V2140

REPORT NUMBER: CAL-95-N03

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

NISSAN MOTORS CORPORATION
1995 NISSAN 240 SX
2-DOOR COUPE

NHTSA NUMBER: MS5201

CALSPAN TEST NUMBER: 8227-3

October 4, 1994

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FINAL REPORT

PREPARED FOR:

U. S. Department of Transportation
National Highway Traffic Safety Administration
Office of Market Incentives
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15. *Supplementary Notes*		

16. *Abstract*

A frontal load cell barrier test of a 1995 Nissan 240 SX 2-Door Coupe was perfomed at Calspan Advanced Technology Center crash test facility in Buffalo, New York, on October 4, 1994.

The impact velocity was 56.5 kph and the temperature at the barrier face was 11°C. The maximum post-test vehicle crush was 657 mm. The test vehicle was equipped with a 3-point belt system at each of the front outboard seating positions. The test vehicle was also equipped with supplemental airbags at each of the front outboard seating positions.

With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger complied with the head, chest and femur requirements.

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Section 1

PURPOSE AND TEST PROCEDURE

This 56.3 kph frontal barrier impact test is part of the Composite FY 92 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 48.3 kph requirements.

The 56.3 kph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test procedure.

Section 2

SUMMARY OF TEST MS5201

A load cell barrier consisting of 36 load cells was impacted by a 1995 Nissan 240 SX 2-Door Coupe at a velocity of 56.3 kph. The test was performed at the Calspan Corporation Advanced Technology Center on October 4, 1994. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by 1 real-time camera and 16 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

Two Part 572, 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. 245) and the right-front passenger ATD (Serial No. 45) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 81 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

The driver's HIC was 900.4. The maximum chest deceleration over 3 milliseconds was 57.4 g's and maximum chest deflection was 41.6 mm. Femur loads were -877.0 newtons on the left femur and -2939.9 newtons on the right femur.

The right front passenger's HIC was 403.6. Maximum chest deceleration over 3 milliseconds was 51.6 g's and maximum chest deflection was 34.6 mm. Femur loads were -1984.1 newtons on the left and -2028.4 newtons on the right.

Table 1

GENERAL TEST AND VEHICLE DATA

Vehicle Year/Make/Model/Body Style: 1995 Nissan 240 SX 2-Door Coupe

NHTSA Test No.: MS5201 VIN.: JN1AS44D4SW001402

Body Color: White Date of Manufacture: 2/94

Date Received: 8/16/94

Odometer Reading: 000205

Engine:	4	Cylinders;	-	C.I.D.;	2.4	Liters;	-	CC
	X	Gas;	-	Diesel;	-	Turbocharged		
	X	Longitudinal;			-	Transverse		
Transmission:	5	Speed;	X	Manual;	-	Automatic;	-	Overdrive
Final Drive:	-	Front Wheel;	X	Rear Wheel;	-	Four Wheel		
Accessories:	-	A/C;	X	P/S;	X	P/B;	X	P/wdo
	X	Tilt Wheel;	-	P/seats;	-	Cruise Control	-	Other

Type of Occupant Restraint: 3-point restraint system with driver and passenger airbags.

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 241 kPa, Rear 241 kPa

Recommended Tire Size: P195/60R15

Recommended Cold Tire Pressure: Front 200 kPa, Rear 200 kPa

Tires on Vehicle: P195/60R15 Manufacturer: Bridgestone

Number of Occupants:	2	Front;	2	Rear;	-	3rd Seat;	4	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) = 311 kgs. (A)

No. of Occupants x 68 kgs. = 272 kgs. (B)

Rated Cargo and Luggage Weight (RCLW) A-B = 39 kgs.

GVWR 1721 kgs. GAWR: Front 873 kgs. Rear 854 kgs.

Table 1

GENERAL TEST AND VEHICLE DATA (cont'd)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids) = UDW:

Right Front = 331 kgs. Right Rear = 292 kgs.

Left Front = 337 kgs. Left Rear = 294 kgs.

TOTAL FRONT WEIGHT = 668 kgs. (53.3 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 586 kgs. (46.7 % of Total Vehicle Weight)

TOTAL DELIVERED WEIGHT = 1,254 kgs.

CALCULATION FOR TARGET TEST WEIGHT:

UDW = Unloaded Delivered Weight 1254 kgs.

VCW = Vehicle Capacity Weight 272 kgs.

DSC = Designated Seating Capacity 4

RCLW = VCW - 68 (DSC) = 39 kgs.

Target Test Weight = UDW + RCLW + (2 dummies x 74.4 kgs./ dummy)

Target Test Weight = 1441 kgs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 50 KGS CARGO:

Right Front = 359 kgs. Right Rear = 357 kgs.

Left Front = 357 kgs. Left Rear = 367 kgs.

TOTAL FRONT WEIGHT = 716 kgs. (49.7 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 724 kgs. (50.3 % of Total Vehicle Weight)

TOTAL TEST WEIGHT = 1,440 kgs.

Weight of ballast secured in vehicle trunk area = 0 kgs.

VEHICLE ATTITUDE (all dimensions in mm):

Delivered Attitude:	RF	692	LF	692	RR	668	LR	667
Test Attitude:	RF	675	LF	675	RR	633	LR	634

Wheel Base: 2530 mm.; C.G. = 1272 mm. rearward of front wheel C/L

Remarks: 16 gallons of Stoddard solvent was placed in the fuel tank.

Table 1

GENERAL TEST AND VEHICLE DATA (cont'd)

POST -IMPACT DATA:

Type of Test:	Frontal Barrier	Impact Angle:	0°
Date of Test:	October 4, 1994	Time of Test:	15:40

Ambient Temperature: 11 ° C at impact area

Temperature in Occupant Compartment: 21 ° C

Windshield Molding Temperature: 21 ° C

Required Impact Velocity Range: 55.5 to 57.1 kph

Impact Velocity: primary = 56.3 kph, secondary = 56.5 kph

Distance From Front Bumper to Barrier Face When

Entering Speed Trap: 1321 mm

Exiting Speed Trap: 305 mm

VEHICLE REBOUND AND CRUSH (mm):

Vehicle Length:	Pre-test = R	4404	C_L	4514	L	4407
	Post-test = R	3837	C_L	3880	L	3868
	Crush = R	567	C_L	634	L	539

Distance from front of test vehicle to point of impact:

R	313	C_L	290	L	320

VISIBLE DUMMY CONTACT POINTS:

	Driver	Passenger
Head	Airbag	Airbag
Chest	Airbag	Airbag
Abdomen	No contact	No contact
Left Knee	Lower dash	Lower dash
Right Knee	Lower dash	Lower dash

Table 1

GENERAL TEST AND VEHICLE DATA (cont'd)

	Front		Rear	
	Left	Right	Left	Right
Door Opening	Operable	Operable	N/A	N/A

	Front		Rear	
Seat Movement	Left	Right	Left	Right
Seat Back Failure	None	None	N/A	N/A
Seat Shift (mm.)	0.0	0.0	N/A	N/A

Glazing Damage

Backlight/Windshield: Windshield sustained stress fractures but remain intact.

Other Notable Impact Effects: None.

Section 3

OCCUPANT AND VEHICLE INFORMATION

I. DATA

1. Dummy Injury Criteria Data Summary
2. Dummy Positioning Data
3. Seat Belt Performance Assessment Data
4. Camera Locations
5. Vehicle Target Locations
6. Load Cell Barrier Data
7. Vehicle Accelerometer Data
8. Test Vehicle Measurements

Table 2

DUMMY INJURY CRITERIA VALUES

NHTSA No.: MS5201 Vehicle: 1995 Nissan 240 SX 2-Door Coupe

	MAXIMUM HEAD ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	-73.7	-22.0	29.2	78.8
Position #2 - Passenger	-53.0	-18.1	-23.2	53.0

	MAXIMUM CHEST ACCELERATION (g's)			
	X	Y	Z	R*
Position #1 - Driver	-58.2	14.1	15.3	57.4
Position #2 - Passenger	-51.4	-11.1	13.4	51.6

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

	MAXIMUM FORCE - FEMUR LOAD (nwt)	
	LEFT FEMUR	RIGHT FEMUR
Position #1 - Driver	-877.0	-2939.9
Position #2 - Passenger	-1984.1	-2028.4

	MAXIMUM FORCE - SEAT BELT LOADS (nwt)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
Position #1 - Driver	7219.2	-	8307.5
Position #2 - Passenger	7840.2	9674.3	-

	HEAD INJURY CRITERIA (HIC)			
	HIC**	t_1 (mSec)	t_2 (mSec)	Average Acceleration t_1 to t_2
Position #1 - Driver	900.4	64.32	95.52	60.8
Position #2 - Passenger	403.6	63.48	99.36	41.7

** HIC is as defined in FMVSS 208. The maximum time interval from t_1 to t_2 is 36 milliseconds.

Table 3

HYBRID III NECK AND CHEST DATA SHEET

Vehicle Year/Make/Model/Body Style: 1995 Nissan 240 SX 2-Door Coupe

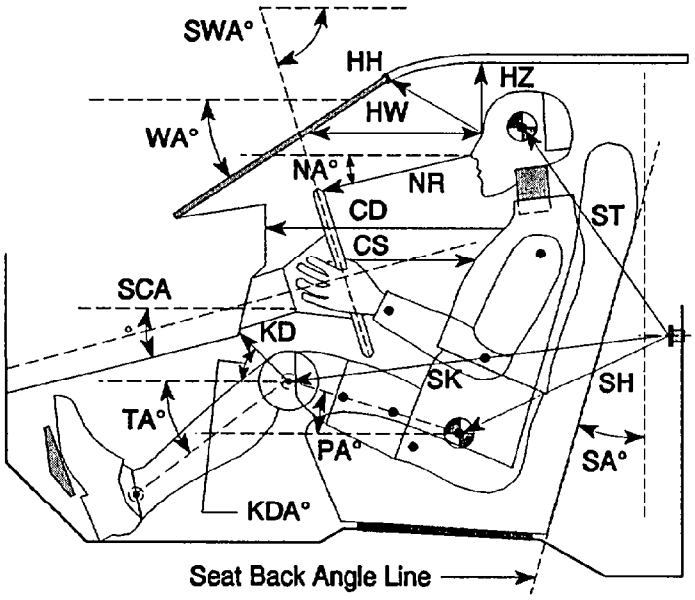
Vehicle NHTSA No.: MS5201 Test Date: October 4, 1994

MAXIMUM VALUES	DRIVER DUMMY ID #245:	PASSENGER DUMMY ID #45:
Neck Load X (nwt)	389.3	875.7
Neck Load Y (nwt)	-394.1	274.4
Neck Load Z (nwt)	1950.7	1761.6
Neck Moment X (nwt-m)	-12.3	12.8
Neck Moment Y (nwt-m)	40.3	56.2
Neck Moment Z (nwt-m)	15.3	18.3
Chest Deflection X (mm.)	41.6	34.6
Time of Max. Occurrence (msec)	82.4	79.1

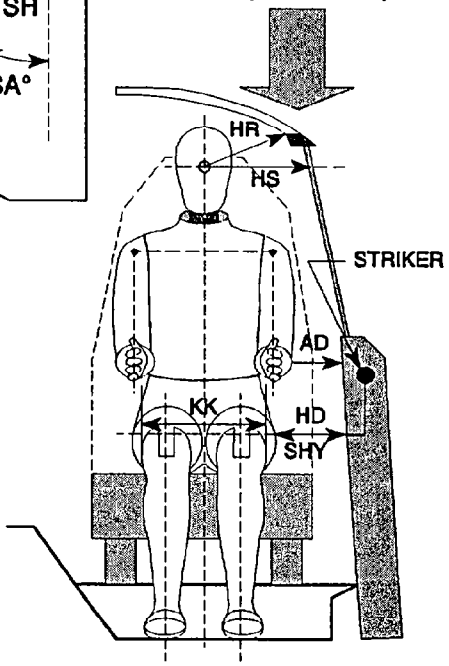
Note: All values listed occur during the primary impact event.

Figure 1

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



AD - Arm to Door
HD - H-Point to Door
HR - Head to Side Header
HS - Head to Side Window
KK - Knee to Knee
SHY- Striker to H-Point (Y Direction)



CD - Chest to Dash
CS - Steering Wheel to Chest
HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
KDA- Knee to Dash Angle
KDL- Left Knee to Dash
KDR- Right Knee to Dash
NA - Nose to Rim Angle
NR - Nose to Rim
PA - Pelvic Angle
RA - Rim to Abdomen
SA - Seat Back Angle
SCA- Steering Column Angle
SH - Striker to H-Point
SK - Striker to Knee
ST - Striker to Head
SWA- Steering Wheel Angle
TA - Tibial Angle
WA - Windshield Angle

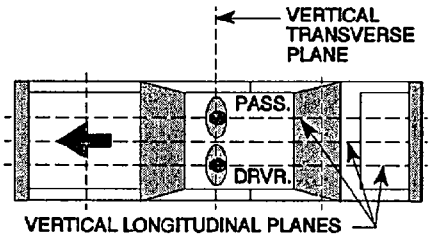


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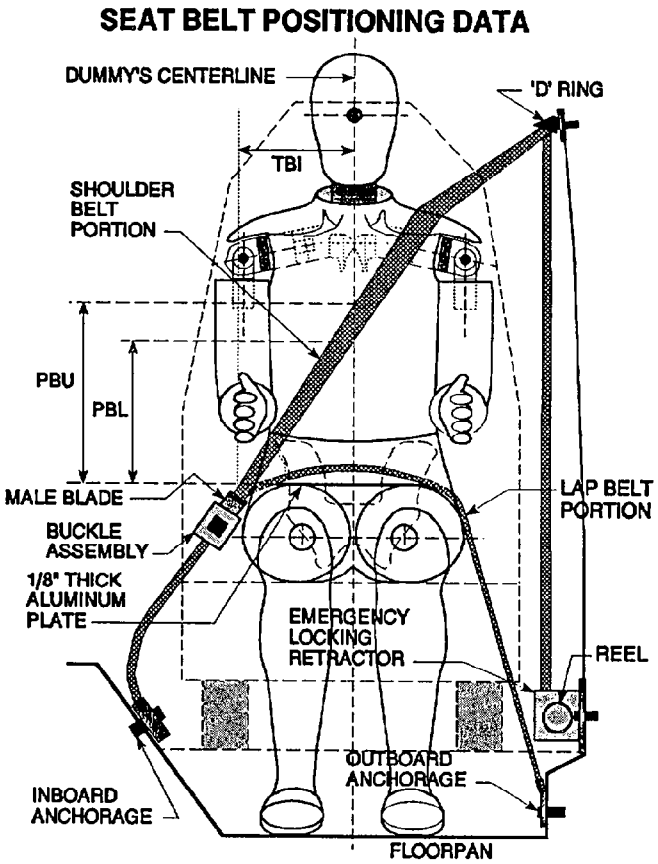
Table 4
FRONT SEAT OCCUPANT MEASUREMENTS

	DRIVER (Serial #245)			PASS. (Serial #45)		
WA°	28°			28°		
SWA°	18°			N/A		
SCA°	72°			N/A		
SA°	25°			25°		
HZ	150			145		
HH	343			344		
HW	592			610		
HR	187			195		
NR	410	Angle	12°	N/A		
CD	535			625		
CS	300			N/A		
RA	230			N/A		
KDL	142	Angle (KDA)	34°	135		
KDR	143			130	Angle (KDA)	35°
PA°	24°			24°		
TA°	28°			30°		
KK	245			210		
ST	483	Angle	30°	533	Angle	30°
SK	678	Angle	100°	767	Angle	100°
SH	406	Angle	135°	427	Angle	124°
SHY	260			270		
HS	250			250		
HD	120			110		
AD	90			95		

Figure 2

SEAT BELT POSITIONING DATA



	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	305	324
PBL-- Top surface of alum. plate to belt lower edge	246	235
LAP BELT TENSION	Retractor	Retractor
SHOULDER BELT TENSION	-	-

Table 5

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:	Driver	Passenger
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	1810	1810
Shoulder belt length as measured on Part 572 Dummy.	920	920
Lap belt length as measured on Part 572 Dummy.	740	740
SHOULDER BELT SPOOL-OFF DATA:		
As determined by film analysis.	80	90
As determined mechanically.	75	75
BELT STRETCH DATA:		
Measured electronically between shoulder belt load cell and the "D" ring.	3.5 mm/M	2.1 mm/M
Measured mechanically.	0.0 mm/M	0.0 mm/M

Figure 3

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 6.

