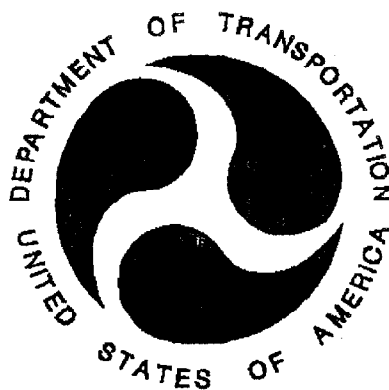


REPORT NO. KAR-98-4

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

TOYOTA MOTOR MANUFACTURING
1998 TOYOTA AVALON XL
4-DOOR SEDAN
NHTSA NO. MW5108

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



JANUARY 16, 1998
FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
OFFICE OF CRASHWORTHINESS STANDARDS
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WASHINGTON, D.C. 20590

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Date: January 16, 1998

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Date: January 16, 1998

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Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact test was conducted on a 1998 Toyota Avalon XL 4-Door Sedan at KARCO Engineering on December 18, 1997. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301 and footwell intrusion performance. The impact velocity was 55.70 km/h. The ambient temperature at the barrier face at the time of impact was 10.0°C. The vehicle's maximum post-test static crush was 642 mm, located at the centerline of the vehicle. The test vehicle was equipped with a 3-point continuous belt system and second generation supplemental airbags at both frontal outboard-seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" the occupant injury response data summary is as follows: <table border="1"> <thead> <tr> <th>Injury Criteria</th><th>Threshold Value</th><th>Driver Dummy</th><th>Passenger Dummy</th></tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td><td>1000</td><td>513.3</td><td>546.4</td></tr> <tr> <td>Chest Resultant Peak 3 msec clip</td><td>60 G's</td><td>50.4</td><td>36.7</td></tr> <tr> <td>Left Femur Force</td><td>10009 N</td><td>-2621.0</td><td>-1624.2</td></tr> <tr> <td>Right Femur Force</td><td>10009 N</td><td>-5657.9</td><td>-1237.0</td></tr> </tbody> </table>				Injury Criteria	Threshold Value	Driver Dummy	Passenger Dummy	Head Injury Criteria (HIC)	1000	513.3	546.4	Chest Resultant Peak 3 msec clip	60 G's	50.4	36.7	Left Femur Force	10009 N	-2621.0	-1624.2	Right Femur Force	10009 N	-5657.9	-1237.0
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SECTION 1

PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST MW5108

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test is part of the FY' 98 New Car Assessment Program (NCAP) frontal barrier crash worthiness evaluation program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract Number DTNH22-97-D-02007. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for frontal barrier impacts at a speed in excess of the current 30 mph (48 km/h) FMVSS 208/212/219/301 requirements.

1.2 TEST PROCEDURE

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

The test was conducted at KARCO Engineering on December 18, 1997, at a speed of 55.70 km/h. The test vehicle was instrumented with nine (9) 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 seventeen (17) 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 and chest primary and redundant tri-axial accelerometers, pelvic tri-axial accelerometers, left/right femur load cells, left/right lower leg sensors and left/right foot accelerometers. In addition, chest displacement and neck six-axis load and moment sensors were utilized. Seat belt load cells were also placed on the driver and passenger shoulder and lap belts to measure torso and pelvic section loading. The ATDs were positioned in the front outboard seating positions according to the dummy placement procedures specified in the Laboratory Indicant Test Procedure. Ninety-six channels of data were recorded with a PC based (TDAS) on-board data acquisition system. The data was digitally sampled at 10,000 samples per second and processed per section IP11 of the Laboratory Indicant Test Procedure.

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

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A immovable barrier was impacted by a 1998 Toyota Avalon XL 4-Door Sedan at a velocity of 55.70 km/h. The test weight, with two (2) 50th percentile male ATDs, was 1717 kg.

The driver's Head Injury Criteria (HIC) was 513.3, the maximum chest deceleration over three (3) milliseconds was 50.4 g and the left and right femur loads were -2621.0 and -5657.9 Newtons, respectively. Chest deflection for the driver ATD was -21.2 mm. The driver ATD head contacted the airbag and headrest, its chest and abdomen contacted the airbag, and both knees contacted the lower dash knee bolster, with the left and right knees contacting the steering column.

The right front passenger's HIC was 546.4, maximum chest deceleration over three (3) milliseconds was 36.7 g, and the left and right femur loads were -1624.2 and -1237.0 Newtons respectively. Chest deflection for the passenger ATD was -28.4 mm. The passenger ATD head contacted the airbag and headrest, the chest and abdomen contacted the airbag and both knees contacted the dashboard.

Seat belt spoolout, the data channels failed at 25 milliseconds, and the data was not recorded. Shoulder belt stretch was 0.39 mm/cm for the driver ATD and 0.60 mm/cm for the passenger ATD.

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

The test vehicle sustained a maximum static crush of 642 mm at the vehicle centerline. The driver side door opened without the aid of tools. The passenger side door opened without the aid of tools.

1.4 GENERAL COMMENTS

The 1998 Toyota Avalon XL 4-Door Sedan passed the requirements of 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. The dummy and vehicle response data traces are presented in Appendix B. Appendix C Load Cell Barrier information is not applicable to this test. Appendix D contains the instrumentation data channel assignments. Appendix E contains the dummy calibration data and Appendix F contains the owner's manual instructions for the occupant restraint systems.

SECTION 2.

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

TEST MODE: 56.3 km/h New Car Assessment Program (NCAP) Frontal Barrier Impact

CONVERSION FACTORS USED IN THIS REPORT:

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

DATA SHEET NO. 1

CRASH TEST SUMMARY

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

TEST MODE: 56.3 km/h NCAP Frontal Barrier Impact

TEST DATE: December 18, 1997

TIME: 12:01 PM

TEMPERATURE: 10.0° C

TEST WEIGHT: 1717 kg

IMPACT VELOCITY: 55.70 km/h

VEHICLE REBOUND AT CENTER OF EACH WHEEL; REBOUND ANGLE = 0°

Measurements in mm	Left Side	Centerline	Right Side
Vehicle Rebound	960	860	930

VEHICLE STATIC CRUSH

Measurements in mm	Left	Center	Right
Pre-test Measurements	4562	4867	4560
Post-test Measurements	4258	4225	4171
Static Crush	-304	-642	-389

DOOR OPENING AND SEAT TRACK INFORMATION

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

DUMMY INFORMATION

	Driver	Passenger
Dummy Type/No.	50% Male Hybrid III (S/N 35)	50% Male Hybrid III (S/N 34)
Data Channels	44	44
Visible Contact Points		
Head	AIR BAG, HEADREST	AIR BAG, HEADREST
Chest	AIR BAG	AIR BAG
Abdomen	AIR BAG	AIR BAG
Left Knee	DASHBOARD/STEERING COLUMN	DASH BOARD
Right Knee	DASHBOARD/STEERING COLUMN	DASH BOARD

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

TEST VEHICLE INFORMATION			
Manufacturer	TOYOTA MOTOR MANUFACTURING	VIN	4T1BF18B0WU225678
Manufacturing Date	11/97	Delivery Date	12/12/97
Dealer	VALLEY-HI TOYOTA/HONDA	NHTSA NO.	MW5108
Odometer Reading	000027 MI	Fuel Type	UNLEADED
Engine Displacement	3.0 LITER	Cylinders	6
Transmission	AUTOMATIC	Final Drive	FRONT
Engine Placement	TRANSVERSE	Color	SABLE/PEARL
Tire Press./Max. Cap. Front	220 kPa	Cold Tire Press. Front	220 kPa
Tire Press./Max. Cap. Rear	220 kPa	Cold Tire Press. Rear	220 kPa
Recommend Tire Size	P205/65R15 92H	Type of Spare	FULL SIZE P205/65R15 92H
Tire Size on Vehicle	P205/65R15 92H	Manufacturer	BRIDGESTONE
GVWR	2064 Kg	Cargo Capacity	70 Kg
GAWR Front	1209 Kg	GAWR Rear	1209 Kg
Air Conditioning	YES	Power Steering	YES
Power Brakes	YES	AM/FM/Cassette	YES
Disc Brakes (Front)	YES	Disc Brakes (Rear)	YES
Power Windows	YES	Tilt Steering	YES
Anti-lock Brakes (ABS)	YES	Power Seats	YES
Driver Airbag	YES	Passenger Airbag	YES

VEHICLE CAPACITY DATA:

TYPE OF FRONT SEATS Bucket Seats

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

WEIGHT OF VEHICLE AS RECEIVED AT KARCO (with maximum fluids):. 1502 kg

Data Sheet No. 2... (Continued)

VEHICLE CAPACITY WEIGHT (kg):

Vehicle Capacity Weight 410 kg
 Occupant Weight 340 kg
 Rated Cargo/Luggage Weight (RCLW) 70 kg

	FRONT	REAR	TOTAL
Right	453	287	740
Left	485	278	763
Total	938	565	1503
Percent of Total	62.4	37.6	100%

CALCULATION OF TEST TARGET WEIGHT (kg):

Total Delivered Weight 1503 kg
 RCLW 70 kg
 Weight of 2 P572 ATDs 152 kg
 TARGET TEST WEIGHT 1725 kg

TEST WEIGHT OF VEHICLE WITH 2 ATDs AND BALLAST

	FRONT	REAR	TOTAL
Right	492	351	843
Left	506	368	874
Total	998	719	1717
Percent of Total	58.1	41.9	100%

Weight of Ballast secured in cargo area: 100 kg

Includes cameras, instrumentation, brake
 abort and bags containing lead shot secured
 in the right and left rear fender wells.

Vehicle Components Removed For Weight Reduction:

Side mirrors, jack, tools, rear seat assembly,
 spare tire AND PANELING.

TEST VEHICLE ATTITUDE (mm)

ATTITUDE	LF	RF	LR	RR
As Delivered	710	714	719	727
As Tested	670	670	680	670

Vehicle Wheelbase: 2718 mm

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 70.0 liters

Usable Capacity Figure Furnished by COTR = 70.0 liters

Test Volume Range (92 to 94% of Usable Capacity) = 64.4 to 65.8 liters

ACTUAL TEST VOLUME = 65.0 liters (With entire fuel system filled)

Test Fluid Type = Stoddard Solvent

Specific Gravity = 0.764

Kinematic Viscosity = as per ASTM Standard D484-71

Color = Red

Type of Fuel Pump = Electric X Mechanical

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

DETAILS OF FUEL SYSTEM: Fuel pump is activated when ignition key is turned to the "ON" (operational)
position and engine is running.

DATA SHEET NO. 3

POST IMPACT DATA

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

TEST MODE: 56.3 km/h New Car Assessment Program (NCAP) Frontal Barrier Impact

TEST DATE: December 18, 1997

TIME: 12:01 PM

TEMPERATURE: 10.0 ° C

REQUIRED IMPACT VELOCITY RANGE: 55.51 km/h to 57.11 km/h

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

Trap No. 1 = 55.70 km/h Trap No. 2 = 55.72 km/h

Distance from vehicle to barrier - -

A. entering trap = 1524 mm

B. leaving trap = 305 mm

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

Vehicle Length	Left	Center	Right
Pre-test Measurements (mm)	4562	4867	4560
Post-test Measurements (mm)	4258	4225	4171
Static Crush (mm)	-304	-642	-389
Average	-445		

VEHICLE REBOUND: (from rigid barrier with rotational movement)

VEHICLE REBOUND AT CENTER OF EACH WHEEL: REBOUND ANGLE = 0°

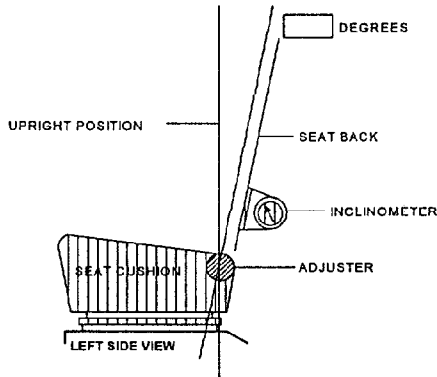
Measurements in mm	Left Side	Centerline	Right Side
Vehicle Rebound	960	860	930

DATA SHEET NO. 4

TEST VEHICLE INFORMATION

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN NHTSA NO. MW5108

1. NOMINAL DESIGN RIDING POSITION -



FRONT SEAT ASSEMBLY

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

Measurement Instructions: A special application tool with pointed probes was inserted through the fabric to make contact with the rigid portion of the lower seat frame assembly approximately 13 inches above the pivot point of the seat back. The inclinometer was placed against the flat surface of the tool and the seat back angle was measured directly from the dial face. For reference purposes the first detent from the front of the seat was identified as number "1".

Seat back angle for driver's seat = 21°

Measurement Instructions: A special application tool with pointed probes was inserted through the fabric to make contact with the rigid portion of the lower seat frame assembly approximately 13 inches above the pivot point of the seat back. The inclinometer was placed against the flat surface of the tool and the seat back angle was measured directly from the dial face. For reference purposes the first detent from the front of the seat was identified as number "1".

Seat back angle for passenger's seat = 21°

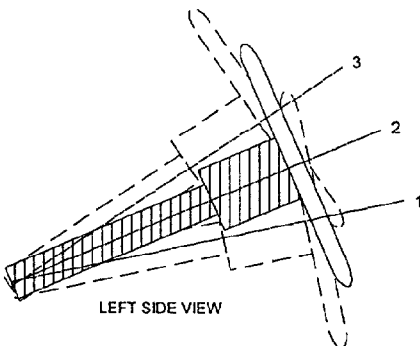
2. SEAT FORE & AFT POSITIONS -

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

Positioning of the driver's seat: 16 seating positions, seat set at detent location no. 9

Positioning of the passenger's seat (if applicable): 16 seating positions, set at detent no. 9

3. STEERING COLUMN ADJUSTMENTS:



STEERING COLUMN ASSEMBLY

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

Operational Instructions:

Position No. 1 is at 16°

Position No. 2 is at 25°

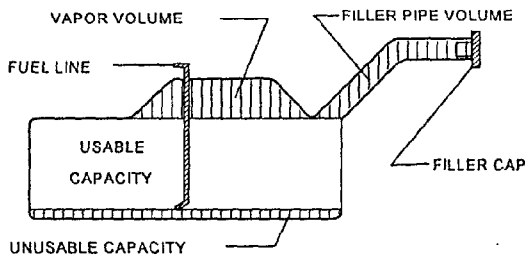
Position No. 3 is at 34°

4. SEAT BELT UPPER ANCHORAGE:

Belt adjuster set to mid-position.

DATA SHEET NO. 4 (continued)

5. FUEL TANK CAPACITY DATA



5.1 A. "Usable Capacity" of standard equipment fuel tank = 70.0 liters.

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

C. "Usable Capacity" of vehicle(s) used for certification testing to requirements of FMVSS 301 = 64.4 to 65.8 liters.

VEHICLE FUEL TANK ASSEMBLY

Operational Instructions:

5.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 65.0 liters

5.3 Is vehicle equipped with electric fuel pump?

Yes X No

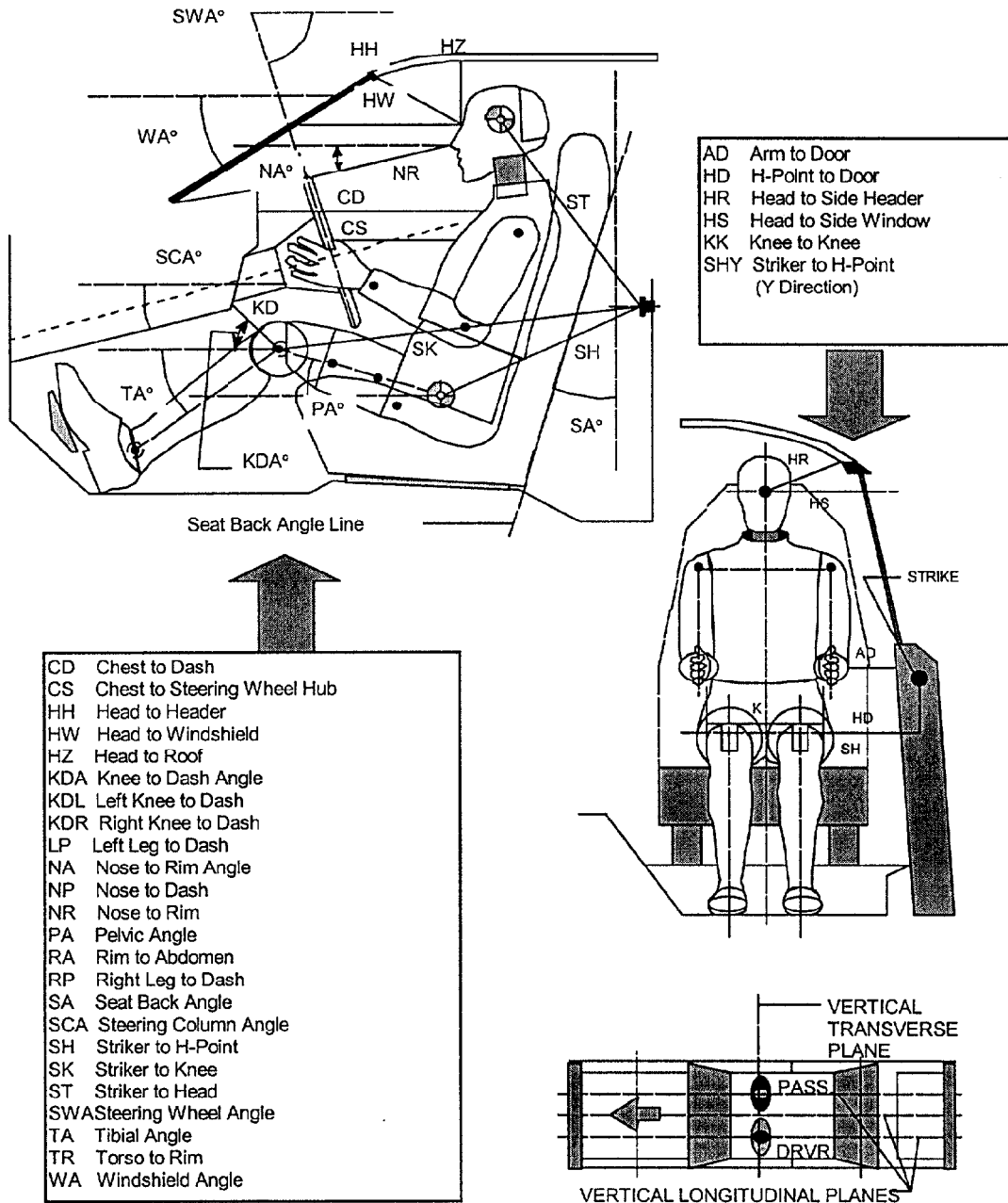
If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

Fuel pump is activated when ignition key is turned to the "ON" (operational) position and the engine is running.

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



DATA SHEET NO. 5...(continued)

DUMMY POSITIONING IN VEHICLE

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN NHTSA NO. MW5108

FRONT SEAT MEASUREMENT TABLE

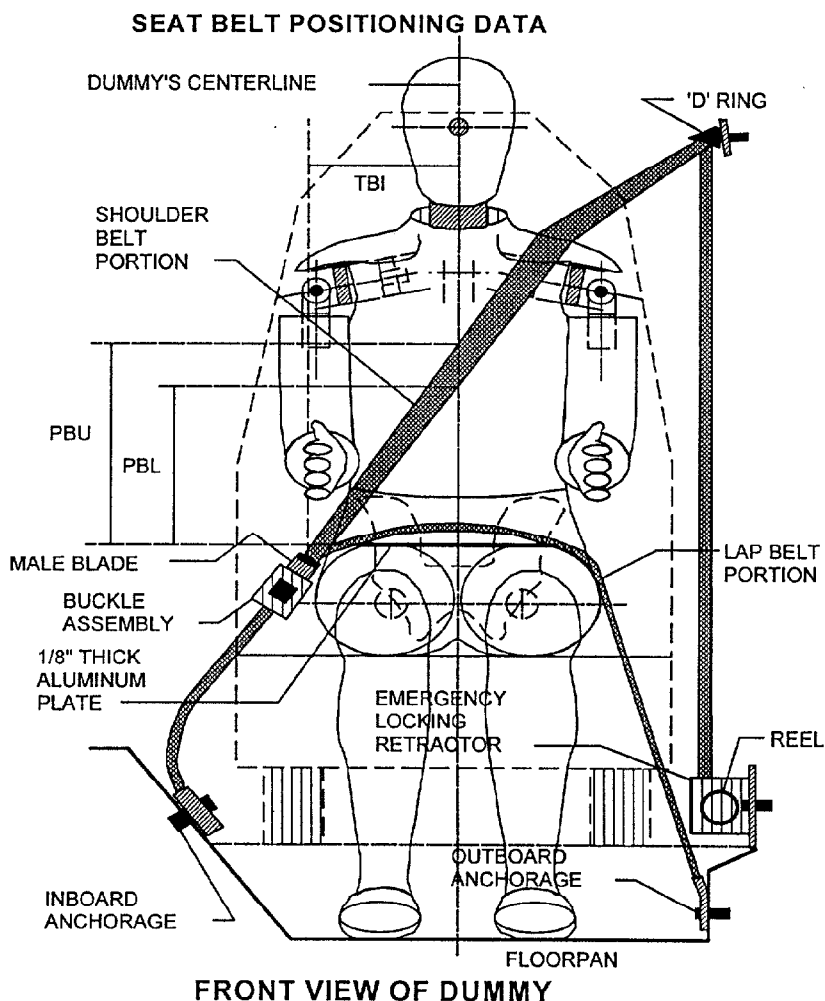
	DRIVER (Serial No. <u>35</u>)		PASS. (Serial No. <u>34</u>)	
	DISTANCE (mm)	ANGLE (°)	DISTANCE (mm)	ANGLE (°)
WA°		30		
SWA°		63		
SCA°		30		
SA°		21		21
HZ	220	90	190	90
HH	345	0	300	0
HW	500	0	480	0
HR	253		225	
NR	370	10		
CD	510		510	
CS	250	0		
RA	170	0		
KDL	130	20	160	
KDR	100		160	35
PA°		25		25
TA°		45		40
KK	275		250	
ST	470	20	515	25
SH	310	35	260	40
SHY	330		300	
HS	370		270	
HD	156		169	
AD	100		55	
AA	N/A		N/A	

DATA SHEET NO. 6

SEAT BELT POSITIONING DATA

SEATING POSITION	DRIVER	PASSENGER
TCI -- Dummy centerline to shoulder bolt	SEE NOTE	SEE NOTE
PBU--Top surface of aluminum plate to belt upper edge	SEE NOTE	SEE NOTE
PBL--Top surface of aluminum plate to belt lower edge	SEE NOTE	SEE NOTE
Lap Belt tension	10 Newtons	10 Newtons
Shoulder Belt tension	Retractor	Retractor

NOTE: Per manufacturers specifications, both driver and passenger belts were positioned 150mm from under the chin to belt center on the dummies chest.



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

VEHICLE YR/MAKE/MODEL/BODY: 1988 TOYOTA AVALON XL 4 DOOR SEDAN

NHTSA No.: MW5108

TEST PROGRAM: 1988 NHTSA 35 MPH NCAP

TEST DATE: 12/18/97

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.)	1612	-551	419	G's	2.7	127.0	-32.8	40.3
2	Right Rear X-Member (Pri.)	1644	610	410	G's	2.3	123.4	-32.9	40.5
3	Engine Top	4190	60	780	G's	47.3	47.2	-167.0	32.5
4	Engine Bottom	4050	340	172	G's	7.6	45.0	-95.2	30.1
5	Left Brake Caliper	3990	-635	235	G's	41.8	61.9	-121.0	44.1
6	Right Brake Caliper	3990	635	235	G's	61.5	69.4	-97.4	54.4
7	Instrument Panel	3152	0	975	G's	5.7	103.0	-62.3	51.5
8	Left Rear X-Member (Rednt.)	1612	-604	419	G's	2.7	126.9	-33.4	39.7

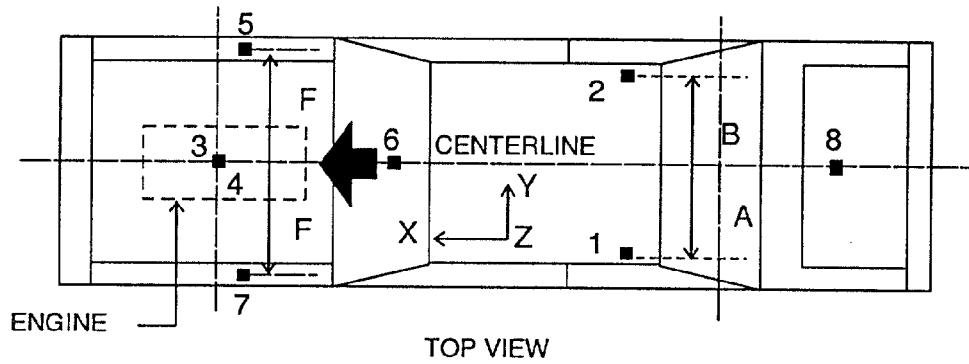
Reference Points

X - From Rear Surface of Vehicle

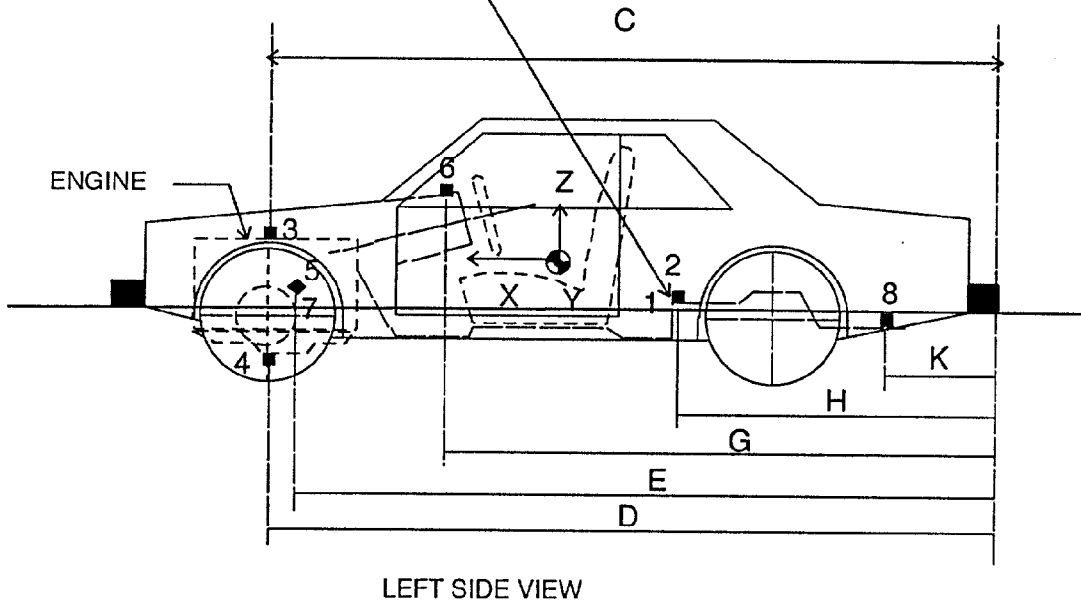
Y - Vehicle Centerline

Z - Ground Plane

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



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

VEHICLE YR/MAKE/MODEL/BODY: 1998 TOYOTA AVALON XL 4 DOOR SEDAN

NHTSA No.: MW5108

TEST PROGRAM: 1988 NHTSA 35 MPH NCAP

TEST DATE: 12/18/97

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	10.2	210.2	-59.2	72.4	21.1	201.5	-58.1	83.2
Head CG	Y	G's	3.4	45.9	-6.2	72.8	8.8	91.5	-2.6	75.7
Head CG	Z	G's	18.5	64.8	-16.3	87.8	3.7	118.2	-27.2	74.6
Head CG Resultant	N/A	G's	60.5	72.4			62.6	82.2		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.1	168.8	-51.4	67.9	3.6	238.4	-37.8	73.8
Chest CG	Y	G's	3.6	64.5	-5.5	56.8	2.2	38.0	-6.8	88.4
Chest CG	Z	G's	10.0	62.1	-11.6	94.6	7.4	112.1	-7.9	81.1
Chest CG Resultant	N/A	G's	51.8	67.8			38.2	73.7		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	125.7	39.1	-2621.0	46.8	720.2	47.7	-1624.2	58.5
Right Femur	Z	Newtons	435.1	83.8	-5657.9	60.0	760.1	46.9	-1237.0	65.3

SEAT BELT PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt	N/A	Newtons	10507.8	66.2	0.4	1.7	10823.0	61.1	1.9	0.0
Shoulder Belt	N/A	Newtons	8647.6	67.1	-16.6	209.9	8476.2	79.9	-11.9	7.8

HEAD INJURY CRITERIA (HIC)

Locat	Driver				Passenger			
	HIC	Avg G's	T ¹	T ²	HIC	Avg G's	T ¹	T ²
Head CG Primary	513.3	38.1	66.0	99.9	546.4	40.3	52.8	88.7

CHEST CLIP (3MSEC)

Loca	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	50.4	66.3	69.3	36.7	59.8	62.8

DATA SHEET NO. 8...(continued)

VEHICLE YR/MAKE/MODEL/BODY: 1998 TOYOTA AVALON XL 4 DOOR SEDAN

NHTSA No.: MW5108

TEST PROGRAM: 1988 NHTSA 35 MPH NCAP

TEST DATE: 12/18/97

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	2.0	94.2	-55.8	60.4	3.6	126.2	-48.5	65.1
Pelvis	Y	G's	3.5	72.1	-22.4	55.3	4.5	33.8	-8.2	72.3
Pelvis	Z	G's	3.5	239.3	-20.7	70.8	3.1	187.7	-21.3	65.1

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	222.3	149.1	-649.9	75.9	427.2	55.0	-174.0	87.8
Neck Force	Y	Newtons	139.4	72.0	-105.1	104.5	115.2	79.1	-148.1	137.9
Neck Force	Z	Newtons	2034.7	65.1	-291.7	97.7	1133.3	75.1	-242.6	252.1
Neck Moment	X	Joules	15.2	82.3	-4.7	156.8	11.1	79.2	-3.6	62.9
Neck Moment	Y	Joules	36.6	64.8	-14.0	232.3	20.6	134.7	-18.1	54.6
Neck Moment	Z	Joules	3.6	135.4	-5.1	84.6	10.3	102.5	-4.0	157.9

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	108.8	55.4	-20.0	77.9	87.2	51.1	-21.9	92.7
Left Foot Aft	Z	G's	29.3	21.2	-73.8	54.7	13.7	79.0	-56.8	34.9
Left Foot Fore	Z	G's	14.8	67.3	-126.1	54.1	20.0	76.3	-71.8	53.8
Right Foot Aft	X	G's	122.7	45.3	-16.7	54.9	70.3	55.5	-12.4	78.6
Right Foot Aft	Z	G's	16.1	69.2	-77.9	36.9	8.1	72.3	-45.9	32.4
Right Foot Fore	Z	G's	90.2	43.6	-112.6	47.7	13.9	50.5	-72.4	45.1

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Lower Force	X	Newtons	60.7	175.3	-1179.8	58.2	105.6	131.9	-801.7	53.7
Left Lower Force	Z	Newtons	117.5	173.3	-2269.8	58.9	103.0	135.1	-4043.6	35.4
Left Lower Moment	Y	Joules	50.7	54.6	-42.2	79.0	41.9	53.2	-75.2	91.5
Left Upper Moment	X	Joules	57.3	61.7	-16.7	19.7	11.7	132.4	-35.7	37.1
Left Upper Moment	Y	Joules	146.3	58.6	-14.4	132.1	129.2	56.6	-20.8	127.9
Right Lower Force	X	Newtons	69.0	187.8	-1150.9	48.0	139.5	117.3	-641.4	40.2
Right Lower Force	Z	Newtons	140.1	172.5	-4796.4	47.7	129.9	141.5	-3055.1	35.7
Right Lower Moment	Y	Joules	34.6	43.1	-27.3	81.1	43.1	56.9	-72.9	84.3
Right Upper Moment	X	Joules	7.1	45.1	-68.5	67.2	12.2	83.3	-34.7	65.0
Right Upper Moment	Y	Joules	176.5	61.3	-12.4	213.9	85.3	61.8	-15.1	143.9

DATA SHEET NO. 8...(continued)

VEHICLE YR/MAKE/MODEL/BODY: 1998 TOYOTA AVALON XL 4 DOOR SEDAN

NHTSA No.: MW5108

TEST PROGRAM: 1988 NHTSA 35 MPH NCAP

TEST DATE: 12/18/97

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.0	13.0	-21.2	69.7	0.2	3.9	-28.4	82.8

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	13.0	211.8	-61.4	71.0	18.5	201.4	-58.0	82.8
Head CG	Y	G's	3.5	100.2	-4.3	75.9	7.7	92.5	-2.1	76.6
Head CG	Z	G's	22.7	64.7	-19.3	87.4	3.7	116.8	-25.6	73.8
Head CG Resultant	N/A	G's	63.2	71.0			61.7	81.9		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	5.4	169.4	-51.7	76.2	4.0	238.1	-37.1	73.7
Chest CG	Y	G's	7.1	64.3	-5.5	56.8	3.5	37.5	-6.3	88.4
Chest CG	Z	G's	6.5	59.3	-10.4	94.6	6.1	113.8	-8.6	81.2
Chest CG Resultant	N/A	G's	51.9	67.7			37.3	73.7		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G's	T ¹	T ²	HIC	Avg G's	T ¹	T ²
Head CG Redundant	577.5	40.0	65.6	100.0	522.8	40.7	53.4	89.2

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	50.3	66.2	69.2	36.2	59.5	62.5

DATA SHEET NO. 9

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

BELT LENGTH DATA (mm)	DRIVER	PASSENGER
Total belt length for continuous webbing systems.	3080	3080
Retractor reel to 'D' ring	620	620
Shoulder belt length as measured on Part 572 Dummy	880	880
Lap belt length as measured on Part 572 Dummy	800	800
Remainder of belt on reel	780	780

SHOULDER BELT SPOOL-OFF DATA (mm)	DRIVER	PASSENGER
As determined mechanically	78	Broke
As determined electronically	1.4*	8.0*

BELT STRETCH DATA (mm/cm)	DRIVER	PASSENGER
Measured electronically between shoulder belt load cell and the "D" ring	0.64	0.54
Measured mechanically	.02	.02

* Check plots for channel failures.

DATA SHEET NO. 10

SUMMARY OF FMVSS 212 DATA

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

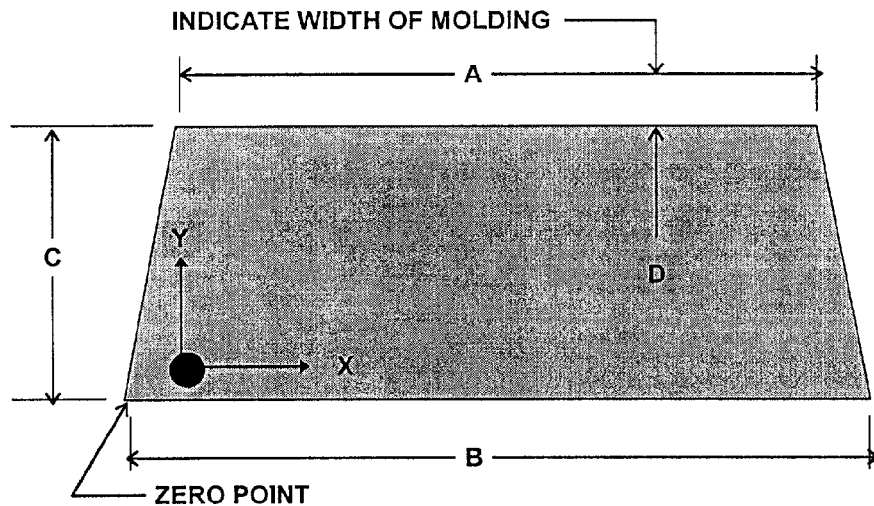
Details of windshield mounting (method of retention, type of trim, etc.):

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

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

WINDSHIELD PERIPHERY MEASUREMENTS (mm)			
	PRETEST	POST TEST	PERCENT RETENTION
Right Side	2140	2140	100%
Left Side	2140	2140	100%
Total	4280	4280	100%

Indicate area of retention failure.



FRONT VIEW OF WINDSHIELD

Width of molding = Top 10 mm , Sides 25 mm, Bottom 10 mm.

Temperature of windshield molding during test = 21.11 °C

DATA SHEET NO. 11

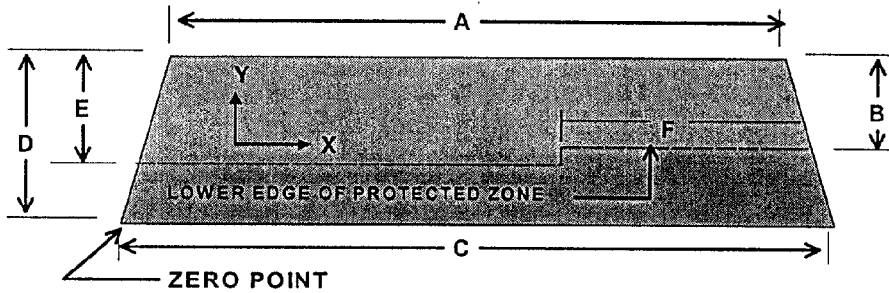
WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

SKETCH OF FRONT VIEW OF WINDSHIELD:

Provide all dimensions necessary to reproduce the protected area.



	DIMENSION mm
A	1260
B	380
C	1520
D	750
E	435
F	920

FRONT VIEW OF WINDSHIELD

AREA OF PROTECTED ZONE FAILURES:

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

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

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

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

DATA SHEET NO. 12

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

TEST MODE: 56.3 km/h New Car Assessment Program (NCAP) Frontal Barrier Impact

TEST DATE: December 18, 1997

TIME: 12:01 PM

TEMPERATURE 10.0° C

STODDARD SOLVENT SPILLAGE MEASUREMENT:

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

DATA SHEET NO. 13

FMVSS 301 STATIC ROLLOVER DATA SHEET

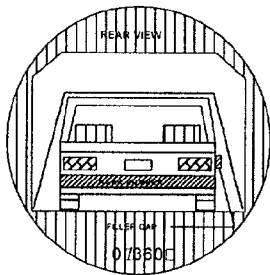
TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

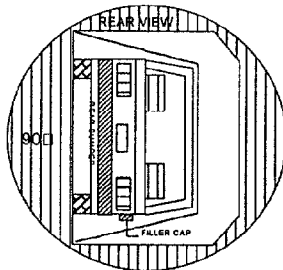
TEST MODE: 56.3 km/h New Car Assessment Program (NCAP) Frontal Barrier Impact

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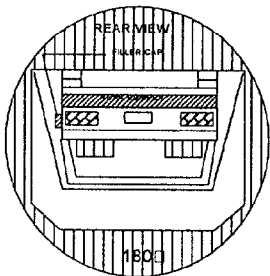
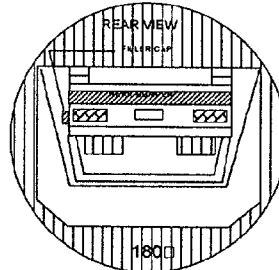
TEST DATE: December 18, 1997 TIME: 12:01 PM TEMPERATURE: 10.0C



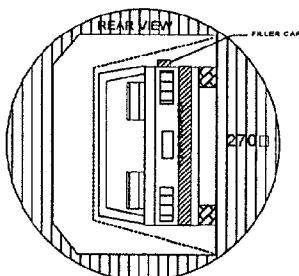
0° TO 90°



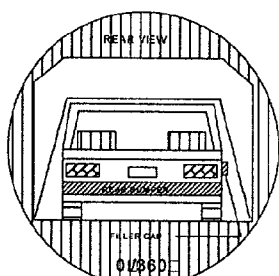
90° TO 180°



180° TO 270°



270° TO 0°



1. The specified fixture rollover rate for each 90° of rotation = 1 to 3 minutes.

2. The position hold time at each position = 5 minutes (minimum)

TEST PHASE	ROTATION TIME (sec.)	POSITION HOLD TIME (sec)	STODDARD SPILLAGE (oz.)
0° TO 90°	83	303	0
90° TO 180°	84	386	0
180° TO 270°	82	305	0
270° TO 360°	82	304	0

3. Provide Details of Stoddard Solvent Spillage Locations--

No solvent leakage occurred during rollover tests.

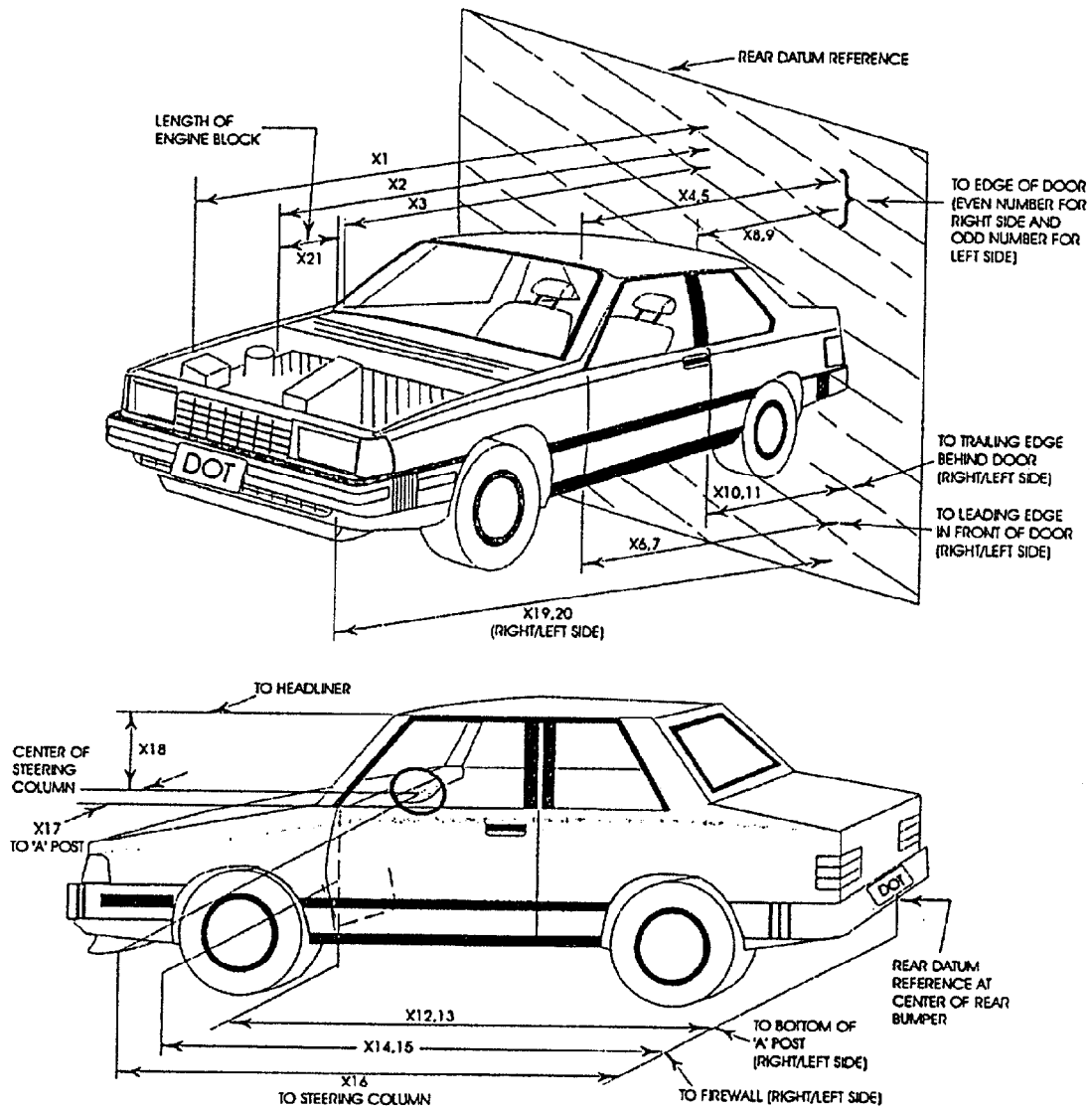
DATA SHEET NO. 14

VEHICLE MEASUREMENTS

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

NO.	MEASUREMENT DESCRIPTION	DIMENSIONS IN MM		
		PRE-TEST	POST-TEST	DIFFERENCE
1	Total length of vehicle at centerline	4867	4225	-642
2	Rear surface of vehicle (RSOV) to front of engine	4290	4115	-175
3	RSOV to firewall centerline	3670	3540	-130
4	RSOV to leading edge of right door	3325	3332	+7
5	RSOV to leading edge of left door	3317	3330	+13
6	RSOV to lower leading edge of right door	3305	3301	-4
7	RSOV to lower leading edge of left door	3309	3309	0
8	RSOV to upper trailing edge of right door	2285	2293	+8
9	RSOV to upper trailing edge of left door	2280	2295	+15
10	RSOV to lower trailing edge of right door	2284	2280	-4
11	RSOV to lower trailing edge of left door	2280	2280	0
12	RSOV to bottom of right 'A' pillar	3327	3317	-10
13	RSOV to bottom of left 'A' pillar	3347	3306	-41
14	RSOV to firewall on right side	3580	3455	-125
15	RSOV to firewall of left side	3585	3564	-21
16	RSOV to steering column	2885	2880	-5
17	Center of steering column to left 'A' pillar	360	470	+110
18	Center of steering column to headlining	445	374	-71
19	RSOV to right side of front bumper	4560	4171	-389
20	RSOV to left side of front bumper	4562	4258	-304
21	Length of engine block	365	365	0
22	RSOV to right side of dash panel	3180	3208	+28
23	RSOV to center of dash panel	3160	3118	-42
24	RSOV to left side of dash panel	3180	3203	+23



DATA SHEET NO. 15

CAMERA LOCATIONS

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

CAMERA NO.	VIEW	CAMERA POSITIONS (mm) *			ANGLE (Deg.)	FILM PLANE TO HEAD TARGET (mm)	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Right Side View-Real Time	2083	8331	914	0	7620	Zoom	24
2A	Left Side View No. 1	1321	-8382	864	0	7798	13	350
2B	Left Side View No. 2	1499	-9855	1270	1	9271	25	970
3	Left Side View No. 3	3480	-2489	1930	1	2108	50	950
4	Left Side View No. 4	3048	2565	1955	20	2315	19	1000
5	Left Side View No. 5	1905	-8306	2515	15	7747	25	1010
6	Left Side View No. 6	1880	-8382	1092	11	7620	25	980
7	Right Side View No. 1	1295	10,160	1168	1	9296	13	1100
8	Right Side View No. 2	4851	12,598	2794	1	11,887	50	1150
9	Right Side View No. 3	6832	11,633	3175	8	12,310	80	900
10	Right Side View No. 4	2997	10,871	1066	1	10,546	50	1100
11	Overhead Windshield	914	0	5715	95	N/A	13	1100
12	Front View No. 1 Driver	-356	356	2540	41	3022	19	1100
13	Front View No. 2 Passenger	-356	508	2540	45	3022	19	930
14	Pit Camera Engine View	864	0	-1600	2	N/A	13	860
15	Pit Camera Fuel Tank View	4953	0	-1778	44	N/A	19	780
16	Driver Side Onboard	3022	279	1117	10	1016	13	420
17	Passenger Side Onboard	2946	279	1168	10	1016	13	420

* X - film plane to barrier face Y - film plane to monorail centerline Z - film plane to ground

DATA SHEET NO. 16

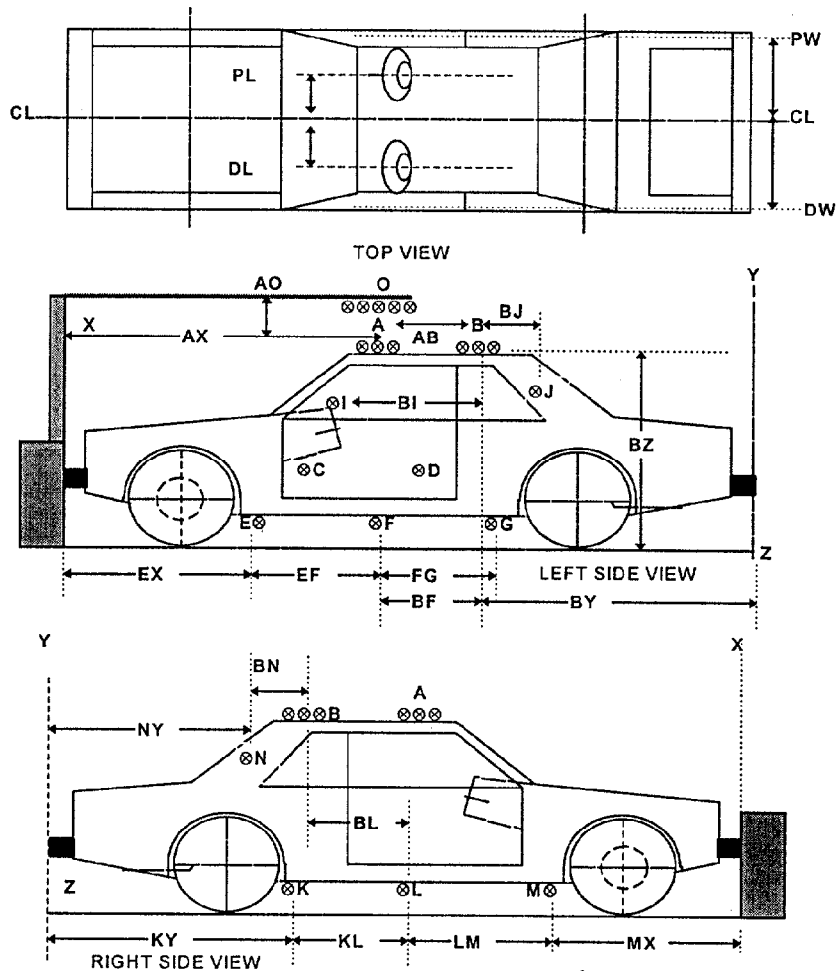
REFERENCE PHOTOGRAPH TARGETS

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

ITEM	DESCRIPTION	VALUE	ITEM	DESCRIPTION	VALUE
AX	TARGET A TO BARRIER	2440	NY	TARGET N TO REAR BUMPER	1220
AB	TARGET A TO TARGET B	610	BN	TARGET B TO TARGET N	630
AO	VERTICAL DISTANCE A TO O	153	KY	TARGET K TO REAR BUMPER	1600
BJ	TARGET B TO TARGET J	600	KL	TARGET K TO TARGET L	883
BI	TARGET B TO STEERING COLUMN	1280	BL	TARGET B TO TARGET L	750
BZ	TARGET B TO GROUND LEVEL	1504	LM	TARGET L TO TARGET M	874
EX	TARGET E TO BARRIER	1490	MX	TARGET M TO BARRIER	1550
EF	TARGET E TO TARGET F	870	CL/PL	VEHICLE CENTERLINE TO PASSENGER	370
FG	TARGET F TO TARGET G	830	CL/PW	VEHICLE CENTERLINE TO RIGHT SILL	755
BF	TARGET B TO TARGET F	750	CL/DL	VEHICLE CENTERLINE TO DRIVER	370
BY	TARGET B TO REAR BUMPER	1820	CL/DW	VEHICLE CENTERLINE TO LEFT SILL	755

Distances in mm



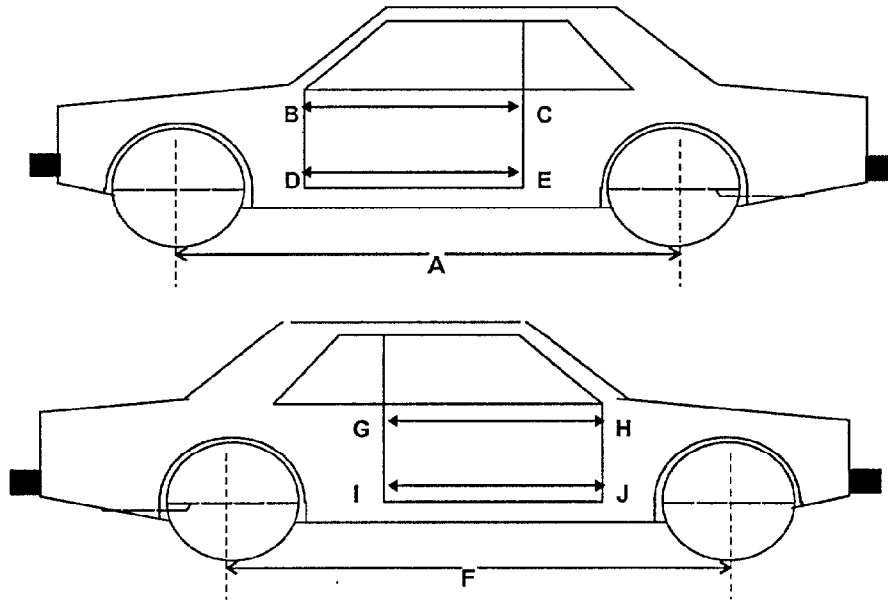
DATA SHEET NO. 17

VEHICLE INTRUSION MEASUREMENTS

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

DOOR OPENING WIDTH



UNITS (mm)	LEFT SIDE		RIGHT SIDE	
MEASUREMENT	BC	DE	GH	IJ
PRE-TEST	1035	1029	1039	1021
POST-TEST	1037	1029	1040	1021
DIFFERENCE	+2	0	+1	0

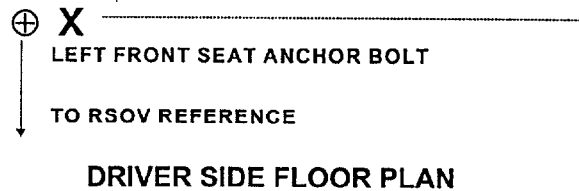
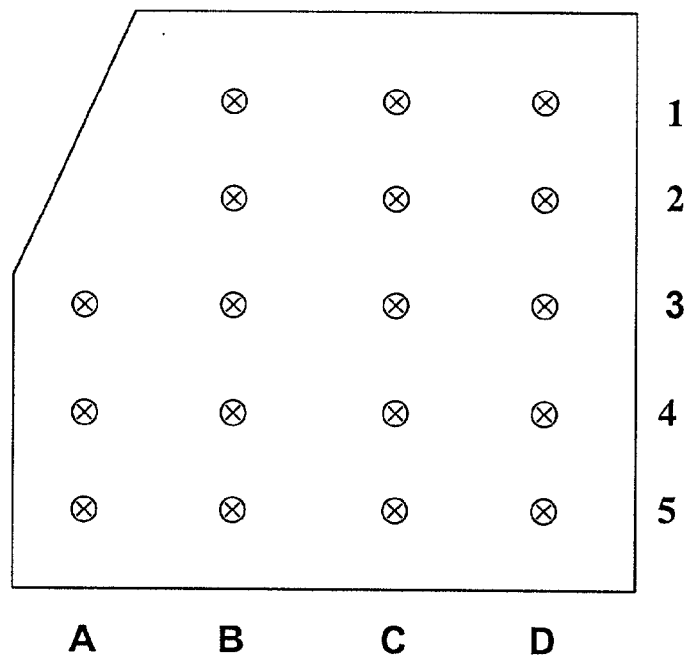
VEHICLE WHEELBASE CHANGE

UNITS (mm)	A = LEFT SIDE WHEELBASE	F = RIGHT SIDE WHEELBASE
PRE-TEST	2718	2718
POST-TEST	2635	2636
DIFFERENCE	-83	-82

Data Sheet No. 17(Continued)

FLOOR PAN INTRUSION (Distances in mm)

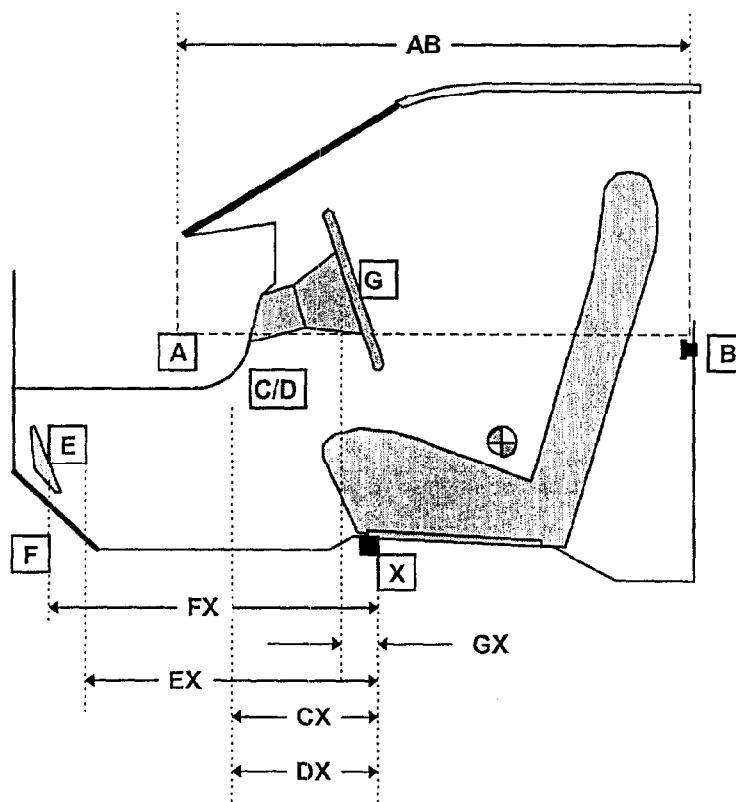
TARGET COLUMN	A		B		C		D	
TARGET ROW	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST
1	N/A	N/A	735	621	735	622	735	626
2	N/A	N/A	600	534	600	515	600	528
3	450	450	450	450	450	450	450	450
4	300	300	300	300	300	300	300	300
5	150	150	150	150	150	150	150	150
REF. POINT	RSOV TO ANCHOR BOLT (PRE-TEST)		2820		RSOV TO ANCHOR BOLT (POST-TEST)		2838	



DRIVER COMPARTMENT INTRUSION (Distances in mm)

REF.	DESCRIPTION	PRE-TEST	POST-TEST
AB	DOOR OPENING (INSIDE WINDOW JAM)	981	976
CX	LOWER LEFT KNEE BOLSTER TO X	330	316
DX	LOWER RIGHT KNEE BOLSTER TO X	330	330
EX	BRAKE PEDAL TO X	570	536
FX	FOOT REST TO X	605	566
GX	STEERING COLUMN HUB (CENTER) TO X	40	70

X = LEFT FRONT SEAT ANCHOR BOLT

**DRIVER COMPARTMENT**

DATA SHEET NO. 18

BARRIER ORIENTATION

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

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

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

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

(NO OFFSET REQUIRED FOR THIS TEST)

DATA SHEET NO. 19

ACCIDENT INVESTIGATION DIVISION DATA

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN NHTSA NO. MW5108

VIN: 4T1BF18B0WU225678 TEST DATE: 12/18/97

WHEELBASE: 2718 mm TEST WEIGHT: 1217 kg

VEHICLE SIZE CATEGORY: 4-DOOR PASSENGER SEDAN

ACCELEROMETER DATA:

LOCATION: Left and right rear floor pans

CALIBRATION PROCEDURE: 6 months/ drop test

LINEARITY: Good INTEGRATION ALGORITHM: NHTSA Standard

VEHICLE IMPACT SPEED: 55.70 km/h TIME OF SEPARATION: 74.60 msec

VELOCITY CHANGE: 64.78 km/h

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

IMPACT MODE: Full Frontal

CRUSH DEPTH DIMENSIONS:

C1 = 560 mm

C2 = 630 mm

C3 = 638 mm

C4 = 640 mm

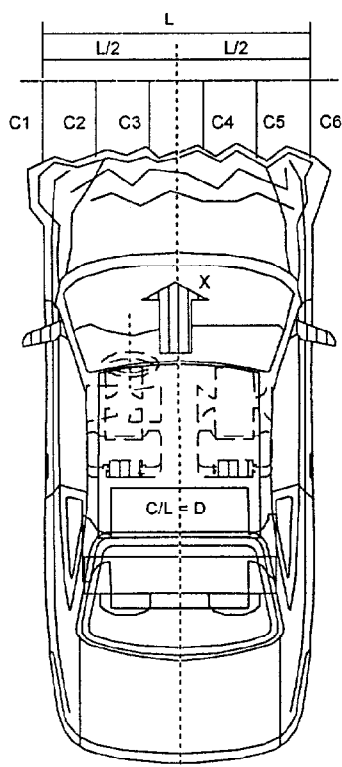
C5 = 621 mm

C6 = 492 mm

MIDPOINT OF DAMAGE: D = vehicle centerline 750 MM

LENGTH OF DAMAGE REGION:

L = 1500 mm



DATA SHEET NO. 20

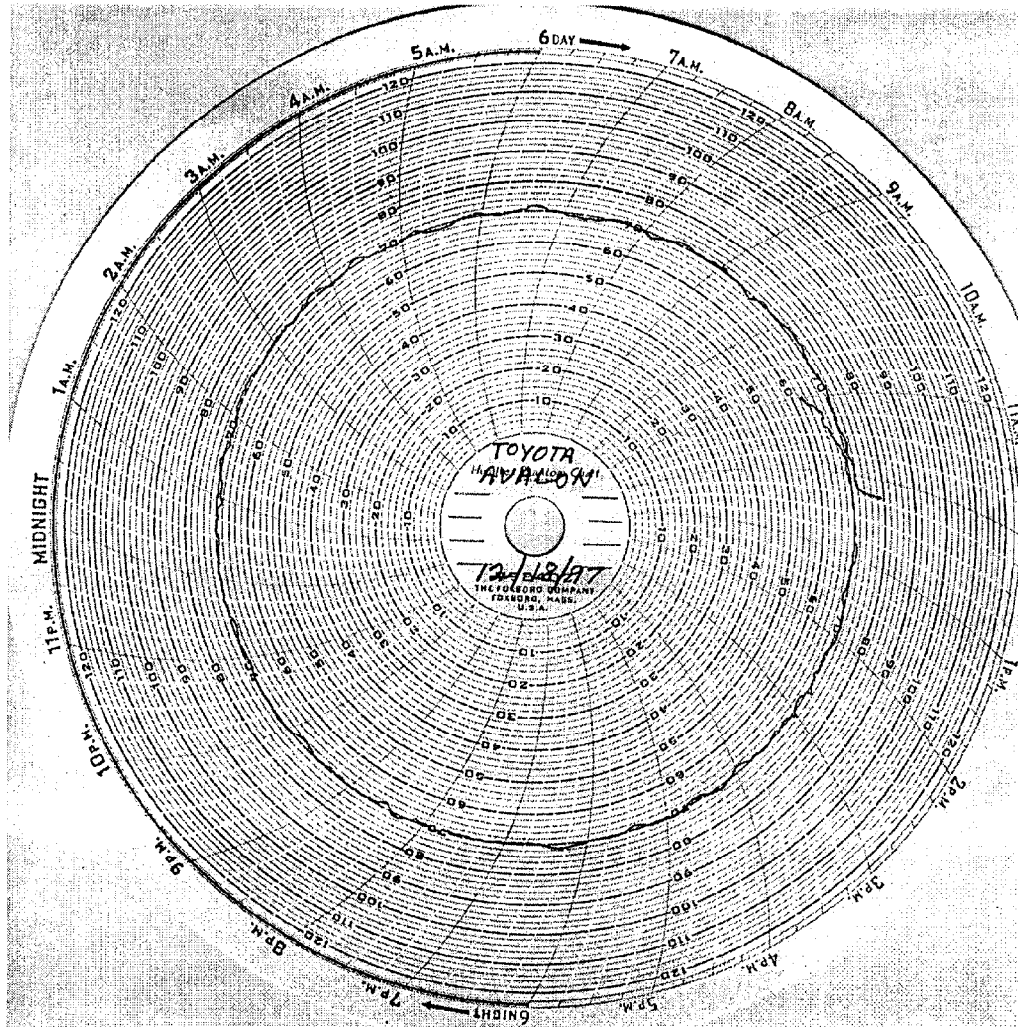
DUMMY/VEHICLE TEMPERATURE STABILIZATION

TEST VEHICLE: 1998 TOYOTA AVALON XL 4-DOOR SEDAN

NHTSA NO. MW5108

VIN: 4T1BF18B0WU225678

TEST DATE: 12/18/97



APPENDIX A

PHOTOGRAPHS

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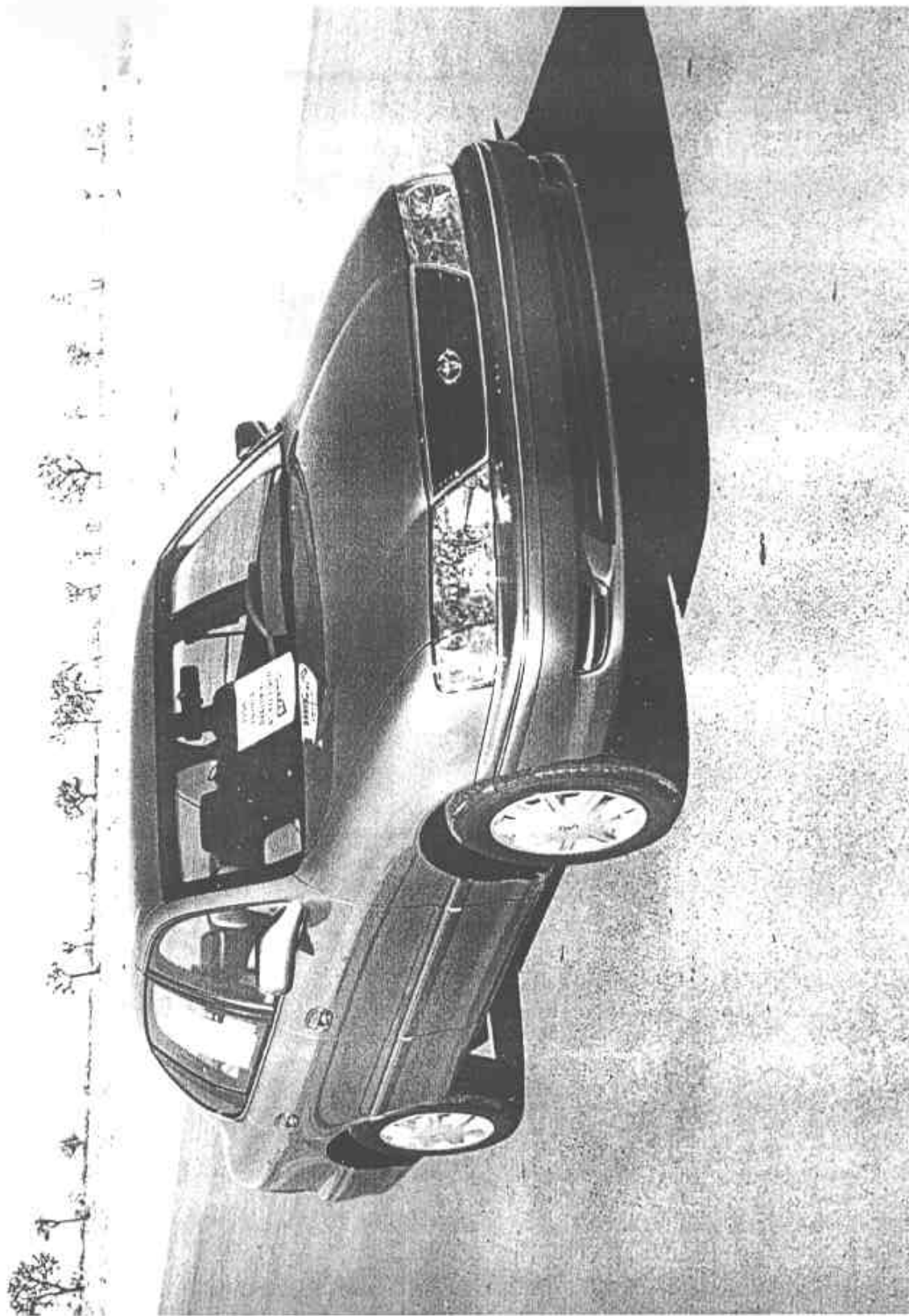


FIGURE A-1. RIGHT FRONT AS RECEIVED

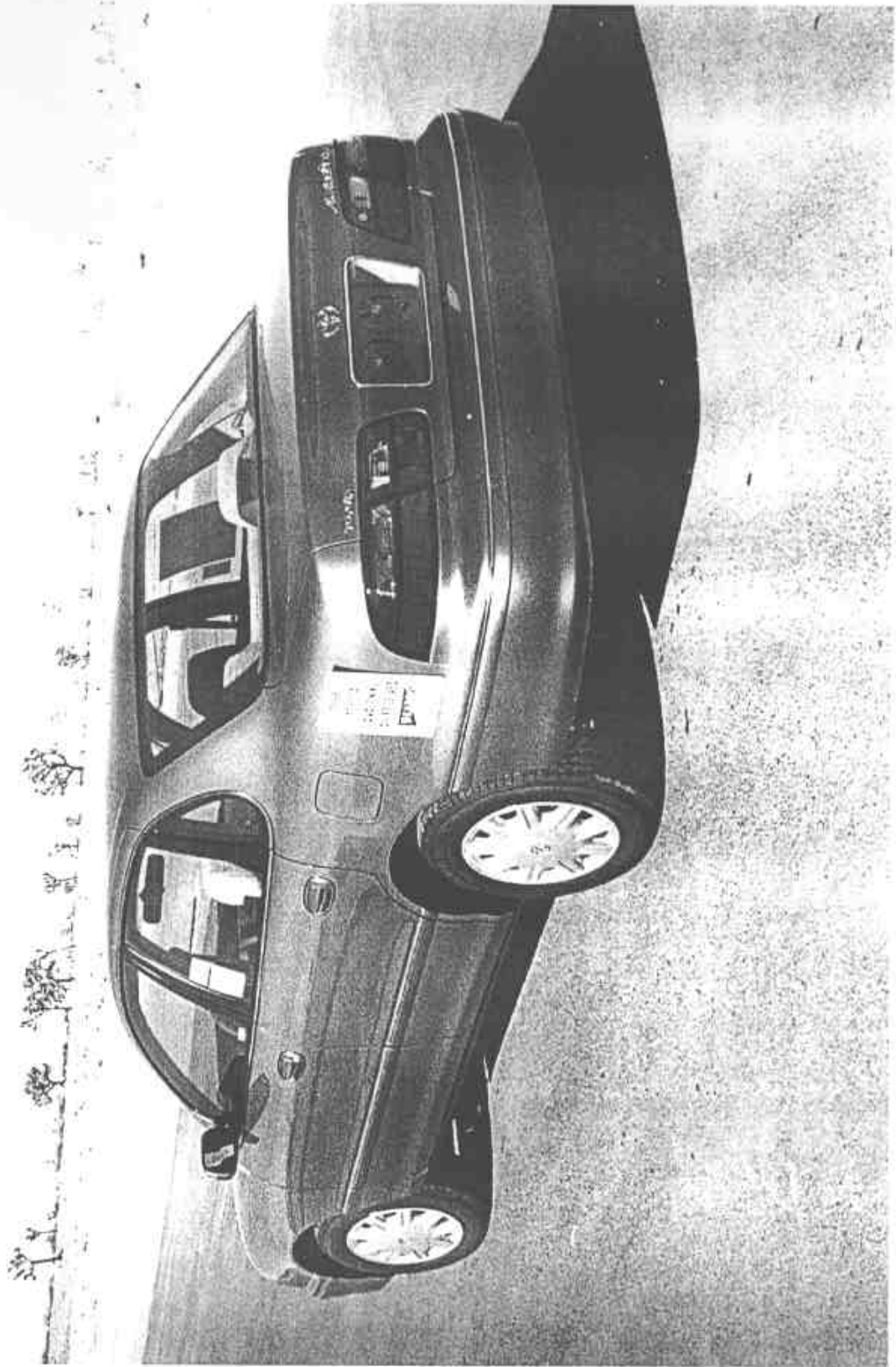


FIGURE A-2. LEFT REAR AS RECEIVED

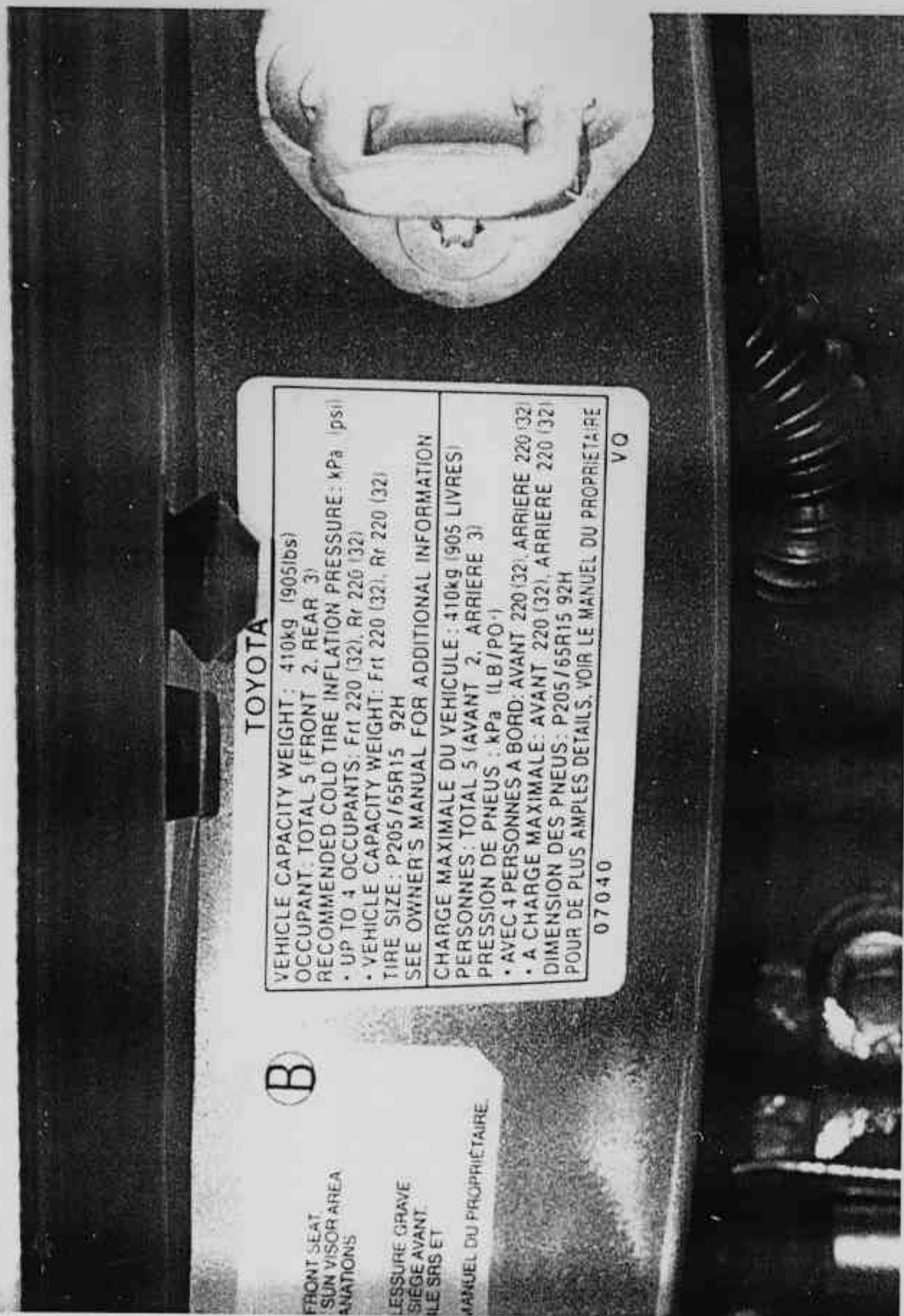


FIGURE A-4. VEHICLE TIRE PLACARD

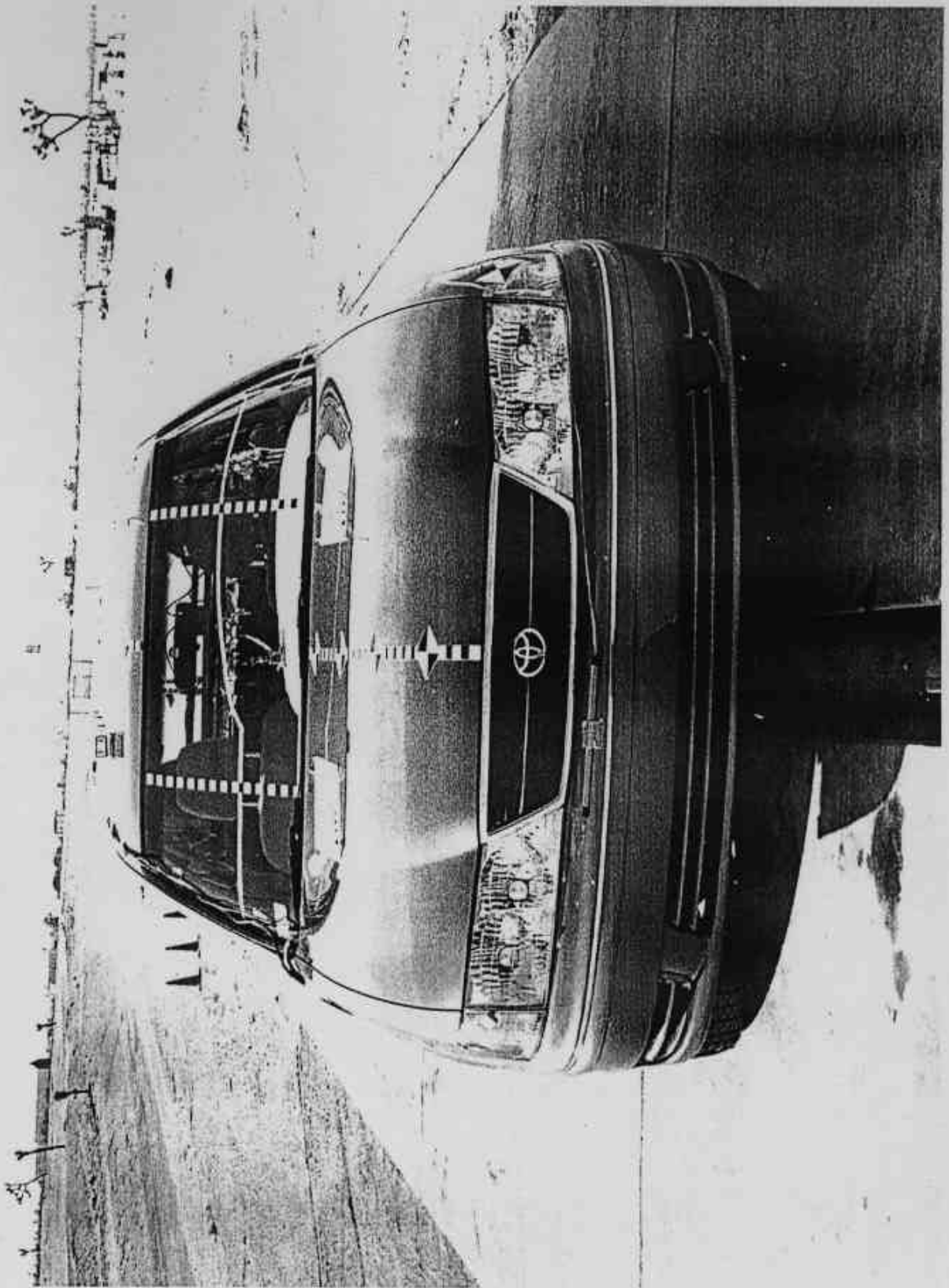


FIGURE A-5. PRETEST FRONT VIEW

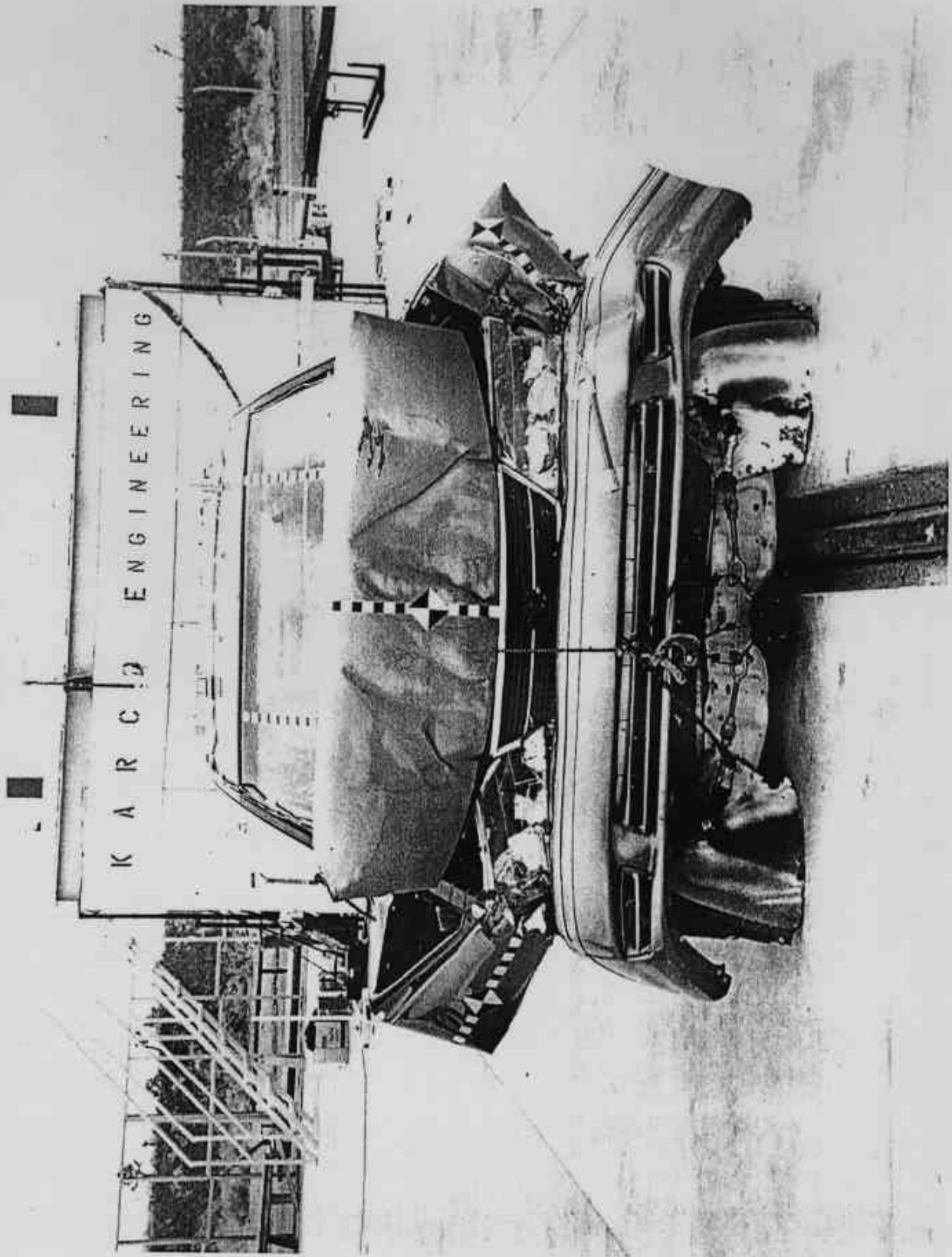


FIGURE A-6. POST TEST FRONT VIEW

A-6

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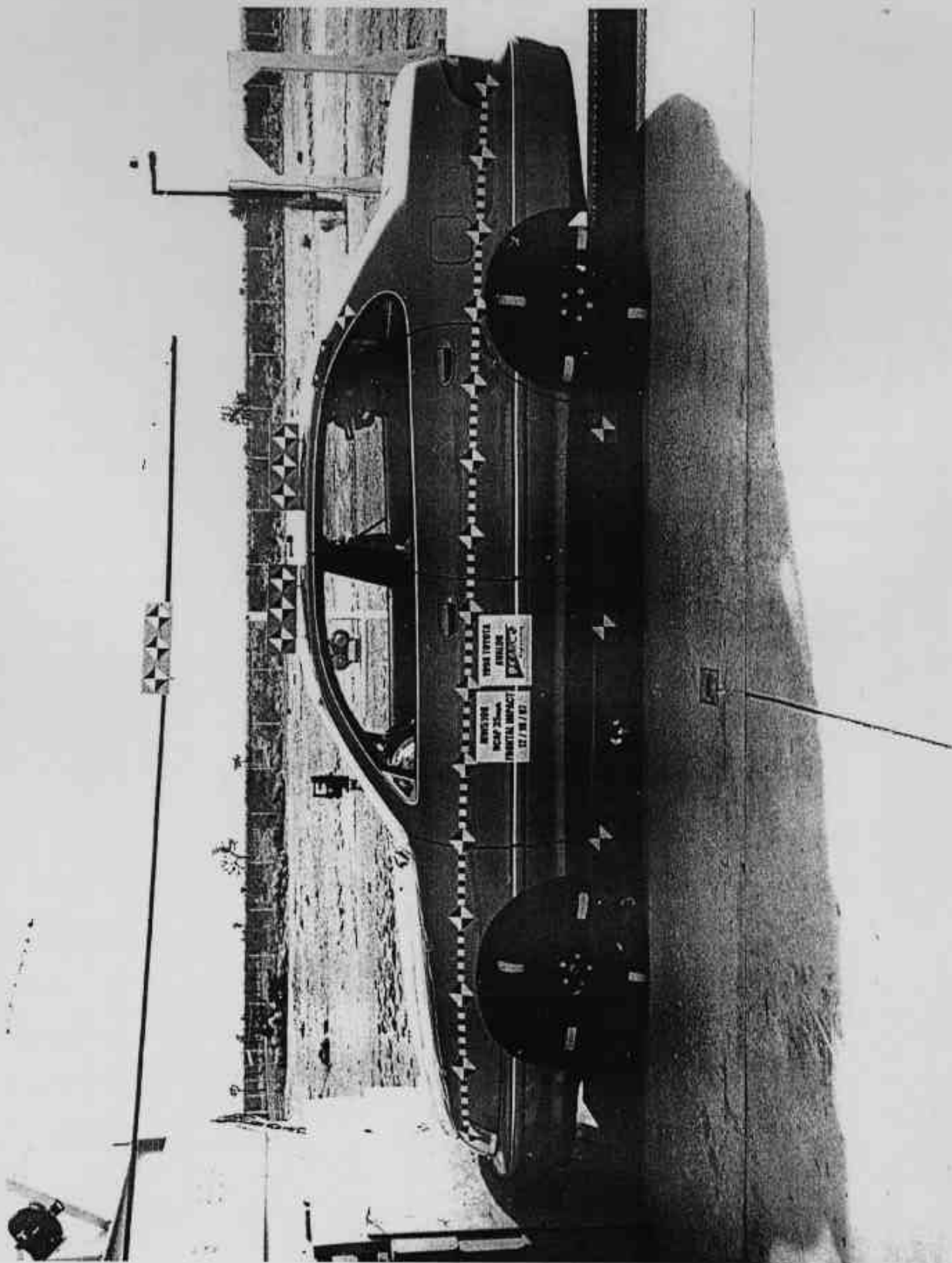


FIGURE A-7. PRETEST LEFT SIDE VIEW

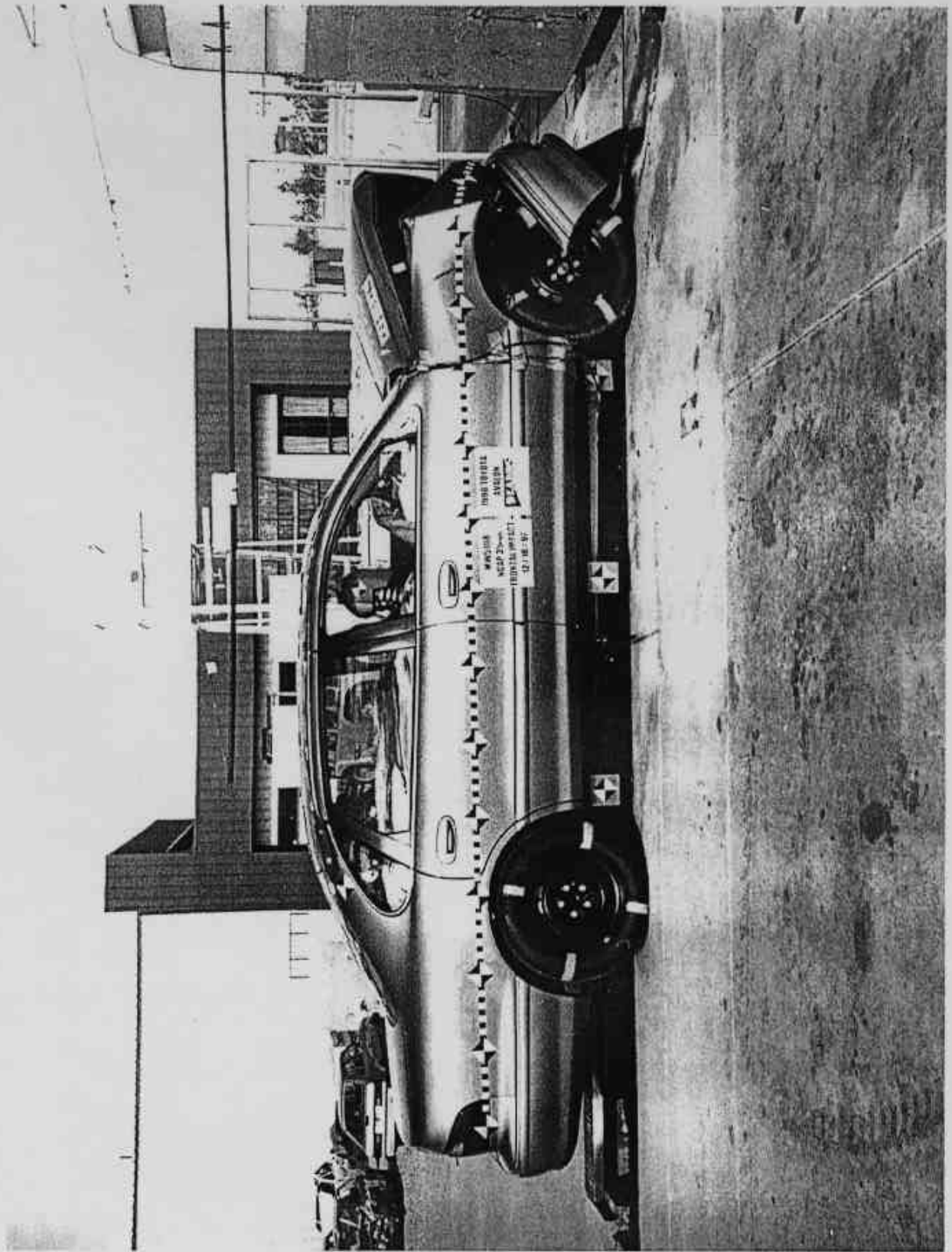


FIGURE A-10. POST TEST RIGHT SIDE VIEW



FIGURE A-11. PRETEST RIGHT FRONT VIEW

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FIGURE A-12. POST TEST RIGHT FRONT VIEW

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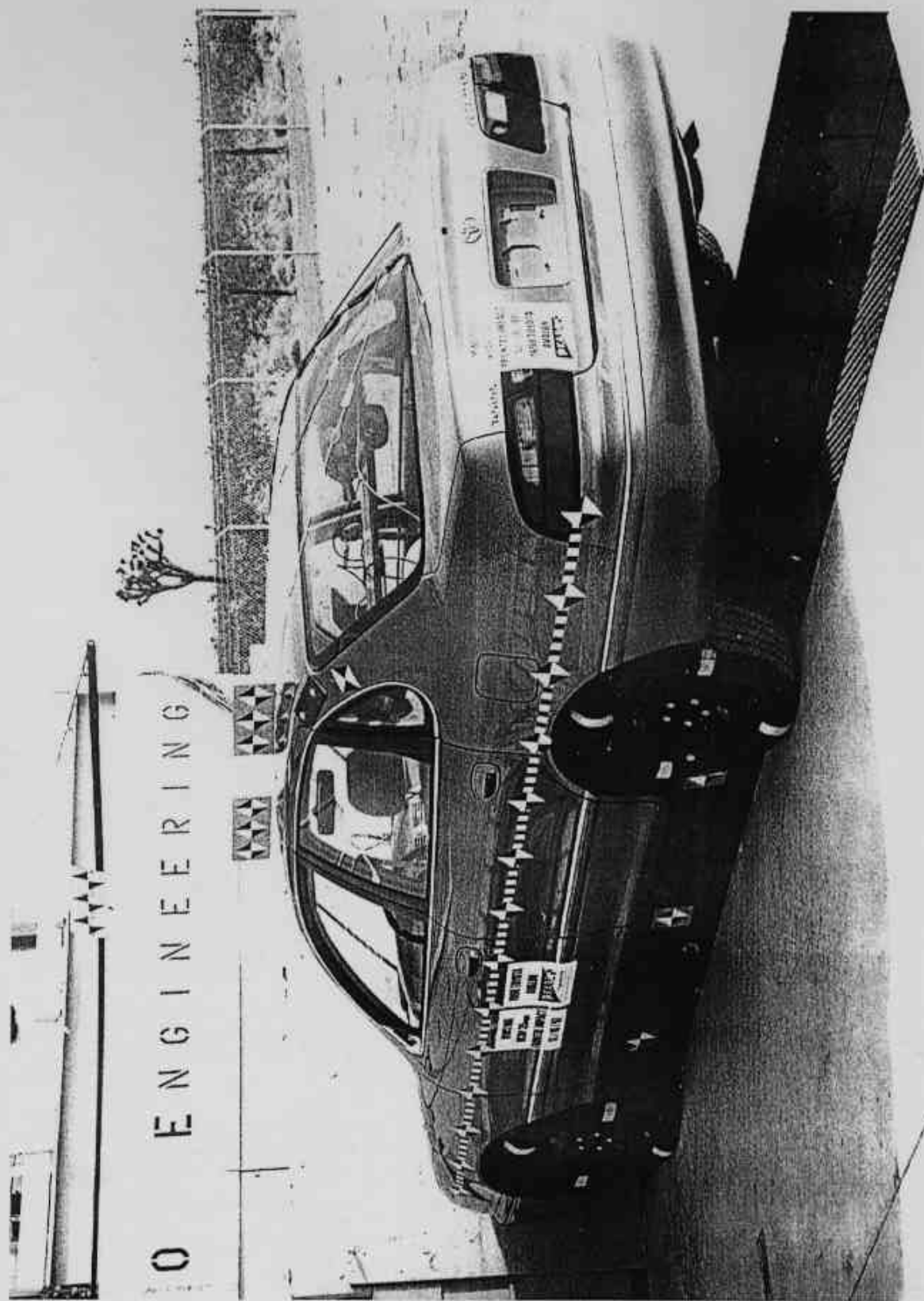


