

REPORT NO. KAR-97-11

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
FRONTAL BARRIER FORTY PERCENT OFFSET IMPACT TEST

TOYOTA MOTOR CORPORATION
1996 TOYOTA CAMRY
4-DOOR SEDAN
NHTSA NO. MT5103

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



OCTOBER 9, 1997
FINAL REPORT

PREPARED FOR:
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16. <i>Abstract</i> A 60.3 km/h frontal barrier impact test was conducted on a 1996 Toyota Camry 4-door sedan at KARCO Engineering on August 7, 1997. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301 and footwell intrusion performance. The impact velocity was 60.14 km/h. The ambient temperature at the barrier face at the time of impact was 28.6 °C. The vehicle's maximum post-test static crush was 730 mm, located at the left edge of the front bumper. The test vehicle was equipped with a 3-point continuous belt system and supplemental airbags at both frontal outboard-seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" the occupant injury response data summary is as follows: <table border="1"> <thead> <tr> <th><u>Injury Criteria</u></th> <th><u>Threshold Value</u></th> <th><u>Driver Dummy</u></th> <th><u>Passenger Dummy</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>1000</td> <td>70.5</td> <td>130.6</td> </tr> <tr> <td>Chest Resultant Peak 3 msec clip</td> <td>60 G's</td> <td>27.9</td> <td>21.9</td> </tr> <tr> <td>Left Femur Force</td> <td>10009 N</td> <td>-3147.4</td> <td>-2715.8</td> </tr> <tr> <td>Right Femur Force</td> <td>10009 N</td> <td>-1830.7</td> <td>-1253.5</td> </tr> </tbody> </table>				<u>Injury Criteria</u>	<u>Threshold Value</u>	<u>Driver Dummy</u>	<u>Passenger Dummy</u>	Head Injury Criteria (HIC)	1000	70.5	130.6	Chest Resultant Peak 3 msec clip	60 G's	27.9	21.9	Left Femur Force	10009 N	-3147.4	-2715.8	Right Femur Force	10009 N	-1830.7	-1253.5
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SECTION 1

PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST MT5103

1.1 PURPOSE

This 37.5 mph (60.3 km/h) frontal barrier impact test is part of the FY' 97 Forty Percent Offset frontal barrier crash worthiness evaluation program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract No. DTNH22-97-D-02007. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for frontal barrier impacts with the vehicle impacting a deformable barrier at an impact speed in excess of the current 30 mph (48 km/h) FMVSS 208/212/219/301 requirements. The test program will be used to develop a standard for driver footwell intrusion data during frontal offset collisions.

1.2 TEST PROCEDURE

This 60.3 km/h forty percent frontal barrier offset impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated 01 September 1996 and corresponding KARCO Engineering Test Procedure KTP-001, dated September 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 August 7, 1997 at a speed of 60.14 km/h. The test vehicle was aligned with the deformable barrier such that the right edge of the barrier face was offset to the left of the vehicle centerline by ten percent of the vehicle's width. The test vehicle was instrumented with eight (8) accelerometers to measure longitudinal axis and rotational 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 59.53 to 61.14 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. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The test vehicle contained two (2) part 572E 5th percentile adult female anthropomorphic test devices (ATDs). Both ATDs were instrumented with head, chest, pelvic tri-axial accelerometers, left/right femur load cells and left/right lower leg sensors. In addition, chest displacement and neck six-axis load and moment sensors were utilized. The ATDs were positioned in the front outboard seating positions according to the dummy placement procedures specified in the Laboratory Indicant Test Procedure. Ninety-six channels of data were recorded with a PC based (TDAS) on-board data acquisition system. The data was digitally sampled at 10,000 samples per second and processed per section IP11 of the Laboratory Indicant Test Procedure.

The Driver ATD (serial No. 202) and the right-front passenger ATD (serial No. 274) were not used in any previous tests since their last calibration. Injury criteria were not exceeded by either ATD during this frontal offset barrier impact test.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A deformable honeycomb barrier was impacted by a 1996 Toyota Camry 4-door sedan at a velocity of 60.14 km/h. The test weight, with two (2) 5th percentile female ATDs, was 1532 kg.

The driver's Head Injury Criteria (HIC) was 70.5, the maximum chest deceleration over three (3) milliseconds was 27.9 g and the left and right femur loads were -3147.4 and -1830.7 Newtons, respectively. Chest deflection for the driver ATD was -25.3 mm. The driver ATD head contacted the airbag, headrest and 'B' pillar; its chest and abdomen contacted the airbag, the left knee contacted the steering column and both knees contacted the lower dash knee bolster.

The right front passenger's HIC was 130.6, maximum chest deceleration over three (3) milliseconds was 21.9 g, and the left and right femur loads were -2715.8 and -1253.5 Newtons, respectively. Chest deflection for the passenger ATD was -17.9 mm. The passenger ATD head contacted the airbag and headrest, the chest and abdomen contacted the airbag, both knees contacted the glove box and knee bolster.

Seat belt spoolout, measured by on-board pullout potentiometers was 56.7 mm for the driver ATD and 9.2 mm for the passenger ATD. Shoulder belt stretch was 0.042 cm/cm for the driver ATD and 0.01 cm/cm for the passenger ATD.

There was 100 percent windshield retention, 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 730 mm at the left side of the front bumper. The driver and passenger side doors opened without the aid of tools.

1.4 GENERAL COMMENTS

The 1996 Toyota Camry 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 contains the deformable barrier pre- and post-test measurement data. Appendix D is for test equipment and instrument calibration data. Appendix E contains the dummy calibration data and Appendix F the owner's manual instructions for the occupant restraint systems.

SECTION 2.

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

TEST MODE: 60.3 km/h Forty Percent Offset 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 (kPa)

DATA SHEET NO. 1

CRASH TEST SUMMARY

TEST MODE: 60.3 km/h Forty Percent Offset Frontal Barrier Impact NHTSA NO. MT5103

TEST DATE: August 7, 1997 TIME: 3:40 PM TEMPERATURE: 28.6° C

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

TEST WEIGHT: 1532 kg IMPACT VELOCITY: 60.14 km/h

VEHICLE REBOUND AND STATIC CRUSH; REBOUND ANGLE = 55°

	Left		Center		Right	
Vehicle Rebound (mm)	X = 192	Y = 1220	X = 266	Y = 1280	X = 328	Y = 1300
Pre-test Measurements (mm)	4620		4770		4620	
Post-test Measurements (mm)	3890		4220		4720	
Static Crush (mm)	730		550		+100	

DOOR OPENING AND SEAT TRACK INFORMATION

	Driver	Passenger
Door Opening (Front)	OPENED	OPENED
Door Opening (Rear)	OPENED	OPENED
Seat Track Shift (mm of shift)	3	0
Seat Back Failure	NO	NO

DUMMY INFORMATION

	Driver	Passenger
Dummy Type/No.	5% Female Hybrid III (S/N 202)	5% Female Hybrid III (S/N 274)
Data Channels	44	44
Visible Contact Points		
Head	AIR BAG, 'B' PILLAR, HEAD REST	AIR BAG, HEAD REST
Chest	AIR BAG	AIR BAG
Abdomen	AIR BAG	AIR BAG
Left Knee	KNEE BOLSTER	KNEE BOLSTER
Right Knee	KNEE BOLSTER, STEERING COLUMN	KNEE BOLSTER

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

TEST VEHICLE INFORMATION			
Manufacturer	TOYOTA MOTOR CORP.	VIN	4T1B512KXTU790814
Manufacturing Date	5/96	Delivery Date	7/3/97
Dealer	Crown Toyota Ontario, CA	NHTSA No.	MT5103
Odometer Reading	19,309 mi.	Fuel Type	Unleaded Gasoline
Engine Displacement	2.2 Liter	Cylinders	4
Transmission	4-speed Automatic	Final Drive	Front Wheel Drive
Engine Placement	Transverse	Color	Blue
Tire Press./Max. Cap. Front	210 kPa	Cold Tire Press. Front	210 kPa
Tire Press./Max. Cap. Rear	210 kPa	Cold Tire Press. Rear	210 kPa
Recommend Tire Size	195/70R14	Type of Spare	T135/90/R14 Temporal Spare
Tire Size on Vehicle	P195/70R14	Manufacturer	Firestone
GVWR	1886 kg	Cargo Capacity	23 kg
GAWR Front	1091 kg	GAWR Rear	1091 kg
Air Conditioning	YES	Power Steering	YES
Power Brakes	YES	AM/FM/Cassette	YES
Disc Brakes (Front)	YES	Disc Brakes (Rear)	NO
Power Windows	YES	Tilt Steering	YES
Anti-lock Brakes (ABS)	YES	Power Seats	NO
Driver Airbag	YES	Passenger Airbag	YES

VEHICLE CAPACITY DATA:

TYPE OF FRONT SEATS Bucket Seats

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

WEIGHT OF VEHICLE AS RECEIVED AT KARCO (with maximum fluids): 1409 kg

Data Sheet No. 2... (Continued)

VEHICLE CAPACITY WEIGHT (kg):

Vehicle Capacity Weight 364 kg
 Occupant Weight 340 kg
 Rated Cargo/Luggage Weight (RCLW) 24 kg

	FRONT	REAR	TOTAL
Right	435	267	
Left	437	270	
Total	872	537	1409
Percent of Total	61.9	38.1	

CALCULATION OF TEST TARGET WEIGHT (kg):

Total Delivered Weight 1409 kg
 RCLW 24 kg
 Weight of 2 P572 ATDs 104 kg
 TARGET TEST WEIGHT 1537 kg

TEST WEIGHT OF VEHICLE WITH 2 ATDs AND BALLAST

	FRONT	REAR	TOTAL
Right	452	307	
Left	461	312	
Total	913	619	1532
Percent of Total	59.6	40.4	

Weight of Ballast secured in cargo area: 0 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
 and spare tire.

TEST VEHICLE ATTITUDE (mm)

ATTITUDE	LF	RF	LR	RR
As Delivered	679	679	686	686
As Tested	661	667	654	667

Vehicle Wheelbase: 2591 mm

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 70 liters

Usable Capacity Figure Furnished by COTR = 70 liters

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

ACTUAL TEST VOLUME = 65.1 liters (With entire fuel system filled)

Test Fluid Type = Stoddard Solvent

Specific Gravity = 0.764

Kinematic Viscosity = as per ASTM Standard D484-71

Color = Red

Type of Fuel Pump = Electric X Mechanical

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

DETAILS OF FUEL SYSTEM: Electrically operated, ignition key activated, with automatic shutoff

DATA SHEET NO. 3

POST IMPACT DATA

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

TEST MODE: 60.3 km/h Forty Percent Offset Frontal Barrier Impact NHTSA NO. MT5103

TEST DATE: August 7, 1997 TIME: 3:40 PM TEMPERATURE: 28.6° C

REQUIRED IMPACT VELOCITY RANGE: 59.53 km/h to 61.14 km/h

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

Trap No. 1 = 60.14 km/h Trap No. 2 = 59.99 km/h

Distance from vehicle to barrier - -

A. entering trap = 1818 mm

B. leaving trap = 599 mm

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

Vehicle Length	Left	Center	Right
Pre-test Measurements (mm)	4620	4750	4620
Post-test Measurements (mm)	3890	4220	4720
Static Crush (mm)	730	550	+100
Average	393		

VEHICLE REBOUND: (from rigid barrier with rotational movement)

Distance in mm	Left		Center		Right	
Vehicle Rebound	X = 2641	Y = 1778	X = 1981	Y = 1930	X = 1036	Y = 2133
Average	X = 1886	Y = 1947				

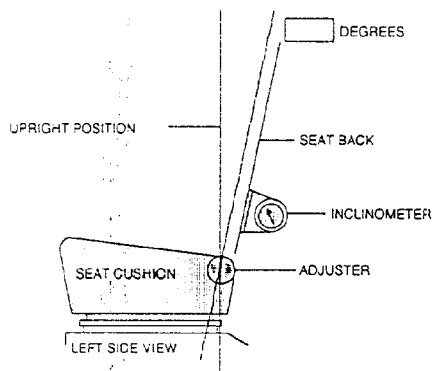
DATA SHEET NO. 4

TEST VEHICLE INFORMATION

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103

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 = 18.0 ° set to 9th rearward position from upright.

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 = 18.0 °; set to 9th rearward position from upright.

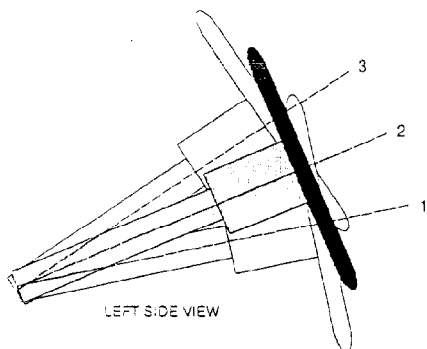
2. SEAT FORE & AFT POSITIONS -

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: 15 seating positions; set to 1st detent position from front.

Positioning of the passenger's seat (if applicable): 15 seating positions; set to 1st position from front.

3. STEERING COLUMN ADJUSTMENTS:



STEERING COLUMN ASSEMBLY

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

Operational Instructions:

Position No. 1 is at 18°

Position No. 2 is at 25°

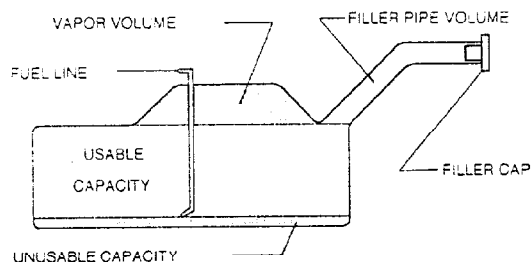
Position No. 3 is at 32°

4. SEAT BELT UPPER ANCHORAGE:

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) = 65.1 liters

5.3 Is vehicle equipped with electric fuel pump?

Yes X No

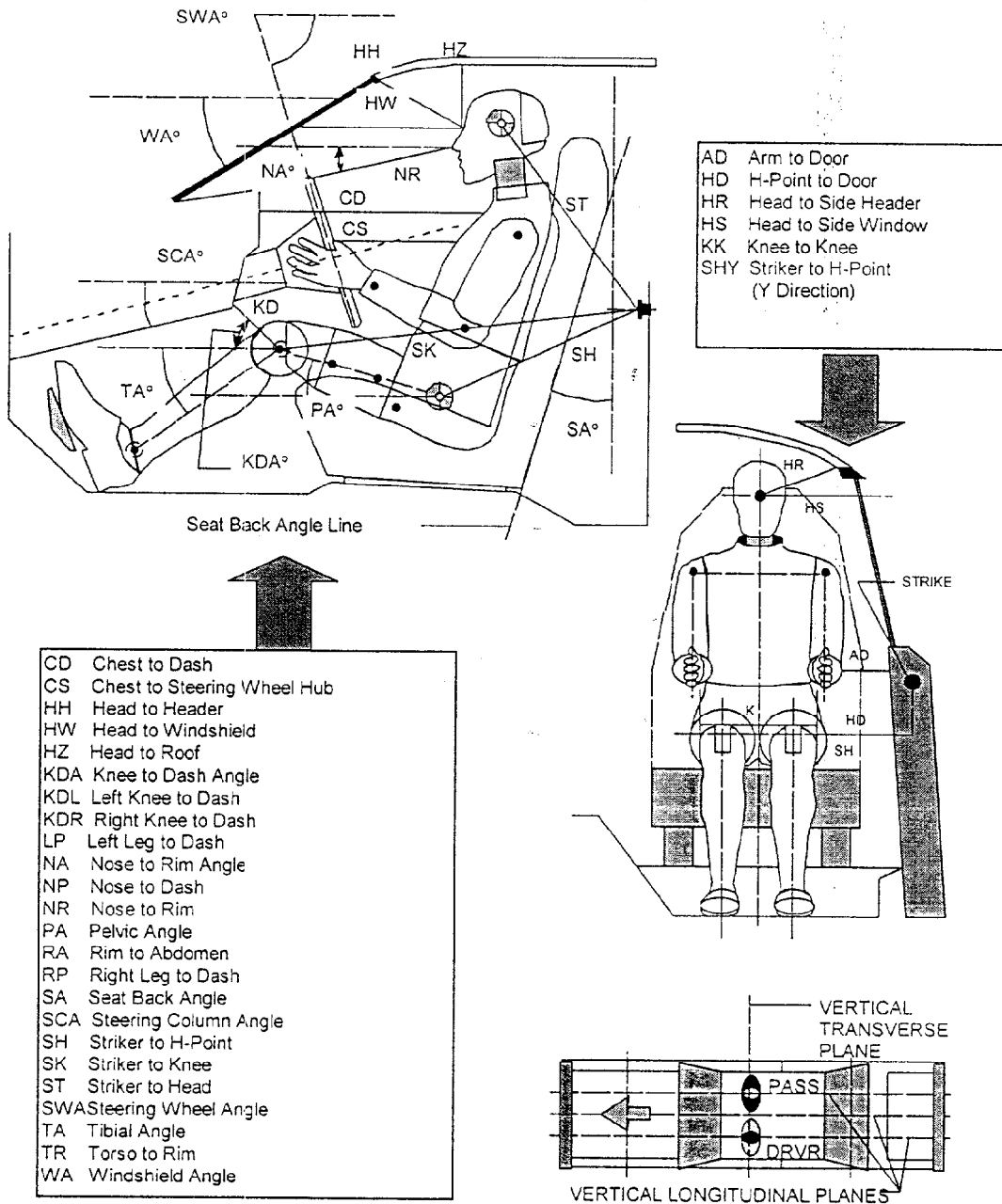
If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

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

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: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103

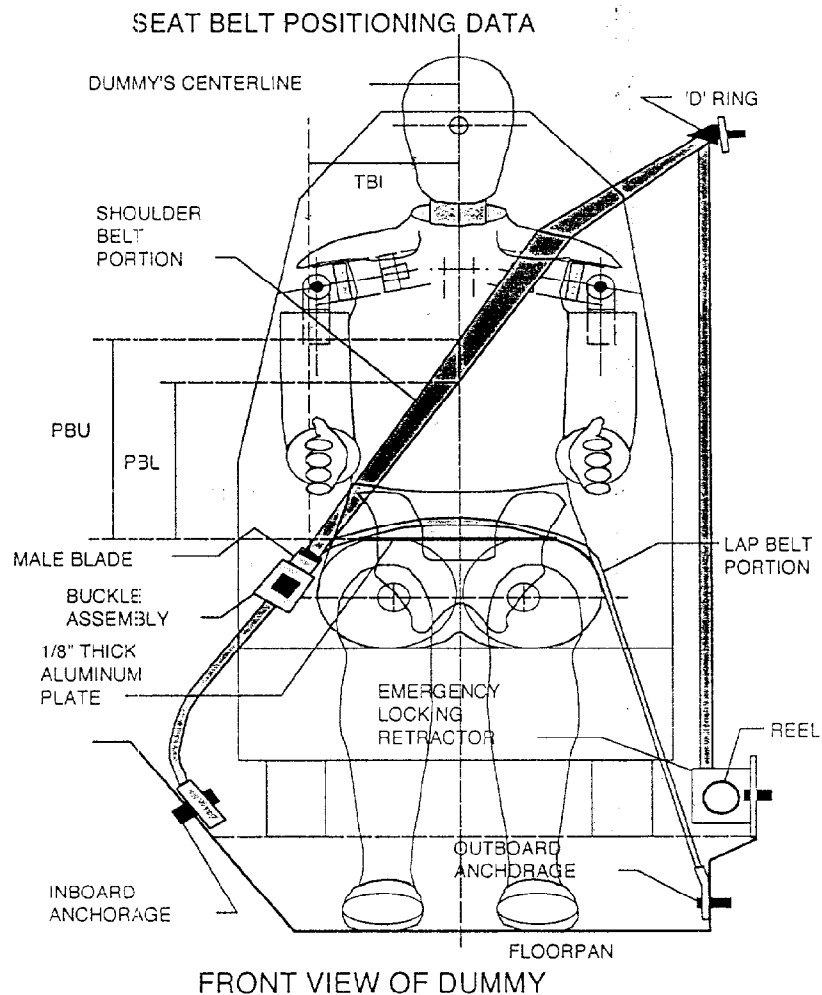
FRONT SEAT MEASUREMENT TABLE

	DRIVER (Serial No. <u>202</u>)		PASS. (Serial No. <u>274</u>)	
	DISTANCE (mm)	ANGLE (°)	DISTANCE (mm)	ANGLE (°)
WA°		31		
SWA°		64		
SCA°		26		
SA°		18.0		18.0
HZ	230	90	240	90
HH	251	0	272	0
HW	560	0	571	0
HR	260		257	
NR	305	12		
CD	475		430	
CS	190	0		
RA	60	0		
KDL	23	24	75	
KDR	58		75	35
PA°		25.5		25.5
TA°		-25		-48
KK	271		222	
ST	448	65.	460	58
SH	331	26	360	25
SHY	305		300	
HS	310		320	
HD	252		265	
AD	130		115	

DATA SHEET NO. 6

SEAT BELT POSITIONING DATA

SEATING POSITION	DRIVER	PASSENGER
TCL -- Dummy centerline to shoulder bolt	260 mm	250 mm
PBU--Top surface of aluminum plate to belt upper edge	210 mm	240 mm
PBL--Top surface of aluminum plate to belt lower edge	130 mm	160 mm
Lap Belt tension	10 Newtons	10 Newtons
Shoulder Belt tension	Retractor	Retractor



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

VEHICLE YR/MAKE/MODEL/BODY: 1996 Toyota Camry LE 4 Door Sedan

NHTSA No.: MT5103

TEST PROGRAM: 1997 NHTSA 40% Offset Impact (Female)

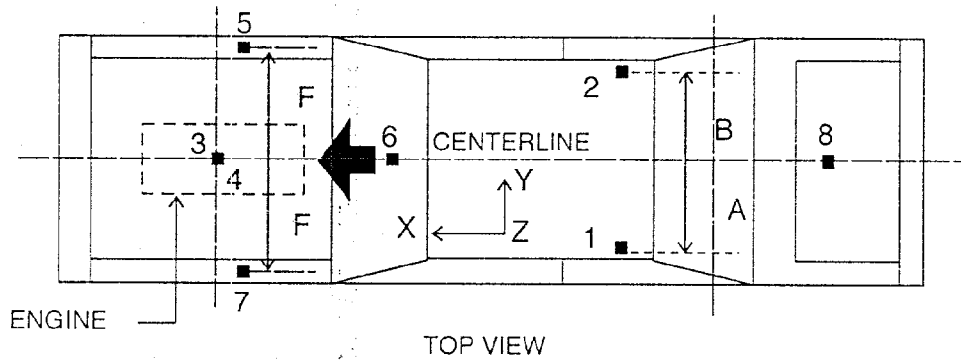
TEST DATE: 8/7/97

VEHICLE ACCELEROMETER LOCATIONS AND PEAK ACCELERATIONS

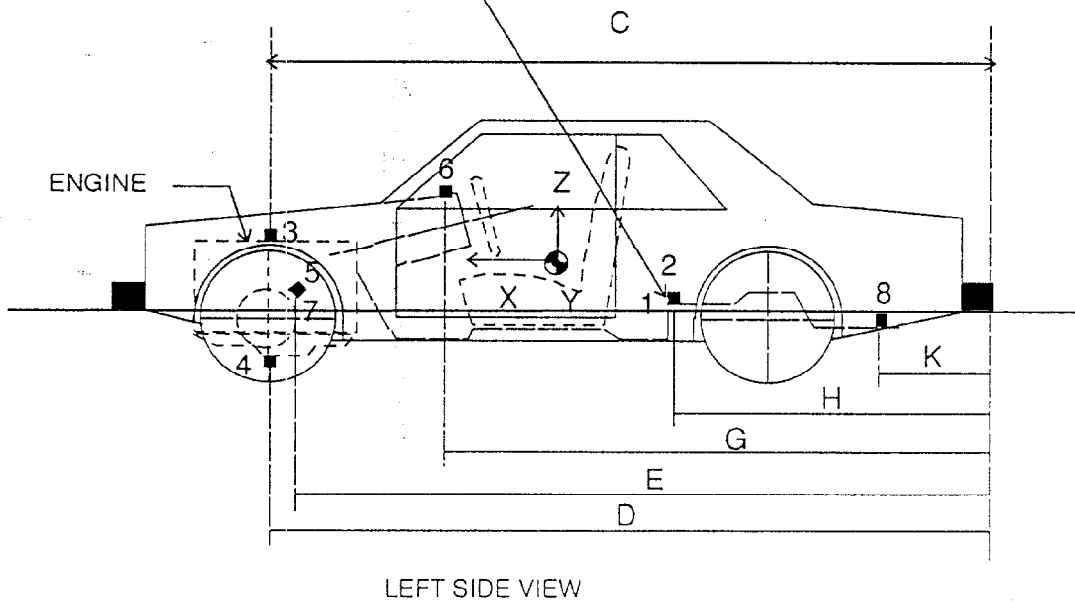
No.	Accelerometer Locations	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear Sill X	1860	-630	405	G's	3.8	177.4	-30.4	103.0
2	Left Rear Sill Y	1830	-600	380	G's	6.1	78.4	-1.3	149.4
3	Center Console Rear X	2120	0	350	G's	2.7	174.9	-35.7	100.2
4	Center Console Rear Y	2070	0	350	G's	9.1	79.3	-3.3	18.7
5	Right Rear Sill X	1860	620	405	G's	1.8	192.3	-30.3	101.6
6	Right Rear Sill Y	1828	600	380	G's	8.0	78.9	-2.0	154.5
7	Center Rear Trunk X	215	-130	560	G's	9.4	178.7	-29.4	112.2
8	Center Rear Trunk Y	215	120	560	G's	14.8	95.2	-2.9	190.4

Reference Points X - 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 5TH FEMALE ATD INJURY CRITERIA AND SENSOR DATA

VEHICLE YR/MAKE/MODEL/BODY: 1996 Toyota Camry LE 4 Door Sedan

NHTSA No.: MT5103

TEST PROGRAM: 1997 NHTSA 40% Offset Impact (Female)

TEST DATE: 8/7/97

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	12.1	185.4	-32.7	28.9	30.7	108.7	-60.1	42.9
Head CG	Y	G's	39.1	153.5	-10.5	191.0	15.6	75.5	-20.2	43.4
Head CG	Z	G's	23.3	31.5	-25.5	29.2	24.8	107.4	-25.1	46.3
Head CG Resultant	N/A	G's	41.8	153.7			60.9	43.0		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	3.1	213.6	-29.2	101.6	1.0	198.4	-22.0	72.7
Chest CG	Y	G's	9.7	135.8	-0.4	265.0	11.0	104.0	-0.2	6.2
Chest CG	Z	G's	6.9	153.4	-6.7	33.3	7.2	41.6	-9.0	38.1
Chest CG Resultant	N/A	G's	29.6	101.6			22.7	103.9		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	60.4	190.7	-3147.4	109.3	111.9	238.6	-2715.8	102.8
Right Femur	Z	Newtons	156.2	23.3	-1830.7	91.1	193.0	38.9	-1253.5	112.1

SEAT BELT PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt	N/A	Newtons	558.8	45.7	-5.5	2.9	1398.4	112.6	-70.3	35.4
Shoulder Belt	N/A	Newtons	2091.6	129.9	-22.2	29.5	2775.8	114.5	-0.3	0.0

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G's	T ¹	T ²	HIC	Avg G's	T ¹	T ²
Head CG Primary	70.5	20.8	123.7	159.6	130.6	28.4	58.8	89.0

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	27.9	100.2	103.2	21.9	101.5	104.5

DATA SHEET NO. 8...(continued)

VEHICLE YR/MAKE/MODEL/BODY: 1996 Toyota Camry LE 4 Door Sedan

NHTSA No.: MT5103

TEST PROGRAM: 1997 NHTSA 40% Offset Impact (Female)

TEST DATE: 8/7/97

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	3.6	166.6	-25.6	109.8	3.5	162.1	-29.2	108.9
Pelvis	Y	G's	6.5	96.7	-4.1	166.9	7.5	90.1	-5.7	165.0
Pelvis	Z	G's	3.8	221.3	-9.7	96.3	3.1	218.7	-11.7	125.3

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	733.5	46.2	-198.0	187.5	1385.0	81.1	-561.2	36.0
Neck Force	Y	Newtons	402.8	207.0	-134.7	29.0	207.7	73.5	-255.0	52.7
Neck Force	Z	Newtons	1228.3	31.3	-107.5	0.9	1579.1	69.6	-239.6	116.8
Neck Moment	X	Joules	6.9	298.5	-33.9	197.2	13.6	73.4	-17.7	53.8
Neck Moment	Y	Joules	6.1	149.8	-48.7	45.6	22.7	217.3	-88.7	85.2
Neck Moment	Z	Joules	2.0	195.6	-19.5	157.8	4.0	138.7	-11.2	108.1

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest	X	CM	0.01	2.2	-2.53	105.7	0.02	27.7	-1.79	85.0

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	3.4	213.6	-30.7	101.5	1.5	196.5	-21.8	84.6
Chest CG	Y	G's	11.9	135.6	-3.0	33.7	11.0	115.0	-2.1	63.2
Chest CG	Z	G's	7.9	144.0	-6.1	33.2	8.8	137.5	-7.4	50.8
Chest CG Resultant	N/A	G's	31.0	101.5			22.8	115.2		

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	28.9	100.0	103.0	22.2	113.5	116.5

DATA SHEET NO. 8...(continued)

VEHICLE YR/MAKE/MODEL/BODY: 1996 Toyota Camry LE 4 Door Sedan

NHTSA No.: MT5103

TEST PROGRAM: 1997 NHTSA 40% Offset Impact (Female)

TEST DATE: 8/7/97

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	28.7	38.3	-7.7	52.9	45.9	84.7	-4.3	207.3
Left Foot Aft	Z	G's	4.0	50.8	-39.4	86.8	8.6	44.0	-26.4	51.3
Left Foot Fore	Z	G's	12.2	31.1	-65.4	36.1	4.6	78.4	-27.5	94.4
Right Foot Aft	X	G's	72.9	67.1	-33.0	89.3	44.1	119.3	-9.2	173.4
Right Foot Aft	Z	G's	5.2	282.0	-56.3	64.7	4.1	247.5	-16.7	114.5
Right Foot Fore	Z	G's	32.3	89.4	-76.0	69.9	7.6	178.2	-20.8	104.0

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	90.1	91.9	-17.4	186.6	149.4	76.5	-213.9	105.6
Left Lower Force	Z	Newtons	55.1	207.0	-97.8	93.3	317.6	67.4	-183.6	44.2
Left Lower Moment	X	Joules	2.3	92.3	-1.1	122.2				
Left Lower Moment	Y	Joules	16.9	92.3	-0.8	37.3	14.8	96.4	-4.5	288.8
Left Upper Force	X	Newtons	75.9	92.0	-24.8	11.8				
Left Upper Force	Z	Newtons	62.1	68.8	-88.4	97.0				
Left Upper Moment	X	Joules	1.6	92.3	-1.4	197.3	12.6	78.2	-15.1	132.5
Left Upper Moment	Y	Joules	3.4	96.5	-2.2	69.3	28.7	107.8	-40.5	76.8
Right Lower Force	X	Newtons	1397.5	92.3	-56.0	206.3	0.0	0.0	0.0	0.0
Right Lower Force	Z	Newtons	160.6	40.4	-2210.9	89.7	0.0	0.0	0.0	0.0
Right Lower Moment	X	Joules	47.7	89.2	-3.3	298.4				
Right Lower Moment	Y	Joules	196.7	90.6	-23.3	66.6	0.0	0.0	0.0	0.0
Right Upper Force	X	Newtons	1072.6	90.5	-213.0	61.4				
Right Upper Force	Z	Newtons	291.4	38.0	-1691.6	90.0				
Right Upper Moment	X	Joules	37.4	89.0	-14.0	63.4	11.0	206.8	-5.9	131.1
Right Upper Moment	Y	Joules	19.4	90.5	-64.4	68.8	24.4	63.3	-14.4	158.4

DATA SHEET NO. 9

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103

BELT LENGTH DATA (mm)	DRIVER	PASSENGER
Total belt length for continuous webbing systems.	2900	2900
Retractor reel to 'D' ring	600	610
Shoulder belt length as measured on Part 572 Dummy	980	930
Lap belt length as measured on Part 572 Dummy	940	910
Remainder of belt on reel	380	450

SHOULDER BELT SPOOL-OFF DATA (mm)	DRIVER	PASSENGER
As determined by film analysis	50	32
As determined mechanically	55	22
As determined electronically	56.7	9.2

BELT STRETCH DATA (cm/cm)	DRIVER	PASSENGER
Measured electronically between shoulder belt load cell and the "D" ring	0.04	N/A (channel failed)
Measured mechanically	0.00	0.02

DATA SHEET NO. 10

SUMMARY OF FMVSS 212 DATA

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103

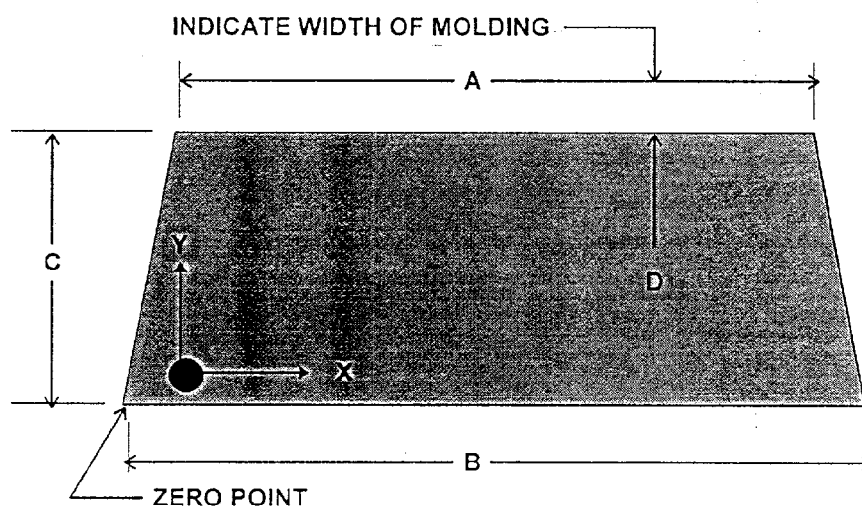
Details of windshield mounting (method of retention, type of trim, etc.):

Windshield glass is secured to the vehicle frame with a rubber adhesive 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	2025	2025	100%
Left Side	2025	2025	100%
Total	4050	4050	100%

Indicate area of retention failure.



FRONT VIEW OF WINDSHIELD

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

Temperature of windshield molding during test = 28.4 °C

DATA SHEET NO. 11

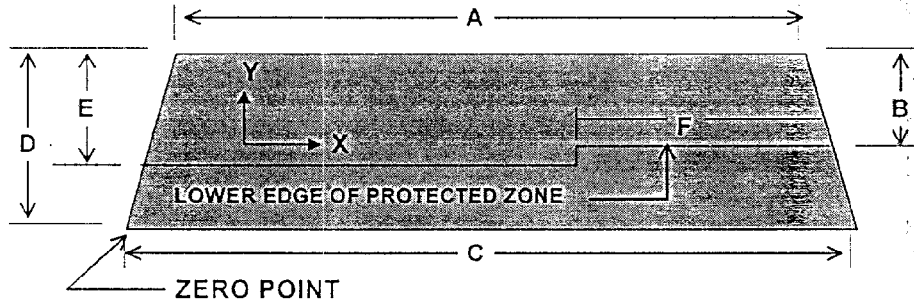
WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103

SKETCH OF FRONT VIEW OF WINDSHIELD:

Provide all dimensions necessary to reproduce the protected area.



	DIMENSION (mm)
A	1170
B	330
C	1470
D	710
E	455
F	345

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

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

TEST MODE: 60.3 km/h Forty Percent Offset Frontal Barrier Impact NHTSA NO. MT5103

TEST DATE: August 7, 1997 TIME: 3:40 PM TEMPERATURE: 28.6° 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

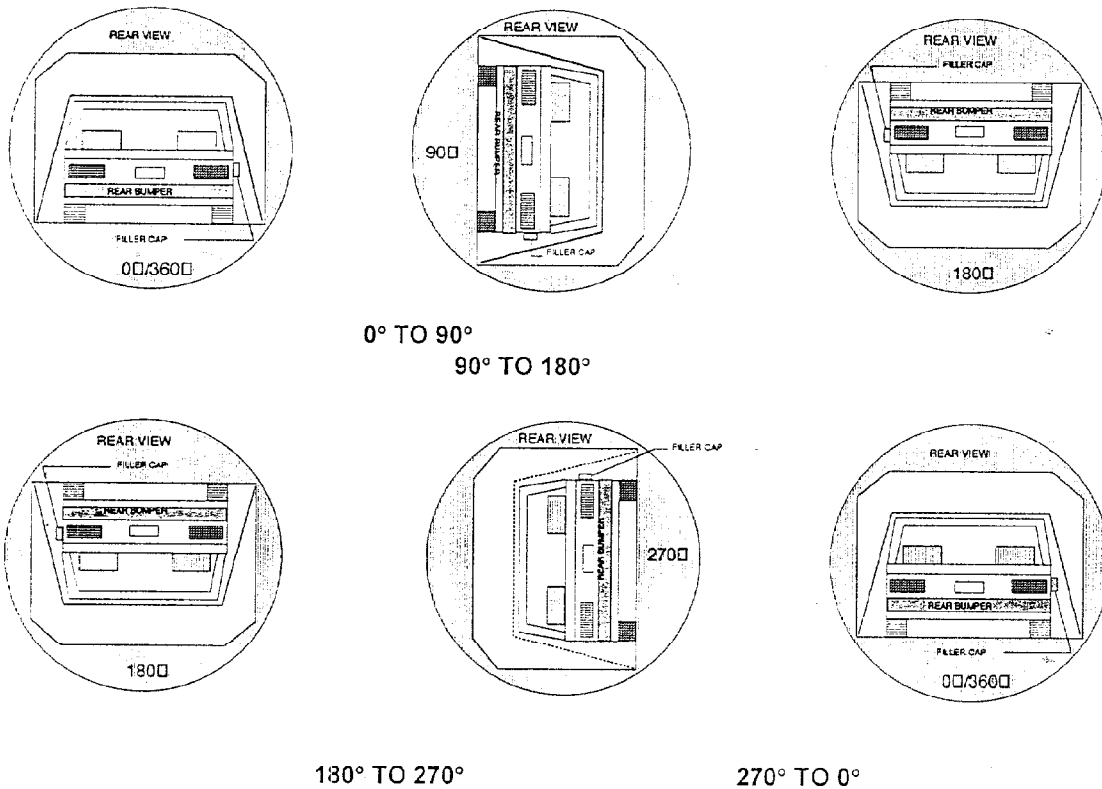
DATA SHEET NO. 13

FMVSS 301 STATIC ROLLOVER DATA SHEET

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

TEST MODE: 60.3 km/h Forty Percent Offset Frontal Barrier Impact NHTSA NO. MT5103

TEST DATE: August 7, 1997 TIME: 3:40 PM TEMPERATURE: 28.6° C



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°	84	352	0.0
90° TO 180°	89	358	0.0
180° TO 270°	83	342	0.0
270° TO 360°	87	355	0.0

3. Provide Details of Stoddard Solvent Spillage Locations--

No solvent leakage occurred during rollover tests.

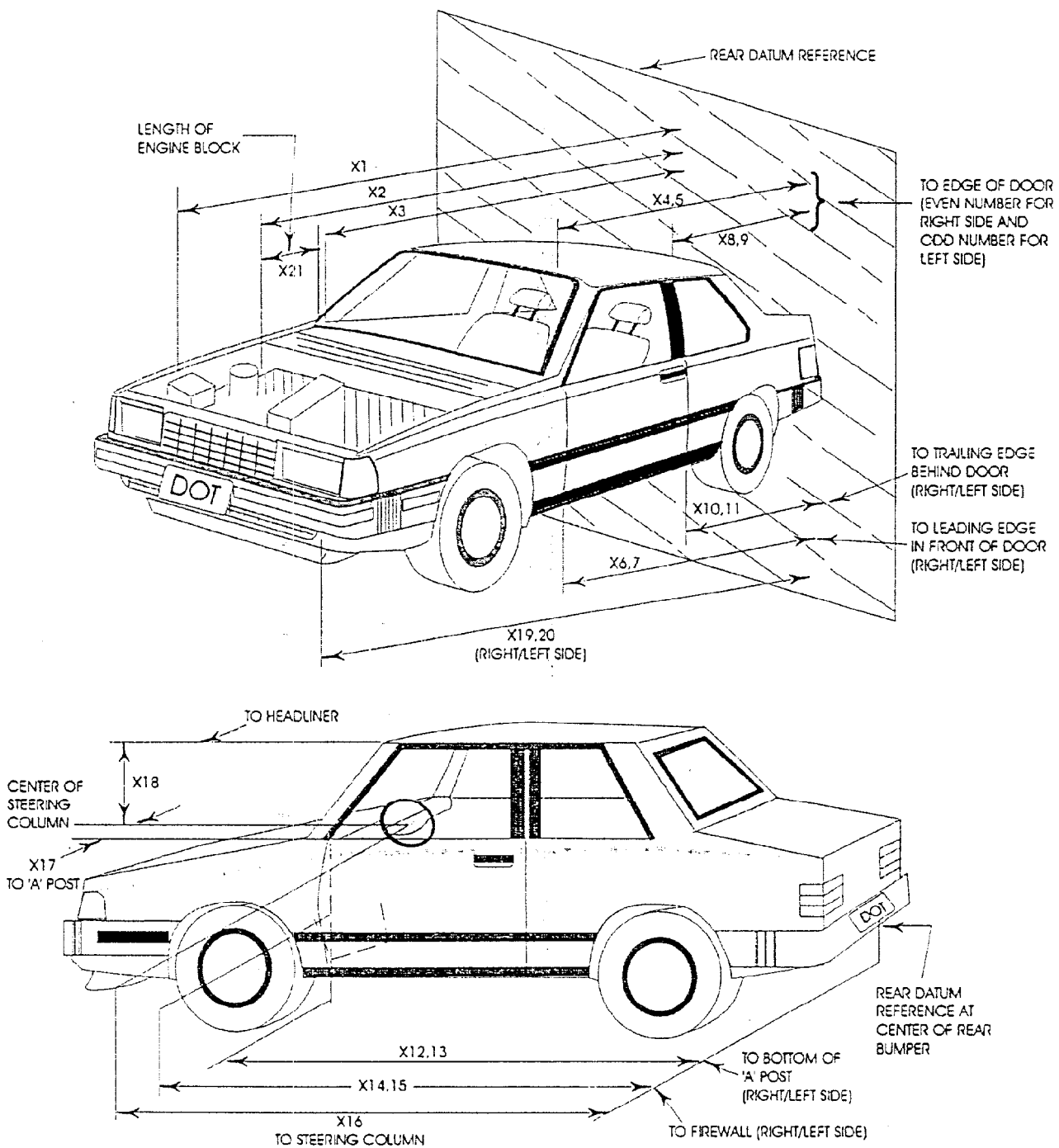
DATA SHEET NO. 14

VEHICLE MEASUREMENTS

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103

NO.	MEASUREMENT DESCRIPTION	DIMENSIONS IN MM		
		PRE-TEST	POST-TEST	DIFFERENCE
1	Total length of vehicle at centerline	4770	4220	550
2	Rear surface of vehicle (RSOV) to front of engine	4160	3820	340
3	RSOV to firewall centerline	3550	3450	100
4	RSOV to leading edge of right door	3210	3220	+10
5	RSOV to leading edge of left door	3195	3190	5
6	RSOV to lower leading edge of right door	3240	3240	0
7	RSOV to lower leading edge of left door	3240	3245	+5
8	RSOV to upper trailing edge of right door	2200	2220	0
9	RSOV to upper trailing edge of left door	2190	2190	0
10	RSOV to lower trailing edge of right door	2190	2200	+10
11	RSOV to lower trailing edge of left door	2190	2210	+20
12	RSOV to bottom of right 'A' pillar	3200	3200	0
13	RSOV to bottom of left 'A' pillar	3200	3200	0
14	RSOV to firewall on right side	3510	3530	+20
15	RSOV to firewall of left side	3510	3300	210
16	RSOV to steering column	2785	2770	15
17	Center of steering column to left 'A' pillar	320	300	20
18	Center of steering column to headlining	390	420	+30
19	RSOV to right side of front bumper	4620	4720	+100
20	RSOV to left side of front bumper	4620	3890	730
21	Length of engine block	450	450	0
22	RSOV to right side of dash panel	3020	3020	0
23	RSOV to center of dash panel	3030	3030	0
24	RSOV to left side of dash panel	3010	3000	10



DATA SHEET NO. 15

CAMERA LOCATIONS

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDANNHTSA NO. MT5103

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	---	---	---	---	---	Zoom	24
2	Left Side View No. 1	0	-4572	1473	1	4763	13	850
3	Left Side View No. 2	4115	-635	1803	7	8941	50	1000
4	Left Side View No. 3	3632	2565	2096	19	2540	19	1050
5	Left Side View No. 4	1880	-8255	3099	17	7925	25	1000
6	Left Side View No. 5	1880	-8255	2489	13	7849	25	1000
7	Right Side View No. 1	1626	8357	838	2	7772	13	1000
8	Right Side View No. 2	1676	8357	1448	10	7772	25	950
9	Right Side View No. 3	7290	7595	2216	11	8788	80	1000
10	Right Side View No. 4	-8844	19512	1092	1	21641	50	1000
11	Overhead No. 1	1219	0	6071	90	N/A	5.6	1300
12	Overhead No. 2	0	-178	6071	31	N/A	35	450
13	Front View No. 1	-1638	0	3734	31	4826	50	600
14	Front View No. 2	-1334	406	2616	29	4115	19	1000
15	Front View No. 3	-1334	-406	2591	55	4115	19	1150
16	Driver Side Belt	3658	140	559	15	N/A	13	1000
17	Passenger Side Belt	3658	-152	559	13	N/A	13	1000
18	Left Side View No. 5	2007	-12751	1219	10	12090	13	1000

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

DATA SHEET NO. 16

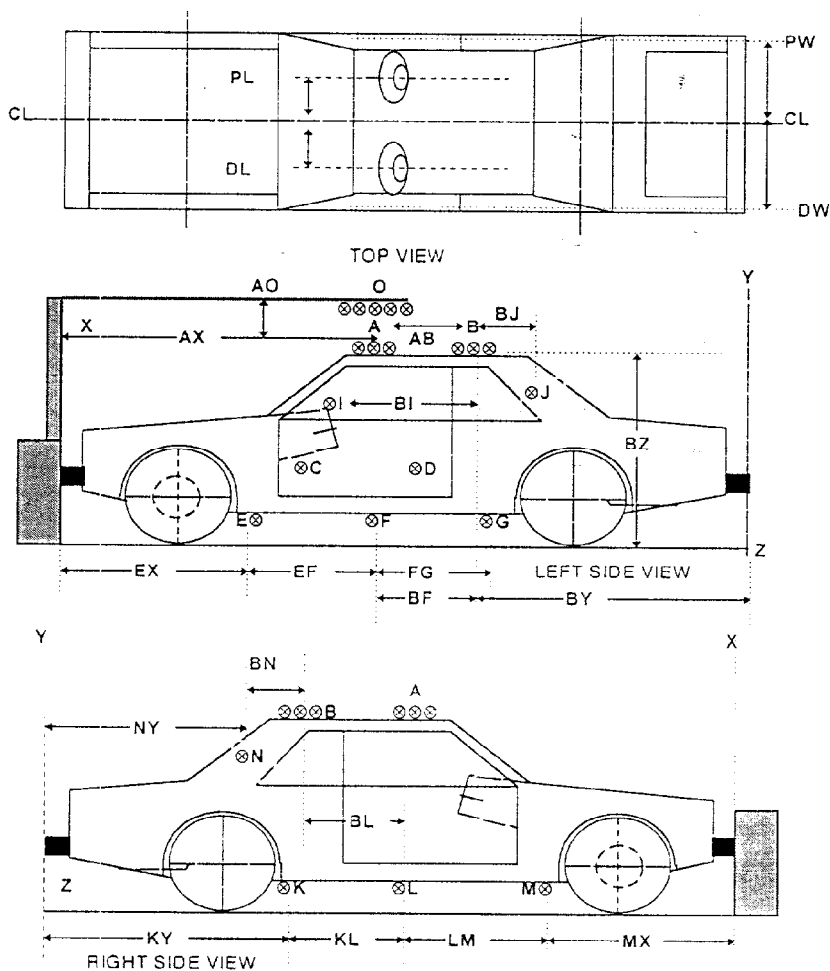
REFERENCE PHOTOGRAPH TARGETS

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103

ITEM	DESCRIPTION	VALUE	ITEM	DESCRIPTION	VALUE
AX	TARGET A TO BARRIER	2440	NY	TARGET N TO REAR BUMPER	1290
AB	TARGET A TO TARGET B	620	BN	TARGET B TO TARGET N	1320
AO	VERTICAL DISTANCE A TO O	1382	KY	TARGET K TO REAR BUMPER	1610
BJ	TARGET B TO TARGET J	240	KL	TARGET K TO TARGET L	780
BI	TARGET B TO STEERING COLUMN	1660	BL	TARGET B TO TARGET L	860
BZ	TARGET B TO GROUND LEVEL	1230	LM	TARGET L TO TARGET M	950
EX	TARGET E TO BARRIER	1480	MX	TARGET M TO BARRIER	1480
EF	TARGET E TO TARGET F	850	CL/PL	VEHICLE CENTERLINE TO PASSENGER	375
FG	TARGET F TO TARGET G	850	CL/PW	VEHICLE CENTERLINE TO RIGHT SILL	87
BF	TARGET B TO TARGET F	930	CL/DL	VEHICLE CENTERLINE TO DRIVER	370
BY	TARGET B TO REAR BUMPER	1220	CL/DW	VEHICLE CENTERLINE TO LEFT SILL	87

Distances in mm



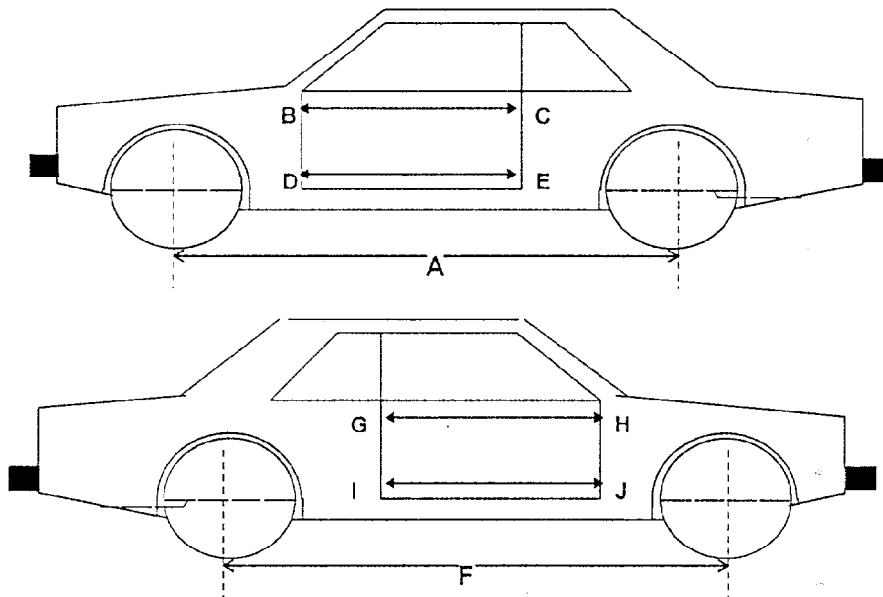
DATA SHEET NO. 17

VEHICLE INTRUSION MEASUREMENTS

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103

DOOR OPENING WIDTH



UNITS (mm)	LEFT SIDE		RIGHT SIDE	
MEASUREMENT	BC	DE	GH	IJ
PRE-TEST	1005	1050	1010	1050
POST-TEST	1000	1035	1000	1040
DIFFERENCE	5	15	10	10

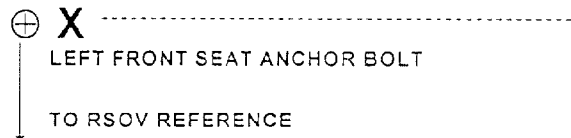
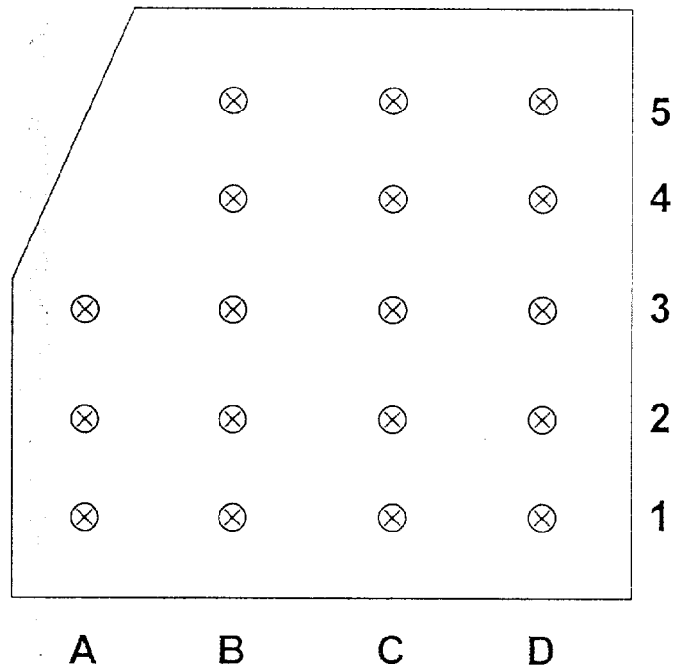
VEHICLE WHEELBASE CHANGE

UNITS (mm)	A = LEFT SIDE WHEELBASE	F = RIGHT SIDE WHEELBASE
PRE-TEST	2591	2591
POST-TEST	2362	2591
DIFFERENCE	229	0

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	700	555	700	535	700	540
2	N/A	N/A	560	485	560	460	560	495
3	420	392	420	385	420	380	420	400
4	280	260	280	250	280	260	280	280
5	140	120	140	120	140	130	140	140
REF. POINT	RSOV TO ANCHOR BOLT (PRE-TEST)		2680		RSOV TO ANCHOR BOLT (POST-TEST)		2680	



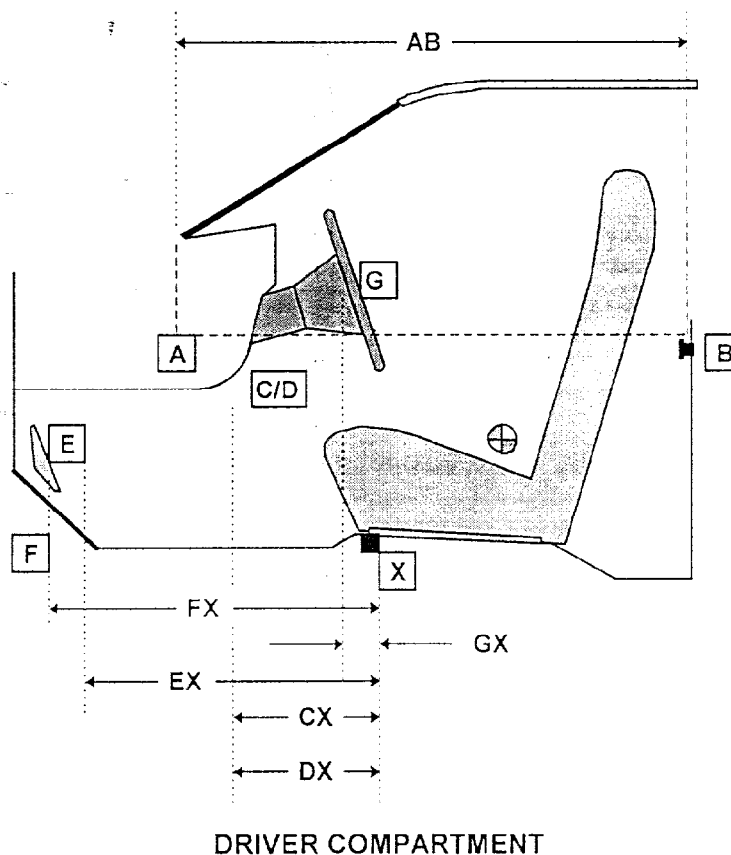
DRIVER SIDE FLOOR PLAN

(Data Sheet No. 17Continued)

DRIVER COMPARTMENT INTRUSION (Distances in mm)

REF.	DESCRIPTION	PRE-TEST	POST-TEST
AB	DOOR OPENING (INSIDE WINDOW JAM)	970	935
CX	LOWER LEFT KNEE BOLSTER TO X	380	340
DX	LOWER RIGHT KNEE BOLSTER TO X	380	380
EX	BRAKE PEDAL TO X	560	475
FX	FOOT REST TO X	595	510
GX	STEERING COLUMN HUB (CENTER) TO X	40	-30

X = LEFT FRONT SEAT ANCHOR BOLT

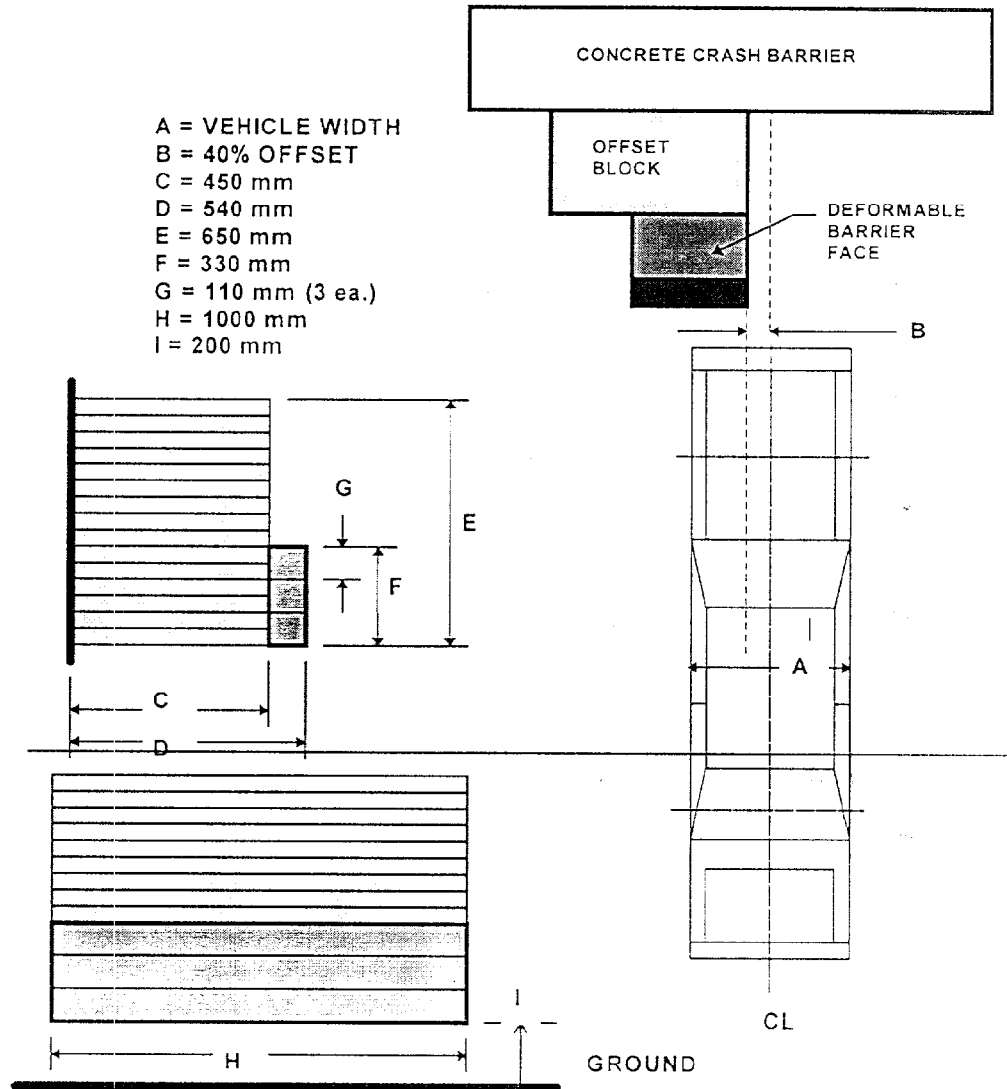


DATA SHEET NO. 18

OFFSET BARRIER ORIENTATION

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103



A = VEHICLE WIDTH MEASURED AT WIDEST POINT	<u>1778</u>	mm	
B = 40% OFFSET FROM LEFT EDGE OF VEHICLE	<u>711</u>	mm	
ACTUAL OFFSET DURING TEST	<u>709</u>	mm	= <u>39.88 %</u>

DATA SHEET NO. 19

ACCIDENT INVESTIGATION DIVISION DATA

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN NHTSA NO. MT5103

VIN: 4T1B512KXTU790814

TEST DATE: 08/07/97

WHEELBASE: 2591 mm

TEST WEIGHT: 1532 kg

VEHICLE SIZE CATEGORY: 4-DOOR PASSENGER SEDAN

ACCELEROMETER DATA:

LOCATION: Left and right side passenger compartment

CALIBRATION PROCEDURE: 6 months/ drop test

LINEARITY: Good

INTEGRATION ALGORITHM: NHTSA Standard

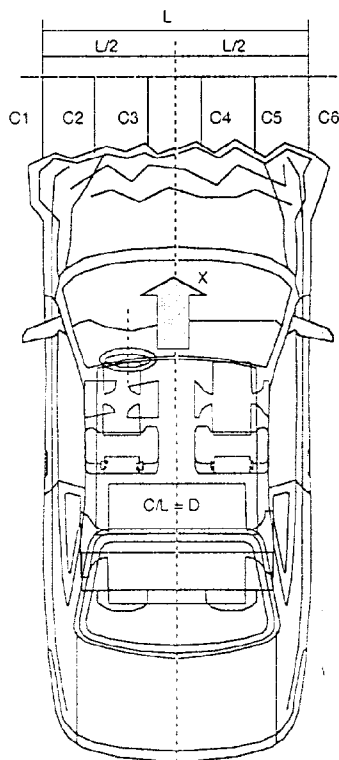
VEHICLE IMPACT SPEED: 60.14 km/h

TIME OF SEPARATION: 115.9 msec

VELOCITY CHANGE: 71.60 km/h

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

IMPACT MODE: Frontal Offset (40%)



CRUSH DEPTH DIMENSIONS:

C1 = 720 mm

C2 = 445 mm

C3 = 315 mm

C4 = 120 mm

C5 = +30 mm

C6 = +80 mm

MIDPOINT OF DAMAGE: D = vehicle centerline

LENGTH OF DAMAGE REGION:

L = 1540 mm

DATA SHEET NO. 20

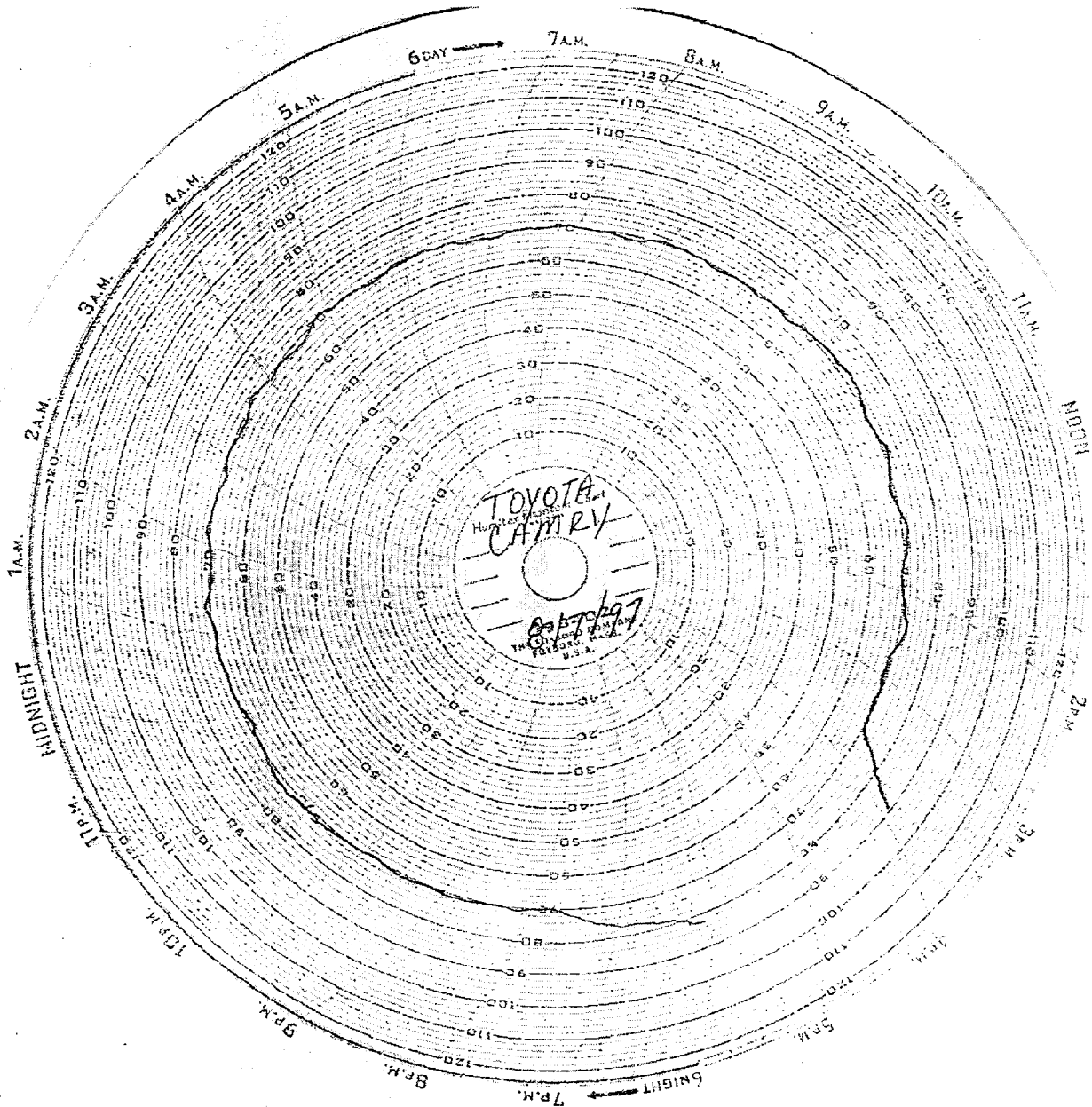
DUMMY/VEHICLE TEMPERATURE STABILIZATION

TEST VEHICLE: 1996 TOYOTA CAMRY 4-DOOR SEDAN

NHTSA NO. MT5103

VIN: 4T1B512KXTU790814

TEST DATE: 08/07/97



APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

Figure		Page
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A-5	Pre-test Front View	A-5
A-6	Post-test Front View	A-6
A-7	Pre-test Left Side View	A-7
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FIGURE A-1. LEFT FRONT AS RECEIVED

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FIGURE A-2. RIGHT REAR AS RECEIVED

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FIGURE A-5. PRETEST FRONT VIEW

A-5

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FIGURE A-6. POST TEST FRONT VIEW

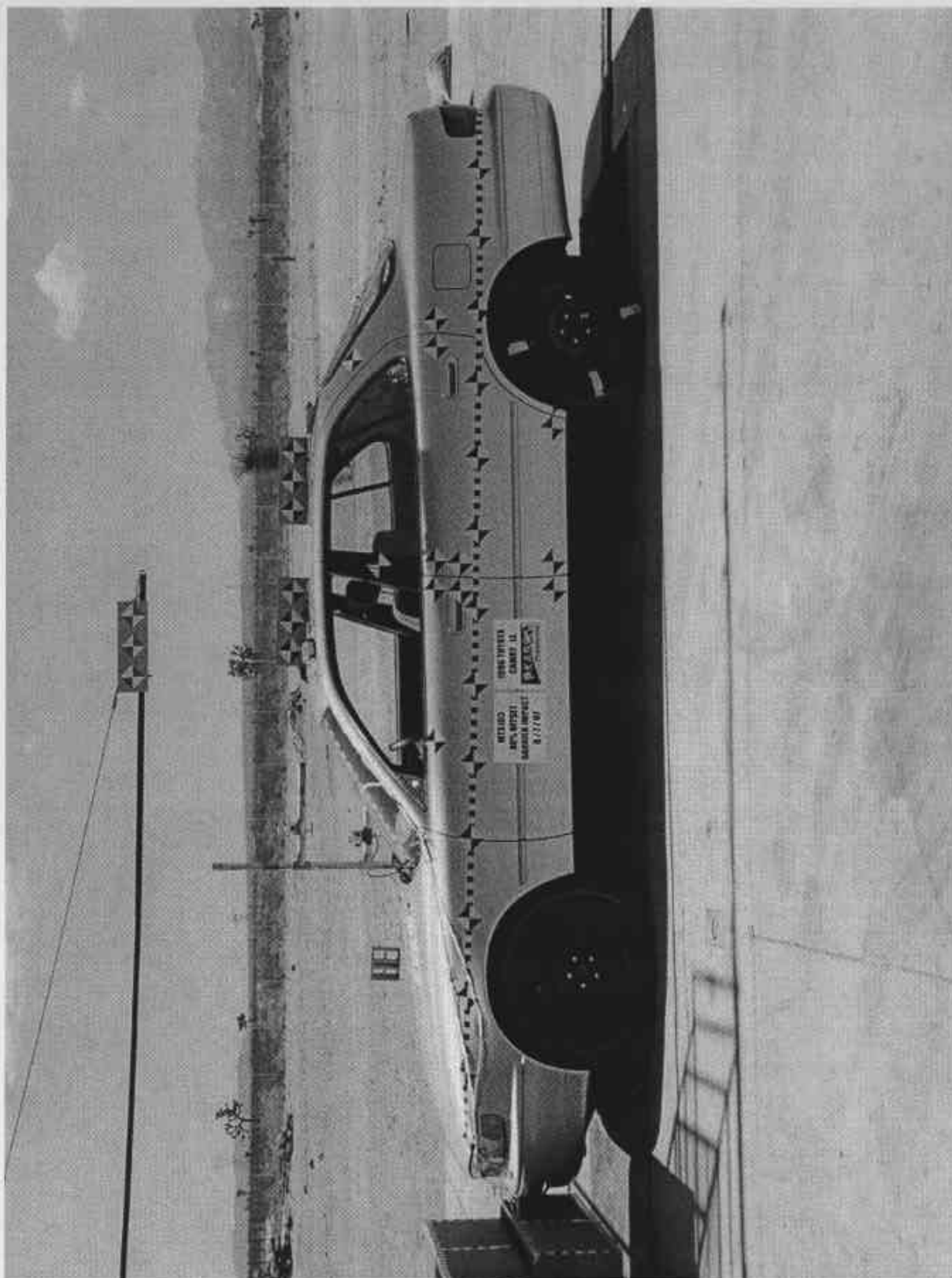


FIGURE A-7. PRETEST LEFT SIDE VIEW

A-7

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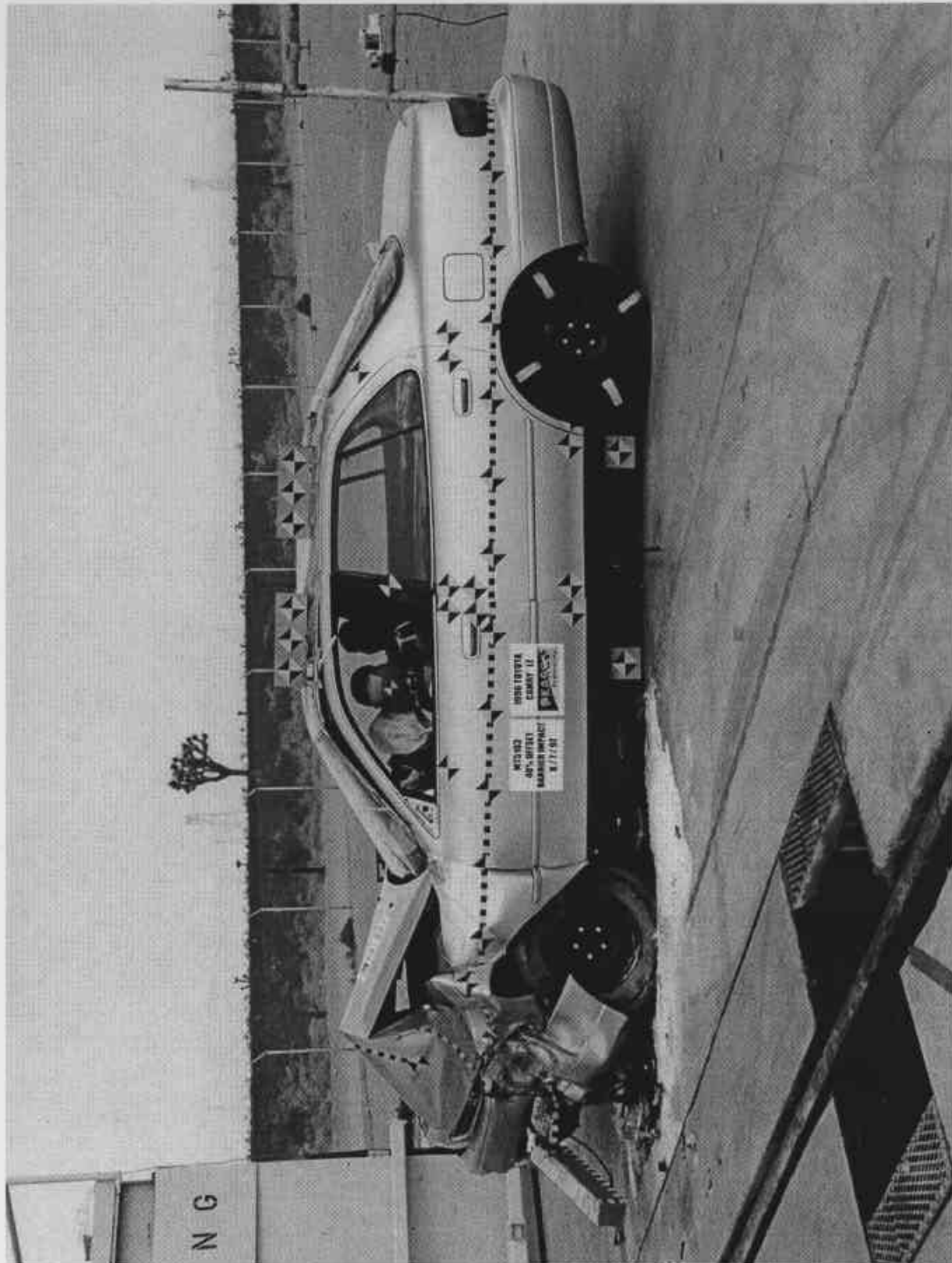


FIGURE A-8. POST TEST LEFT SIDE VIEW



FIGURE A-10. POST TEST RIGHT SIDE VIEW

A-10

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FIGURE A-11. PRETEST LEFT FRONT VIEW

A-11

KAR-97-R97015-03

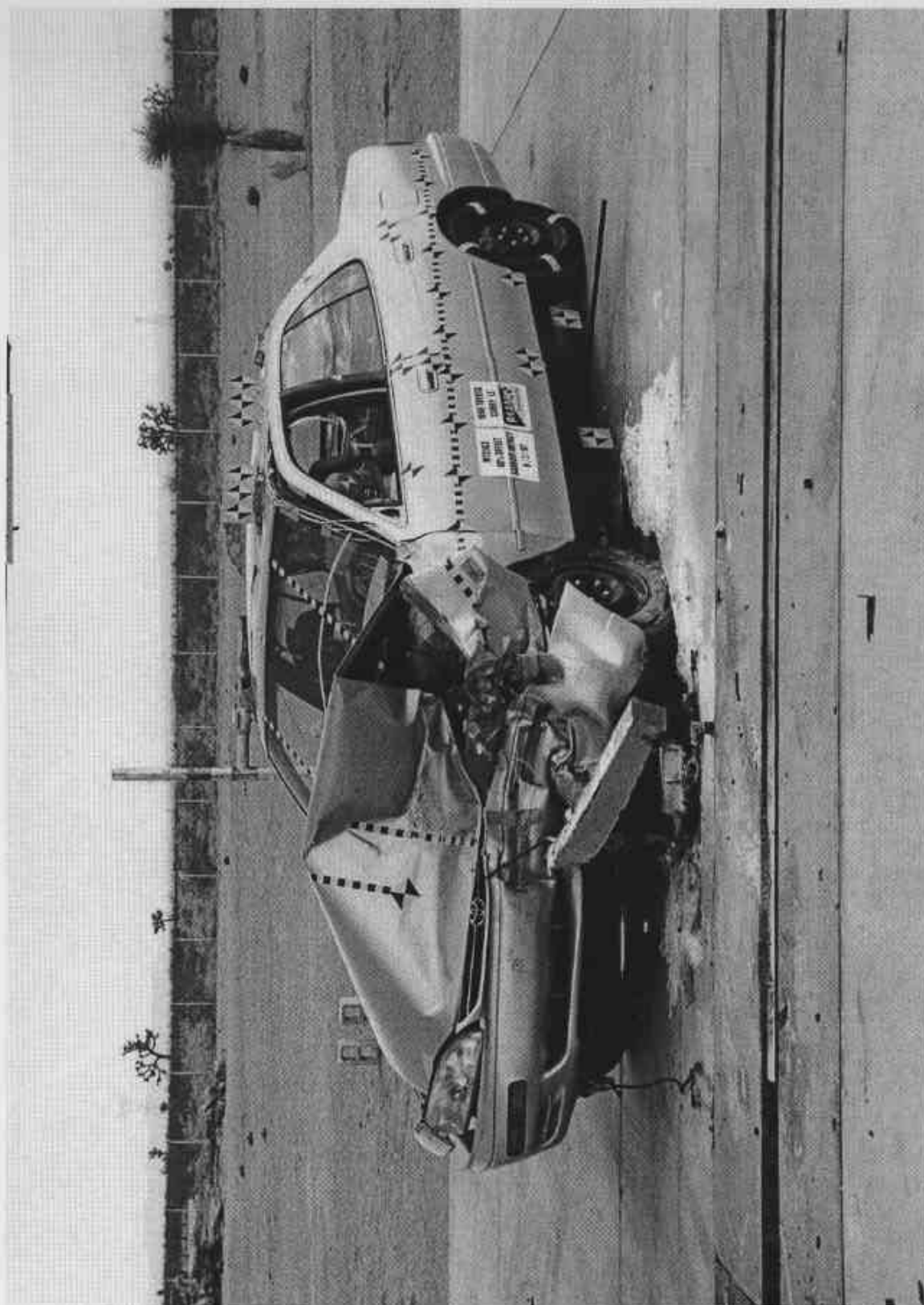


FIGURE A-12. POST TEST LEFT FRONT VIEW

A-12

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FIGURE A-13. PRETEST RIGHT REAR VIEW

A-13

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FIGURE A-14 POST TEST RIGHT REAR VIEW

A14

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FIGURE A-15. PRETEST OVERHEAD VIEW



FIGURE A-16. POST TEST OVERHEAD VIEW

A-16

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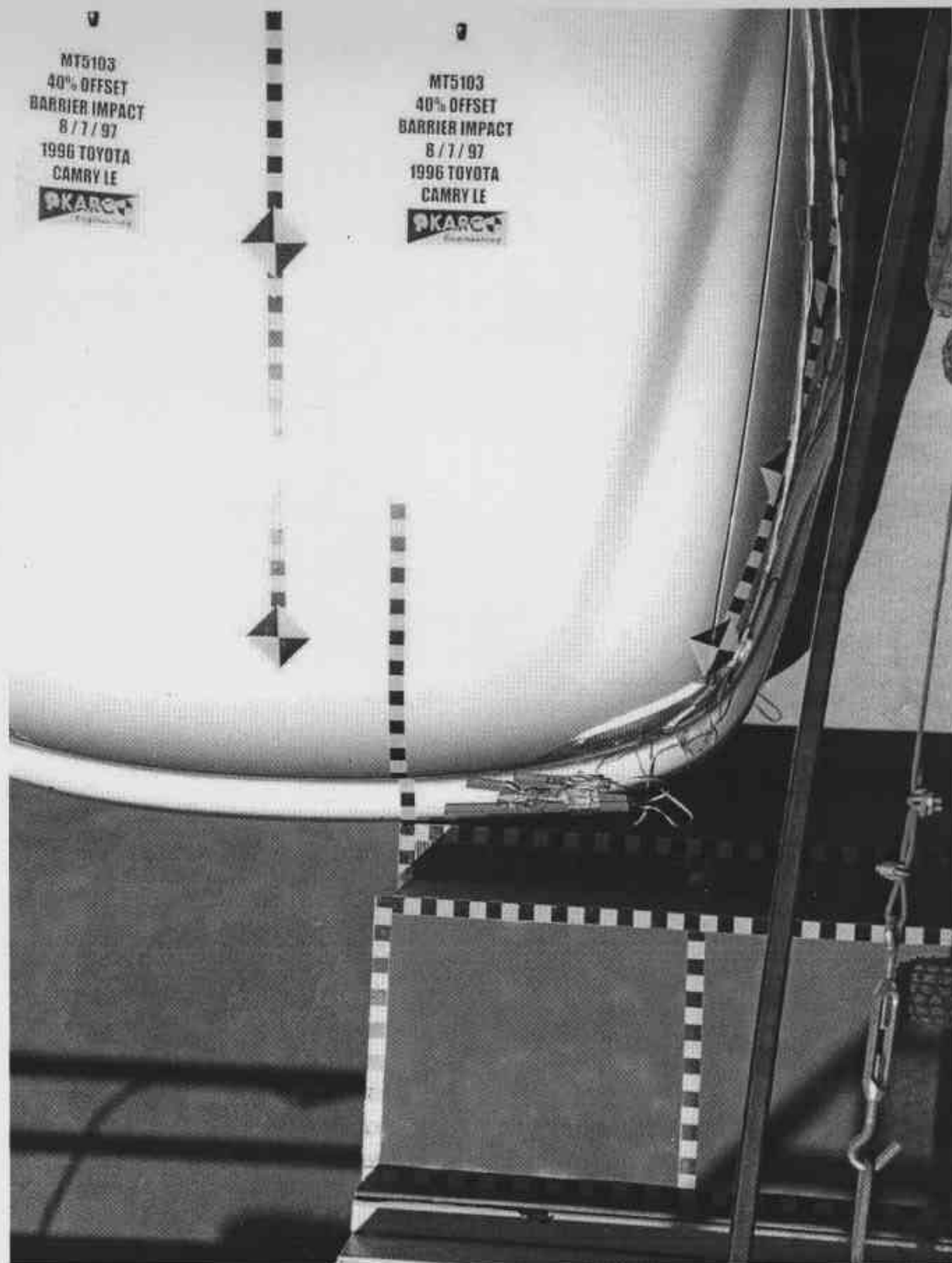


FIGURE -17. PRETEST OVERHEAD CLOSEUP



FIGURE A-18. POST TEST OVERHEAD CLOSEUP

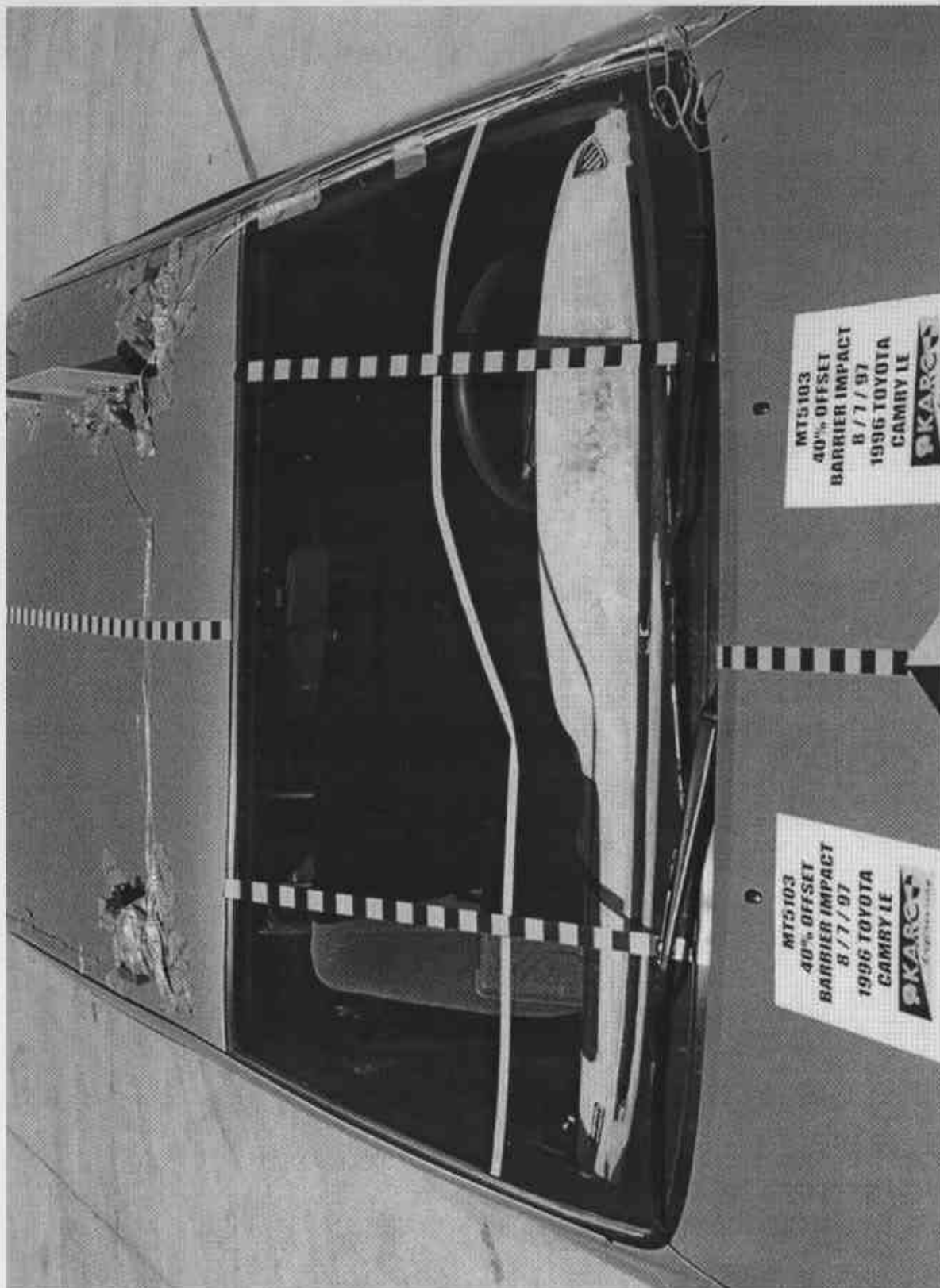


FIGURE A-19. PRETEST WINDSHIELD

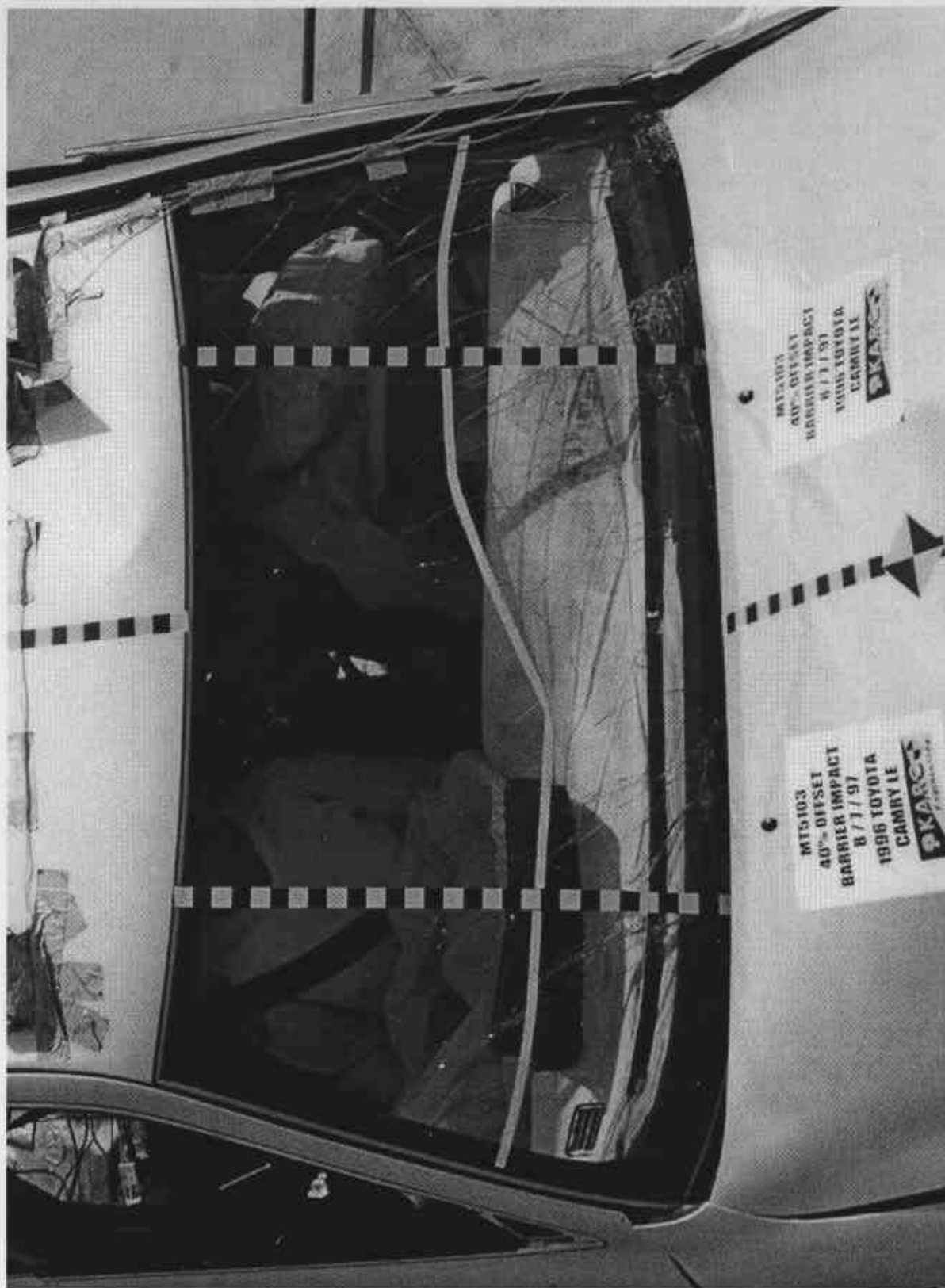


FIGURE A-20. POST TEST WINDSHIELD

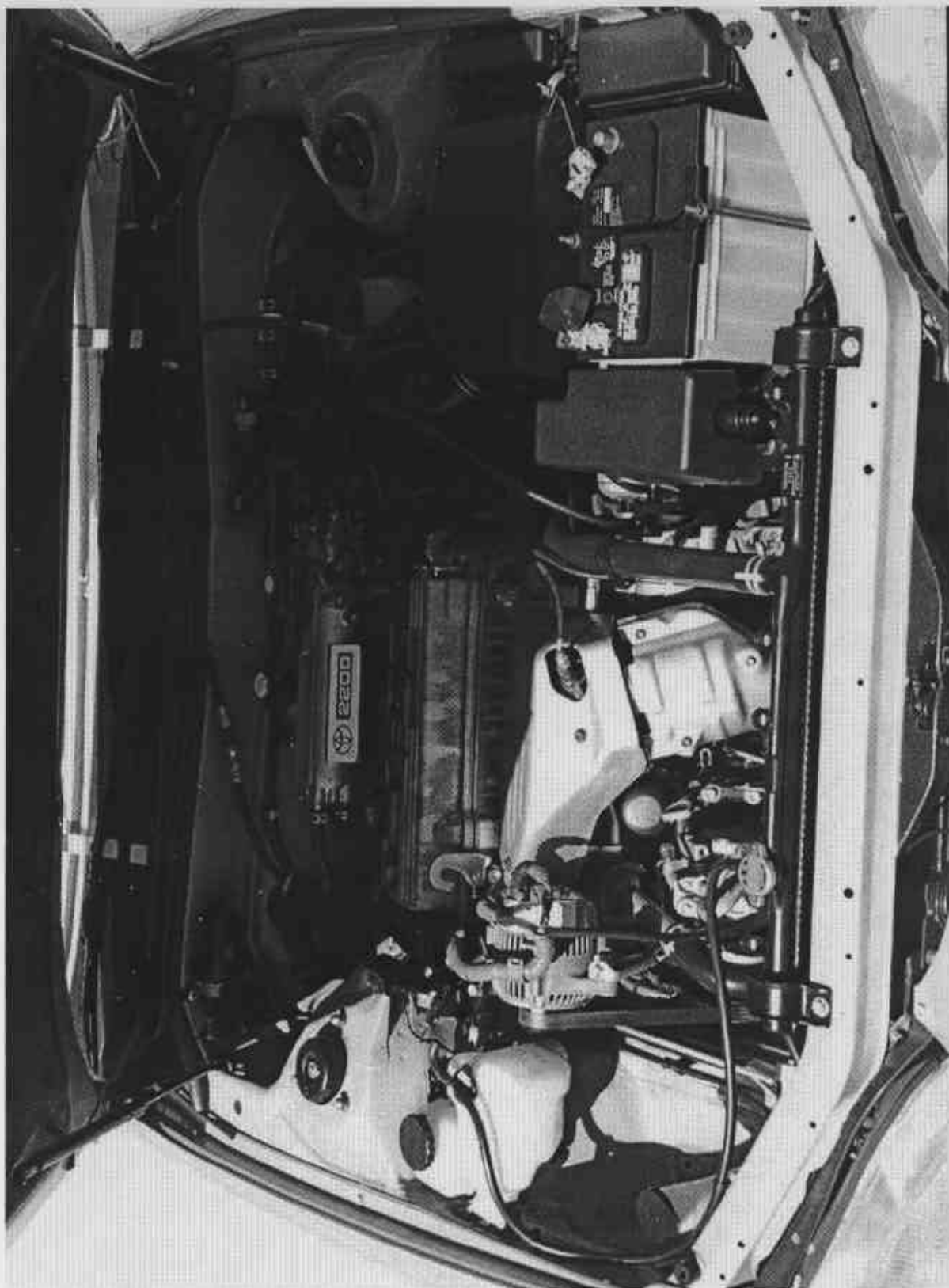


FIGURE-21. PRETEST ENGINE COMPARTMENT

A-21

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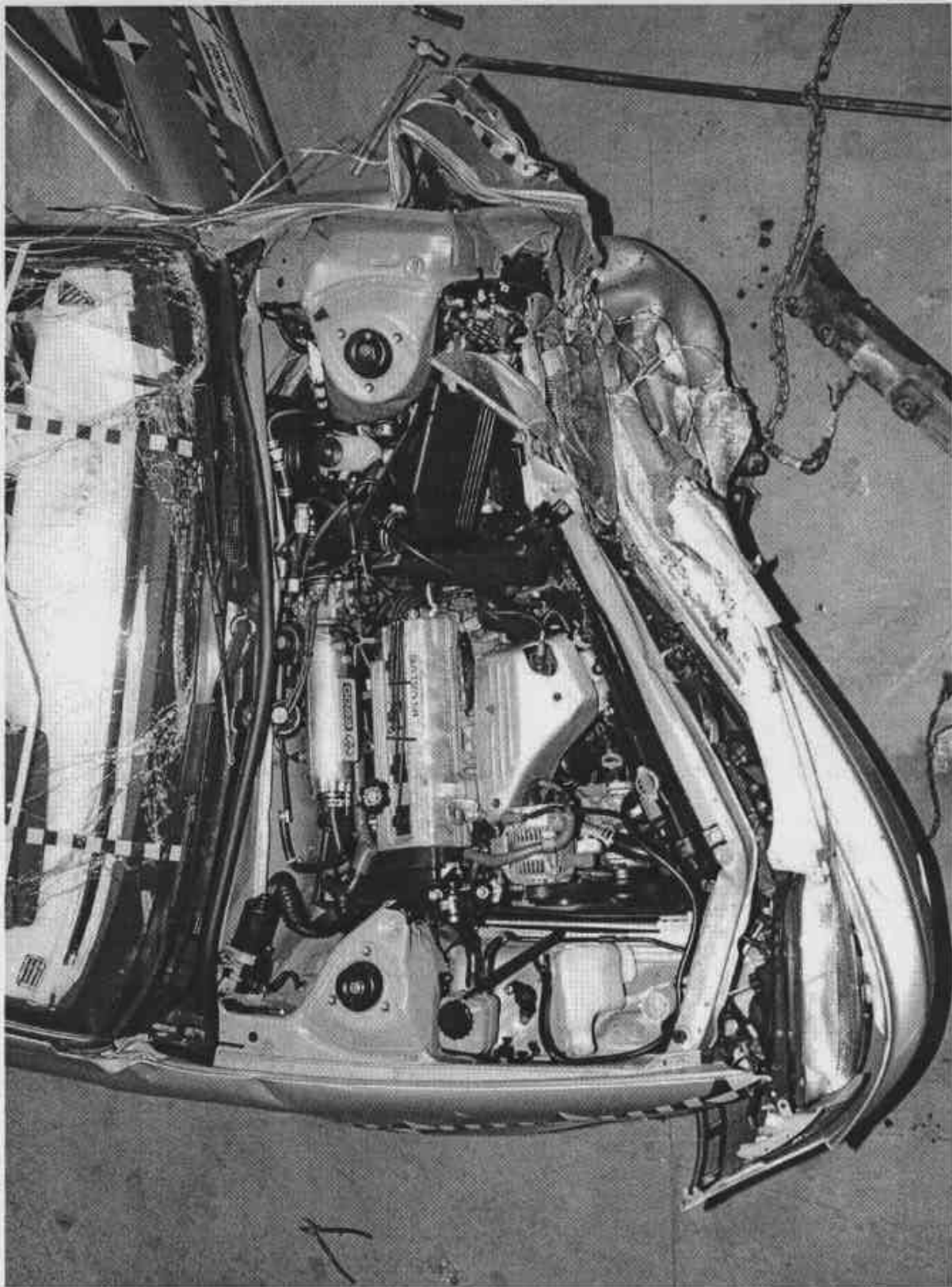


