

REPORT NUMBER: CAL-91-N11

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

TOYOTA MOTOR COMPANY
1991 TOYOTA TERCEL
4-DOOR SEDAN

NHTSA NUMBER: MM5102

CALSPAN TEST NUMBER: 7893-7

CALSPAN CORPORATION
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April 2, 1991



FINAL REPORT

PREPARED FOR:

U. S. Department of Transportation
National Highway Traffic Safety Administration
Office of Market Incentives
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16. Abstract A frontal load cell barrier test of a 1991 Toyota Tercel 4-Door Sedan was performed at Calspan Advanced Technology Center crash test facility in Buffalo, New York on April 2, 1991. The impact speed was 35.3 mph and the ambient temperature at the barrier face at the time of impact was 36°F. The maximum post-test vehicle crush was 20.9 inches. The test vehicle was equipped with an automatic torso belt and manual lap belt at each of the front seating positions. With regard to FMVSS 208 "Occupant Crash Protection," injury criteria, the driver dummy appeared to exceed the maximum head injury criteria.					
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Section 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is part of the Composite FY 90 Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-90-D-02121. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph requirements.

The 35 mph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test procedure.

Section 2

SUMMARY OF TEST NUMBER MM5102

A load cell barrier consisting of 36 load cells was impacted by a 1991 Toyota Tercel 4-Door Sedan at a velocity of 35.3 mph. The test was performed at the Calspan Corporation Advanced Technology center on April 2, 1991. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by one real-time camera and 13 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

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

Both ATDs were fully instrumented with head and chest triaxial accelerometers and right/left femur load cells. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver ATD (Serial No. 357) and the right-front passenger ATD (Serial No. 358) were calibrated previous to this test. Certification details, along with instrumentation calibration data, can be found in Appendices C and D.

The 67 channels of data were recorded on six 14-channel FM tape recorders. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Accelerometer #4, located on the bottom of engine block, had a zero offset after 50 msec. Barrier load cells C9 and D1 did not record accurately during test; data curves have been removed from report and both load cells were not used in load cell sums.

The driver's HIC was 1138.1. The maximum chest deceleration over 3 milliseconds was 57.0 g's and femur loads were 945.4 and 1325.2 pounds.

The right front passenger's HIC was 728.5 and maximum chest deceleration over 3 milliseconds was 51.4 g's. Femur loads were 778.3 and 948.7 pounds.

Table 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Vehicle Year/Make/Model/Body Style: 1991 Toyota Tercel 4-Door Sedan

NHTSA No.: MM5102 VIN.: JT2EL43A4M0029329

Body Color: White Date Of Manufacture: November 1990

Engine: 4 Cylinders; - C.I.D.; 1.5 Liters; - CC
X Gas; - Diesel; - Turbocharged
- Longitudinal; X Transverse

Transmission: - Speed; - Manual; X Automatic; - Overdrive

Final Drive: X Front Wheel; - Rear Wheel; - Four Wheel

Date Received: 2-27-91 Odometer Reading: 44 miles
- A/C; X P/S; X P/B; - P/wdo.; - Tilt Wheel
- P/seats; - Cruise Control

Type of Occupant Restraint: Automatic torso belt with a manual lap belt.

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 32 psi, Rear 32 psi

Recommended Tire Size: P145/80R13

Recommended Cold Tire Pressure: Front 32 psi, Rear 32 psi

Tires on Vehicle: 155SR13 ; Manufacturer: Yokohama

Number of Occupants: 2 Front; 3 Rear; - 3rd Seat; 5 TOTAL

Type of Front Seats: X Bucket; - Bench; - Split Bench

Type of Front Seat Back: - Fixed X Adj. With X Lever - Rot. Knob

Vehicle Capacity Weight (VCW) = 775 lbs. (A)

No. of Occupants x 150 lbs. = 750 lbs. (B)

Rated Cargo and Luggage
Weight (RCLW) A-B = 25 lbs.

GVWR 2970 lbs. GAWR: Front 1620 lbs. Rear 1395 lbs.

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS) = UDW:

Right Front = 660 lbs. Right Rear = 380 lbs.
 Left Front = 690 lbs. Left Rear = 390 lbs.
 TOTAL FRONT WEIGHT = 1350 lbs. (63.7 % of Total Vehicle Weight)
 TOTAL REAR WEIGHT = 770 lbs. (36.3 % of Total Vehicle Weight)
 TOTAL DELIVERY WEIGHT = 2120 lbs.

CALCULATION FOR TARGET TEST WEIGHT:

UDW = Unloaded Delivered Weight (2120 lbs.)
 VCW = Vehicle Capacity Weight (775 lbs.)
 DSC = Designated Seating Capacity (5)
 RCLW = VCW - 150 (DSC) = 25 lbs.
 Target Test Weight = UDW + RCLW + (2 dummies x 164 lbs./dummy)
 Target Test Weight = 2473 lbs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 22 POUNDS CARGO:

Right Front = 690 lbs. Right Rear = 540 lbs.
 Left Front = 700 lbs. Left Rear = 540 lbs.
 TOTAL FRONT WEIGHT = 1390 lbs. (56.3 % of Total Vehicle Weight)
 TOTAL REAR WEIGHT = 1080 lbs. (43.7 % of Total Vehicle Weight)
 TOTAL TEST WEIGHT = 2470 lbs.
 Weight of ballast secured in vehicle trunk area = 0 lbs.

VEHICLE ATTITUDE (all dimensions in inches):

Delivered Attitude: RF 25.1 LF 24.8 RR 25.0 LR 24.8
 Test Attitude: RF 24.5 LF 24.5 RR 23.5 LR 23.5
 Wheel Base: 93.6 in.; C.G. = 40.9 in. rearward of front wheel C/L.

Remarks: 11.1 gallons of stoddard fluid was placed in the fuel tank.

The vehicle's trunk lid, and rear seat belt assembly were
removed to achieve test weight.

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

POST-IMPACT DATA:

Type of Test: Frontal Barrier Impact Angle: 0°
 Date of Test: April 2, 1991 Time of Test: 1:15
 Ambient Temperature: 36 °F at impact area
 Temperature in Occupant Compartment: 70 °F
 Windshield Molding Temperature: 70 °F
 Required Impact Velocity Range: 34.5 to 35.5 mph
 Impact Velocity: primary = 35.3 mph, secondary = 35.4 mph
 Distance From Front Bumper to Barrier Face When
 Entering Speed Trap: 52 inches
 Exiting Speed Trap: 12 inches

VEHICLE REBOUND AND CRUSH (inches):

Vehicle Length: Pre-test = R 158.4 C 161.7 L 158.5
 Post-test = R 140.8 C 140.8 L 139.0
 Crush = R 17.6 C 20.9 L 19.5

Distance from front of test vehicle to point of impact:

R 19.5 C 20.7 L 22.3

VISIBLE DUMMY CONTACT POINTS:

	<u>Driver</u>	<u>Passenger</u>
Head	<u>Upper Steering Rim and Hub</u>	<u>Minor Impact on Visor</u>
Chest	<u>No Contact</u>	<u>No Contact</u>
Abdomen	<u>No Contact</u>	<u>No Contact</u>
Left Knee	<u>Under Dash Area</u>	<u>Glove Box Lid</u>
Right Knee	<u>Under Dash Area</u>	<u>Glove Box Lid</u>

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

	<u>Front</u>		<u>Rear</u>	
	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Door Opening	<u>operable</u>	<u>operable</u>	<u>operable</u>	<u>operable</u>

	<u>Front</u>	
	<u>Left</u>	<u>Right</u>
<u>Seat Movement</u>		
Seat Back Failure	<u>None</u>	<u>None</u>
Seat Shift (in.)	<u>0.0</u>	<u>0.0</u>

Glazing Damage

Backlight/Windshield Windshield sustained stress fractures but remained intact.

Other Notable Impact Effects: None.

Section 3
OMI FINAL DATA

Occupant and Vehicle Information

I. OMI DATA

1. Dummy Injury Criteria Data Summary
2. Dummy Positioning Data
3. Seat Belt Positioning Data
4. Seat Belt Performance Assessment Data
5. Driver Dummy to Steering Column Dimensions
6. Camera Locations
7. Vehicle Target Locations

II. OVR DATA

1. Load Cell Barrier Data
2. Vehicle Accelerometer Data
3. Test Vehicle Measurements

Table 2
DUMMY INJURY CRITERIA VALUES

NHTSA No.: MM5102 Vehicle: 1991 Toyota Tercel 4-Door Sedan

	MAXIMUM HEAD ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	-216.0	-28.9	94.9	237.3
Position #2 - Passenger	-30.1	32.5	68.4	75.5

	MAXIMUM CHEST ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	-57.7	-31.5	19.8	57.0
Position #2 - Passenger	-52.6	45.1	-17.0	51.4

The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Position #1 - Driver	945.4	1325.2
Position #2 - Passenger	778.3	948.7

	MAXIMUM FORCE - SEAT BELT LOADS (lbs.)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
Position #1 - Driver	2712.5	-	888.9
Position #2 - Passenger	2468.0	1002.5	-

	HEAD INJURY CRITERIA (HIC)			
	HIC	t ₁ (SEC)	t ₂ (SEC)	Average Acceleration t ₁ TO t ₂
Position #1 - Driver	1138.1	.06972	.09192	76.6
Position #2 - Passenger	728.5	.05640	.09228	52.9

HIC is as defined in FMVSS 208. The maximum time interval from t₁ to t₂ is 36 milliseconds.

Figure 1

PART 572 DUMMY IN-VEHICLE POSITION

Test No.: MM5102 Vehicle: 1991 Toyota Tercel 4-Dr. Sedan

SEAT TYPE:

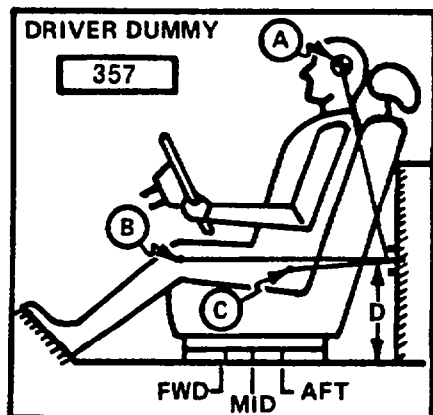
- Bench
X Bucket
- Split Bench

ADJUSTER TYPE:

X Manual
- Power

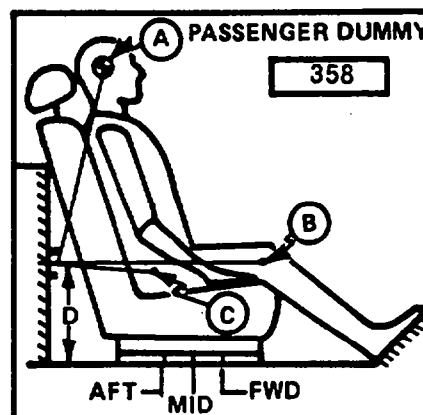
SEAT BACK TYPE:

- Fixed
X Adjustable Reclining



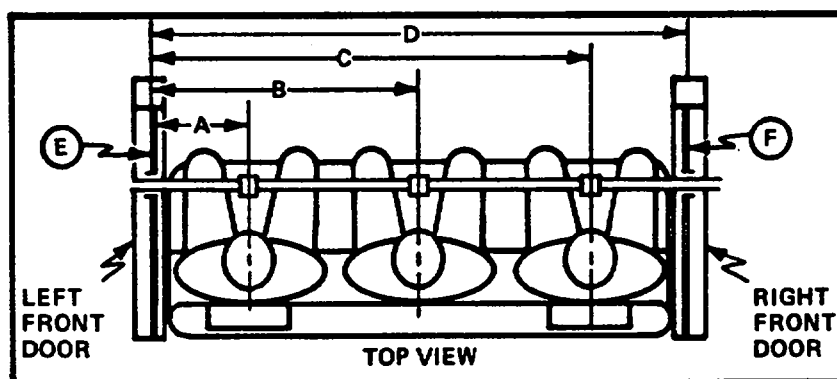
MEASUREMENT LOCATION

- A - Head Target
- B - Knee Joint
- C - Approximate 'H' Point
- D - Sill to Reference Point



A = 20.3 in. -6 Degrees
 B = 22.3 in. 97 Degrees
 C = 9.3 in. 133 Degrees
 D = 14.0 in.

A = 20.3 in. -6 Degrees
 B = 23.7 in. 100 Degrees
 C = 9.6 in. 135 Degrees
 D = 14.0 in.



S/N 357

DUMMY ID

S/N 358

A = Left Door to Driver Centerline 11.7 in.
 B = Left Door to Center Passenger Centerline - in.
 C = Left Door to Right Passenger Centerline 37.3 in.
 D = Left Door to Right Door 49.2 in.
 E,F = Window Glass Height (Right and Left Must Be Equal) 12.0 in.

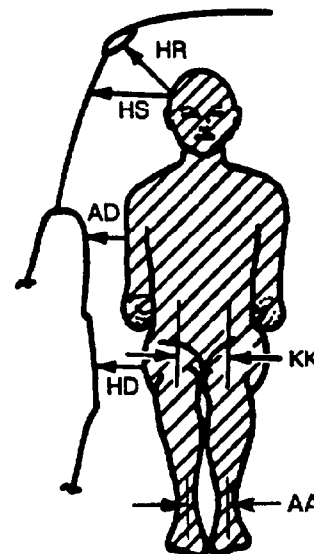
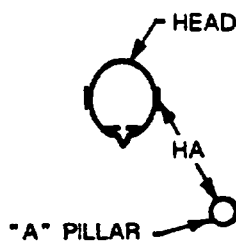
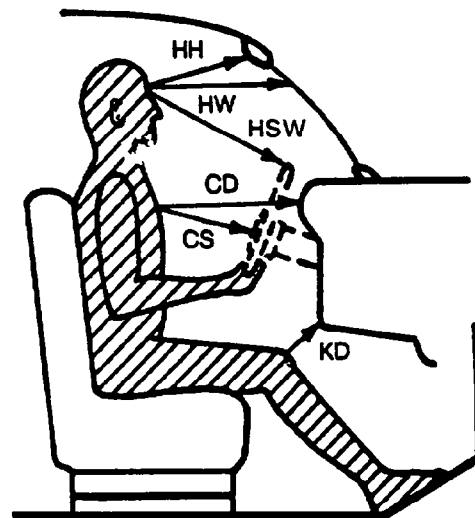
Figure 2

OCCUPANT CLEARANCE DIMENSIONS

	DRIVER	PASSENGER
HH	13.1	13.0
HW	18.5	18.0
CD	21.3	21.0
CS	13.5	-
KDL	4.0	4.8
KDR	4.2	4.2
SA	See Note	See Note
TA	23°	23°
HSW	19.1	-

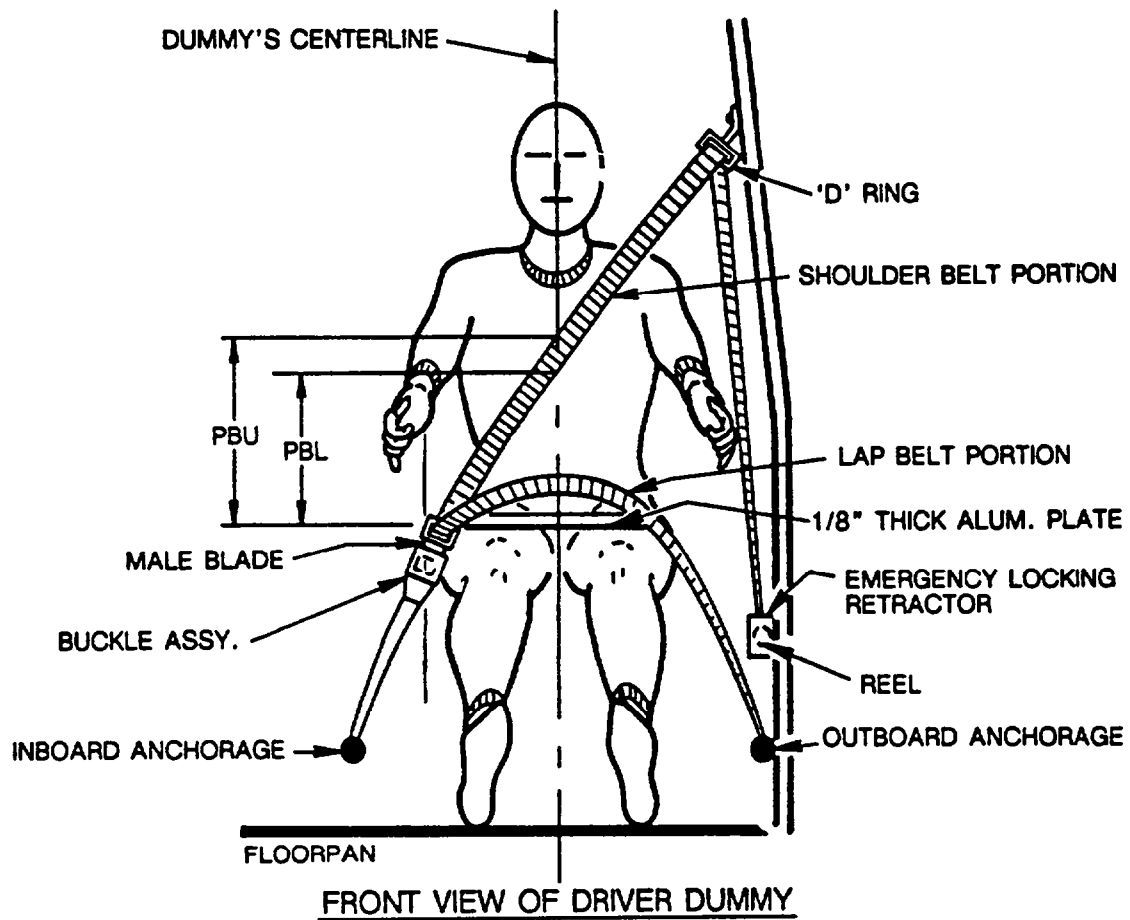
HH = Head to Windshield Header
 HW = Head to Windshield
 HSW = Head to Steering Wheel
 CD = Chest to Dash
 CS = Chest to Steering Wheel
 KD(L/R) = Knee to Dash (Left/Right)
 SA = Seat Back Angle
 TA = Torso Angle
 HA = Head Target to "A" Pillar
 HR = Head to Side Roof
 HS = Head to Side Window
 AD = Arm to Door
 HD = Hip to Door
 KK = Knee to Knee
 AA = Ankle to Ankle

	DRIVER	PASSENGER
HR	4.8	4.8
HS	8.3	8.5
AD	4.1	5.1
HD	7.0	6.7
KK	10.0	7.8
HA	16.6	16.3
AA	12.0	8.7



Note: Seat back was positioned as specified by manufacturer.

Figure 3
SEAT BELT POSITIONING DATA



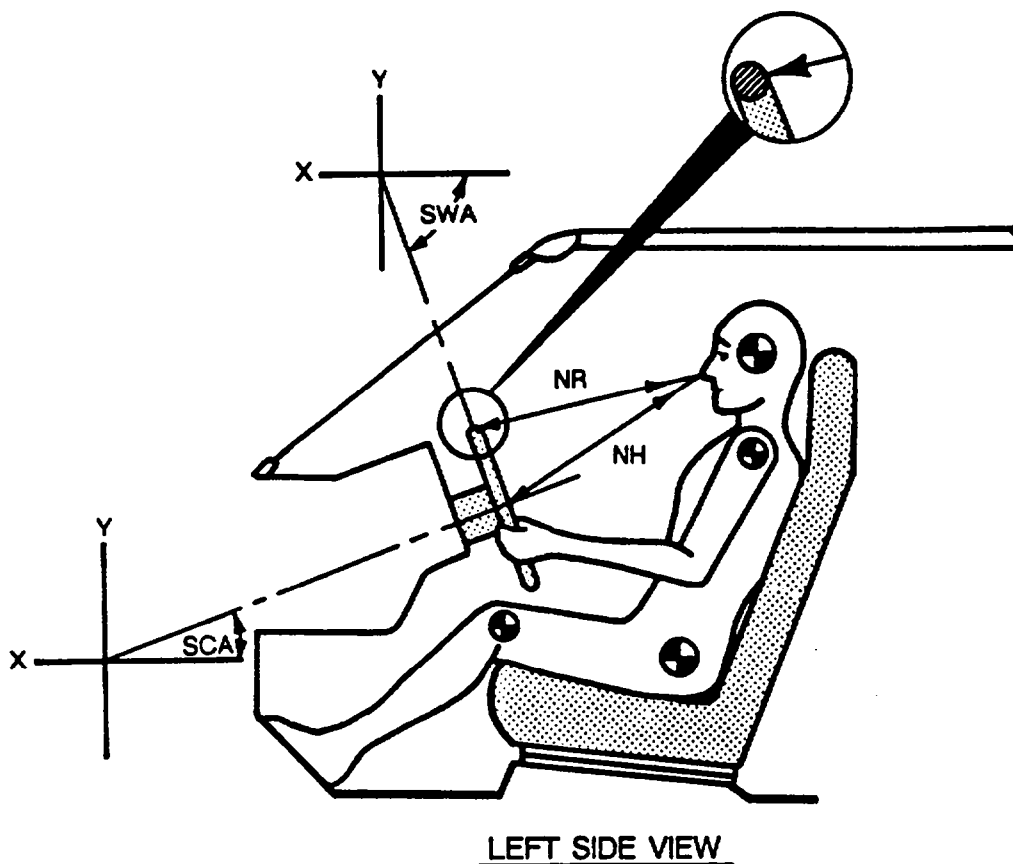
	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
<u>PBU</u> -- Top surface of alum. plate to upper edge	13.5	13.5
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	10.5	10.5
<u>LAP BELT TENSION</u>	—	—
<u>SHOULDER BELT TENSION</u>	—	—

Table 3
SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

<u>BELT LENGTH DATA:</u>	<u>Driver</u>	<u>Passenger</u>
Shoulder belt length as measured on Part 572 Dummy.	<u>35.5"</u>	<u>35.5"</u>
Lap belt length as measured on Part 572 Dummy.	<u>33.0"</u>	<u>33.0"</u>
<u>LAP BELT SPOOL-OFF DATA:</u>		
As determined mechanically.	<u>2.0"</u>	<u>2.5"</u>
<u>BELT STRETCH DATA:</u>		
Measured electronically between shoulder belt load cell and the "D" ring.	<u>2.2 in/ft</u>	<u>1.6 in/ft</u>
Measured mechanically	<u>0.2 in/ft</u>	<u>0.0 in/ft</u>

Figure 4

DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSY. REFERENCE DIMENSIONS



		MEASUREMENTS	
<u>NR</u>	-- Distance from tip of dummy's nose to Top Rear surface of steering wheel rim	17.2	Inches
<u>NH</u>	-- Distance from tip of dummy's nose to center of steering column hub	19.0	Inches
<u>SCA</u>	-- Angle of steering column relative to the horizontal X axis	25.0	Degrees
<u>SWA</u>	-- Angle of steering wheel relative to the horizontal X axis	-65.0	Degrees

Figure 5
CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 4

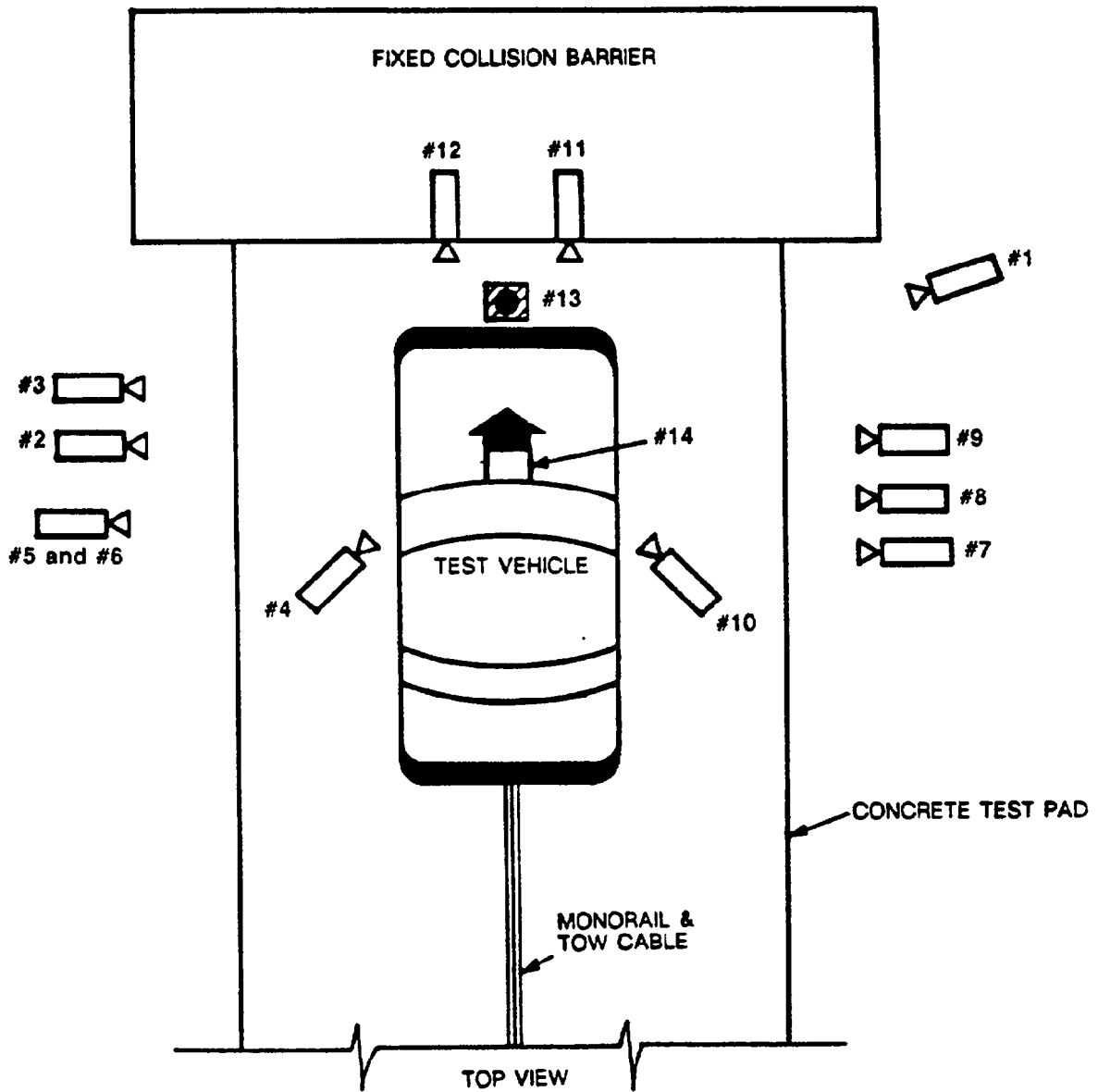


Table 4
HIGH-SPEED CAMERA LOCATIONS

Test No. MM5102		Vehicle: 1991 Toyota Tercel 4-Door Sedan						
CAMERA NO.	VIEW	CAMERA POSITIONS (in)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real-Time Camera	X	Y	Z				
2	Overall Left Side	199	55	41	-6	183.4	13	550
3	Left Side View	269	27	41	-5	253.4	25	580
4	Driver and Interior View	98	93	67	-19	82.4	13	660
5	Steering Column (Bottom)	245	68	46	-5	229.4	25	555
6	Steering Column (Top)	245	68	71	-11	229.4	25	560
7	Overall Right Side	207	67	42	-5	191.4	13	525
8	Right Side View	269	51	40	-2	253.4	25	595
9	Right Passenger View	268	72	53	-3	252.4	35	490
10	Passenger and Interior View	93	92	65	-23	77.4	25	540
11	Passenger Front View	24	-5	71	-41	-	13	540
12	Driver Front View	24	-5	72	-41	-	13	540
13	Windshield View	0	0	125	-43	-	13	550
14	Pit View of Engine	0	39	-118	90	-	13	700

*X = film plane to monorail centerline
 Y = film plane to impact location
 Z = film plan to ground
 ** = referenced to horizontal plane

Figure 6
VEHICLE TARGET LOCATIONS

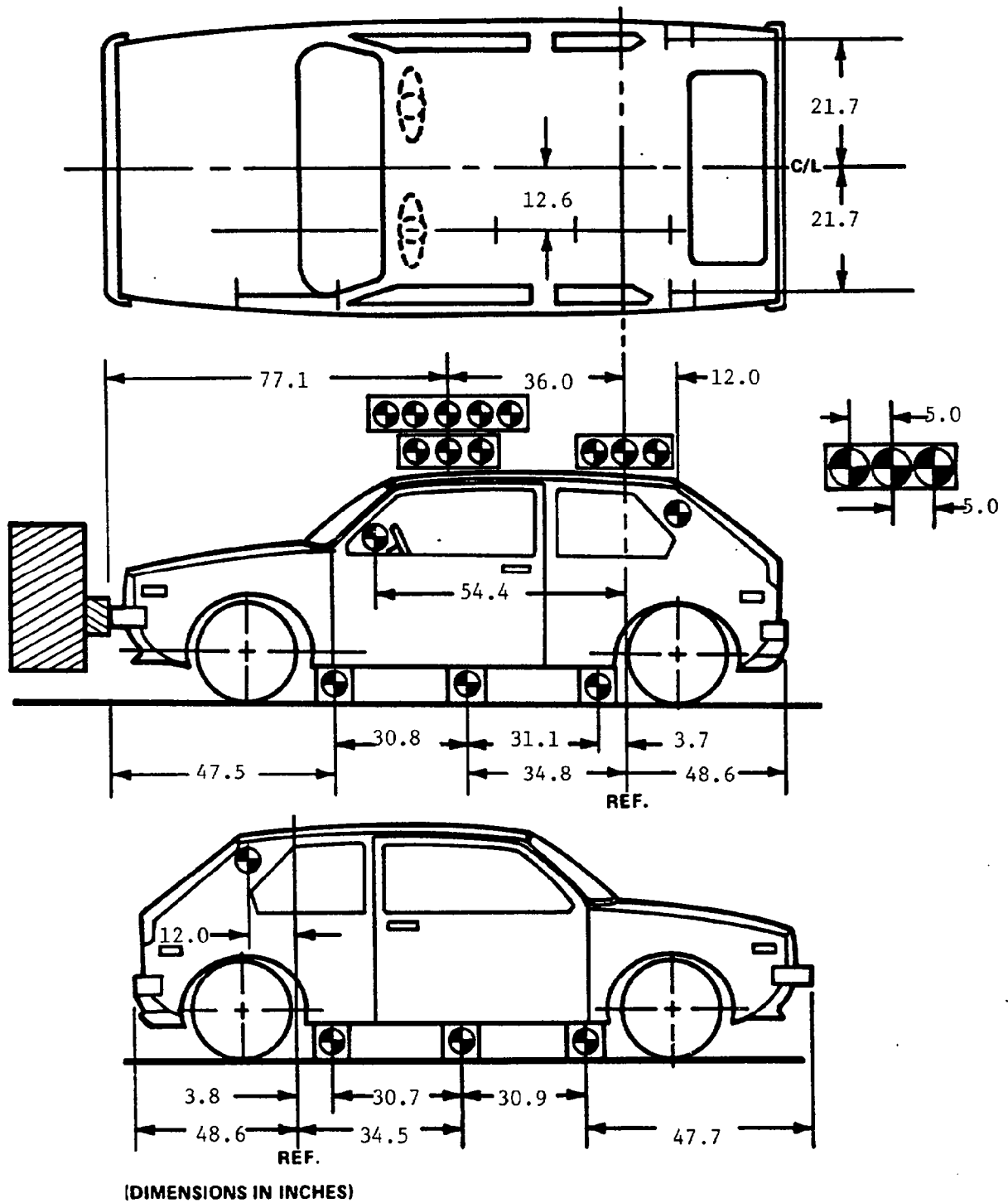
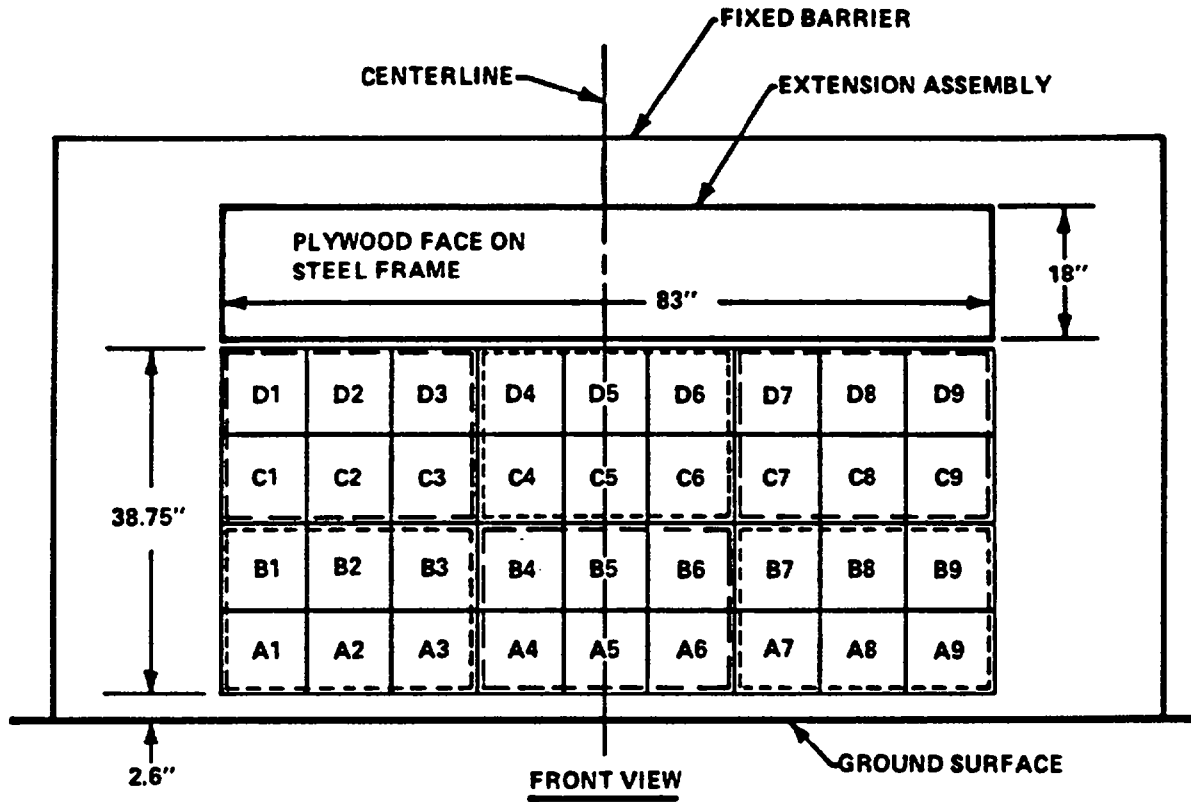


Figure 7

LOAD CELL LOCATIONS ON FIXED BARRIER

- 36 Load Cells
- 4 Rows
- 9 Columns
- 6 Groupings (6 cells/group)



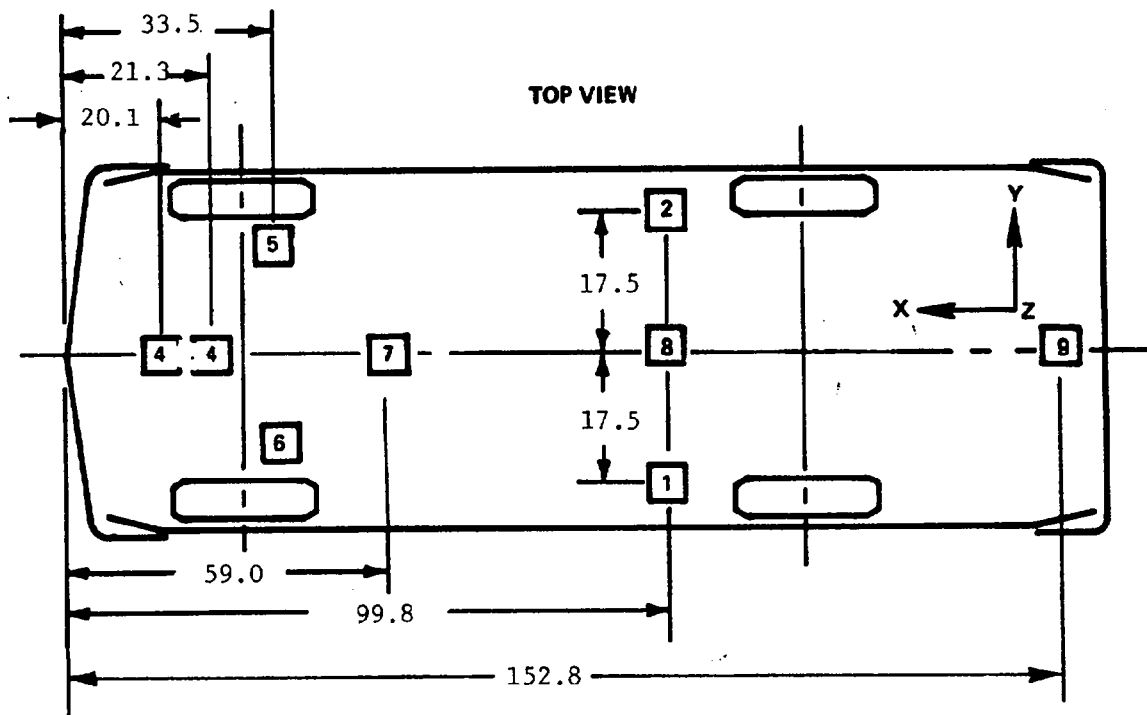
6 GROUPS OF 6 LOAD CELLS EACH

Group 4	Group 5	Group 6
C1 thru D3	C4 thru D6	C7 thru D9
Group 1	Group 2	Group 3
A1 thru B3	A4 thru B6	A7 thru B9

The following data is presented in Appendix B:

- (1) Data from 36 individual load cells
- (2) Total or Sum of 36 individual load cells
- (3) Data from 6 Groupings shown above (6 cells/group)

Figure 8
VEHICLE ACCELEROMETER LOCATIONS



ACCELEROMETER NUMBER*	ACCELEROMETER LOCATION	DIRECTION		
		X	Y	Z
1	Left Rear Seat Crossmember	X		
2	Right Rear Seat Crossmember	X		
3	Top of Engine	X		
4	Bottom of Engine	X		
5	Right Disc Brake Caliper	x		
6	Left Disk Brake Caliper	X		
7	Instrument Panel	X		
8	Center Rear Seat Crossmember			X
9	Rear Trunk Centerline			X

*The accelerometer pack number can be correlated with the vehicle response data traces found in Appendix B.

Figure 9
TEST VEHICLE MEASUREMENTS

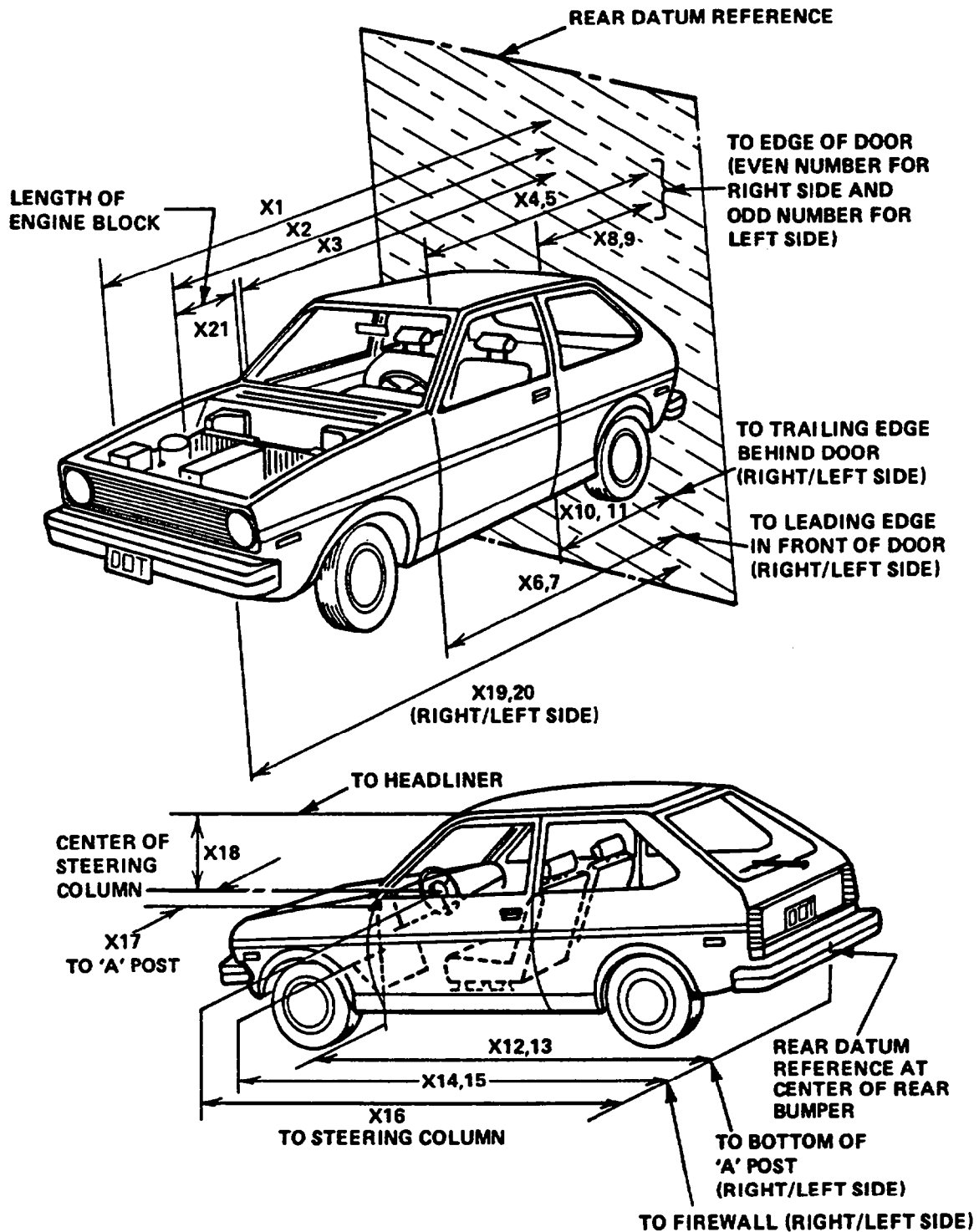


Table 5
VEHICLE MEASUREMENTS

No.		All Dimensions in Inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	161.7	140.8	20.9
X2	Rear Surface of Vehicle to Front of Engine	141.8	133.1	8.7
X3	Rear Surface of Vehicle to Firewall	123.6	118.9	4.7
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	111.4	112.2	-0.8
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	111.5	112.8	-1.3
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	111.3	110.5	0.8
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	111.5	110.9	0.6
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	71.8	72.3	-0.5
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	71.9	72.5	-0.6
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	72.5	72.0	0.5
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	72.6	72.3	0.3
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	111.2	110.3	0.9
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	111.6	110.9	0.7
X14	Rear Surface of Vehicle to Firewall, Right Side	122.5	121.1	1.4
X15	Rear Surface of Vehicle to Firewall, Left Side	122.4	120.2	2.2
X16	Rear Surface of Vehicle to Steering Column	95.8	96.9	-1.1
X17	Center of Steering Column to "A" Post	16.4	17.4	-1.0
X18	Center of Steering Column to Headliner	16.4	14.8	1.6
X19	Rear Surface of Vehicle to Right Side of Front Bumper	158.5	139.0	19.5
X20	Rear Surface of Vehicle to Left Side of Front Bumper	158.4	140.8	17.6
X21	Length of Engine Block	14.3	14.3	0.0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	102.0	102.9	-0.9
CD	Rear Surface of Vehicle to Center of Dash Panel	113.0	104.1	8.9
LD	Rear Surface of Vehicle to Left Side of Dash Panel	102.0	102.8	-0.8

Appendix A

PHOTOGRAPHS

PHOTOGRAPHS

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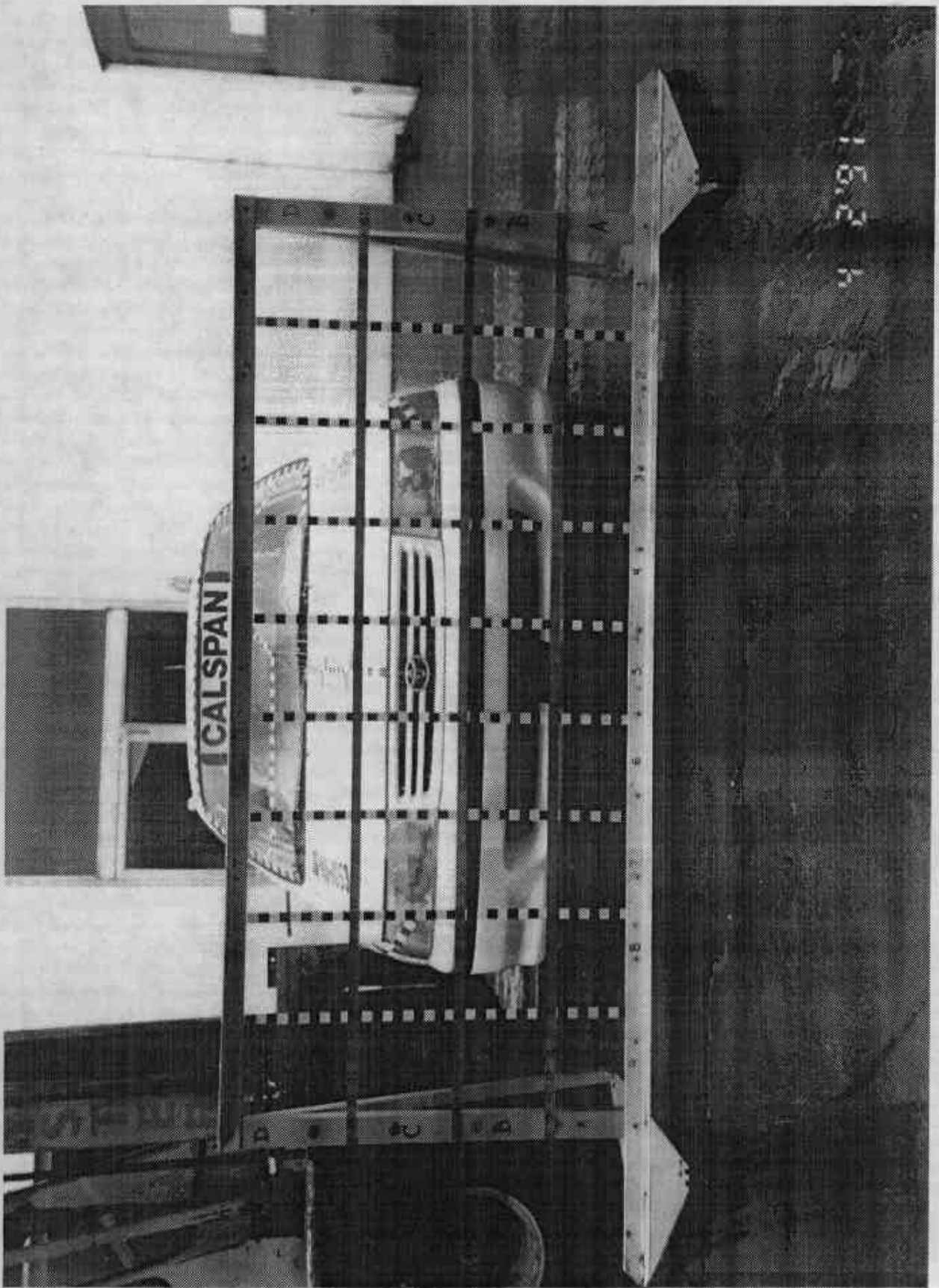


Figure A-1 LOAD CELL LOCATIONS



FIGURE A-2 PRE-TEST FRONT VIEW

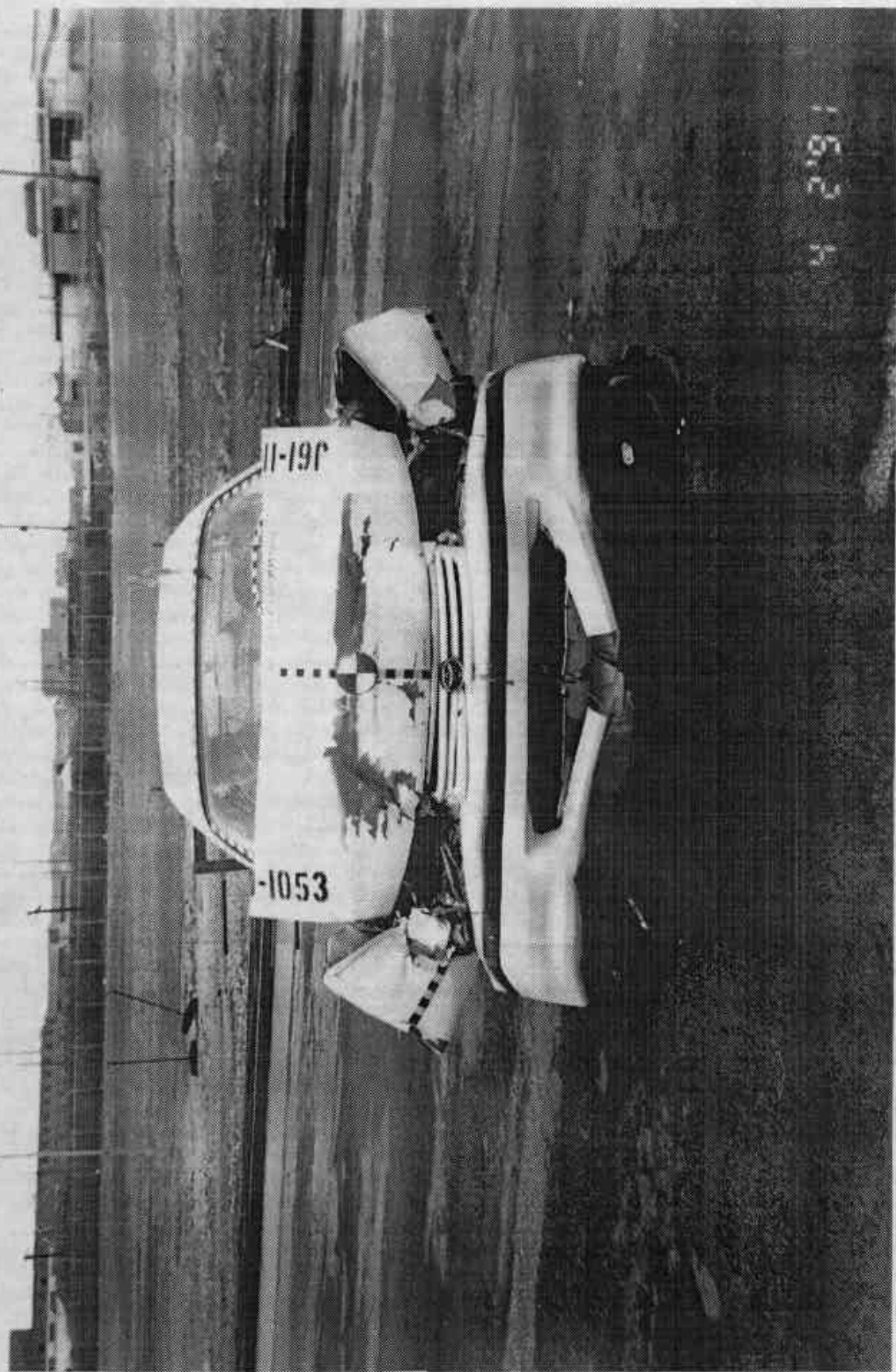


Figure A-3 POST TEST FRONT VIEW

A-5

7893-7

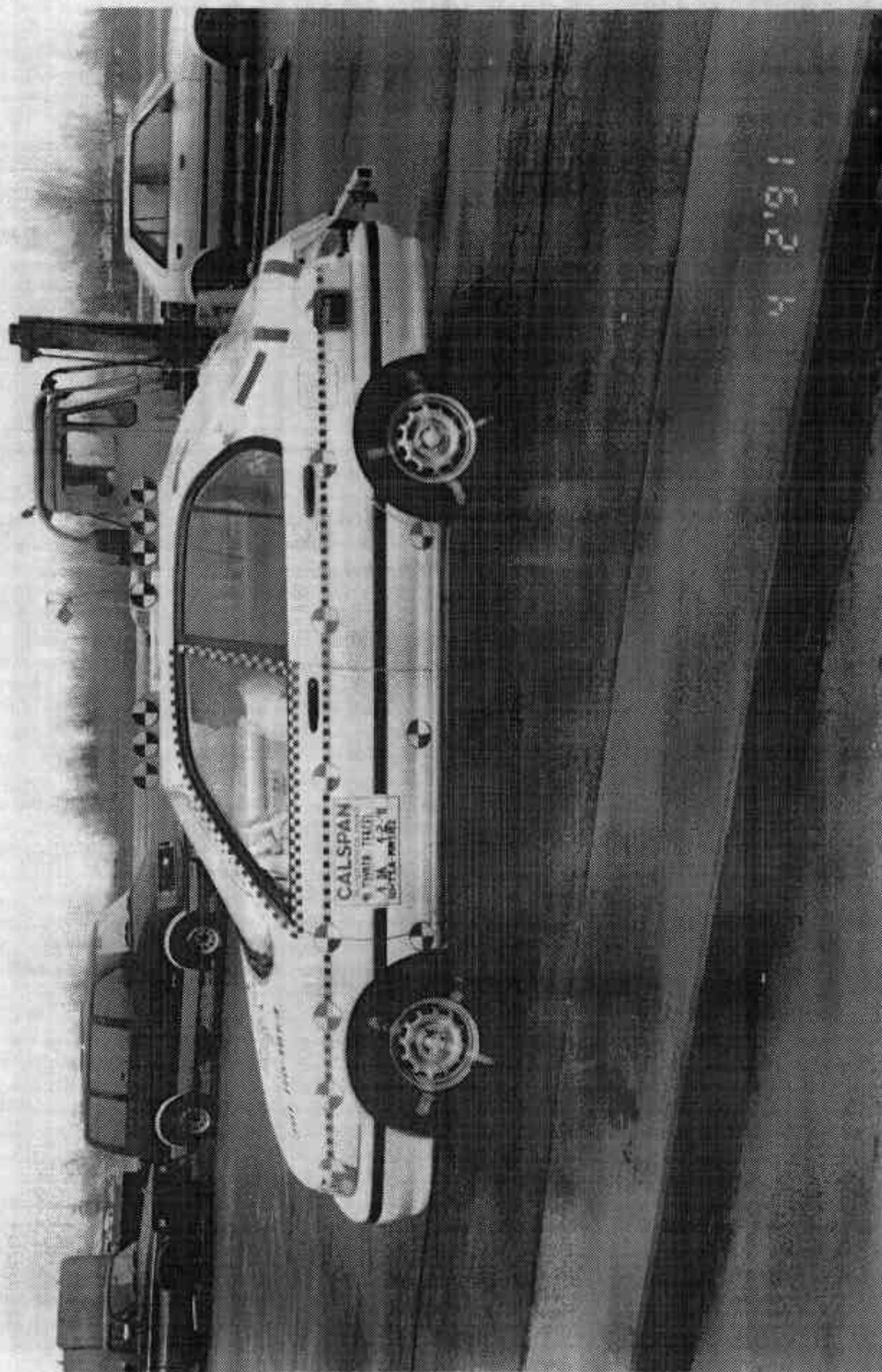


Figure A-4 PRE-TEST LEFT SIDE VIEW

A-6

7893-7

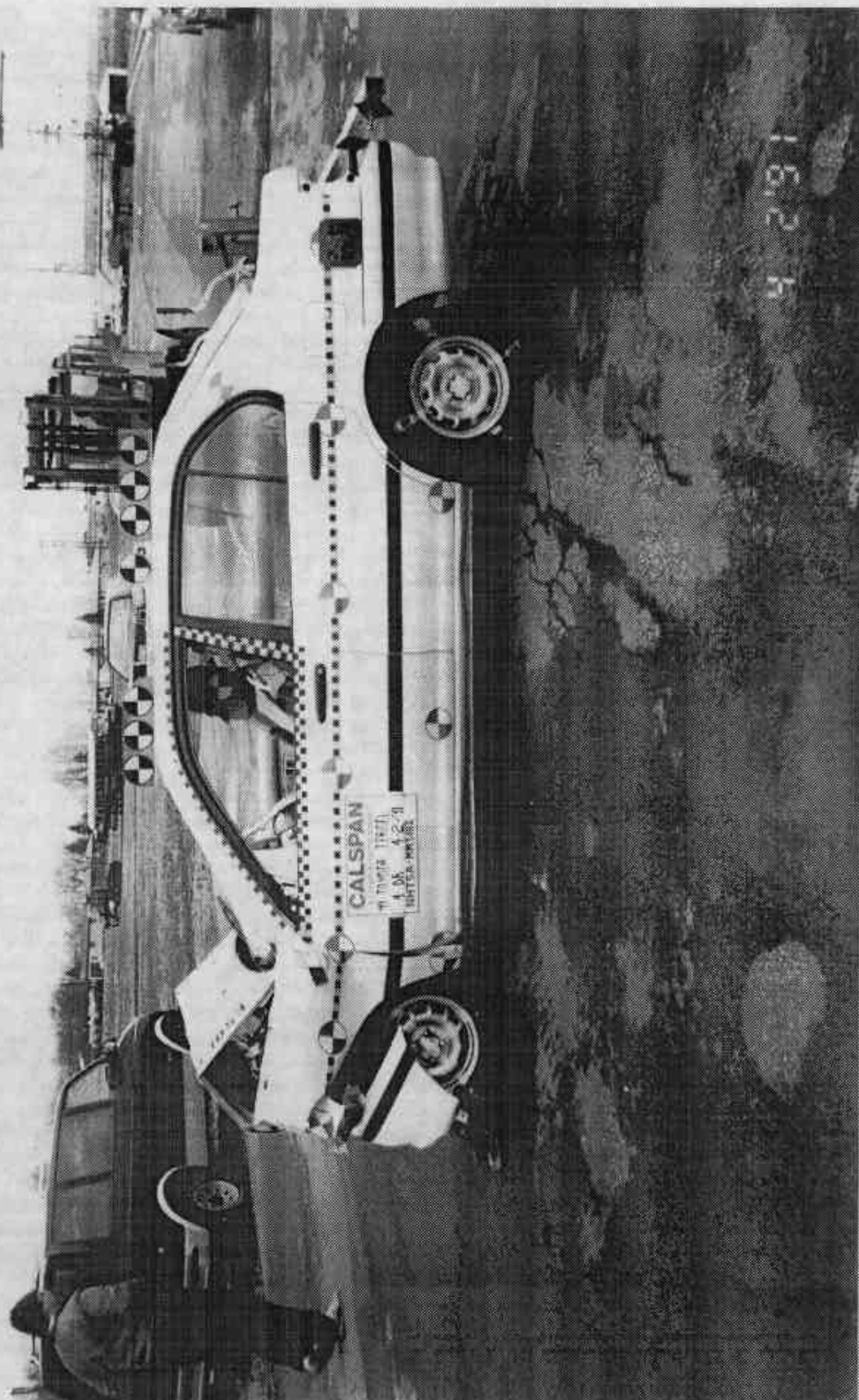


Figure A-5 POST TEST LEFT SIDE VIEW

A-7

7893-7

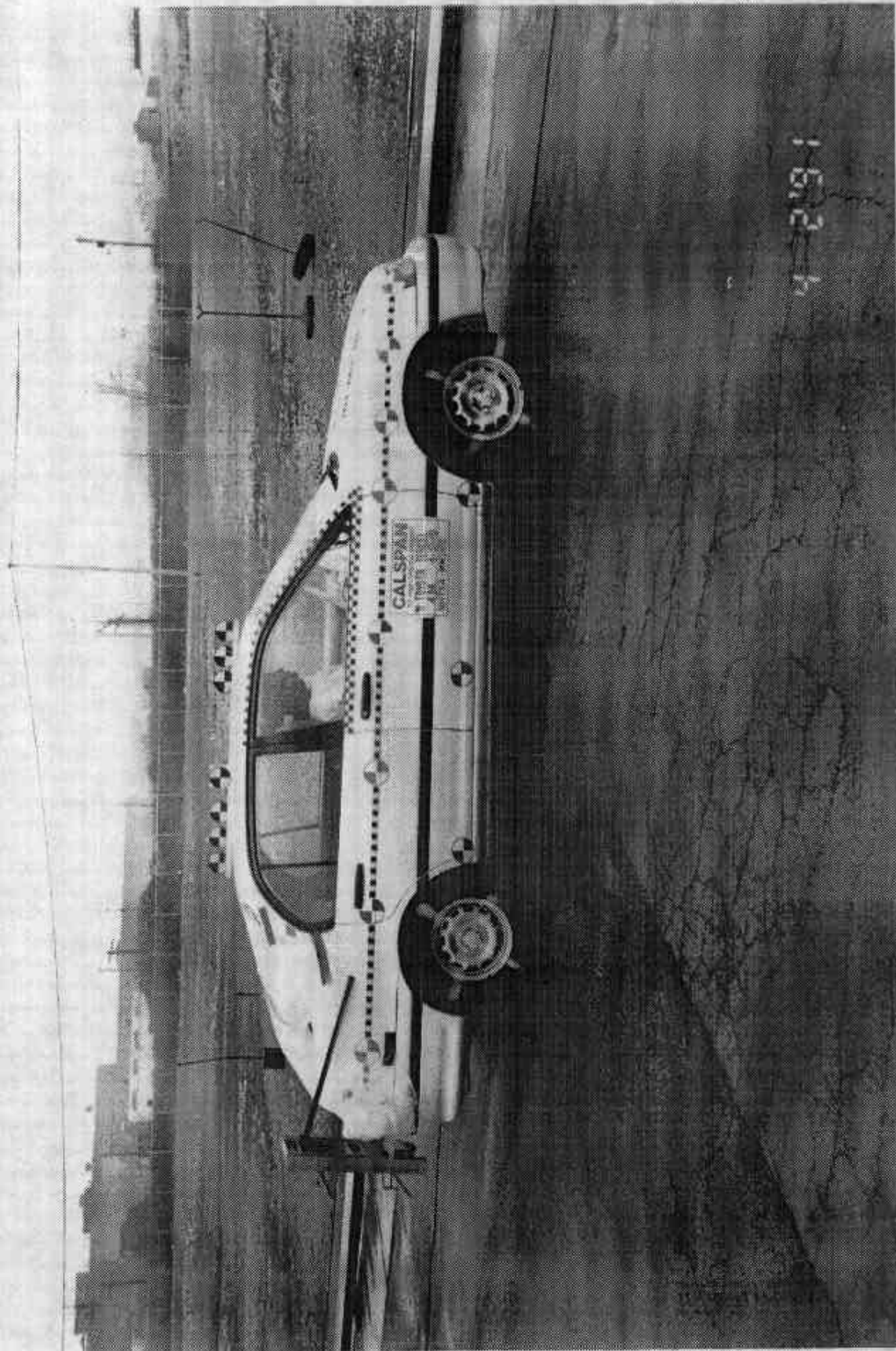


Figure A-6 PRE-TEST RIGHT SIDE VIEW

A-8

7803-7

163-4

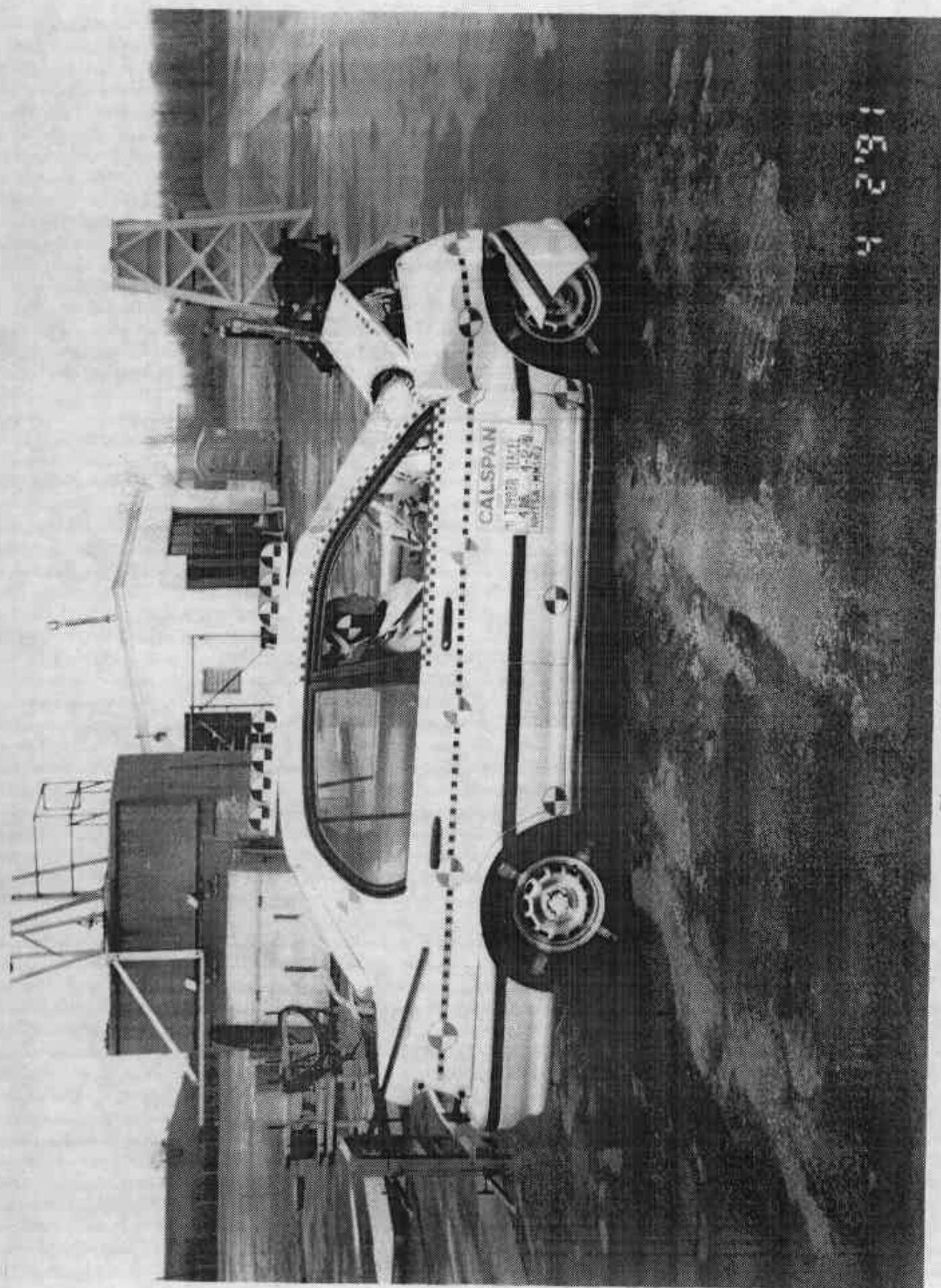


FIGURE A-7 POST-TEST RIGHT SIDE VIEW

A-9

7893-7

15.2 h
4 2'9"