FIGURE A-13. PRETEST LEFT REAR VIEW

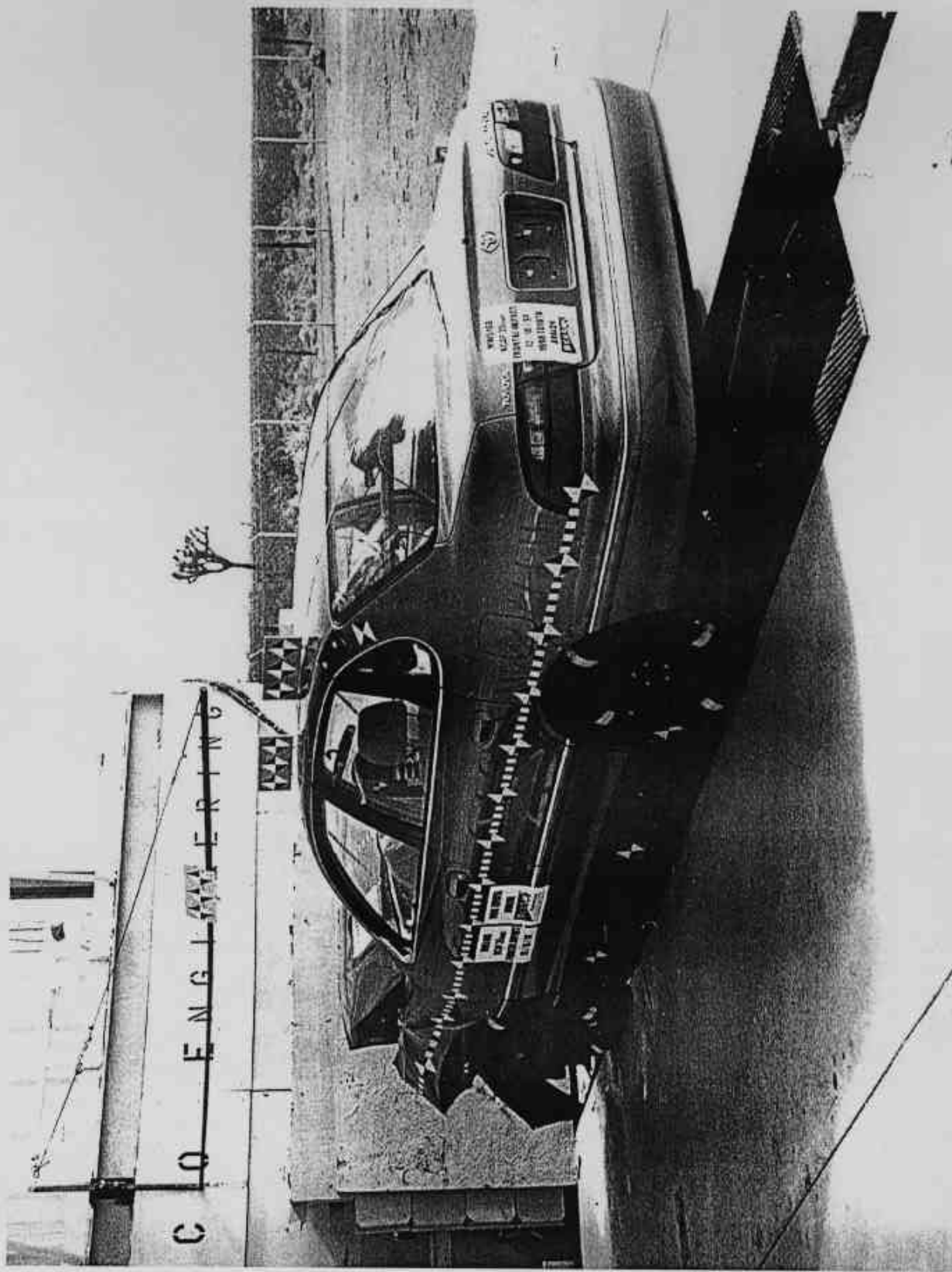


FIGURE A-14. POST TEST LEFT REAR VIEW

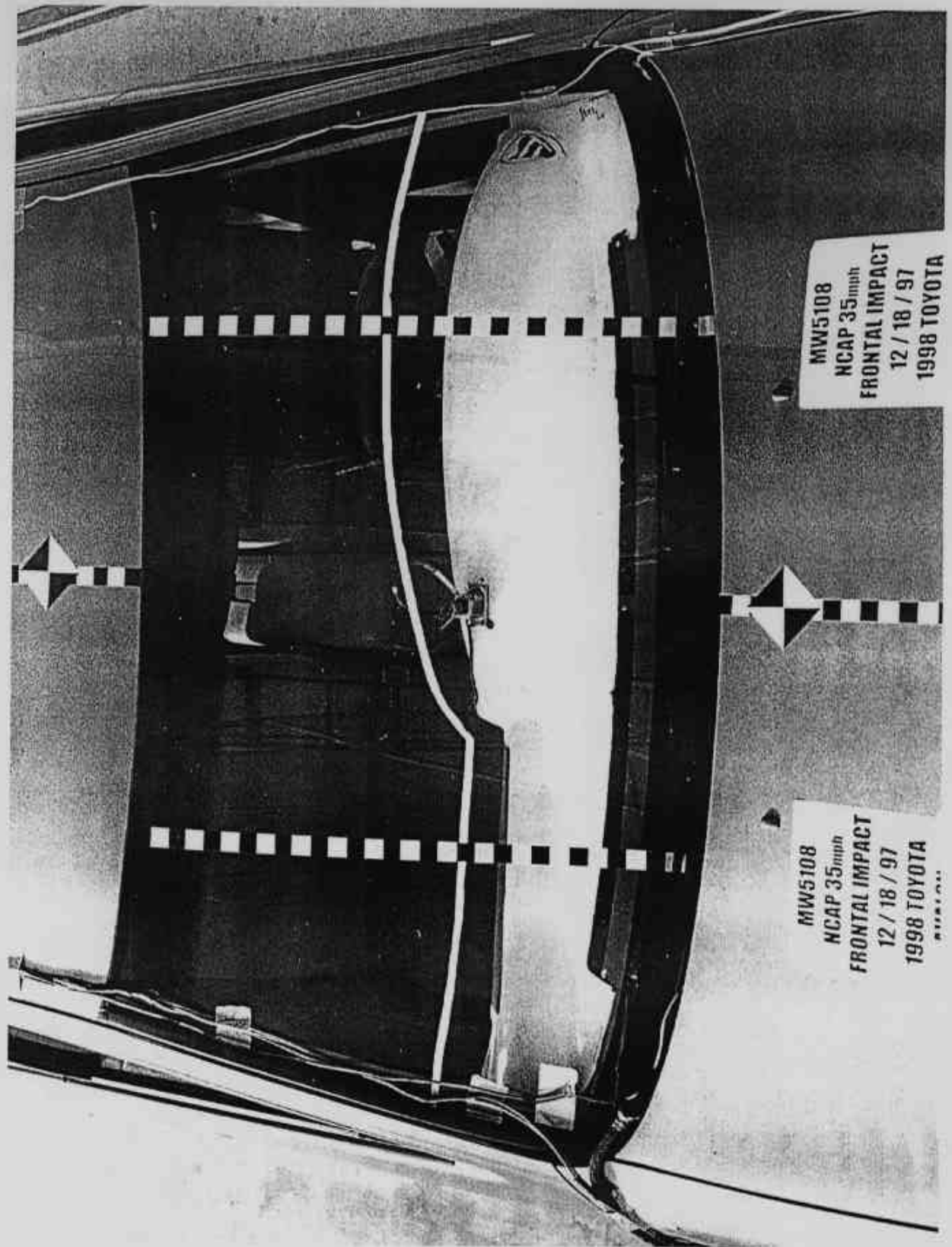


FIGURE A-15. PRETEST WINDSHIELD

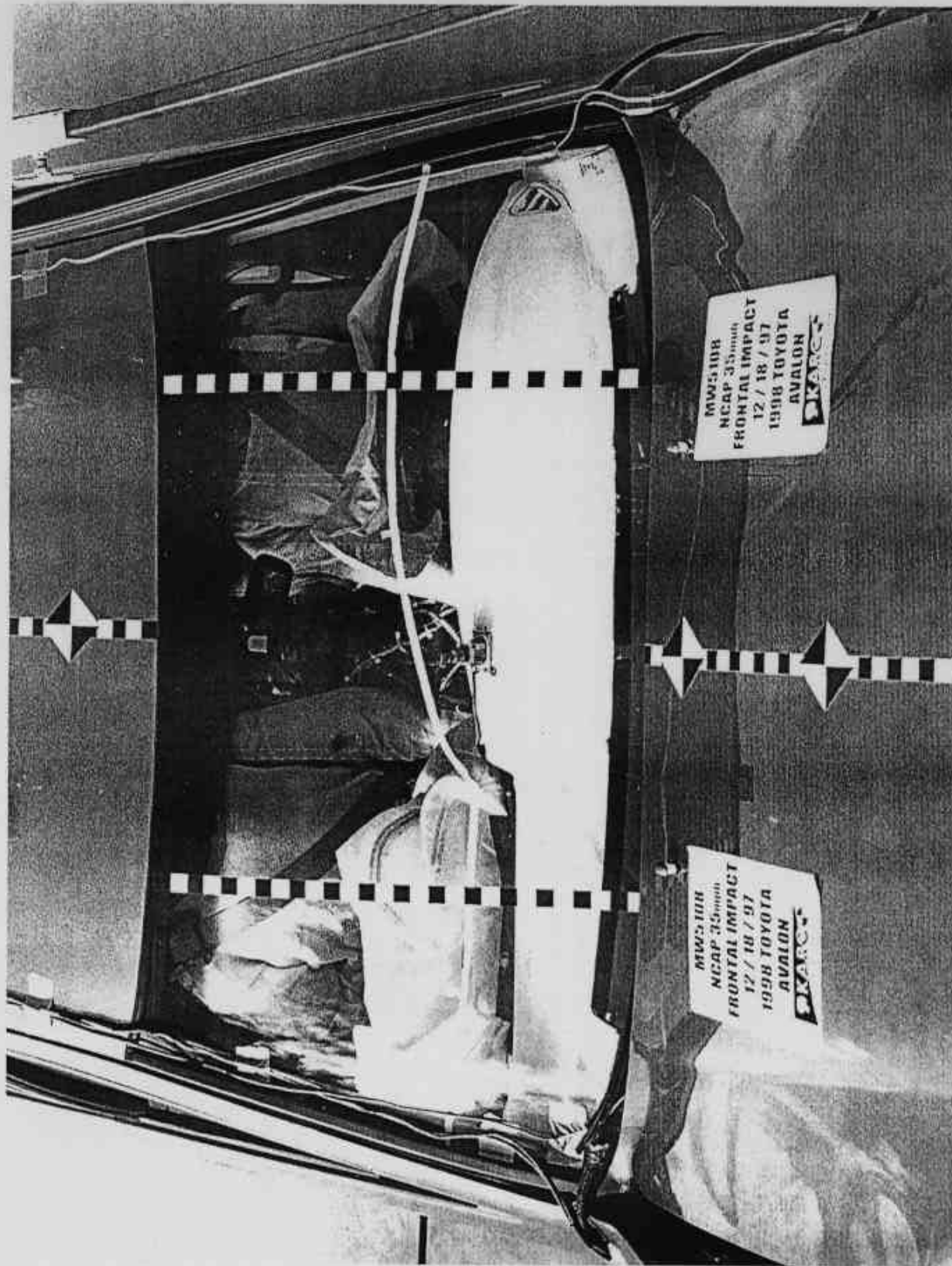


FIGURE A-16. POST TEST WINDSHIELD

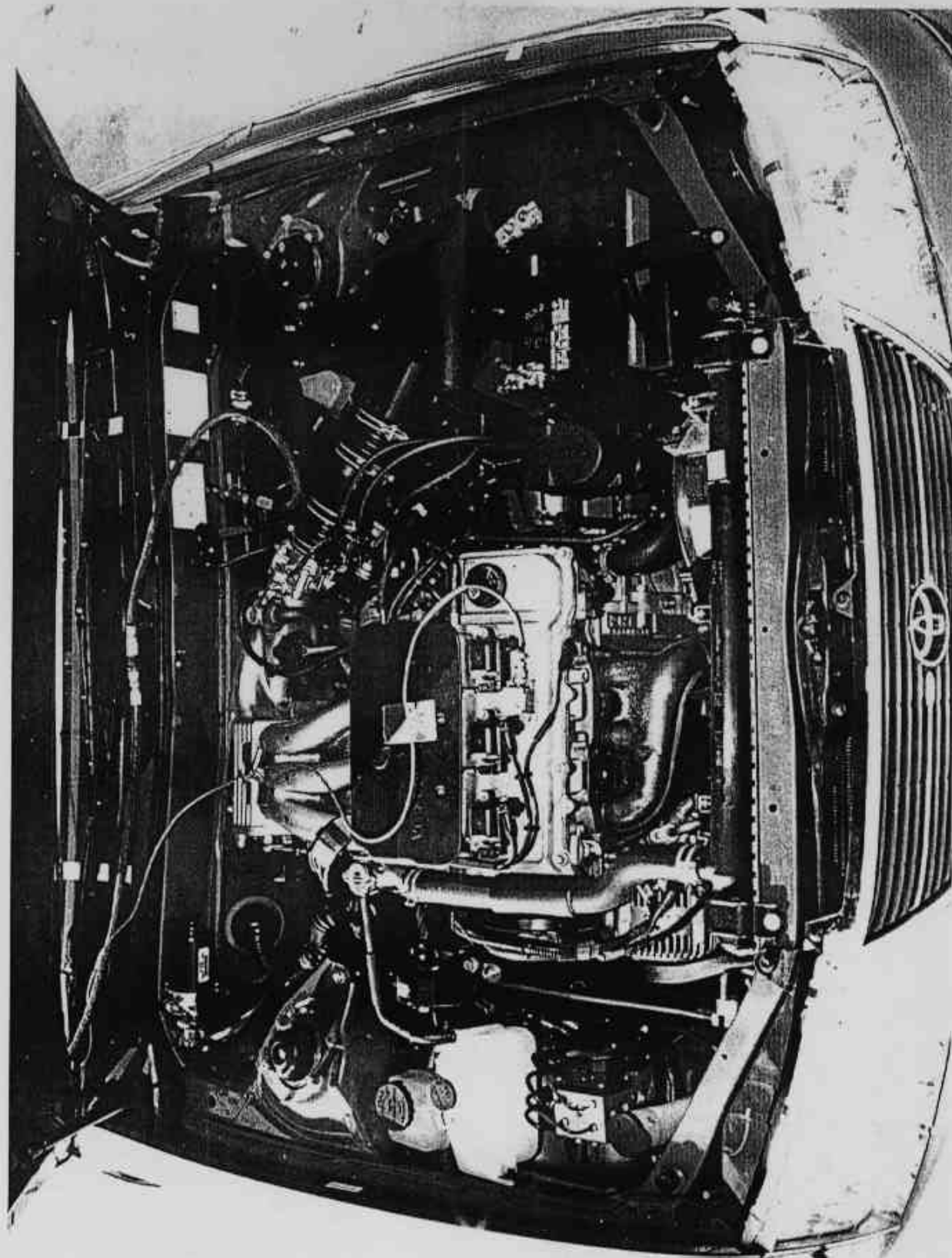


FIGURE -17. PRETEST ENGINE COMPARTMENT

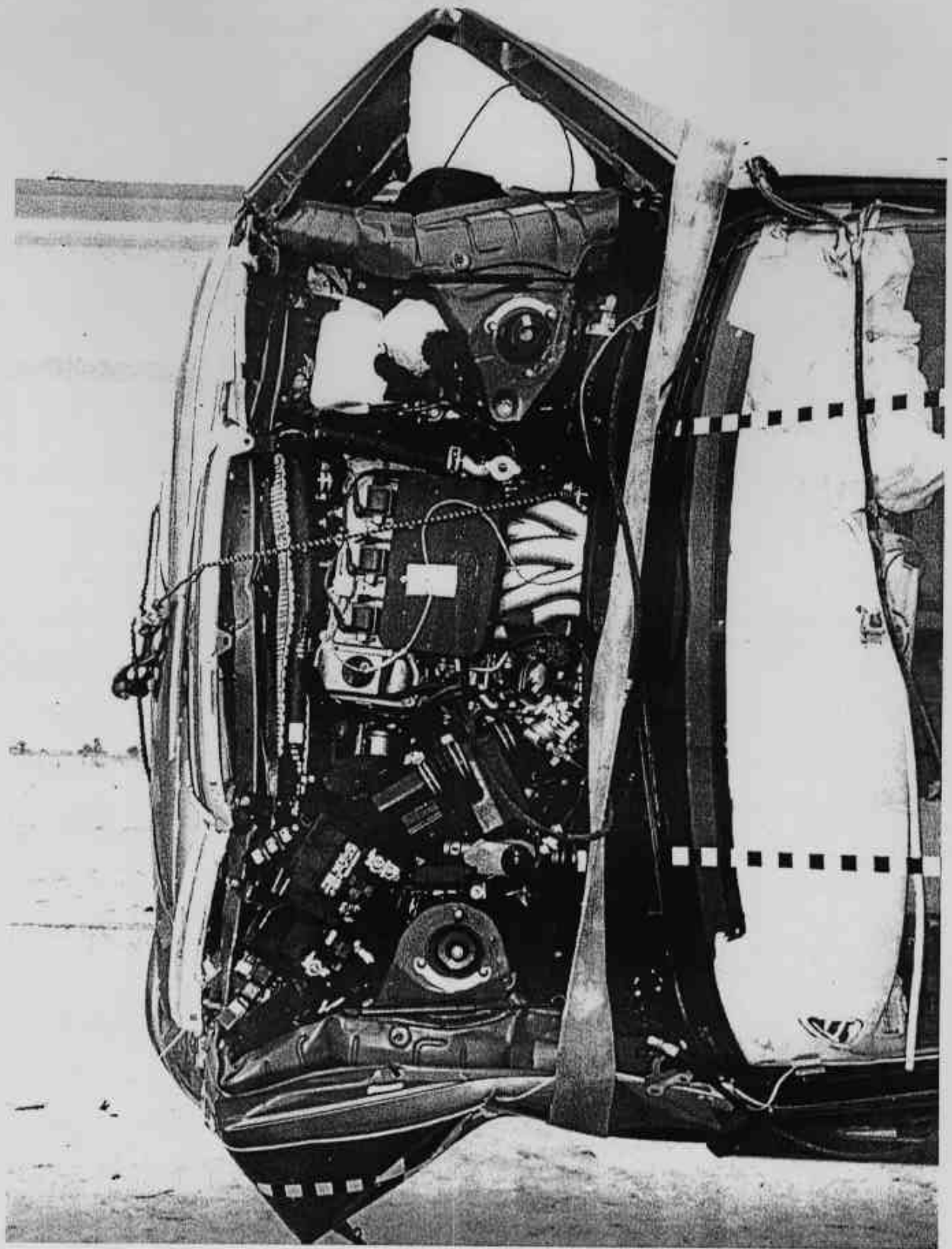


FIGURE A-18. POST TEST ENGINE COMPARTMENT

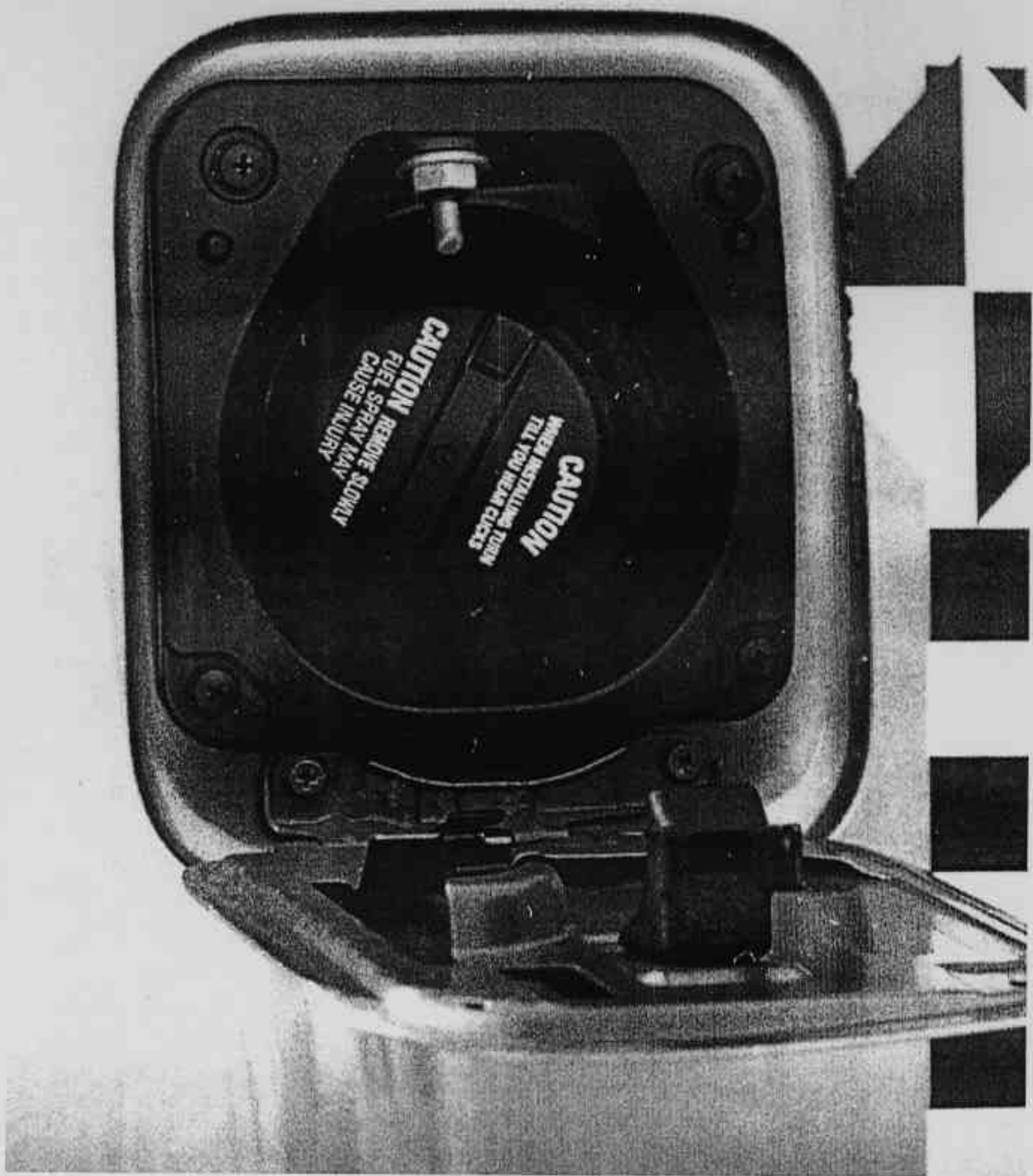


FIGURE A-19. PRETEST FUEL CAP

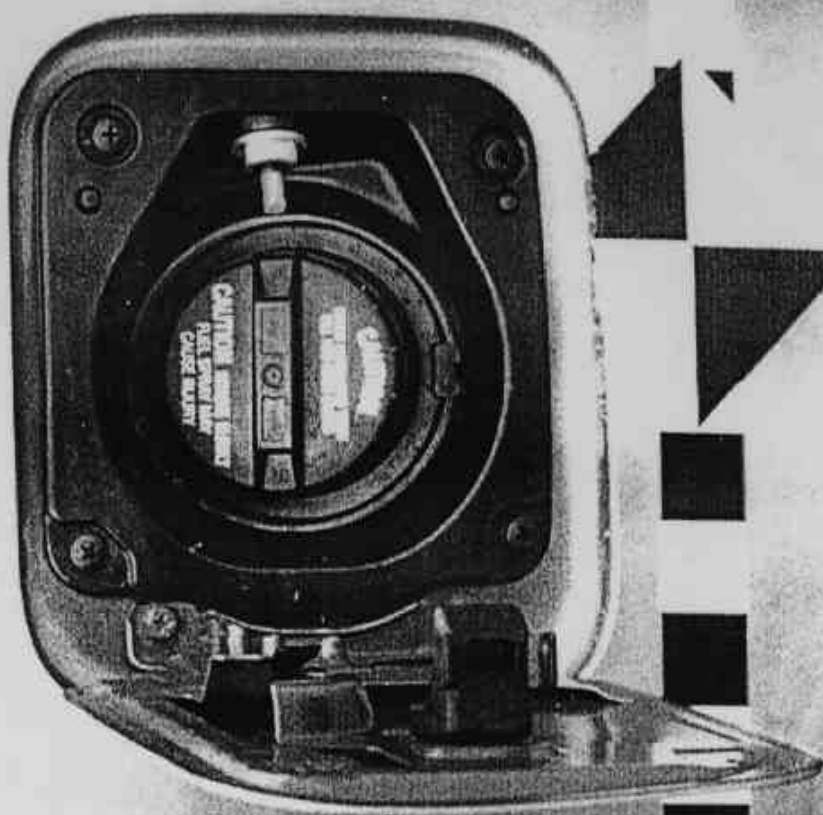


FIGURE A-20. POST TEST FUEL CAP

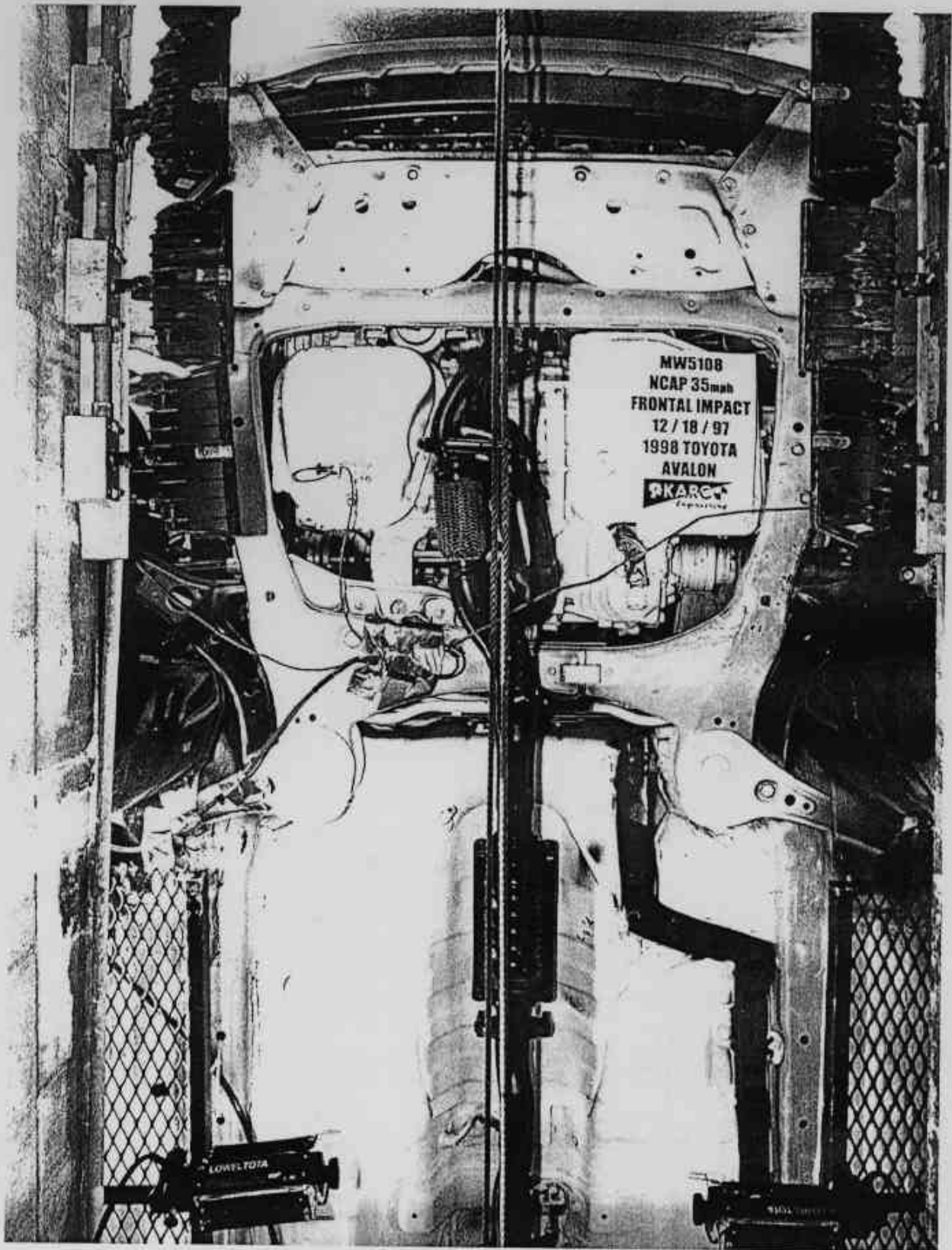


FIGURE-21. PRETEST FRONT UNDERSIDE

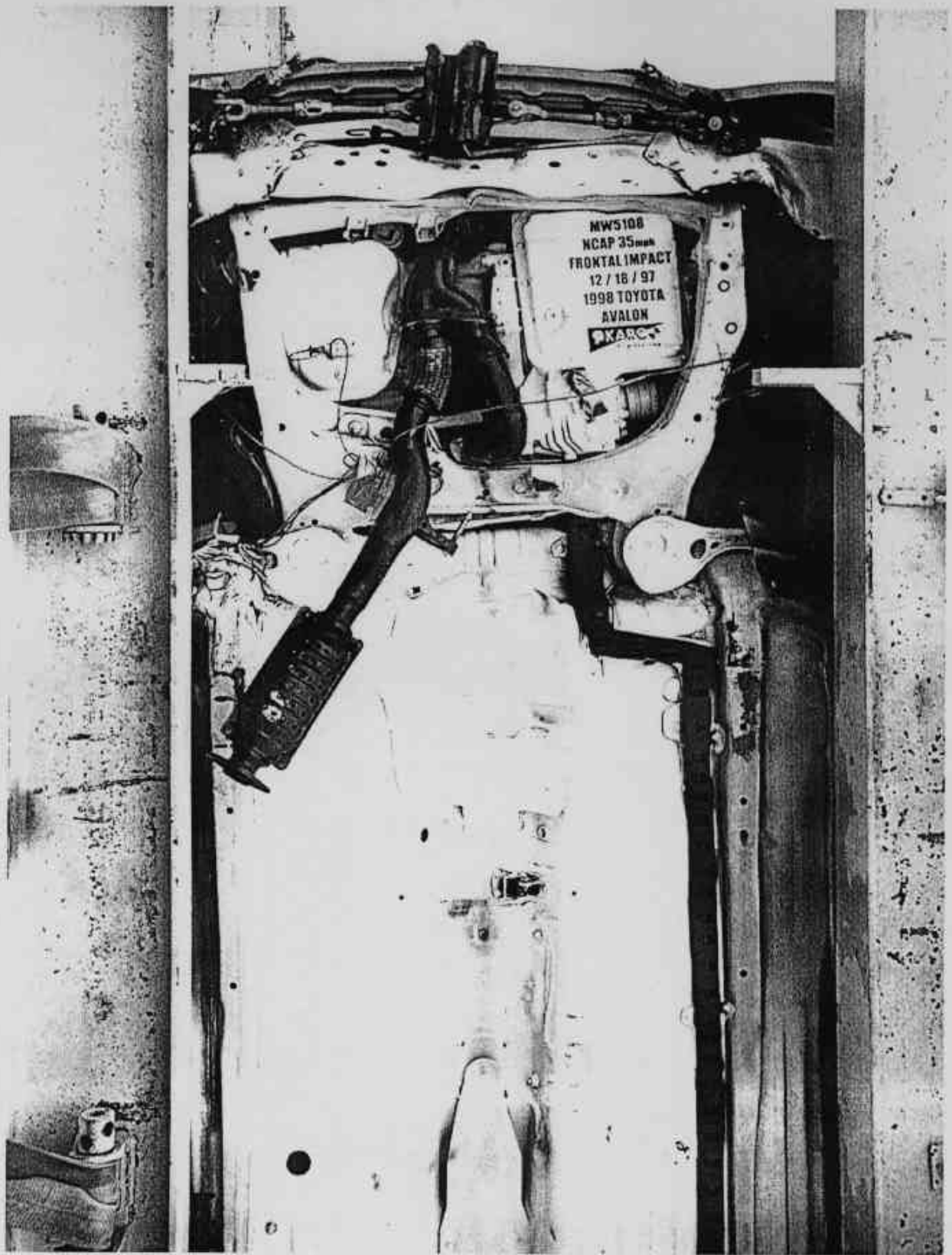


FIGURE A-22. POST TEST FRONT UNDERSIDE

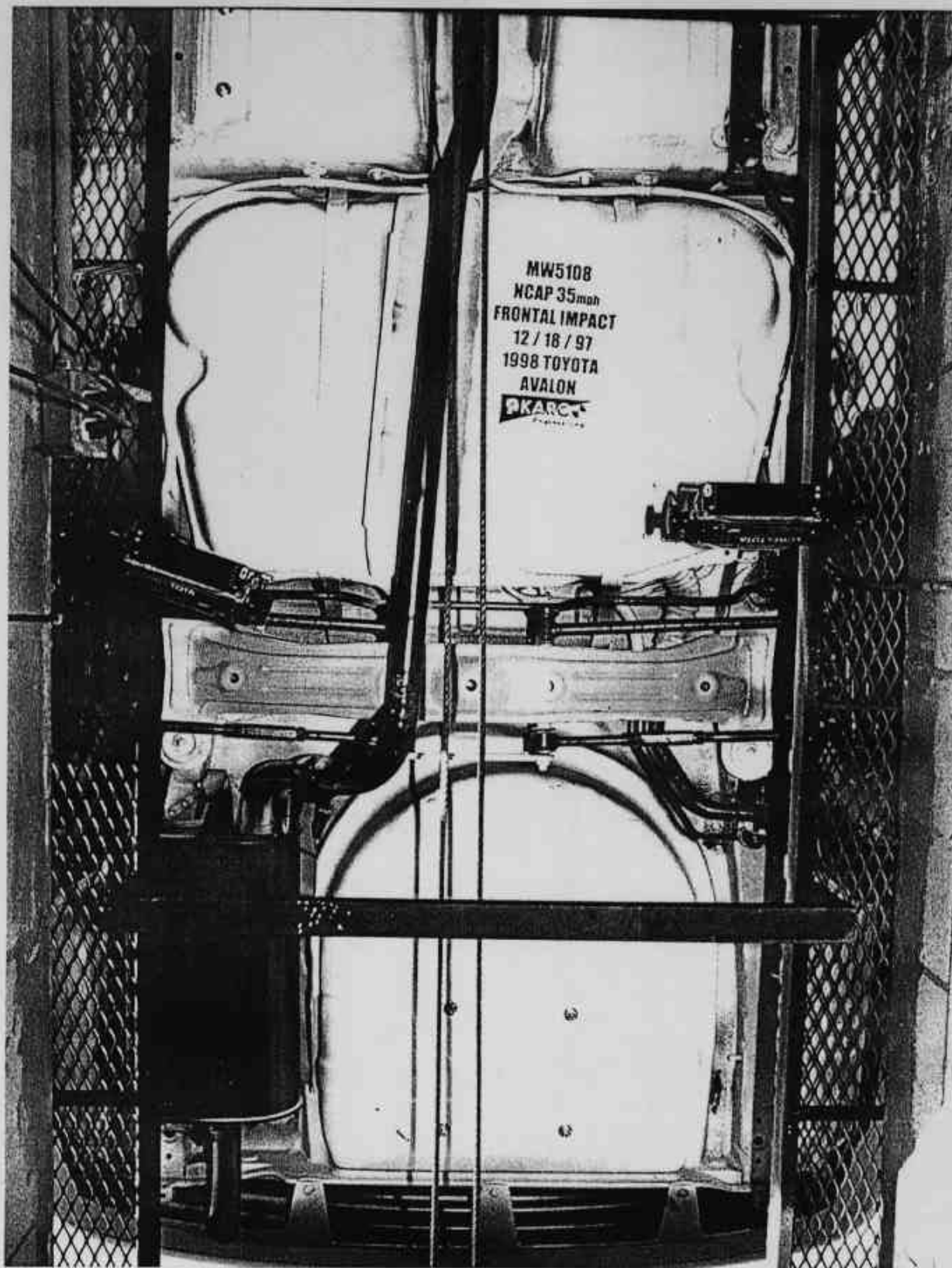


FIGURE A-23. PRETEST REAR UNDERSIDE

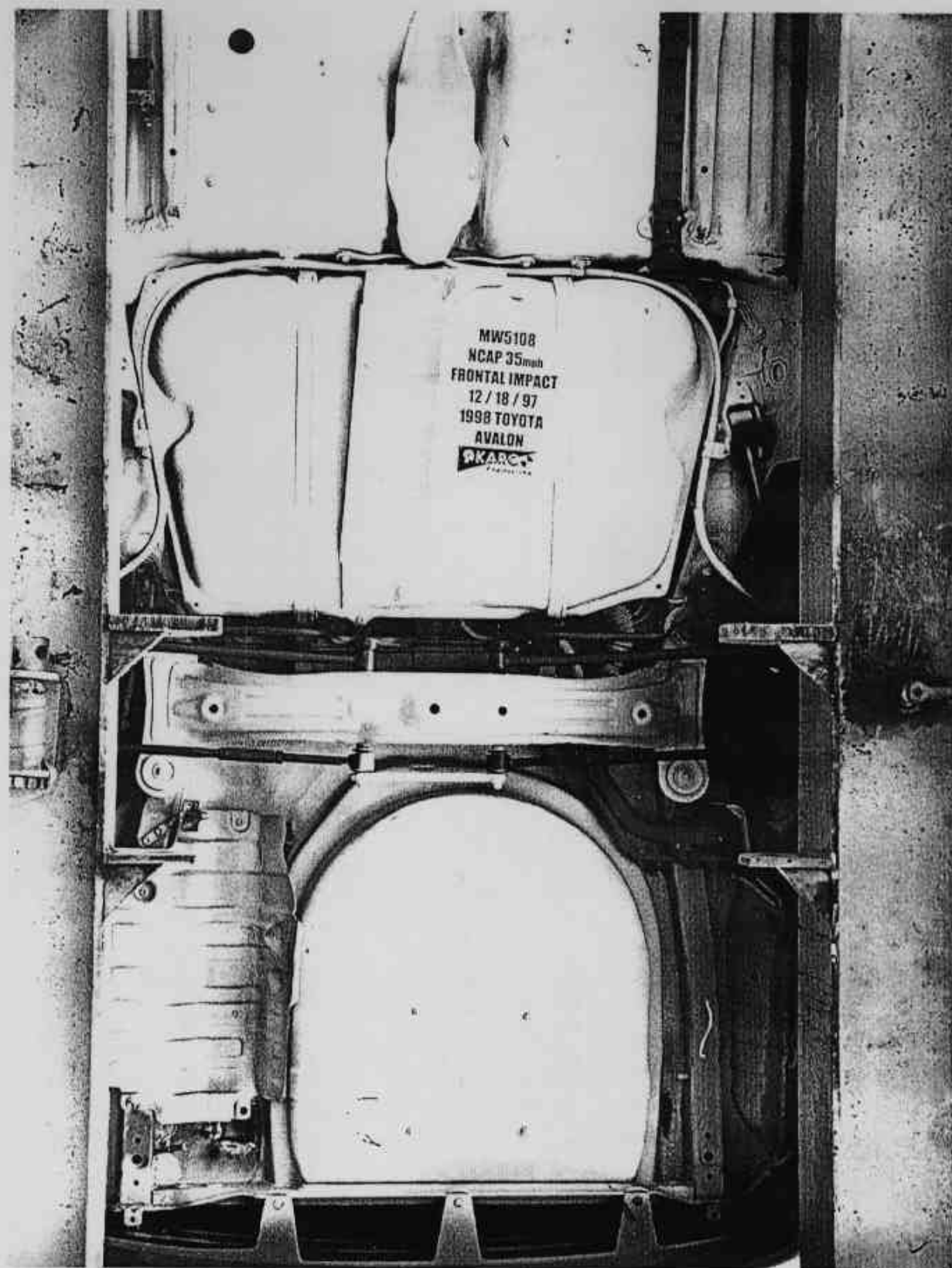


FIGURE A-24.POST TEST REAR UNDERSIDE



FIGURE A-25. PRETEST DRIVER FLOOR PAN

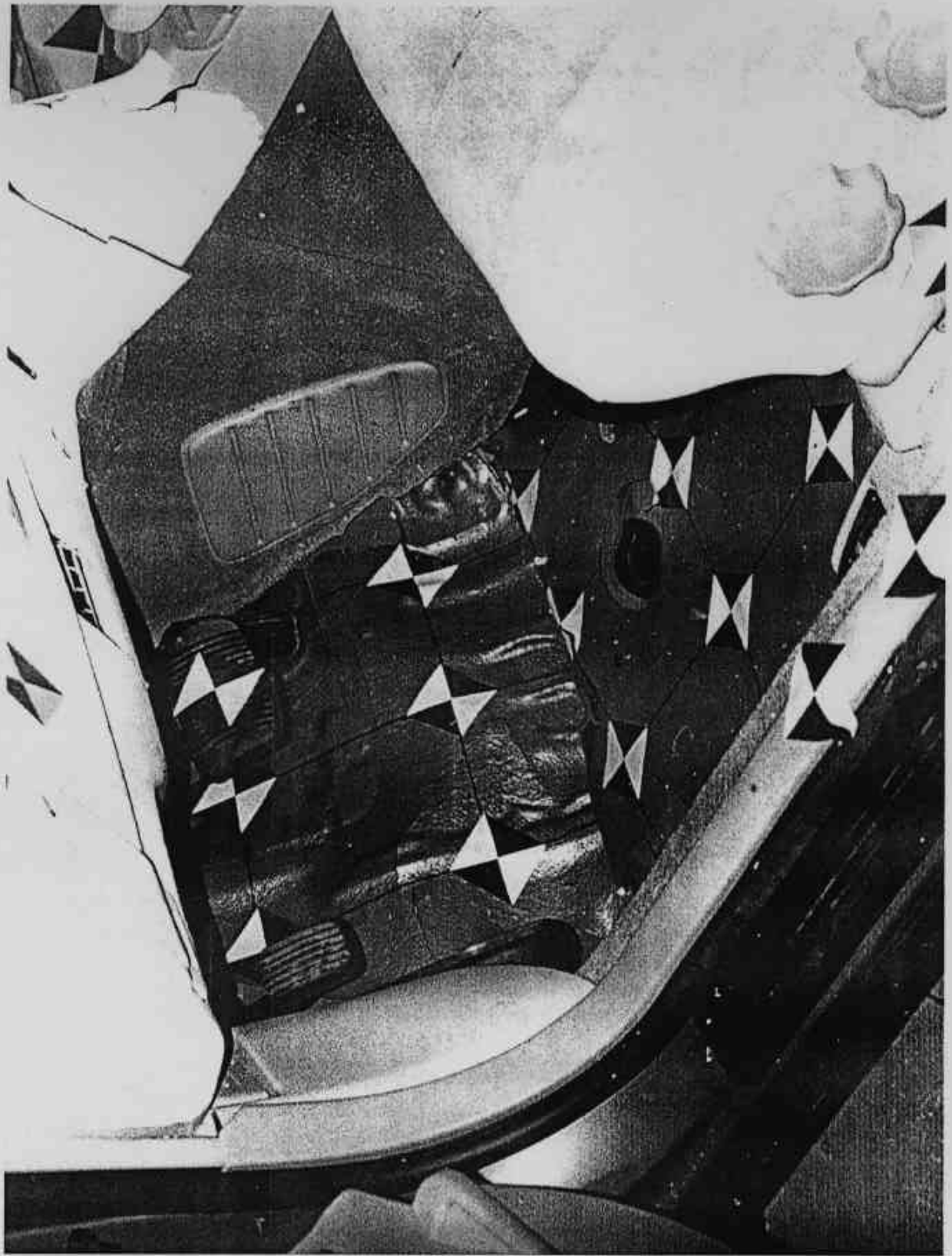


FIGURE A-26. POST TEST DRIVER FLOOR PAN

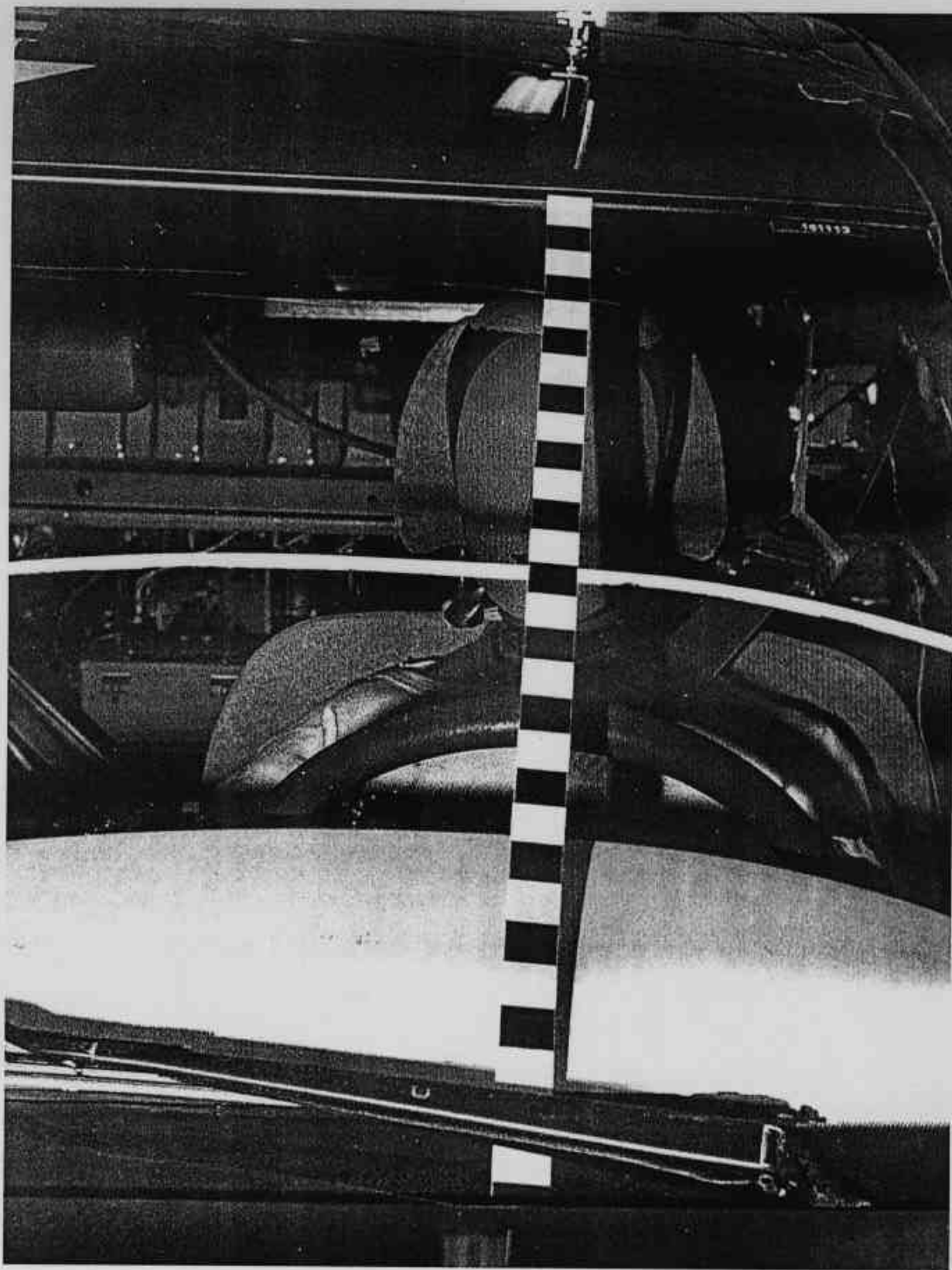


FIGURE A-27. PRETEST DRIVER DUMMY (FRONT VIEW)

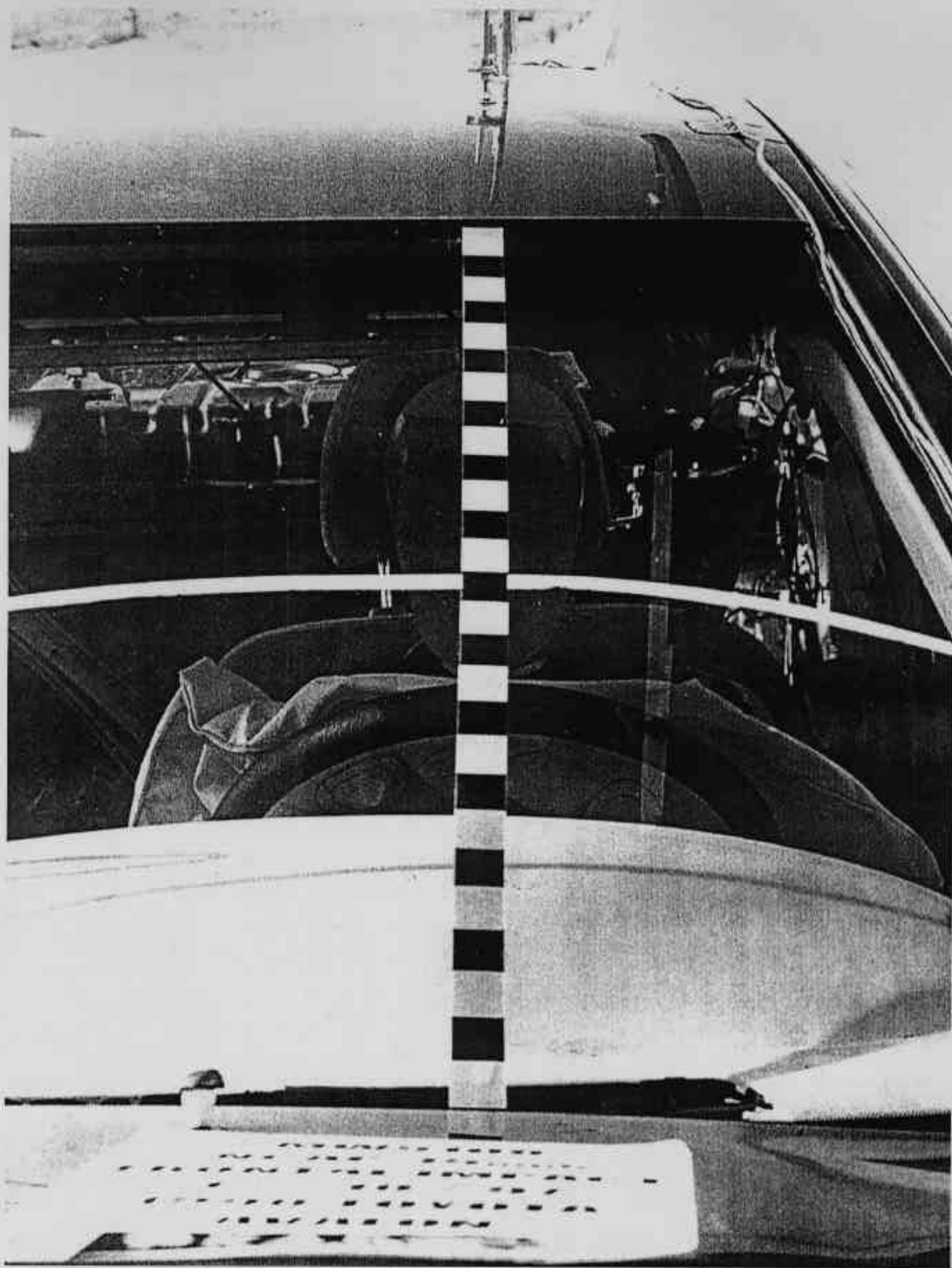


FIGURE A-28. POST TEST DRIVER DUMMY (FRONT VIEW)

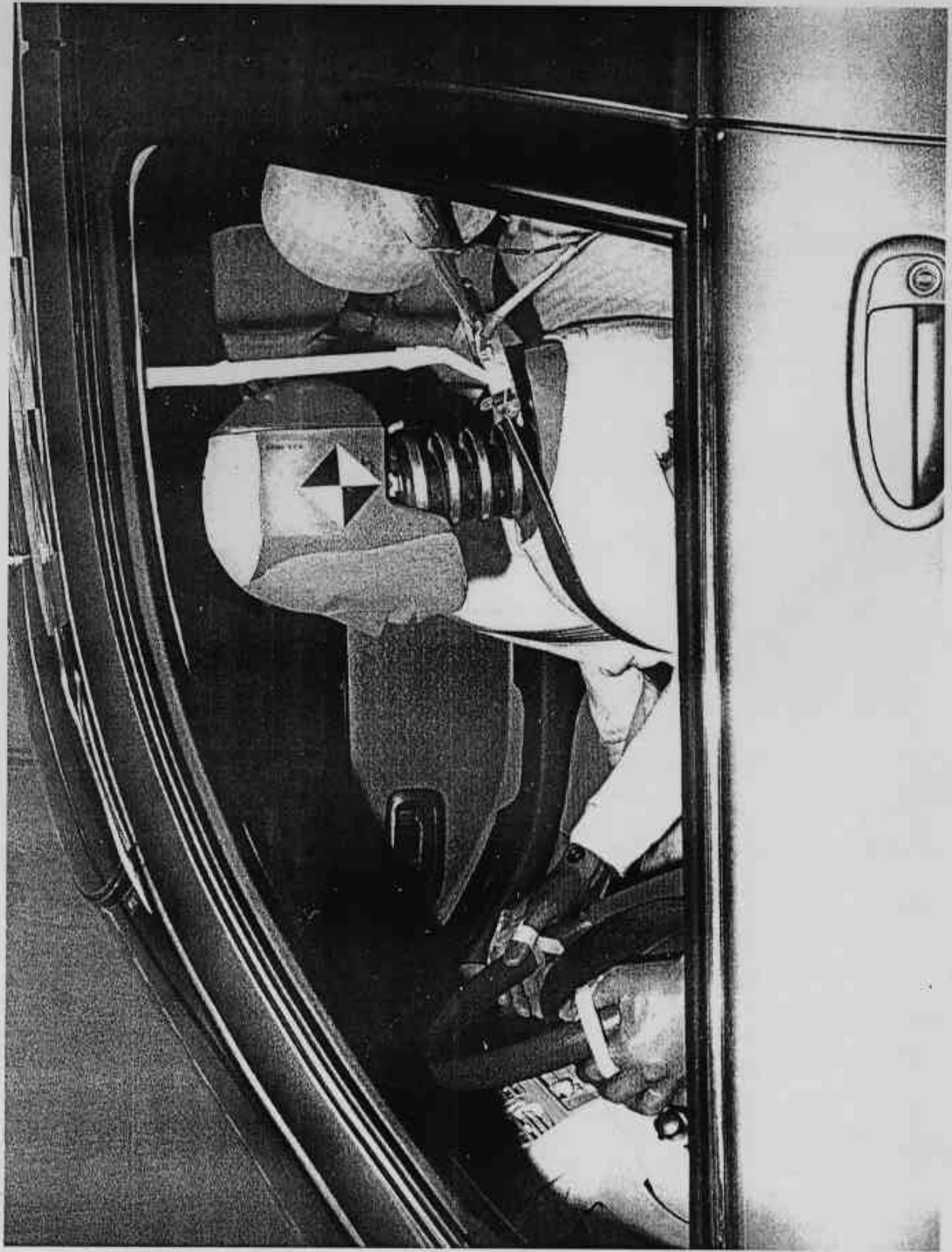


FIGURE A-29. PRETEST DRIVER DUMMY (THRU WINDOW)

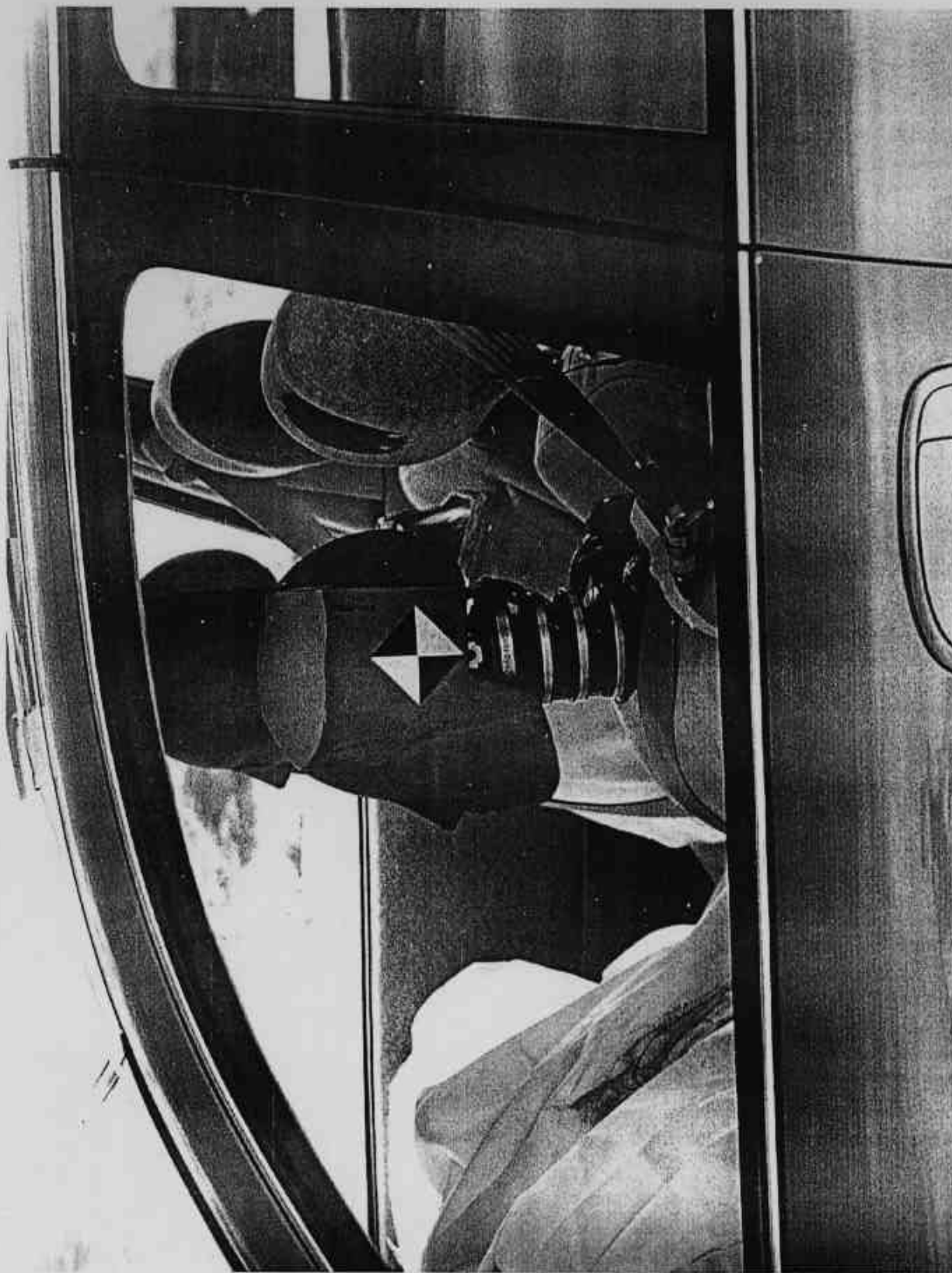


FIGURE A-30. POST TEST DRIVER DUMMY (THRU WINDOW)

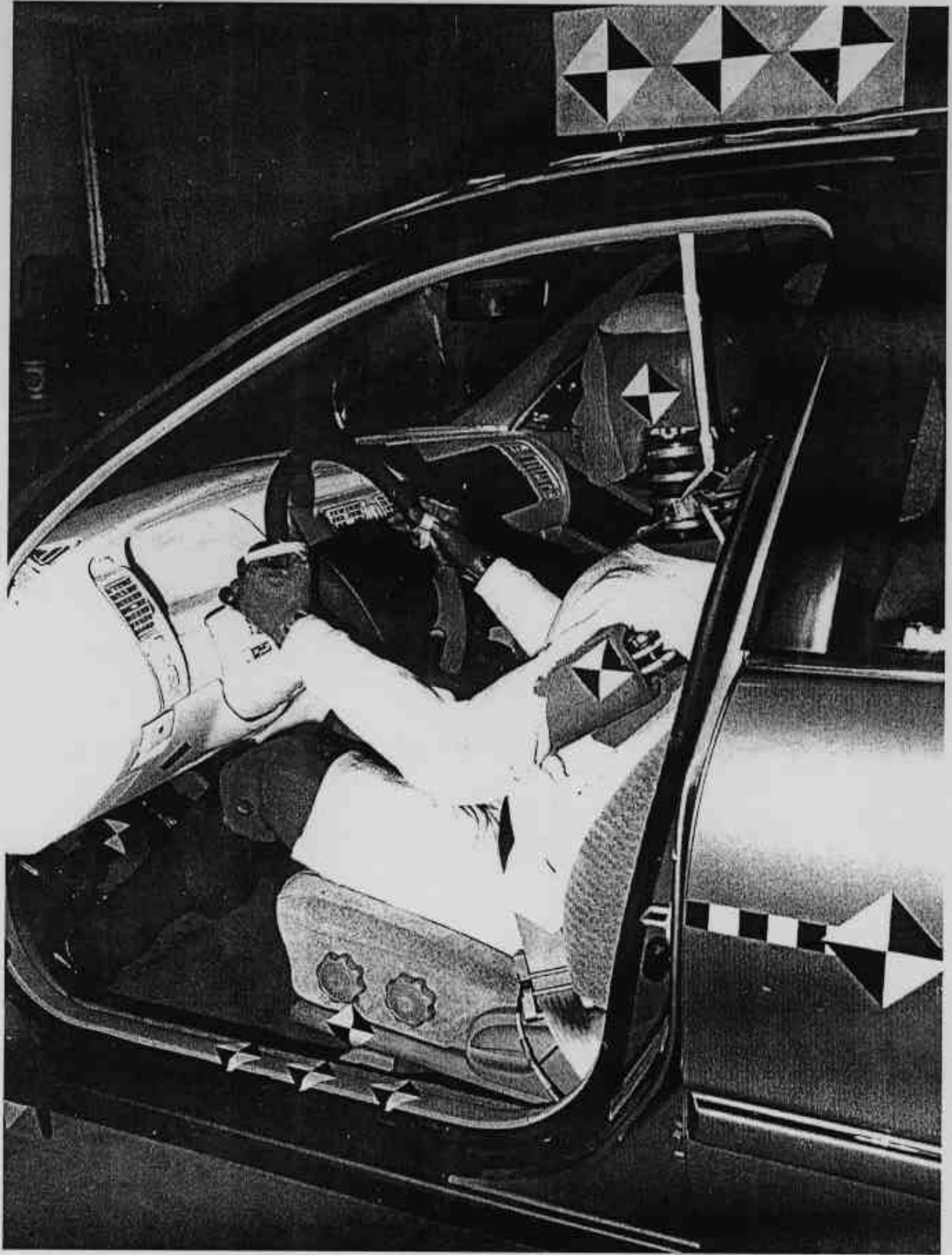


FIGURE A-31. PRETEST DRIVER DUMMY (DOOR OPEN)



FIGURE A-32. POST TEST DRIVER DUMMY (DOOR OPEN)



FIGURE A-33. PRE TEST DRIVER DUMMY (90° TO VEHICLE)



FIGURE A-34. POST TEST DRIVER DUMMY (90° TO VEHICLE)



FIGURE A-35. POST TEST DRIVER DUMMY HEAD

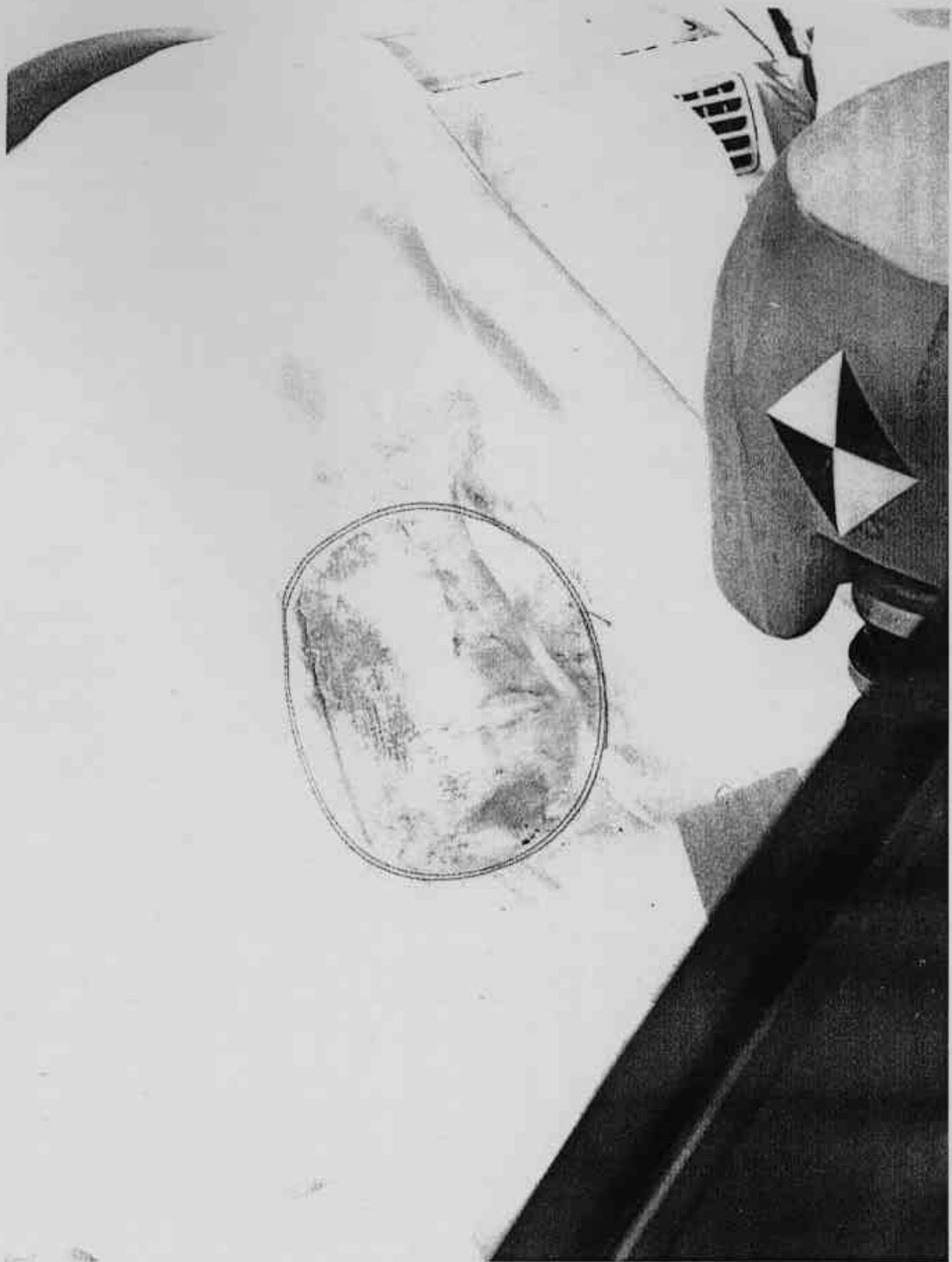


FIGURE A-36. POST TEST DRIVER DUMMY CONTACT POINT

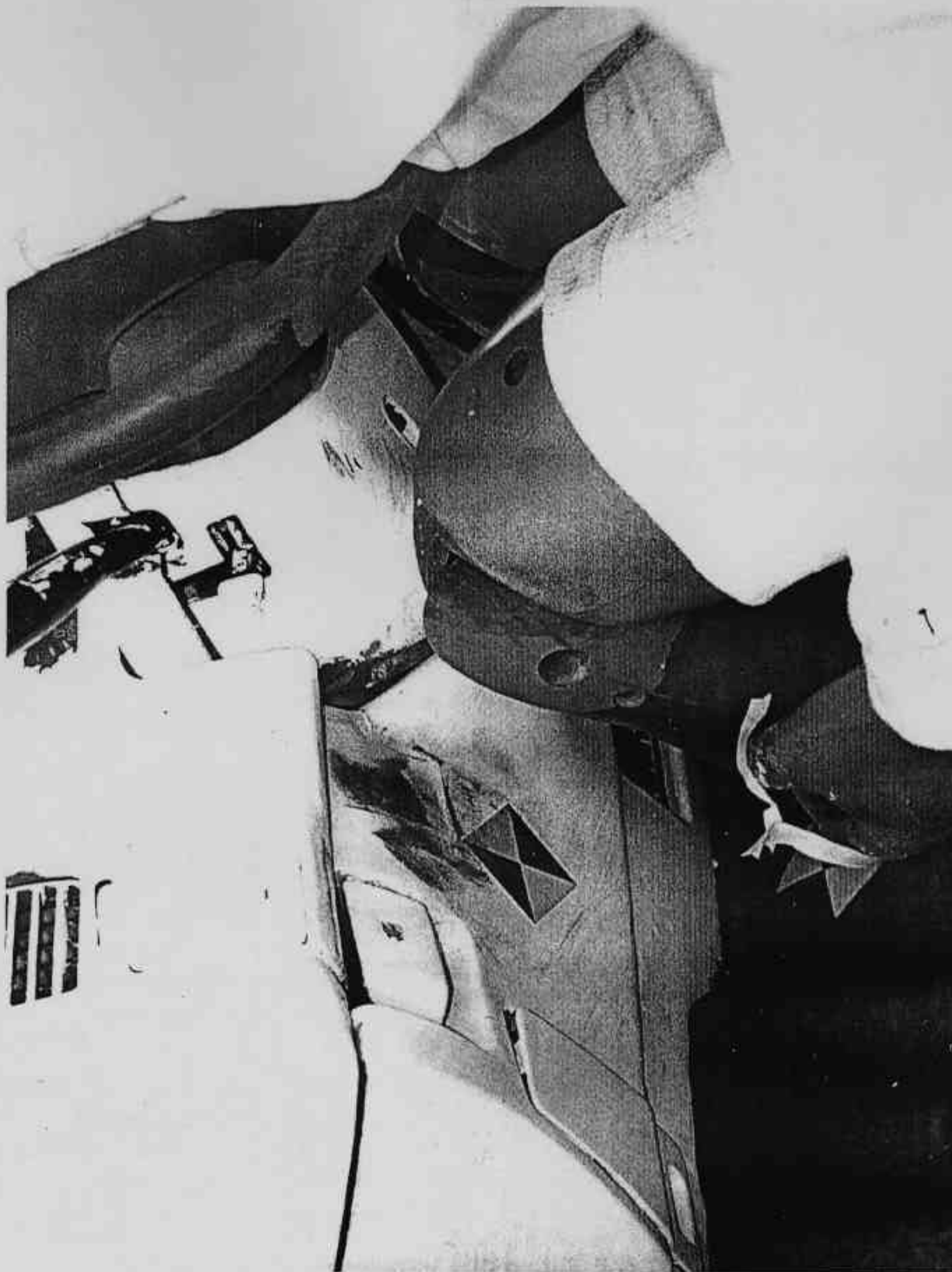


FIGURE A-37. POST TEST DRIVER DUMMY CONTACT POINT

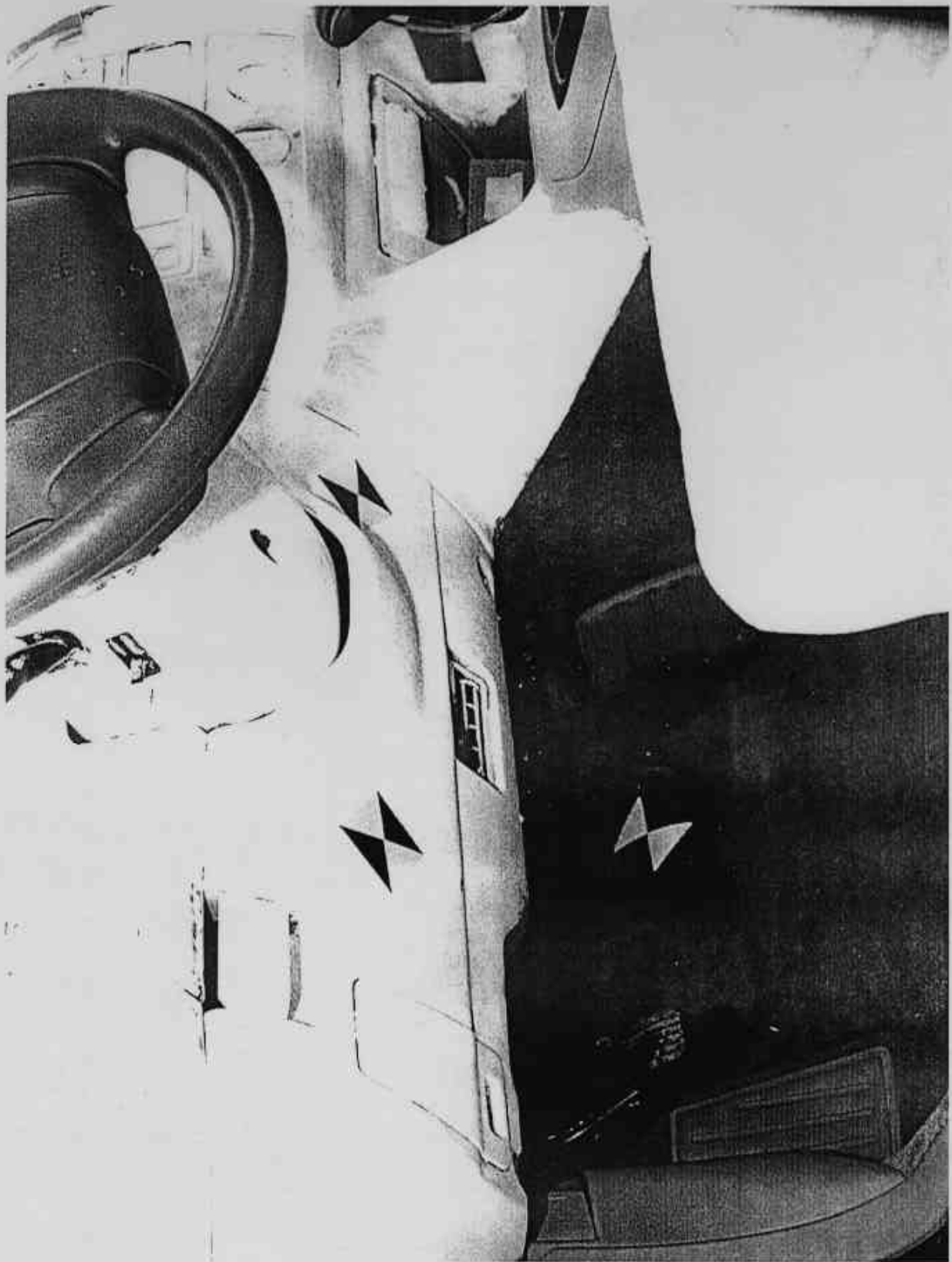


FIGURE A-38.PRETEST DRIVER SIDE KNEE BOLSTER

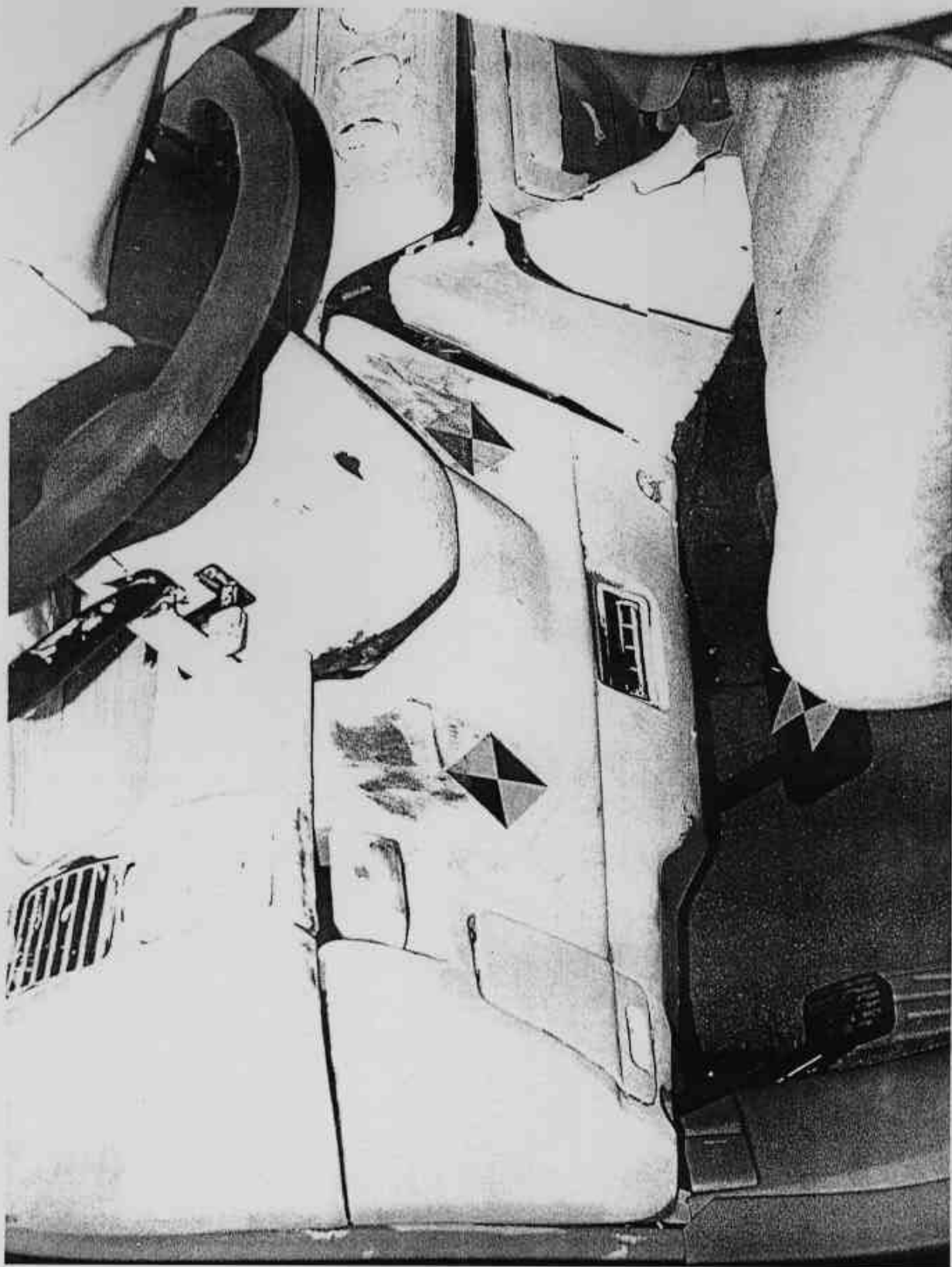


FIGURE A-39. POST TEST DRIVER KNEE BOLSTER



FIGURE A-40. PRETEST PASSENGER DUMMY (FRONT VIEW)

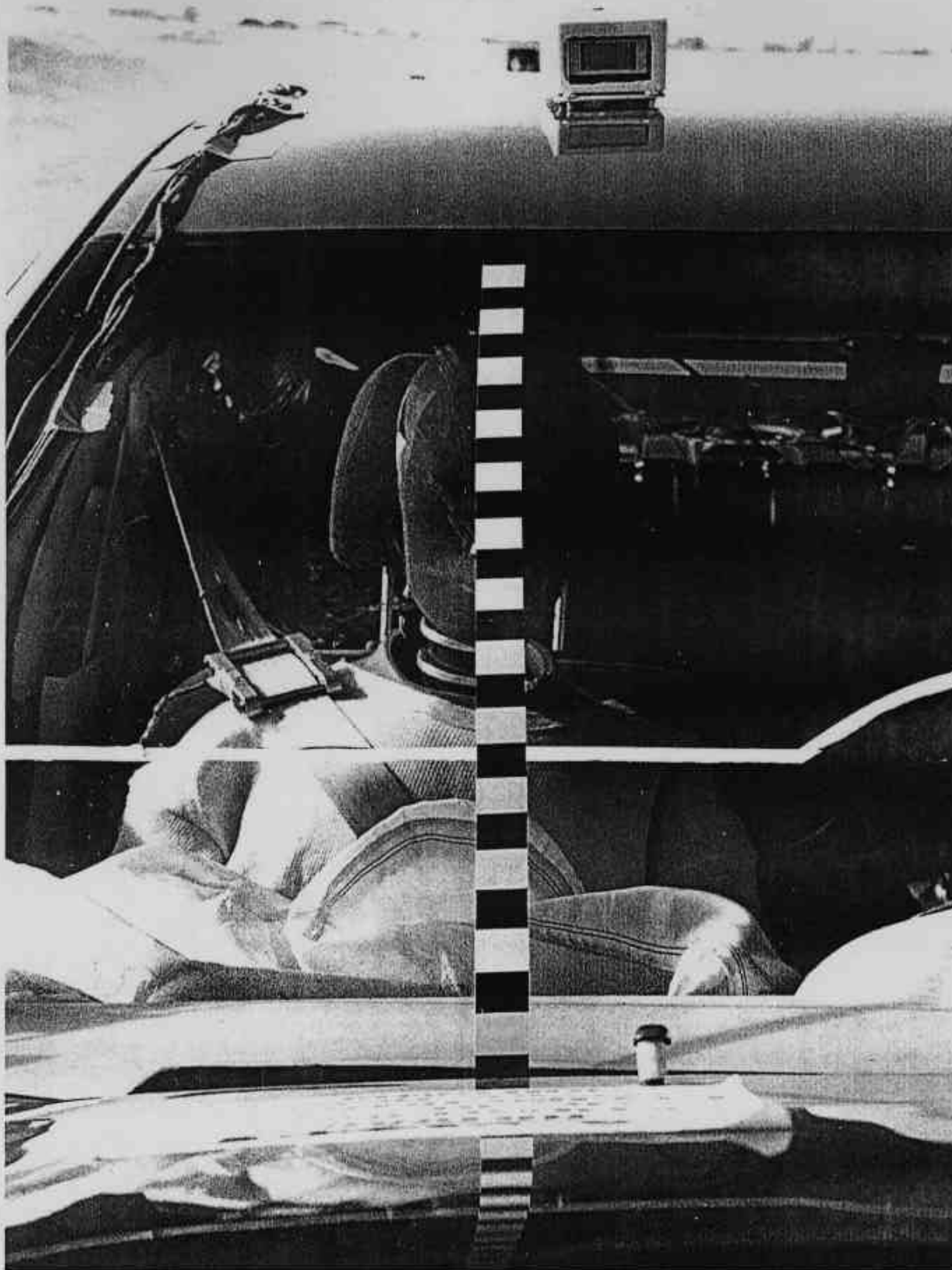


FIGURE A-41. POST TEST PASSENGER DUMMY (FRONT VIEW)



FIGURE A-42. PRETEST PASSENGER DUMMY (THRU WINDOW)

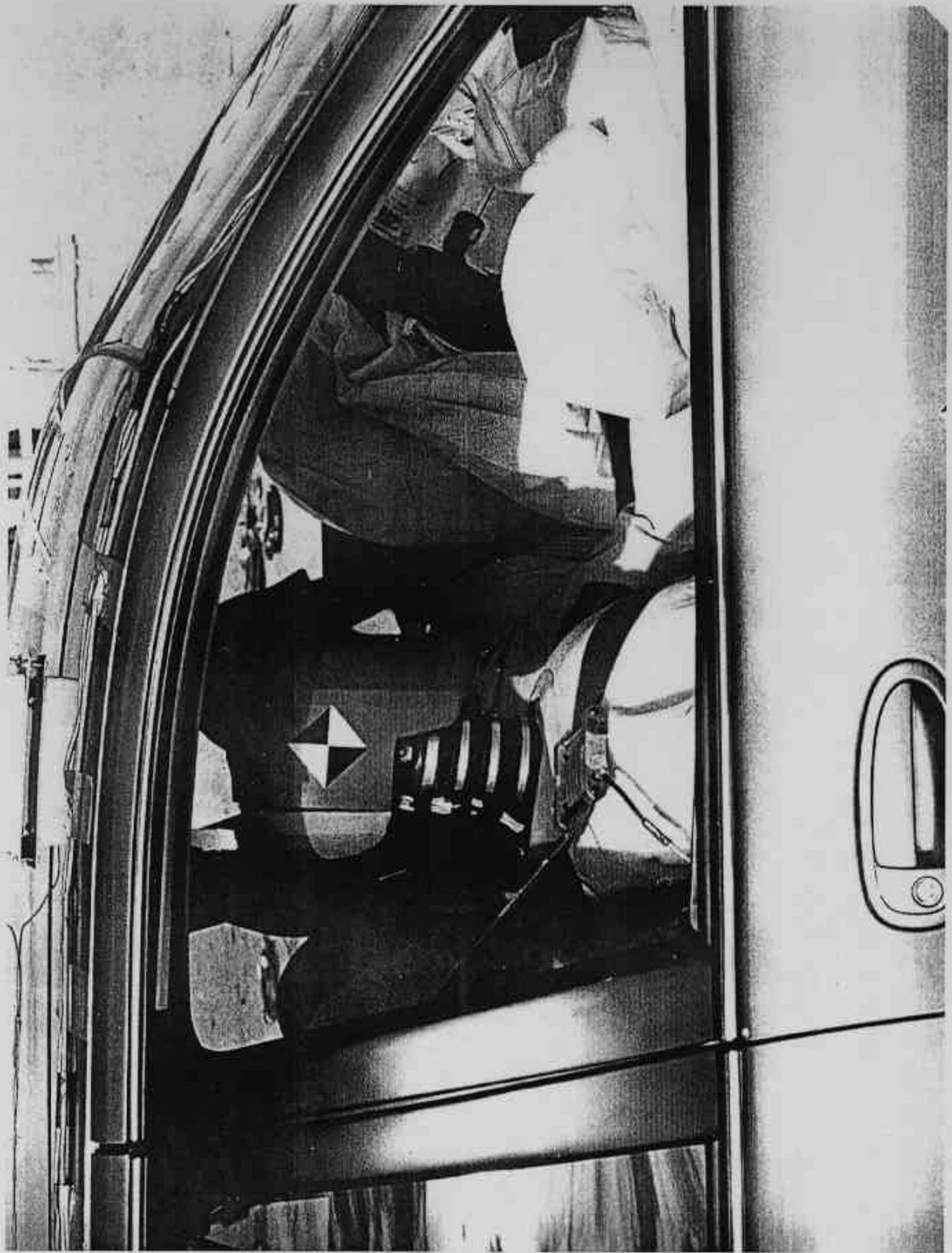


FIGURE A-43. POST TEST PASSENGER DUMMY (THRU WINDOW)



FIGURE A-44. PRETEST PASSENGER DUMMY (DOOR OPEN)



FIGURE A-45. POST TEST PASSENGER DUMMY (DOOR OPEN)



FIGURE A-46. PRETEST PASSENGER DUMMY (90° TO VEHICLE)



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

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FIGURE A-48. POST TEST PASSENGER DUMMY HEAD



FIGURE A-49. POST TEST PASSENGER DUMMY CONTACT POINT

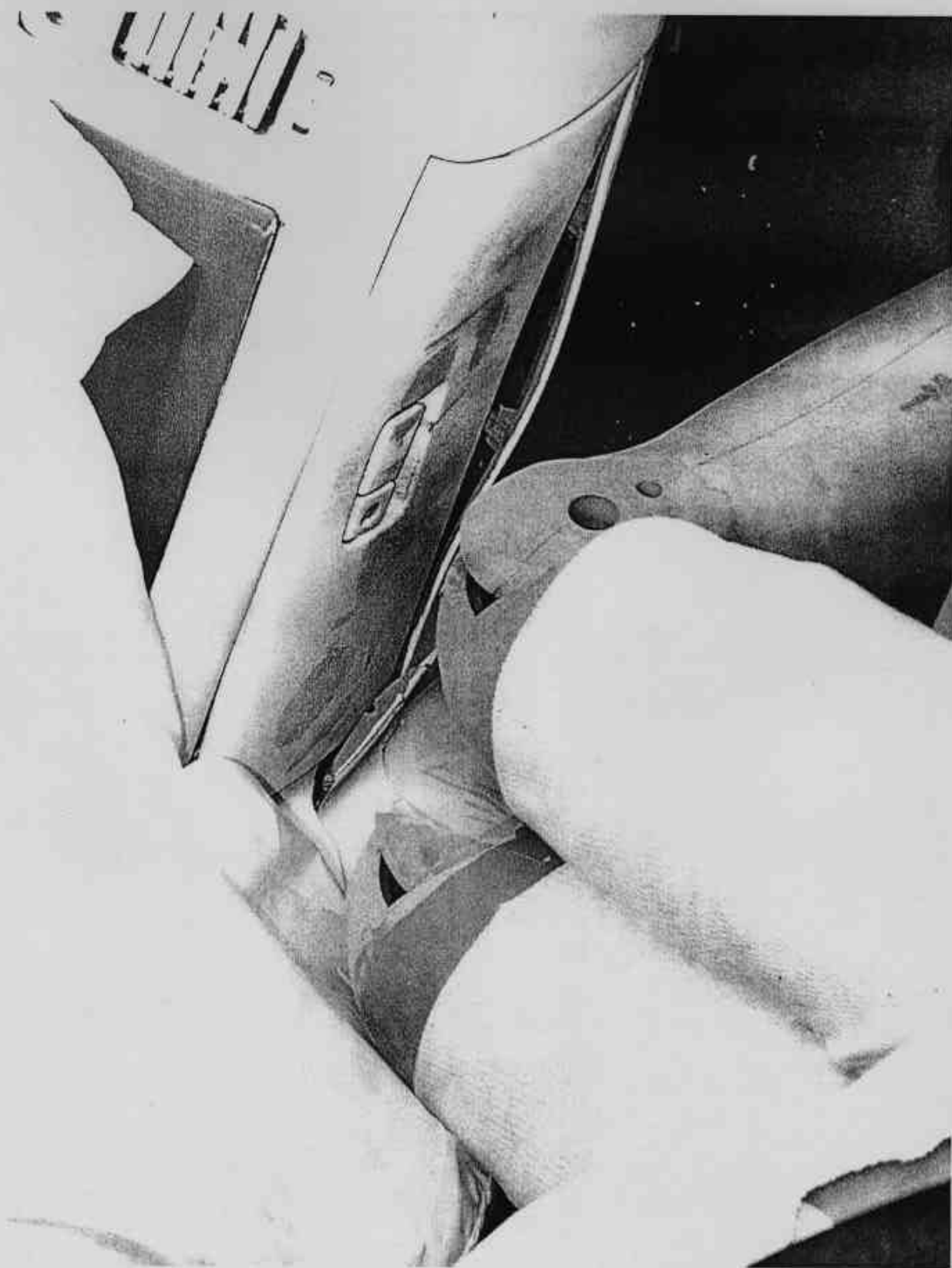


FIGURE A-50. POST TEST PASSENGER DUMMY CONTACT POINT

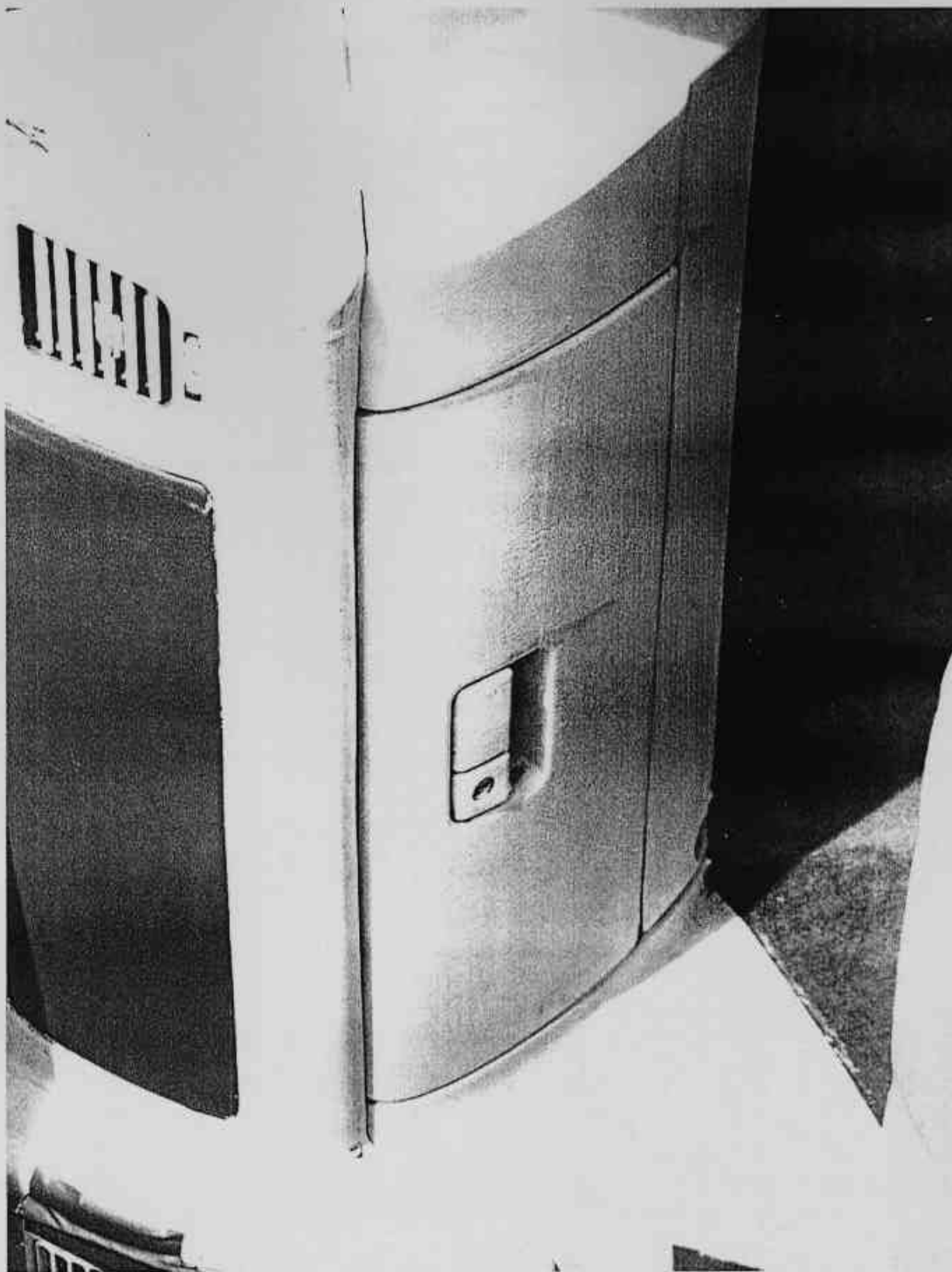


FIGURE A-51. PRETEST PASSENGER SIDE KNEE BOLSTER



FIGURE A-52. POST TEST PASSENGER SIDE KNEE BOLSTER

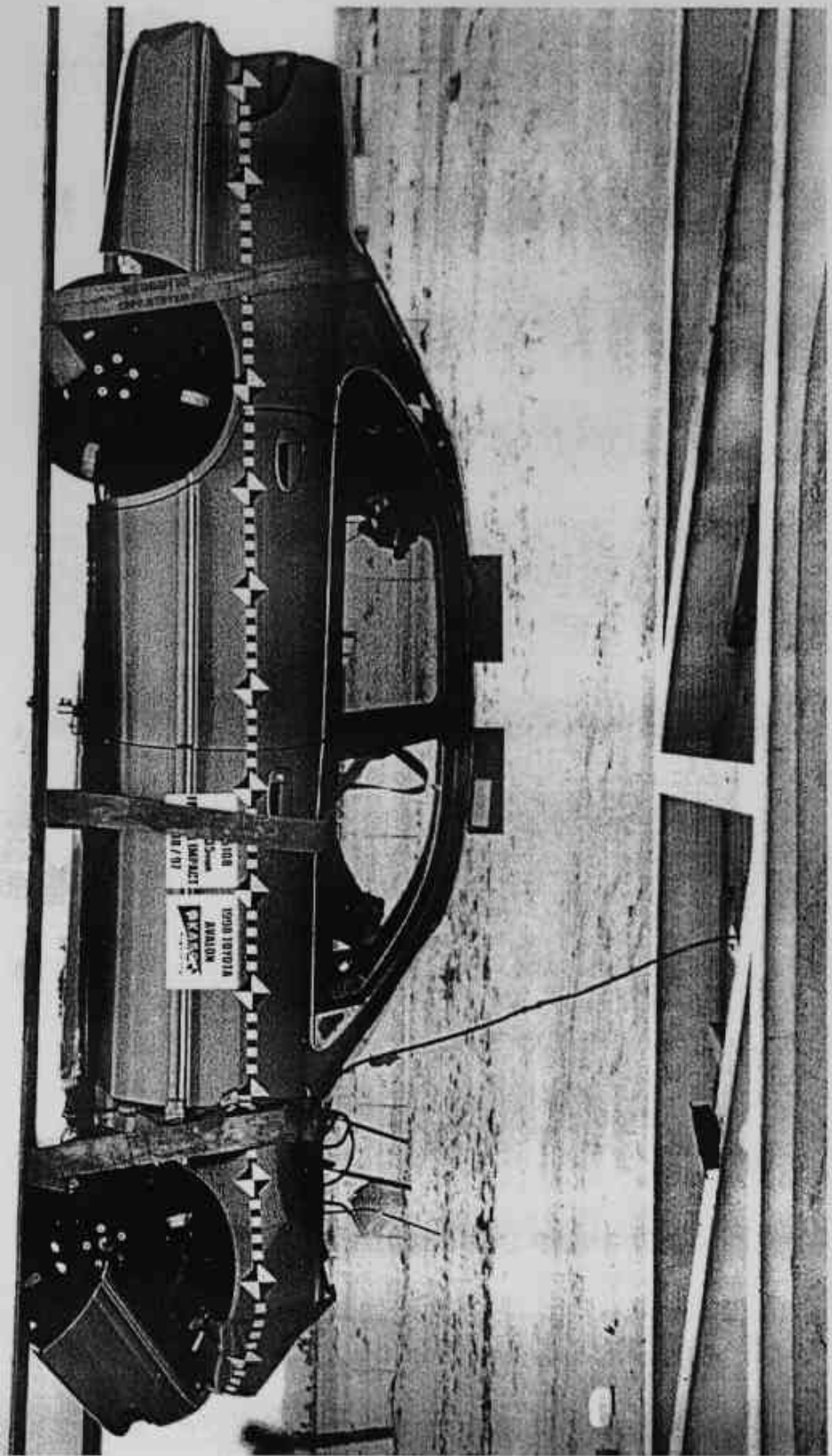


FIGURE 53. VEHICLE ON ROLLOVER

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APPENDIX B
DUMMY, VEHICLE AND RESPONSE DATA TRACES

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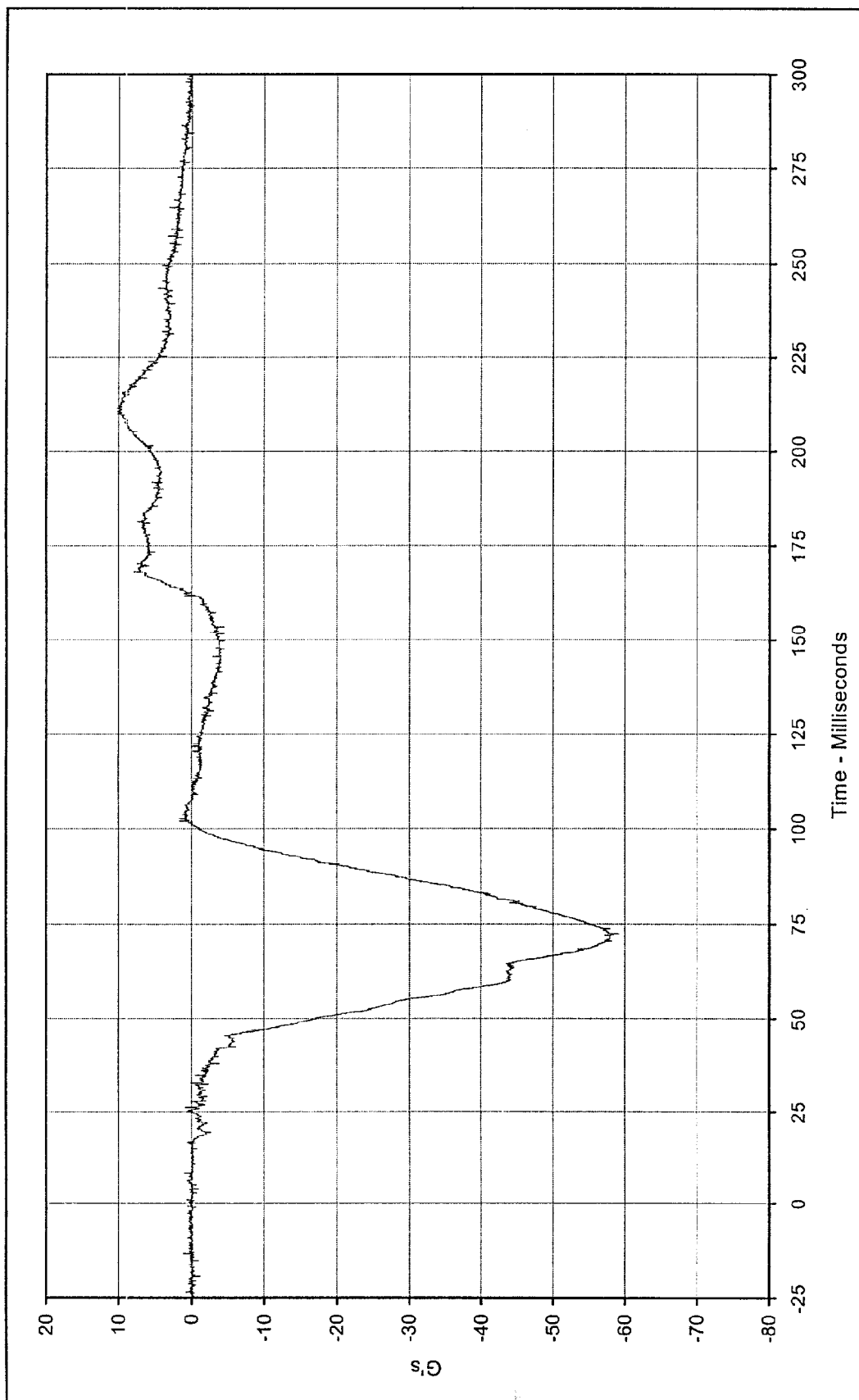
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B-127	Vehicle Right Rear Primary Velocity X	B-127
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Curve Description: Driver Head Primary X

Maximum Value: 10.2 at 210.2 Milliseconds

Minimum Value: -59.2 at 72.4 Milliseconds

SAE Filter Class: 1000

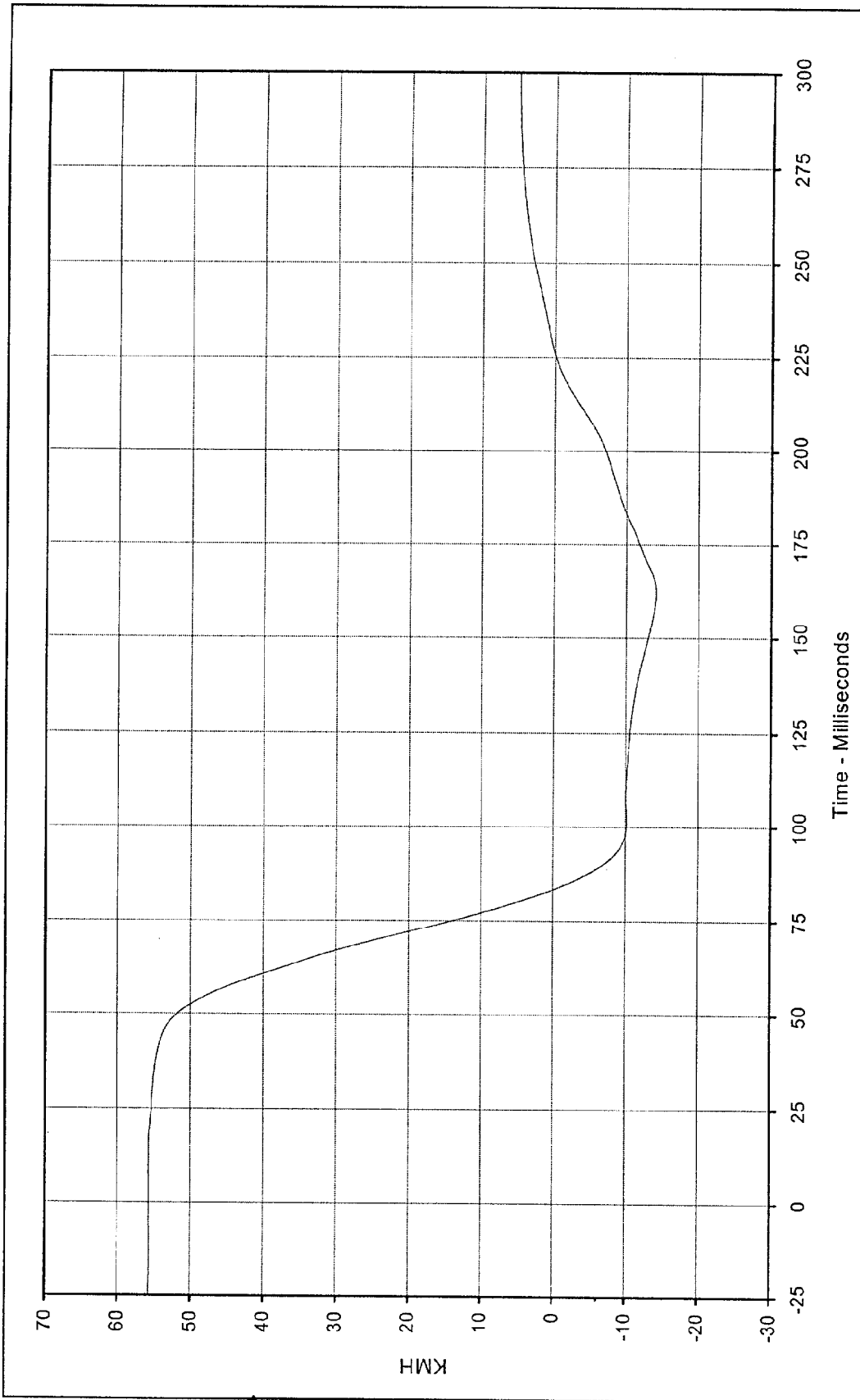
Date of Test: 12/18/97

Curve Number: FIL-001

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

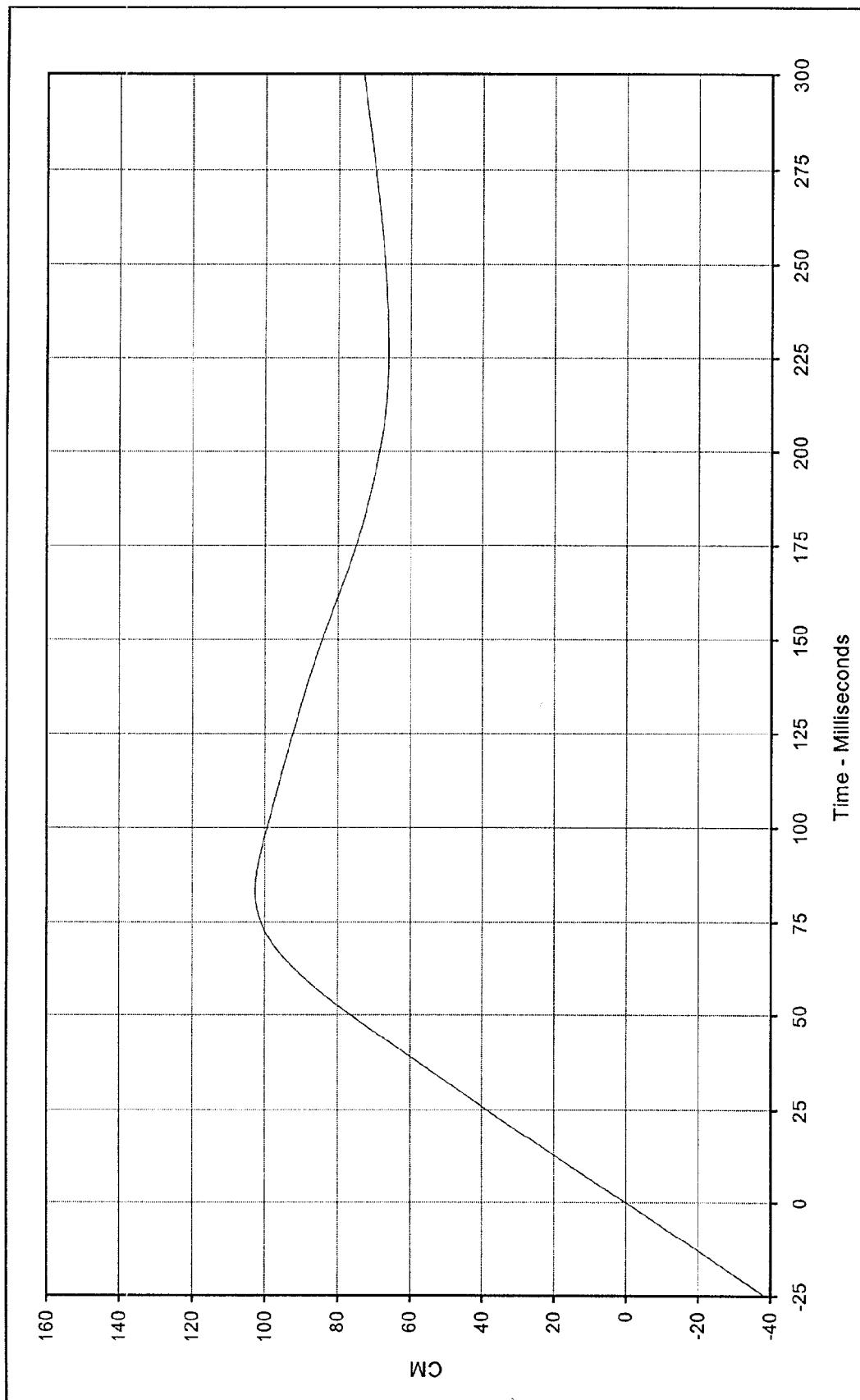




Curve Description: Driver Head Primary X Velocity
 Maximum Value: 55.7 at 8.8 Milliseconds
 Minimum Value: -14.1 at 162.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN1-001

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Driver Head Primary X Displ.

Maximum Value: 102.6 at 83.4 Milliseconds

Minimum Value: 0.1 at 0.0 Milliseconds

SAE Filter Class: 180

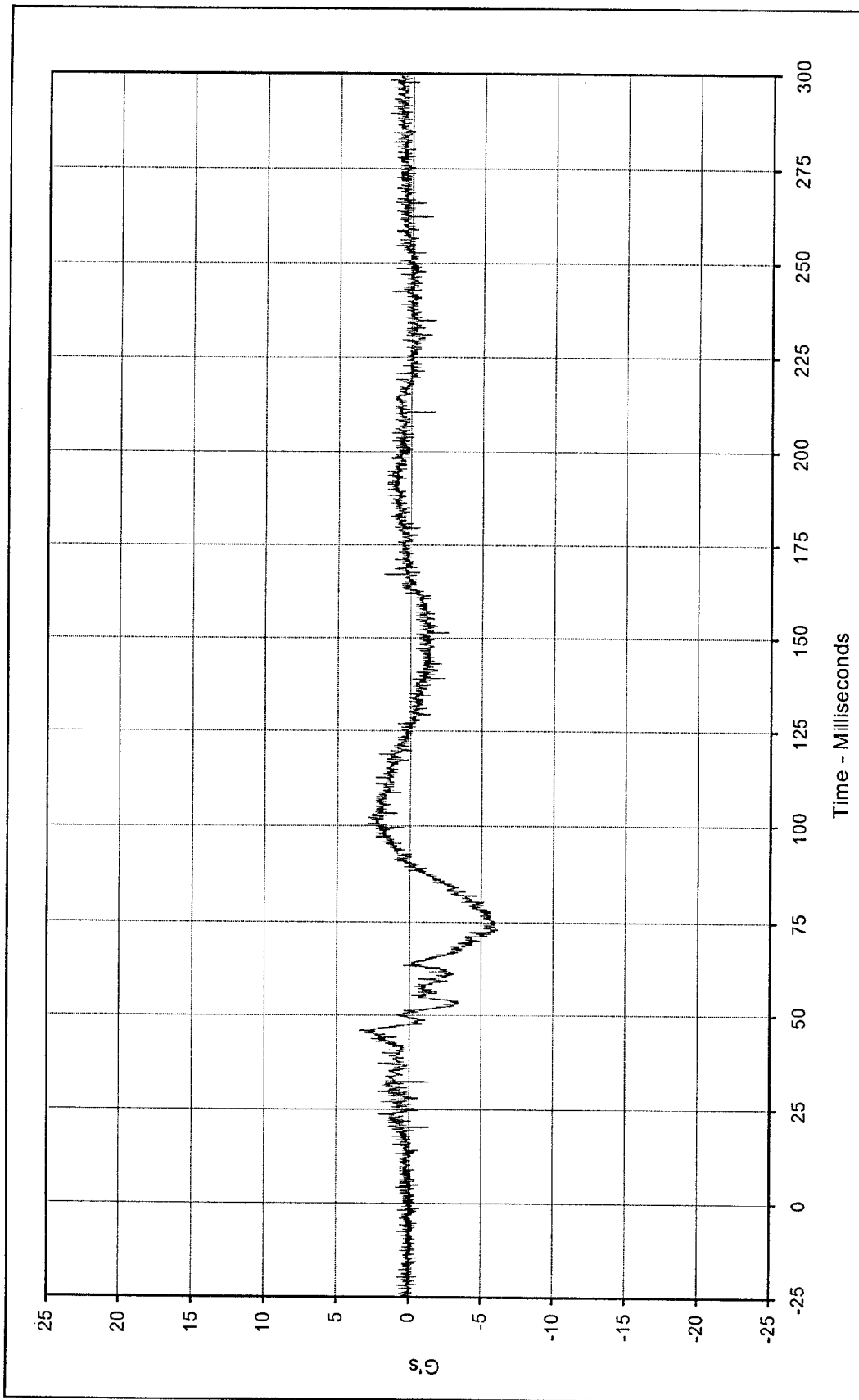
Date of Test: 12/18/97

Curve Number: IN2-001

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

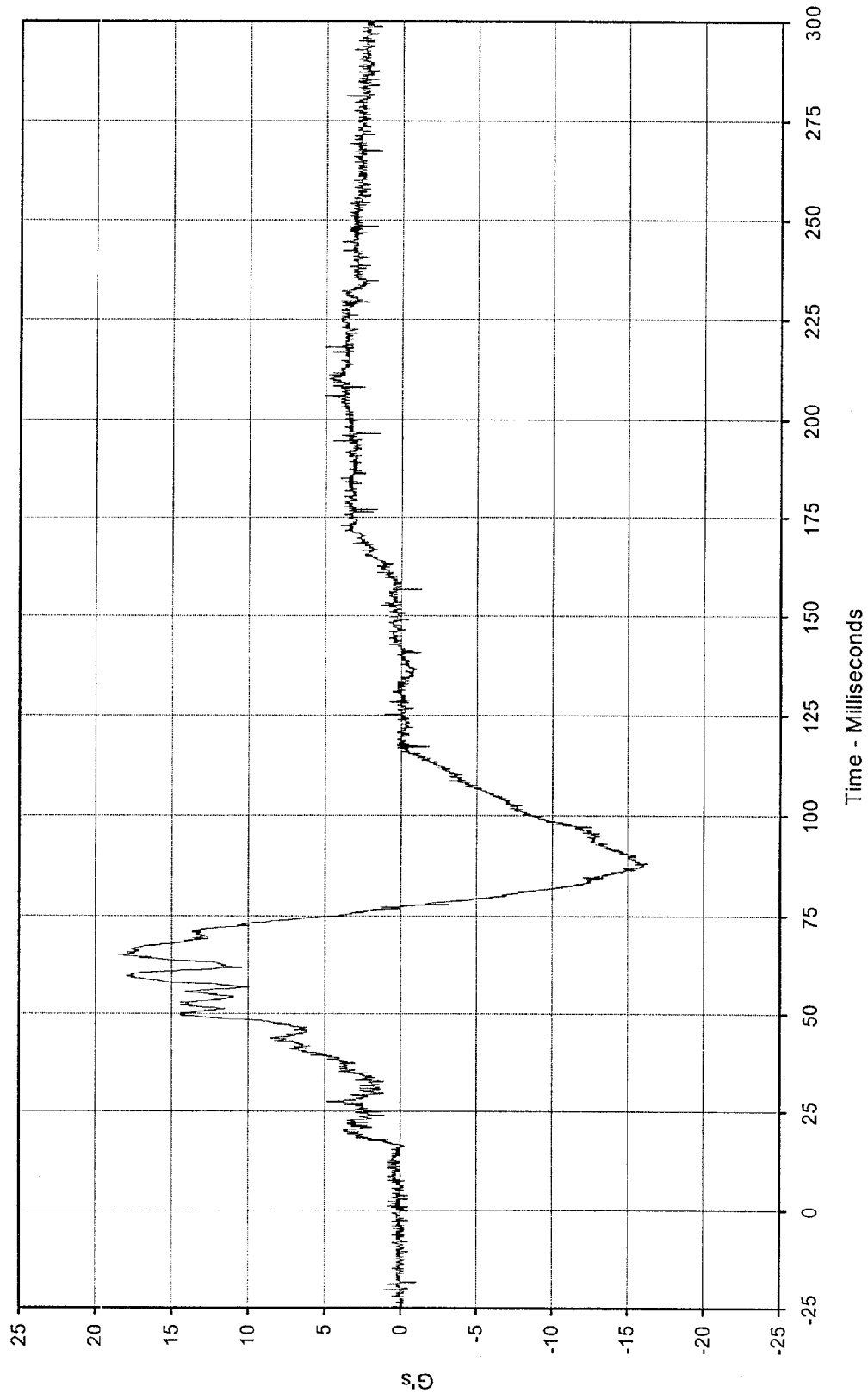




Curve Description: Driver Head Primary Y Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
Maximum Value: 3.4 at 45.9 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan
Minimum Value: -6.2 at 72.8 Milliseconds



SAE Filter Class: 1000
Date of Test: 12/18/97
Curve Number: FIL-002



Curve Description: Driver Head Primary Z

Maximum Value: 18.5 at 64.8 Milliseconds

Minimum Value: -16.3 at 87.8 Milliseconds

SAE Filter Class: 1000

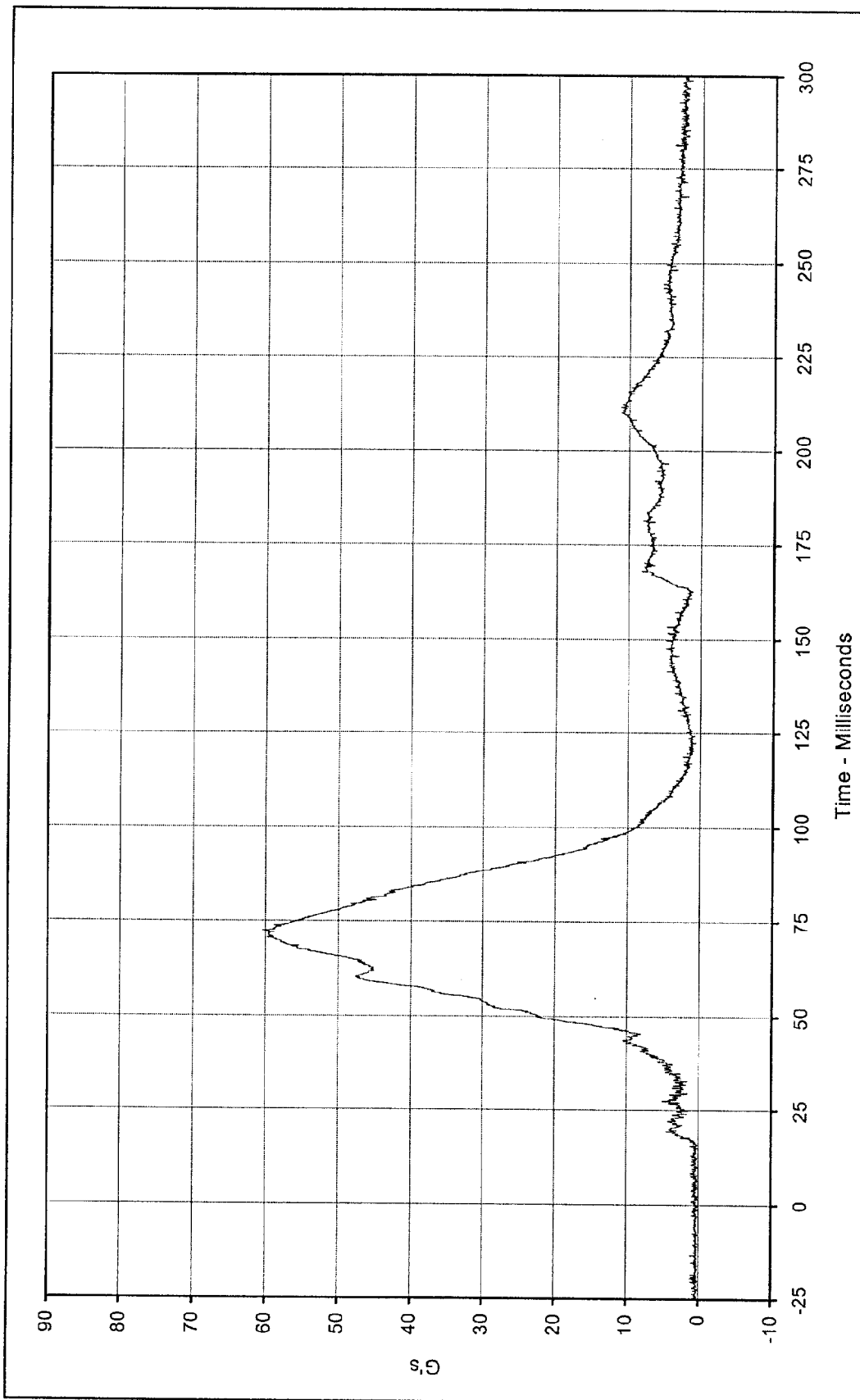
Date of Test: 12/18/97

Curve Number: FIL-003

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

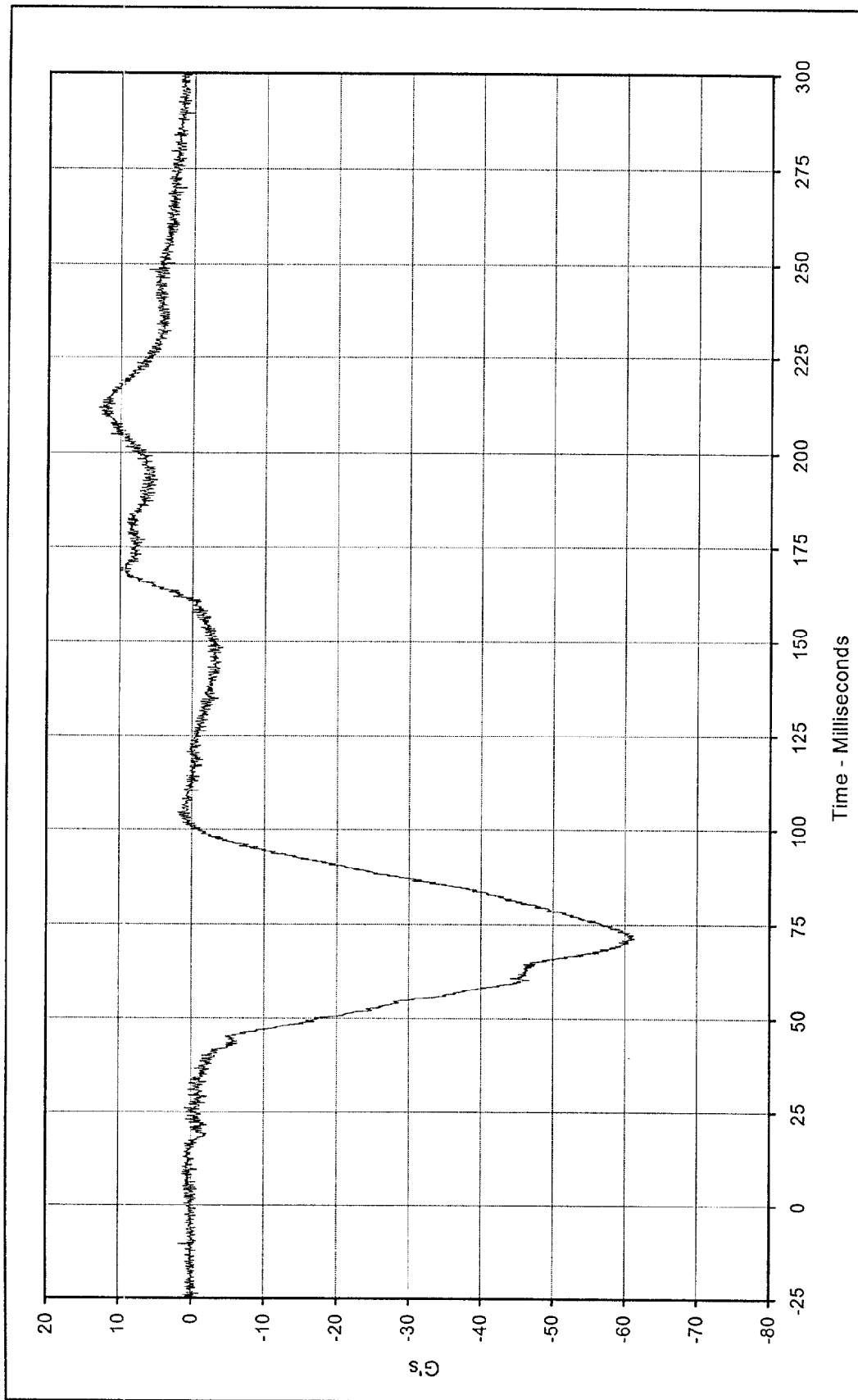




Curve Description: Driver Head Resultant Primary
 Maximum Value: 60.5 at 72.4 Milliseconds
 Minimum Value: 0.1 at 1.5 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: RES-001

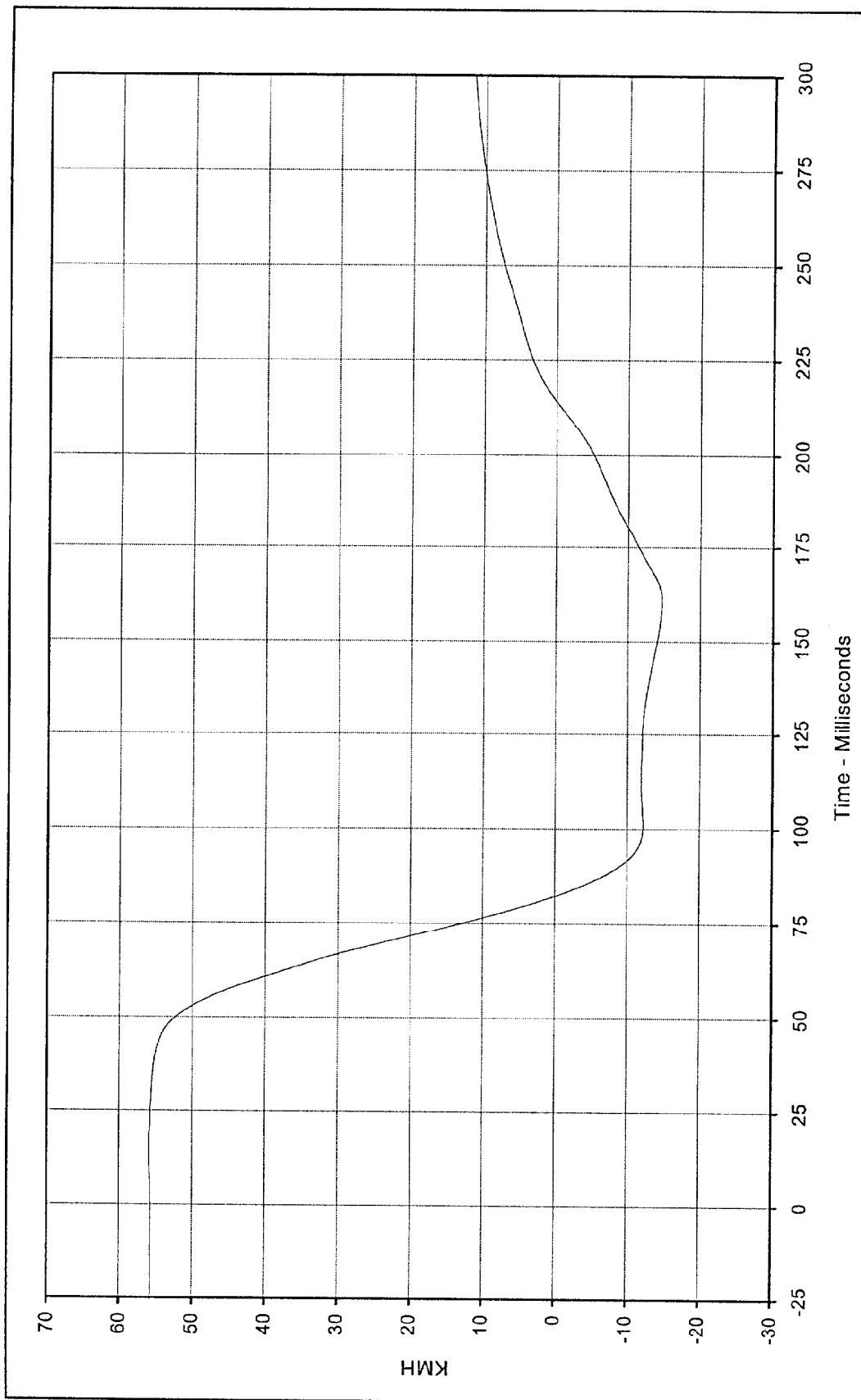
Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:	Driver Head Redundant X	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	13.0 at 211.8 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-61.4 at 71.0 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/18/97			
Curve Number:	FIL-004			





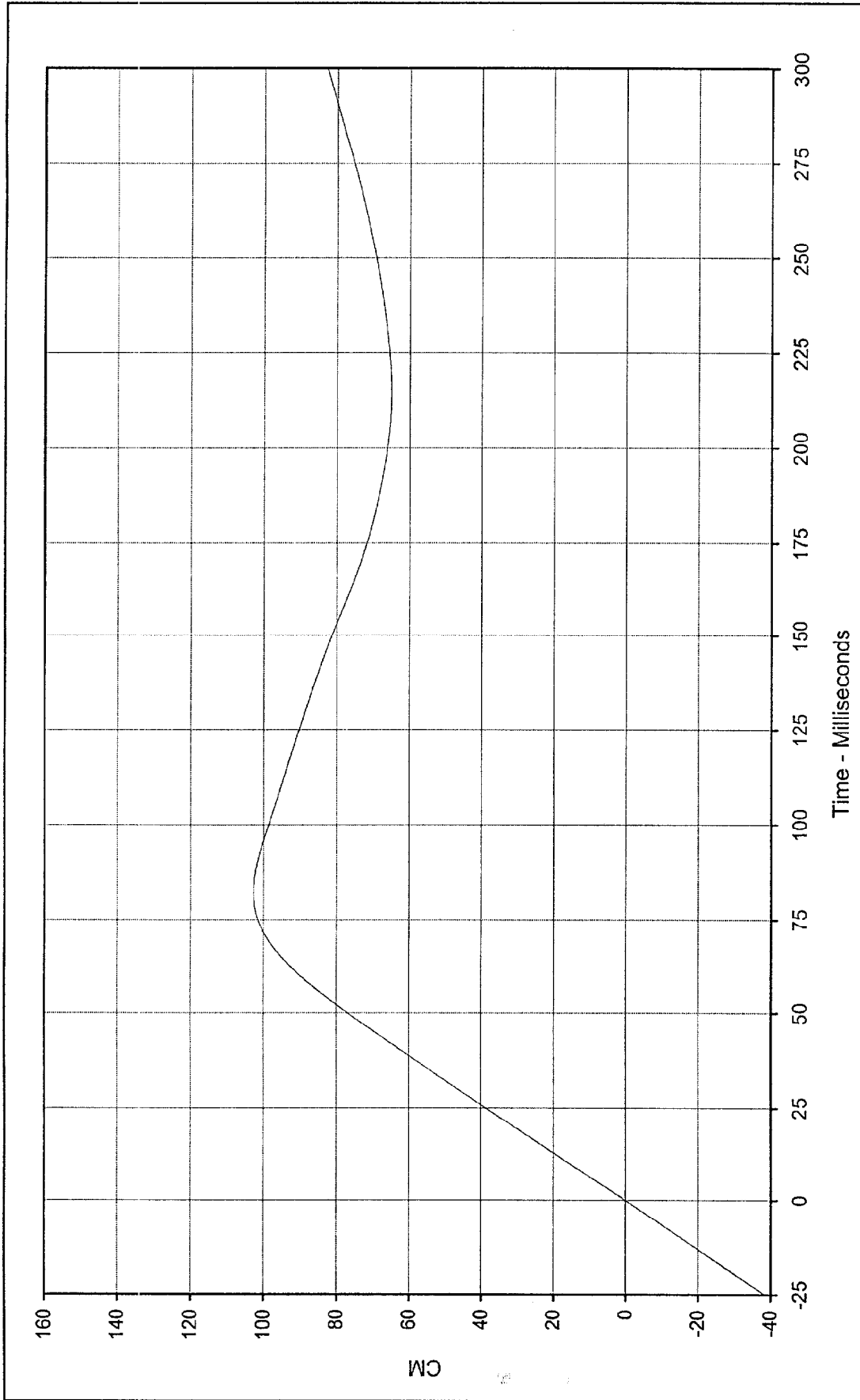
Curve Description: Driver Head Redundant X Velocity

Maximum Value:	55.9	at	16.3	Milliseconds
Minimum Value:	-14.7	at	161.1	Milliseconds
SAE Filter Class:	180			
Date of Test:	12/18/97			
Curve Number:	IN1-004			

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

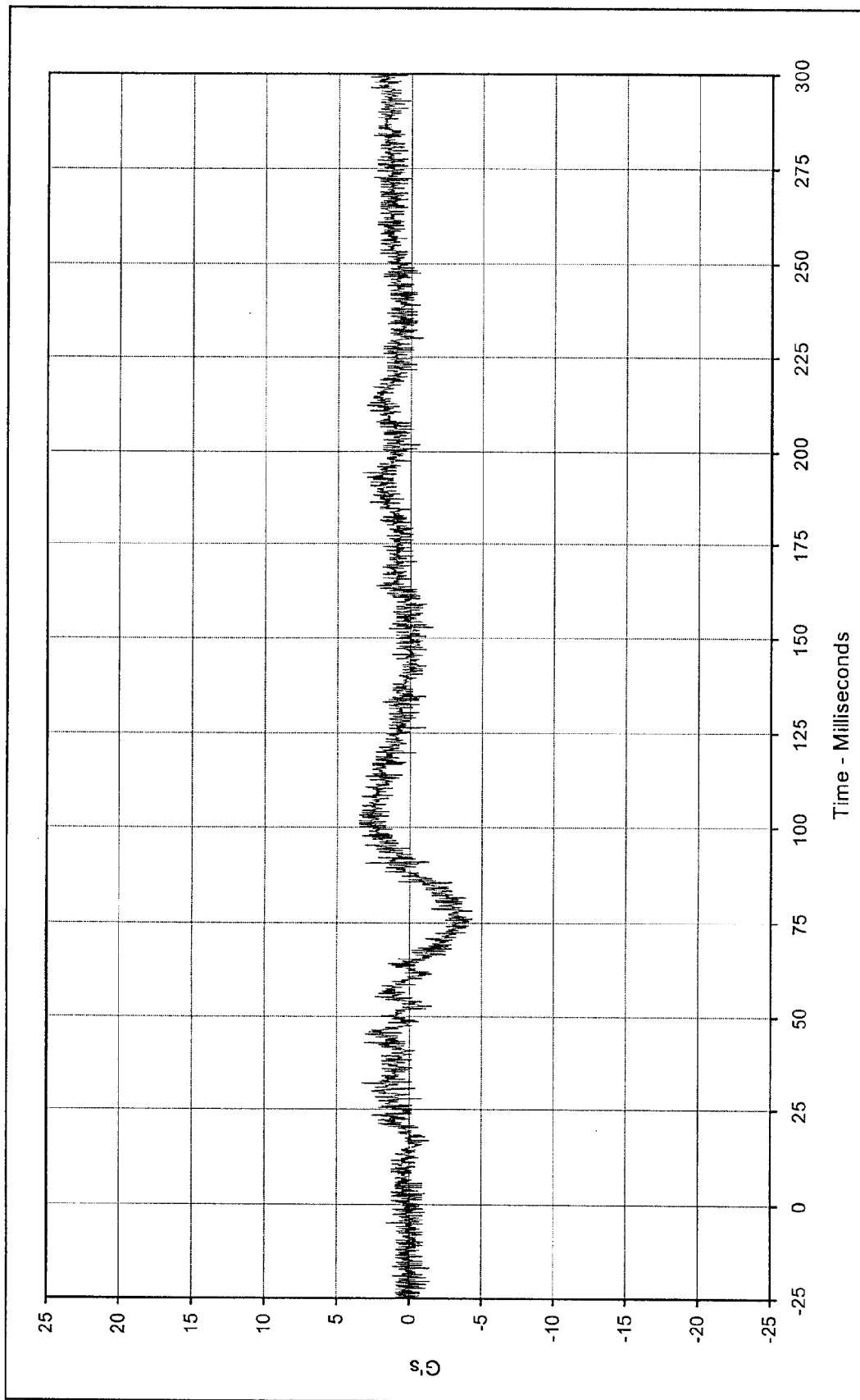




Curve Description: Driver Head Redundant X Displ.
Maximum Value: 102.7 at 82.2 Milliseconds
Minimum Value: 0.1 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/18/97
Curve Number: IN2-004

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

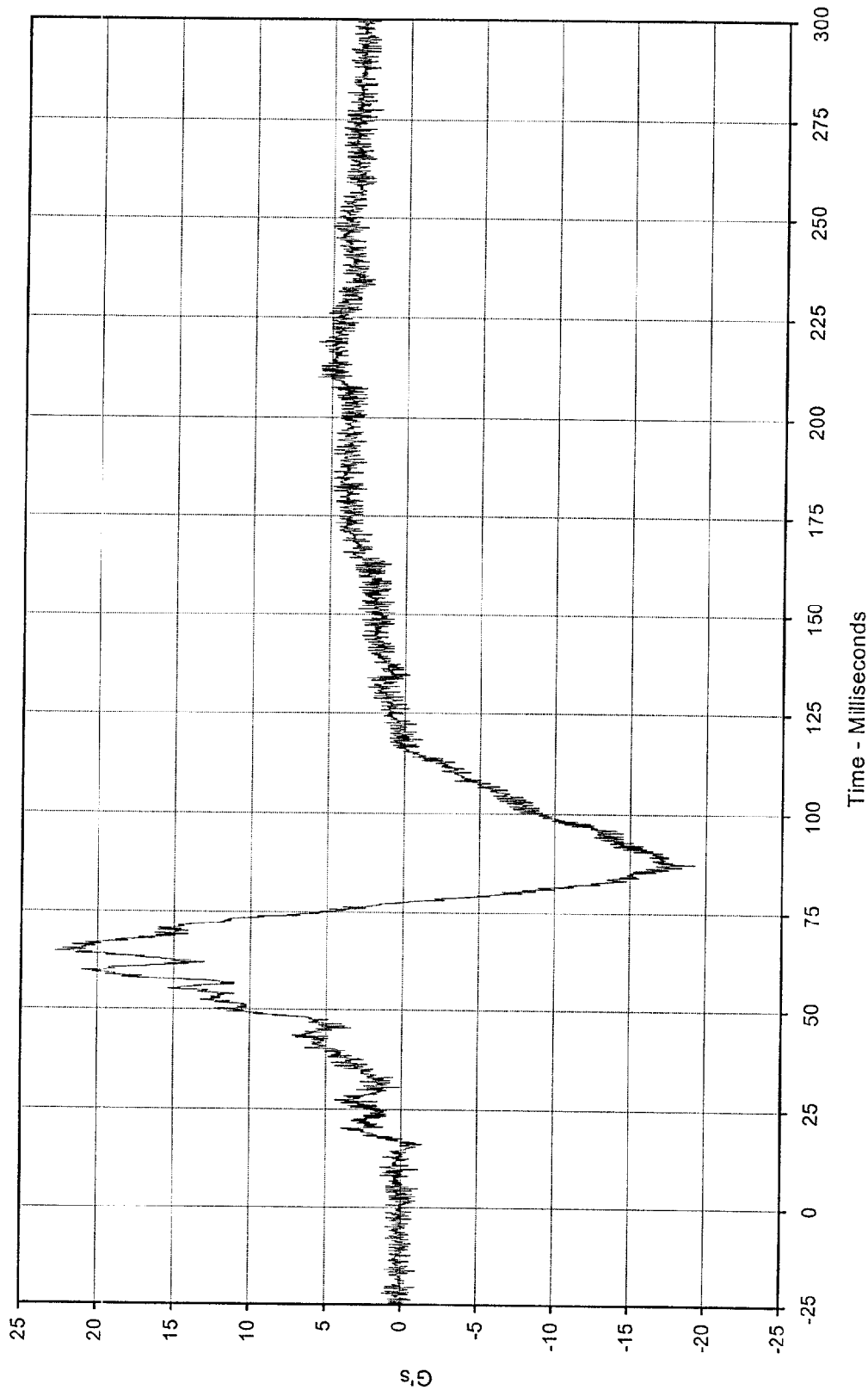




Curve Description: Driver Head Redundant Y
 Maximum Value: 3.5 at 100.2 Milliseconds
 Minimum Value: -4.3 at 75.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: FIL-005

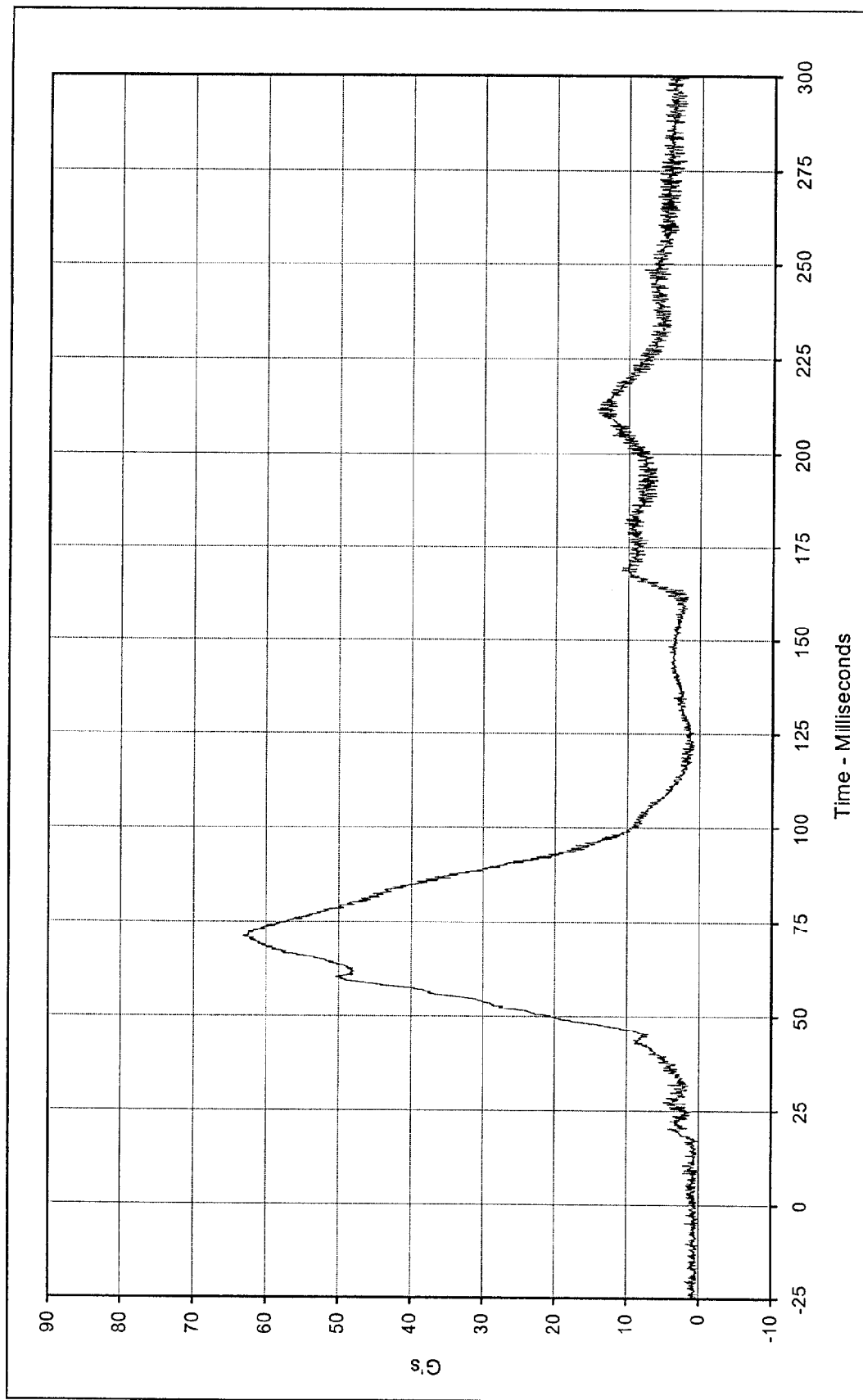
Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:	Driver Head Redundant Z	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	22.7	at	64.7	Milliseconds
Minimum Value:	-19.3	at	87.4	Milliseconds
SAE Filter Class:	1000	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Date of Test:	12/18/97			
Curve Number:	FIL-006			

