

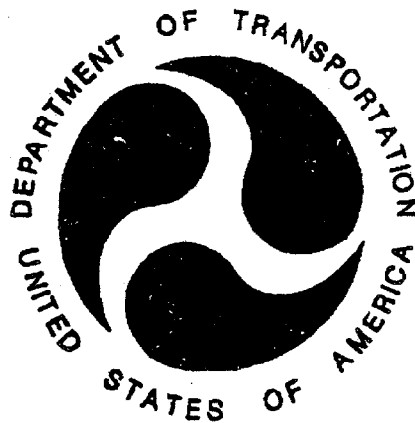
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REPORT NUMBER KAR-99-17

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

**HONDA MOTOR CO., LTD
1999 ACURA 3.5RL
4 DOOR SEDAN
NHTSA NUMBER: MX5304**

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



MAY 28, 1999

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
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Prepared by: James E. Gorth
Mr. James E. Gorth, Project Engineer
KARCO Engineering

Date: May 28, 1999

Reviewed by: Jerry L. Kratzke
Mr. Jerry L. Kratzke, Director of Operations
KARCO Engineering

Date: May 28, 1999

Approved by: Frank D. Richardson
Mr. Frank D. Richardson, Program Manager
KARCO Engineering

Date: May 28, 1999

FINAL REPORT ACCEPTED BY:

Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 1999 Acura 3.5RL at KARCO Engineering on May 18, 1999. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 56.58 km/h. The ambient temperature at the barrier face at the time of impact is 28.8 degrees Celcius. The vehicle's maximum post test static crush is 610 mm located at the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and second generation supplemental airbags in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:					
Measurement Description		Units	Threshold	Driver ATD	Passenger ATD
Head Injury Criteria (HIC)		N/A	1000	576.3	559.4
Max. Thorax Accel. (3 msec Clip)		G's	60	55.6	52.6
Left Femur force		Newtons	10009	-941.8	-1263.1
Right Femur Force		Newtons	10009	-1457.1	-1142.0
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SECTION 1

PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST MX5304

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 is to obtain vehicle crashworthiness, occupant restraint system performance, and lower leg data for frontal barrier impacts. The impact velocity used in this test is in excess of the current 30 mph (48.3 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 the 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 May 18, 1999 at a speed of 56.58 km/h. The test vehicle was instrumented with eight (8) 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 eighteen (18) 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 and right femur load cells, upper and lower tibia sensors, and foot accelerometers. In addition, chest displacement and upper neck six-axis force 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-four (94) 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. 34) and the right-front passenger ATD (Serial No. 35) were re-calibrated for this test. FMVSS 208 "Occupant Crash Protection" injury criteria were not exceeded by either ATD during this frontal barrier impact test.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A rigid load cell barrier was impacted by a 1999 Acura 3.5RL at a velocity of 56.58 km/h. The test vehicle weight is 1927 kilograms with two (2) part 572E 50th percentile adult male ATDs. Twenty-four (24) load cell barrier data channels were obtained in conducting the May 18, 1999 NCAP test. The test vehicle is equipped with a longitudinally mounted 3.5-liter, 6-cylinder engine and a 5-speed automatic transmission.

The driver Head Injury Criteria (HIC) is 576.3. The maximum resultant chest deceleration over three (3) milliseconds is 55.6 g's. The left and right femur loads are -941.8 and -1457.1 Newtons, respectively. Chest deflection for the driver ATD peaked at -34.0mm. The driver ATD head contacted the airbag and headrest, its chest and abdomen contacted the airbag, and both knees contacted the knee bolster.

The right front passenger's HIC is 559.4. The maximum resultant chest deceleration over three (3) milliseconds is 52.6 g's. The left and right femur loads are -1263.1 and -1142.0 Newtons respectively. Chest deflection for the passenger ATD peaked at -30.7 mm. The passenger ATD head contacted the airbag and headrest, the chest and abdomen contacted the airbag and both knees contacted the glove box.

Maximum seat belt spool out as measured by on-board pullout potentiometers is 154.0 mm for the driver ATD and 177.9 mm for the passenger ATD. The shoulder belt stretch sensors are not used with seat belt pre-tensioner systems.

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

The test vehicle sustained a maximum static crush of 610 mm located to the left of the vehicle centerline. Both the driver and passenger side doors opened without the aid of tools.

1.4 GENERAL COMMENTS

The 1999 Acura 3.5RL 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 and vehicle 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 seating and restraint systems.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99

CONVERSION FACTORS USED IN THIS REPORT*

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

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

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

Test Vehicle: 1999 Acura 3.5RL
Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
Test Date: 5/18/99

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.58
Test Weight	kg	1927
Impact Angle	degrees	0
Average Rebound	mm	653
Maximum Static Crush	mm	610

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	Opened	Opened
Rear Door Opening	Opened	Opened
Seat Track Shift (mm)	10	10
Seat Back Failure	None	None

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type / Serial No.	50% Male Hybrid III / No. 34	50% Male Hybrid III / No. 35
Head Contact	Airbag/Headrest	Airbag/Headrest
Chest Contact	Airbag	Airbag
Abdomen Contact	Airbag	Airbag
Left Knee Contact	Knee Bolster	Glove Box
Right Knee Contact	Knee Bolster	Glove Box

16mm MOVIE COVERAGE

High Speed	18
Real Time	1
Total	19

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	8
Vehicle Structure Accelerometers	8
Rigid Barrier Load Cells	24
Total	120

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 1999 Acura 3.5RL
 Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
 Test Date: 5/18/99

TEST VEHICLE INFORMATION

Manufacturer	Honda Motor Corporation
Model	3.5RL
Body Style	4 Door Coupe
NHTSA NO.	MX5304
VIN	JH4KA9657XC005054
Color	Black
Delivery Date	4/23/99
Odometer Reading (mile)	154
Dealer	Acura of Pasadena
Transmission	Automatic
Final Drive	Front
Number of Cylinders	6
Engine Displacement (L)	3.5
Engine Placement	Longitudinal

TEST VEHICLE OPTIONS

Driver Airbag	Yes
Passenger Airbag	Yes
Power Windows	Yes
Power Steering	Yes
Power Door Locks	Yes
Tilt Wheel	Yes
Air Conditioning	Yes
Power Brakes	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	Yes
Anti-lock Brakes	Yes
AM/FM/Cassette	Yes
Anti-Theft System	Yes
Cruise Control	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda Motor Co., LTD	GVWR (kg)	2191
Date of Manufacture	December-98	GAWR Front (kg)	116
		GAWR Rear (kg)	1025

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	203	203
Cold Pressure (kPa)	203	203
Recommend Tire Size	P215/60/R16	P215/60/R16
Tire Size on Vehicle	P215/60/R16	P215/60/R16
Tire Manufacturer	Michelin	Michelin

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	None	
Number of Occupants	2	3	0	5
Capacity Wt. (VCW) (kg)				385
Cargo Weight (RCLW) (kg)				45

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

Test Vehicle: 1999 Acura 3.5RL
 Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
 Test Date: 5/18/99

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	527	351		560	422	
Right	kg	502	355		526	419	
Ratio	%	59.3	40.7		56.4	43.6	
Totals	kg	1029	706	1735	1086	841	1927

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1735
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Vehicle Target Weight (TVTW)	kg	1932

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	678	678	670	675	1186
As Tested	mm	668	666	654	652	1272

Vehicle Wheel base (mm): 2915

Weight of Ballast secured in cargo area (kg): 18 *

Vehicle Components Removed: Side mirrors, jack, tools, spare tire and paneling.

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

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 68.1

Usable Capacity Figure Furnished by COTR (L): 68.1

Actual Test Volume with entire fuel System Filled (L): 63.4

Test Fluid Type: Stoddard Solvent ; Specific Gravity: 0.764

Is Vehicle Fuel Pump Electric or Mechanical?: Electric

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

Fuel System Particulars: Driver side filler door, tank mounted at rear seat centerline,
fuel lines travel inside left frame rail.

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

Test Vehicle: 1999 Acura 3.5RL
Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
Test Date: 5/18/99

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.51 to 57.12	56.58
Trap No. 1 Entry Distance	mm	< 1524	1524
Trap No. 1 Exit Distance	mm	< 1524	305
Trap No. 2 Velocity (Redundant)	km/h	55.51 to 57.12	56.63
Trap No. 2 Entry Distance	mm	< 1524	1524
Trap No. 2 Exit Distance	mm	< 1524	305

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4695	4352	-343
Center	mm	4975	4365	-610
Right Side	mm	4695	4334	-361

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	642
Center	mm	660
Right Side	mm	656
Average	mm	653

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

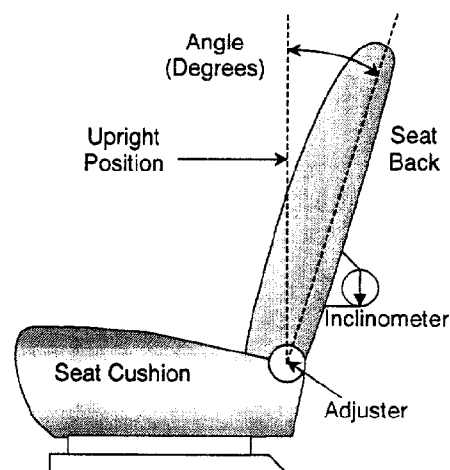
Test Vehicle: 1999 Acura 3.5RL
Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
Test Date: 5/18/99

NOMINAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturers designated angle. The procedure is as follows: The seat back angle is adjusted so that the distance from the center of the inner sunvisor bracket bolt to the center of the outer headrest mounting hole is 683mm. An inclinometer is placed against the flat surface of the tool and the seat back angle is measured directly from the dial face.

Driver seat back angle: 25° with a seated dummy
Passenger seat back angle: 25° with a seated dummy



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

Both driver and passenger seats have power operated seats. The total travel on both the driver and passenger seats is 234 mm. The fore/aft position is set at the middle position for both driver and passenger.

Driver seat fore/aft total travel: 234mm total distance of travel.
Passenger seat fore/aft total travel: 234mm total distance of travel
Driver seat fore/aft position: Seat set at 117 mm.
Passenger seat fore/aft position: Seat set at 117 mm.

SEAT BELT UPPER ANCHORAGE

The test vehicle is equipped with adjustable anchorages for both driver and passenger seat positions. There are 4 positions or detents. The anchorages were placed in the 1st or uppermost position.

DATA SHEET NO. 4...(continued)

TEST VEHICLE INFORMATION

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99

FUEL TANK CAPACITY DATA

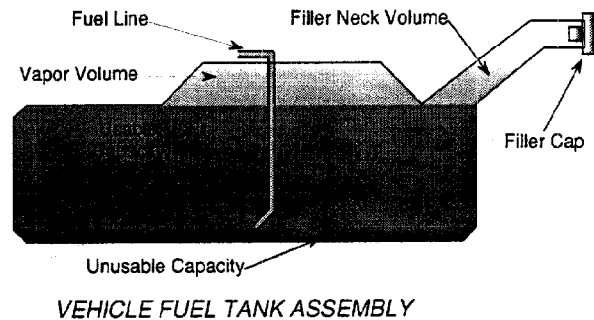
The "Usable Capacity" of the standard equipment fuel tank is: 68.1 liters

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

"Usable Capacity" used for certification tests FMVSS 301 requirements: 62.6 to 64.0 liters

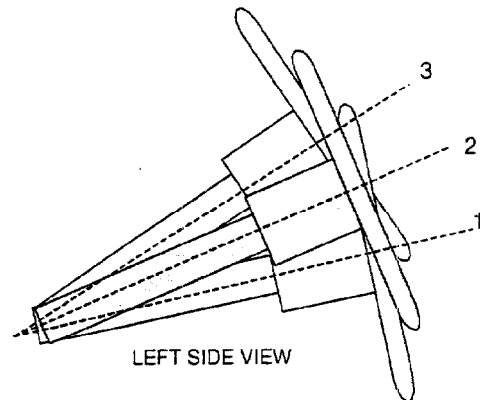
Actual amount of Stoddard solvent added to vehicle for certification test: 63.3 liters

The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed to the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat. Fuel lines run along the left of center of the uni-body to the engine compartment.



STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes, when it is moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed onto the plate and the angle is measured. The tested vehicle has its steering column set to the geometric center, or position 2 as indicated in the drawing at right and the angle below.



STEERING COLUMN ASSEMBLY

Lowermost, position 1: 20°

Geometric center, position 2: 25°

Uppermost, position 3: 30°

STEERING COLUMN FORE/AFT (TELESCOPING) ADJUSTMENT

The steering column fore/aft position is power adjusted. Test position is made so that the steering column is at the middle position of its total travel.

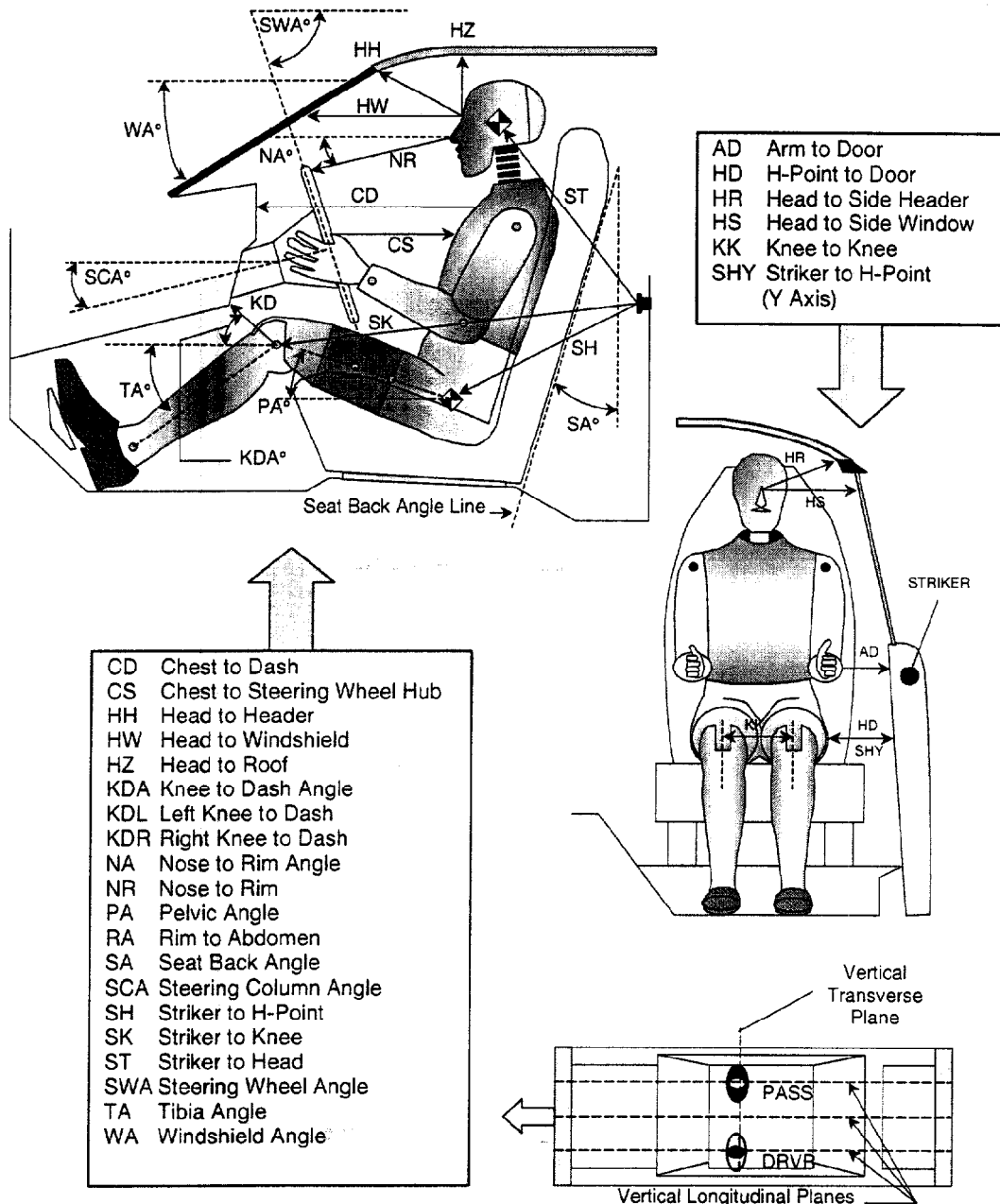
DATA SHEET NO. 5 **DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

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

Test Vehicle: 1999 Acura 3.5RL
 Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
 Test Date: 5/18/99

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		33		
SWA	Steering Wheel Angle		60		
SCA	Steering Column Angle		30		
SA	Seat Back Angle		25		28
HZ	Head to Roof (Z)	200	90	185	90
HH	Head to Header	395	0	390	0
HW	Head to Windshield	616	0	605	0
HR	Head to Side Header (Y)	220		222	
NR	Nose to Rim	500	4		
CD	Chest to Dash	590		580	
CS	Chest to Steering Hub	365	0		
RA	Rim to Abdomen	235	0		
KDL	Left Knee to Dash	230	37	210	
KDR	Right Knee to Dash	175		210	37
PA	Pelvic Angle		24		22
TA	Tibia Angle		33		34
KK	Knee to Knee (Y)	275		210	
SK	Striker to Knee	585	13	585	15
ST	Striker to Head	460	7	500	3
SH	Striker to H-Point	255	45	255	35
SHY	Striker to H-Point (Y)	228		233	
HS	Head to Side Window	300		274	
HD	H-Point to Door (Y)	126		124	
AD	Arm to Door (Y)	100		20	

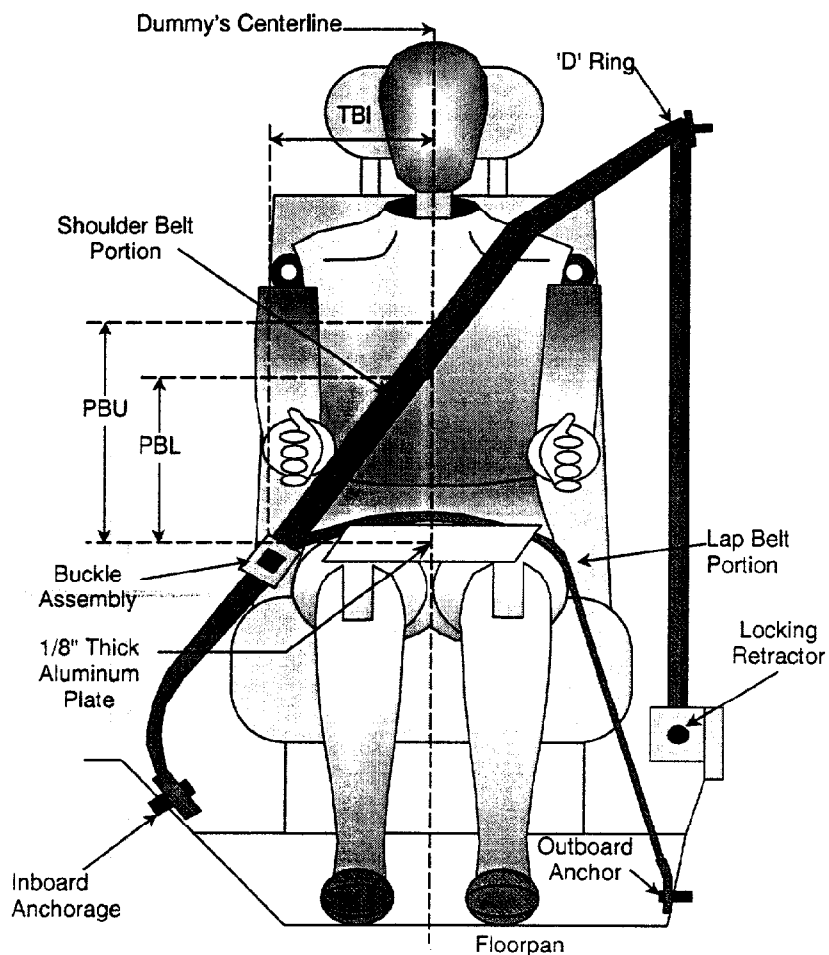
DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to lap/shoulder belt intersection	mm	195	195
PBU - Top surface of reference to belt upper edge	mm	340	347
PBL - Top surface of reference to belt lower edge	mm	253	263
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 ACURA 3.5 RL 4 DOOR SEDAN

NHTSA No.: MX5304

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP

TEST DATE: 5/18/99

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.)	1915	-610	360	G's	2.9	119.5	-39.4	56.2
2	Right Rear X-Member (Pri.)	1960	580	365	G's	3.4	123.3	-39.0	55.3
3	Engine Top	4160	320	730	G's	28.2	52.0	-114.3	39.7
4	Engine Bottom	4130	0	170	G's	17.4	53.3	-102.8	37.1
5	Left Brake Caliper	3950	-720	410	G's	54.6	58.5	-64.4	45.2
6	Right Brake Caliper	3950	720	410	G's	37.0	61.0	-76.2	47.4
7	Instrument Panel	3260	30	920	G's	30.3	67.2	-62.5	58.8
8	Left Rear X-Member (Rednt.)	1820	-610	355	G's	2.8	118.5	-39.1	55.9

Reference Points

X - From Rear Surface of Vehicle

Y - Vehicle Centerline

Z - Ground Plane

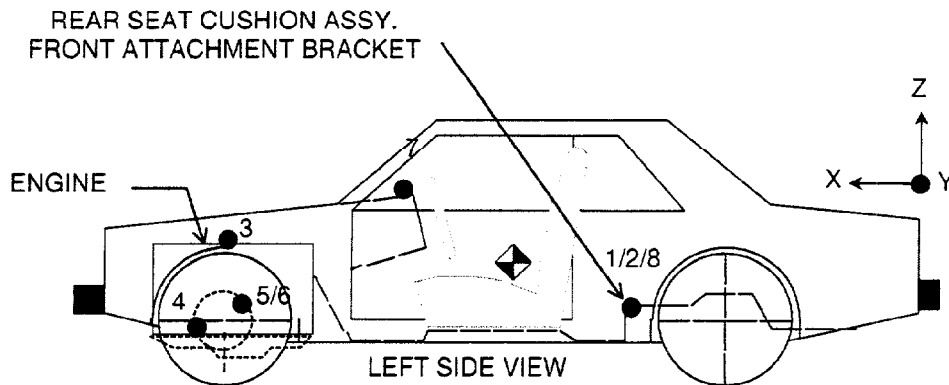
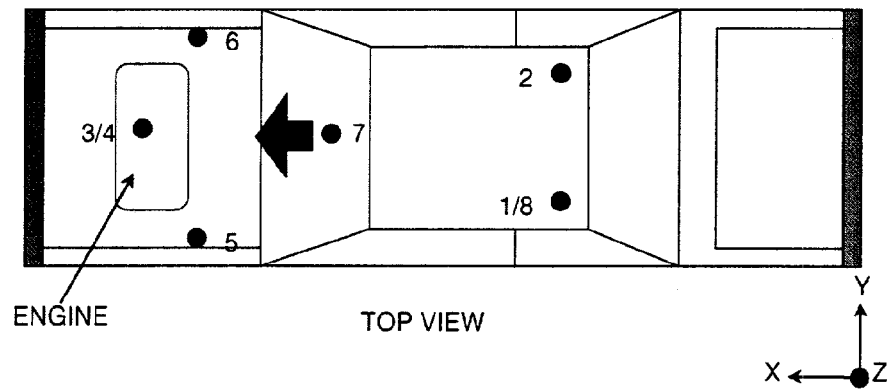
DATA SHEET NO. 7...(continued)
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99



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

TEST VEHICLE: 1999 ACURA 3.5 RL 4 DOOR SEDAN

NHTSA No.: MX5304

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP

TEST DATE: 5/18/99

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	9.6	297.2	-65.7	77.4	9.2	182.7	-60.2	82.6
Head CG	Y	G's	10.7	85.4	-3.7	55.3	7.0	44.8	-28.3	89.0
Head CG	Z	G's	23.5	57.2	-27.6	82.1	27.8	53.5	-8.5	103.3
Head CG Resultant	N/A	G's	66.2	77.4			63.8	85.1		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.7	249.0	-60.5	80.3	4.2	233.1	-52.6	78.3
Chest CG	Y	G's	4.3	82.8	-3.1	56.5	7.9	53.6	-14.6	87.8
Chest CG	Z	G's	16.4	58.7	-22.5	80.6	12.5	53.4	-27.6	84.6
Chest CG Resultant	N/A	G's	64.4	80.4			54.2	78.3		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	1435.5	60.8	-941.8	71.4	955.5	55.6	-1263.1	69.2
Right Femur	Z	Newtons	939.0	78.2	-1457.1	53.5	1174.4	57.7	-1142.0	69.9

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	10180.3	68.4	-0.3	171.8	10222.6	67.5	7.7	0.0
Shoulder Belt Force	N/A	Newtons	6987.1	61.5	-3.6	153.0	6009.8	71.4	0.2	190.0
Shoulder Belt Spoolout	N/A	MM	154.0	90.3	-1.8	36.8	177.9	89.1	-5.8	34.8
Shoulder Belt Stretch	N/A	MM/CM	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.0

* Not used with pre-tensioner

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	576.3	49.5	59.7	93.0	559.4	49.6	68.8	101.0

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	55.6	79.2	82.2	52.6	77.9	80.9

DATA SHEET NO. 8...(continued)

TEST VEHICLE: 1999 ACURA 3.5 RL 4 DOOR SEDAN

NHTSA No.: MX5304

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP

TEST DATE: 5/18/99

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	5.9	91.5	-56.3	69.1	6.6	92.0	-57.6	67.8
Pelvis	Y	G's	9.9	78.8	-12.8	52.7	5.5	47.5	-10.7	83.2
Pelvis	Z	G's	6.5	191.0	-46.2	78.2	4.6	233.5	-39.7	85.8

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	522.5	82.3	-295.2	140.6	433.3	67.6	-505.6	52.7
Neck Force	Y	Newtons	146.8	119.1	-167.7	79.7	127.2	188.4	-529.8	89.6
Neck Force	Z	Newtons	1520.9	72.1	-320.1	96.9	1339.3	65.6	-473.7	85.8
Neck Moment	X	N·m	10.7	123.1	-7.3	92.3	37.1	88.2	-14.9	118.3
Neck Moment	Y	N·m	33.5	130.9	-26.6	94.7	57.7	67.4	-19.9	51.5
Neck Moment	Z	N·m	6.0	150.9	-11.8	94.6	35.2	95.5	-11.2	143.7

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	16.4	71.3	-55.5	61.8	29.0	56.8	-72.5	46.3
Left Foot Aft	Z	G's	6.6	244.8	-49.4	53.0	22.6	71.9	-111.9	47.3
Left Foot Fore	Z	G's	23.0	38.3	-81.3	52.9	96.7	60.2	-176.1	47.4
Right Foot Aft	X	G's	36.4	58.3	-135.4	50.2	32.6	58.0	-65.2	47.6
Right Foot Aft	Z	G's	16.8	57.8	-198.4	52.4	17.9	72.3	-106.1	46.7
Right Foot Fore	Z	G's	92.3	58.0	-214.6	42.7	94.6	50.9	-220.4	46.3

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	69.2	64.5	-4.9	127.6	15.0	76.3	-22.0	63.5
Left Lower Moment	Y	N·m	11.6	69.2	-29.5	60.1	113.5	70.0	-33.8	47.4
Left Lower Force	Z	Newtons	78.1	155.1	-2125.1	54.7	304.6	242.9	-3094.8	85.3
Left Upper Moment	X	N·m	56.8	64.1	-24.6	87.6	33.1	80.9	-35.7	64.3
Left Upper Moment	Y	N·m	17.4	161.5	-109.8	64.0	12.2	136.3	-107.9	47.6
Right Lower Moment	X	N·m	25.4	51.0	-68.7	57.4	29.9	61.0	-16.4	49.4
Right Lower Moment	Y	N·m	93.8	60.6	-37.2	48.1	136.5	70.9	-54.6	47.1
Right Lower Force	Z	Newtons	146.5	40.0	-6690.8	53.2	240.3	167.8	-2615.1	34.4
Right Upper Moment	X	N·m	28.5	54.0	-24.8	74.3	23.4	84.9	-29.4	49.9
Right Upper Moment	Y	N·m	19.5	122.9	-191.0	54.1	35.6	70.9	-87.8	47.8

DATA SHEET NO. 8...(continued)

TEST VEHICLE: 1999 ACURA 3.5 RL 4 DOOR SEDAN

NHTSA No.: MX5304

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP

TEST DATE: 5/18/99

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.2	14.6	-34.0	74.6	0.2	5.5	-30.7	87.9

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	8.3	298.3	-64.0	76.3	8.9	186.6	-59.5	82.8
Head CG	Y	G's	10.3	87.6	-3.1	55.5	5.1	44.7	-25.5	90.1
Head CG	Z	G's	24.3	60.2	-30.3	81.9	26.2	63.4	-10.7	85.7
Head CG Resultant	N/A	G's	64.3	77.1			62.6	85.7		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.6	249.2	-59.6	80.4	3.2	231.5	-53.3	78.0
Chest CG	Y	G's	5.4	82.6	-3.4	56.4	3.5	46.0	-13.7	88.1
Chest CG	Z	G's	12.8	58.7	-23.0	80.6	10.9	56.2	-24.9	84.6
Chest CG Resultant	N/A	G's	63.8	80.4			54.1	78.0		

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	576.9	48.7	59.6	94.4	553.8	47.3	63.8	99.7

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	55.2	79.3	82.3	52.5	76.9	79.9

DATA SHEET NO. 9
SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline lap/shoulder belt intersection	mm	195	195
PBU - Top surface of reference to belt upper edge	mm	340	347
PBL - Top surface of reference to belt lower edge	mm	253	263
Lap Belt tension	Newtons	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to 'D' ring	mm	530	530
Shoulder belt length as measured on ATD	mm	820	840
Lap belt length as measured on ATD	mm	745	770
Remainder of belt on reel	mm	650	635
Total belt length for continuous webbing systems	mm	2745	2775

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	95.0	125.0
As determined electronically	mm	154.0	177.9

BELT STRETCH DATA

Measurement Description	Units	Driver	Passenger
Electronically from shoulder belt load cell and "D" ring	mm/cm	N/A*	N/A*
Mechanically	mm/cm	0.10	0.10

*Not used with shoulder belt pre-tensioner systems.

DATA SHEET NO. 10
SUMMARY OF FMVSS 212 DATA

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99

Windshield Mounting Details:

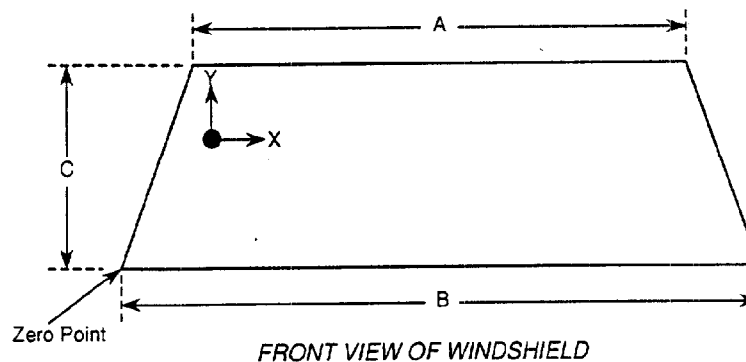
Windshield glass is secured to the vehicle frame with a rubber type adhesive. Molding covers the windshield periphery at the top and sides. The windshield bottom is not covered with molding.

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

Temperature of windshield molding during test: 21.1 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2075.0	2075.0	100
Right Side	2075.0	2075.0	100
Total	4150.0	4150.0	100



WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1150	22
B	mm	1550	0
C	mm	725	24

DATA SHEET NO. 11

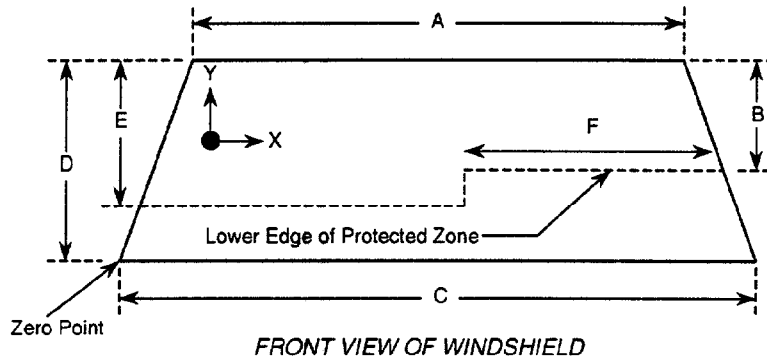
WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99



WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1150
B	mm	336
C	mm	1550
D	mm	725
E	mm	474
F	mm	636

AREA OF PROTECTED ZONE FAILURES

- A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 in. by a vehicle component other than one that is normally in contact with the windshield. No penetration occurred.

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

- B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component. No penetration occurred.

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 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99

Test Time: 2:15 PM

Temperature at Time of Impact: 28.8 °C

STODDARD SOLVENT SPILLAGE MEASUREMENT

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

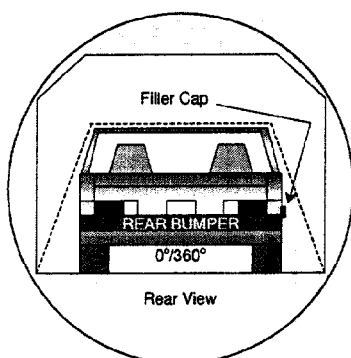
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 1999 Acura 3.5RL

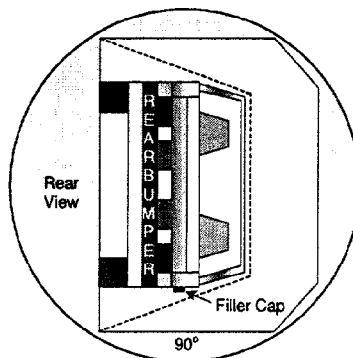
NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

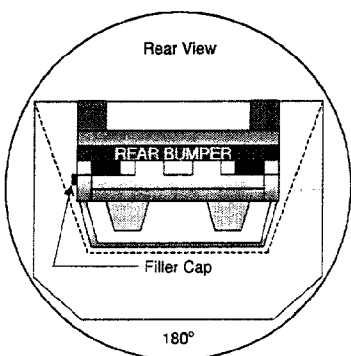
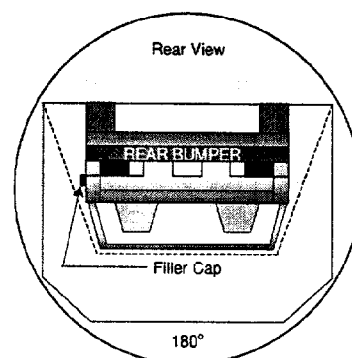
Test Date: 5/18/99



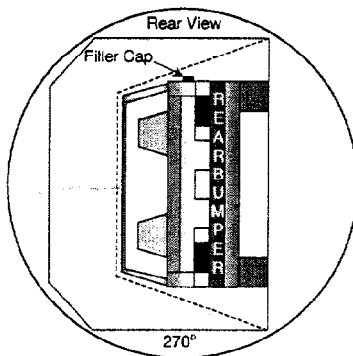
0° TO 90°



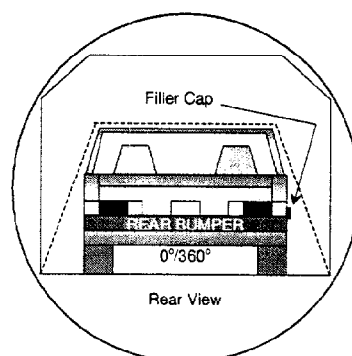
90° TO 180°



180° TO 270°



270° TO 360°



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

TEST PHASE	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	82	300	0.0
90° TO 180°	81	300	0.0
180° TO 270°	78	300	0.0
270° TO 360°	82	300	0.0

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

Test Vehicle: 1999 Acura 3.5RL

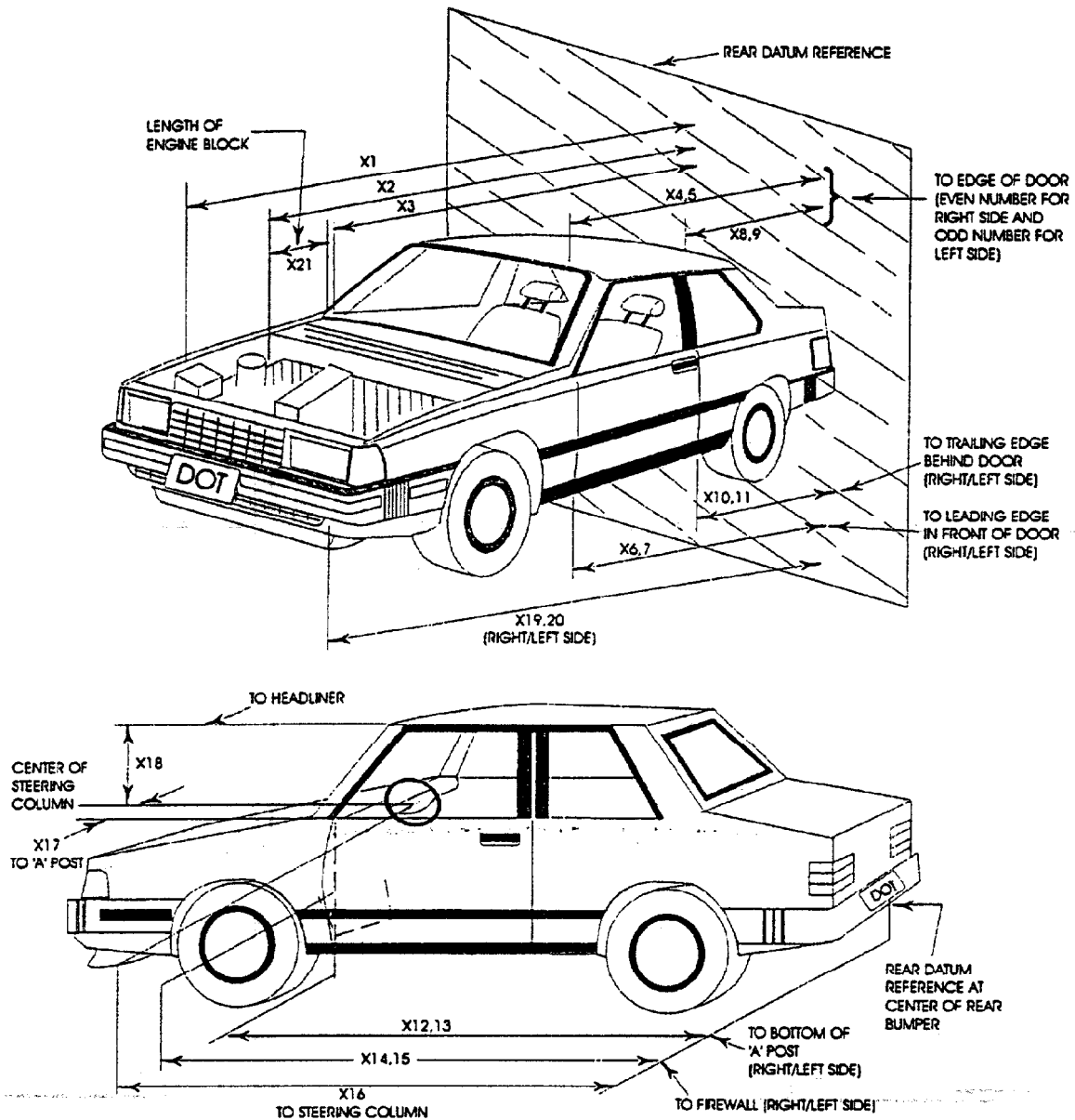
NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4975	4365	-610
2	RSOV to front of engine	mm	4205	4045	-160
3	RSOV to firewall centerline	mm	3584	3575	-9
4	RSOV to upper leading edge of right door	mm	3372	3375	3
5	RSOV to upper leading edge of left door	mm	3360	3360	0
6	RSOV to lower leading edge of right door	mm	3373	3371	-2
7	RSOV to lower leading edge of left door	mm	3370	3355	-15
8	RSOV to upper trailing edge of right door	mm	2319	2320	1
9	RSOV to upper trailing edge of left door	mm	2312	2306	-6
10	RSOV to lower trailing edge of right door	mm	2310	2310	0
11	RSOV to lower trailing edge of left door	mm	2310	2296	-14
12	RSOV to bottom of right 'A' pillar	mm	3368	3367	-1
13	RSOV to bottom of left 'A' pillar	mm	3370	3370	0
14	RSOV to firewall on right side	mm	3685	3670	-15
15	RSOV to firewall of left side	mm	3585	3529	-56
16	RSOV to steering column	mm	2922	2890	-32
17	Center of steering column to left 'A' pillar	mm	382	375	-7
18	Center of steering column to headlining	mm	440	390	-50
19	RSOV to right side of front bumper	mm	4695	4334	-361
20	RSOV to left side of front bumper	mm	4695	4352	-343
21	Length of engine block	mm	370	370	0
RD	RSOV to right side of dash panel	mm	3110	3110	0
CD	RSOV to center of dash panel	mm	3174	3144	-30
LD	RSOV to left side of dash panel	mm	3132	3072	-60

VEHICLE MEASUREMENTS



DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99

No.	Camera View	Location (mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Right Side, Real Time	3454	10973	1245	0	1651	Zoom	24
2	Left Side, No. 1	2000	8100	1338	1	7850	13	1100
3	Left Side, No. 2	900	6450	1480	3	6372	25	920
4	Left Side, No. 3	5000	5350	2140	10	5560	35	830
5	Left Side, No. 4	2250	8200	3070	15	8050	24	900
6	Left Side, No. 5	2200	8150	2610	10	8000	28	920
7	Right Side, No. 1	2000	8300	885	0	7900	19	910
8	Right Side, No. 2	1400	8200	1610	5	7950	40	870
9	Right Side, No. 3	5000	5500	2090	9	3900	35	900
10	Right Side, No. 4	2500	6230	1245	1	6020	24	900
11	Overhead Overall	800	0	5486	90	N/A	13	1000
12	Front View, Driver	200	330	2449	45	N/A	13	950
13	Front View, Passenger	200	350	2449	45	N/A	13	1000 *
14	Pit Camera, Engine	750	0	1520	90	N/A	10	1050
15	Pit Camera, Fuel Tank	4300	0	1650	58	N/A	10	1000
16	Onboard, Driver	2585	370	1100	2	1950	13	500
17	Onboard, Passenger	3585	370	1100	5	1338	13	430
18	Driver Side No. 6	1950	8200	1240	1	8000	50	970
19	Passenger Side No. 5	1900	8150	1695	3	7970	50	910

X - Barrier Face Y - Monorail Centerline Z - Ground

* Camera Starts After T=0

DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 1999 Acura 3.5RL

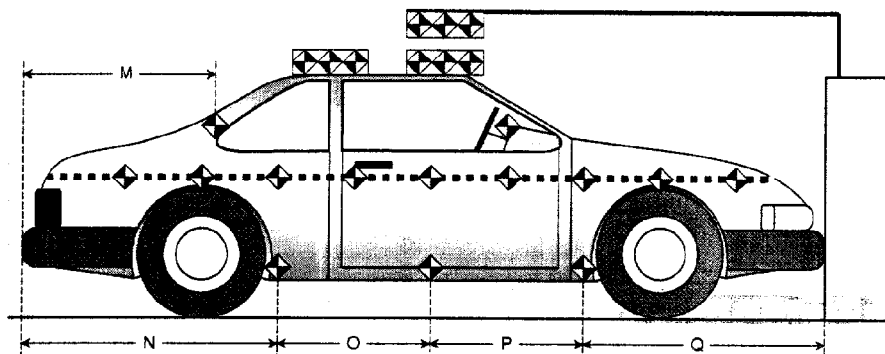
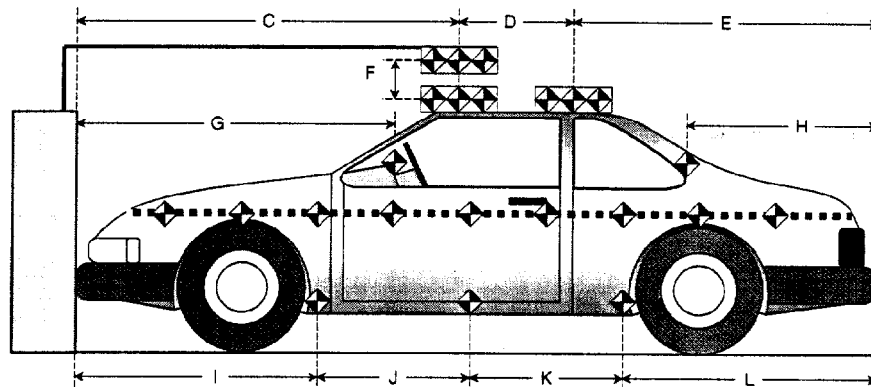
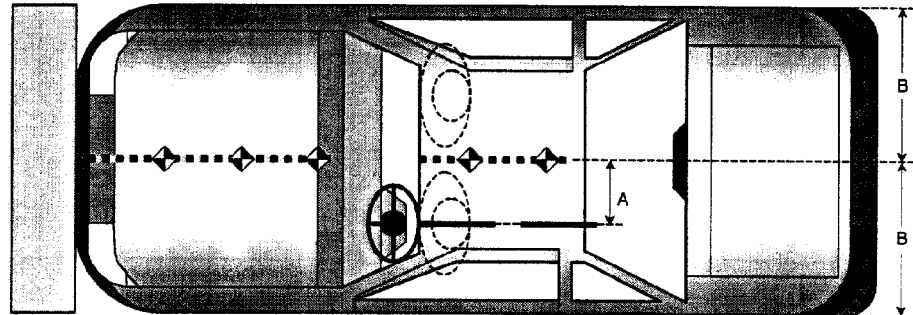
NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99

All Dimensions
in mm

Item	Value
A	330
B	935
C	2774
D	605
E	1592
F	153.6
G	1870
H	1340
I	1400
J	1001
K	1001
L	1581
M	1365
N	1580
O	995
P	997
Q	1405



DATA SHEET NO. 17

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

Test Program: 1999 NHTSA 35 MPH NCAP

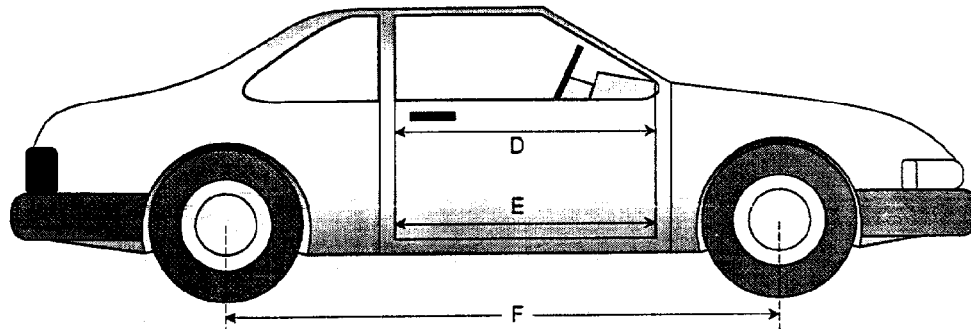
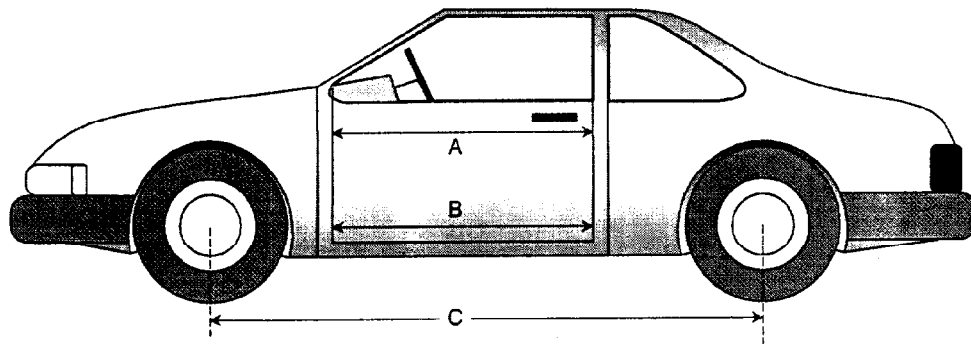
Test Date: 5/18/99

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	989	982	-7
B	Left Side Lower	mm	889	884	-5
D	Right Side Upper	mm	994	981	-13
E	Right Side Lower	mm	909	906	-3

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheel base	mm	2915	2793	-122
F	Right Side Wheel base	mm	2915	2795	-120



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

Test Vehicle: 1999 Acura 3.5RL

NHTSA No.: MX5304

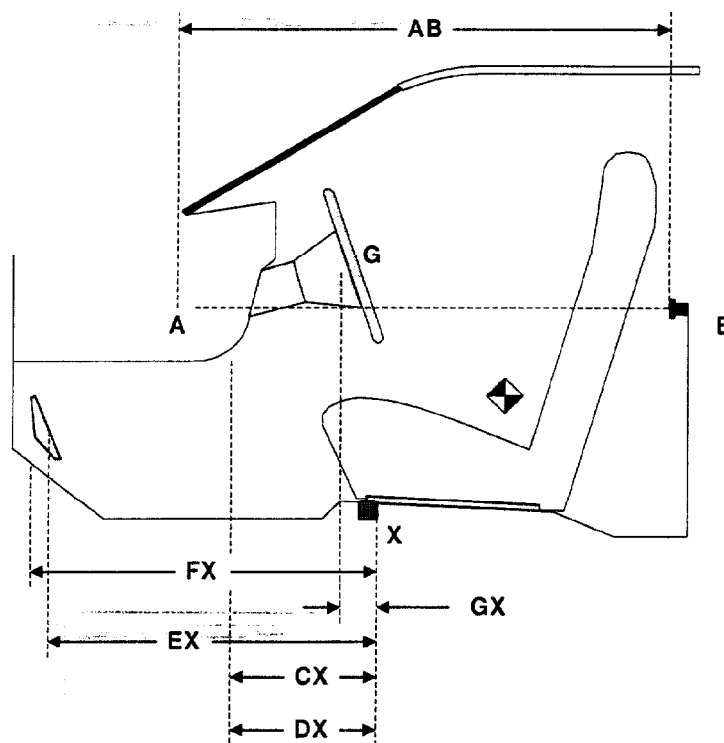
Test Program: 1999 NHTSA 35 MPH NCAP

Test Date: 5/18/99

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	989	982	-7
CX	Left Knee Bolster to X	mm	320	285	-35
DX	Right Knee Bolster to X	mm	325	300	-25
EX	Brake Pedal to X	mm	555	520	-35
FX	Foot Rest to X	mm	600	606	6
GX	Center of Steering Wheel Hub to X	mm	25	15	-10

X = Left Front Seat Outboard Anchor Bolt Head

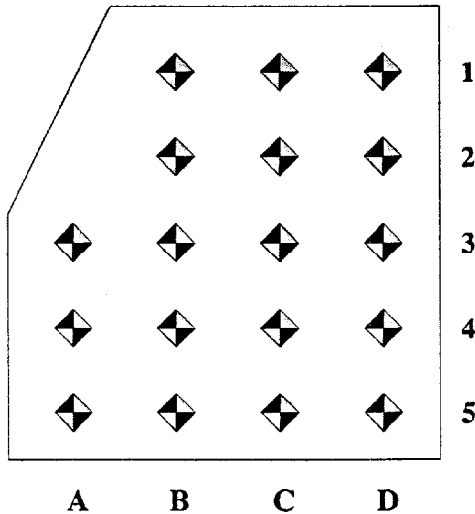


DRIVER COMPARTMENT

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

Test Vehicle: 1999 Acura 3.5RL
 Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
 Test Date: 5/18/99



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

Columns A through D are evenly spaced.

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

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

DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	680	680	675	680	650	638	615	630	-30	-42	-60	-50
2	610	608	605	607	610	597	583	587	0	-11	-22	-20
3	540	540	535	540	538	540	537	525	-2	0	2	-15
4	440	440	438	435	440	440	440	430	0	0	2	-5
5	340	340	330	333	340	340	335	335	0	0	5	2

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	43	20	43	45	58	30	56	62	15	10	13	17
2	-15	-10	-18	-14	-30	-25	-23	-17	-15	-15	-5	-3
3	-32	-33	-30	-34	-37	-60	-65	-33	-5	-27	-35	1
4	-40	-38	-35	-35	-34	-40	-55	-53	6	-2	-20	-18
5	-52	-50	-30	-33	-43	-42	-35	-43	9	8	-5	-10

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

Test Vehicle: 1999 Acura 3.5RL
 Test Program: 1999 NHTSA 35 MPH NCAP

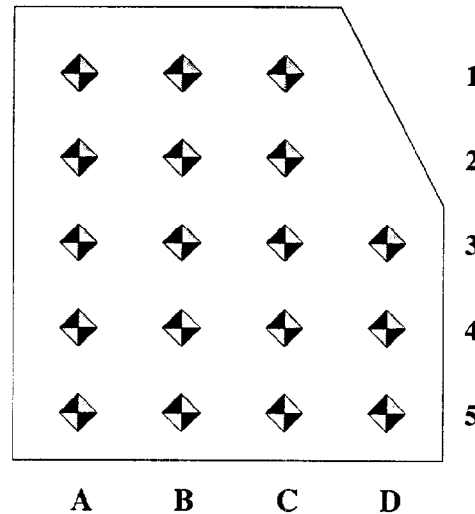
NHTSA No.: MX5304
 Test Date: 5/18/99

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

Columns A through D are evenly spaced.

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

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



PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	698	711	711	704	571	579	588	610	-127	-132	-123	-94
2	614	611	613	612	523	532	553	576	-91	-79	-60	-36
3	513	511	514	512	489	490	498	507	-24	-21	-16	-5
4	413	411	413	410	400	405	410	410	-13	-6	-3	0
5	313	311	310	307	310	307	309	310	-3	-4	-1	3

PASSENGER FLOOR PAN Z-AXIS

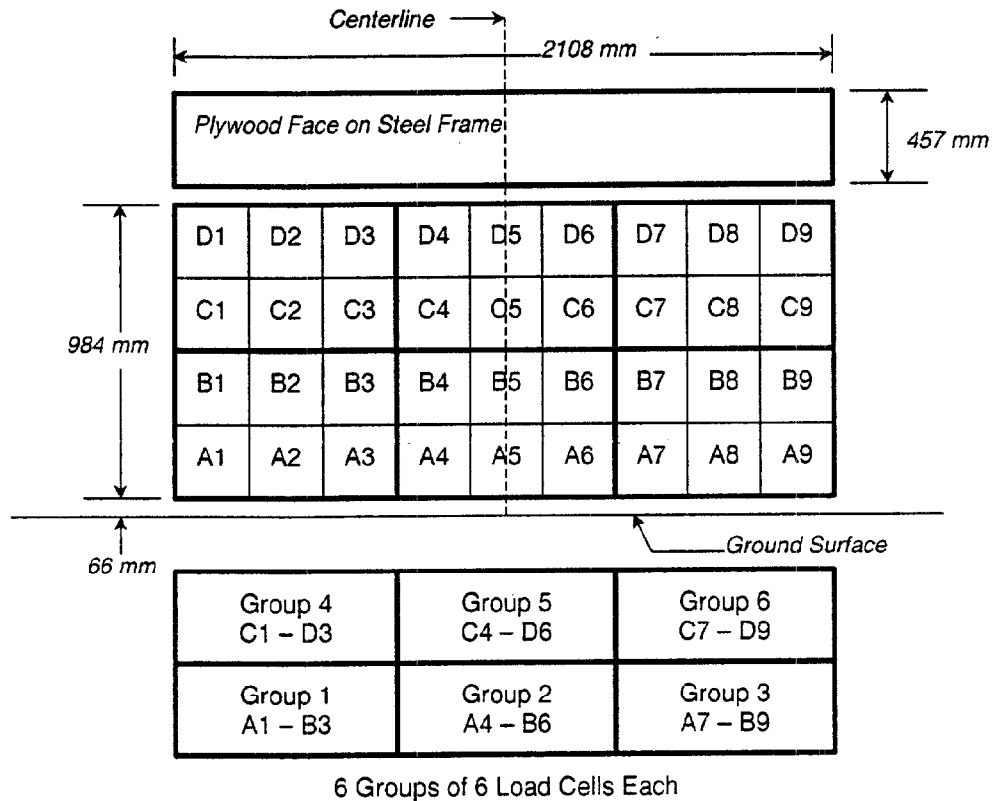
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	155	165	165	165	185	200	199	191	30	35	34	26
2	75	87	80	83	79	73	78	79	4	-14	-2	-4
3	-35	-35	-35	-35	-50	-45	-50	-43	-15	-10	-15	-8
4	-35	-40	-45	-45	-30	-32	-42	-38	5	8	3	7
5	-30	-40	-45	-45	-43	-45	-49	-49	-13	-5	-4	-4

DATA SHEET NO. 18
FIXED BARRIER TYPE

Test Vehicle: 1999 Acura 3.5RL
 Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
 Test Date: 5/18/99

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



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

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

**DATA SHEET NO. 19
ACCIDENT INVESTIGATION DATA**

Test Vehicle: 1999 Acura 3.5RL
Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
Test Date: 5/18/99

VEHICLE INFORMATION

VIN: JH4KA9657XC005054
Vehicle Size Category: 4-Door Sedan

Wheel base (mm): 2915
Test Weight (kg): 1927

ACCELEROMETER DATA

Accelerometer Location: Left rear seat cross-member
Cal. Procedure/Interval: 6 months / drop test
Integration Algorithm: NHTSA Standard
Impact Velocity (km/h): 56.58
Velocity Change (km/h): 65.92

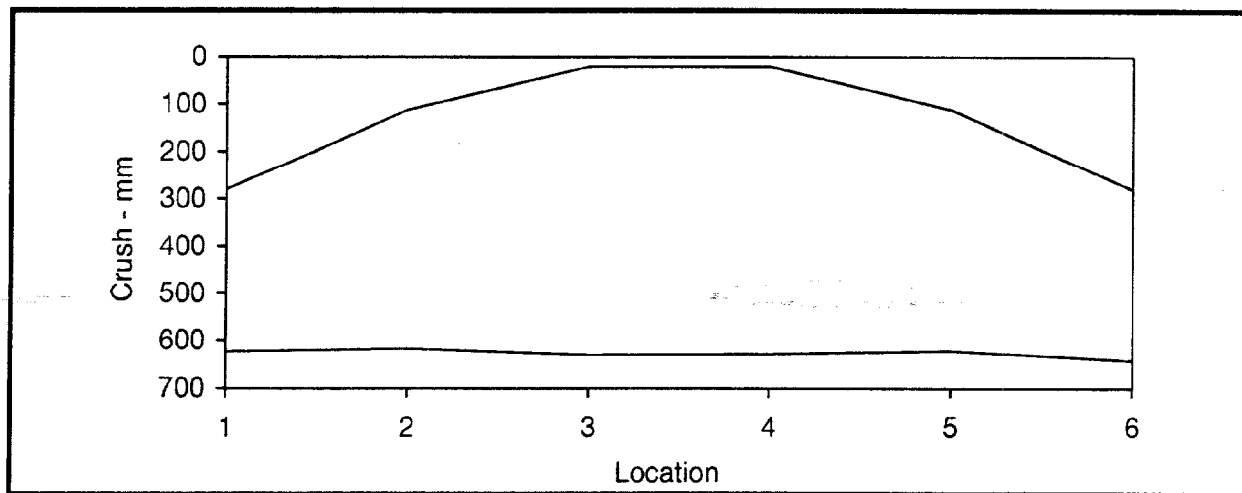
Linearity: Good

Time of Separation (msec): 74.8

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6 Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1643 Impact Mode: Full Frontal

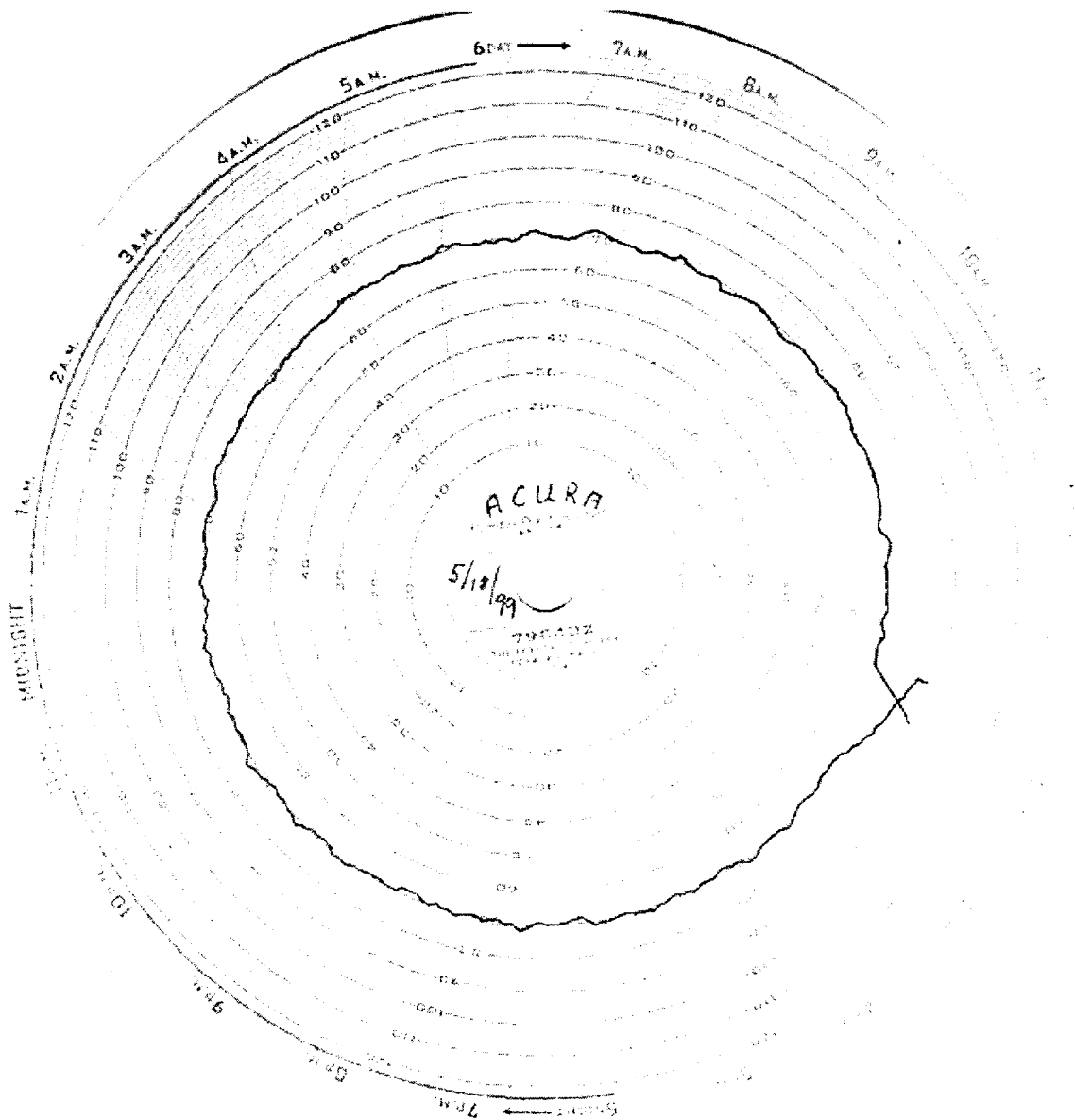
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	280	623	-343
C2	Crush zone 2 on left side	mm	112	617	-505
C3	Crush zone 3 on left side	mm	20	630	-610
C4	Crush zone 4 on right side	mm	20	628	-608
C5	Crush zone 5 on right side	mm	112	622	-510
C6	Crush zone 6 at right side	mm	280	641	-361



DATA SHEET NO. 20
DUMMY/ VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 1999 Acura 3.5RL
Test Program: 1999 NHTSA 35 MPH NCAP

NHTSA No.: MX5304
Test Date: 5/18/99



APPENDIX A
PHOTOGRAPHS

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FIGURE A-1. RIGHT FRONT AS RECEIVED

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FIGURE A-2. LEFT REAR AS RECEIVED

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FIGURE A-5. PRETEST FRONT VIEW

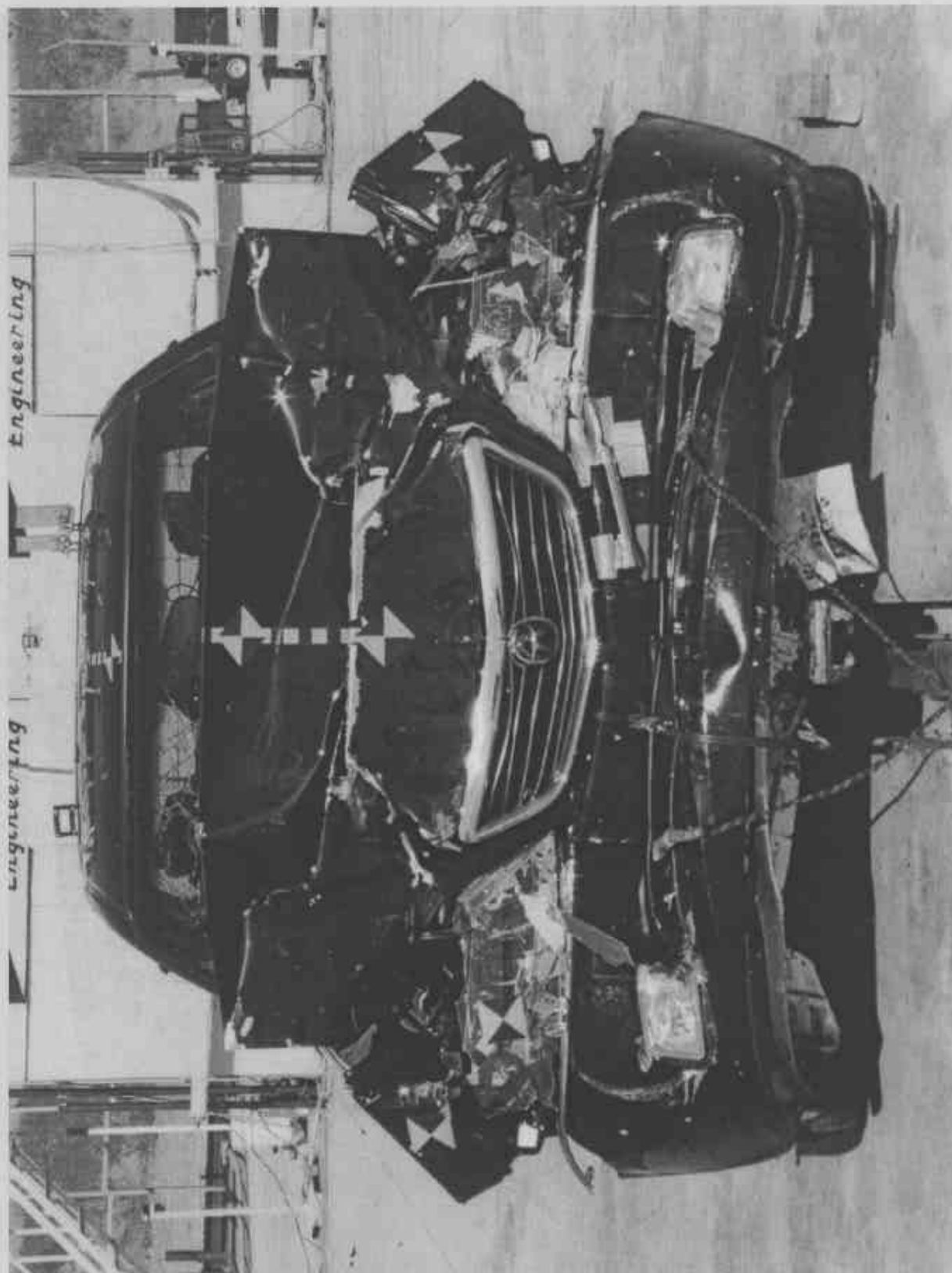


FIGURE A-6. POST TEST FRONT VIEW

A-6

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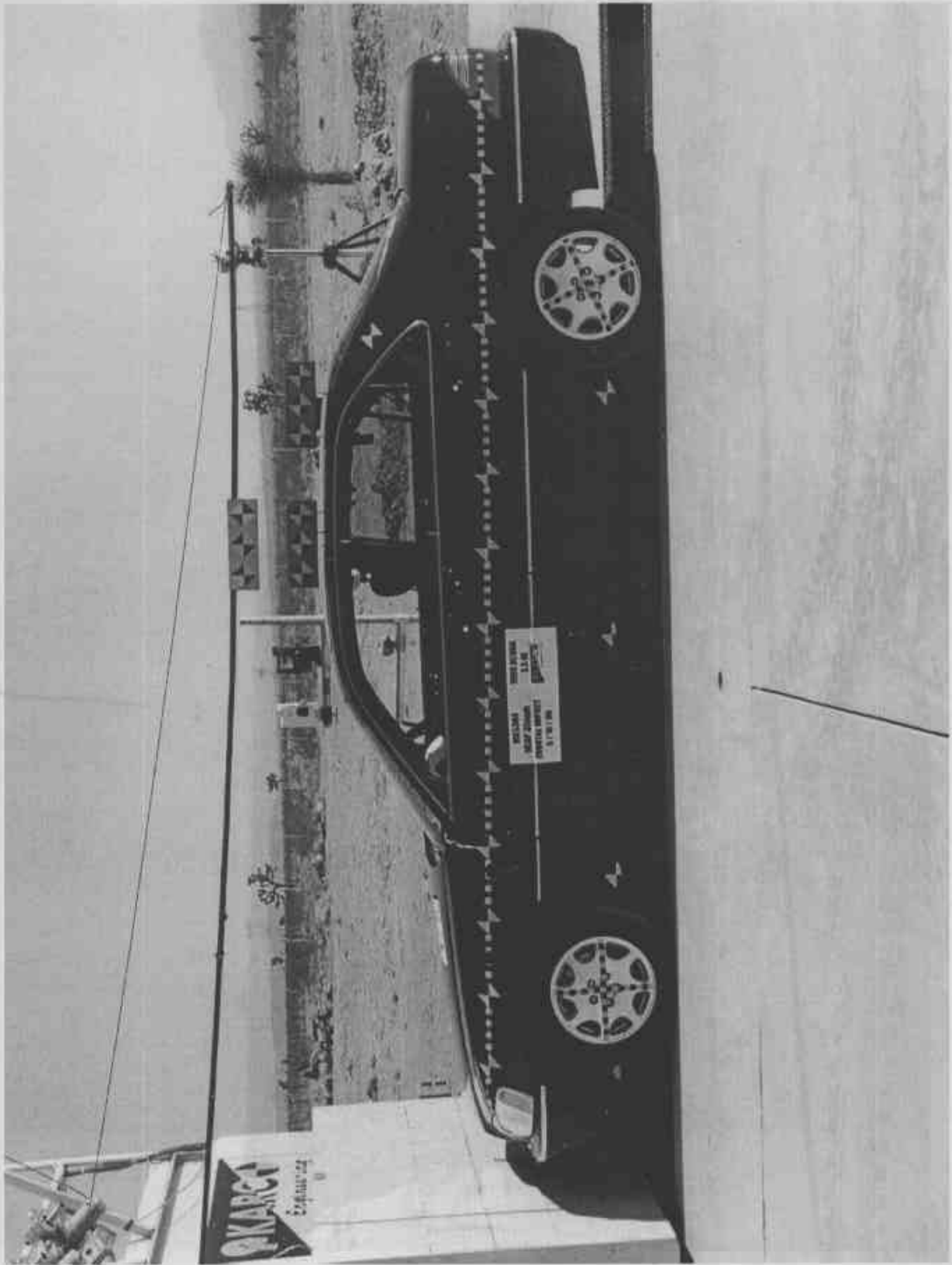


FIGURE A-7. PRETEST LEFT SIDE VIEW

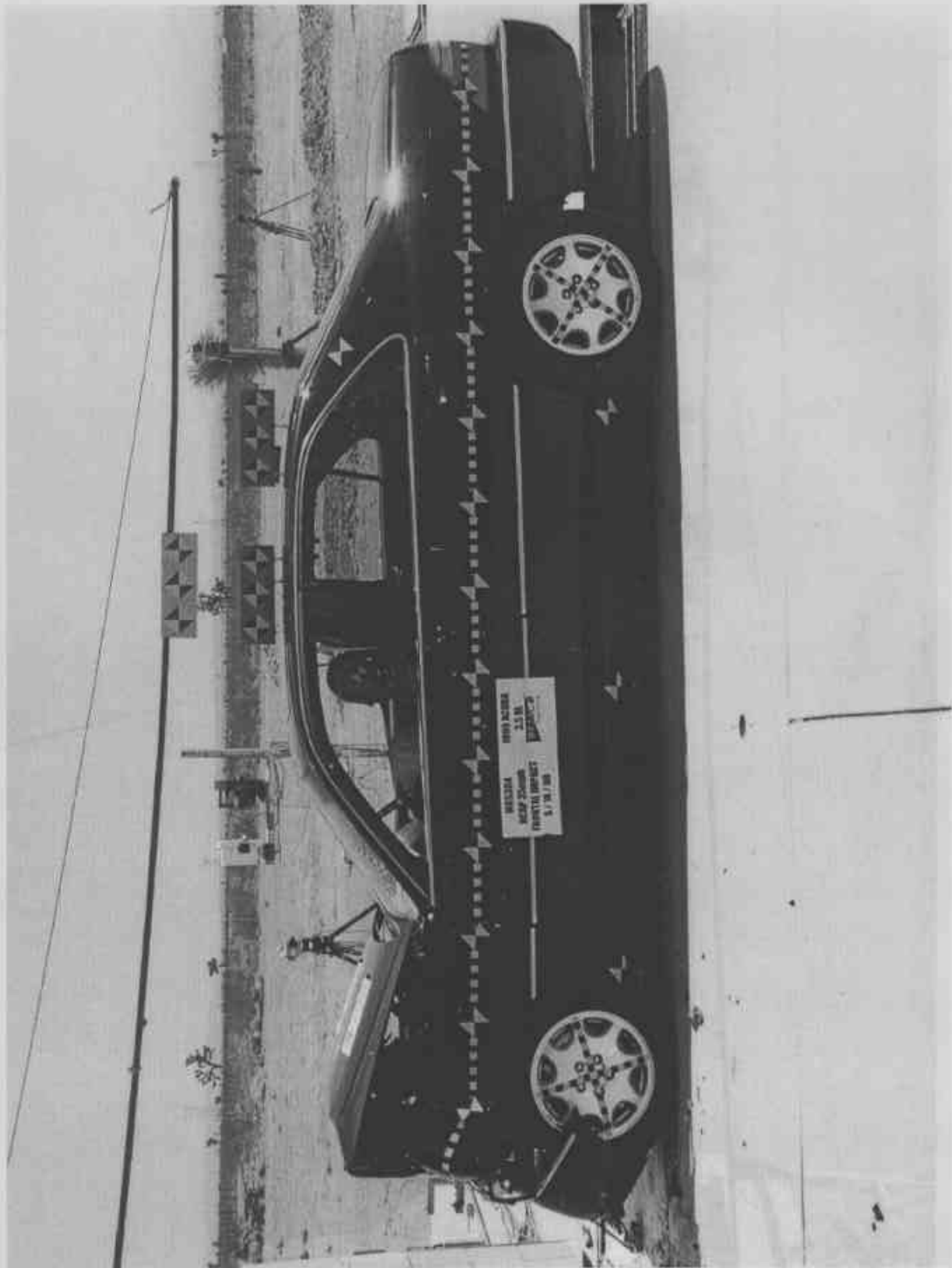


FIGURE A-8. POST TEST LEFT SIDE VIEW

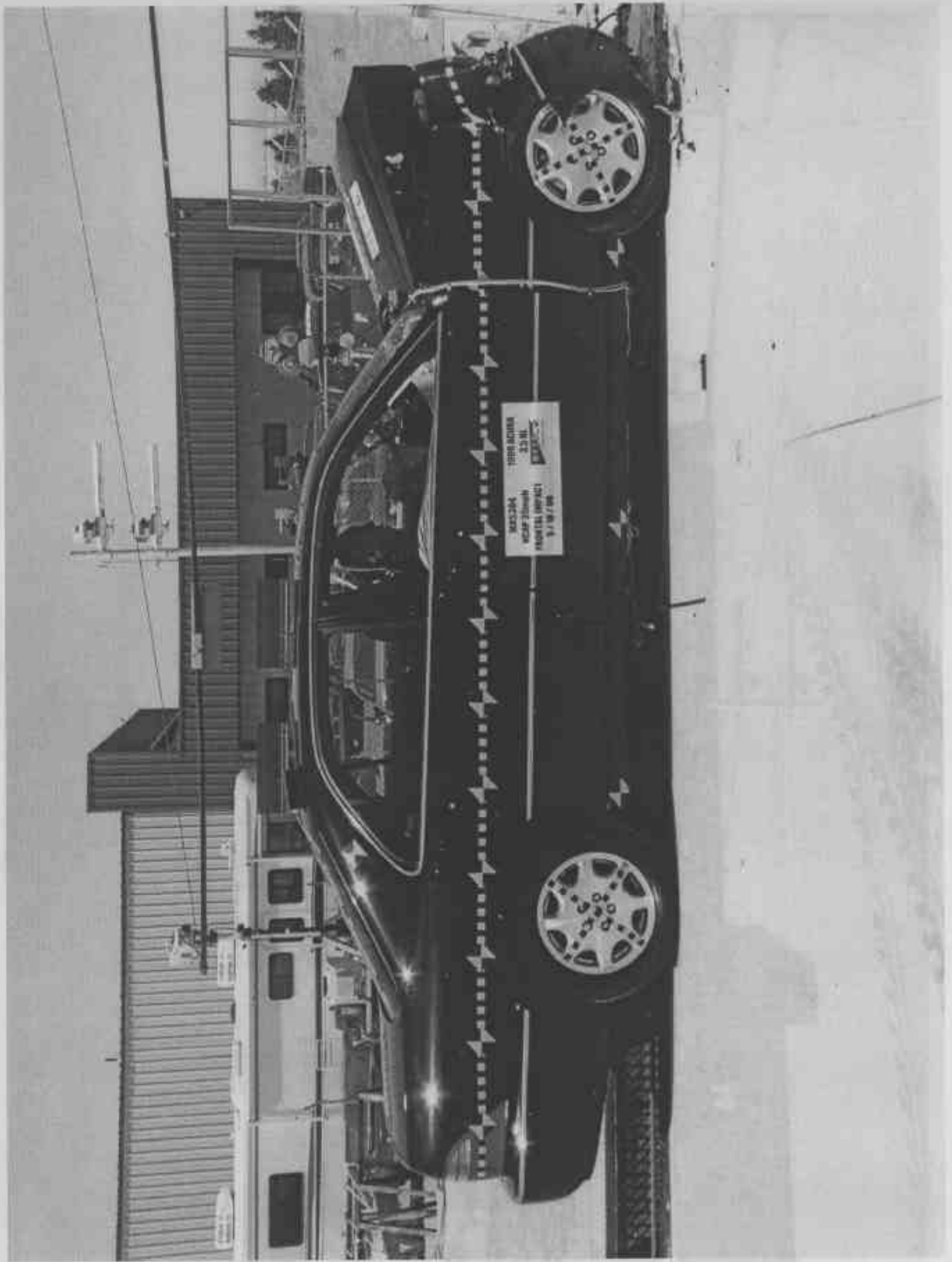


FIGURE A-10. POST TEST RIGHT SIDE VIEW



FIGURE A-11. PRETEST RIGHT FRONT VIEW

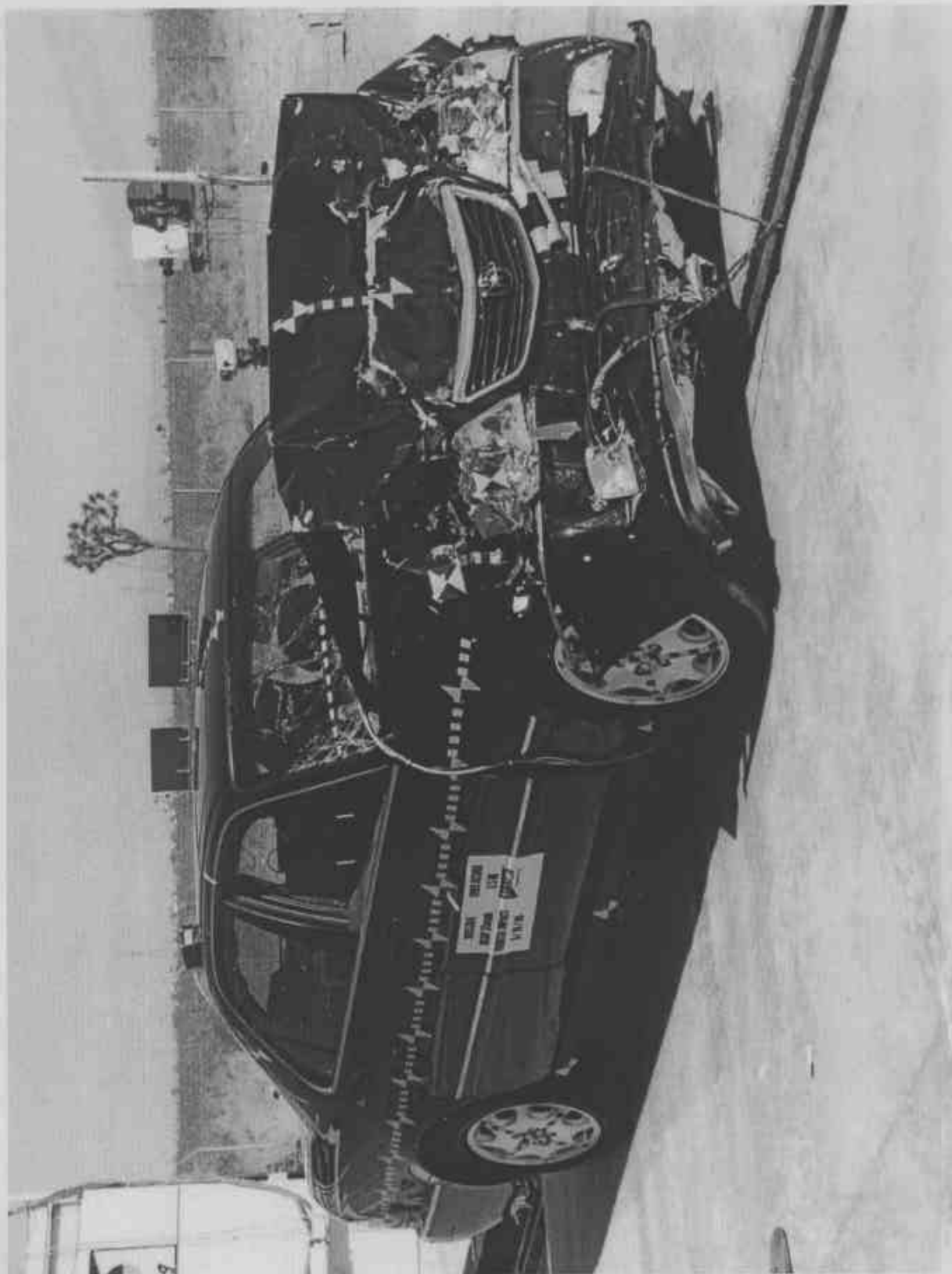


FIGURE A-12. POST TEST RIGHT FRONT VIEW

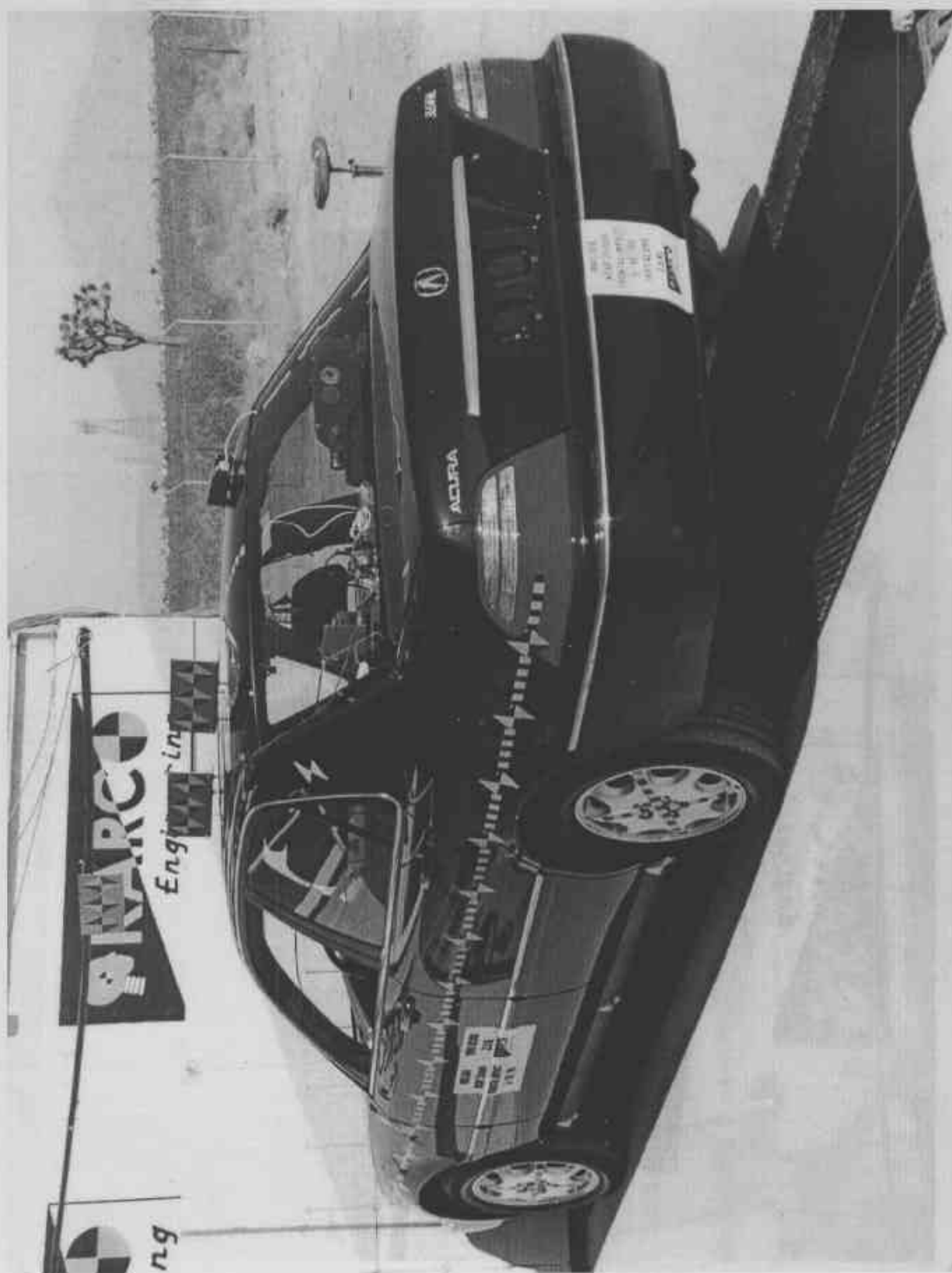


FIGURE A-13. PRETEST LEFT REAR VIEW



FIGURE A-14. POST TEST LEFT REAR VIEW

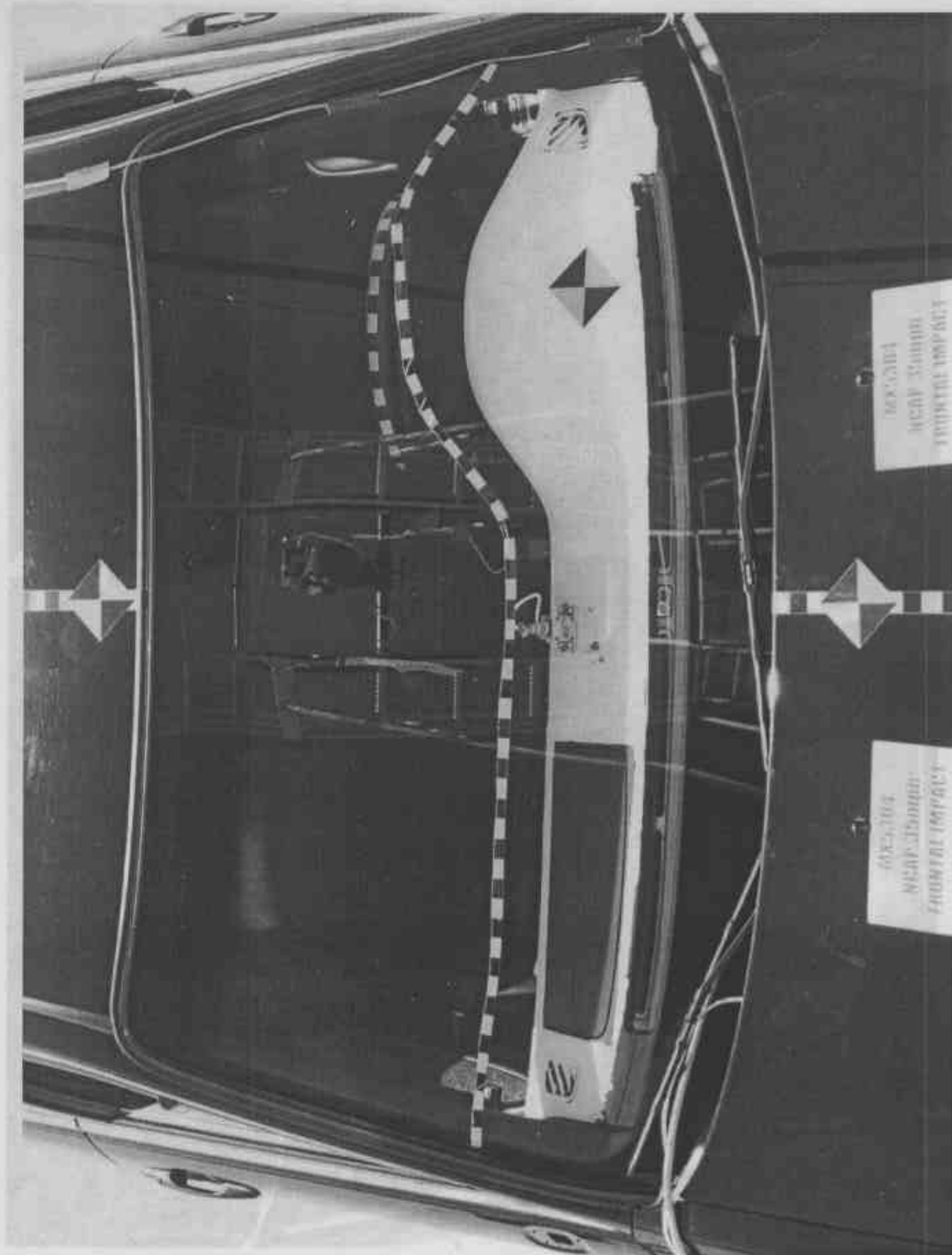


FIGURE A-15. PRETEST WINDSHIELD

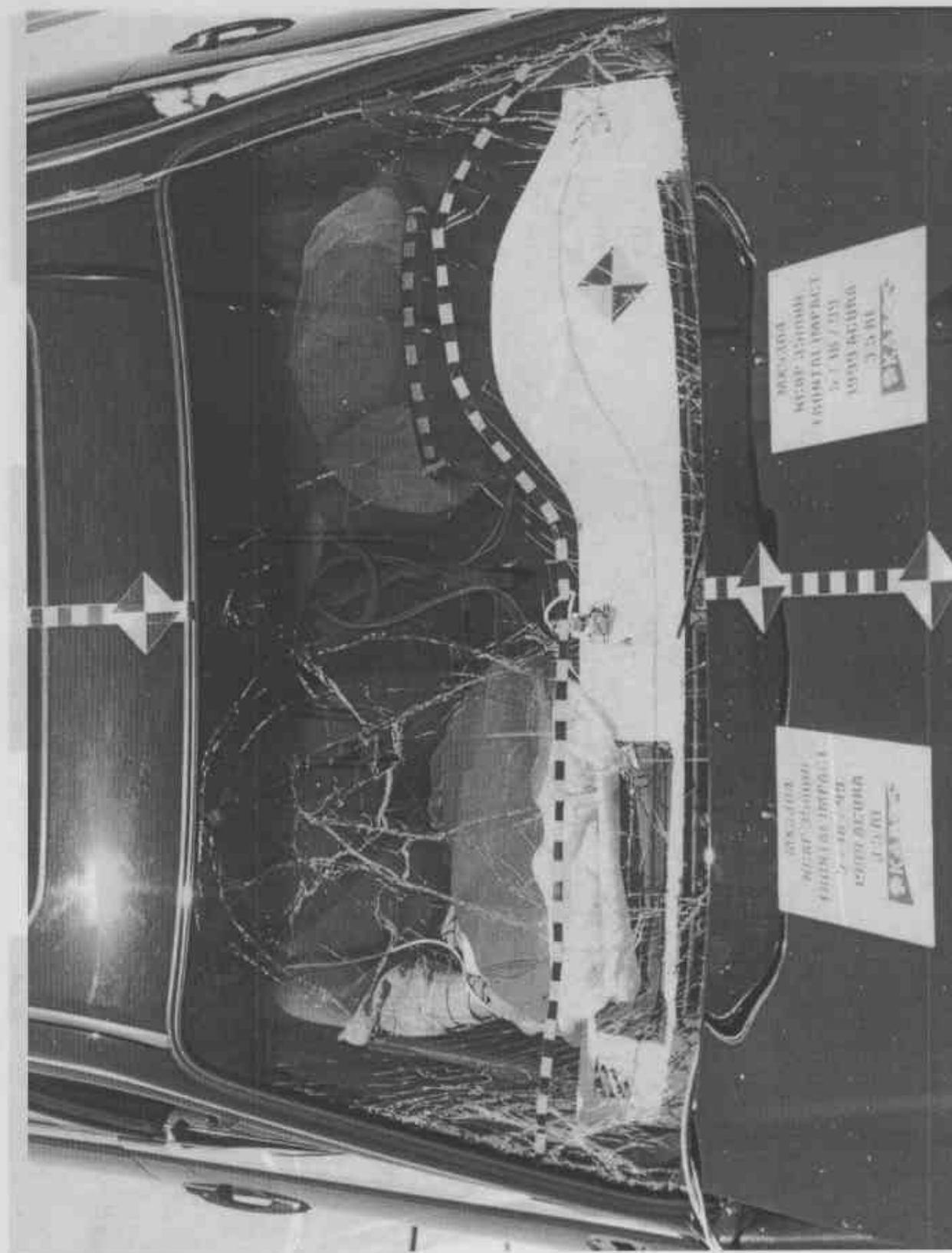


FIGURE A-16. POST TEST WINDSHIELD

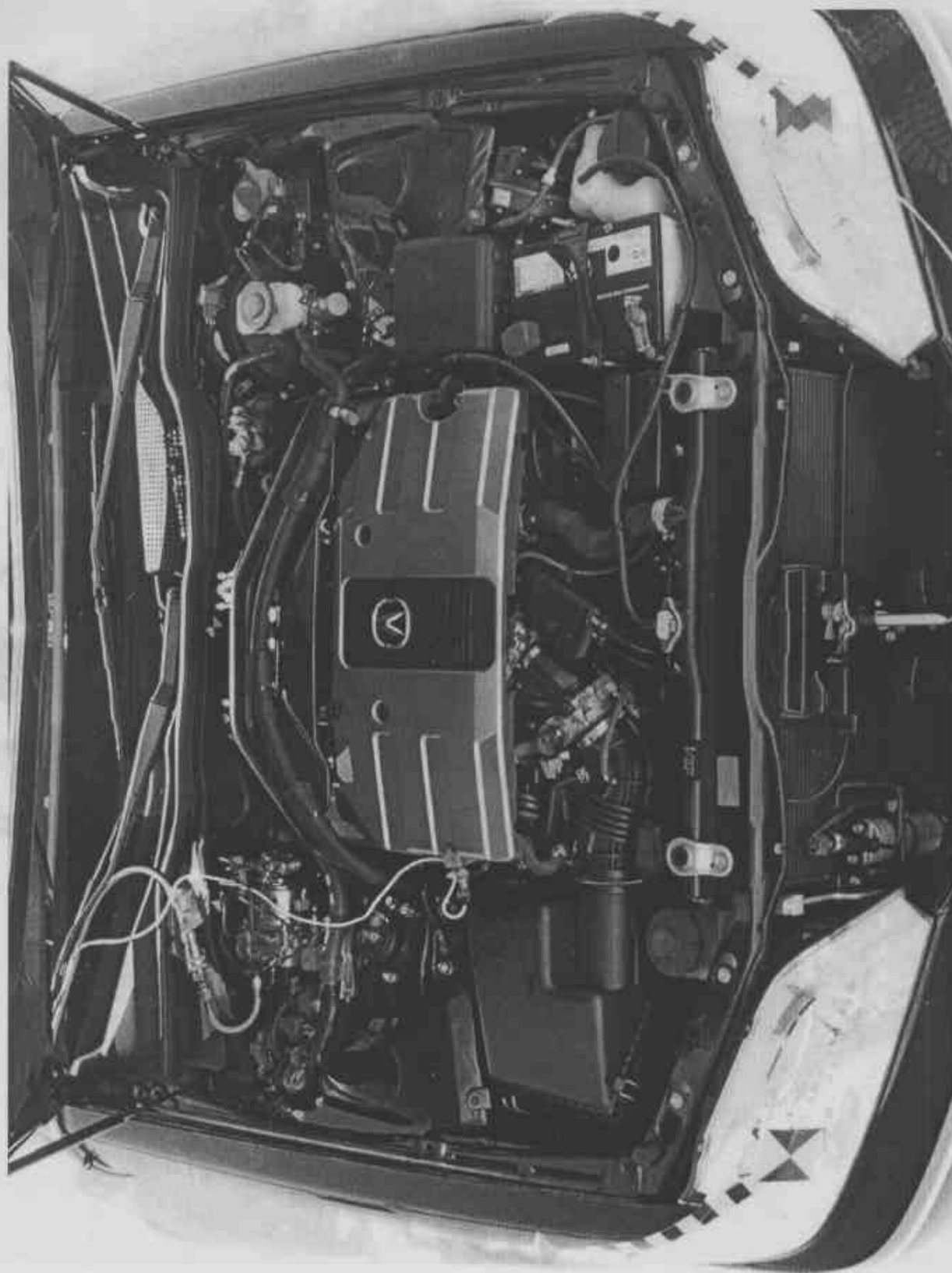


FIGURE A-17. PRETEST ENGINE COMPARTMENT

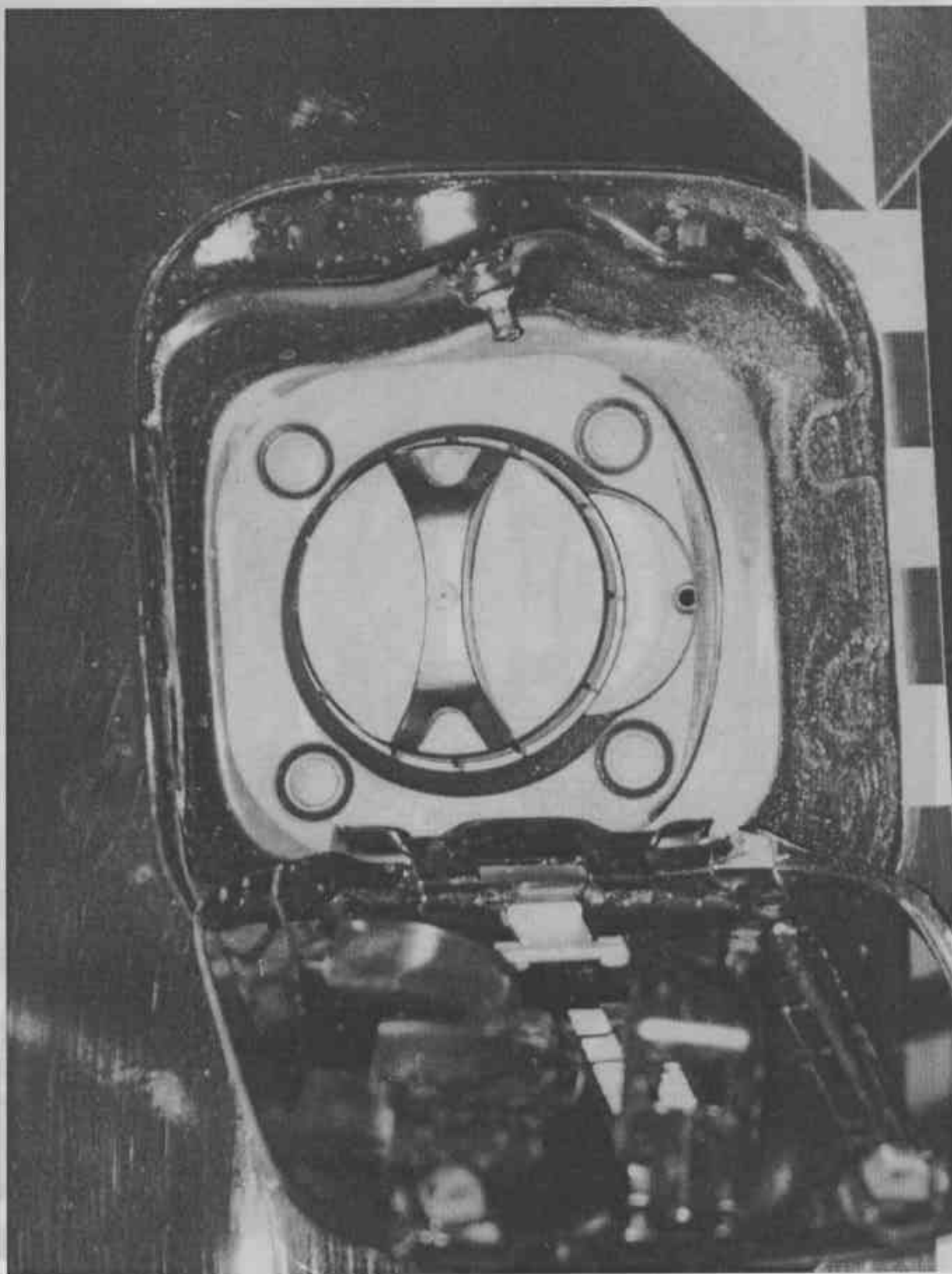


FIGURE A-19. PRETEST FUEL CAP

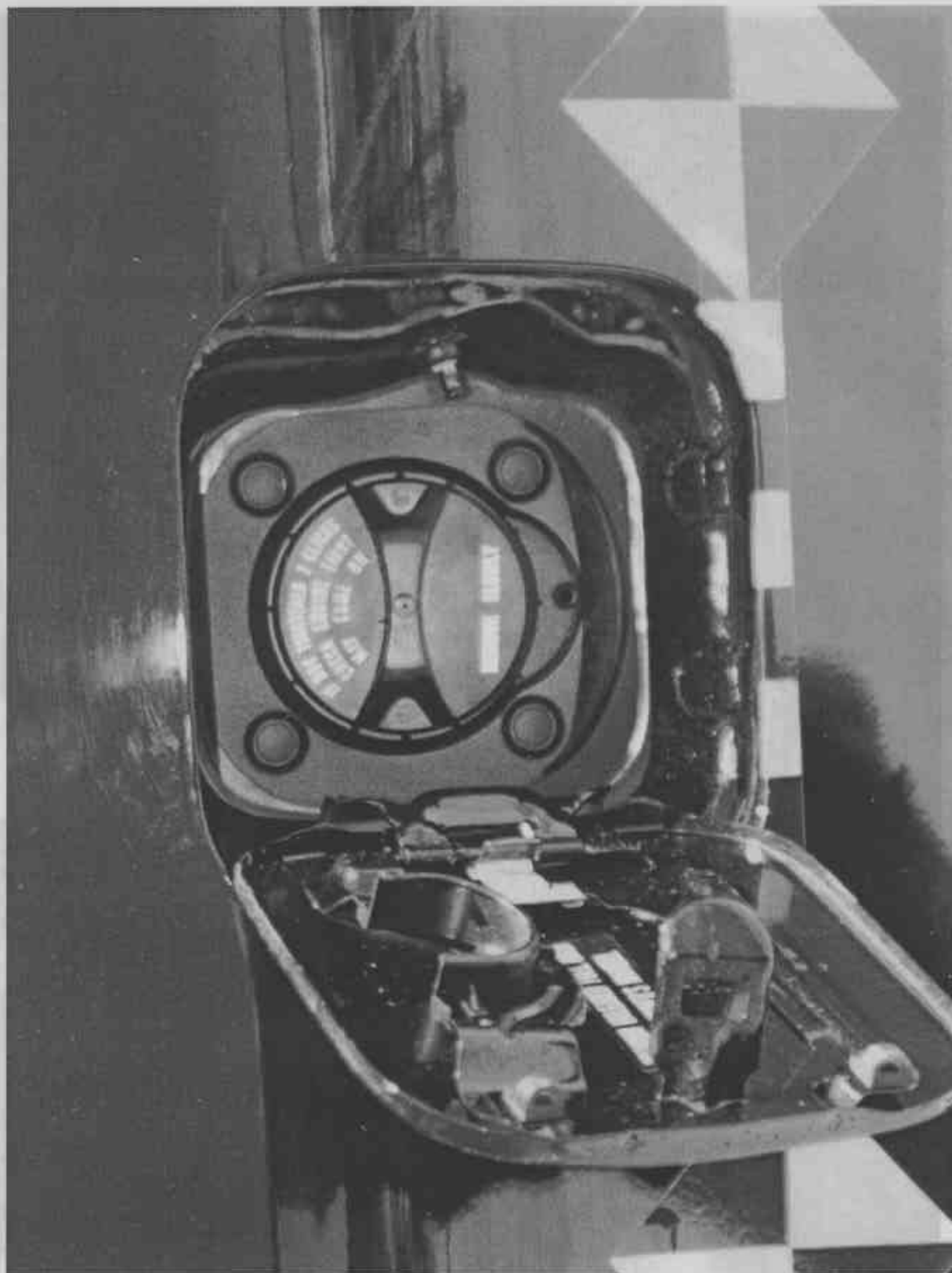


FIGURE A-20. POST TEST FUEL CAP

A-20

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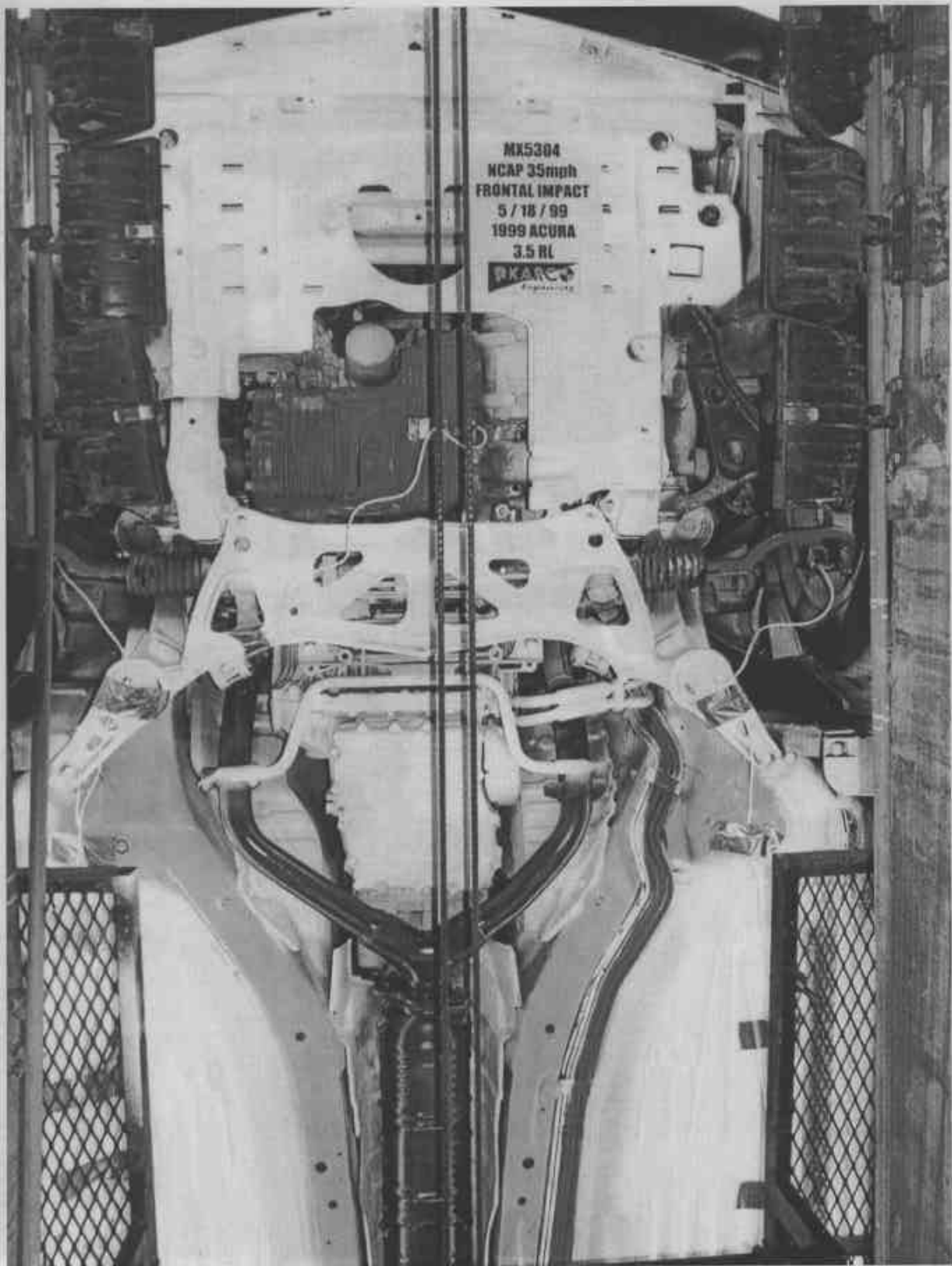


FIGURE A-21. PRETEST FRONT UNDERSIDE

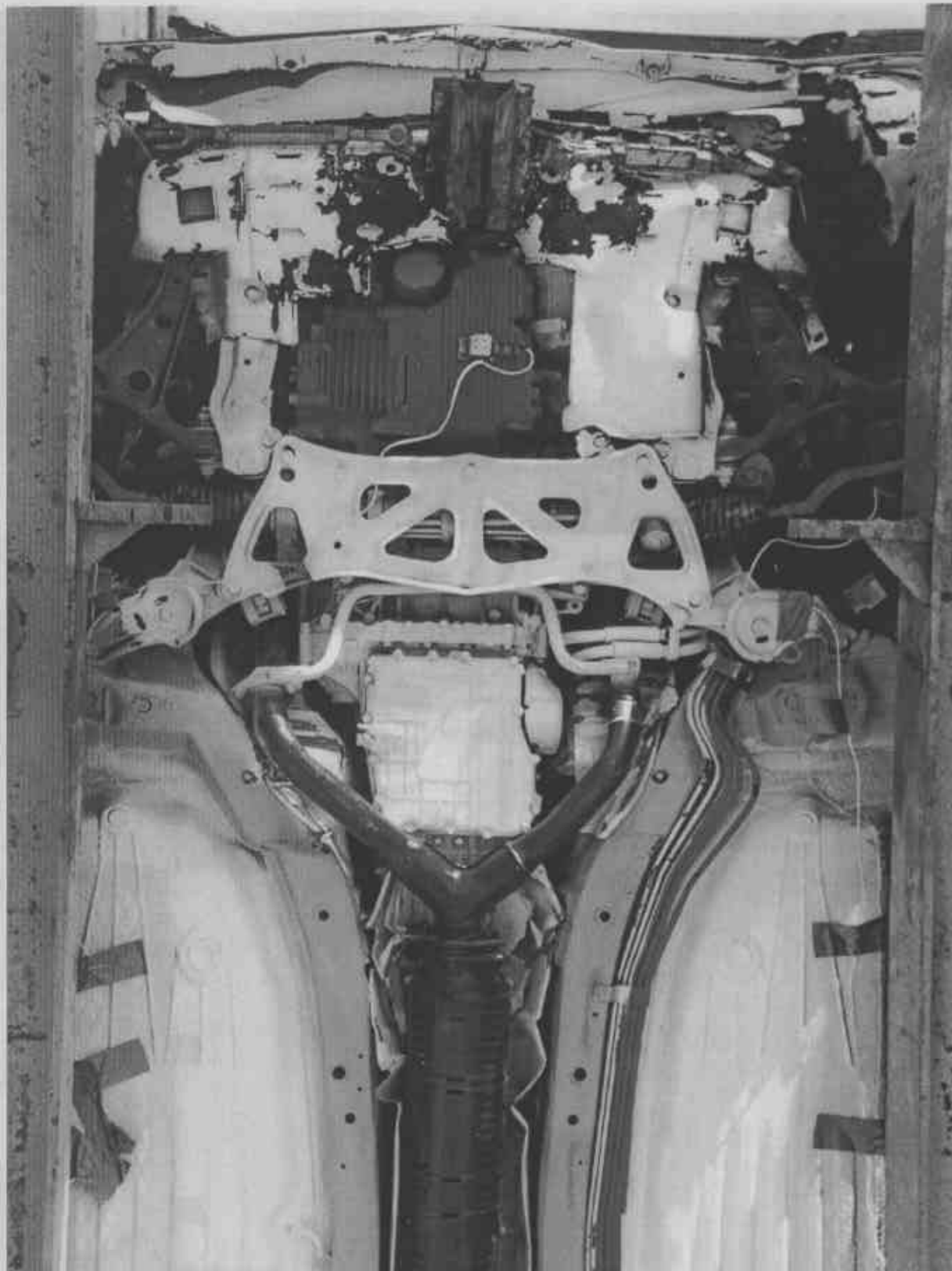


FIGURE A-22. POST TEST FRONT UNDERSIDE

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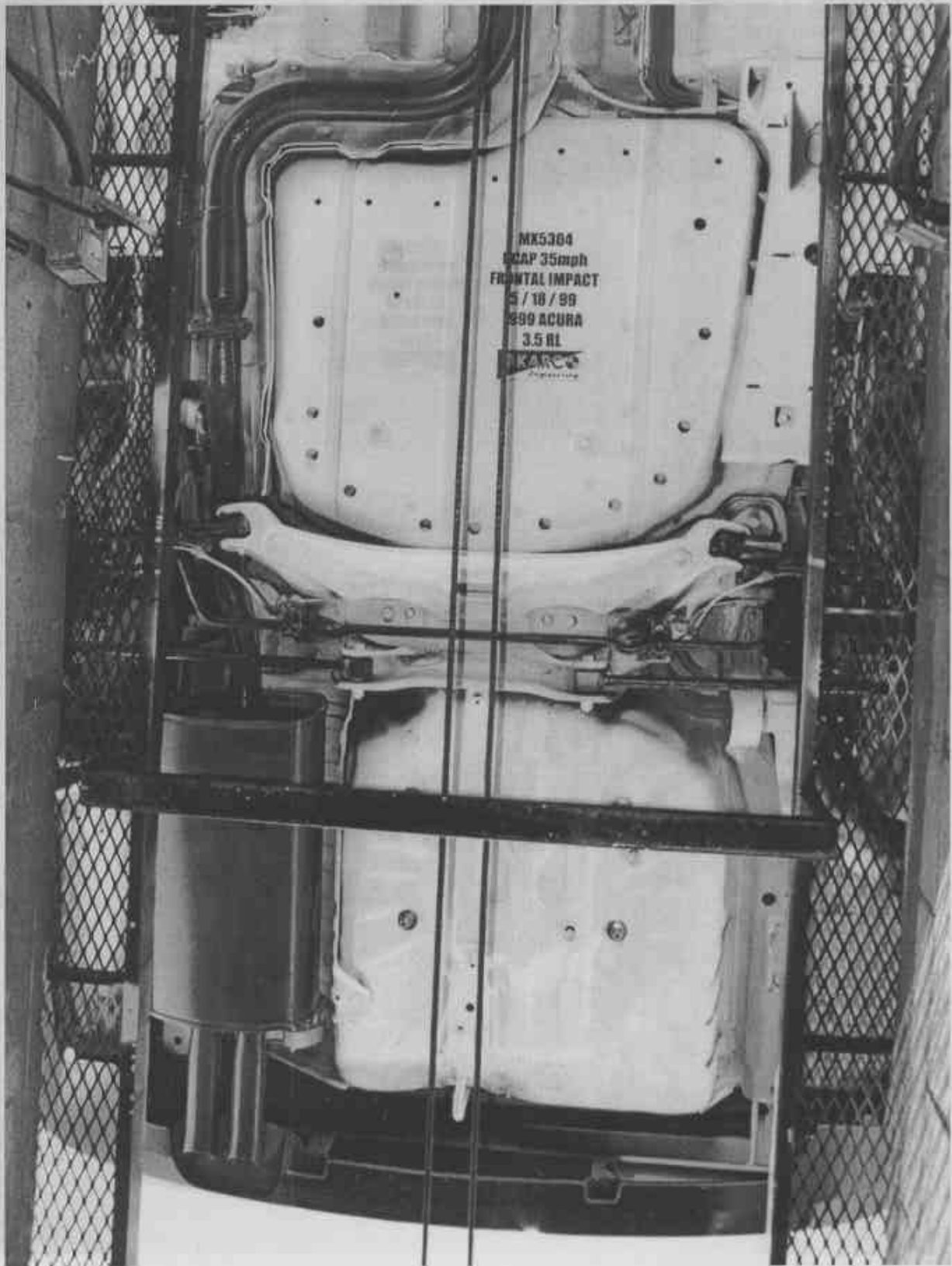


FIGURE A-23. PRETEST REAR UNDERSIDE

11-1007000A

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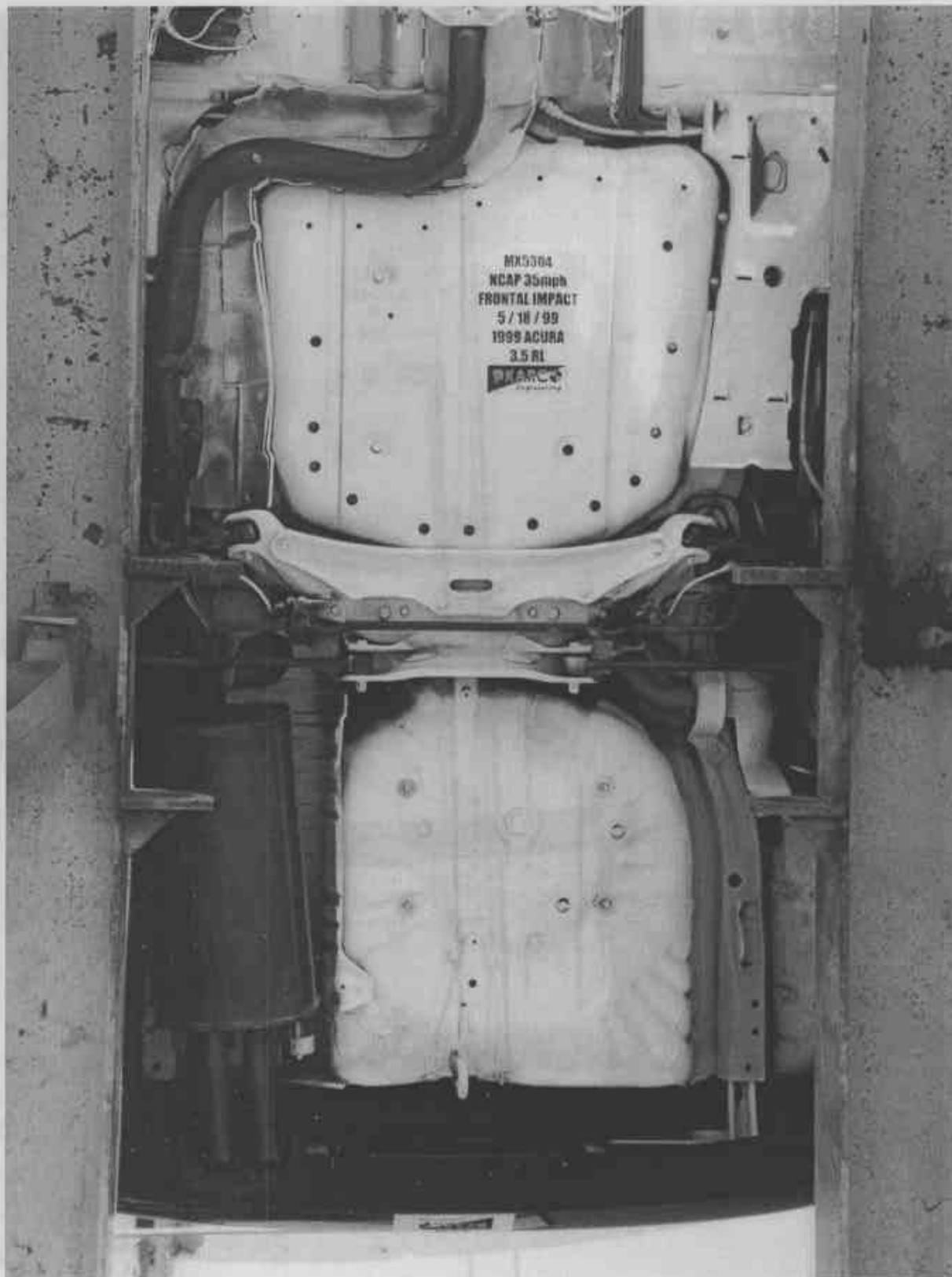


FIGURE A-24. POST TEST REAR UNDERSIDE

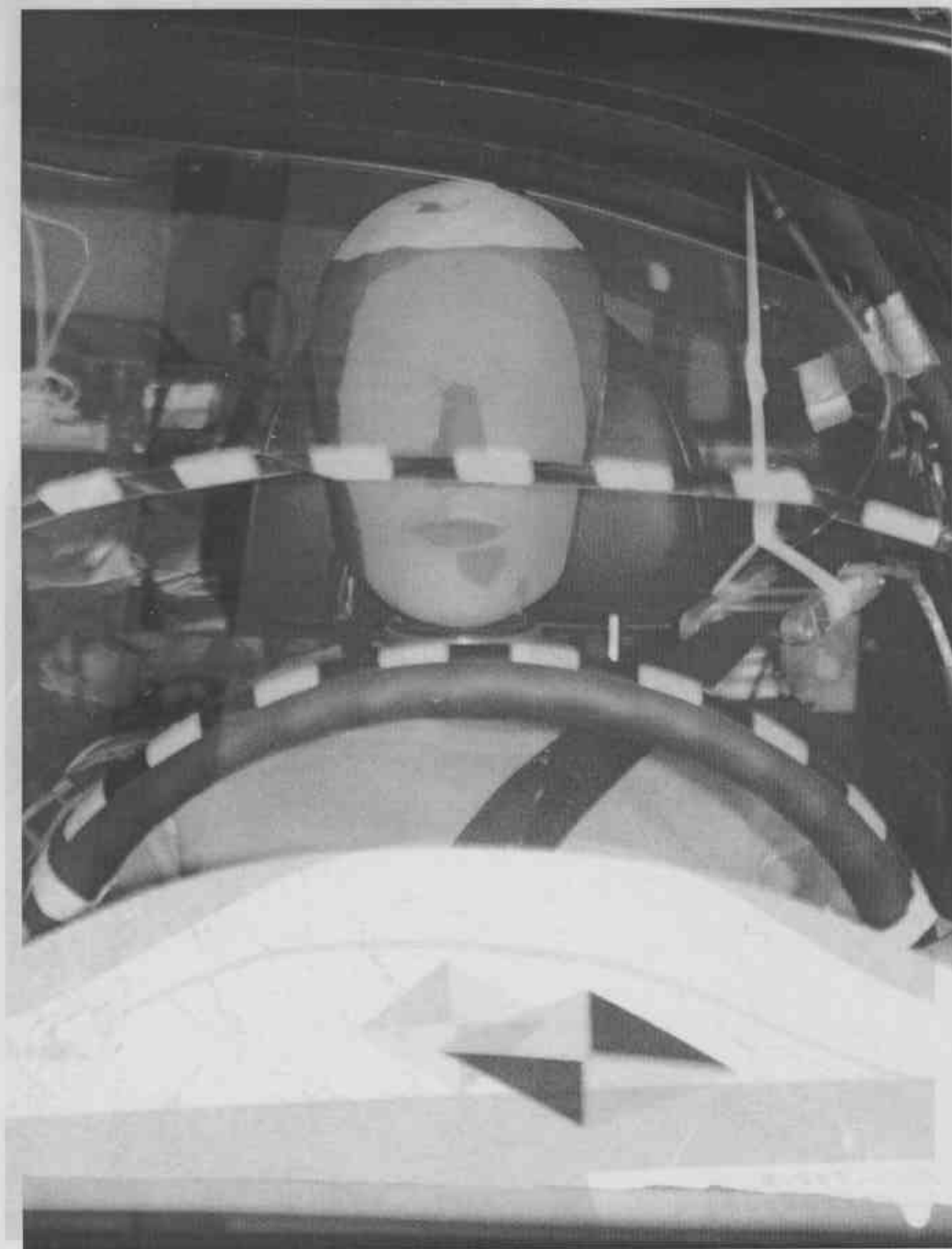


FIGURE A-25. PRETEST DRIVER DUMMY (FRONT VIEW)