FIGURE A-22. POST TEST ENGINE COMPARTMENT

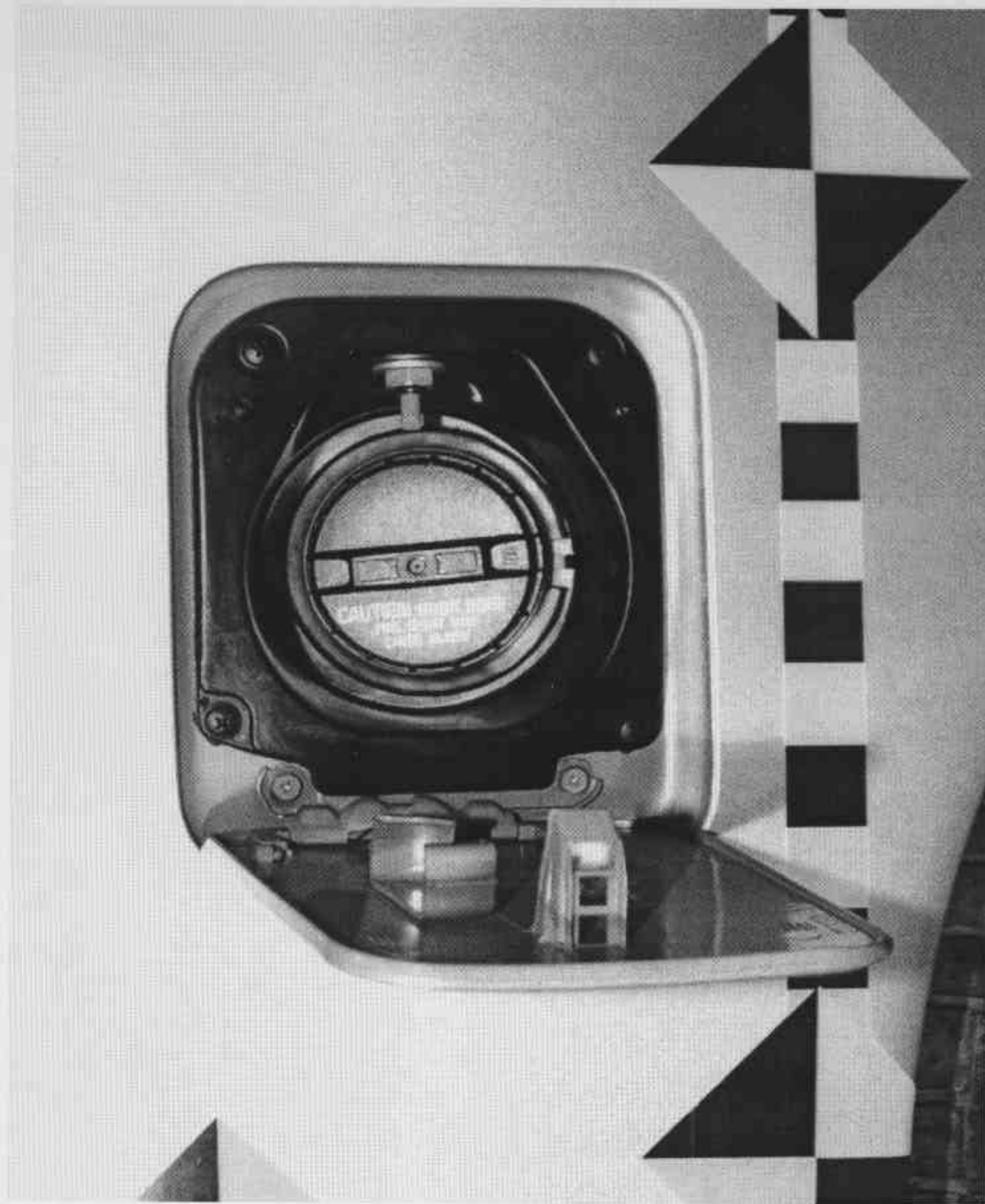


FIGURE A-23. FUEL CAP

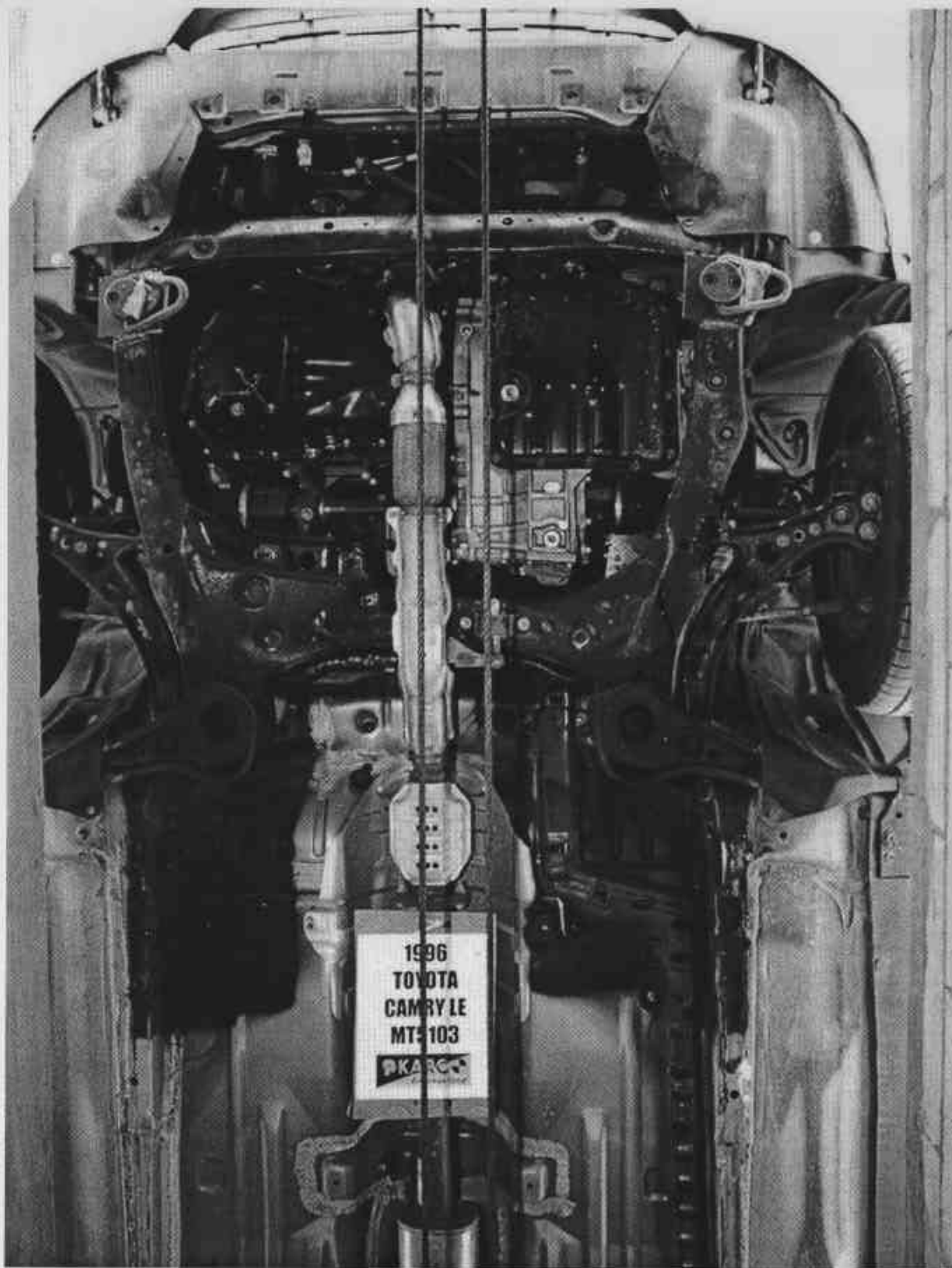


FIGURE A-24.PRETEST FRONT UNDERBODY

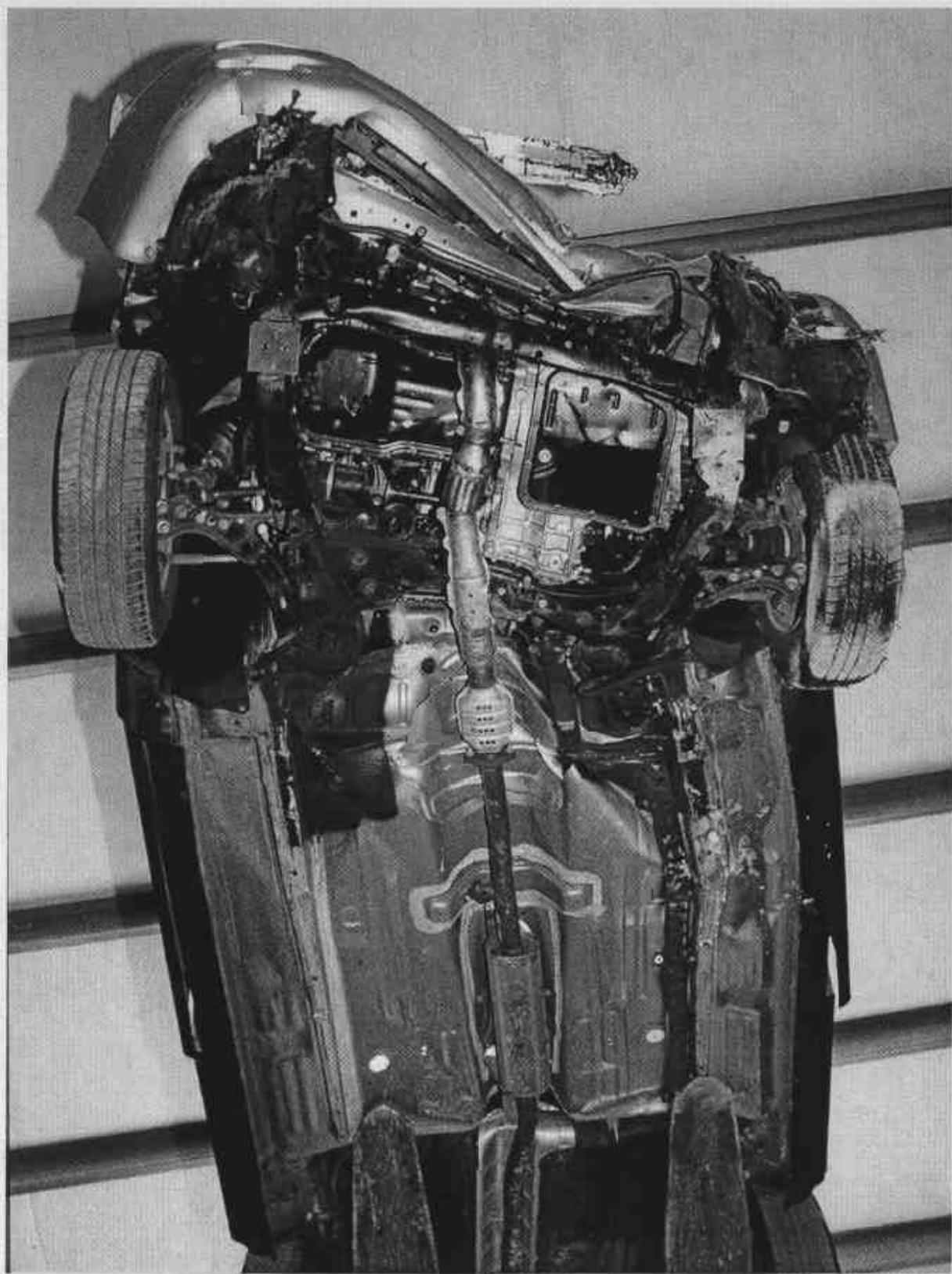


FIGURE A-25. POST TEST FRONT UNDERBODY

A-25

KAR-97-R97015-03

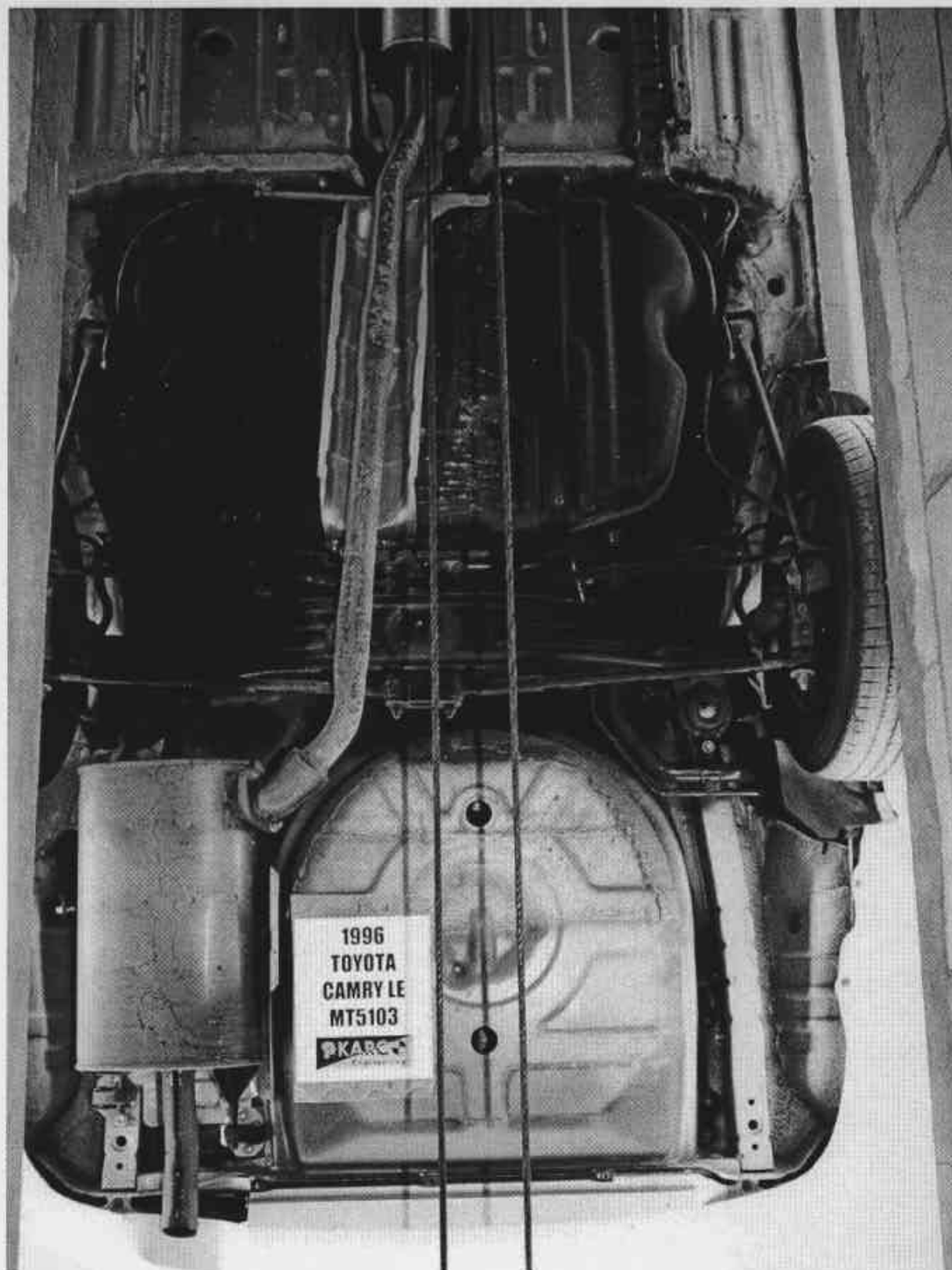


FIGURE A-26. PRETEST REAR UNDERBODY

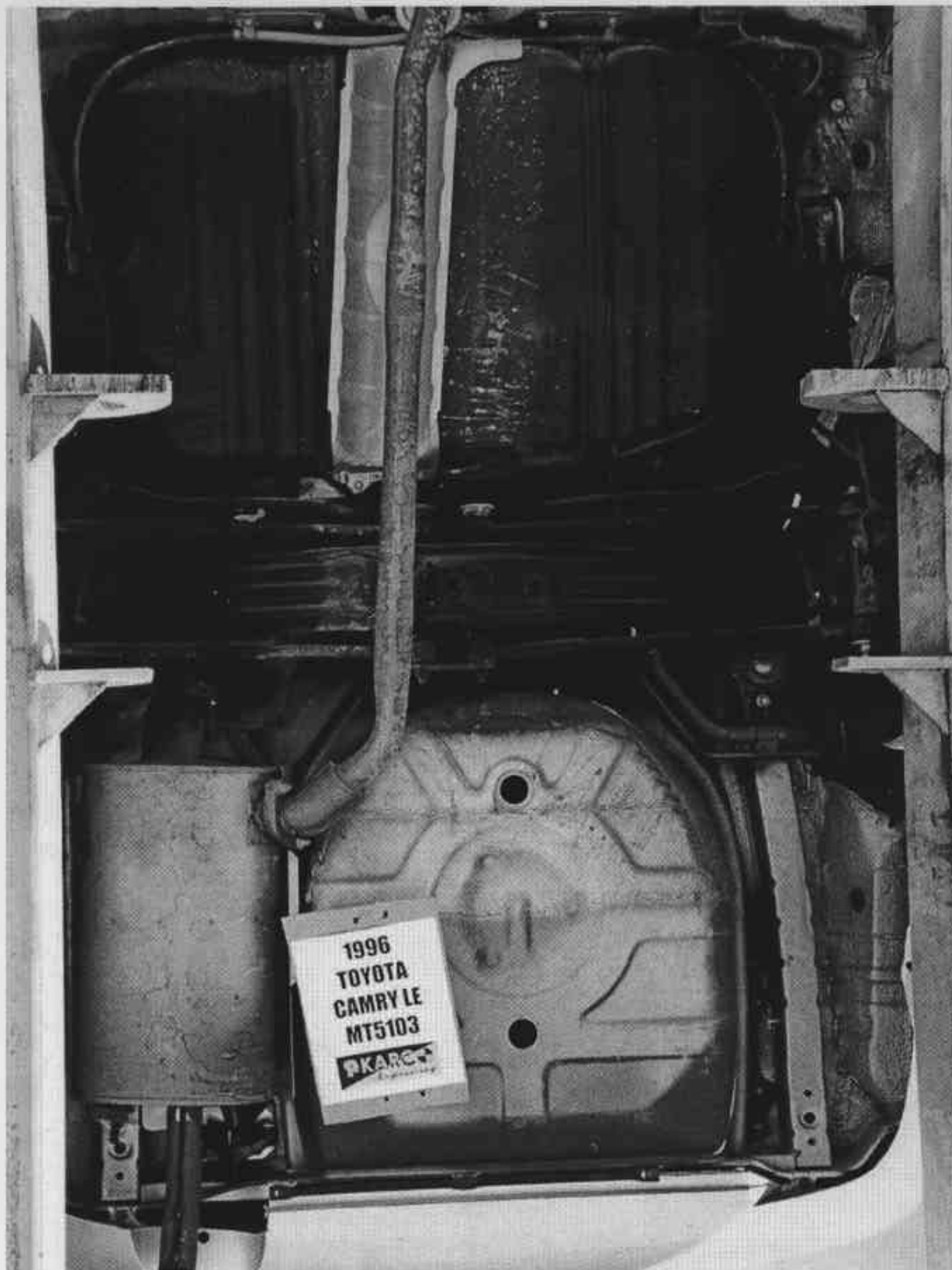


FIGURE A-27. POST TEST REAR UNDERBODY

A-27

KAR-97-R97015-03

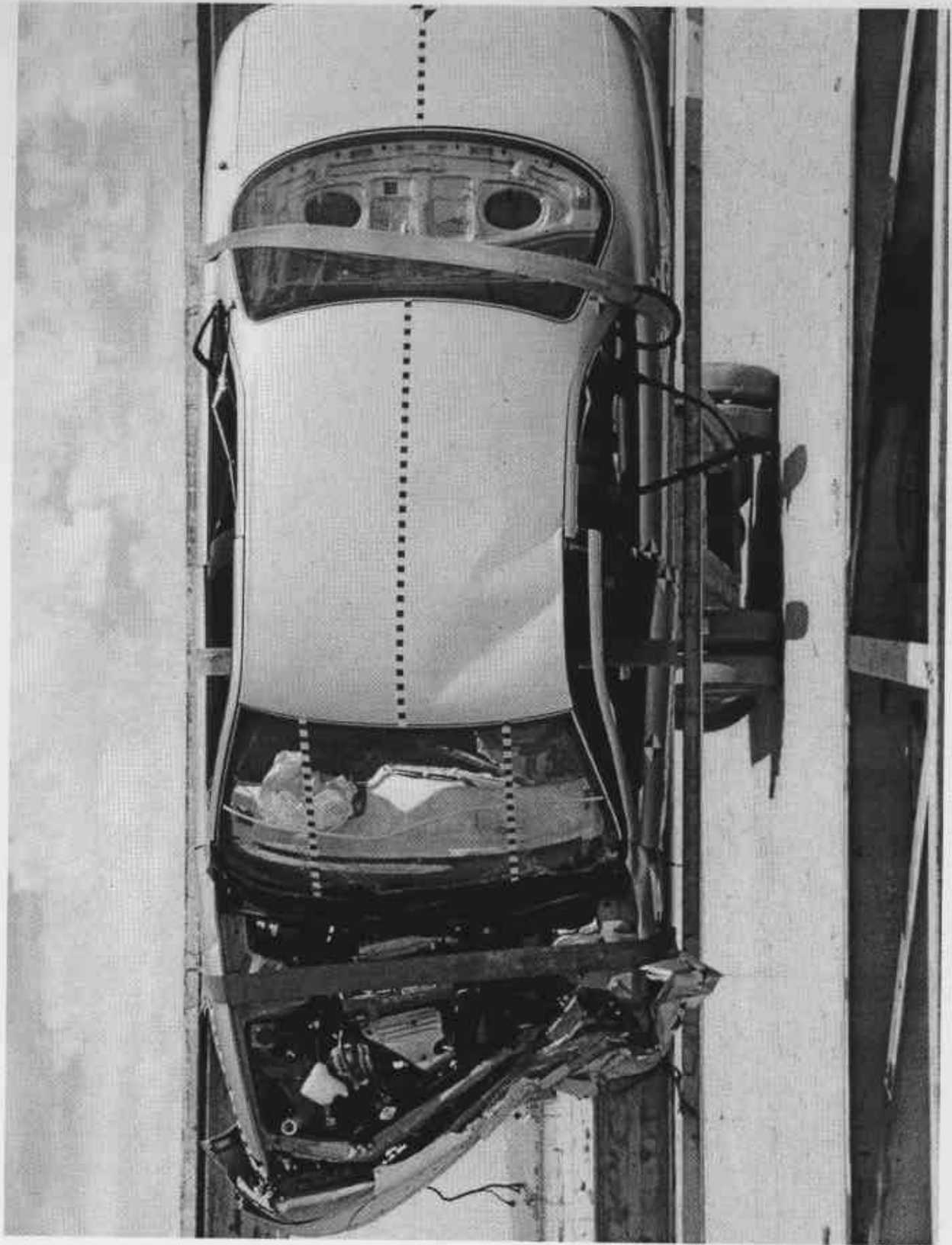


FIGURE A-28. VEHICLE ON ROLLOVER DEVICE

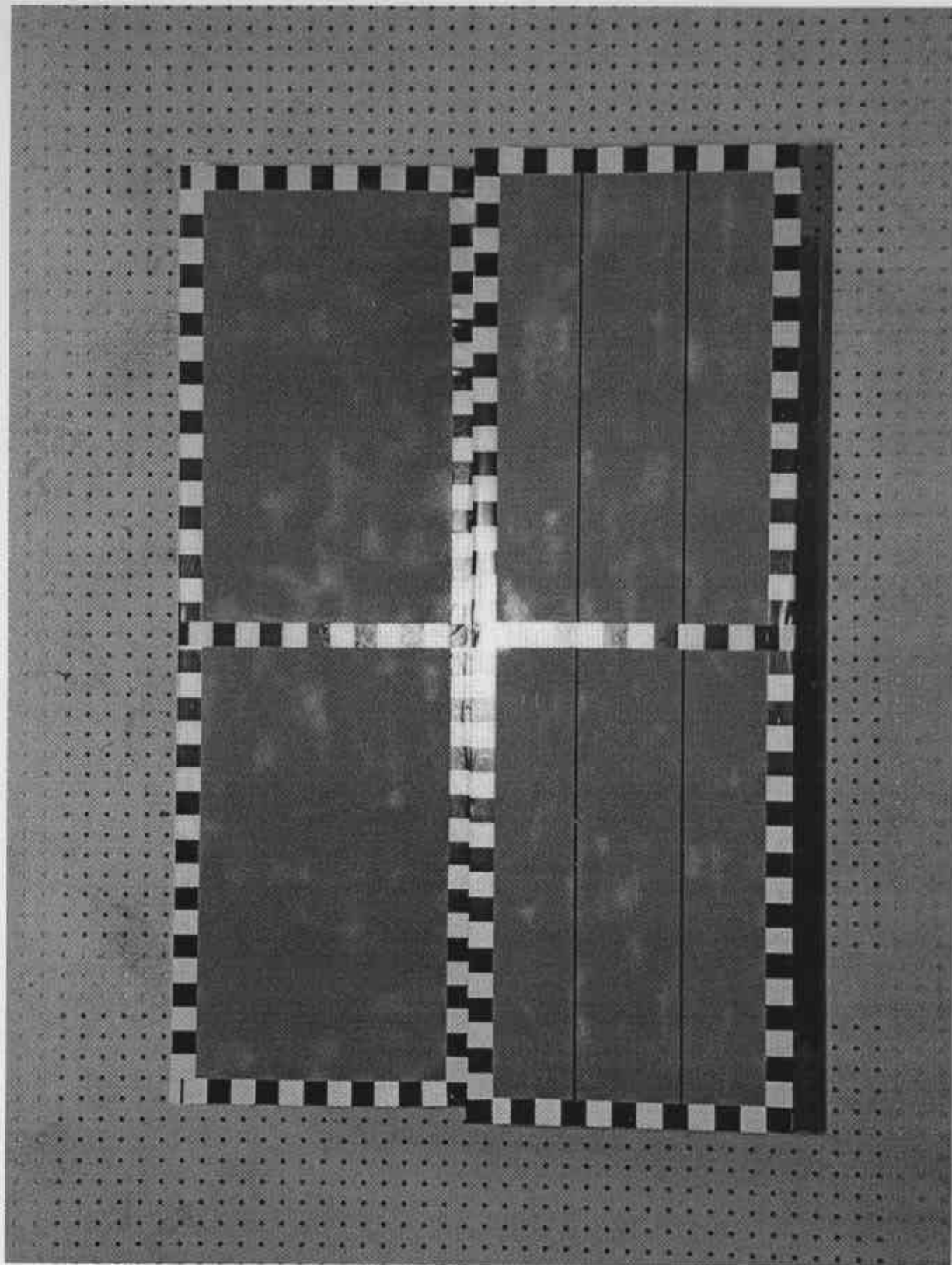


FIGURE A-29. PRETEST BARRIER FRONT VIEW

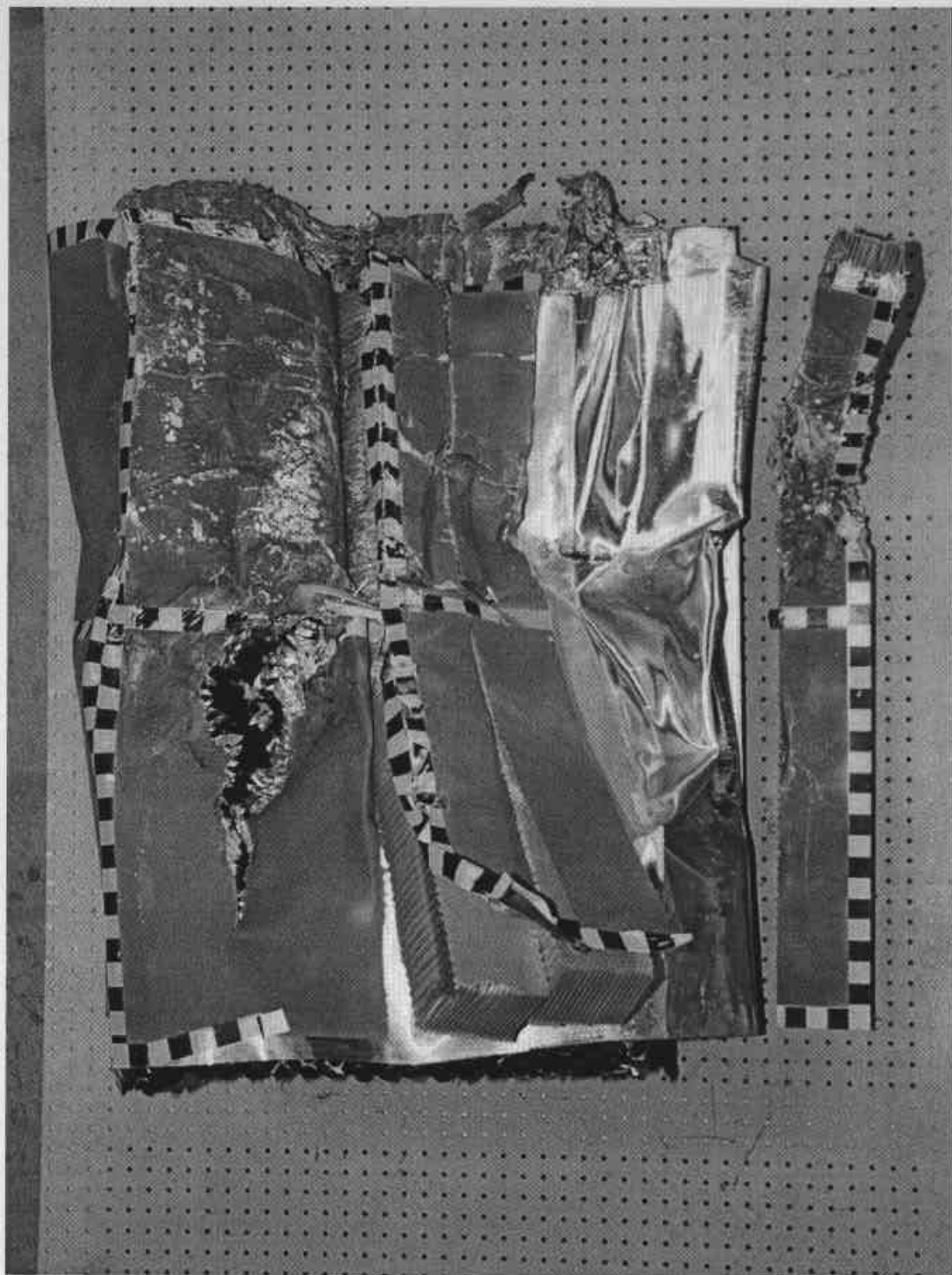


FIGURE A-30. POST TEST BARRIER FRONT VIEW

A-30

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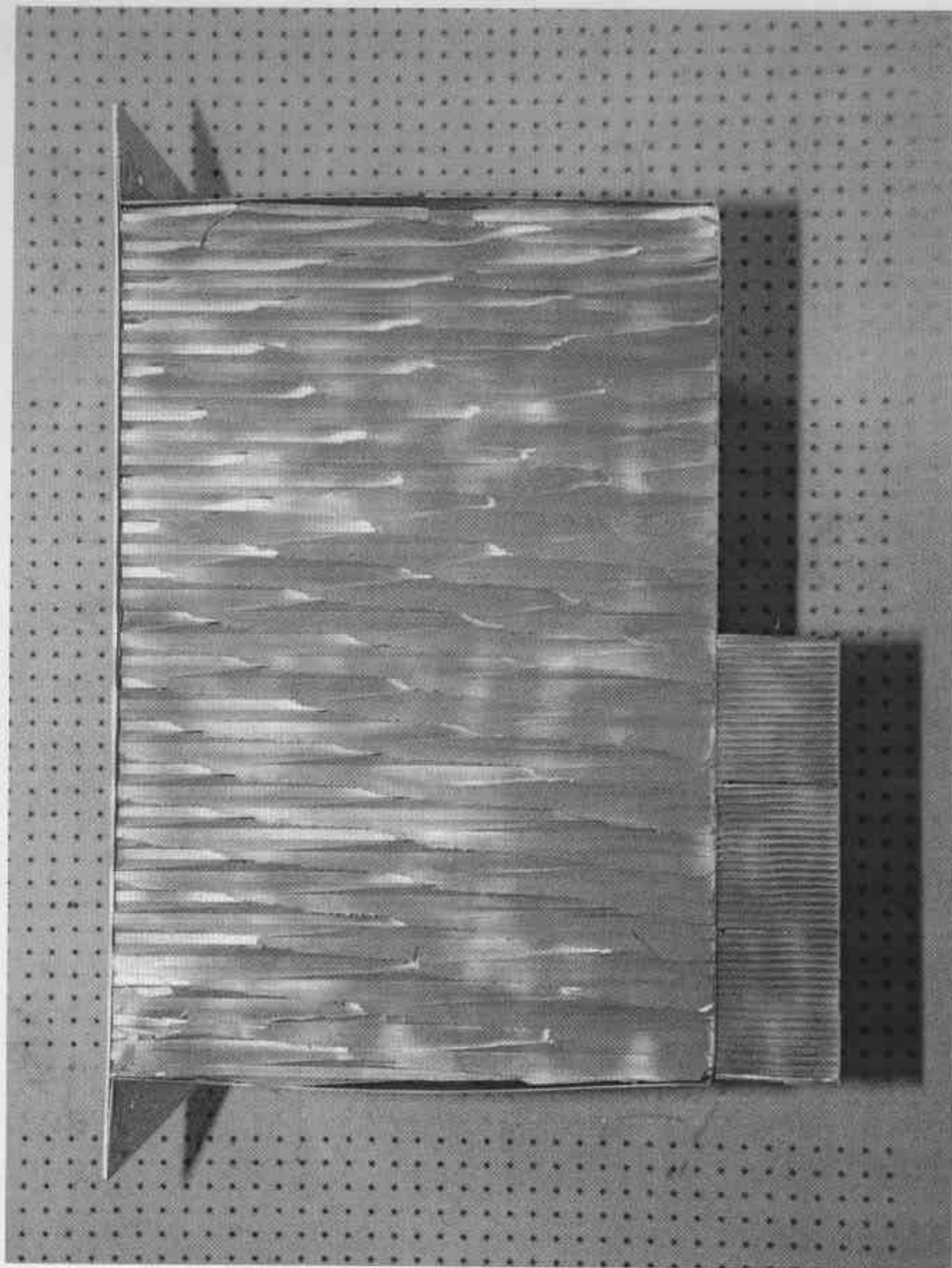


FIGURE A-31. PRE TEST BARRIER LEFT SIDE VIEW

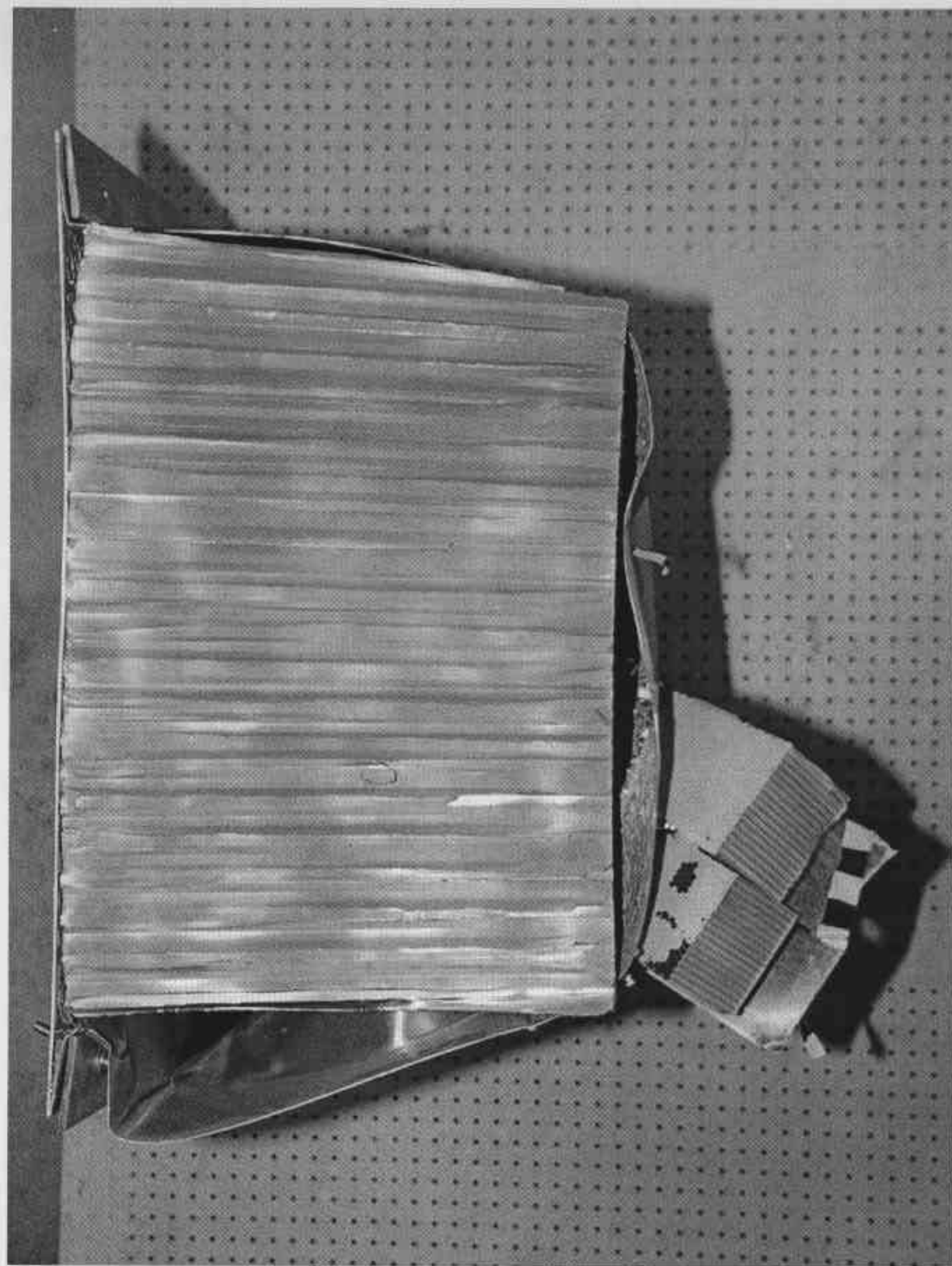


FIGURE A-32. POST TEST BARRIER LEFT SIDE VIEW

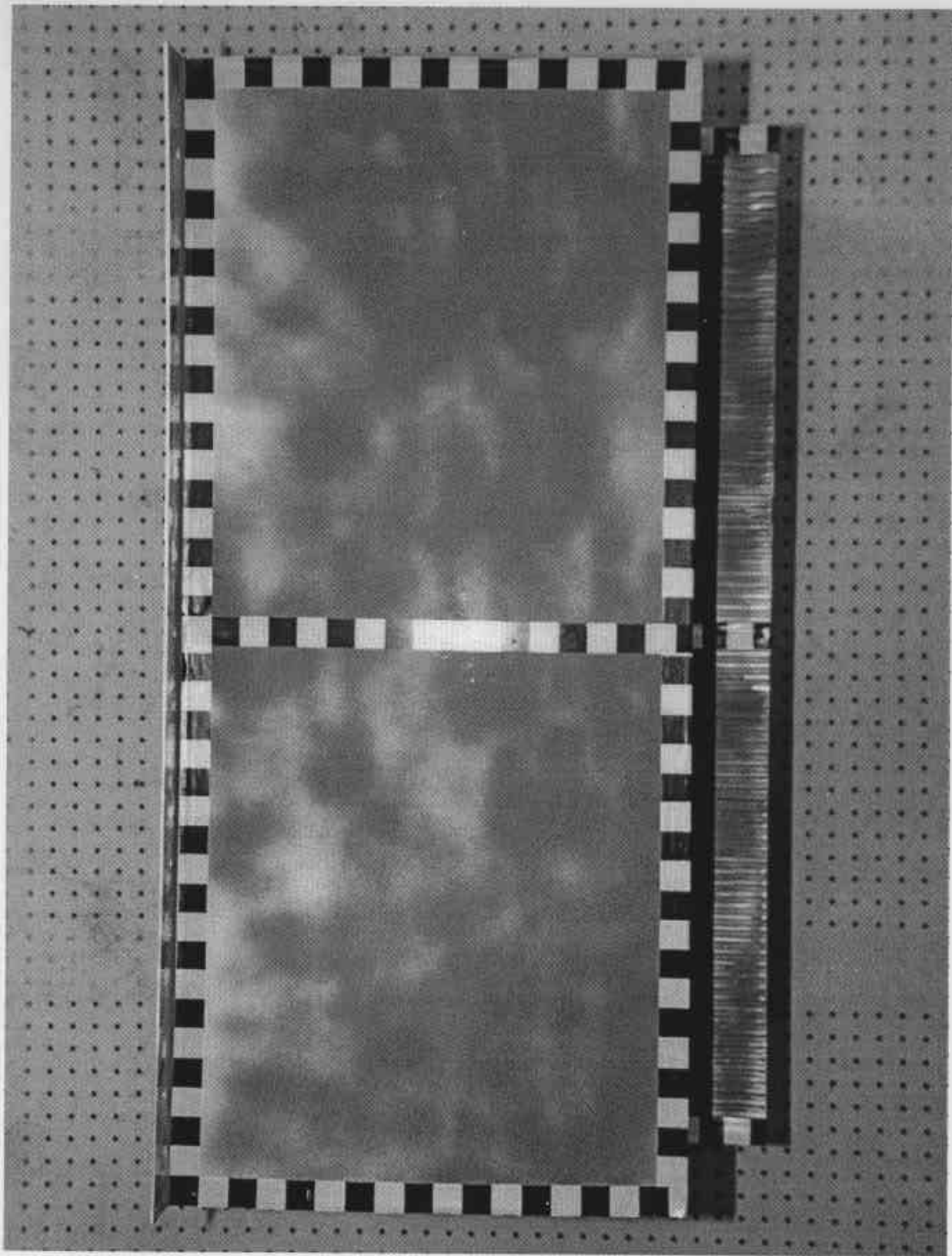


FIGURE A-33. PRETEST BARRIER TOP VIEW



FIGURE A-34. POST TEST BARRIER TOP VIEW

A-34

KAR-97-R97015-03

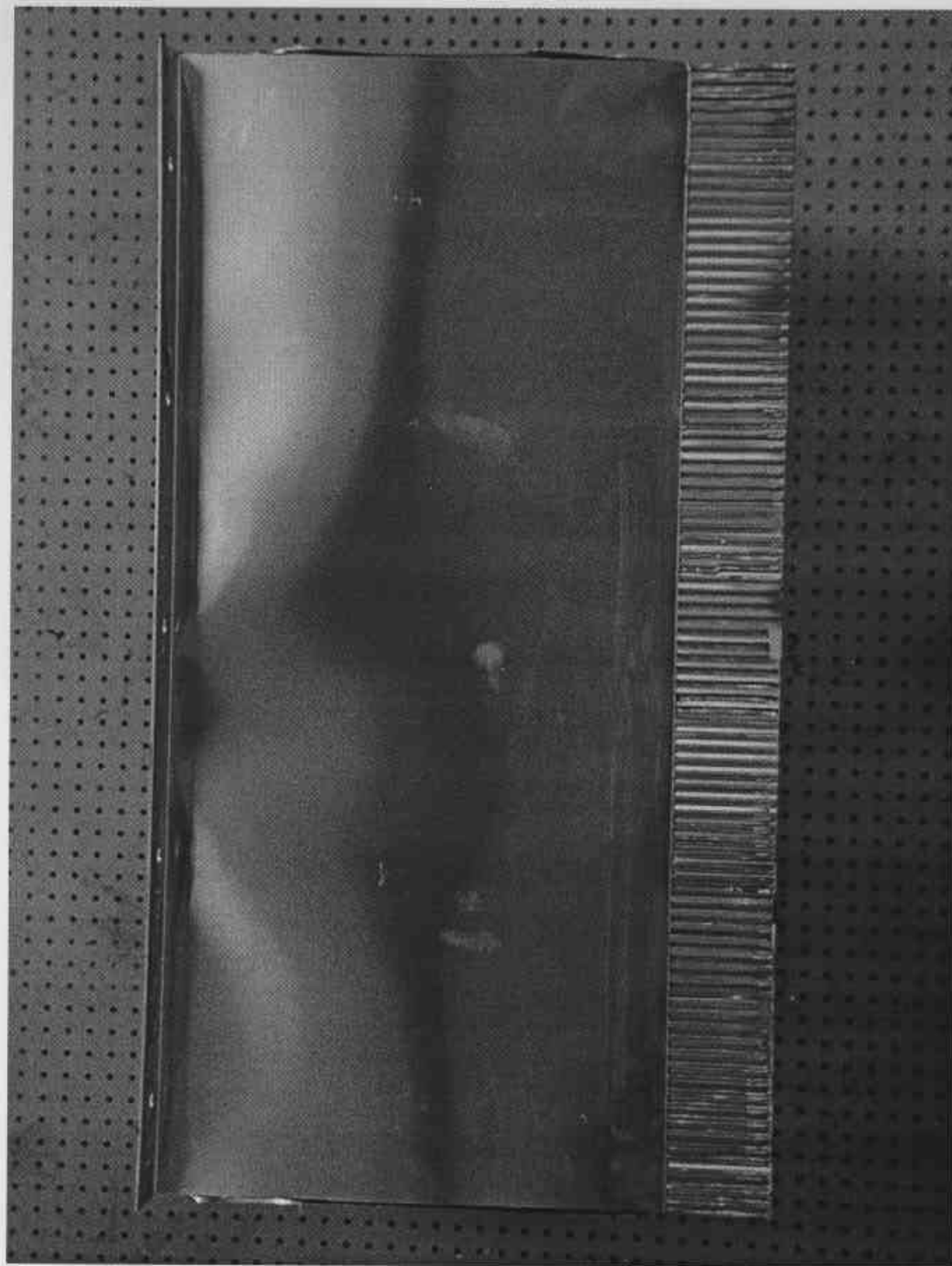


FIGURE A-35. PRETEST BARRIER BOTTOM VIEW

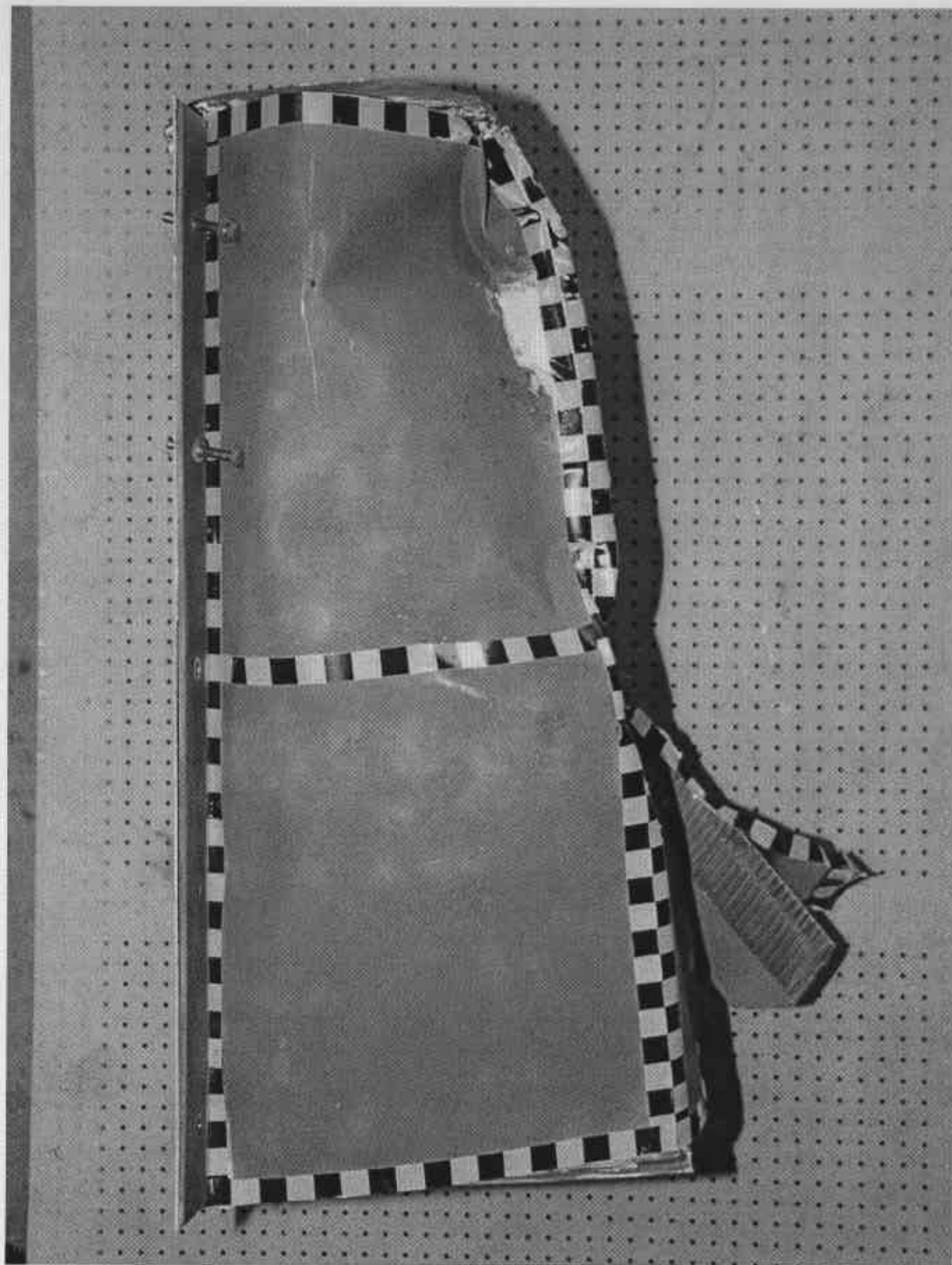


FIGURE A-36. POST TEST BARRIER BOTTOM VIEW

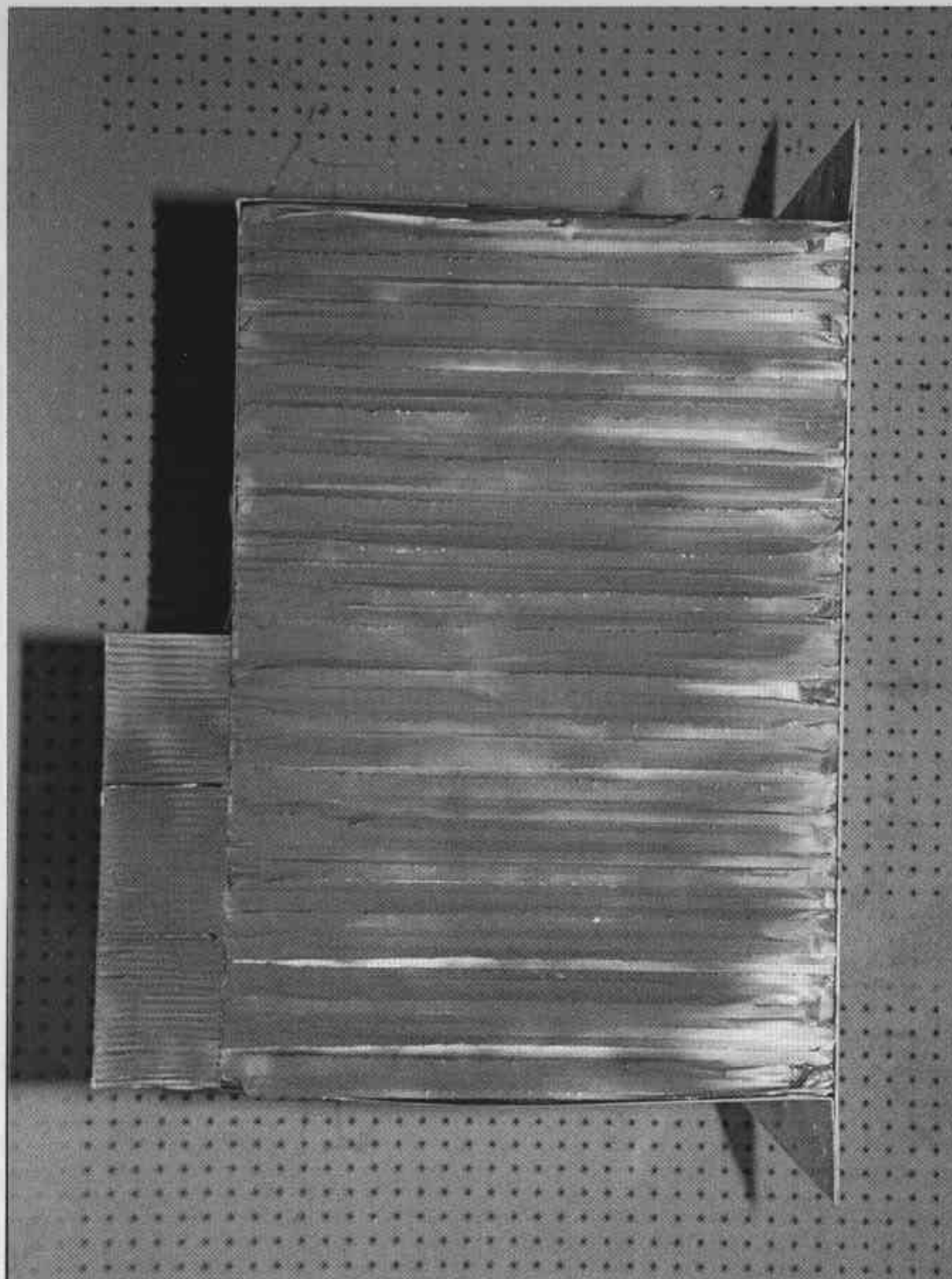


FIGURE A-37. PRETEST BARRIER RIGHT SIDE VIEW

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FIGURE A-38. POST TEST BARRIER RIGHT SIDE VIEW

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FIGURE A39. PRETEST DRIVER DUMMY (THRU WINDOW)



FIGURE A-40. POST TEST DRIVER DUMMY (THRU WINDOW)



FIGURE A-41. PRETEST DRIVER DUMMY (DOOR OPEN)



FIGURE A-42. POST TEST DRIVER DUMMY (DOOR OPEN)



FIGURE A-43. PRE TEST DRIVER DUMMY (90° TO VEHICLE)



FIGURE A-44. POST TEST DRIVER DUMMY (90° TO VEHICLE)

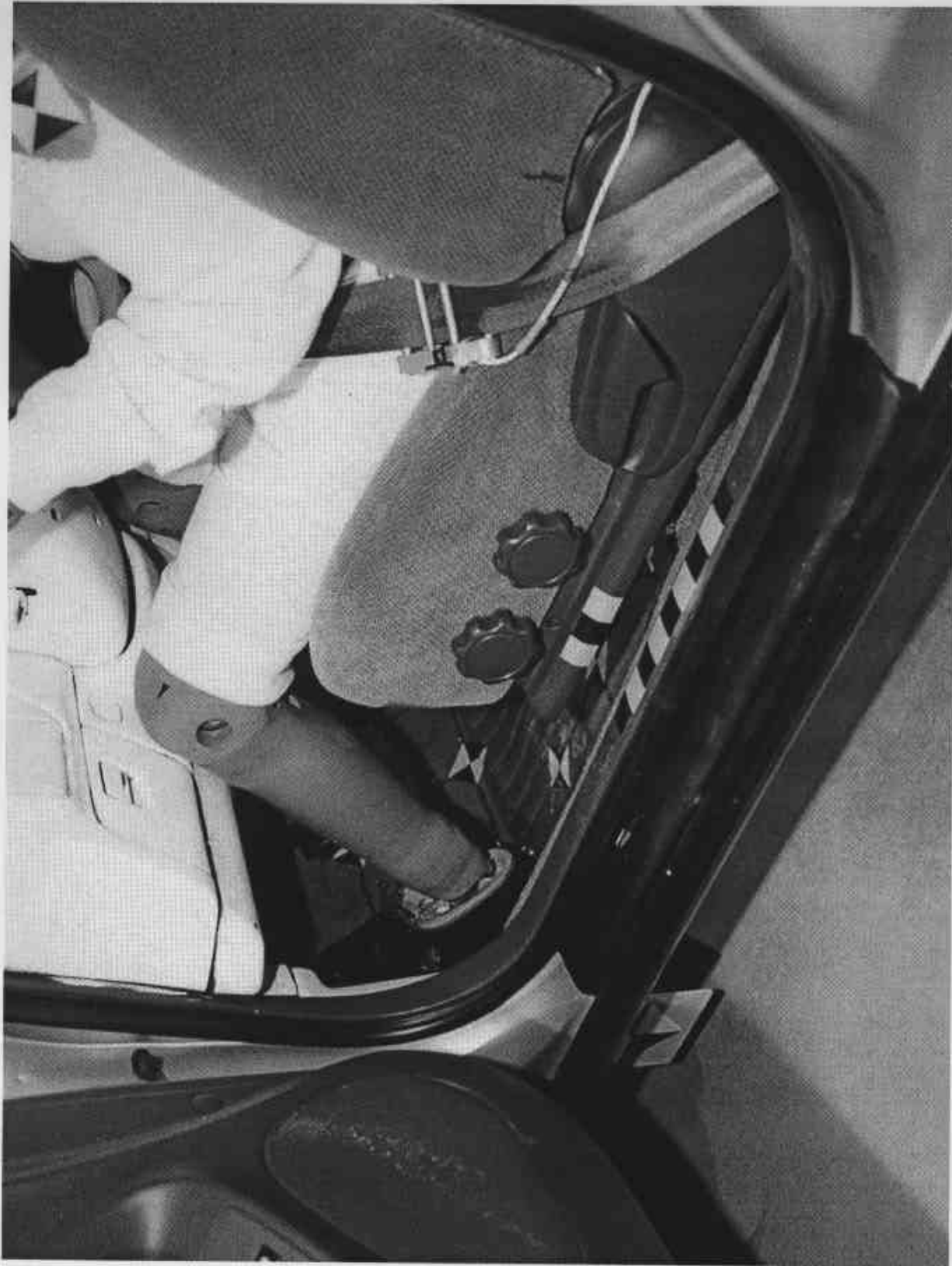


FIGURE A-45. PRETEST DRIVER DUMMY FEET



FIGURE A-46. POST TEST DRIVER DUMMY FEET



FIGURE A-47. PRETEST DRIVER SIDE FLOOR

A-47

KAR-97-R97015-03

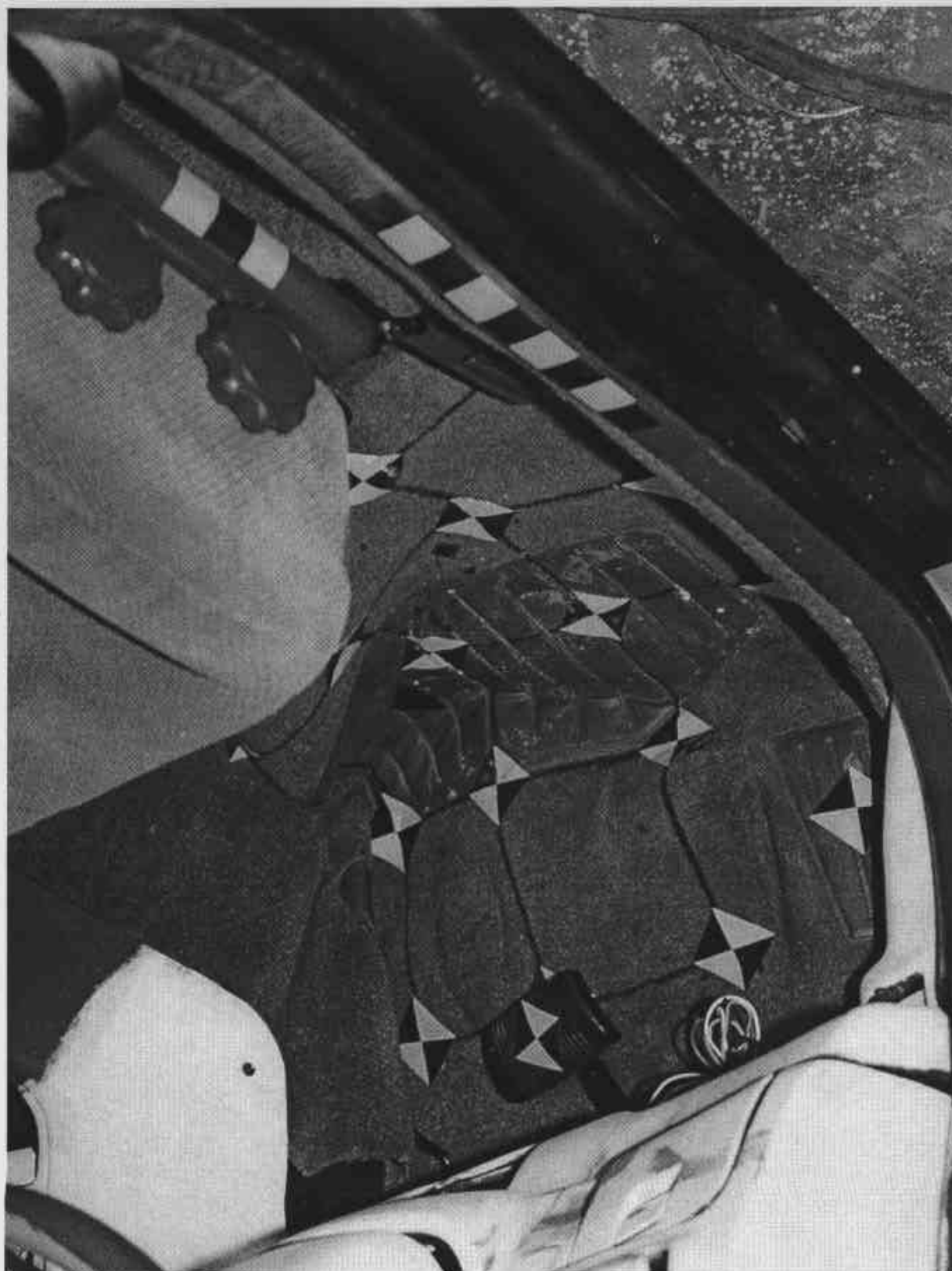


FIGURE A-48.POST TEST DRIVER SIDE FLOOR

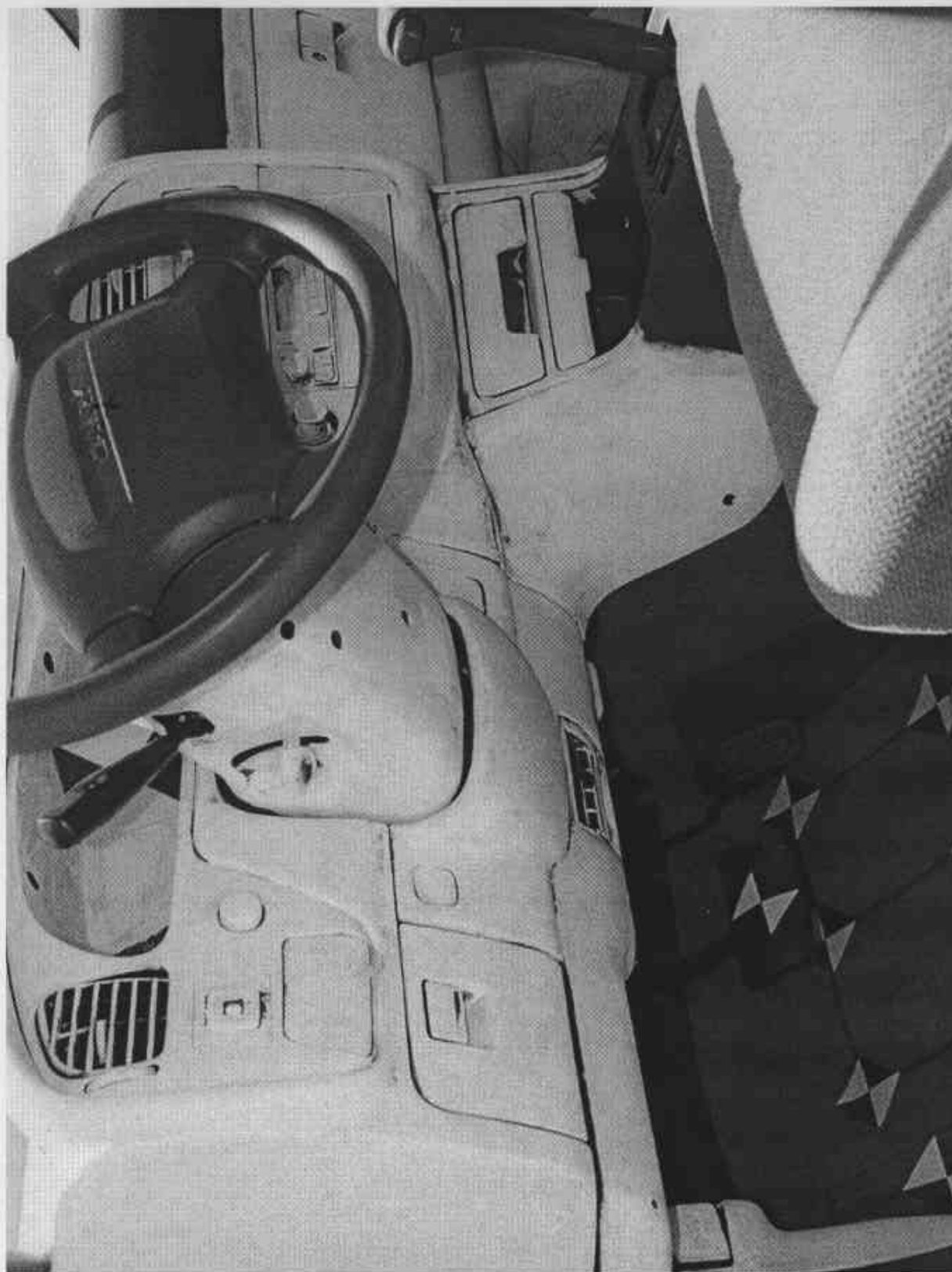


FIGURE A-49. PRETEST DRIVER KNEE BOLSTER



FIGURE A-50. POST TEST DRIVER KNEE BOLSTER AND DUMMY CONTACT

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FIGURE A-51. DRIVER HEAD POST TEST

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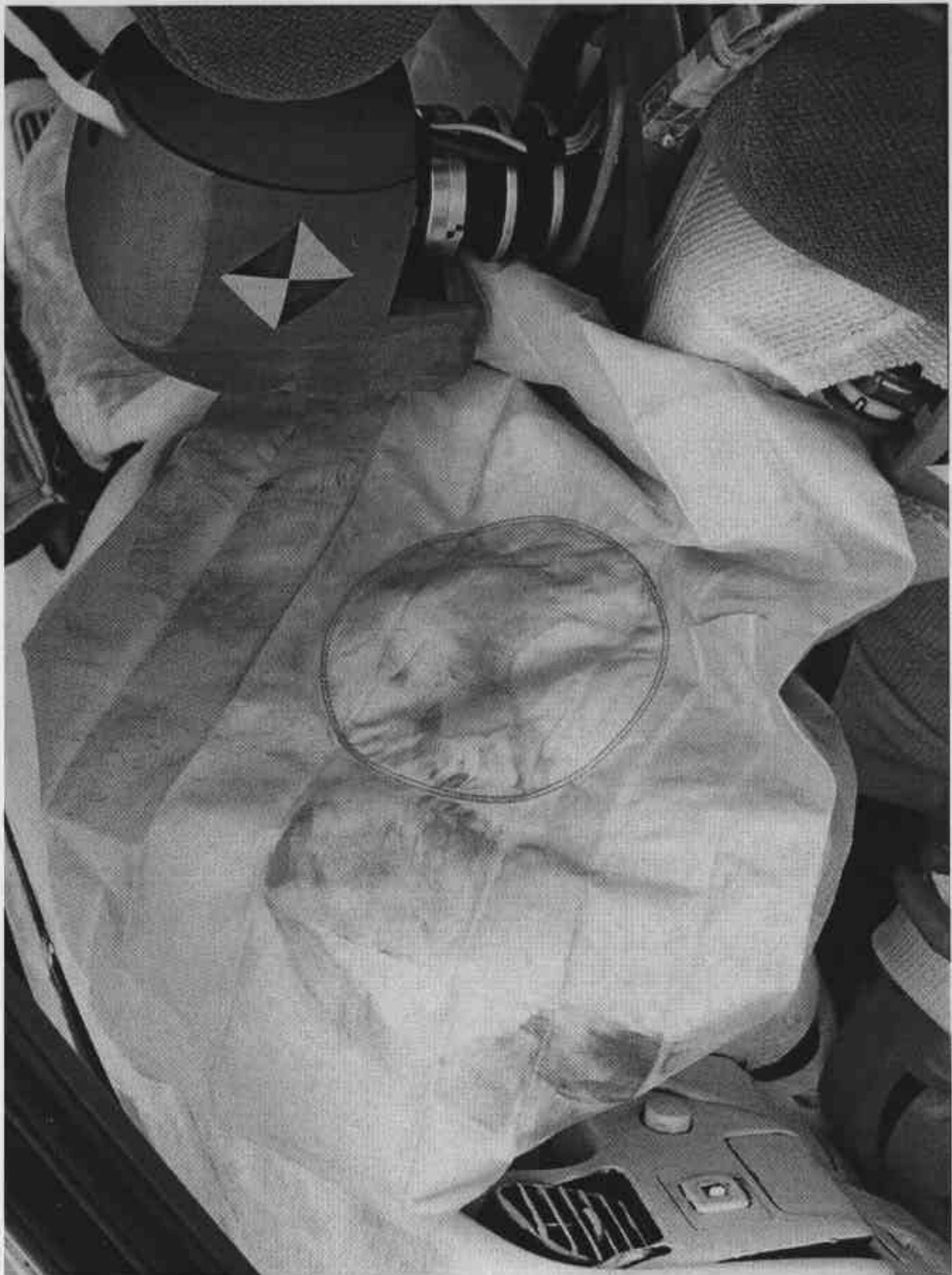


FIGURE A-52. DRIVER DUMMY HEAD CONTACT POINT



FIGURE A-53. DRIVER DUMMY HEAD CONTACT POINT



FIGURE A-54. DRIVER DUMMY CHEST CONTACT POINT



FIGURE A-55. PRETEST PASSENGER DUMMY (THRU WINDOW)



FIGURE A-56. POST TEST PASSENGER DUMMY (THRU WINDOW)

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FIGURE A-57. PRETEST PASSENGER DUMMY (DOOR OPEN)



FIGURE A-58. POST TEST PASSENGER DUMMY (DOOR OPEN)



FIGURE A-59. PRETEST PASSENGER DUMMY (90° TO VEHICLE)



FIGURE A-60. POST TEST PASSENGER DUMMY (90° TO VEHICLE)

A-60

KAR-97-R97015-03

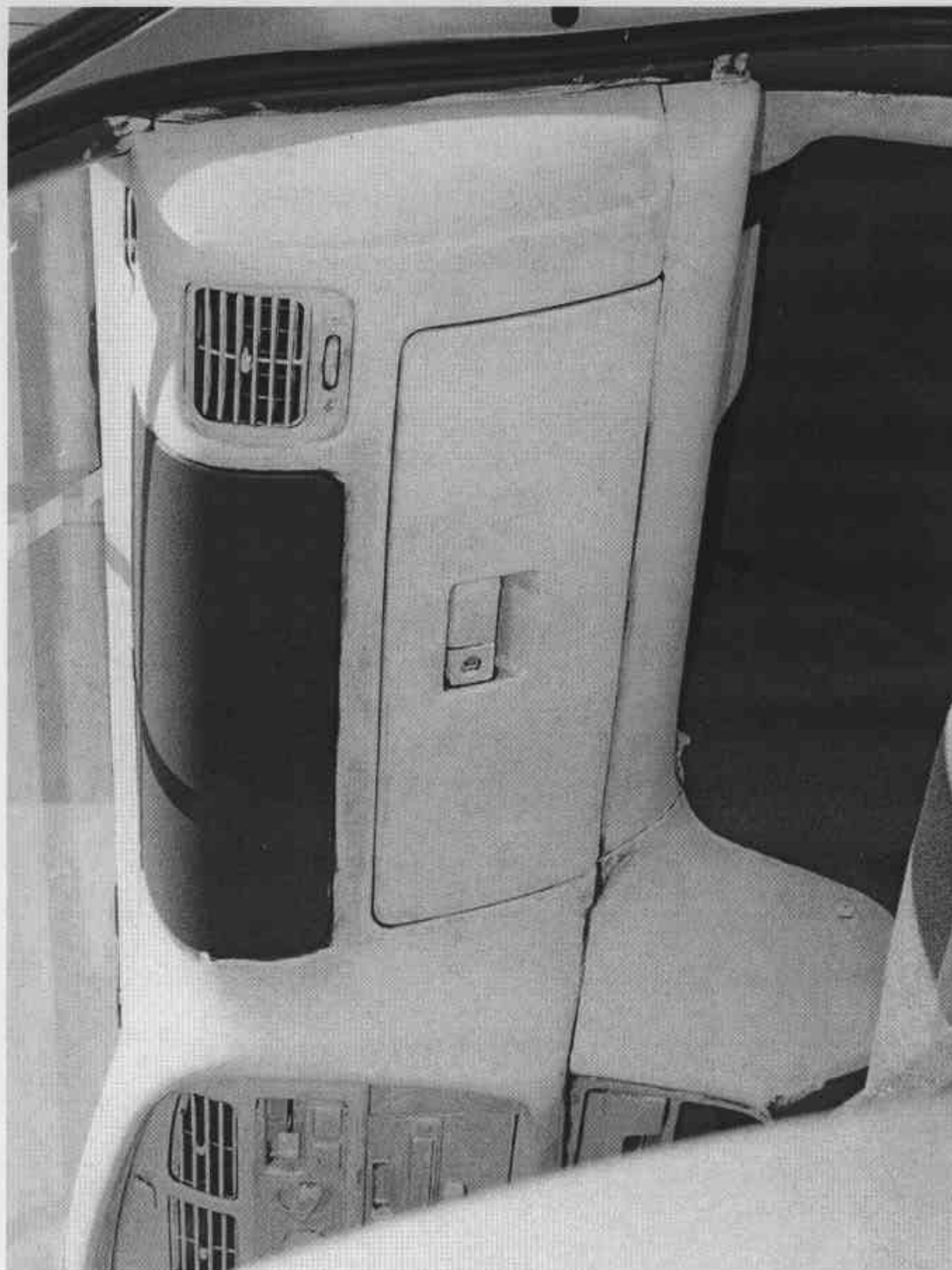


FIGURE A-61.PRETEST PASSENGER KNEE BOLSTER

A-61

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FIGURE A-62. POST TEST PASSENGER DUMMY KNEE BOLSTER AND DUMMY CONTACT

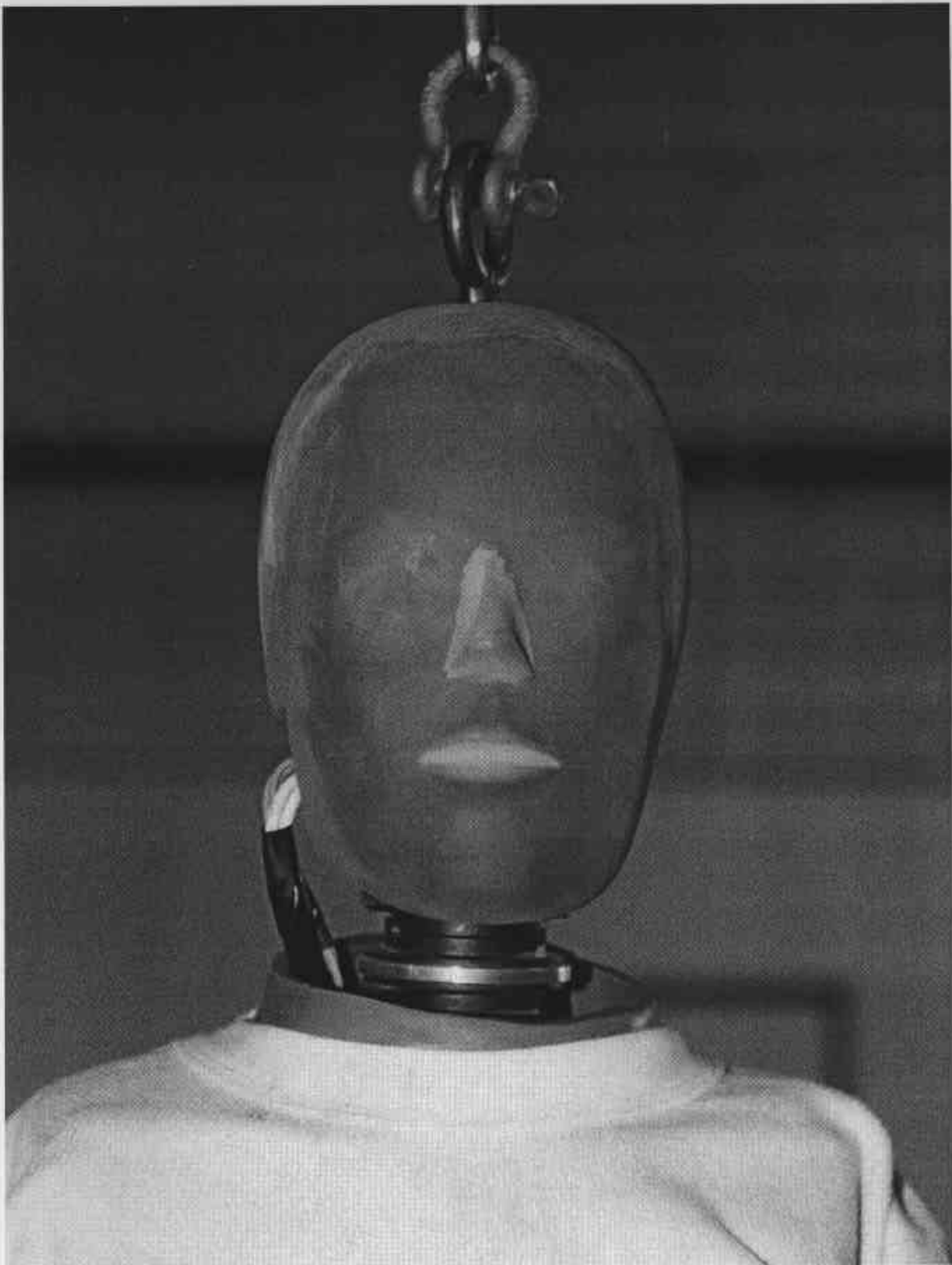


FIGURE A-63.PASSENGER HEAD POST TEST



FIGURE A-64. PASSENGER HEAD CONTACT POINT

APPENDIX B
DUMMY, VEHICLE AND RESPONSE DATA TRACES

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B-4	Driver Head Primary Y	B-4
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B-6	Driver Head Resultant Primary	B-6
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B-19	Driver Chest Primary Z	B-19
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B-33	Driver Pelvis Resultant	B-33
B-34	Driver Left Femur Force	B-34
B-35	Driver Right Femur Force	B-35

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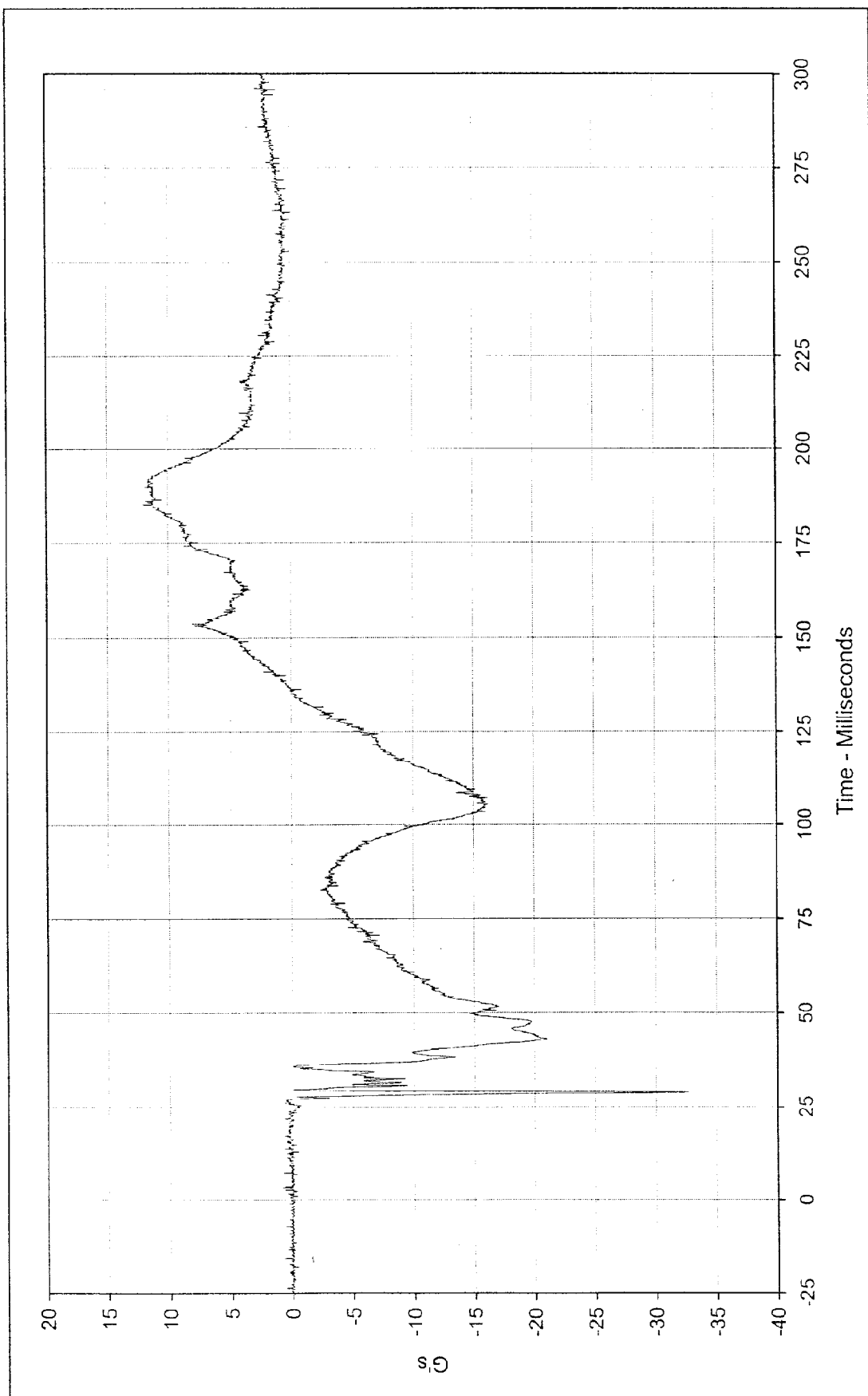
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B-39	Driver Left Upper Tibia Moment Y	B-39
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B-43	Driver Left Lower Tibia Moment Y	B-43
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B-46	Driver Right Upper Tibia Moment X	B-46
B-47	Driver Right Upper Tibia Moment Y	B-47
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B-104	Passenger Right Lower Tibia Force X	B-104
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LIST OF DATA PLOTS...(Continued)

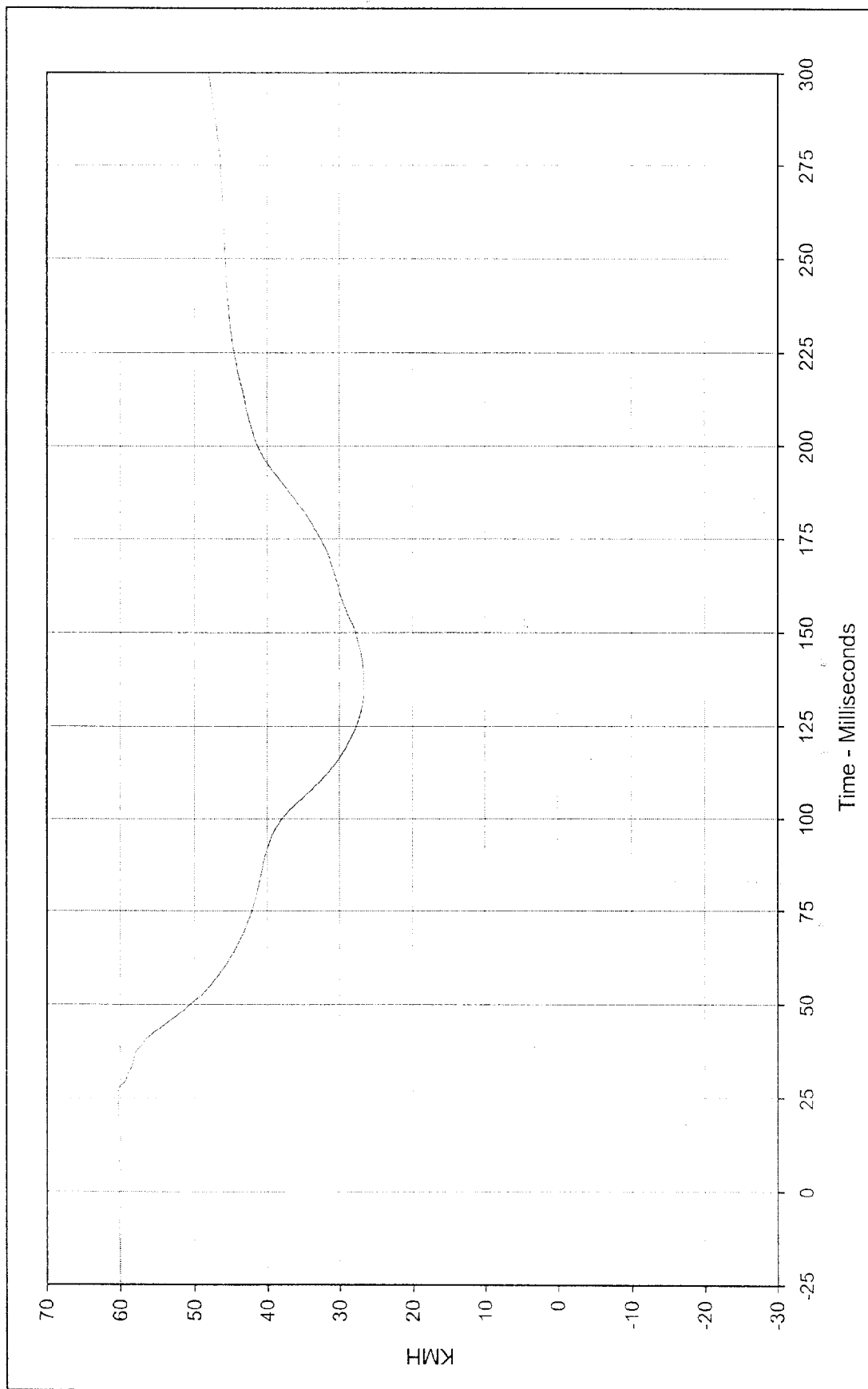
Data Plot		Page
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Testing Program: 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

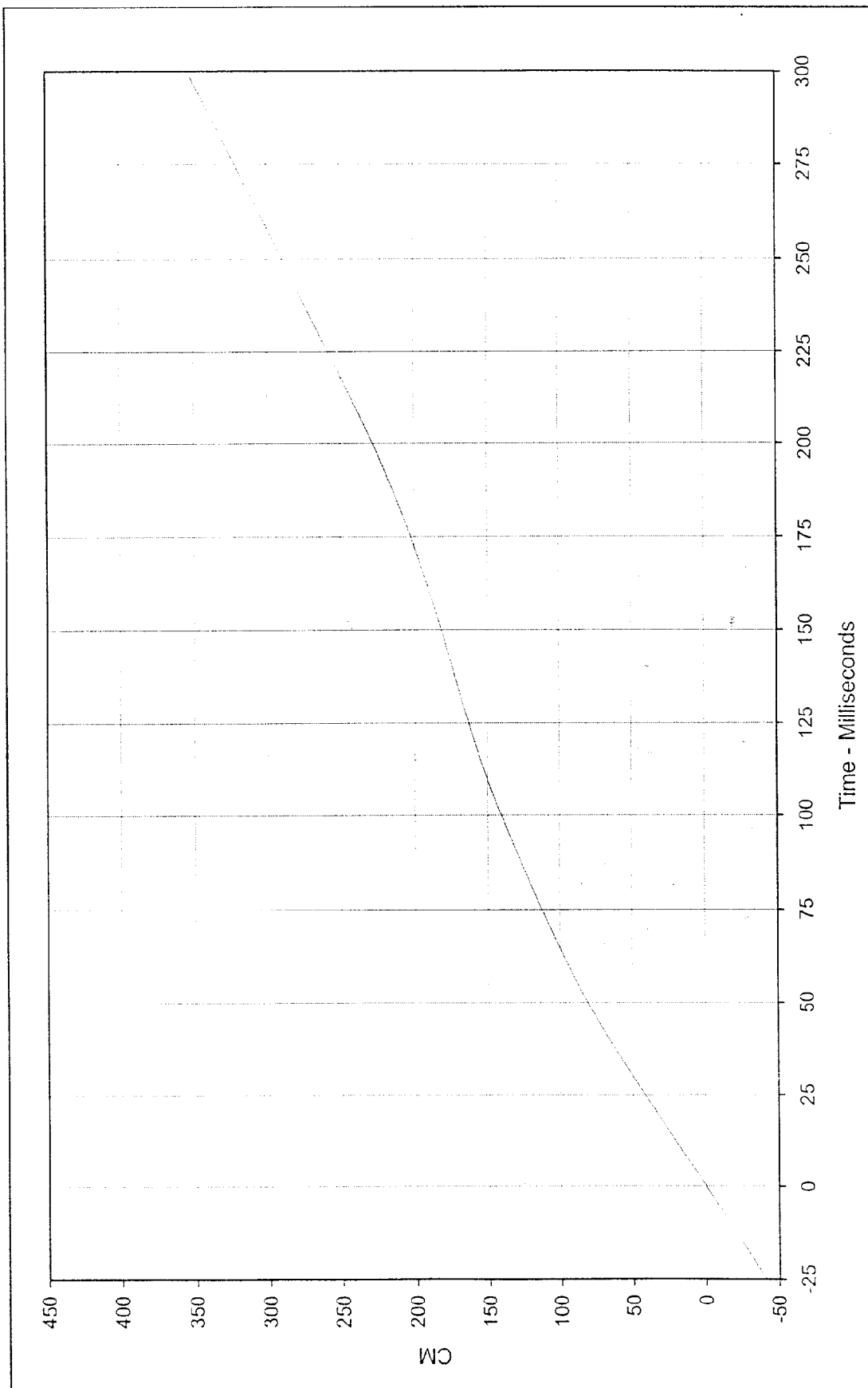
Curve Description: Driver Head Primary X
 Maximum Value: 12.1 at 185.4 Milliseconds
 Minimum Value: -32.7 at 289 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: FIL-001





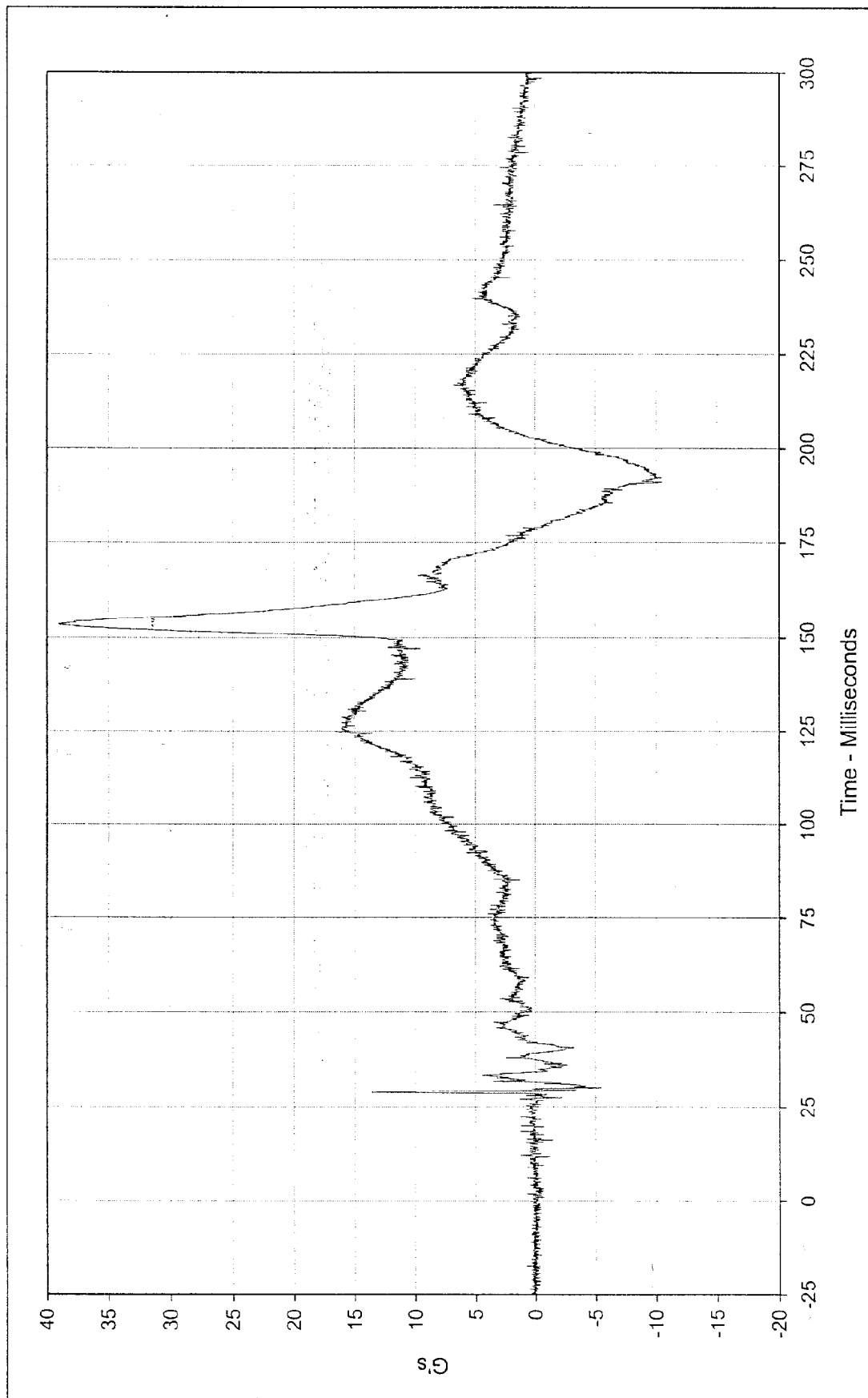
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Maximum Value:	60.3	at	27.1	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	26.7	at	136.5		
SAE Filter Class:	180				
Date of Test:	8/7/97				
Curve Number:	IN1-001				





Curve Description:	Driver Head Primary X Displ.	Testing Program:	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	353.5 at 299.9 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.0 at 0.0 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	IN2-001		





Curve Description: Driver Head Primary Y

Maximum Value: 39.1 at 153.5 Milliseconds

Minimum Value: -10.5 at 191.0 Milliseconds

SAE Filter Class: 1000

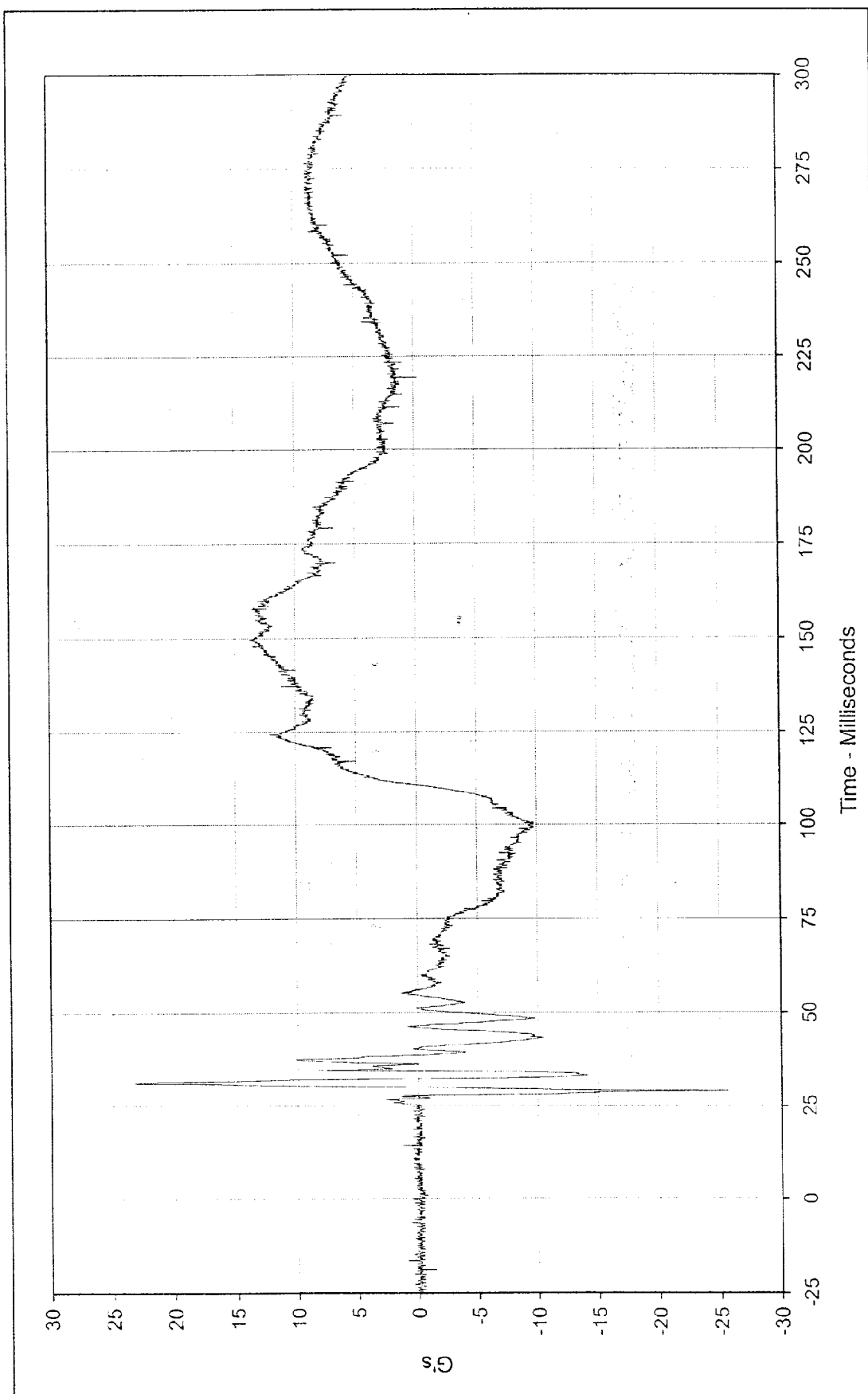
Date of Test: 8/7/97

Curve Number: FIL-002

Testing Program: 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

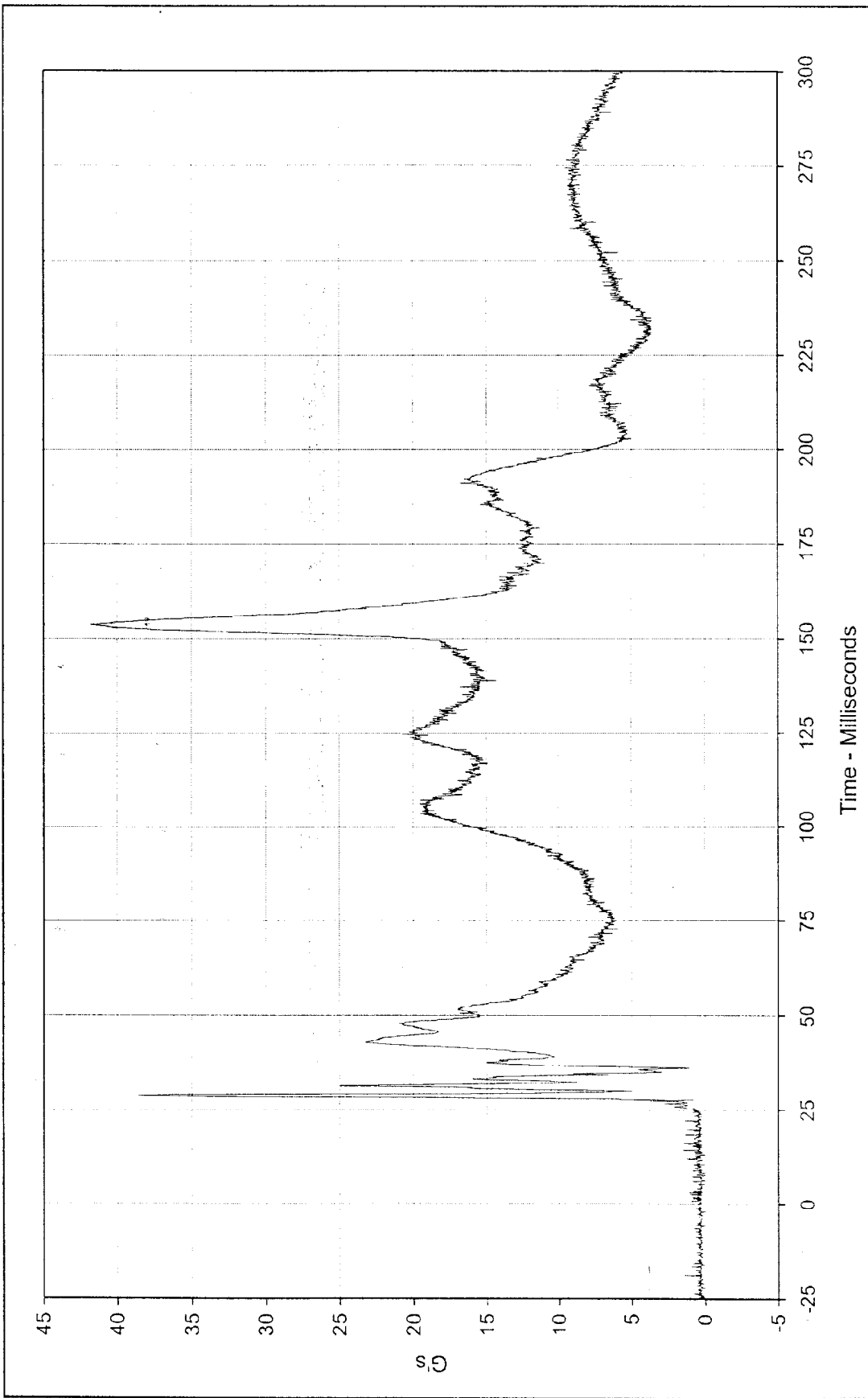




Testing Program: 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

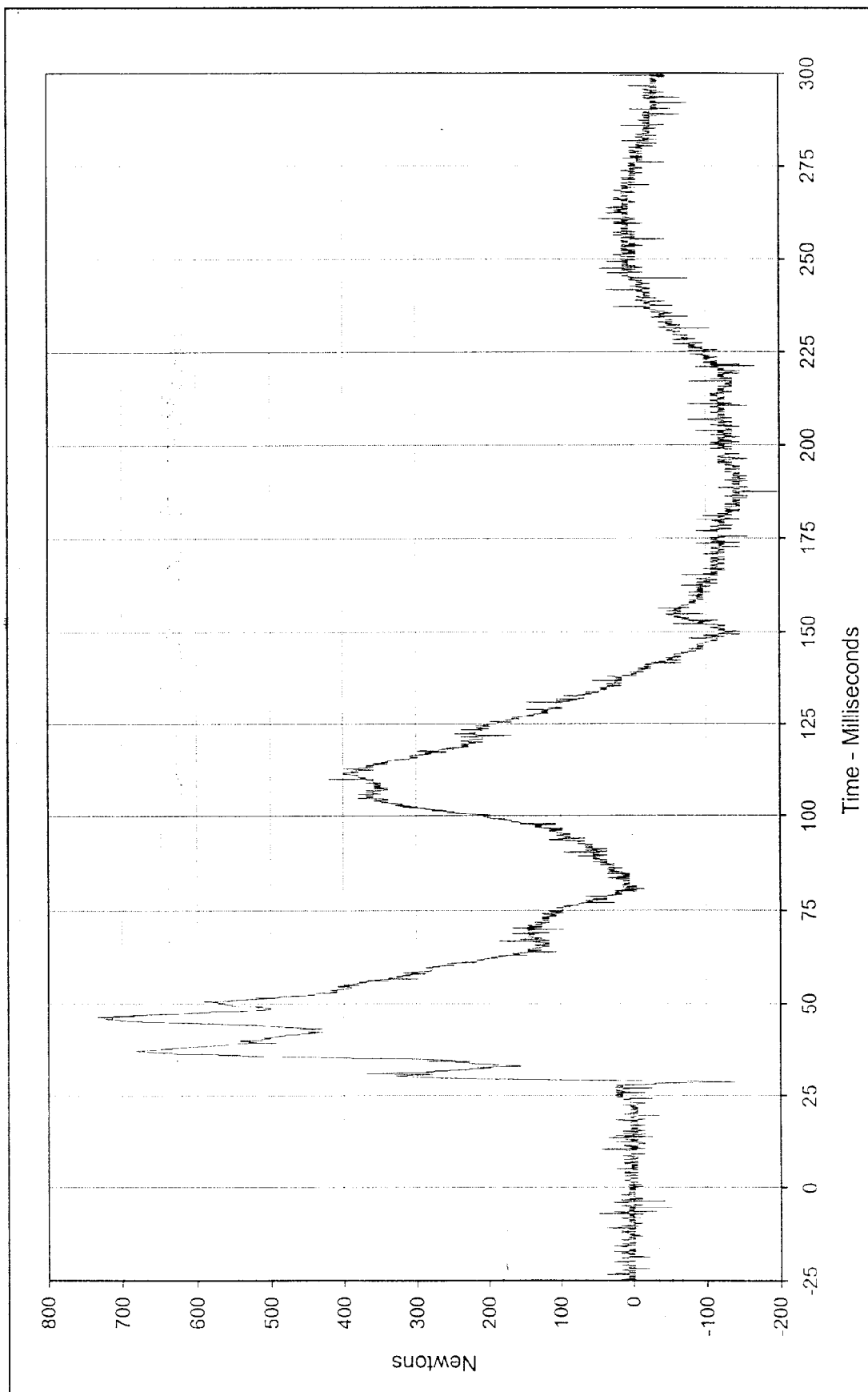
Curve Description: Driver Head Primary Z
 Maximum Value: 23.3 at 31.5 Milliseconds
 Minimum Value: -25.5 at 29.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: FIL-003





Curve Description:	Driver Head Resultant Primary	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	41.8 at 153.7 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.1 at 5.3 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	RES-001		

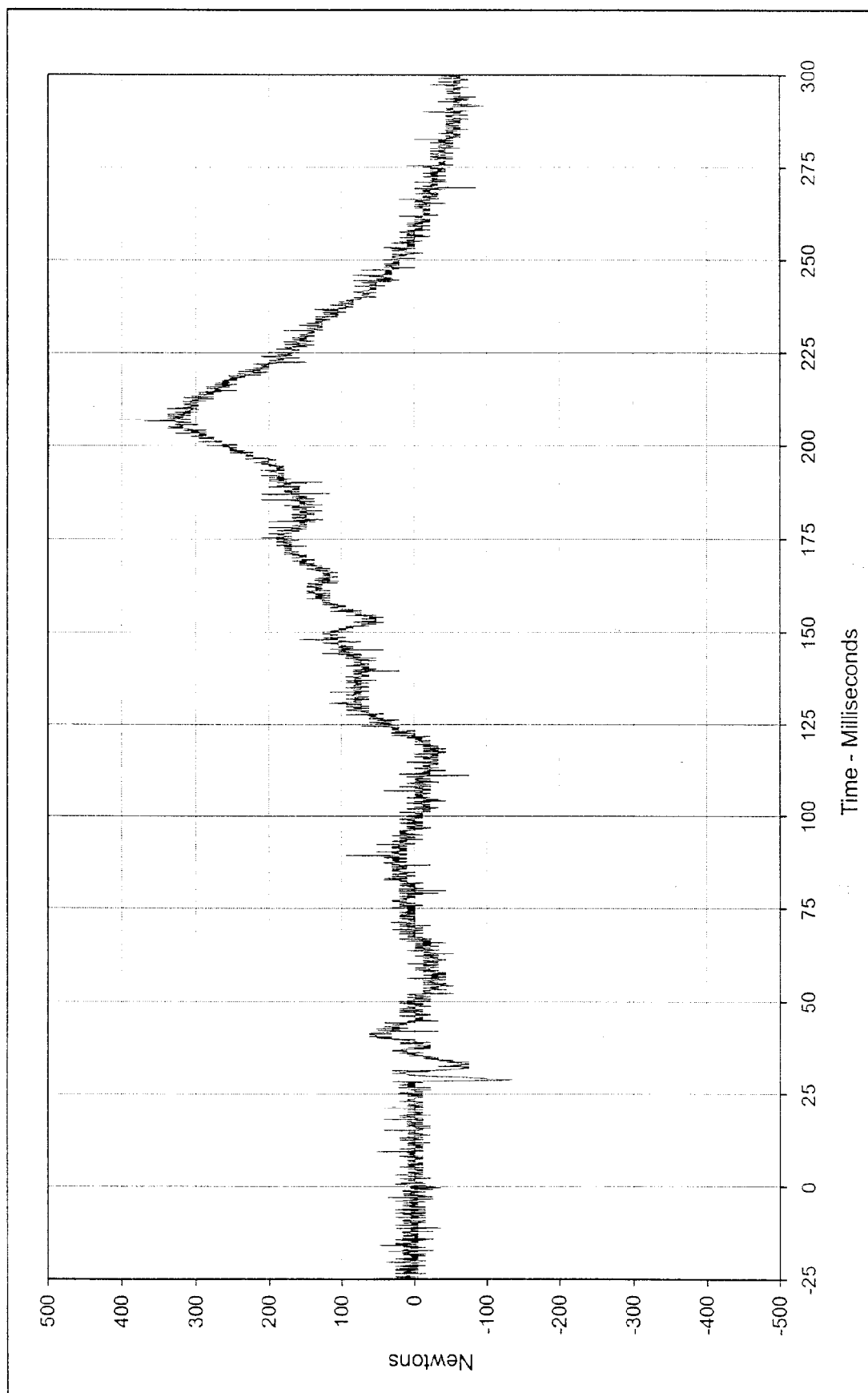




Curve Description: 1997 NHTSA 40% Offset Impact (Female)
 Testing Program: 1996 Toyota Camry LE 4 Door Sedan
 Test Vehicle:

Driver Neck Force X
 Maximum Value: 733.5 at 46.2 Milliseconds
 Minimum Value: -198.0 at 187.5 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: FIL-004

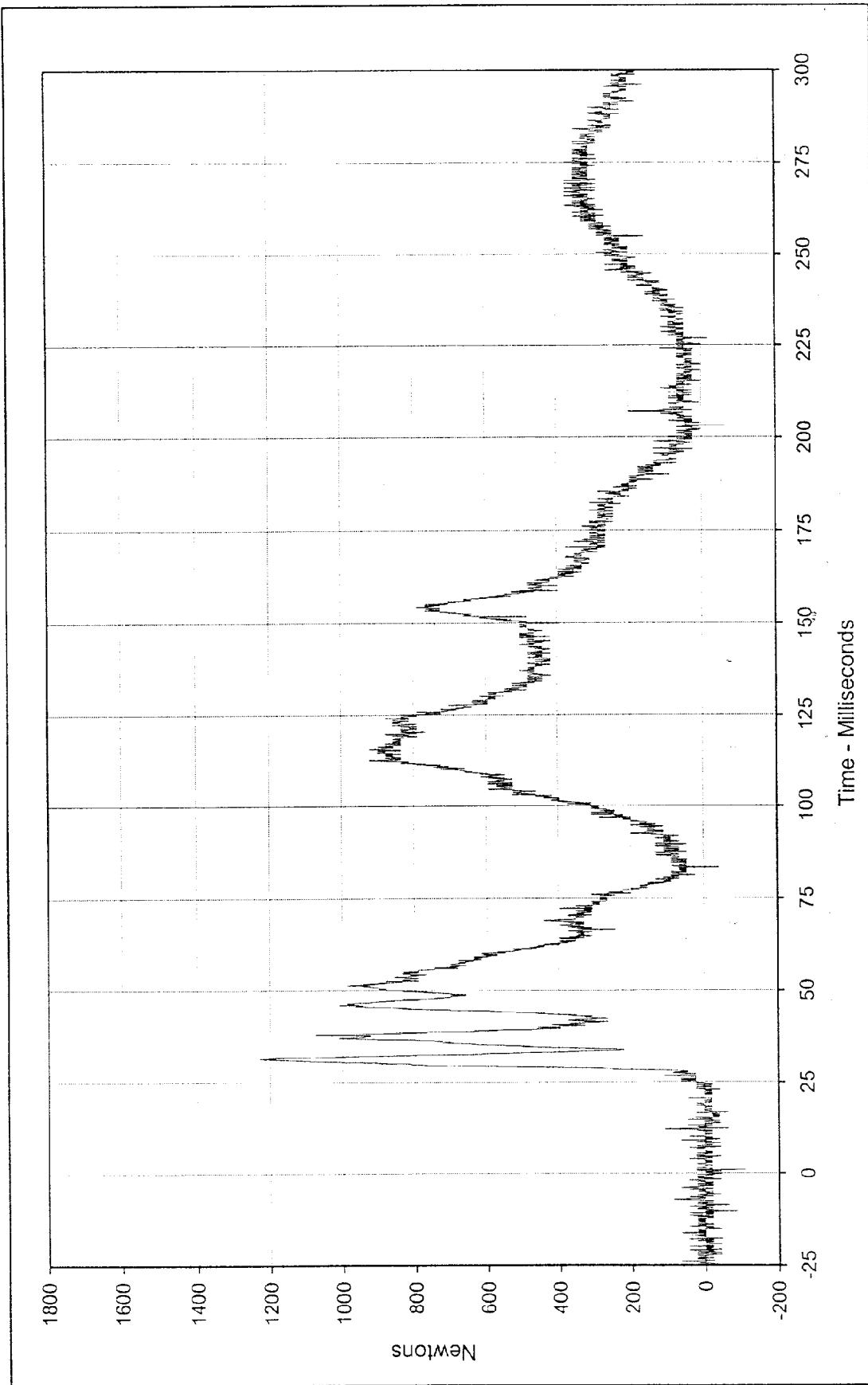




Curve Description:		Driver Neck Force Y		Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	402.8	at	207.0	Milliseconds	Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-134.7	at	29.0	Milliseconds	
SAE Filter Class:	1000				
Date of Test:	8/7/97				
Curve Number:	FIL-005				



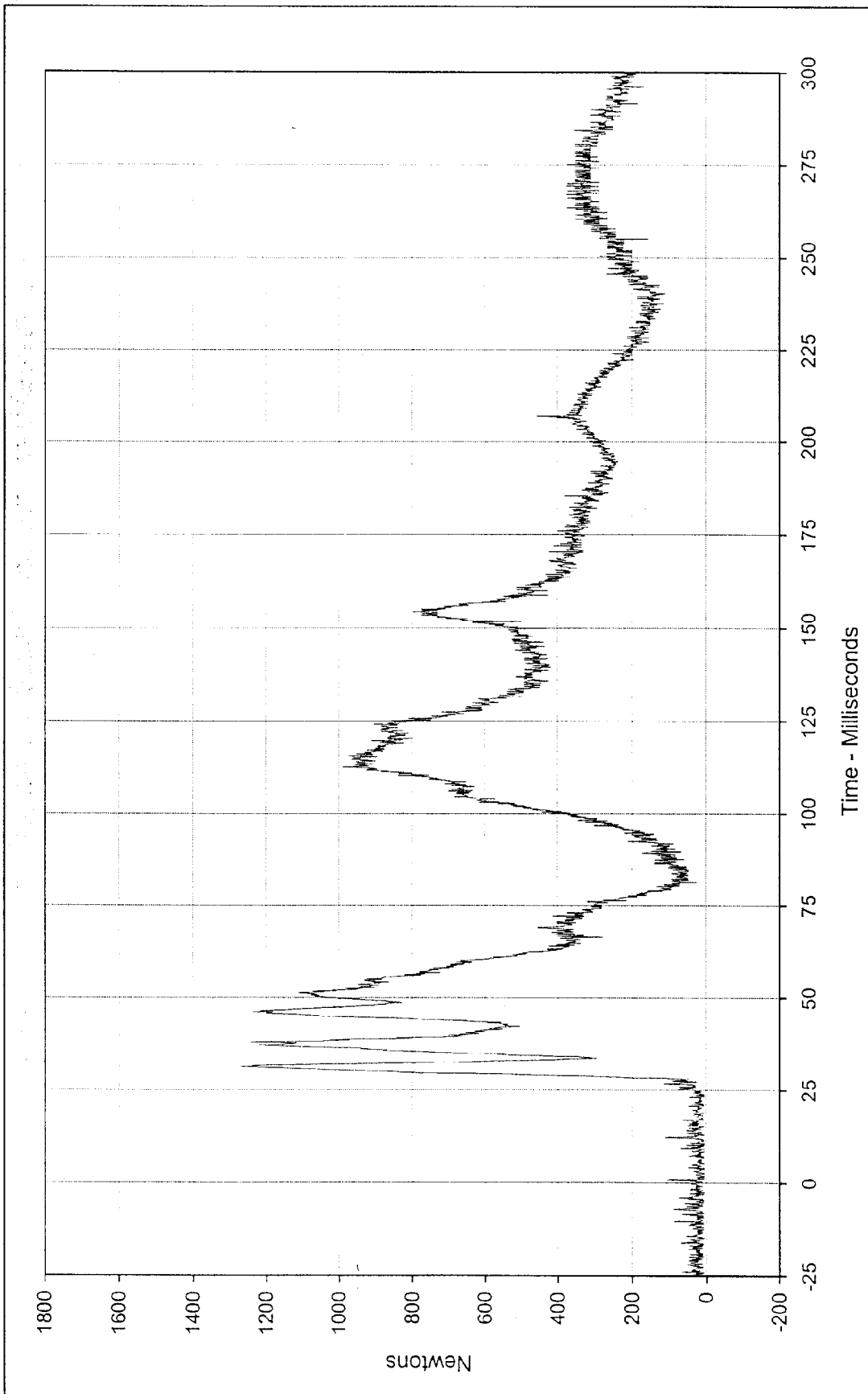




Curve Description: Driver Neck Force Z
 Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