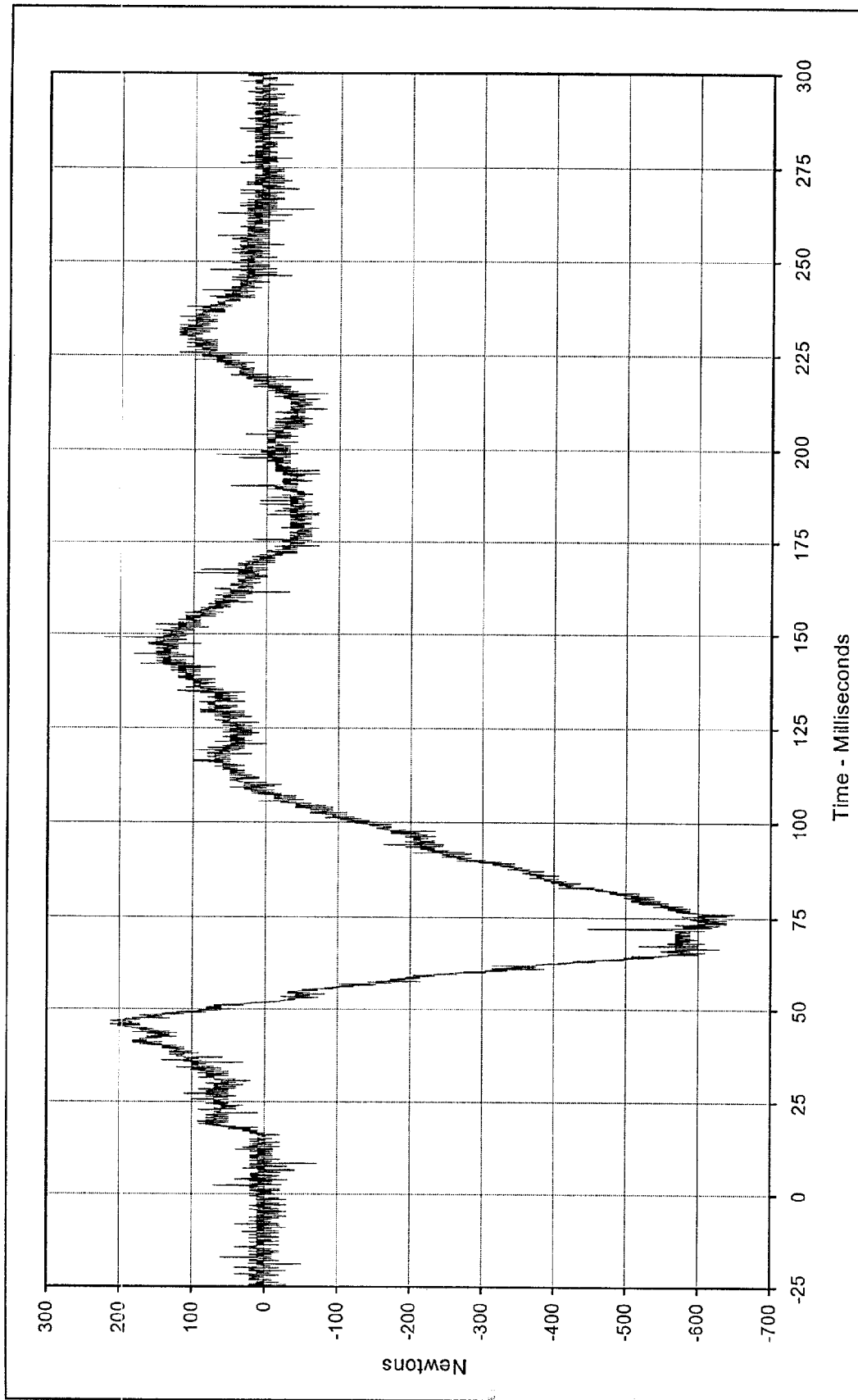




Curve Description: Driver Head Resultant Redundant
 Maximum Value: 63.2 at 71.0 Milliseconds
 Minimum Value: 0.1 at 16.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: RES-004

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:

Maximum Value: 222.3 at 149.1 Milliseconds
Minimum Value: -649.9 at 75.9 Milliseconds

SAE Filter Class: 1000

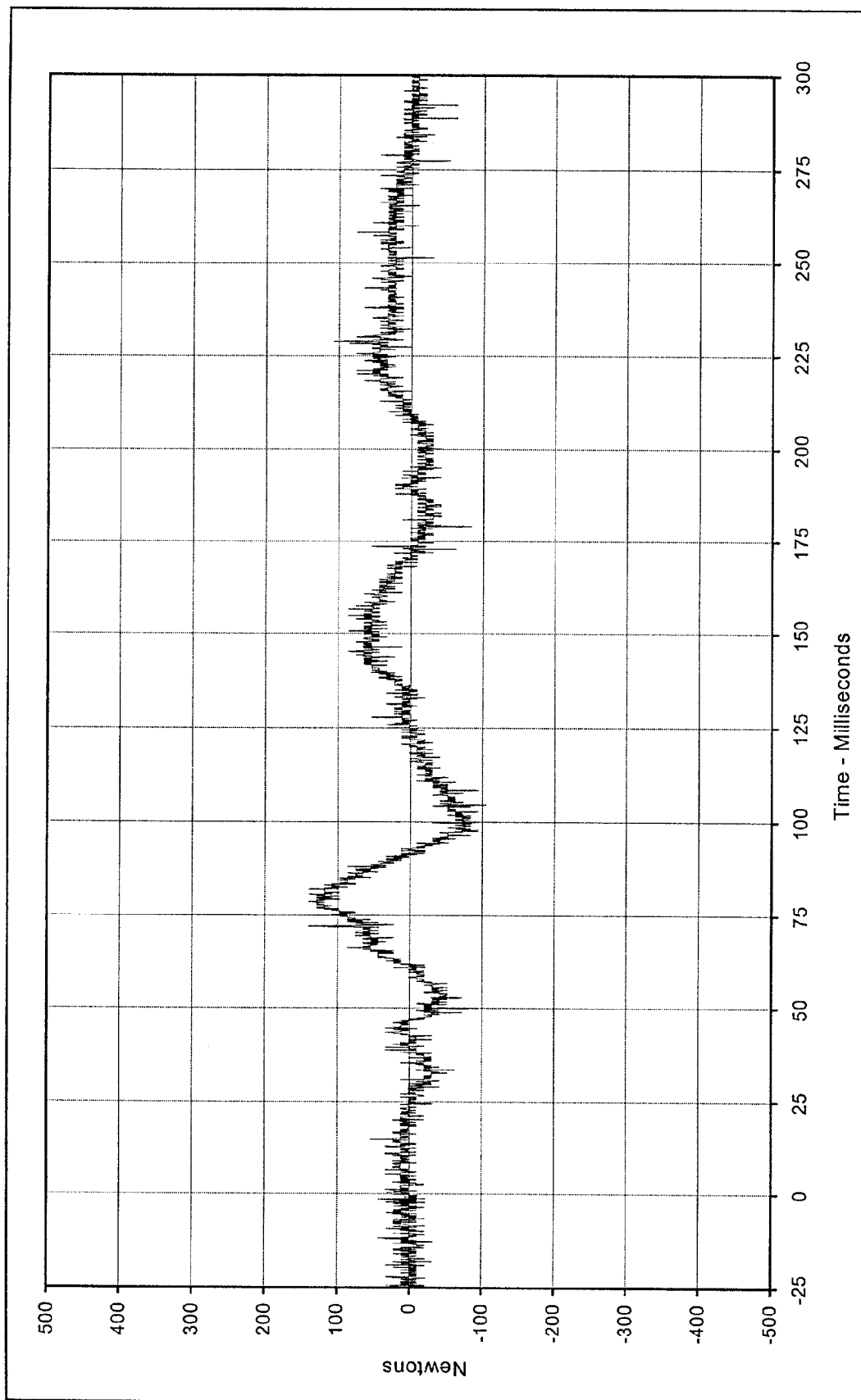
Date of Test: 12/18/97

Curve Number: FIL-007

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

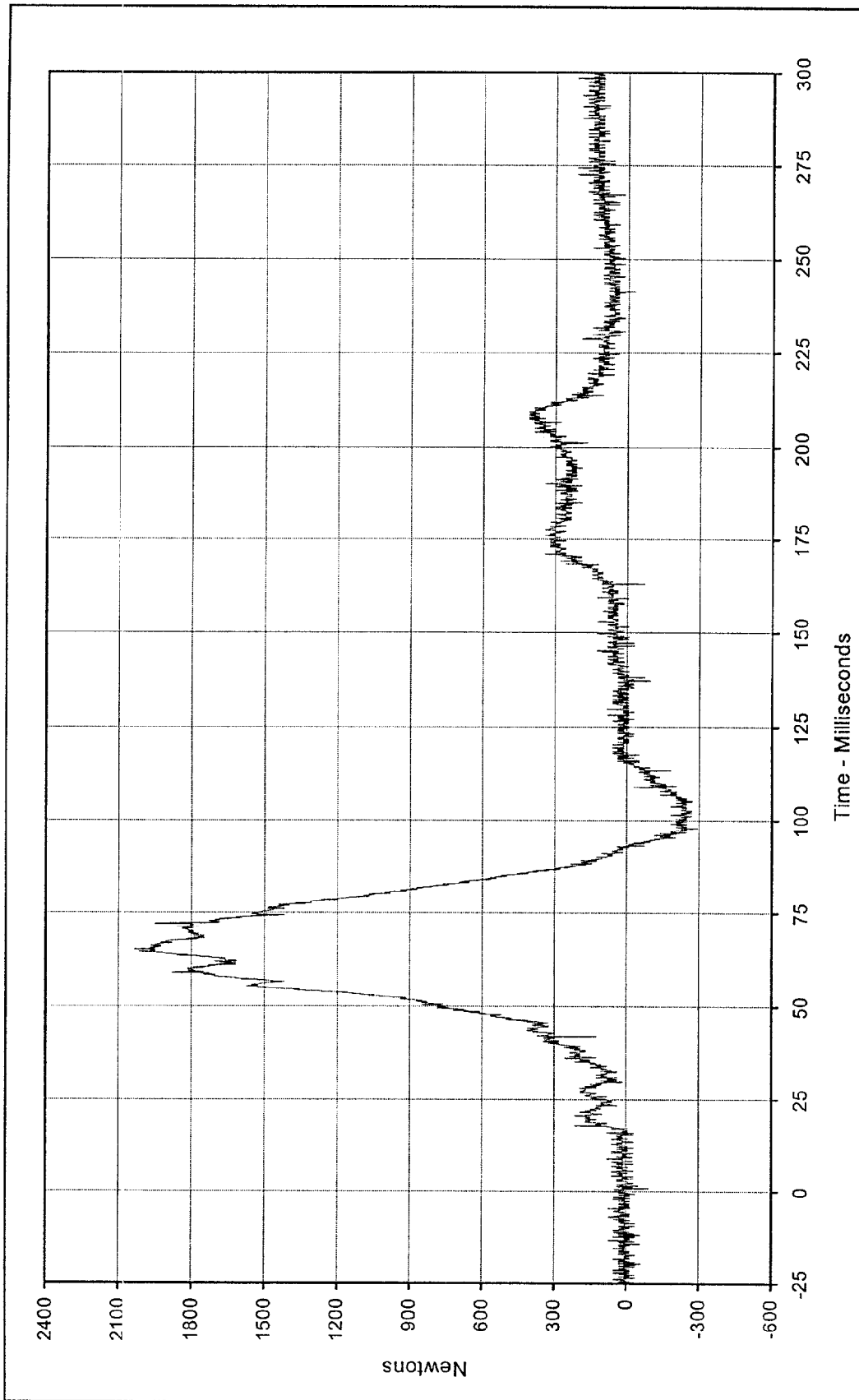




Curve Description: 1988 NHTSA 35 mph NCAP No.: MW5108
 Testing Program
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

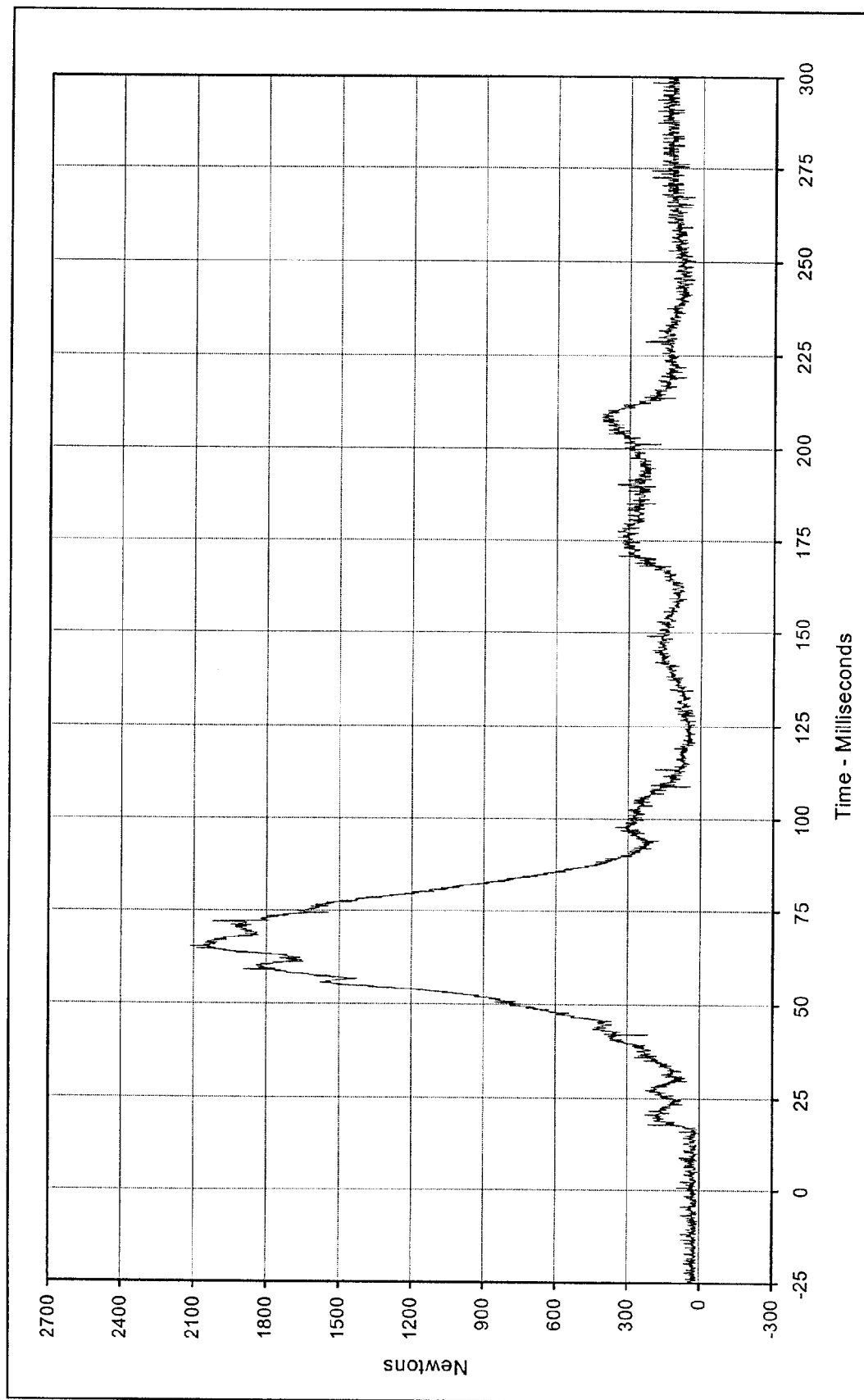
Driver Neck Force Y
 Maximum Value: 139.4 at 72.0 Milliseconds
 Minimum Value: -105.1 at 104.5 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: FIL-008





Curve Description:		Driver Neck Force Z		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	2034.7	at	65.1	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-291.7	at	97.7			
SAE Filter Class:	1000					
Date of Test:	12/18/97					
Curve Number:	FIL-009					





Curve Description: Driver Neck Force Resultant

Maximum Value: 2116.1 at 65.1 Milliseconds

Minimum Value: 6.6 at 5.1 Milliseconds

SAE Filter Class: 1000

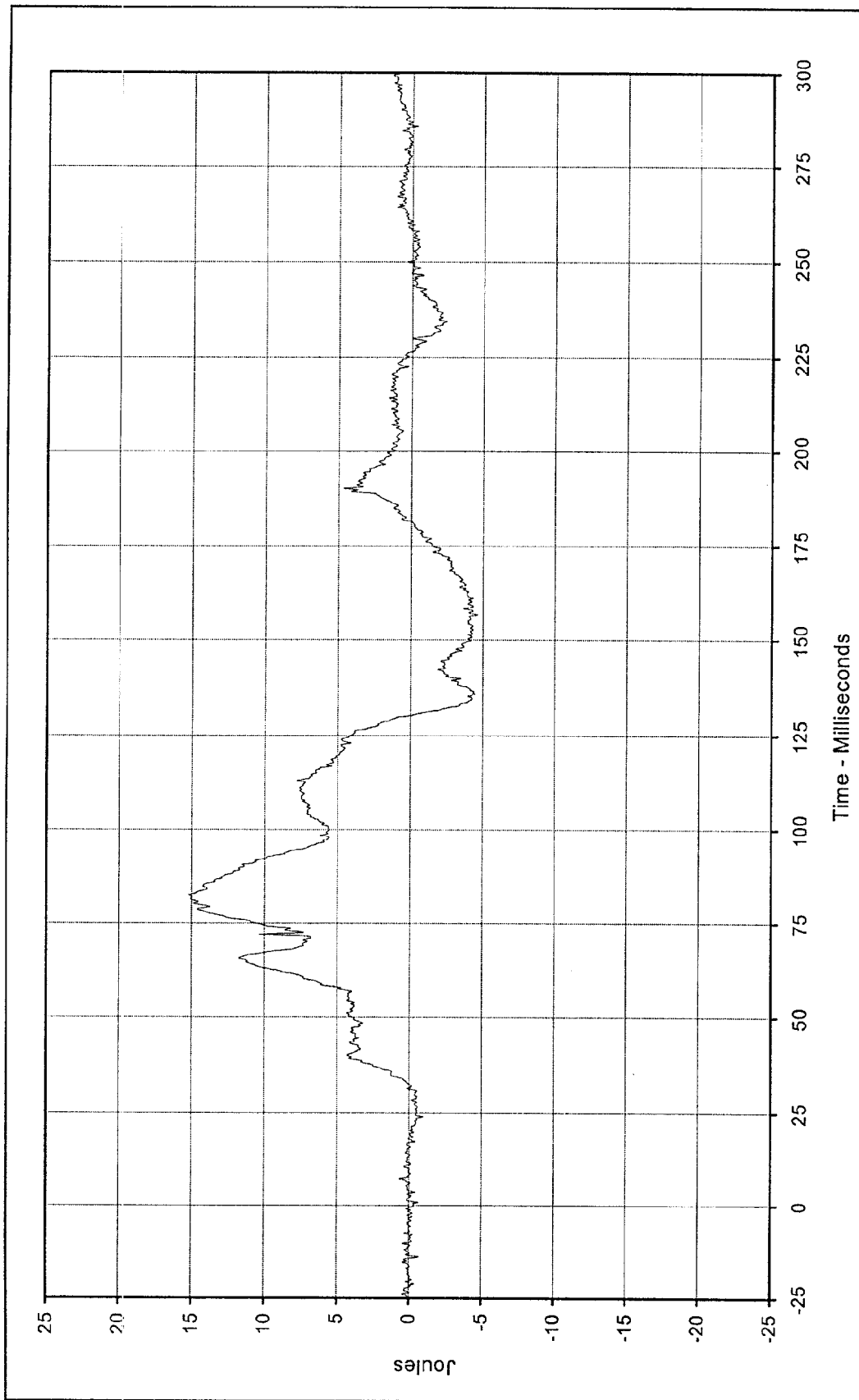
Date of Test: 12/18/97

Curve Number: RES-007

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

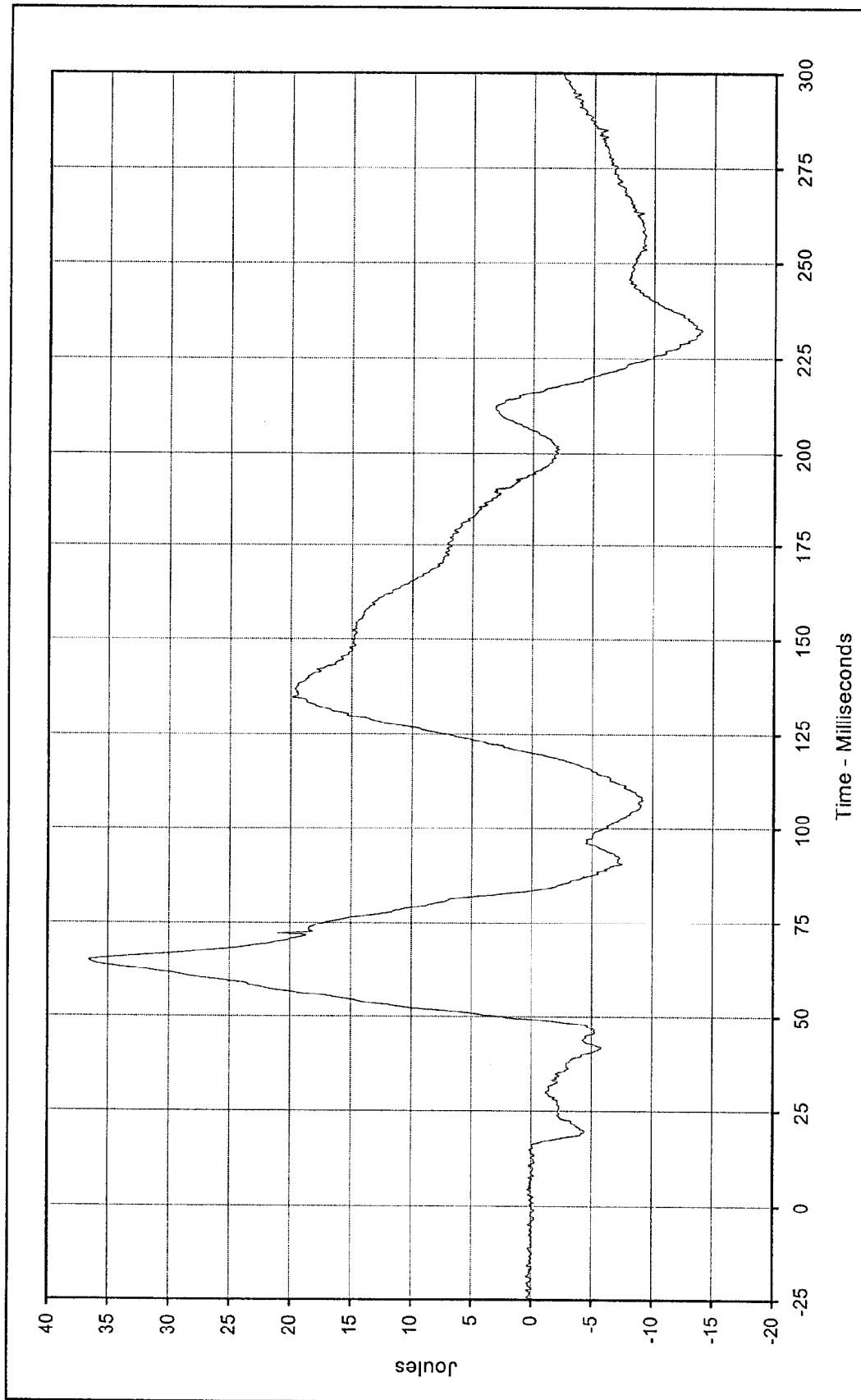
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:	Driver Neck Moment X	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	15.2 at 82.3 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-4.7 at 156.8 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/18/97			
Curve Number:	FIL-010			





Curve Description: Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 36.6 at 64.8 Milliseconds

Minimum Value: -14.0 at 232.3 Milliseconds

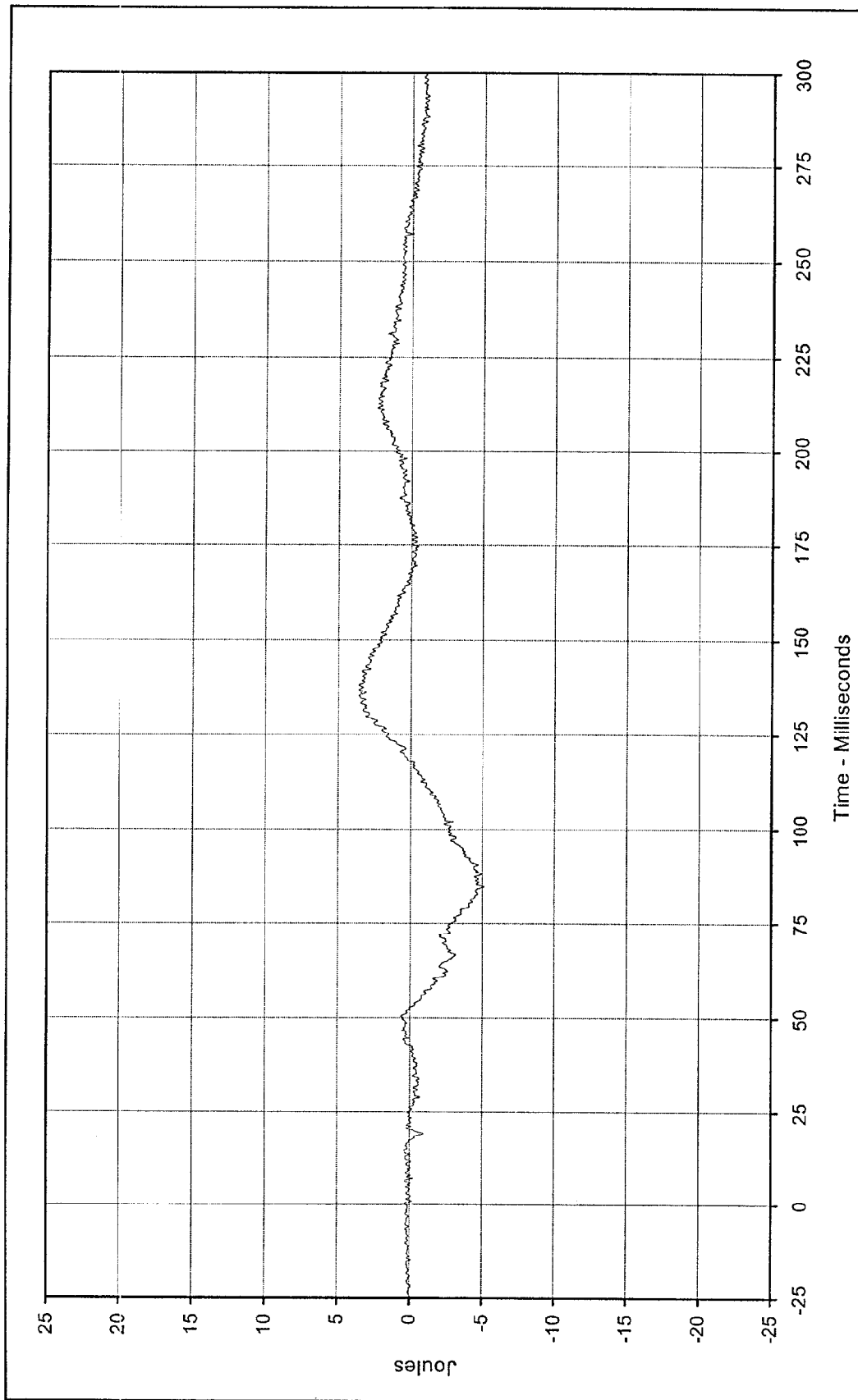
SAE Filter Class: 600

Date of Test: 12/18/97

Curve Number: FIL-011

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

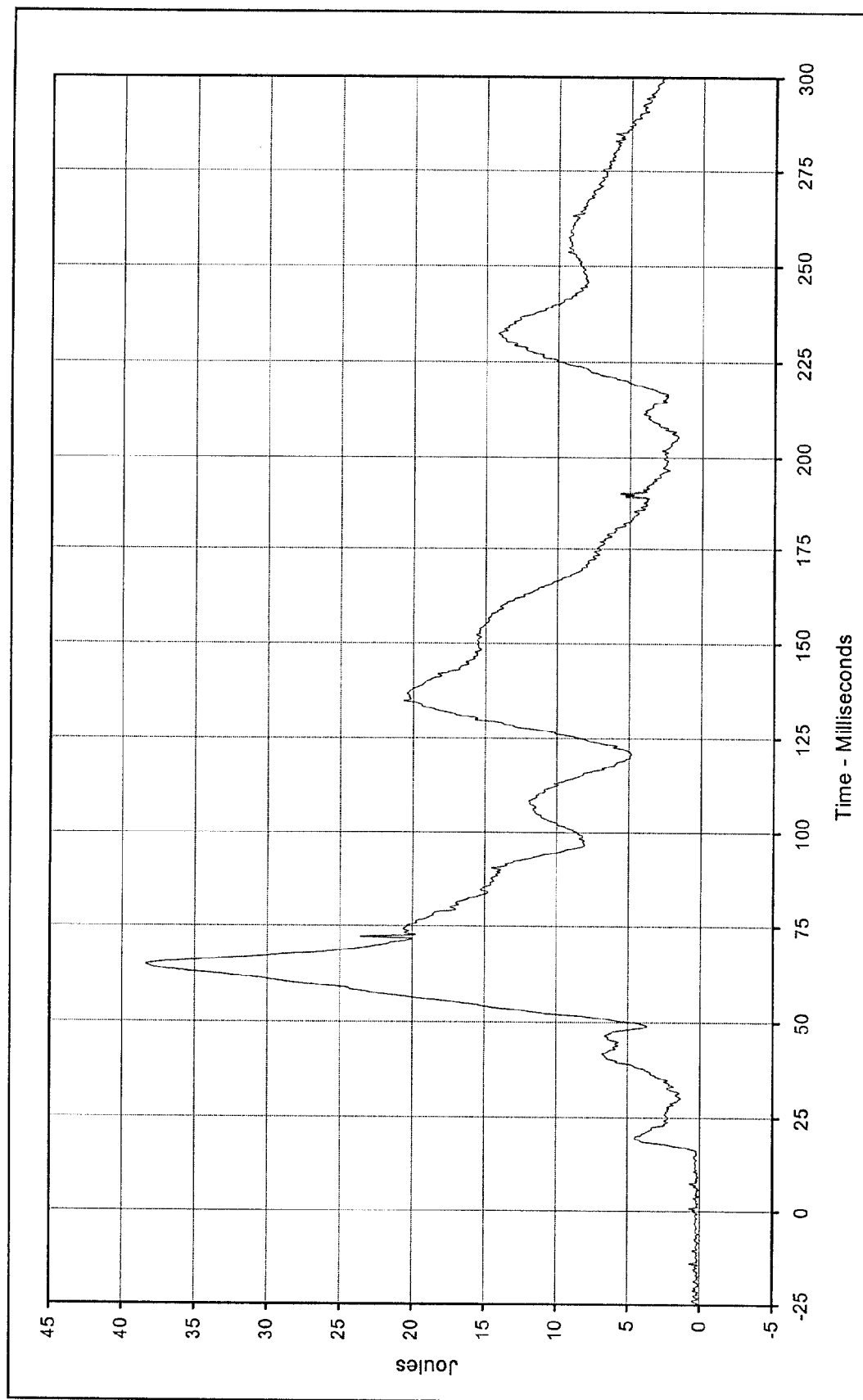




Curve Description: Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

Driver Neck Moment Z
 Maximum Value: 3.6 at 135.4 Milliseconds
 Minimum Value: -5.1 at 84.6 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-012

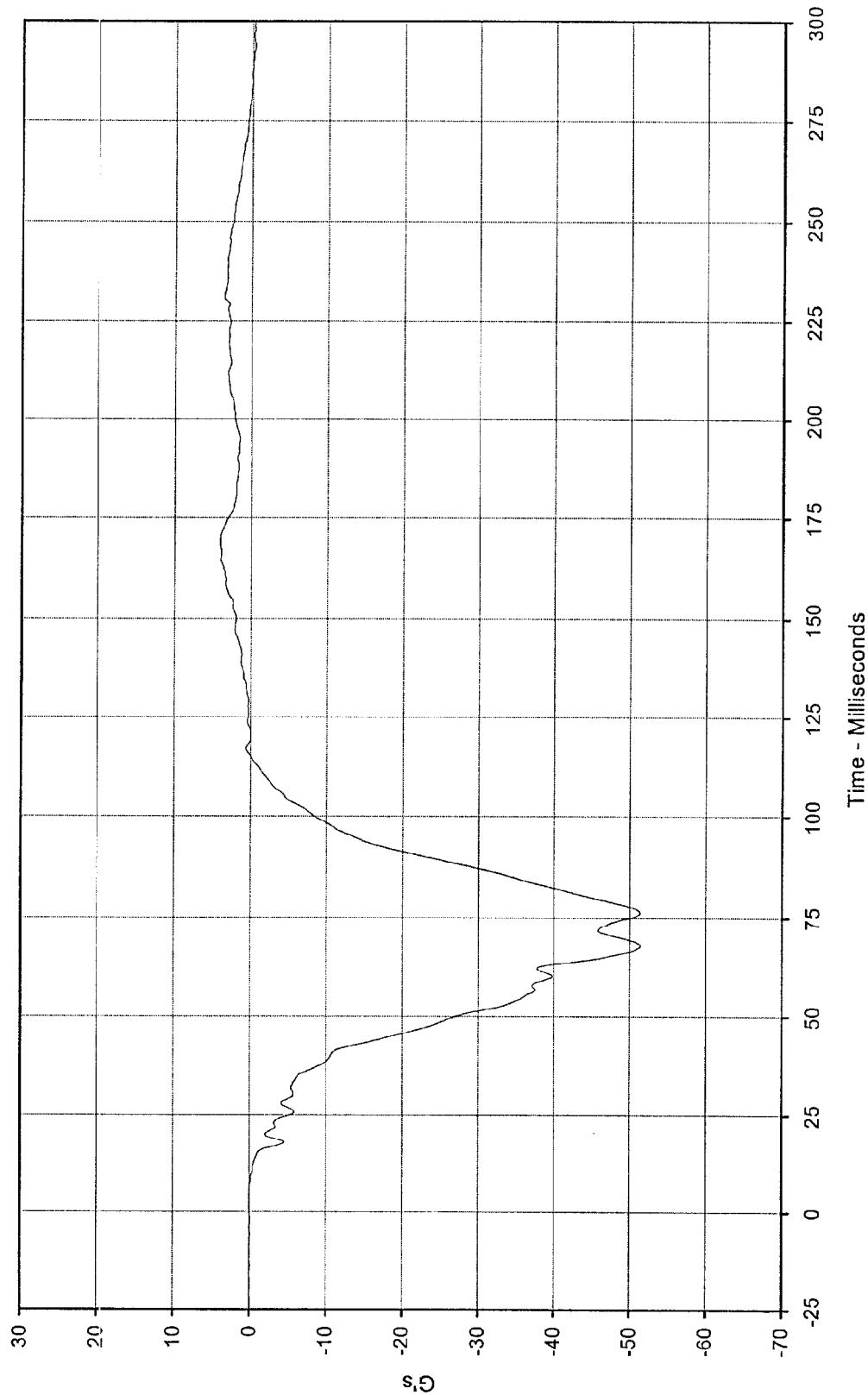




Curve Description: Driver Neck Moment Resultant
 Maximum Value: 38.4 at 64.8 Milliseconds
 Minimum Value: 0.1 at 4.0 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: RES-010

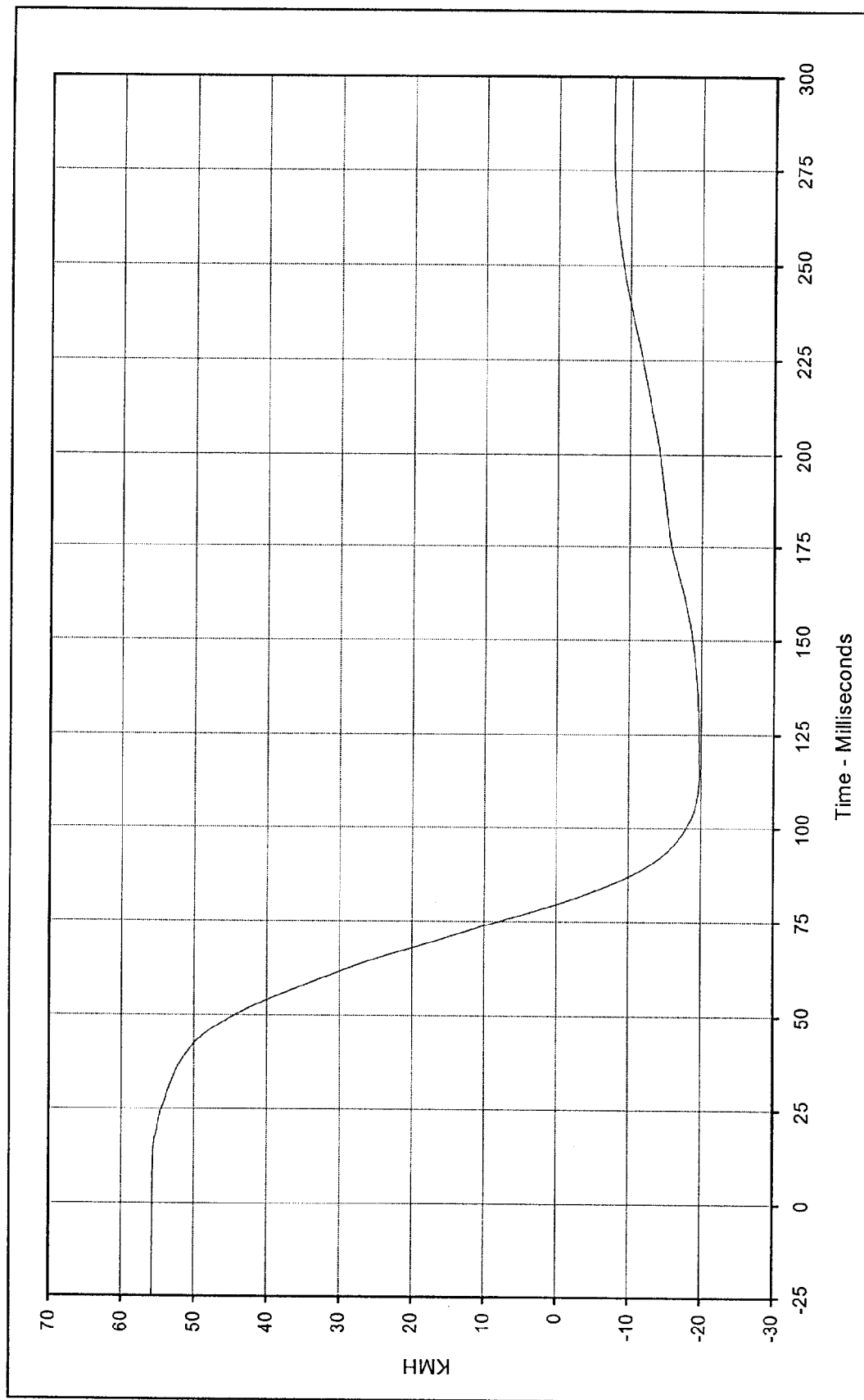
Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:	Driver Chest Primary X	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	4.1	at	168.8	Milliseconds
Minimum Value:	-51.4	at	67.9	Milliseconds
SAE Filter Class:	180			
Date of Test:	12/18/97	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Curve Number:	FIL-013			



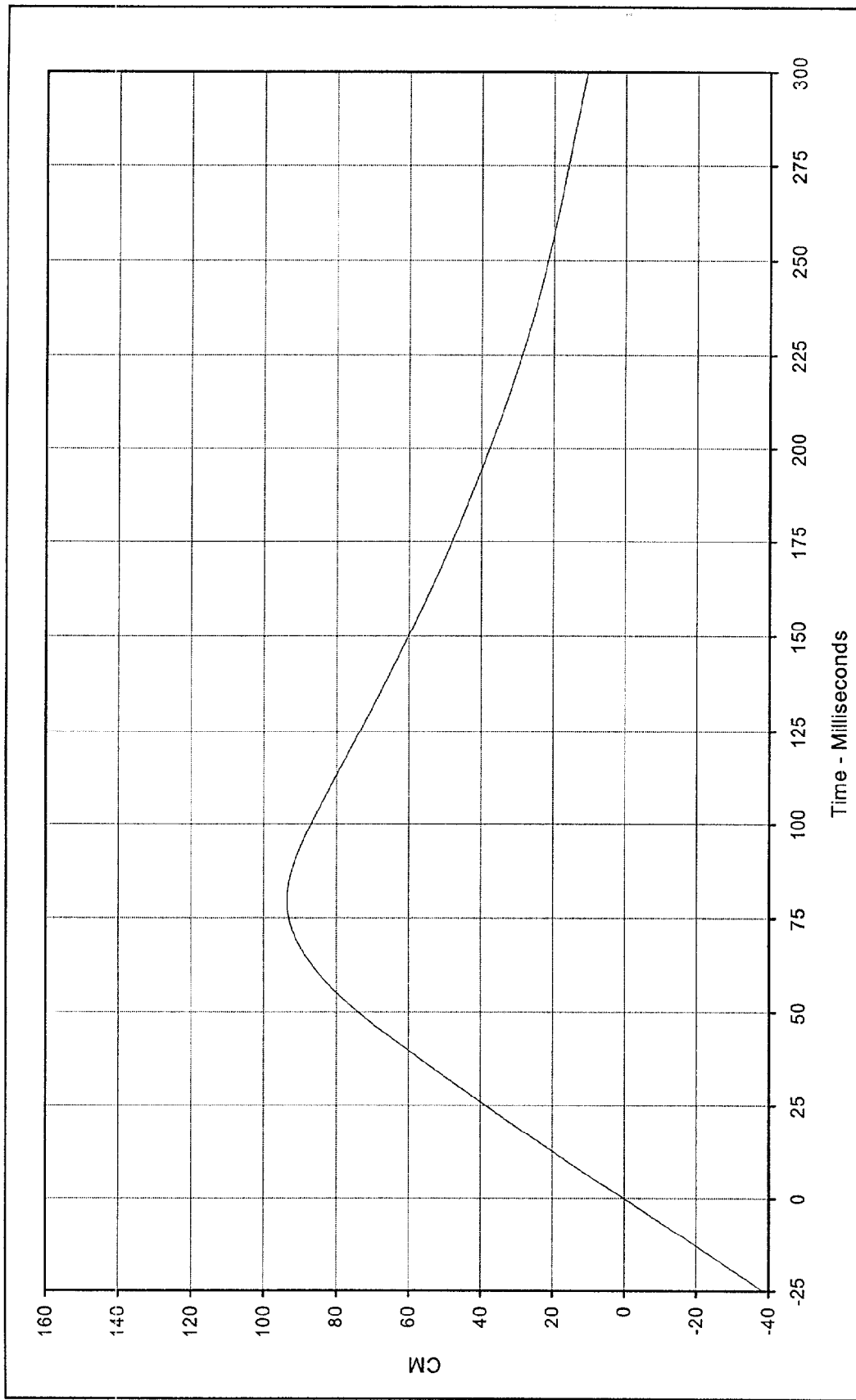


Curve Description: Driver Chest Primary X Velocity
 Maximum Value: 55.7 at 5.9 Milliseconds
 Minimum Value: -19.8 at 115.1 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN1-013

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

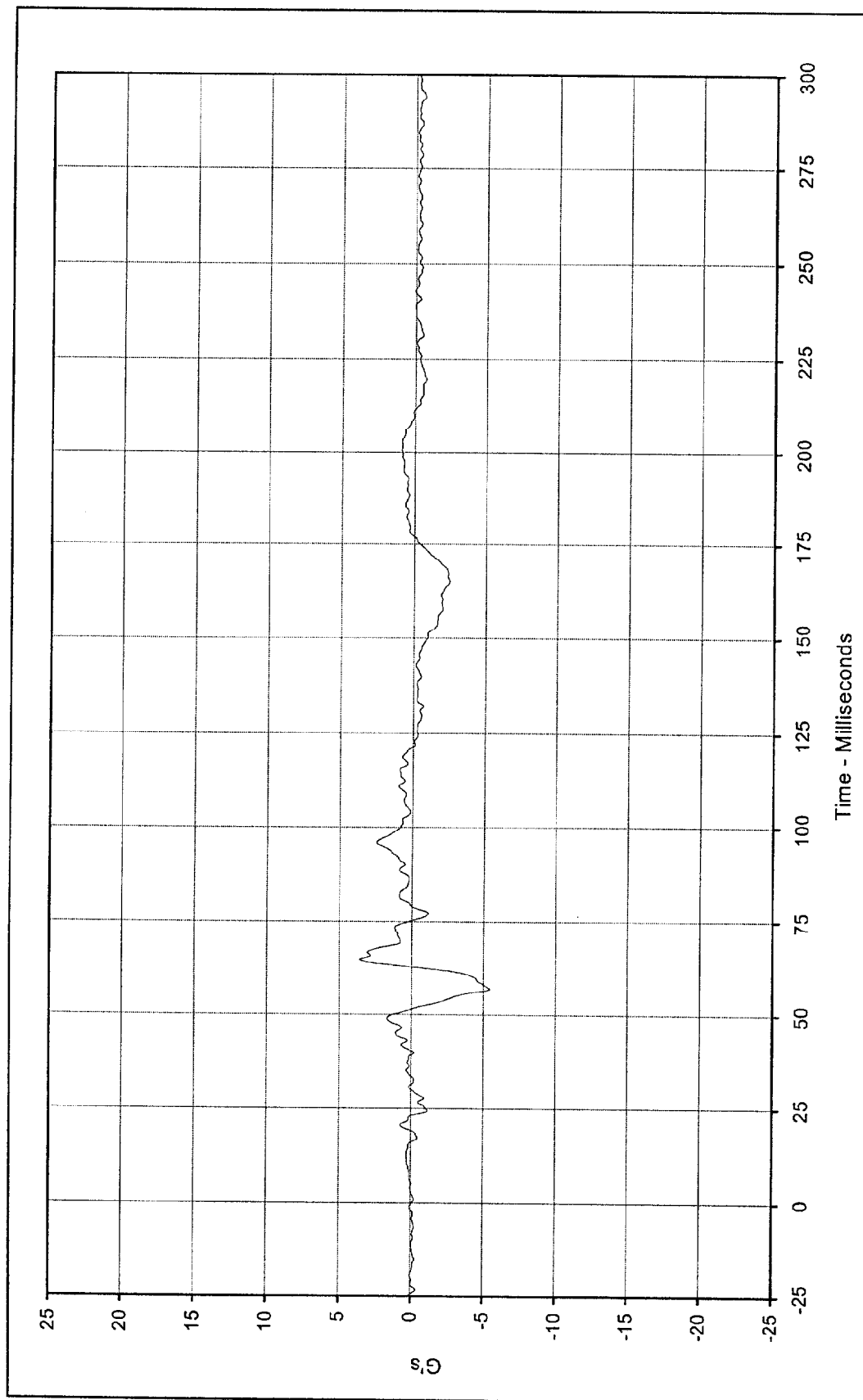




Curve Description: Driver Chest Primary X Displ.
 Maximum Value: 93.5 at 79.5 Milliseconds
 Minimum Value: 0.1 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN2-013

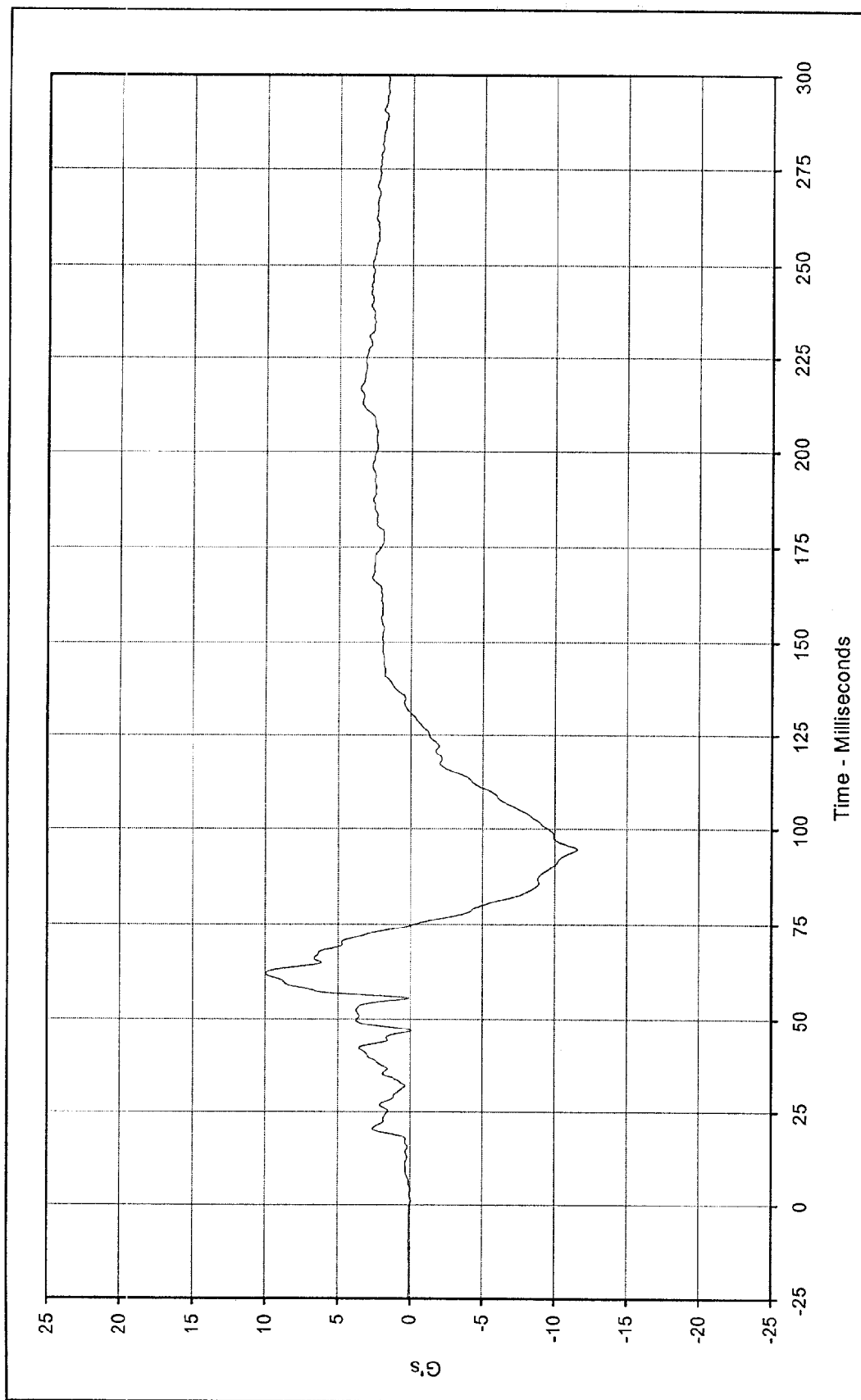
Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





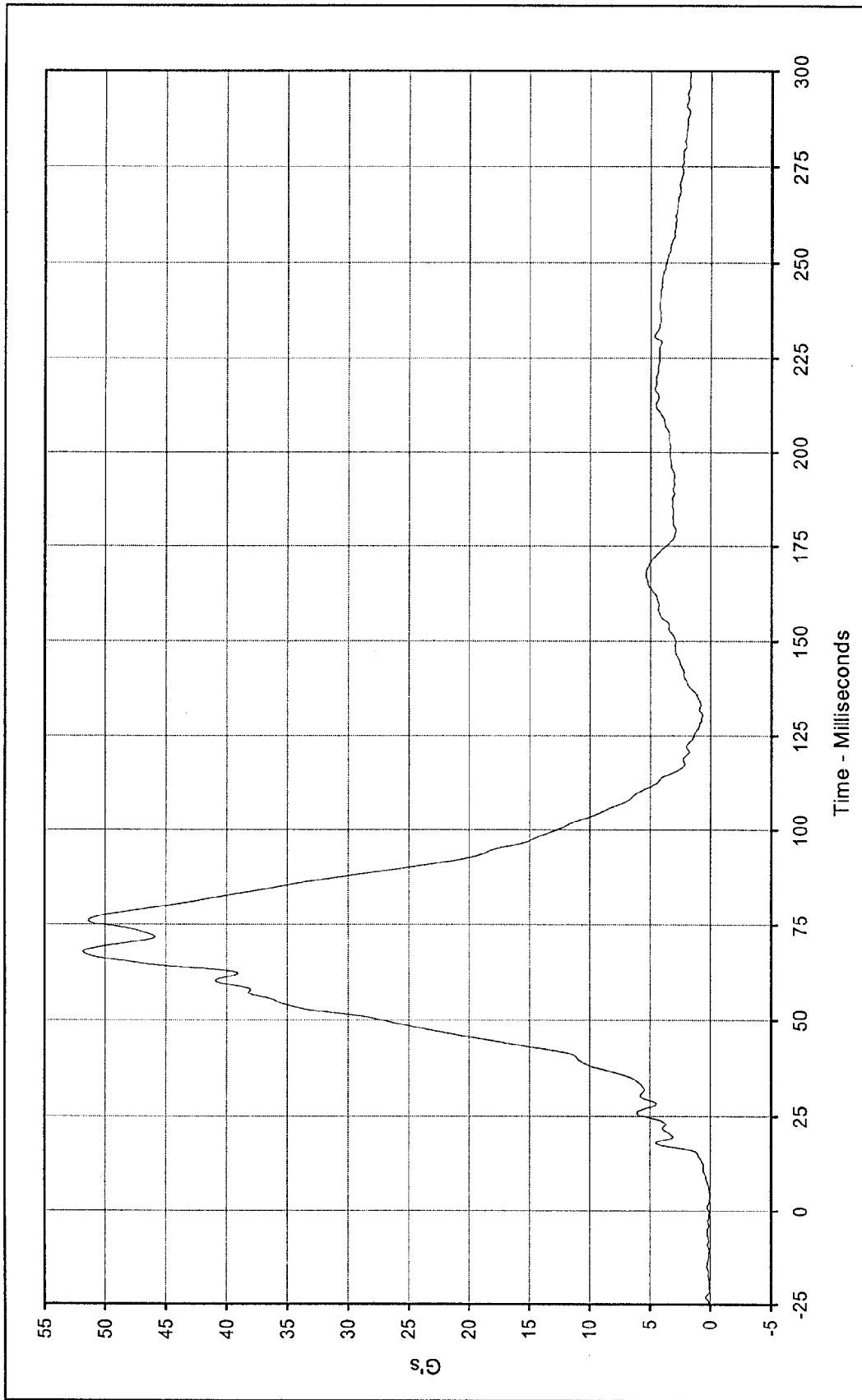
Curve Description:	Driver Chest Primary Y		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	3.6	at 64.5	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-5.5	at 56.8			
SAE Filter Class:	180				
Date of Test:	12/18/97				
Curve Number:	FIL-014				





Curve Description:	Driver Chest Primary Z	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	10.0	at	62.1	Milliseconds
Minimum Value:	-11.6	at	94.6	Milliseconds
SAE Filter Class:	180			
Date of Test:	12/18/97	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Curve Number:	FIL-015			

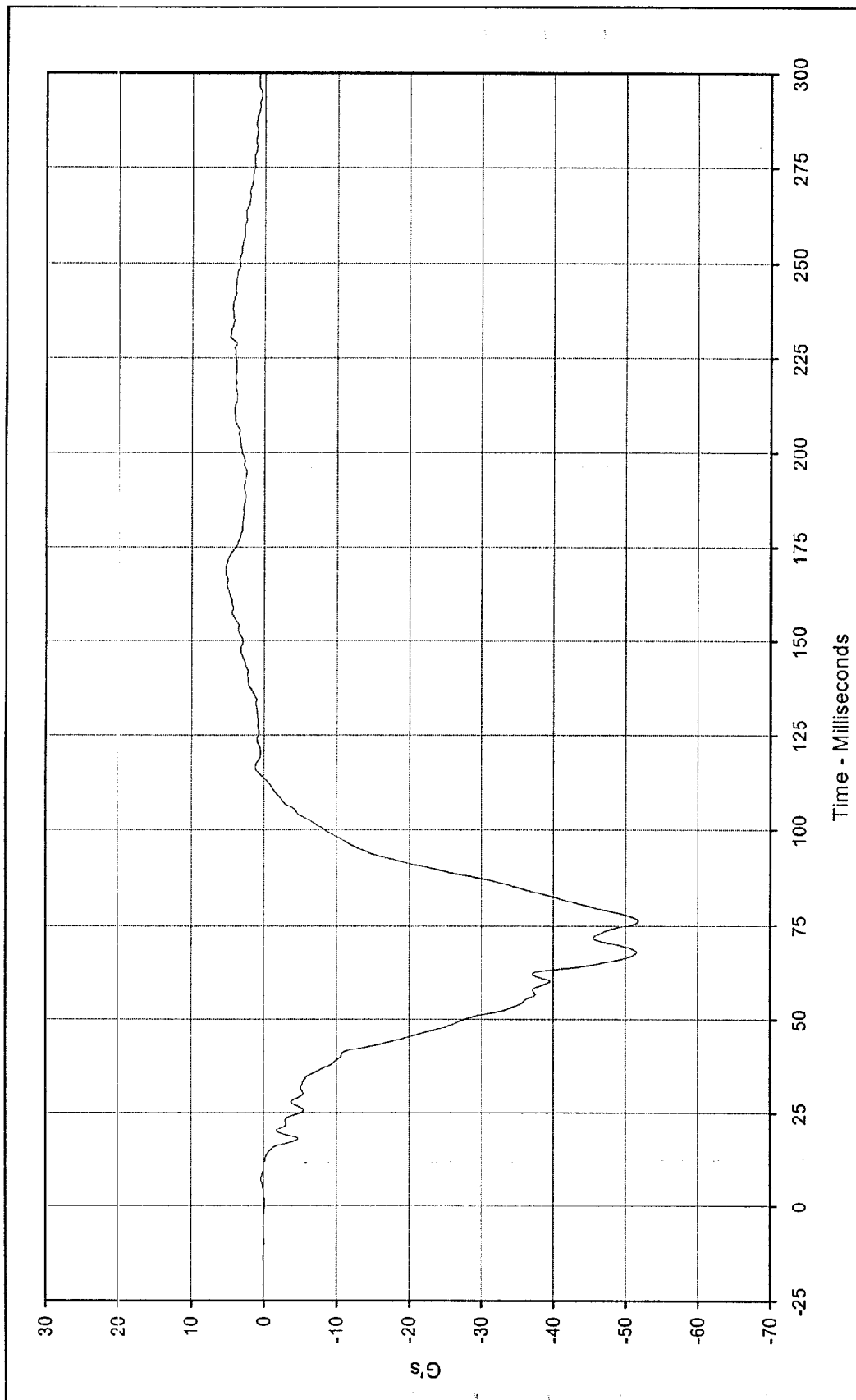




Curve Description: Driver Chest Resultant Primary
 Maximum Value: 51.8 at 67.8 Milliseconds
 Minimum Value: 0.0 at 4.5 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: RES-013

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

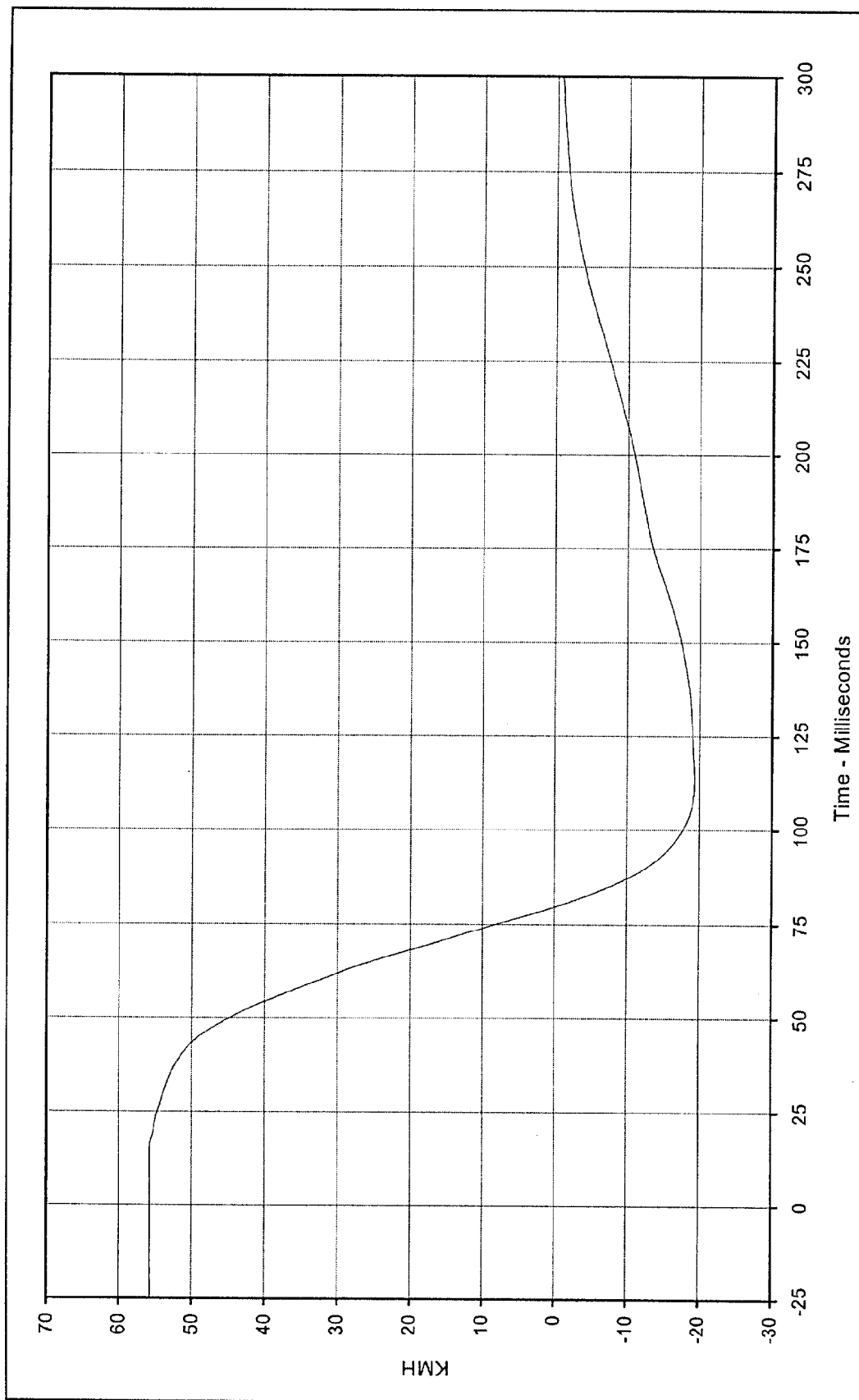




Curve Description: Driver Chest Redundant X
 Maximum Value: 5.4 at 169.4 Milliseconds
 Minimum Value: -51.7 at 76.2 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: FIL-016

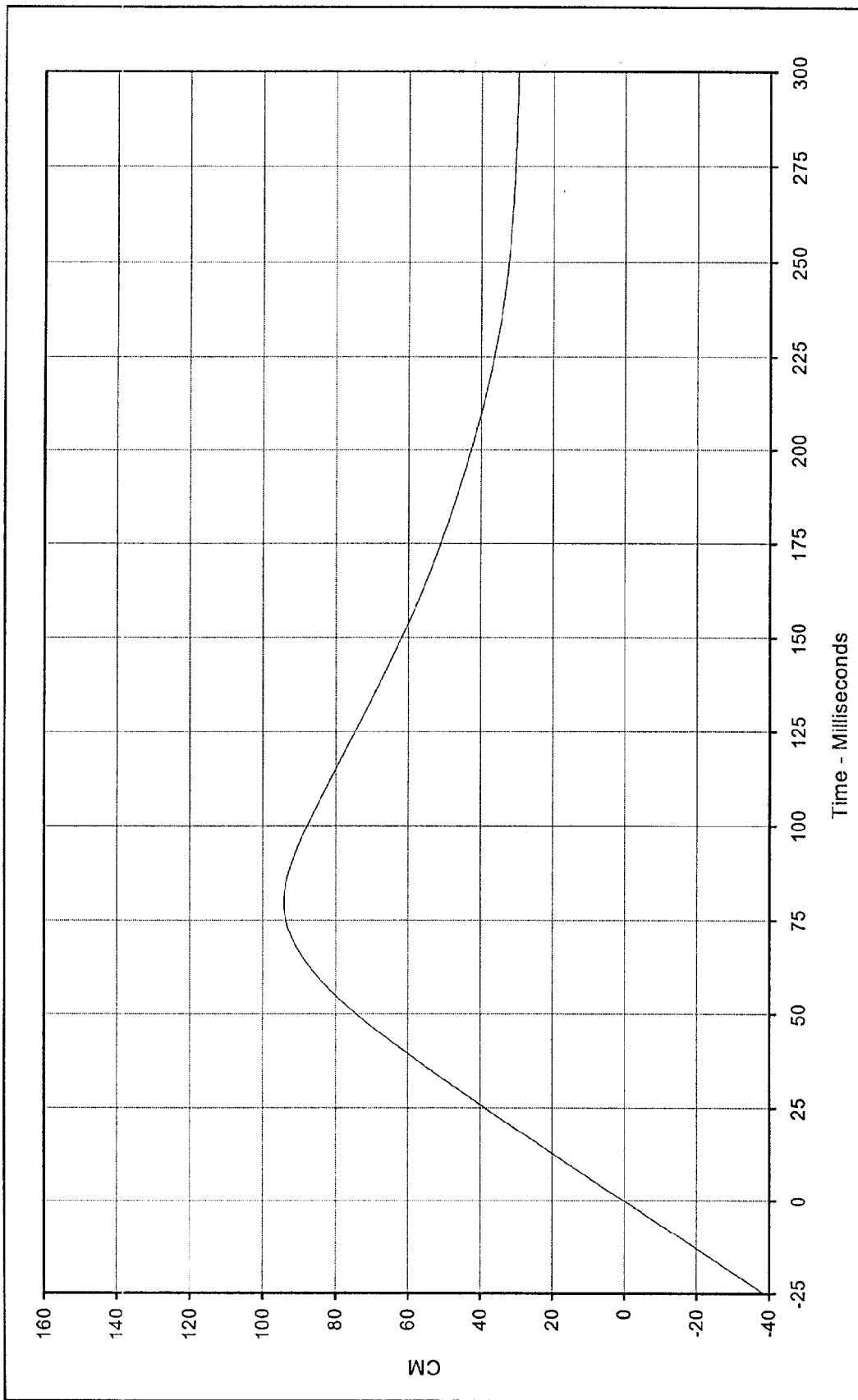
Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





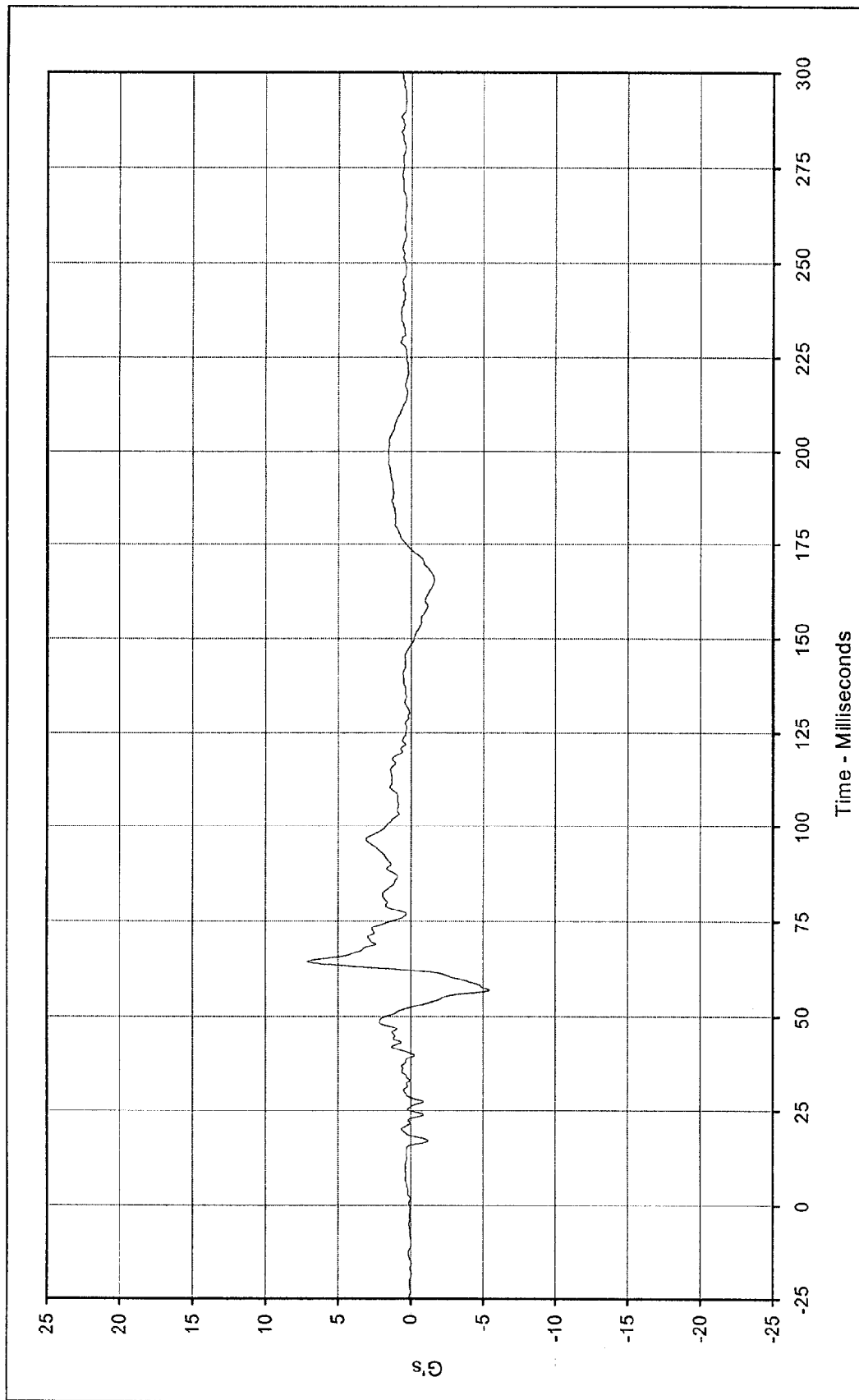
Curve Description: Driver Chest Redundant X Velocity
 Maximum Value: 55.8 at 11.6 Milliseconds
 Minimum Value: -19.4 at 113.5 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN1-016





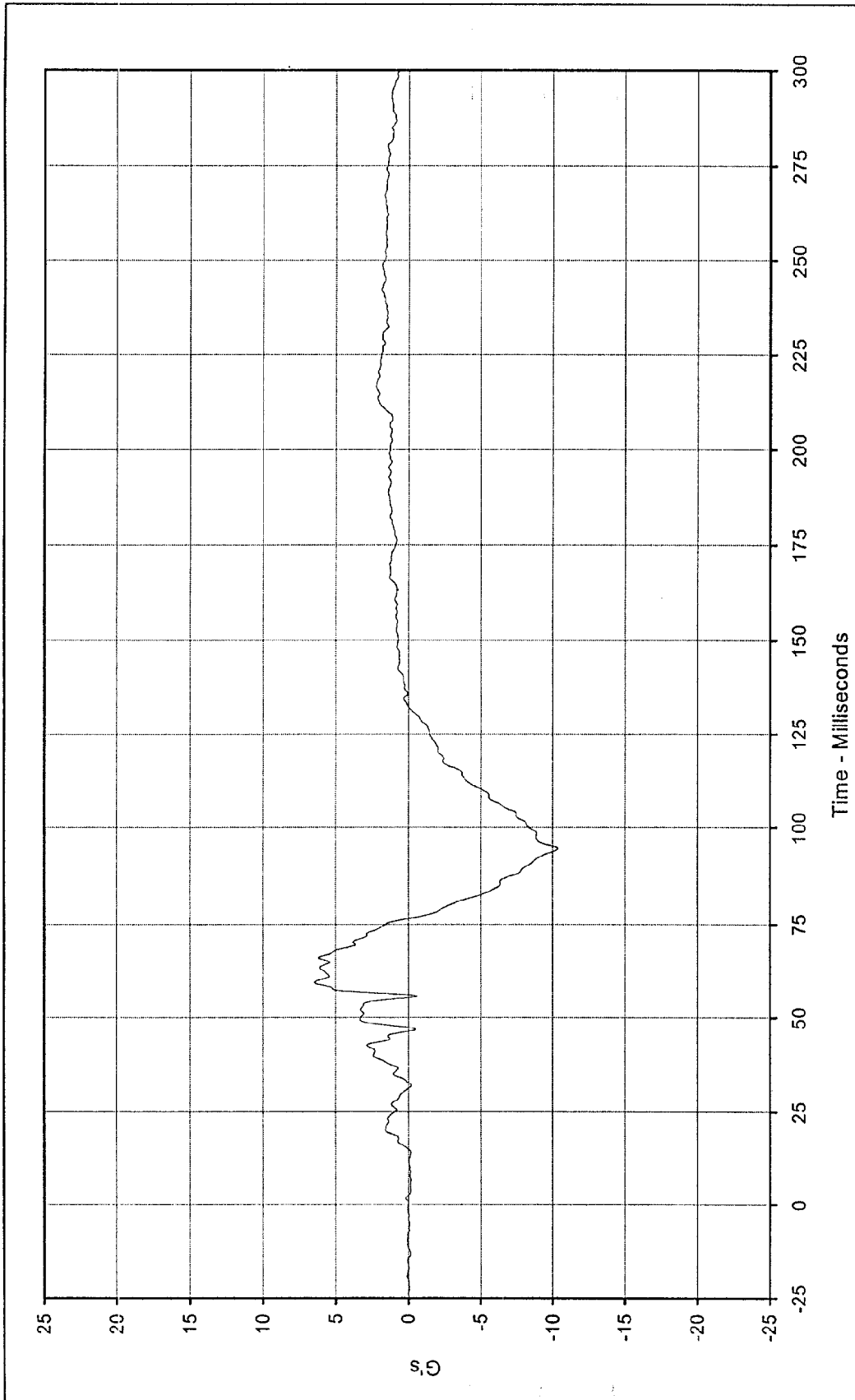
Curve Description:	Driver Chest Redundant X Displ.	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	94.2	at	79.6	Milliseconds
Minimum Value:	0.1	at	0.0	Milliseconds
SAE Filter Class:	180	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Date of Test:	12/18/97			
Curve Number:	IN2-016			





Curve Description:		Driver Chest Redundant Y		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	7.1	at	64.3	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-5.5	at	56.8			
SAE Filter Class:	180					
Date of Test:	12/18/97					
Curve Number:	FIL-017					





Curve Description: Driver Chest Redundant Z Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 6.5 at 59.3 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

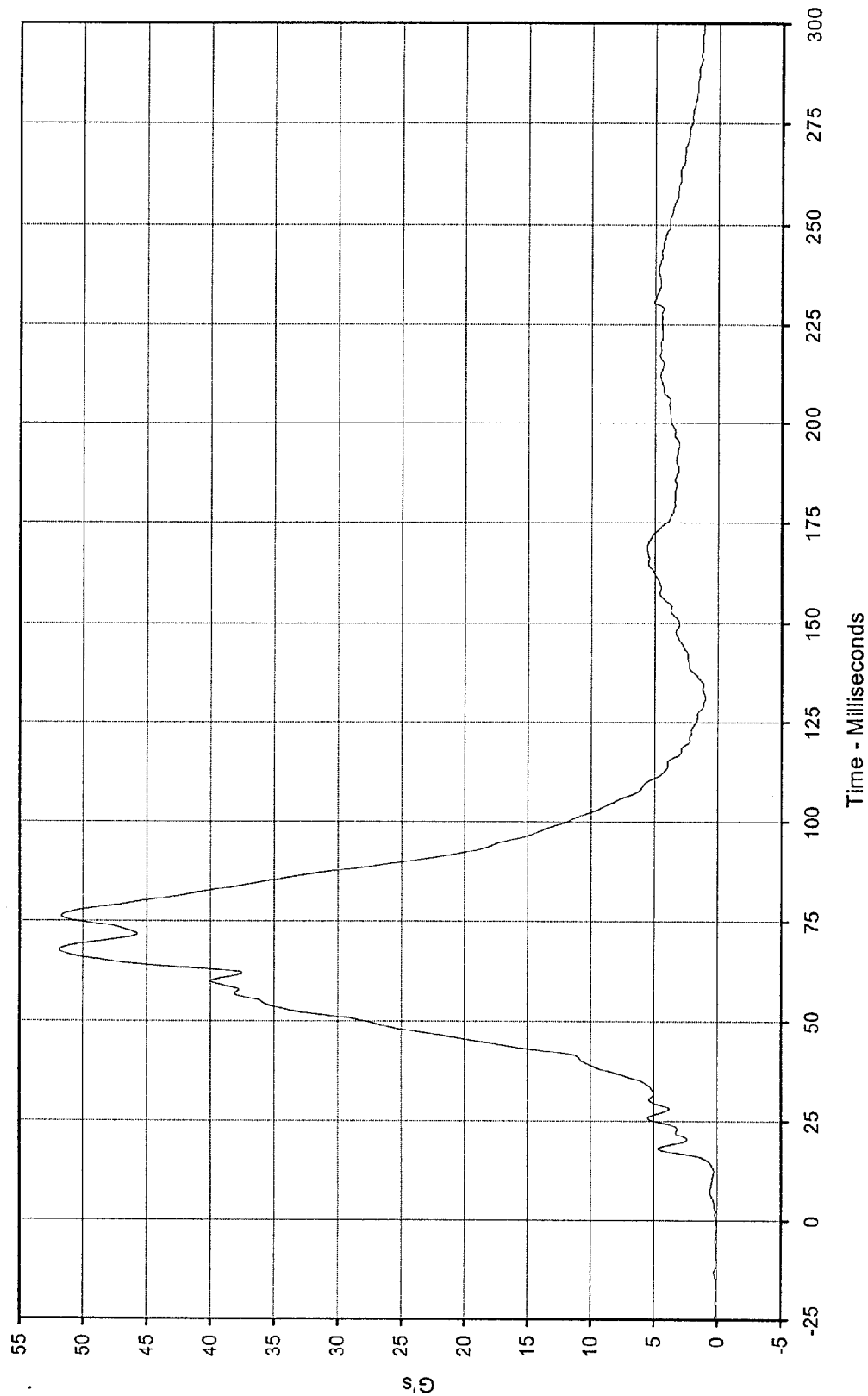
Minimum Value: -10.4 at 94.6 Milliseconds

SAE Filter Class: 180

Date of Test: 12/18/97

Curve Number: FIL-018





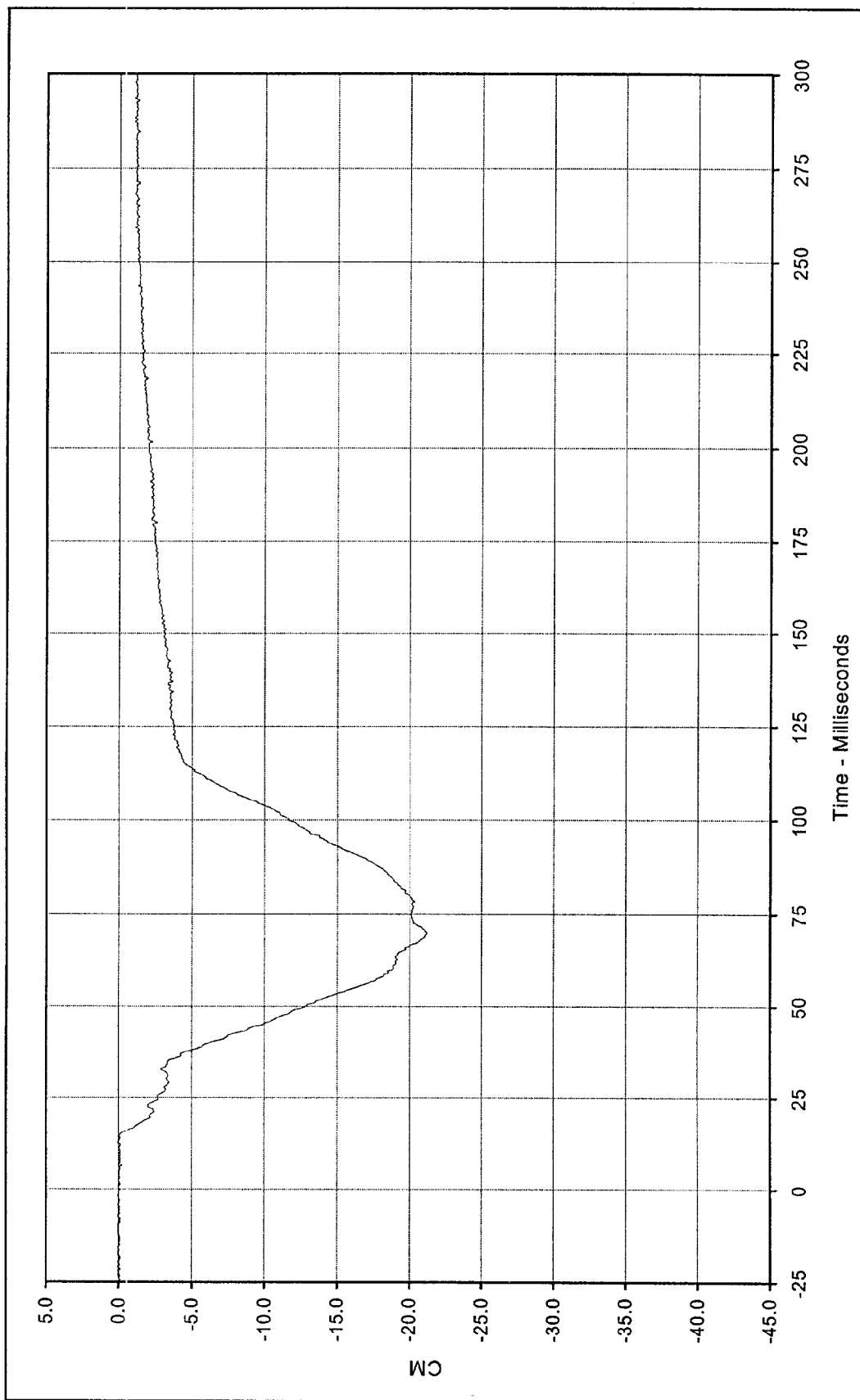
Curve Description: Driver Chest Resultant Redundant

Maximum Value:	51.9	at	67.7	Milliseconds
Minimum Value:	0.1	at	2.2	Milliseconds
SAE Filter Class:	180			
Date of Test:	12/18/97			
Curve Number:	RES-016			

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Driver Chest Displacement X

Maximum Value: 0.0 at 13.0 Milliseconds

Minimum Value: -21.2 at 69.7 Milliseconds

SAE Filter Class: 600

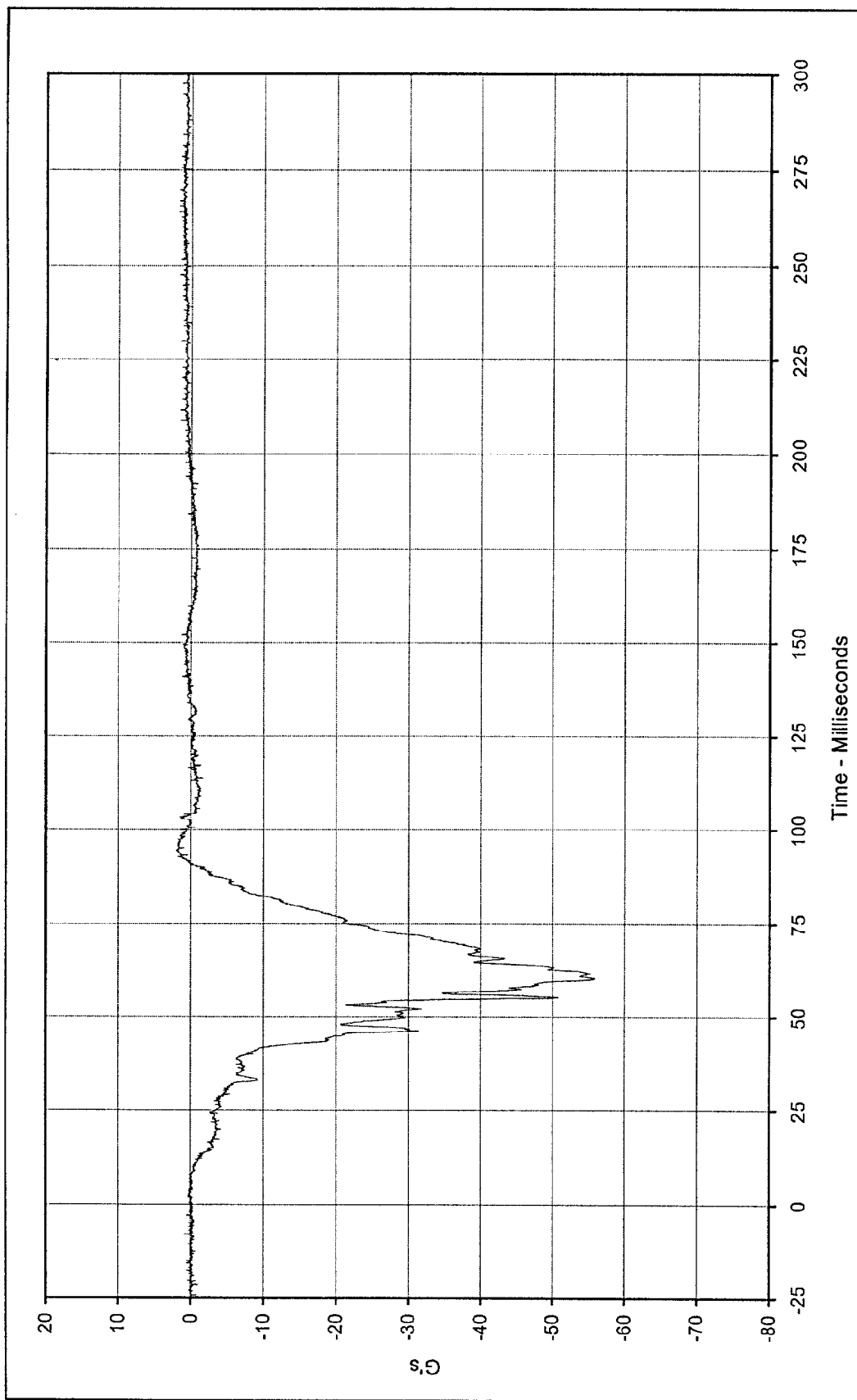
Date of Test: 12/18/97

Curve Number: FIL-019

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan



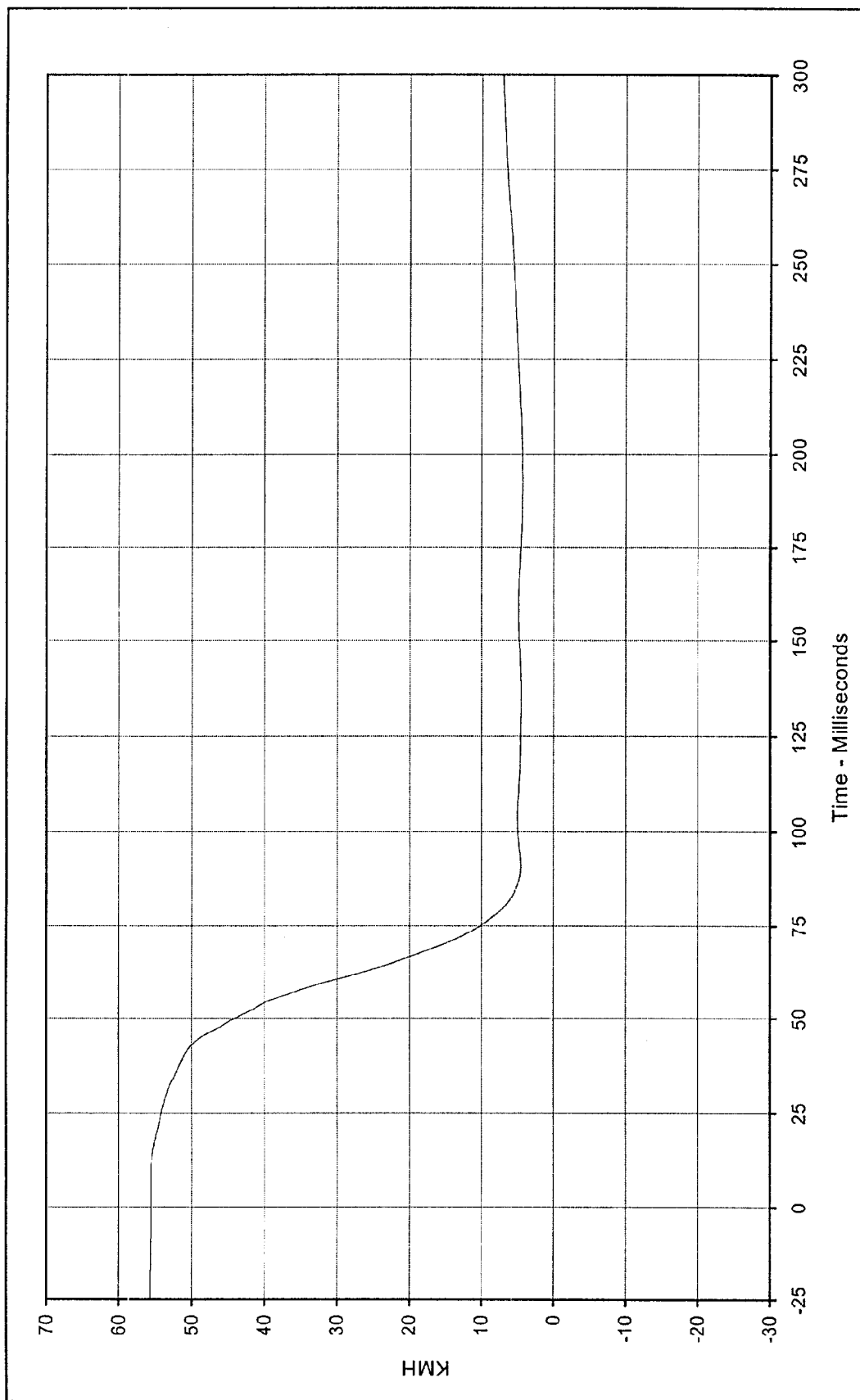


Curve Description:	Driver Pelvis X		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	2.0	at 94.2	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-55.8	at 60.4			
SAE Filter Class:	1000				
Date of Test:	12/18/97				
Curve Number:	FIL-020				



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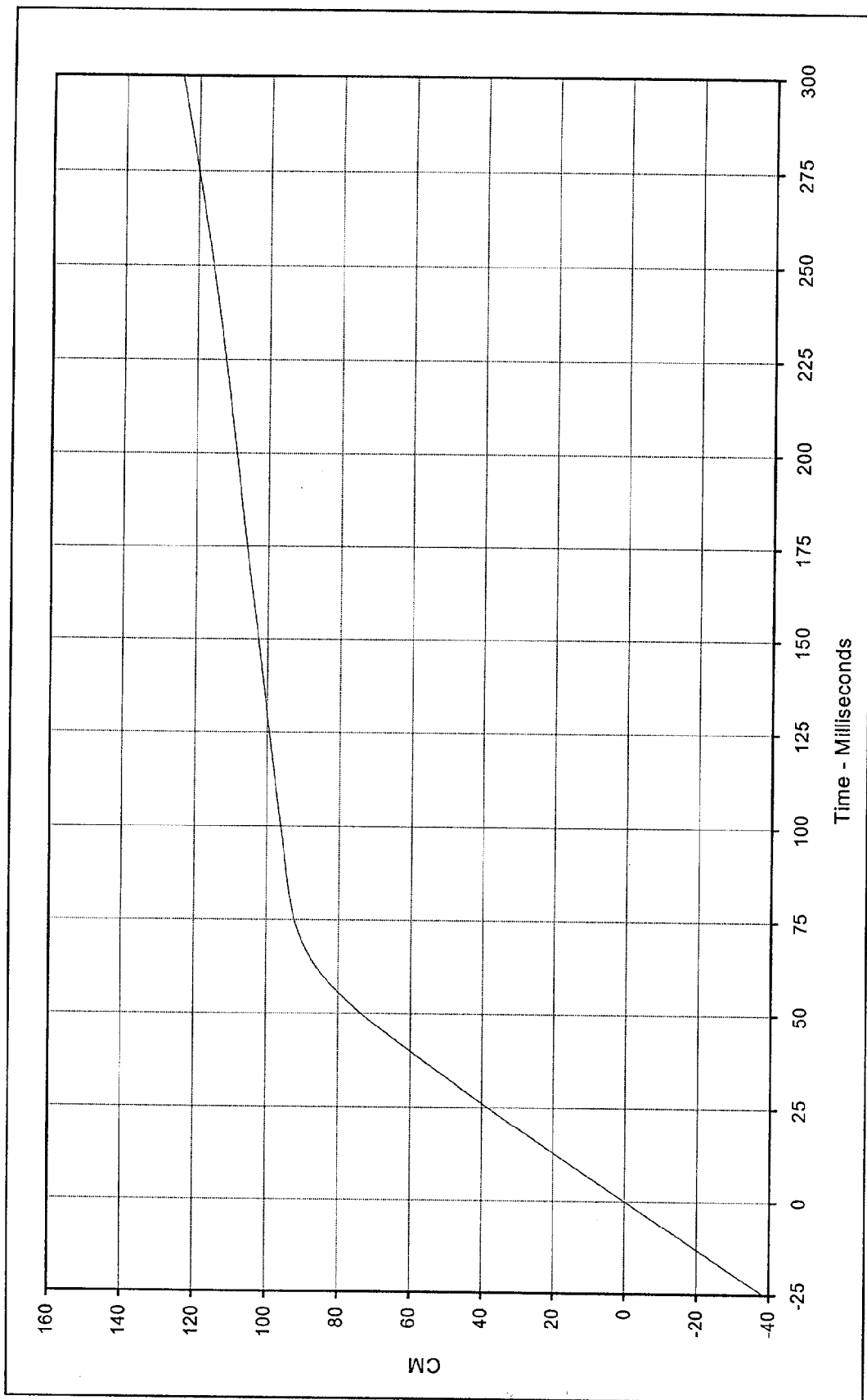




Curve Description: Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

Driver Pelvis X Velocity
 Maximum Value: 55.6 at 4.0 Milliseconds
 Minimum Value: 4.3 at 192.7 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN1-020





Curve Description: Driver Pelvis X Displ.

Maximum Value: 124.7 at 299.9 Milliseconds

Minimum Value: 0.1 at 0.0 Milliseconds

SAE Filter Class: 180

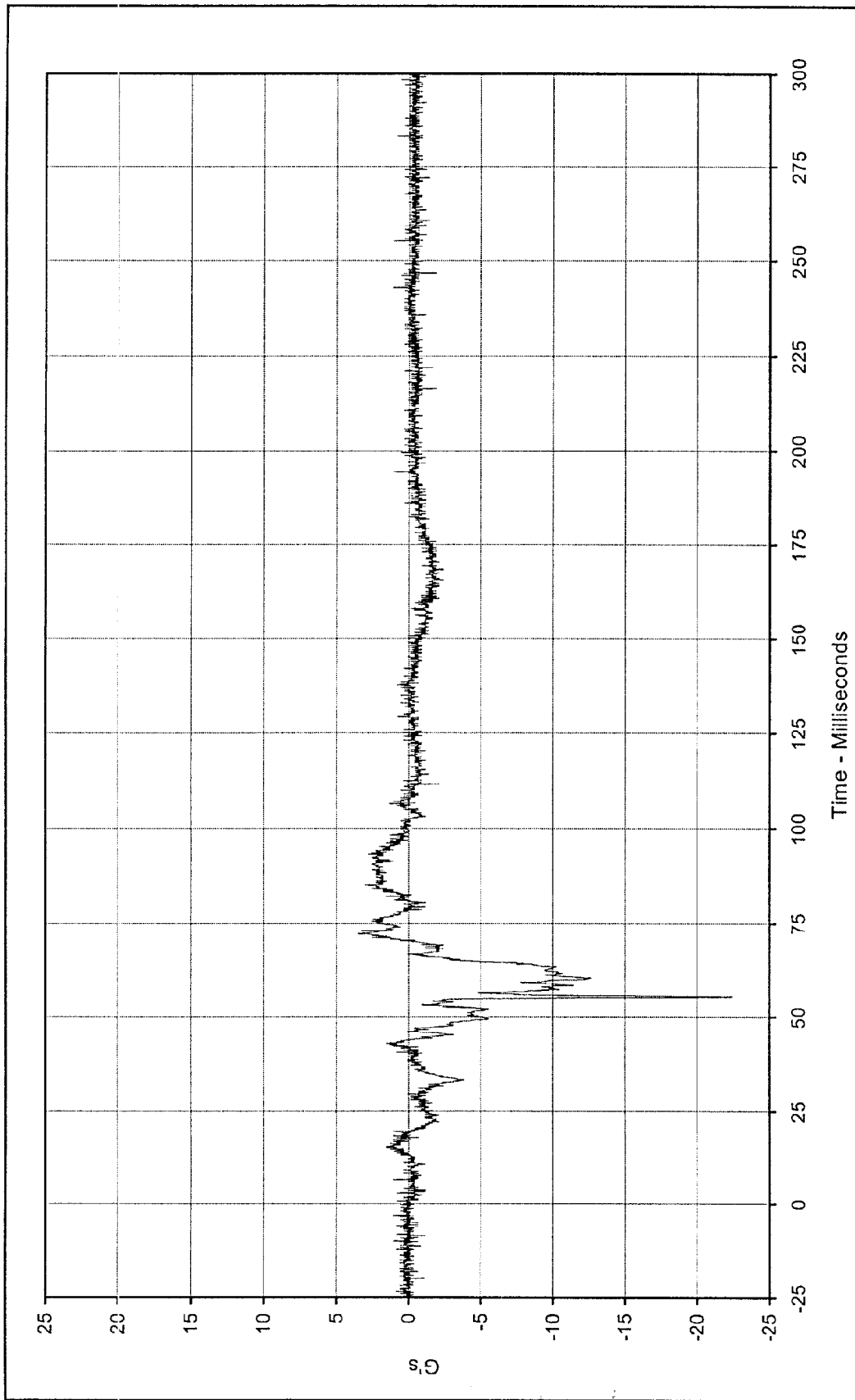
Date of Test: 12/18/97

Curve Number: IN2-020

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

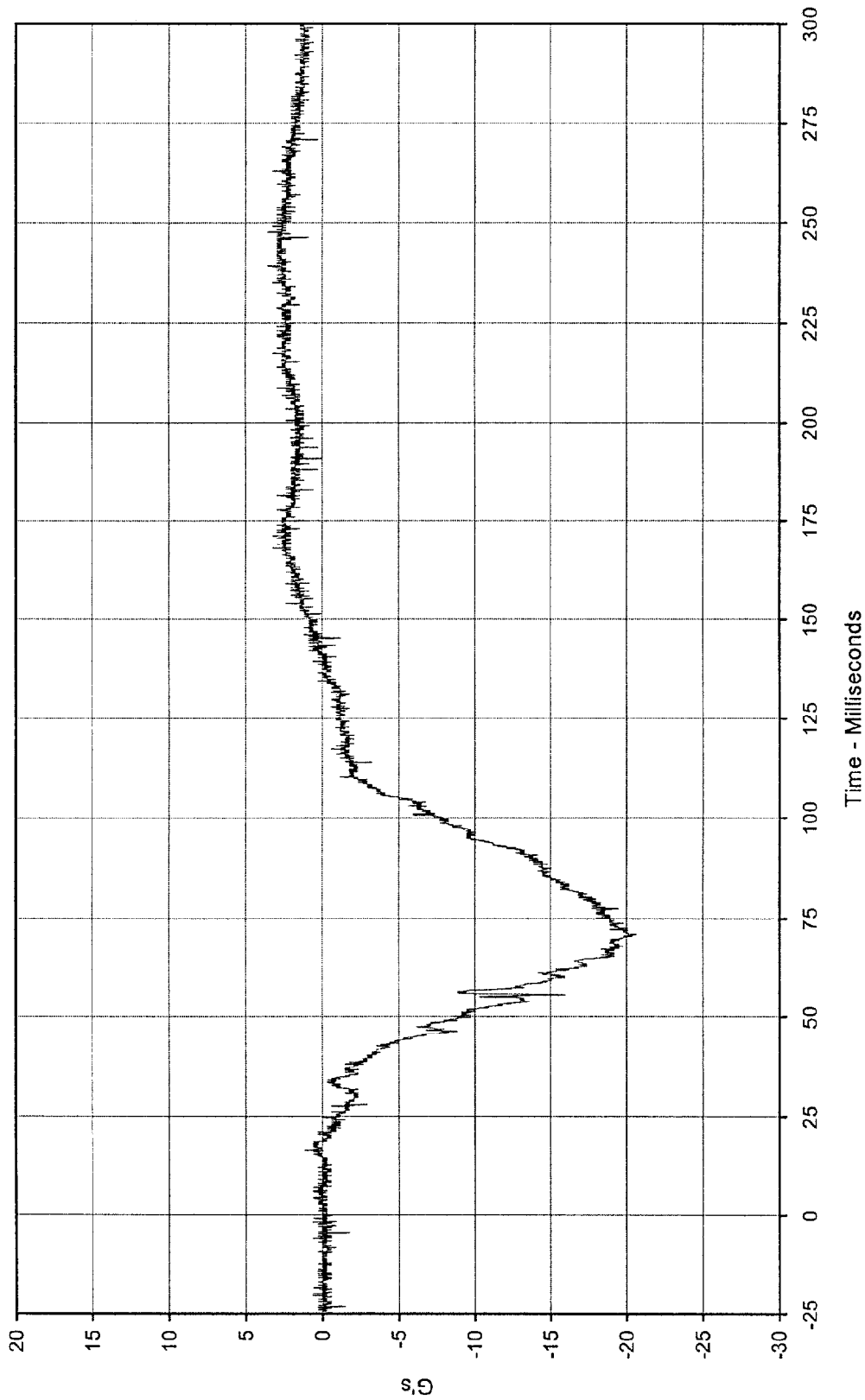




Curve Description: Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

Driver Pelvis Y
 Maximum Value: 3.5 at 72.1 Milliseconds
 Minimum Value: -22.4 at 55.3 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: FIL-021





Curve Description: Driver Pelvis Z

Maximum Value: 3.5 at 239.3 Milliseconds

Minimum Value: -20.7 at 70.8 Milliseconds

SAE Filter Class: 1000

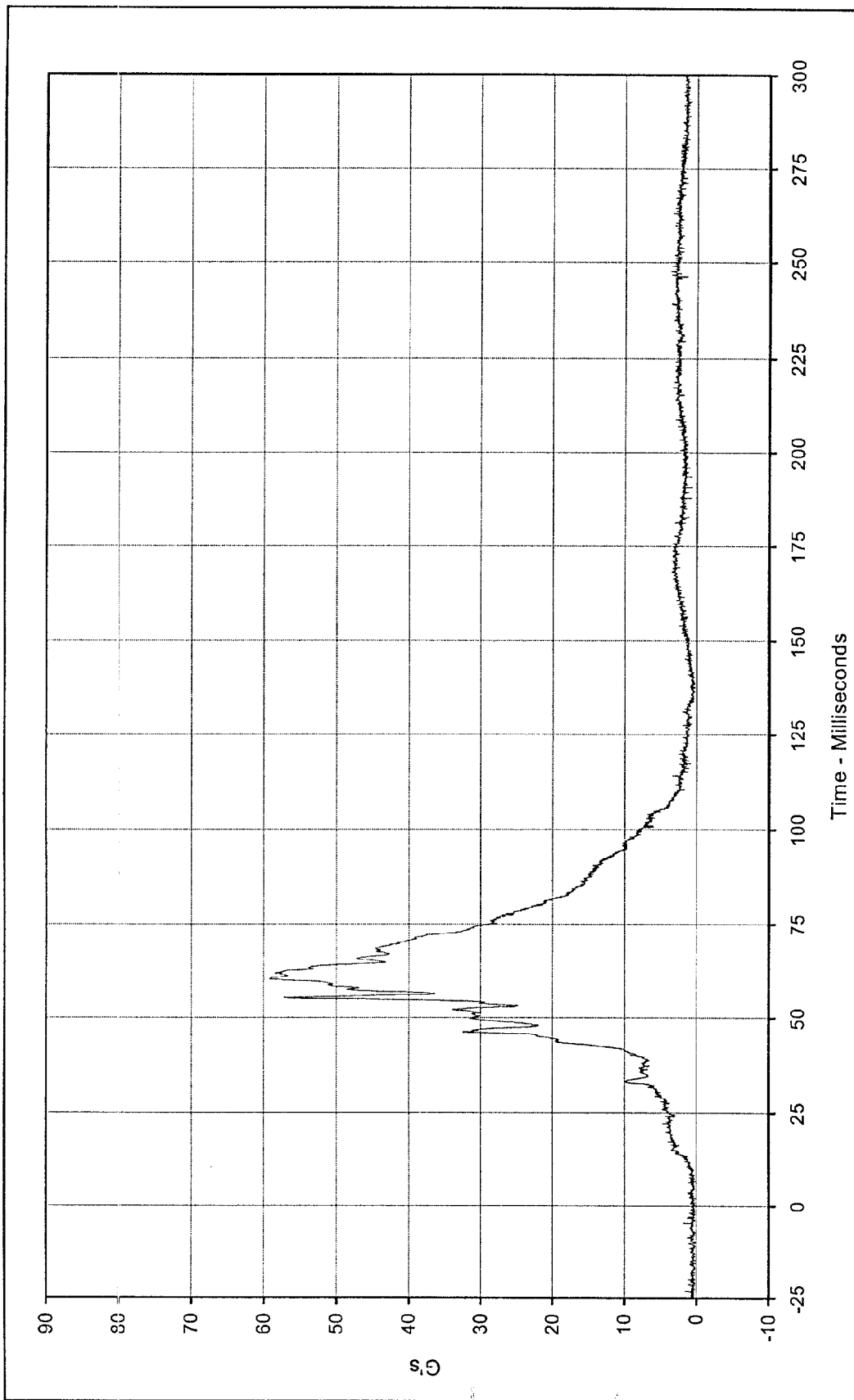
Date of Test: 12/18/97

Curve Number: FIL-022

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Driver Pelvis Resultant

Maximum Value: 59.2 at 60.2 Milliseconds

Minimum Value: 0.1 at 6.9 Milliseconds

SAE Filter Class: 1000

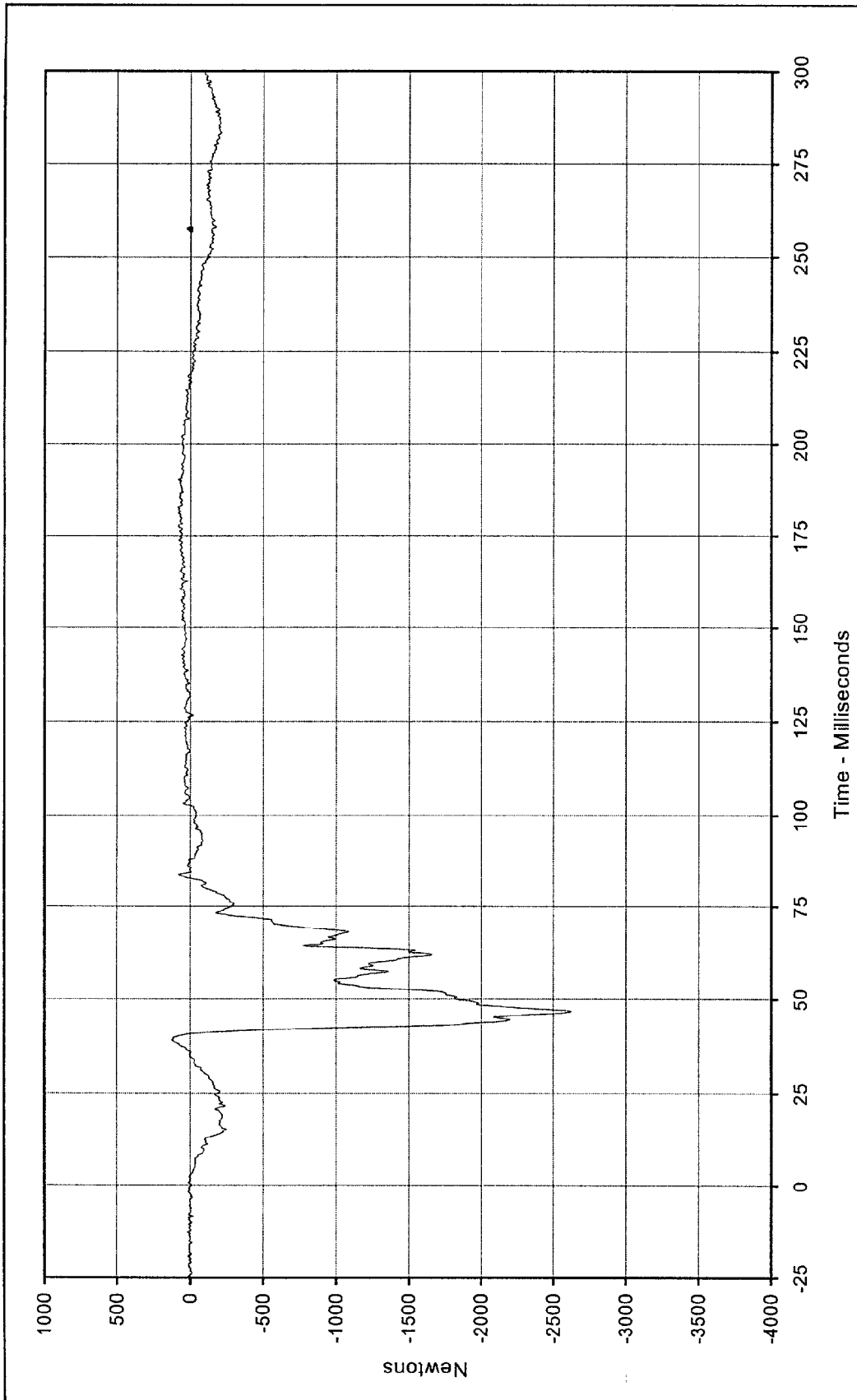
Date of Test: 12/18/97

Curve Number: RES-020

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

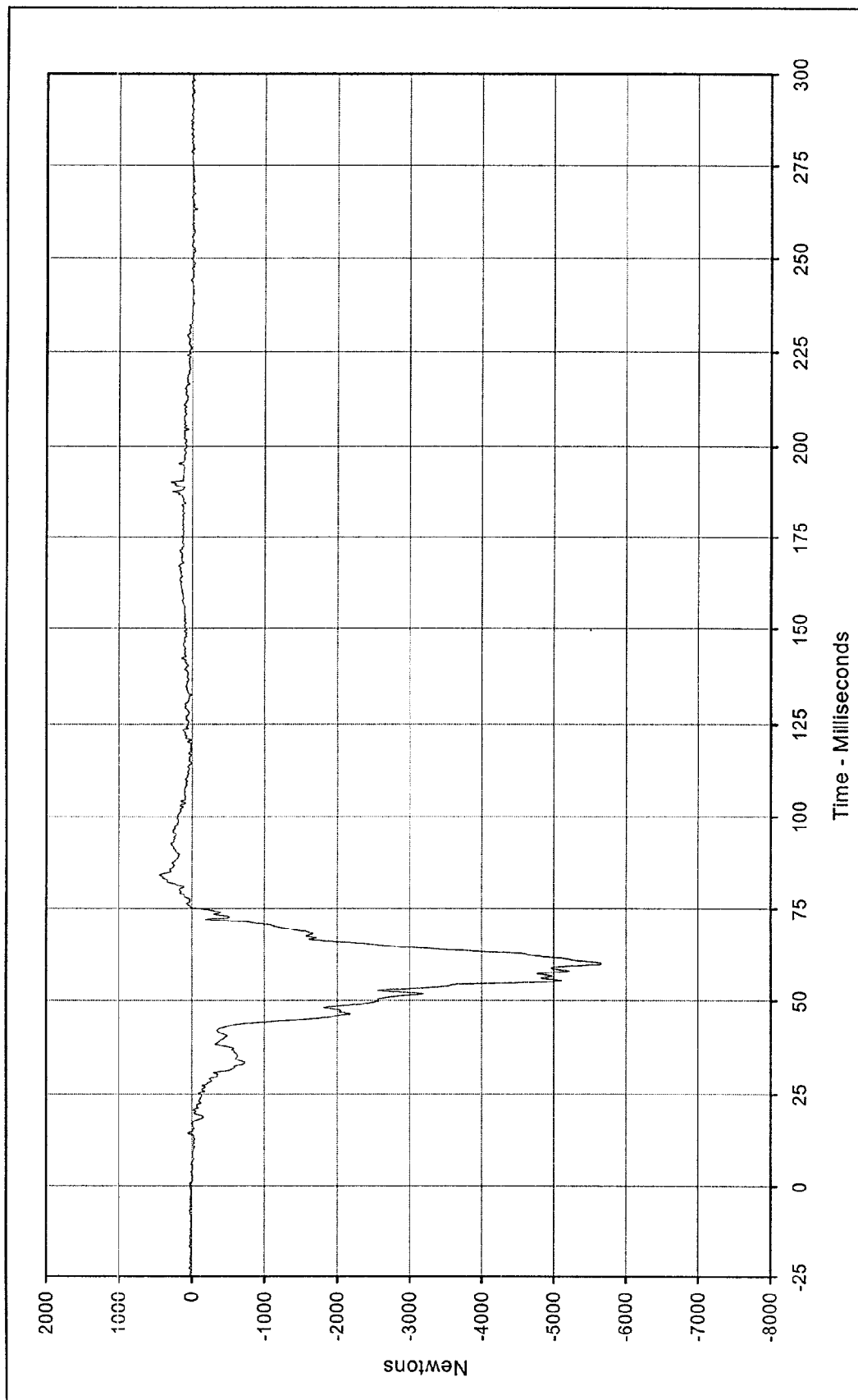




Curve Description: Driver Left Femur Force
 Maximum Value: 125.7 at 39.1 Milliseconds
 Minimum Value: -2621.0 at 46.8 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-023

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Driver Right Femur Force

Maximum Value: 435.1 at 83.8 Milliseconds

Minimum Value: -5657.9 at 60.0 Milliseconds

SAE Filler Class: 600

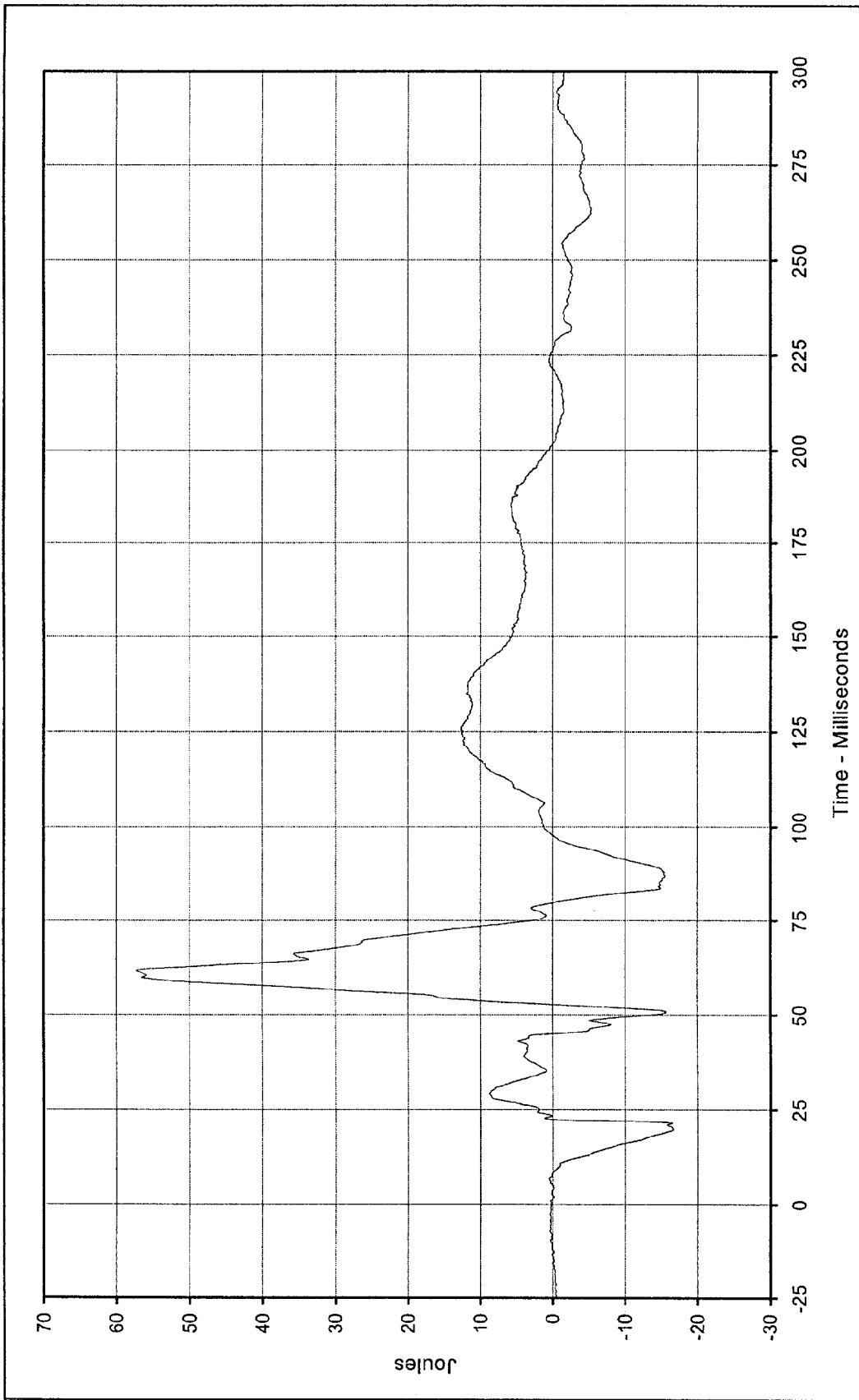
Date of Test: 12/18/97

Curve Number: FIL-024

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

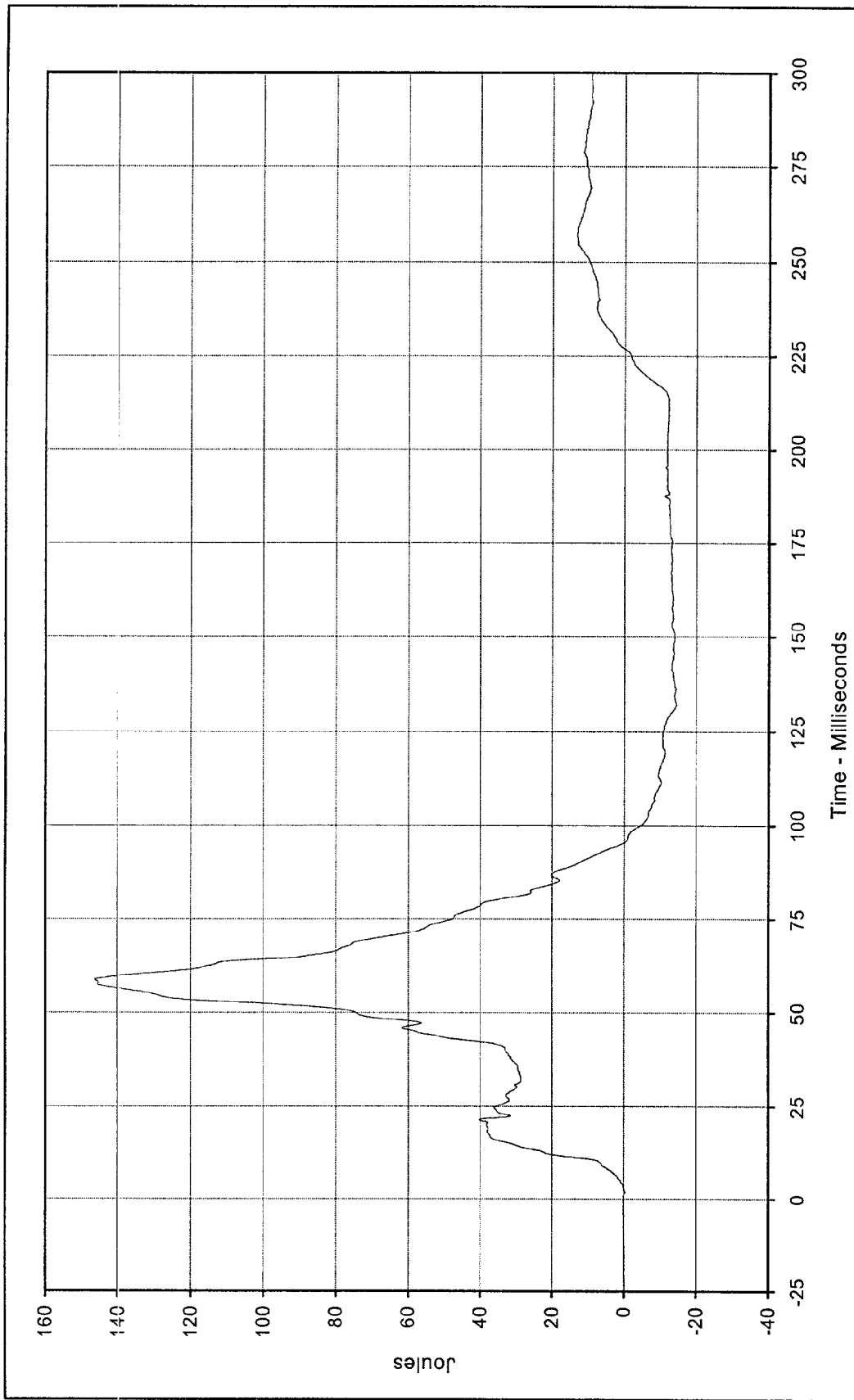




Curve Description: Driver Left Upper Tibia Moment X
 Maximum Value: 57.3 at 61.7 Milliseconds
 Minimum Value: -16.7 at 19.7 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-025