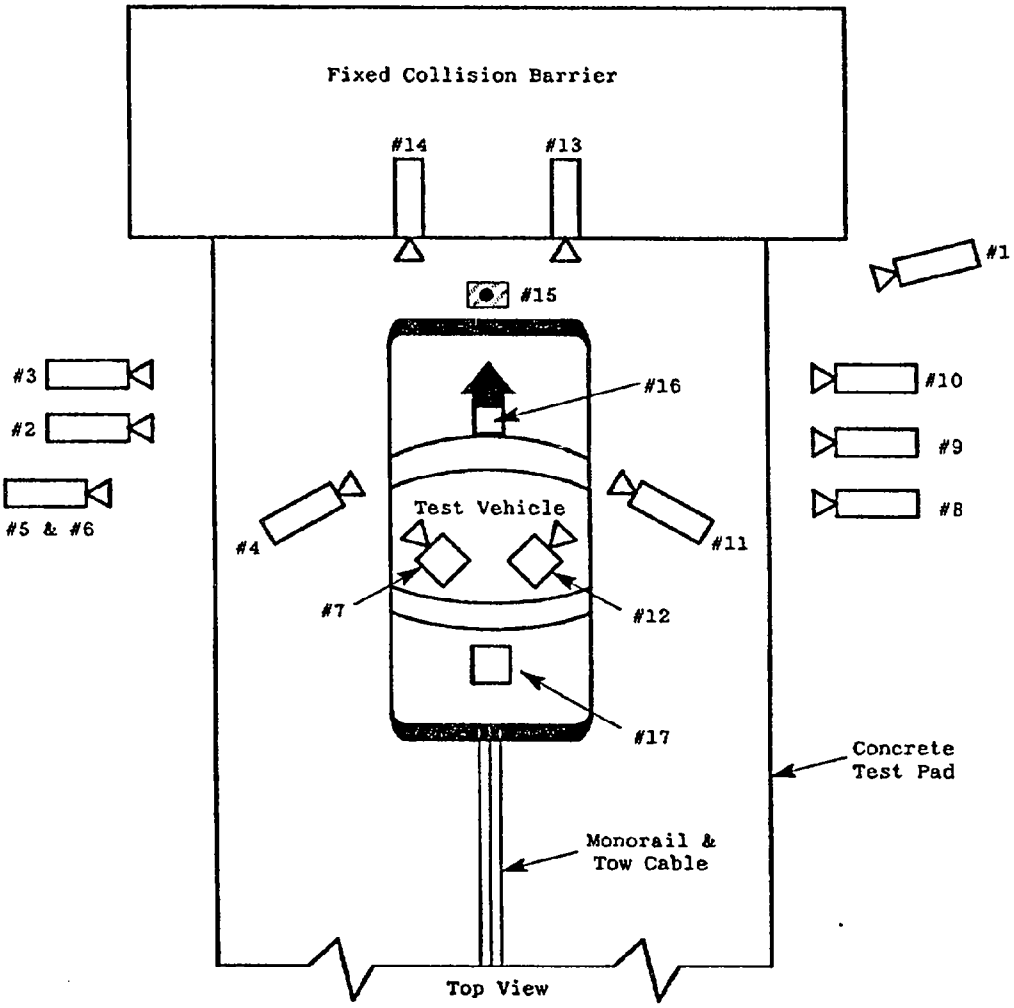


Table 6
HIGH-SPEED CAMERA LOCATIONS

Test No. MS5201 Vehicle: 1995 Nissan 240 SX 2-Door Coupe

CAMERA NO.	VIEW	CAMERA POSITIONS (MM.)* X	Y	Z	ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	5740	1778	1041	-4	5314	13	1010
3	Left Side View	8179	1193	1041	-2	7753	25	990
4	Driver and Interior View	2845	2921	1829	-21	2419	13	970
5	Steering Column (Bottom)	6553	2134	1168	-3	6127	25	N.T.
6	Steering Column (Top)	6553	2134	1778	-10	6127	25	1090
7	Left Belt	-	-	-	-	-	8	575
8	Overall Right Side	6019	1956	1041	-3	5593	13	1050
9	Right Side View	8026	1397	1041	-3	7600	25	1000
10	Right Passenger View	7696	1880	1473	-5	7270	35	930
11	Passenger and Interior View	2819	2946	1880	-21	2390	13	1100
12	Right Belt	-	-	-	-	-	8	600
13	Passenger Front View	559	0	1780	-37	-	13	990
14	Driver Front View	559	0	1780	-36	-	13	1000
15	Windshield View	0	0	3048	-45	-	13	1090
16	Pit View of Engine	0	965	-2184	90	-	13	920
17	Pit View of Fuel Tank	0	3073	-2184	90	-	13	1080

*X = film plane to monorail centerline

Y = film plane to impact location

Z = film plane to ground

** = referenced to horizontal plane

N.T. indicates No Timing

Figure 4

VEHICLE TARGET LOCATIONS

(Dimensions in millimeters)

A	350
B	604
C	1219
D	1938
E	70
F	1276
G	808
H	817
I	135
J	1397
K	952
L	1357
M	70
N	145
O	810
P	810
Q	1357
R	955
S	1392

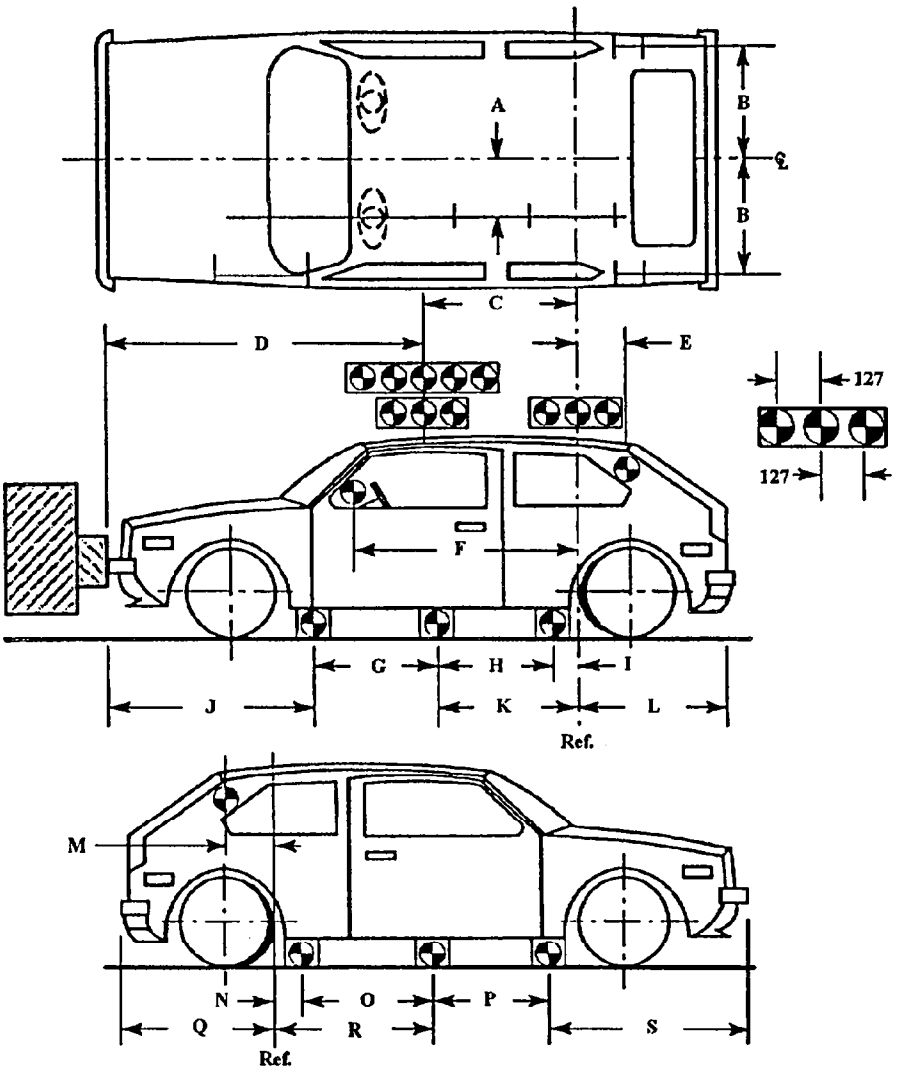
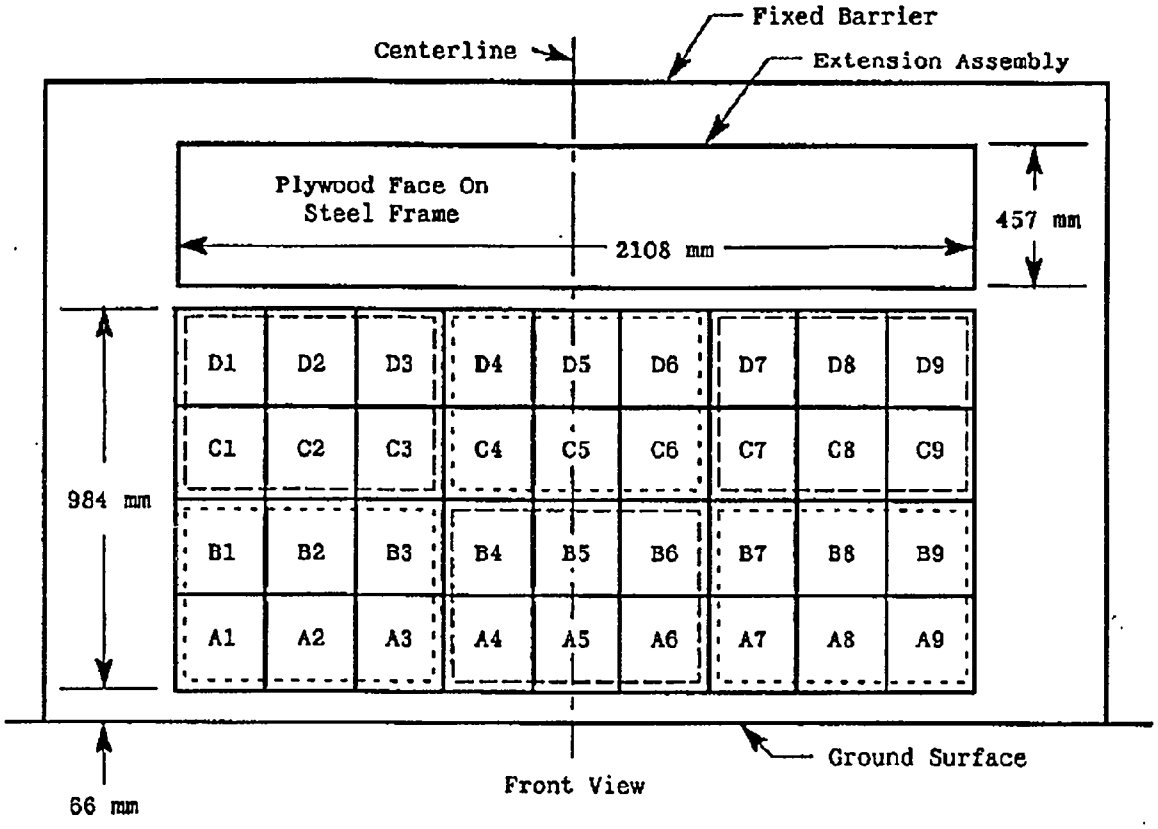


Figure 5

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

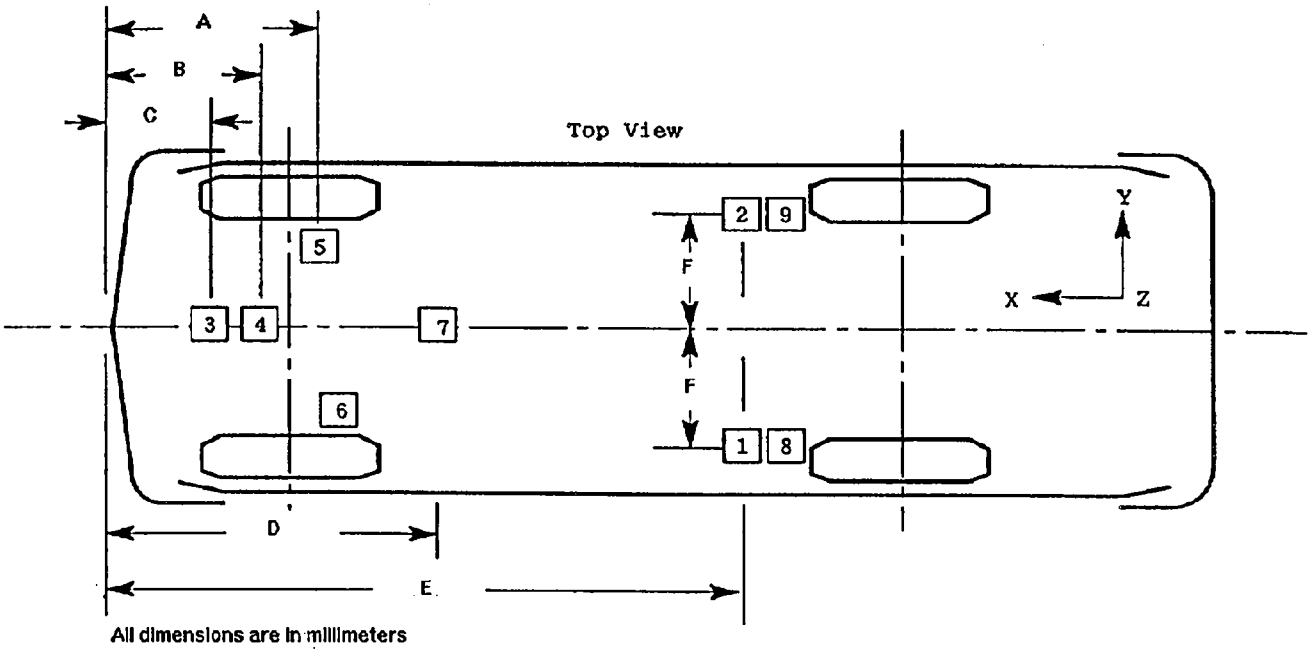
Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

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 6

VEHICLE ACCELEROMETER LOCATIONS



ACCELEROMETER NUMBER*	ACCELEROMETER LOCATION	Distances From Vehicle Front All dimensions in millimeters	
1	Left Rear Seat Crossmember [E/F]	X= 2438	Y= 420
2	Right Rear Seat Crossmember [E/F]	X= 2438	Y= 420
3	Top of engine [C]	914	
4	Bottom of engine [B]	1129	
5	Right Disc Brake Caliper [A]	1026	
6	Left Disc Brake Caliper [A]	1026	
7	Instrument Panel [D]	1479	
8	Left Rear Seat Crossmember [E/F]	X= 2438	Y= 420
9	Right Rear Seat Crossmember [E/F]	X= 2438	Y= 420

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

Figure 7

TEST VEHICLE MEASUREMENTS

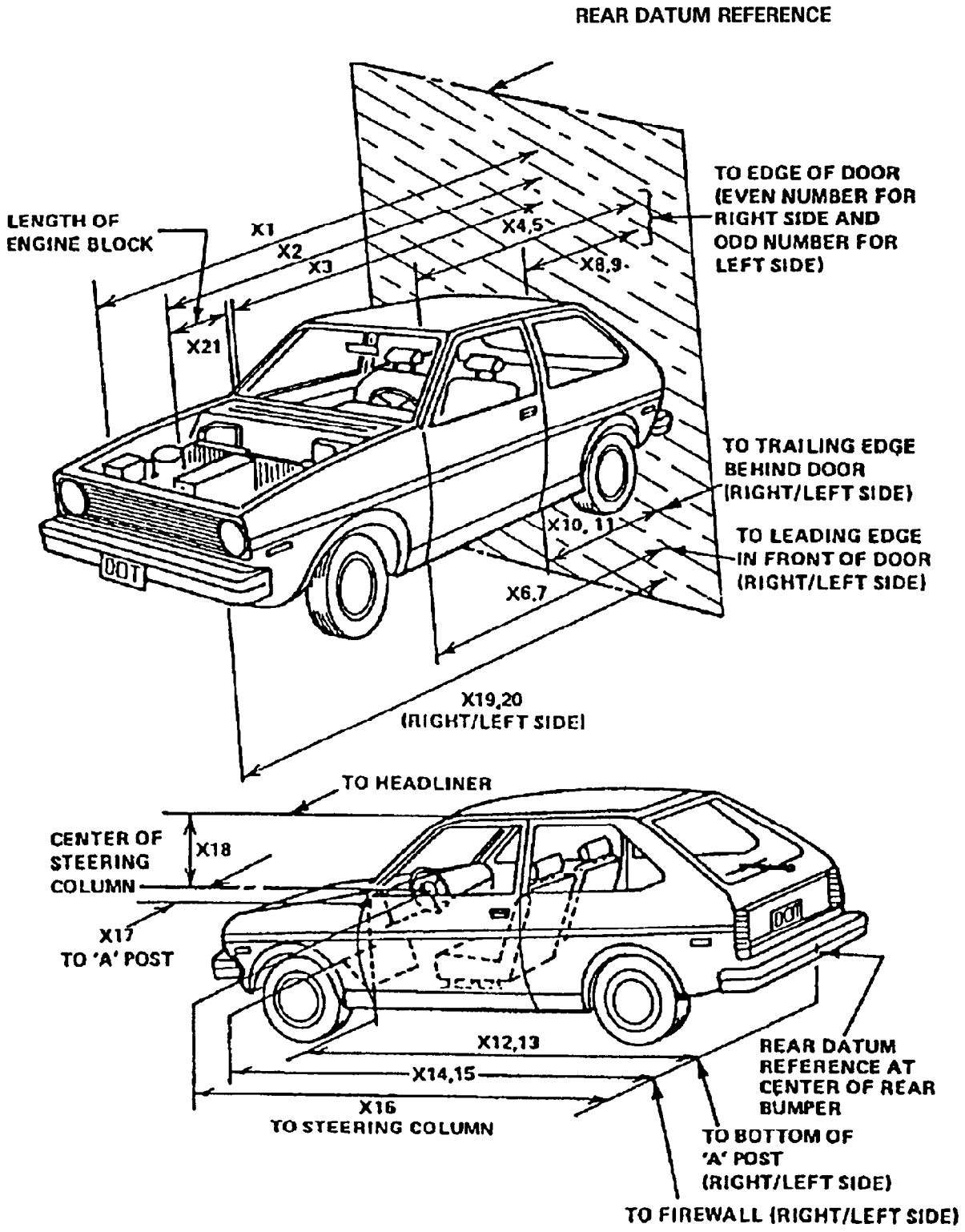


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Table 7

VEHICLE MEASUREMENTS

		All Dimensions in mm		
No.		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	4514	3880	634
X2	Rear Surface of Vehicle to Front of Engine	3840	3608	232
X3	Rear Surface of Vehicle to Firewall	3781	3068	713
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	2889	2875	14
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	2904	2880	24
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	2946	2928	18
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	2956	2938	18
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	1770	1755	15
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	1782	1772	10
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	1856	1833	23
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	1872	1855	17
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	2953	2929	24
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	2953	2925	28
X14	Rear Surface of Vehicle to Firewall, Right Side	3250	3125	125
X15	Rear Surface of Vehicle to Firewall, Left Side	3258	3170	88
X16	Rear Surface of Vehicle to Steering Column	2490	2490	0
X17	Center of Steering Column to "A" Post	379	375	4
X18	Center of Steering Column to Headliner	403	391	12
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4404	3837	567
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4407	3868	539
X21	Length of Engine Block	510	510	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2681	2670	11
CD	Rear Surface of Vehicle to Center of Dash Panel	2688	2700	-12
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2688	2651	37

Table 8

ACCIDENT INVESTIGATION DIVISION DATA

FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Nissan 240 SX 2-Door Coupe

Vehicle NHTSA No.: MS5201 VIN: JN1AS44D4SW001402

Model Year: 1995 Build Date: 2/94 Test Date: October 4, 1994

Vehicle Size Category: Compact Test Weight: 1440 Kgs

Vehicle Wheelbase: 2530 mm; Front Overhang: 1397 mm; Overall Width: 1415 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions;

C1 = 470 mm

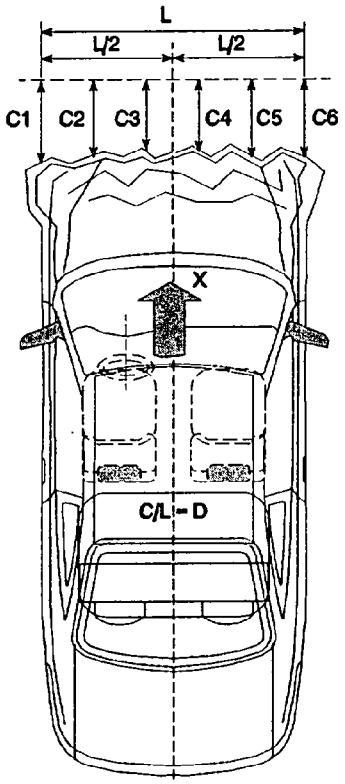
C2 = 657 mm

C3 = 631 mm

C4 = 641 mm

C5 = 641 mm

C6 = 507 mm



Midpoint of Damage: D = Vehicle Centerline (Longitud.)