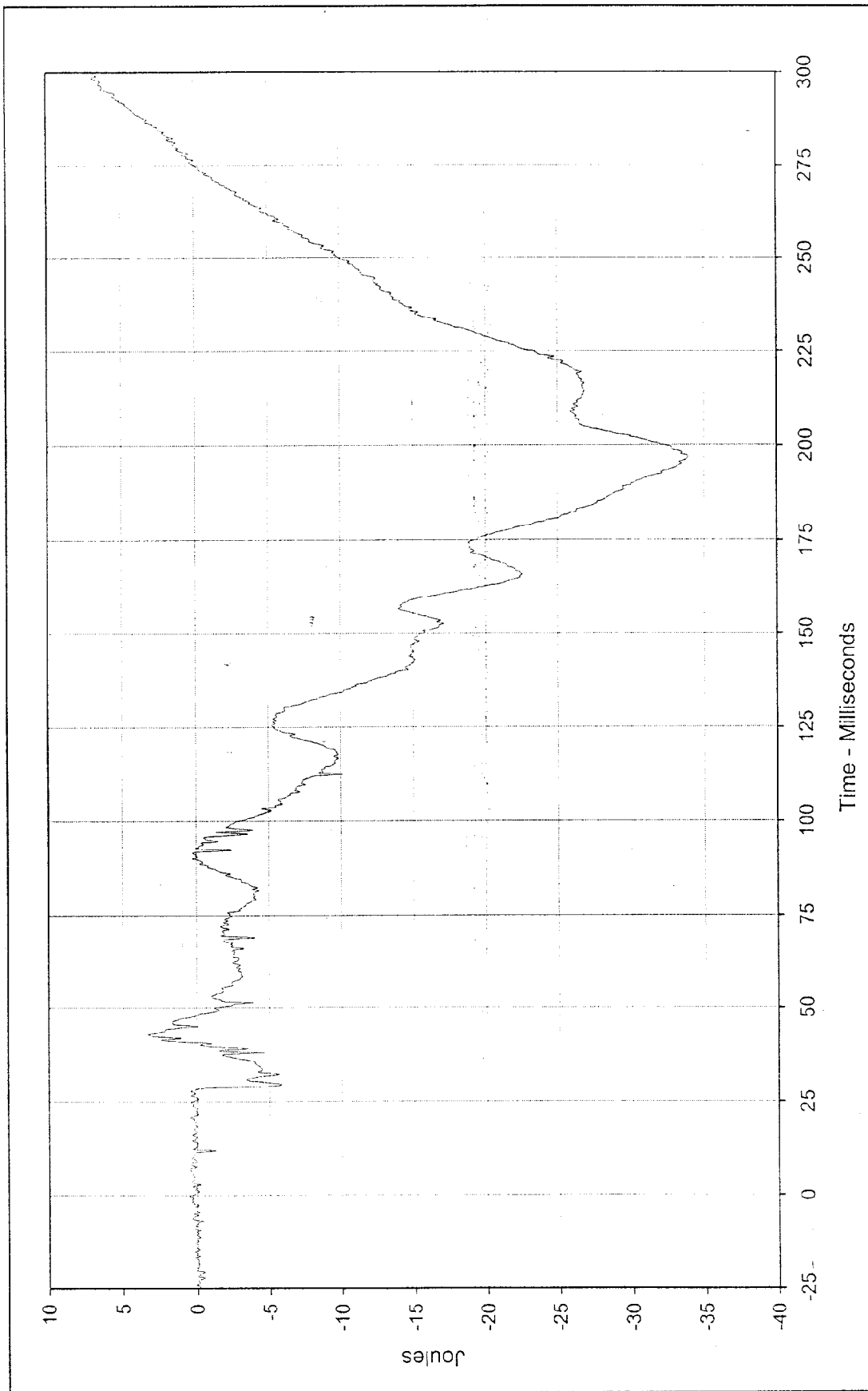
Maximum Value: 1228.3 at 31.3 Milliseconds
 Minimum Value: -107.5 at 0.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: FIL-006





Curve Description:	Driver Neck Force Resultant	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	1268.9 at 31.3 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	5.6 at 1.1 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	RES-004		

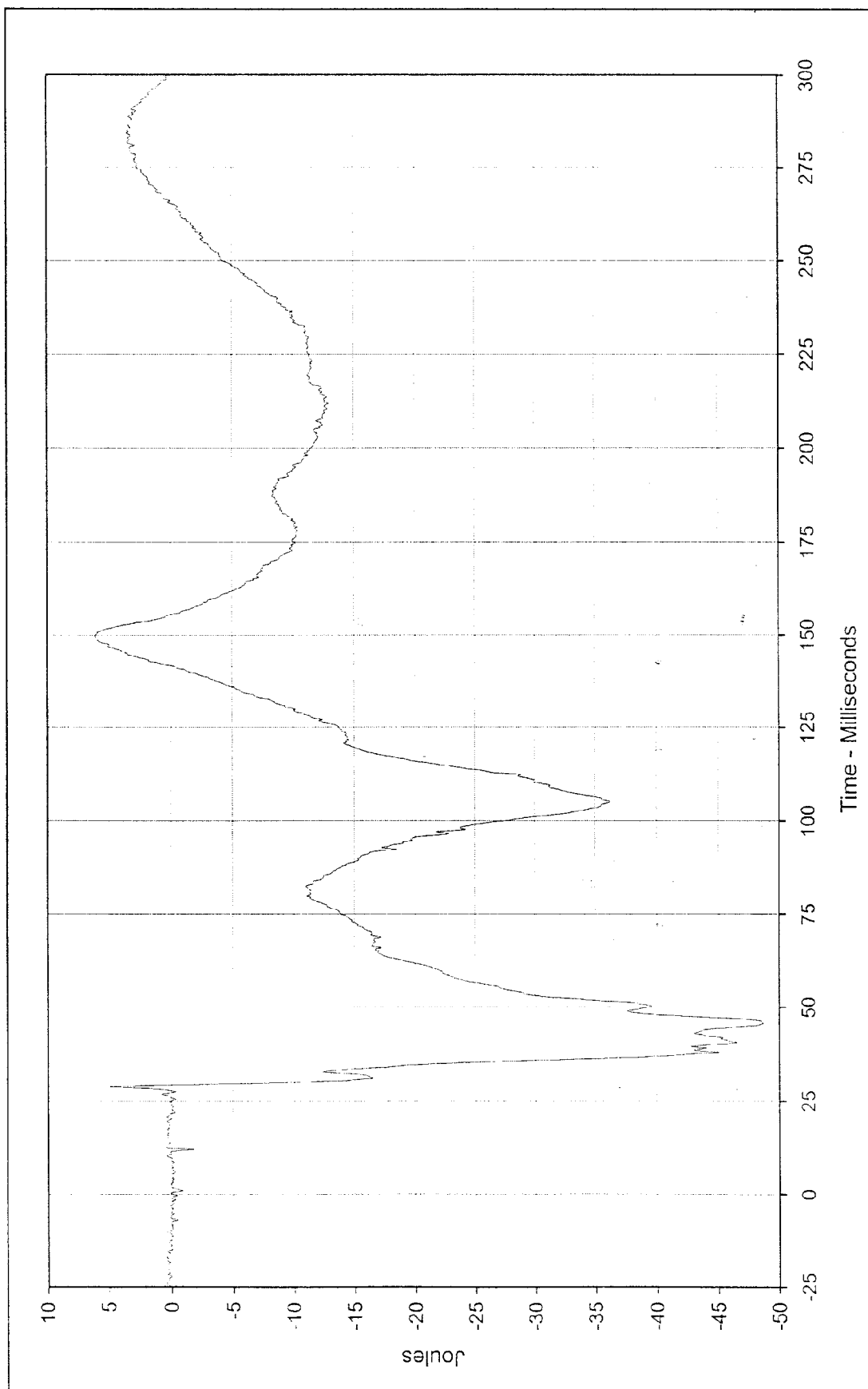




Curve Description:		Driver Neck Moment X		Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	6.9	at	298.5	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-33.9	at	197.2		
SAE Filter Class:	600				
Date of Test:	8/7/97				
Curve Number:	FIL-007				

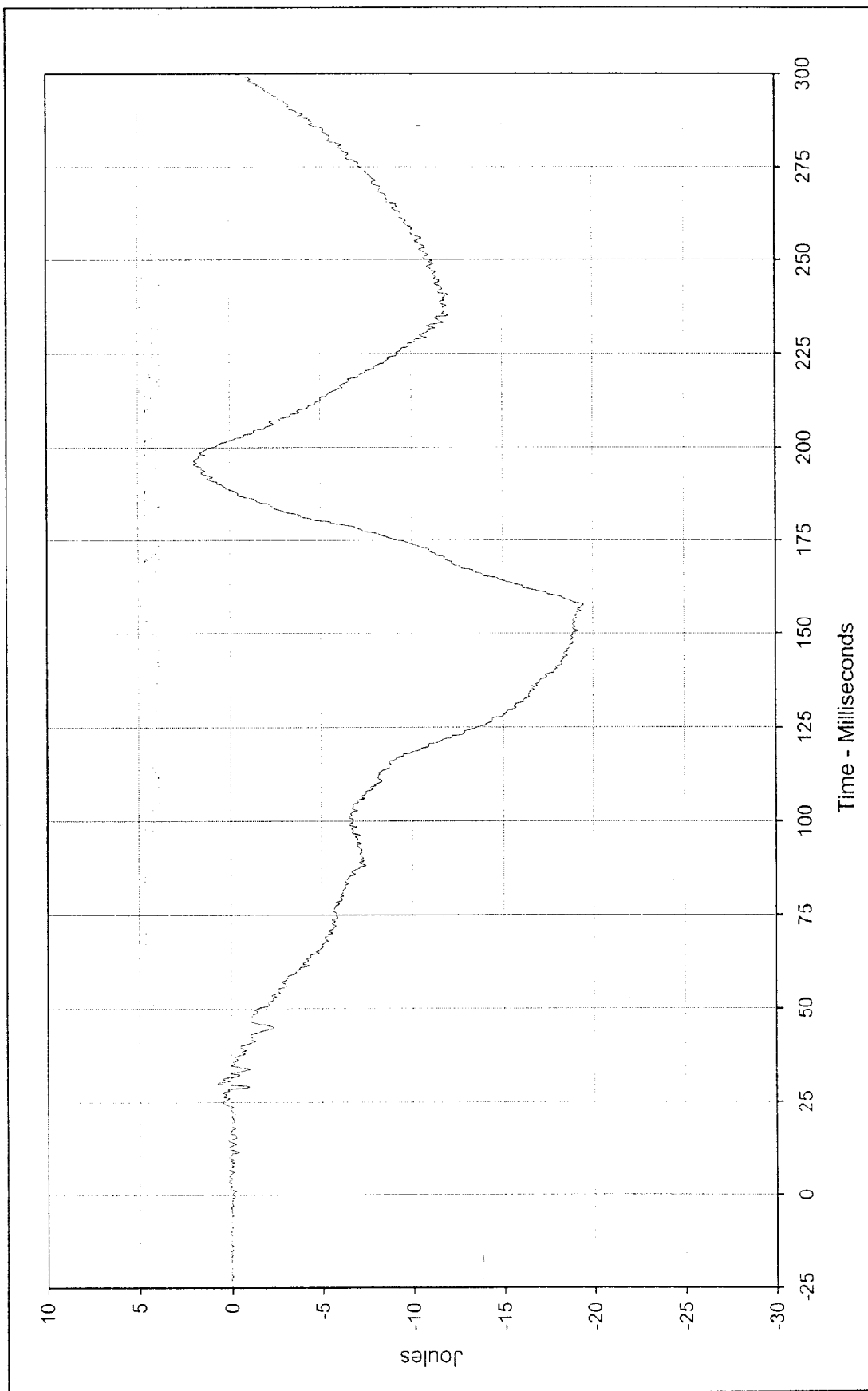






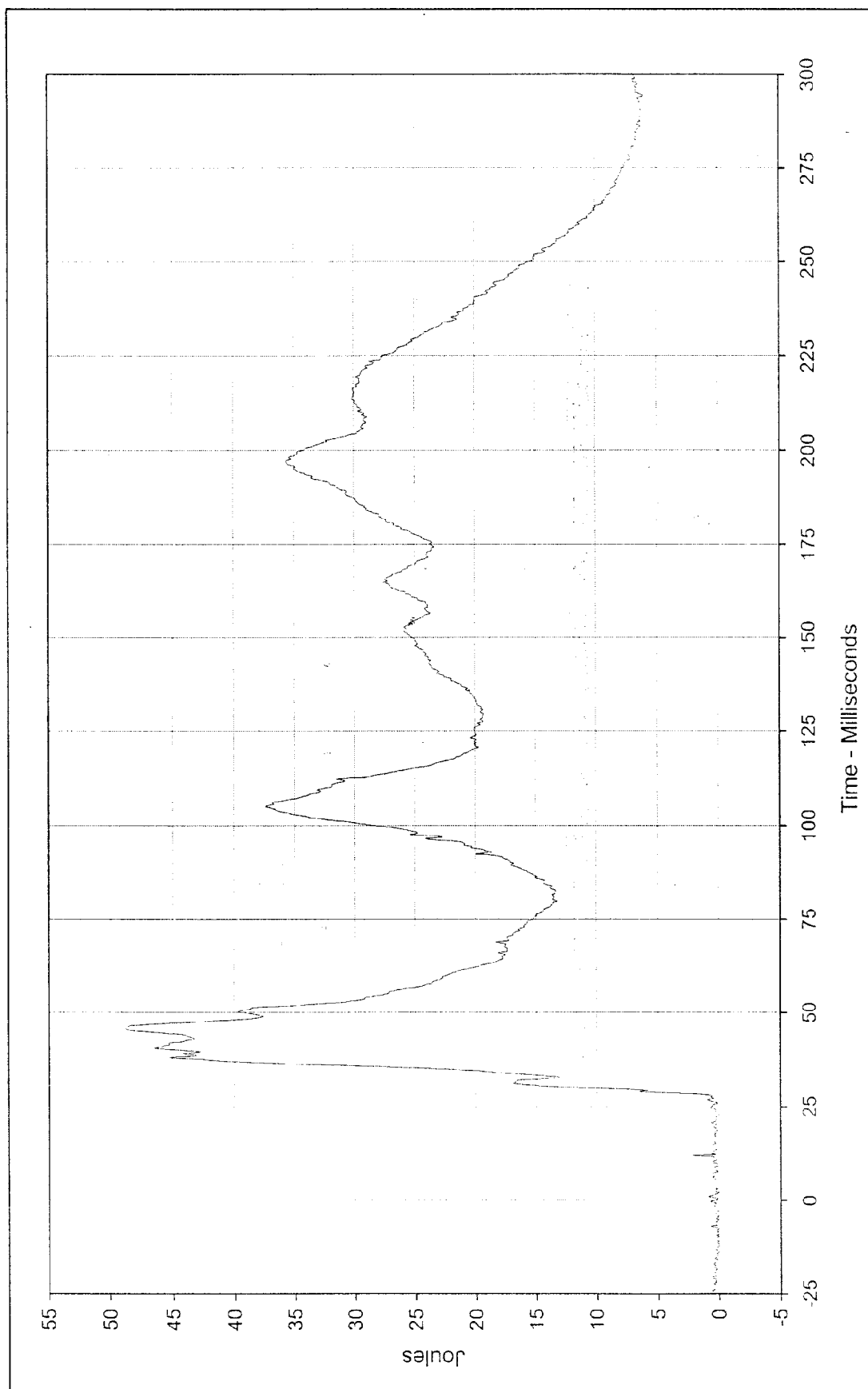
Curve Description:	Driver Neck Moment Y	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	6.1 at 149.8 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-48.7 at 45.6 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-008		





Curve Description:		Driver Neck Moment Z		Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	2.0	at	195.6	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-19.5	at	157.8		
SAE Filter Class:	600				
Date of Test:	8/7/97				
Curve Number:	FIL-009				





Curve Description: Driver Neck Moment Resultant

Maximum Value: 48.8 at 45.6 Milliseconds

Minimum Value: 0.0 at 22.9 Milliseconds

SAE Filter Class: 600

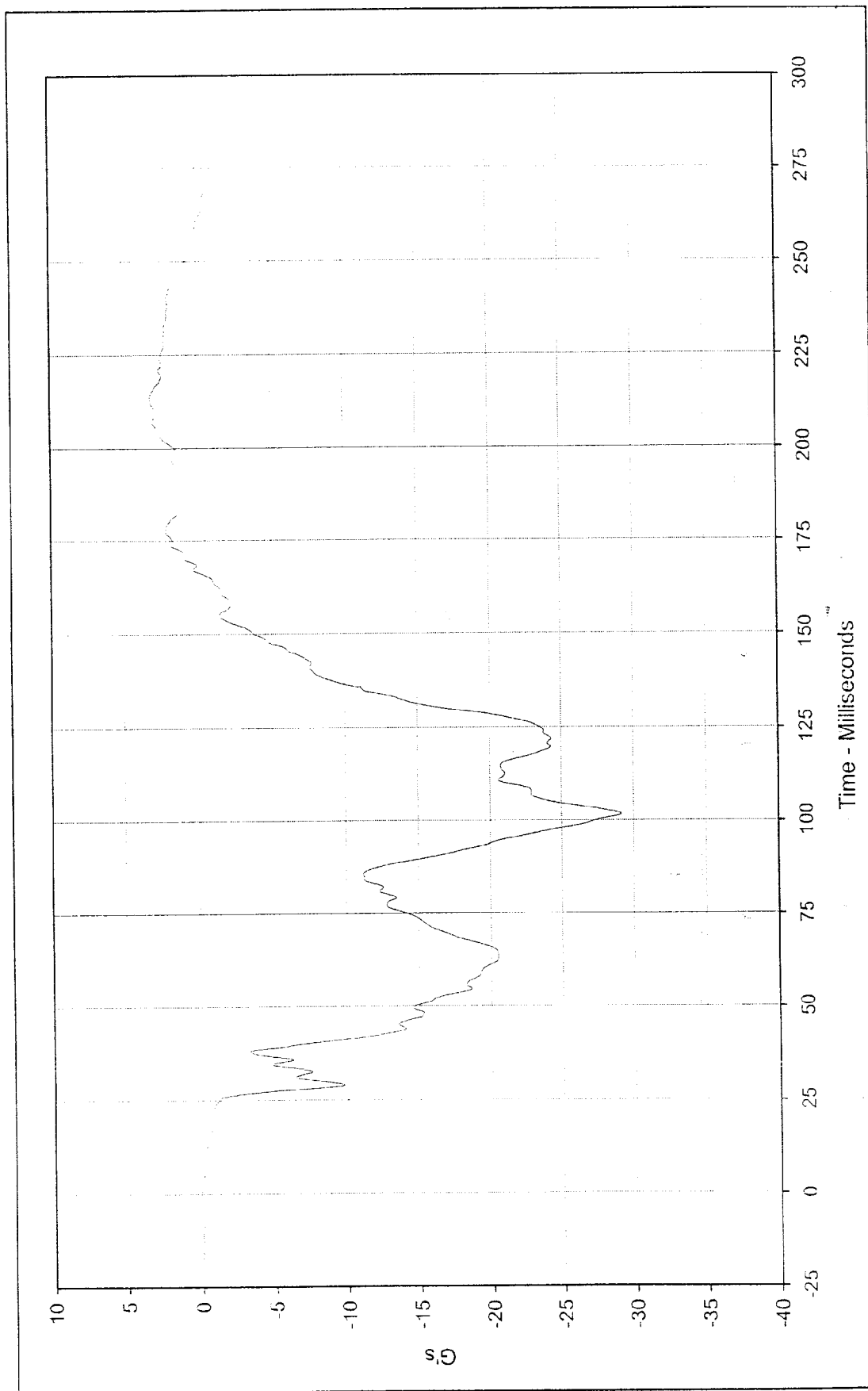
Date of Test: 8/7/97

Curve Number: RES-007

Testing Program 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

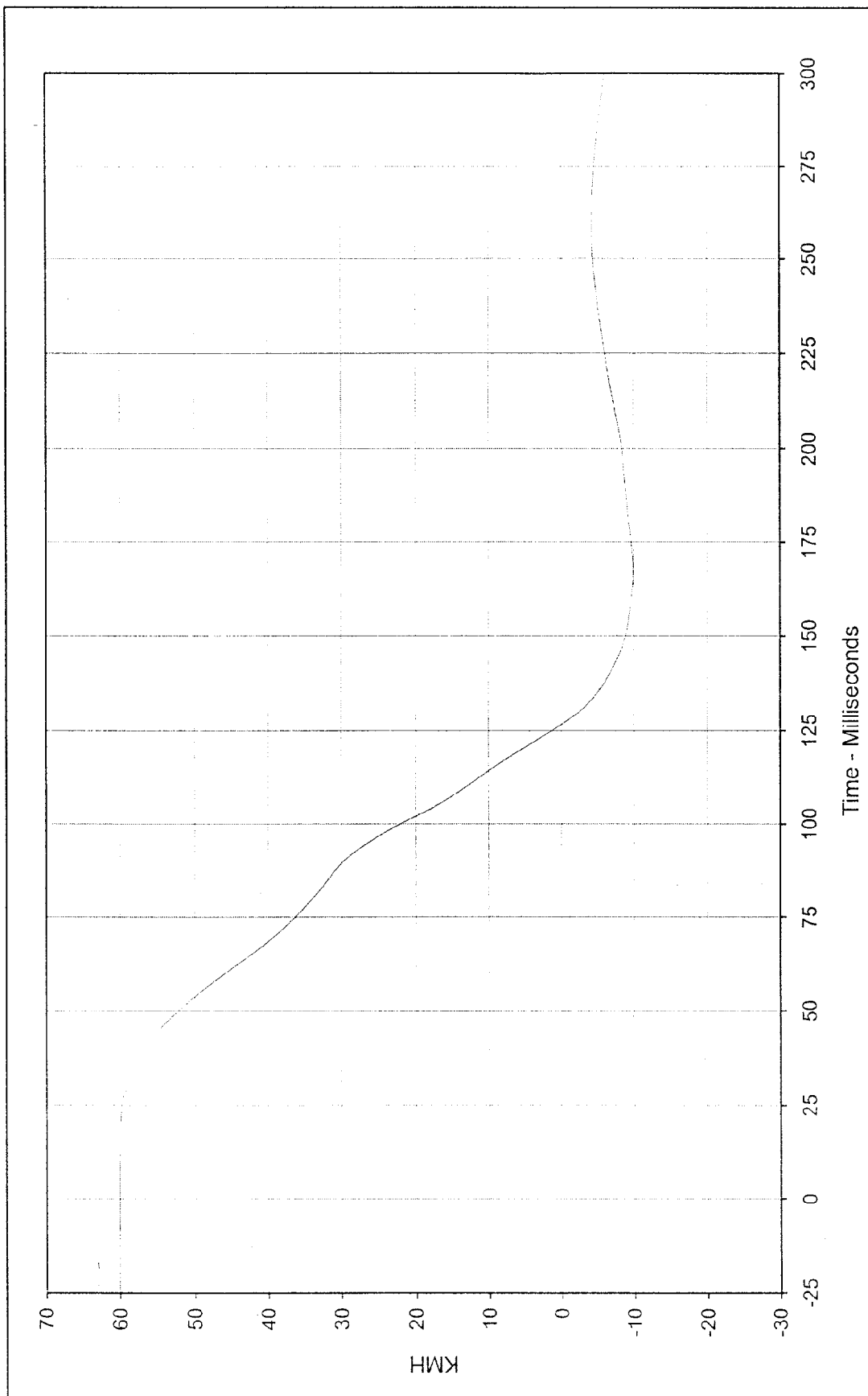




Testing Program: 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Driver Chest Primary X
 Maximum Value: 3.1 at 213.6 Milliseconds
 Minimum Value: -29.2 at 101.6 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: FIL-010





Curve Description: Driver Chest Primary X Velocity

Maximum Value: 60.1 at 1.1 Milliseconds

Minimum Value: -9.9 at 166.5 Milliseconds

SAE Filter Class: 180

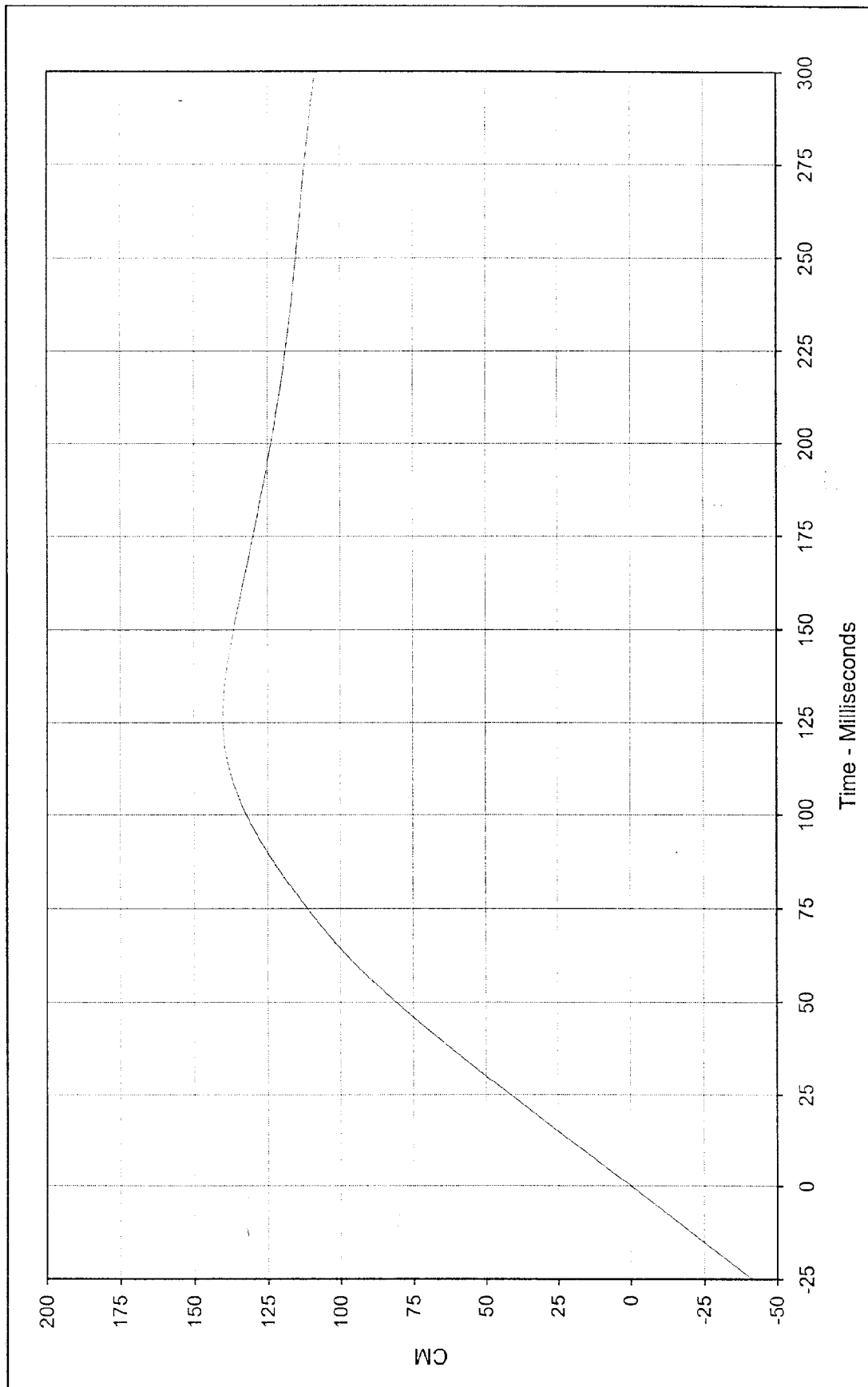
Date of Test: 8/7/97

Curve Number: IN1-010

Testing Program 1997 NHTSA 40% Offset Impact (Female)

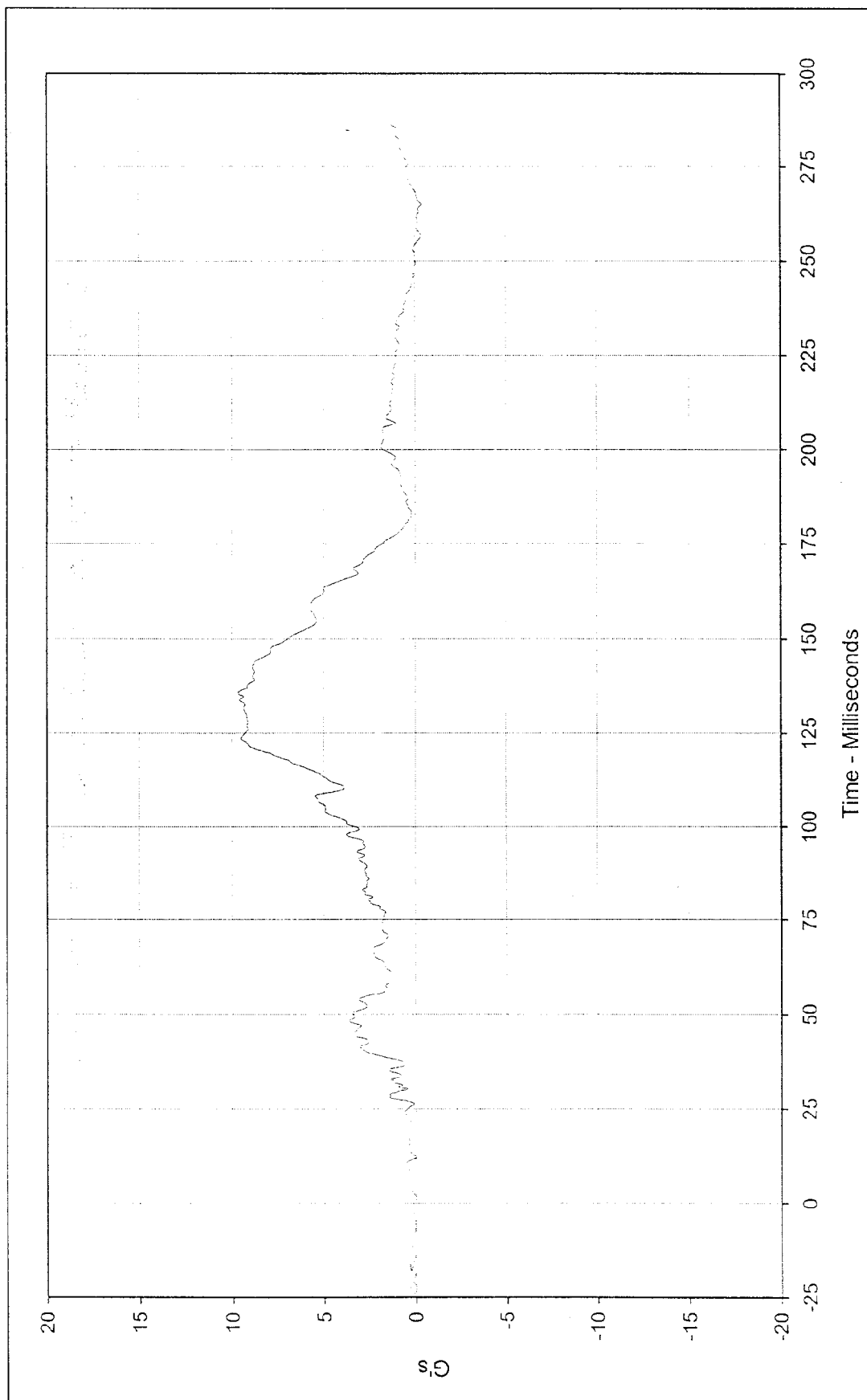
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





Curve Description:	Driver Chest Primary X Displ.	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	140.3 at 126.6 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.0 at 0.0 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	IN2-010		





Testing Program: 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Driver Chest Primary Y

Maximum Value: 9.7 at 135.8 Milliseconds

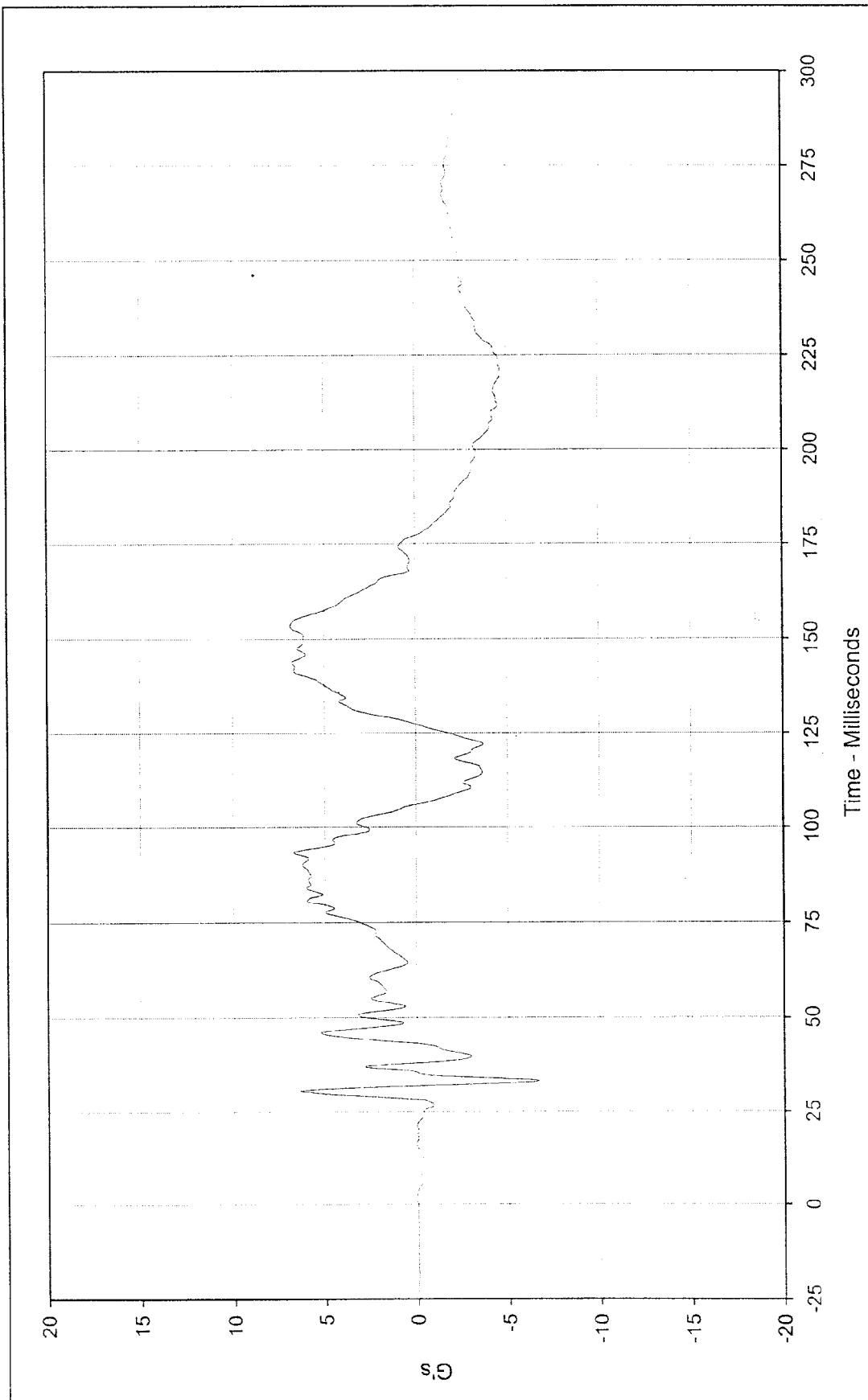
Minimum Value: -0.4 at 265.0 Milliseconds

SAE Filter Class: 180

Date of Test: 8/7/97

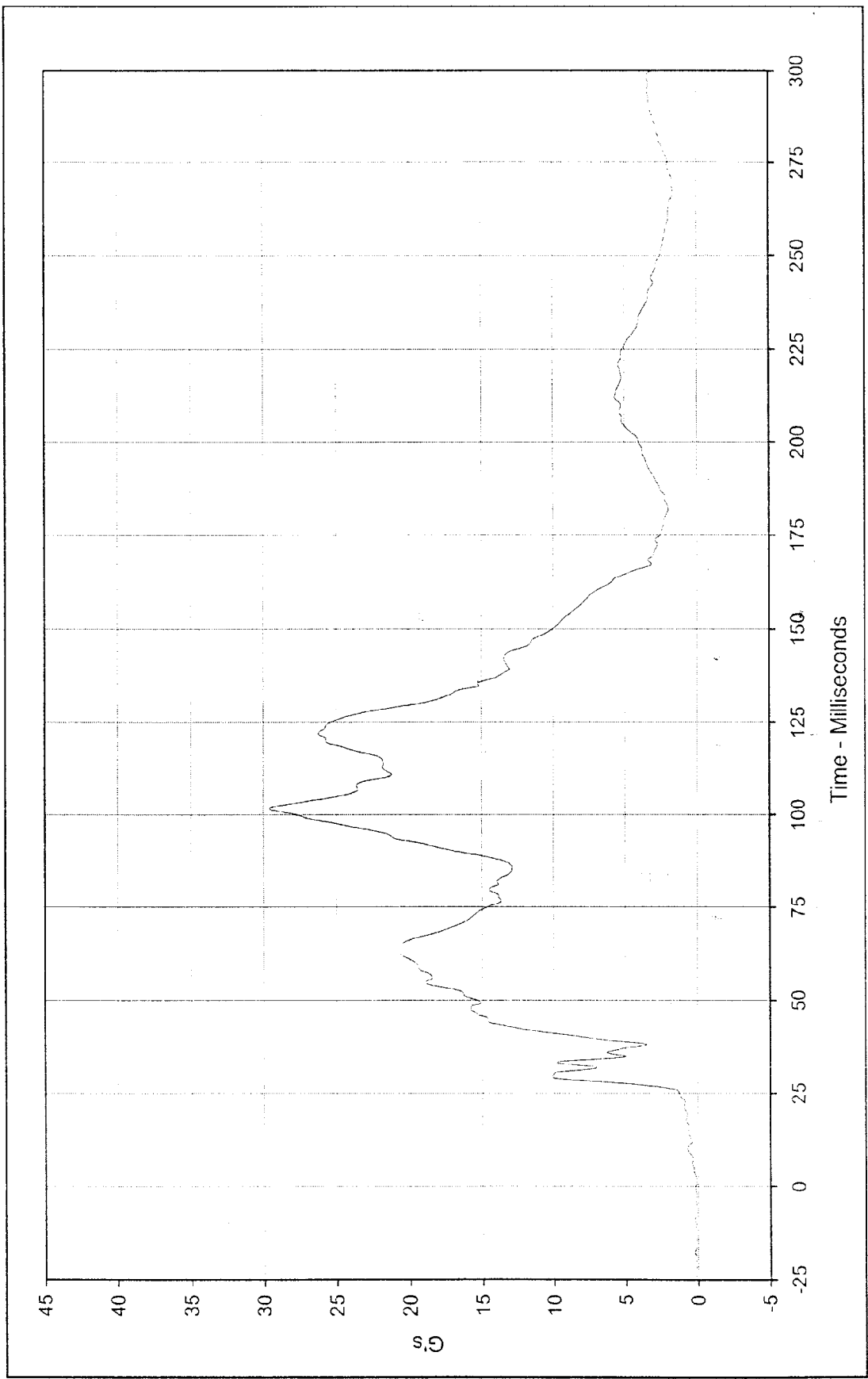
Curve Number: FIL-011





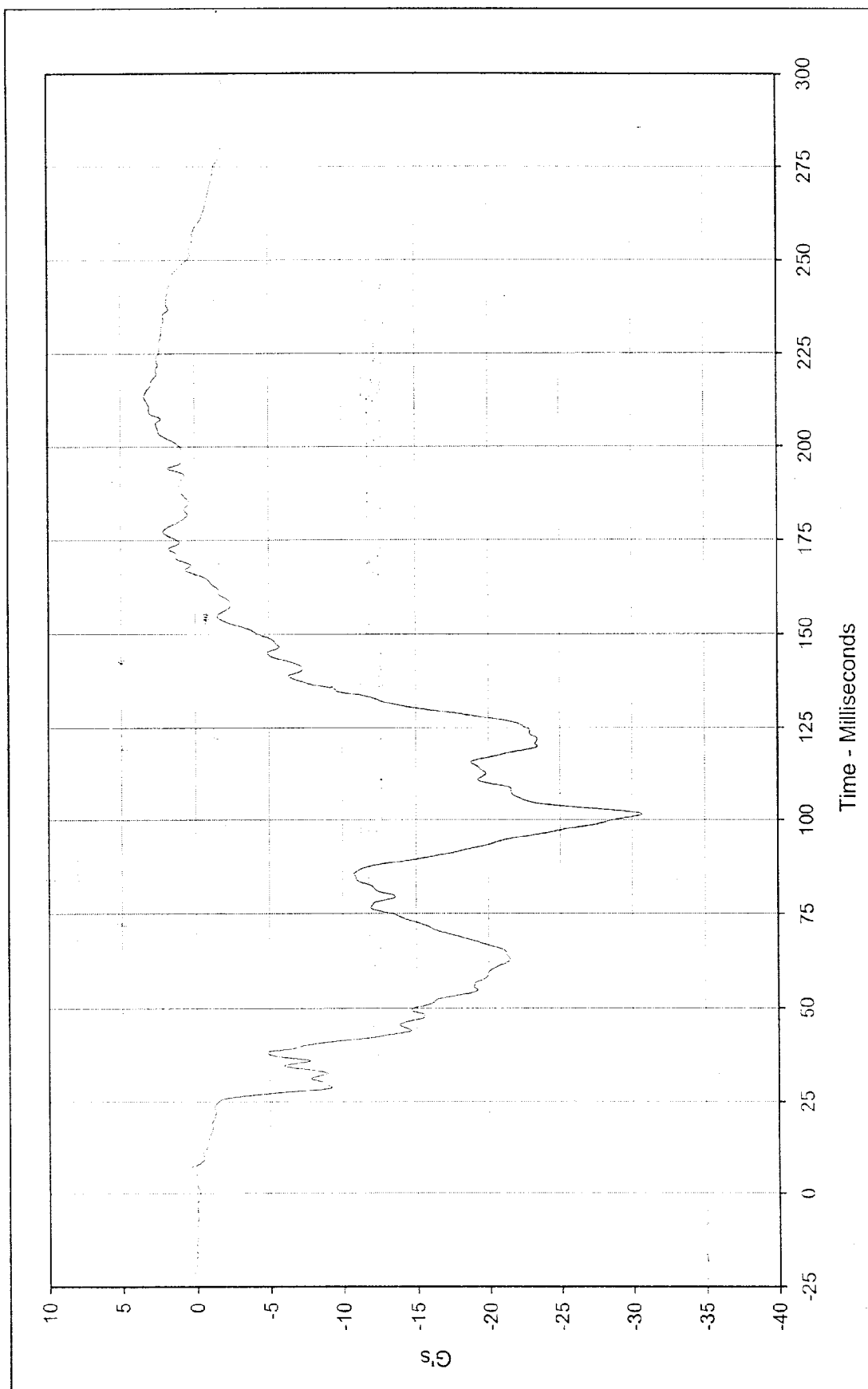
Curve Description:	Driver Chest Primary Z	Testing Program:	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	6.9 at 153.4 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-6.7 at 33.3 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	FIL-012		





Curve Description:	Driver Chest Resultant Primary	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	29.6 at 101.6 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.1 at 0.9 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	RES-010		





Curve Description: Driver Chest Redundant X

Maximum Value: 3.4 at 213.6 Milliseconds

Minimum Value: -30.7 at 101.5 Milliseconds

SAE Filter Class: 180

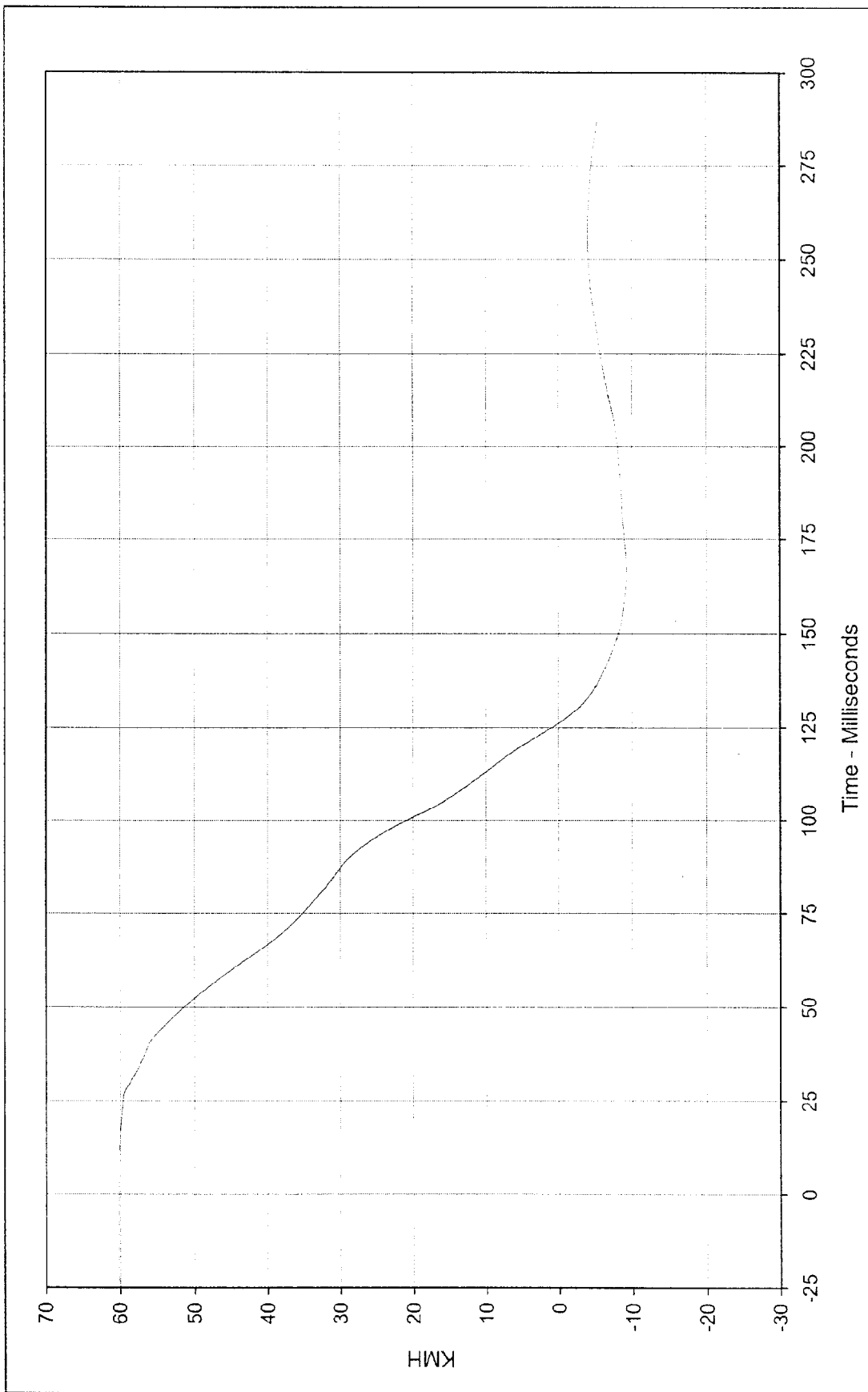
Date of Test: 8/7/97

Curve Number: FIL-013

Testing Program 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

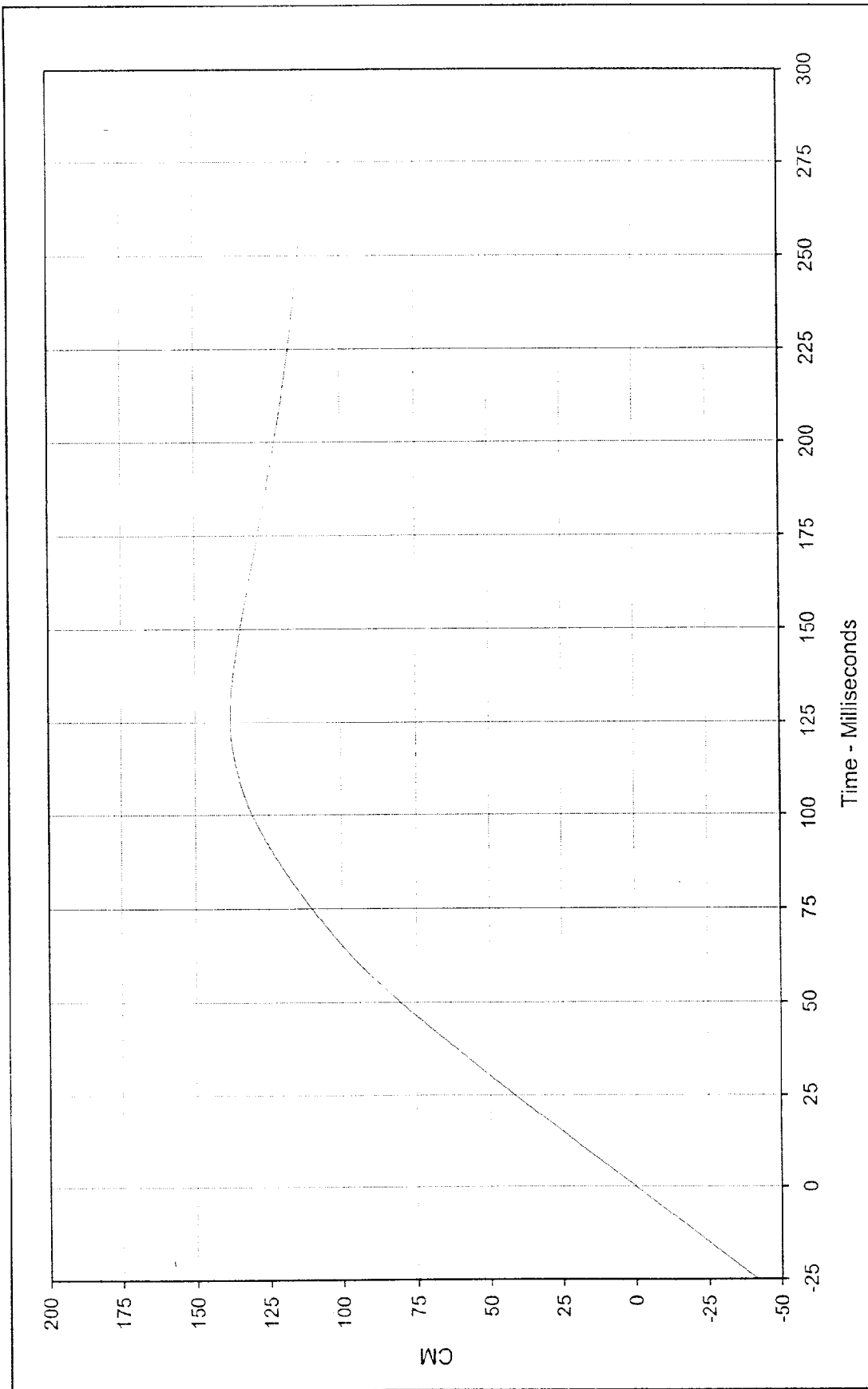




Curve Description:	Driver Chest Redundant X Velocity	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	60.2 at 7.7 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-9.3 at 166.1 Milliseconds		



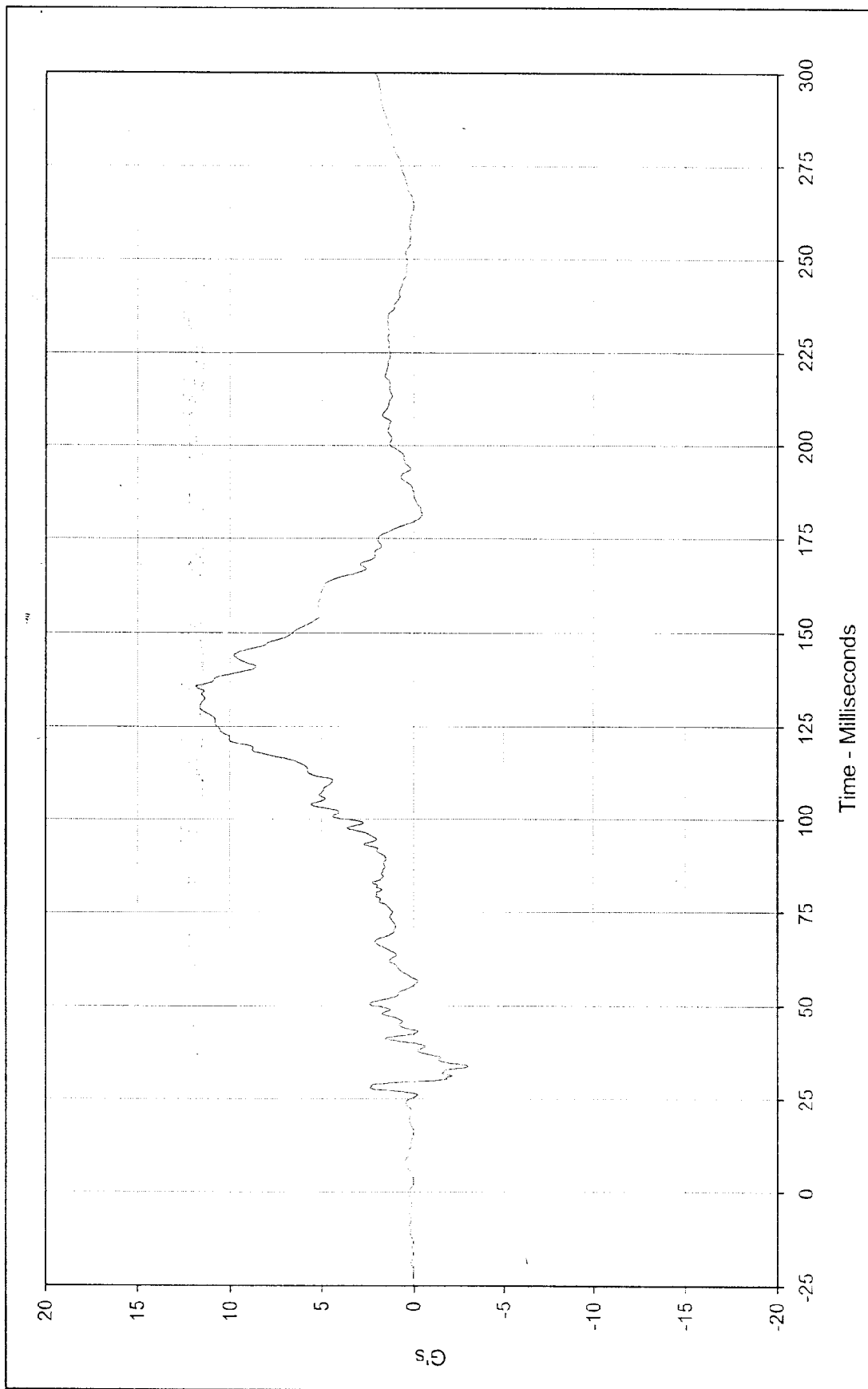
SAE Filter Class:	180
Date of Test:	8/7/97
Curve Number:	IN1-013



Curve Description: Driver Chest Redundant X Displ.
 Maximum Value: 138.0 at 126.2 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN2-013

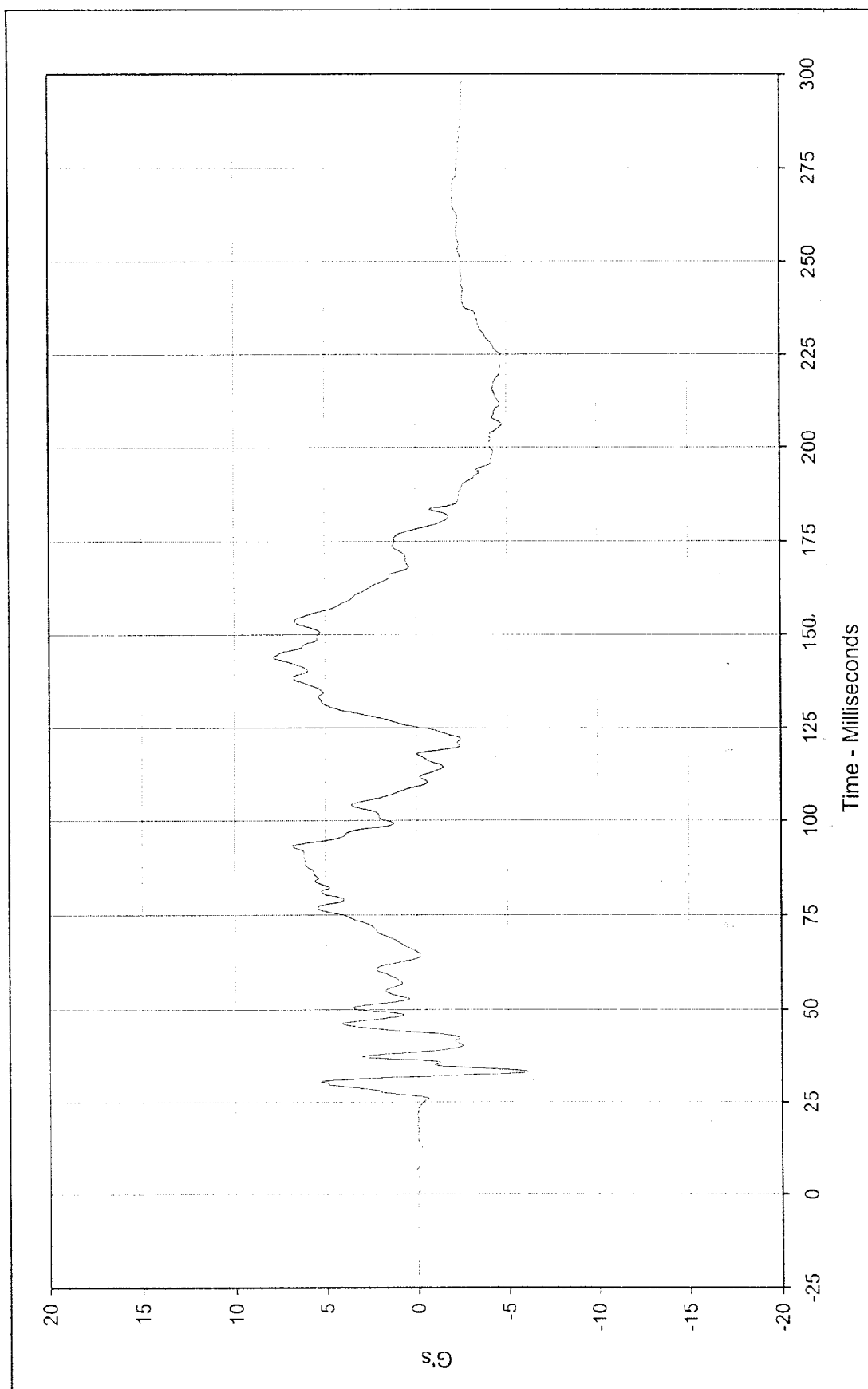
Testing Program: 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





Curve Description:	Driver Chest Redundant Y	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	11.9 at 135.6 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-3.0 at 33.7 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	FIL-014		





Curve Description: Driver Chest Redundant Z Testing Program 1997 NHTSA 40% Offset Impact (Female)

Maximum Value: 7.9 at 144.0 Milliseconds Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

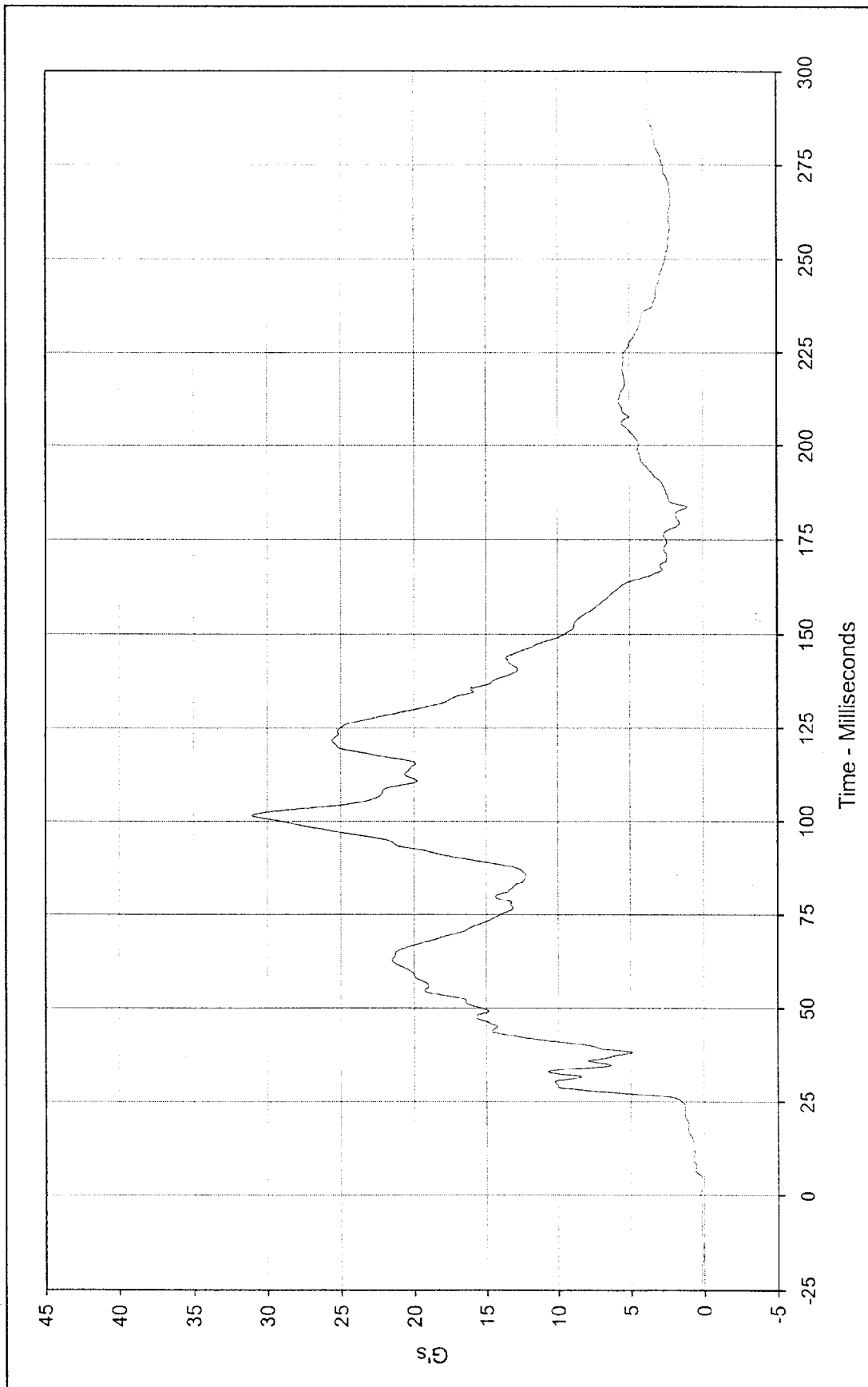
Minimum Value: -6.1 at 33.2 Milliseconds

SAE Filter Class: 180

Date of Test: 8/7/97

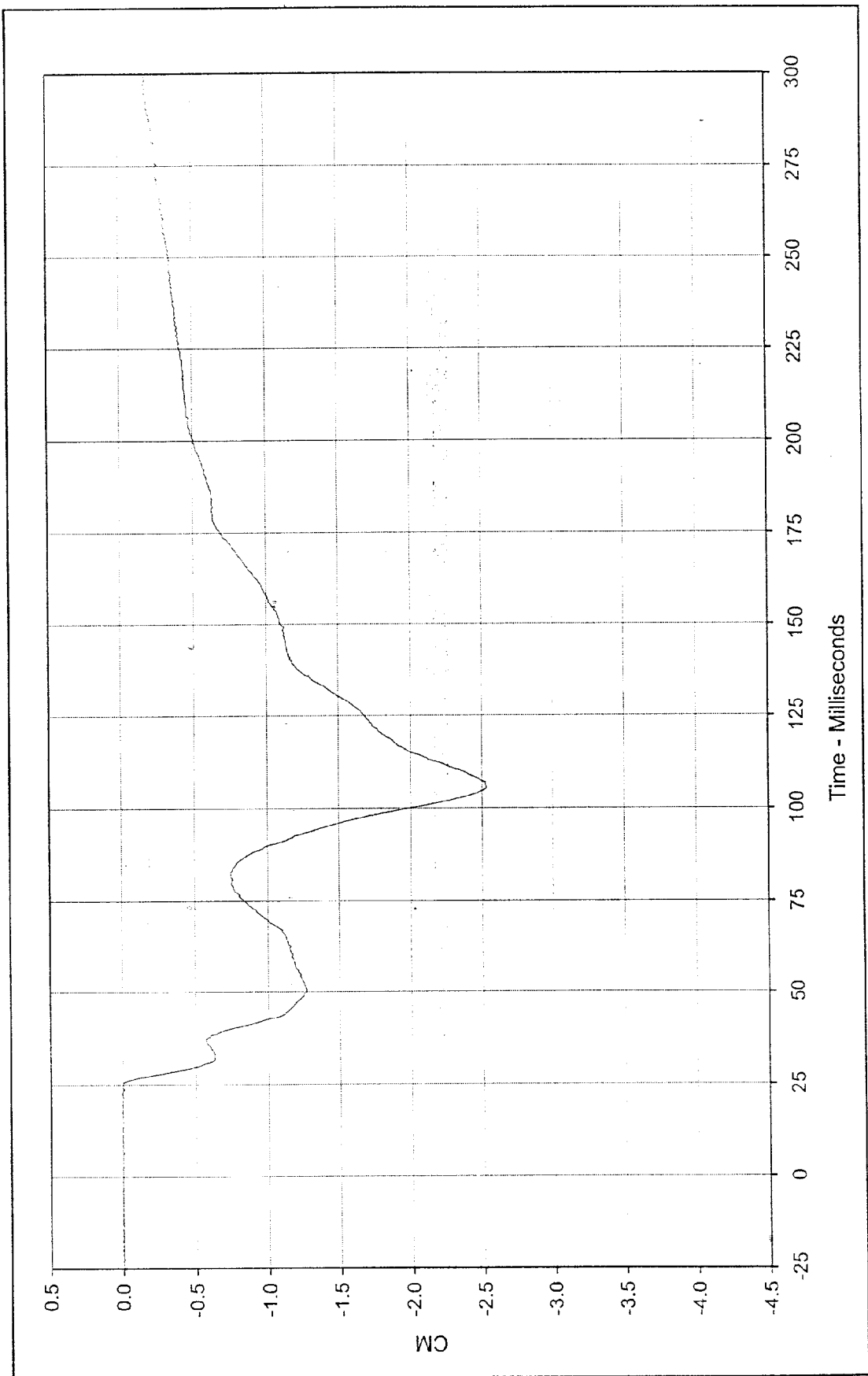
Curve Number: FIL-015





Curve Description:	Driver Chest Resultant Redundant	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	31.0 at 101.5 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.1 at 4.7 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	RES-013		

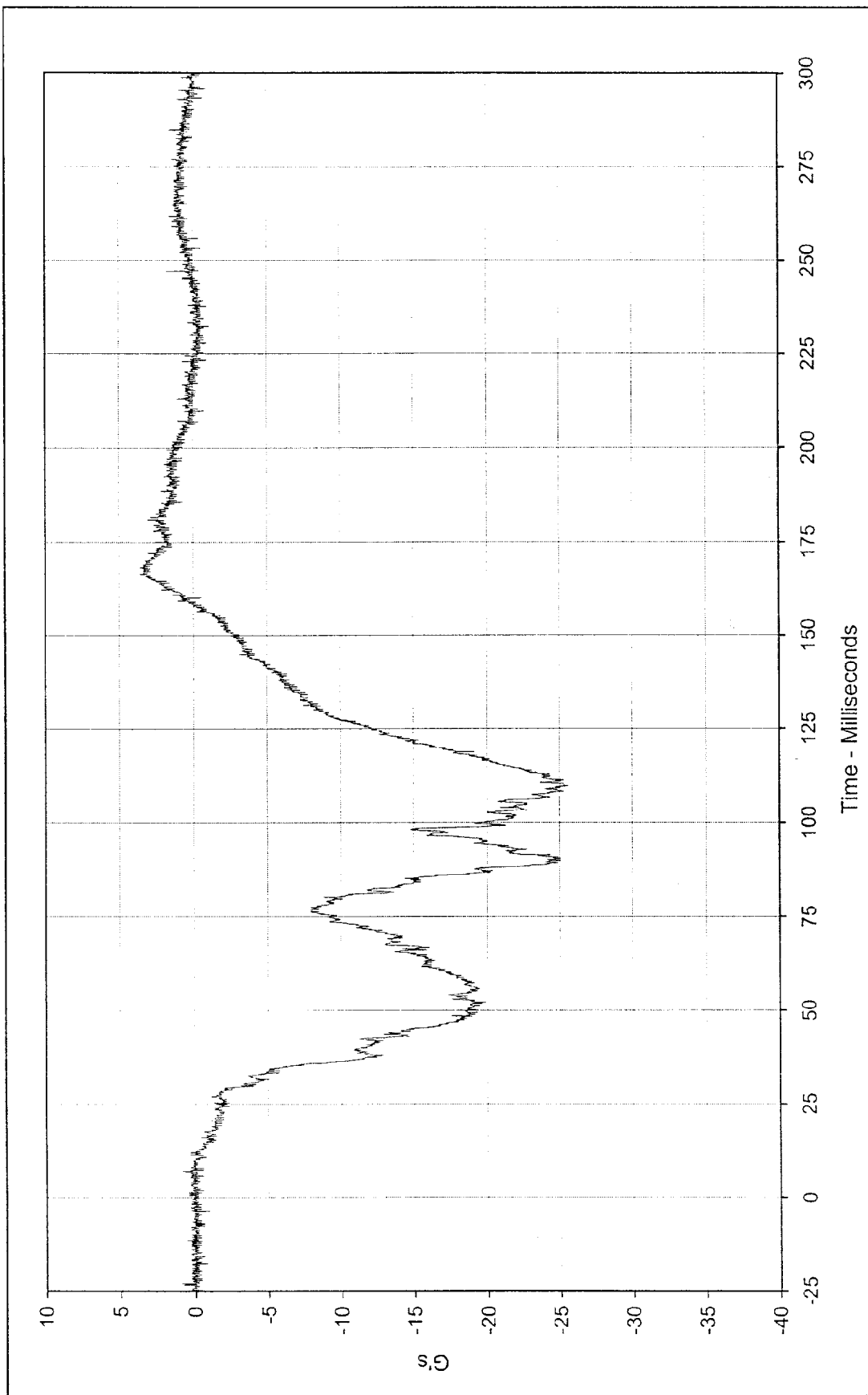




Curve Description: Driver Chest Displacement X
 Maximum Value: 0.01 at 2.2 Milliseconds
 Minimum Value: -2.53 at 105.7 Milliseconds
 SAE Filter Class: 600
 Date of Test: 8/7/97
 Curve Number: FIL-016

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

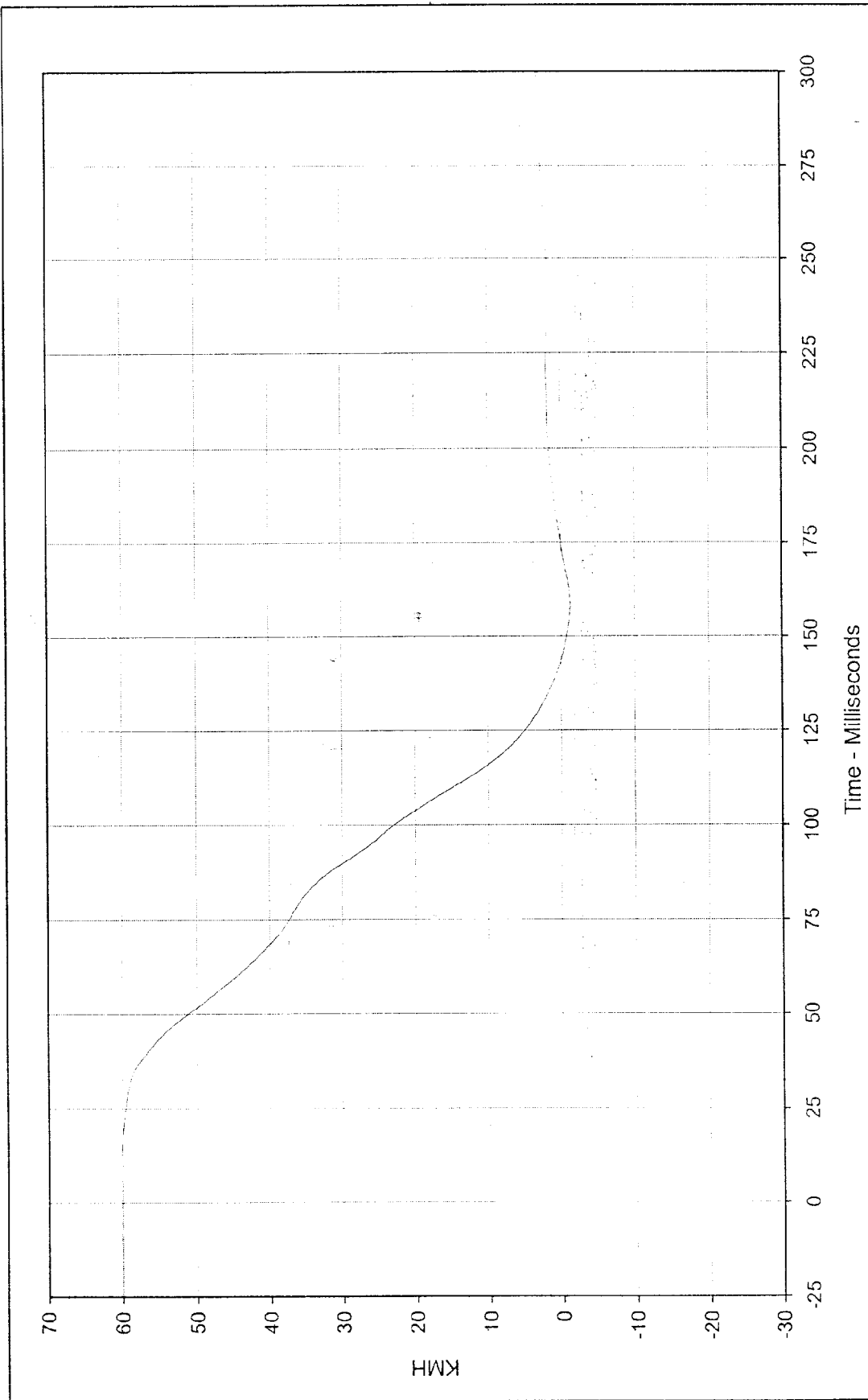




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description:		Driver Pelvis X	
Maximum Value:	3.6	at	166.6 Milliseconds
Minimum Value:	-25.6	at	109.8 Milliseconds
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	FIL-017		

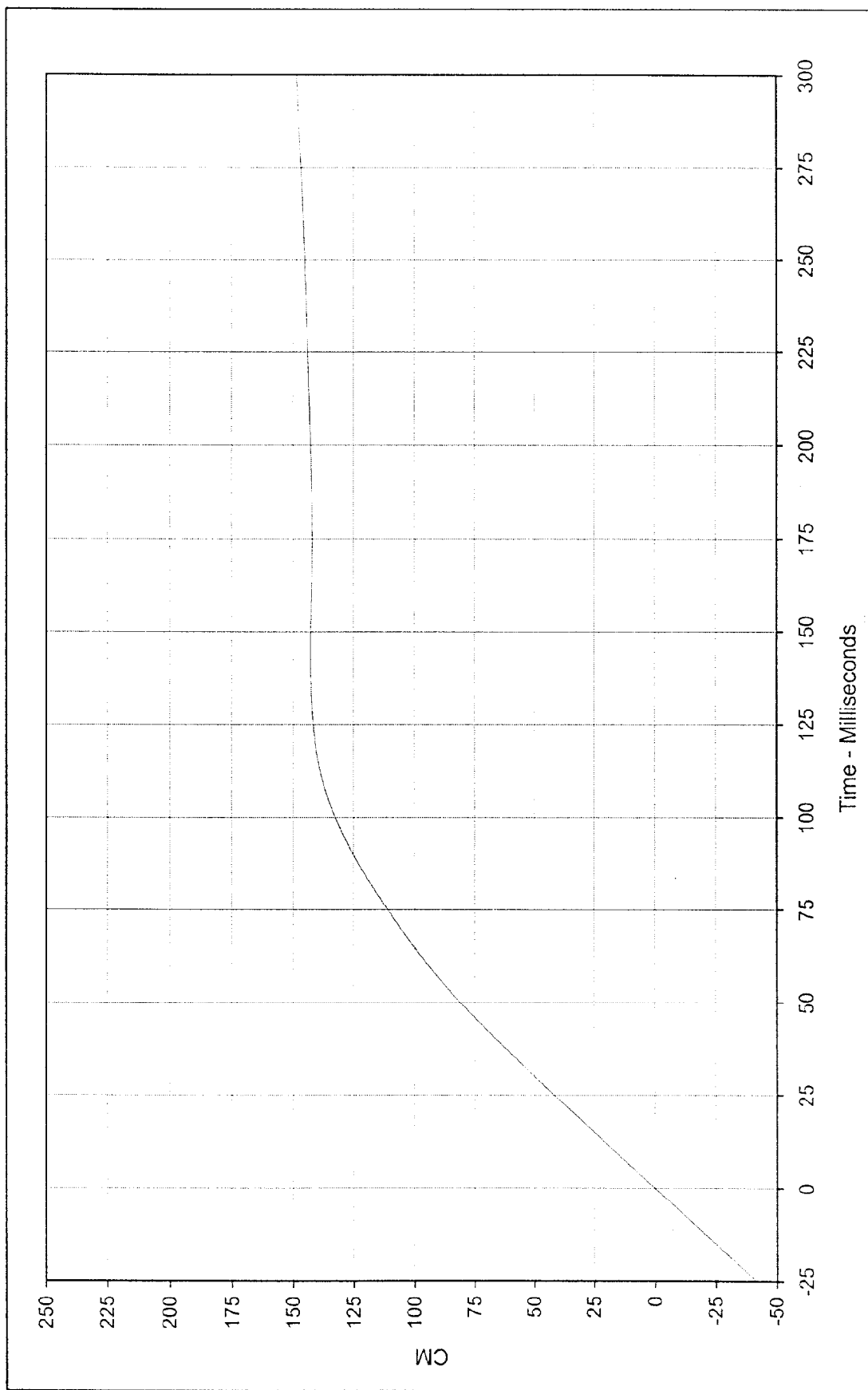




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

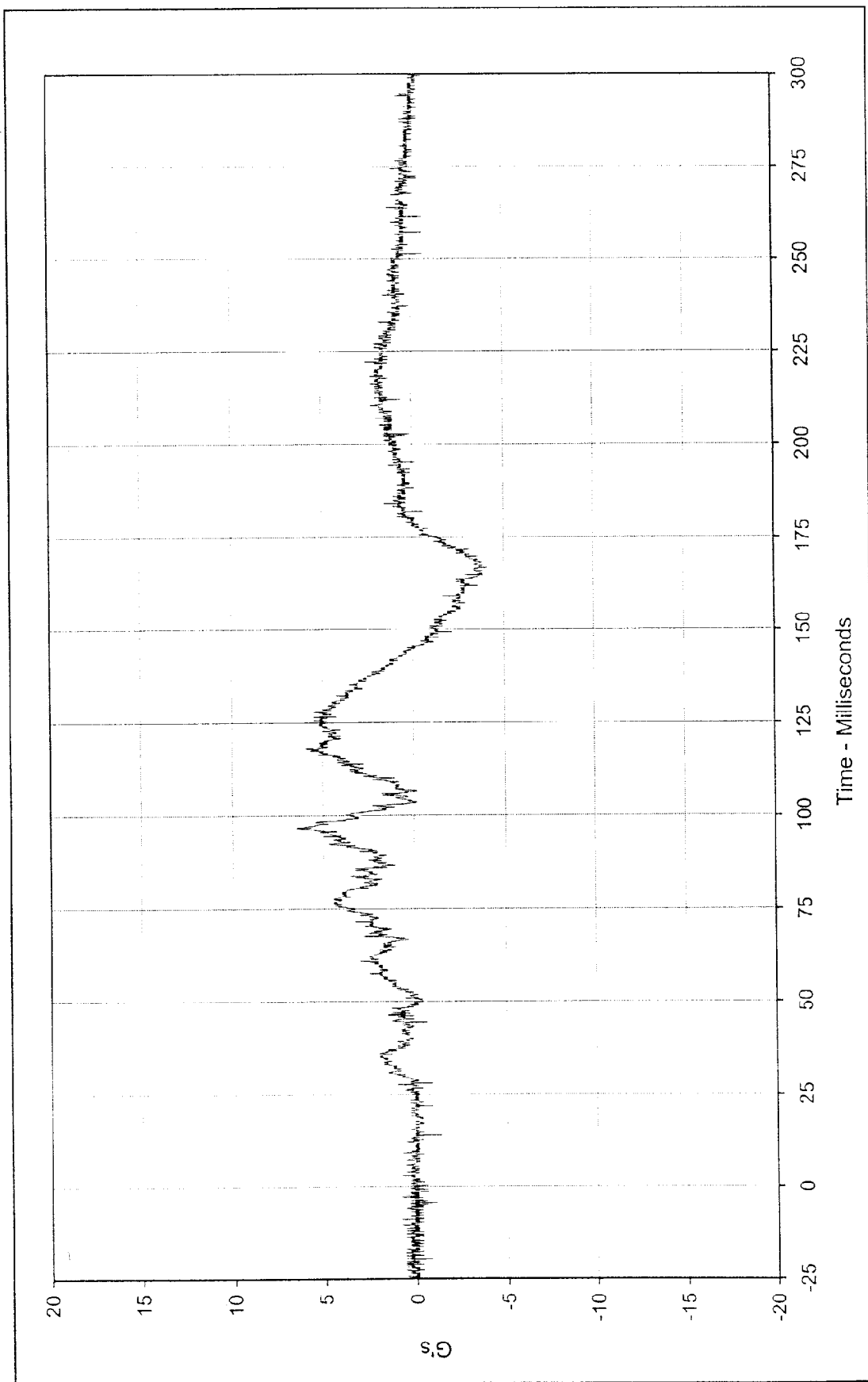
Curve Description: Driver Pelvis X Velocity
 Maximum Value: 60.1 at 9.6 Milliseconds
 Minimum Value: -1.2 at 158.5 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN1-017





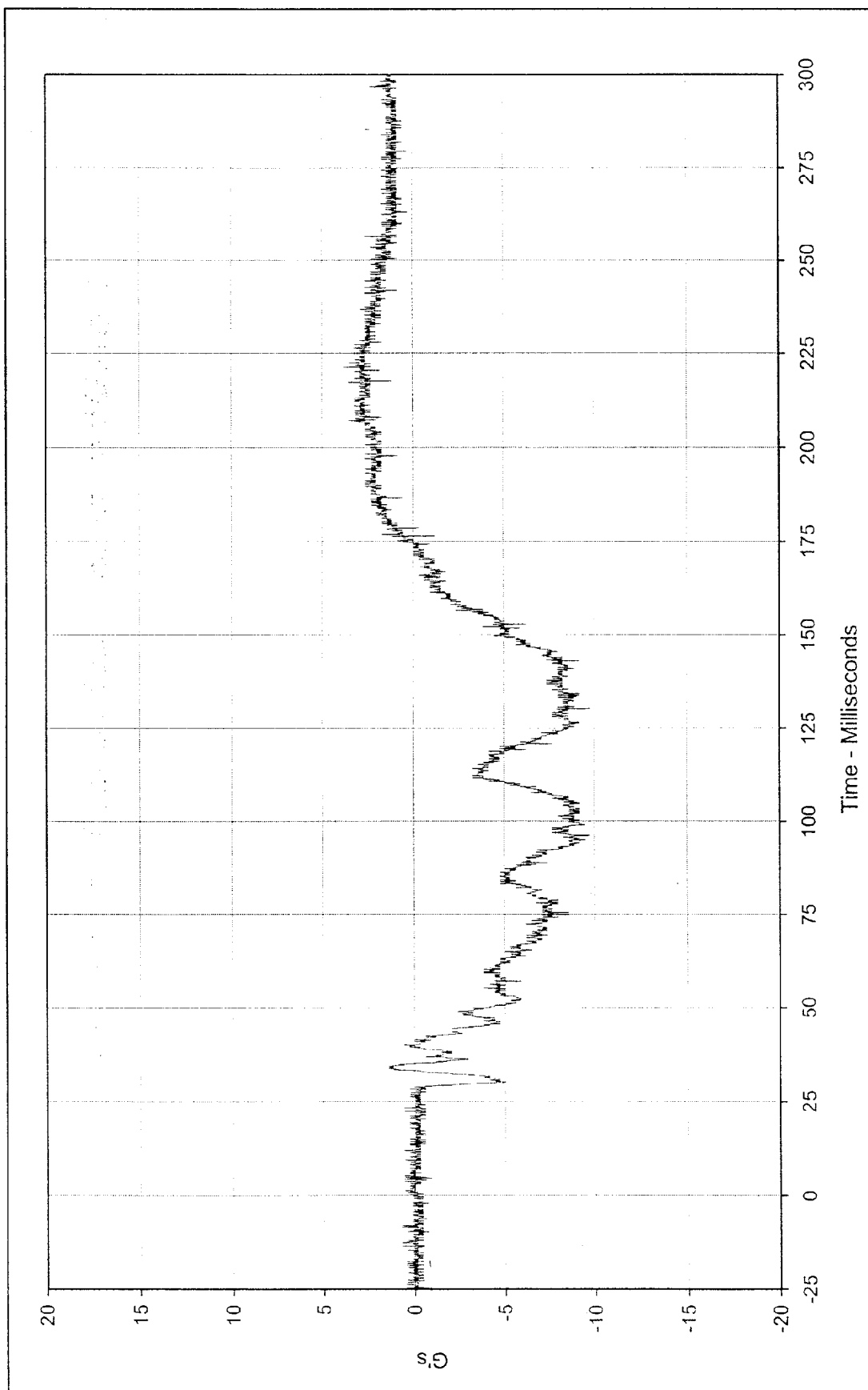
Curve Description:	Driver Pelvis X Displ.	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	148.5 at 299.9 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.0 at 0.0 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	IN2-017		





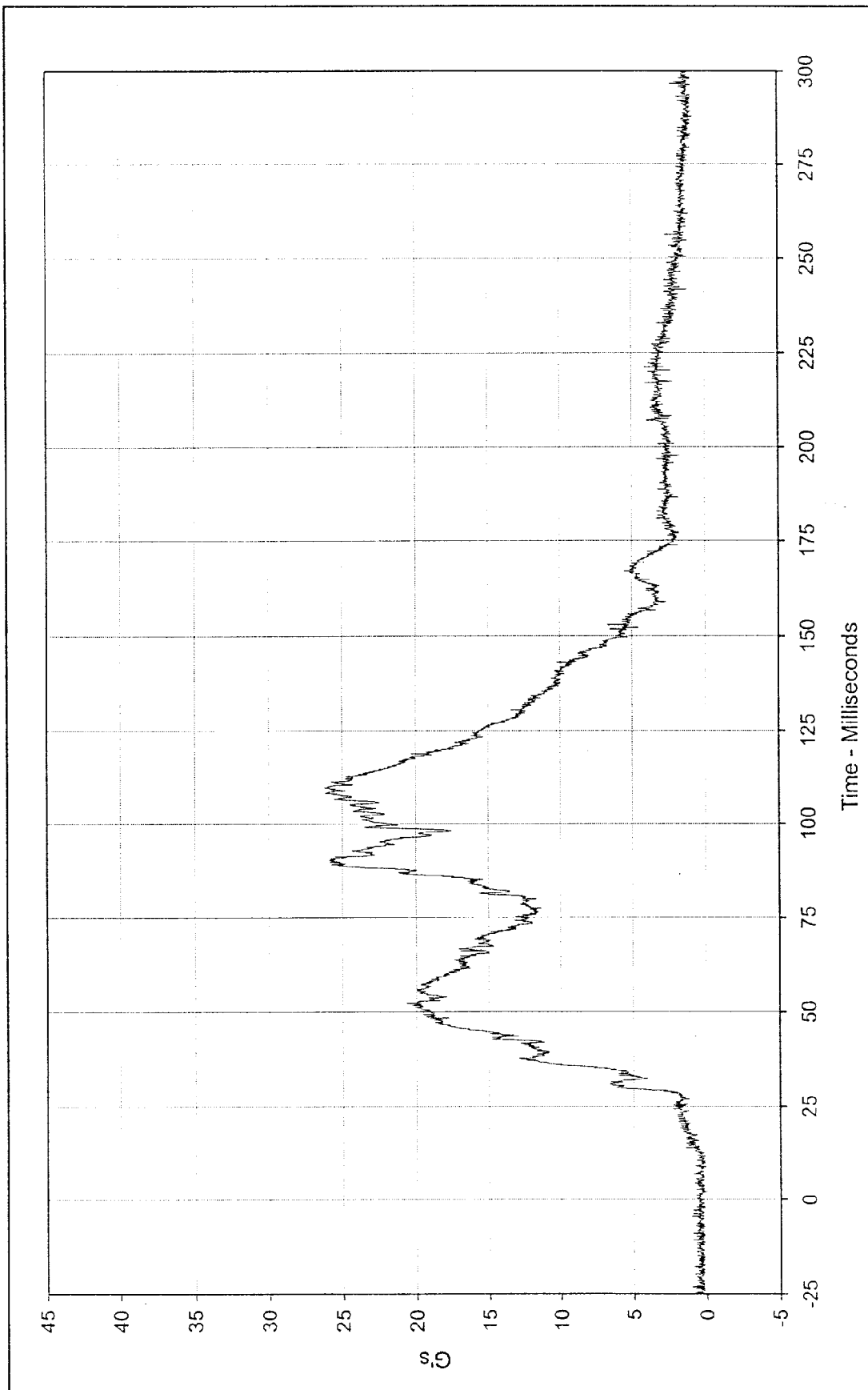
Curve Description:		Testing Program		1997 NHTSA 40% Offset Impact (Female)	
Maximum Value:	6.5	at	96.7	Milliseconds	Test Vehicle:
Minimum Value:	-4.1	at	166.9	Milliseconds	1996 Toyota Camry LE 4 Door Sedan
SAE Filter Class:	1000				
Date of Test:	8/7/97				
Curve Number:	FIL-018				





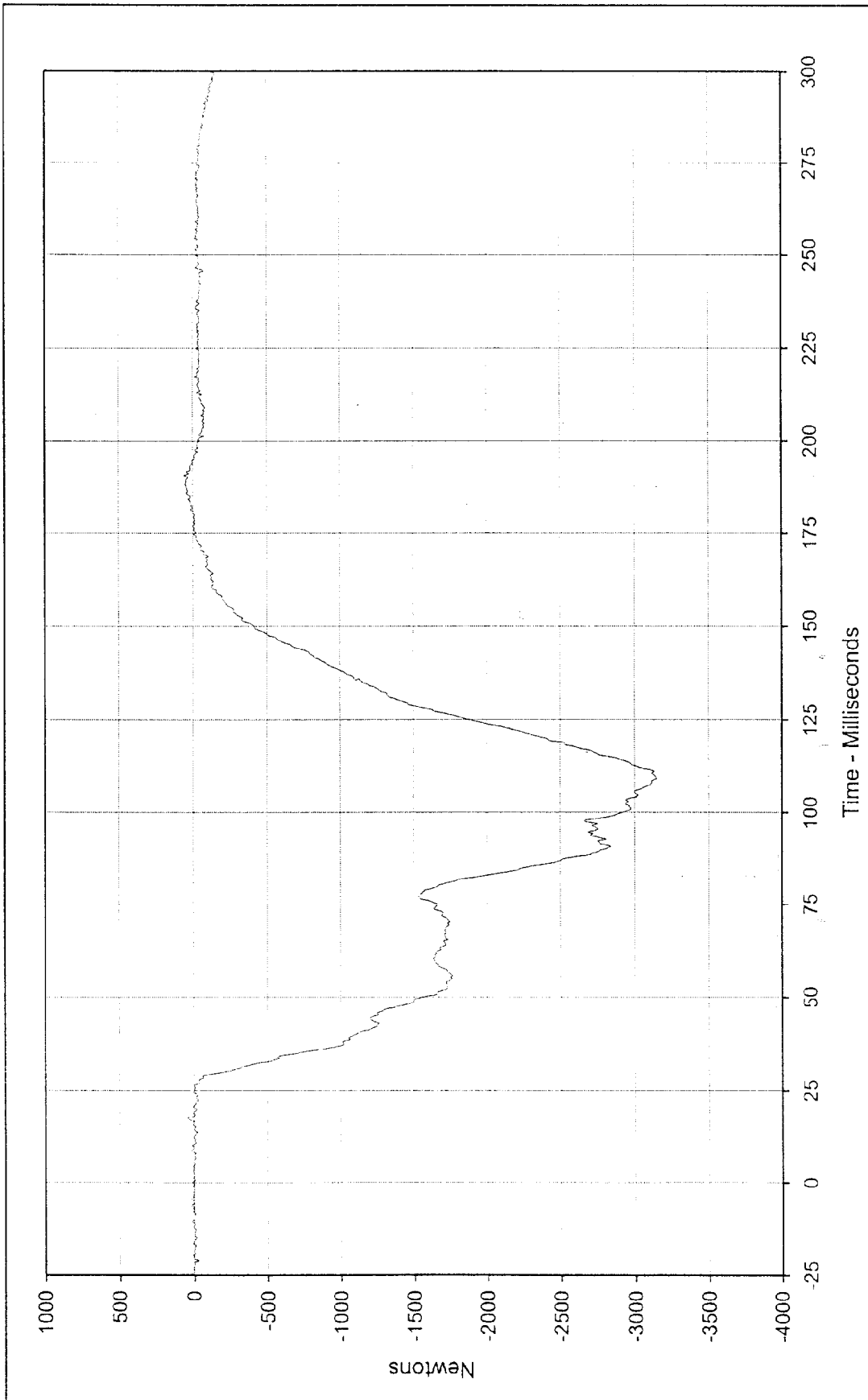
Curve Description:	Driver Pelvis Z	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	3.8 at 221.3 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-9.7 at 96.3 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	FIL-019		





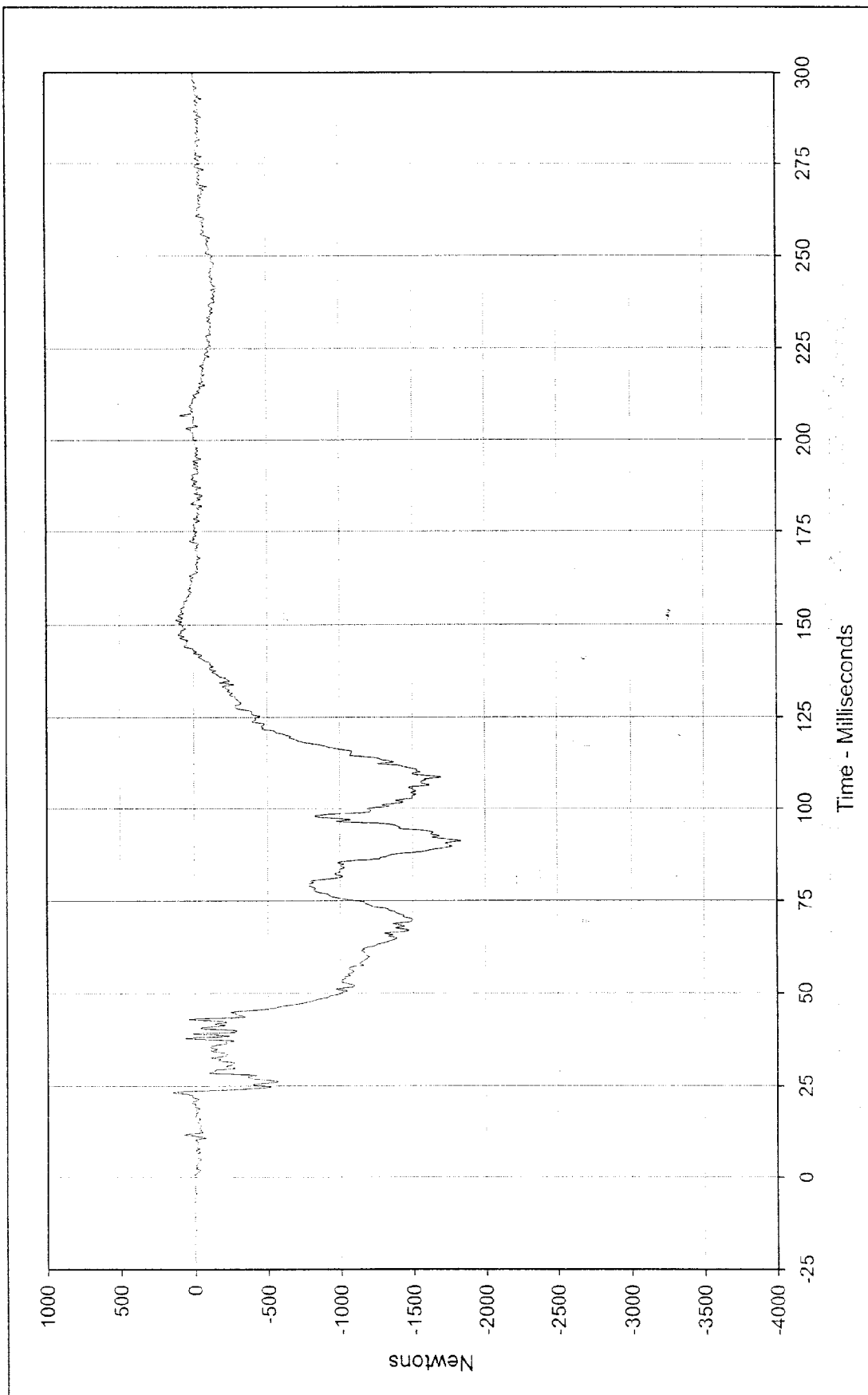
Curve Description:	Driver Pelvis Resultant	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	26.2 at 109.8 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.1 at 2.2 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	RES-017		





Curve Description:	Driver Left Femur Force	Testing Program:	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	60.4 at 190.7 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-3147.4 at 109.3 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-020		

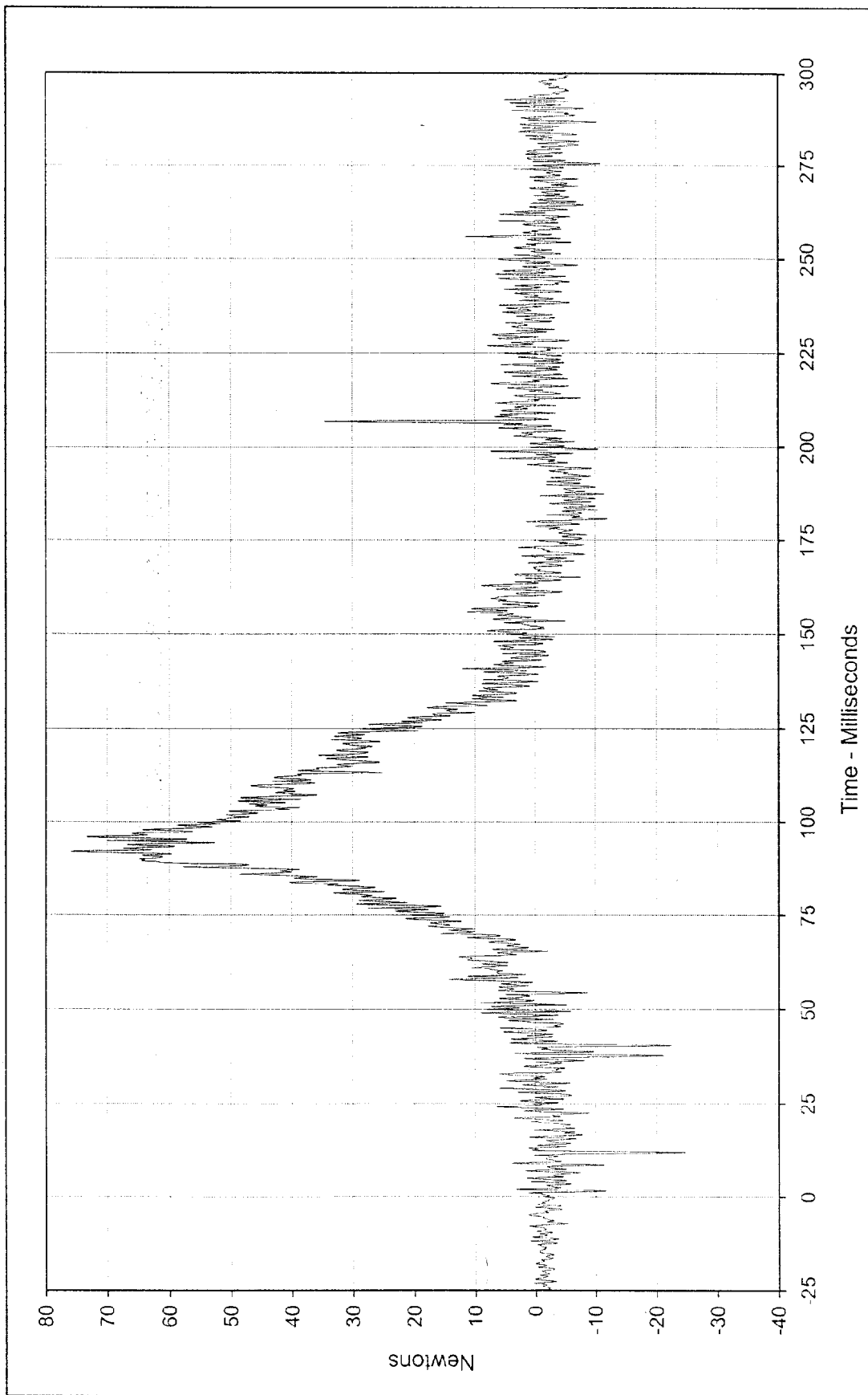




Testing Program: 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

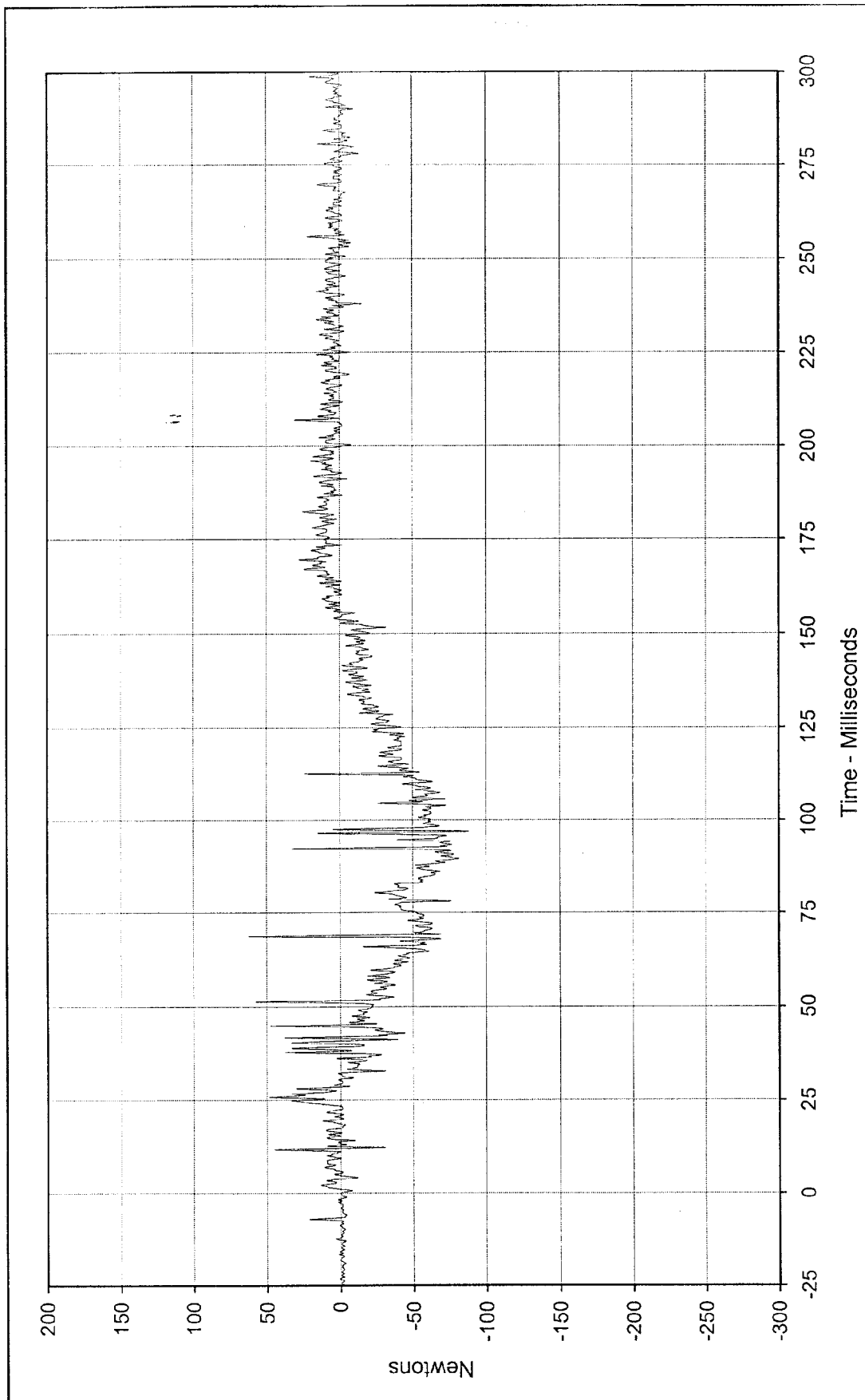
Curve Description:		Driver Right Femur Force	
Maximum Value:	156.2	at	23.3 Milliseconds
Minimum Value:	-1830.7	at	91.1 Milliseconds
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-021		





Curve Description:	Driver Left Upper Tibia Force X	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	75.9 at 92.0 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-24.8 at 11.8 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-022		