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Driver Left Upper Tibia Moment Y

Maximum Value: 146.3 at 58.6 Milliseconds

Minimum Value: -14.4 at 132.1 Milliseconds

SAE Filter Class: 600

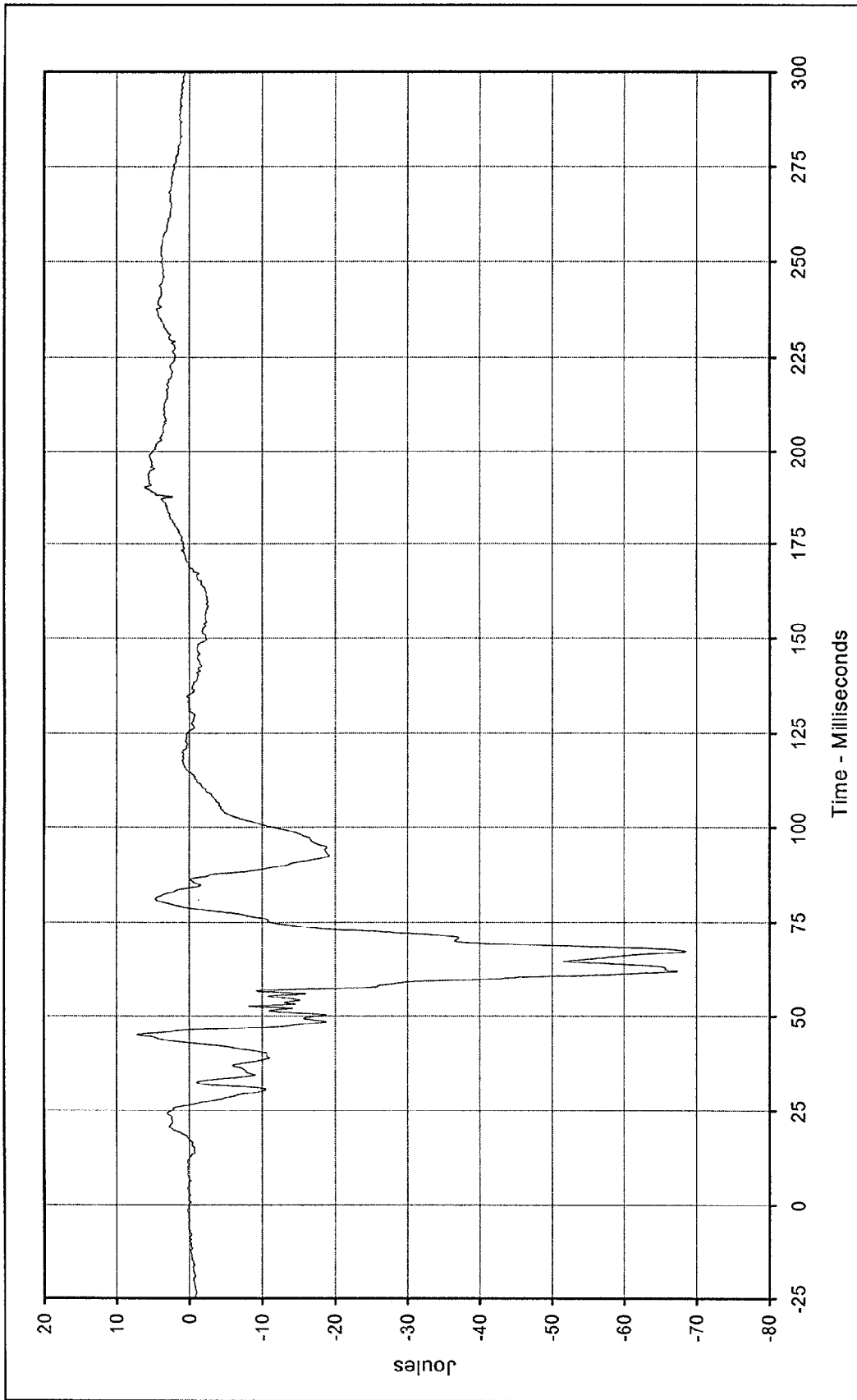
Date of Test: 12/18/97

Curve Number: FIL-026

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Driver Right Upper Tibia Moment X Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 7.1 at 45.1 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

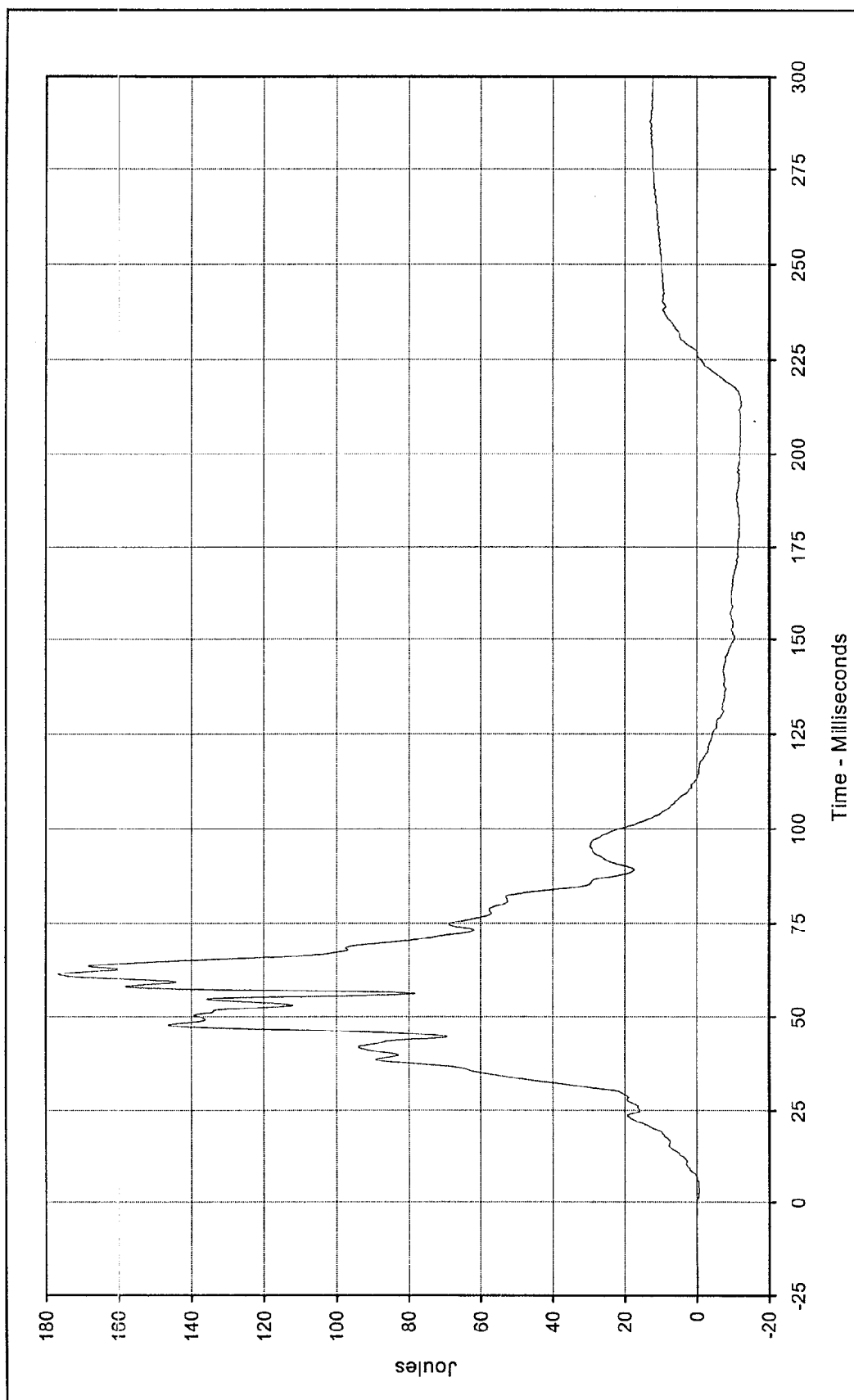
Minimum Value: -68.5 at 67.2 Milliseconds

SAE Filter Class: 600

Date of Test: 12/18/97

Curve Number: FIL-027





Curve Description: Driver Right Upper Tibia Moment Y Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 176.5 at 61.3 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

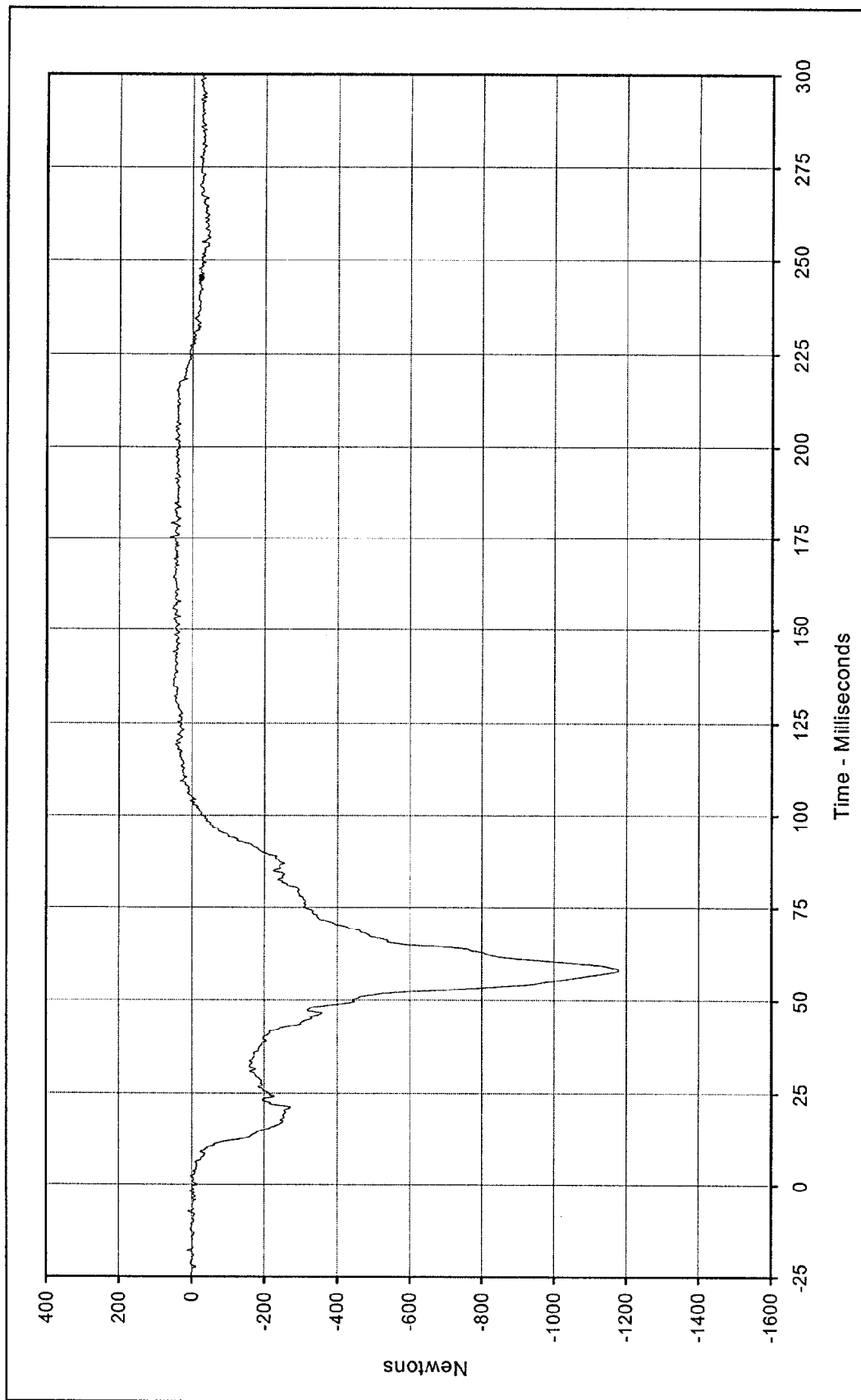
Minimum Value: -12.4 at 213.9 Milliseconds

SAE Filter Class: 600

Date of Test: 12/18/97

Curve Number: FIL-028

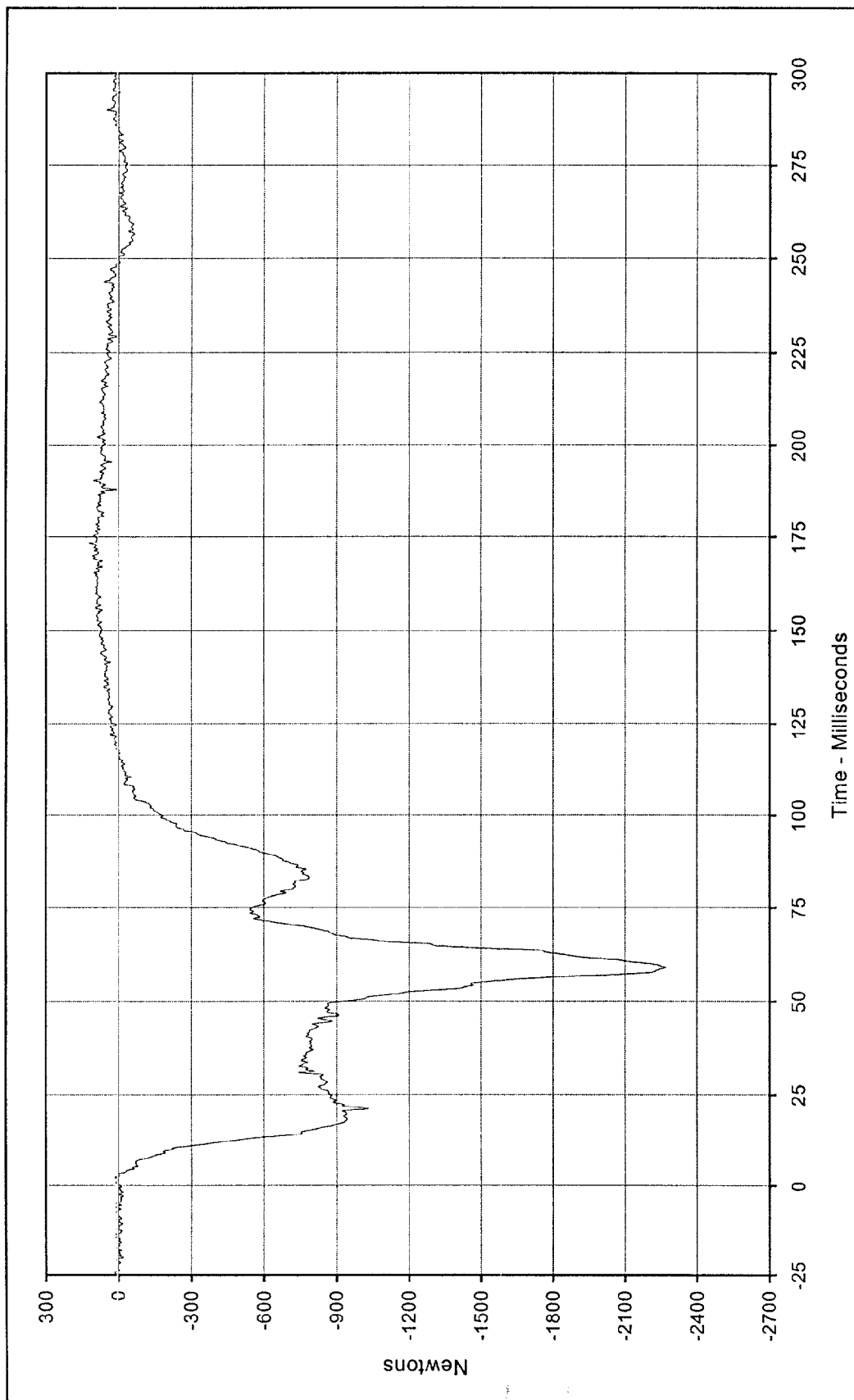




Curve Description: Driver Left Lower Tibia Force X
 Maximum Value: 60.7 at 175.3 Milliseconds
 Minimum Value: -1179.8 at 58.2 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-029

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Driver Left Lower Tibia Force Z

Maximum Value: 117.5 at 173.3 Milliseconds

Minimum Value: -2269.8 at 58.9 Milliseconds

SAE Filter Class: 600

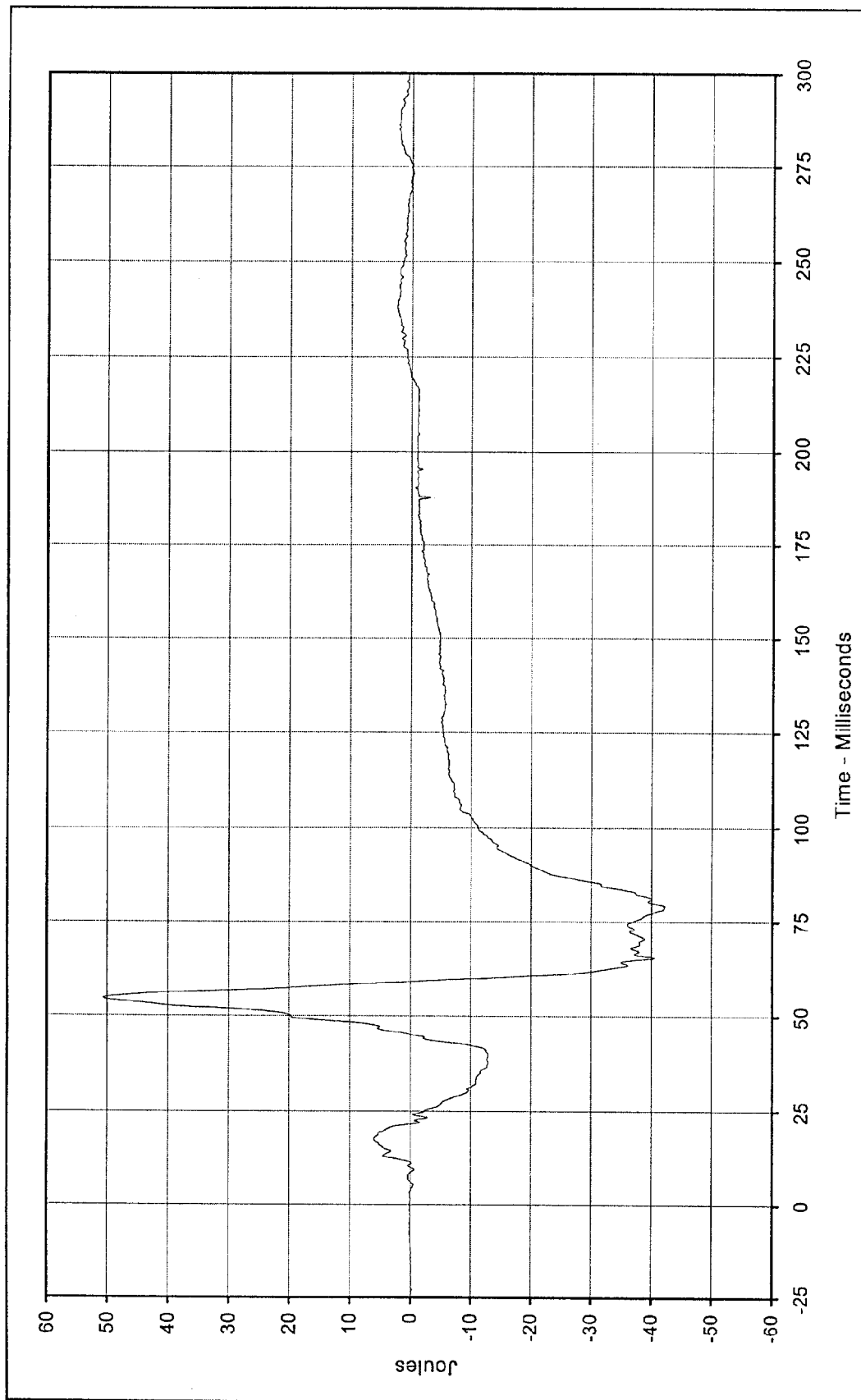
Date of Test: 12/18/97

Curve Number: FIL-030

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan



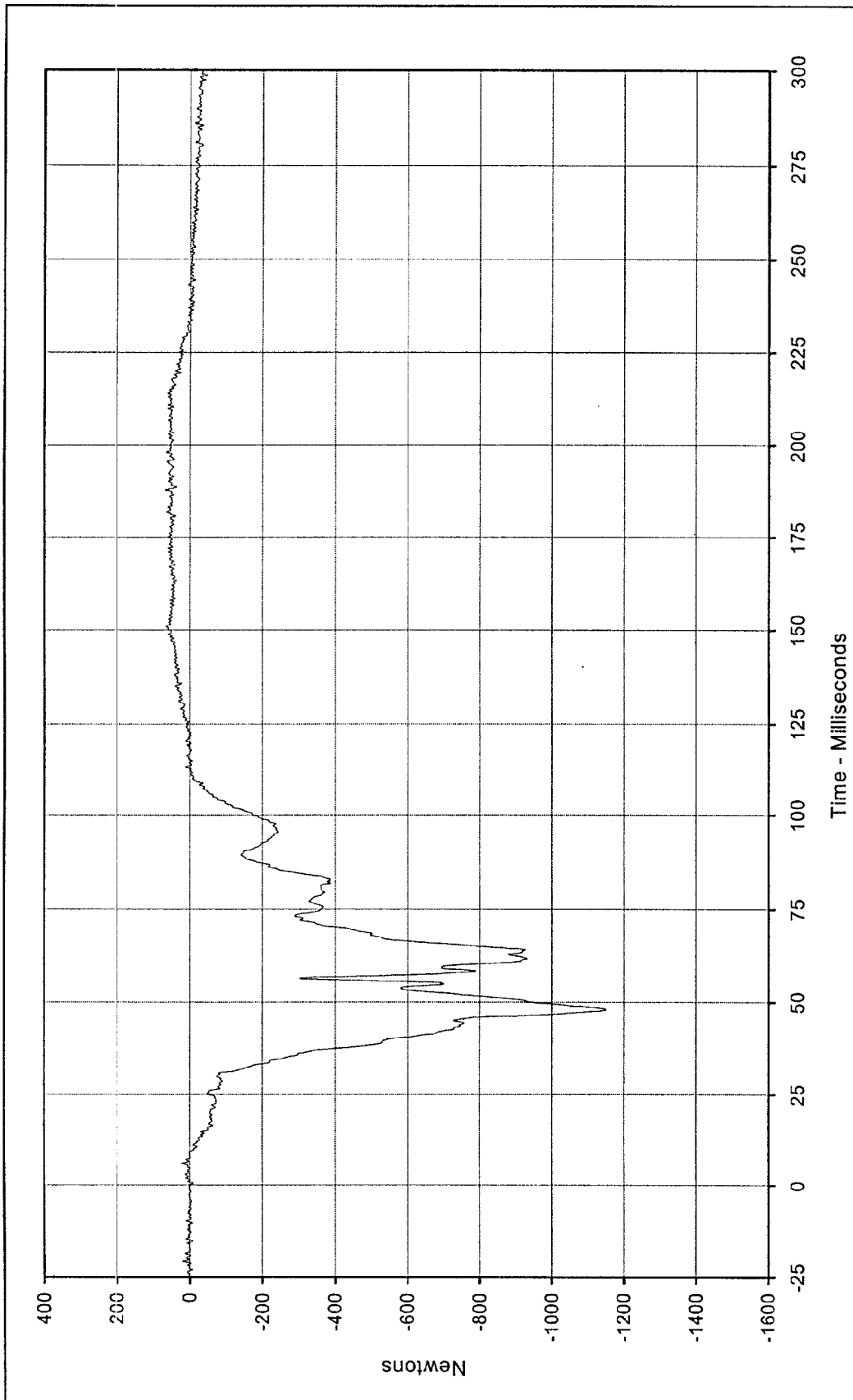


Curve Description:	Driver Left Lower Tibia Moment Y	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	50.7	at	54.6	Milliseconds
Minimum Value:	-42.2	at	79.0	Milliseconds
SAE Filter Class:	600			
Date of Test:	12/18/97			
Curve Number:	FIL-031			
		Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	



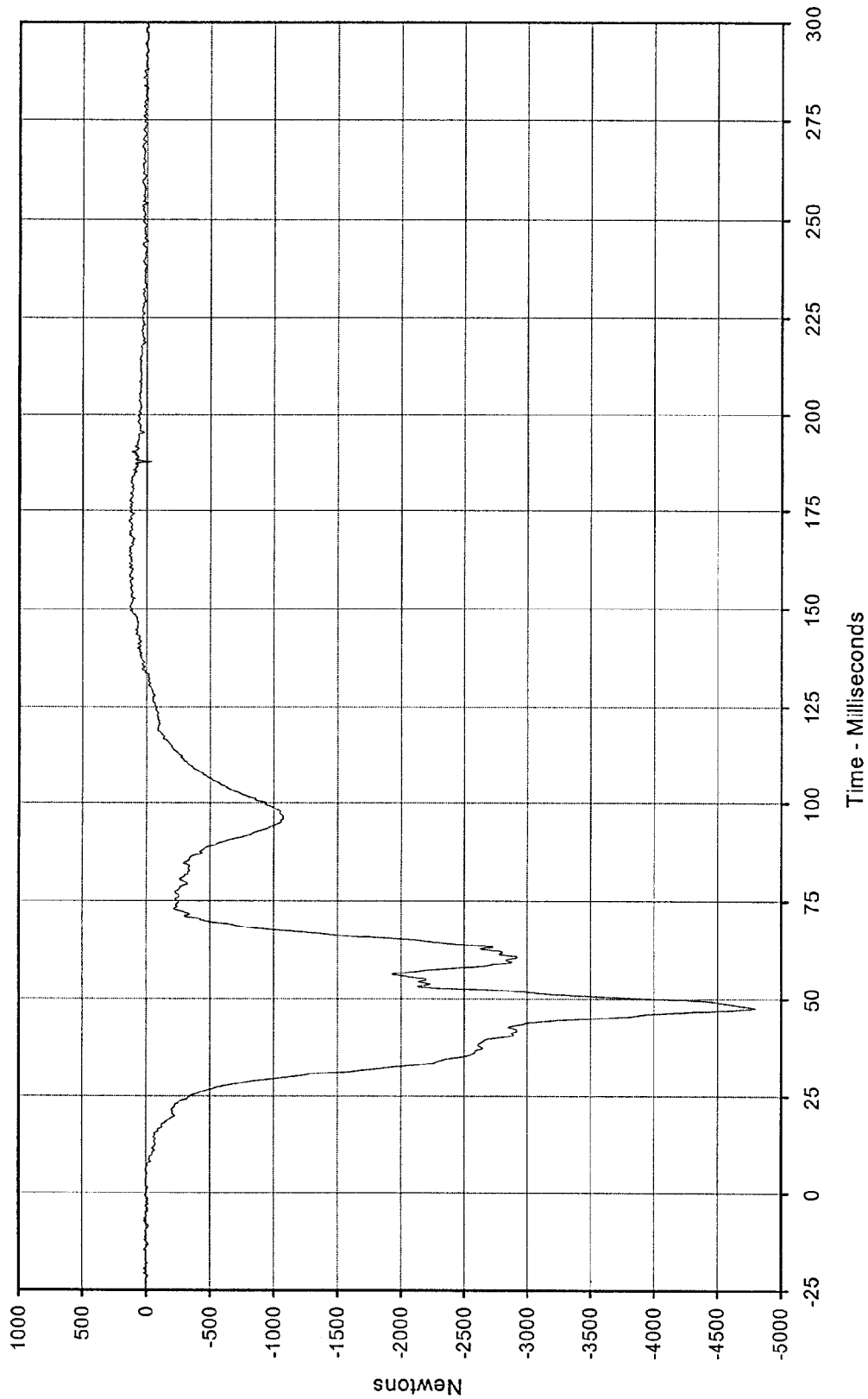
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Curve Description:	Driver Right Lower Tibia Force X	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	69.0 at 187.8 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-1150.9 at 48.0 Milliseconds			
SAE Filter Class:	600			
Date of Test:	12/18/97			
Curve Number:	FIL-032			

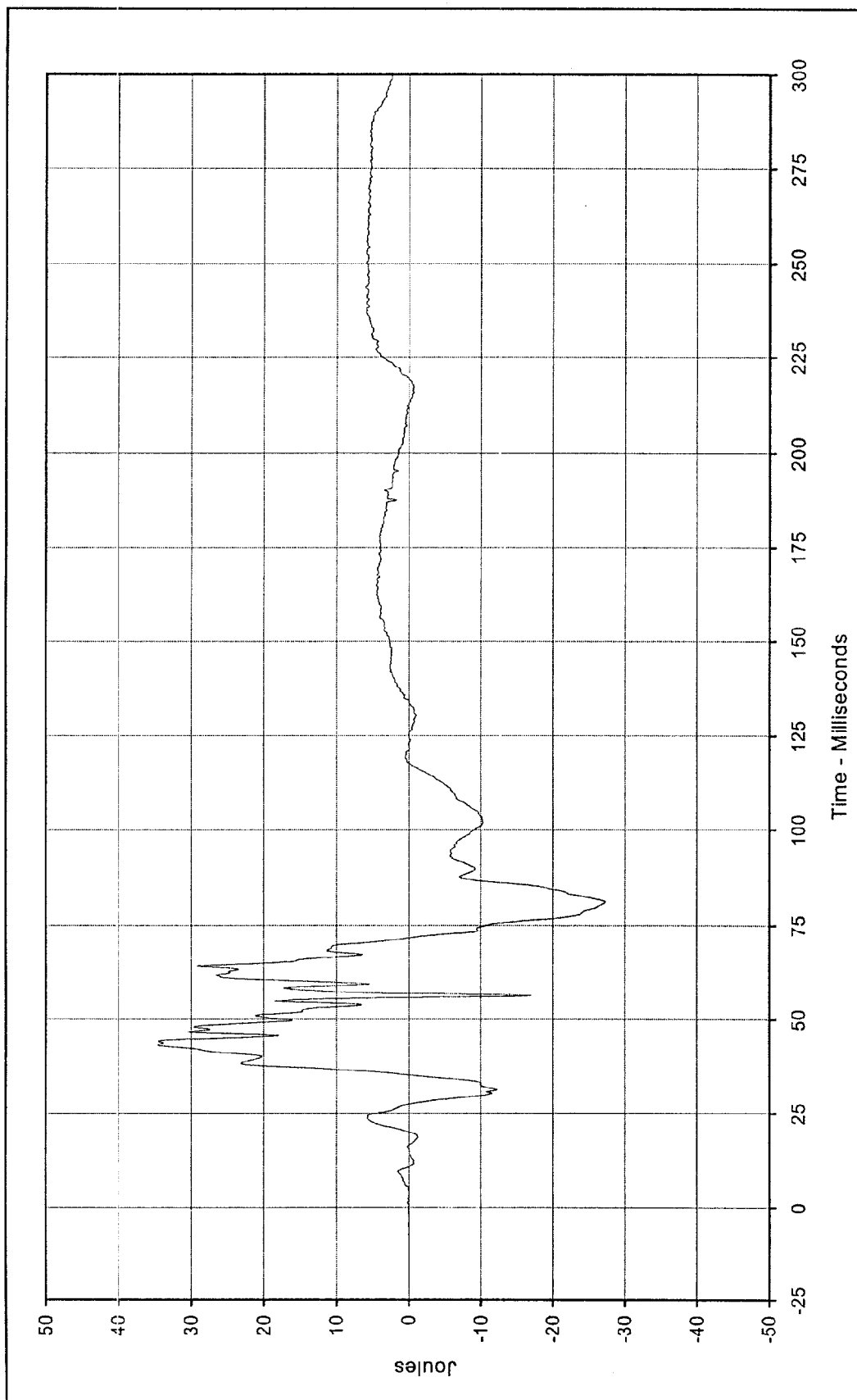




Curve Description: Driver Right Lower Tibia Force Z
 Maximum Value: 140.1 at 172.5 Milliseconds
 Minimum Value: -4796.4 at 47.7 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-033

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

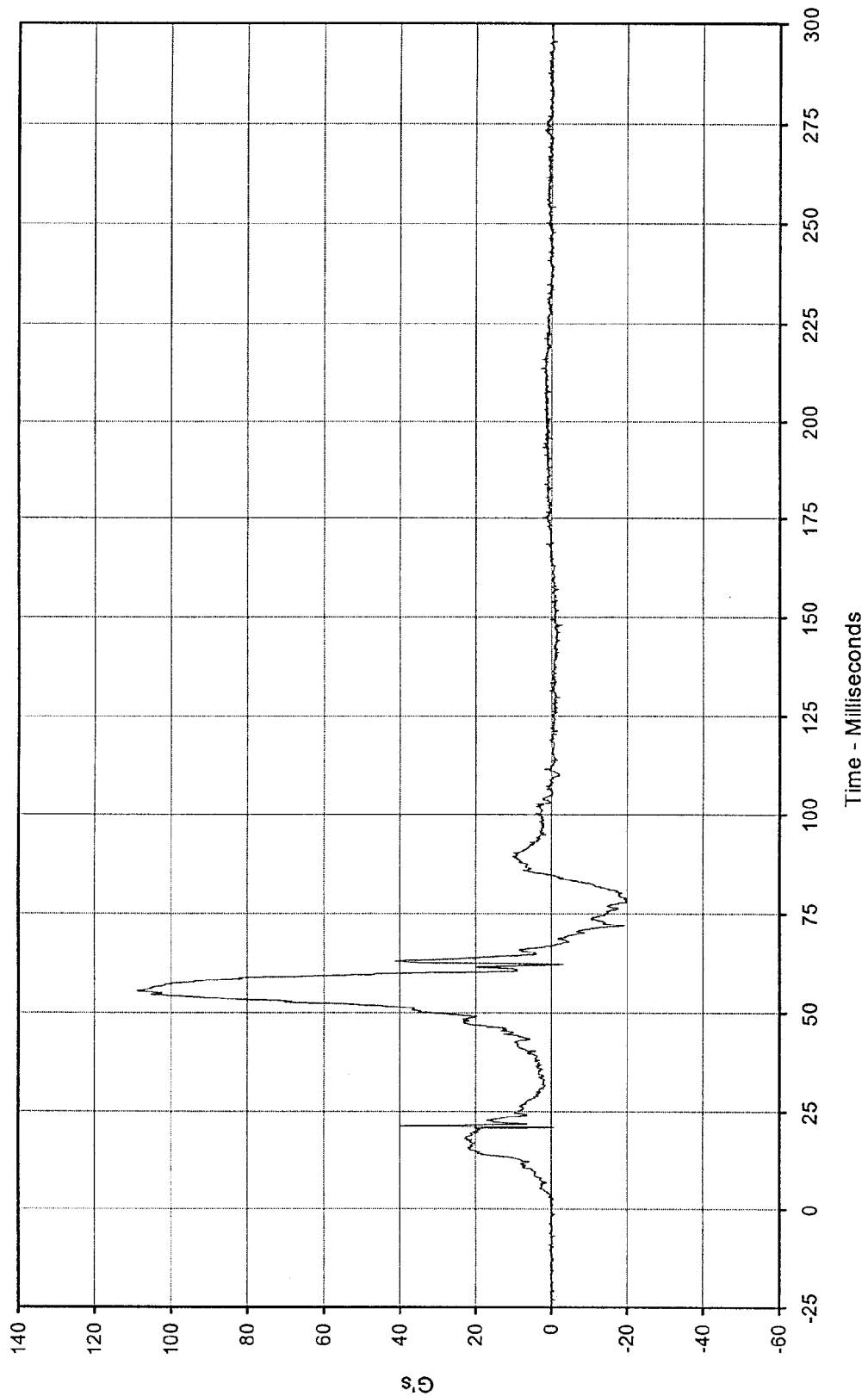




Curve Description: Driver Right Lower Tibia Moment Y
 Maximum Value: 34.6 at 43.1 Milliseconds
 Minimum Value: -27.3 at 81.1 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-034

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

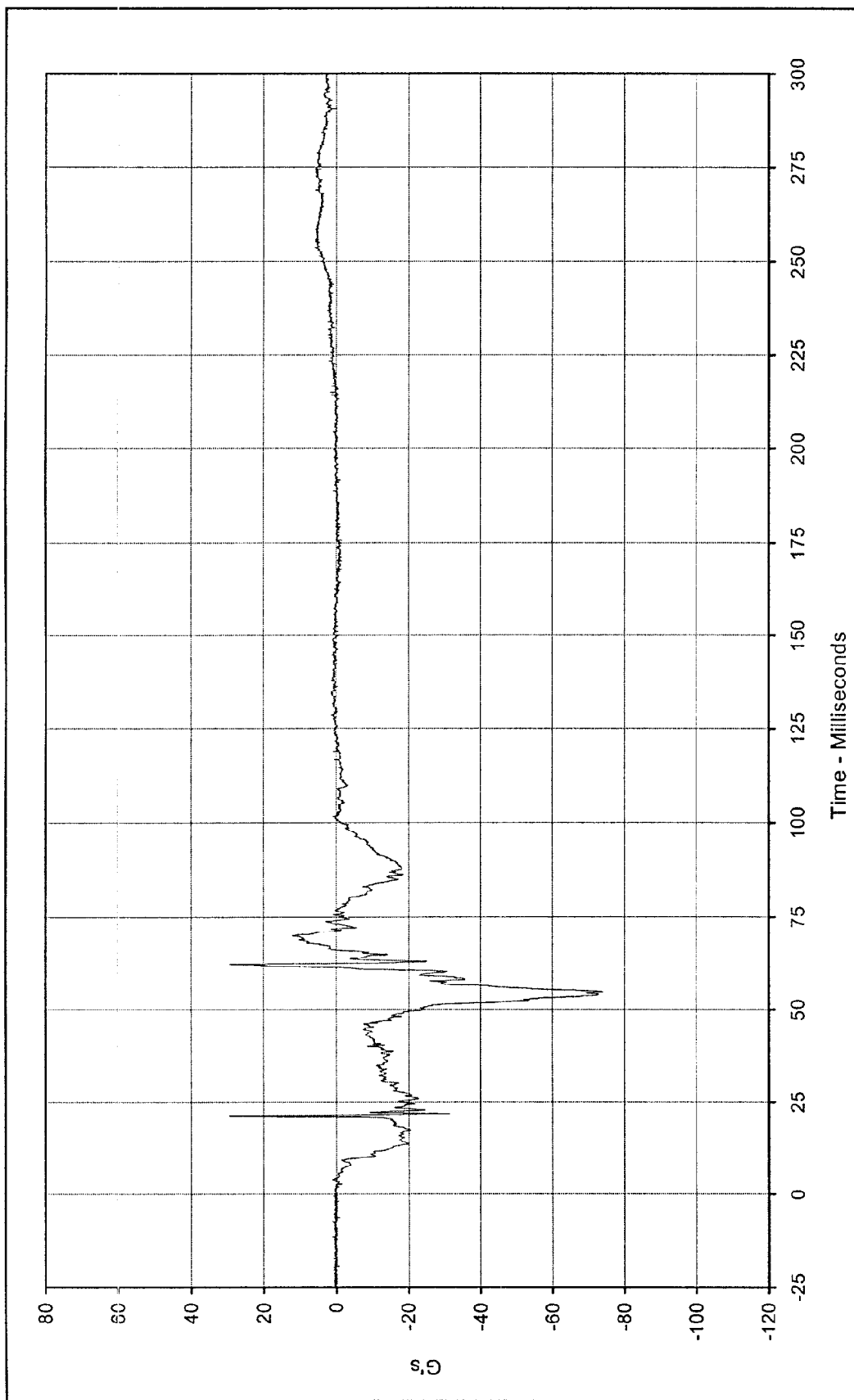




Curve Description:		Driver Left Foot Aft X		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:		108.8	at	55.4	Milliseconds	Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan
Minimum Value:		-20.0	at	77.9	Milliseconds	
SAE Filter Class:		1000				
Date of Test:		12/18/97				
Curve Number:		FIL-035				

The logo for KARCO Engineering features the word "KARCO" in a large, bold, sans-serif font. A stylized lightbulb is integrated into the letter "A". To the right of "KARCO", the word "Engineering" is written in a smaller, italicized, sans-serif font. The entire logo is set against a black background with a white diagonal stripe running from the bottom left to the top right.





Curve Description: Driver Left Foot Aft Z

Maximum Value: 29.3 at 21.2 Milliseconds

Minimum Value: -73.8 at 54.7 Milliseconds

SAE Filter Class: 1000

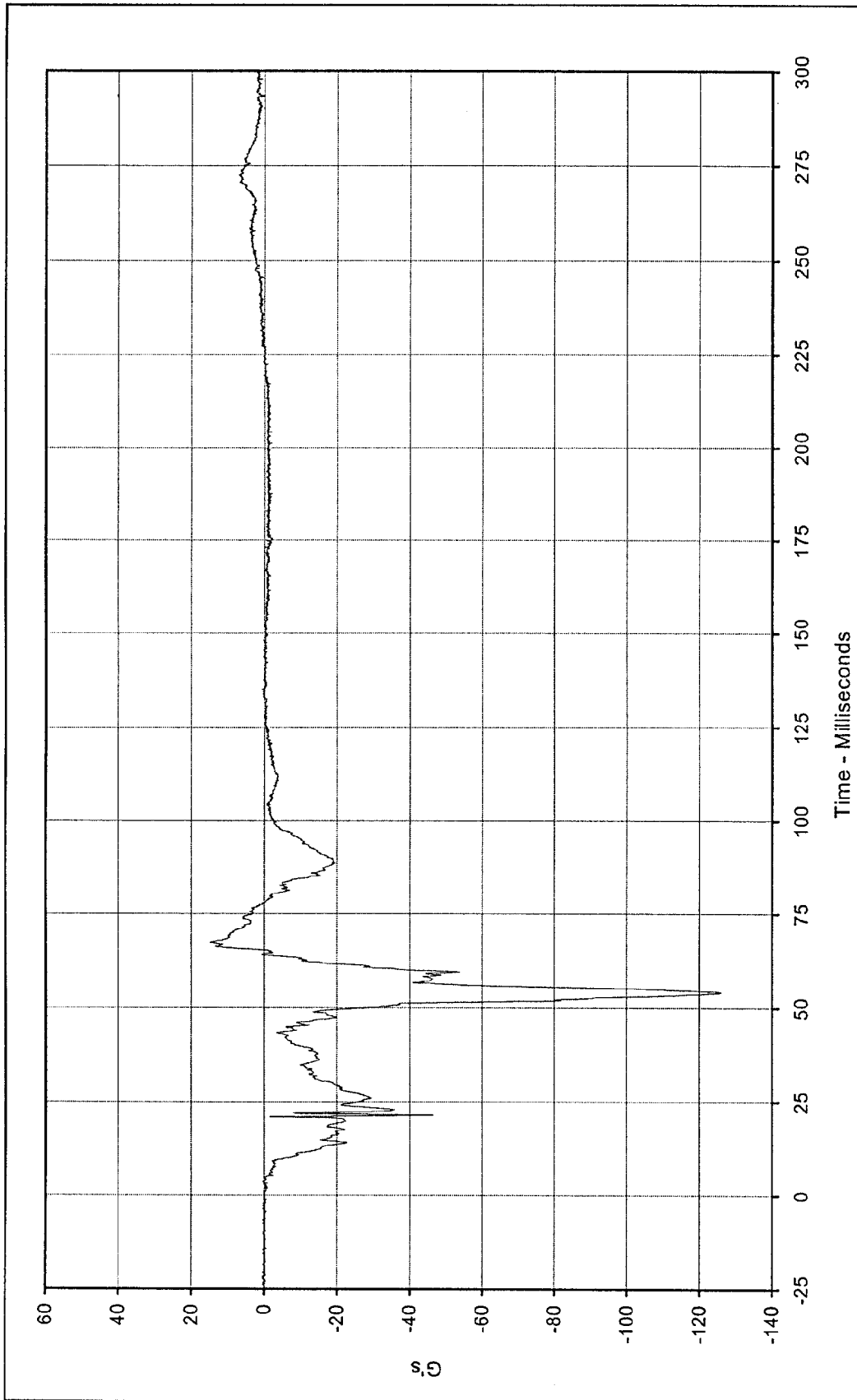
Date of Test: 12/18/97

Curve Number: FIL-036

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

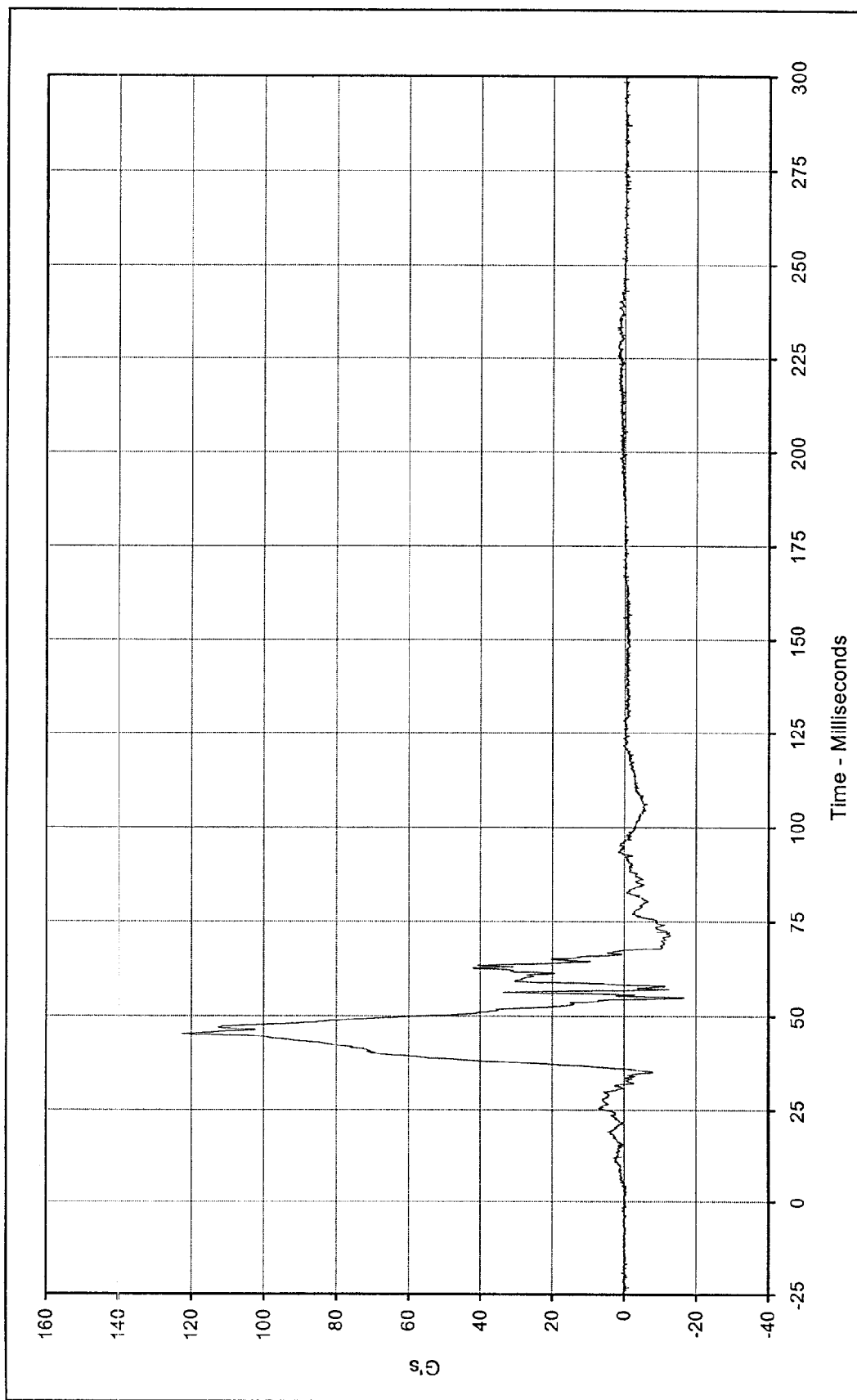




Curve Description: Driver Left Foot Fore Z
 Maximum Value: 14.8 at 67.3 Milliseconds
 Minimum Value: -126.1 at 54.1 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: FIL-037

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Driver Right Foot Aft X

Maximum Value: 122.7 at 45.3 Milliseconds

Minimum Value: -16.7 at 54.9 Milliseconds

SAE Filter Class: 1000

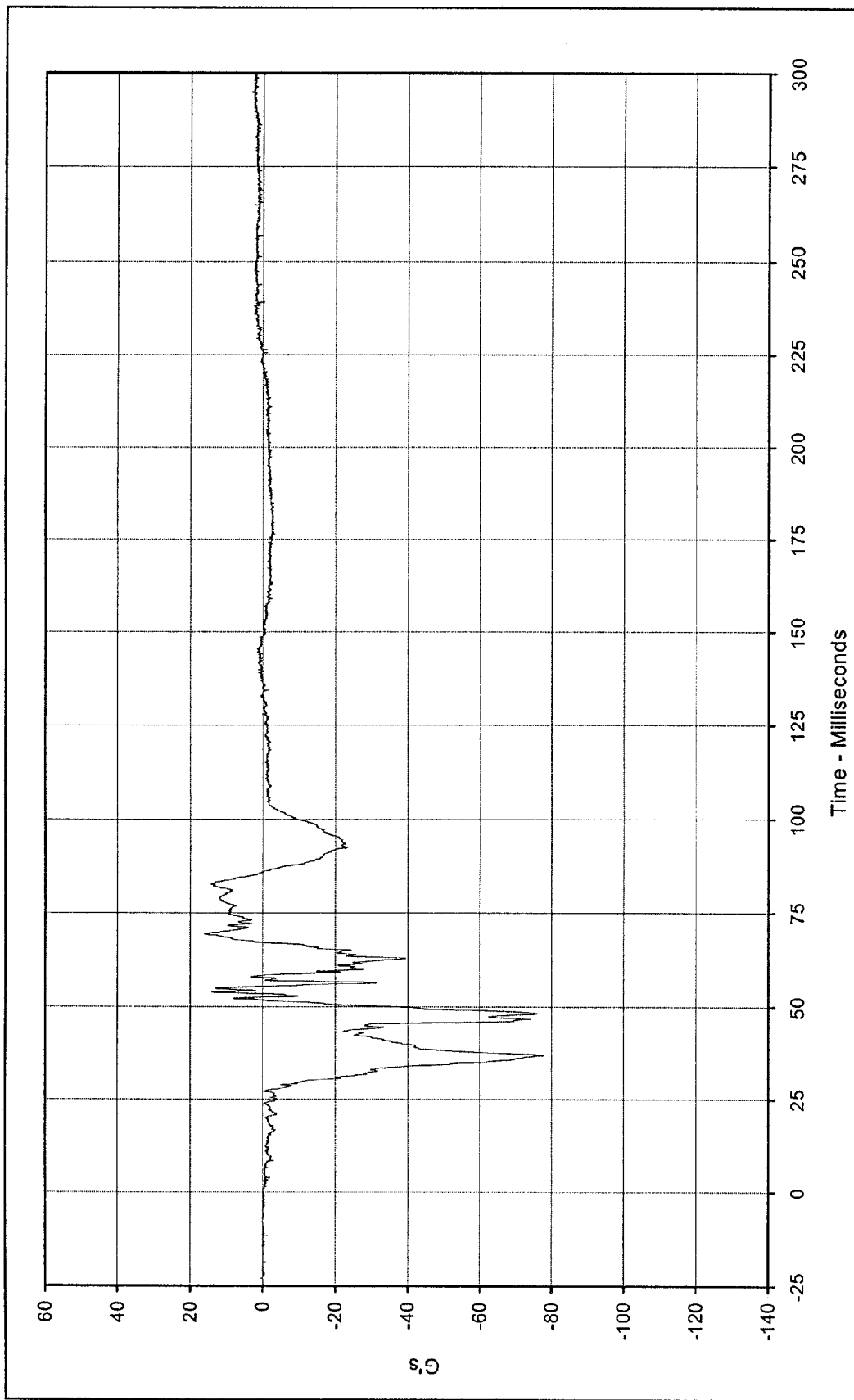
Date of Test: 12/18/97

Curve Number: FIL-038

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

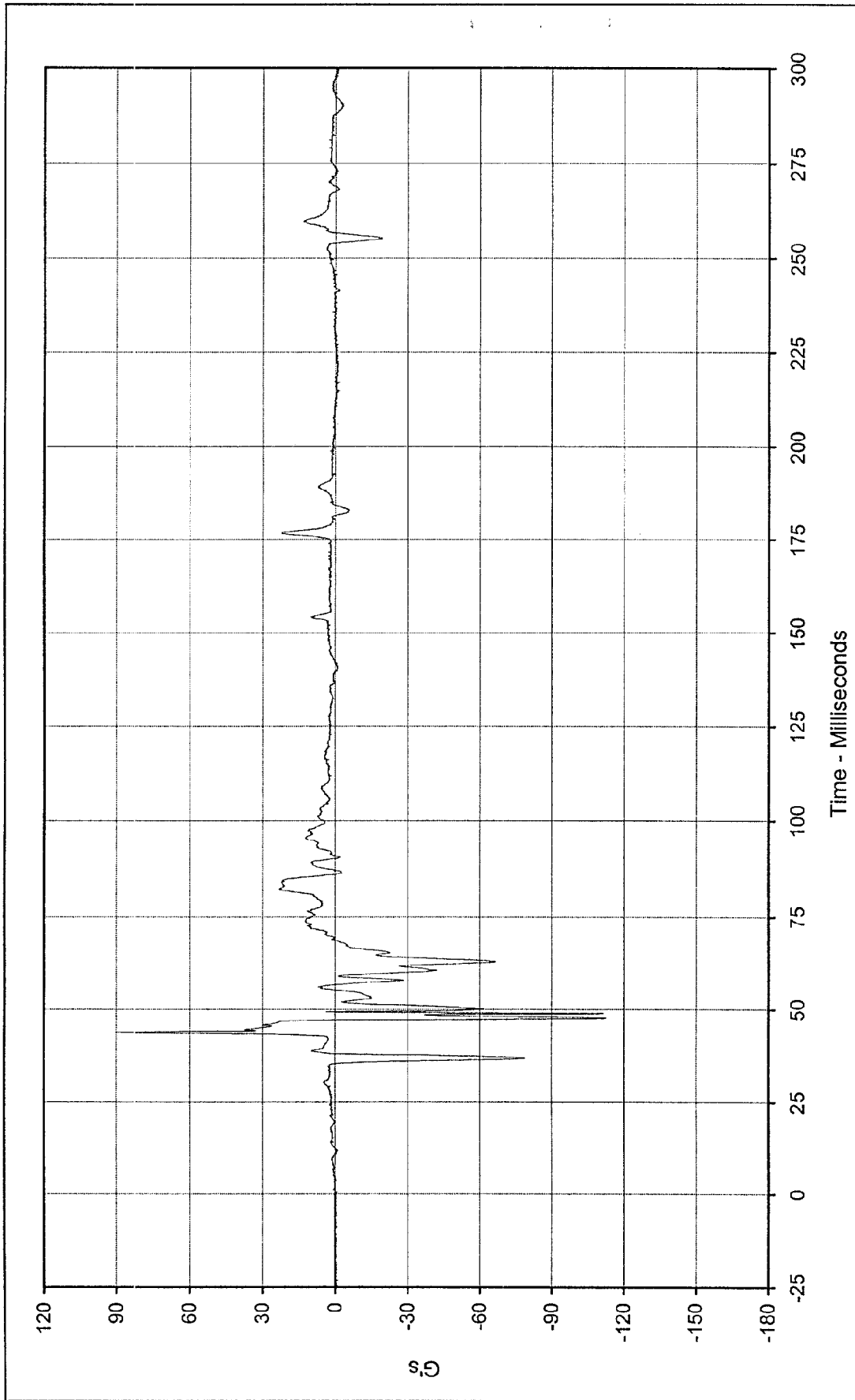




Curve Description: Driver Right Foot Aft Z
 Maximum Value: 16.1 at 69.2 Milliseconds
 Minimum Value: -77.9 at 36.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: FIL-039

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Driver Right Foot Fore Z

Maximum Value: 90.2 at 43.6 Milliseconds

Minimum Value: -112.6 at 47.7 Milliseconds

SAE Filter Class: 1000

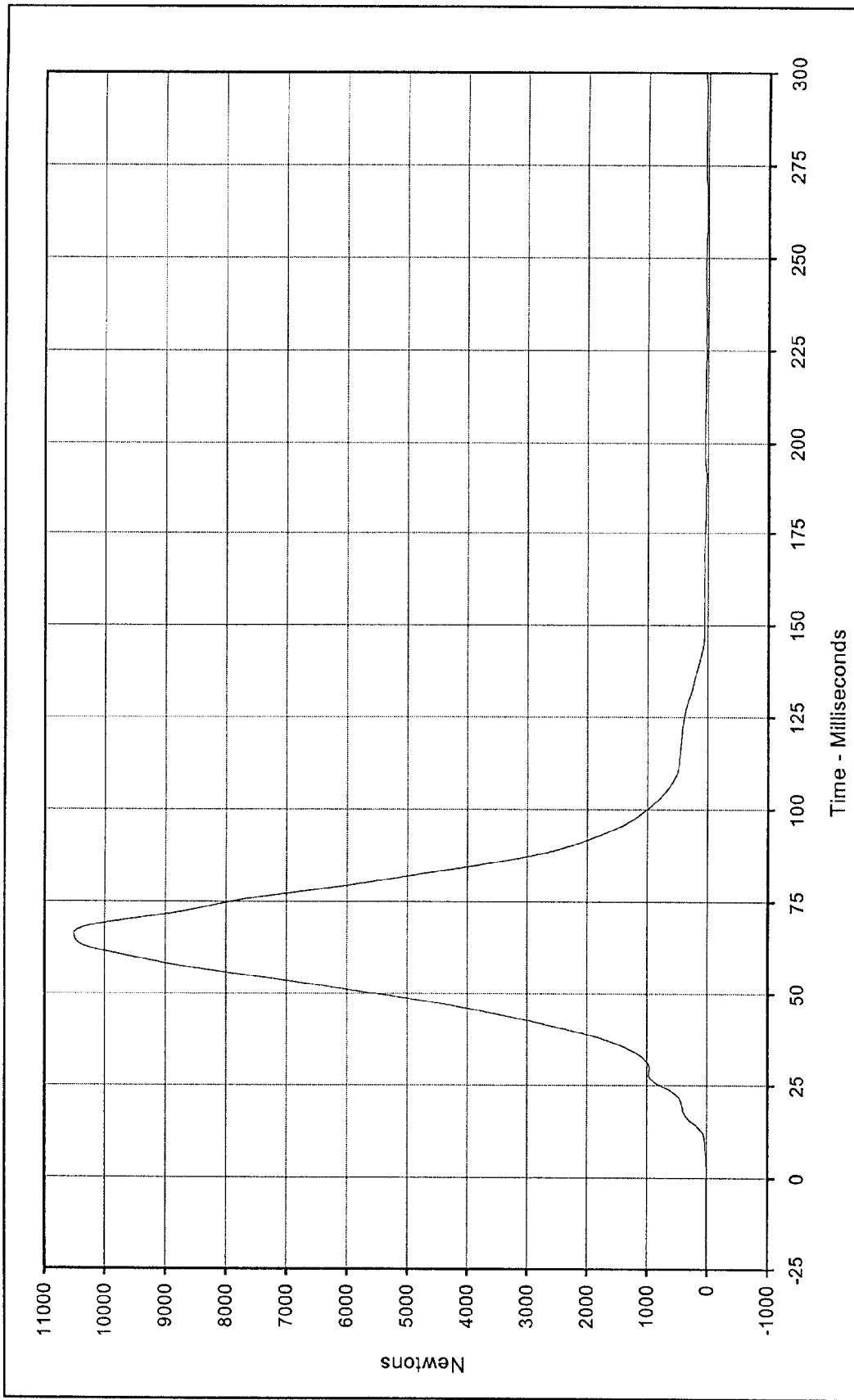
Date of Test: 12/18/97

Curve Number: FIL-040

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

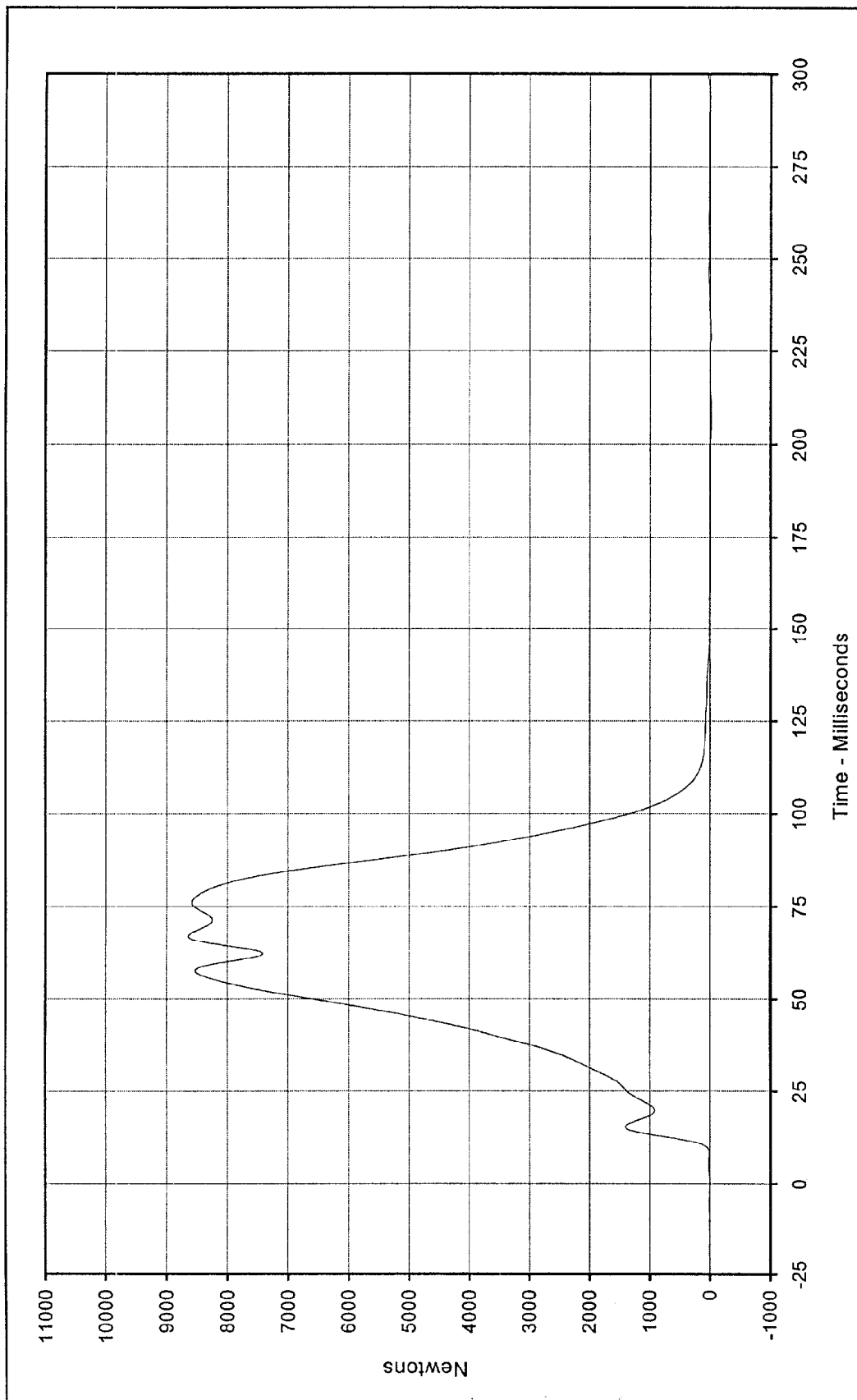
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:		Driver Lap Belt Force		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	10507.8	at	66.2	Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan
Minimum Value:	0.4	at	1.7	Milliseconds		
SAE Filter Class:	60					
Date of Test:	12/18/97					
Curve Number:	FIL-041					





Curve Description: Driver Shoulder Belt Force

Maximum Value: 8647.6 at 67.1 Milliseconds

Minimum Value: -16.6 at 209.9 Milliseconds

SAE Filter Class: 60

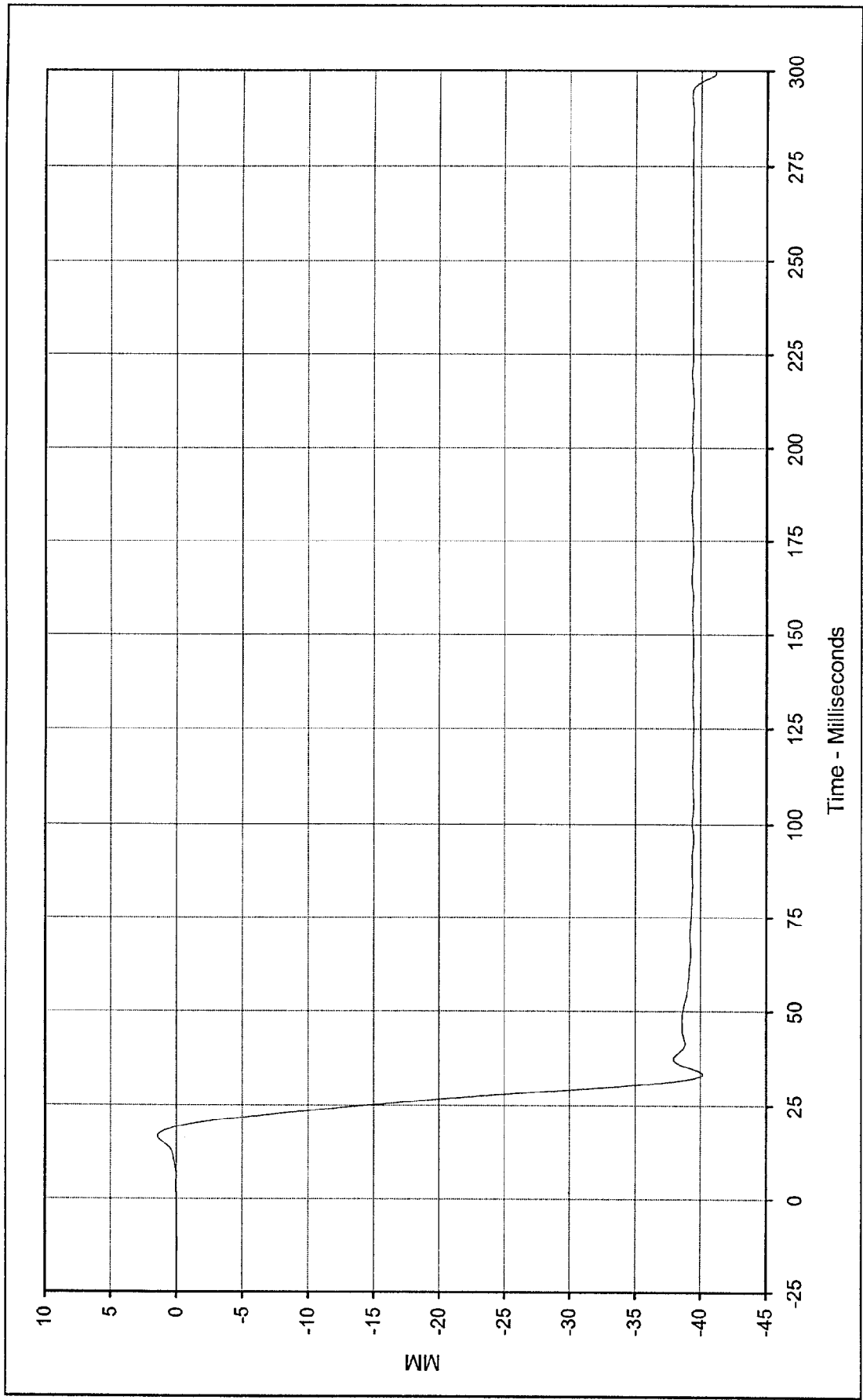
Date of Test: 12/18/97

Curve Number: FIL-042

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

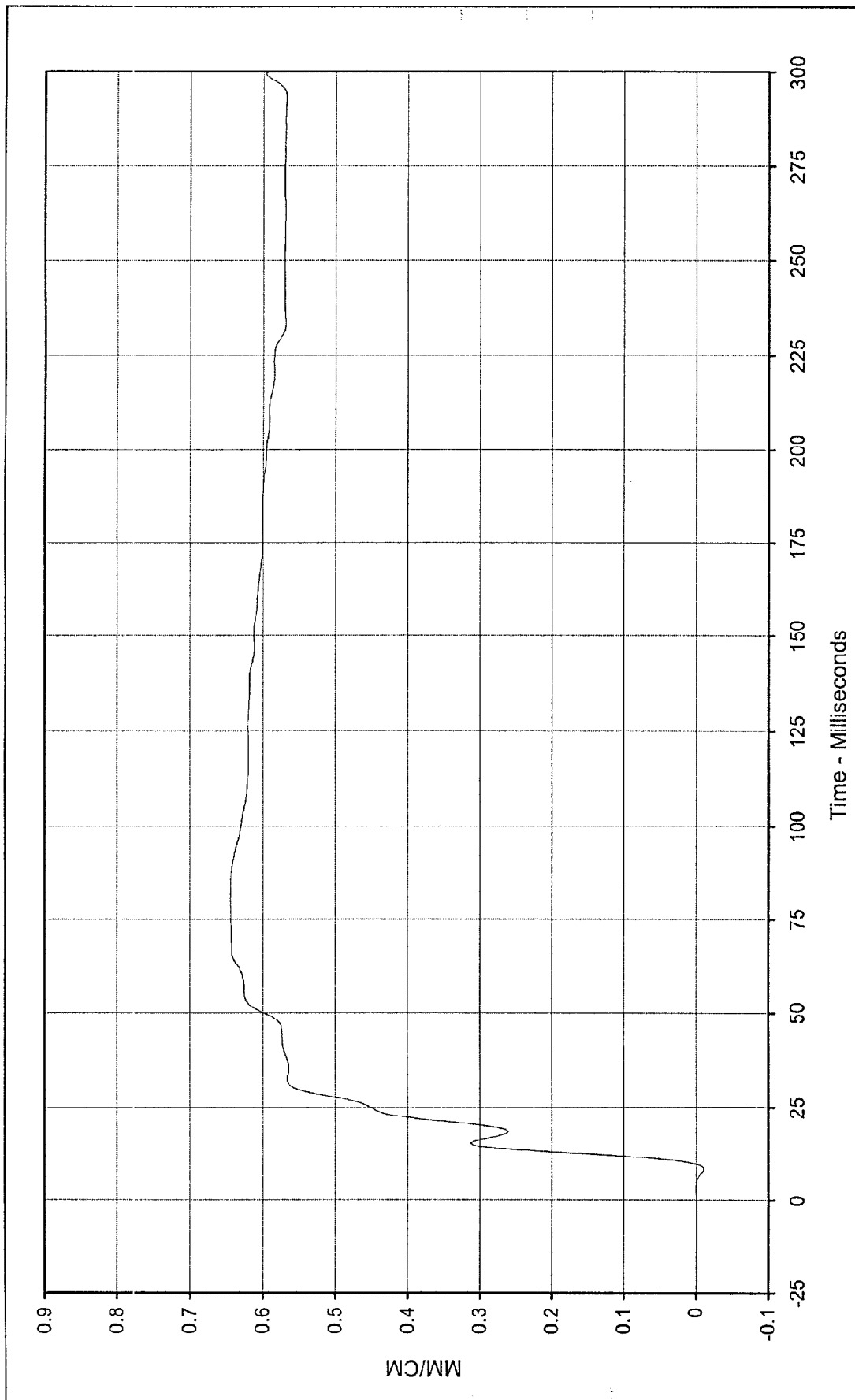




Curve Description:	Driver Shoulder Belt Pullout	*	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	1.4	at 16.8	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-41.1	at 299.3			
SAE Filter Class:	60				
Date of Test:	12/18/97				
Curve Number:	FIL-043				



*Channel Failed at 17.0 Msec



Curve Description: Driver Shoulder Belt Elongation

Maximum Value: 0.64 at 84.5 Milliseconds

Minimum Value: -0.01 at 8.5 Milliseconds

SAE Filter Class: 60

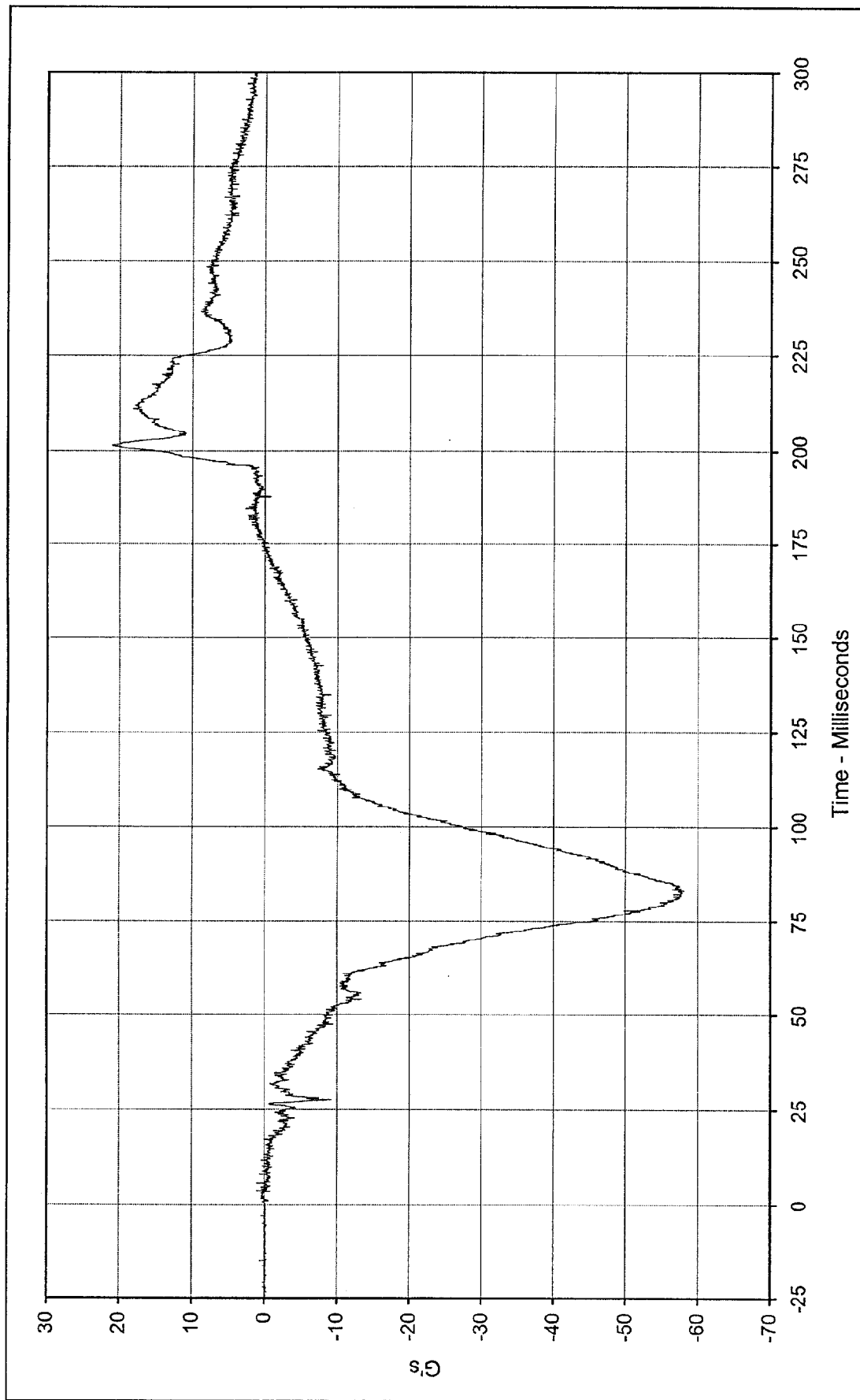
Date of Test: 12/18/97

Curve Number: FIL-044

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

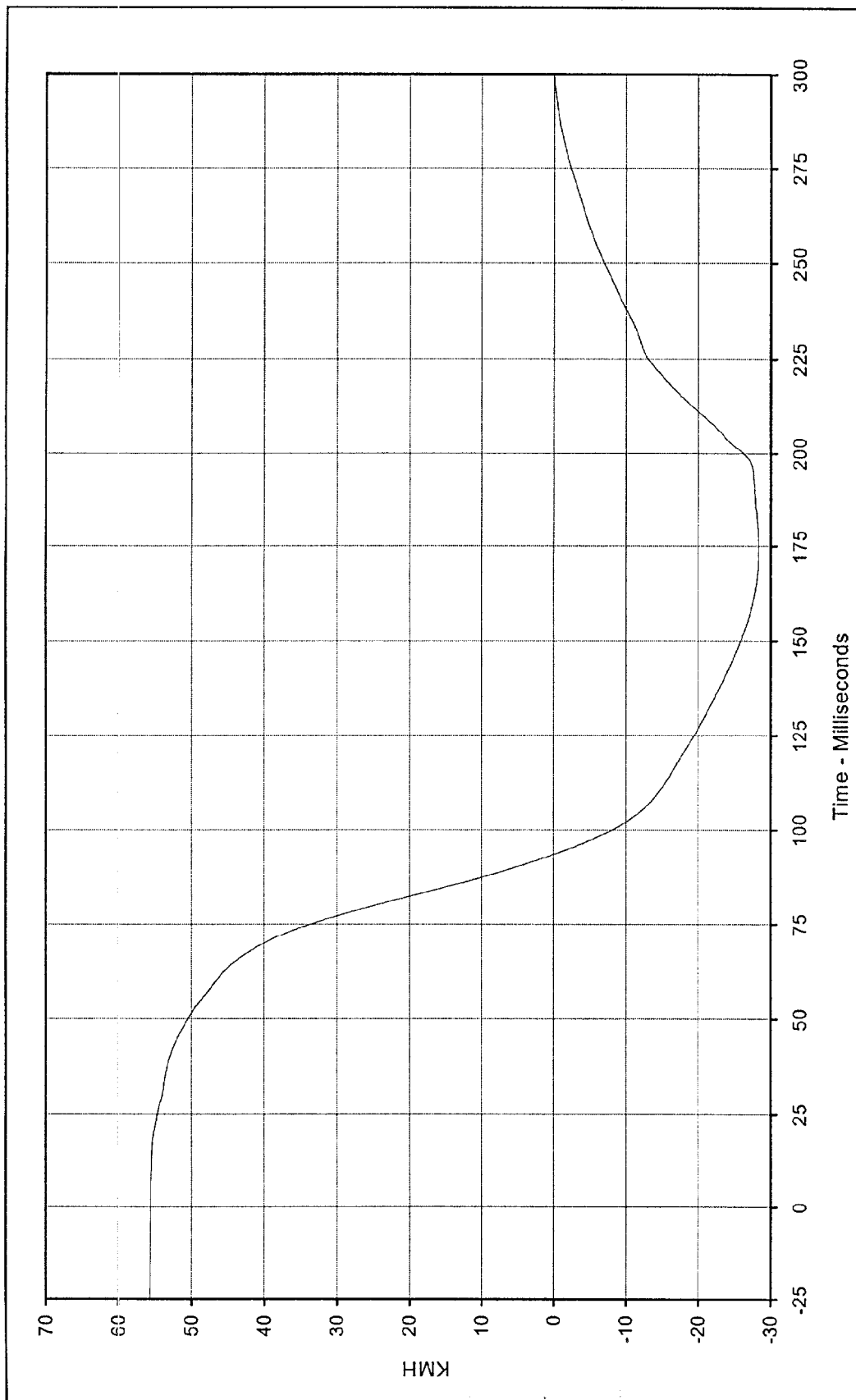
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:	Passenger Head Primary X	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	21.1 at 201.5 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-58.1 at 83.2 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/18/97			
Curve Number:	FIL-045			

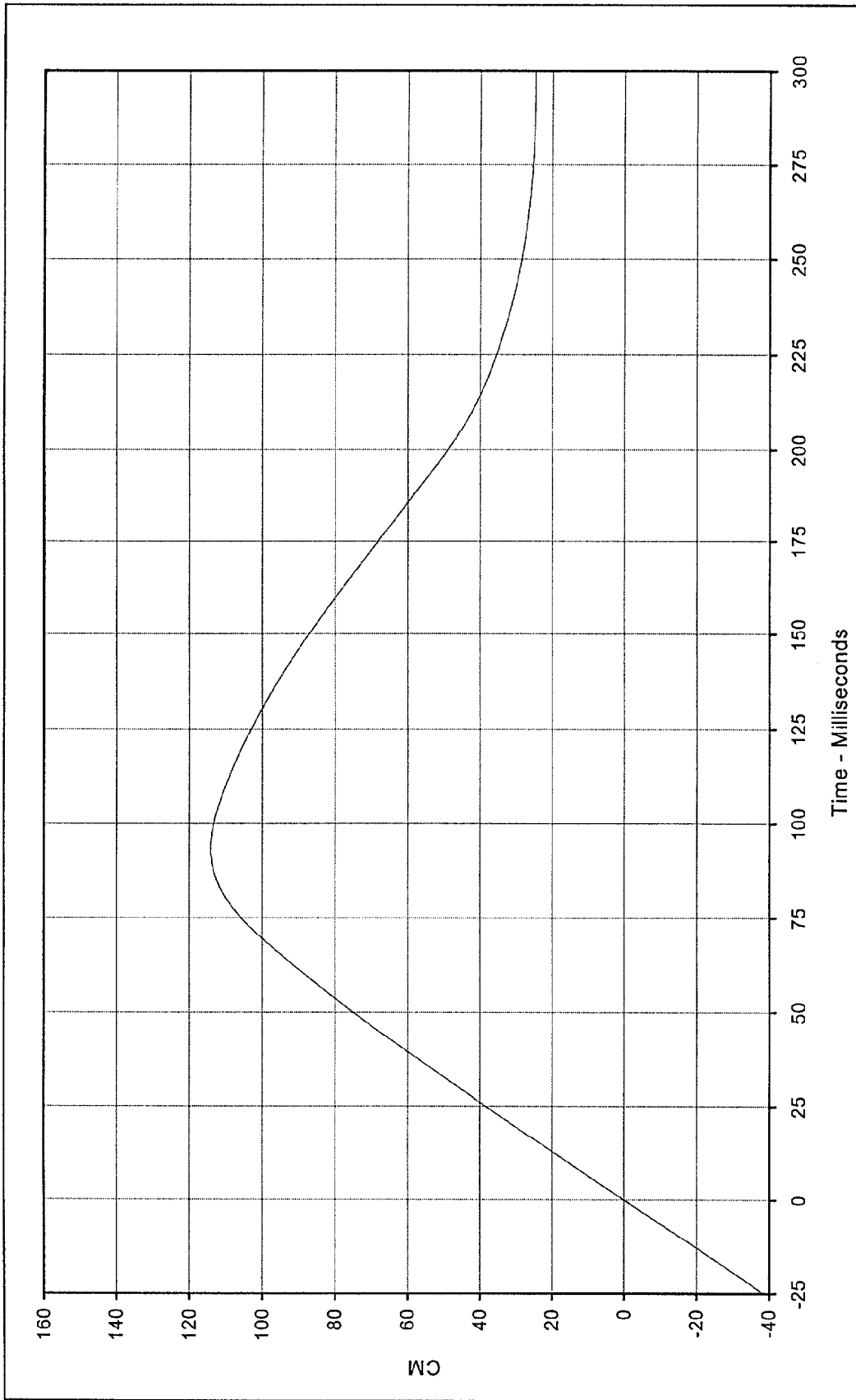




Curve Description: Passenger Head Primary X Velocity
 Maximum Value: 55.6 at 3.9 Milliseconds
 Minimum Value: -28.4 at 173.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN1-045

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Head Primary X Displ. Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 114.2 at 93.4 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

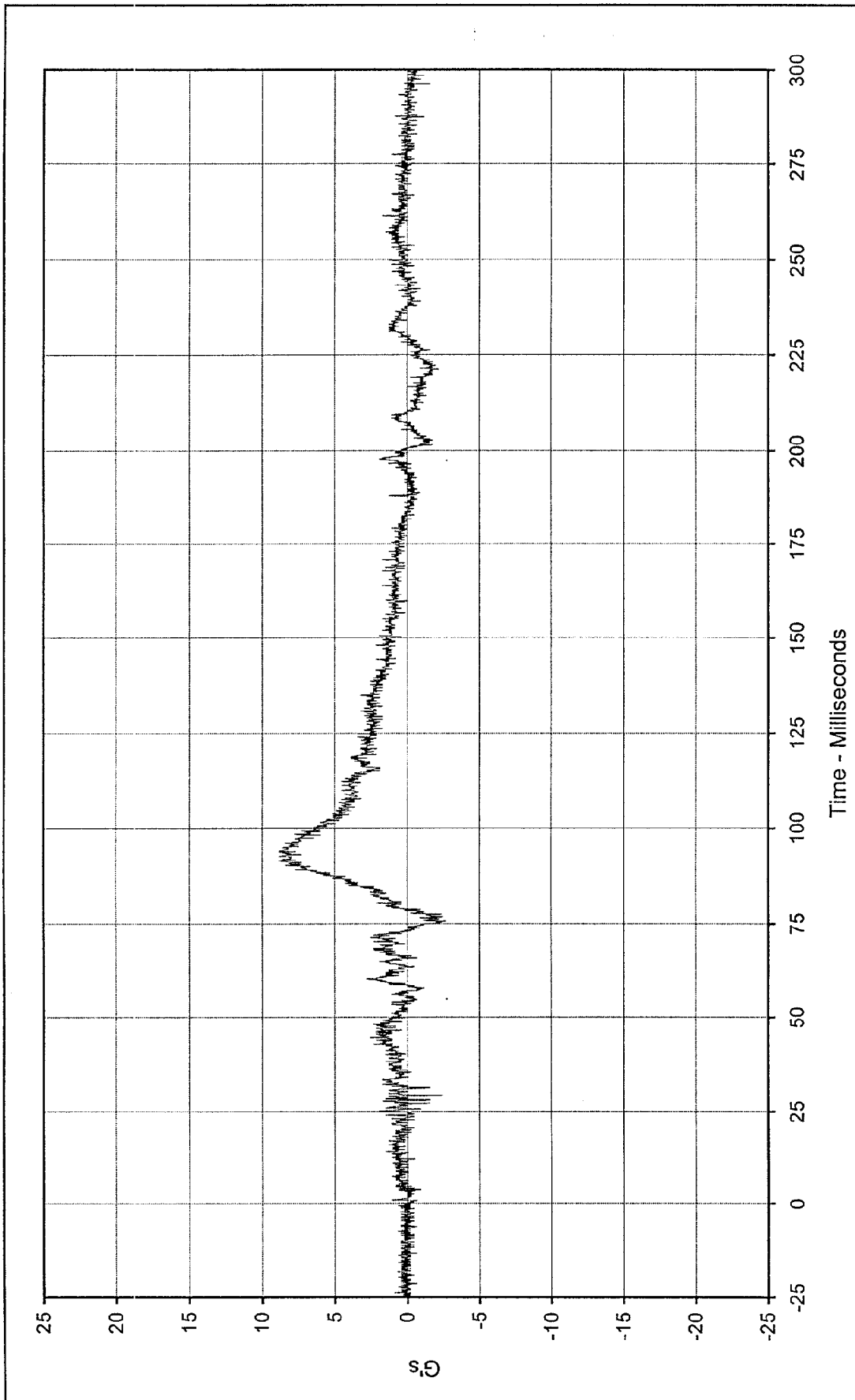
Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 12/18/97

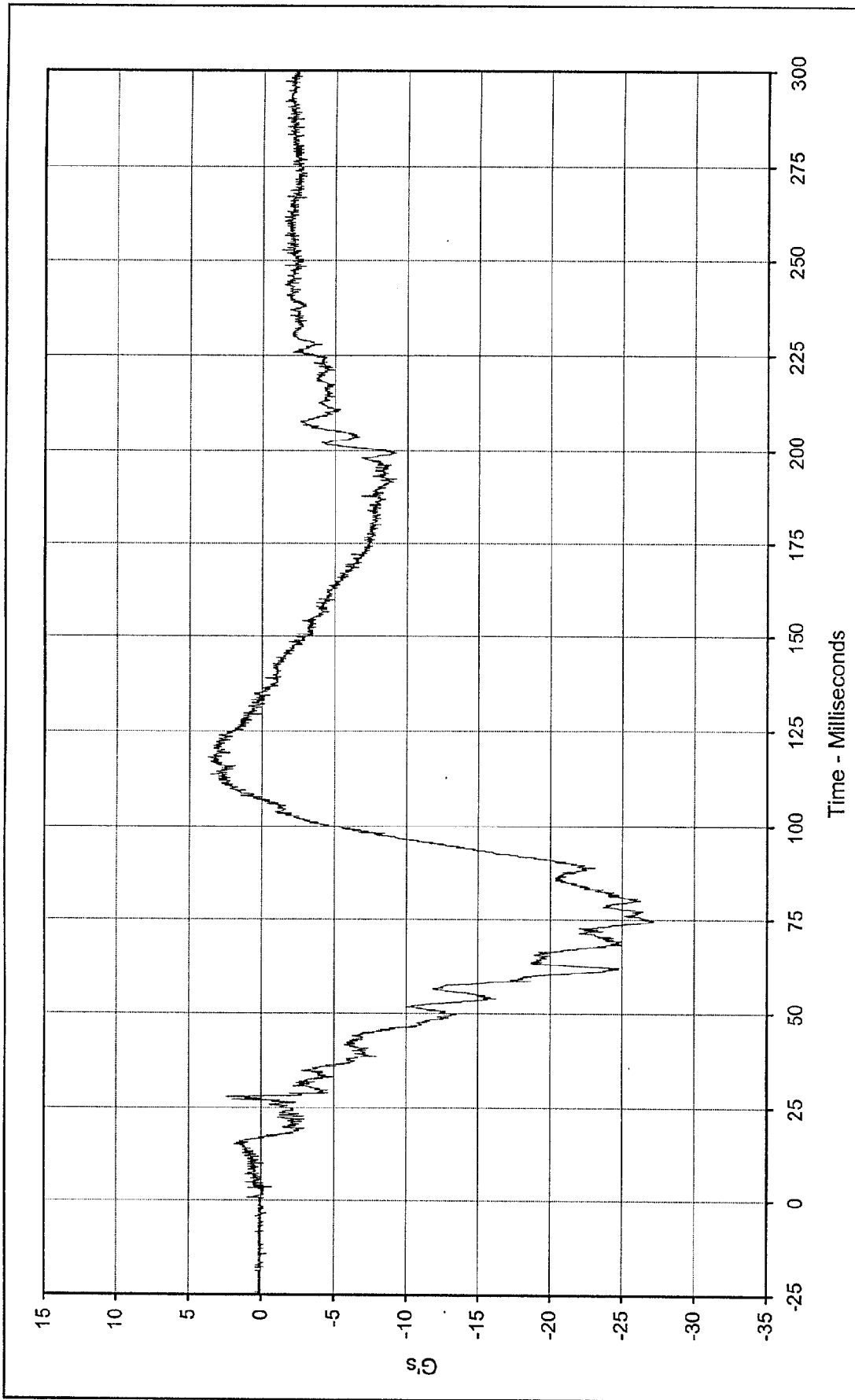
Curve Number: IN2-045





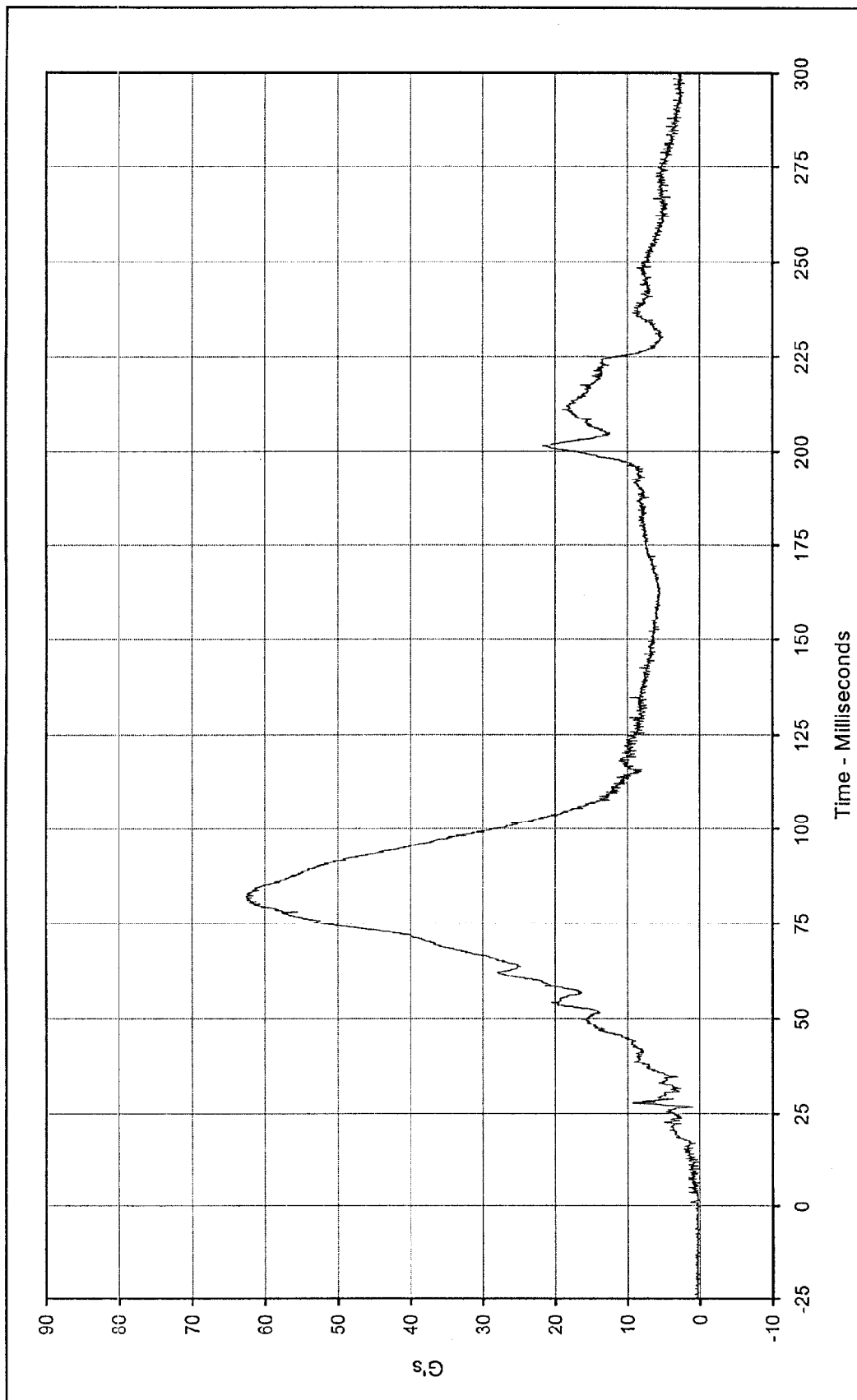
Curve Description:	Passenger Head Primary Y	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	8.8 at 91.5 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-2.6 at 75.7 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/18/97			
Curve Number:	FIL-046			





Curve Description:	Passenger Head Primary Z	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	3.7	at	118.2	Milliseconds
Minimum Value:	-27.2	at	74.6	Milliseconds
SAE Filter Class:	1000			
Date of Test:	12/18/97	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Curve Number:	FIL-047			





Curve Description: Passenger Head Resultant Primary

Maximum Value: 62.6 at 82.2 Milliseconds

Minimum Value: 0.0 at 1.5 Milliseconds

SAE Filter Class: 1000

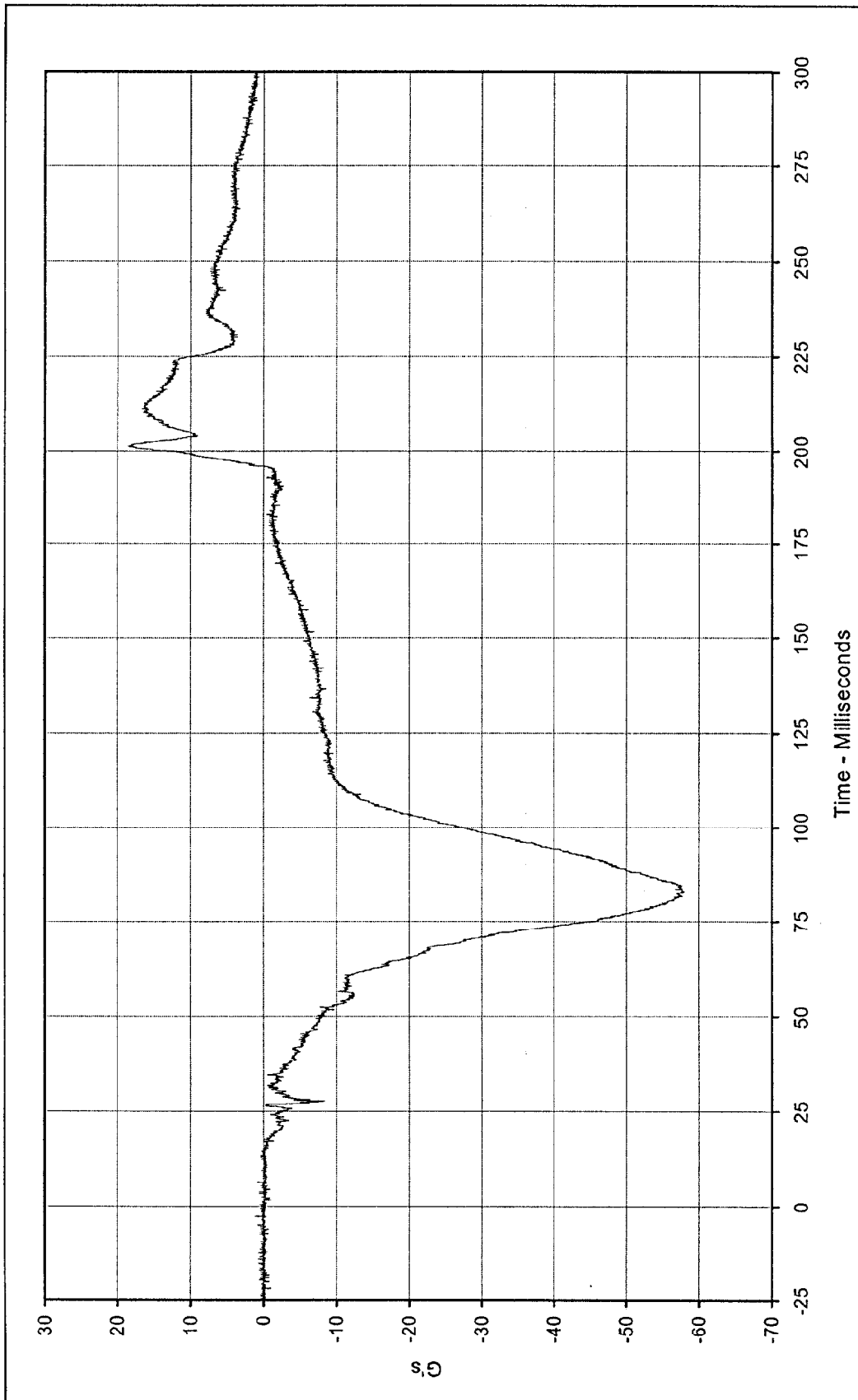
Date of Test: 12/18/97

Curve Number: RES-045

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108

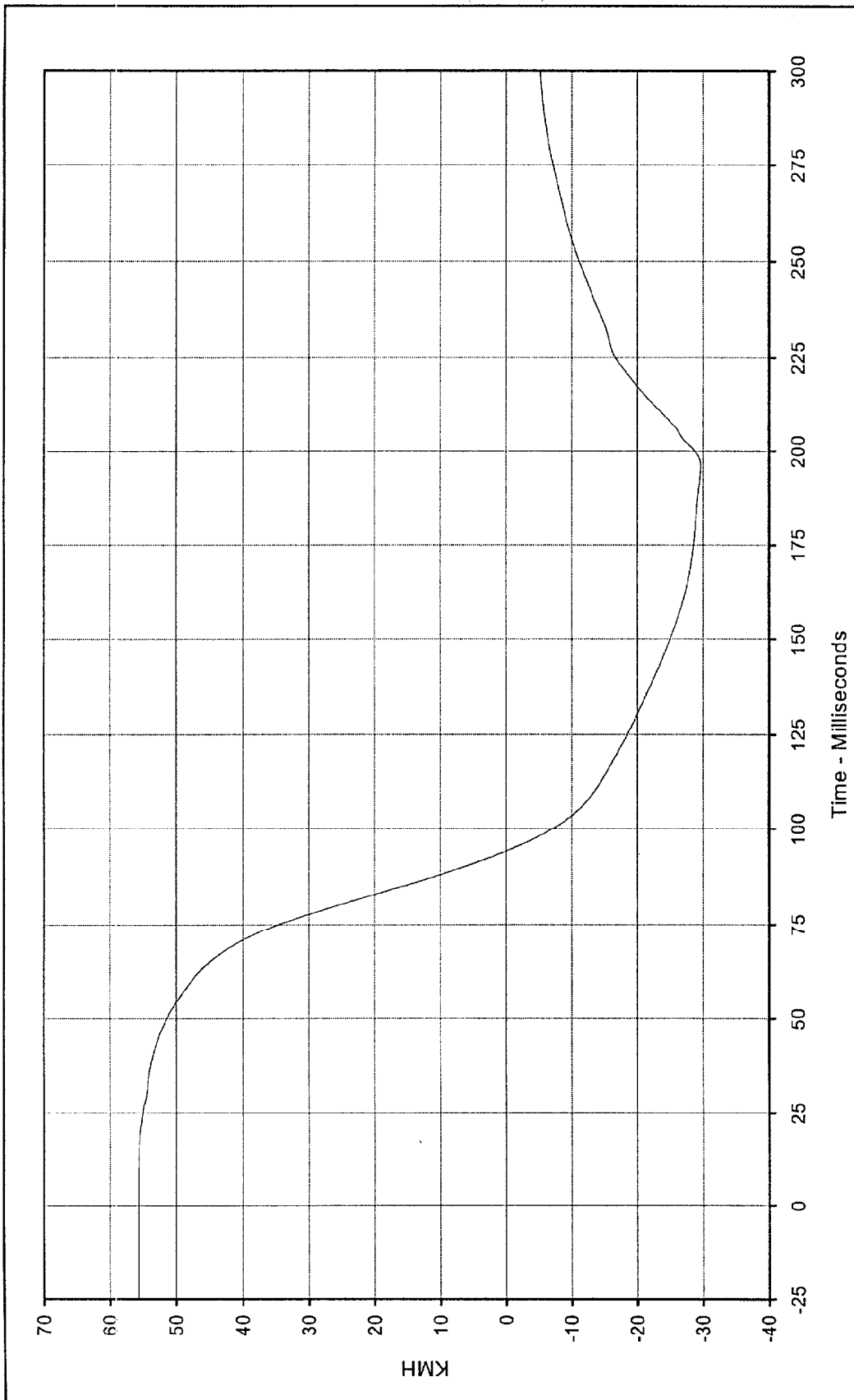
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:	Passenger Head Redundant X	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	18.5 at 201.4 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-58.0 at 82.8 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/18/97			
Curve Number:	FIL-048			





Curve Description: Passenger Head Redundant X Velocity

Maximum Value: 55.7 at 0.0 Milliseconds

Minimum Value: -29.7 at 196.0 Milliseconds

SAE Filter Class: 180

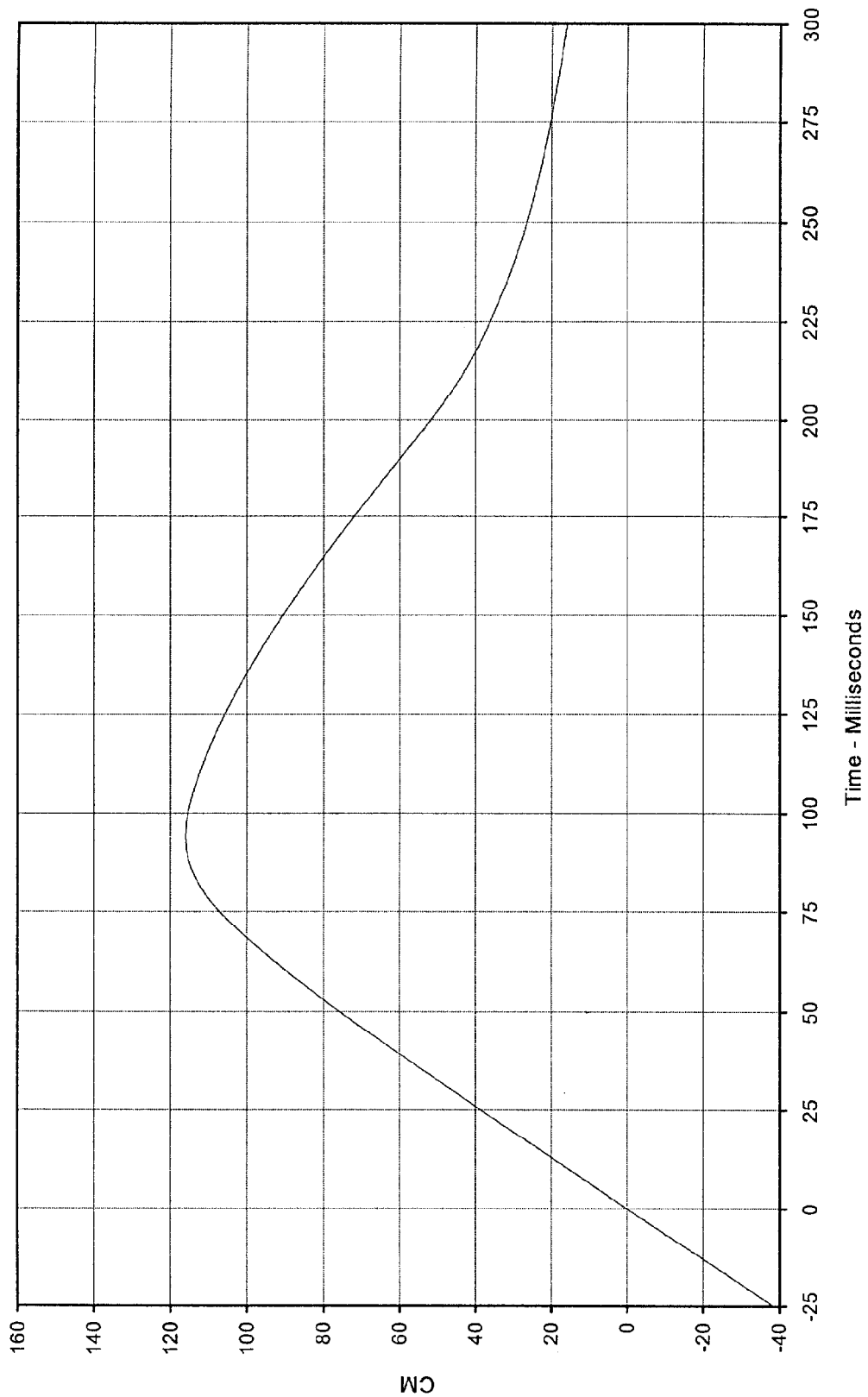
Date of Test: 12/18/97

Curve Number: IN1-048

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

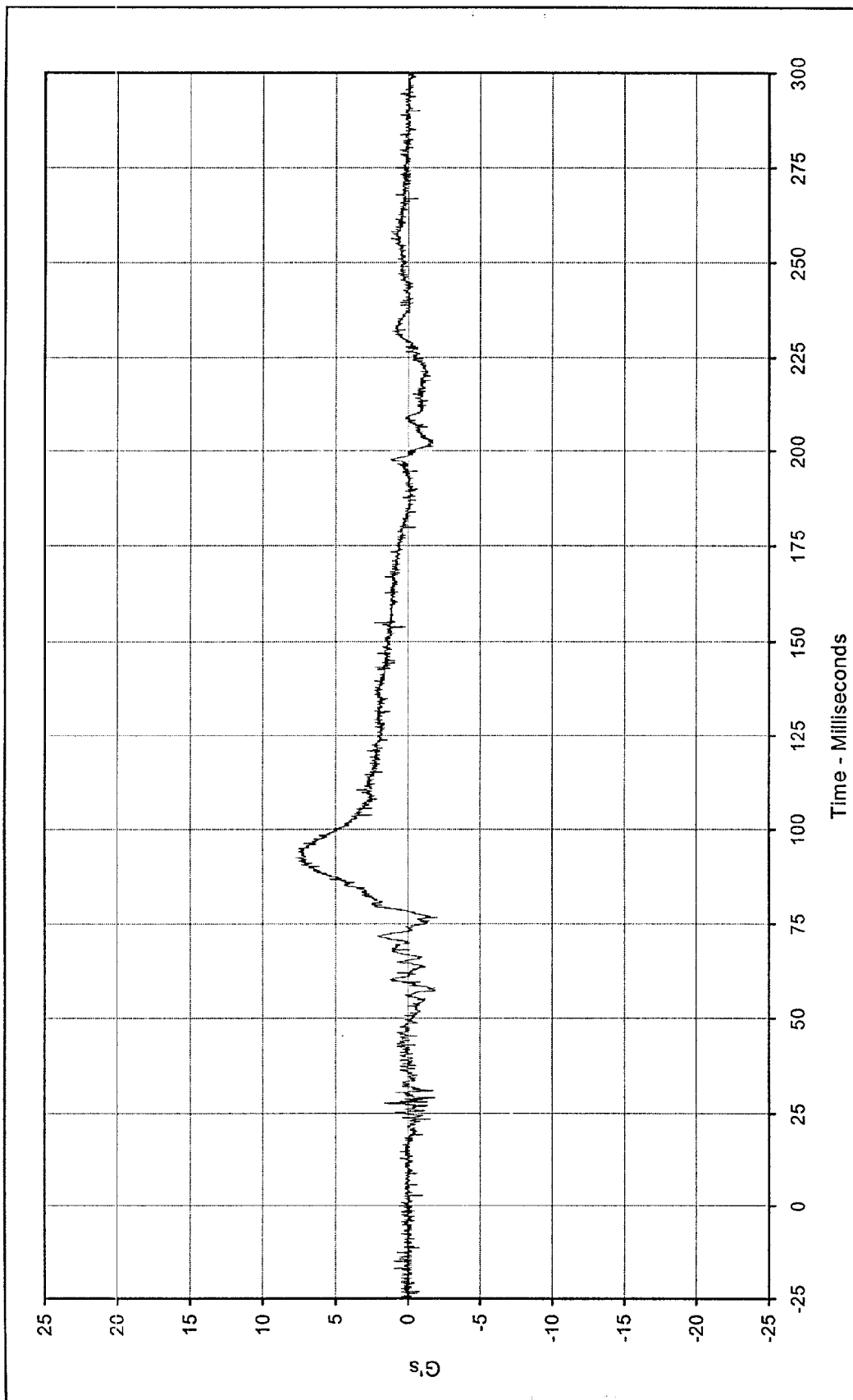




Curve Description: Passenger Head Redundant X Displ.
 Maximum Value: 116.1 at 94.1 Milliseconds
 Minimum Value: 0.1 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN2-048

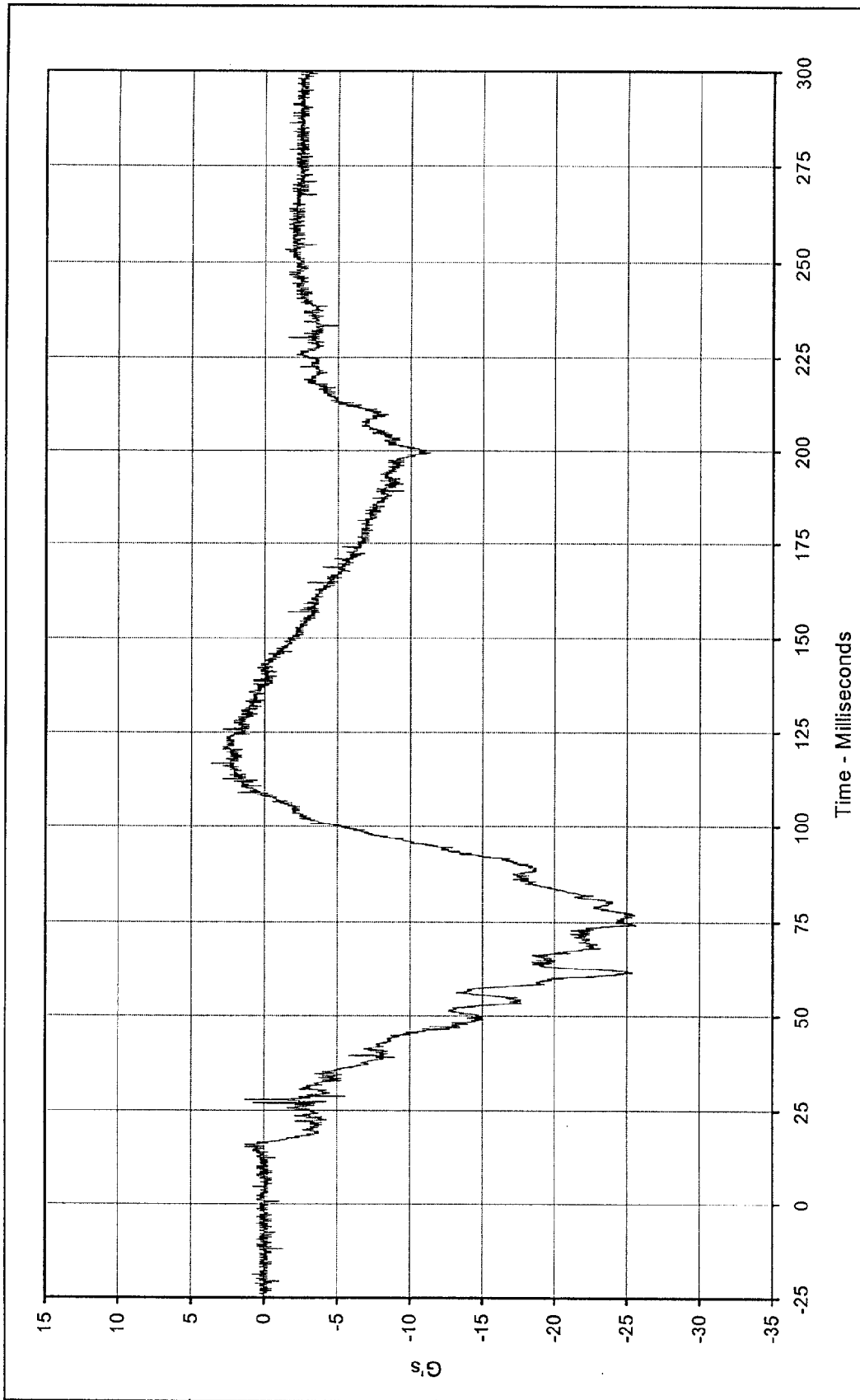
Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:	Passenger Head Redundant Y	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	7.7 at 92.5 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-2.1 at 76.6 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/18/97			
Curve Number:	FIL-049			

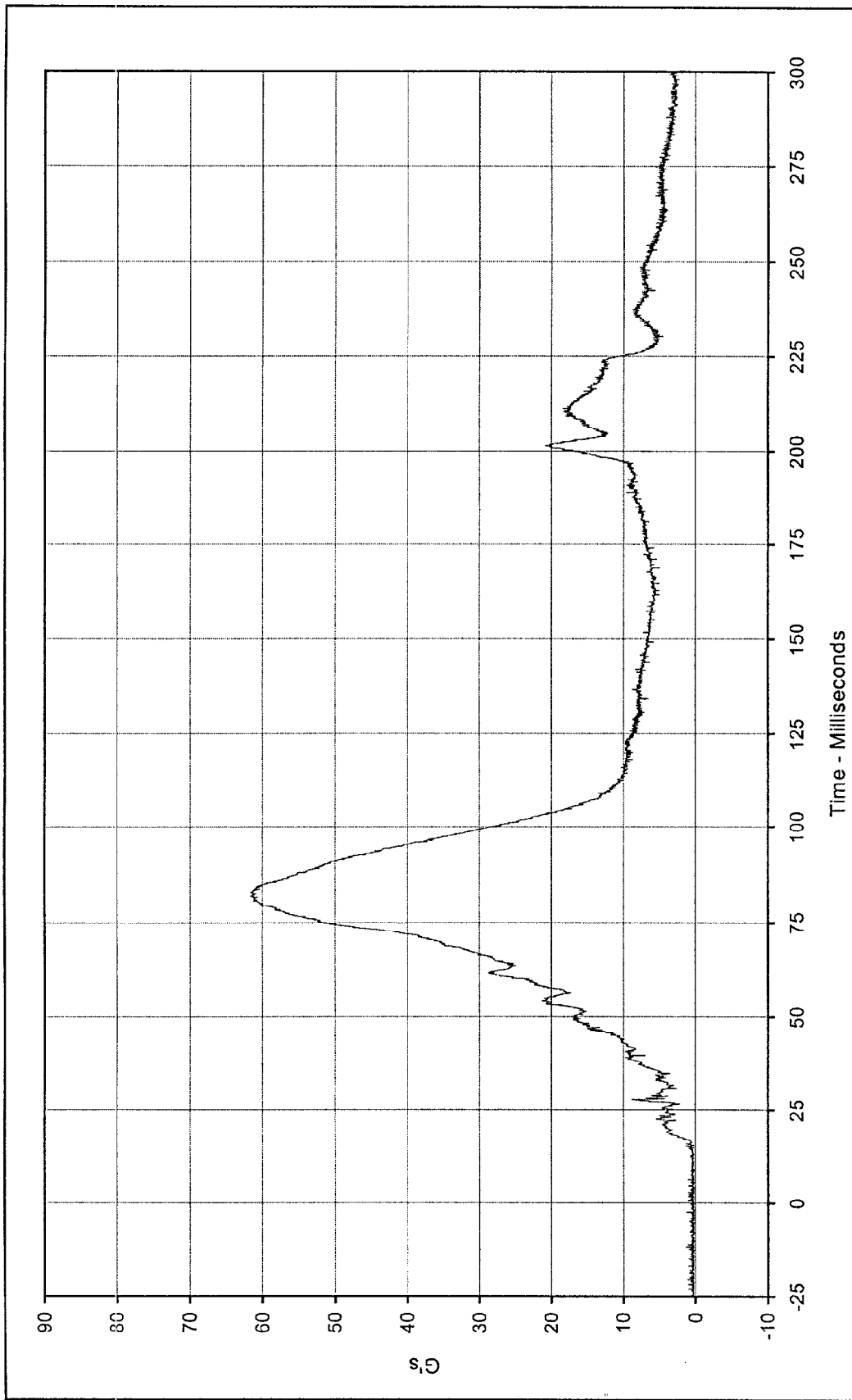




Curve Description: Passenger Head Redundant Z Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
Maximum Value: 3.7 at 116.8 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan
Minimum Value: -25.6 at 73.8 Milliseconds