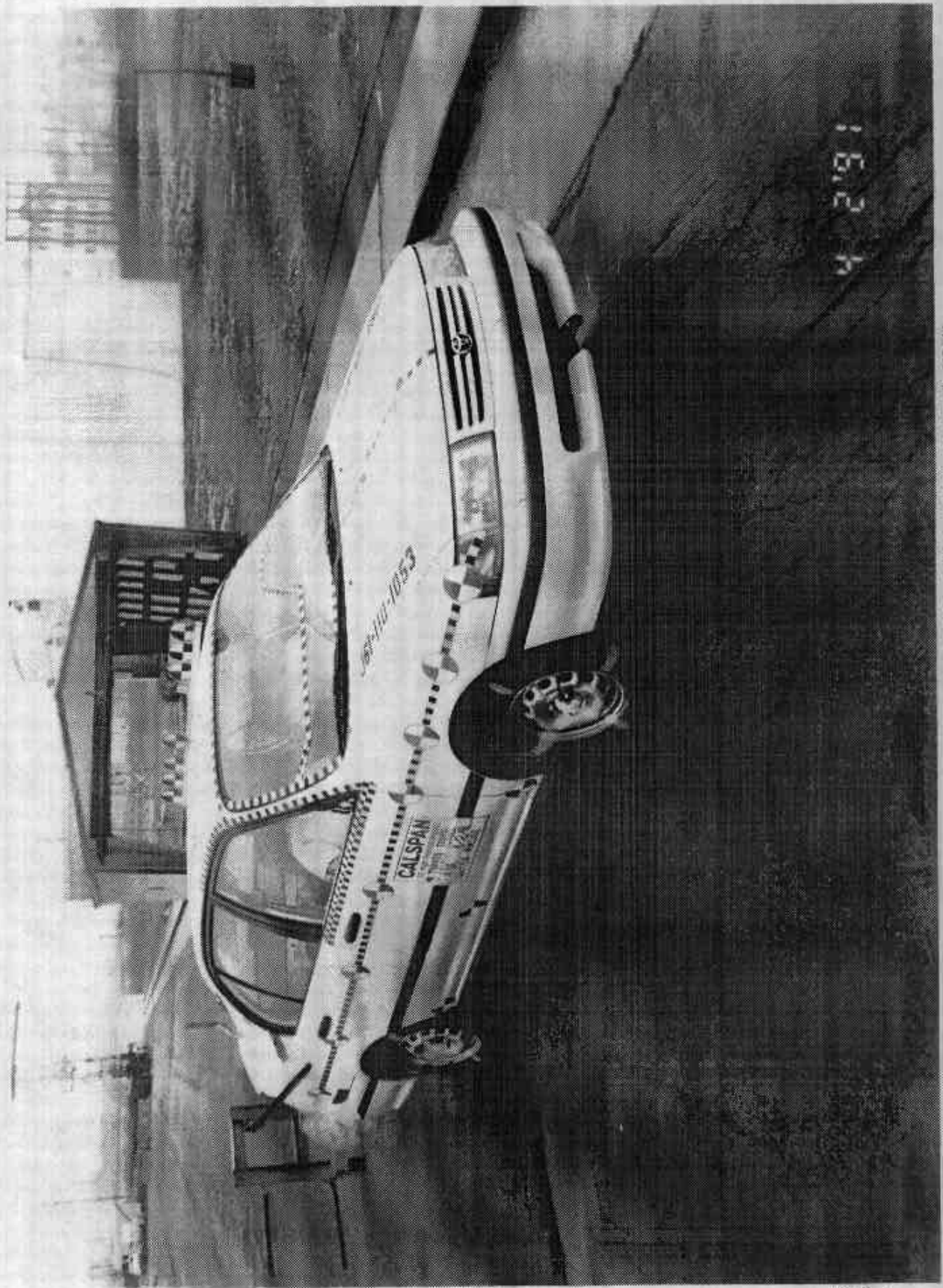


Figure A-8 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

A-10

7893-7

16.2.4

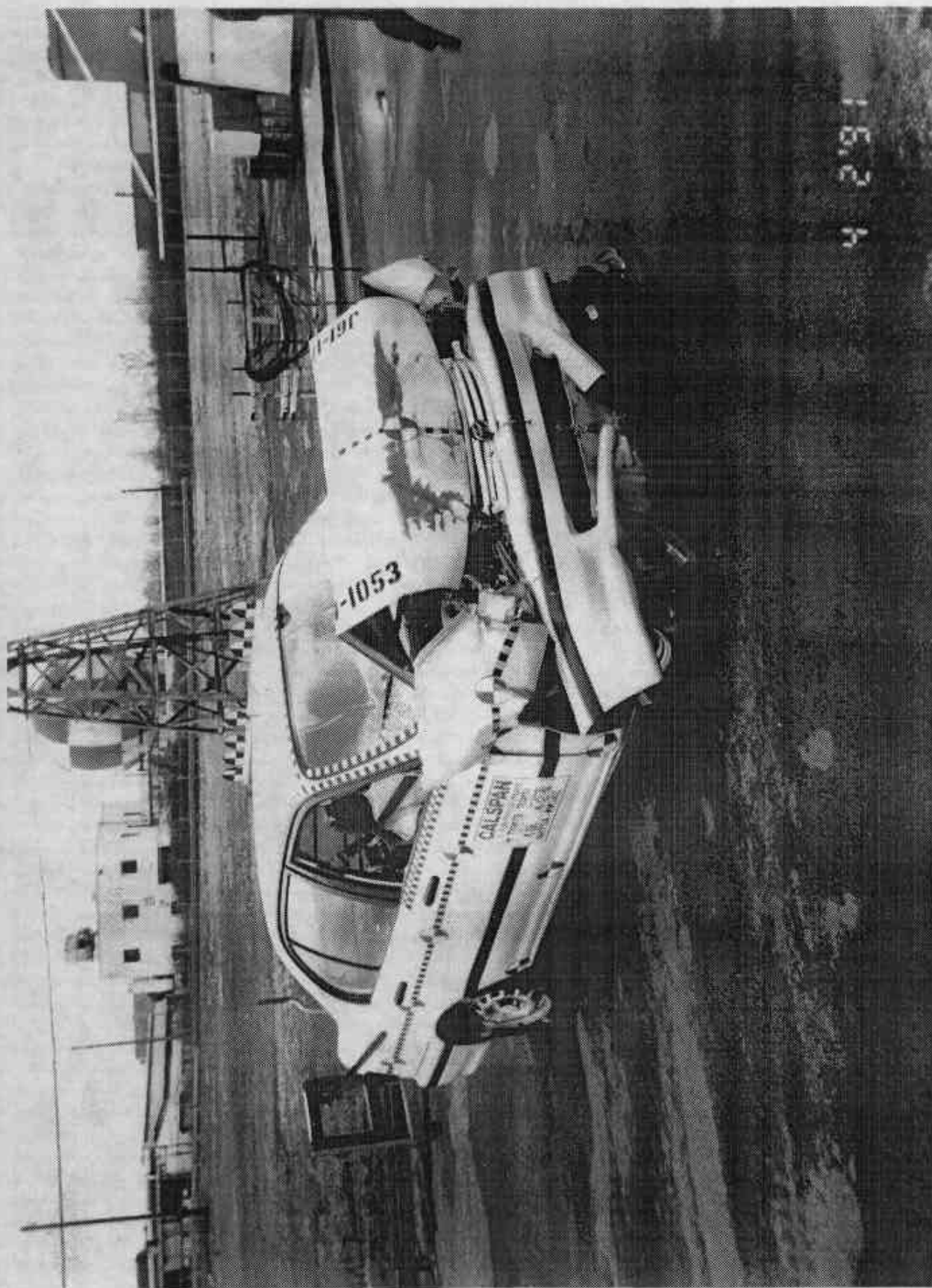


Figure A-9 POST-TEST RIGHT FRONT THREE-QUARTER VIEW

A-11

7893-7

4 291



FIGURE A-10 PRE-TEST LEFT REAR THREE-QUARTER VIEW

A-12

7893-7

1624



4 2'9"

Figure A-11 POST-TEST LEFT REAR THREE-QUARTER VIEW

A-13

7893-7

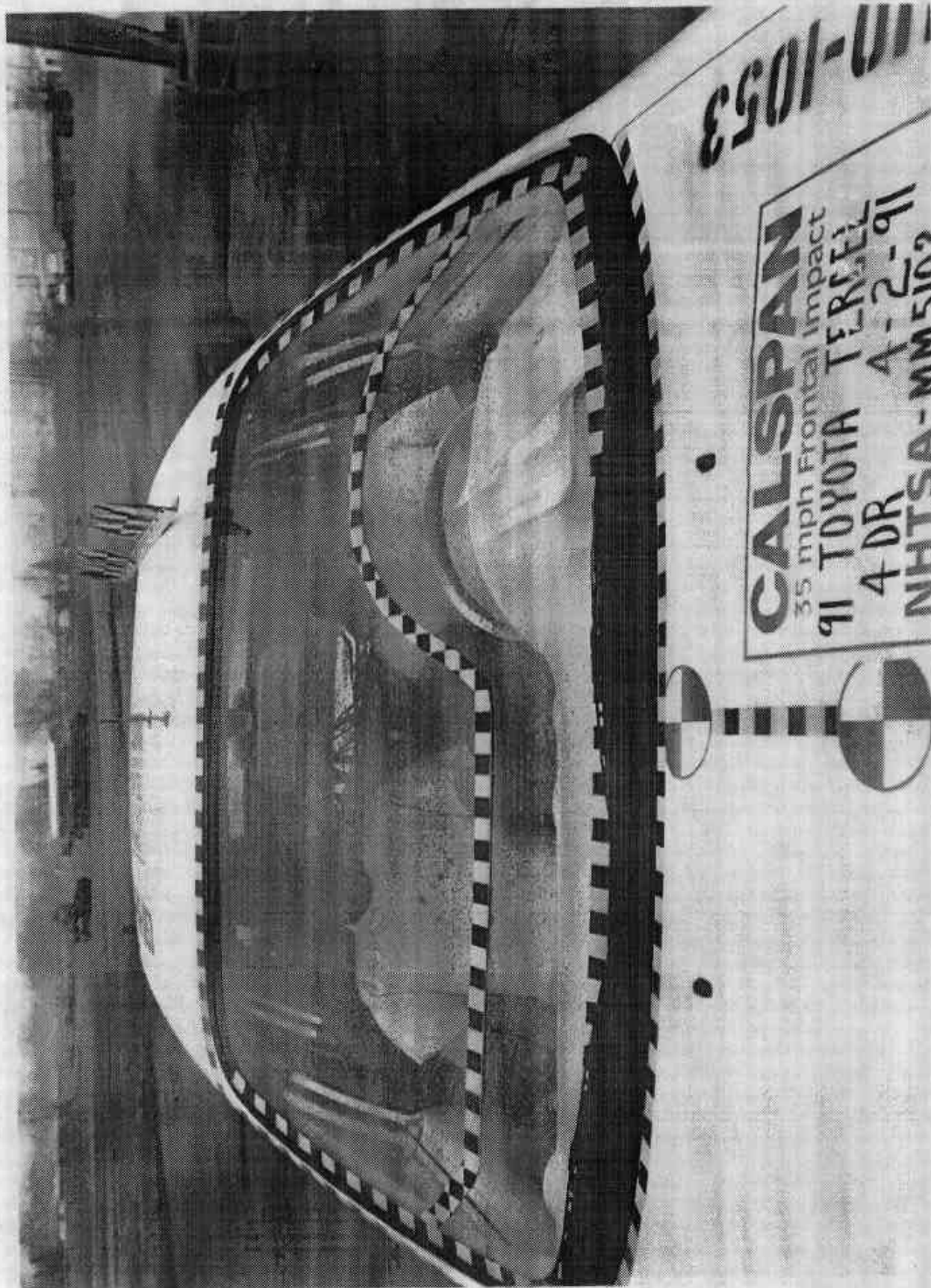


Figure A-12 PRE-TEST WINDSHIELD VIEW

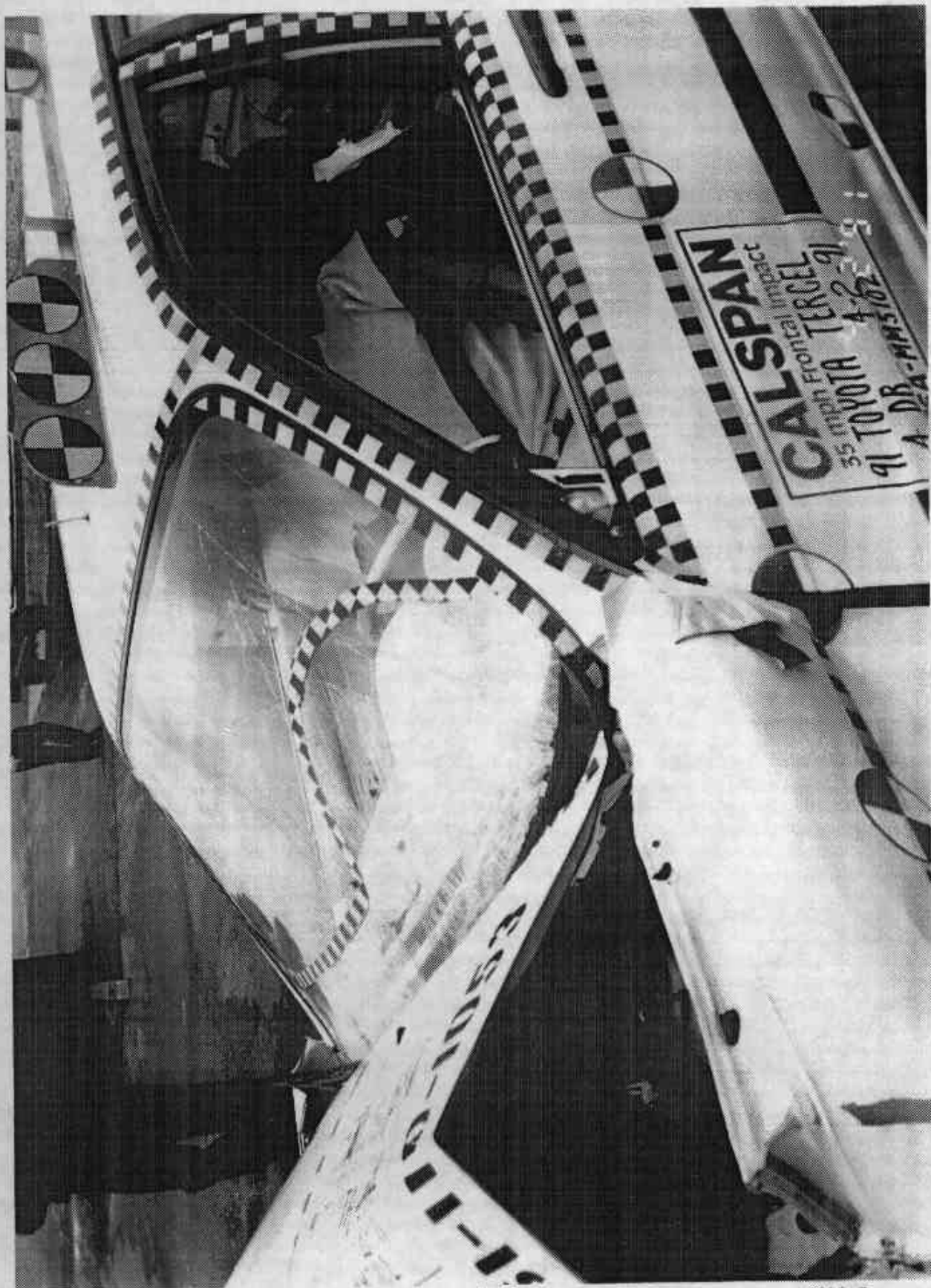


Figure A-13 - POST-TEST WINDSHIELD VIEW

A-15

7893-7

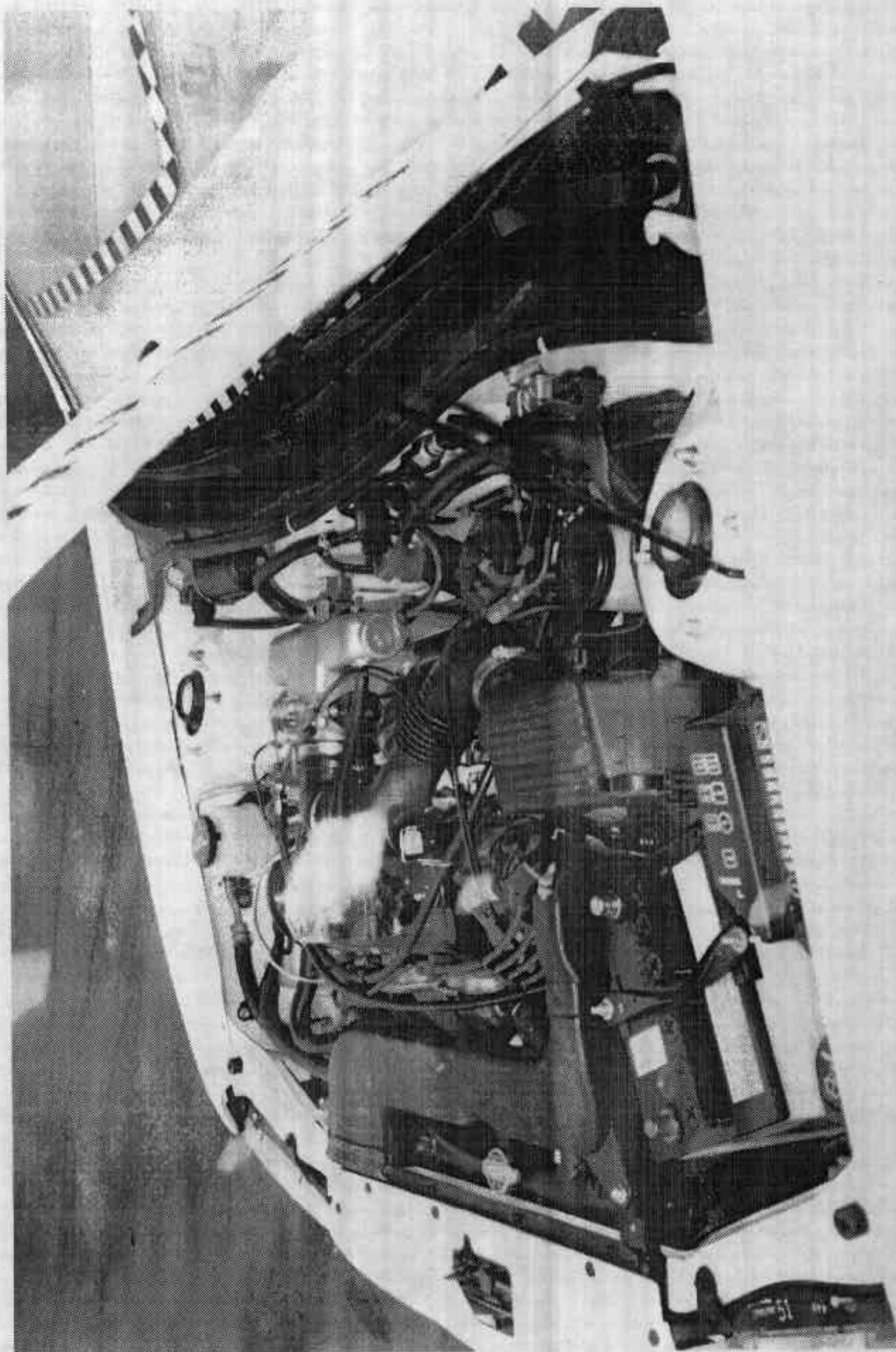


Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

A-16

7893-7

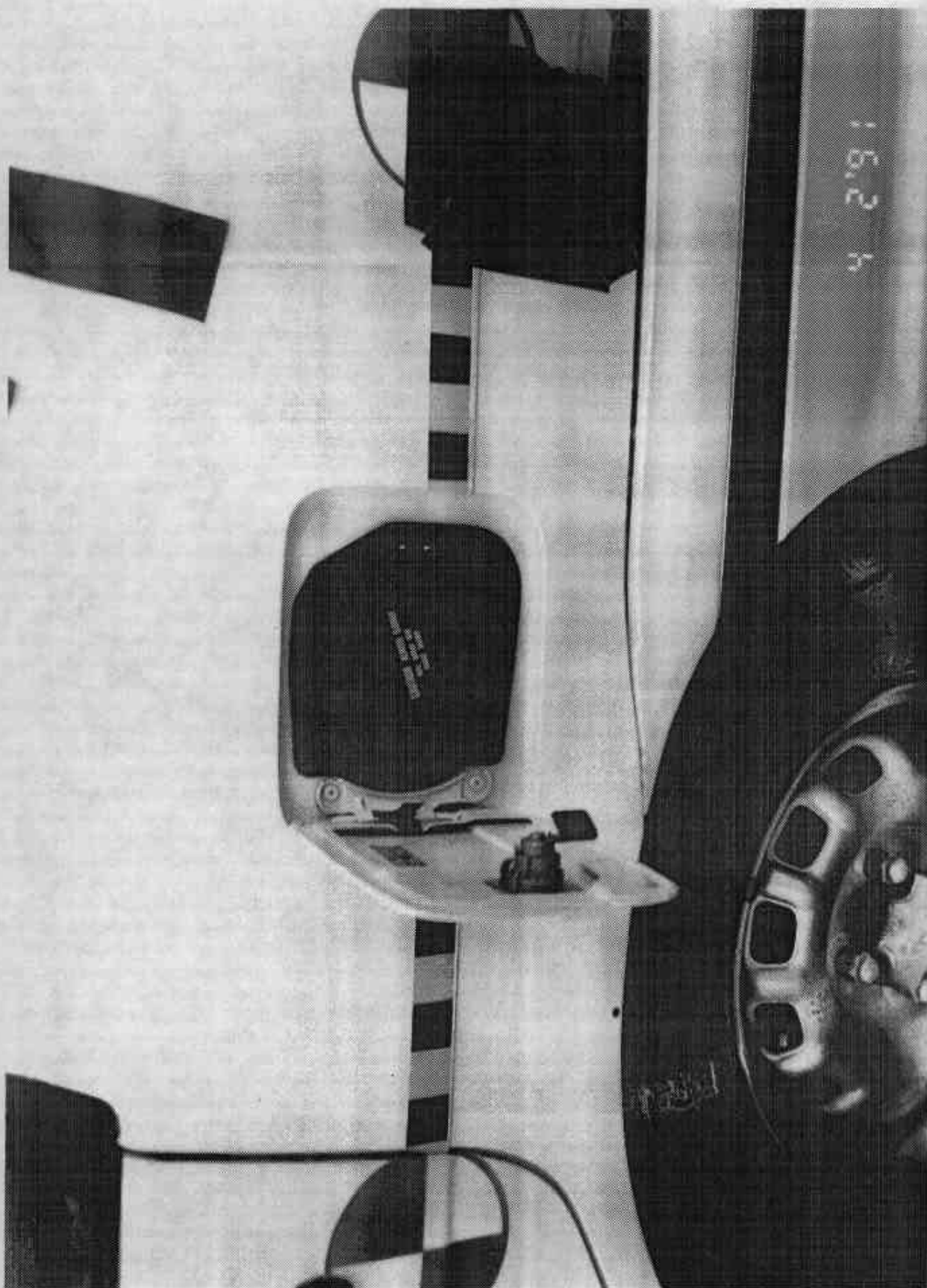


Figure A-15 FUEL CAP VIEW

A-17

7893-7

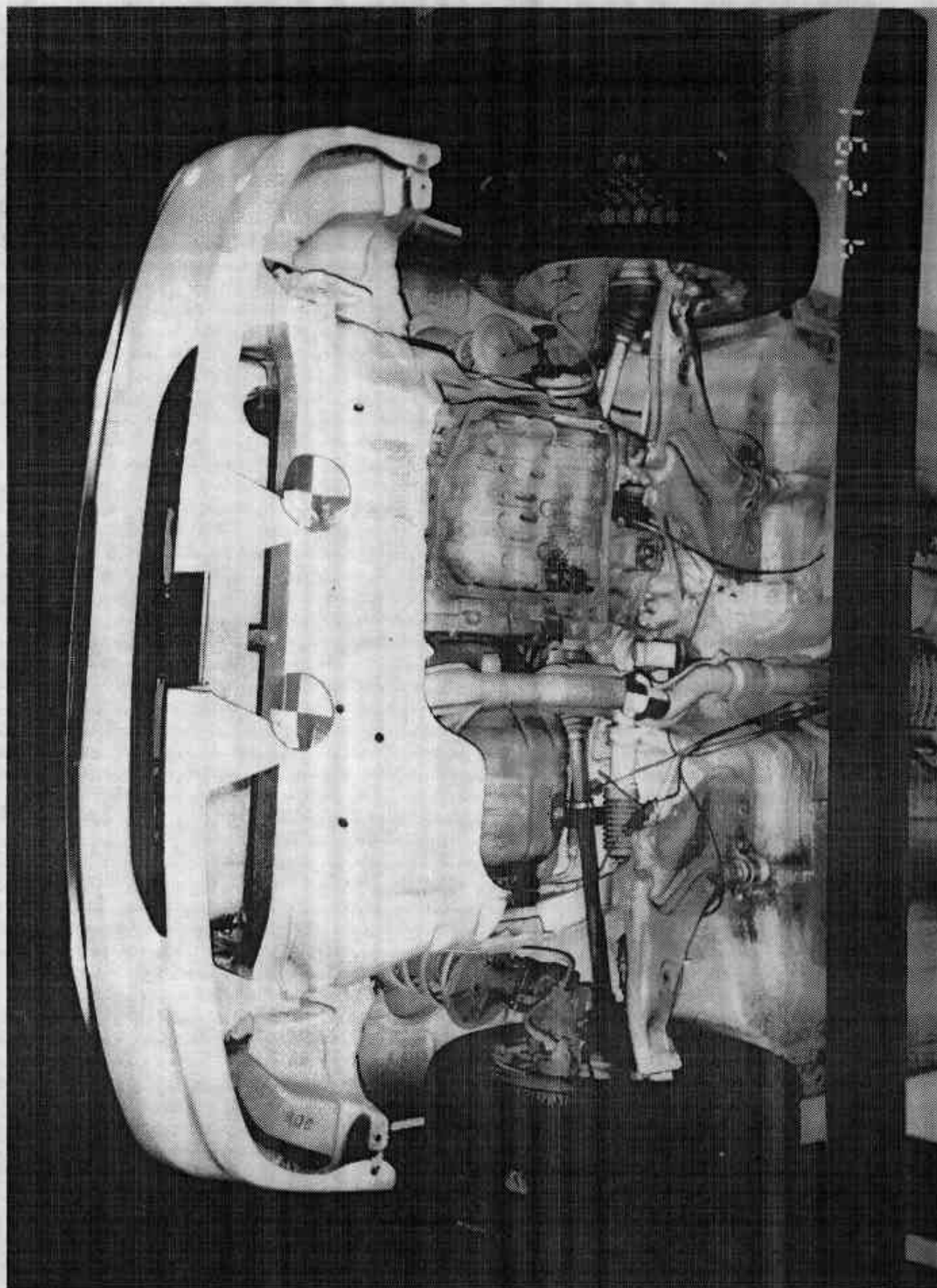


FIGURE A-16 PRE-TEST FRONT UNDERBODY VIEW

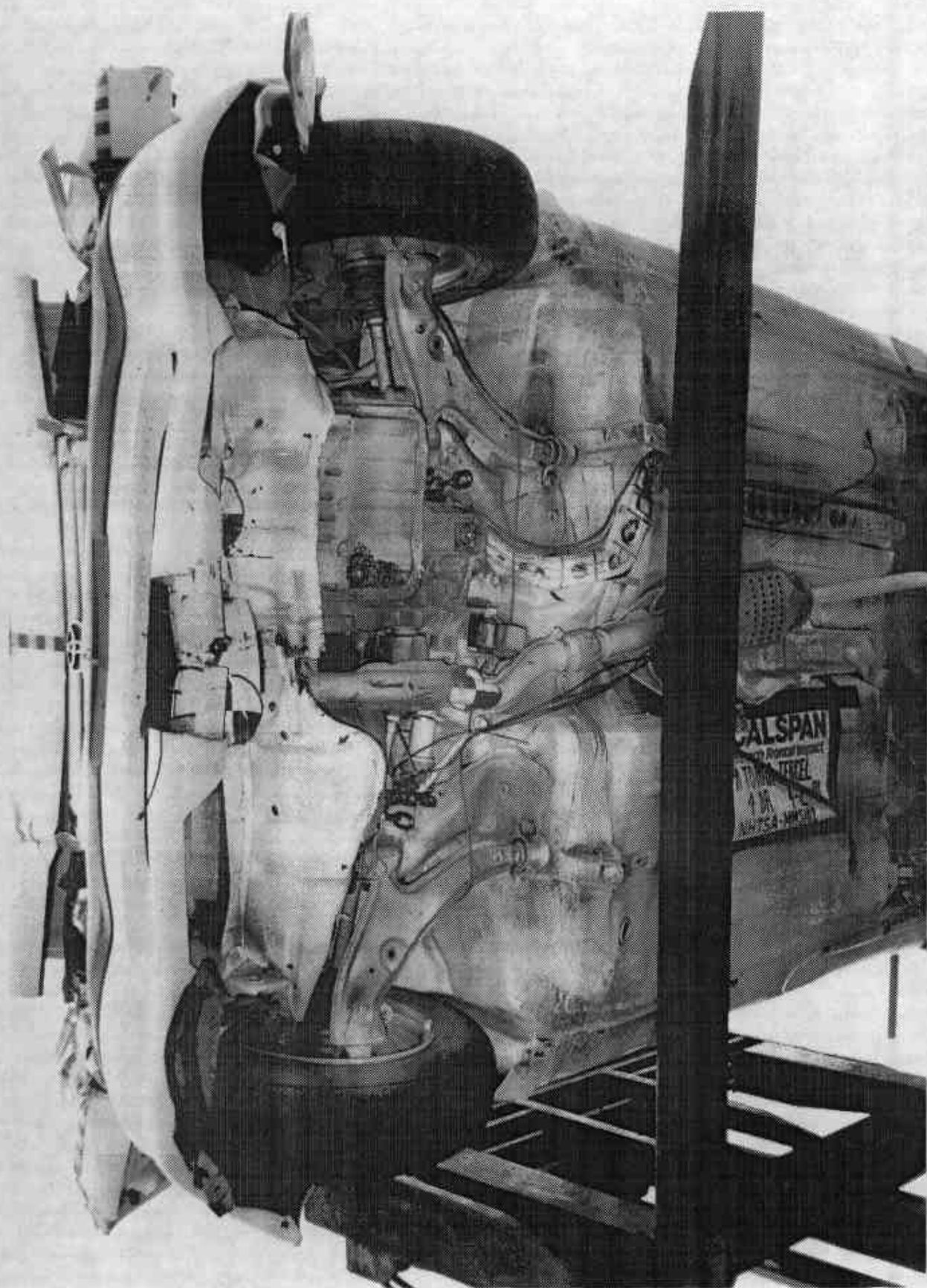


Figure A-17 POST-TEST FRONT UNDERBODY VIEW

A-19

7893-7

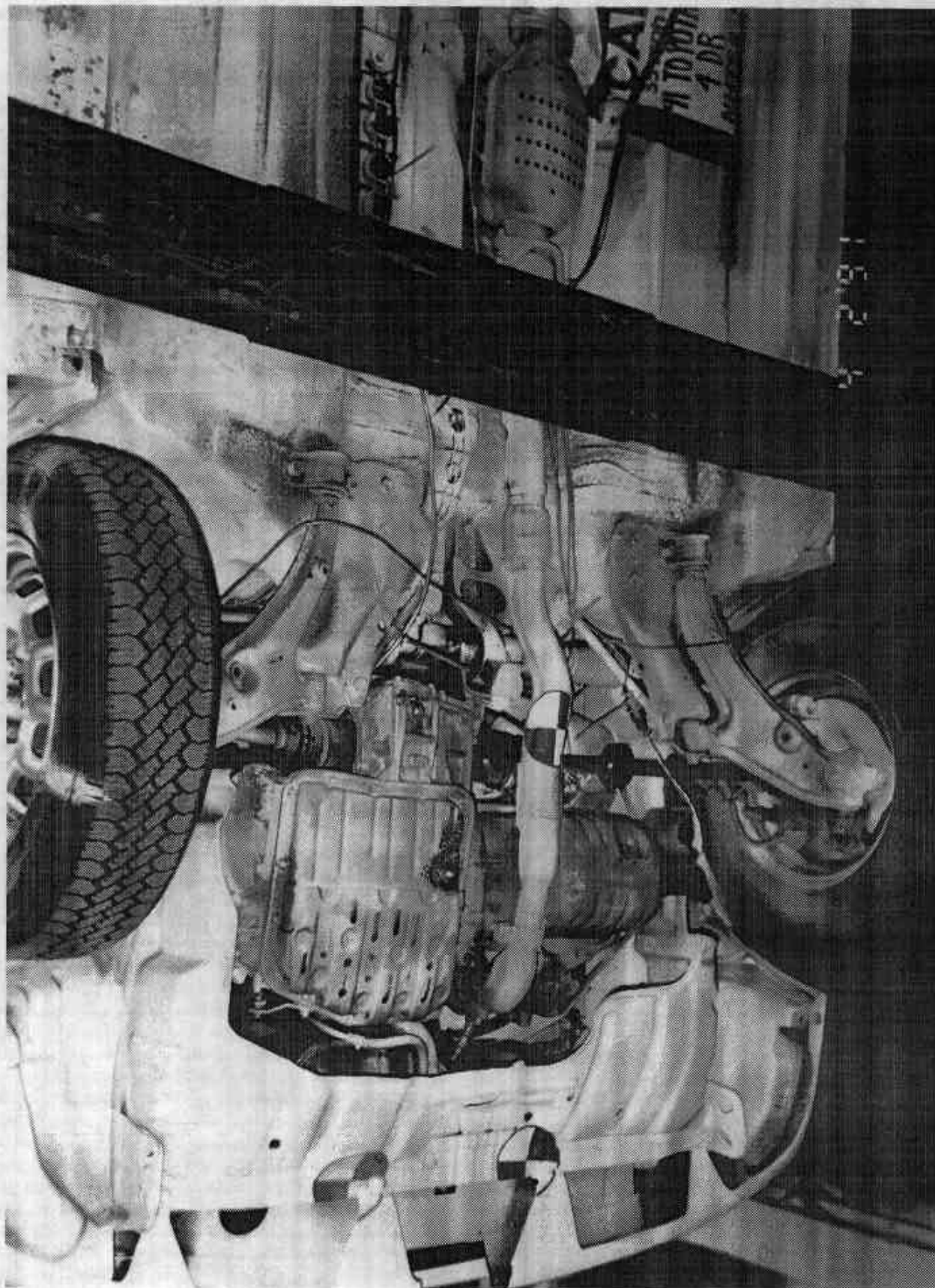


Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

A-20

7893-7

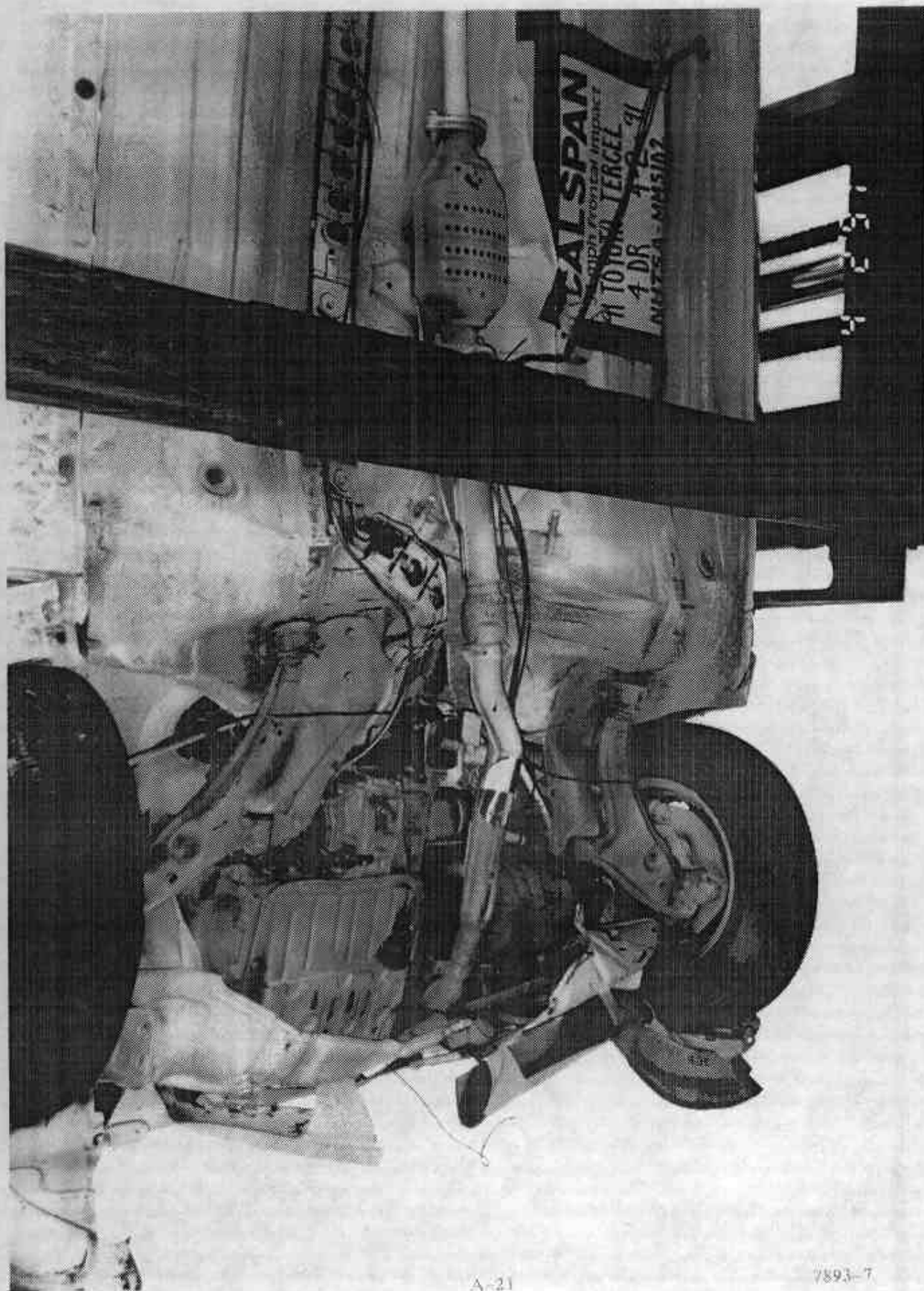


FIGURE A-19 POST-TEST FRONT SIDE UNDERBODY VIEW

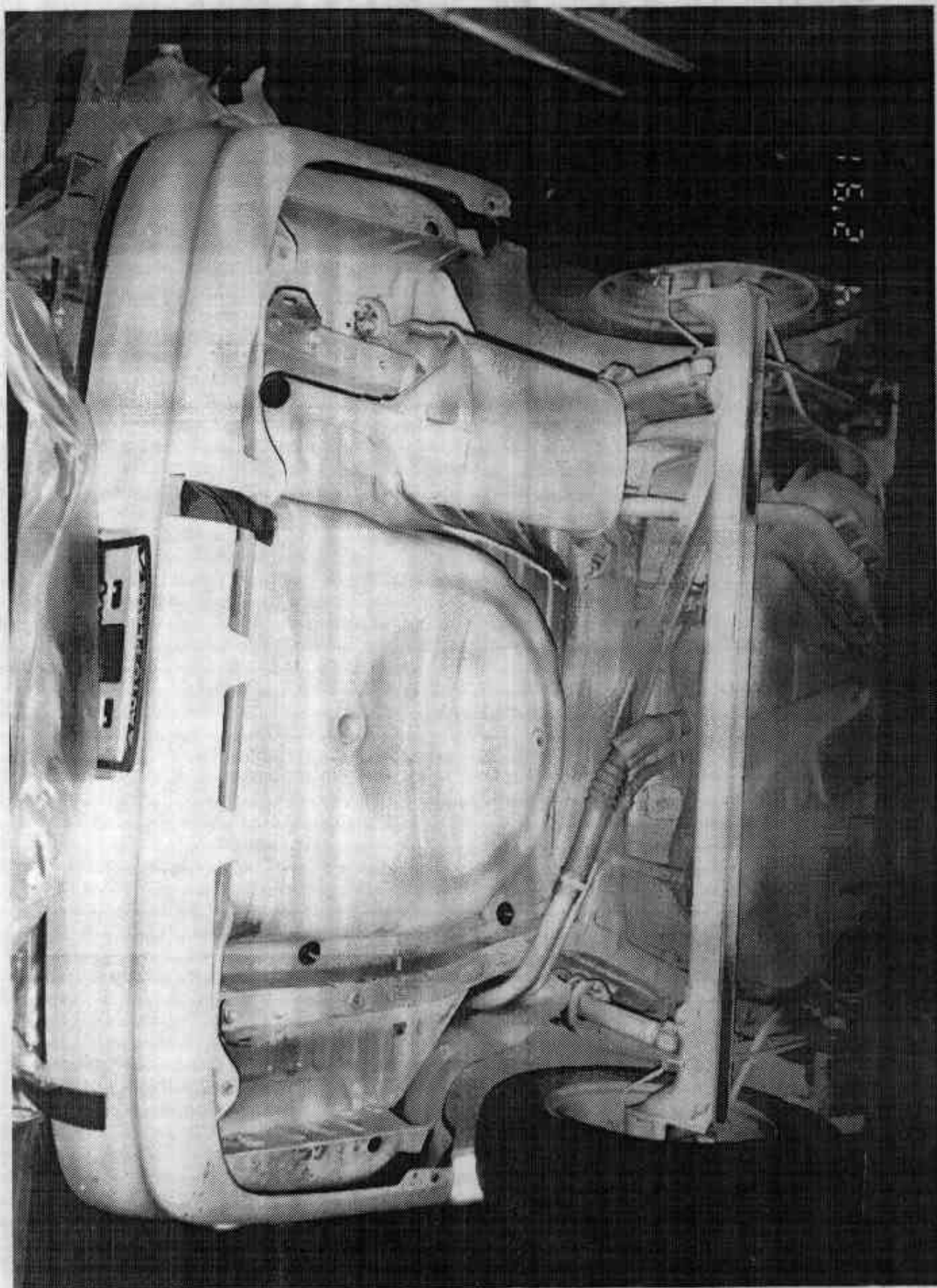


Figure A-20. PRE-TEST REAR UNDERBODY VIEW

A-22

7893-7

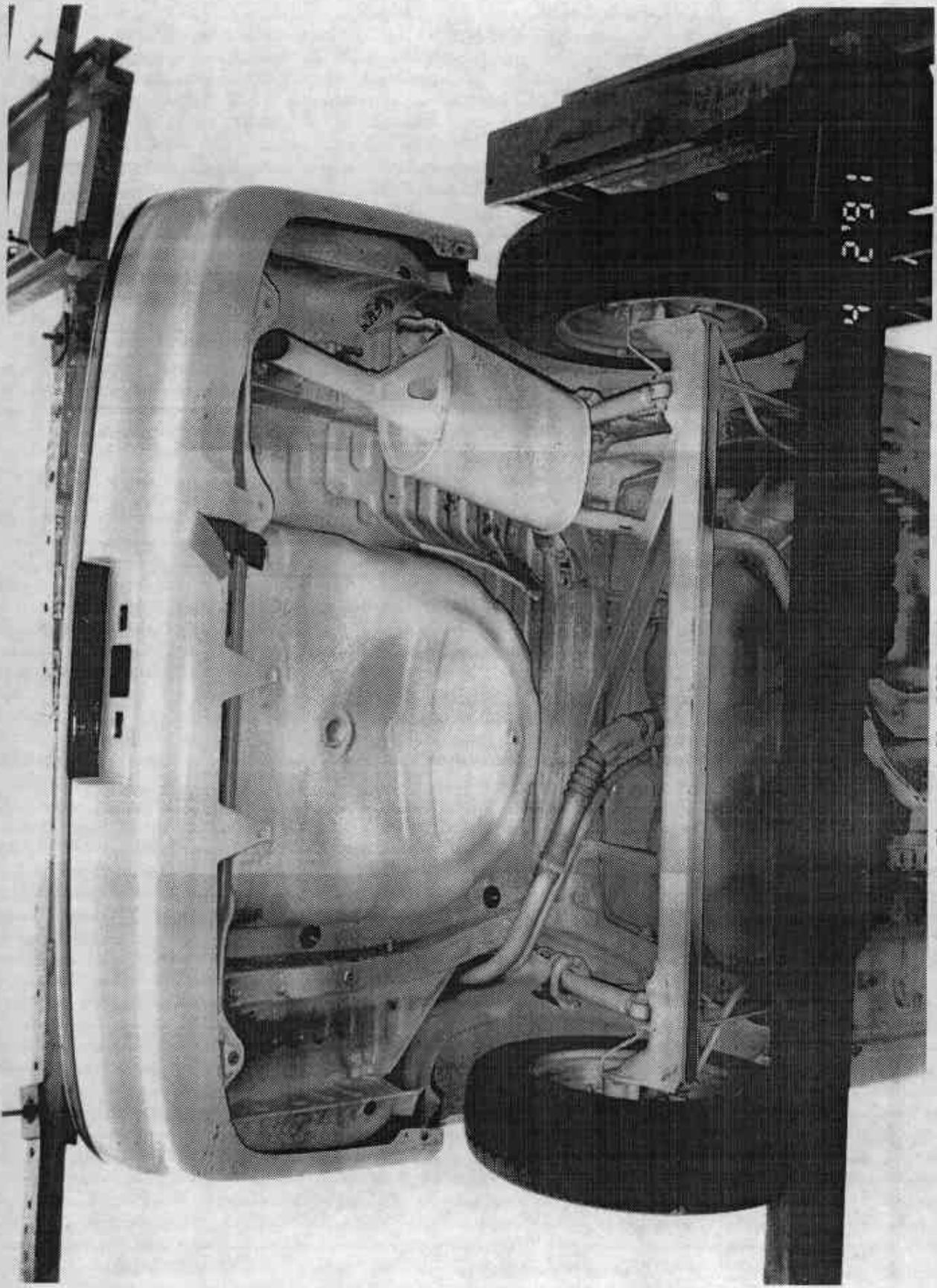


FIGURE A-21. POST-TEST REAR UNDERBODY VIEW

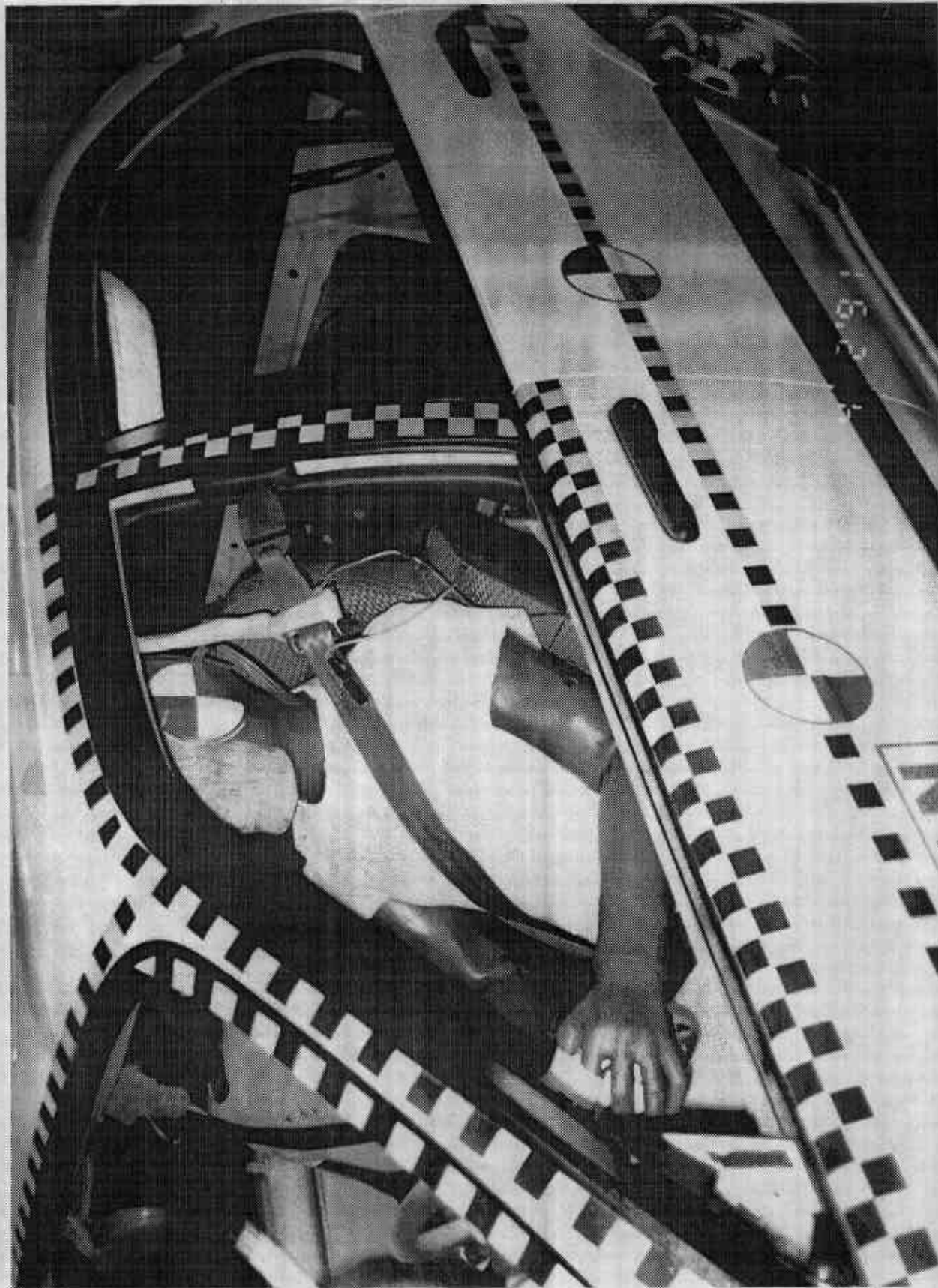


FIGURE A-22 PRE-TEST DRIVER POSITION VIEW

A-24

7893-7

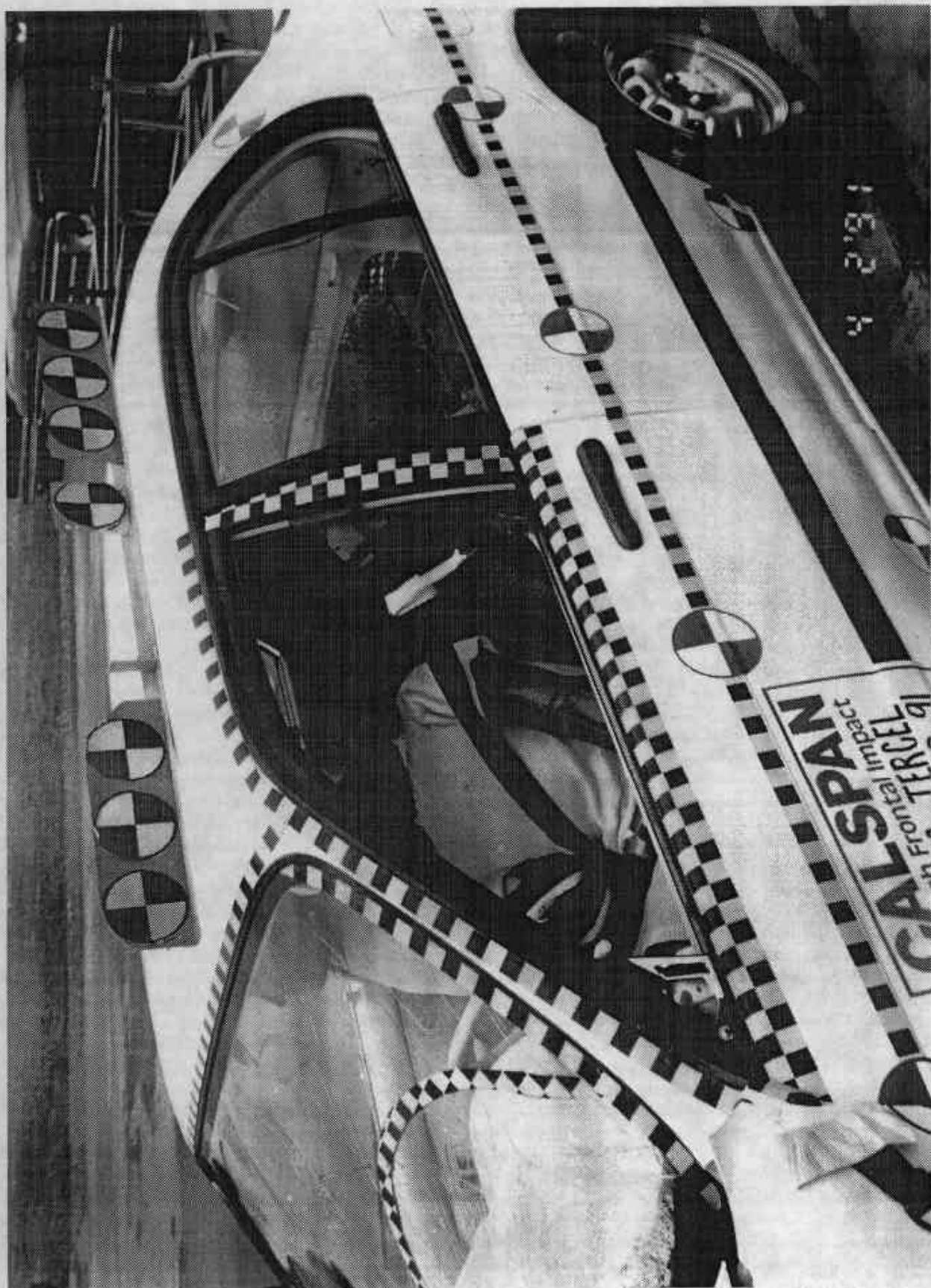


Figure A-23 POST-TEST DRIVER POSITION VIEW



FIGURE A-24 PRE-TEST PASSENGER POSITION VIEW

A-26

7893-7

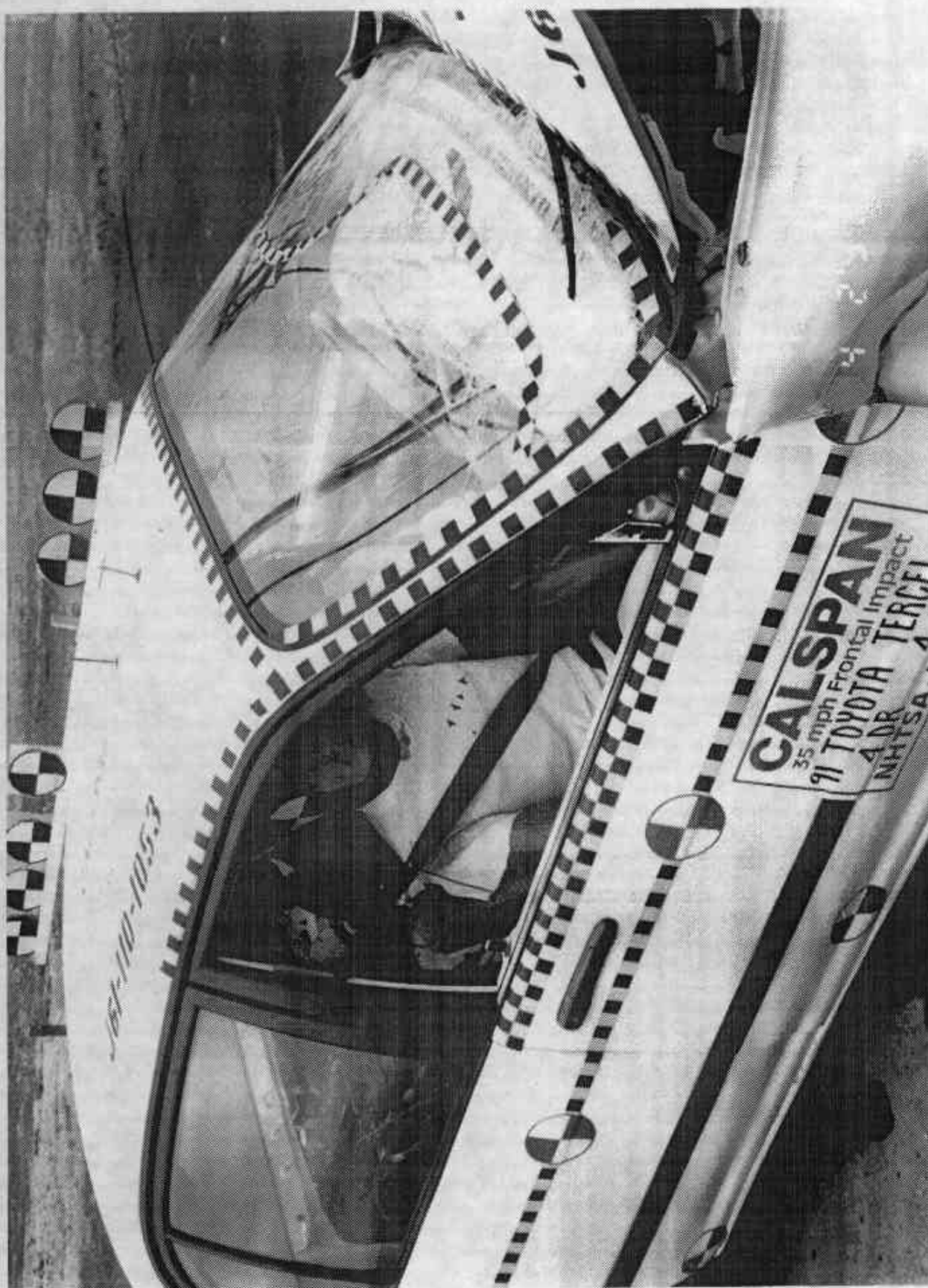


Figure A-25 POST-TEST PASSENGER POSITION VIEW



FIGURE A-28 PRE-TEST DRIVER AND INTERIOR VIEW

A-28

7893-7



Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW

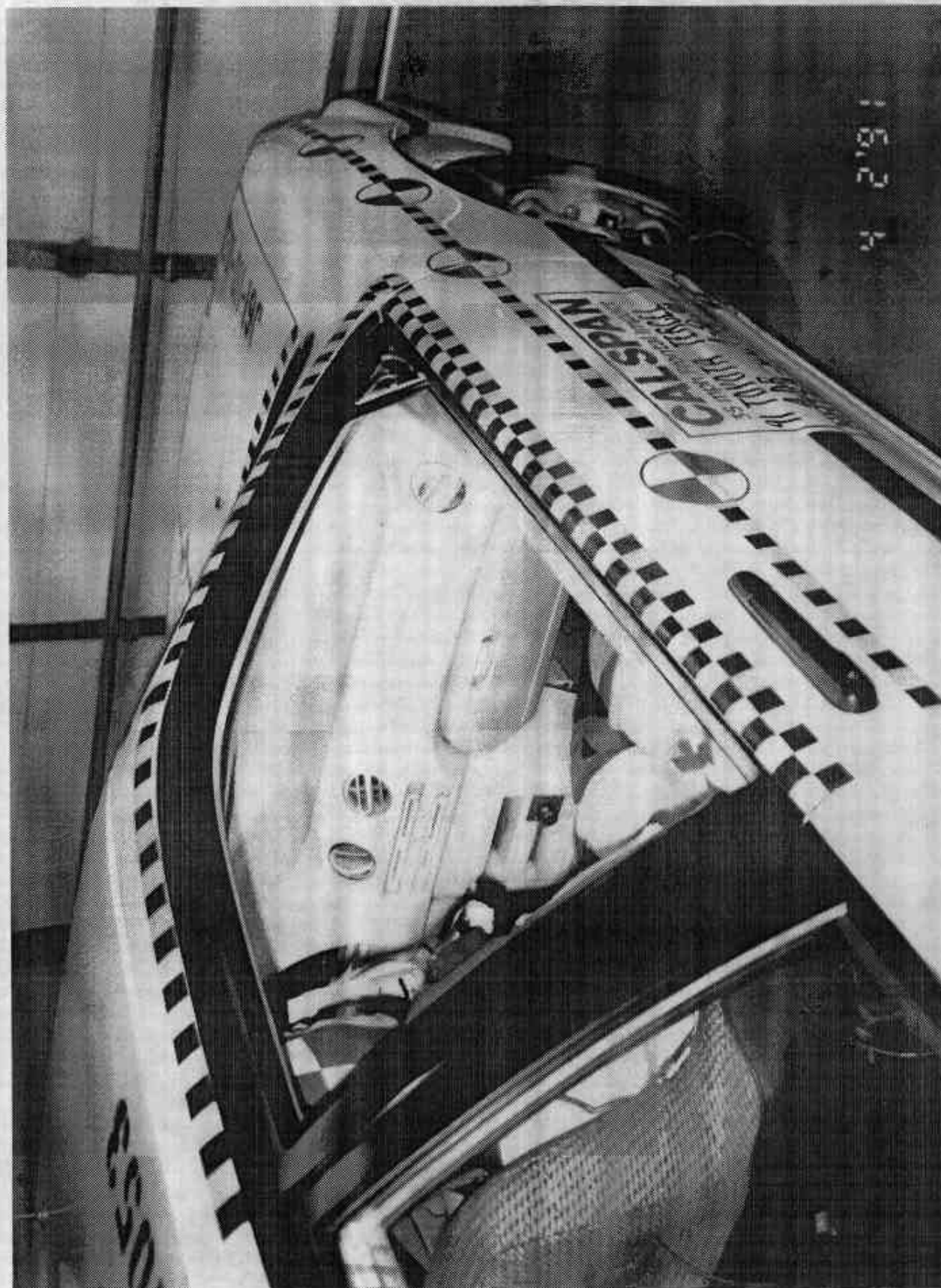


FIGURE A-26 PRE-TEST PASSENGER AND INTERIOR VIEW



Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW

Figure A-31

IMPACT VIEW PHOTOGRAPH IS NOT AVAILABLE

Appendix B

VEHICLE, LOAD CELL BARRIER AND DUMMY RESPONSE DATA

TEST NO. MM5102

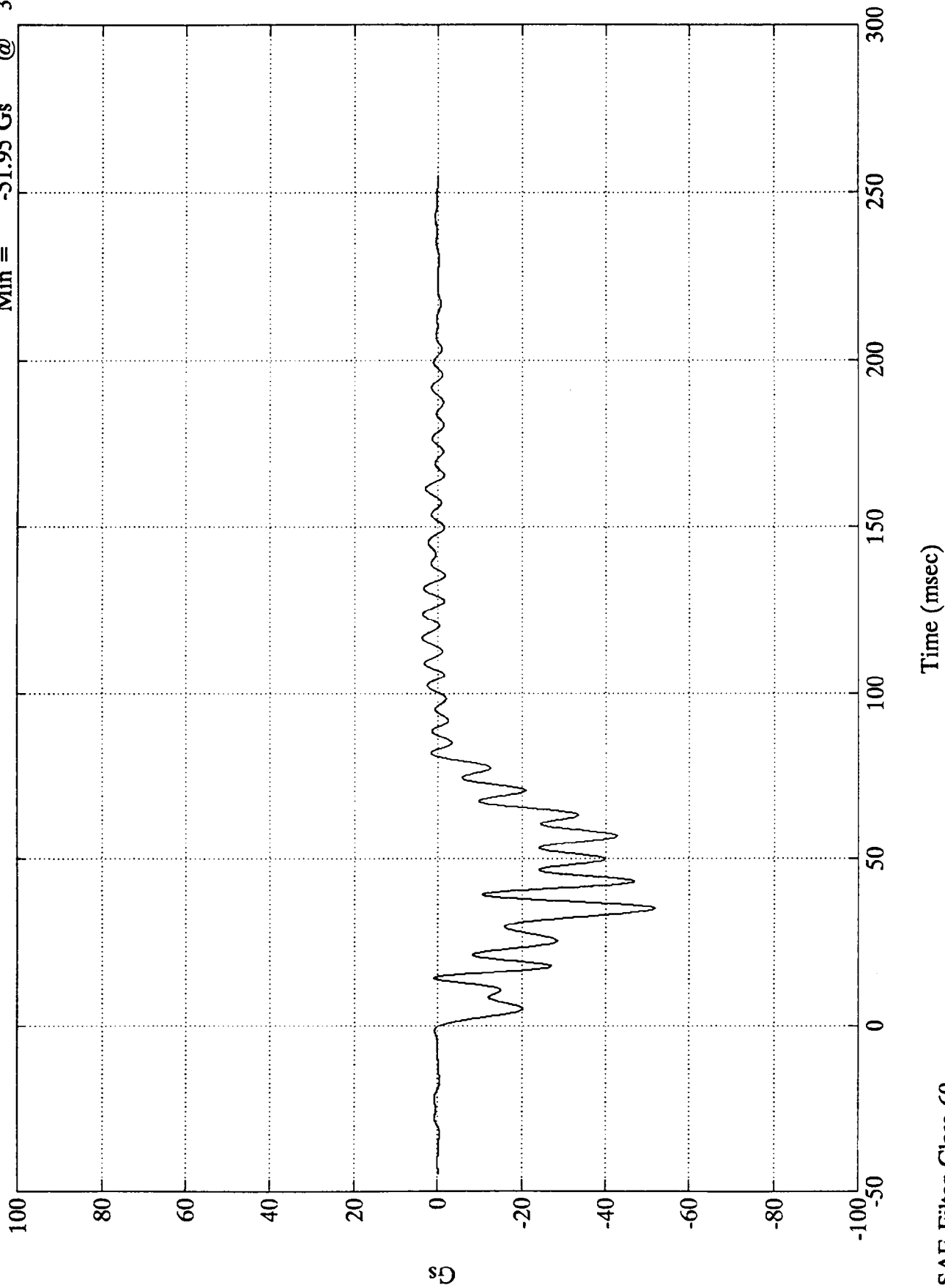
VEHICLE DATA

FILTER CHANNEL CLASS

60

NCAP TEST 1991 TOYOTA TERCEL

Acc. #1(x) Max = 3.76 Gs @ 116.63 ms
Min = -51.95 Gs @ 35.27 ms



B-3

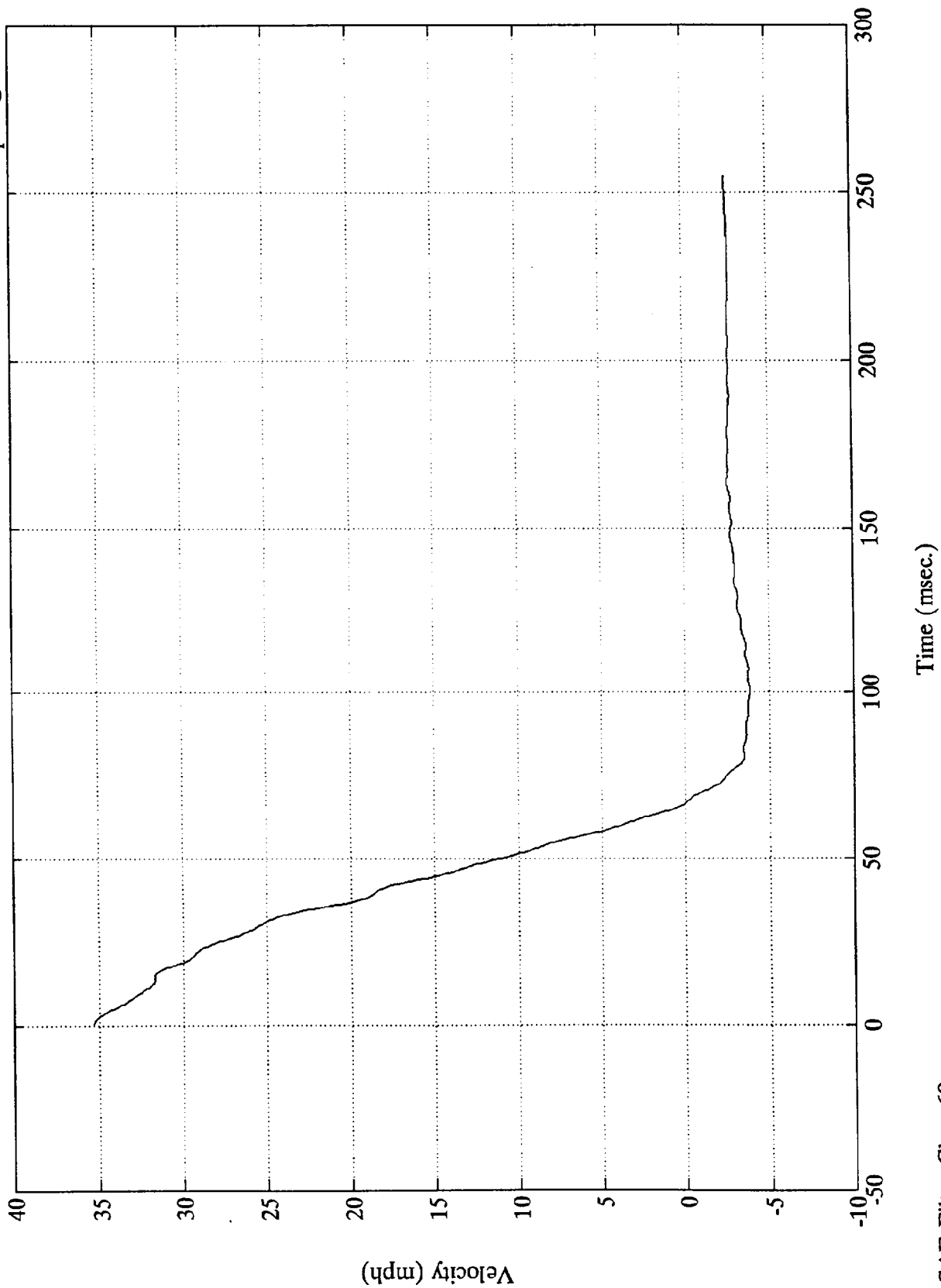
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 35.30 mph @ 0.24 msec
Min = -3.84 mph @ 100.32 msec