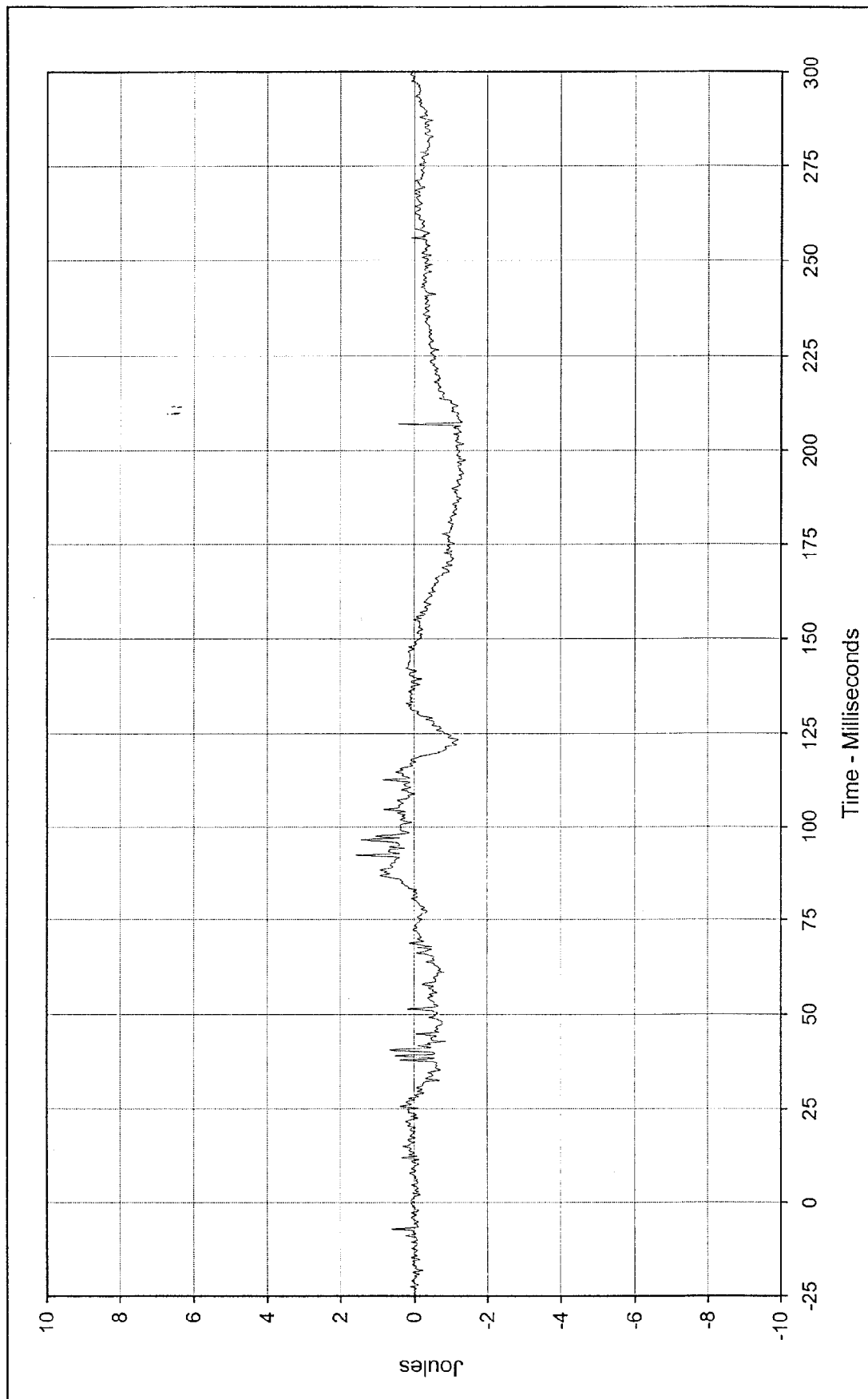




Curve Description: Driver Left Upper Tibia Force Z
 Maximum Value: 62.1 at 68.8 Milliseconds
 Minimum Value: -88.4 at 97.0 Milliseconds
 SAE Filter Class: 600
 Date of Test: 8/7/97
 Curve Number: FIL-023

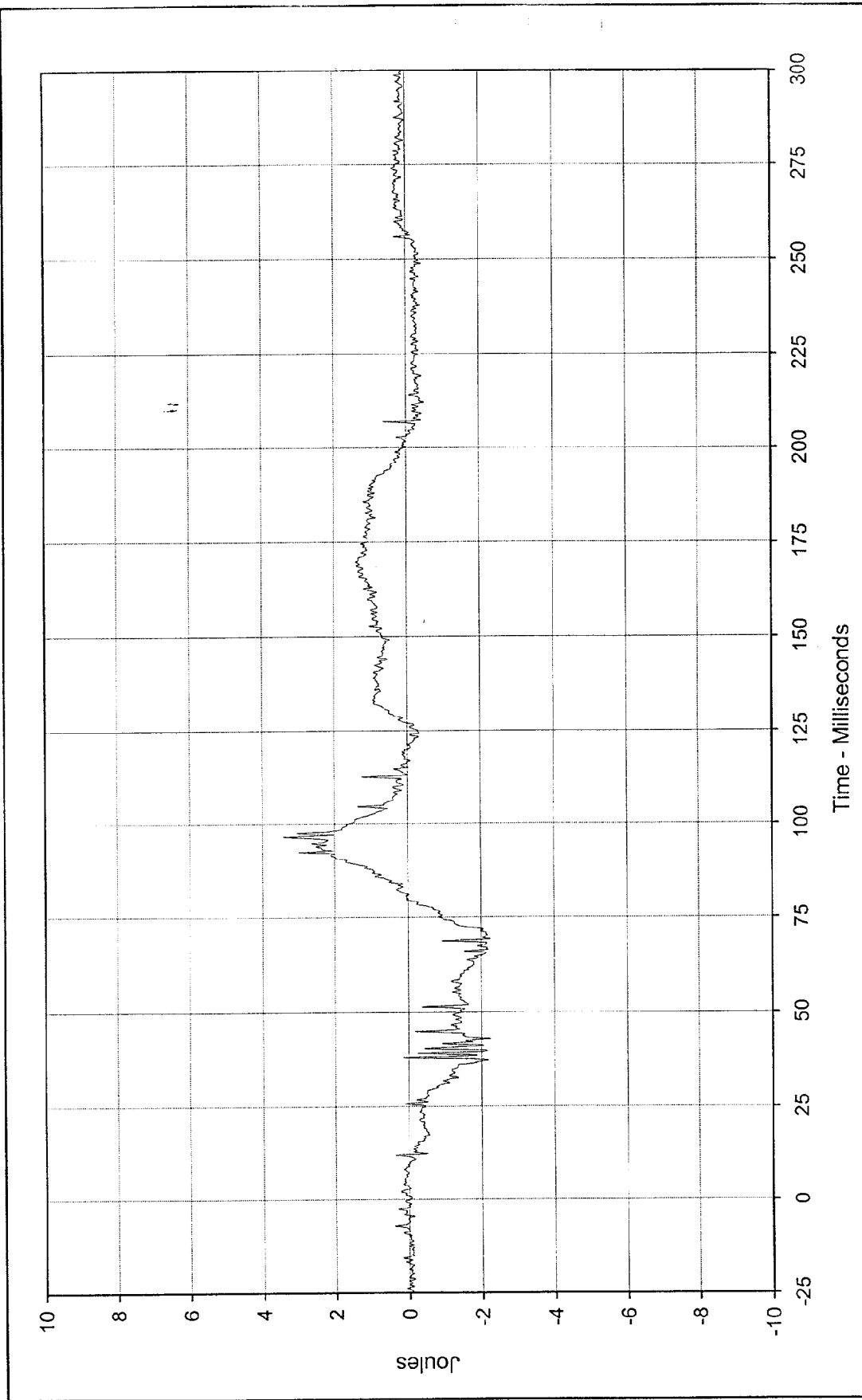
Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





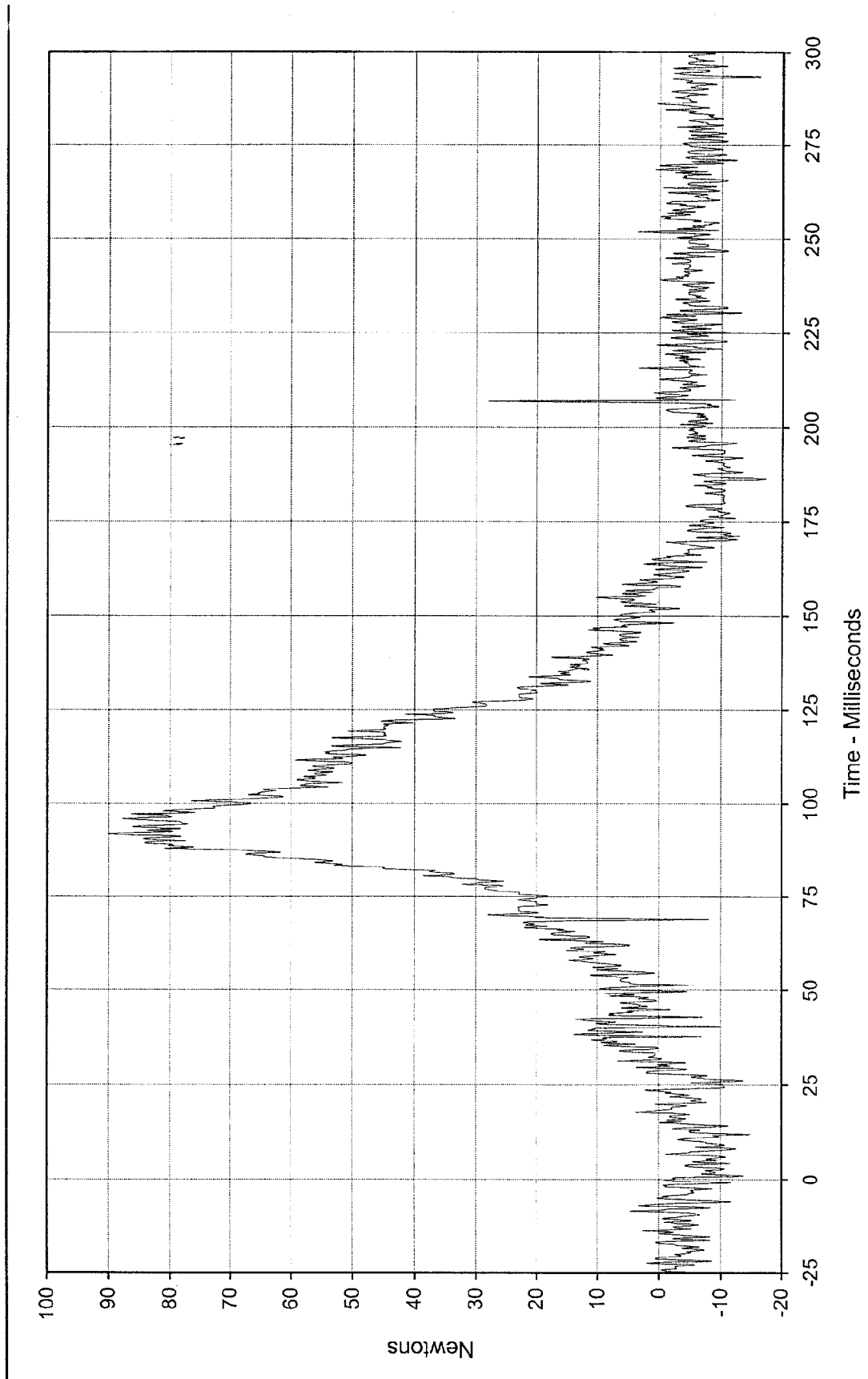
Curve Description:		Testing Program	
Driver Left Upper Tibia Moment X		1997 NHTSA 40% Offset Impact (Female)	
Maximum Value:	1.6 at 92.3 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-1.4 at 197.3 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-024		





Curve Description:	Driver Left Upper Tibia Moment Y	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	3.4 at 96.5 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-2.2 at 69.3 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-025		

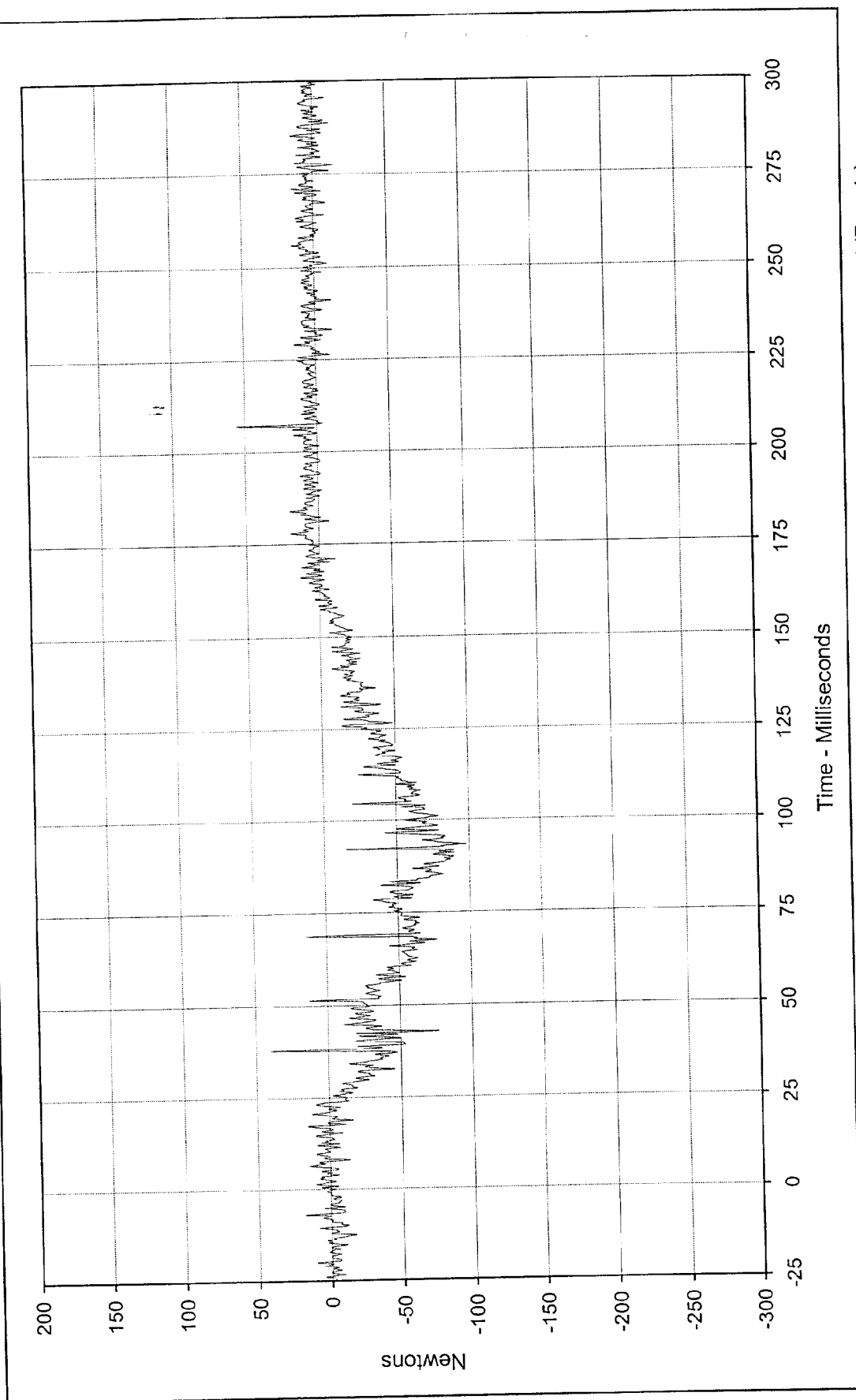




Curve Description: Driver Left Lower Tibia Force X
 Maximum Value: 90.1 at 91.9 Milliseconds
 Minimum Value: -17.4 at 186.6 Milliseconds
 SAE Filter Class: 600
 Date of Test: 8/7/97
 Curve Number: FIL-026

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

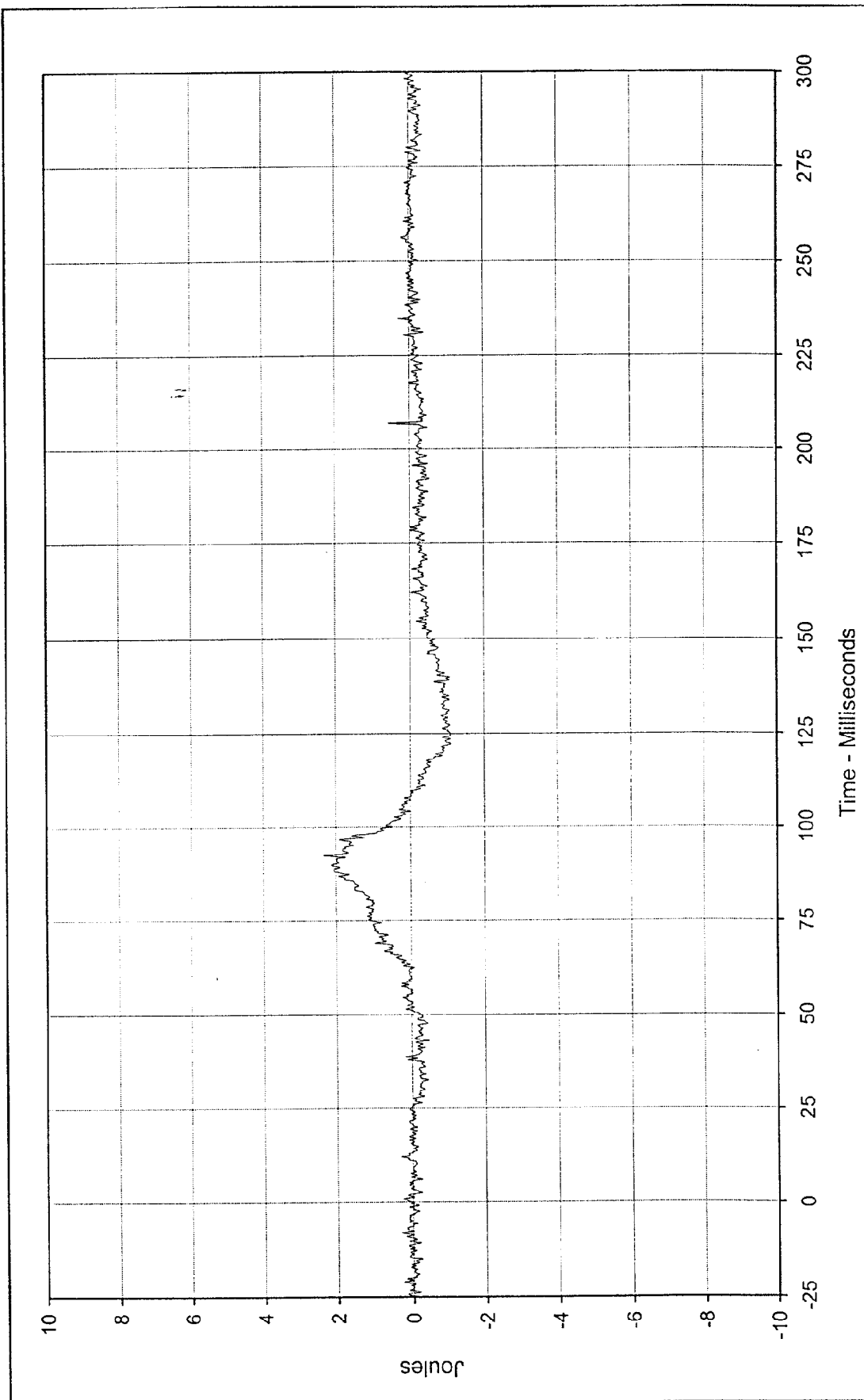




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Driver Left Lower Tibia Force Z
 Maximum Value: 55.1 at 207.0 Milliseconds
 Minimum Value: -97.8 at 93.3 Milliseconds
 SAE Filter Class: 600
 Date of Test: 8/7/97
 Curve Number: FIL-027

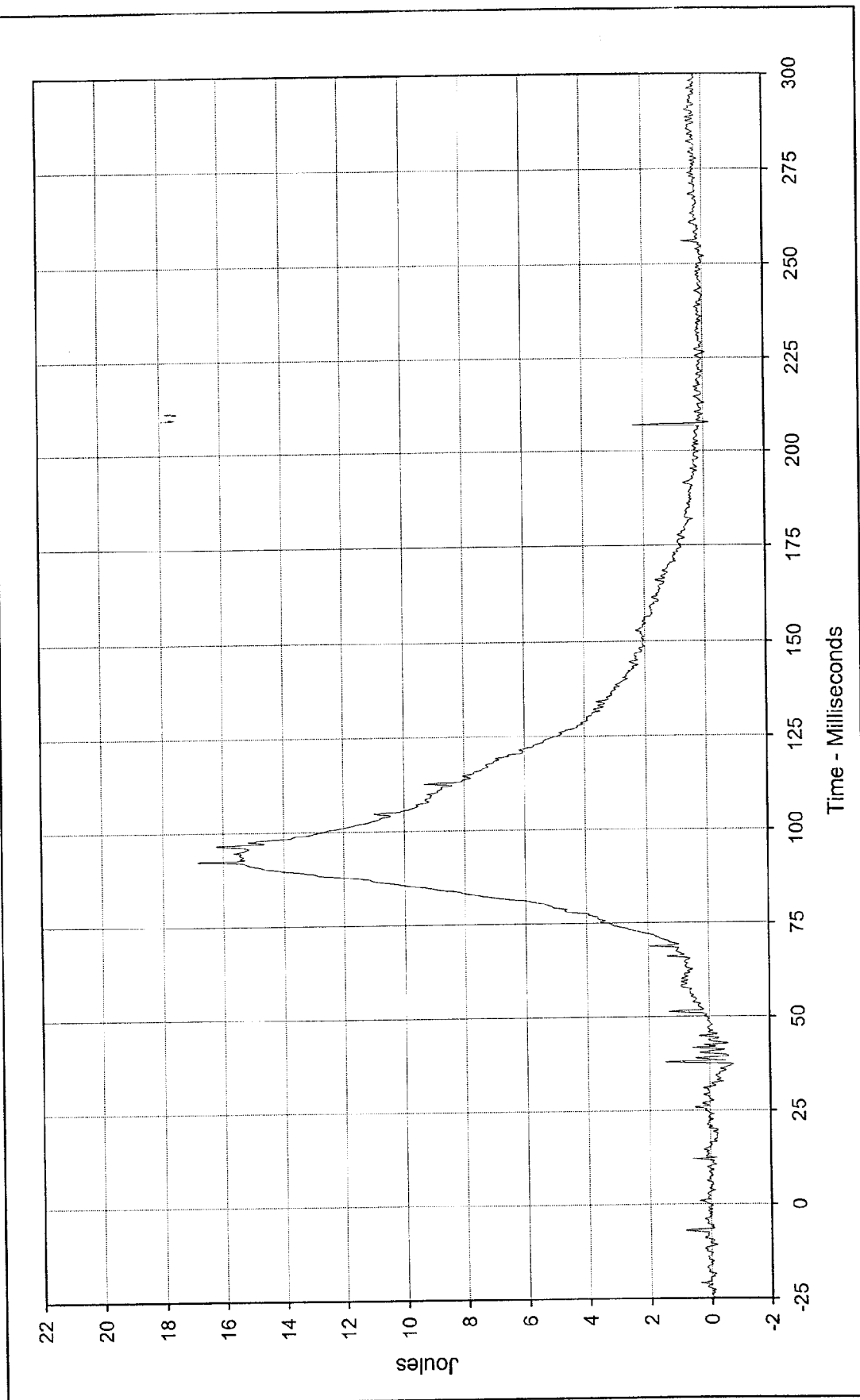




Curve Description: Driver Left Lower Tibia Moment X
 Maximum Value: 2.3 at 92.3 Milliseconds
 Minimum Value: -1.1 at 122.2 Milliseconds
 SAE Filter Class: 600
 Date of Test: 8/7/97
 Curve Number: FIL-028

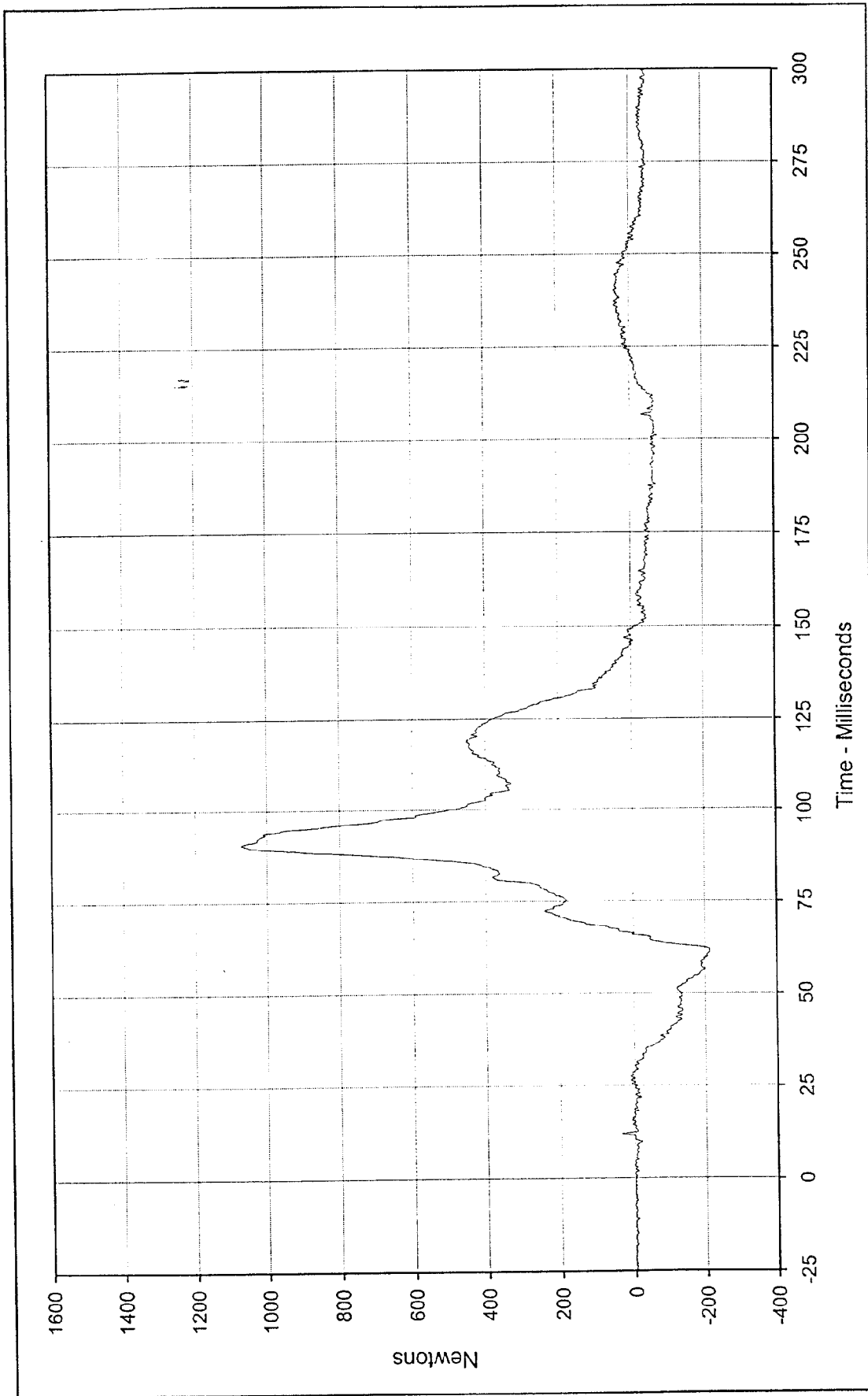
Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





Curve Description:	Driver Left Lower Tibia Moment Y	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	16.9 at 92.3 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-0.8 at 37.3 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-029		

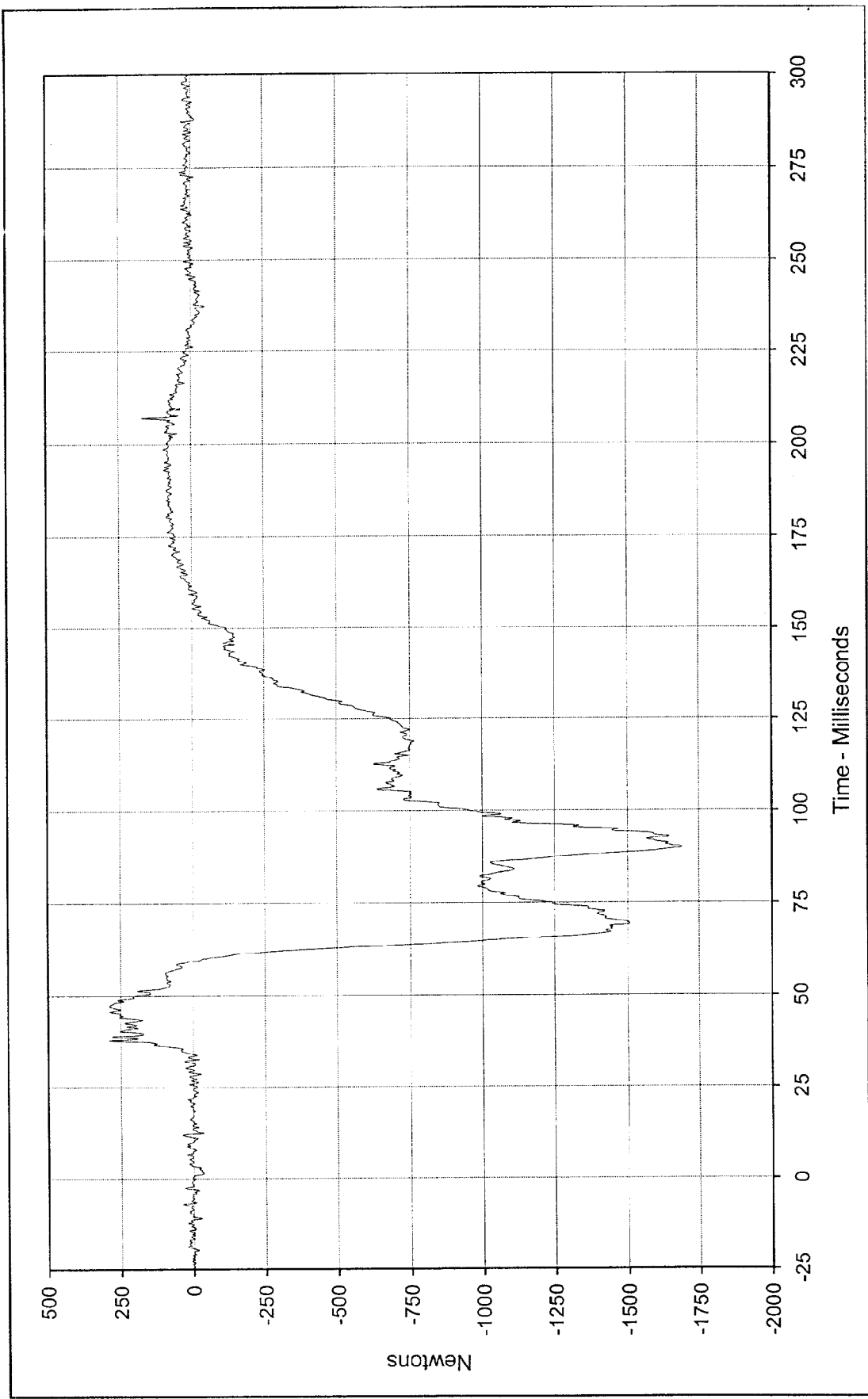




Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Driver Right Upper Tibia Force X
Maximum Value: 1072.6 at 90.5 Milliseconds
Minimum Value: -213.0 at 61.4 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-030

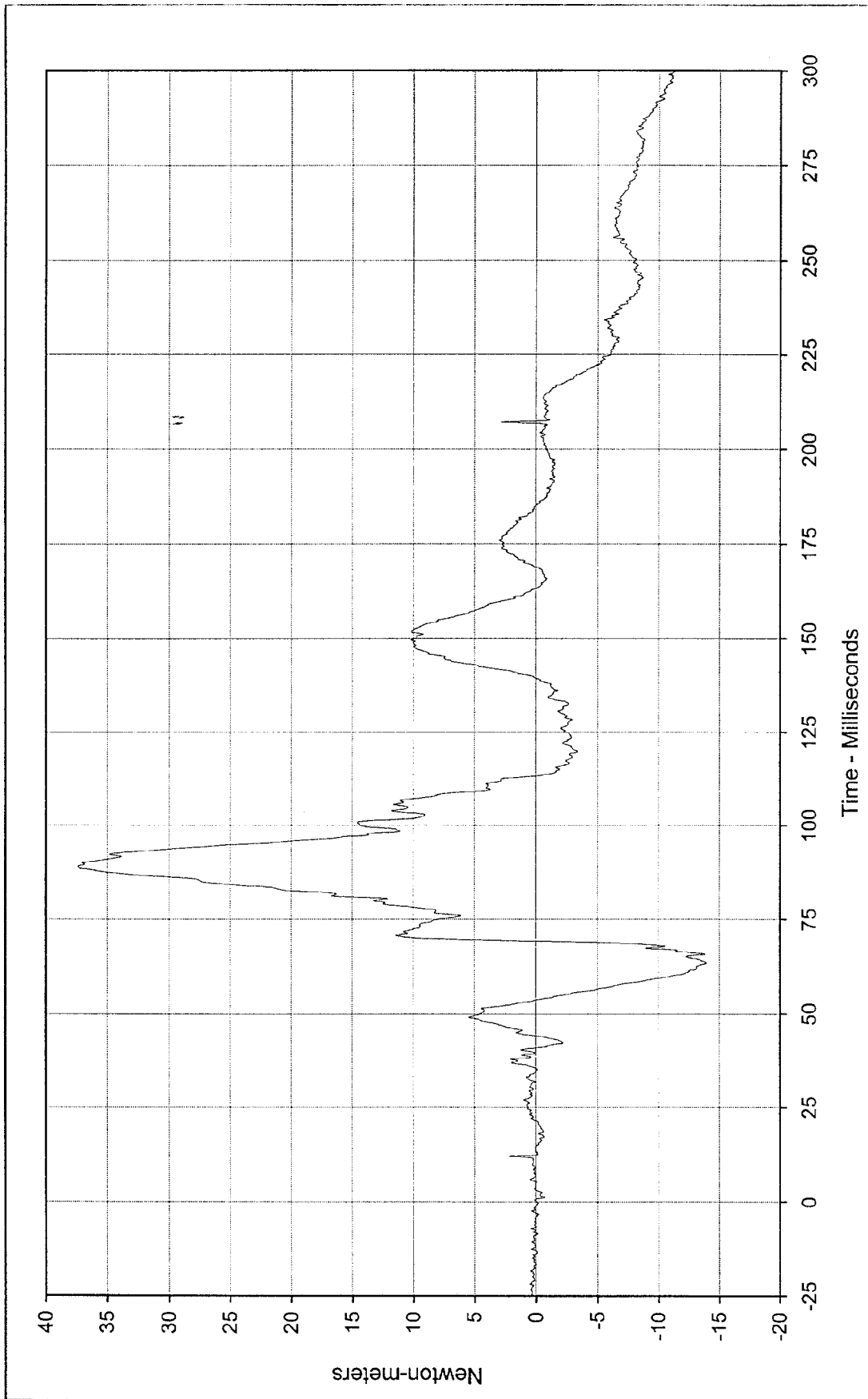




Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Driver Right Upper Tibia Force Z
Maximum Value: 291.4 at 38.0 Milliseconds
Minimum Value: -1691.6 at 90.0 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-031

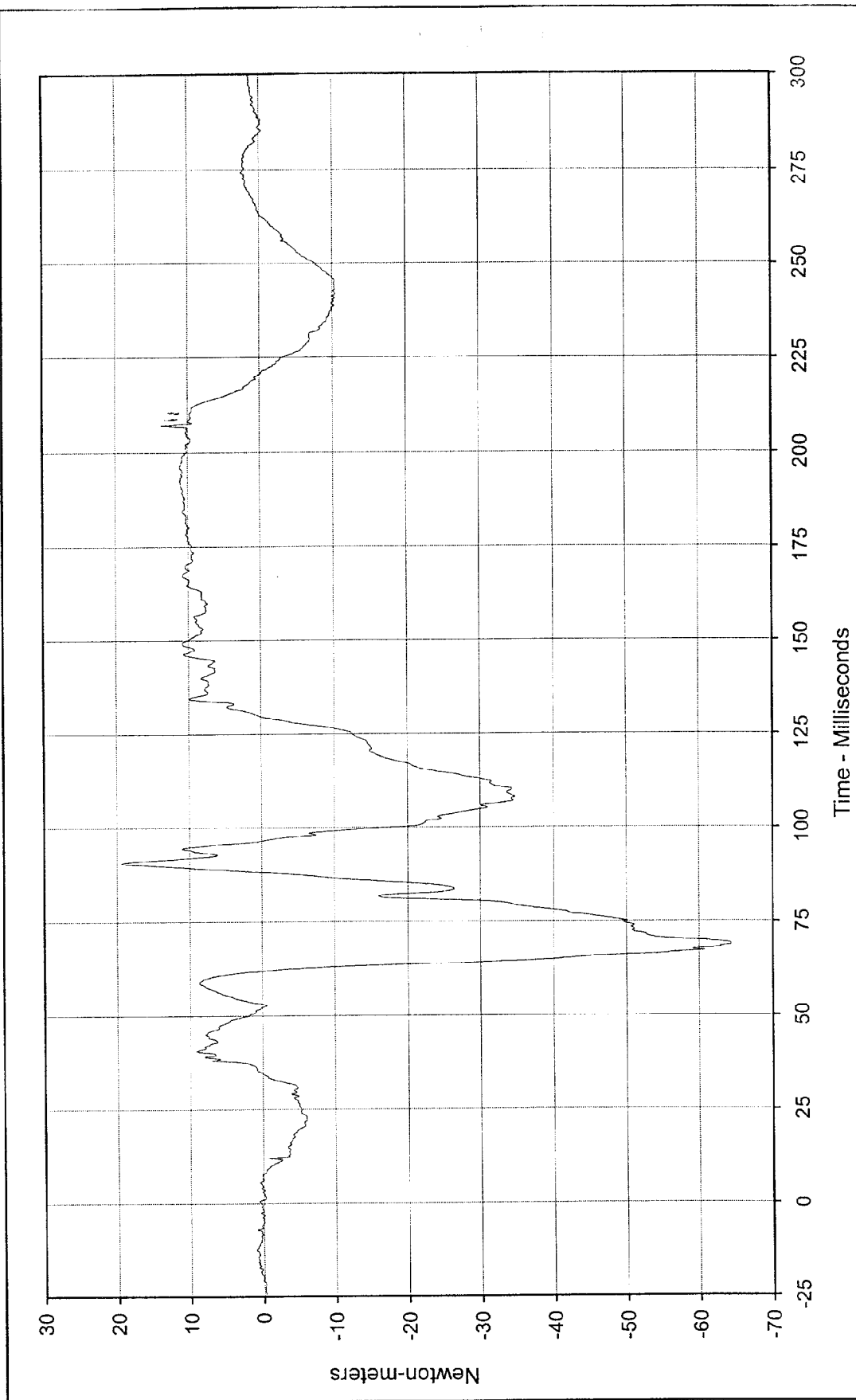




Curve Description: Driver Right Upper Tibia Moment X
Maximum Value: 37.4 at 89.0 Milliseconds
Minimum Value: -14.0 at 63.4 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-032

Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

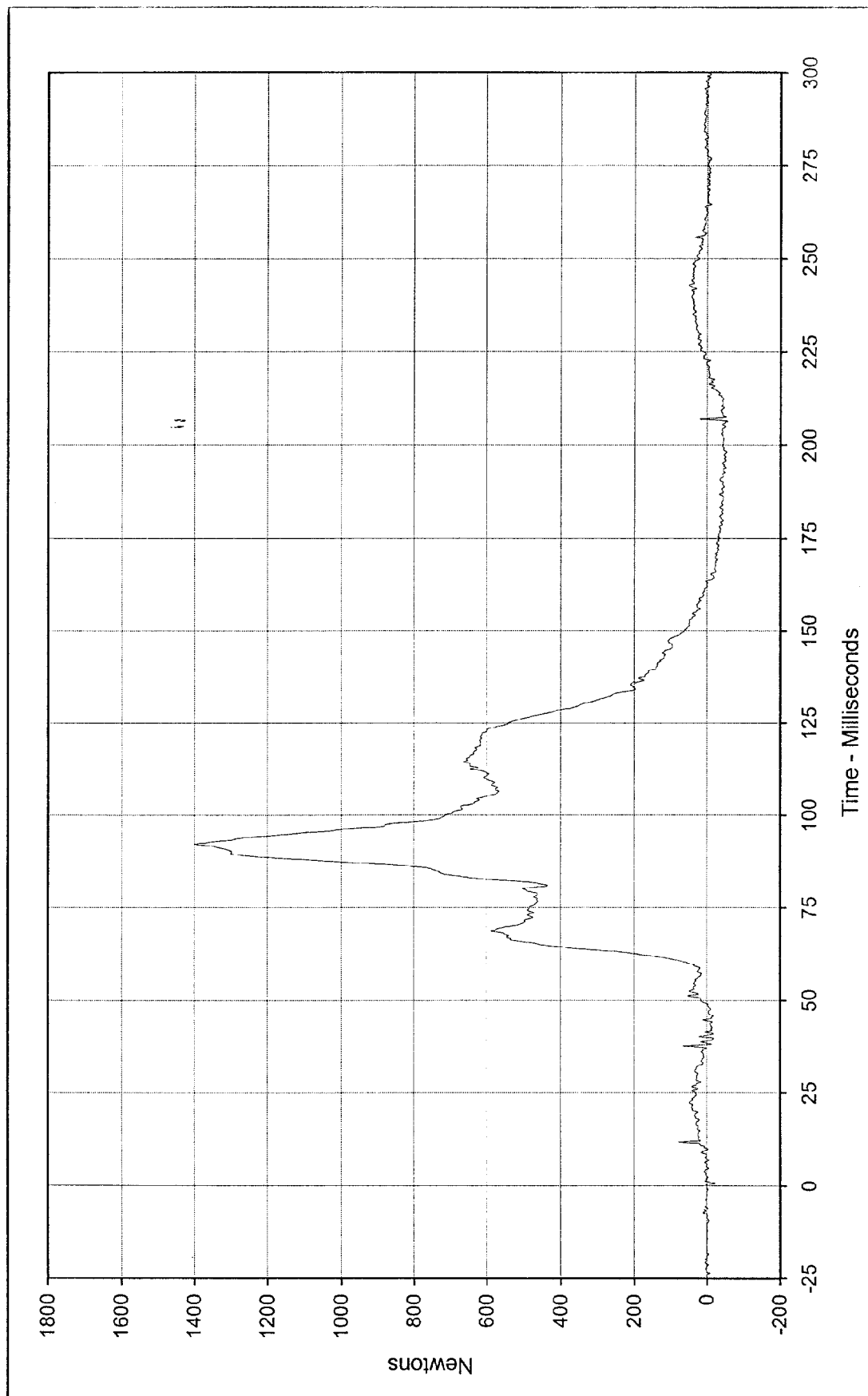




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

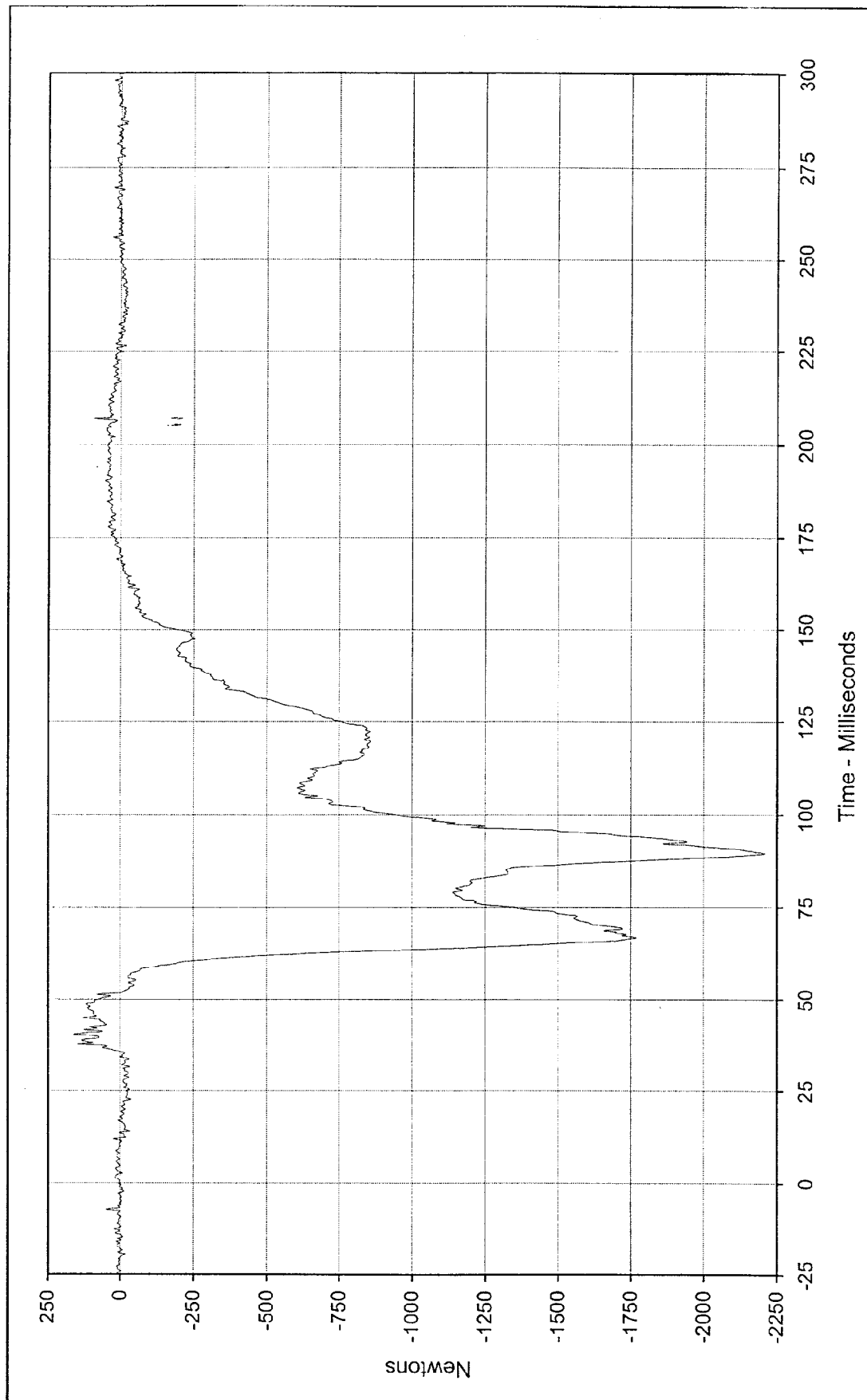
Curve Description: Driver Right Upper Tibia Moment Y
 Maximum Value: 19.4 at 90.5 Milliseconds
 Minimum Value: -64.4 at 68.8 Milliseconds
 SAE Filter Class: 600
 Date of Test: 8/7/97
 Curve Number: FIL-033





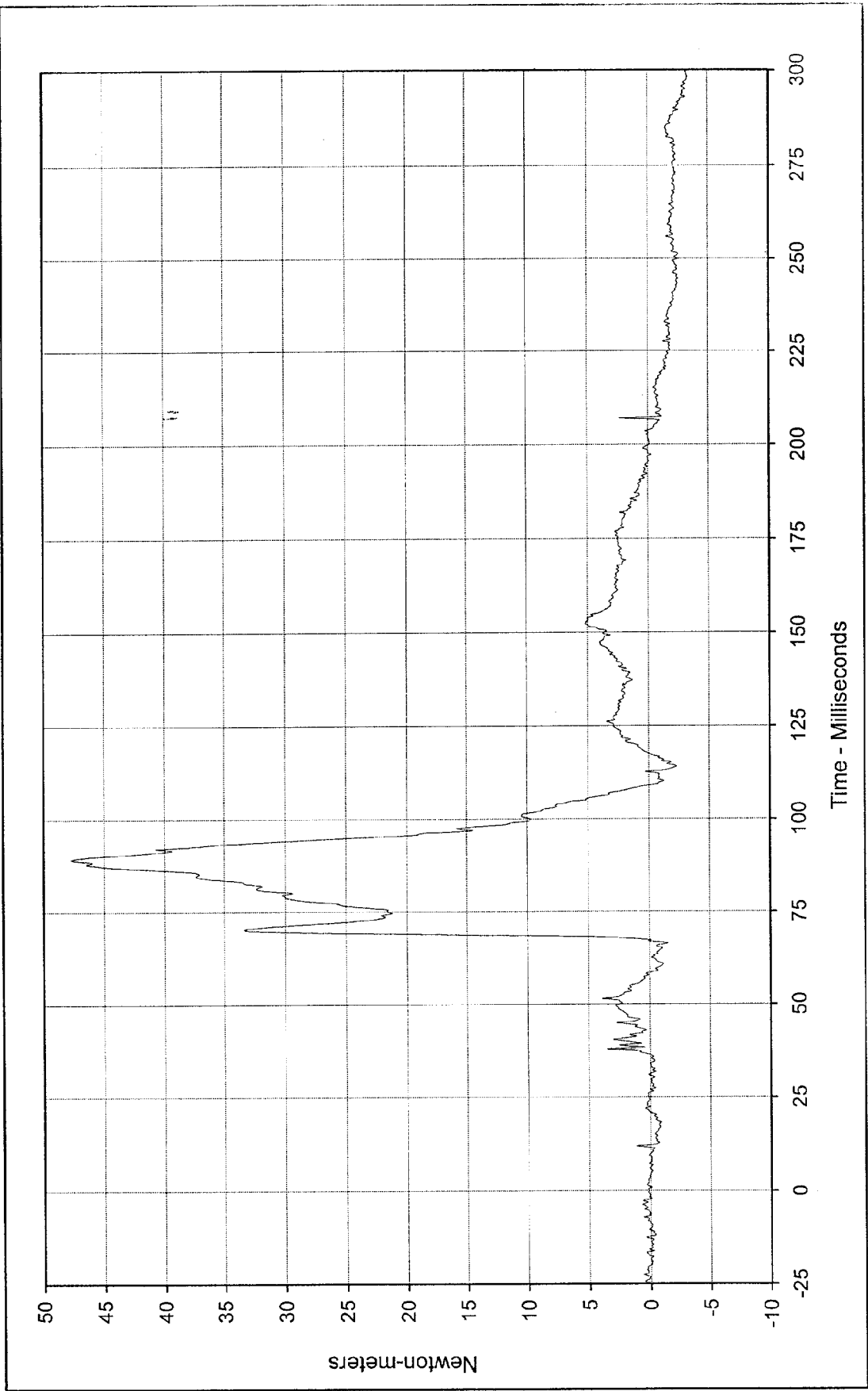
Curve Description:	Driver Right Lower Tibia Force X	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	1397.5 at 92.3 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-56.0 at 206.3 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-034		





Curve Description:	Driver Right Lower Tibia Force Z	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	160.6 at 40.4 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-2210.9 at 89.7 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-035		

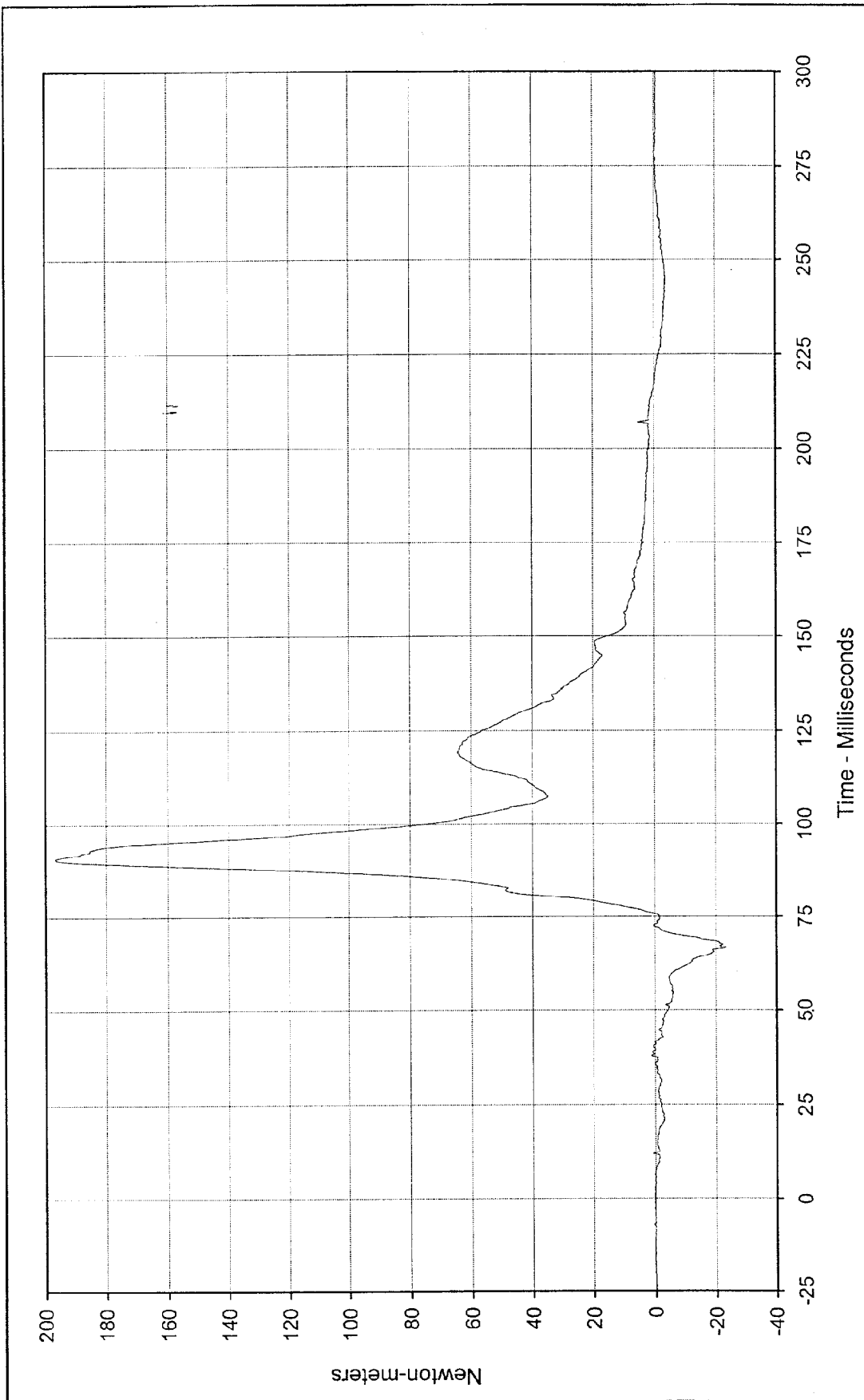




Curve Description: Driver Right Lower Tibia Moment X
Maximum Value: 47.7 at 89.2 Milliseconds
Minimum Value: -3.3 at 298.4 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-036

Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

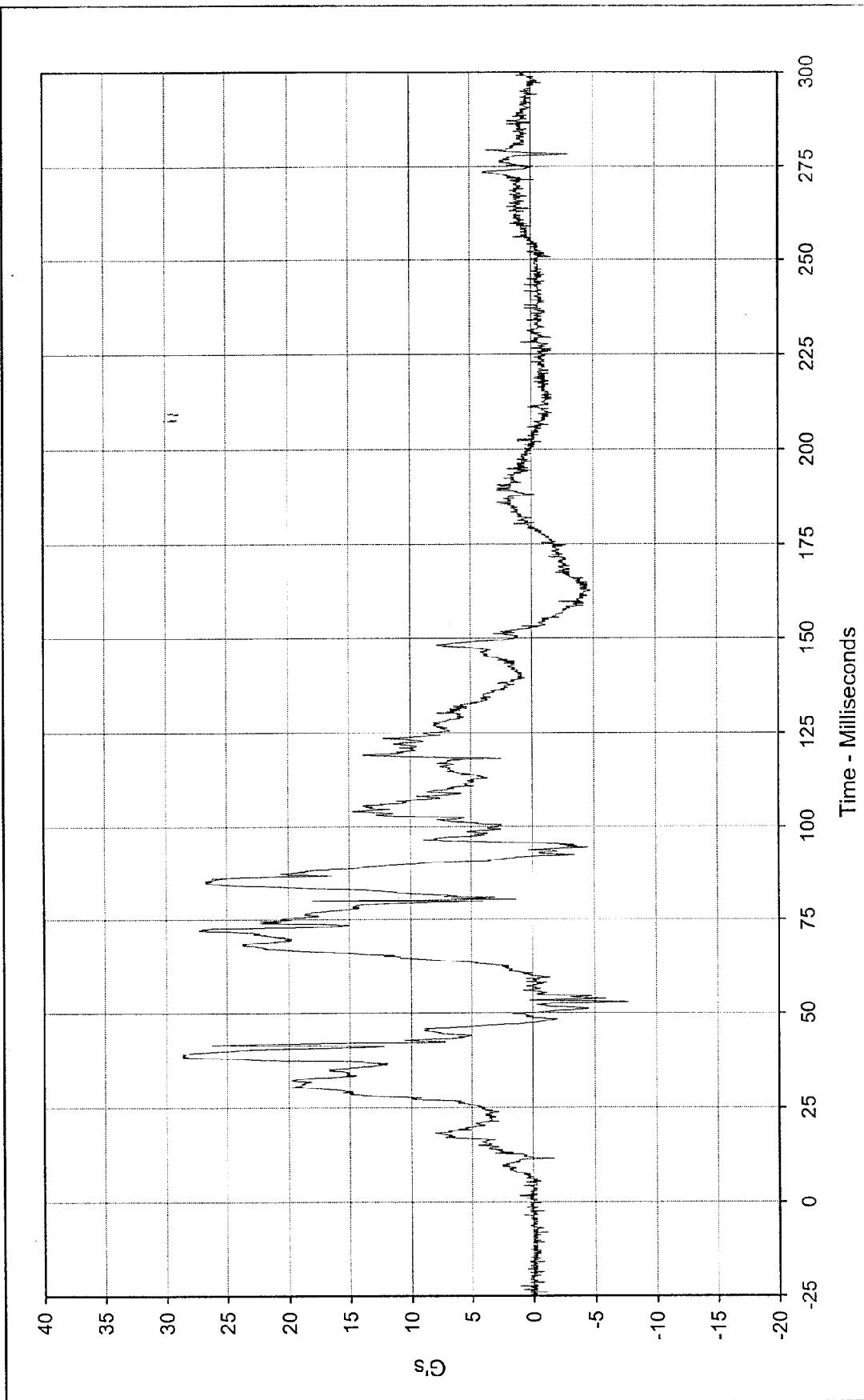




Curve Description: Driver Right Lower Tibia Moment Y
Maximum Value: 196.7 at 90.6 Milliseconds
Minimum Value: -23.3 at 66.6 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-037

Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

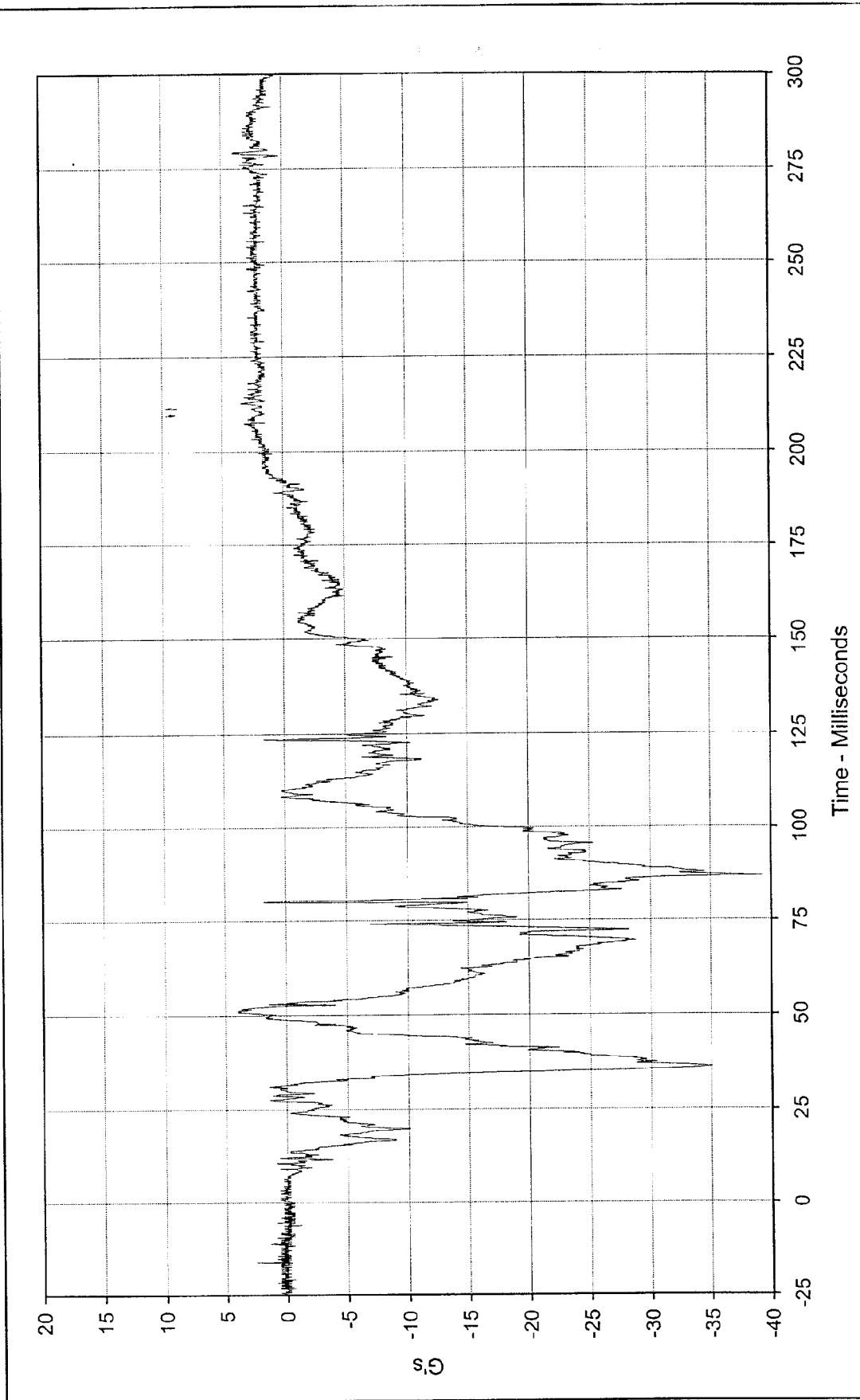




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Driver Left Foot Aft X
 Maximum Value: 28.7 at 38.3 Milliseconds
 Minimum Value: -7.7 at 52.9 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: FIL-038

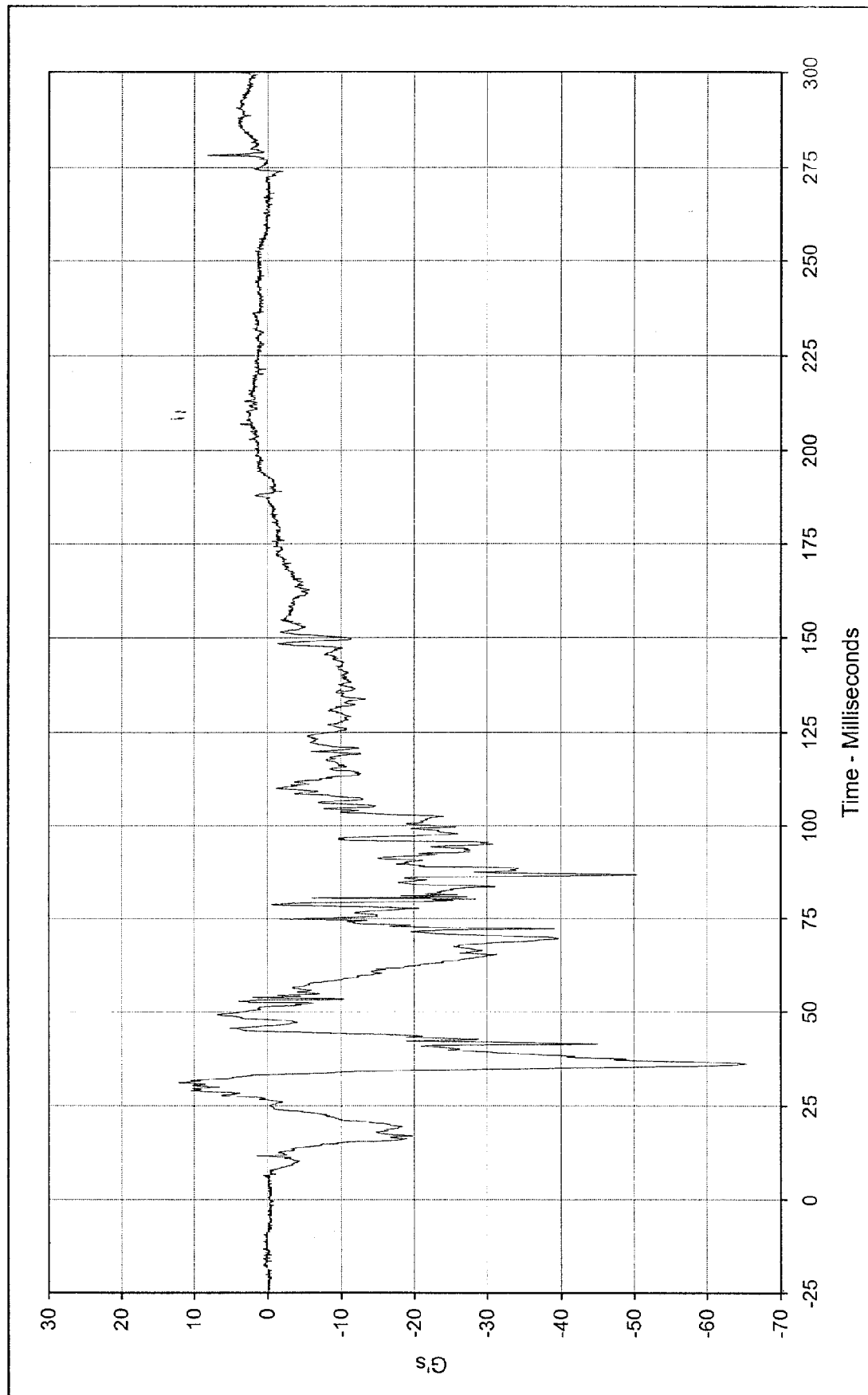




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Driver Left Foot Aft Z
 Maximum Value: 4.0 at 50.8 Milliseconds
 Minimum Value: -39.4 at 86.8 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: FIL-039

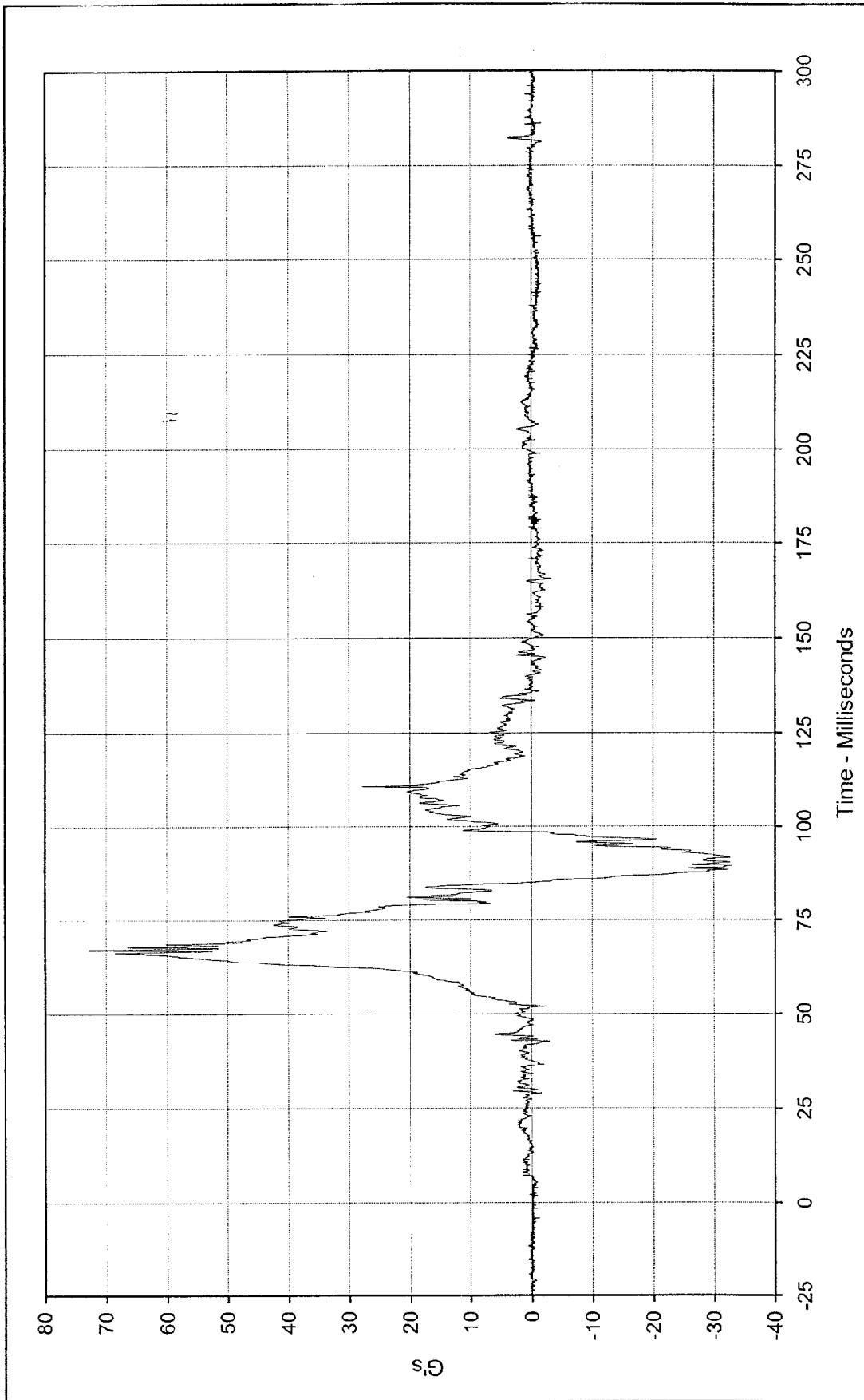




Curve Description:		Driver Left Foot Fore Z		Testing Program	1997 NHTSA 40% Offset Impact (Female)	
Maximum Value:	12.2	at	31.1	Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-65.4	at	36.1	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	8/7/97					
Curve Number:	FIL-040					







Curve Description: 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Driver Right Foot Aft X

Maximum Value: 72.9 at 67.1 Milliseconds

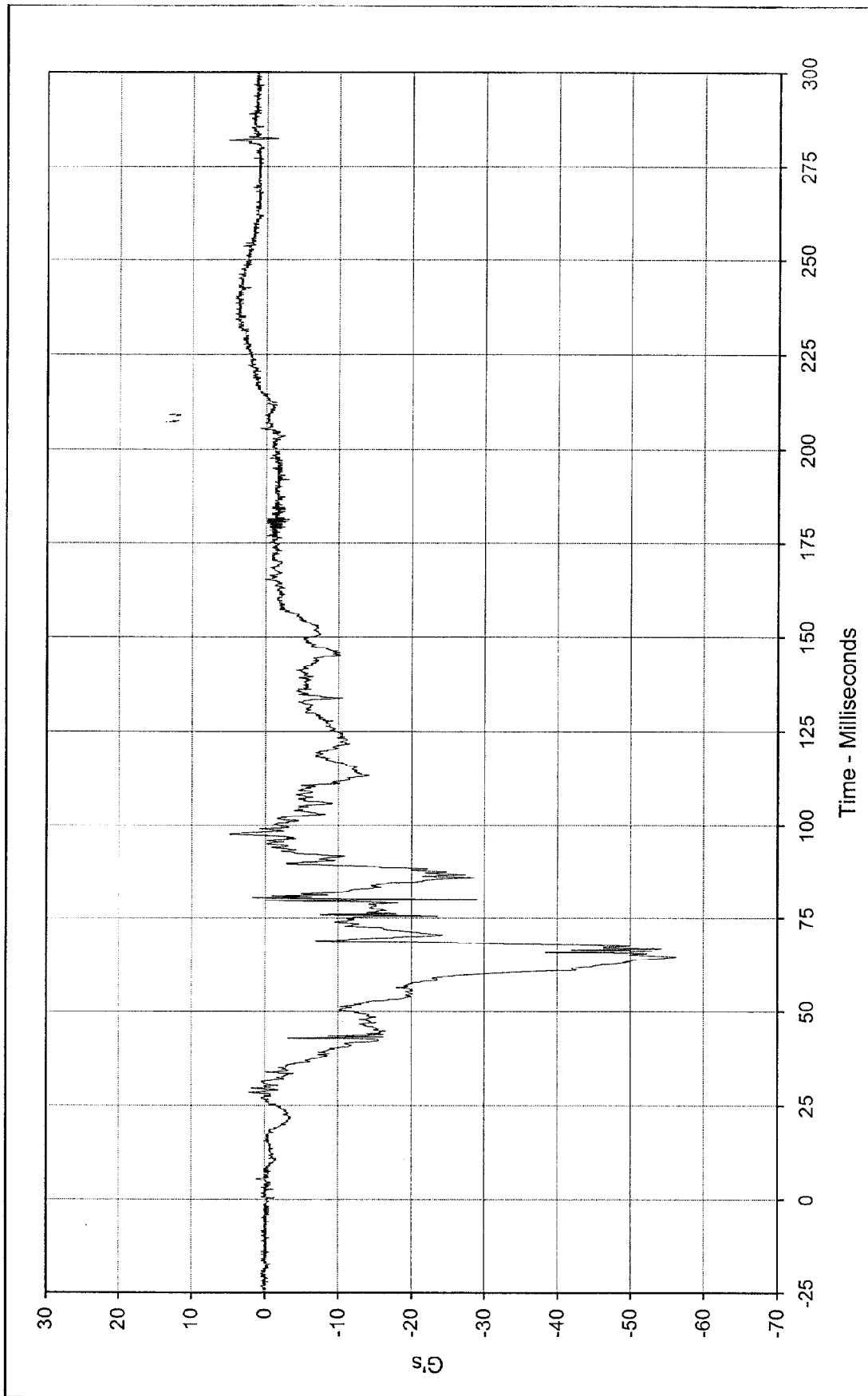
Minimum Value: -33.0 at 89.3 Milliseconds

SAE Filter Class: 1000

Date of Test: 8/7/97

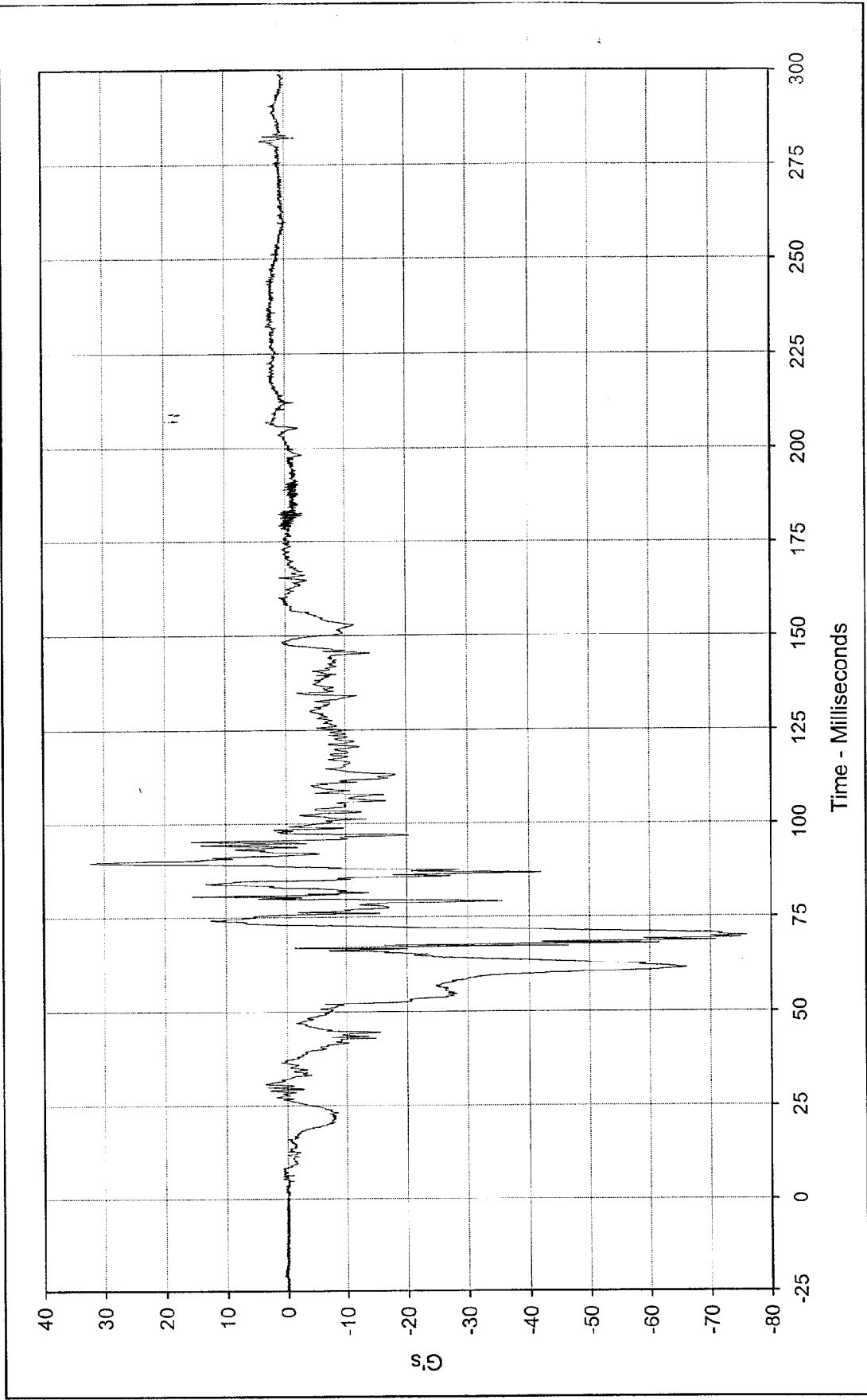
Curve Number: FIL-041





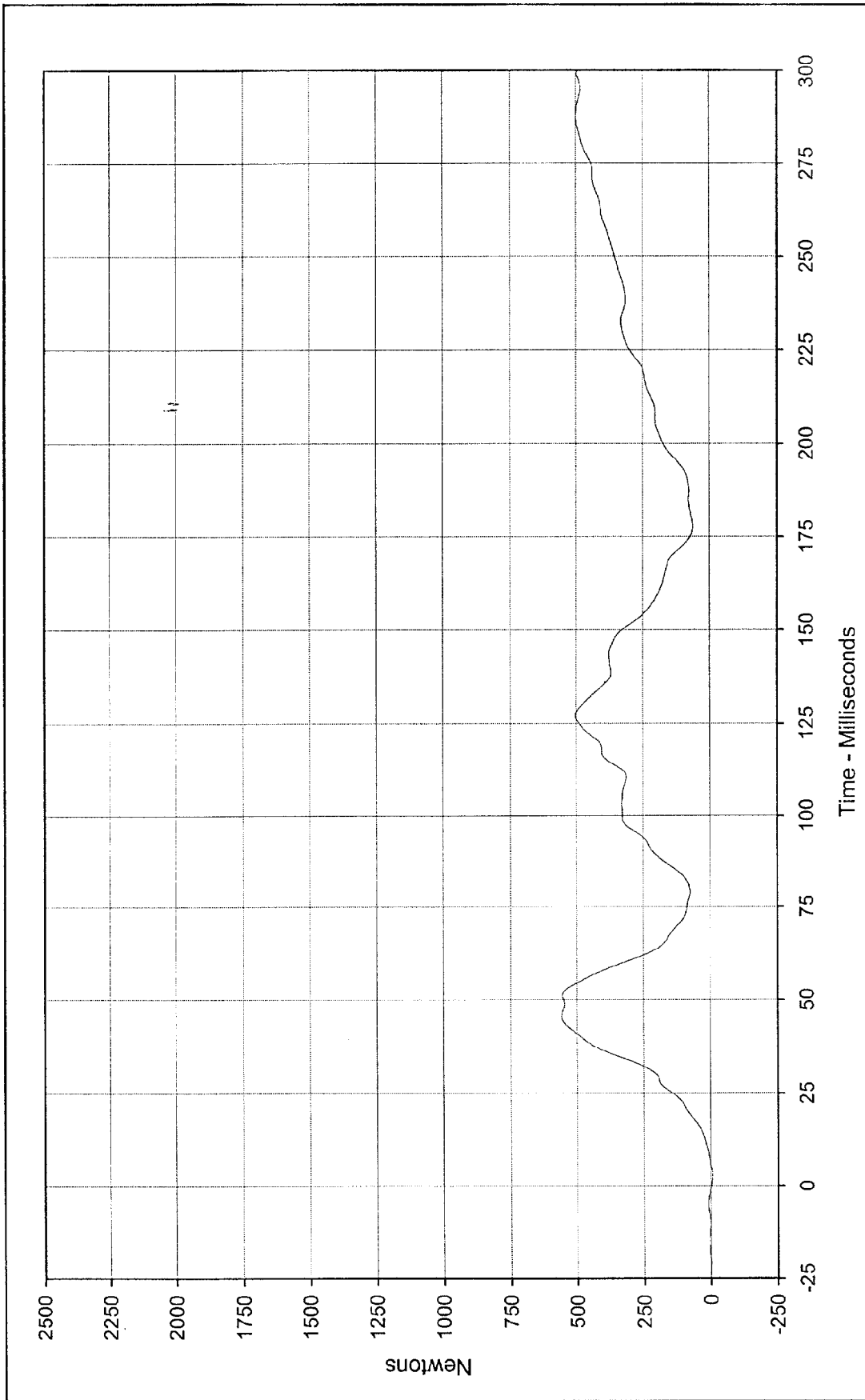
Curve Description:	Driver Right Foot Aft Z	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	5.2 at 282.0 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-56.3 at 64.7 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	FIL-042		





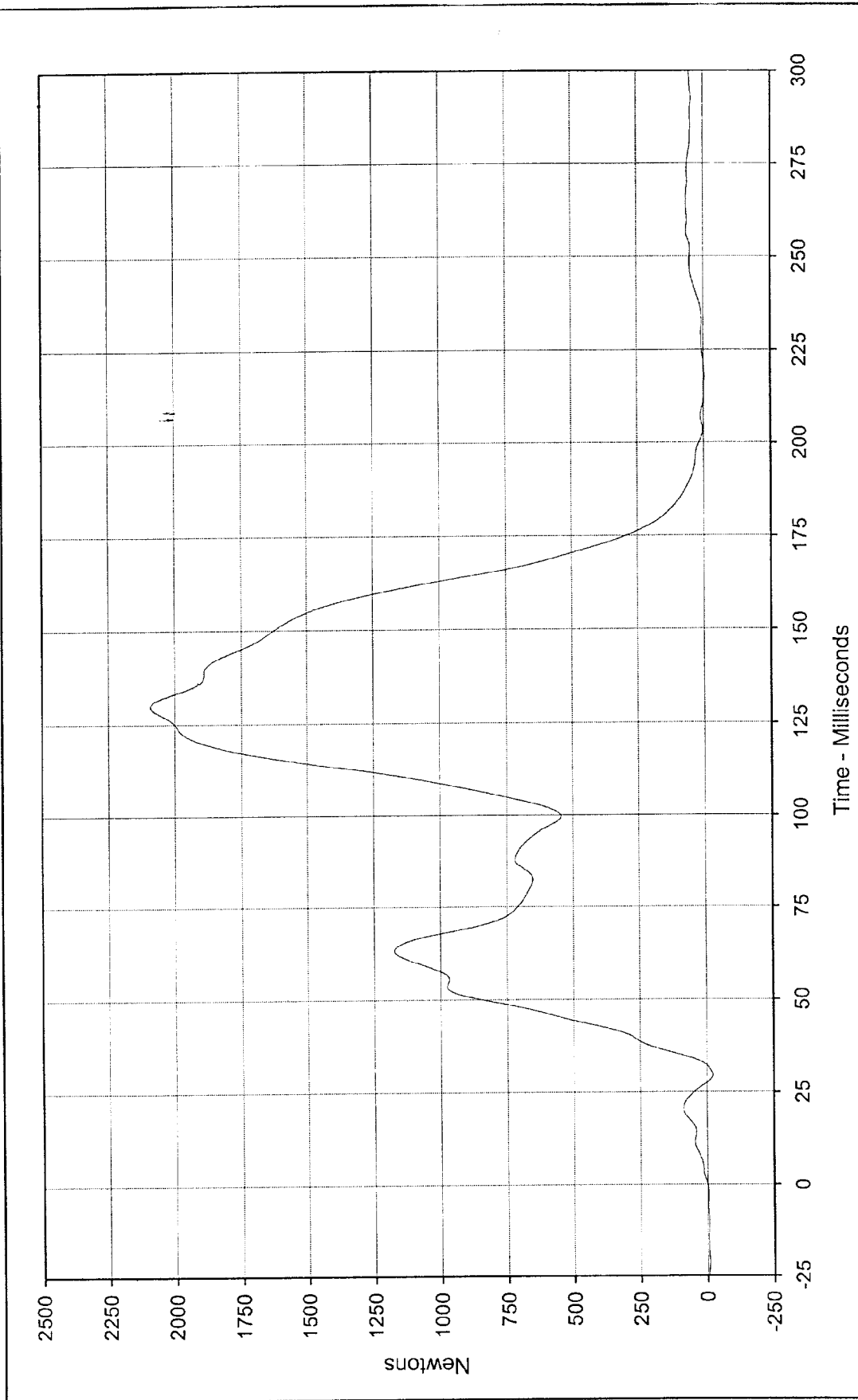
Curve Description:	Driver Right Foot Fore Z	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	32.3 at 89.4 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-76.0 at 69.9 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	FIL-043		





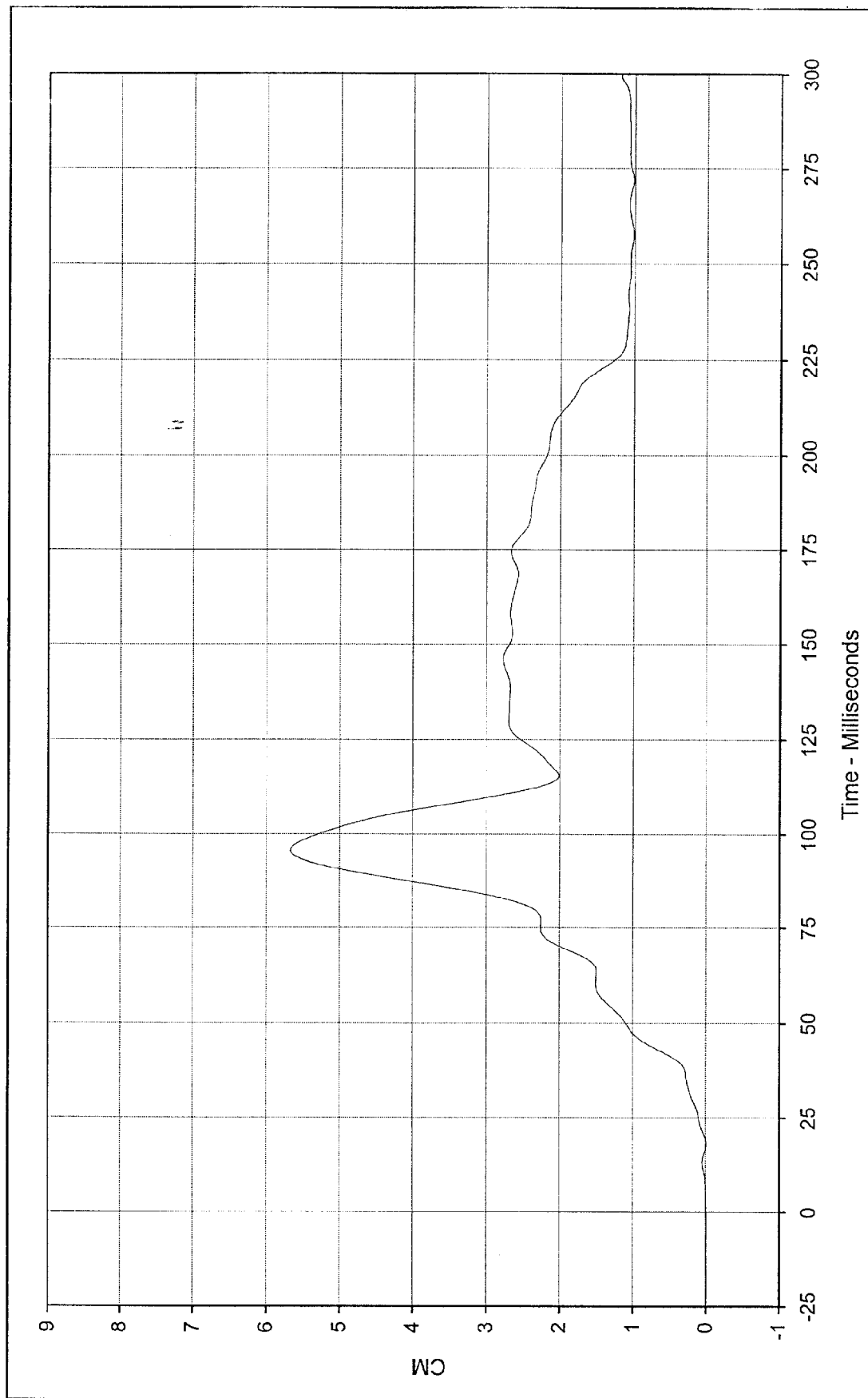
Curve Description: Testing Program 1997 NHTSA 40% Offset Impact (Female)
Maximum Value: 558.8 at 45.7 Milliseconds
Minimum Value: -5.5 at 2.9 Milliseconds
SAE Filter Class: 60
Date of Test: 8/7/97
Curve Number: FIL-044





Curve Description:	Driver Shoulder Belt Force	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	2091.6 at 129.9 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-22.2 at 29.5 Milliseconds		
SAE Filter Class:	60		
Date of Test:	8/7/97		
Curve Number:	FIL-045		

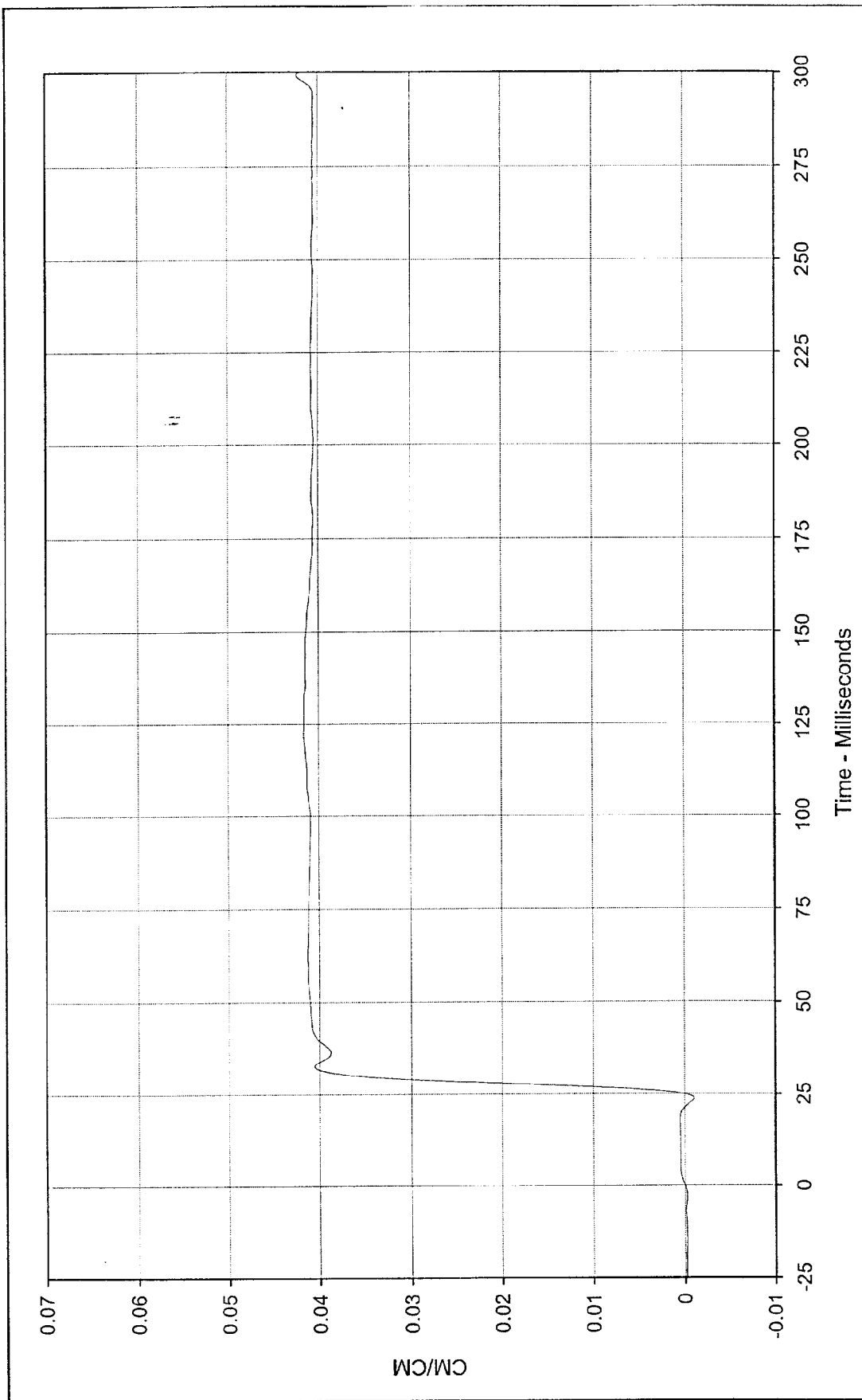




Curve Description:	Driver Shoulder Belt Pullout	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	5.67 at 95.7 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-0.01 at 18.2 Milliseconds		



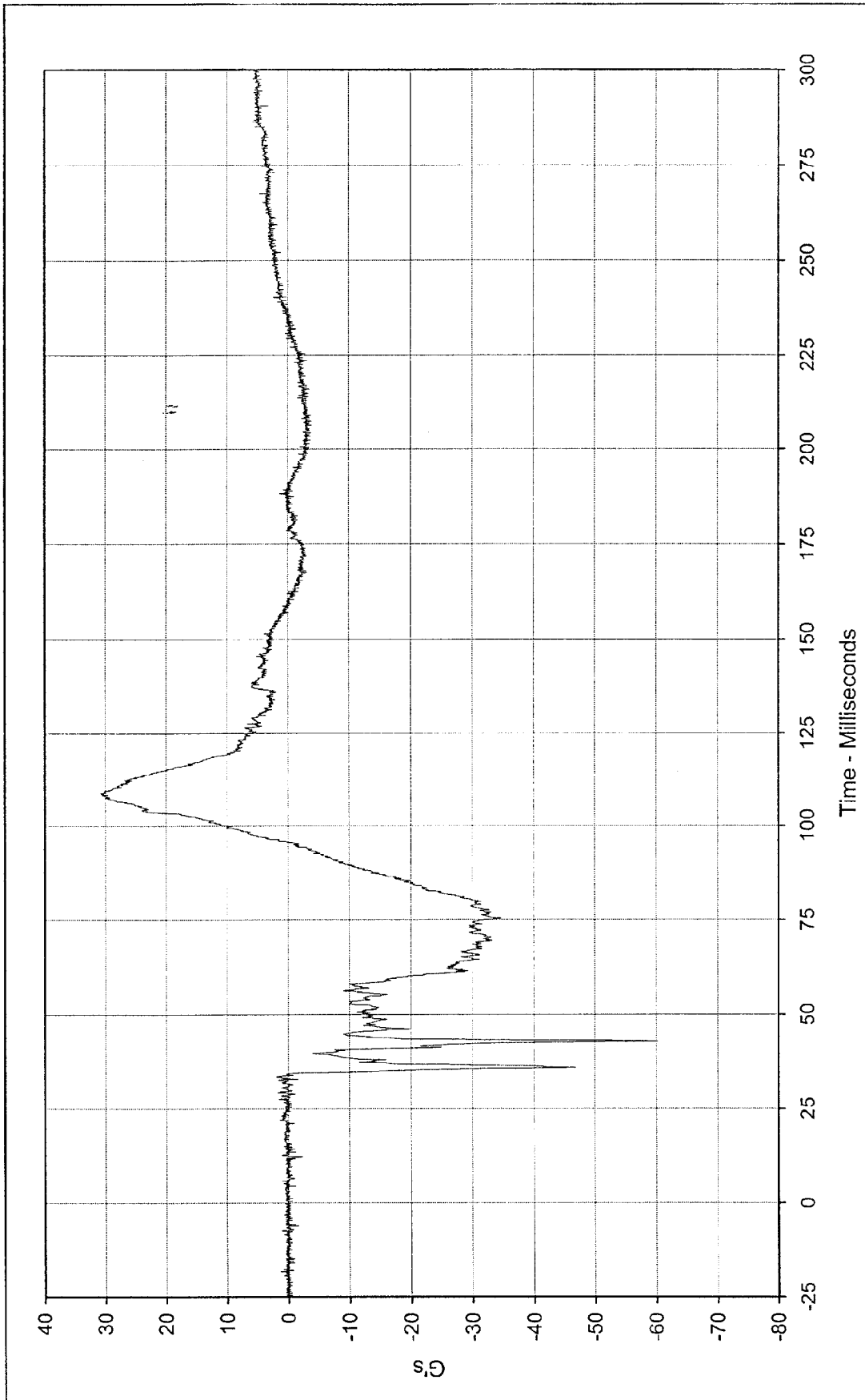
SAE Filter Class:	60
Date of Test:	8/7/97
Curve Number:	FIL-046



Curve Description:	Driver Shoulder Belt Elongation	*	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	0.042	at 299.2 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-0.001	at 23.7 Milliseconds		
SAE Filter Class:	60			
Date of Test:	8/7/97			
Curve Number:	FIL-047			

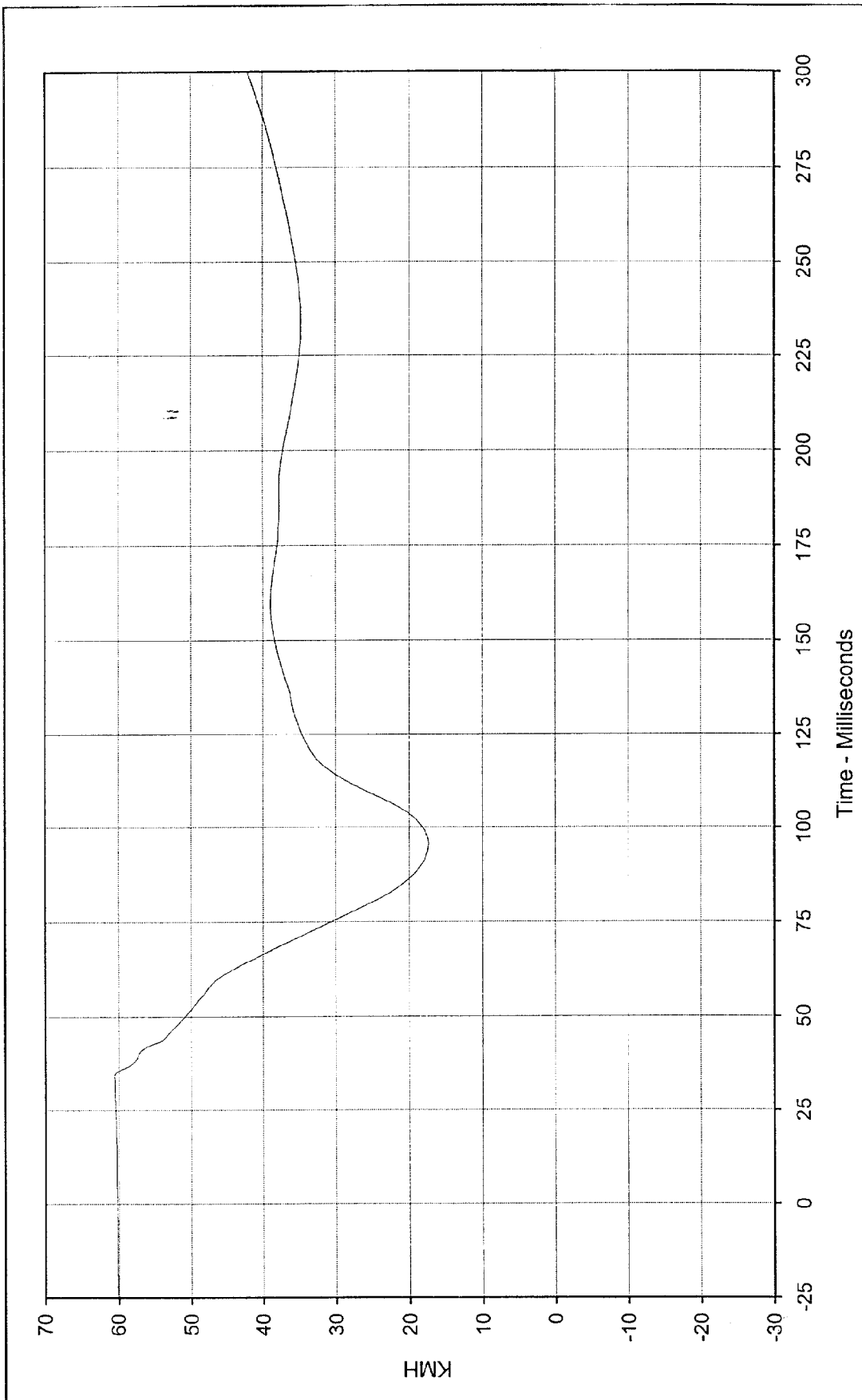


* Questionable Data



Curve Description:	Passenger Head Primary X	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	30.7 at 108.7 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-60.1 at 42.9 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	FIL-048		





Curve Description: Passenger Head Primary X Velocity Testing Program 1997 NHTSA 40% Offset Impact (Female)

Maximum Value: 60.6 at 34.0 Milliseconds Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

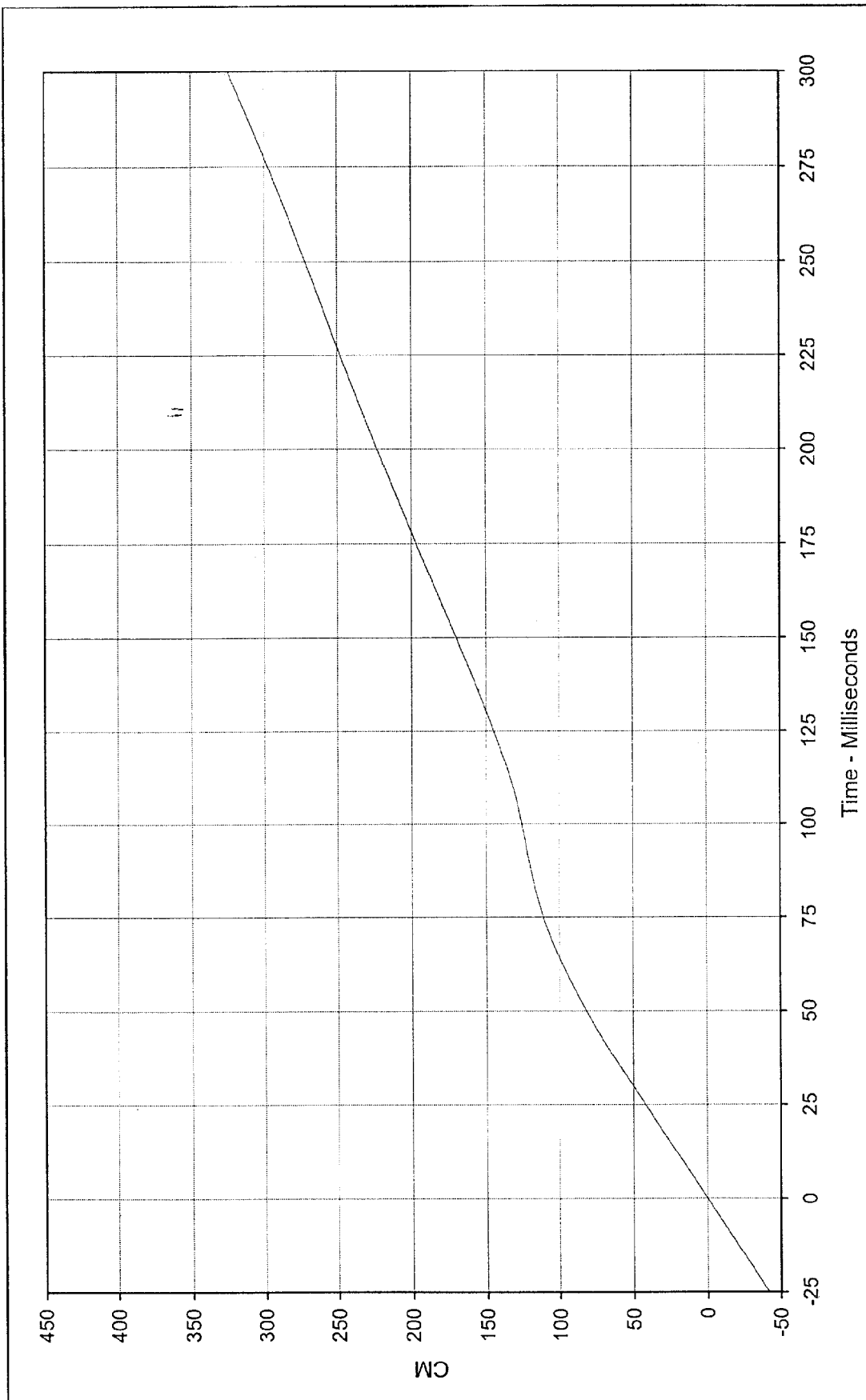
Minimum Value: 17.4 at 95.7 Milliseconds