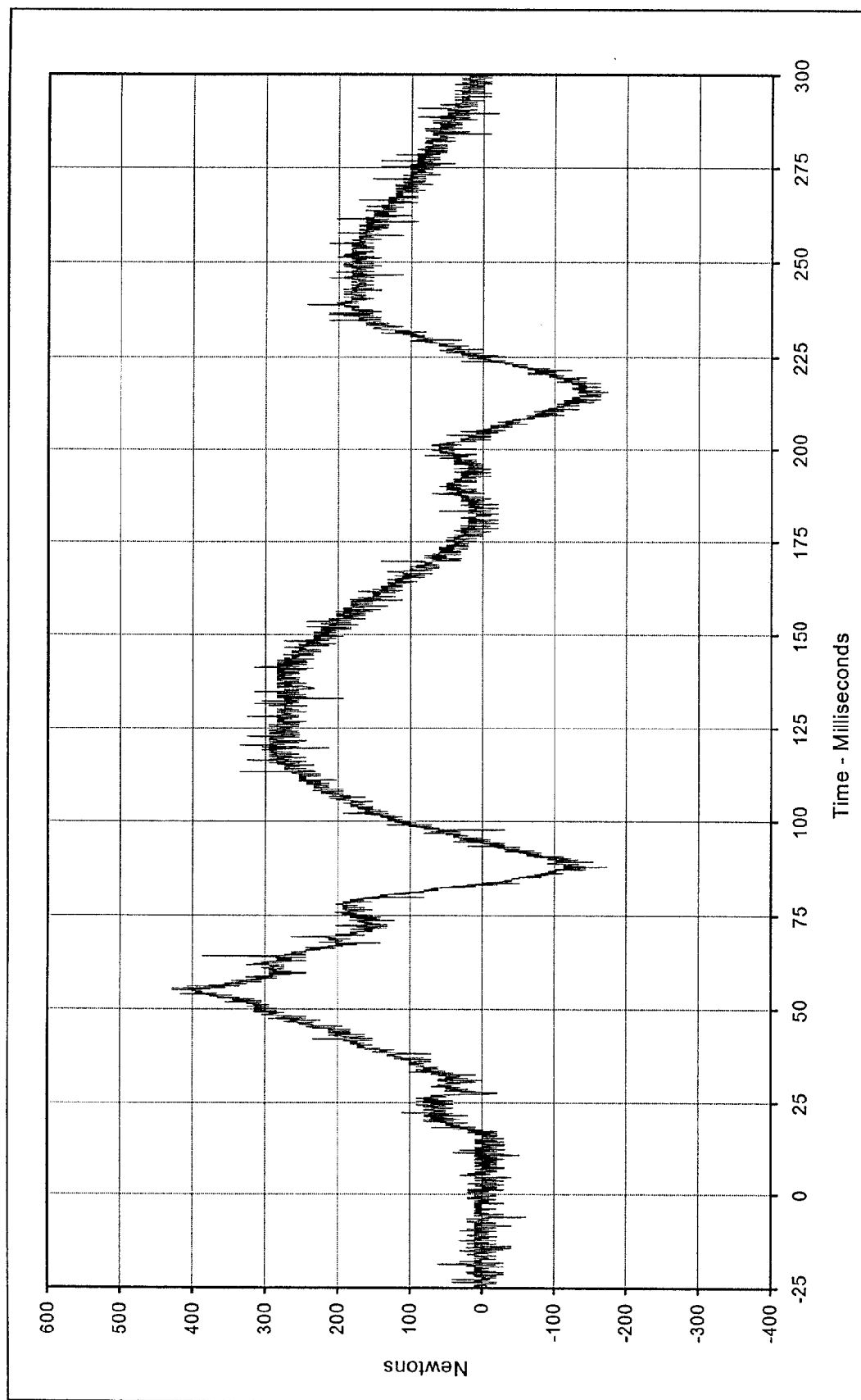
SAE Filter Class: 1000
Date of Test: 12/18/97
Curve Number: FIL-050



Curve Description: Passenger Head Resultant Redundant
 Maximum Value: 61.7 at 81.9 Milliseconds
 Minimum Value: 0.1 at 4.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: RES-048

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Neck Force X

Maximum Value: 427.2 at 55.0 Milliseconds

Minimum Value: -174.0 at 87.8 Milliseconds

SAE Filter Class: 1000

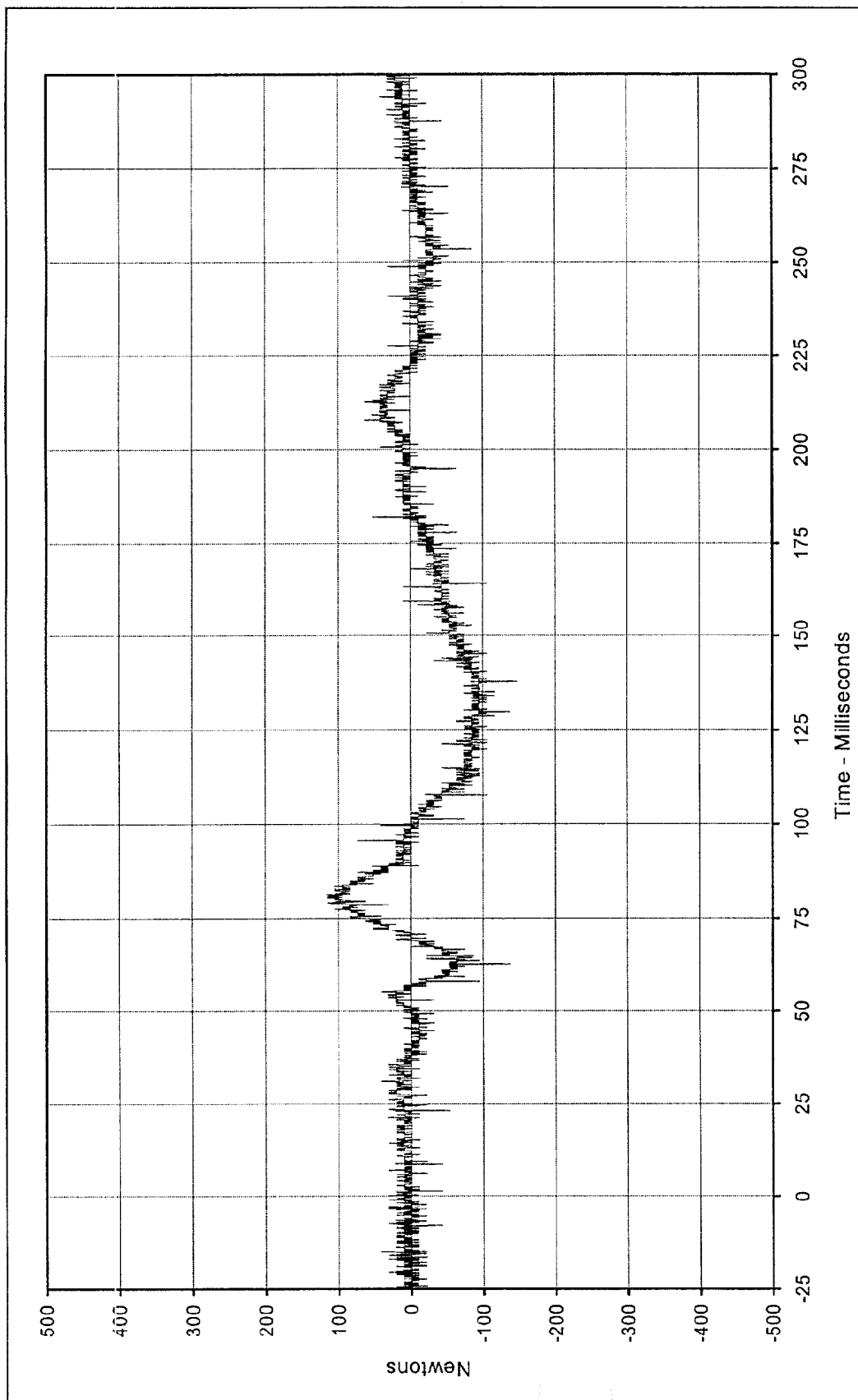
Date of Test: 12/18/97

Curve Number: FIL-051

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

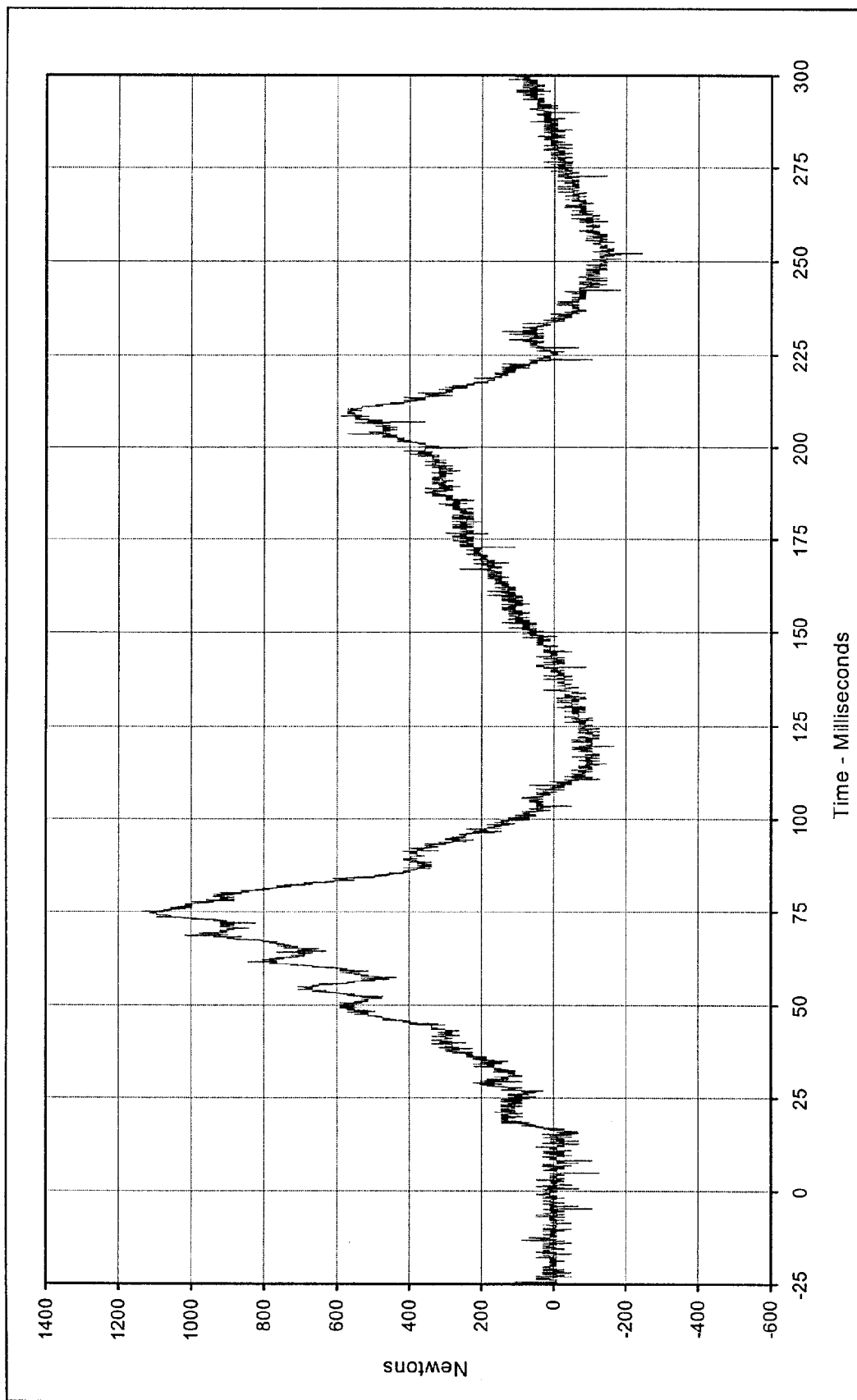
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: _____ Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Maximum Value: 115.2 at 79.1 Milliseconds
 Minimum Value: -148.1 at 137.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: FIL-052



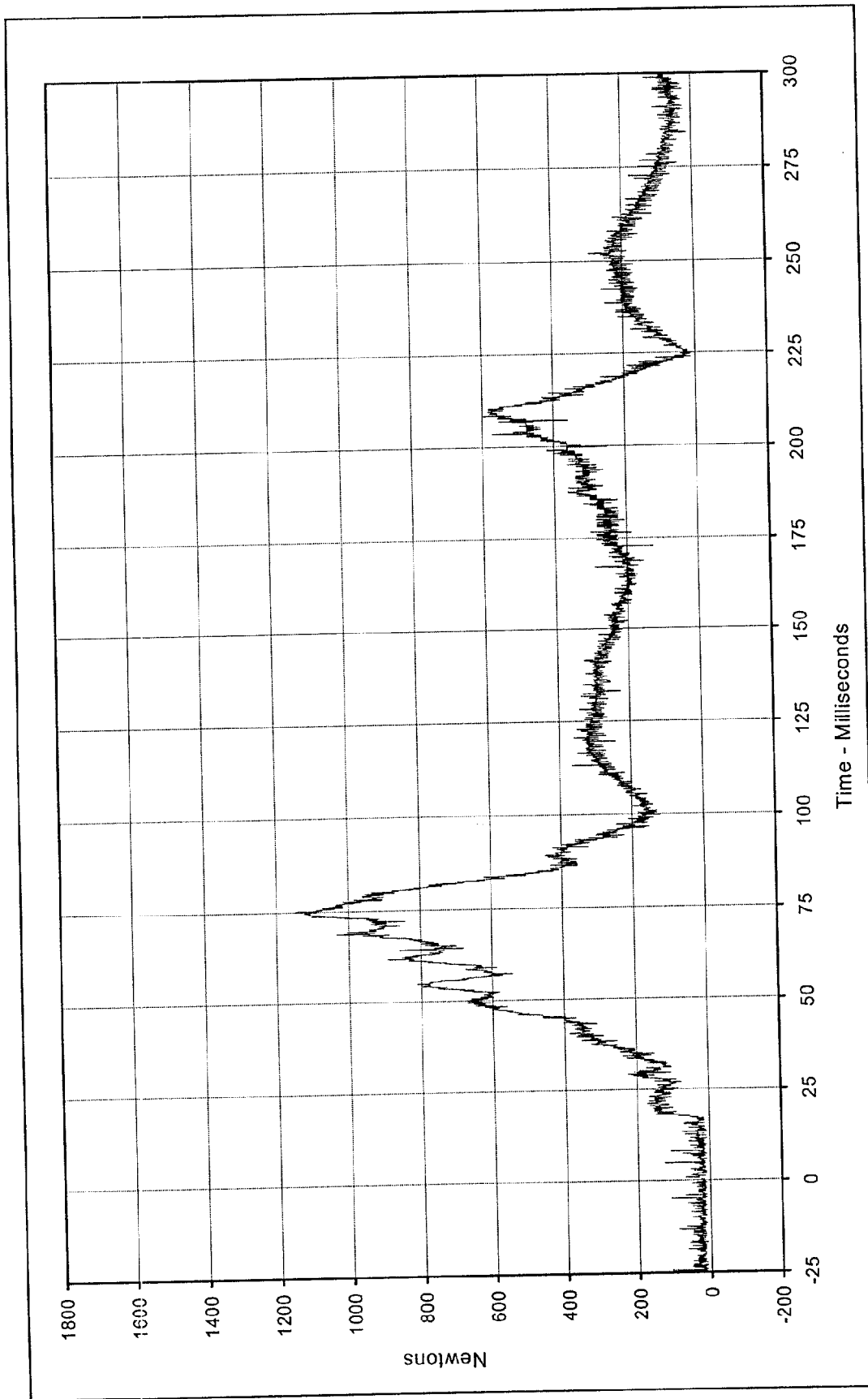


Curve Description:	Passenger Neck Force Z			Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	1133.3	at	75.1	Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan
Minimum Value:	-242.6	at	252.1	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	12/18/97					
Curve Number:	FIL-053					



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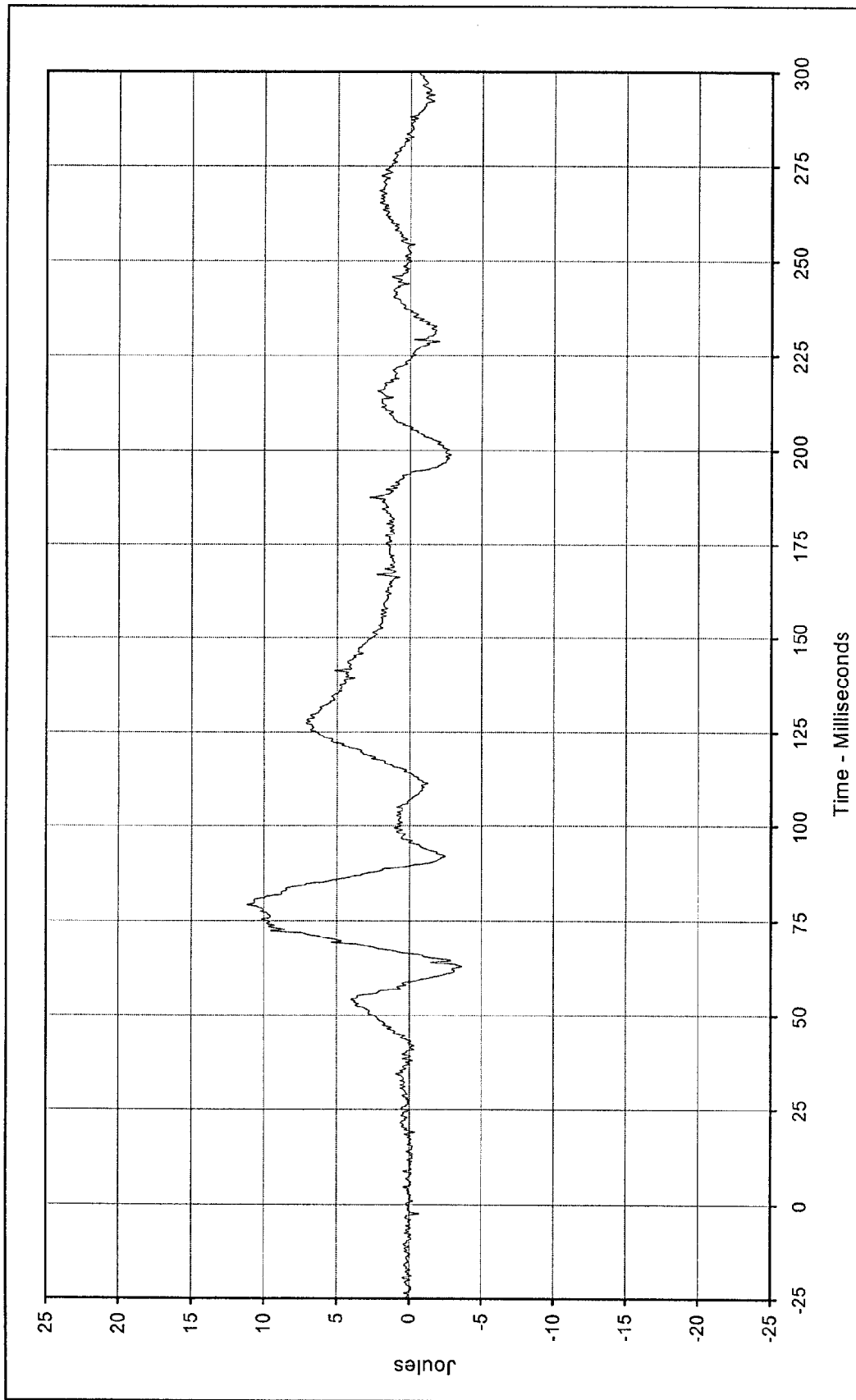




Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

Curve Description: Passenger Neck Force Resultant
 Maximum Value: 1145.8 at 75.1 Milliseconds
 Minimum Value: 9.4 at 2.4 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/18/97
 Curve Number: RES-051





Curve Description: Passenger Neck Moment X

Maximum Value: 11.1 at 79.2 Milliseconds

Minimum Value: -3.6 at 62.9 Milliseconds

SAE Filter Class: 600

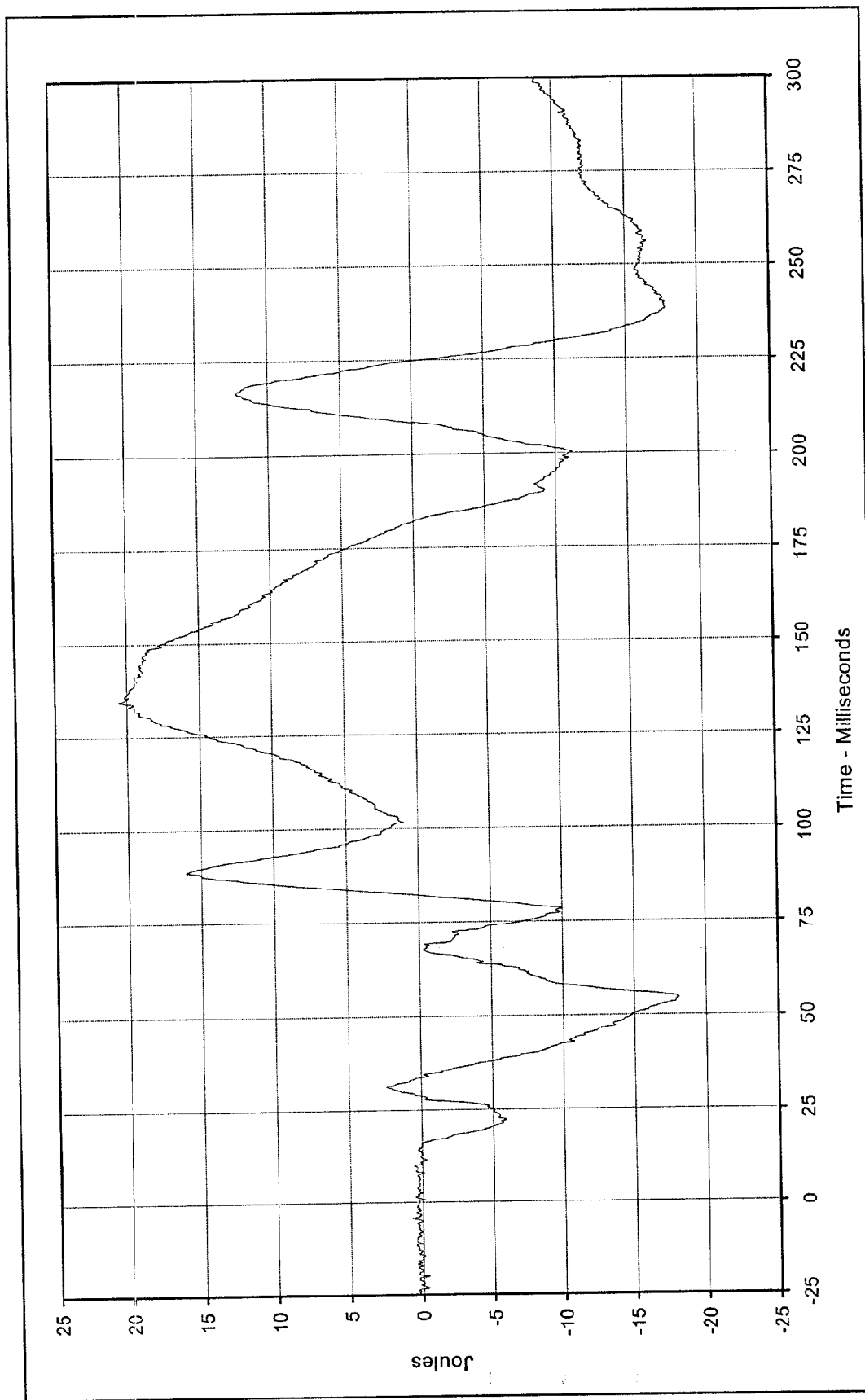
Date of Test: 12/18/97

Curve Number: FIL-054

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

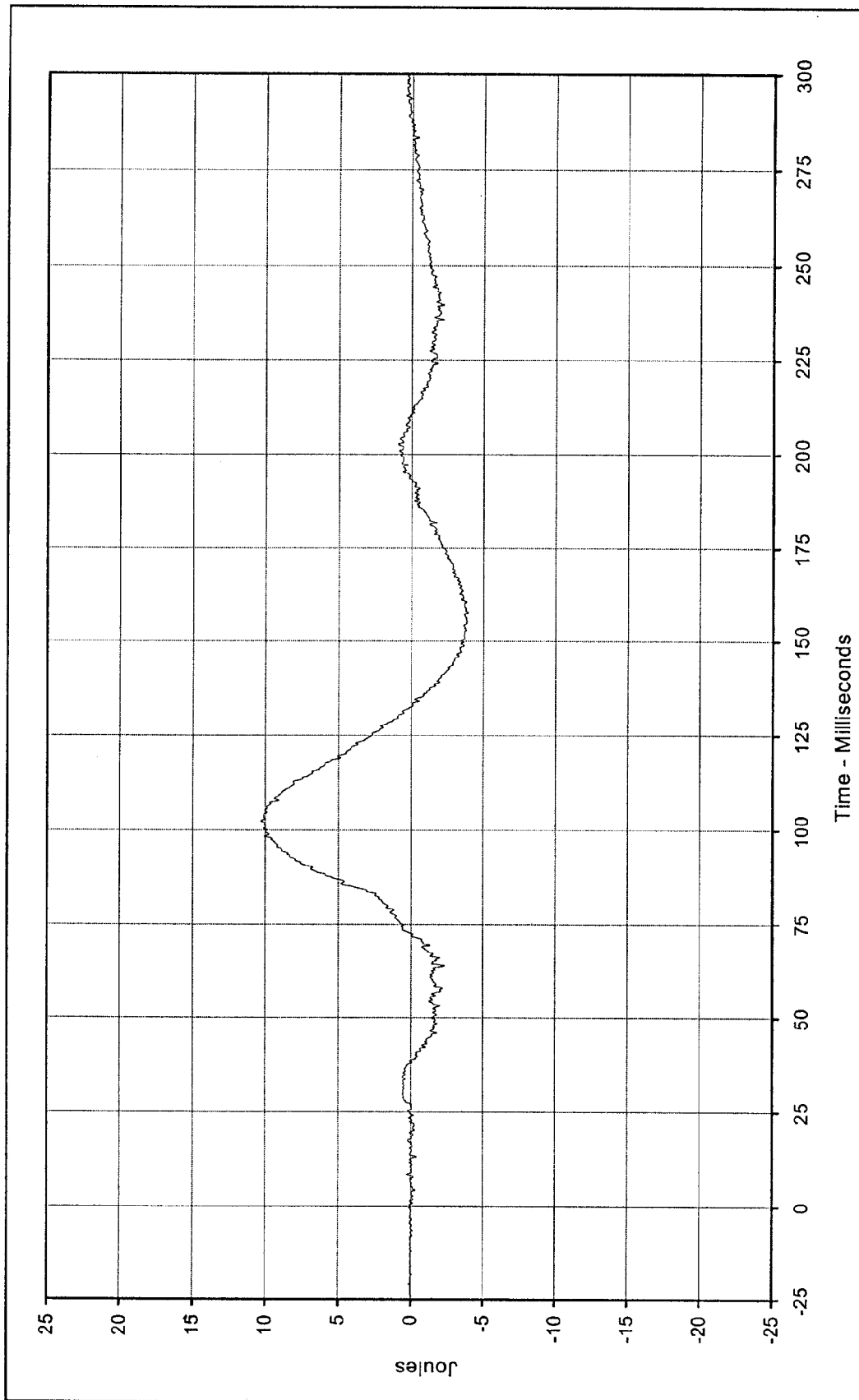




Curve Description: Passenger Neck Moment Y
 Maximum Value: 20.6 at 134.7 Milliseconds
 Minimum Value: -18.1 at 54.6 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-055

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Neck Moment Z

Maximum Value: 10.3 at 102.5 Milliseconds

Minimum Value: -4.0 at 157.9 Milliseconds

SAE Filter Class: 600

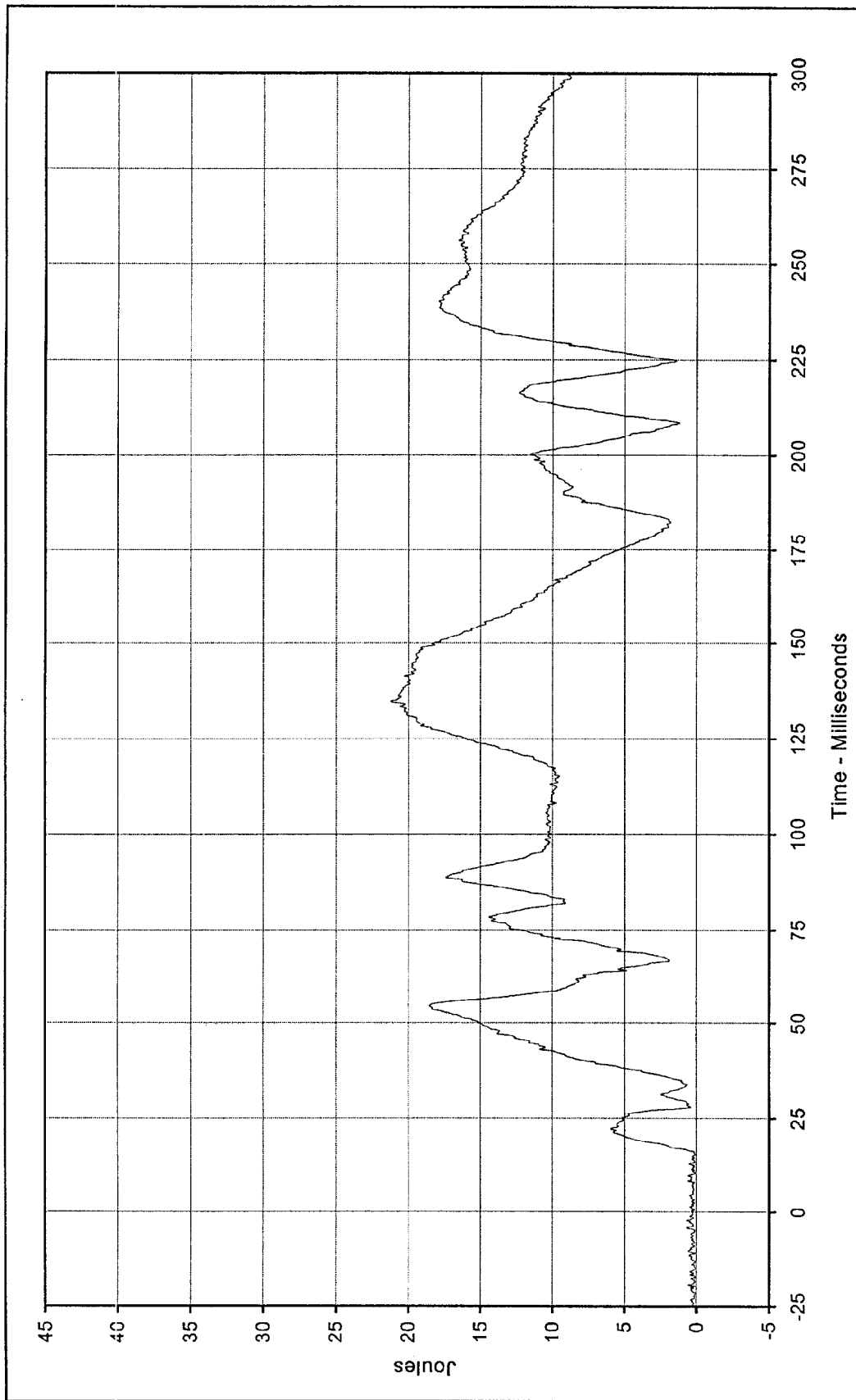
Date of Test: 12/18/97

Curve Number: FIL-056

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Neck Moment Resultant

Maximum Value: 21.2 at 134.7 Milliseconds

Minimum Value: 0.0 at 10.6 Milliseconds

SAE Filter Class: 600

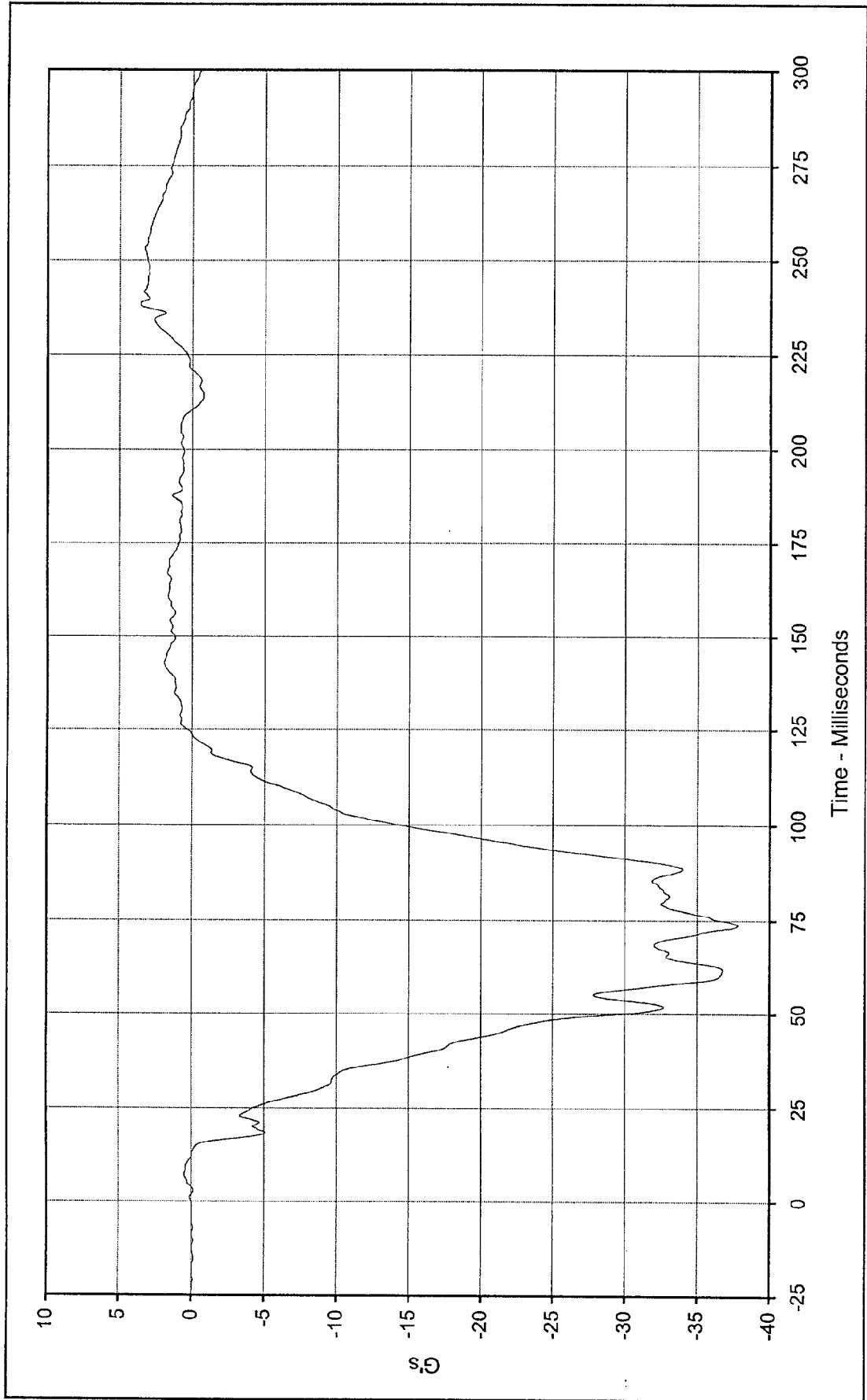
Date of Test: 12/18/97

Curve Number: RES-054

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

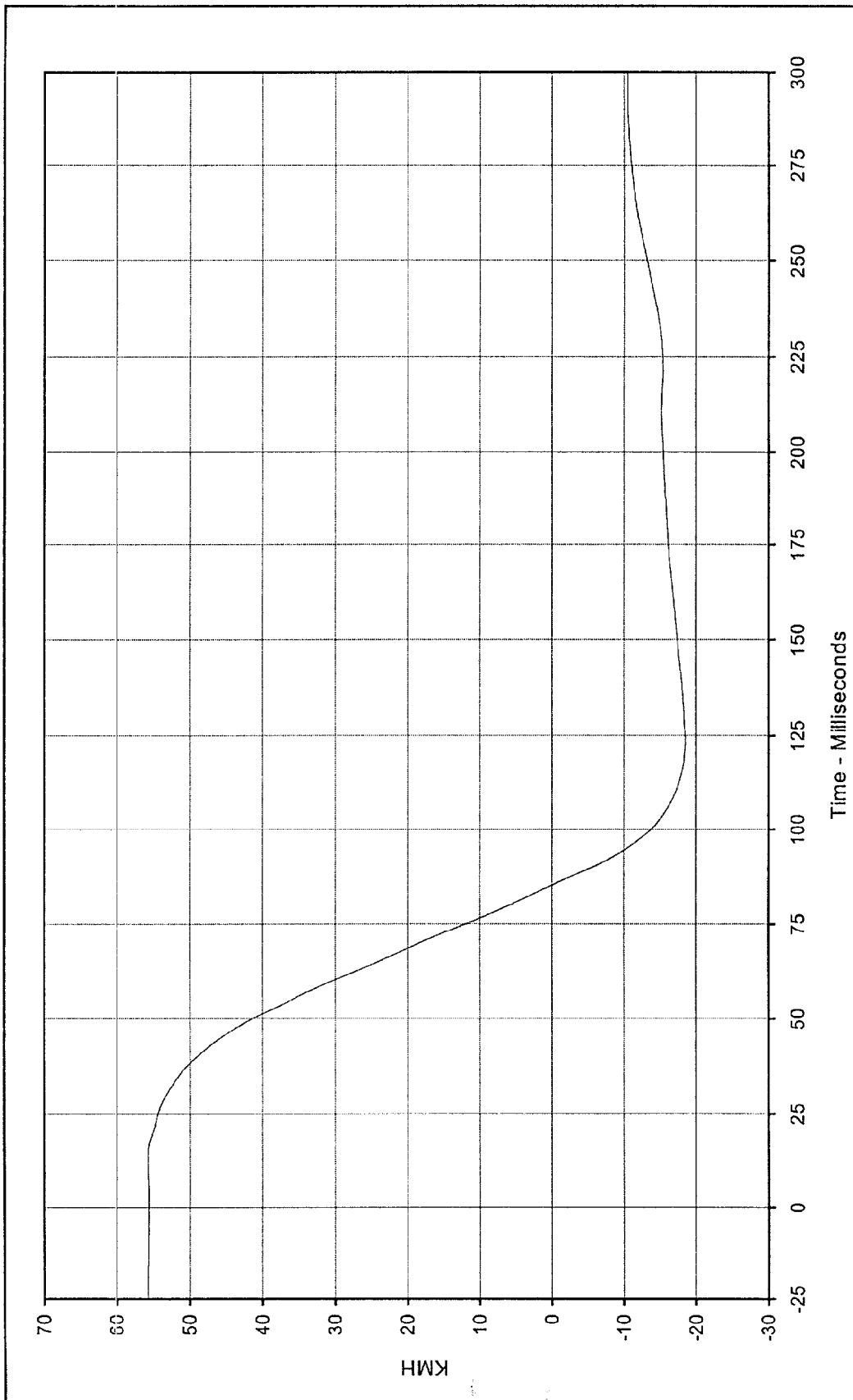
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description:	Passenger Chest Primary X	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	3.6 at 238.4 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-37.8 at 73.8 Milliseconds			
SAE Filter Class:	180			
Date of Test:	12/18/97			
Curve Number:	FIL-057			

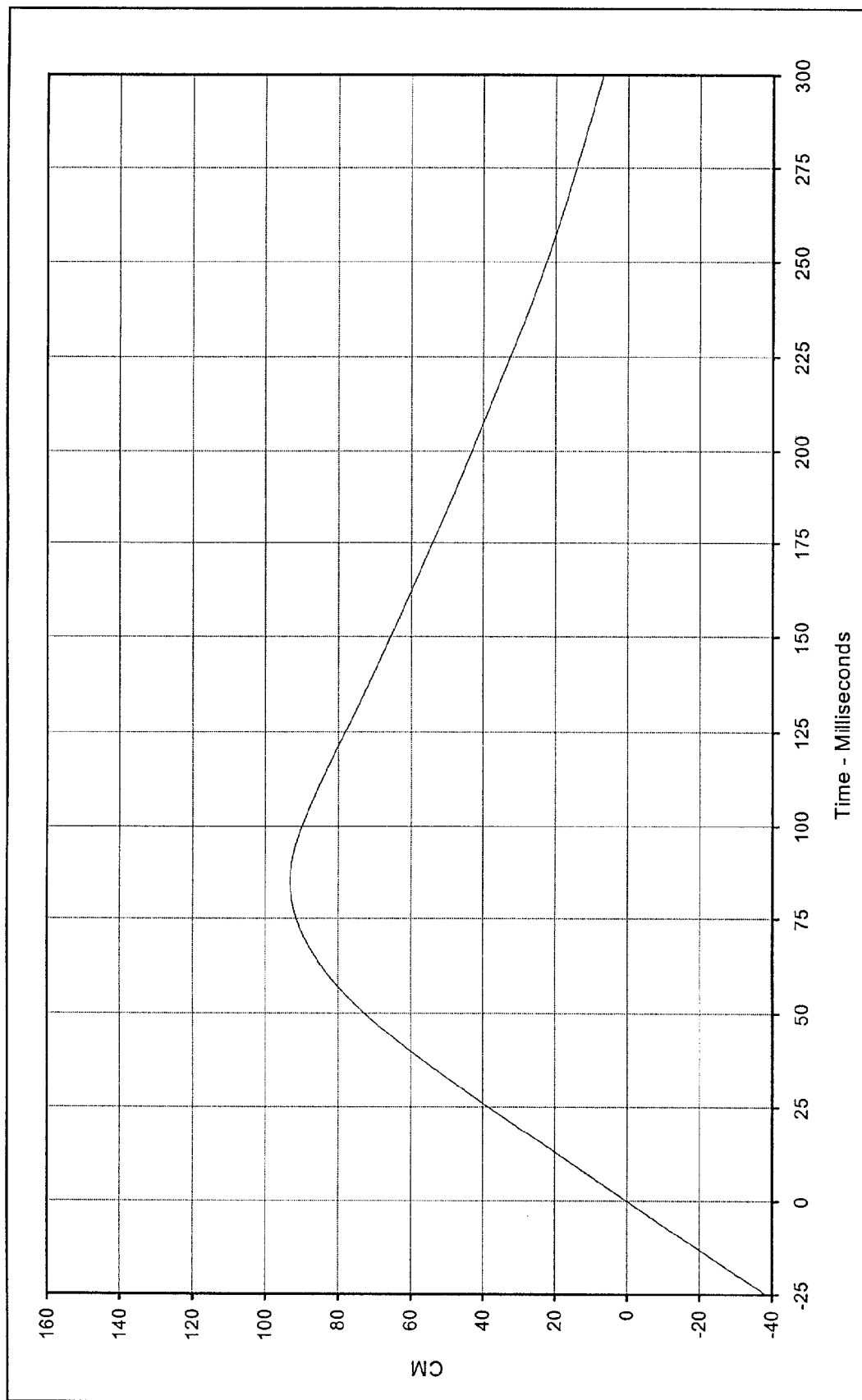




Curve Description: Passenger Chest Primary X Velocity
 Maximum Value: 55.7 at 11.9 Milliseconds
 Minimum Value: -18.4 at 123.8 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN1-057

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Chest Primary X Displ.

Maximum Value: 93.2 at 85.1 Milliseconds

Minimum Value: 0.1 at 0.0 Milliseconds

SAE Filter Class: 180

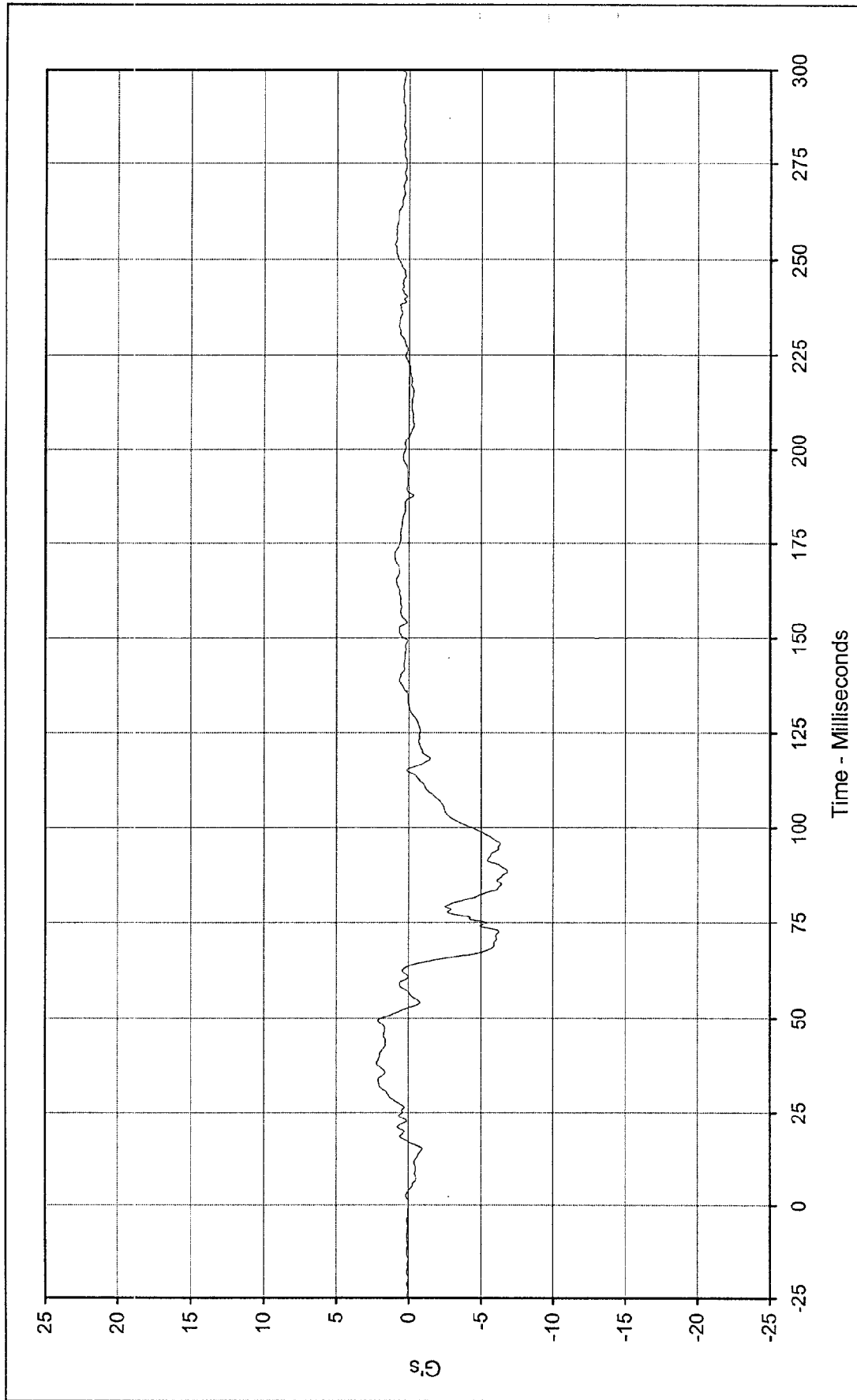
Date of Test: 12/18/97

Curve Number: IN2-057

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

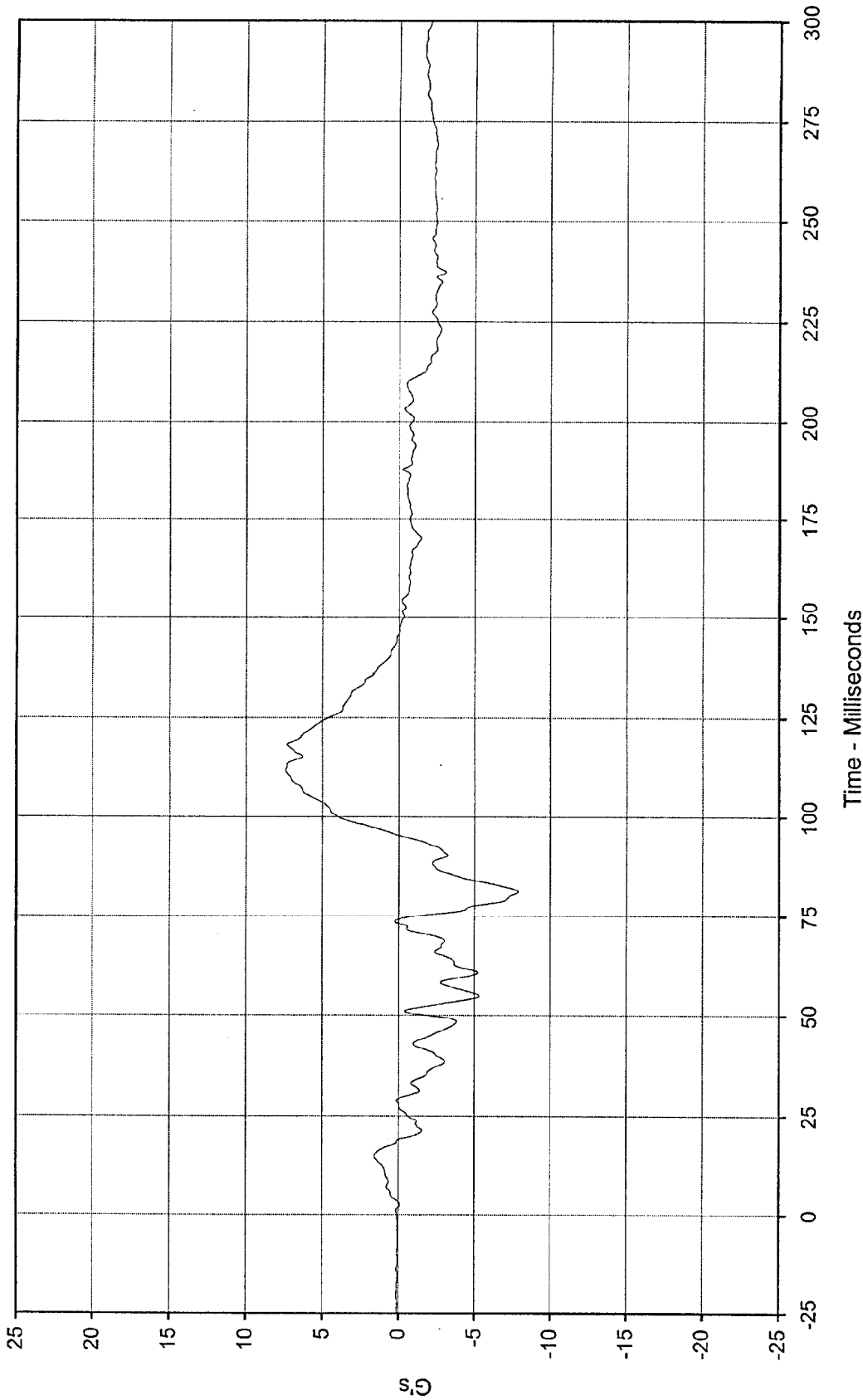




Curve Description: Passenger Chest Primary Y
 Maximum Value: 2.2 at 38.0 Milliseconds
 Minimum Value: -6.8 at 88.4 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: FIL-058

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Chest Primary Z

Maximum Value: 7.4 at 112.1 Milliseconds

Minimum Value: -7.9 at 81.1 Milliseconds

SAE Filter Class: 180

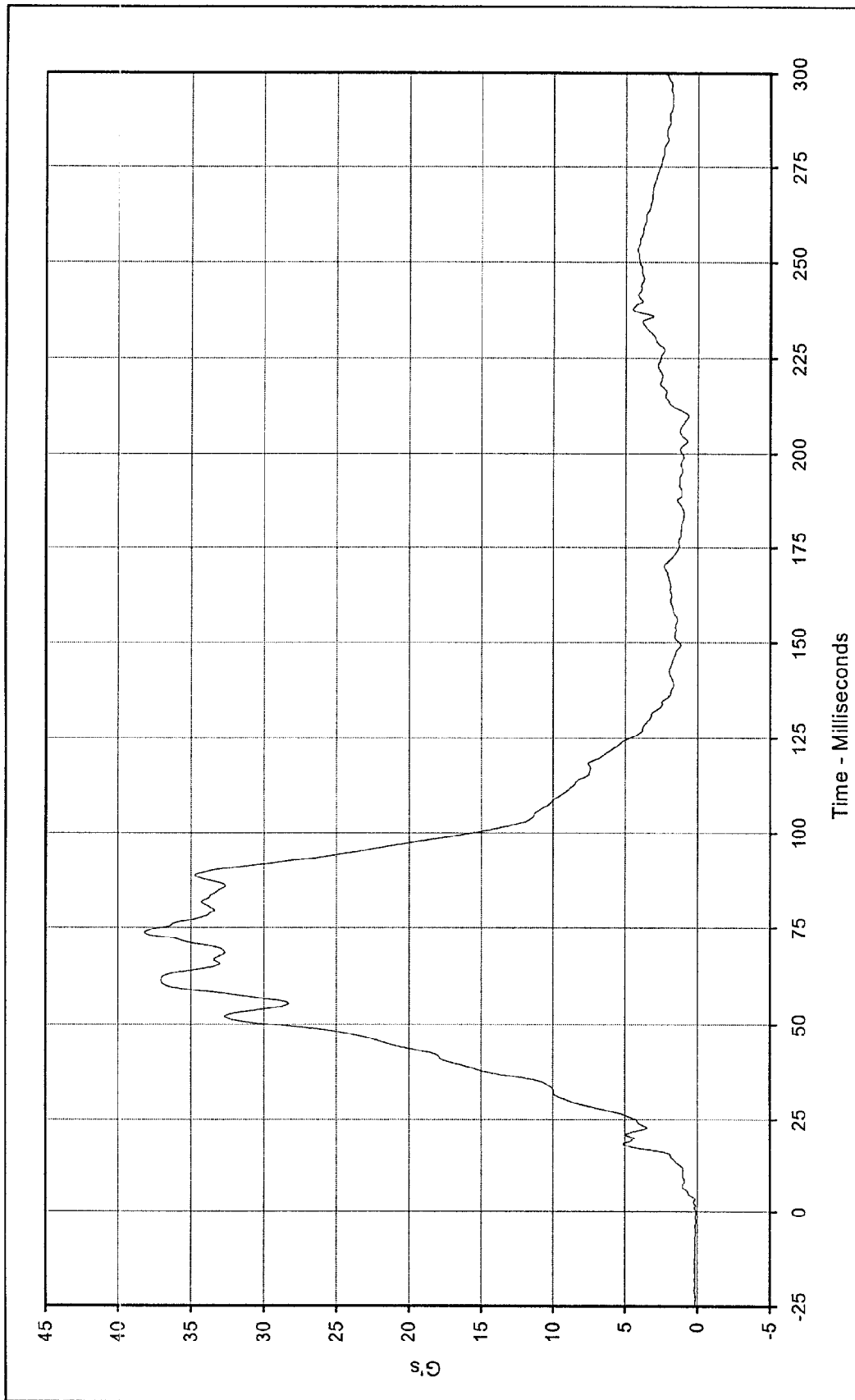
Date of Test: 12/18/97

Curve Number: FIL-059

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Chest Resultant Primary

Maximum Value: 38.2 at 73.7 Milliseconds

Minimum Value: 0.1 at 0.0 Milliseconds

SAE Filter Class: 180

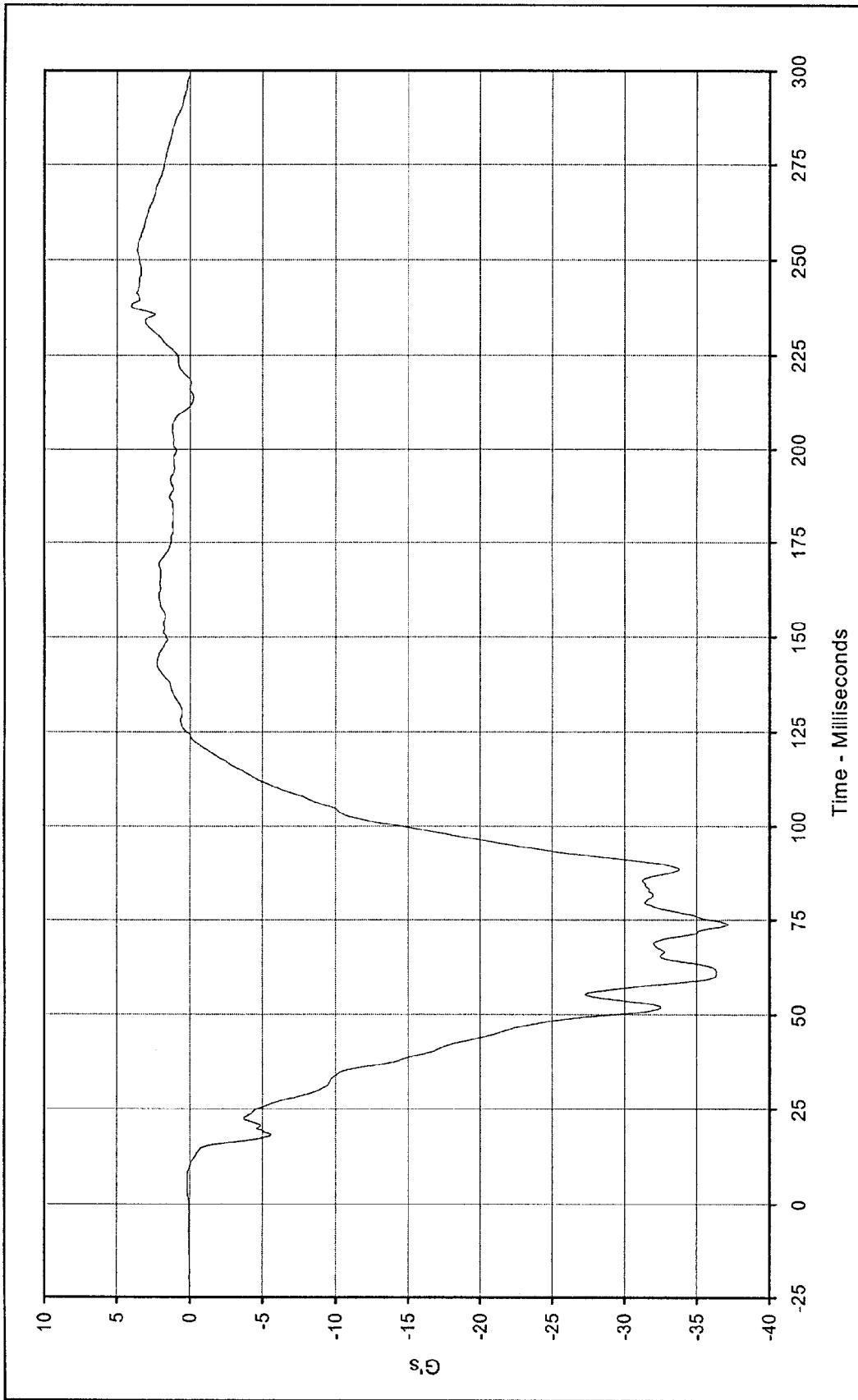
Date of Test: 12/18/97

Curve Number: RES-057

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

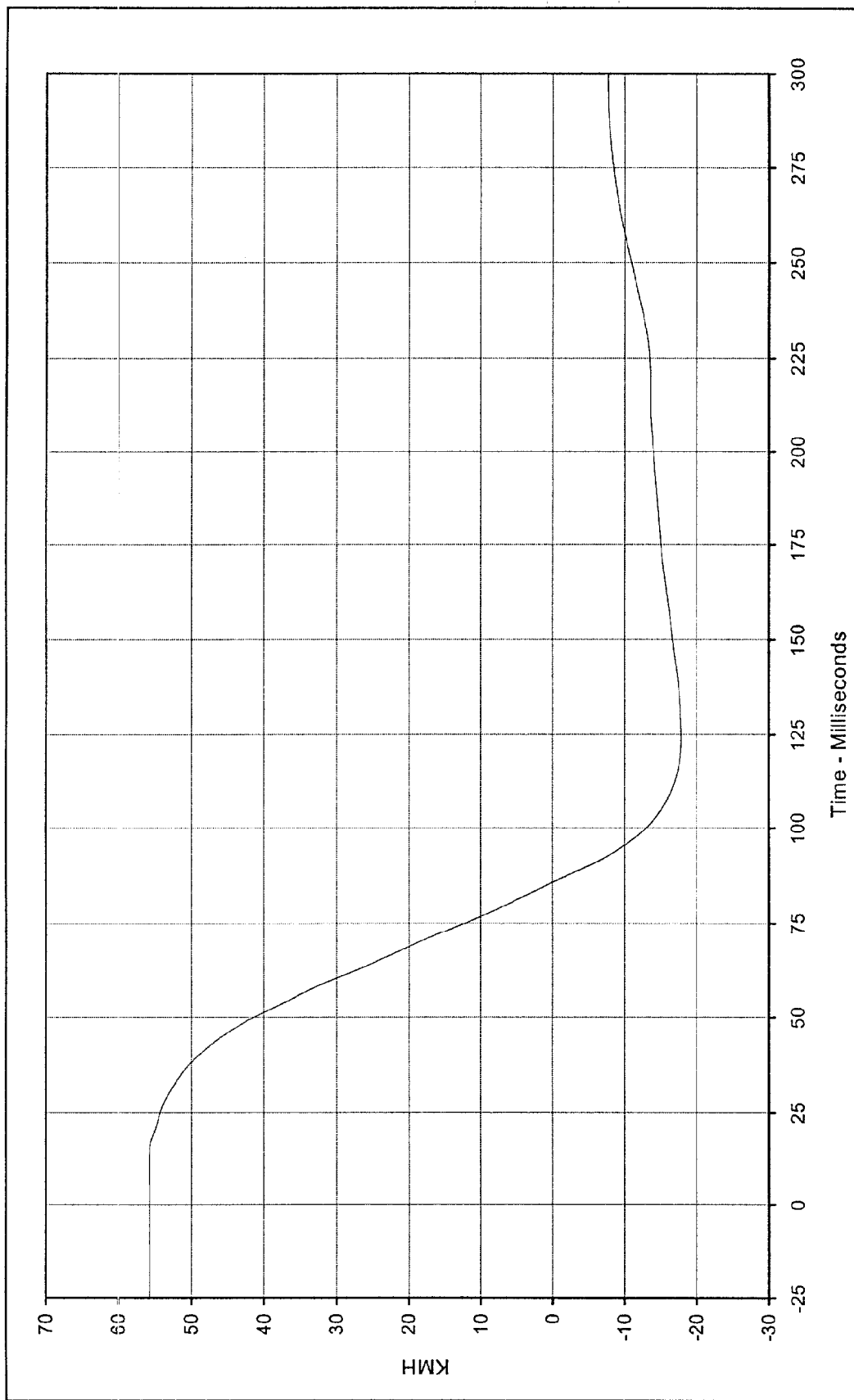




Curve Description: Passenger Chest Redundant X
 Maximum Value: 4.0 at 238.1 Milliseconds
 Minimum Value: -37.1 at 73.7 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: FIL-060

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Chest Redundant X Velocity

Maximum Value: 55.8 at 10.5 Milliseconds

Minimum Value: -17.9 at 124.4 Milliseconds

SAE Filter Class: 180

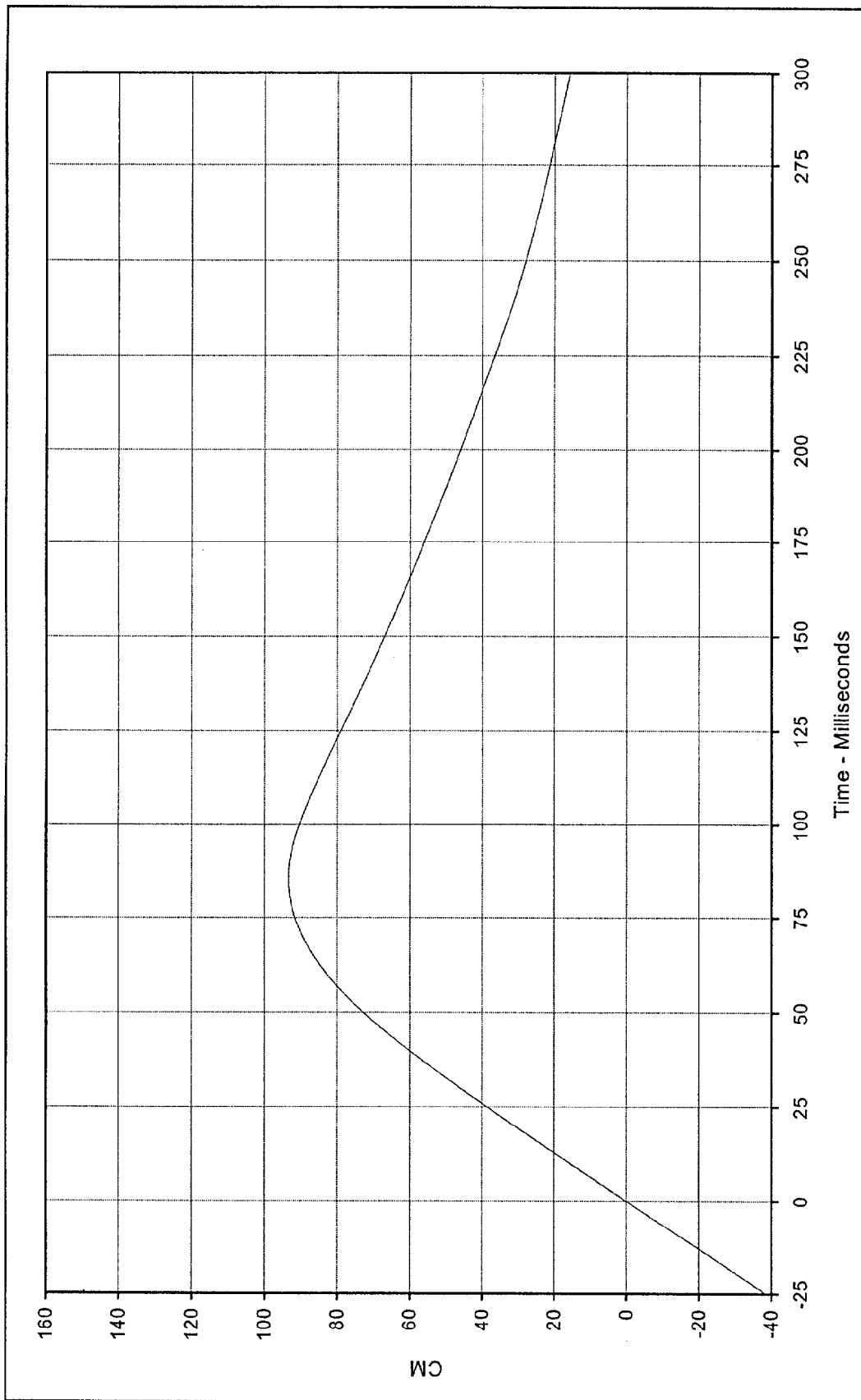
Date of Test: 12/18/97

Curve Number: IN1-060

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

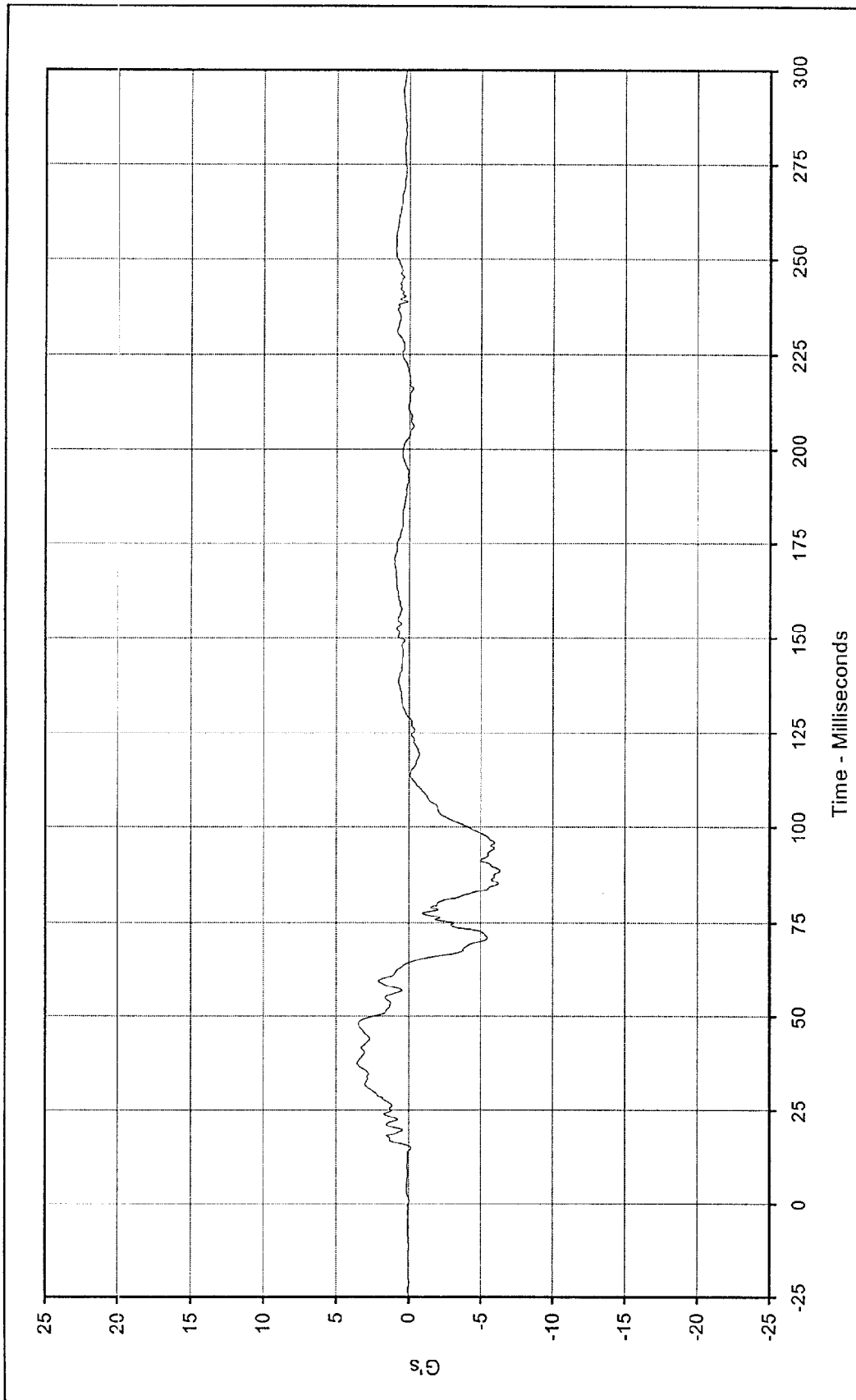




Curve Description: Passenger Chest Redundant X Displ.
 Maximum Value: 93.4 at 85.7 Milliseconds
 Minimum Value: 0.1 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN2-060

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

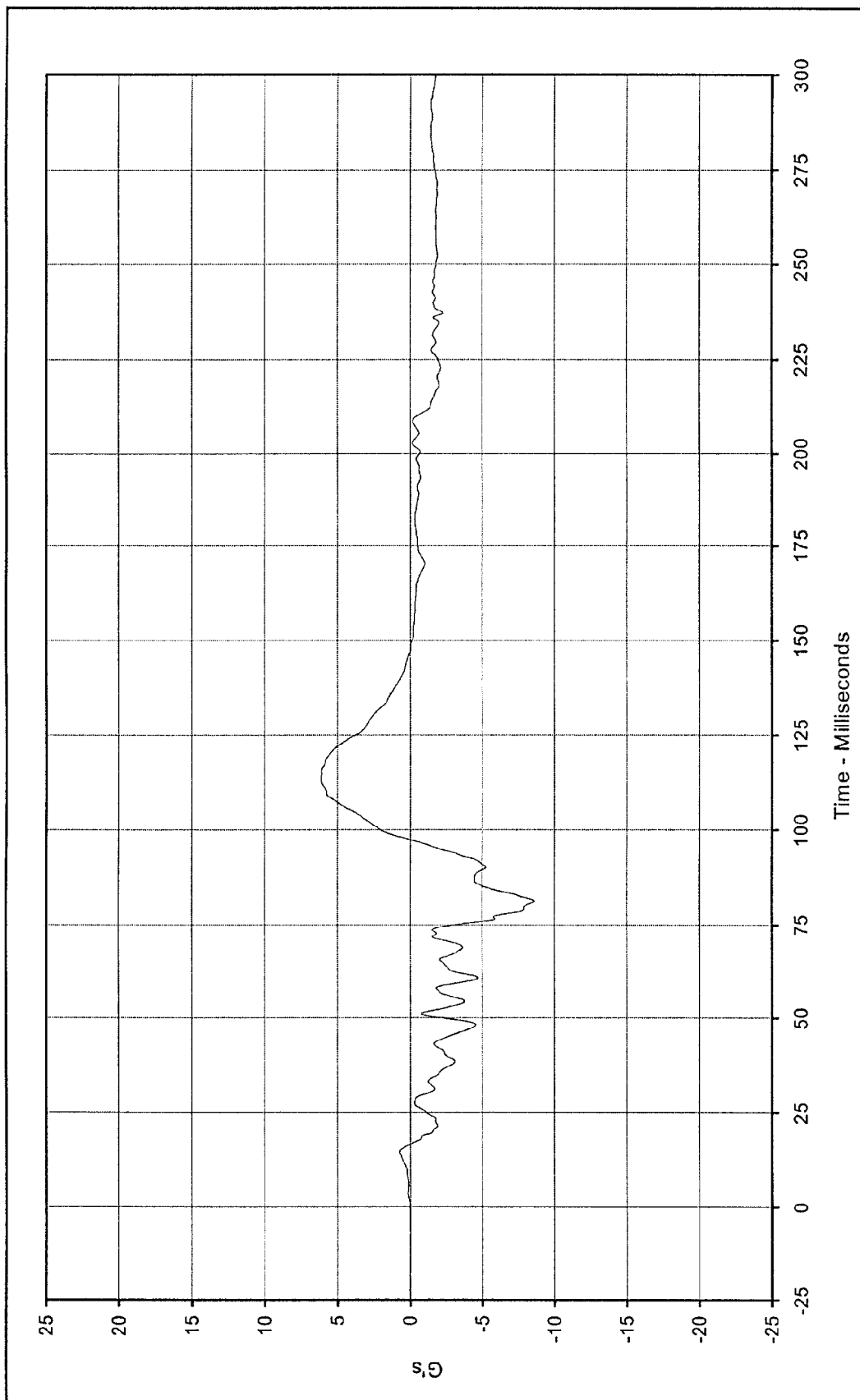




Curve Description: Passenger Chest Redundant Y
 Maximum Value: 3.5 at 37.5 Milliseconds
 Minimum Value: -6.3 at 88.4 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: FIL-061

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

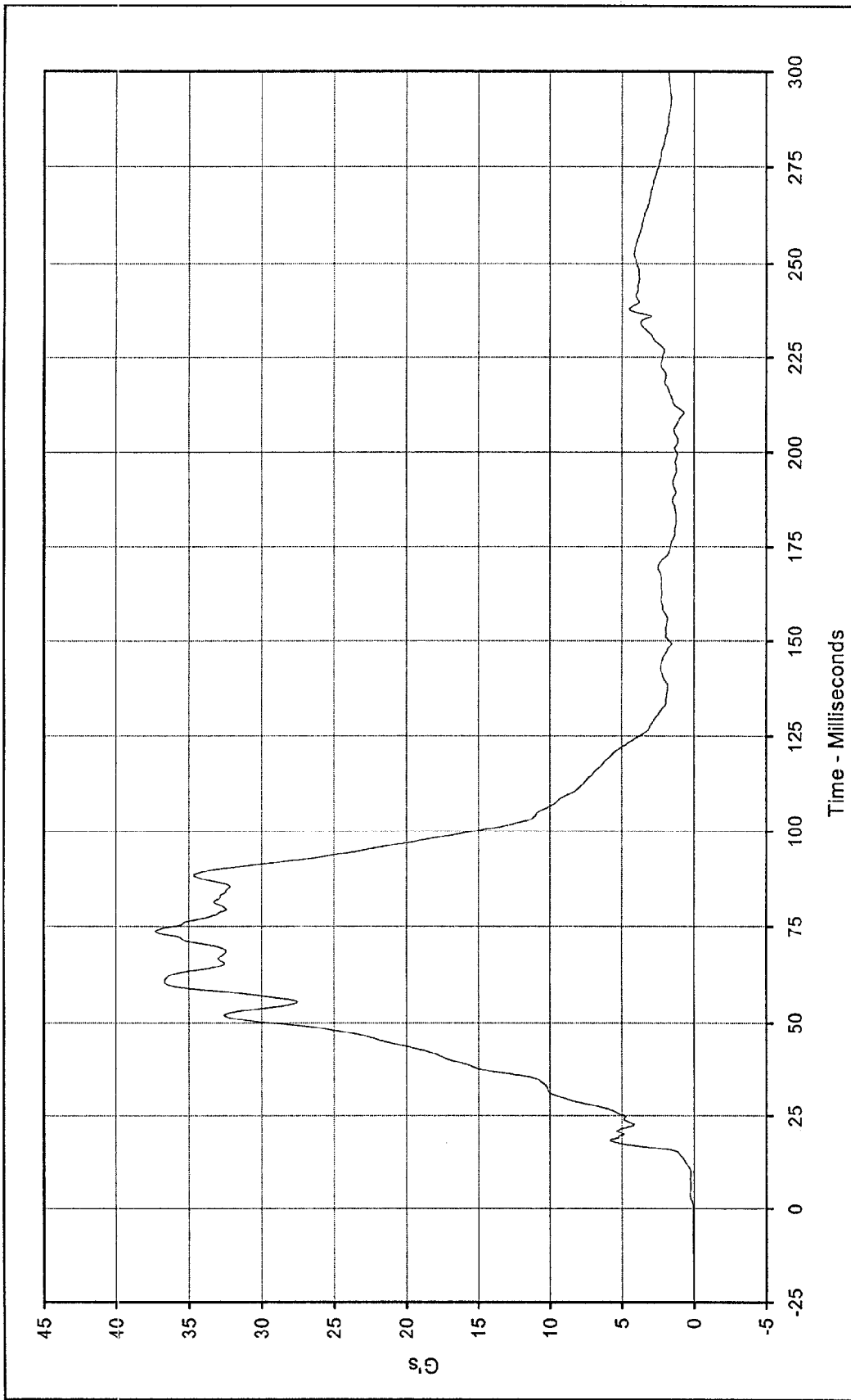




Curve Description: Passenger Chest Redundant Z
 Maximum Value: 6.1 at 113.8 Milliseconds
 Minimum Value: -8.6 at 81.2 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: FIL-062

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Chest Resultant Redundant

Maximum Value: 37.3 at 73.7 Milliseconds

Minimum Value: 0.1 at 0.3 Milliseconds

SAE Filter Class: 180

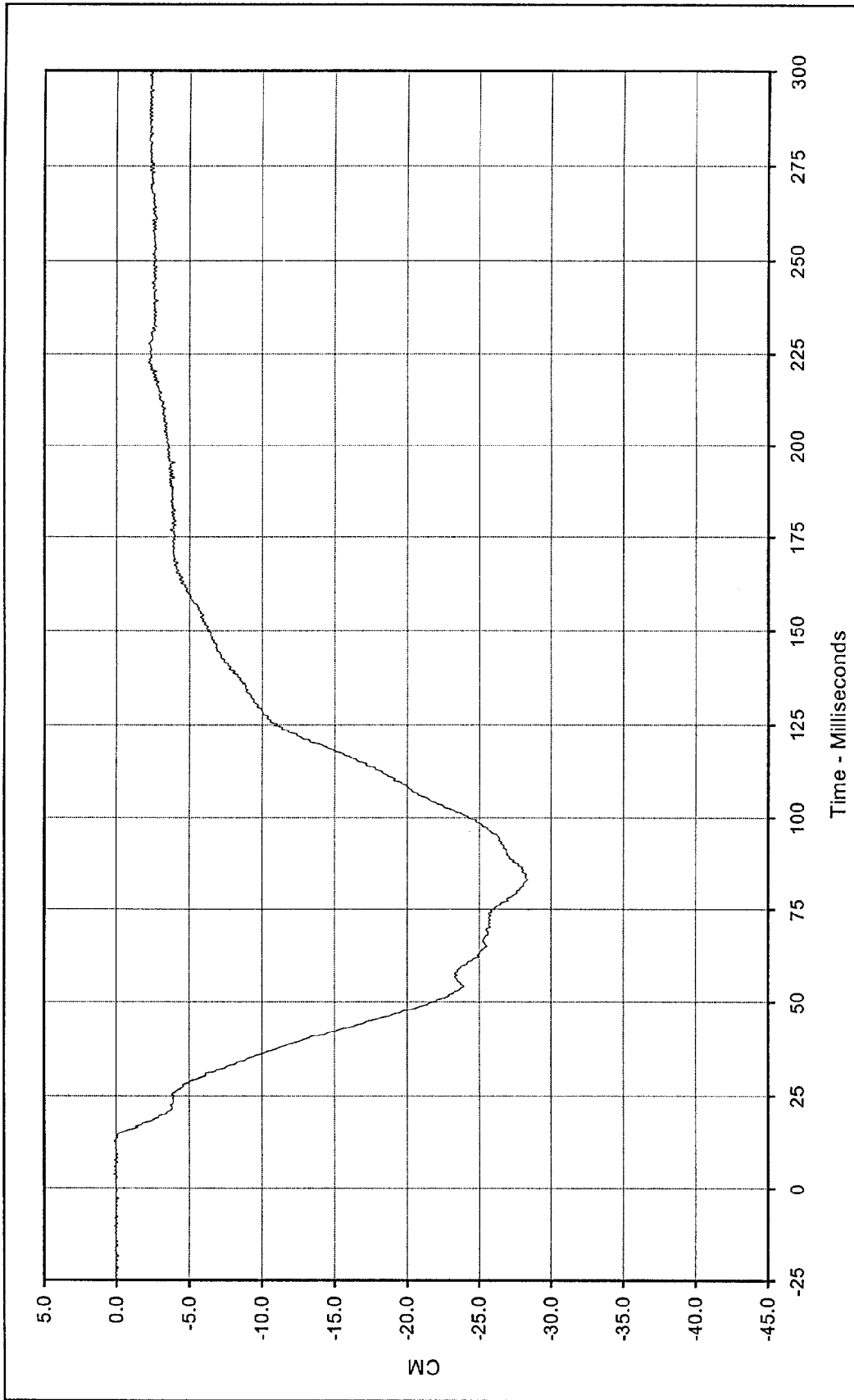
Date of Test: 12/18/97

Curve Number: RES-060

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Chest Displacement X

Maximum Value: 0.2 at 3.9 Milliseconds

Minimum Value: -28.4 at 82.8 Milliseconds

SAE Filter Class: 600

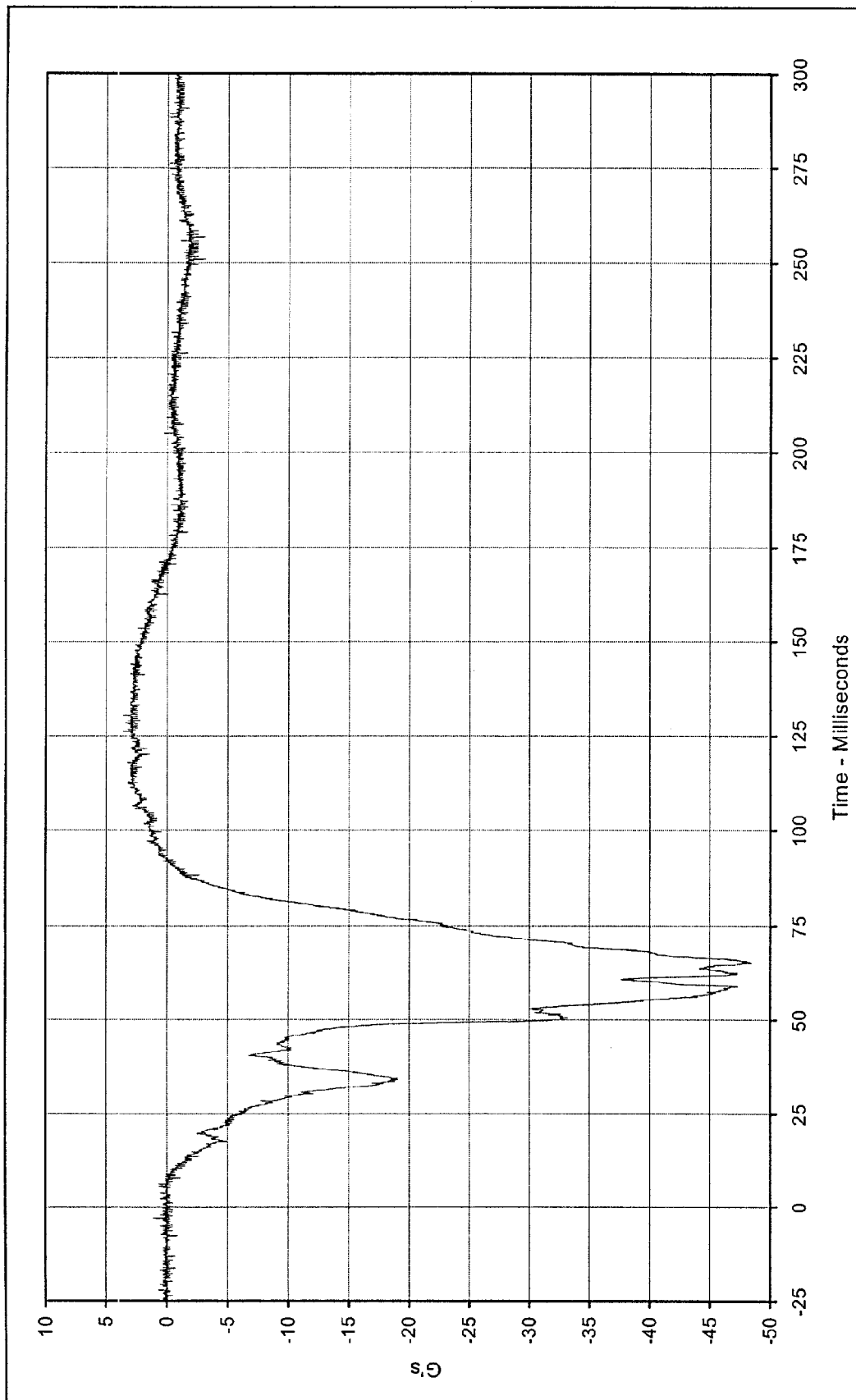
Date of Test: 12/18/97

Curve Number: FIL-063

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

Passenger Pelvis X

Maximum Value: 3.6 at 126.2 Milliseconds

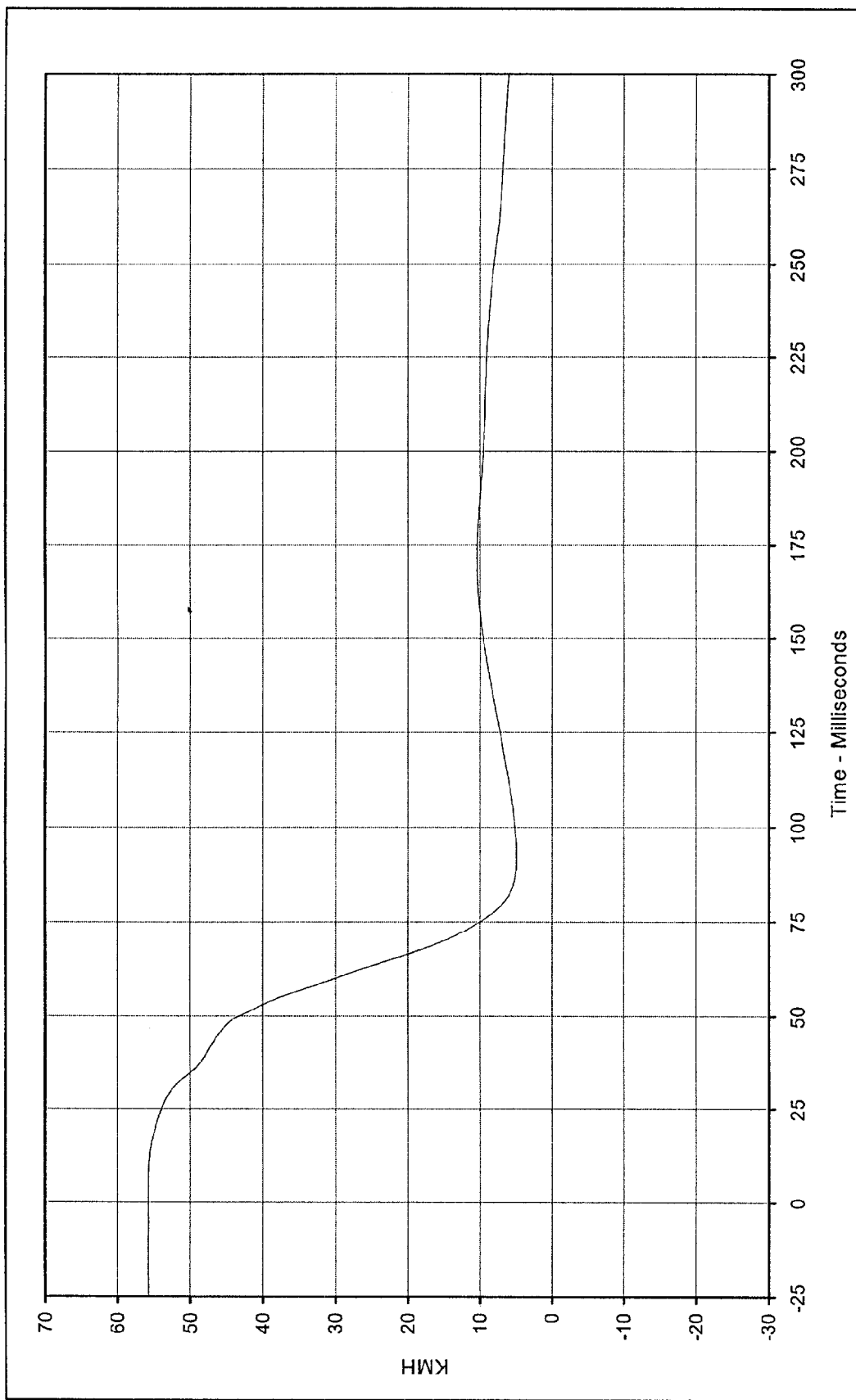
Minimum Value: -48.5 at 65.1 Milliseconds

SAE Filter Class: 1000

Date of Test: 12/18/97

Curve Number: FIL-064





Curve Description: Passenger Pelvis X Velocity

Maximum Value: 55.7 at 6.6 Milliseconds

Minimum Value: 4.9 at 92.2 Milliseconds

SAE Filter Class: 180

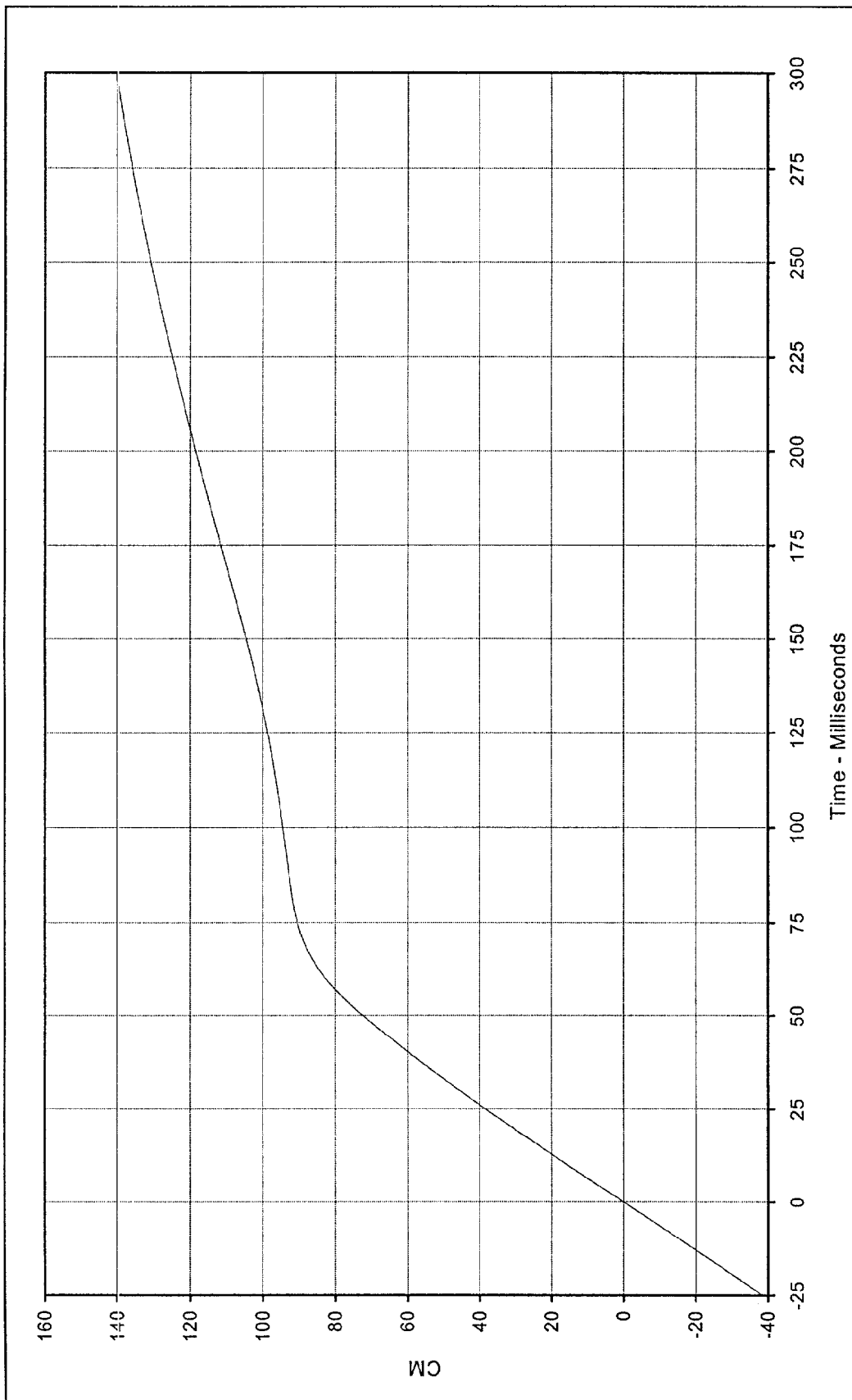
Date of Test: 12/18/97

Curve Number: IN1-064

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Pelvis X Displ. Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 140.4 at 299.9 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

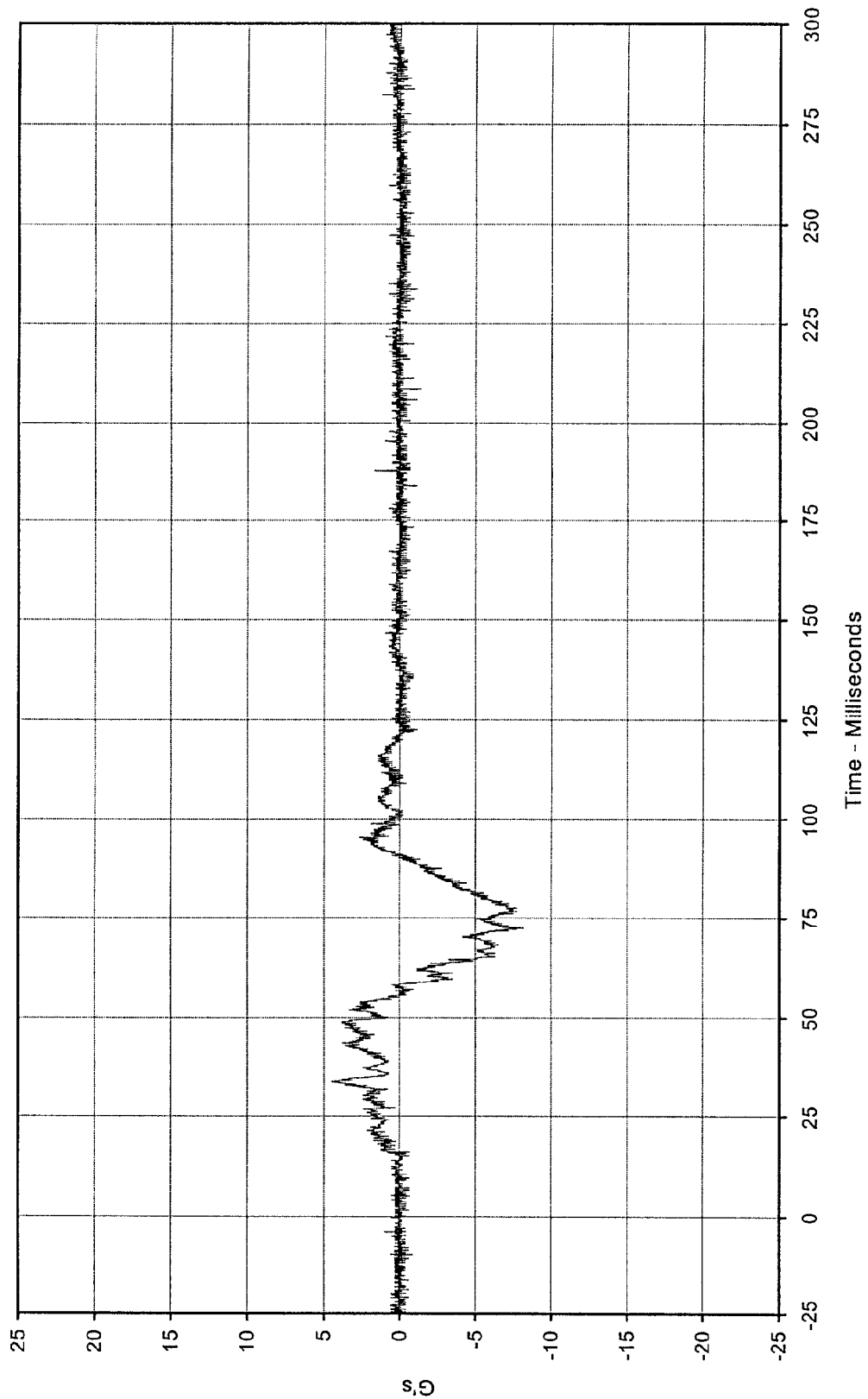
Minimum Value: 0.1 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 12/18/97

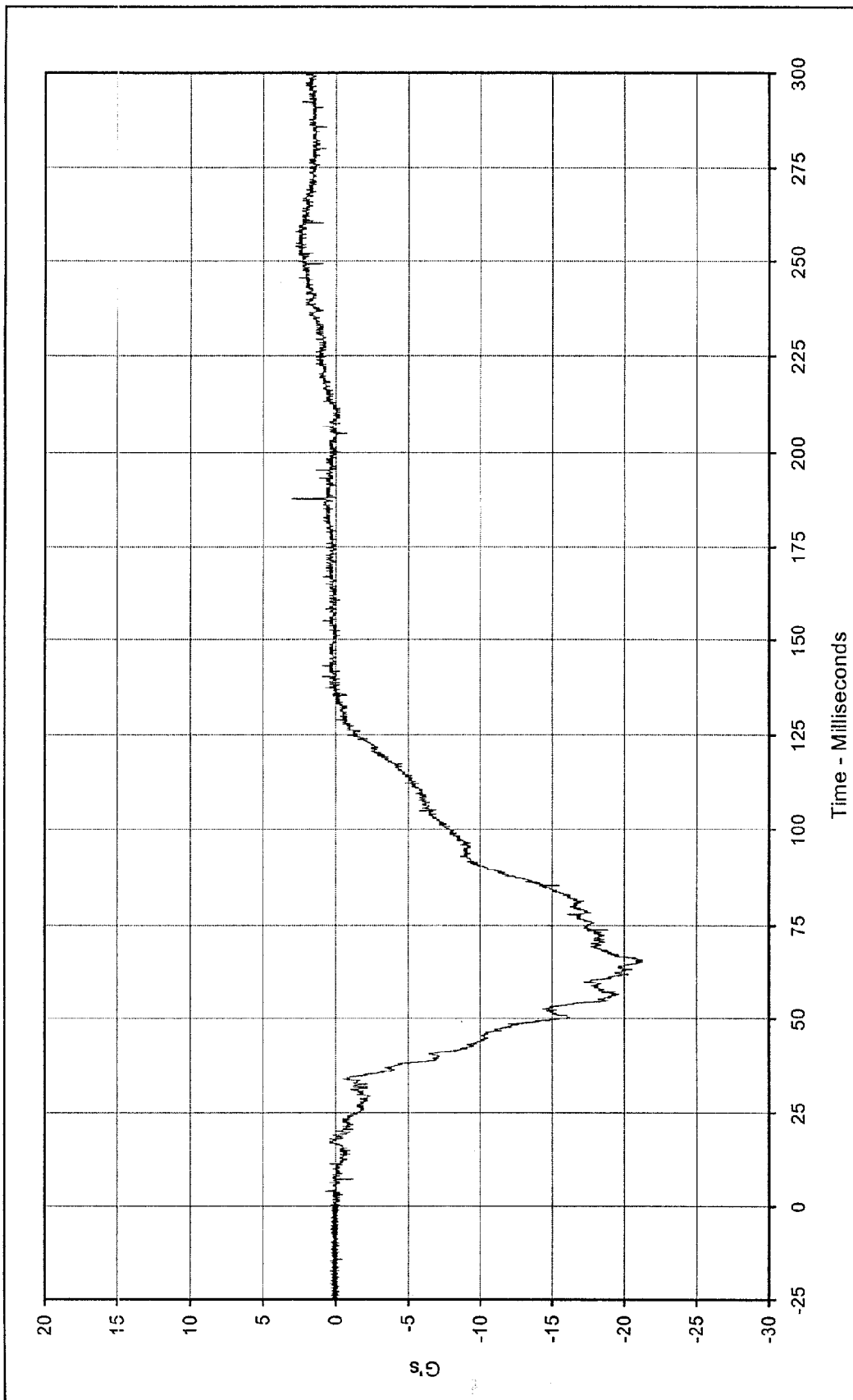
Curve Number: IN2-064





Curve Description:	Passenger Pelvis Y		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	4.5	at 33.8	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-8.2	at 72.3			
SAE Filter Class:	1000				
Date of Test:	12/18/97				
Curve Number:	FIL-065				

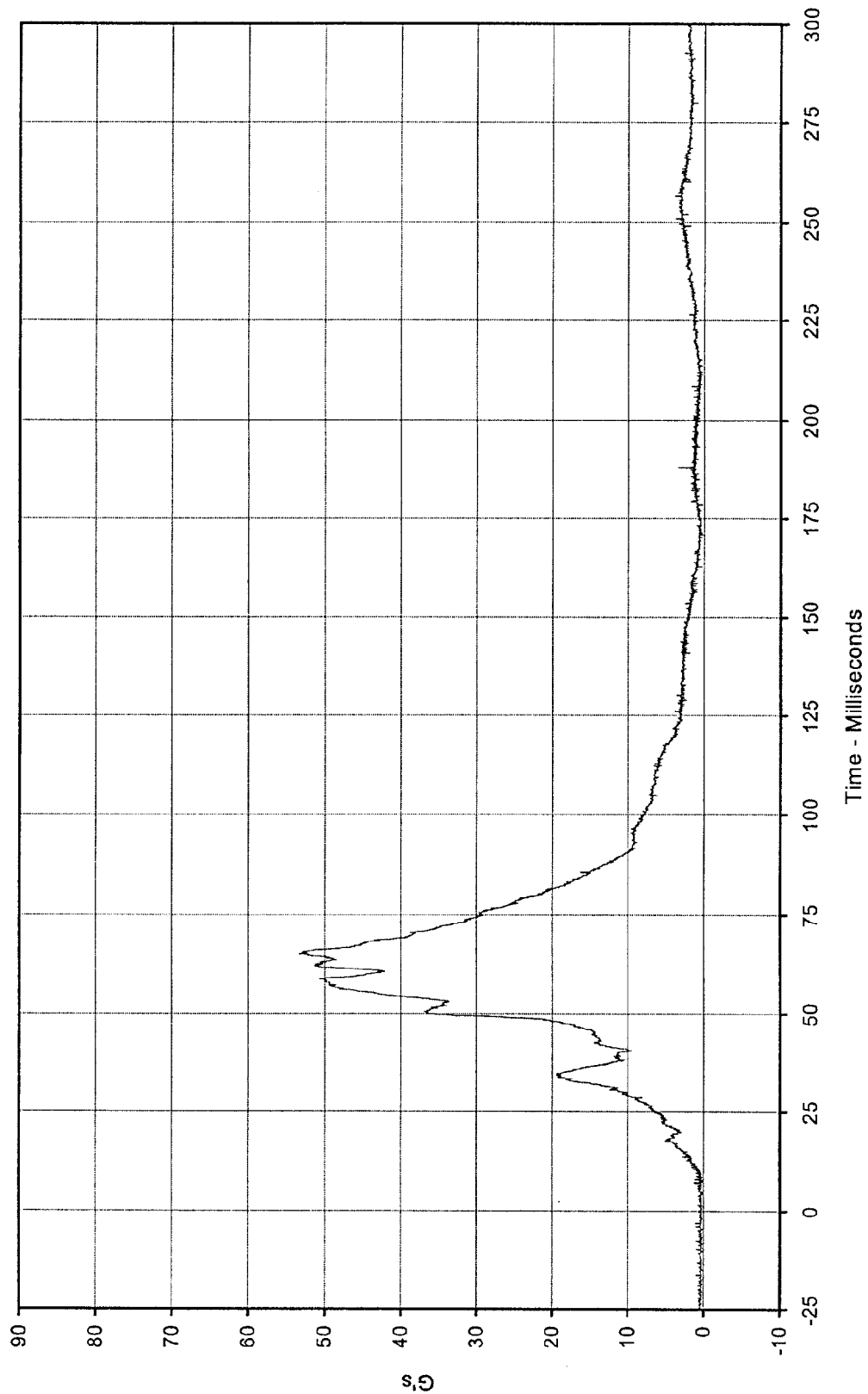




Curve Description: Passenger Pelvis Z Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
Maximum Value: 3.1 at 187.7 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan
Minimum Value: -21.3 at 65.1 Milliseconds



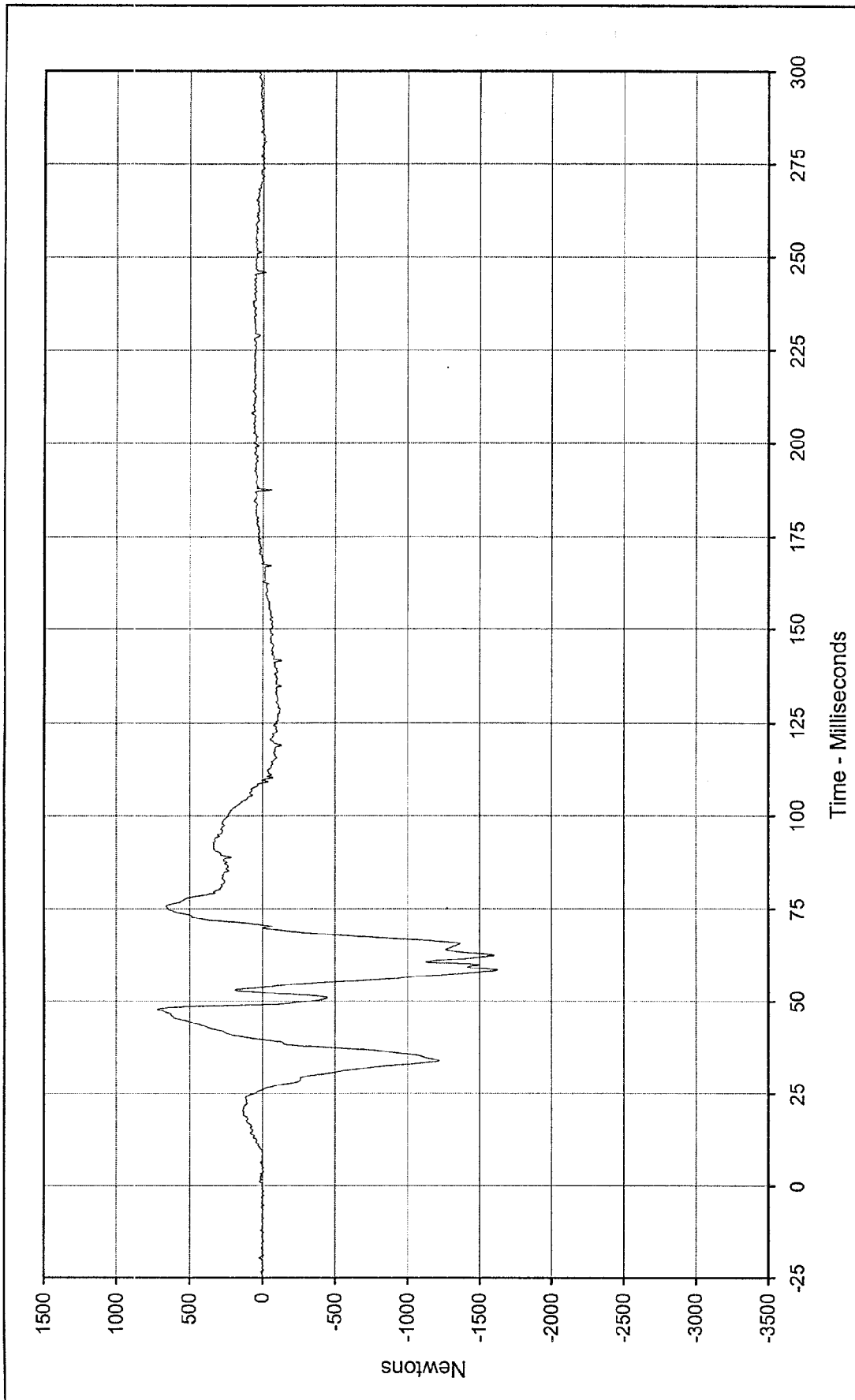
SAE Filter Class: 1000
Date of Test: 12/18/97
Curve Number: FIL-066



Curve Description:		Passenger Pelvis Resultant		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	53.3	at	65.1	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	0.1	at	1.3			
SAE Filter Class:	1000					
Date of Test:	12/18/97					
Curve Number:	RES-064					





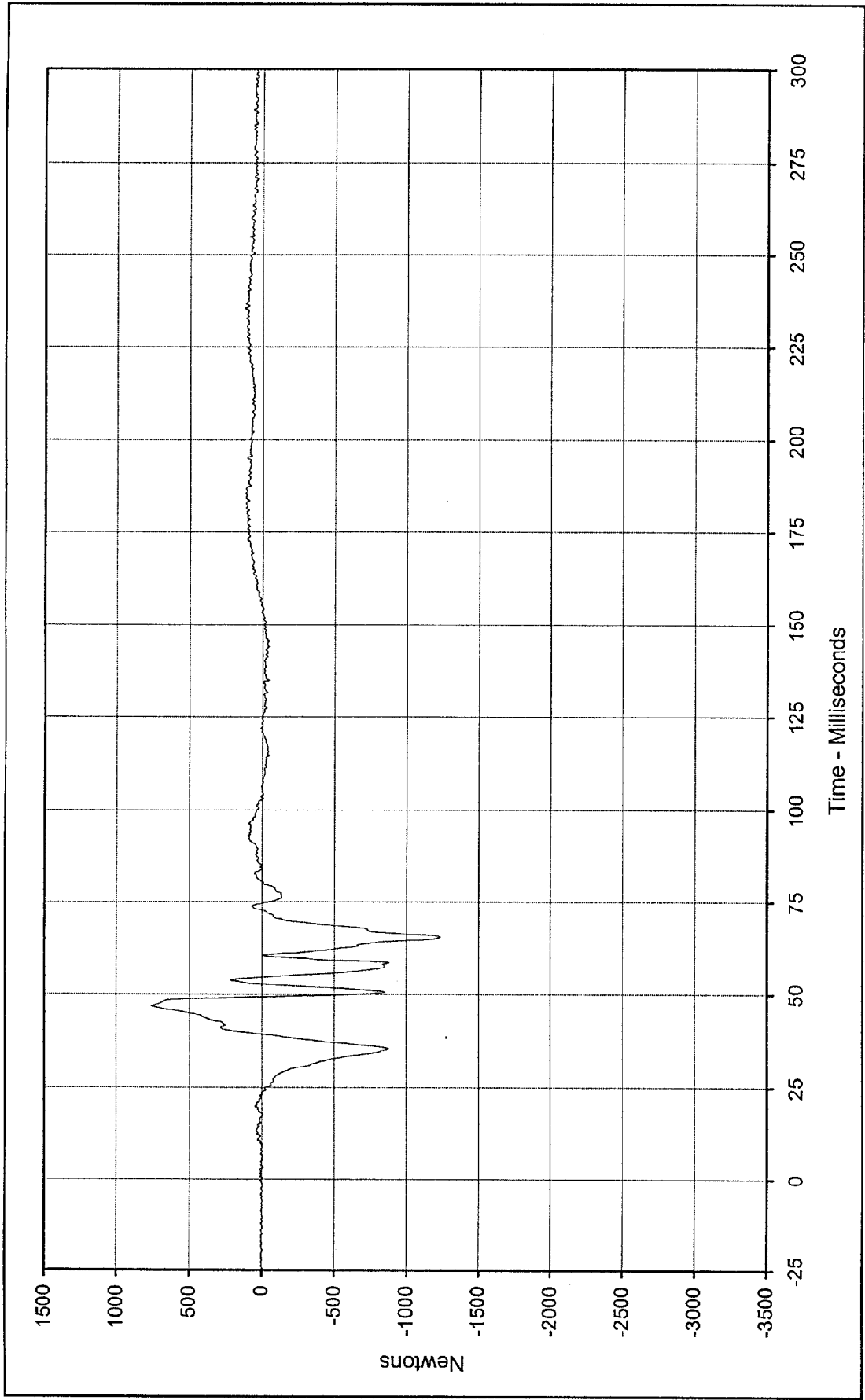


Curve Description: Passenger Left Femur Force
 Maximum Value: 720.2 at 47.7 Milliseconds
 Minimum Value: -1624.2 at 58.5 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-067

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

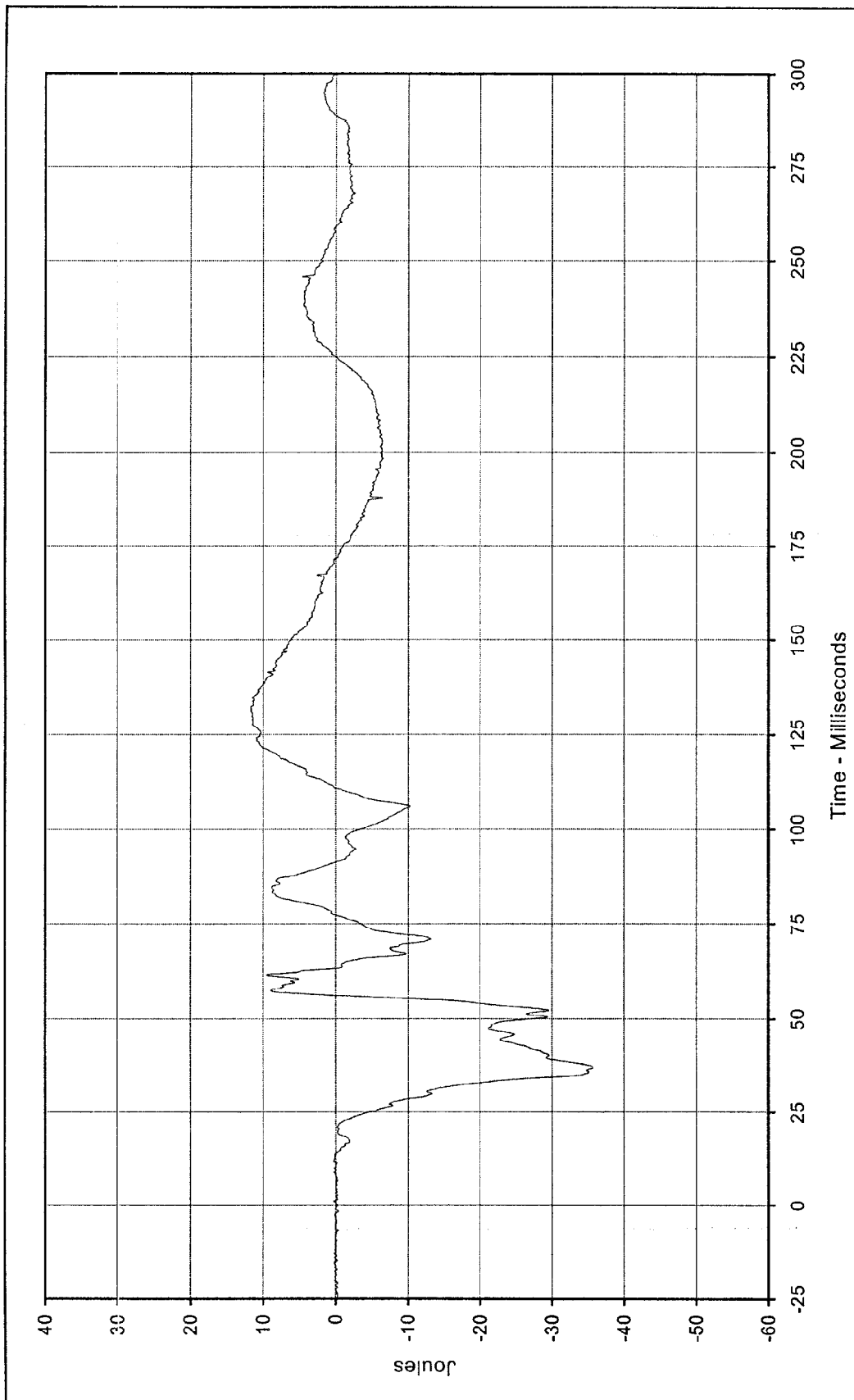




Curve Description:	Passenger Right Femur Force	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	760.1	at	46.9	Milliseconds
Minimum Value:	-1237.0	at	65.3	Milliseconds
SAE Filter Class:	600	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Date of Test:	12/18/97			
Curve Number:	FIL-068			

The logo for AKARCO Engineering. It features a stylized lightbulb with a checkered pattern inside, followed by the word "AKARCO" in a bold, sans-serif font. Below this, the word "Engineering" is written in a script font. The entire logo is set against a black background with a white diagonal line.