Acc. #1(x)

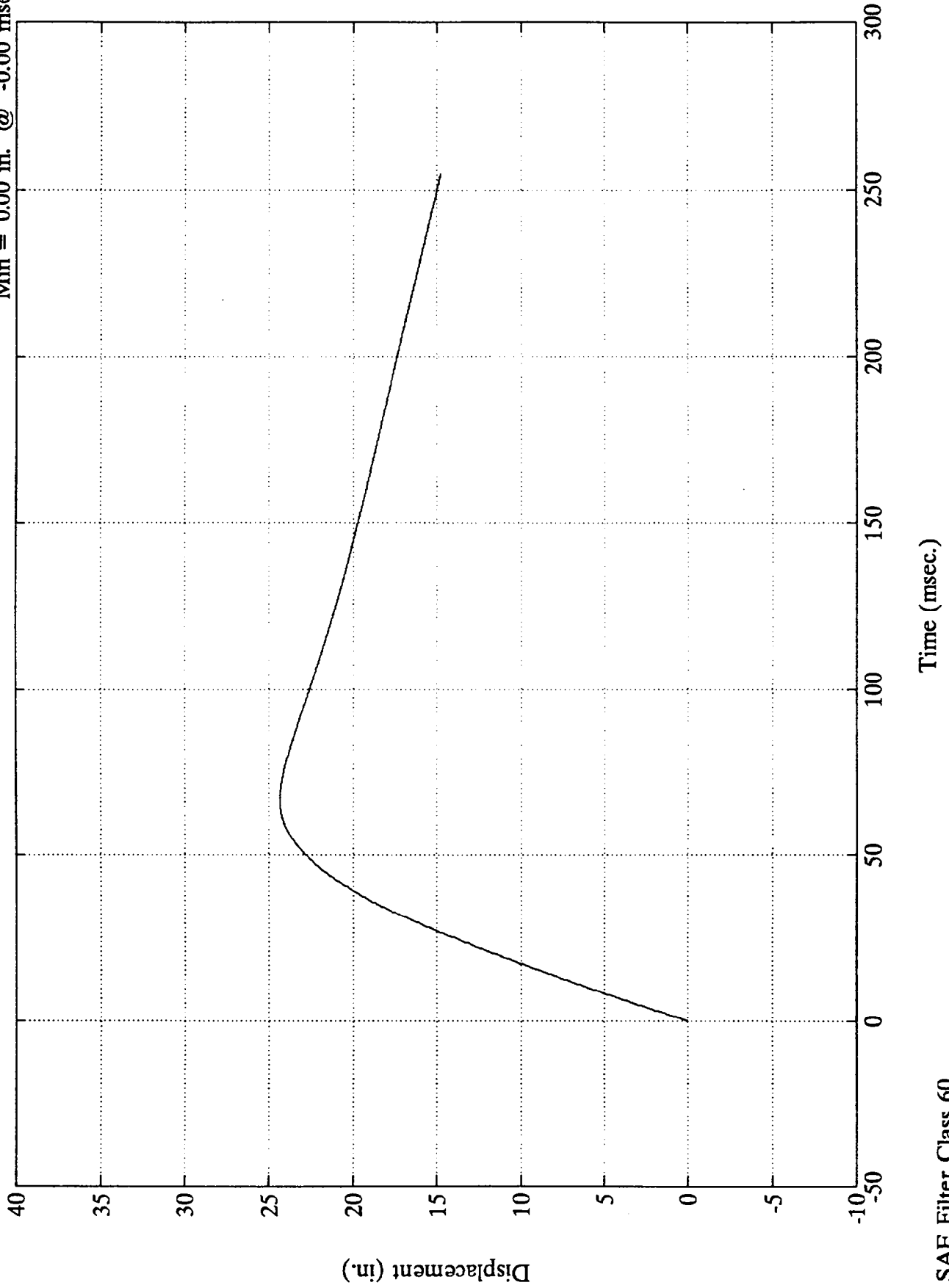


SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Acc. #1(x)

Max = 24.34 in. @ 68.16 msec
Min = 0.00 in. @ -0.00 msec



B-5

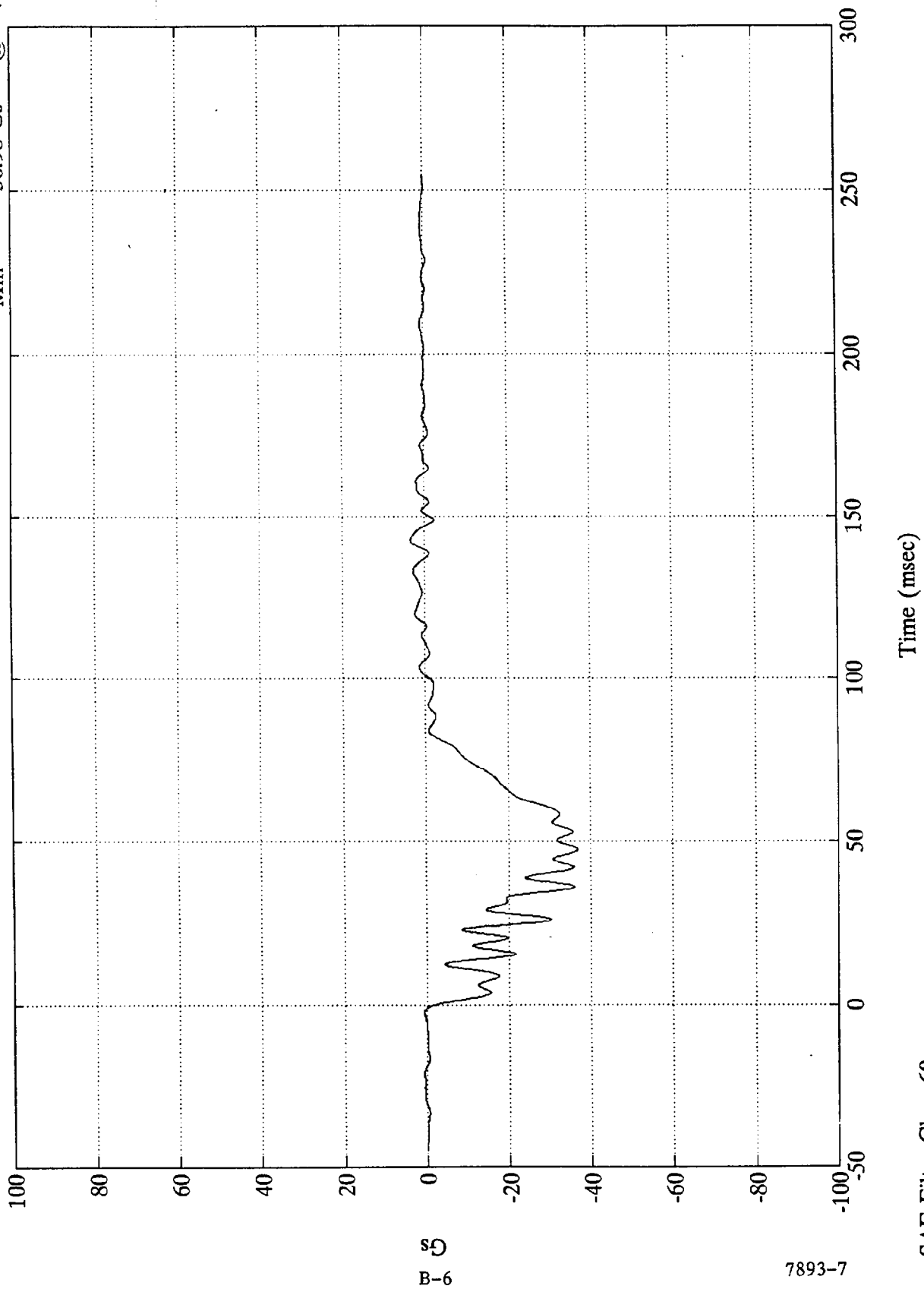
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 3.46 Gs @ 142.55 msec
 Min = -36.98 Gs @ 47.52 msec

Acc. #2(x)



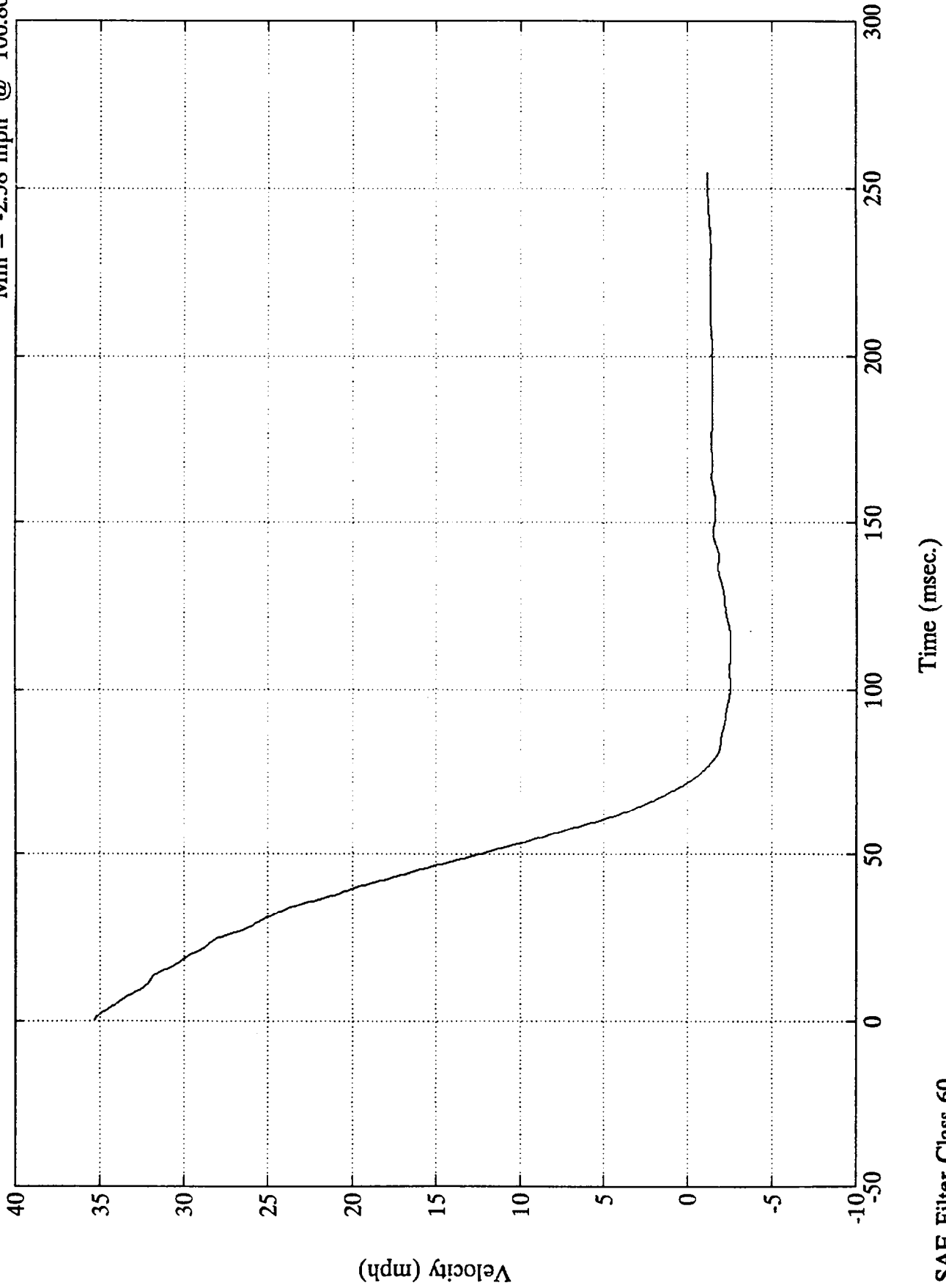
B-6

7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

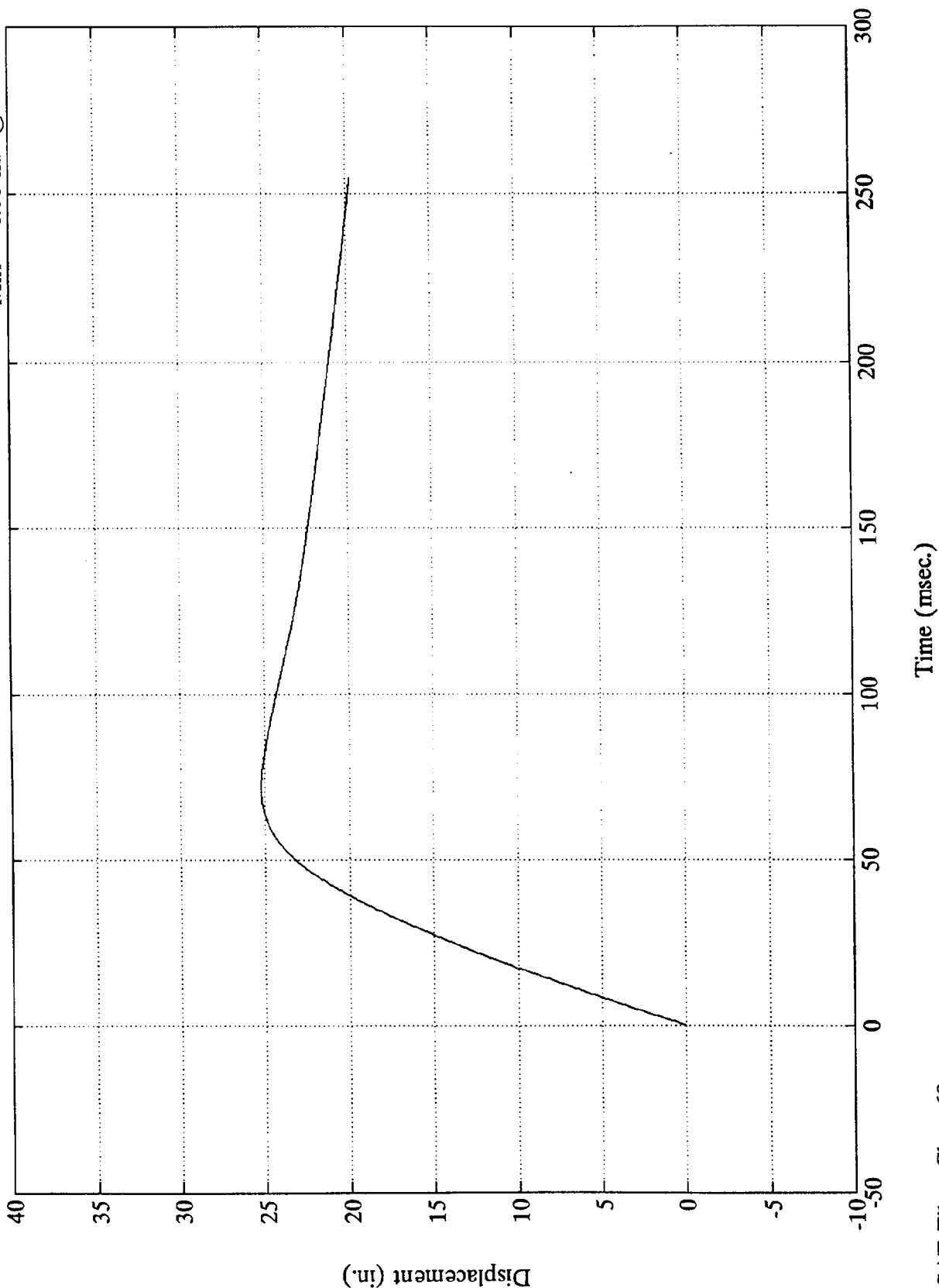
Acc. #2(x)
Max = 35.30 mph @ -0.00 msec
Min = -2.58 mph @ 100.80 msec



NCAP TEST 1991 TOYOTA TERCEL

Max = 25.23 in. @ 72.72 msec
Min = 0.00 in. @ -0.00 msec

Acc. #2(x)



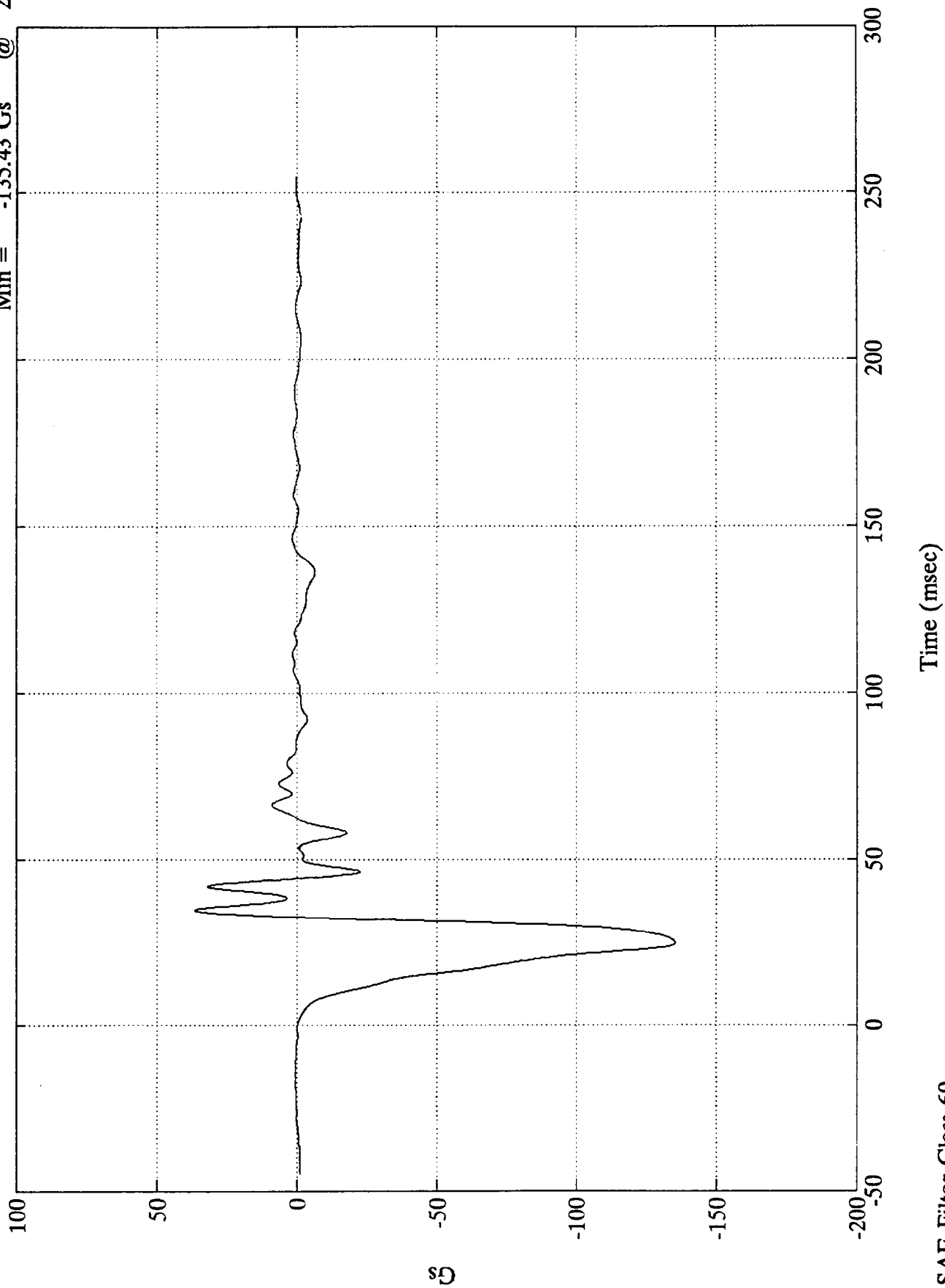
B-8

7893-7

SAE Filter Class 60

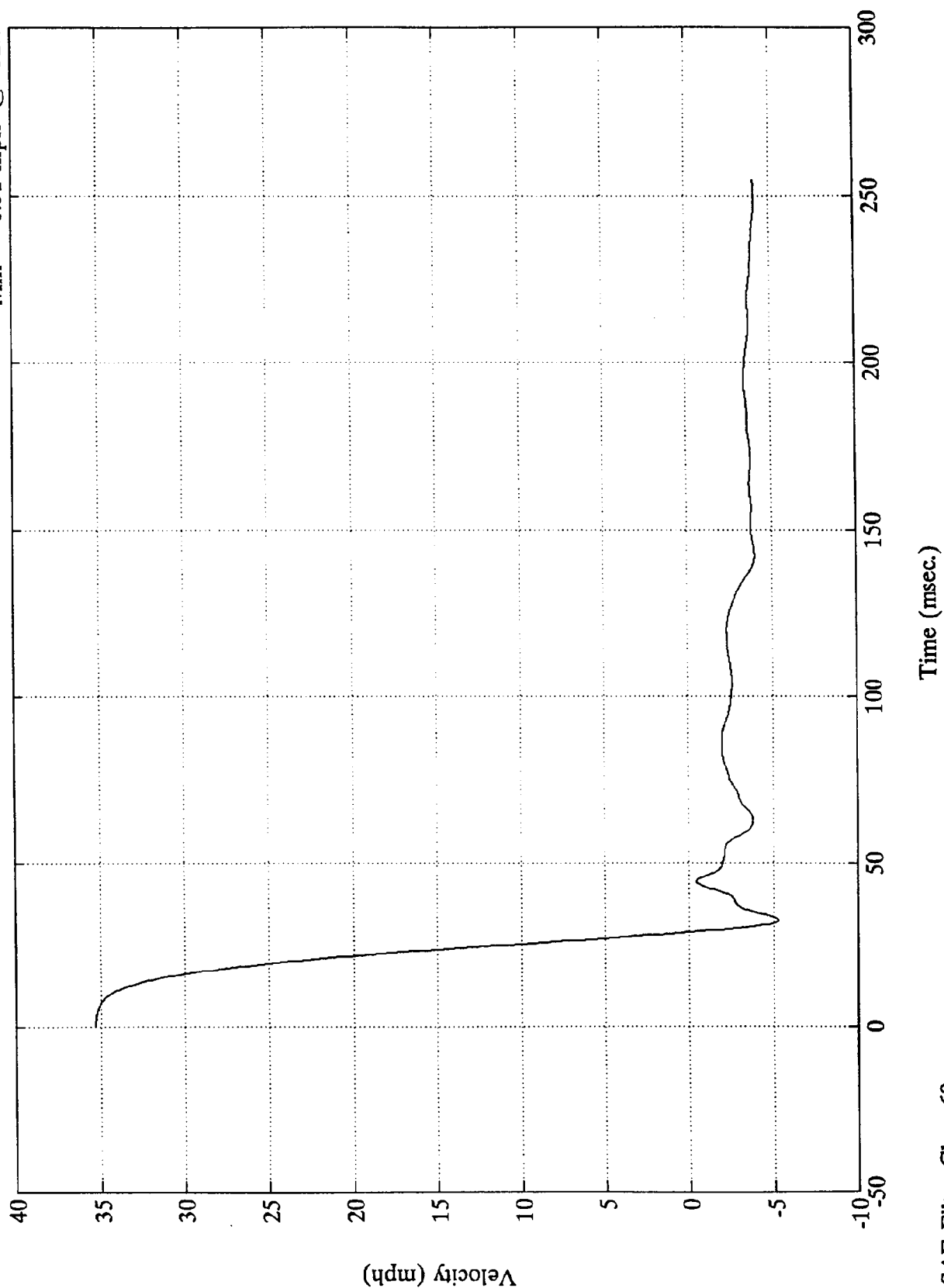
NCAP TEST 1991 TOYOTA TERCEL

Acc. #3(x) Max = 36.68 Gs @ 34.68 ms
 Min = -135.43 Gs @ 24.59 ms



NCAP TEST 1991 TOYOTA TERCEL

Acc. #3(x)
Max = 35.30 mph @ 0.72 msec
Min = -5.31 mph @ 32.64 msec

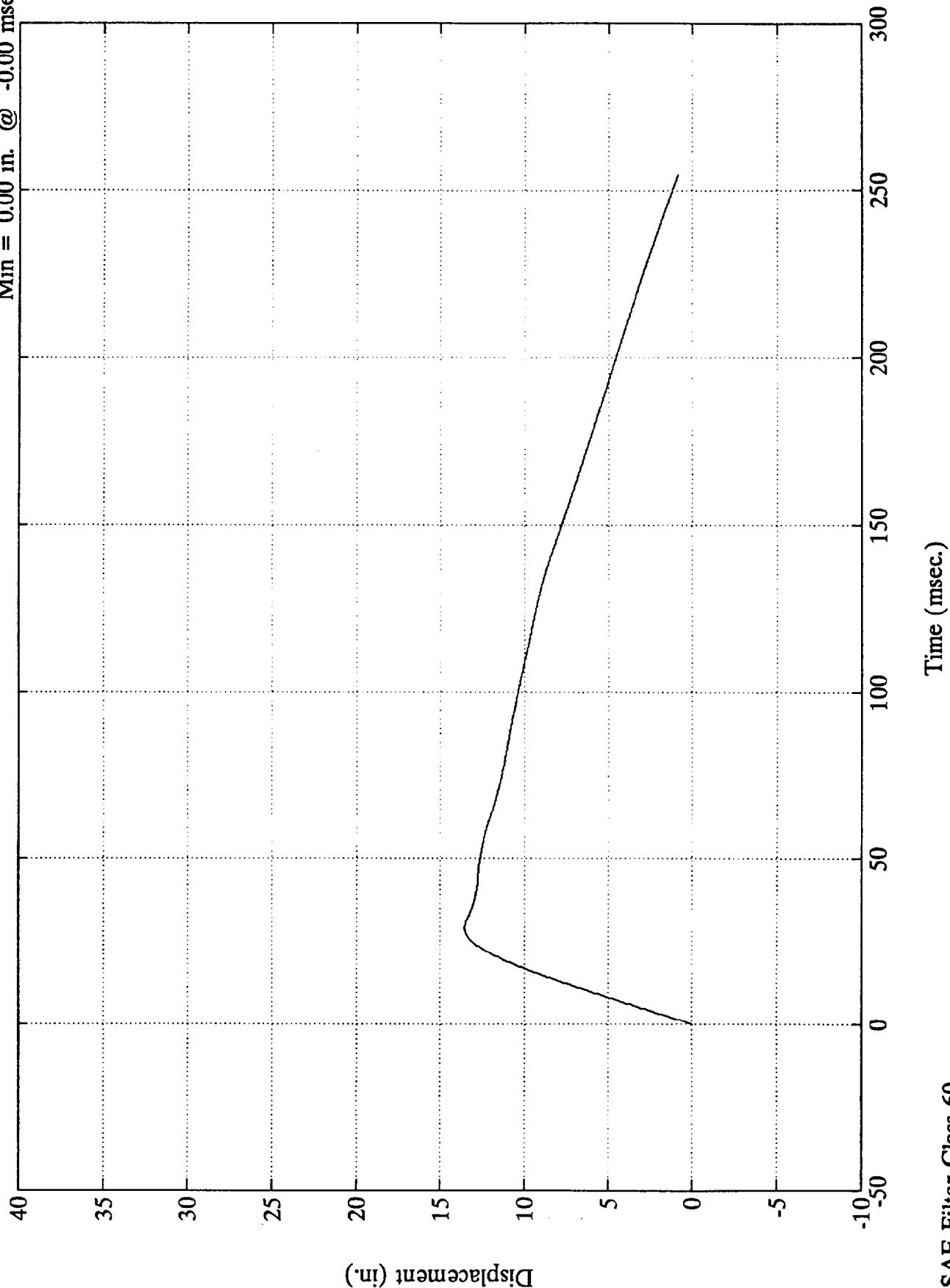


SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Acc. #3(x)

Max = 13.54 in. @ 29.52 msec
Min = 0.00 in. @ -0.00 msec



B-11

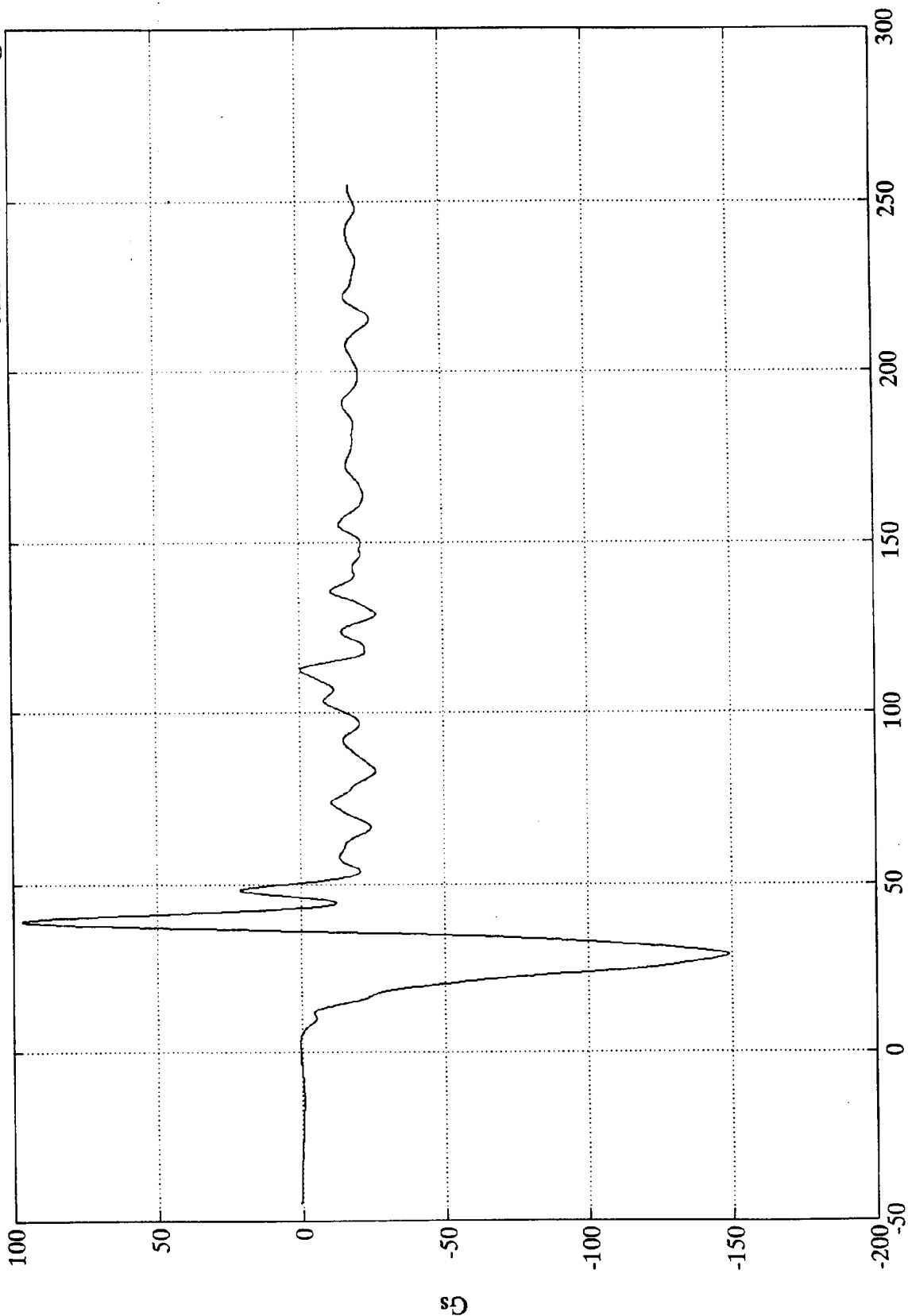
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 96.72 Gs @ 38.88 msec
 Min = -148.85 Gs @ 28.79 msec

Acc. #4(x)



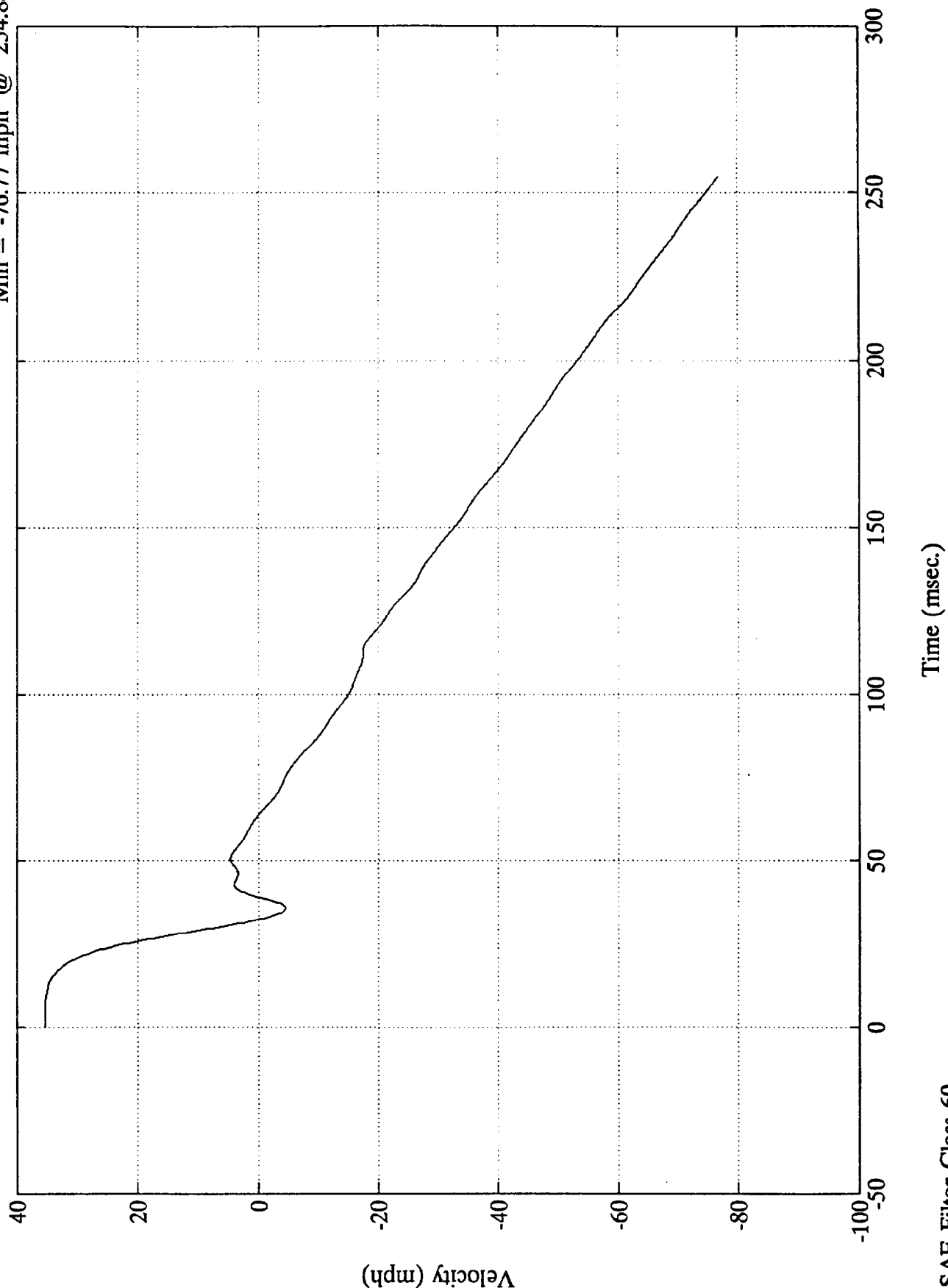
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 35.35 mph @ 6.00 msec
Min = -76.77 mph @ 254.88 msec

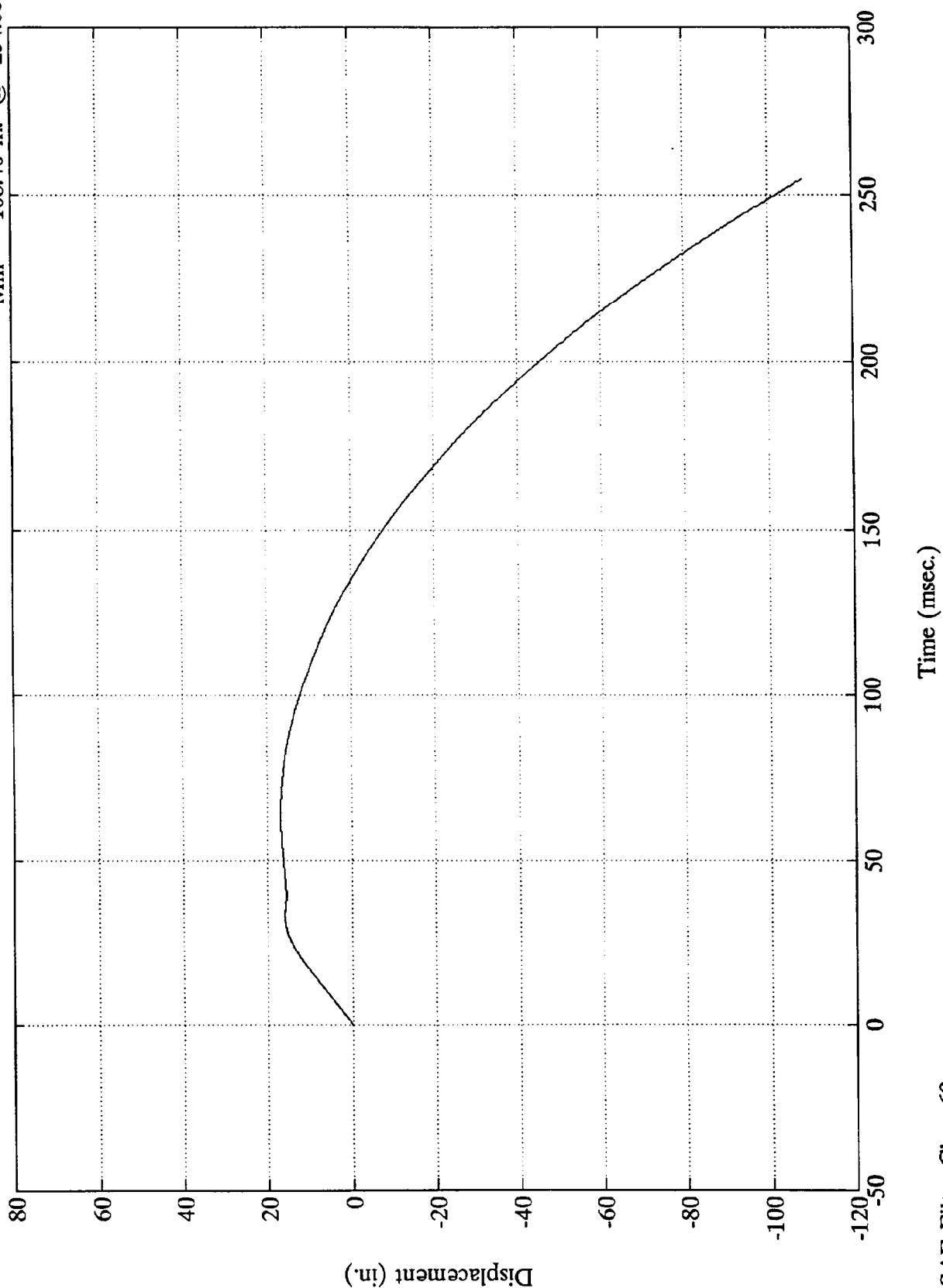
Acc. #4(x)



NCAP TEST 1991 TOYOTA TERCEL

Acc. #4(x)

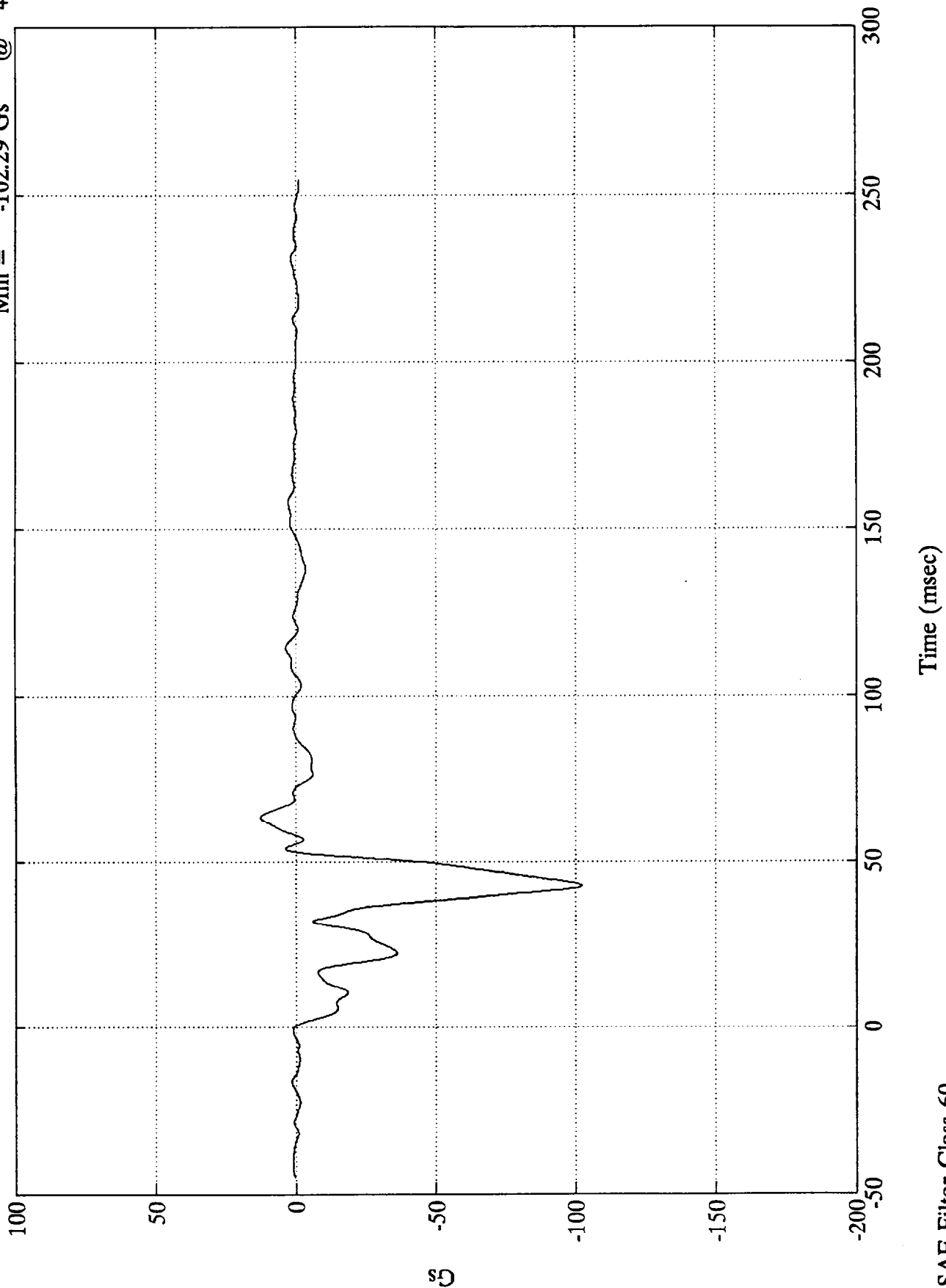
Max = 16.92 in. @ 64.80 msec
Min = -108.40 in. @ 254.88 msec



SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

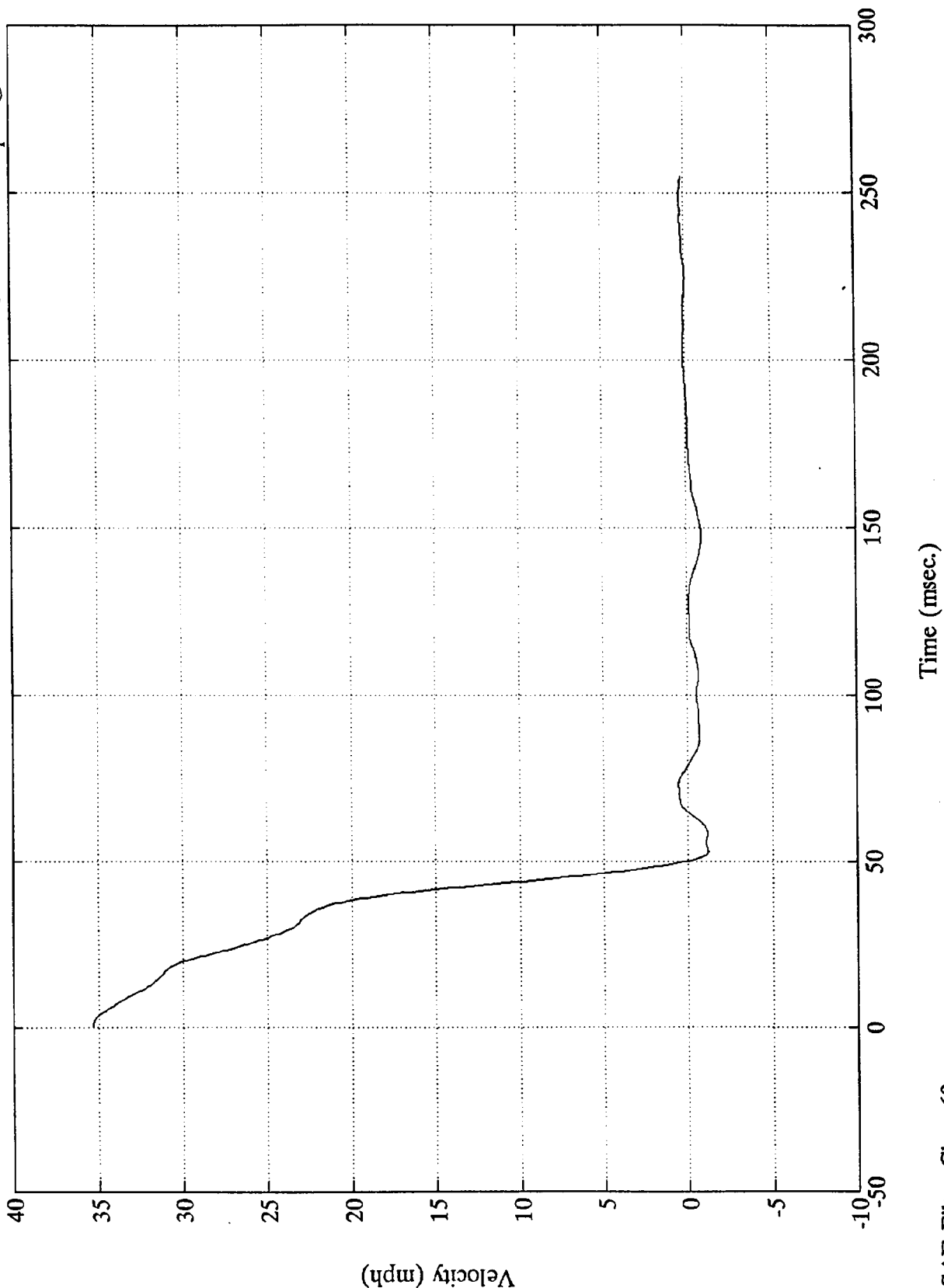
Acc. #5(x) Max = 12.65 Gs @ 63.60 msec
Min = -102.29 Gs @ 42.84 msec



NCAP TEST 1991 TOYOTA TERCEL

Max = 35.30 mph @ 0.72 msec
Min = -1.19 mph @ 53.04 msec

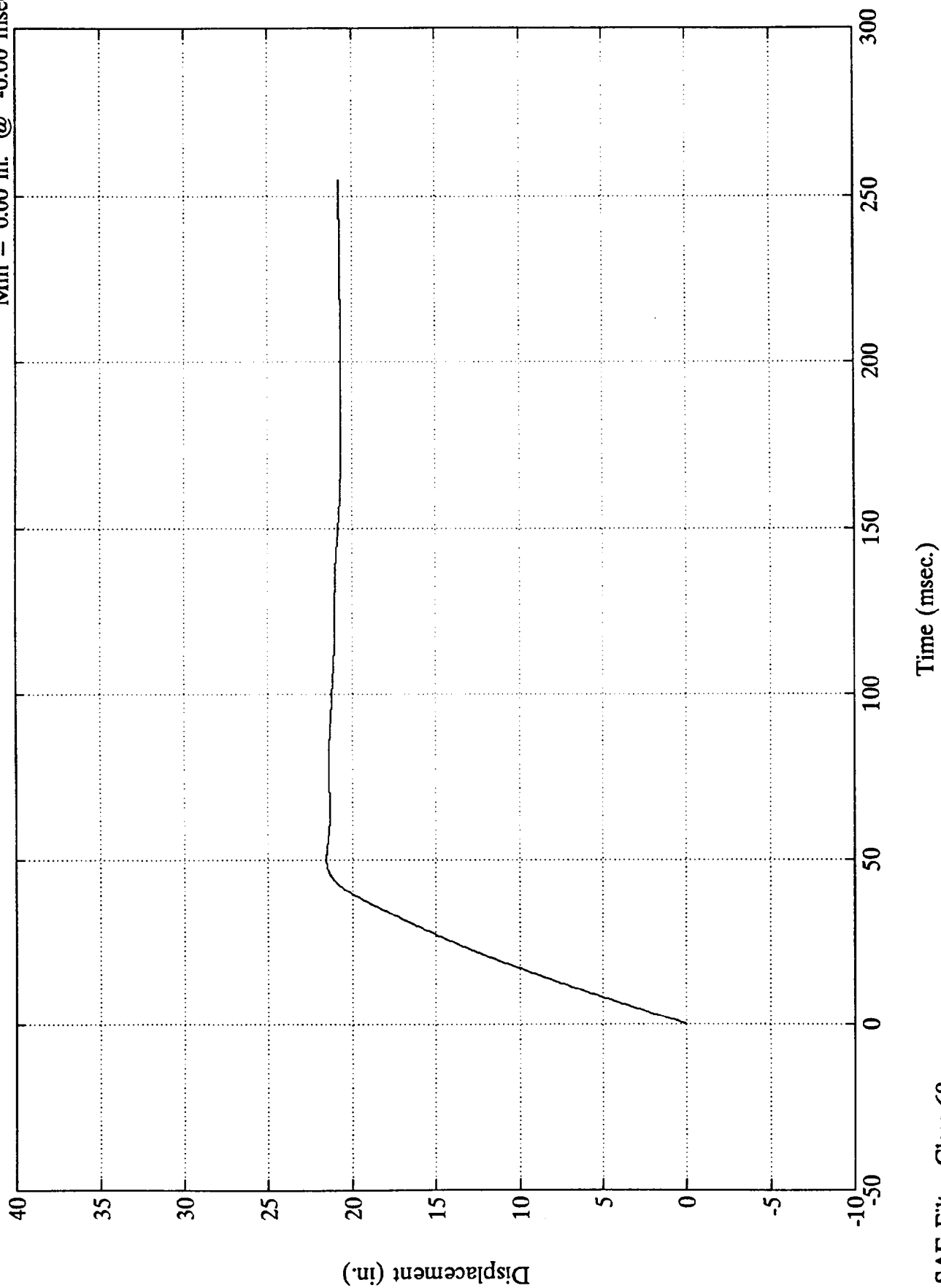
Acc. #5(x)



NCAP TEST 1991 TOYOTA TERCEL

Acc. #5(x)

Max = 21.54 in. @ 50.88 msec
Min = 0.00 in. @ -0.00 msec

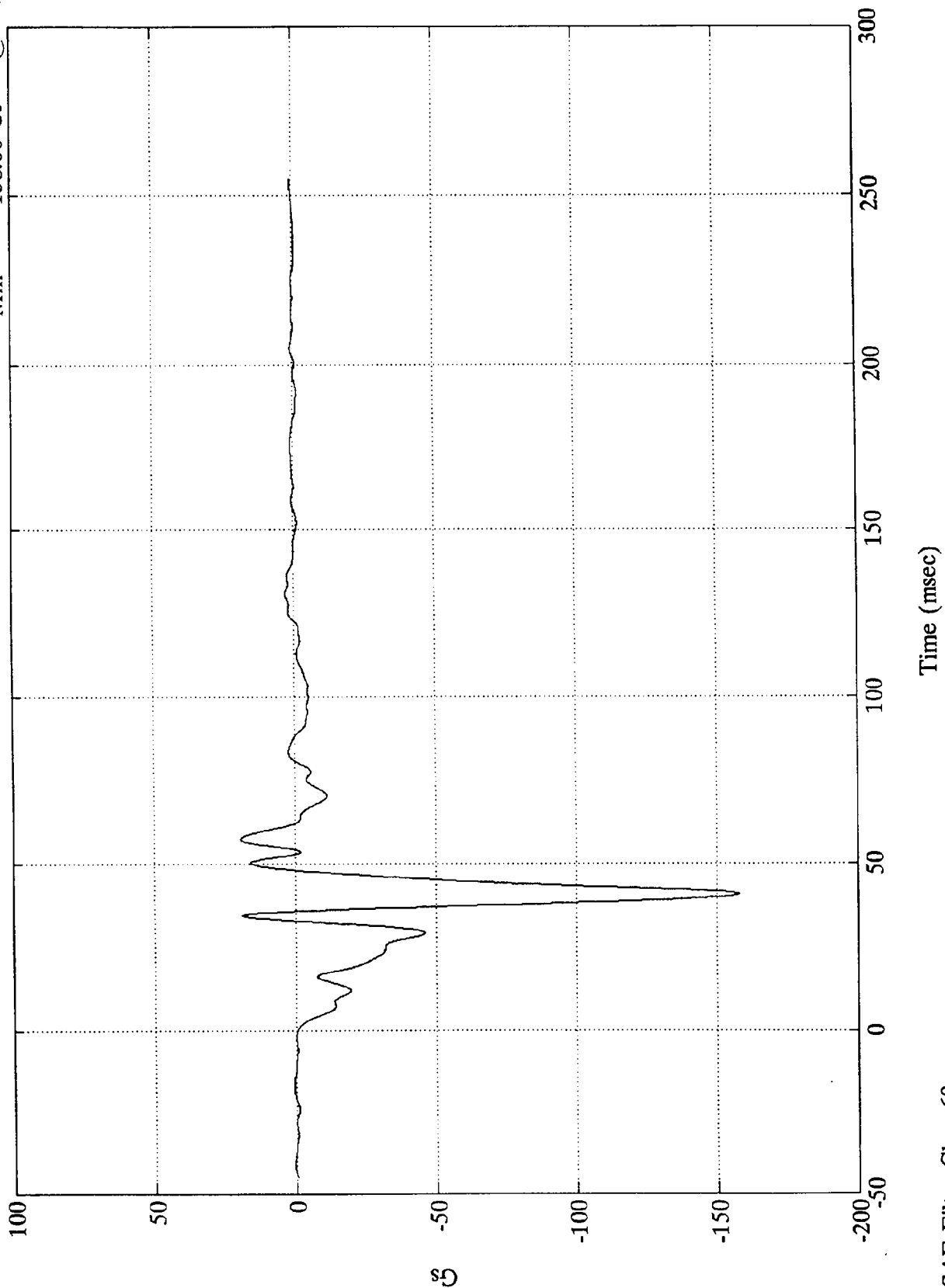


SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 19.45 Gs @ 57.47 msec
Min = -158.00 Gs @ 40.68 msec

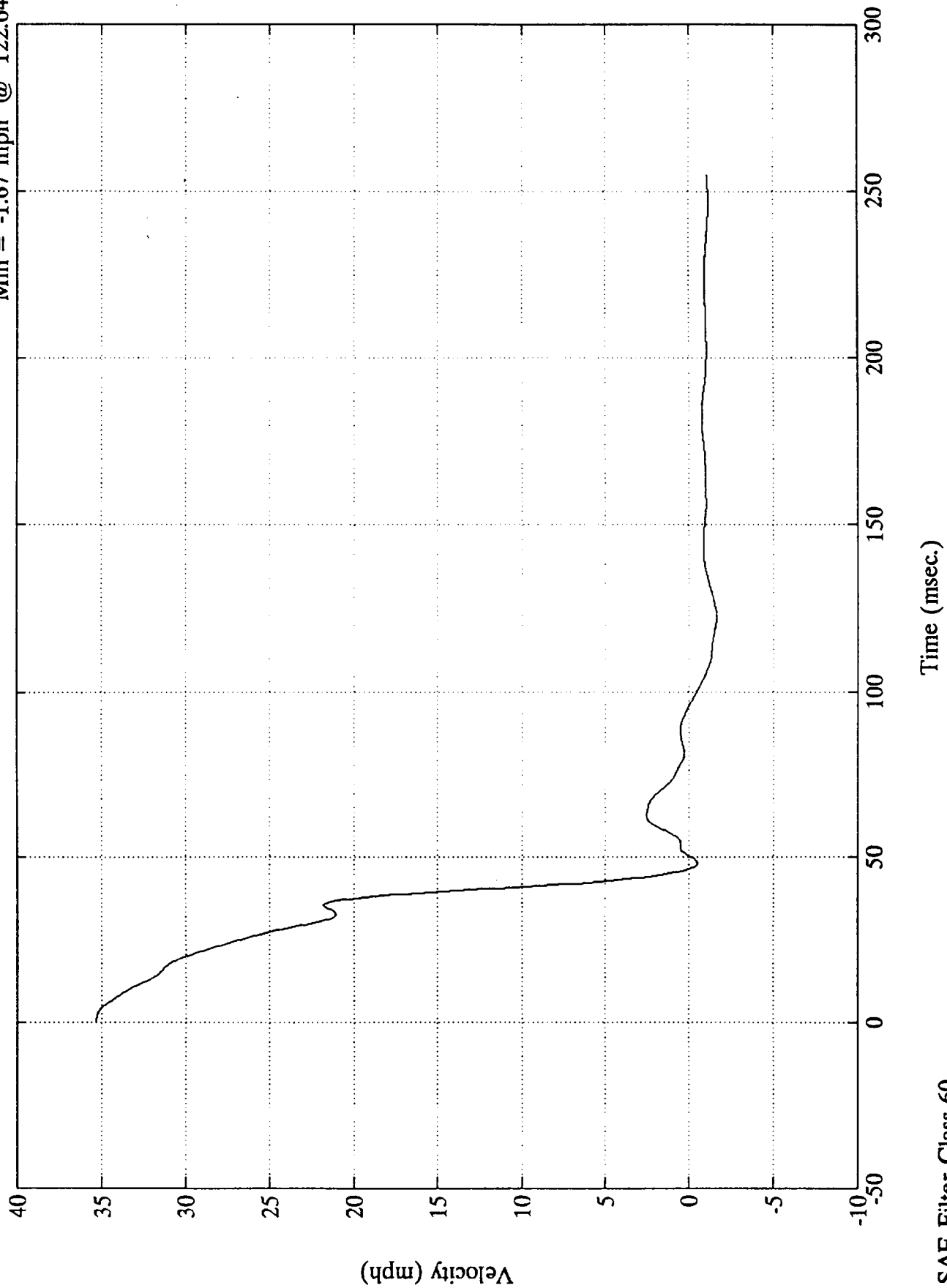
Acc. #6(x)



NCAP TEST 1991 TOYOTA TERCEL

Acc. #6(x)