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)

51-100001A21



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

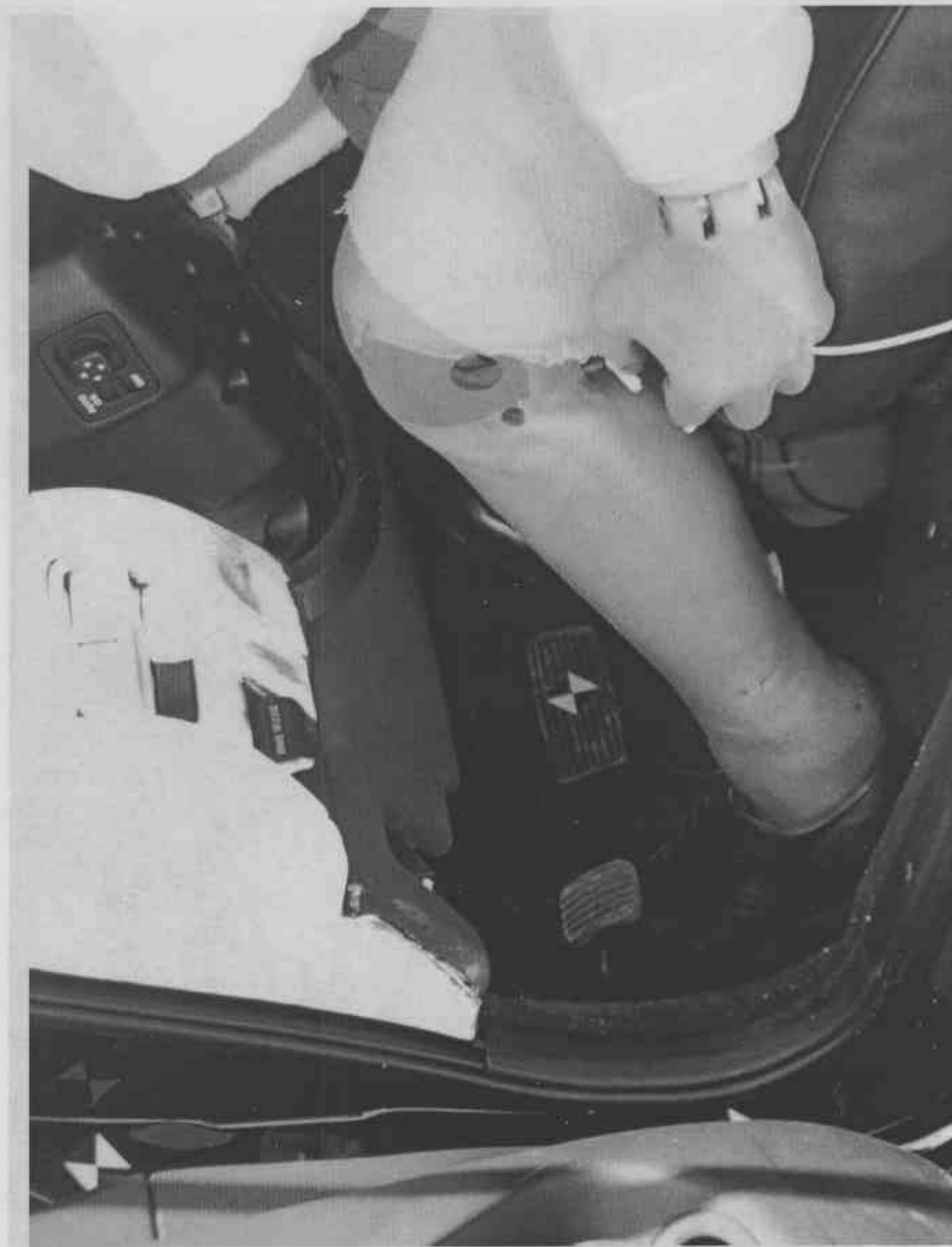


FIGURE A-34. POST TEST DRIVER DUMMY FEET AND KNEE CONTACT



FIGURE A-35. PRETEST DRIVER KNEE BOLSTER

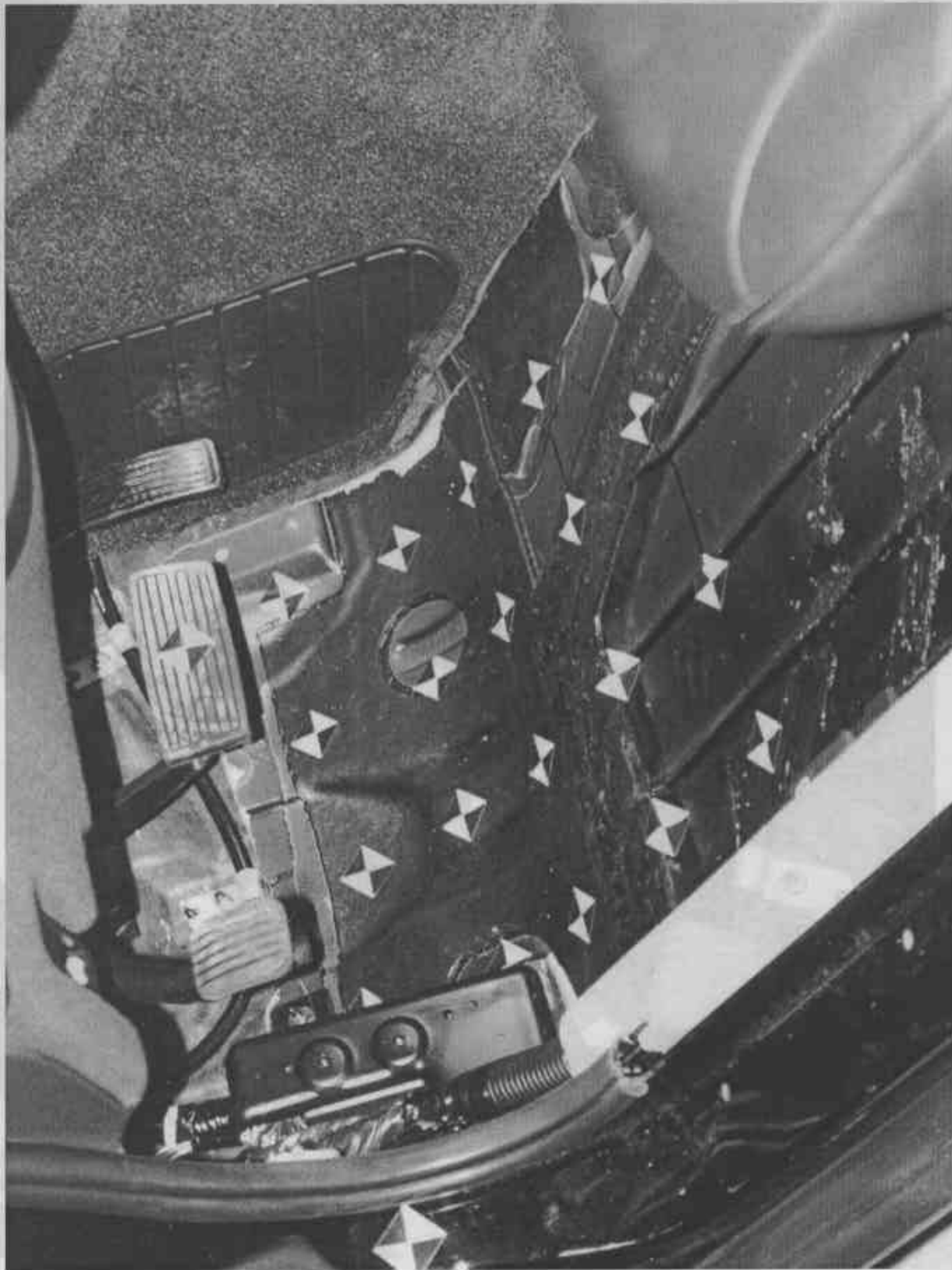


FIGURE A-37. PRETEST DRIVER SIDE FLOOR PAN

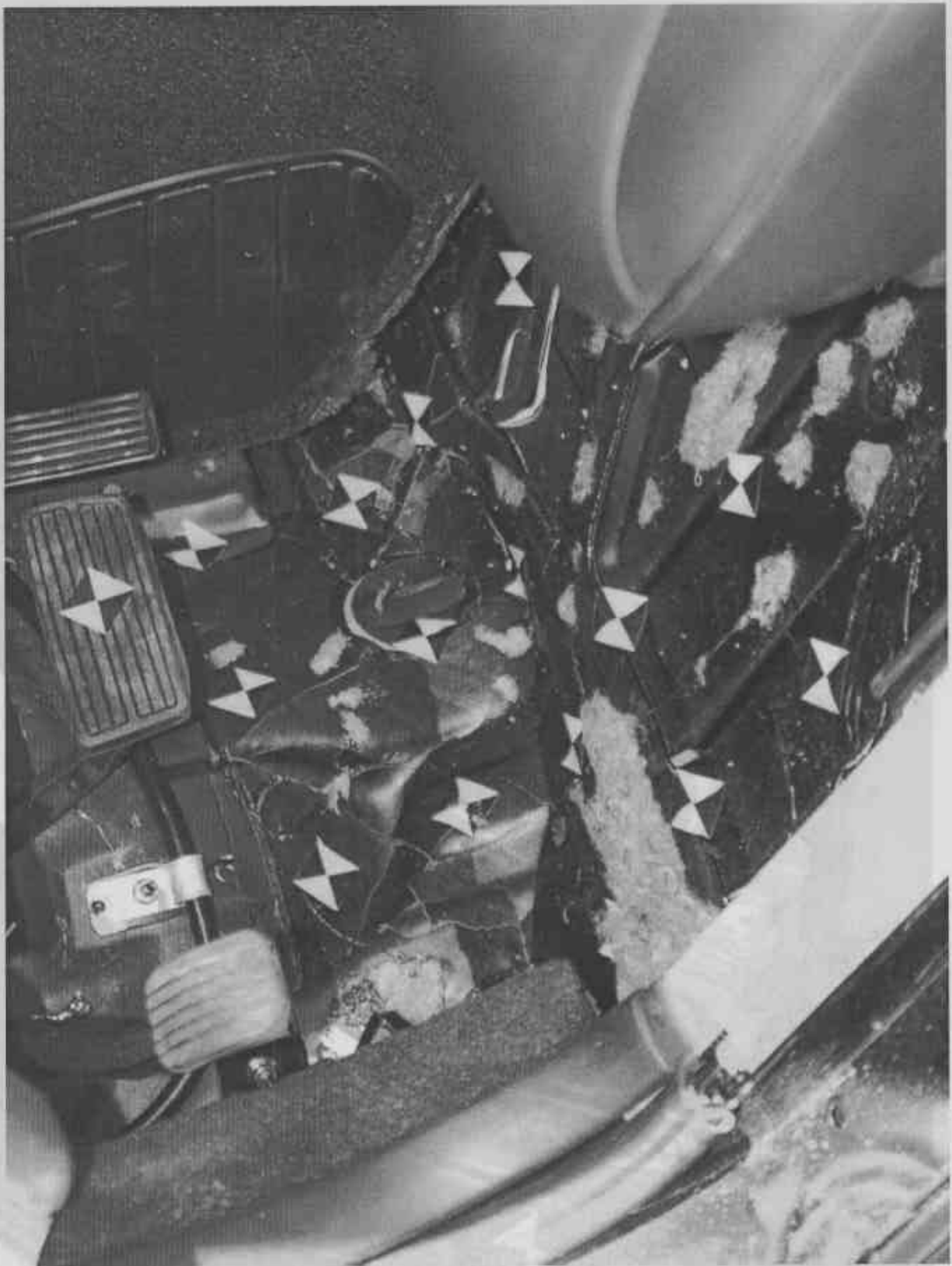


FIGURE A-38. POST TEST DRIVER SIDE FLOOR PAN



FIGURE A-39. POST TEST DRIVER HEAD

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FIGURE A-40. POST TEST DRIVER DUMMY CONTACT

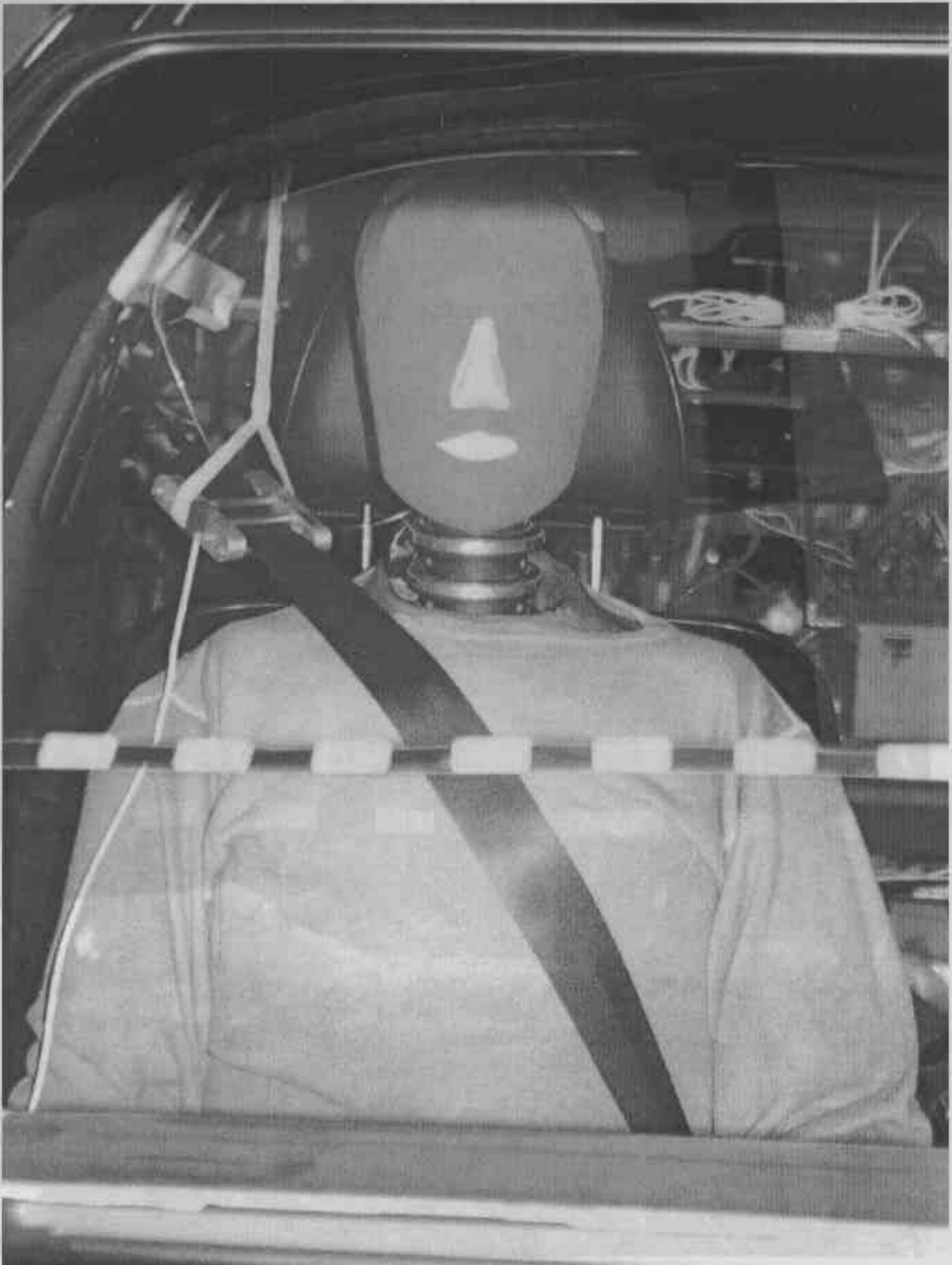


FIGURE A-41. PRETEST PASSENGER DUMMY (FRONT VIEW)



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



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

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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)

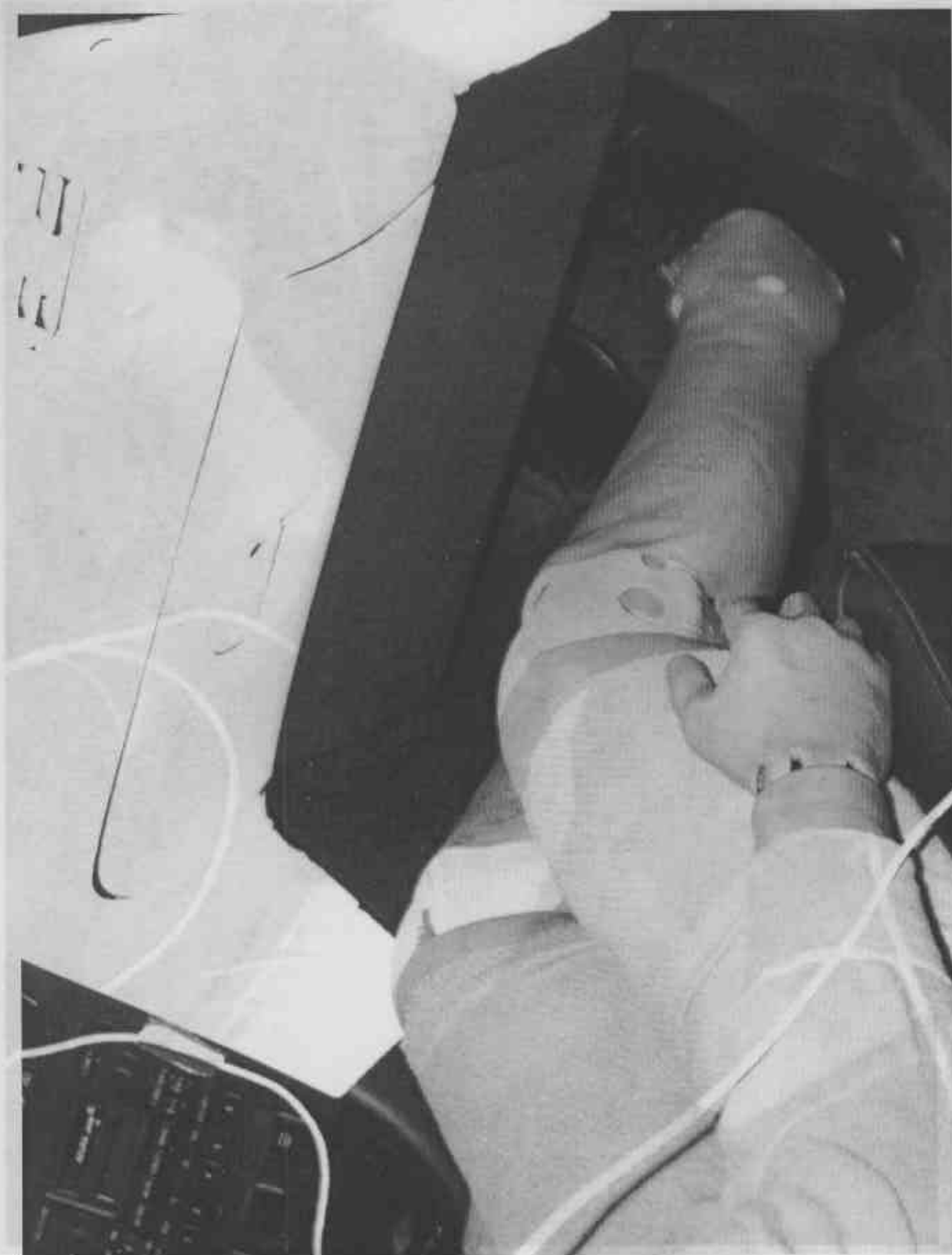


FIGURE A-49. PRETEST PASSENGER DUMMY FEET

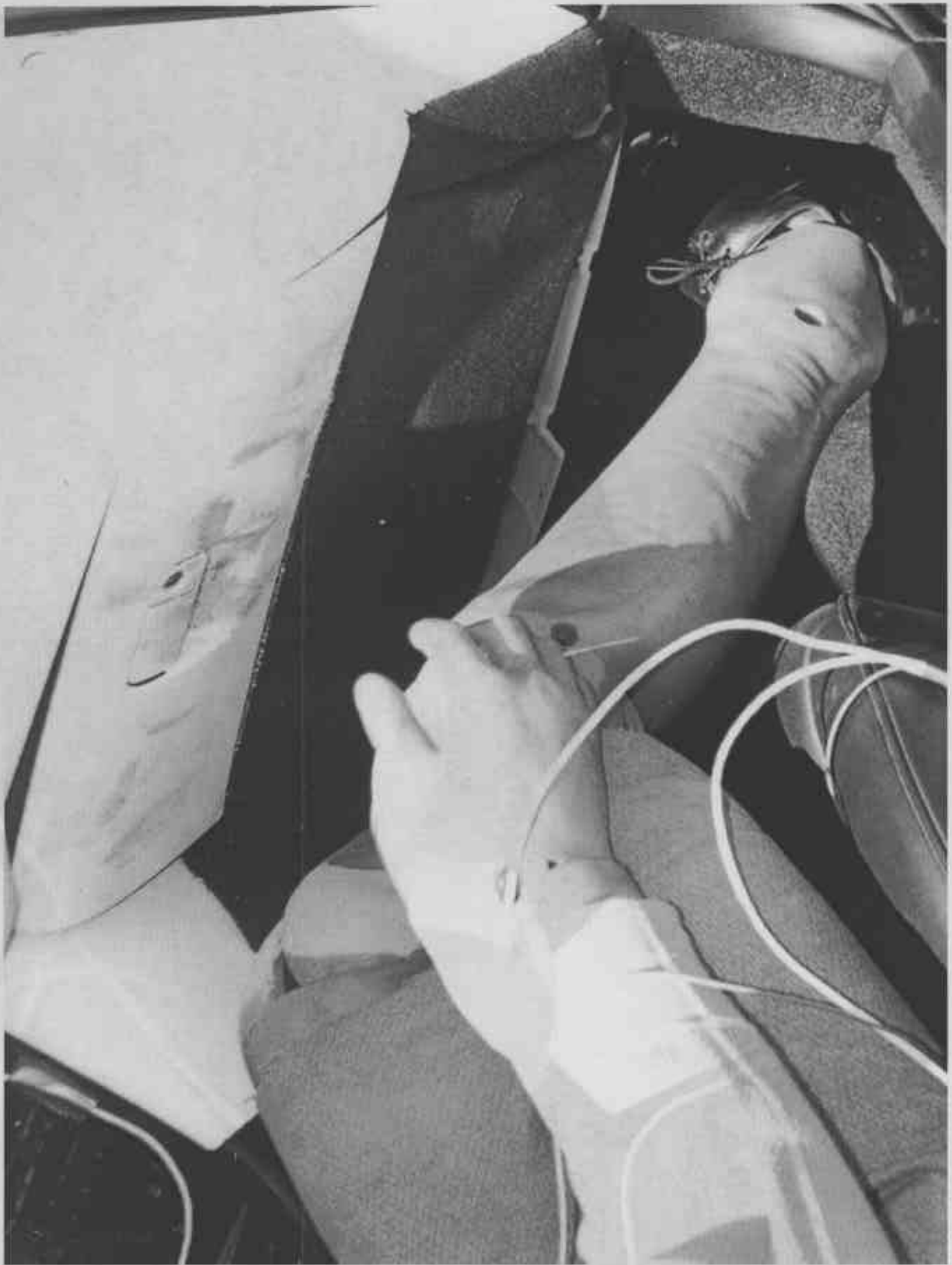


FIGURE A-50. POST TEST PASSENGER DUMMY FEET AND CONTACT POINT



FIGURE A-51. PRETEST PASSENGER SIDE FLOOR PAN

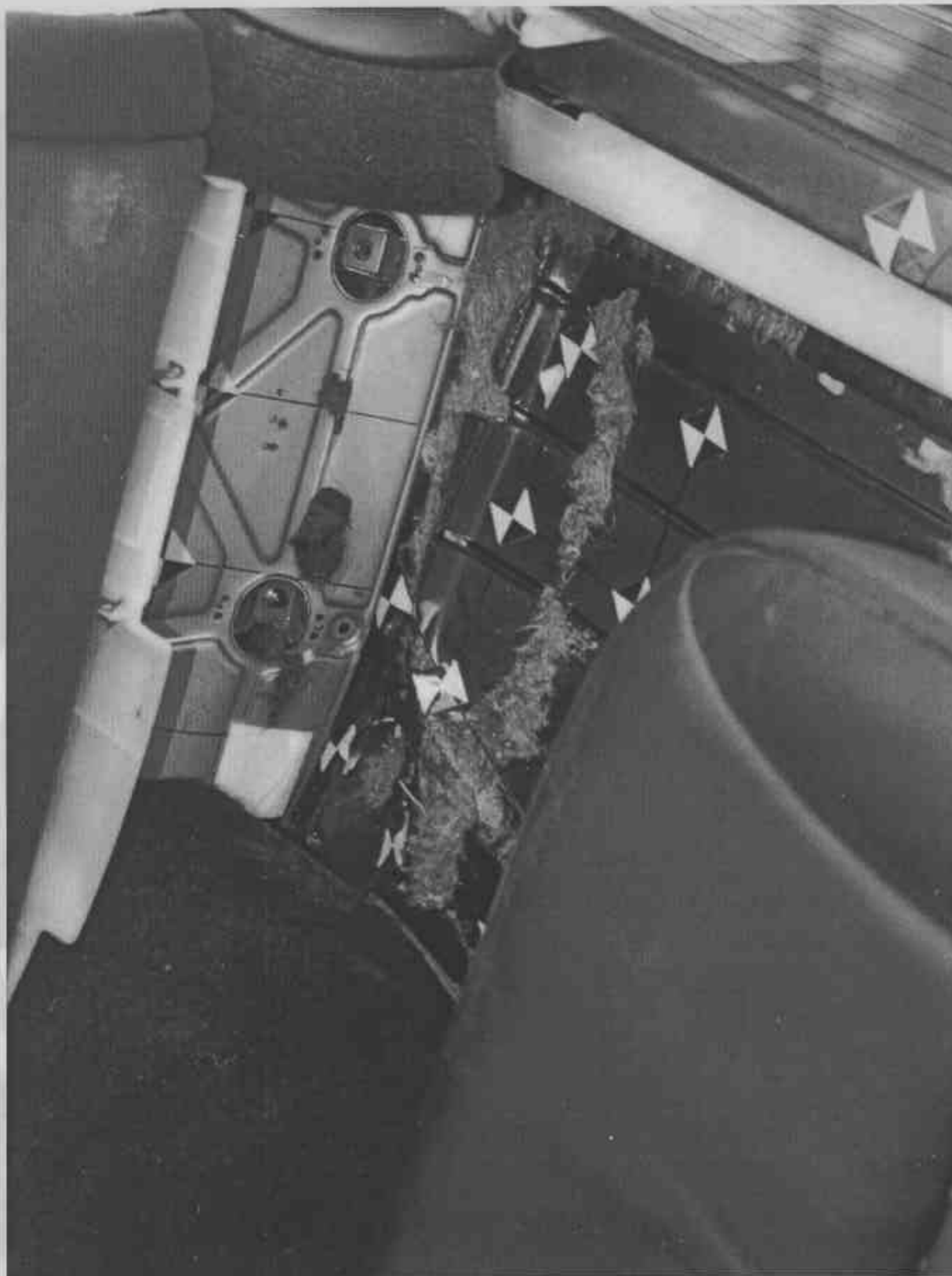


FIGURE A-52. POST TEST PASSENGER SIDE FLOOR PAN

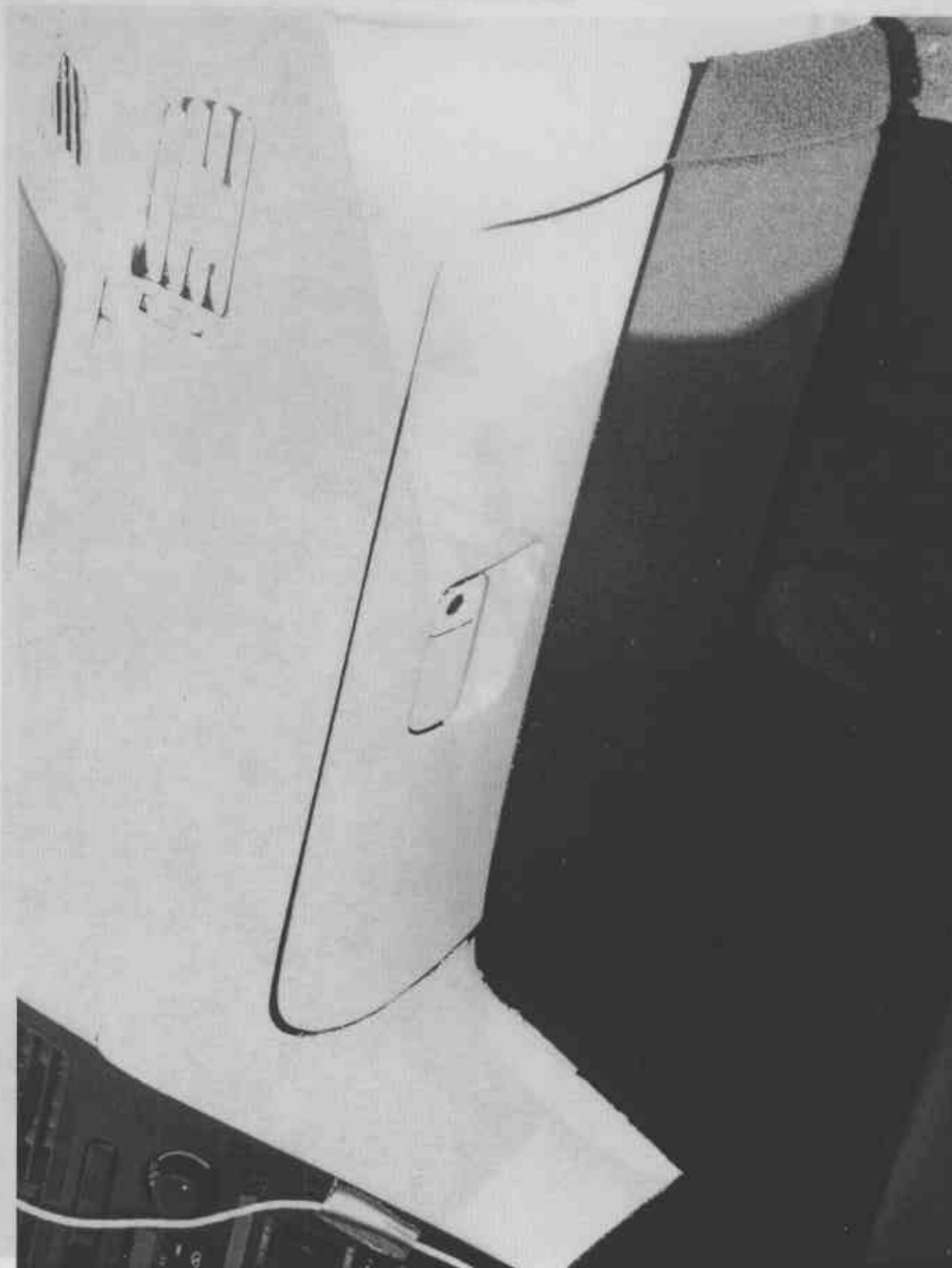


FIGURE A-53. PRETEST PASSENGER SIDE KNEE BOLSTER



FIGURE A-55. POST TEST PASSENGER HEAD

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FIGURE A-56. POST TEST PASSENGER DUMMY CONTACT

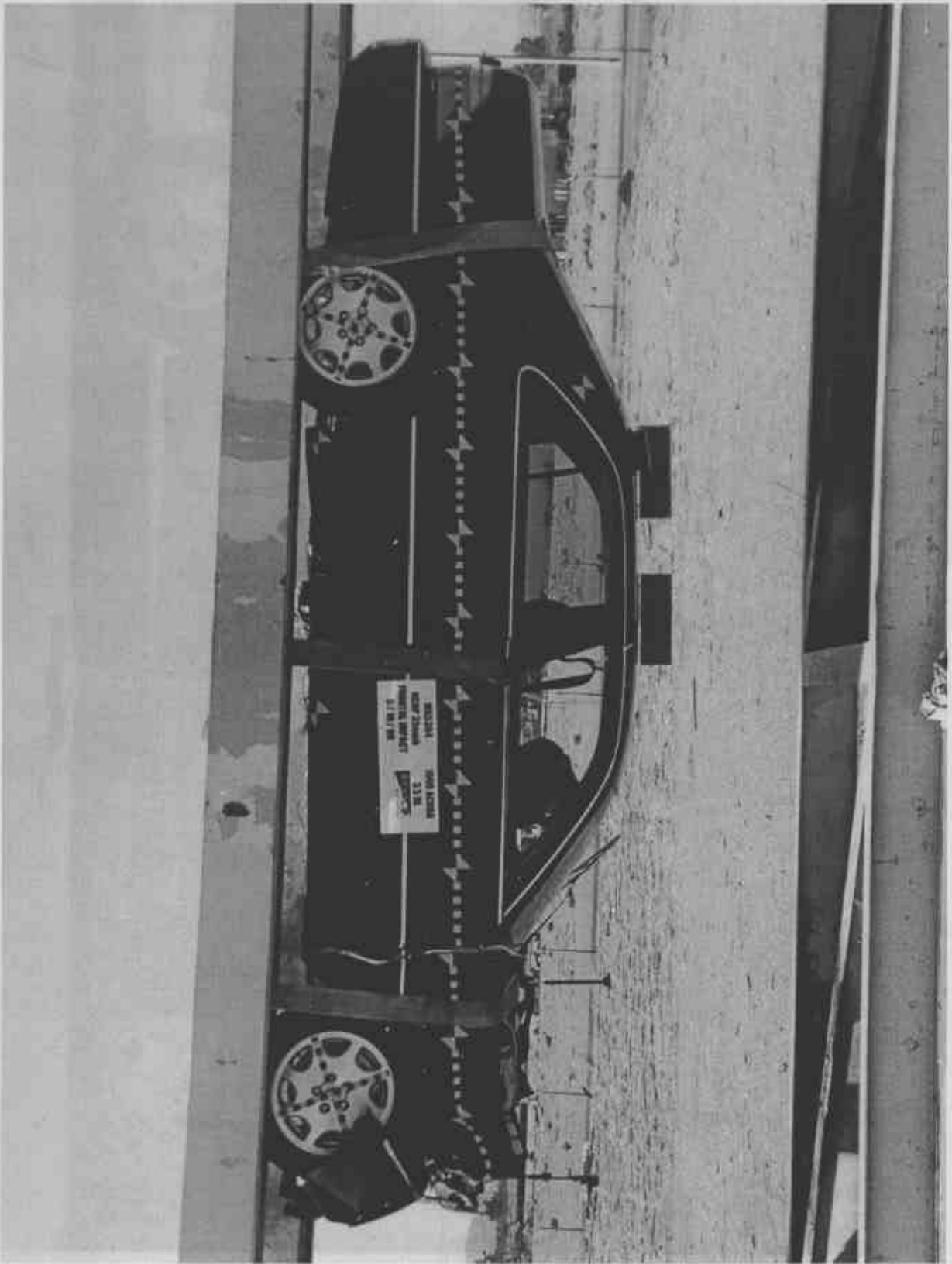


FIGURE A-57. VEHICLE ON ROLLOVER

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TI-100009AX



FIGURE A-58. VEHICLE DURING IMPACT

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APPENDIX B
DUMMY AND VEHICLE RESPONSE DATA TRACES

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B-6 Driver Head Resultant Primary	B-6
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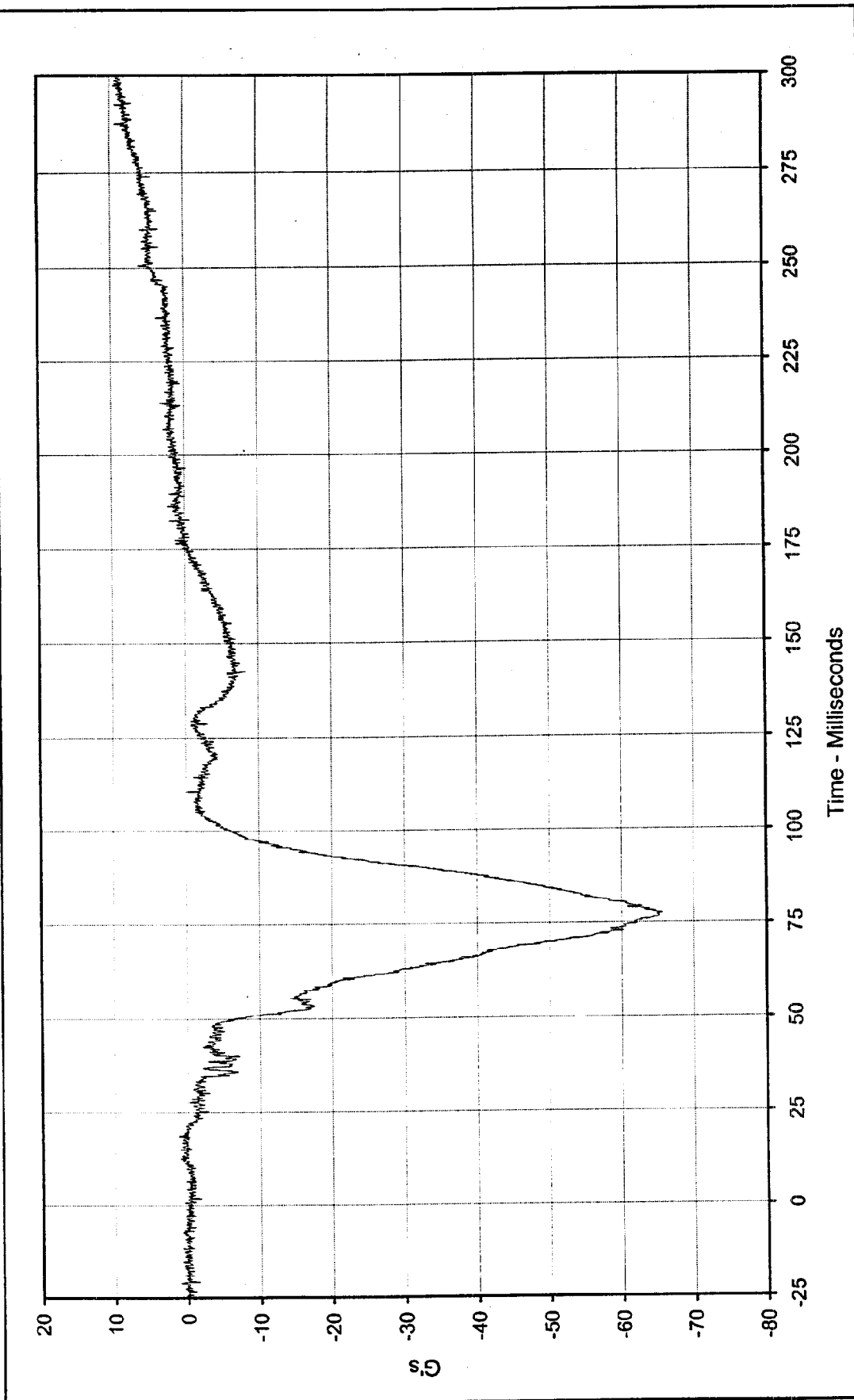
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B-77 Passenger Neck Force Resultant	B-77
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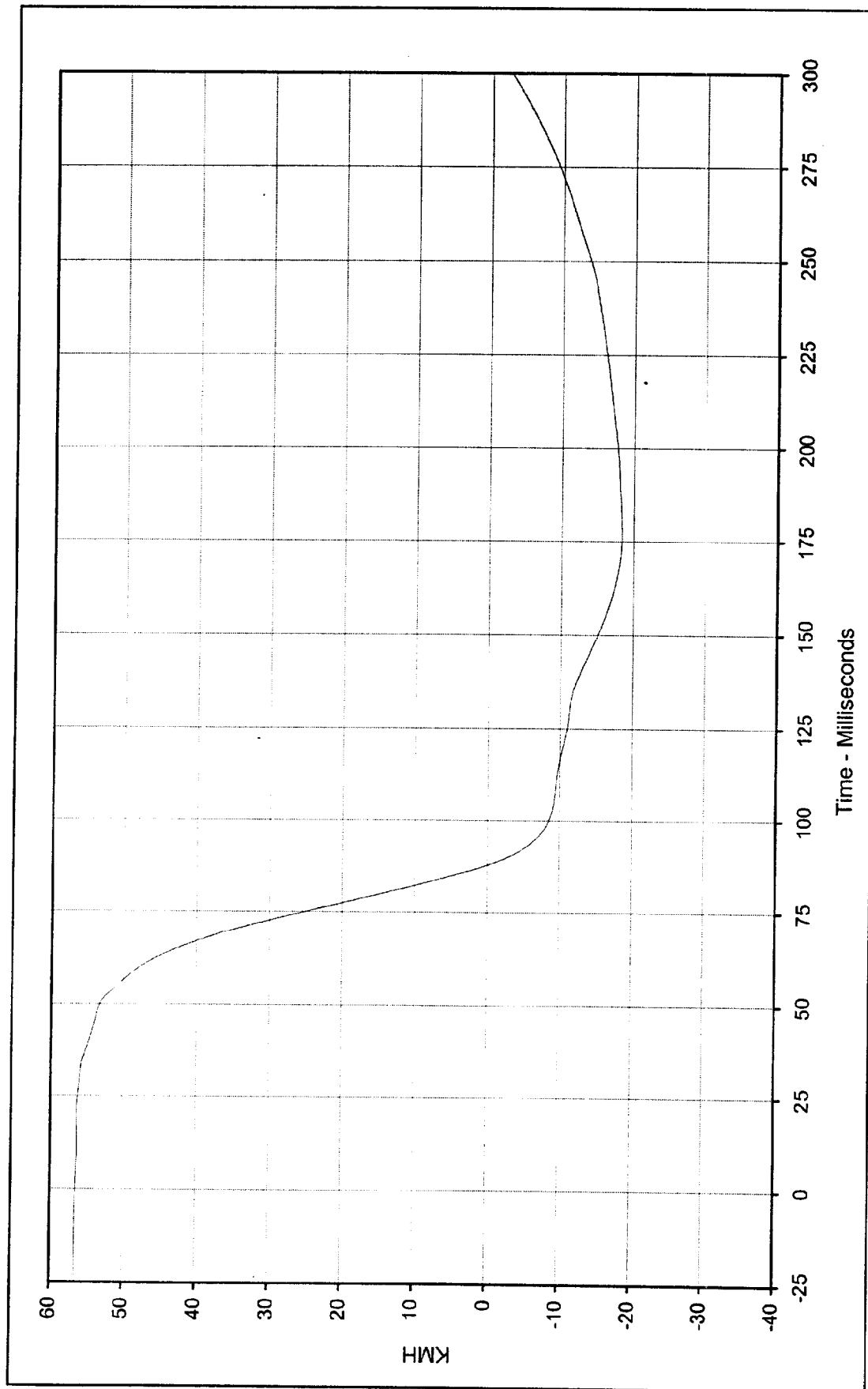
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Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

Curve Description: Driver Head Primary X
 Maximum Value: 9.6 at 297.2 Milliseconds
 Minimum Value: -65.7 at 77.4 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-001

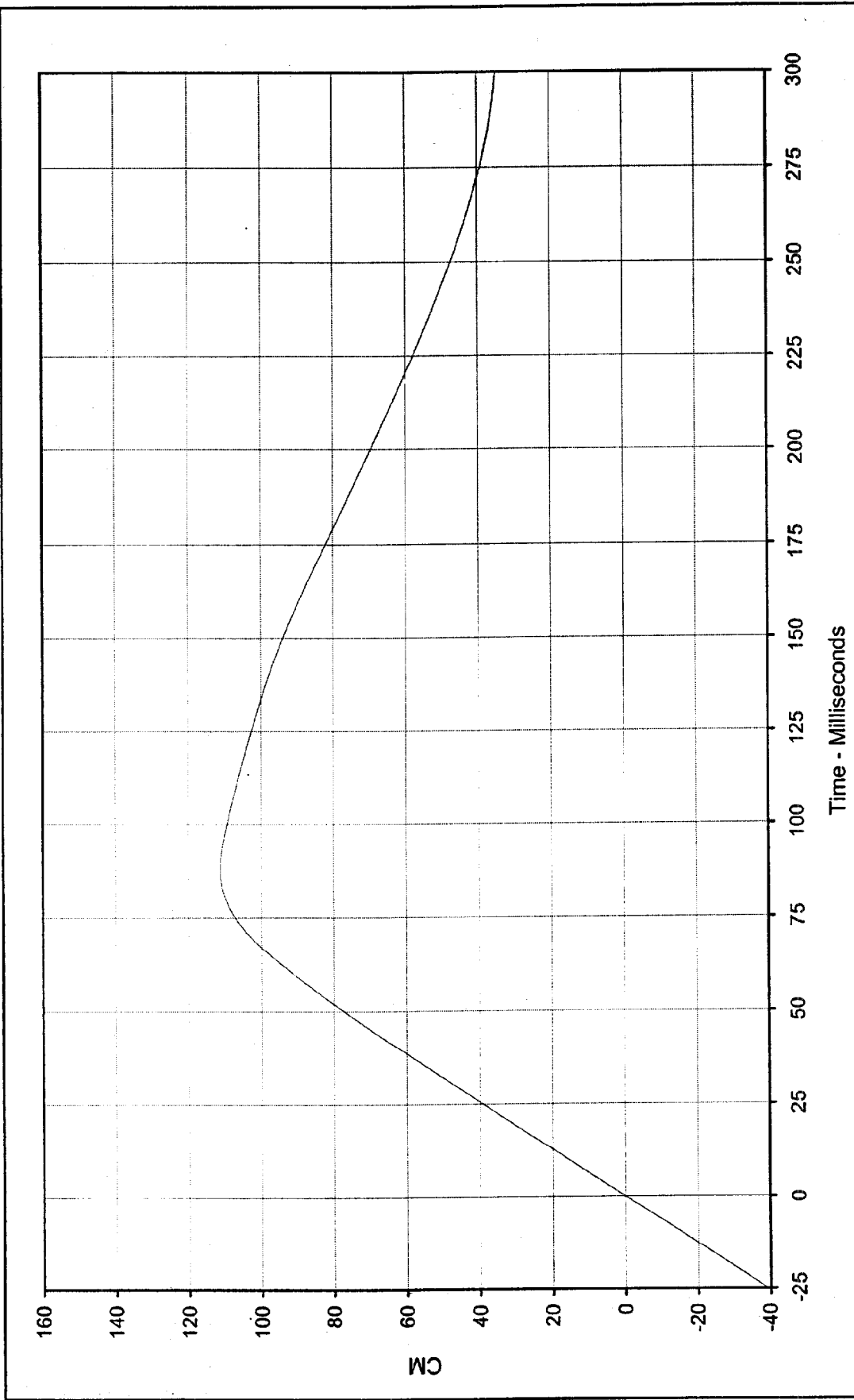




Curve Description: Driver Head Primary X Velocity
 Maximum Value: 56.5 at 0.0 Milliseconds
 Minimum Value: -18.3 at 176.4 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN1-001

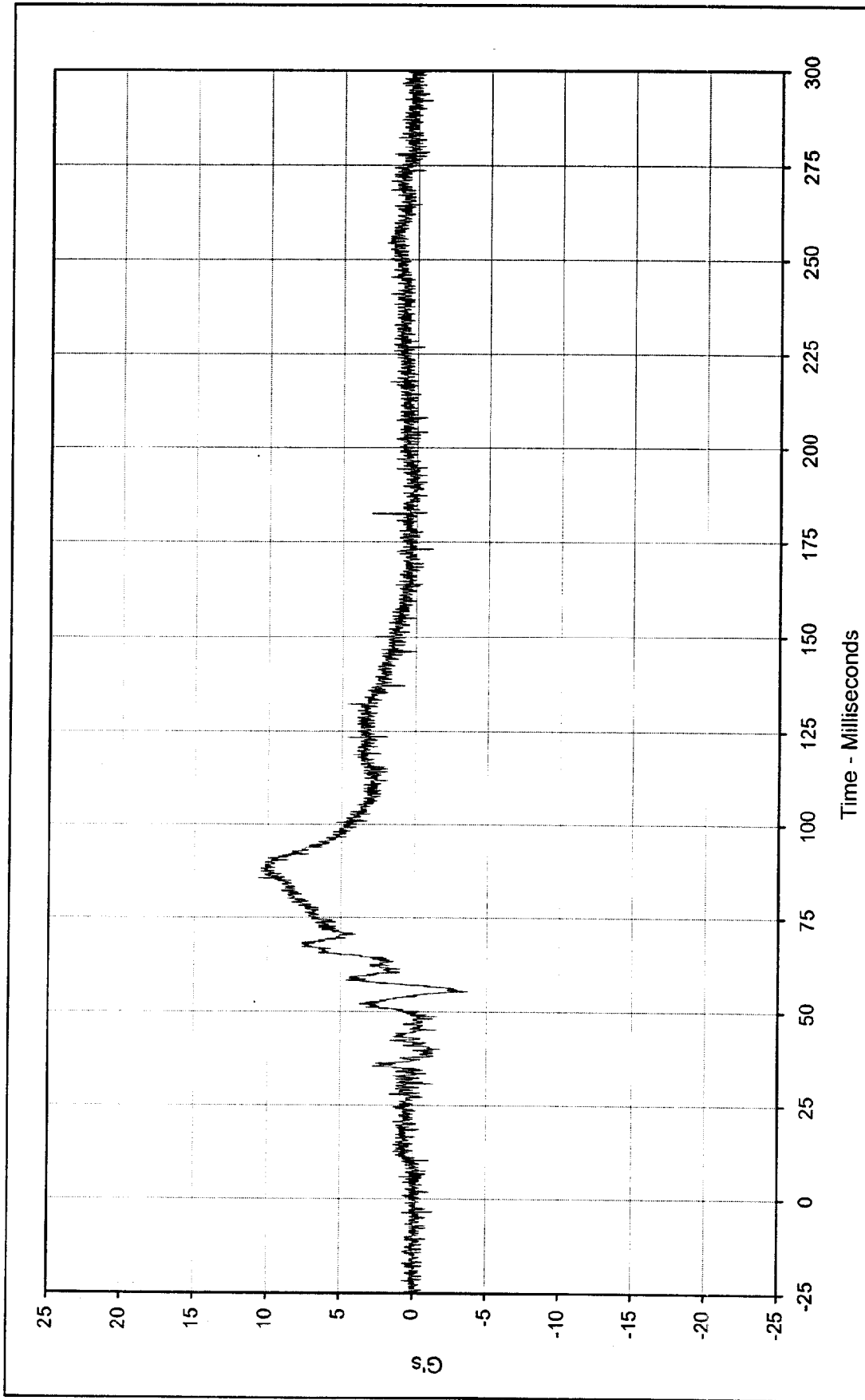
Testing Program 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





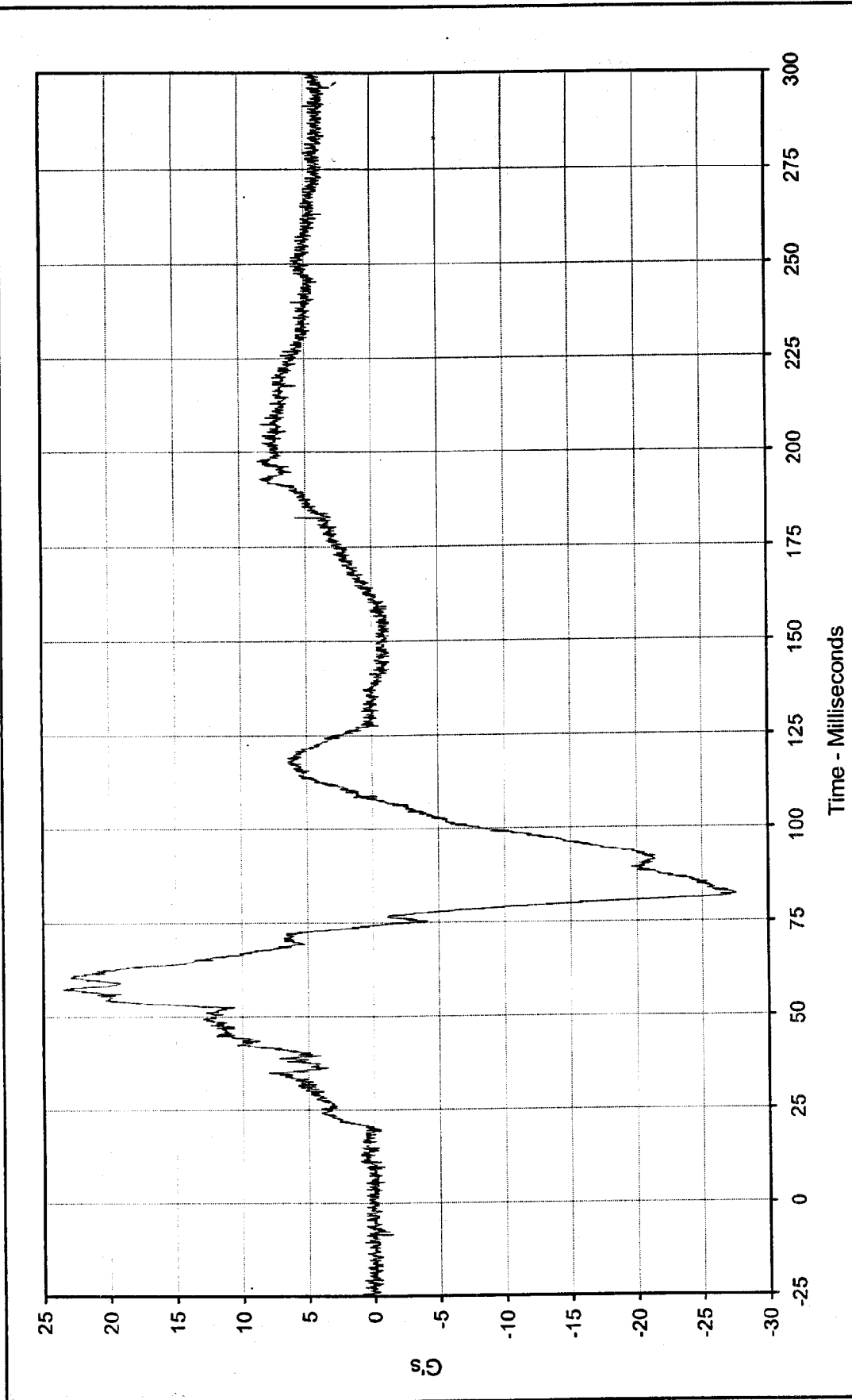
Curve Description:	Driver Head Primary X Displ.	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	111.2 at 87.8 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	0.0 at 0.0 Milliseconds			
SAE Filter Class:	180			
Date of Test:	5/18/99			
Curve Number:	IN2-001			





Curve Description:	Driver Head Primary Y		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	10.7	at 85.4 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-3.7	at 55.3 Milliseconds			
SAE Filter Class:	1000				
Date of Test:	5/18/99				
Curve Number:	FIL-002				

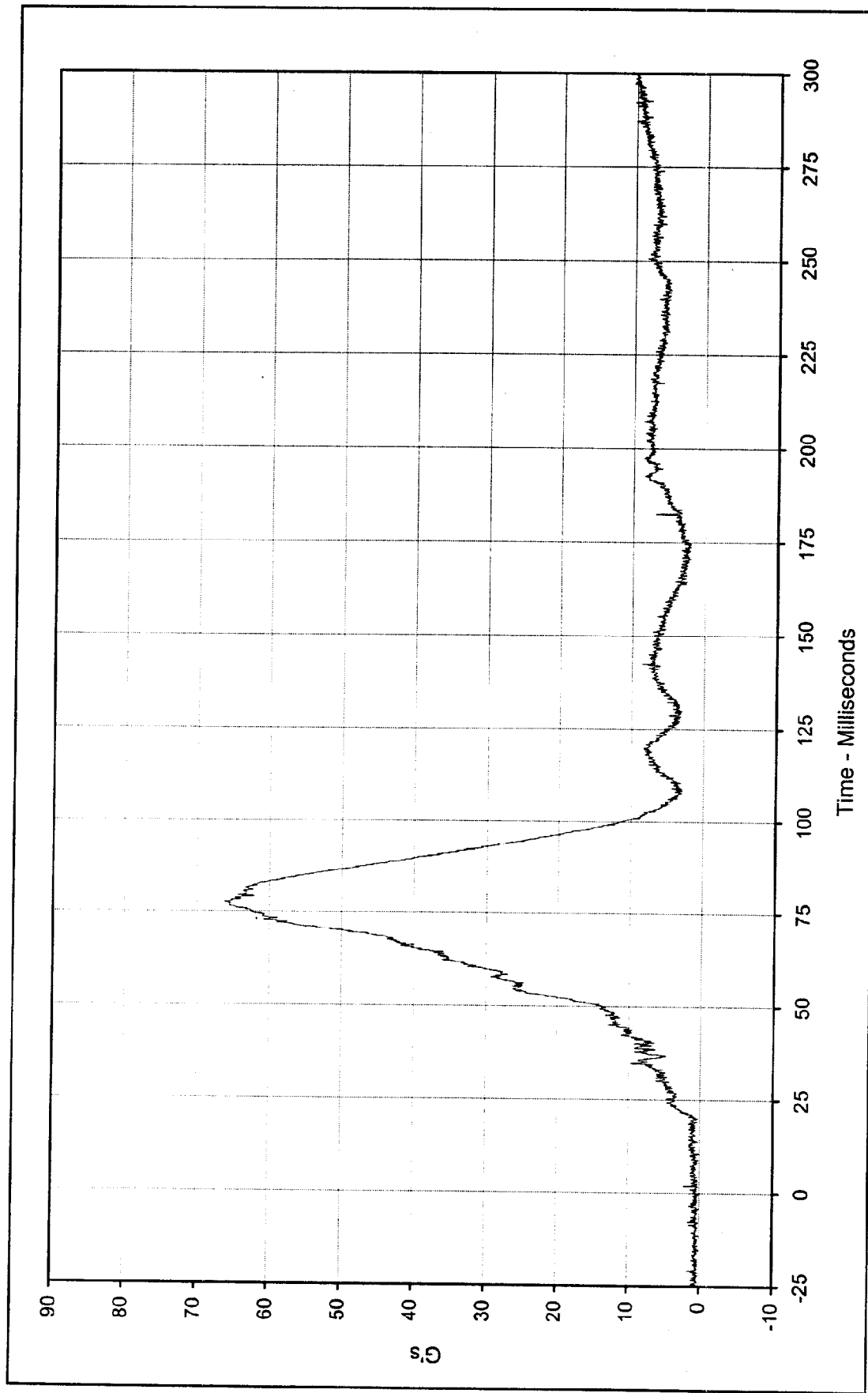




Curve Description: Driver Head Primary Z
 Maximum Value: 23.5 at 57.2 Milliseconds
 Minimum Value: -27.6 at 82.1 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-003

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

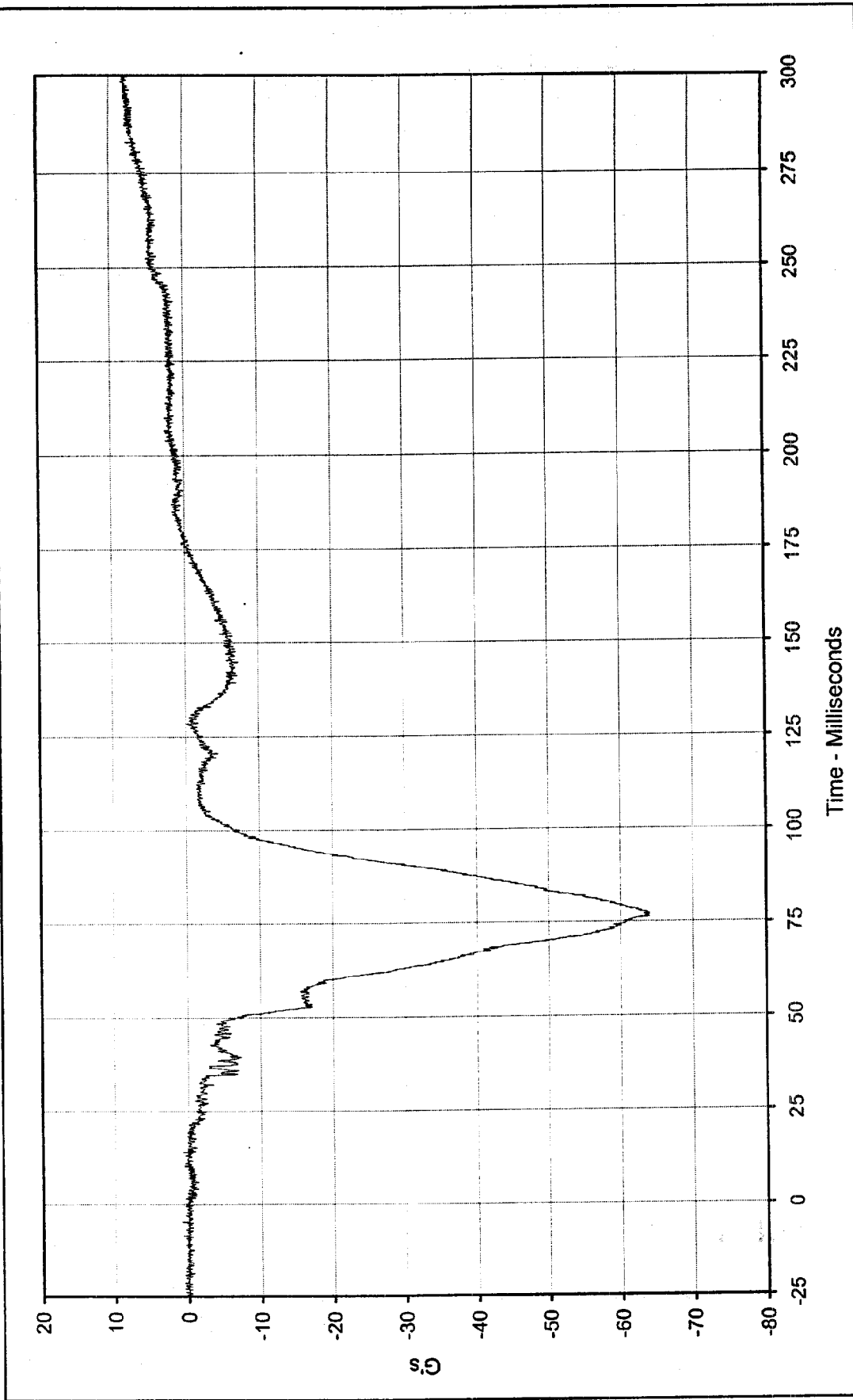




Curve Description: Driver Head Resultant Primary
 Maximum Value: 66.2 at 77.4 Milliseconds
 Minimum Value: 0.0 at 10.4 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: RES-001

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

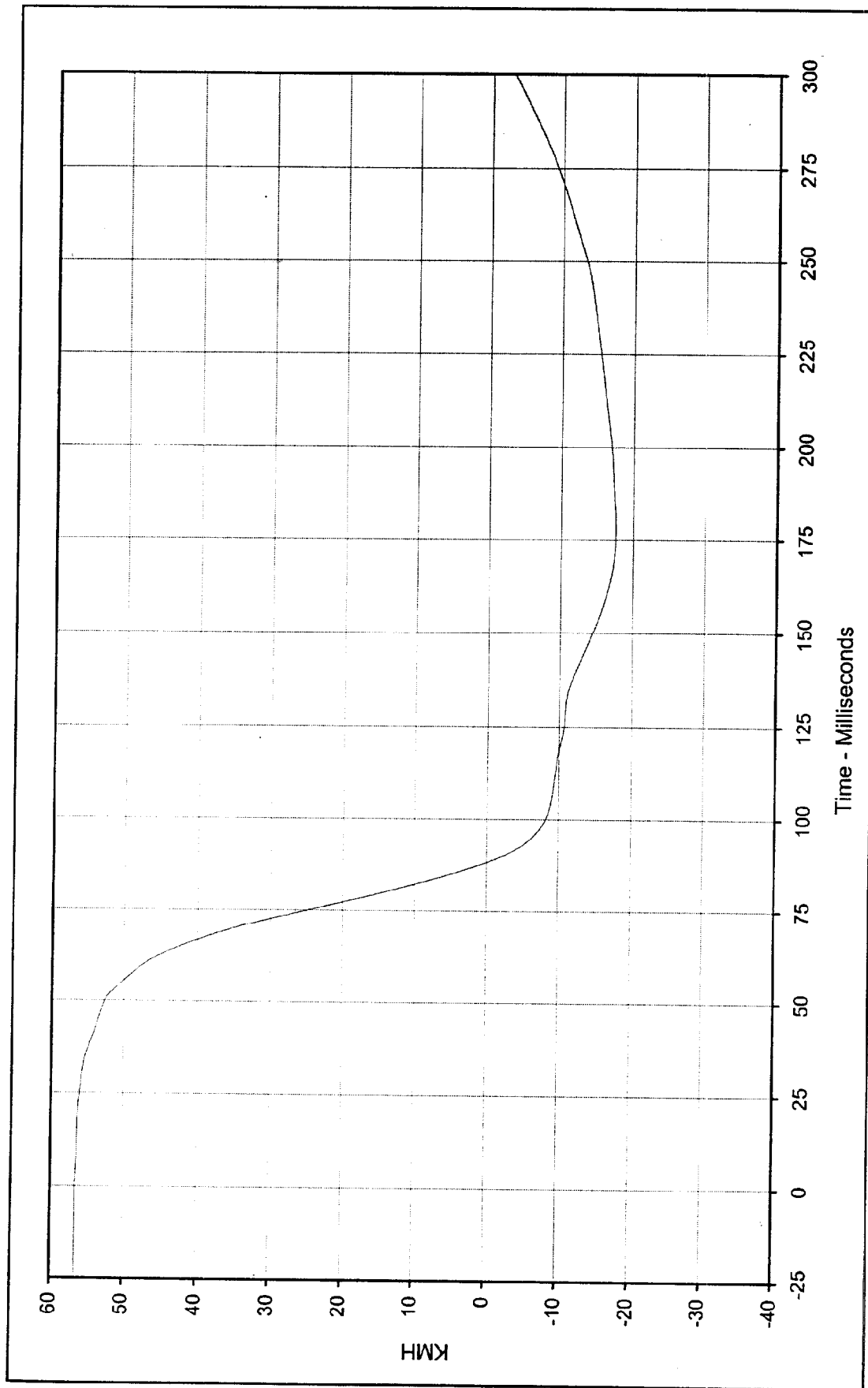




Curve Description: Driver Head Redundant X
 Maximum Value: 8.3 at 298.3 Milliseconds
 Minimum Value: -64.0 at 76.3 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-004

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan



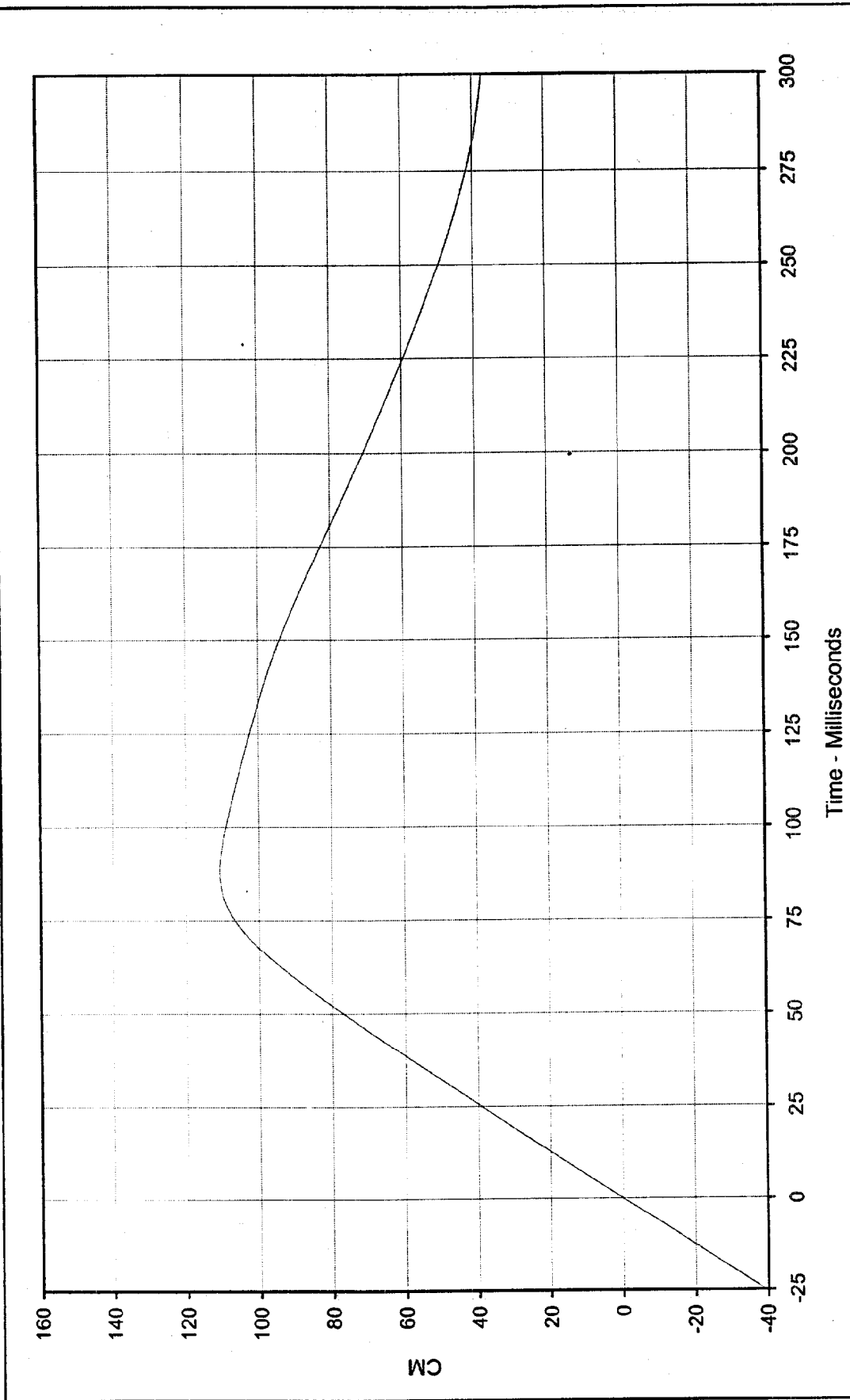


Curve Description: Driver Head Redundant X Velocity
 Maximum Value: 56.6 at 0.0 Milliseconds
 Minimum Value: -17.6 at 177.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN1-004

Testing Program 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

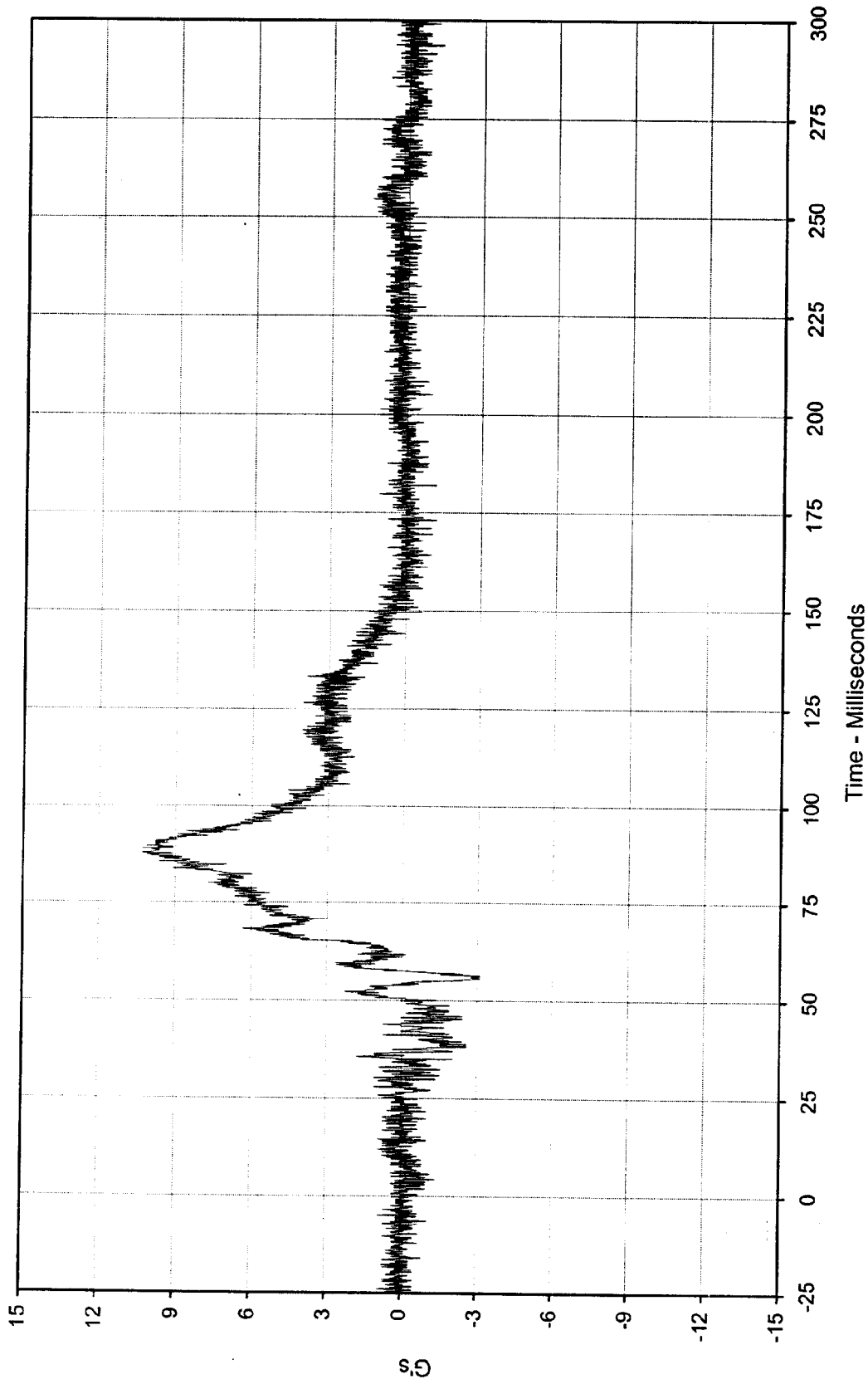




Curve Description: Driver Head Redundant X Displ.
Maximum Value: 110.7 at 88.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 5/18/99
Curve Number: IN2-004

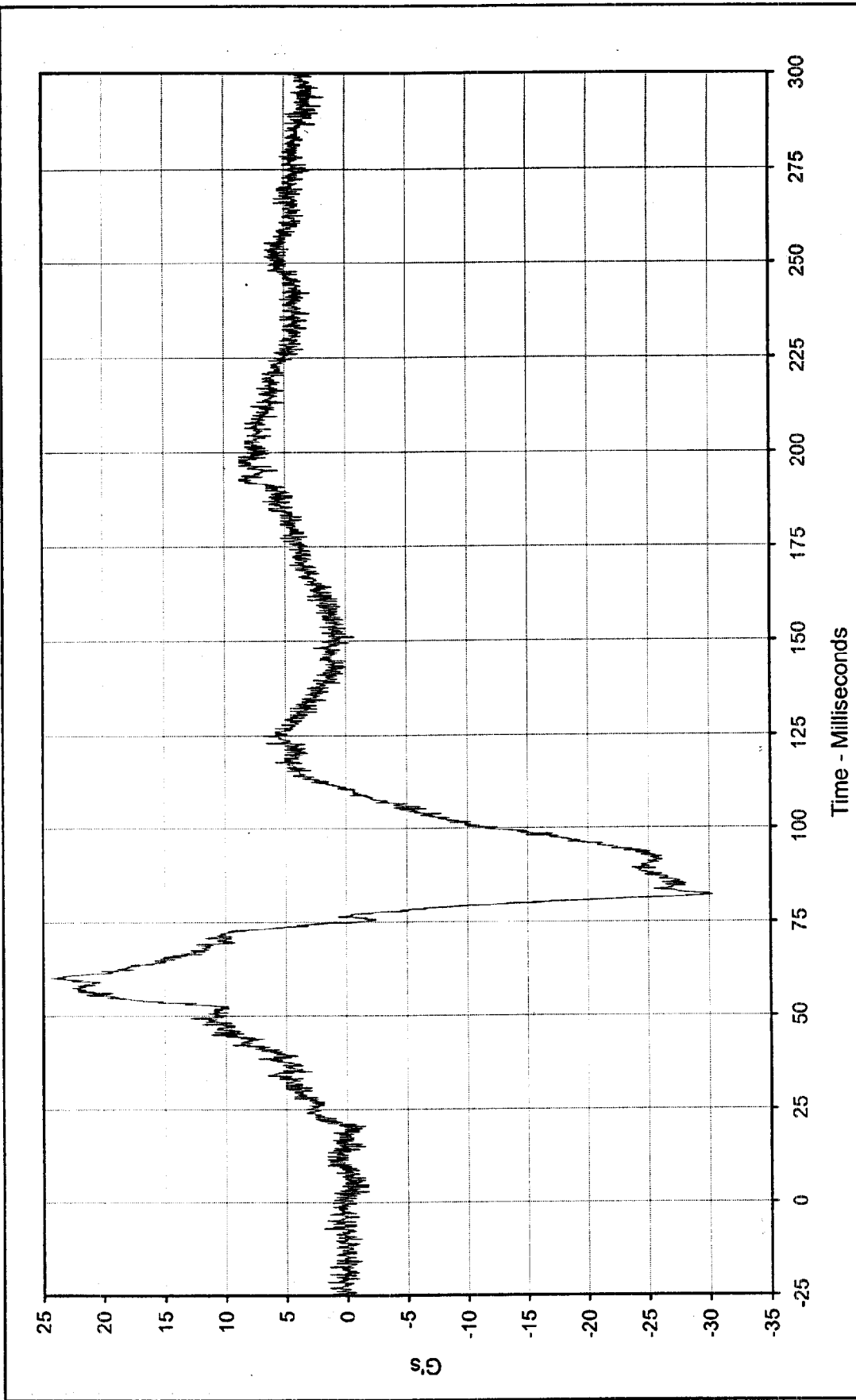
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





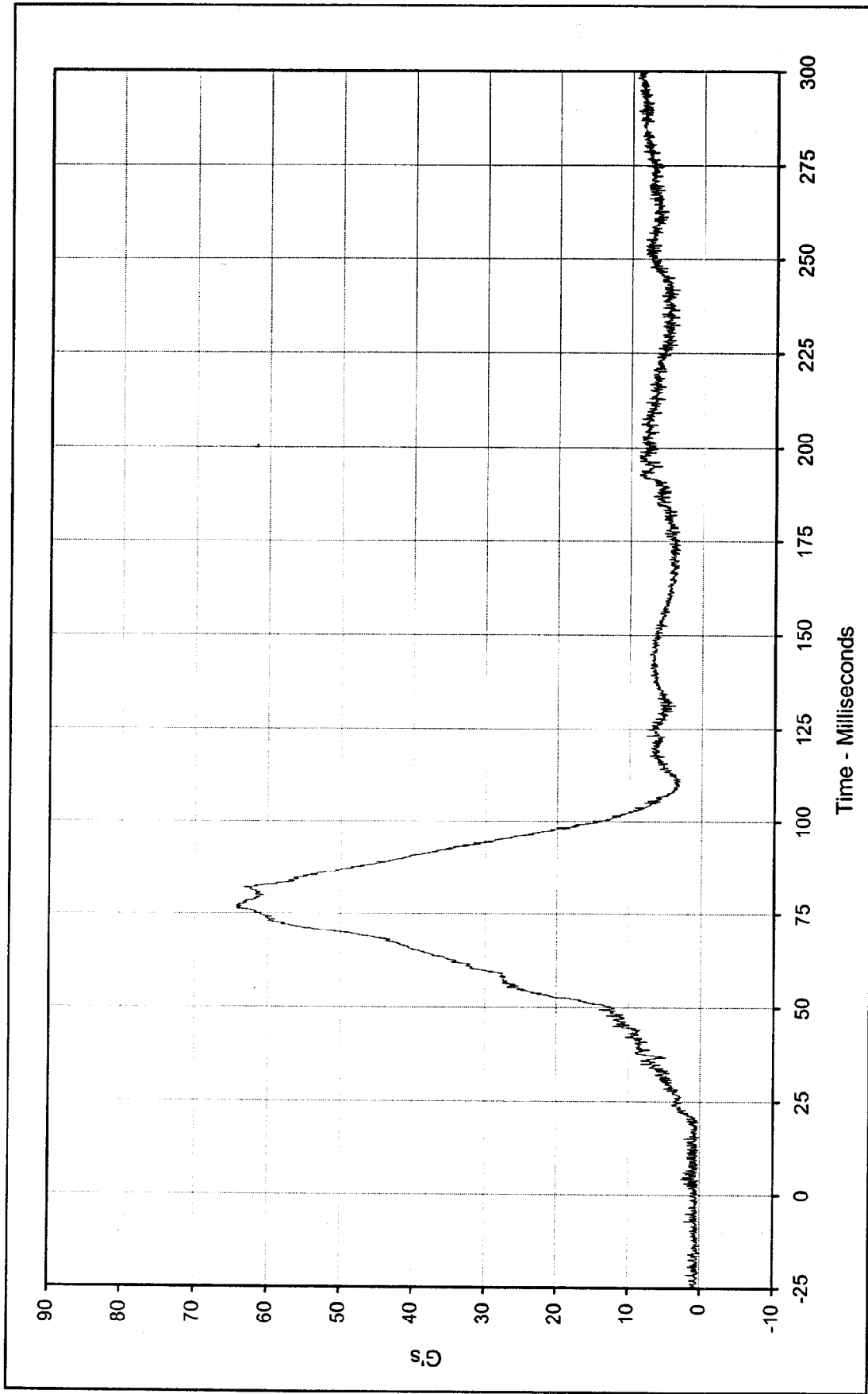
Curve Description:	Driver Head Redundant Y	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	10.3 at 87.6 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-3.1 at 55.5 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	5/18/99			
Curve Number:	FIL-005			





Curve Description:	Driver Head Redundant Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	24.3 at 60.2 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-30.3 at 81.9 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	5/18/99			
Curve Number:	FIL-006			





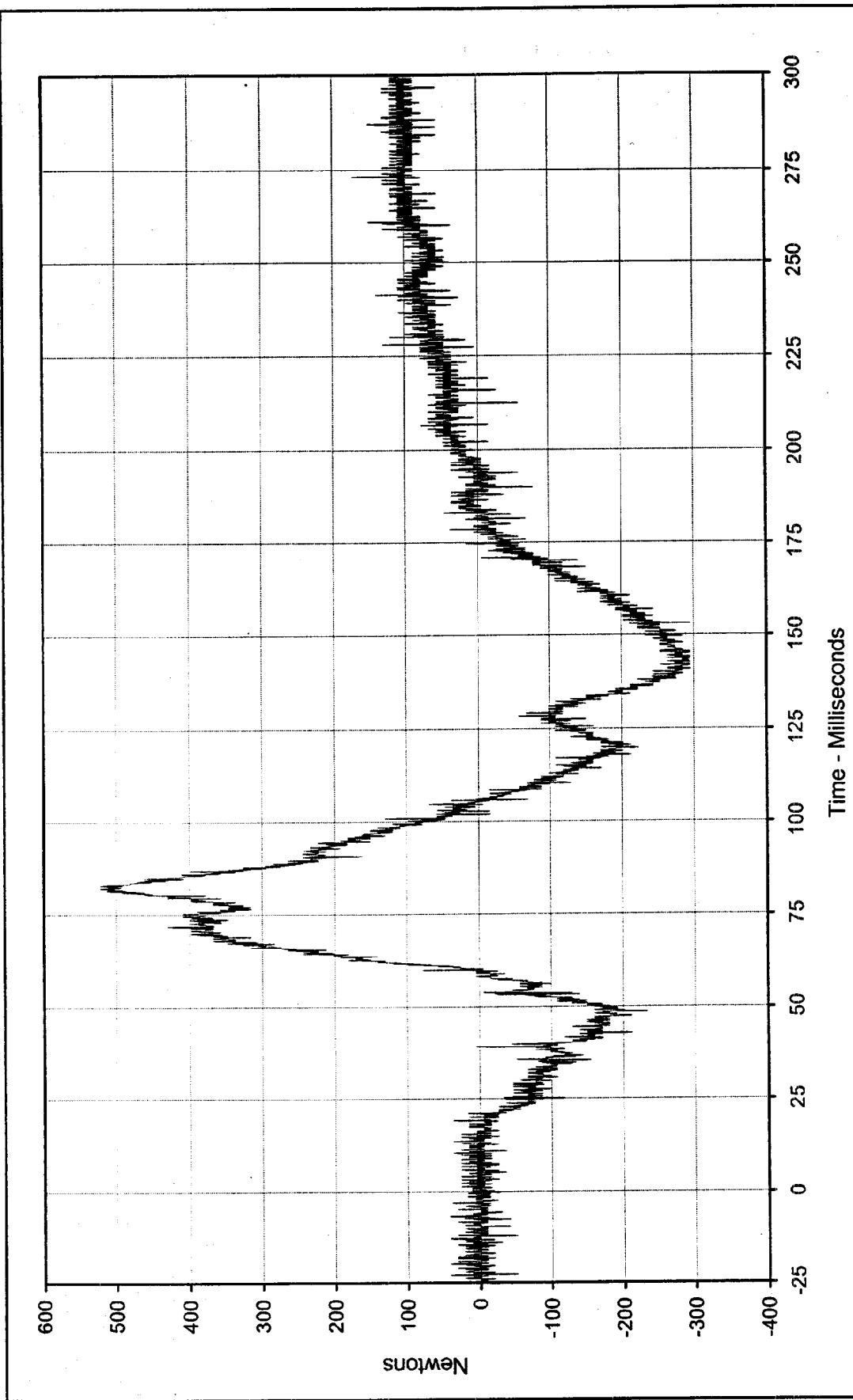
Curve Description: Driver Head Resultant Redundant

Maximum Value:	64.3	at	77.1	Milliseconds
Minimum Value:	0.2	at	4.0	Milliseconds
SAE Filter Class:	1000			
Date of Test:	5/18/99			
Curve Number:	RES-004			

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Neck Force X Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Maximum Value: 522.5 at 82.3 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

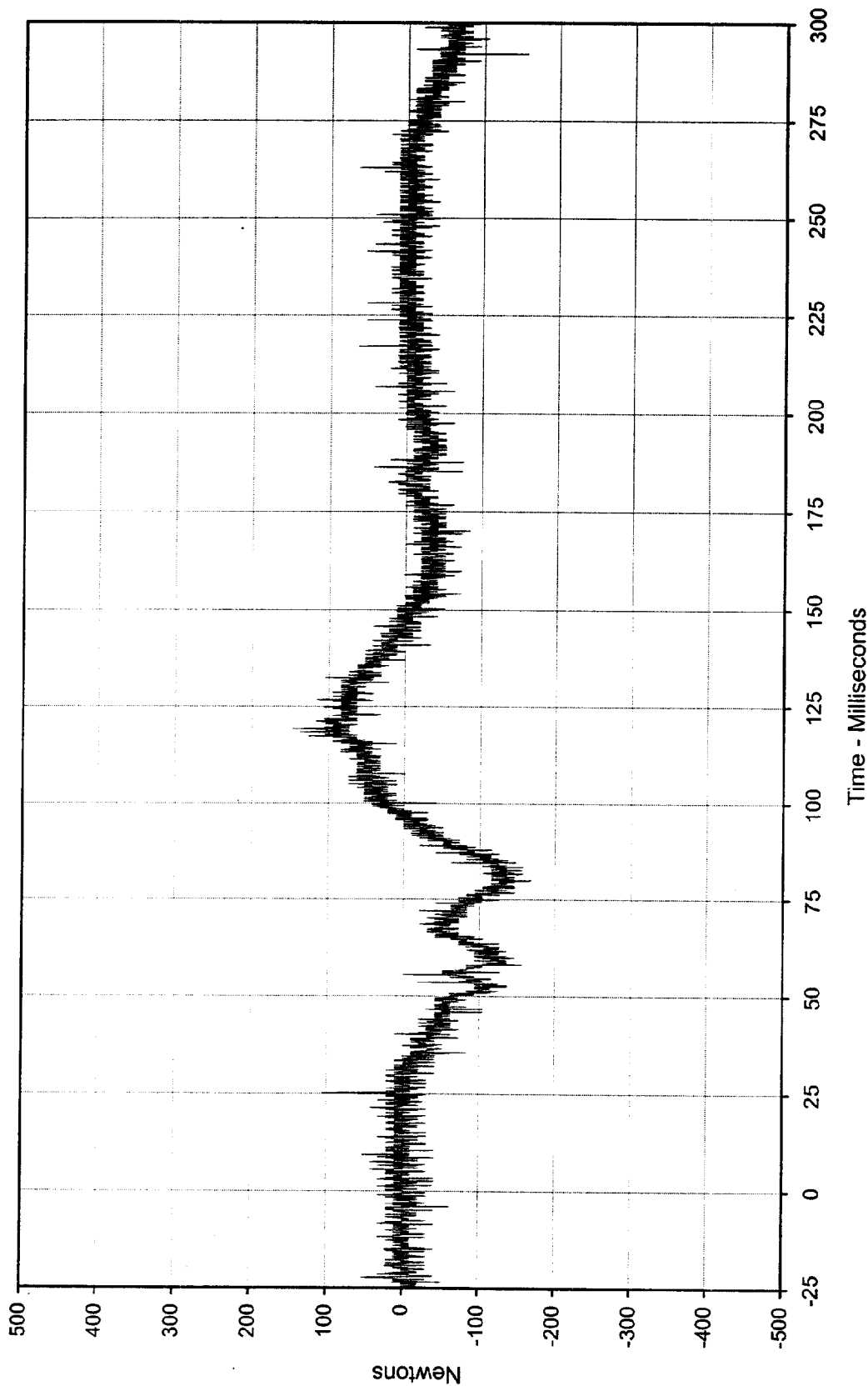
Minimum Value: -295.2 at 140.6 Milliseconds

SAE Filter Class: 1000

Date of Test: 5/18/99

Curve Number: FIL-007





Curve Description:

Driver Neck Force Y

Maximum Value:

146.8 at 119.1 Milliseconds

Minimum Value:

-167.7 at 79.7 Milliseconds

SAE Filter Class:

1000

Date of Test:

5/18/99

Curve Number:

FIL-008

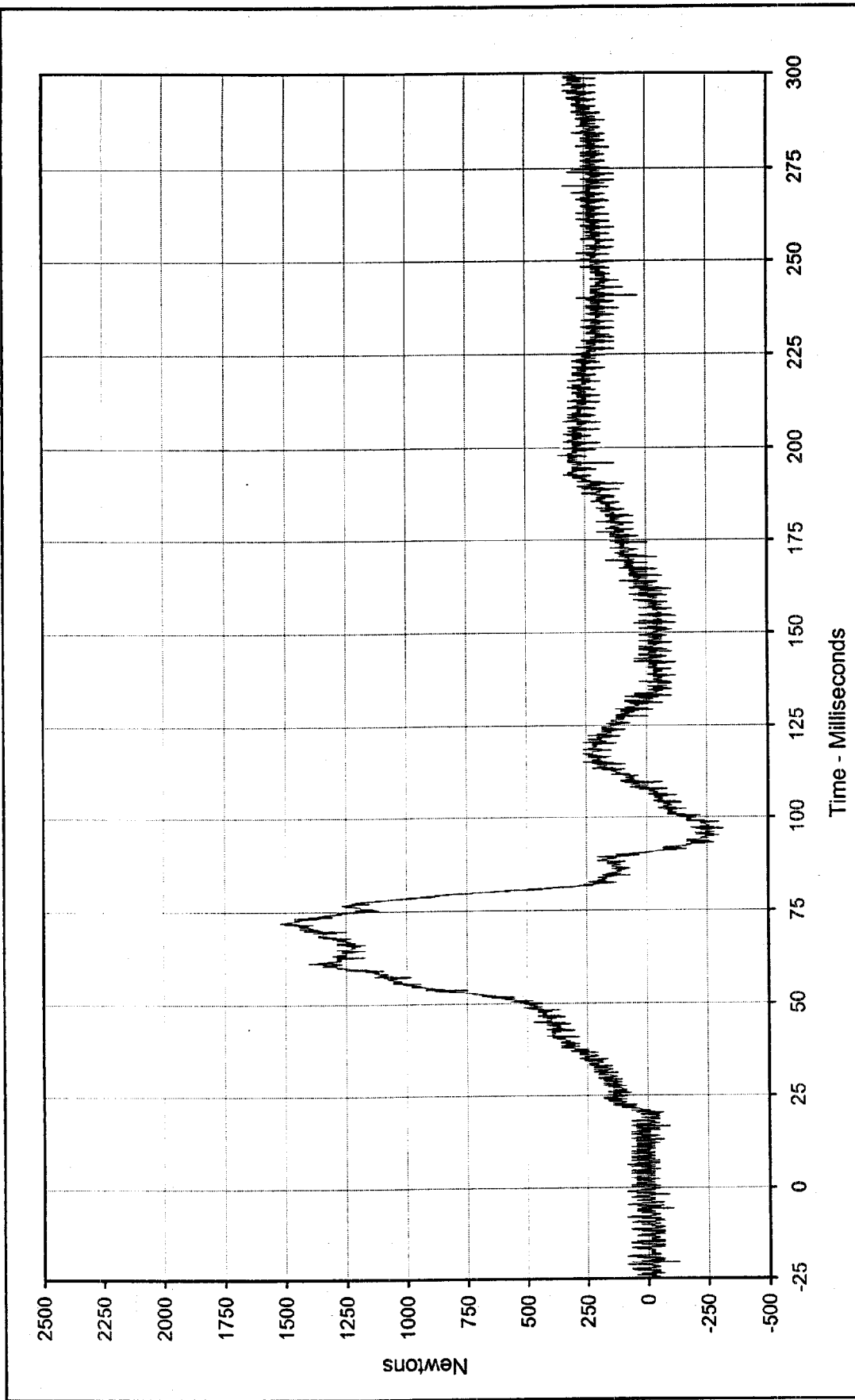
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle:

1999 Acura 3.5 RL 4 Door Sedan



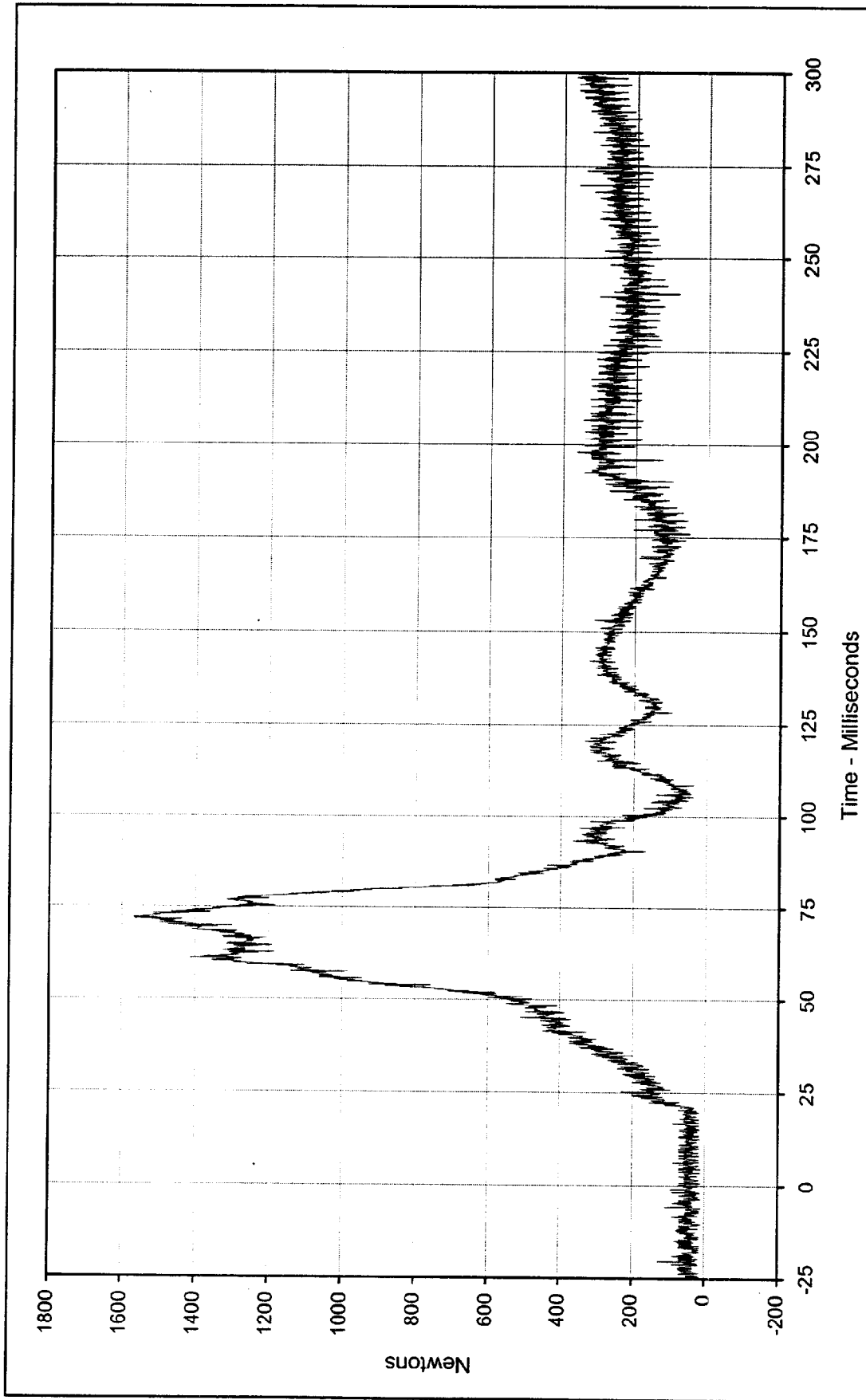


Curve Description: Driver Neck Force Z
 Maximum Value: 1520.9 at 72.1 Milliseconds
 Minimum Value: -320.1 at 96.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-009

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Neck Force Resultant

Maximum Value: 1568.8 at 72.1 Milliseconds

Minimum Value: 10.1 at 0.7 Milliseconds

SAE Filter Class: 1000

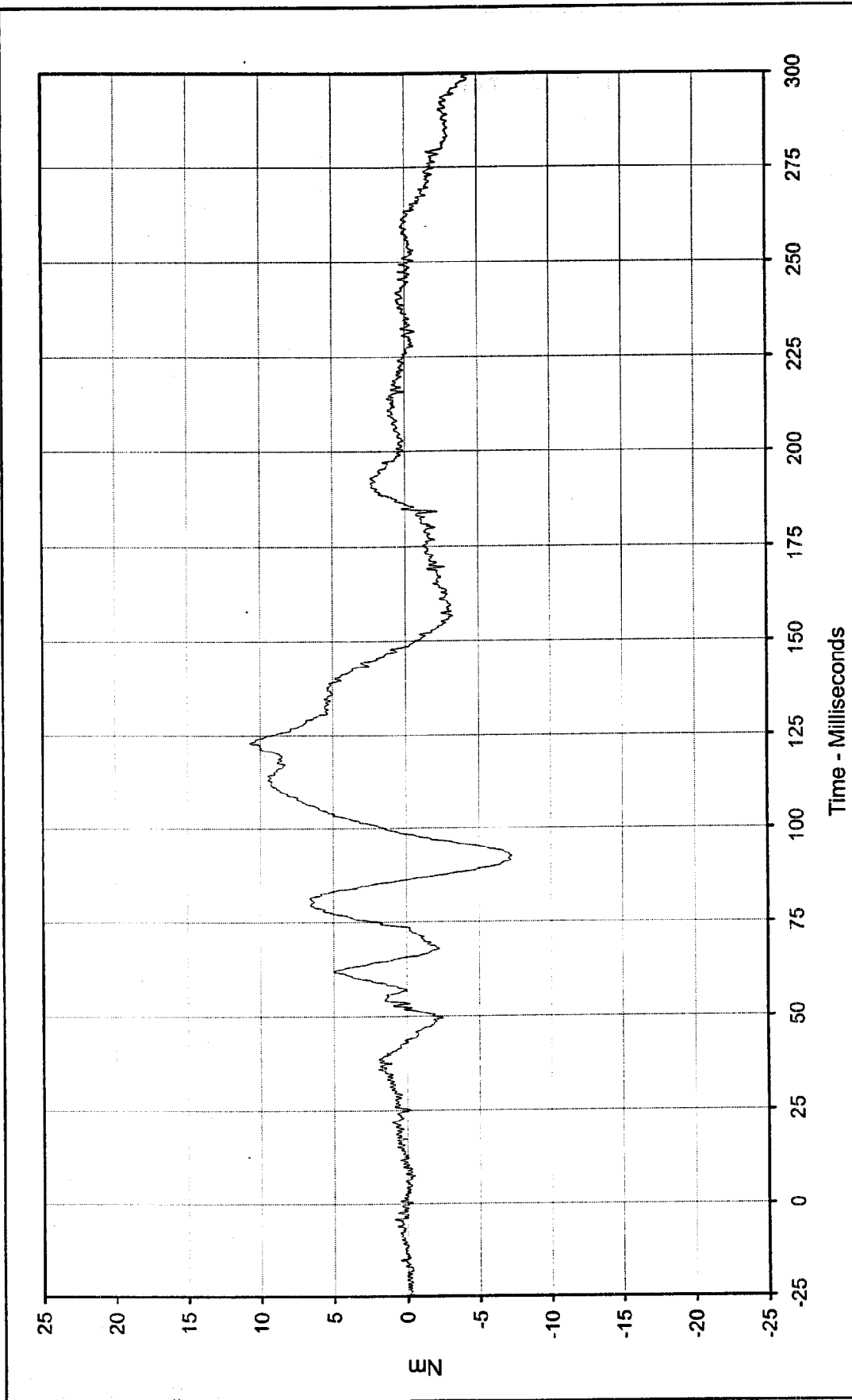
Date of Test: 5/18/99

Curve Number: RES-007

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5304

Maximum Value: 10.7 at 123.1 Milliseconds

Test Program: 1999 Acura 3.5 RL 4 Door Sedan

Minimum Value: -7.3 at 92.3 Milliseconds

SAE Filter Class: 600

Date of Test: 5/18/99

Curve Number: FIL-010





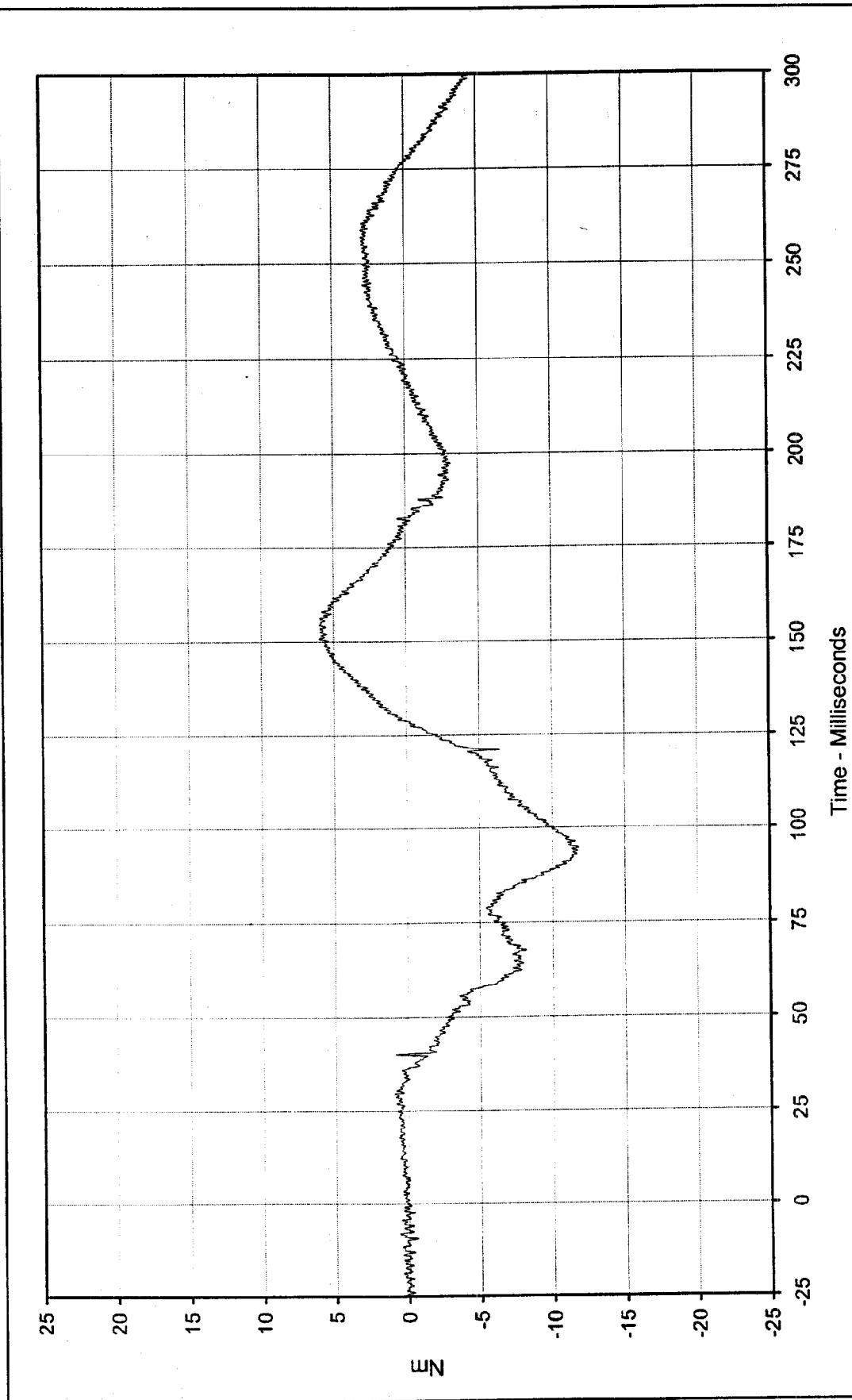
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle:

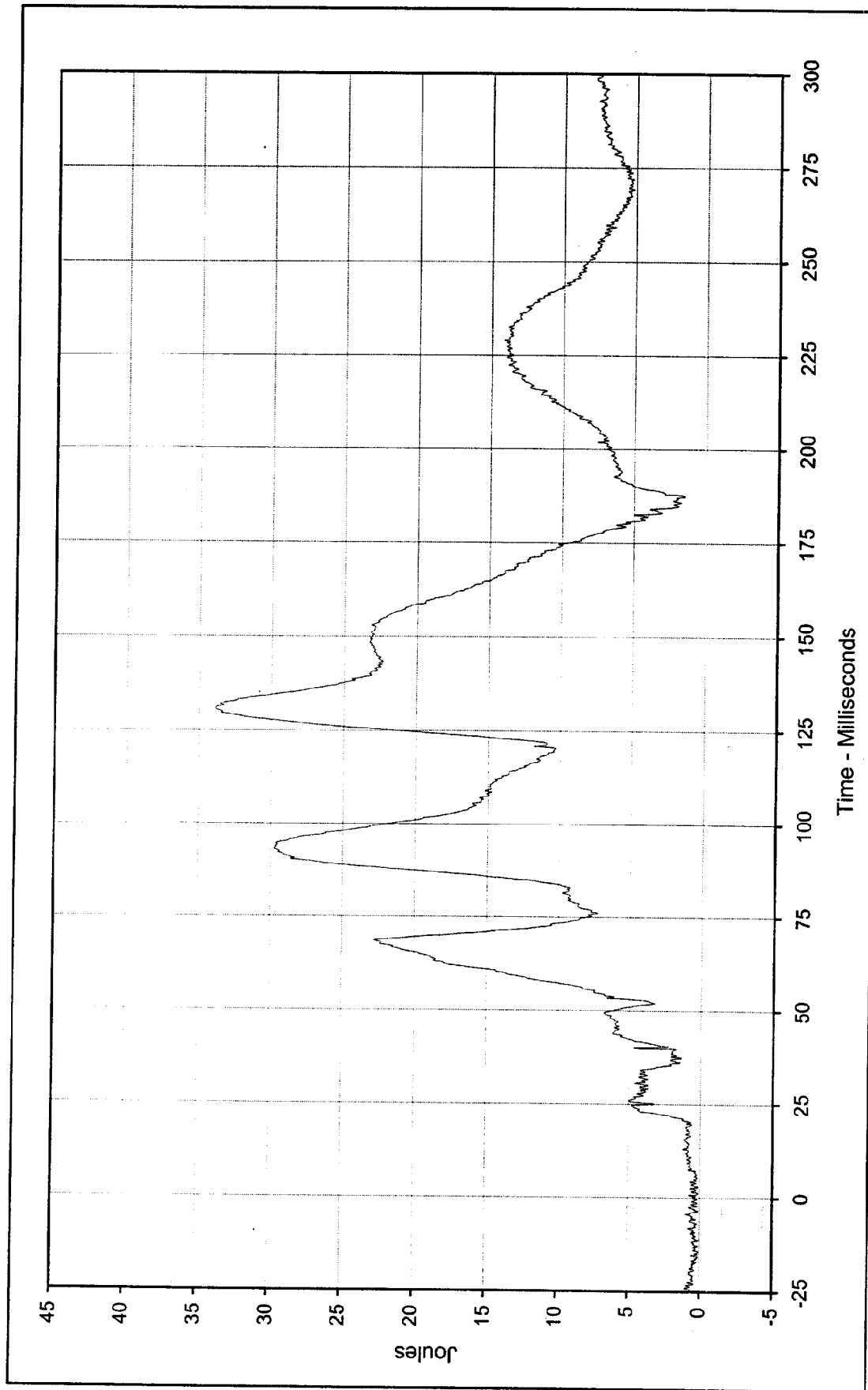
1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Driver Neck Moment Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	6.0 at 150.9 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-11.8 at 94.6 Milliseconds			
SAE Filter Class:	600			
Date of Test:	5/18/99			
Curve Number:	FIL-012			





Curve Description: Driver Neck Moment Resultant

Maximum Value: 33.9 at 130.9 Milliseconds

Minimum Value: 0.1 at 1.2 Milliseconds

SAE Filter Class: 600

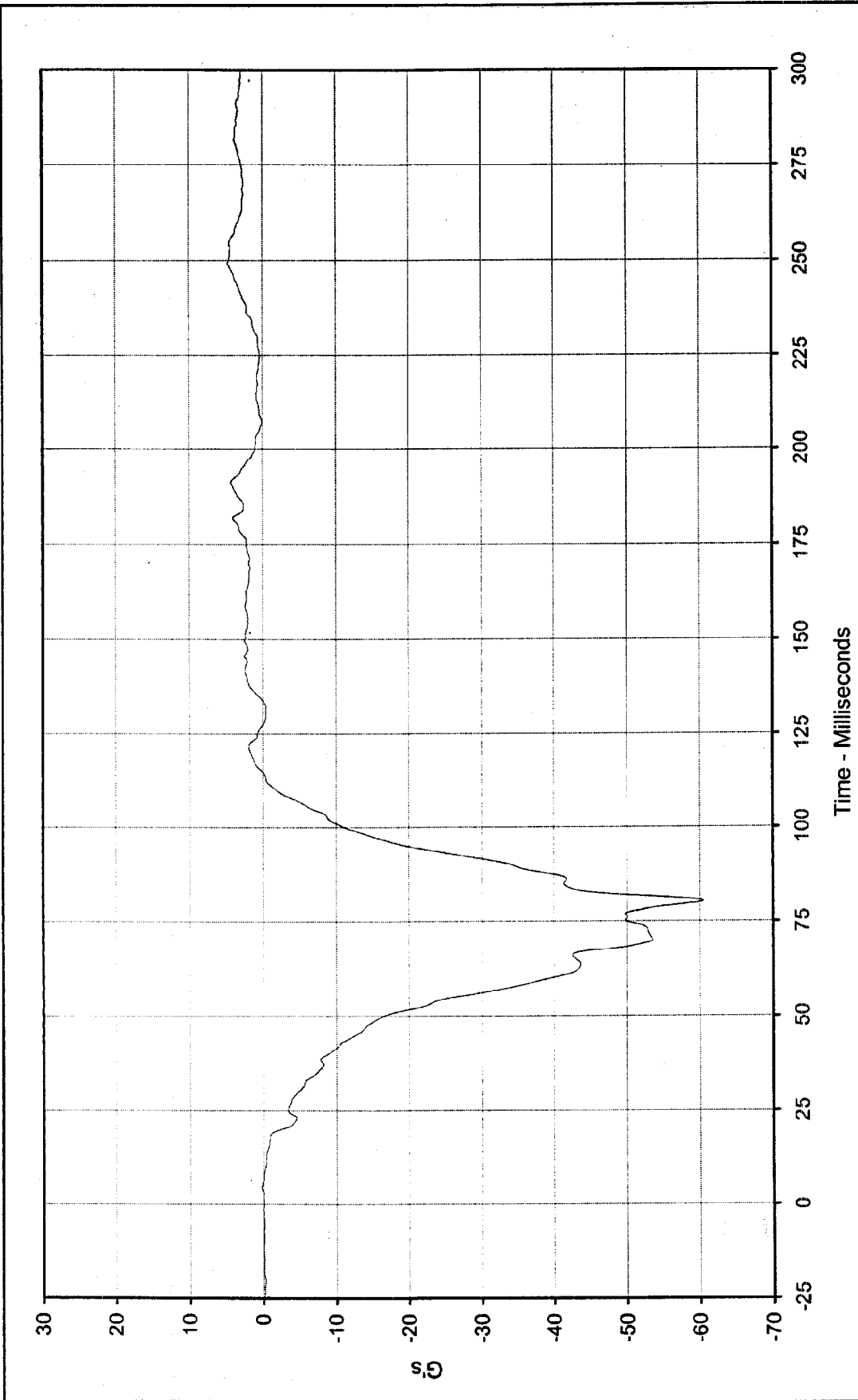
Date of Test: 5/18/99

Curve Number: RES-010

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Chest Primary X

Maximum Value: 4.7 at 249.0 Milliseconds

Minimum Value: -60.5 at 80.3 Milliseconds

SAE Filter Class: 180

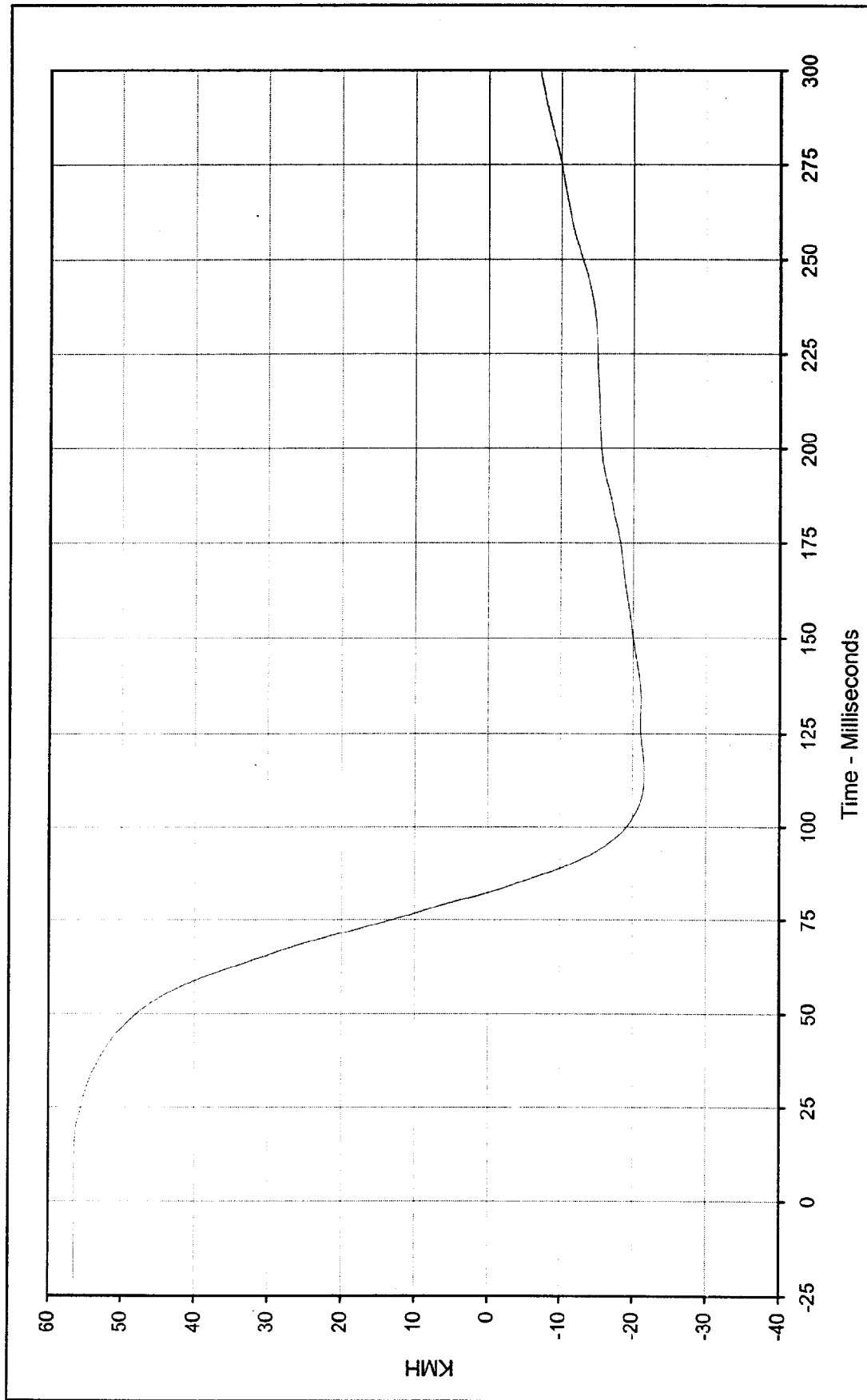
Date of Test: 5/18/99

Curve Number: FIL-013

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

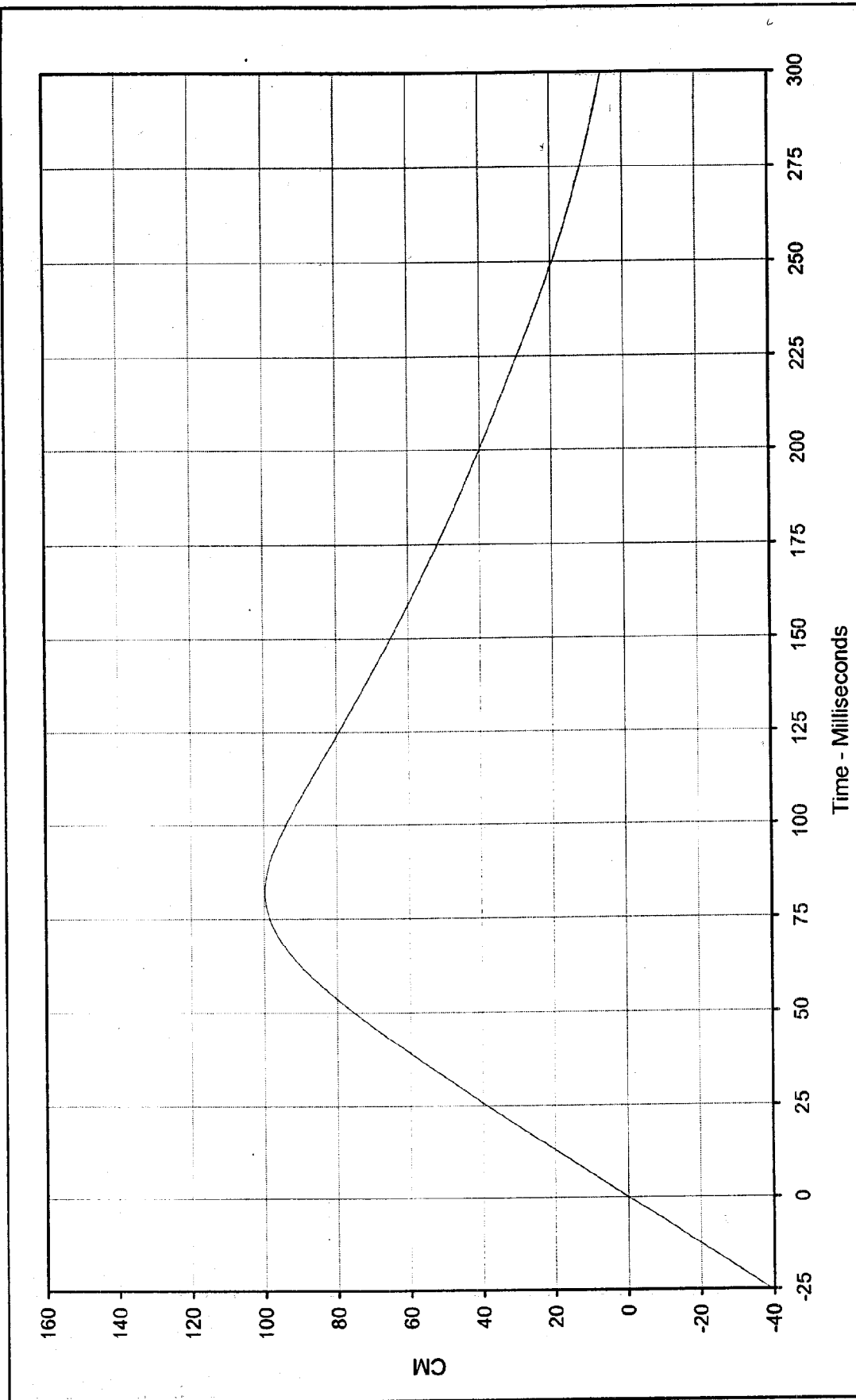




Curve Description: Driver Chest Primary X Velocity
 Maximum Value: 56.5 at 6.5 Milliseconds
 Minimum Value: -21.5 at 114.6 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN1-013

Testing Program 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Chest Primary X Displ. Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Maximum Value: 99.7 at 81.9 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

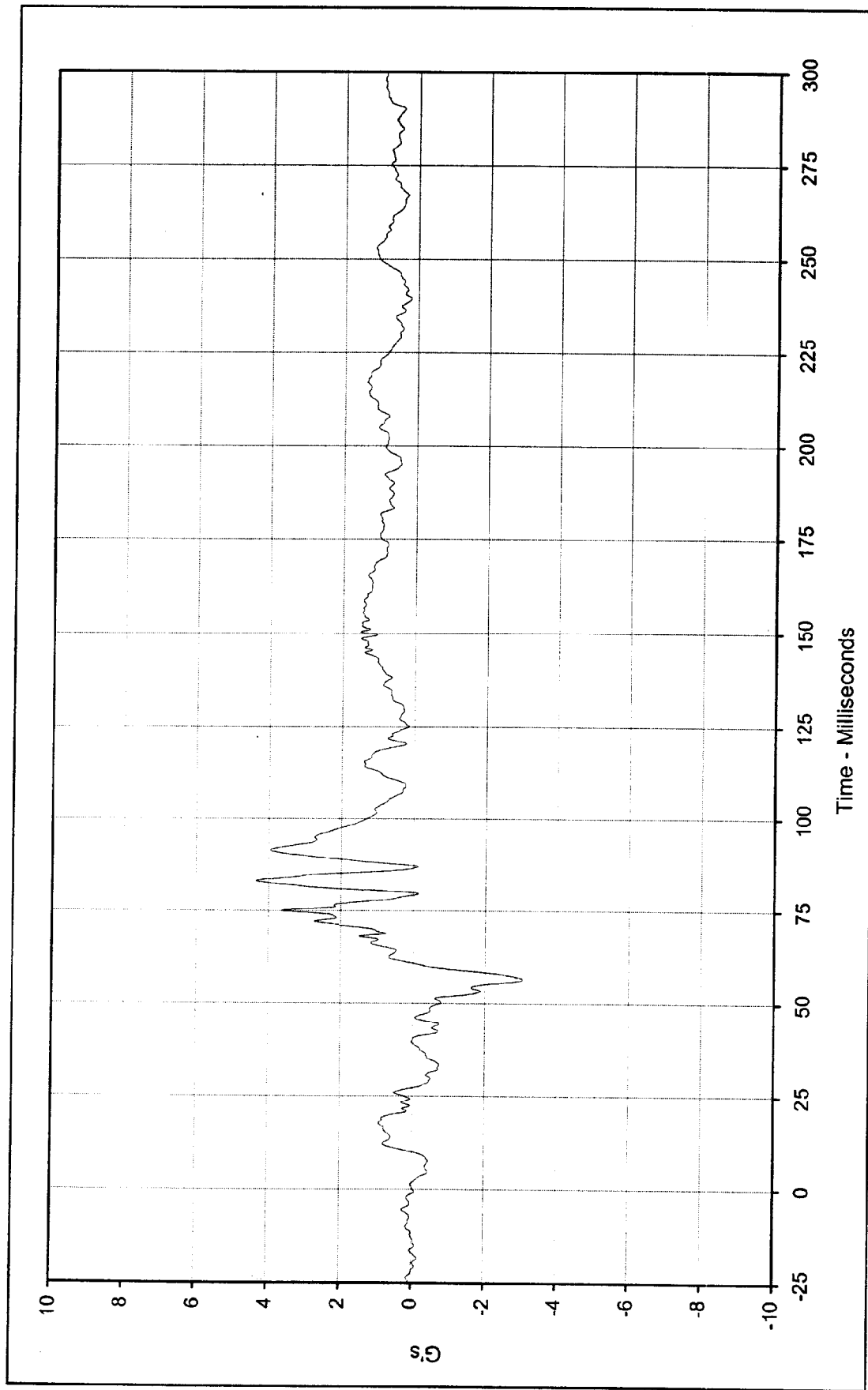
Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 5/18/99