Longitude Length of Damaged Region: L= 1415 mm

Section 4

SUMMARY OF RESULTS OF FMVSS 212, 219 (Partial) AND 301

"Windshield Mounting" FMVSS No. 212 Data

"Windshield Zone Intrusion" FMVSS No. 219 Data

"Fuel System Integrity" FMVSS No. 301

Figure 8

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Windshield is bonded in place and covered with 17 mm molding.

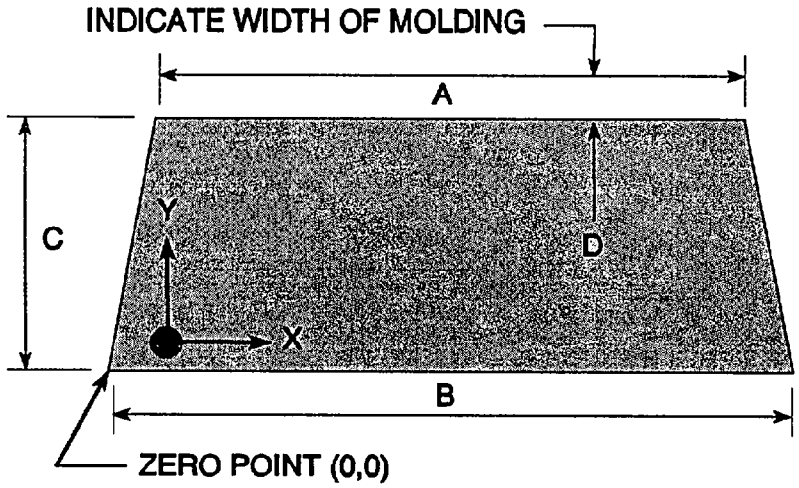
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants,

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		
	PRE-TEST (mm)	POST-TEST(mm)	% OF RETENTION
RIGHT SIDE	2017.5	2017.5	100
LEFT SIDE	2017.5	2017.5	100
TOTAL	4,035	4,035	100

AREA OF RETENTION FAILURE:



FRONT VIEW OF WINDSHIELD

DIMENSIONS	
A	1143
B	1520
C	686
D	17

FAILURE DETAILS:

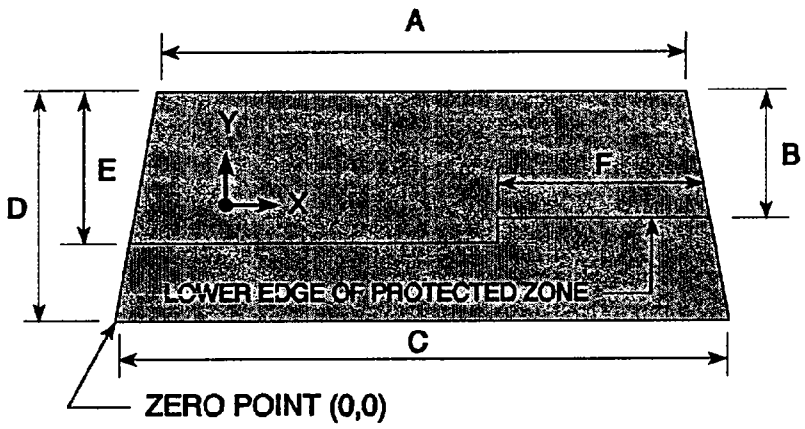
Figure 9

FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5" diameter rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. The locus of points is drawn on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contactable points extend the locus line horizontally to the edges of the windshield, then draw a line on the inner surface of the windshield below and 1/2" distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield.

FMVSS 219 TEST DATA: (Dimensions in mm)



FRONT VIEW OF WINDSHIELD

DIMENSIONS	
A	1143
B	381
C	1520
D	686
E	406
F	584

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 1/4": None

(Show location of penetration on the above sketch)

	COORDINATES	
	X	Y
1.		
2.		
3.		
4.		

Table 9

FMVSS NO. 301-75 "FUEL SYSTEM INTEGRITY" POST IMPACT TEST DATA

TEST VEHICLE NHTSA No.: MS5201 TEST DATE: October 4, 1994

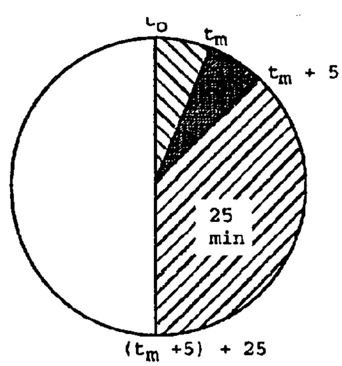
VEHICLE MAKE/MODEL: 1995 Nissan 240 SX

The test vehicle was filled from 92% to 94% of the manufacture's "usable" capacity. The electric fuel pump was operating if it will operate without engine operation. Two Part 572 anthropomorphic test devices were located at each of the front designated seating positions.

TEST VEHICLE IMPACT TYPE:

X	Frontal (35 mph)
______	Oblique (30 mph) with ________ deg. barrier face first contacting ________________ (driver/passenger) side
______	Rear Moving Barrier (30 mph)
______	Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:



	ACTUAL	MAX ALLOWED
1. From impact until vehicle motion ceases	0	1 oz.
2. For 5 minute period after vehicle motion ceases	0	5 oz.
3. For next 25 minutes	0	1 oz./min.

SOLVENT SPILLAGE DETAILS:

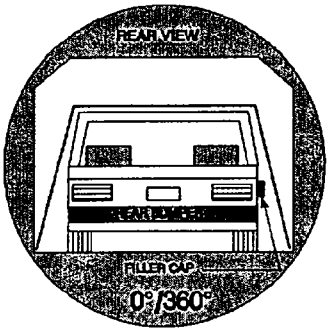
None

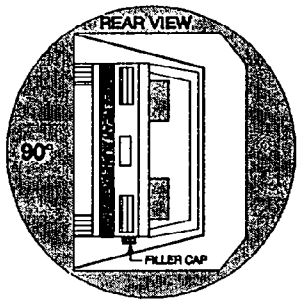
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.
MS5201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	47	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	47	seconds
Next whole minute interval	7	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

Note: Record spillage for whole minute intervals only as determined above.

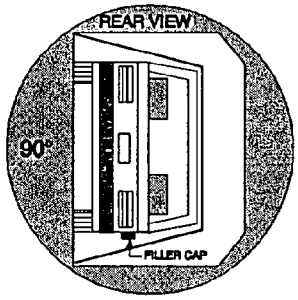
IV. SOLVENT SPILLAGE LOCATION(S): None

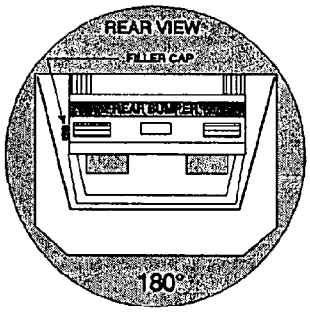
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.
MS5201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	10	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	10	seconds
Next whole minute interval	8	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

Note: Record spillage for whole minute intervals only as determined above.

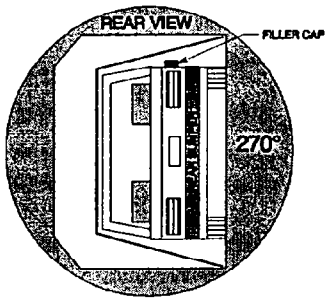
IV. SOLVENT SPILLAGE LOCATION(S): None

Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.
MS5201



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	20	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	20	seconds
Next whole minute interval	8	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

Note: Record spillage for whole minute intervals only as determined above.

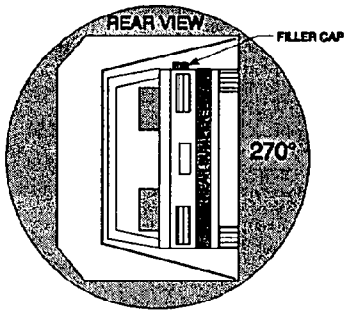
IV. SOLVENT SPILLAGE LOCATION(S): None

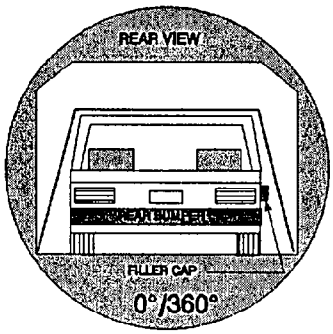
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.
MS5201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	10	seconds
FMVSS 301 Position Hold Time +	5	minutes	10	seconds
TOTAL	7	minutes	20	seconds
Next whole minute interval	8	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S): None