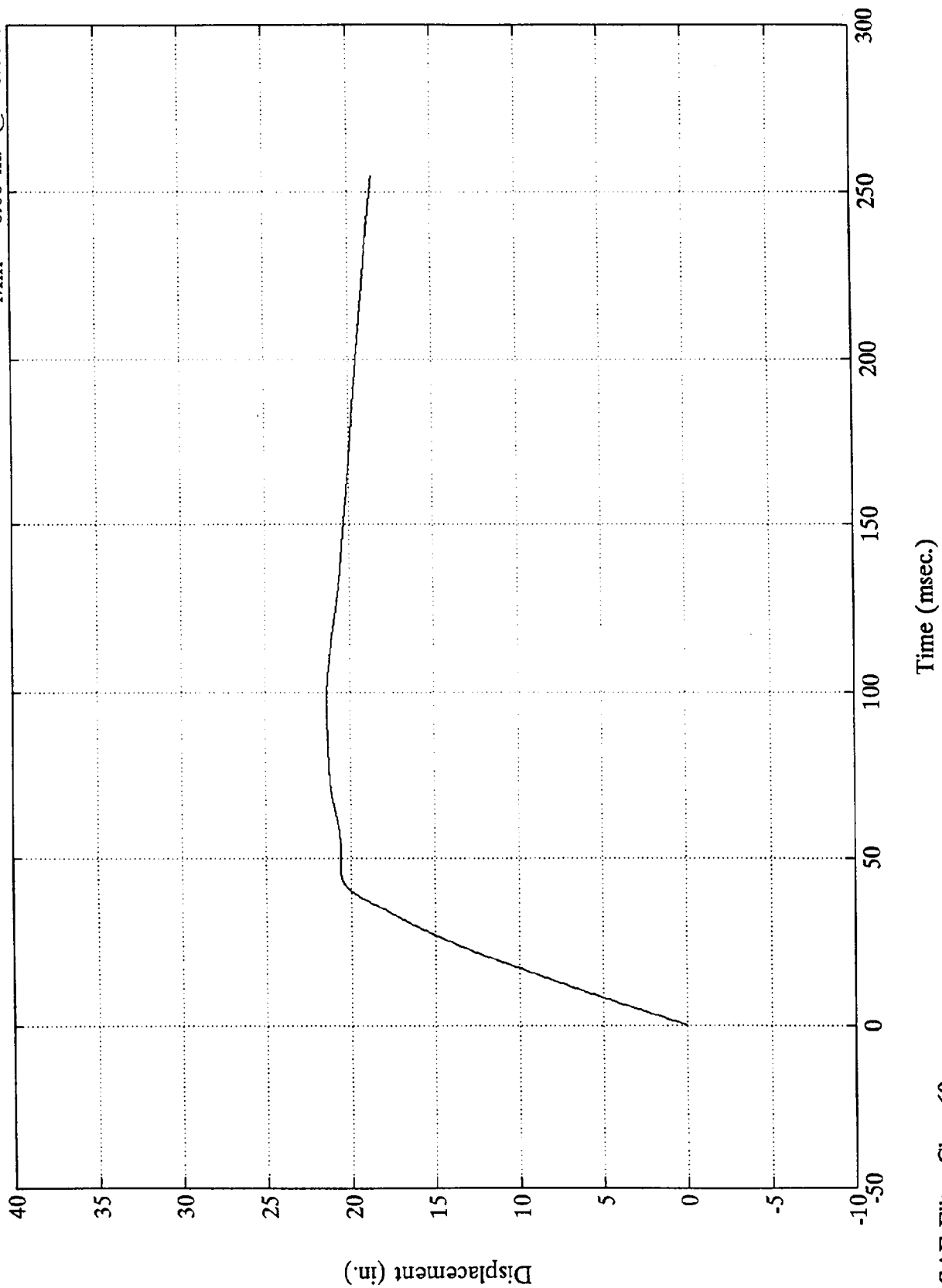
Max = 35.30 mph @ 0.24 msec
Min = -1.67 mph @ 122.64 msec



NCAP TEST 1991 TOYOTA TERCEL

Max = 21.39 in. @ 98.16 msec
Min = 0.00 in. @ -0.00 msec

Acc. #6(x)



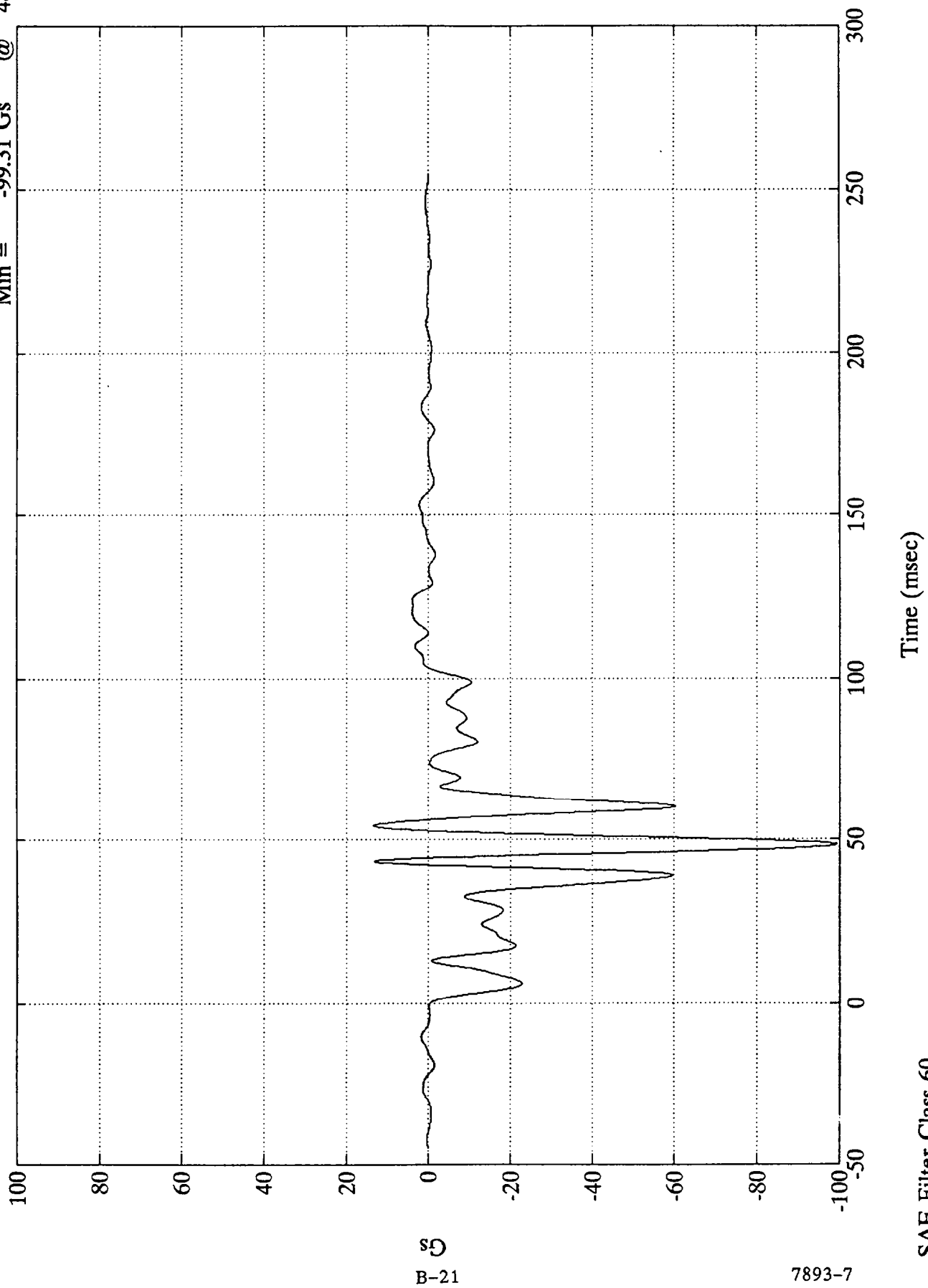
B-20

7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Acc. #7(x) Max = 13.35 Gs @ 54.23 msec
Min = -99.31 Gs @ 48.36 msec



B-21

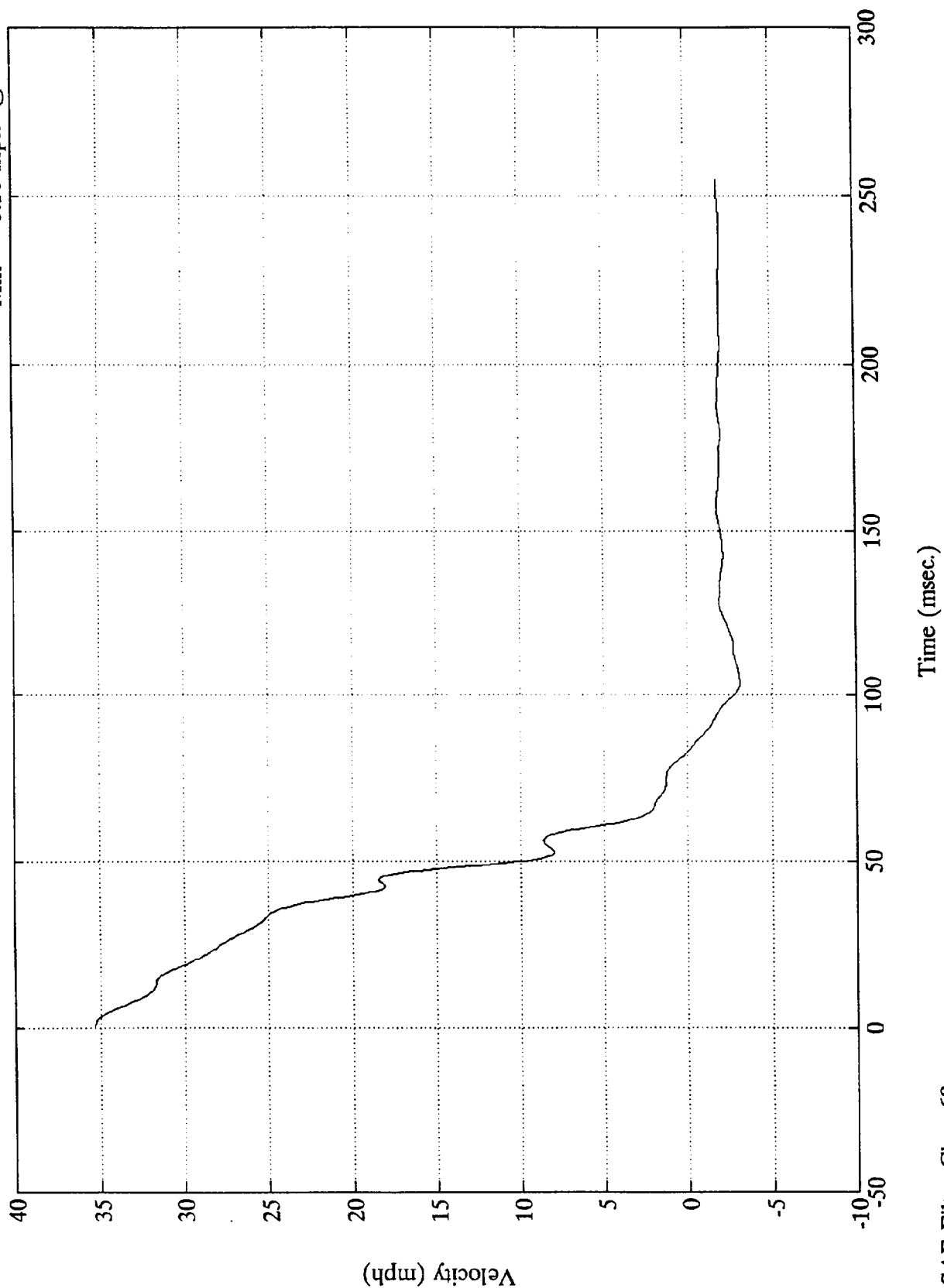
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 35.30 mph @ 0.24 msec
Min = -3.10 mph @ 103.44 msec

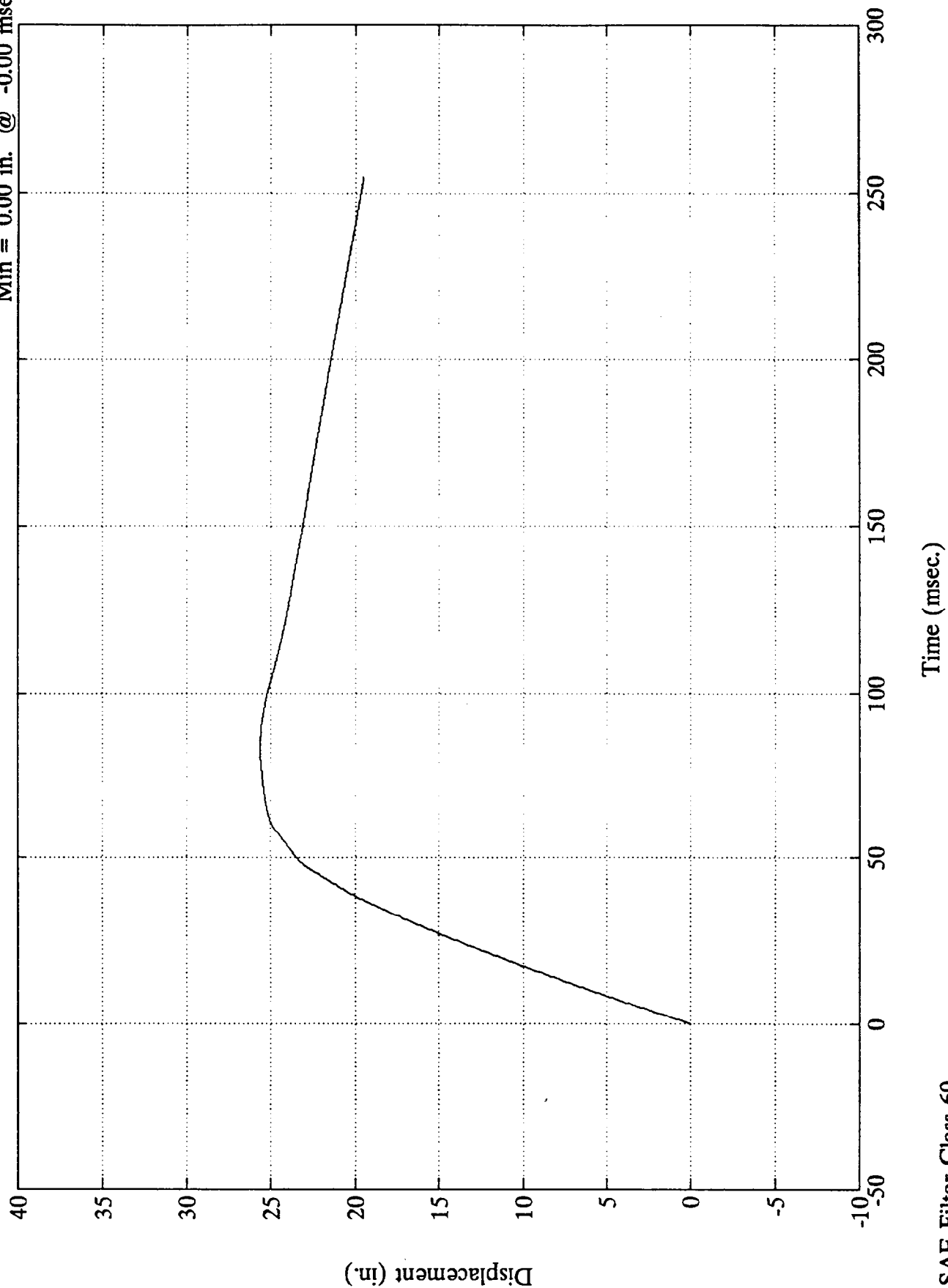
Acc. #7(x)



NCAP TEST 1991 TOYOTA TERCEL

Acc. #7(x)

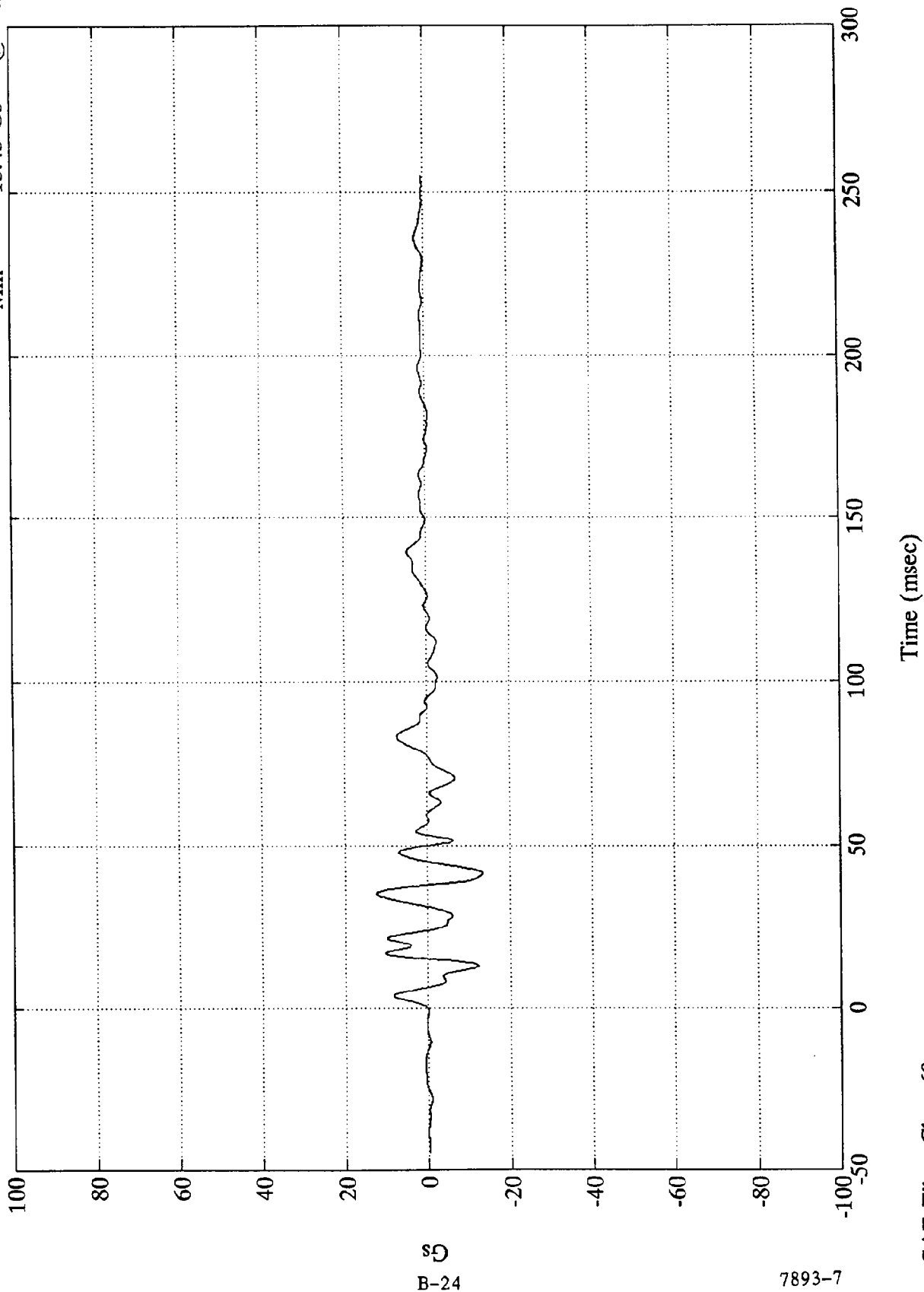
Max = 25.63 in. @ 84.00 msec
Min = 0.00 in. @ -0.00 msec



NCAP TEST 1991 TOYOTA TERCEL

Max = 12.39 Gs @ 35.27 msec
Min = -13.43 Gs @ 41.52 msec

Acc. #8(z)



B-24
Gs

7893-7

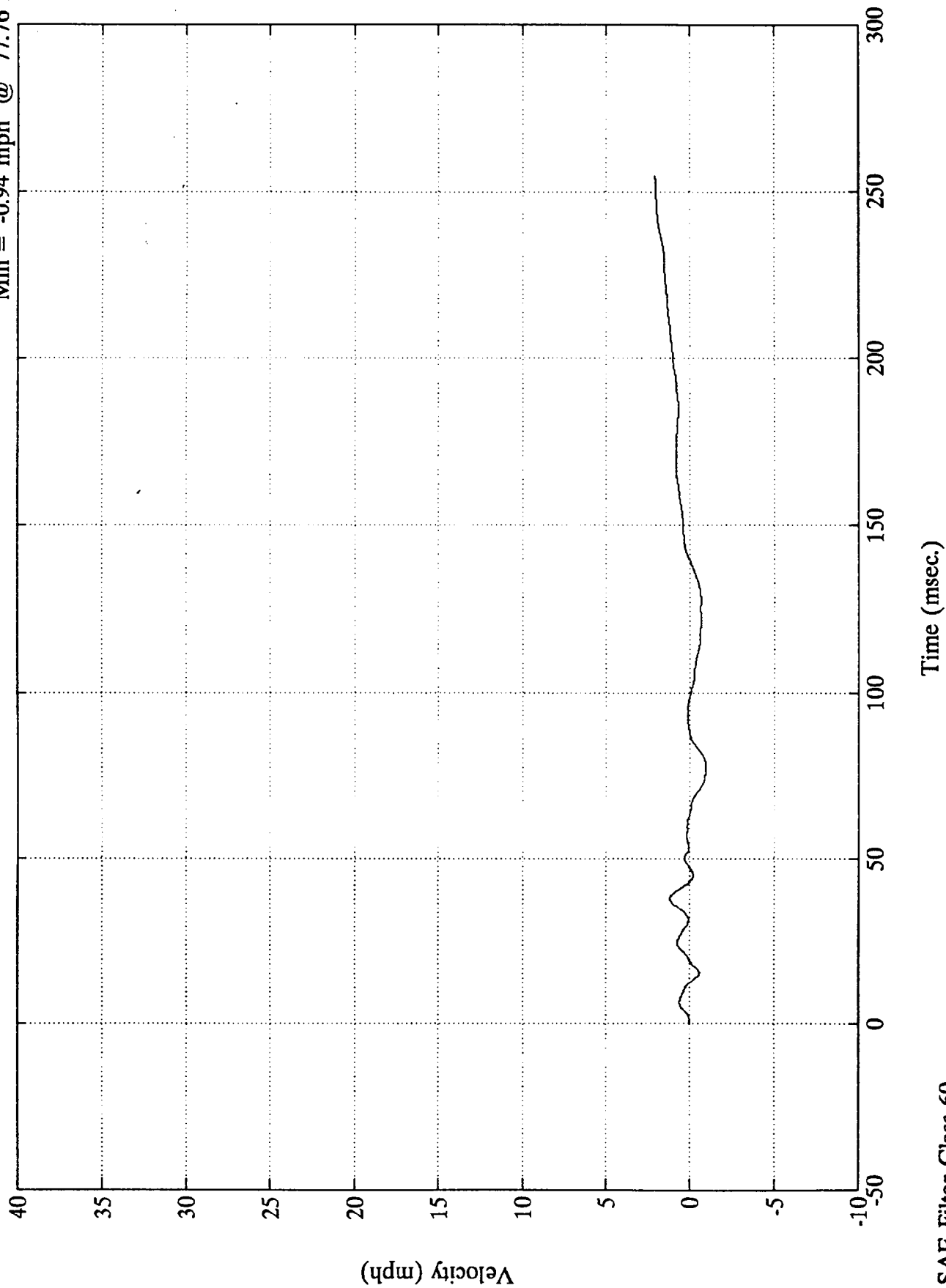
SAE Filter Class 60

Time (msec)

NCAP TEST 1991 TOYOTA TERCEL

Acc. #8(z)

Max = 2.07 mph @ 254.88 msec
Min = -0.94 mph @ 77.76 msec

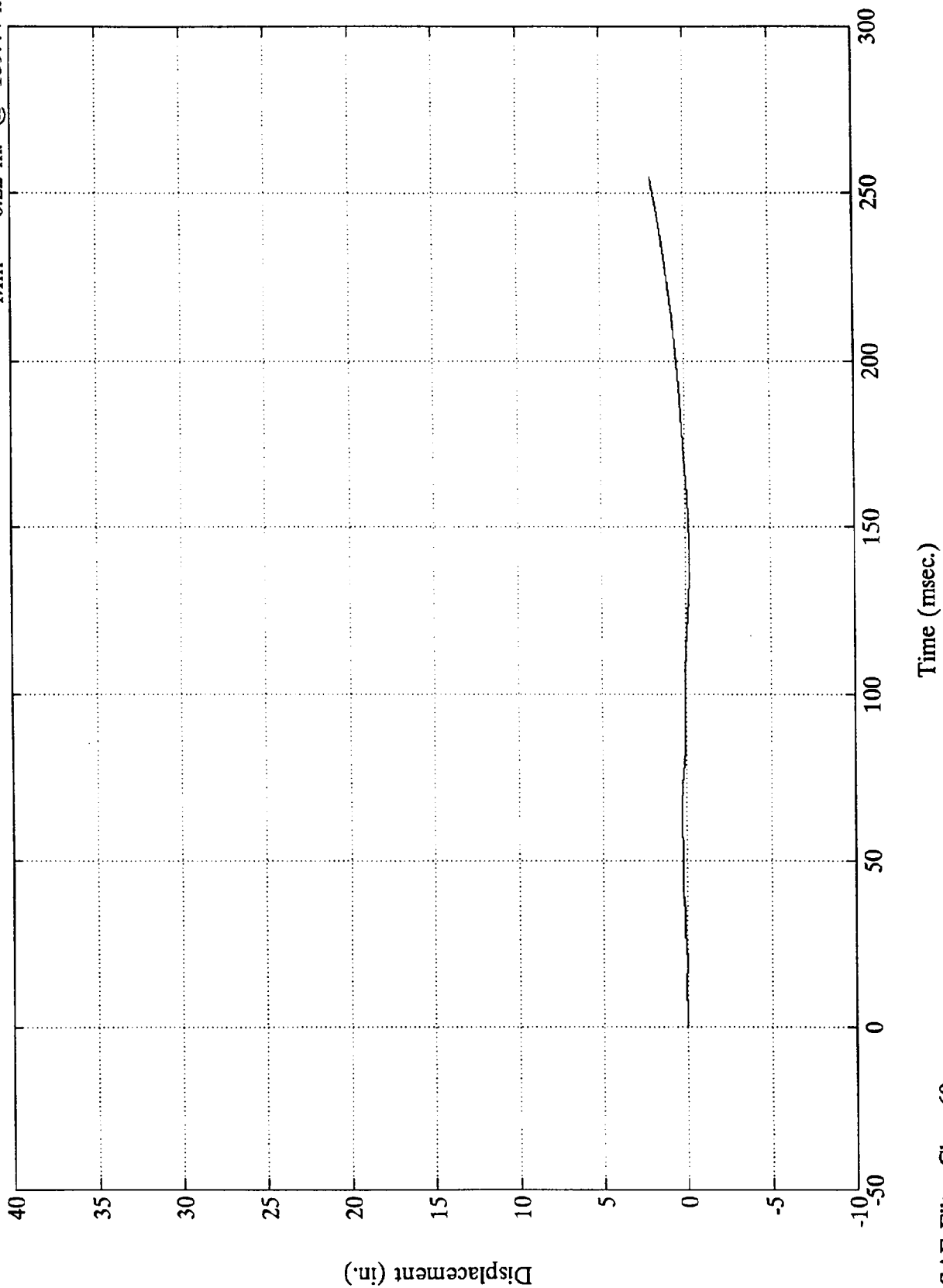


SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

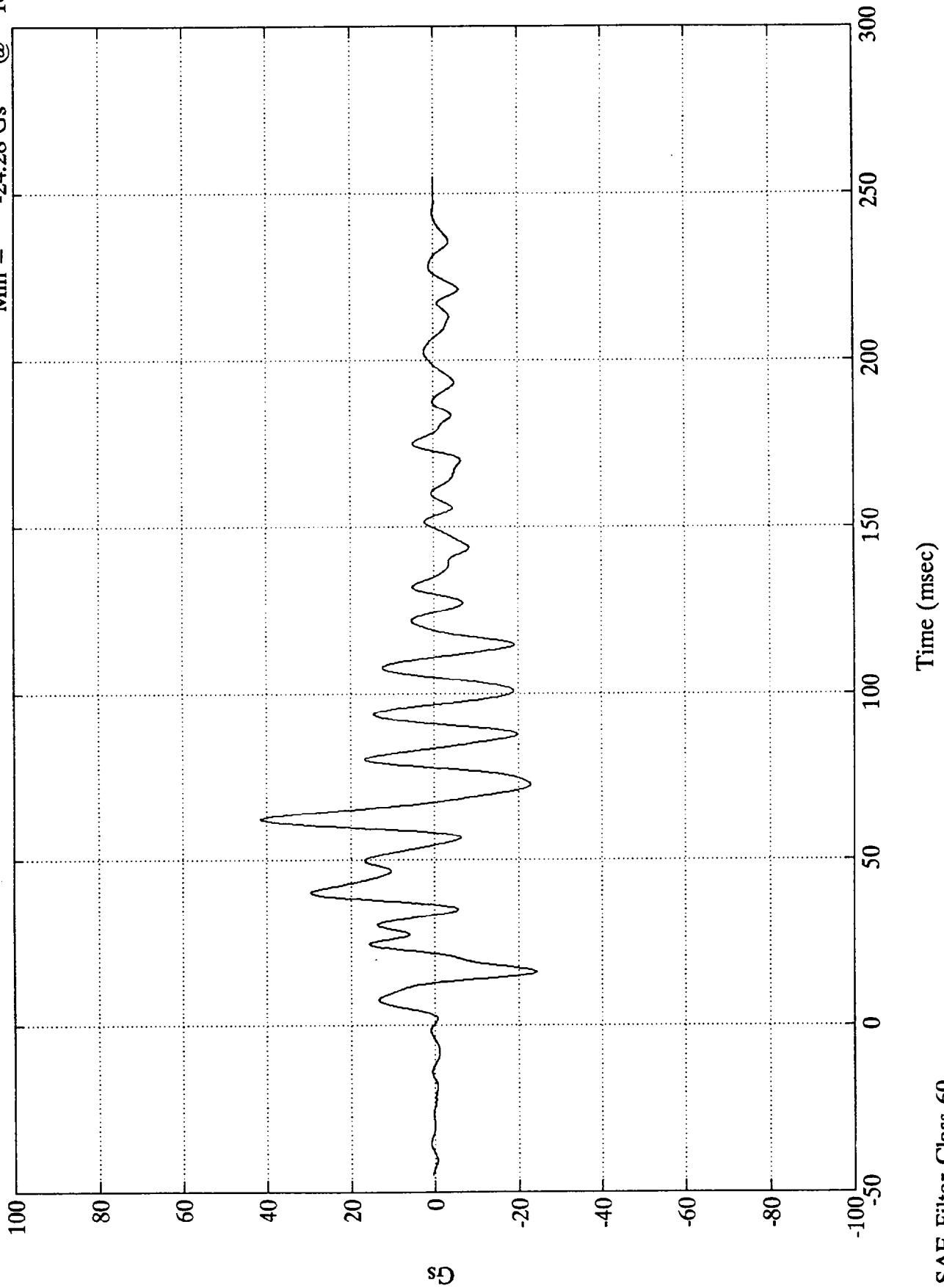
Max = 1.99 in. @ 254.88 msec
Min = -0.22 in. @ 139.44 msec

Acc. #8(z)



NCAP TEST 1991 TOYOTA TERCEL

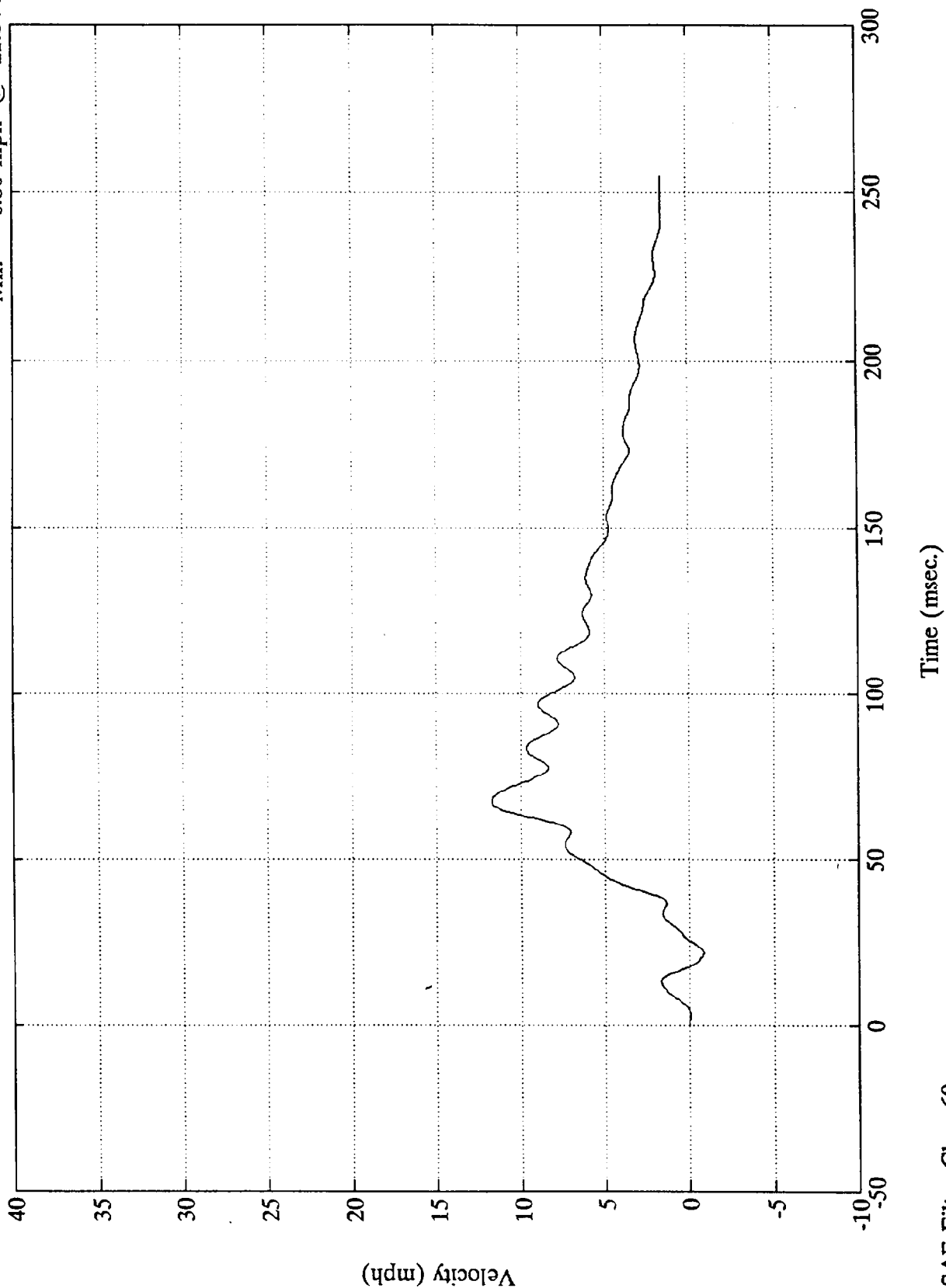
Acc. #9(z) Max = 41.39 Gs @ 62.27 msec
Min = -24.28 Gs @ 16.19 msec



NCAP TEST 1991 TOYOTA TERCEL

Acc. #9(z)

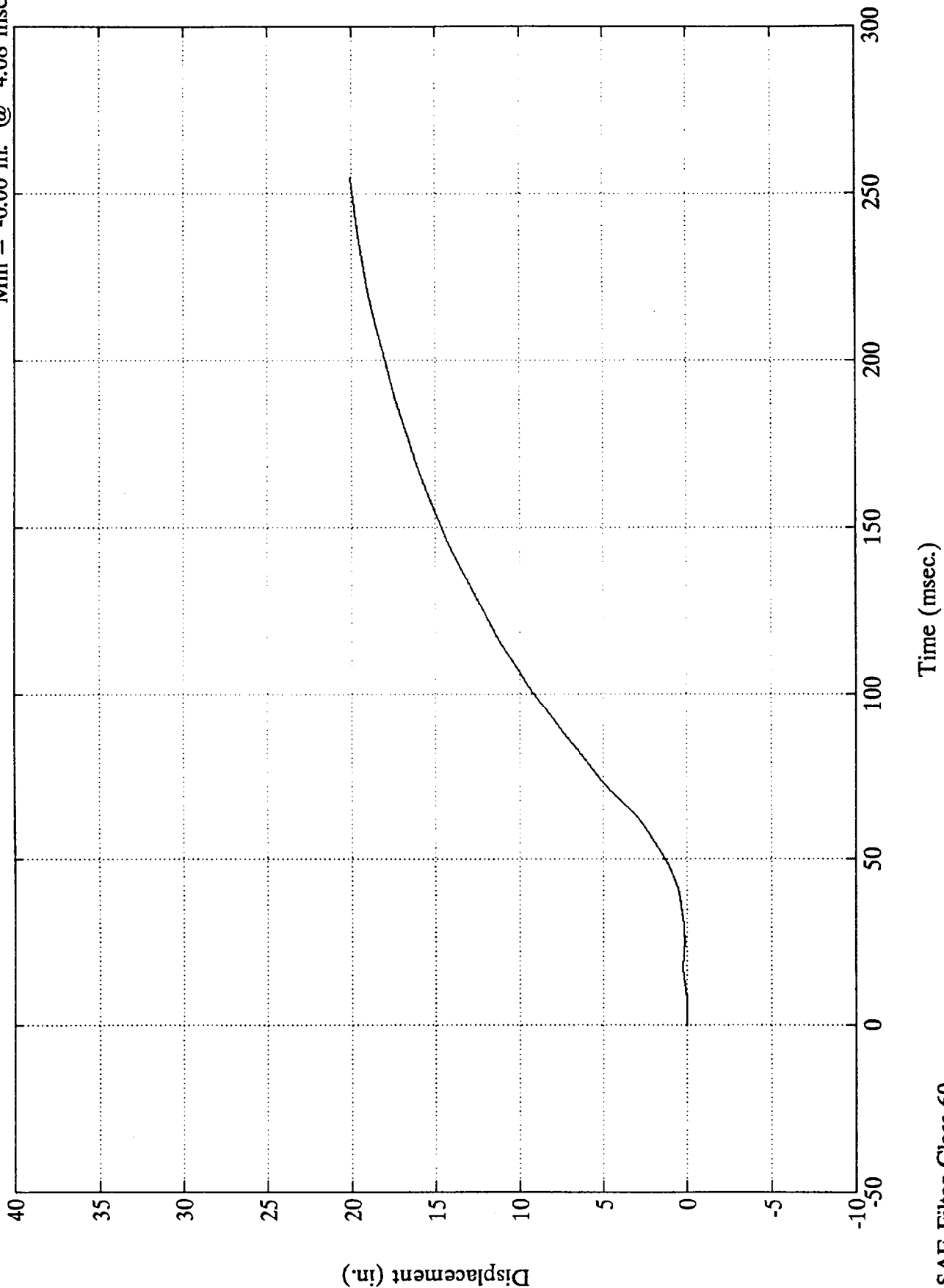
Max = 11.73 mph @ 67.44 msec
Min = -0.80 mph @ 21.84 msec



NCAP TEST 1991 TOYOTA TERCEL

Acc. #9(z)

Max = 20.06 in. @ 254.88 msec
Min = -0.00 in. @ 4.08 msec



TEST NO. MM5102

LOAD CELL BARRIER DATA

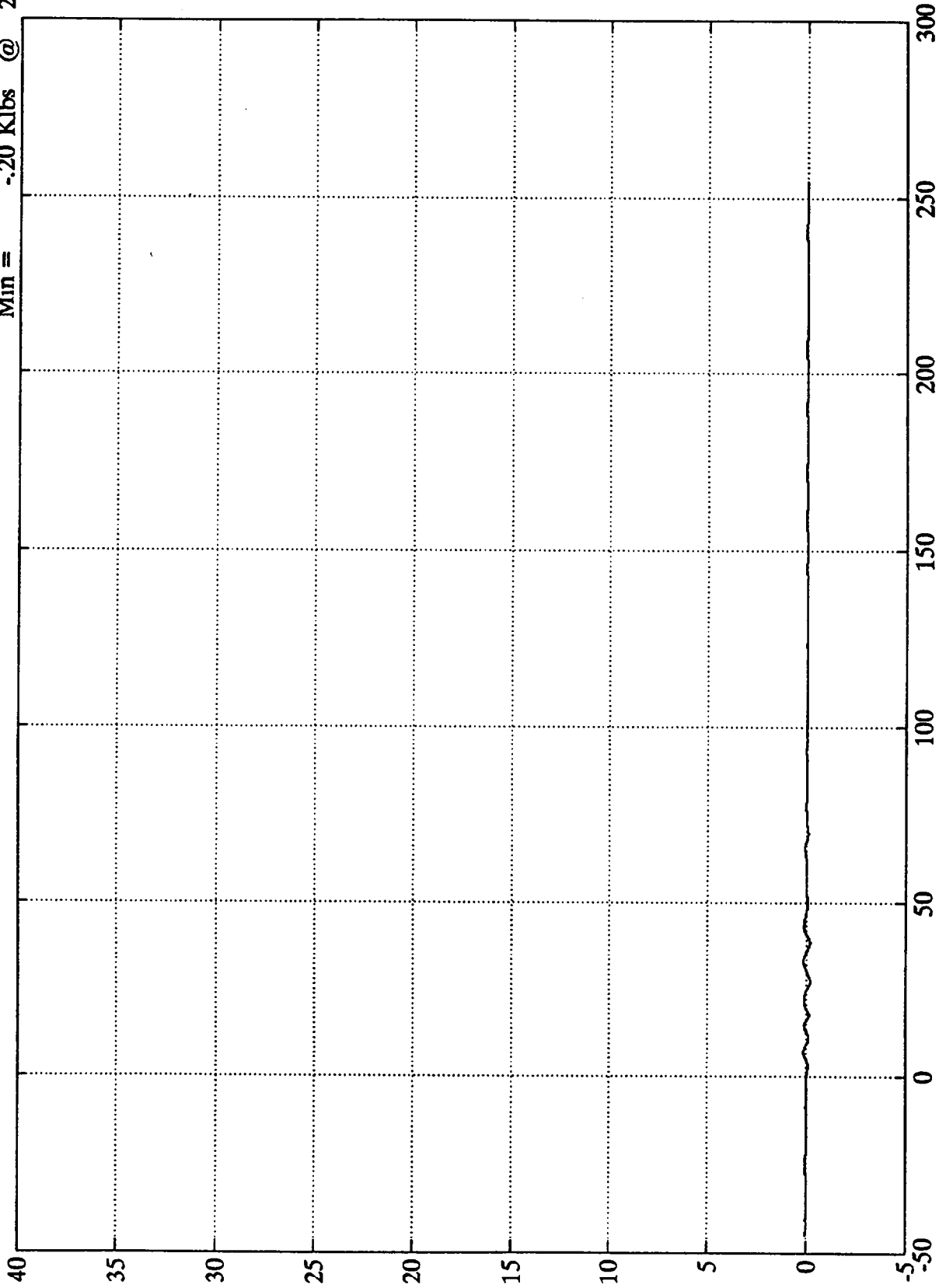
FILTER CHANNEL CLASS

60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell A1

Max =	.13 Klbs	@	33.24	msec
Min =	-.20 Klbs	@	27.36	msec



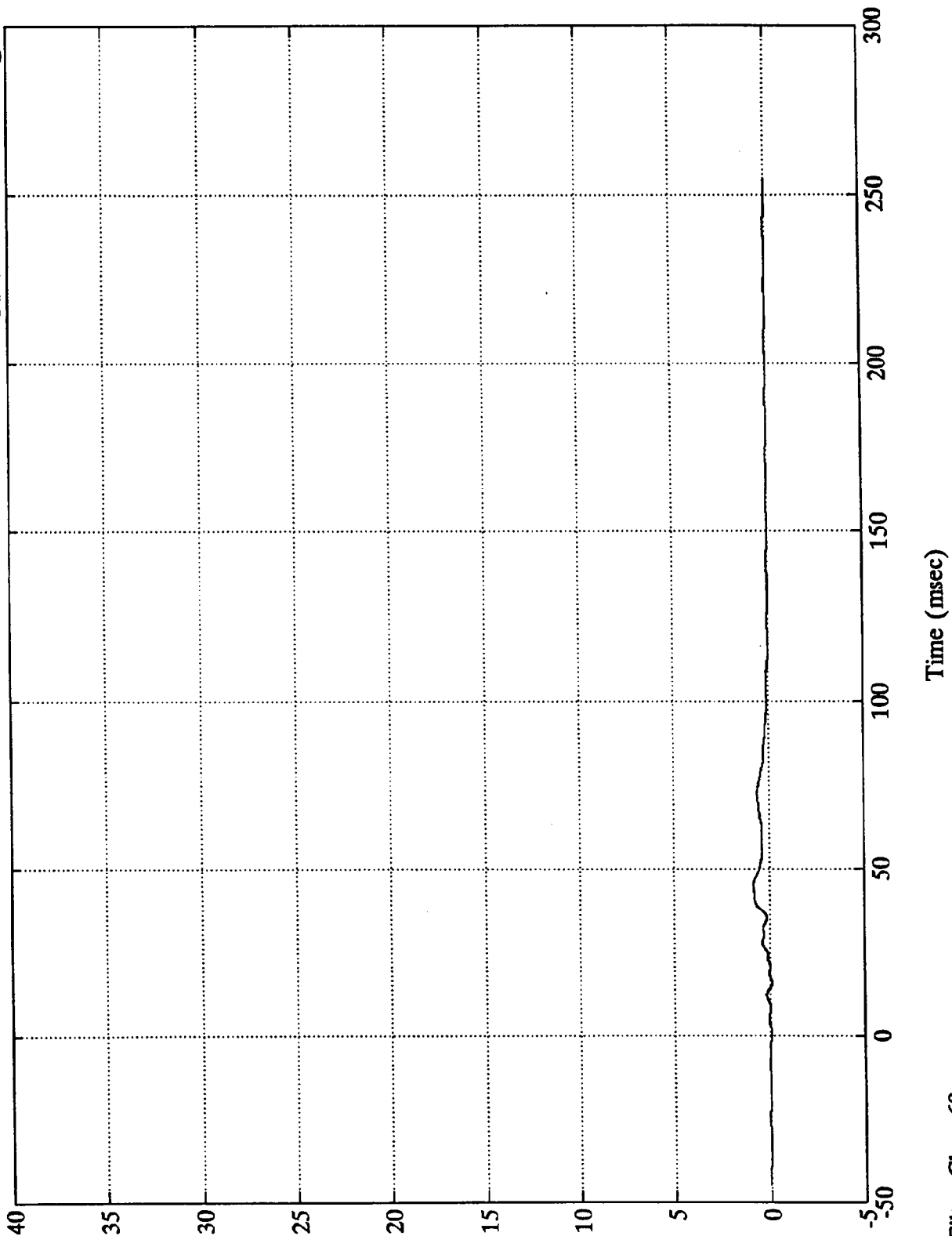
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell A2

Max = .85 Klbs @ 44.87 msec
 Min = -.12 Klbs @ 15.83 msec



B-32

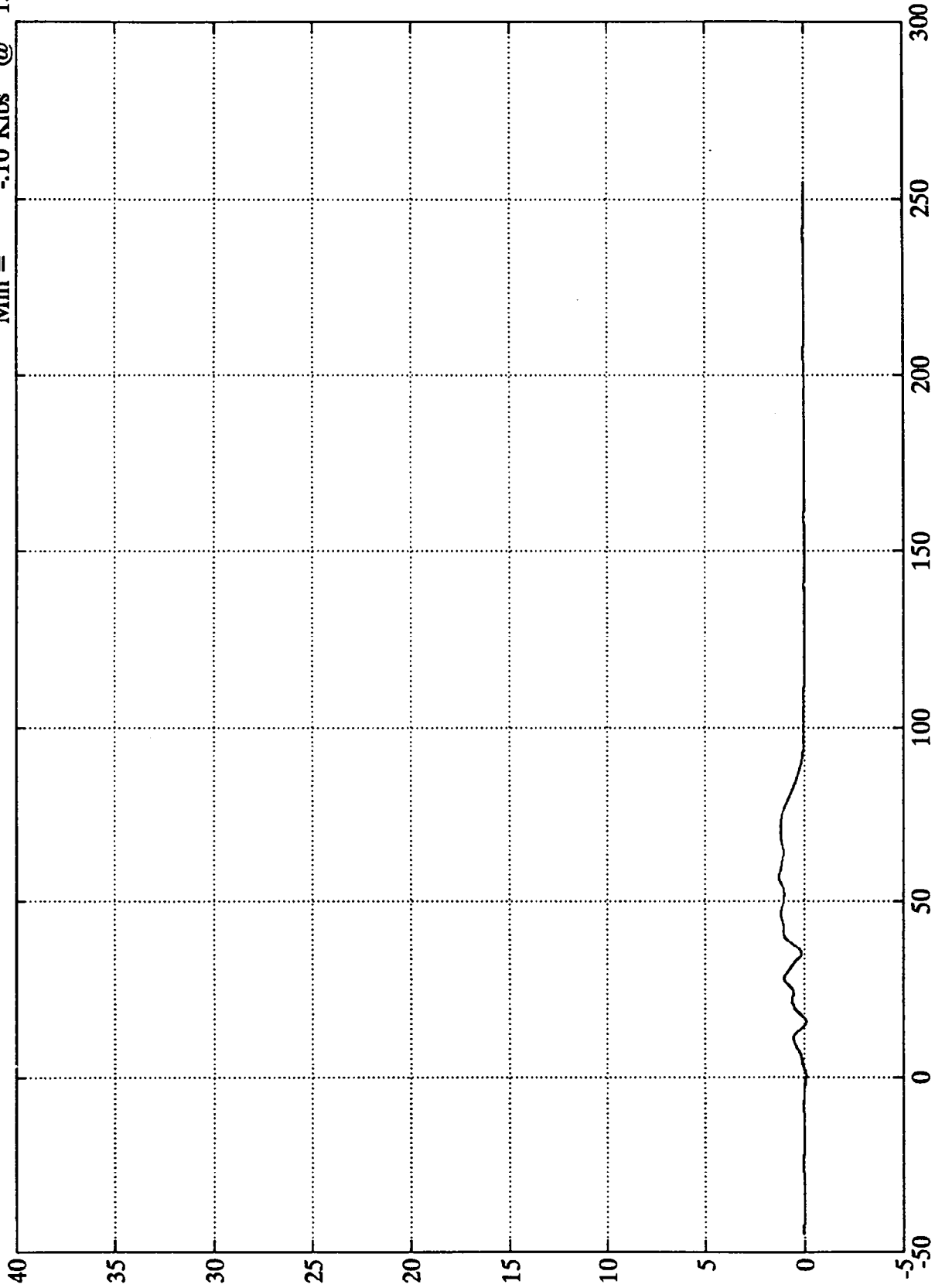
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell A3

Max =	1.29 Klbs	@	56.76 msec
Min =	-1.10 Klbs	@	15.71 msec



Klbs
B-33

7893-7

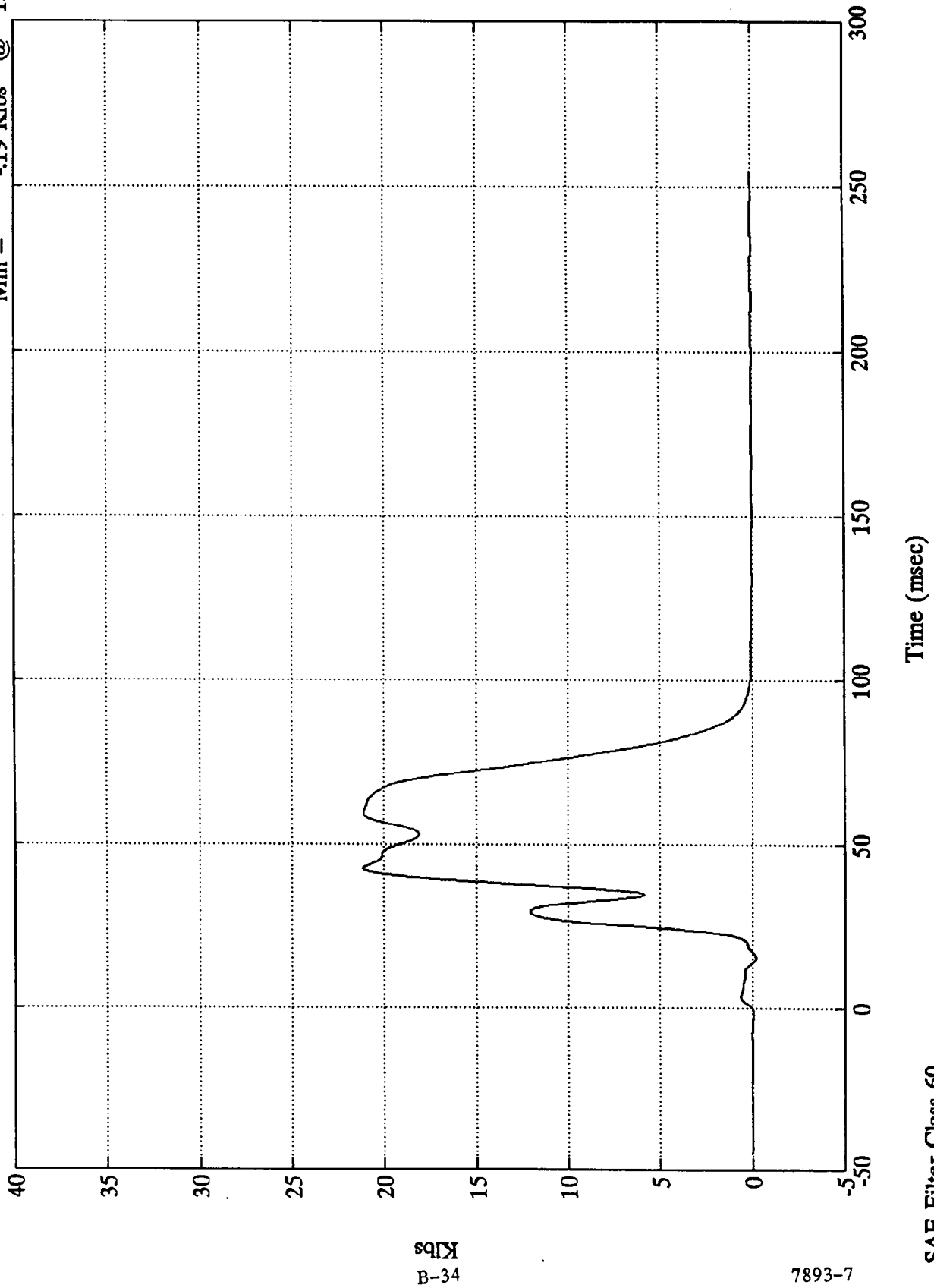
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell A4

Max = 21.18 Klbs @ 42.60 msec
Min = -1.19 Klbs @ 15.47 msec



Klbs
B-34

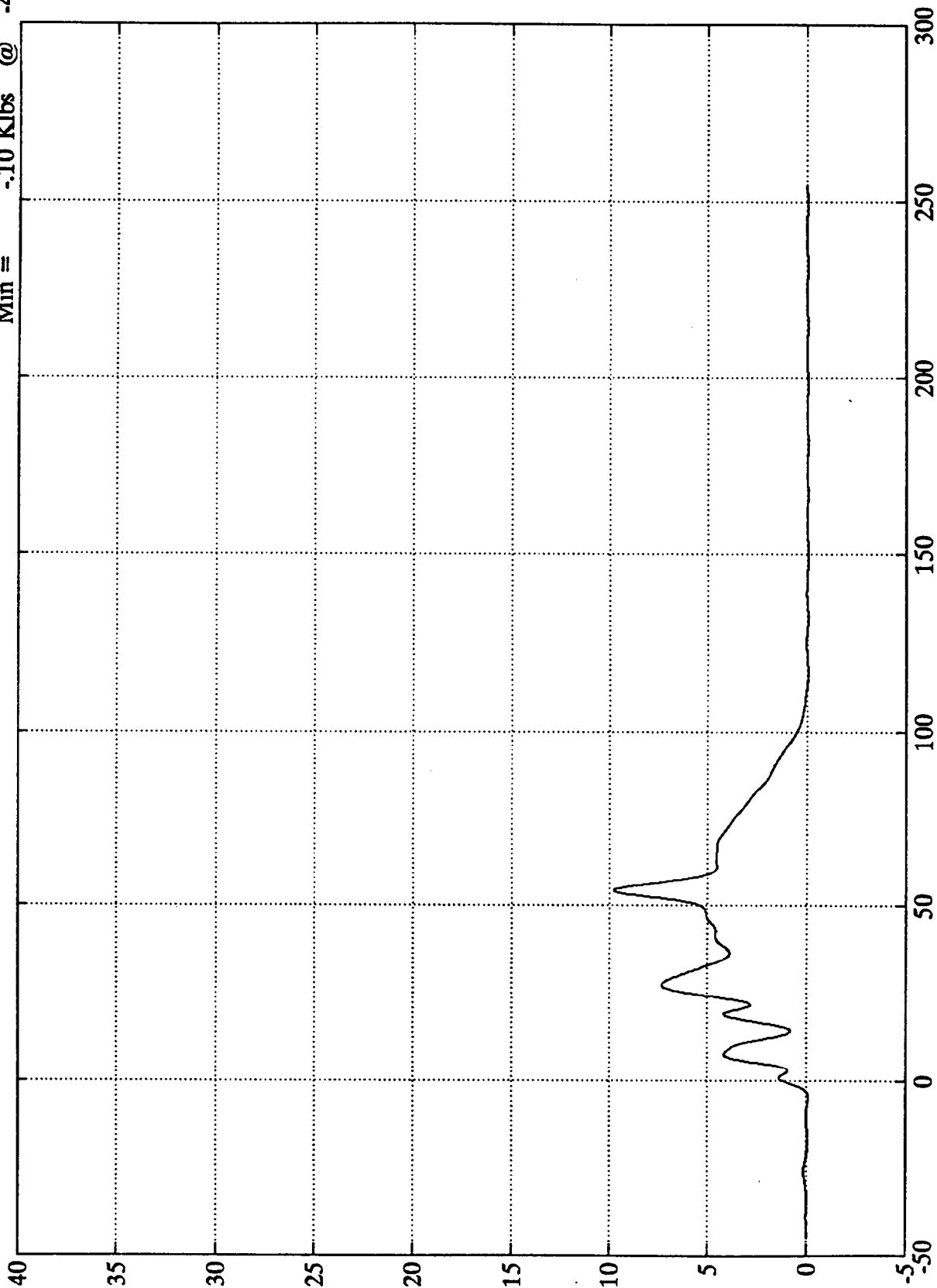
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell A5

Max = 9.78 Klbs @ 54.23 msec
Min = -10 Klbs @ -4.80 msec



Klbs
B-35

7893-7

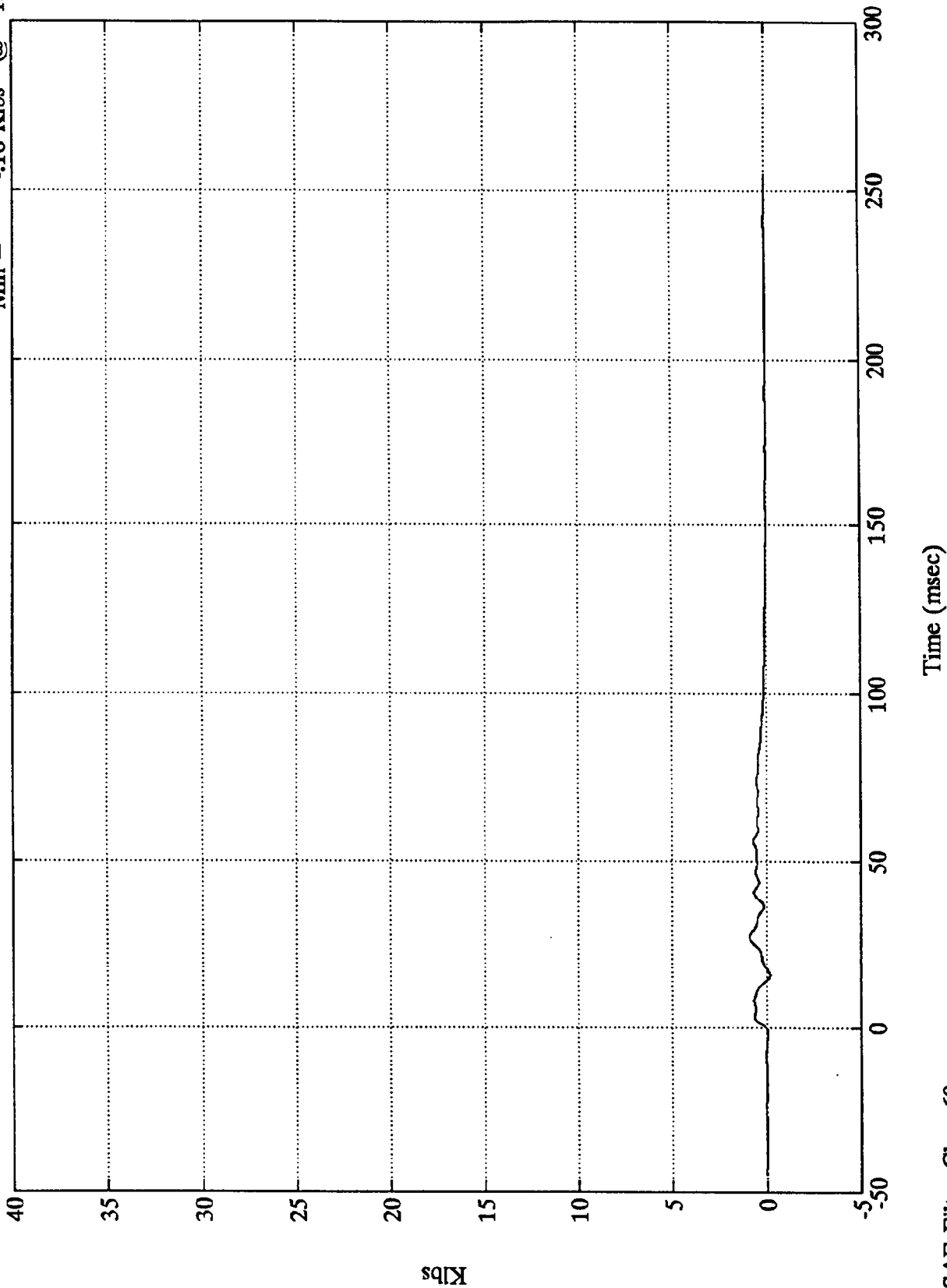
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = .90 Klbs @ 27.36 msec
Min = -.18 Klbs @ 15.71 msec

Barrier Load Cell A6



B-36

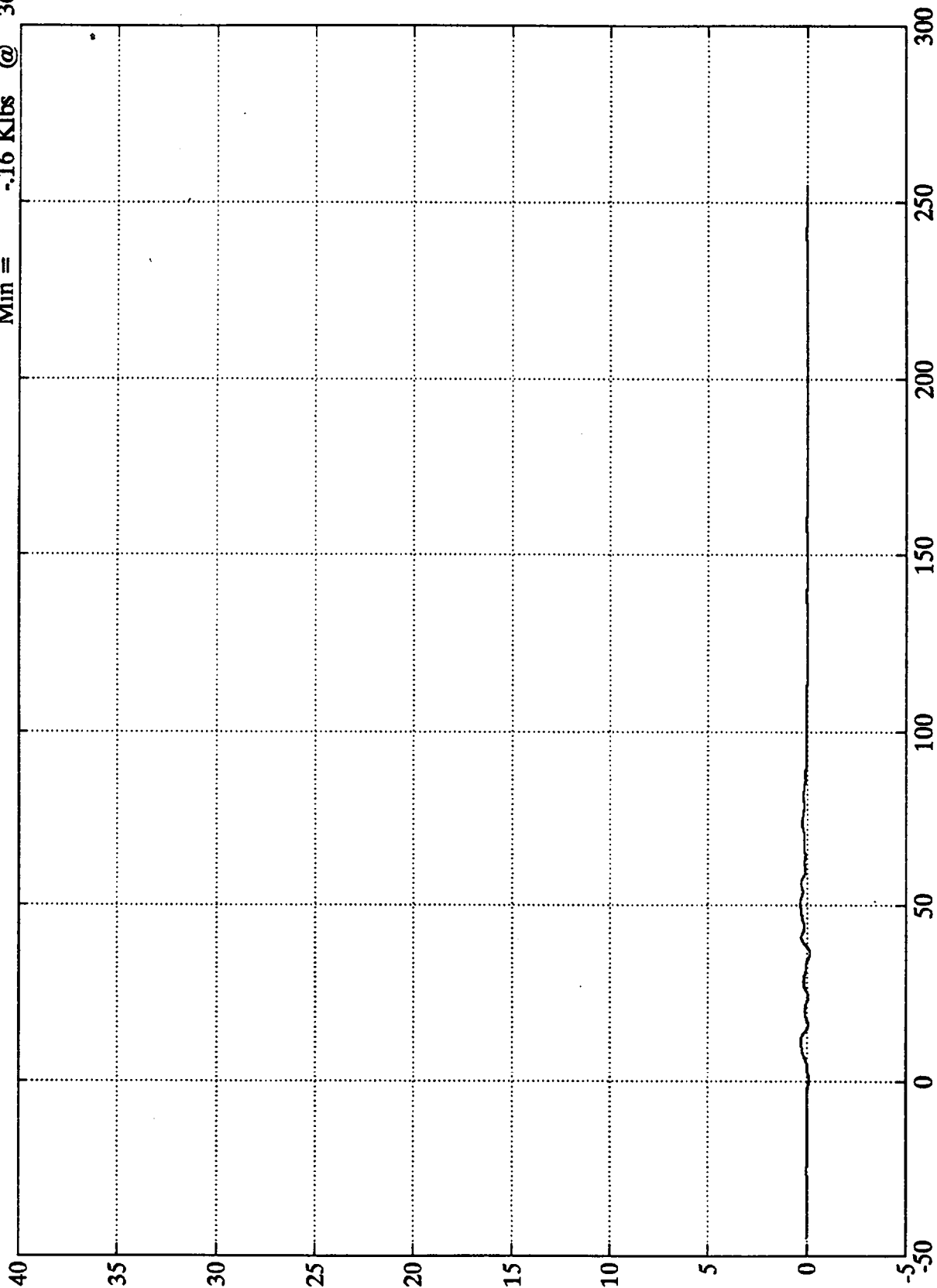
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell A7