Curve Number: IN2-013

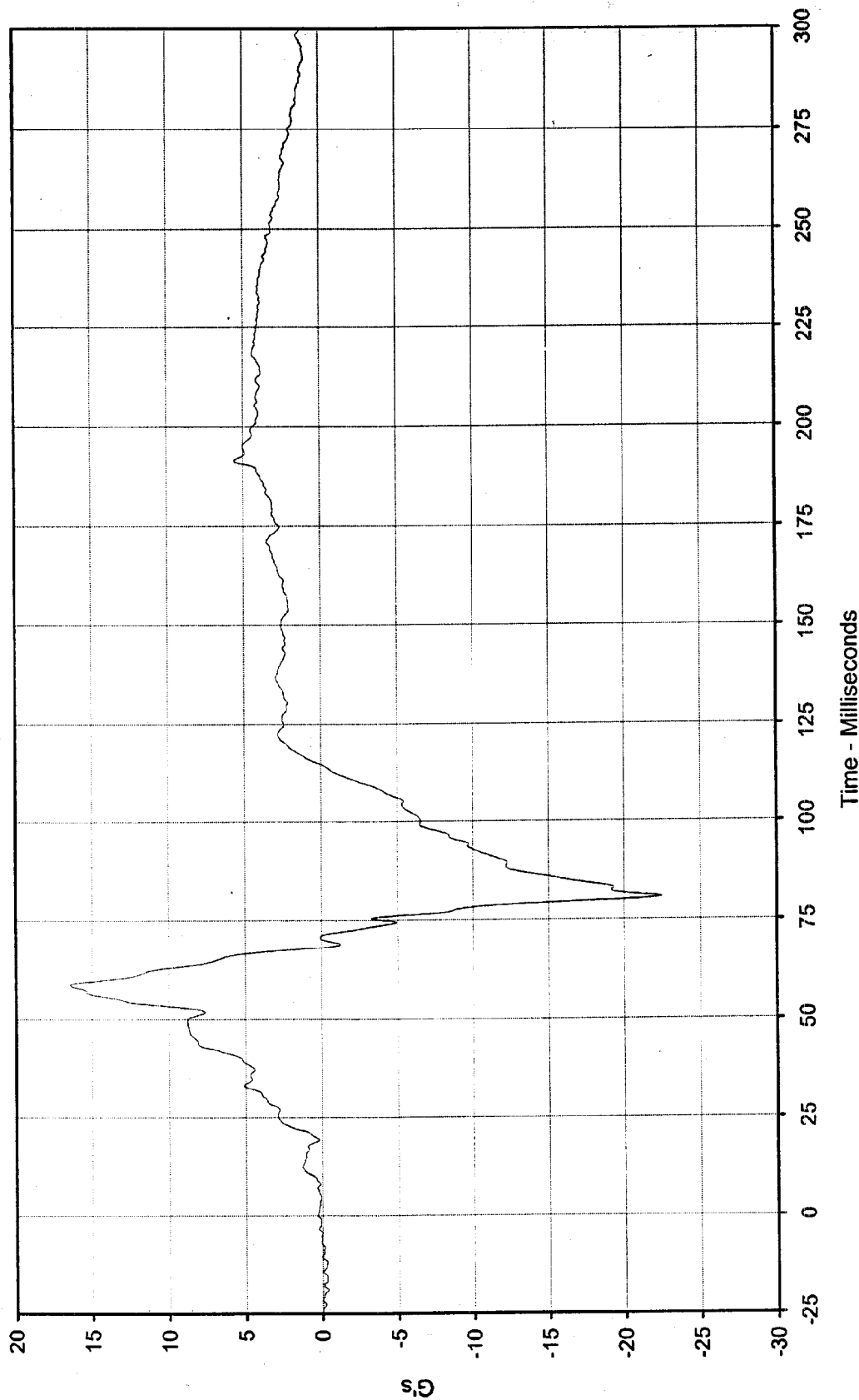




Curve Description: Driver Chest Primary Y
 Maximum Value: 4.3 at 82.8 Milliseconds
 Minimum Value: -3.1 at 56.5 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: FIL-014

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Chest Primary Z Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Maximum Value: 16.4 at 58.7 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

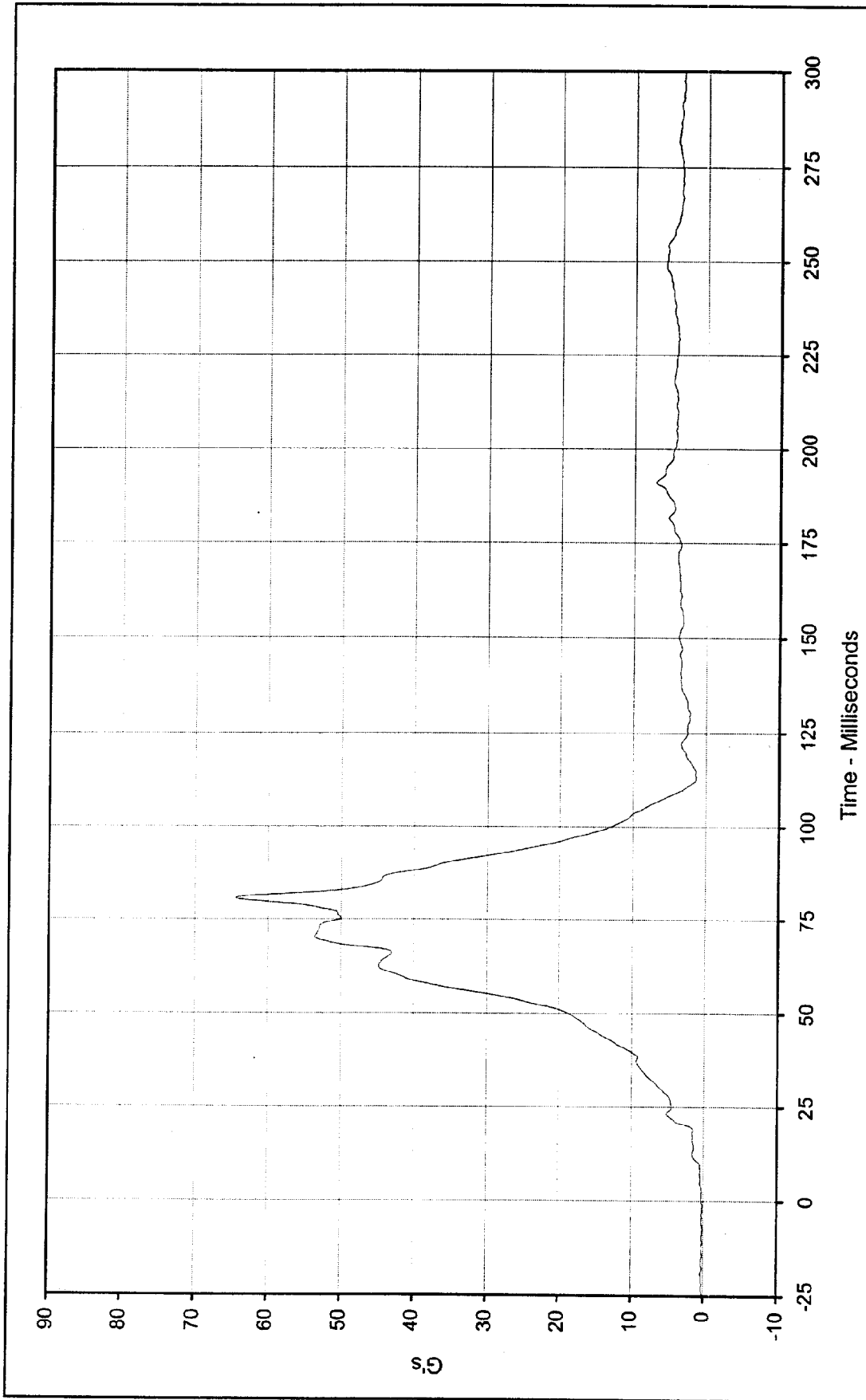
Minimum Value: -22.5 at 80.6 Milliseconds

SAE Filter Class: 180

Date of Test: 5/18/99

Curve Number: FIL-015

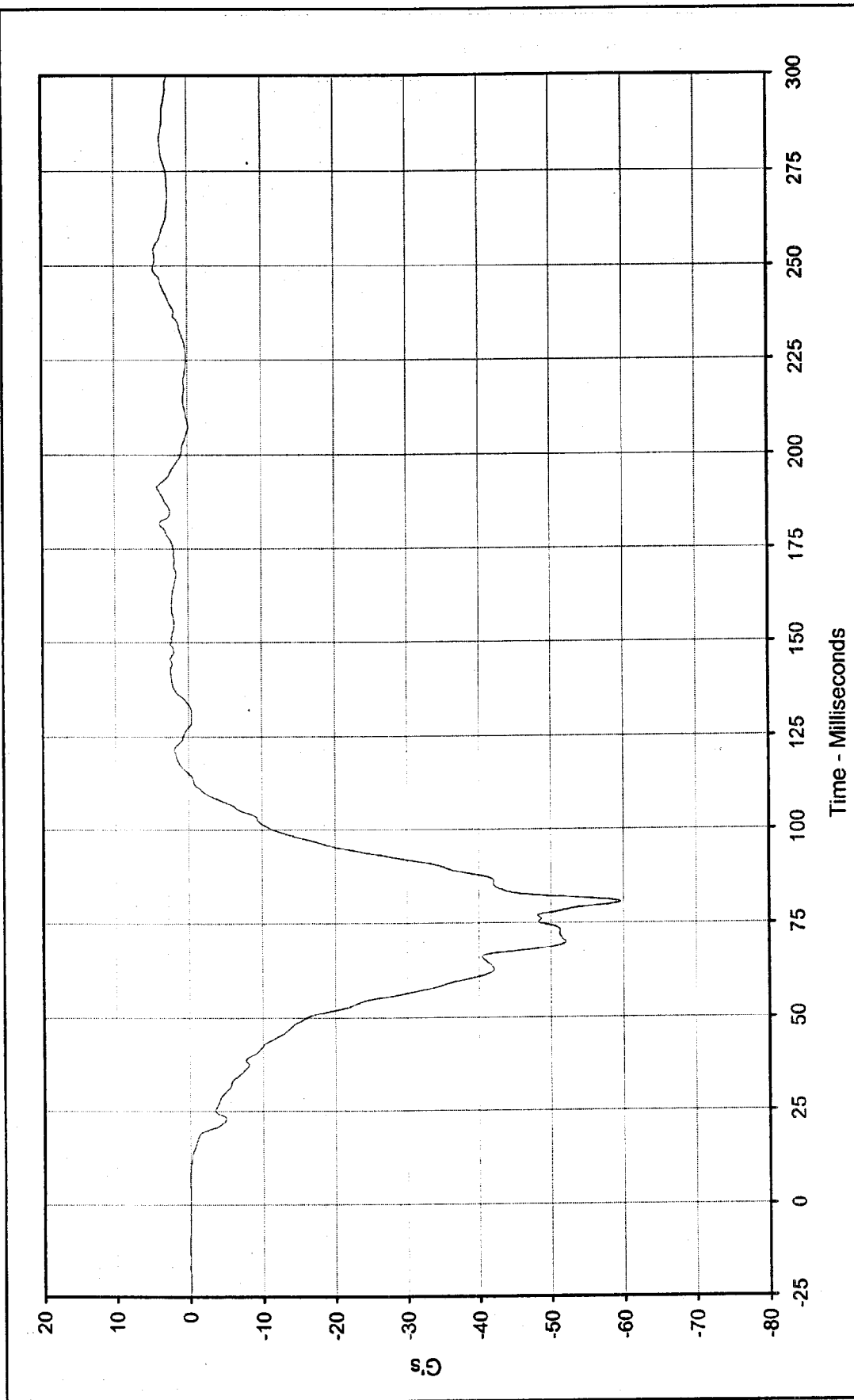




Curve Description: Driver Chest Resultant Primary
Maximum Value: 64.4 at 80.4 Milliseconds
Minimum Value: 0.2 at 2.5 Milliseconds
SAE Filter Class: 180
Date of Test: 5/18/99
Curve Number: RES-013

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Chest Redundant X

Maximum Value: 4.6 at 249.2 Milliseconds

Minimum Value: -59.6 at 80.4 Milliseconds

SAE Filter Class: 180

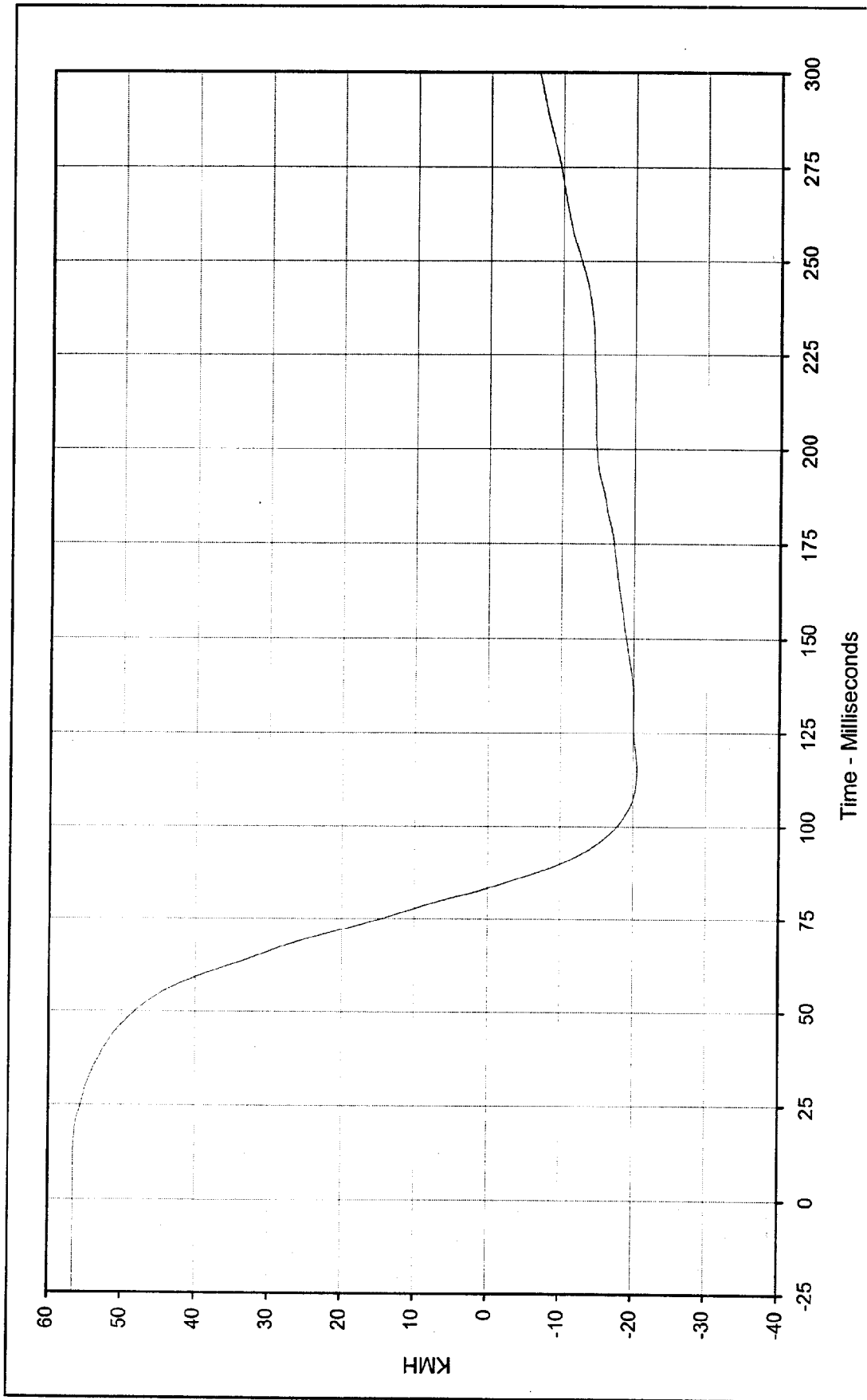
Date of Test: 5/18/99

Curve Number: FIL-016

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Chest Redundant X Velocity

Maximum Value: 56.6 at 0.0 Milliseconds

Minimum Value: -20.5 at 114.9 Milliseconds

SAE Filter Class: 180

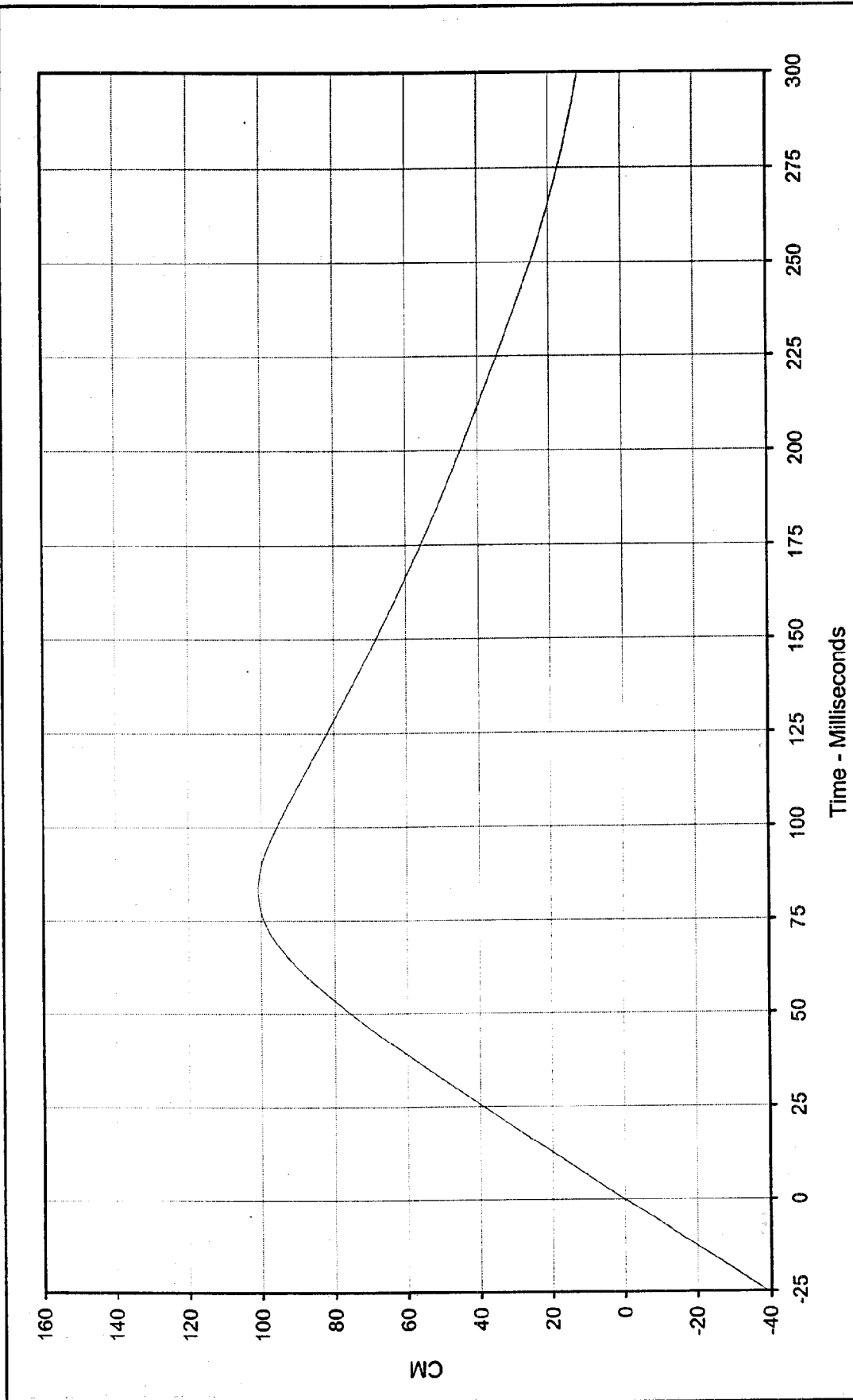
Date of Test: 5/18/99

Curve Number: IN1-016

Testing Program 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

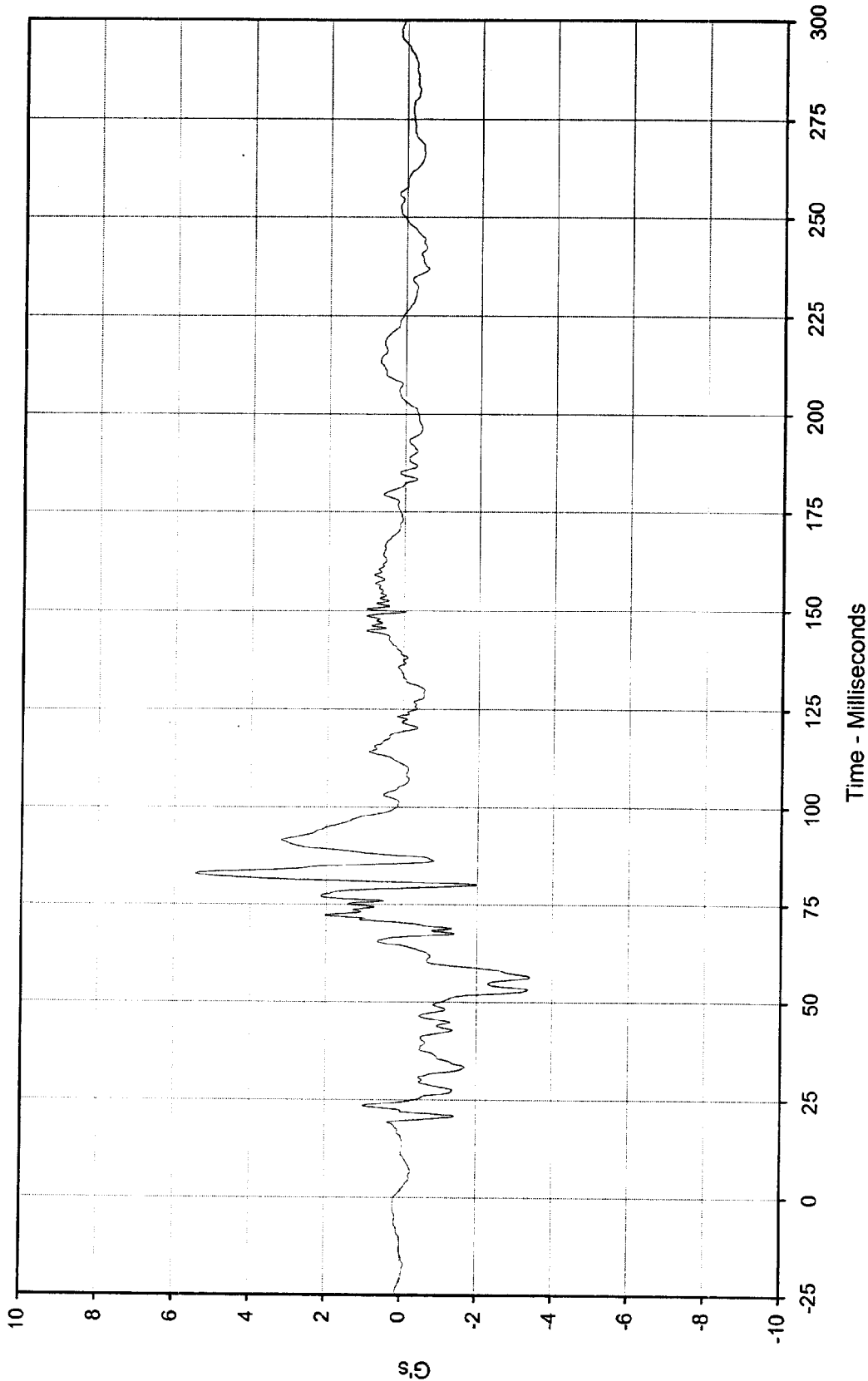




Curve Description: Driver Chest Redundant X Displ.
 Maximum Value: 100.8 at 82.9 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN2-016

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Chest Redundant Y

Maximum Value: 5.4 at 82.6 Milliseconds

Minimum Value: -3.4 at 56.4 Milliseconds

SAE Filter Class: 180

Date of Test: 5/18/99

Curve Number: FIL-017

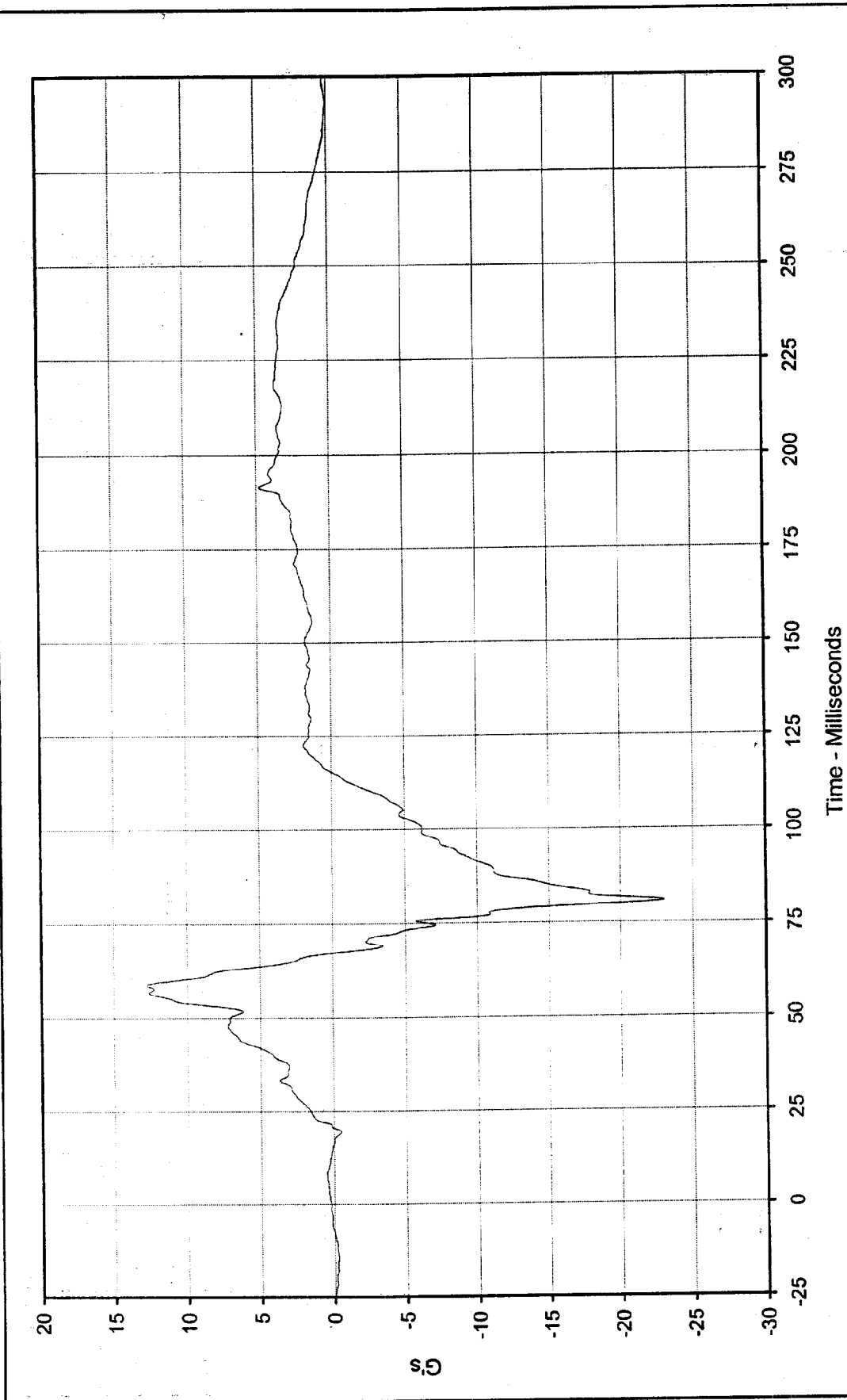
Test Program:

Test Vehicle:

1999 NHTSA 35 mph NCAP No.: MX5304

1999 Acura 3.5 RL 4 Door Sedan





Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Program:

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

Driver Chest Redundant Z

Maximum Value: 12.8 at 58.7 Milliseconds

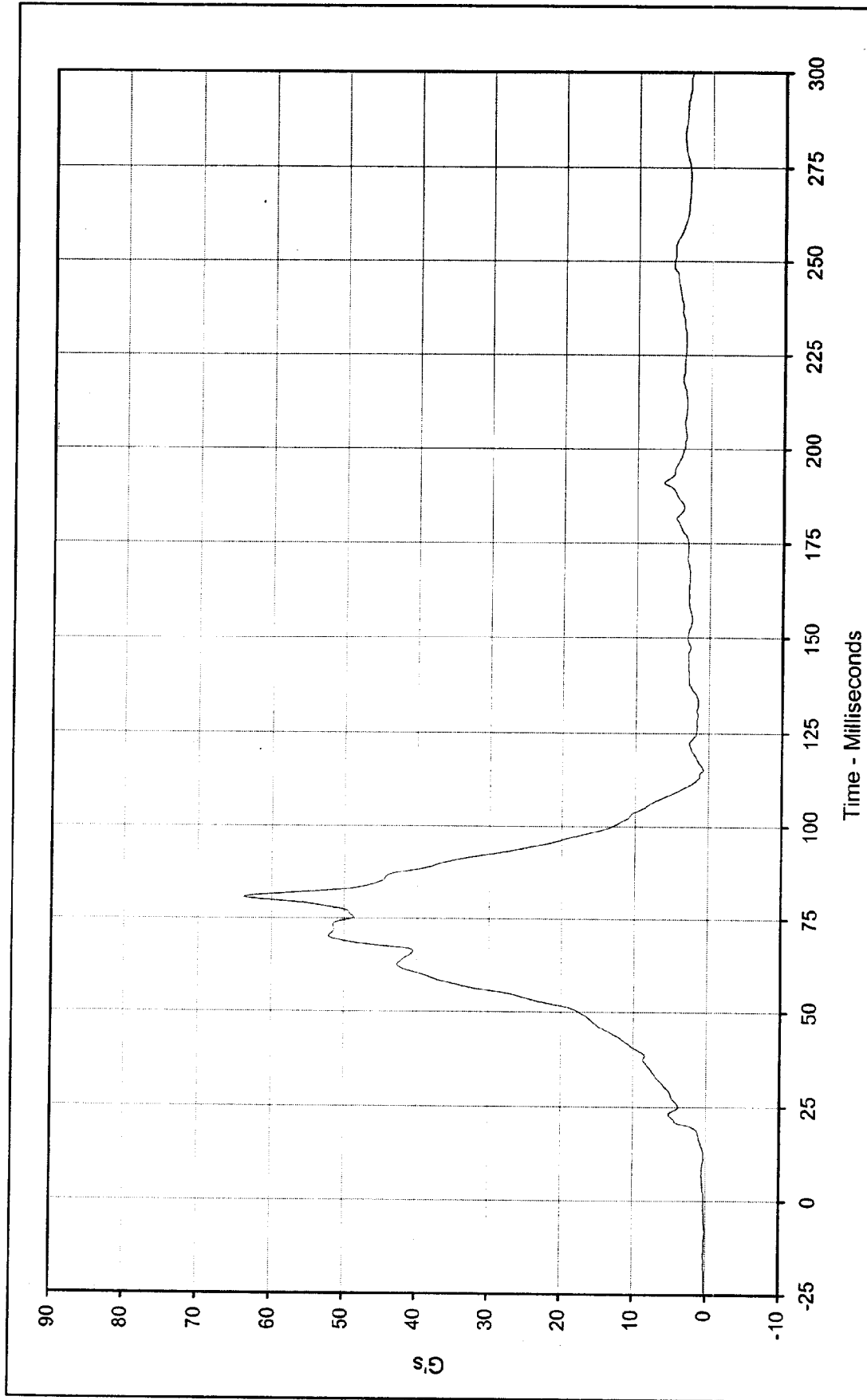
Minimum Value: -23.0 at 80.6 Milliseconds

SAE Filter Class: 180

Date of Test: 5/18/99

Curve Number: FIL-018

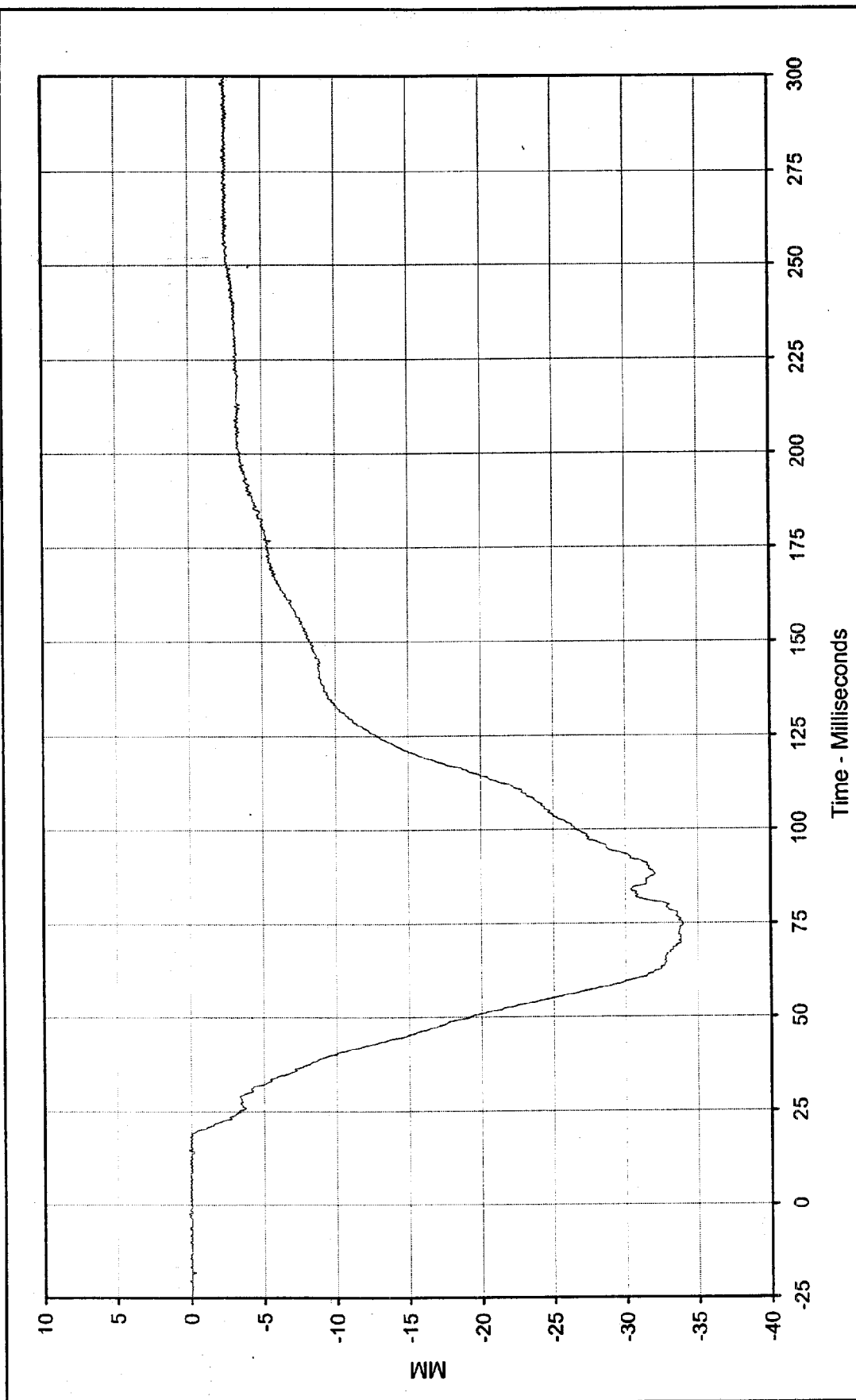




Curve Description: Driver Chest Resultant Redundant
 Maximum Value: 63.8 at 80.4 Milliseconds
 Minimum Value: 0.3 at 0.3 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: RES-016

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan



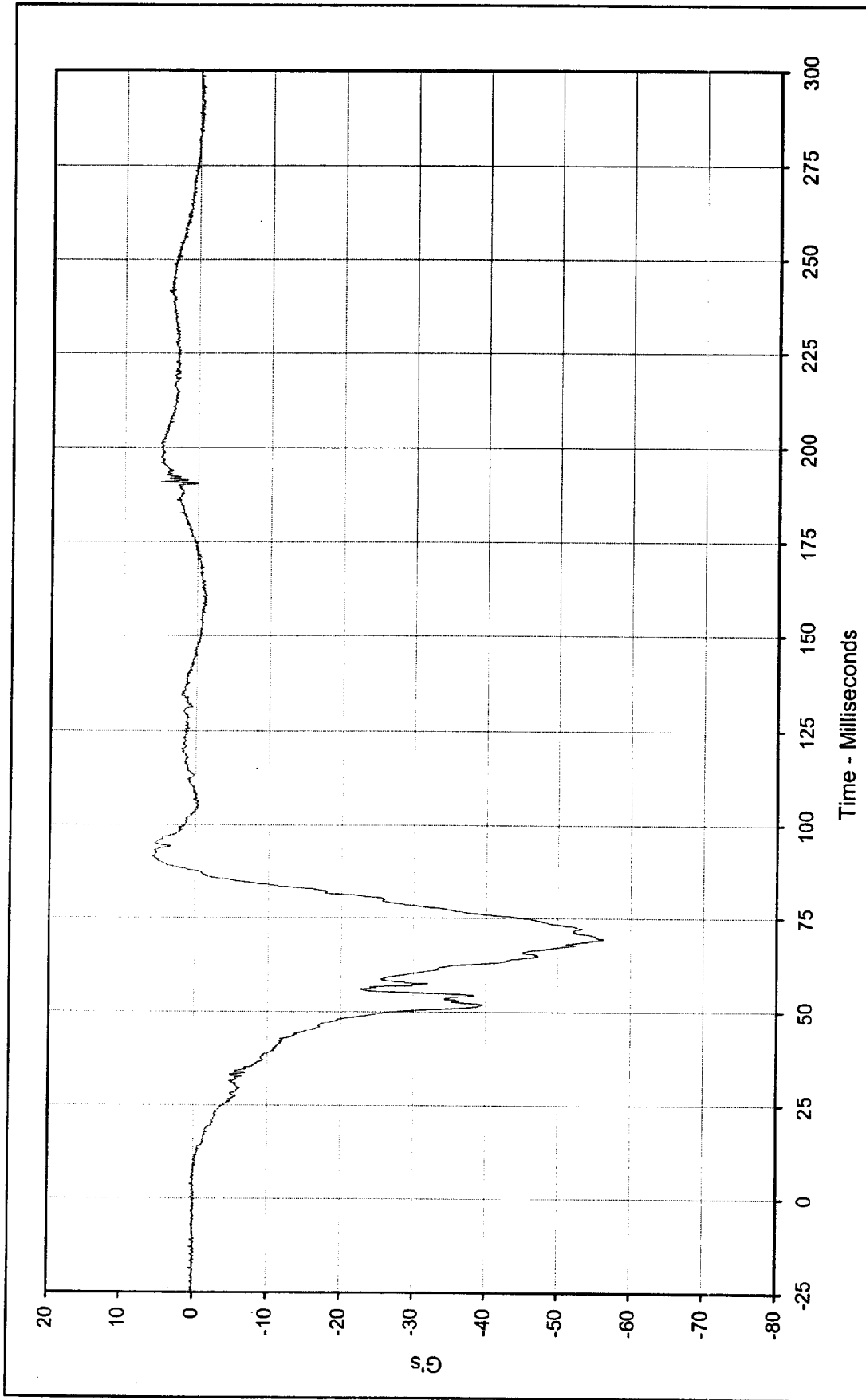


Curve Description: Driver Chest Displacement X
 Maximum Value: 0.2 at 14.6 Milliseconds
 Minimum Value: -34.0 at 74.6 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-019

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

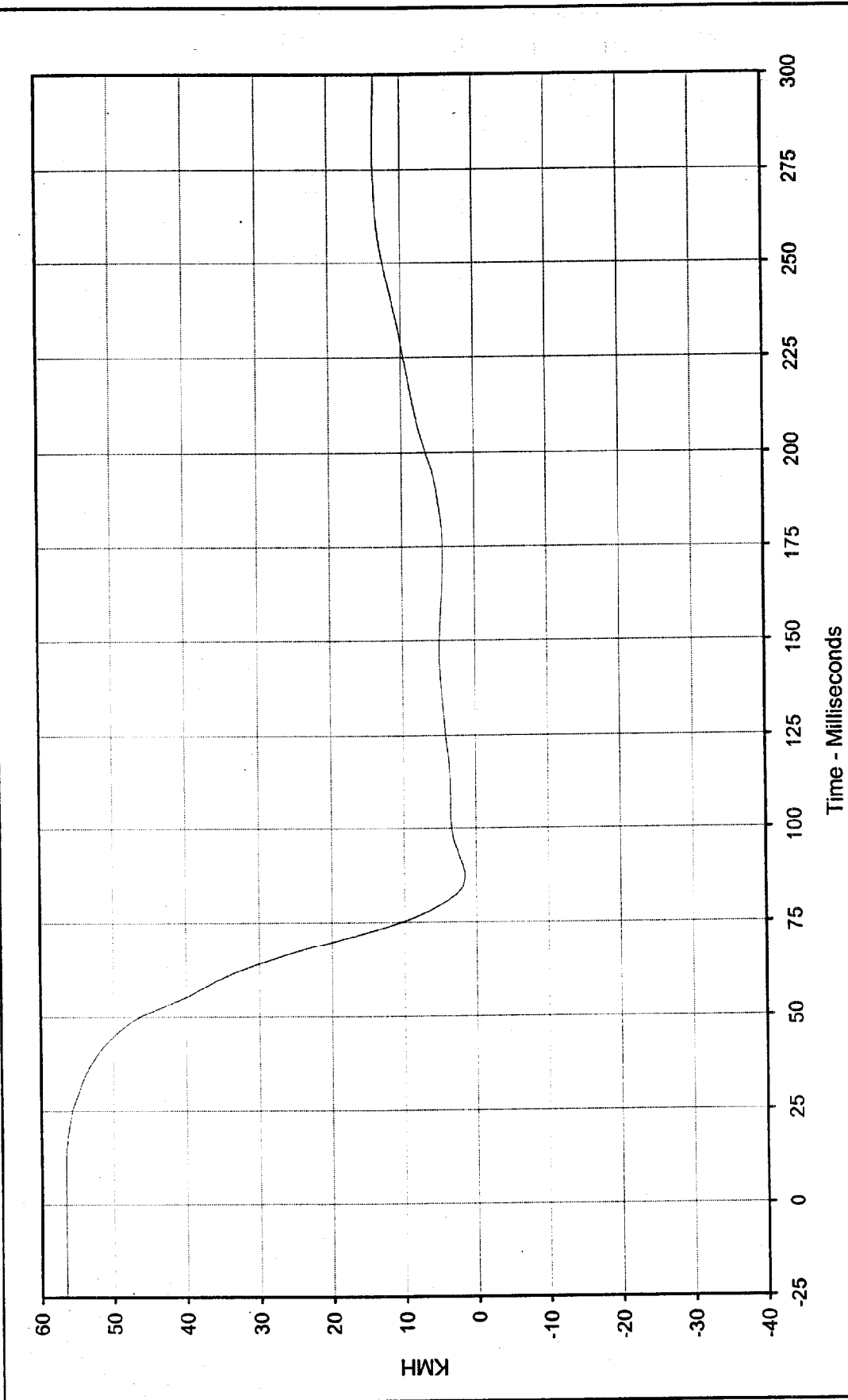
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





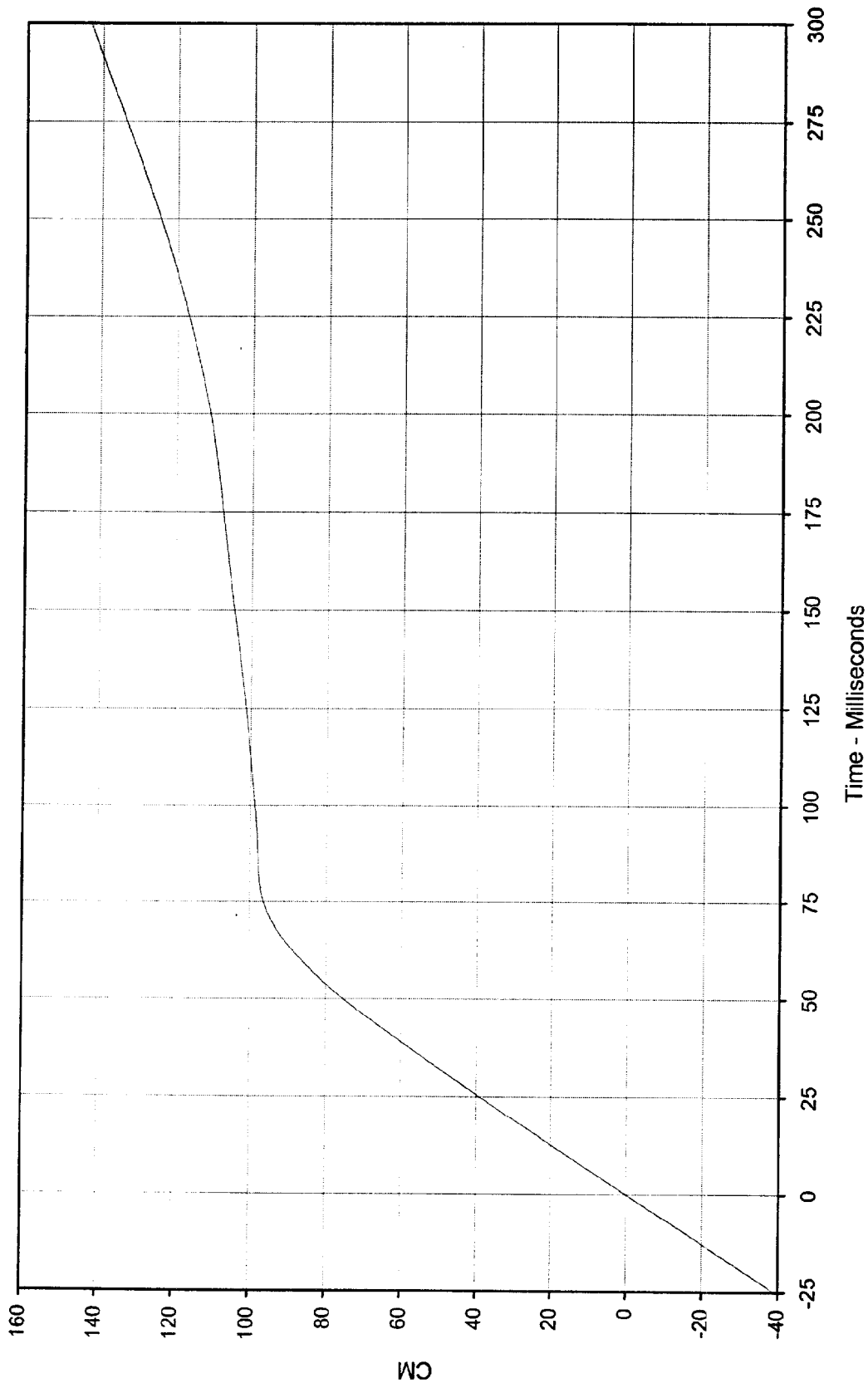
Curve Description:	Driver Pelvis X		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	5.9	at 91.5	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-56.3	at 69.1			
SAE Filter Class:	1000				
Date of Test:	5/18/99				
Curve Number:	FIL-020				





Curve Description:	Driver Pelvis X Velocity	Testing Program	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	56.7 at 7.4 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	1.6 at 87.5 Milliseconds			
SAE Filter Class:	180			
Date of Test:	5/18/99			
Curve Number:	IN1-020			





Curve Description:

Driver Pelvis X Displ.

Maximum Value:

143.2 at 299.9 Milliseconds

Minimum Value:

0.1 at 0.0 Milliseconds

SAE Filter Class:

180

Date of Test:

5/18/99

Curve Number:

IN2-020

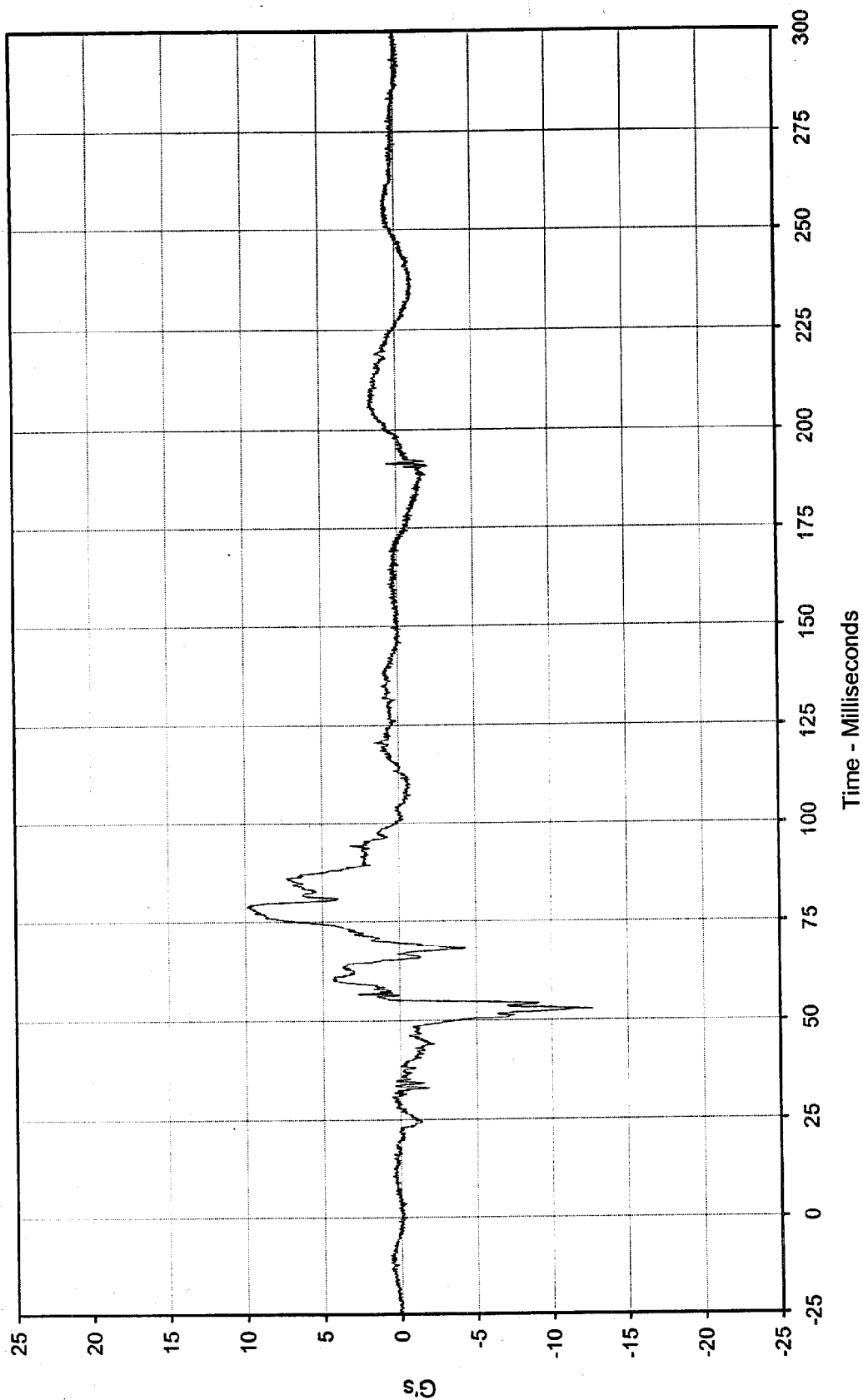
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle:

1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Pelvis Y

Maximum Value: 9.9 at 78.8 Milliseconds

Minimum Value: -12.8 at 52.7 Milliseconds

SAE Filter Class: 1000

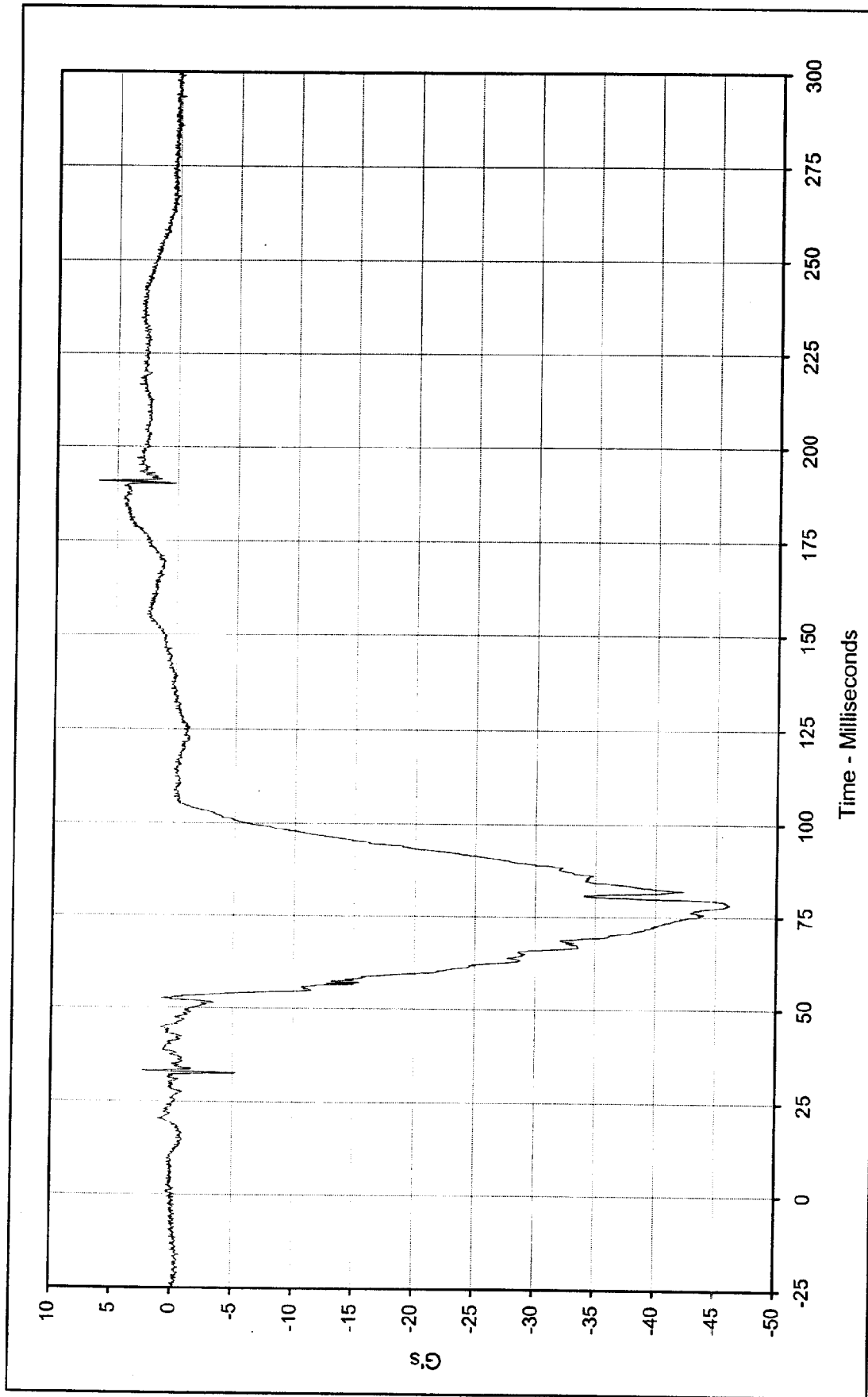
Date of Test: 5/18/99

Curve Number: FIL-021

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

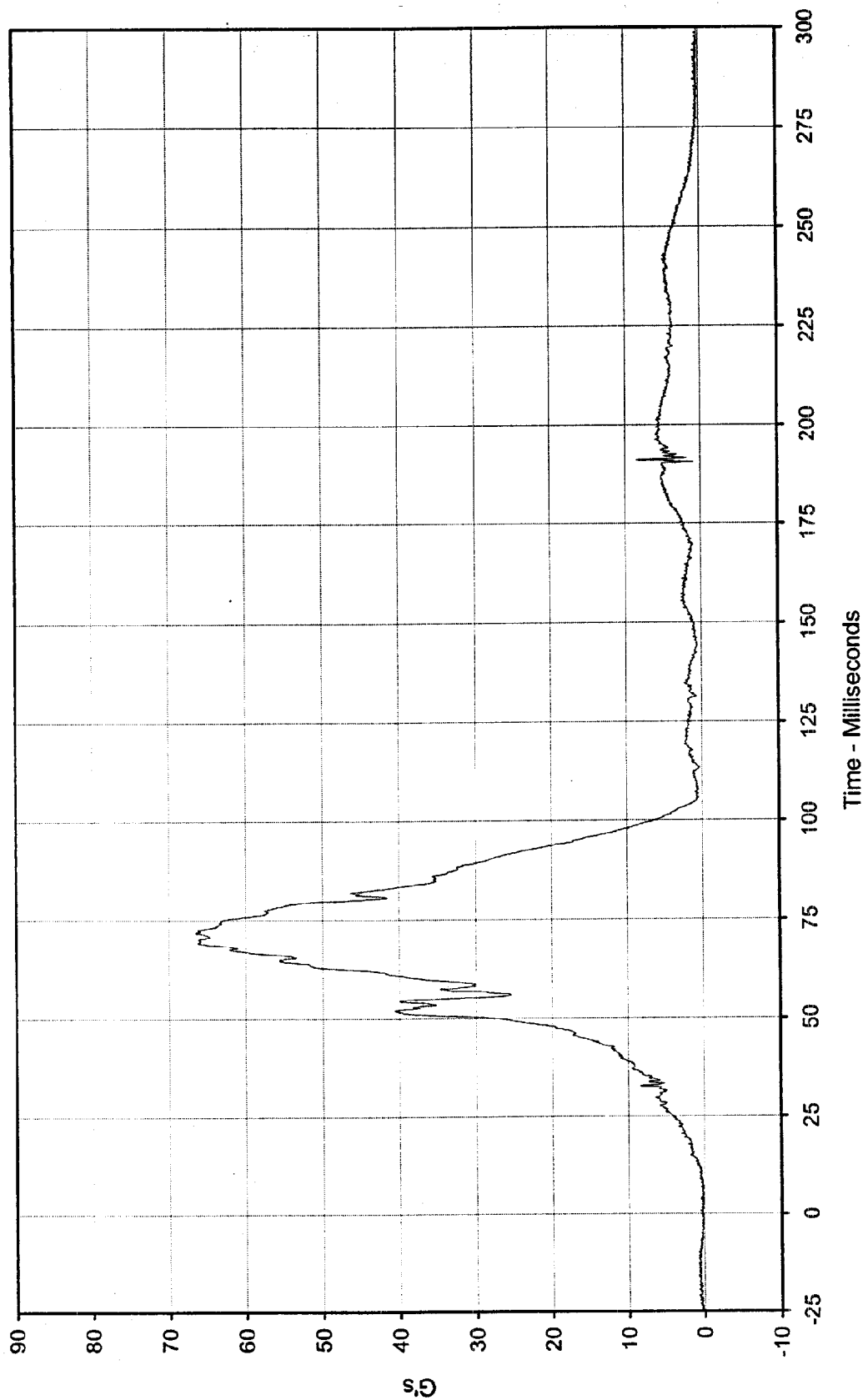




Curve Description: Driver Pelvis Z
 Maximum Value: 6.5 at 191.0 Milliseconds
 Minimum Value: -46.2 at 78.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-022

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Pelvis Resultant

Maximum Value: 66.5 at 71.8 Milliseconds

Minimum Value: 0.0 at 4.0 Milliseconds

SAE Filter Class: 1000

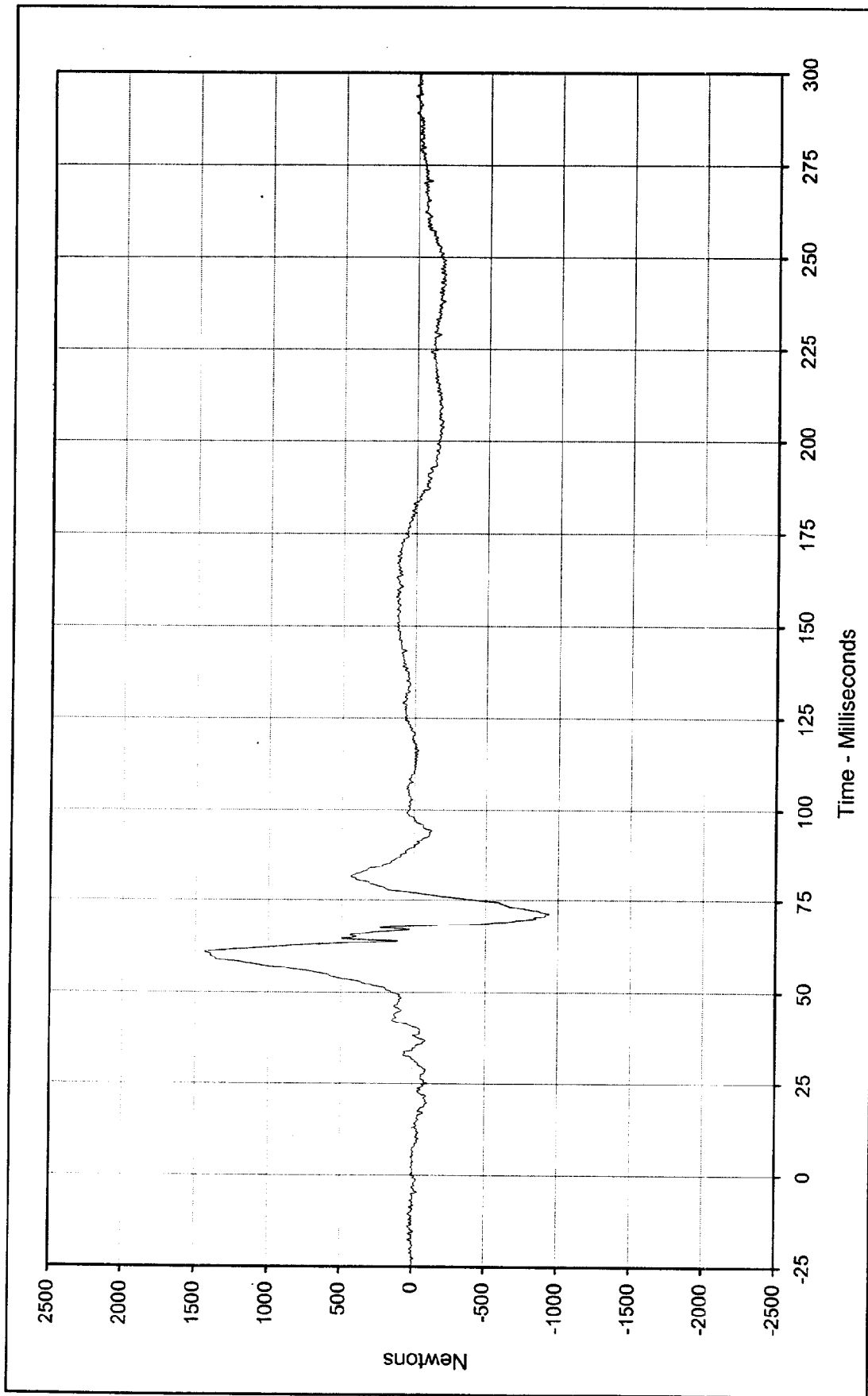
Date of Test: 5/18/99

Curve Number: RES-020

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

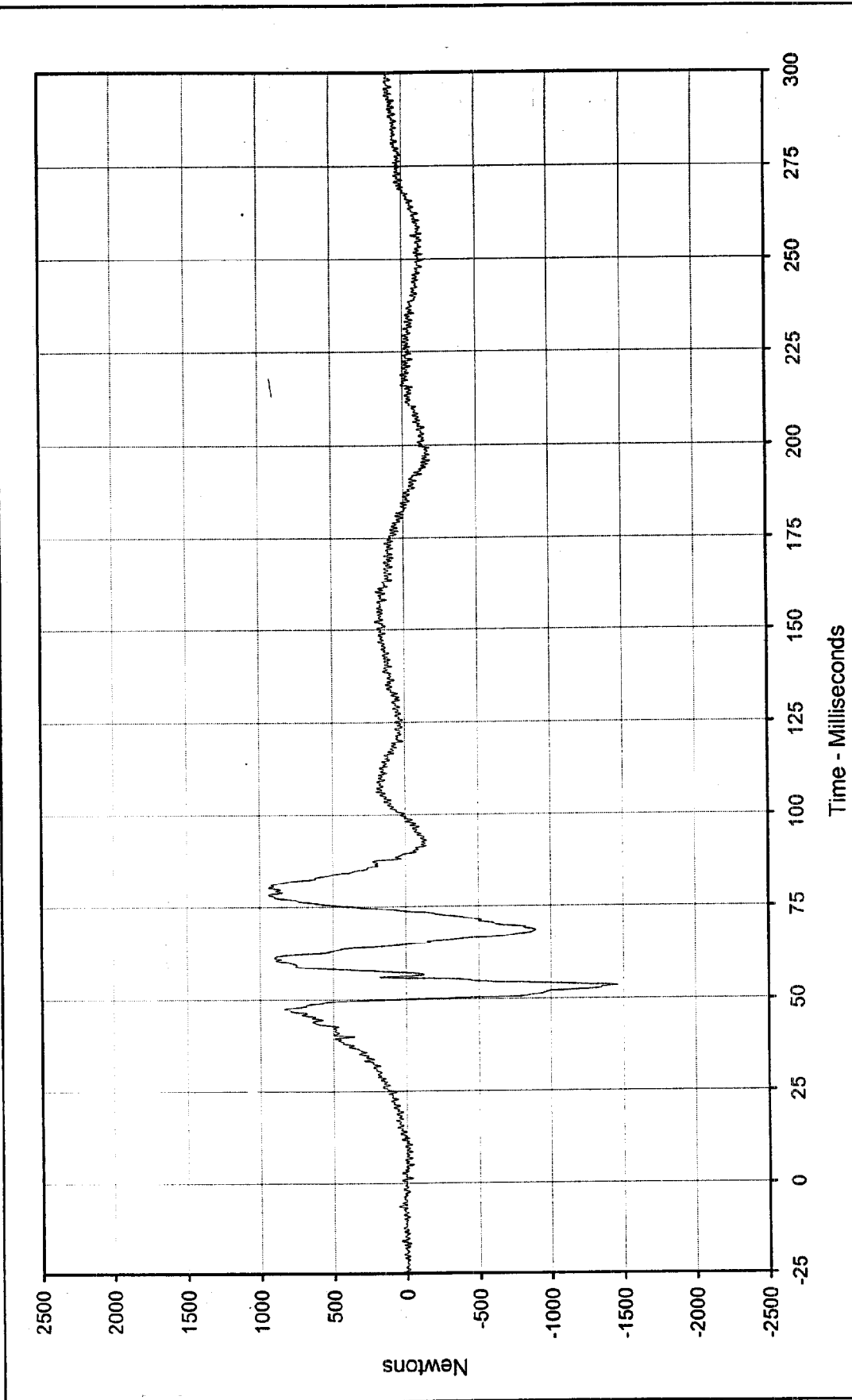
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Driver Left Femur Force	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	1435.5 at 60.8 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-941.8 at 71.4 Milliseconds			
SAE Filter Class:	600			
Date of Test:	5/18/99			
Curve Number:	FIL-023			

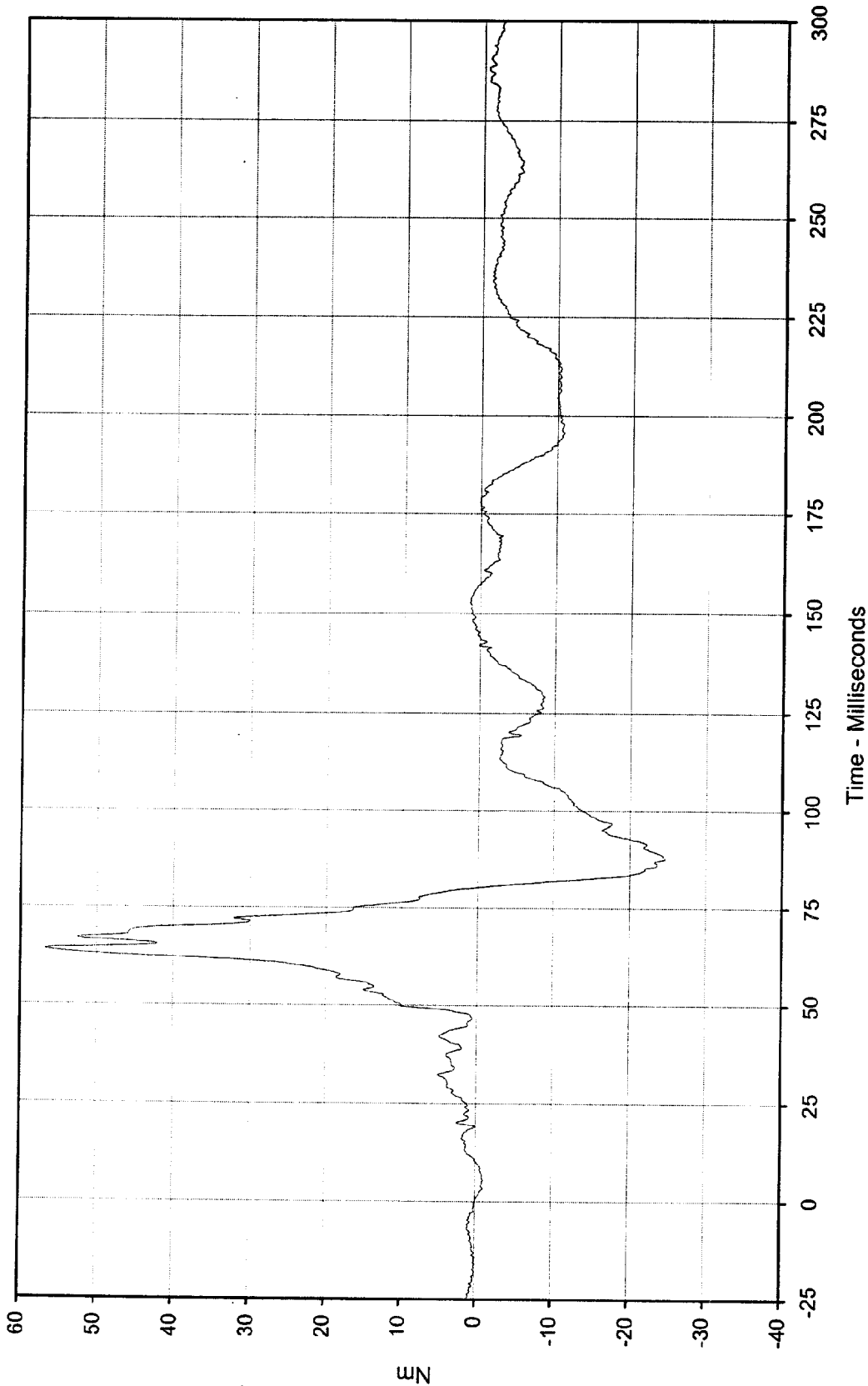




Curve Description: Driver Right Femur Force
 Maximum Value: 939.0 at 78.2 Milliseconds
 Minimum Value: -1457.1 at 53.5 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL -024

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Left Upper Tibia Moment X

Maximum Value: 56.8 at 64.1 Milliseconds

Minimum Value: -24.6 at 87.6 Milliseconds

SAE Filter Class: 600

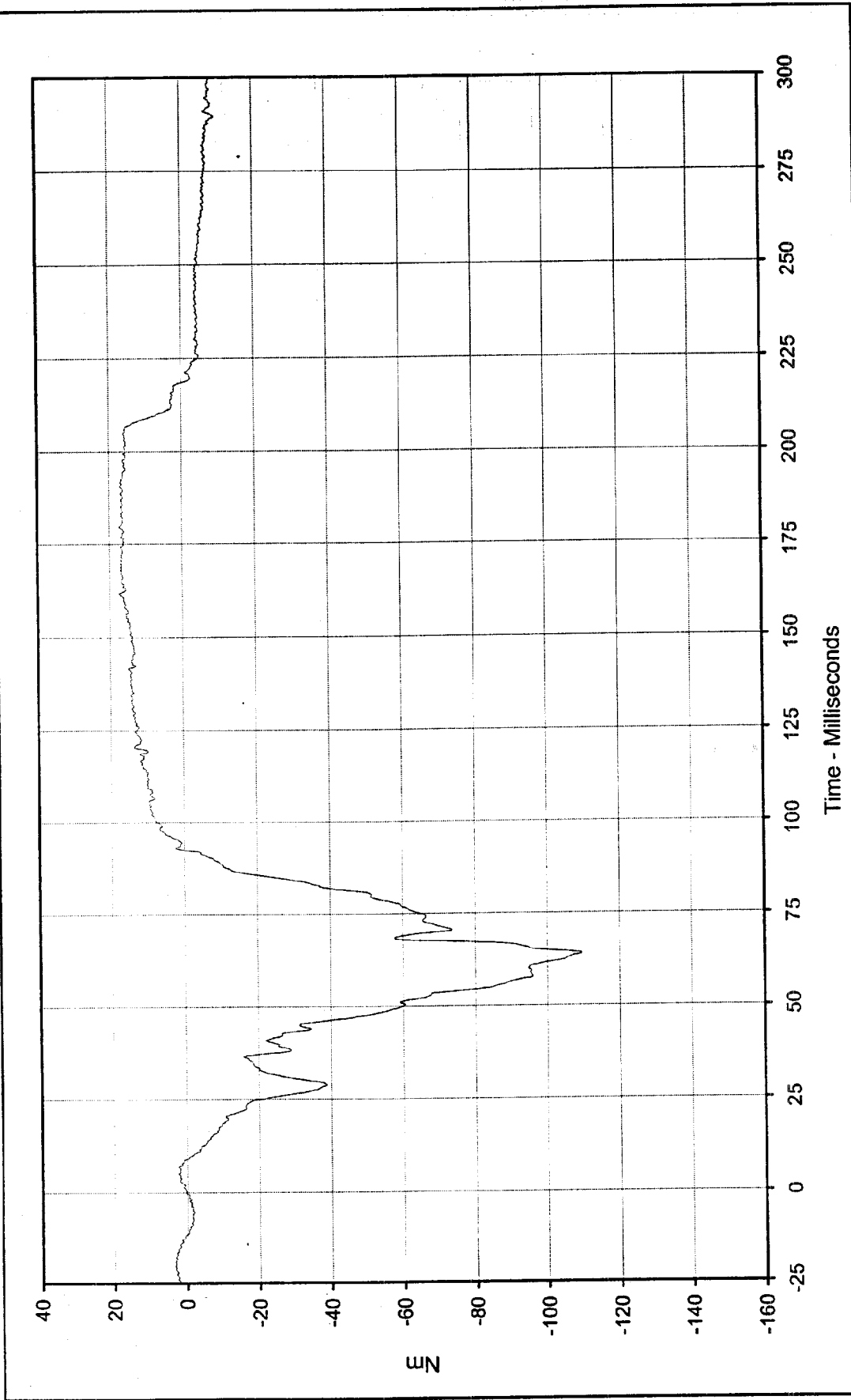
Date of Test: 5/18/99

Curve Number: FIL-025

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan



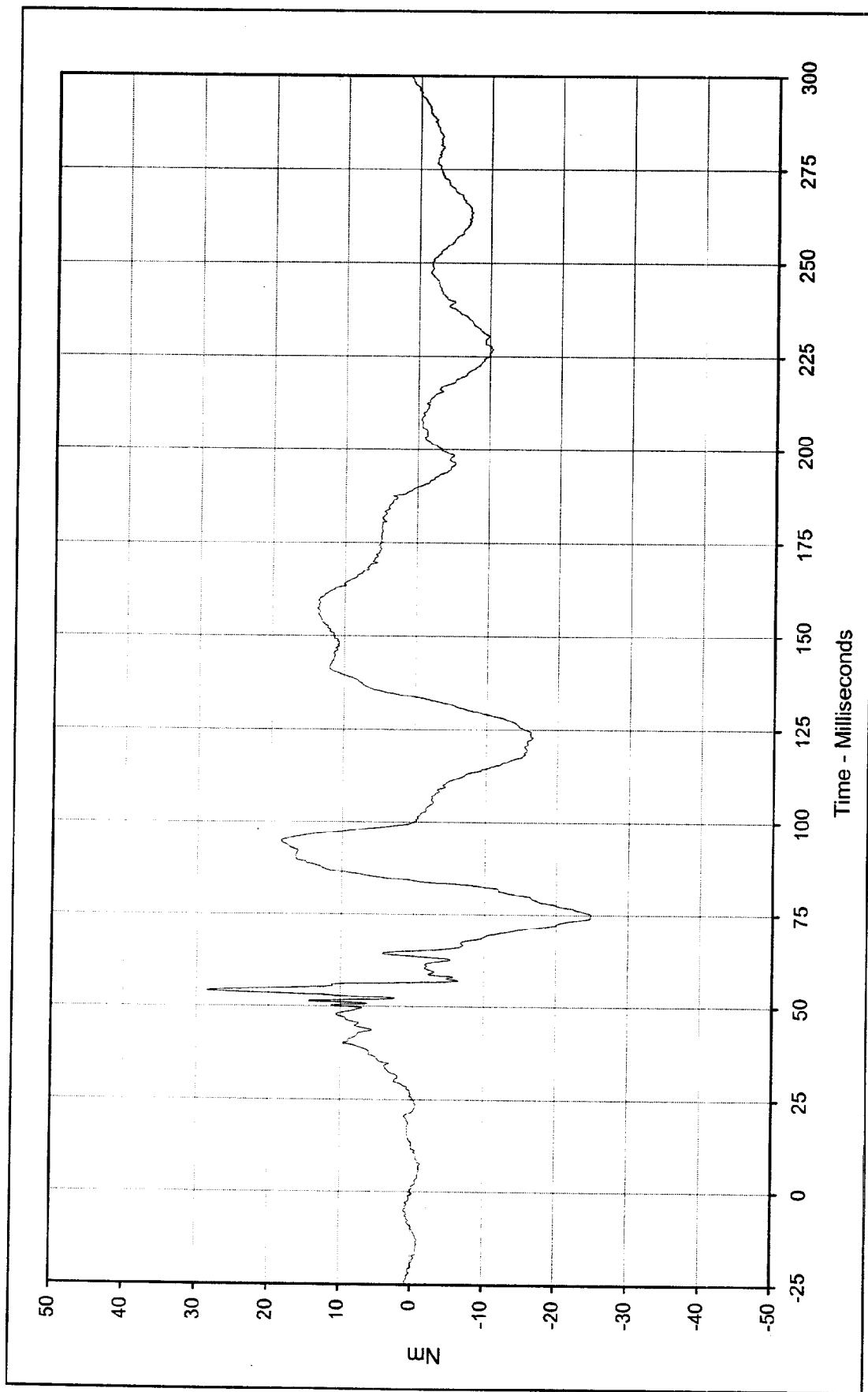


Curve Description: Driver Left Upper Tibia Moment Y
 Maximum Value: 17.4 at 161.5 Milliseconds
 Minimum Value: -109.8 at 64.0 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-026

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

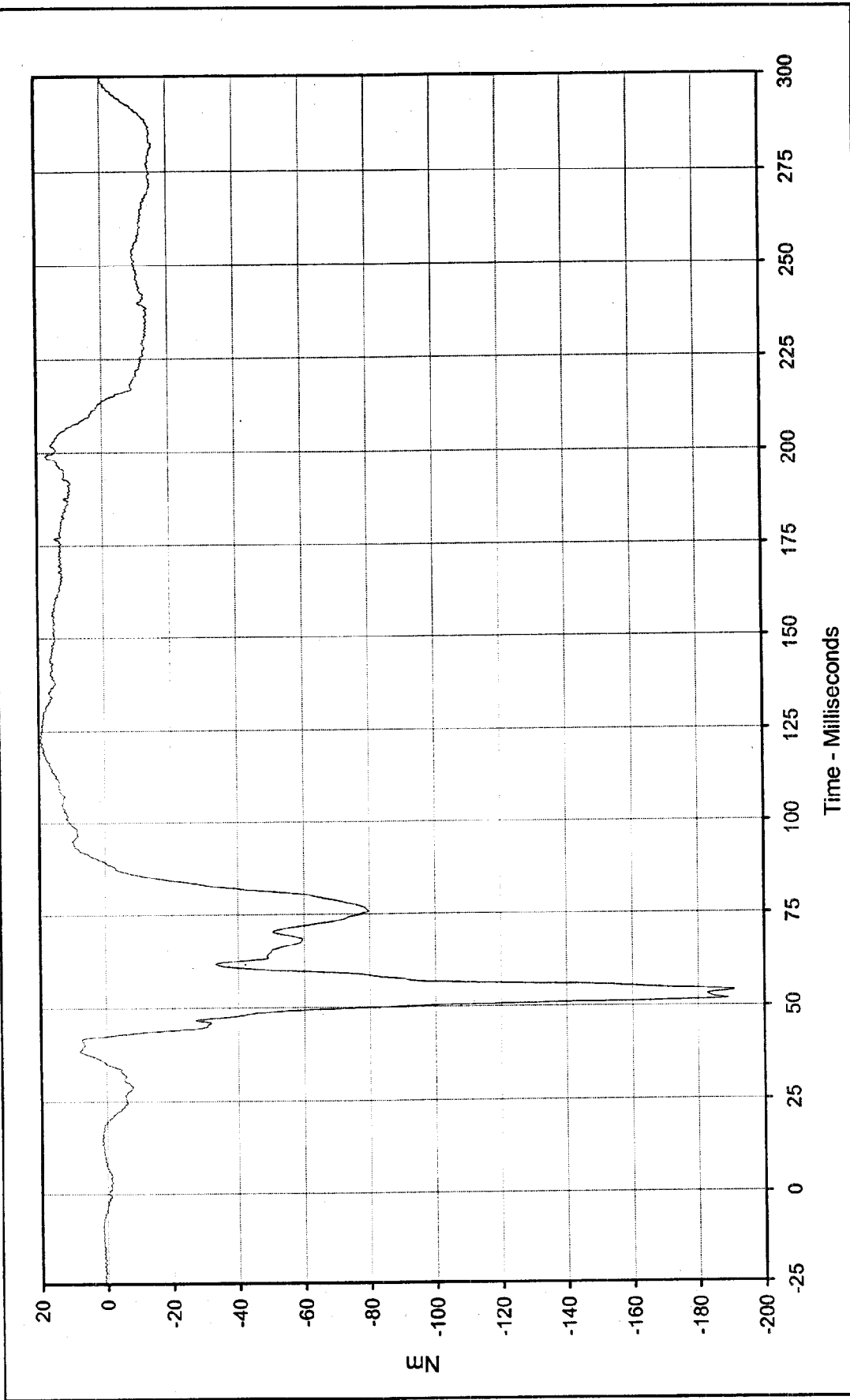




Curve Description: Driver Right Upper Tibia Moment X
 Maximum Value: 28.5 at 54.0 Milliseconds
 Minimum Value: -24.8 at 74.3 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-027

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Right Upper Tibia Moment Y

Test Program: 1999 NHTSA 35 mph NCAP

No.: MX5304

Maximum Value: 19.5 at 122.9 Milliseconds

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

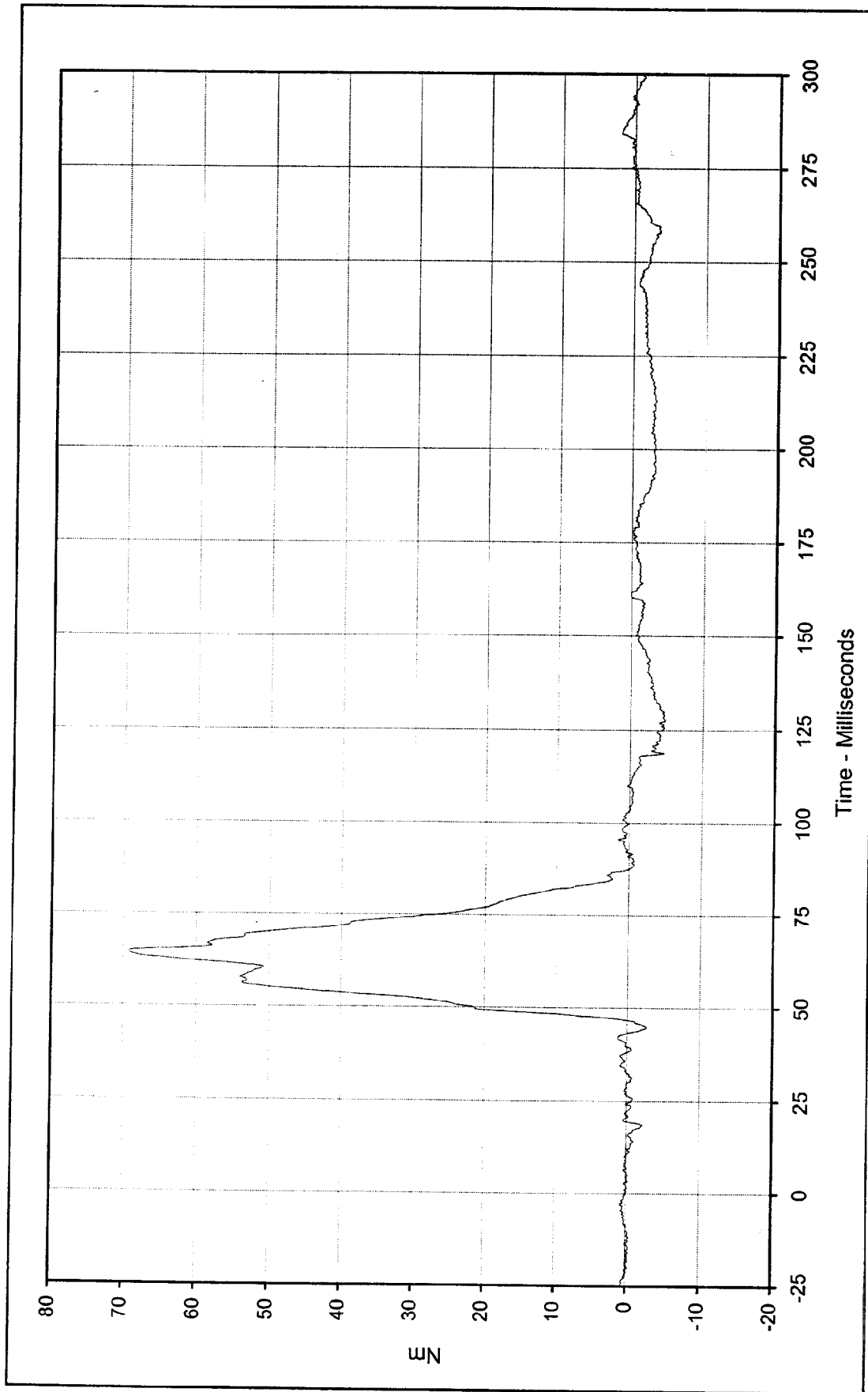
Minimum Value: -191.0 at 54.1 Milliseconds

SAE Filter Class: 600

Date of Test: 5/18/99

Curve Number: FIL-028



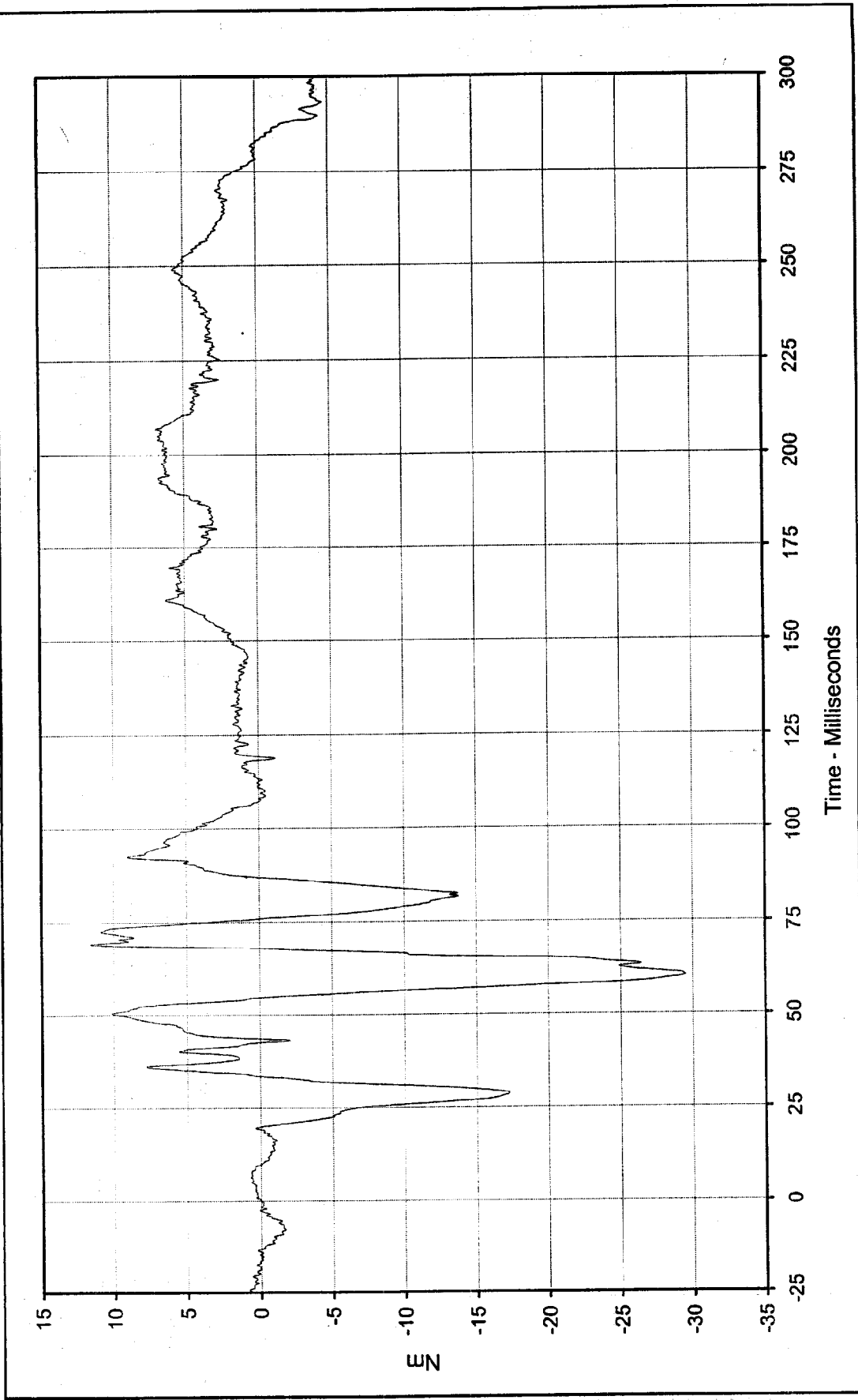


Curve Description: Driver Left Lower Tibia Moment X
 Maximum Value: 69.2 at 64.5 Milliseconds
 Minimum Value: -4.9 at 127.6 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-029

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

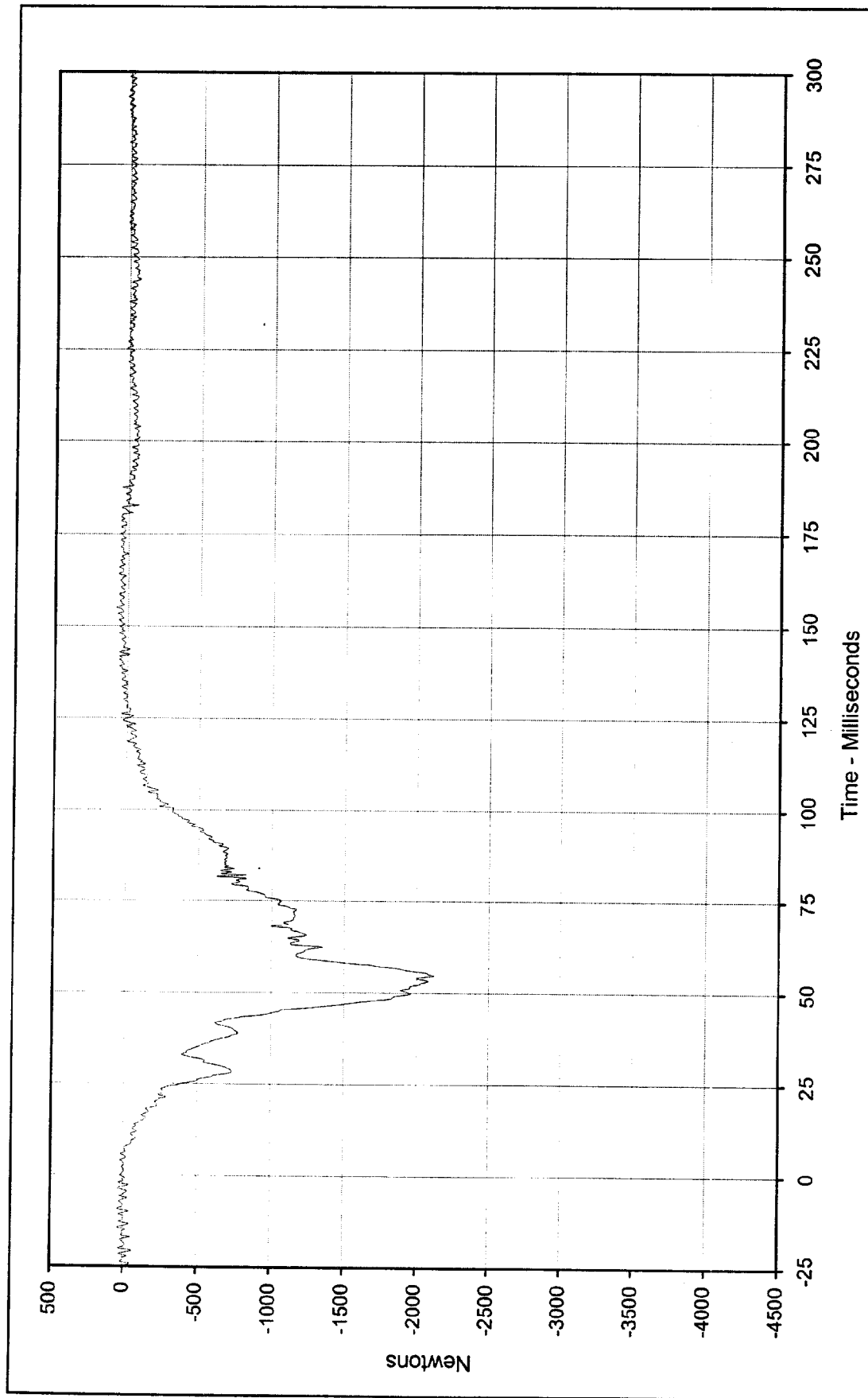




Curve Description: Driver Left Lower Tibia Moment Y
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

Maximum Value: 11.6 at 69.2 Milliseconds
 Minimum Value: -29.5 at 60.1 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-030





Curve Description: Driver Left Lower Tibia Force Z

Maximum Value: 78.1 at 155.1 Milliseconds

Minimum Value: -2125.1 at 54.7 Milliseconds

SAE Filter Class: 600

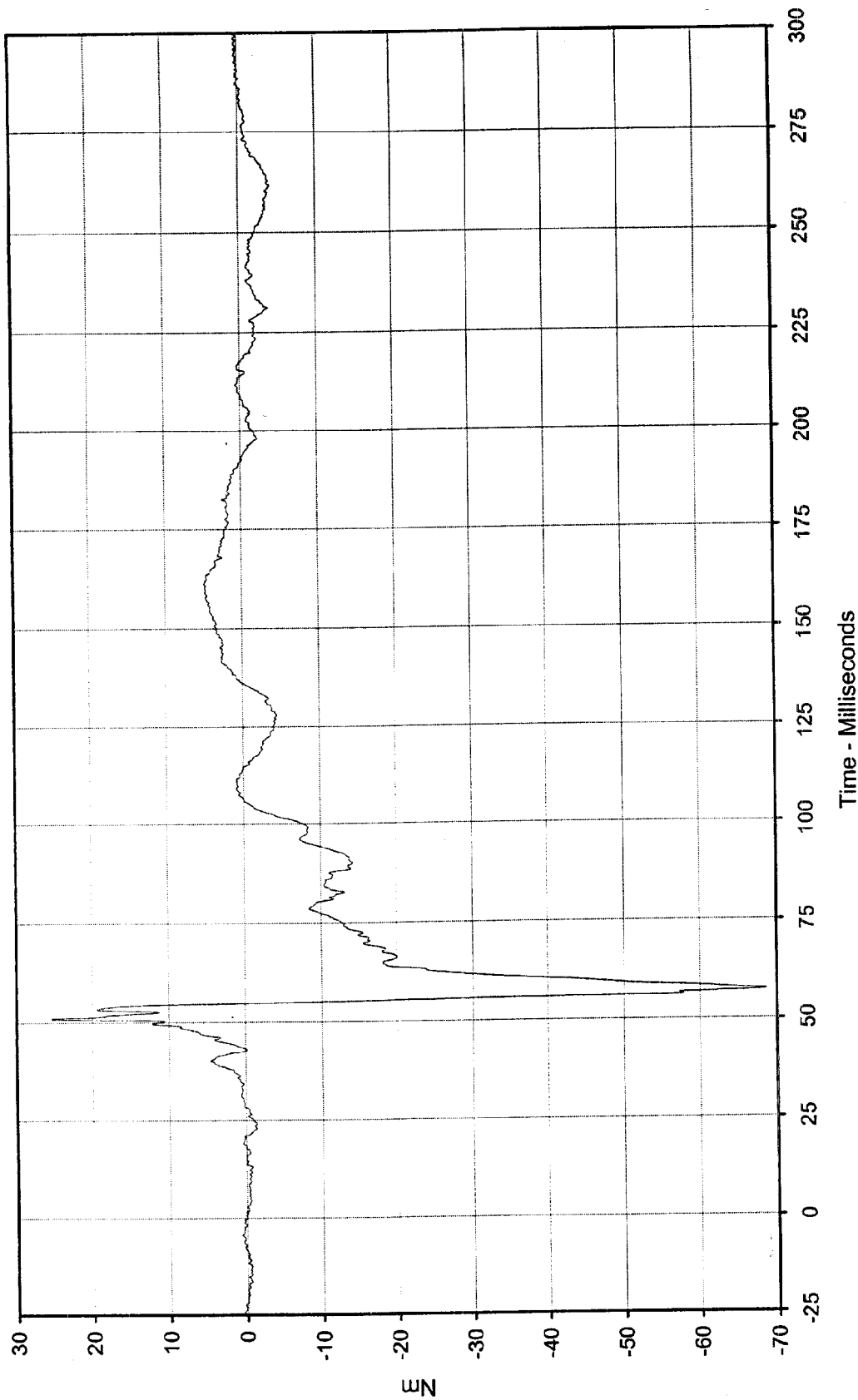
Date of Test: 5/18/99

Curve Number: FIL-031

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

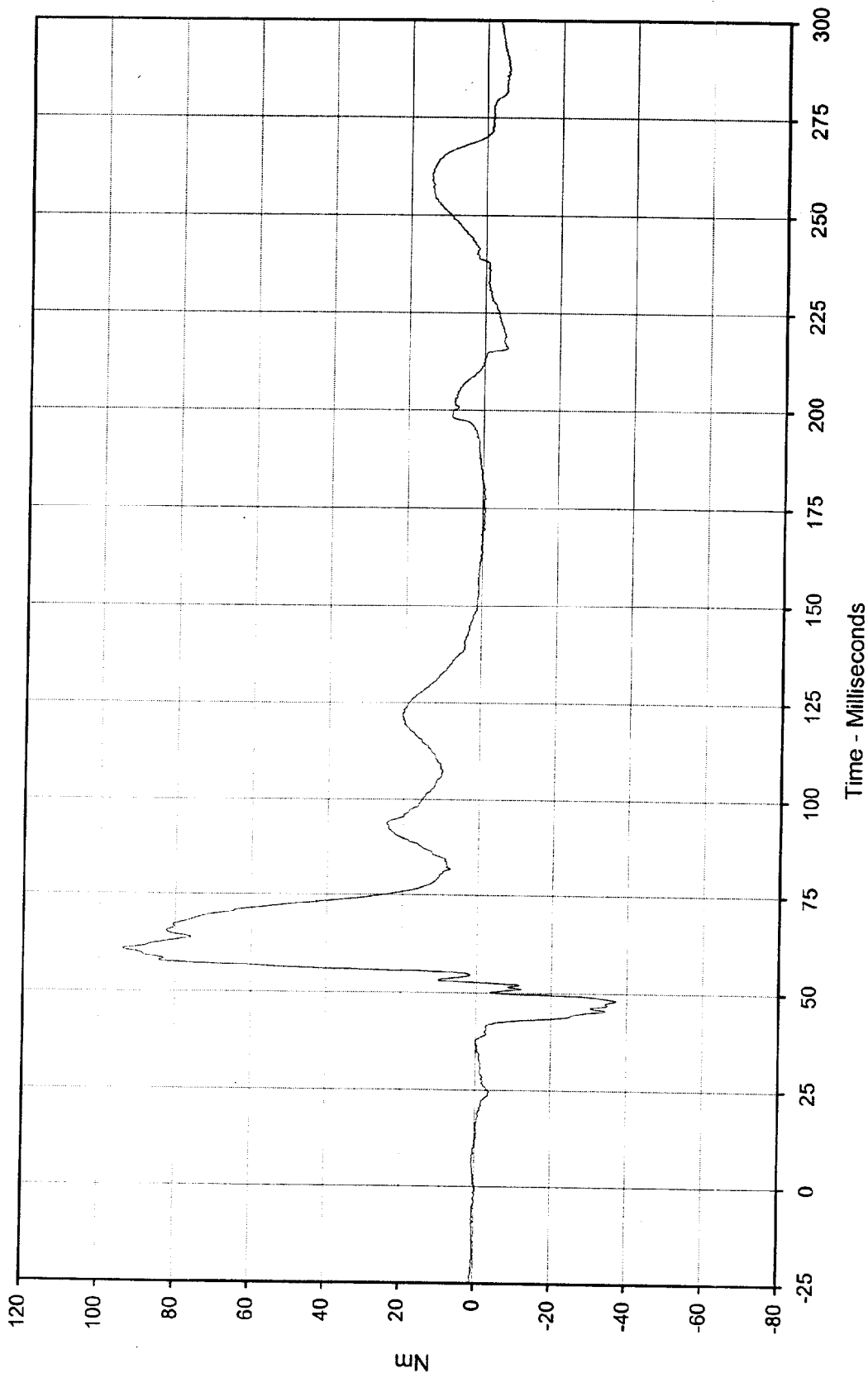




Curve Description: Driver Right Lower Tibia Moment X
 Maximum Value: 25.4 at 51.0 Milliseconds
 Minimum Value: -68.7 at 57.4 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-032

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Driver Right Lower Tibia Moment Y

Maximum Value: 93.8 at 60.6 Milliseconds

Minimum Value: -37.2 at 48.1 Milliseconds

SAE Filter Class: 600

Date of Test: 5/18/99

Curve Number: FIL-033

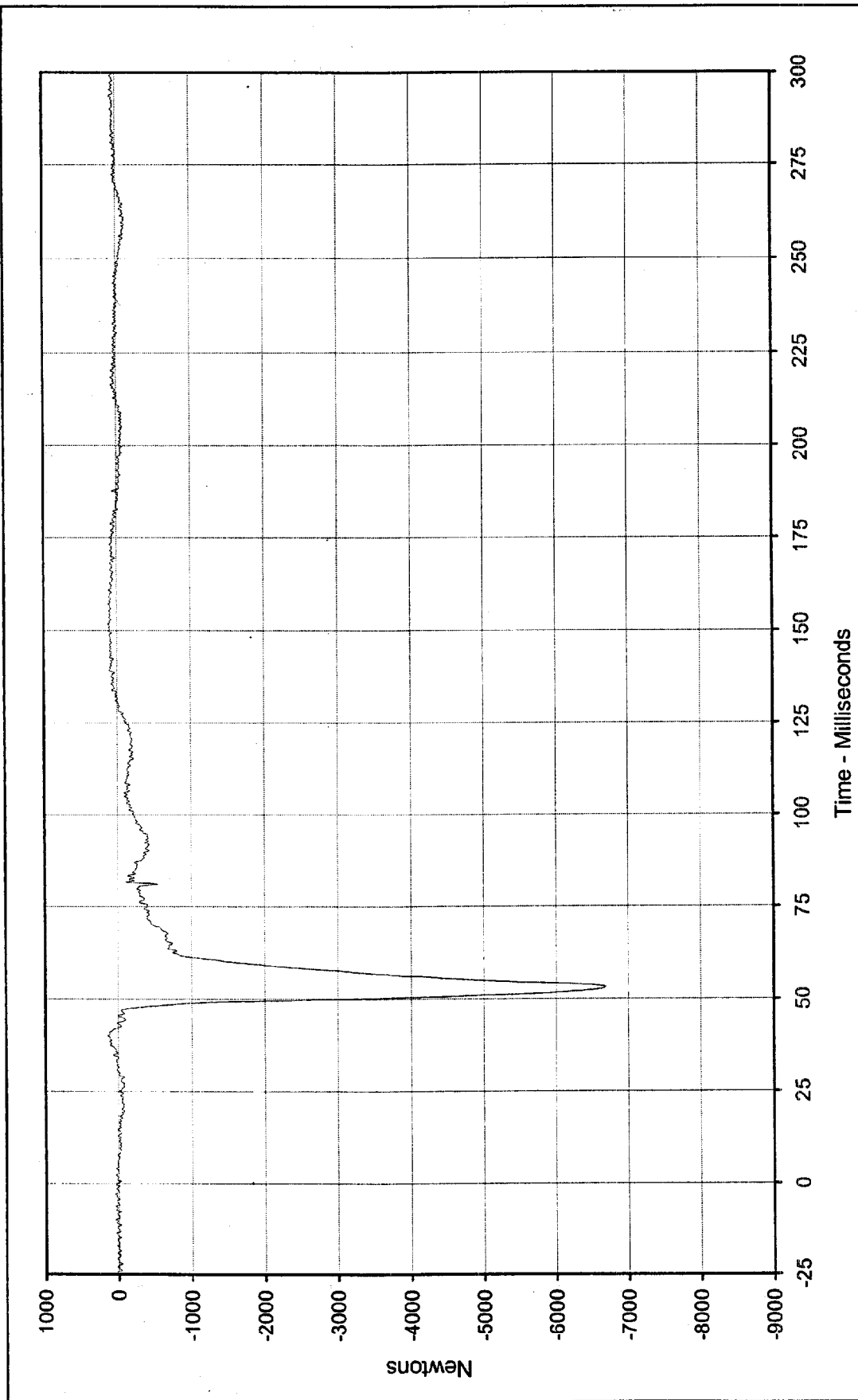
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle:

1999 Acura 3.5 RL 4 Door Sedan

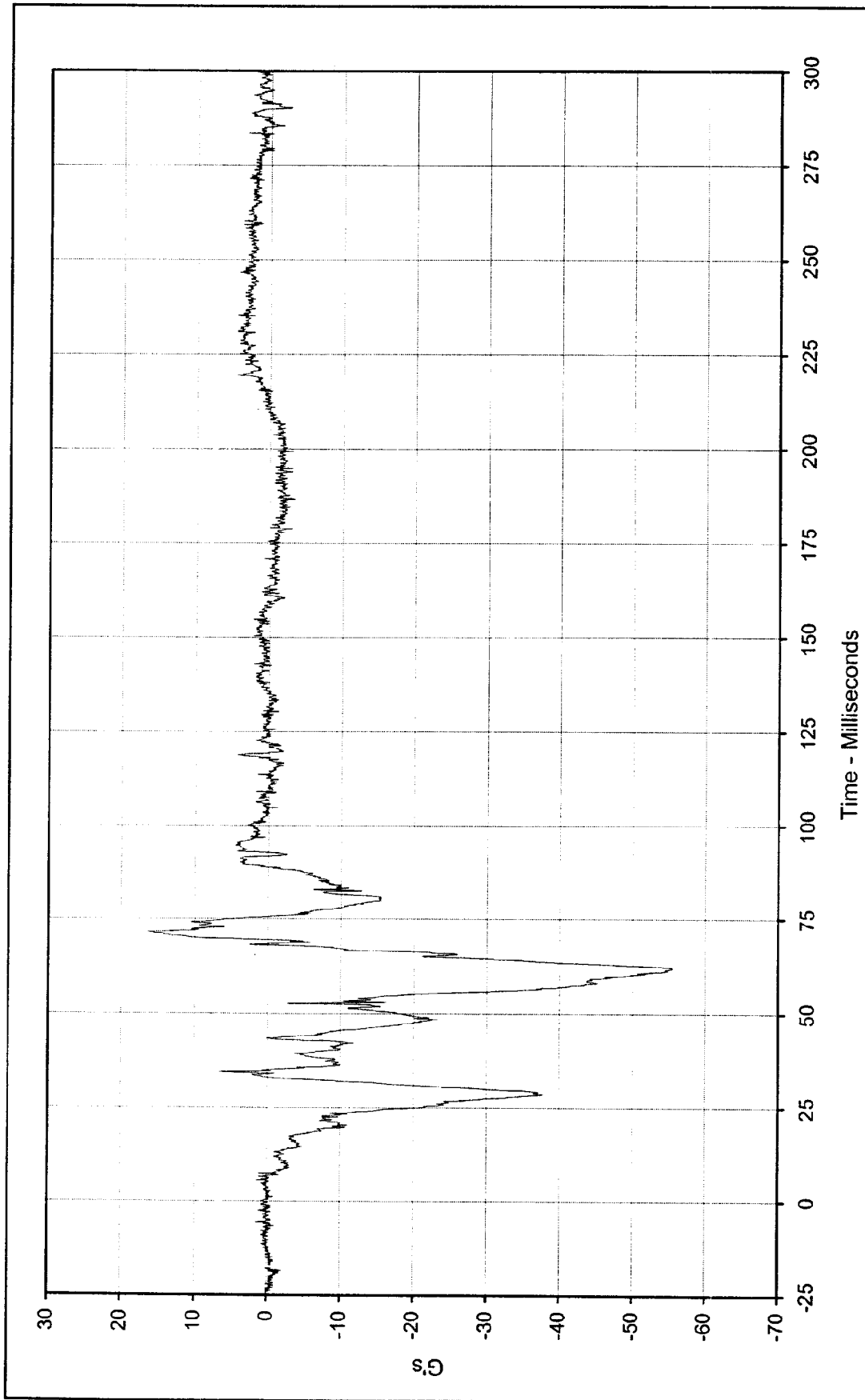




Curve Description: Driver Right Lower Tibia Force Z Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
Maximum Value: 146.5 at 40.0 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan
Minimum Value: -6690.8 at 53.2 Milliseconds



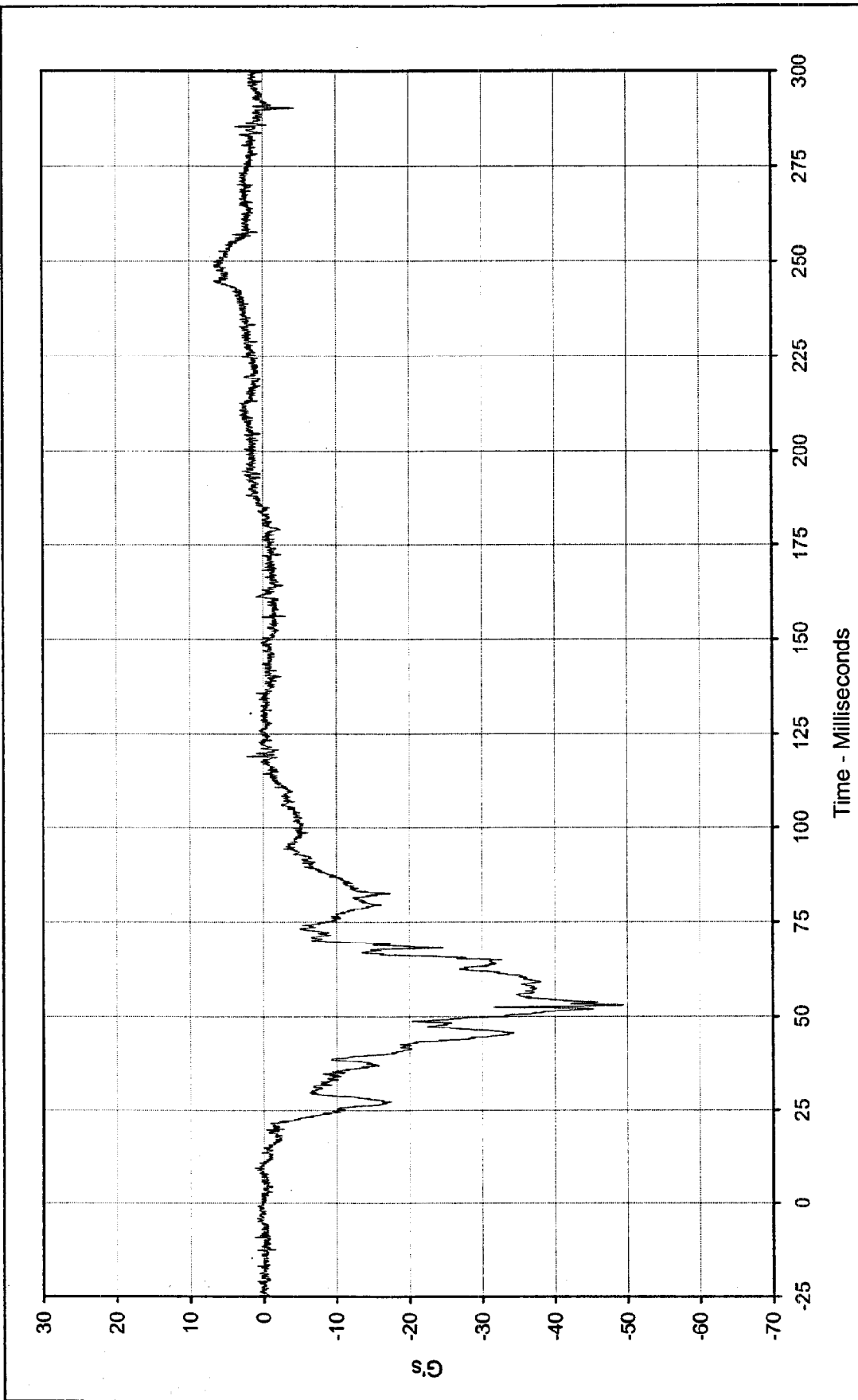
SAE Filter Class: 600
Date of Test: 5/18/99
Curve Number: FIL-034



Curve Description:	Driver Left Foot Aft X			Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	16.4	at	71.3	Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan
Minimum Value:	-55.5	at	61.8	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	5/18/99					
Curve Number:	FIL-035					



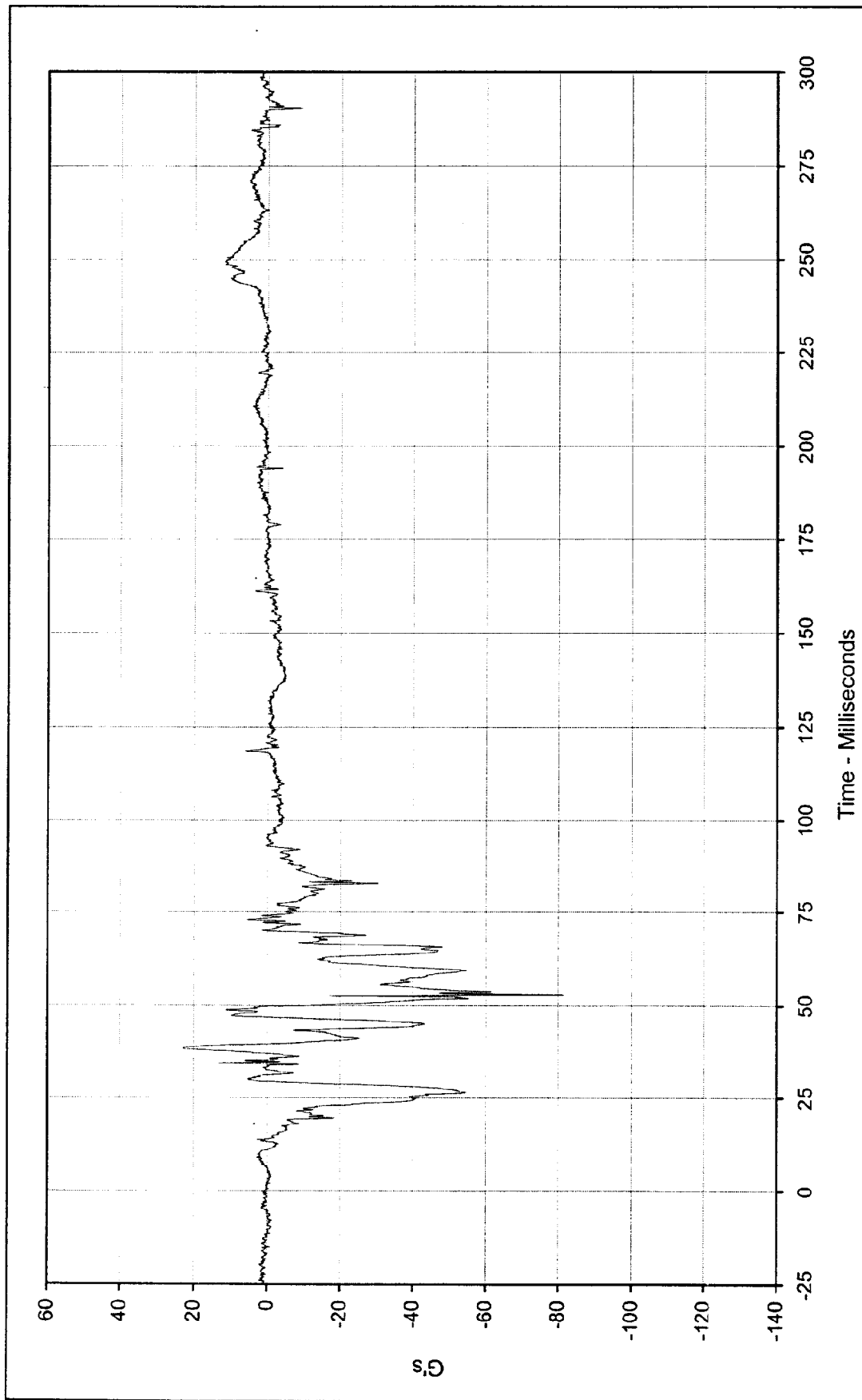




Curve Description: Driver Left Foot Aft Z
 Maximum Value: 6.6 at 244.8 Milliseconds
 Minimum Value: -49.4 at 53.0 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-036

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

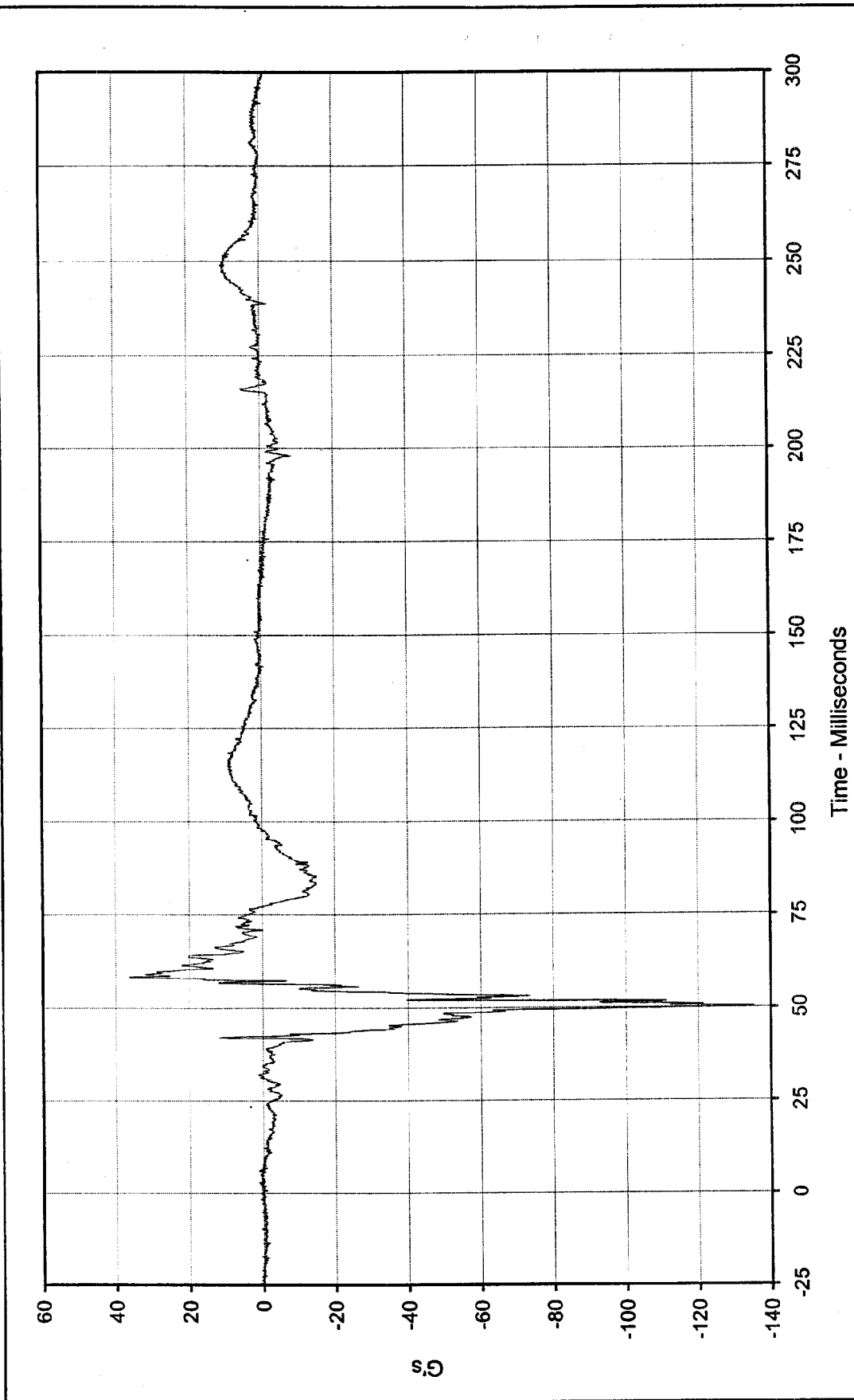




Curve Description: Driver Left Foot Fore Z
 Maximum Value: 23.0 at 38.3 Milliseconds
 Minimum Value: -81.3 at 52.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-037

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

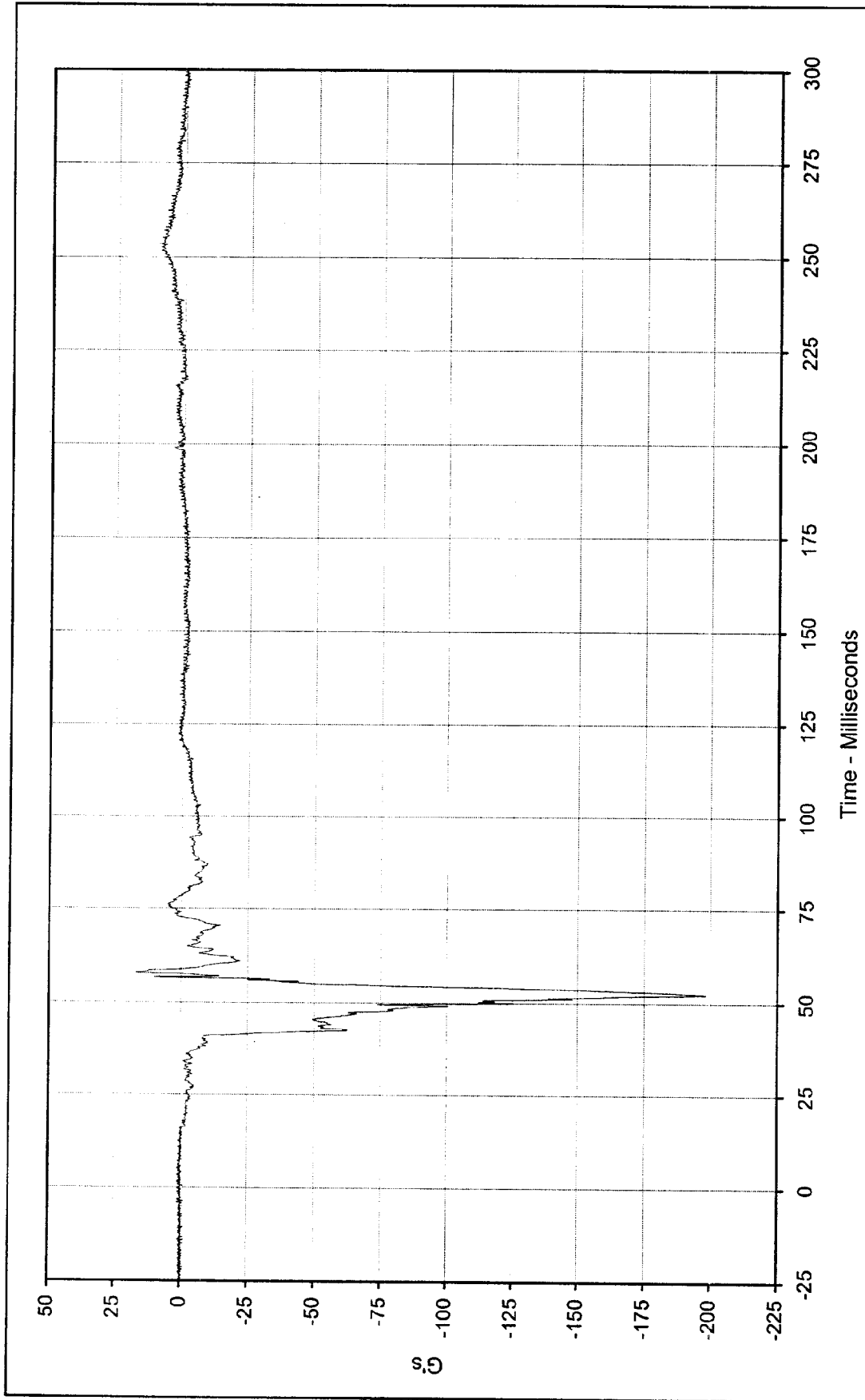




Curve Description: Driver Right Foot Aft X
 Maximum Value: 36.4 at 58.3 Milliseconds
 Minimum Value: -135.4 at 50.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-038