Appendix A

PHOTOGRAPHS

PHOTOGRAPHS

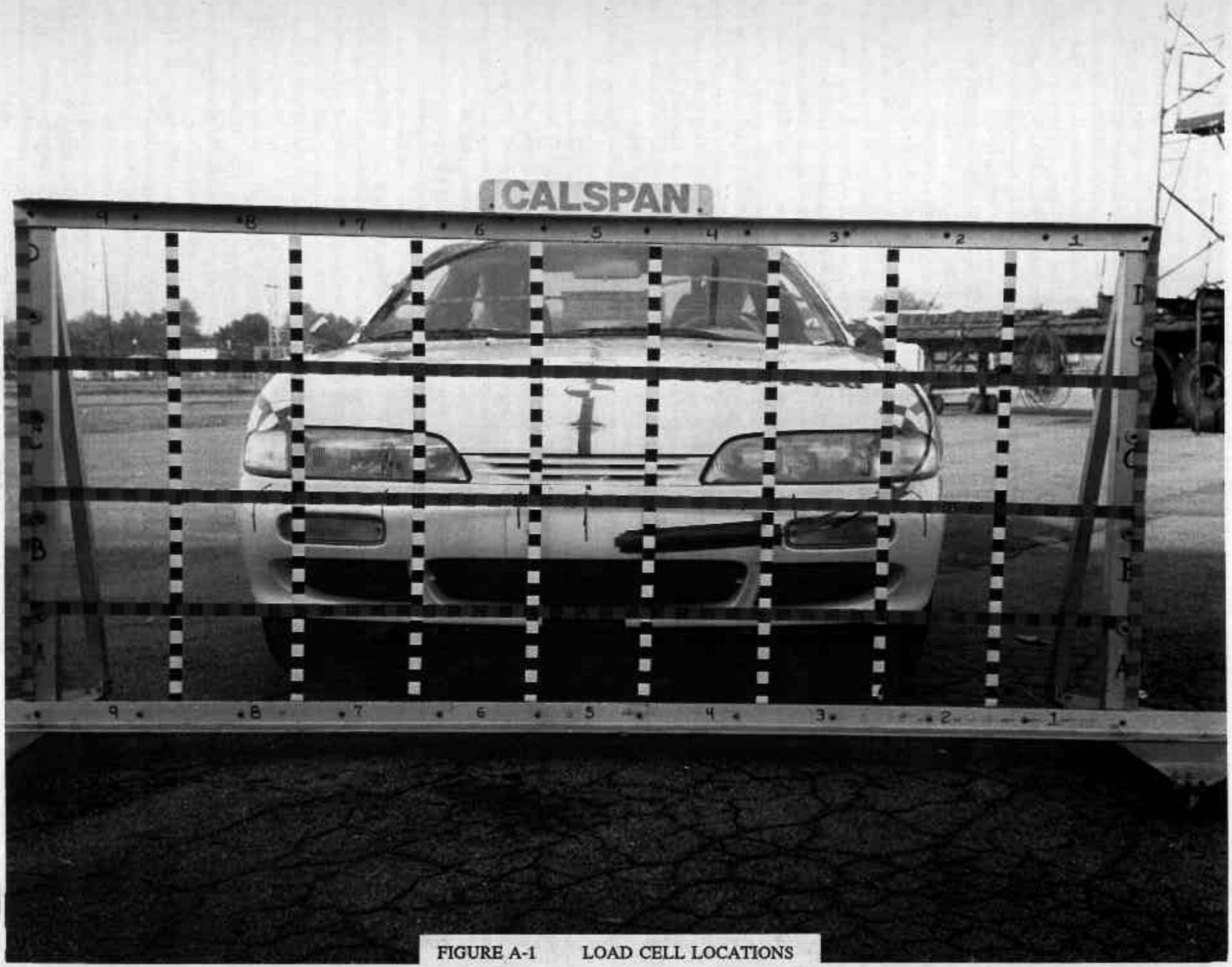


FIGURE A-1 LOAD CELL LOCATIONS

FIGURE A-2 PRE-TEST FRONT VIEW

FIGURE A-3 POST TEST FRONT VIEW

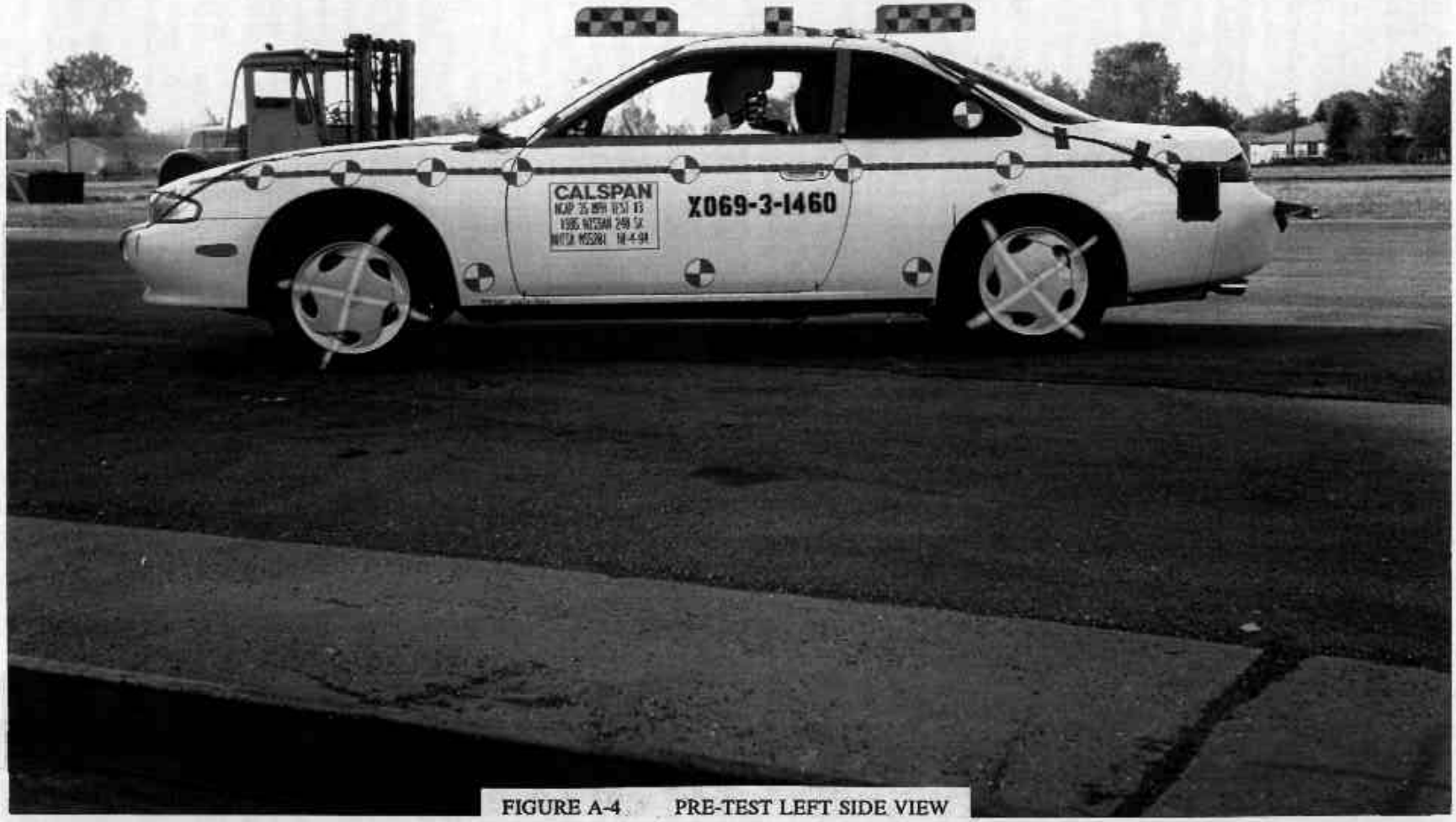


FIGURE A-4 PRE-TEST LEFT SIDE VIEW

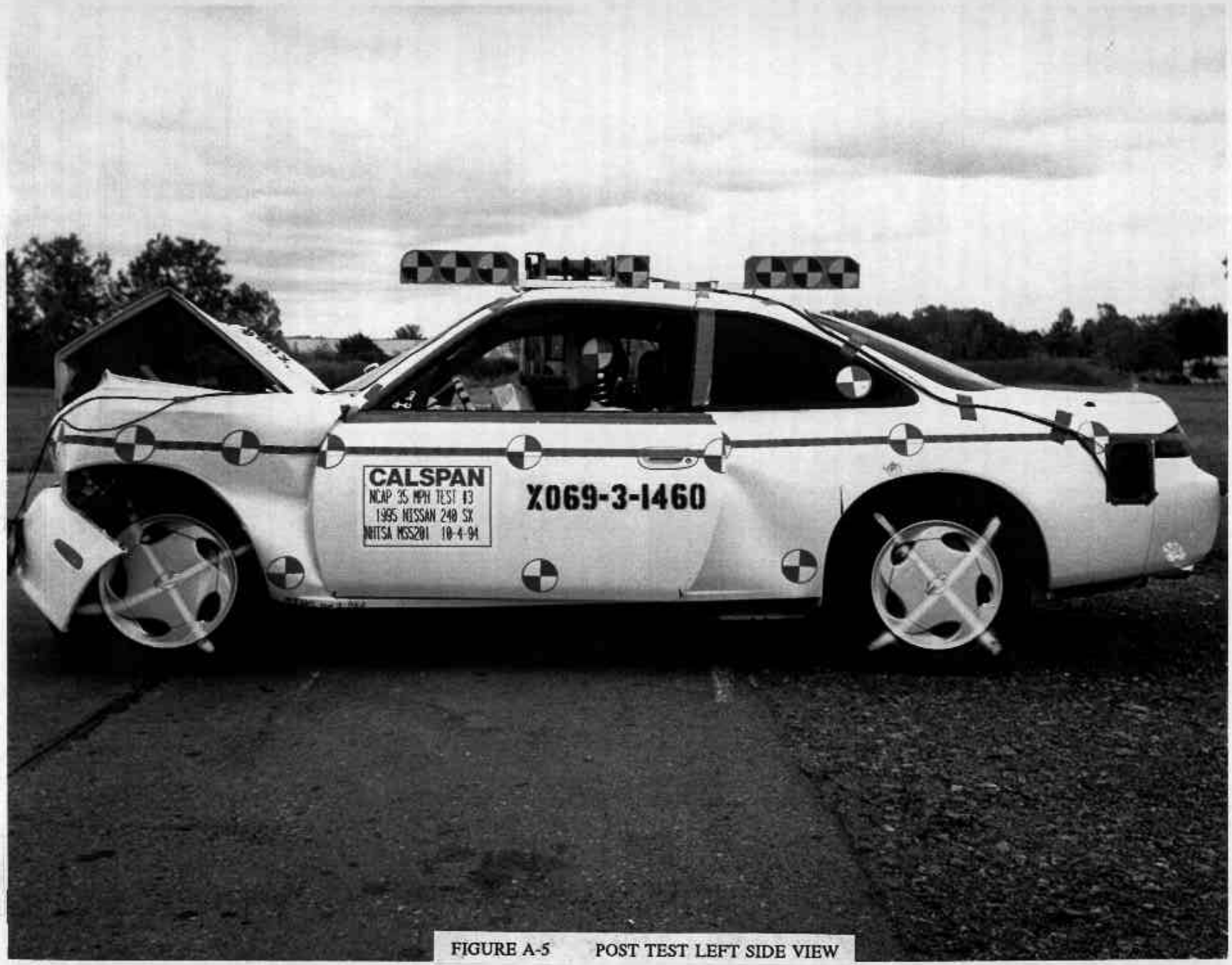


FIGURE A-5 POST TEST LEFT SIDE VIEW

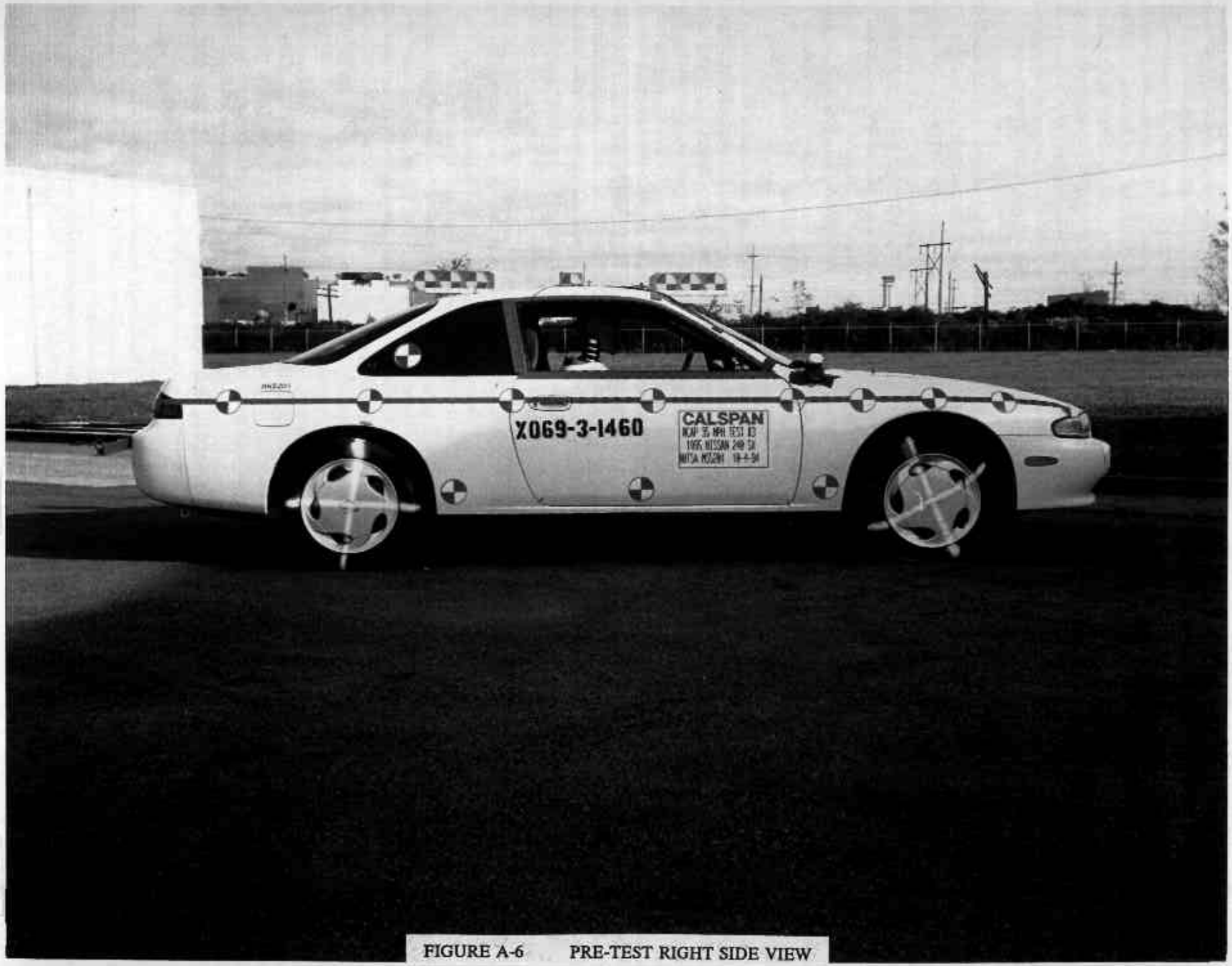


FIGURE A-6 PRE-TEST RIGHT SIDE VIEW

FIGURE A-7 POST TEST RIGHT SIDE VIEW

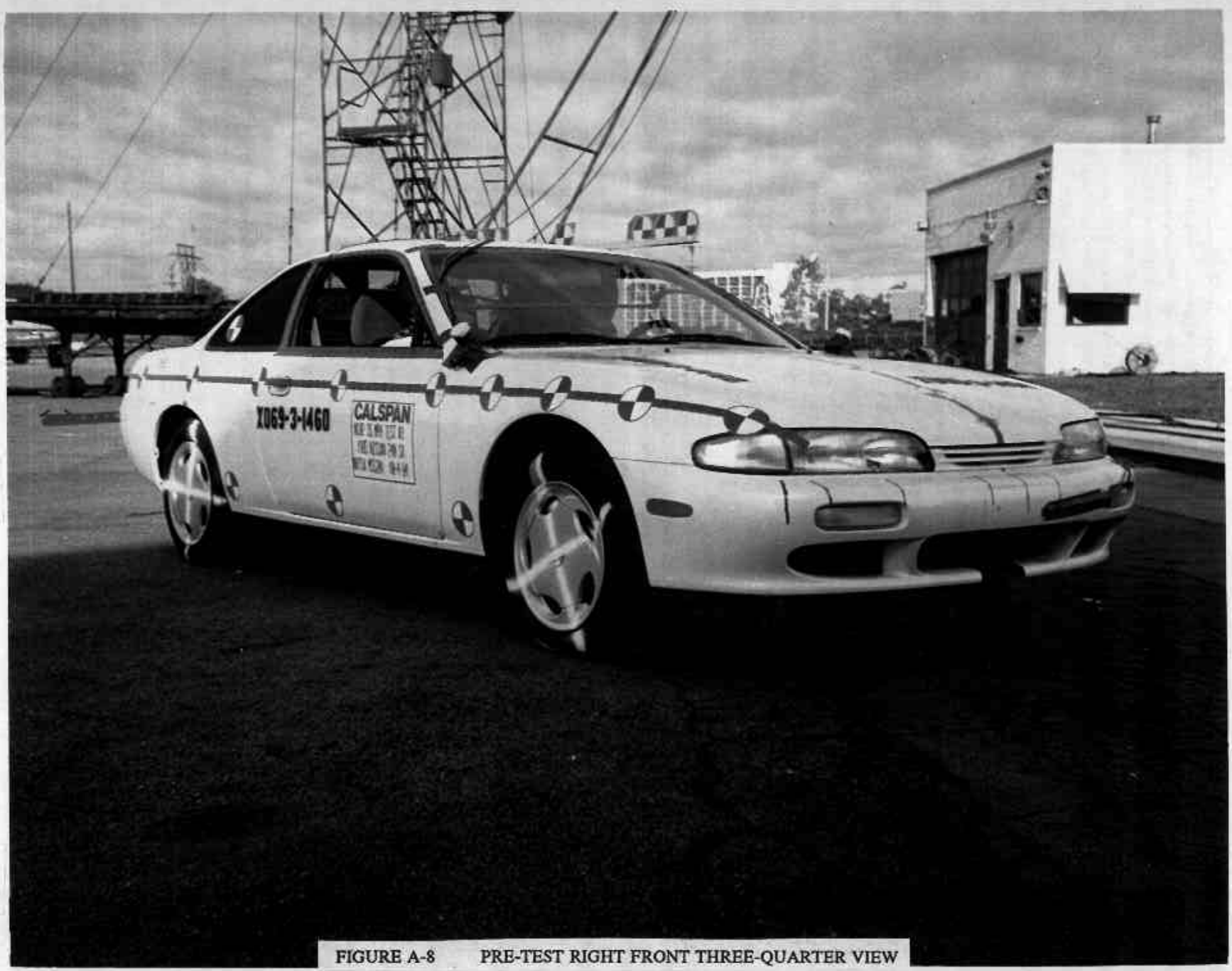


FIGURE A-8 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

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

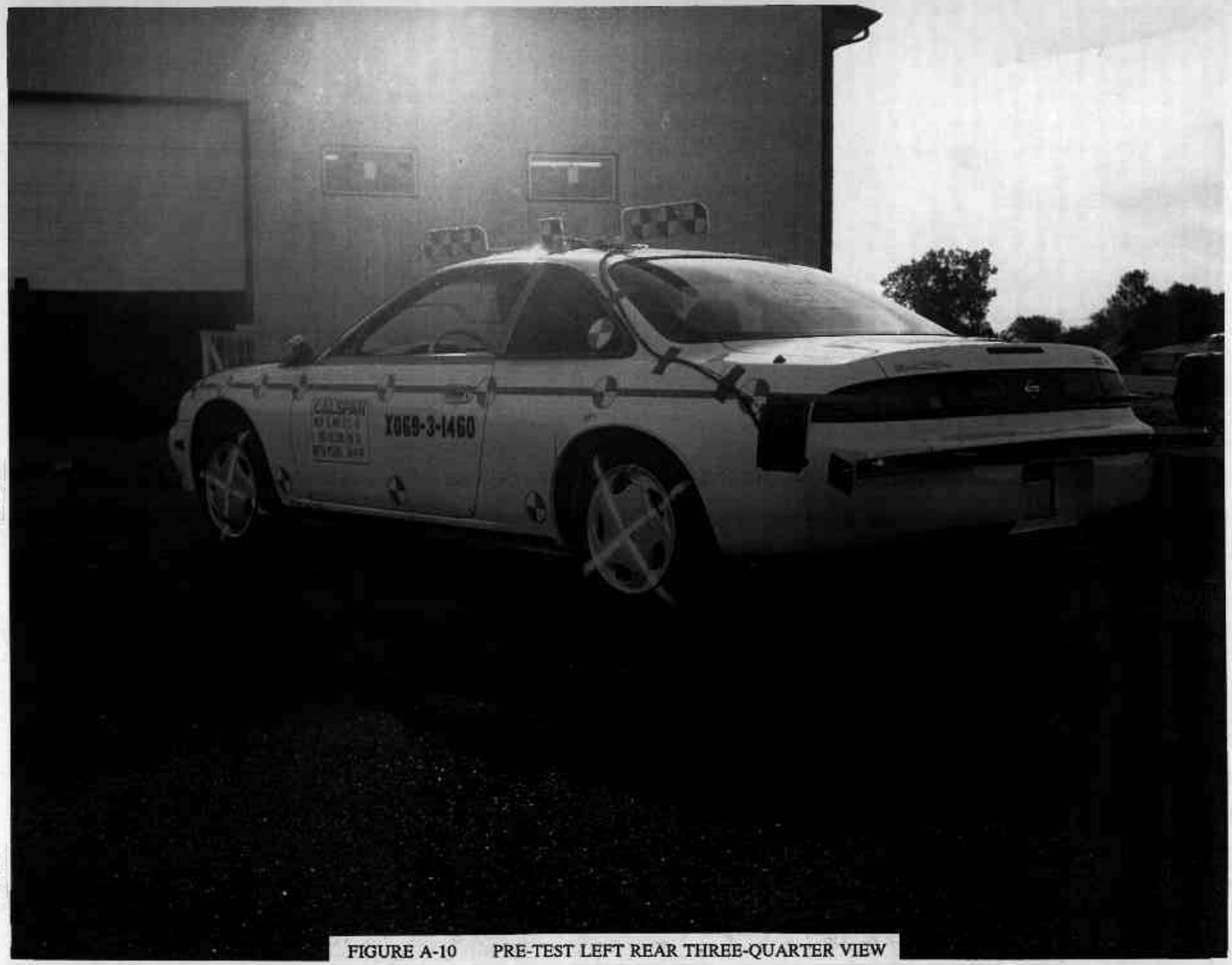


FIGURE A-10 PRE-TEST LEFT REAR THREE-QUARTER VIEW

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

FIGURE A-12 PRE-TEST WINDSHIELD VIEW

FIGURE A-13 POST TEST WINDSHIELD VIEW

8227-3

FIGURE A-14 PRE-TEST ENGINE COMPARTMENT VIEW

FIGURE A-15 FUEL CAP VIEW

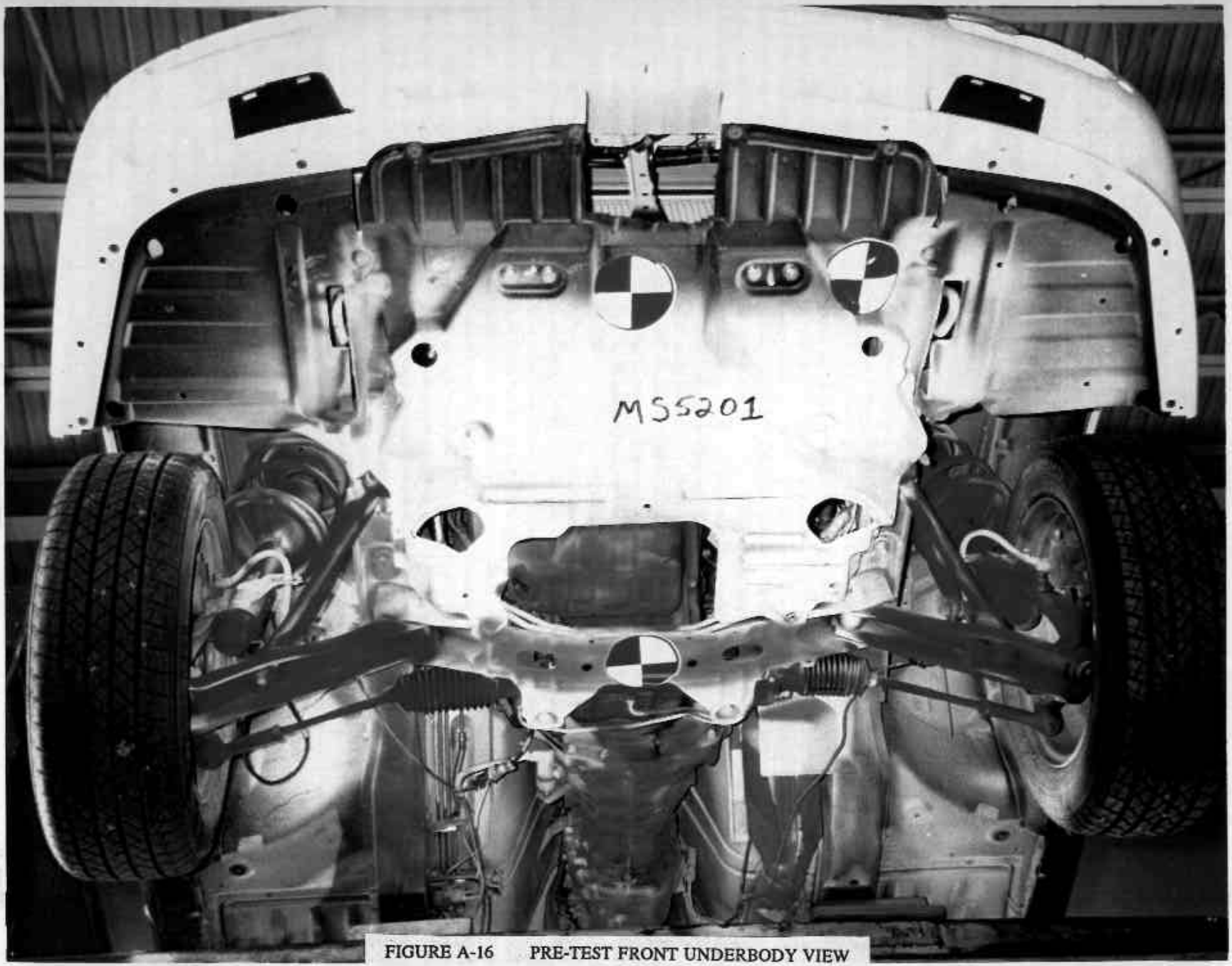


FIGURE A-16 PRE-TEST FRONT UNDERBODY VIEW

FIGURE A-17 POST TEST FRONT UNDERBODY VIEW