Max = .33 Klbs @ 50.52 msec
Min = -.16 Klbs @ 36.47 msec



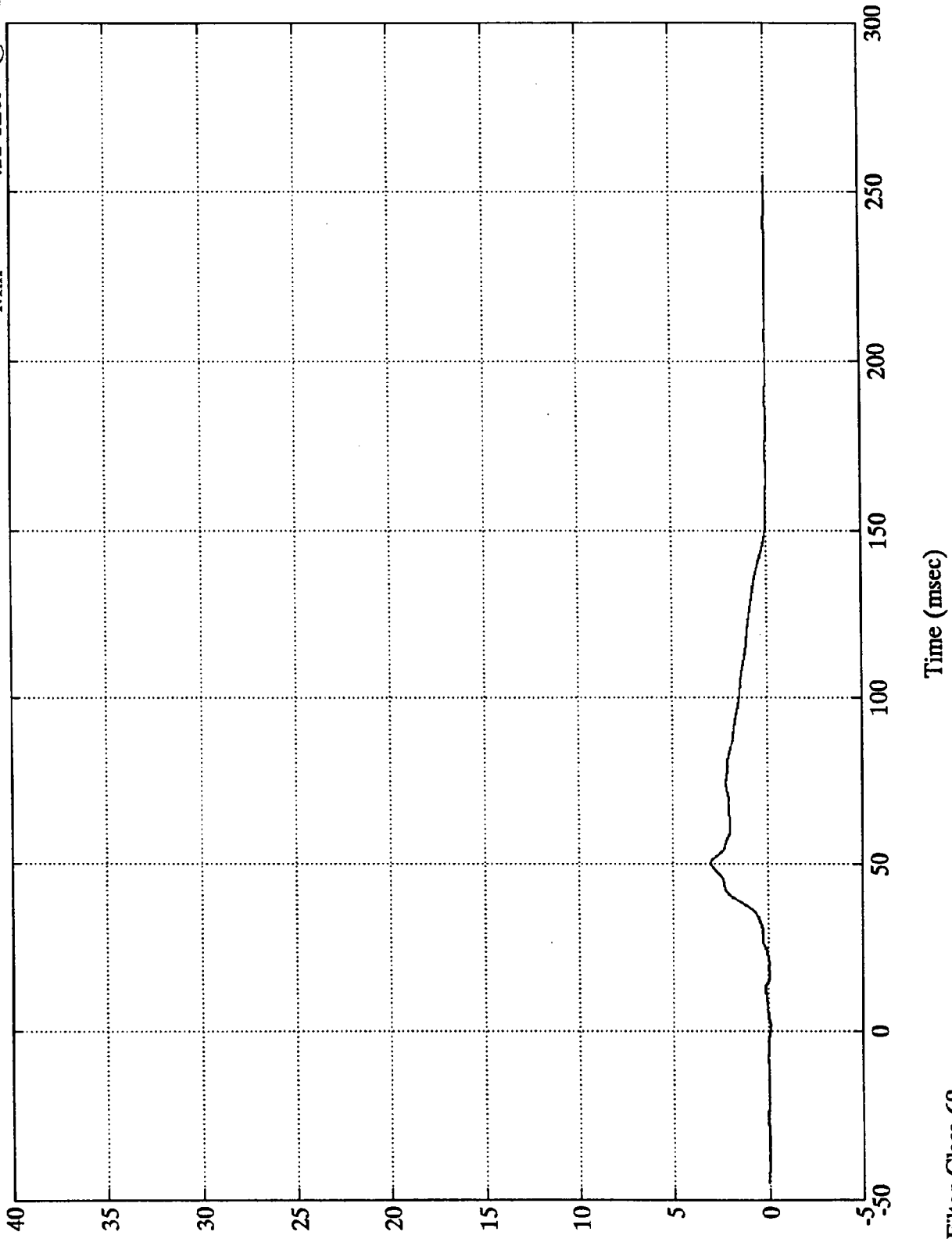
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 3.03 Klbs @ 50.28 msec
Min = -1.11 Klbs @ 1.07 msec

Barrier Load Cell A8



Klbs
B-38

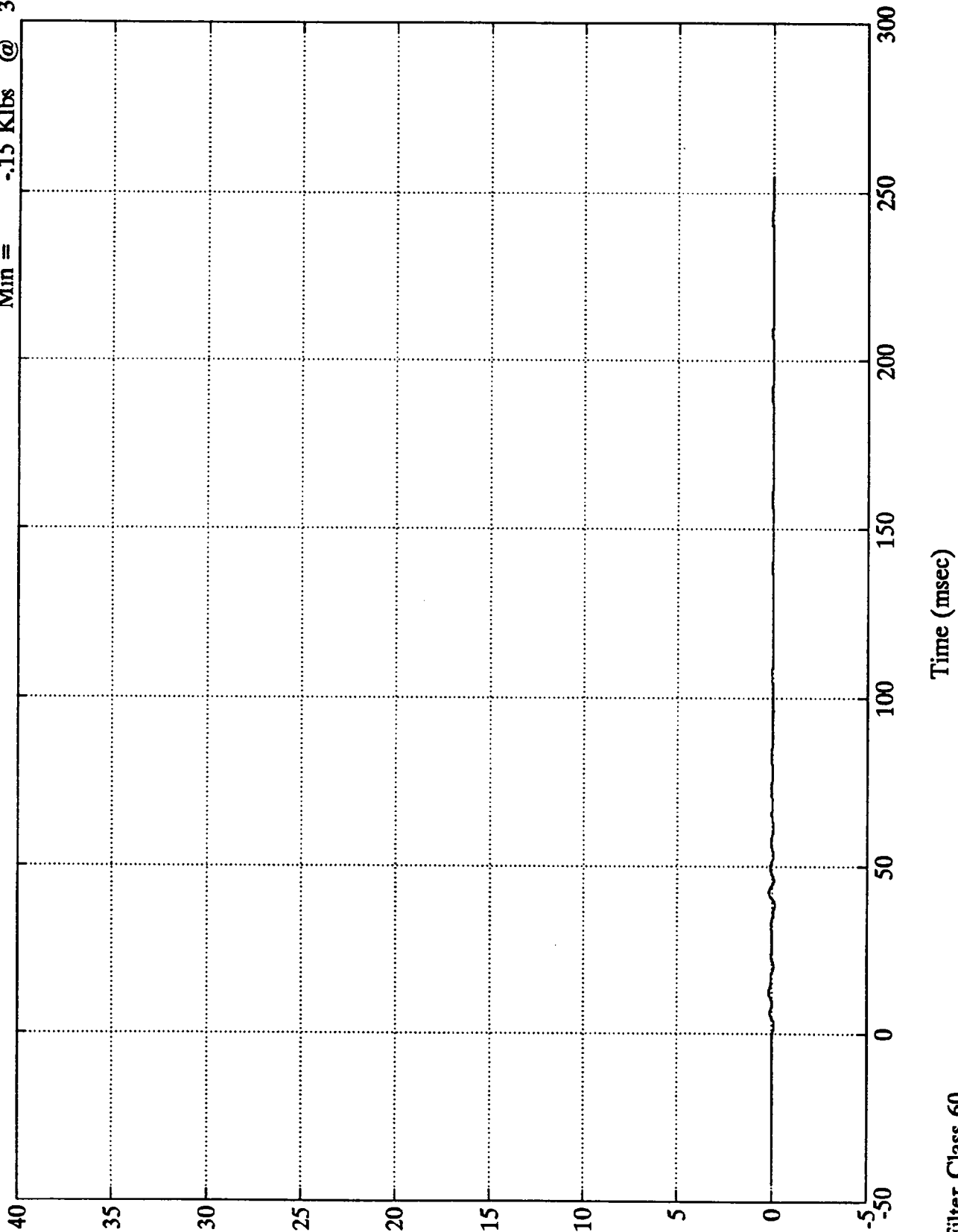
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell A9

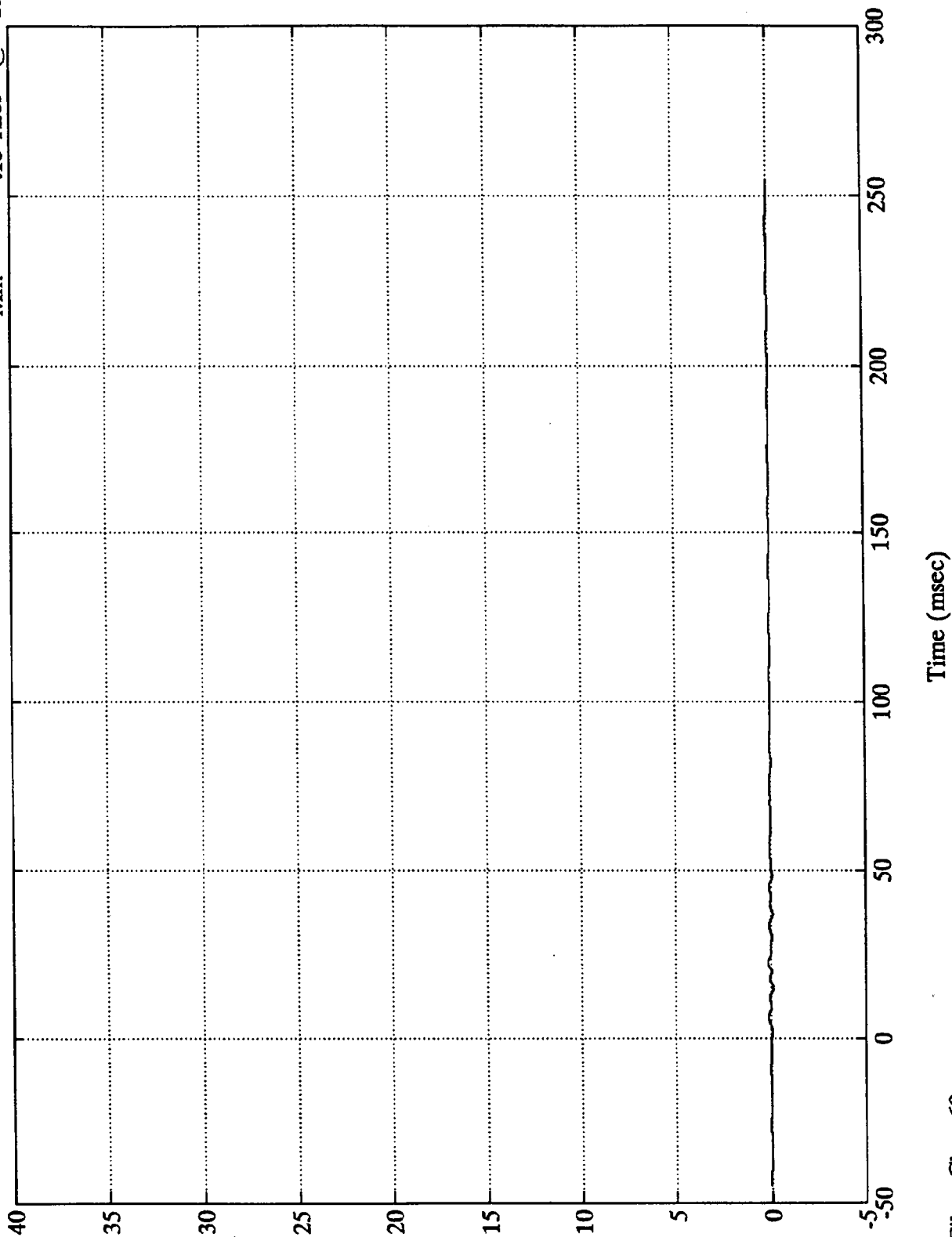
Max = .16 Klbs @ 42.36 msec
Min = -.15 Klbs @ 38.63 msec



NCAP TEST 1991 TOYOTA TERCEL

Max = .15 Klbs @ 22.68 msec
Min = -.13 Klbs @ 15.00 msec

Barrier Load Cell B1



Klbs
B-40

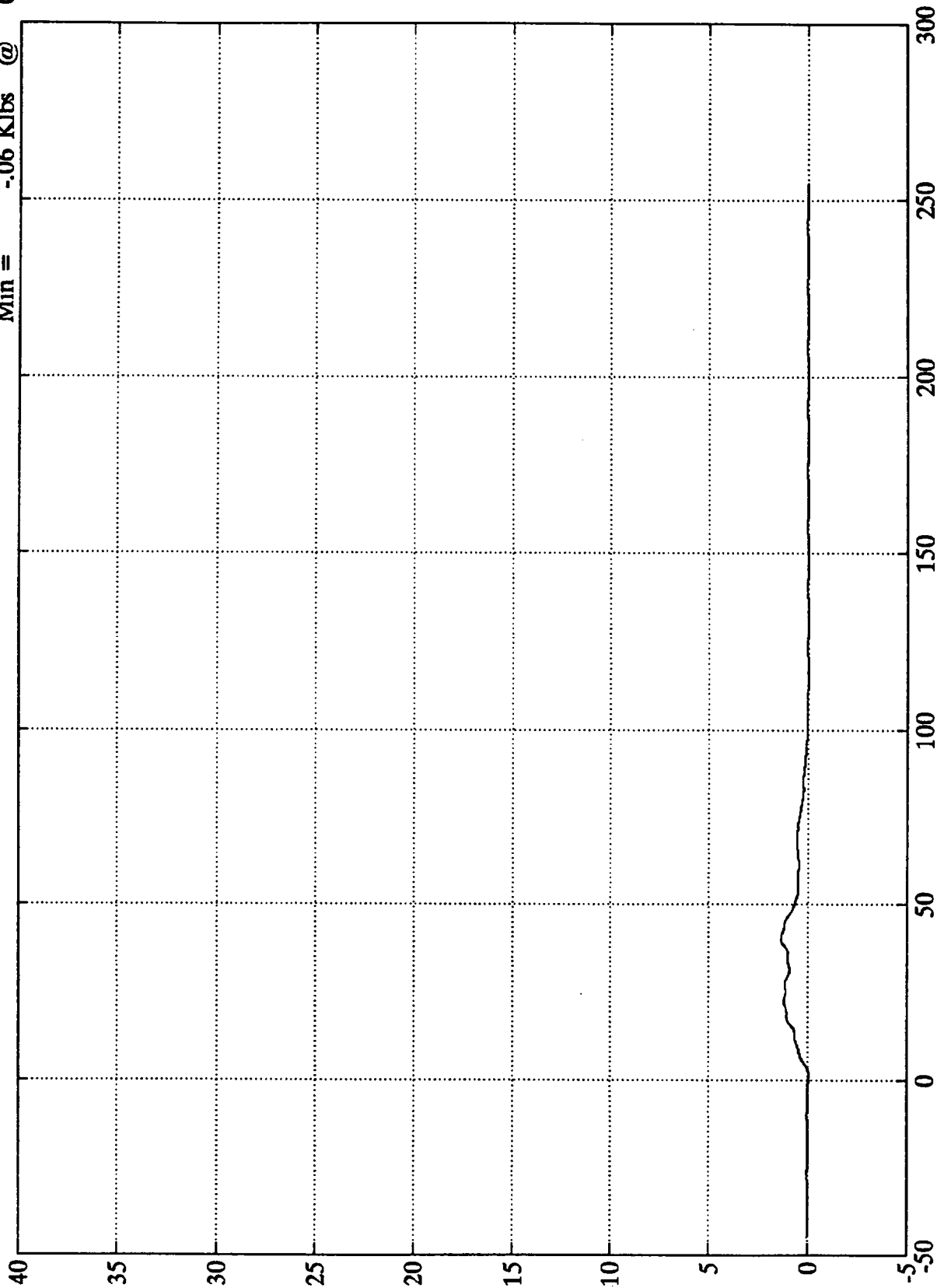
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell B2

Max =	1.37 Klbs	@	40.19 msec
Min =	-0.06 Klbs	@	0.95 msec



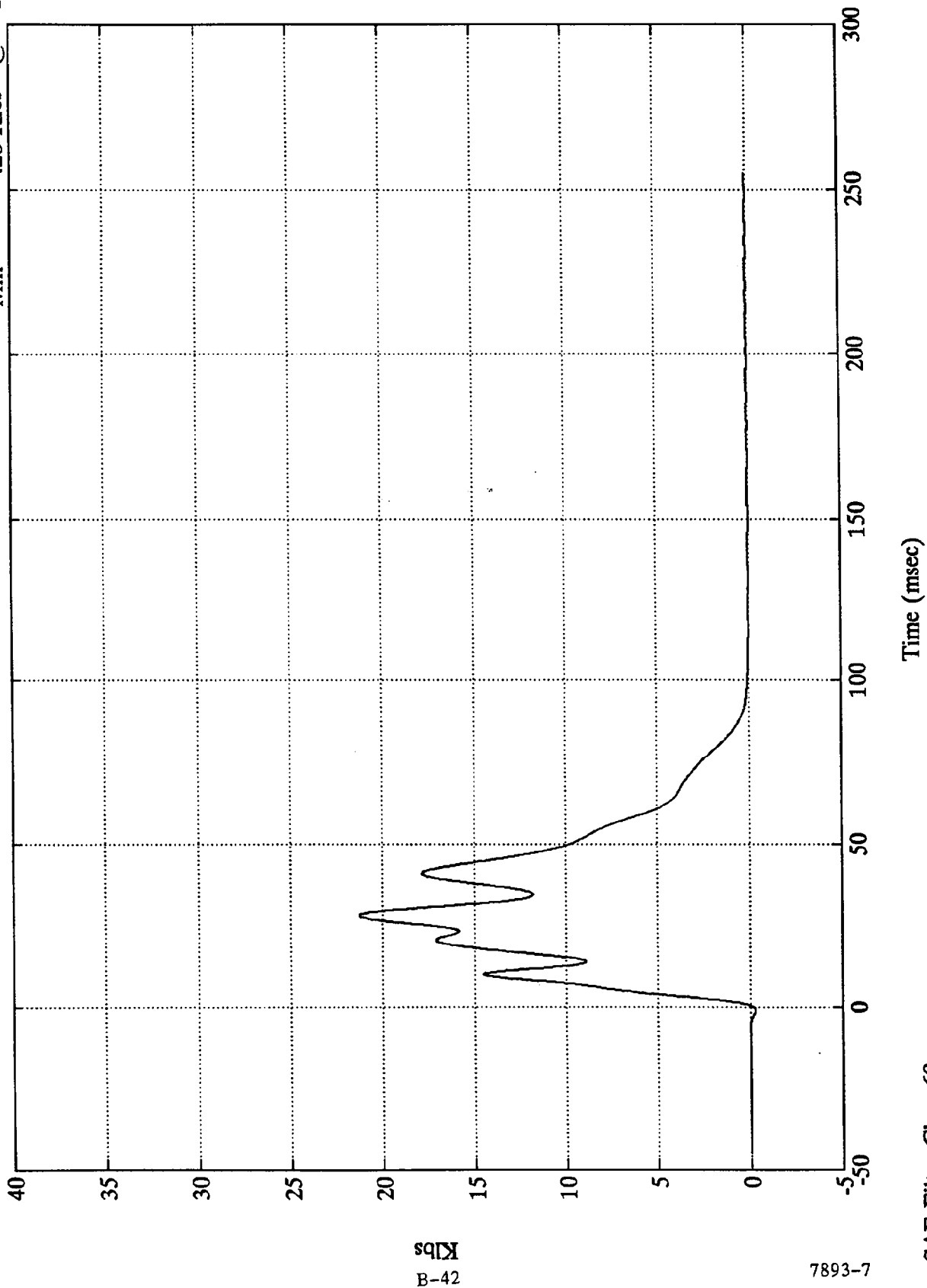
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell B3

Max = 21.27 Klbs @ 27.72 msec
Min = -.28 Klbs @ -1.08 msec



Klbs
B-42

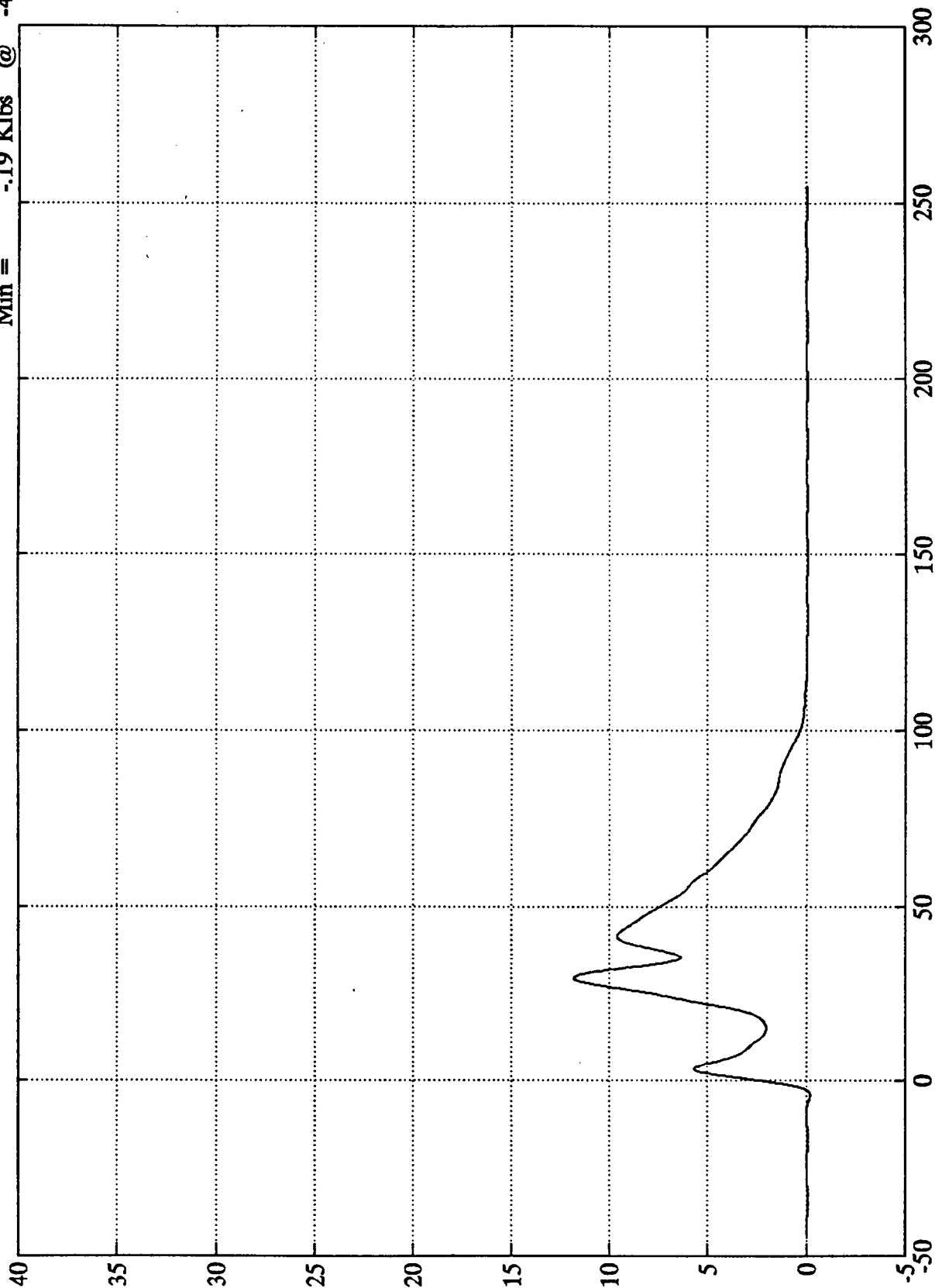
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell B4

Max = 11.81 Klbs @ 29.39 msec
Min = -.19 Klbs @ -4.32 msec



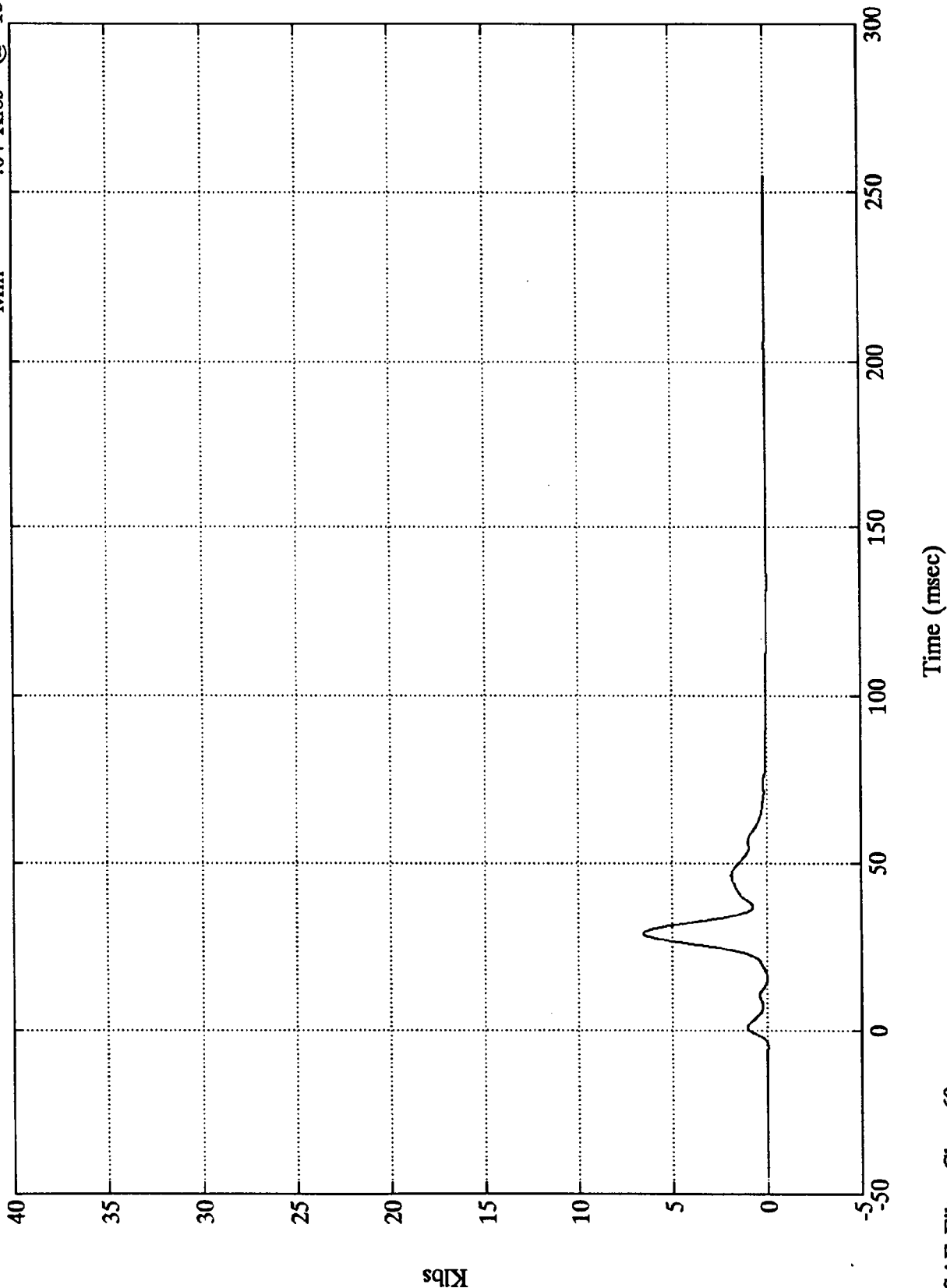
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell B5

Max = 6.54 Klbs @ 29.03 msec
Min = -.04 Klbs @ 133.80 msec



B-44

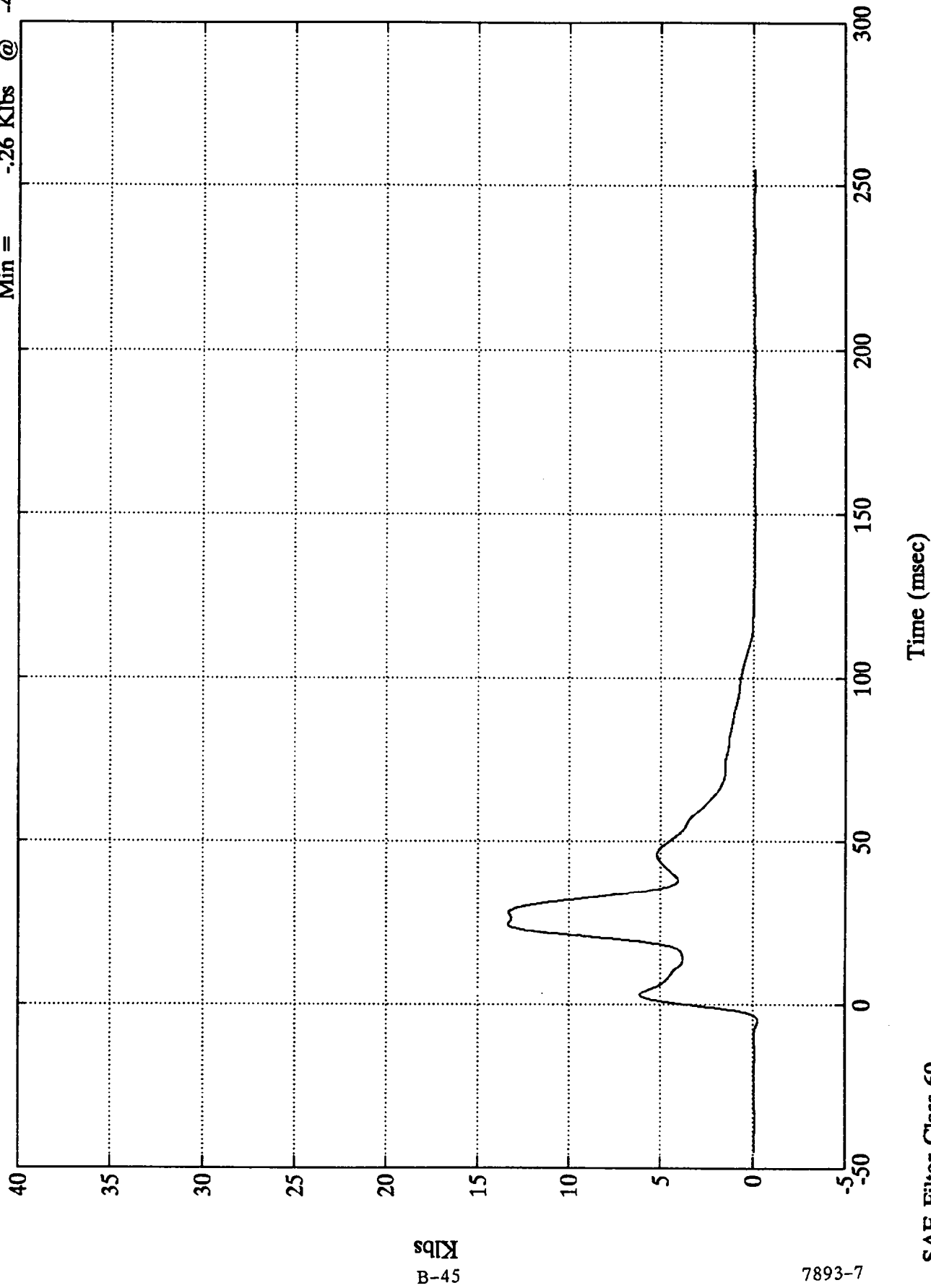
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell B6

Max = 13.34 Klbs @ 24.35 msec
Min = -26 Klbs @ -4.80 msec



Klbs
B-45

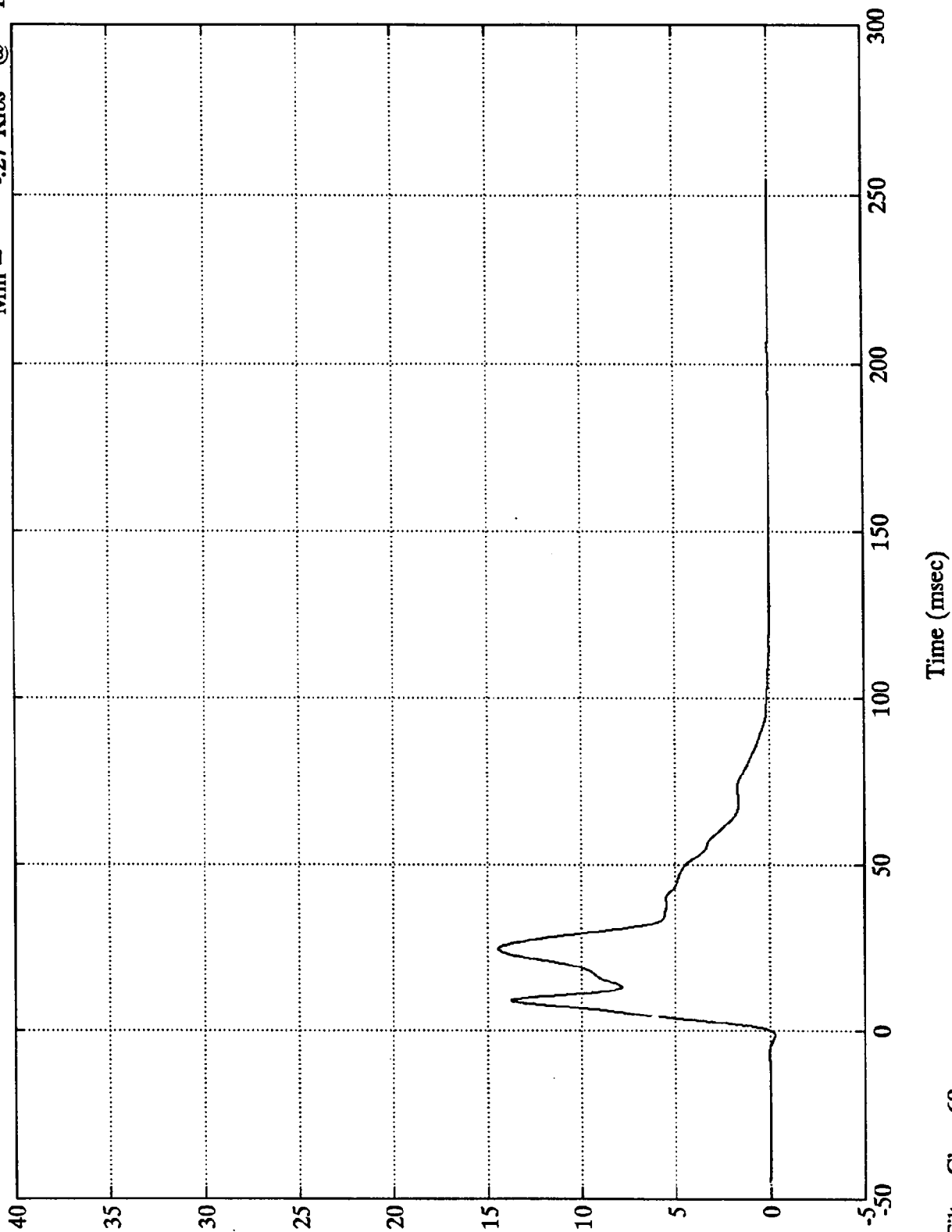
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 14.42 Klbs @ 24.59 msec
Min = -.27 Klbs @ -1.44 msec

Barrier Load Cell B7

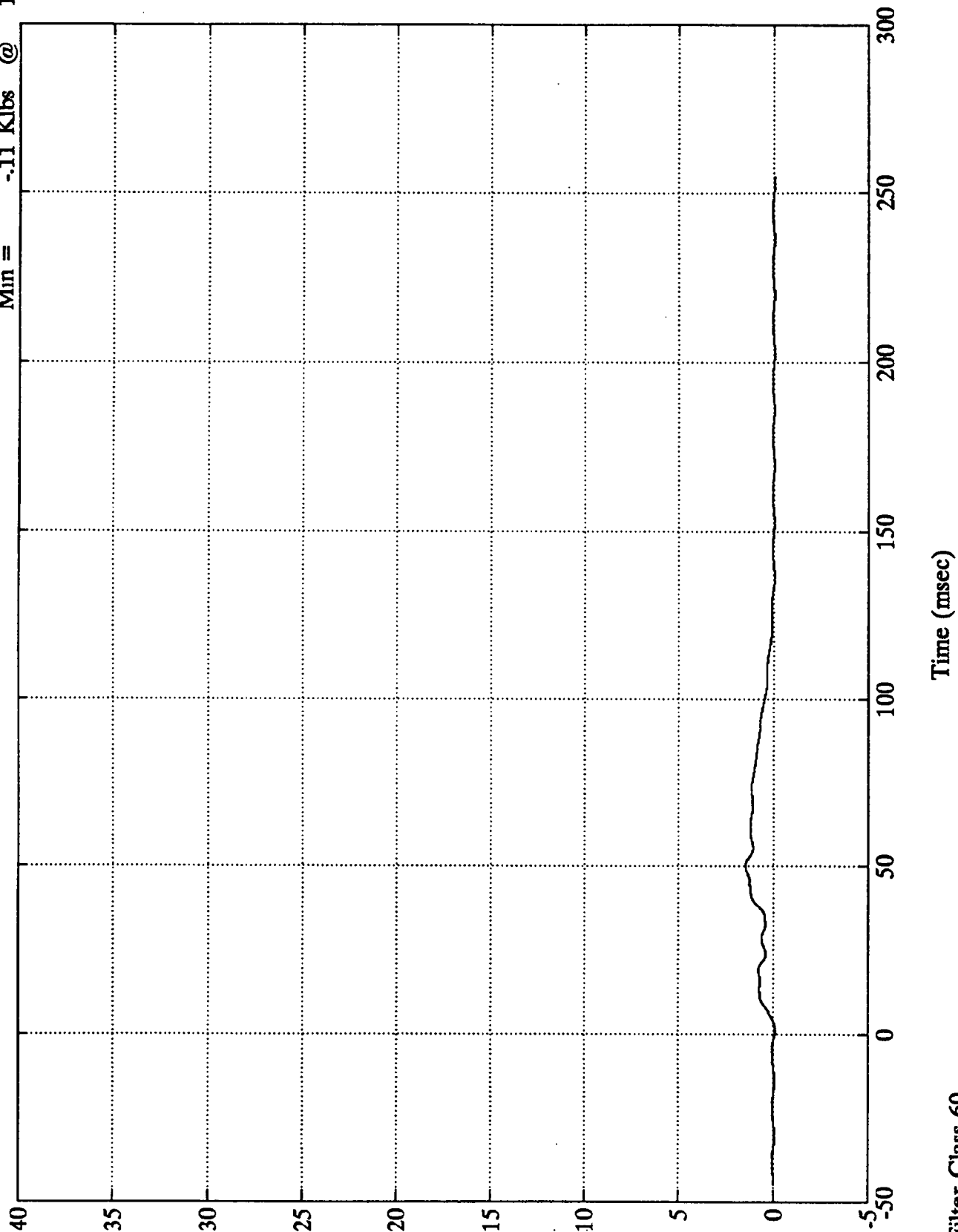


SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell B8

Max =	1.47 Klbs	@	50.04 msec
Min =	-1.1 Klbs	@	1.31 msec



Klbs
B-47

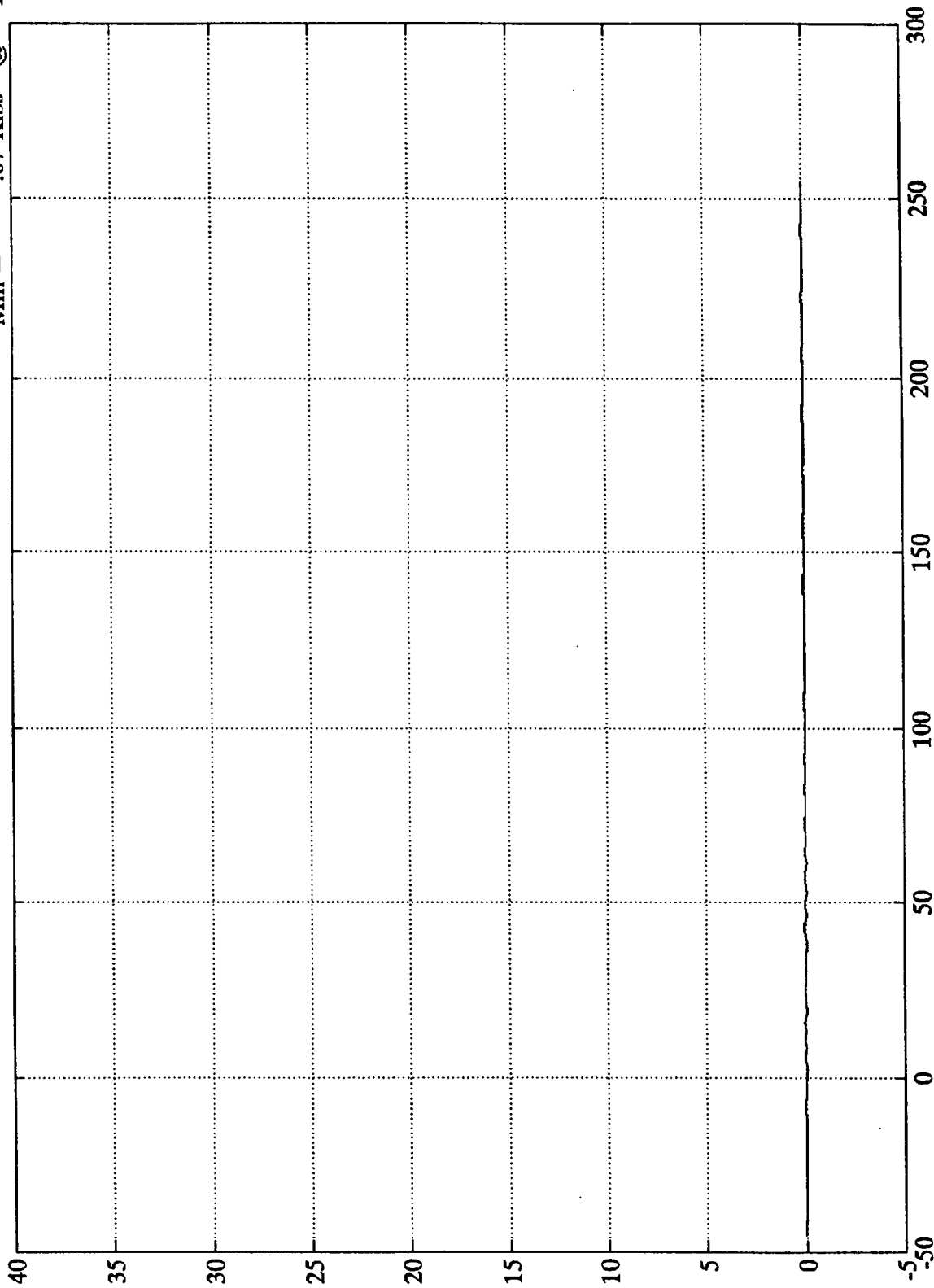
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell B9

Max =	.10 Klbs	@	42.47 msec
Min =	-.07 Klbs	@	1.79 msec



B-48
Klbs

7893-7

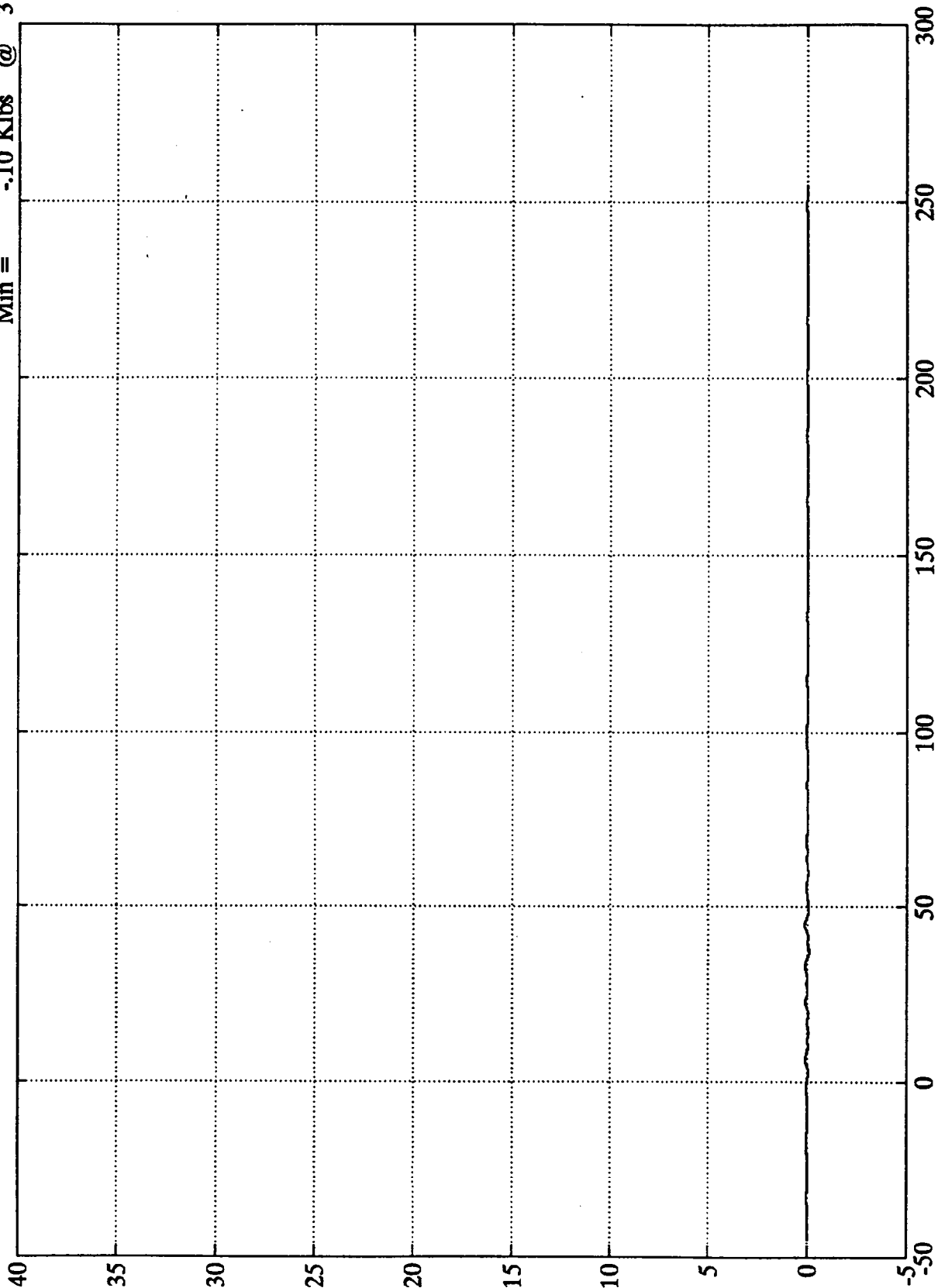
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell C1

Max = .12 Klbs @ 44.87 msec
Min = -.10 Klbs @ 37.31 msec



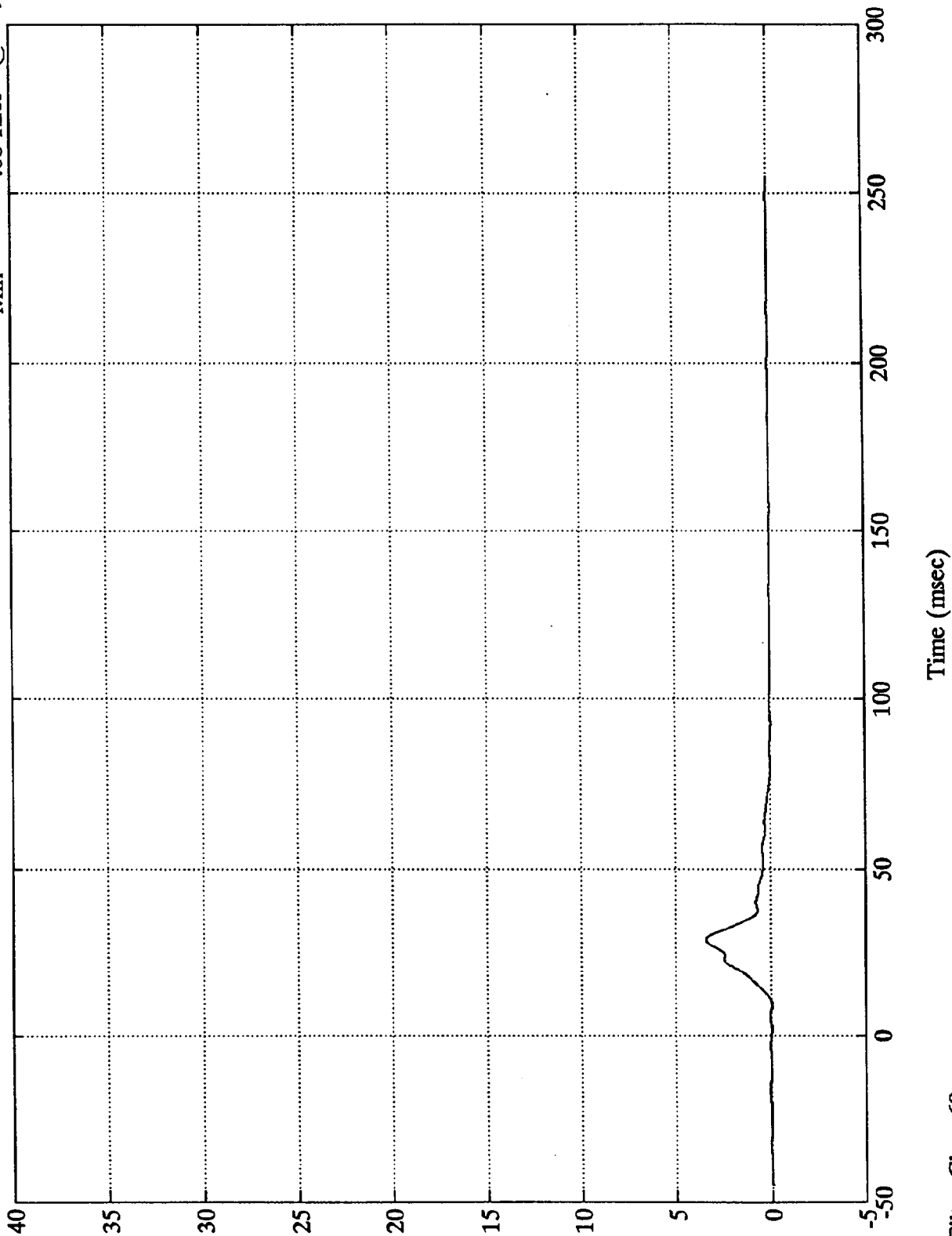
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell C2

Max = 3.42 Klbs @ 28.79 msec
Min = -.08 Klbs @ 9.11 msec



B-50

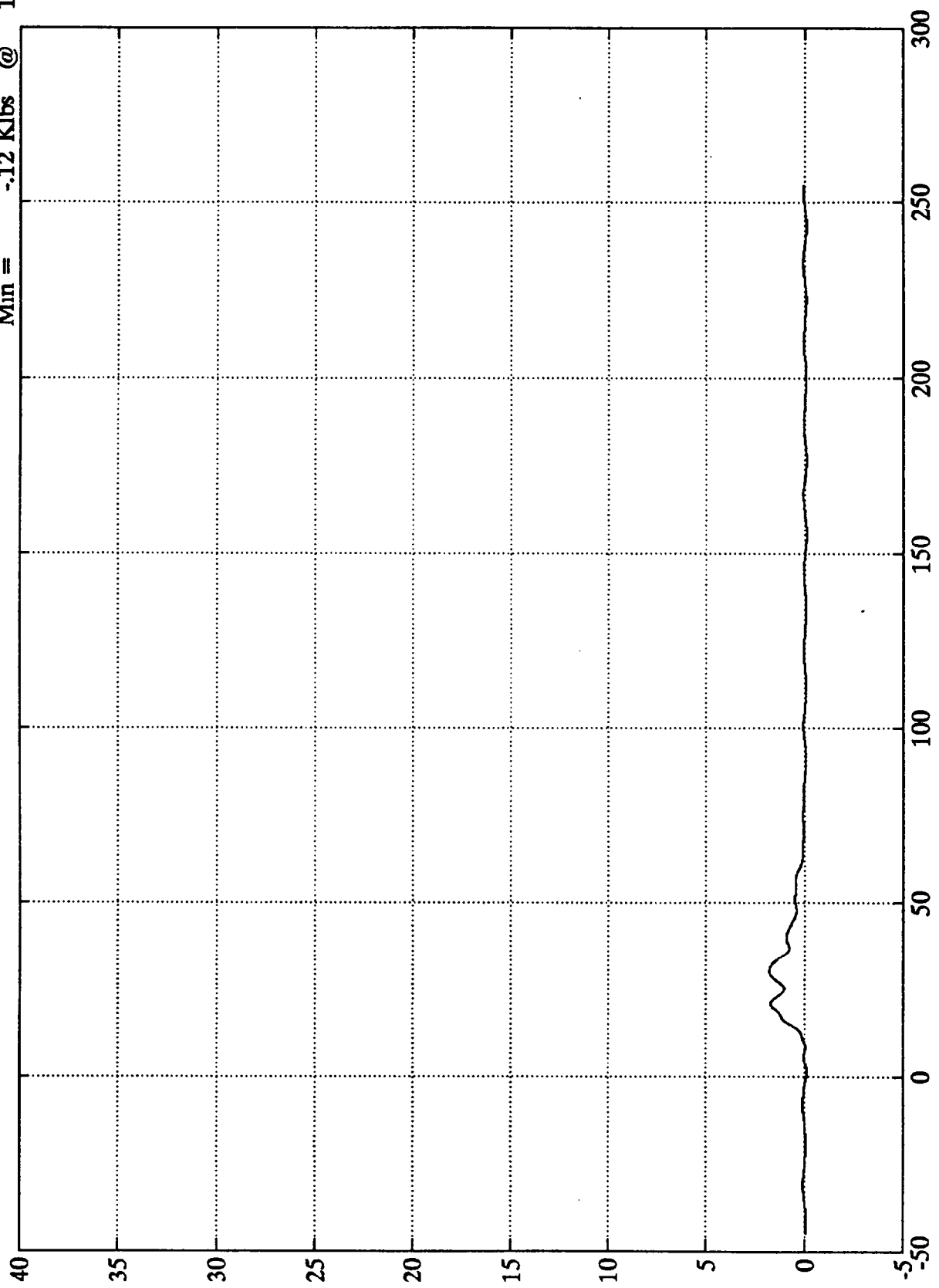
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell C3

Max =	1.77 Klbs	@	30.47 msec
Min =	-.12 Klbs	@	1.43 msec



B-51
Klbs

7893-7

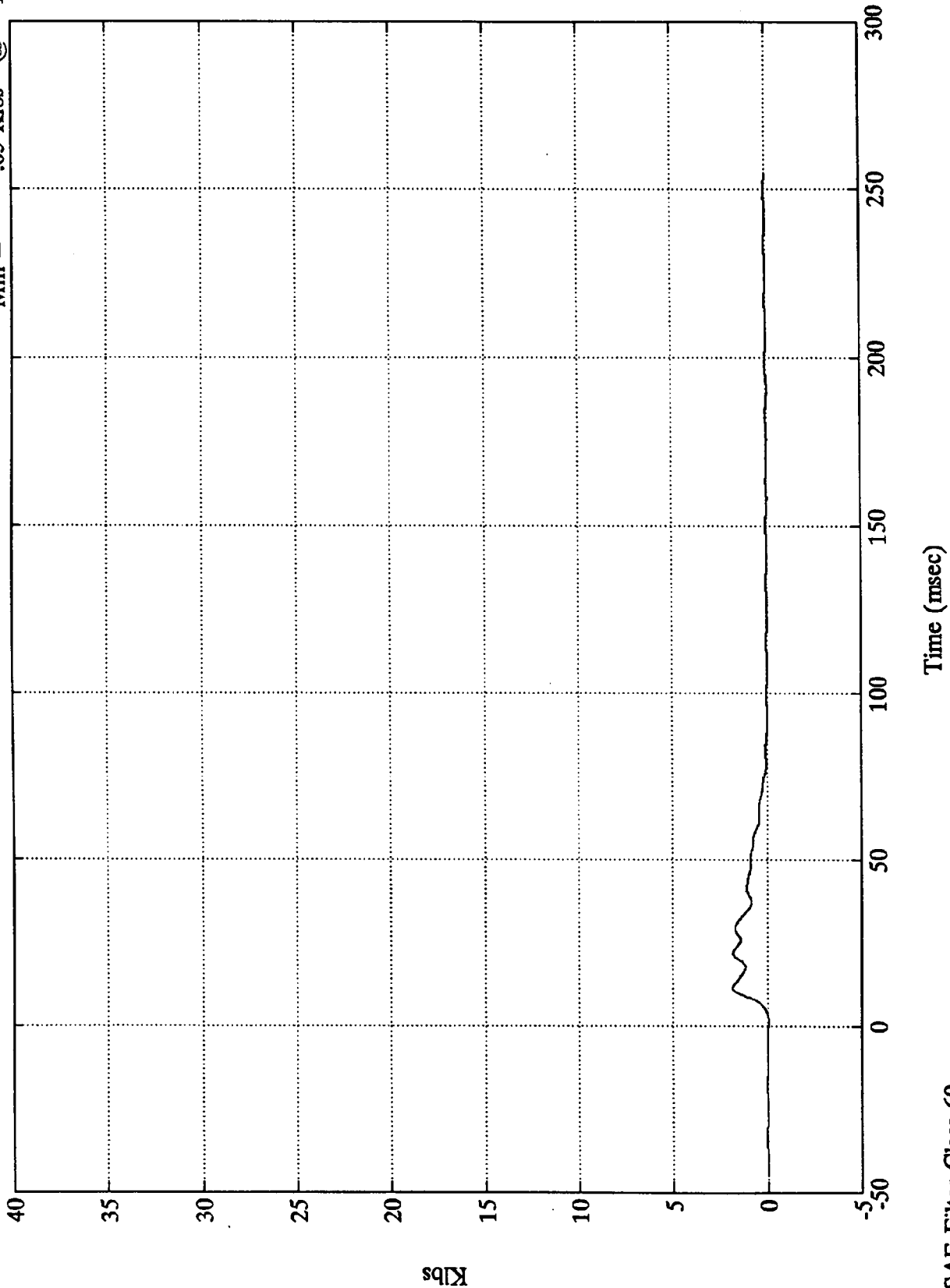
SAE Filter Class 60

Time (msec)

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell C4

Max = 1.87 Klbs @ 11.15 msec
Min = -.05 Klbs @ 1.43 msec

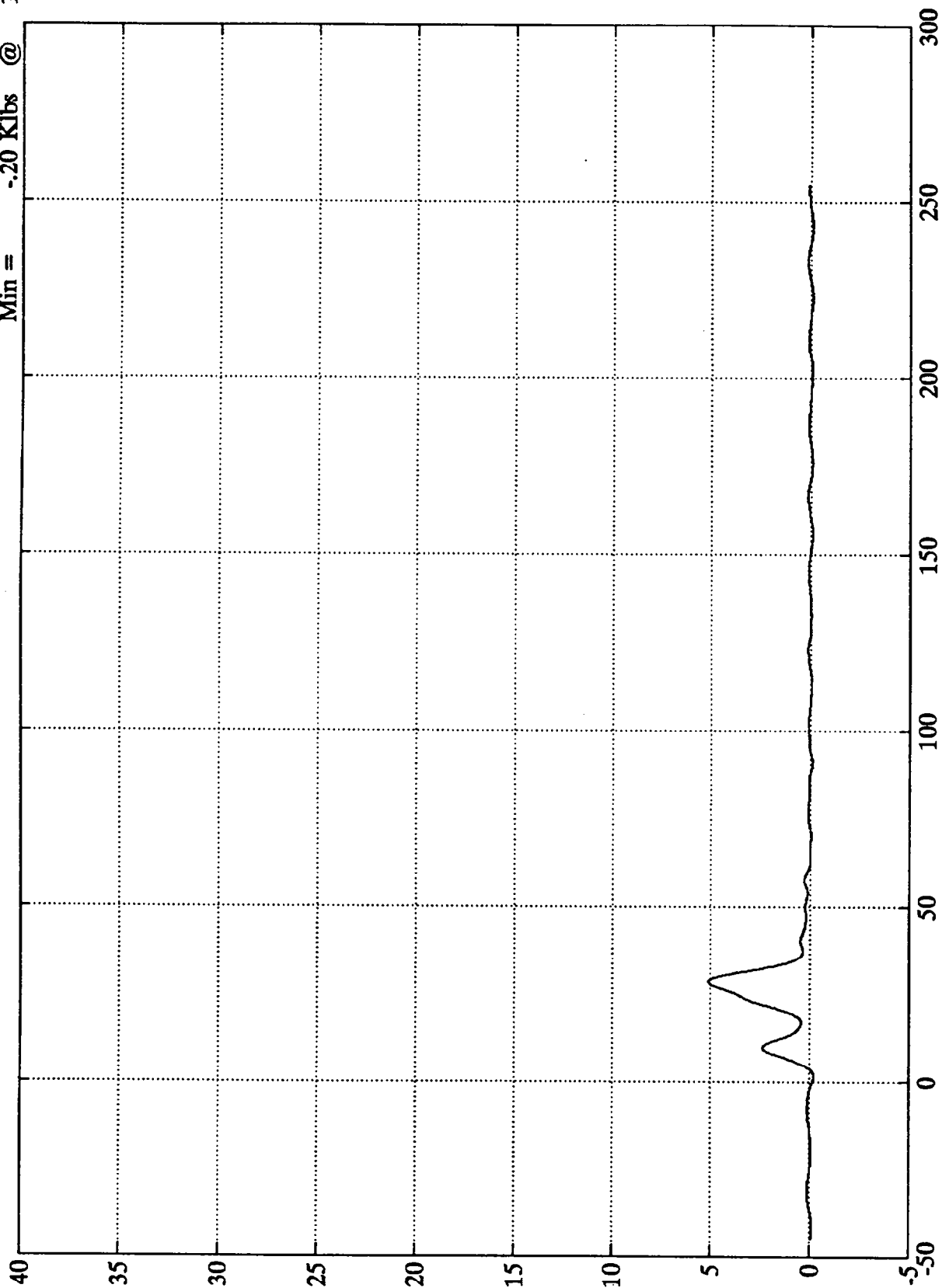


SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell C5

Max = 5.13 Klbs @ 28.44 msec
Min = -.20 Klbs @ 1.67 msec



Klbs
B-53

Time (msec)