SAE Filter Class: 180

Date of Test: 8/7/97

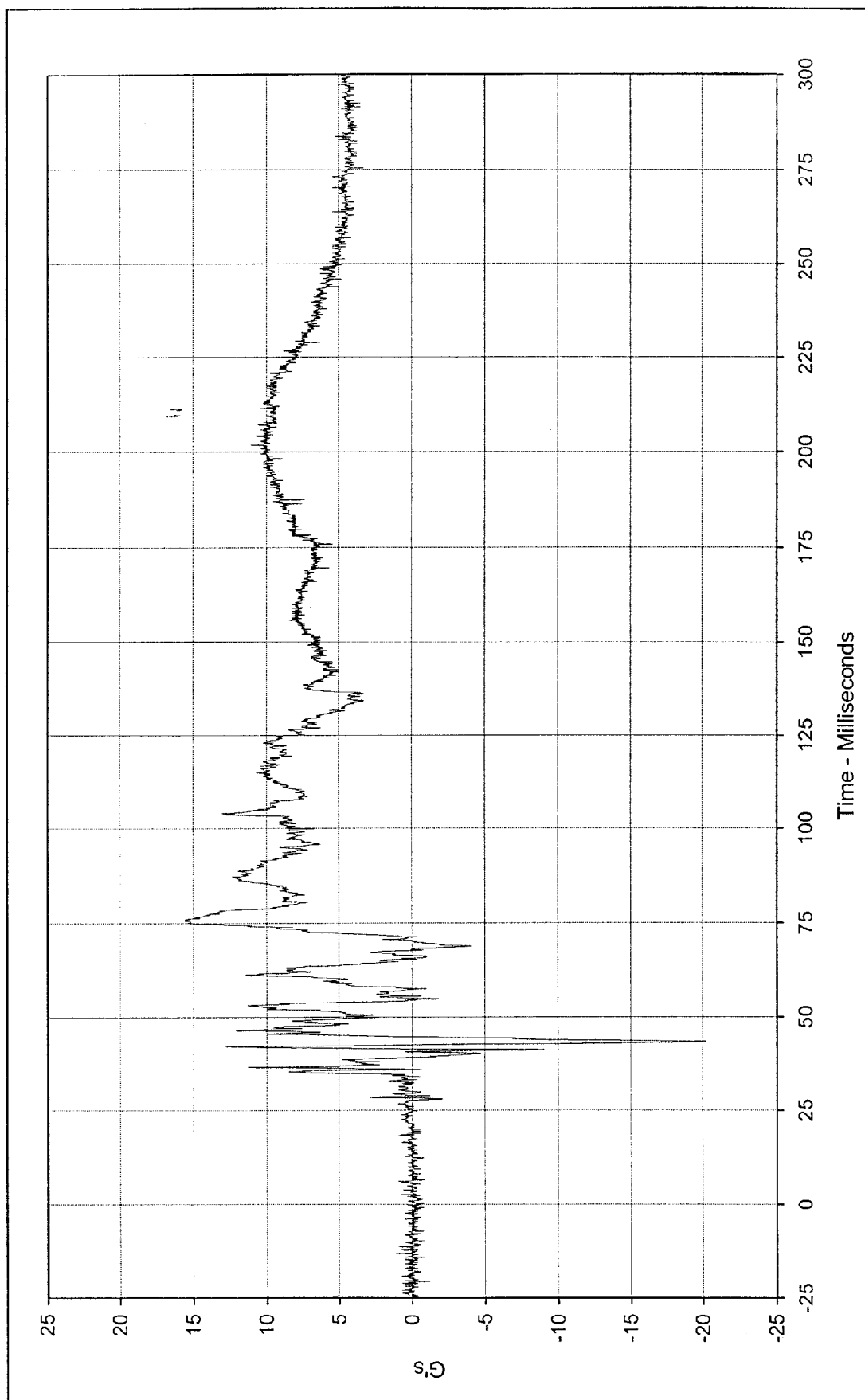
Curve Number: IN1-048



Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

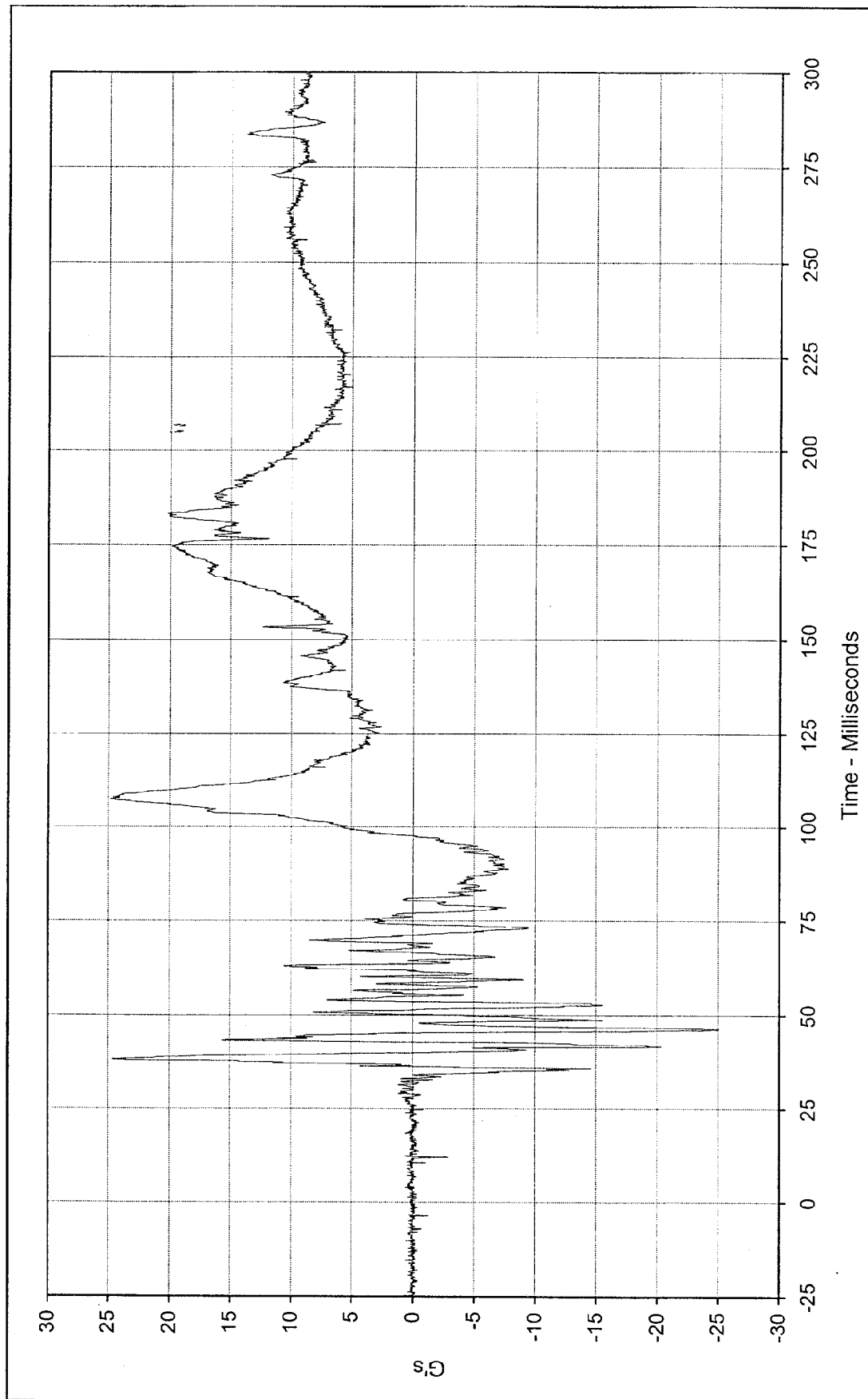
Curve Description: Passenger Head Primary X Displ.
 Maximum Value: 324.9 at 299.9 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN2-048





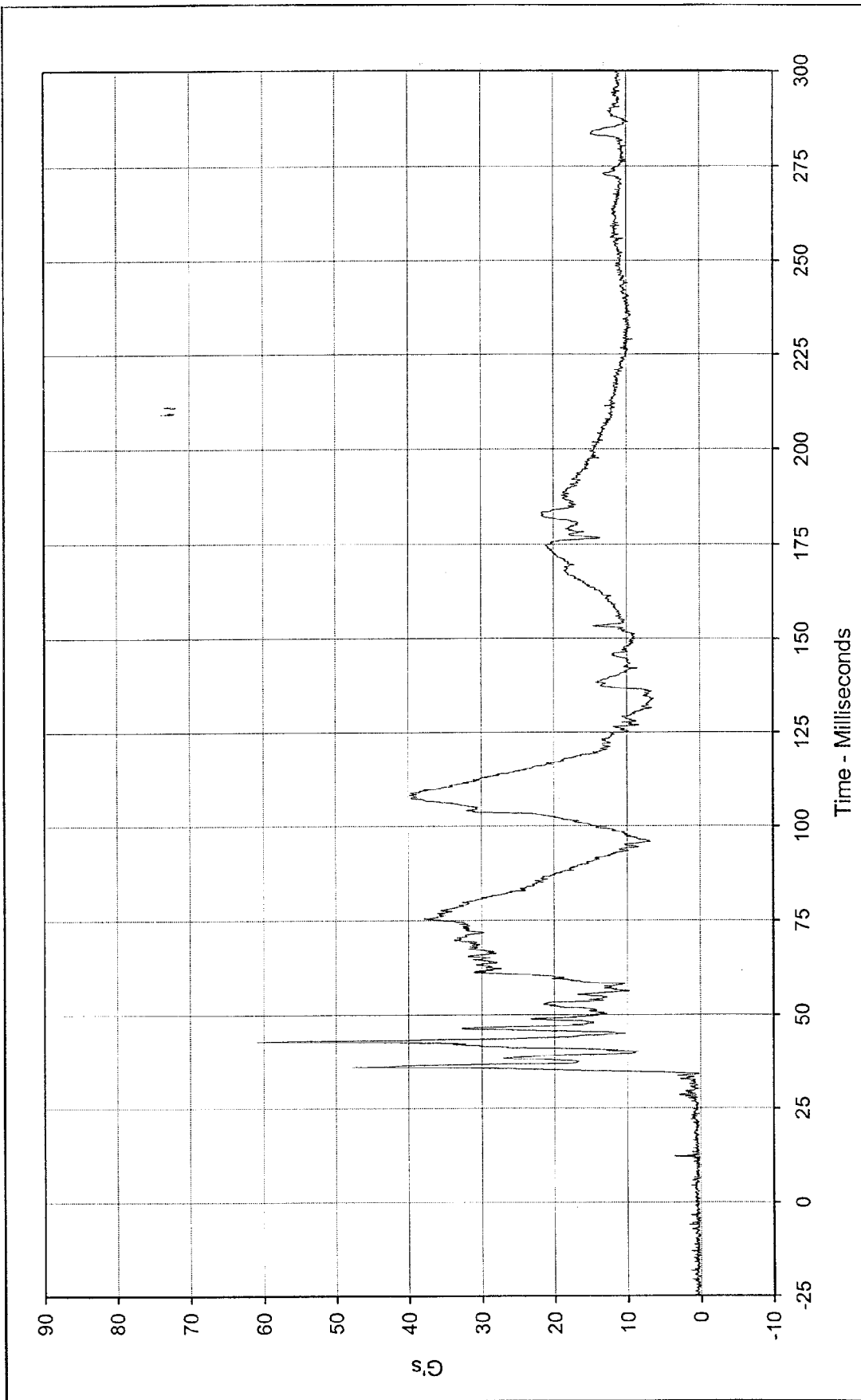
Curve Description:		Passenger Head Primary Y	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	15.6	at 75.5 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-20.2	at 43.4 Milliseconds		
SAE Filter Class:	1000			
Date of Test:	8/7/97			
Curve Number:	FIL-049			





Curve Description:	Passenger Head Primary Z	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	24.8 at 107.4 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-25.1 at 46.3 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	FIL-050		

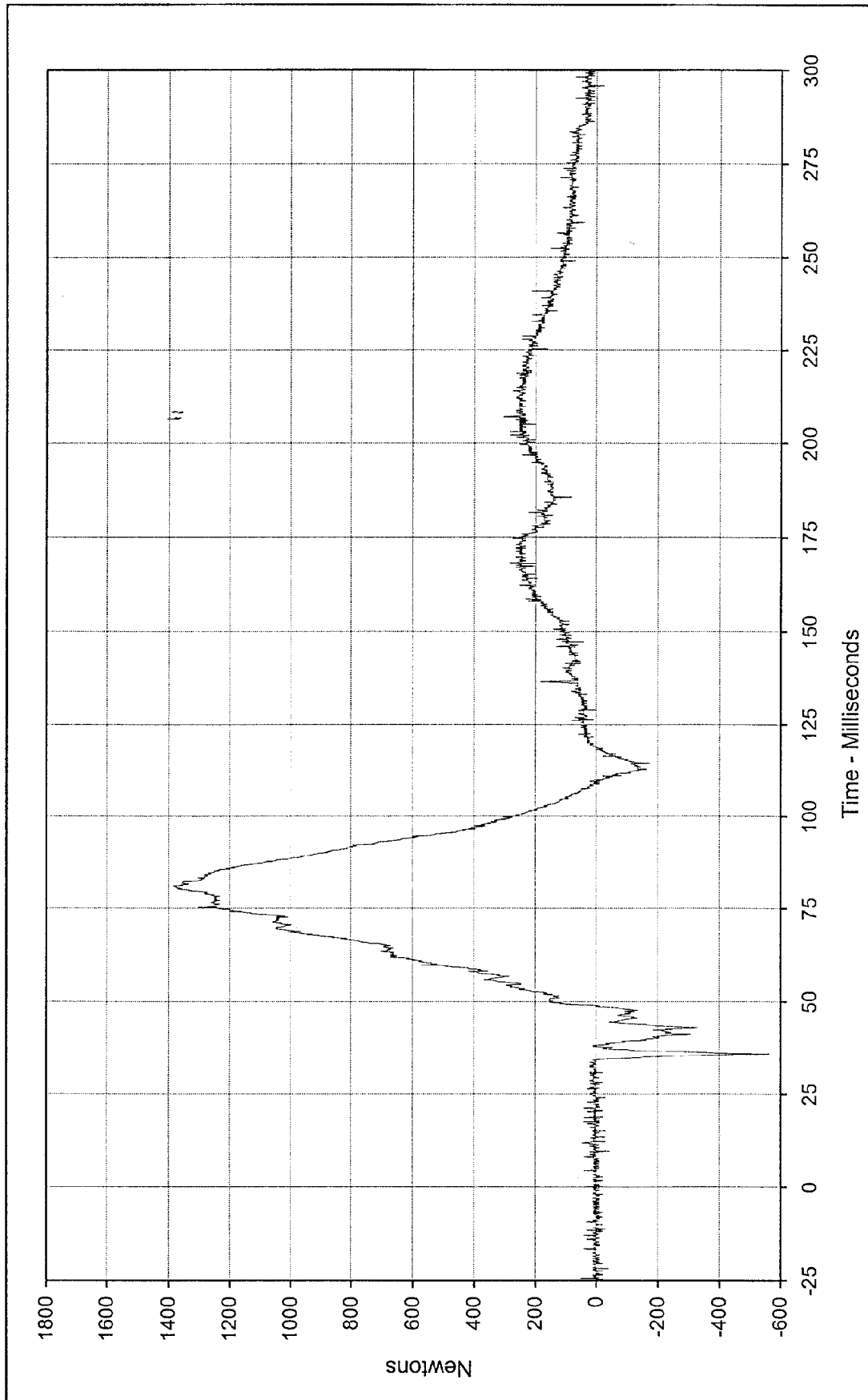




Curve Description: Passenger Head Resultant Primary
 Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

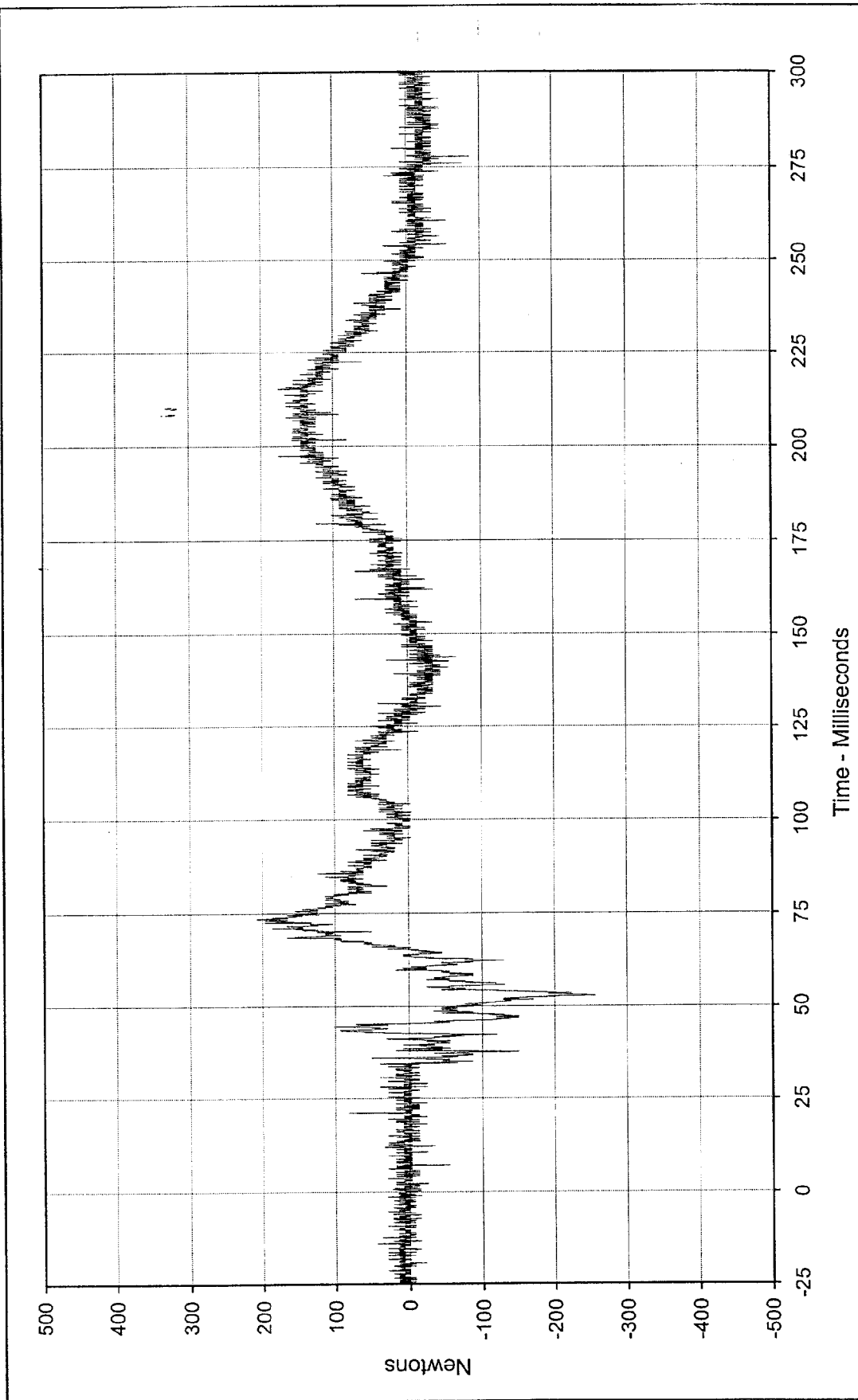
Maximum Value: 60.9 at 43.0 Milliseconds
 Minimum Value: 0.1 at 6.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: RES-048





Curve Description:		Passenger Neck Force X	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	1385.0	at 81.1 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-561.2	at 36.0 Milliseconds		
SAE Filter Class:	1000			
Date of Test:	8/7/97			
Curve Number:	FIL-051			

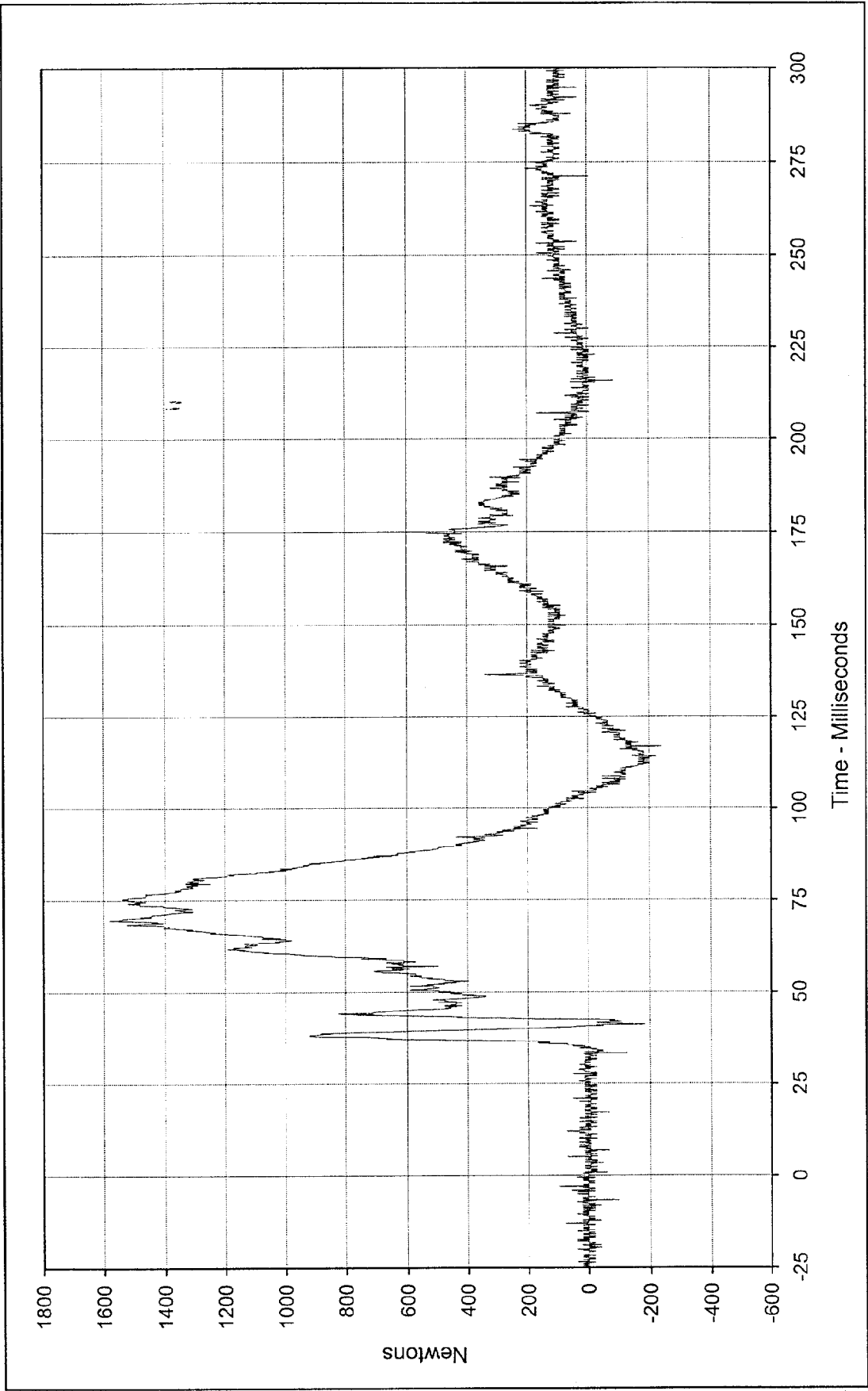




Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

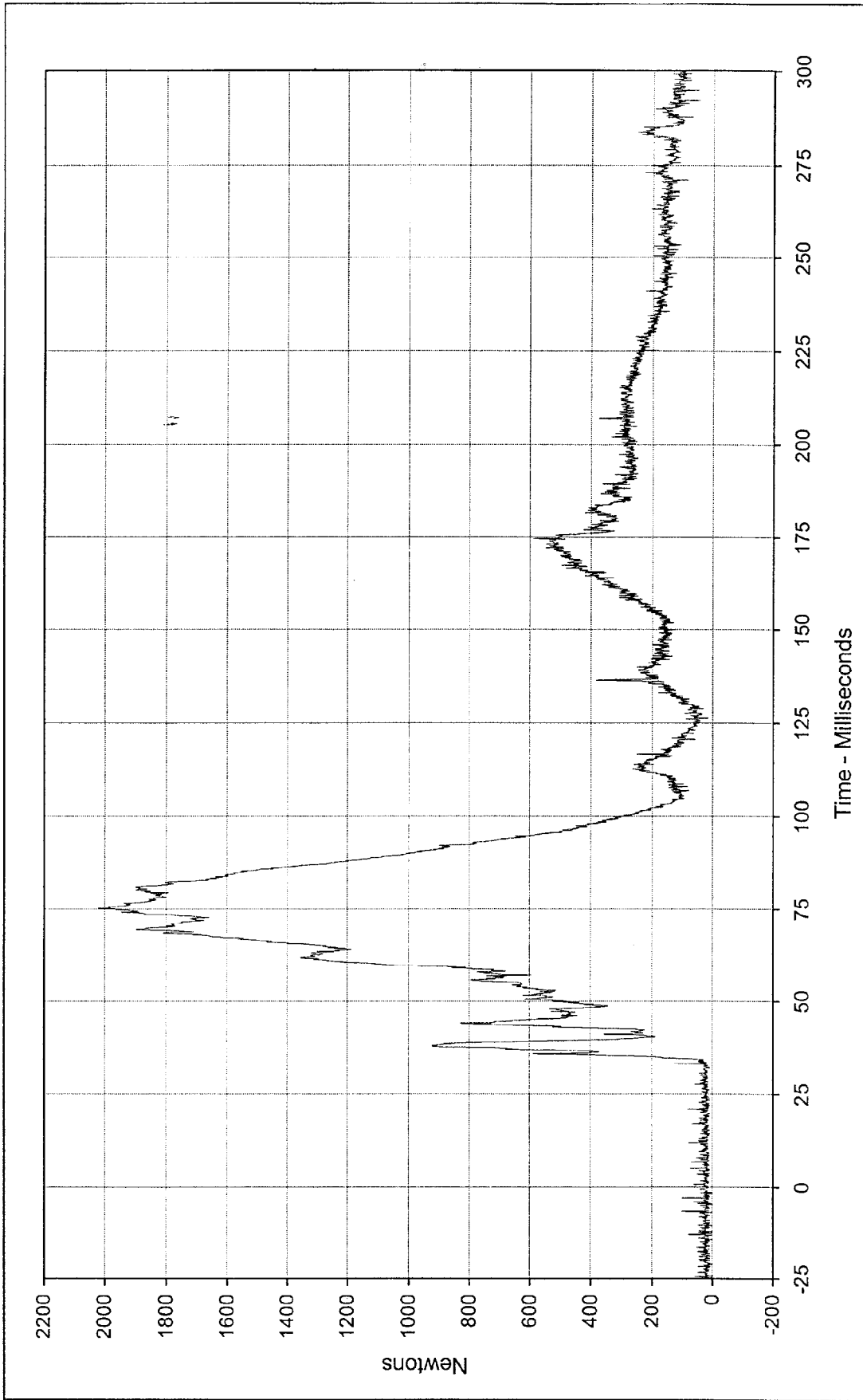
Curve Description: Passenger Neck Force Y
Maximum Value: 207.7 at 73.5 Milliseconds
Minimum Value: -255.0 at 52.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 8/7/97
Curve Number: FIL-052





Curve Description:	Passenger Neck Force Z	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	1579.1 at 69.6 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-239.6 at 116.8 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	FIL-053		

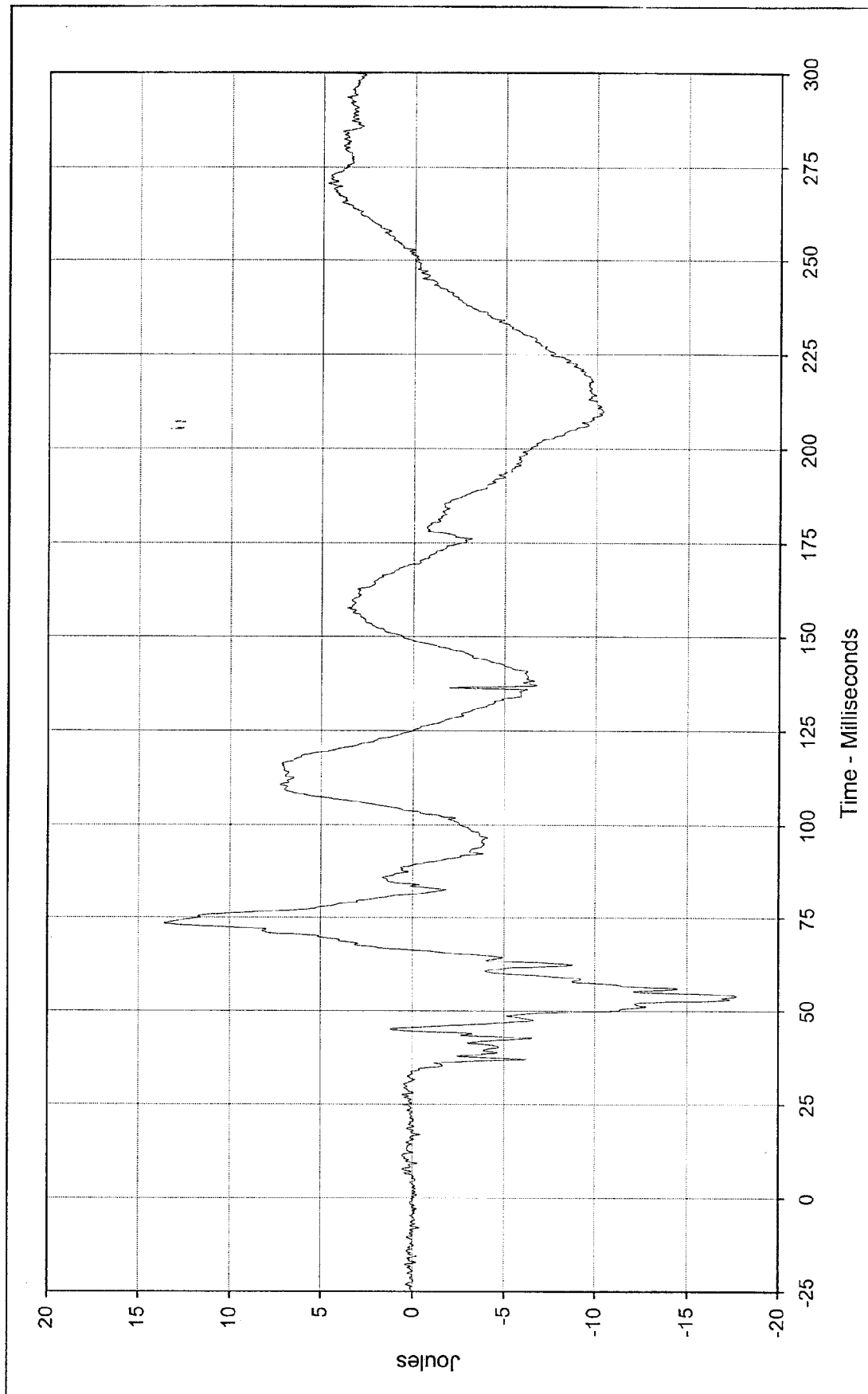




Curve Description: Passenger Neck Force Resultant
Maximum Value: 2021.7 at 75.2 Milliseconds
Minimum Value: 7.9 at 3.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 8/7/97
Curve Number: RES-051

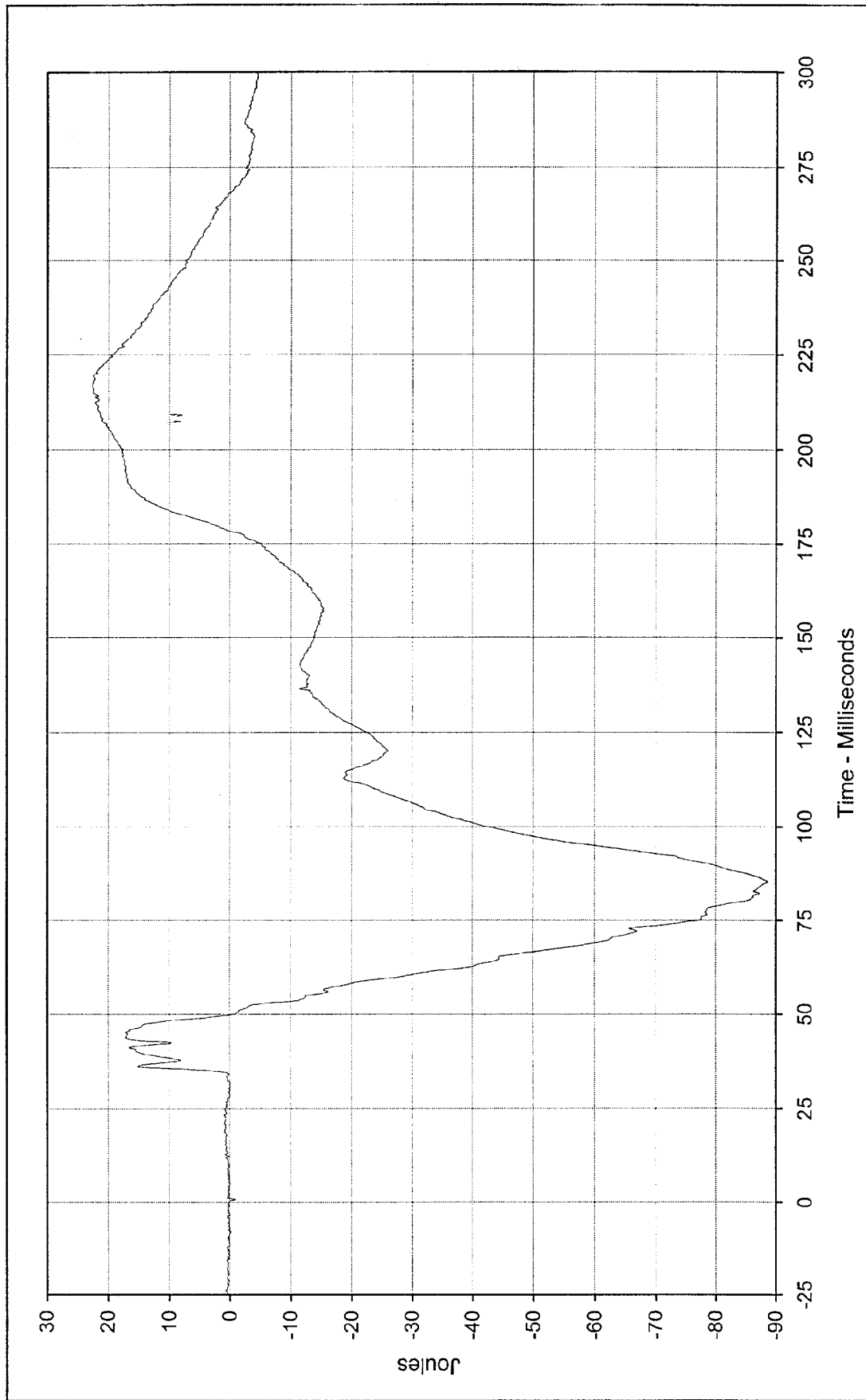
Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





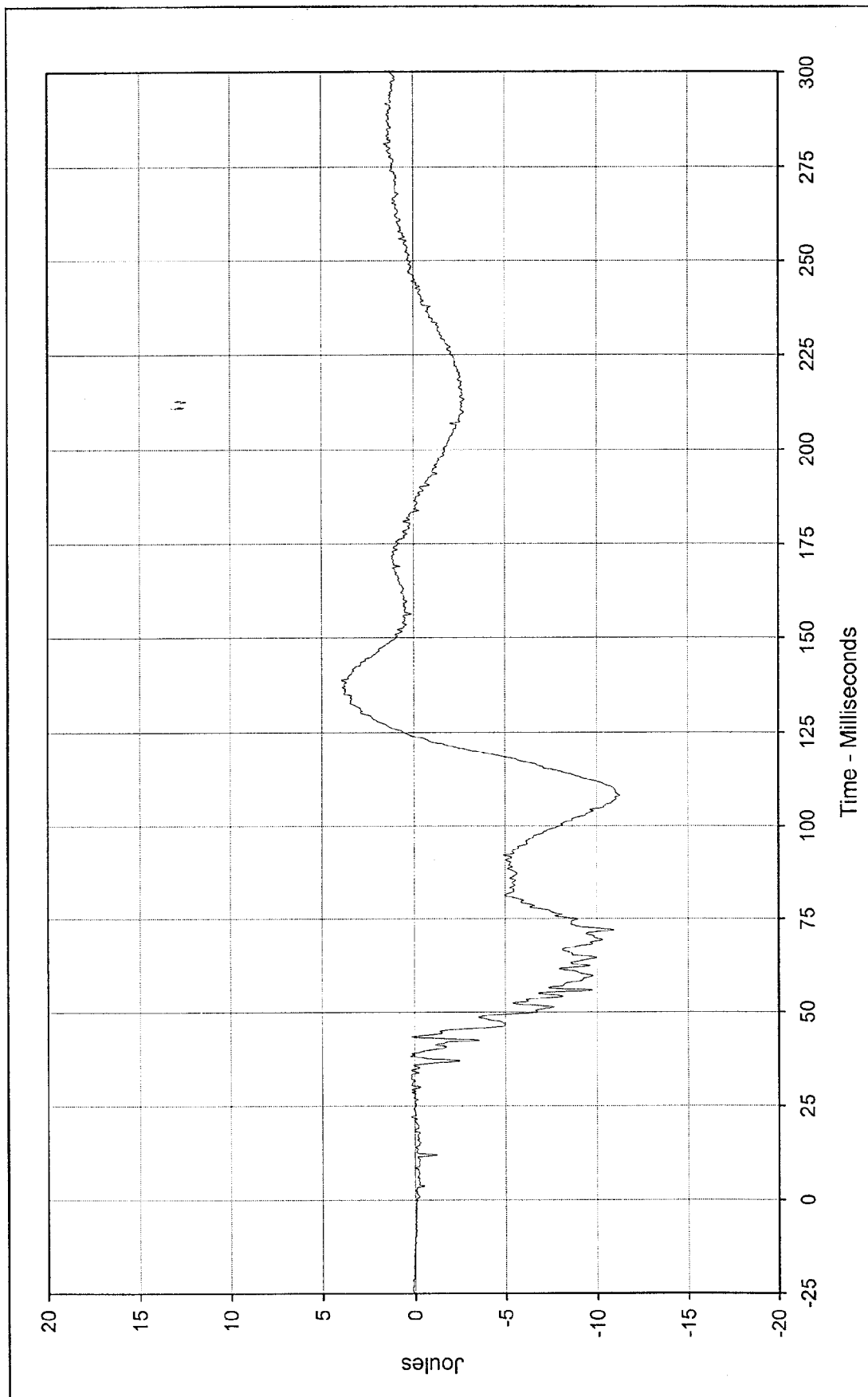
Curve Description:	Passenger Neck Moment X	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	13.6 at 73.4 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-17.7 at 53.8 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-054		





Curve Description:	Passenger Neck Moment Y	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	22.7 at 217.3 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-88.7 at 85.2 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-055		

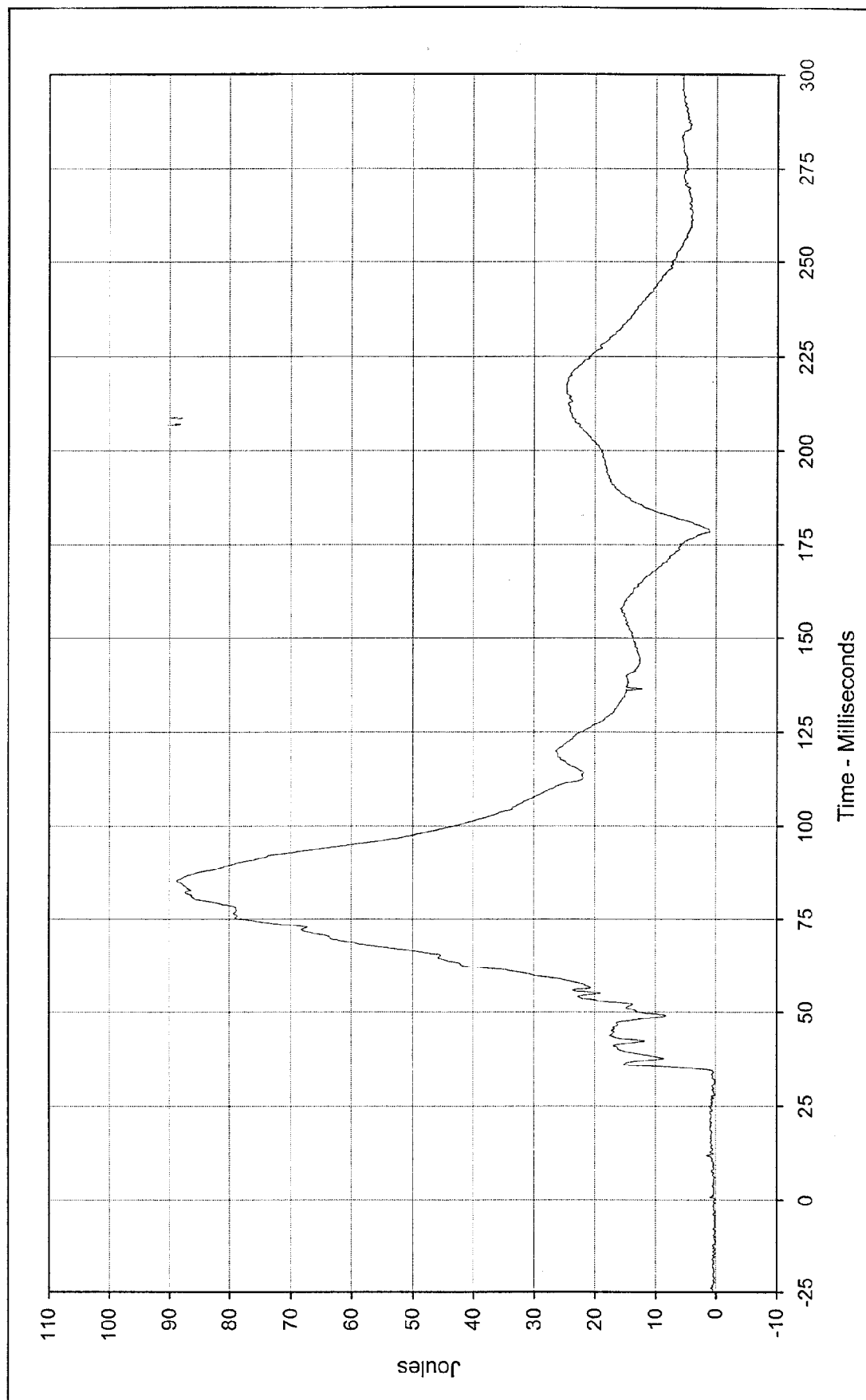




Curve Description: Passenger Neck Moment Z
 Maximum Value: 4.0 at 138.7 Milliseconds
 Minimum Value: -11.2 at 108.1 Milliseconds
 SAE Filter Class: 600
 Date of Test: 8/7/97
 Curve Number: FIL-056

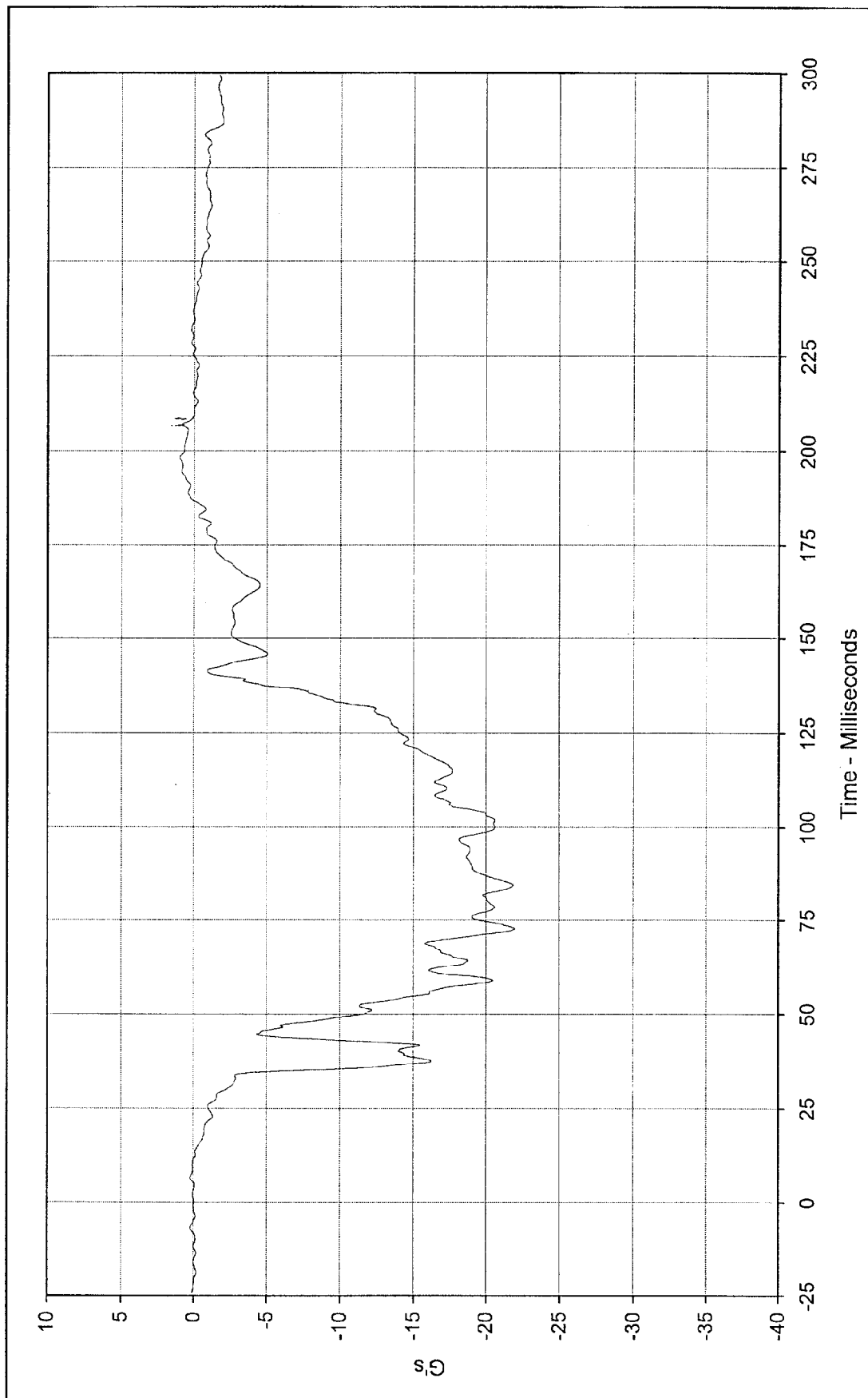
Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





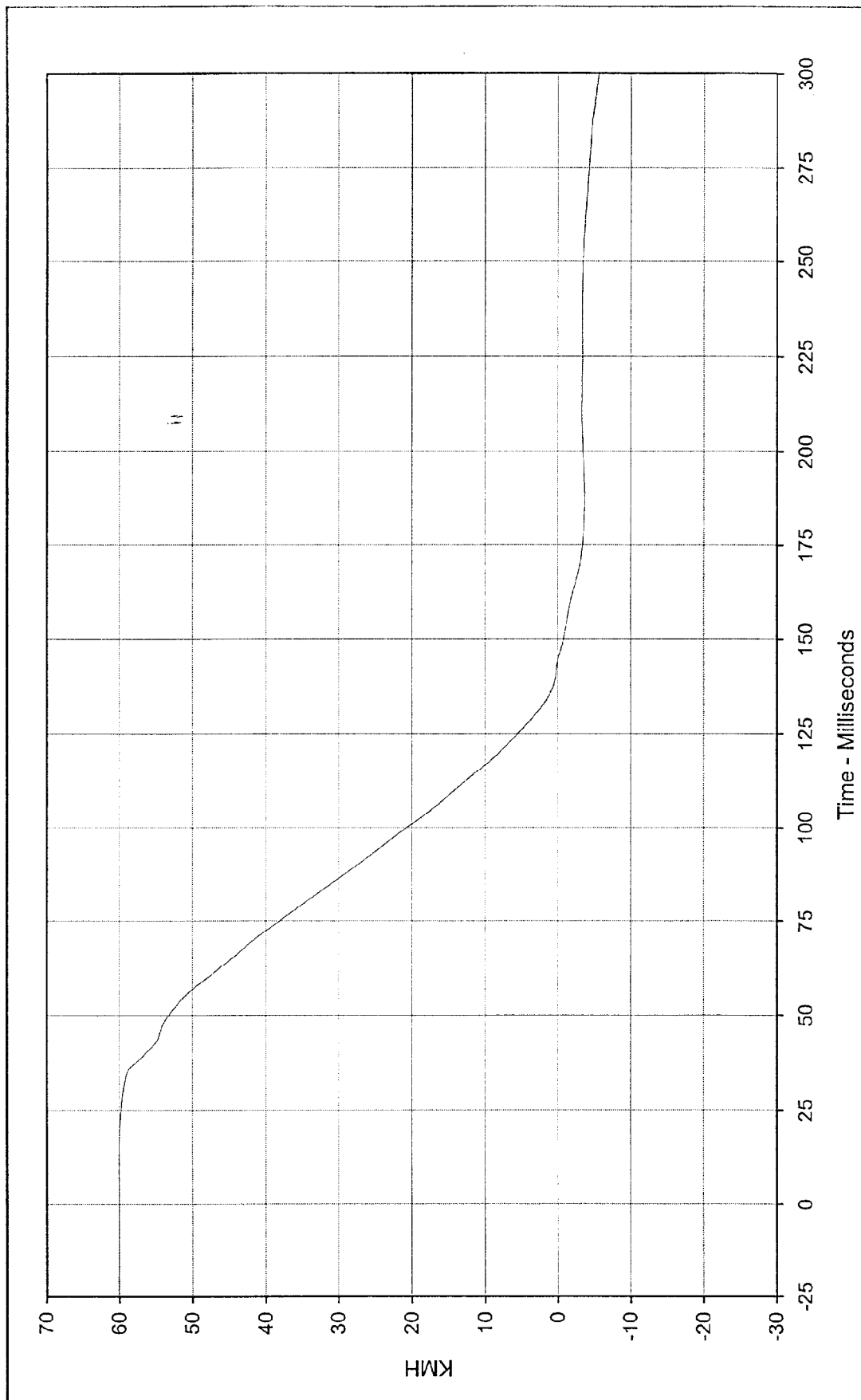
Curve Description:		Passenger Neck Moment Resultant		Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	88.9	at	85.2	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.1	at	28.1		
SAE Filter Class:	600				
Date of Test:	8/7/97				
Curve Number:	RES-054				





Curve Description:	Passenger Chest Primary X	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	1.0 at 198.4 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-22.0 at 72.7 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	FIL-057		

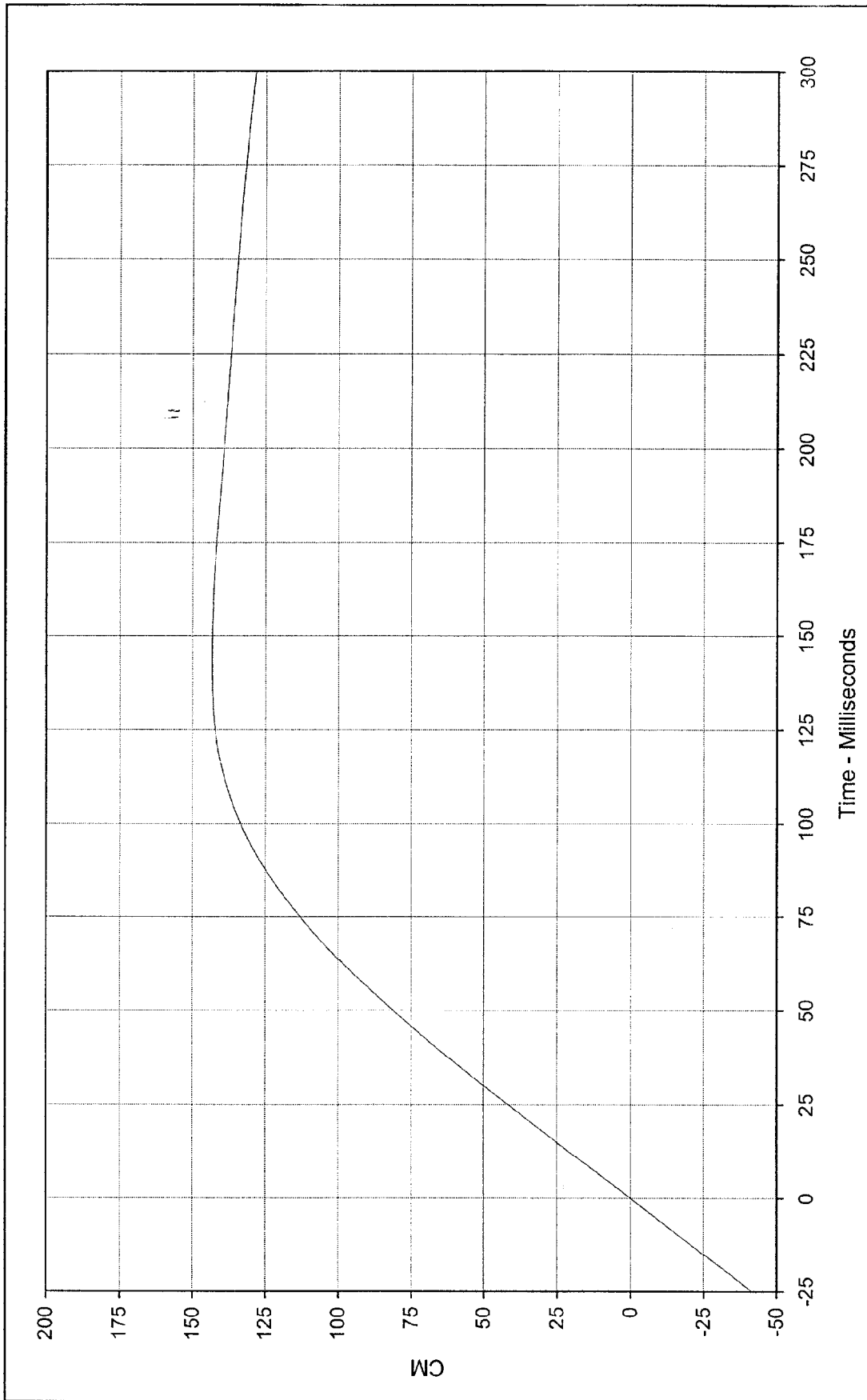




Curve Description: Passenger Chest Primary X Velocity
Maximum Value: 60.1 at 11.7 Milliseconds
Minimum Value: -5.6 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 8/7/97
Curve Number: IN1-057

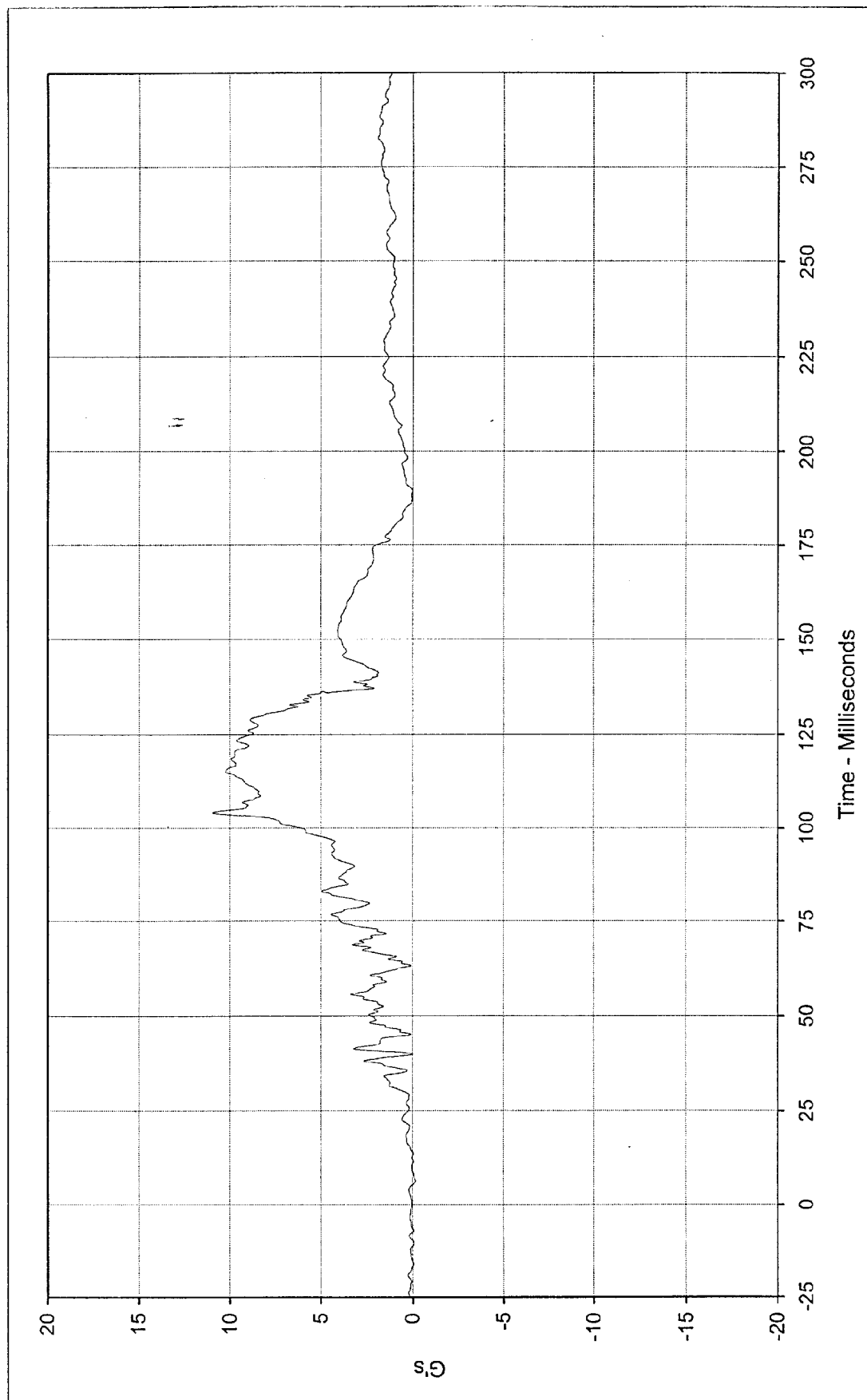
Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





Curve Description:	Passenger Chest Primary X Displ.	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	143.3 at 144.8 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.0 at 0.0 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	IN2-057		





Curve Description: Passenger Chest Primary Y

Maximum Value: 11.0 at 104.0 Milliseconds

Minimum Value: -0.2 at 6.2 Milliseconds

SAE Filter Class: 180

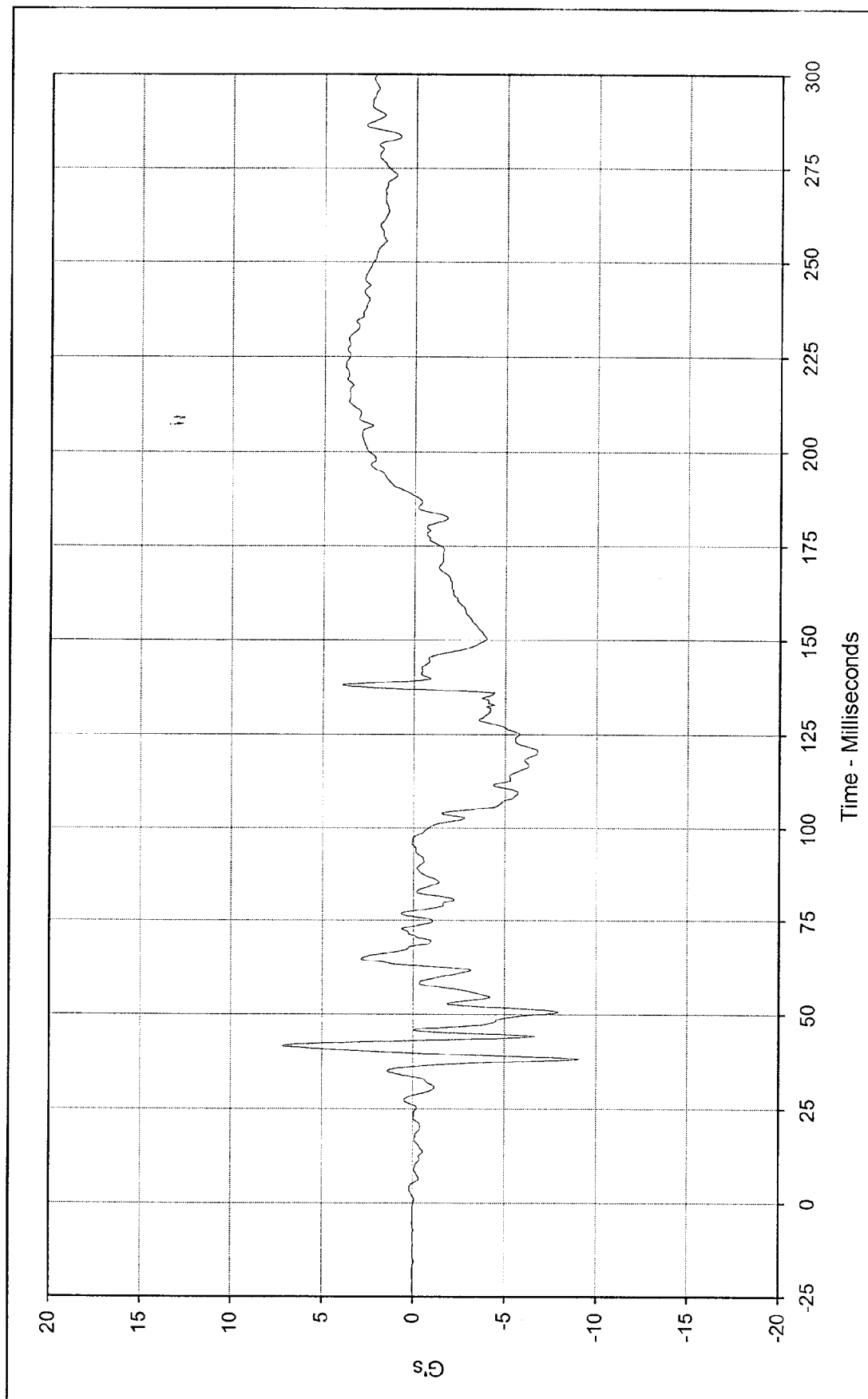
Date of Test: 8/7/97

Curve Number: FIL-058

Testing Program 1997 NHTSA 40% Offset Impact (Female)

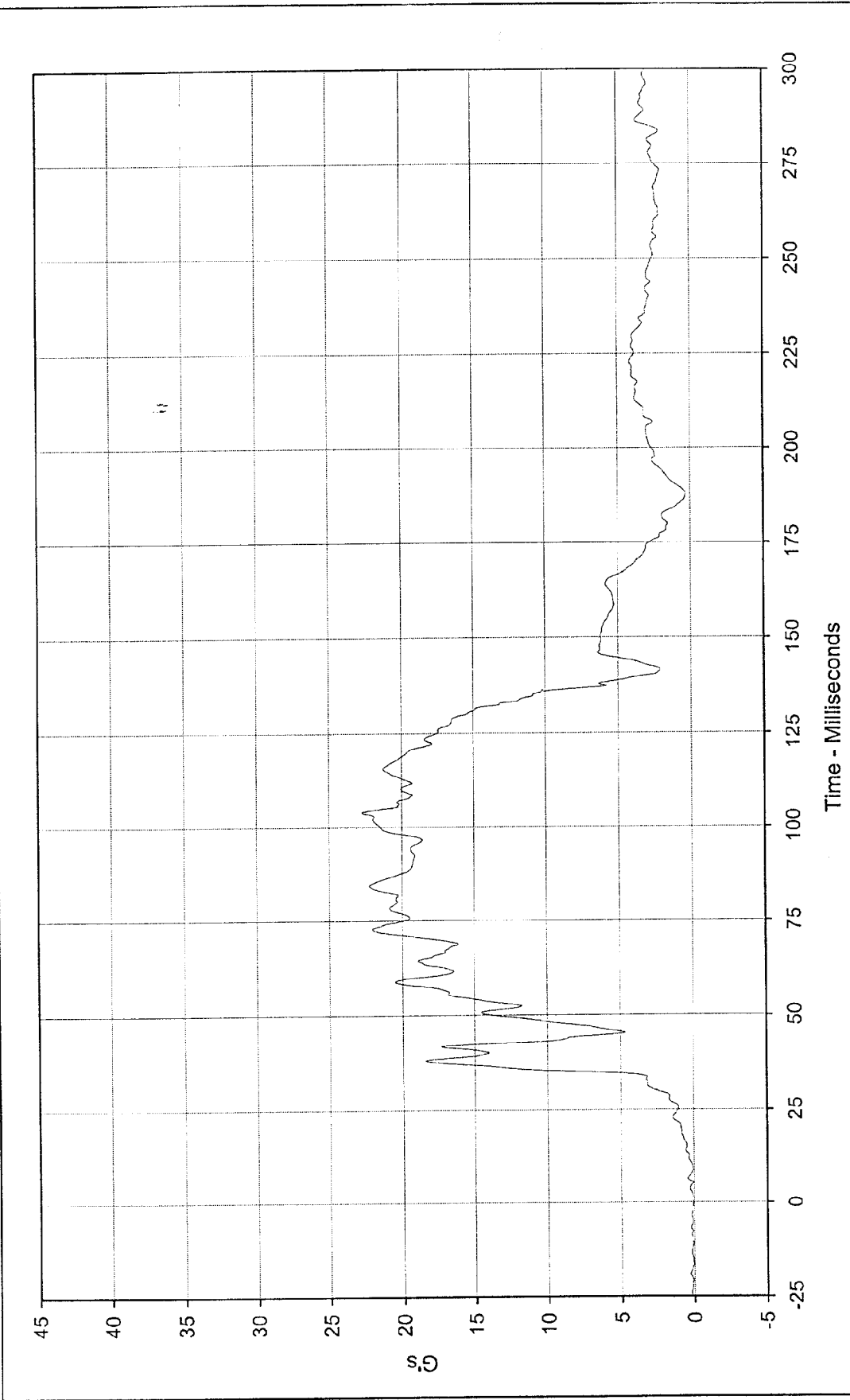
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





Curve Description:	Passenger Chest Primary Z	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	7.2 at 41.6 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-9.0 at 38.1 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	FIL-059		

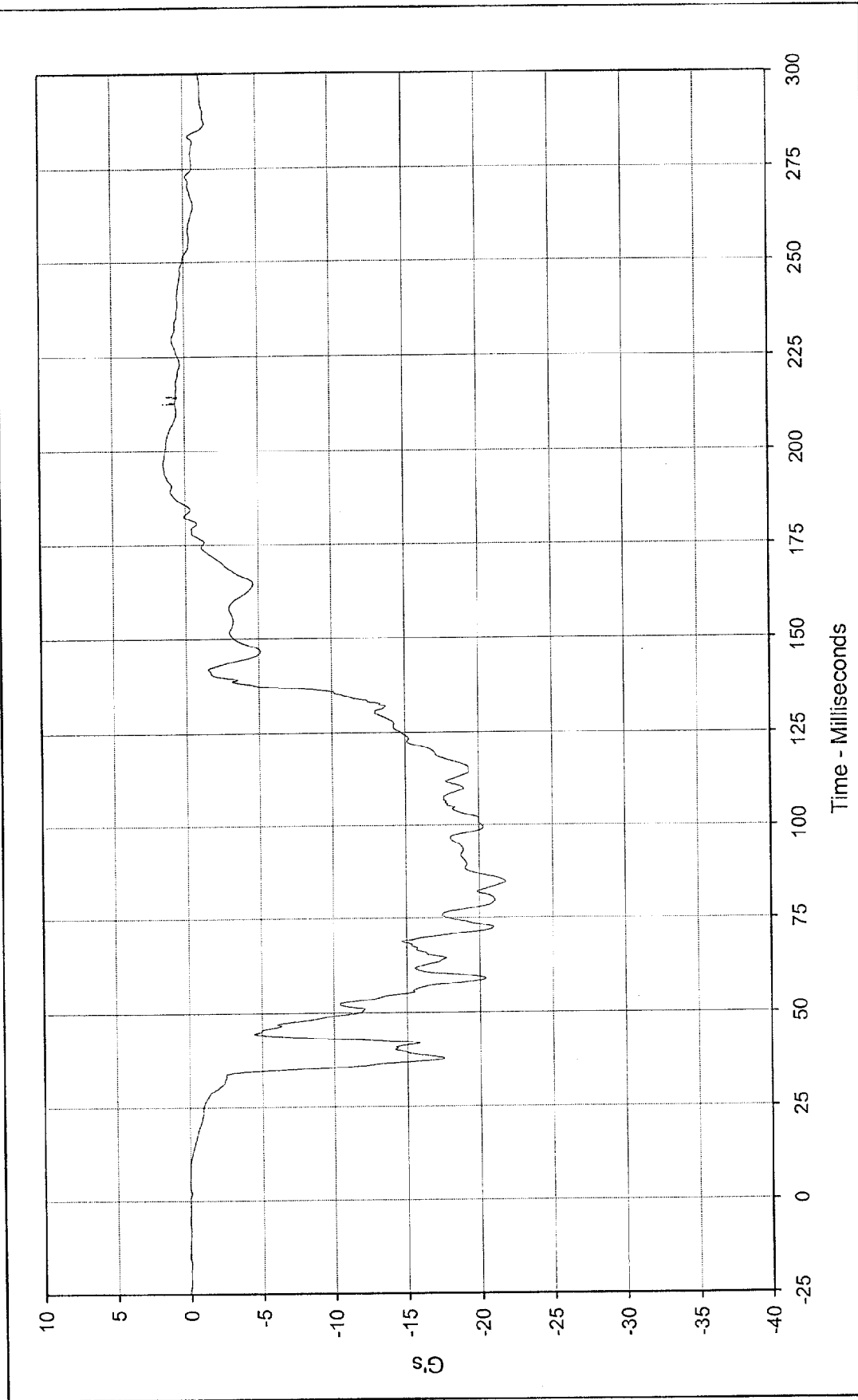




Curve Description: Passenger Chest Resultant Primary
 Maximum Value: 22.7 at 103.9 Milliseconds
 Minimum Value: 0.0 at 5.4 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: RES-057

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

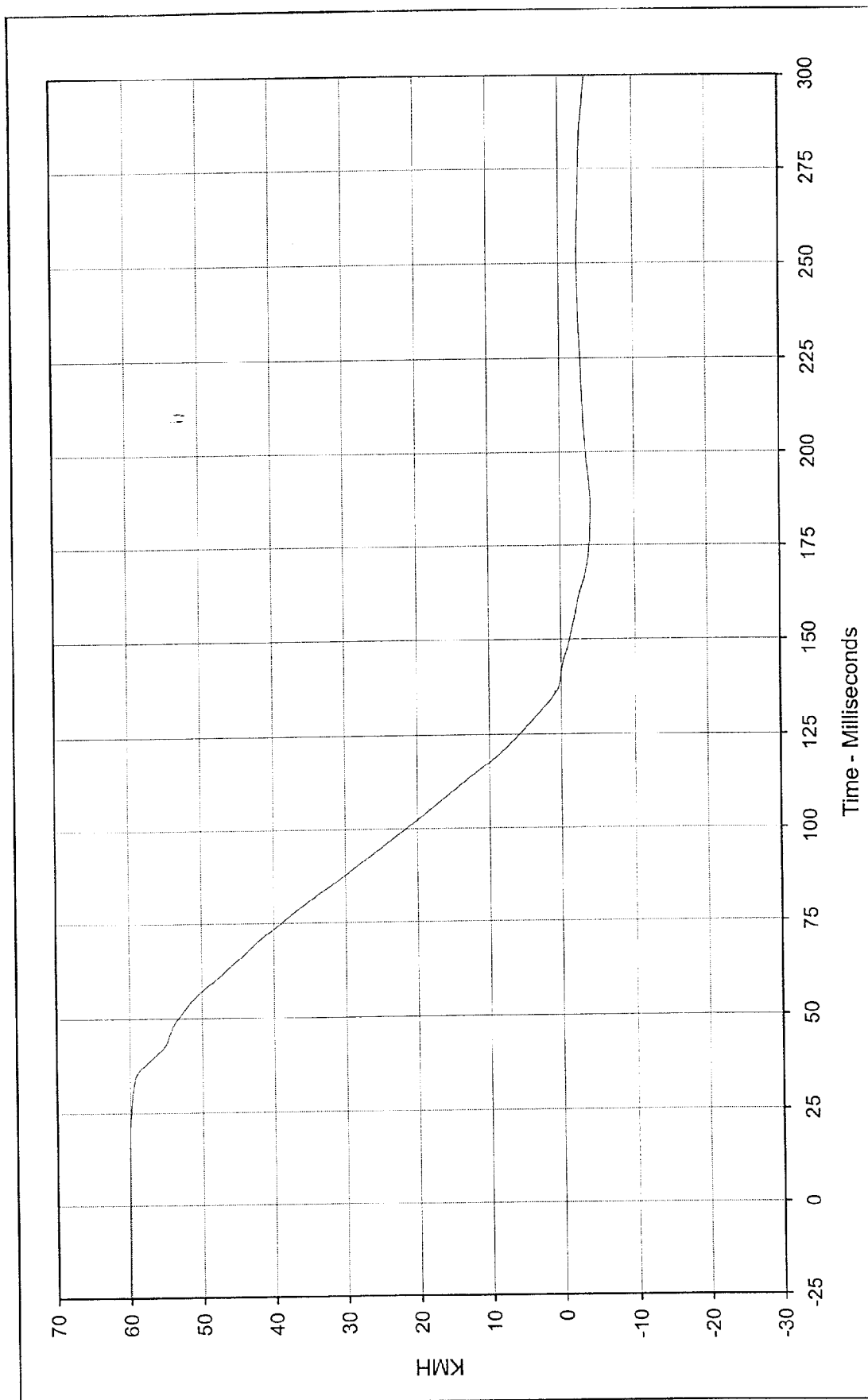




Curve Description: Passenger Chest Redundant X
 Maximum Value: 1.5 at 196.5 Milliseconds
 Minimum Value: -21.8 at 84.6 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: FIL-060

Testing Program: 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

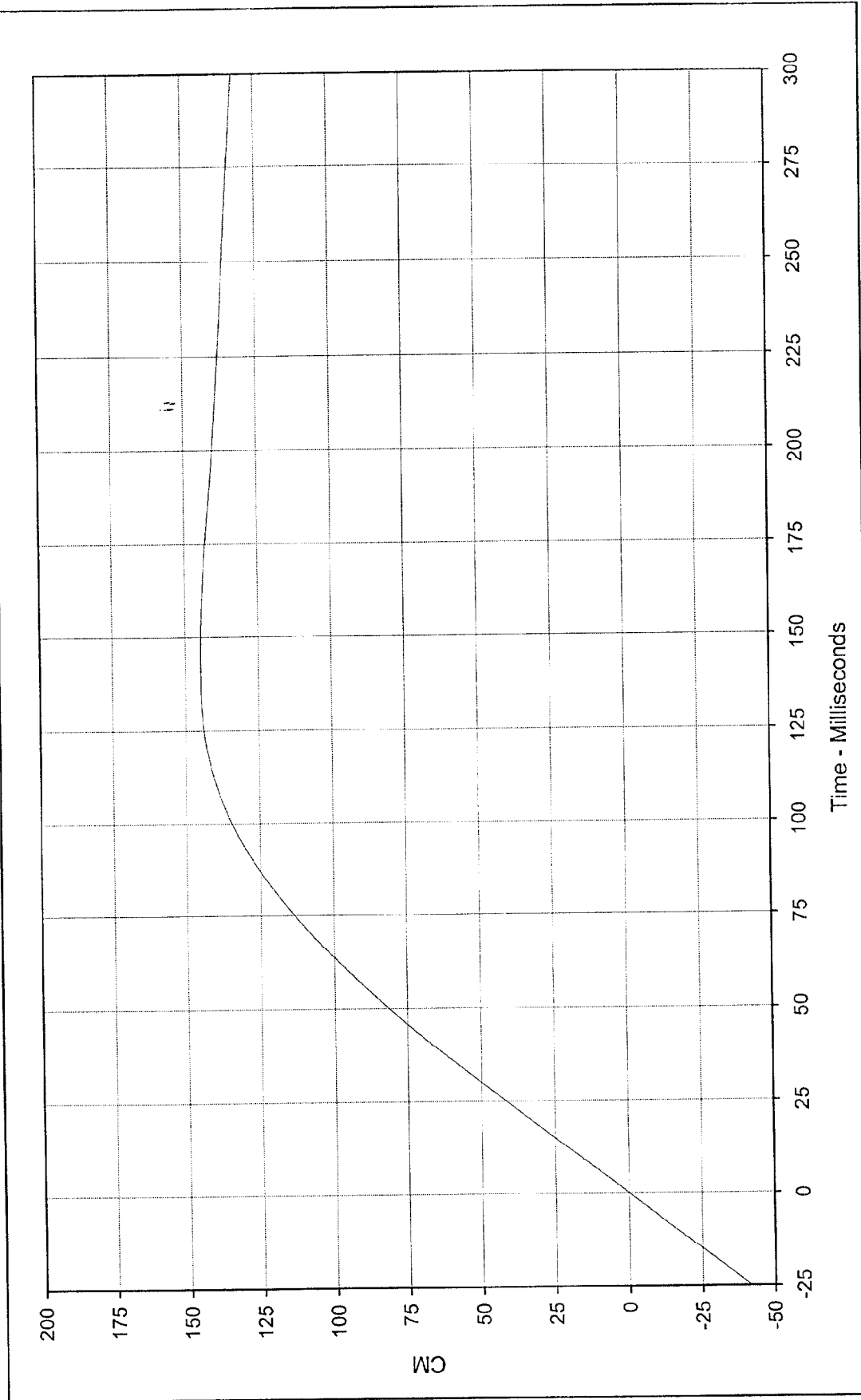




Curve Description: Passenger Chest Redundant X Velocity
 Maximum Value: 60.1 at 0.7 Milliseconds
 Minimum Value: -4.1 at 185.8 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN1-060

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

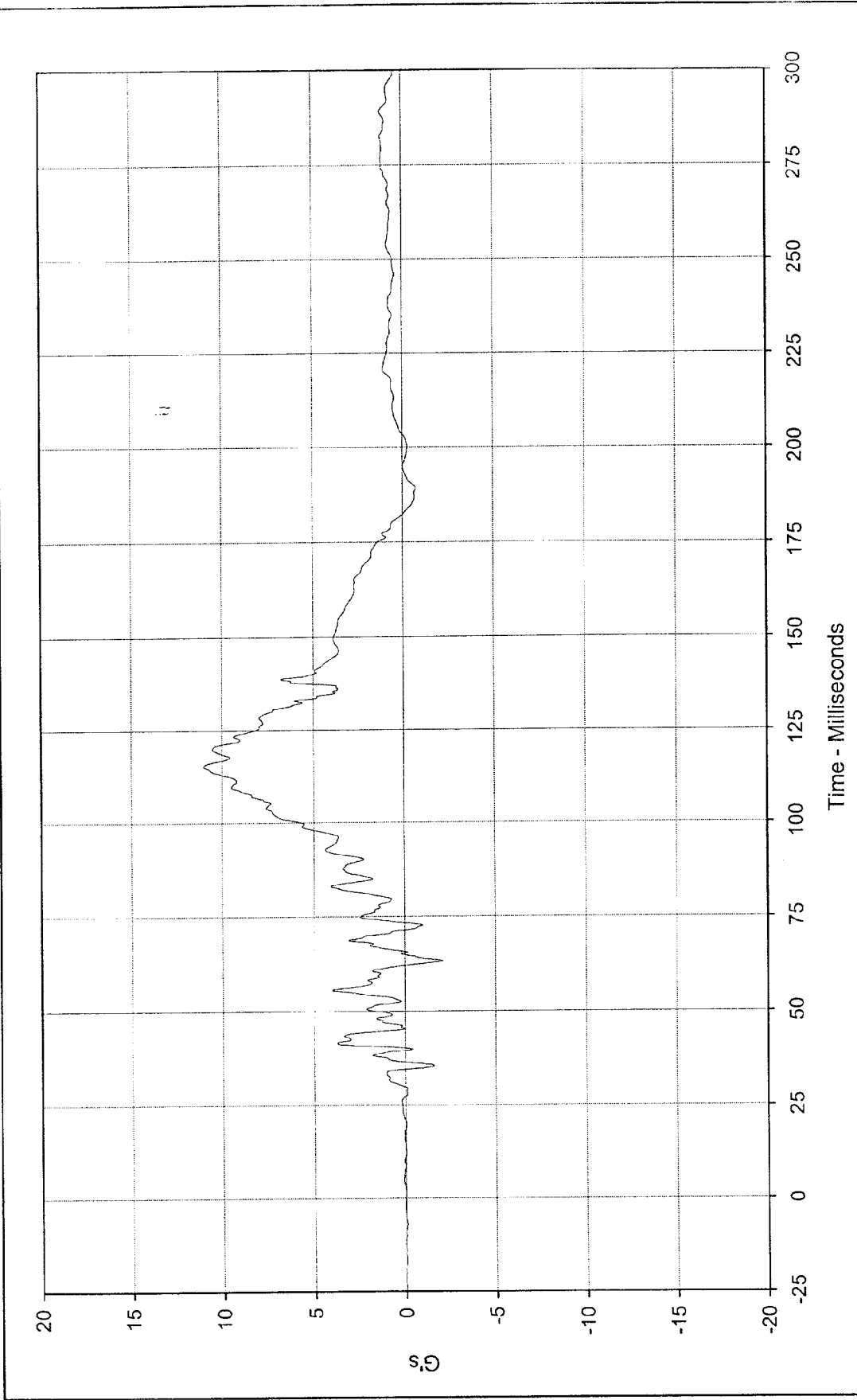




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Chest Redundant X Displ.
 Maximum Value: 144.7 at 140.7 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN2-060

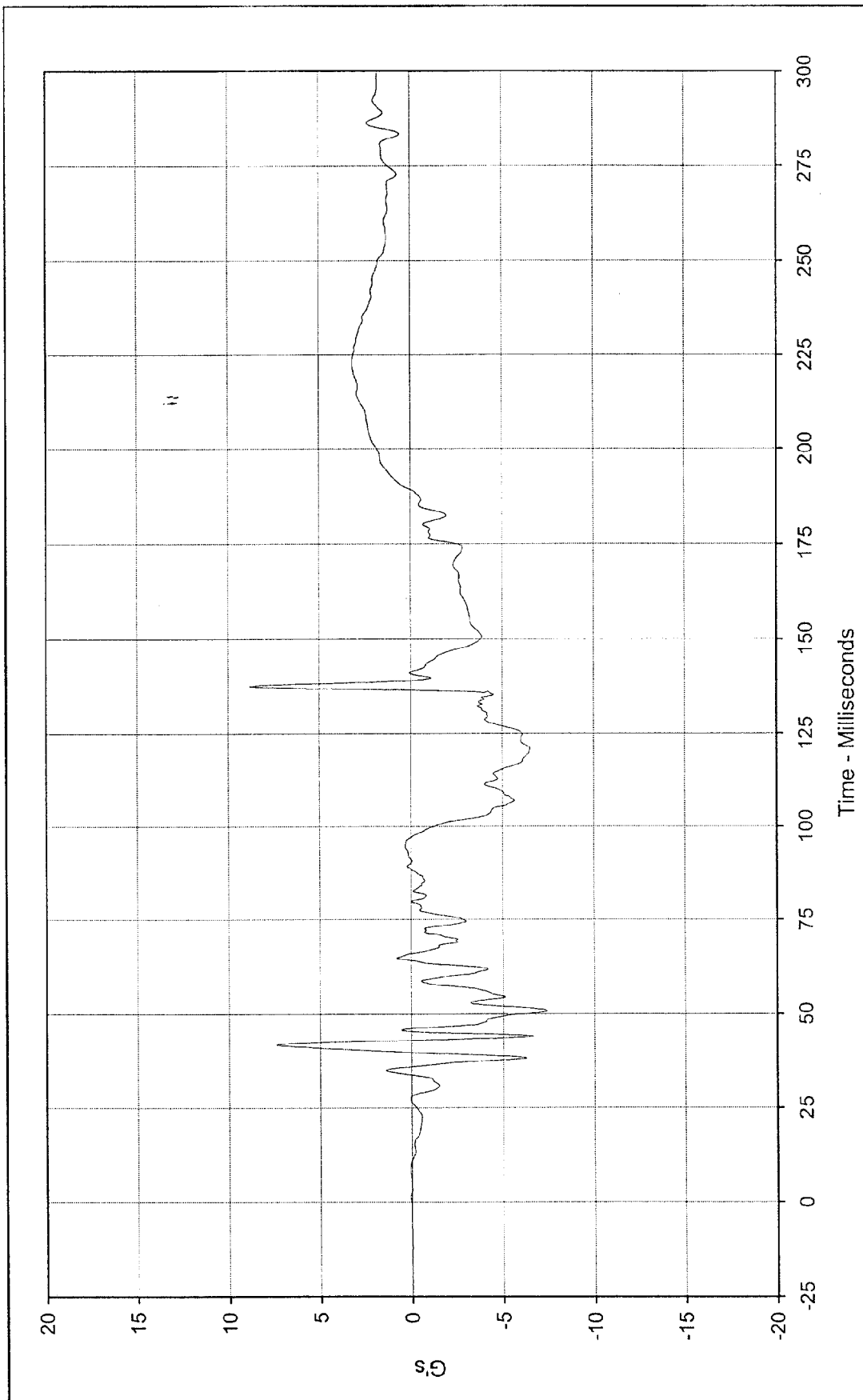




Curve Description: Passenger Chest Redundant Y
Maximum Value: 11.0 at 115.0 Milliseconds
Minimum Value: -2.1 at 63.2 Milliseconds
SAE Filter Class: 180
Date of Test: 8/7/97
Curve Number: FIL-061

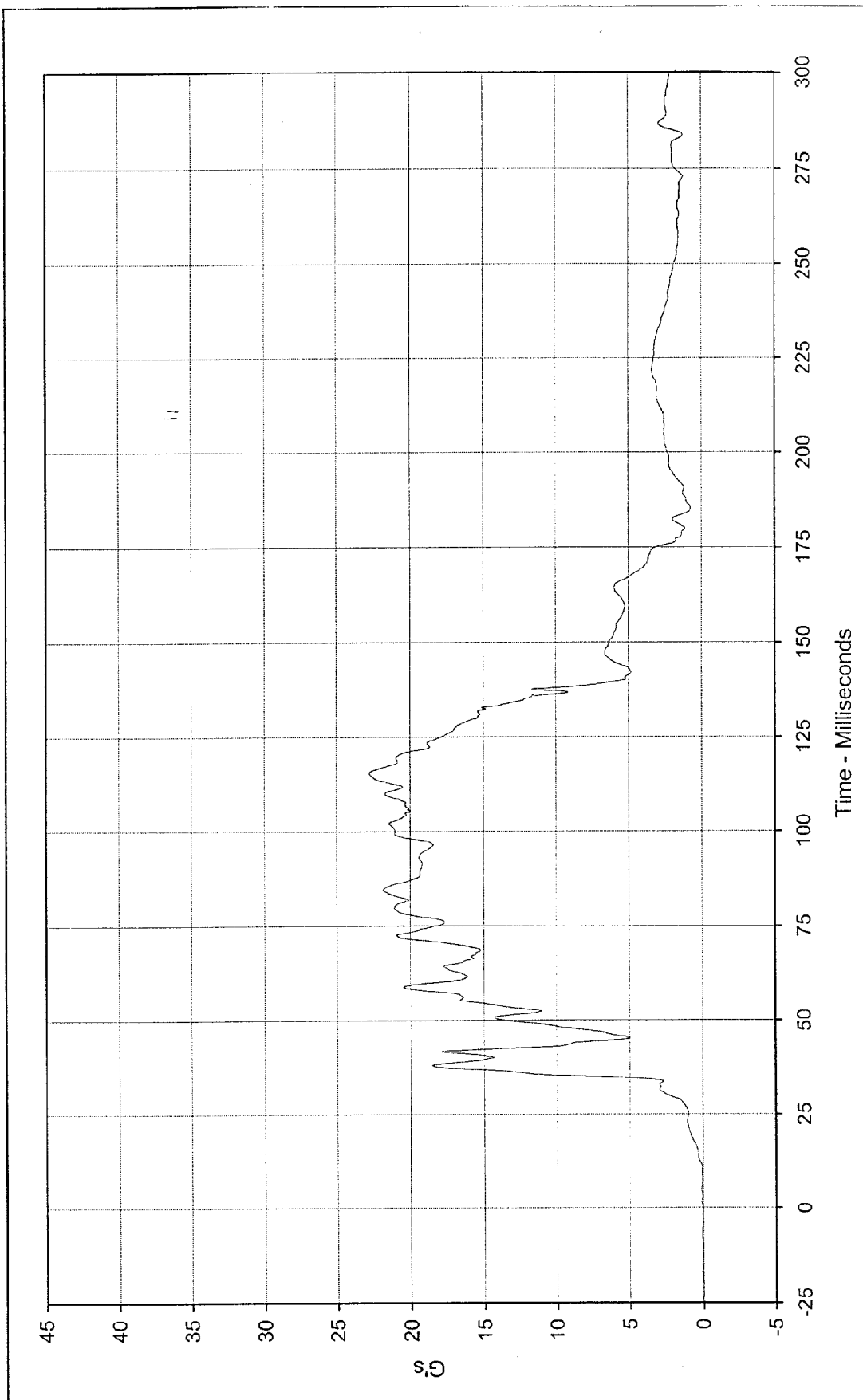
Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





Curve Description:		Passenger Chest Redundant Z		Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	8.8	at	137.5	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-7.4	at	50.8		
SAE Filter Class:	180				
Date of Test:	8/7/97				
Curve Number:	FIL-062				

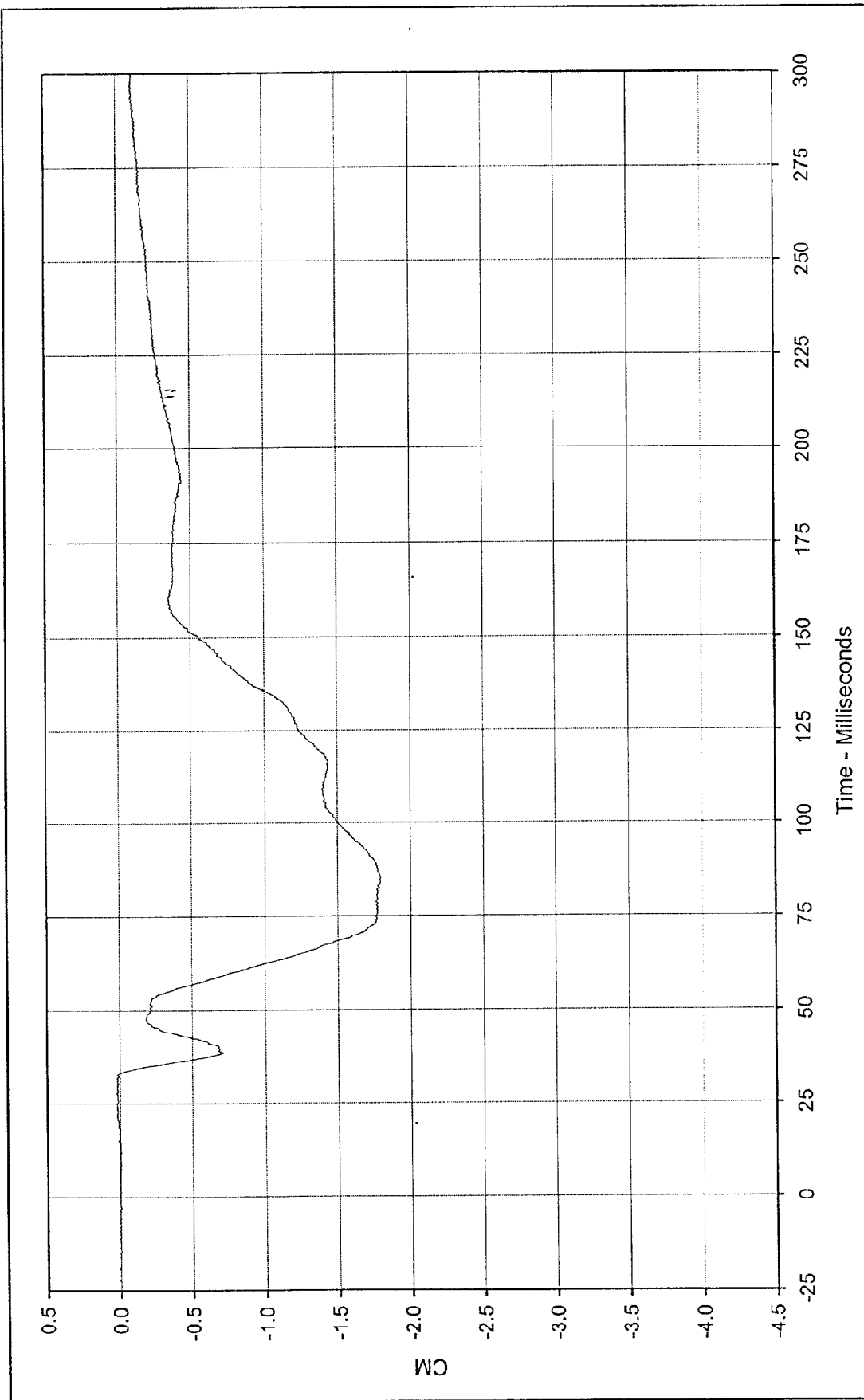




Curve Description: Passenger Chest Resultant Redundant
 Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

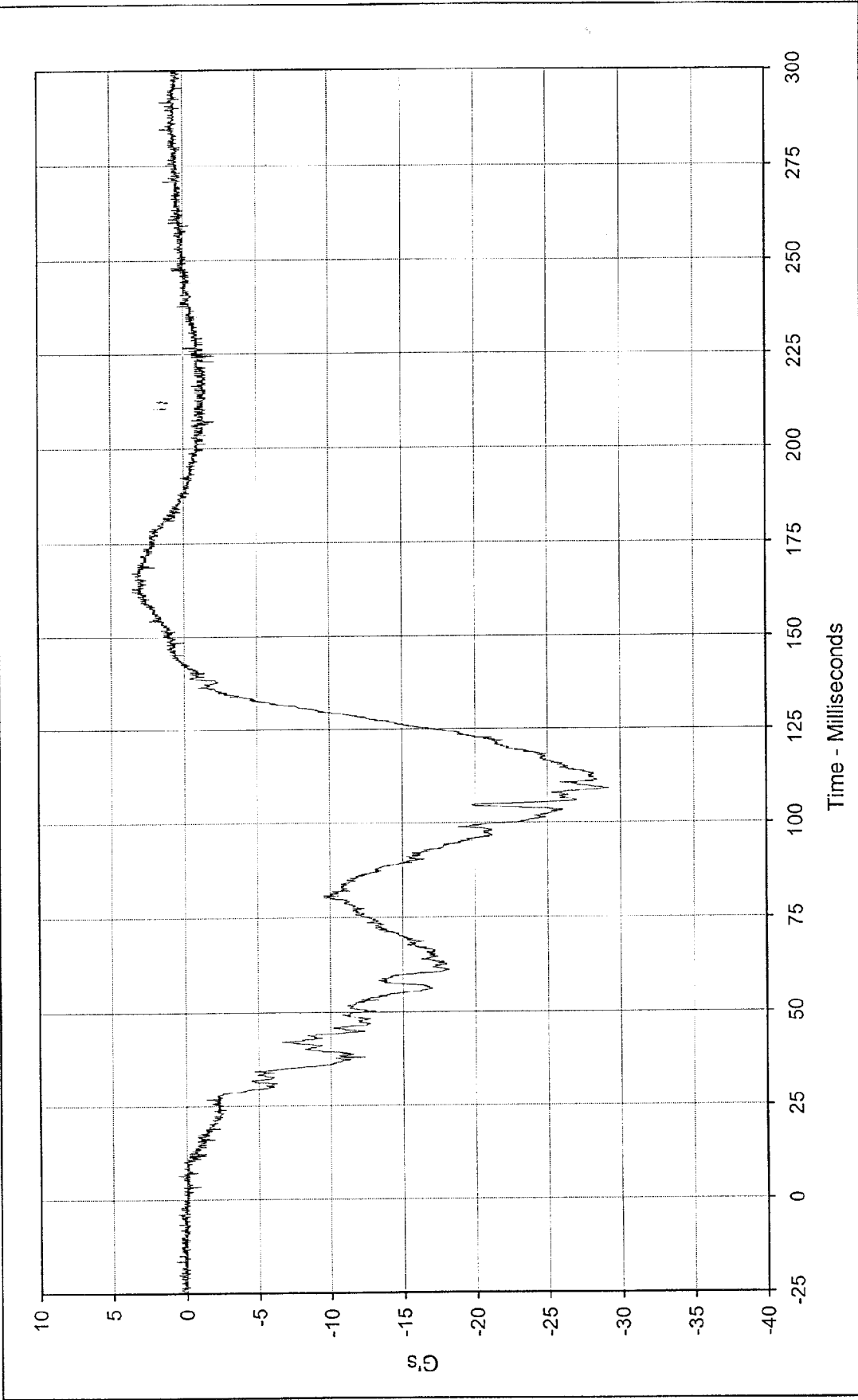
Maximum Value: 22.8 at 115.2 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: RES-060





Curve Description:	Passenger Chest Displacement X	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	0.02 at 27.7 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-1.79 at 85.0 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-063		

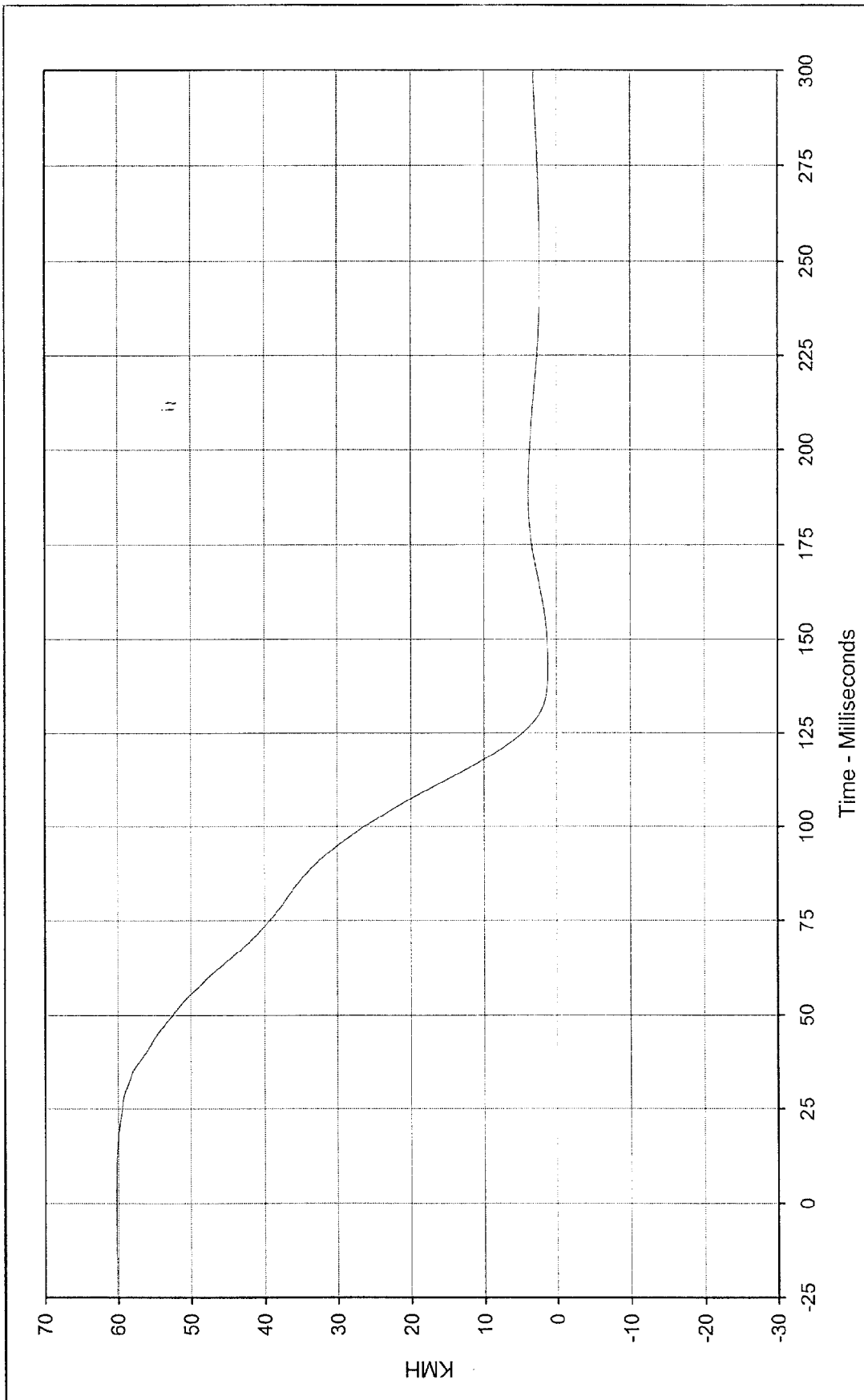




Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Pelvis X
Maximum Value: 3.5 at 162.1 Milliseconds
Minimum Value: -29.2 at 108.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 8/7/97
Curve Number: FIL-064

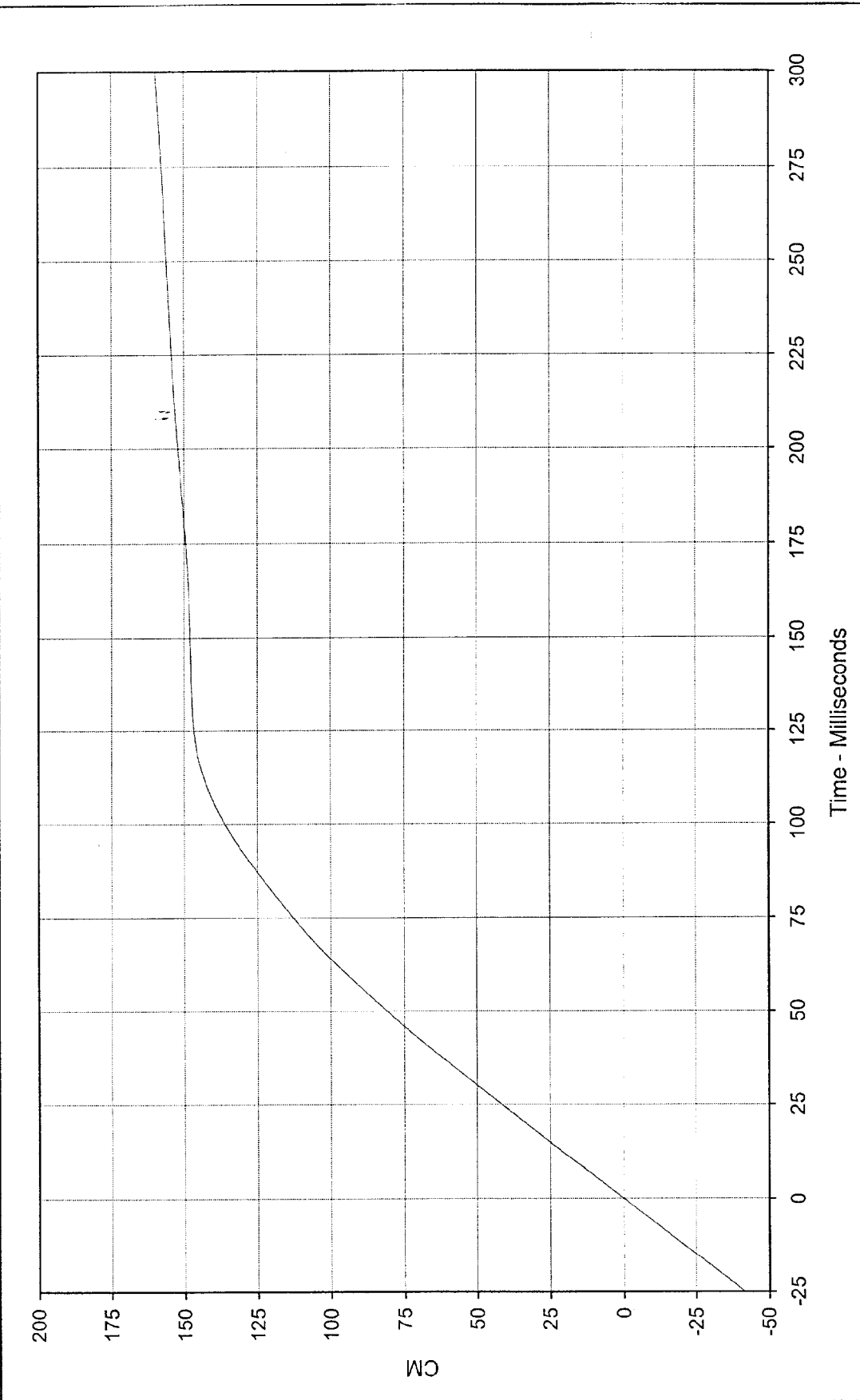




Curve Description: Passenger Pelvis X Velocity
 Maximum Value: 60.2 at 0.0 Milliseconds
 Minimum Value: 1.2 at 142.4 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN1-064

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

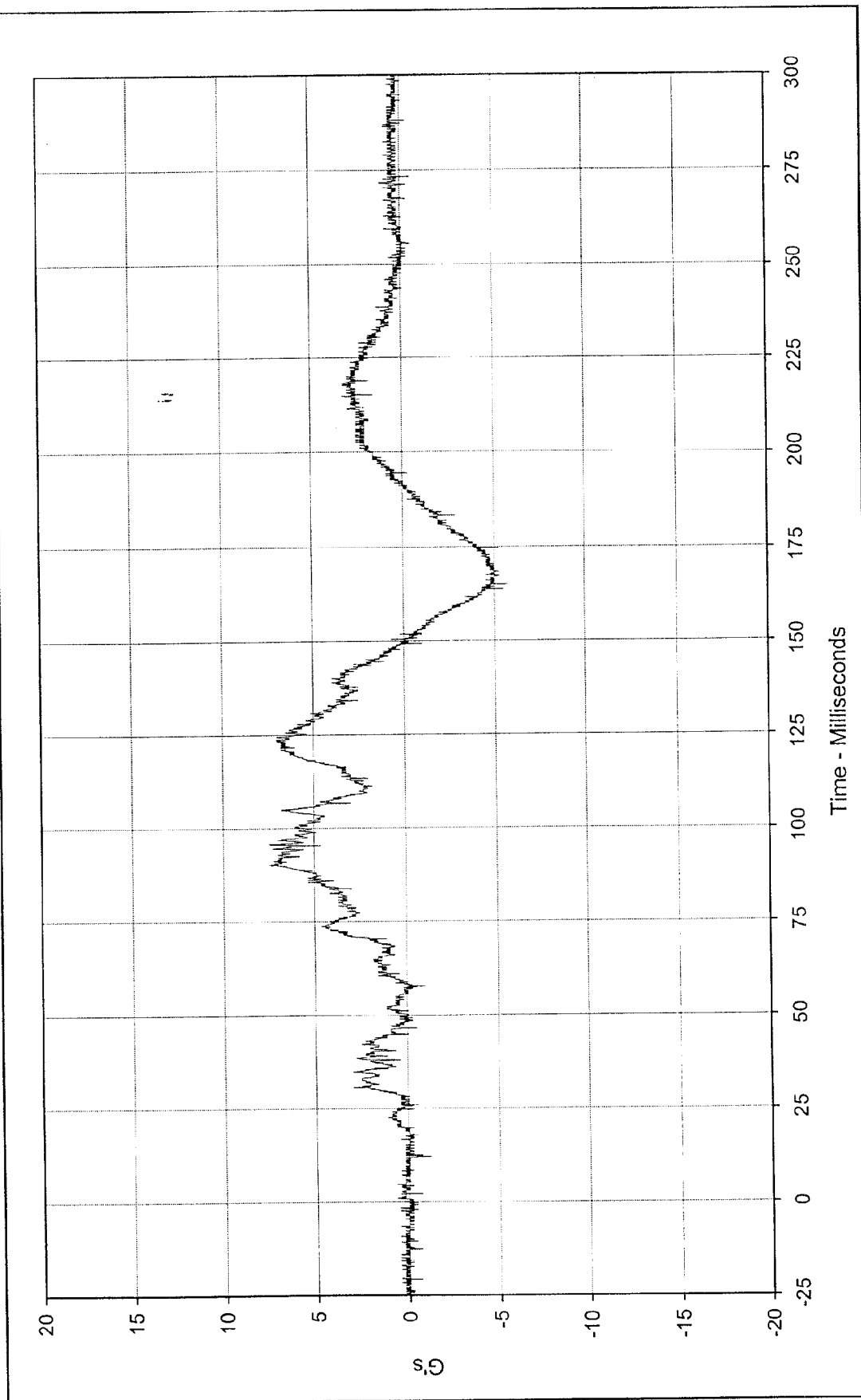




Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Pelvis X Displ.
Maximum Value: 159.8 at 299.9 Milliseconds
Minimum Value: 0.1 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 8/7/97
Curve Number: IN2-064