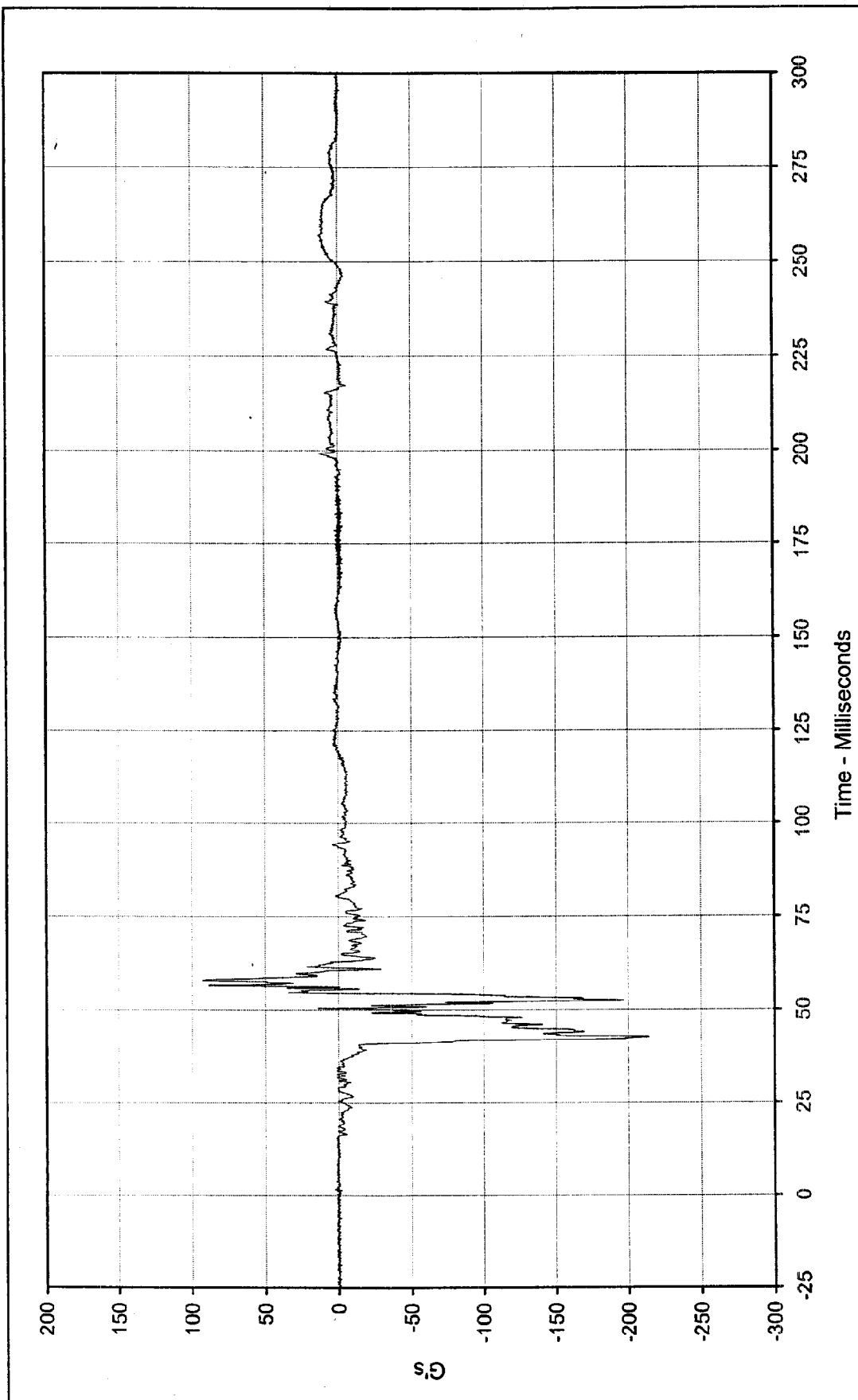
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Driver Right Foot Aft Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	16.8 at 57.8 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-198.4 at 52.4 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	5/18/99			
Curve Number:	FIL-039			

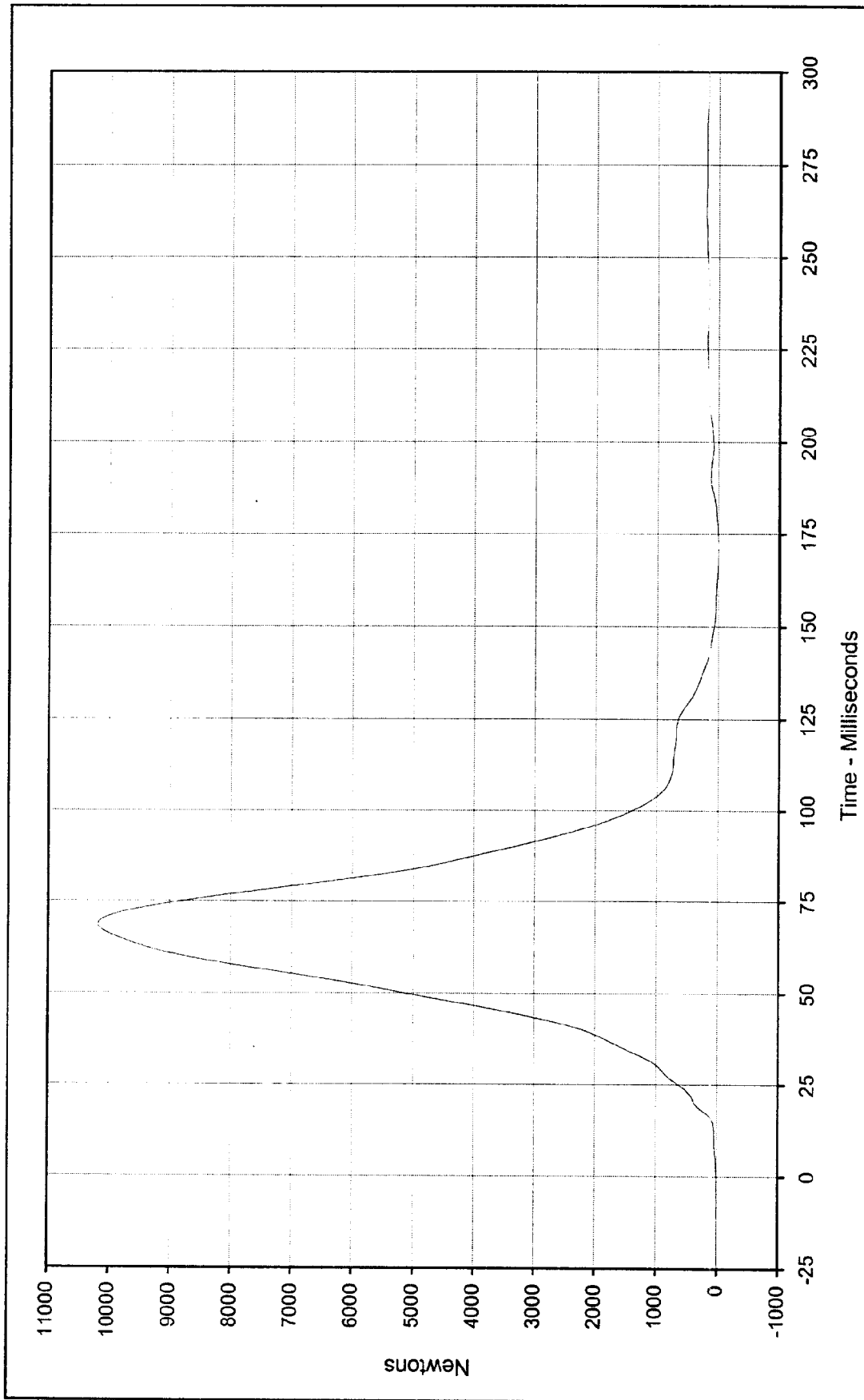




Curve Description: Driver Right Foot Fore Z
 Maximum Value: 92.3 at 58.0 Milliseconds
 Minimum Value: -214.6 at 42.7 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-040

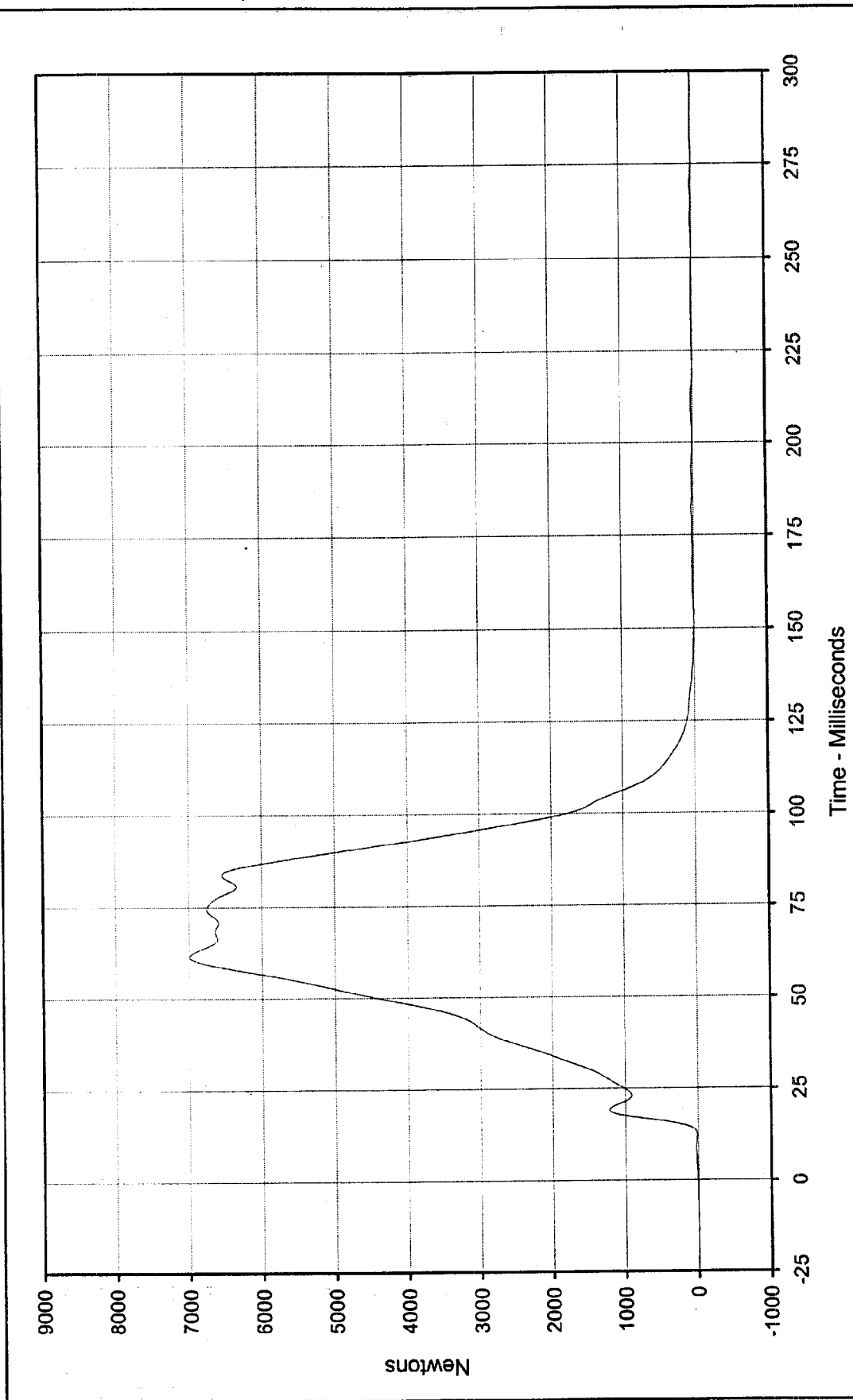
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Driver Lap Belt Force	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	10180.3 at 68.4 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-0.3 at 171.8 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-041			





Curve Description: Driver Shoulder Belt Force

Maximum Value: 6987.1 at 61.5 Milliseconds

Minimum Value: -3.6 at 153.0 Milliseconds

SAE Filter Class: 60

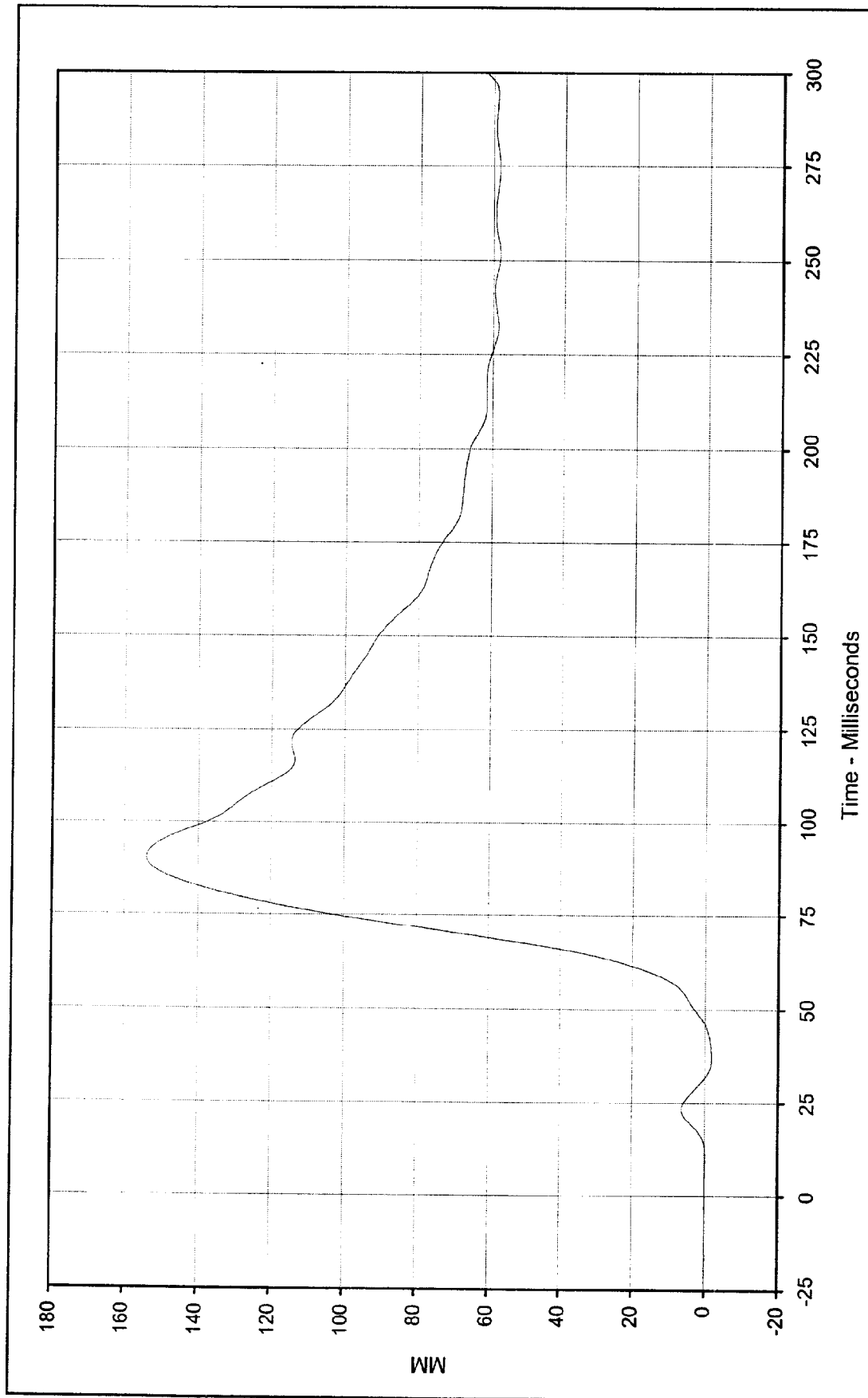
Date of Test: 5/18/99

Curve Number: FIL-042

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

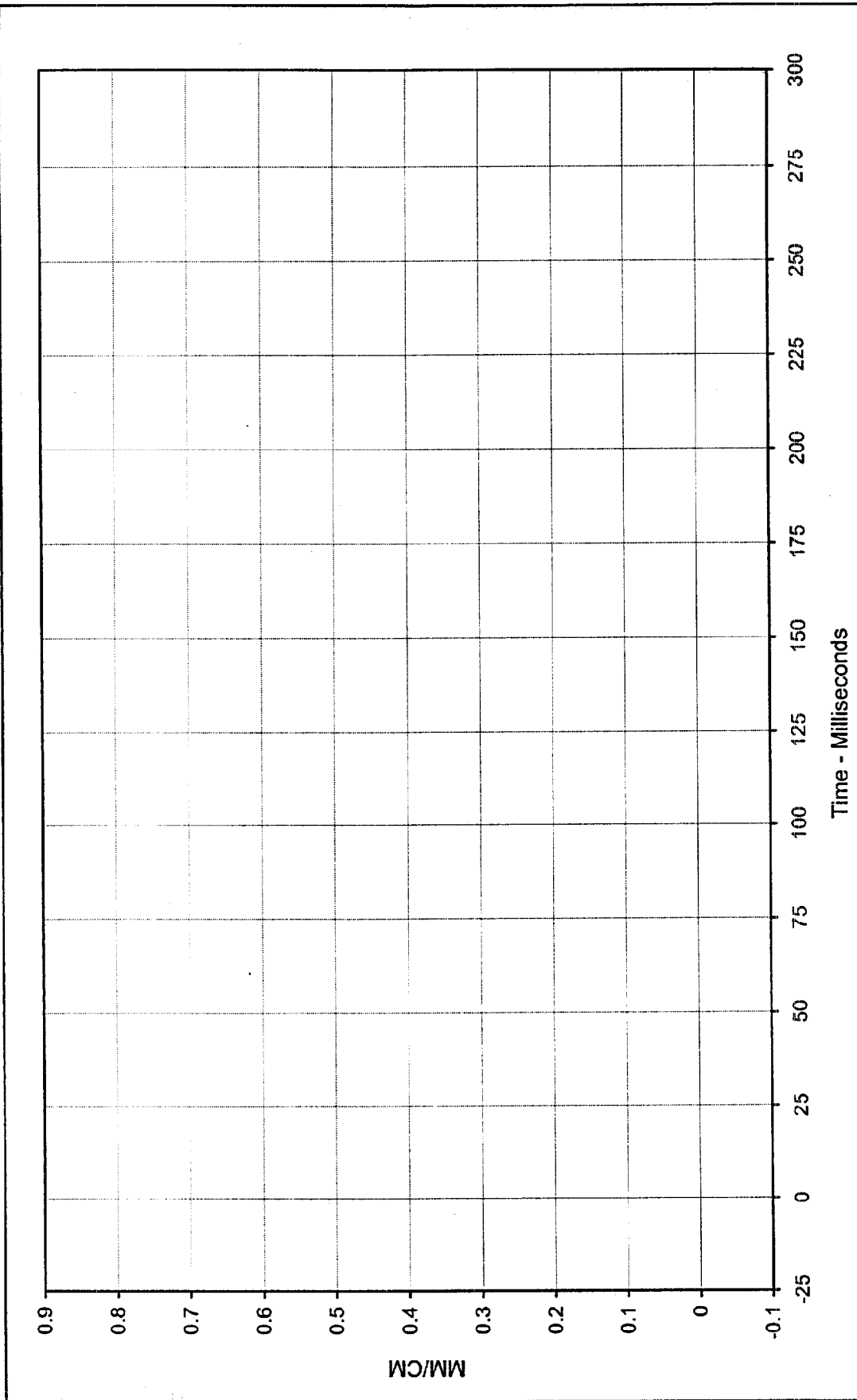
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Driver Shoulder Belt Pullout	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	154.0 at 90.3 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1.8 at 36.8 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-043			





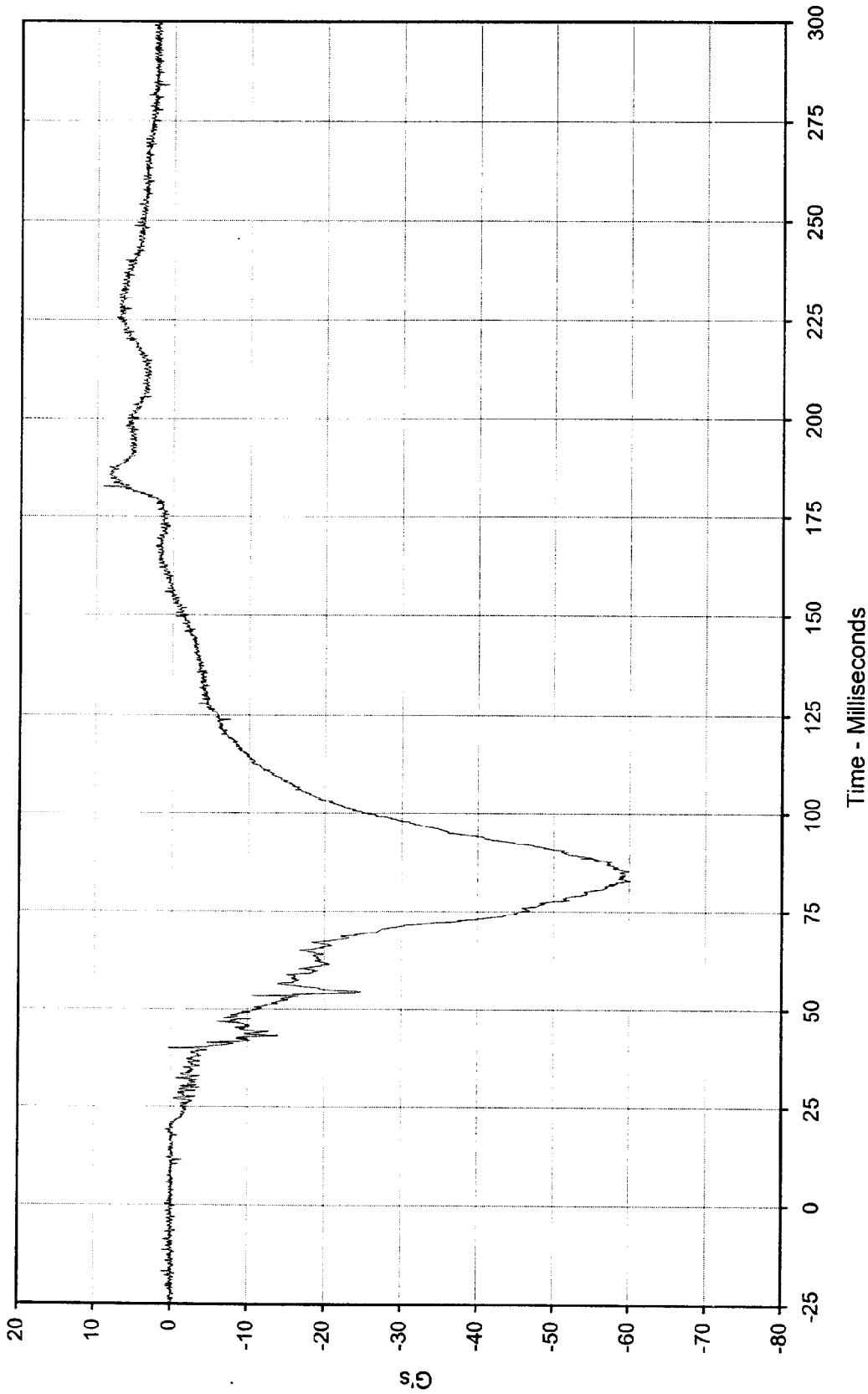
Curve Description: Driver Shoulder Belt Elongation *
 Maximum Value: 0.00 at 0.0 Milliseconds
 Minimum Value: 0.00 at 0.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-044

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan



*Not used with pre-tensioner



Curve Description: Passenger Head Primary X

Maximum Value: 9.2 at 182.7 Milliseconds

Minimum Value: -60.2 at 82.6 Milliseconds

SAE Filter Class: 1000

Date of Test: 5/18/99

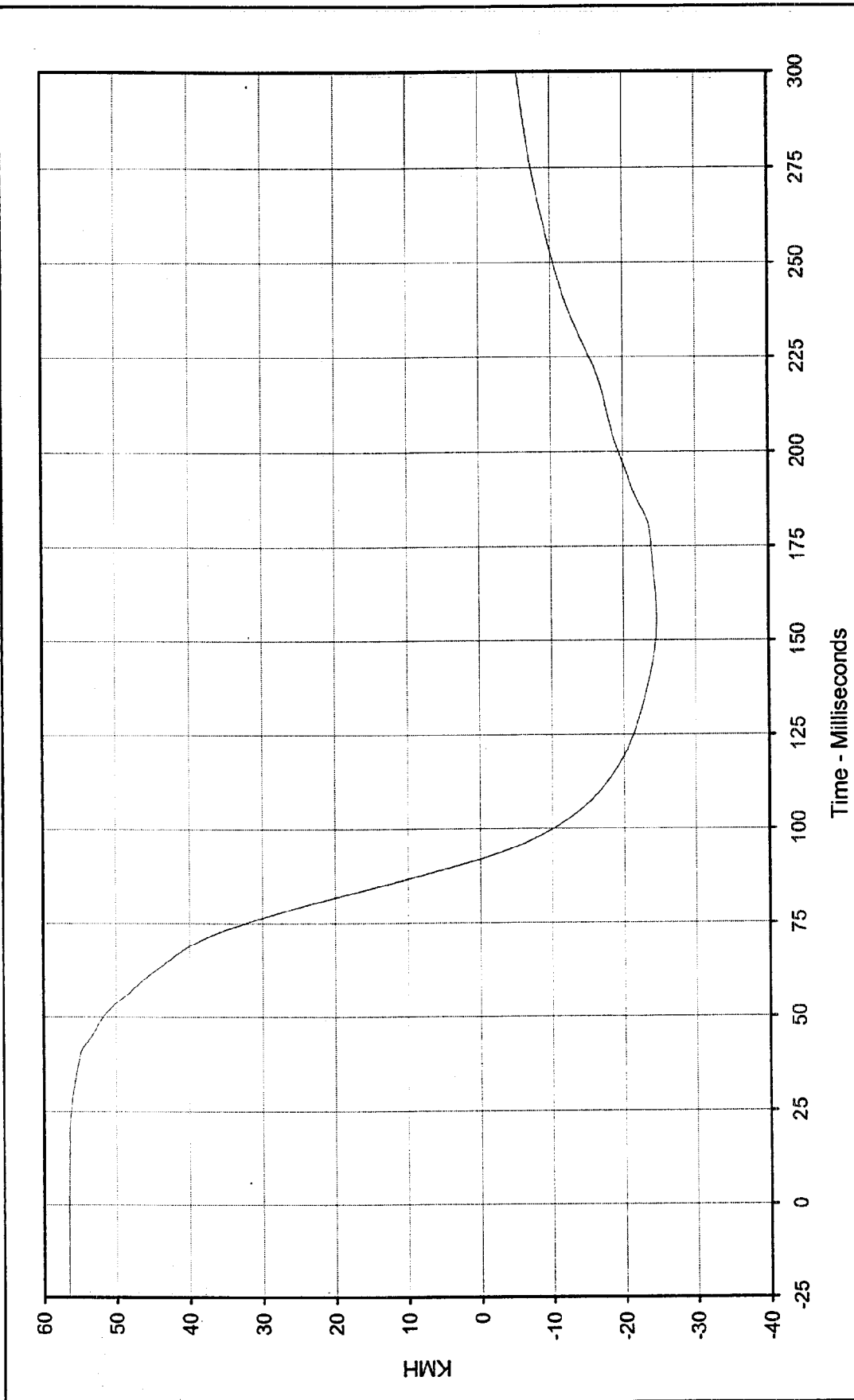
Curve Number: FIL-045

Test Program: 1999 NHTSA 35 mph NCAP

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

No.: MX5304

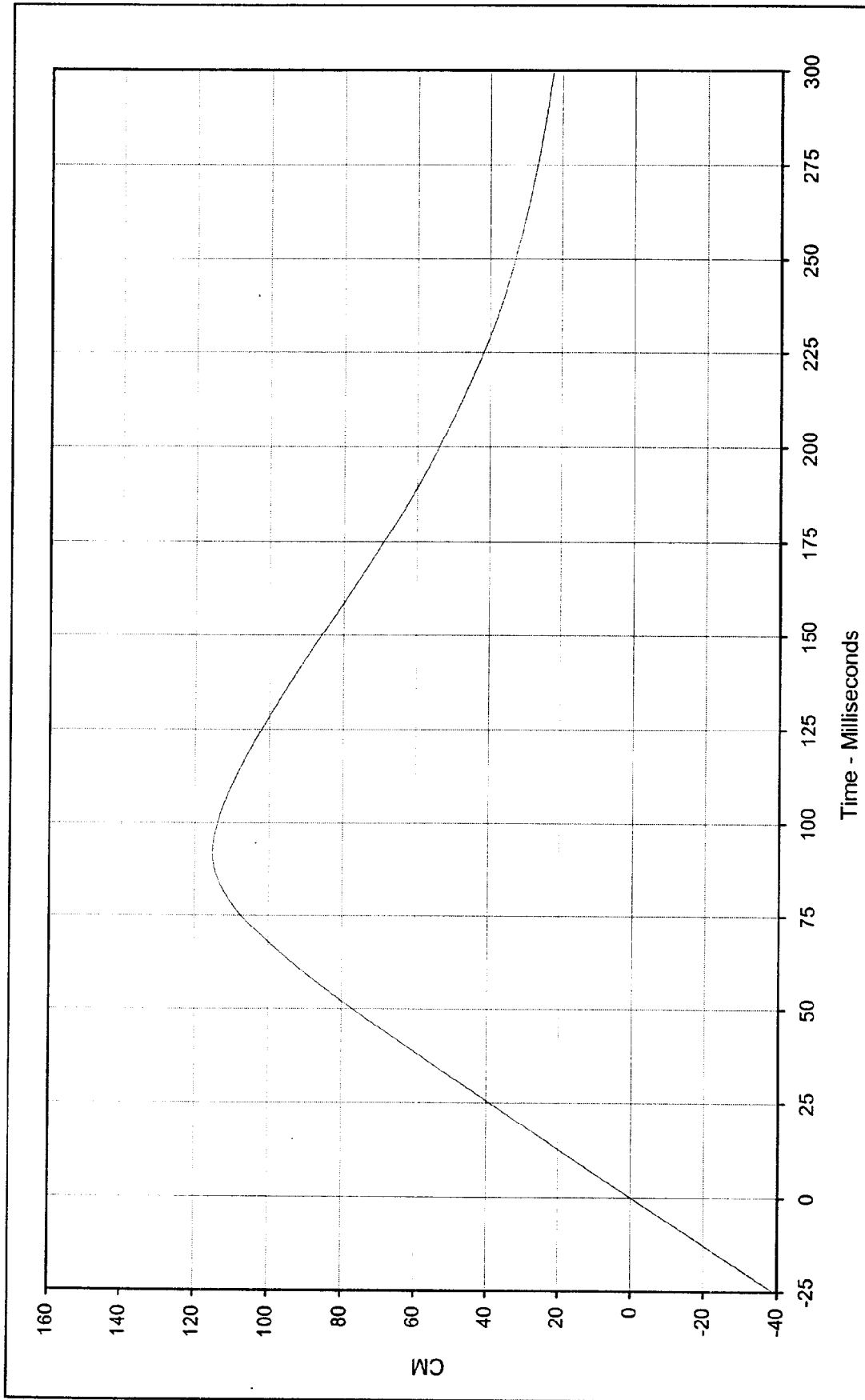




Curve Description: Passenger Head Primary X Velocity
 Maximum Value: 56.5 at 0.0 Milliseconds
 Minimum Value: -24.6 at 155.5 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN1-045

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

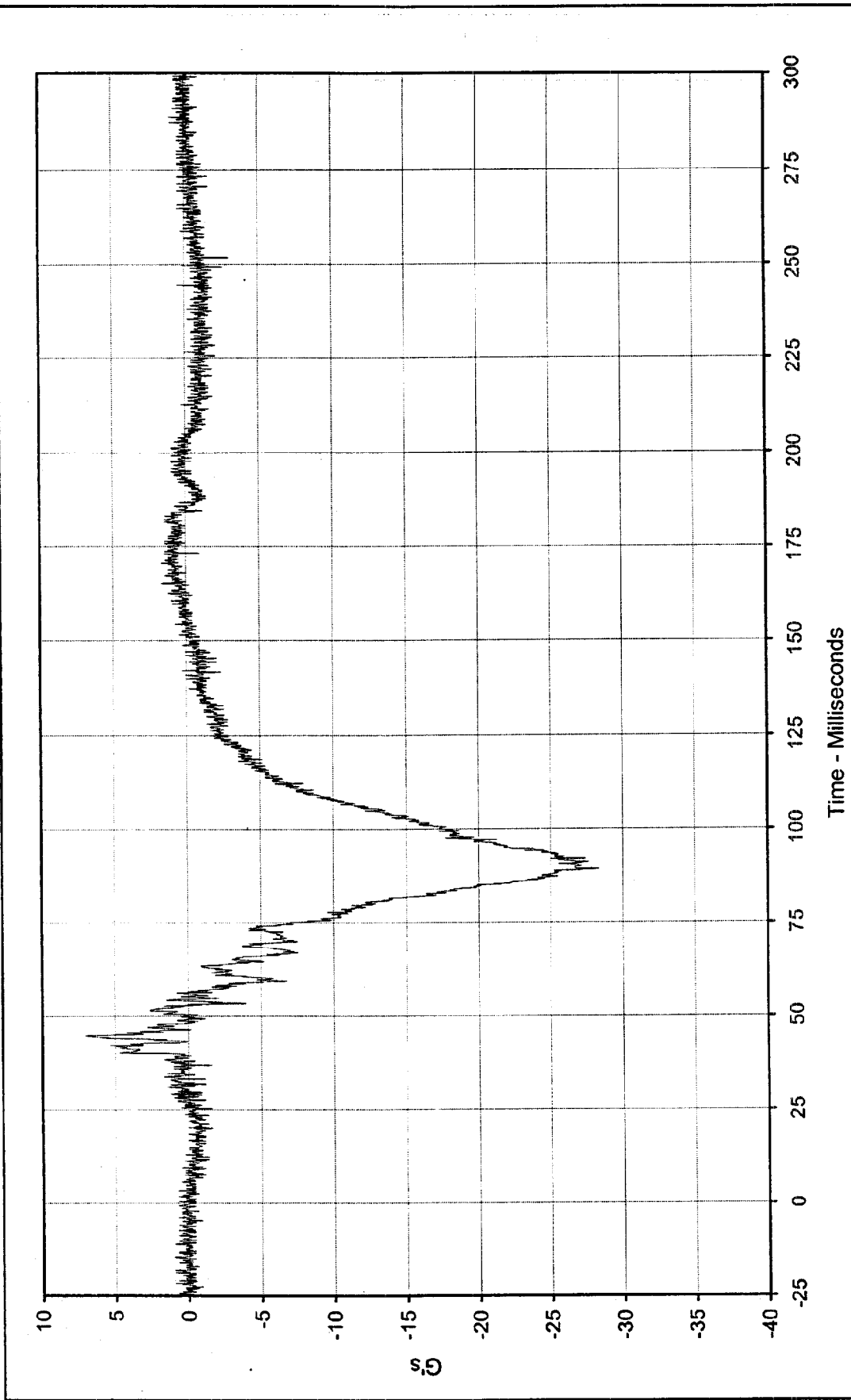




Curve Description: Passenger Head Primary X Displ.
 Maximum Value: 115.1 at 91.9 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN2-045

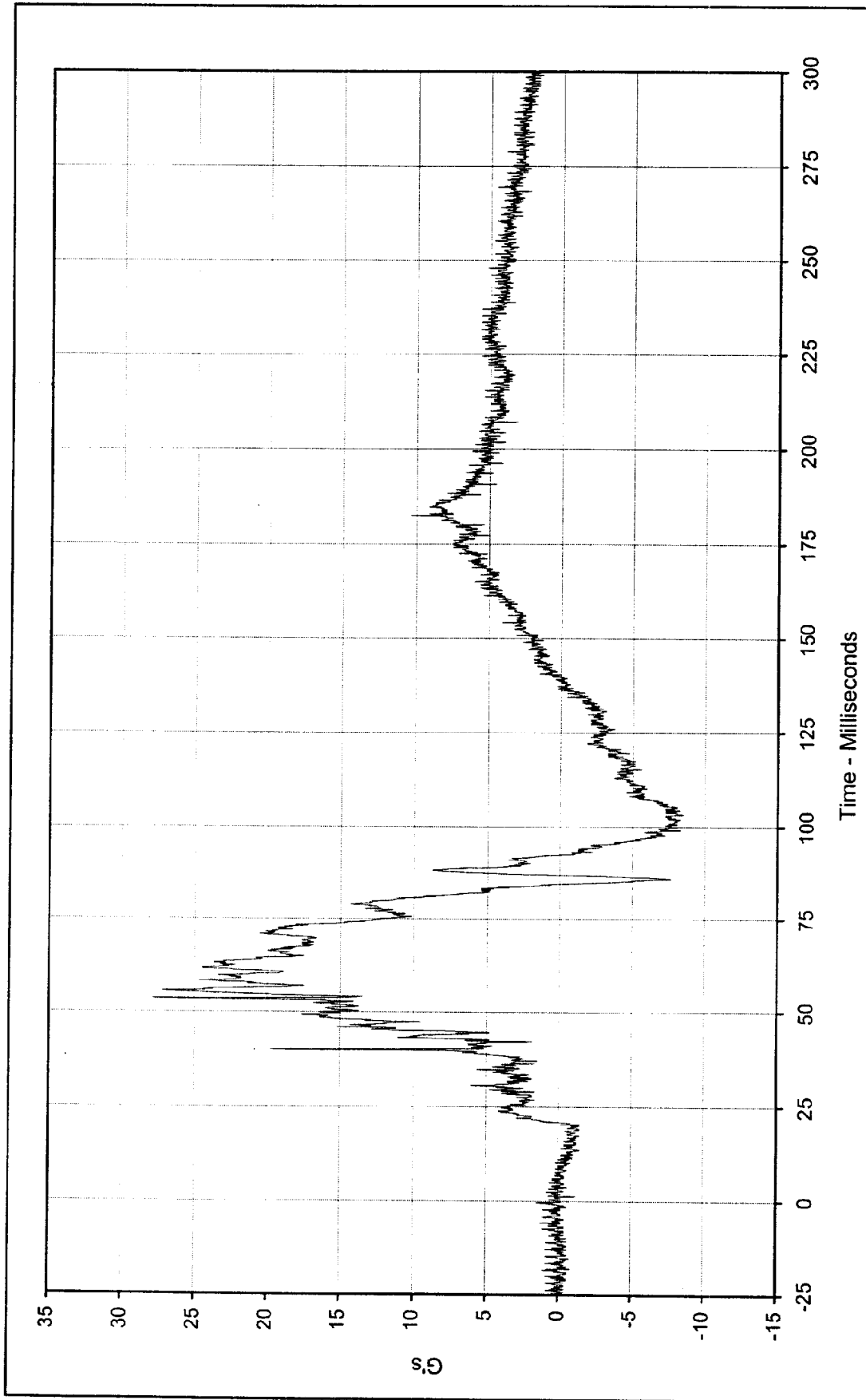
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Passenger Head Primary Y	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	7.0 at 44.8 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-28.3 at 89.0 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	5/18/99			
Curve Number:	FIL-046			

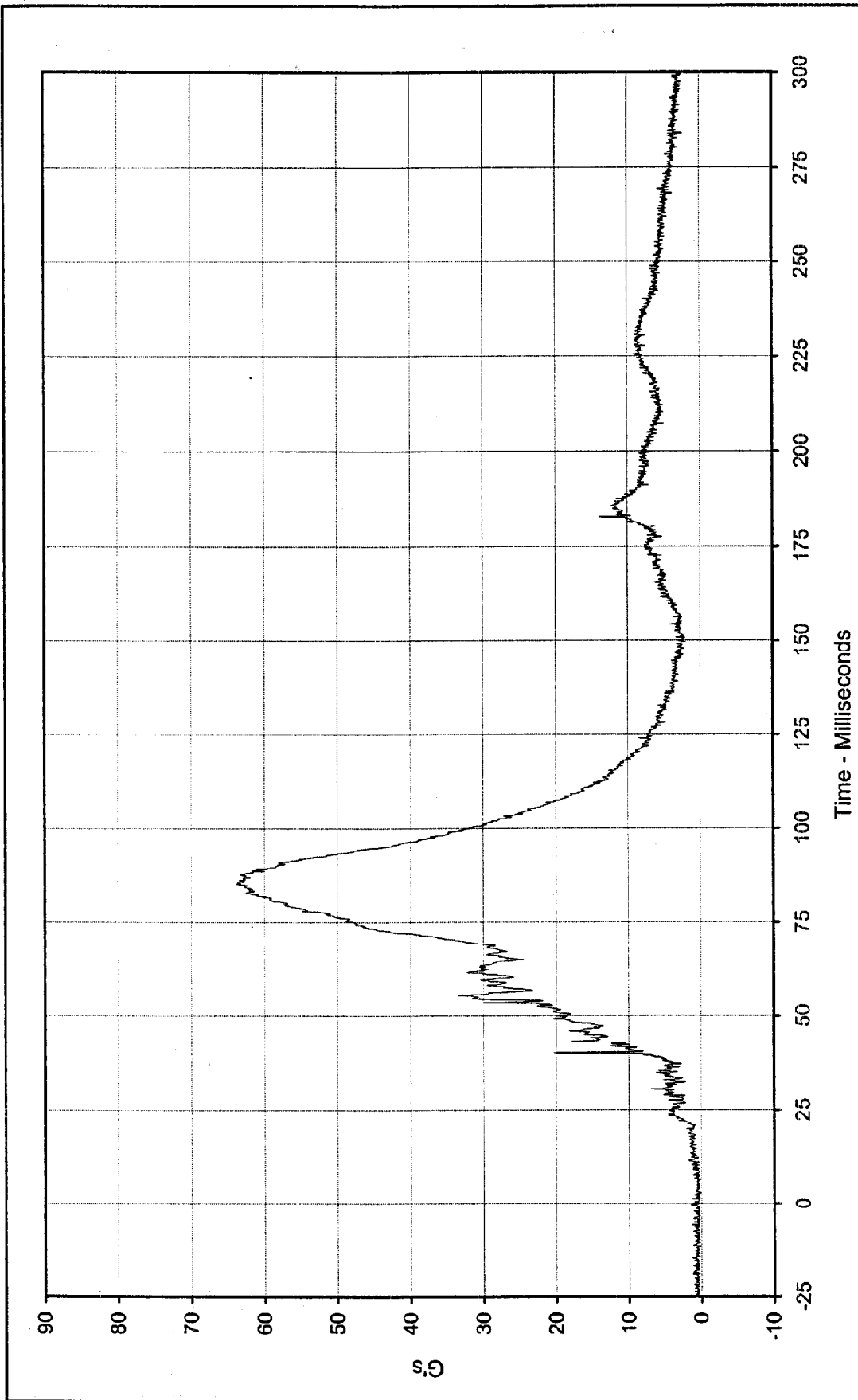




Curve Description:	Passenger Head Primary Z			Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	27.8	at	53.5	Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan
Minimum Value:	-8.5	at	103.3	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	5/18/99					
Curve Number:	FIL-047					

**KARCO**
Engineering

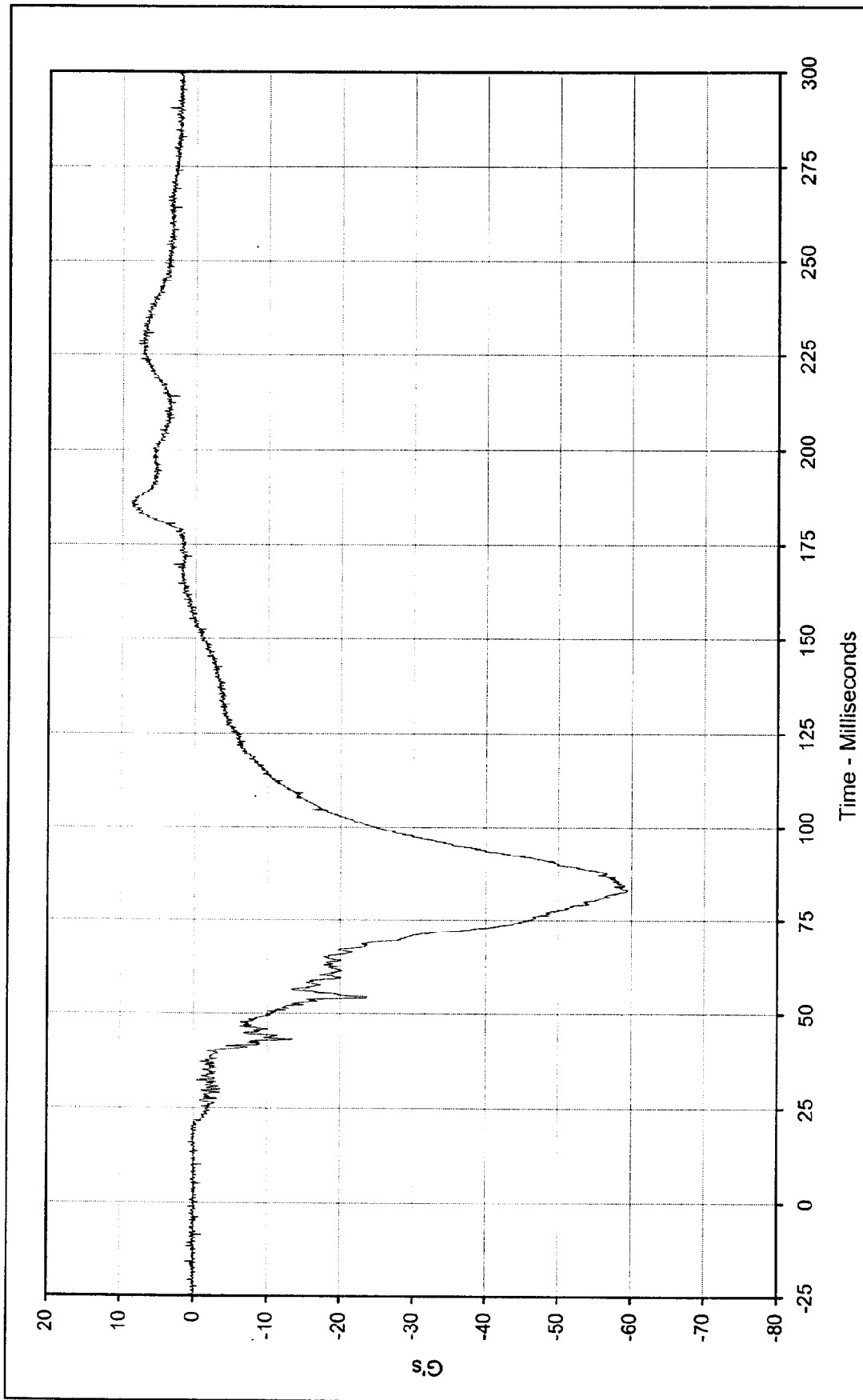




Curve Description: Passenger Head Resultant Primary
 Maximum Value: 63.8 at 85.1 Milliseconds
 Minimum Value: 0.0 at 2.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: RES-045

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

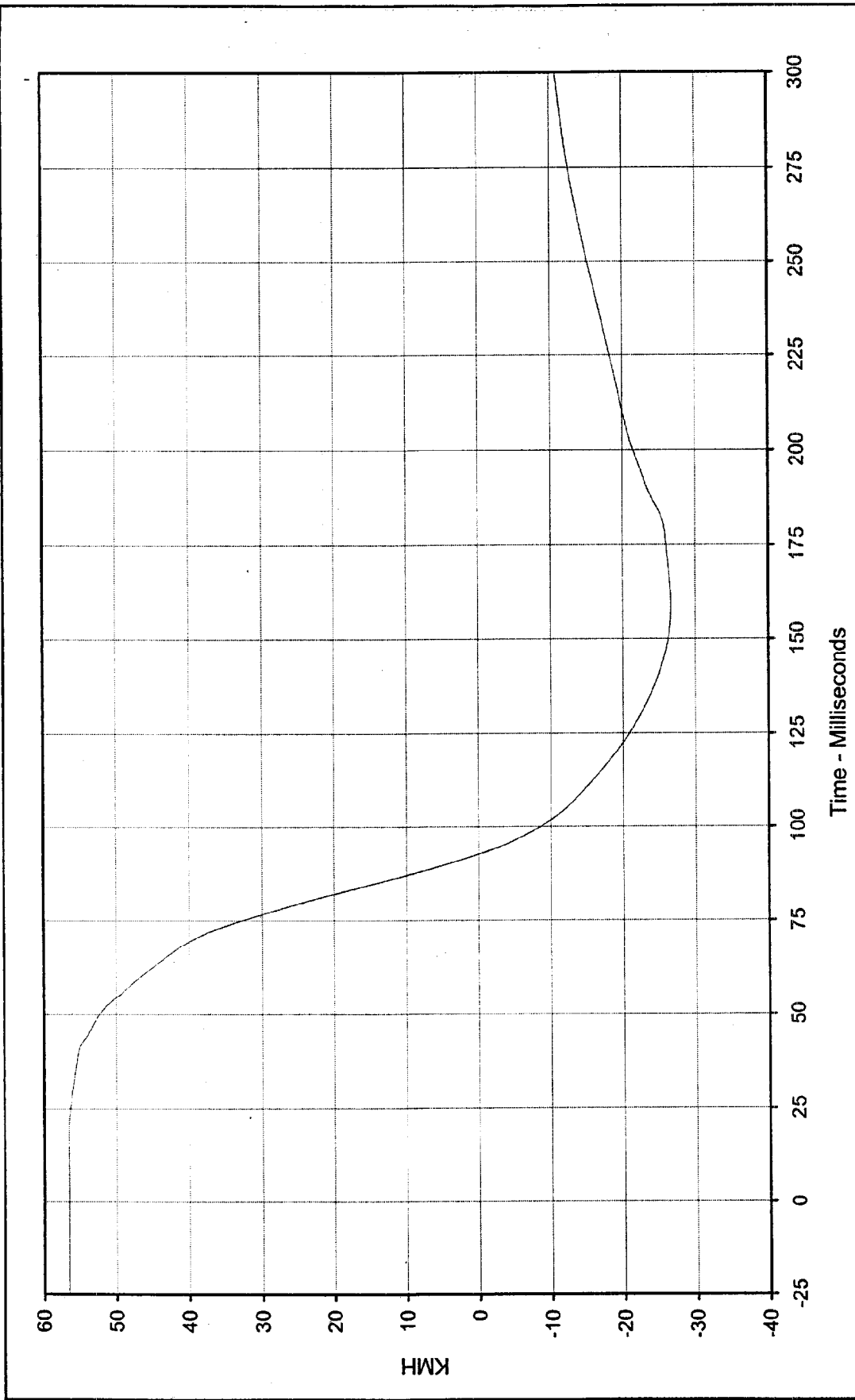




Curve Description: Passenger Head Redundant X
 Maximum Value: 8.9 at 186.6 Milliseconds
 Minimum Value: -59.5 at 82.8 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

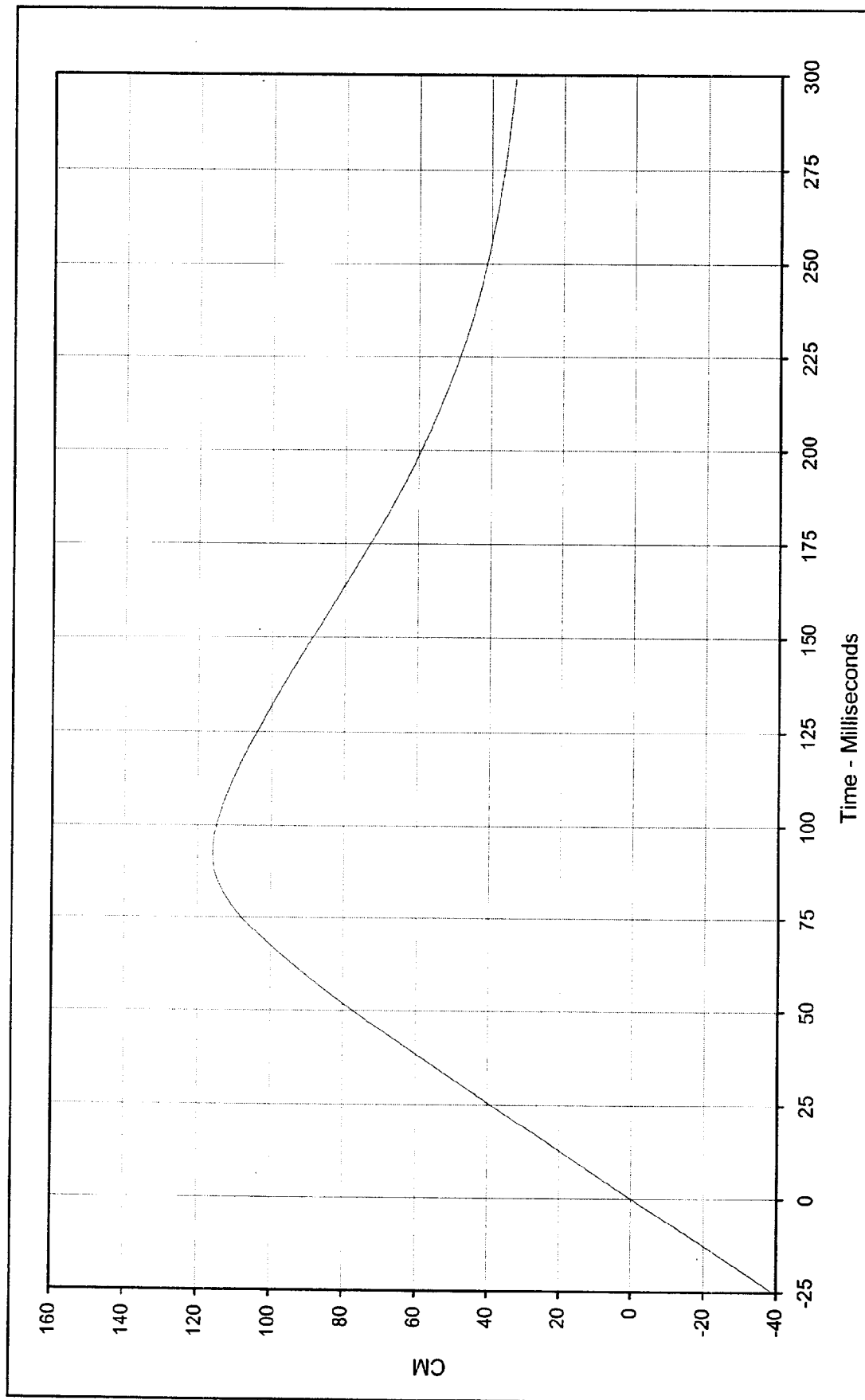




Curve Description: Passenger Head Redundant X Velocity
 Maximum Value: 56.6 at 0.0 Milliseconds
 Minimum Value: -26.7 at 159.2 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN1-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Head Redundant X Displ.

Maximum Value: 115.9 at 92.4 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

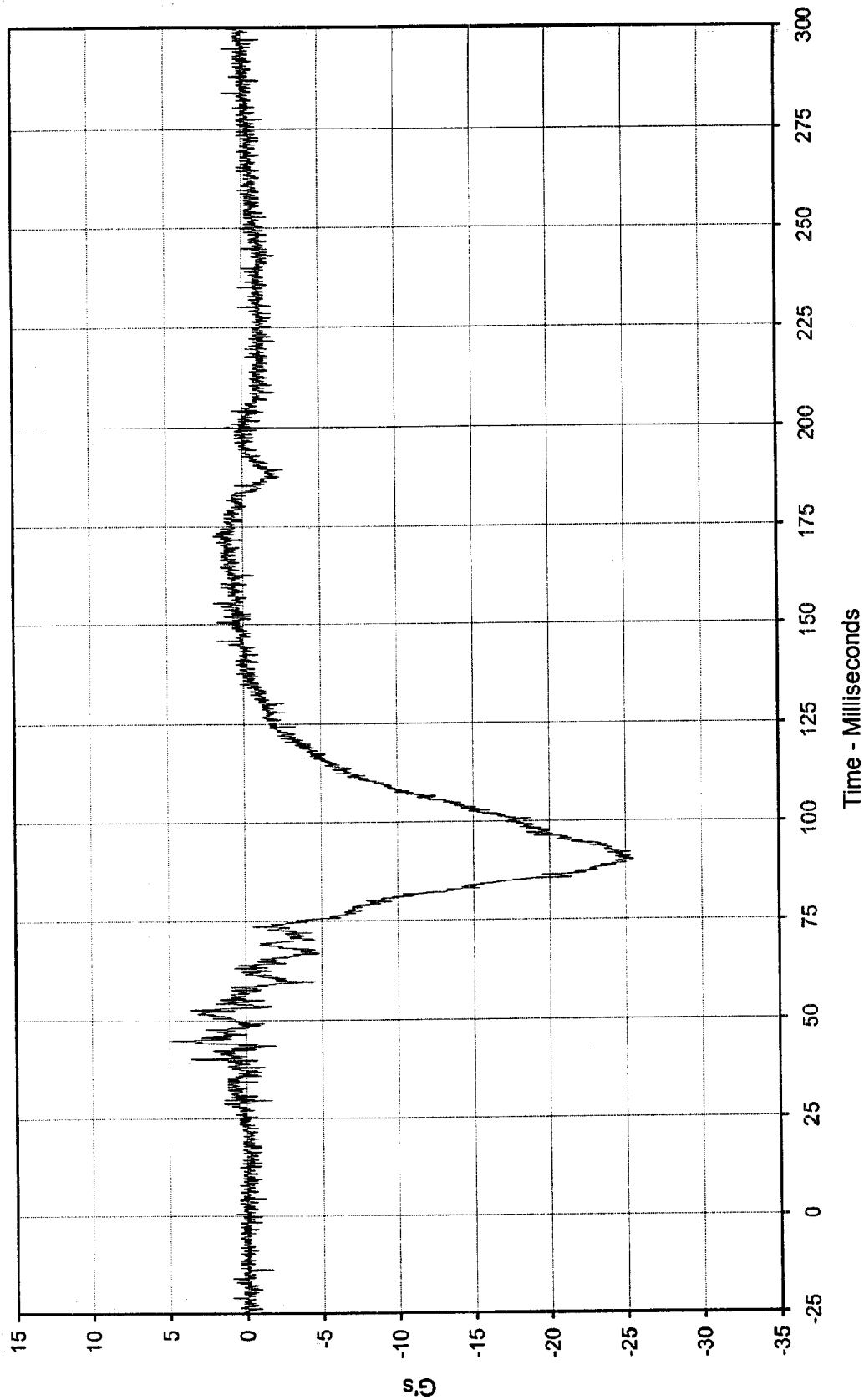
Date of Test: 5/18/99

Curve Number: IN2-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

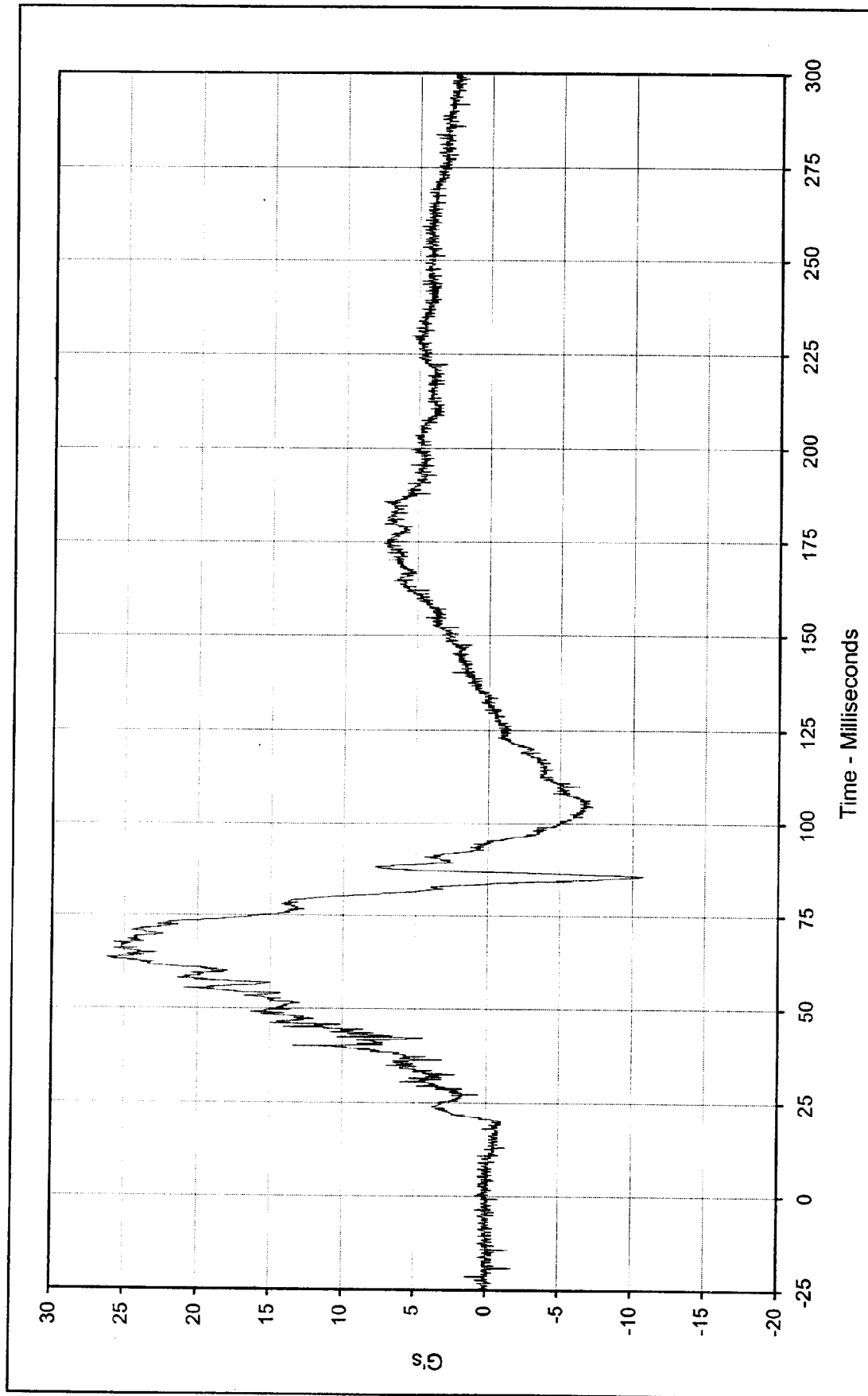




Curve Description: Passenger Head Redundant Y
 Maximum Value: 5.1 at 44.7 Milliseconds
 Minimum Value: -25.5 at 90.1 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-049

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

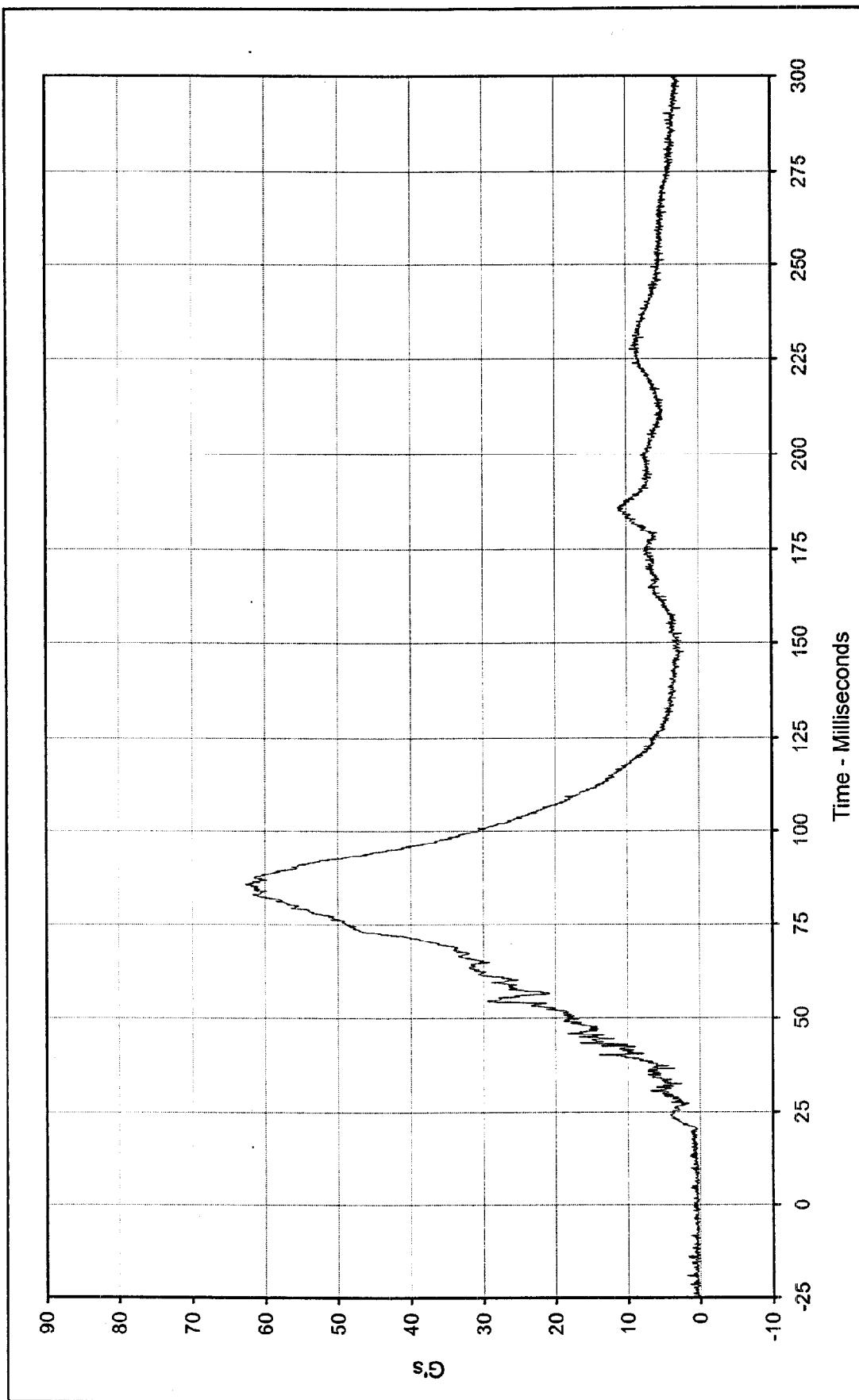




Curve Description: Passenger Head Redundant Z
 Maximum Value: 26.2 at 63.4 Milliseconds
 Minimum Value: -10.7 at 85.7 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-050

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

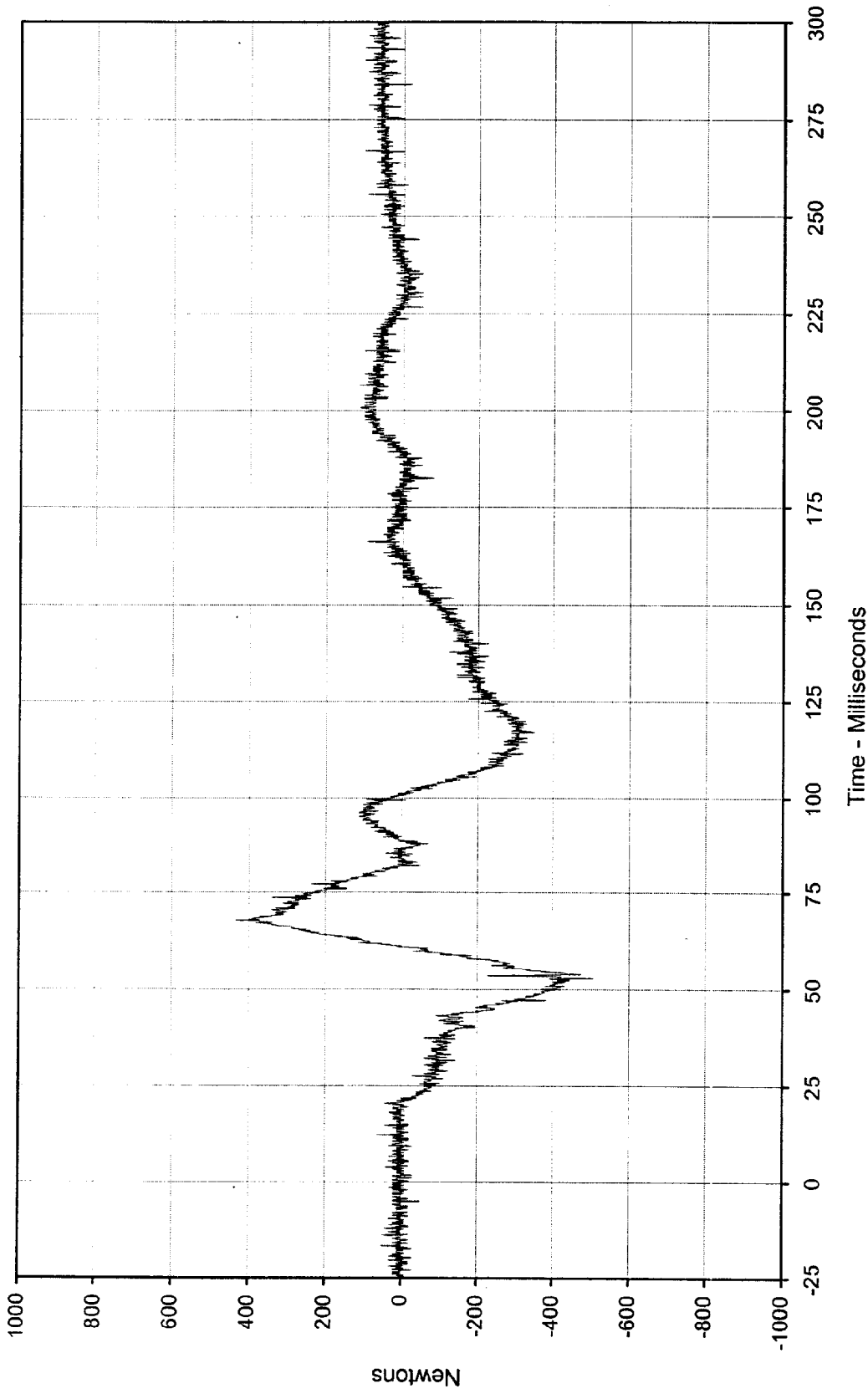




Curve Description: Passenger Head Resultant Redundant
 Maximum Value: 62.6 at 85.7 Milliseconds
 Minimum Value: 0.1 at 1.5 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: RES-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Program: 1999 Acura 3.5 RL 4 Door Sedan

Passenger Neck Force X

Maximum Value: 433.3 at 67.6 Milliseconds

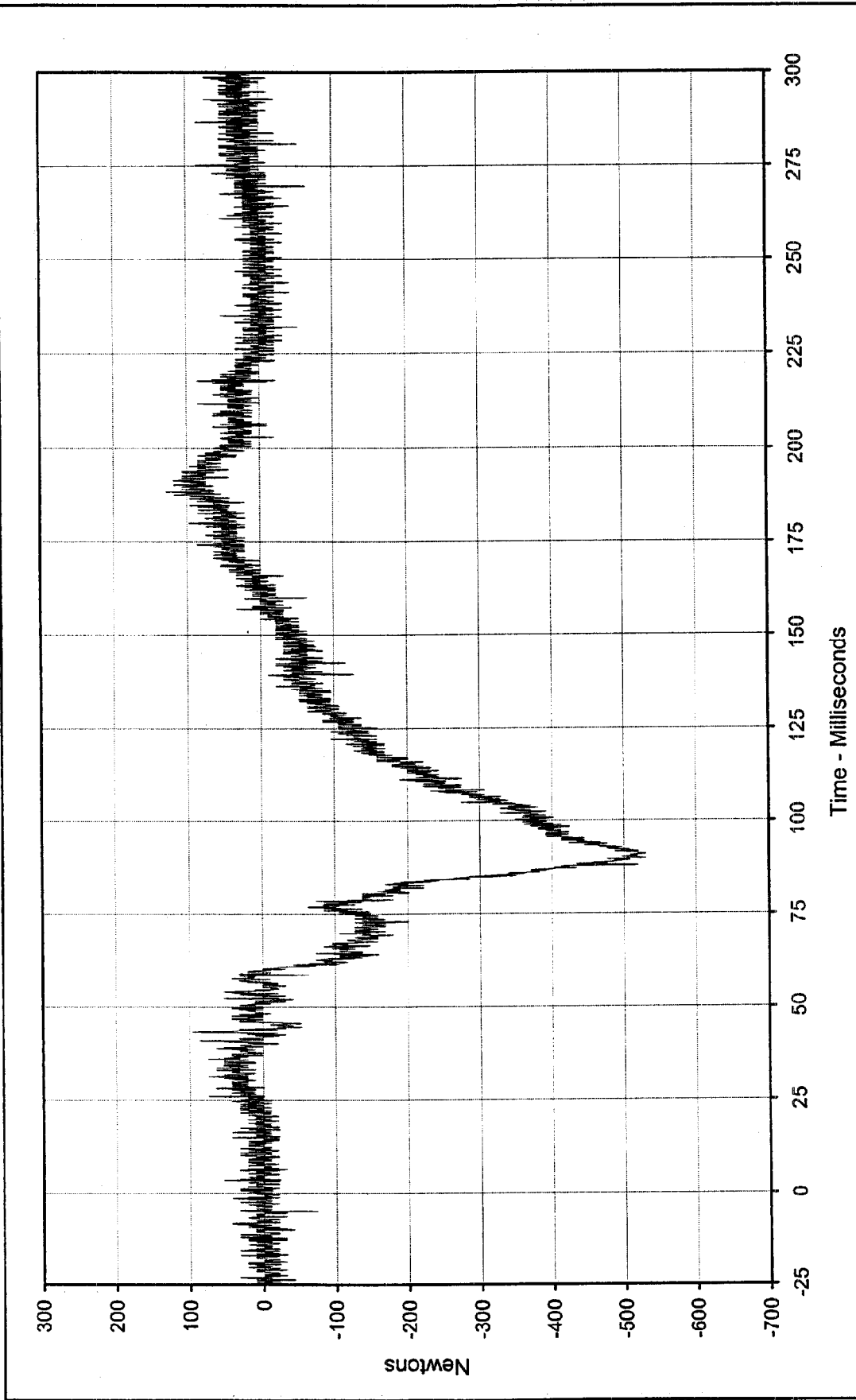
Minimum Value: -505.6 at 52.7 Milliseconds

SAE Filter Class: 1000

Date of Test: 5/18/99

Curve Number: FIL-051

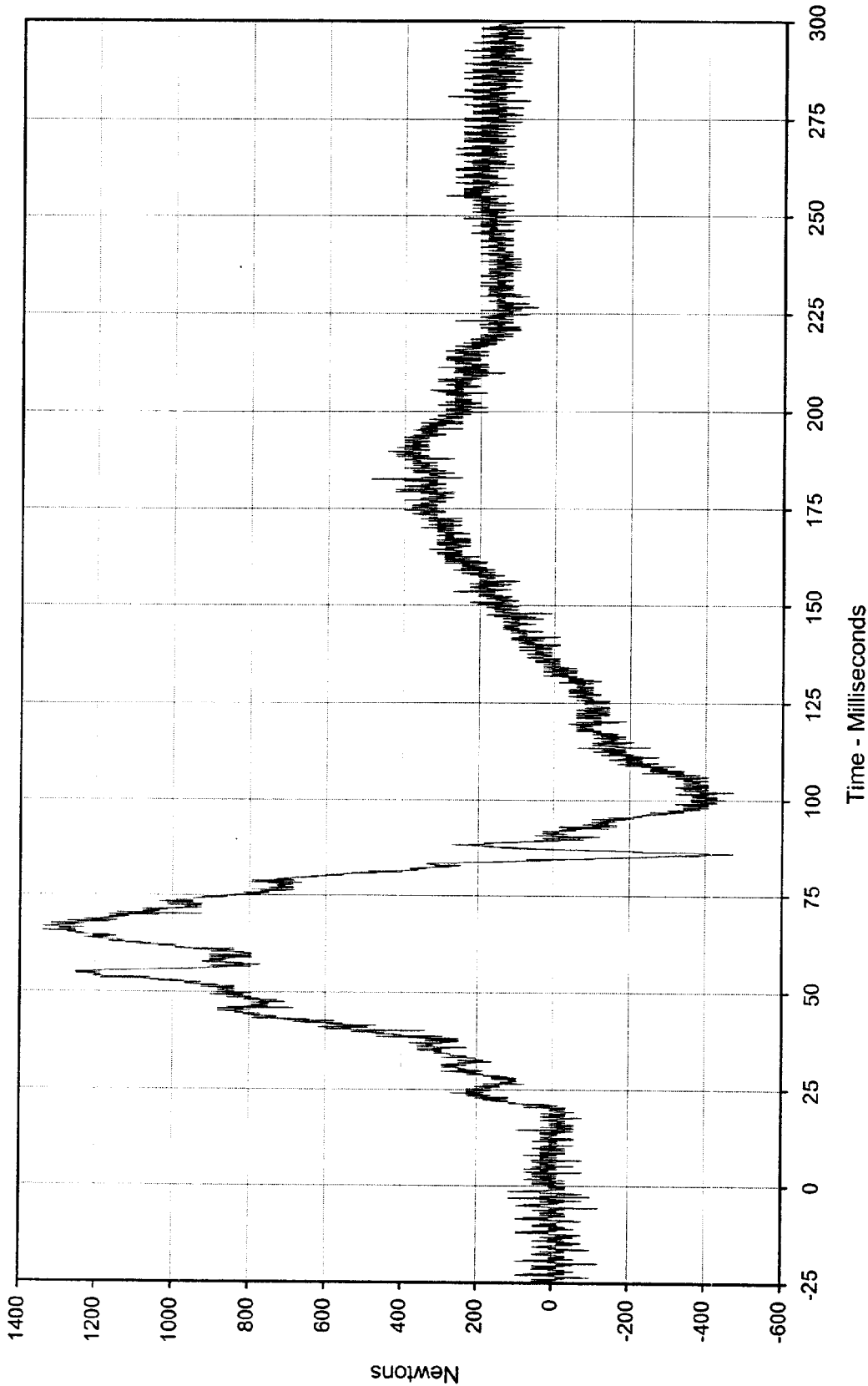




Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Program: 1999 Acura 3.5 RL 4 Door Sedan
 Test Vehicle:

Passenger Neck Force Y
 Maximum Value: 127.2 at 188.4 Milliseconds
 Minimum Value: -529.8 at 89.6 Milliseconds
 SAE Filler Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-052





Curve Description: Passenger Neck Force Z

Maximum Value: 1339.3 at 65.6 Milliseconds

Minimum Value: -473.7 at 185.8 Milliseconds

SAE Filter Class: 1000

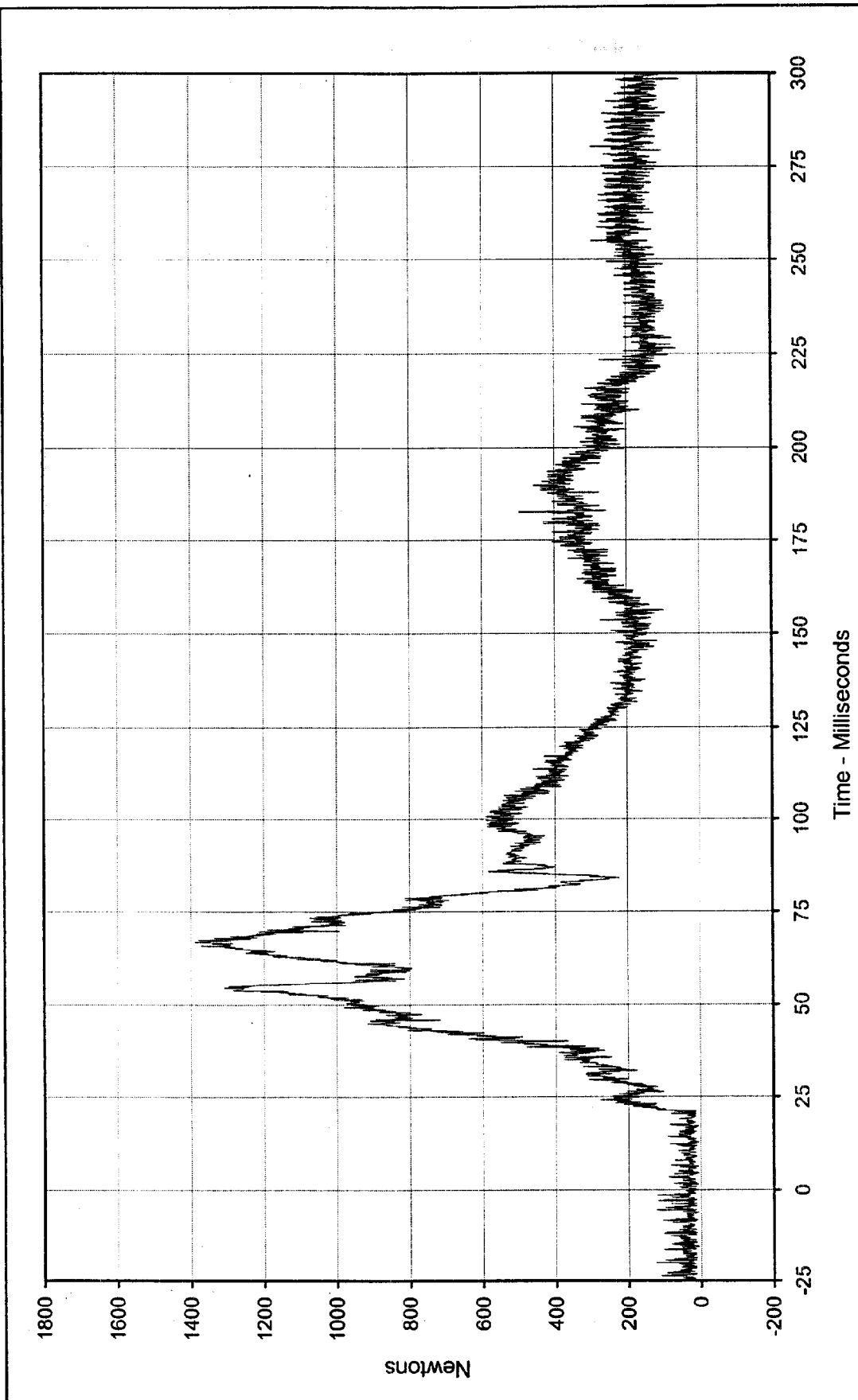
Date of Test: 5/18/99

Curve Number: FIL-053

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

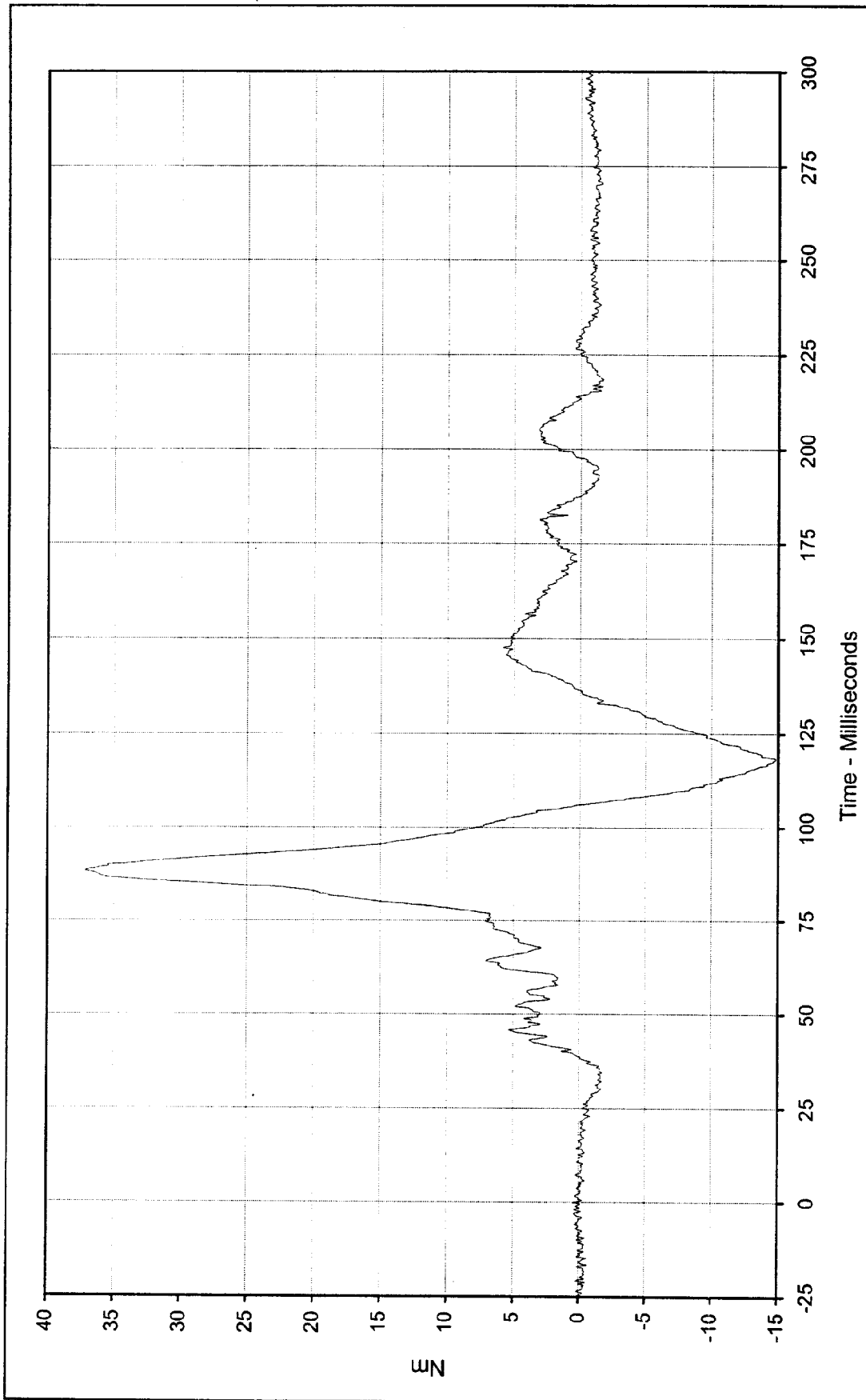




Curve Description: Passenger Neck Force Resultant
 Maximum Value: 1387.7 at 66.6 Milliseconds
 Minimum Value: 6.8 at 1.6 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: RES-051

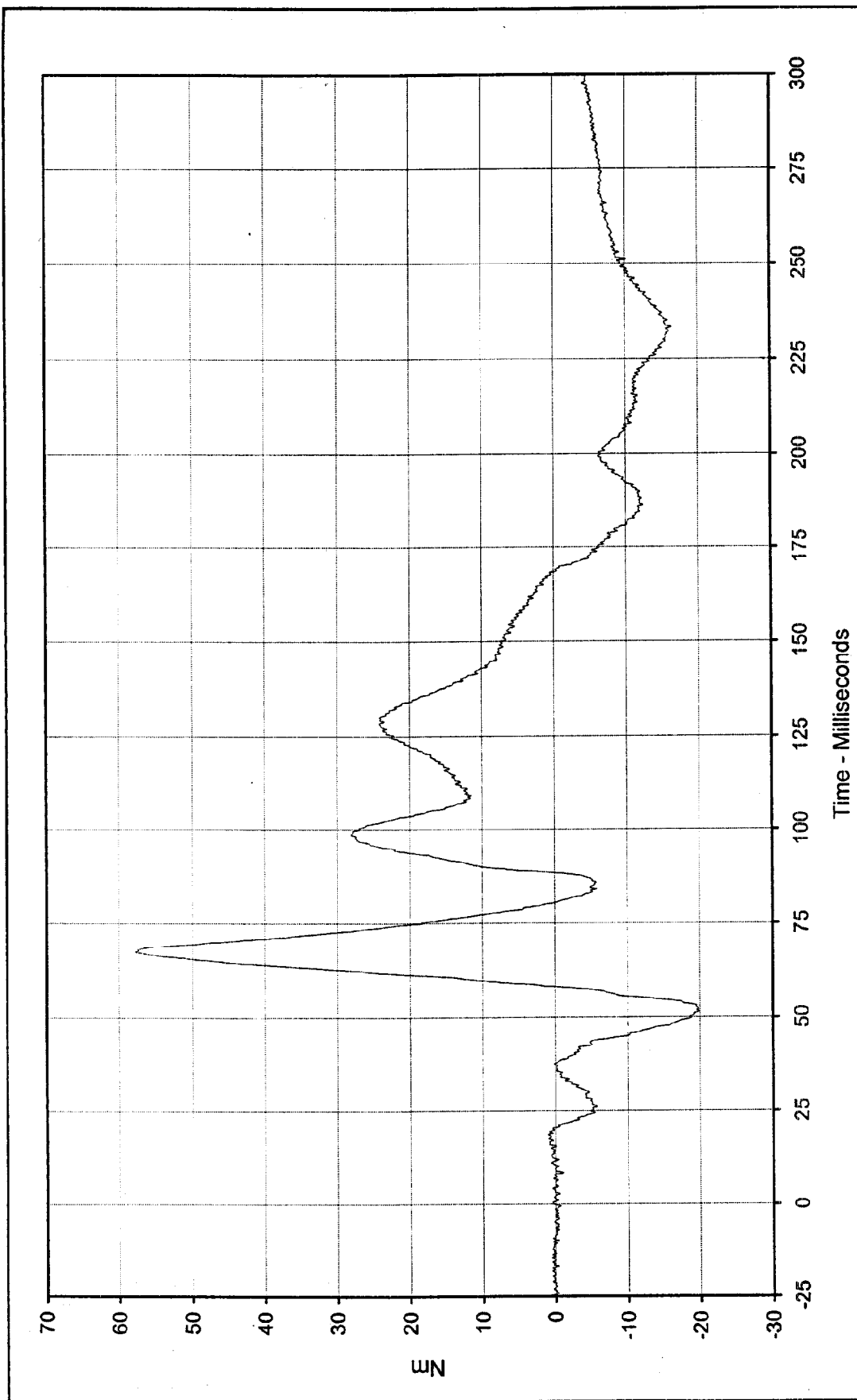
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Passenger Neck Moment X	Test Program:	1999 NHTSA 35 mph NCAP	No.:	MX5304
Maximum Value:	37.1 at 88.2 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan		
Minimum Value:	-14.9 at 118.3 Milliseconds				
SAE Filter Class:	600				
Date of Test:	5/18/99				
Curve Number:	FIL-054				





Curve Description: Passenger Neck Moment Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Maximum Value: 57.7 at 67.4 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

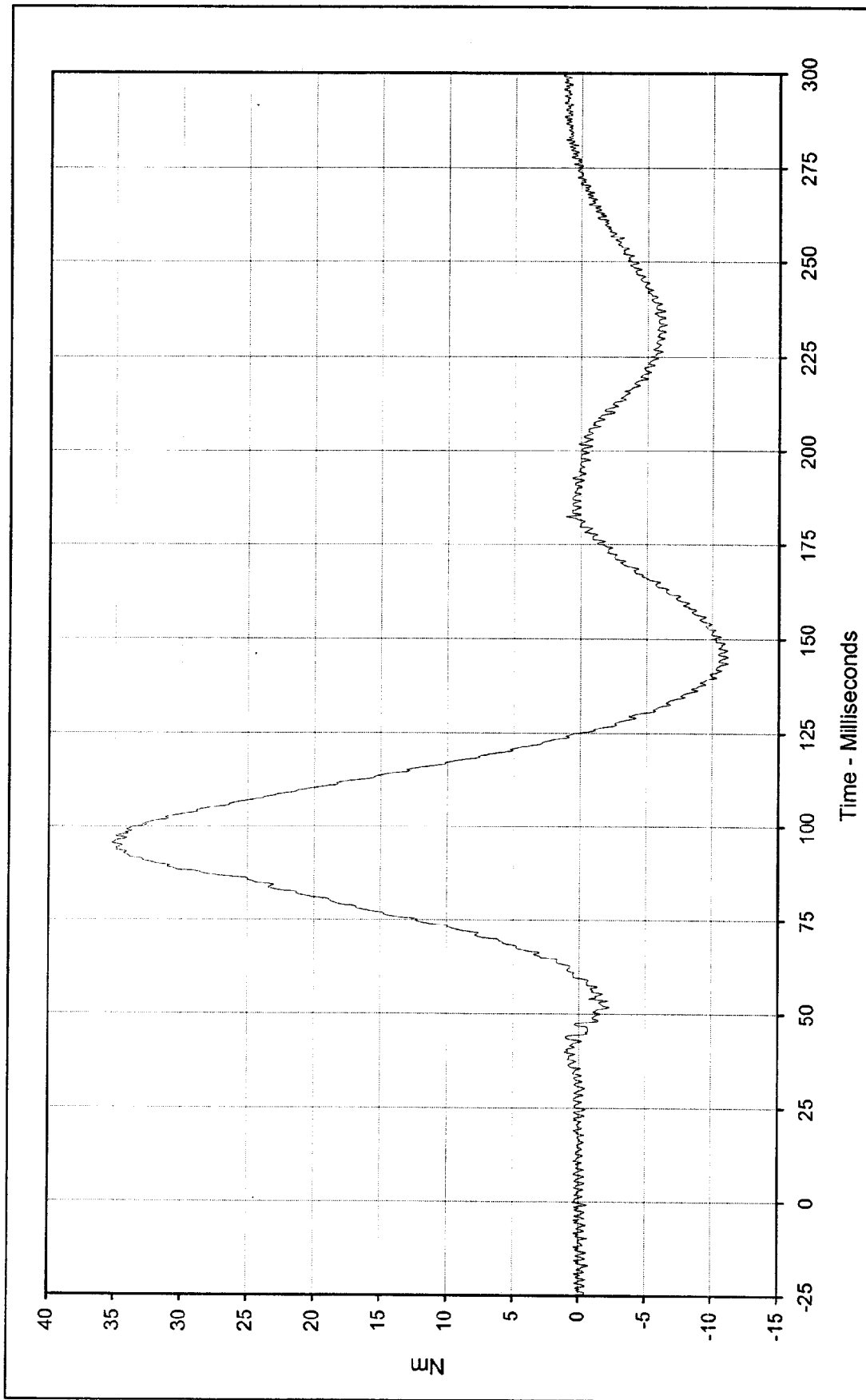
Minimum Value: -19.9 at 51.5 Milliseconds

SAE Filter Class: 600

Date of Test: 5/18/99

Curve Number: FIL-055





Curve Description: Passenger Neck Moment Z

Maximum Value: 35.2 at 95.5 Milliseconds

Minimum Value: -11.2 at 143.7 Milliseconds

SAE Filter Class: 600

Date of Test: 5/18/99

Curve Number: FIL-056

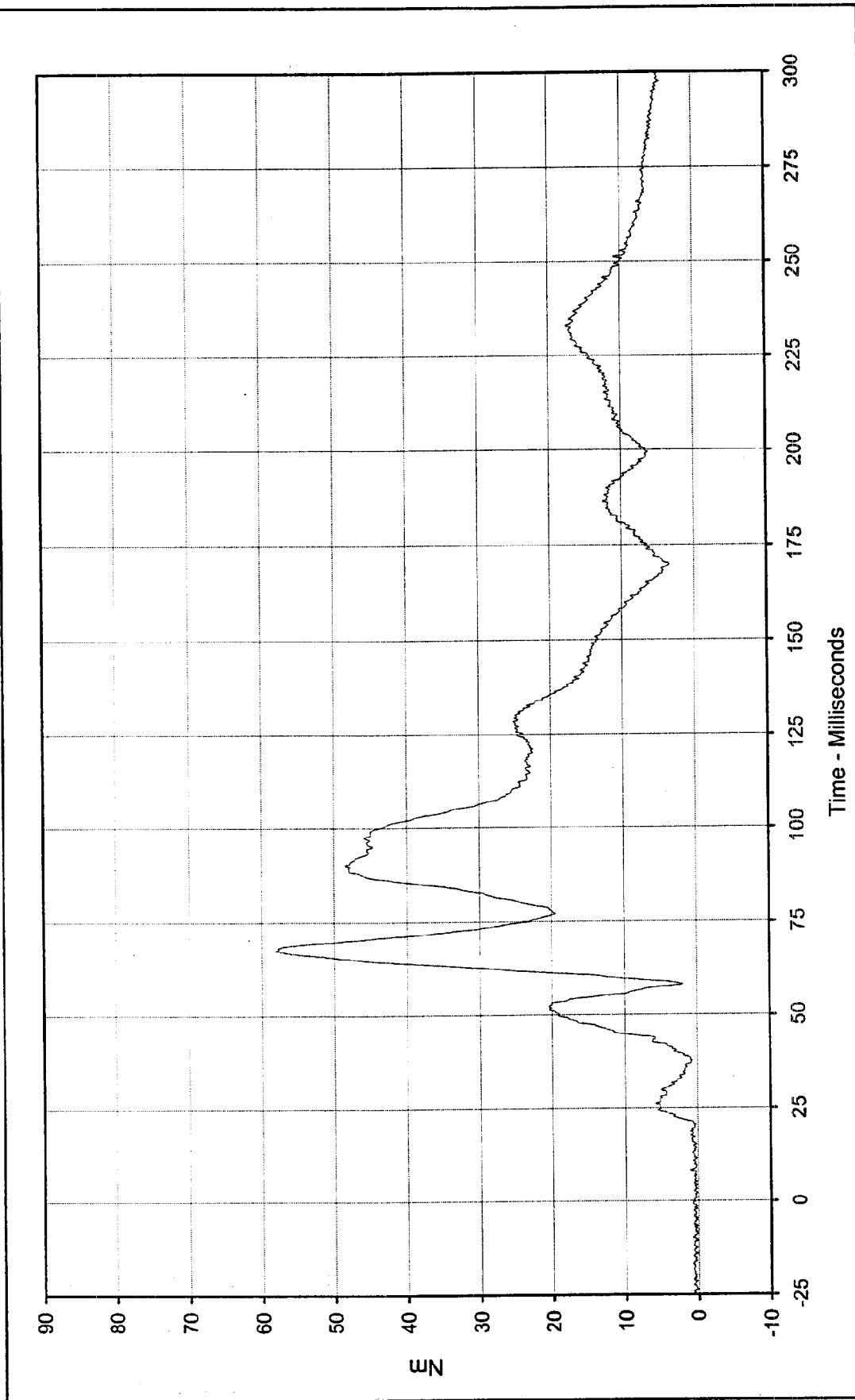
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle:

1999 Acura 3.5 RL 4 Door Sedan

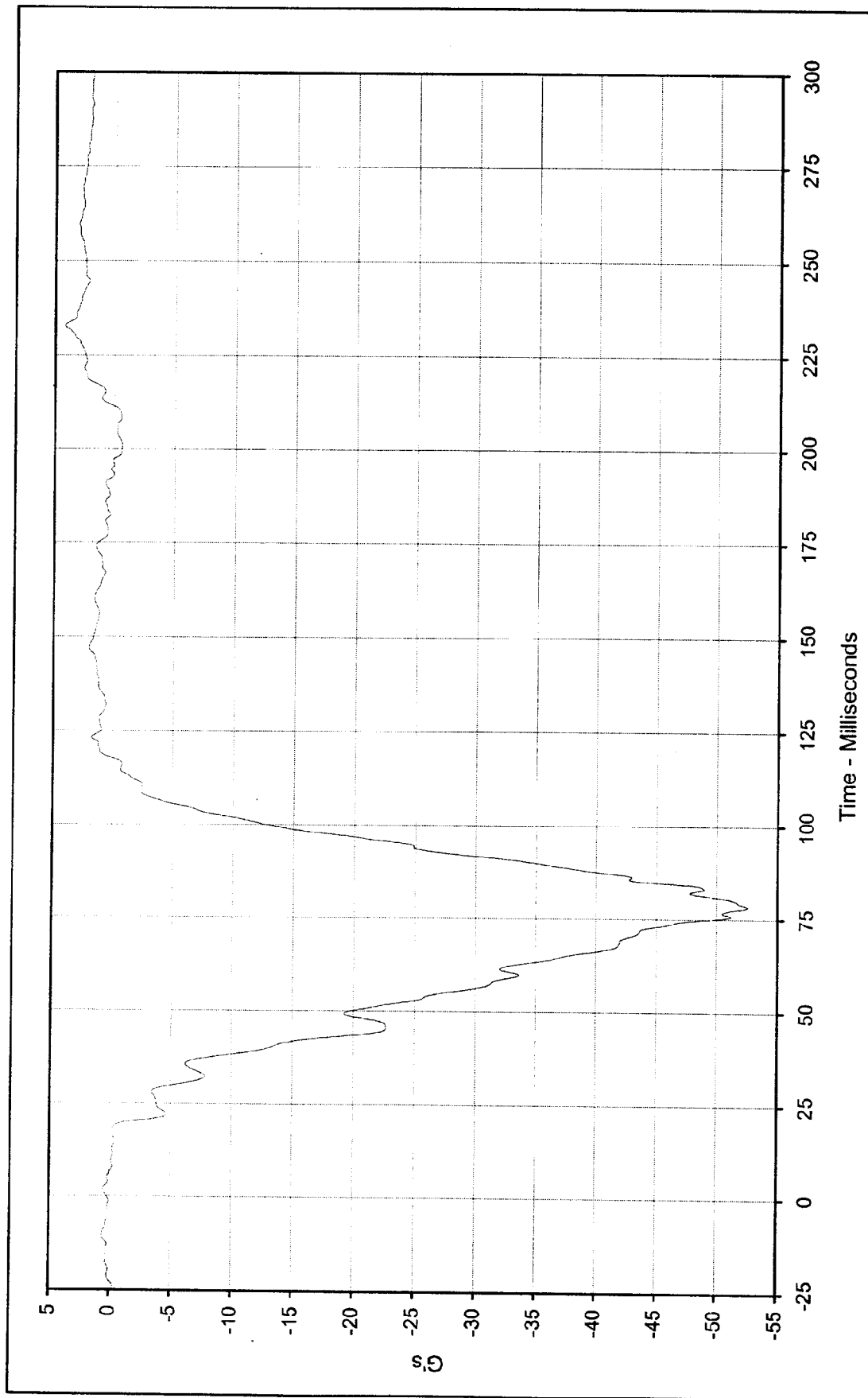




Curve Description: Passenger Neck Moment Resultant
 Maximum Value: 58.0 at 67.4 Milliseconds
 Minimum Value: 0.1 at 5.3 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: RES-054

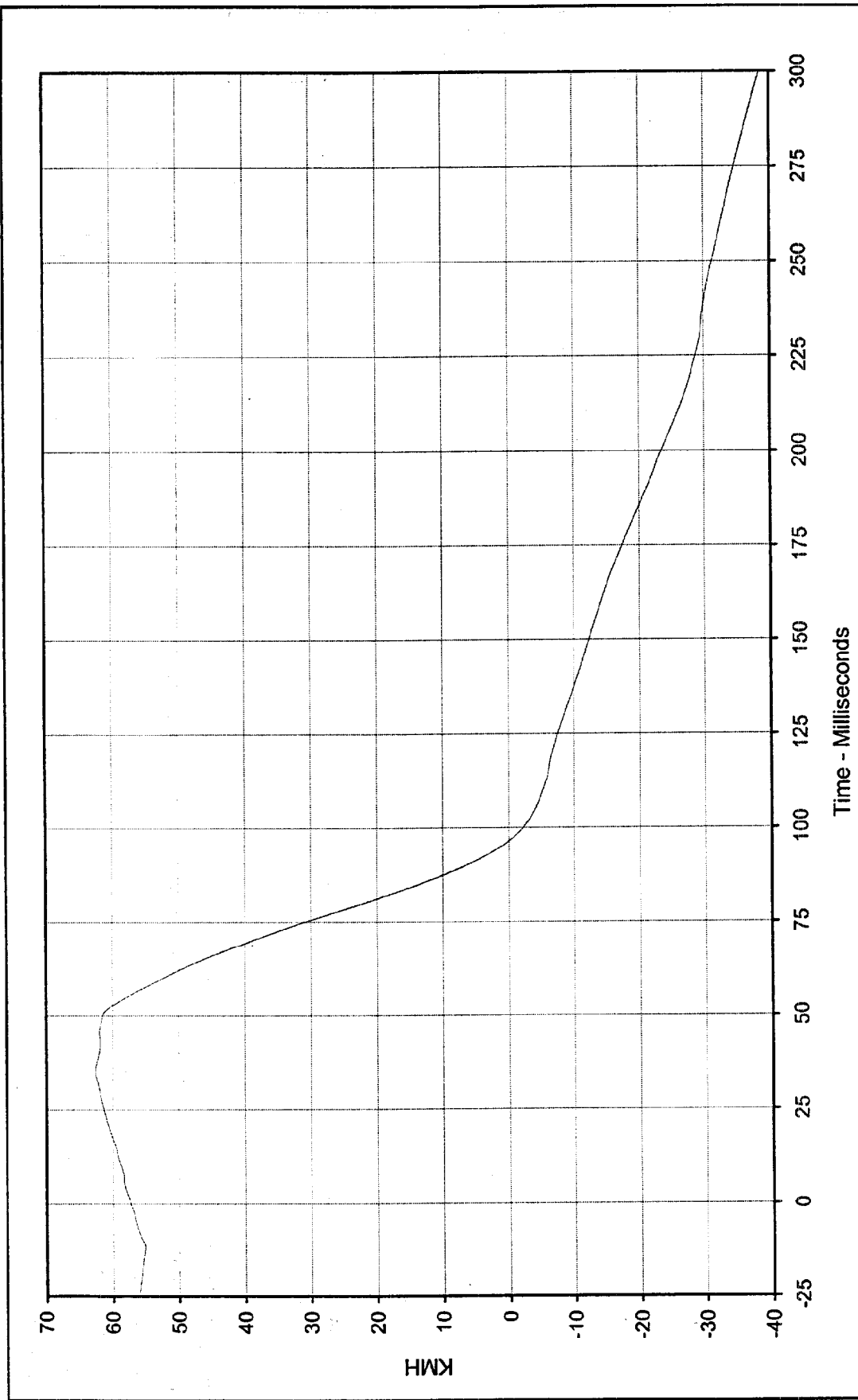
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:		Passenger Chest Primary X		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	4.2	at	233.1	Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan
Minimum Value:	-52.6	at	78.3	Milliseconds		
SAE Filter Class:	180					
Date of Test:	5/18/99					
Curve Number:	FIL-057					





Curve Description: Passenger Chest Primary X Velocity

Maximum Value: 62.6 at 34.7 Milliseconds

Minimum Value: -38.5 at 299.9 Milliseconds

SAE Filter Class: 180

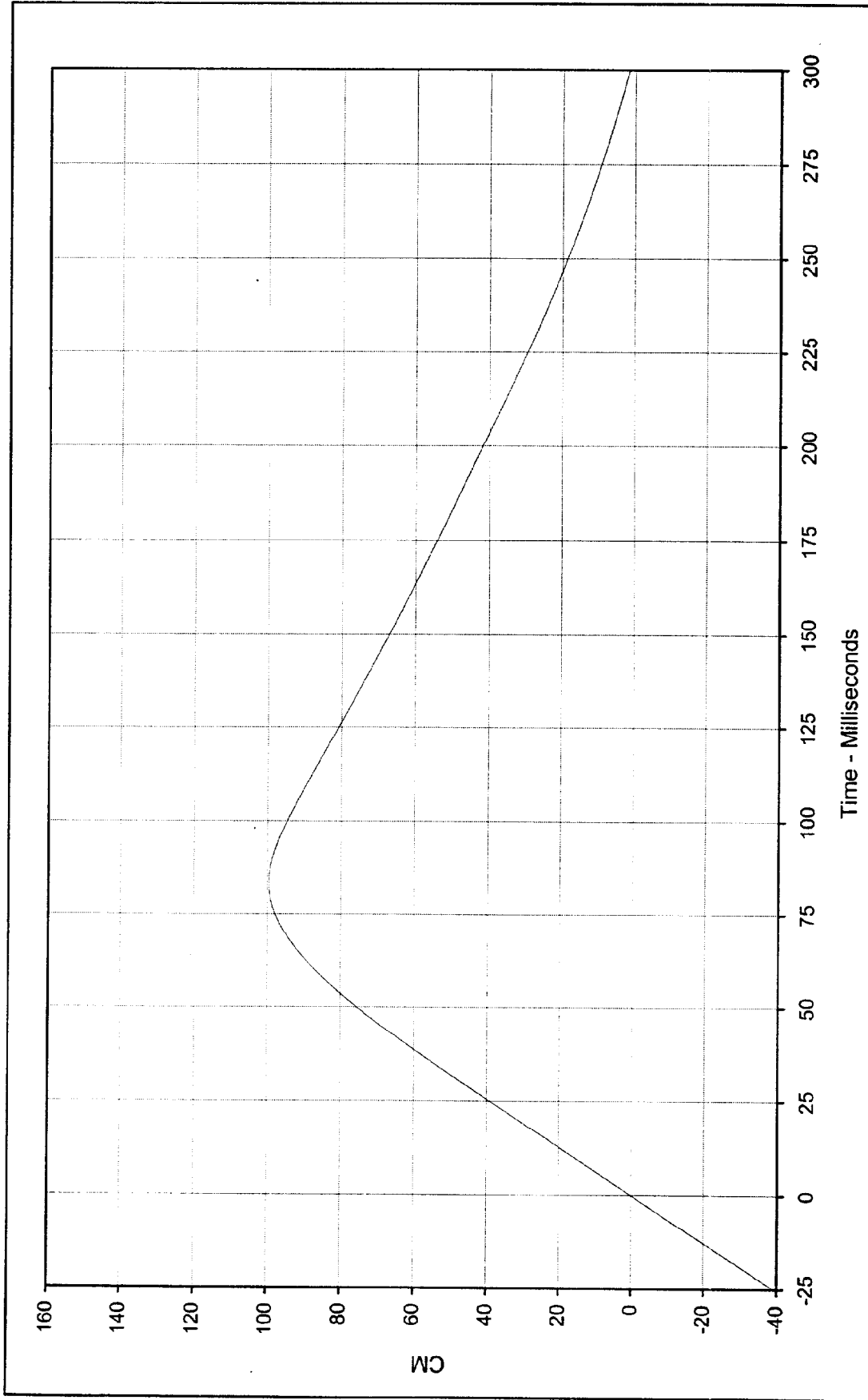
Date of Test: 5/18/99

Curve Number: IN1-057

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Chest Primary X Displ.