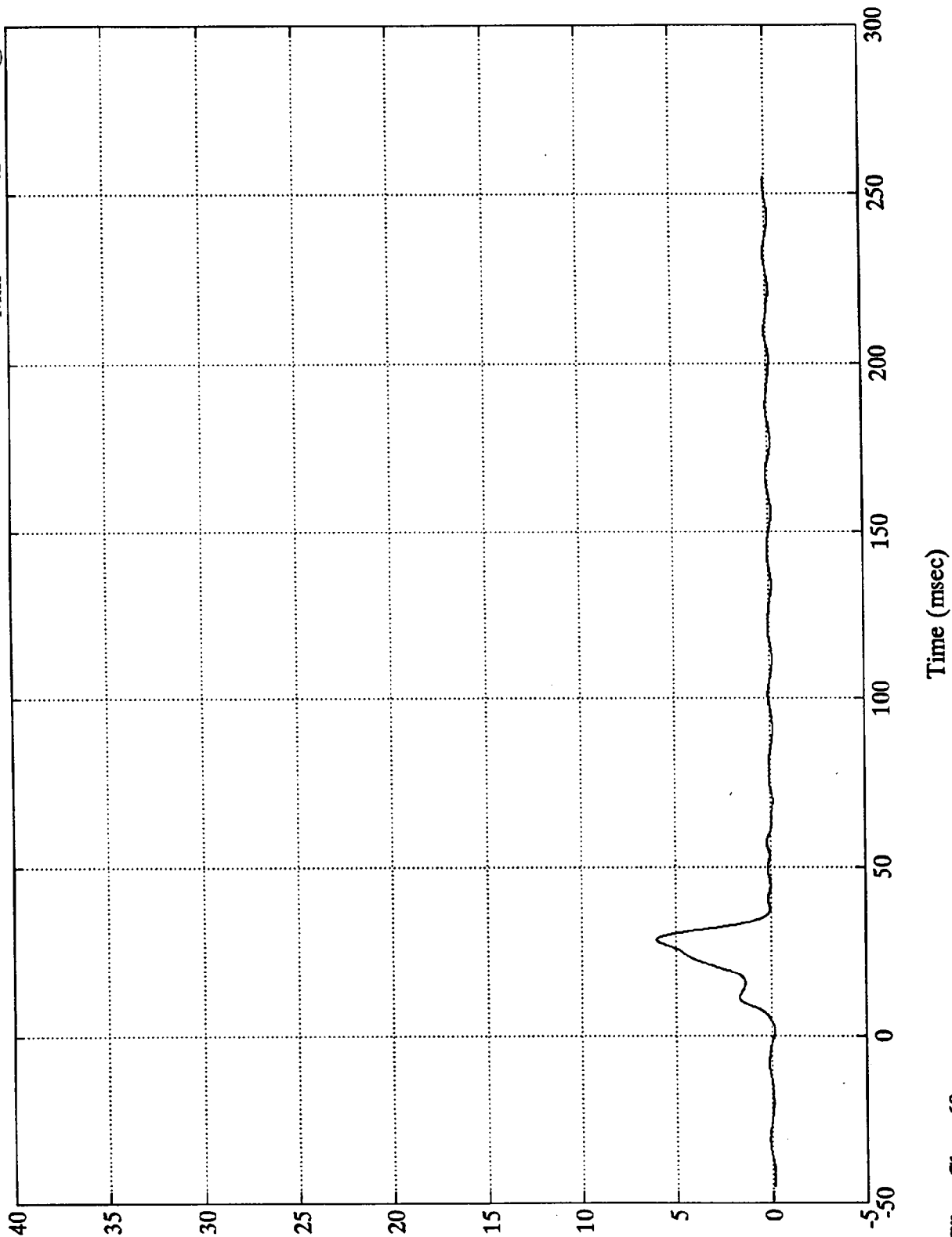
SAE Filter Class 60

7893-7

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell C6

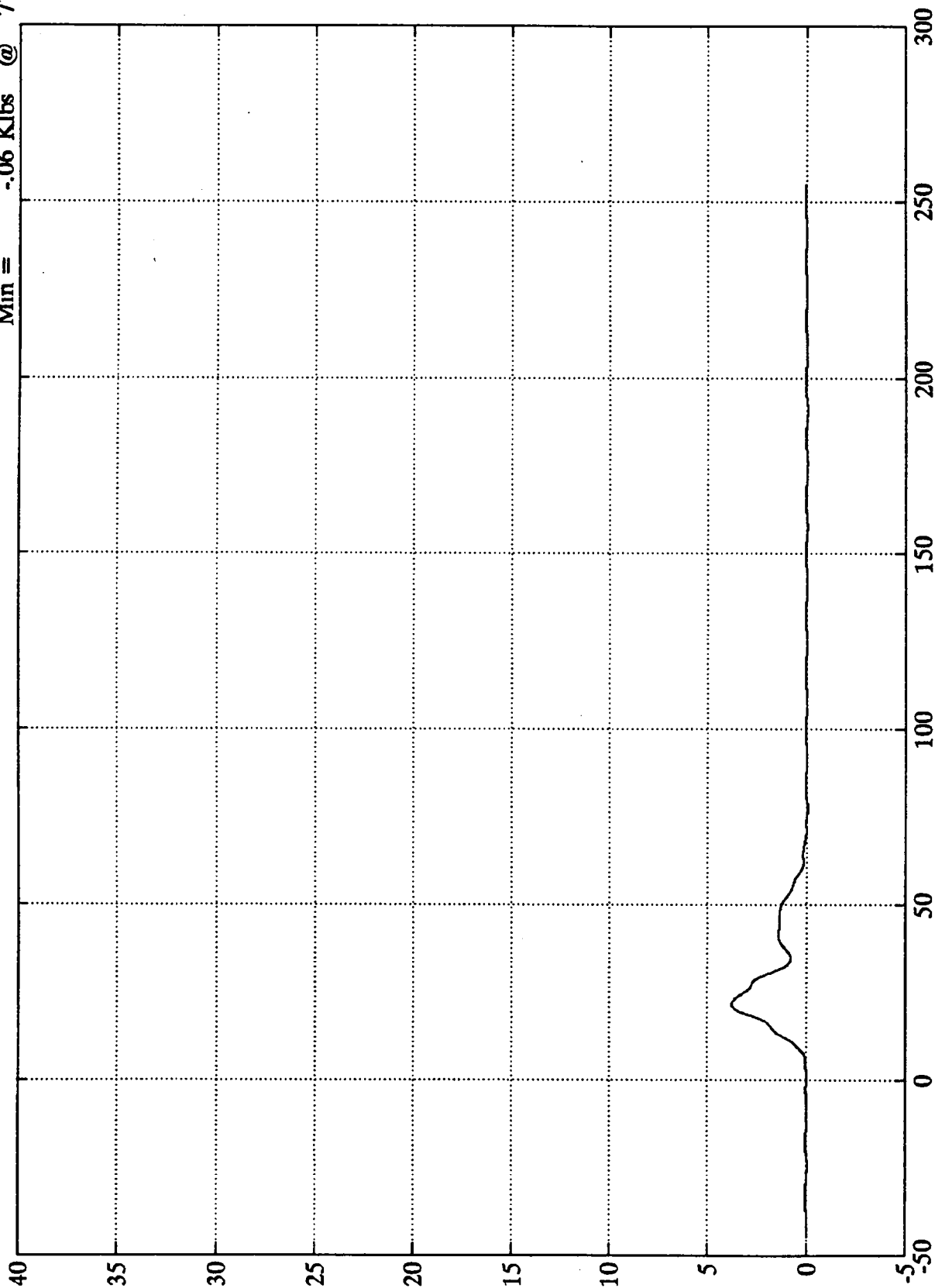
Max = 6.06 Klbs @ 28.44 msec
Min = -.18 Klbs @ 1.43 msec



NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell C7

Max =	3.77 Klbs	@	21.71 msec
Min =	-.06 Klbs	@	77.16 msec



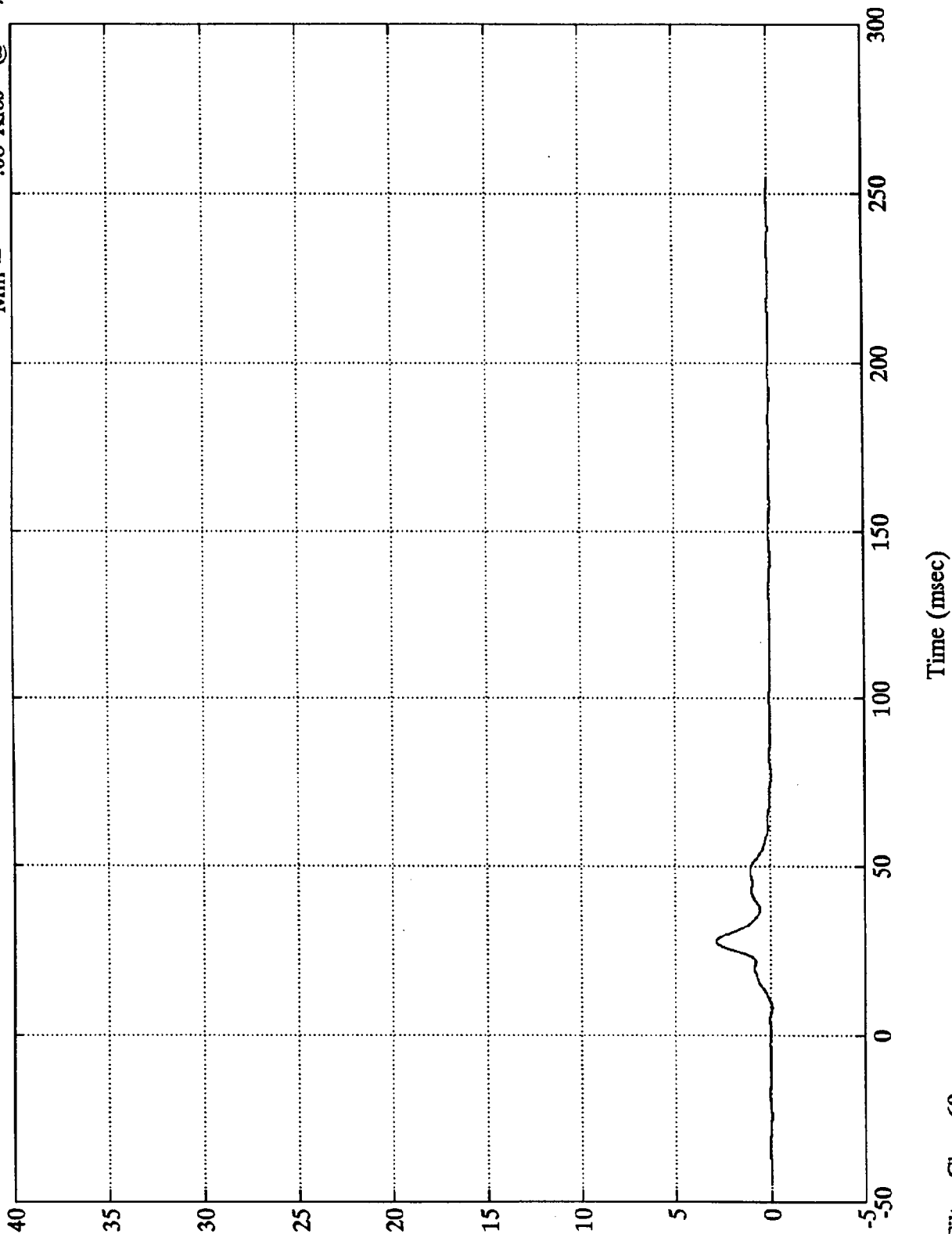
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 2.86 Klbs @ 27.48 msec
Min = -.08 Klbs @ 7.91 msec

Barrier Load Cell C8



B-56

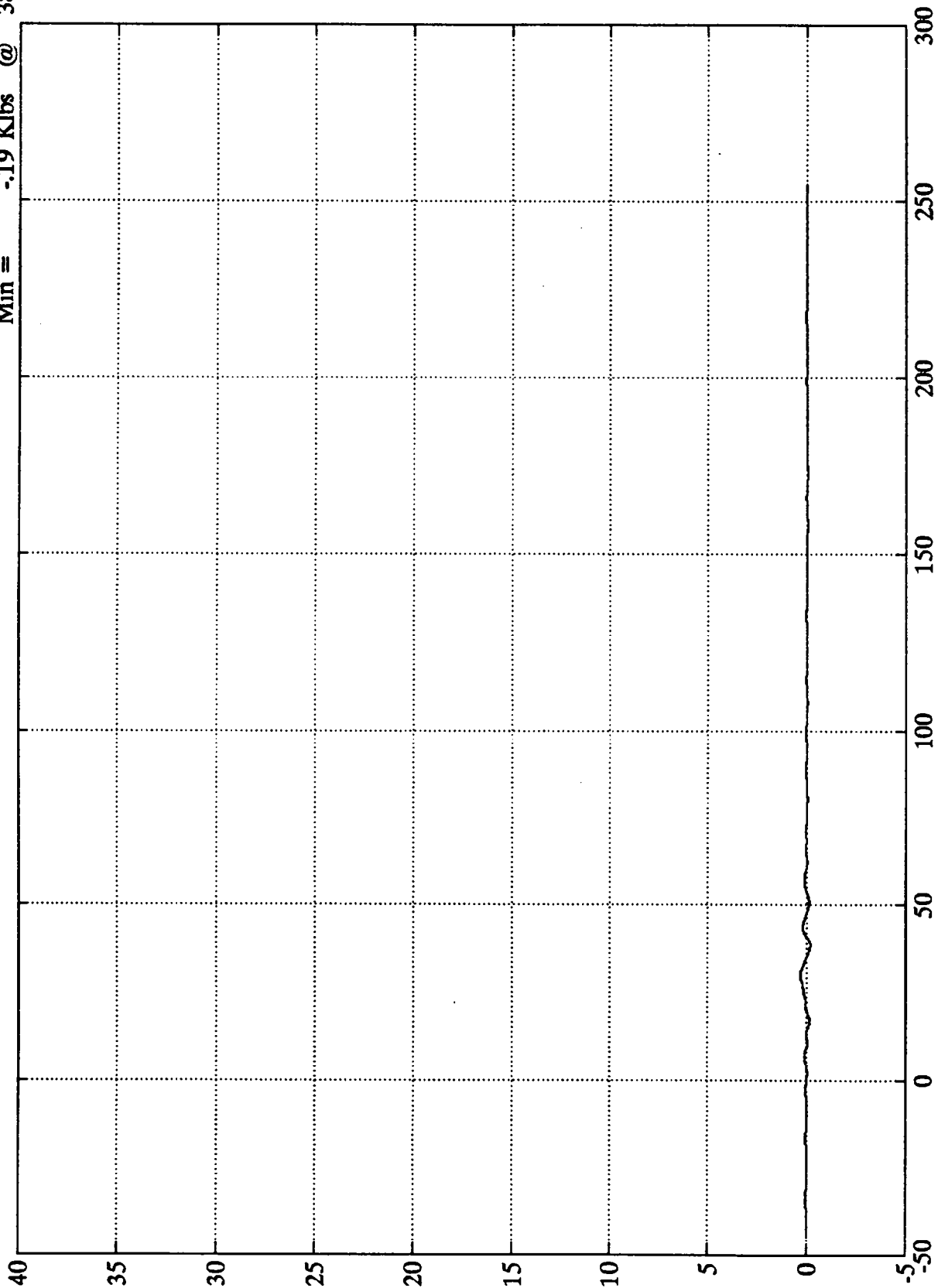
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell D2

Max = .30 Klbs @ 30.12 msec
Min = -.19 Klbs @ 38.75 msec



Klbs
B-57

7893-7

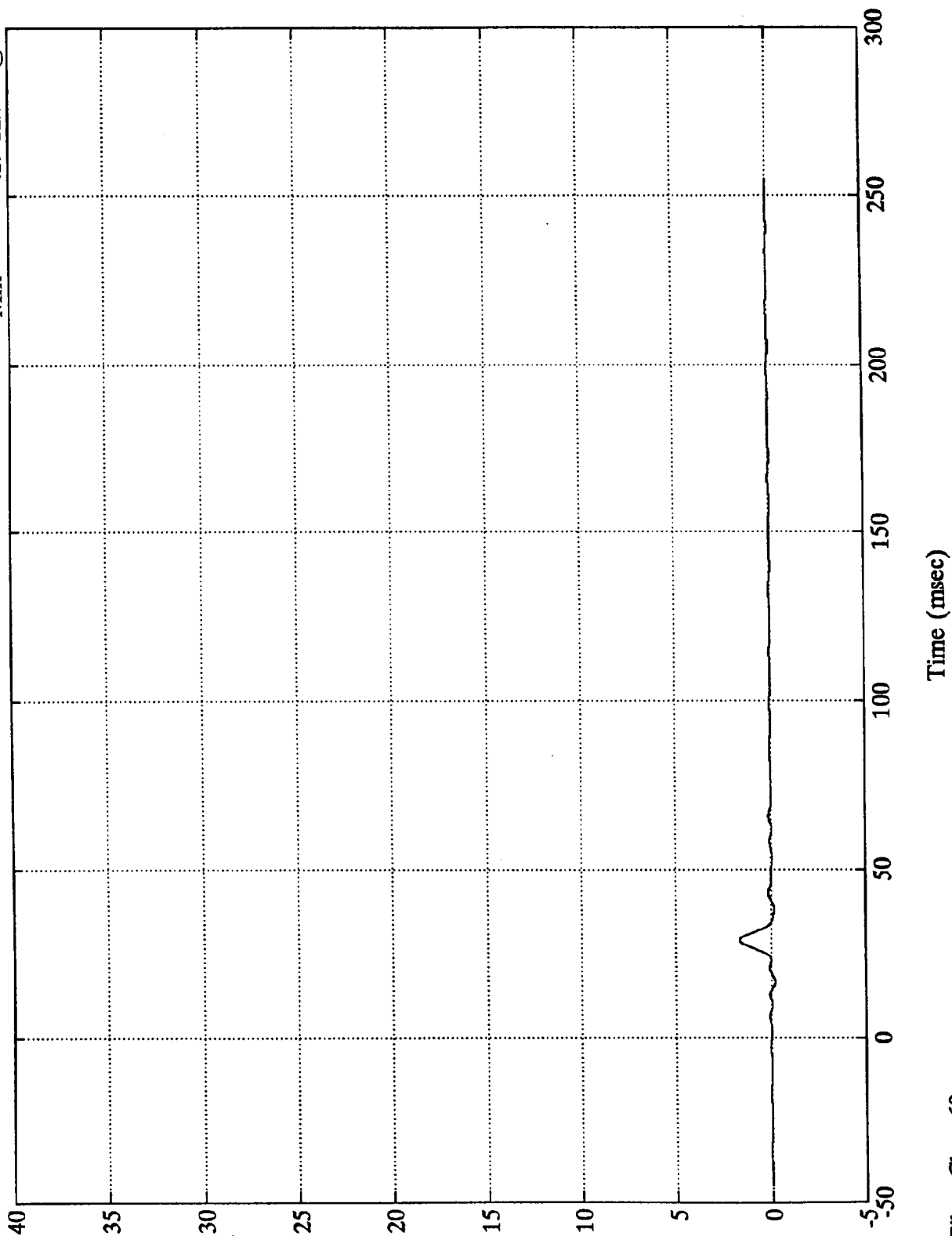
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell D3

Max = 1.65 Klbs @ 28.92 msec
Min = -.19 Klbs @ 16.19 msec



sqix
B-58

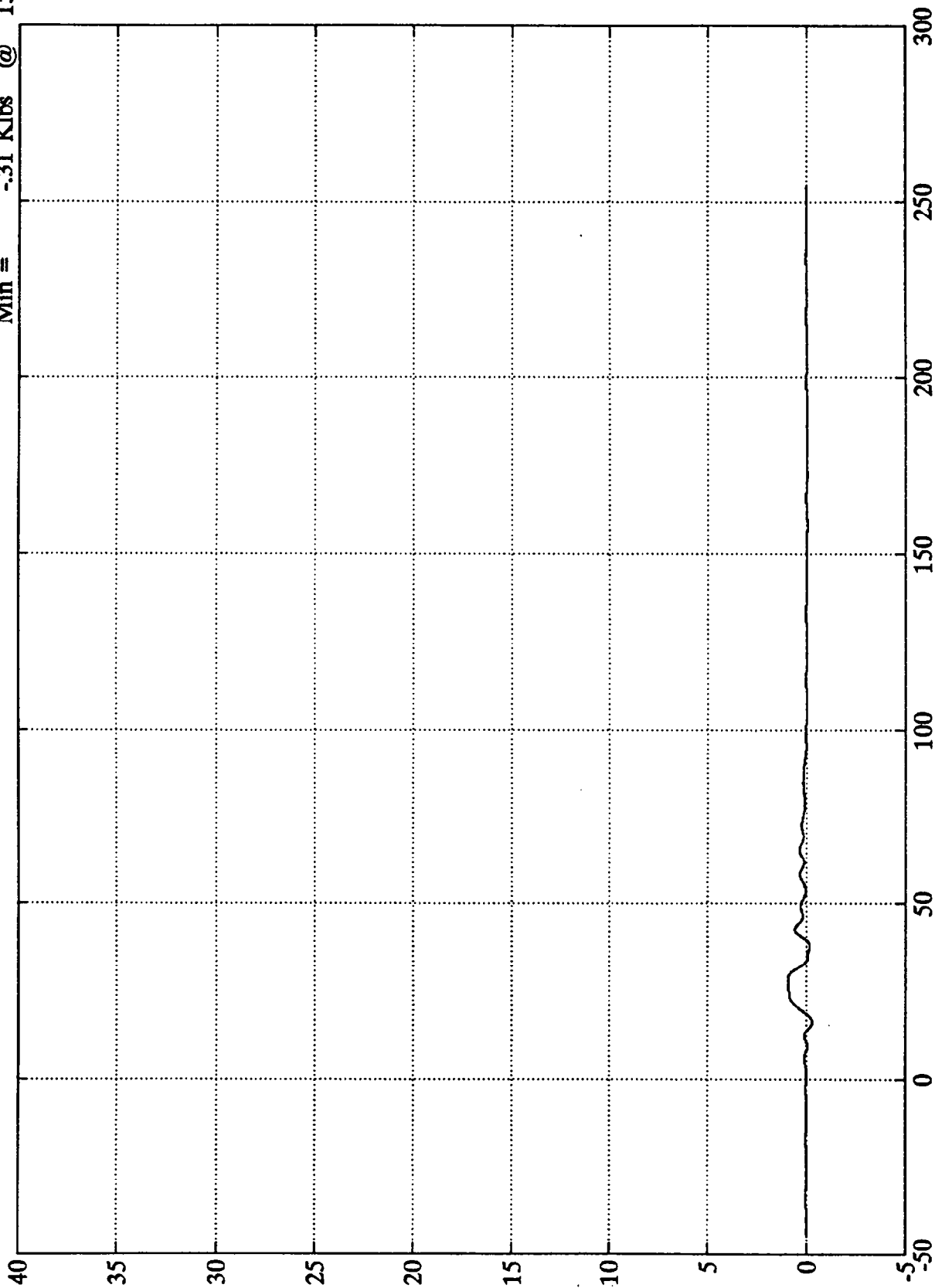
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell D4

Max = .91 Klbs @ 28.68 msec
Min = -.31 Klbs @ 15.95 msec



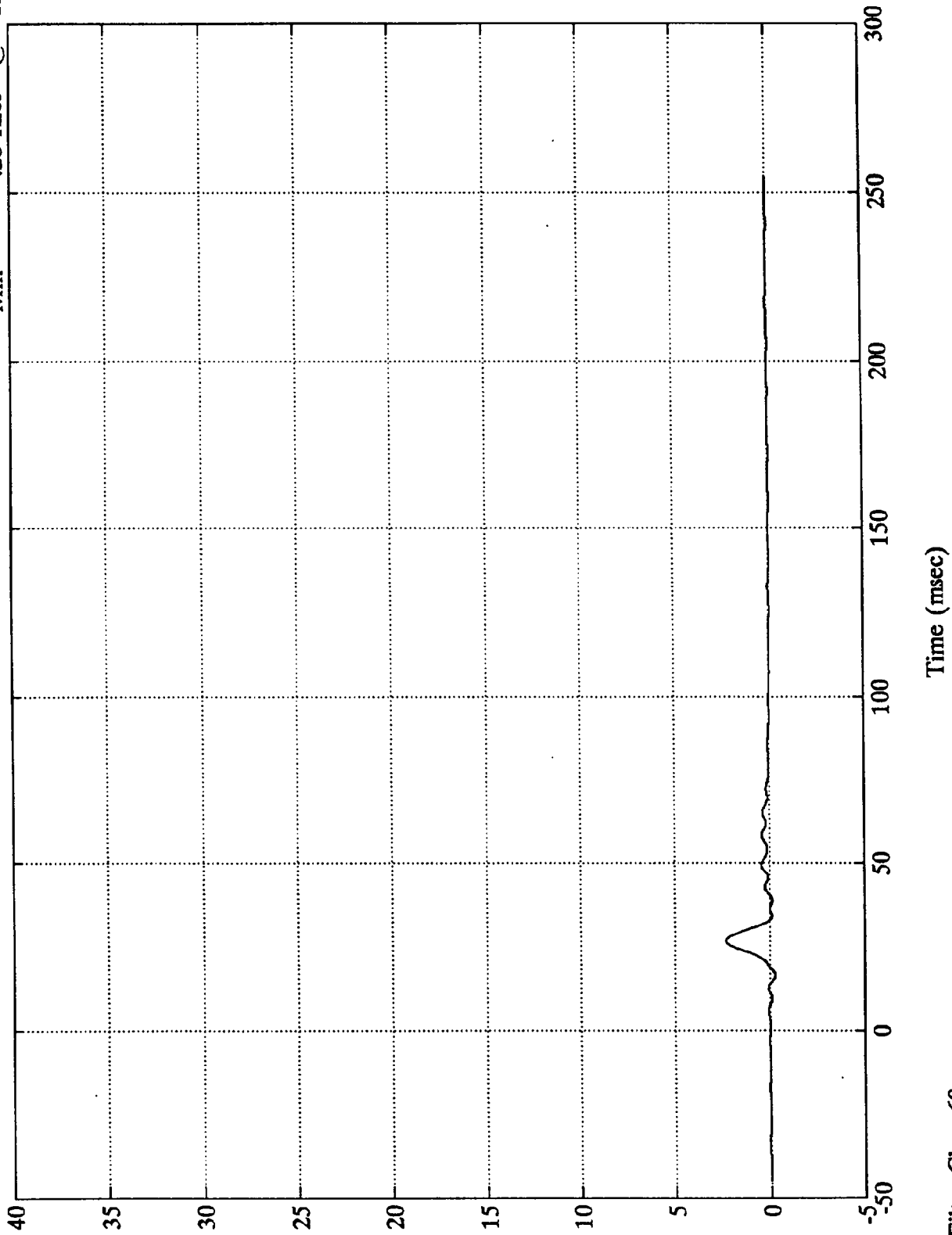
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell D5

Max = 2.32 Klbs @ 26.51 msec
Min = -.28 Klbs @ 15.95 msec



Klbs
B-60

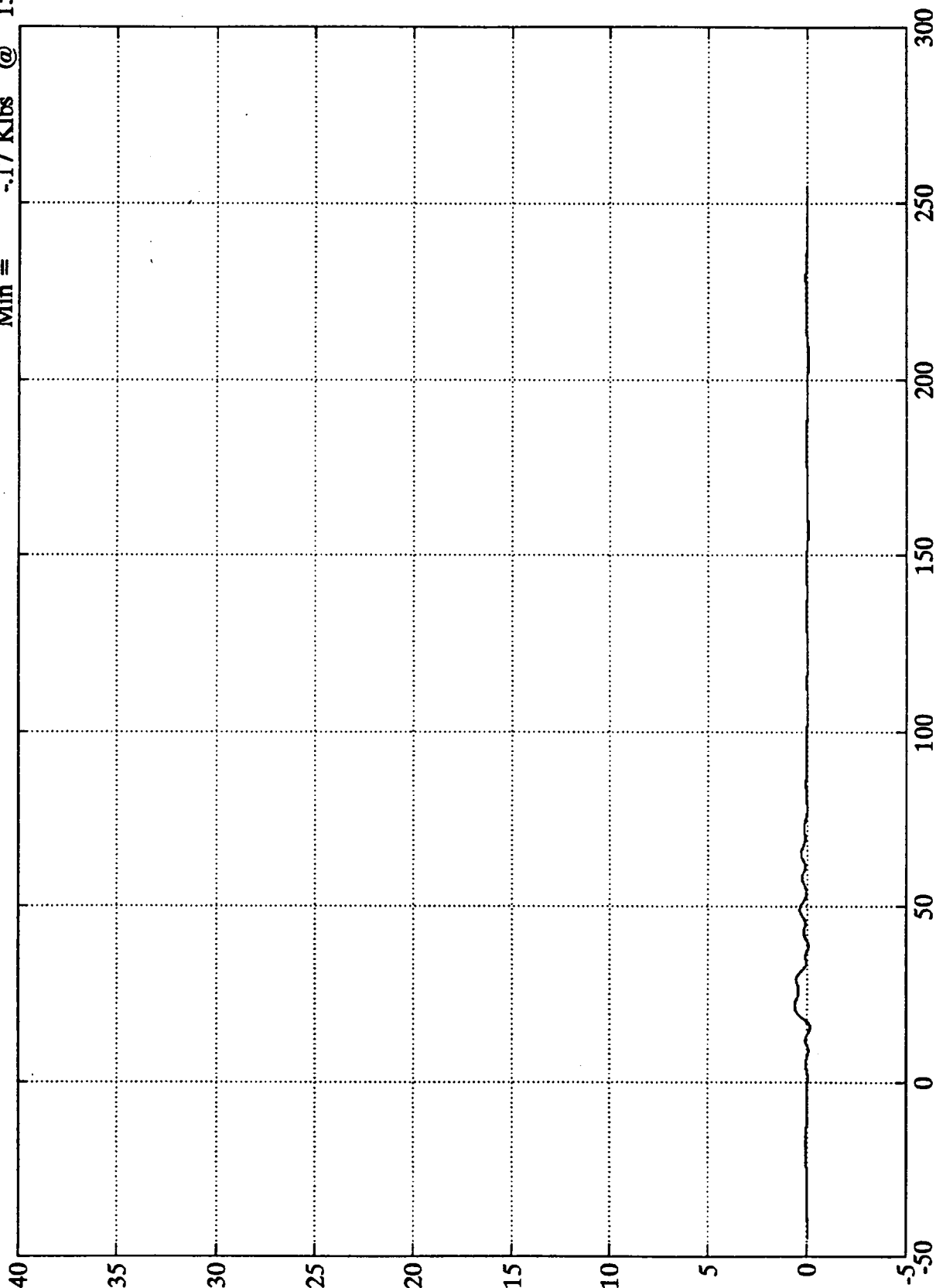
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell D6

Max = .61 Klbs @ 21.84 msec
Min = -.17 Klbs @ 15.71 msec



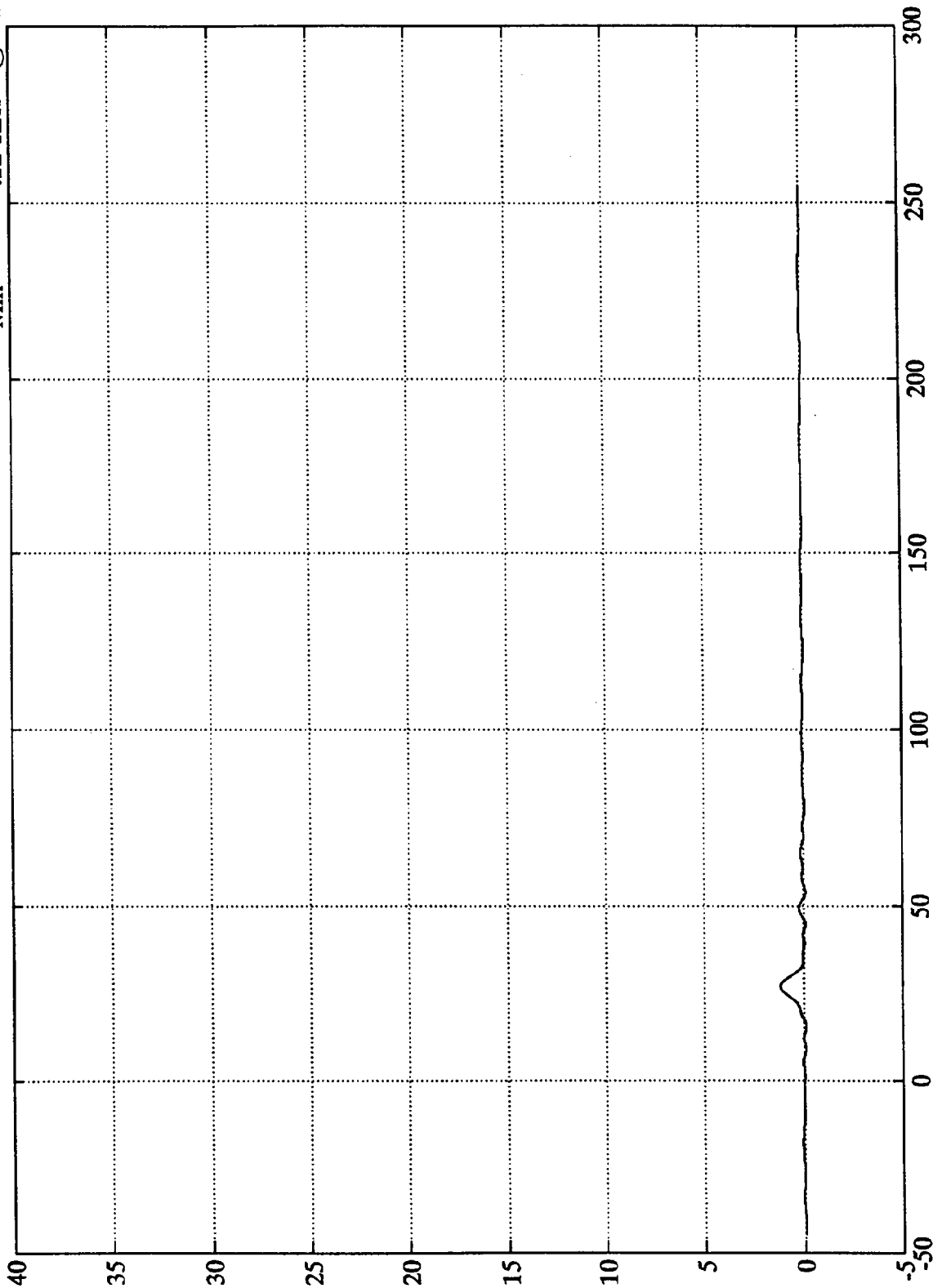
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell D7

Max = 1.17 Klbs @ 27.00 msec
Min = -.12 Klbs @ 15.59 msec



Klbs
B-62

7893-7

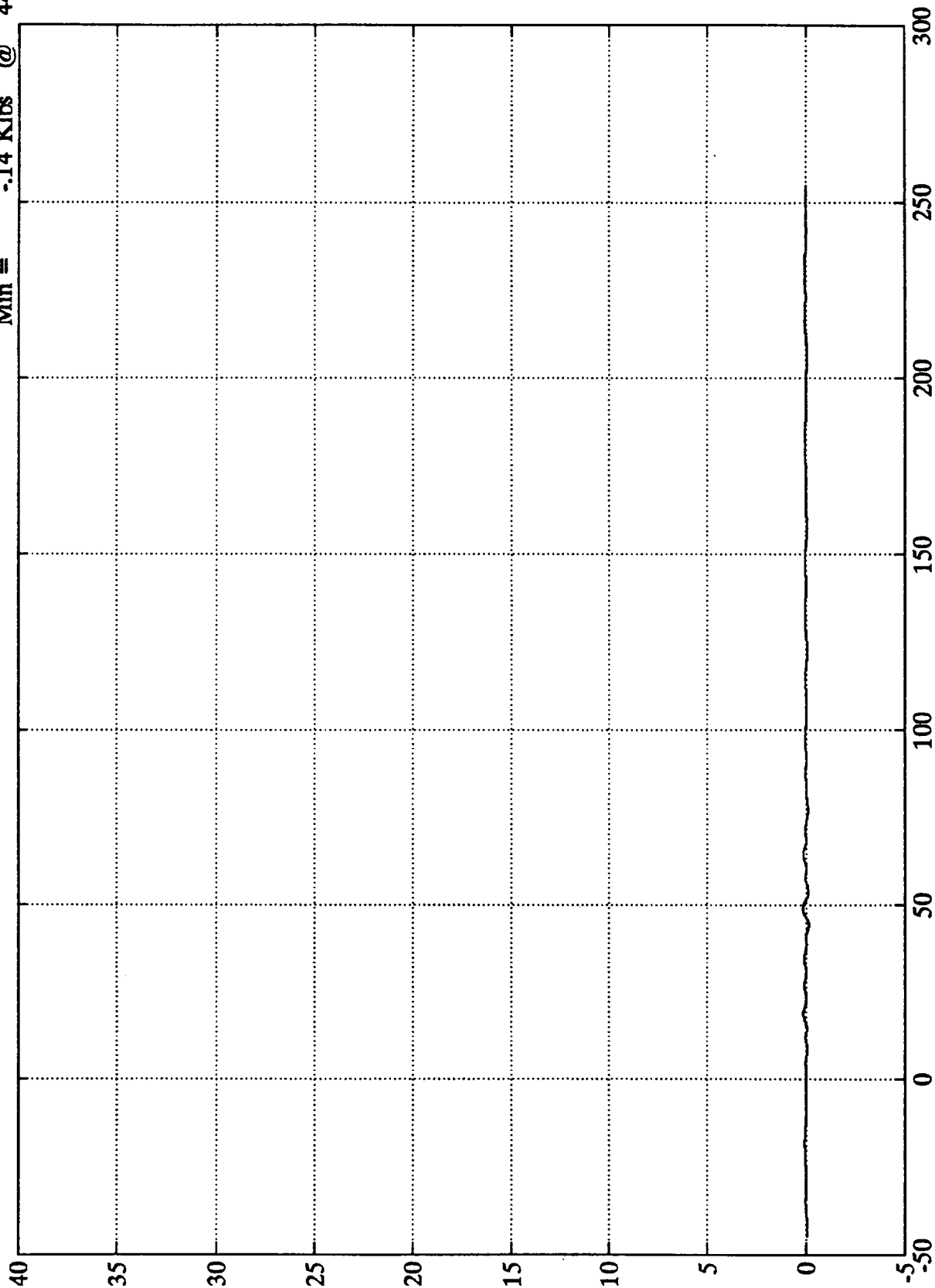
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Barrier Load Cell D8

Max =	.16 Klbs	@	49.07 msec
Min =	-.14 Klbs	@	44.52 msec



Klbs
B-63

7893-7

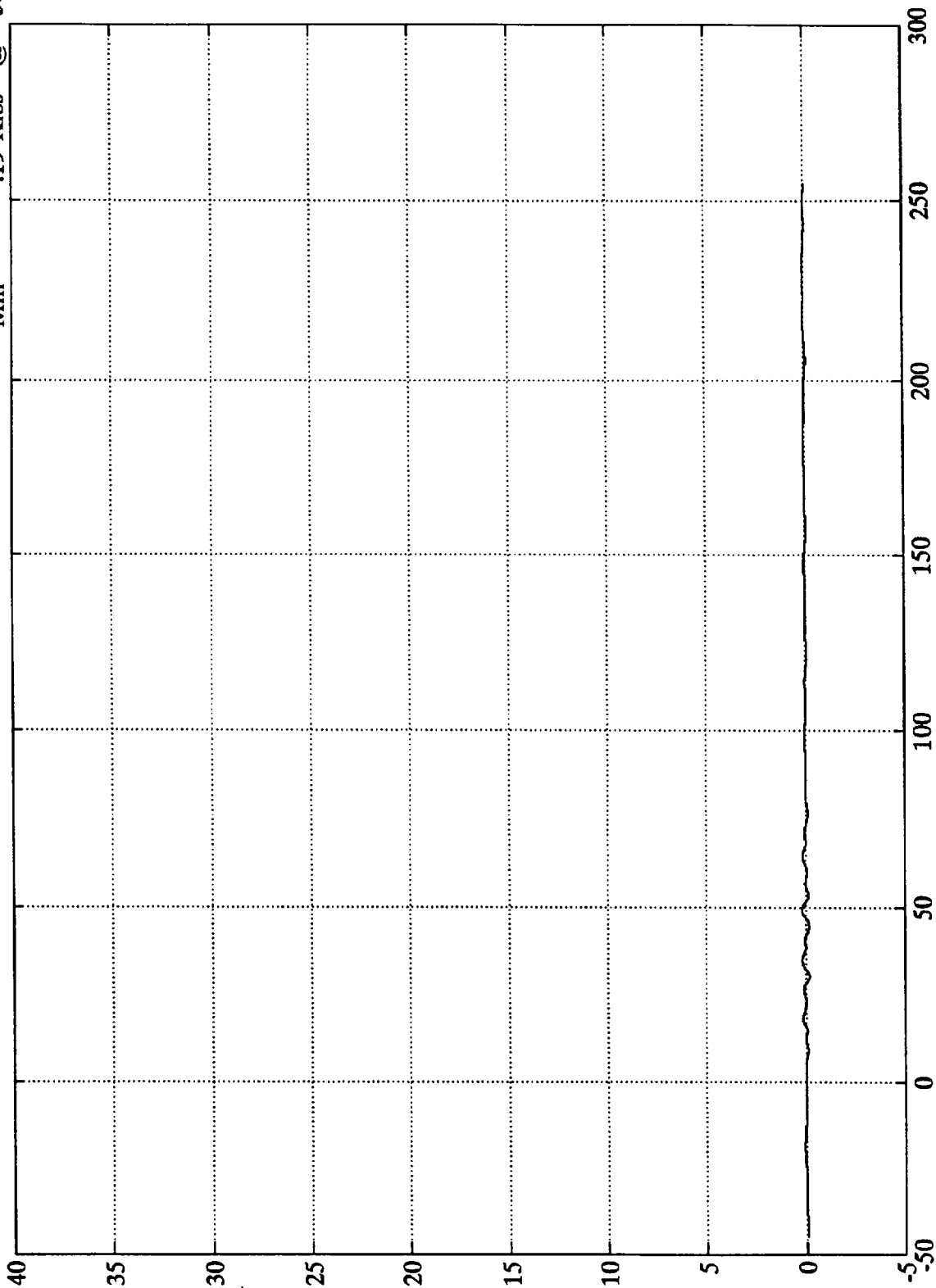
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = .19 Klbs @ 49.20 msec
Min = -.19 Klbs @ 30.00 msec

Barrier Load Cell D9



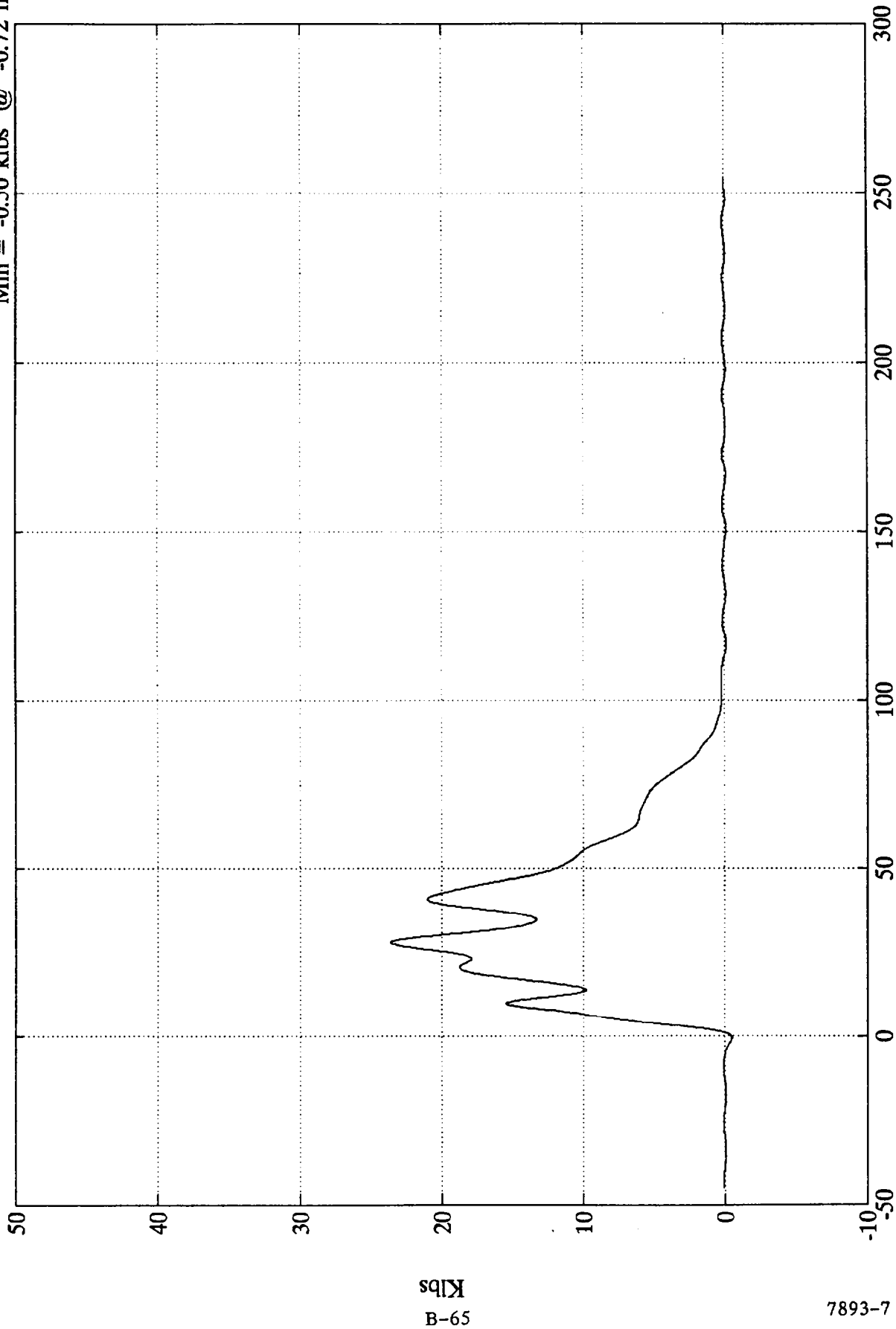
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Group 1 Load Cell Sum

Max = 23.62 klbs @ 27.84 msec
Min = -0.50 klbs @ -0.72 msec



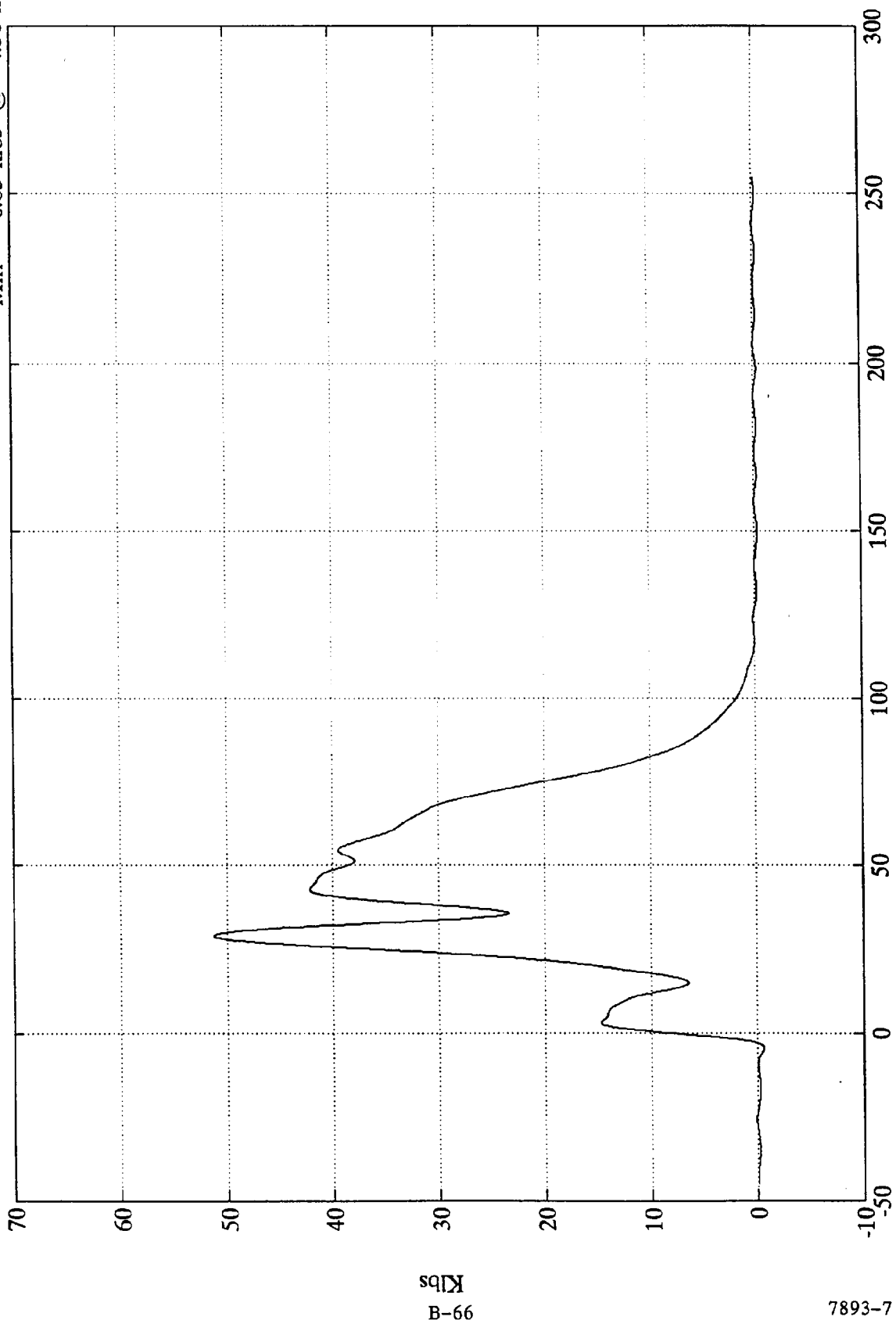
Load Cells (A1,A2,A3,B1,B2,B3)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Group 2 Load Cell Sum

Max = 51.25 klbs @ 28.80 msec
Min = -0.63 klbs @ -4.56 msec



Load Cells (A4, A5, A6, B4, B5, B6)

Time (msec)

SAE Filter Class 60

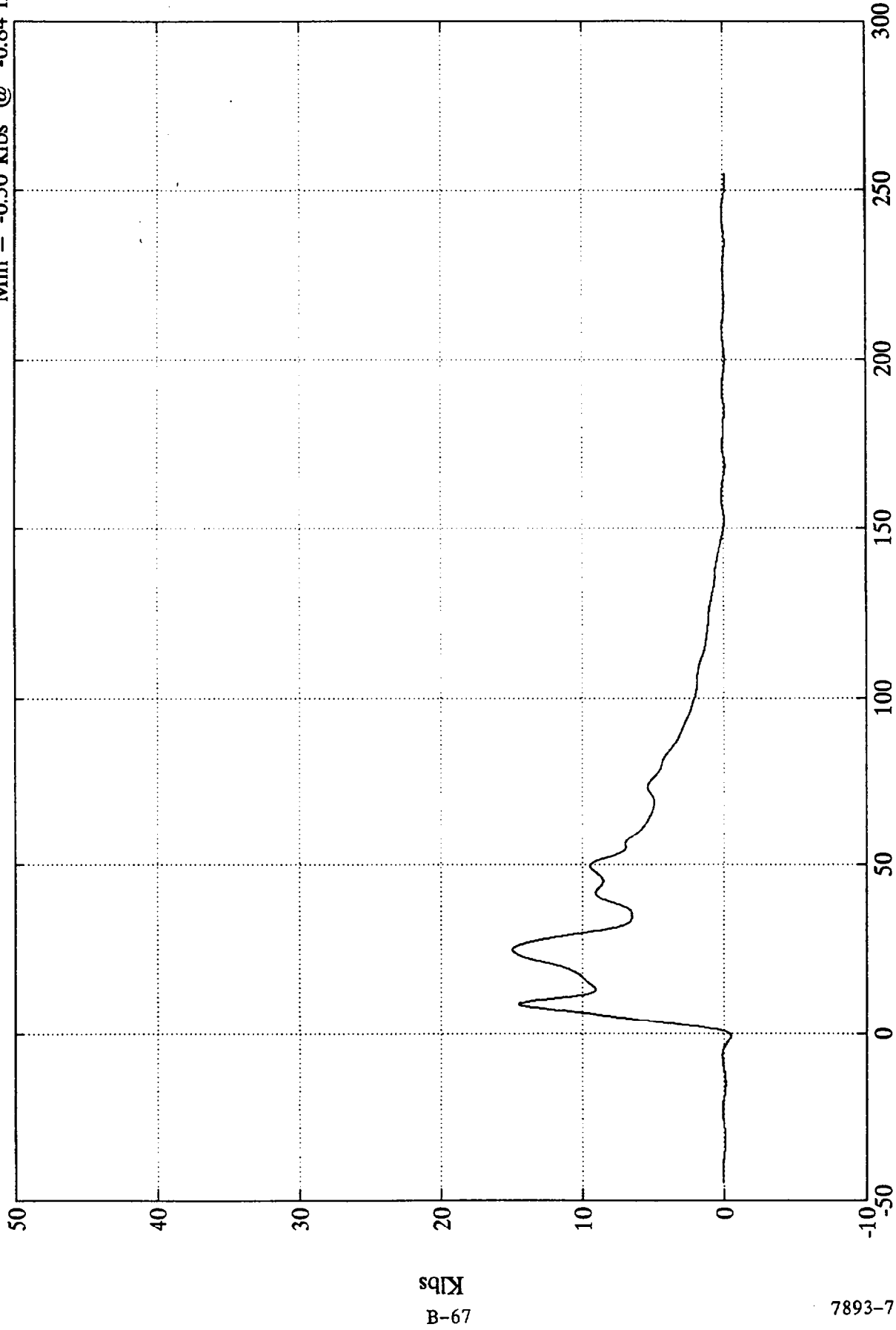
99-B
Klbs

7893-7

NCAP TEST 1991 TOYOTA TERCEL

Max = 14.96 klbs @ 24.96 msec
Min = -0.50 klbs @ -0.84 msec

Group 3 Load Cell Sum



Load Cells (A7,A8,A9,B7,B8,B9)

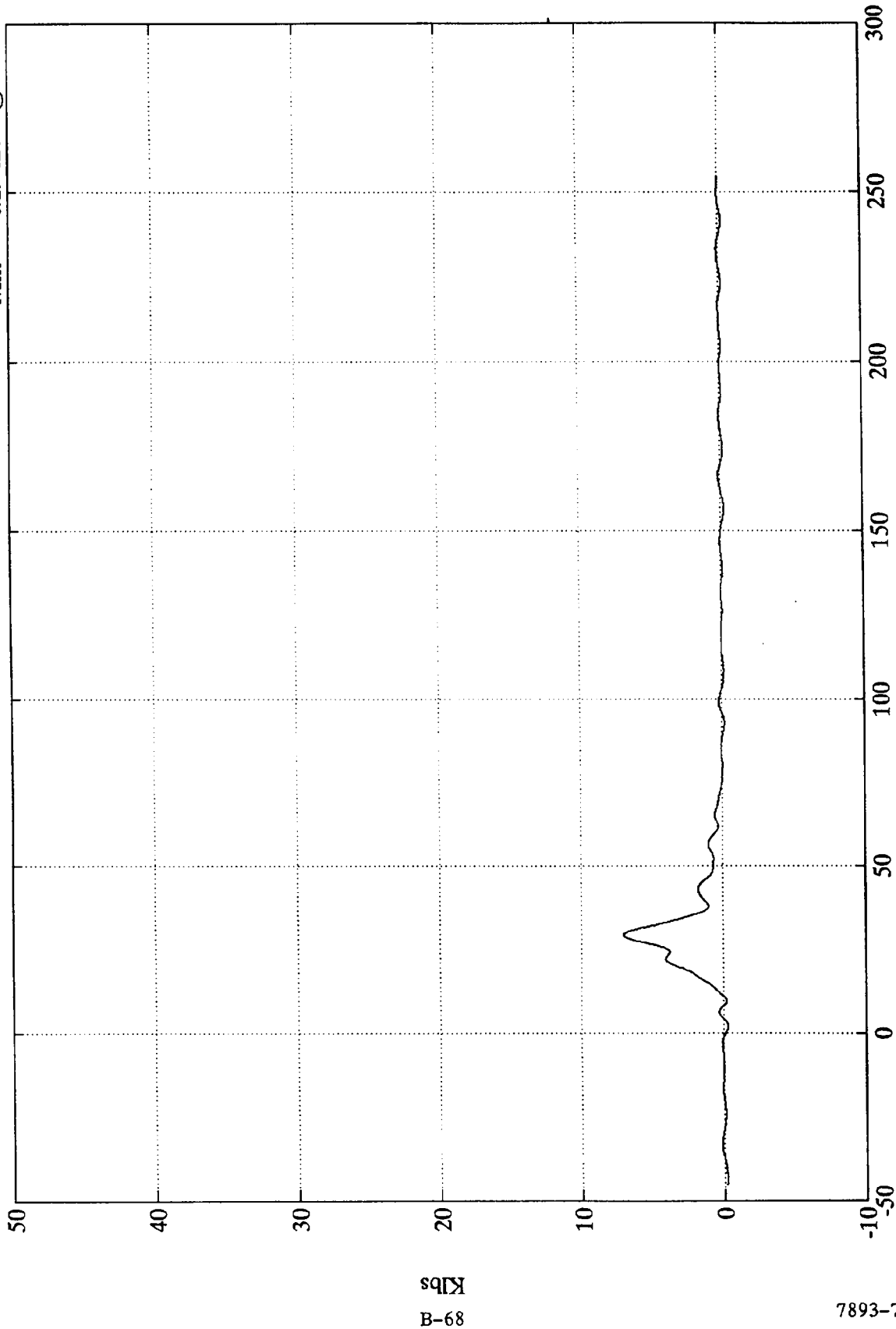
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Max = 7.04 klbs @ 29.16 msec
Min = -0.29 klbs @ 1.92 msec

Group 4 Load Cell Sum



Load Cells (C1,C2,C3,D1,D2,D3)
Load cell D1 was not
included in load cell sum.

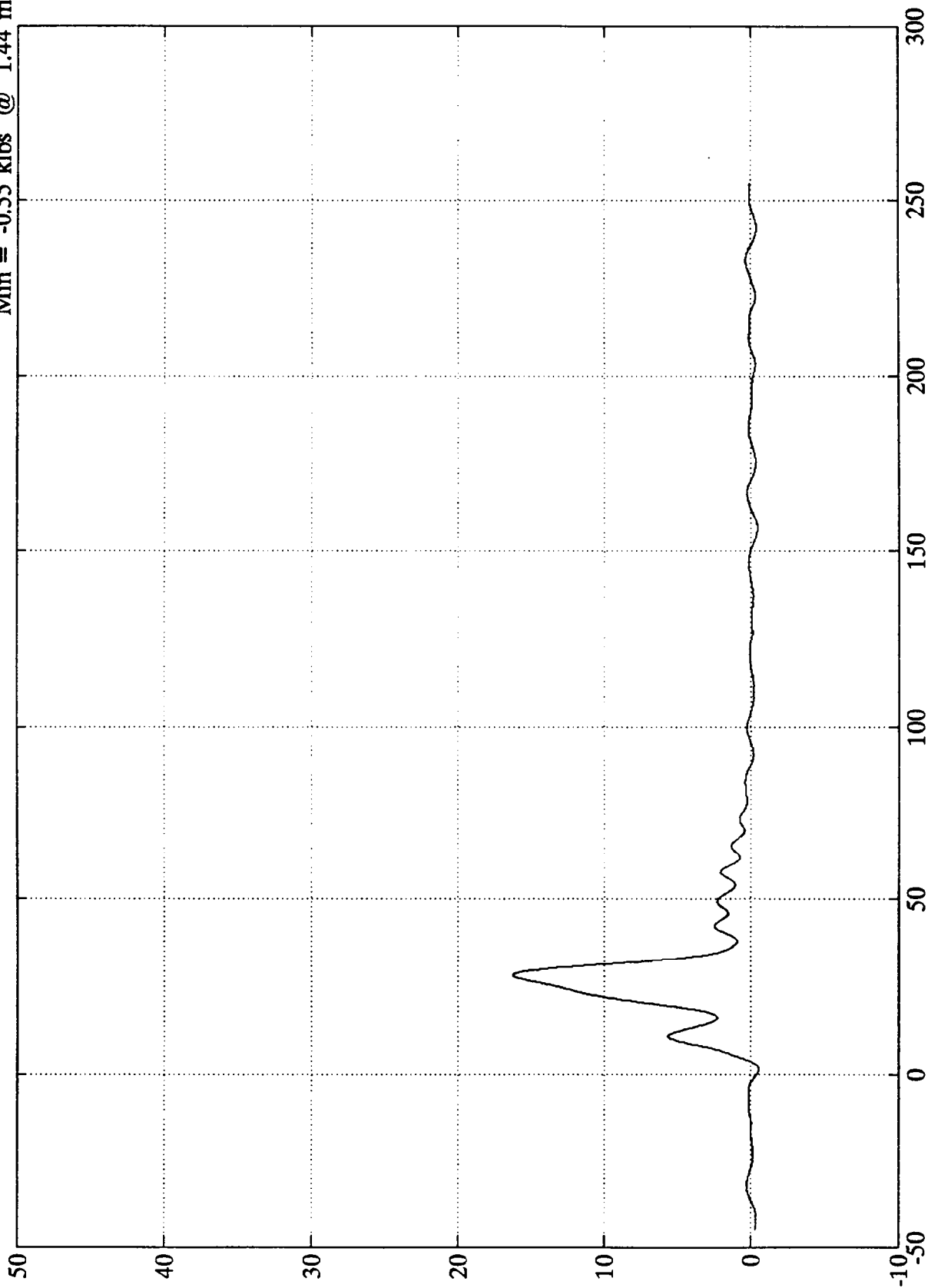
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Group 5 Load Cell Sum

Max = 16.27 klbs @ 28.20 msec
Min = -0.55 klbs @ 1.44 msec



Time (msec)

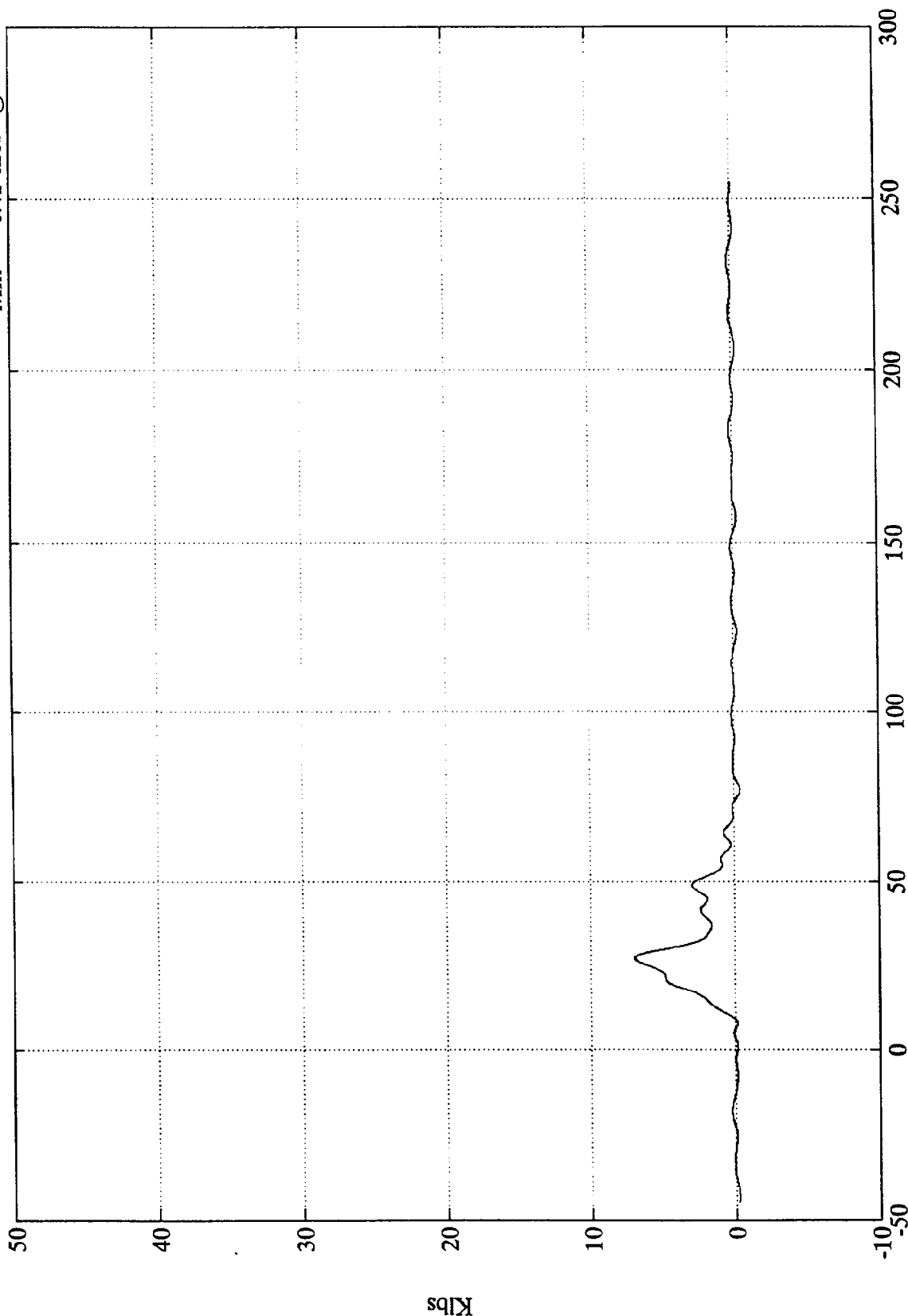
Load Cells (C4,C5,C6,D4,D5,D6)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Group 6 Load Cell Sum

Max = 6.97 klbs @ 27.00 msec
Min = -0.41 klbs @ 77.04 msec



B-70
Klbs

7893-7

Time (msec)

Load Cells (C7,C8,C9,D7,D8,D9)

Load cell C9 was not

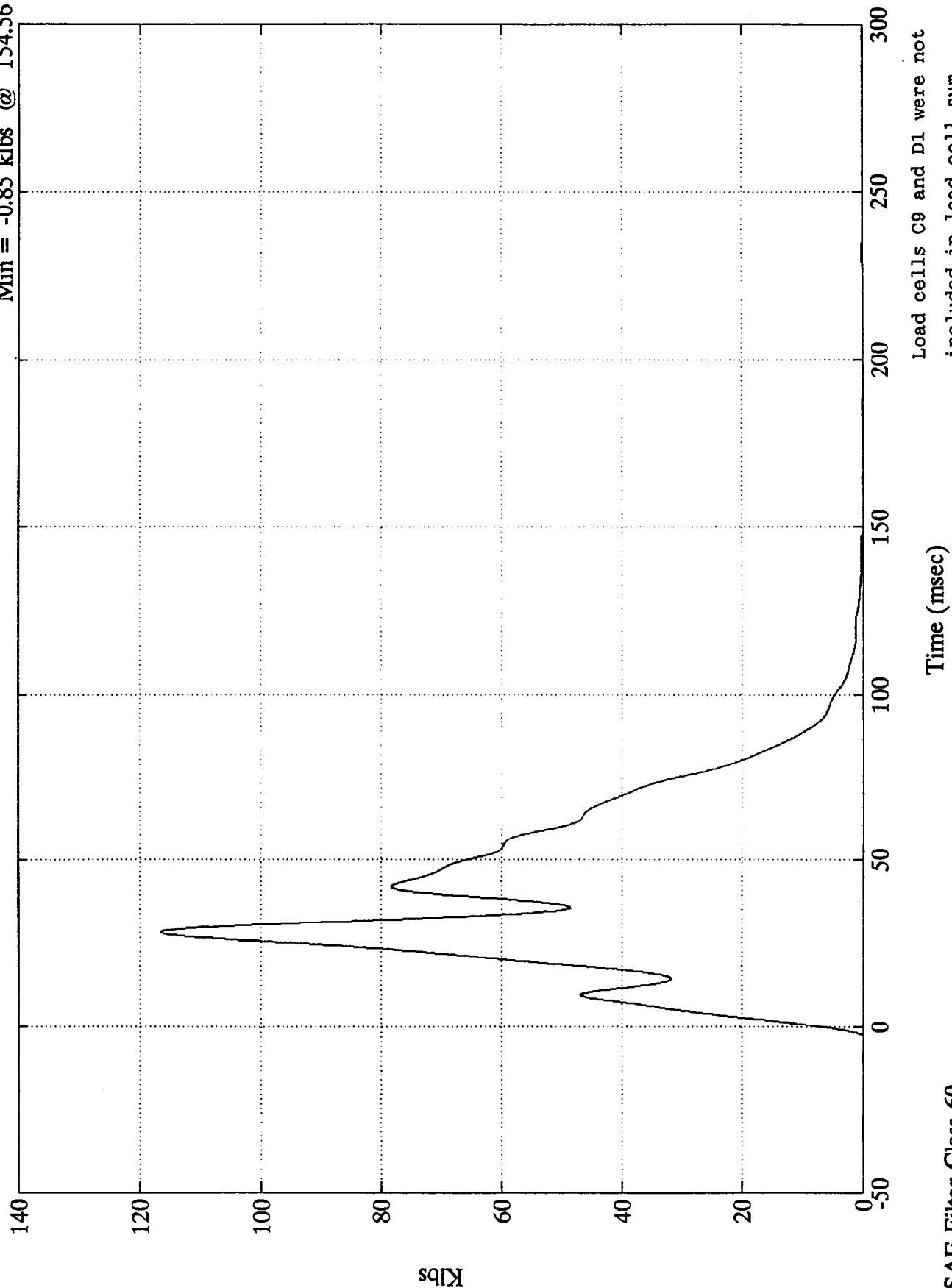
included in load cell sum.