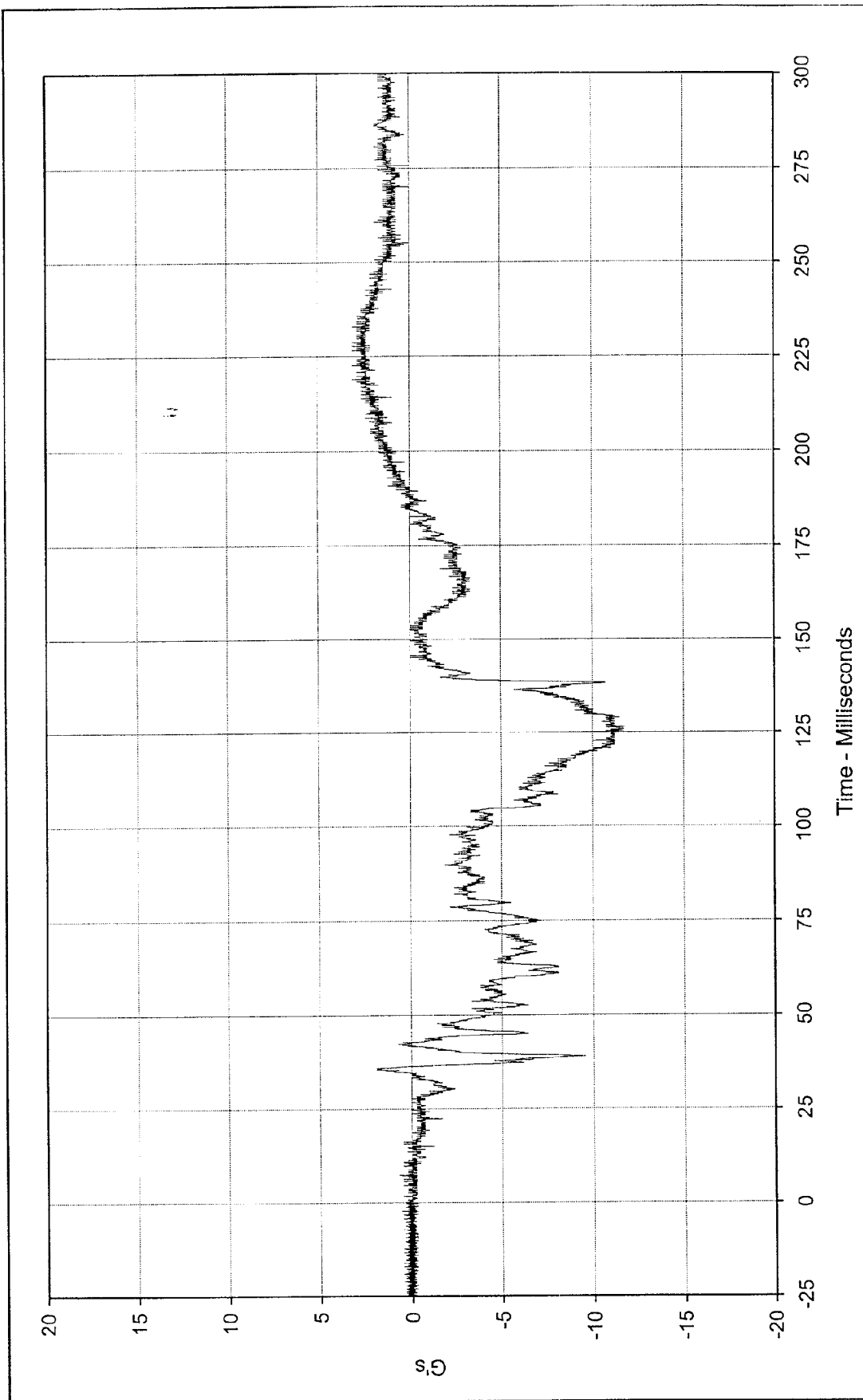




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Pelvis Y
 Maximum Value: 7.5 at 90.1 Milliseconds
 Minimum Value: -5.7 at 165.0 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: FIL-065





Testing Program 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Pelvis Z

Maximum Value: 3.1 at 218.7 Milliseconds

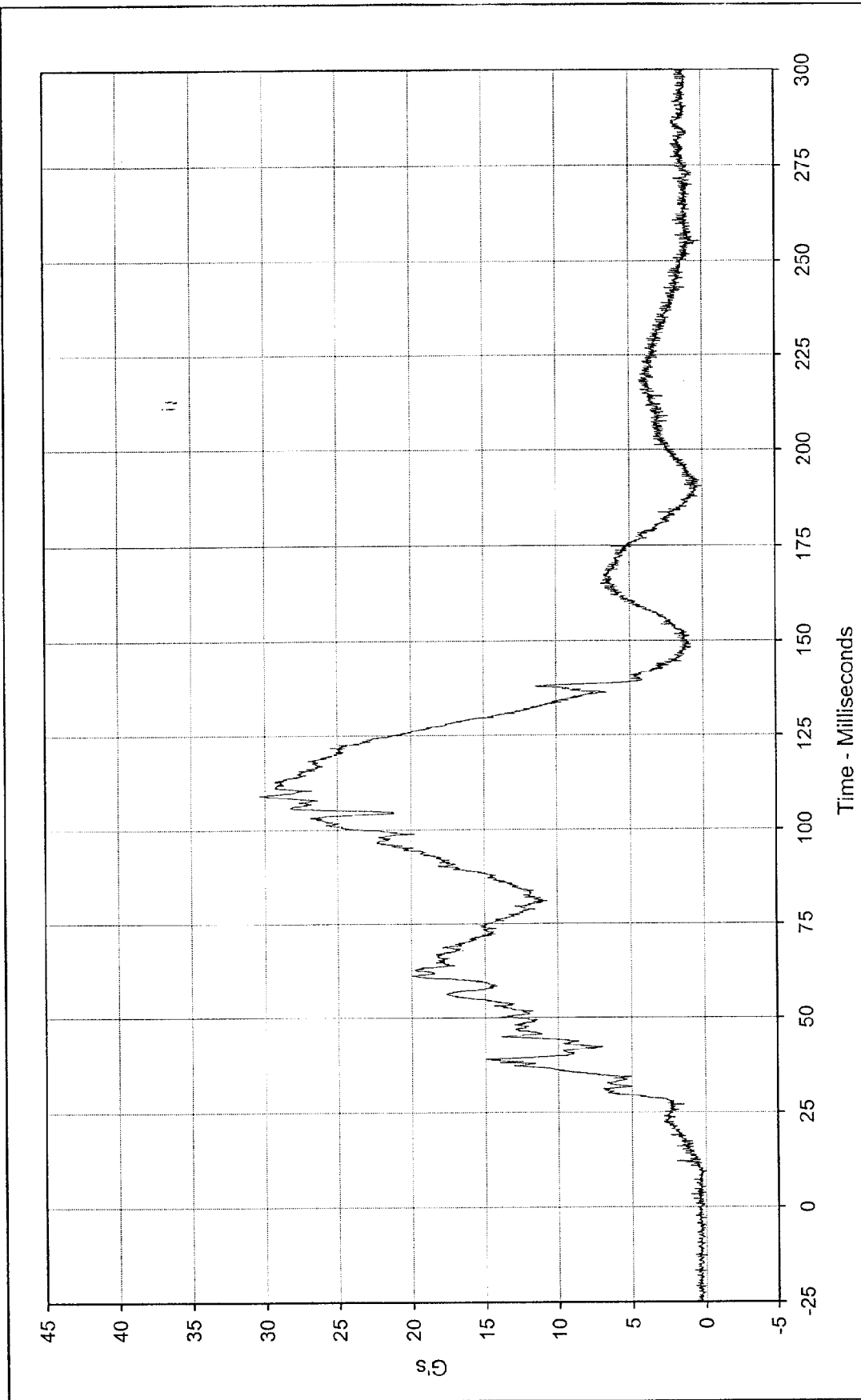
Minimum Value: -11.7 at 125.3 Milliseconds

SAE Filter Class: 1000

Date of Test: 8/7/97

Curve Number: FIL-066

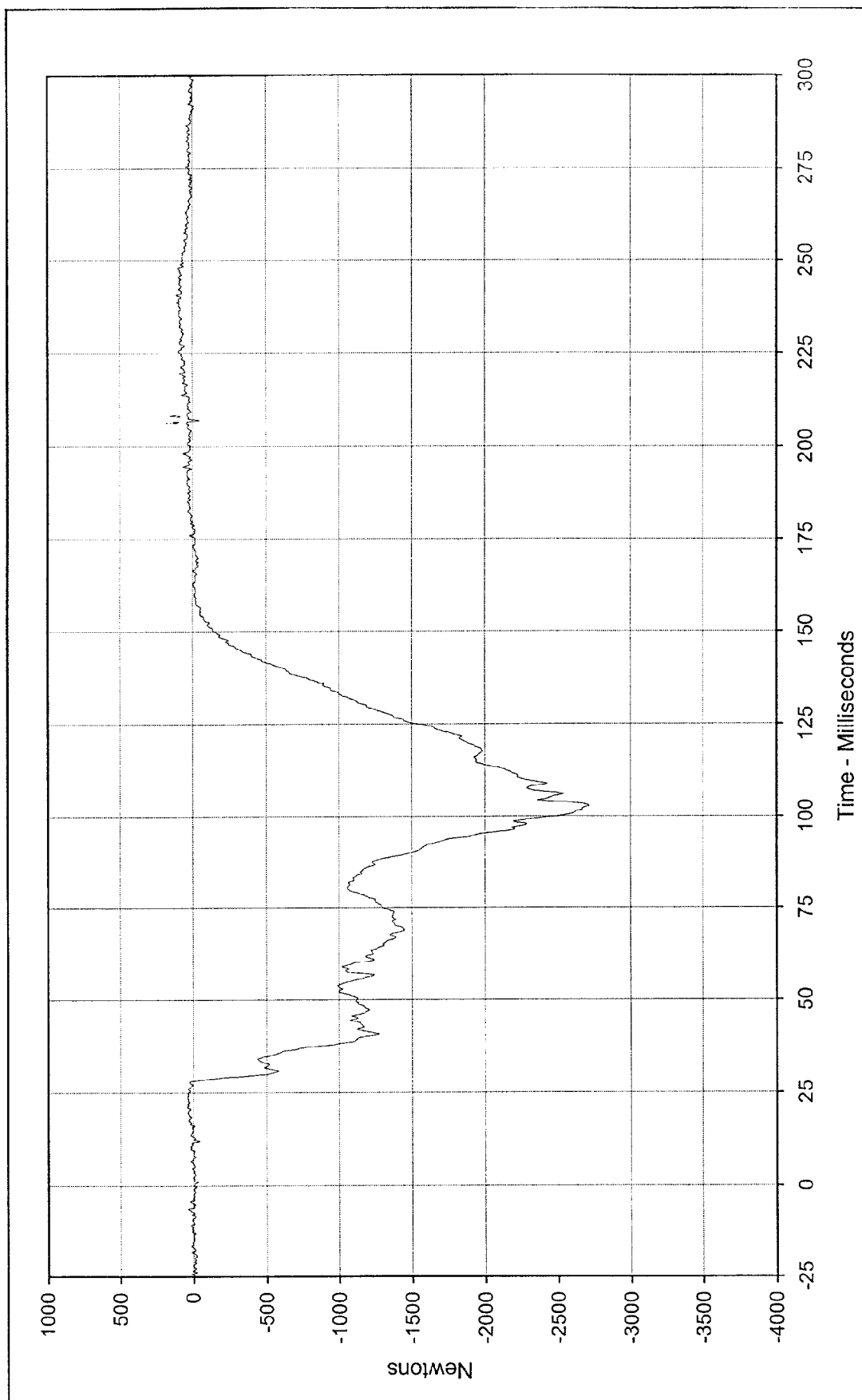




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Pelvis Resultant
 Maximum Value: 30.4 at 108.9 Milliseconds
 Minimum Value: 0.1 at 3.8 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: RES-064

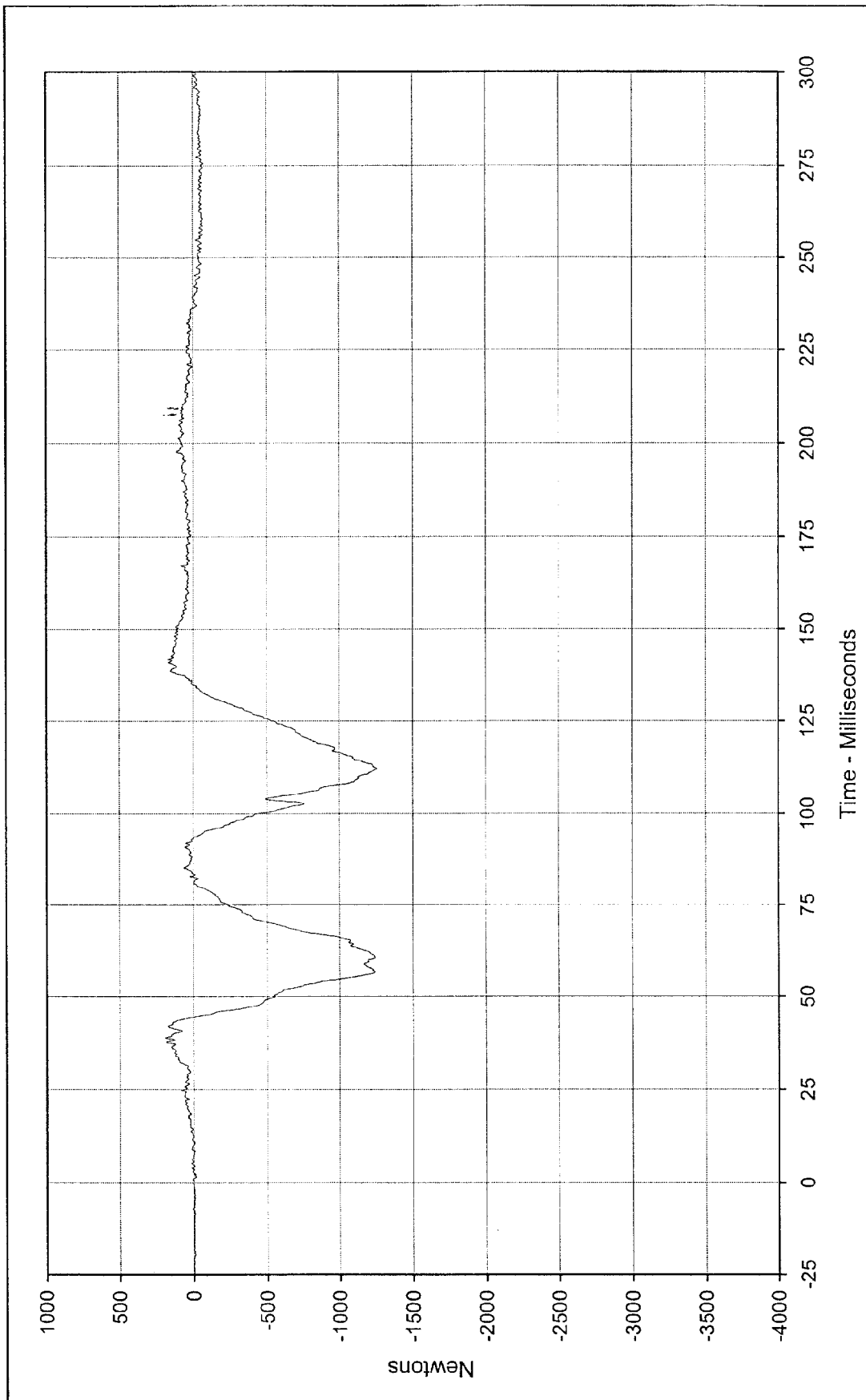




Curve Description: Passenger Left Femur Force
Maximum Value: 111.9 at 238.6 Milliseconds
Minimum Value: -2715.8 at 102.8 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-067

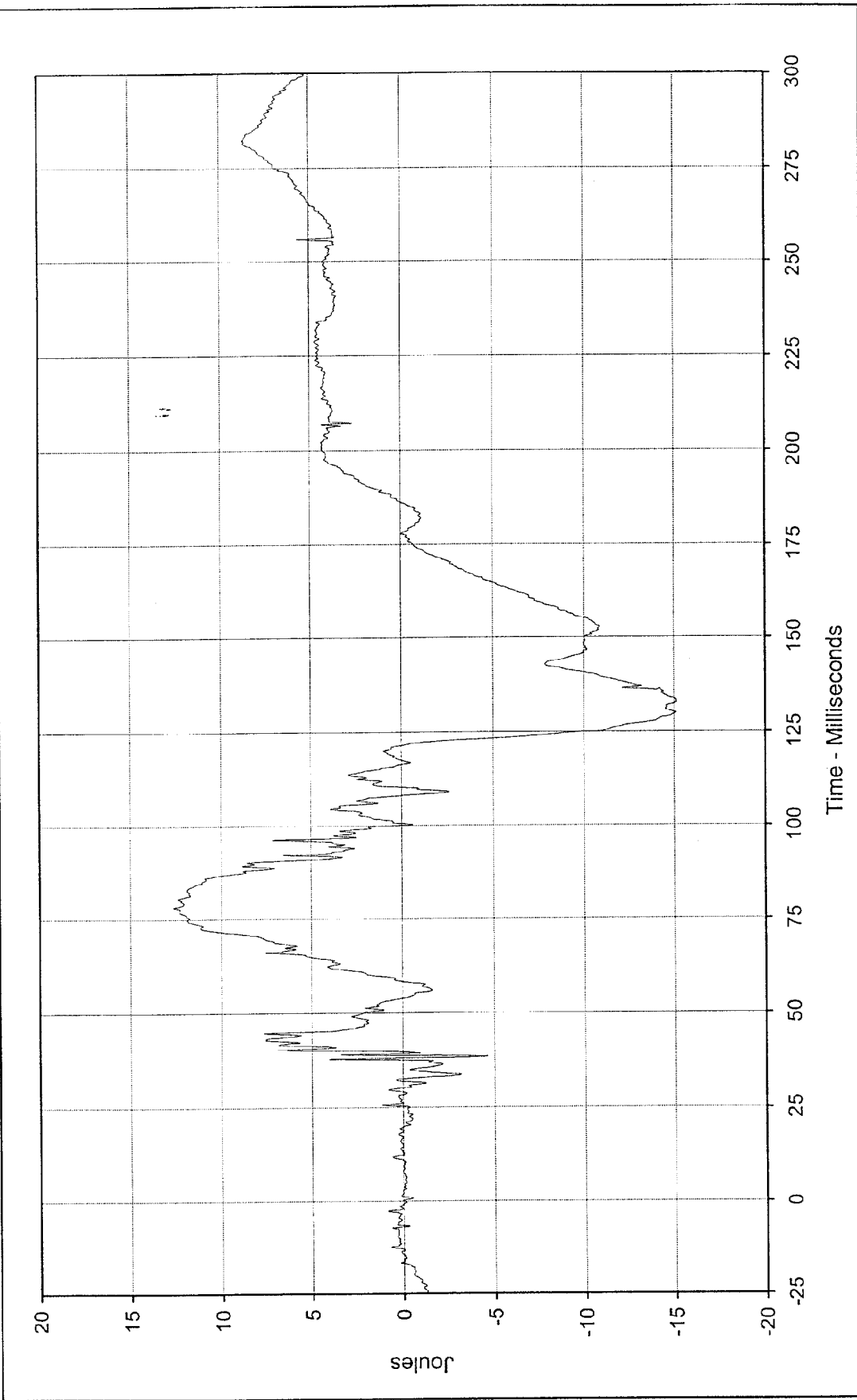
Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





Curve Description:	Passenger Right Femur Force	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	193.0 at 38.9 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-1253.5 at 112.1 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-068		

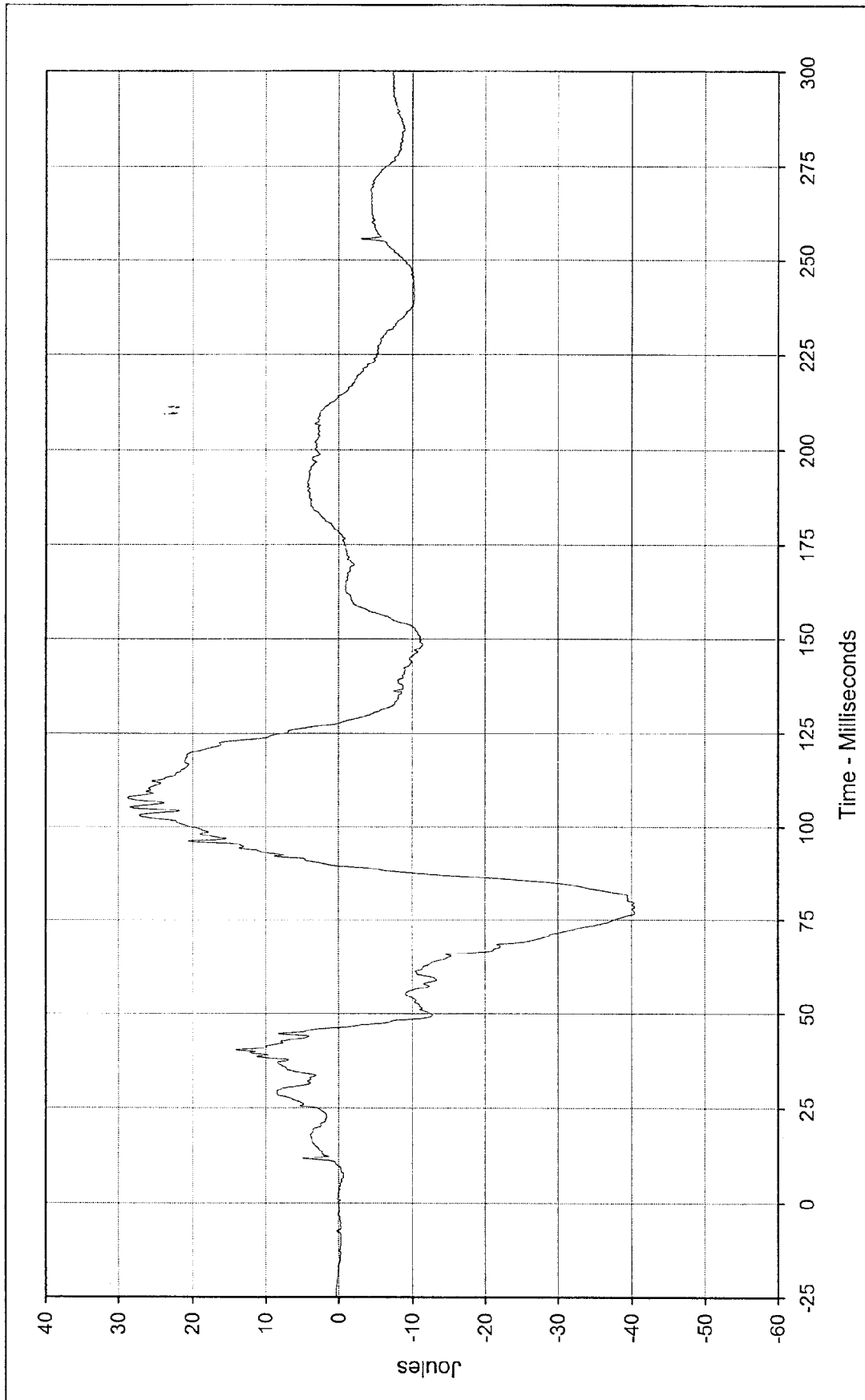




Curve Description: Passenger Left Upper Tibia Moment X
Maximum Value: 12.6 at 78.2 Milliseconds
Minimum Value: -15.1 at 132.5 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-069

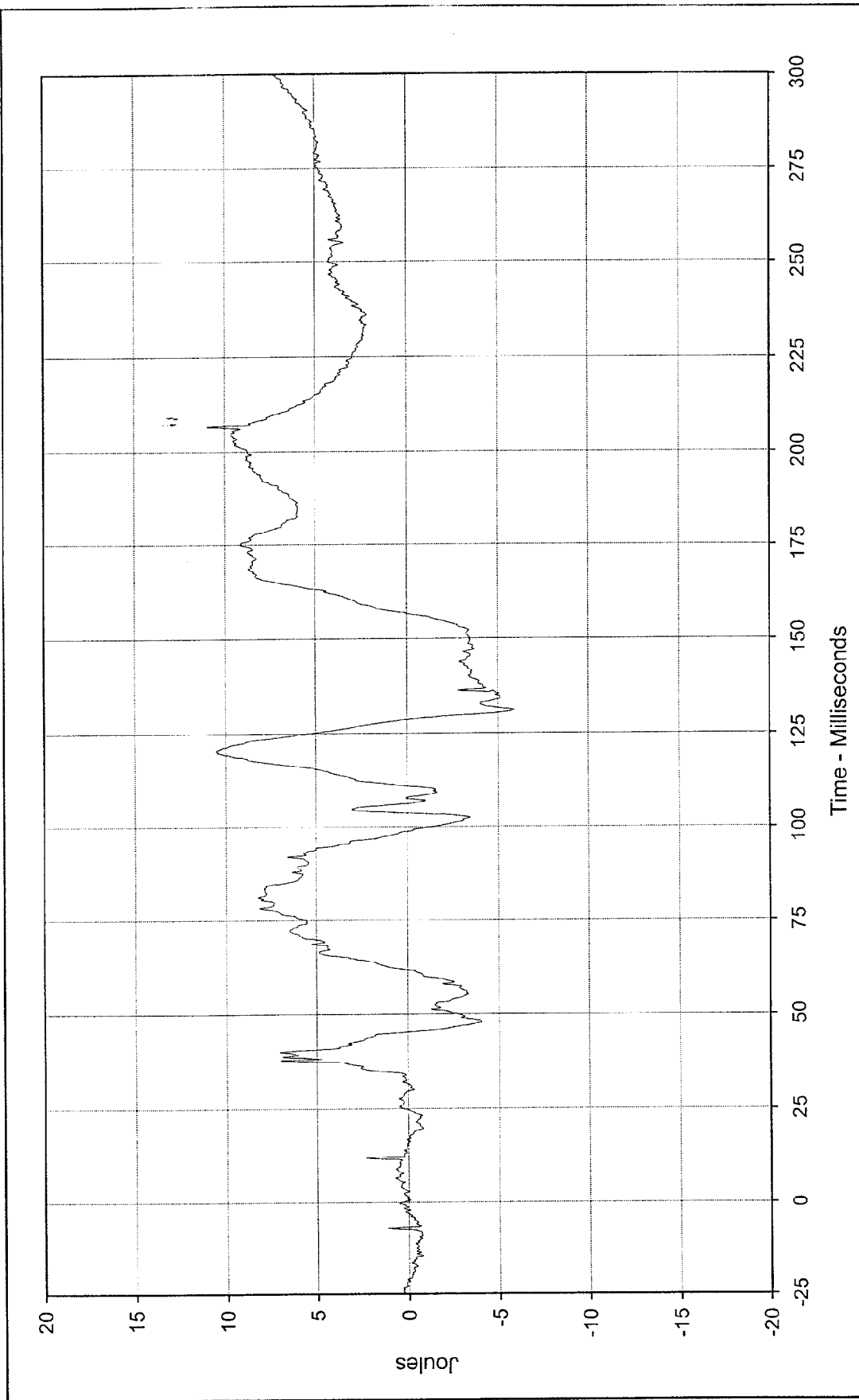
Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





Curve Description:	Passenger Left Upper Tibia Moment Y	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	28.7 at 107.8 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-40.5 at 76.8 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-070		

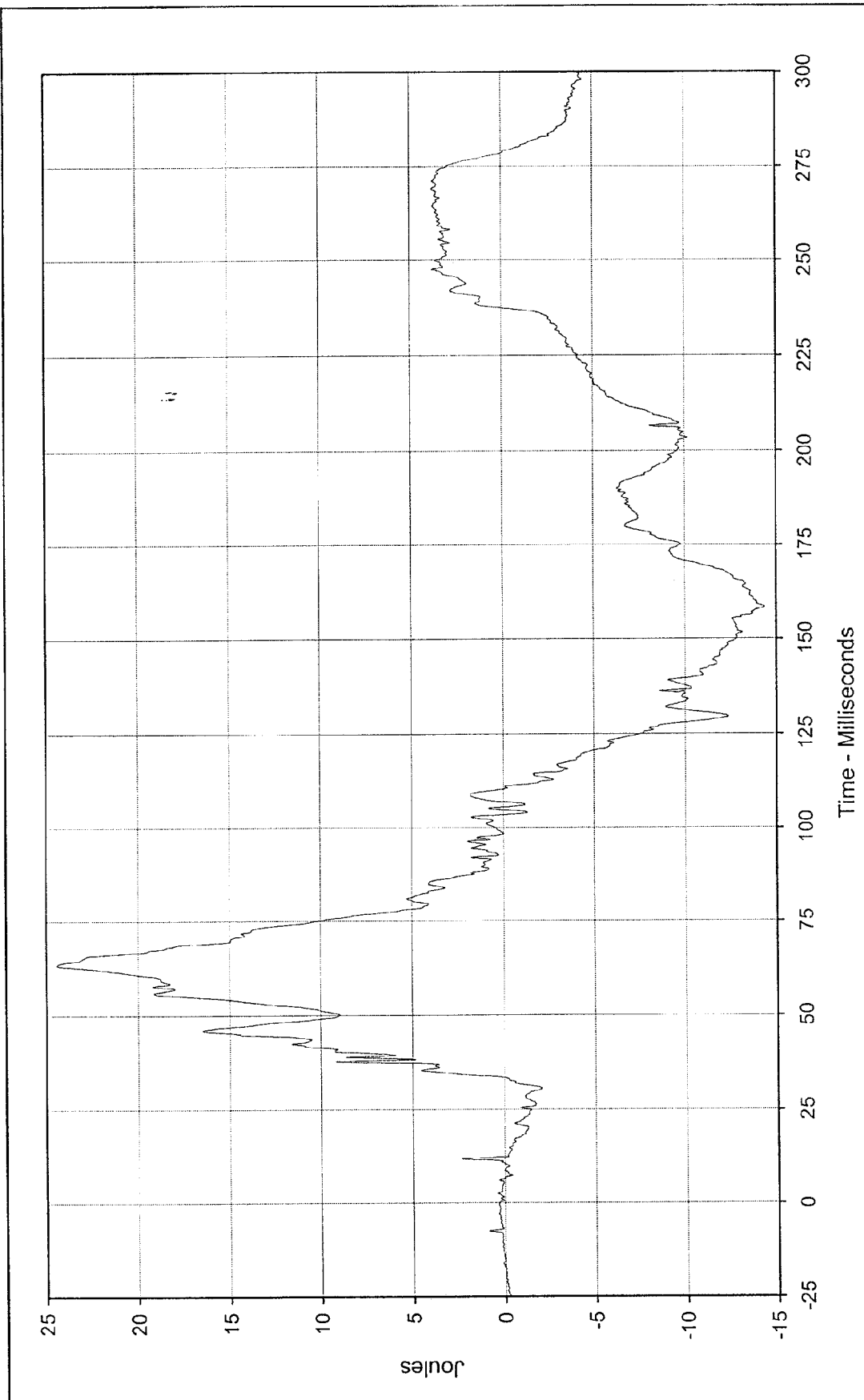




Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Right Upper Tibia Moment X
Maximum Value: 11.0 at 206.8 Milliseconds
Minimum Value: -5.9 at 131.1 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-071

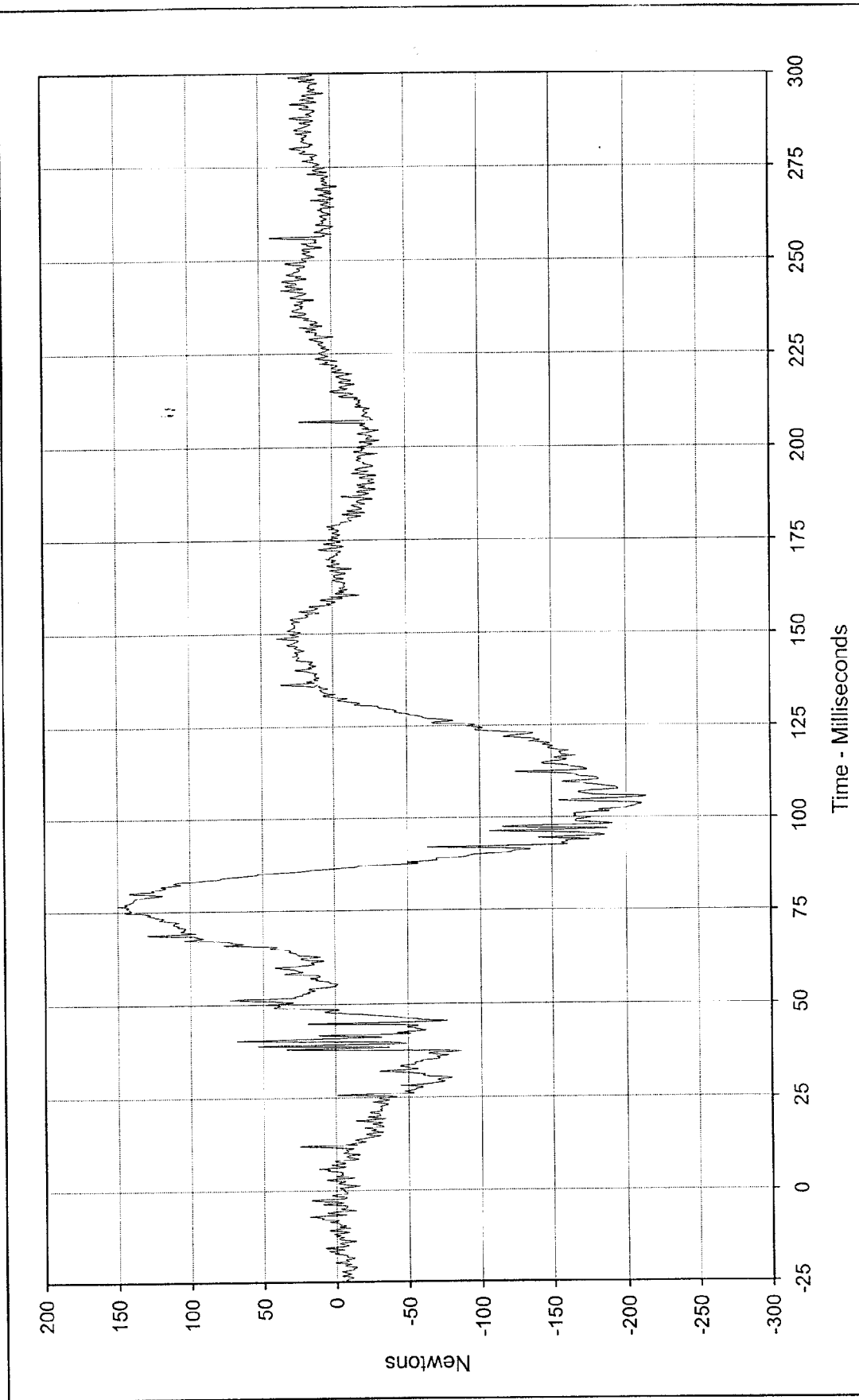




Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Right Upper Tibia Moment Y
Maximum Value: 24.4 at 63.3 Milliseconds
Minimum Value: -14.4 at 158.4 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-072

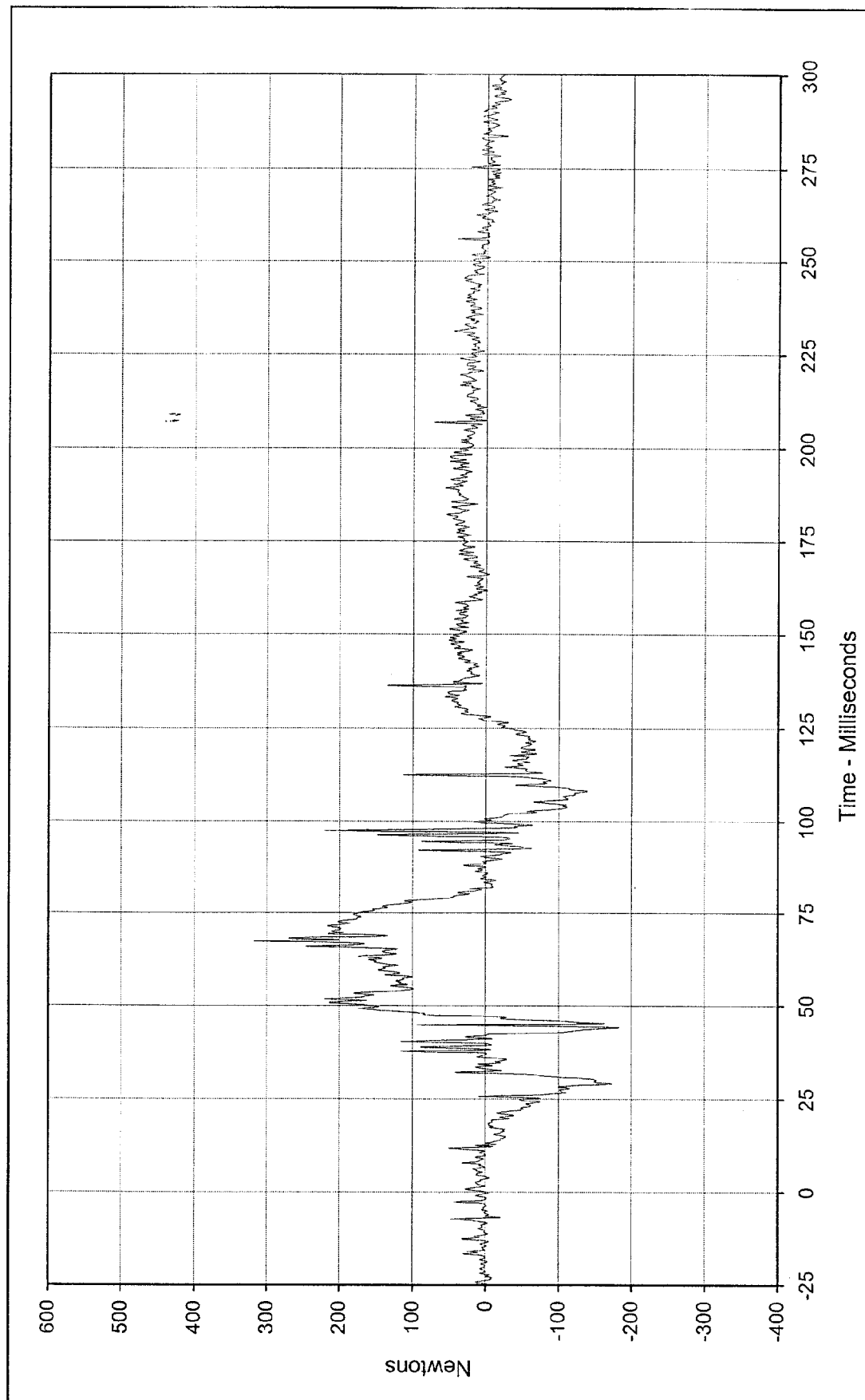




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Left Lower Tibia Force X
 Maximum Value: 149.4 at 76.5 Milliseconds
 Minimum Value: -213.9 at 105.6 Milliseconds
 SAE Filter Class: 600
 Date of Test: 8/7/97
 Curve Number: FIL-073

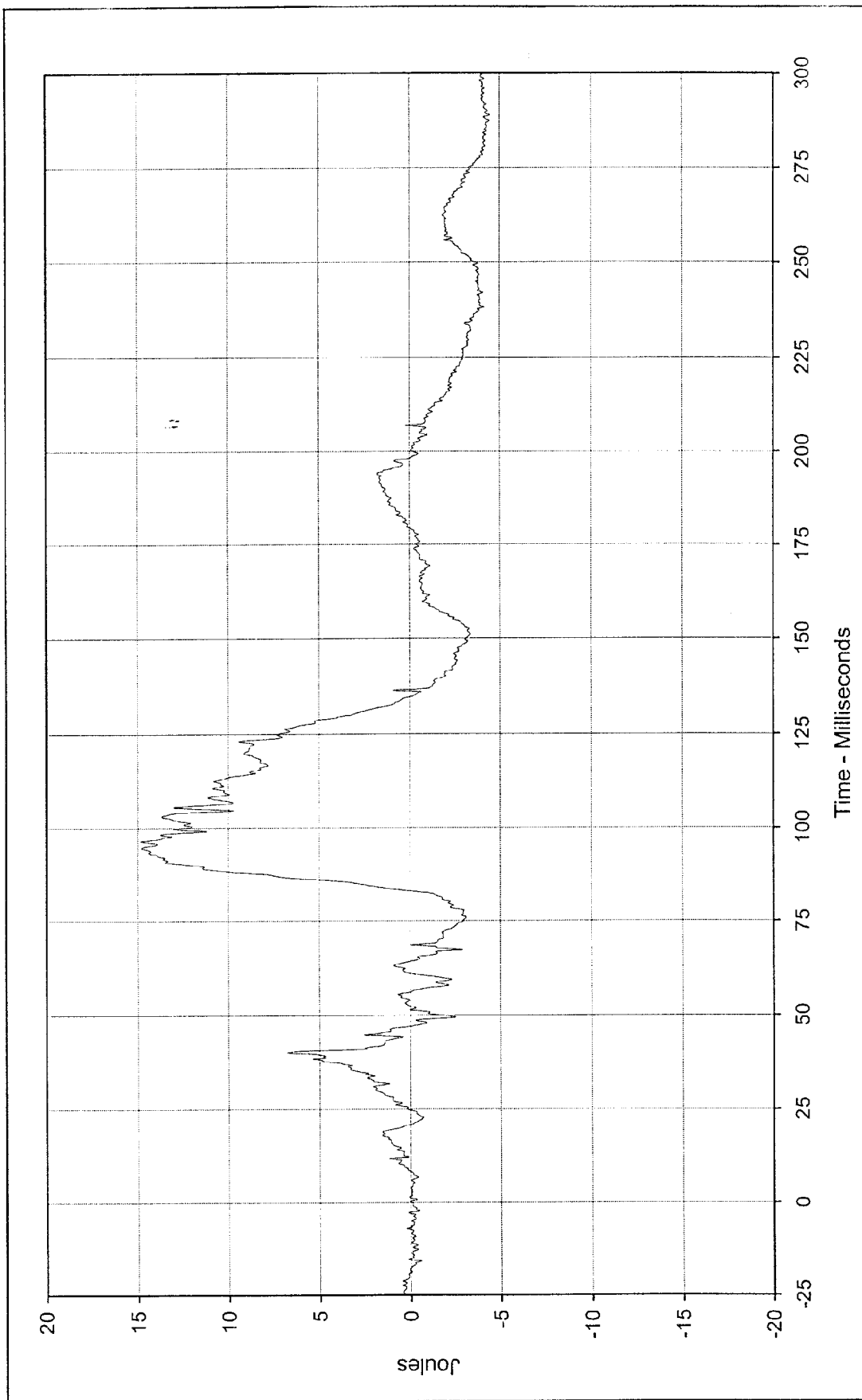




Curve Description: Passenger Left Lower Tibia force Z
 Maximum Value: 317.6 at 67.4 Milliseconds
 Minimum Value: -183.6 at 44.2 Milliseconds
 SAE Filter Class: 600
 Date of Test: 8/7/97
 Curve Number: FIL-074

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

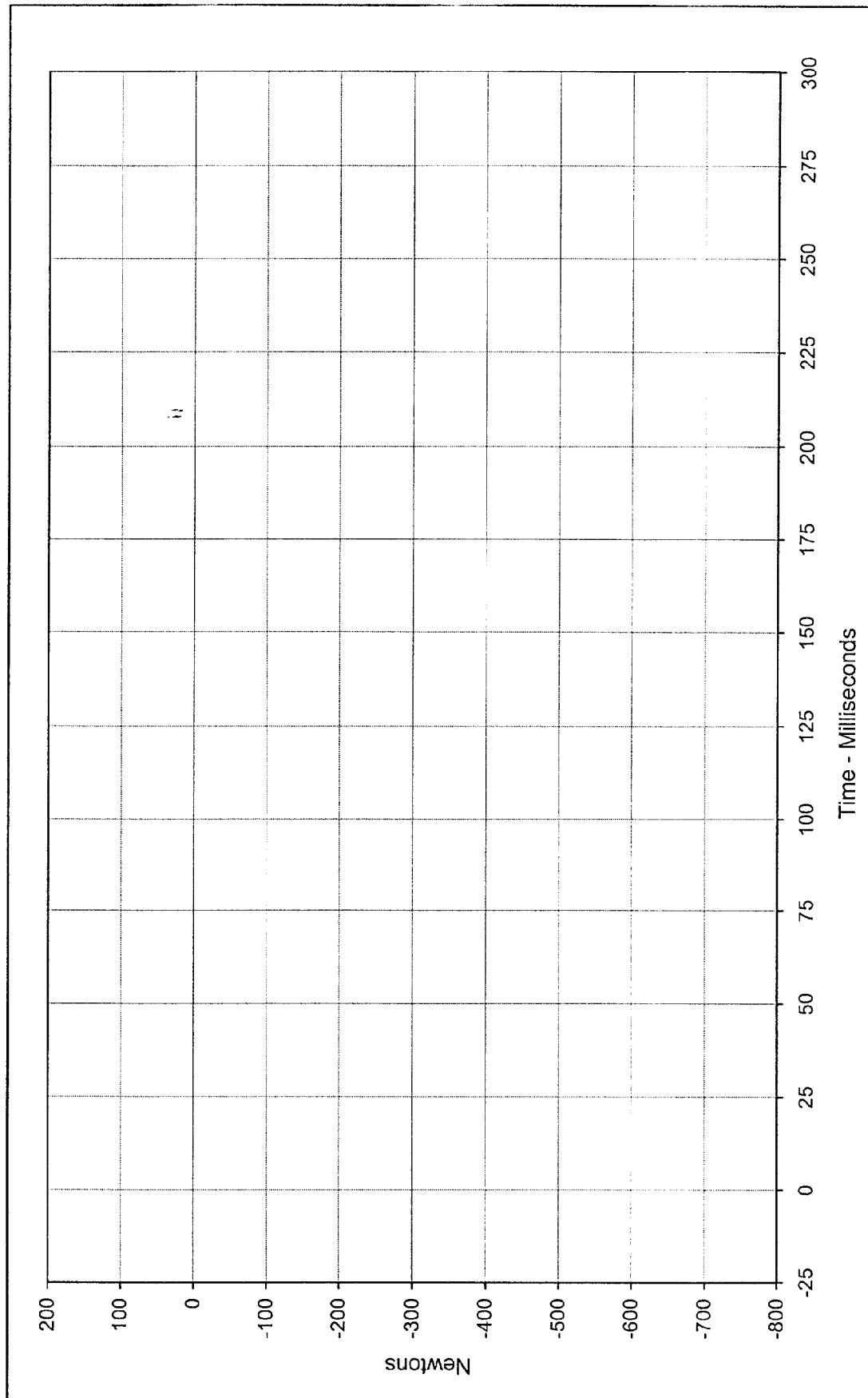




Curve Description: Passenger Left Lower Tibia Moment Y
Maximum Value: 14.8 at 96.4 Milliseconds
Minimum Value: -4.5 at 288.8 Milliseconds
SAE Filter Class: 600
Date of Test: 8/7/97
Curve Number: FIL-075

Testing Program: 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

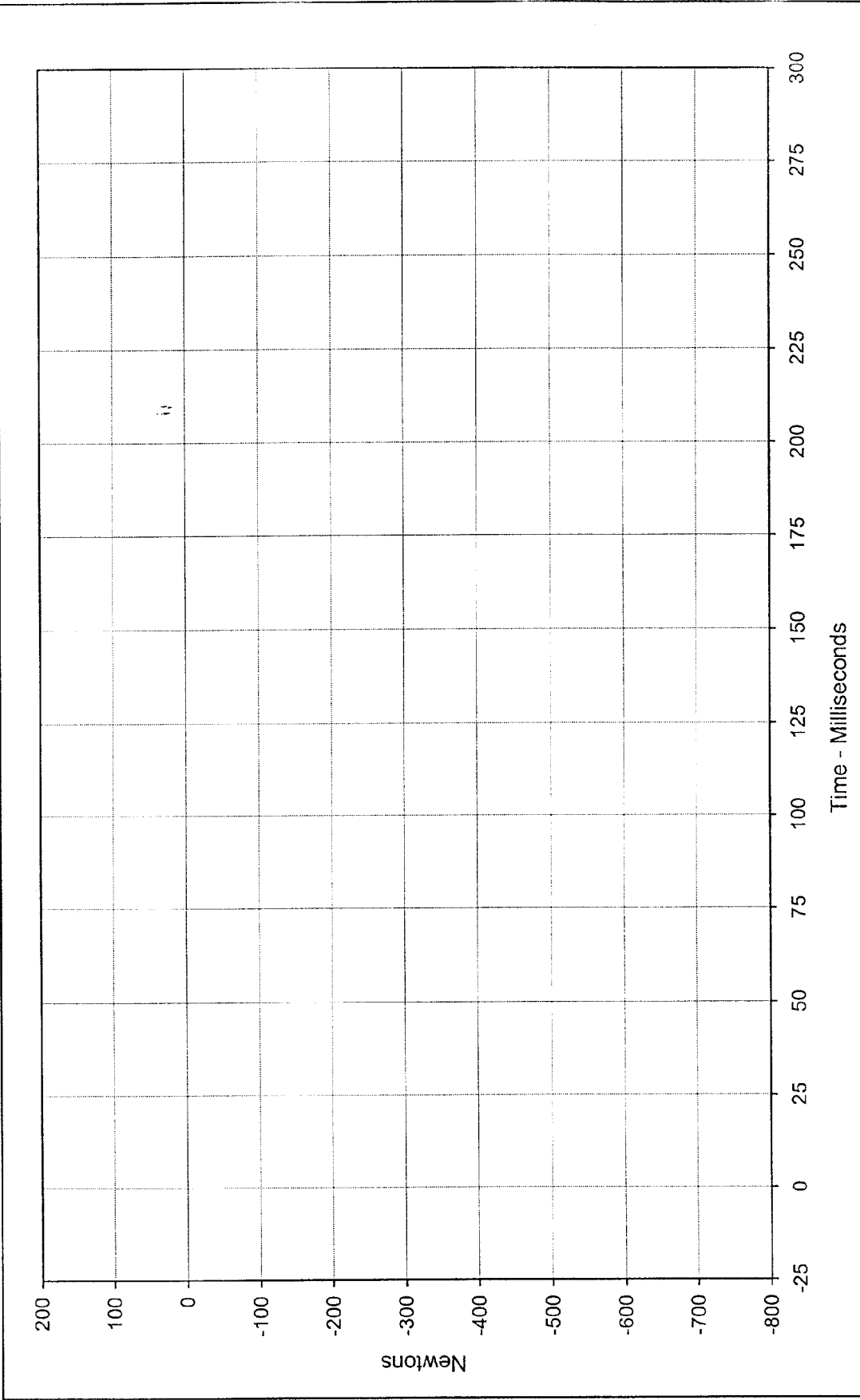




Curve Description:		Passenger Right Lower Tibia Force X *		Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	0.0	at	0.0	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.0	at	0.0		
SAE Filter Class:	600				
Date of Test:	8/7/97				
Curve Number:	FIL-076				



* Channel Failed, No Data



Curve Description: Passenger Right Lower Tibia Force Z * Testing Program 1997 NHTSA 40% Offset Impact (Female)

Maximum Value: 0.0 at 0.0 Milliseconds Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Minimum Value: 0.0 at 0.0 Milliseconds

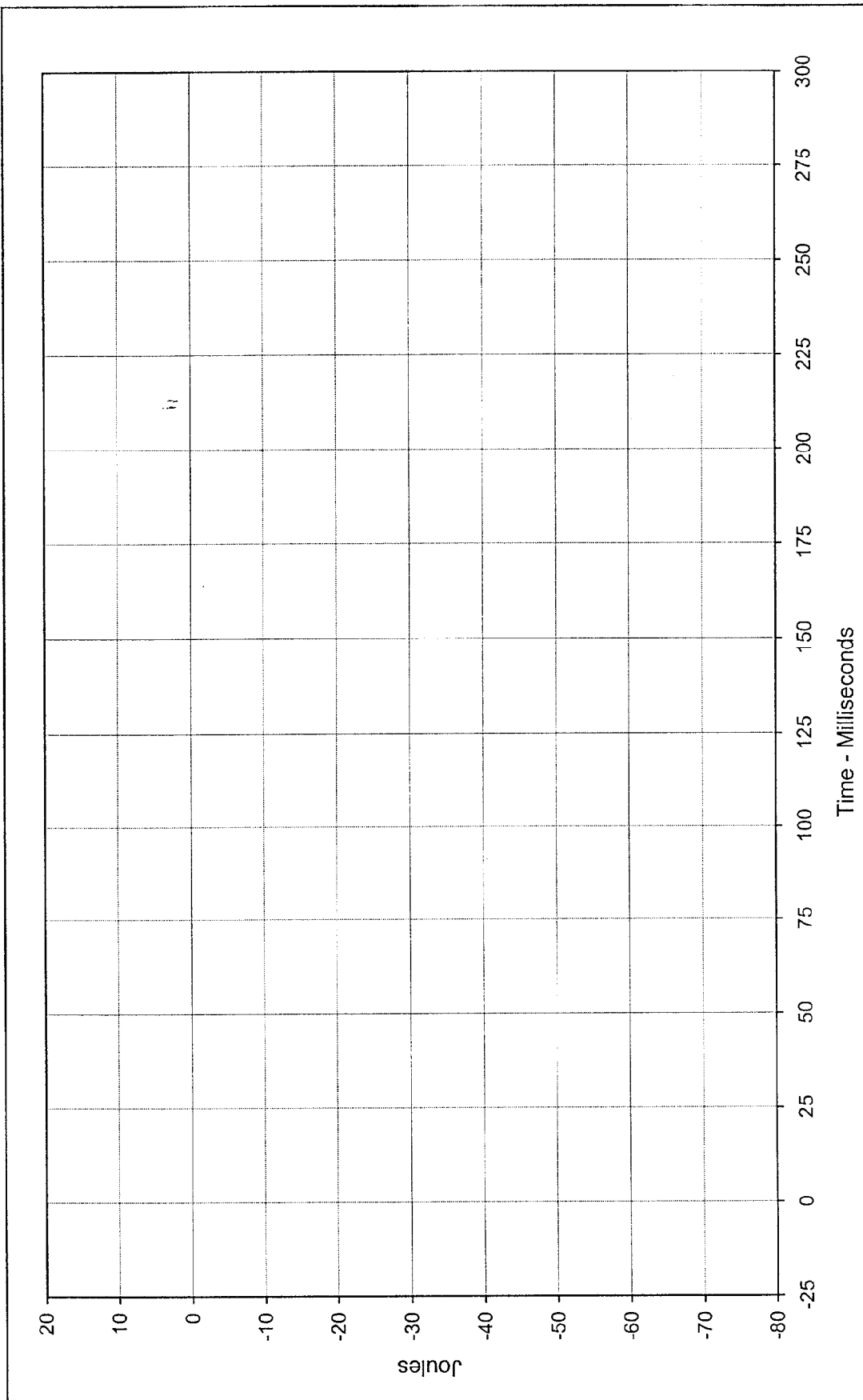


SAE Filter Class: 600

Date of Test: 8/7/97

Curve Number: FIL-077

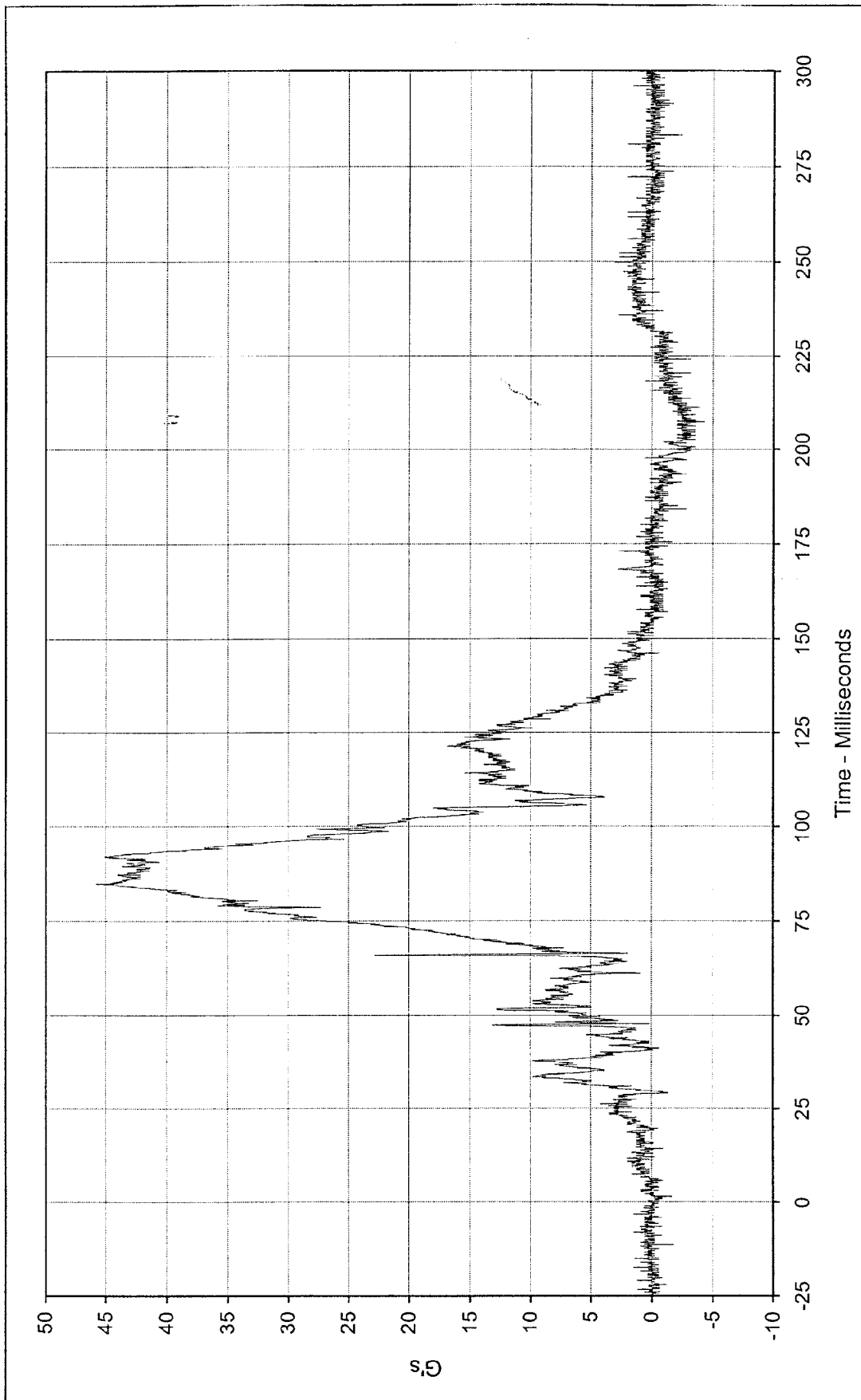
* Channel Failed, No Data



Curve Description: Passenger Right lower Tibia Moment Y *		Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	0.0 at 0.0 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	0.0 at 0.0 Milliseconds		
SAE Filter Class:	600		
Date of Test:	8/7/97		
Curve Number:	FIL-078		

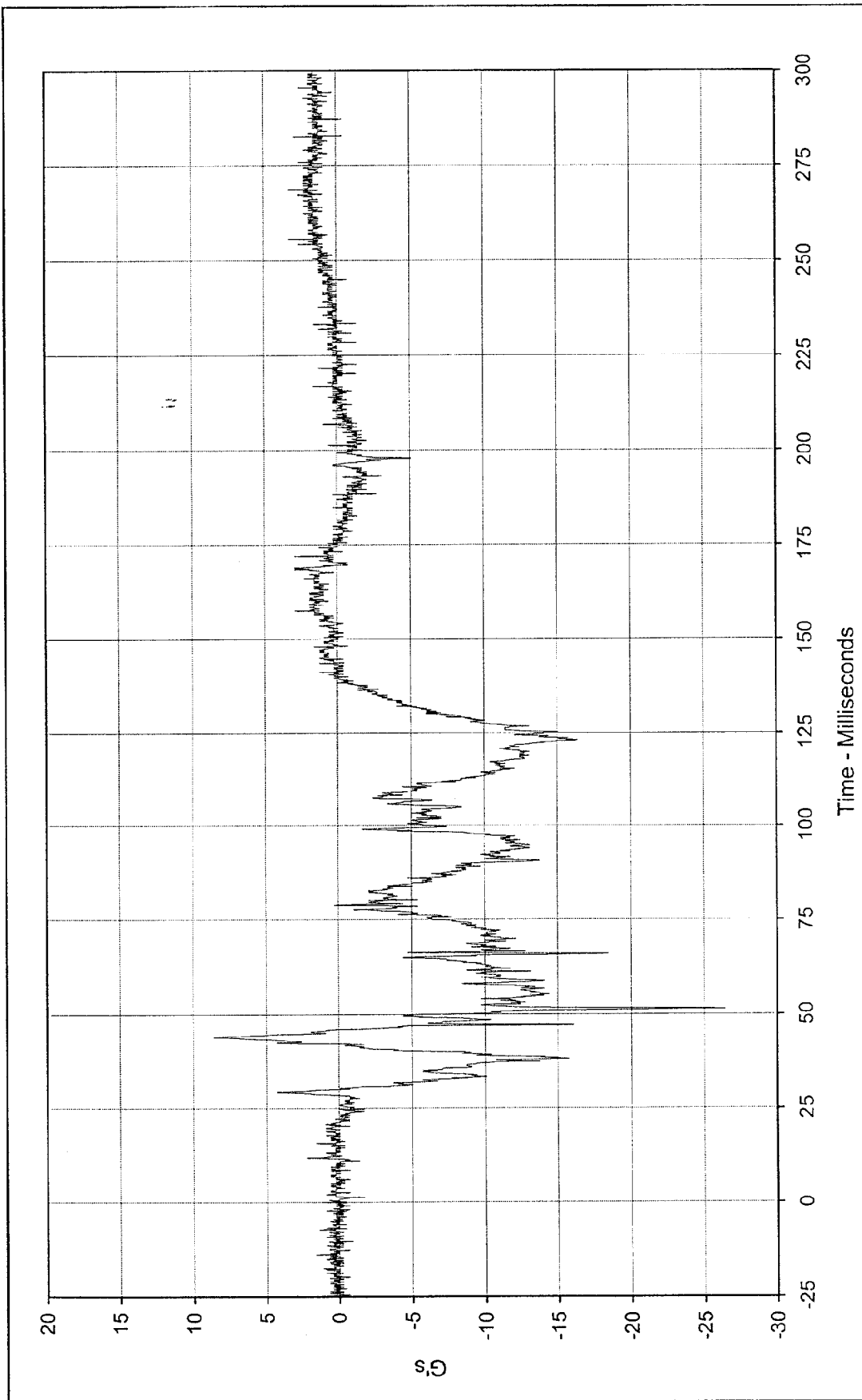


* Channel Failed, No Data



Curve Description:	Passenger Left Foot Aft X	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	45.9 at 84.7 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-4.3 at 207.3 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	FIL-079		

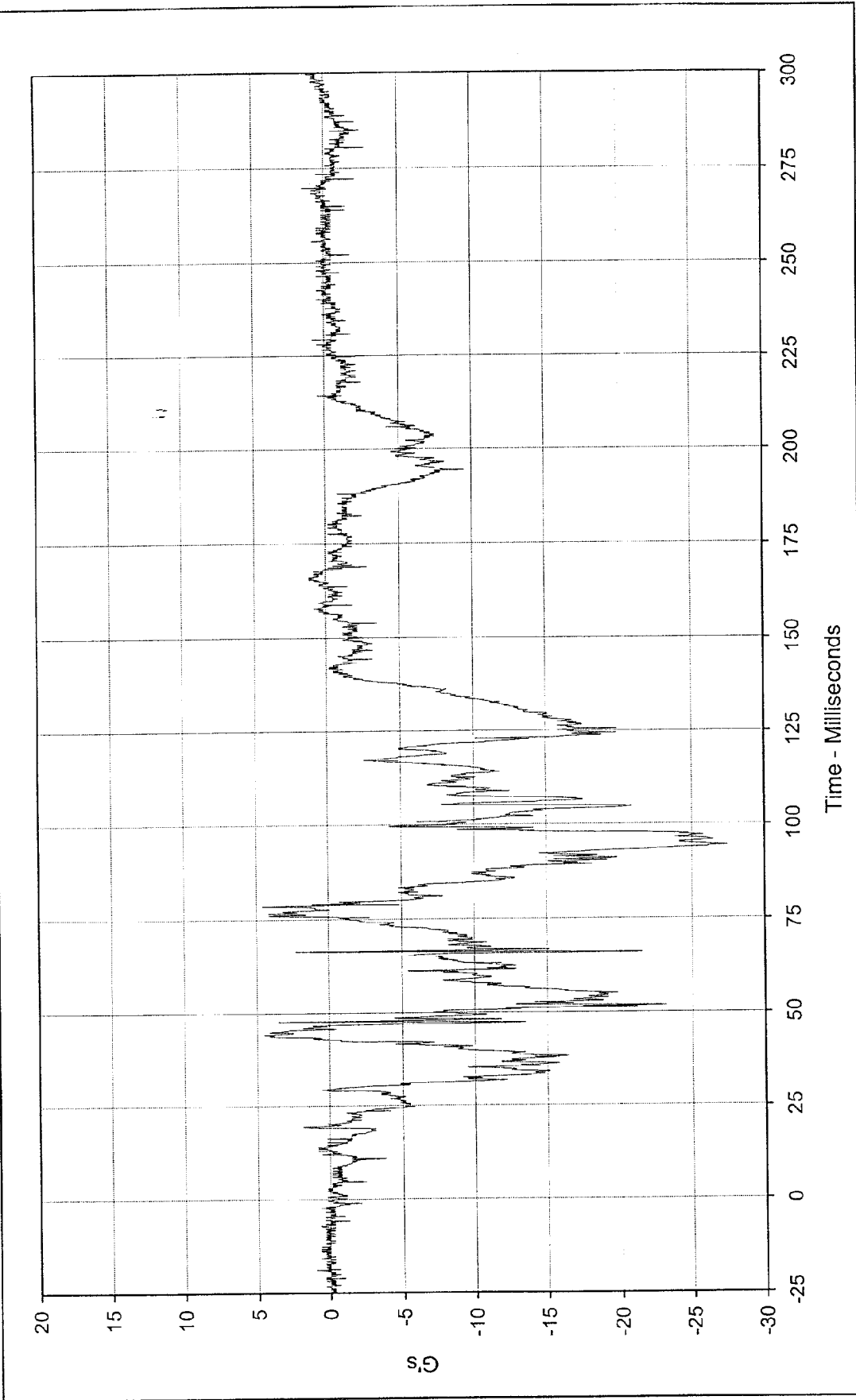




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Left Foot Aft Z
 Maximum Value: 8.6 at 44.0 Milliseconds
 Minimum Value: -26.4 at 51.3 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: FIL-080

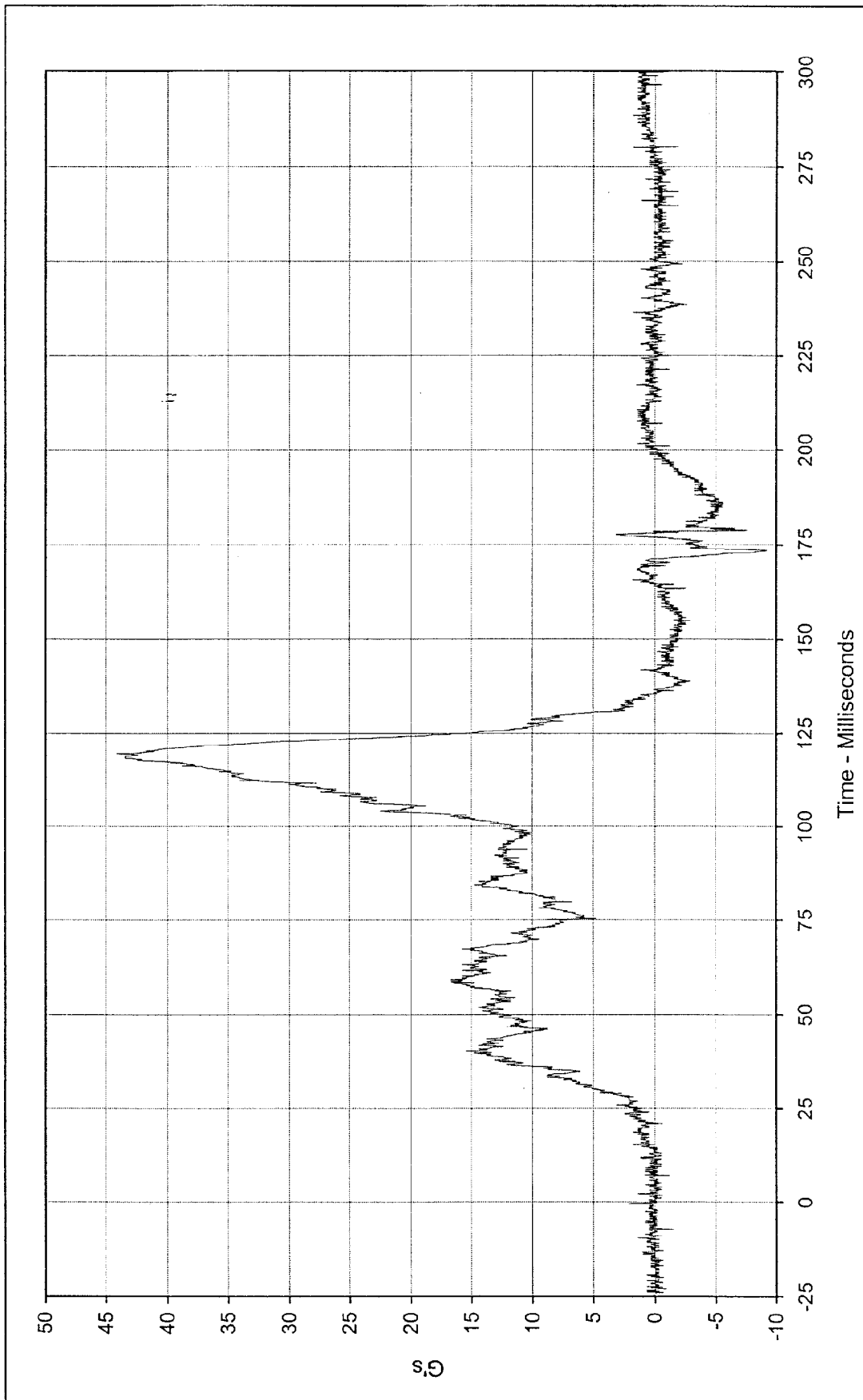




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

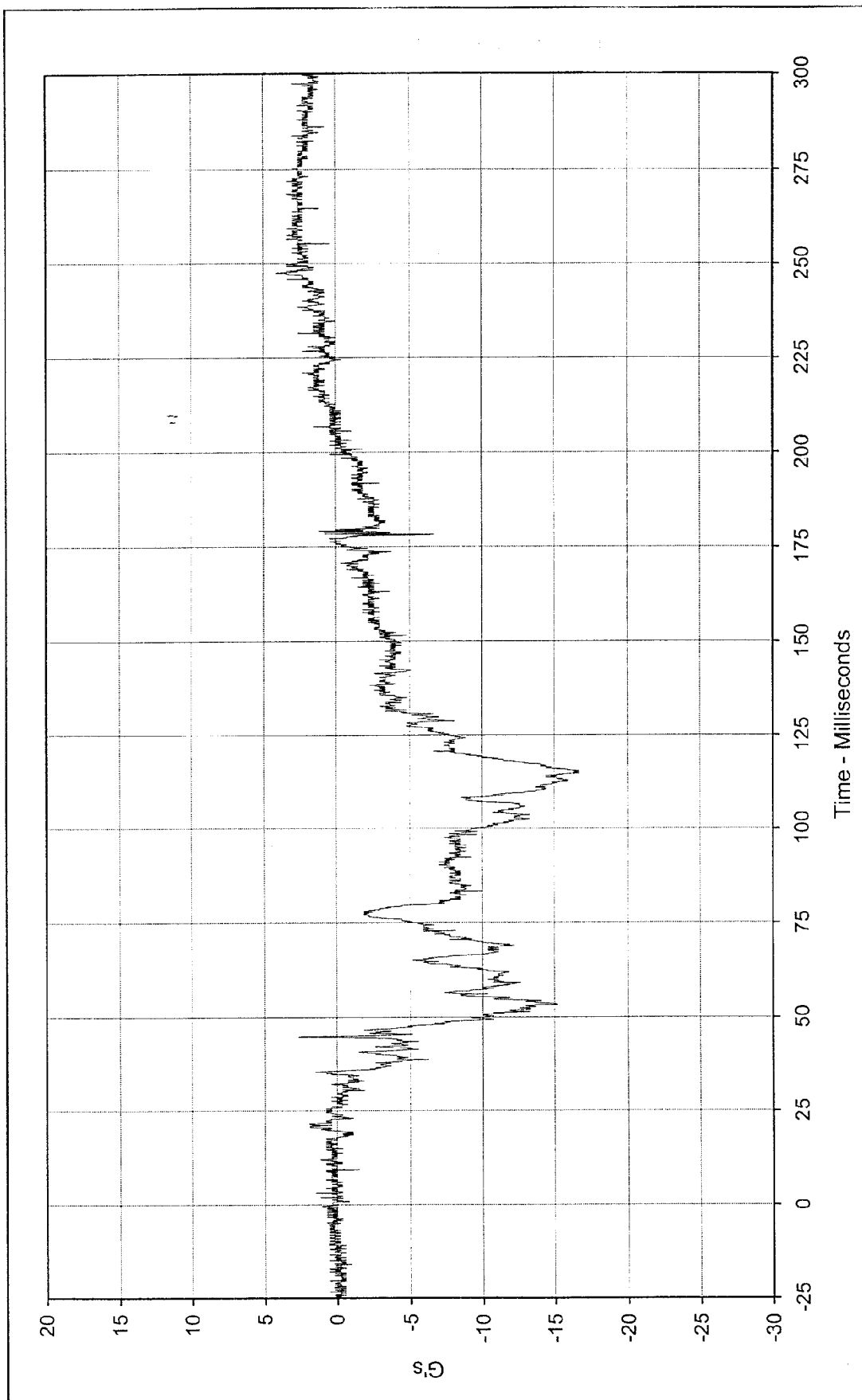
Curve Description: Passenger Left Foot Fore Z
 Maximum Value: 4.6 at 78.4 Milliseconds
 Minimum Value: -27.5 at 94.4 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 8/7/97
 Curve Number: FIL-081





Curve Description:		Passenger Right Foot Aft X		Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	44.1	at	119.3	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-9.2	at	173.4		
SAE Filter Class:	1000				
Date of Test:	8/7/97				
Curve Number:	FIL-082				





Testing Program 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Passenger Right Foot Aft Z

Maximum Value: 4.1 at 247.5 Milliseconds

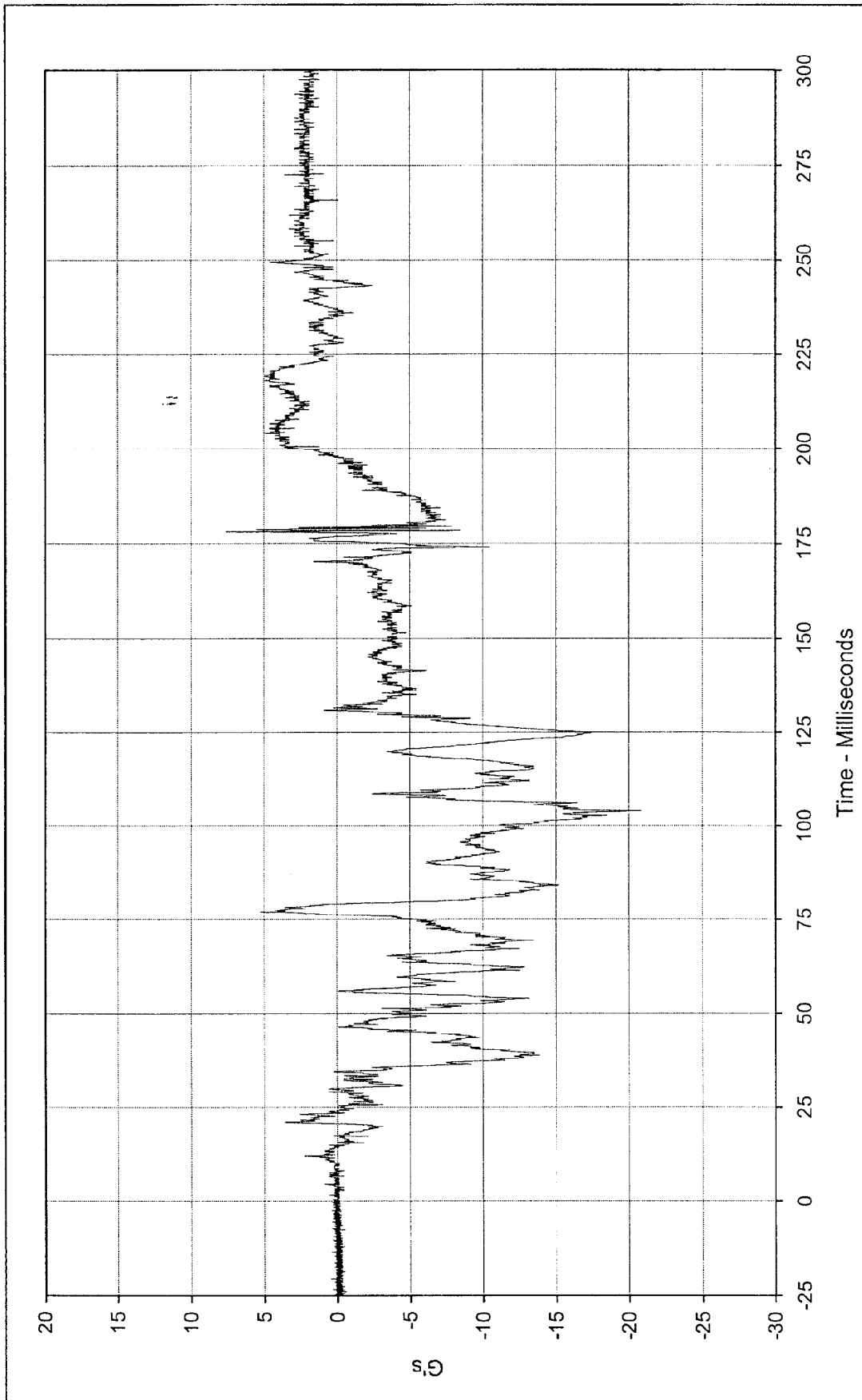
Minimum Value: -16.7 at 114.5 Milliseconds

SAE Filter Class: 1000

Date of Test: 8/7/97

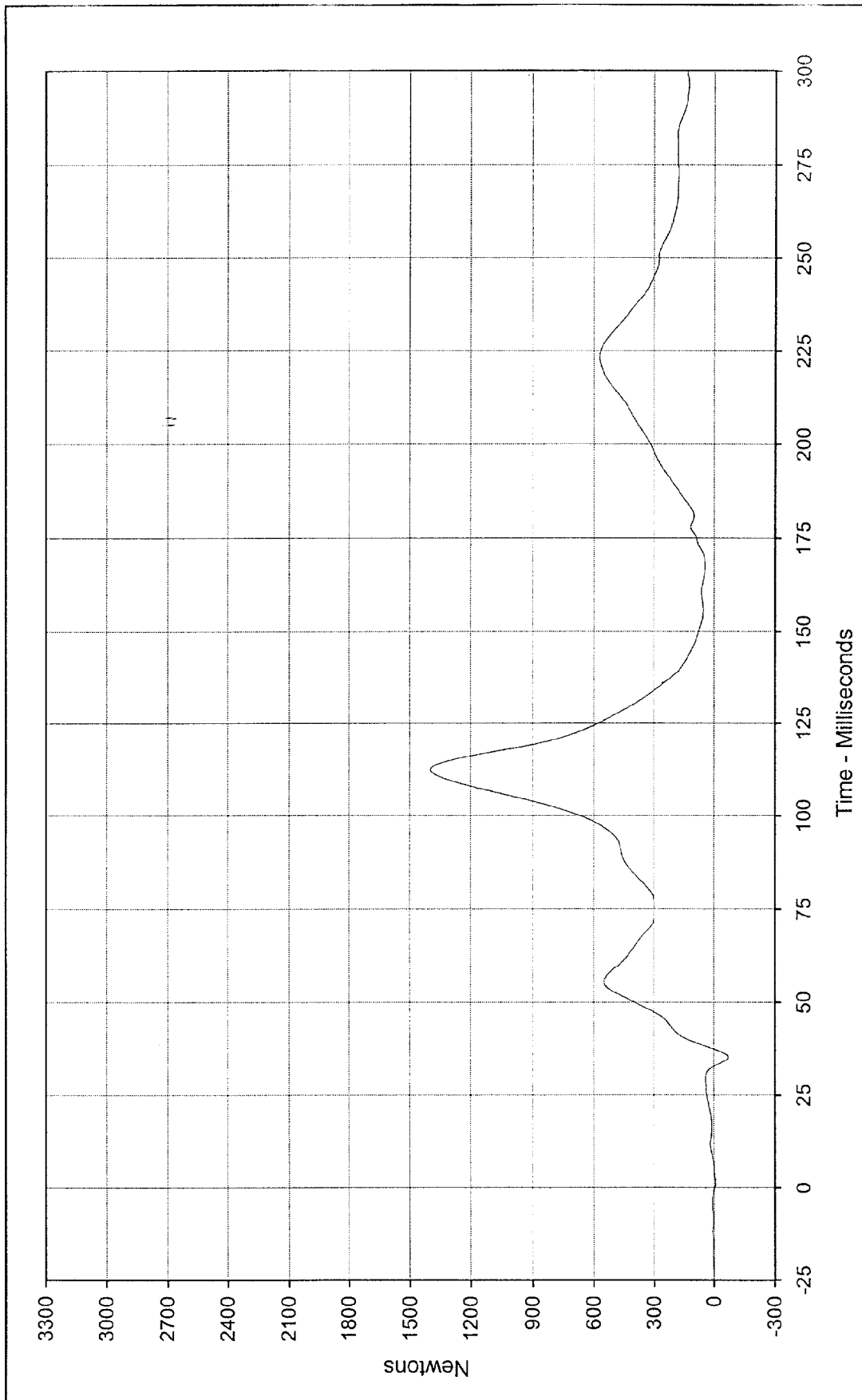
Curve Number: FIL-083





Curve Description:	Passenger Right Foot Fore Z	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	7.6 at 178.2 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-20.8 at 104.0 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	8/7/97		
Curve Number:	FIL-084		

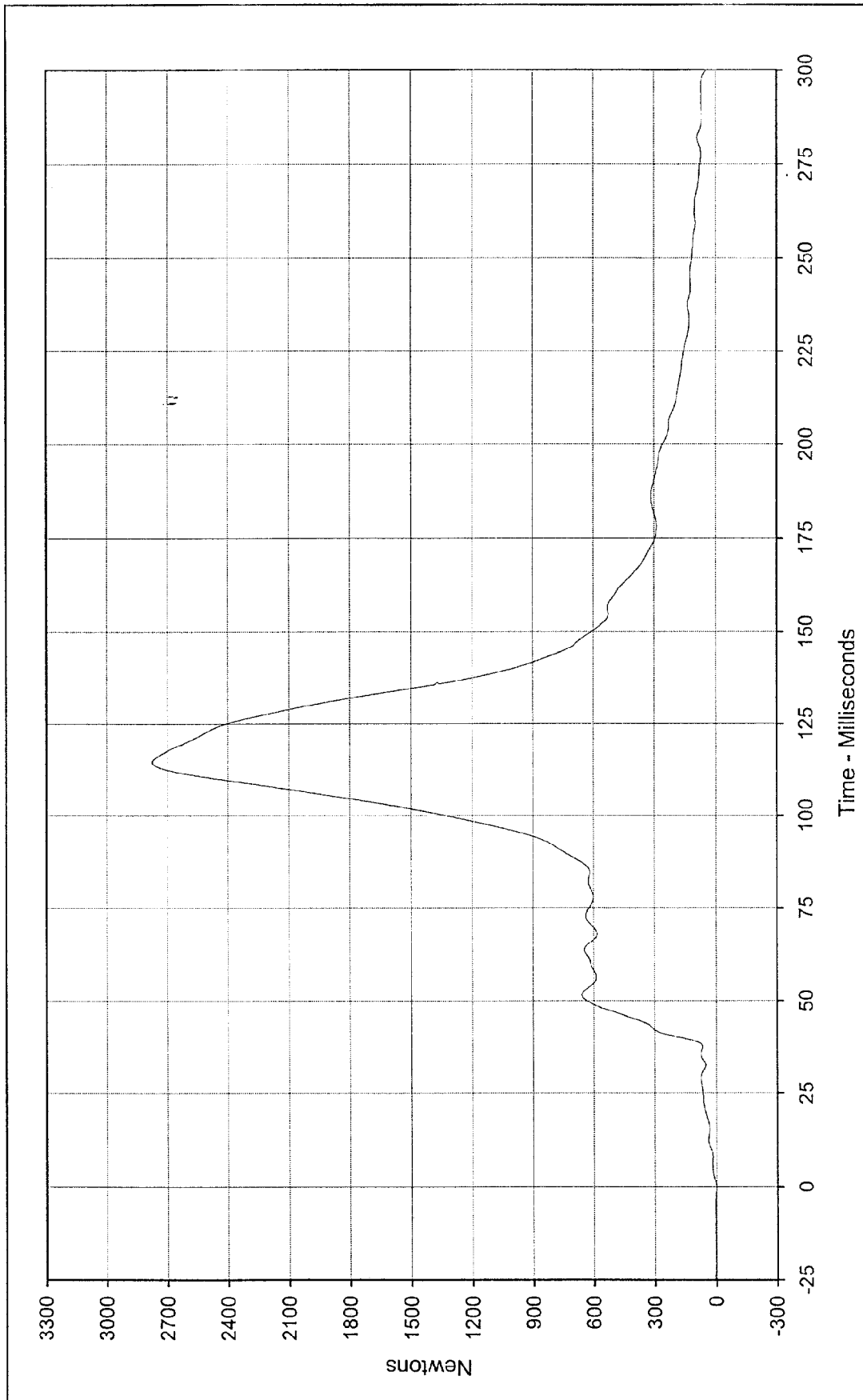




Curve Description:	Passenger Lap Belt Force	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	1398.4 at 112.6 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-70.3 at 35.4 Milliseconds		

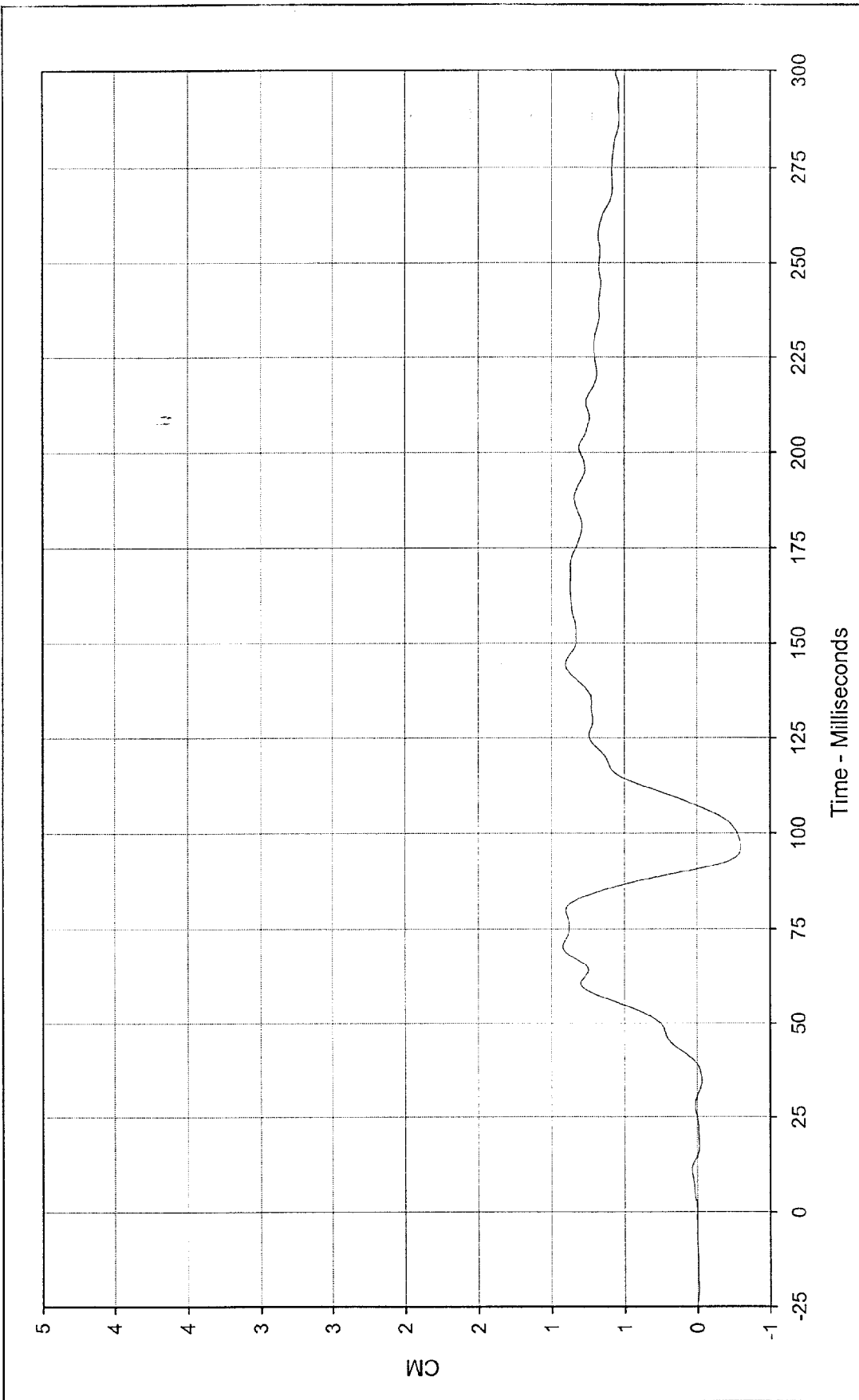


SAE Filter Class:	60
Date of Test:	8/7/97
Curve Number:	FIL-085



Curve Description:	Passenger Shoulder Belt Force	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	2775.8 at 114.5 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-0.3 at 0.0 Milliseconds		
SAE Filter Class:	60		
Date of Test:	8/7/97		
Curve Number:	FIL-086		

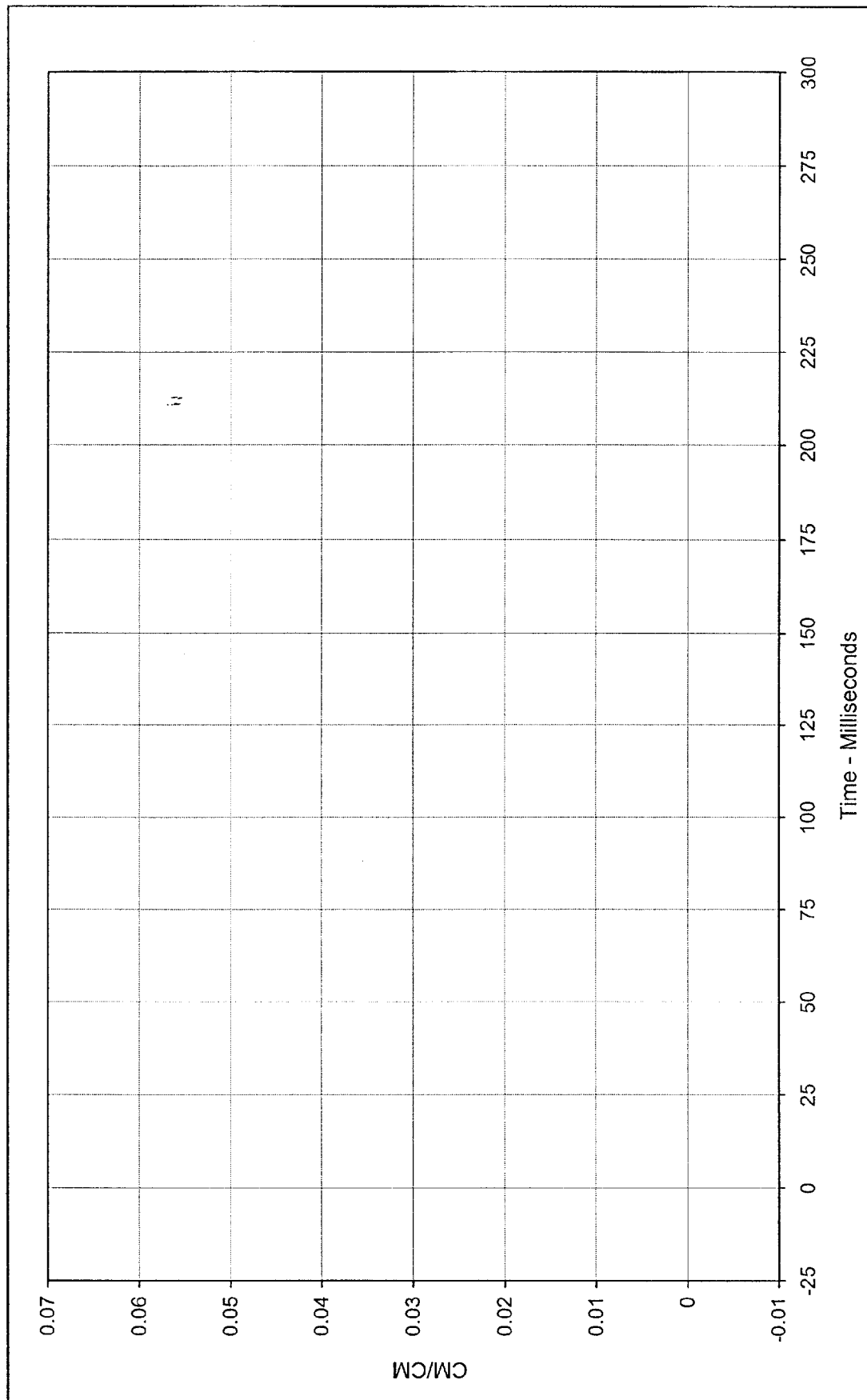




Curve Description: Passenger Shoulder Belt Pullout
 Maximum Value: 0.92 at 70.4 Milliseconds
 Minimum Value: -0.30 at 96.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 8/7/97
 Curve Number: FIL-087

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan



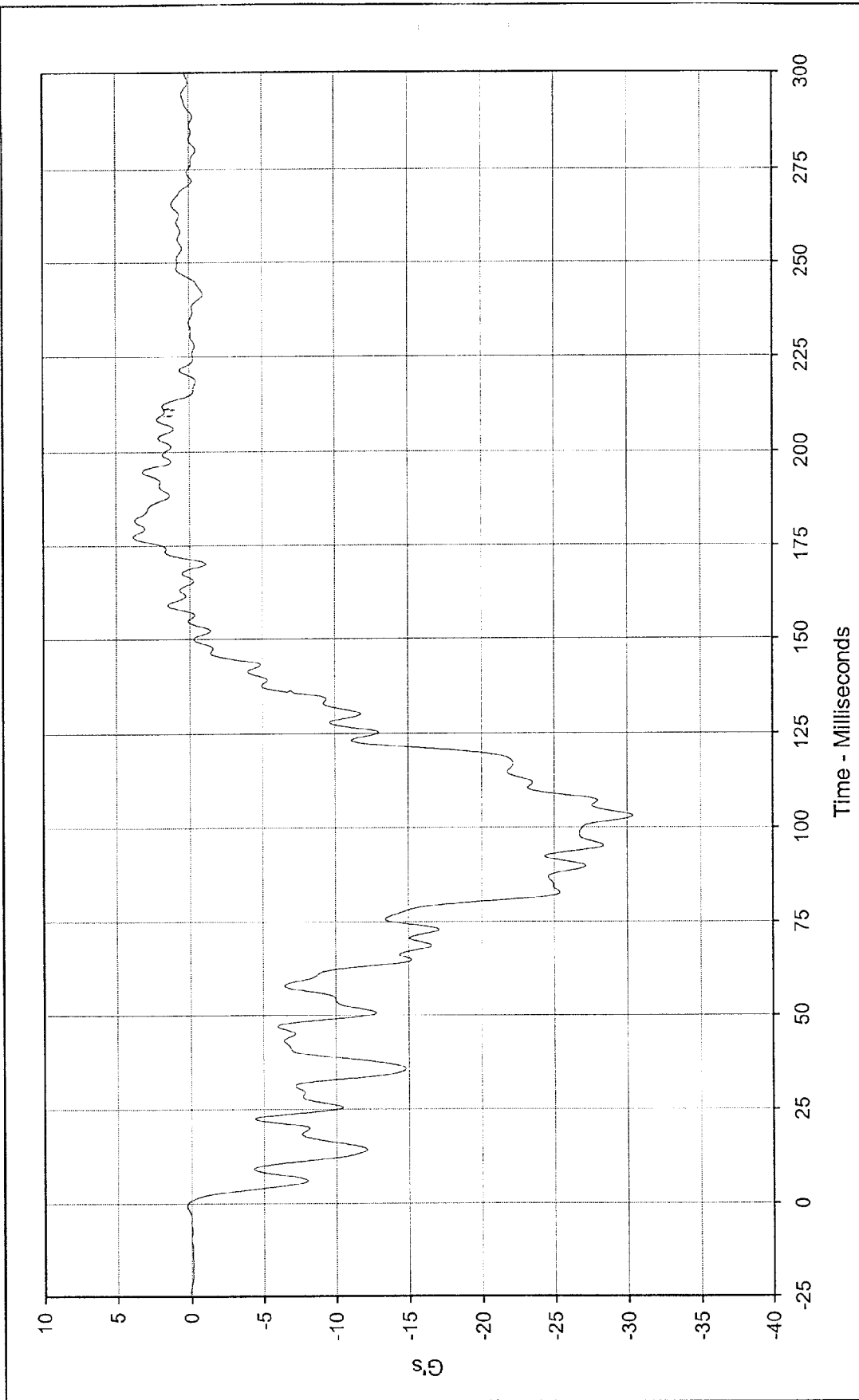


Curve Description: Passenger Shoulder Belt Elongation * Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Maximum Value: 0.000 at 0.0 Milliseconds Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan
 Minimum Value: 0.000 at 0.0 Milliseconds

SAE Filter Class: 60
 Date of Test: 8/7/97
 Curve Number: FIL-088



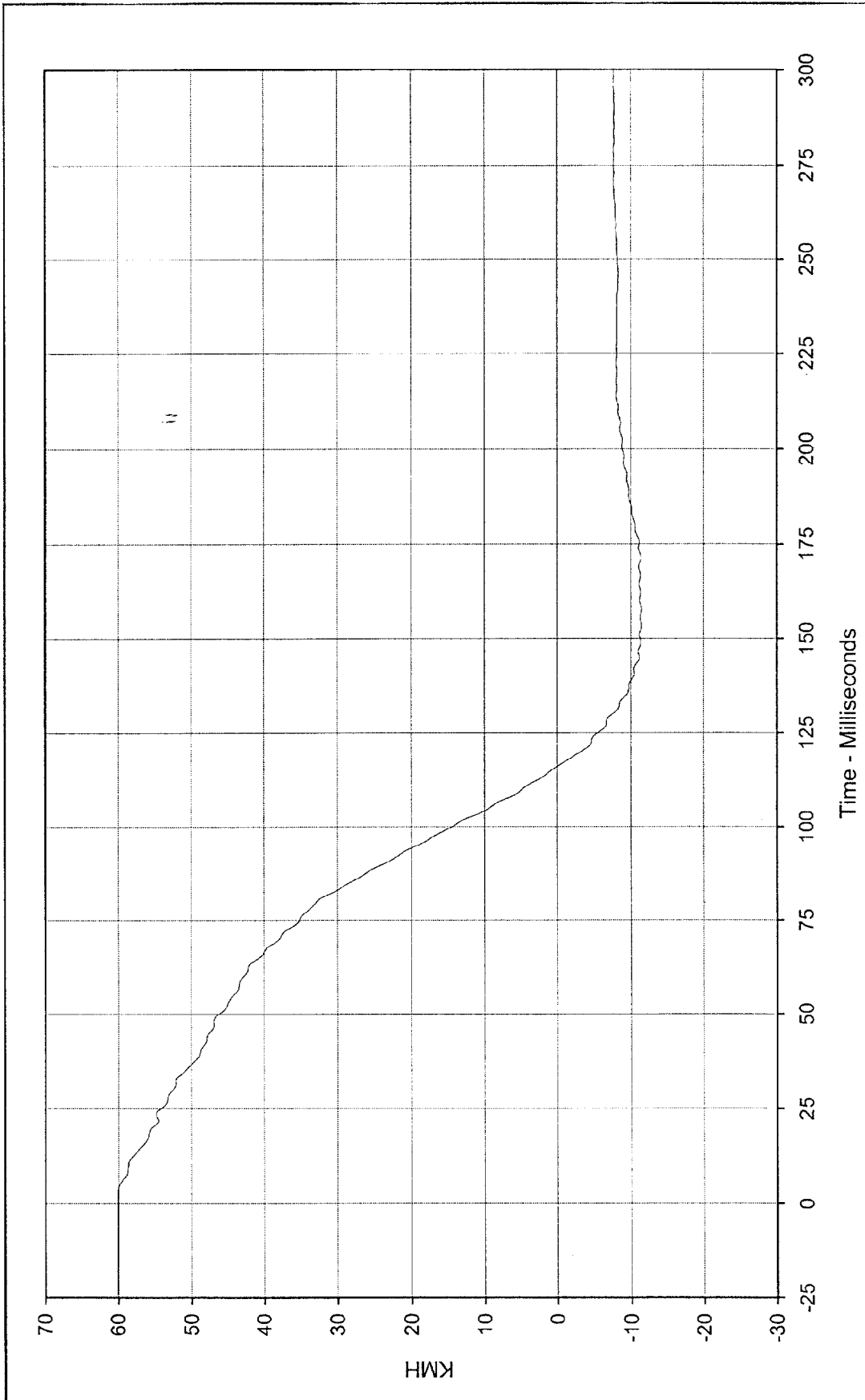
* Channel Failed, No Data



Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Vehicle Left Rear Sill X
 Maximum Value: 3.8 at 177.4 Milliseconds
 Minimum Value: -30.4 at 103.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 8/7/97
 Curve Number: FIL-089

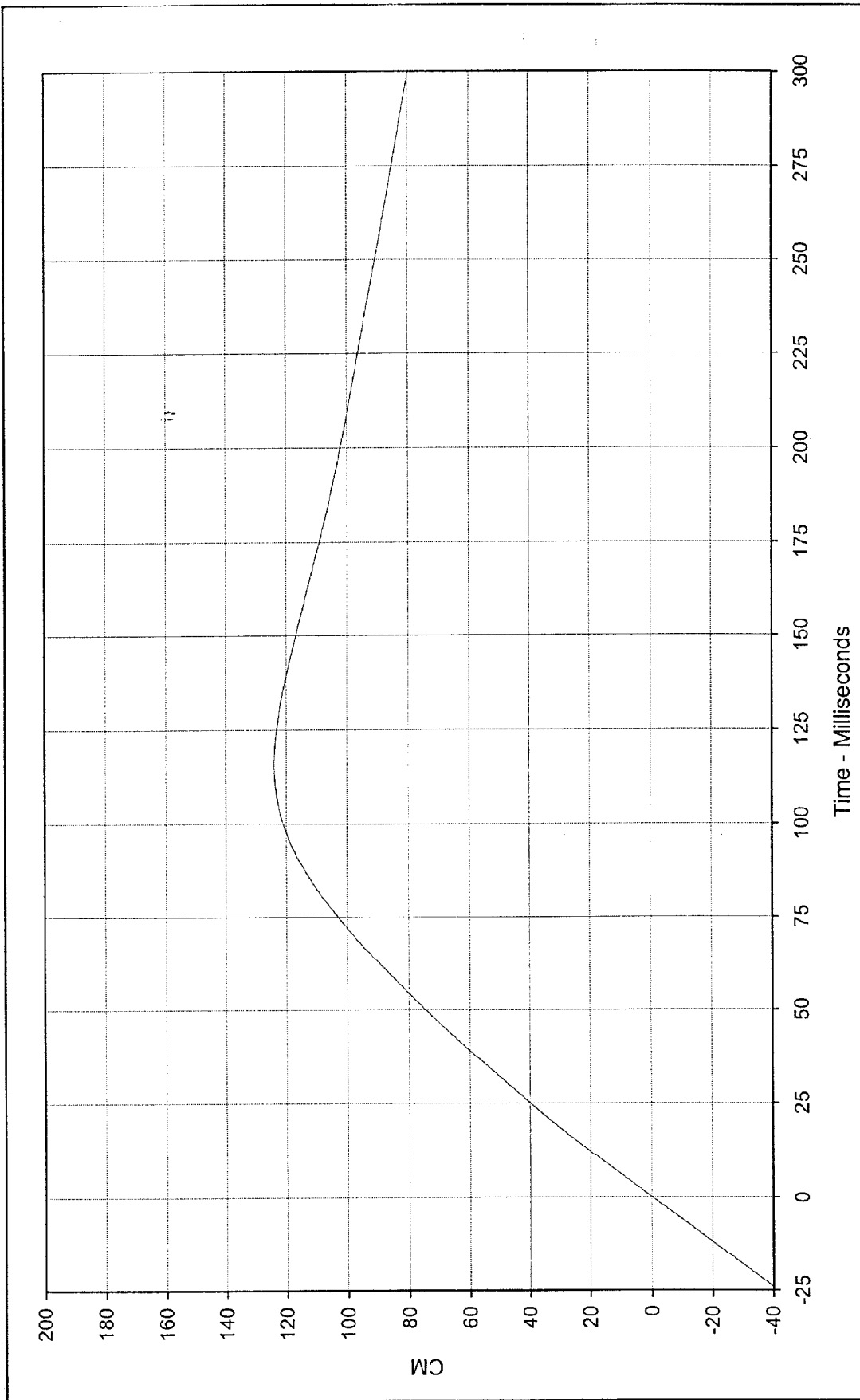




Curve Description: Vehicle Left Rear Sill X Velocity
 Maximum Value: 60.1 at 0.1 Milliseconds
 Minimum Value: -11.5 at 157.7 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN1-089

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry 4 Door Sedan

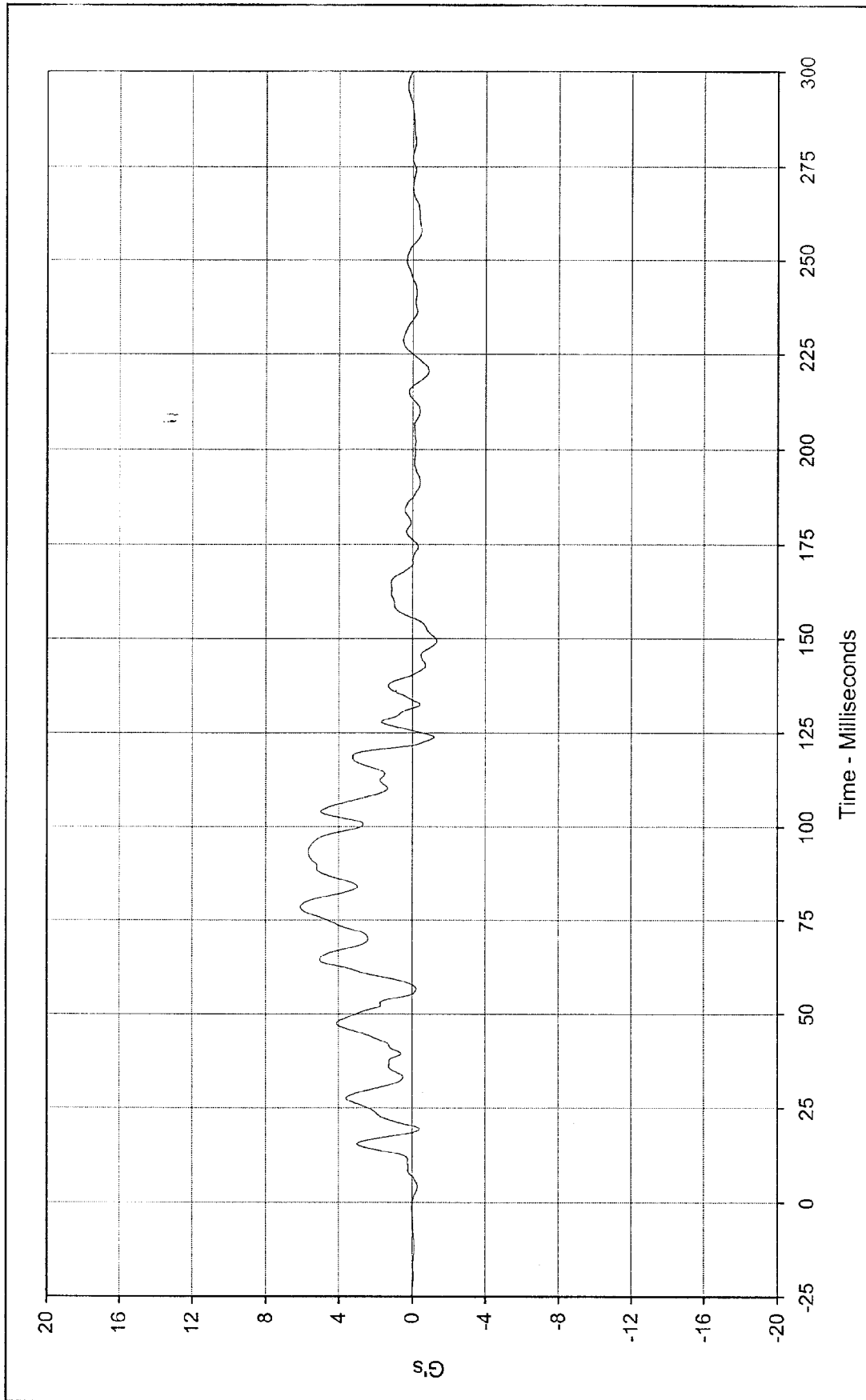




Curve Description: Vehicle Left Rear Sill X Displ.
Maximum Value: 124.0 at 115.9 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 8/7/97
Curve Number: IN2-089