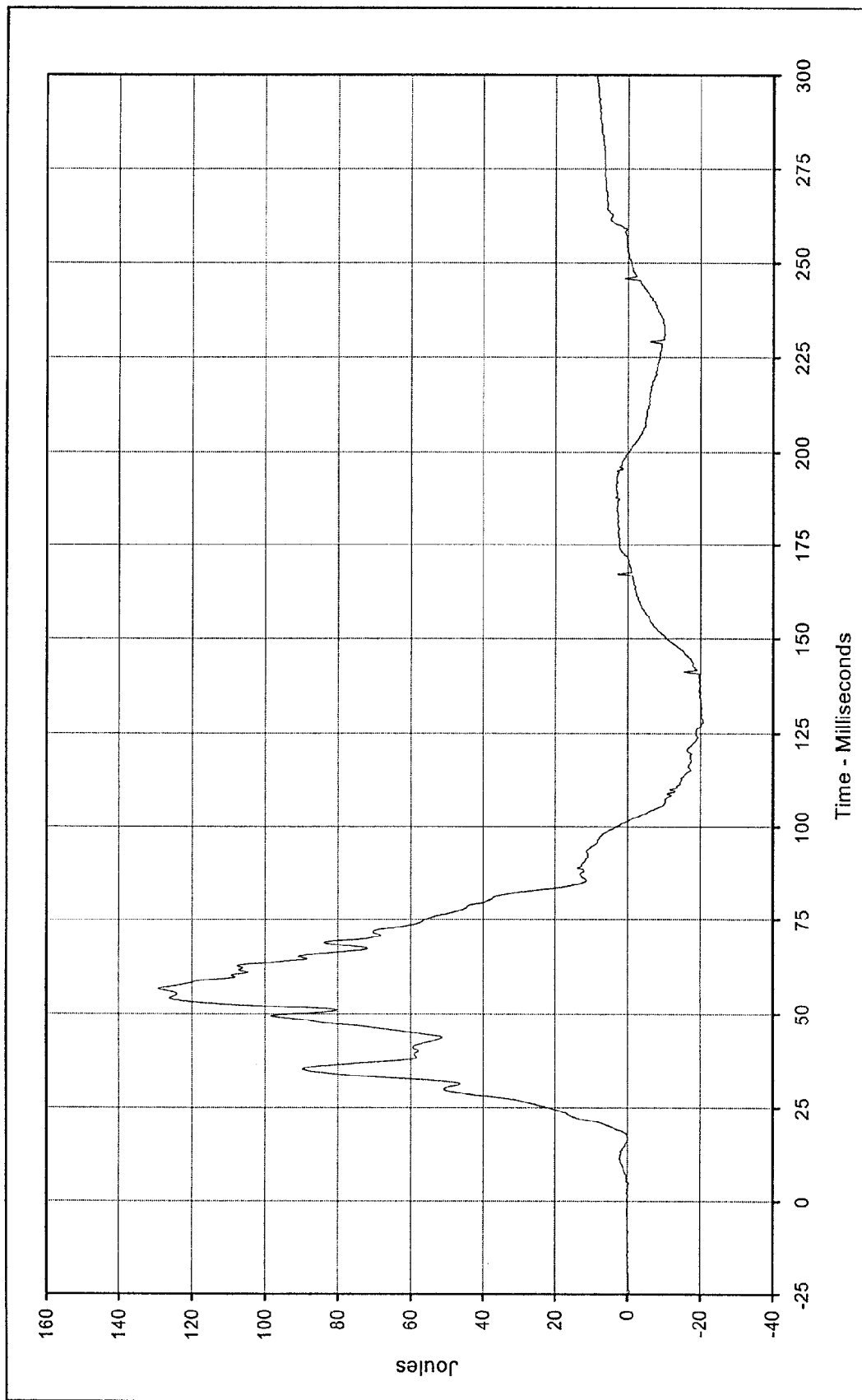




Curve Description: Passenger Left Upper Tibia Moment X
 Maximum Value: 11.7 at 132.4 Milliseconds
 Minimum Value: -35.7 at 37.1 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-069

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

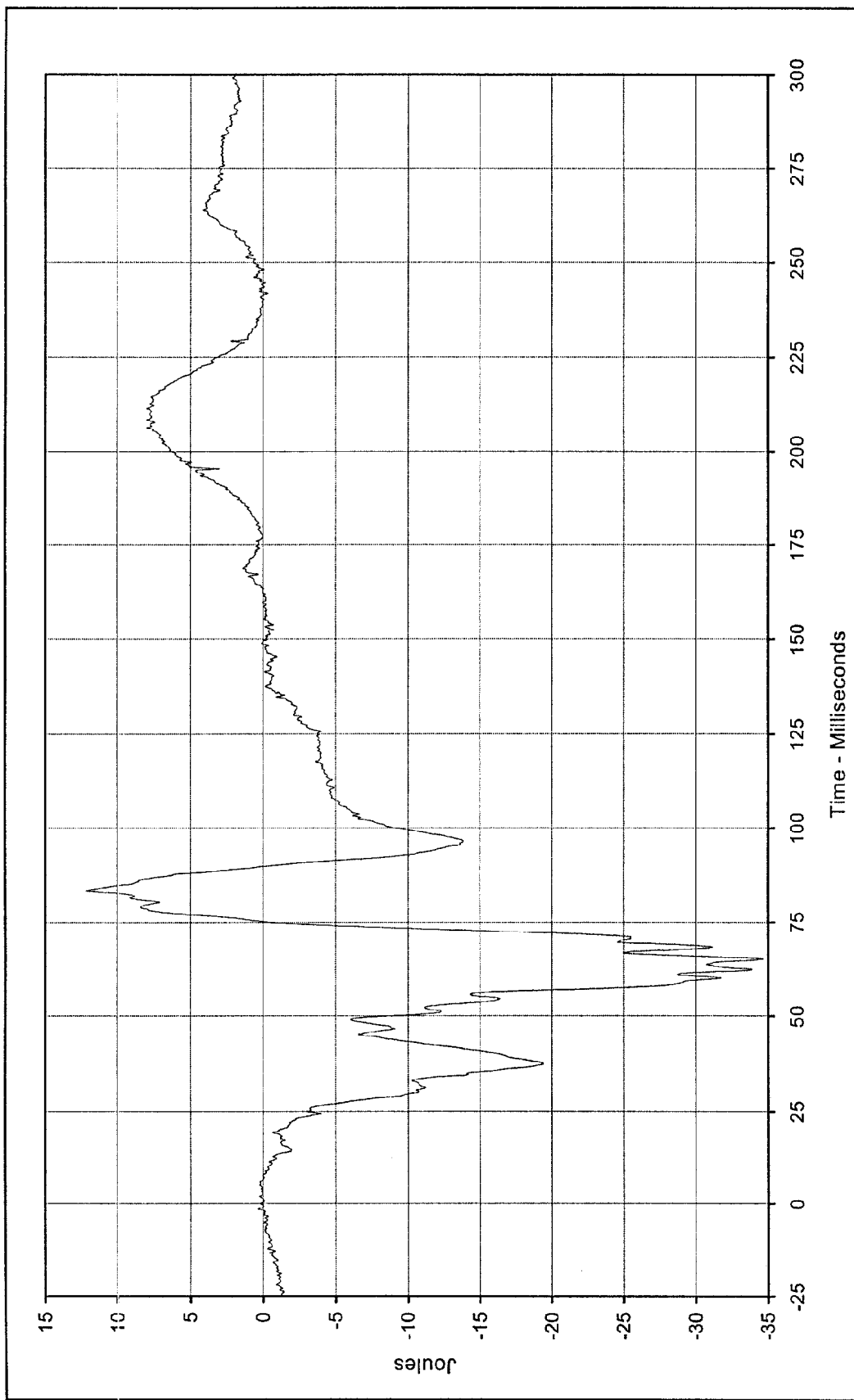




Curve Description: Passenger Left Upper Tibia Moment Y
Maximum Value: 129.2 at 56.6 Milliseconds
Minimum Value: -20.8 at 127.9 Milliseconds
SAE Filter Class: 600
Date of Test: 12/18/97
Curve Number: FIL-070

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 12.2 at 83.3 Milliseconds

Minimum Value: -34.7 at 65.0 Milliseconds

SAE Filter Class: 600

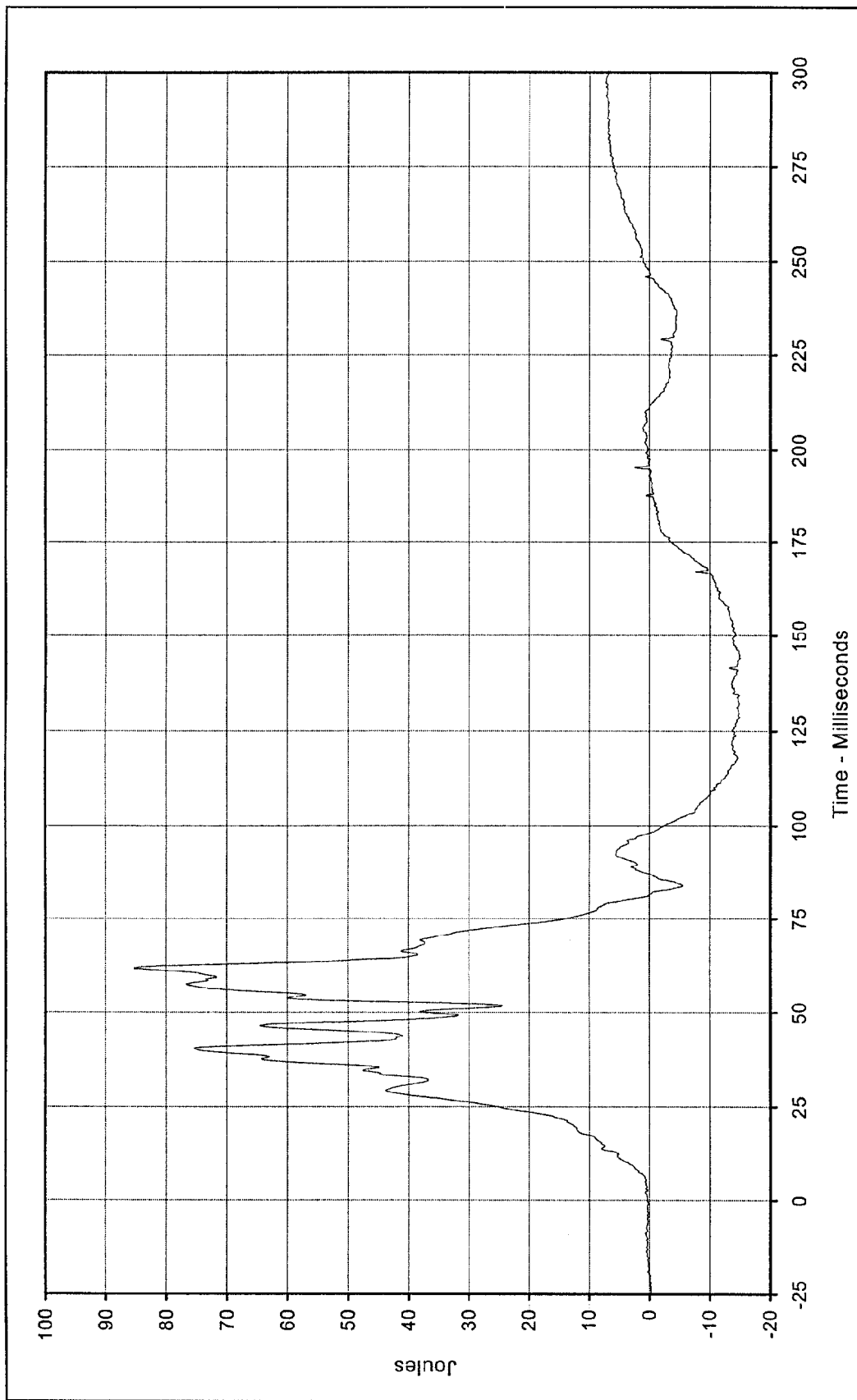
Date of Test: 12/18/97

Curve Number: FIL-071

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 85.3 at 61.8 Milliseconds

Minimum Value: -15.1 at 143.9 Milliseconds

SAE Filter Class: 600

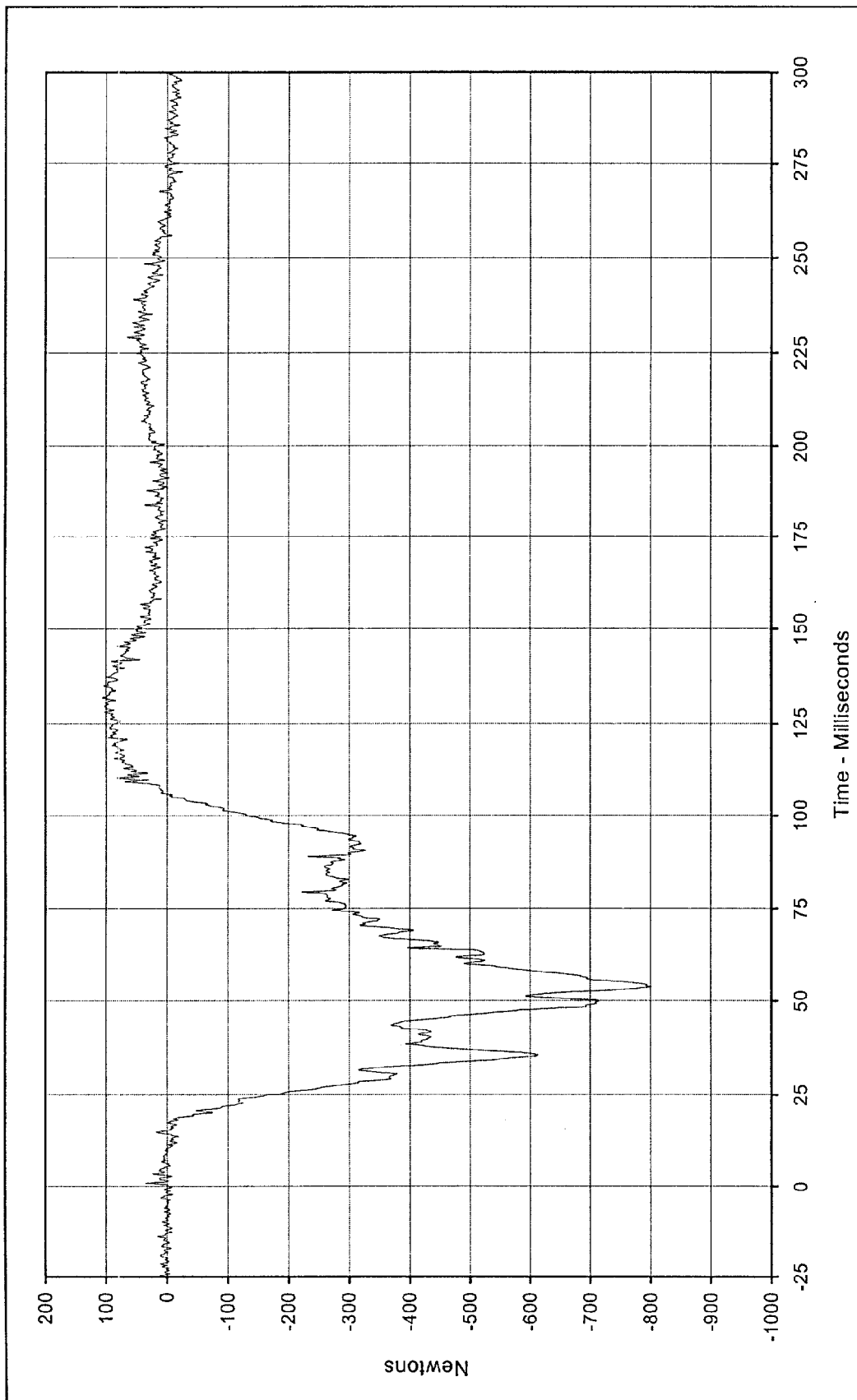
Date of Test: 12/18/97

Curve Number: FIL-072

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

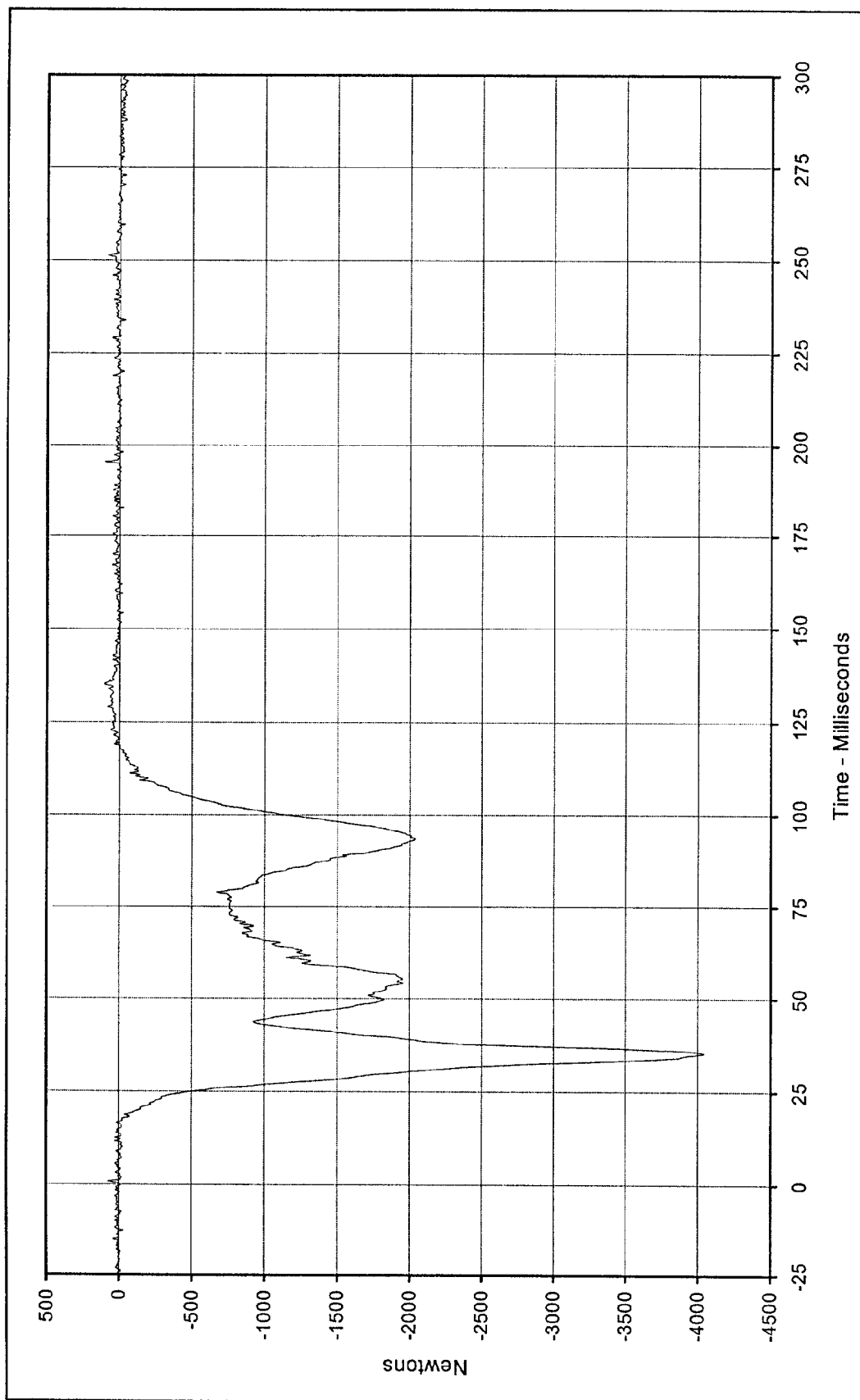




Curve Description: Passenger Left Lower Tibia Force X
 Maximum Value: 105.6 at 131.9 Milliseconds
 Minimum Value: -801.7 at 53.7 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-073

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

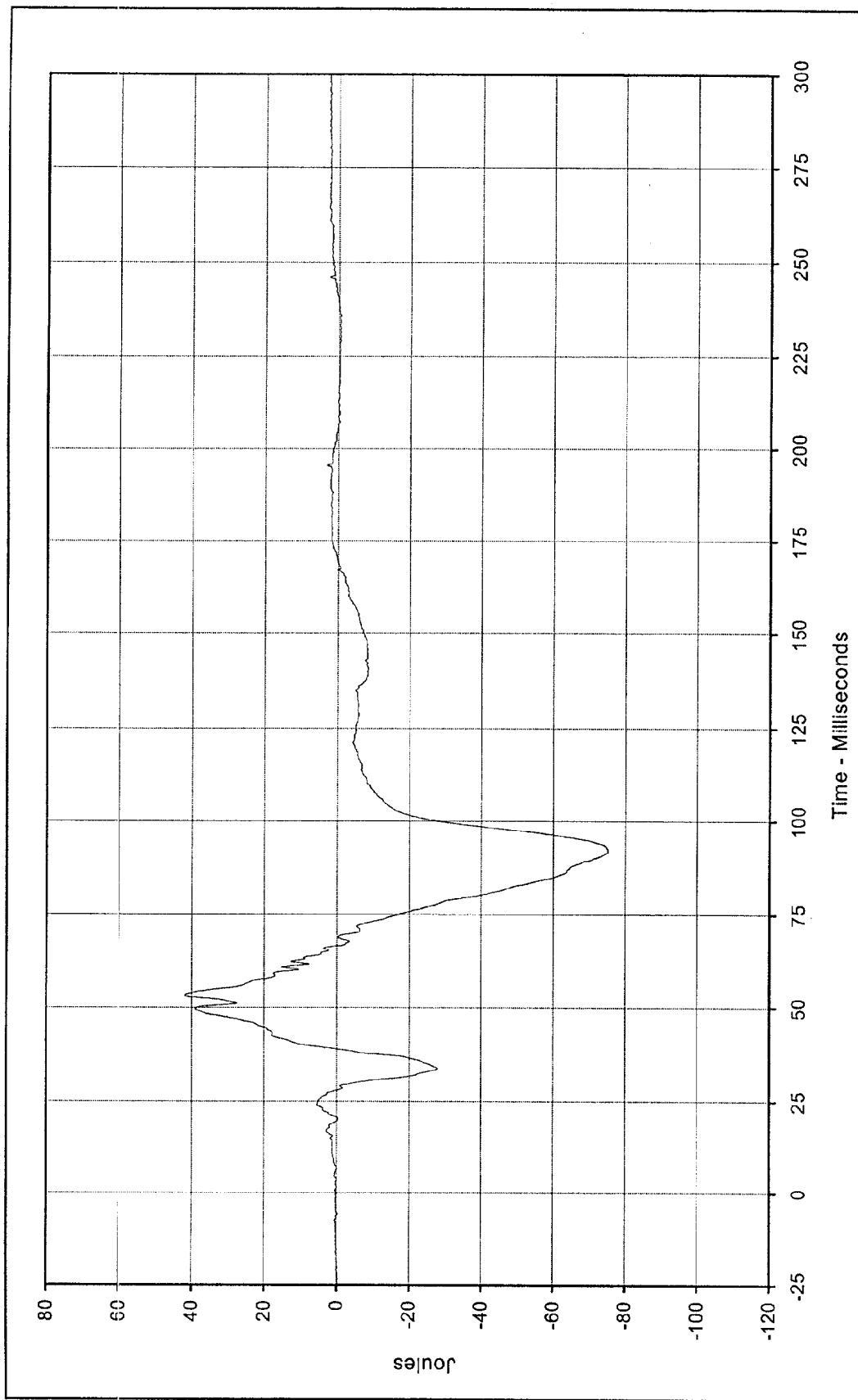




Curve Description: Passenger Left Lower Tibia Force Z
 Maximum Value: 103.0 at 13.1 Milliseconds
 Minimum Value: -4043.6 at 35.4 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-074

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

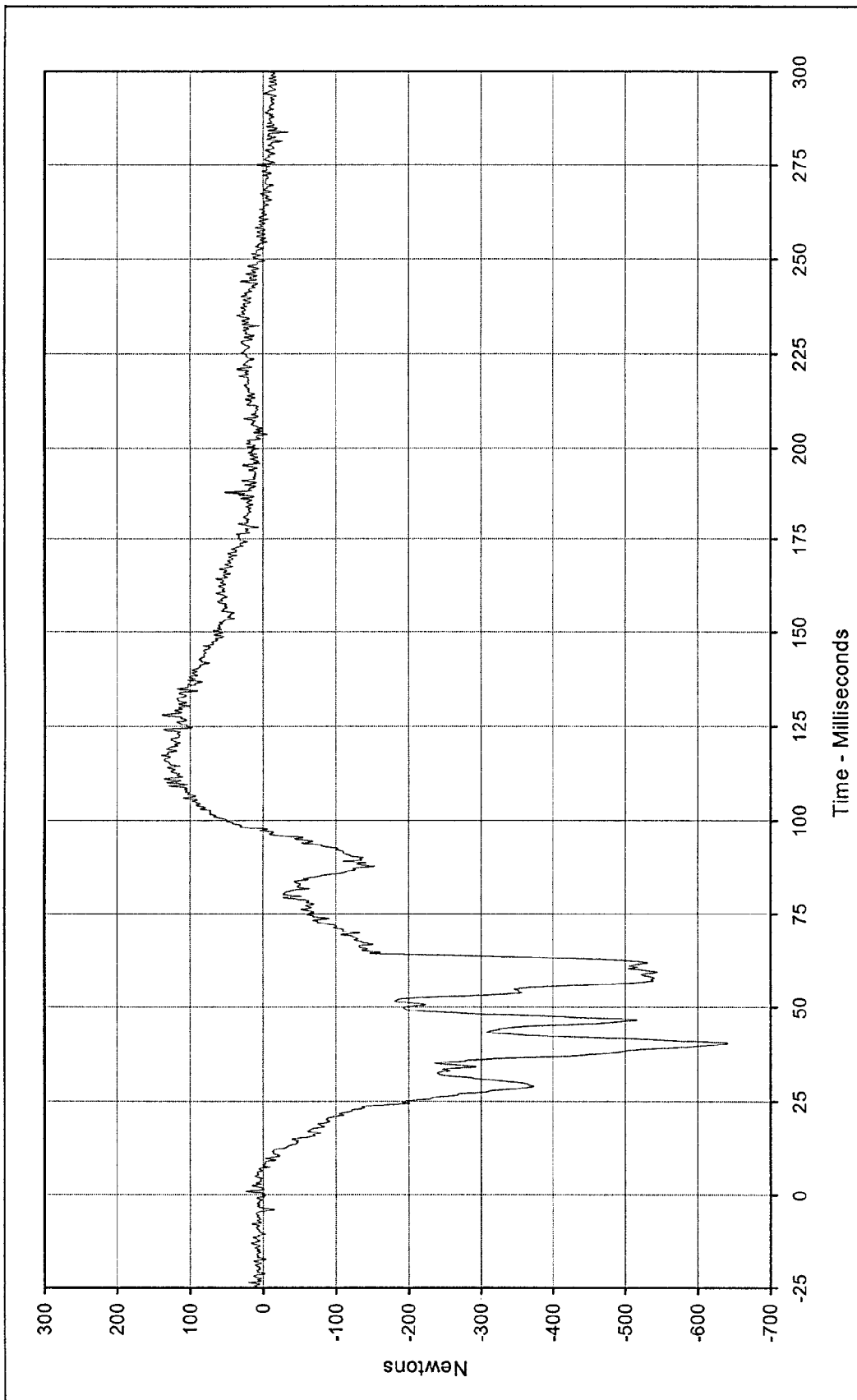




Curve Description: Passenger Left Lower Tibia Moment Y
 Maximum Value: 41.9 at 53.2 Milliseconds
 Minimum Value: -75.2 at 91.5 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-075

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

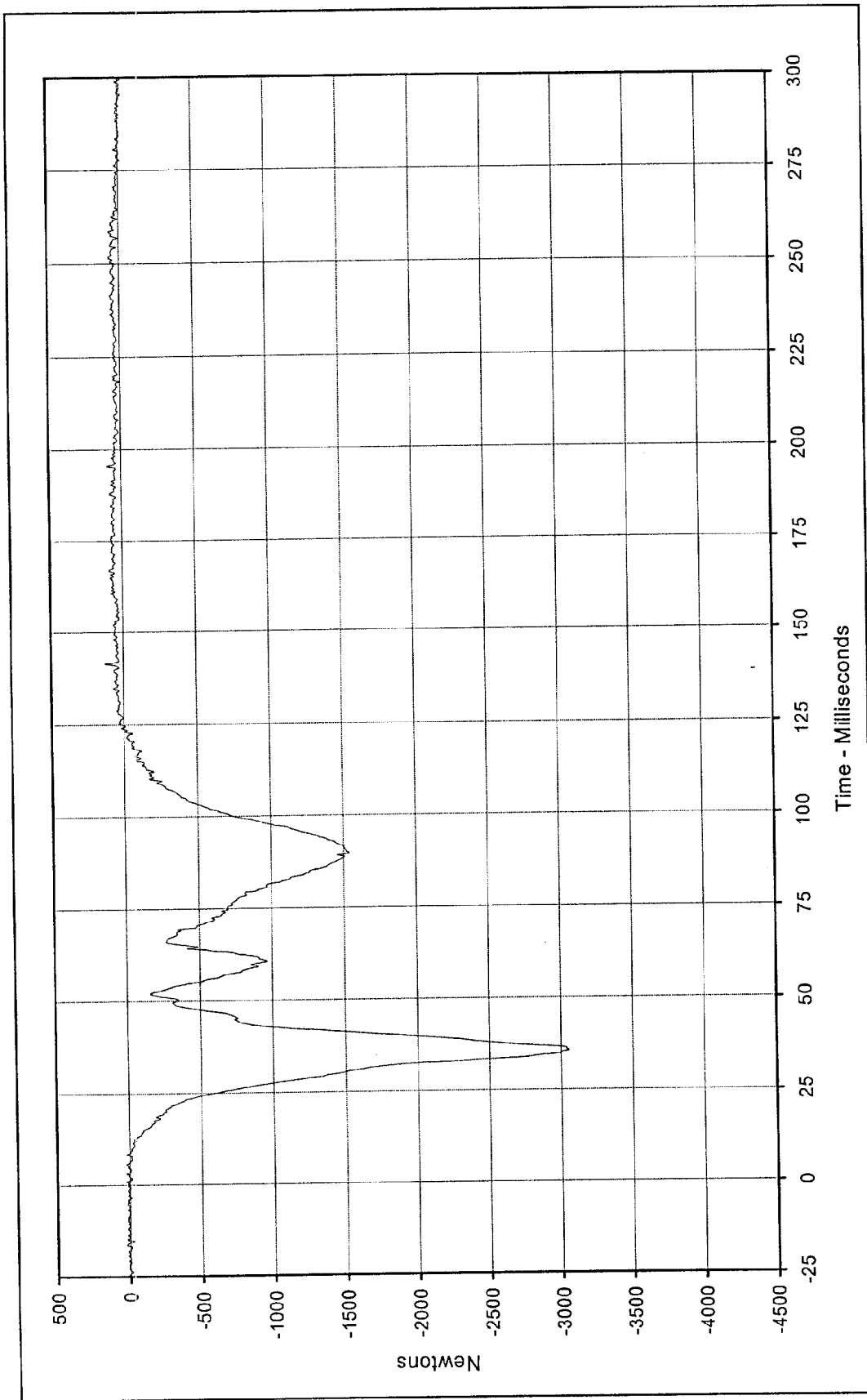




Curve Description: Passenger Right Lower Tibia Force X
 Maximum Value: 139.5 at 17.3 Milliseconds
 Minimum Value: -641.4 at 40.2 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-076

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

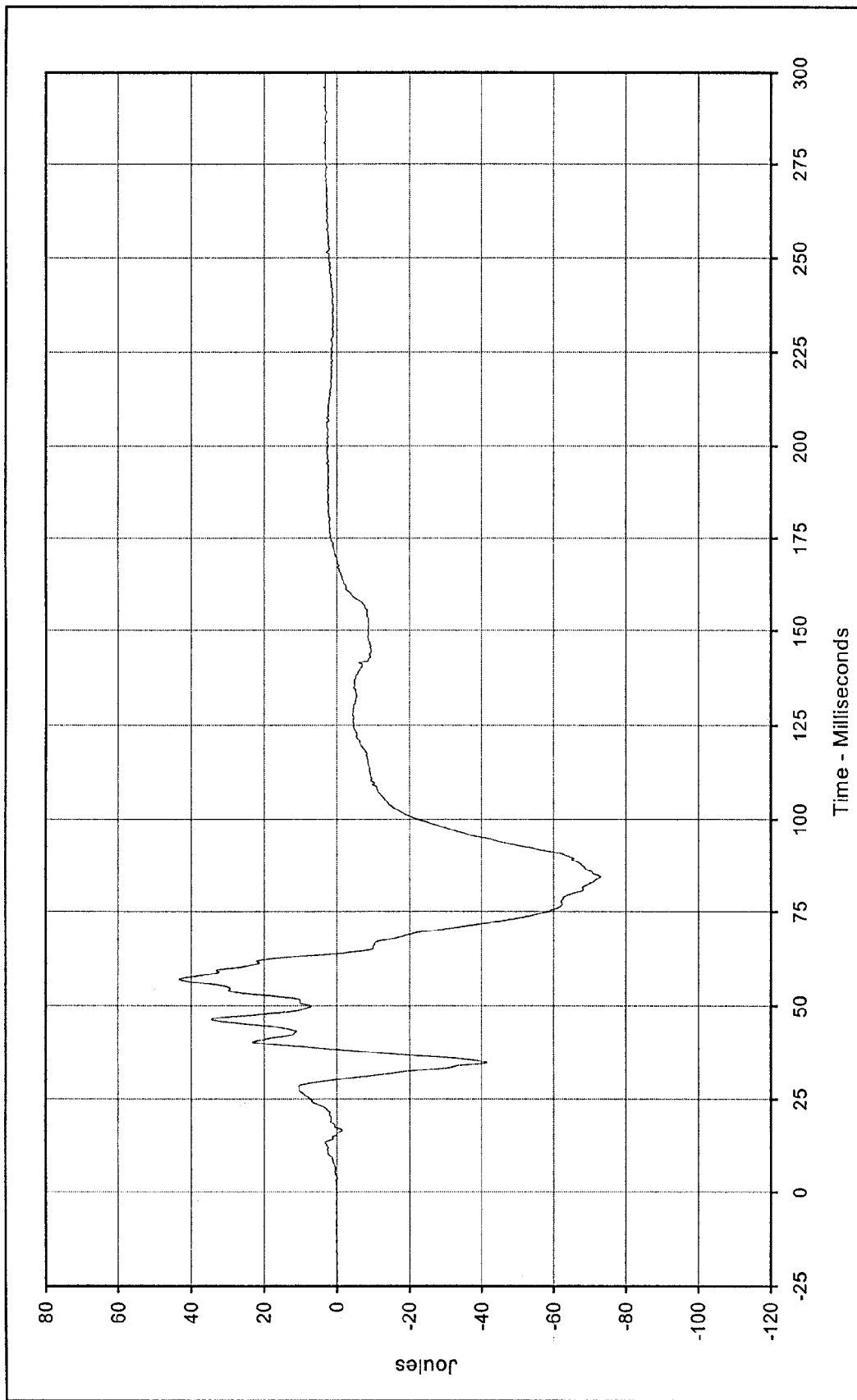




Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

Curve Description: Passenger Right Lower Tibia Force Z
 Maximum Value: 129.9 at 141.5 Milliseconds
 Minimum Value: -3055.1 at 35.7 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-077

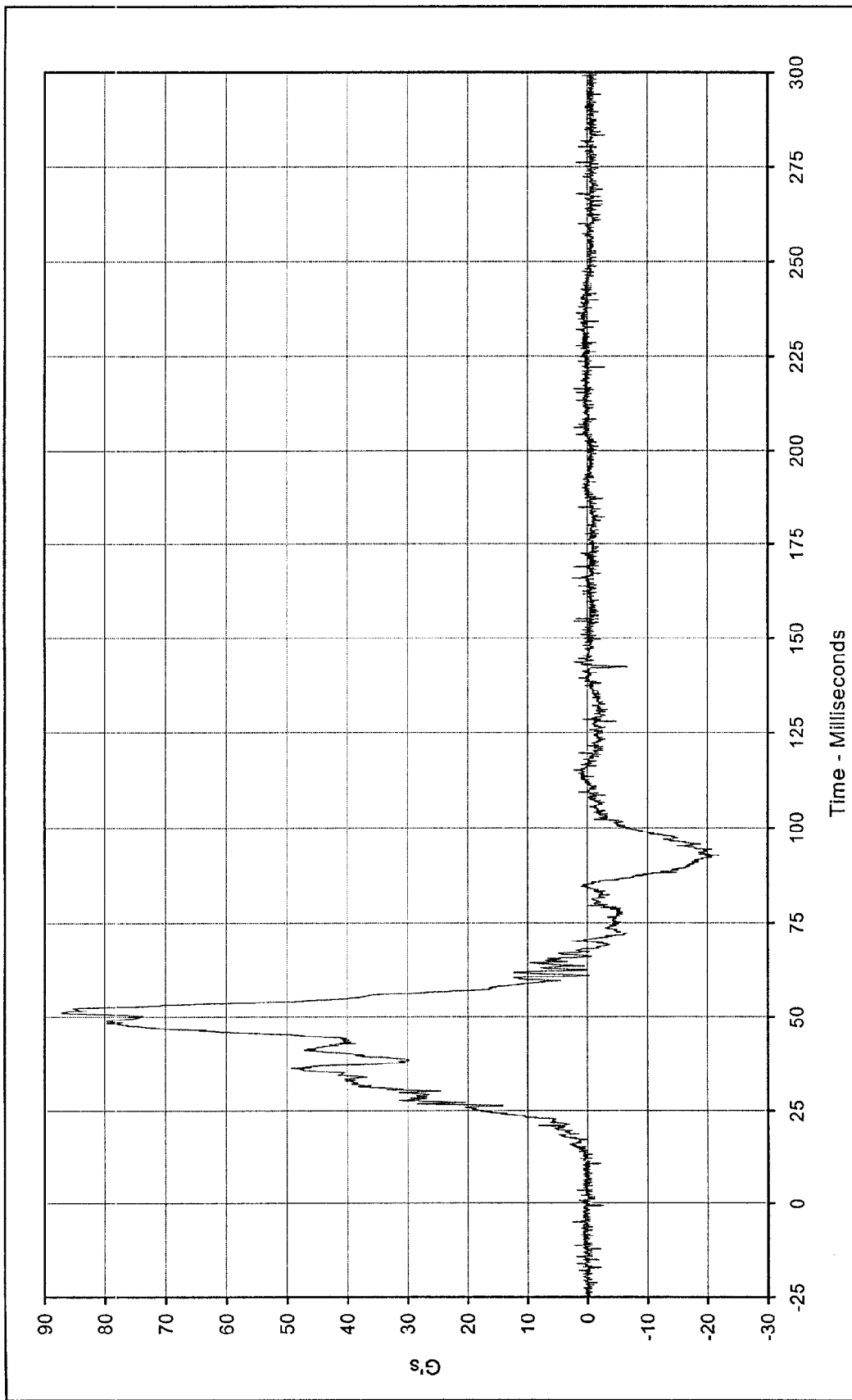




Curve Description: Passenger Right lower Tibia Moment Y
 Maximum Value: 43.1 at 43.1 Milliseconds
 Minimum Value: -72.9 at 84.3 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/18/97
 Curve Number: FIL-078

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Left Foot Aft X

Maximum Value: 87.2 at 51.1 Milliseconds

Minimum Value: -21.9 at 92.7 Milliseconds

SAE Filter Class: 1000

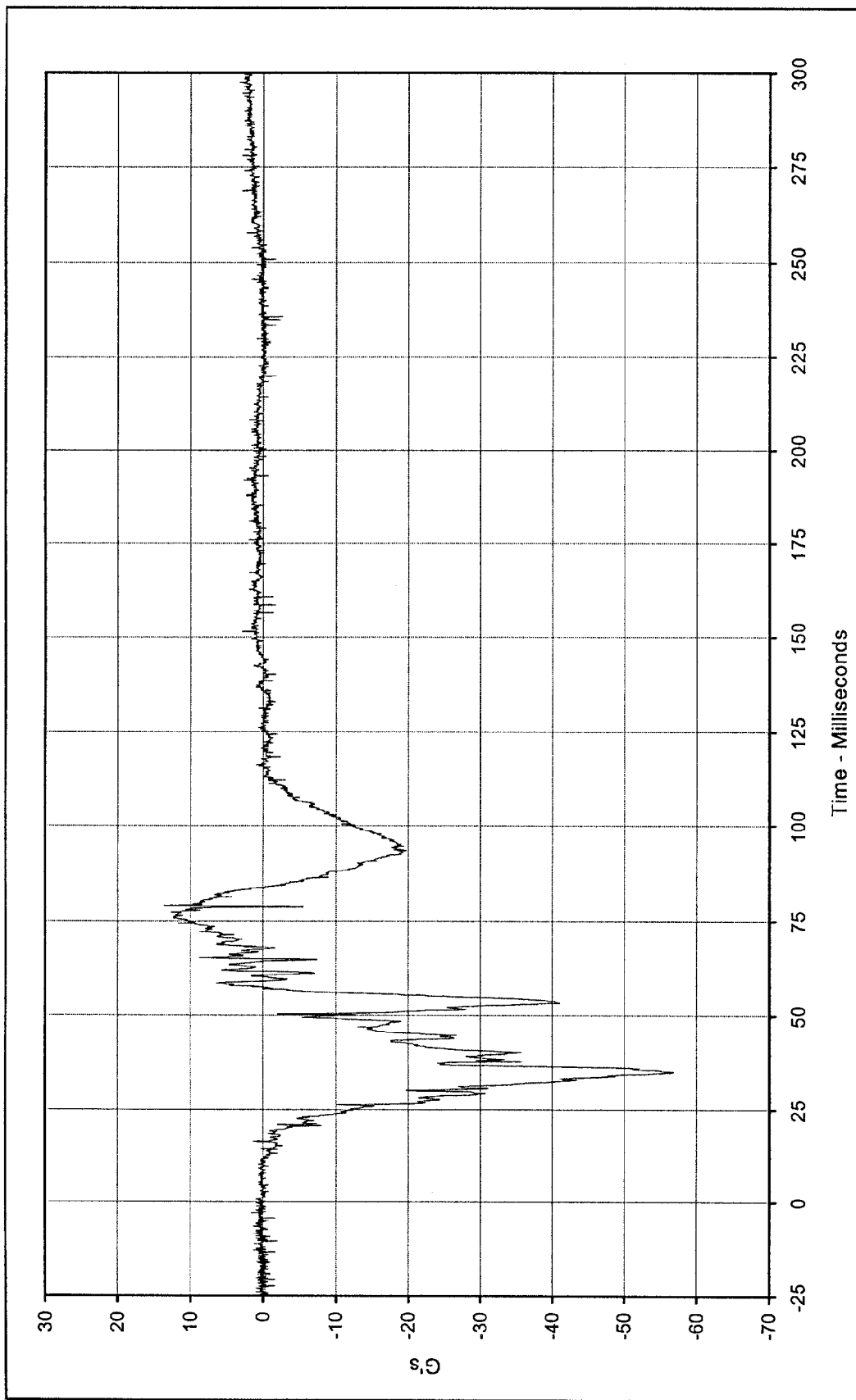
Date of Test: 12/18/97

Curve Number: FIL-079

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

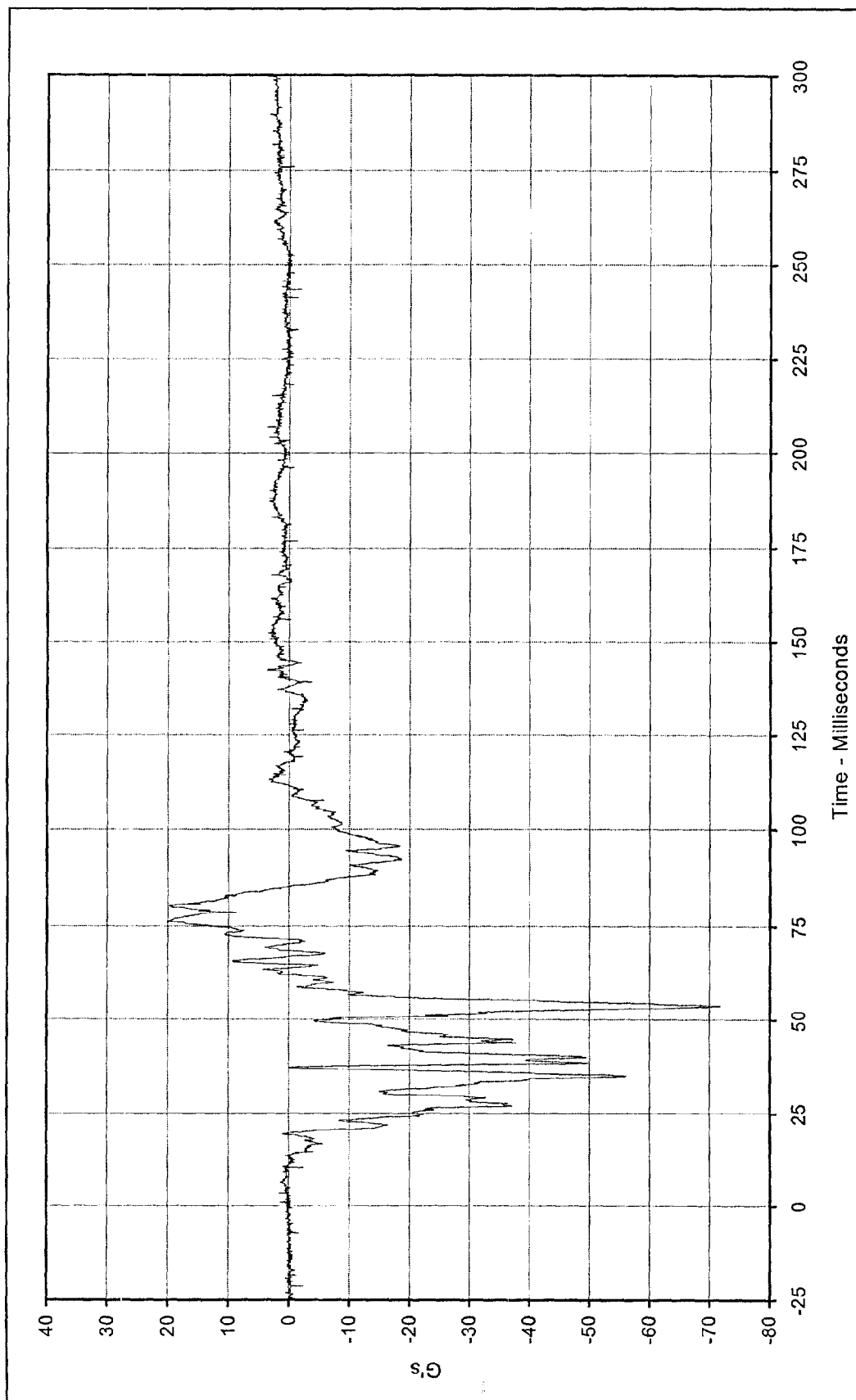
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





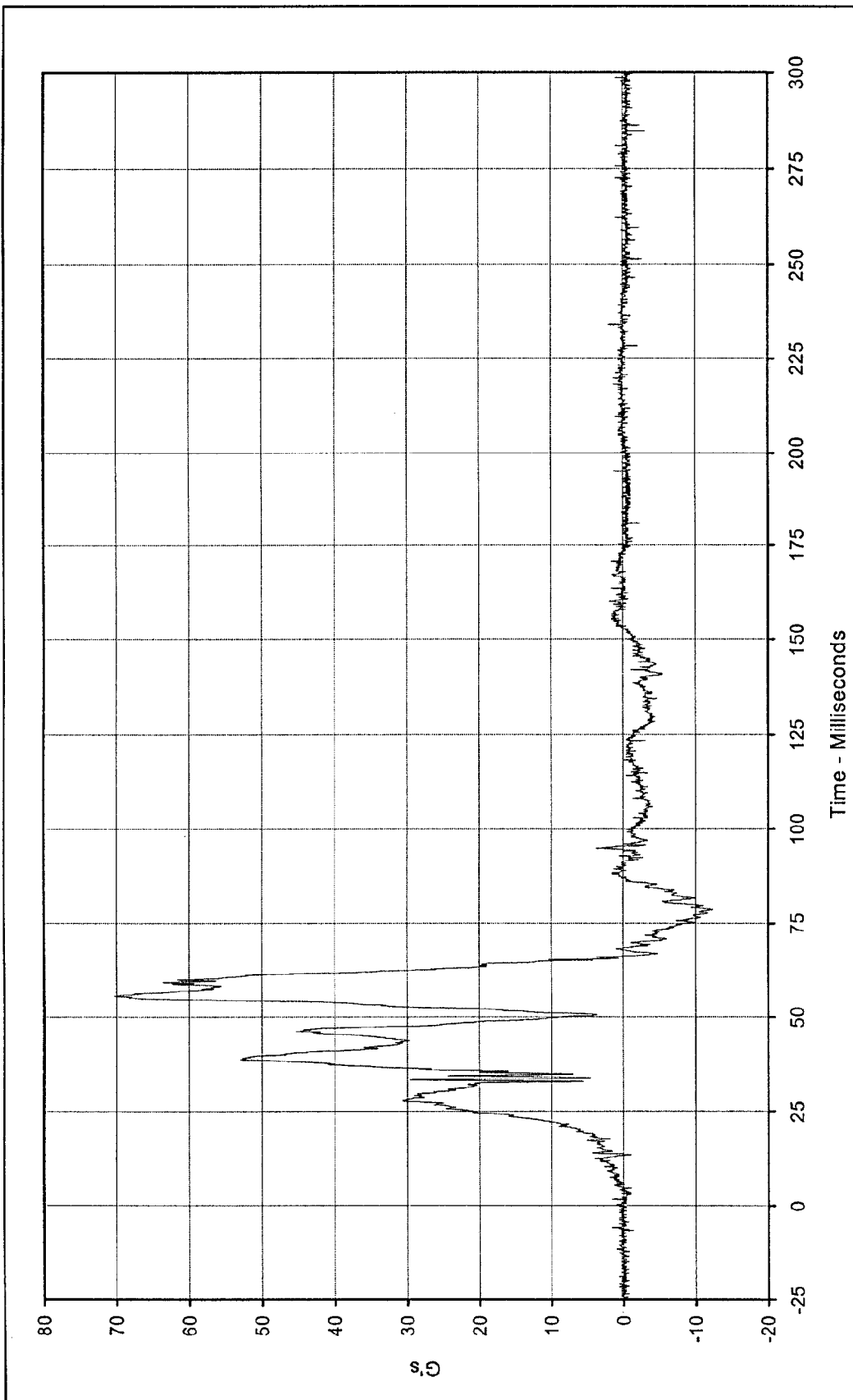
Curve Description:		Passenger Left Foot Aft Z		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	13.7	at	79.0	Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan
Minimum Value:	-56.8	at	34.9	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	12/18/97					
Curve Number:	FIL-080					





Curve Description:		Passenger Left Foot Fore Z		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	20.0	at	76.3	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-71.8	at	53.8			
SAE Filter Class:	1000					
Date of Test:	12/18/97					
Curve Number:	FIL-081					





Curve Description: Passenger Right Foot Aft X

Maximum Value: 70.3 at 55.5 Milliseconds

Minimum Value: -12.4 at 78.6 Milliseconds

SAE Filter Class: 1000

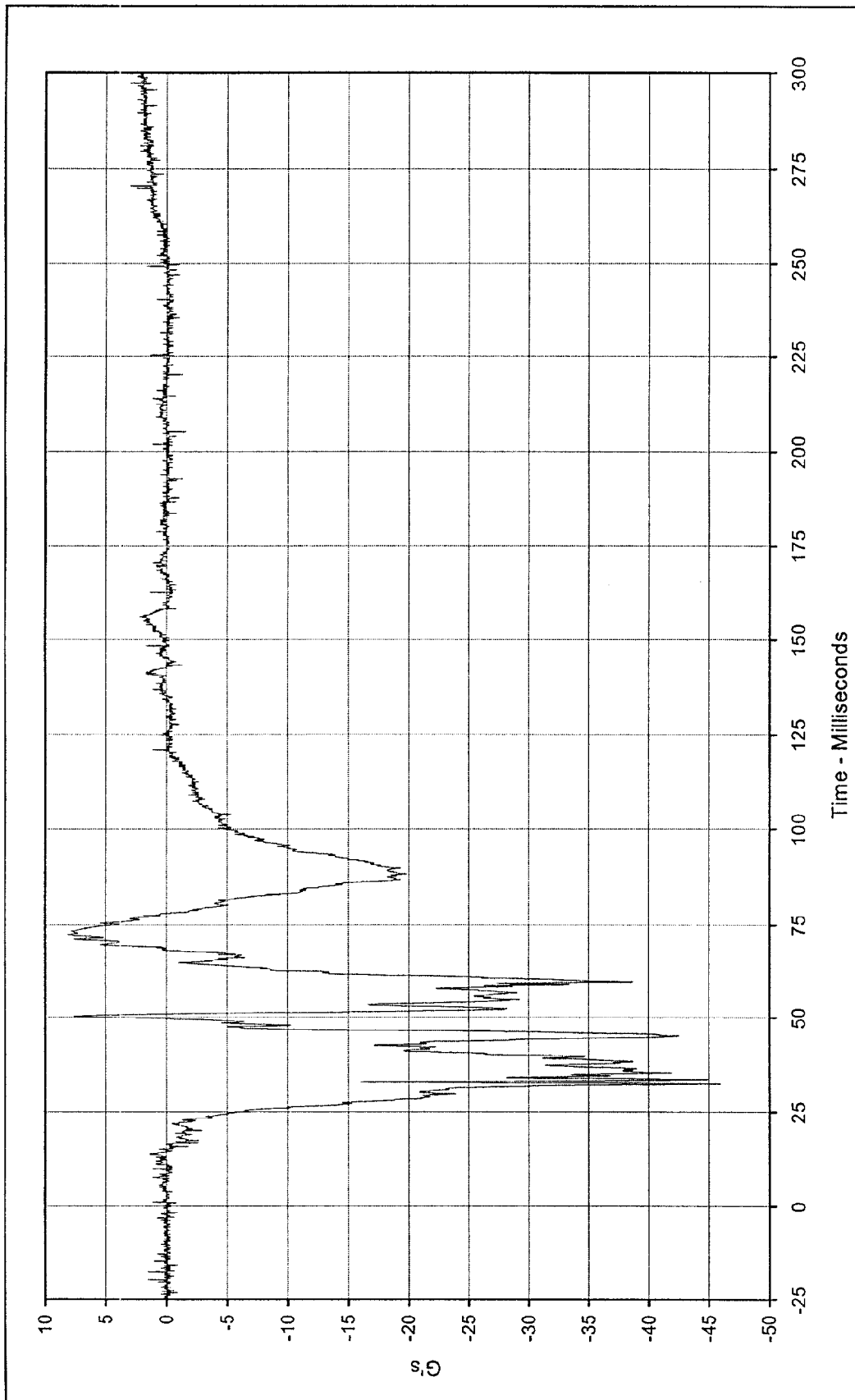
Date of Test: 12/18/97

Curve Number: FIL-082

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Passenger Right Foot Aft Z

Maximum Value: 8.1 at 72.3 Milliseconds

Minimum Value: -45.9 at 32.4 Milliseconds

SAE Filter Class: 1000

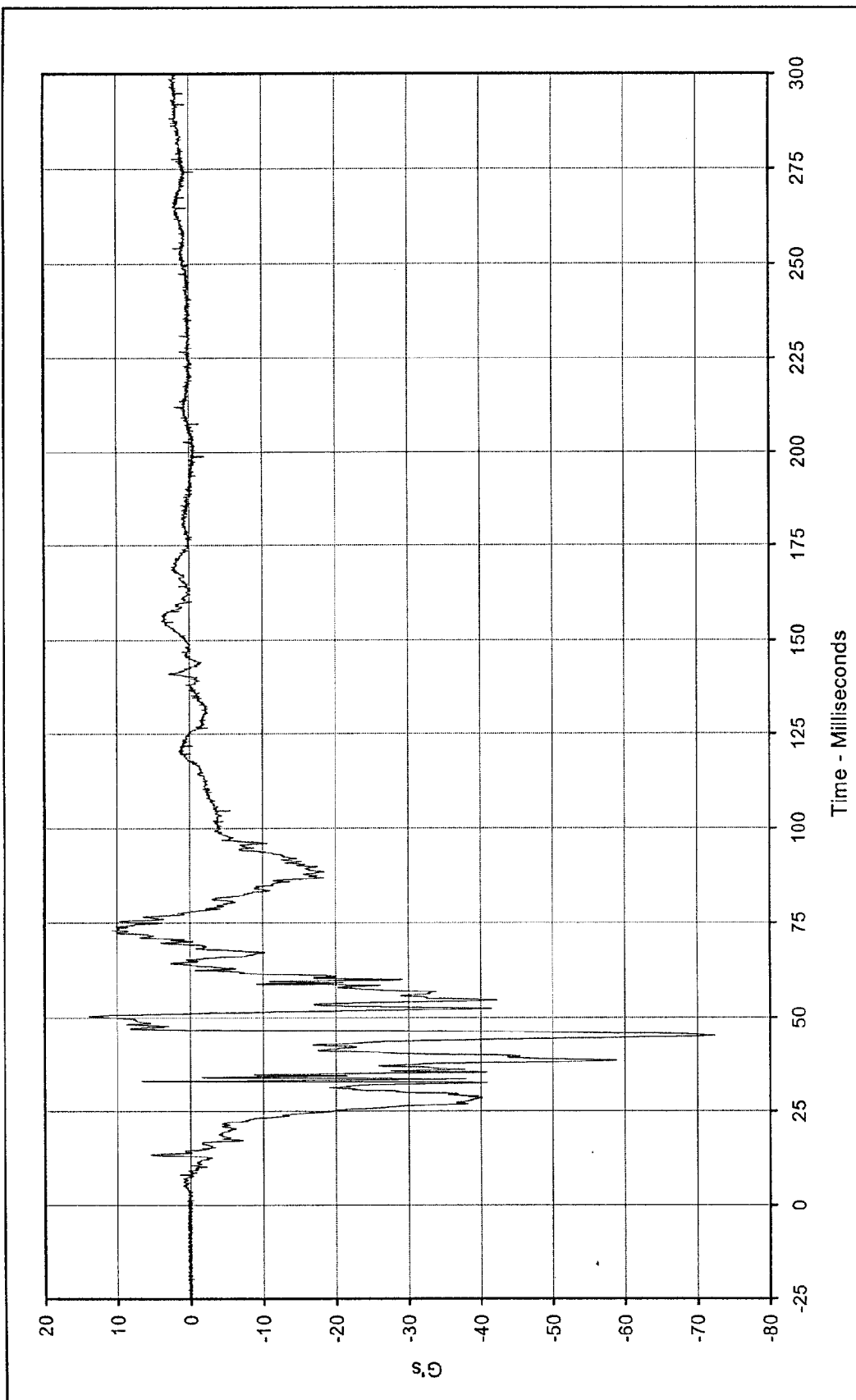
Date of Test: 12/18/97

Curve Number: FIL-083

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

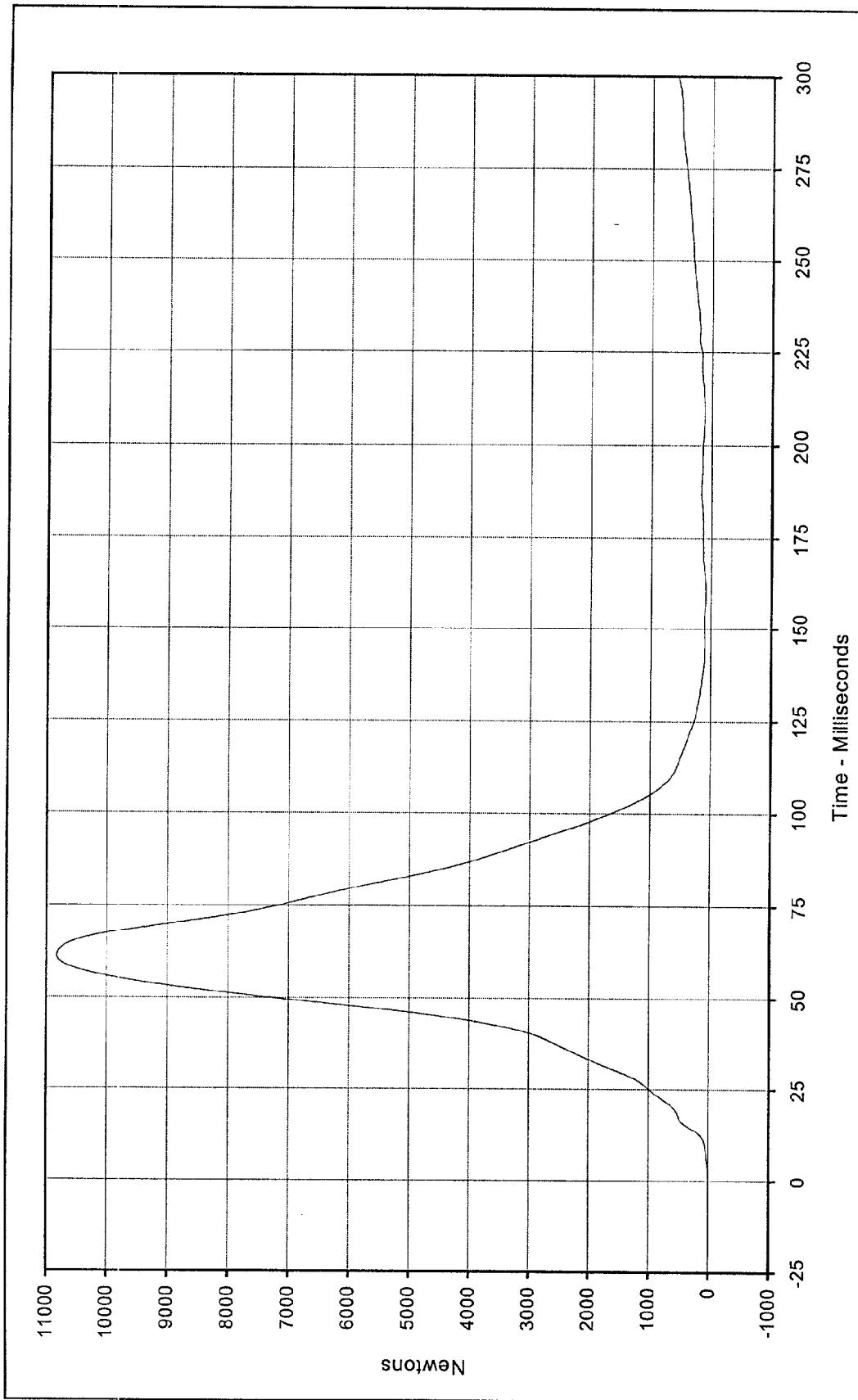
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





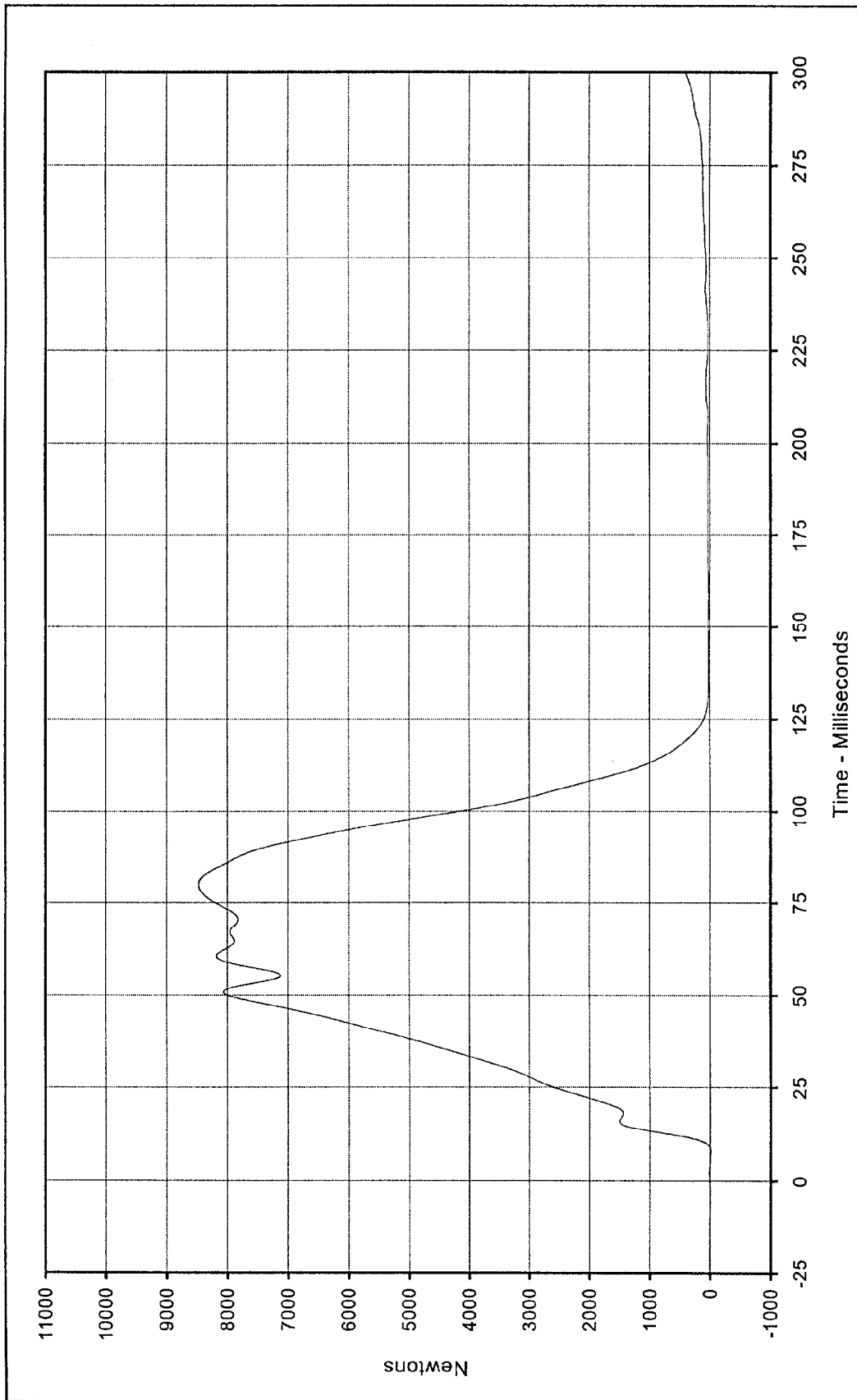
Curve Description:	Passenger Right Foot Fore Z	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	13.9 at 50.5 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-72.4 at 45.1 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	12/18/97			
Curve Number:	FIL-084			





Curve Description:	Passenger Lap Belt Force	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	10823.0 at 61.1 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	1.9 at 0.0 Milliseconds			
SAE Filter Class:	60			
Date of Test:	12/18/97			
Curve Number:	FIL-085			

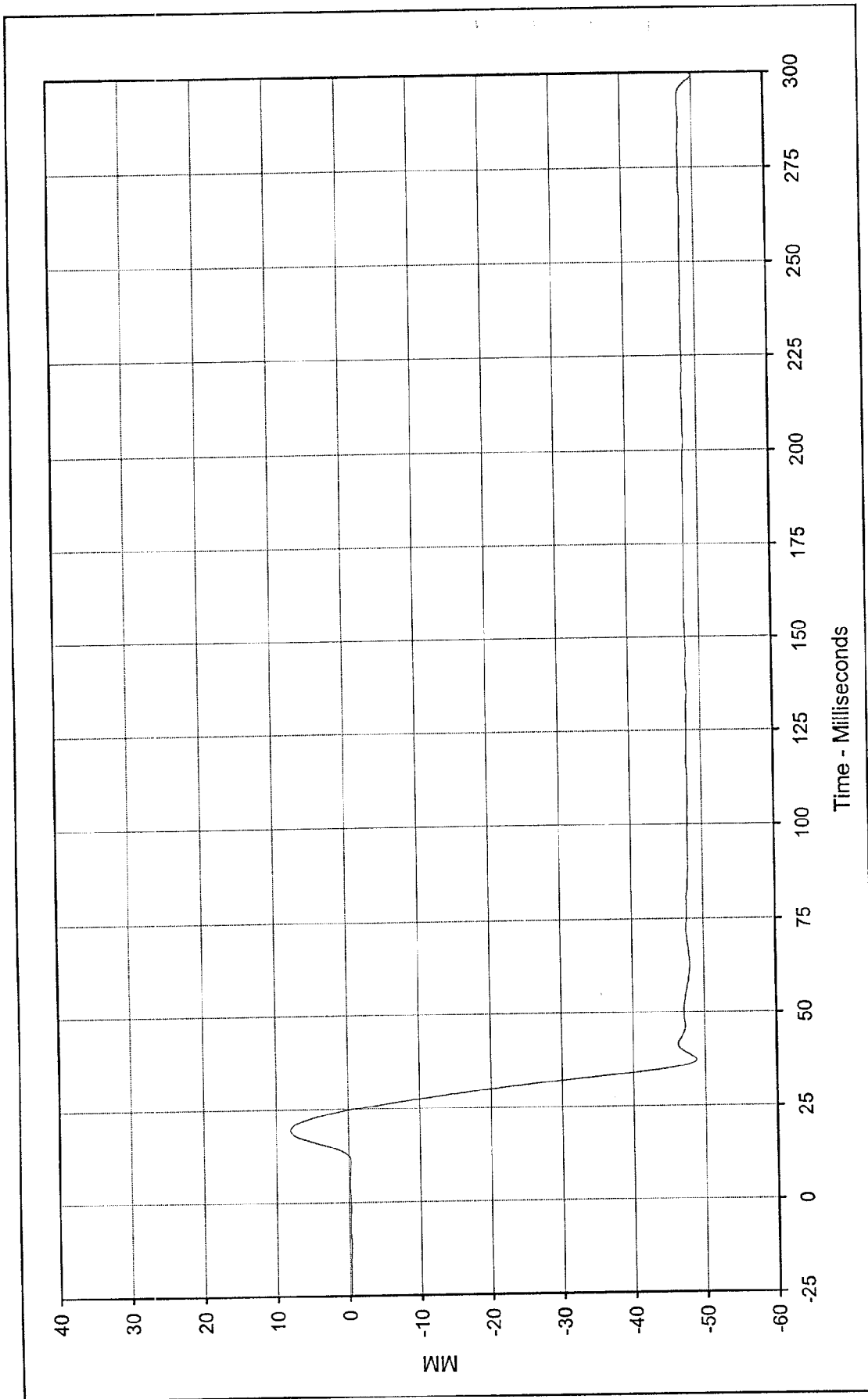




Curve Description: Passenger Shoulder Belt Force
 Maximum Value: 8476.2 at 79.9 Milliseconds
 Minimum Value: -11.9 at 7.8 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/18/97
 Curve Number: FIL-086

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan



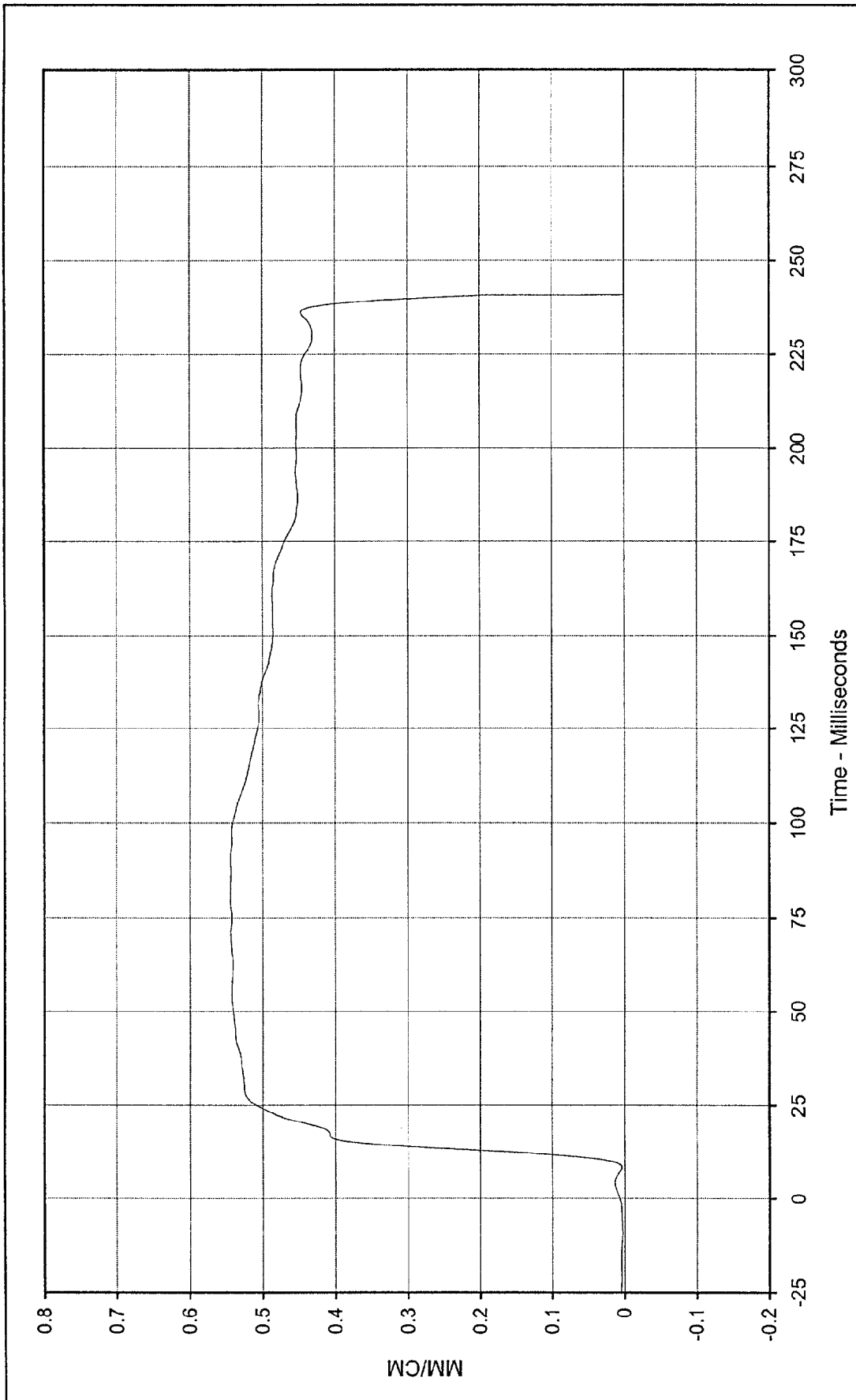


Curve Description: Passenger Shoulder Belt Pullout *
 Maximum Value: 8.0 at 19.7 Milliseconds
 Minimum Value: -50.0 at 299.2 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/18/97
 Curve Number: FIL-087

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan



* Channel Failed at 20.0 Msec.



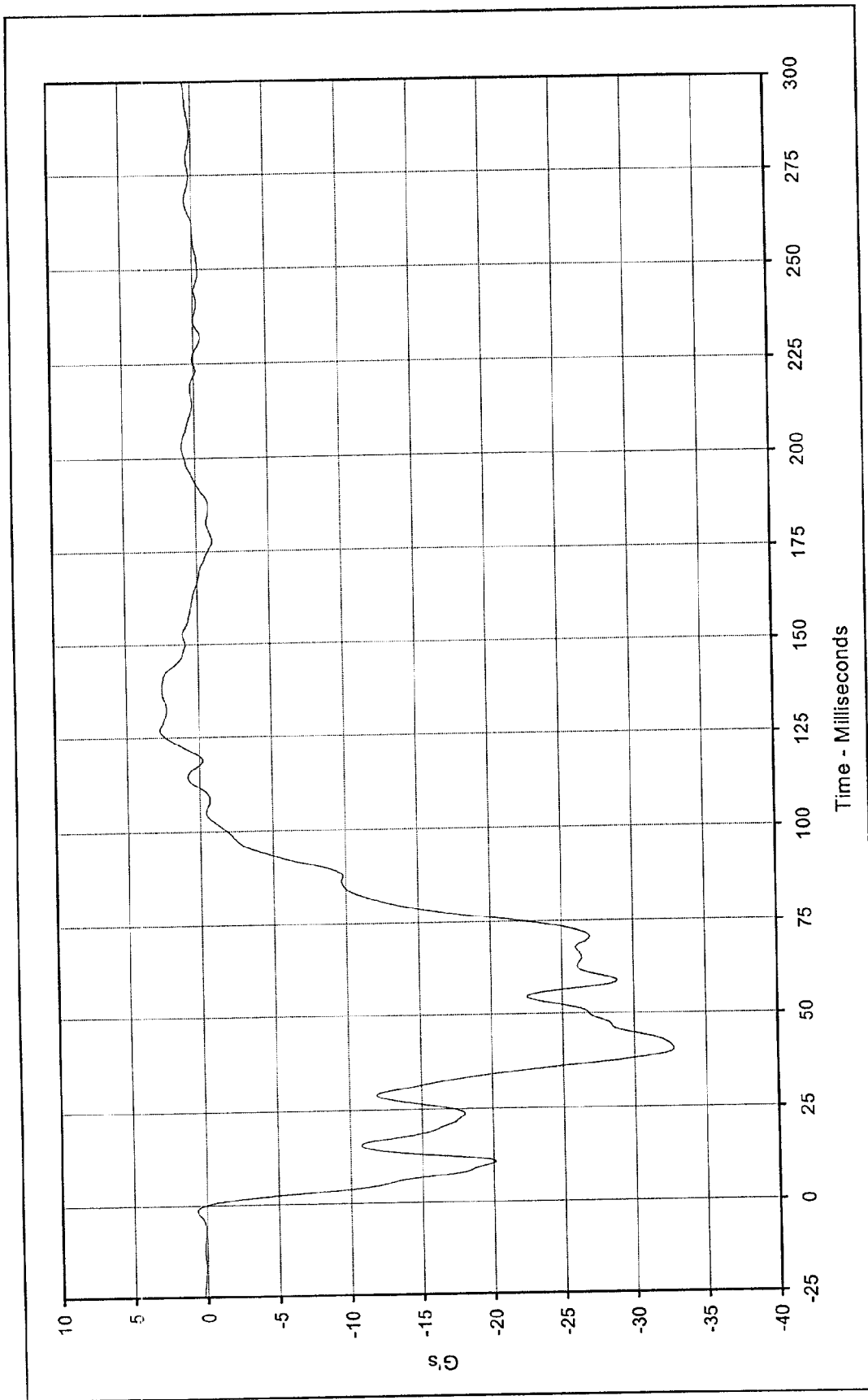
Curve Description: Passenger Shoulder Belt Elongation *
 Maximum Value: 0.54 at 79.2 Milliseconds
 Minimum Value: 0.00 at 241.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/18/97
 Curve Number: FIL-088

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan



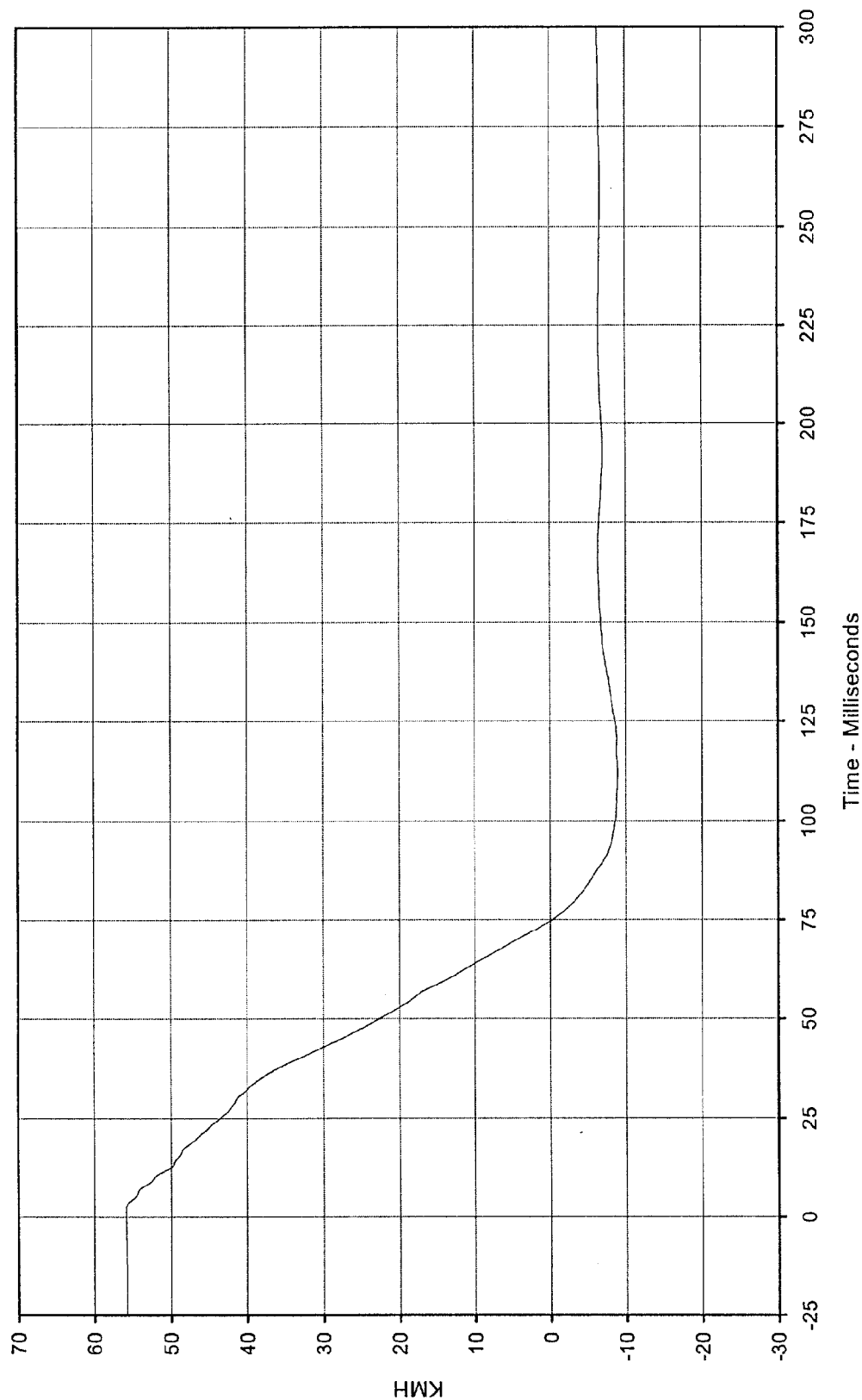
* Channel Failed at 241.0 Msec.



Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan



Curve Description: Vehicle Left Rear Primary
 Maximum Value: 2.7 at 127.0 Milliseconds
 Minimum Value: -32.8 at 40.3 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/18/97
 Curve Number: FIL-089



Curve Description: Vehicle Left Rear Primary Velocity

Maximum Value: 55.9 at 1.8 Milliseconds

Minimum Value: -8.9 at 112.2 Milliseconds

SAE Filter Class: 180

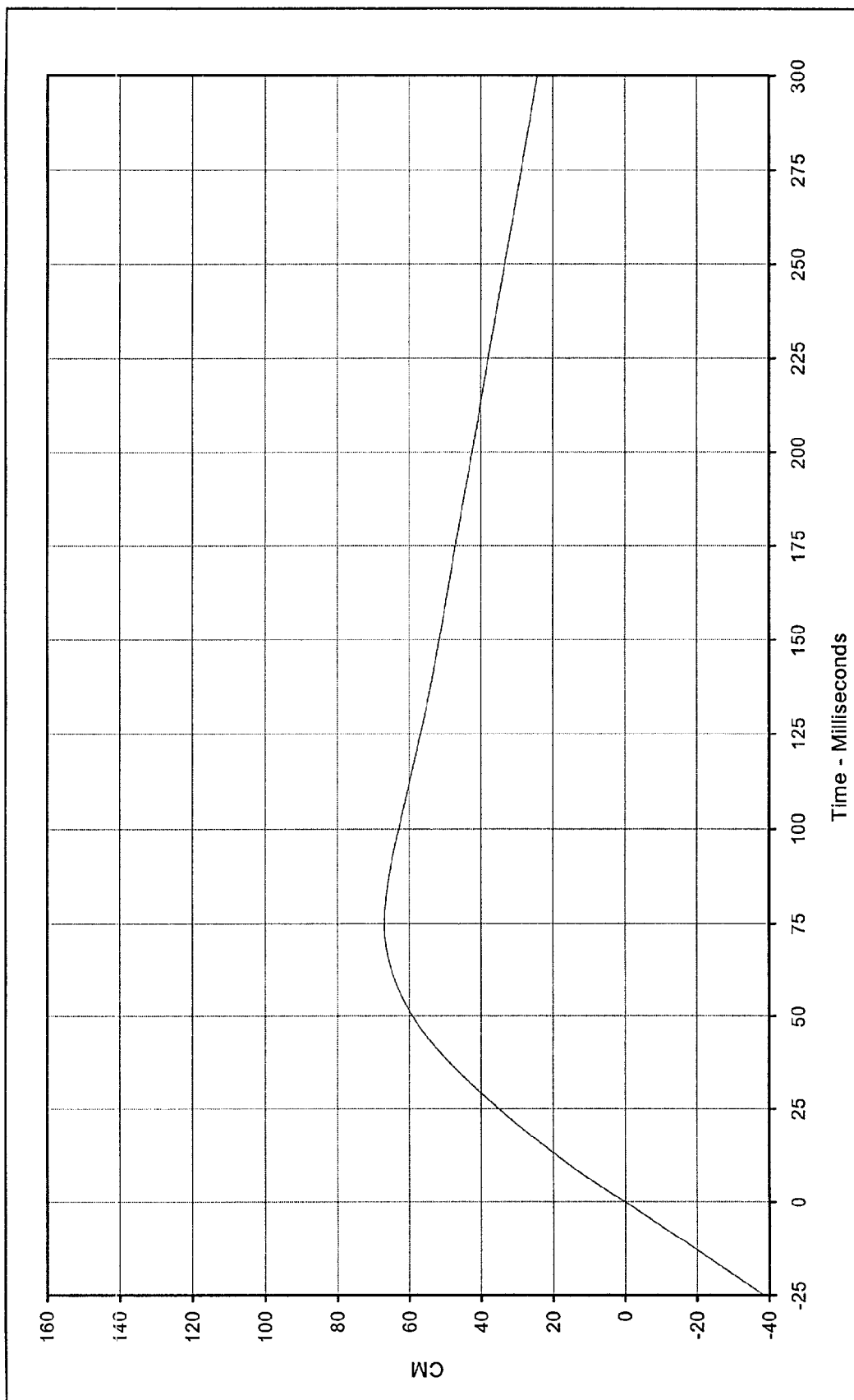
Date of Test: 12/18/97

Curve Number: IN1-089

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Vehicle Left Rear Primary Displ. Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 66.9 at 74.6 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

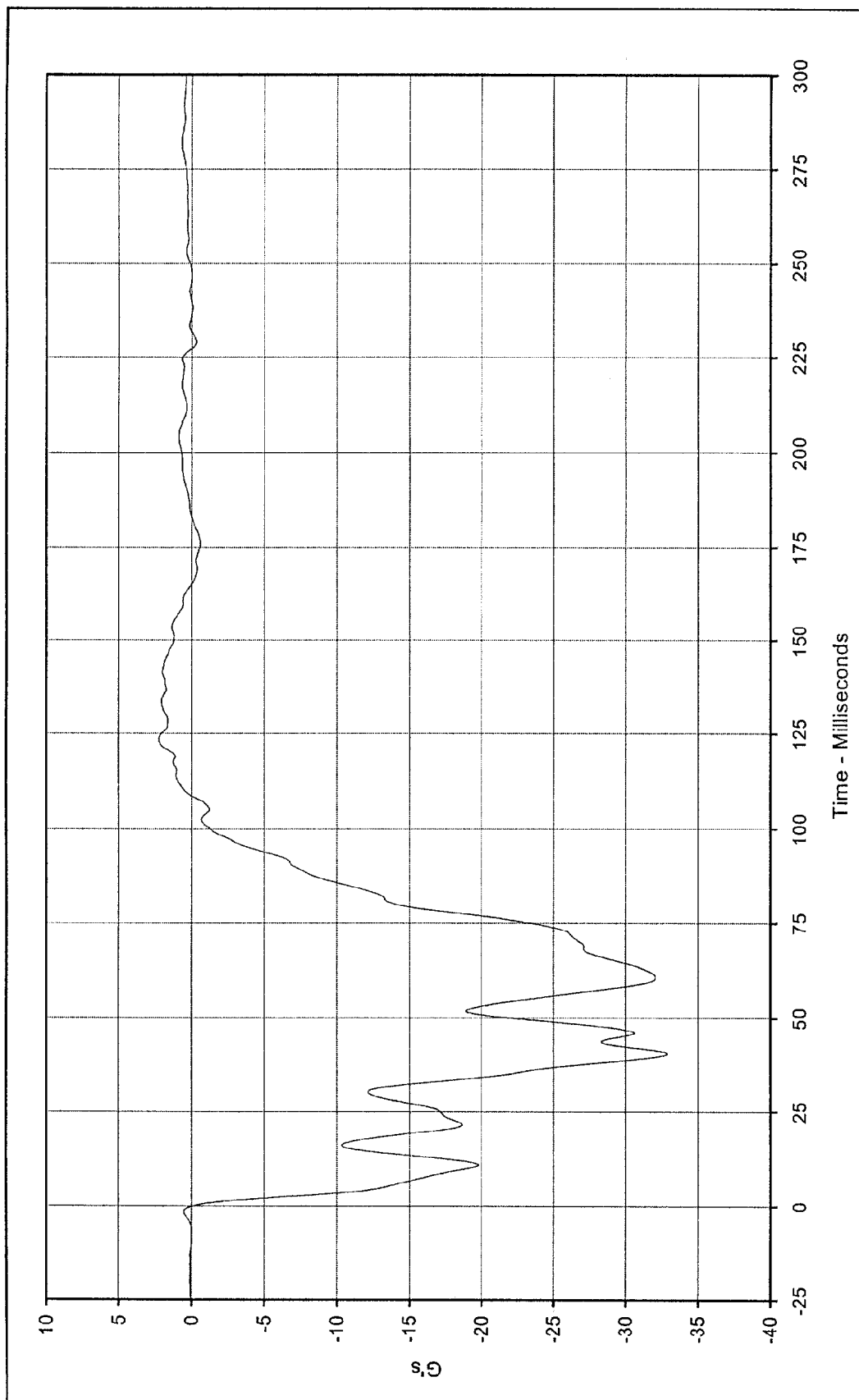
Minimum Value: 0.2 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 12/18/97

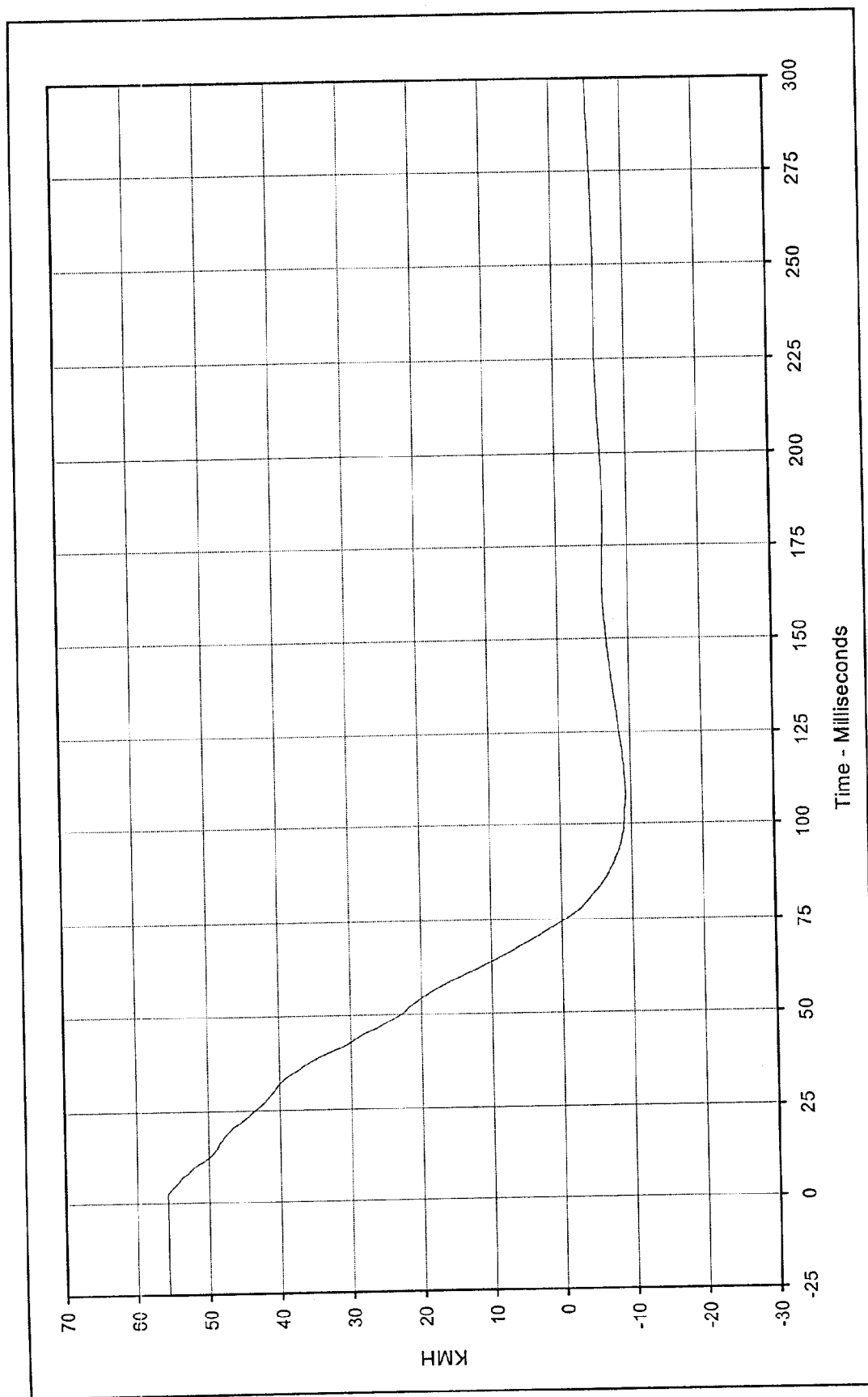
Curve Number: IN2-089





Curve Description:	Vehicle Right Rear Primary	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	2.3 at 123.4 Milliseconds	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-32.9 at 40.5 Milliseconds			
SAE Filler Class:	60			
Date of Test:	12/18/97			
Curve Number:	FIL-090			





Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

Curve Description: Vehicle Right Rear Primary Velocity

Maximum Value: 55.8 at 1.8 Milliseconds

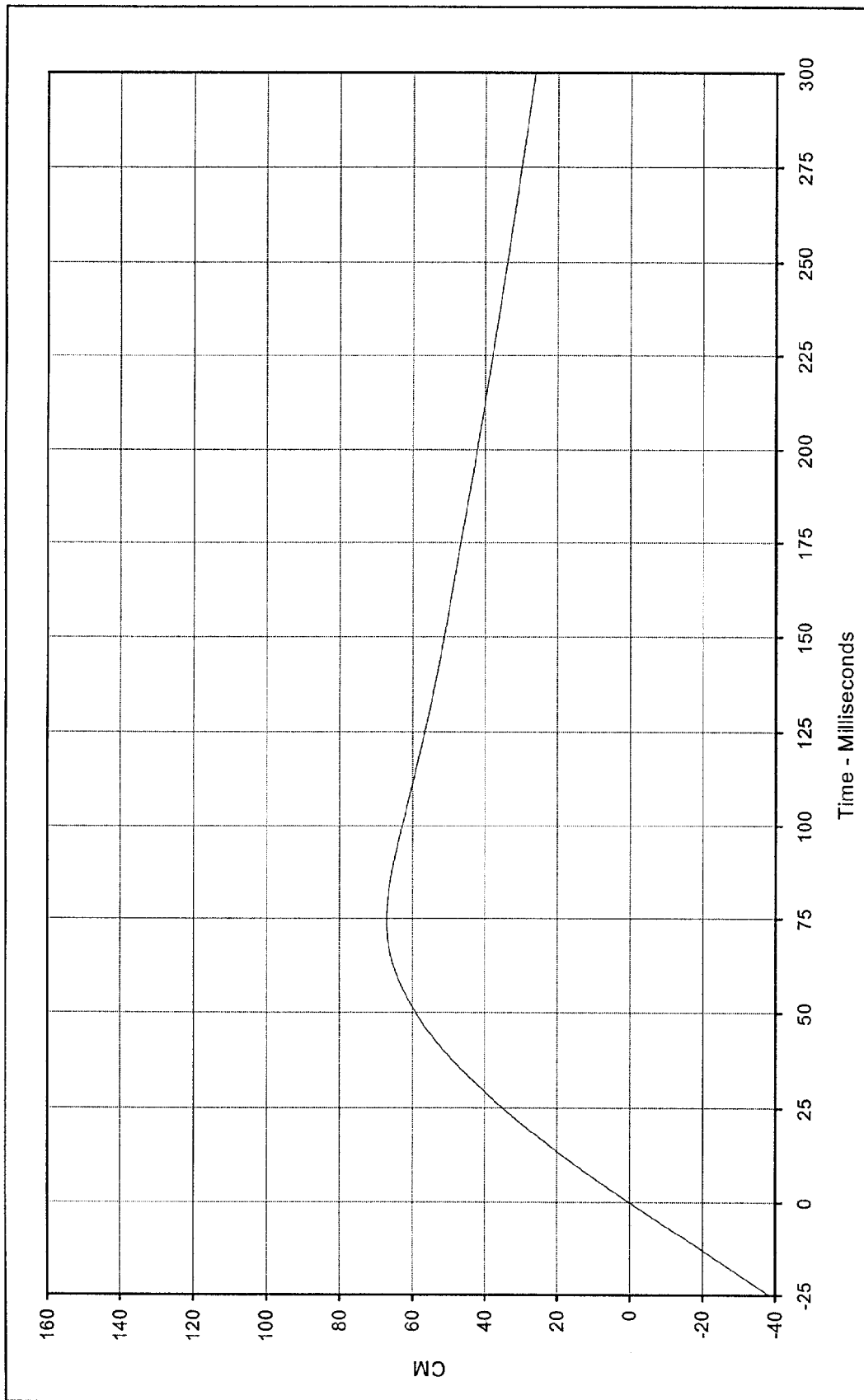
Minimum Value: -9.2 at 108.1 Milliseconds

SAE Filter Class: 180

Date of Test: 12/18/97

Curve Number: IN1-090

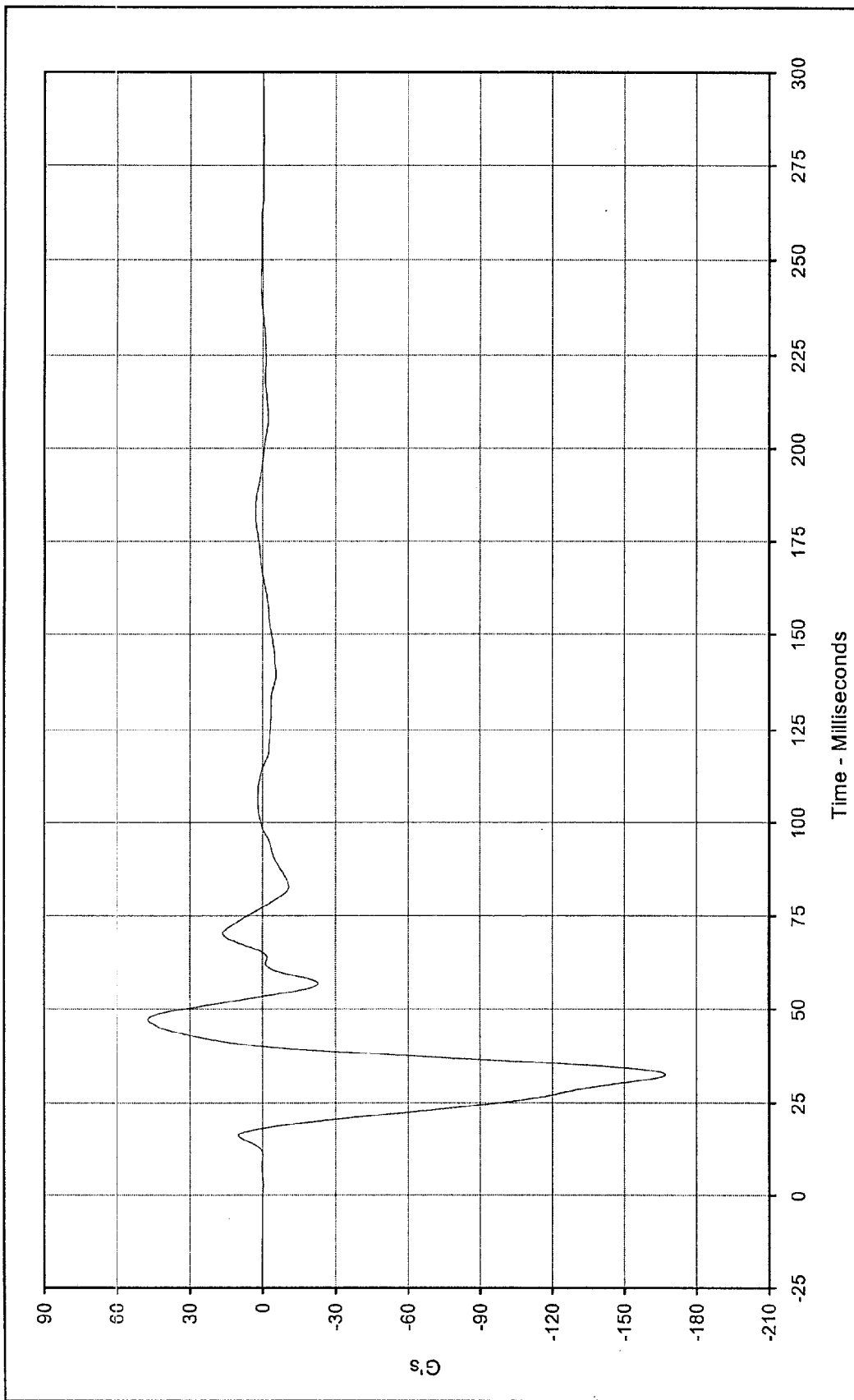




Curve Description: Vehicle Right Rear Primary Displ.
Maximum Value: 67.1 at 74.4 Milliseconds
Minimum Value: 0.1 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/18/97
Curve Number: IN2-090

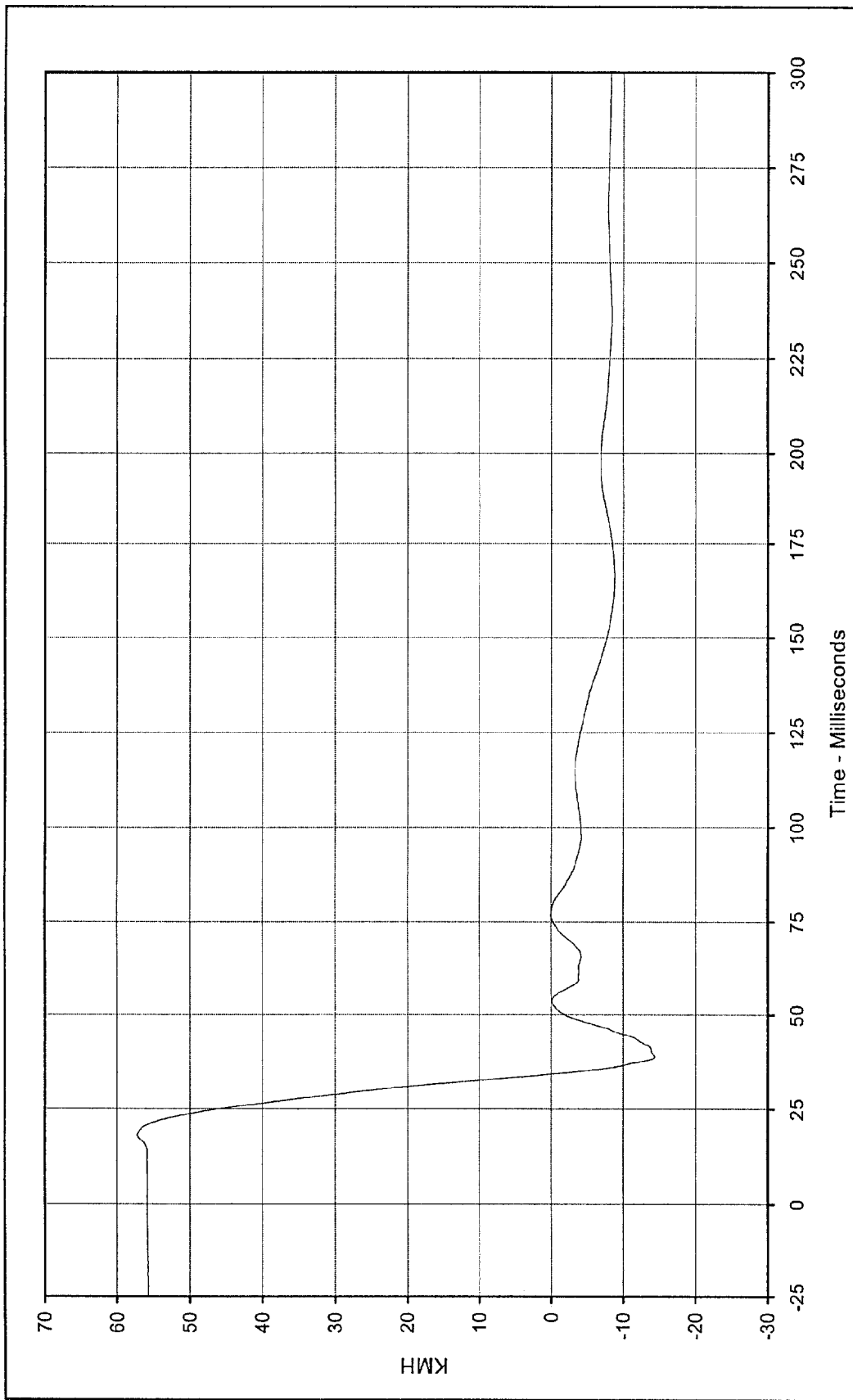
Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108
Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: _____ Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Maximum Value: 47.3 at 47.2 Milliseconds
 Minimum Value: -167.0 at 32.5 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/18/97
 Curve Number: FIL-091





Curve Description: Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 57.2 at 17.9 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

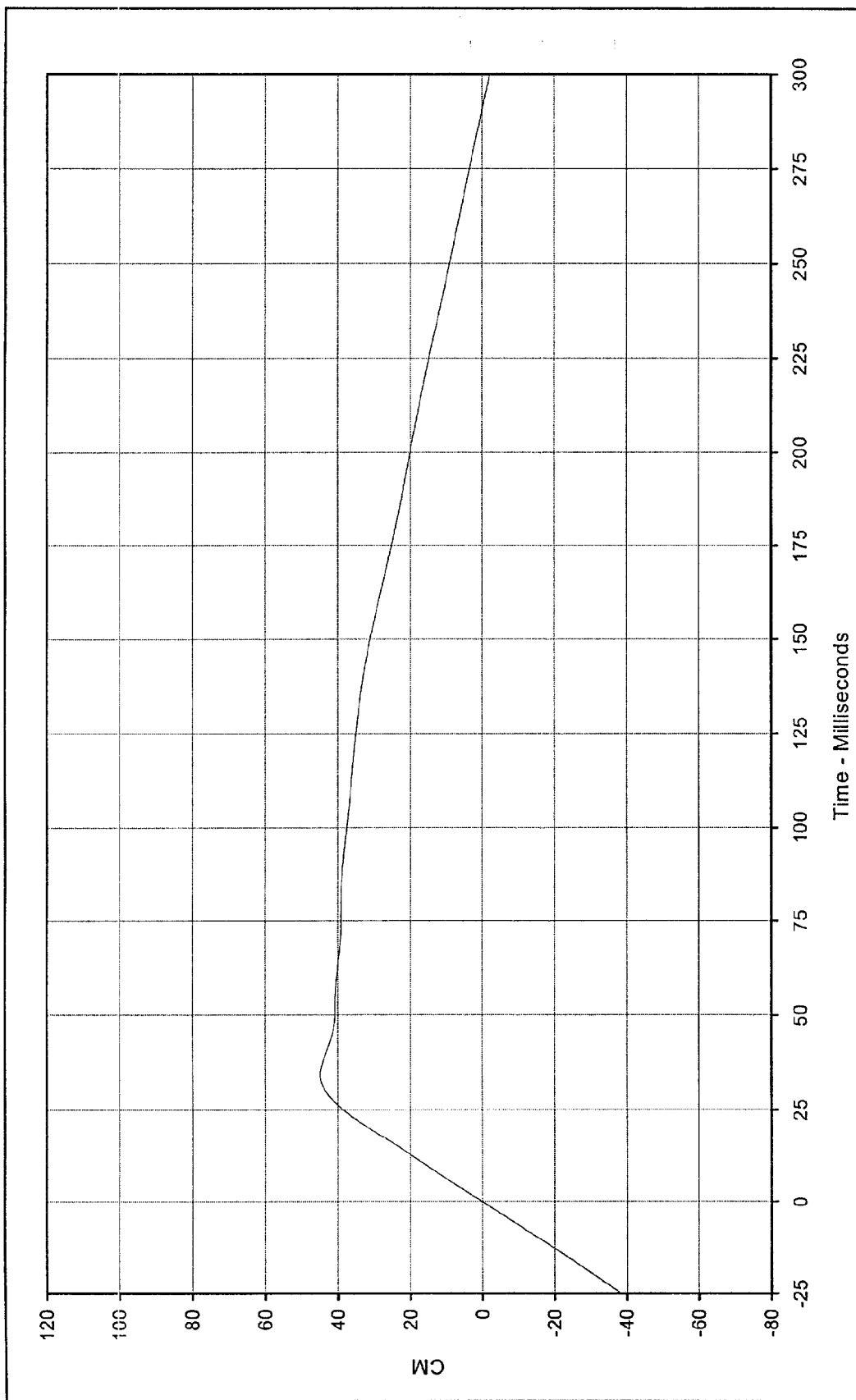
Minimum Value: -14.4 at 38.8 Milliseconds

SAE Filter Class: 180

Date of Test: 12/18/97

Curve Number: IN1-091





Curve Description: _____ Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 44.9 at 34.3 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

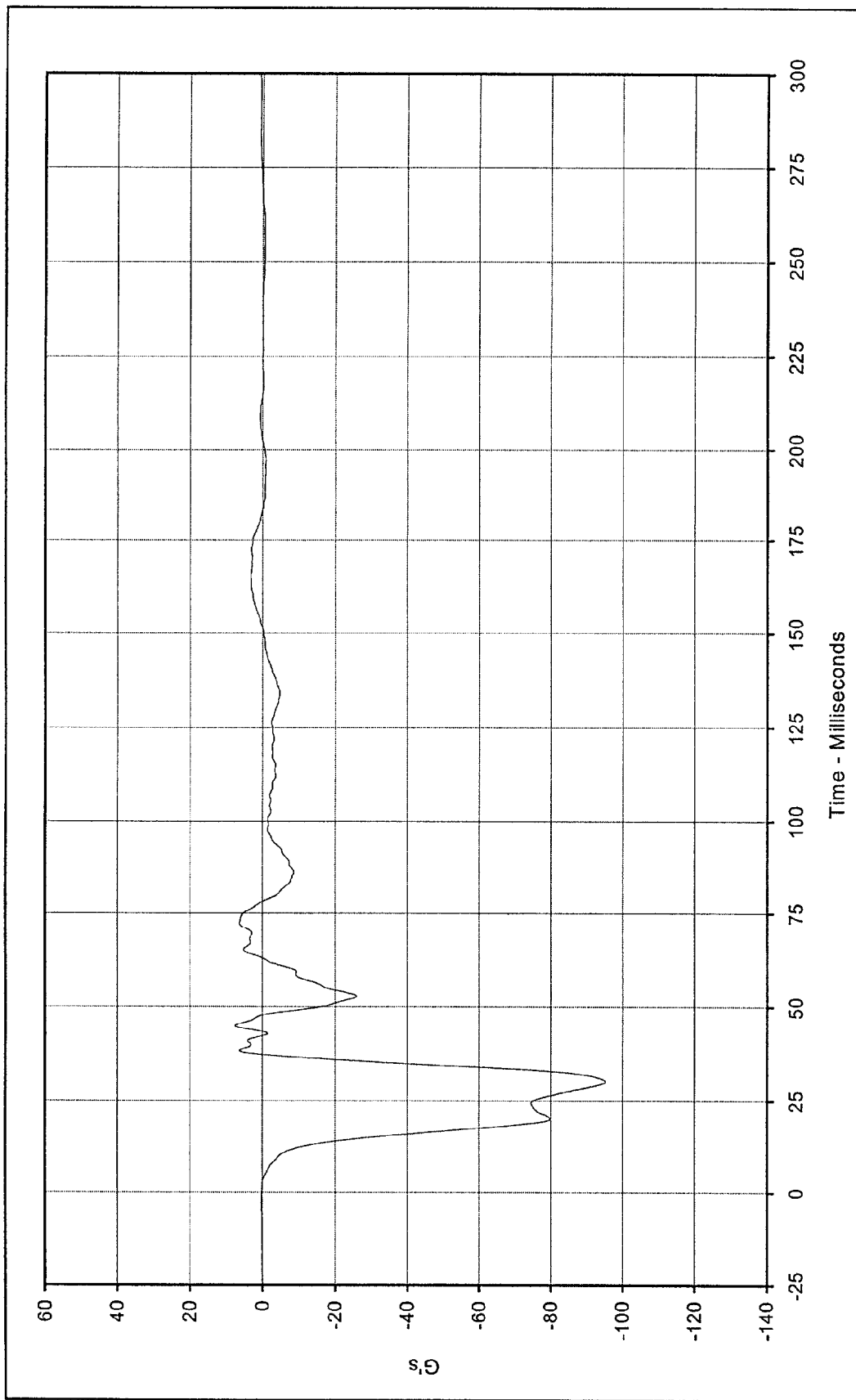
Minimum Value: -2.1 at 299.9 Milliseconds

SAE Filter Class: 180

Date of Test: 12/18/97

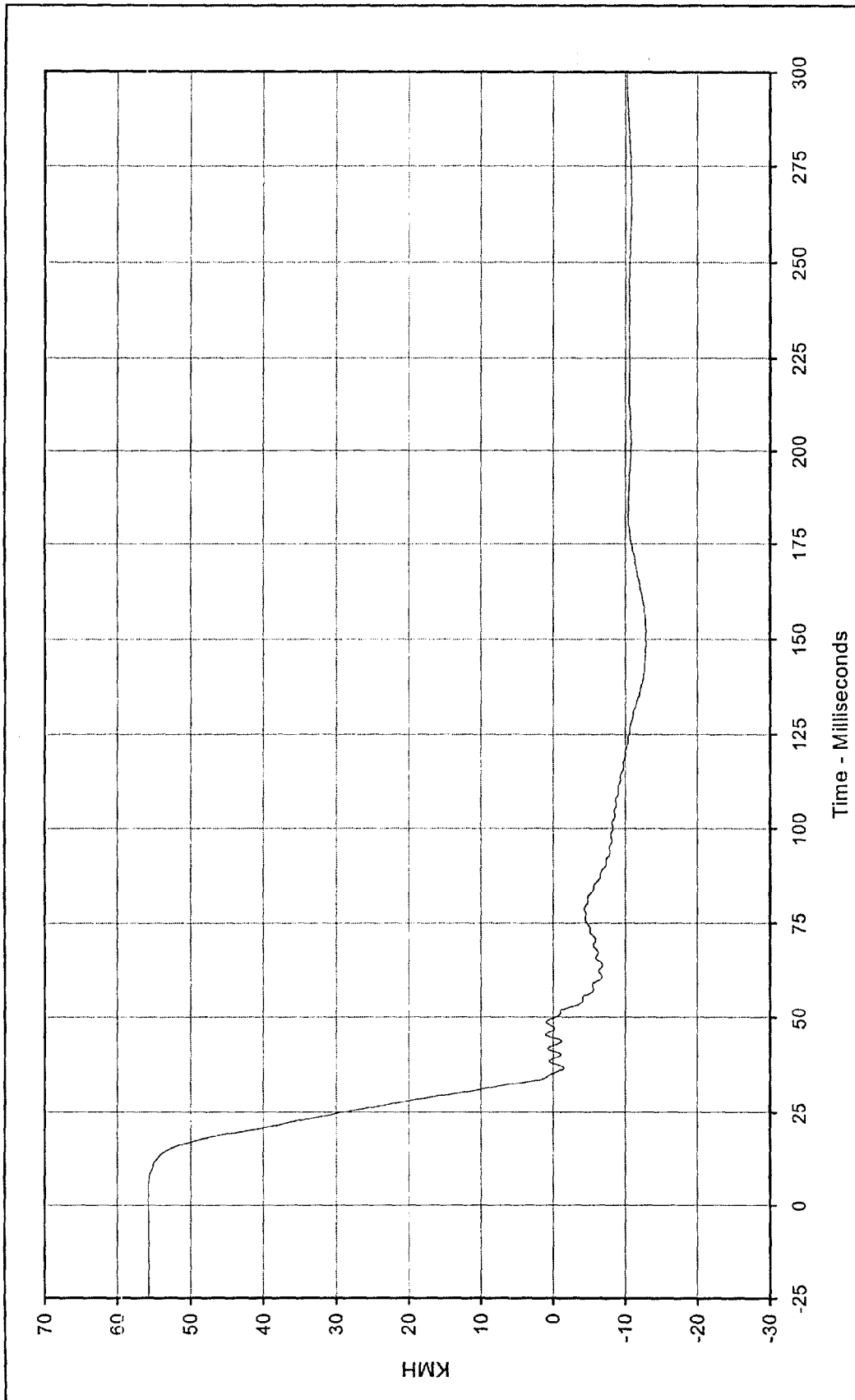
Curve Number: IN2-091





Curve Description:	Vehicle Engine Bottom		Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	7.6	at 45.0	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Minimum Value:	-95.2	at 30.1			
SAE Filter Class:	60				
Date of Test:	12/18/97				
Curve Number:	FIL-092				

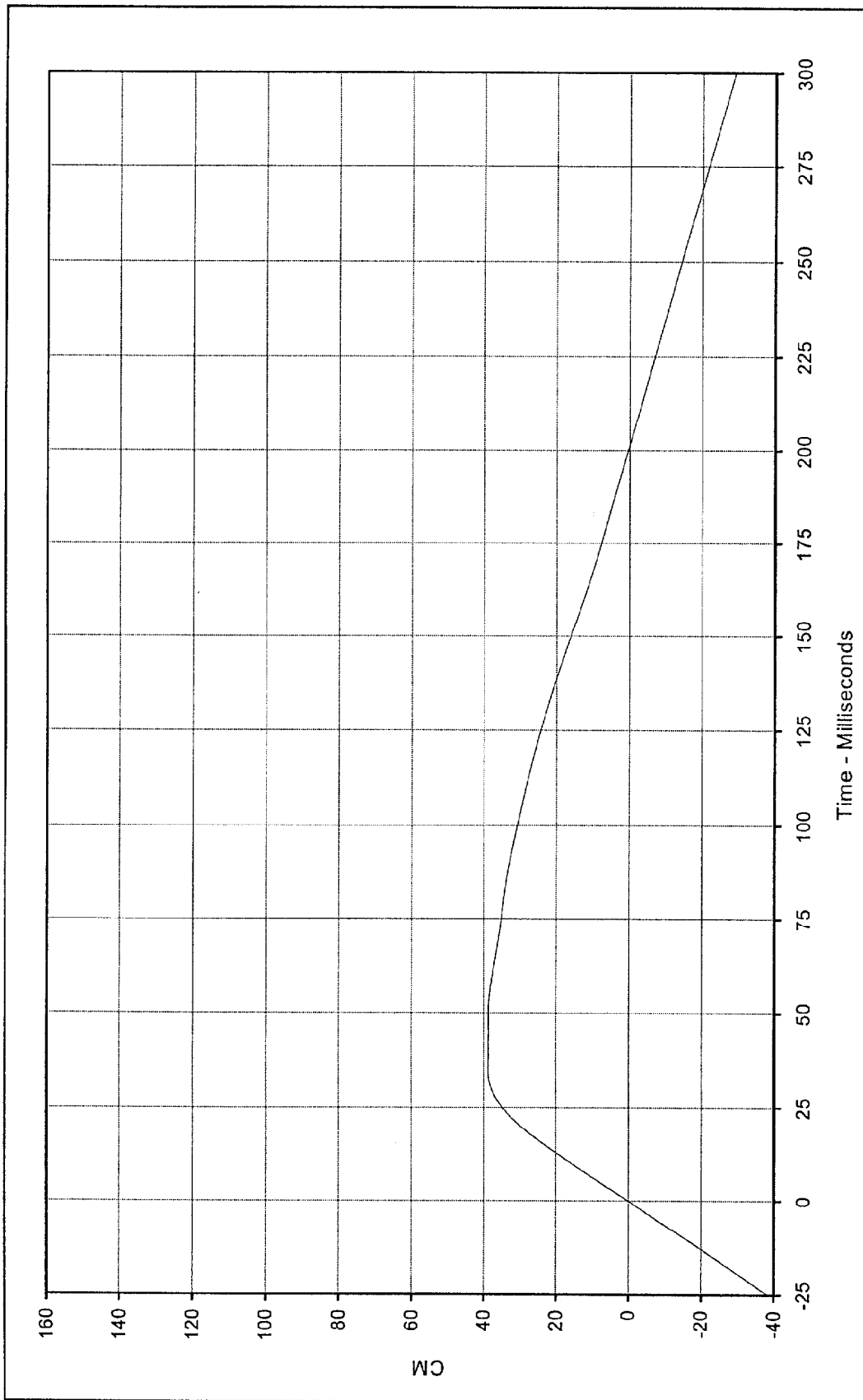




Curve Description: Vehicle Engine Bottom Velocity
 Maximum Value: 55.8 at 4.6 Milliseconds
 Minimum Value: -12.9 at 151.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN1-092

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Vehicle Engine Bottom Displ.