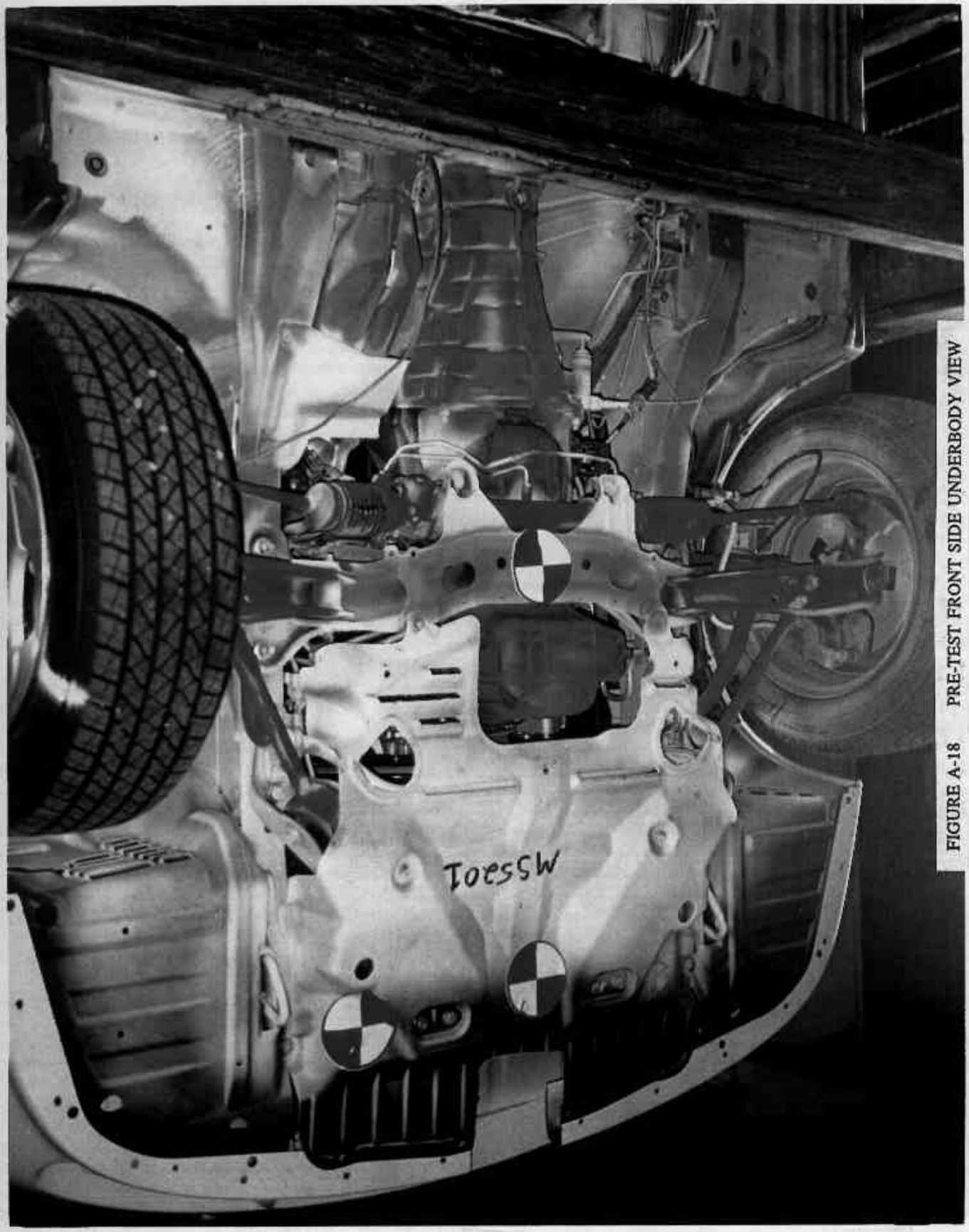


FIGURE A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

FIGURE A-19 POST TEST FRONT SIDE UNDERBODY VIEW

FIGURE A-20 PRE-TEST REAR UNDERBODY VIEW

FIGURE A-21 POST TEST REAR UNDERBODY VIEW

FIGURE A-22 PRE-TEST DRIVER POSITION VIEW

FIGURE A-23 POST TEST DRIVER POSITION VIEW

FIGURE A-24 PRE-TEST PASSENGER POSITION VIEW

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FIGURE A-25 POST TEST PASSENGER POSITION VIEW

FIGURE A-26 PRE-TEST DRIVER AND INTERIOR VIEW

FIGURE A-27 POST TEST DRIVER AND INTERIOR VIEW

FIGURE A-28 PRE-TEST PASSENGER AND INTERIOR VIEW

FIGURE A-29 POST TEST PASSENGER AND INTERIOR VIEW

FIGURE A-30 IMPACT VIEW

Appendix B

VEHICLE, LOAD CELL BARRIER AND DUMMY RESPONSE DATA

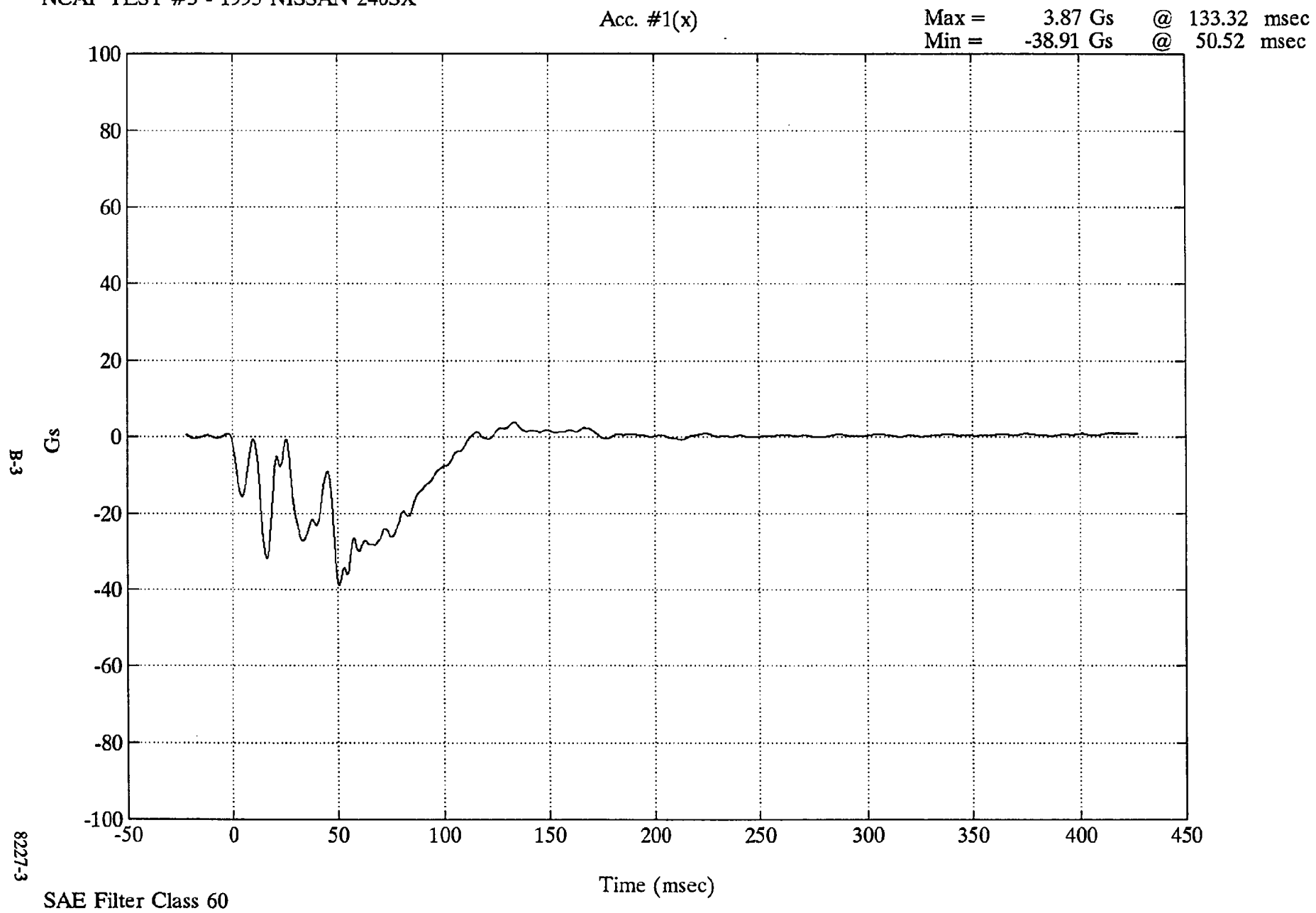
TEST NO. MS5201

VEHICLE DATA

FILTER CHANNEL CLASS

60

NCAP TEST #3 - 1995 NISSAN 240SX

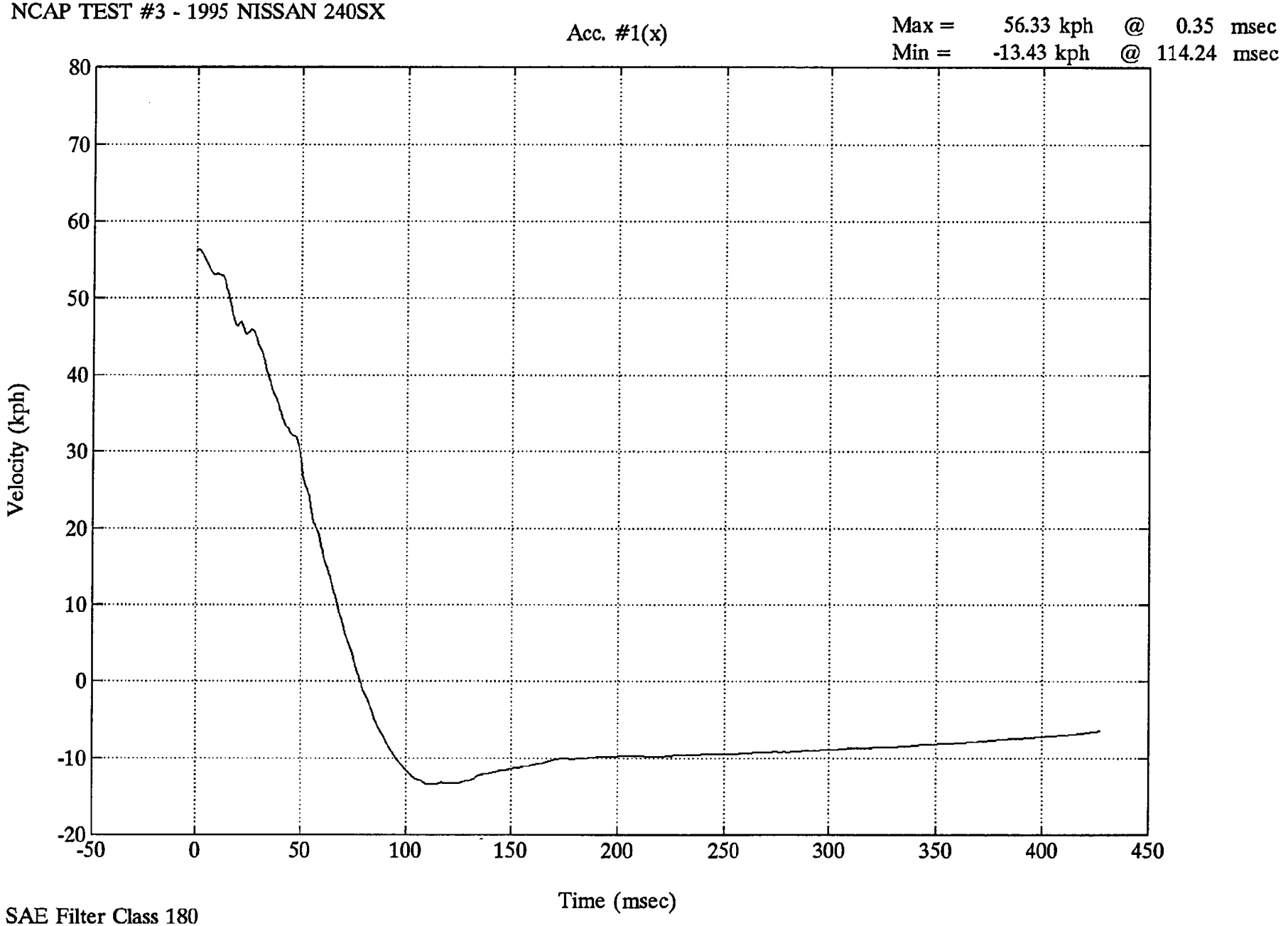


B-3

8227-3

SAE Filter Class 60

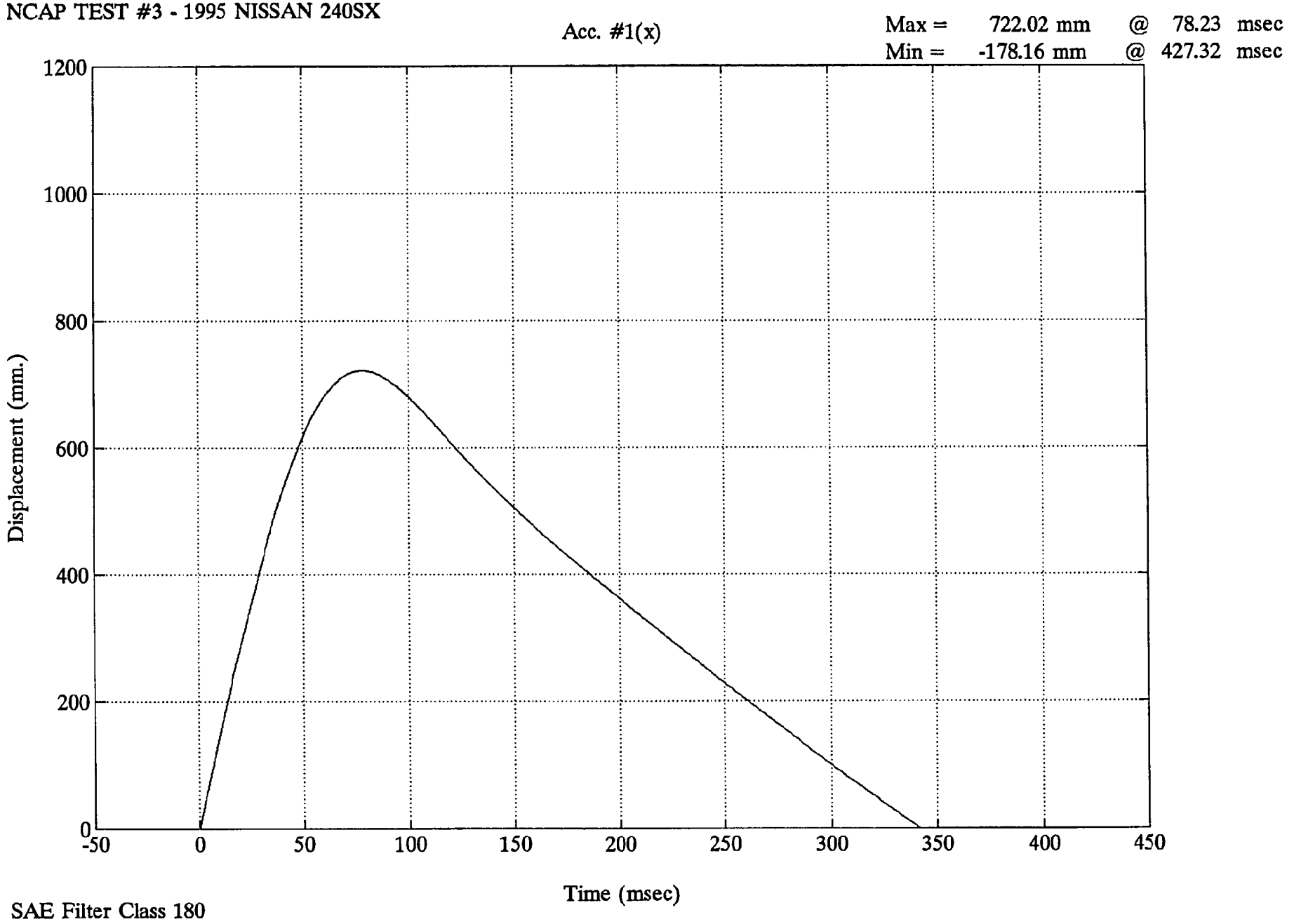
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