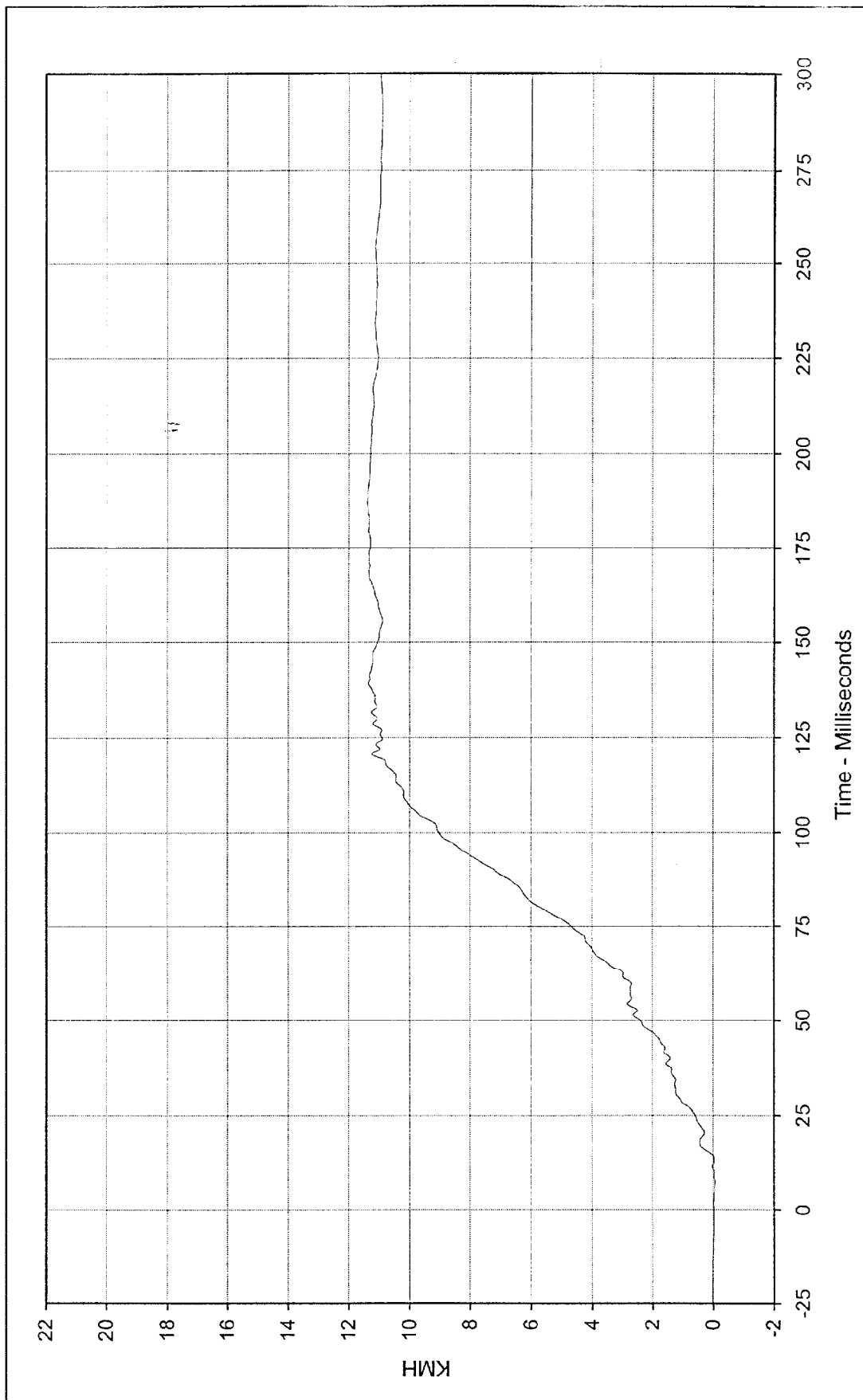
Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry 4 Door Sedan





Curve Description:	Vehicle Left Rear Sill Y		Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	6.1	at 78.4 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-1.3	at 149.4 Milliseconds		
SAE Filter Class:	60			
Date of Test:	8/7/97			
Curve Number:	FIL-090			





Curve Description: Vehicle Left Rear Sill Y Velocity

Maximum Value: 11.4 at 11.4 Milliseconds

Minimum Value: -0.1 at 7.4 Milliseconds

SAE Filter Class: 180

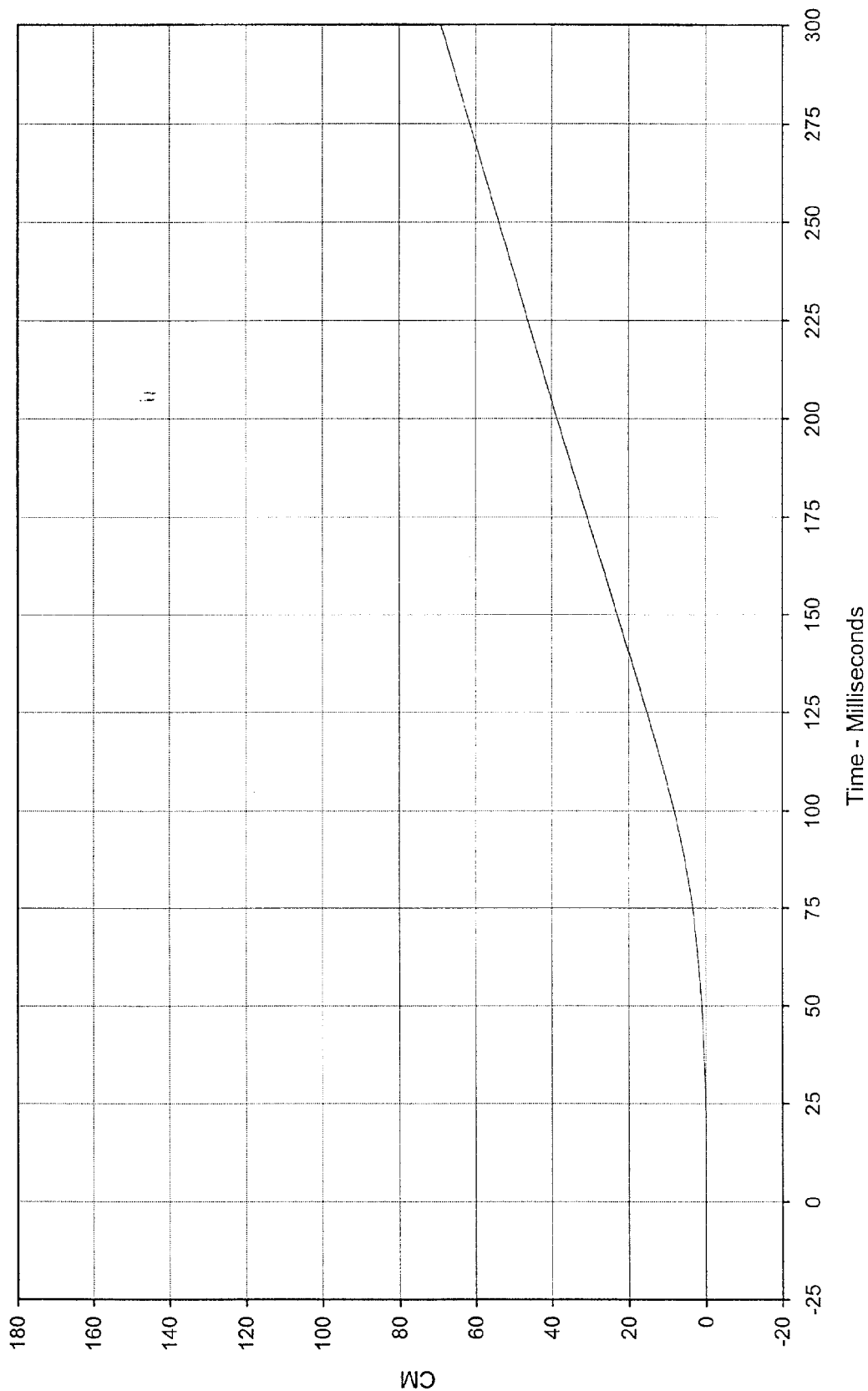
Date of Test: 8/7/97

Curve Number: IN1-090

Testing Program: 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry 4 Door Sedan

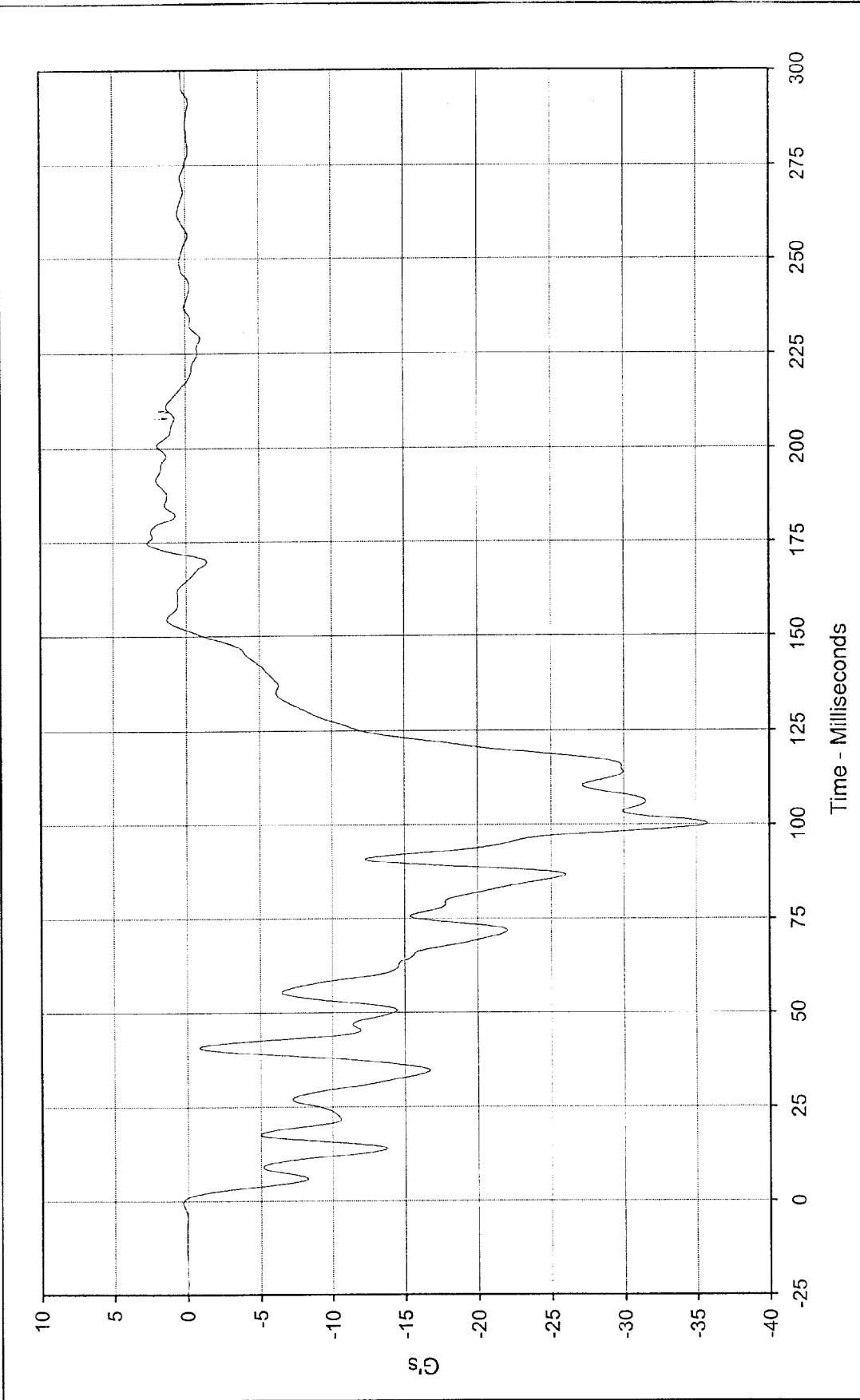




Curve Description: Vehicle Left Rear Sill Y Displ.
 Maximum Value: 69.2 at 299.9 Milliseconds
 Minimum Value: 0.0 at 14.5 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN2-090

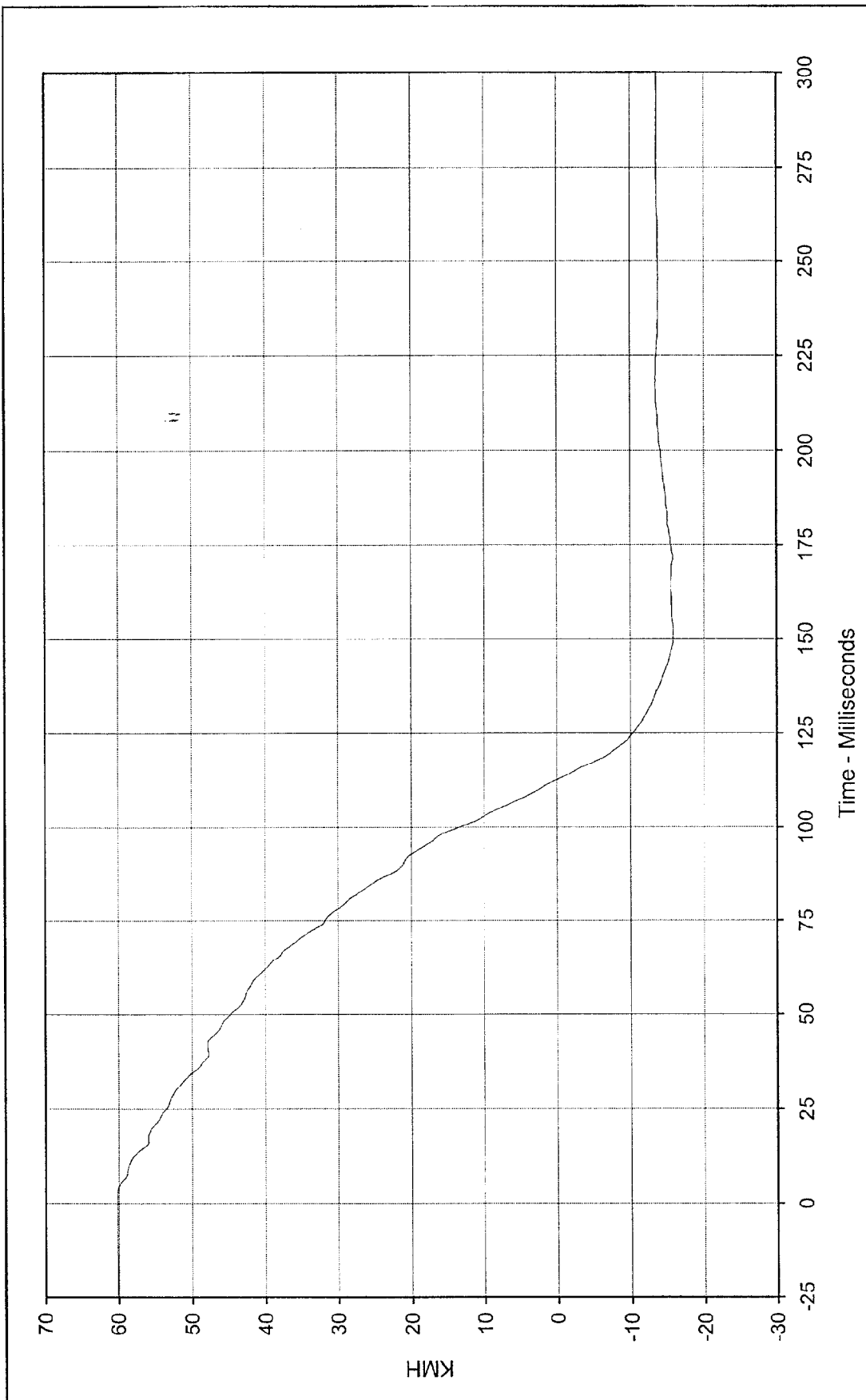
Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry 4 Door Sedan





Curve Description:	Vehicle Center Console Rear X	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	2.7 at 174.9 Milliseconds	Test Vehicle:	1996 Toyota Camry LE 4 Door Sedan
Minimum Value:	-35.7 at 100.2 Milliseconds		
SAE Filter Class:	60		
Date of Test:	8/7/97		
Curve Number:	FIL-091		

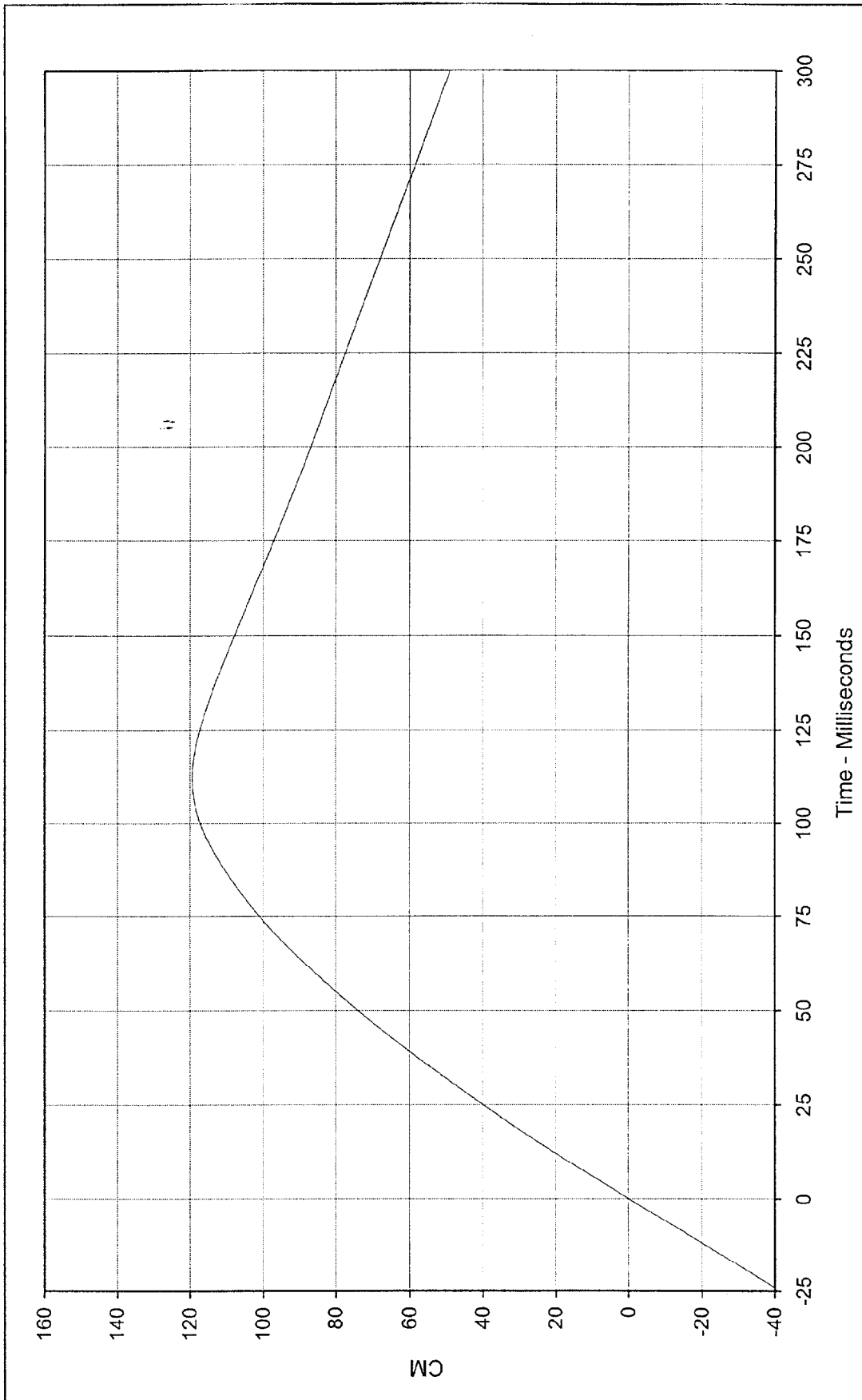




Curve Description: Vehicle Center Rear Console X Velocity
 Maximum Value: 60.2 at 1.8 Milliseconds
 Minimum Value: -15.8 at 152.2 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN1-091

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry 4 Door Sedan

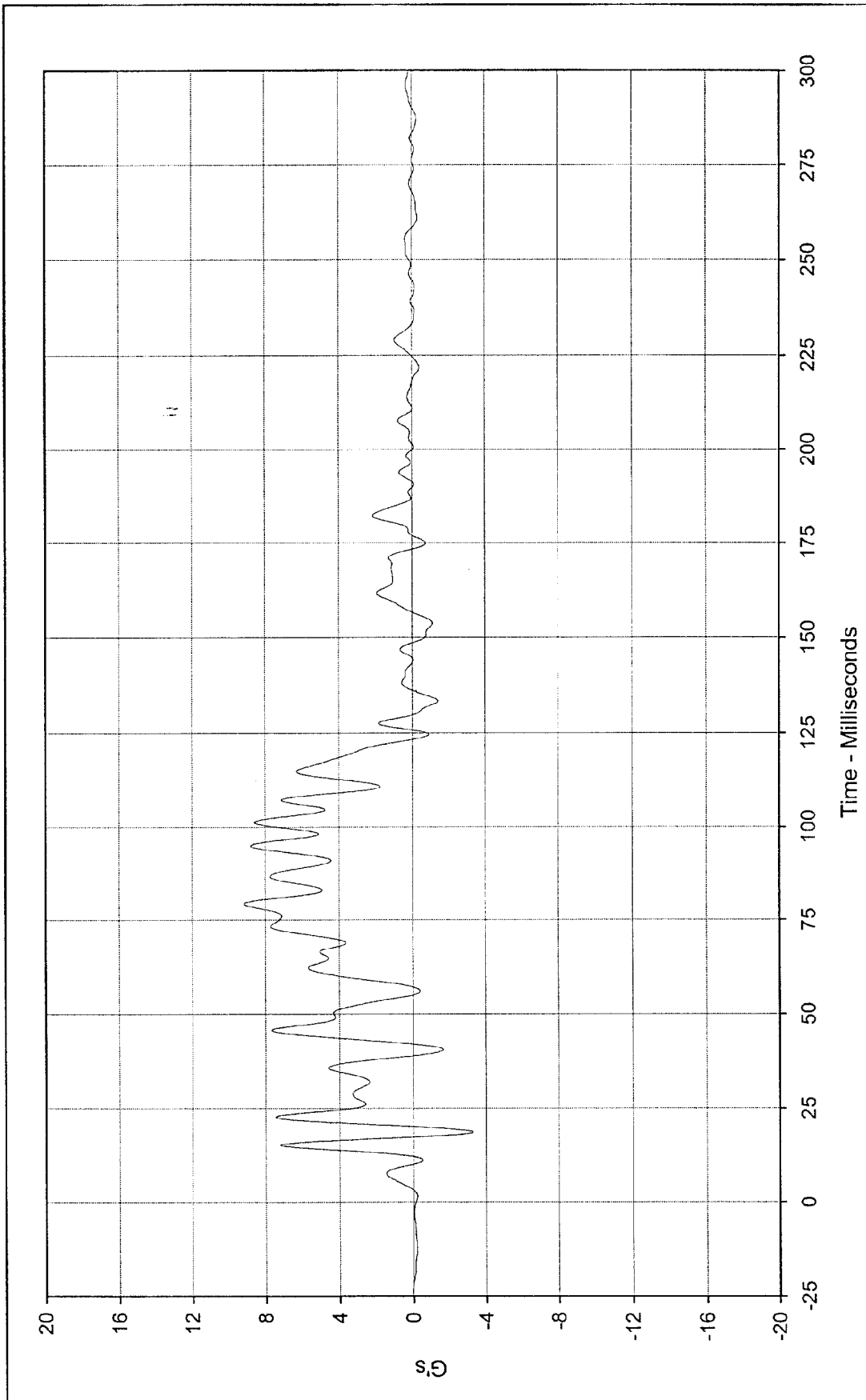




Curve Description: Vehicle Center Rear Console X Displ. Testing Program 1997 NHTSA 40% Offset Impact (Female)
Maximum Value: 119.4 at 112.6 Milliseconds Test Vehicle: 1996 Toyota Camry 4 Door Sedan
Minimum Value: 0.0 at 0.0 Milliseconds



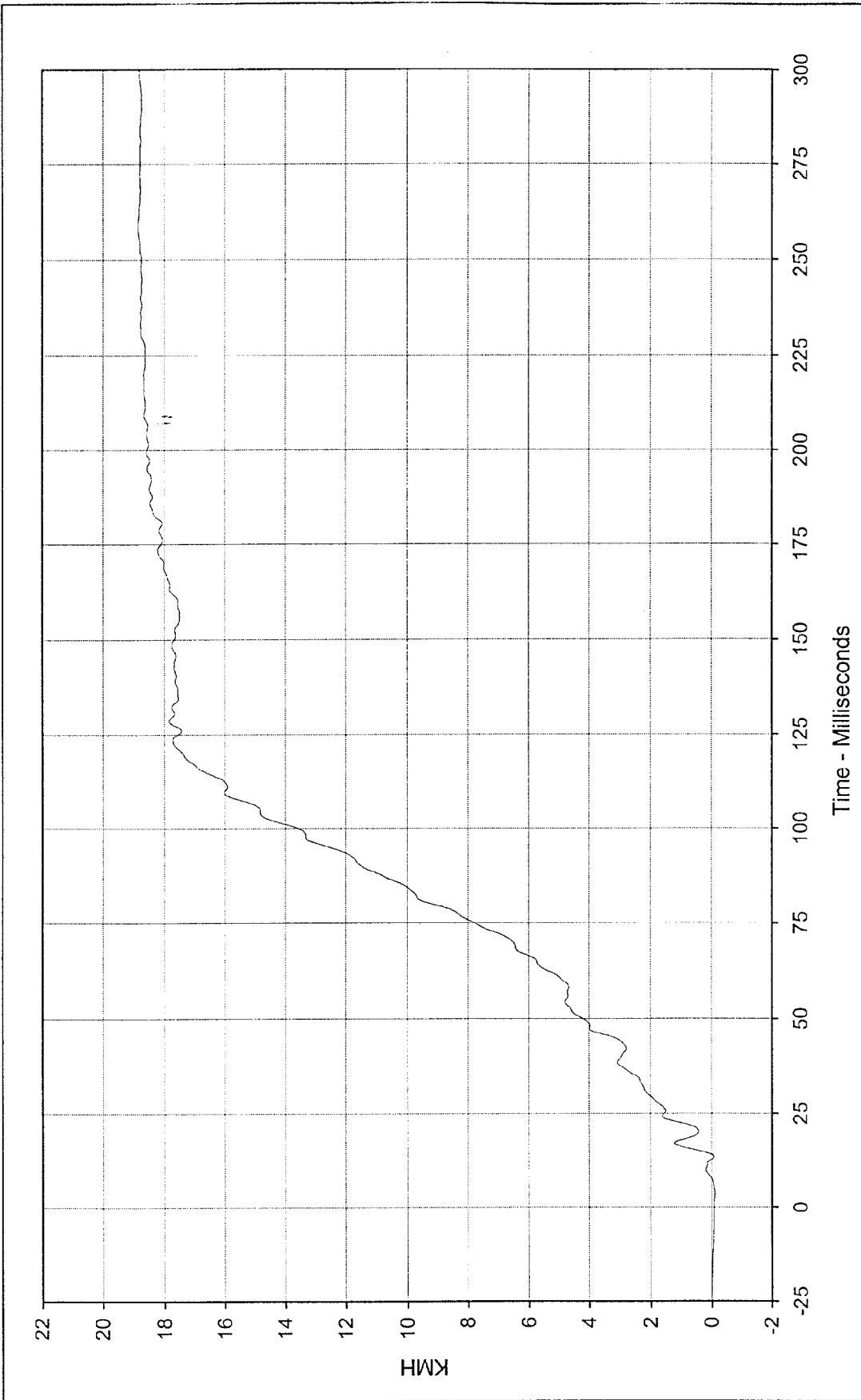
SAE Filter Class: 180
Date of Test: 8/7/97
Curve Number: IN2-091



Curve Description: Vehicle Center Console Rear Y
 Maximum Value: 9.1 at 79.3 Milliseconds
 Minimum Value: -3.3 at 18.7 Milliseconds
 SAE Filter Class: 60
 Date of Test: 8/7/97
 Curve Number: FIL-092

Testing Program: 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





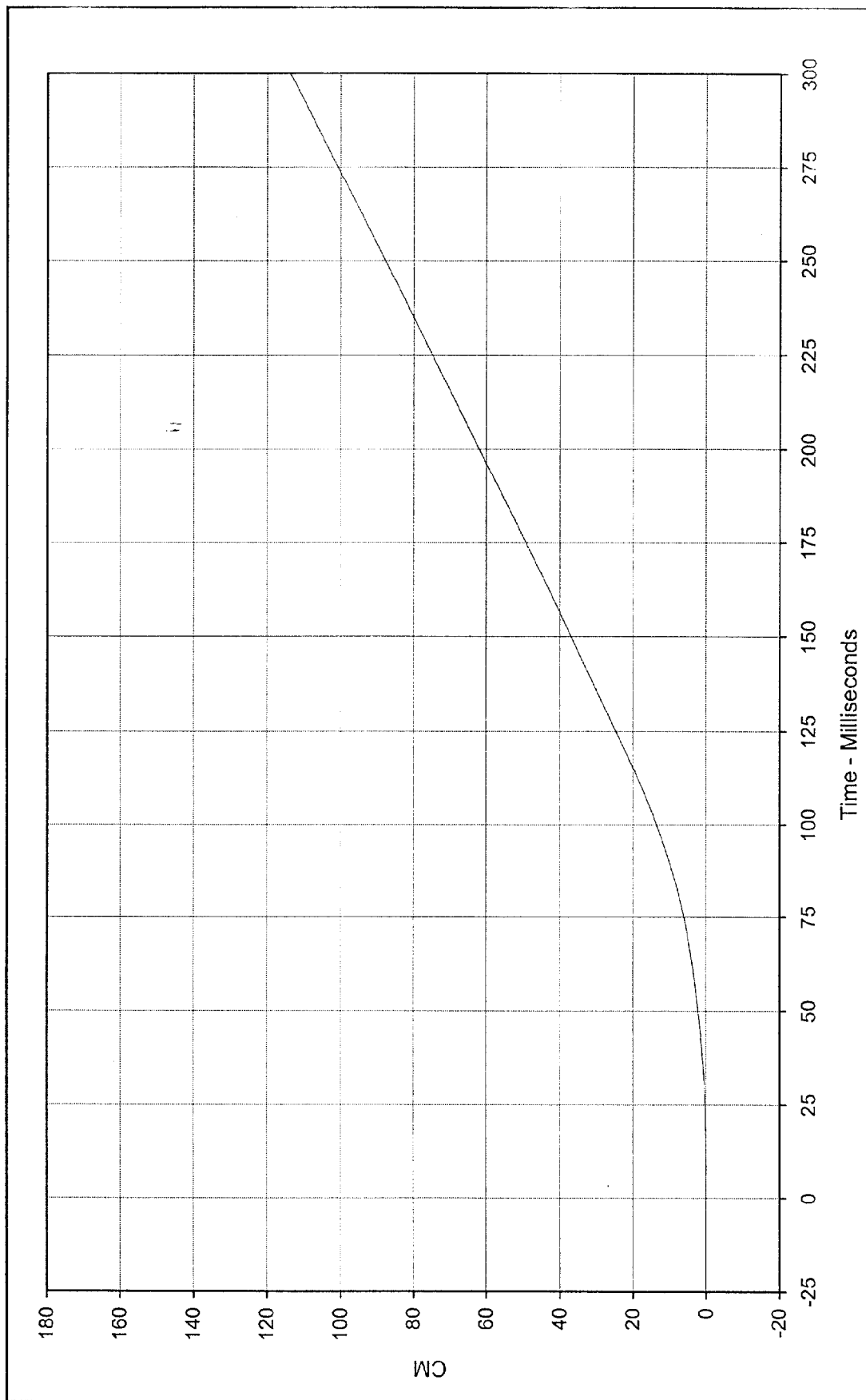
Curve Description: Vehicle Center Rear Console Y Velocity

Maximum Value:	18.9	at	258.5	Milliseconds
Minimum Value:	-0.1	at	3.7	Milliseconds
SAE Filter Class:	180			
Date of Test:	8/7/97			
Curve Number:	IN1-092			

Testing Program 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry 4 Door Sedan

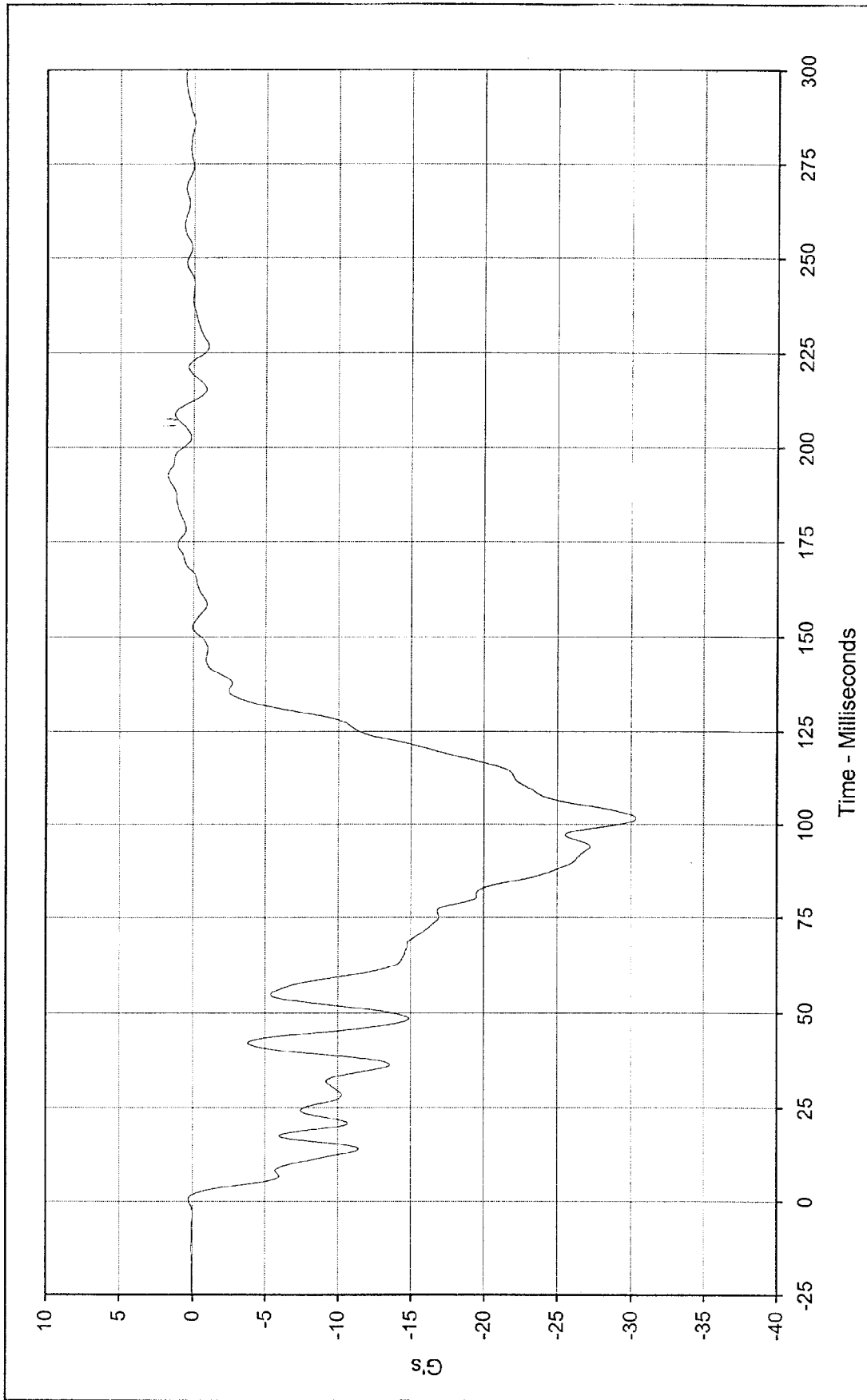




Curve Description: Vehicle Center Rear Console Y Displ.
 Maximum Value: 113.8 at 299.9 Milliseconds
 Minimum Value: 0.0 at 7.7 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN2-092

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry 4 Door Sedan

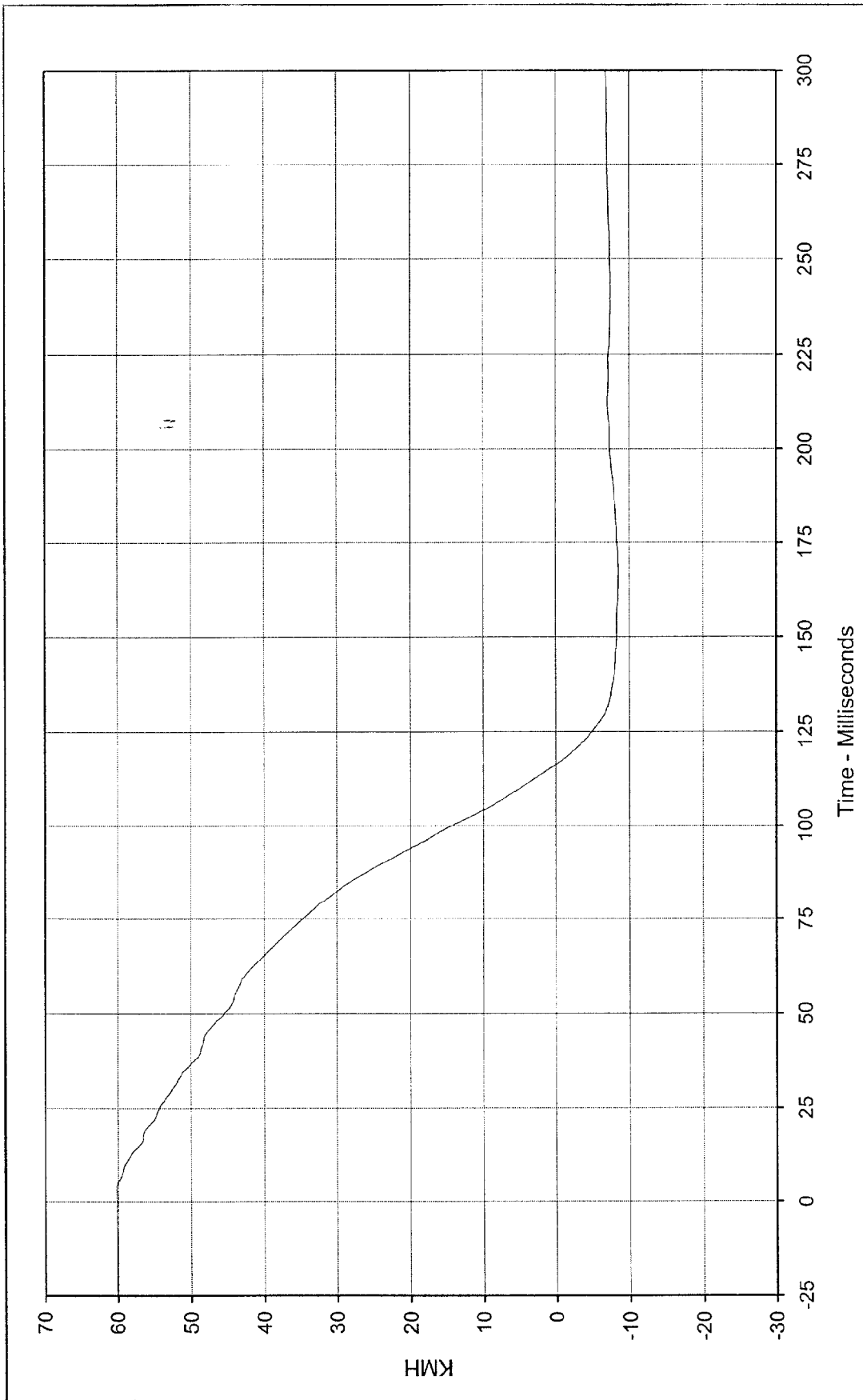




Curve Description: Vehicle Right Rear Sill X
 Maximum Value: 1.8 at 192.3 Milliseconds
 Minimum Value: -30.3 at 101.6 Milliseconds
 SAE Filter Class: 60
 Date of Test: 8/7/97
 Curve Number: FIL-093

Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

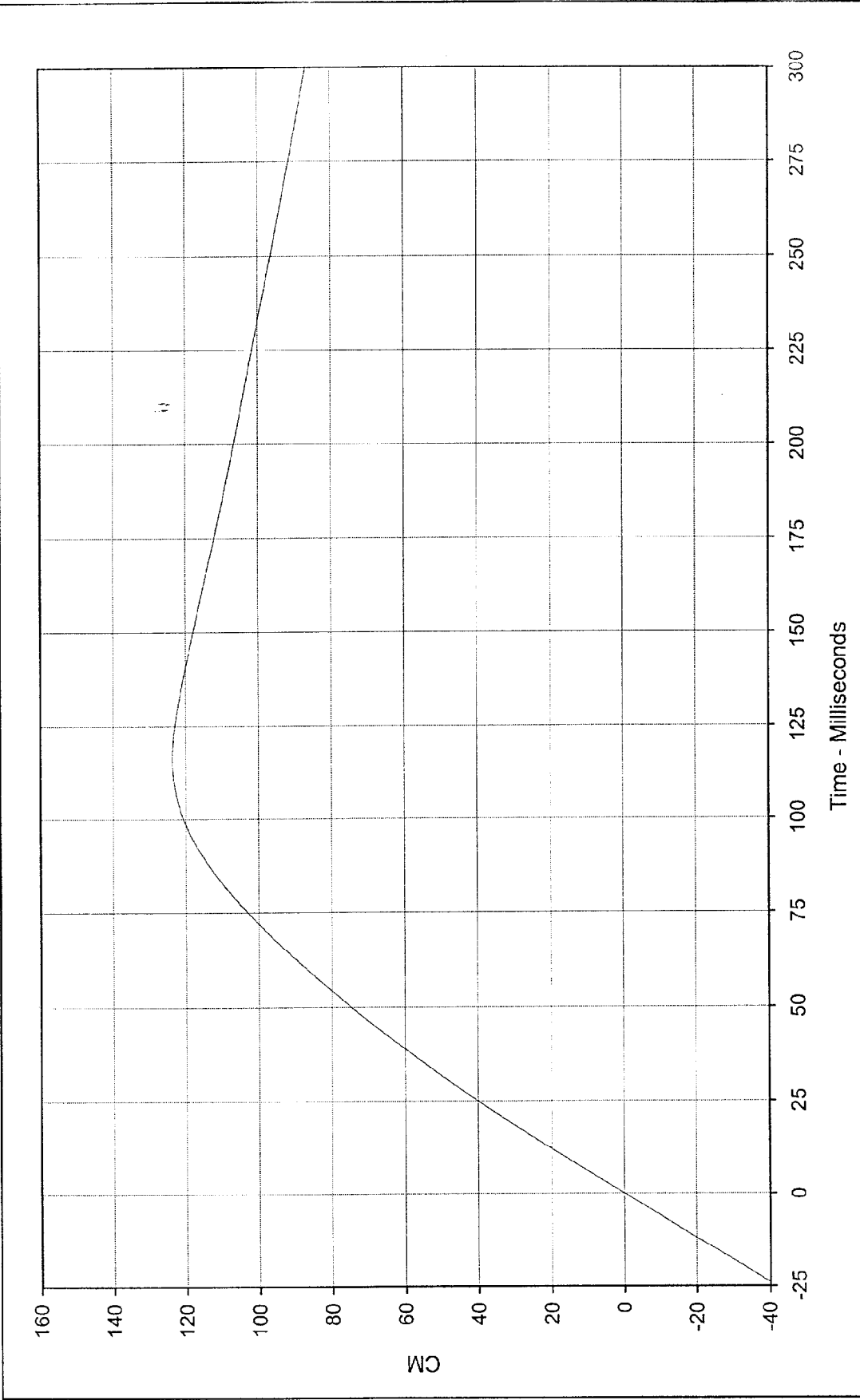




Curve Description: Vehicle Right Rear Sill X Velocity
Maximum Value: 60.2 at 3.9 Milliseconds
Minimum Value: -8.5 at 167.6 Milliseconds
SAE Filter Class: 180
Date of Test: 8/7/97
Curve Number: IN1-093

Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry 4 Door Sedan

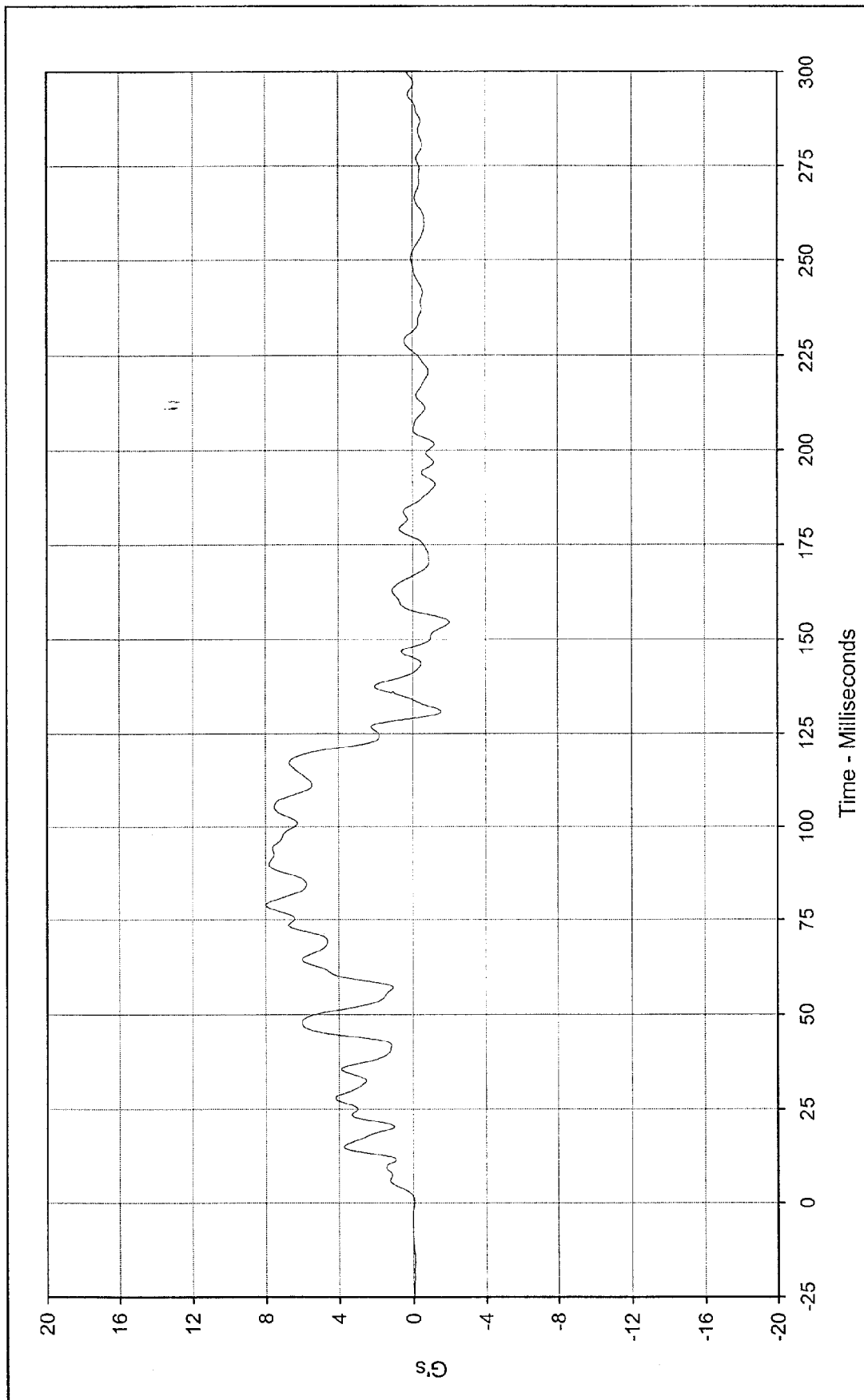




Curve Description: Vehicle Right Rear Sill X Displ.
Maximum Value: 123.6 at 116.2 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 8/7/97
Curve Number: IN2-093

Testing Program 1997 NHTSA 40% Offset Impact (Female)
Test Vehicle: 1996 Toyota Camry 4 Door Sedan

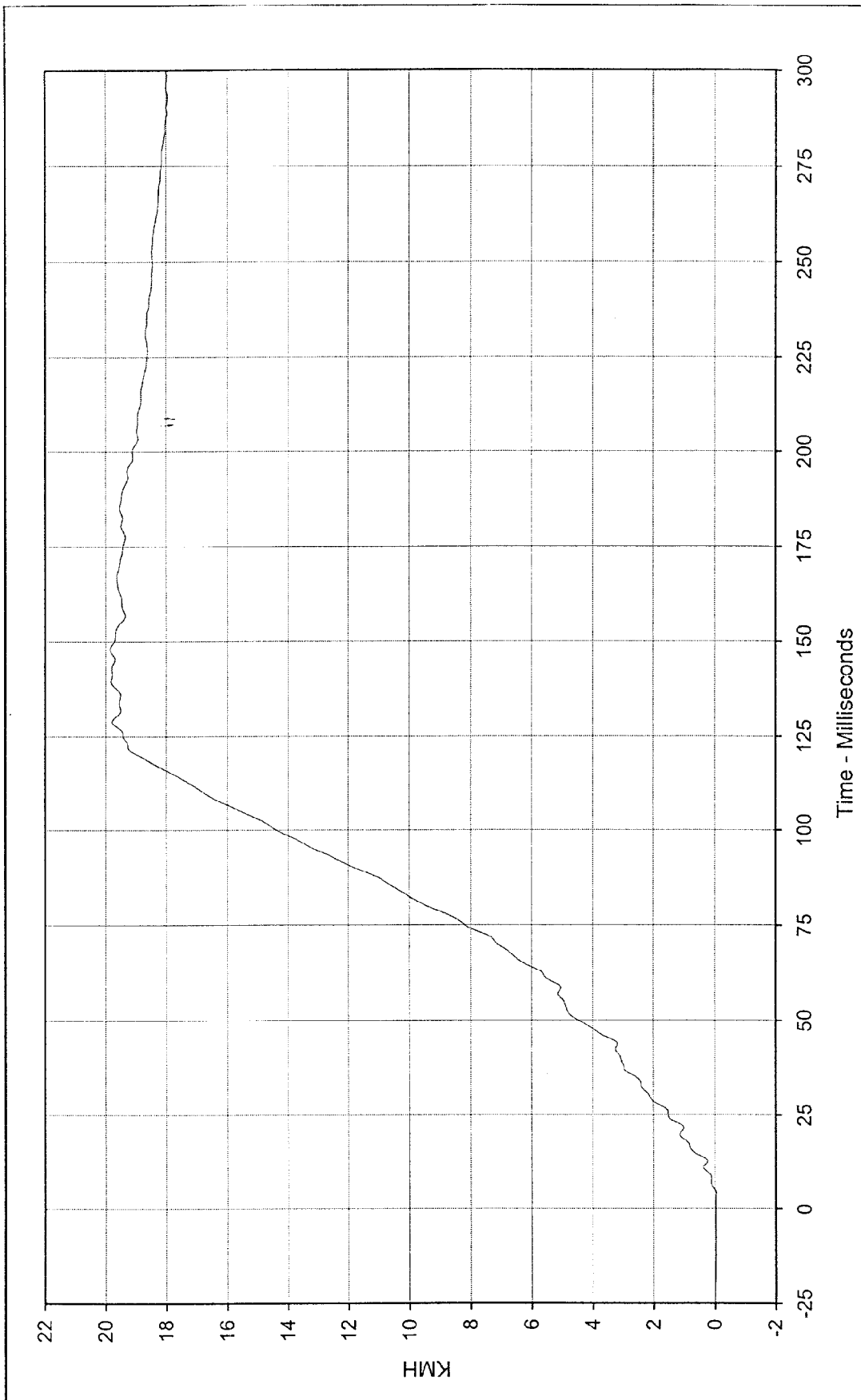




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

Curve Description: Vehicle Right Rear Sill Y
 Maximum Value: 8.0 at 78.9 Milliseconds
 Minimum Value: -2.0 at 154.5 Milliseconds
 SAE Filter Class: 60
 Date of Test: 8/7/97
 Curve Number: FIL-094

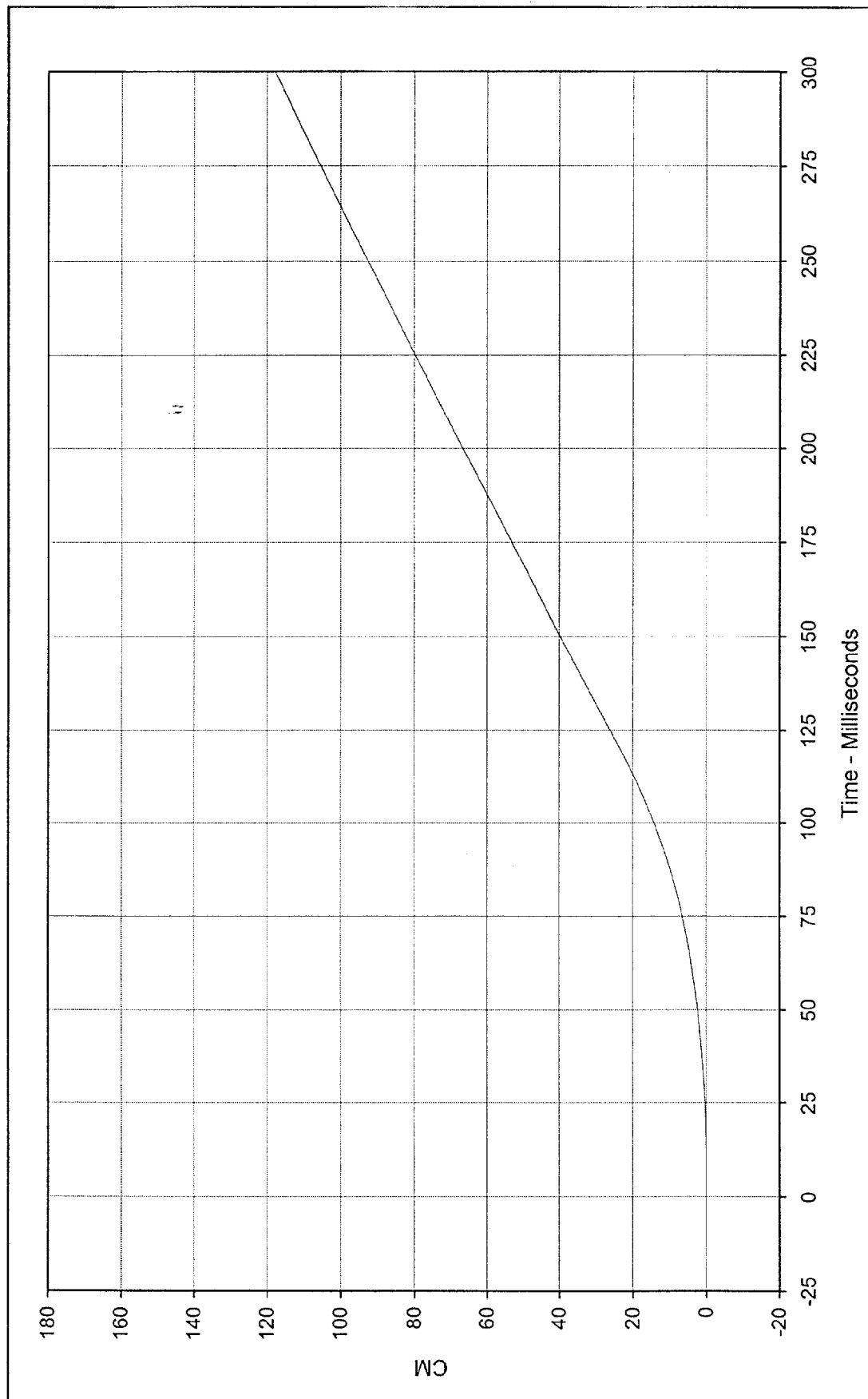




Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry 4 Door Sedan

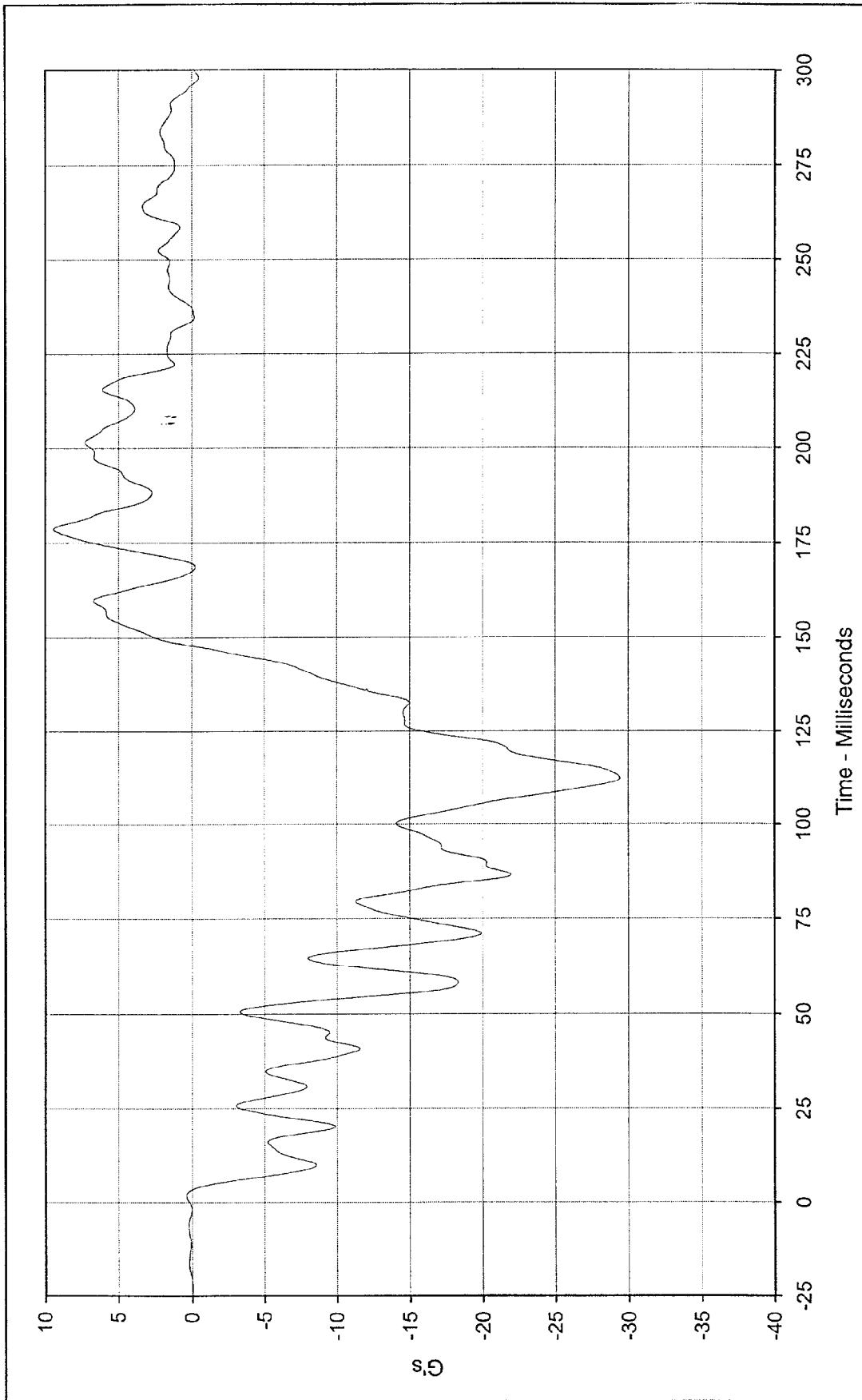
Curve Description: Vehicle Right Rear Sill Y Velocity
 Maximum Value: 19.9 at 148.1 Milliseconds
 Minimum Value: 0.0 at 4.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN1-094





Curve Description:	Vehicle Right Rear Sill Y Displ.	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	117.8 at 299.9 Milliseconds	Test Vehicle:	1996 Toyota Camry 4 Door Sedan
Minimum Value:	0.0 at 5.1 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	IN2-094		





Curve Description: Vehicle Center Rear Trunk X

Maximum Value: 9.4 at 178.7 Milliseconds

Minimum Value: -29.4 at 112.2 Milliseconds

SAE Filter Class: 60

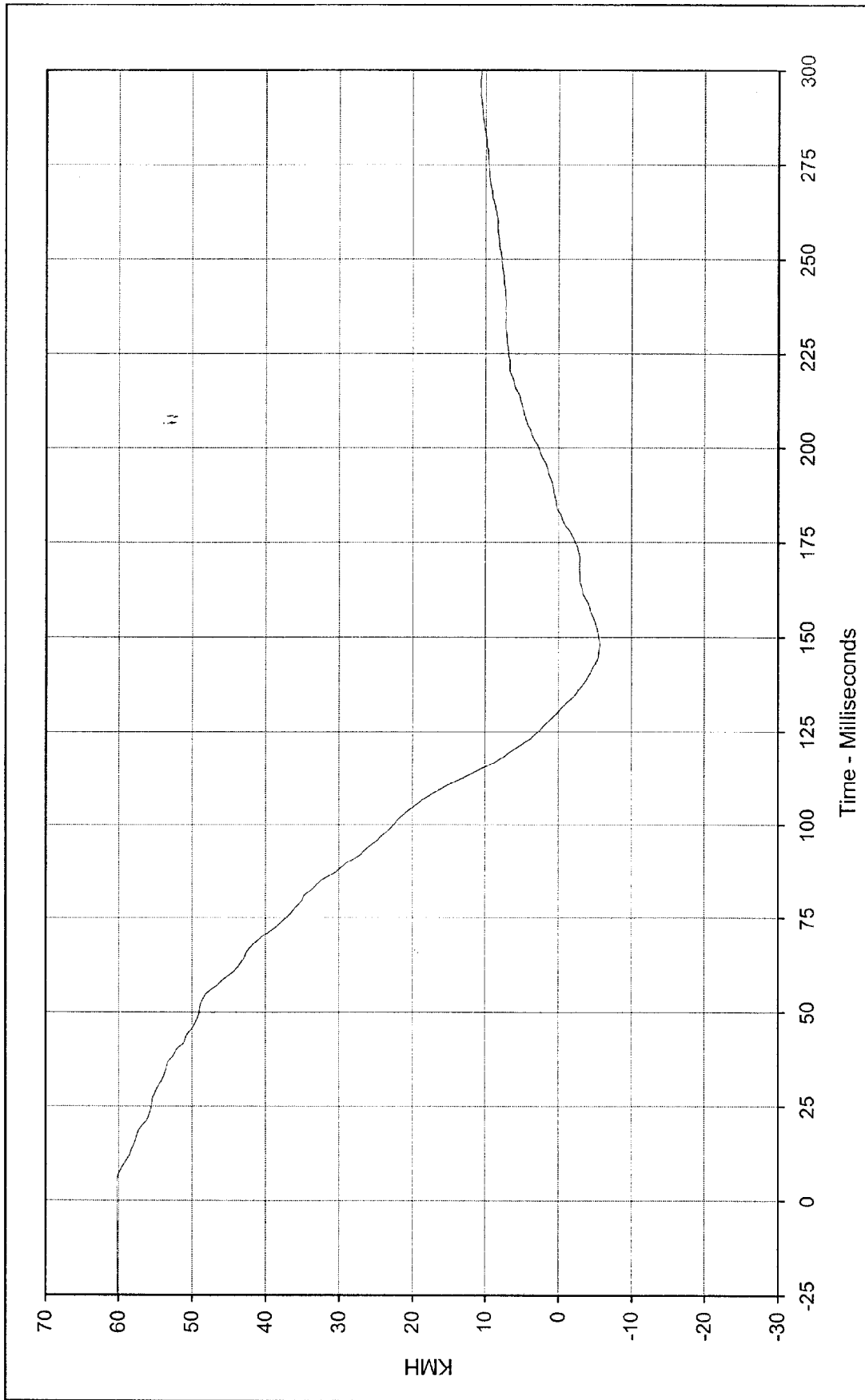
Date of Test: 8/7/97

Curve Number: FIL-095

Testing Program 1997 NHTSA 40% Offset Impact (Female)

Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan

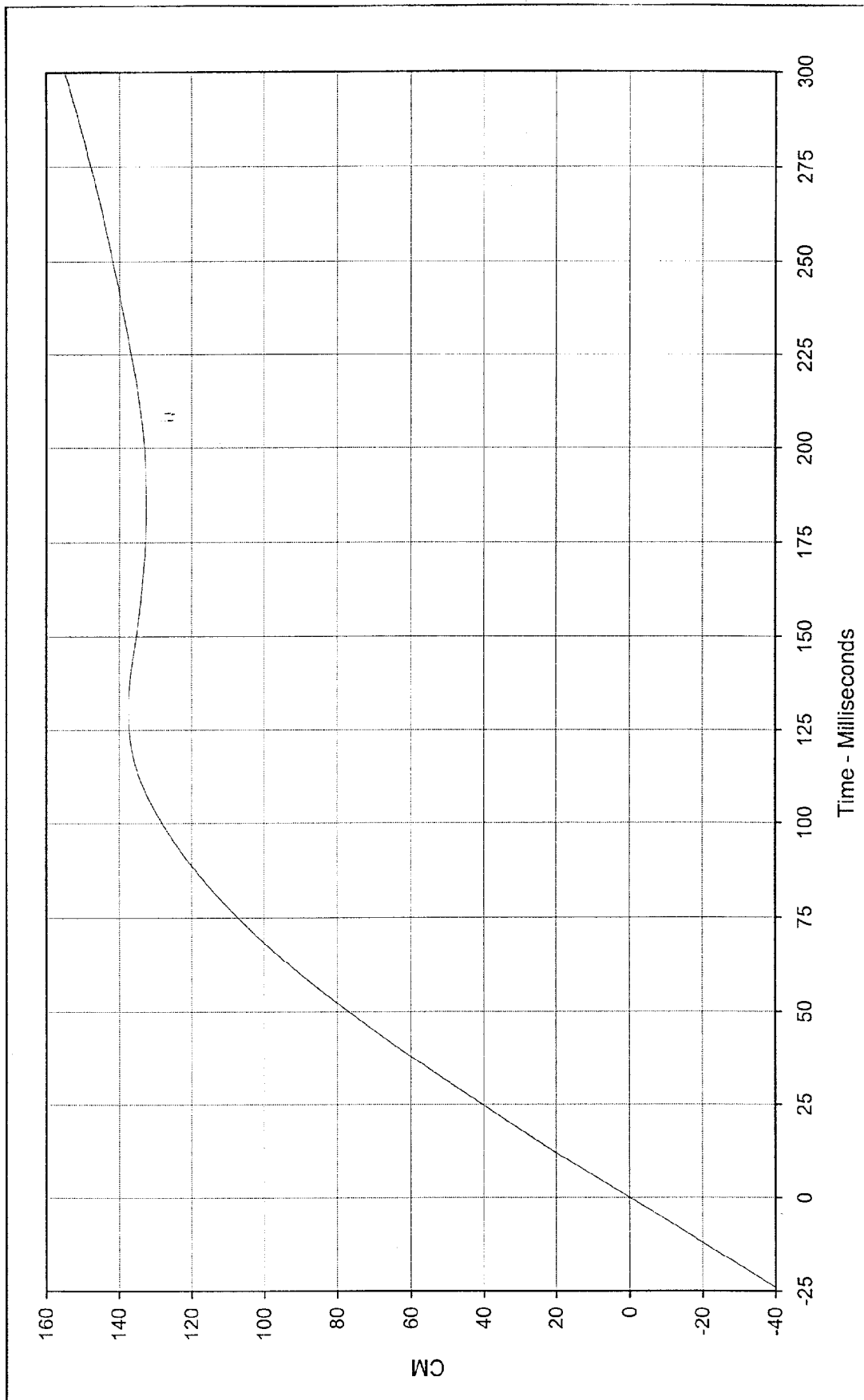




Curve Description: Vehicle Center Rear Trunk X Velocity
 Maximum Value: 60.2 at 4.4 Milliseconds
 Minimum Value: -5.7 at 148.1 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN1-095

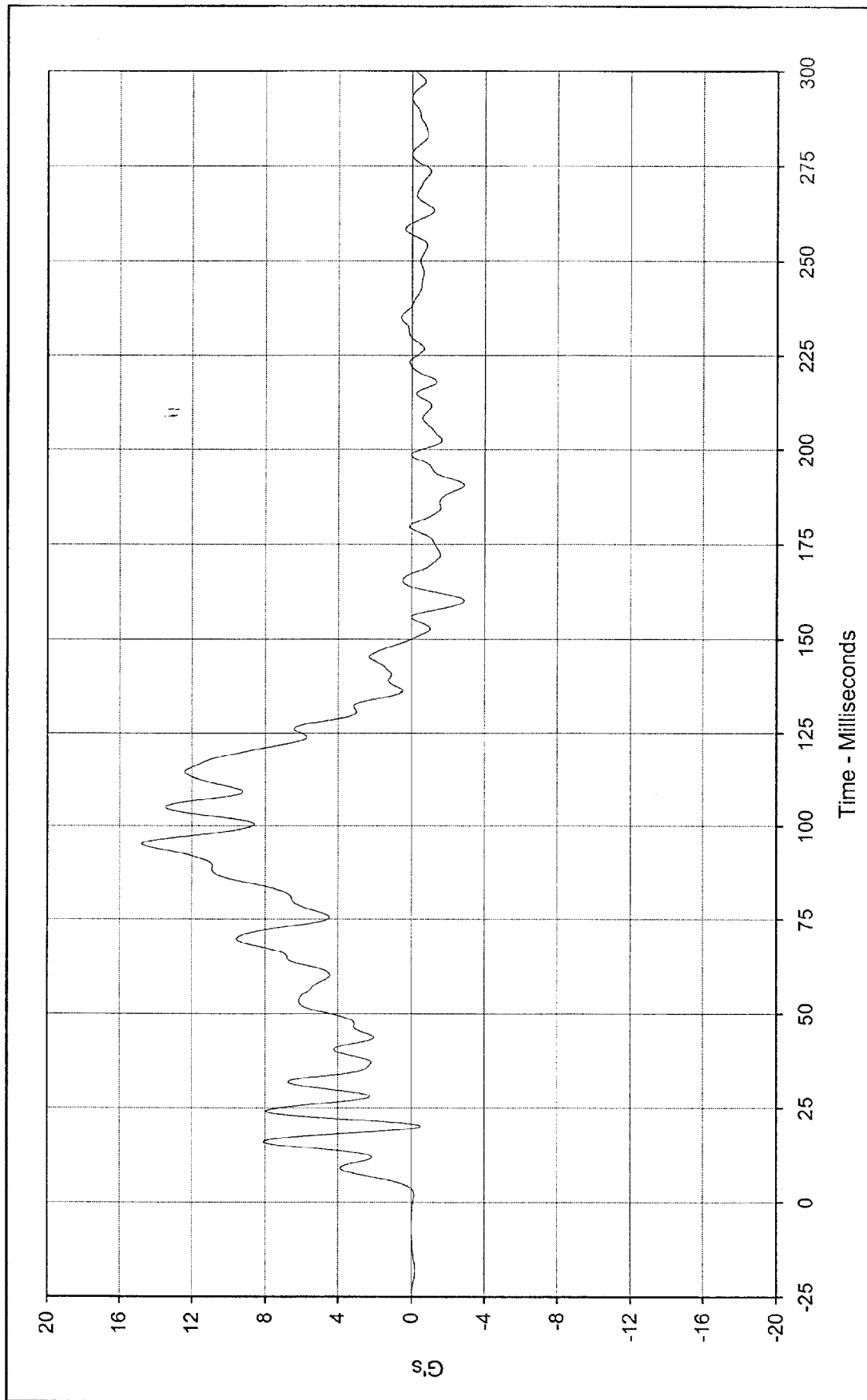
Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry 4 Door Sedan





Curve Description: Vehicle Center Rear Trunk X Displ. Testing Program 1997 NHTSA 40% Offset Impact (Female)
 Maximum Value: 154.8 at 299.9 Milliseconds Test Vehicle: 1996 Toyota Camry 4 Door Sedan
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/7/97
 Curve Number: IN2-095

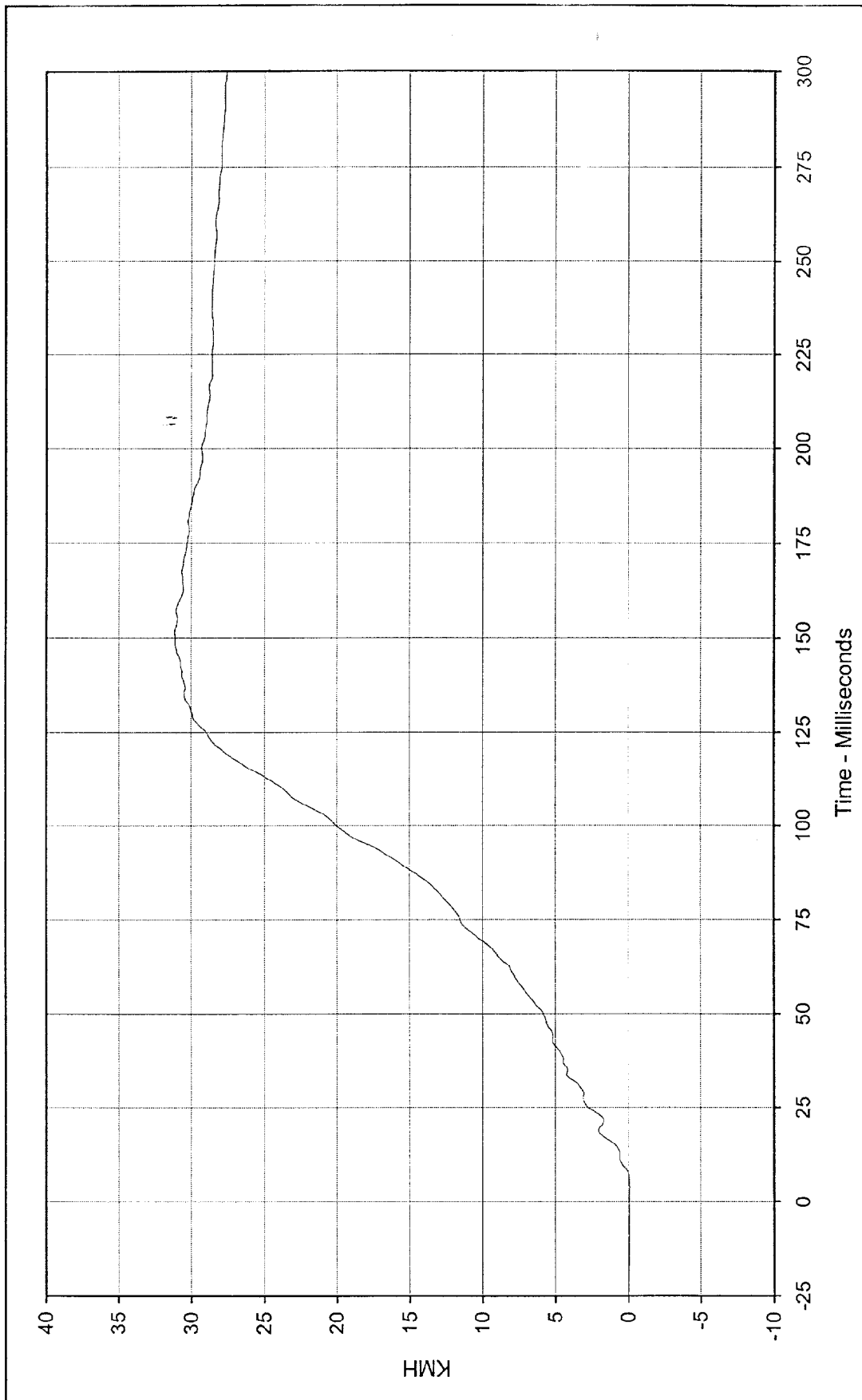




Curve Description: Vehicle Center Rear Trunk Y
 Maximum Value: 14.8 at 95.2 Milliseconds
 Minimum Value: -2.9 at 190.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 8/7/97
 Curve Number: FIL-096

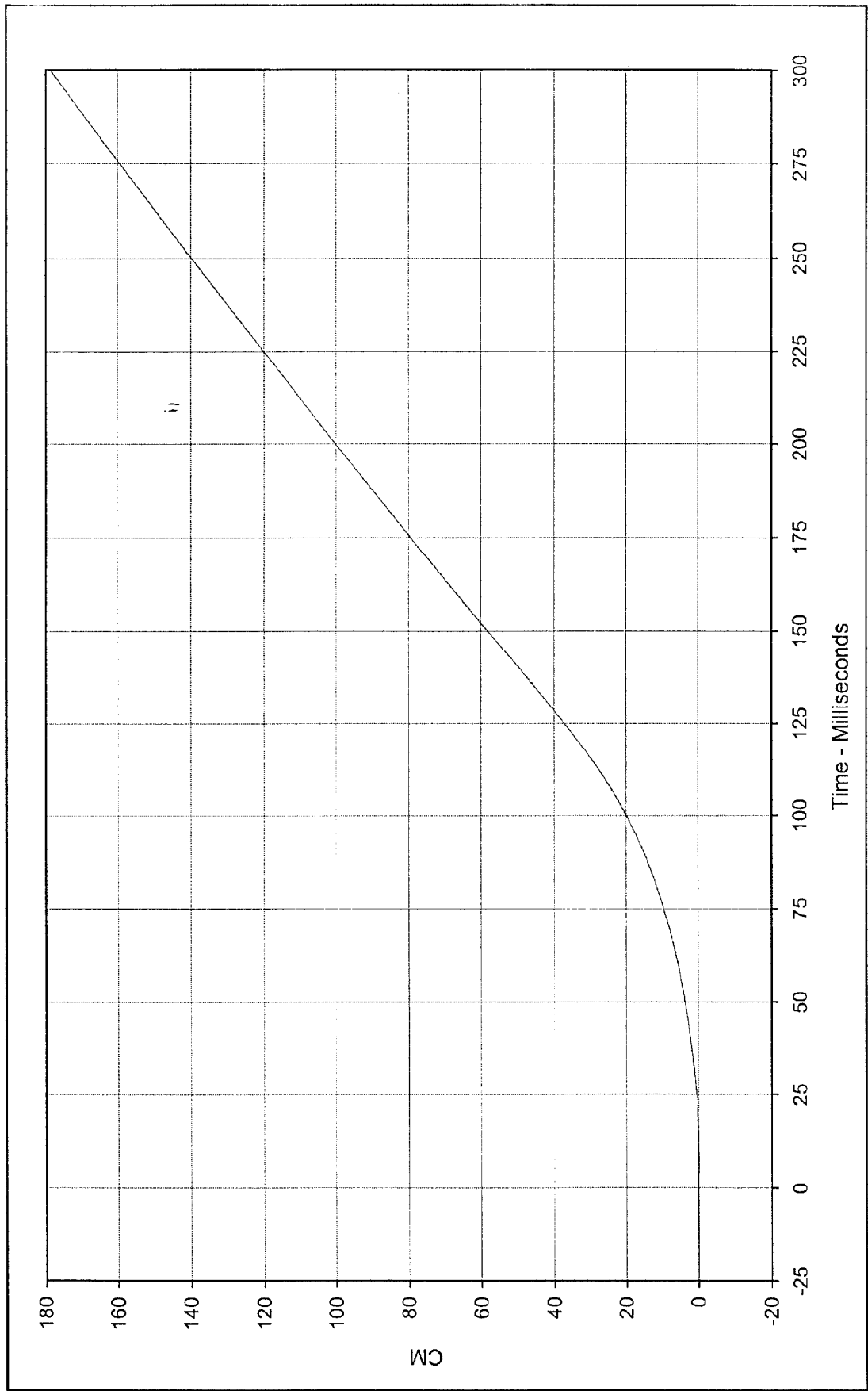
Testing Program: 1997 NHTSA 40% Offset Impact (Female)
 Test Vehicle: 1996 Toyota Camry LE 4 Door Sedan





Curve Description:	Vehicle Center Rear Trunk Y Velocity	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	31.1 at 151.6 Milliseconds	Test Vehicle:	1996 Toyota Camry 4 Door Sedan
Minimum Value:	-0.1 at 3.7 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	IN1-096		





Curve Description:	Vehicle Center Rear Trunk Y Displ.	Testing Program	1997 NHTSA 40% Offset Impact (Female)
Maximum Value:	178.5 at 299.9 Milliseconds	Test Vehicle:	1996 Toyota Camry 4 Door Sedan
Minimum Value:	-0.1 at 7.3 Milliseconds		
SAE Filter Class:	180		
Date of Test:	8/7/97		
Curve Number:	IN2-096		



APPENDIX C
DEFORMABLE BARRIER DATA

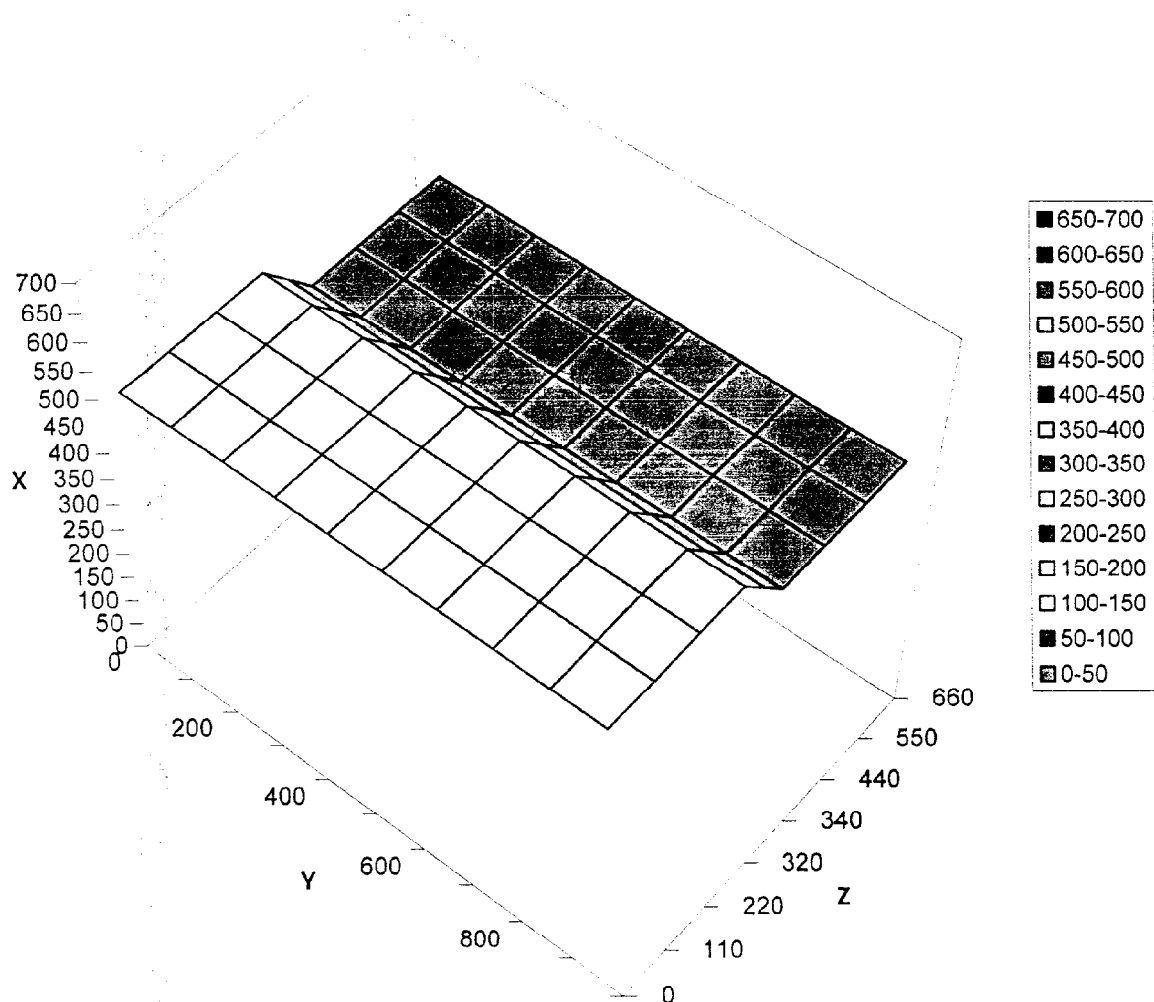
DEFORMABLE BARRIER MEASUREMENTS - PRETEST

VEHICLE YR/MAKE/MODEL/BODY 1996 TOYOTA CAMRY LE 4 DOOR SEDAN

NHTSA No.: MT5103

TEST PROGRAM 1997 NHTSA 40% OFFSET IMPACT (Female)

TEST DATE: 8/7/97



All Measurements are in Millimeters

	Z Axis	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
Y Axis		0	100	200	300	400	500	600	700	800	900
Level 1	660	454	454	454	454	454	454	454	454	454	454
Level 2	550	454	454	454	454	454	454	454	454	454	454
Level 3	440	454	454	454	454	454	454	454	454	454	454
Level 4	340	454	454	454	454	454	454	454	454	454	454
Level 5	320	544	544	544	544	544	544	544	544	544	544
Level 6	220	544	544	544	544	544	544	544	544	544	544
Level 7	110	544	544	544	544	544	544	544	544	544	544
Level 8	0	544	544	544	544	544	544	544	544	544	544

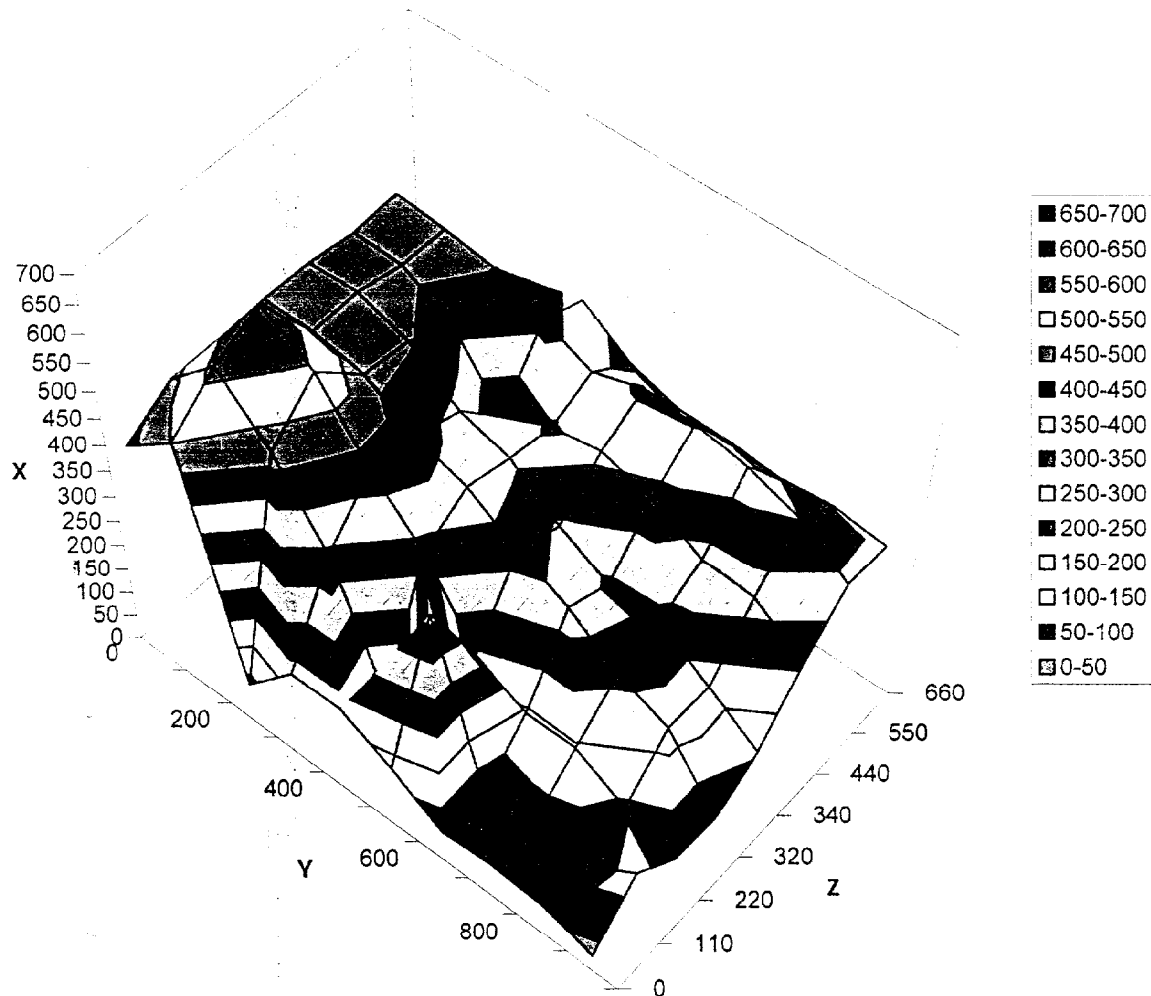
DEFORMABLE BARRIER MEASUREMENTS - POSTTEST

VEHICLE YR/MAKE/MODEL/BODY: 1996 TOYOTA CAMRY LE 4 DOOR SEDAN

NHTSA No.: MT5103

TEST PROGRAM 1997 NHTSA 40% OFFSET IMPACT (Female)

TEST DATE: 8/7/97



All Measurements are in Millimeters

	Z Axis	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
Y Axis	0	0	100	200	300	400	500	600	700	800	900
Level 1	660	303	267	321	383	322	295	293	284	295	282
Level 2	550	475	465	453	415	377	408	402	385	352	287
Level 3	440	469	467	417	303	346	362	335	281	274	208
Level 4	340	482	487	456	388	361	293	243	237	172	106
Level 5	320	486	485	468	414	382	324	280	212	175	52
Level 6	220	480	601	544	427	334	194	143	145	92	56
Level 7	110	481	565	473	341	118	364	57	75	55	126
Level 8	0	431	500	82	181	180	129	65	73	66	34

APPENDIX D
INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

40 % Offset Test With Hybrid III Female 5th Percentile ATD

Instrumentation Data Channel Assignments

Driver A.T.D Serial Number 202

Test Date: 8/07/97

Vehicle: 1996 Toyota Camry LE 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	NECK FORCE	X	GPUN01FX	Load cell, six axis neck	R. A. Denton	1716A	N
5	NECK FORCE	Y	GPUN01FY	Load cell, six axis neck	R. A. Denton	1716A	N
6	NECK FORCE	Z	GPUN01FZ	Load cell, six axis neck	R. A. Denton	1716A	N
7	NECK MOMENT	X	GPUN01MX	Load cell, six axis neck	R. A. Denton	1716A	N.m
8	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	N.m
9	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	N.m
10	CHEST , PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
11	CHEST , PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
12	CHEST , PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
13	CHEST , REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-2000	G
14	CHEST , REDUNDANT	Y	GPAC023	Accel., 1/2 bridge	Endevco	7264-2000	G
15	CHEST , REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
16	CHEST DISPLACEMENT	X	GPRP001	Potentiometer, Rotary	Servo	14CBI	CM
17	PELVIS, PRIMARY	X	GPAC025	Accel., 1/2 bridge	Endevco	7264-2000	G
18	PELVIS, PRIMARY	Y	GPAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
19	PELVIS, PRIMARY	Z	GPAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
20	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
21	RIGHT FEMUR FORCE	Z	GPLC001	Load cell, Femur	G.S.E.	2430	N

40 % Offset Test With Hybrid III Female 5th Percentile ATD

Instrumentation Data Channel Assignments

Driver A.T.D Serial Number 202

Test Date: 8/07/97

Vehicle: 1996 Toyota Camry LE 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
22	UP. TIBIA LEFT FORCE	X	GPU105FX	4 ch., Upper Tibia Gage	R. A. Denton	3115	N.m
23	UP. LEFT TIBIA FORCE	Z	GPU105FZ	4 ch., Upper Tibia Gage	R. A. Denton	3115	N.m
24	UP. TIBIA LEFT MOM.	X	GPU105MX	4 ch., Upper Tibia Gage	R. A. Denton	3115	N.m
25	UP. TIBIA LEFT MOM.	Y	GPU105MY	4 ch., Upper Tibia Gage	R. A. Denton	3115	N.m
26	LWR. TIBIA LEFT FORCE	X	GPL105FX	4 ch., lower tibia gage	R. A. Denton	3287	N
27	LWR. LEFT TIBIA FORCE	Z	GPL105FZ	4 ch., lower tibia gage	R. A. Denton	3287	N
28	LWR. TIBIA LEFT MOM.	X	GPL105MX	4 ch., lower tibia gage	R. A. Denton	3287	N.m
29	LWR. TIBIA LEFT MOM.	Y	GPL105MY	4 ch., lower tibia gage	R. A. Denton	3287	N.m
30	UP. TIBIA RIGHT FORCE	X	GPU106FX	4 ch., Upper Tibia Gage	R. A. Denton	3115	N
31	UP. RIGHT TIBIA FORCE	Z	GPU106FZ	4 ch., Upper Tibia Gage	R. A. Denton	3115	N
32	UP. TIBIA RIGHT MOM.	X	GPU106MX	4 ch., Upper Tibia Gage	R. A. Denton	3115	N.m
33	UP. TIBIA RIGHT MOM.	Y	GPU106MY	4 ch., Upper Tibia Gage	R. A. Denton	3115	N.m
34	LWR. TIBIA RIGHT FORCE	X	GPL106FX	4 ch., lower tibia gage	R. A. Denton	3287	N
35	LWR. RIGHT TIBIA FORCE	Z	GPL106FZ	4 ch., lower tibia gage	R. A. Denton	3287	N
36	LWR. TIBIA RIGHT MOM.	X	GPL106MX	4 ch., lower tibia gage	R. A. Denton	3287	N.m
37	LWR. TIBIA RIGHT MOM.	Y	GPL106MY	4 ch., lower tibia gage	R. A. Denton	3287	N.m
38	FOOT LEFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT LEFT	Y	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT LEFT	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	FOOT RIGHT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
42	FOOT RIGHT	Y	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
43	FOOT RIGHT	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
44	LAP BELT FORCE	X	KELC001	Load cell, Seat belt	Lebow	3371	N
45	SHOULDER BELT FORCE	X	KELC002	Load cell, Seat belt	Lebow	3371	N
46	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celco	PTX101-0030	CM
47	SHOULDER BELT ELONG.	X	KEPP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	CM/CM

40 % Offset Test With Hybrid III Female 5th Percentile ATD

Instrumentation Data Channel Assignments

Passenger A.T.D Serial Number 274

Test Date: 8/07/97

Vehicle: 1996 Toyota Camry LE 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
48	HEAD, PRIMARY	X	KEAC039	Accel., 1/2 bridge	Endevco	7264-2000	G
49	HEAD, PRIMARY	Y	KEAC038	Accel., 1/2 bridge	Endevco	7264-2000	G
50	HEAD, PRIMARY	Z	KEAC027	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	CM
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

40 % Offset Test With Hybrid III Female 5th Percentile ATD

Instrumentation Data Channel Assignments

Passenger A.T.D Serial Number 274

Test Date: 8/07/97

Vehicle: 1996 Toyota Camry LE 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPU T07MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
70	UP. TIBIA LEFT MOM.	Y	GPU T07MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
71	UP. TIBIA RIGHT MOM.	X	GPU T08MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
72	UP. TIBIA RIGHT MOM.	Y	GPU T08MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
73	LWR. TIBIA LEFT FORCE	X	GPL T07FY	3 ch., lower tibia gage	R. A. Denton	1584	N
74	LWR. TIBIA LEFT FORCE	Z	GPL T07FZ	3 ch., lower tibia gage	R. A. Denton	1584	N
75	LWR. TIBIA LEFT MOM.	Y	GPL T07MX	3 ch., lower tibia gage	R. A. Denton	1584	N.m
76	LWR. TIBIA RIGHT FORCE	X	GPL T08FY	3 ch., lower tibia gage	R. A. Denton	1584	N
77	LWR. TIBIA RIGHT FORCE	Z	GPL T08FZ	3 ch., lower tibia gage	R. A. Denton	1584	N
78	LWR. TIBIA RIGHT MOM.	Y	GPL T08MX	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	CM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	CM/CM

**40 % Offset Test With Hybrid III Female 5th Percentile ATD
Instrumentation Data Channel Assignments
Vehicle Accelerometers**

Test Date: 8/07/97

Vehicle: 1996 Toyota Camry LE 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	LEFT REAR SILL	X	KEVA005	Accel., Vehicle block	I.C. Sensor	3031-500	G
90	LEFT REAR SILL	Y	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	CENTER CONSOLE REAR	X	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
92	CENTER CONSOLE REAR	Y	KEVA002	Accel., Vehicle block	I.C. Sensor	3031-500	G
93	RIGHT REAR SILL	X	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-500	G
94	RIGHT REAR SILL	Y	KEVA004	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	CENTER TRUNK REAR	X	KEVA007	Accel., Vehicle block	I.C. Sensor	3031-200	G
96	CENTER TRUNK REAR	Y	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G

APPENDIX E
DUMMY CALIBRATION DATA



Hybrid III Calibration Data Sheet

5TH Percentile Female

Head Drop Calibration

ATD Serial No.: 202

Part Serial No.: N/A

Test I.D.: 202HD

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Peak Resultant Acceleration	G's	240.0 to 295.0	264.5	Pass
Peak Lateral Acceleration	G's	≤15.0	7.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

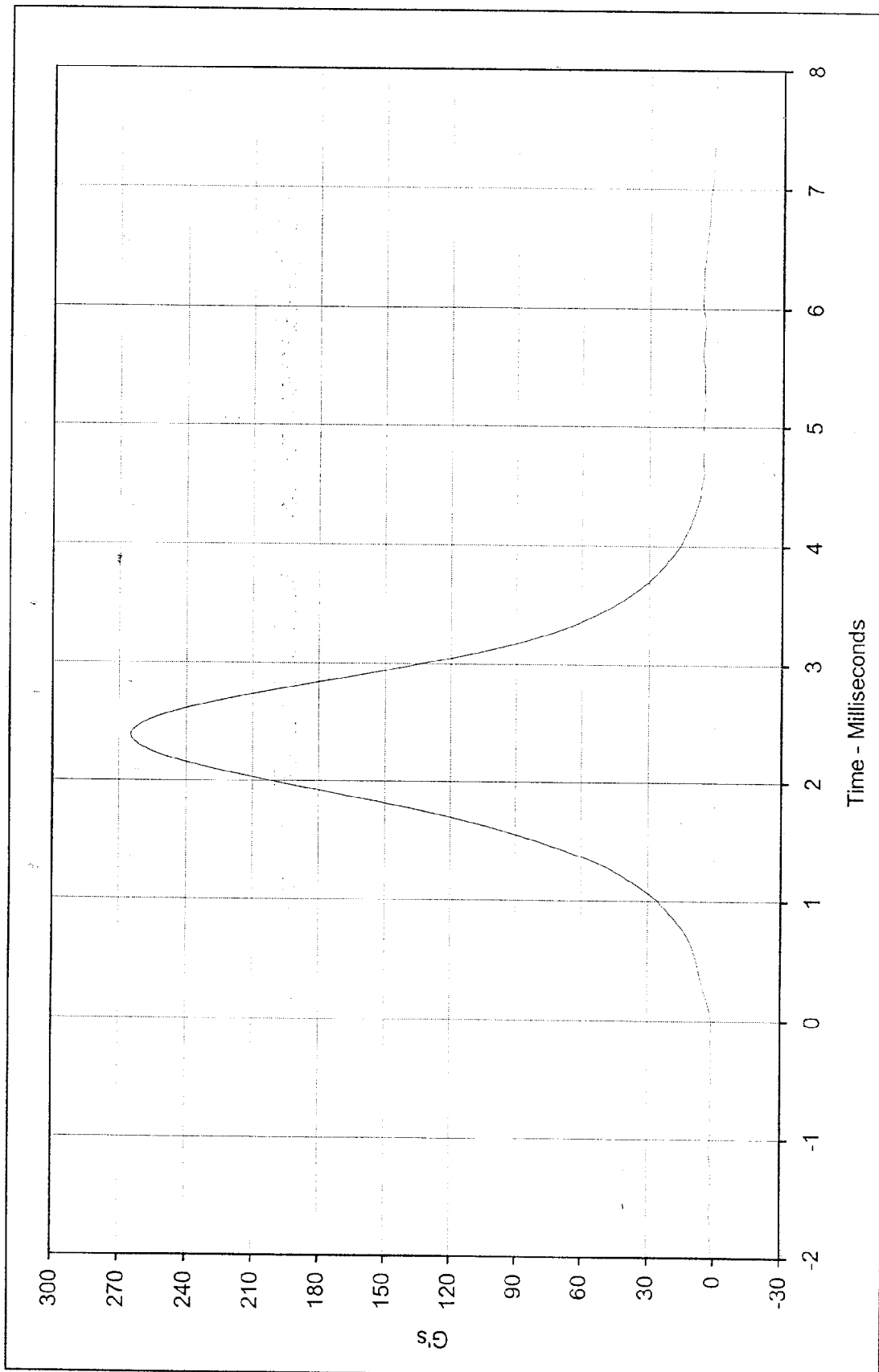
Approved By

July 29, 1997

Test Date

7/29/97

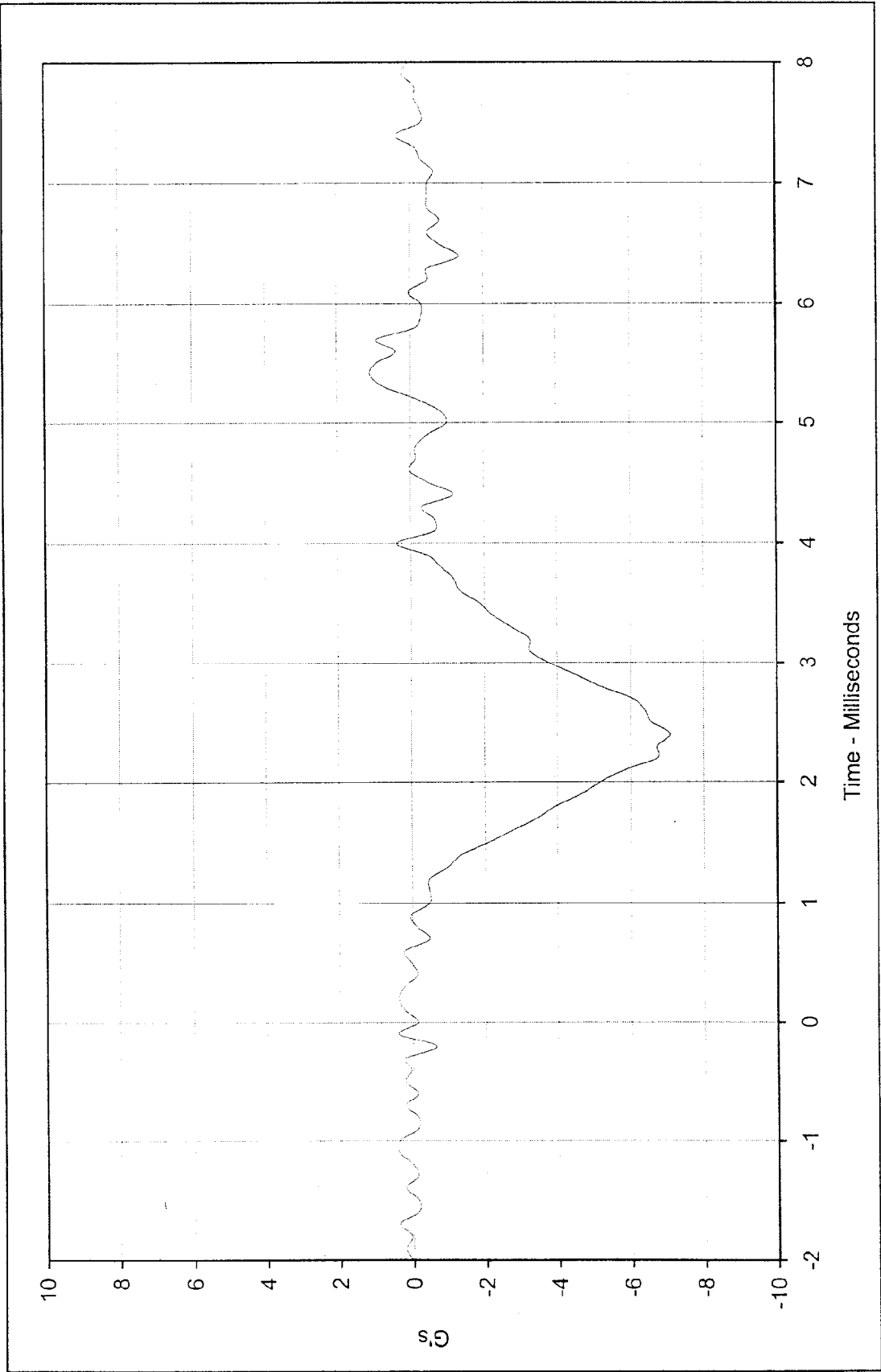
Date



Curve Description: Head Resultant Acceleration
 Testing Program: Hybrid III Head Drop Calibration (Female)
 Test Information: S/N of Part: N/A Test I.D.: 202HD

Maximum Value: 264.5 at 2.4 Milliseconds
 Minimum Value: 0.6 at 7.8 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 7/29/97
 ATD Serial No.: 202





Curve Description:		Testing Program		Hybrid III Head Drop Calibration (Female)	
Maximum Value:	1.1	at	5.4	Milliseconds	Test Information:
Minimum Value:	-7.1	at	2.4	Milliseconds	S/N of Part: N/A
SAE Filter Class:	1000	Test I.D.: 202HD			
Date of Test:	7/29/97				
ATD Serial No.:	202				





Hybrid III Calibration Data Sheet

5TH Percentile Female

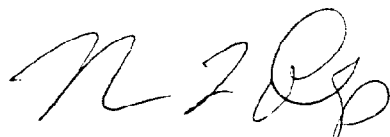
Thorax Impact Test

ATD Serial No.: 202

Part Serial No.: N/A

Test I.D.: FC003

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Peak Probe Force	Newtons	3800 to 4300	4257	Pass
Peak Sternum Displacement	CM	5.1 to 5.8	5.1	Pass
Internal Hysteresis	%	69 to 85	80.4	Pass
Overall Test Results				Pass