Maximum Value: 99.6 at 83.3 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

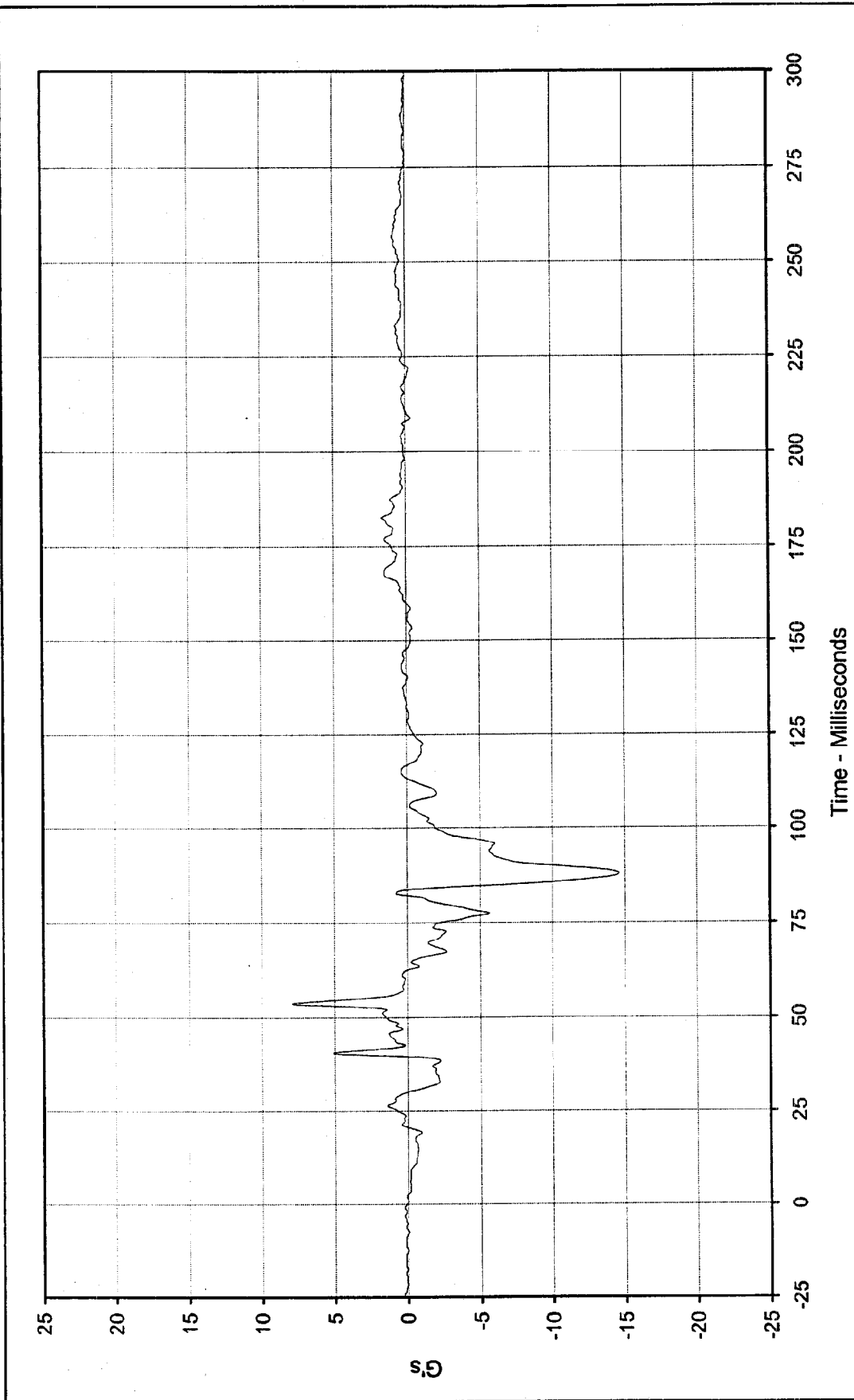
Date of Test: 5/18/99

Curve Number: IN2-057

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

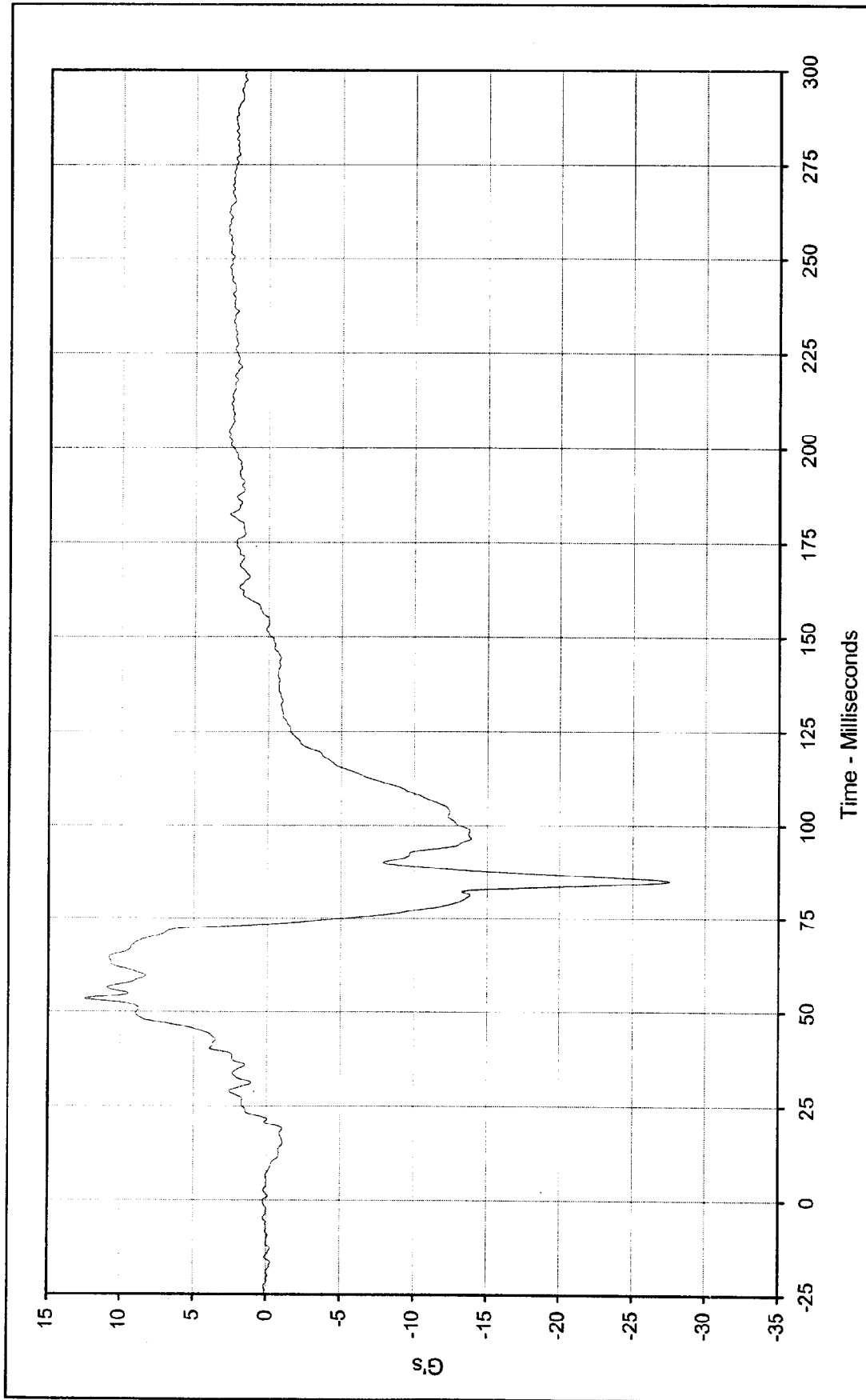




Curve Description: Passenger Chest Primary Y
 Maximum Value: 7.9 at 53.6 Milliseconds
 Minimum Value: -14.6 at 87.8 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: FIL-058

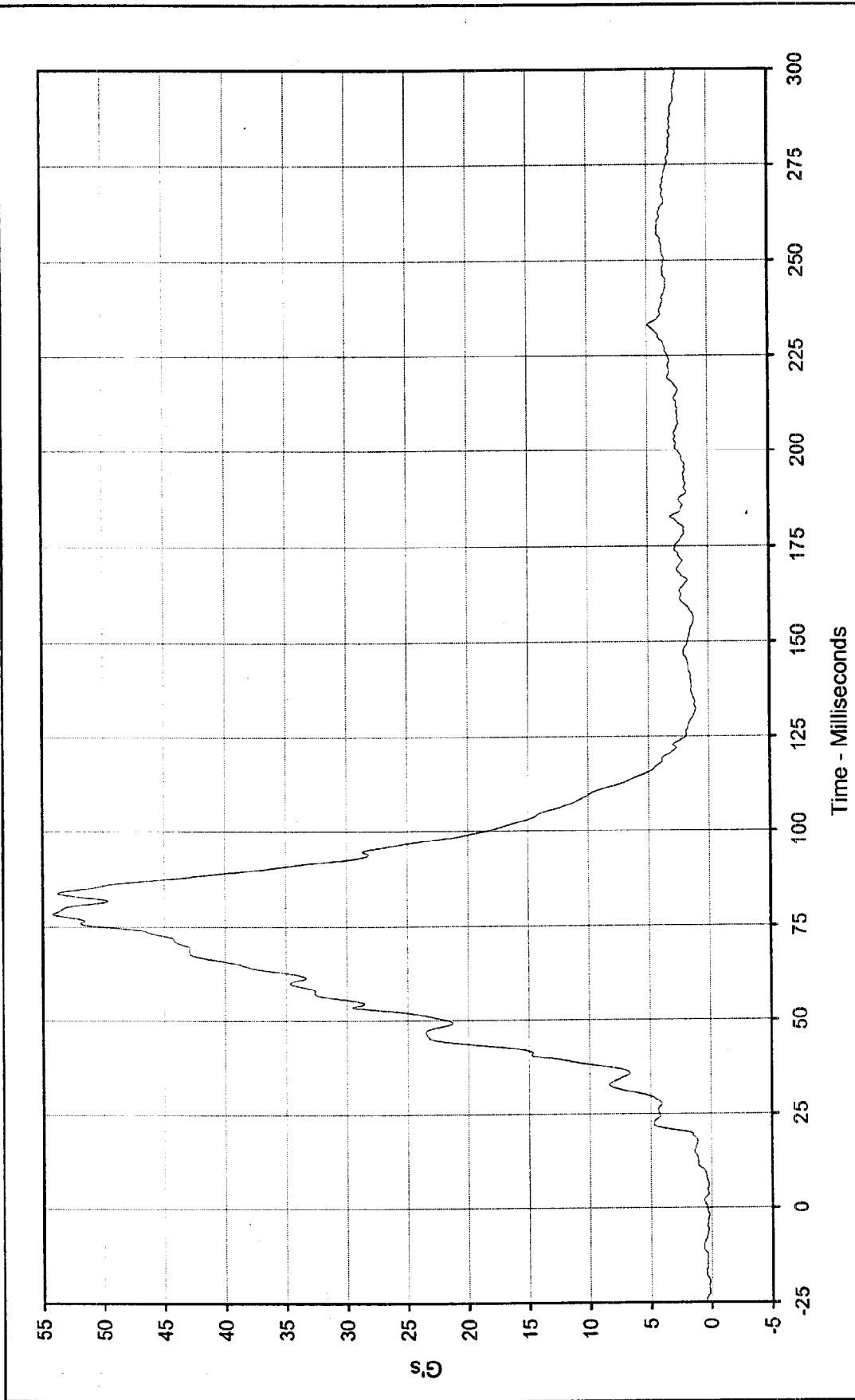
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





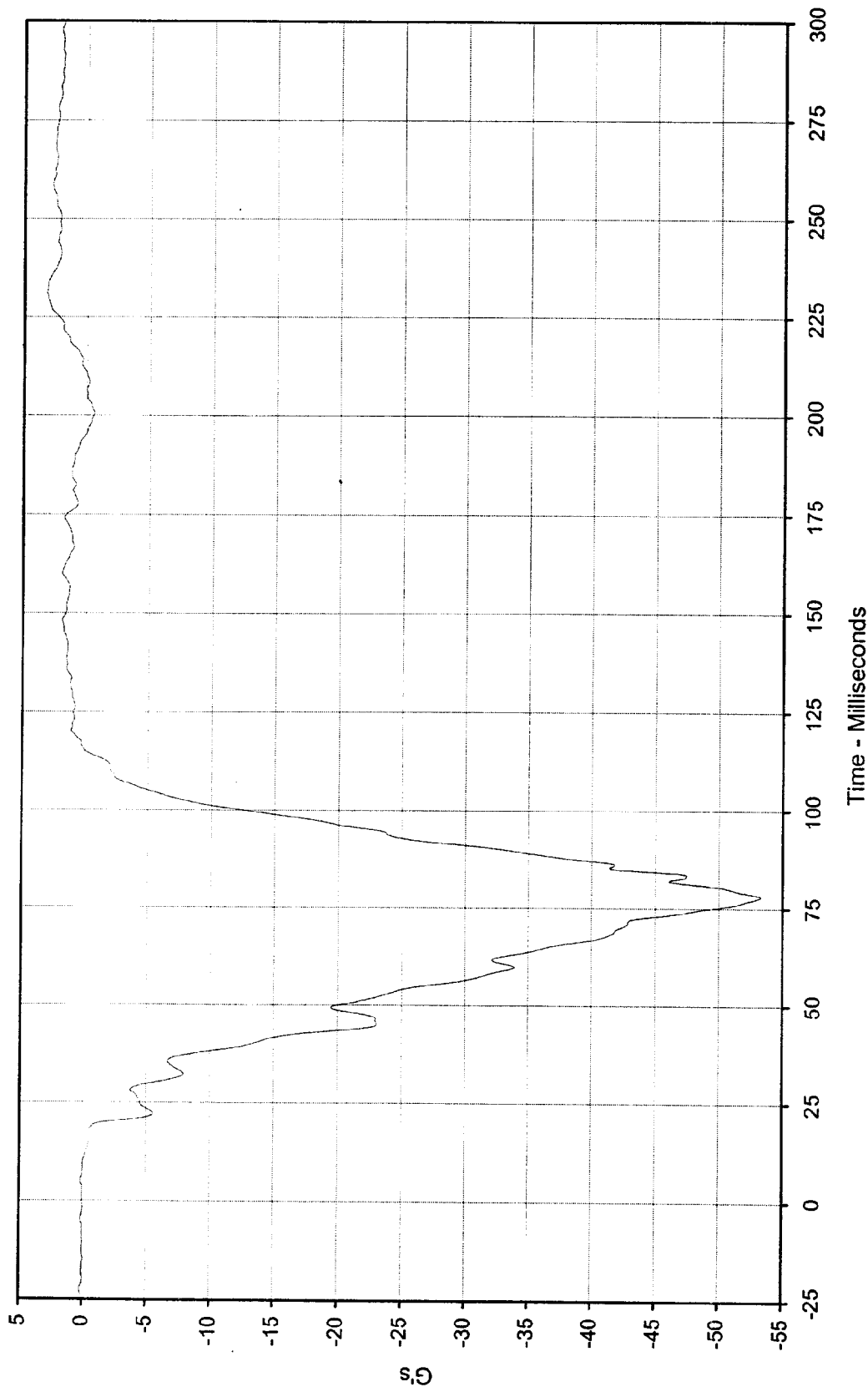
Curve Description:	Passenger Chest Primary Z	Test Program:	1999 NHTSA 35 mph NCAP	No.:	MX5304
Maximum Value:	12.5 at 53.4 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan		
Minimum Value:	-27.6 at 84.6 Milliseconds				
SAE Filter Class:	180				
Date of Test:	5/18/99				
Curve Number:	FIL-059				





Curve Description: Passenger Chest Resultant Primary		Test Program: 1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value: 54.2	at 78.3 Milliseconds	Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value: 0.2	at 6.2 Milliseconds		
SAE Filter Class: 180			
Date of Test: 5/18/99			
Curve Number: RES-057			





Curve Description: Passenger Chest Redundant X

Maximum Value: 3.2 at 231.5 Milliseconds

Minimum Value: -53.3 at 78.0 Milliseconds

SAE Filter Class: 180

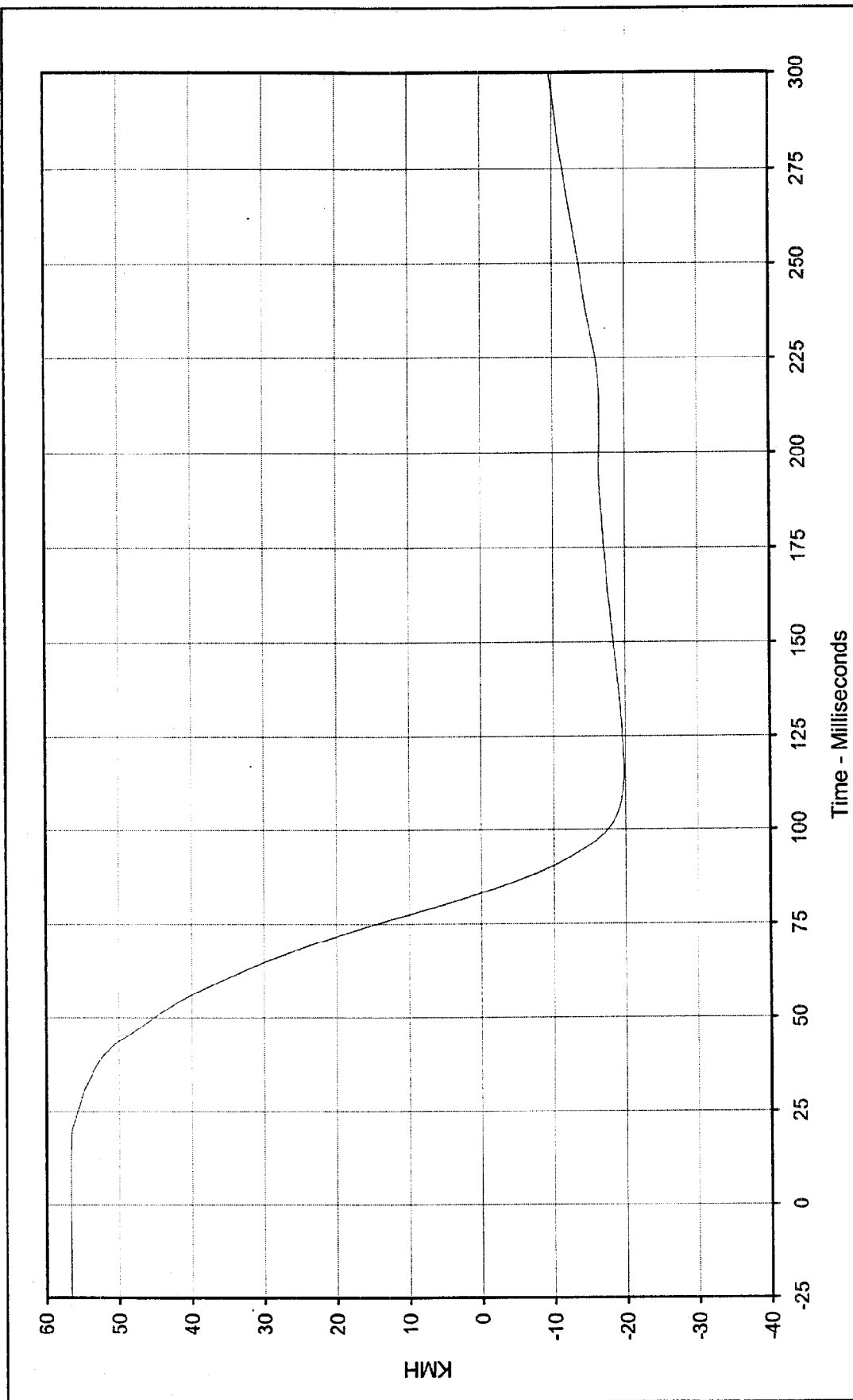
Date of Test: 5/18/99

Curve Number: FIL-060

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

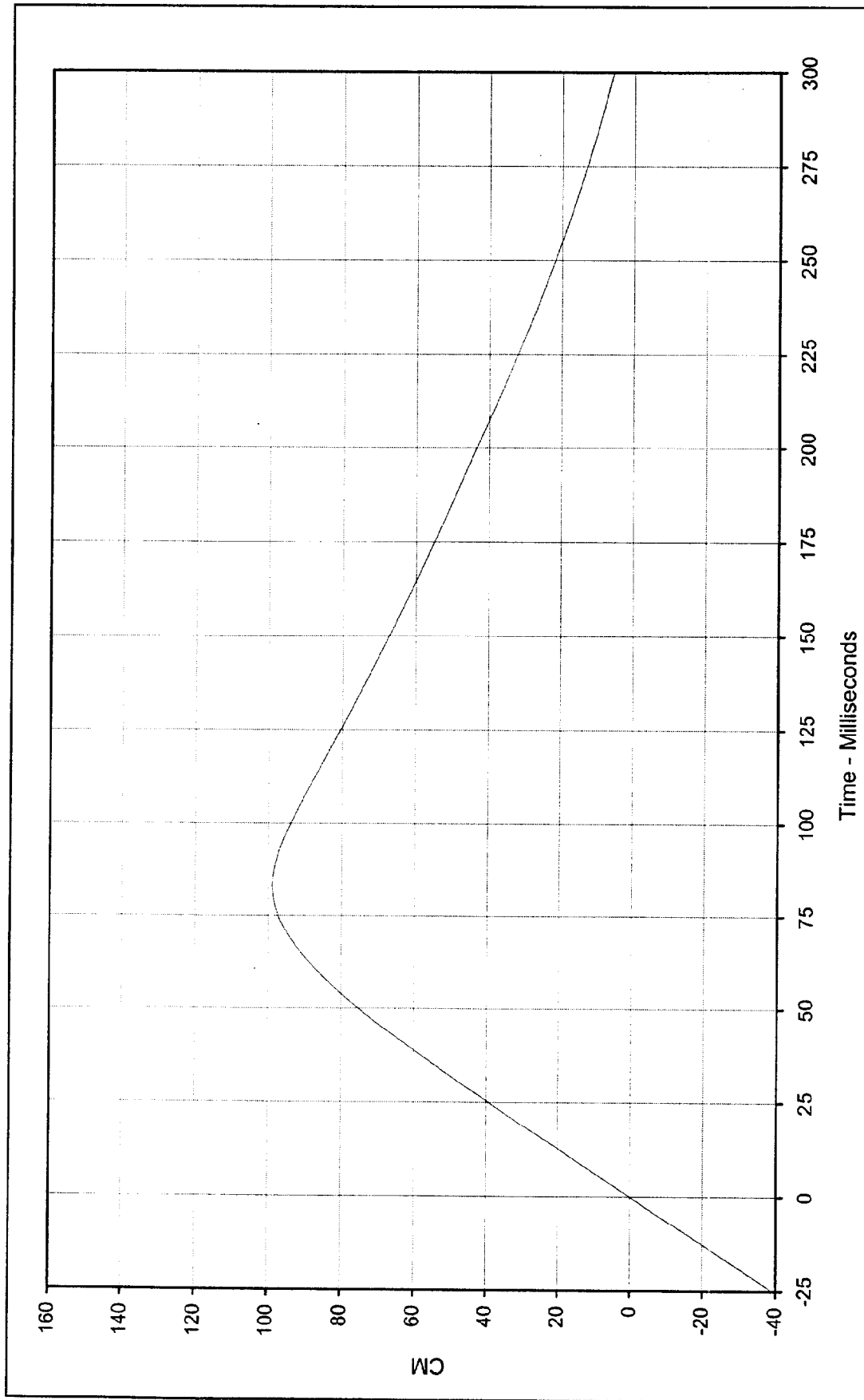




Curve Description: Passenger Chest Redundant X Velocity
 Maximum Value: 56.7 at 7.6 Milliseconds
 Minimum Value: -19.8 at 115.1 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN1-060

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 98.8 at 83.1 Milliseconds

Minimum Value: 0.1 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 5/18/99

Curve Number: IN2-060

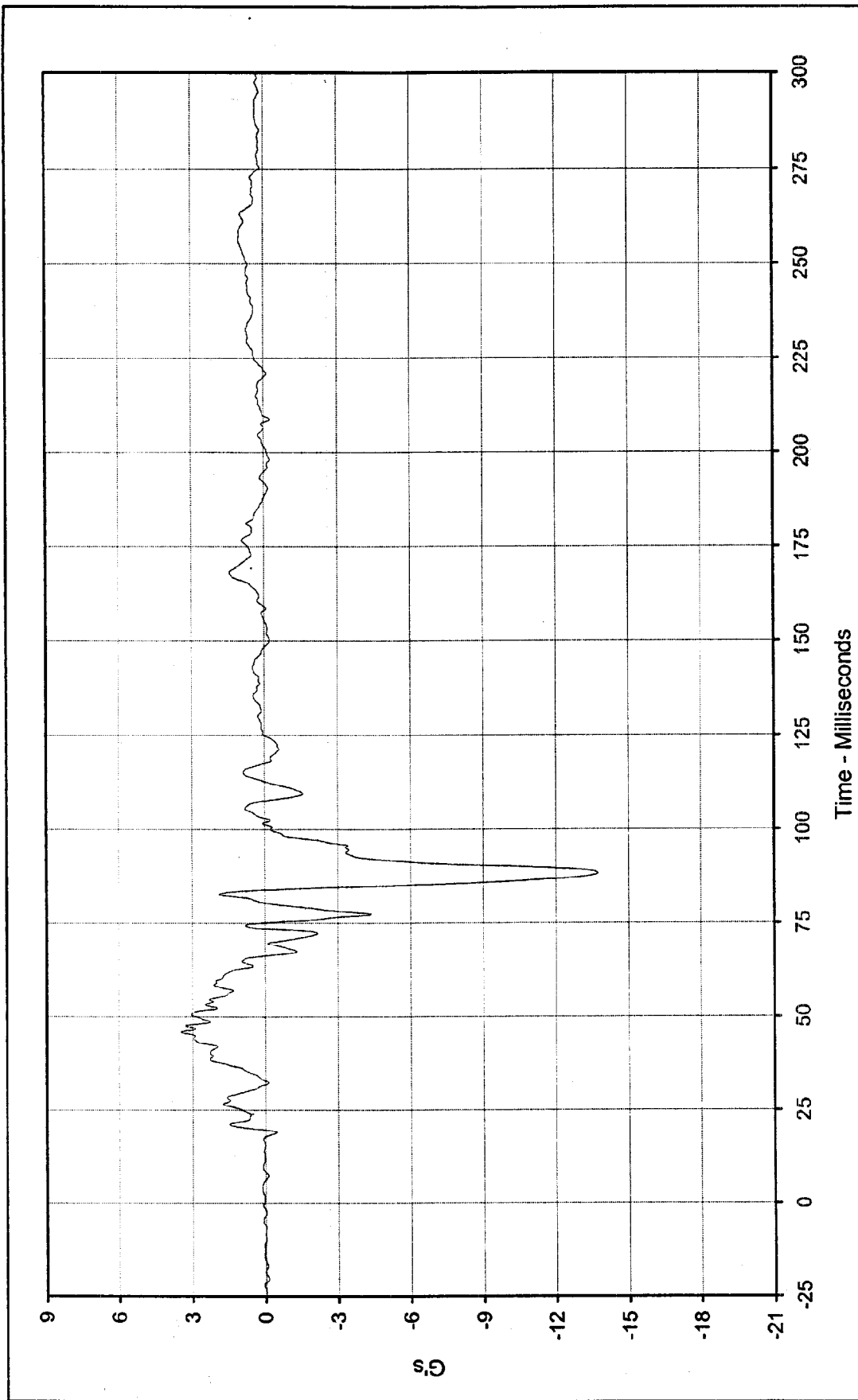
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle:

1999 Acura 3.5 RL 4 Door Sedan

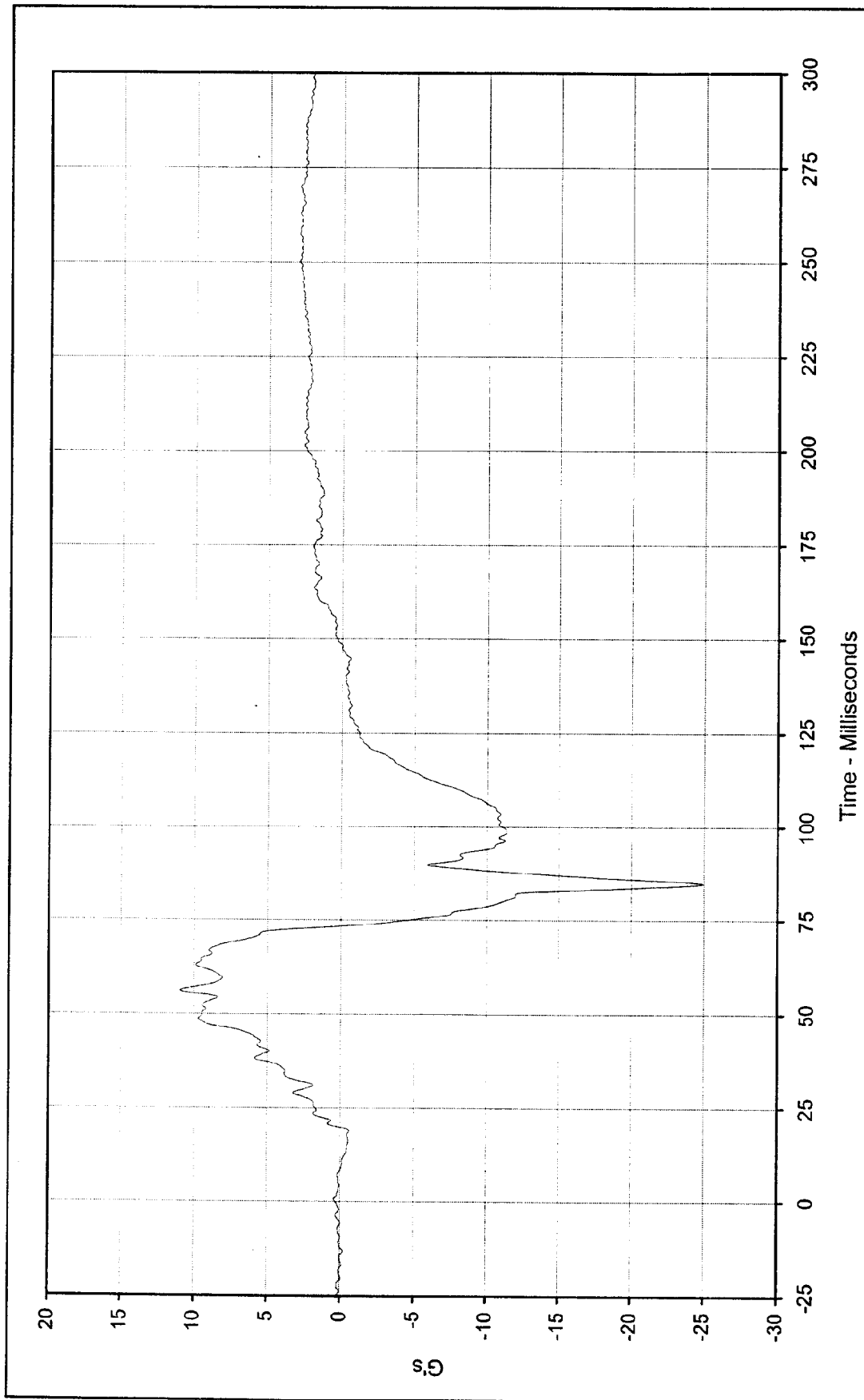




Curve Description: Passenger Chest Redundant Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
Maximum Value: 3.5 at 46.0 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan
Minimum Value: -13.7 at 88.1 Milliseconds

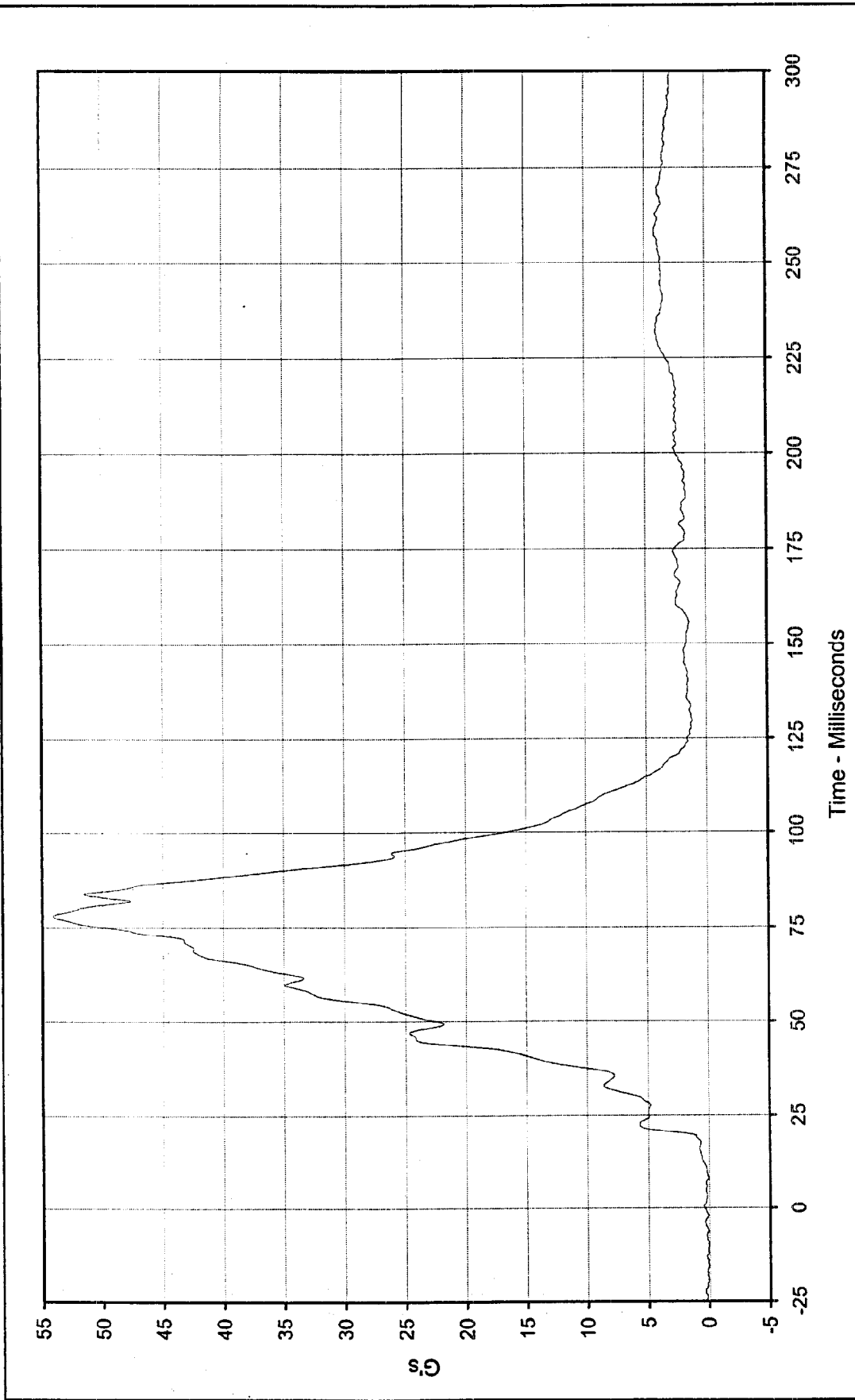


SAE Filter Class: 180
Date of Test: 5/18/99
Curve Number: FIL-061



Curve Description:	Passenger Chest Redundant Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	10.9 at 56.2 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-24.9 at 84.6 Milliseconds			
SAE Filter Class:	180			
Date of Test:	5/18/99			
Curve Number:	FIL-062			





Curve Description: Passenger Chest Resultant Redundant

Maximum Value: 54.1 at 78.0 Milliseconds

Minimum Value: 0.0 at 8.3 Milliseconds

SAE Filter Class: 180

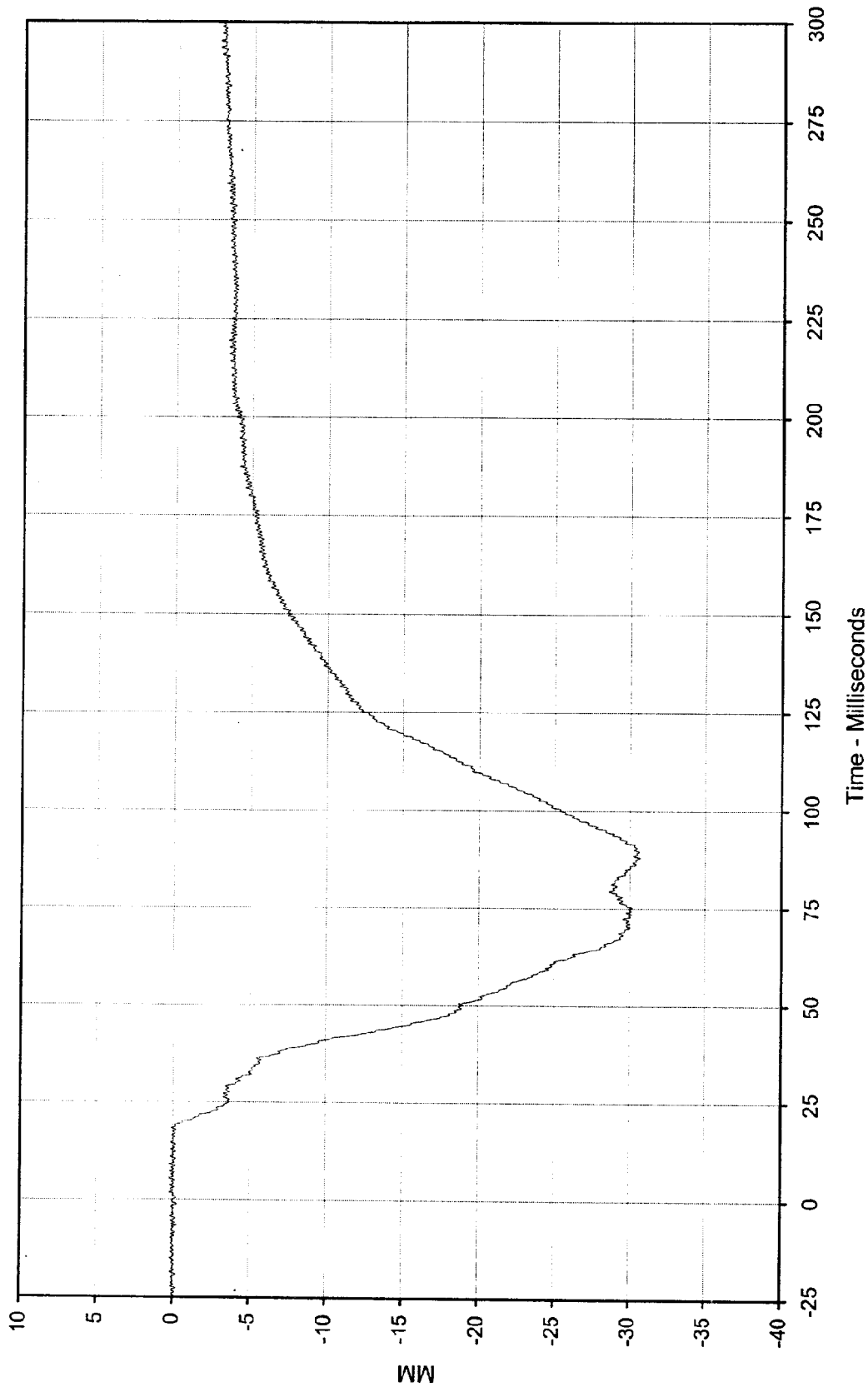
Date of Test: 5/18/99

Curve Number: RES-060

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

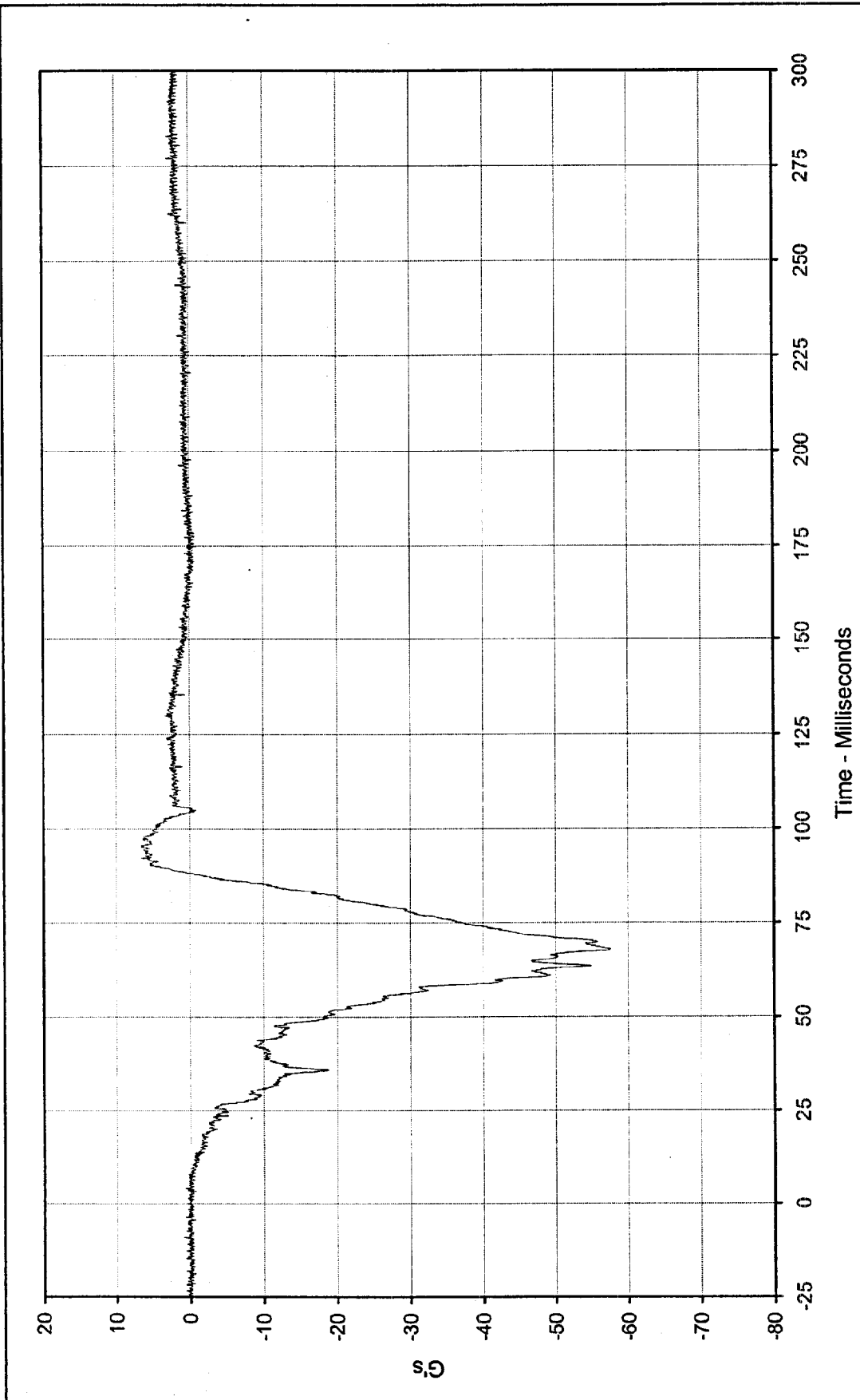




Curve Description: Passenger Chest Displacement X
 Maximum Value: 0.2 at 5.5 Milliseconds
 Minimum Value: -30.7 at 87.9 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-063

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

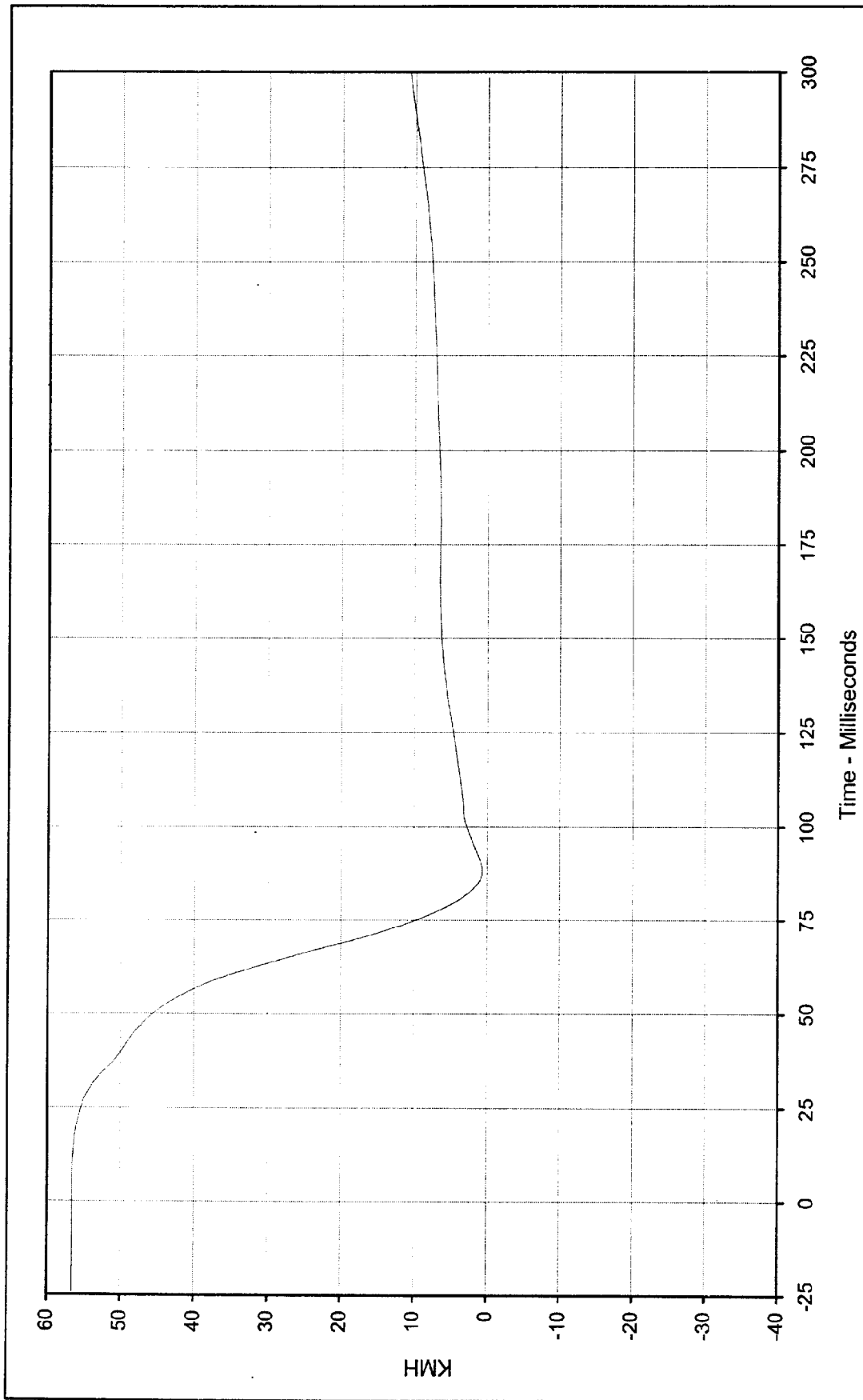




Curve Description:		Passenger Pelvis X		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	6.6	at	92.0	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-57.6	at	67.8			
SAE Filter Class:	1000					
Date of Test:	5/18/99					
Curve Number:	FIL-064					







Curve Description: Passenger Pelvis X Velocity

Maximum Value: 56.6 at 1.0 Milliseconds

Minimum Value: 0.6 at 88.1 Milliseconds

SAE Filter Class: 180

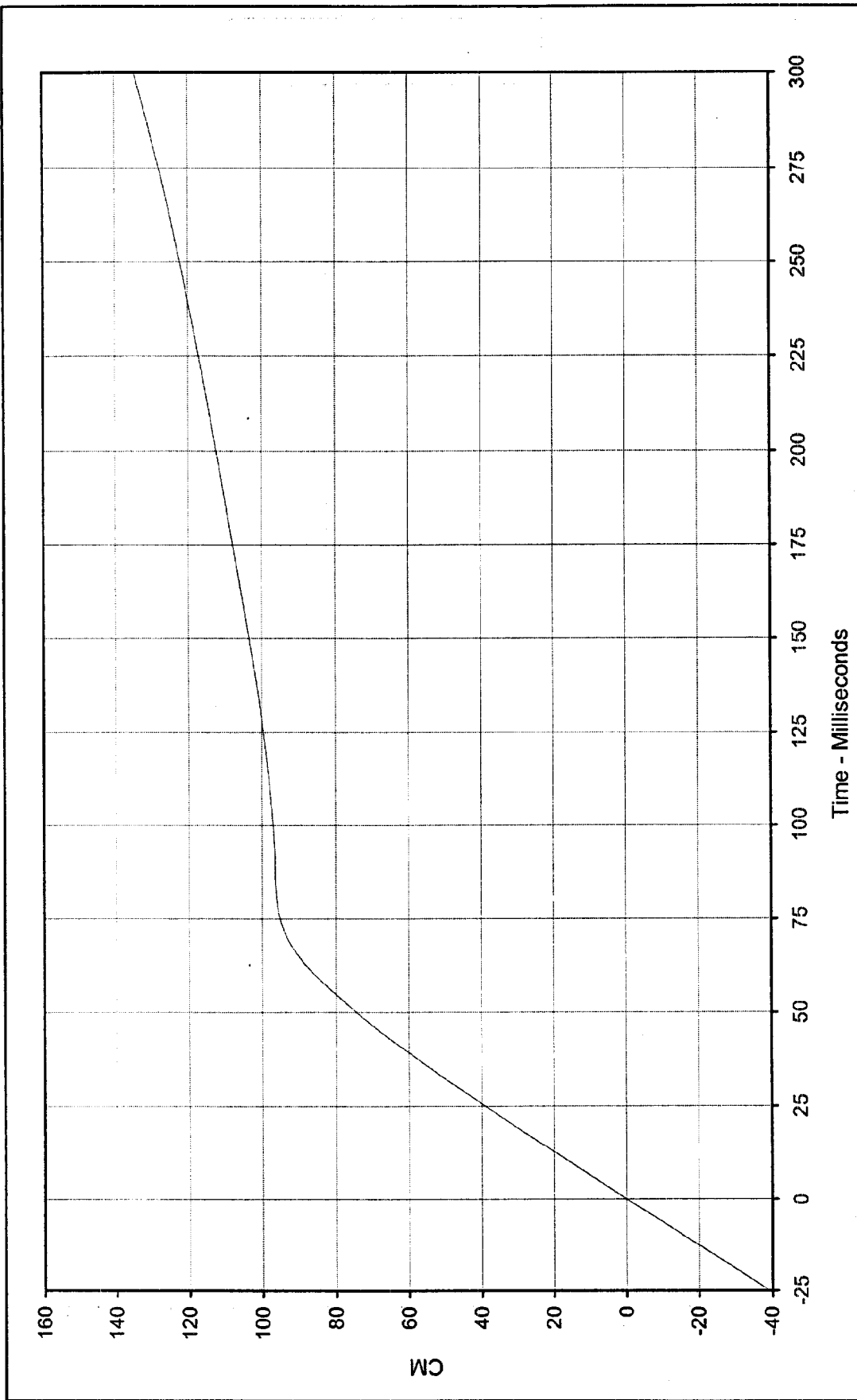
Date of Test: 5/18/99

Curve Number: IN1-064

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Pelvis X Displ.

Maximum Value: 134.6 at 299.9 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

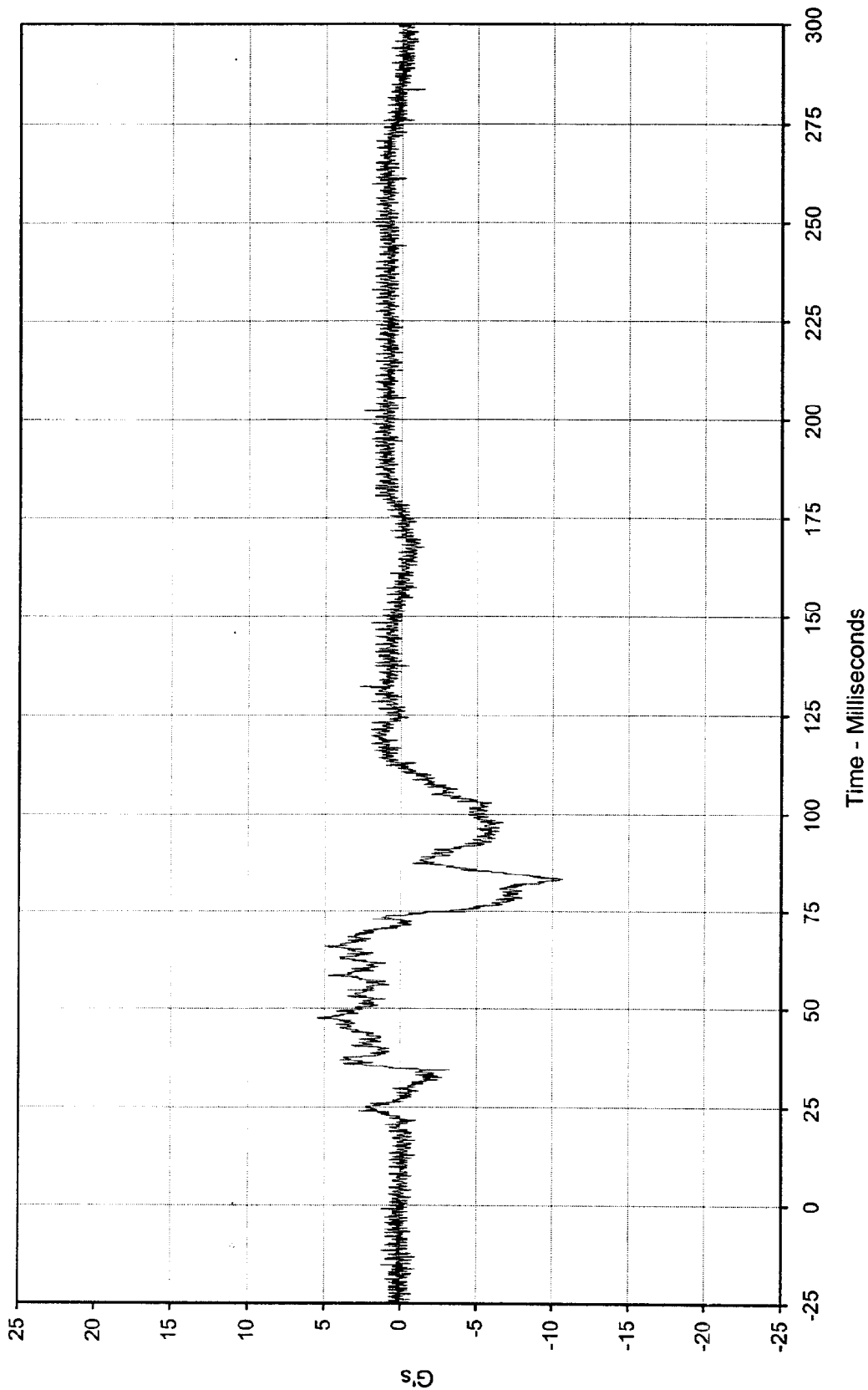
Date of Test: 5/18/99

Curve Number: IN2-064

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

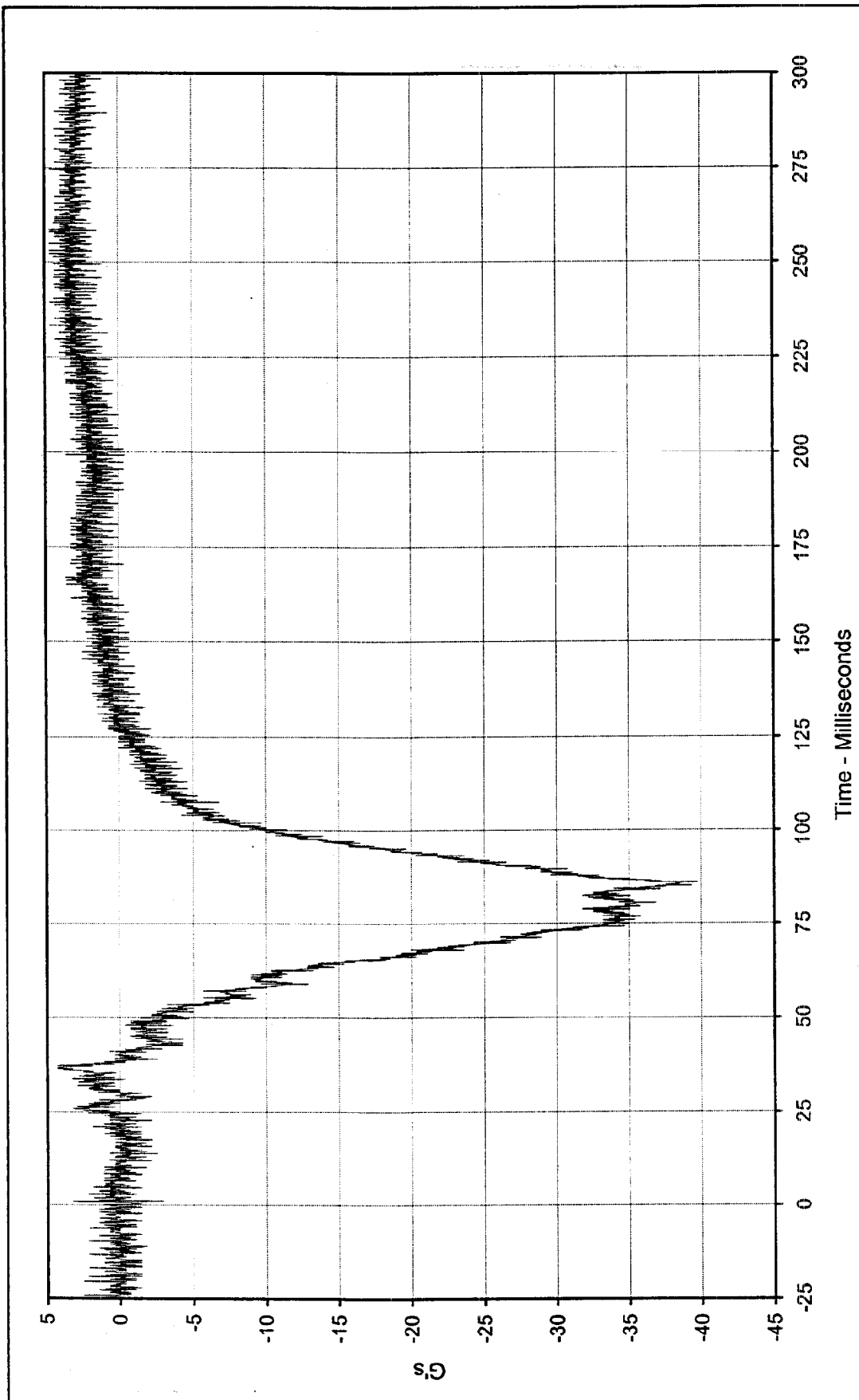
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Passenger Pelvis Y		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	5.5	at 47.5	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-10.7	at 83.2			
SAE Filter Class:	1000				
Date of Test:	5/18/99				
Curve Number:	FIL-065				

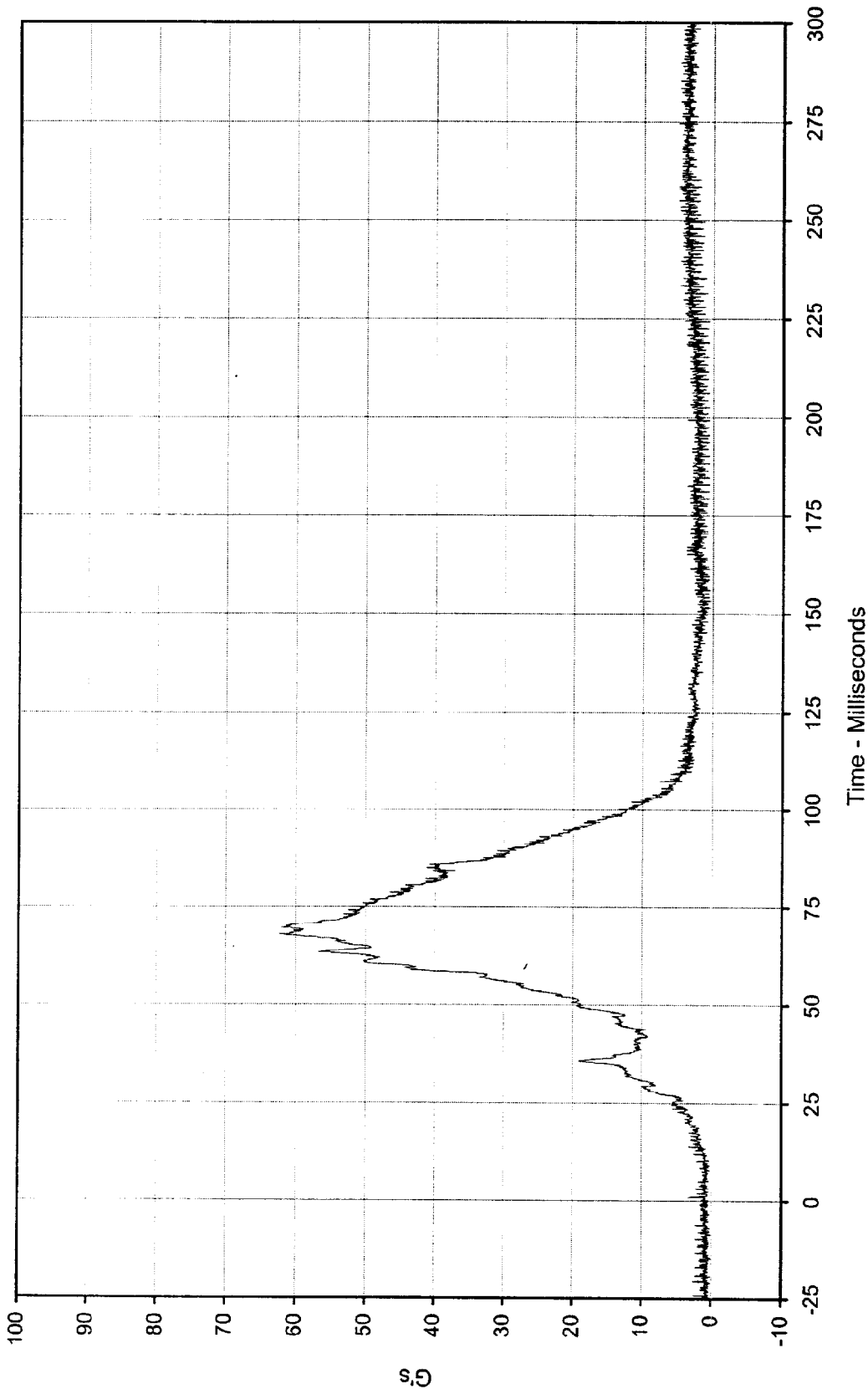




Curve Description:		Passenger Pelvis Z		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	4.6	at	233.5	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-39.7	at	85.8			
SAE Filter Class:	1000					
Date of Test:	5/18/99					
Curve Number:	FIL-066					



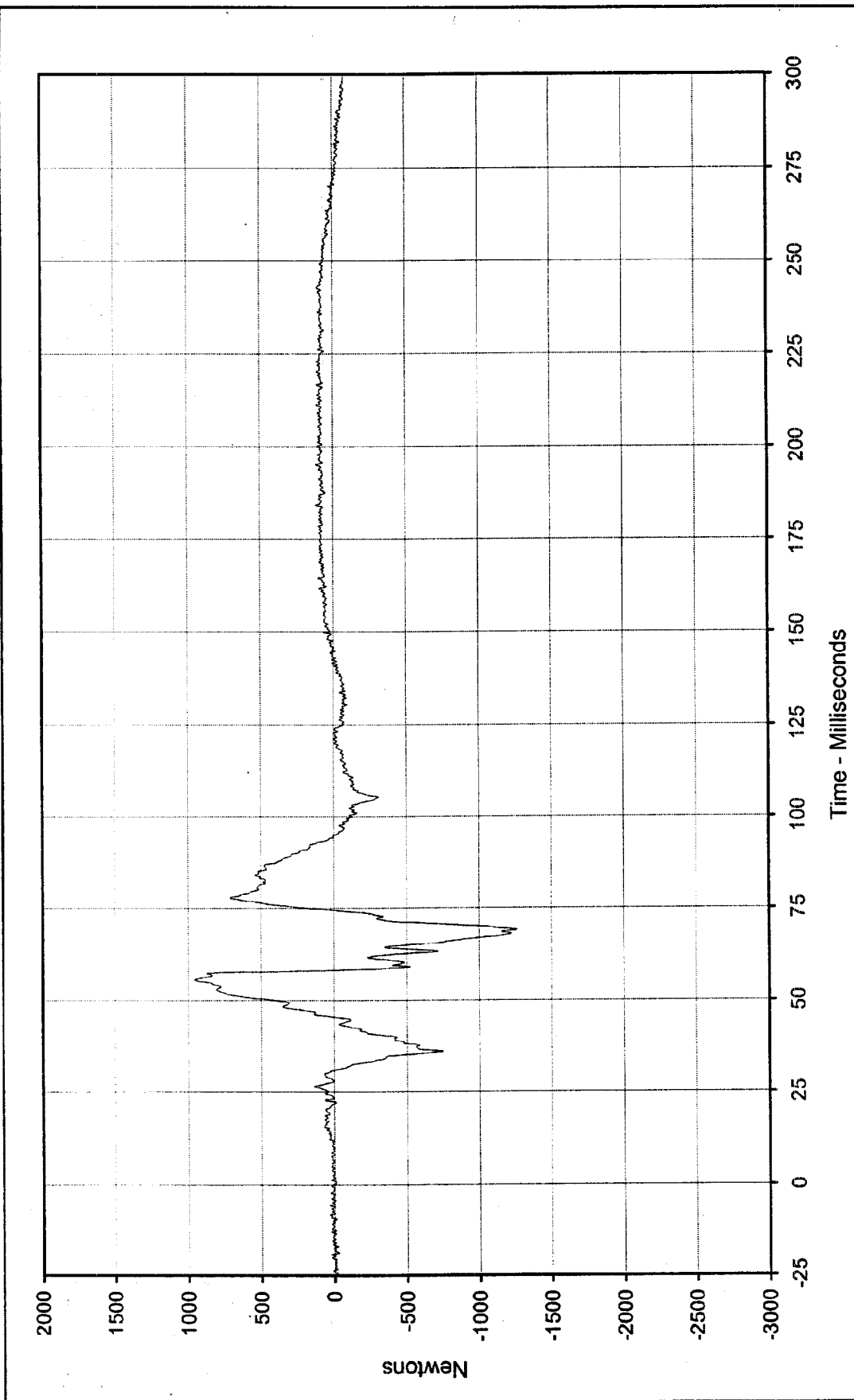




Curve Description: Passenger Pelvis Resultant
 Maximum Value: 62.3 at 67.8 Milliseconds
 Minimum Value: 0.2 at 7.8 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: RES-064

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

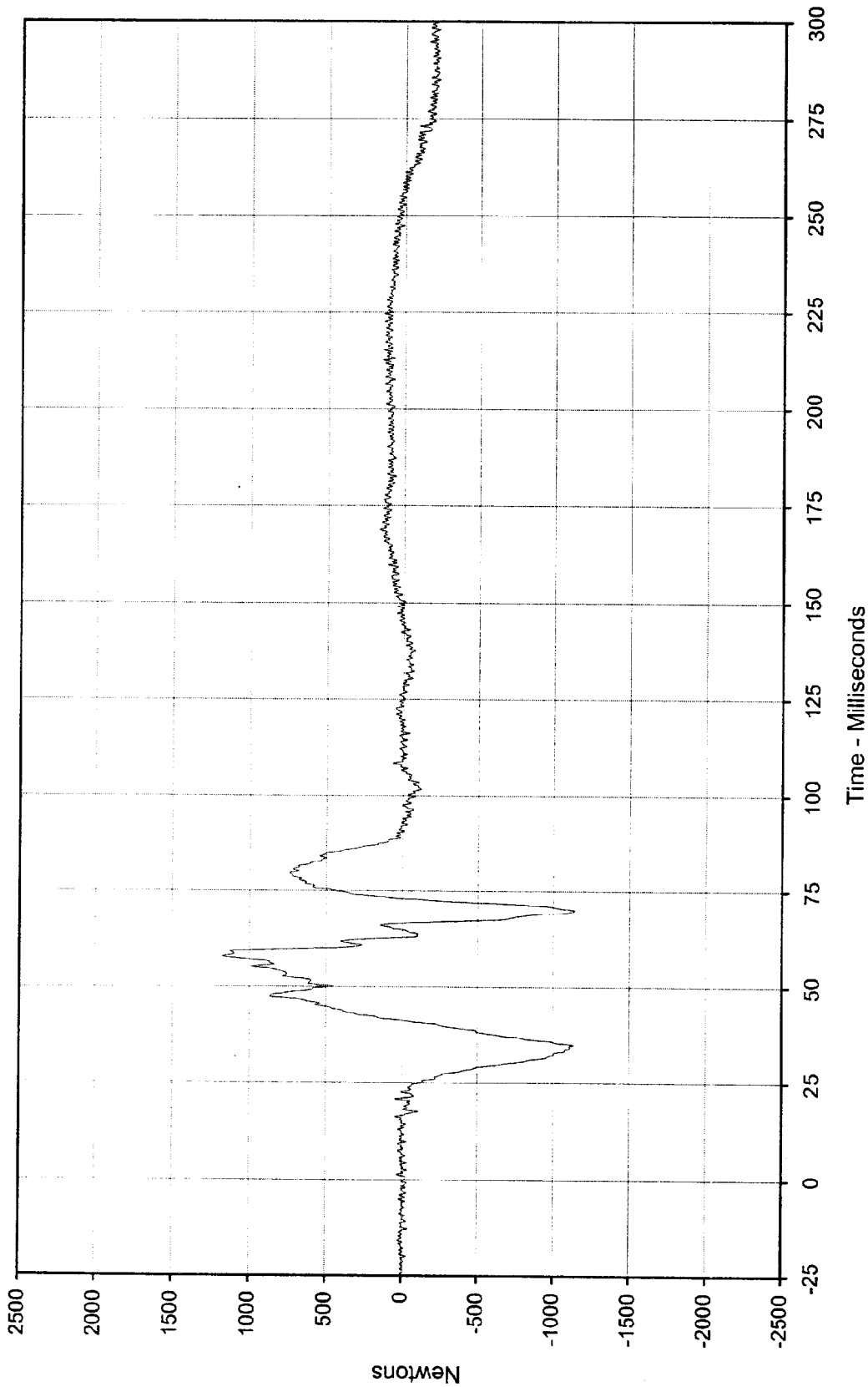




Curve Description: Passenger Left Femur Force
 Maximum Value: 955.5 at 55.6 Milliseconds
 Minimum Value: -1263.1 at 69.2 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-067

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

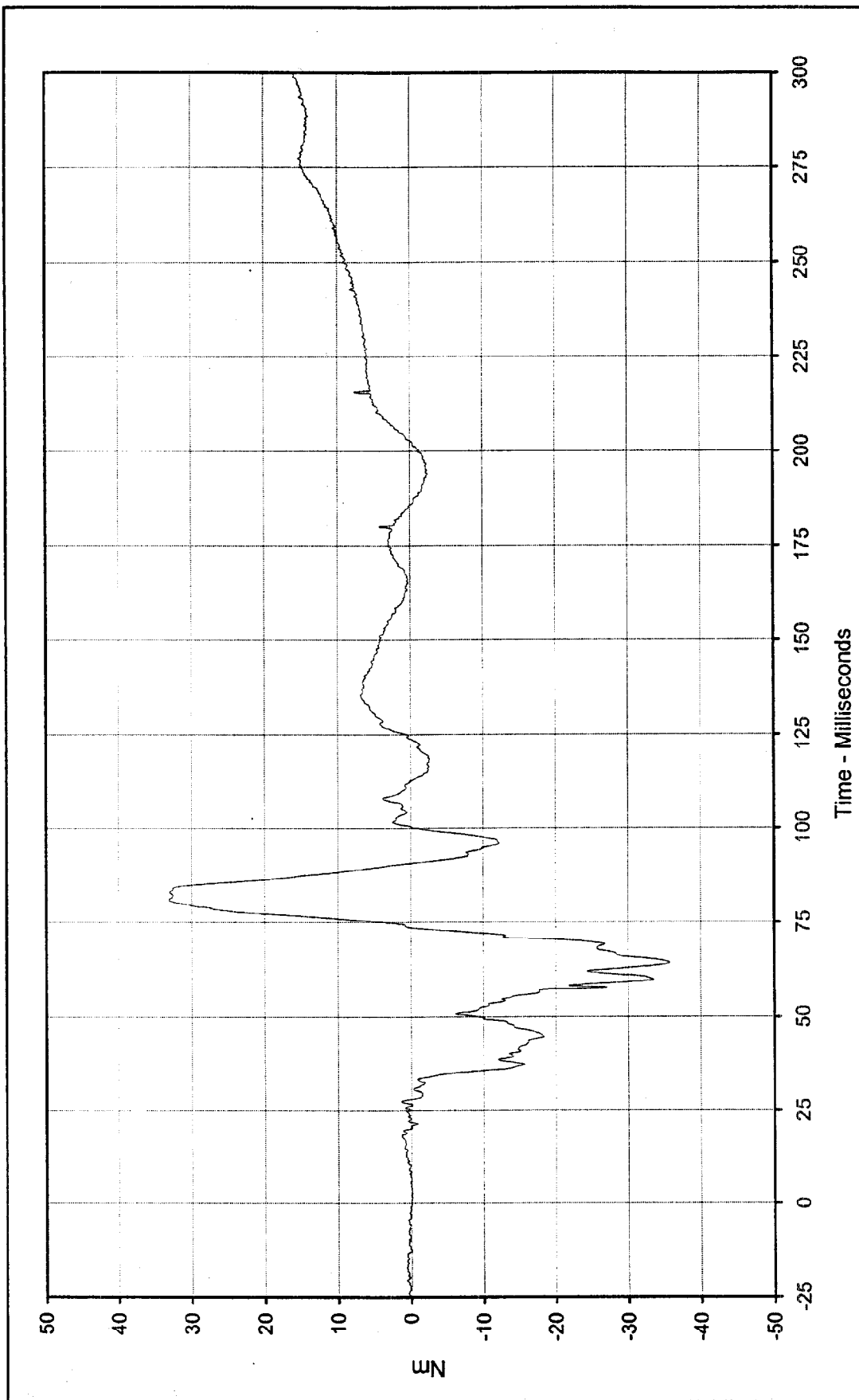




Curve Description: Passenger Right Femur Force
 Maximum Value: 1174.4 at 57.7 Milliseconds
 Minimum Value: -1142.0 at 69.9 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-068

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Left Upper Tibia Moment X

Maximum Value: 33.1 at 80.9 Milliseconds

Minimum Value: -35.7 at 64.3 Milliseconds

SAE Filter Class: 600

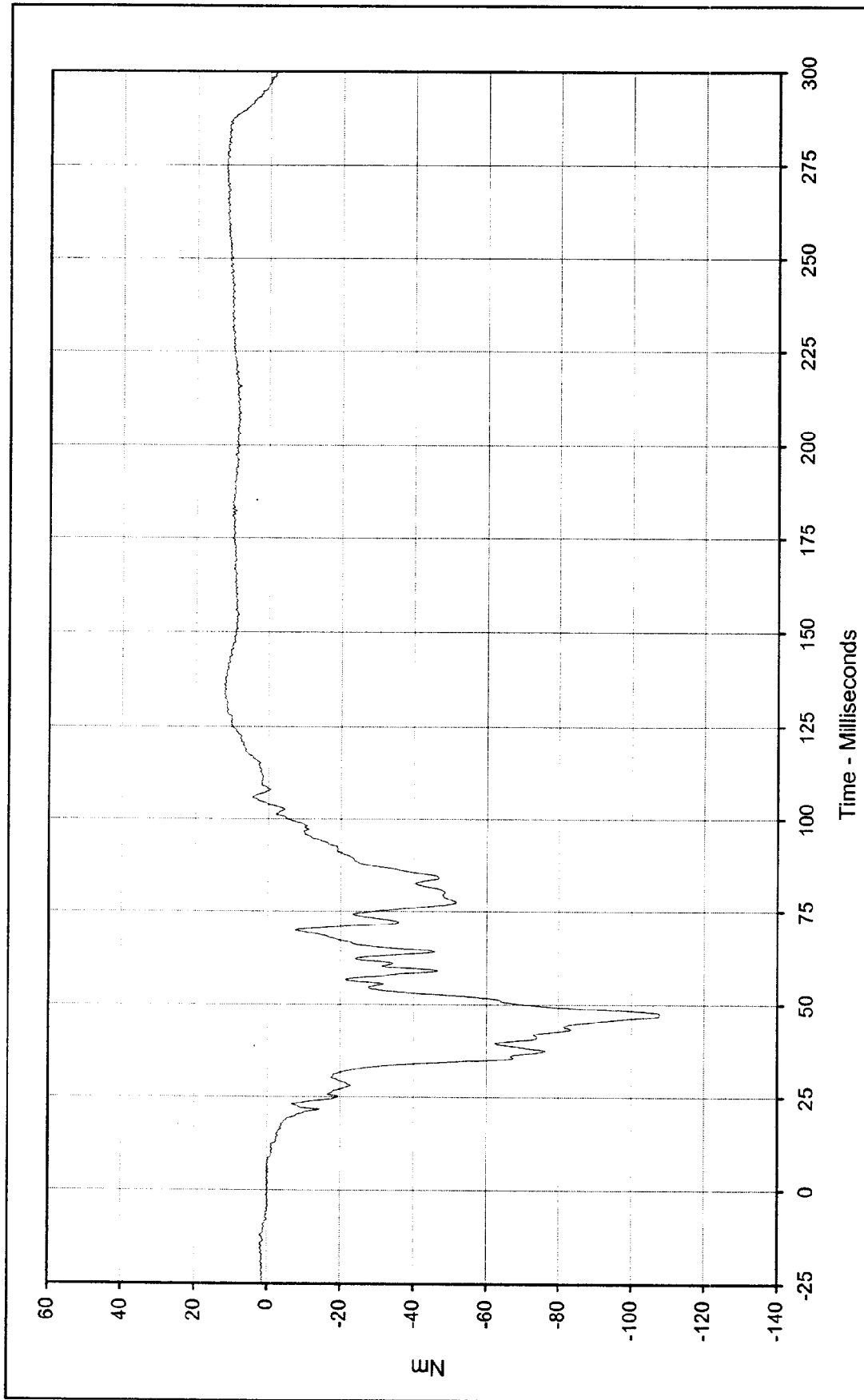
Date of Test: 5/18/99

Curve Number: FIL-069

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Left Upper Tibia Moment Y

Maximum Value: 12.2 at 136.3 Milliseconds

Minimum Value: -107.9 at 47.6 Milliseconds

SAE Filter Class: 600

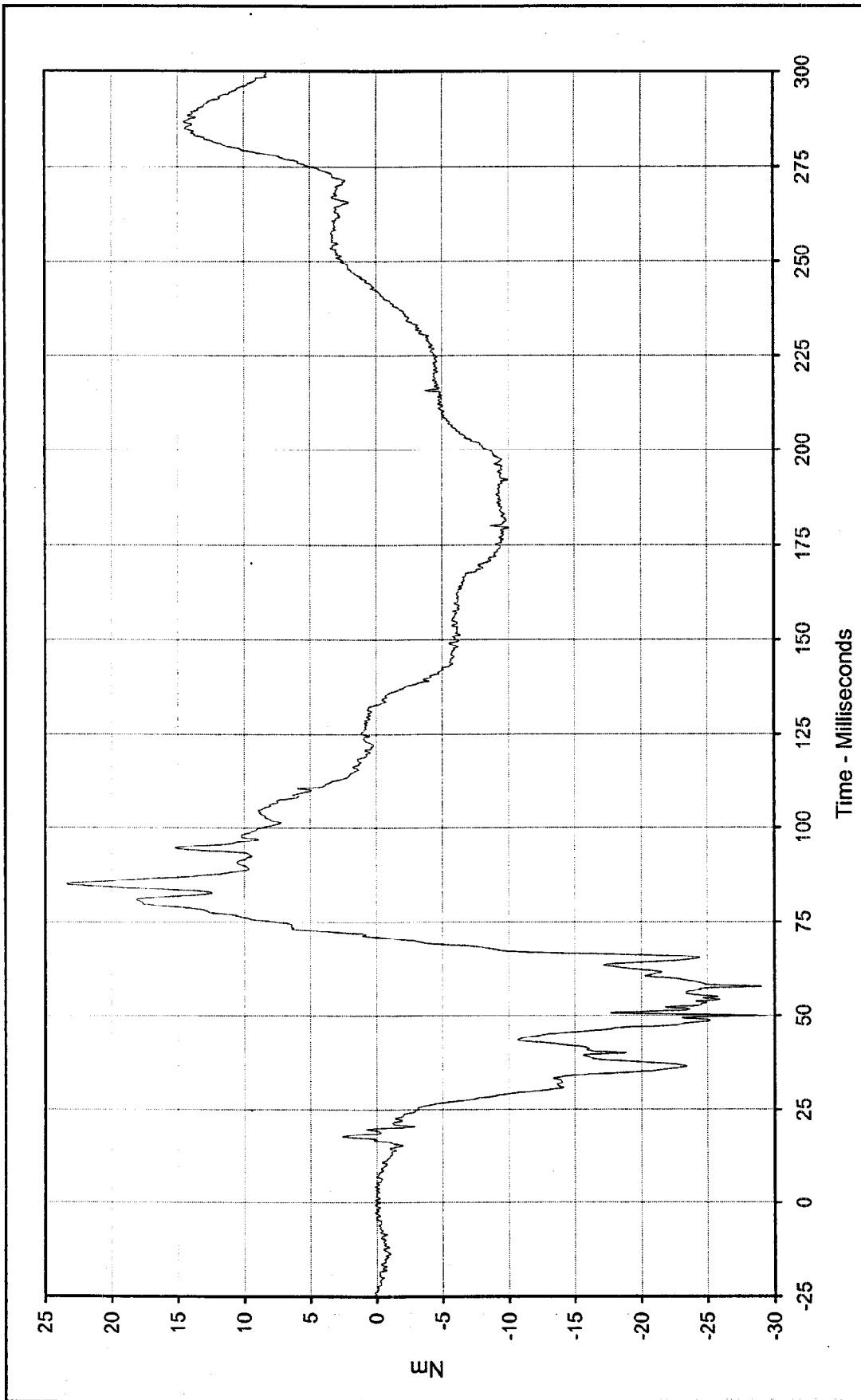
Date of Test: 5/18/99

Curve Number: FIL-070

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 23.4 at 84.9 Milliseconds

Minimum Value: -29.4 at 49.9 Milliseconds

SAE Filter Class: 600

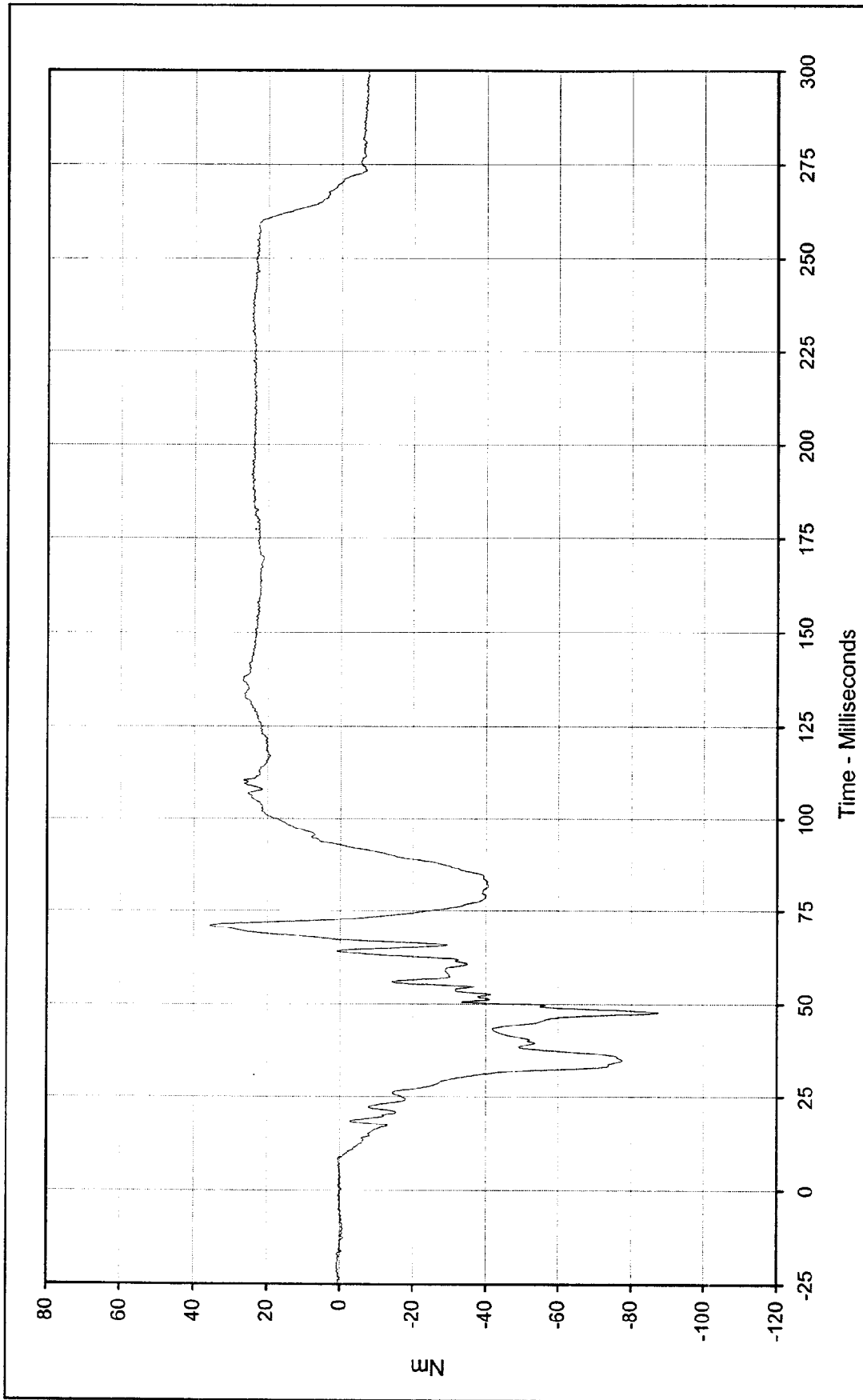
Date of Test: 5/18/99

Curve Number: FIL-071

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 35.6 at 70.9 Milliseconds

Minimum Value: -87.8 at 47.8 Milliseconds

SAE Filter Class: 600

Date of Test: 5/18/99

Curve Number: FIL-072

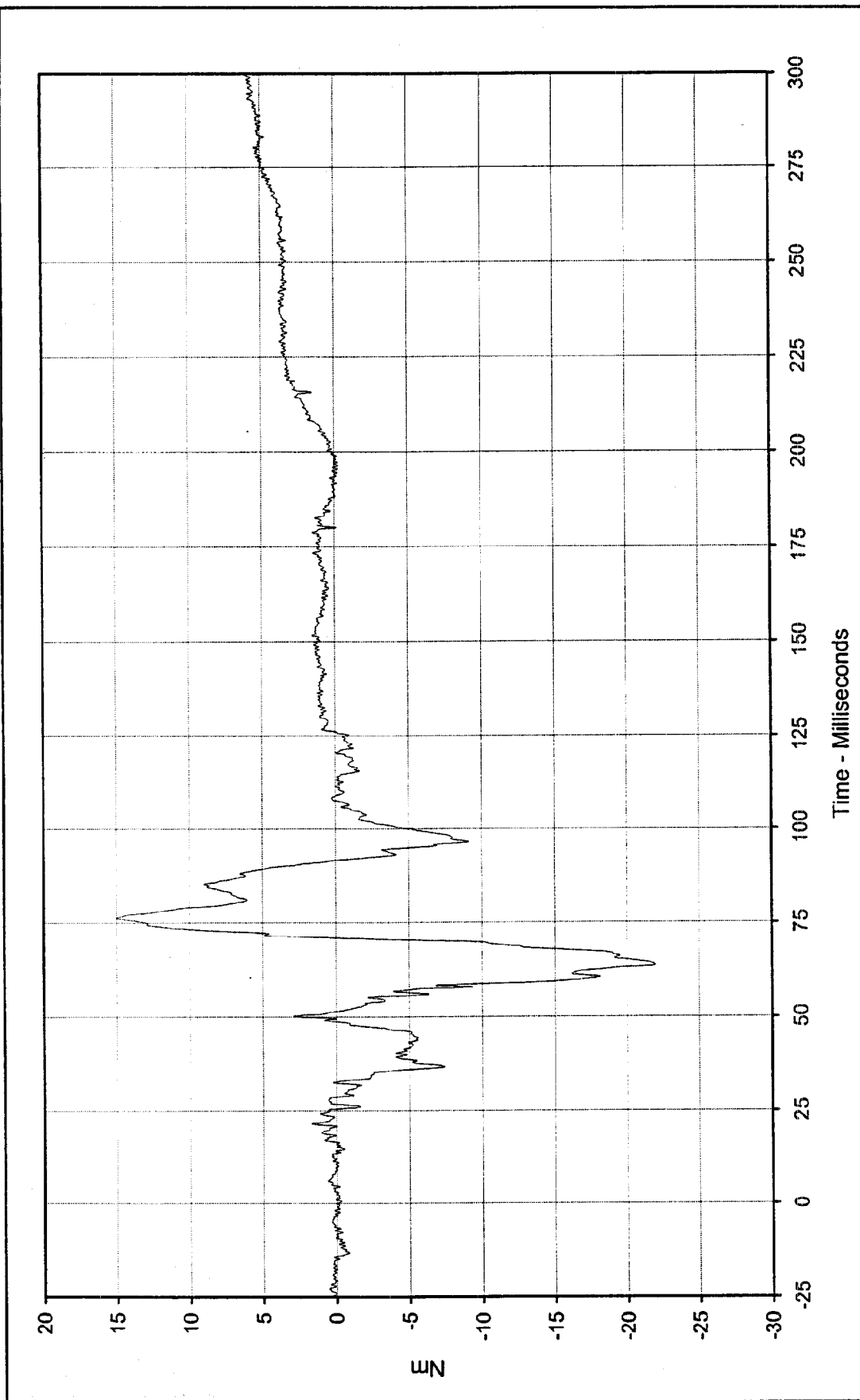
Test Program:

Test Vehicle:

1999 NHTSA 35 mph NCAP No.: MX5304

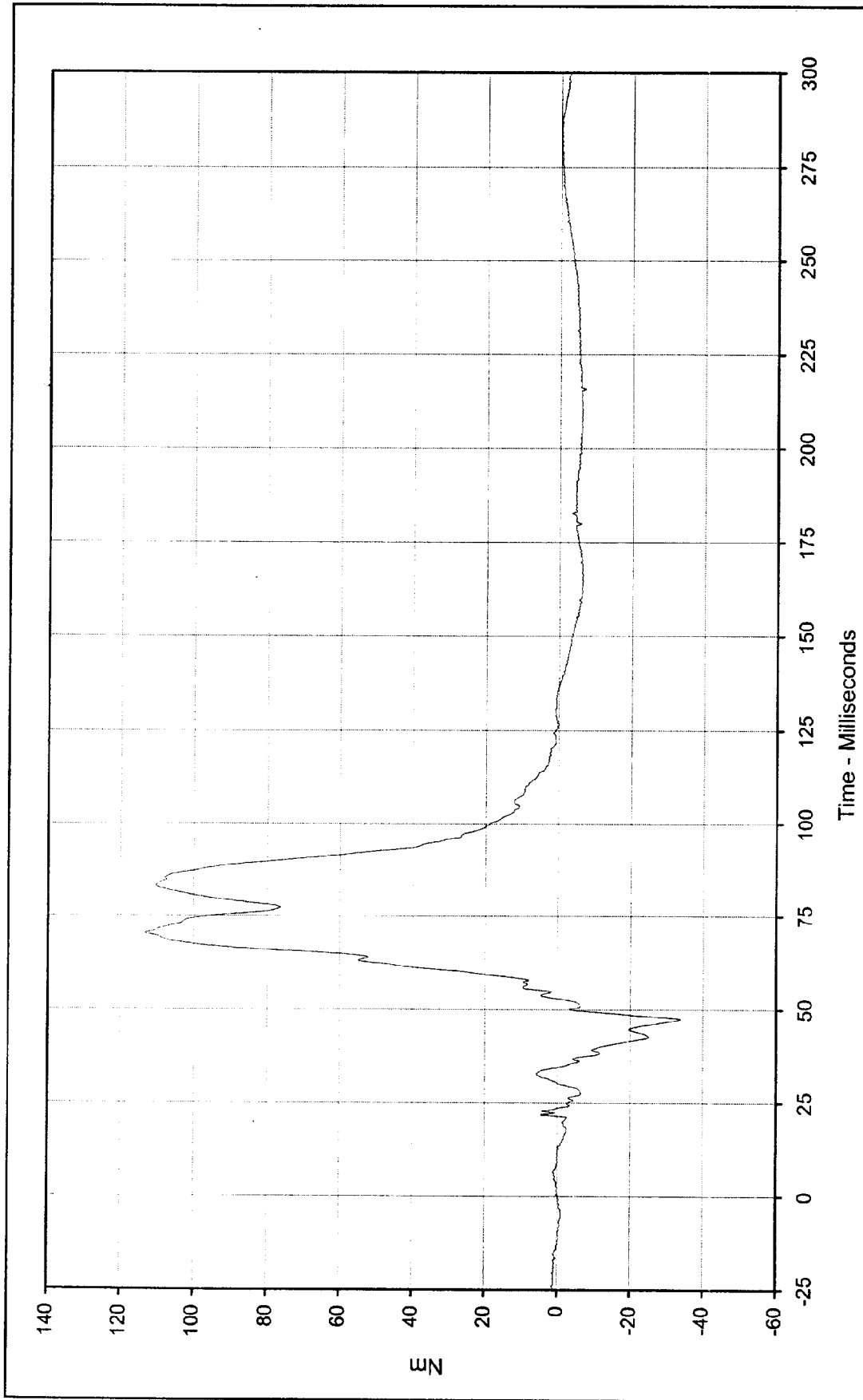
1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Moment X	Test Program: 1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value: 15.0 at 76.3 Milliseconds	Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value: -22.0 at 63.5 Milliseconds		
SAE Filter Class: 600		
Date of Test: 5/18/99		
Curve Number: FIL-073		





Curve Description: Passenger Left Lower Tibia Moment Y

Maximum Value: 113.5 at 70.0 Milliseconds

Minimum Value: -33.8 at 47.4 Milliseconds

SAE Filter Class: 600

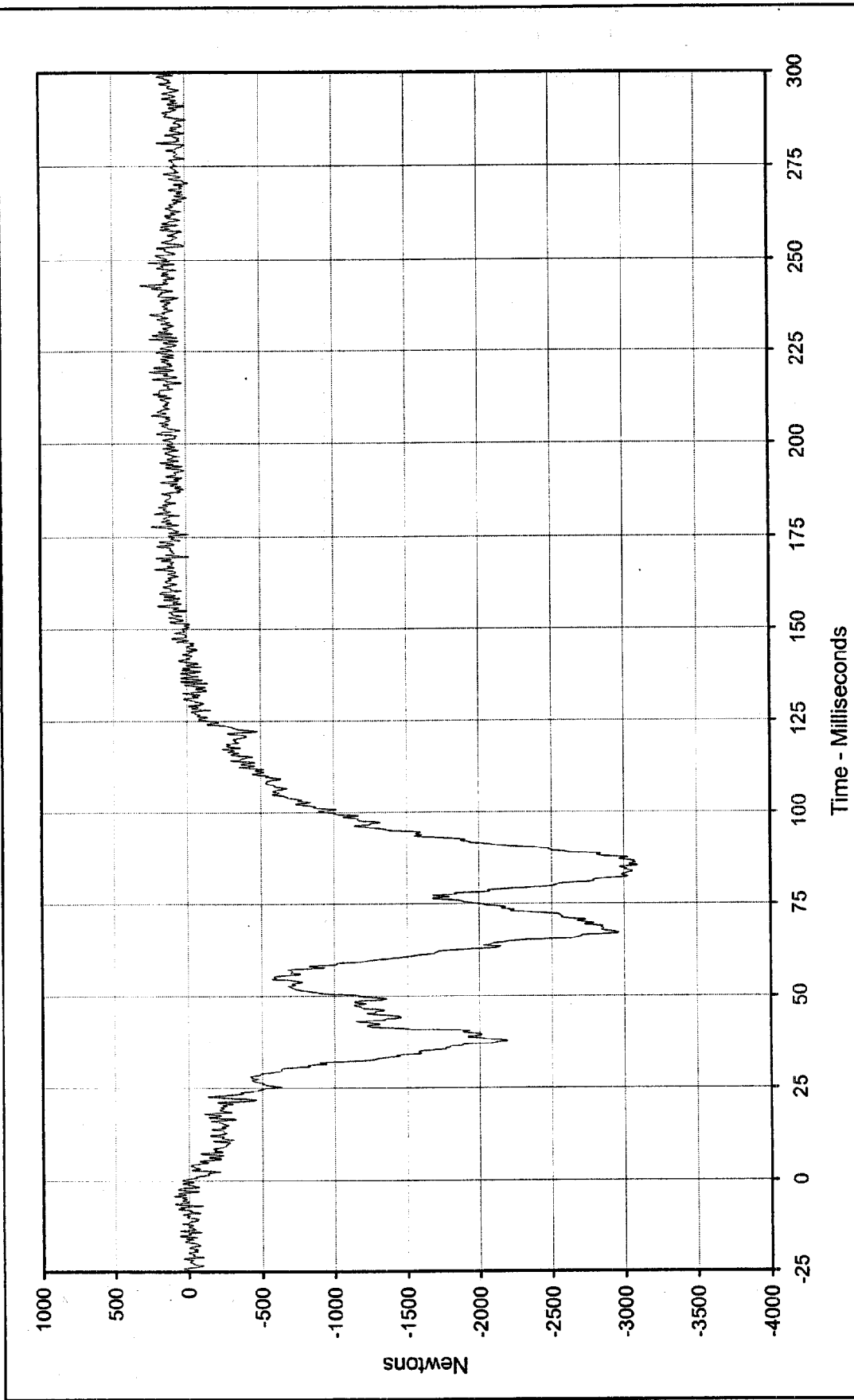
Date of Test: 5/18/99

Curve Number: FIL-074

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan



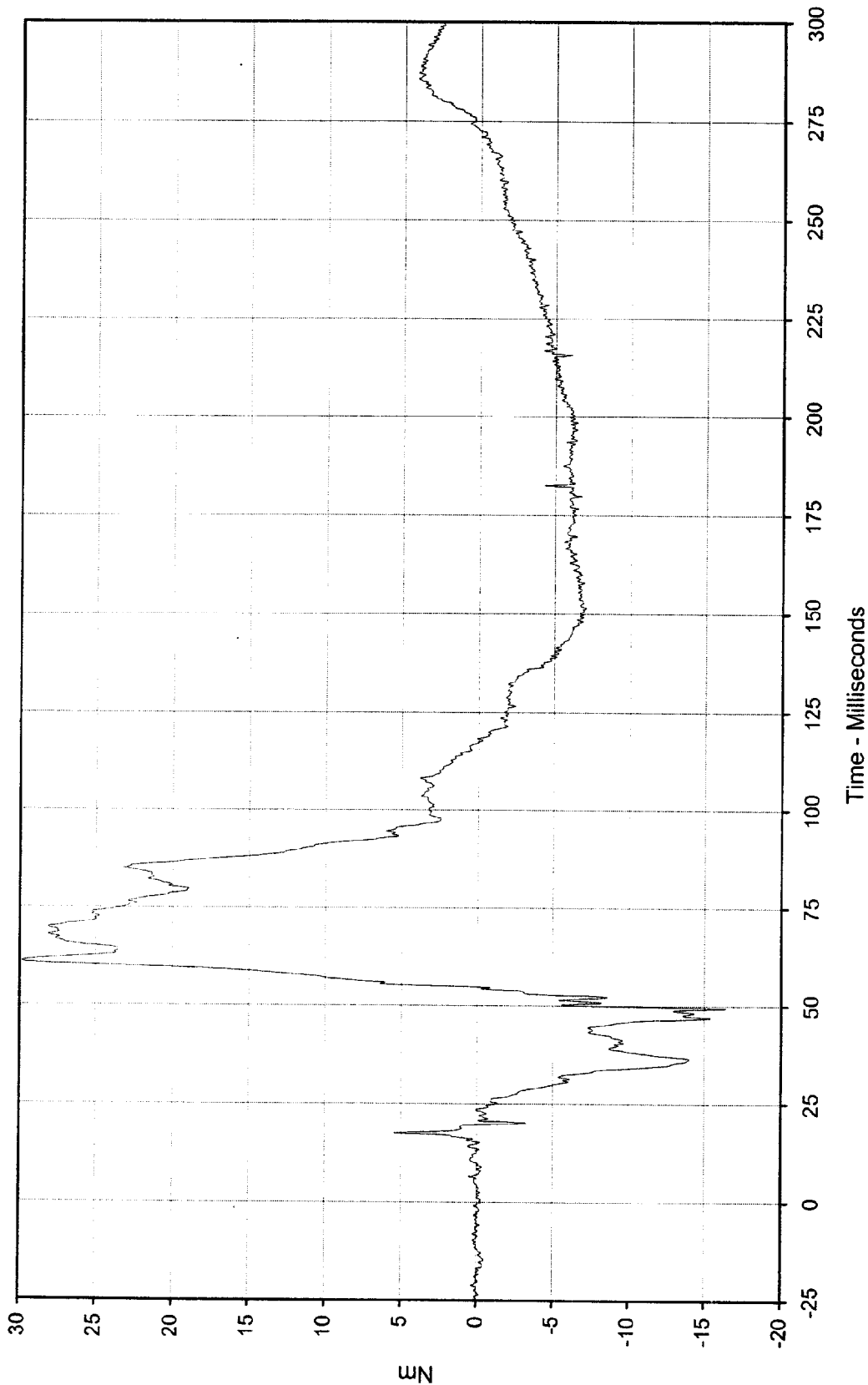


Curve Description: Passenger Left Lower Tibia Force Z
 Maximum Value: 304.6 at 242.9 Milliseconds
 Minimum Value: -3094.8 at 85.3 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-075

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Right Lower Tibia Moment X

Maximum Value: 29.9 at 61.0 Milliseconds

Minimum Value: -16.4 at 49.4 Milliseconds

SAE Filter Class: 600

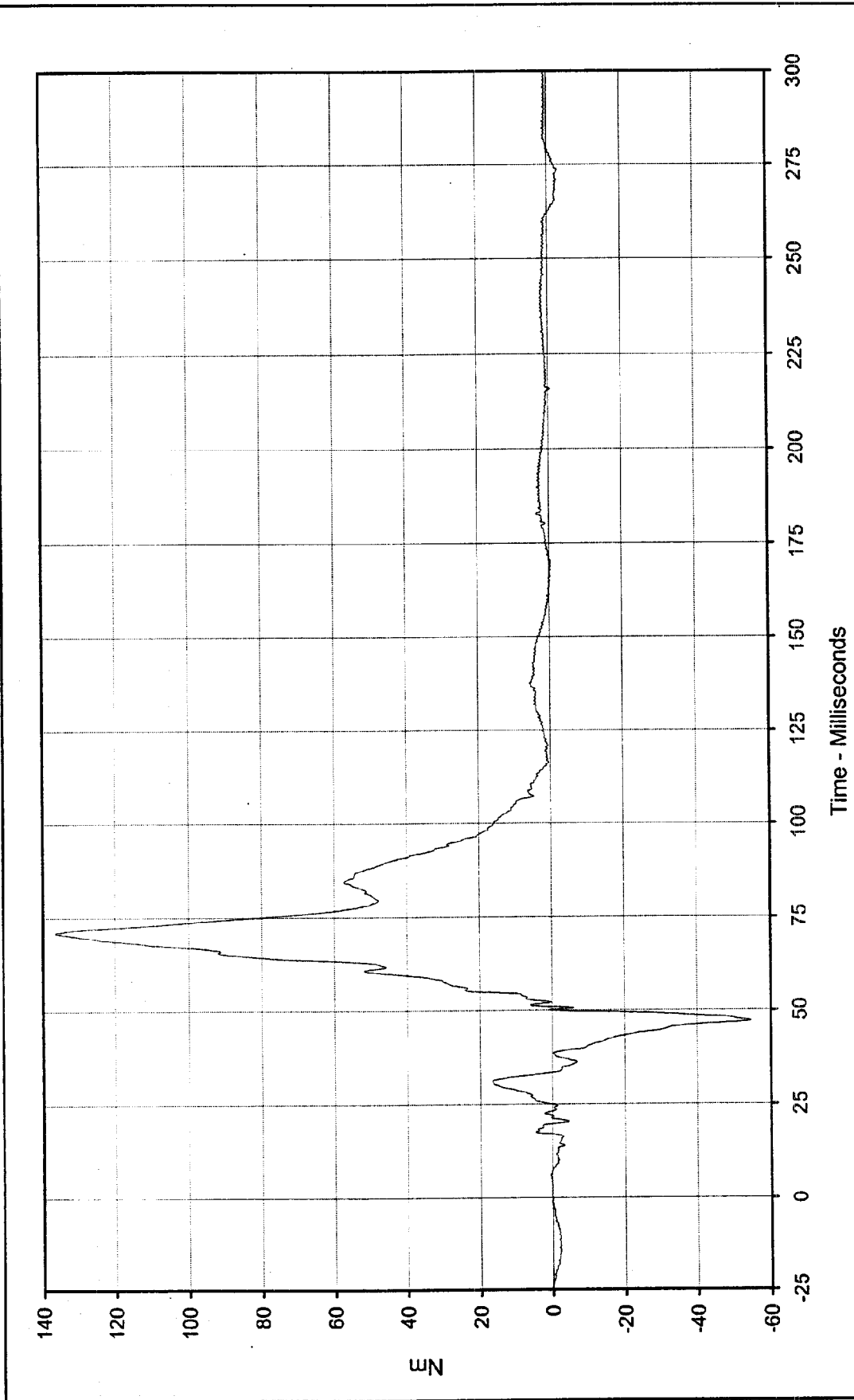
Date of Test: 5/18/99

Curve Number: FIL-076

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

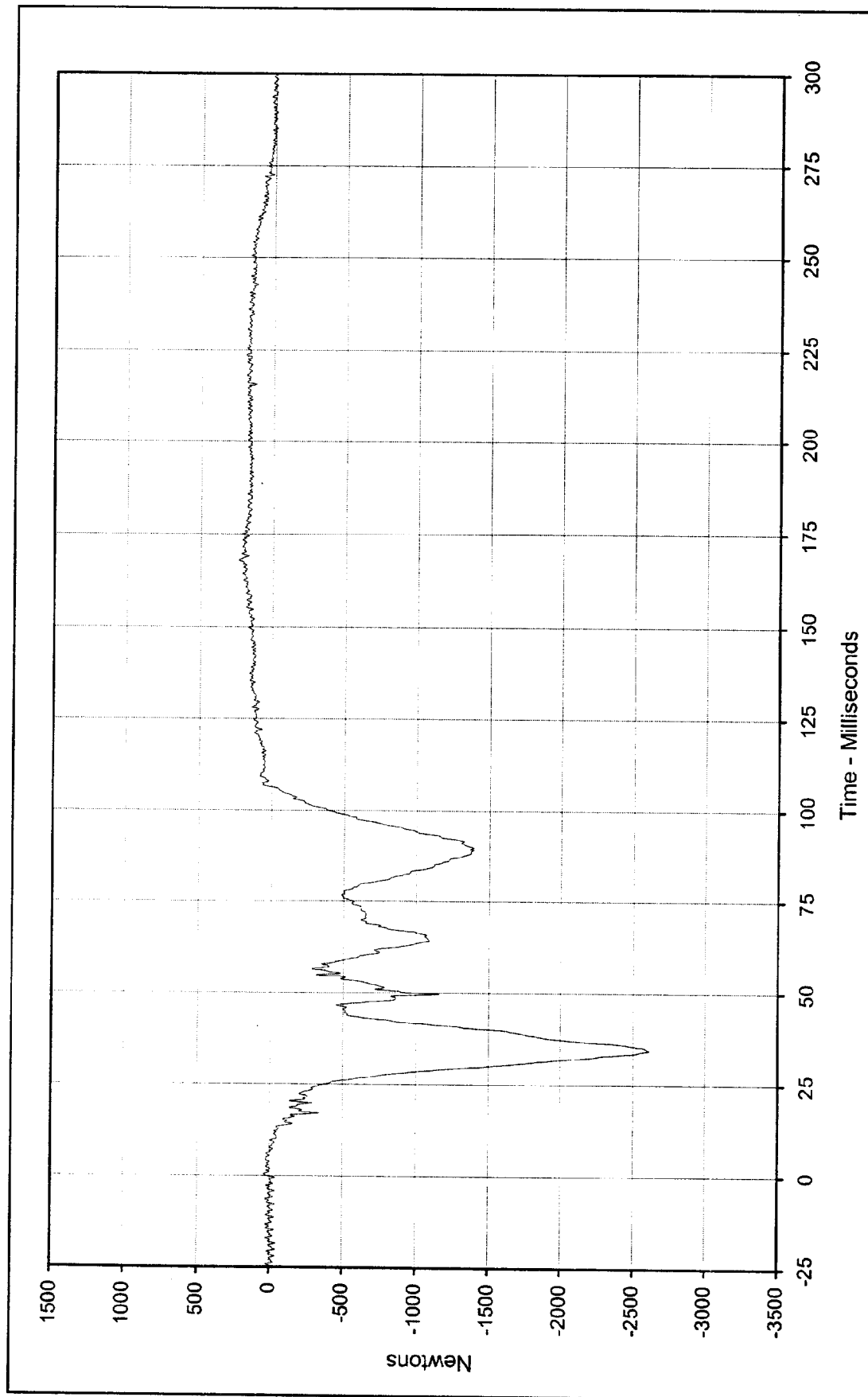




Curve Description: Passenger Right Lower Tibia Moment Y
 Maximum Value: 136.5 at 70.9 milliseconds
 Minimum Value: -54.6 at 47.1 milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-077

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

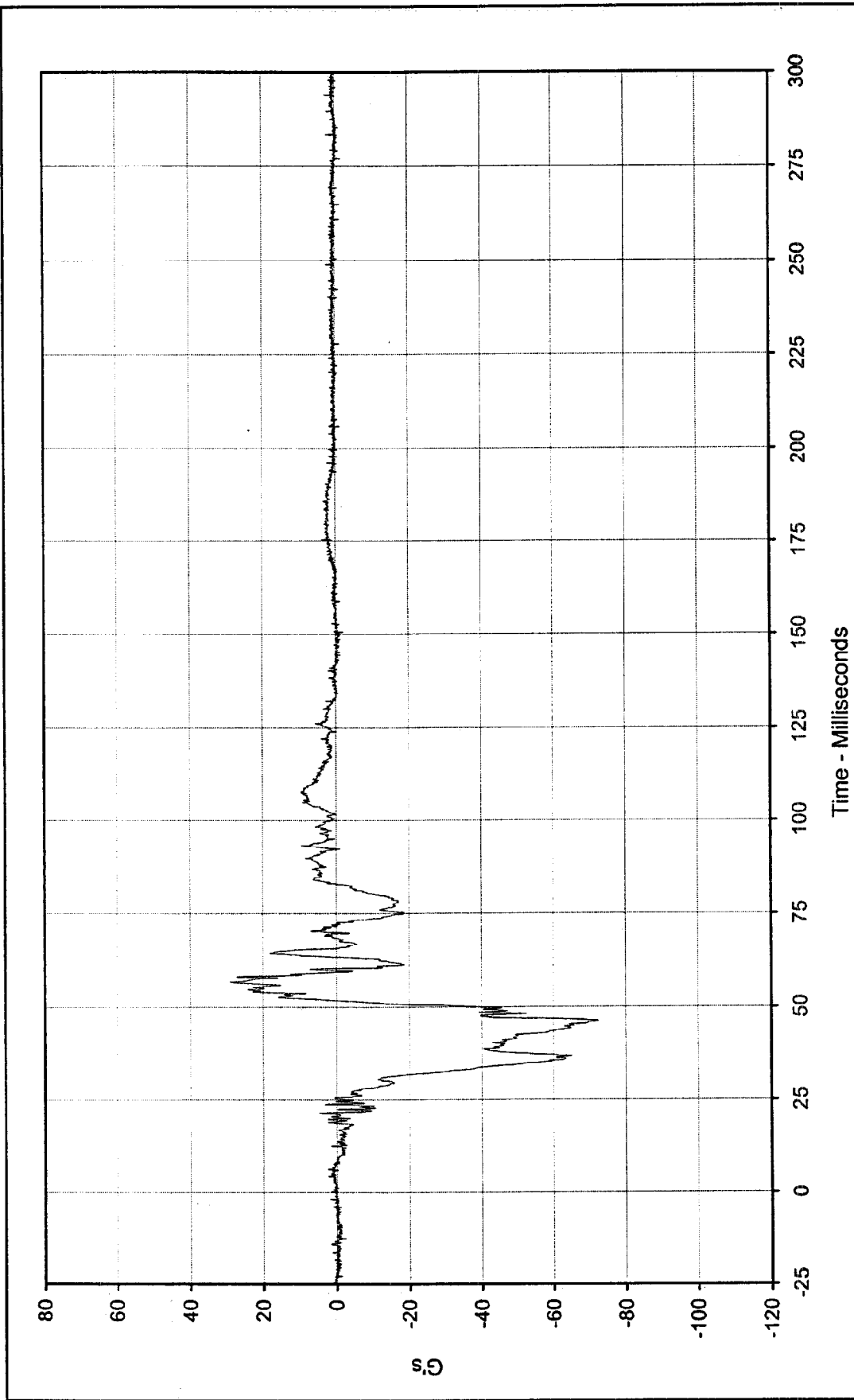




Curve Description: Passenger Right lower Tibia Force Z
 Maximum Value: 240.3 at 167.8 Milliseconds
 Minimum Value: -2615.1 at 34.4 Milliseconds
 SAE Filter Class: 600
 Date of Test: 5/18/99
 Curve Number: FIL-078

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

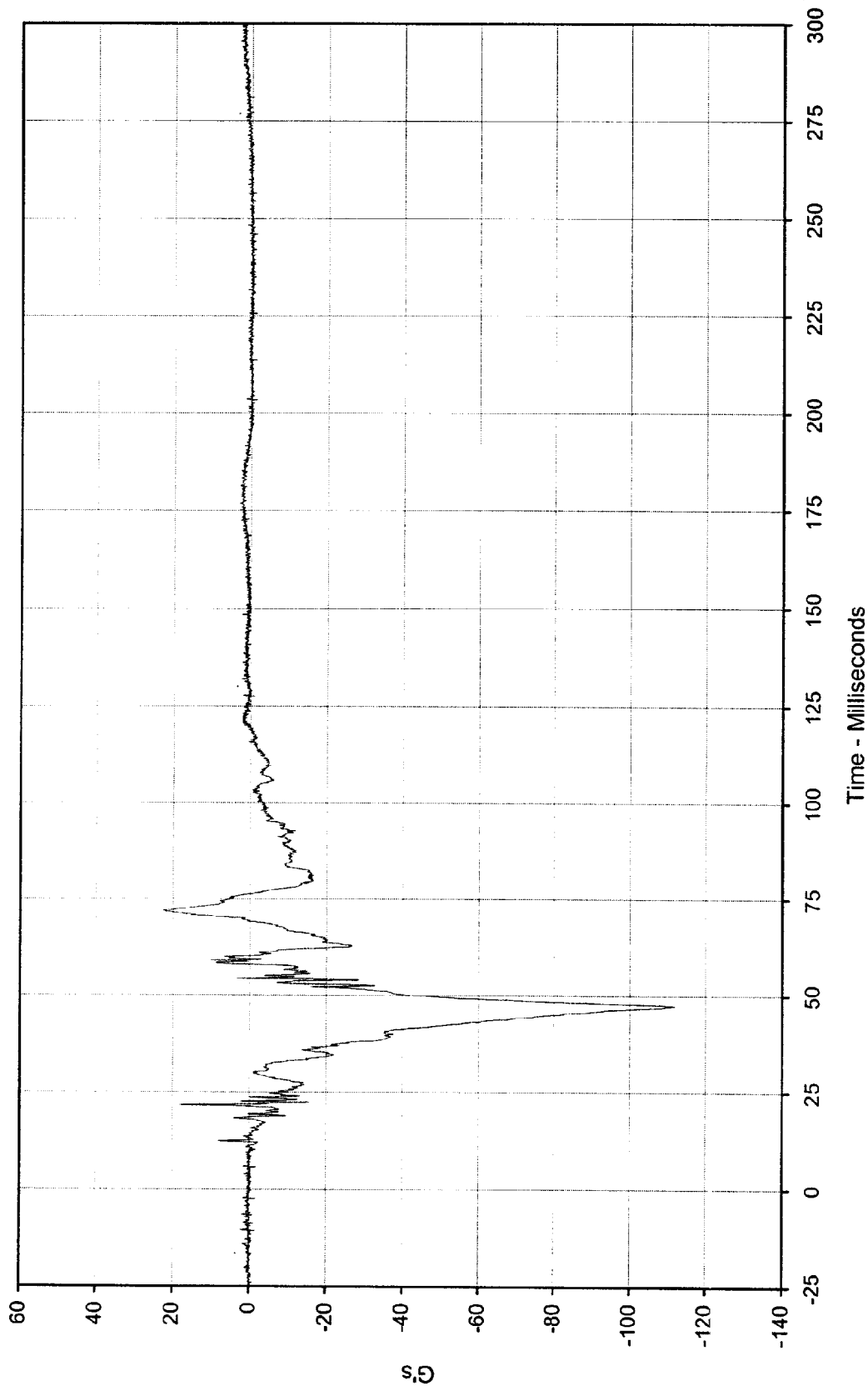




Curve Description: Passenger Left Foot Aft X
 Maximum Value: 29.0 at 56.8 Milliseconds
 Minimum Value: -72.5 at 46.3 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 5/18/99
 Curve Number: FIL-079

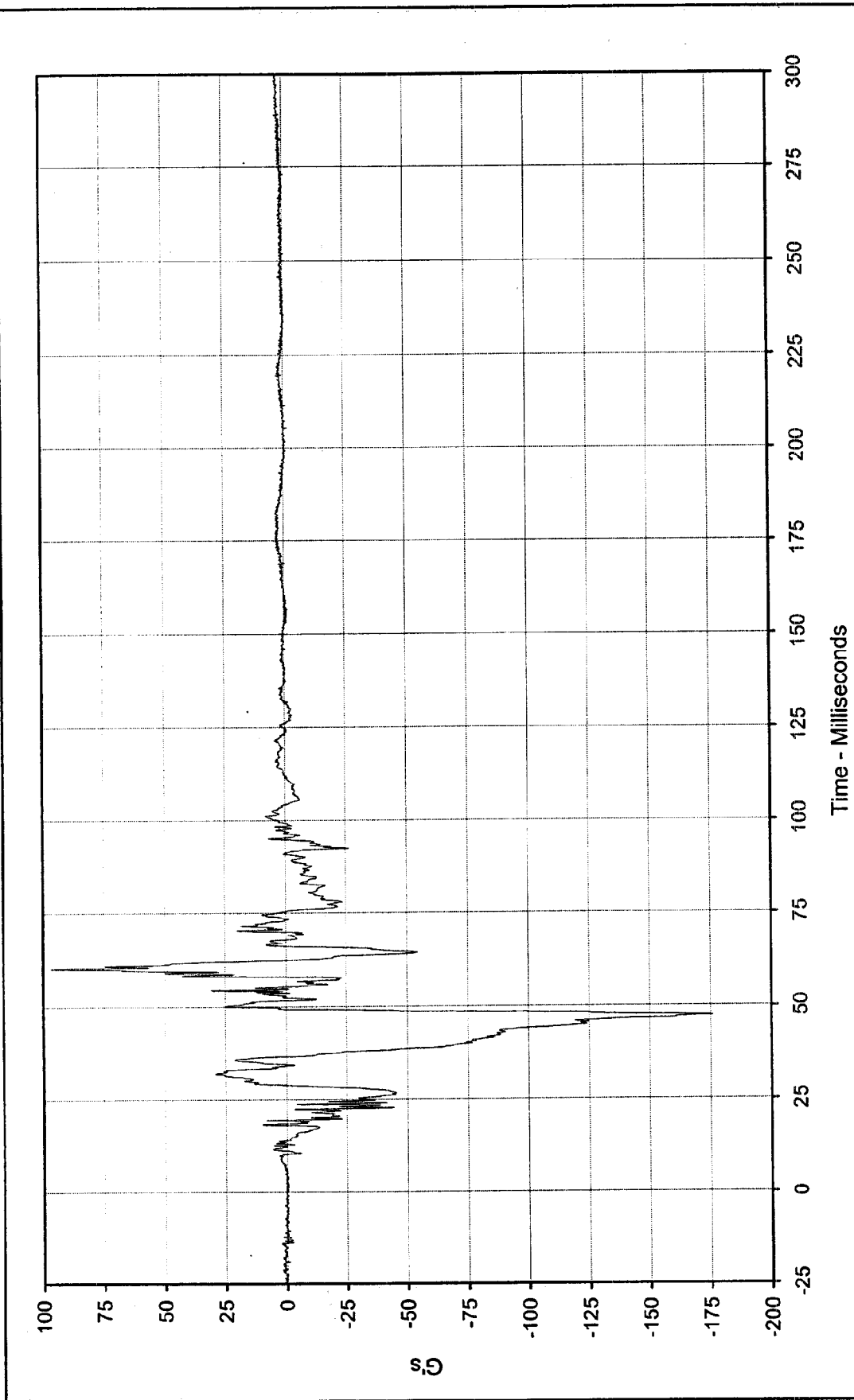
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





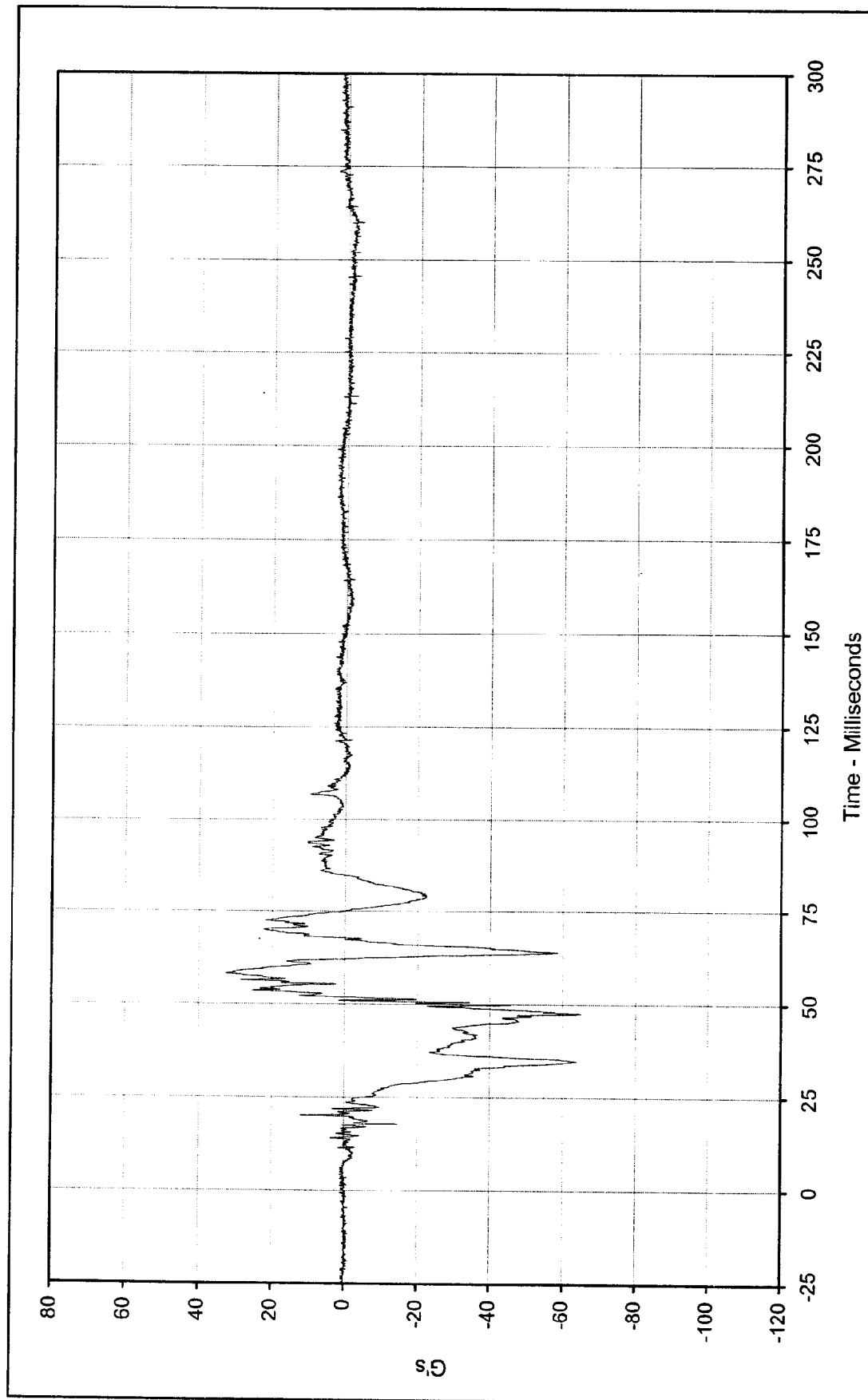
Curve Description:	Passenger Left Foot Air Z		Test Program:	1999 NHTSA 35 mph NCAP No.: MX5304	
Maximum Value:	22.6	at 71.9	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-111.9	at 47.3			
SAE Filter Class:	1000				
Date of Test:	5/18/99				
Curve Number:	FIL-080				





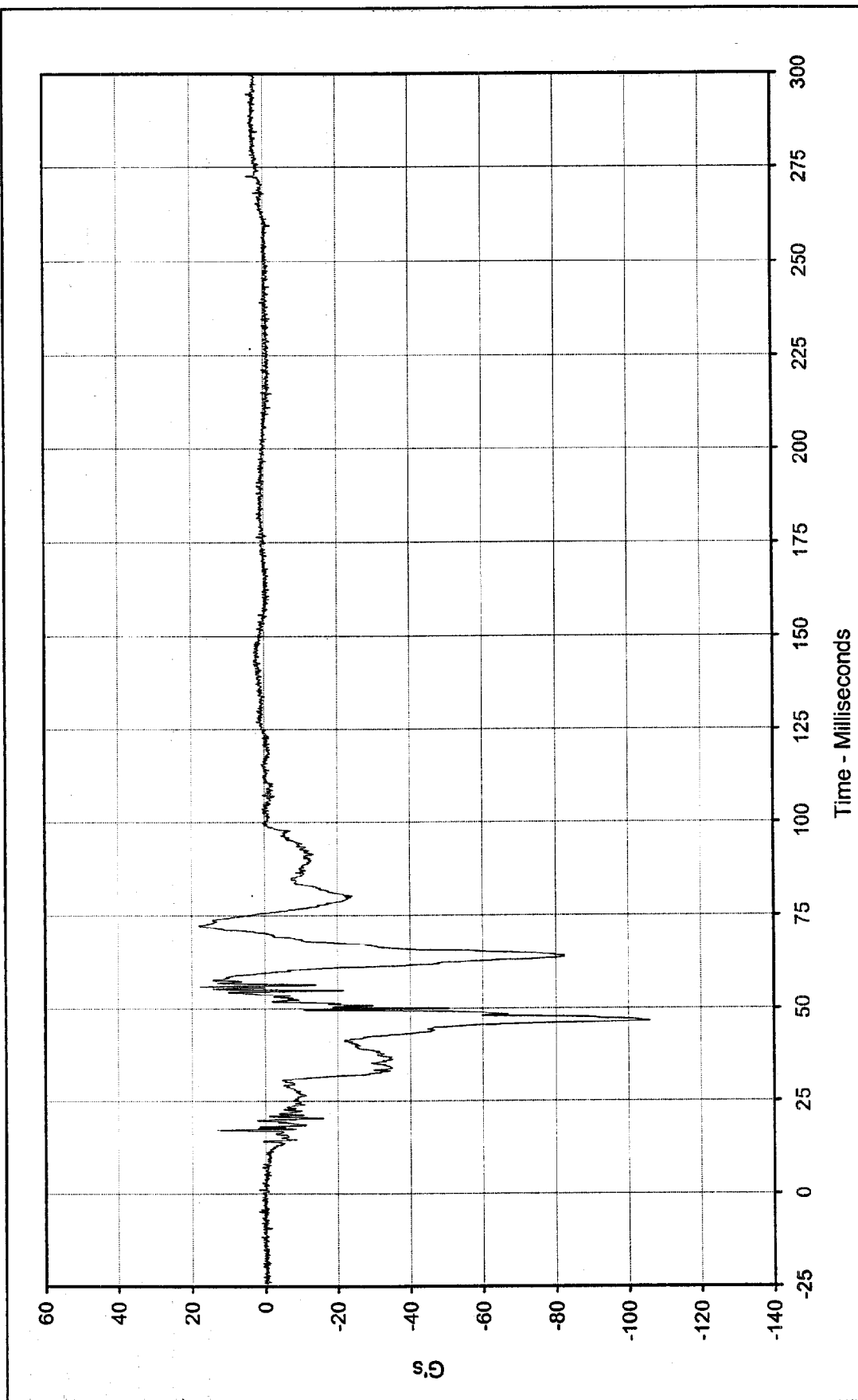
Curve Description:	Passenger Left Foot Fore Z		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	96.7	at 60.2	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-176.1	at 47.4			
SAE Filter Class:	1000				
Date of Test:	5/18/99				
Curve Number:	FIL-081				





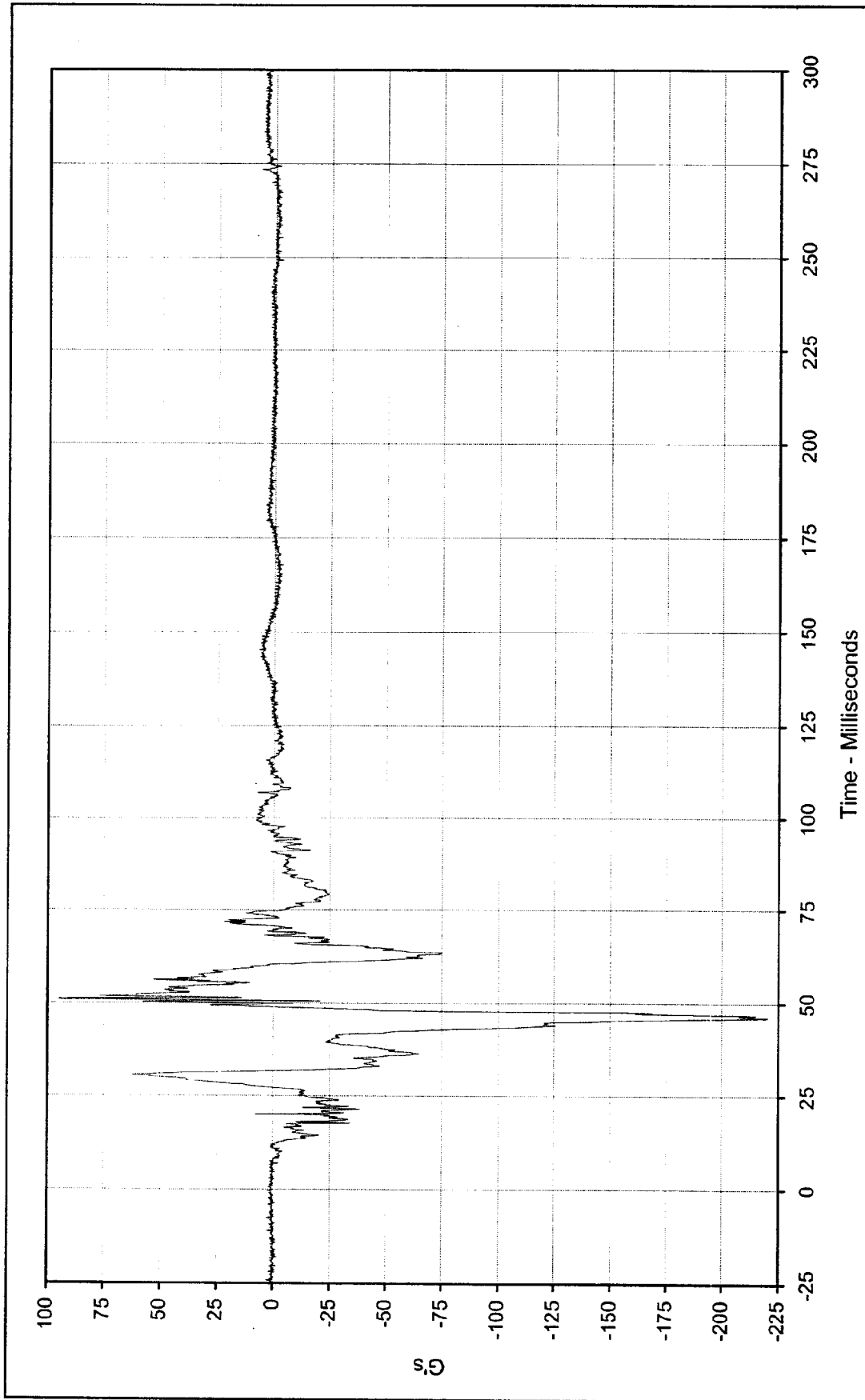
Curve Description:	Passenger Right Foot Aft X	Test Program:	1999 NHTSA 35 mph NCAP	No.:	MX5304
Maximum Value:	32.6 at 58.0 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan		
Minimum Value:	-65.2 at 47.6 Milliseconds				
SAE Filter Class:	1000				
Date of Test:	5/18/99				
Curve Number:	FIL-082				





Curve Description:	Passenger Right Foot Air Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	17.9 at 72.3 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-106.1 at 46.7 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	5/18/99			
Curve Number:	FIL-083			

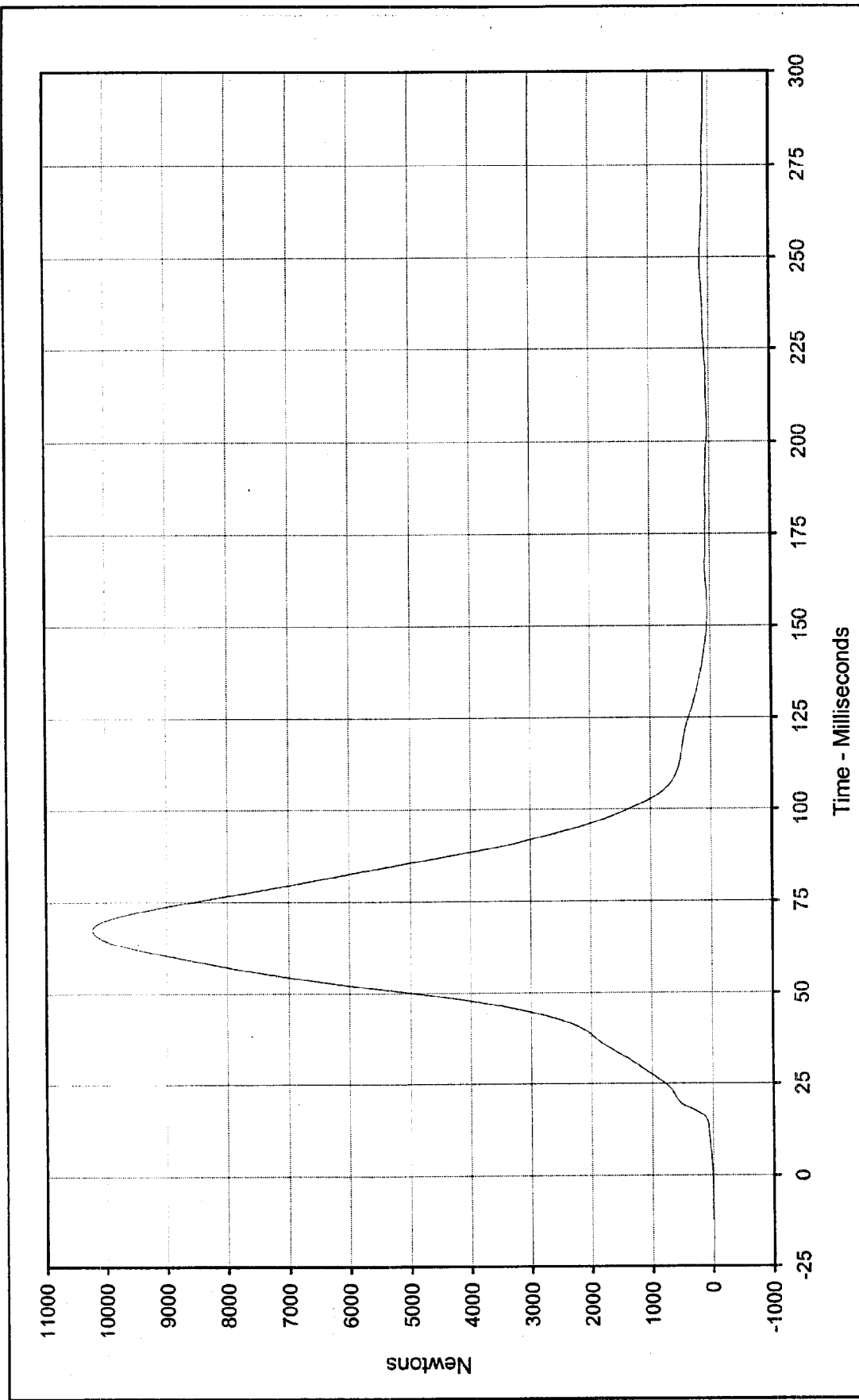




Curve Description:	Passenger Right Foot Fore Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	94.6 at 50.9 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-220.4 at 46.3 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	5/18/99			
Curve Number:	FIL-084			