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Total Load Cell Sum

Max = 116.57 klbs @ 28.08 msec
Min = -0.85 klbs @ 154.56 msec



Load cells C9 and D1 were not included in load cell sum.

SAE Filter Class 60

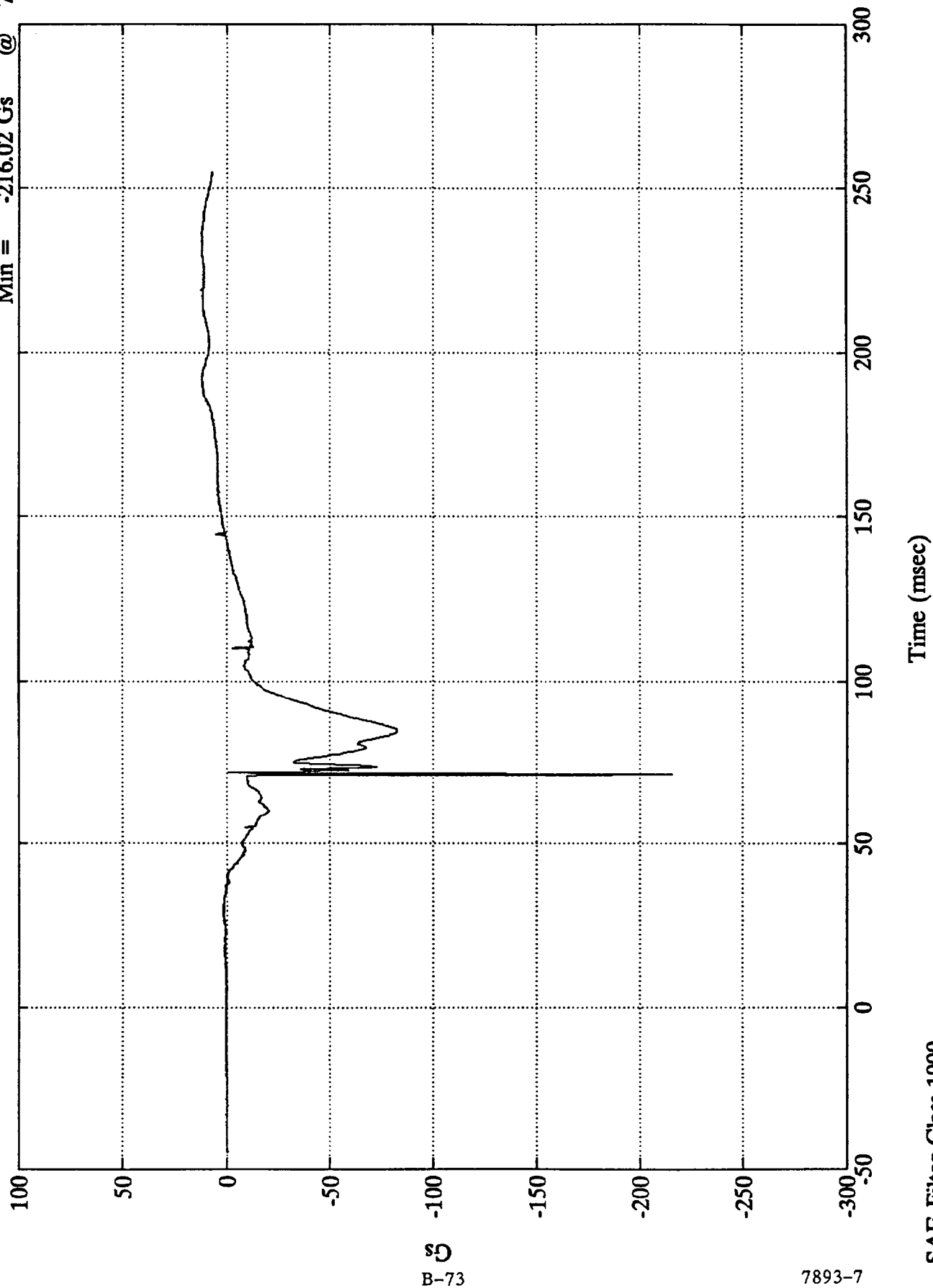
TEST NO. MM5102

DUMMY DATA

CLASS	FILTER CHANNEL
Head Accelerations	1000
Chest Accelerations	180
Femur Forces	600
Belt Loads	60

NCAP TEST 1991 TOYOTA TERCEL

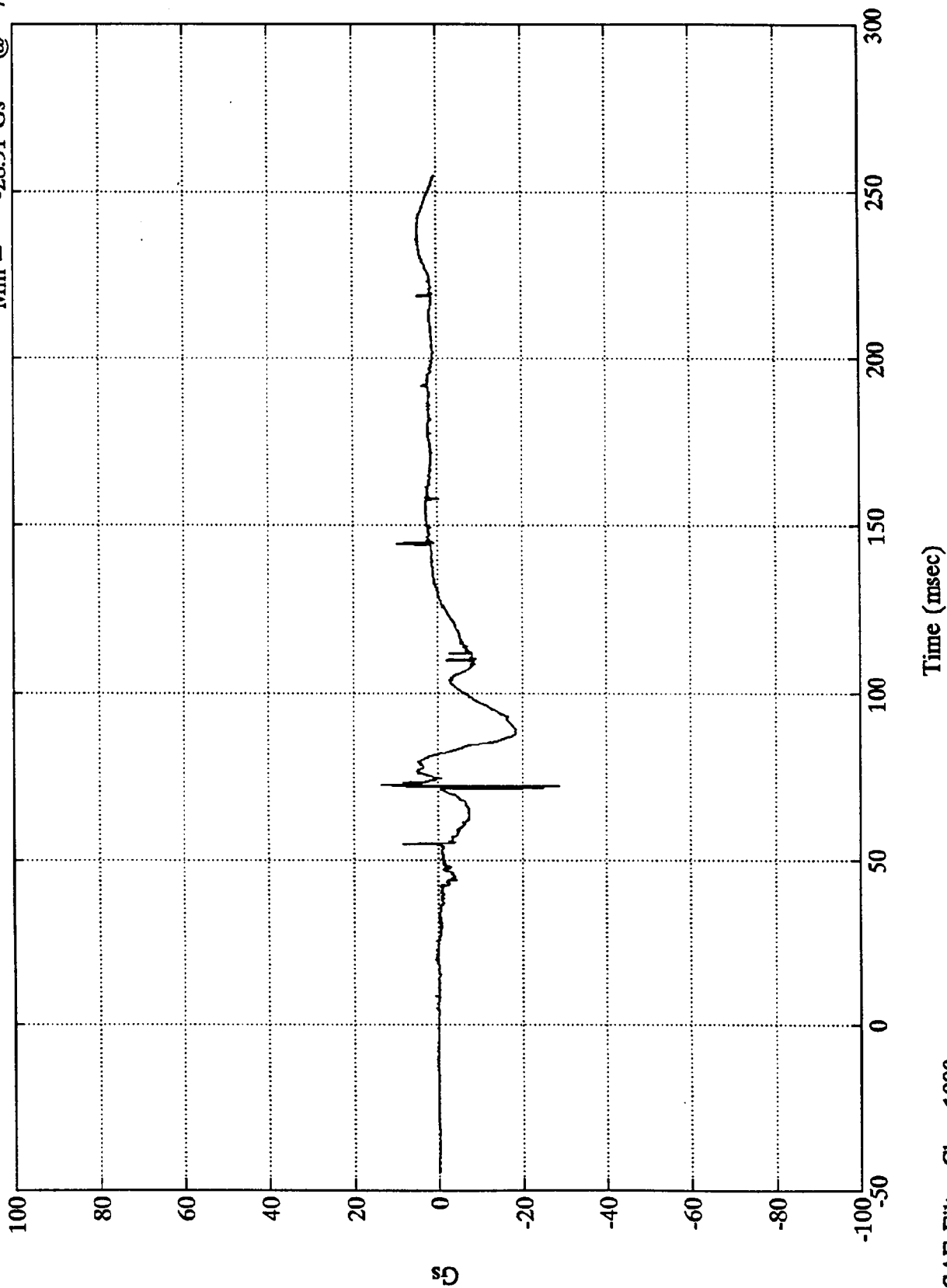
Pos. 1 Head X
Max = 12.33 Gs @ 235.92 msec
Min = -216.02 Gs @ 71.52 msec



NCAP TEST 1991 TOYOTA TERCEL

Pos. 1 Head Y

Max = 13.43 Gs @ 72.36 msec
Min = -28.91 Gs @ 72.00 msec



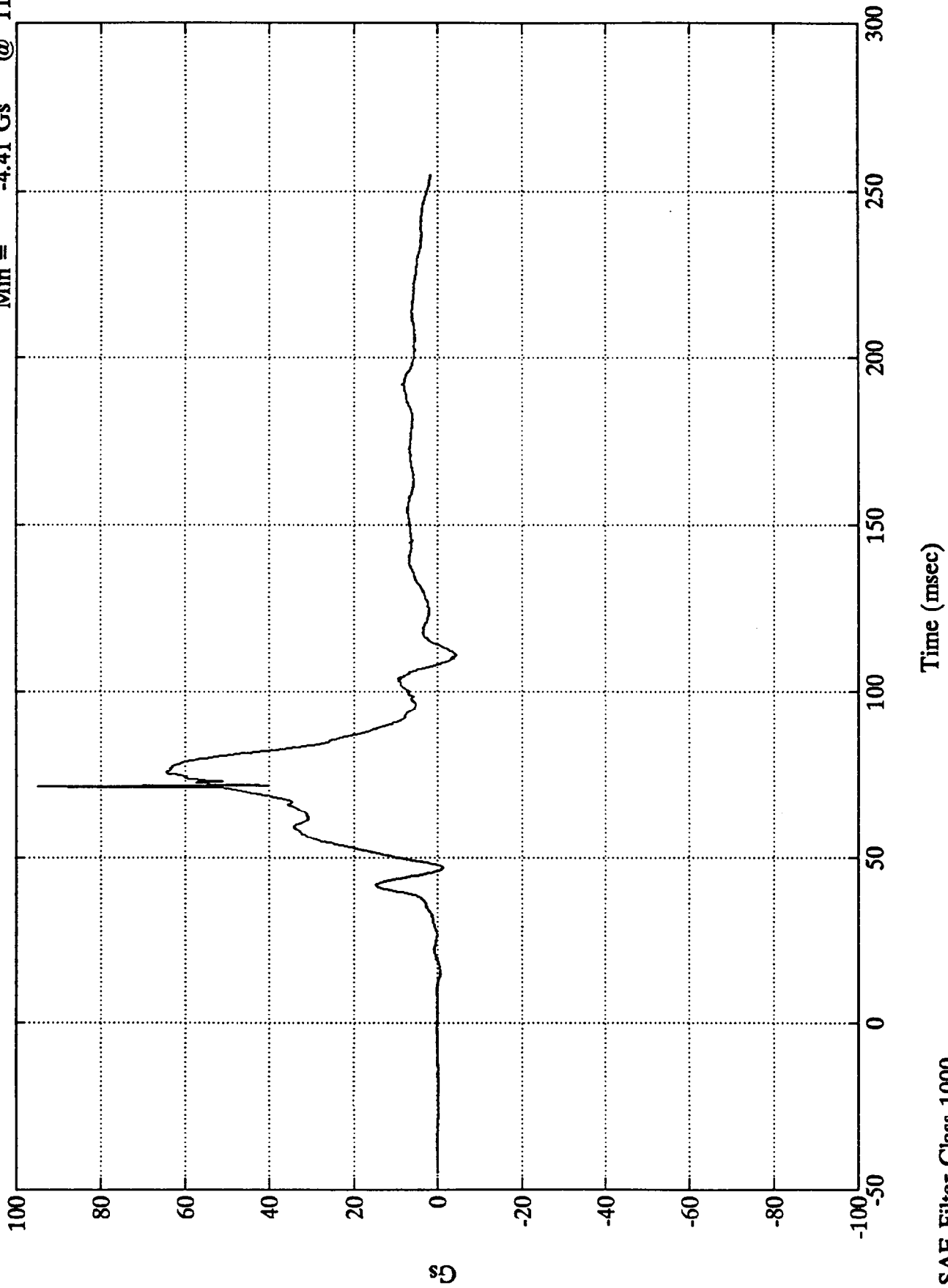
B-74

7893-7

SAE Filter Class 1000

NCAP TEST 1991 TOYOTA TERCEL

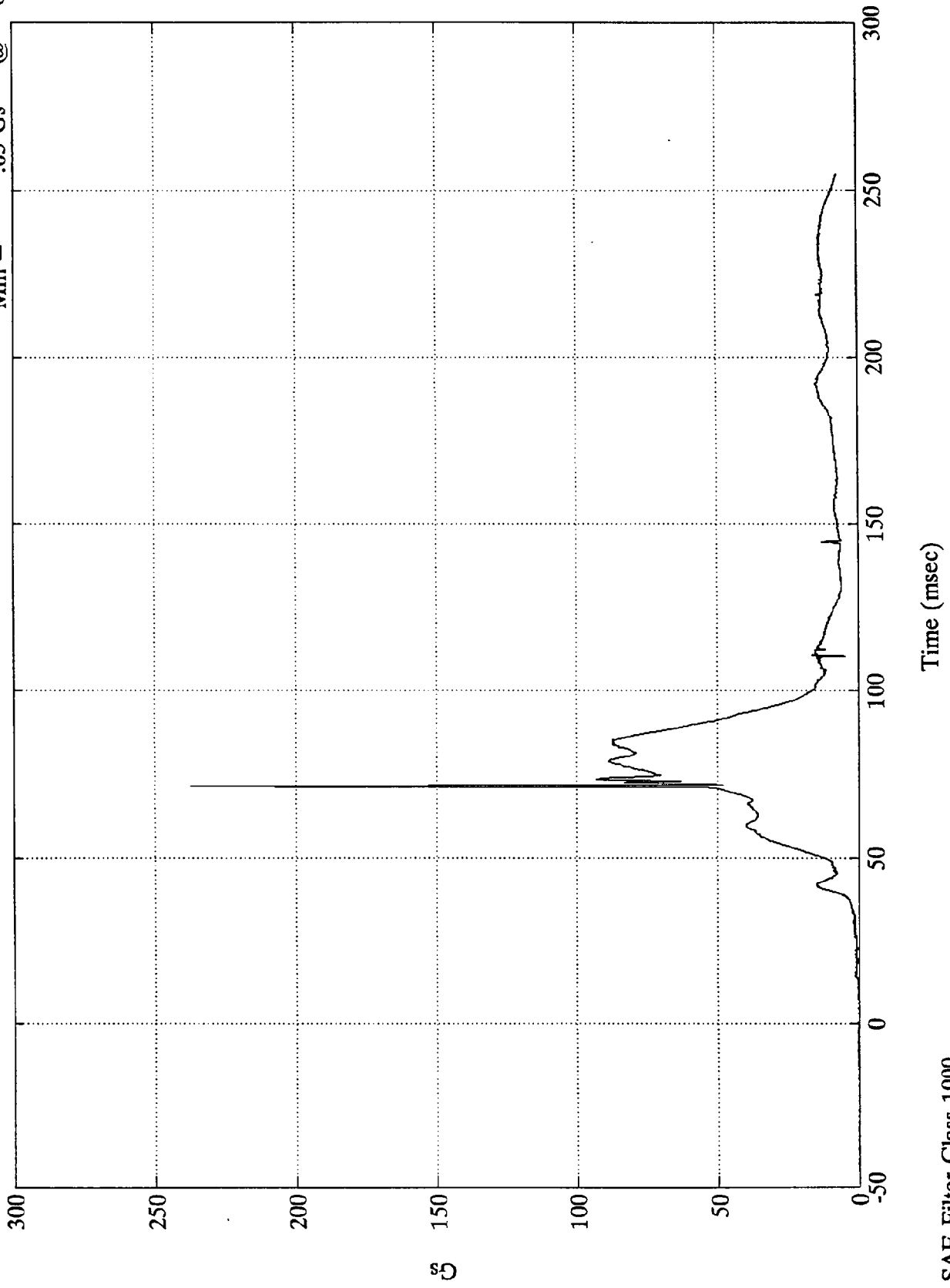
Pos. 1 Head Z
Max = 94.94 Gs @ 71.52 msec
Min = -4.41 Gs @ 111.00 msec



NCAP TEST 1991 TOYOTA TERCEL

Max = 237.28 Gs @ 71.52 msec
 Min = .03 Gs @ 6.71 msec

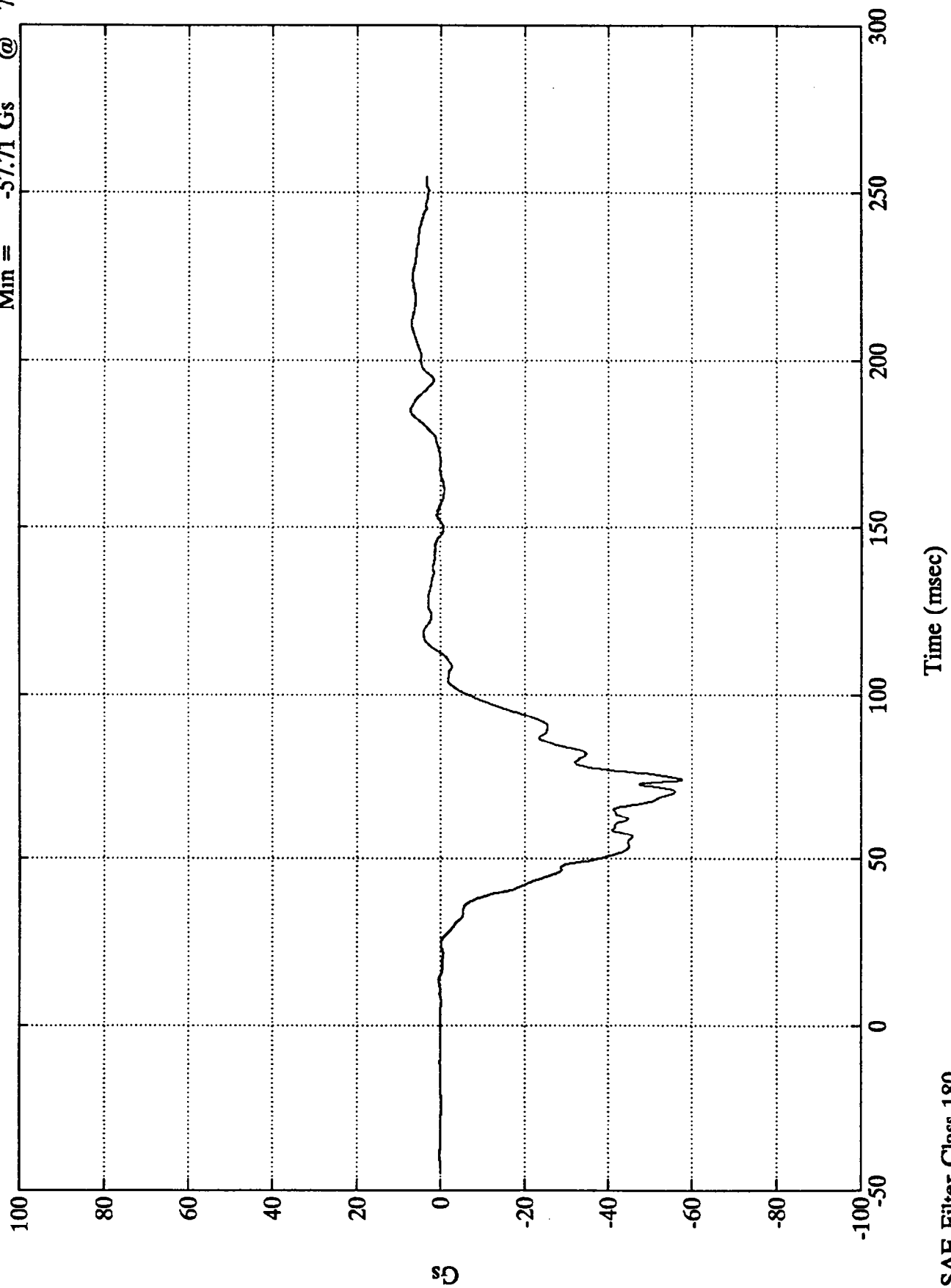
Pos. 1 Head Resultant



SAE Filter Class 1000

NCAP TEST 1991 TOYOTA TERCEL

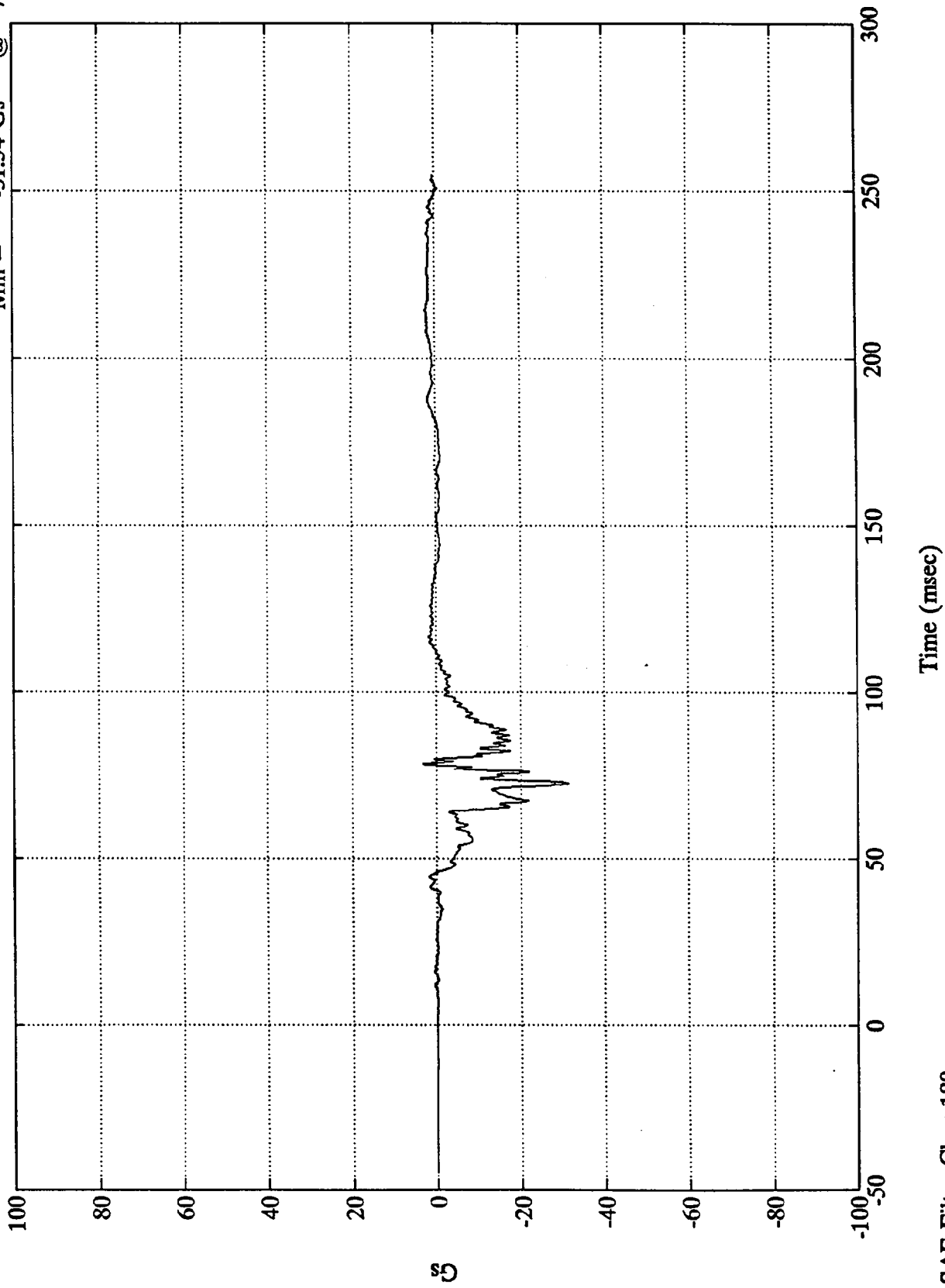
Pos. 1 Chest X
Max = 7.19 Gs @ 185.04 msec
Min = -57.71 Gs @ 74.04 msec



NCAP TEST 1991 TOYOTA TERCEL

Max = 3.23 Gs @ 78.23 msec
 Min = -31.54 Gs @ 72.24 msec

Pos. 1 Chest Y

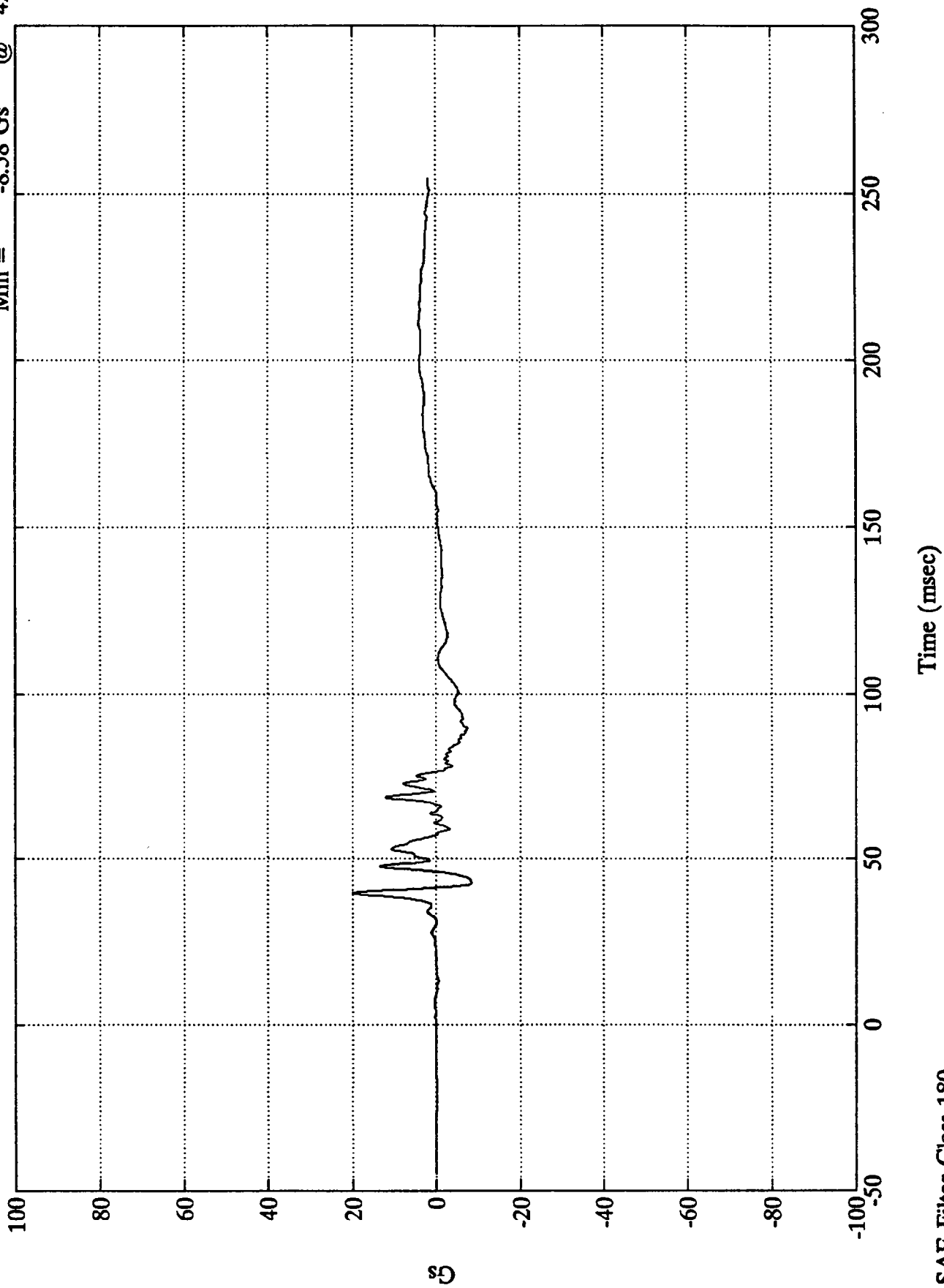


B-78

7893-7

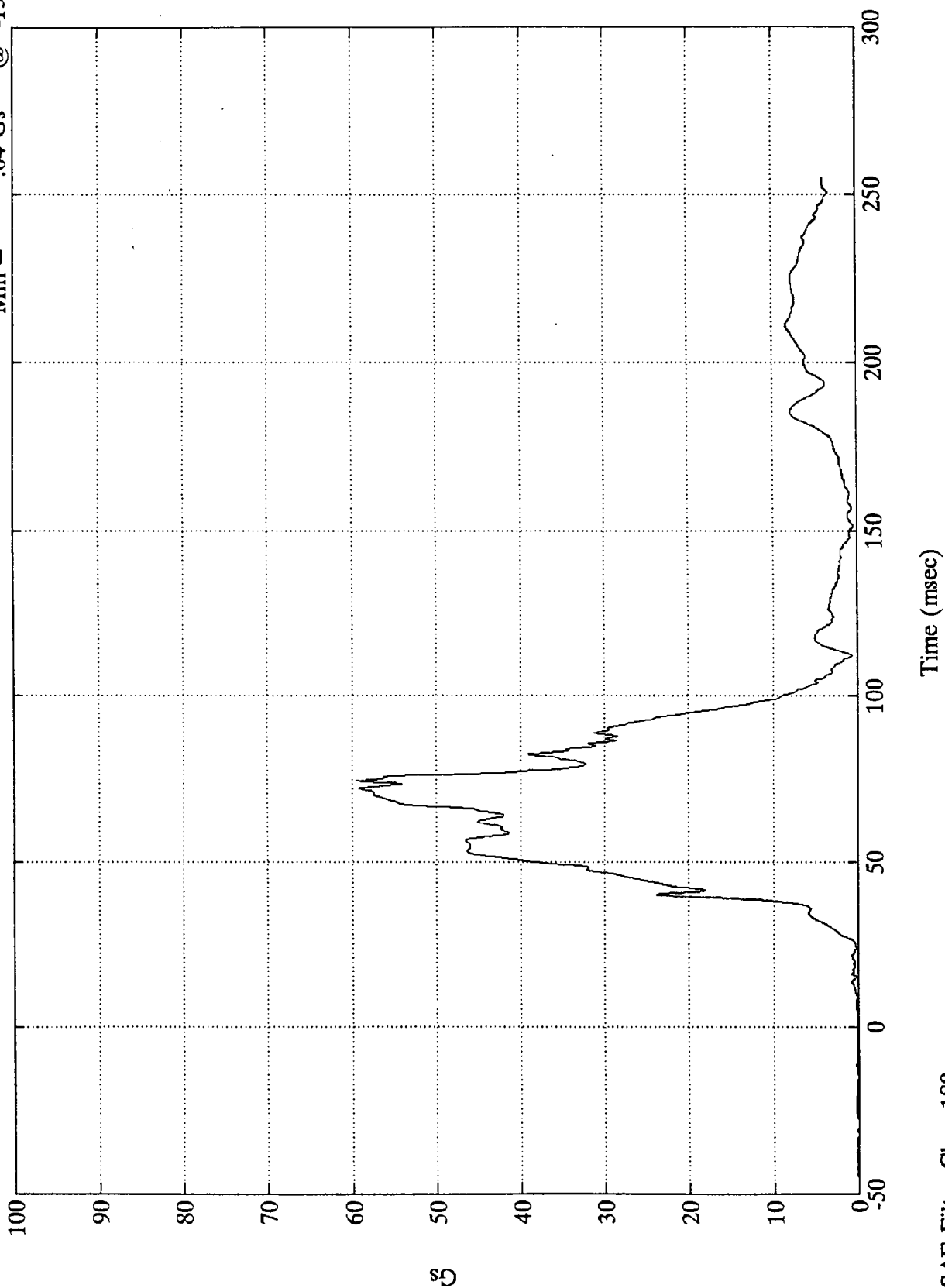
SAE Filter Class 180

Pos. 1 Chest Z
 Max = 19.84 Gs @ 39.71 msec
 Min = -8.58 Gs @ 42.72 msec



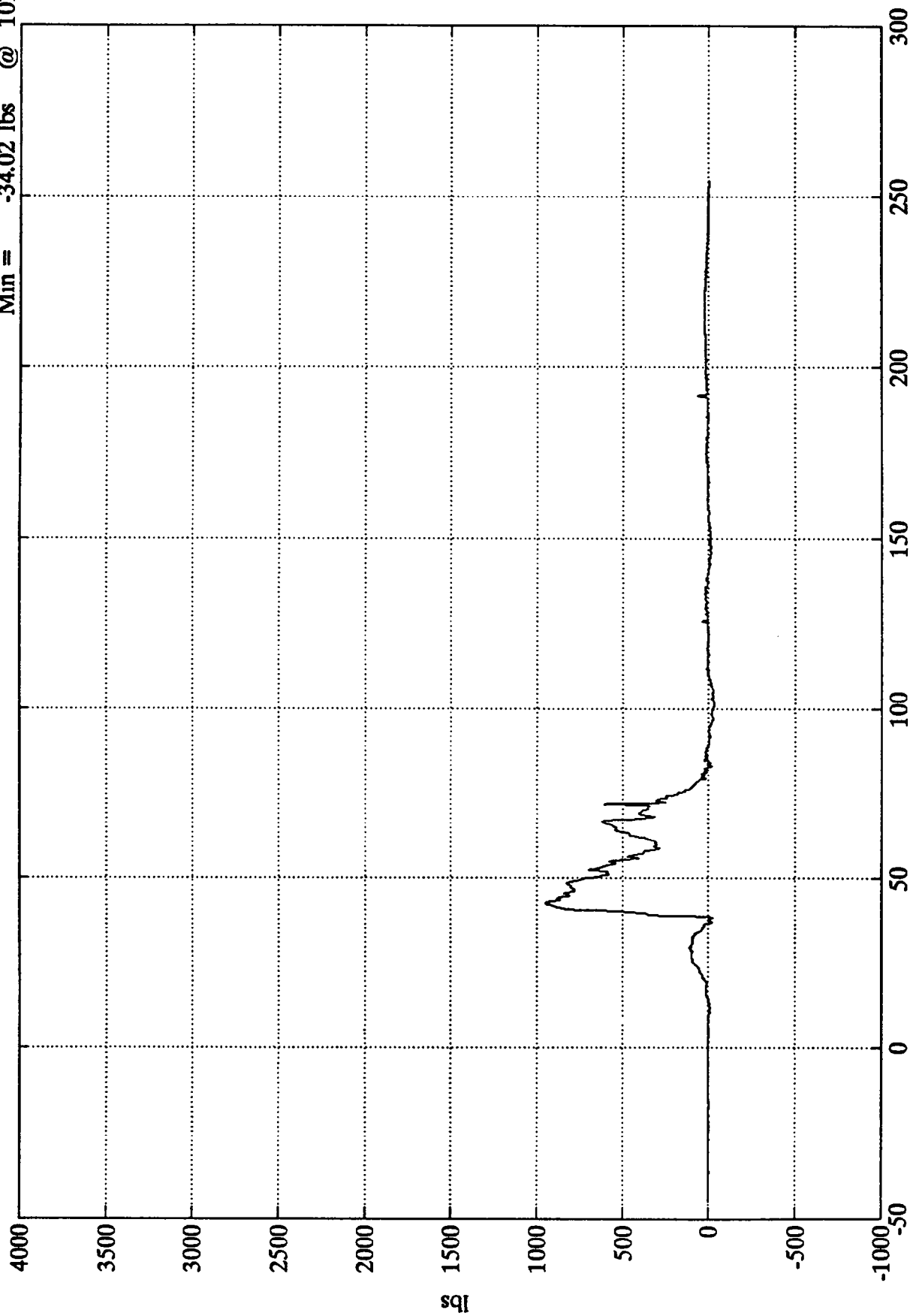
NCAP TEST 1991 TOYOTA TERCEL

Pos. 1 Chest Resultant
 Max = 59.53 Gs @ 74.27 msec
 Min = .04 Gs @ -15.24 msec



NCAP TEST 1991 TOYOTA TERCEL

Pos. 1 Left Femur
Max = 945.36 lbs @ 42.60 msec
Min = -34.02 lbs @ 101.52 msec



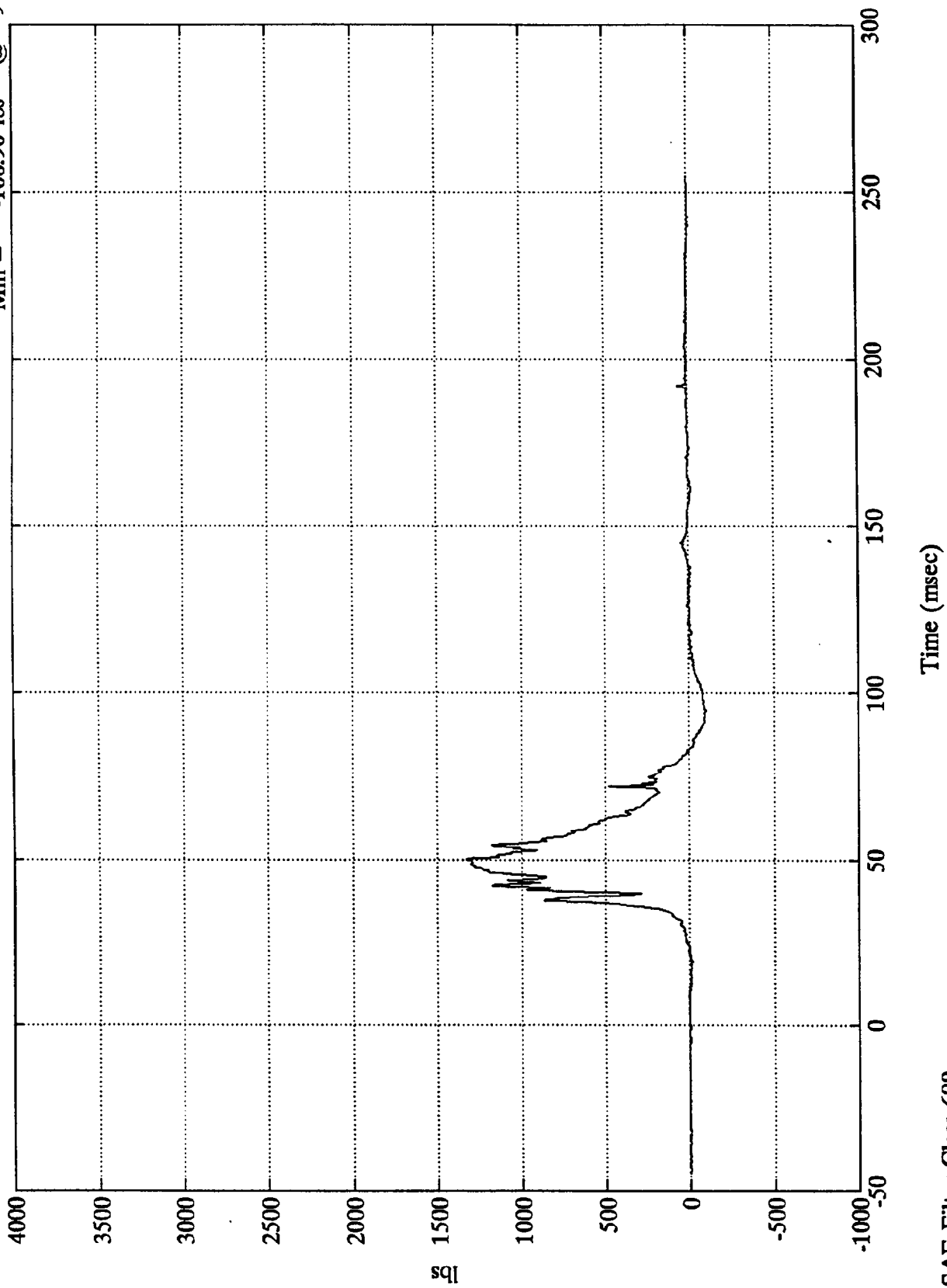
Time (msec)

SAE Filter Class 600

NCAP TEST 1991 TOYOTA TERCEL

Pos. 1 Right Femur

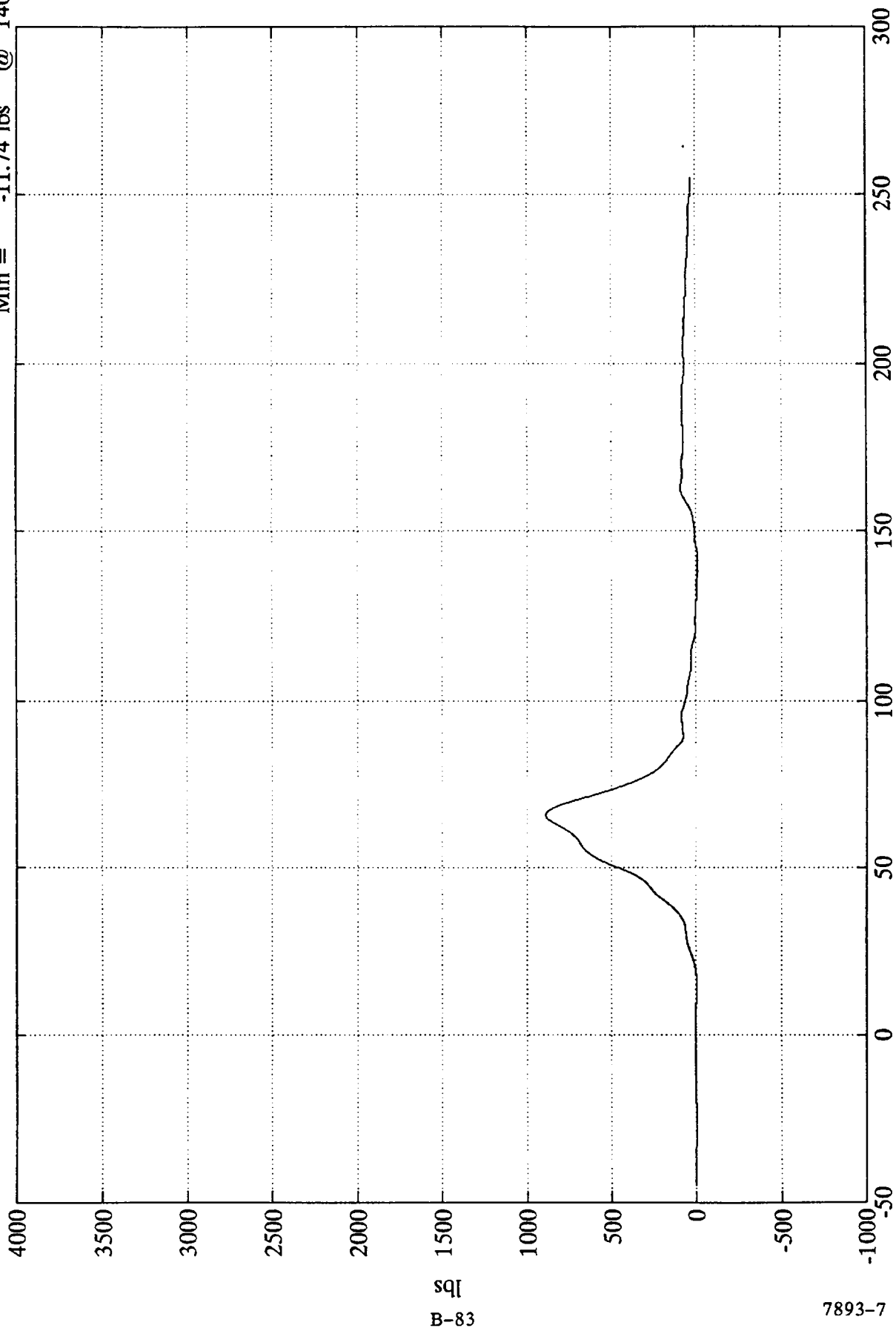
Max = 1325.19 lbs @ 50.28 msec
Min = -100.90 lbs @ 94.68 msec



NCAP TEST 1991 TOYOTA TERCEL

Pos. 1 Left Belt Load

Max = 888.92 lbs @ 66.00 msec
Min = -11.74 lbs @ 140.28 msec



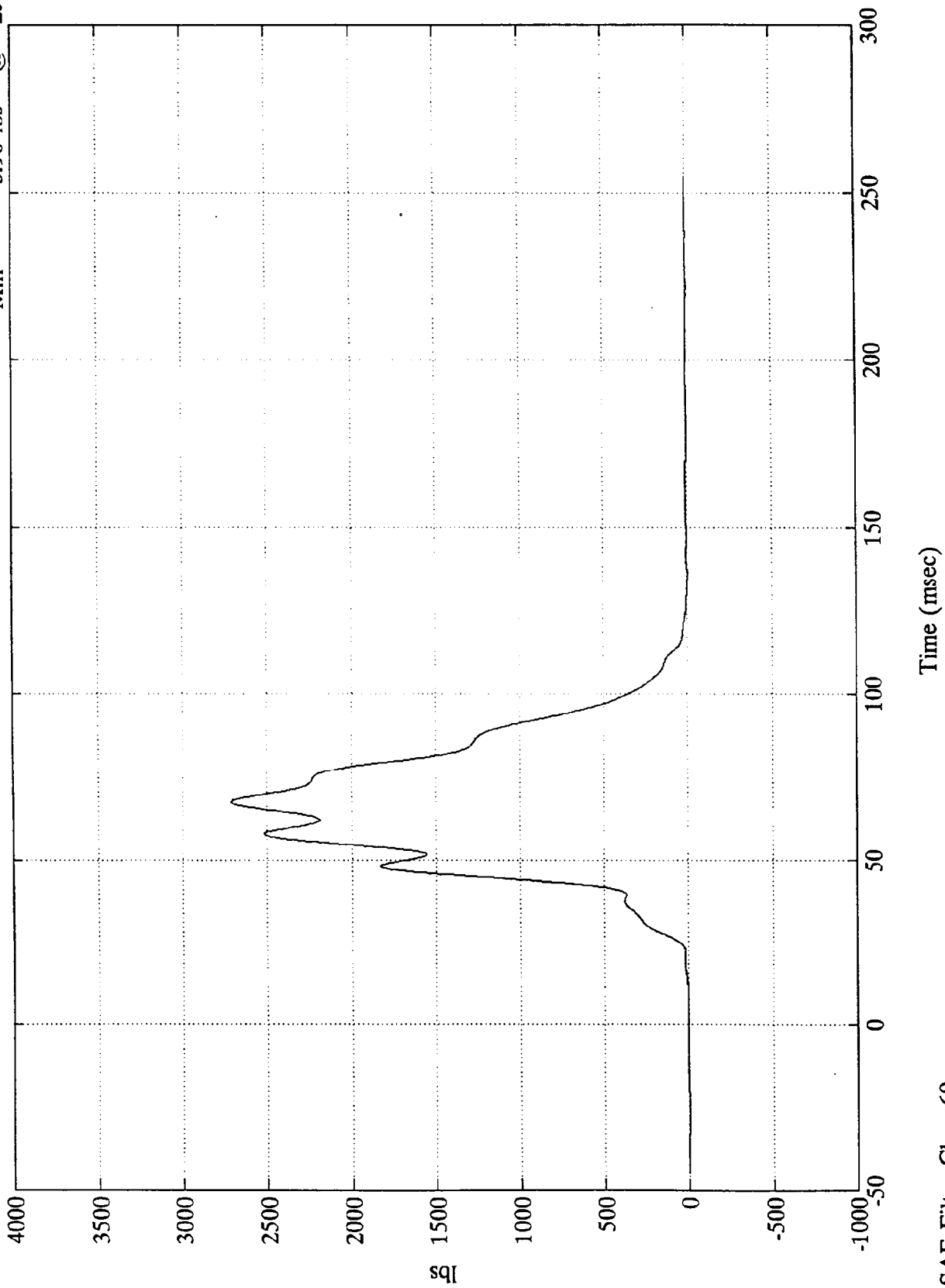
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Pos. 1 Torso Belt Load

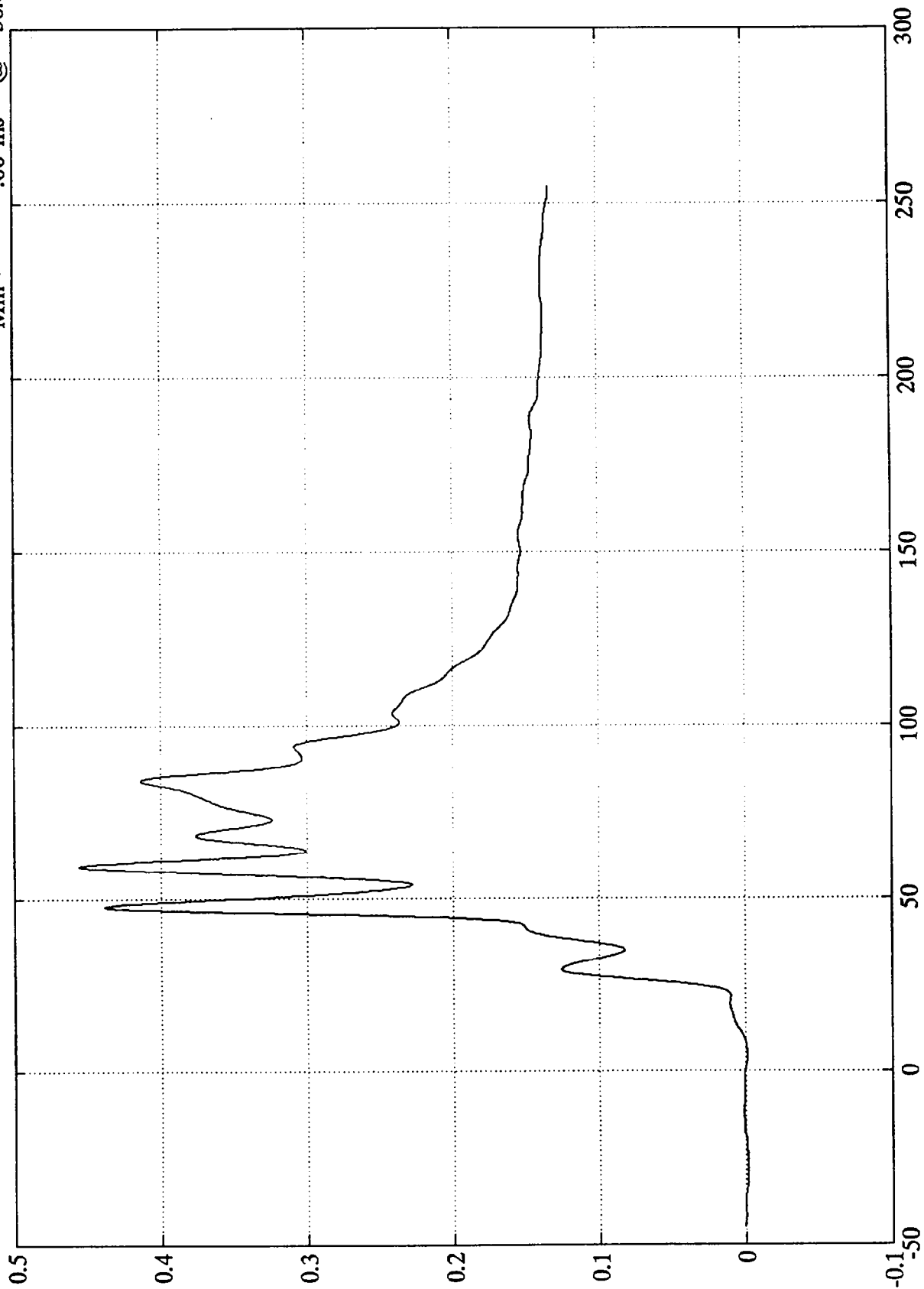
Max = 2712.48 lbs @ 67.56 msec
Min = -3.90 lbs @ -25.68 msec



NCAP TEST 1991 TOYOTA TERCEL

Pos. 1 Belt Elongation

Max = .45 ins @ 59.40 msec
Min = -.00 ins @ -30.60 msec



Time (msec)

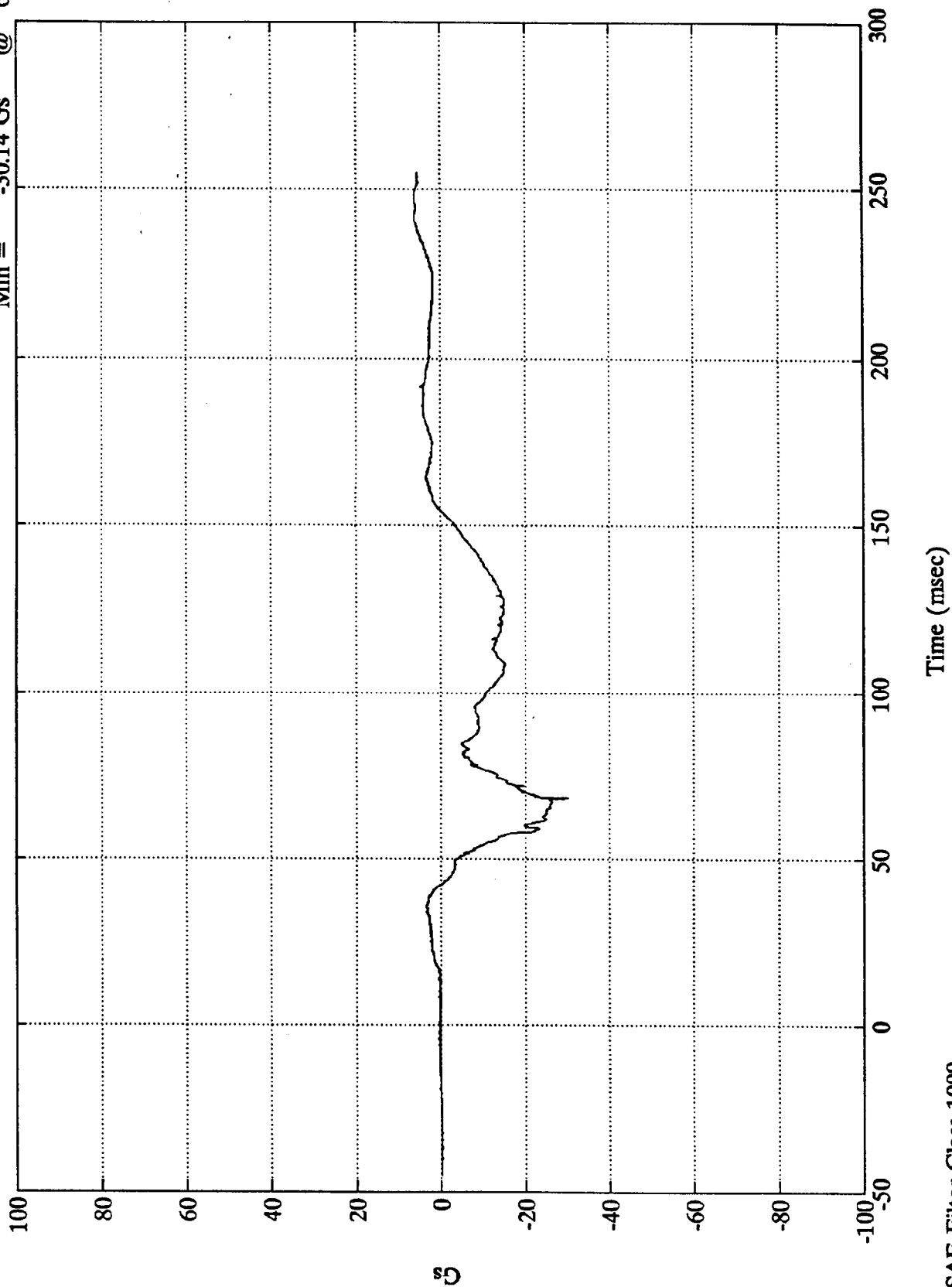
Measured over 2.5 inches

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

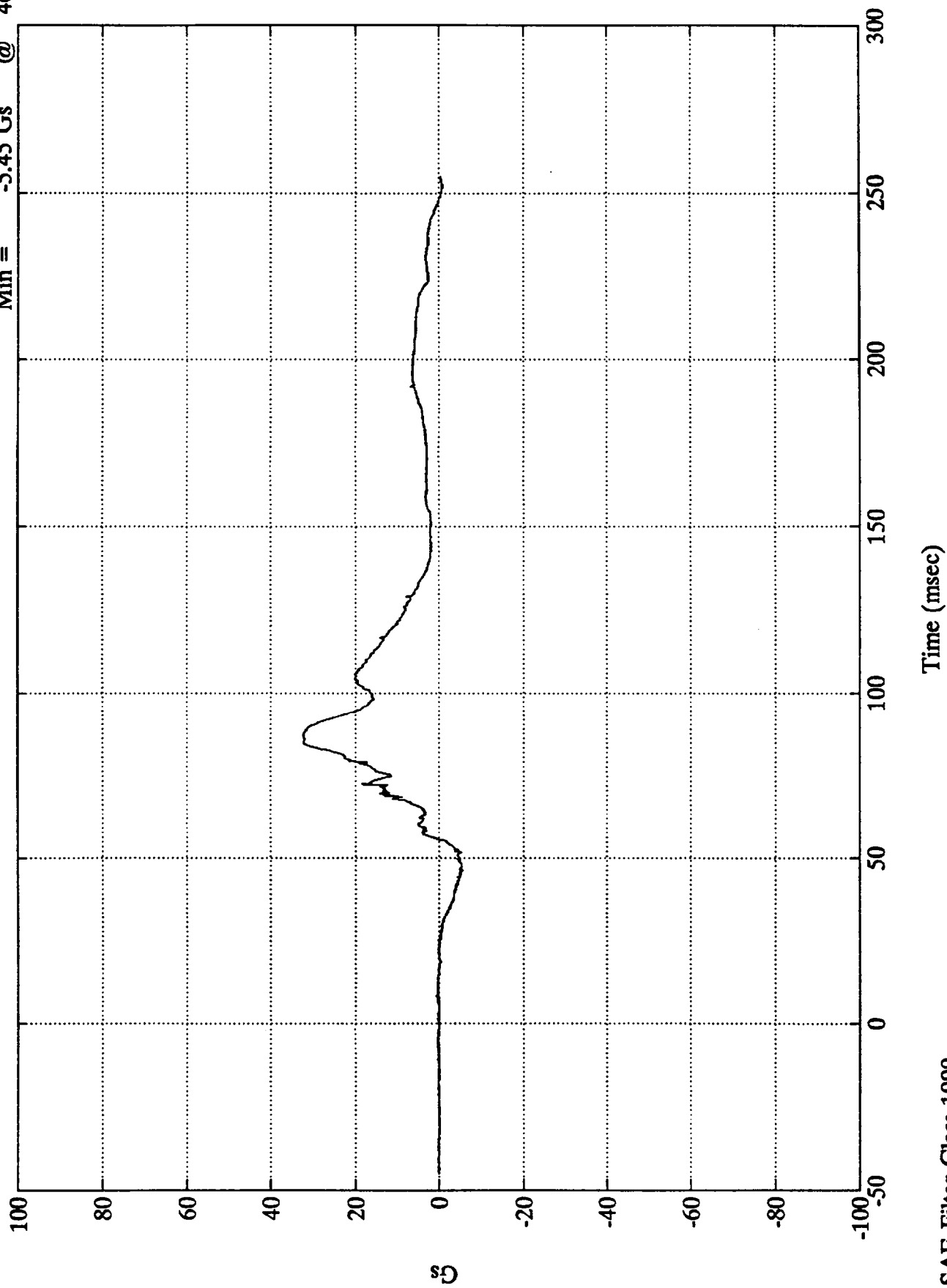
Pos. 2 Head X

Max = 6.08 Gs @ 248.76 msec
Min = -30.14 Gs @ 68.04 msec



NCAP TEST 1991 TOYOTA TERCEL

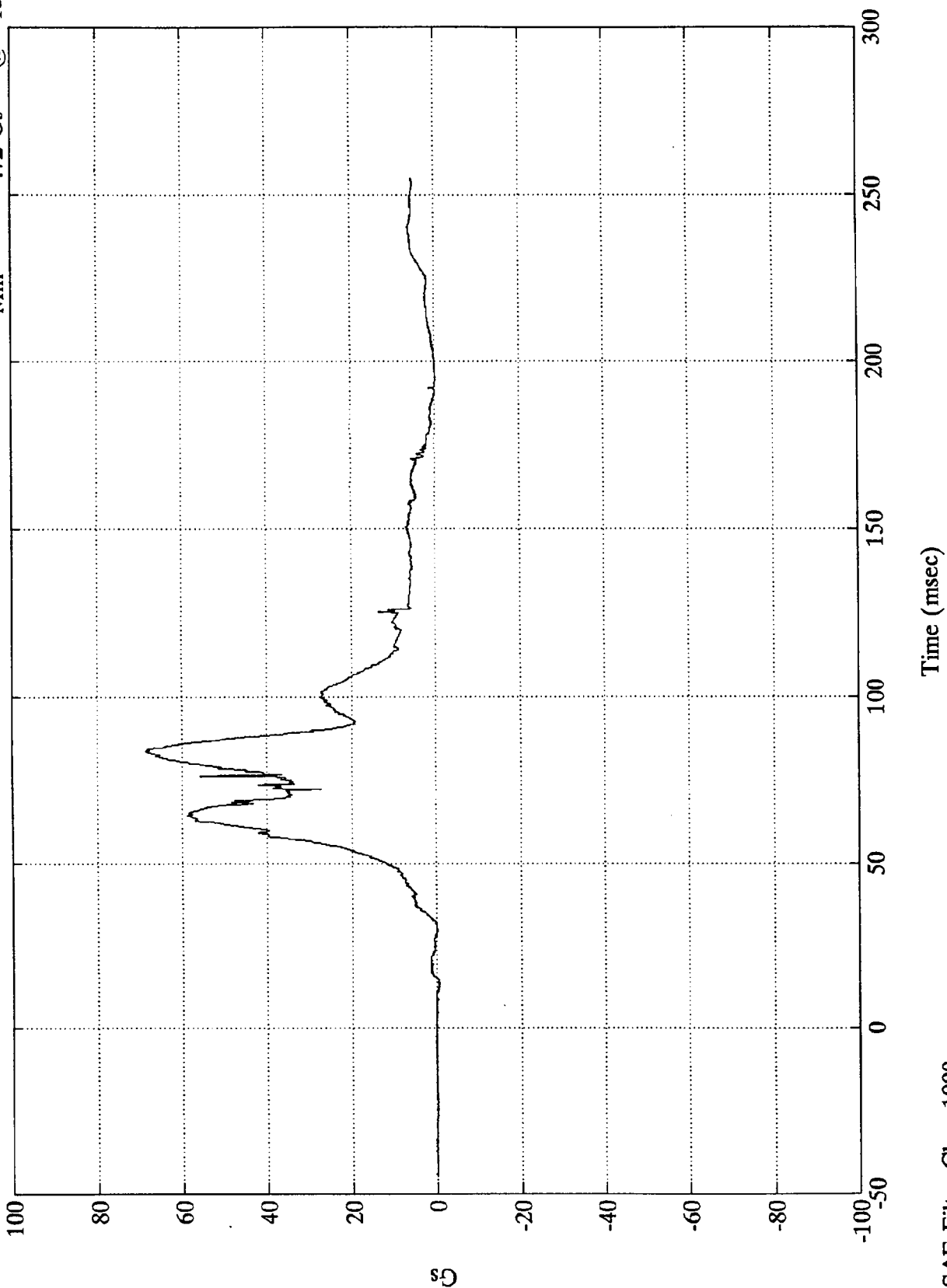
Pos. 2 Head Y
Max = 32.45 Gs @ 87.00 msec
Min = -5.45 Gs @ 46.44 msec