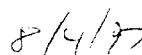
Laboratory Technician



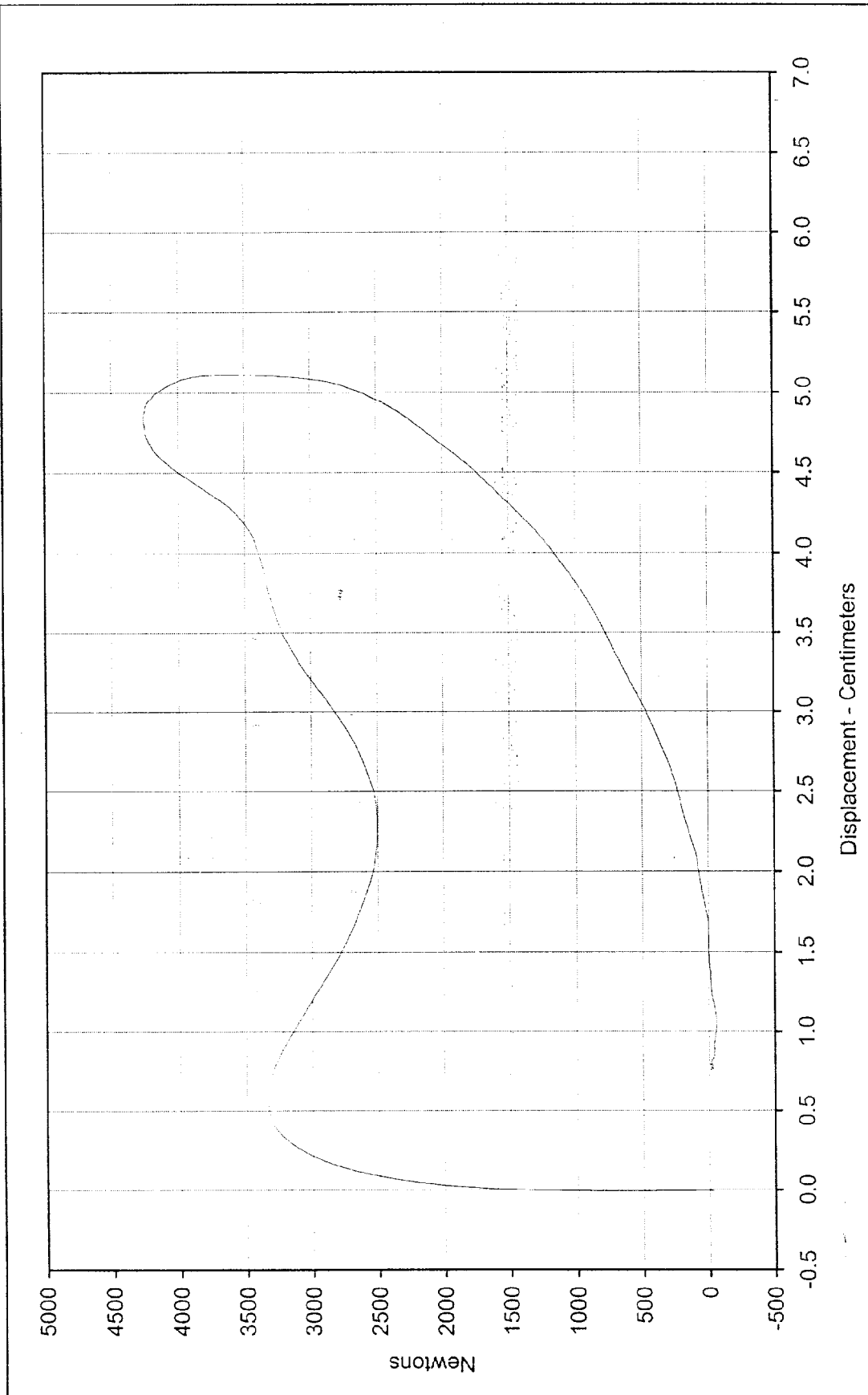
Approved By

August 4, 1997

Test Date



Date



Curve Description: Probe Force vs. Chest Displacement
 Testing Program Hybrid III Thorax Impact Test (5TH Female)
 Test Information: S/N of Part: N/A Test I.D.: FC003

Probe Force:	4256.9	Newton
Chest Displ.:	5.11	Centimeters
SAE Filter Class:	180	
Date of Test:	8/4/97	
ATD Serial No.:	202	





Hybrid III Calibration Data Sheet

5TH Percentile Female

Neck Flexion Test

ATD Serial No.: 202

Part Serial No.: N/A

Test I.D.: 202N1

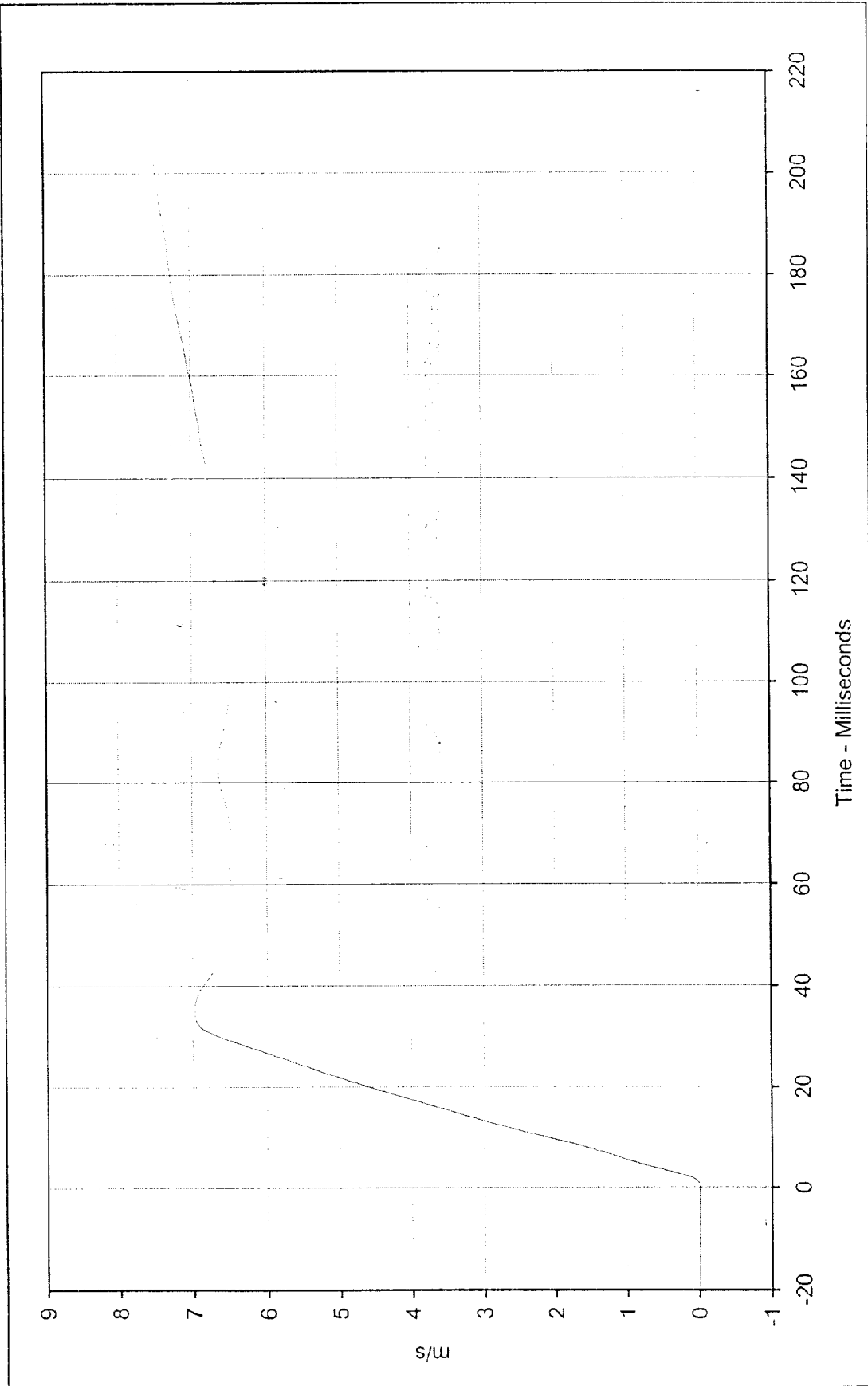
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	31	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 Msec	m/s	2.10 to 2.50	2.13	Pass
	20 Msec	m/s	4.00 to 5.00	4.60	Pass
	30 Msec	m/s	5.80 to 7.00	6.63	Pass
Maximum "D" Plane Rotation		Degrees	78.0 to 96.0	95.4	Pass
"D" Plane Rotation Decay, Time From Peak Value To Zero Crossing		Msec.	57.0 to 69.0	67.0	Pass
Moment About Occipital Condyle		N • m	69.0 to 84.0	75.8	Pass
Moment About Occipital Condyle Decay, Time From Peak Value To Zero Crossing		Msec.	41.0 to 50.0	47.3	Pass
Time of Peak Rotation With Respect to Peak Moment		Msec.	2.0 to 12.0	7.3	Pass
Overall Test Results					Pass

Laboratory Technician

Approved By

August 6, 1997
 Test Date

8/6/97
 Date



Curve Description: Hybrid III Neck Flexion Test (Female)

Test Information: S/N of Part: N/A Test I.D.: 202N1

Pendulum Velocity

Maximum Value: 7.6 at 220.0 Milliseconds

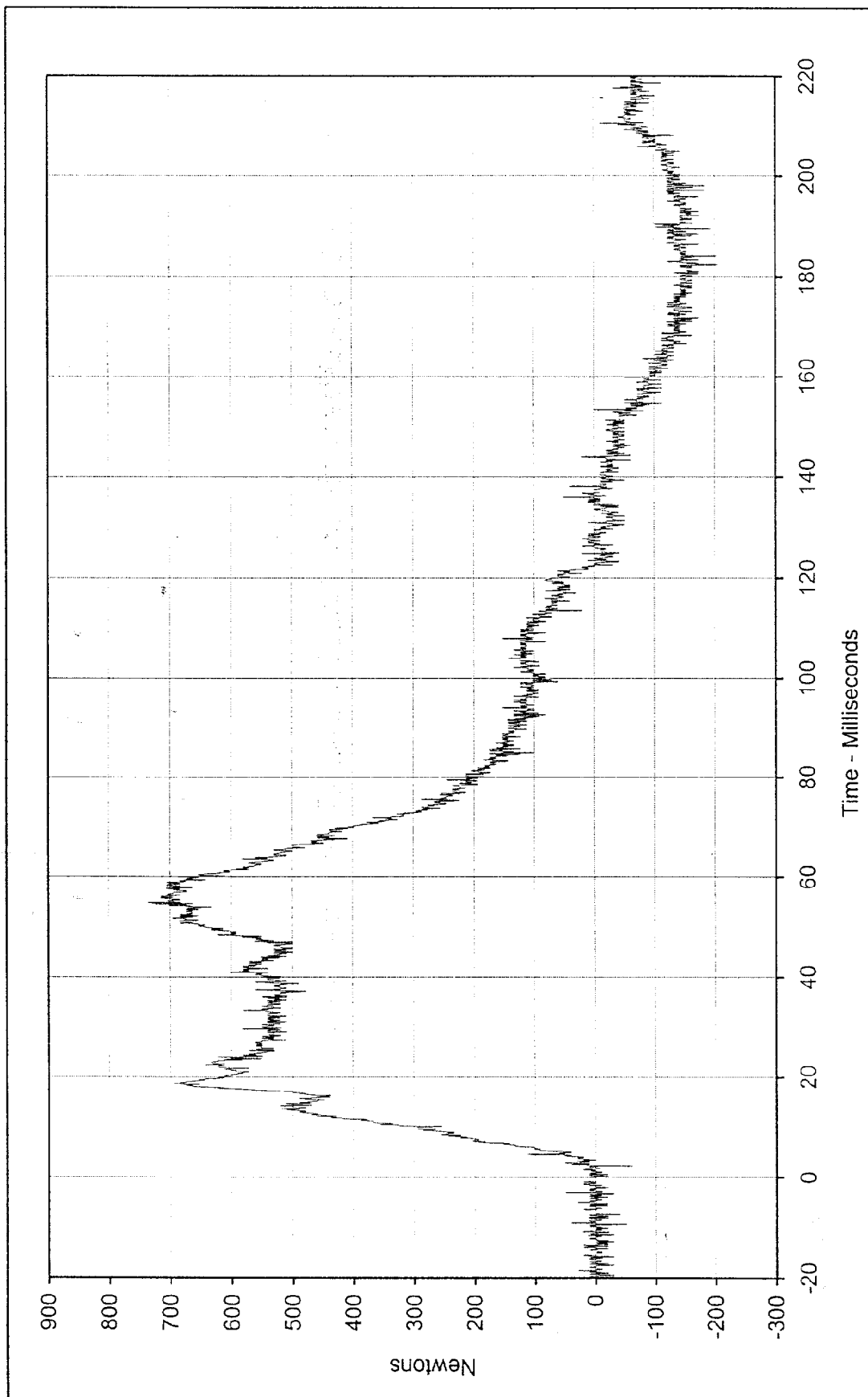
Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 8/6/97

ATD Serial No.: 202





Curve Description: Neck Force X Testing Program Hybrid III Neck Flexion Test (Female)

Maximum Value: 734.8 at 54.7 Milliseconds Test Information: S/N of Part: N/A Test I.D.: 202N1

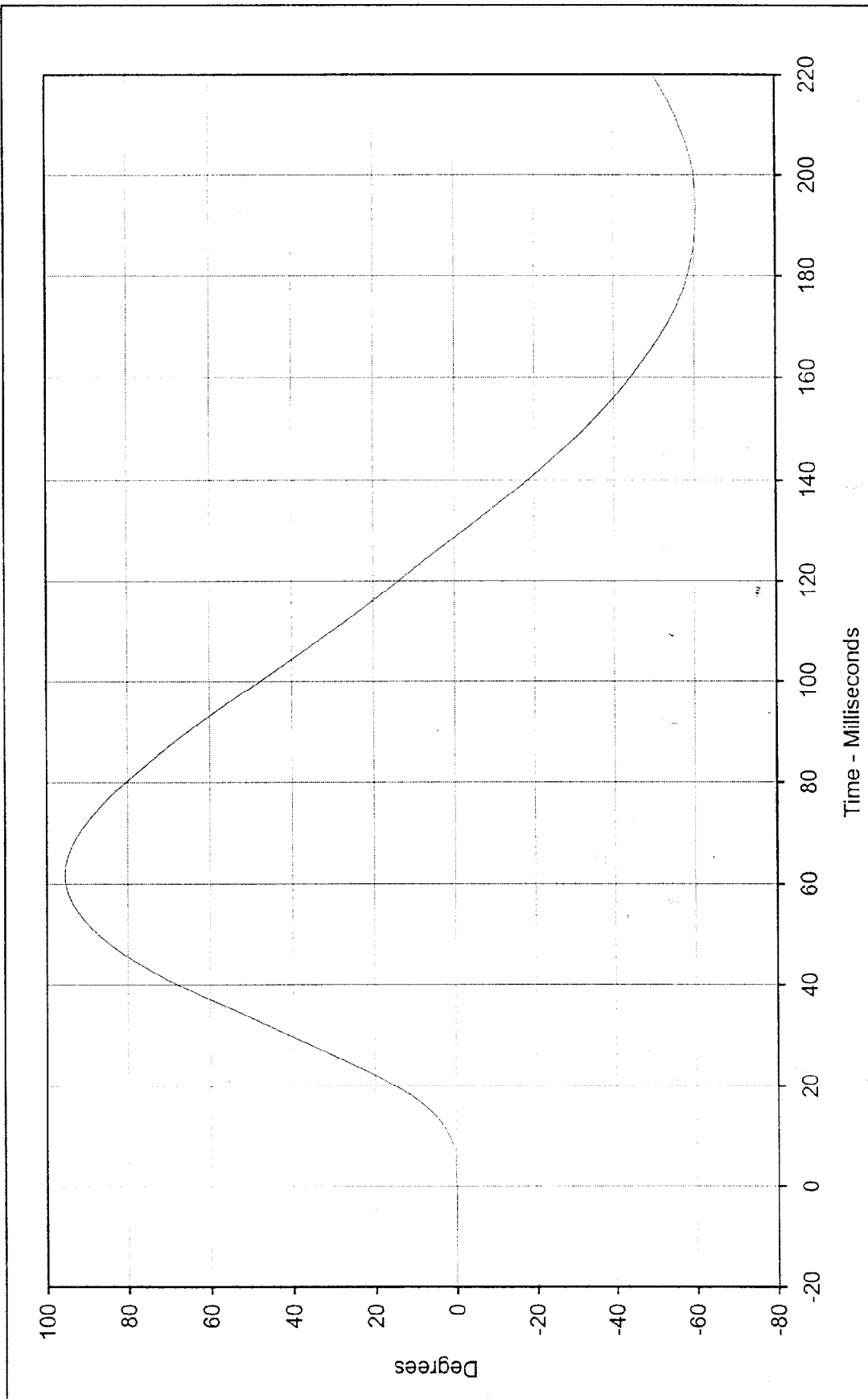
Minimum Value: -204.1 at 182.4 Milliseconds

SAE Filter Class: 1000

Date of Test: 8/6/97

ATD Serial No.: 202





Curve Description: Hybrid III Neck Flexion Test (Female)

Testing Program

S/N of Part: N/A Test I.D.: 202N1

"D" Plane Rotation

Maximum Value: 95.4 at 61.7 Milliseconds

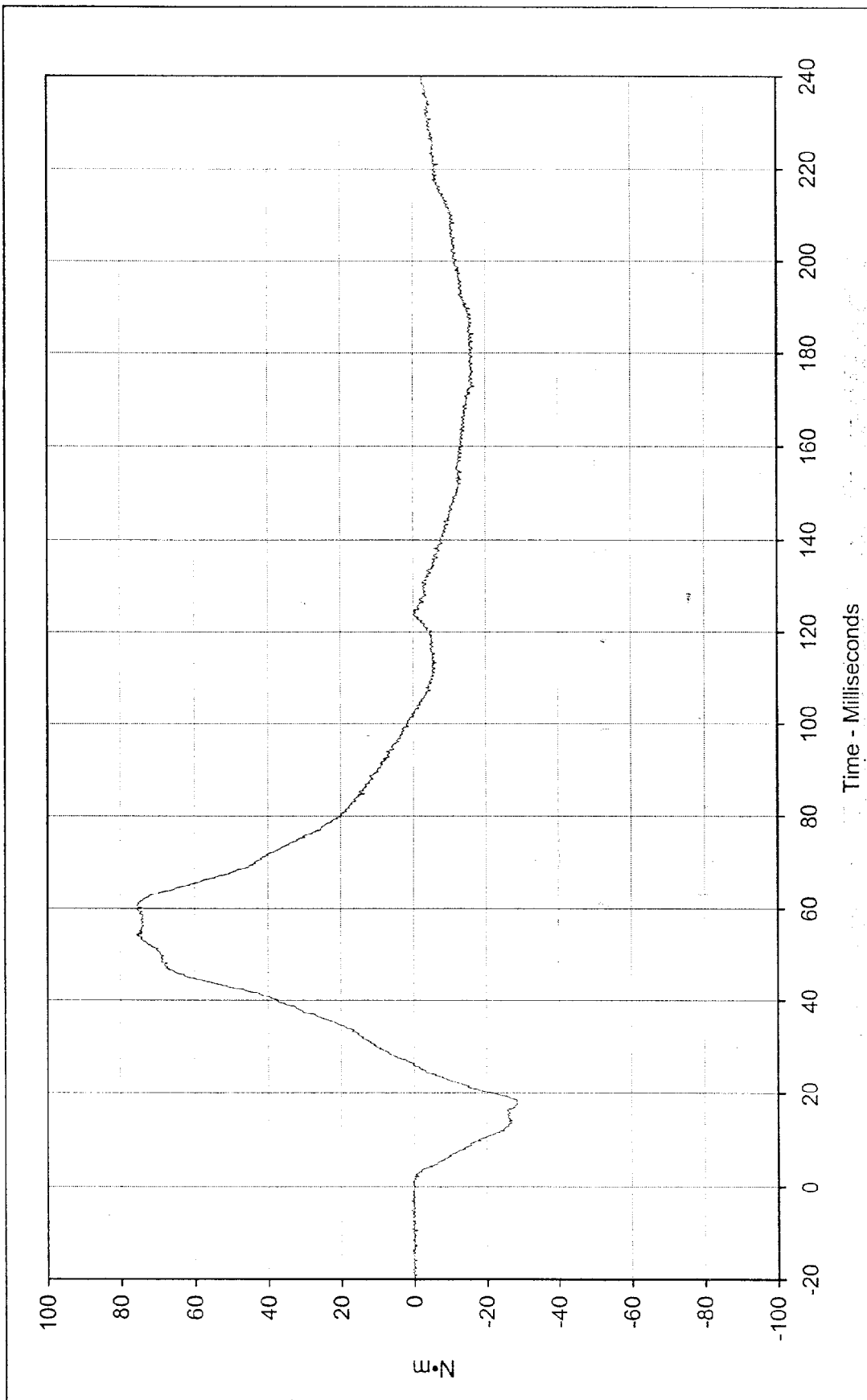
Minimum Value: -60.5 at 193.7 Milliseconds

SAE Filter Class: 60

Date of Test: 8/6/97

ATD Serial No.: 202





Curve Description: Moment About Occipital Condyles

Maximum Value:	75.8	at	54.4	Milliseconds
Minimum Value:	-28.6	at	17.7	Milliseconds
SAE Filter Class:	600			
Date of Test:	8/6/97			
ATD Serial No.:	202			

Testing Program: Hybrid III Neck Flexion Test (Female)

Test Information: S/N of Part: N/A Test I.D.: 202N1





Hybrid III Calibration Data Sheet

5TH Percentile Female

Neck Extension Test

ATD Serial No.: 202

Part Serial No.: N/A

Test I.D.: FNE01

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.09	Pass
Pendulum Deceleration	10 Msec	m/s	1.50 to 1.90	1.73	Pass
	20 Msec	m/s	3.10 to 3.90	3.79	Pass
	30 Msec	m/s	4.60 to 5.60	5.49	Pass
Maximum "D" Plane Rotation		Degrees	97.0 to 119.0	104.9	Pass
"D" Plane Rotation Decay, Angle When the Decaying Y Moment is at -10 N•m		Degrees	80.0 to 96.0	91.2	Pass
Calculated Moment About Occipital Condyle		N•m	-54.0 to -67.0	-65.3	Pass
Moment About Occipital Condyle Decay, Time From Negative Peak Value To -10 N•m		Msec.	28.0 to 38.0	31.3	Pass
Overall Test Results					Pass

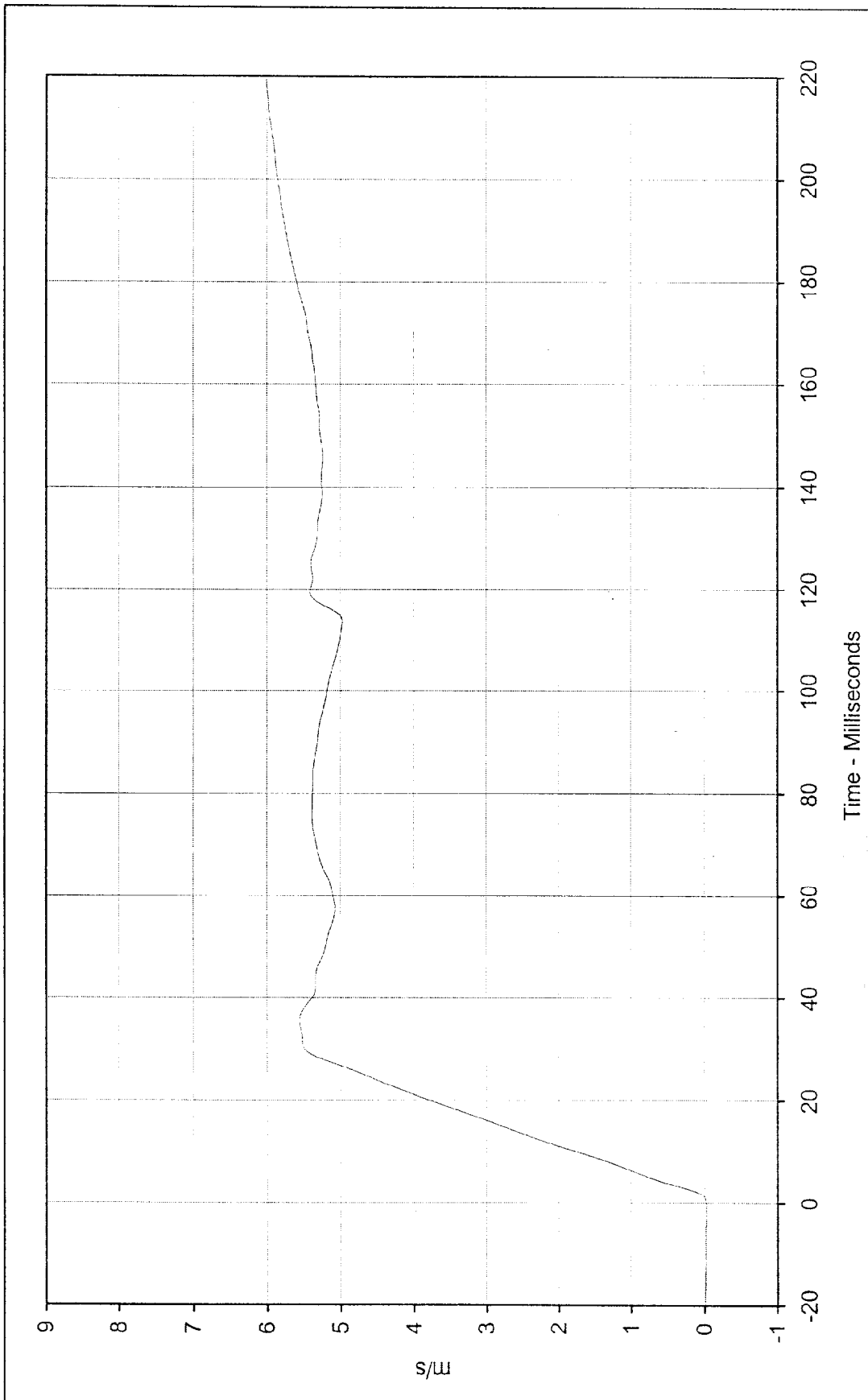
N202
Laboratory Technician

J. Robinson
Approved By

August 6, 1997

Test Date

8/6/97
Date



Curve Description: Hybrid III Neck Extension Test (Female)

Testing Program: Hybrid III Neck Extension Test (Female)

Test Information: S/N of Part: N/A Test I.D.: FNE01

Maximum Value: 6.0 at 220.0 Milliseconds

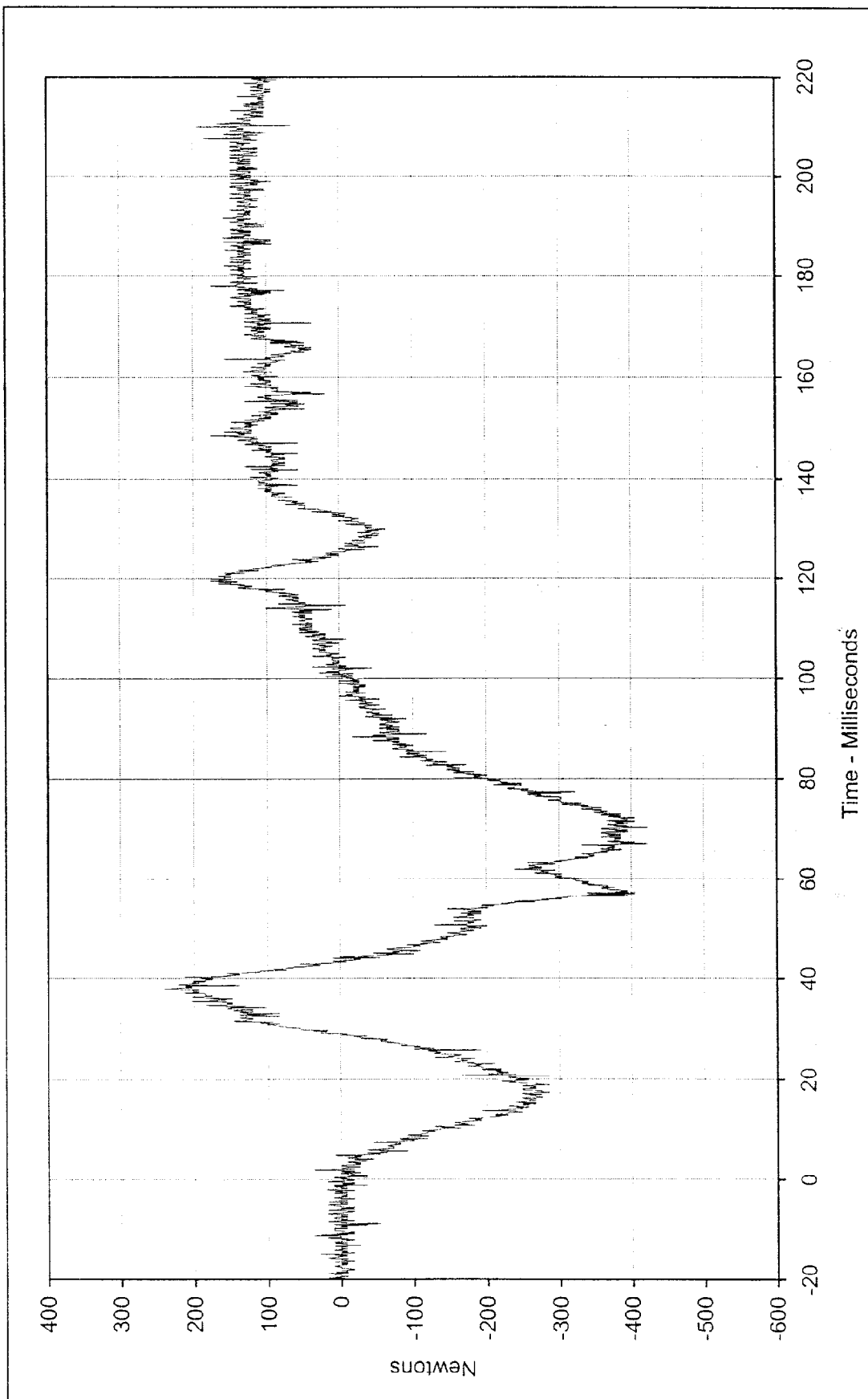
Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 8/6/97

ATD Serial No.: 202





Curve Description: Neck Force X

Maximum Value: 240.0 at 37.9 Milliseconds

Minimum Value: -422.4 at 67.1 Milliseconds

SAE Filter Class: 1000

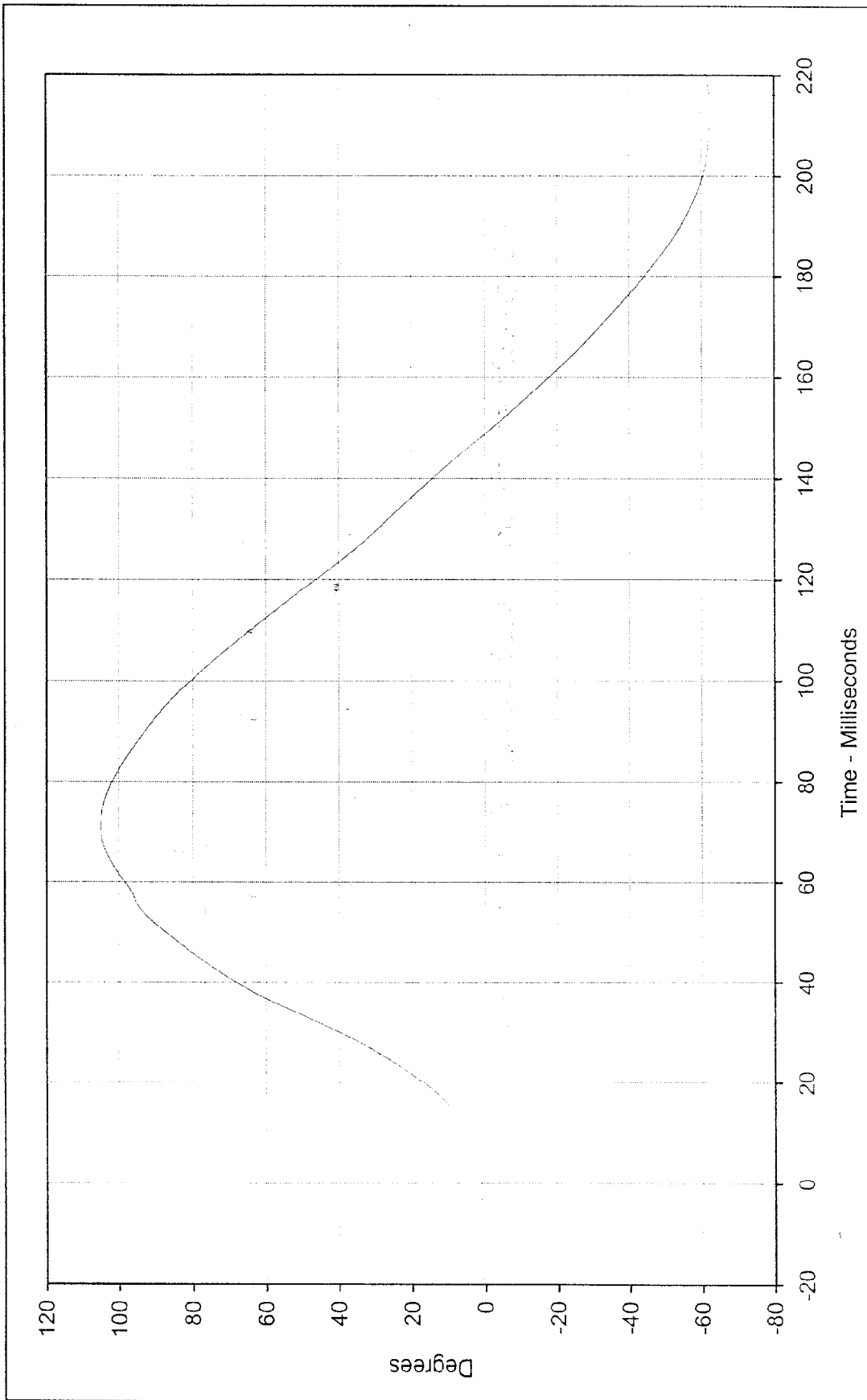
Date of Test: 8/6/97

ATD Serial No.: 202

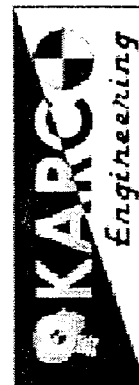
Testing Program: Hybrid III Neck Extension Test (Female)

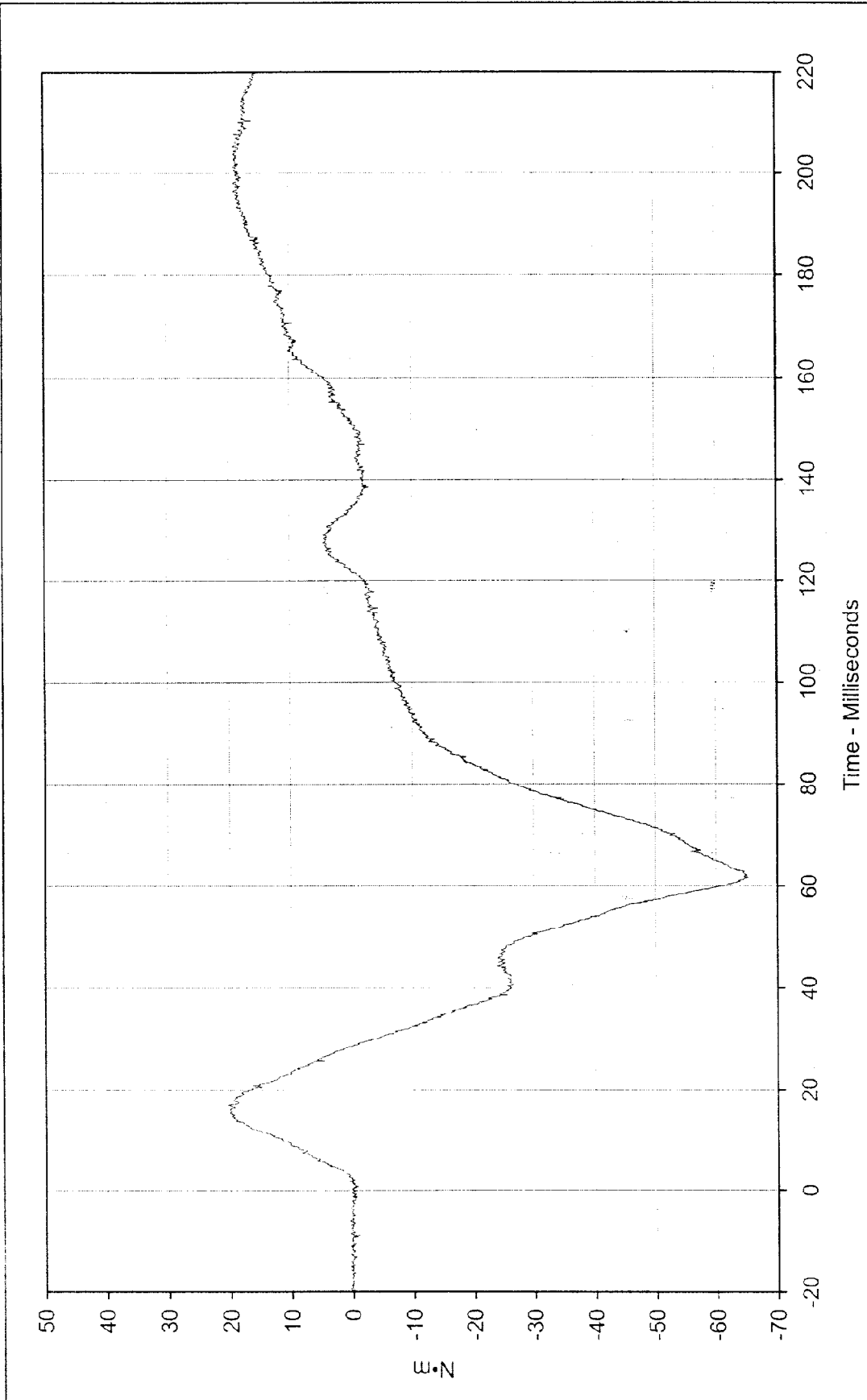
Test Information: S/N of Part: N/A Test I.D.: FNE01





Curve Description:	"D" Plane Rotation	Testing Program	Hybrid III Neck Extension Test (Female)
Maximum Value:	104.9 at 71.1 Milliseconds	Test Information:	S/N of Part: N/A Test I.D.: FNE01
Minimum Value:	-62.3 at 213.5 Milliseconds		
SAE Filter Class:	60		
Date of Test:	8/6/97		
ATD Serial No.:	202		





Testing Program: Hybrid III Neck Extension Test (Female)

Test Information: S/N of Part: N/A Test I.D.: FNE01

Curve Description: Moment About Occipital Condyles

Maximum Value: 20.5 at 17.1 Milliseconds

Minimum Value: -65.3 at 61.8 Milliseconds

SAE Filter Class: 600

Date of Test: 8/6/97

ATD Serial No.: 202





Hybrid III Calibration Data Sheet

50TH Percentile Female

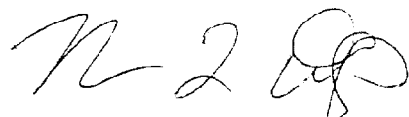
External Measurements

ATD Serial No.: 202

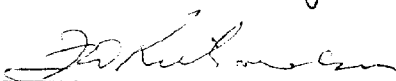
Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43	Pass
A - Total sitting height	mm	785.0 to 795.0	790.0	Pass
B - Shoulder pivot height	mm	434.0 to 450.0	439.0	Pass
C - "H" point height	mm	81.5 to 86.5	82.0	Pass
D - "H" point from seat back	mm	144.5 to 149.5	145.0	Pass
E - Shoulder pivot from back	mm	71.0 to 81.0	78.0	Pass
F - Thigh clearance	mm	114.0 to 130.0	120.0	Pass
G - Elbow to finger tip	mm	303.0 to 409.0	396.0	Pass
H - Skull cap to back line	mm	43.2 to 48.5	45.0	Pass
I - Shoulder to elbow length	mm	287.0 to 303.0	296.0	Pass
J - Elbow rest height	mm	191.0 to 211.0	205.0	Pass
K - Buttock to knee length	mm	509.5 to 533.5	520.0	Pass
L - Popliteal height	mm	349.5 to 373.5	360.0	Pass
M - Knee to floor height	mm	449.0 to 465.0	460.0	Pass
N - Buttock popliteal length	mm	399.5 to 423.5	420.0	Pass
O - Chest depth	mm	183.0 to 200.0	190.0	Pass
P - Foot length	mm	216.0 to 232.0	225.0	Pass
R - Foot width	mm	76.0 to 92.0	80.0	Pass
V - Shoulder width	mm	348.0 to 364.0	360.0	Pass
W - Hip width at "H" point	mm	299.0 to 315.0	300.0	Pass
X - Chest circumference	mm	783.0 to 813.0	800.0	Pass
Y - Waist circumference	mm	757.0 to 787.0	780.0	Pass
AA - Location for chest circumference	mm	300.0 to 310.0	309.0	Pass
BB - Location for waist circumference	mm	160.0 to 170.0	166.0	Pass
Overall Test Results				Pass



Laboratory Technician



Approved By

August 6, 1997

Test Date

8/6/97

Date



Hybrid III Calibration Data Sheet

5TH Percentile Female

Head Drop Calibration

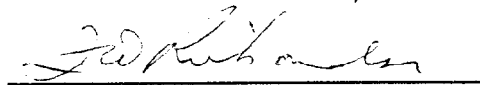
ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: 274HD

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Peak Resultant Acceleration	G's	240.0 to 295.0	278.0	Pass
Peak Lateral Acceleration	G's	≤15.0	4.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

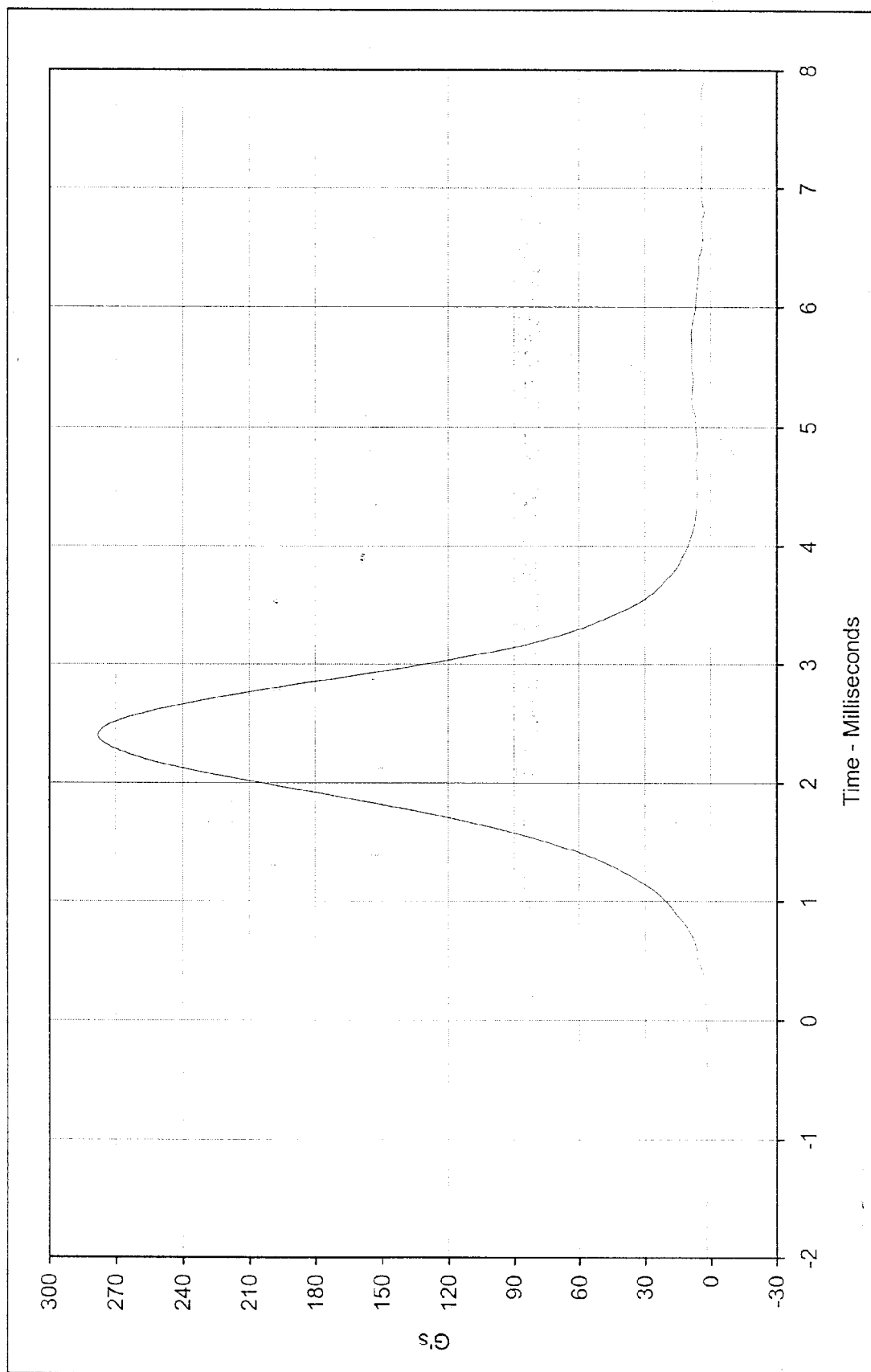

Approved By

July 29, 1997

Test Date

7/29/97

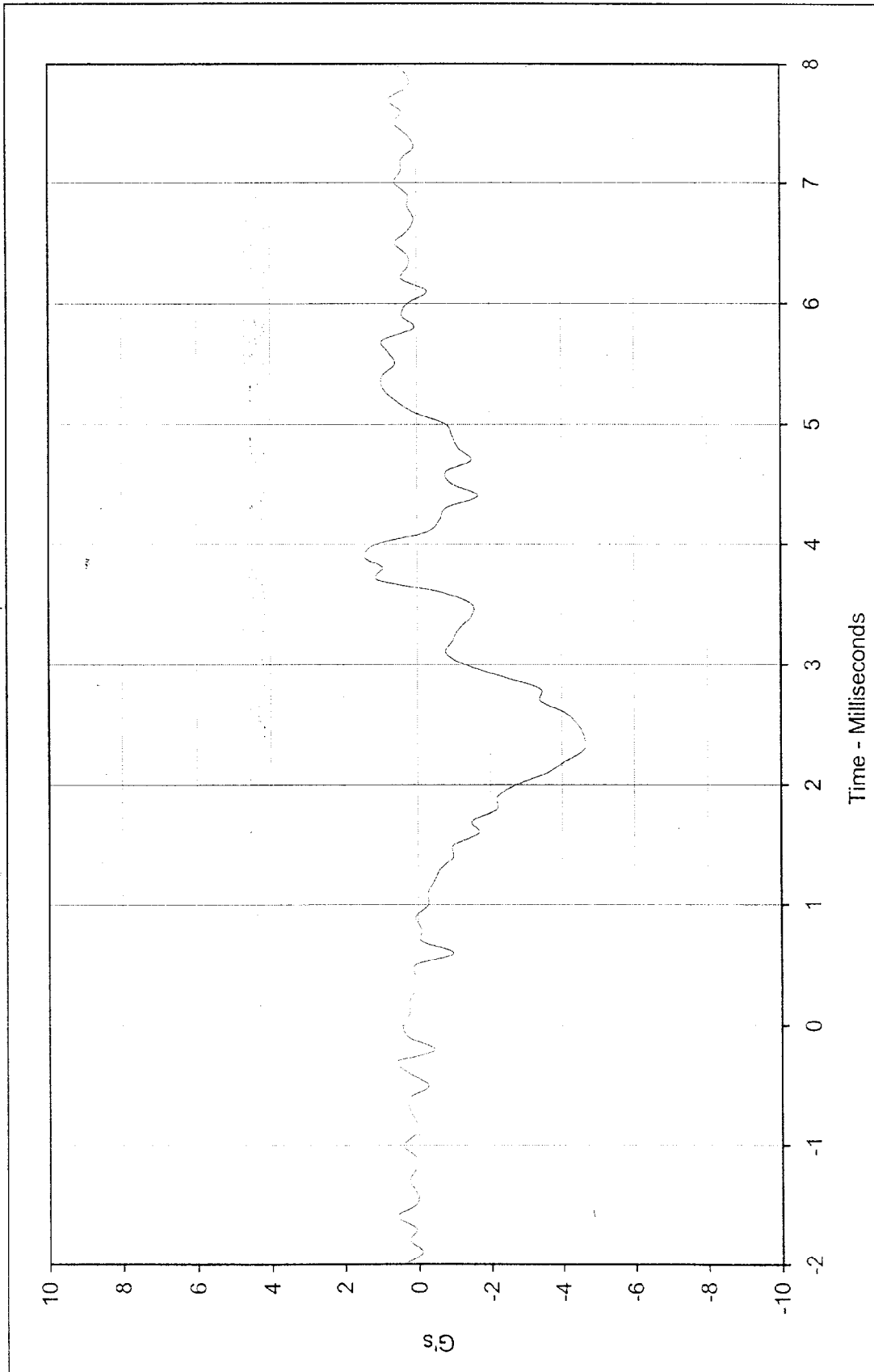
Date



Curve Description: Hybrid III Head Drop Calibration (Female)
 Test Information: S/N of Part: N/A Test I.D.: 274HD

Head Resultant Acceleration
 Maximum Value: 278.0 at 2.4 Milliseconds
 Minimum Value: 1.3 at -0.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 7/29/97
 ATD Serial No.: 274





Testing Program Hybrid III Head Drop Calibration (Female)
 Test Information: S/N of Part: N/A Test I.D.: 274HD

Curve Description: Head Acceleration Y Axis
 Maximum Value: 1.5 at 3.9 Milliseconds
 Minimum Value: -4.6 at 2.3 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 7/29/97
 ATD Serial No.: 274





Hybrid III Calibration Data Sheet

5TH Percentile Female

Thorax Impact Test

ATD Serial No.: 274

Part Serial No.: N/A

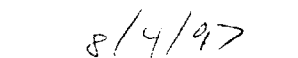
Test I.D.: FC001

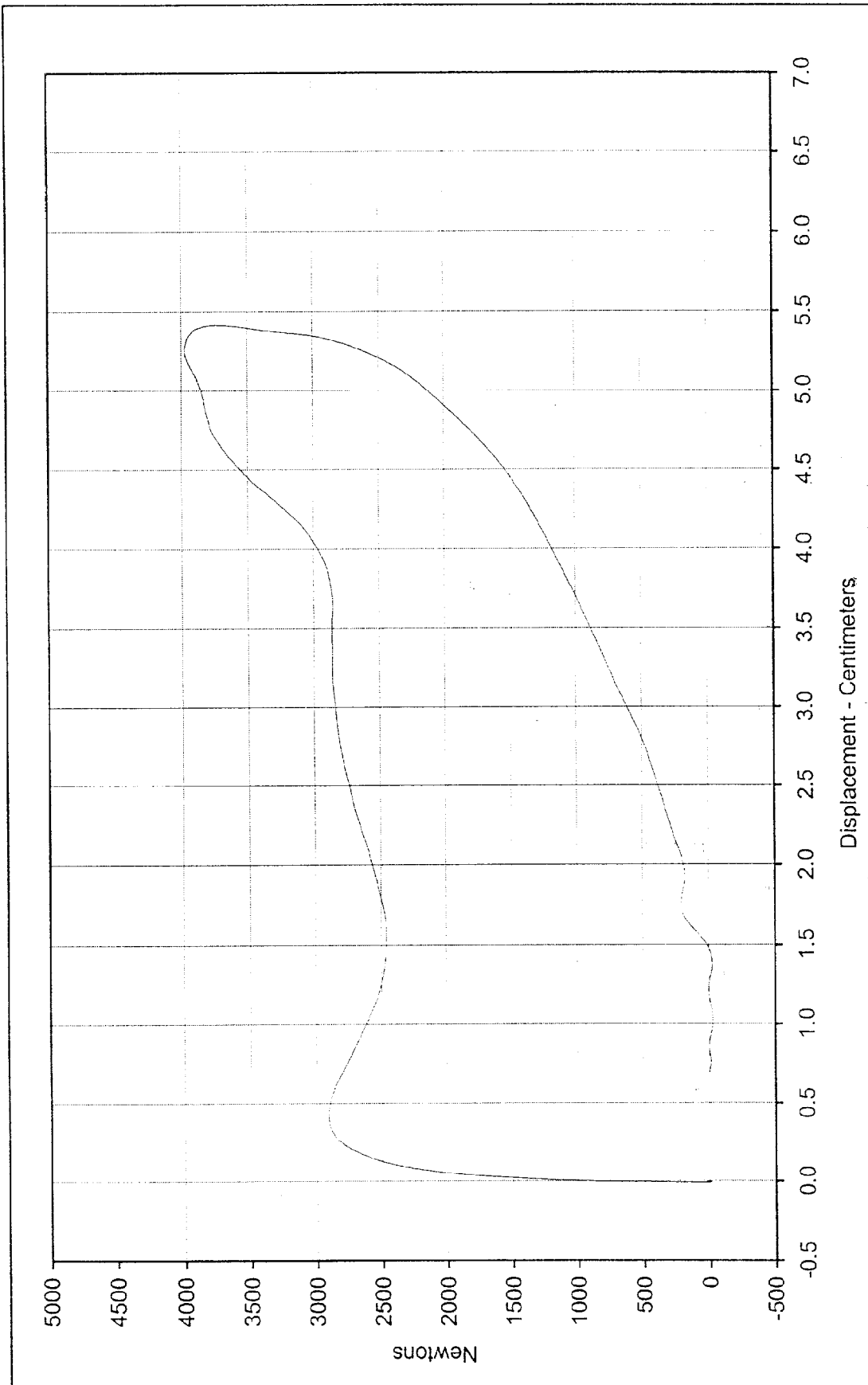
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Peak Probe Force	Newtons	3800 to 4300	3972	Pass
Peak Sternum Displacement	CM	5.1 to 5.8	5.4	Pass
Internal Hysteresis	%	69 to 85	74.9	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

August 4, 1997
Test Date


Date



Curve Description: Probe Force vs. Chest Displacement Testing Program Hybrid III Thorax Impact Test (5TH Female)

Probe Force: 3972.2 Newtons Test Information: SN of Part: N/A Test I.D.: FC001

Chest Displ.: 5.42 Centimeters

SAE Filter Class: 180

Date of Test: 8/4/97

ATD Serial No.: 274





Hybrid III Calibration Data Sheet

5TH Percentile Female

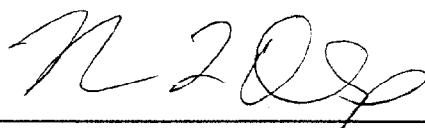
Neck Flexion Test

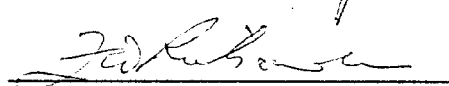
ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: FNF03

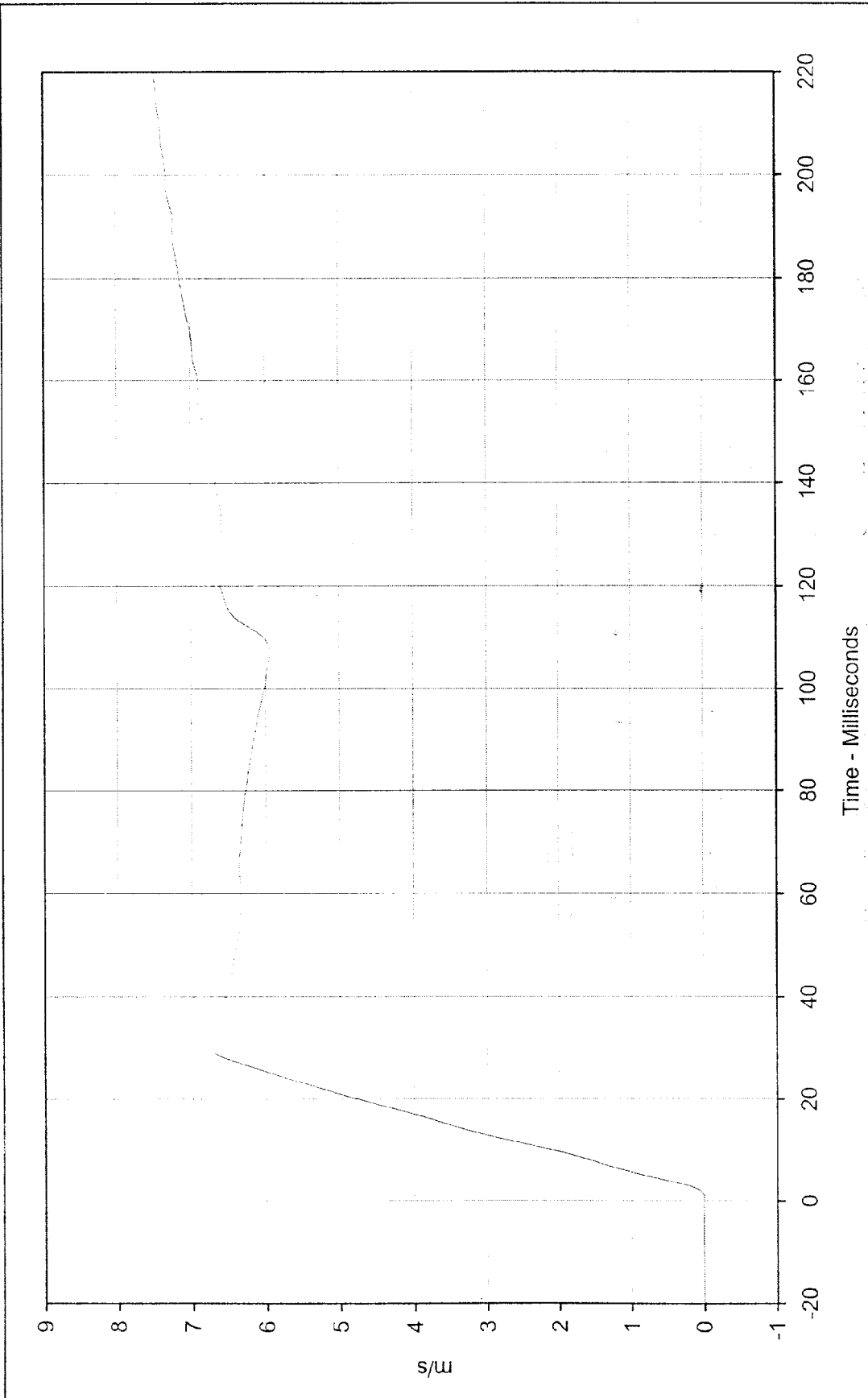
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	31	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 Msec	m/s	2.10 to 2.50	2.12	Pass
	20 Msec	m/s	4.00 to 5.00	4.77	Pass
	30 Msec	m/s	5.80 to 7.00	6.75	Pass
Maximum "D" Plane Rotation		Degrees	78.0 to 96.0	95.4	Pass
"D" Plane Rotation Decay, Time From Peak Value To Zero Crossing		Msec.	57.0 to 69.0	66.0	Pass
Moment About Occipital Condyle		N•m	69.0 to 84.0	78.3	Pass
Moment About Occipital Condyle Decay, Time From Peak Value To Zero Crossing		Msec.	41.0 to 50.0	44.9	Pass
Time of Peak Rotation With Respect to Peak Moment		Msec.	2.0 to 12.0	2.9	Pass
Overall Test Results					Pass


 Laboratory Technician


 Approved By

August 6, 1997
 Test Date

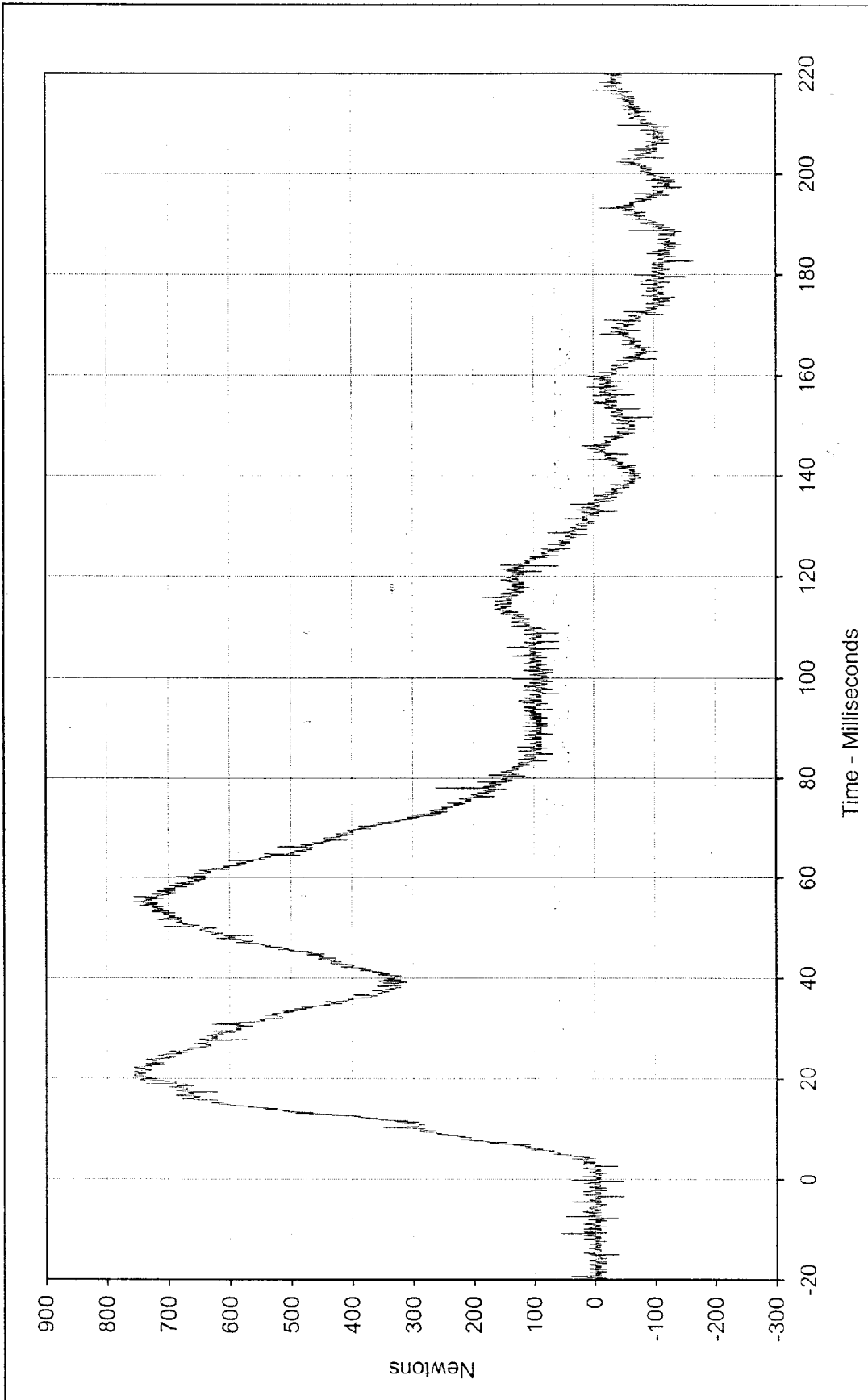
8/6/97
 Date



Testing Program Hybrid III Neck Flexion Test (Female)
 Test Information: S/N of Part: N/A Test I.D.: FNF03



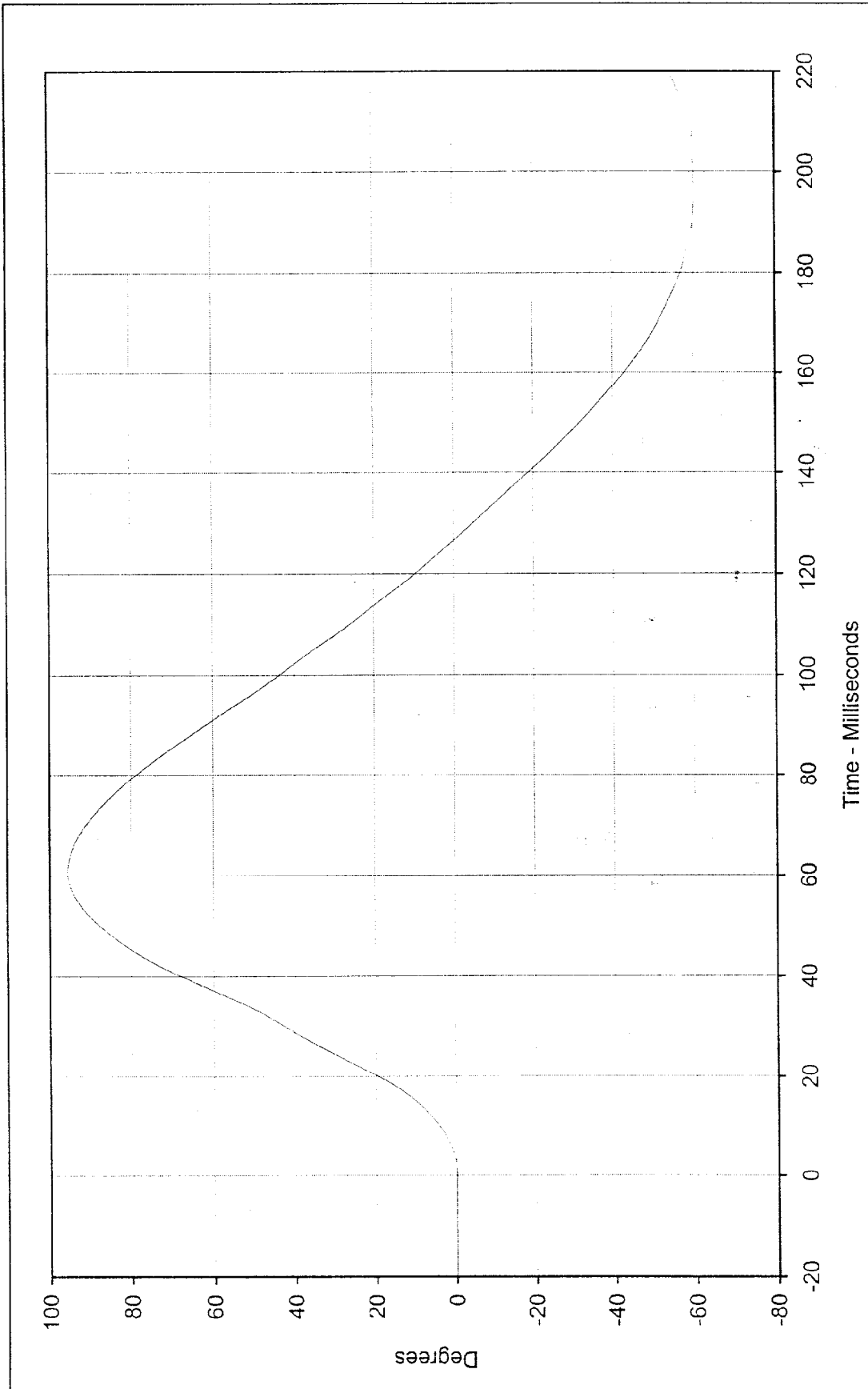
Curve Description: Pendulum Velocity
 Maximum Value: 7.5 at 220.0 Milliseconds
 Minimum Value: 0.0 at 0.6 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/6/97
 ATD Serial No.: 274



Curve Description:	Neck Force X	Testing Program	Hybrid III Neck Flexion Test (Female)
Maximum Value:	756.3 at 20.5 Milliseconds	Test Information:	S/N of Part: N/A Test I.D.: FNF03
Minimum Value:	-164.8 at 182.7 Milliseconds		

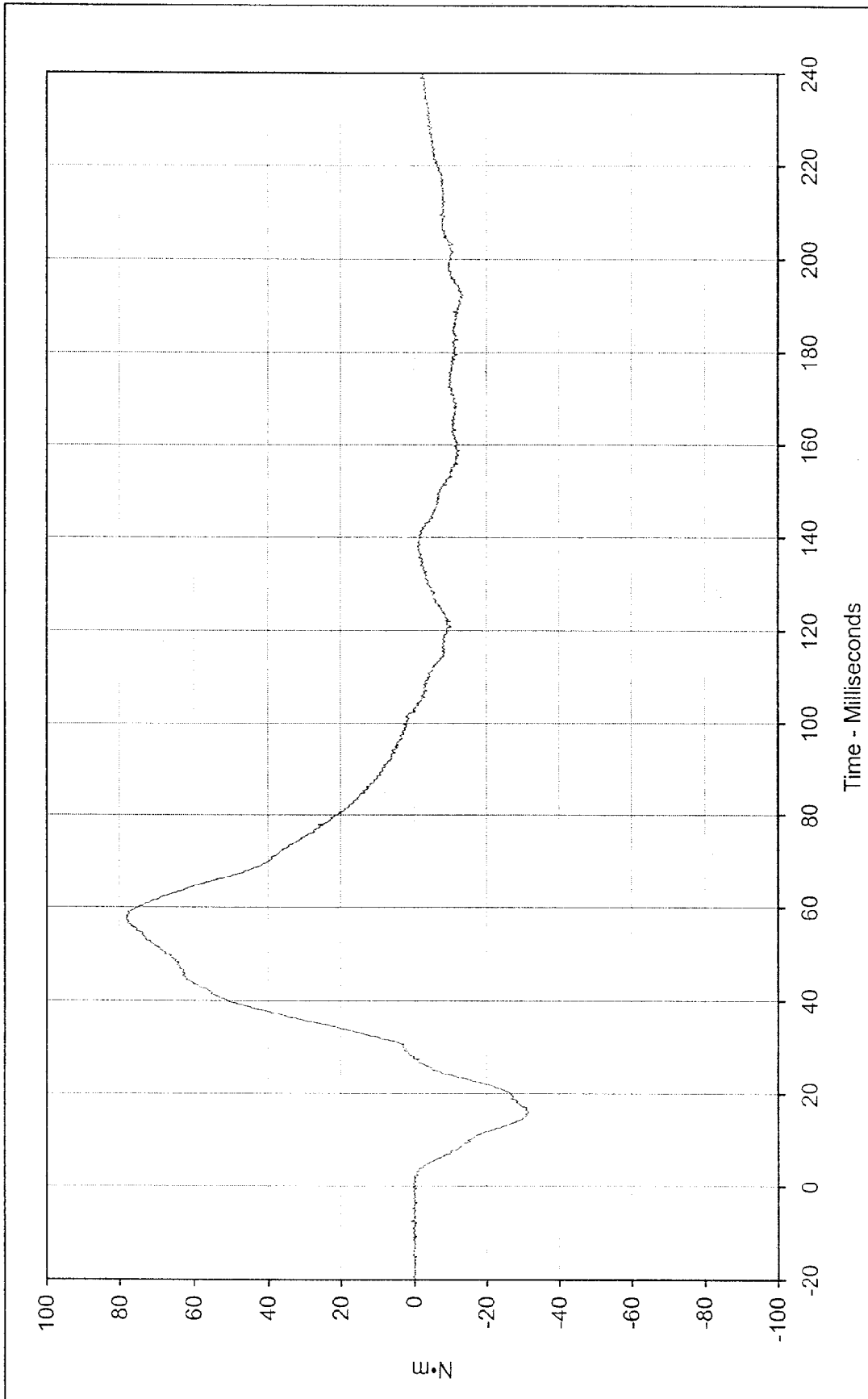


SAE Filter Class:	1000
Date of Test:	8/6/97
ATD Serial No.:	274



Curve Description:		Testing Program		Hybrid III Neck Flexion Test (Female)	
Maximum Value:	95.4	at	60.6	S/N of Part:	N/A
Minimum Value:	-60.4	at	195.1	Test I.D.:	FNF03
SAE Filter Class:	60				
Date of Test:	8/6/97				
ATD Serial No.:	274				





Curve Description:	Moment About Occipital Condyles	Testing Program	Hybrid III Neck Flexion Test (Female)
Maximum Value:	78.3 at 57.7 Milliseconds	Test Information:	S/N of Part: N/A Test I.D.: FNF03
Minimum Value:	-31.7 at 16.2 Milliseconds		



SAE Filter Class:	600
Date of Test:	8/6/97
ATD Serial No.:	274



Hybrid III Calibration Data Sheet

5TH Percentile Female

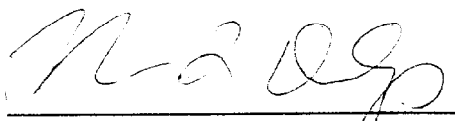
Neck Extension Test

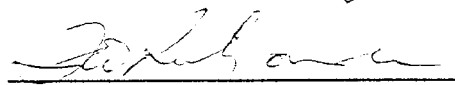
ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: FNE03

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.09	Pass
Pendulum Deceleration	10 Msec	m/s	1.50 to 1.90	1.63	Pass
	20 Msec	m/s	3.10 to 3.90	3.83	Pass
	30 Msec	m/s	4.60 to 5.60	5.40	Pass
Maximum "D" Plane Rotation		Degrees	97.0 to 119.0	104.0	Pass
"D" Plane Rotation Decay, Angle When the Decaying Y Moment is at -10 N•m		Degrees	80.0 to 96.0	87.1	Pass
Calculated Moment About Occipital Condyle		N•m	-54 to -67	-64.0	Pass
Moment About Occipital Condyle Decay, Time From Negative Peak Value To -10 N•m		Msec.	28.0 to 38.0	30.2	Pass
Overall Test Results					Pass


Laboratory Technician

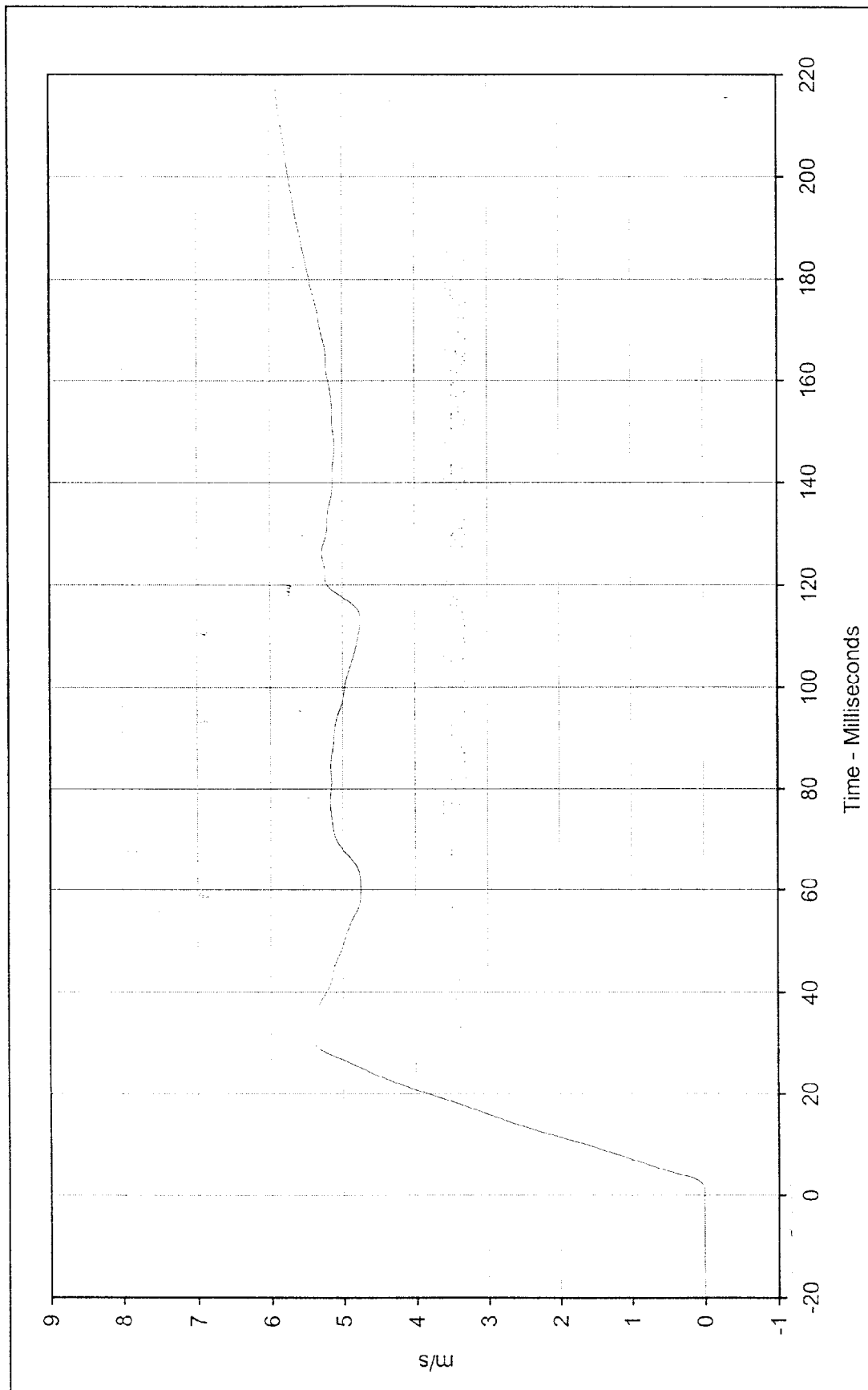

Approved By

August 6, 1997

Test Date

8/6/97

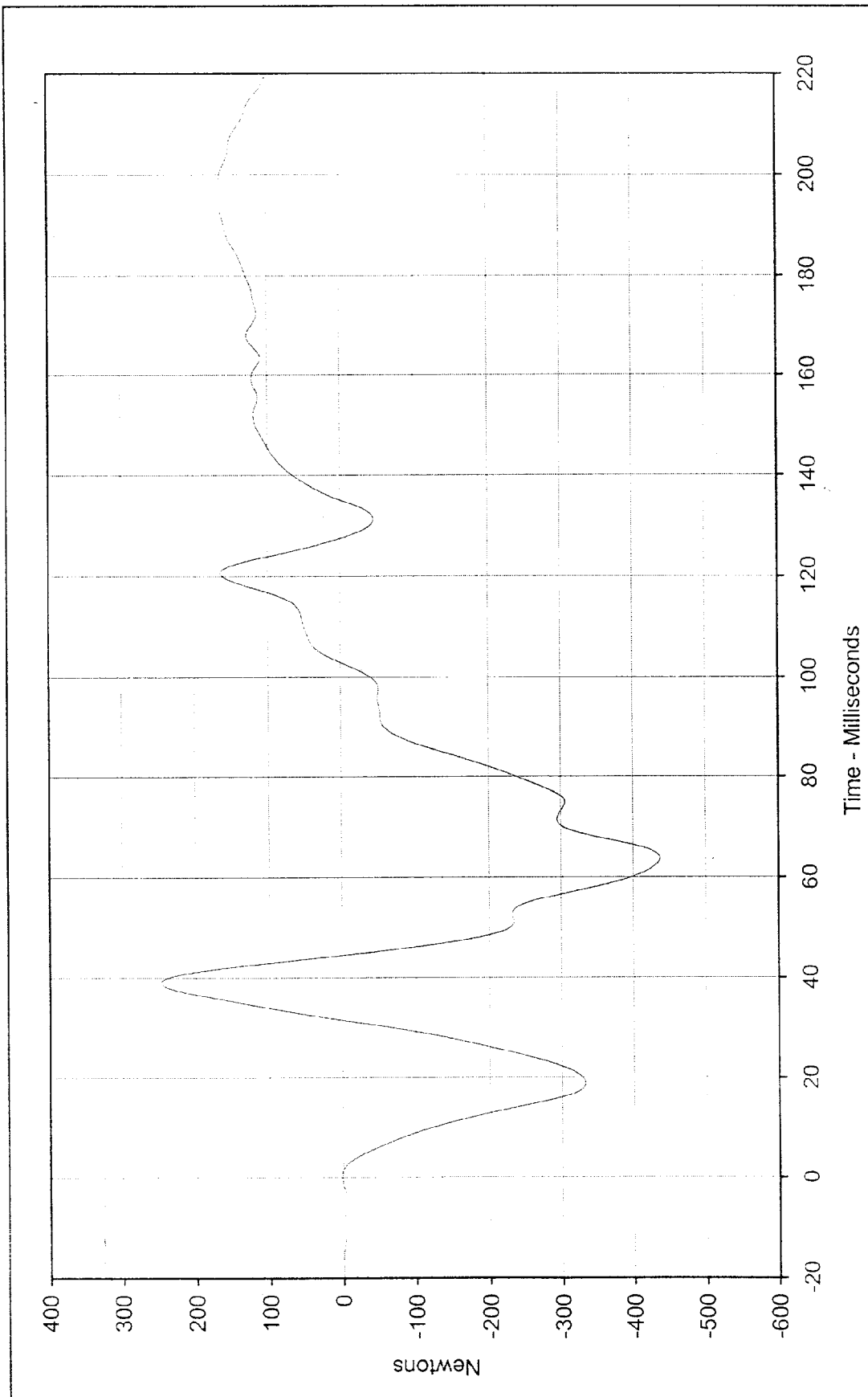
Date



Curve Description: Hybrid III Neck Extension Test (Female)
 Test Information: S/N of Part: N/A Test I.D.: FNE03

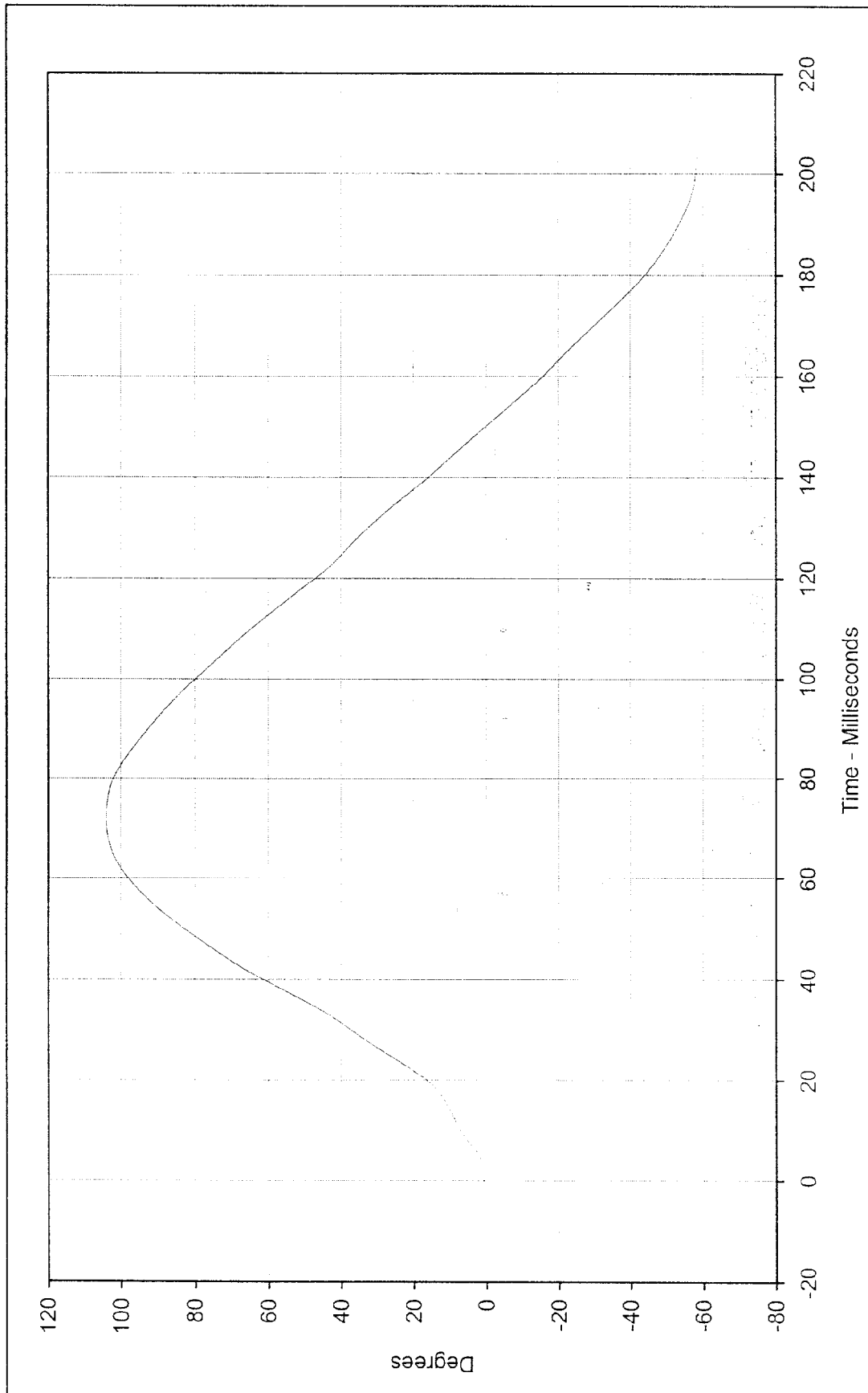
Pendulum Velocity
 Maximum Value: 5.9 at 220.0 Milliseconds
 Minimum Value: 0.0 at 1.2 Milliseconds
 SAE Filter Class: 180
 Date of Test: 8/6/97
 ATD Serial No.: 274





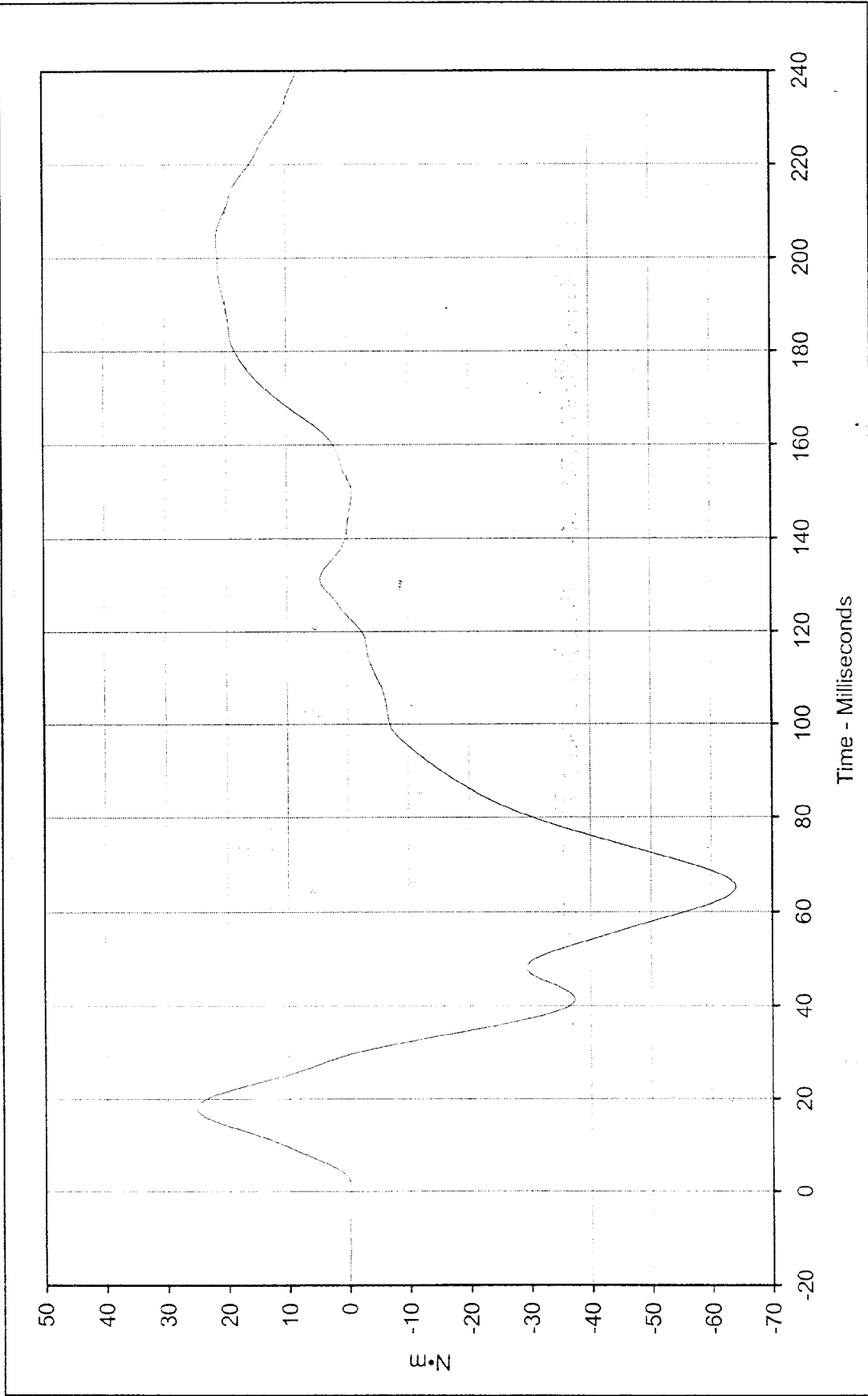
Curve Description:		Neck Force X		Testing Program	Hybrid III Neck Extension Test (Female)
Maximum Value:	247.2	at	39.1	Test Information:	S/N of Part: N/A Test I.D.: FNE03
Minimum Value:	-437.0	at	63.7		
SAE Filter Class:	60				
Date of Test:	8/6/97				
ATD Serial No.:	274				





Curve Description:	"D" Plane Rotation		Testing Program	Hybrid III Neck Extension Test (Female)
Maximum Value:	104.0	at 71.8	Test Information:	S/N of Part: N/A Test I.D.: FNE03
Minimum Value:	-58.9	at 207.7		
SAE Filter Class:	60			
Date of Test:	8/6/97			
ATD Serial No.:	274			





Curve Description: Moment About Occipital Condyles
Maximum Value: 25.1 at 18.0 Milliseconds
Minimum Value: -64.0 at 65.3 Milliseconds
SAE Filter Class: 60
Date of Test: 8/6/97
ATD Serial No.: 274

Testing Program: Hybrid III Neck Extension Test (Female)
Test Information: S/N of Part: N/A Test I.D.: FNE03





Hybrid III Calibration Data Sheet

50TH Percentile Female

External Measurements

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.0	Pass
Laboratory relative humidity	%	10 to 70	43	Pass
A - Total sitting height	mm	785.0 to 795.0	791.0	Pass
B - Shoulder pivot height	mm	434.0 to 450.0	445.0	Pass
C - "H" point height	mm	81.5 to 86.5	84.0	Pass
D - "H" point from seat back	mm	144.5 to 149.5	147.0	Pass
E - Shoulder pivot from back	mm	71.0 to 81.0	80.0	Pass
F - Thigh clearance	mm	114.0 to 130.0	125.0	Pass
G - Elbow to finger tip	mm	393.0 to 409.0	396.0	Pass
H - Skull cap to back line	mm	43.2 to 48.5	46.0	Pass
I - Shoulder to elbow length	mm	287.0 to 303.0	298.0	Pass
J - Elbow rest height	mm	191.0 to 211.0	210.0	Pass
K - Buttock to knee length	mm	509.5 to 533.5	532.0	Pass
L - Popliteal height	mm	349.5 to 373.5	370.0	Pass
M - Knee to floor height	mm	449.0 to 465.0	459.0	Pass
N - Buttock popliteal length	mm	399.5 to 423.5	422.0	Pass
O - Chest depth	mm	183.0 to 200.0	197.0	Pass
P - Foot length	mm	216.0 to 232.0	230.0	Pass
R - Foot width	mm	76.0 to 92.0	90.0	Pass
V - Shoulder width	mm	348.0 to 364.0	361.0	Pass
W - Hip width at "H" point	mm	299.0 to 315.0	299.0	Pass
X - Chest circumference	mm	783.0 to 813.0	785.0	Pass
Y - Waist circumference	mm	757.0 to 787.0	780.0	Pass
AA - Location for chest circumference	mm	300.0 to 310.0	305.0	Pass
BB - Location for waist circumference	mm	160.0 to 170.0	168.0	Pass
Overall Test Results				Pass

N 2009
Laboratory Technician

J. R. R. R.
Approved By

August 6, 1997

Test Date

8/6/97

Date

APPENDIX F
VEHICLE OWNER'S MANUAL
OCCUPANT RESTRAINT INSTRUCTIONS

Seat belts – -Seat belt precautions

Toyota recommends 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.

Baby or small child. Use a child restraint system which fits your vehicle. See "Child restraint" for details.

Child. 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. Do not allow the child to stand up or kneel on either rear or front seats. If the shoulder belt falls across the child's neck or face, move the child to the center position and use the center lap belt.

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, however, first check with your doctor.

CAUTION:

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

When using the seat belts, observe the following:

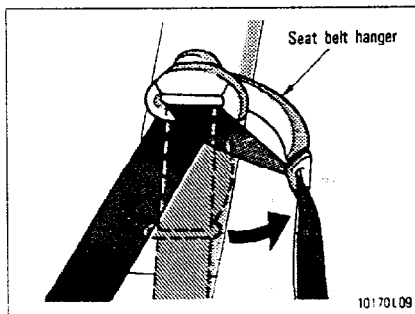
- Use the belt for only one person at a time. Do not use a single belt for two or more people—even children.
- Avoid reclining the seatbacks too much. The seat belts provide maximum protection when the seatbacks are in the upright position. (See the seat adjustment instructions.)
- Be careful not to damage the belt webbing or hardware. Take care that they do not get caught or pinched in the seat or 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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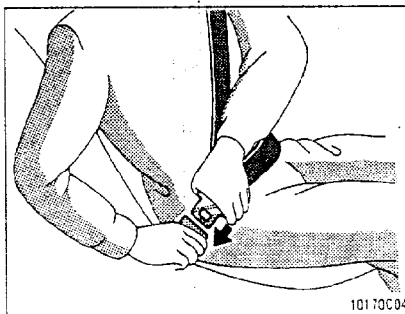
-Front seat belts and rear outside seat belts



Seat belts with a seat belt hanger-

Make sure that the seat belt hanger is secured in raised position. If it is not, be sure to raise the seat belt hanger until it locks in position.

You will hear a click when the seat belt hanger locks in position.



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.

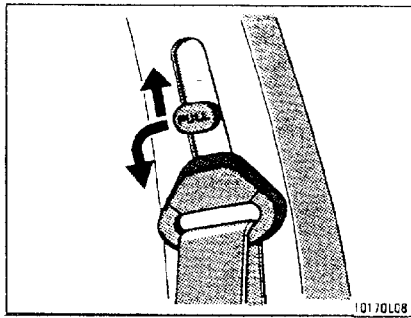
When a passenger's shoulder belt is completely extended and is then retracted even slightly, the belt is locked in that position and cannot be extended. This feature is used to hold the child restraint system securely. (For details, see "Child restraint" in this chapter.) To free the belt again, fully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

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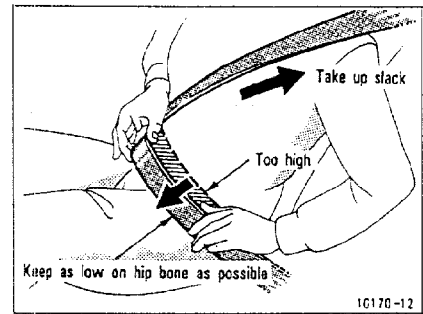
Seat belts with an adjustable shoulder anchor –

Adjust the shoulder anchor position to your size.

To raise the anchor position, push the anchor up. To lower the anchor position, pull the knob and slide the anchor down. After adjustment, make sure the anchor is locked in position.

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 increase the chance of injury.



Adjust the position of the lap and shoulder belts.

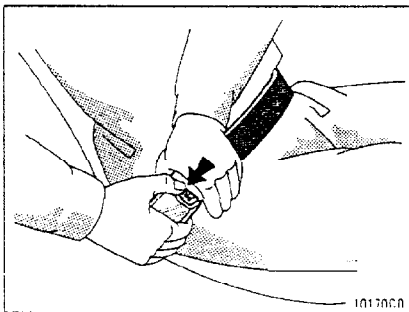
Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit by pulling the shoulder portion upward through the latch plate.

CAUTION:

- High-positioned lap belts and loose-fitting belts both could increase the chance of injury due to sliding under the lap belt during an accident. Keep the lap belt as low on your hip bone as possible.
- For your safety, do not place the shoulder belt under your arm.

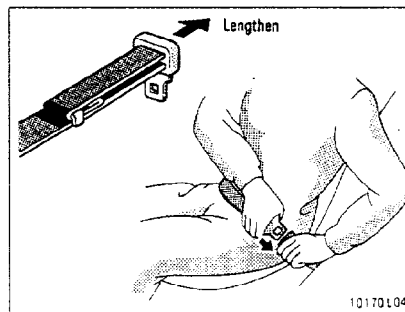
32

-Rear center seat belt



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.

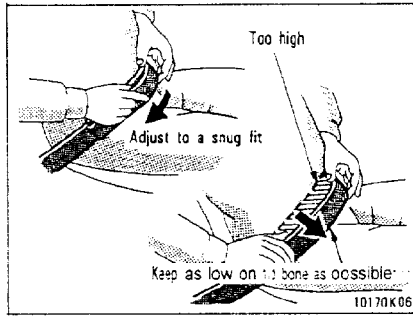
You will hear a click when the tab locks into the buckle.

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.

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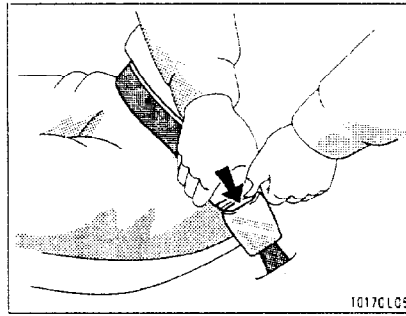


Remove excess length of the belt and adjust the belt position.

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

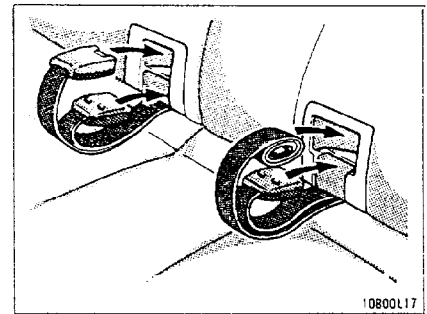
Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit.

CAUTION: High-positioned and loose-fitting lap belts could increase the chance of injury due to sliding under the lap belt during an accident. Keep the lap belt as low on your hip bone as possible.



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

-Stowing the rear seat belts (wagon)

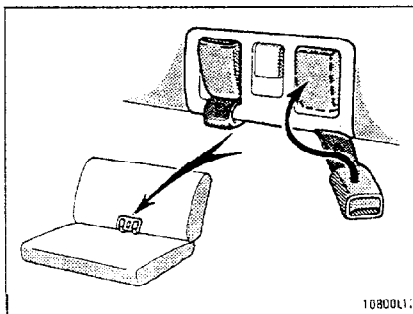


The rear seat belts can be stowed when not in use.

Seat belts must be stowed before you fold the seatback. (See "Rear seats-Fold-down rear seat" in this chapter.)

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-Stowing the third seat belts (wagon)



The third seat belts can be stowed when not in use.

Seat belts must be stowed before you fold the seatback. (See "Rear seats-Take-down third seat" in this chapter.)

-Seat belt extender

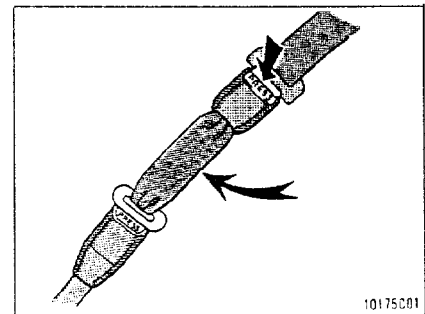
If your seat belt cannot be fastened securely because it is not long enough, a personalized seat belt extender is available from your Toyota dealer free of charge.

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.

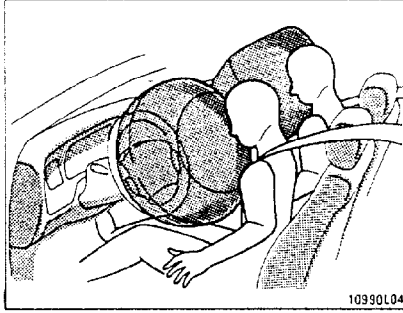
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SRS airbags

CAUTION:

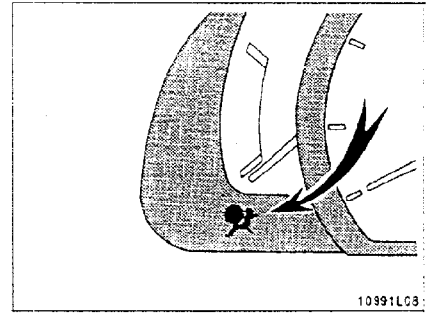
- After inserting the tab, make sure the tab and buckle are locked and that the seat belt extender is not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.
- If the seat belt does not function normally, immediately contact your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

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The SRS (Supplemental Restraint System) airbags are designed to provide further protection to the driver and front passenger when added to the primary protection provided by the seat belts.

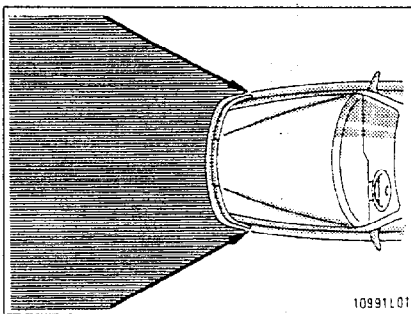
In response to a severe frontal impact, the SRS airbags work together with the seat belts to prevent or reduce injury by inflating, in order to decrease the likelihood of the driver's or front passenger's head or chest directly hitting the steering wheel or dashboard. The passenger airbag is activated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



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 front airbag sensors, center airbag sensor assembly, inflators, warning light, interconnecting wiring and power sources.

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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.

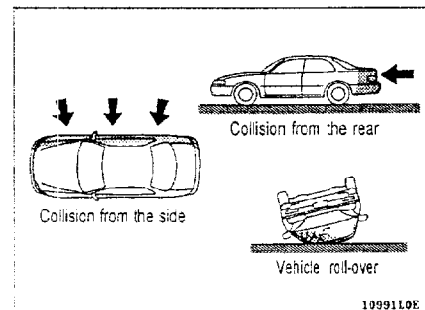
The SRS airbags will deploy if the severity of the impact is above the designed threshold level, comparable to an approximate 20 km/h (14 mph) collision when impacting straight into a fixed barrier that does not move or deform.

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 (a collision in which the nose of the vehicle "under-rides", or goes under, the bed of a truck).

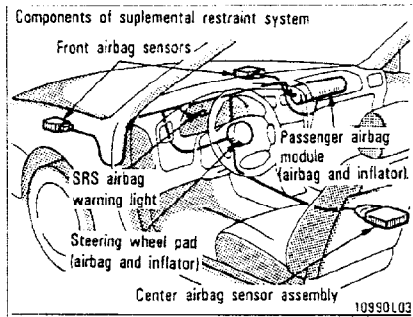
It is possible with collision severity at the marginal level of airbag sensor detection and activation that only one of your vehicle's two airbags will deploy.

For your safety, be sure to always wear your 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 center airbag sensor assembly consists of a safing sensor and center 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 nitrogen 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 the nitrogen gas. This is not harmful and 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.

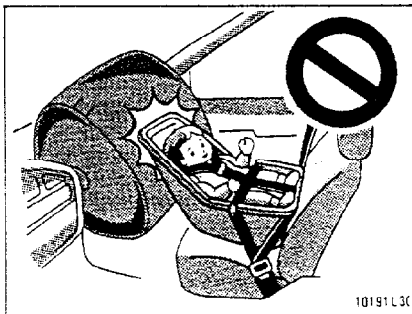
Parts of the airbag module (steering wheel hub, dashboard) may be hot for several minutes, but the airbags themselves will not be hot. The airbags are designed to inflate only once.

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.

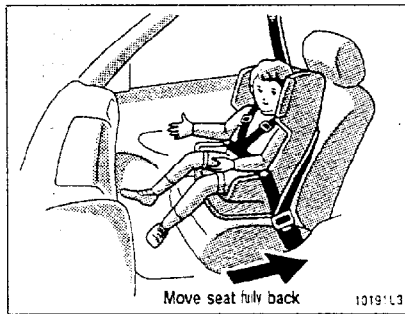
CAUTION:

- The SRS airbag system is designed only as a supplement to the primary protection of the seat belt systems of the driver and front passenger. The front seat occupants are particularly susceptible to injury if they do not wear their seat belts; when sudden braking or a collision occurs, they may be thrown forward. To obtain further protection in an accident, the driver and all passengers in the vehicle should always wear their seat belts when driving. For instructions and precautions concerning the seat belt system, see "Seat belts" in this chapter.
- A baby or small child who is too small to use a seat belt should be properly secured in a rear seat using a child restraint system.

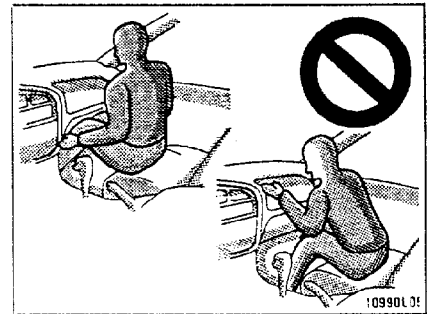
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- Do not use a rear-facing child restraint system in the front seat because the force of the rapid inflation of the passenger airbag may cause severe injury to the child. Vehicles with a passenger airbag display a caution label on the passenger side instrument panel as shown above to remind you not to install a rear-facing child restraint system on the front seat.

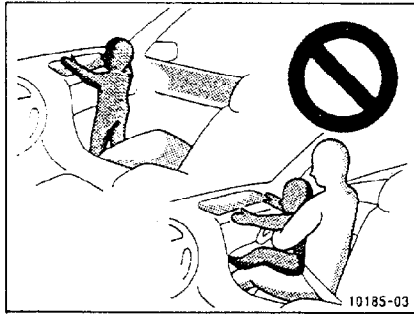


- When using a forward-facing child restraint system in the front seat, the seat must be moved as far back as possible. For instructions concerning the installation of a child restraint system, see "Child restraint" in this chapter.

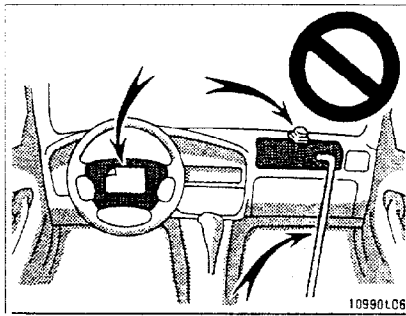


- Do not sit on the edge of the seat or lean over the dashboard when the vehicle is in use. The airbags inflate with considerable speed and force; you may be severely injured. Sit up straight and well back in the seat, and always use your seat belt.

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- 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 severely 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 on or in front of the dashboard or steering wheel pad that houses the airbag system. They might restrict inflation or cause personal injury as they are projected rearward.

- Do not modify, remove or open any component or wiring, such as the steering wheel, column cover, front passenger airbag cover, front passenger airbag, center airbag sensor assembly or front airbag sensors. Doing any of these may cause sudden SRS airbag inflation or disable the system, which could result in personal injury.

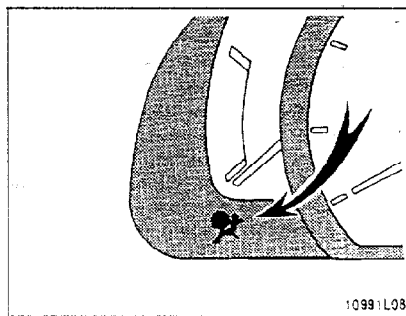
Failure to follow these instructions can result in severe injuries.

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NOTICE:

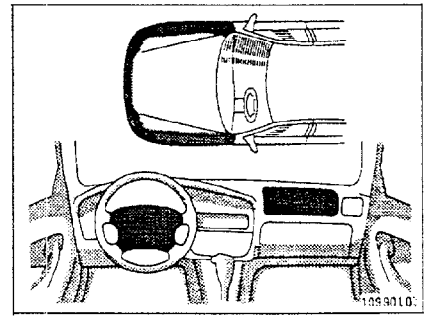
Do not perform any of the following changes without consulting your Toyota dealer. Such changes can interfere with proper operation of the SRS airbag system in some cases.

- ♦ 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 fenders, front and rear console, steering column, steering wheel or dashboard near the front passenger's 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) was involved in an accident not of the extent to 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.

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