Maximum Value: 38.7 at 35.5 Milliseconds

Minimum Value: -29.0 at 299.9 Milliseconds

SAE Filter Class: 180

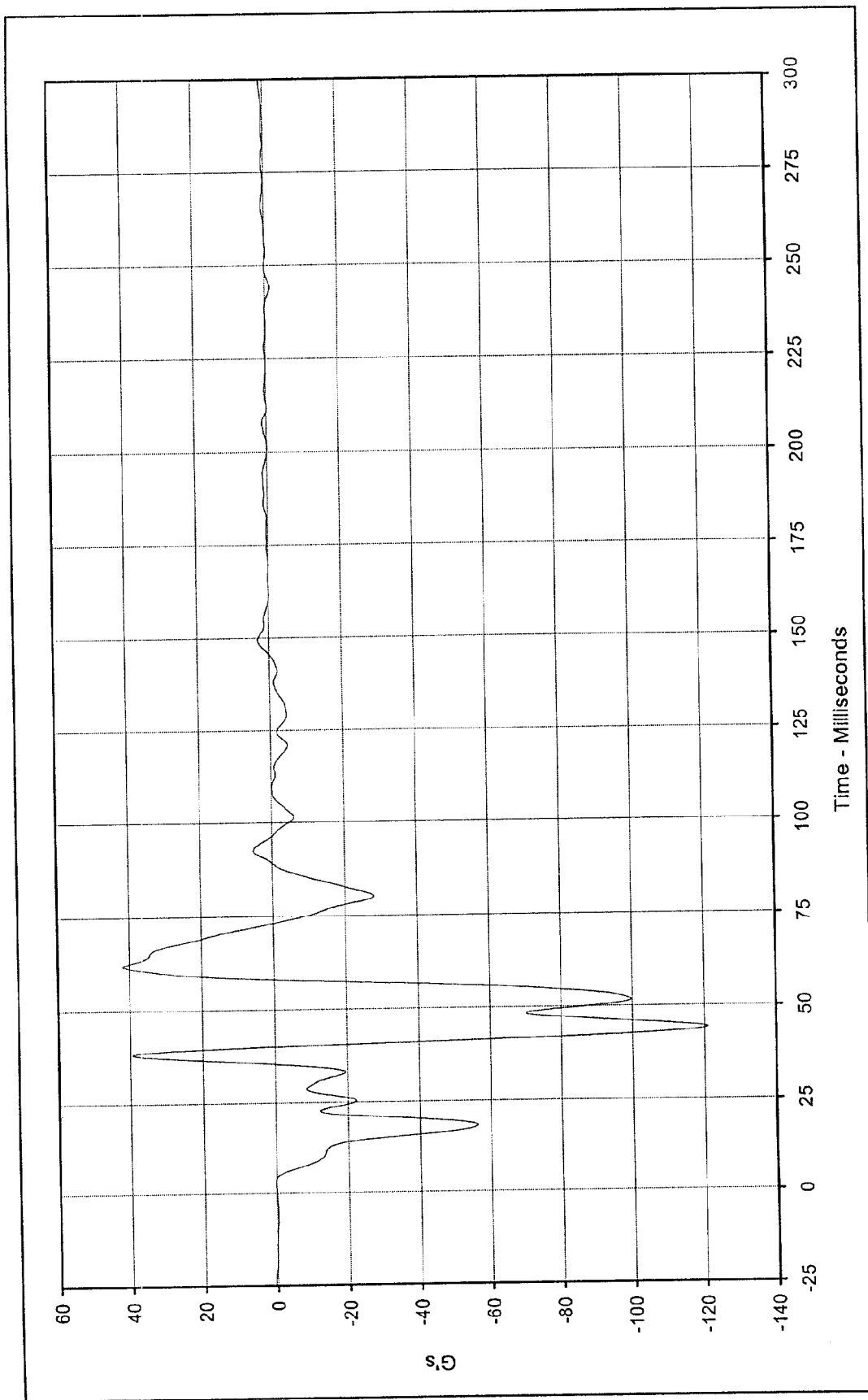
Date of Test: 12/18/97

Curve Number: IN2-092

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

Curve Description: Vehicle Left Brake Caliper

Maximum Value: 41.8 at 61.9 Milliseconds

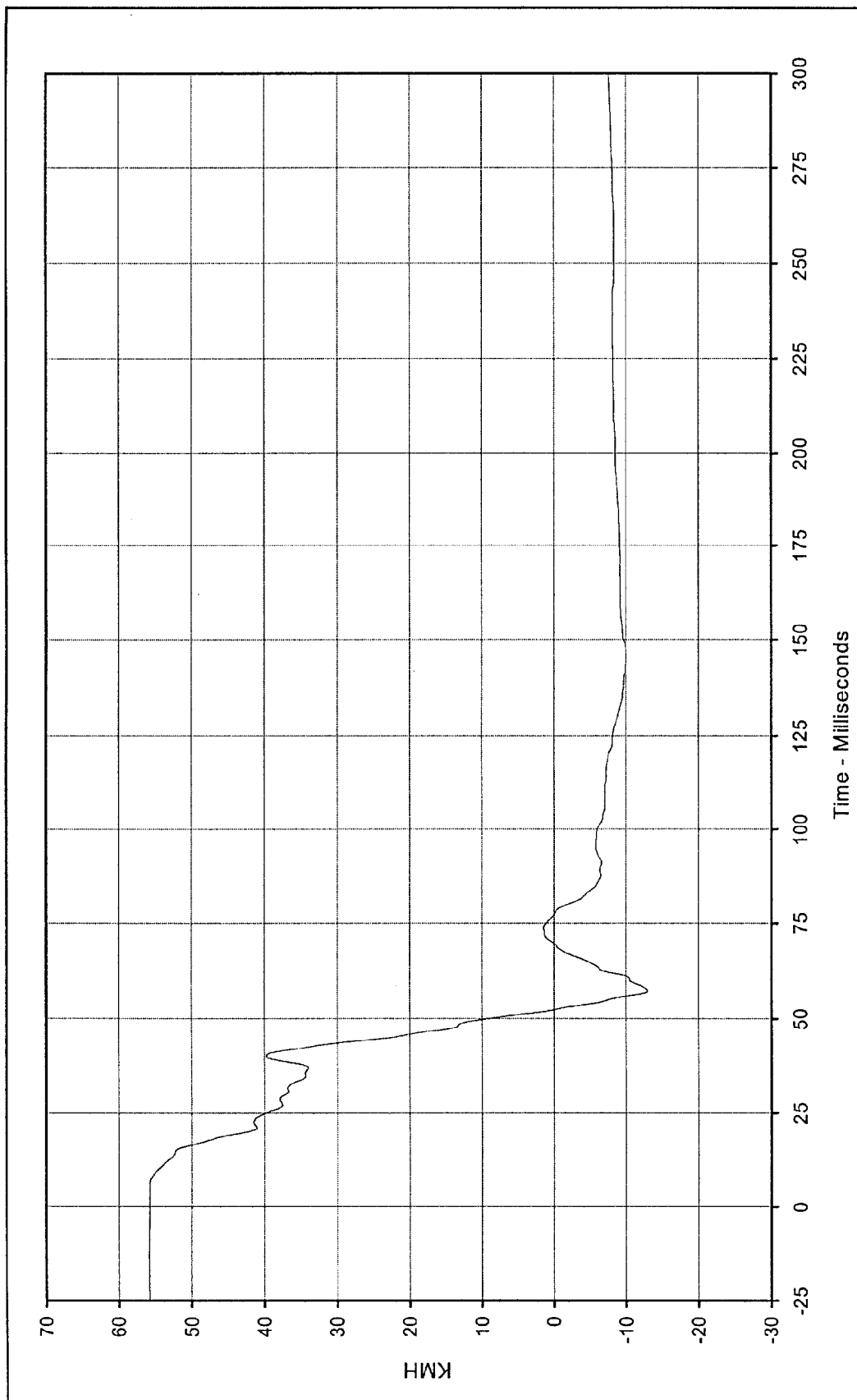
Minimum Value: -121.0 at 44.1 Milliseconds

SAE Filter Class: 60

Date of Test: 12/18/97

Curve Number: FIL-093





Curve Description: Vehicle Left Brake Caliper Velocity Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 55.7 at 0.0 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

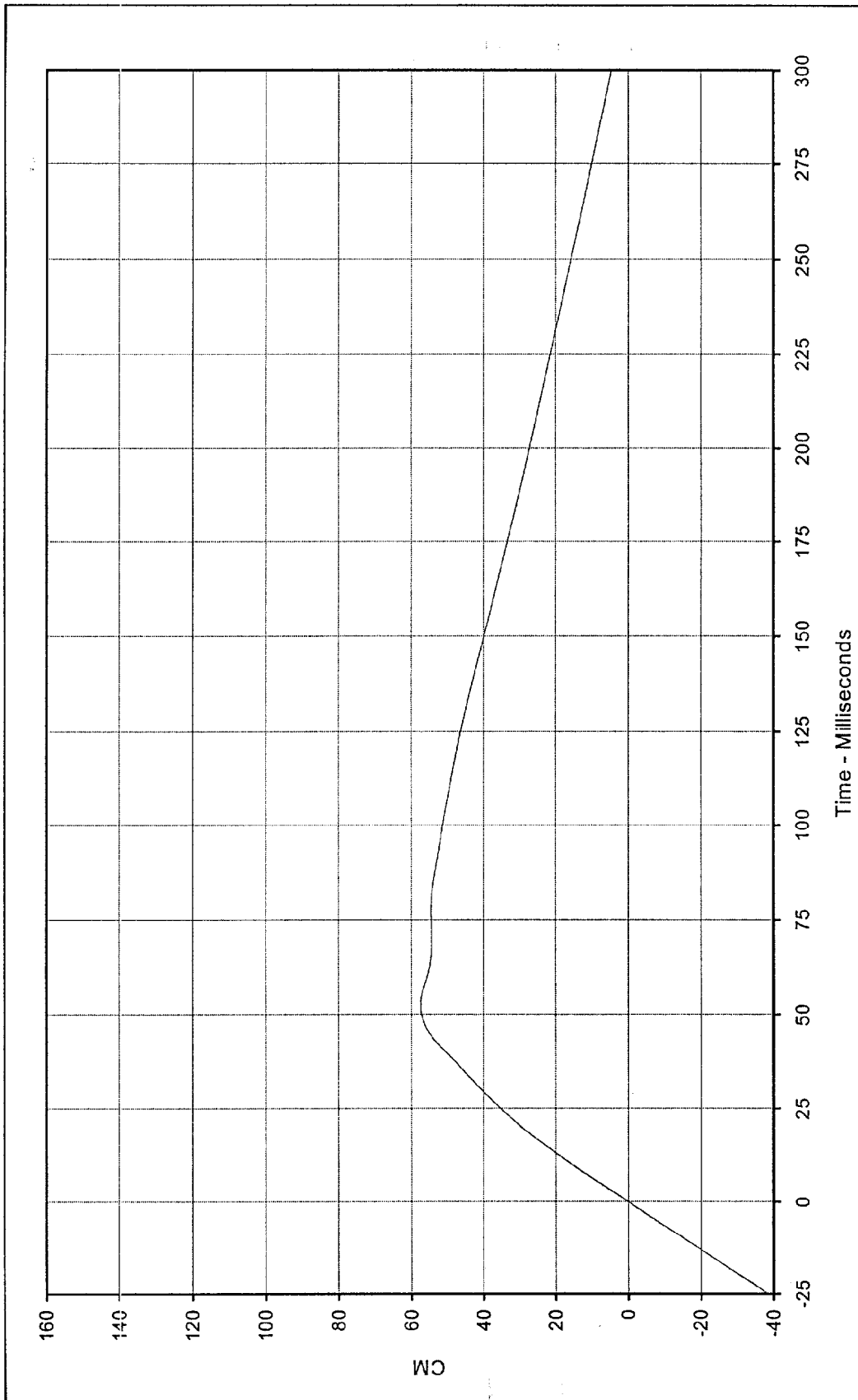
Minimum Value: -13.0 at 57.3 Milliseconds

SAE Filter Class: 180

Date of Test: 12/18/97

Curve Number: IN1-093

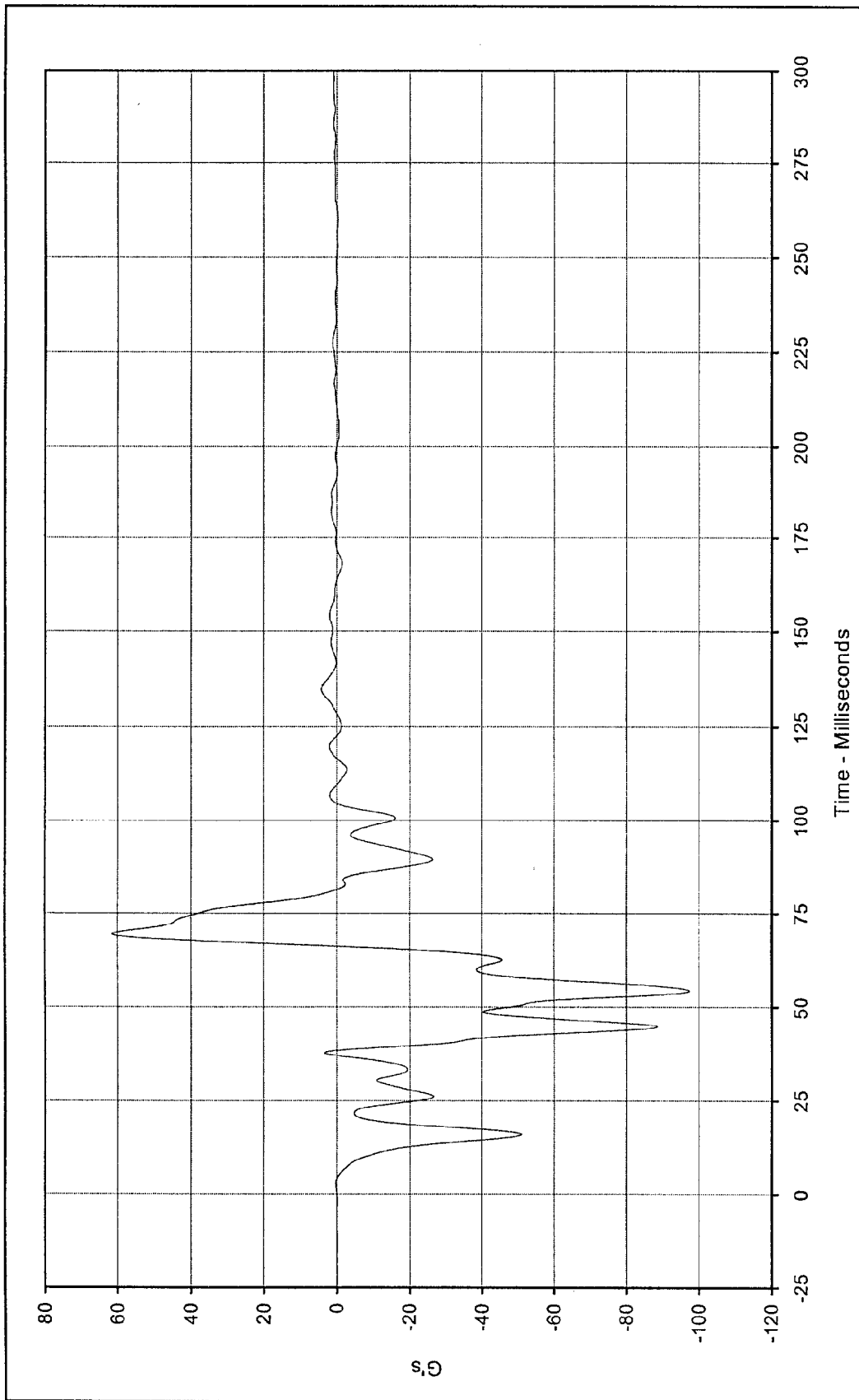




Curve Description: Vehicle Left Brake Caliper Displ.
 Maximum Value: 57.4 at 52.4 Milliseconds
 Minimum Value: 0.1 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN2-093

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Vehicle Right Brake Caliper Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108

Maximum Value: 61.5 at 69.4 Milliseconds Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

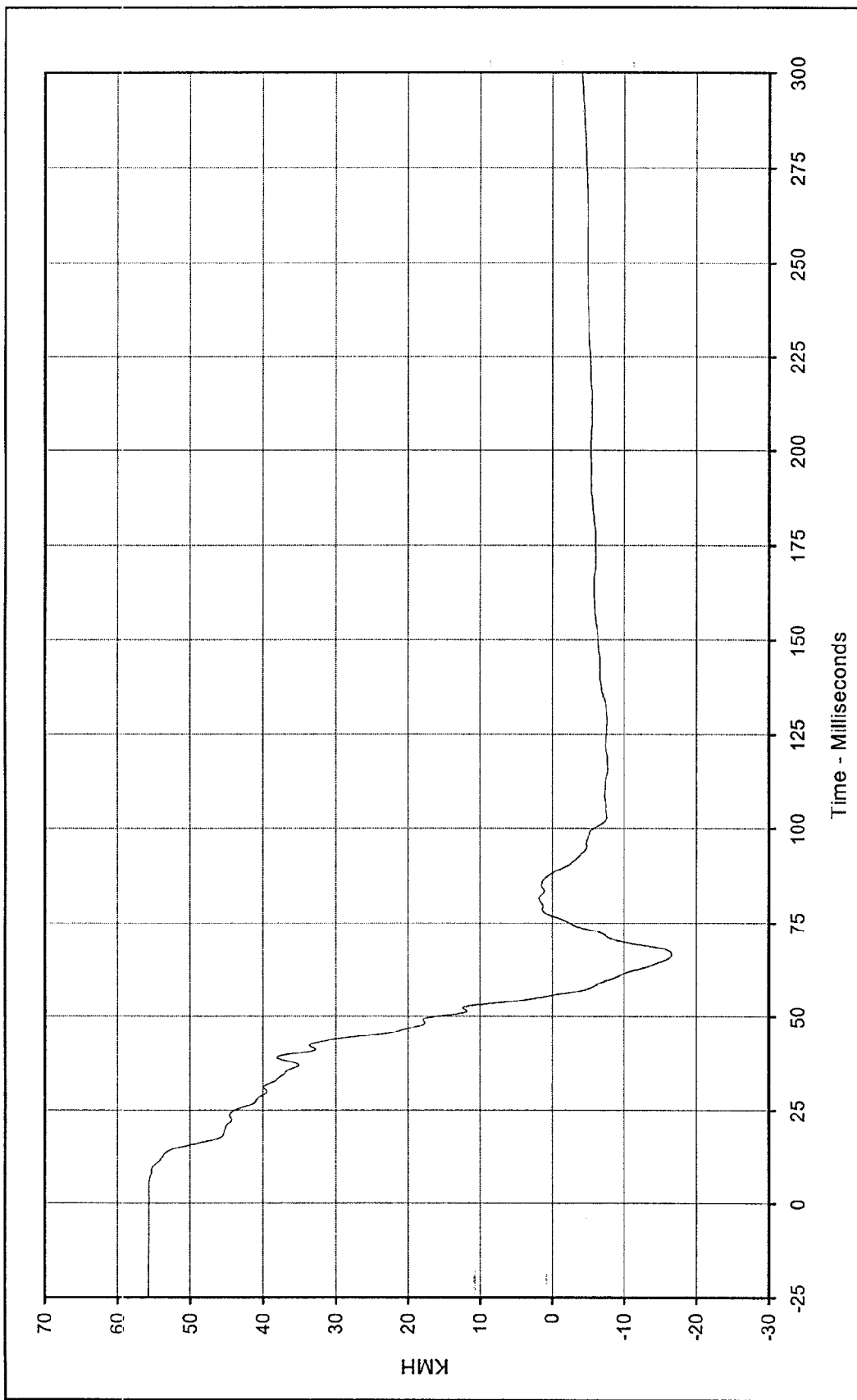
Minimum Value: -97.4 at 54.4 Milliseconds

SAE Filter Class: 60

Date of Test: 12/18/97

Curve Number: FIL-094

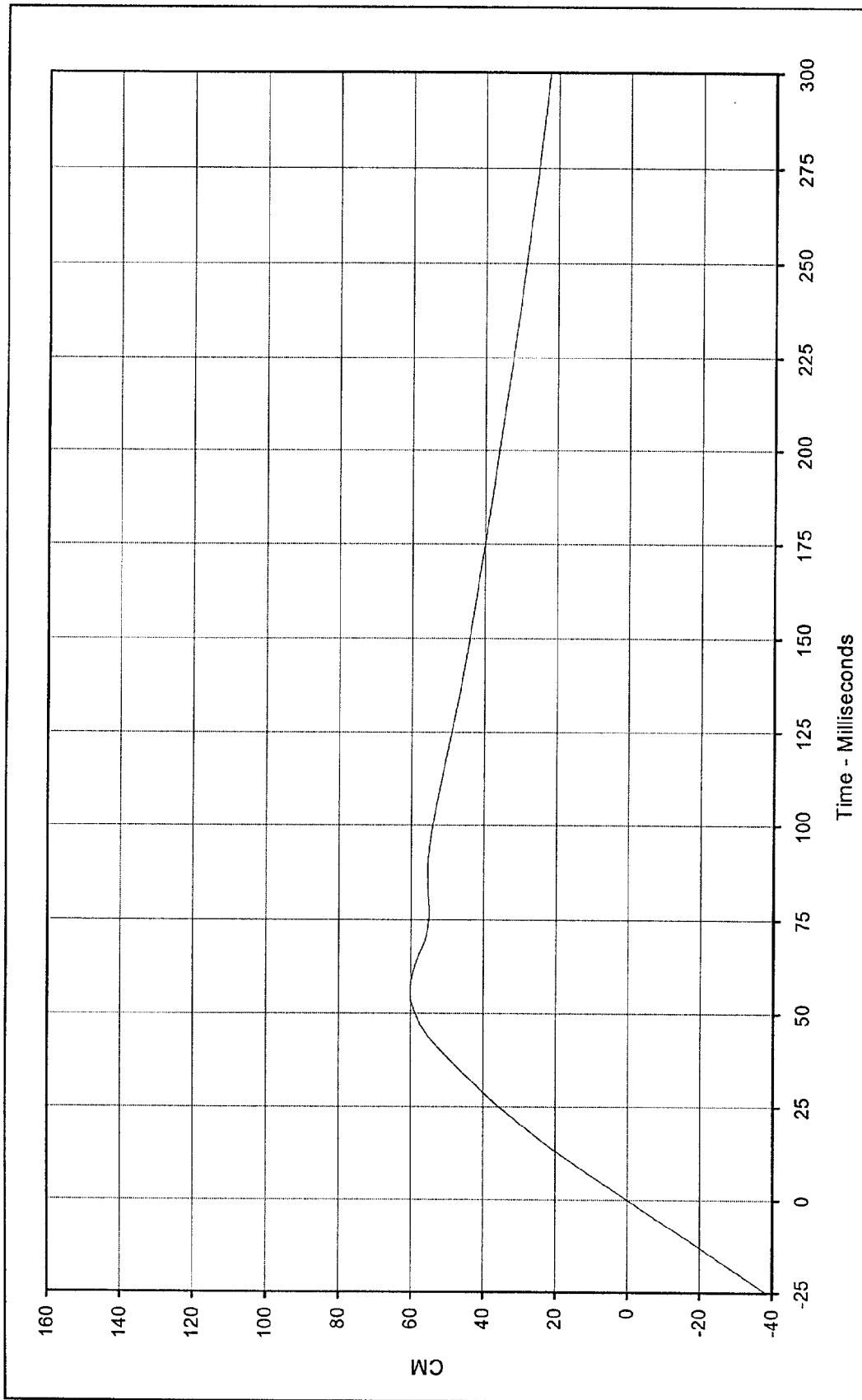




Curve Description: Vehicle Right Brake Caliper Velocity
 Maximum Value: 55.7 at 5.1 Milliseconds
 Minimum Value: -16.6 at 66.5 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN1-094

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

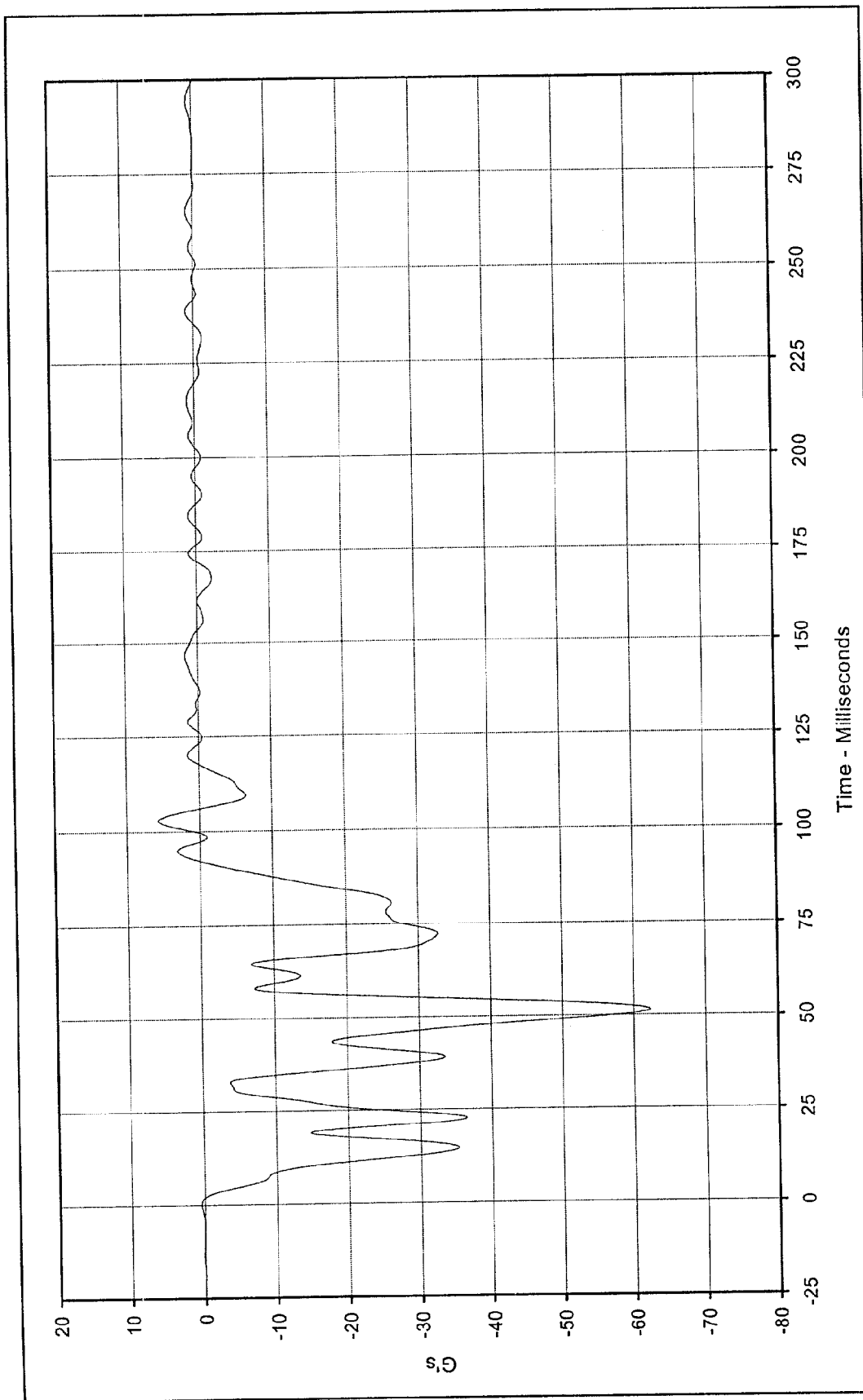




Curve Description: Vehicle Right Brake Caliper Displ.
 Maximum Value: 60.2 at 55.6 Milliseconds
 Minimum Value: 0.1 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN2-094

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

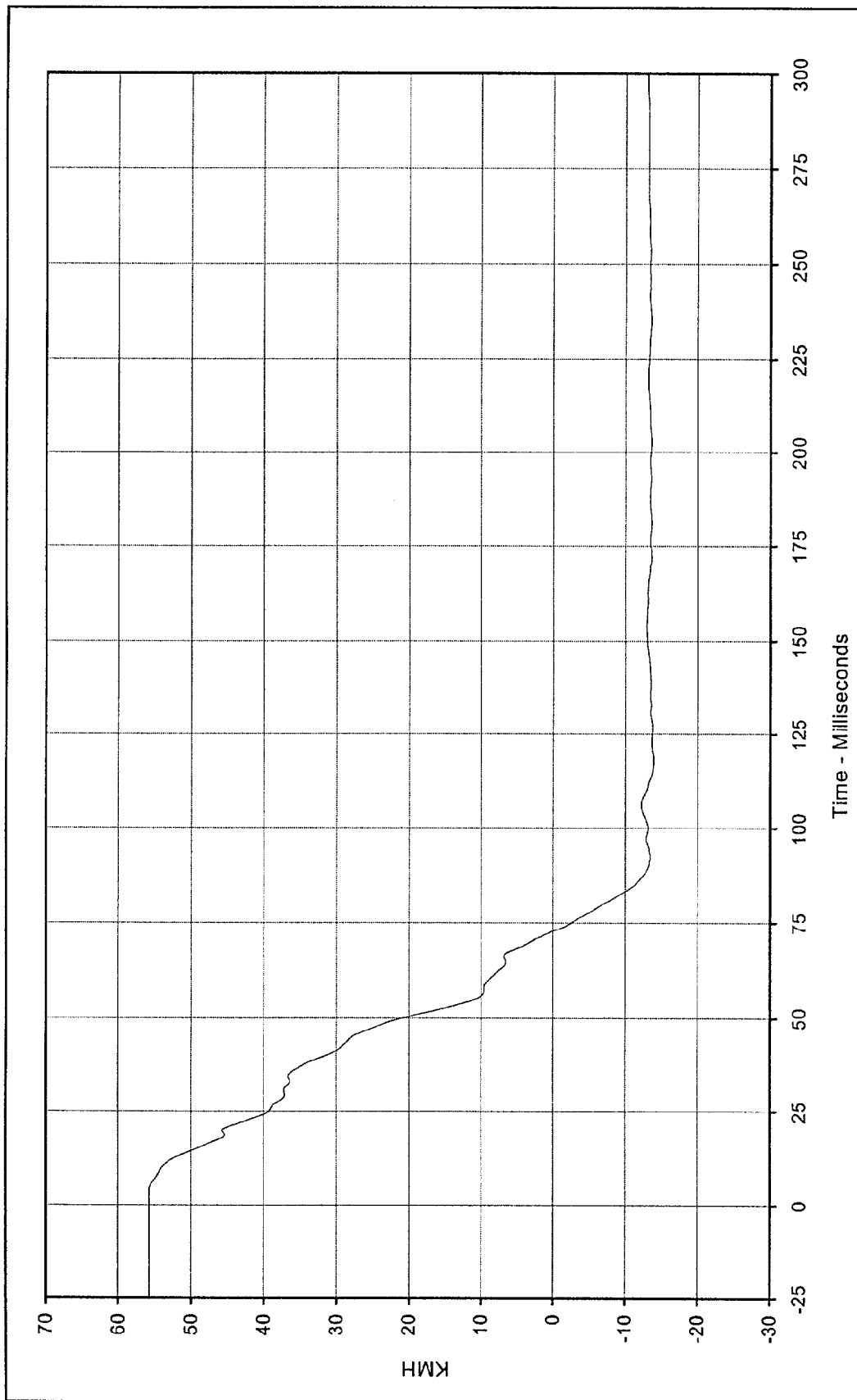




Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

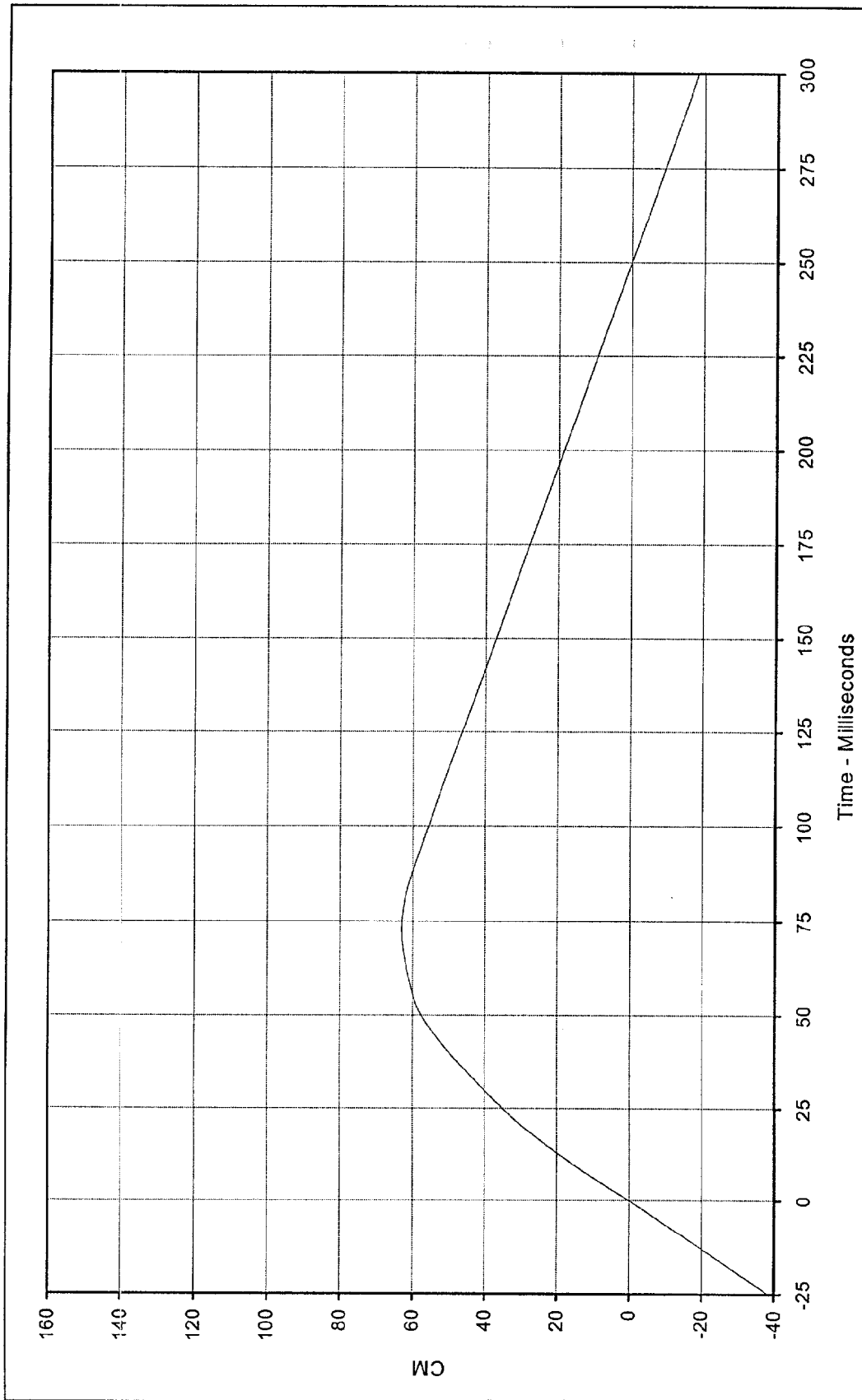


Curve Description: Vehicle Instrument Panel
 Maximum Value: 5.7 at 103.0 Milliseconds
 Minimum Value: -62.3 at 51.5 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/18/97
 Curve Number: FIL-095



Curve Description:	Vehicle Instrument Panel Velocity	Testing Program	1988 NHTSA 35 mph NCAP	No.: MW5108
Maximum Value:	55.8	at	3.2	Milliseconds
Minimum Value:	-13.9	at	118.1	Milliseconds
SAE Filter Class:	180			
Date of Test:	12/18/97	Test Vehicle:	1998 Toyota Avalon XL 4 Door Sedan	
Curve Number:	IN1-095			





Curve Description: Vehicle Instrument Panel Displ.

Maximum Value: 63.0 at 72.7 Milliseconds

Minimum Value: -18.2 at 299.9 Milliseconds

SAE Filter Class: 180

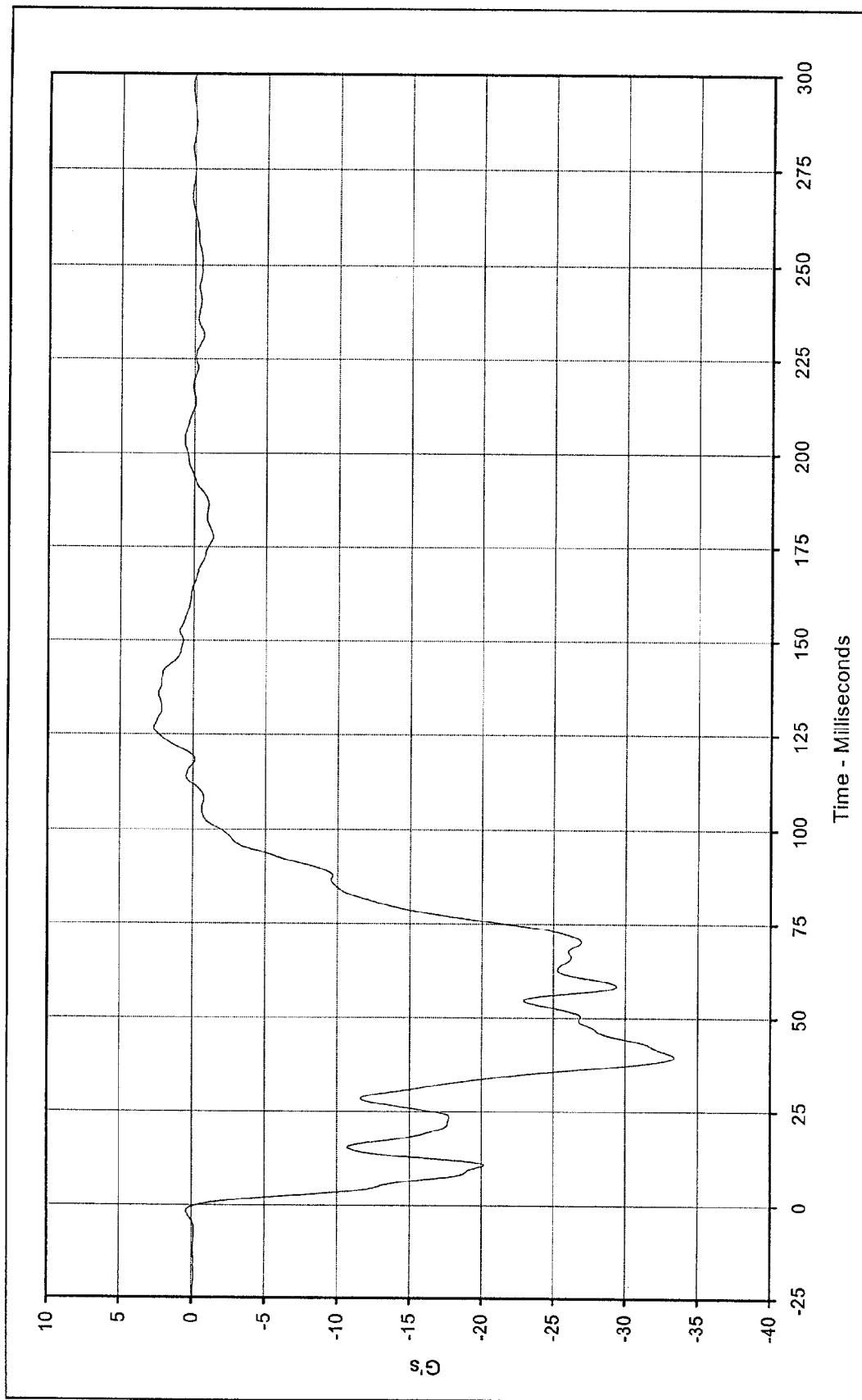
Date of Test: 12/18/97

Curve Number: IN2-095

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Vehicle Left Rear Redundant

Maximum Value: 2.7 at 126.9 Milliseconds

Minimum Value: -33.4 at 39.7 Milliseconds

SAE Filter Class: 60

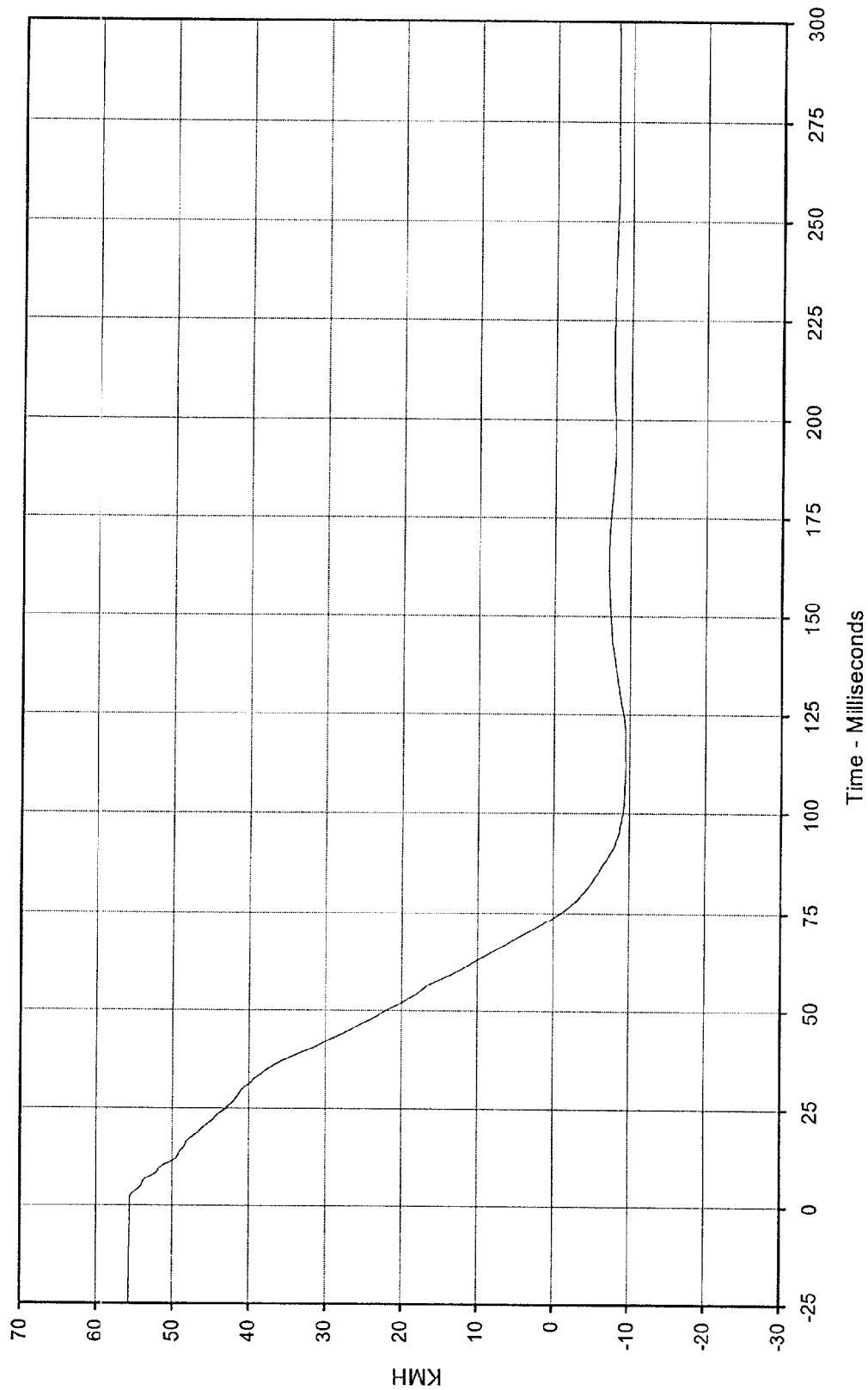
Date of Test: 12/18/97

Curve Number: FIL-096

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108

Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

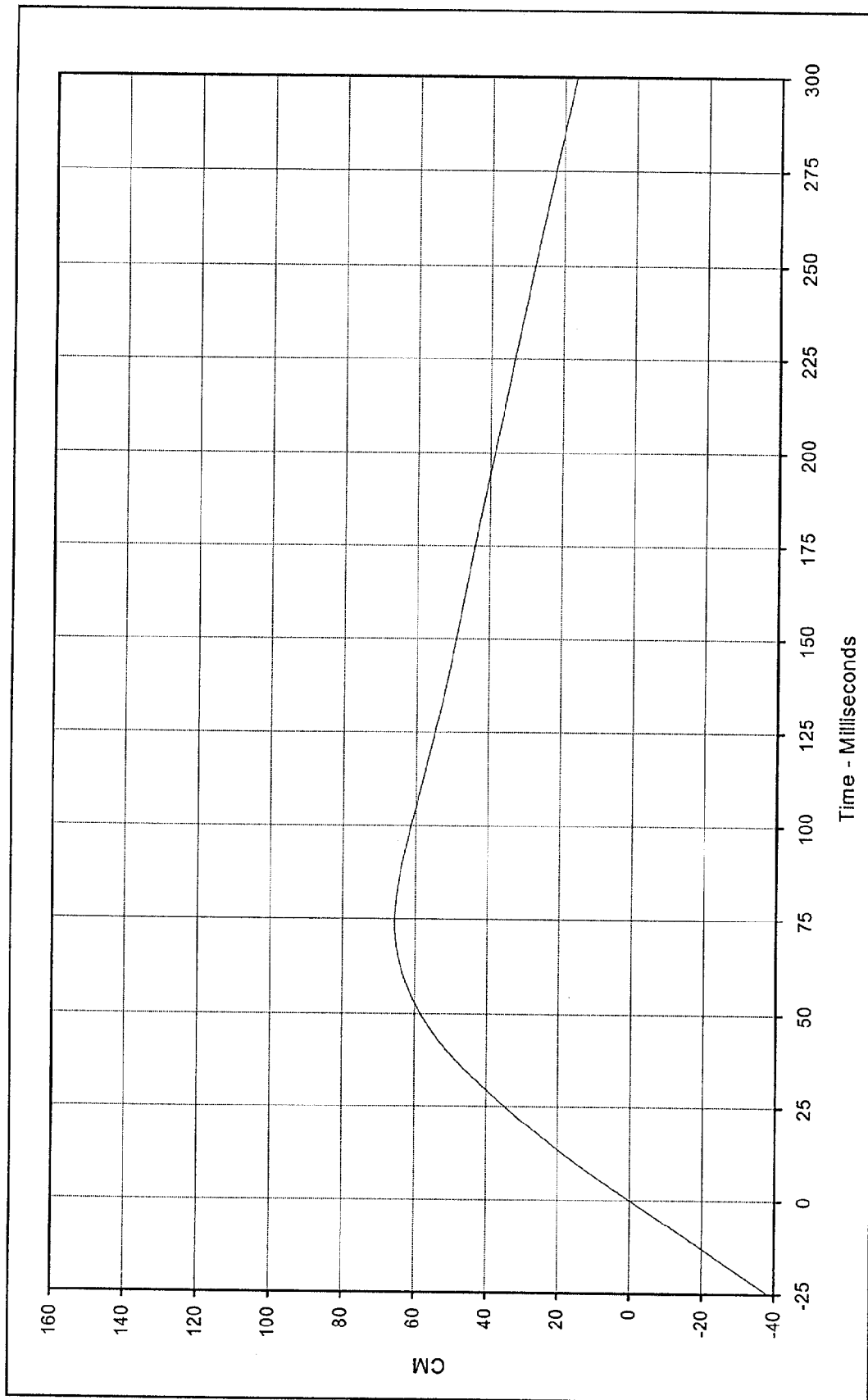




Curve Description: Vehicle Left Rear Redundant Velocity
 Maximum Value: 55.6 at 1.5 Milliseconds
 Minimum Value: -9.5 at 112.3 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN1-096

Testing Program 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan





Curve Description: Vehicle Left Rear Redundant Displ.
 Maximum Value: 65.6 at 73.8 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 12/18/97
 Curve Number: IN2-096

Testing Program: 1988 NHTSA 35 mph NCAP No.: MW5108
 Test Vehicle: 1998 Toyota Avalon XL 4 Door Sedan



APPENDIX C
DEFORMABLE BARRIER DATA

APPENDIX D
INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

**Ncap Test With Hybrid III Male 50th Percentile ATD
Instrumentation Data Channel Assignments**

Driver A.T.D Serial Number 35

Test Date: 12/18/97

Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD, PRIMARY	X	GPAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
2	HEAD, PRIMARY	Y	GPAC002	Accel., 1/2 bridge	Endevco	7264-2000	G
3	HEAD, PRIMARY	Z	GPAC003	Accel., 1/2 bridge	Endevco	7264-2000	G
4	HEAD, REDUNDANT	X	GPAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
5	HEAD, REDUNDANT	Y	GPAC021	Accel., 1/2 bridge	Endevco	7264-2000	G
6	HEAD, REDUNDANT	Z	GPAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
7	NECK FORCE	X	GPUN01FX	Load cell, six axis neck	R. A. Denton	1716A	N
8	NECK FORCE	Y	GPUN01FY	Load cell, six axis neck	R. A. Denton	1716A	N
9	NECK FORCE	Z	GPUN01FZ	Load cell, six axis neck	R. A. Denton	1716A	N
10	NECK MOMENT	X	GPUN01MX	Load cell, six axis neck	R. A. Denton	1716A	N.m
11	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	N.m
12	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	N.m
13	CHEST, PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
14	CHEST, PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
15	CHEST, PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
16	CHEST, REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-2000	G
17	CHEST, REDUNDANT	Y	GPAC023	Accel., 1/2 bridge	Endevco	7264-2000	G
18	CHEST, REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
19	CHEST DISPLACEMENT	X	GPRP001	Potentiometer, Rotary	Servo	14CBI	MM
20	PELVIS, PRIMARY	X	GPAC025	Accel., 1/2 bridge	Endevco	7264-2000	G
21	PELVIS, PRIMARY	Y	GPAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
22	PELVIS, PRIMARY	Z	GPAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
23	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
24	RIGHT FEMUR FORCE	Z	GPLC001	Load cell, Femur	G.S.E.	2430	N

**Ncap Test With Hybrid III Male 50th Percentile ATD
Instrumentation Data Channel Assignments**

Driver A.T.D Serial Number 35

Test Date: 12/18/97

Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
25	UP. TIBIA LEFT MOM.	X	GPUT01MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
26	UP. TIBIA LEFT MOM.	Y	GPUT01MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
27	UP. TIBIA RIGHT MOM.	X	GPUT02MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
28	UP. TIBIA RIGHT MOM.	Y	GPUT02MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
29	LWR. TIBIA LEFT FORCE	Y	GPLT01FY	3 ch., lower tibia gage	R. A. Denton	1584	N
30	LWR. TIBIA LEFT FORCE	Z	GPLT01FZ	3 ch., lower tibia gage	R. A. Denton	1584	N
31	LWR. TIBIA LEFT MOM.	X	GPLT01MX	3 ch., lower tibia gage	R. A. Denton	1584	N.m
32	LWR. TIBIA RIGHT FORCE	Y	GPLT02FY	3 ch., lower tibia gage	R. A. Denton	1584	N
33	LWR. TIBIA RIGHT FORCE	Z	GPLT02FZ	3 ch., lower tibia gage	R. A. Denton	1584	N
34	LWR. TIBIA RIGHT MOM.	X	GPLT02MX	3 ch., lower tibia gage	R. A. Denton	1584	N.m
35	FOOT LEFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT	Y	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT	Y	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	LAP BELT FORCE	X	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

Ncap Test With Hybrid III Male 50th Percentile ATD

Instrumentation Data Channel Assignments

Passenger A.T.D Serial Number 34

Test Date: 12/18/97

Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
45	HEAD, PRIMARY	X	KEAC039	Accel., 1/2 bridge	Endevco	7264-2000	G
46	HEAD, PRIMARY	Y	KEAC038	Accel., 1/2 bridge	Endevco	7264-2000	G
47	HEAD, PRIMARY	Z	KEAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
48	HEAD, REDUNDANT	X	KEAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
49	HEAD, REDUNDANT	Y	KEAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
50	HEAD, REDUNDANT	Z	KEAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
51	NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
52	NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
53	NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
54	NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	N.m
55	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	N.m
56	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	N.m
57	CHEST, PRIMARY	X	GPAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
58	CHEST, PRIMARY	Y	GPAC024	Accel., 1/2 bridge	Endevco	7264-2000	G
59	CHEST, PRIMARY	Z	GPAC029	Accel., 1/2 bridge	Endevco	7264-2000	G
60	CHEST, REDUNDANT	X	KEAC023	Accel., 1/2 bridge	Endevco	7264-200	G
61	CHEST, REDUNDANT	Y	KEAC022	Accel., 1/2 bridge	Endevco	7264-200	G
62	CHEST, REDUNDANT	Z	KEAC024	Accel., 1/2 bridge	Endevco	7264-200	G
63	CHEST DISPLACEMENT	X	GPRP002	Potentiometer, Rotary	Servo	14CBI	MM
64	PELVIS, PRIMARY	X	GPAC009	Accel., 1/2 bridge	Endevco	7264-2000	G
65	PELVIS, PRIMARY	Y	GPAC017	Accel., 1/2 bridge	Endevco	7264-2000	G
66	PELVIS, PRIMARY	Z	GPAC018	Accel., 1/2 bridge	Endevco	7264-2000	G
67	LEFT FEMUR FORCE	Z	KEFF003	Load cell, Femur	R.A. Denton	2121	N
68	RIGHT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2121	N

**Ncap Test With Hybrid III Male 50th Percentile ATD
Instrumentation Data Channel Assignments**

Passenger A.T.D Serial Number 34

Test Date: 12/18/97

Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPUT03MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
70	UP. TIBIA LEFT MOM.	Y	GPUT03MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
71	UP. TIBIA RIGHT MOM.	X	GPUT04MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
72	UP. TIBIA RIGHT MOM.	Y	GPUT04MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
73	LWR. TIBIA LEFT FORCE	Y	GPUT03FY	3 ch., lower tibia gage	R. A. Denton	1584	N
74	LWR. TIBIA LEFT FORCE	Z	GPUT03FZ	3 ch., lower tibia gage	R. A. Denton	1584	N
75	LWR. TIBIA LEFT MOM.	X	GPUT03MX	3 ch., lower tibia gage	R. A. Denton	1584	N.m
76	LWR. TIBIA RIGHT FORCE	Y	GPUT04FY	3 ch., lower tibia gage	R. A. Denton	1584	N
77	LWR. TIBIA RIGHT FORCE	Z	GPUT04FZ	3 ch., lower tibia gage	R. A. Denton	1584	N
78	LWR. TIBIA RIGHT MOM.	X	GPUT04MX	3 ch., lower tibia gage	R. A. Denton	1584	N.m
79	FOOT LEFT	X	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT	Y	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT	Y	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT	Z	KEIC004Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	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	MM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

**Ncap Test With Hybrid III Male 50th Percentile ATD
Instrumentation Data Channel Assignments**

Vehicle Accelerometers

Test Date: 12/18/97

Vehicle: 1998 Toyota Avalon XL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	LEFT REAR PRIMARY	X	KEVA005	Accel., Vehicle block	I.C. Sensor	3031-500	G
90	RIGHT REAR PRIMARY	X	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	ENGINE TOP	X	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
92	ENGINE BOTTOM	X	KEVA002	Accel., Vehicle block	I.C. Sensor	3031-500	G
93	LEFT BRAKE CALIPER	X	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-500	G
94	RIGHT BRAKE CALIPER	X	KEVA004	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	INSTUMENT PANEL	X	KEVA007	Accel., Vehicle block	I.C. Sensor	3031-200	G
96	LEFT REAR REDUNDANT	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G

APPENDIX E
DUMMY CALIBRATION DATA



Hybrid III Calibration Data Sheet

50TH Percentile Male

Left Knee Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: H3K12

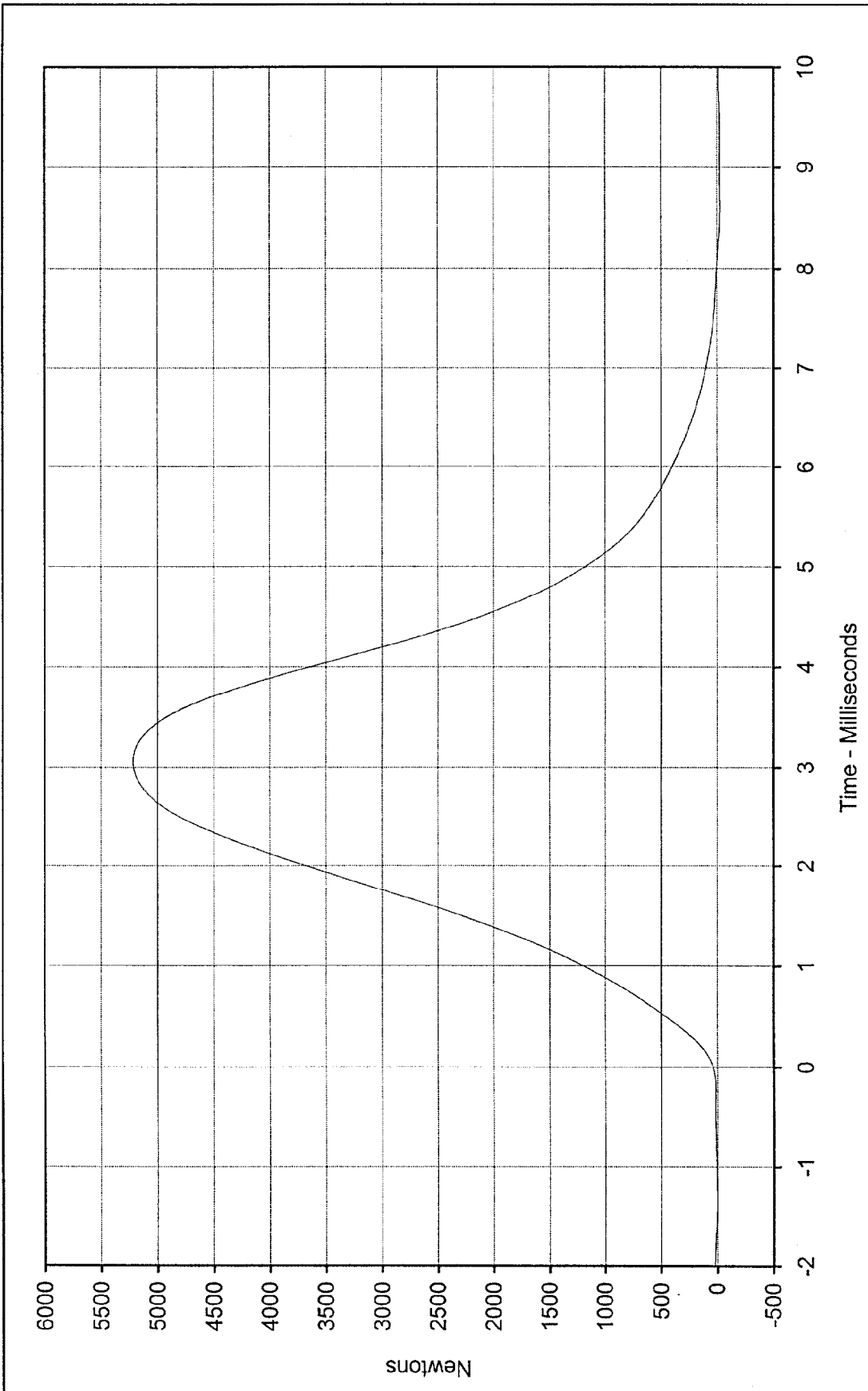
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.129	Pass
Peak Probe Force	Newtons	4715 to 5782	5212.6	Pass
Overall Test Results				Pass

N. Z. O'Connell
Laboratory Technician

J. Whitehead
Approved By

December 15, 1997
Test Date

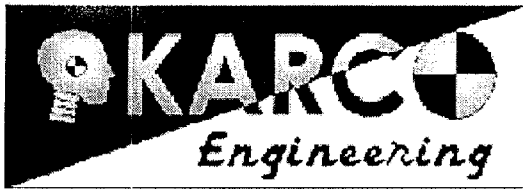
12/15/97
Date



Testing Program: Hybrid III Left Knee Impact Test
 Test Information: Part S/N: N/A Test I.D.: H3K12



Curve Description:		Probe Force	
Maximum Value:	5212.6	at	3.1 Milliseconds
Minimum Value:	-1.2	at	-1.4 Milliseconds
SAE Filter Class:	600		
Date of Test:	12/15/97		
ATD Serial No.:	034		



Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: H3K09

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	33	Pass
Probe Velocity	m/s	2.073 to 2.134	2.122	Pass
Peak Probe Force	Newtons	4715 to 5782	5626.9	Pass
Overall Test Results				Pass

Laboratory Technician

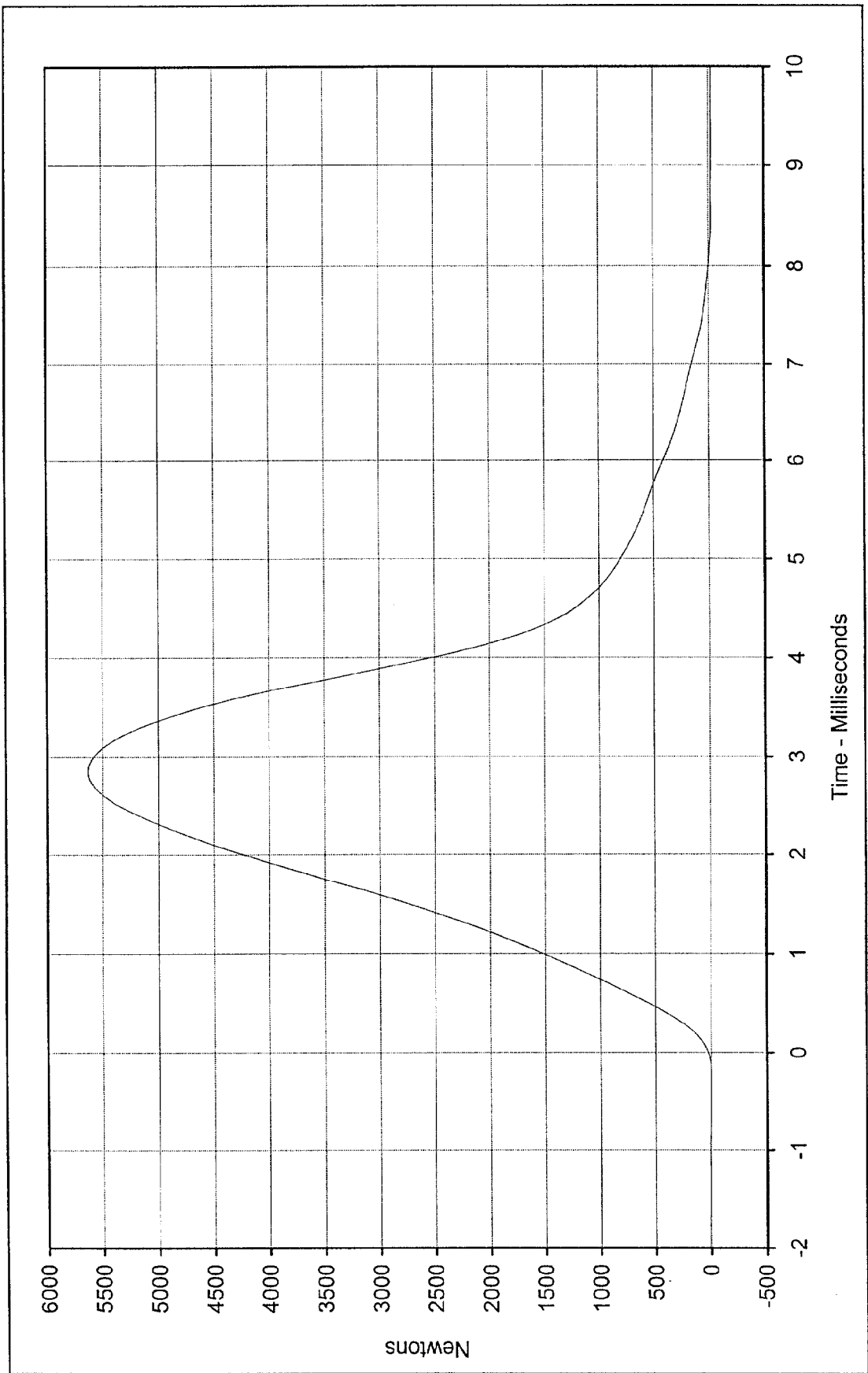
December 15, 1997

Test Date

Approved By

12/15/97

Date



Testing Program: Hybrid III Right Knee Impact Test
 Test Information: Part S/N: N/A Test I.D.: H3K09

Curve Description: Probe Force
 Maximum Value: 5626.9 at 2.9 Milliseconds
 Minimum Value: 0.6 at 8.0 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/15/97
 ATD Serial No.: 034





Hybrid III Calibration Data Sheet

50TH Percentile Male

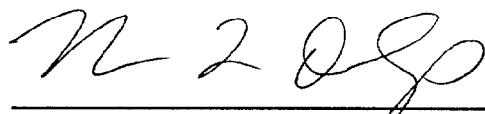
Head Drop Calibration

ATD Serial No.: 34

Part Serial No.: N/A

Test I.D.: HD100

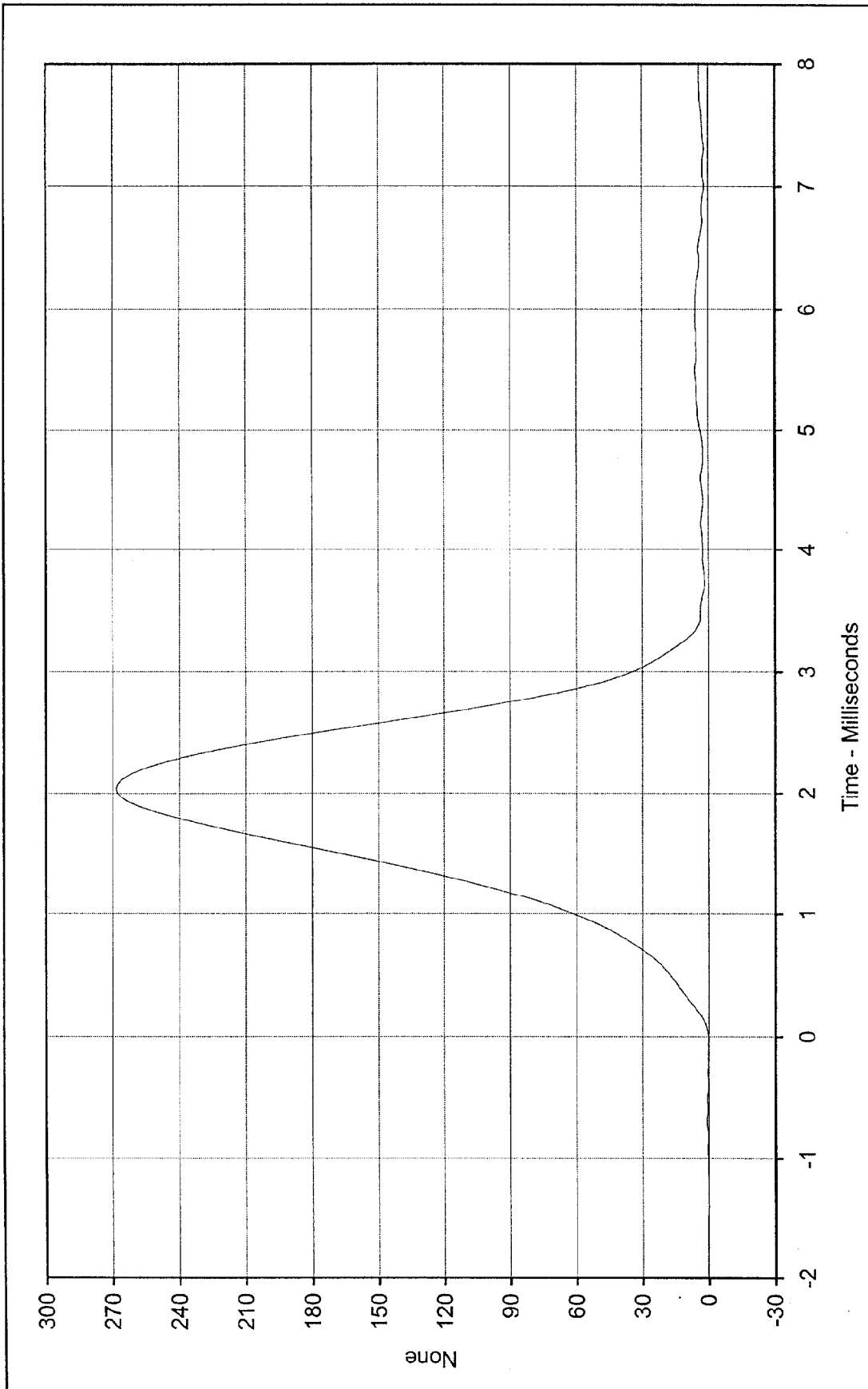
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	267.6	Pass
Peak Lateral Acceleration	G's	≤15.0	3.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

December 15, 1997
Test Date

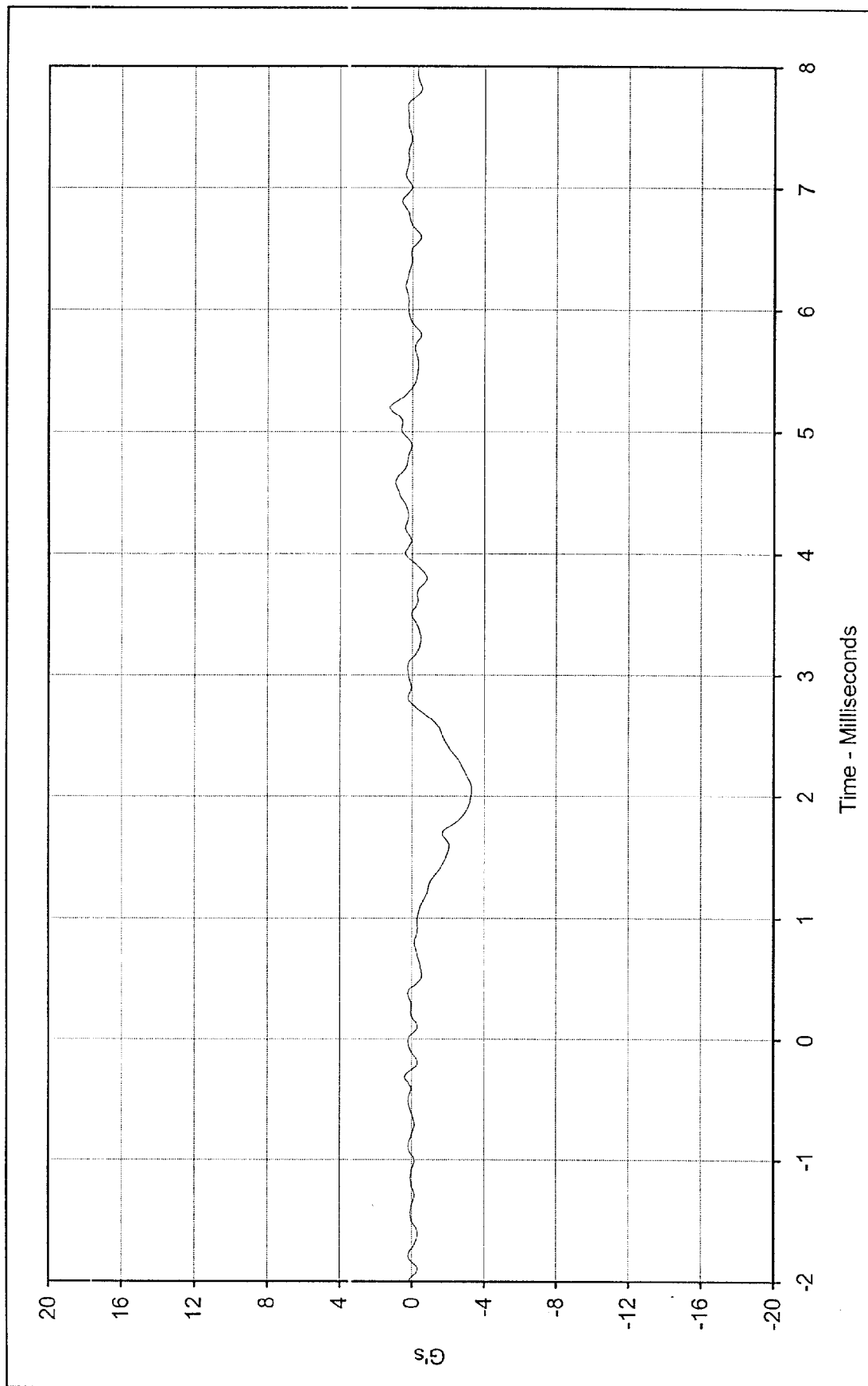
12/15/97
Date



Testing Program Hybrid III Head Drop Calibration (Male)
 Test Information: S/N of Part: N/A Test I.D.: HD100

Curve Description: Head Resultant Acceleration
 Maximum Value: 267.6 at 2.0 Milliseconds
 Minimum Value: 0.1 at -1.4 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/15/97
 ATD Serial No.: 34





Curve Description: Hybrid III Head Drop Calibration (Male)
 Testing Program: Hybrid III Head Drop Calibration (Male)
 Test Information: S/N of Part: N/A Test I.D.: HD100

Head Acceleration Y Axis
 Maximum Value: 1.3 at 5.2 Milliseconds
 Minimum Value: -3.3 at 2.0 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/15/97
 ATD Serial No.: 34





Hybrid III Calibration Data Sheet

50TH Percentile Male

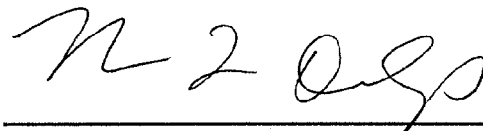
Thorax Impact Test

ATD Serial No.: 034

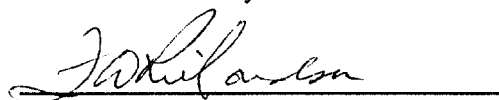
Part Serial No.: n/a

Test I.D.: CH101

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	6.71	Pass
Peak Probe Force	Newtons	5159 to 5893	5601	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.57	Pass
Internal Hysteresis	%	69 to 85	77.9	Pass
Overall Test Results				Pass



Laboratory Technician

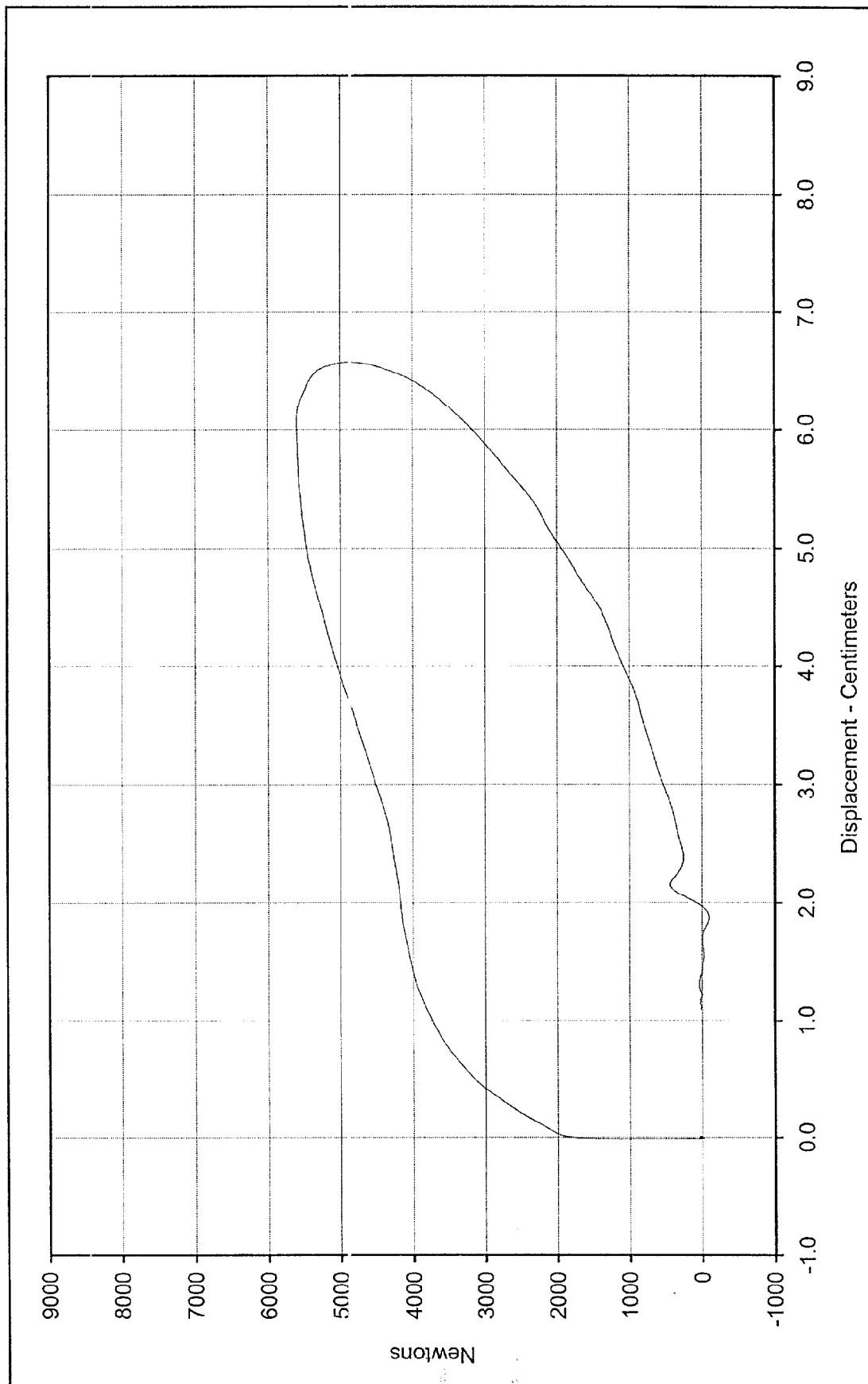


Approved By

December 5, 1997

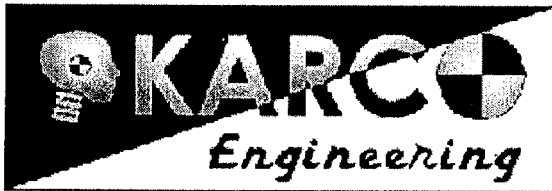
Test Date

12/5/97
Date



Curve Description:	Probe Force vs. Chest Displacement	Testing Program	Hybrid III Thorax Impact Test
Probe Force:	5601.2 Newtons	Test Information:	S/N of Part: n/a Test I.D.: CH101
Chest Displ.:	6.57 Centimeters		
SAE Filter Class:	180		
Date of Test:	12/5/97		
ATD Serial No.:	034		





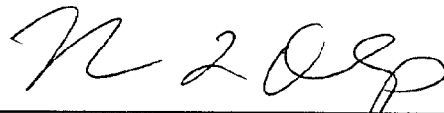
Hybrid III Calibration Data Sheet

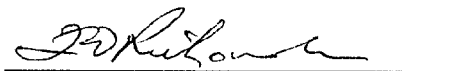
50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 34Part Serial No.: n/aTest I.D.: NF100

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	6.89 to 7.13	6.92	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.8	Pass
	20 Msec.	G's	17.6 to 22.6	19.9	Pass
	30 Msec.	G's	12.5 to 18.5	16.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	16.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	74.2	Pass
	Time	Msec.	57.0 to 64.0	61.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	120.5	Pass
Moment About Occipital Condyle	Maximum	N • m	84.1 to 108.5	94.3	Pass
	Time	Msec.	47.0 to 58.0	50.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	106.2	Pass
Overall Test Results					Pass

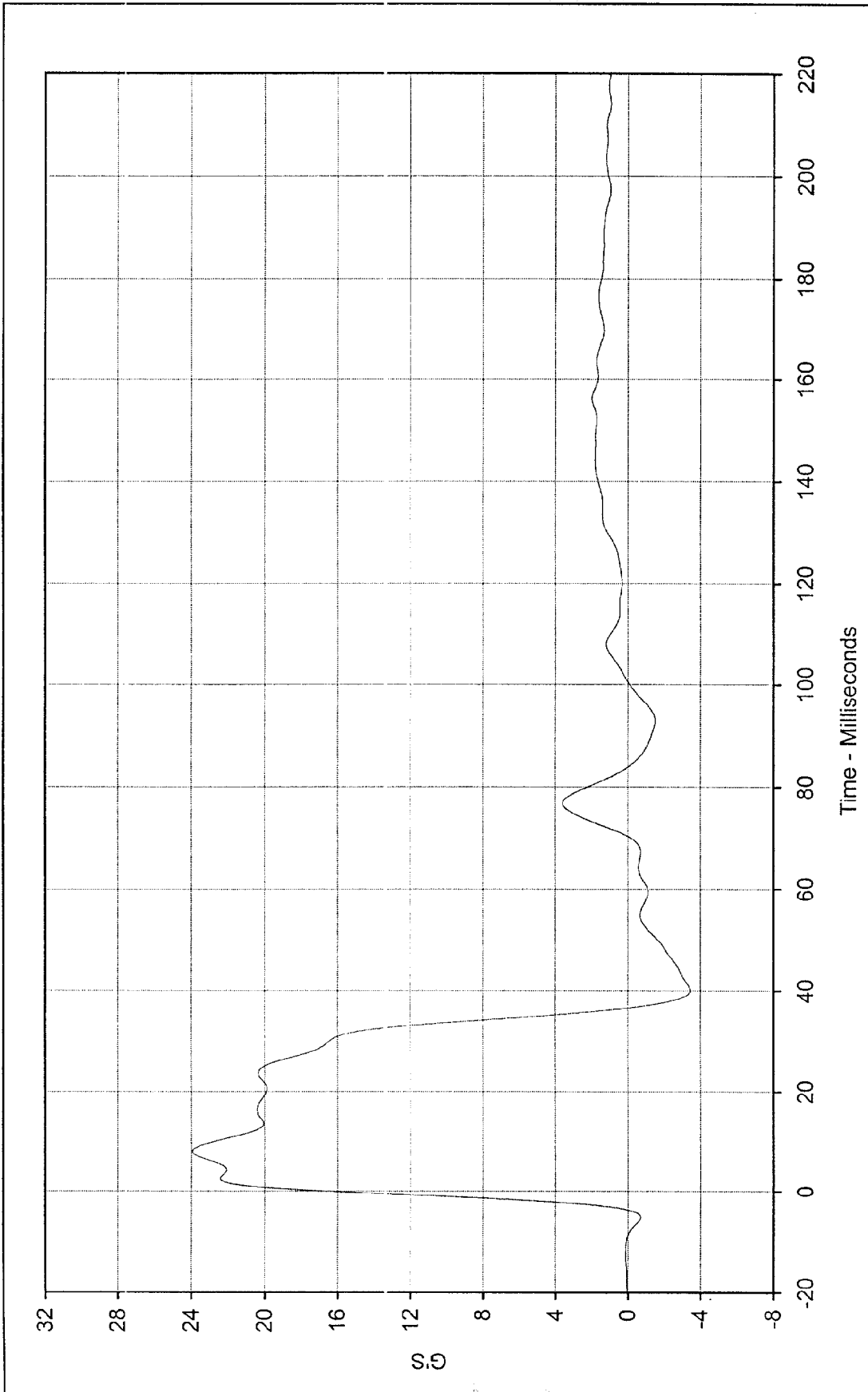

Laboratory Technician


Approved By

December 14, 1997

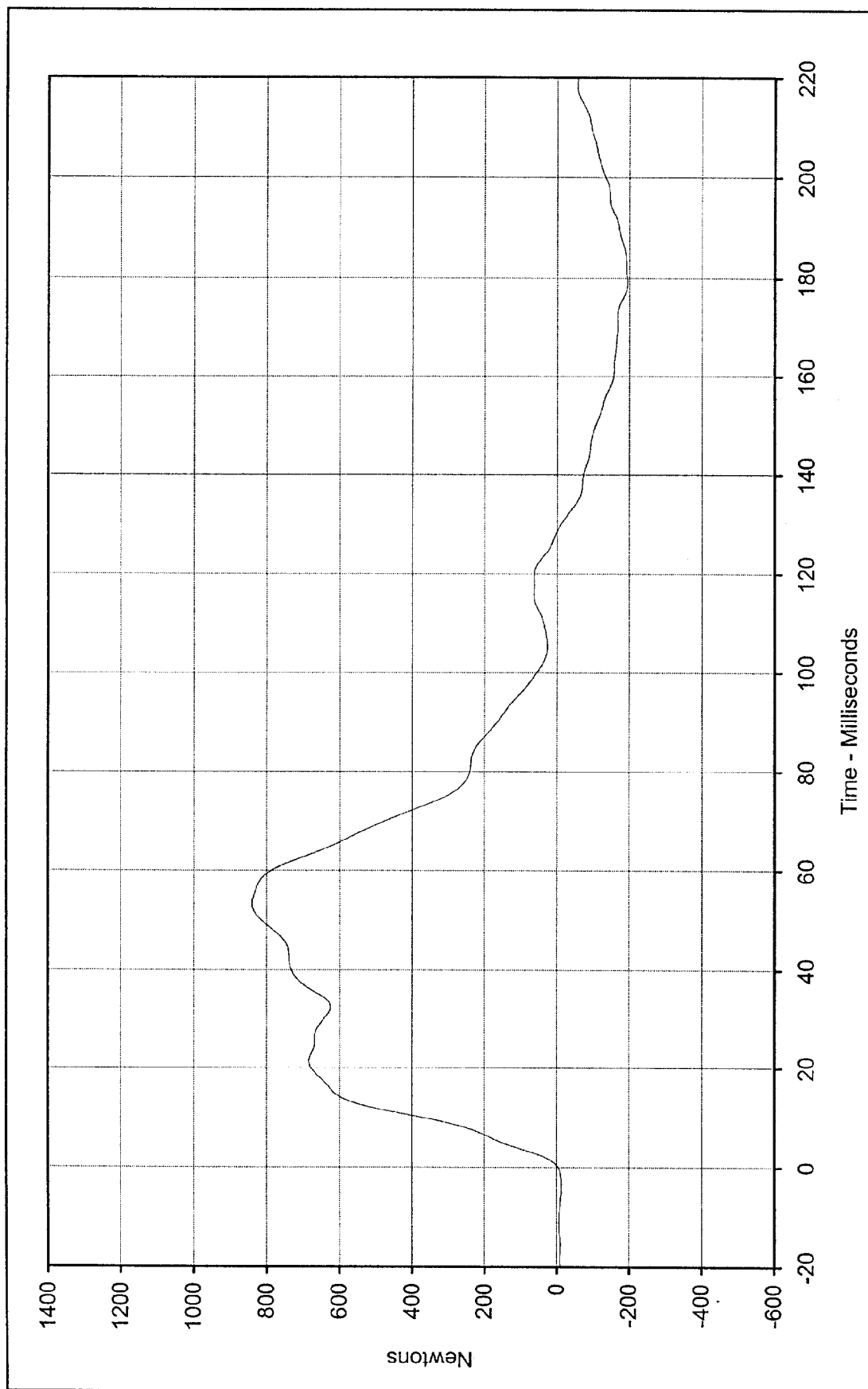
Test Date

12/14/97
Date



Curve Description:	Pendulum Deceleration	Testing Program	Hybrid III Neck Flexion Test (Male)
Maximum Value:	23.9 at 8.0 Milliseconds	Test Information:	S/N of Part: n/a Test I.D.: NF100
Minimum Value:	-3.4 at 40.1 Milliseconds		
SAE Filter Class:	60		
Date of Test:	12/14/97		
ATD Serial No.:	34		





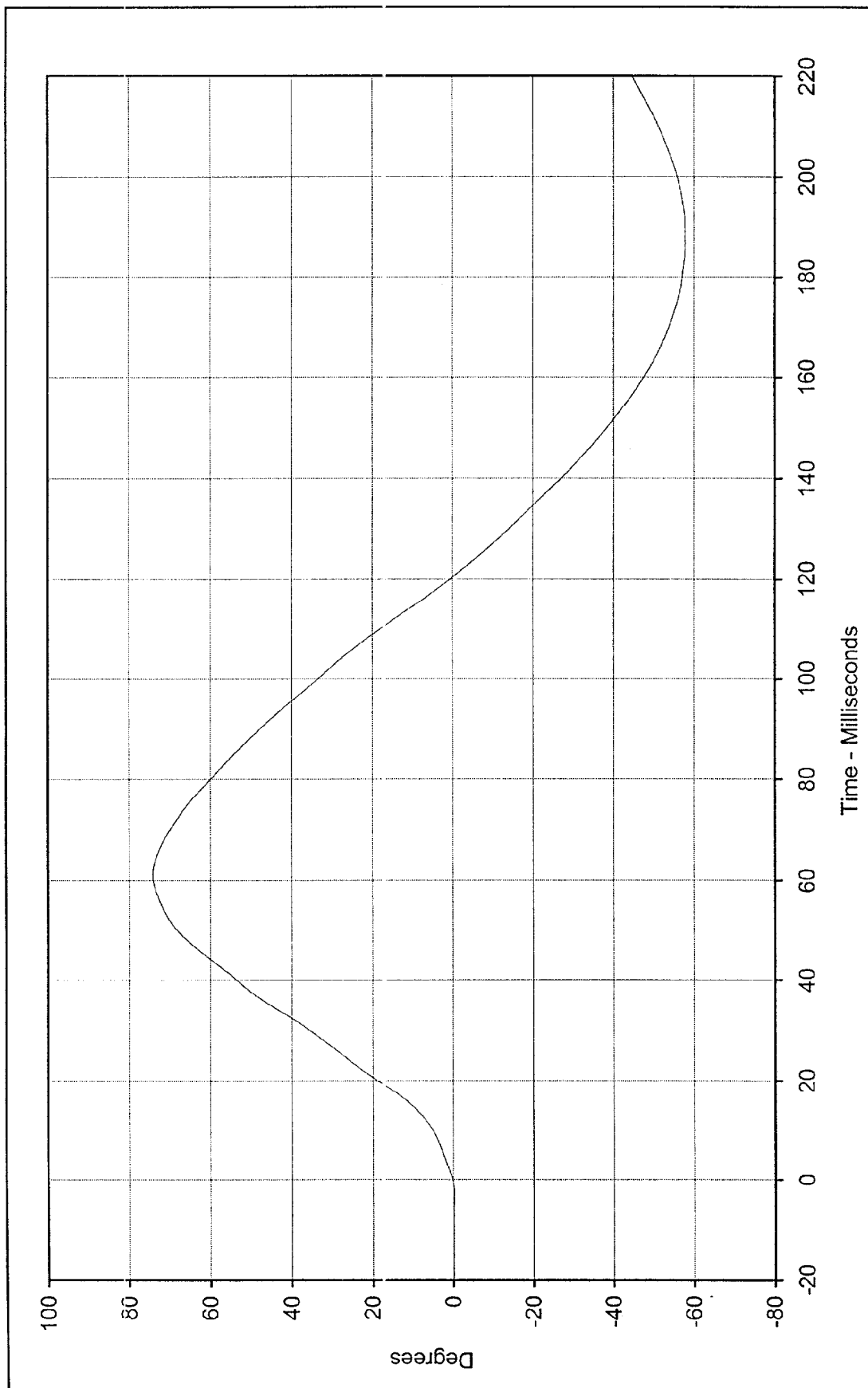
Curve Description: Neck Force X
 Maximum Value: 840.8 at 53.3 Milliseconds
 Minimum Value: -194.7 at 179.0 Milliseconds

SAE Filter Class: 60
 Date of Test: 12/14/97
 ATD Serial No.: 34

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NF100

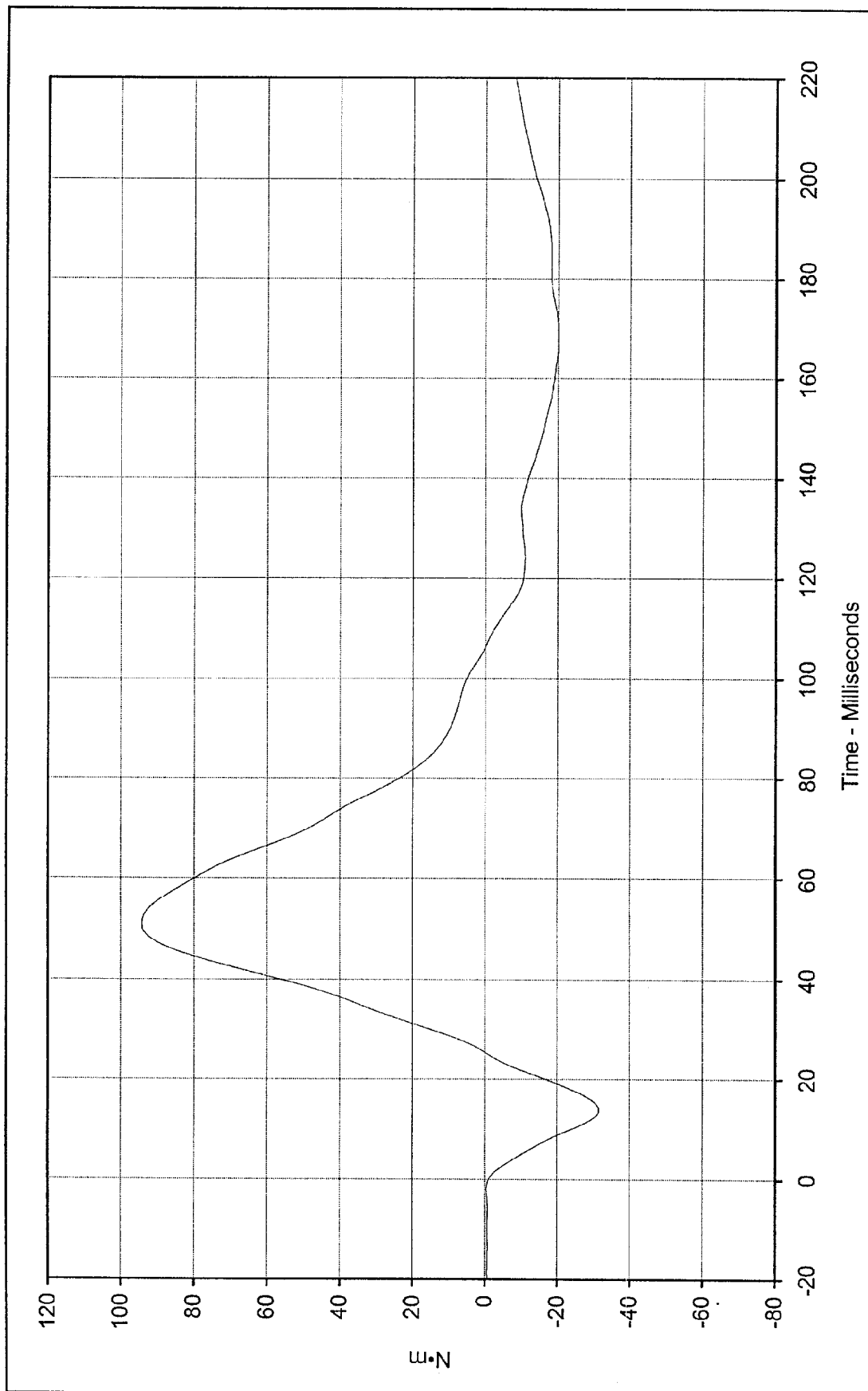




Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NF100

Curve Description: "D" Plane Rotation
 Maximum Value: 74.2 at 61.2 Milliseconds
 Minimum Value: -57.8 at 186.7 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/14/97
 ATD Serial No.: 34





Curve Description: Moment About Occipital Condyles

Maximum Value: 94.3 at 50.9 Milliseconds

Minimum Value: -31.5 at 13.7 Milliseconds

SAE Filter Class: 60

Date of Test: 12/14/97

ATD Serial No.: 34

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NF100





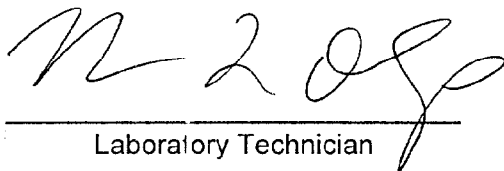
Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 34Part Serial No.: n/aTest I.D.: NE101

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	6.06	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.0	Pass
	20 Msec.	G's	14.0 to 19.0	16.2	Pass
	30 Msec.	G's	11.0 to 16.0	16.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	16.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	43.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.3	Pass
	Time	Msec.	72.0 to 82.0	77.8	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	162.5	Pass
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-76.0	Pass
	Time	Msec.	65.0 to 79.0	73.2	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	147.1	Pass
Overall Test Results				Pass	



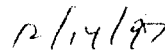
Laboratory Technician



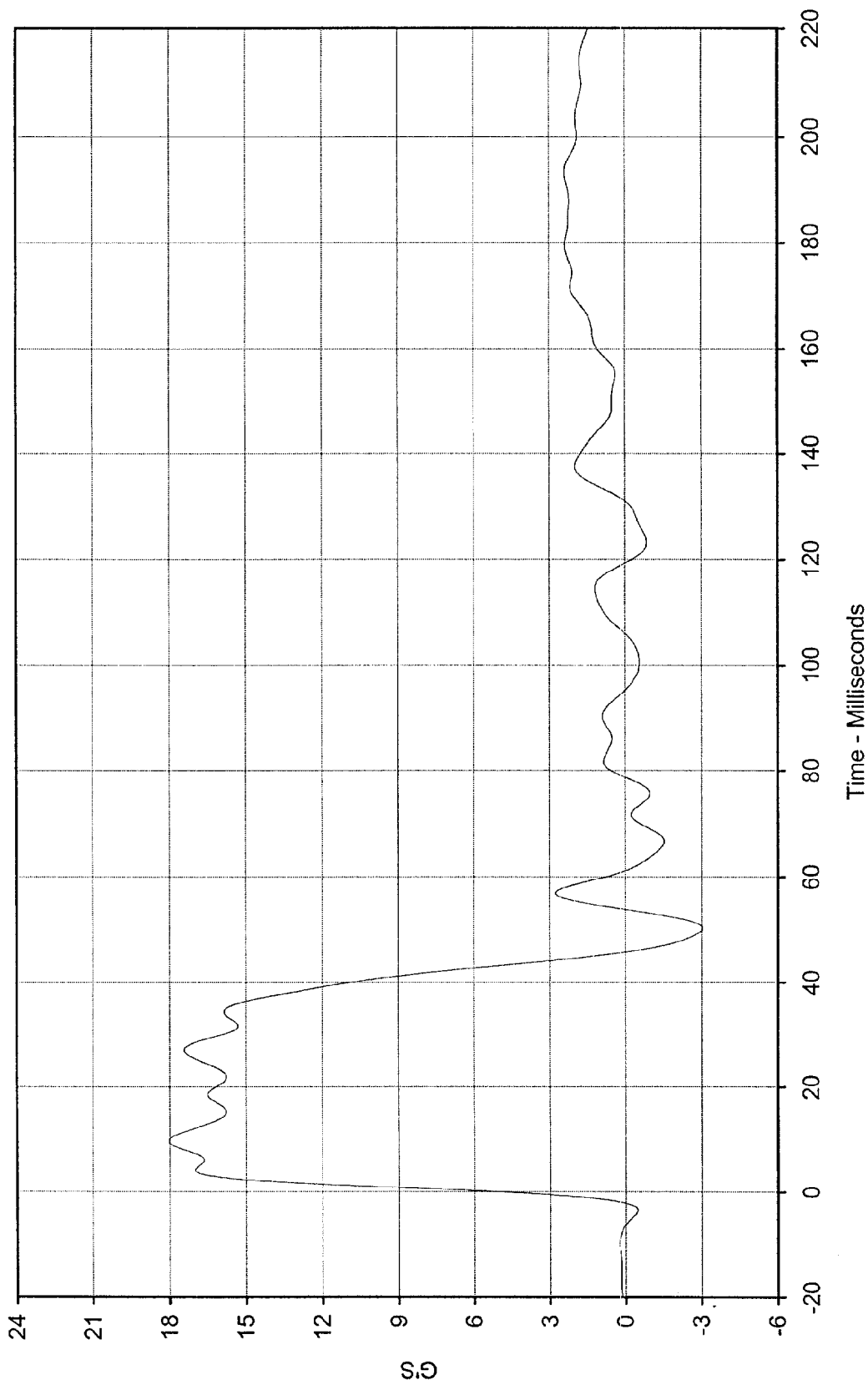
Approved By

December 14, 1997

Test Date



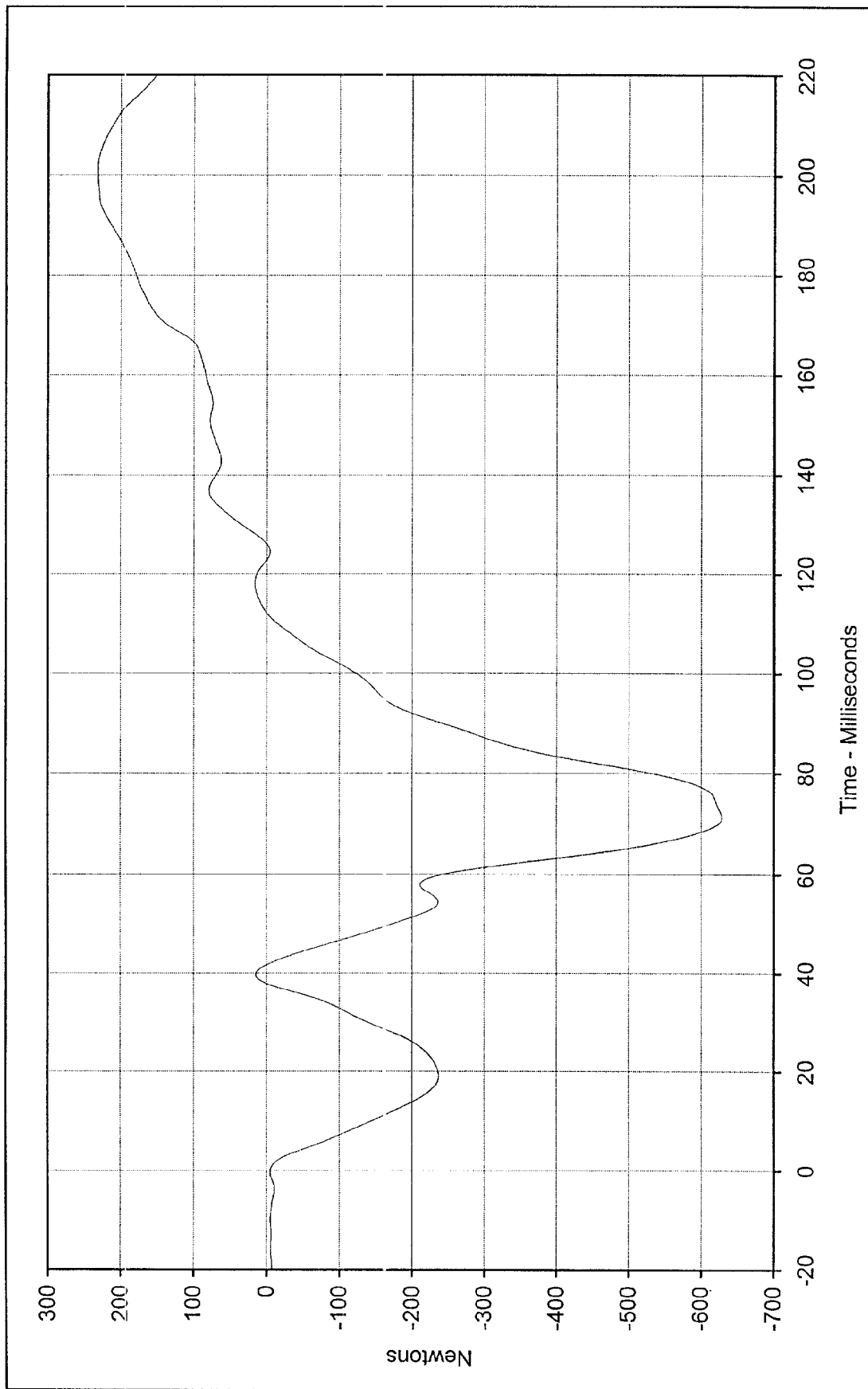
Date



Curve Description: Pendulum Deceleration
 Maximum Value: 18.0 at 9.8 Milliseconds
 Minimum Value: -3.0 at 50.2 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/14/97
 ATD Serial No.: 34

Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE101

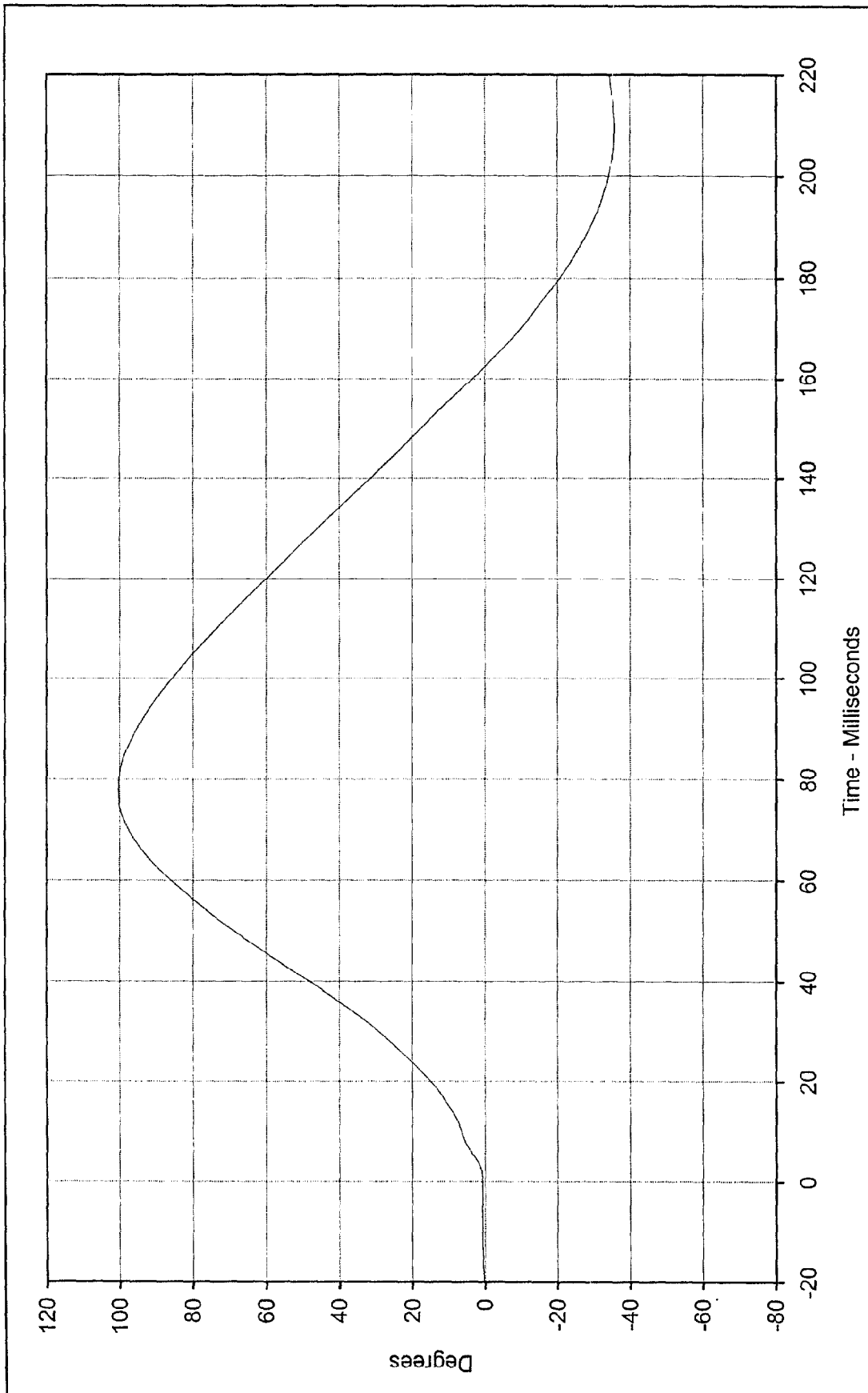




Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE101



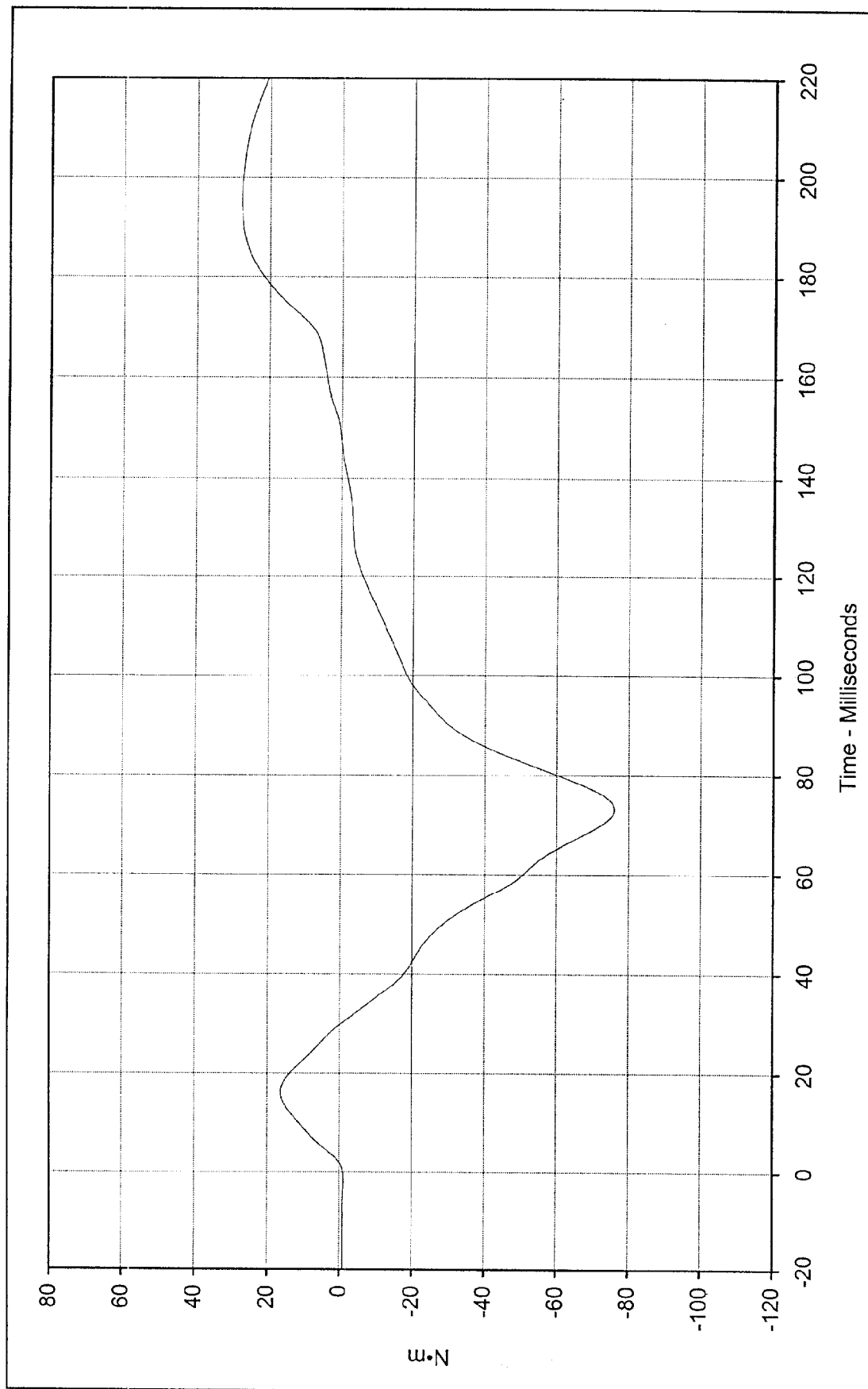
Curve Description: Neck Force X
 Maximum Value: 231.8 at 201.0 Milliseconds
 Minimum Value: -628.8 at 71.2 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/14/97
 ATD Serial No.: 34



Testing Program Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE101

Curve Description: "D" Plane Rotation
 Maximum Value: 100.3 at 77.8 Milliseconds
 Minimum Value: -35.6 at 209.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/14/97
 ATD Serial No.: 34





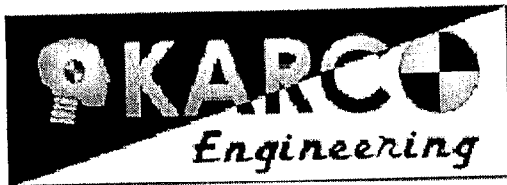
Curve Description: Moment About Occipital Condyles
 Maximum Value: 27.8 at 195.7 Milliseconds
 Minimum Value: -76.0 at 73.2 Milliseconds

SAE Filter Class: 60
 Date of Test: 12/14/97
 ATD Serial No.: 34

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NE101





Hybrid III Calibration Data Sheet

50TH Percentile Male

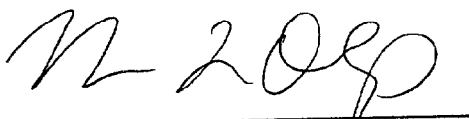
External Measurements

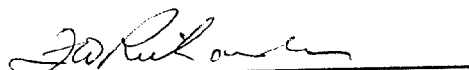
ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43.0	Pass
A - Total sitting height	mm	878.8 to 889.0	880.0	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	510.0	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	138.1	Pass
E - Shoulder pivot from back	mm	83.8 to 94.0	85.0	Pass
F - Thigh clearance	mm	139.7 to 154.9	151.0	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	300.0	Pass
H - Skull cap to back line	mm	40.6 to 45.7	43.0	Pass
I - Shoulder to elbow length	mm	330.2 to 345.4	341.0	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	590.0	Pass
L - Popliteal length	mm	429.3 to 454.7	430.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	490.7	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	467.0	Pass
O - Chest depth	mm	213.4 to 228.6	216.0	Pass
P - Foot length	mm	251.5 to 266.7	260.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	435.0	Pass
W - Foot breadth	mm	91.4 to 106.7	99.0	Pass
Y - Chest circumference	mm	970.3 to 1000.8	1000.0	Pass
Z - Waist circumference	mm	835.7 to 866.1	860.0	Pass
AA - Location for chest circumference	mm	429.3 to 434.3	431.0	Pass
BB - Location for waist circumference	mm	226.1 to 231.1	230.0	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

December 16, 1997

Test Date

12/16/97

Date



Hybrid III Calibration Data Sheet

50TH Percentile Male

Left Knee Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: H3K11

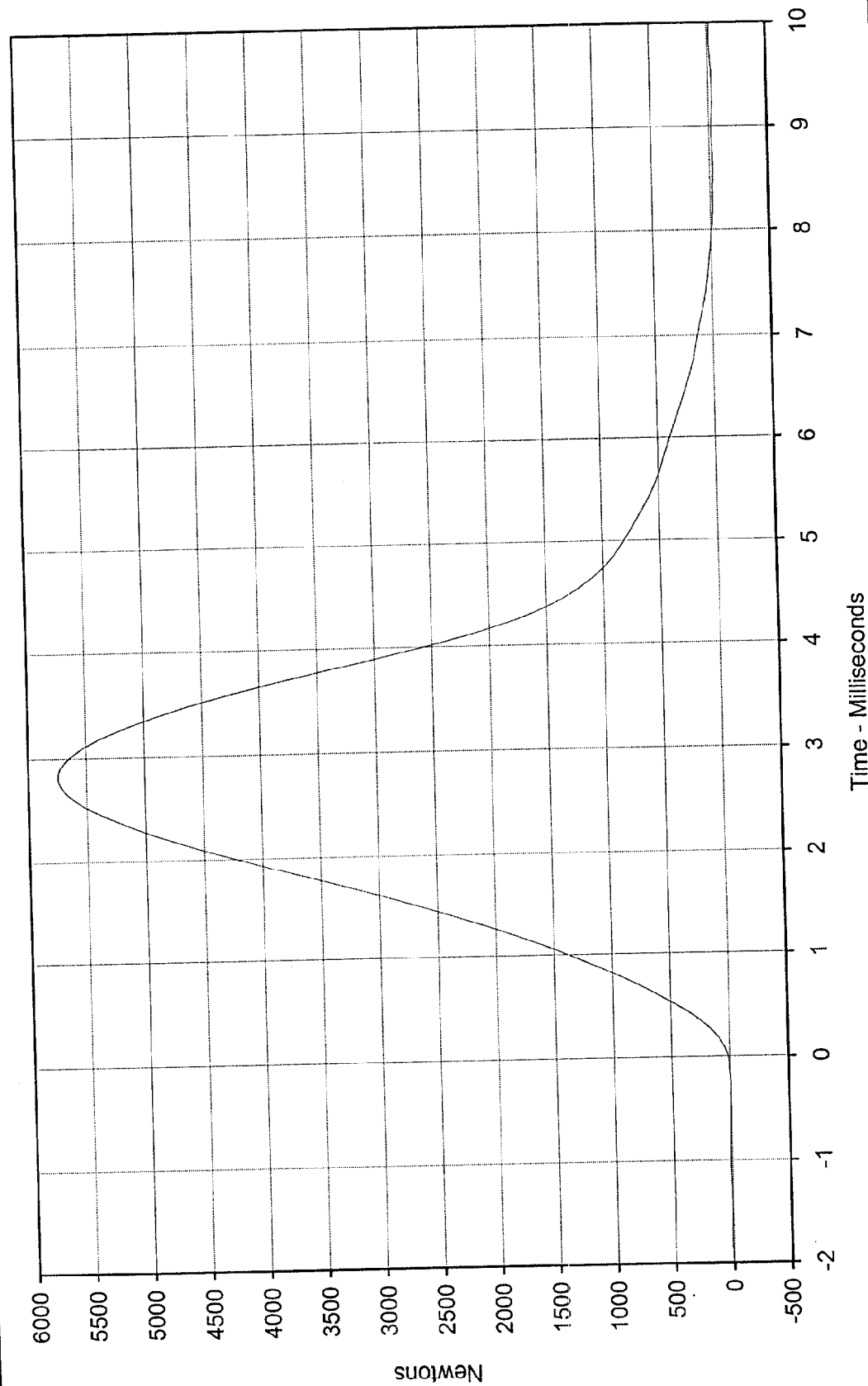
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.120	Pass
Peak Probe Force	Newtons	4715 to 5782	5743.7	Pass
Overall Test Results				Pass