NCAP TEST 1991 TOYOTA TERCEL

Max = 68.44 Gs @ 83.64 msec
Min = -7.72 Gs @ 13.08 msec

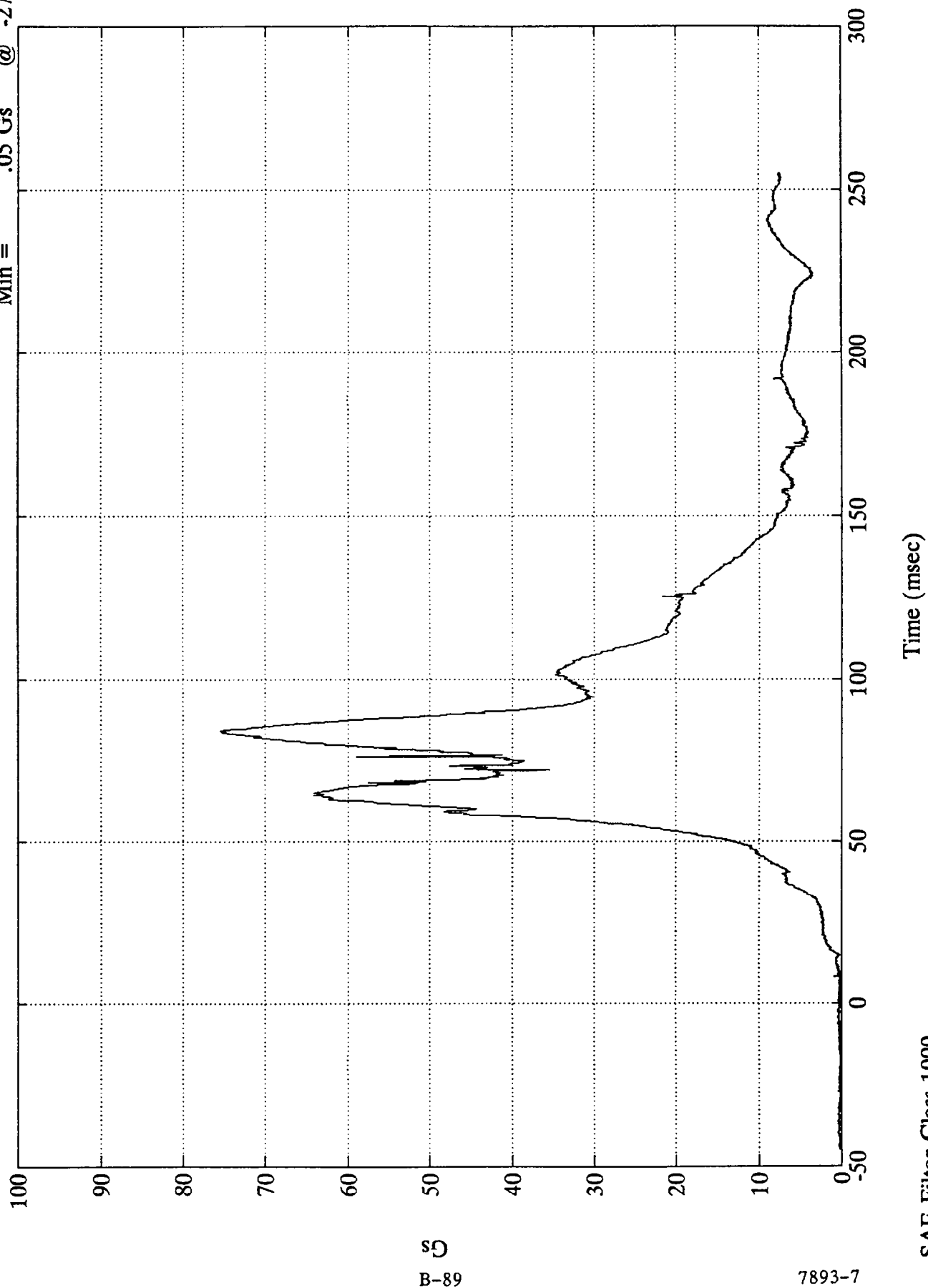
Pos. 2 Head Z



SAE Filter Class 1000

NCAP TEST 1991 TOYOTA TERCEL

Pos. 2 Head Resultant
Max = 75.45 Gs @ 84.12 msec
Min = .05 Gs @ -27.72 msec



B-89

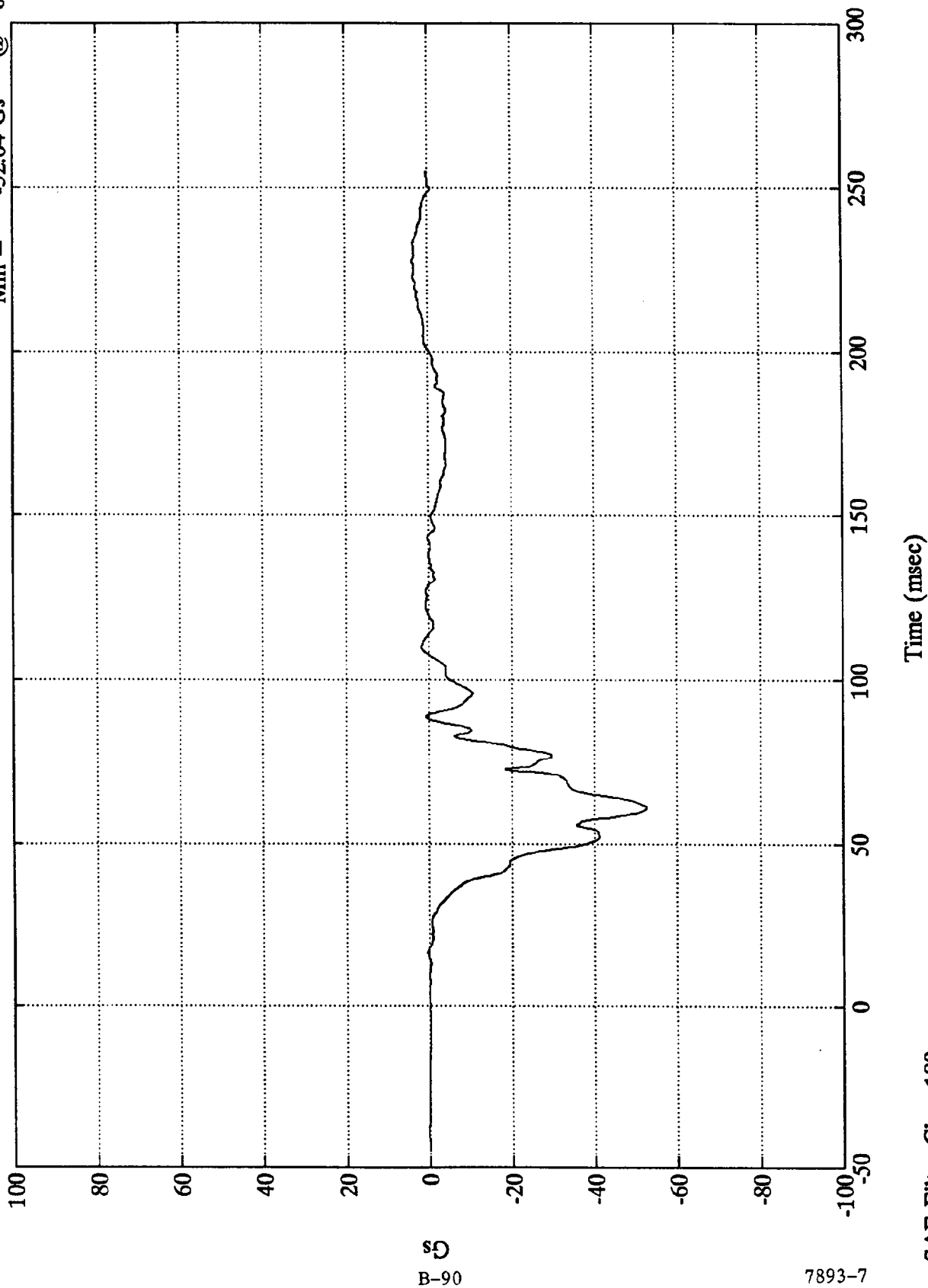
7893-7

SAE Filter Class 1000

NCAP TEST 1991 TOYOTA TERCEL

Max = 3.79 Gs @ 228.00 msec
 Min = -52.64 Gs @ 61.20 msec

Pos. 2 Chest X

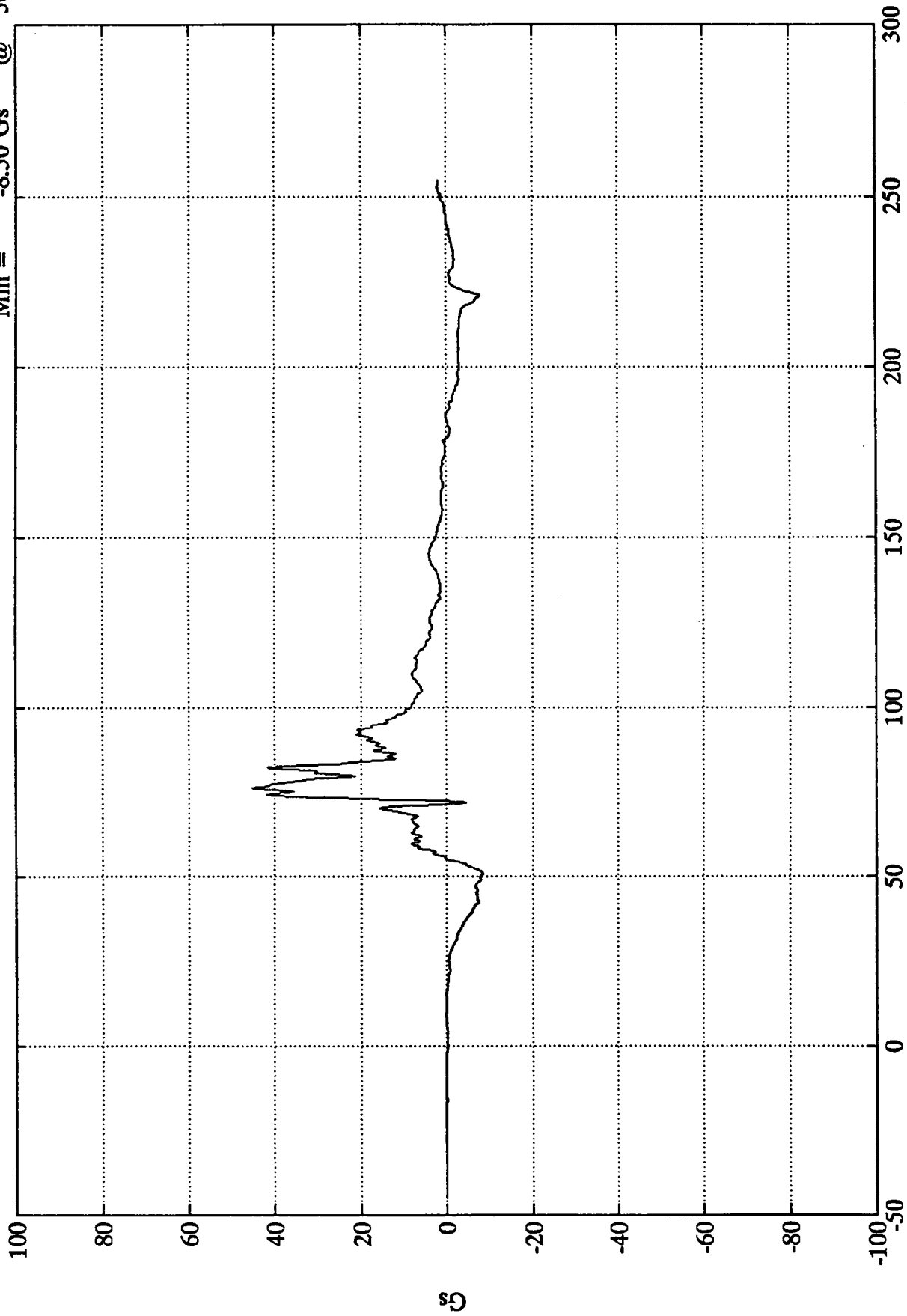


SAE Filter Class 180

NCAP TEST 1991 TOYOTA TERCEL

Pos. 2 Chest Y

Max = 45.10 Gs @ 76.31 msec
Min = -8.50 Gs @ 50.88 msec



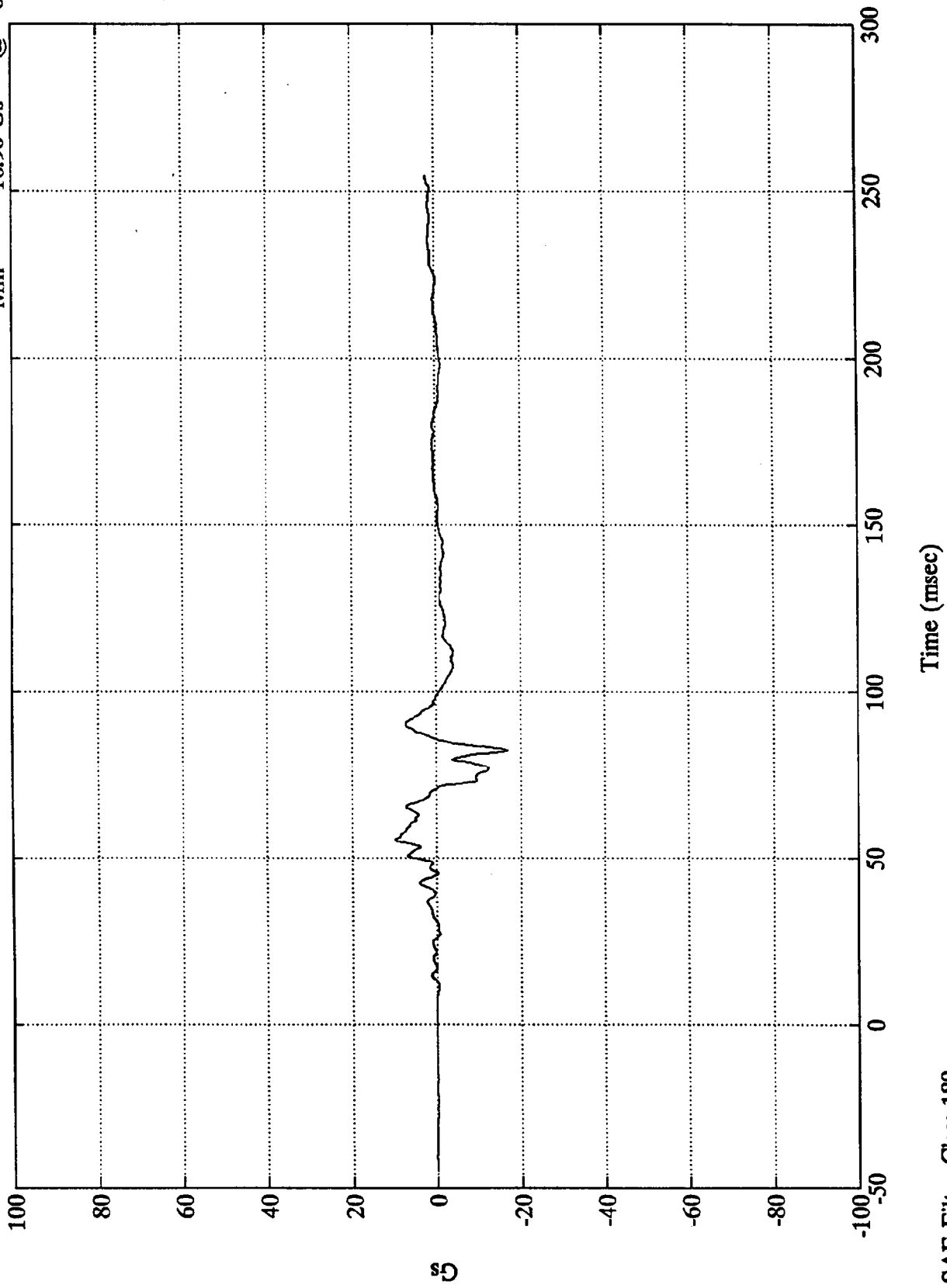
Time (msec)

SAE Filter Class 180

NCAP TEST 1991 TOYOTA TERCEL

Max = 9.96 Gs @ 55.56 msec
Min = -16.96 Gs @ 82.44 msec

Pos. 2 Chest Z



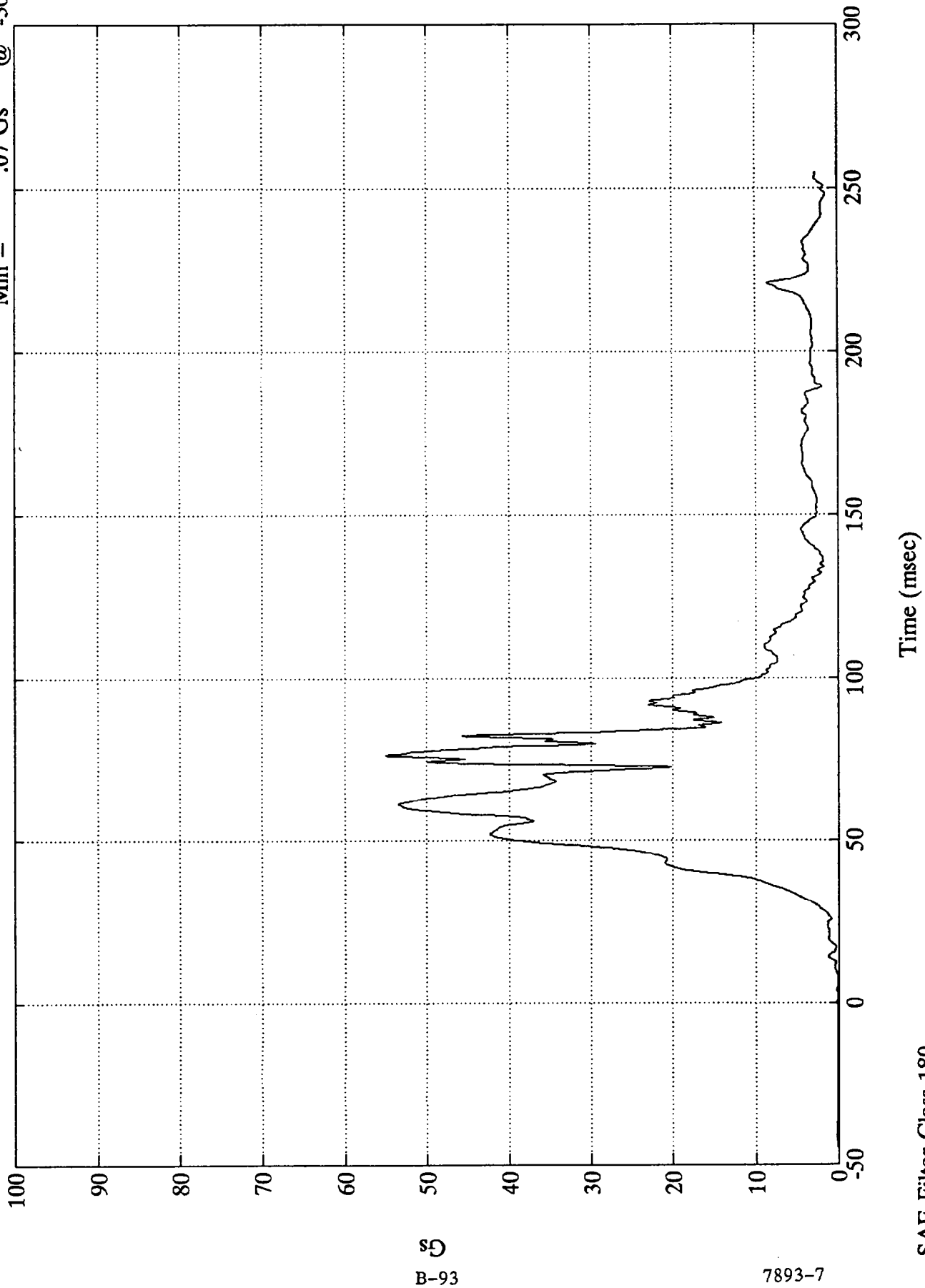
Gs
B-92

7893-7

SAE Filter Class 180

Pos. 2 Chest Resultant

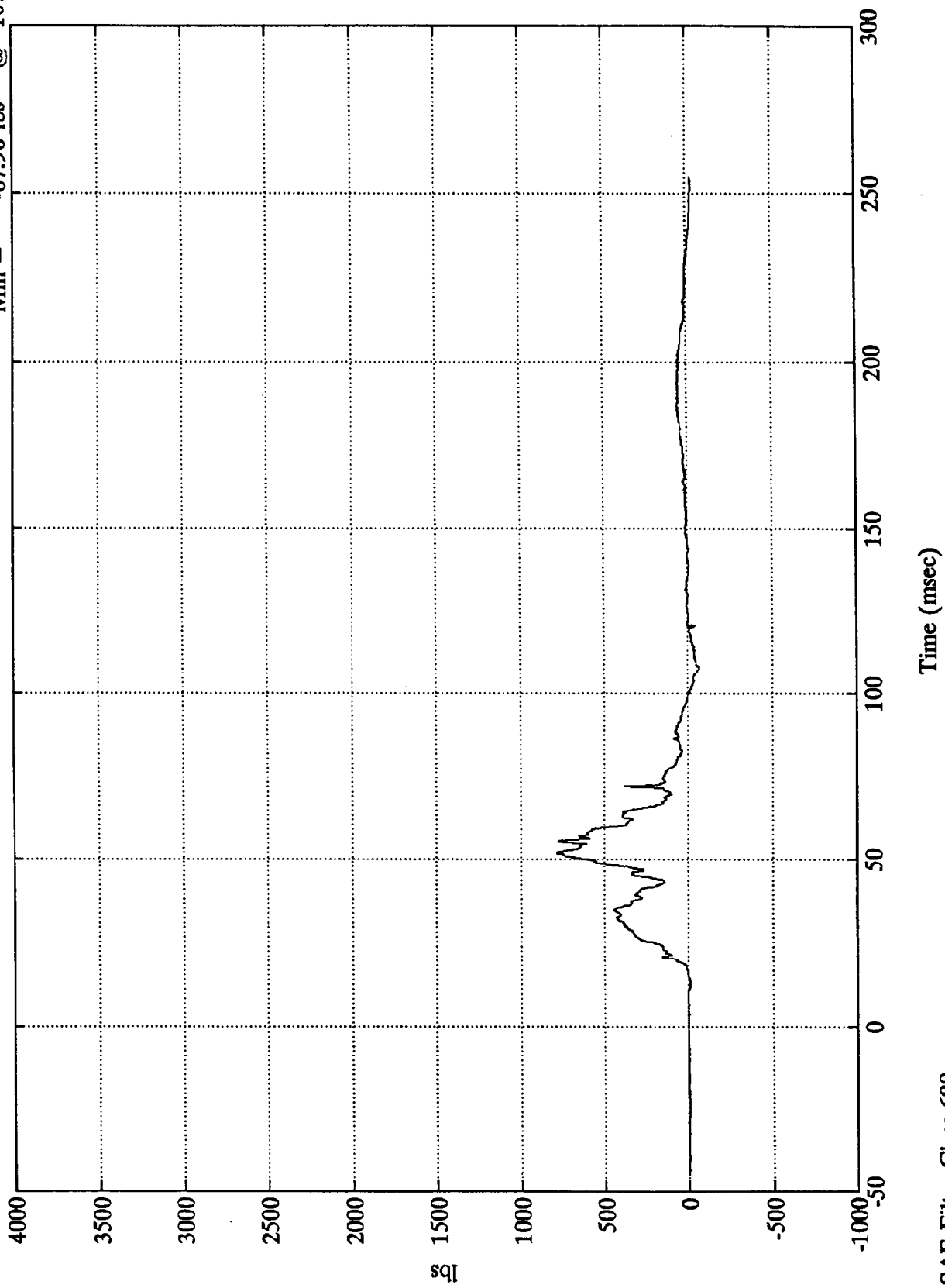
Max = 54.88 Gs @ 76.31 msec
Min = .07 Gs @ -30.60 msec



NCAP TEST 1991 TOYOTA TERCEL

Max = 778.27 lbs @ 51.95 msec
Min = -67.90 lbs @ 107.51 msec

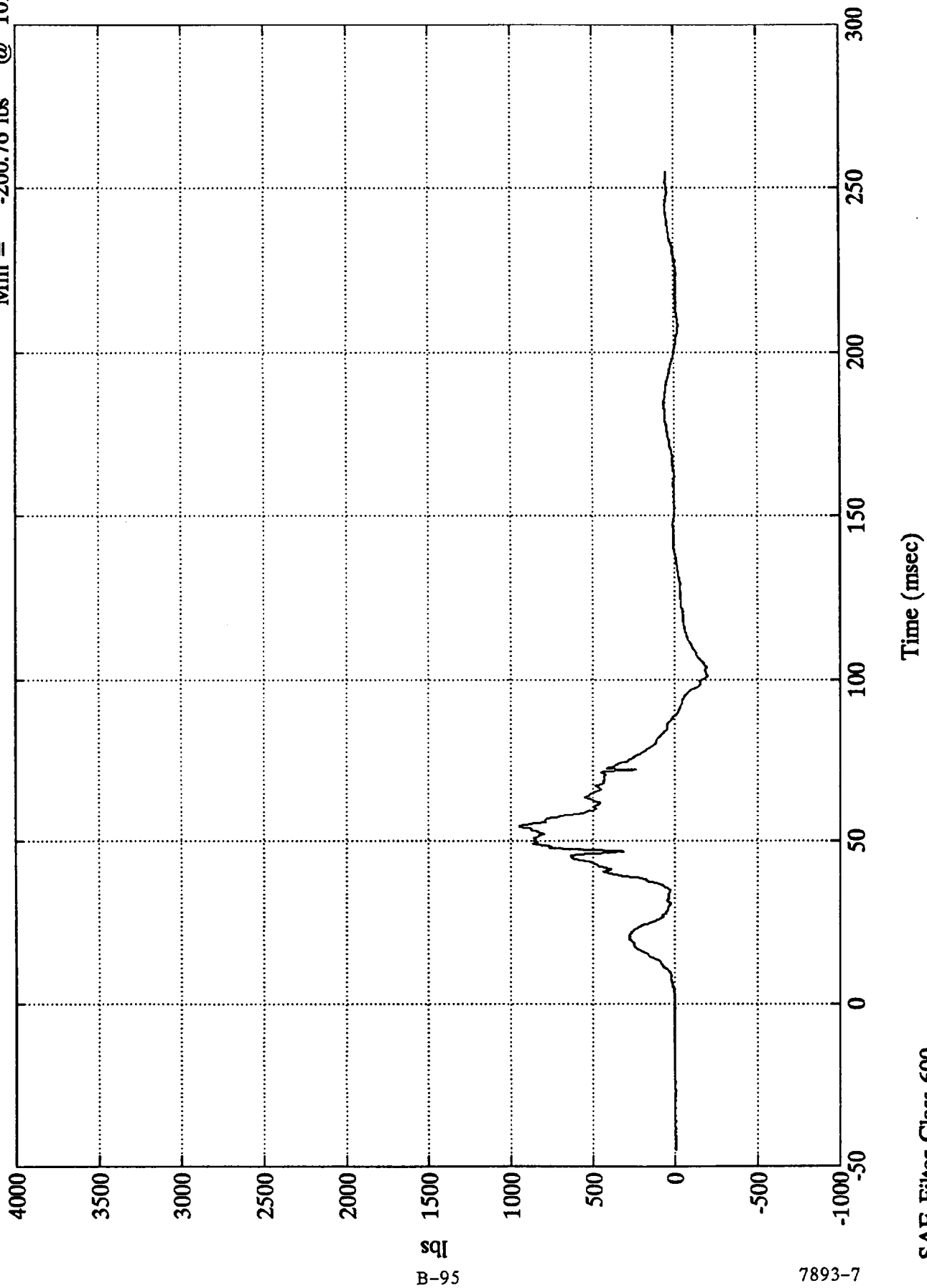
Pos. 2 Left Femur



NCAP TEST 1991 TOYOTA TERCEL

Pos. 2 Right Femur

Max = 948.73 lbs @ 54.47 msec
Min = -200.76 lbs @ 101.16 msec



B-95

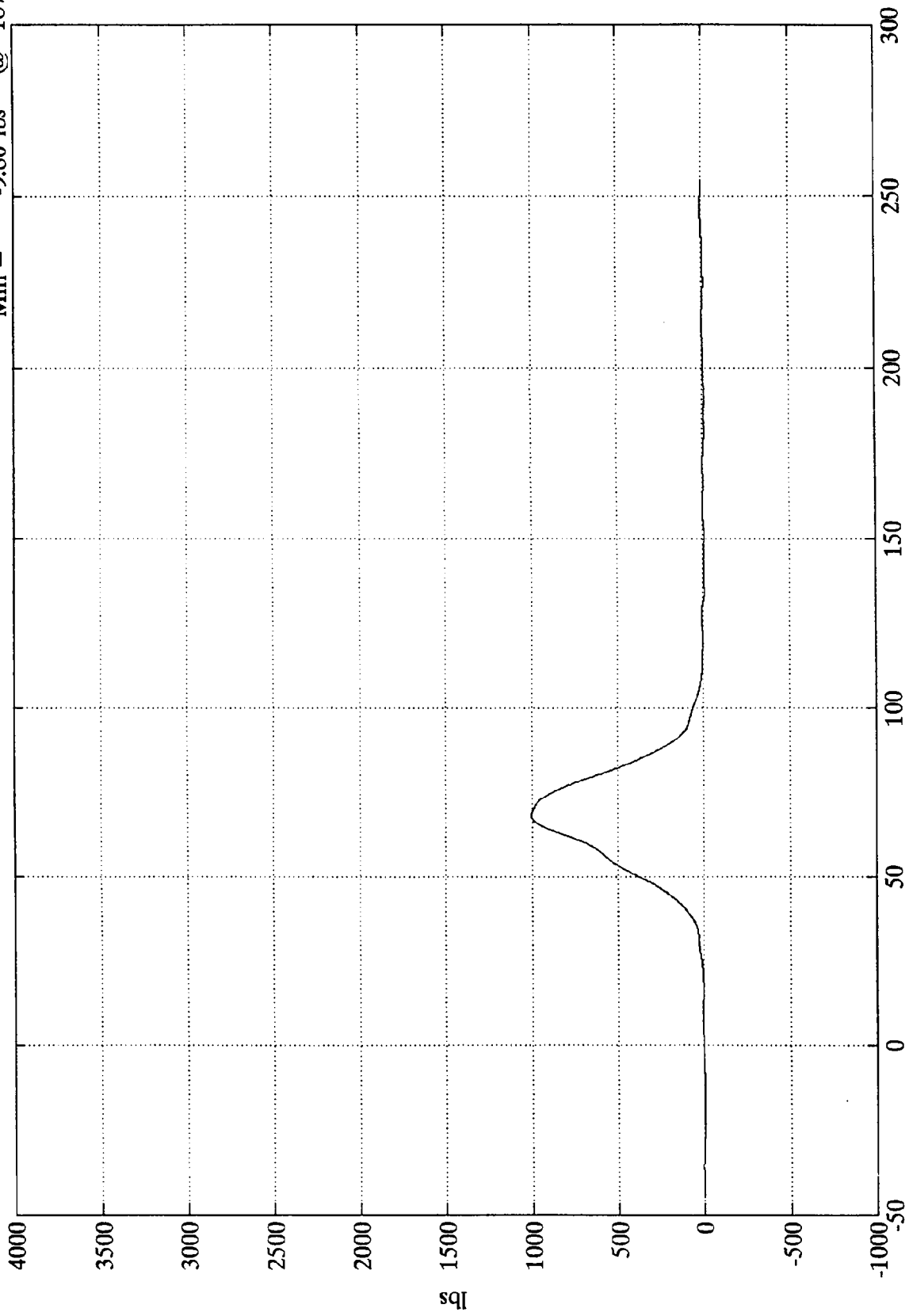
7893-7

SAE Filter Class 600

NCAP TEST 1991 TOYOTA TERCEL

Pos. 2 Right Belt Load

Max = 1002.55 lbs @ 68.28 msec
Min = -9.80 lbs @ 187.80 msec



sq
B-96

7893-7

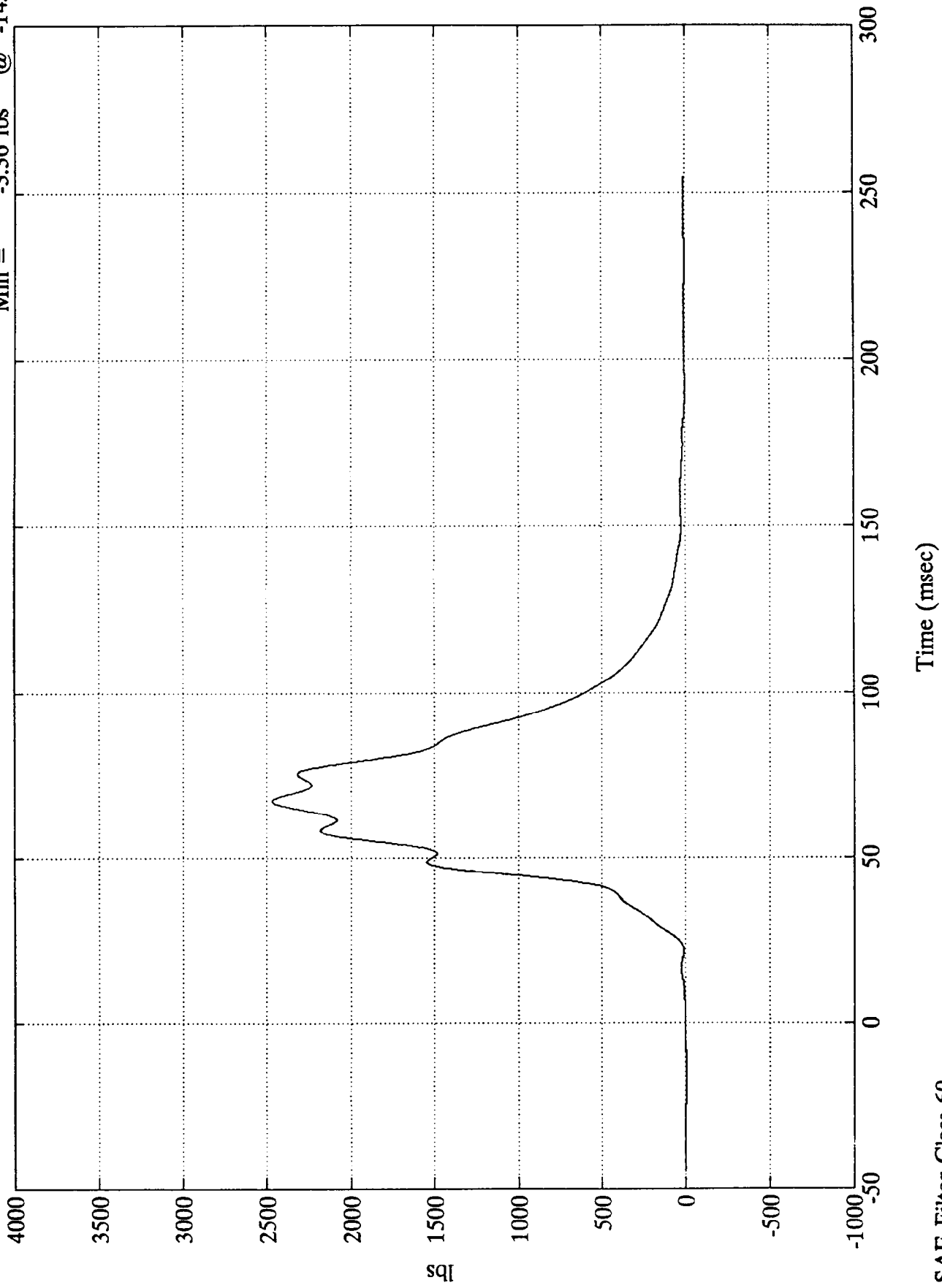
Time (msec)

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Pos. 2 Torso Belt Load

Max = 2468.05 lbs @ 67.44 msec
Min = -3.36 lbs @ -14.76 msec



sqI
B-97

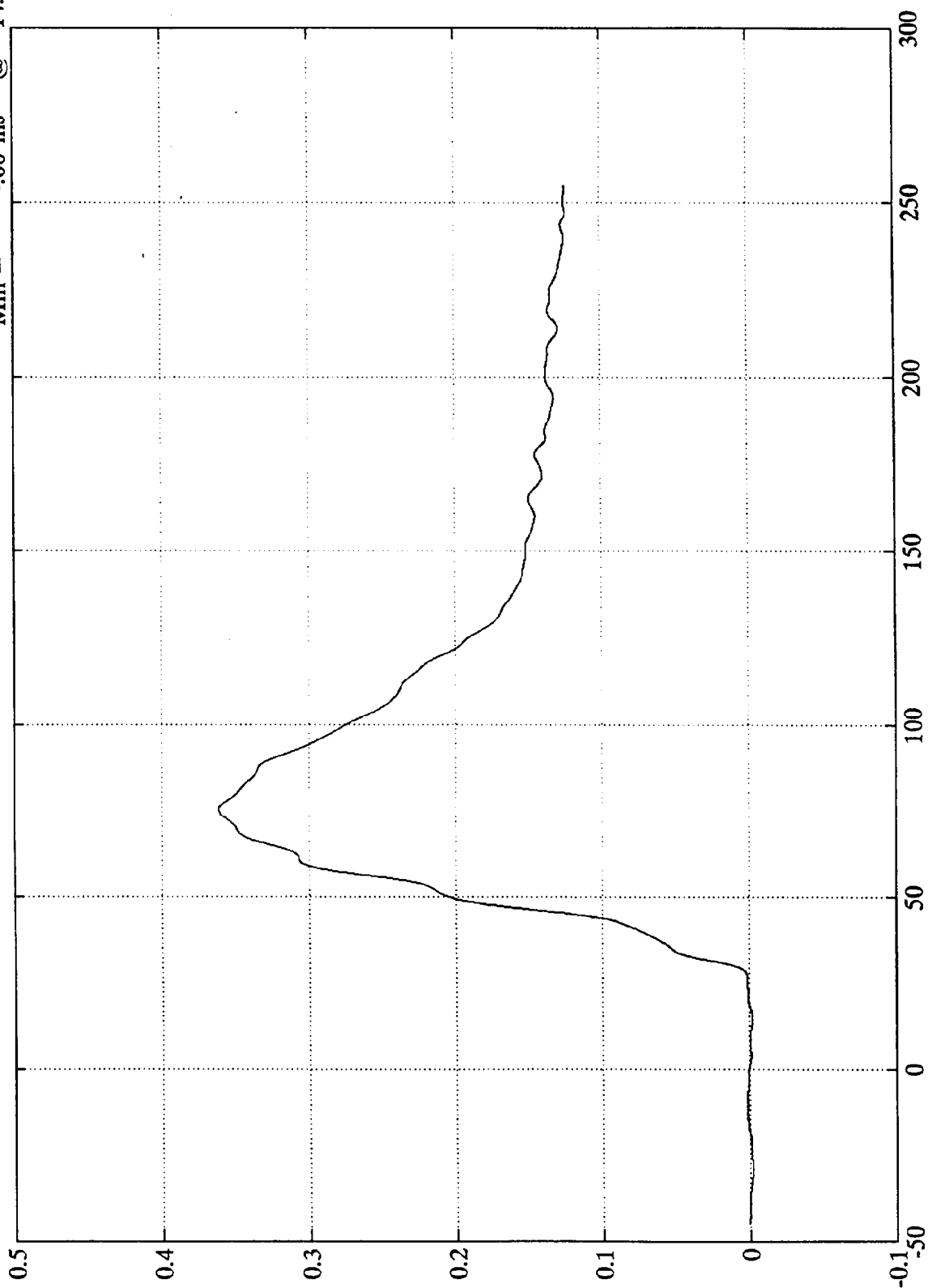
7893-7

SAE Filter Class 60

NCAP TEST 1991 TOYOTA TERCEL

Pos. 2 Belt Elongation

Max = .36 ins @ 75.36 msec
Min = -.00 ins @ 14.27 msec



Measured over 2.5 inches

SAE Filter Class 60

Appendix C

PART 572-B DUMMY CONFIGURATION
AND PERFORMANCE VERIFICATION DATA SHEETS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of Calspan Corporation, Advanced Technology Center. A summary of the test results, and Part 572 specifications are included in this Appendix.

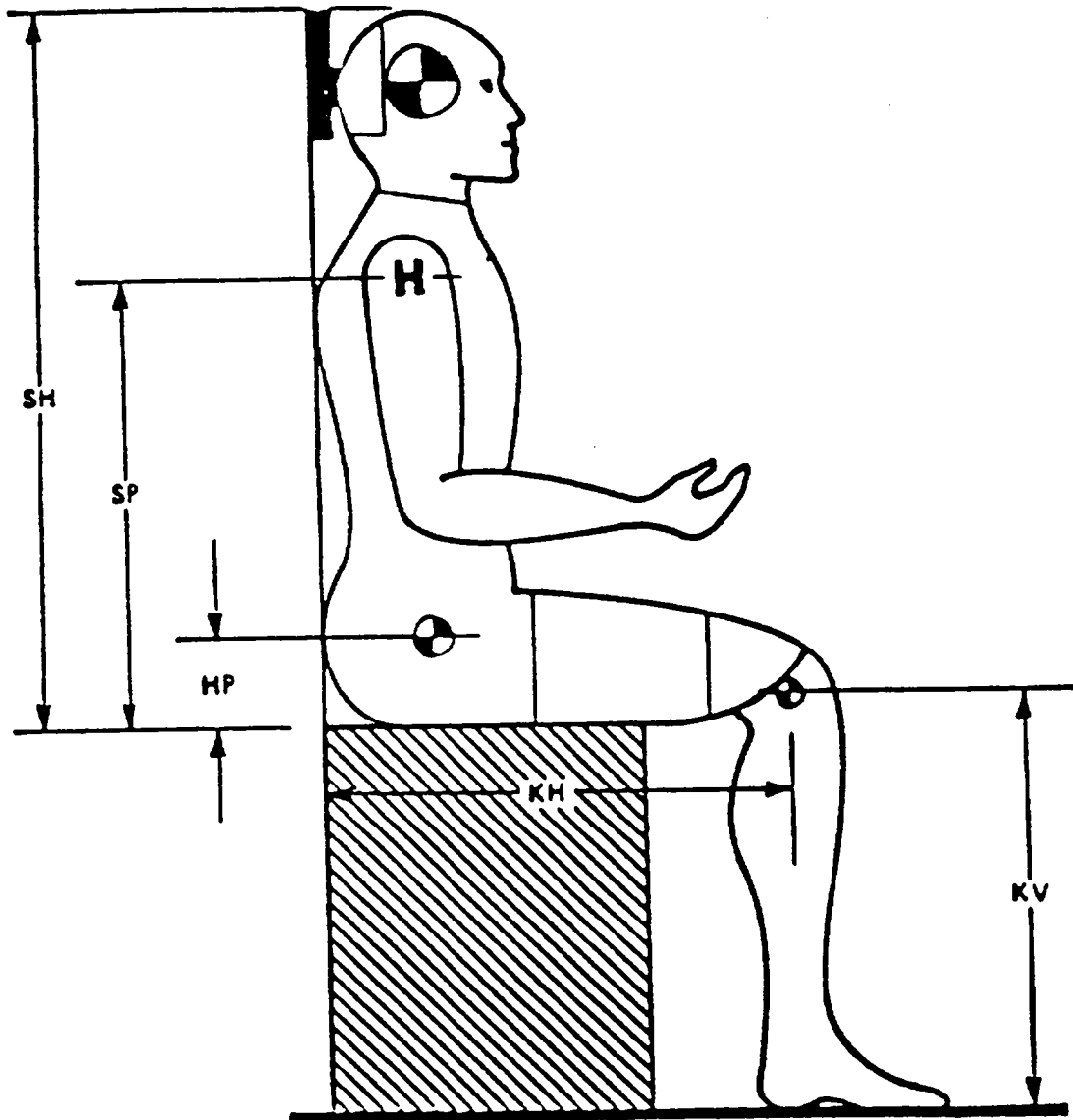
Dummy serial numbers and certification dates are:

<u>Serial No.</u>	<u>Completion Date</u>
357	3-8-91
358	3-8-91

Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Indicant Testing Final Report No. 6525-V-1.

Figure 10
DUMMY CONFIGURATION DIMENSIONS



PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA DUMMY I.D. NUMBER.: 357

I. CONFIGURATION VERIFICATION DATA

	P. 572 SPECIFICATION	PRE-TEST if required	POST-TEST if required
DATE OF CONFIGURATION VERIFICATION	XXXXXXXXXXXXXX	3-8-91	
VERIFICATION NUMBER FOR DUMMY (*)	XXXXXXXXXXXXXX	1	
SH - Seated Height	35.6 to 35.8"	35.6 "	"
SP - Shoulder Pivot Height	21.8 to 22.4"	21.9 "	"
HP - Hip Pivot Height	3.9" ref.	3.9 "	"
KH - Knee Pivot from Back Line	20.1 to 20.7"	20.4 "	"
KV - Knee Pivot from floor	19.3 to 19.9"	19.5 "	"
SW - Shoulder Width	17.8 to 18.4"	18.0 "	"
HW - Hip Width	14.0 to 15.4"	14.3 "	"

II. PERFORMANCE VERIFICATION DATA:

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION		3-8-91	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY (*)		1	
VERIFICATION LAB TEMPERATURE (66 to 78 deg.)		69-70 deg	deg
VERIFICATION LAB HUMIDITY (10 TO 70 %)		26-33 %	%
TEST PARAMETER	SPECIFICACIÓN		
1. HEAD DROP TEST			
a. peak resultant accel.	210 to 260 G's	218.3 G's	G's
b. peak lateral accel.	<= 10 G's	7.7 G's	G's
c. Time above 100 G's	0.9 to 1.5 ms.	1.38 ms	ms

* Sequential number beginning with "1" at the start of each fiscal years's crash test program.

TECHNICIAN'S NAME: IVAN MINKEWICZ

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA...continued

II. PERFORMANCE VERIFICATION DATA (continued)

NHTSA DUMMY I.D. NUMBER: 357

TEST PARAMETER	SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
2. NECK BENDING TEST			
a. Pendulum Speed	21.5 to 25.5 fps.	23.5 fps	
b. Pend. Avg. Decel. over t3 to t2	20 to 24 G's	23.1 G's	
c. Peak Resultant Head Acceleration	26 G's max.	25.79 G's	
d. Pendulum Decel. (t2-t1)	<= 3 ms.	2.48 ms	
e. Pendulum Decel. (t3-t2)	25 to 30 ms.	26.29 ms	
f. Pendulum Decel. (t4-t3)	<= 10 ms.	8.43 ms	
g. Max. Head Rotation	63 to 73 deg.	69.59 deg	
h. Chordal Displacement			

HEAD ROTATION ANGLE				
0 deg.	Time	-2 to 2 ms.	0.0 ms	
	Displ.	-.5 to .5"	0.0 "	
30 deg.	Time	25.6 to 34.4 ms.	29.02 ms	
	Displ.	2.1 to 3.1"	2.49 "	
60 deg.	Time	40.3 to 51.7 ms.	44.89 ms	
	Displ.	4.3 to 5.3"	4.84 "	
Maximum	Time	53.2 to 66.8 ms.	56.67 ms	
	Displ.	5.0 to 6.0"	5.28 "	
60 deg.	Time	67.0 to 83.0 ms.	70.19 ms	
	Displ.	4.3 to 5.3"	4.88 "	
30 deg.	Time	85.4 to 104.6 ms.	88.67 ms	
	Displ.	2.1 to 3.1"	2.20 "	
0 deg.	Time	101.0 - 123.0 ms.	103.17 ms	
	Displ.	-.5 to 0.5"	0.0 "	

TECHNICIANS NAME: IVAN MINKEWICZ

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA (continued)

II. PERFORMANCE VERIFICATION DATA (continued)

NHTSA DUMMY I.D. NUMBER: 357

TEST PARAMETER	SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
3. ABDOMINAL COMPRESSION			
TEST: (preload = 50 lbs.)			
a. Force @ 0.5"	23 to 36 lbs.	25 lbs	
b. Force @ 0.75"	36 to 50 lbs.	39 lbs	
c. Force @ 1.0"	50 to 63 lbs.	58 lbs	
d. Force @ 1.3"	73 to 88 lbs.	85.5 lbs	
4. LUMBAR FLEXION TEST:			
a. Force @ 20 deg.	22 to 34 lbs.	25 lbs	
b. Force @ 30 deg.	34 to 46 lbs.	38.9 lbs	
c. Force @ 40 deg.	46 to 58 lbs.	53.5 lbs	
d. Return Angle	12 deg. maximum	10 deg	
5. CHEST IMPACT TESTS:			
A. High Speed			
(1) Probe Speed	21.78-22.22 fps.	21.8 fps	
(2) Peak Deflection	1.7" maximum	1.69 "	
(3) Peak Resistive Force	2250 lbs maximum	2055 lbs	
(4) Internal Hysteresis	50 to 70%	57.3 %	
B. Low Speed			
(1) Probe Speed	13.86-14.14 fps.	13.9 fps	
(2) Peak Deflection	1.1" maximum	1.06 "	
(3) Peak Resistive Force	1450 lbs maximum	1258 lbs	
(4) Internal Hysteresis	50 to 70%	57.2 %	

TECHNICIAN'S NAME: IVAN MINKEWICZ

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA (continued)

II. PERFORMANCE VERIFICATION DATA (continued)

NHTSA DUMMY I.D. NUMBER: 357

		PRE-TEST (if required)	POST-TEST (if required)
TEST PARAMETER	SPECIFICATION		
6. KNEE IMPACT TEST			
A. Left Knee			
(1) Probe Speed	6.76 to 7.04 fps	7.0 fps	
(2) Maximum Force	1850 to 2500 lbs	1939 lbs	
(3) Time above 1000 lbs.	1.7 ms. minimum	1.75 ms	
B. Right Knee			
(1) Probe Speed	6.76 to 7.04 fps	7.0 fps	
(2) Maximum Force	1850 to 2500 lbs	2028 lbs	
(3) Time Above 1000 lbs.	1.7 ms. minimum	1.75 ms	

REMARKS:

TECHNICIAN'S NAME: IVAN MINKEWICZ

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY ID NUMBER 357

DUMMY INSTRUMENT--	MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
1. HEAD ACCELEROMETER--				
HX LONGITUDINAL--	ENDEVCO	FY05	3-91	9-91
HY LATERAL--	ENDEVCO	GD98	3-91	9-91
HZ VERTICAL--	ENDEVCO	CD75	3-91	9-91
2. CHEST ACCELEROMETER--				
CX LONGITUDINAL--	CEC	A73	3-91	9-91
CY LATERAL--	ENDEVCO	CE06	3-91	9-91
CZ VERTICAL--	CEC	A44	3-91	9-91
3. FEMUR LOAD CELLS				
LEFT SIDE	GSE	954	3-91	9-91
RIGHT SIDE	GSE	955	3-91	9-91
CALIBRATION LABORATORY INSTRUMENTS--				
1. PENDULUM ACC.--	CEC	A160	11-90	5-91
2. TEST PROBE ACCELEROMETER--	CEC	A161	11-90	5-91
3. LUMBAR FLEXION TEST PUSH FORCE GAUGE--	TRANS- DUCER INC	20051	1-91	7-91
4. ABDOMINAL COMPRESS. TEST FORCE GAUGE--	BLH	72952	1-91	7-91
5. ABDOMINAL COMPRESS. TEST FORCE GAUGE--	CIC	567-11	1-91	7-91

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA DUMMY I.D. NUMBER.: 358

I. CONFIGURATION VERIFICATION DATA

	P. 572 SPECIFICATION	PRE-TEST if required	POST-TEST if required
DATE OF CONFIGURATION VERIFICATION	XXXXXXXXXXXXXXX	3-8-91	
VERIFICATION NUMBER FOR DUMMY (*)	XXXXXXXXXXXXXXX	1	
SH - Seated Height	35.6 to 35.8"	35.6 "	"
SP - Shoulder Pivot Height	21.8 to 22.4"	22.1 "	"
HP - Hip Pivot Height	3.9" ref.	3.9 "	"
KH - Knee Pivot from Back Line	20.1 to 20.7"	20.5 "	"
KV - Knee Pivot from floor	19.3 to 19.9"	19.6 "	"
SW - Shoulder Width	17.8 to 18.4"	18.0 "	"
HW - Hip Width	14.0 to 15.4"	14.8 "	"

II. PERFORMANCE VERIFICATION DATA:

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION		3-8-91	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY (*)		1	
VERIFICATION LAB TEMPERATURE (66 to 78 deg.)		69-70 deg	deg
VERIFICATION LAB HUMIDITY (10 TO 70 %)		27-33 %	%
TEST PARAMETER	SPECIFICATION		
1. HEAD DROP TEST			
a. peak resultant accel.	210 to 260 G's	237 G's	G's
b. peak lateral accel.	<= 10 C's	7.4 G's	G's
c. Time above 100 G's	0.9 to 1.5 ms.	1.38 ms	ms

* Sequential number beginning with "1" at the start of each fiscal years's crash test program.

TECHNICIAN'S NAME: IVAN MINKEWICZ

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA...continued

II. PERFORMANCE VERIFICATION DATA (continued)

NHTSA DUMMY I.D. NUMBER: 358

TEST PARAMETER		SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
2. NECK BENDING TEST				
a. Pendulum Speed		21.5 to 25.5 fps.	23.7 fps	
b. Pend. Avg. Decel. over t3 to t2		20 to 24 G's	23.6 G's	
c. Peak Resultant Head Acceleration		26 G's max.	25.89 G's	
d. Pendulum Decel. (t2-t1)		<= 3 ms.	2.73 ms	
e. Pendulum Decel. (t3-t2)		25 to 30 ms.	27.53 ms	
f. Pendulum Decel. (t4-t3)		<= 10 ms.	5.46 ms	
g. Max. Head Rotation		63 to 73 deg.	70.68 deg	
h. Chordal Displacement				
HEAD ROTATION ANGLE				
0 deg.	Time	-2 to 2 ms.	0.0 ms	
	Displ.	-.5 to .5"	0.0 "	
30 deg.	Time	25.6 to 34.4 ms.	28.77 ms	
	Displ.	2.1 to 3.1"	2.51 "	
60 deg.	Time	40.3 to 51.7 ms.	43.03 ms	
	Displ.	4.3 to 5.3"	4.81 "	
Maximum	Time	53.2 to 66.8 ms.	58.9 ms	
	Displ.	5.0 to 6.0"	5.47 "	
60 deg.	Time	67.0 to 83.0 ms.	72.17 ms	
	Displ.	4.3 to 5.3"	4.46 "	
30 deg.	Time	85.4 to 104.6 ms.	88.05 ms	
	Displ.	2.1 to 3.1"	2.11 "	
0 deg.	Time	101.0 - 123.0 ms.	102.93 ms	
	Displ.	-.5 to 0.5"	0.0 "	

TECHNICIANS NAME: IVAN MINKEWICZ

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA (continued)

II. PERFORMANCE VERIFICATION DATA (continued)

NHTSA DUMMY I.D. NUMBER: 358

		PRE-TEST (if required)	POST-TEST (if required)
TEST PARAMETER	SPECIFICATION		
3. ABDOMINAL COMPRESSION			
TEST: (preload = 50 lbs.)			
a. Force @ 0.5"	23 to 36 lbs.	28.5 lbs	
b. Force @ 0.75"	36 to 50 lbs.	43 lbs	
c. Force @ 1.0"	50 to 63 lbs.	59 lbs	
d. Force @ 1.3"	73 to 88 lbs.	84.5 lbs	
4. LUMBAR FLEXION TEST:			
a. Force @ 20 deg.	22 to 34 lbs.	30 lbs	
b. Force @ 30 deg.	34 to 46 lbs.	41 lbs	
c. Force @ 40 deg.	46 to 58 lbs.	53 lbs	
d. Return Angle	12 deg. maximum	7 deg	
5. CHEST IMPACT TESTS:			
A. High Speed			
(1) Probe Speed	21.78-22.22 fps.	21.8 fps	
(2) Peak Deflection	1.7" maximum	1.66 "	
(3) Peak Resistive Force	2250 lbs maximum	2016 lbs	
(4) Internal Hysteresis	50 to 70%	55.7 %	
B. Low Speed			
(1) Probe Speed	13.86-14.14 fps.	13.9 fps	
(2) Peak Deflection	1.1" maximum	1.06 "	
(3) Peak Resistive Force	1450 lbs maximum	1256 lbs	
(4) Internal Hysteresis	50 to 70%	54 %	

TECHNICIAN'S NAME: IVAN MINKEWICZ

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA (continued)

II. PERFORMANCE VERIFICATION DATA (continued)

NHTSA DUMMY I.D. NUMBER: 358

		PRE-TEST (if required)	POST-TEST (if required)
TEST PARAMETER	SPECIFICATION		
6. KNEE IMPACT TEST			
A. Left Knee			
(1) Probe Speed	6.76 to 7.04 fps	7.0 fps	
(2) Maximum Force	1850 to 2500 lbs	2369 lbs	
(3) Time above 1000 lbs.	1.7 ms. minimum	1.75 ms	
B. Right Knee			
(1) Probe Speed	6.76 to 7.04 fps	7.0 fps	
(2) Maximum Force	1850 to 2500 lbs	2049 lbs	
(3) Time Above 1000 lbs.	1.7 ms. minimum	1.875 ms	

REMARKS:

TECHNICIAN'S NAME: IVAN MINKEWICZ

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY ID NUMBER 358

DUMMY INSTRUMENT--	MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
1. HEAD ACCELEROMETER--				
HX LONGITUDINAL--	ENDEVCO	EL86	3-91	9-91
HY LATERAL--	ENDEVCO	FR42	3-91	9-91
HZ VERTICAL--	ENDEVCO	GK69	3-91	9-91
2. CHEST ACCELEROMETER--				
CX LONGITUDINAL--	CEC	A150	3-91	9-91
CY LATERAL--	ENDEVCO	EL79	3-91	9-91
CZ VERTICAL--	CEC	A151	3-91	9-91
3. FEMUR LOAD CELLS				
LEFT SIDE	GSE	77	3-91	9-91
RIGHT SIDE	GSE	1927	3-91	9-91
CALIBRATION LABORATORY INSTRUMENTS--				
1. PENDULUM ACC.--	CEC	A160	11-90	5-91
2. TEST PROBE ACCELEROMETER--	CEC	A161	11-90	5-91
3. LUMBAR FLEXION TEST PUSH FORCE GAUGE--	TRANS- DUCER INC	20051	1-91	7-91
4. ABDOMINAL COMPRESS. TEST FORCE GAUGE--	BLH	72952	1-91	7-91
5. ABDOMINAL COMPRESS. TEST FORCE GAUGE--	CIC	567-11	1-91	7-91

Appendix D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(6 Month Calibration Minimum)

DRIVER DUMMY	Serial #	Manufacturer	Calibration	
			Last	Next
Head X	FY05	ENDEVCO	3-91	9-91
Y	GD98	ENDEVCO	3-91	9-91
Z	CD75	ENDEVCO	3-91	9-91
Chest X	A73	CEC	3-91	9-91
Y	CE06	ENDEVCO	3-91	9-91
Z	A44	CEC	3-91	9-91
Right Femur Load Cell	955	GSE	3-91	9-91
Left Femur Load Cell	954	GSE	3-91	9-91
Neck Load Cell X				
Y				
Z				
Neck Moment X				
Y				
Z				
Chest Deflection Gauge Hybrid III Use Only				
Lap Belt Load Cells	123	LEBOW	3-91	9-91
Shoulder Belt Load Cells	127	LEBOW	3-91	9-91
Spool-Out Potentiometer	-	-	-	-
Belt Stretch Transducer	E1	CALSPAN	10-90	4-91

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(6 Month Calibration Minimum)

PASSENGER DUMMY	Serial #	Manufacturer	Calibration	
			Last	Next
Head X Y Z	EL86	ENDEVCO	3-91	9-91
	FR42	ENDEVCO	3-91	9-91
	GK69	ENDEVCO	3-91	9-91
Chest X Y Z	A150	CEC	3-91	9-91
	EL79	ENDEVCO	3-91	9-91
	A151	CEC	3-91	9-91
Right Femur Load Cell	1927	GSE	3-91	9-91
Left Femur Load Cell	77	GSE	3-91	9-91
Neck Load Cell X Y Z				
Neck Moment X Y Z				
Chest Deflection Gauge Hybrid III Use Only				
Lap Belt Load Cells	133	LEBOW	3-91	9-91
Shoulder Belt Load Cells	135	LEBOW	3-91	9-91
Spool-Out Potentiometer	-	-	-	-
Belt Stretch Transducer	E3	CALSPAN	10-90	4-91

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	A181	CEC	12-91	6-91
Right Rear Seat Crossmember	A146	CEC	2-91	8-91
Top of Engine	A157	CEC	3-91	9-91
Bottom of Engine	A144	CEC	10-90	4-91
Left Disc Brake Caliper	A134	CEC	10-90	4-91
Right Disc Brake Caliper	A68	CEC	10-90	4-91
Instrument Panel	A179	CEC	12-90	6-91
Center Rear Crossmember Z	A115	CEC	3-91	9-91
Vehicle Rear Z	A156	CEC	3-91	9-91

INSTRUMENT CALIBRATION FOR LABORATORY INSTRUMENTS
(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Neck Bending Pendulum Accel.	A160	CEC	11-90	5-91
Neck Bending Rotary Potentiometer	None	BOURNS	1-91	7-91
Femur Probe Accelerometer	A160	CEC	11-90	5-91
Chest/Thorax Probe Accel.	A161	CEC	11-90	5-91
Lumbar Flexion Force Gauge	20051	TRANSDUCER INC.	1-91	7-91



Appendix E

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM 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.

Children. If they are too big for child restraint systems, they should sit in the rear seat and be restrained with the seat belts. According to accident statistics, children are safer when properly restrained in the rear seat than in the front seat. Do not allow the child to stand up or kneel on the seat. 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.

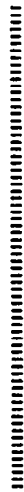
CAUTION: Persons should ride in their seats properly wearing their seat belts whenever the vehicle is moving. Otherwise, they are much more likely to suffer serious bodily injury in the event of sudden braking or a collision. When using the seat belts, observe the following:

- Use the belt for only one person at a time. Do not use a single belt for two or more people—even children.
- After inserting the tab, make sure that the connection is secure and the belt is not twisted.
- 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, and take care that they do not get caught or pinched in the seat or doors.

- Inspect the belt system periodically. Check for cuts, frays, 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.

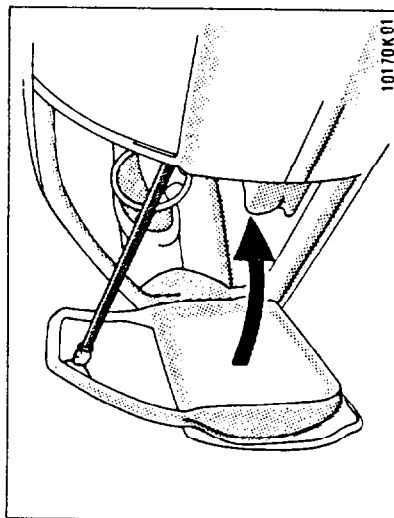
- Replace the belt assembly if it has been used in a severe impact. The entire assembly should be replaced even if damage is not obvious.



—Front seat belts (U.S.A.)

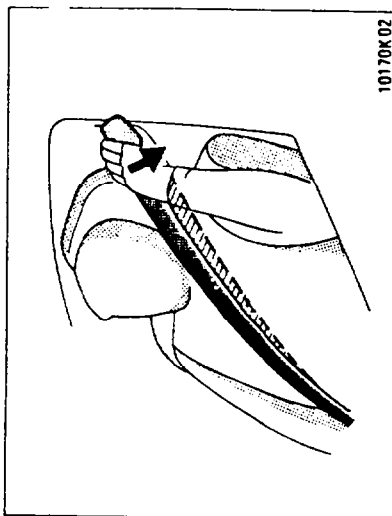
Your front seat belt consists of an Automatic Shoulder Belt and a Manual Lap Belt.

CAUTION: Be sure to fasten the Manual Lap Belt as well as the Automatic Shoulder Belt. Failure to wear the Manual Lap Belt could increase the chance of injury during an accident.



To fasten your shoulder belt, enter the vehicle and close the door.

The retractor will lock the belt during a sudden stop or on impact. At other times you can move around freely.

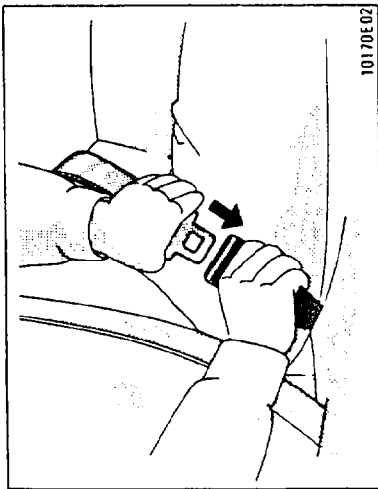


Adjust the seat so that the front passenger's shoe soles may touch the toeboard and sit up straight and well back in the seat.

For those who find the belt irritating across the neck, the belt position may be lowered by pulling down the belt anchor until it clicks.

CAUTION:

- Always be sure that the belt is positioned well across the shoulder. Failure to do so could reduce the amount of protection in an accident and increase the chance of injury.
- For your safety, do not place the shoulder belt under your arm.



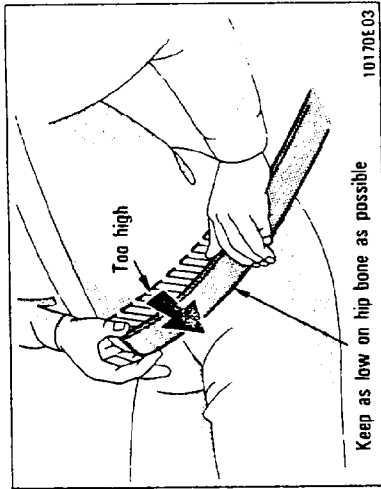
10170E02

To fasten your lap 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 lap belt length automatically adjusts to your size.

The retractor will lock the belt during a sudden stop or on impact. At other times you can move around freely.

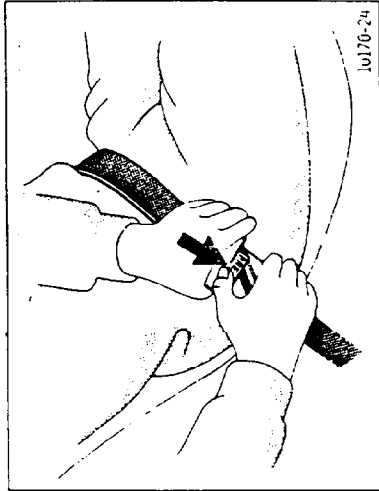


10170E03

Adjust the position of the lap belt.

Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit by pulling it firmly across your lap toward the retractor, so it can take up slack.

CAUTION: High-positioned lap belts could increase the chance of injury due to sliding under the lap belt during an accident.



10170-24

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

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