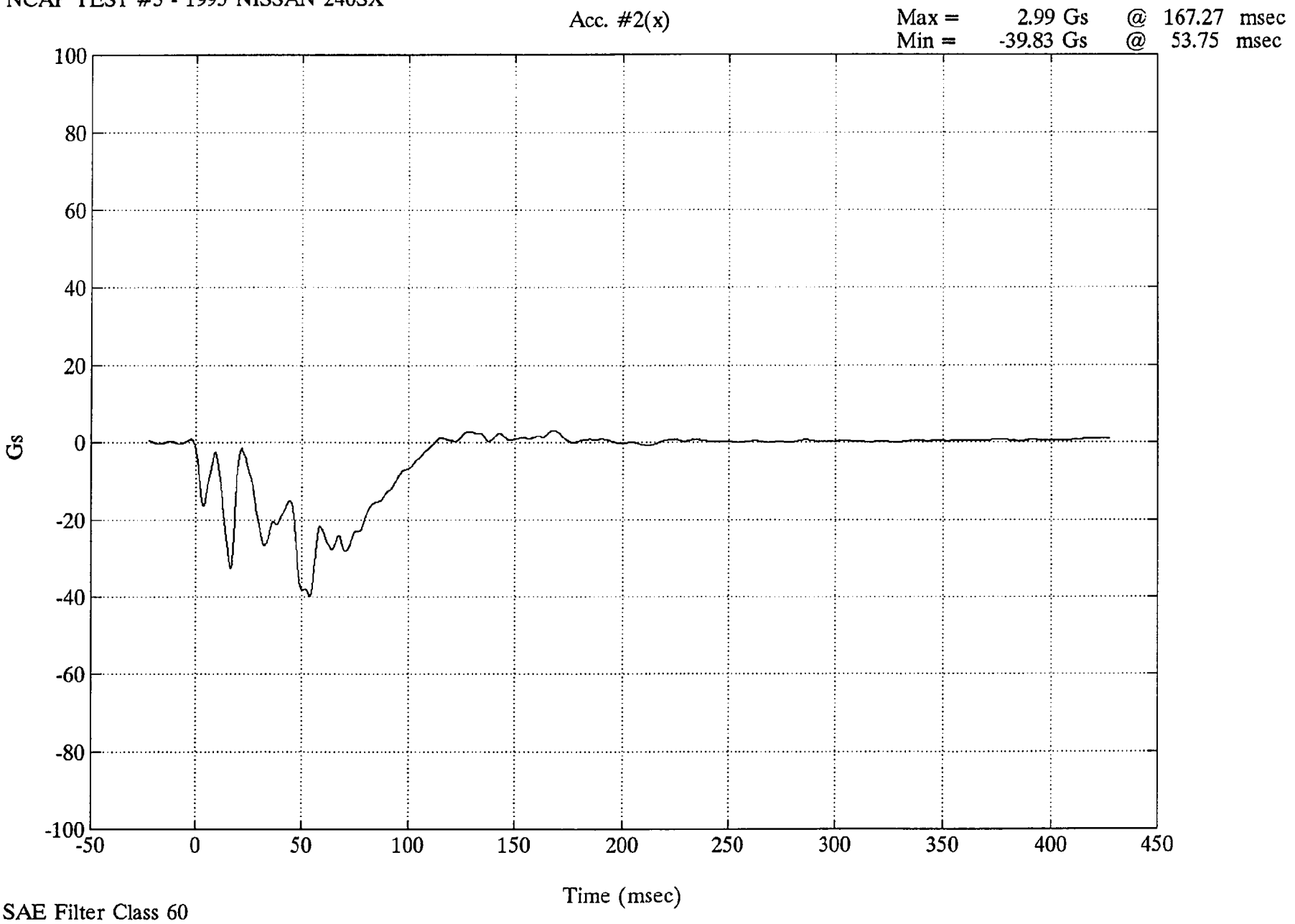
8227-3

NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

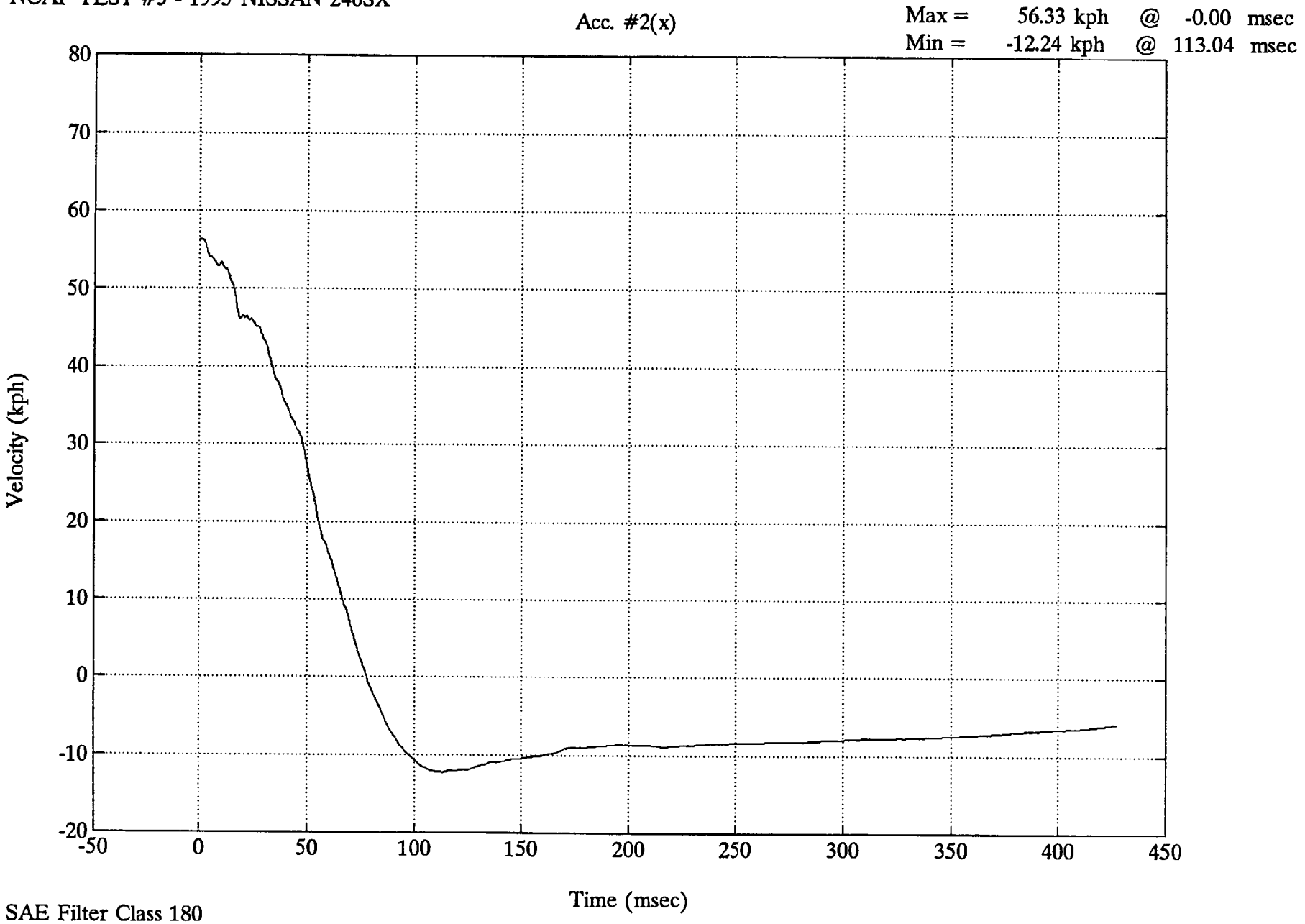
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60

8227-3

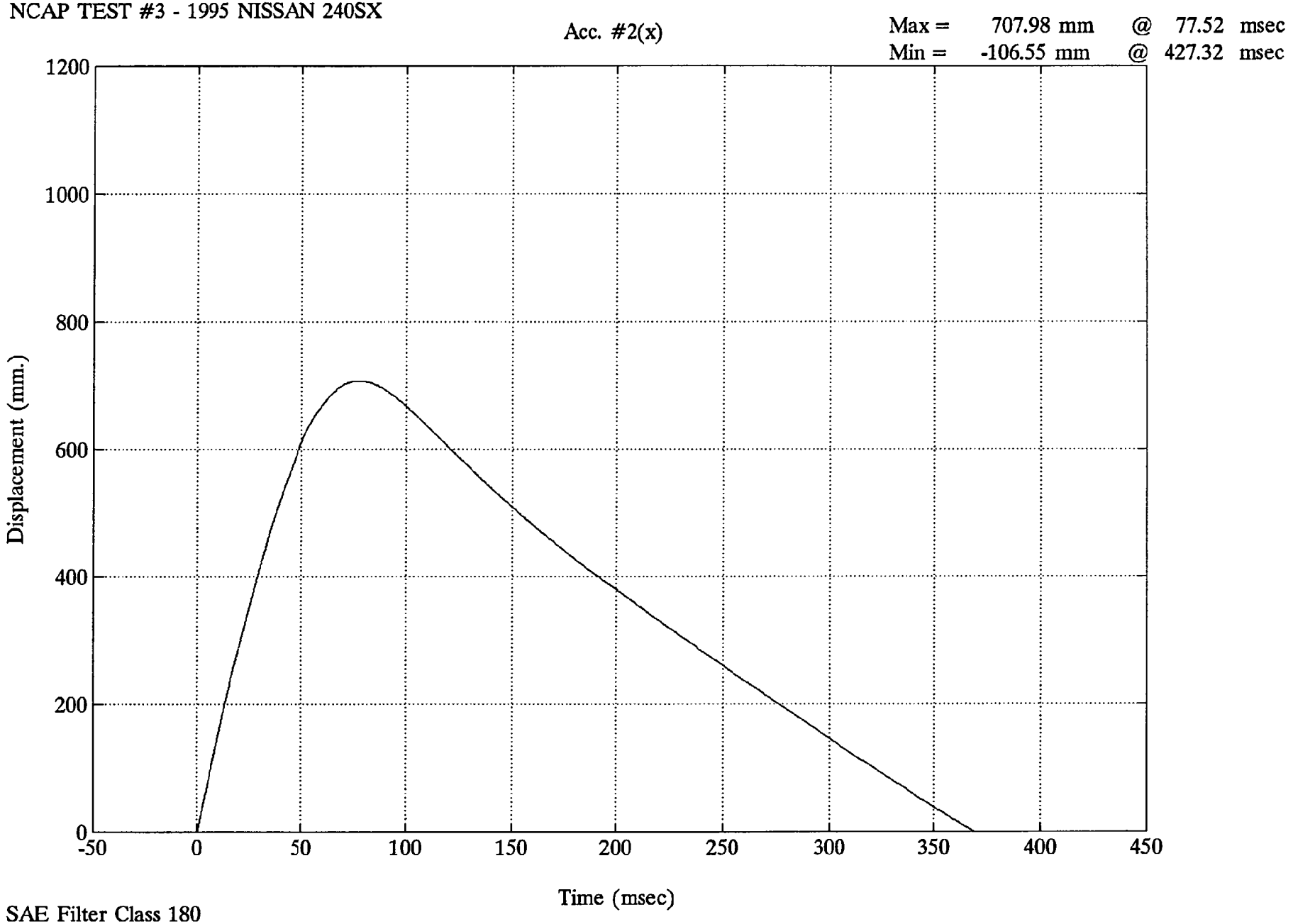
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

8227-3

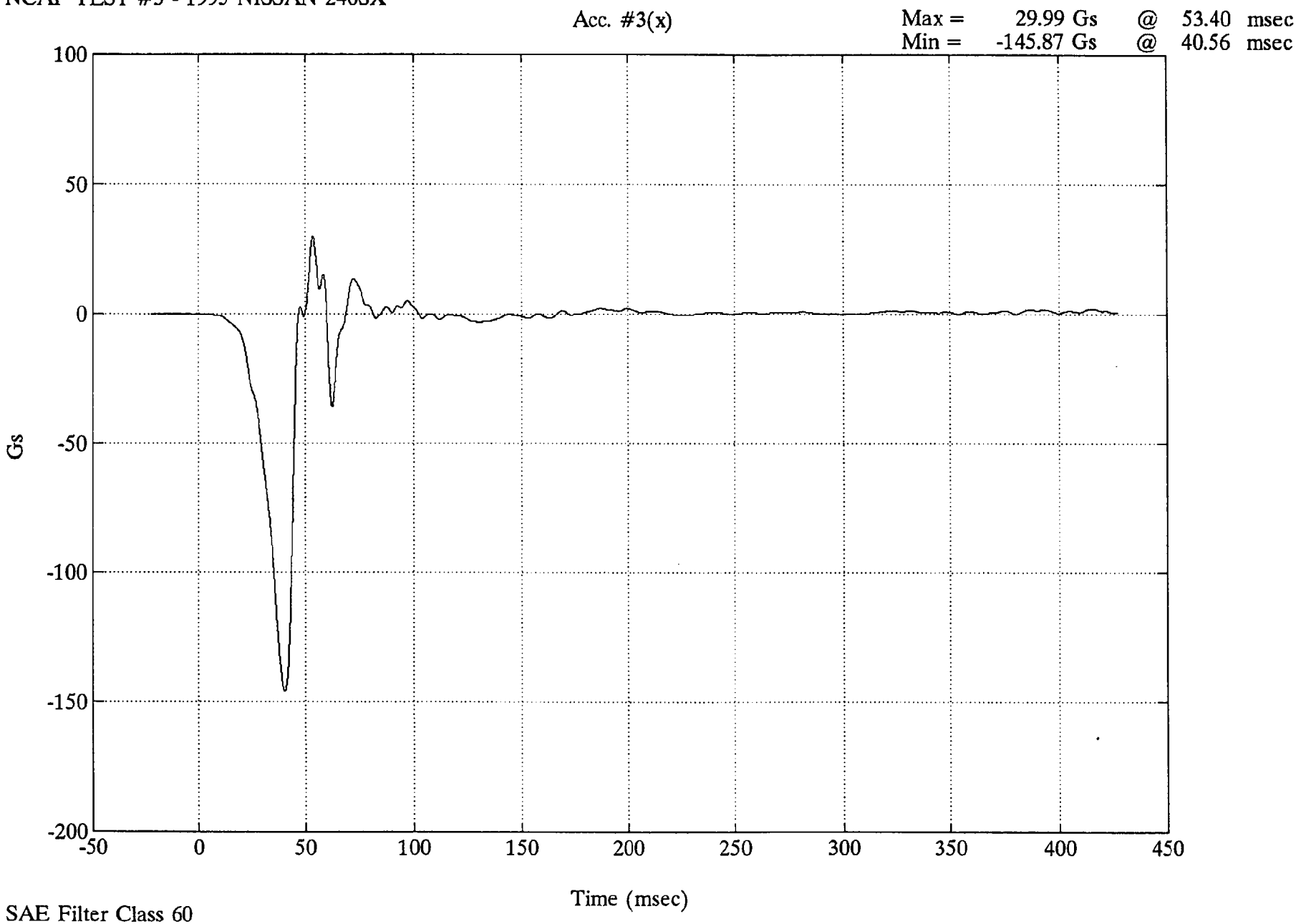
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

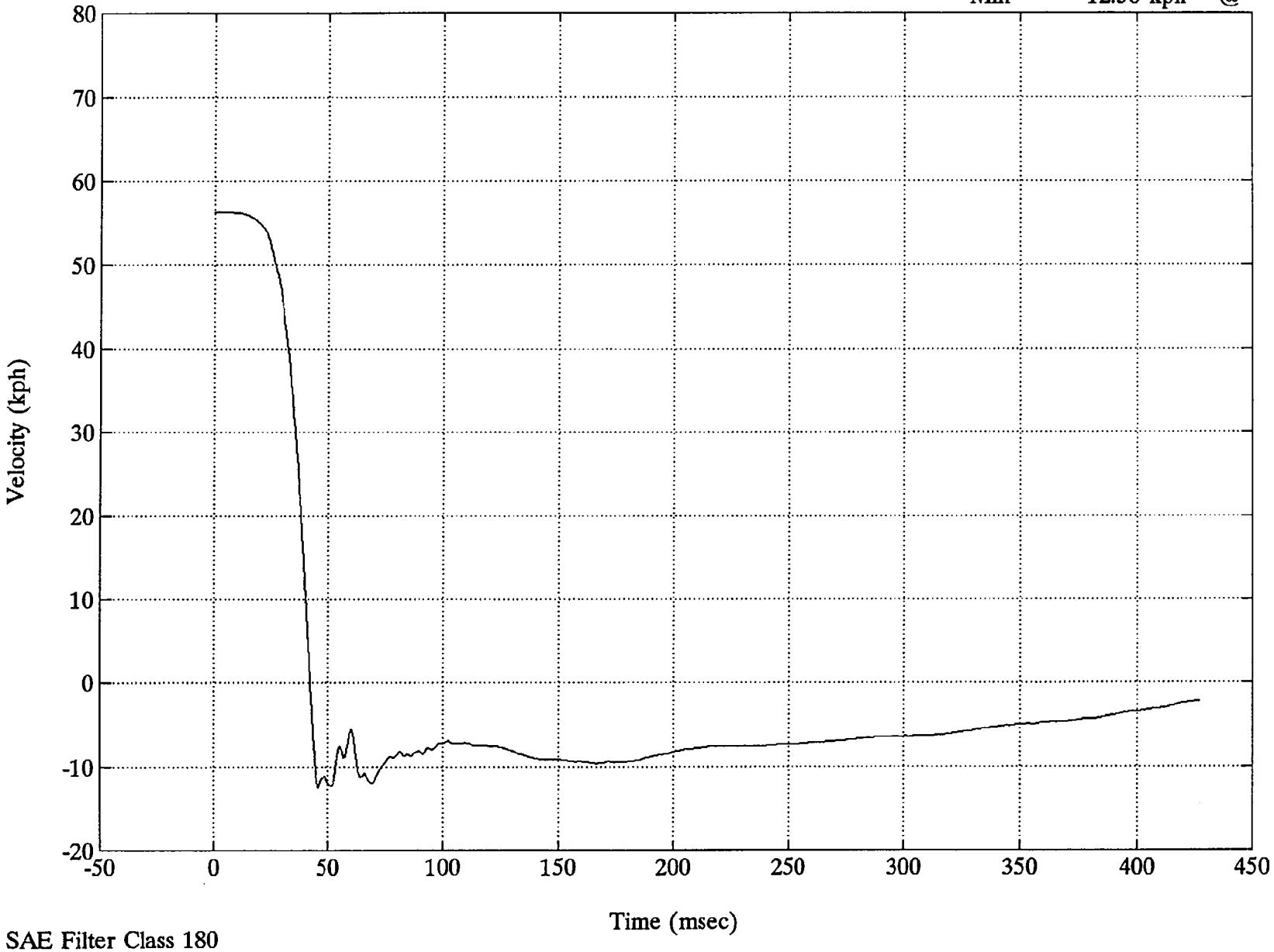


SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX

Acc. #3(x)