N 2 Osg
Laboratory Technician

JO Rulowen
Approved By

December 15, 1997
Test Date

12/15/97
Date



Testing Program: Hybrid III Left Knee Impact Test

Test Information: Part S/N: N/A Test I.D.: H3K11

Curve Description: Probe Force

Maximum Value: 5743.7 at 2.8 Milliseconds

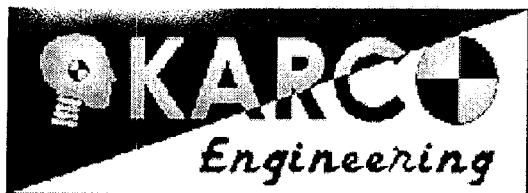
Minimum Value: -7.3 at 8.0 Milliseconds

SAE Filter Class: 600

Date of Test: 12/15/97

Part Number: 035





Hybrid III Calibration Data Sheet

50TH Percentile Male

Right Knee Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: H3K12

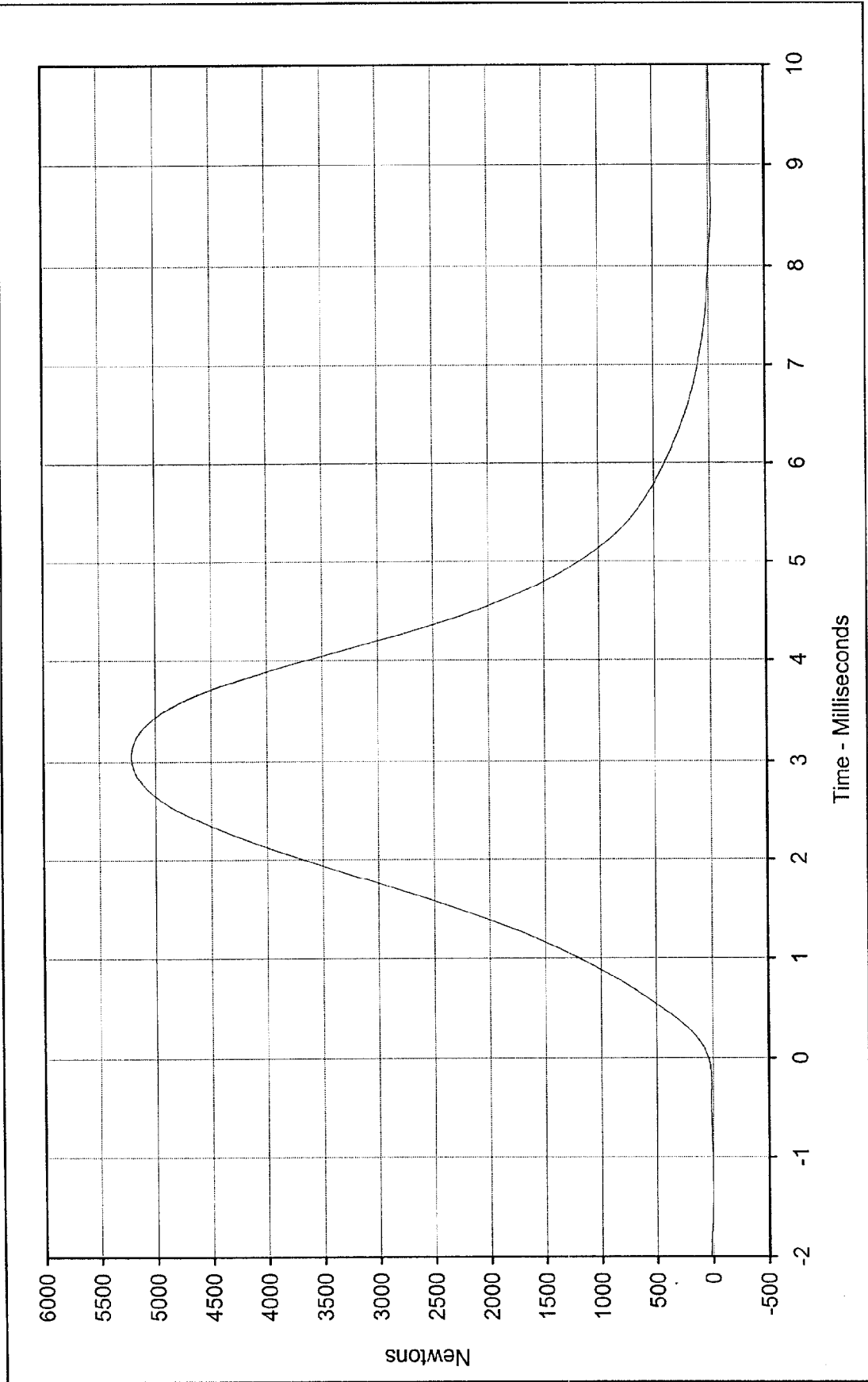
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.122	Pass
Peak Probe Force	Newtons	4715 to 5782	5212.6	Pass
Overall Test Results				Pass

N 2 O g p
Laboratory Technician

J. K. Howland
Approved By

December 15, 1997
Test Date

12/15/97
Date



Testing Program: Hybrid III Right Knee Impact Test
Test Information: Part S/N: N/A Test I.D.: H3K12

Curve Description: Probe Force
Maximum Value: 5212.6 at 3.1 Milliseconds
Minimum Value: -1.2 at -1.4 Milliseconds
SAE Filter Class: 600
Date of Test: 12/15/97
ATD Serial No.: 035





Hybrid III Calibration Data Sheet

50TH Percentile Male

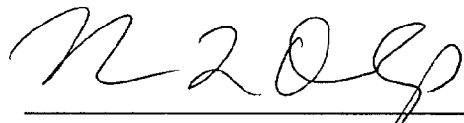
Head Drop Calibration

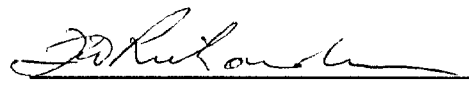
ATD Serial No.: 35

Part Serial No.: N/A

Test I.D.: HD101

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	263.8	Pass
Peak Lateral Acceleration	G's	≤15.0	13.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

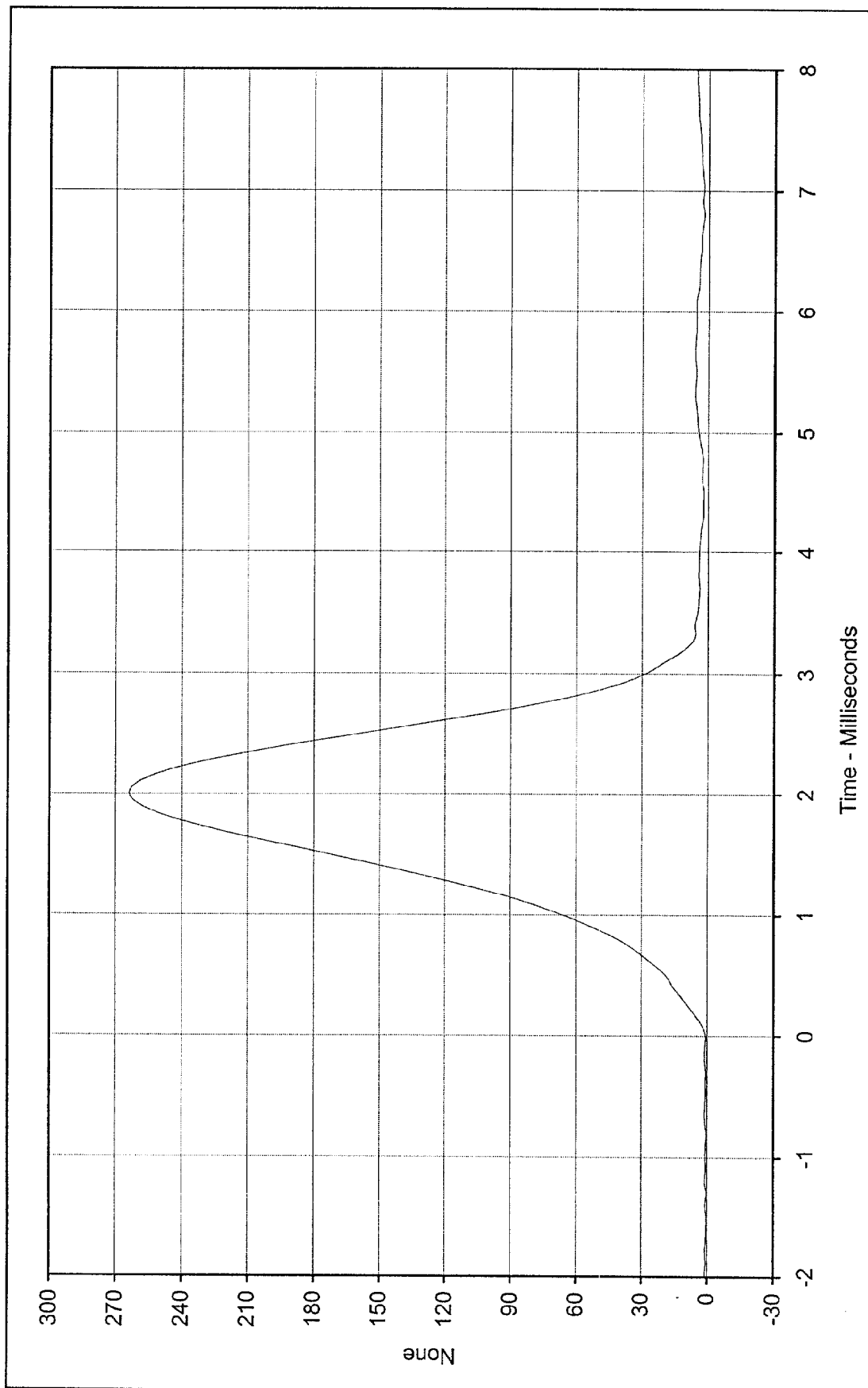

Laboratory Technician


Approved By

December 15, 1997

Test Date

12/15/97
Date



Curve Description: Head Resultant Acceleration Testing Program Hybrid III Head Drop Calibration (Male)

Maximum Value: 263.8 at 2.0 Milliseconds

Minimum Value: 0.3 at -1.3 Milliseconds

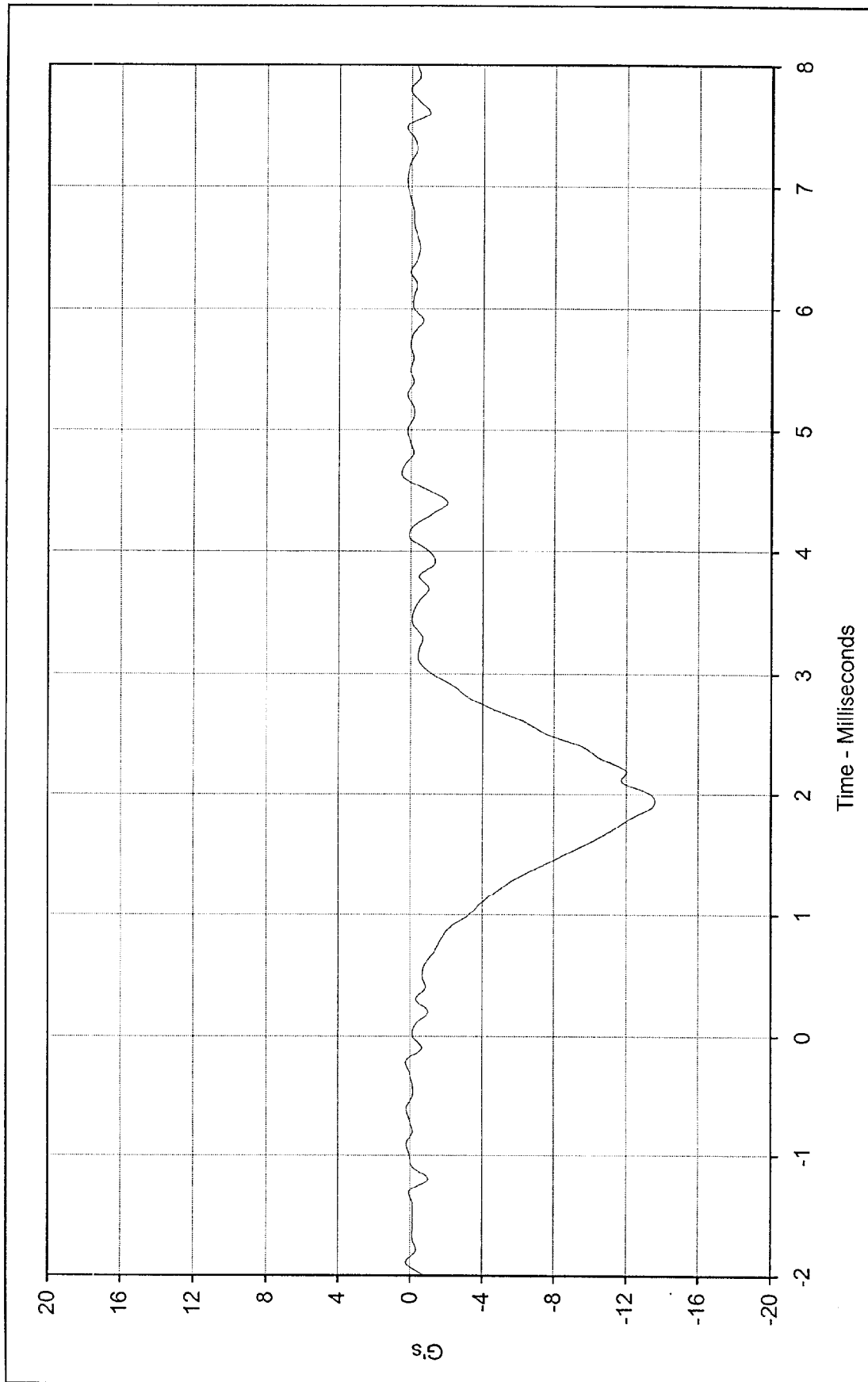
SAE Filter Class: 1000

Date of Test: 12/15/97

ATD Serial No.: 35

Test Information: S/N of Part: N/A Test I.D.: HD101





Testing Program: Hybrid III Head Drop Calibration (Male)
 Test Information: S/N of Part: N/A Test I.D.: HD101

Curve Description: Head Acceleration Y Axis
 Maximum Value: 0.4 at 4.6 Milliseconds
 Minimum Value: -13.5 at 1.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/15/97
 ATD Serial No.: 35





Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 035

Part Serial No.: n/a

Test I.D.: CH100

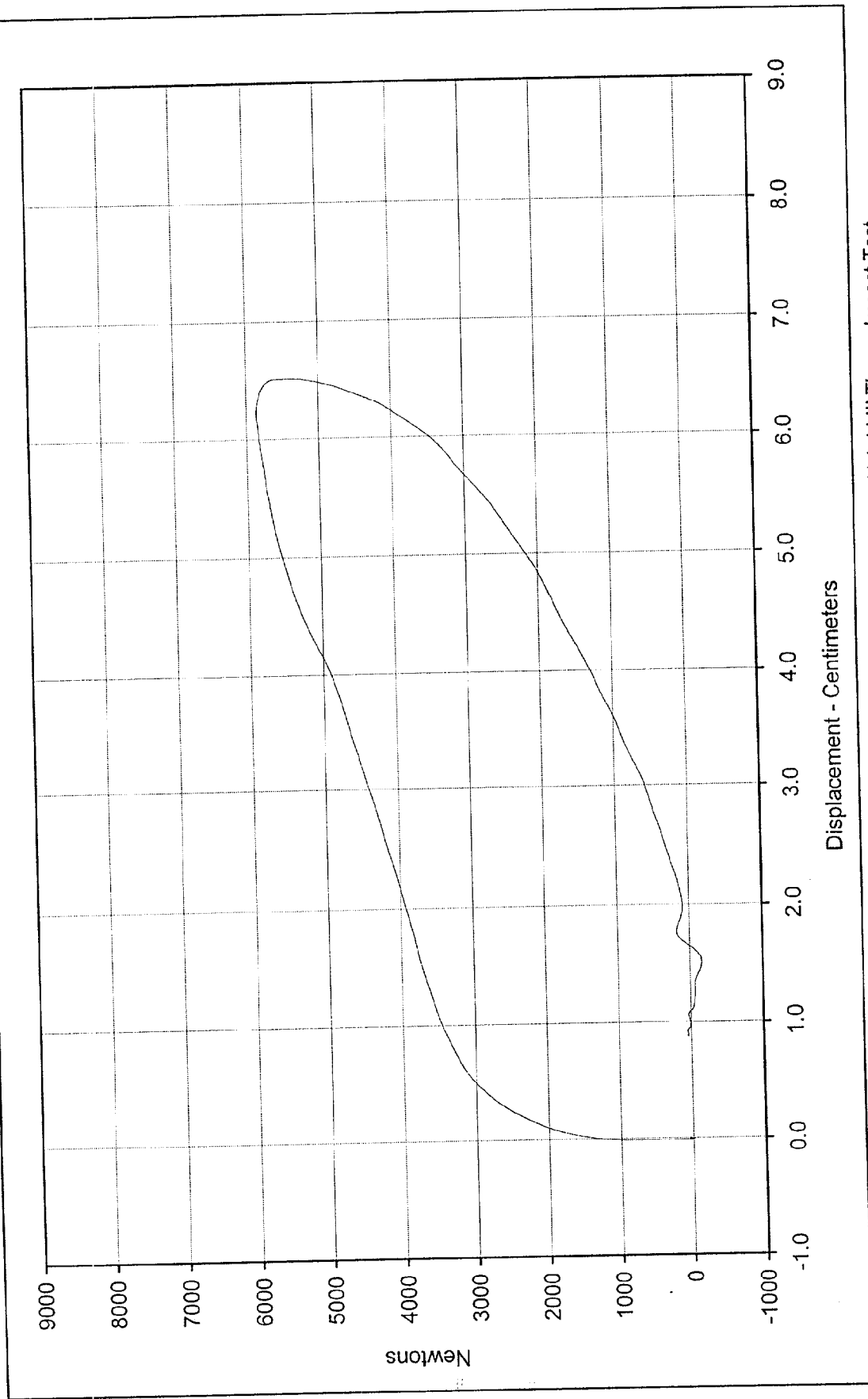
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	Newtons	5159 to 5893	5861	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.51	Pass
Internal Hysteresis	%	69 to 85	73.0	Pass
Overall Test Results				Pass

N202p
Laboratory Technician

J. J. Kuhlman
Approved By

December 16, 1997
Test Date

12/16/97
Date



Curve Description:
 Probe Force vs. Chest Displacement

Testing Program
 Hybrid III Thorax Impact Test

Test Information:
 S/N of Part: n/a
 Test I.D.: CH100



Probe Force:
 5860.5
 Newtons

Chest Displ.:
 6.51
 Centimeters

SAE Filter Class:
 180

Date of Test:
 12/16/97

ATD Serial No.:
 035



Hybrid III Calibration Data Sheet

50TH Percentile Male

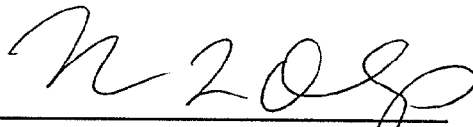
Neck Flexion Test

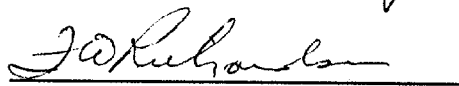
ATD Serial No.: 35

Part Serial No.: n/a

Test I.D.: NF101

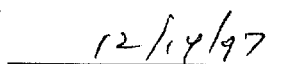
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	36	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.93	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.9	Pass
	20 Msec.	G's	17.6 to 22.6	19.5	Pass
	30 Msec.	G's	12.5 to 18.5	15.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	15.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.9	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	76.1	Pass
	Time	Msec.	57.0 to 64.0	61.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	122.7	Pass
Moment About Occipital Condyle	Maximum	N • m	84.1 to 108.5	94.0	Pass
	Time	Msec.	47.0 to 58.0	53.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	105.8	Pass
Overall Test Results				Pass	

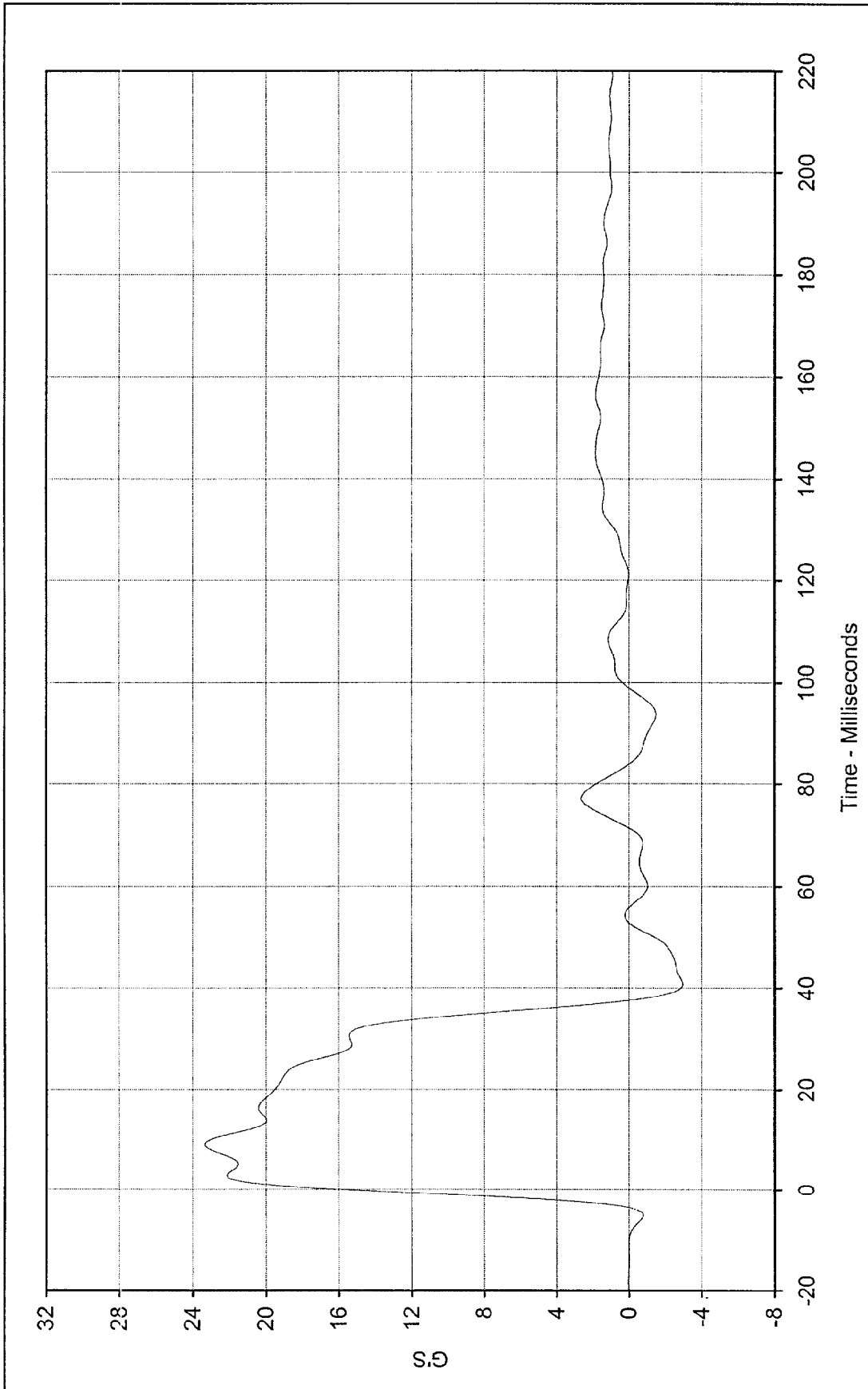

 Laboratory Technician


 Approved By

December 14, 1997

Test Date

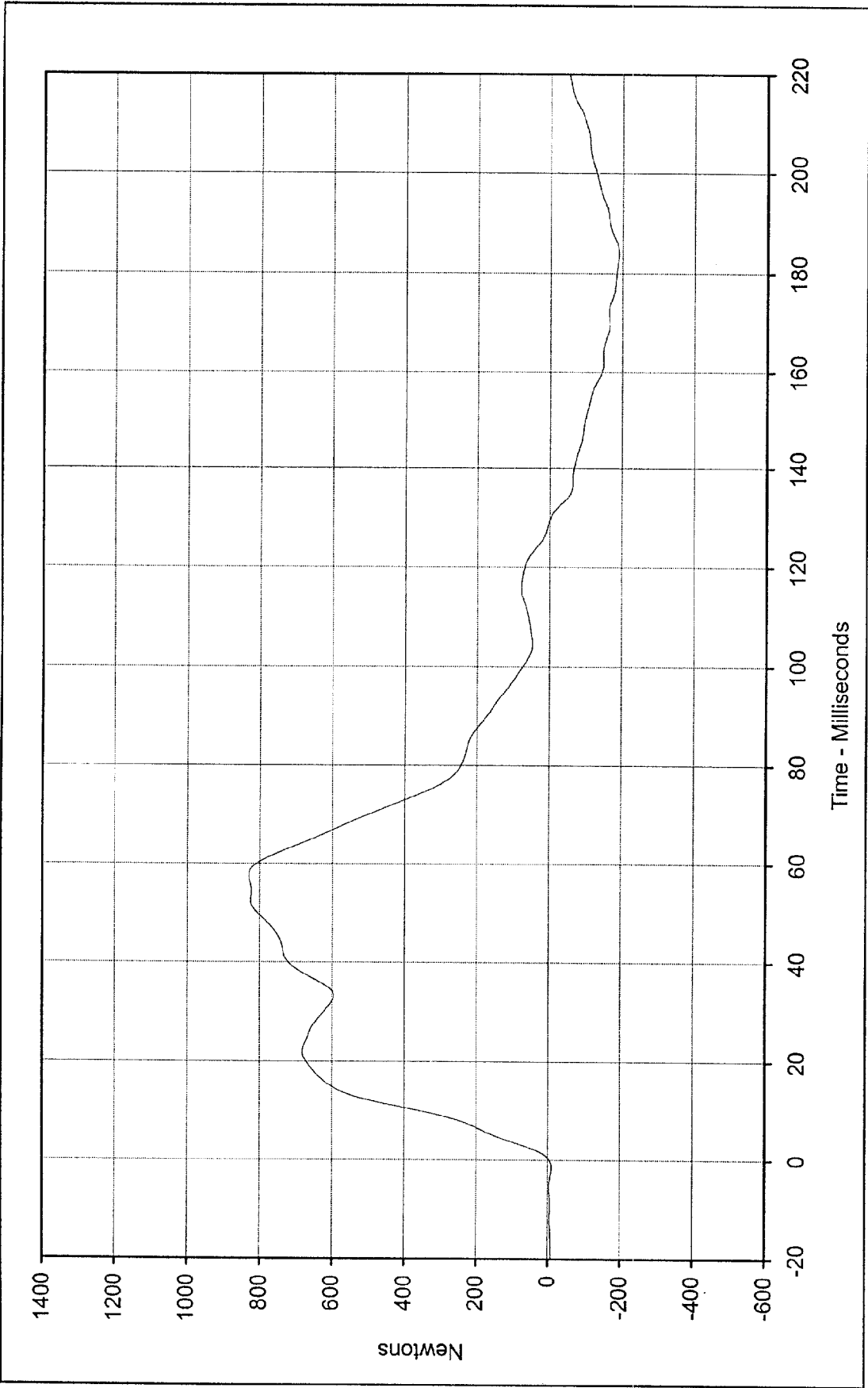

 Date



Curve Description: Hybrid III Neck Flexion Test (Male)
 Testing Program: S/N of Part: n/a Test I.D.: NF101

Pendulum Deceleration
 Maximum Value: 23.3 at 8.9 Milliseconds
 Minimum Value: -3.0 at 40.8 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/14/97
 ATD Serial No.: 35





Curve Description: Neck Force X

Maximum Value: 830.8 at 57.7 Milliseconds

Minimum Value: -189.8 at 183.9 Milliseconds

SAE Filter Class: 60

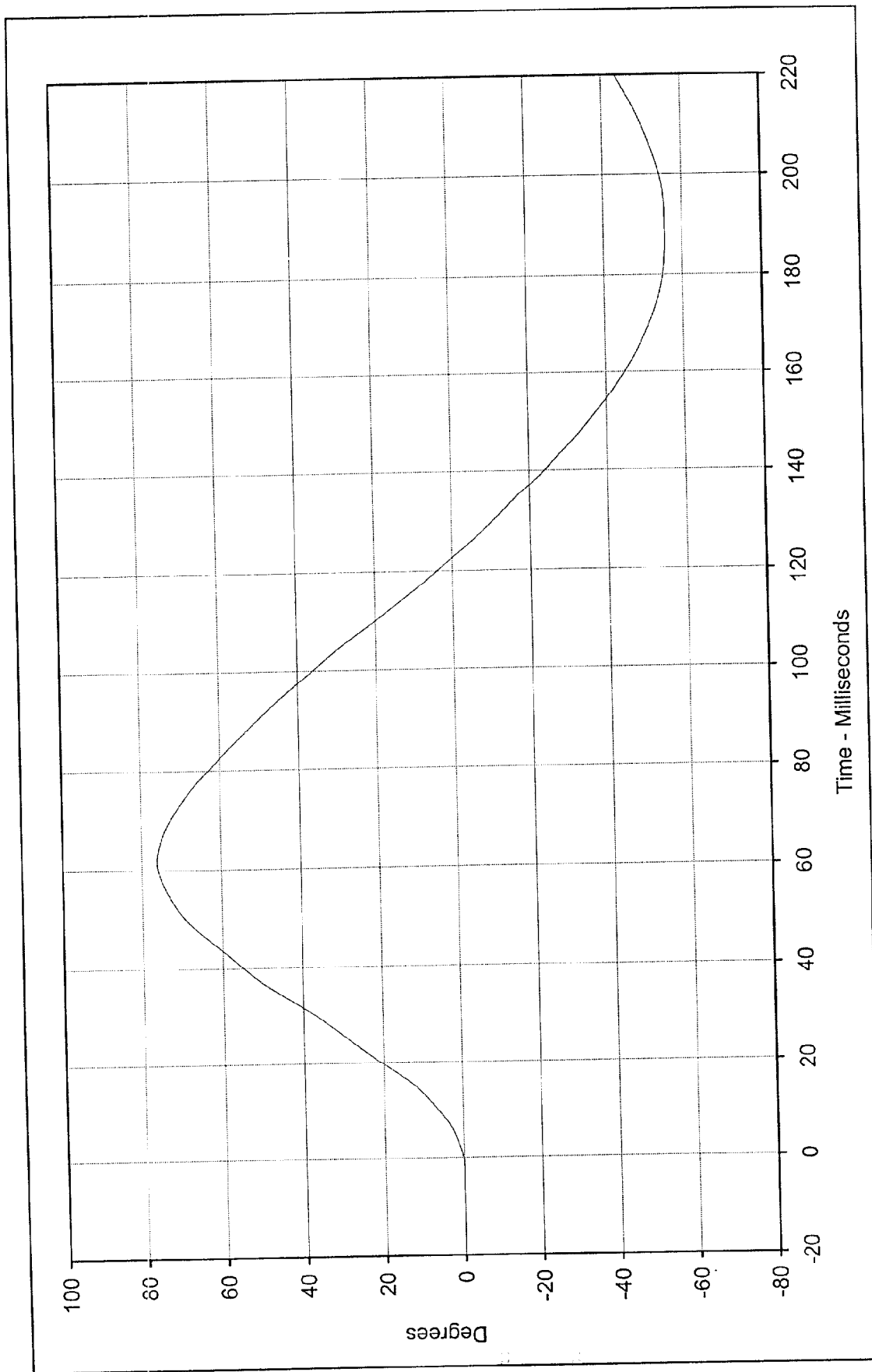
Date of Test: 12/14/97

ATD Serial No.: 35

Testing Program Hybrid III Neck Flexion Test (Male)

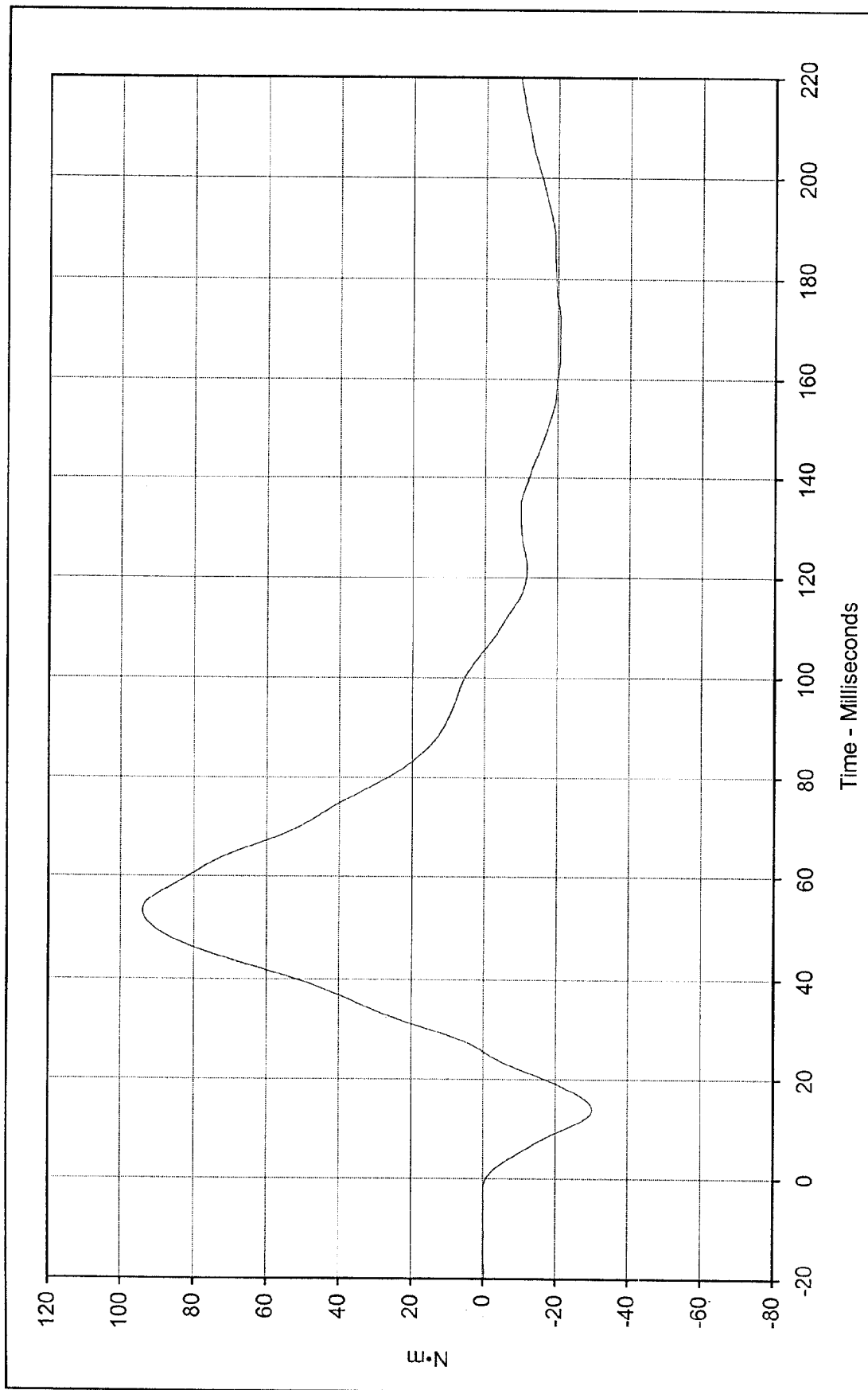
Test Information: S/N of Part: n/a Test I.D.: NF101





Curve Description:	"D" Plane Rotation	Testing Program	Hybrid III Neck Flexion Test (Male)
Maximum Value:	76.1 at 61.7 Milliseconds	Test Information:	S/N of Part: n/a Test I.D.: NF101
Minimum Value:	-55.6 at 188.0 Milliseconds		
SAE Filter Class:	60		
Date of Test:	12/14/97		
ATD Serial No.:	35		





Curve Description: Moment About Occipital Condyles

Maximum Value: 94.0 at 53.2 Milliseconds

Minimum Value: -30.1 at 13.8 Milliseconds

SAE Filter Class: 60

Date of Test: 12/14/97

ATD Serial No.: 35

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NF101





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 35

Part Serial No.: n/a

Test I.D.: NE100

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	6.03	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.2	Pass
	20 Msec.	G's	14.0 to 19.0	16.1	Pass
	30 Msec.	G's	11.0 to 16.0	15.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	40.9	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	102.0	Pass
	Time	Msec.	72.0 to 82.0	77.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	161.7	Pass
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-77.6	Pass
	Time	Msec.	65.0 to 79.0	72.2	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	147.0	Pass
Overall Test Results				Pass	

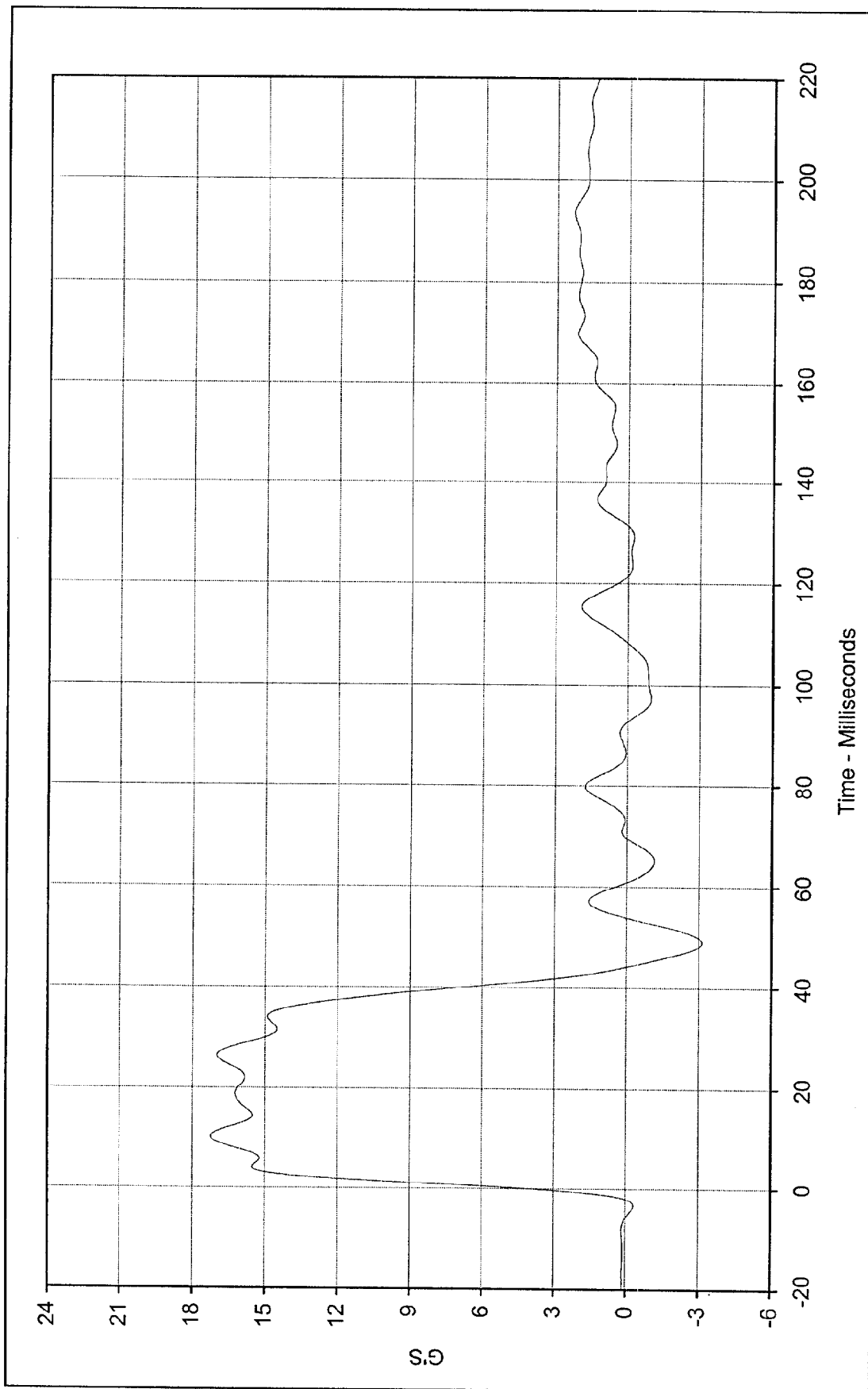
N. 2009
Laboratory Technician

J. O. K. O. O. O.
Approved By

December 14, 1997

Test Date

12/14/97
Date

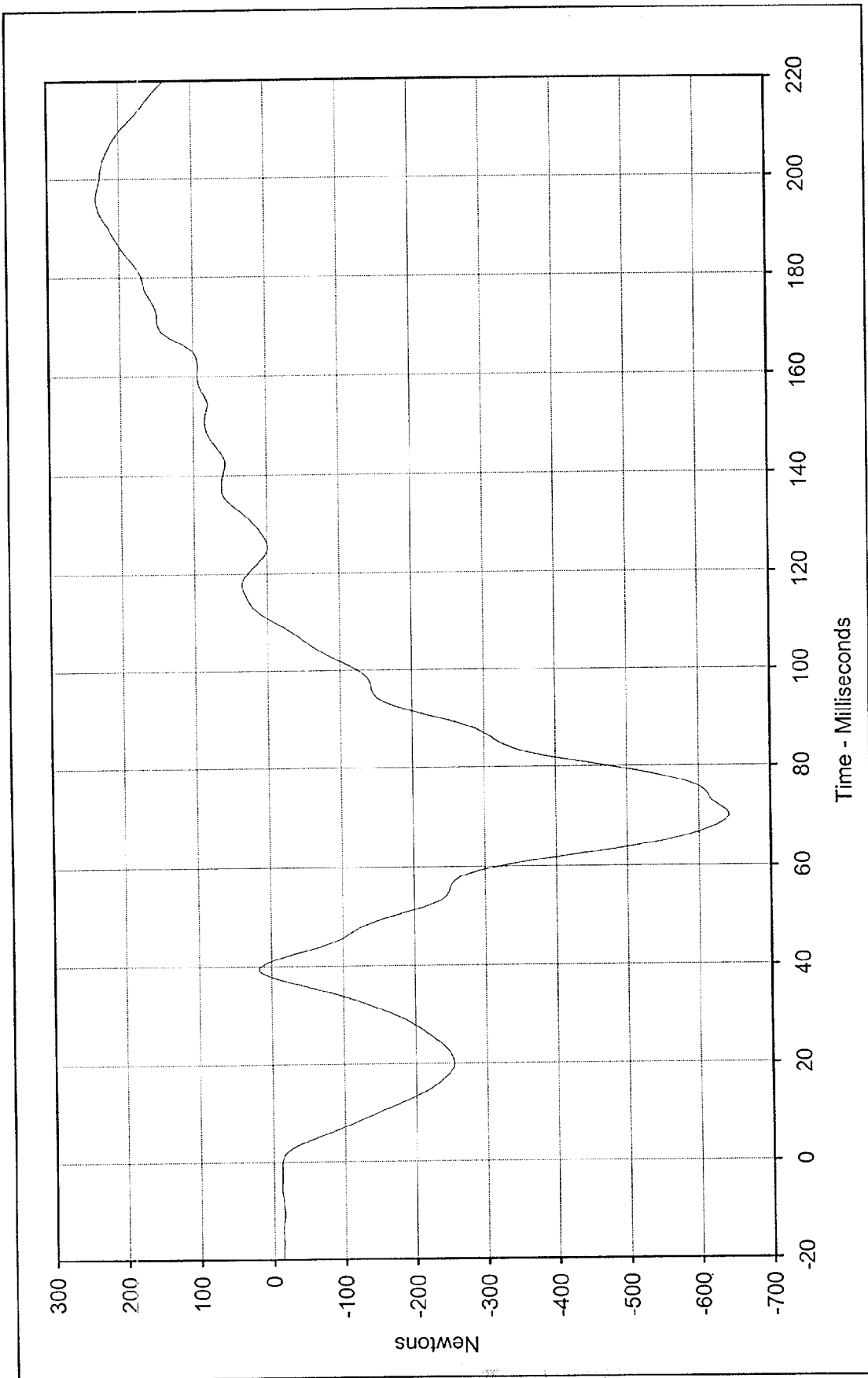


Curve Description: Pendulum Deceleration
 Maximum Value: 17.2 at 10.3 Milliseconds
 Minimum Value: -3.1 at 49.1 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/14/97
 ATD Serial No.: 35

Testing Program Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NE100

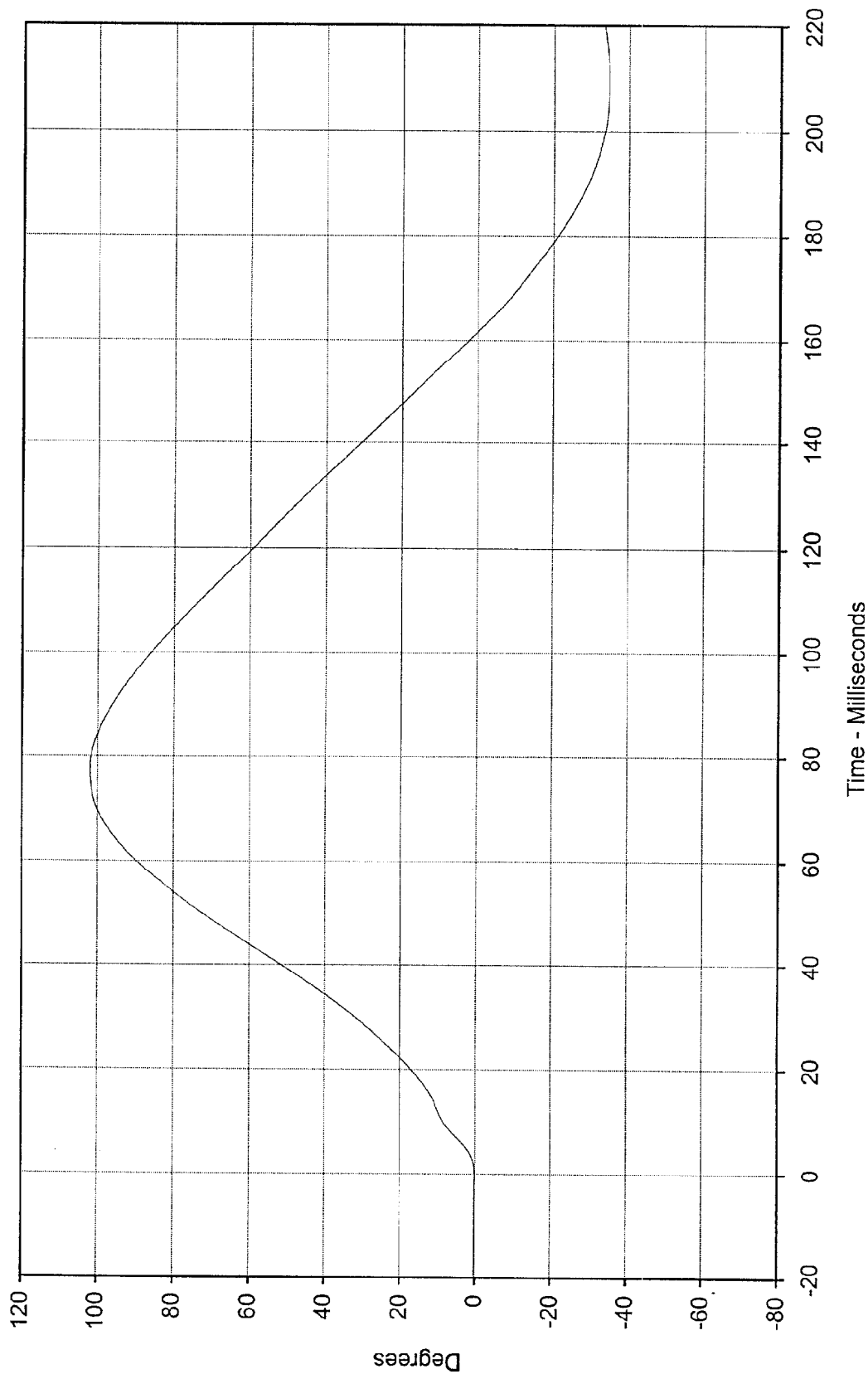




Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE100

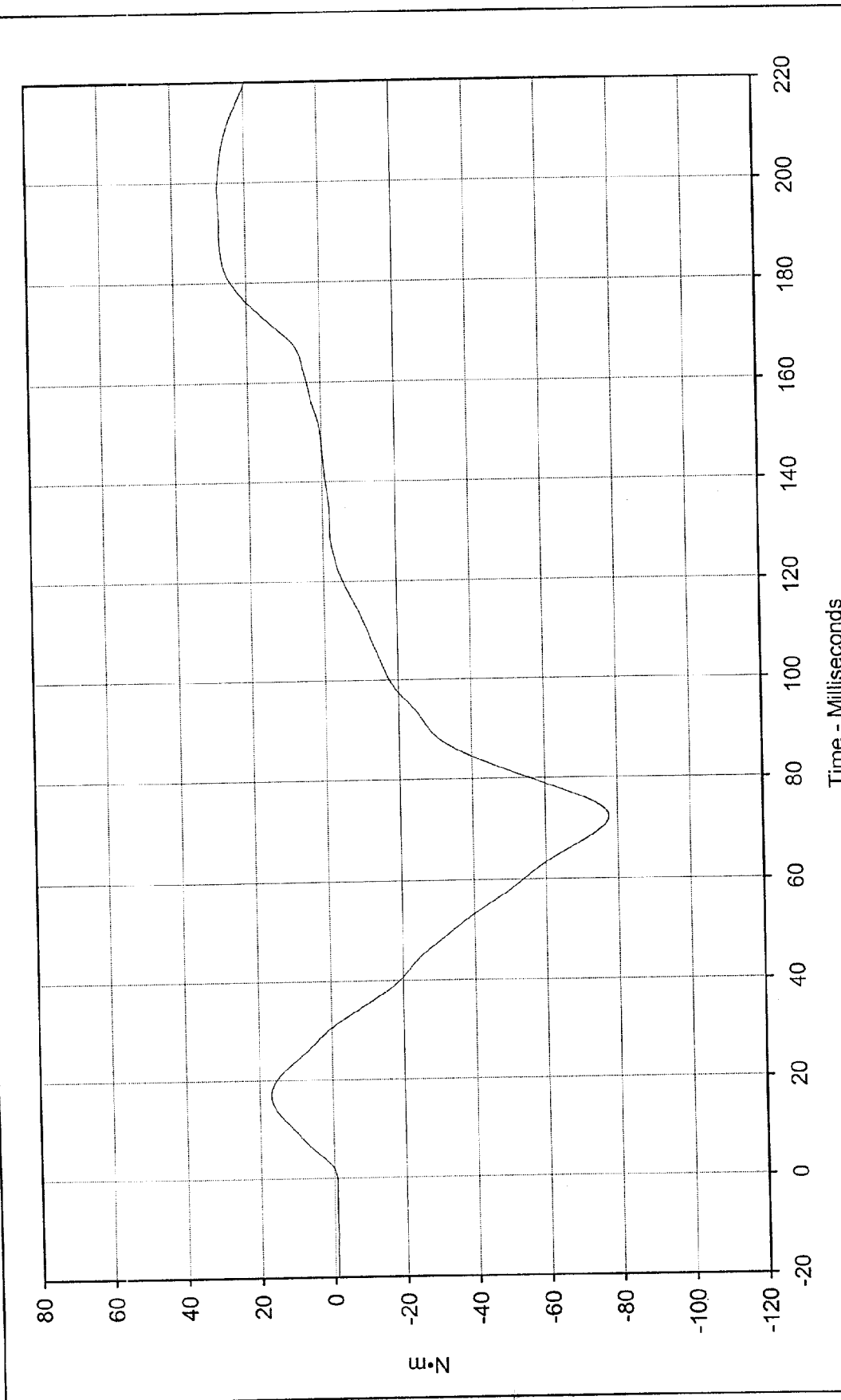


Curve Description:		Neck Force X	
Maximum Value:	232.3	at	196.0 Milliseconds
Minimum Value:	-642.5	at	70.0 Milliseconds
SAE Filter Class:	60		
Date of Test:	12/14/97		
ATD Serial No.:	35		



Curve Description:	"D" Plane Rotation		Testing Program	Hybrid III Neck Extension Test (Male)	
Maximum Value:	102.0	at 77.5 Milliseconds	Test Information:	S/N of Part: n/a	Test I.D.: NE100
Minimum Value:	-34.6	at 209.3 Milliseconds			
SAE Filter Class:	60				
Date of Test:	12/14/97				
ATD Serial No.:	35				





Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE100

Curve Description: Moment About Occipital Condyles
 Maximum Value: 27.6 at 19.5 Milliseconds
 Minimum Value: -77.6 at 72.2 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/14/97
 ATD Serial No.: 35





Hybrid III Calibration Data Sheet

50TH Percentile Male

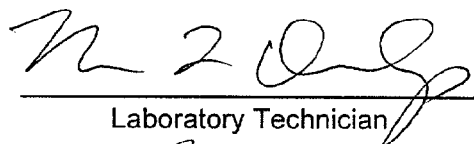
External Measurements

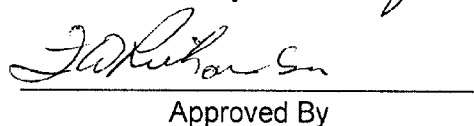
ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: N/A

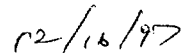
External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43.0	Pass
A - Total sitting height	mm	878.8 to 889.0	881.0	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	510.0	Pass
C - "H" point height	mm	83.8 to 88.9	85.0	Pass
D - "H" point from seat back	mm	134.6 to 139.7	138.1	Pass
E - Shoulder pivot from back	mm	83.8 to 94.0	91.0	Pass
F - Thigh clearance	mm	139.7 to 154.9	151.0	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	301.0	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	344.0	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	600.0	Pass
L - Popliteal length	mm	429.3 to 454.7	430.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	499.0	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	470.0	Pass
O - Chest depth	mm	213.4 to 228.6	216.0	Pass
P - Foot length	mm	251.5 to 266.7	265.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	435.0	Pass
W - Foot breadth	mm	91.4 to 106.7	100.0	Pass
Y - Chest circumference	mm	970.3 to 1000.8	980.0	Pass
Z - Waist circumference	mm	835.7 to 866.1	860.0	Pass
AA - Location for chest circumference	mm	429.3 to 434.3	431.0	Pass
BB - Location for waist circumference	mm	226.1 to 231.1	229.0	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

December 16, 1997

Test Date



Date

APPENDIX F
VEHICLE OWNER'S MANUAL
OCCUPANT RESTRAINT INSTRUCTIONS

KAR-97-R97050-04

To turn on the seat heater, push the switch.

The key must be in the "ON" position.

Pushing on the opposite side will turn it off.



CAUTION

Occupants must use caution when operating the seat heater because it may make them feel too hot or cause burns at low temperatures (erythema, varicella). Use extra caution for;

- Baby, small child, elderly person, sick person or handicapped person
- Persons who have delicate skin
- Persons who are exhausted
- Persons who have taken alcohol or drugs which induce sleep (sleeping drug, cold remedy, etc.)

To prevent the seat overheating, do not use the seat heater with a blanket, cushion, or other insulating objects which cover the seat.

NOTICE

- ◆ *Do not put unevenly weighed objects on the seat and do not stick sharp objects (needles, nails, etc.) into the seat.*
- ◆ *When cleaning the seats, do not use organic substances (paint thinner, benzine, alcohol, gasoline, etc.). They may damage the heater and seat surface.*
- ◆ *To prevent the battery from being discharge, turn the switch on when the engine is running.*

Seat belts- -Seat belt precautions

Toyota strongly urges that the driver and passengers in the vehicle be properly restrained at all times with the seat belts provided. Failure to do so could increase the chance of injury and/or the severity of injury in accidents.

Child. Use a child restraint system appropriate for the child until the child becomes large enough to properly wear the vehicle's seat belts. See "Child restraint" for details.

If a child is too large for a child restraint system, the child should sit in the rear seat and must be restrained using the vehicle's seat belt. According to accident statistics, the child is safer when properly restrained in the rear seat than in the front seat.

If a child must sit in the front seat, the seat belts should be worn properly. If an accident occurs and the seat belts are not worn properly, the force of the rapid inflation of the airbag may cause death or serious injury to the child.

Do not allow the child to stand up or kneel on either rear or front seats. An unrestrained child could suffer serious injury or death during emergency braking or a collision. Also, do not let the child sit on your lap. It does not provide sufficient restraint.

If the shoulder belt falls across the child's neck or face, have the child sit slightly closer to the buckle side of the seat so that the belt lays across the shoulder.

Pregnant woman. Toyota recommends the use of a seat belt. Ask your doctor for specific recommendations. The lap belt should be worn securely and as low as possible over the hips and not on the waist.

Injured person. Toyota recommends the use of a seat belt. Depending on the injury, first check with your doctor for specific recommendations.

CAUTION

Persons should ride in their seat properly wearing their seat belts whenever the vehicle is moving. Otherwise, they are much more likely to suffer serious bodily injury or death in the event of sudden braking or a collision.

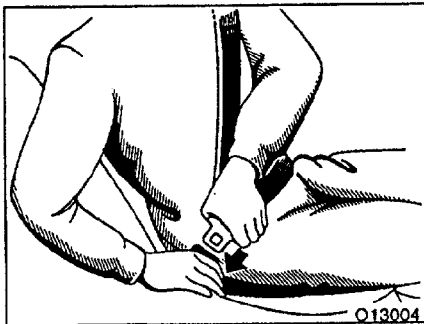
When using the seat belts, observe the following:

- Use the belt for only one person at a time. Do not use a single belt for two or more people—even children.
- Avoid reclining the seatbacks too much. The seat belts provide maximum protection when the seatbacks are in the upright position. (Refer to the seat adjustment instructions.)
- Be careful not to damage the belt webbing or hardware. Take care that they do not get caught or pinched in the seat or side doors.
- Inspect the belt system periodically. Check for cuts, fraying, and loose parts. Damaged parts should be replaced. Do not disassemble or modify the system.

- Keep the belts clean and dry. If they need cleaning, use a mild soap solution or lukewarm water. Never use bleach, dye, or abrasive cleaners—they may severely weaken the belts.
- Replace the belt assembly (including bolts) if it has been used in a severe impact. The entire assembly should be replaced even if damage is not obvious.

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-Front and rear seat belts (3-point type)



Adjust the seat as needed (front seats only) and sit up straight and well back in the seat. To fasten your belt, pull it out of the retractor and insert the tab into the buckle.

You will hear a click when the tab locks into the buckle.

The seat belt length automatically adjusts to your size and the seat position.

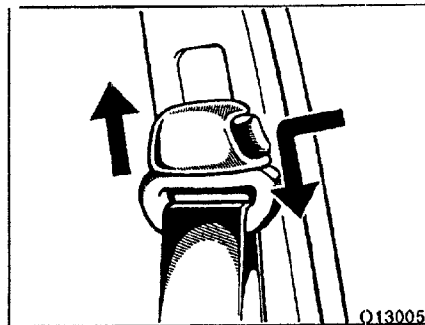
The retractor will lock the belt during a sudden stop or on impact. It also may lock if you lean forward too quickly. A slow, easy motion will allow the belt to extend, and you can move around freely.

If the seat belt cannot be pulled out of the retractor, firmly pull the belt and release it. You will then be able to smoothly pull the belt out of the retractor.

When a passenger's shoulder belt is completely extended and is then retracted even slightly, the belt is locked in that position and cannot be extended. This feature is used to hold the child restraint system securely. (For details, see "Child restraint" in this chapter.) To free the belt again, fully retract the belt and then pull the belt out once more.

CAUTION

- After inserting the tab, make sure the tab and buckle are locked and that the belt is not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.
- If the seat belt does not function normally, immediately contact your Toyota dealer. Do not use the seat until the seat belt is fixed. It cannot protect an adult occupant or your child from injury.



Seat belts with an adjustable shoulder

Adjust the shoulder anchor position to your size.

To raise: Slide the anchor up.

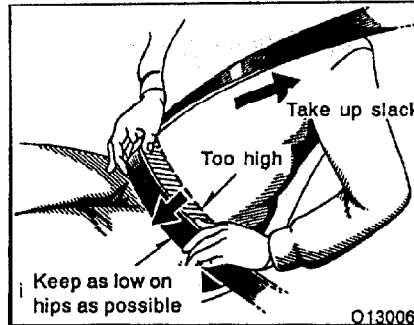
To lower: Push in the lock release button and slide the anchor down.

After adjustment, make sure the anchor is locked in position.

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CAUTION

Always make sure the shoulder belt is positioned across the center of your shoulder. The belt should be kept away from your neck, but not falling off your shoulder. Failure to do so could reduce the amount of protection in an accident and cause serious injuries in a collision.



Adjust the position of the lap and shoulder belts.

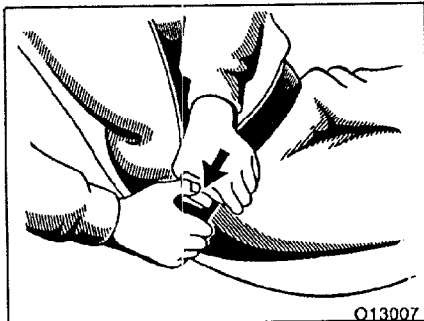
Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit by pulling the shoulder portion upward through the latch plate.

CAUTION

- High-positioned lap belts and loose-fitting belts both could cause serious injuries due to sliding under the lap belt during a collision or other unintended result. Keep the lap belt positioned as low on hips as possible.
- For your safety, do not place the shoulder belt under your arm.

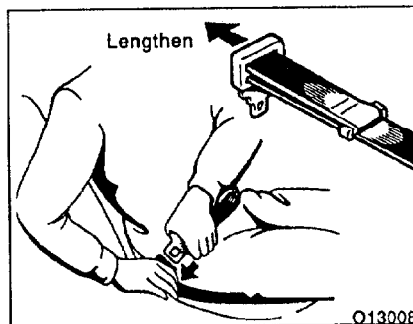
36

-Front center seat belt (2-point type)



To release the belt, press the buckle-release button and allow the belt to retract.

If the belt does not retract smoothly, pull it out and check for kinks or twists. Then make sure it remains untwisted as it retracts.



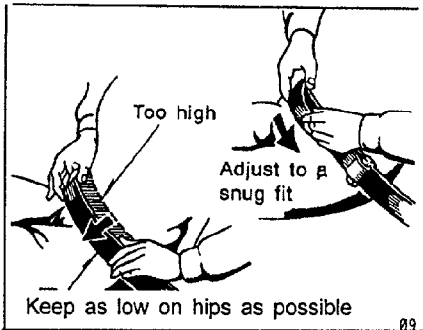
Sit up straight and well back in the seat. To fasten your belt, insert the tab into the buckle.

You will hear a click when the tab locks into the buckle.

If the belt is not long enough for you, hold the tab at a right angle to the belt and pull on the tab.

CAUTION

- After inserting the tab, make sure the tab and buckle are locked and that the belt is not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.
- If the seat belt does not function normally, immediately contact your Toyota dealer. Do not use the seat until the seat belt is fixed. It cannot protect an adult occupant or your child from injury.



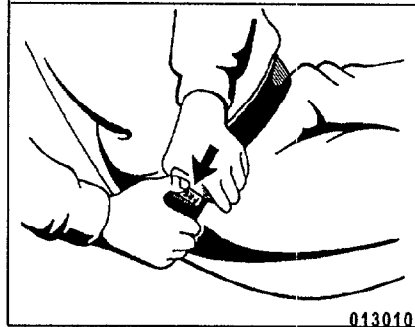
Remove excess length of the belt and adjust the belt position.

To shorten the belt, pull the free end of the belt.

Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit.

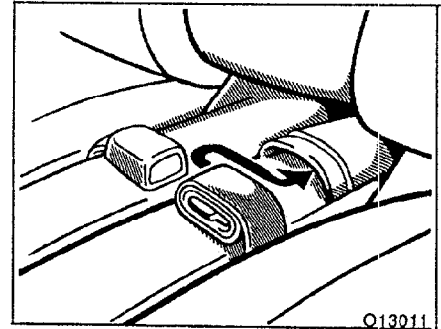
CAUTION

High-positioned and loose-fitting lap belt could cause serious injuries due to sliding under the lap belt during a collision or other unintended result. Keep the lap belt positioned as low on hips as possible.



To release the belt, press the buckle-release button.

-Stowing the front center seat belt



The front center seat belts can be stowed when not in use.

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-Seat belt extender

If your seat belt cannot be fastened securely because it is not long enough, a personalized seat belt extender is available from your Toyota dealer free of charge.

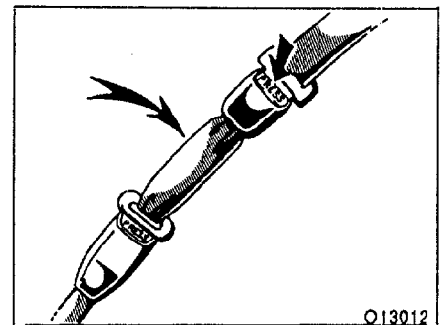
Please contact your local Toyota dealer so that the dealer can order the proper required length for the extender. Bring the heaviest coat you expect to wear for proper measurement and selection of length. Additional ordering information is available at your Toyota dealer.

CAUTION

When using the seat belt extender, observe the following. Failure to follow these instructions could result in less effectiveness of the seat belt restraint system in case of vehicle accident, increasing the chance of personal injury.

- Never use the seat belt extender if you can fasten the seat belt without it.

- Remember that the extender provided for you may not be safe when used on a different vehicle, or for another person or at a different seating position than the one originally intended for.



To connect the extender to the seat belt, insert the tab into the seat belt buckle so that the "PRESS" signs on the buckle-release buttons of the extender and the seat belt are both facing outward as shown.

You will hear a click when the tab locks into the buckle.

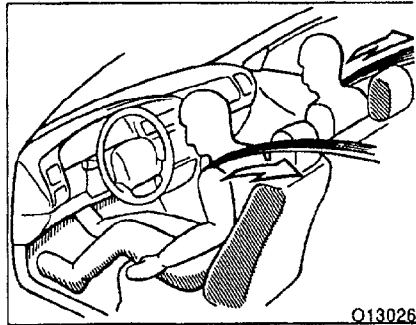
When releasing the seat belt, press on the buckle-release button on the extender, not on the seat belt. This helps prevent damage to the vehicle interior and extender itself.

When not in use, remove the extender and store in the vehicle for future use.

-Front seat belt pretensioners

CAUTION

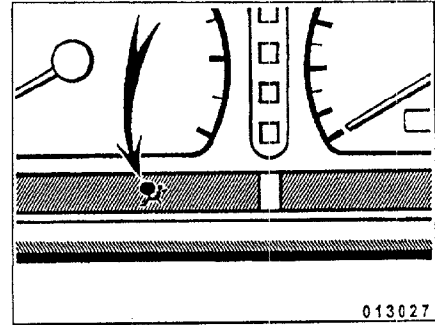
- After inserting the tab, make sure the tab and buckle are locked and that the seat belt extender is not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.
- If the seat belt does not function normally, immediately contact your Toyota dealer.



The driver and front passenger's seat belts are equipped with a pretensioner which is designed to be activated together with the front airbags in response to a severe frontal impact.

When the airbag sensor detects the shock of a severe frontal impact, the front seat belt is quickly drawn back in by the retractor so that the belt snugly restrains the front seat occupants.

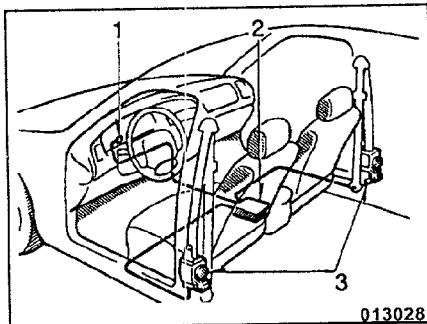
The seat belt pretensioners are activated even with no passenger in the front seat.



This indicator comes on when the ignition key is turned to the "ACC" or "ON" position. It goes off after about 6 seconds. This means the front seat belt pretensioners are operating properly.

This warning light system monitors airbag sensor assembly, seat belt pretensioner assembly, warning light, interconnecting wiring and power sources. (For details, see "Service reminder indicators and warning buzzers" in chapter I-5.)

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The seat belt pretensioner system mainly consists of the following components and their locations are shown in the illustration.

1. SRS airbag warning light
2. Airbag sensor assembly
3. Seat belt pretensioner assembly

The seat belt pretensioner is controlled by the airbag sensor assembly. The airbag sensor assembly consists of a safing sensor and airbag sensor.

When a seat belt pretensioner is activated, an operating noise may be heard and a small amount of smoke-like gas may be released. This gas is harmless and does not indicate that a fire is occurring.

Once the seat belt pretensioner has been activated, the seat belt retractor remains locked.

CAUTION

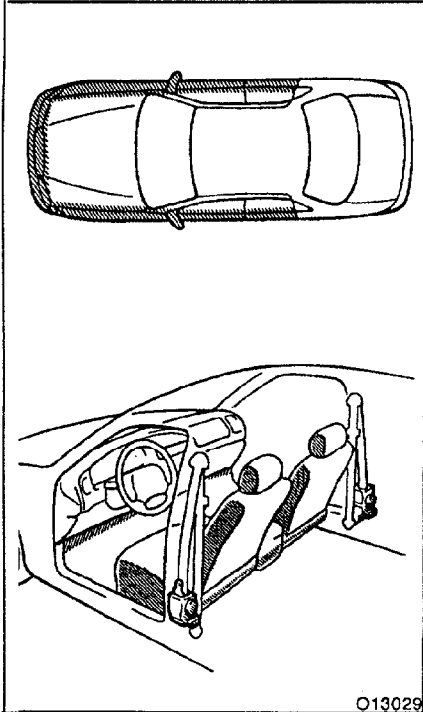
Do not modify, remove, strike or open the front seat belt pretensioner assemblies, airbag sensor or surrounding area or wiring. Doing any of these may cause sudden operation of the front seat belt pretensioners or disable the system, which could result in serious injury.

Failure to follow these instructions can result in serious injuries.

NOTICE

Do not perform any of the following changes without consulting your Toyota dealer. Such changes can interfere with proper operation of the seat belt pretensioners in some cases.

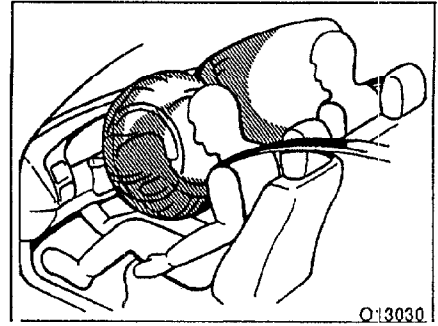
- ◆ Installation of electronic items such as a mobile two-way radio, cassette tape player or compact disc player
- ◆ Repairs on or near the front seat belt retractor assemblies
- ◆ Modification of the suspension system
- ◆ Modification of the front end structure
- ◆ Attachment of a grille guard (bull bar, kangaroo bar, etc.), snowplow, winches or any other equipment to the front end
- ◆ Repairs made on or near the front end structure or console



This front seat belt pretensioner system has a service reminder indicator to inform the driver of operating problems. If either of the following conditions occurs, this indicates a malfunction of the airbags or pretensioners. Contact your Toyota dealer as soon as possible to service the vehicle.

- The light does not come on when the ignition key is turned to the "ACC" or "ON" position, or remains on.
- The light comes on or flashes while driving.
- If either front seat belt does not retract or can not be pulled out due to a malfunction or activation of the pretensioner.
- The front seat belt pretensioner assembly or surrounding area has been damaged.
- The front and side parts of the vehicle (shaded in the illustration) were involved in an accident not of the extent to cause the seat belt pretensioners to operate.
- The front seat belt pretensioner assembly is scratched, cracked, or otherwise damaged.

SRS driver and front passenger airbags



The SRS (Supplemental Restraint System) airbags are designed to provide further protection for occupants in the following seats when added to the primary protection provided by the seat belts.

- Vehicles with separate front seats-The SRS airbags are designed to protect the driver and front passenger.
- Vehicles with bench front seats-The SRS airbags are designed to protect the driver and right-front passenger. They are not designed to protect occupant in the center position.

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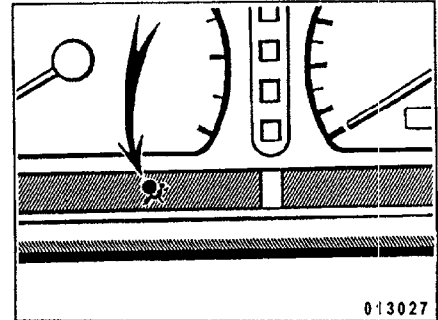
In response to a severe frontal impact, the SRS airbags work together with the seat belts to help prevent or reduce injury by inflating, in order to decrease the likelihood of the driver's or front passenger's head or chest directly hitting the steering wheel or dashboard. The passenger airbag is activated even with no passenger in the front seat.

Be sure to wear your seat belt.

⚠ CAUTION

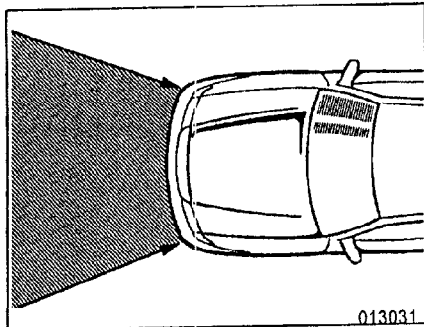
A driver or front passenger too close to the steering wheel or dashboard during airbag deployment can be killed or seriously injured. Toyota strongly recommends that:

- The driver sit as far back as possible from the steering wheel while still maintaining control of the vehicle.
- The front passenger sit as far back as possible from the dashboard.
- All vehicle occupants be properly restrained using the available seat belts.



This indicator comes on when the ignition key is turned to the "ACC" or "ON" position. It goes off after about 6 seconds. This means the SRS airbags are operating properly.

The SRS airbag warning light system monitors the airbag sensor assembly, inflators, warning light, interconnecting wiring and power sources. (For details, see "Service reminder indicators and warning buzzers" in chapter 1-5.)



The SRS airbag system is designed to activate in response to a severe frontal impact within the shaded area between the arrows in the illustration.

There may be the case that the SRS airbags will not activate with such an impact in which the occupant wearing the seat belt correctly would not get serious injury.

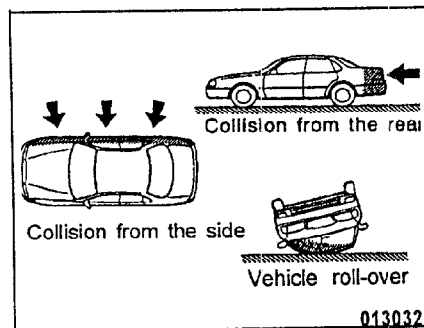
The SRS airbags will deploy if the severity of the impact is above the designed threshold level, comparable to an approximate 20 km/h (14 mph) collision when impacting straight into a fixed barrier that does not move or deform.

If the severity of the impact is below the above threshold level, the SRS airbags may not deploy.

However, this threshold velocity will be considerably higher if the vehicle strikes an object, such as a parked vehicle or sign pole, which can move or deform on impact, or if it is involved in an underride collision (e.g. a collision in which the nose of the vehicle "underrides", or goes under, the bed of a truck).

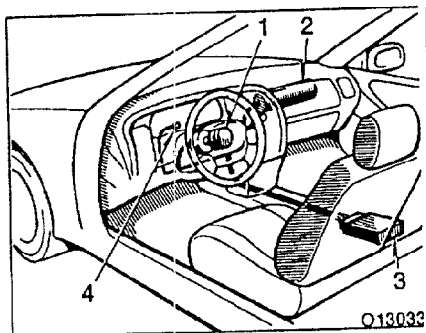
It is possible with collision severity at the marginal level of airbag sensor detection and activation that only one of your vehicle's two airbags will deploy.

For the safety of all occupants, be sure to always wear seat belts.



The SRS airbags are not designed to inflate if the vehicle is subjected to a side or rear impact, if it rolls over, or if it is involved in a low-speed frontal collision.

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The SRS airbag system mainly consists of the following components and their locations are shown in the illustration.

1. Airbag module for driver (airbag and inflator)
2. Airbag module for passenger (airbag and inflator)
3. Airbag sensor assembly
4. SRS airbag warning light

The airbag sensor assembly consists of a sensing sensor and airbag sensor.

In a severe frontal impact, sensors detect deceleration and the system triggers the airbag inflators. Then a chemical reaction in the inflators momentarily fills the airbags with non-toxic gas to help restrain the forward motion of the occupants.

When the airbags inflate, they produce a fairly loud noise and release some smoke along with non-toxic gas. This does not indicate a fire. Be sure to wash off any residue as soon as possible to prevent minor skin irritation.

Deployment of the airbags happen in a fraction of a second, so the airbags must inflate with considerable force. While the system is designed to reduce serious injuries, it may also cause minor burns or abrasions and swellings.

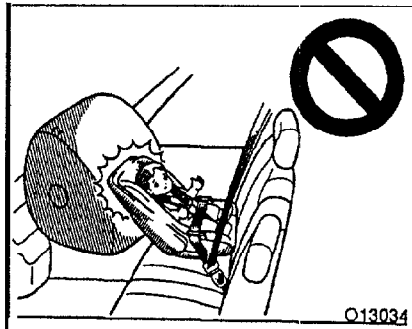
Parts of the airbag module (steering wheel hub, dashboard) may be hot for several minutes, but the airbags themselves will not be hot. The airbags are designed to inflate only once.

A crash severe enough to inflate the airbags may break the windshield as the vehicle buckles. In vehicles with a passenger airbag the windshield may also be damaged by absorbing some of the force of the inflating airbag.

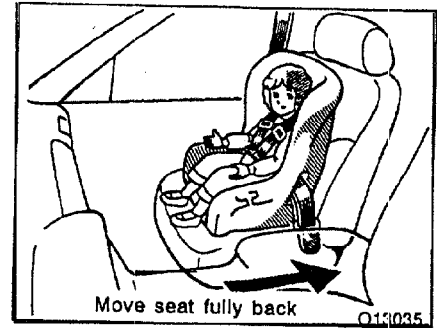
CAUTION

The SRS airbag system is designed only as a supplement to the primary protection of the driver side and front passenger side seat belt systems. The front seat occupants can be killed or seriously injured by an inflating airbag if they do not wear the available seat belts. During sudden braking just before a collision, an unrestrained driver or front passenger can move forward into direct contact with or close proximity to the airbag which may then deploy during the collision. To obtain maximum protection in an accident, the driver and all passengers in the vehicle must wear their seat belts. Wearing a seat belt during an accident reduces the chances of death or serious injuries or being thrown out of the vehicle. For instructions and precautions concerning the seat belt system, see "Seat belts" in this chapter.

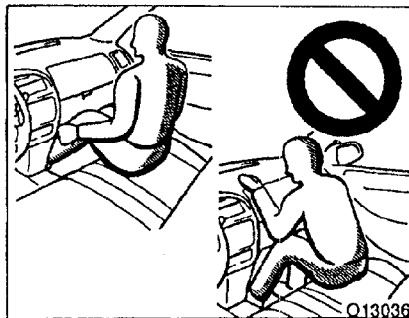
- Improperly seated and/or restrained infants and children can be killed or seriously injured by a deploying airbag. An infant or child who is too small to use a seat belt should be properly secured using a child restraint system. Toyota strongly recommends that all infants and children be placed in the rear seat of the vehicle and properly restrained. The rear seat is the safest for infants and children. For instructions concerning the installation of a child restraint system, see "Child restraint" in this chapter.



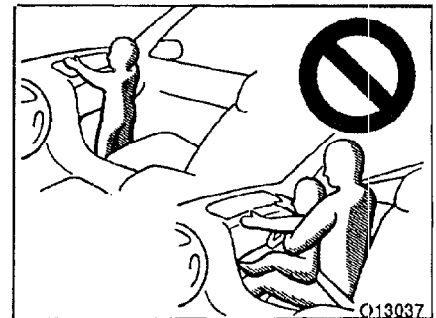
- Never put a rear-facing child restraint system on the front seat because the force of the rapid inflation of the passenger airbag can cause death or serious injury to the child.



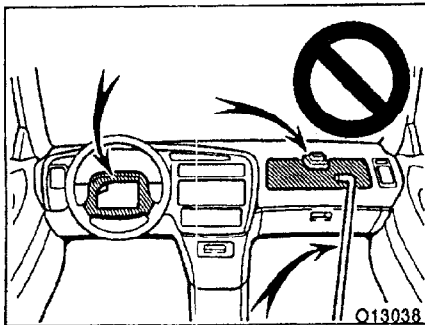
- A forward-facing child restraint system should be allowed to put on the front seat only when it is unavoidable. Always move the seat as far back as possible, because the force of a deploying airbag could cause death or serious injury to the child. On vehicles with side airbags, do not allow the child to lean against the front door or around the front door even if the child is seated in the child restraint system. It is dangerous if the side airbag inflates, and the impact could cause death or serious injury to the child. For instructions concerning the installation of a child restraint system, see "Child restraint" in this chapter.



- Do not sit on the edge of the seat or lean over the dashboard when the vehicle is in use. The airbags inflate with considerable speed and force; you may be killed or seriously injured. Sit up straight and well back in the seat, and always use your seat belt.



- Do not allow a child to stand up, or to kneel on the front passenger seat. The airbag inflates with considerable speed and force; the child may be killed or seriously injured.
- Do not hold a child on your lap or in your arms. Use a child restraint system in the rear seat. For instructions concerning the installation of a child restraint system, see "Child restraint" in this chapter.



- Do not put objects or your pets on or in front of the dashboard or steering wheel pad that houses the airbag system. They might restrict inflation or cause death or serious injury as they are projected rearward by the force of deploying airbags. Likewise, the driver and front passenger should not hold things in their arms or on their knees.

•• Do not modify or remove any wiring. Do not modify, remove, strike or open any components such as the steering wheel column cover, front passenger airbag cover, front passenger airbag, airbag sensor assembly. Doing any of these may cause sudden SRS airbag inflation or disable the system, which could result in death or serious injury.

Failure to follow these instructions can result in death or serious injuries.

NOTICE

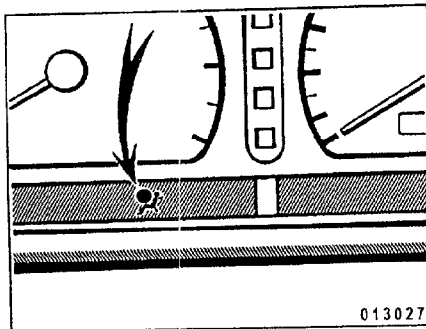
Do not perform any of the following changes without consulting your Toyota dealer. Such changes can interfere with proper operation of the SRS airbag system in some cases.

- ◆ Installation of electronic items such as a mobile two-way radio, cassette tape player or compact disc player
- ◆ Modification of the suspension system

•• Modification of the front end structure

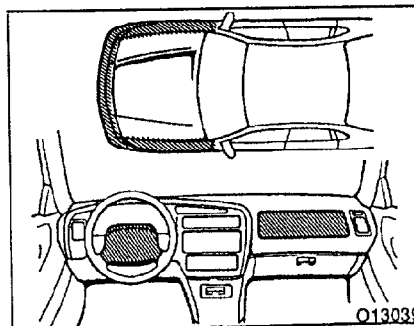
*Attachment of a grille guard (bull bar, kangaroo bar, etc.), snowplow, winches or any other equipment to the front end

&Repairs made on or near the front end structure, console, steering column, steering wheel or dashboard near the front passenger airbag



This SRS airbag system has a service reminder indicator to inform the driver of operating problems. If either of the following conditions occurs, this indicates a malfunction of the airbags. Contact your Toyota dealer as soon as possible to service the vehicle.

- The light does not come on when the ignition key is turned to the "ACC" or "ON" position, or remains on.
- The light comes on while driving.



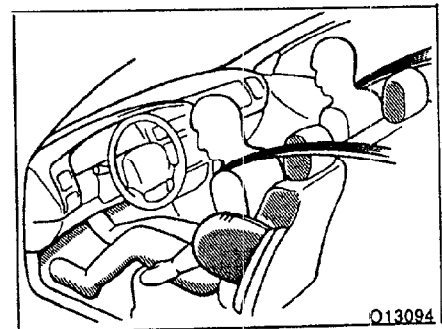
In the following cases, contact your Toyota dealer as soon as possible:

- The SRS airbags have been inflated.
- The front part of the vehicle (shaded in the illustration) were involved in an accident that did not cause the SRS airbags to inflate.
- The pad section of the steering wheel or front passenger airbag cover (shaded in the illustration) is scratched, cracked, or otherwise damaged.

NOTICE

Do not disconnect the battery cables before contacting your Toyota dealer.

SRS side airbags



The SRS (Supplemental Restraint System) side airbags are designed to provide further protection for occupants in the following seats when added to the primary protection provided by the seat belts.

- Vehicles with separate front seats-The SRS side airbags are designed to protect the driver and front passenger.
- Vehicles with bench front seats-The SRS side airbags are designed to protect the driver and right-front passenger. They are not designed to protect occupant in the center position.

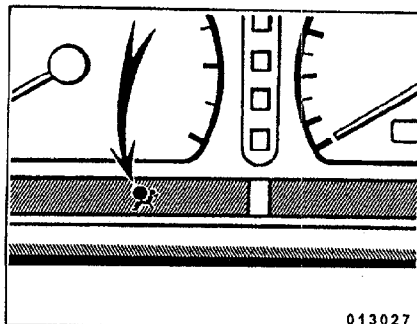
In response to a severe side impact, the SRS side airbags work together with the seat belt to help prevent or reduce injury by inflating, in order to decrease the impact mainly on the driver's or front passenger's chest. The SRS side airbag on the passenger seat is activated even with no passenger in the front seat.

Be sure to wear your seat belt.

! CAUTION

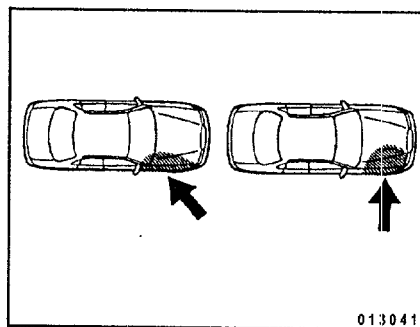
SRS side airbags inflate with considerable force. To avoid potential death or serious injury during inflation of a side airbag, Toyota strongly recommends that the driver and front passenger;

- Wear their seat belt
- Remain properly seated with their back against the seat at all times.



This indicator comes on when the ignition key is turned to the "ACC" or "ON" position. It goes off after about 6 seconds. This means the SRS side airbags are operating properly.

The warning light system monitors the airbag sensor assembly, inflators, warning light, interconnecting wiring and power sources. (For details, see "Service reminder indicators and warning buzzers" in chapter I-5.)



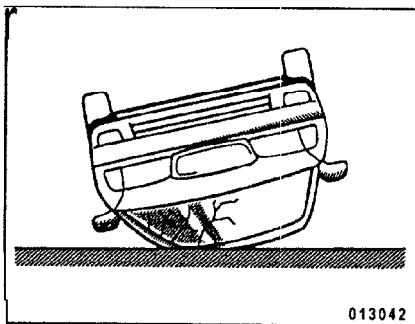
The SRS side airbag system may not inflate if the vehicle is subjected to a collision from the side at an angle, or a collision to the side of the vehicle body other than the passenger compartment shown in the illustration, which impact is not severe enough for the passenger compartment.

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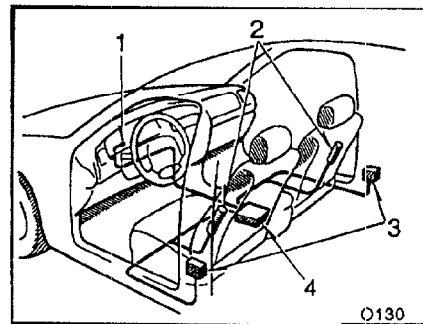
There may be the case that the SRS side airbags will not activate with such an impact in which the occupant wearing the seat belt correctly would not get serious injury.

The SRS side airbags are designed to inflate when the passenger compartment gets a severe impact from the side.

For the safety of all occupants, be sure to always wear your seat belt.



The SRS side airbags are not designed to inflate if the vehicle is rolled over. If the impact on the body of the passenger compartment is not strong as illustrated above, the relevant SRS side airbag may not inflate.



The SRS side airbag system mainly consists of the following components and their locations are shown in the illustration.

1. SRS airbag warning light
2. Side airbag module (airbag and inflator)
3. Side airbag sensor assembly
4. Airbag sensor assembly

The SRS side airbag system is controlled by the airbag sensor. The airbag sensor assembly consists of a safing sensor and airbag sensor.

In a severe side impact, the side airbag sensor triggers the side airbag inflators. Then a chemical reaction in the inflators momentarily fills the airbags with non-toxic gas to help restrain the forward or lateral motion of the occupants.

When the airbags inflate, they produce a fairly loud noise and release some smoke along with non-toxic gas. This does not indicate a fire. Be sure to wash off any residue as soon as possible to prevent minor skin irritation.

Deployment of the airbags happen in a fraction of a second, so the airbags must inflate with considerable force. While the system is designed to reduce serious injuries, it may also cause minor burns or abrasions and swellings.

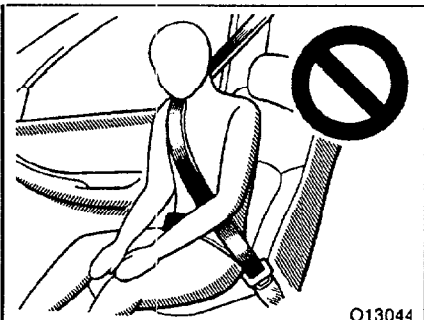
Front seats may be hot for several minutes, but the airbags themselves will not be hot. The airbags are designed to inflate only once.

⚠ CAUTION

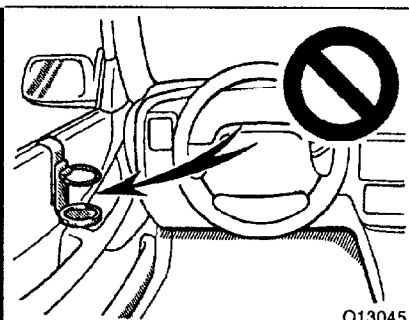
• The SRS side airbag system is designed only as a supplement to the primary protection of the driver side and front passenger side seat belt systems. The front seat occupants can be killed or seriously injured by an inflating airbag if they do not wear the available seat belts. During sudden braking just before a collision, an unrestrained driver or front passenger can move sideward into direct contact with or close proximity to the airbag which may then deploy during the collision. To obtain maximum protection in an accident, the driver and all passengers in the vehicle must wear their seat belts. Wearing a seat belt during an accident reduces the chances of death or serious injuries or being thrown out of the vehicle. For instructions and precautions concerning the seat belt system, see "Seat belts" in this chapter.

• Improperly seated and/or restrained infants and children can be killed or seriously injured by a deploying airbag. An infant or child who is too small to use a seat belt should be properly secured using a child restraint system. Toyota strongly recommends that all infants and children be placed in the rear seat of the vehicle and properly restrained. The rear seat is the safest for infants and children. For instructions concerning the installation of a child restraint system, see "Child restraint" in this chapter.

• Do not allow the child to lean against the front door or around the front door even if the child is seated in the child restraint system. It is dangerous if the side airbag inflates and the impact could cause death or serious injury to the child. For instructions concerning the installation of a child restraint system, see "Child restraint" in this chapter.



- Do not lean against the front door when the vehicle is in use. The side airbag inflates with considerable speed and force; you may be killed or seriously injured.
- Do not apply excessive weight to the outer side of the front seats on vehicles with side airbags.
- The child head should not be leaned against the vicinity of the part where the side airbag activates.



- Do not attach a cup holder or any other device on or around the door. When the side airbag inflates, the cup holder or any other device will be thrown with great force or the side airbag may not activate correctly, resulting in death or serious injury. Likewise, the driver and front passenger should not hold things in their arms or on their knees.

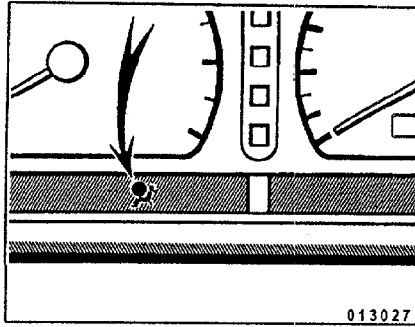
- Do not use accessories for the seats which cover the parts where the side airbags should inflate. Such accessories may prevent the side airbags from activating correctly, causing death or serious injury.
- Do not modify or replace the seats or surface of the front seats with the side airbags. Such changes may disable the system or cause the side airbags to inflate, resulting in death or serious injury. Consult your Toyota dealer.

Failure to follow these instructions can result in death or serious injuries.

NOTICE

Do not perform any of the following changes without consulting your Toyota dealer. Such changes can interfere with proper operation of the SRS airbag system in some cases.

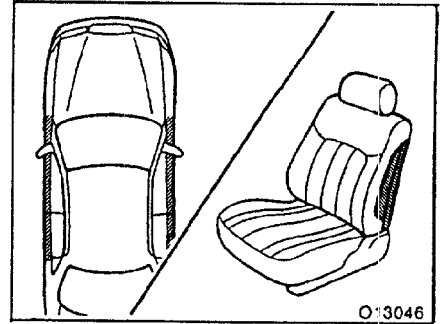
- ◆ installation of electronic items such as a mobile two-way radio, cassette tape player or compact disc player
- ◆ Modification of the suspension system
- ◆ Modification of the side structure of the passenger compartment
- ◆ Repairs made on or near the console of front seat



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This SRS side airbag system has a service reminder indicator to inform the driver of operating problems. If either of the following conditions occurs, this indicates a malfunction of the airbags. Contact your Toyota dealer as soon as possible to service the vehicle.

- The light does not come on when the ignition key is turned to the "ACC" or "ON" position, or remains on.
- The light comes on or flashes while driving.



O-3046

In the following cases, contact your Toyota dealer as soon as possible:

- The SRS side airbags have been inflated.
- The portion of the doors (shaded in the illustration) were involved in an accident that did not cause the SRS side airbags to inflate.
- The surface of the seats with the side airbag (shaded in the illustration) is scratched, cracked, or otherwise damaged.

NOTICE

Do not disconnect the battery cables before contacting your Toyota dealer.

Child restraint- Child restraint precautions

Toyota strongly urges the use of child restraint systems for children small enough to use them.

The laws of all fifty states in the U.S.A. and Canada now require the use of a child restraint system.

Your vehicle conforms to SAE J1819.

If a child is too large for a child restraint system, the child should sit in the rear seat and must be restrained using the vehicle's seat belt. See "Seat belts" for details.

CAUTION

For effective protection in automobile accidents and sudden stops, children must be properly restrained using a seat belt or child restraint system depending on the age and size of the child. Holding a child in your arms is not a substitute for a child restraint system. In an accident, the child can be crushed against the windshield, or between you and the vehicle's interior.

*Toyota strongly urges use of a proper child restraint system which conforms to the size of the child, and is put on the rear seat. According to accident statistics, the child is safer when properly restrained in the rear seat than in the front seat.

- Never put a rear-facing child restraint system on the front seat. In the event of an accident, the force of the rapid inflation of the airbag can cause death or serious injury if a rear-facing child restraint system is put on the front seat.
- Unless it is unavoidable, do not put a forward-facing child restraint system on the front seat.

-Child restraint system

- A forward-facing child restraint system should be allowed to put on the front seat only when it is unavoidable. Always move the seat as far back as possible, because the force of a deploying airbag could cause death or serious injury to the child. Do not allow the child to lean against the front door or around the front door even if the child is seated in the child restraint system. It is dangerous if the side airbag inflates, and the impact could cause death or serious injury to the child.
- Make sure that you have complied with all installation instructions provided by the child restraint manufacturer and that the system is properly secured.

A child restraint system for a small child or baby must itself be properly restrained on the seat with either the lap belt or the lap portion of the lap/shoulder belt. You must carefully consult the manufacturer's instructions which accompany your child restraint system.

To provide proper restraint, use a child restraint system following the manufacturer's instructions about the appropriate age of the child and size for the restraint system.

Install the child restraint system correctly following the instructions provided by its manufacturer of the system. General directions are also provided under the following instructions.

The child restraint system should be installed on the rear seat. According to accident statistics, the child is safer when properly restrained in the rear seat than in the front seat.

CAUTION

- Never put a rear-facing child restraint system on the front seat. In the event of an accident, the force of the rapid inflation of the airbag can cause death or serious injury if a rear-facing child restraint system is put on the front seat.
- Unless it is unavoidable, do not put a forward-facing child restraint system on the front seat.
- A forward-facing child restraint system should be allowed to put on the front seat only when it is unavoidable. Always move the seat as far back as possible, because the force of a deploying airbag could cause death or serious injury to the child. Do not allow the child to lean against the front door or around the front door even if the child is seated in the child restraint system. It is dangerous if the side airbag inflates, and the impact could cause death or serious injury to the child.

- After installing the child restraint system, make sure it is secured in place following the manufacturer's instructions. If it is not restrained securely, it may cause death or serious injury to the child in the event of a sudden stop or accident.

When not using the child restraint system, keep it secured with the seat belt or place it in the trunk or somewhere other than the passenger compartment. This will prevent it from injuring passengers in the event of a sudden stop or accident.

Your vehicle has anchors for securing the top strap of a child restraint system. The anchor nuts are welded beneath the sheet metal to permit installation of an anchor bracket for a child restraint system.

To install an anchor bracket, use an 8 mm X 30 mm X 1.25 mm coarse thread metric bolt and 15 mm (0.6 in.) spacer. Note that the bolts accompanying many child restraint systems are not metric. You can damage the anchor nuts on your vehicle if you force bolts with different thread into the anchor nuts.

For instructions about how to install the anchor bracket, see "Top strap anchors and locations".

If your child restraint system does not provide any of the necessary parts, you can purchase the following items from your Toyota dealer.

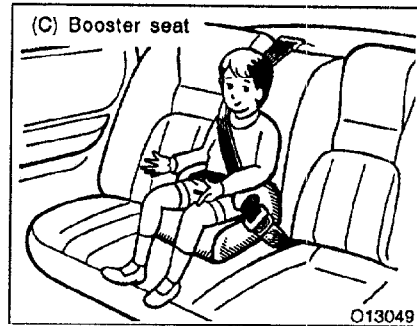
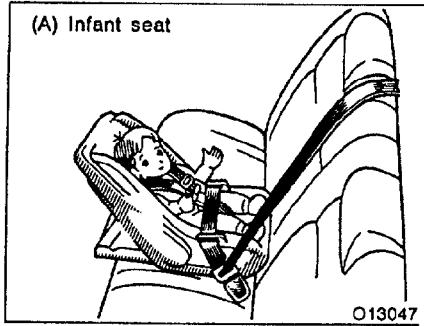
- * CRS installation kit
(Part No. 04731-22012)-contains 1 bolt, 3 types of spacers and 1 locking clip.
- * Bolt (Part No. 91511-60830)

-Types of child restraint system

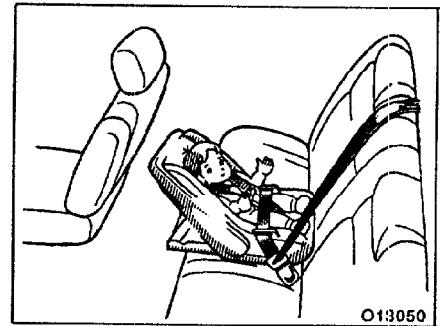
Child restraint systems are classified into the following 3 types depending on the child's age and size.

- (A) Infant seat
- (B) Convertible seat
- (C) Booster seat

Install the child restraint system following the instructions provided by its manufacturer.

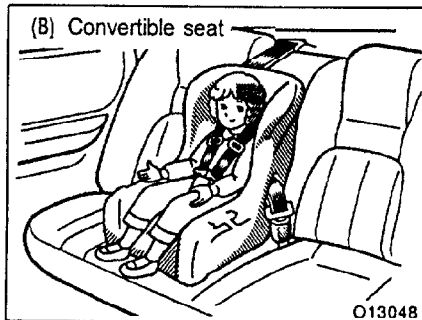


**-Installation with 3-point
type seat belt**

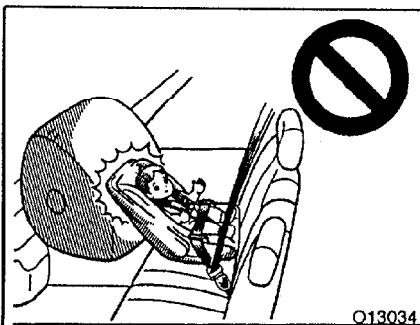


(A) INFANT SEAT INSTALLATION

An infant seat is used in rear-facing position only.

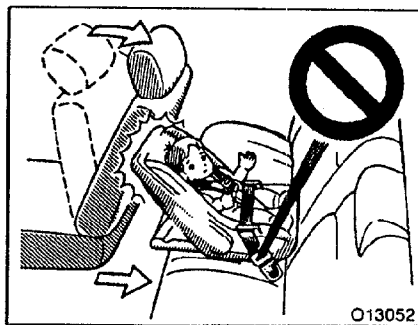


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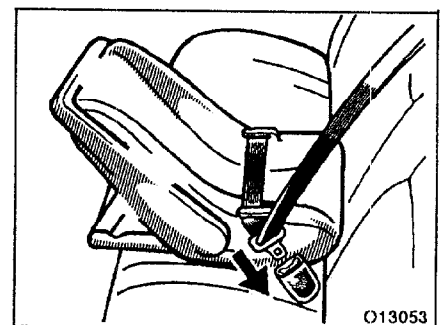


CAUTION

- Never put a rear-facing child restraint system on the front seat because the force of the rapid inflation of the passenger airbag can cause death or serious injury to the child.



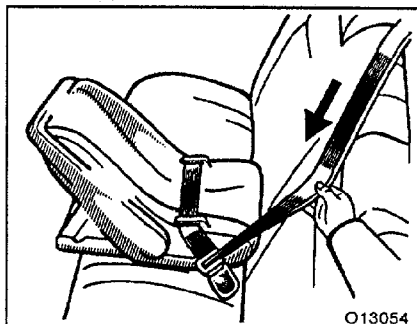
- Do not put a rear-facing child restraint system on the rear seat if it interferes with the lock mechanism of the front seats. This can cause severe injury to the child and front passenger in case of sudden braking or a collision.



1. Run the lap and shoulder belt through or around the infant seat following the instructions provided by its manufacturer and insert the tab into the buckle taking care not to twist the belt. Keep the lap portion of the belt tight.

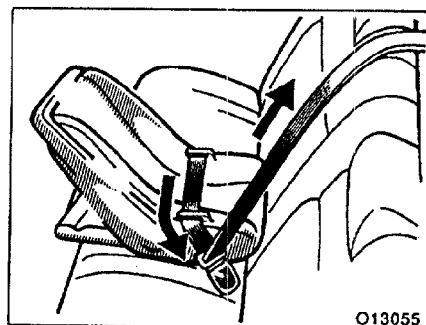
CAUTION

- After inserting the tab, make sure the tab and buckle are locked and that the lap and shoulder portions of the belt are not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.
- If the seat belt does not function normally, it cannot protect your child from injury. Contact your Toyota dealer immediately. Do not use the seat until the seat belt is fixed.



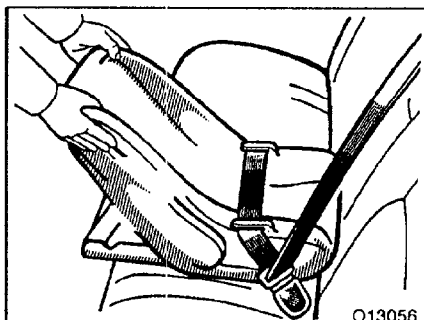
2. Fully extend the shoulder belt to put it in the lock mode. When the belt is then retracted even slightly, it cannot be extended.

To hold the infant seat securely, make sure the belt is in the lock mode before letting the belt retract.



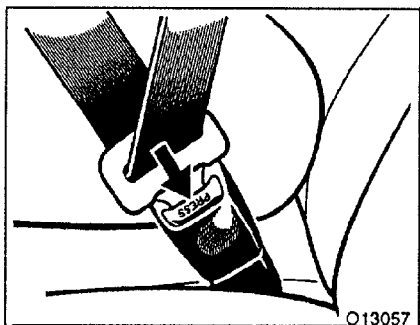
3. While pressing the infant seat firmly against the seat cushion and seatback, let the shoulder belt retract as far as it will go to hold the infant seat securely.

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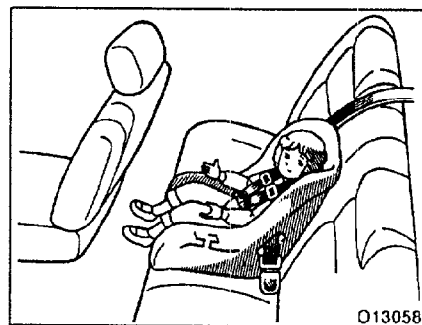


CAUTION

Make sure the seat belt is securely locked. Also make sure the child restraint system is secure by pushing and pulling it in different directions. Follow all the installation instructions provided by its manufacturer.

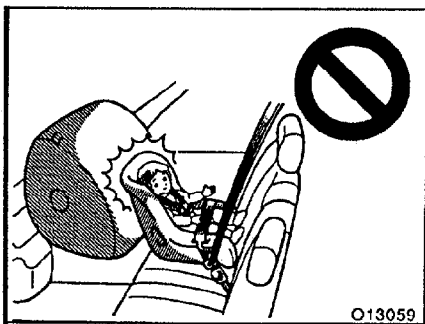


4. To remove the infant seat, press the buckle-release button and allow the belt to retract completely. The belt will move freely again and be ready to work for an adult or older child passenger.



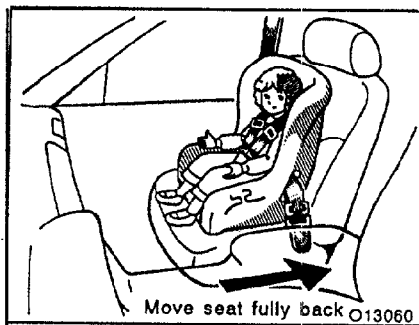
(B) CONVERTIBLE SEAT INSTALLATION

A convertible seat is used in forward-facing and rear-facing position depending on the child's age and size. When installing, follow the manufacturer's instruction about the applicable child's age and size as well as directions for installing a child restraint system.

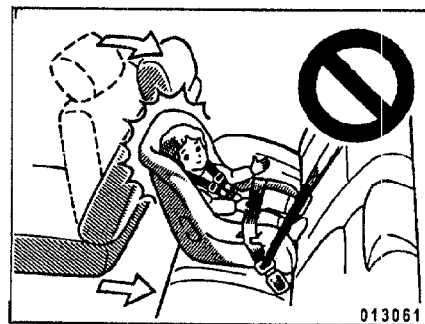


CAUTION

- Never put a rear-facing child restraint system on the front seat because the force of the rapid inflation of the passenger airbag can cause death or serious injury to the child.

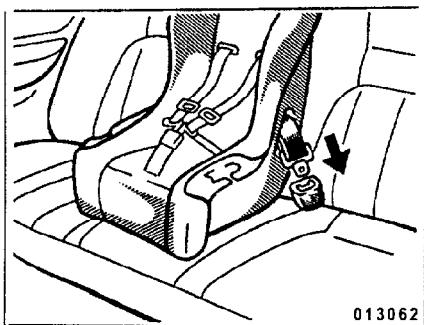


- A forward-facing child restraint system should be allowed to put on the front seat only when it is unavoidable. Always move the seat as far back as possible, because the force of a deploying airbag could cause death or serious injury to the child. Do not allow the child to lean against the front door or around the front door even if the child is seated in the child restraint system. It is dangerous if the side airbag inflates, and the impact could cause death or serious injury to the child.



- Do not put a rear-facing child restraint system on the rear seat if it interferes with the lock mechanism of the front seats. This can cause severe injury to the child and front passenger in case of sudden braking or a collision.

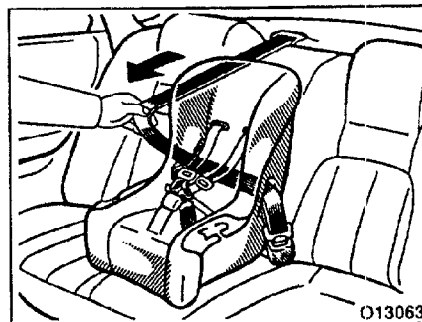
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1. Run the lap and shoulder belt through or around the convertible seat following the instructions provided by its manufacturer and insert the tab into the buckle taking care not to twist the belt. Keep the lap portion of the belt tight.

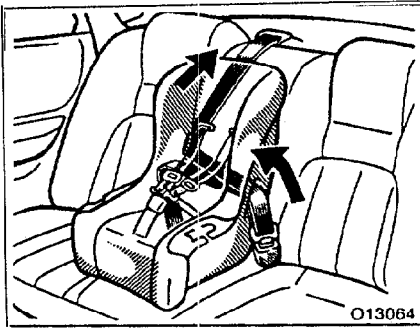
CAUTION

- After inserting the tab, make sure the tab and buckle are locked and that the lap and shoulder portions of the belt are not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.
- If the seat belt does not function normally, it cannot protect your child from injury. Contact your Toyota dealer immediately. Do not use the seat until the seat belt is fixed.

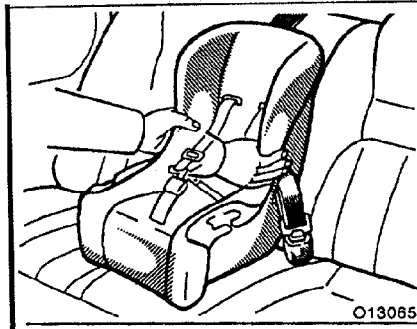


2. Fully extend the shoulder belt to put it in the lock mode. When the belt is then retracted even slightly, it cannot be extended.

To hold the convertible seat securely, make sure the belt is in the lock mode before letting the belt retract.

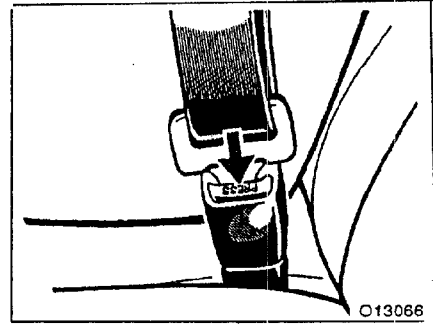


3. While pressing the convertible seat firmly against the seat cushion and seatback, let the shoulder belt retract as far as it will go to hold the convertible seat securely.



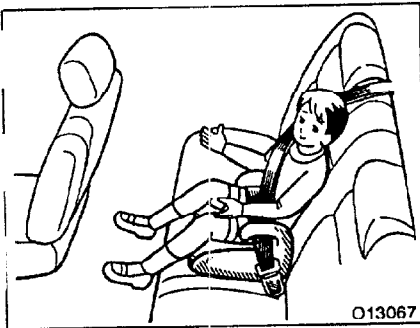
CAUTION

Make sure the seat belt is securely locked. Also make sure the child restraint system is secure by pushing and pulling it in different directions. Follow all the installation instructions provided by its manufacturer.



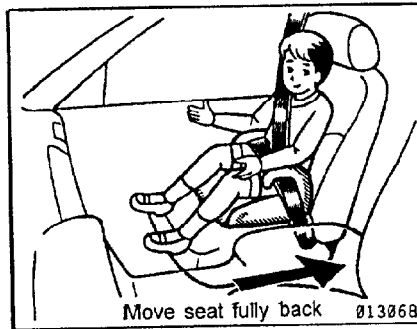
4. To remove the convertible seat, press the buckle-release button and allow the belt to retract completely. The belt will move freely again and be ready to work for an adult or older child passenger.

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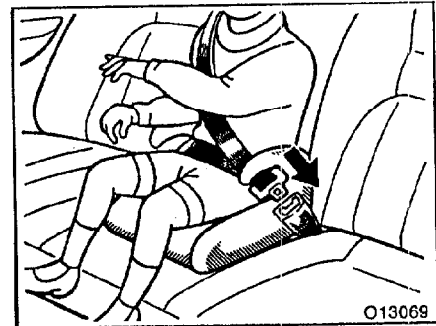
(C) BOOSTER SEAT INSTALLATION

A booster seat is used in forward-facing position only.



CAUTION

A forward-facing child restraint system should be put on the front seat only when it is unavoidable. Always move the seat as far back as possible, because the force of a deploying airbag could cause death or serious injury to the child. Do not allow the child to lean against the front door or around the front door even if the child is seated in the child restraint system. It is dangerous if the side inflates, and the impact could cause death or serious injury to the child.



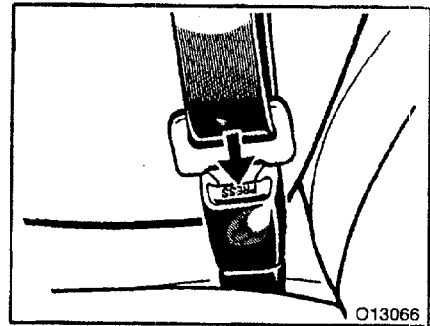
1. Sit the child on a booster seat. Run the lap and shoulder belt through or around the booster seat and child following the instructions provided by its manufacturer and insert the tab into the buckle taking care not to twist the belt.

Make sure the shoulder belt is correctly across the child's shoulder and that the lap belt is positioned as low as possible on child's hips. See "Seat belts" for details.

CAUTION

- Always make sure the shoulder belt is positioned across the center of child's shoulder. The belt should be kept away from child's neck, but not falling off child's shoulder. Failure to do so could reduce the amount of protection in an accident and cause serious injuries in a collision.
- High-positioned lap belts and loose-fitting belts both could cause serious injuries due to sliding under the lap belt during a collision or other unintended result. Keep the lap belt position as low on hips as possible.
- For child's safety, do not place the shoulder belt under child's arm.
- After inserting the tab, make sure the tab and buckle are locked and that the lap and shoulder portions of the belt are not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.

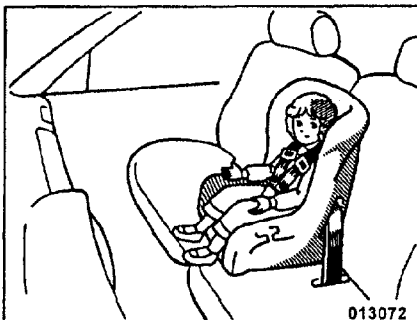
- If the seat belt does not function normally, it cannot protect your child from injury. Contact your Toyota dealer immediately. Do not use the seat until the seat belt is fixed.



2. To remove the child restraint system, press the buckle-release button and allow the belt to retract.

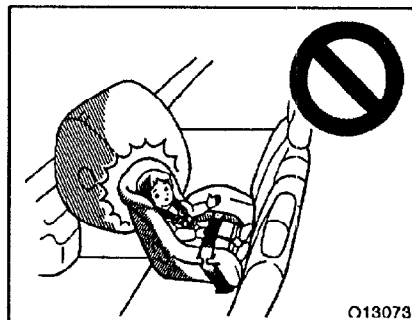
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-Installation with P-point type seat belt



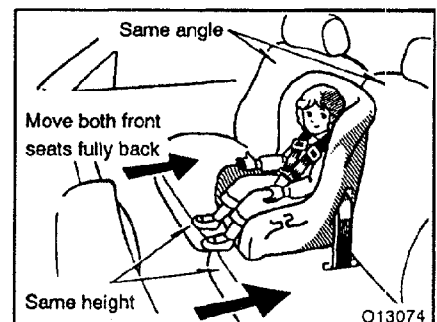
CONVERTIBLE SEAT INSTALLATION

A convertible seat is used in forward-facing and rear-facing position depending on the child's age and size. When installing, follow the manufacturer's instruction about the applicable child's age and size as well as directions for installing a child restraint system.



CAUTION

- Never put a rear-facing child restraint system on the front seat because the force of the rapid inflation of the passenger airbag can cause death or serious injury to the child.



- A forward-facing child restraint system should be put on the front seat only when it is unavoidable. Always move the seat as far back as possible, because the force of a deploying airbag could cause death or serious injury to the child.

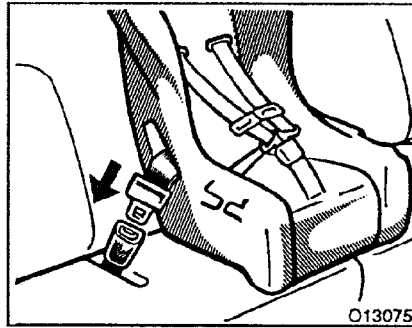
When installing a child restraint system in the front seat center position, move the driver and passenger seats as far back as possible, set both seatbacks to the same angle as the back of the child restraint system, and set both seat cushions at the same height so that the child restraint system is securely restrained.

With the child restraint system installed, check that your driving position is satisfactory and that the child restraint system does not interfere with your driving.

If your driving position is not satisfactory, or the child restraint system interferes with your driving, install it at another position.

⚠ CAUTION

- When using a forward-facing child restraint system, move the driver and passenger seats as far back as possible, set both seatbacks to the same angle as the back of the child restraint system, set both seat cushions at the same height and make sure your driving position is satisfactory.
- Ignoring the above instructions may result in a serious injury in case of an accident.

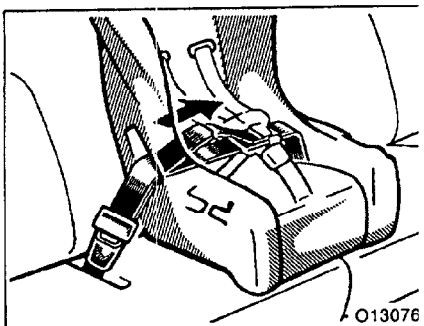


1. Run the center lap belt through or around the convertible seat following the instructions provided by its manufacturer and insert the tab into the buckle taking care not to twist the belt. Keep the lap portion of the belt tight.

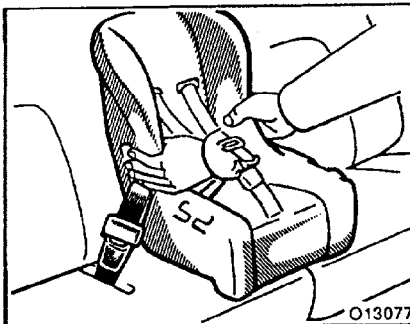
⚠ CAUTION

- After inserting the tab, make sure the tab and buckle are locked and that the lap and shoulder portions of the belt is not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.
- If the seat belt does not function normally, it cannot protect your child from injury. Contact your Toyota dealer immediately. Do not use the seat until the seat belt is fixed.

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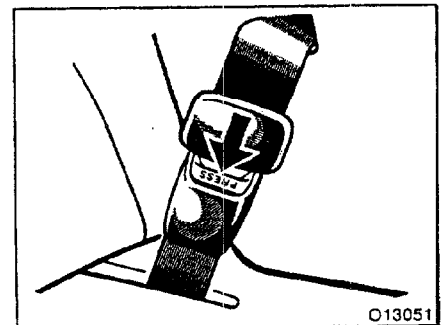


2. While pressing the convertible seat firmly against the seat cushion and seatback, tighten the lap belt by pulling its free end to hold the convertible seat securely.



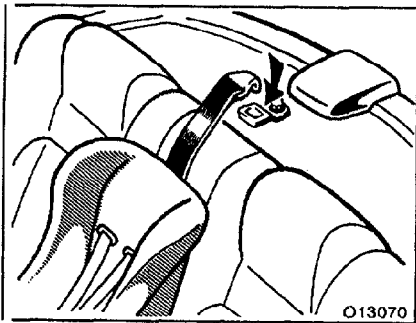
⚠ CAUTION

Make sure the seat belt is securely locked. Also make sure the child restraint system is secure by pushing and pulling it in different directions. Follow all the installation instructions provided by its manufacturer.



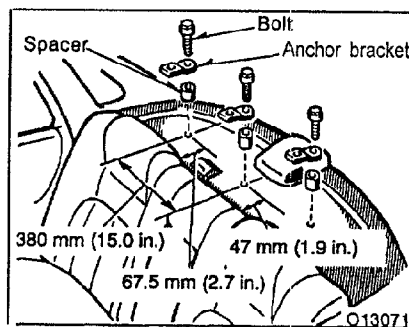
3. To remove the convertible seat, press the buckle-release button and allow the belt to retract completely. The belt will move freely again and be ready to work for an adult or older child passenger.

-Top strap anchors and locations



If your child restraint system requires the use of a top strap, latch the hook onto the anchor bracket and tighten the top strap.

See the following instructions to install the anchor bracket.



a. Using the illustration as a guide, run your fingers across the trim of the filler panel itself to locate the position of the holes underneath.

b. Make a hole in the covering directly above the hole in the filler panel.

c. Insert a 15 mm (0.6 in.) spacer and tighten down the anchor bracket for your child restraint system with a bolt. Torque the bolt to 16.5-24.7 N-m (1.68-2.52 kgf-m, 12.2-18.2

To comply with Canada Motor Vehicle Safety Standards, vehicles sold in Canada are provided with a bracket set in the glovebox, designed for use with any of the 3 anchor locations shown in the illustration.

If your child restraint system does not provide any of the necessary parts, ask your Toyota dealer. (See "Child restraint system".)