Curve Description: Passenger Lap Belt Force Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Maximum Value: 10222.6 at 67.5 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

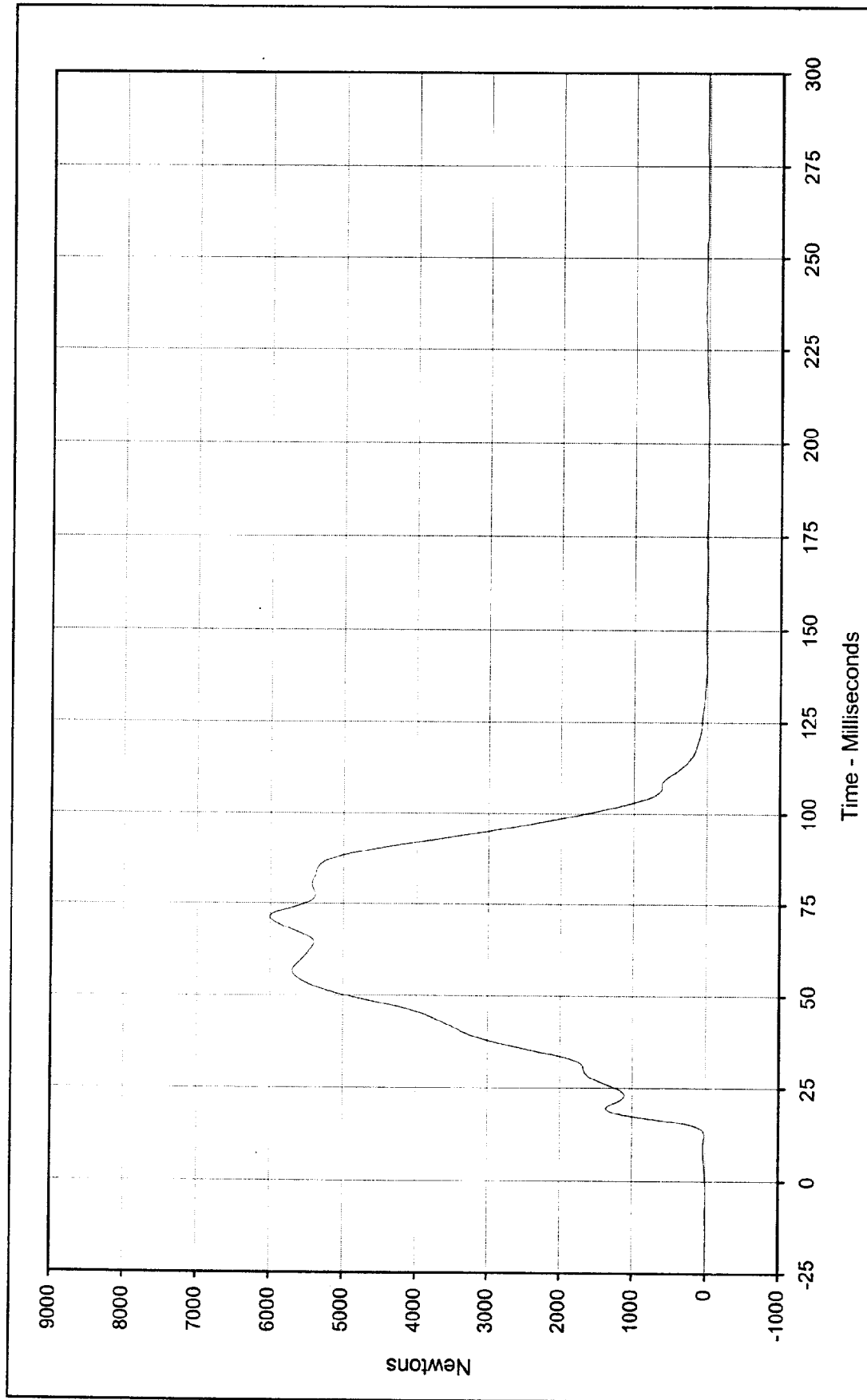
Minimum Value: 7.7 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 5/18/99

Curve Number: FIL-085

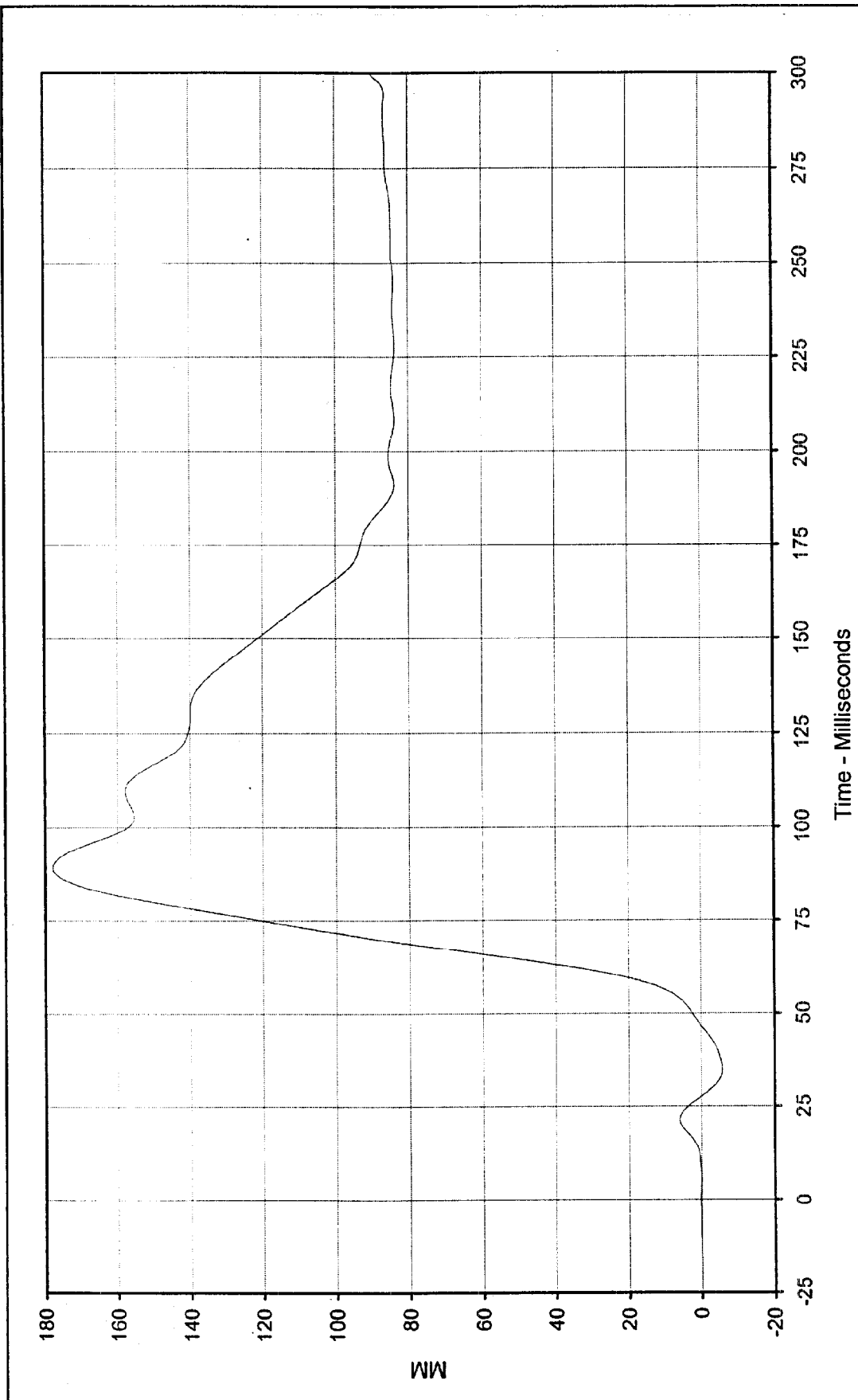




Curve Description: Passenger Shoulder Belt Force
 Maximum Value: 6009.8 at 71.4 Milliseconds
 Minimum Value: 0.2 at 190.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-086

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Passenger Shoulder Belt Pullout

Test Program: 1999 NHTSA 35 mph NCAP

Maximum Value: 177.9 at 89.1 Milliseconds

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

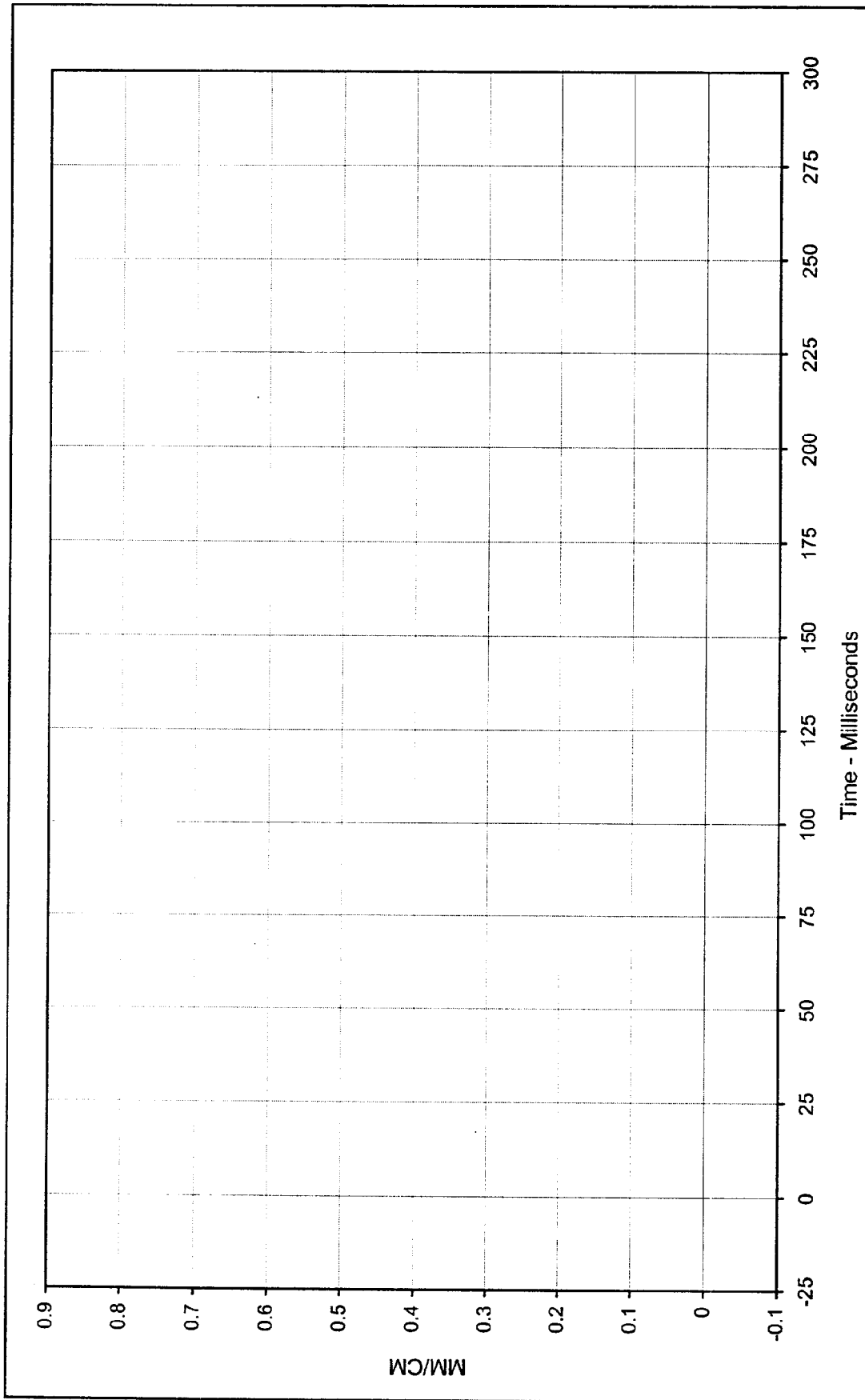
Minimum Value: -5.8 at 34.8 Milliseconds

SAE Filter Class: 60

Date of Test: 5/18/99

Curve Number: FIL-087

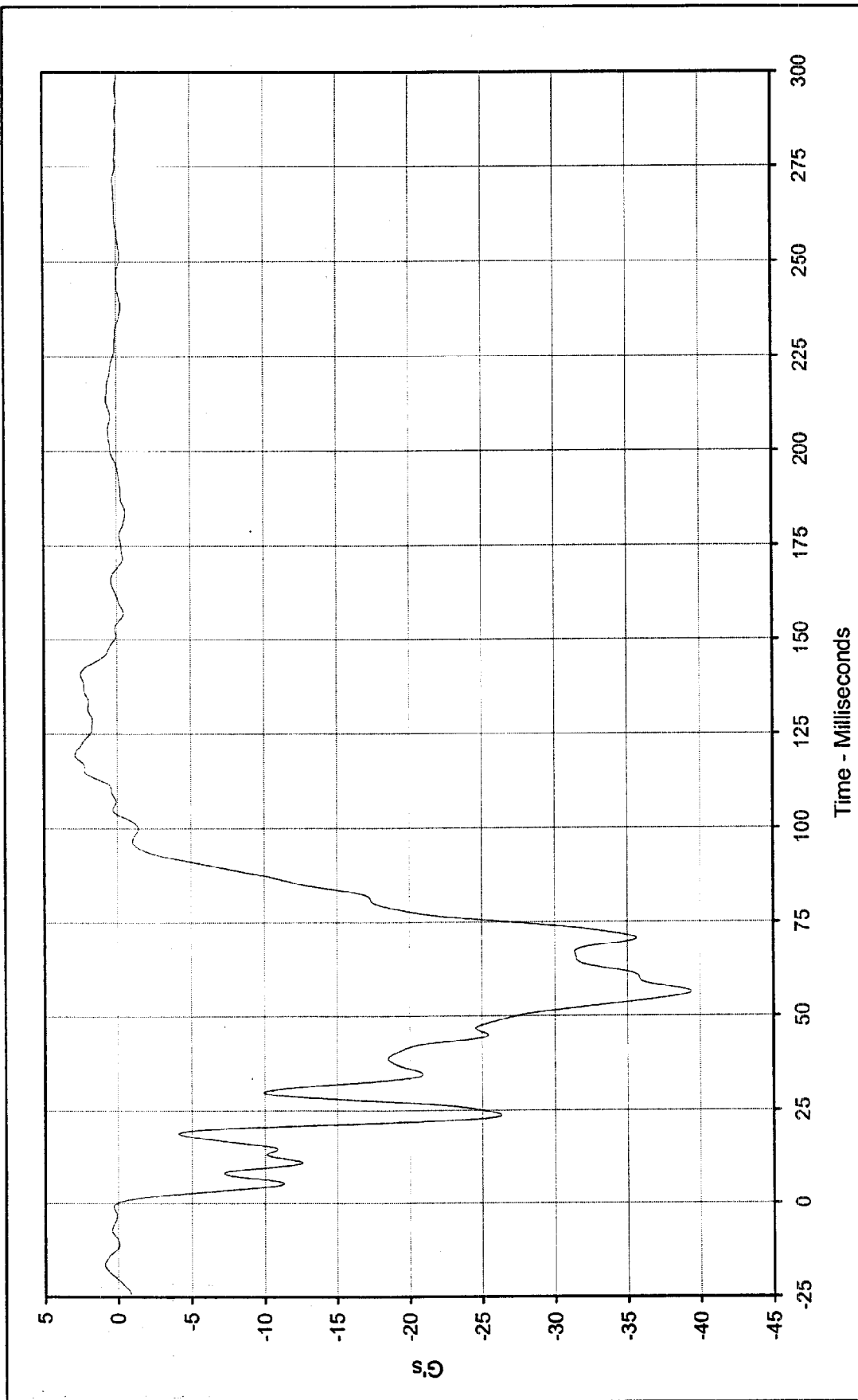




Curve Description:	Passenger Shoulder Belt Elongation *	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	0.00 at 0.0 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	0.00 at 0.0 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-088			



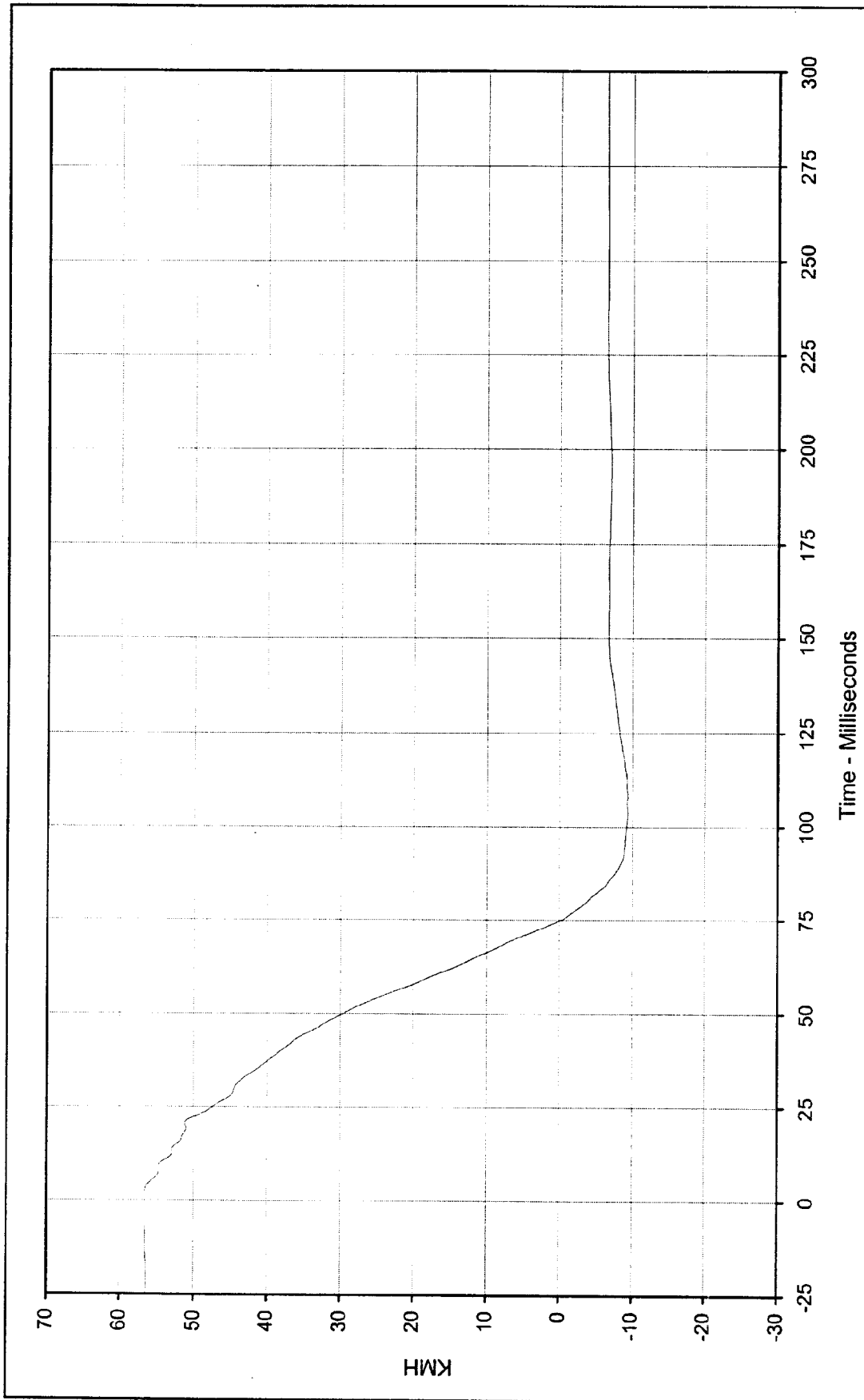
*Not used with pre-tensioner



Curve Description: Vehicle Left Rear Primary
 Maximum Value: 2.9 at 119.5 Milliseconds
 Minimum Value: -39.4 at 56.2 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-089

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

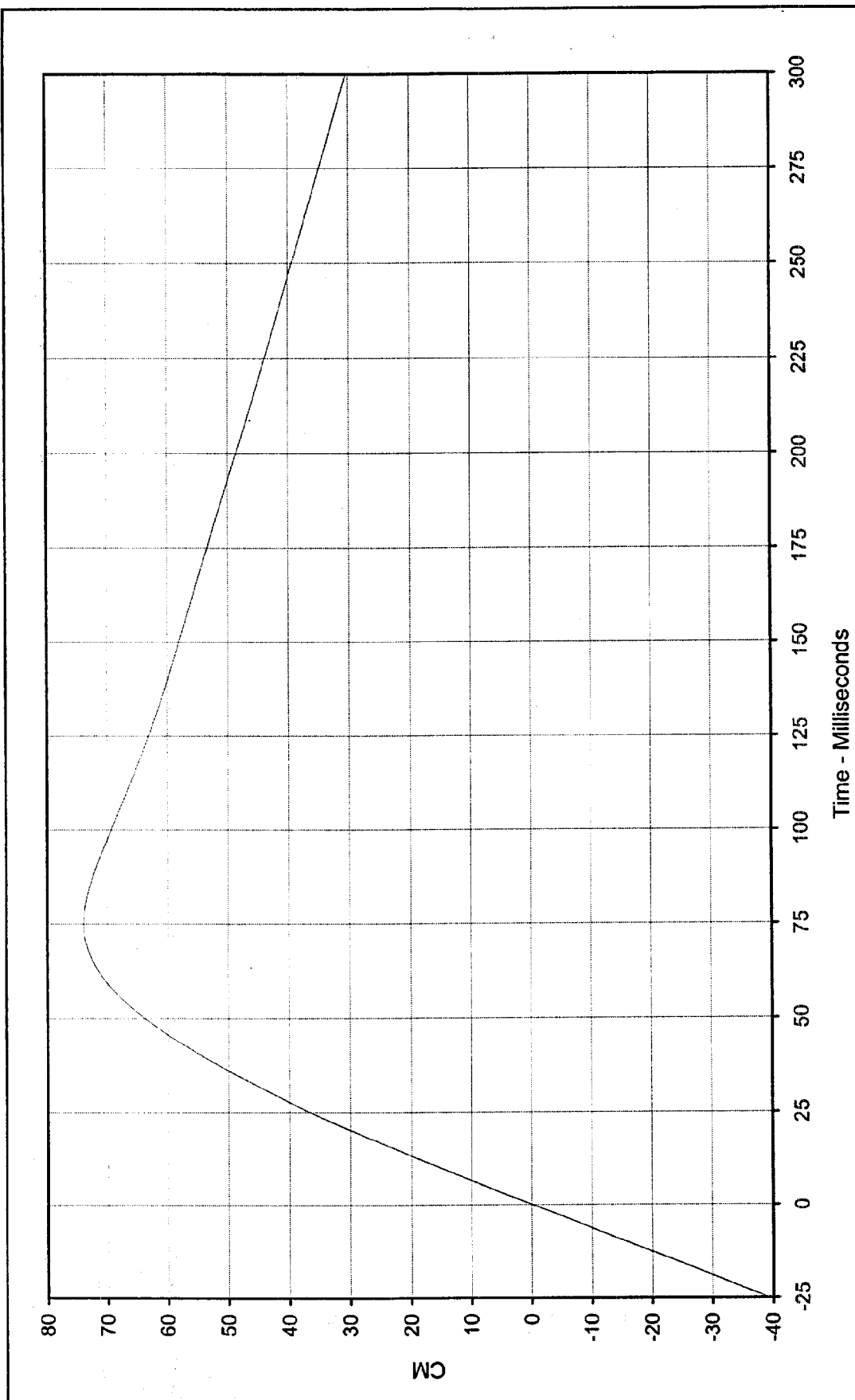




Curve Description: Vehicle Left Rear Primary Velocity
 Maximum Value: 56.6 at 1.5 Milliseconds
 Minimum Value: -9.3 at 103.3 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN1-089

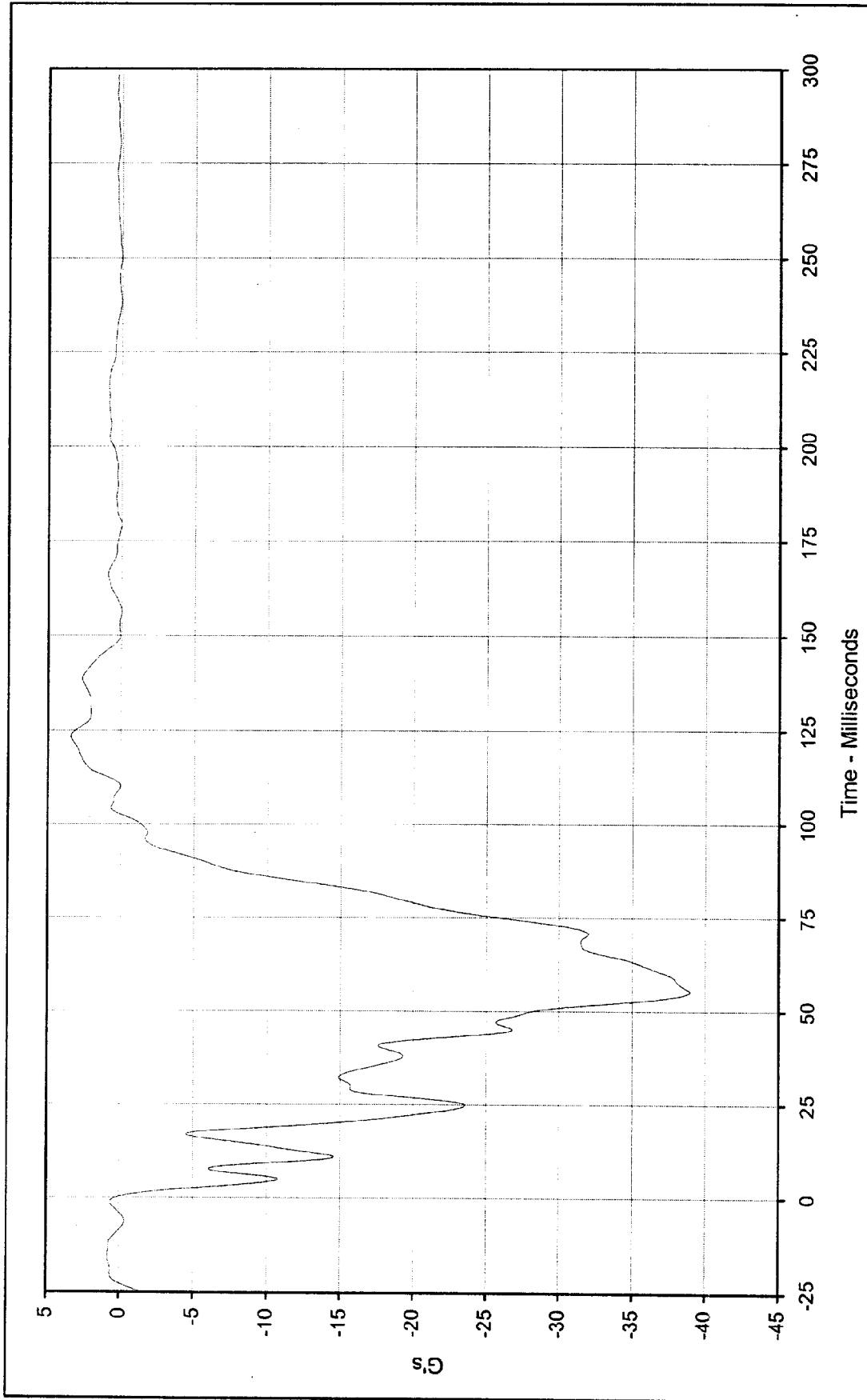
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





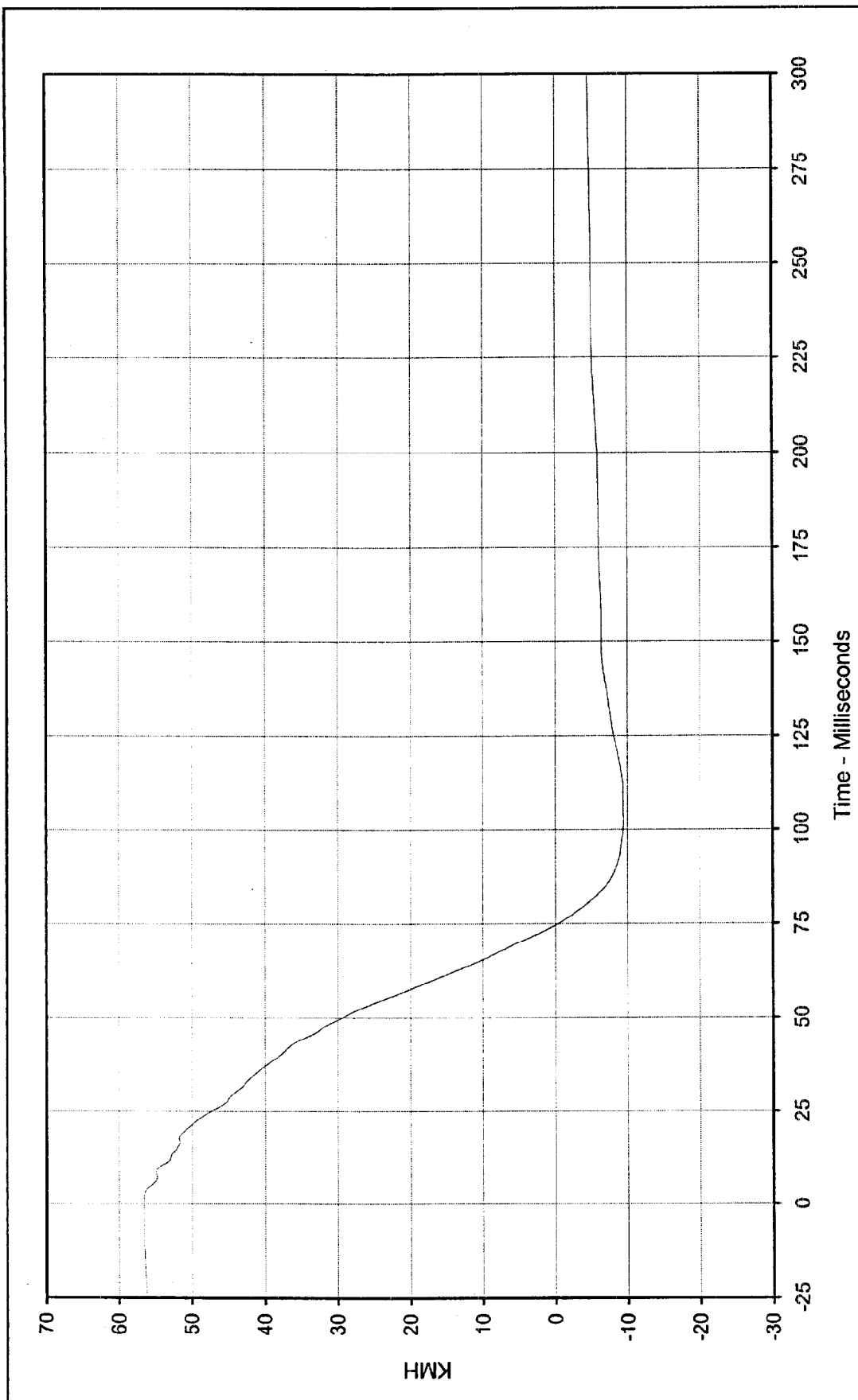
Curve Description:	Vehicle Left Rear Primary Displ.	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	73.9 at 74.7 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-0.1 at 0.0 Milliseconds			
SAE Filter Class:	180			
Date of Test:	5/18/99			
Curve Number:	IN2-089			





Curve Description:	Vehicle Right Rear Primary	Test Program:	1999 NHTSA 35 mph NCAP	No.:	MX5304
Maximum Value:	3.4 at 123.3 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan		
Minimum Value:	-39.0 at 55.3 Milliseconds				
SAE Filter Class:	60				
Date of Test:	5/18/99				
Curve Number:	FIL-090				

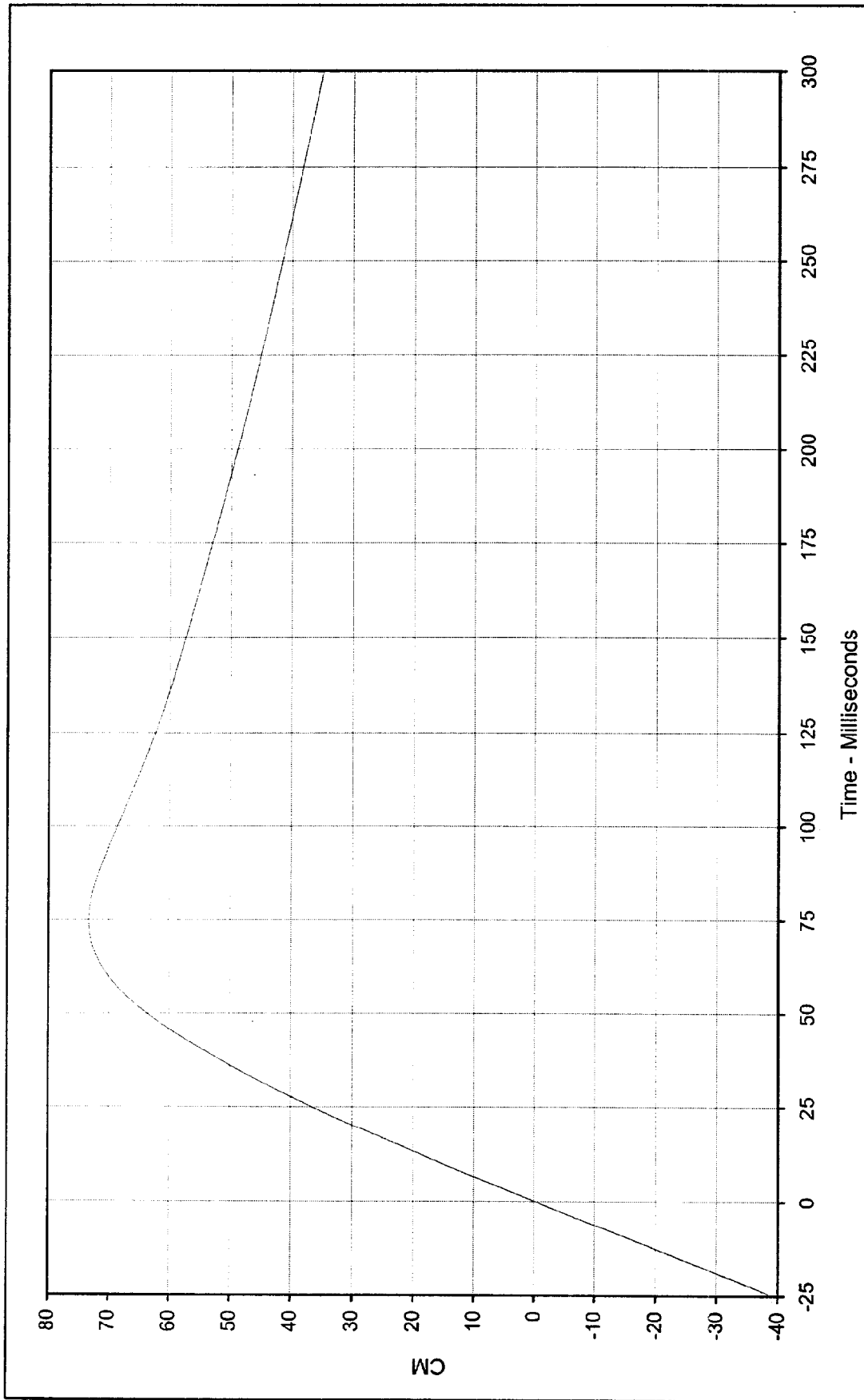




Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan



Curve Description: Vehicle Right Rear Primary Velocity
 Maximum Value: 56.6 at 1.4 Milliseconds
 Minimum Value: -9.5 at 102.7 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN1-090



Curve Description: Vehicle Right Rear Primary Displ.

Maximum Value: 73.4 at 74.5 Milliseconds

Minimum Value: -0.1 at 0.0 Milliseconds

SAE Filter Class: 180

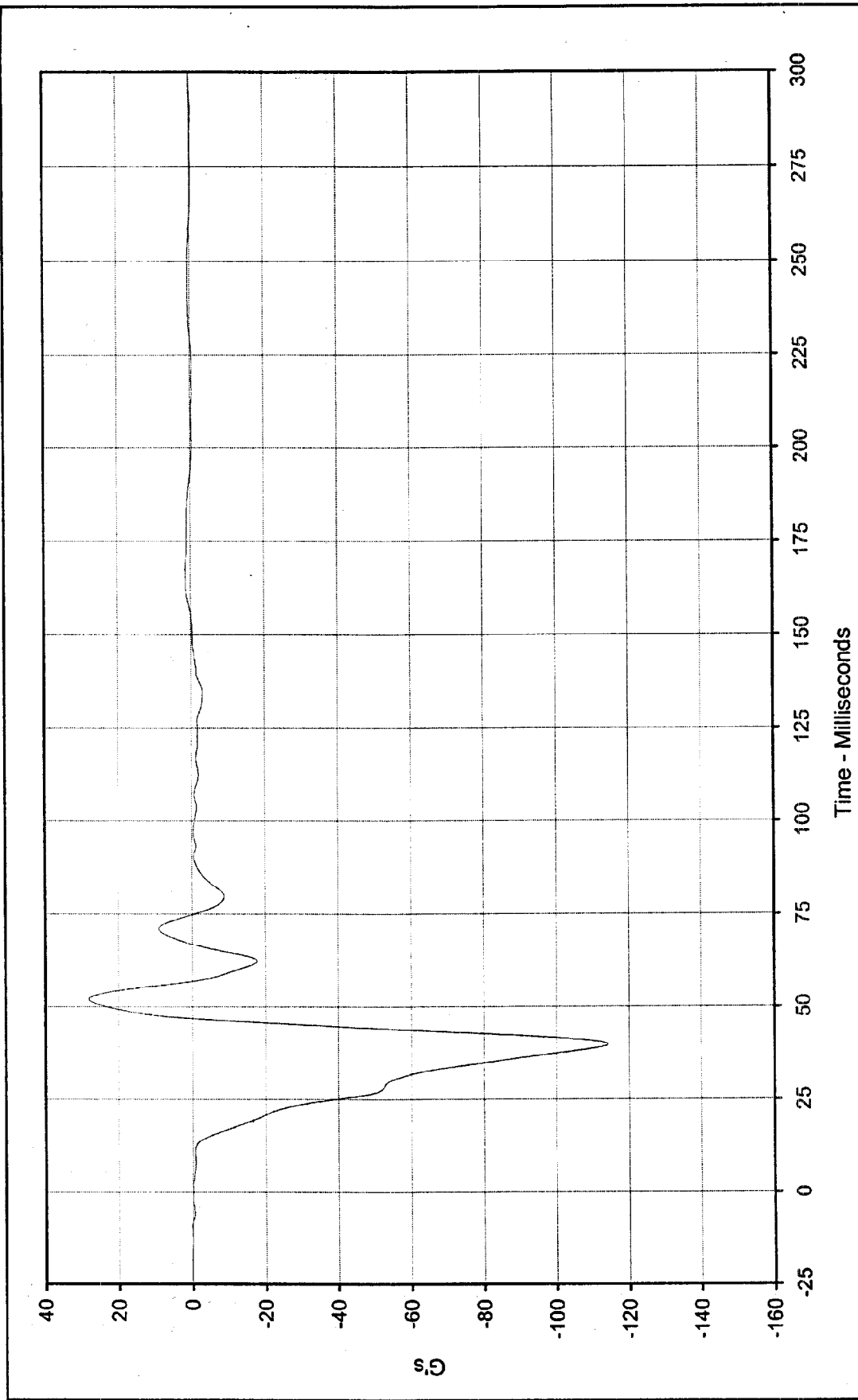
Date of Test: 5/18/99

Curve Number: IN2-090

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

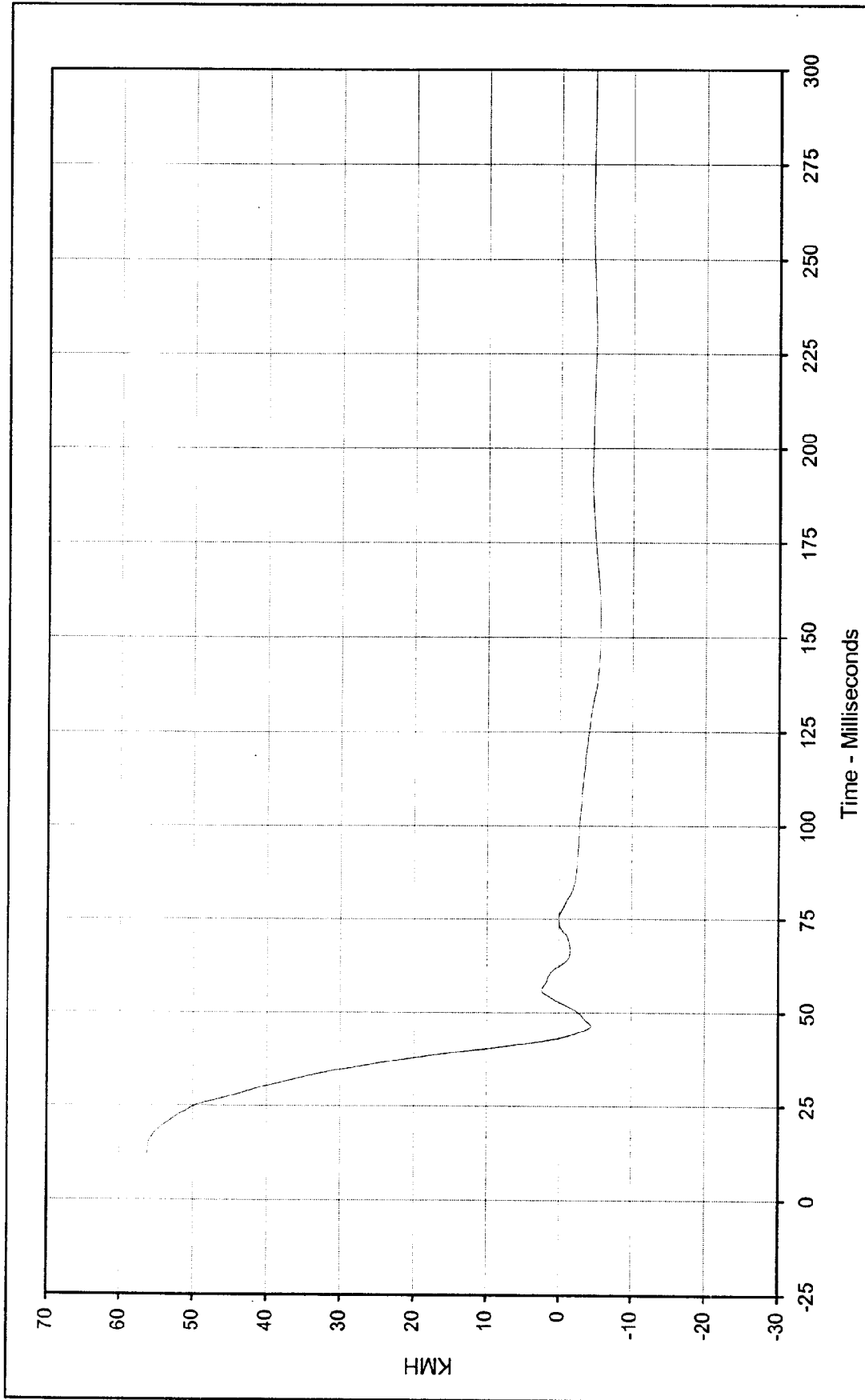




Curve Description: Vehicle Engine Top
 Maximum Value: 28.2 at 52.0 Milliseconds
 Minimum Value: -114.3 at 39.7 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-091

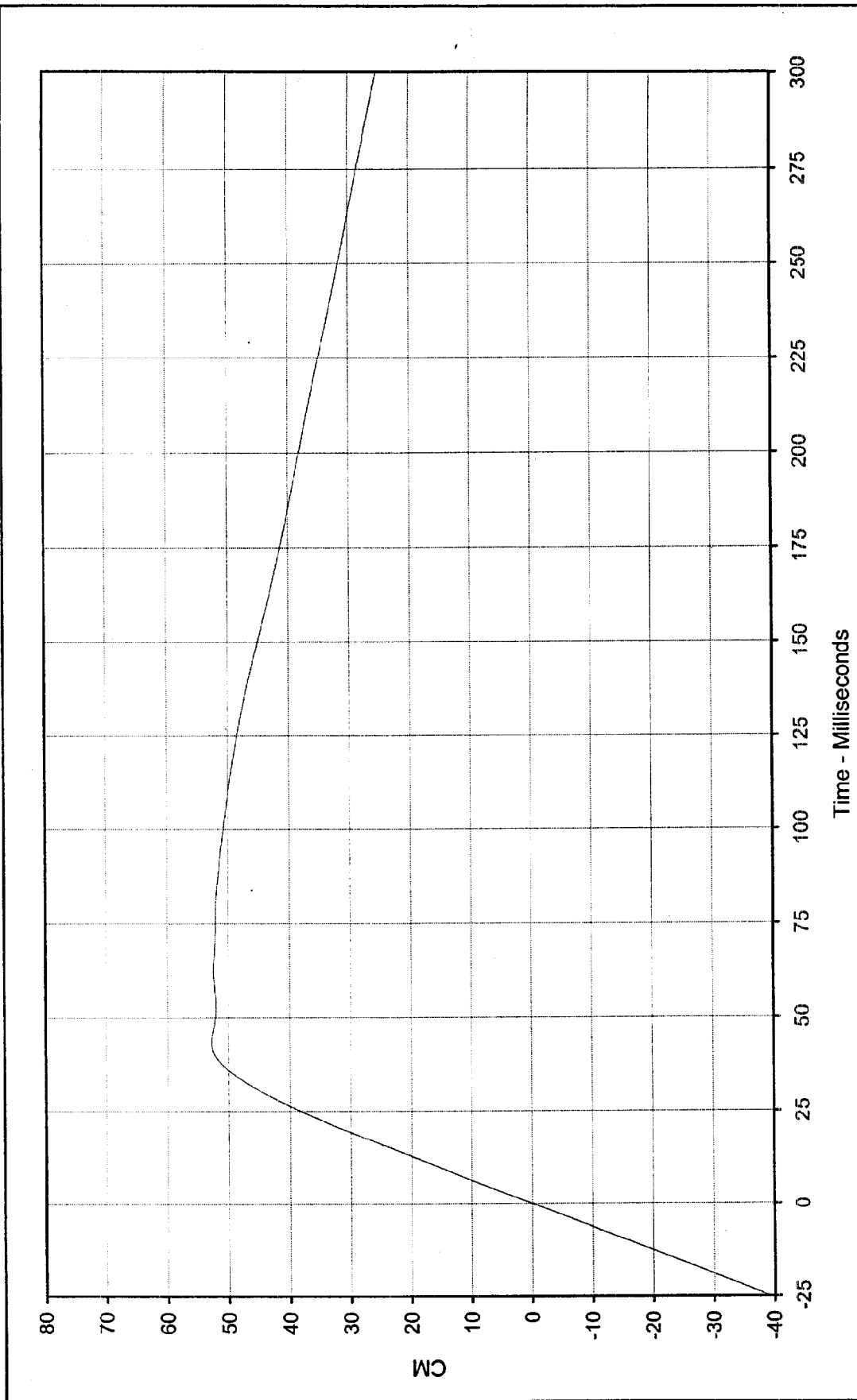
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





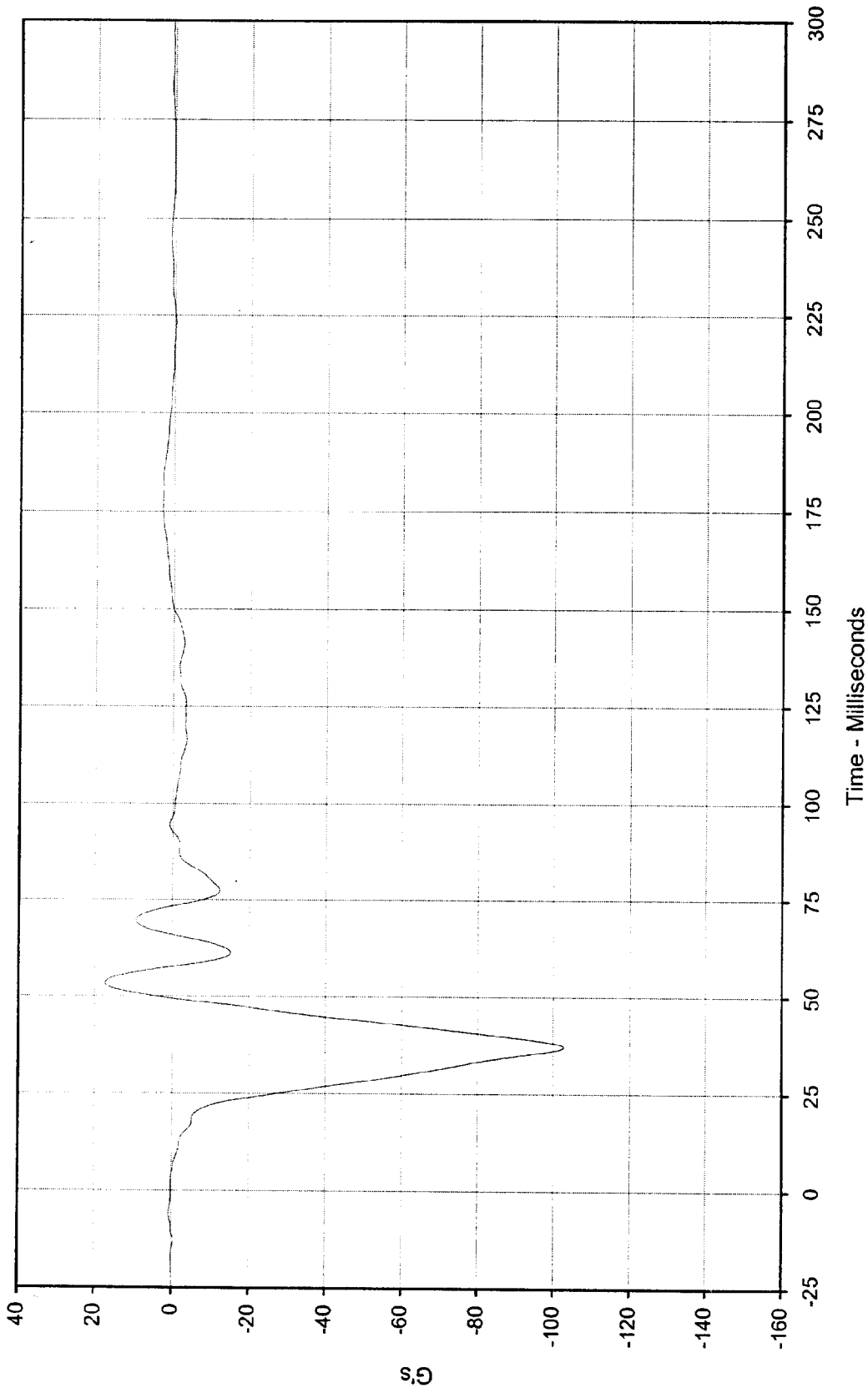
Curve Description:	Vehicle Engine Top Velocity	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	56.5 at 0.0 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-5.6 at 156.6 Milliseconds			
SAE Filter Class:	180			
Date of Test:	5/18/99			
Curve Number:	IN1-091			





Curve Description:	Vehicle Engine Top Displacement	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	52.7 at 43.1 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	0.0 at 0.0 Milliseconds			
SAE Filter Class:	180			
Date of Test:	5/18/99			
Curve Number:	IN2-091			





Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Program: 1999 Acura 3.5 RL 4 Door Sedan

Maximum Value: 17.4 at 53.3 Milliseconds

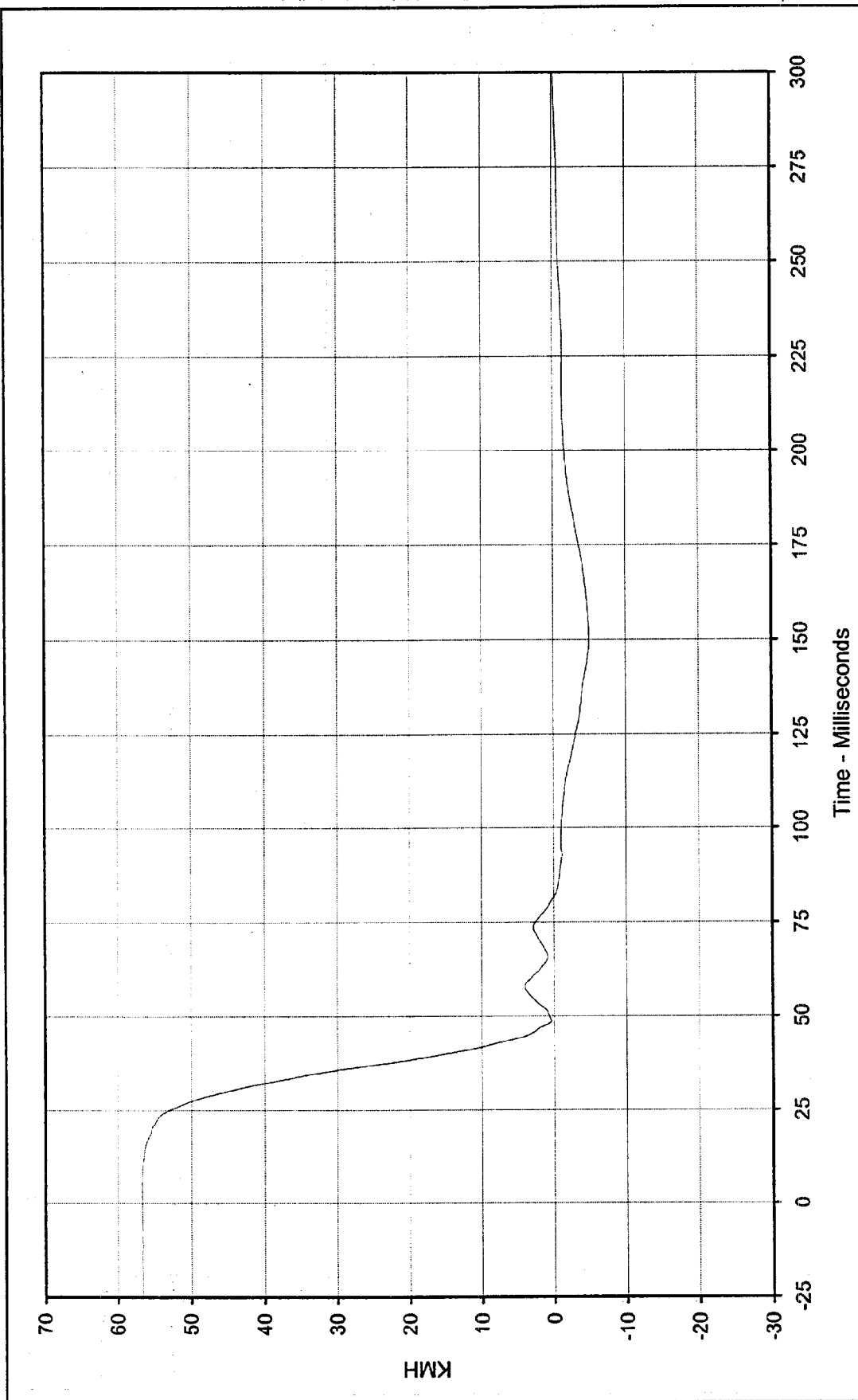
Minimum Value: -102.8 at 37.1 Milliseconds

SAE Filter Class: 60

Date of Test: 5/18/99

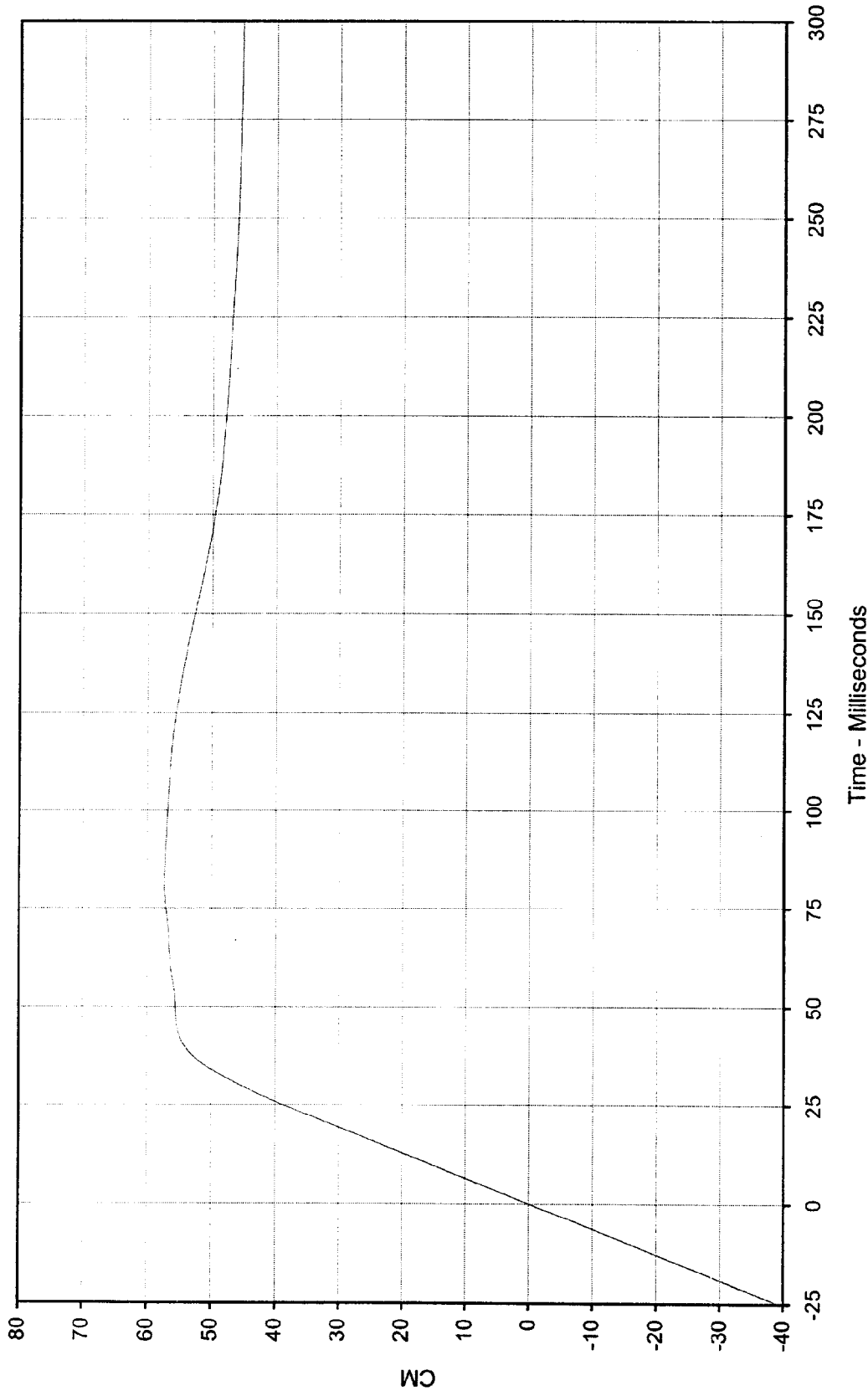
Curve Number: FIL-092





Curve Description:	Vehicle Engine Bottom Velocity	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	56.8 at 4.9 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-5.0 at 149.3 Milliseconds			
SAE Filter Class:	180			
Date of Test:	5/18/99			
Curve Number:	IN1-092			





Curve Description: Vehicle Engine Bottom Displacement

Maximum Value: 57.3 at 81.6 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

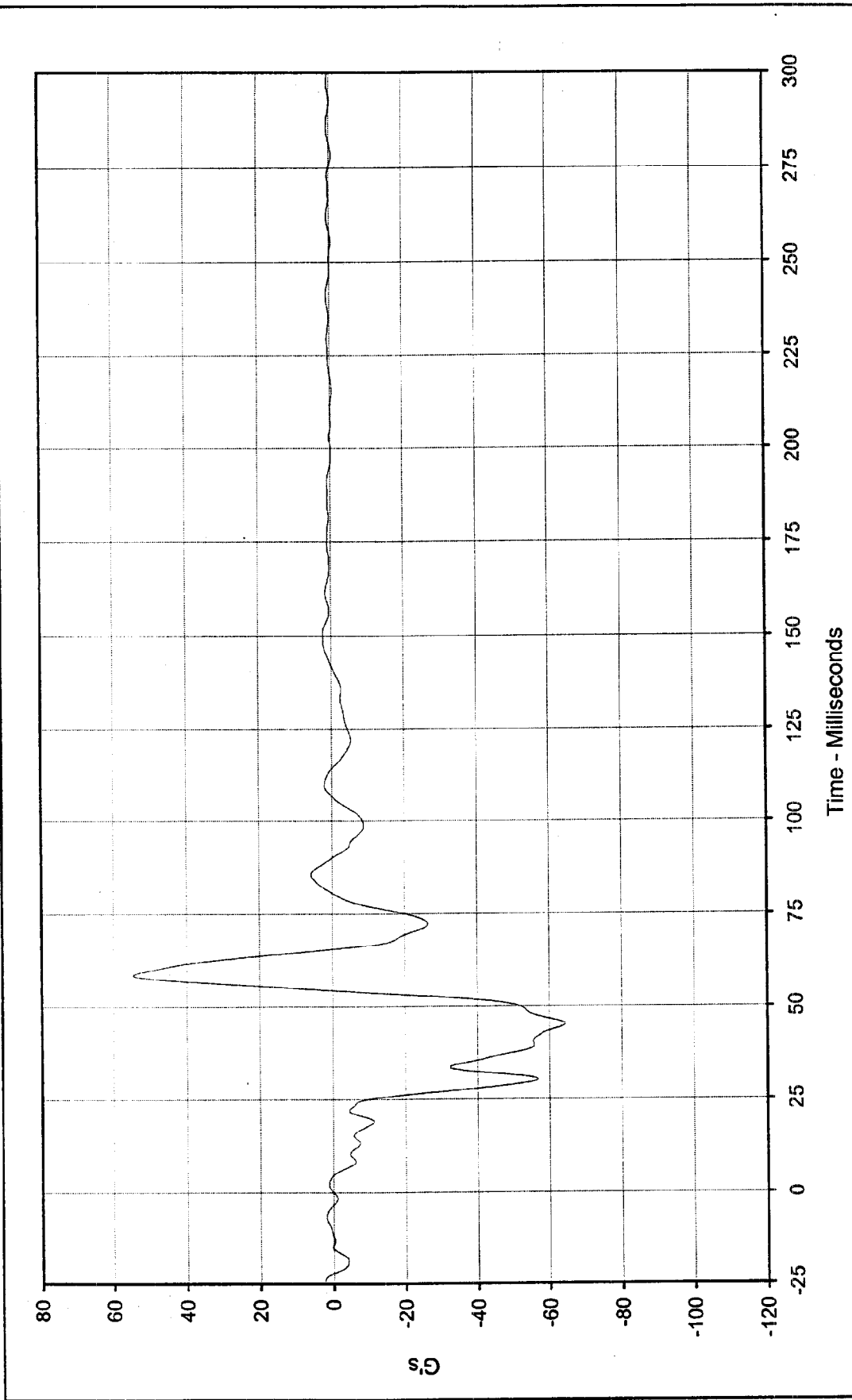
Date of Test: 5/18/99

Curve Number: IN2-092

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Program:

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

Vehicle Left Brake Caliper

Maximum Value: 54.6 at 58.5 Milliseconds

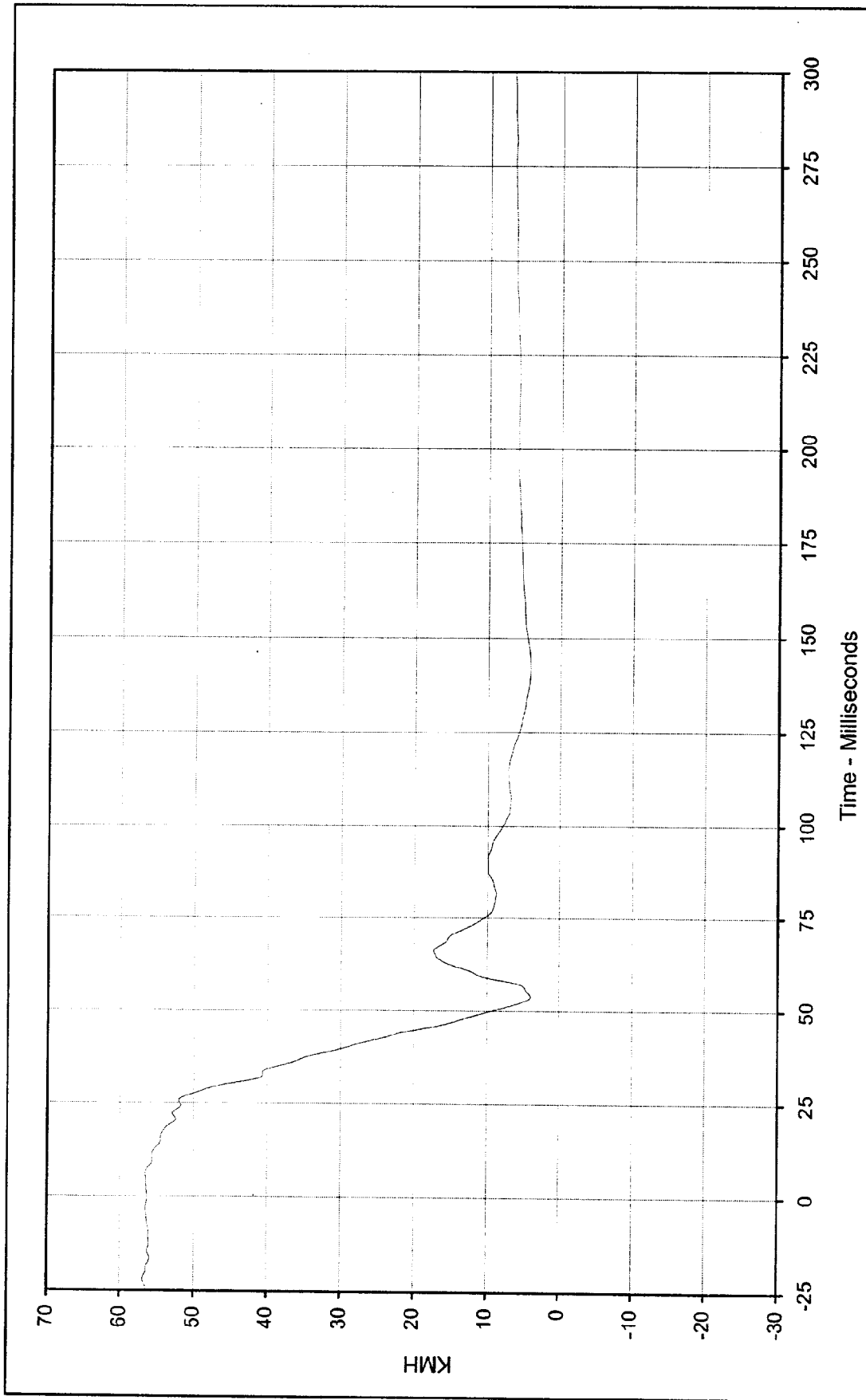
Minimum Value: -64.4 at 45.2 Milliseconds

SAE Filter Class: 60

Date of Test: 5/18/99

Curve Number: FIL-093





Curve Description: Vehicle Left Brake Caliper Velocity

Maximum Value: 56.5 at 6.3 Milliseconds

Minimum Value: 4.0 at 53.8 Milliseconds

SAE Filter Class: 180

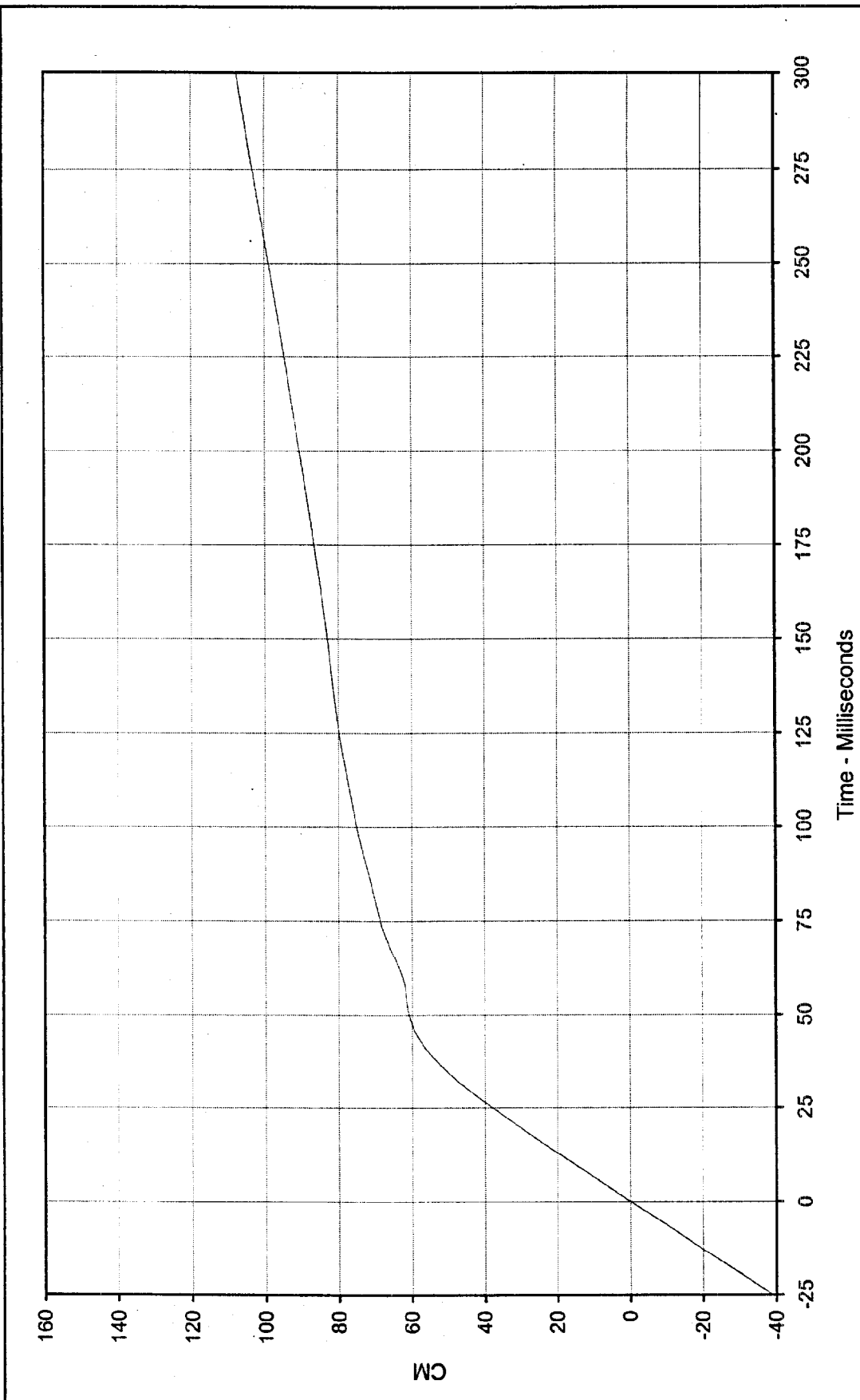
Date of Test: 5/18/99

Curve Number: IN1-093

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

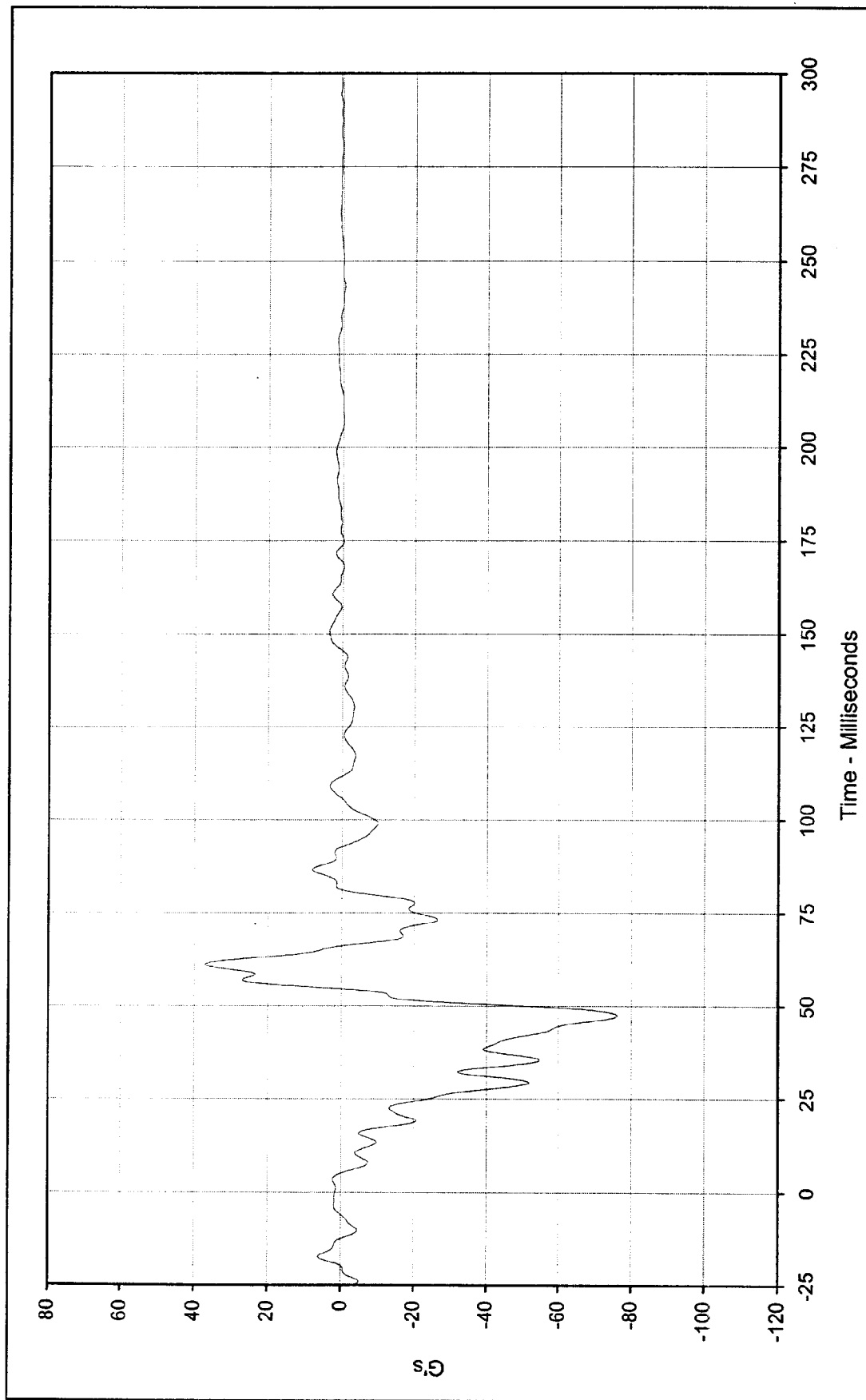




Curve Description: Vehicle Left Brake Caliper Displ.
Maximum Value: 107.8 at 299.9 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 5/18/99
Curve Number: IN2-093

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

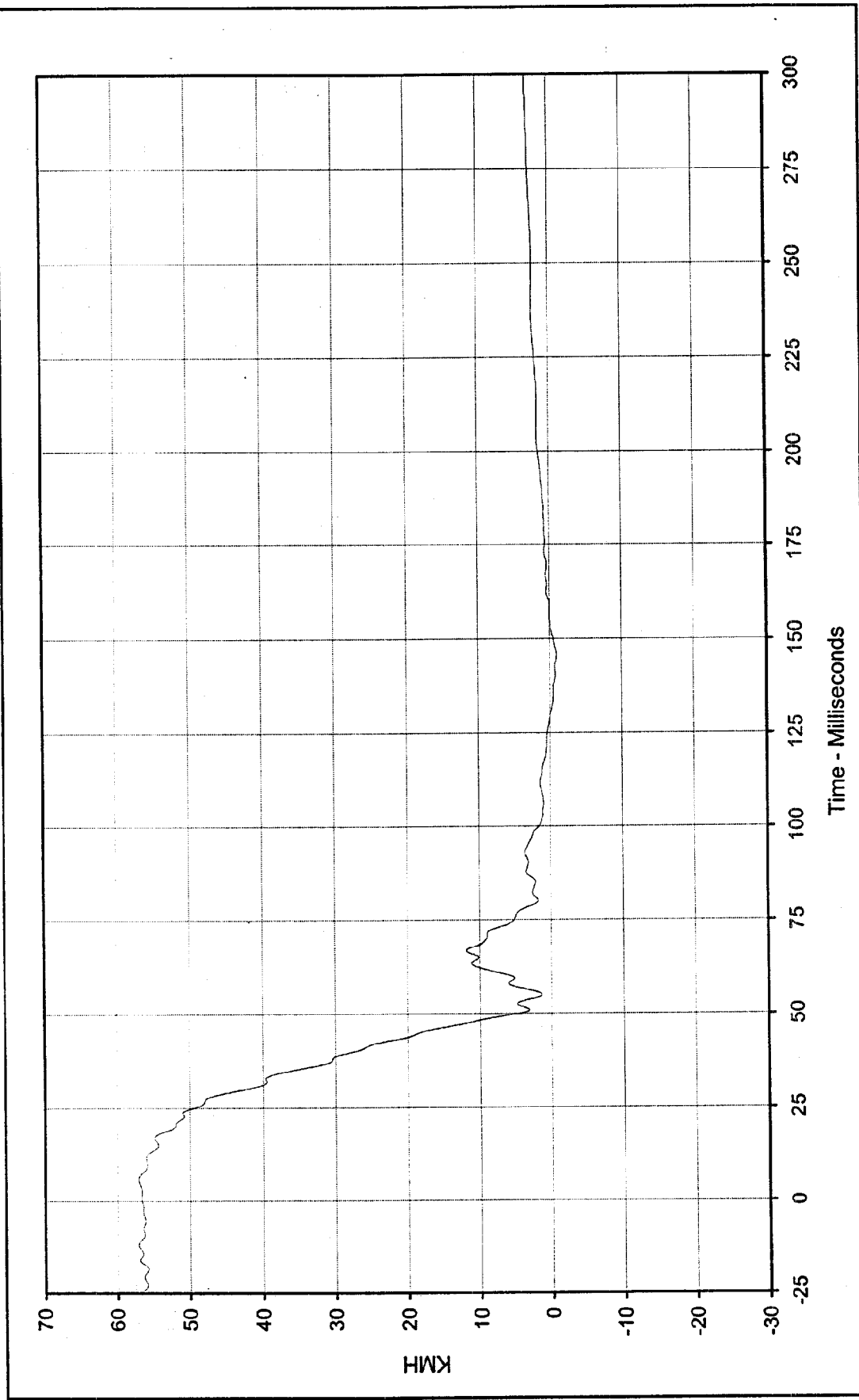




Curve Description:	Vehicle Right Brake Caliper			Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	37.0	at	61.0	Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan
Minimum Value:	-76.2	at	47.4	Milliseconds		
SAE Filter Class:	60					
Date of Test:	5/18/99					
Curve Number:	FIL-094					

**KARCO**
Engineering





Curve Description: Vehicle Right Brake Caliper Velocity

Maximum Value: 57.1 at 5.9 Milliseconds

Minimum Value: -1.0 at 145.8 Milliseconds

SAE Filter Class: 180

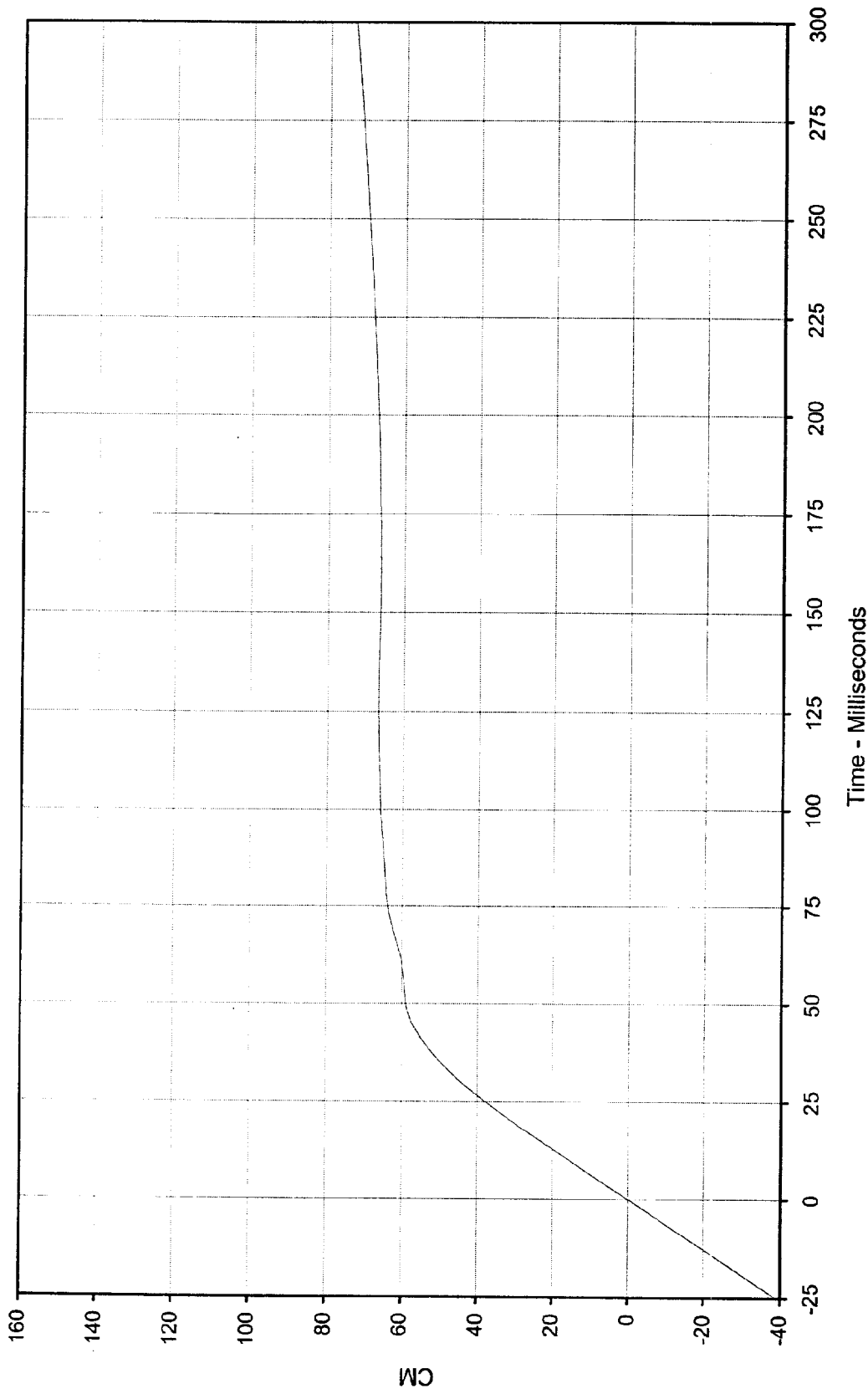
Date of Test: 5/18/99

Curve Number: IN1-094

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Vehicle Right Brake Caliper Displ.

Maximum Value: 73.3 at 299.9 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 5/18/99

Curve Number: IN2-094

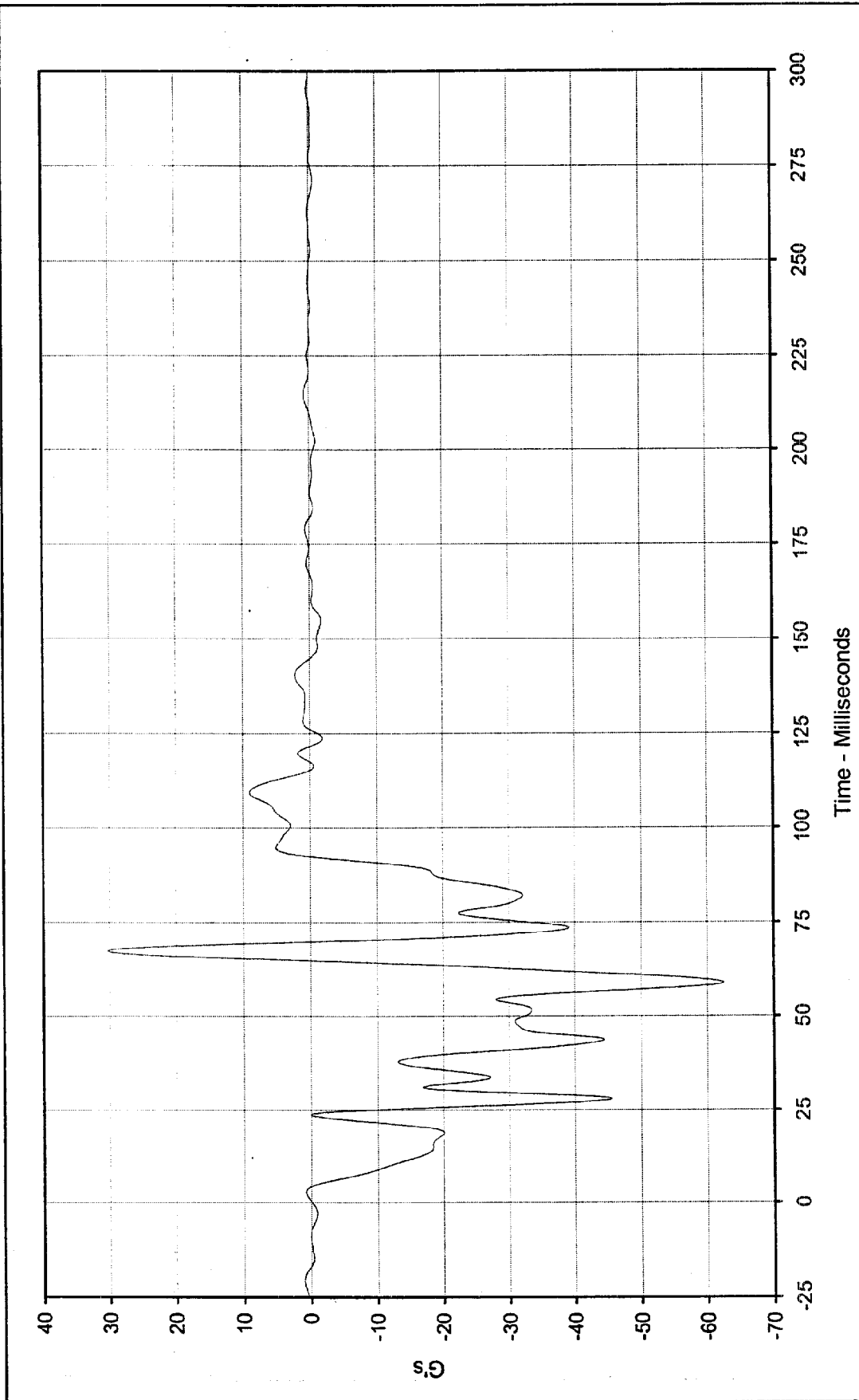
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle:

1999 Acura 3.5 RL 4 Door Sedan

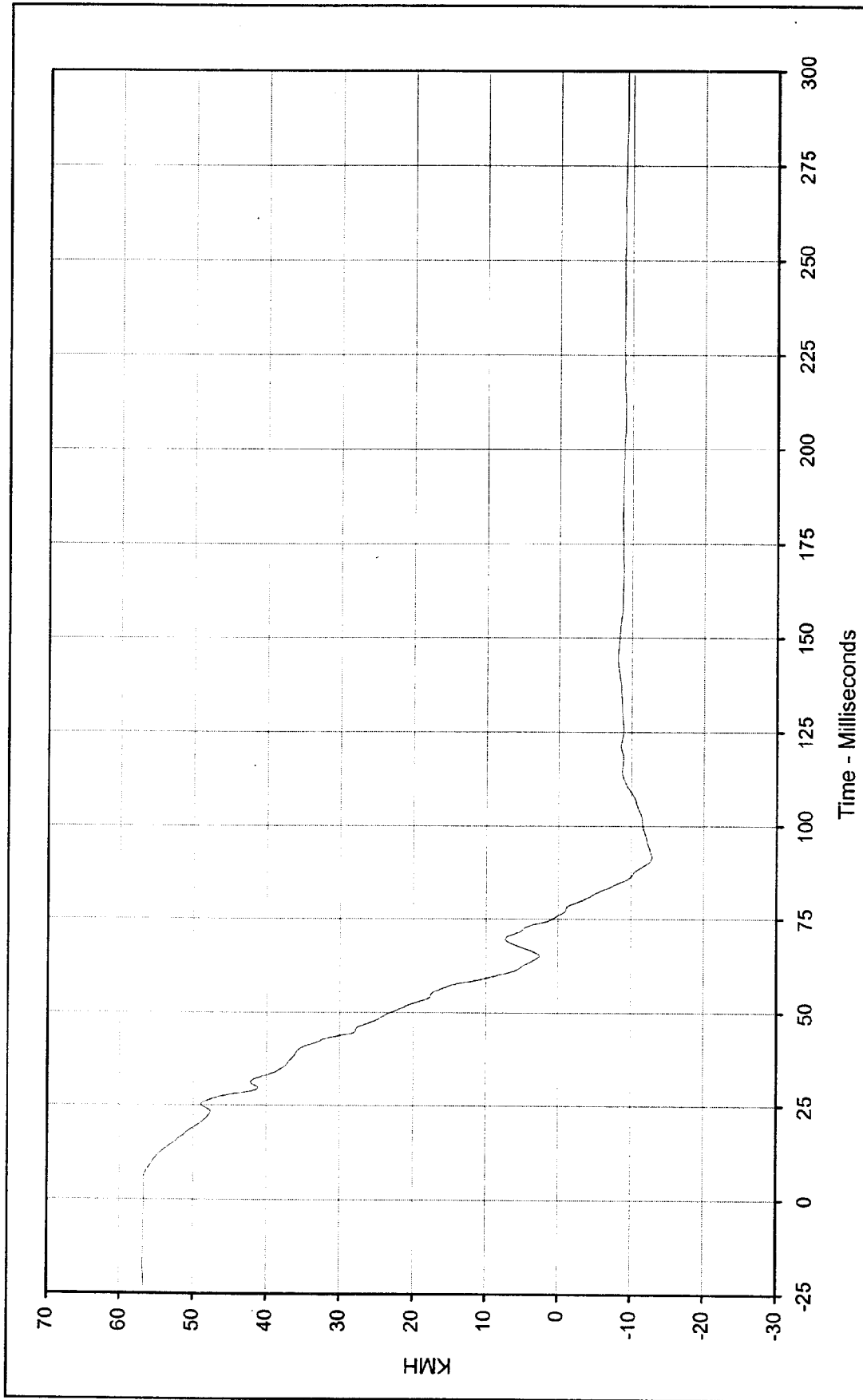




Curve Description: Vehicle Instrument Panel Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Maximum Value: 30.3 at 67.2 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan
 Minimum Value: -62.5 at 58.8 Milliseconds



SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-095



Curve Description: Vehicle Instrument Panel Velocity

Maximum Value: 56.8 at 5.3 Milliseconds

Minimum Value: -12.9 at 91.6 Milliseconds

SAE Filter Class: 180

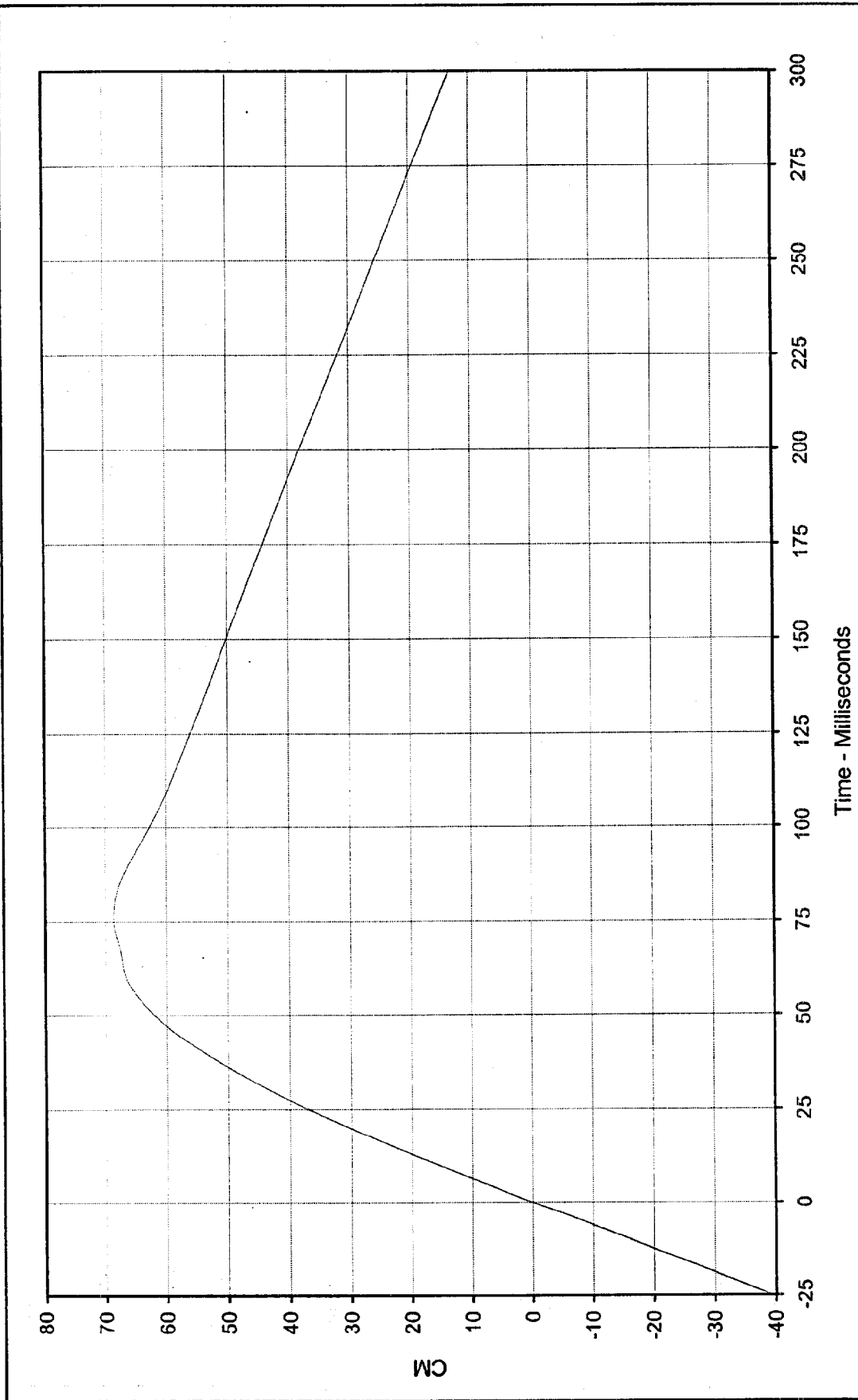
Date of Test: 5/18/99

Curve Number: IN1-095

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Vehicle Instrument Panel Displacement

Maximum Value: 68.6 at 75.9 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

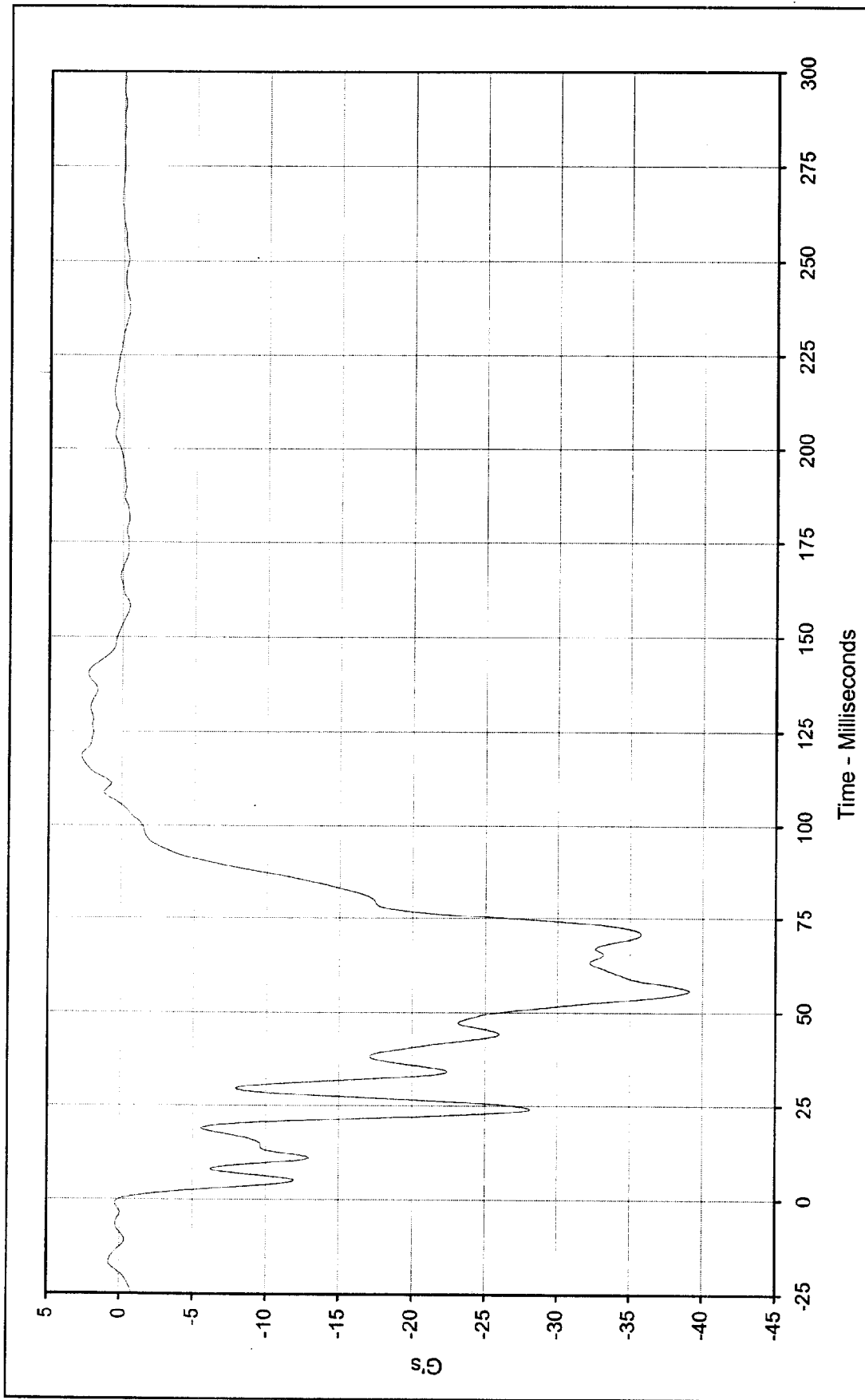
Date of Test: 5/18/99

Curve Number: IN2-095

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

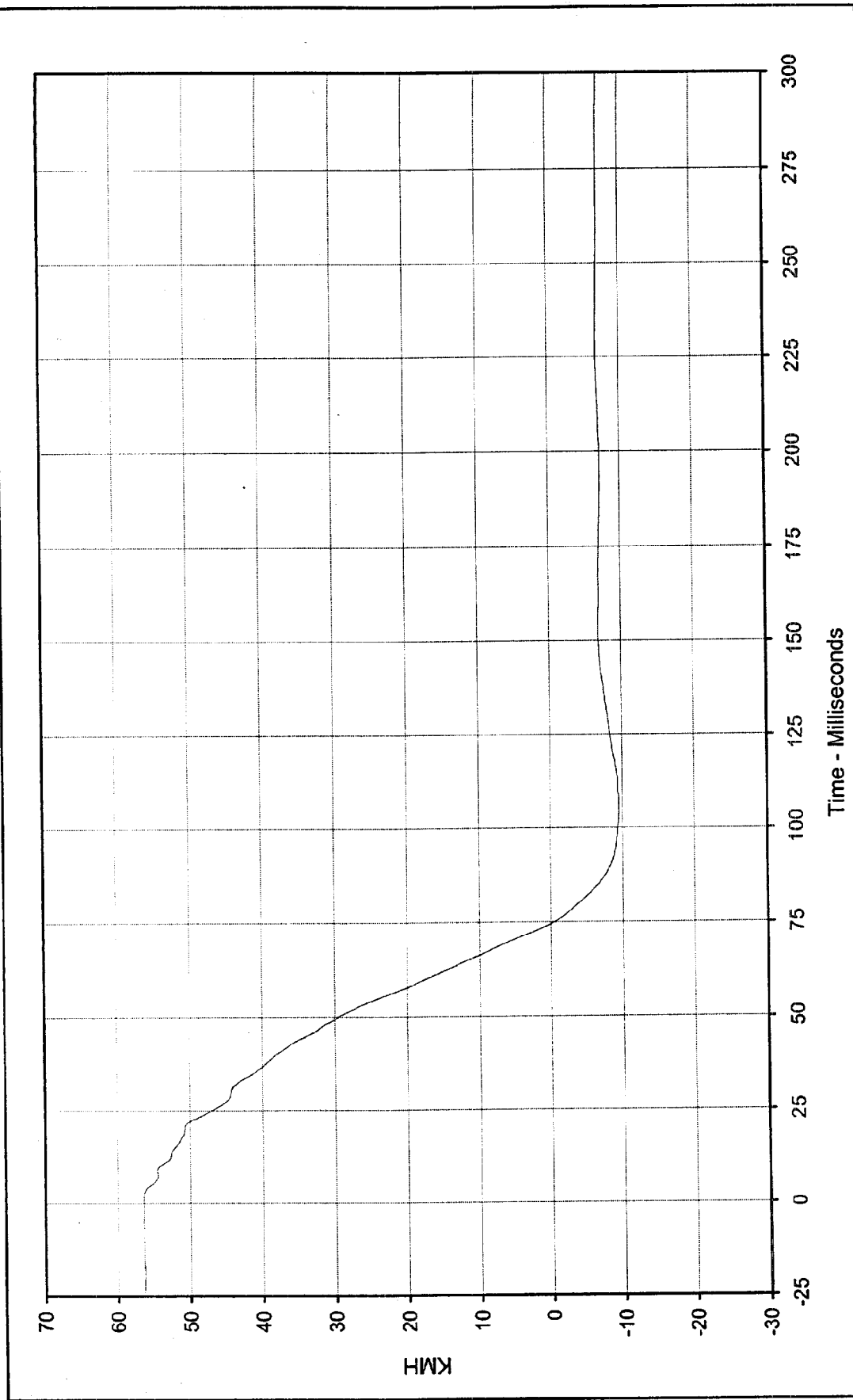
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Vehicle Left Rear Redundant	Test Program:	1999 NHTSA 35 mph NCAP	No.:	MX5304
Maximum Value:	2.8 at 118.5 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan		
Minimum Value:	-39.1 at 55.9 Milliseconds				
SAE Filter Class:	60				
Date of Test:	5/18/99				
Curve Number:	FIL-096				



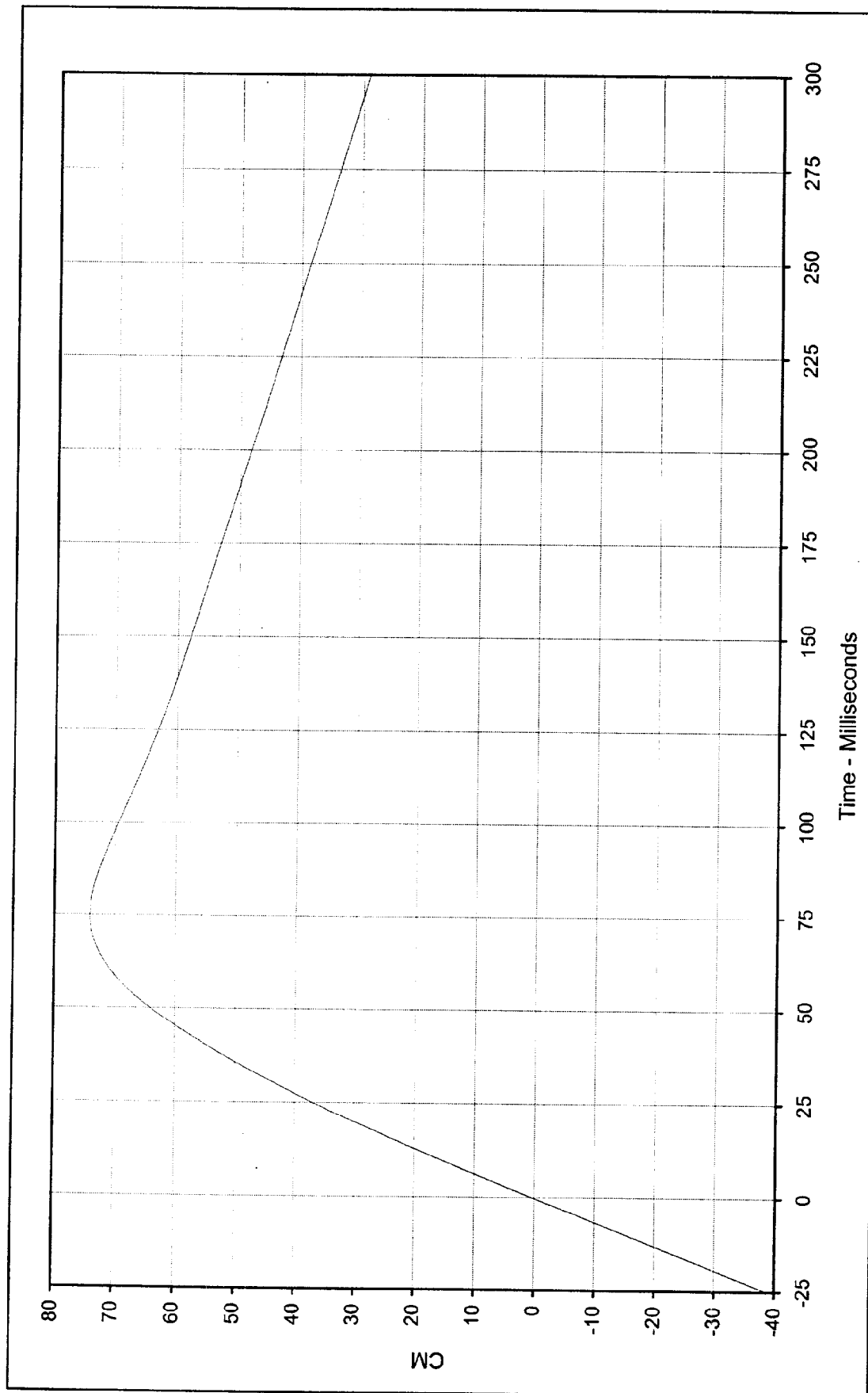


Curve Description: Vehicle Left Rear Redundant Velocity
 Maximum Value: 56.4 at 1.6 Milliseconds
 Minimum Value: -9.5 at 106.1 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN1-096

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Vehicle Left Rear Redundant Displ.
 Maximum Value: 74.1 at 74.5 Milliseconds
 Minimum Value: 0.5 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 5/18/99
 Curve Number: IN2-096

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

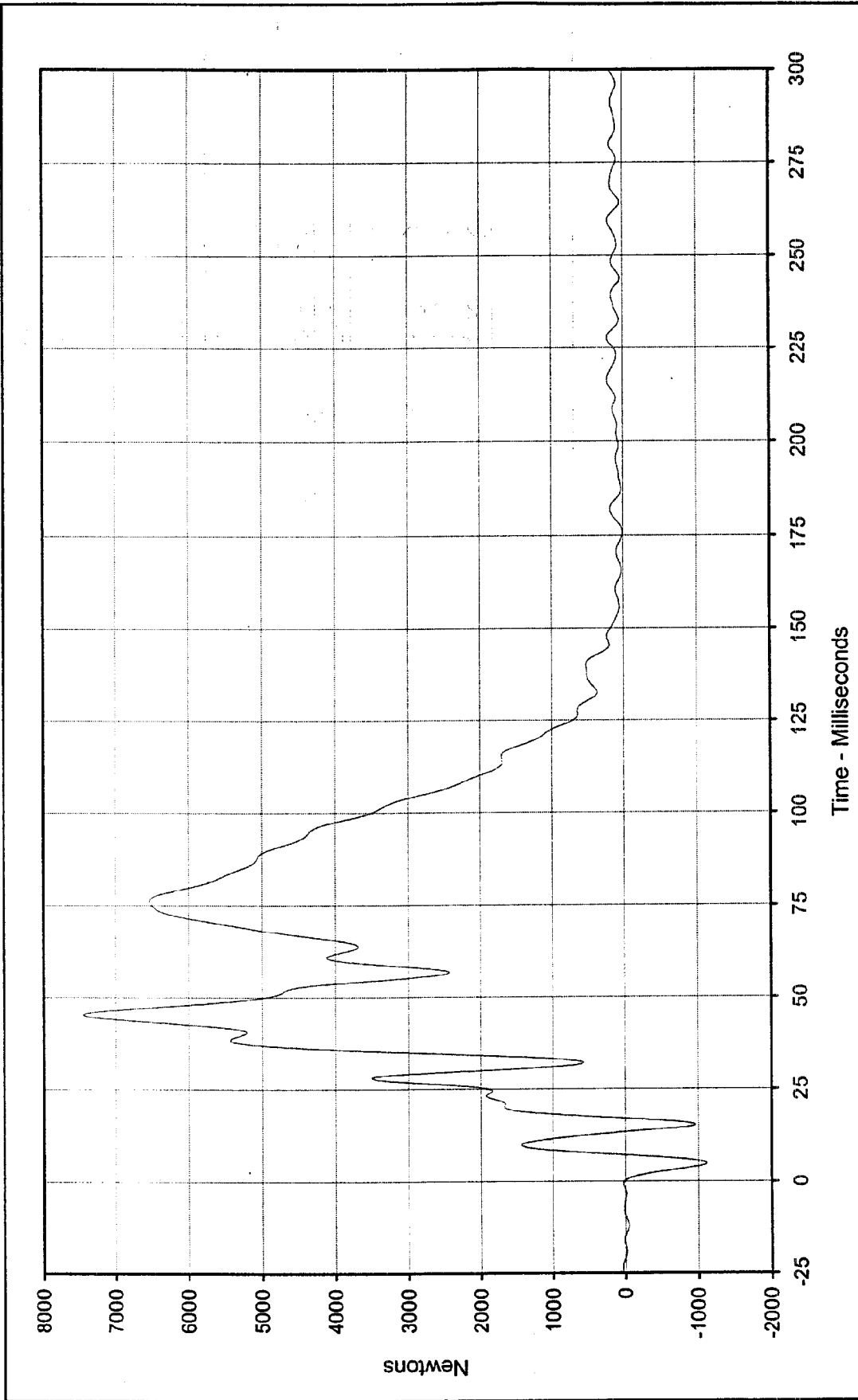


APPENDIX C
LOAD CELL BARRIER INFORMATION

KAR99001-17

LIST OF BARRIER DATA PLOTS

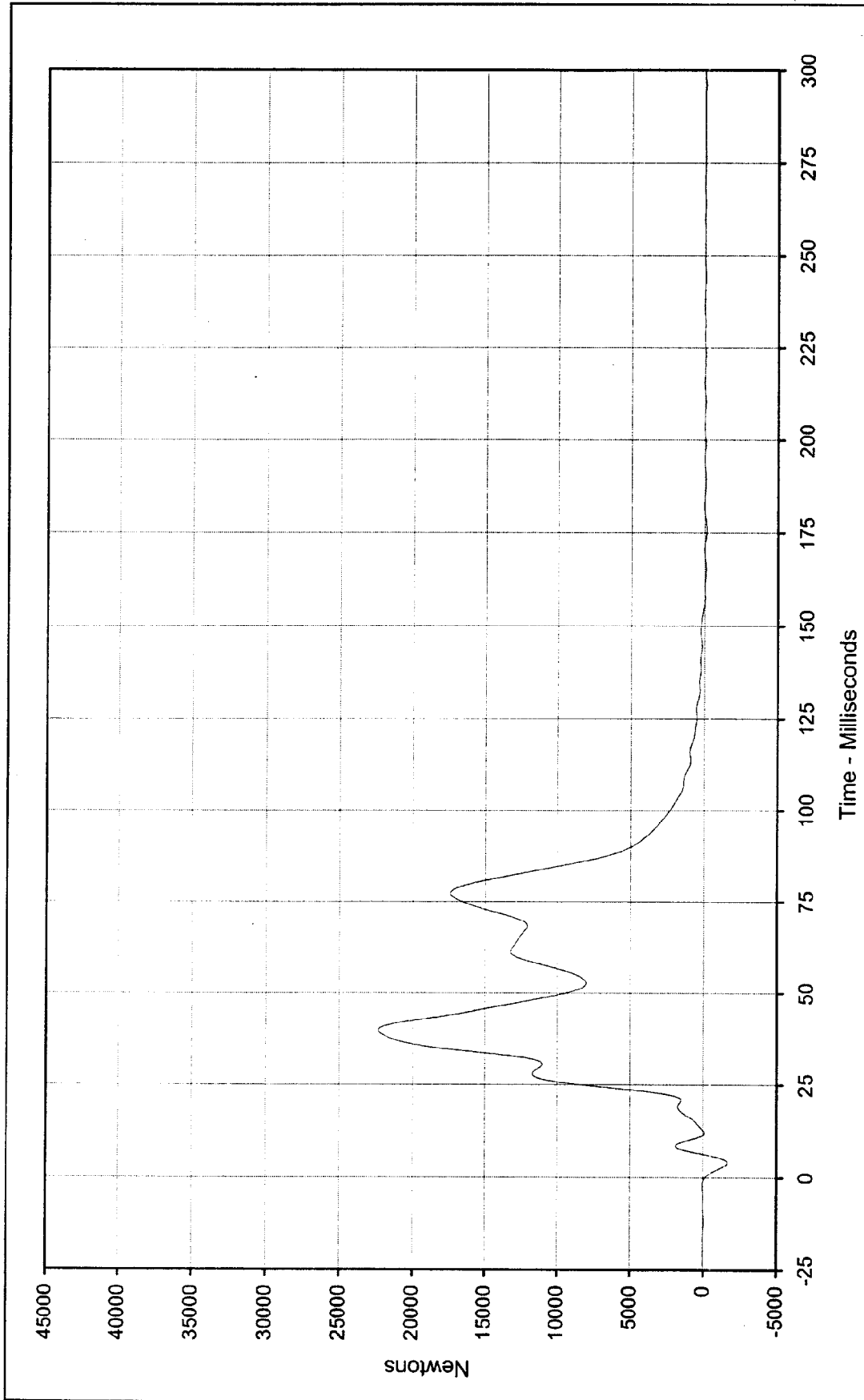
Data Plot		Page
C-1	Barrier Force Location A2	C-1
C-2	Barrier Force Location A3	C-2
C-3	Barrier Force Location A4	C-3
C-4	Barrier Force Location A5	C-4
C-5	Barrier Force Location A6	C-5
C-6	Barrier Force Location A7	C-6
C-7	Barrier Force Location A8	C-7
C-8	Barrier Force Location A9	C-8
C-9	Barrier Force Location B2	C-9
C-10	Barrier Force Location B3	C-10
C-11	Barrier Force Location B4	C-11
C-12	Barrier Force Location B5	C-12
C-13	Barrier Force Location B6	C-13
C-14	Barrier Force Location B7	C-14
C-15	Barrier Force Location B8	C-15
C-16	Barrier Force Location B9	C-16
C-17	Barrier Force Location C2	C-17
C-18	Barrier Force Location C3	C-18
C-19	Barrier Force Location C4	C-19
C-20	Barrier Force Location C5	C-20
C-21	Barrier Force Location C6	C-21
C-22	Barrier Force Location C7	C-22
C-23	Barrier Force Location C8	C-23
C-24	Barrier Force Location C9	C-24
C-25	Barrier Force Sum Group 1	C-25
C-26	Barrier Force Sum Group 2	C-26
C-27	Barrier Force Sum Group 3	C-27
C-28	Barrier Force Sum Group 4	C-28
C-29	Barrier Force Sum Group 5	C-29
C-30	Barrier Force Sum Group 6	C-30
C-31	Barrier Force Sum Total	C-31
C-32	Barrier Force Sum Total vs. Dynamic Crush	C-32
C-33	Barrier Load Cell Summary Data	C-33



Curve Description: Barrier Force A2
 Maximum Value: 7449.4 at 45.4 Milliseconds
 Minimum Value: -1118.6 at 4.8 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-099

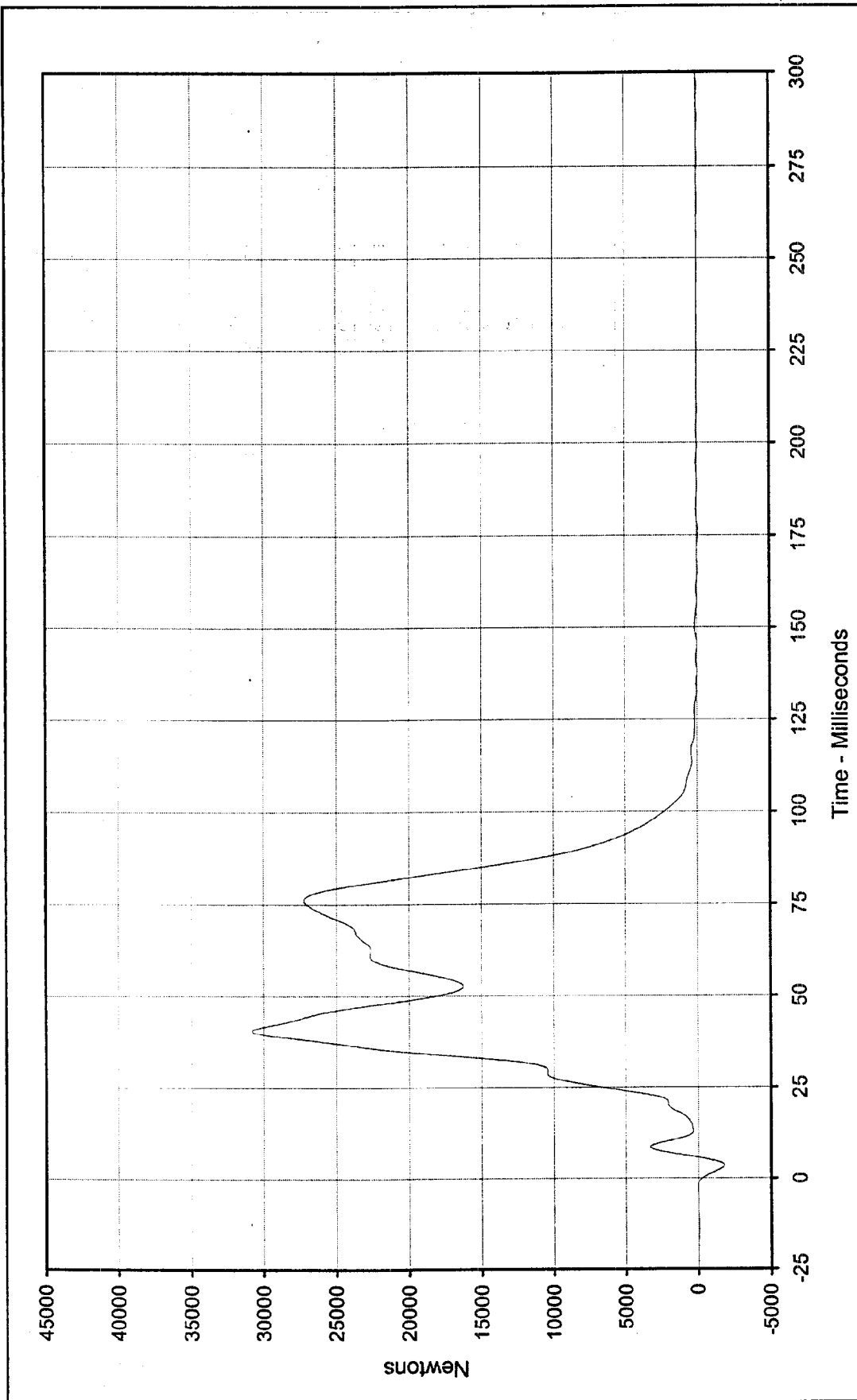
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





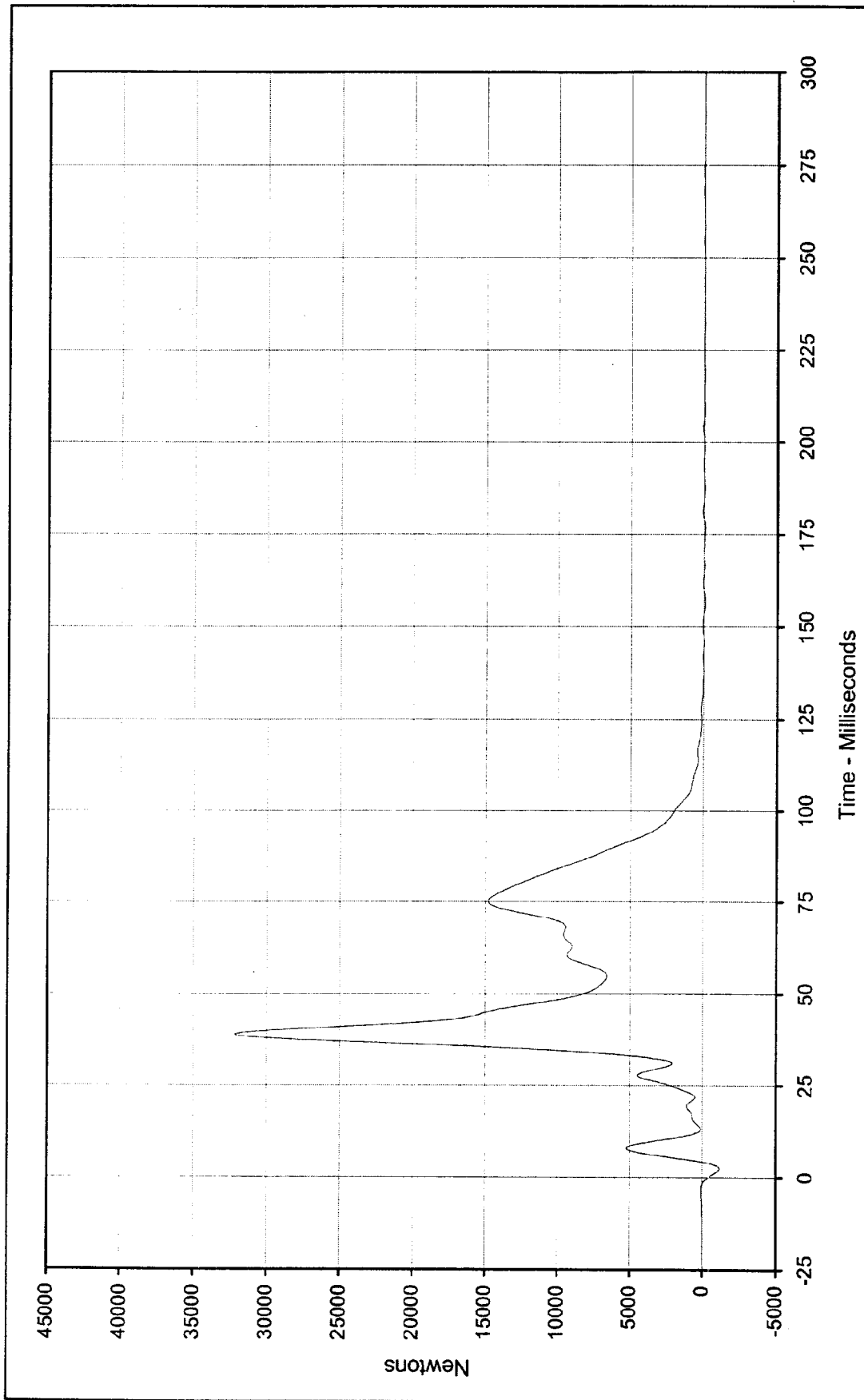
Curve Description:	Barrier Force A3	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	22353.5 at 39.7 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1684.8 at 4.0 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-100			





Curve Description:		Barrier Force A4		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	30784.2	at	40.5	Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan
Minimum Value:	-1802.6	at	3.5	Milliseconds		
SAE Filter Class:	60					
Date of Test:	5/18/99					
Curve Number:	FIL-101					





Curve Description: Barrier Force A5 Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Maximum Value: 32159.9 at 38.8 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