Max = 56.33 kph @ -0.00 msec
Min = -12.56 kph @ 45.36 msec



B-10

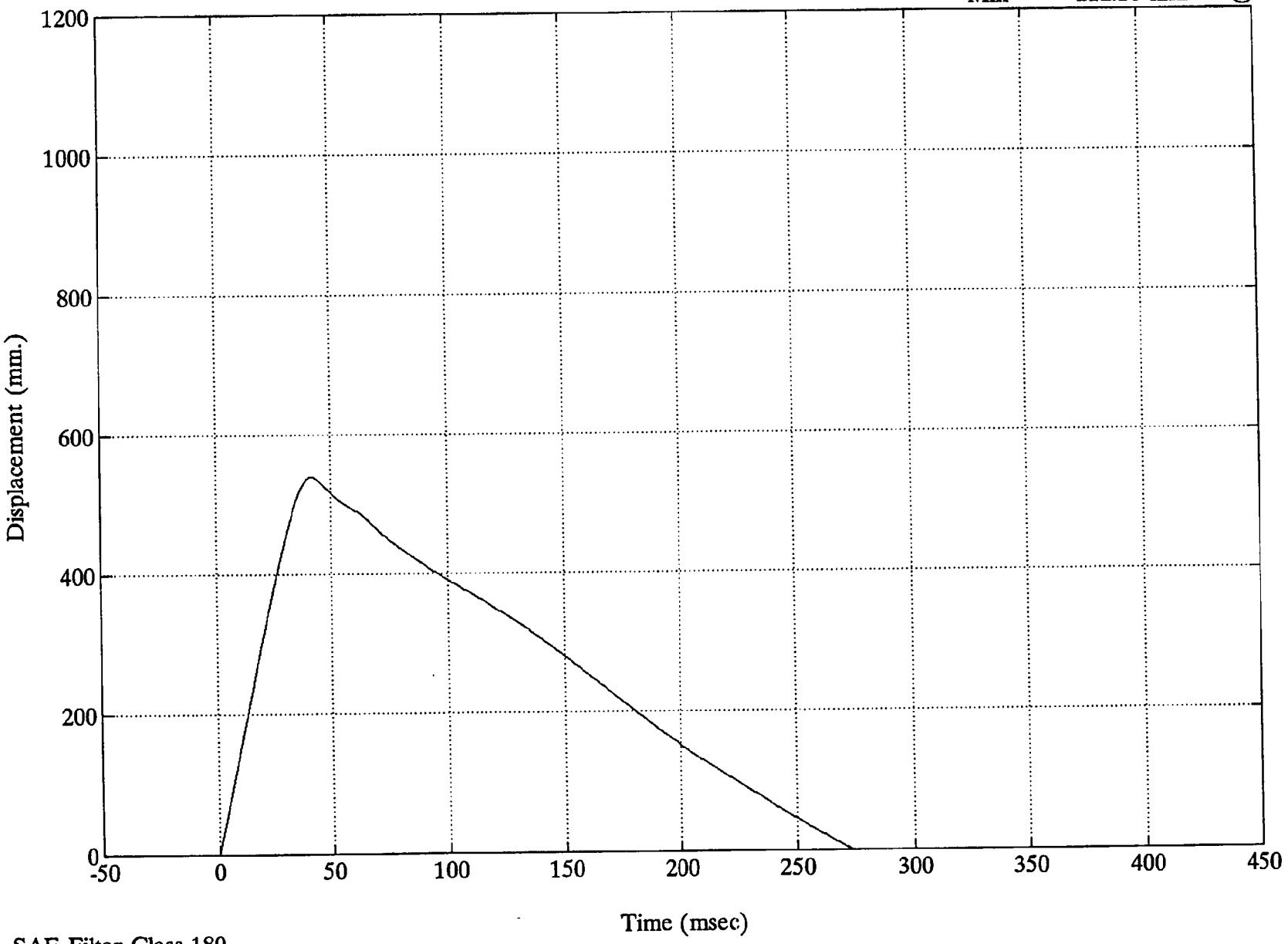
8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

Acc. #3(x)

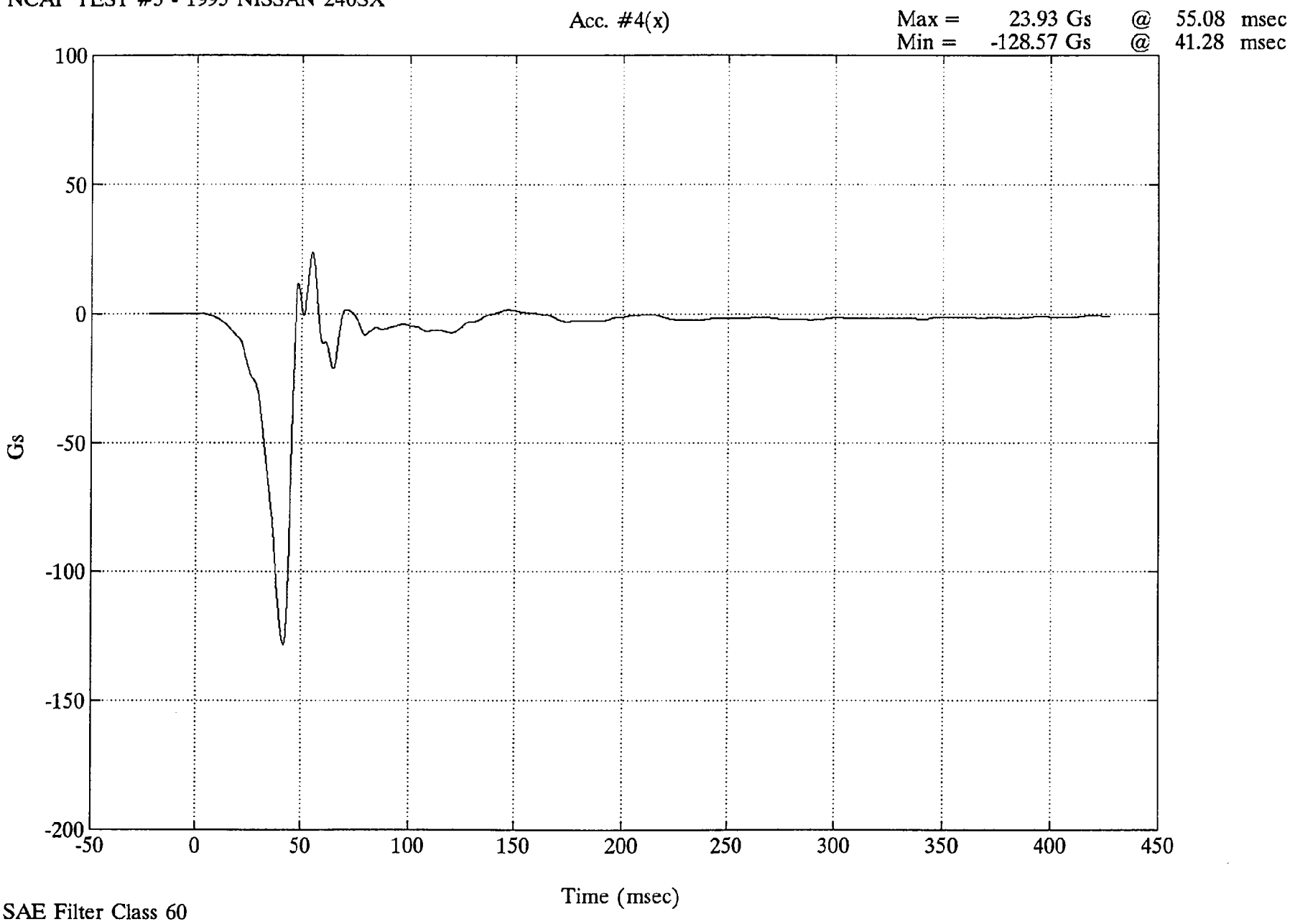
Max = 539.54 mm @ 41.99 msec
Min = -212.10 mm @ 427.32 msec



SAE Filter Class 180

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

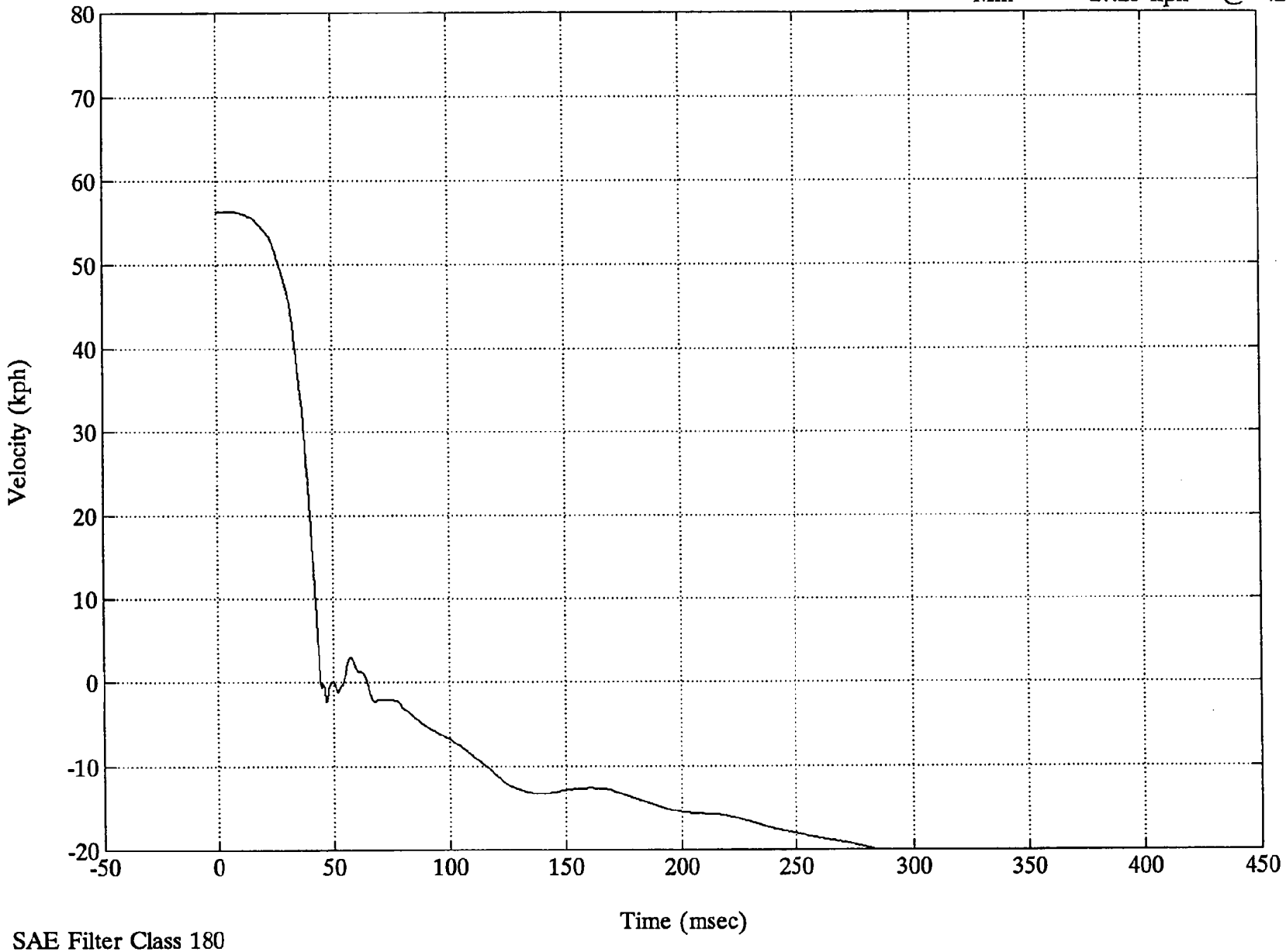


SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX

Acc. #4(x)

Max = 56.34 kph @ 2.99 msec
Min = -27.25 kph @ 427.32 msec

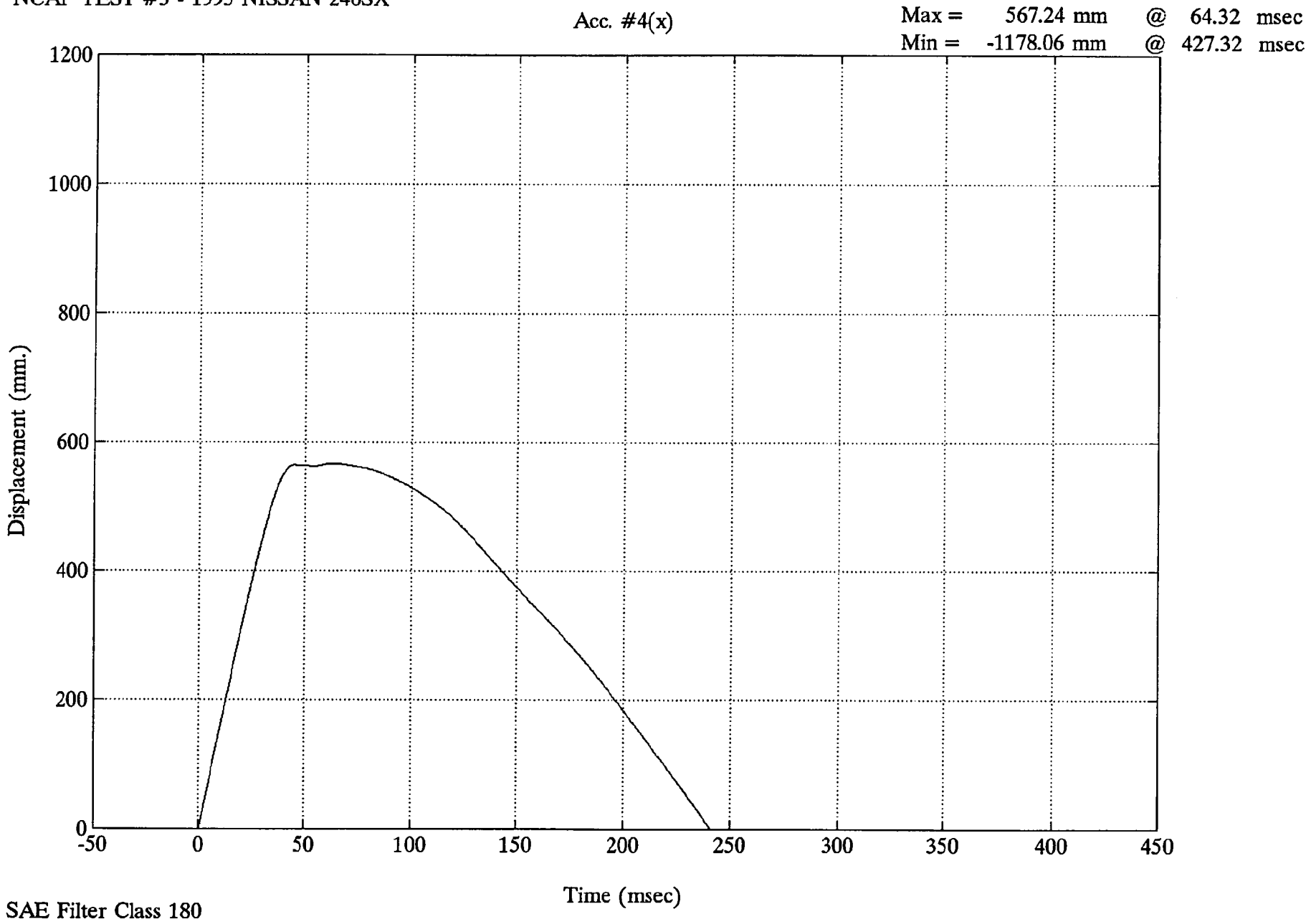


B-13

8227-3

SAE Filter Class 180

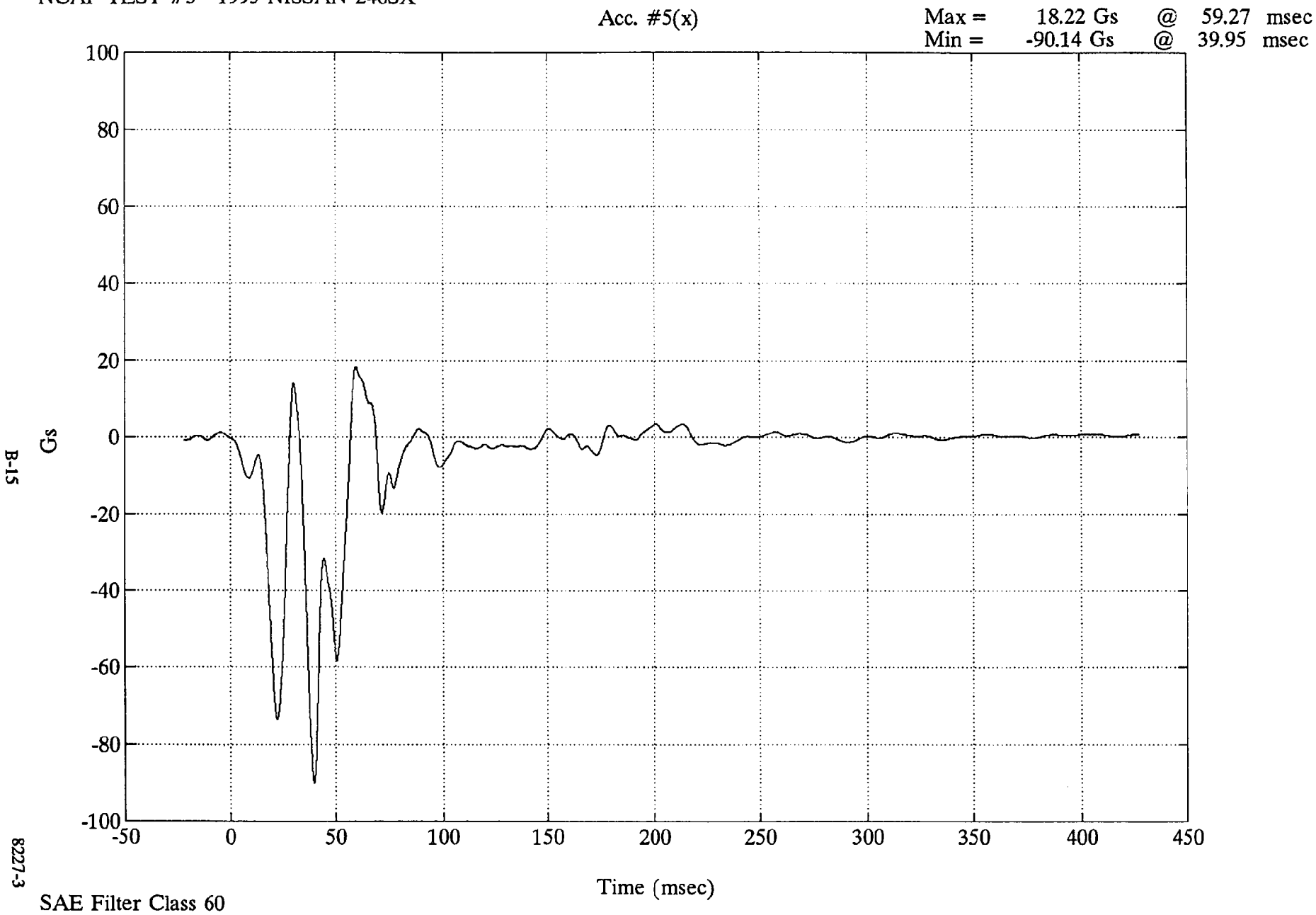
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX