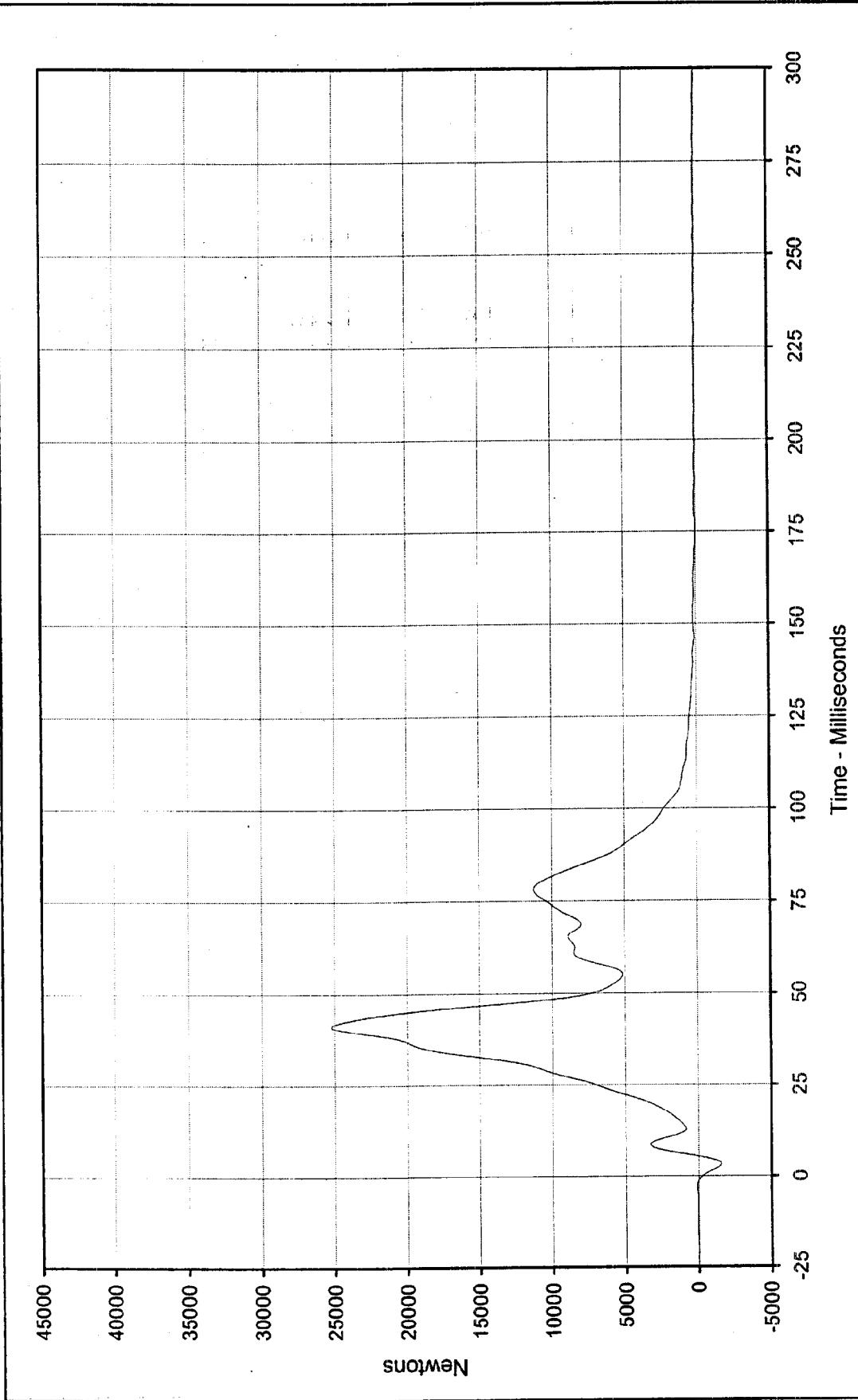
Minimum Value: -1185.2 at 2.4 Milliseconds

SAE Filter Class: 60

Date of Test: 5/18/99

Curve Number: FIL-102

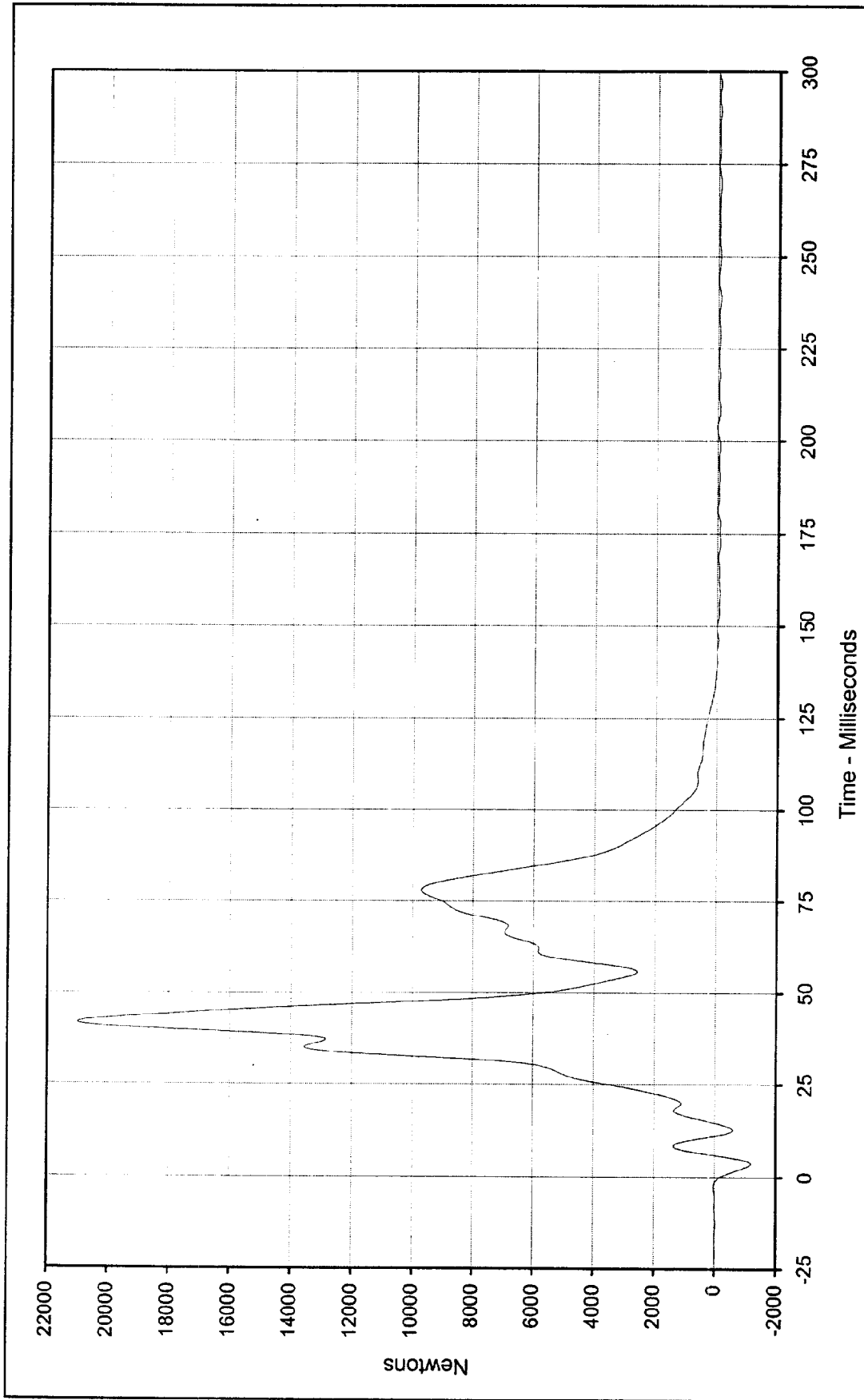




Curve Description: Barrier Force A6
Maximum Value: 25250.3 at 41.2 Milliseconds
Minimum Value: -1544.4 at 3.3 Milliseconds
SAE Filter Class: 60
Date of Test: 5/18/99
Curve Number: FIL-103

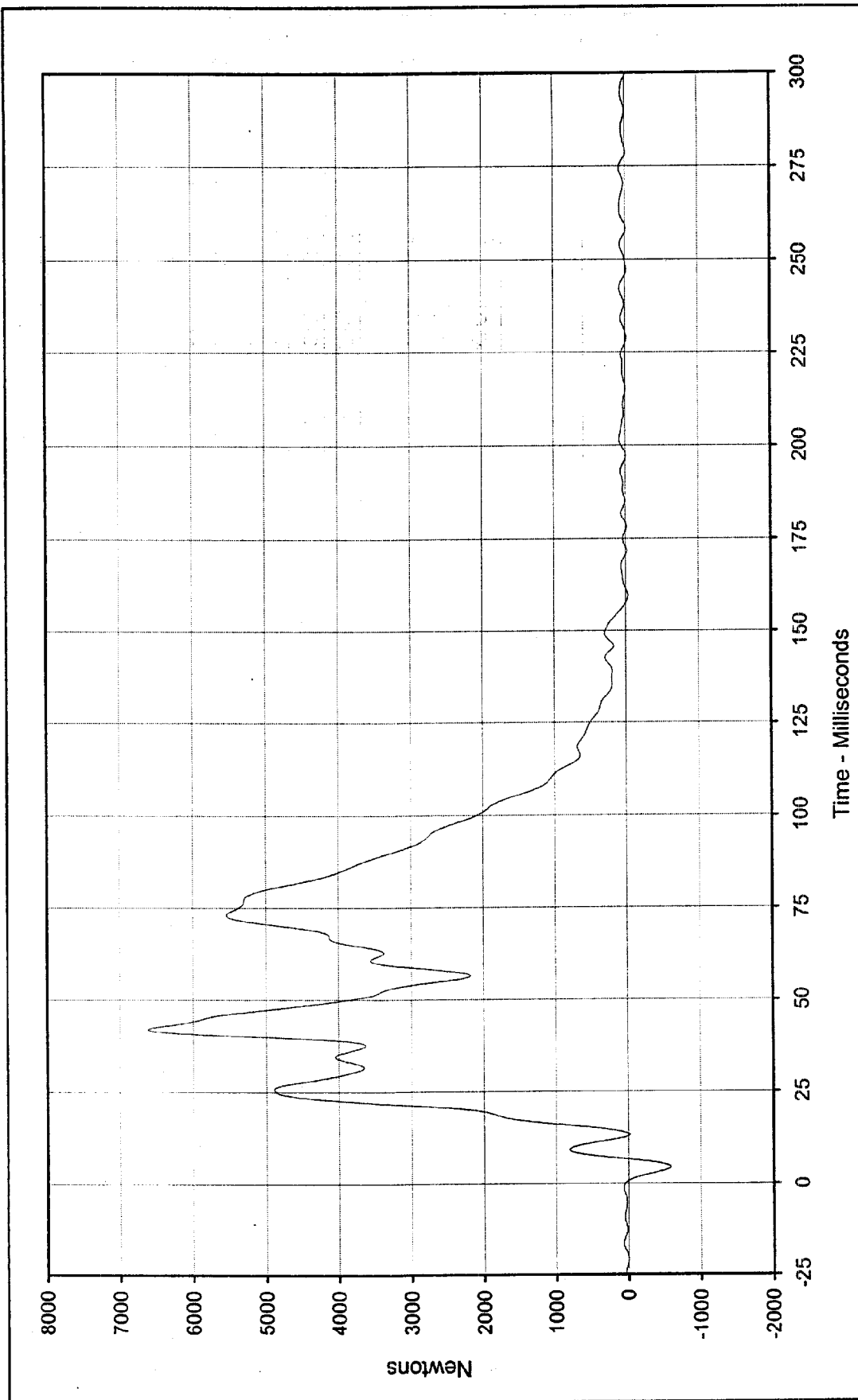
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Barrier Force A7	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	20995.7 at 41.6 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1189.6 at 3.6 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-104			



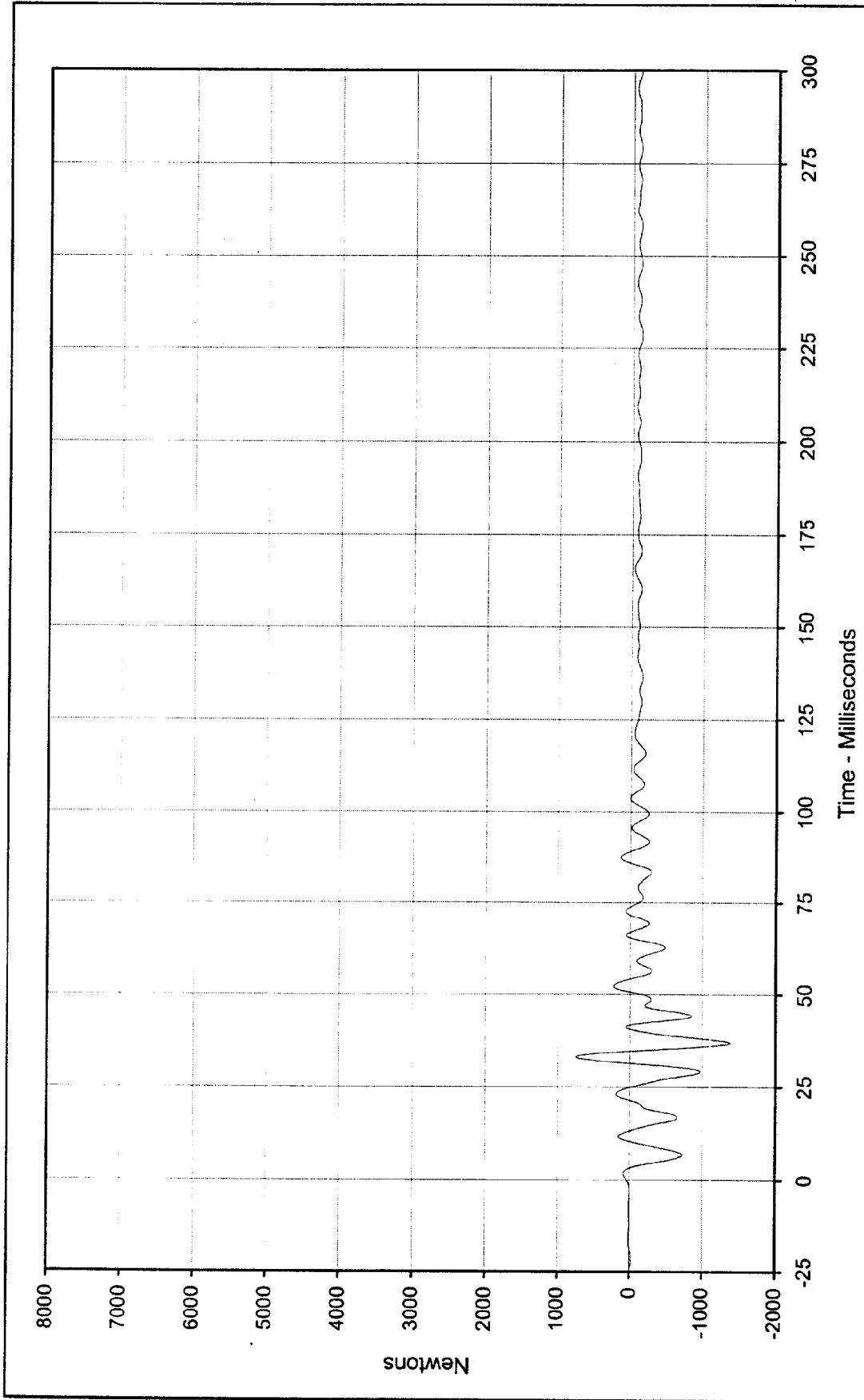


Curve Description: Barrier Force A8
 Maximum Value: 6617.4 at 42.1 Milliseconds
 Minimum Value: -588.2 at 4.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-105

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

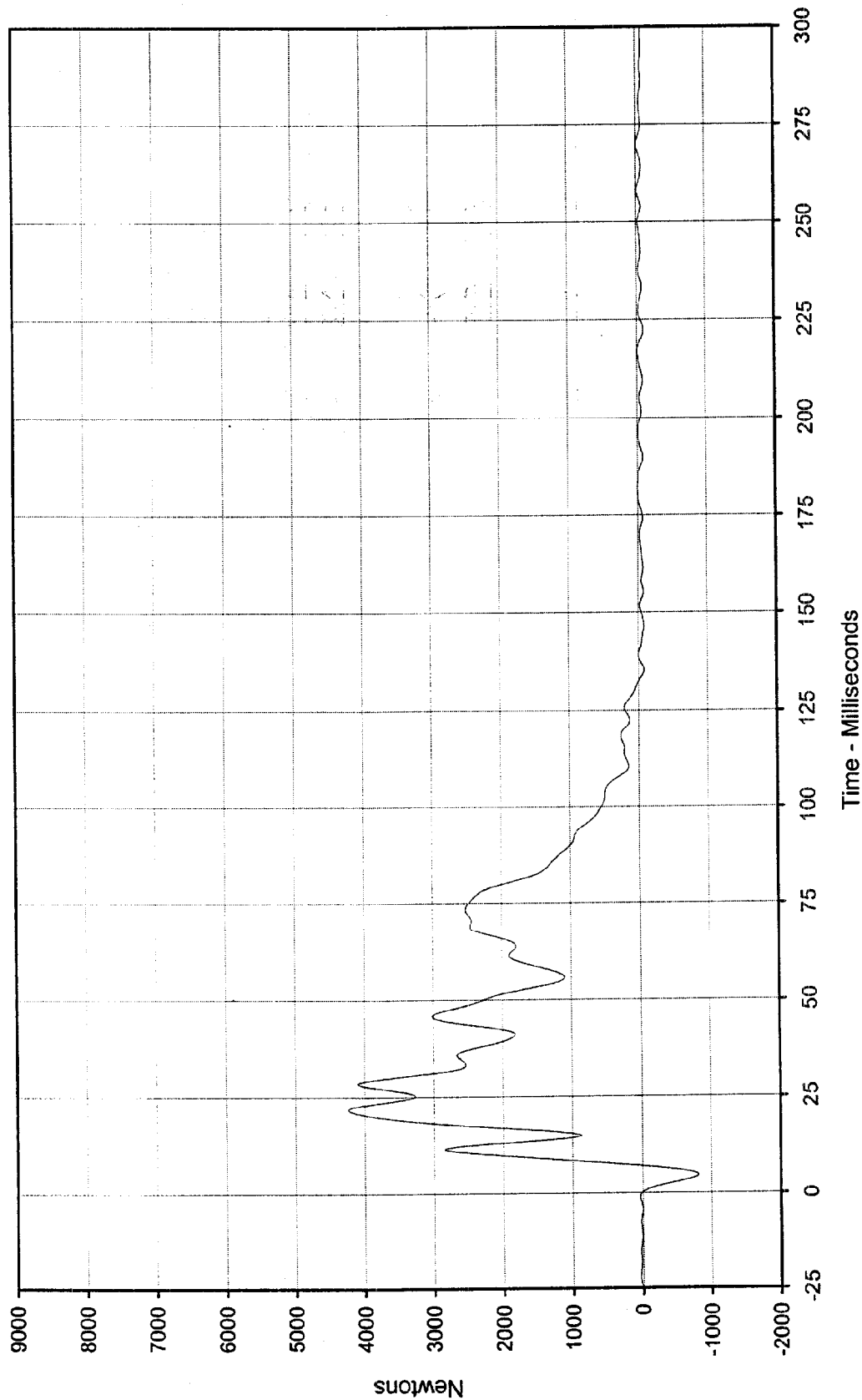
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Barrier Force A9	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	744.5 at 33.1 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1386.3 at 36.9 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-106			





Curve Description: Barrier Force B2

Maximum Value: 4237.3 at 21.8 Milliseconds

Minimum Value: -806.0 at 4.5 Milliseconds

SAE Filter Class: 60

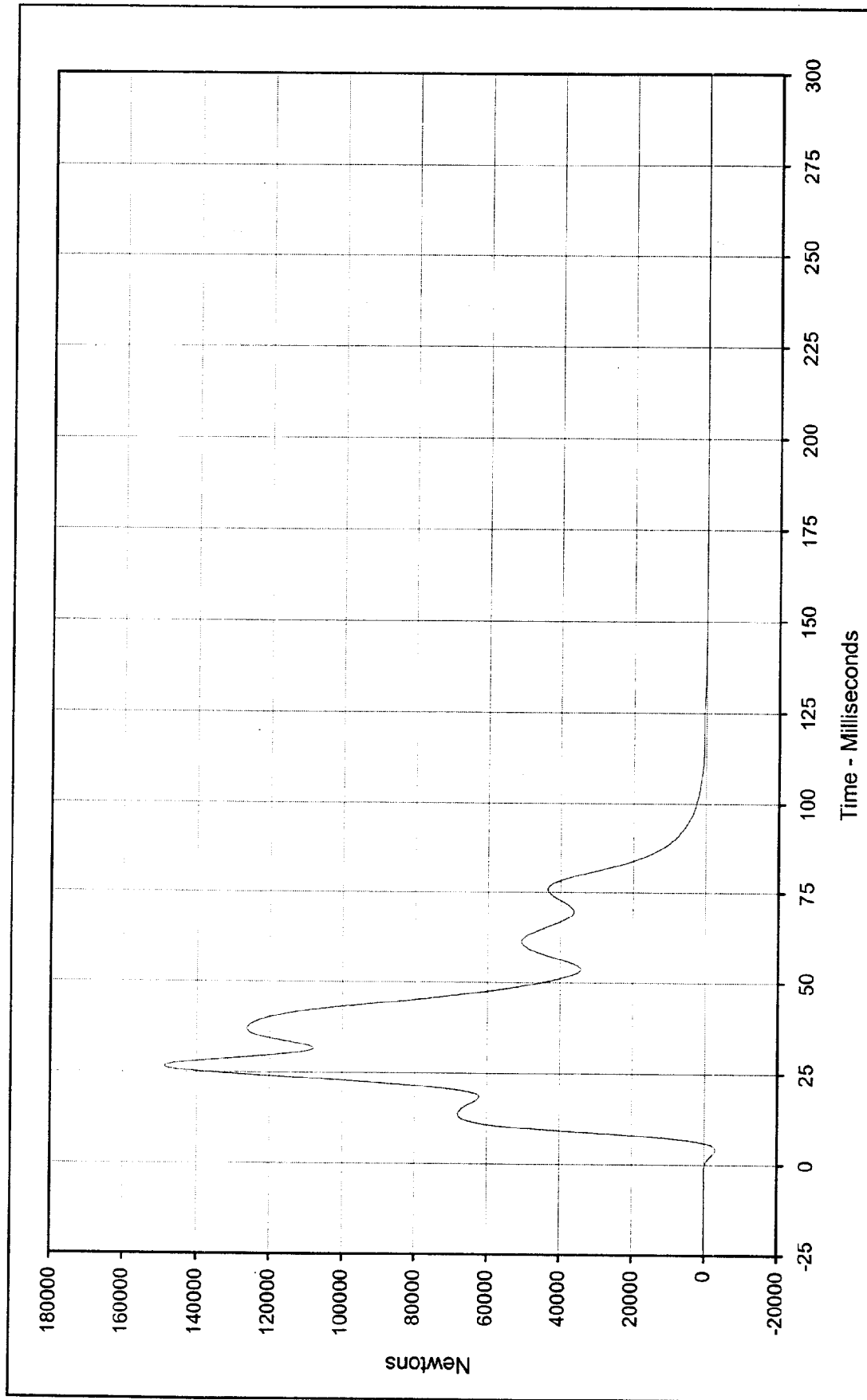
Date of Test: 5/18/99

Curve Number: FIL-108

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

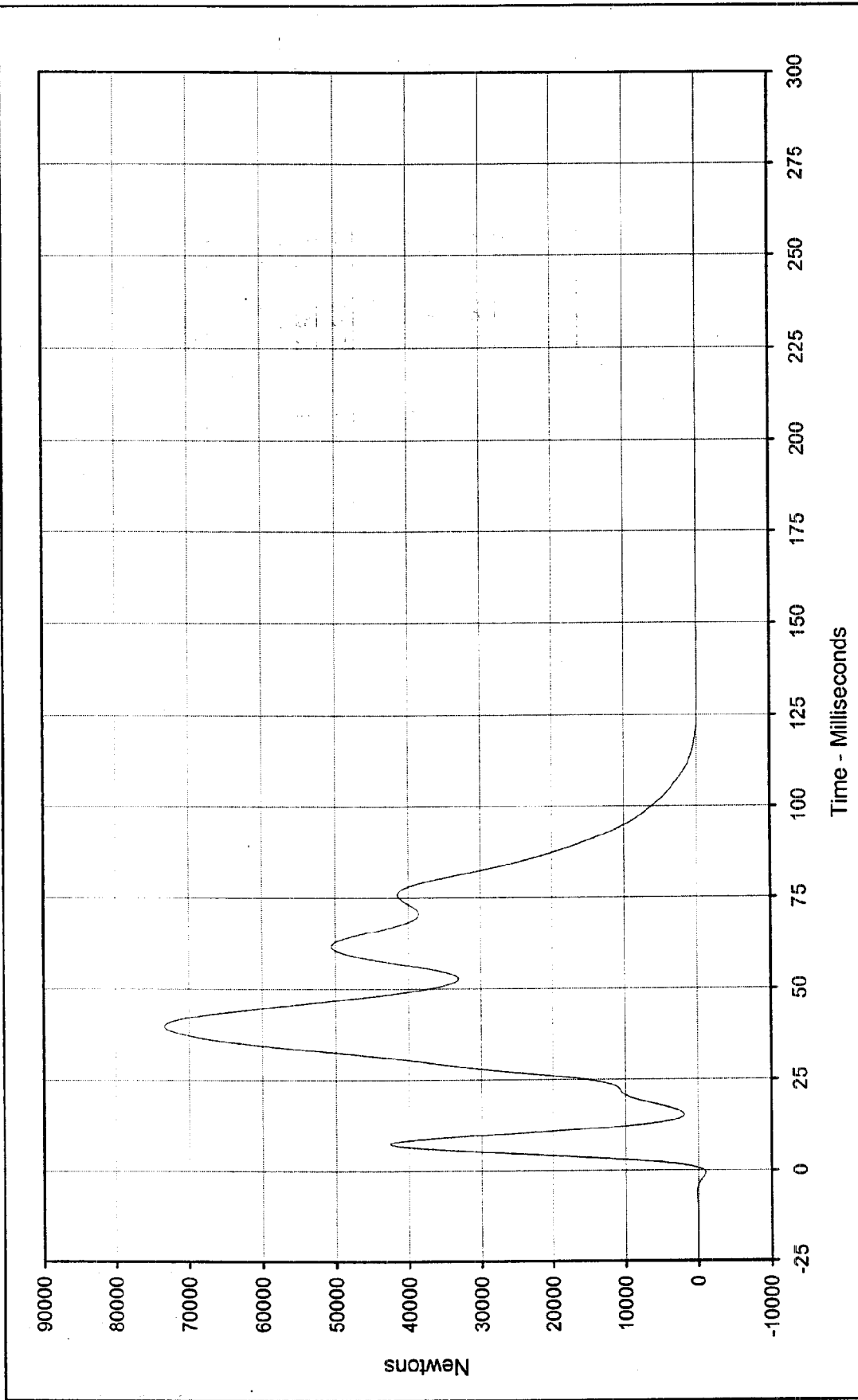
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:	Barrier Force B3	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	148624.4 at 26.6 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-3045.5 at 4.1 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-109			





Curve Description: Barrier Force B4 Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Maximum Value: 7310.4 at 39.7 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

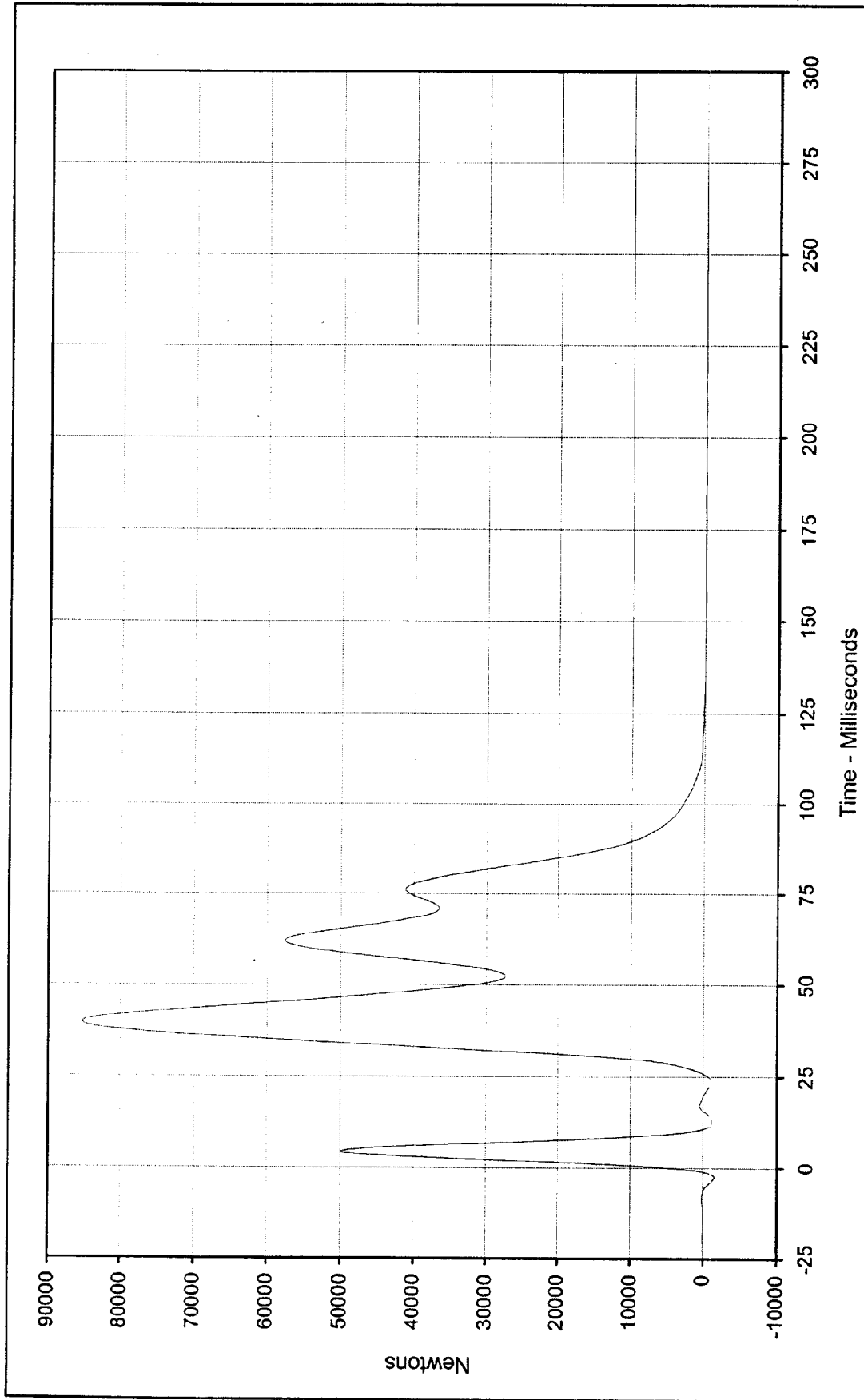
Minimum Value: -821.4 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 5/18/99

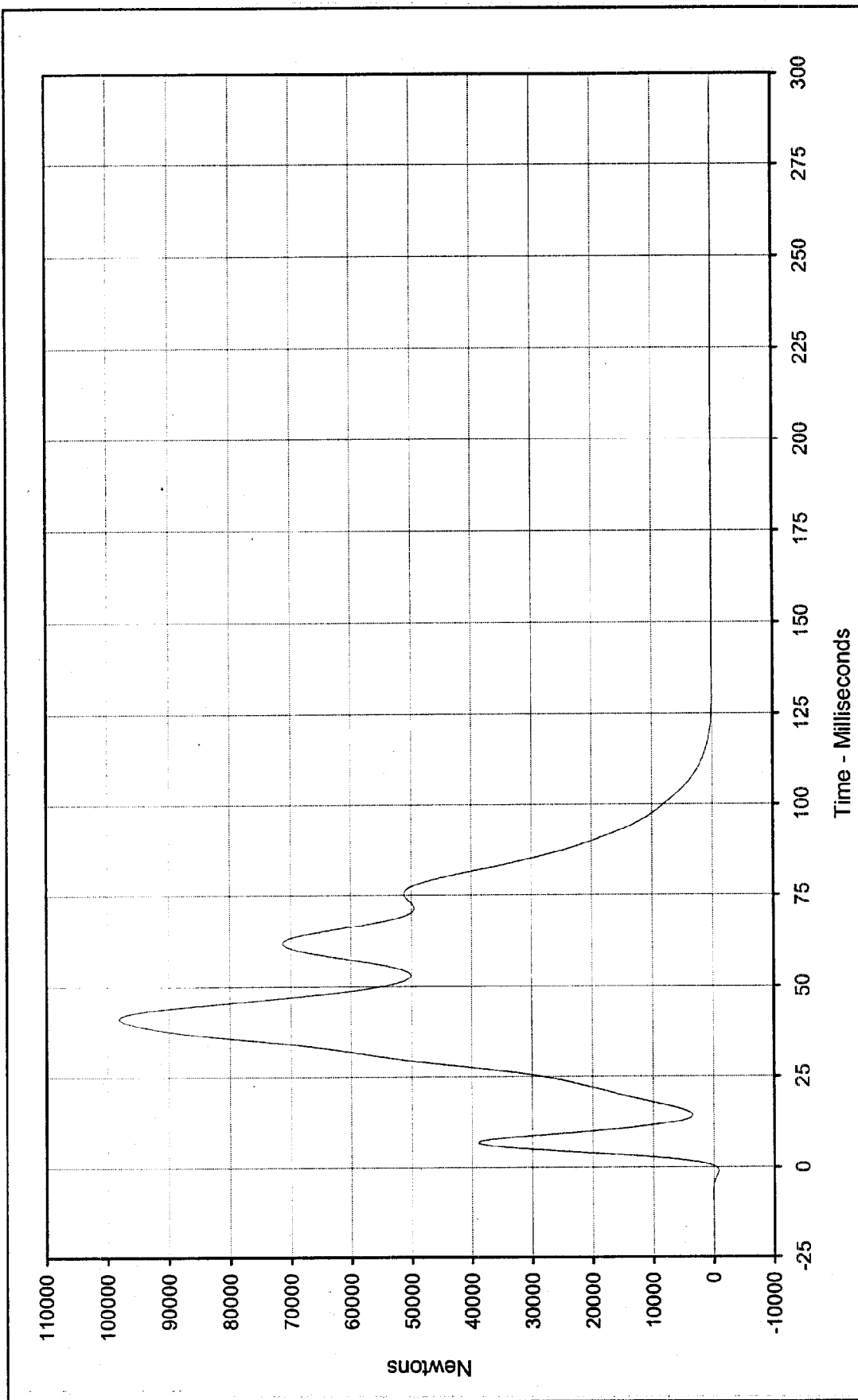
Curve Number: FIL-110





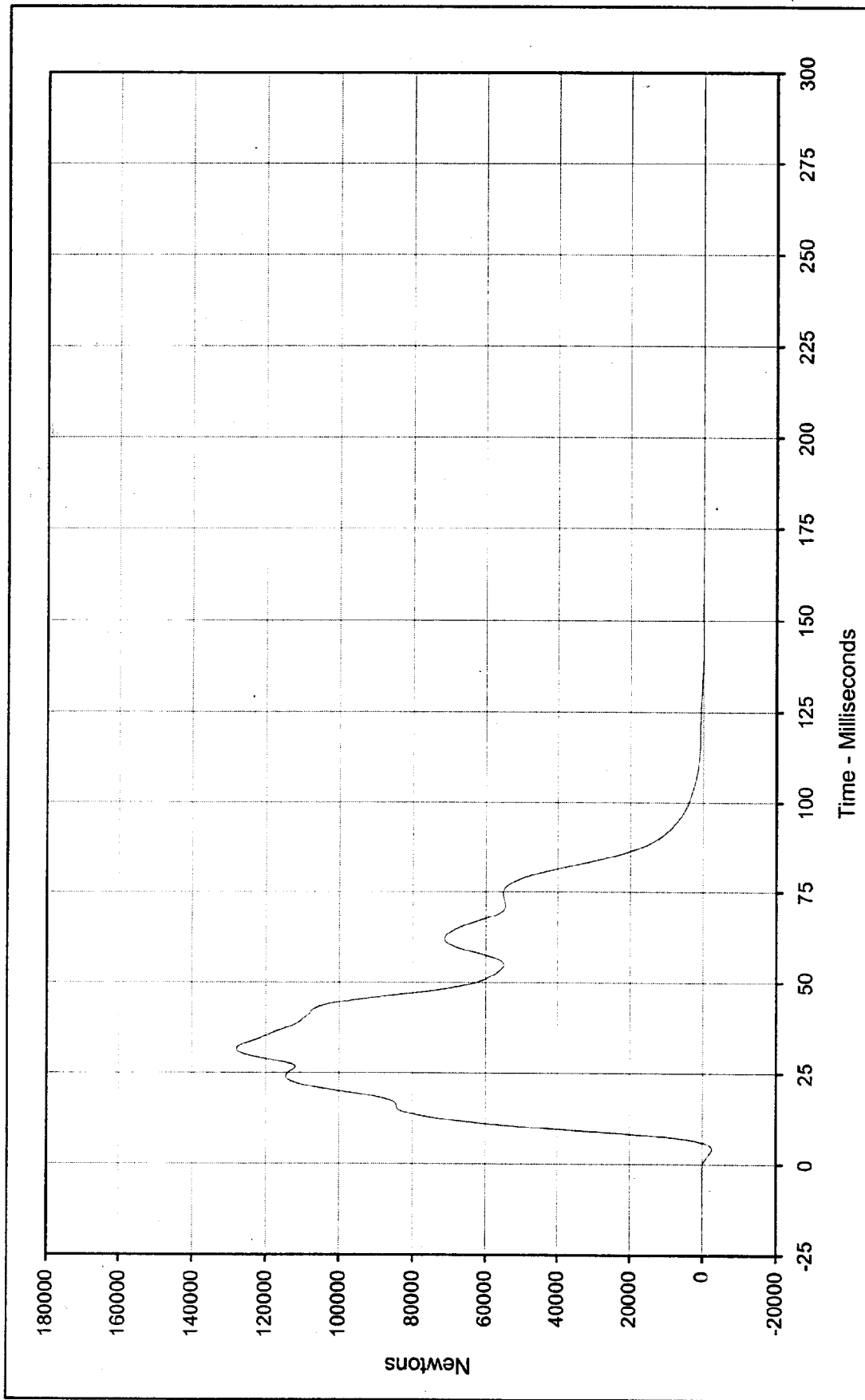
Curve Description:	Barrier Force B5	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	85290.8 at 39.5 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1148.4 at 12.5 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-111			





Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5304
 Maximum Value: 98069.7 at 41.2 Milliseconds
 Minimum Value: -474.3 at 0.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-112





Curve Description: Barrier Force B7

Maximum Value: 127869.6 at 31.6 Milliseconds

Minimum Value: -2551.8 at 4.1 Milliseconds

SAE Filter Class: 60

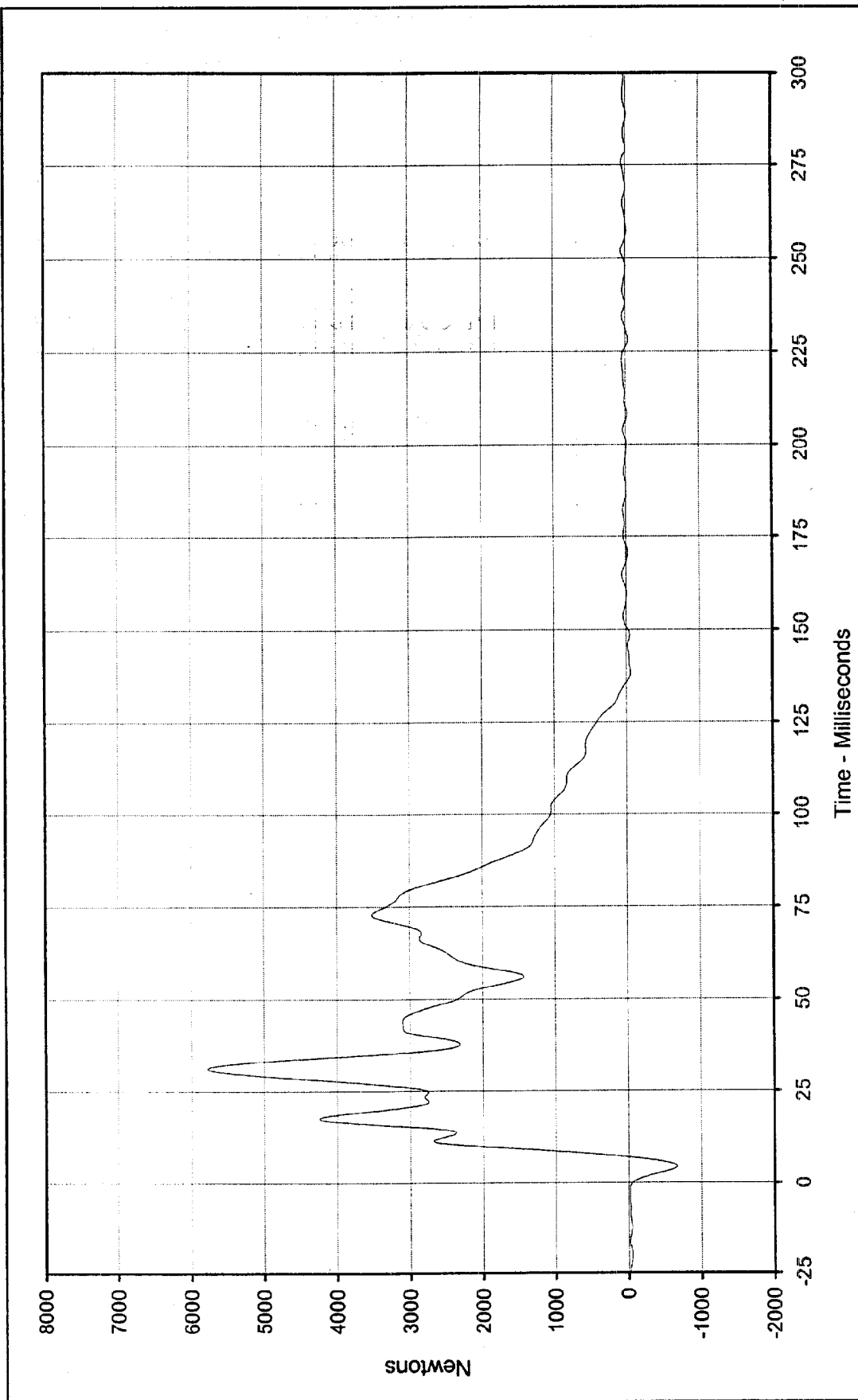
Date of Test: 5/18/99

Curve Number: FIL-113

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

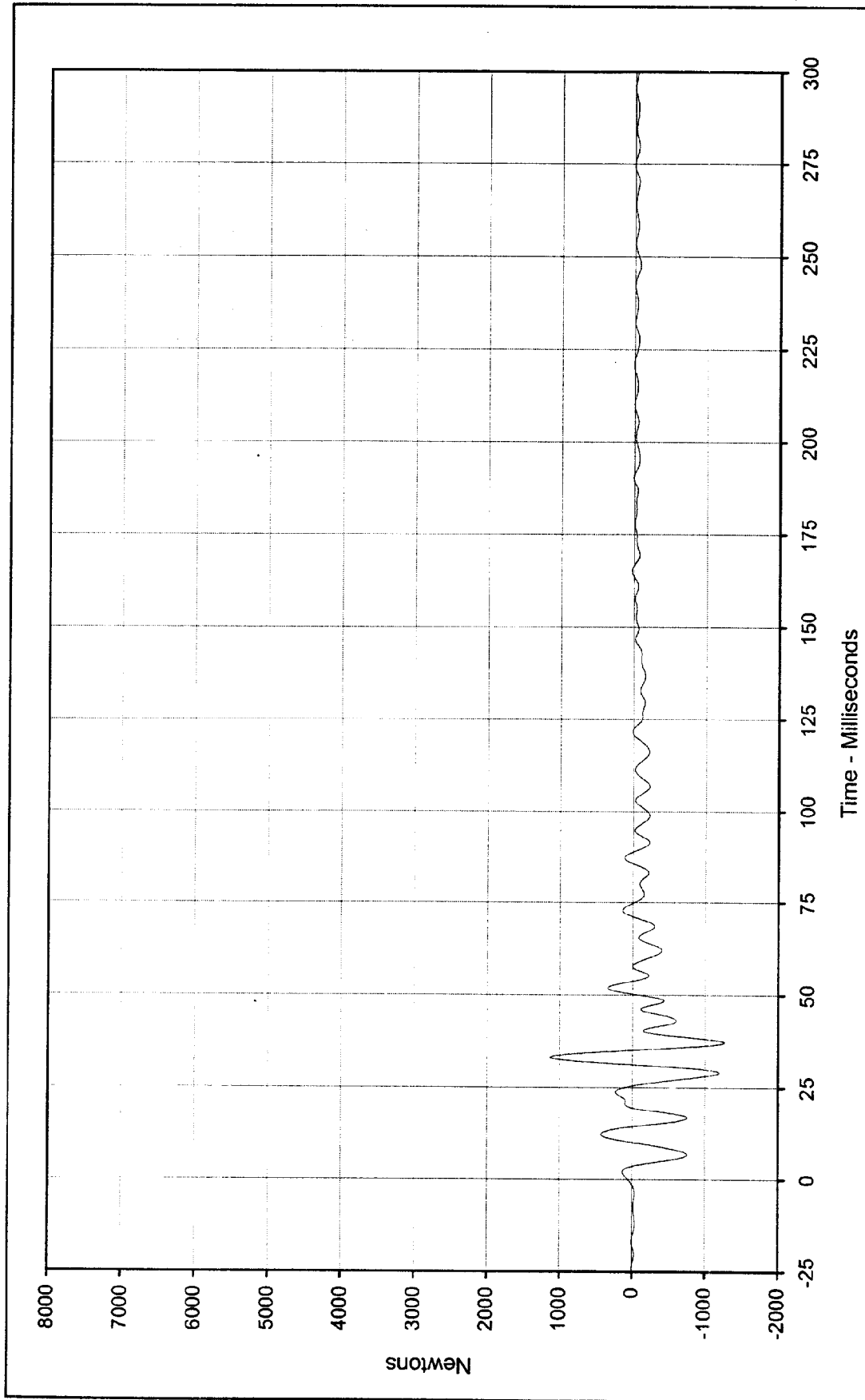




Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

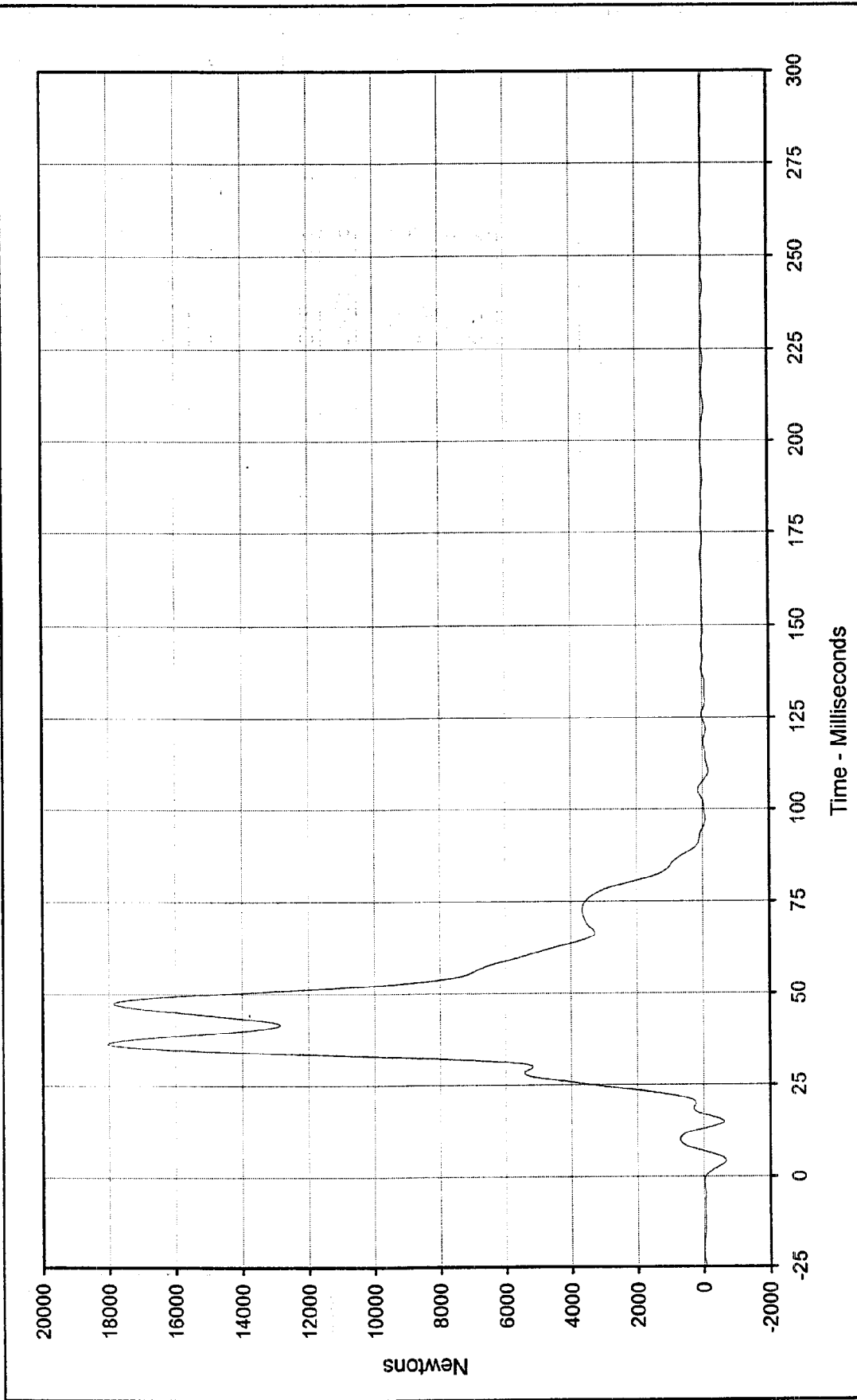
Curve Description: Barrier Force B8
 Maximum Value: 5778.4 at 31.2 Milliseconds
 Minimum Value: -668.3 at 4.3 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-114





Curve Description:	Barrier Force B9	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	1123.9 at 33.2 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1273.6 at 37.1 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-115			

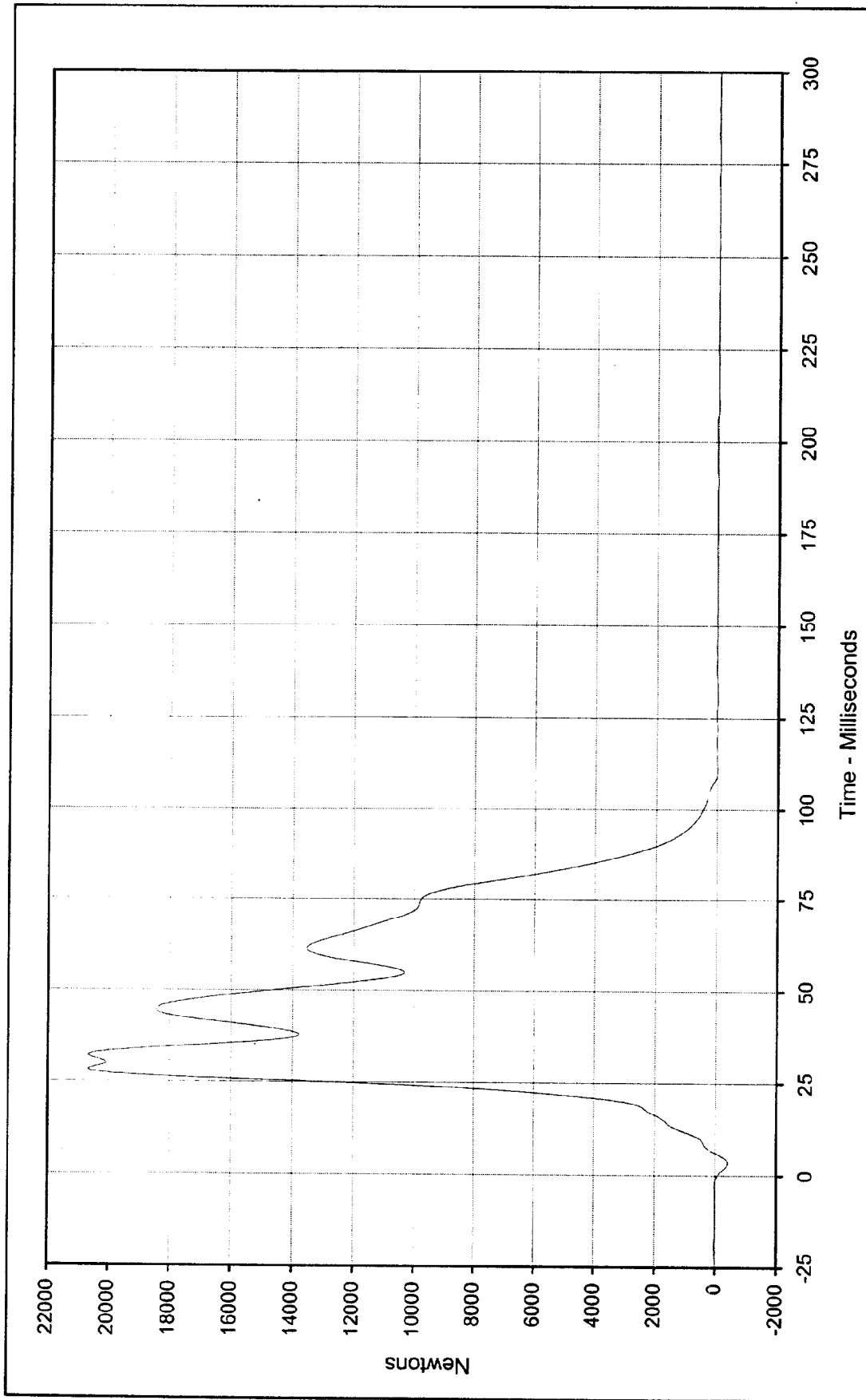




Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

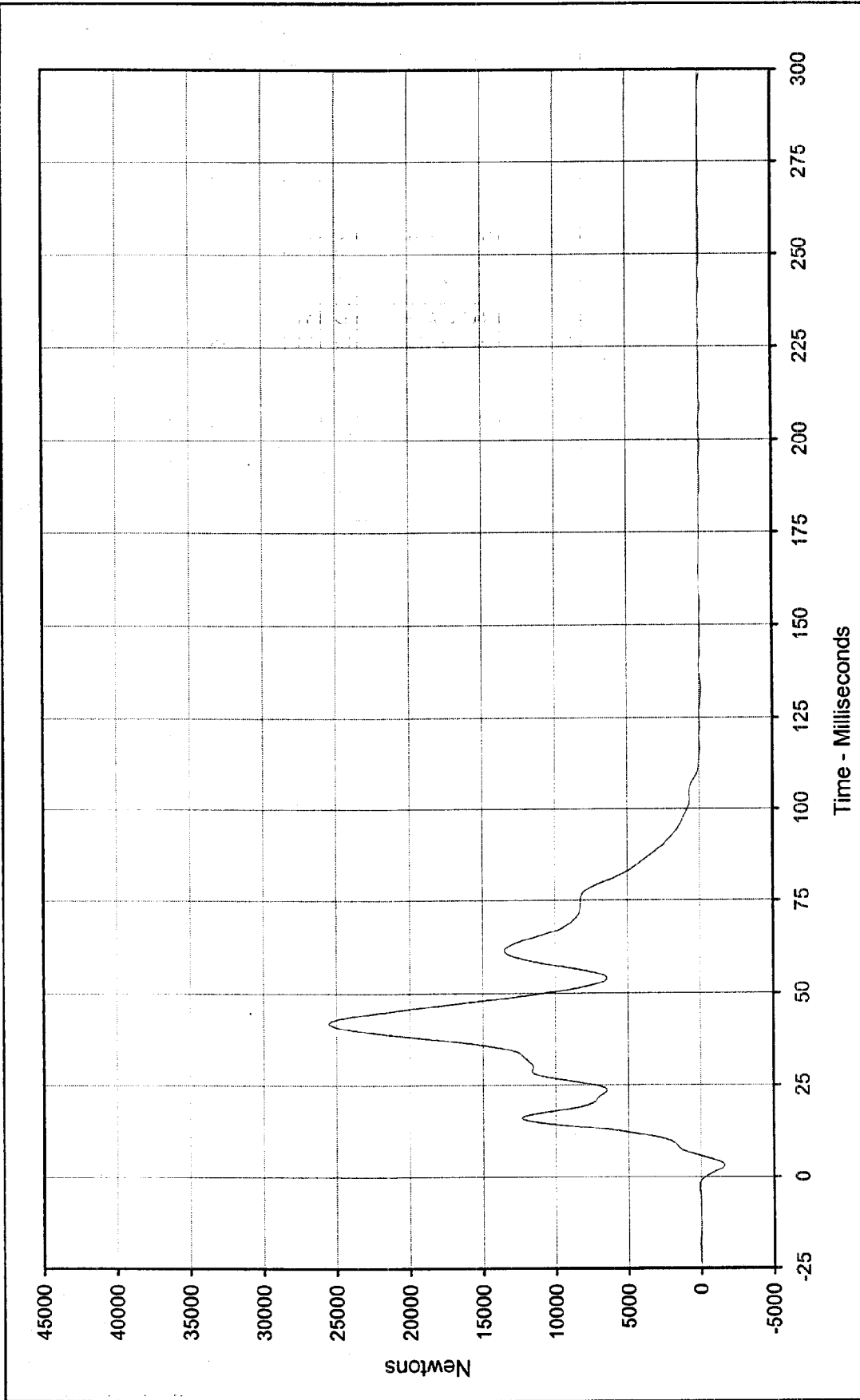
Curve Description: Barrier Force C2
 Maximum Value: 18033.7 at 36.3 Milliseconds
 Minimum Value: -668.6 at 4.3 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-117





Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5304
 Maximum Value: 20665.5 at 28.2 Milliseconds
 Minimum Value: -429.2 at 3.5 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: FIL-118





Curve Description: Barrier Force C4

Maximum Value: 25510.7 at 42.0 Milliseconds

Minimum Value: -1645.8 at 3.2 Milliseconds

SAE Filter Class: 60

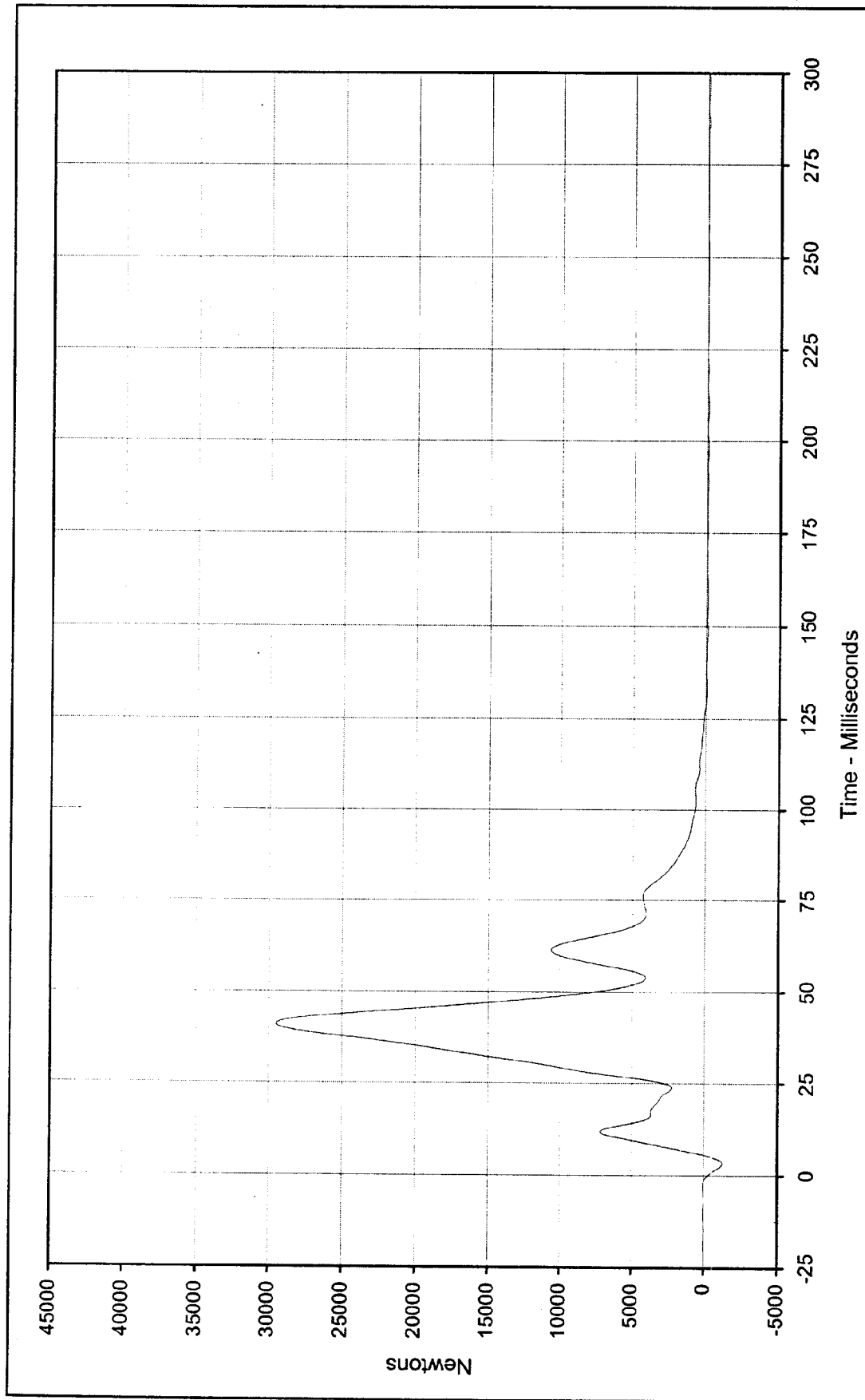
Date of Test: 5/18/99

Curve Number: FIL-119

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

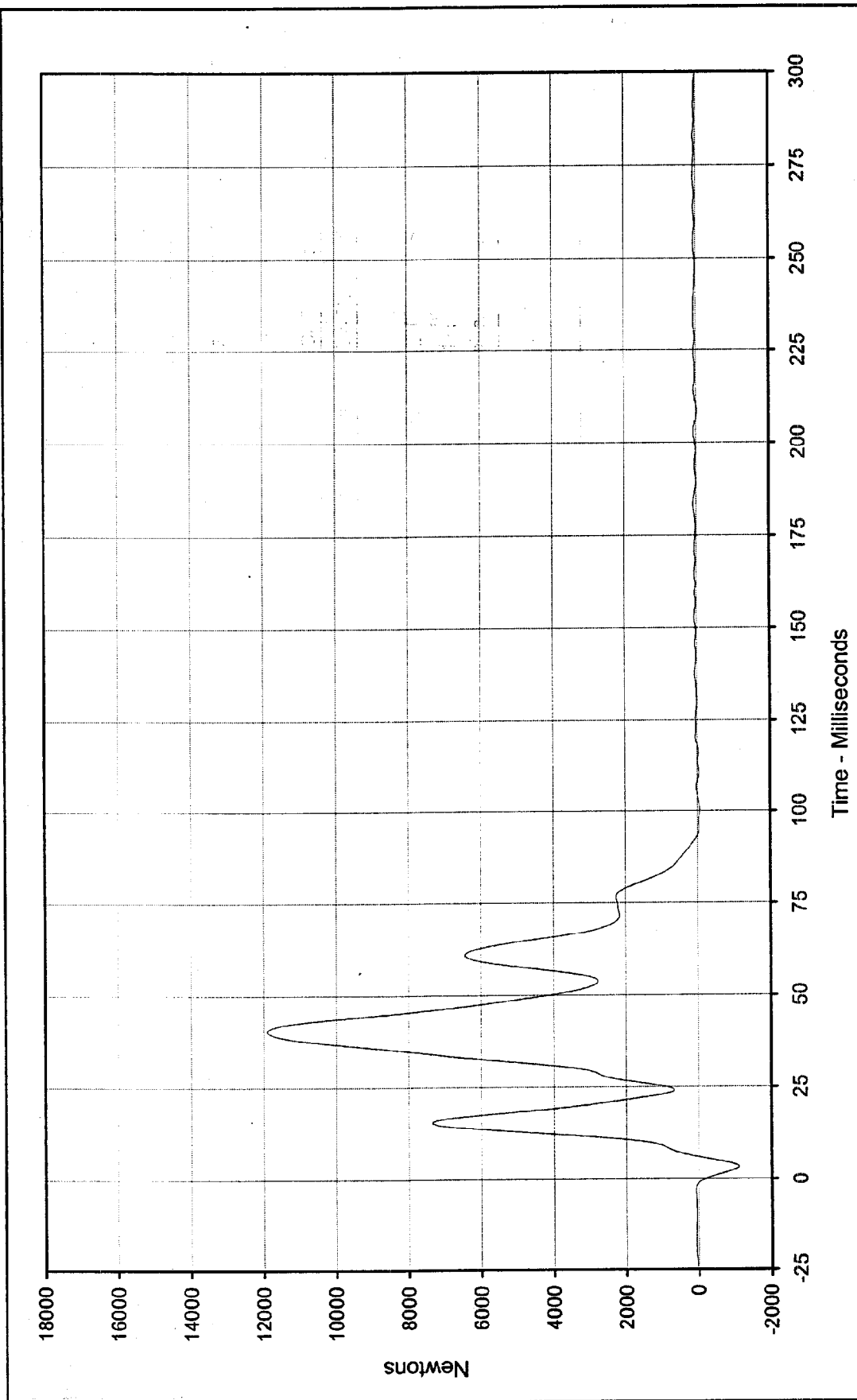
Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





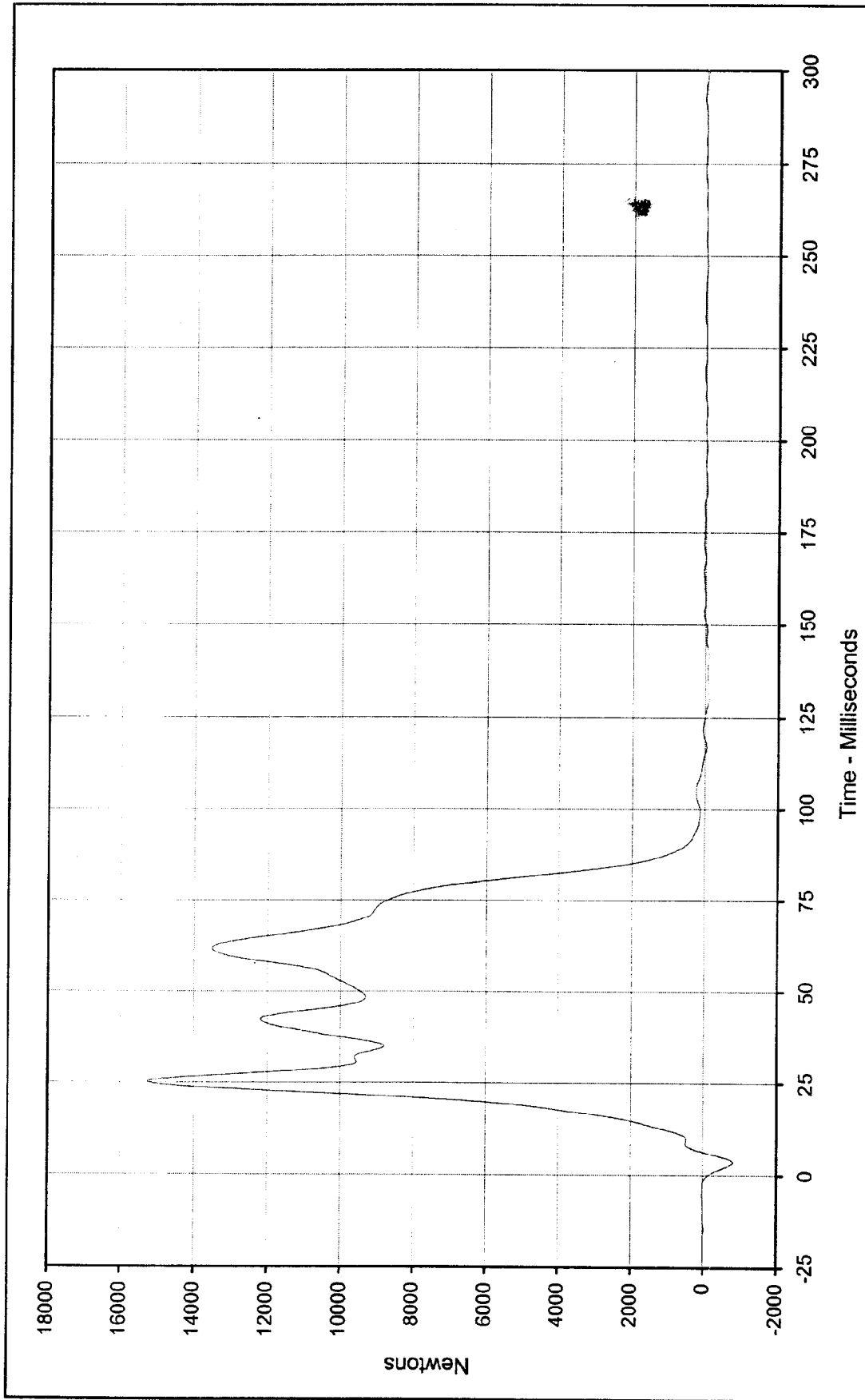
Curve Description:	Barrier Force C5	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	29485.8 at 40.8 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1290.1 at 3.2 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-120			





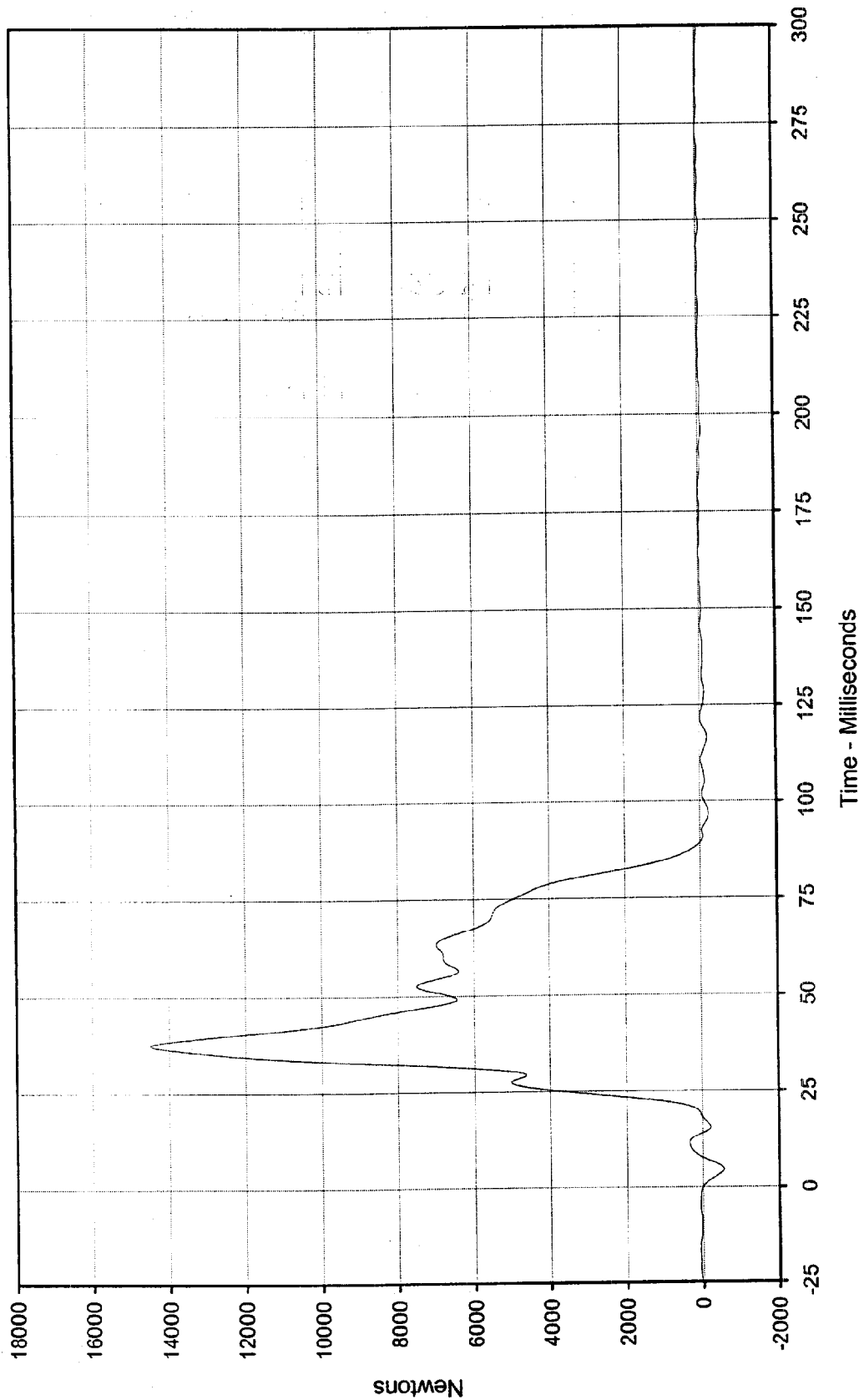
Curve Description:	Barrier Force C6	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	11908.6 at 40.4 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1110.8 at 3.3 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-121			





Curve Description:	Barrier Force C7	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	15252.5 at 25.2 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-824.8 at 3.6 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	FIL-122			





Curve Description: Barrier Force C8

Maximum Value: 14479.6 at 37.5 Milliseconds

Minimum Value: -549.3 at 4.4 Milliseconds

SAE Filler Class: 60

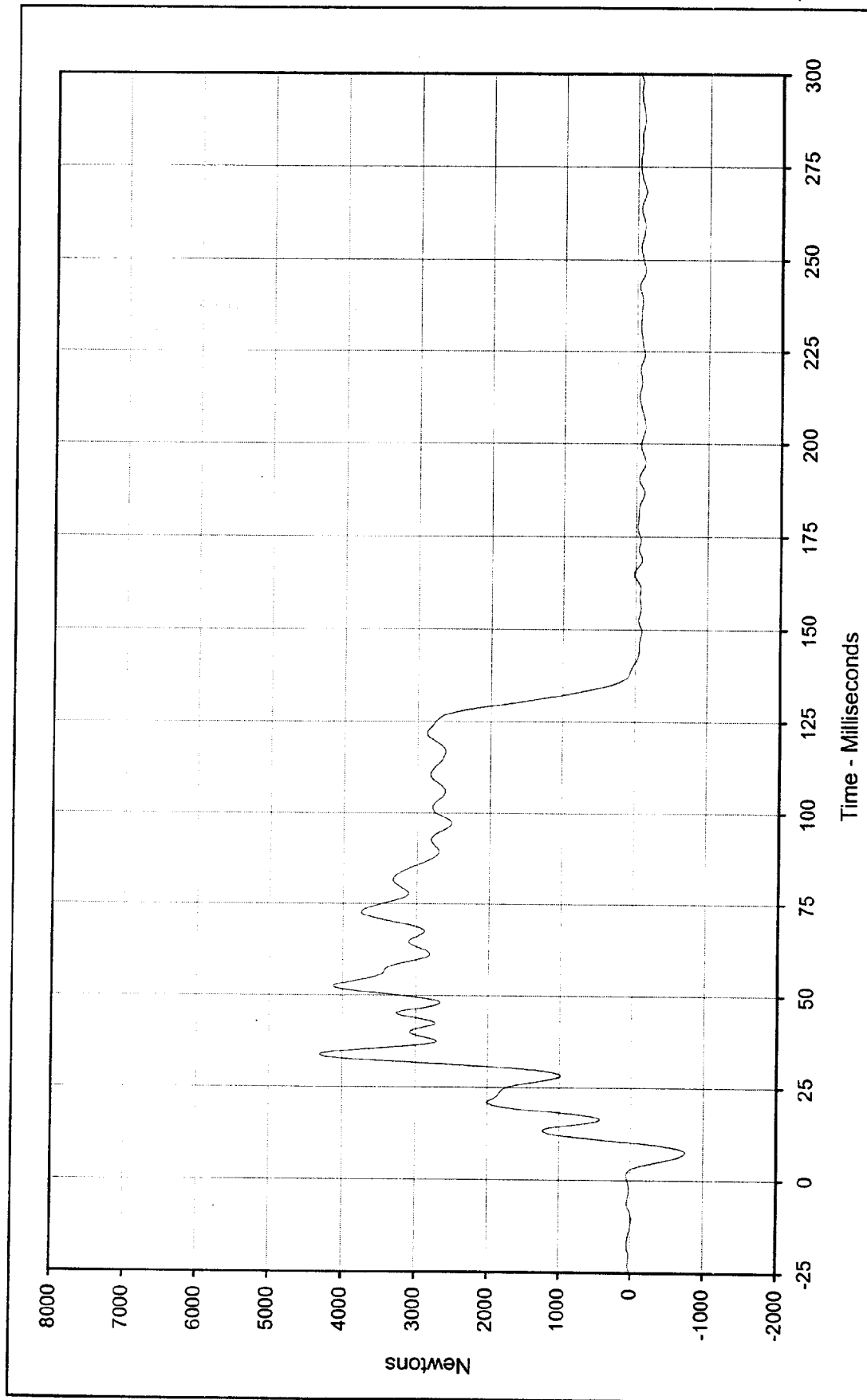
Date of Test: 5/18/99

Curve Number: FIL-123

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan





Curve Description:

Maximum Value: 4306.9 at 33.7 Milliseconds

Minimum Value: -753.2 at 7.5 Milliseconds

SAE Filter Class: 60

Date of Test: 5/18/99

Curve Number: FIL-124

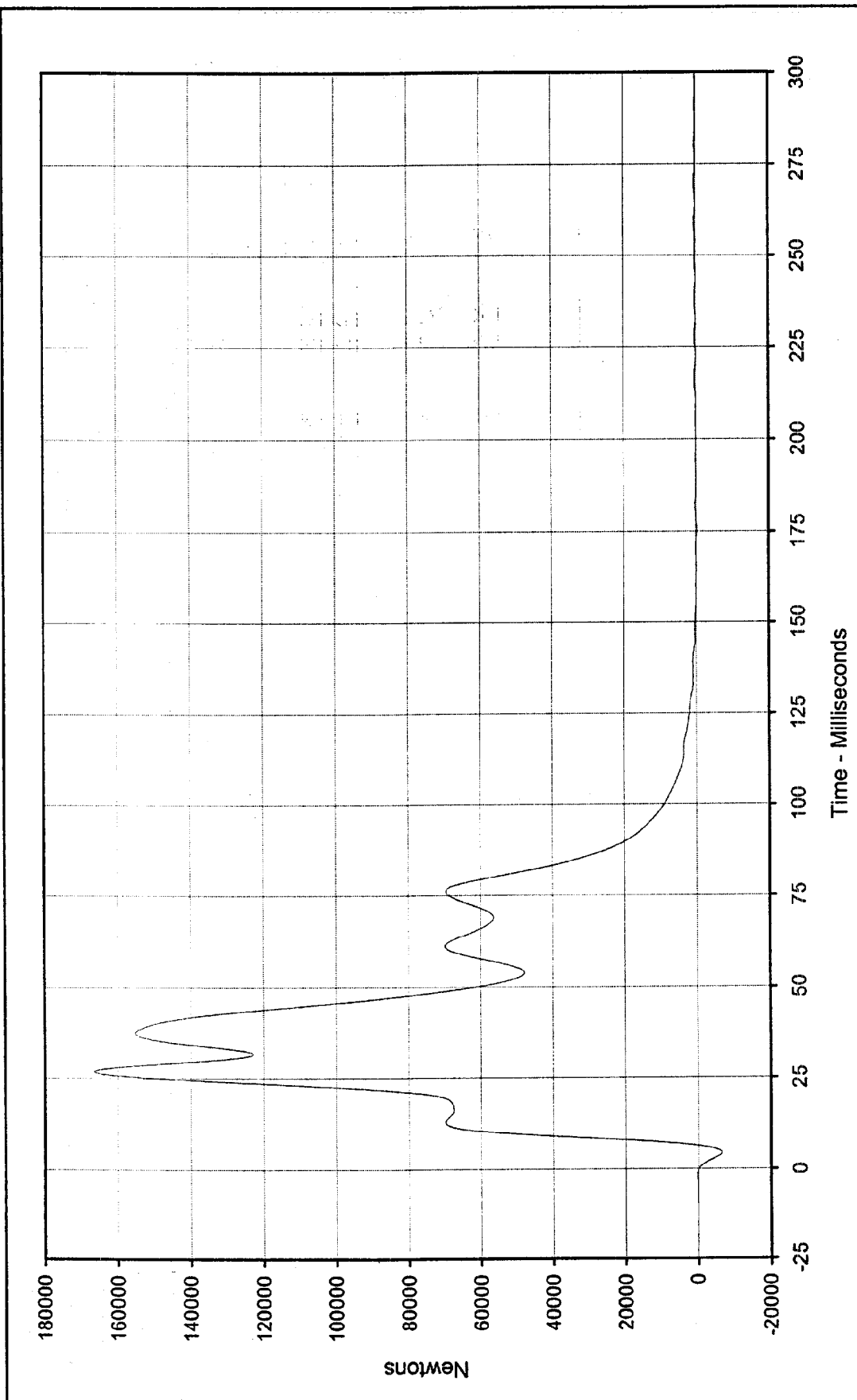
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle:

1999 Acura 3.5 RL 4 Door Sedan





Curve Description: Barrier Force Sum Group 1

Maximum Value: 166466.5 at 26.8 Milliseconds

Minimum Value: -6547.8 at 4.2 Milliseconds

SAE Filler Class: 60

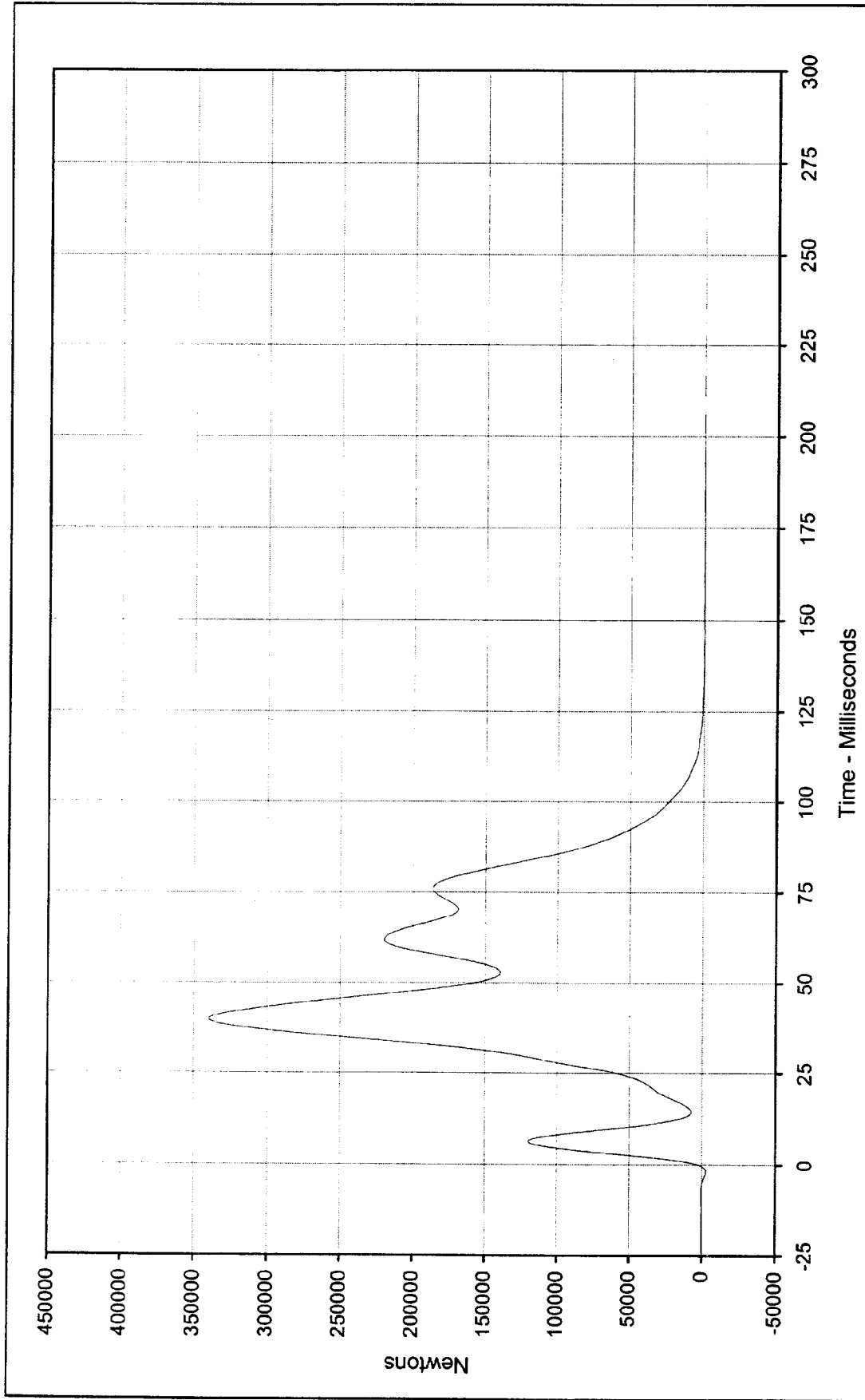
Date of Test: 5/18/99

Curve Number: SUM-001

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304

Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

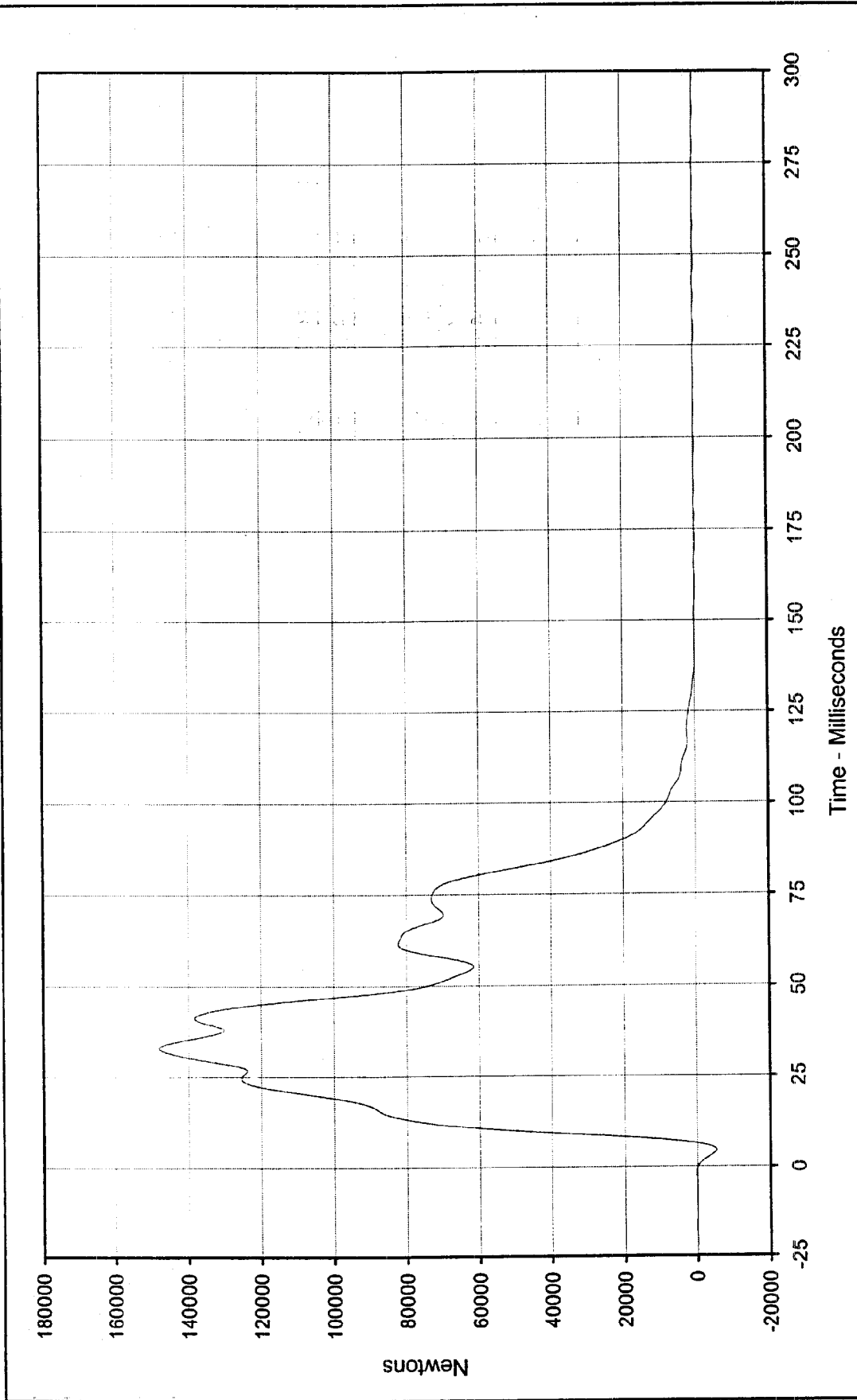




Curve Description: Barrier Force Sum Group 2
 Maximum Value: 339684.4 at 39.8 Milliseconds
 Minimum Value: -277.4 at 176.6 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: SUM-002

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan

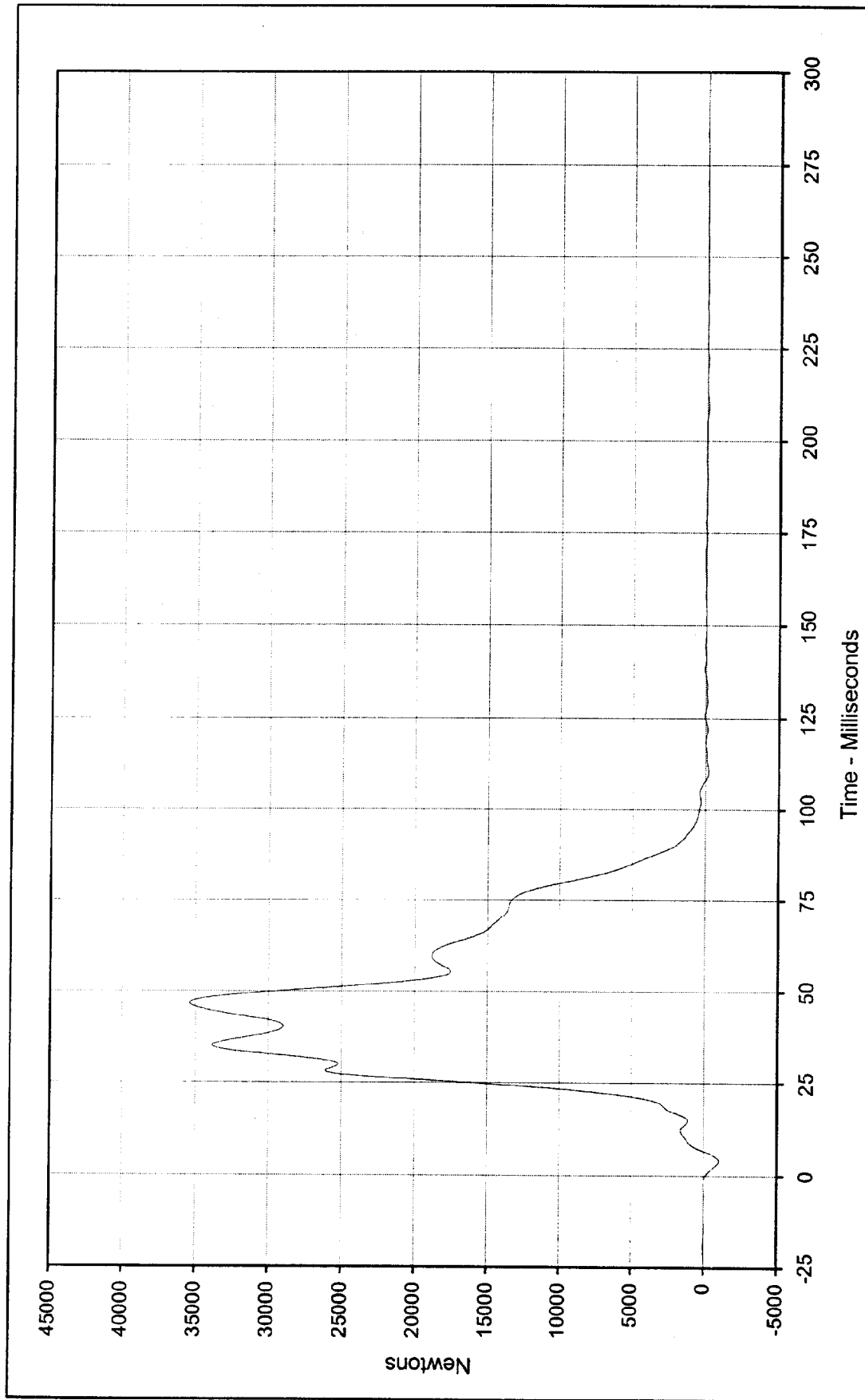




Curve Description: Barrier Force Sum Group 3 Test Program: 1999 NHTSA 35 mph NCAP No.: MX5304
Maximum Value: 148026.9 at 32.9 Milliseconds Test Vehicle: 1999 Acura 3.5 RL 4 Door Sedan
Minimum Value: -5279.5 at 4.4 Milliseconds

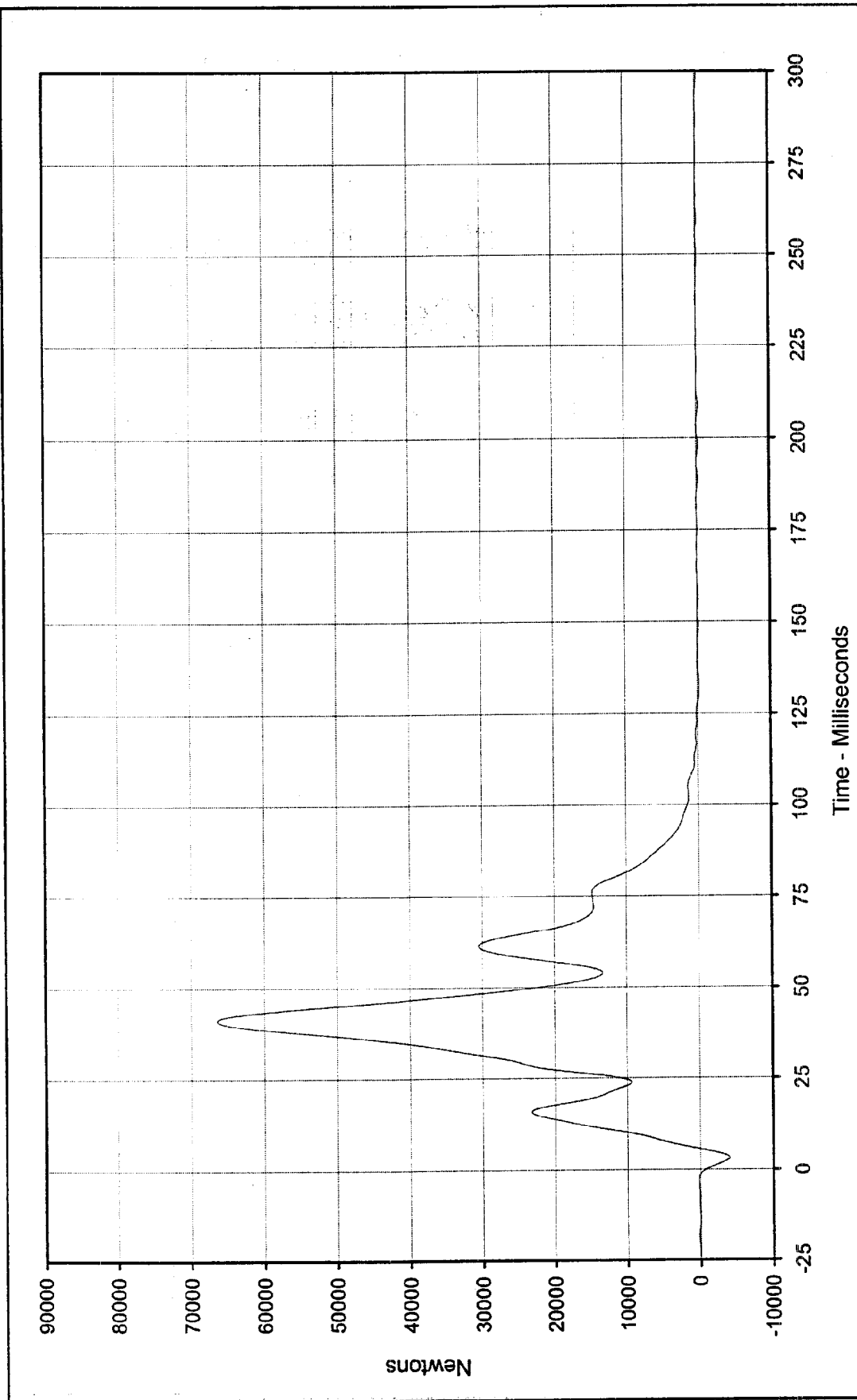


SAE Filter Class: 60
Date of Test: 5/18/99
Curve Number: SUM-003



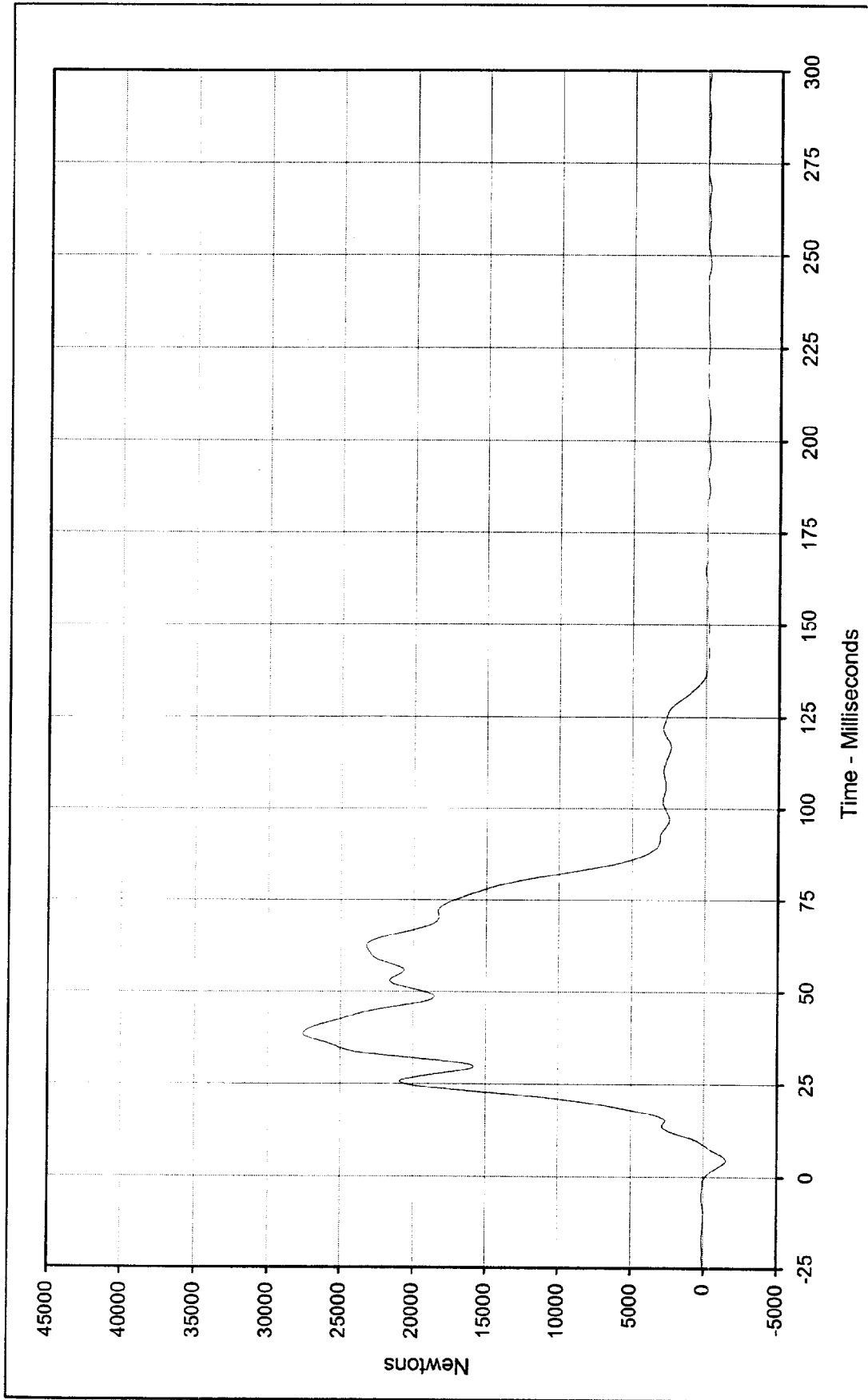
Curve Description:	Barrier Force Sum Group 4	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	35385.1 at 46.8 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1060.0 at 3.9 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	SUM-004			





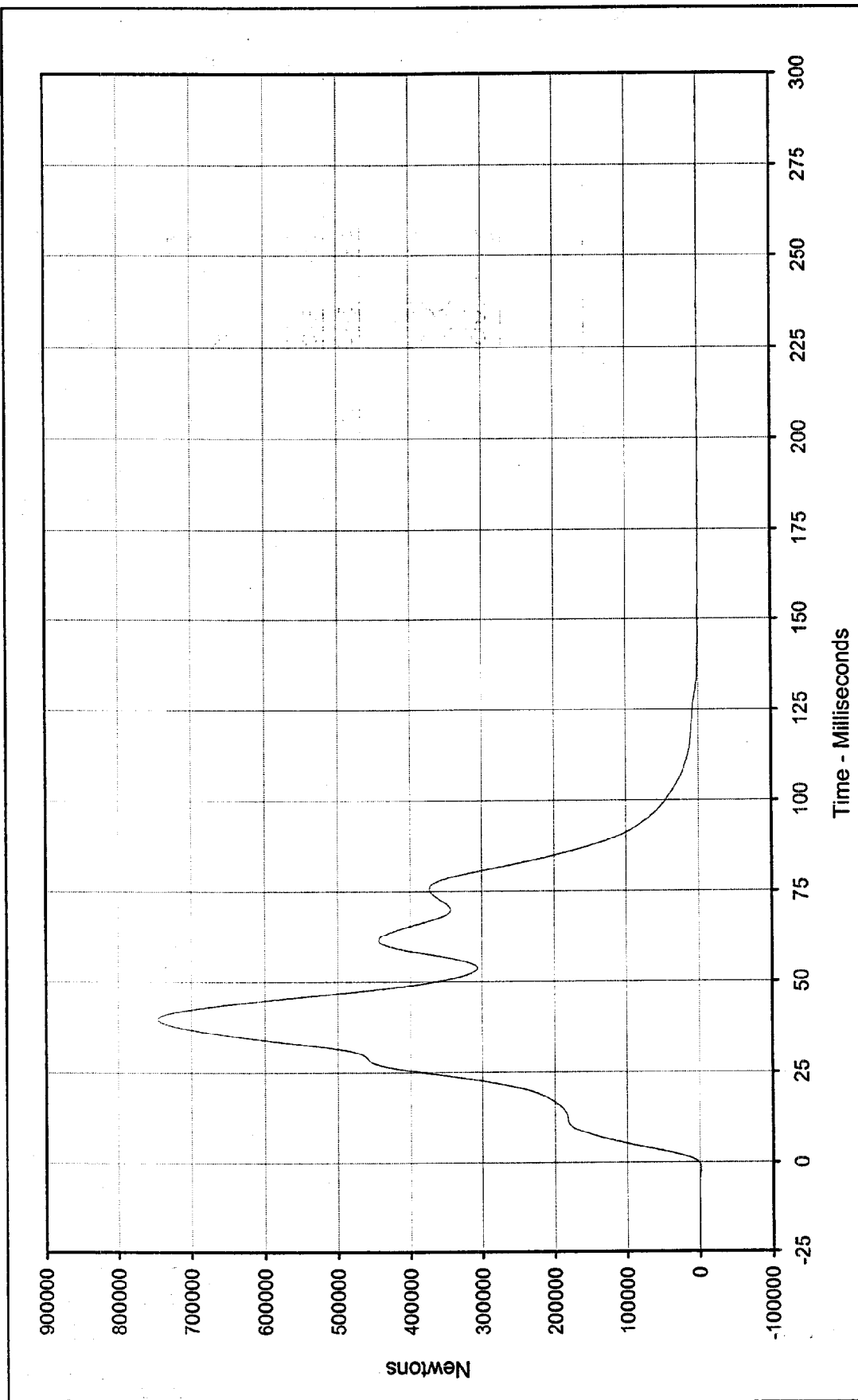
Curve Description:	Barrier Force Sum Group 5	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	66467.5 at 41.3 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-4044.1 at 3.2 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	SUM-005			





Curve Description:	Barrier Force Sum Group 6	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Value:	27540.6 at 38.4 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Minimum Value:	-1509.2 at 4.4 Milliseconds			
SAE Filter Class:	60			
Date of Test:	5/18/99			
Curve Number:	SUM-006			

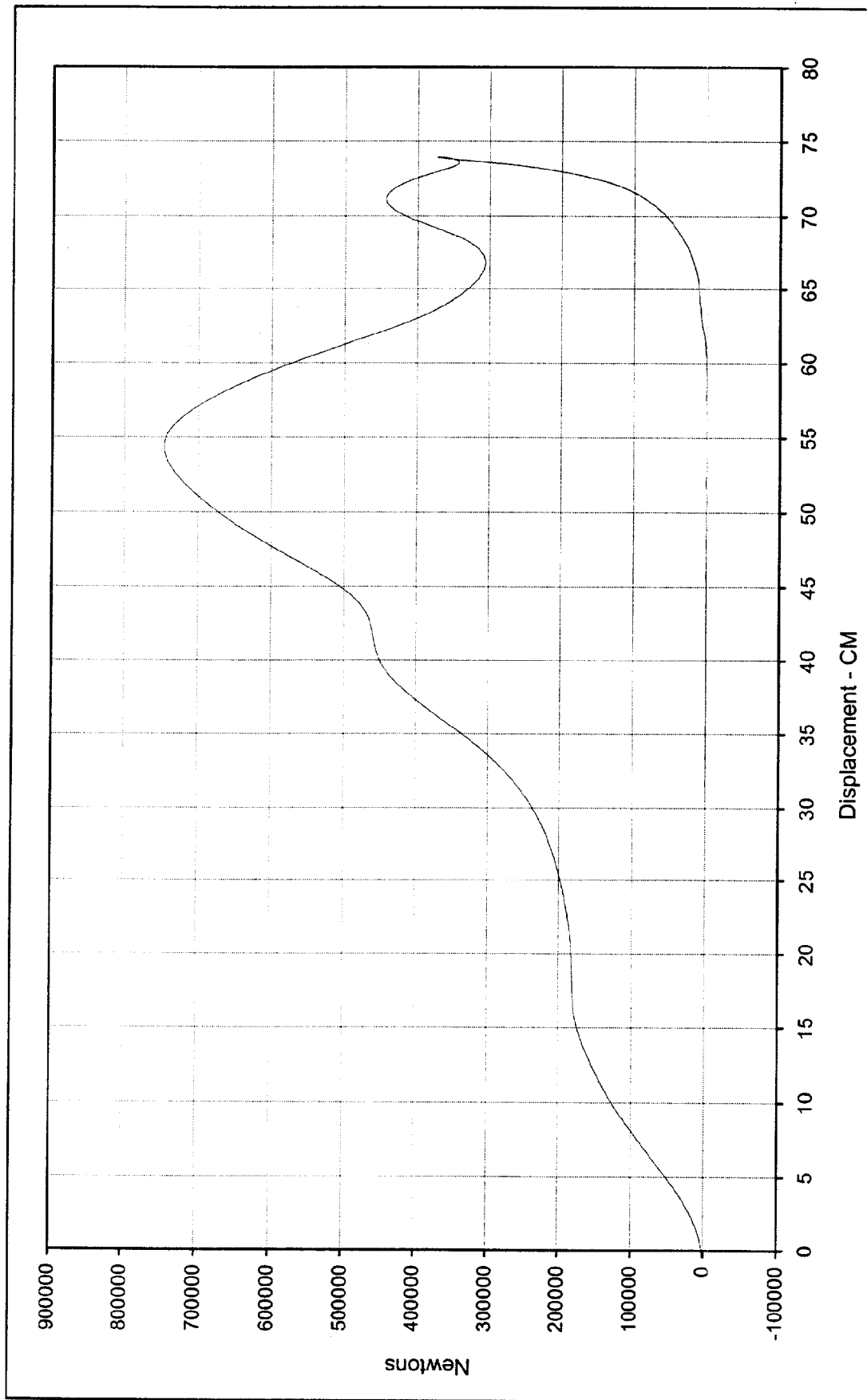




Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5304
 Test Program: 1999 Acura 3.5 RL 4 Door Sedan
 Test Vehicle:

Barrier Force Sum Total
 Maximum Value: 746035.0 at 39.9 Milliseconds
 Minimum Value: -822.1 at 188.5 Milliseconds
 SAE Filter Class: 60
 Date of Test: 5/18/99
 Curve Number: SUM-007





Curve Description:	Sum Force Total vs. Dynamic Crush	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5304
Maximum Displ.:	73.9 at 74.7 Milliseconds	Test Vehicle:	1999 Acura 3.5 RL 4 Door Sedan	
Maximum Force:	746035.0 at 39.9 Milliseconds			
Measured Energy:	246,442 joules			
Date of Test:	5/18/99			
Curve Number:	XVY-001			



BARRIER LOAD CELL SUMMARY DATATEST VEHICLE: 1999 ACURA 3.5 RL 4 DOOR SEDANNHTSA No.: MX5304TEST PROGRAM: 1999 NHTSA 35 MPH NCAPTEST DATE: 5/18/99**BARRIER LOAD CELL PEAK FORCES**

Location	Units	Max	Time	Min	Time
Barrier Force A2	Newtons	7449.4	45.4	-1118.6	4.8
Barrier Force A3	Newtons	22353.5	39.7	-1684.8	4.0
Barrier Force A4	Newtons	30784.2	40.5	-1802.6	3.5
Barrier Force A5	Newtons	32159.9	38.8	-1185.2	2.4
Barrier Force A6	Newtons	25250.3	41.2	-1544.4	3.3
Barrier Force A7	Newtons	20995.7	41.6	-1189.6	3.6
Barrier Force A8	Newtons	6617.4	42.1	-588.2	4.4
Barrier Force A9	Newtons	744.5	33.1	-1386.3	36.9
Barrier Force B2	Newtons	4237.3	21.8	-806.0	4.5
Barrier Force B3	Newtons	148624.4	26.6	-3045.5	4.1
Barrier Force B4	Newtons	73310.4	39.7	-821.4	0.0
Barrier Force B5	Newtons	85290.8	39.5	-1148.4	12.5
Barrier Force B6	Newtons	98069.7	41.2	-474.3	0.0
Barrier Force B7	Newtons	127869.6	31.6	-2551.8	4.1
Barrier Force B8	Newtons	5778.4	31.2	-668.3	4.3
Barrier Force B9	Newtons	1123.9	33.2	-1273.6	37.1
Barrier Force C2	Newtons	18033.7	36.3	-668.6	4.3
Barrier Force C3	Newtons	20665.5	28.2	-429.2	3.5
Barrier Force C4	Newtons	25510.7	42.0	-1645.8	3.2
Barrier Force C5	Newtons	29485.8	40.8	-1290.1	3.2
Barrier Force C6	Newtons	11908.6	40.4	-1110.8	3.3
Barrier Force C7	Newtons	15252.5	25.2	-824.8	3.6
Barrier Force C8	Newtons	14479.6	37.5	-549.3	4.4
Barrier Force C9	Newtons	4306.9	33.7	-753.2	7.5
Barrier Force Sum No.1	Newtons	166466.5	26.8	-6547.8	4.2
Barrier Force Sum No.2	Newtons	339684.4	39.8	-277.4	176.6
Barrier Force Sum No.3	Newtons	148026.9	32.9	-5279.5	4.4
Barrier Force Sum No.4	Newtons	35385.1	46.8	-1060.0	3.9
Barrier Force Sum No.5	Newtons	66467.5	41.3	-4044.1	3.2
Barrier Force Sum No.6	Newtons	27540.6	38.4	-1509.2	4.4
Barrier Force Sum Total	Newtons	746035.0	39.9	-822.1	188.5

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

APPENDIX D
INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

KAR99001-17

1999 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 34
5/18/99
1999 Acura 3.5 RL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD, PRIMARY	X	KEAC039	Accel., 1/2 bridge	Endevco	7264-2000	G
2	HEAD, PRIMARY	Y	KEAC038	Accel., 1/2 bridge	Endevco	7264-2000	G
3	HEAD, PRIMARY	Z	KEAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
4	HEAD, REDUNDANT	X	KEAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
5	HEAD, REDUNDANT	Y	KEAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
6	HEAD, REDUNDANT	Z	KEAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
7	NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
8	NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
9	NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
10	NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
11	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
12	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
13	CHEST, PRIMARY	X	GPAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
14	CHEST, PRIMARY	Y	GPAC024	Accel., 1/2 bridge	Endevco	7264-2000	G
15	CHEST, PRIMARY	Z	GPAC029	Accel., 1/2 bridge	Endevco	7264-2000	G
16	CHEST, REDUNDANT	X	KEAC023	Accel., 1/2 bridge	Endevco	7264-200	G
17	CHEST, REDUNDANT	Y	KEAC022	Accel., 1/2 bridge	Endevco	7264-200	G
18	CHEST, REDUNDANT	Z	KEAC024	Accel., 1/2 bridge	Endevco	7264-200	G
19	CHEST DISPLACEMENT	X	GPCP001	Rotary Pot Chest	Servo	14CBI	MM
20	PELVIS, PRIMARY	X	KEAC019	Accel., 1/2 bridge	Endevco	7264-200	G
21	PELVIS, PRIMARY	Y	KEAC020	Accel., 1/2 bridge	Endevco	7264-200	G
22	PELVIS, PRIMARY	Z	KEAC021	Accel., 1/2 bridge	Endevco	7264-200	G
23	LEFT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2121	N
24	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

5/18/99

1999 Acura 3.5 RL 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	Nm
26	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
27	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
28	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
29	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
30	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
31	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
32	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
33	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
34	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
35	FOOT LEFT	X	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT	Y	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT	Y	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT	Z	KEIC004Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	LAP BELT FORCE	X	KELC001	Load cell, Seat belt	Lebow	3371	N
42	SHOULDER BELT FORCE	X	KELC002	Load cell, Seat belt	Lebow	3371	N
43	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
44	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

1999 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 35
5/18/99
1999 Acura 3.5 RL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
45	HEAD, PRIMARY	X	GPAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
46	HEAD, PRIMARY	Y	GPAC002	Accel., 1/2 bridge	Endevco	7264-2000	G
47	HEAD, PRIMARY	Z	GPAC003	Accel., 1/2 bridge	Endevco	7264-2000	G
48	HEAD, REDUNDANT	X	GPAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
49	HEAD, REDUNDANT	Y	GPAC021	Accel., 1/2 bridge	Endevco	7264-2000	G
50	HEAD, REDUNDANT	Z	GPAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
51	NECK FORCE	X	GPUN01FX	Load cell, six axis neck	R. A. Denton	1716A	N
52	NECK FORCE	Y	GPUN01FY	Load cell, six axis neck	R. A. Denton	1716A	N
53	NECK FORCE	Z	GPUN01FZ	Load cell, six axis neck	R. A. Denton	1716A	N
54	NECK MOMENT	X	GPUN01MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
55	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
56	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
57	CHEST, PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
58	CHEST, PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
59	CHEST, PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
60	CHEST, REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-2000	G
61	CHEST, REDUNDANT	Y	GPAC023	Accel., 1/2 bridge	Endevco	7264-2000	G
62	CHEST, REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
63	CHEST DISPLACEMENT	X	GPCP002	Rotary Pot Chest	Servo	14CBI	MM
64	PELVIS, PRIMARY	X	GPAC025	Accel., 1/2 bridge	Endevco	7264-2000	G
65	PELVIS, PRIMARY	Y	GPAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
66	PELVIS, PRIMARY	Z	GPAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
67	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
68	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
5/18/99
1999 Acura 3.5 RL 4 Door Sedan

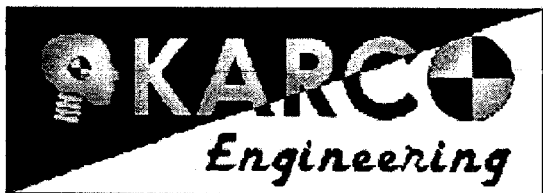
CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
70	UP. TIBIA LEFT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
71	UP. TIBIA RIGHT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
72	UP. TIBIA RIGHT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
73	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
74	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
75	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
76	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
77	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
78	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
79	FOOT LEFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT	Y	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT	Y	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	KELC003	Load cell, Seat belt	Lebow	3371	N
86	SHOULDER BELT FORCE	X	KELC004	Load cell, Seat belt	Lebow	3371	N
87	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	CM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

1999 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers
5/18/99
1999 Acura 3.5 RL 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

KAR99001-17



Hybrid III Calibration Data Sheet

50TH Percentile Male

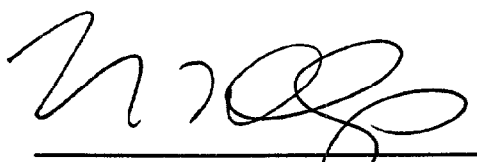
Left Knee Impact Test

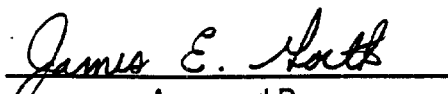
ATD Serial No.: 34

Part Serial No.: N/A

Test I.D.: KN04A

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	2.094	Pass
Peak Probe Force	Newtons	4715 to 5782	5574.2	Pass
Overall Test Results				Pass


Laboratory Technician

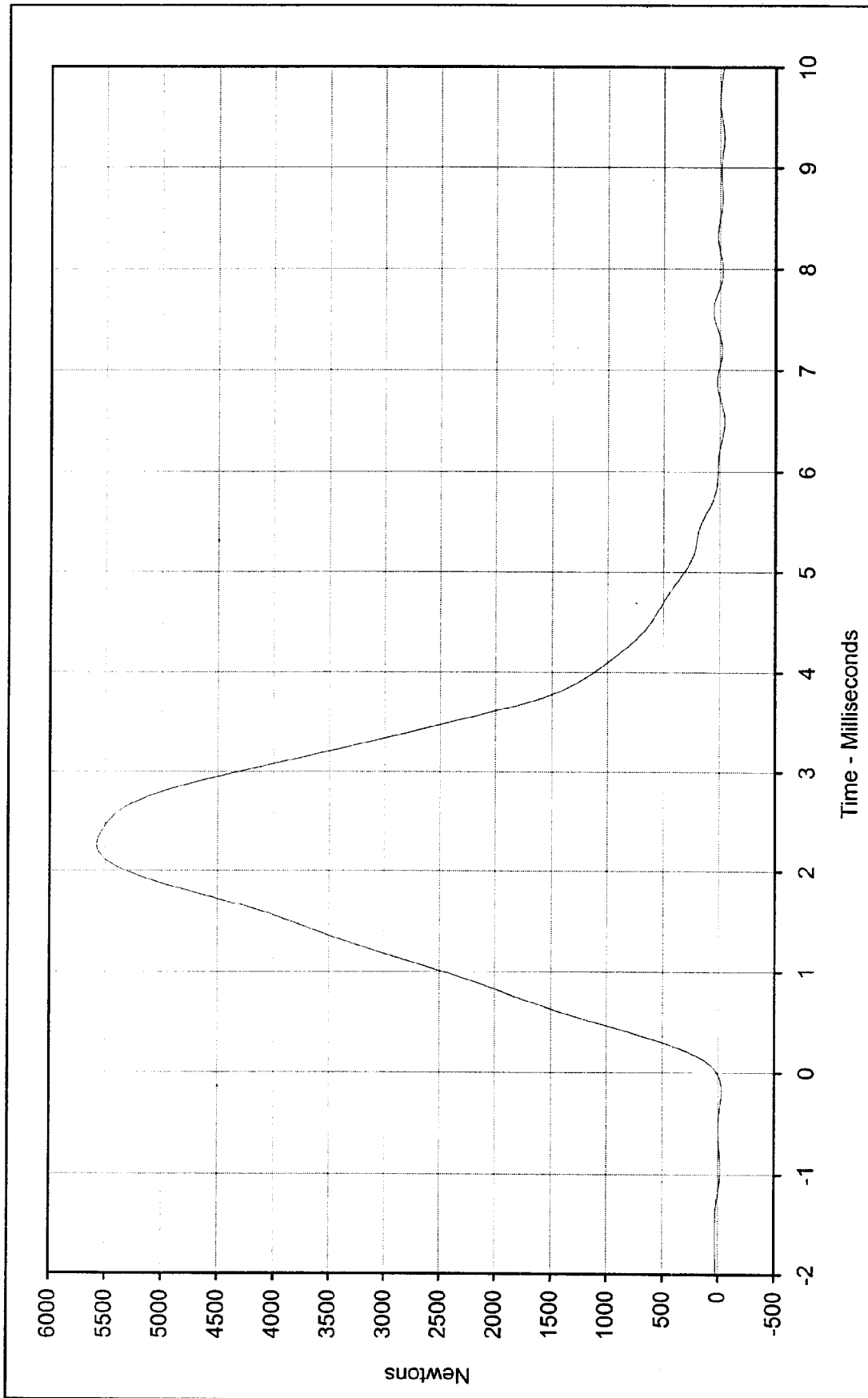

Approved By

March 24, 1999

Test Date

3/24/99

Date



Testing Program: Hybrid III Left Knee Impact Test
 Test Information: Part S/N: N/A Test I.D.: KN04A



Curve Description: Probe Force
 Maximum Value: 5574.2 at 2.3 Milliseconds
 Minimum Value: -45.8 at 6.5 Milliseconds
 SAE Filter Class: 600
 Date of Test: 3/24/99
 ATD Serial No.: 34



Hybrid III Calibration Data Sheet

50TH Percentile Male

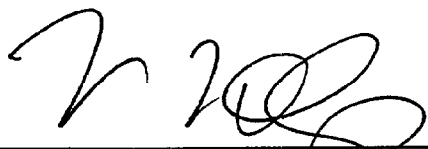
Right Knee Impact Test

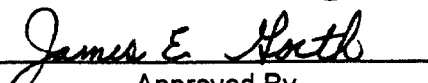
ATD Serial No.: 34

Part Serial No.: N/A

Test I.D.: KN04B

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	2.101	Pass
Peak Probe Force	Newtons	4715 to 5782	5694.5	Pass
Overall Test Results				Pass


Laboratory Technician

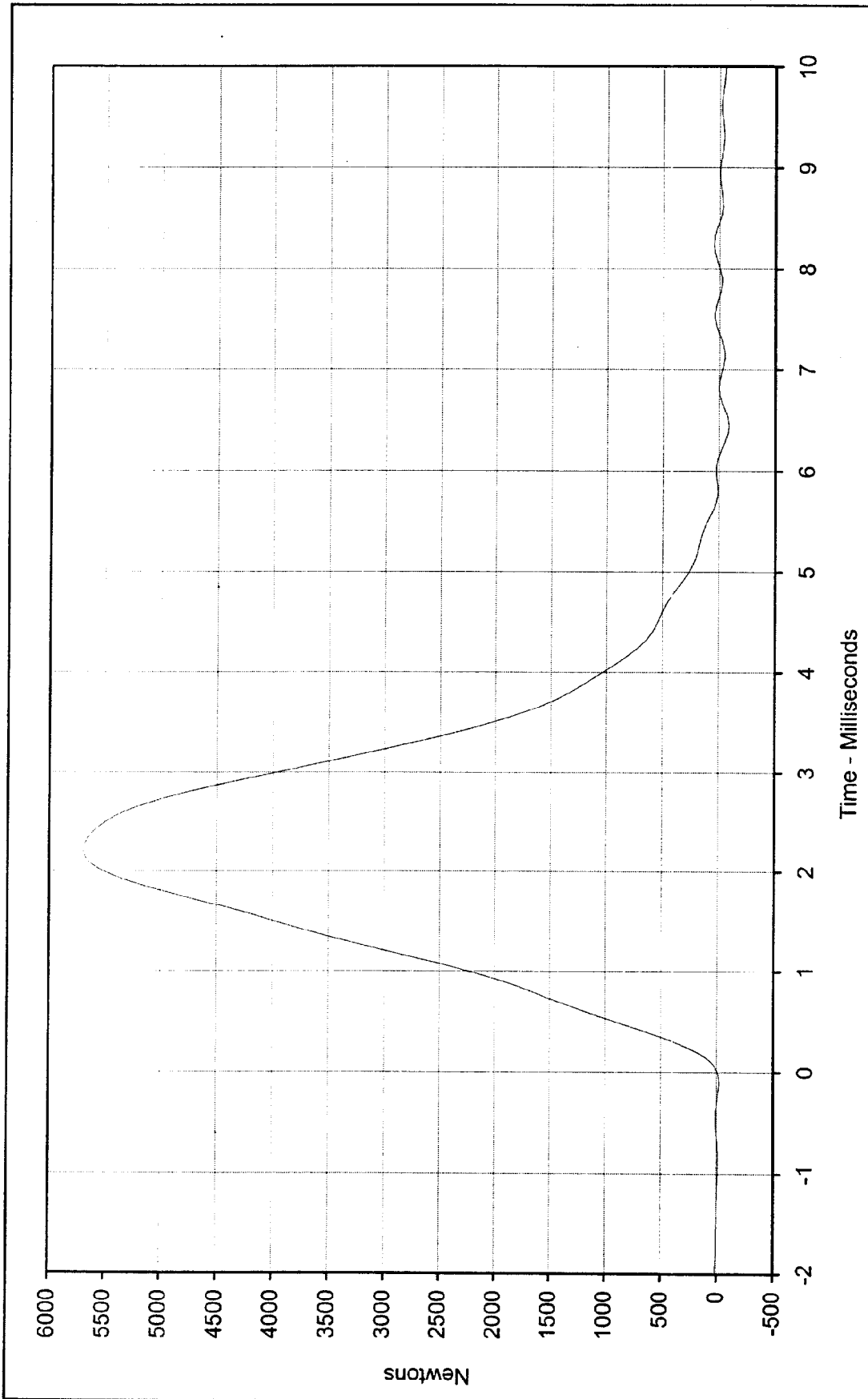

Approved By

March 24, 1999

Test Date

3/24/99

Date



Testing Program: Hybrid III Right Knee Impact Test
 Test Information: Part S/N: N/A Test I.D.: KN04B



Curve Description: Probe Force
 Maximum Value: 5694.5 at 2.2 Milliseconds
 Minimum Value: -82.8 at 6.4 Milliseconds
 SAE Filter Class: 600
 Date of Test: 3/24/99
 ATD Serial No.: 34



Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

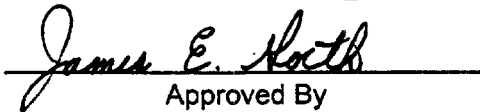
ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: HD04A

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	255.6	Pass
Peak Lateral Acceleration	G's	≤15.0	3.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

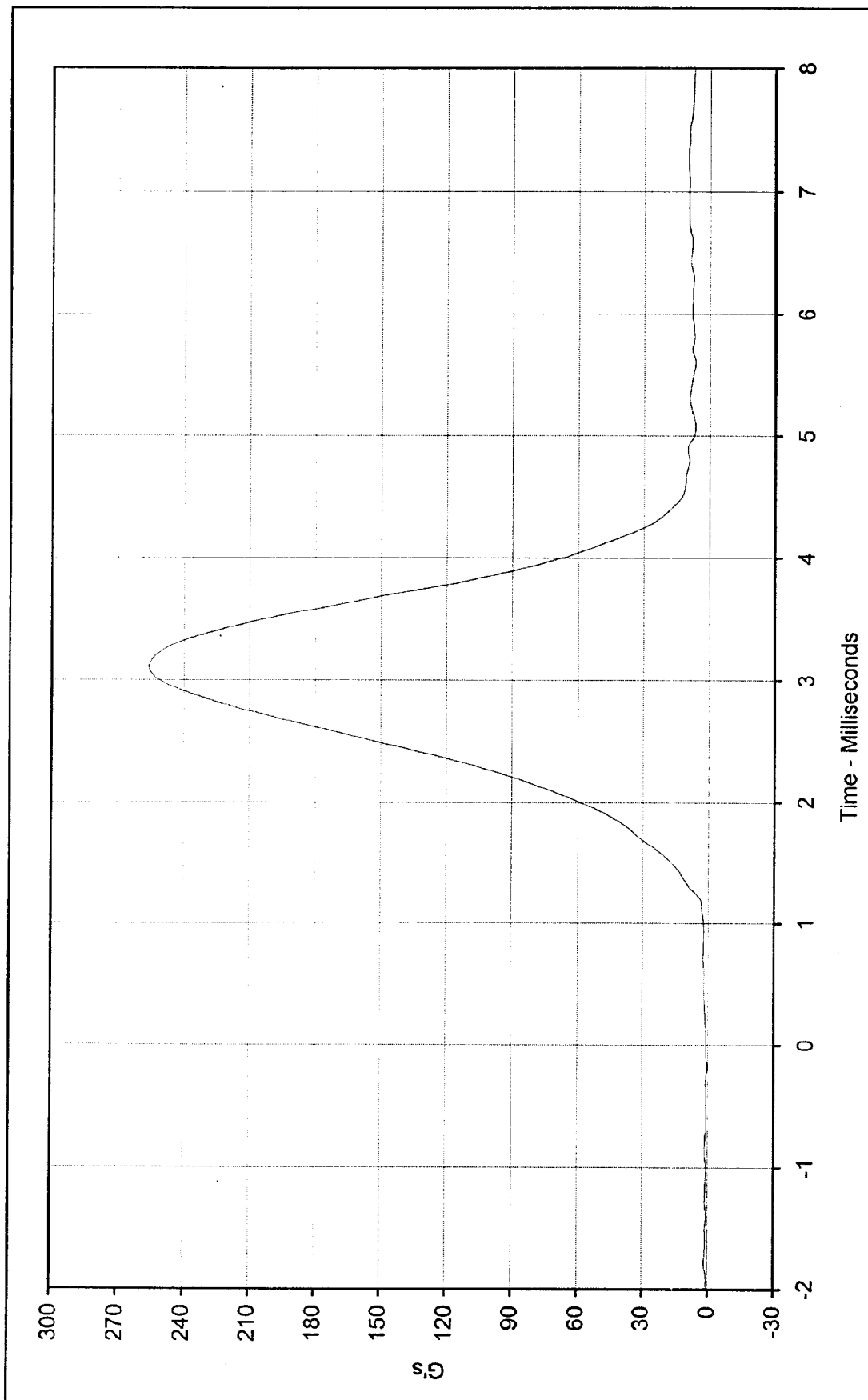

Approved By

March 24, 1999

Test Date

3/24/99

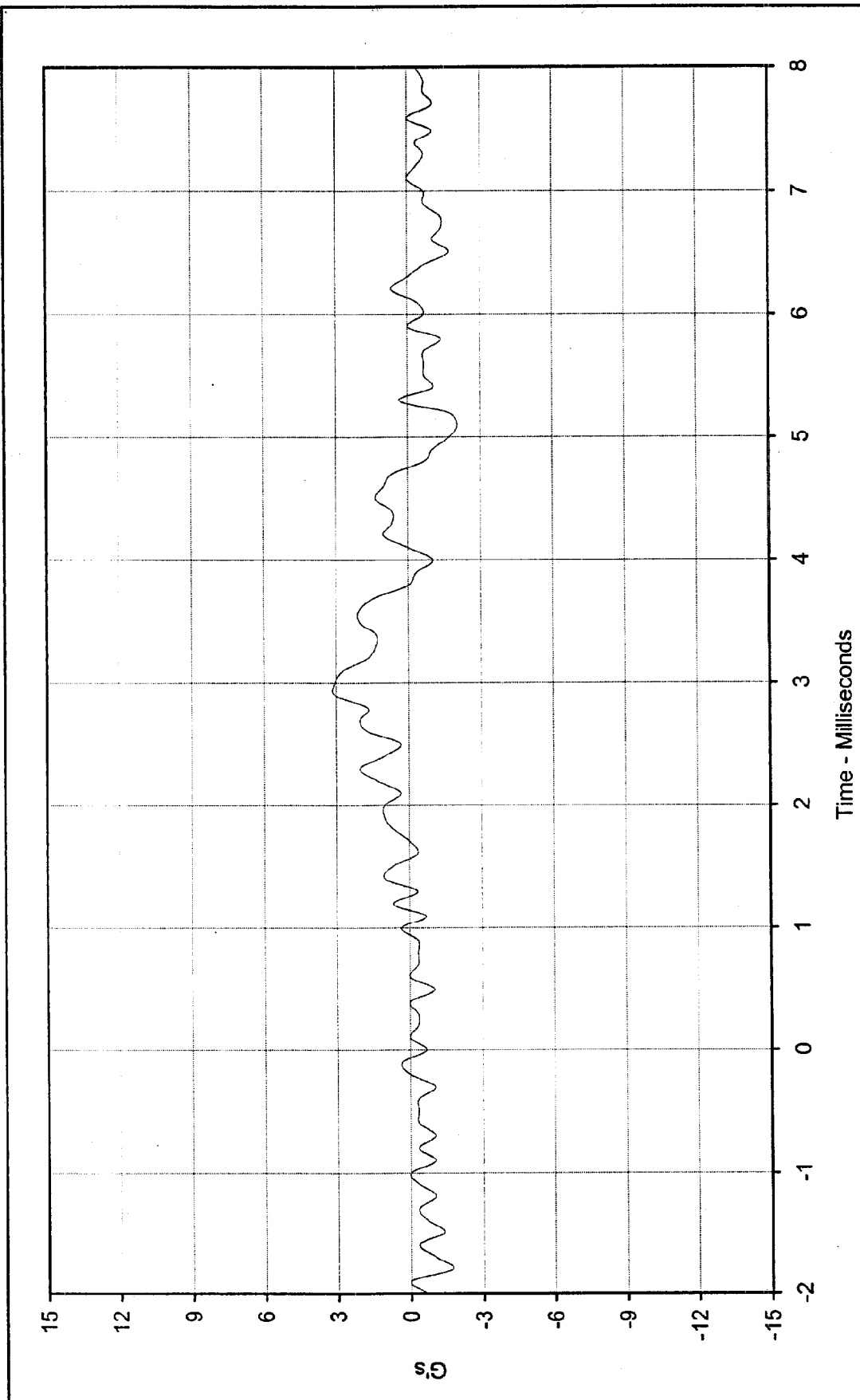
Date



Testing Program Hybrid III Head Drop Calibration (Male)
 Test Information: S/N of Part: N/A Test I.D.: HD04A



Curve Description: Head Resultant Acceleration
 Maximum Value: 255.6 at 3.1 Milliseconds
 Minimum Value: 0.4 at -0.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 3/24/99
 ATD Serial No.: 034



Testing Program Hybrid III Head Drop Calibration (Male)
 Test Information: S/N of Part: N/A Test I.D.: HD04A



Curve Description: Head Acceleration Y Axis
 Maximum Value: 3.1 at 2.9 Milliseconds
 Minimum Value: -2.0 at 5.1 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 3/24/99
 ATD Serial No.: 034



Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

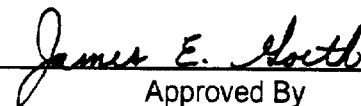
Test I.D.: CH04A

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	6.66	Pass
Peak Probe Force	Newtons	5159 to 5893	5836	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.41	Pass
Internal Hysteresis	%	69 to 85	78.7	Pass
Overall Test Results				Pass


Laboratory Technician

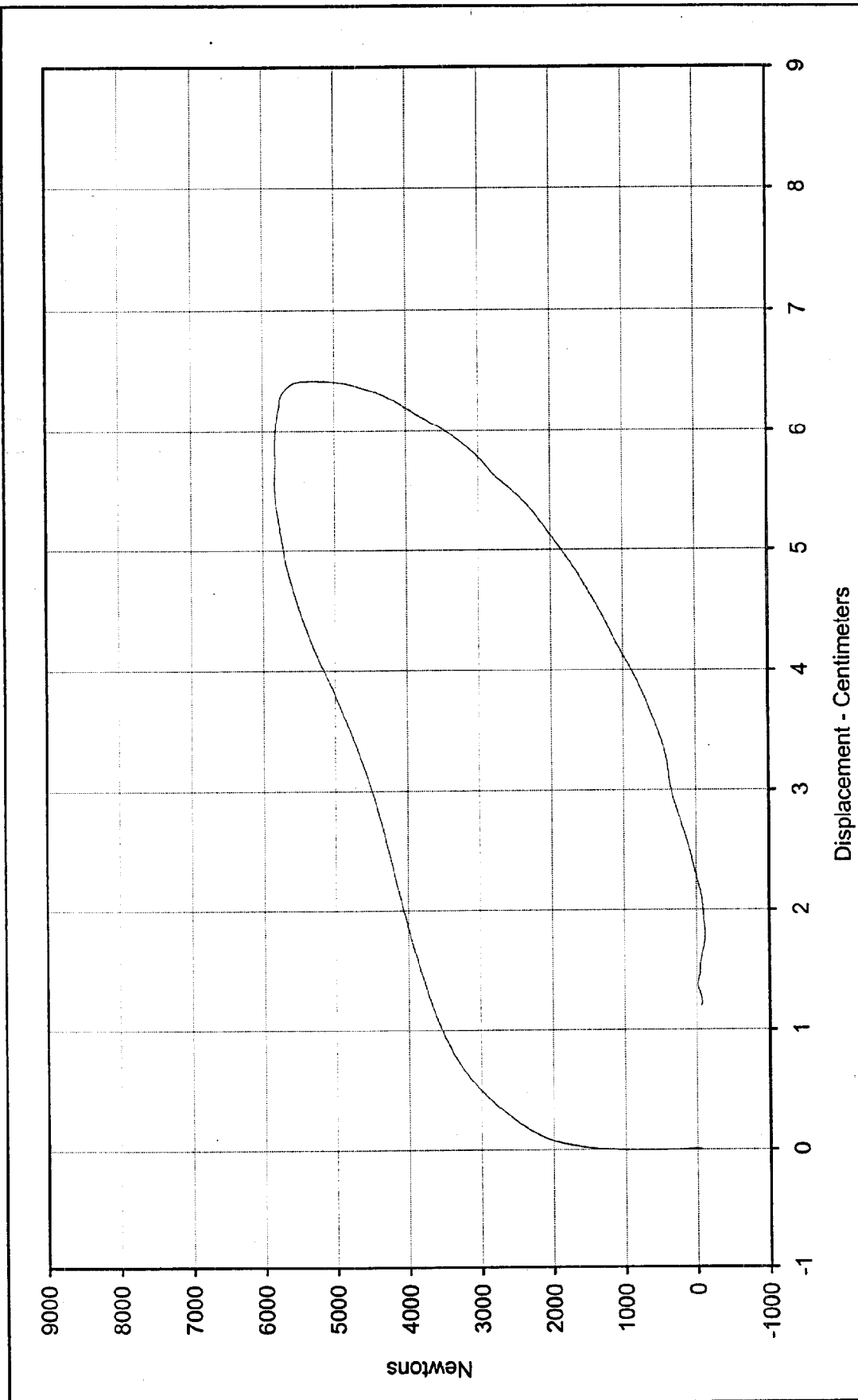
April 27, 1999

Test Date


Approved By

4/27/99

Date



Testing Program Hybrid III Thorax Impact Test
 Test Information: S/N of Part: N/A Test I.D.: CH04A

Curve Description: Probe Force vs. Chest Displacement
 Probe Force: 5836.0 Newtons
 Chest Displ.: 6.41 Centimeters
 SAE Filter Class: 180
 Date of Test: 4/27/99
 ATD Serial No.: 034





Hybrid III Calibration Data Sheet

50TH Percentile Male

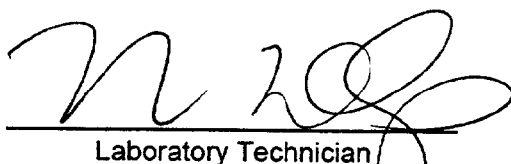
Neck Flexion Test

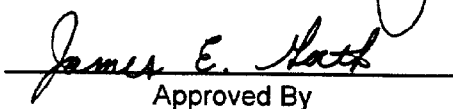
ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NF04A

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	6.97	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.1	Pass
	20 Msec.	G's	17.6 to 22.6	21.4	Pass
	30 Msec.	G's	12.5 to 18.5	18.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	37.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	65.9	Pass
	Time	Msec.	57.0 to 64.0	59.1	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	89.5	Pass
	Time	Msec.	47.0 to 58.0	49.6	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.9	Pass
Overall Test Results					Pass


Laboratory Technician

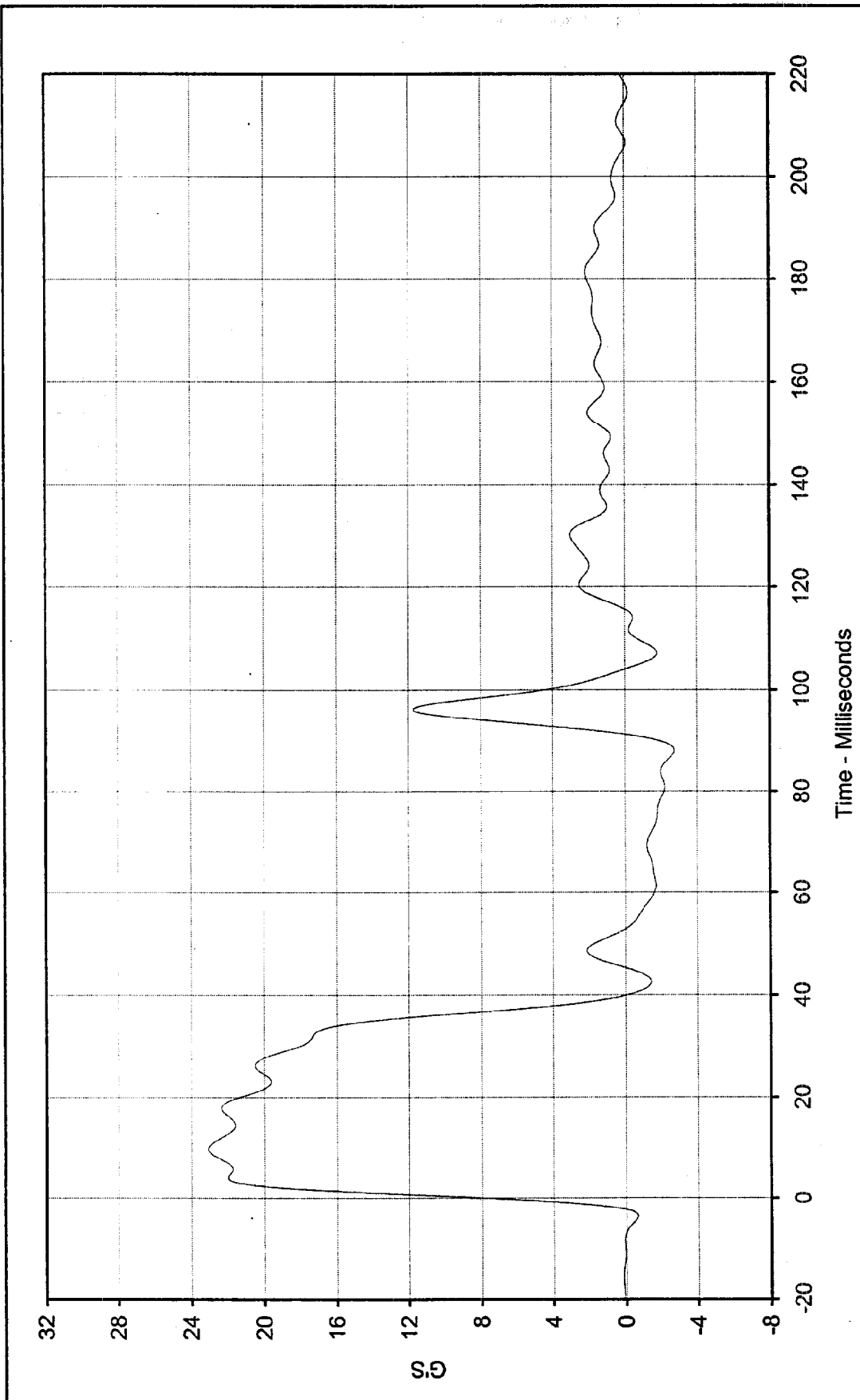

Approved By

March 22, 1999

Test Date

3/22/99

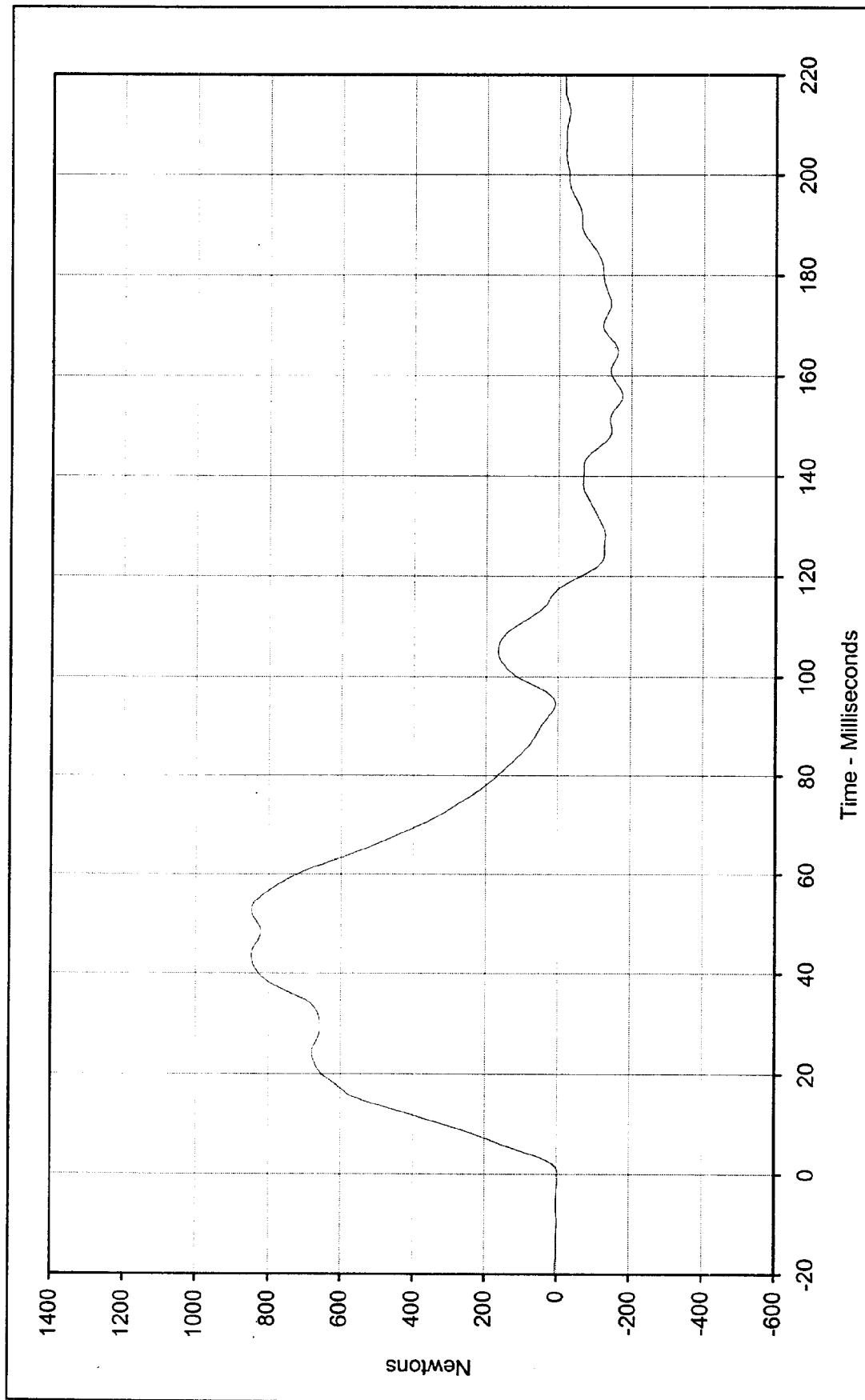
Date



Curve Description: Pendulum Deceleration Testing Program Hybrid III Neck Flexion Test (Male)
 Maximum Value: 23.1 at 9.9 Milliseconds Test Information: S/N of Part: N/A Test I.D.: NF04A
 Minimum Value: -2.7 at 88.0 Milliseconds



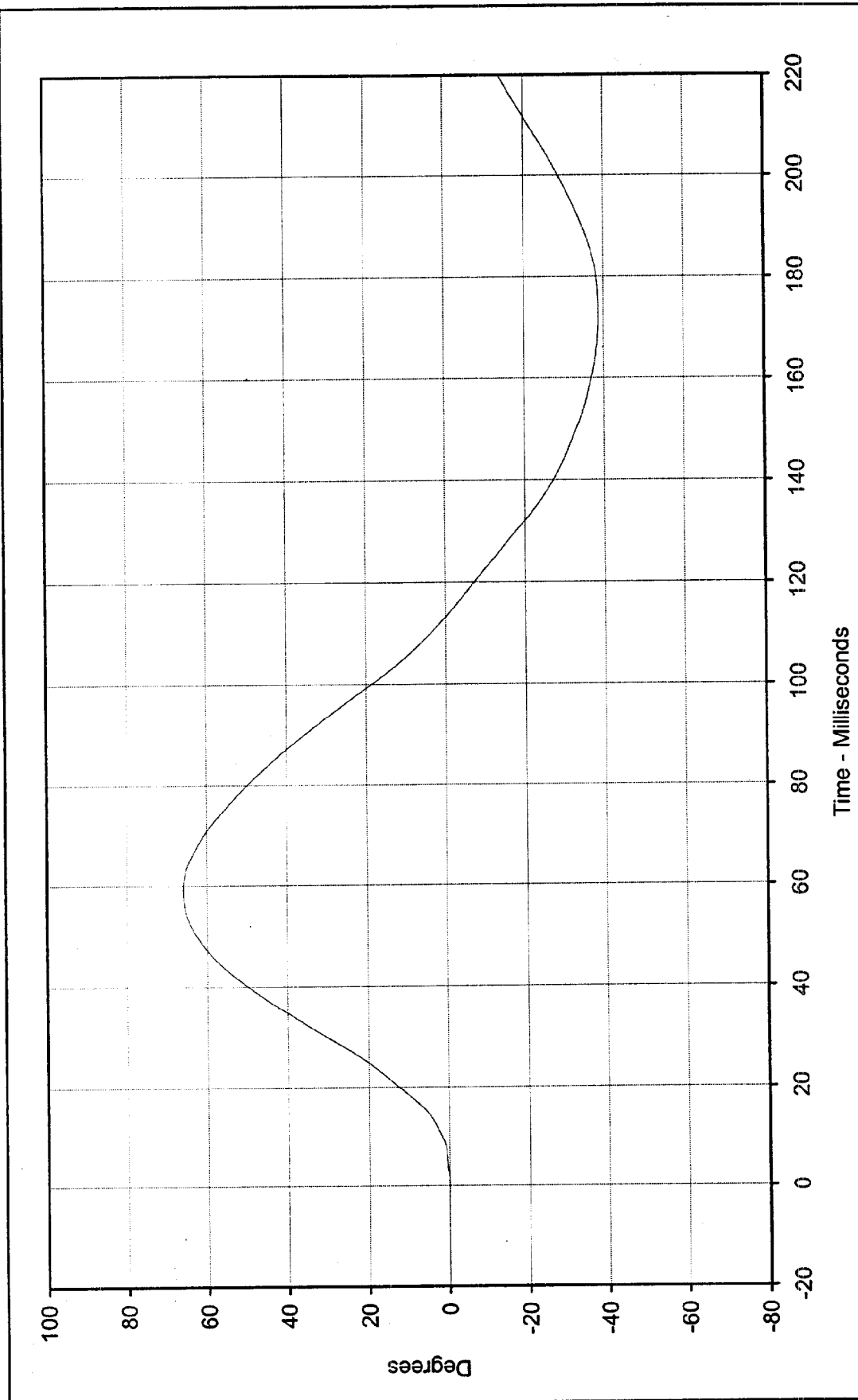
SAE Filter Class: 60
 Date of Test: 3/22/99
 ATD Serial No.: 034



Curve Description: Neck Force X
 Maximum Value: 848.1 at 43.5 Milliseconds
 Minimum Value: -174.9 at 156.2 Milliseconds
 SAE Filter Class: 60
 Date of Test: 3/22/99
 ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: N/A Test I.D.: NF04A

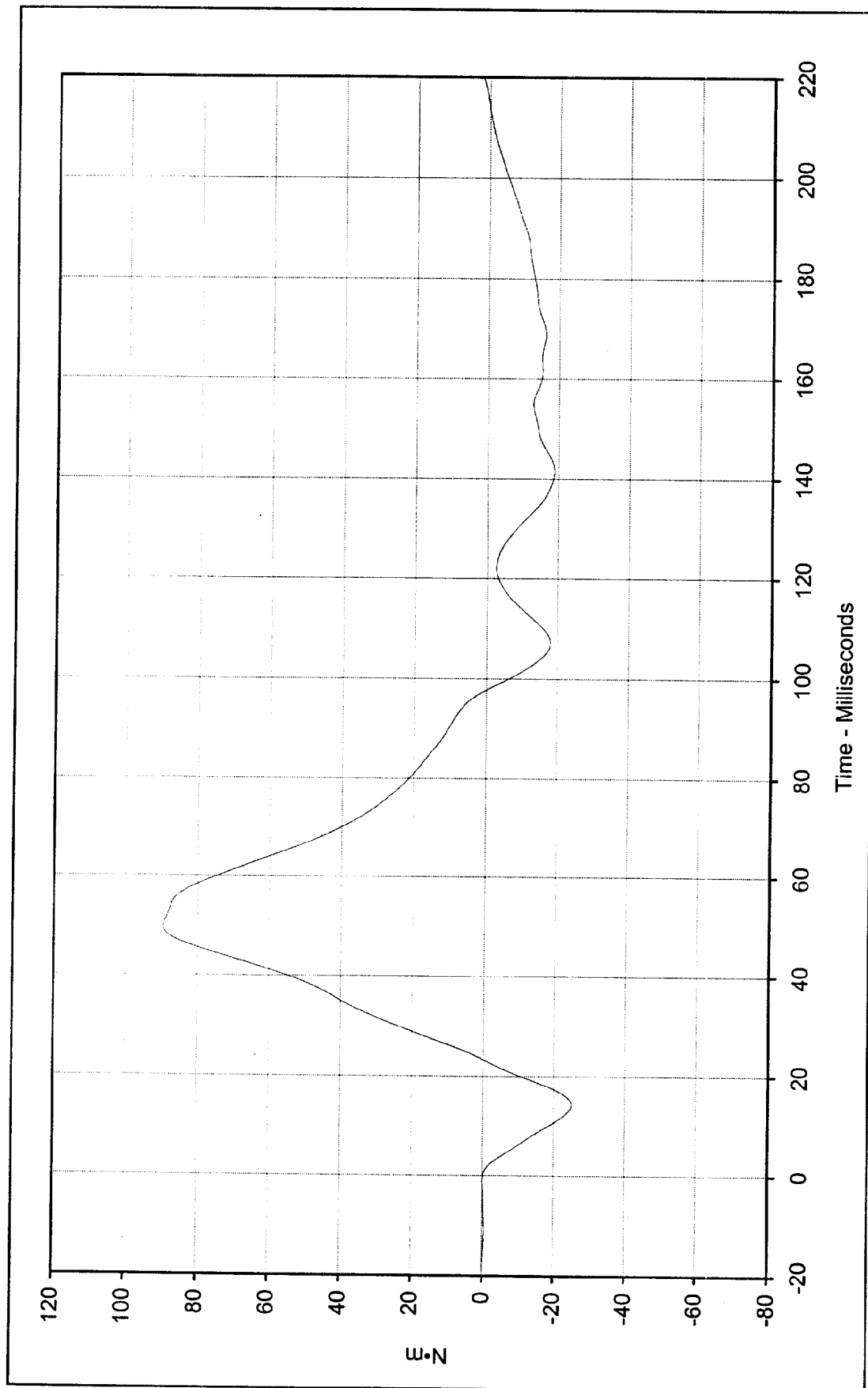




Testing Program Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: N/A Test I.D.: NF04A

Curve Description: "D" Plane Rotation
 Maximum Value: 65.9 at 59.1 Milliseconds
 Minimum Value: -38.7 at 172.3 Milliseconds
 SAE Filter Class: 60
 Date of Test: 3/22/99
 ATD Serial No.: 034





Curve Description: Moment About Occipital Condyles

Maximum Value: 89.5 at 49.6 Milliseconds

Minimum Value: -25.0 at 14.2 Milliseconds

SAE Filter Class: 60

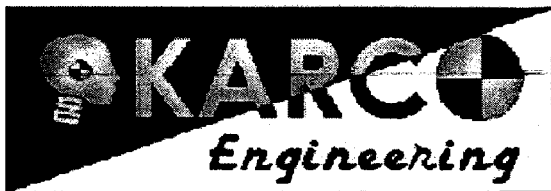
Date of Test: 3/22/99

ATD Serial No.: 034

Testing Program Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF04A





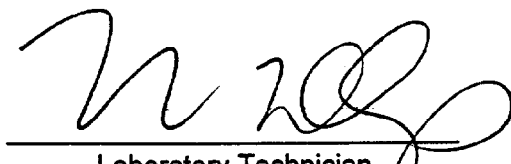
Hybrid III Calibration Data Sheet

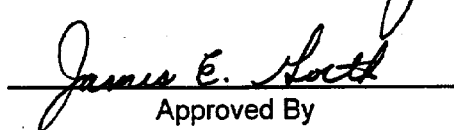
50TH Percentile Male

Neck Extension Test

ATD Serial No.: 034Part Serial No.: N/ATest I.D.: NE04A

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	17.2	Pass
	20 Msec.	G's	14.0 to 19.0	15.7	Pass
	30 Msec.	G's	11.0 to 16.0	13.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	13.3	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	45.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	87.0	Pass
	Time	Msec.	72.0 to 82.0	80.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	158.6	Pass
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-62.5	Pass
	Time	Msec.	65.0 to 79.0	66.3	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	136.4	Pass
Overall Test Results					Pass


Laboratory Technician

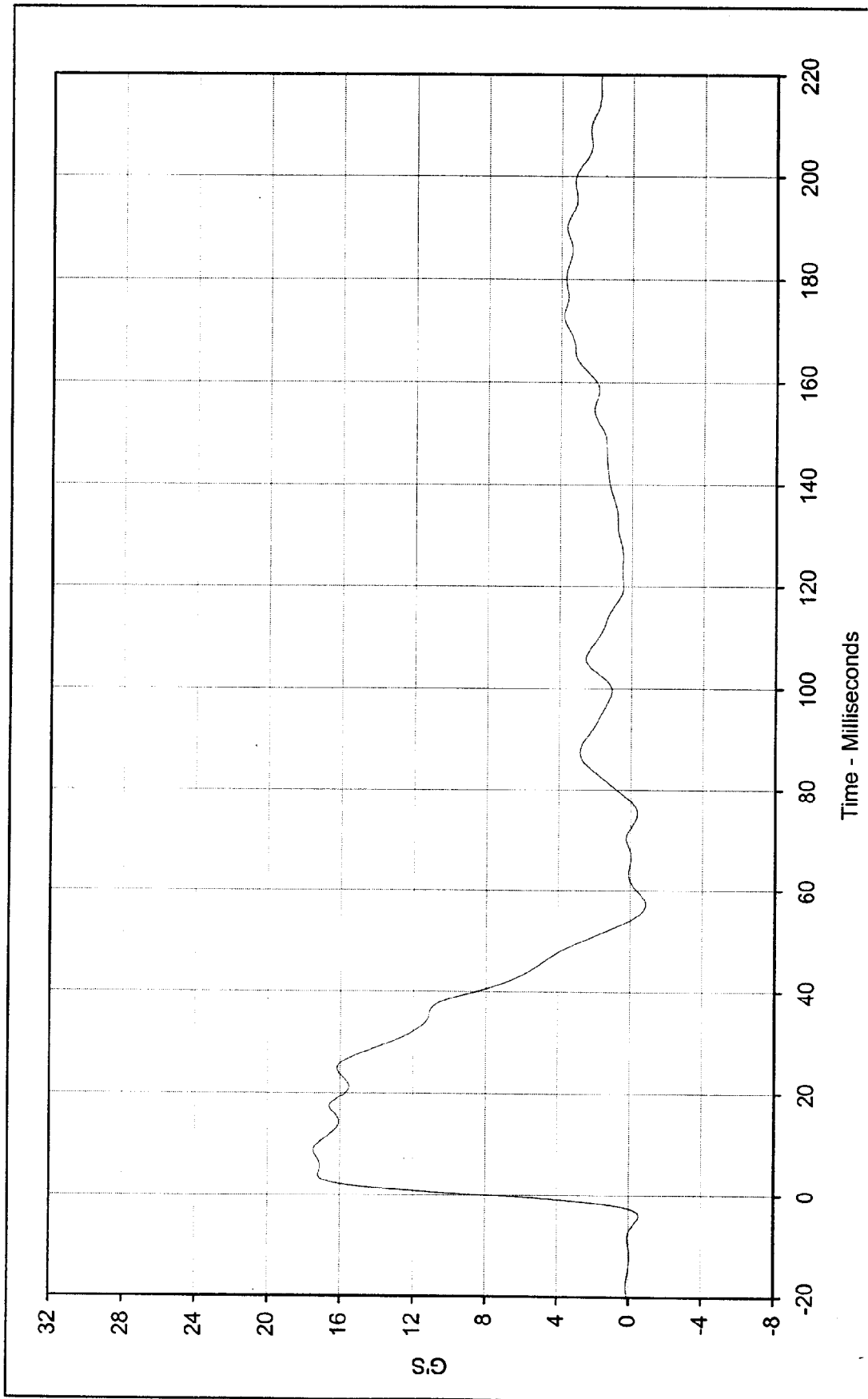

Approved By

March 22, 1999

Test Date

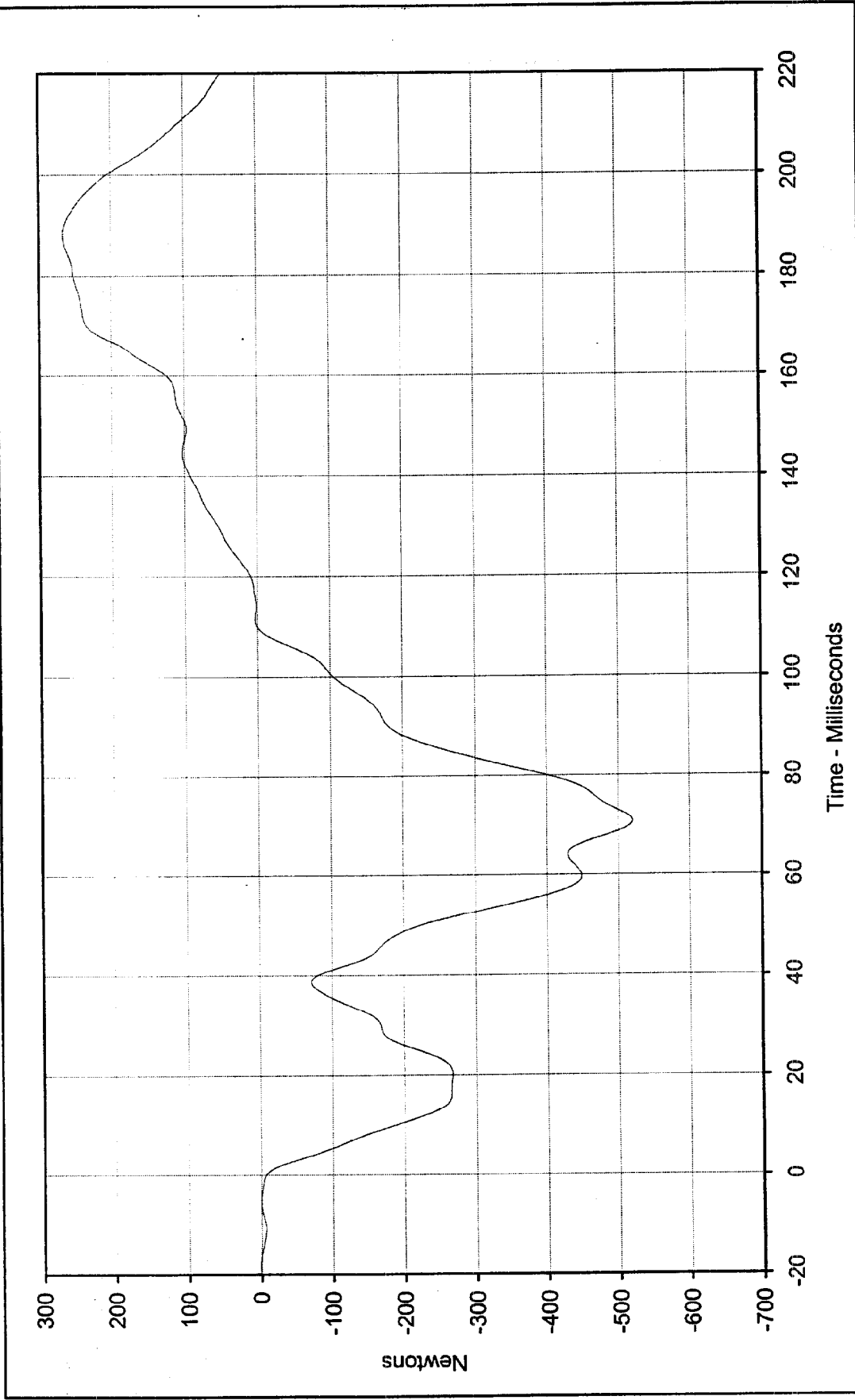
3/22/99

Date



Curve Description:	Pendulum Deceleration				Testing Program	Hybrid III Neck Extension Test (Male)	
Maximum Value:	17.5	at	8.8	Milliseconds	Test Information:	S/N of Part: N/A Test I.D.: NE04A	
Minimum Value:	-0.9	at	57.1	Milliseconds			
SAE Filter Class:	60						
Date of Test:	3/22/99						
ATD Serial No.:	034						

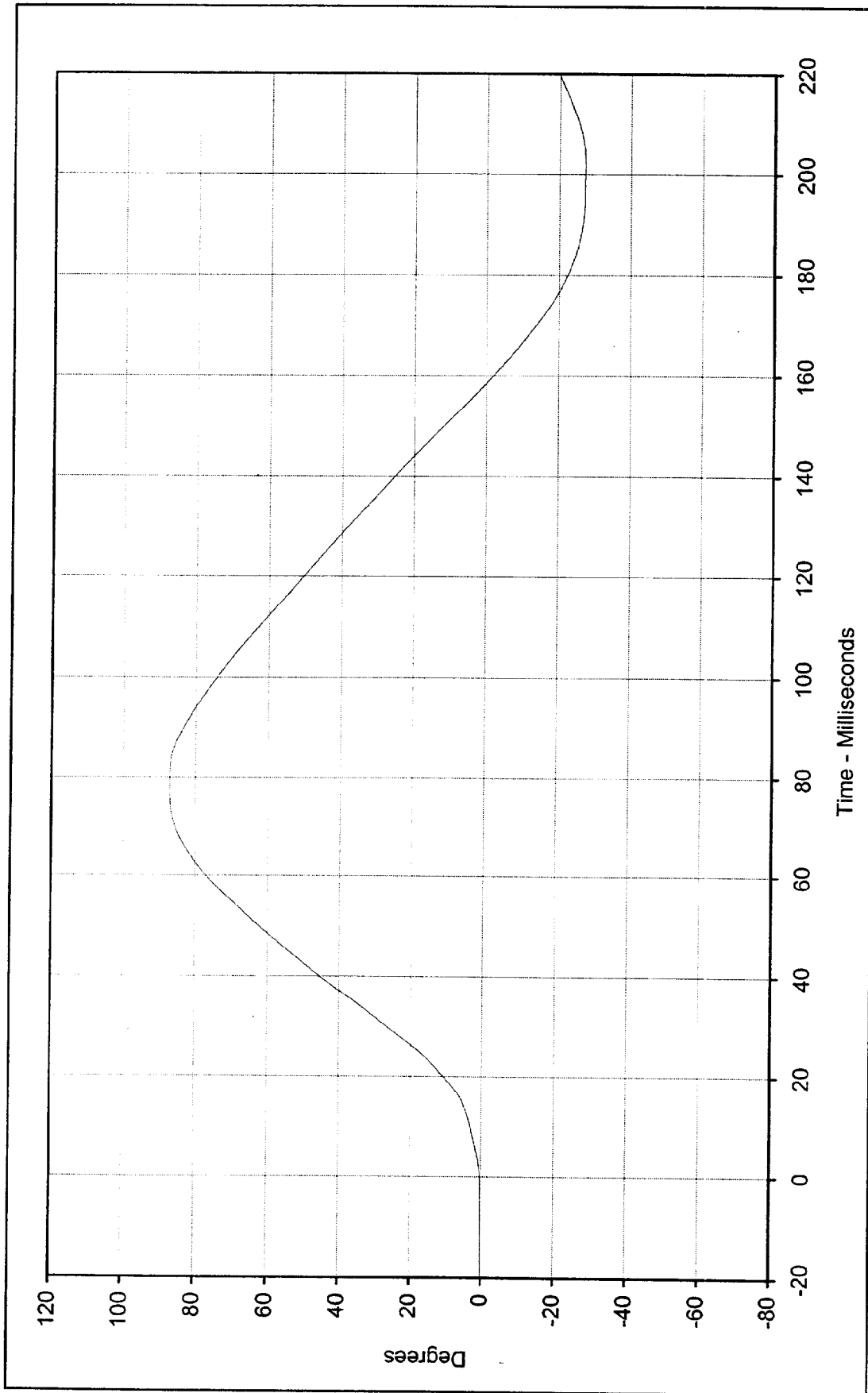




Testing Program: Hybrid III Neck Extension Test (Male)
Test Information: S/N of Part: N/A Test I.D.: NE04A

Curve Description: Neck Force X
Maximum Value: 266.9 at 188.2 Milliseconds
Minimum Value: -520.0 at 70.7 Milliseconds
SAE Filter Class: 60
Date of Test: 3/22/99
ATD Serial No.: 034





Curve Description:

"D" Plane Rotation

Maximum Value: 87.0 at 80.6 Milliseconds

Minimum Value: -27.2 at 201.5 Milliseconds

SAE Filter Class: 60

Date of Test: 3/22/99

ATD Serial No.: 034

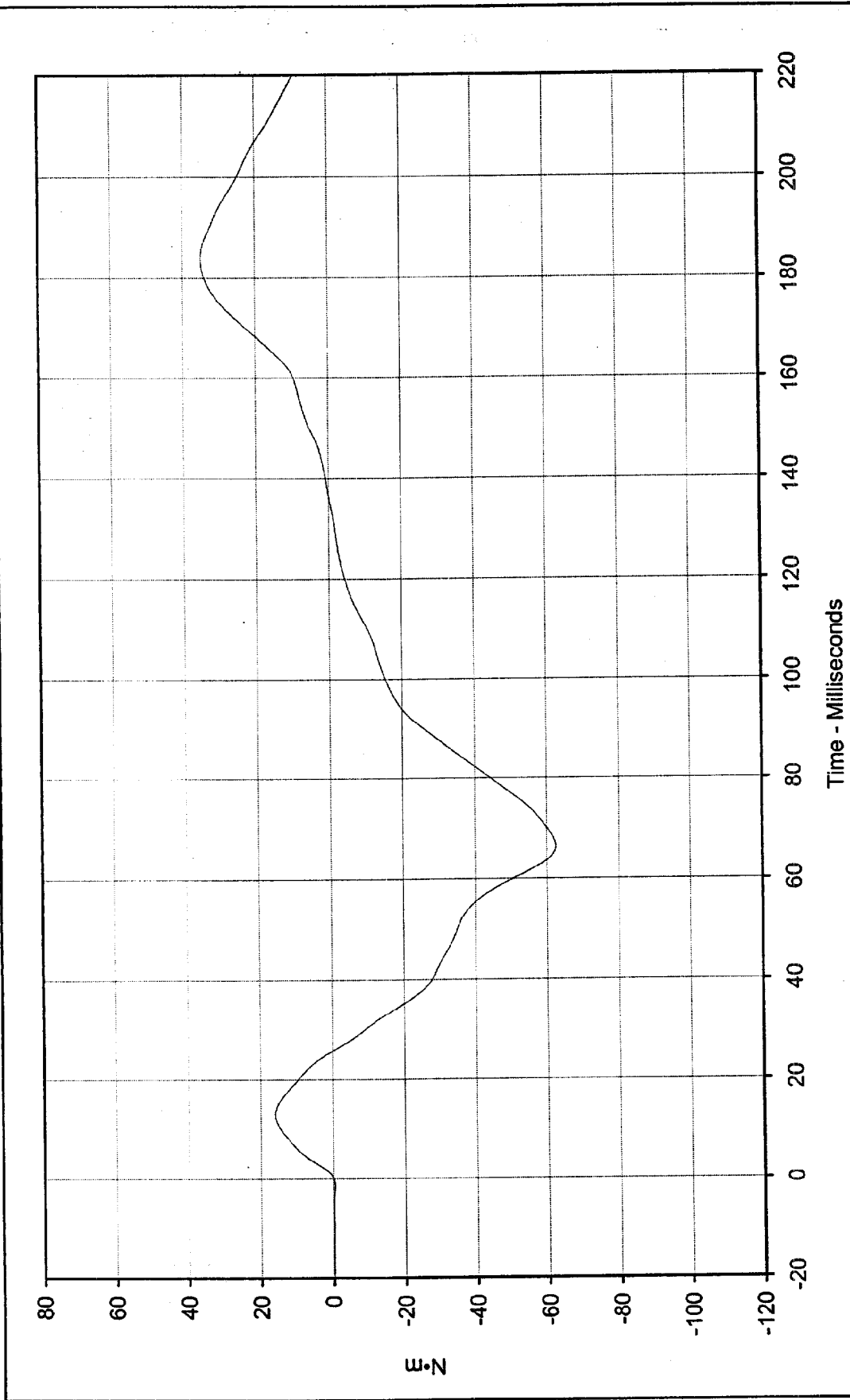
Testing Program

Hybrid III Neck Extension Test (Male)

Test Information:

S/N of Part: N/A Test I.D.: NE04A





Testing Program Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: N/A Test I.D.: NE04A

Curve Description: Moment About Occipital Condyles
 Maximum Value: 35.0 at 183.8 Milliseconds
 Minimum Value: -62.5 at 66.3 Milliseconds
 SAE Filter Class: 60
 Date of Test: 3/22/99
 ATD Serial No.: 034





Hybrid III Calibration Data Sheet

50TH Percentile Male

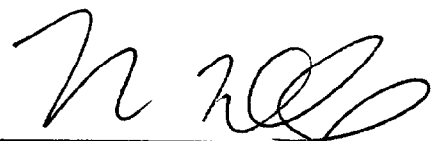
External Measurements

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	35	Pass
A - Total sitting height	mm	878.8 to 889.0	885.0	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	516.0	Pass
C - "H" point height	mm	83.8 to 88.9	87.0	Pass
D - "H" point from seat back	mm	134.6 to 139.7	137.0	Pass
E - Shoulder pivot from back	mm	83.8 to 94.0	87.0	Pass
F - Thigh clearance	mm	139.7 to 154.9	152.0	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	302.0	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	340.0	Pass
J - Elbow rest height	mm	190.5 to 210.8	209.0	Pass
K - Buttock to knee length	mm	579.1 to 604.5	602.0	Pass
L - Popliteal length	mm	429.3 to 454.7	450.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	486.0	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	475.0	Pass
O - Chest depth	mm	213.4 to 228.6	226.0	Pass
P - Foot length	mm	251.5 to 266.7	261.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	430.0	Pass
W - Foot breadth	mm	91.4 to 106.7	105.0	Pass
Y - Chest circumference	mm	970.3 to 1000.8	995.0	Pass
Z - Waist circumference	mm	835.7 to 866.1	860.0	Pass
AA - Location for chest circumference	mm	429.3 to 434.3	432.0	Pass
BB - Location for waist circumference	mm	226.1 to 231.1	228.0	Pass
Overall Test Results				Pass


 Laboratory Technician


 Approved By

May 5, 1999
 Test Date

5/5/99
 Date



Hybrid III Calibration Data Sheet

50TH Percentile Male

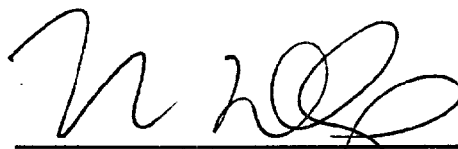
Left Knee Impact Test

ATD Serial No.: 35

Part Serial No.: N/A

Test I.D.: KN04C

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	5644.1	Pass
Overall Test Results				Pass


Laboratory Technician

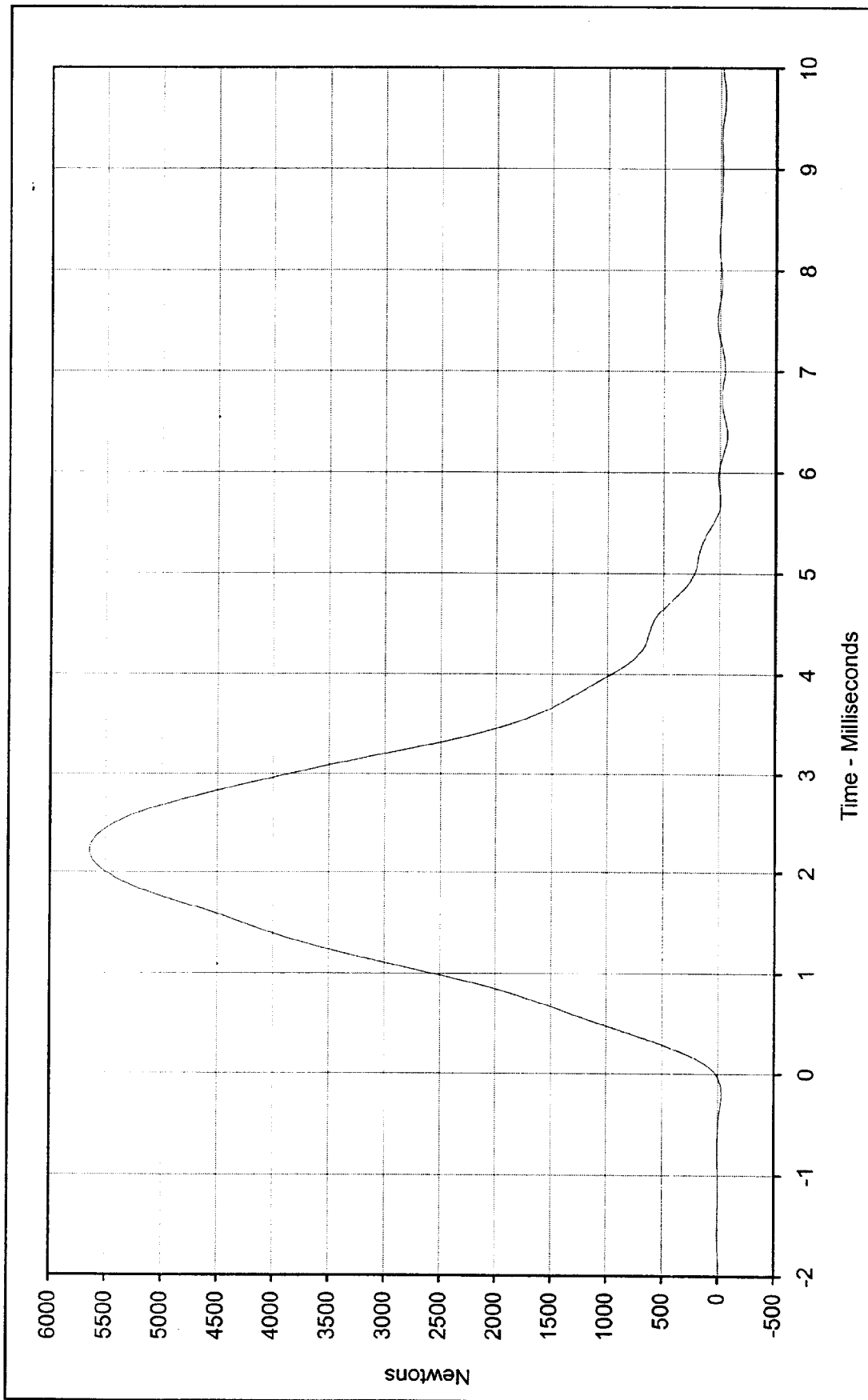

Approved By

March 24, 1999

Test Date

3/24/99

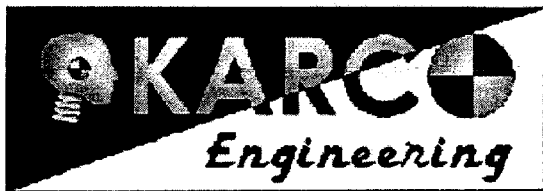
Date



Testing Program: Hybrid III Left Knee Impact Test
 Test Information: Part S/N: N/A Test I.D.: KN04C



Curve Description: Probe Force
 Maximum Value: 5644.1 at 2.2 Milliseconds
 Minimum Value: -65.2 at 6.4 Milliseconds
 SAE Filter Class: 600
 Date of Test: 3/24/99
 ATD Serial No.: 35



Hybrid III Calibration Data Sheet

50TH Percentile Male

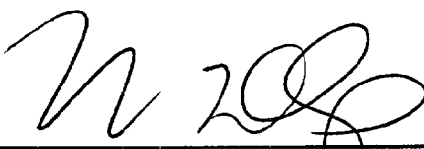
Right Knee Impact Test

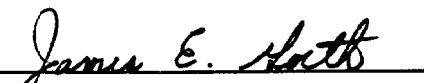
ATD Serial No.: 35

Part Serial No.: N/A

Test I.D.: KN04D

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	2.093	Pass
Peak Probe Force	Newtons	4715 to 5782	5157.4	Pass
Overall Test Results				Pass


Laboratory Technician

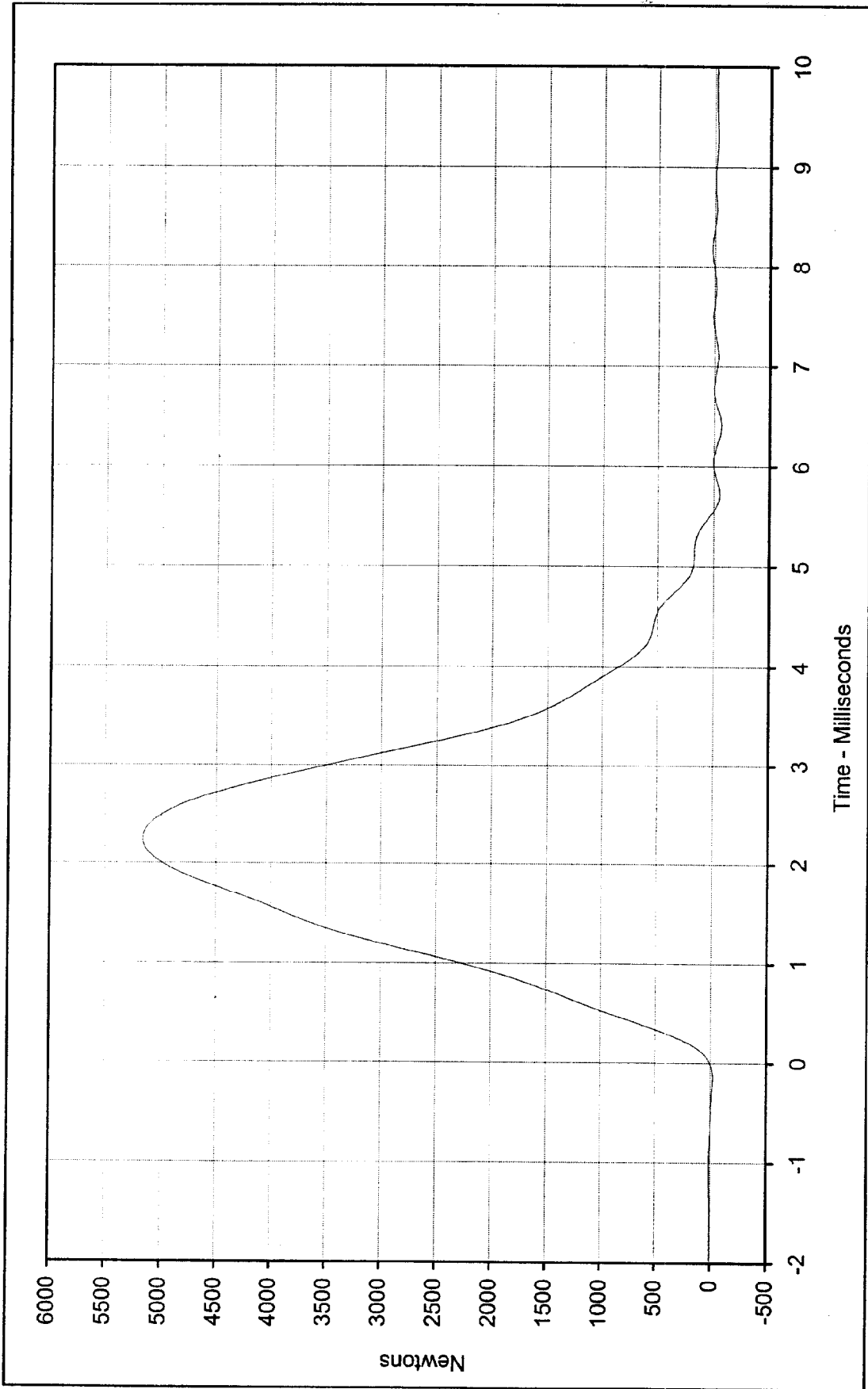

Approved By

March 24, 1999

Test Date

3/24/99

Date



Testing Program Hybrid III Right Knee Impact Test
 Test Information: Part S/N: N/A Test I.D.: KN04D



Curve Description: Probe Force
 Maximum Value: 5157.4 at 2.2 Milliseconds
 Minimum Value: -65.9 at 6.4 Milliseconds
 SAE Filter Class: 600
 Date of Test: 3/24/99
 ATD Serial No.: 35



Hybrid III Calibration Data Sheet

50TH Percentile Male

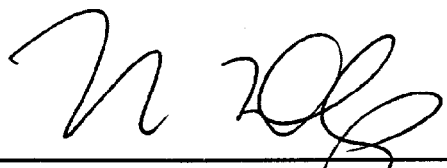
Head Drop Calibration

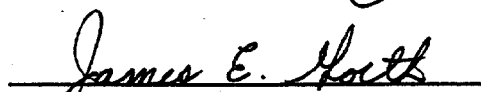
ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: HD04B

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	273.3	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

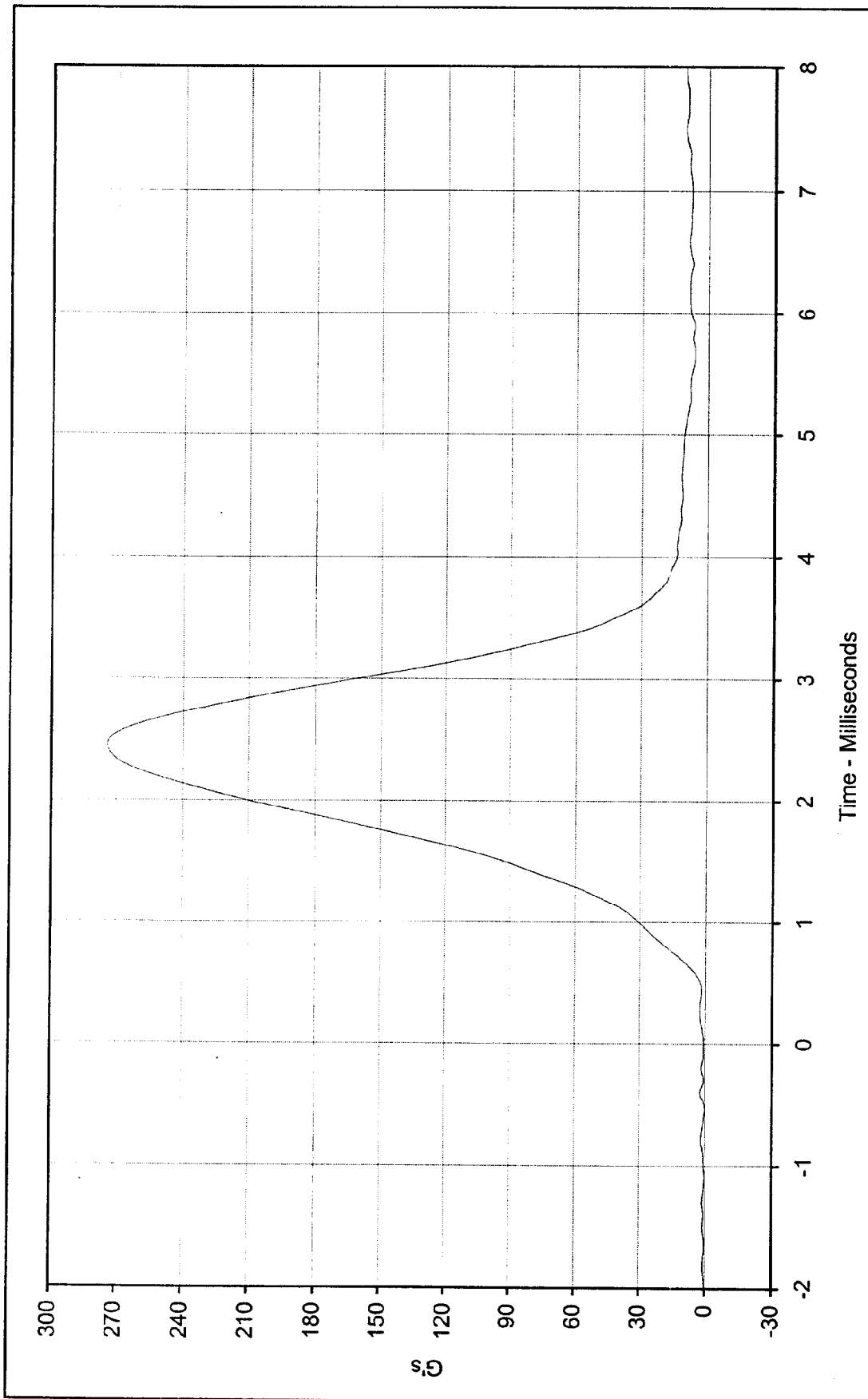

Approved By

March 24, 1999

Test Date

3/24/99

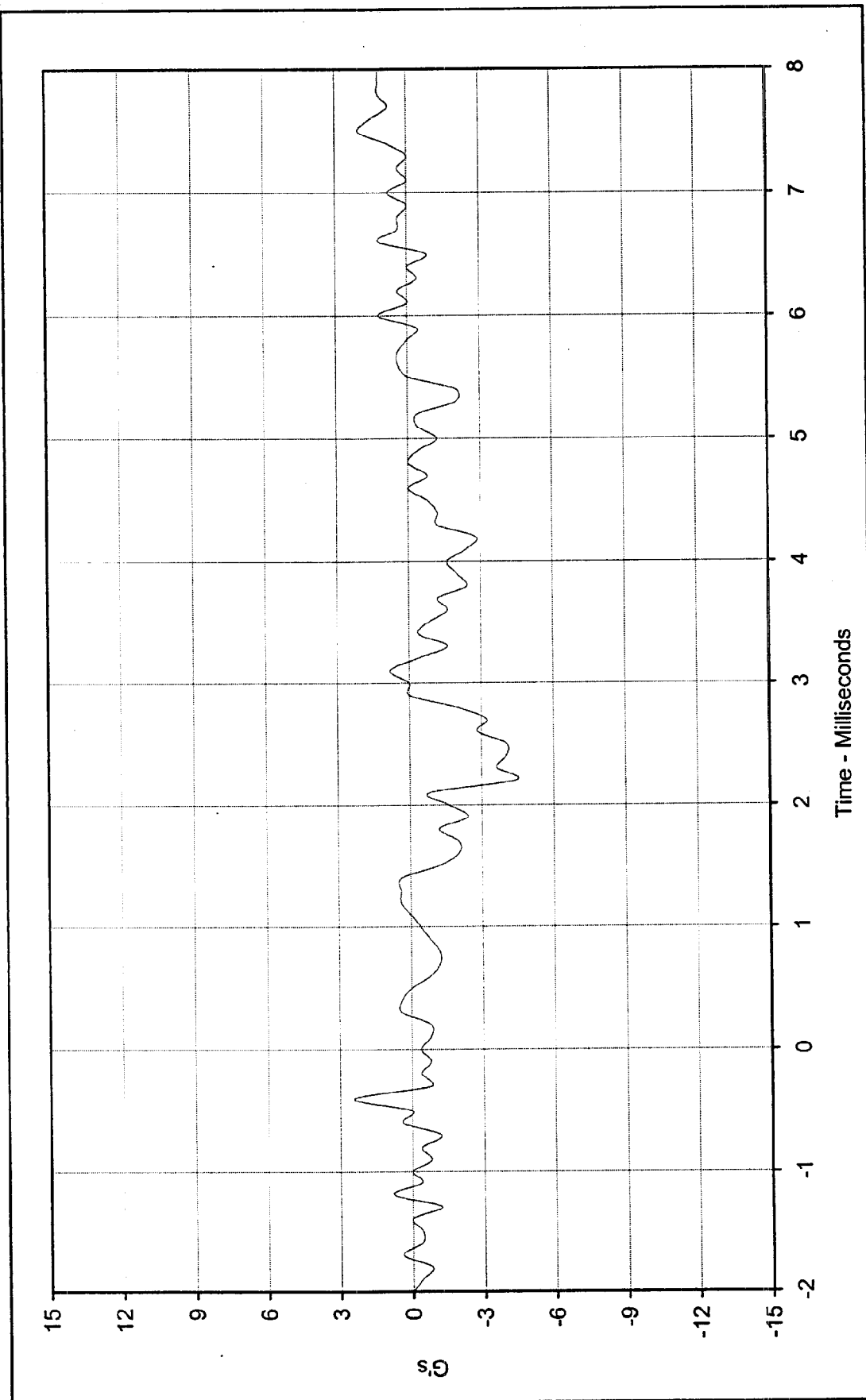
Date



Testing Program Hybrid III Head Drop Calibration (Male)
 Test Information: S/N of Part: N/A Test I.D.: HD04B



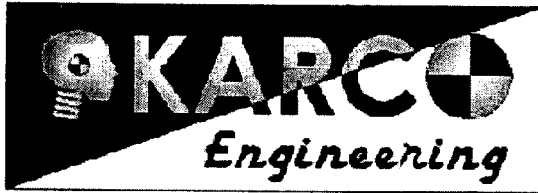
Curve Description: Head Resultant Acceleration
 Maximum Value: 273.3 at 2.5 Milliseconds
 Minimum Value: 0.3 at -2.0 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 3/24/99
 ATD Serial No.: 035



Testing Program Hybrid III Head Drop Calibration (Male)
 Test Information: S/N of Part: N/A Test I.D.: HD04B

Curve Description: Head Acceleration Y Axis
 Maximum Value: 2.4 at -0.4 Milliseconds
 Minimum Value: -4.4 at 2.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 3/24/99
 ATD Serial No.: 035





Hybrid III Calibration Data Sheet

50TH Percentile Male

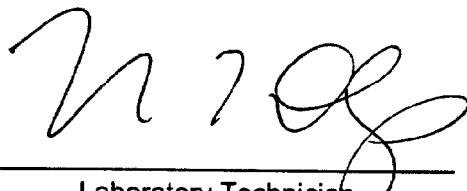
Thorax Impact Test

ATD Serial No.: 035

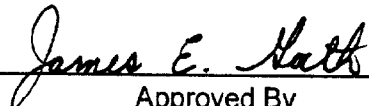
Part Serial No.: N/A

Test I.D.: CH05A

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	6.69	Pass
Peak Probe Force	Newtons	5159 to 5893	5728	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.86	Pass
Internal Hysteresis	%	69 to 85	77.2	Pass
Overall Test Results				Pass



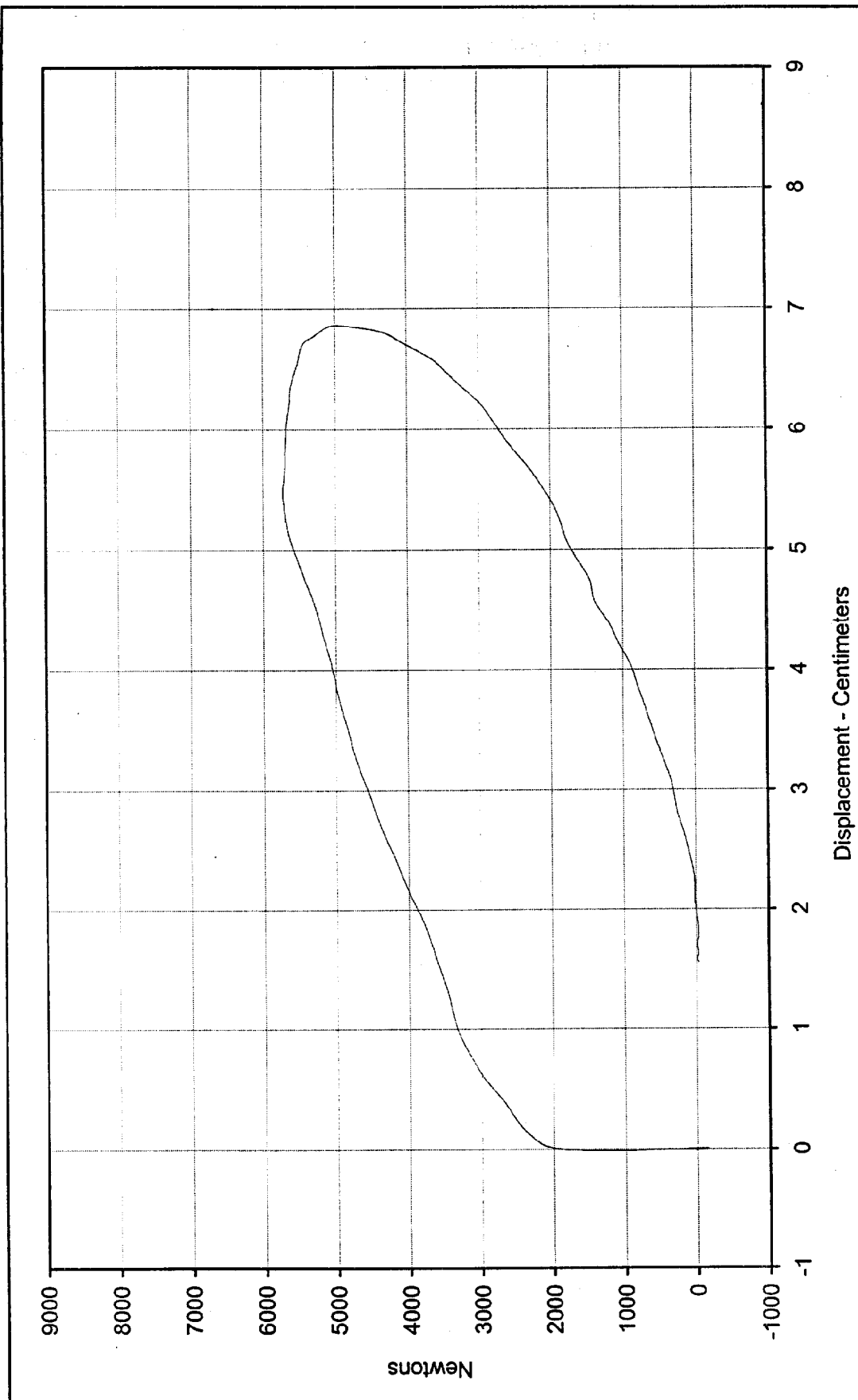
Laboratory Technician



Approved By

May 3, 1999
Test Date

5/3/99
Date



Curve Description: Probe Force vs. Chest Displacement Testing Program Hybrid III Thorax Impact Test
 Probe Force: 5727.9 Newtons Test Information: S/N of Part: N/A Test I.D.: CH05A

Chest Displ.: 6.86 Centimeters
 SAE Filter Class: 180
 Date of Test: 5/3/99
 ATD Serial No.: 035





Hybrid III Calibration Data Sheet

50TH Percentile Male

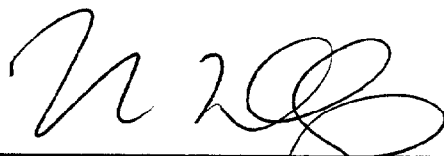
Neck Flexion Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: NF04B

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	6.98	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.2	Pass
	20 Msec.	G's	17.6 to 22.6	21.3	Pass
	30 Msec.	G's	12.5 to 18.5	18.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	40.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	66.0	Pass
	Time	Msec.	57.0 to 64.0	62.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	119.1	Pass
Moment About Occipital Condyle	Maximum	N • m	84.1 to 108.5	85.4	Pass
	Time	Msec.	47.0 to 58.0	55.0	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	102.1	Pass
Overall Test Results					Pass


 Laboratory Technician

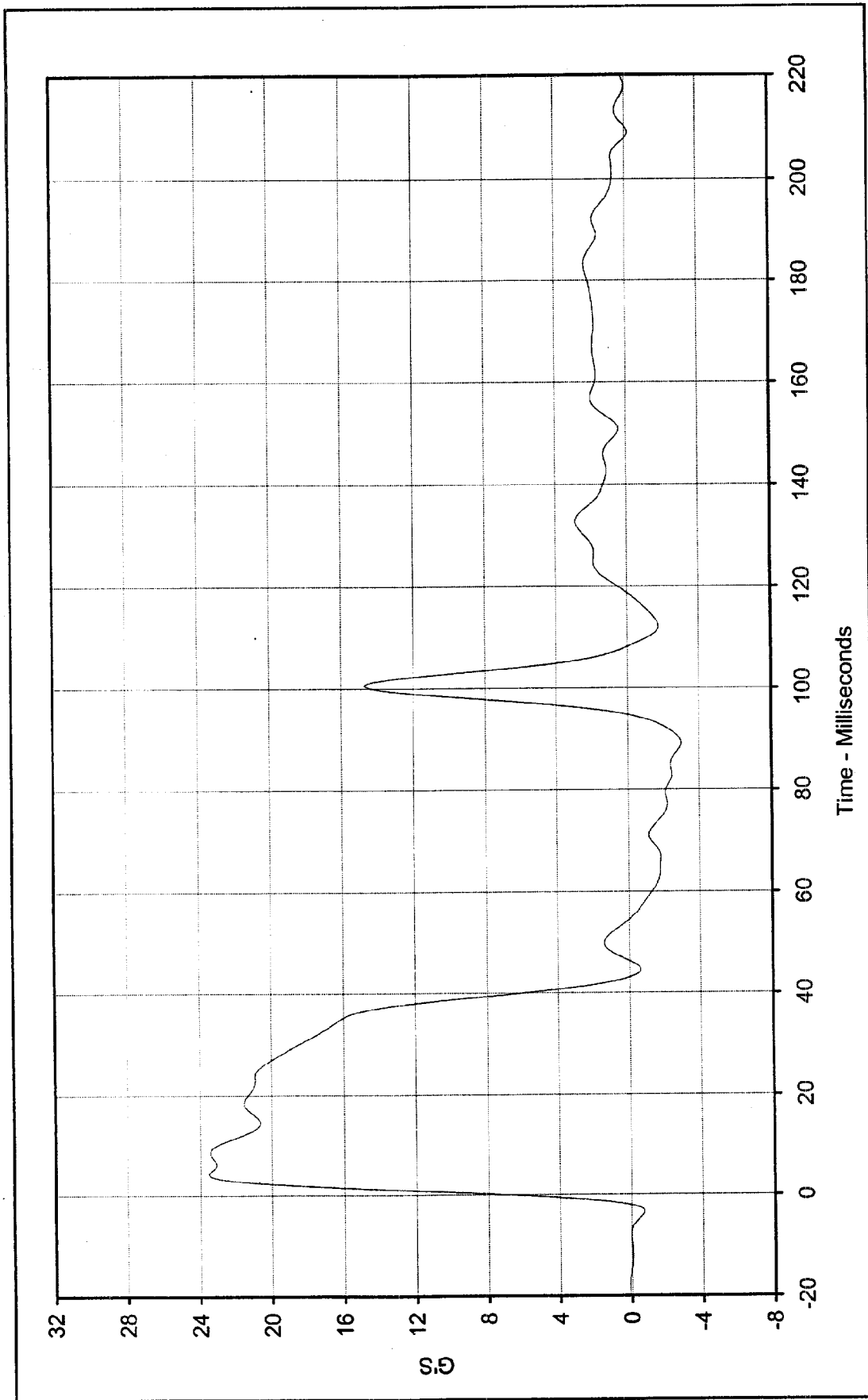

 Approved By

March 22, 1999

Test Date

3/22/99

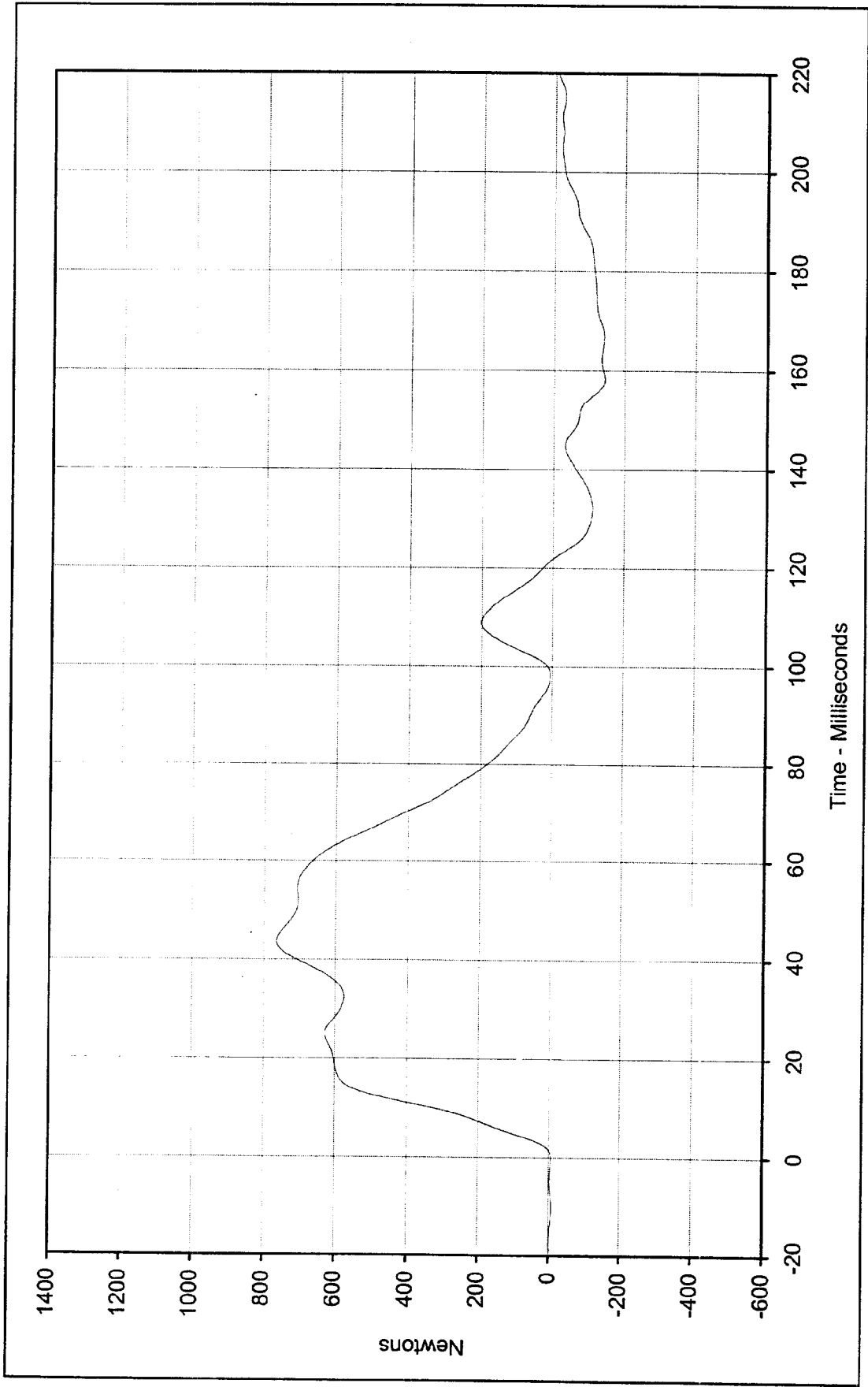
Date



Curve Description: Pendulum Deceleration
 Maximum Value: 23.5 at 4.3 Milliseconds
 Minimum Value: -3.0 at 89.1 Milliseconds
 SAE Filter Class: 60
 Date of Test: 3/22/99
 ATD Serial No.: 035

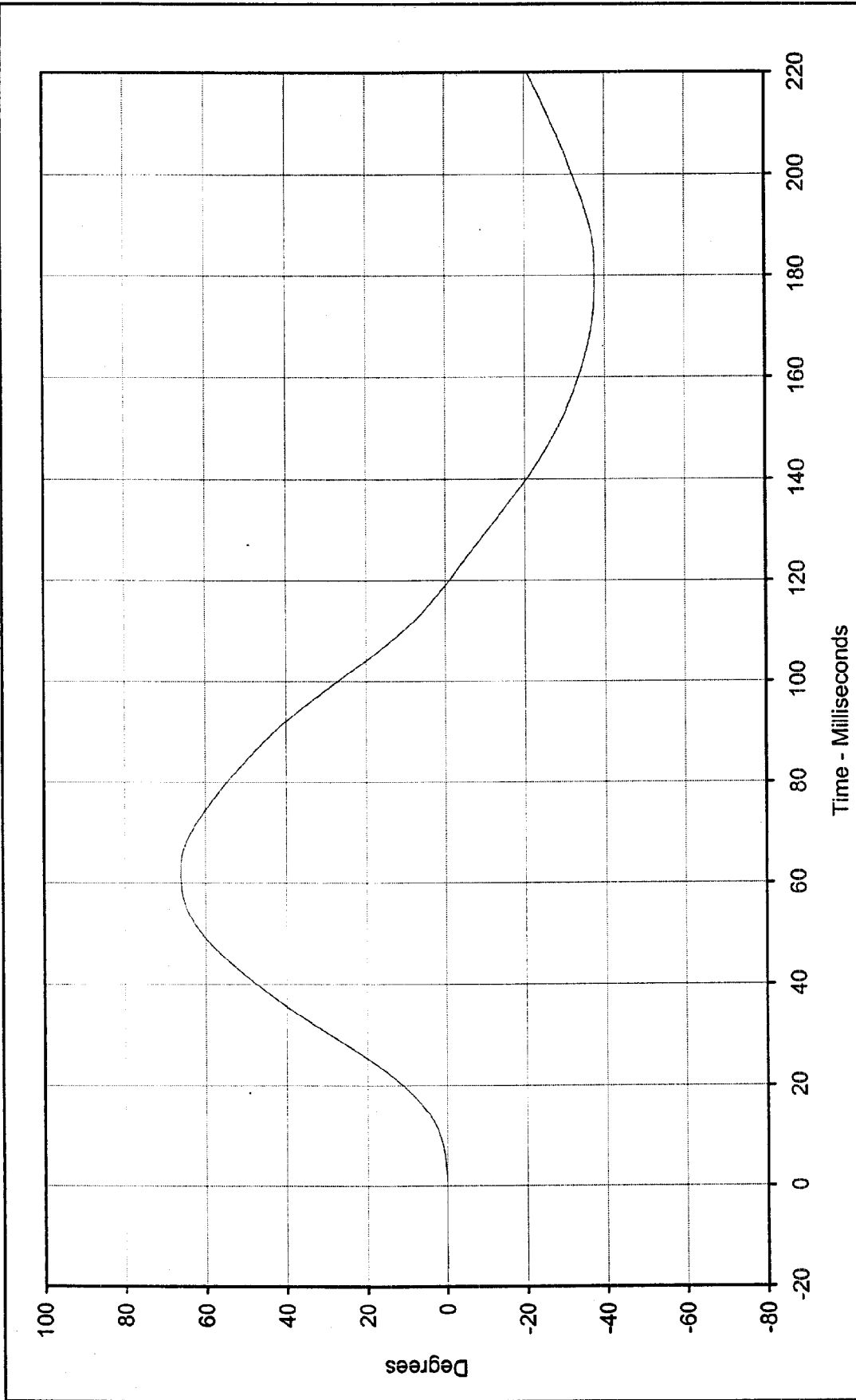
Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: N/A Test I.D.: NF04B





Curve Description:	Neck Force X	Testing Program	Hybrid III Neck Flexion Test (Male)
Maximum Value:	764.1 at 43.6 Milliseconds	Test Information:	S/N of Part: N/A Test I.D.: NF04B
Minimum Value:	-143.6 at 158.3 Milliseconds		
SAE Filter Class:	60		
Date of Test:	3/22/99		
ATD Serial No.:	035		

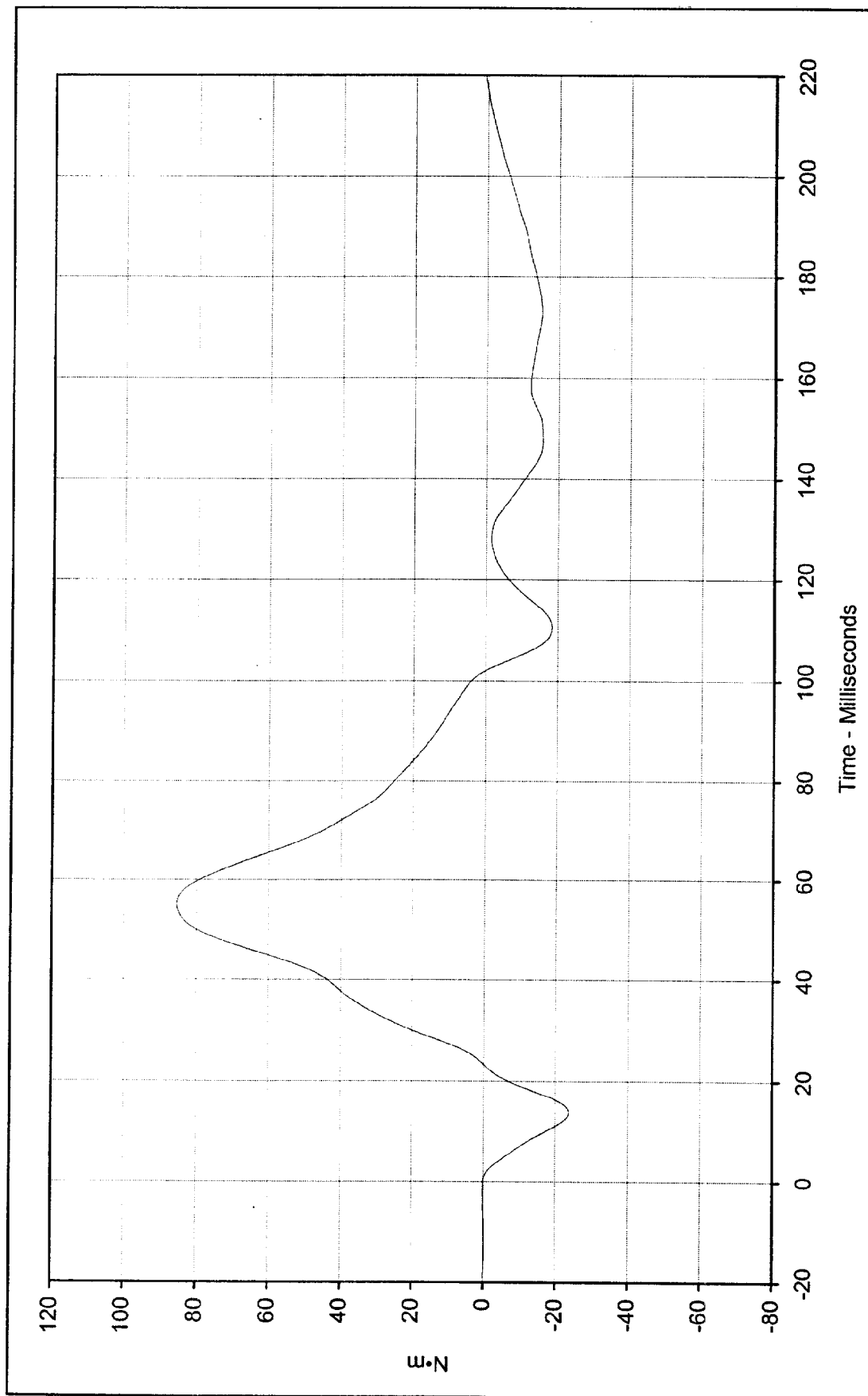




Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: N/A Test I.D.: NF04B

Curve Description: "D" Plane Rotation
 Maximum Value: 66.0 at 62.2 Milliseconds
 Minimum Value: -37.5 at 179.7 Milliseconds
 SAE Filter Class: 60
 Date of Test: 3/22/99
 ATD Serial No.: 035





Curve Description: Moment About Occipital Condyles

Maximum Value: 85.4 at 55.0 Milliseconds

Minimum Value: -23.7 at 13.7 Milliseconds

SAE Filter Class: 60

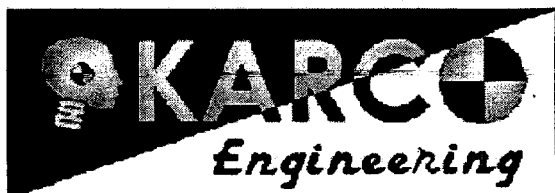
Date of Test: 3/22/99

ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF04B





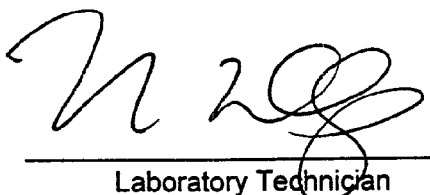
Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 035Part Serial No.: N/ATest I.D.: NE04B

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	6.18	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.8	Pass
	20 Msec.	G's	14.0 to 19.0	16.5	Pass
	30 Msec.	G's	11.0 to 16.0	12.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	12.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	45.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	93.7	Pass
	Time	Msec.	72.0 to 82.0	78.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	160.3	Pass
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-66.2	Pass
	Time	Msec.	65.0 to 79.0	66.6	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	136.7	Pass
Overall Test Results					Pass


Laboratory Technician

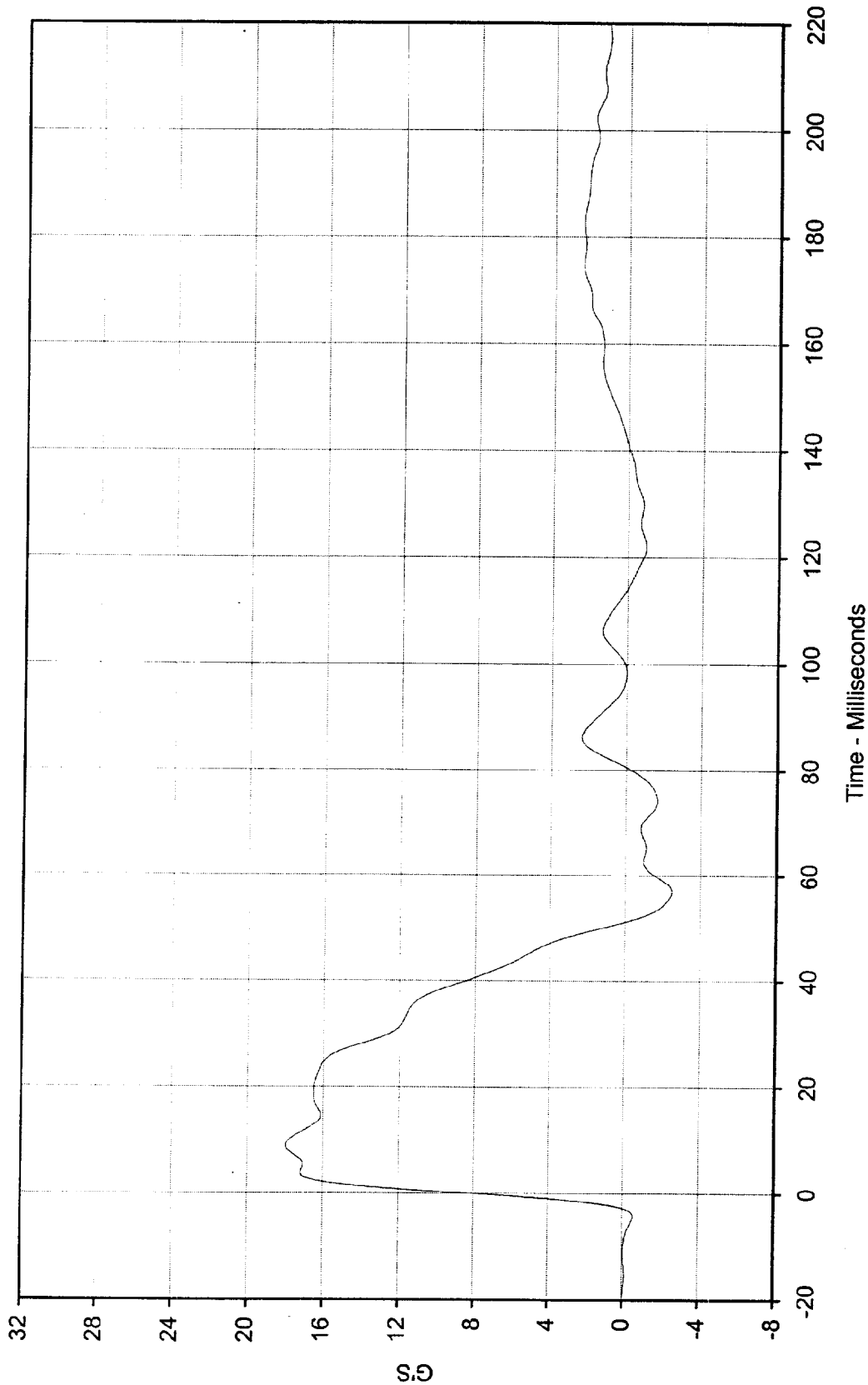

Approved By

March 22, 1999

Test Date

3/22/99

Date



Curve Description: Pendulum Deceleration

Maximum Value: 18.0 at 9.0 Milliseconds

Minimum Value: -2.5 at 56.7 Milliseconds

SAE Filter Class: 60

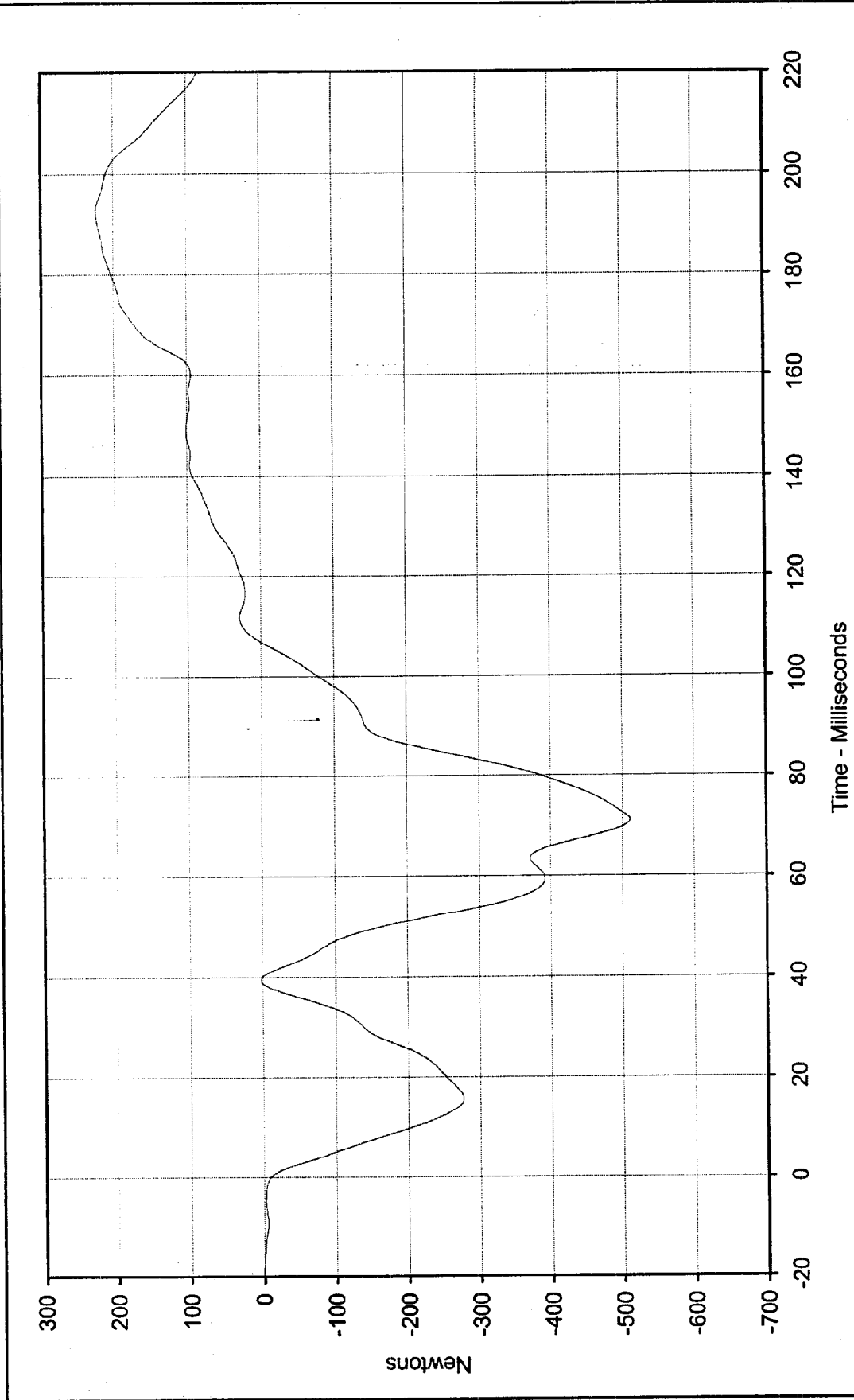
Date of Test: 3/22/99

ATD Serial No.: 035

Testing Program Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE04B

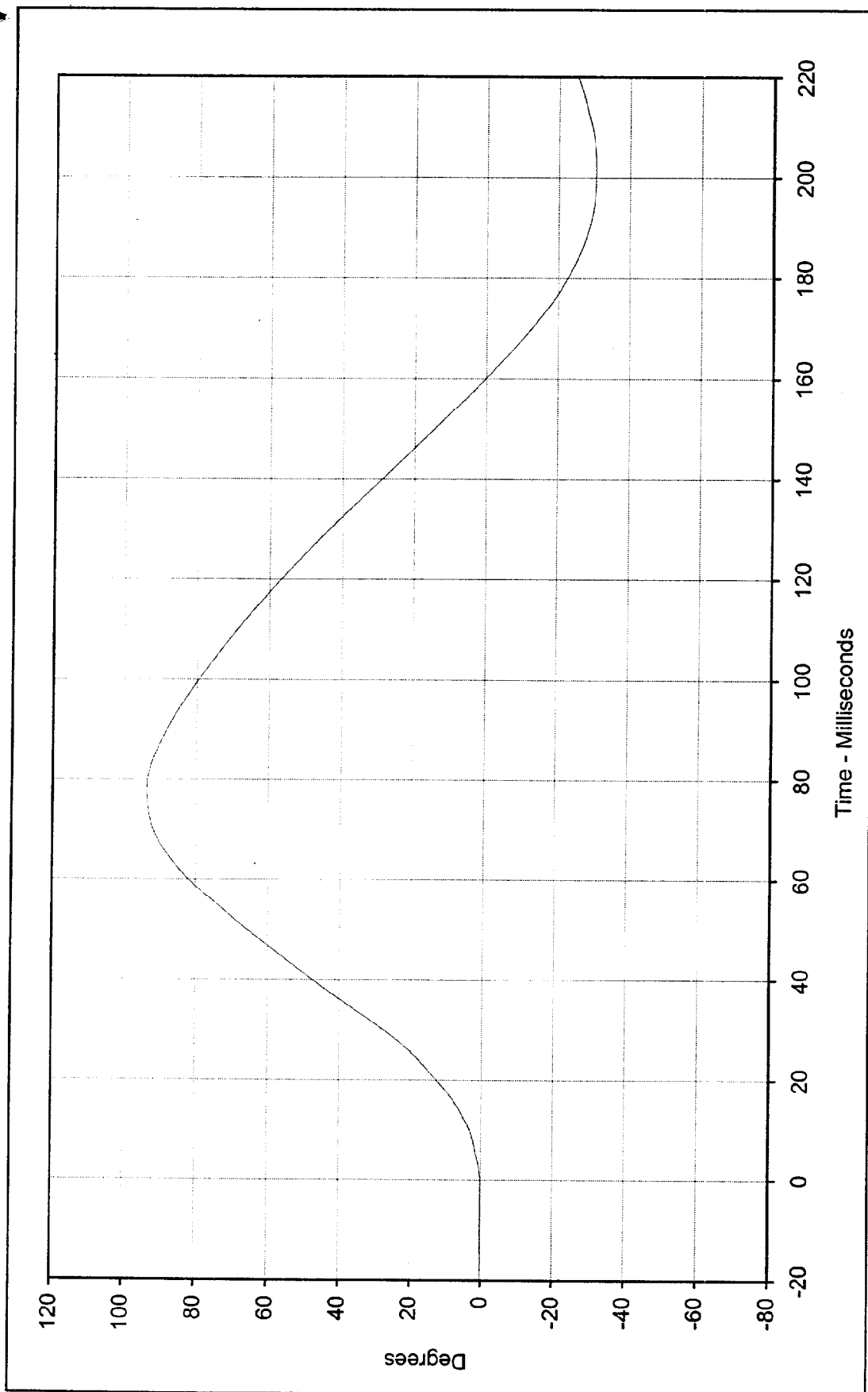




Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: N/A Test I.D.: NE04B

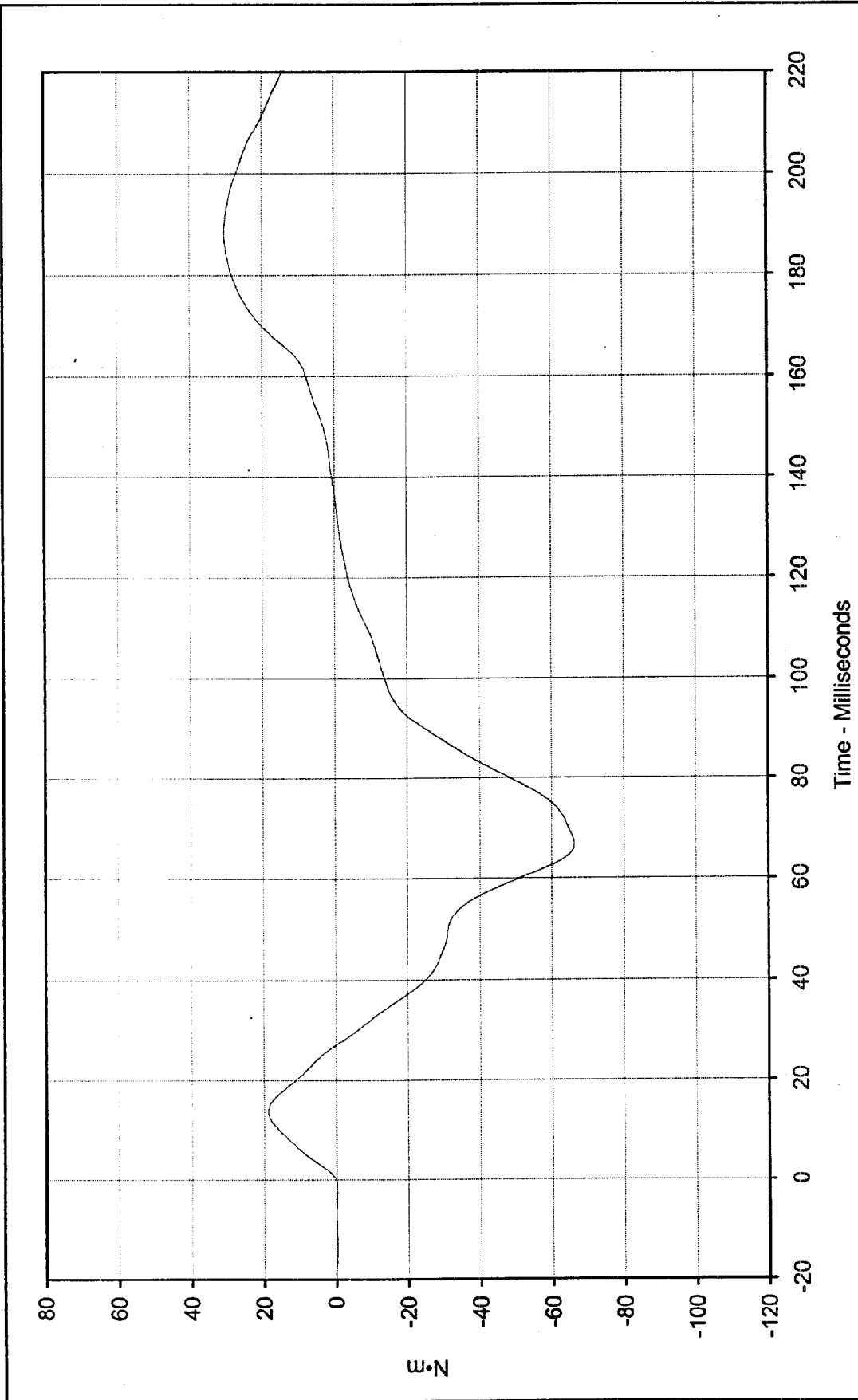
Curve Description: Neck Force X
 Maximum Value: 223.8 at 192.7 Milliseconds
 Minimum Value: -510.5 at 71.1 Milliseconds
 SAE Filter Class: 60
 Date of Test: 3/22/99
 ATD Serial No.: 035





Curve Description:	"D" Plane Rotation	Testing Program	Hybrid III Neck Extension Test (Male)
Maximum Value:	93.7 at 78.0 Milliseconds	Test Information:	S/N of Part: N/A Test I.D.: NE04B
Minimum Value:	-30.4 at 201.5 Milliseconds		
SAE Filter Class:	60		
Date of Test:	3/22/99		
ATD Serial No.:	035		





Curve Description: Moment About Occipital Condyles Testing Program Hybrid III Neck Extension Test (Male)

Maximum Value: 30.4 at 188.4 Milliseconds Test Information: S/N of Part: N/A Test I.D.: NE04B

Minimum Value: -66.2 at 66.6 Milliseconds

SAE Filter Class: 60

Date of Test: 3/22/99

ATD Serial No.: 035





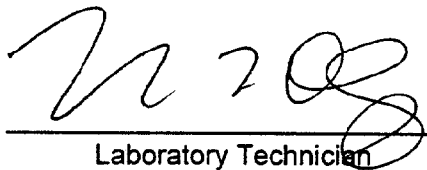
Hybrid III Calibration Data Sheet

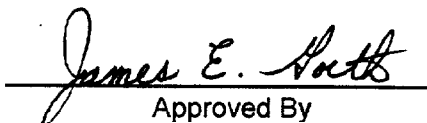
50TH Percentile Male

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	35	Pass
A - Total sitting height	mm	878.8 to 889.0	888.0	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	519.0	Pass
C - "H" point height	mm	83.8 to 88.9	87.0	Pass
D - "H" point from seat back	mm	134.6 to 139.7	136.0	Pass
E - Shoulder pivot from back	mm	83.8 to 94.0	86.0	Pass
F - Thigh clearance	mm	139.7 to 154.9	152.0	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	295.0	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	335.0	Pass
J - Elbow rest height	mm	190.5 to 210.8	200.0	Pass
K - Buttock to knee length	mm	579.1 to 604.5	595.0	Pass
L - Popliteal length	mm	429.3 to 454.7	440.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	498.0	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	474.0	Pass
O - Chest depth	mm	213.4 to 228.6	222.0	Pass
P - Foot length	mm	251.5 to 266.7	261.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	430.0	Pass
W - Foot breadth	mm	91.4 to 106.7	103.0	Pass
Y - Chest circumference	mm	970.3 to 1000.8	979.0	Pass
Z - Waist circumference	mm	835.7 to 866.1	860.0	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

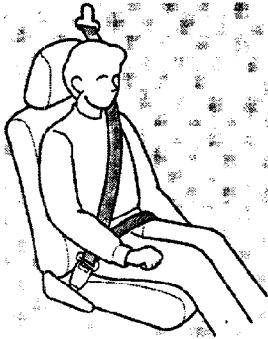

Approved By

May 5, 1999
Test Date

5/5/99
Date

APPENDIX F
VEHICLE OWNER'S MANUAL
OCCUPANT RESTRAINT INSTRUCTIONS

KAR99001-17



Position the lap part of the belt as low as possible across your hips, then pull up on the shoulder part of the belt so the lap part fits snugly. This lets your strong pelvic bones take the force of a crash and reduces the chance of internal injuries.

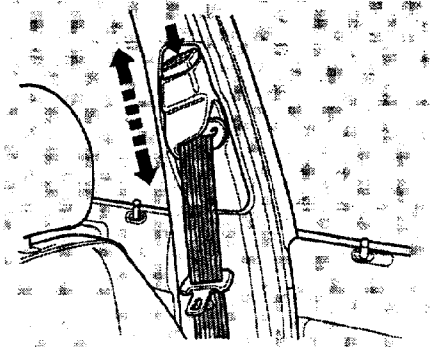
If necessary, pull up on the belt again to remove any slack from the shoulder part, then check that the belt rests across the center of your chest and over your shoulder. This

spreads the forces of a crash over the strongest bones in your upper body.

Improperly positioning the seat belts can cause serious injury or death in a crash.

Make sure all seat belts are properly positioned before driving.

If the seat belt touches or crosses your neck, or if it crosses your arm instead of your shoulder, you need to adjust the seat belt anchor height.



To adjust the height of a front seat belt anchor, press the release button and slide the anchor up or down as needed (it has four positions).

Never place the shoulder portion of a lap/shoulder belt under your arm or behind your back. This could cause very serious injuries in a crash.

CONTINUED

Driver and Passenger Safety 15

Additional Information About Your Seat Belts

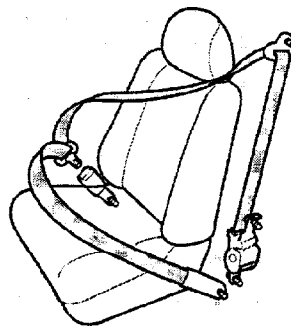
Seat Belt System Components

Your seat belt system includes lap/shoulder belts in all five seating positions. The front seat belts are also equipped with automatic seat belt tensioners.



The seat belt system also includes a light on the instrument panel to remind you and your passengers to fasten your belts. If the driver's seat belt is not fastened before the ignition is turned ON (II), the light will come on and a beeper will also sound. The beeper will stop after a few seconds, but the light will stay on until the driver's seat belt is fastened.

Lap/Shoulder Belt



This seat belt has a single belt that goes over your shoulder, across your chest and across your hips.

To fasten the belt, insert the latch plate into the buckle, then tug on the belt to make sure the buckle is latched.

To unlock the belt, push the red PRESS button on the buckle. Guide the belt across your body to the door pillar. After exiting the car, be sure the belt is out of the way and will not get closed in the door.

All seat belts have an emergency locking retractor. In normal driving, the retractor lets you move freely in your seat while it keeps some tension on the belt. During a collision or sudden stop, the retractor automatically locks the belt to help restrain your body.

The seat belts in all seating positions except the driver's have an additional locking mechanism that must be activated to secure a child seat. (See pages 28 and 32 for instructions on how to secure child seats with this type of seat belt.)

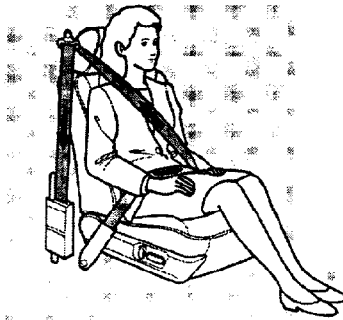
Additional Information About Your Seat Belts

If the shoulder part of the belt is pulled all the way out, the locking mechanism will activate. The belt will retract, but it will not allow a passenger to move freely.

To deactivate the locking mechanism, unlatch the buckle and let the seat belt fully retract. To refasten the belt, pull it out only as far as needed.

See page 14 for instructions on how to wear the lap/shoulder belt properly.

Automatic Seat Belt Tensioners



For added protection, the front seat belts are equipped with automatic seat belt tensioners. When activated, the tensioners immediately tighten the belts to help hold the driver and a front passenger in place.

The tensioners are designed to activate primarily in frontal collisions. The tensioners are independent of the airbag system, so they can be activated during a collision that

might not cause the airbags to deploy. In this case, the airbags would not be needed but the additional seat belt tension can be helpful.

The tensioners will be activated in a collision severe enough to cause the front airbags to inflate.

When the tensioners are activated, the seats belts will remain tight until they are unbuckled in the normal way.

SRS The SRS indicator light will come on if there is a problem with your automatic seat belt tensioners (see page 45).

Driver and Passenger Safety 41

Additional Information About Your Front Airbags

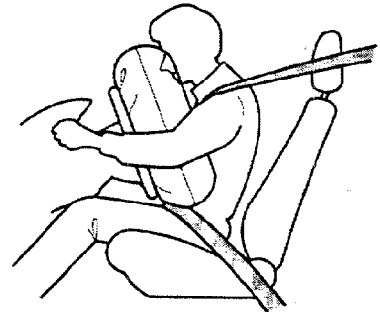
SRS Components

Your Supplemental Restraint System (SRS) includes:

- Two front airbags. The driver's airbag is stored in the center of the steering wheel; the front passenger's airbag is stored in the dashboard. Both are marked "SRS AIRBAG."
- Automatic seat belt tensioners (see page 41).
- Sensors that can detect a moderate to severe frontal collision.
- A sophisticated electronic system that continually monitors the sensors, control unit, the airbag activators, and all related wiring when the ignition is ON (II).

- An indicator light on the instrument panel that alerts you to a possible problem with the system (see page 45).
- Emergency backup power in case your car's electrical system is disconnected in a crash.

How Your Front Airbags Work



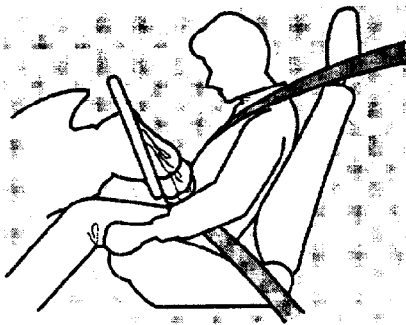
If you ever have a moderate to severe frontal collision, the sensors will detect the vehicle's rapid deceleration. If the rate of deceleration is high enough, the control unit will instantly inflate the front airbags.

Additional Information About Your Front Airbags

During a frontal crash, your seat belts help restrain your lower body and torso. Your airbag provides a cushion to help restrain and protect your head and chest.

Since both airbags use the same sensors, both airbags normally inflate at the same time. However, it is possible for only one airbag to inflate.

This can occur when the severity of a collision is at the margin, or threshold, that determines whether or not the airbags will deploy. In such cases, the seat belt will provide sufficient protection, and the supplemental protection offered by the airbag would be minimal.



After inflating, the front airbags immediately deflate, so they won't interfere with the driver's visibility, or the ability to steer or operate other controls.

The total time for inflation and deflation is approximately one-tenth of a second, so fast that most occupants are not aware that the airbags deployed until they see them lying in their laps.

After a crash, you may see what looks like smoke. This is actually powder from the airbag's surface. Although the powder is not harmful, people with respiratory problems may experience some temporary discomfort. If this occurs, get out of the car as soon as it is safe to do so.

U.S. Owners

For additional information on how your airbags work, see the booklet titled *SRS: What You Need to Know About Airbags* that came with your owner's manual.

Canadian Owners

For additional information on how your airbags work, ask your dealer for a copy of the booklet titled *SRS: What You Need to Know About Airbags*.

Additional Information About Your Front Airbags

How the SRS Indicator Light Works

SRS The purpose of the SRS indicator light is to alert you to a potential problem with your front airbags. This light will also alert you to a potential problem with your side airbags or automatic seat belt tensioners.

When you turn the ignition ON (II), this indicator will light up briefly then go out. This tells you that the system is working properly.

However, if the light comes on at any other time, you should have the system checked by your dealer. For example:

- If the SRS indicator light does not come on after you turn the ignition ON (II).
- If the light stays on after the engine starts.
- If the light comes on or flashes on and off while you drive.

If you see any of these indications, your airbags may not deploy or your seat belt tensioners may not work when you need them. See your Acura dealer as soon as possible.

Ignoring the SRS indicator light can result in serious injury or death if the airbags do not inflate when needed.

Have your vehicle checked by a dealer as soon as possible if the SRS light alerts you to a potential problem.

Seat Adjustments

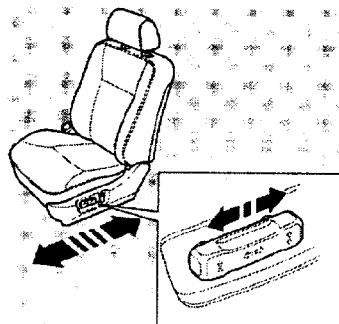
Driver's Seat Adjustment

See *pages 12 – 14 for important safety information and warnings about how to properly position seats and seat-belts.*

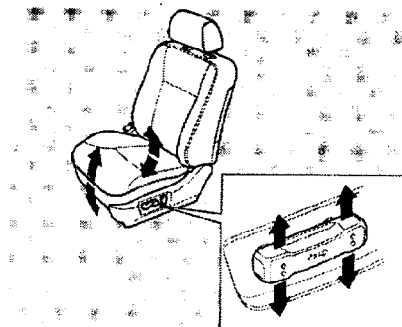
Adjust the seat before you start driving.

Your Acura has power adjustments for both front seats. The two power seat adjustment switches are on the outside edge of the seat bottom.

You can adjust the power seats with the ignition switch in any position.



The long horizontal switch adjusts the seat bottom in several directions. The short vertical switch adjusts the seat-back angle. Push the horizontal switch forward or backward to move the seat forward or backward.

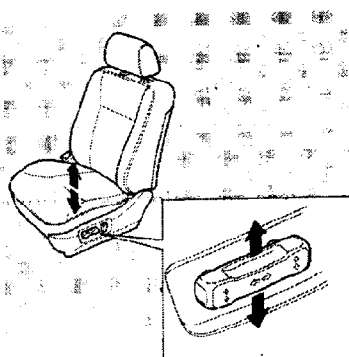


Pull up or push down on the front of the switch to move the seat bottom's front edge up or down. Pull up or push down on the rear of the switch to move the rear of the seat bottom up or down.

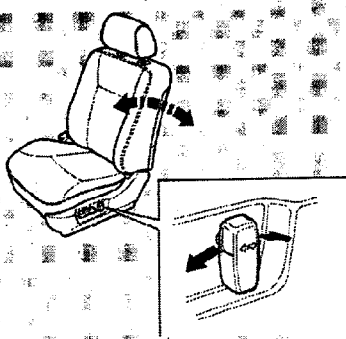
CONTINUED

Instruments and Controls 93

Seat Adjustments



Pull the center of the horizontal switch up to raise the seat. Push it down to lower the seat.

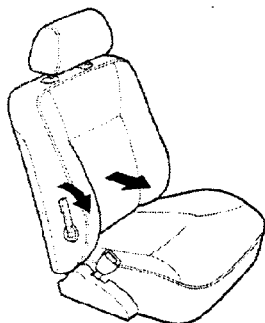


Adjust the seat-back angle by pushing the rear switch in the direction you want to move.

The driver's seat includes a memory feature. Two seat positions can be stored in separate memories. You can then select a memorized position by pushing the appropriate memory button. Refer to page 100 for how to memorize and select the seat positions.

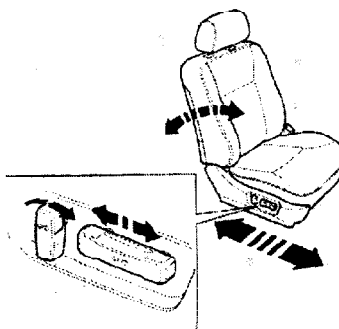
Seat Adjustments

Driver's Lumbar Support



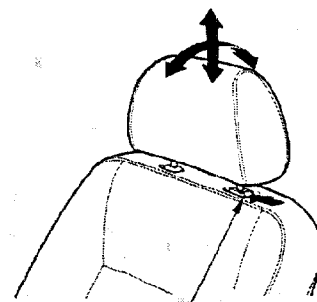
Vary the lumbar support by moving the lever on the right side of the seat-back. Pivot the lever forward until it stops, then let it return. Doing this several times adjusts the lumbar support through its full range.

Front Passenger's Seat Adjustments



The seat adjustment switches are on the outside edge of the seat bottom. Push the long horizontal switch forward or backward to move the seat bottom in that direction. Adjust the seat-back angle by pushing the vertical switch in the direction you want to move.

Head Restraints



RELEASE BUTTON

See page 14 for important safety information and a warning about how to properly position the head restraints. The head restraints help protect you and your passengers from whiplash and other injuries. They are most effective when you adjust them so the back of the occupant's head rests against the center of the restraint. A taller person should adjust the restraint as high as possible.