B-15

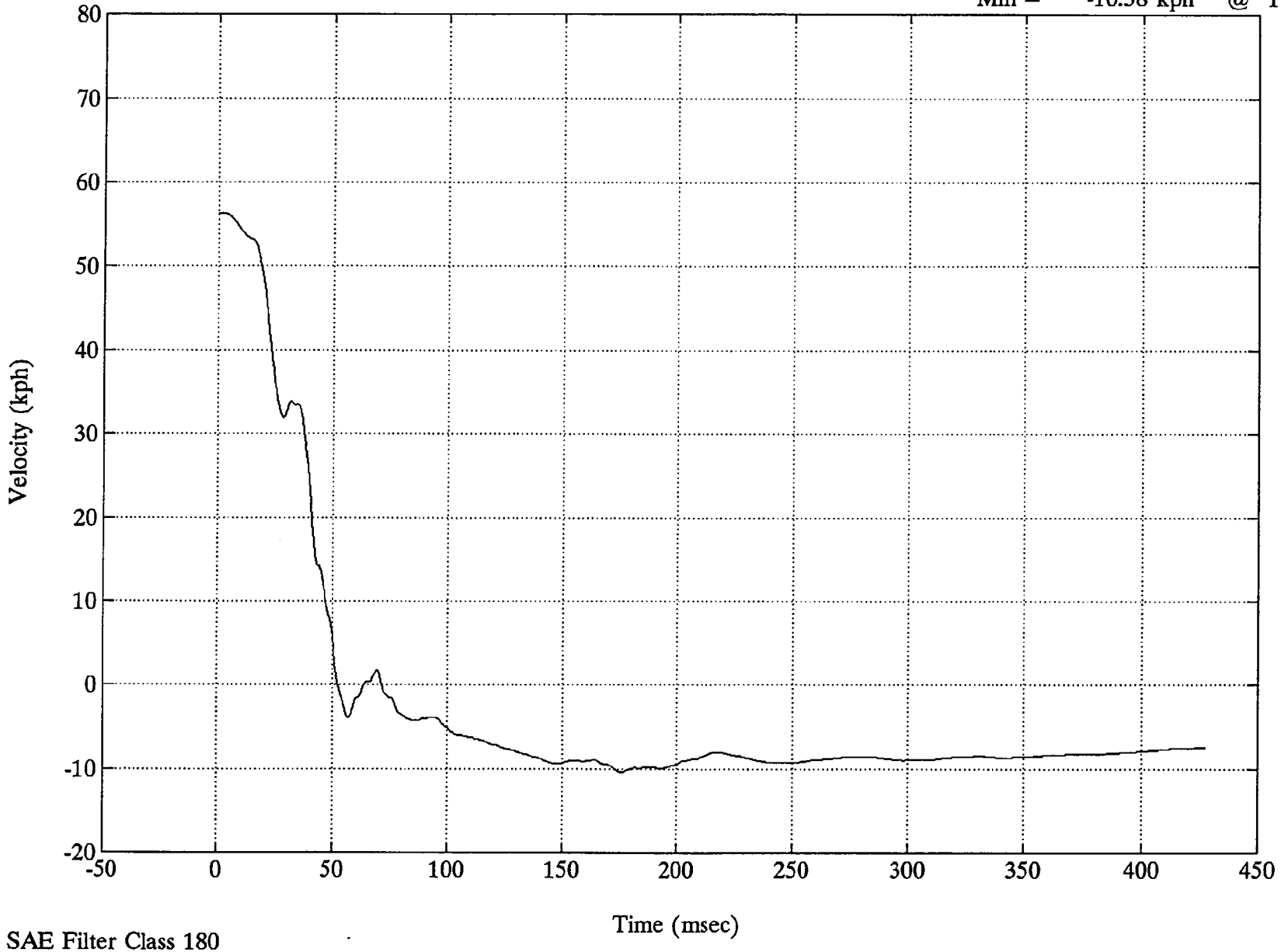
8227-3

SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX

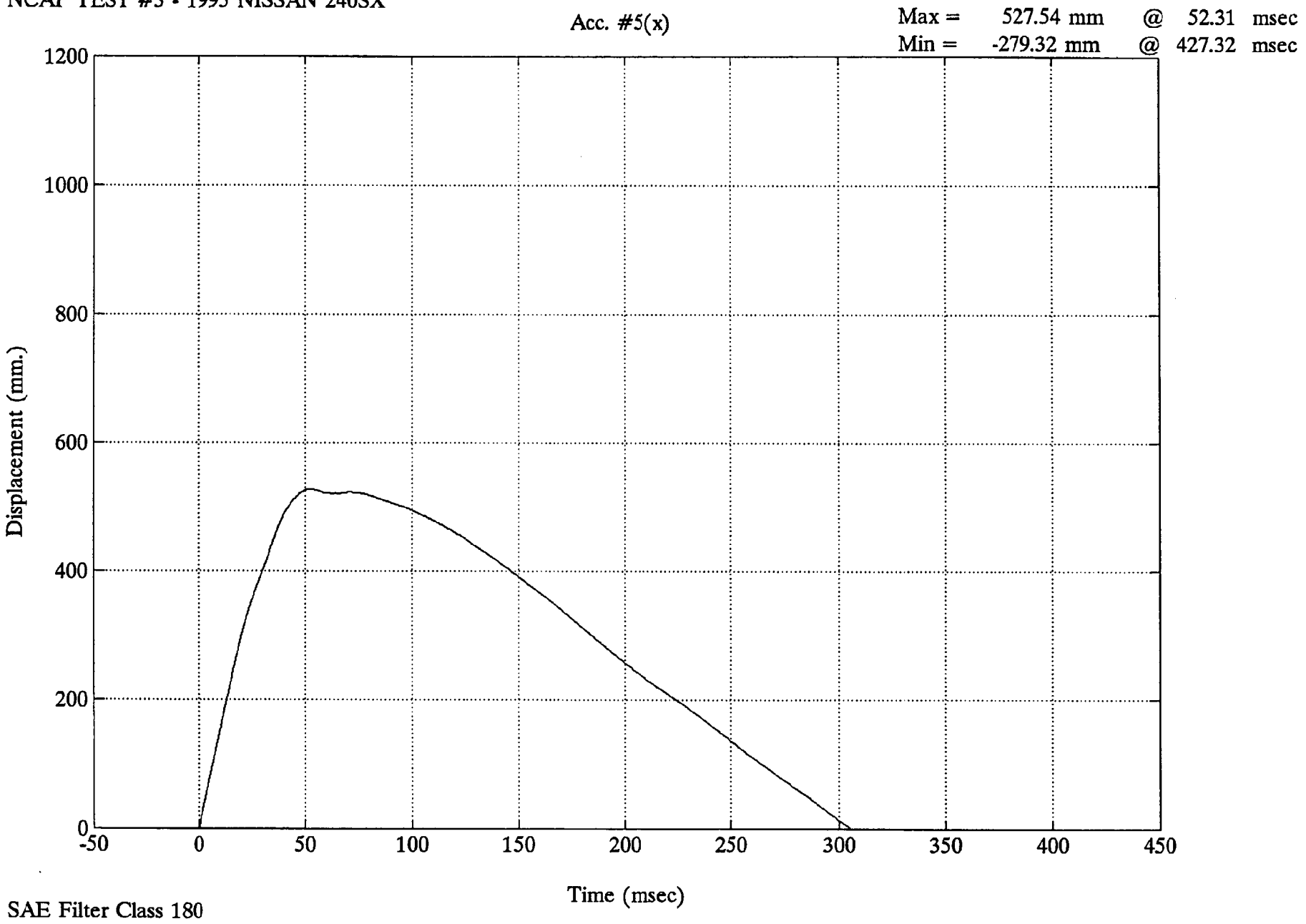
Acc. #5(x)

Max = 56.33 kph @ -0.00 msec
Min = -10.38 kph @ 176.16 msec



SAE Filter Class 180

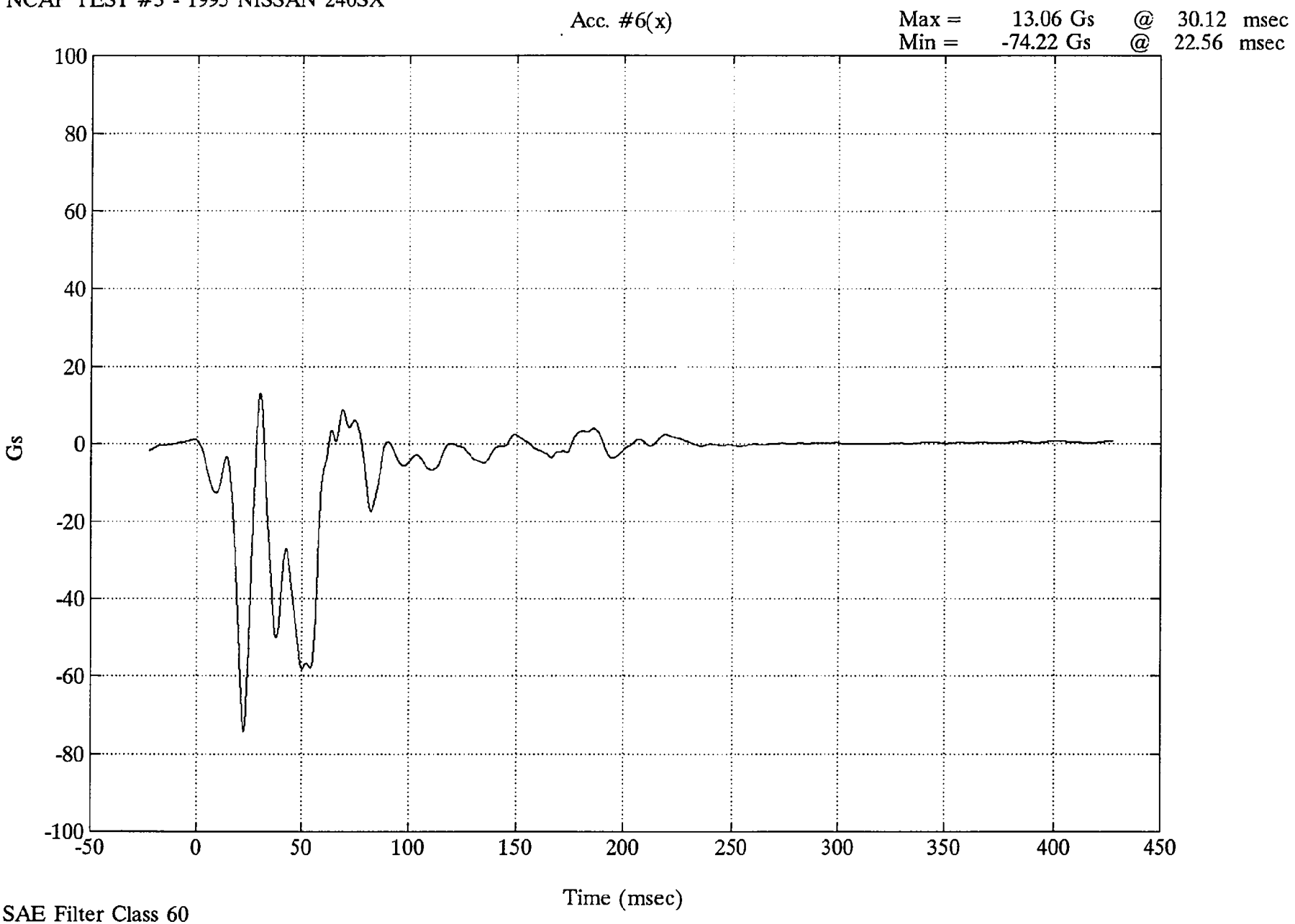
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX



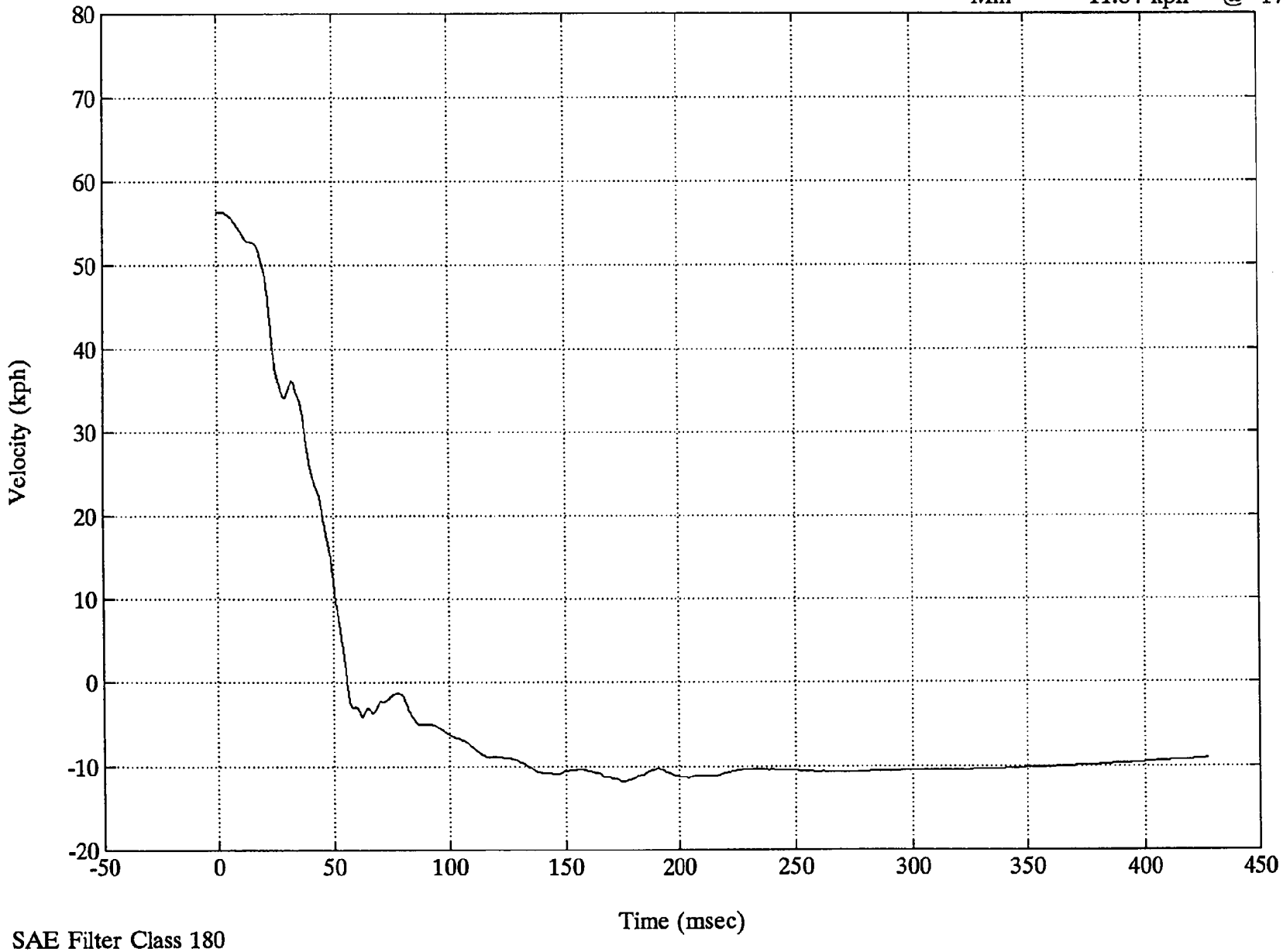
SAE Filter Class 60

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

Acc. #6(x)

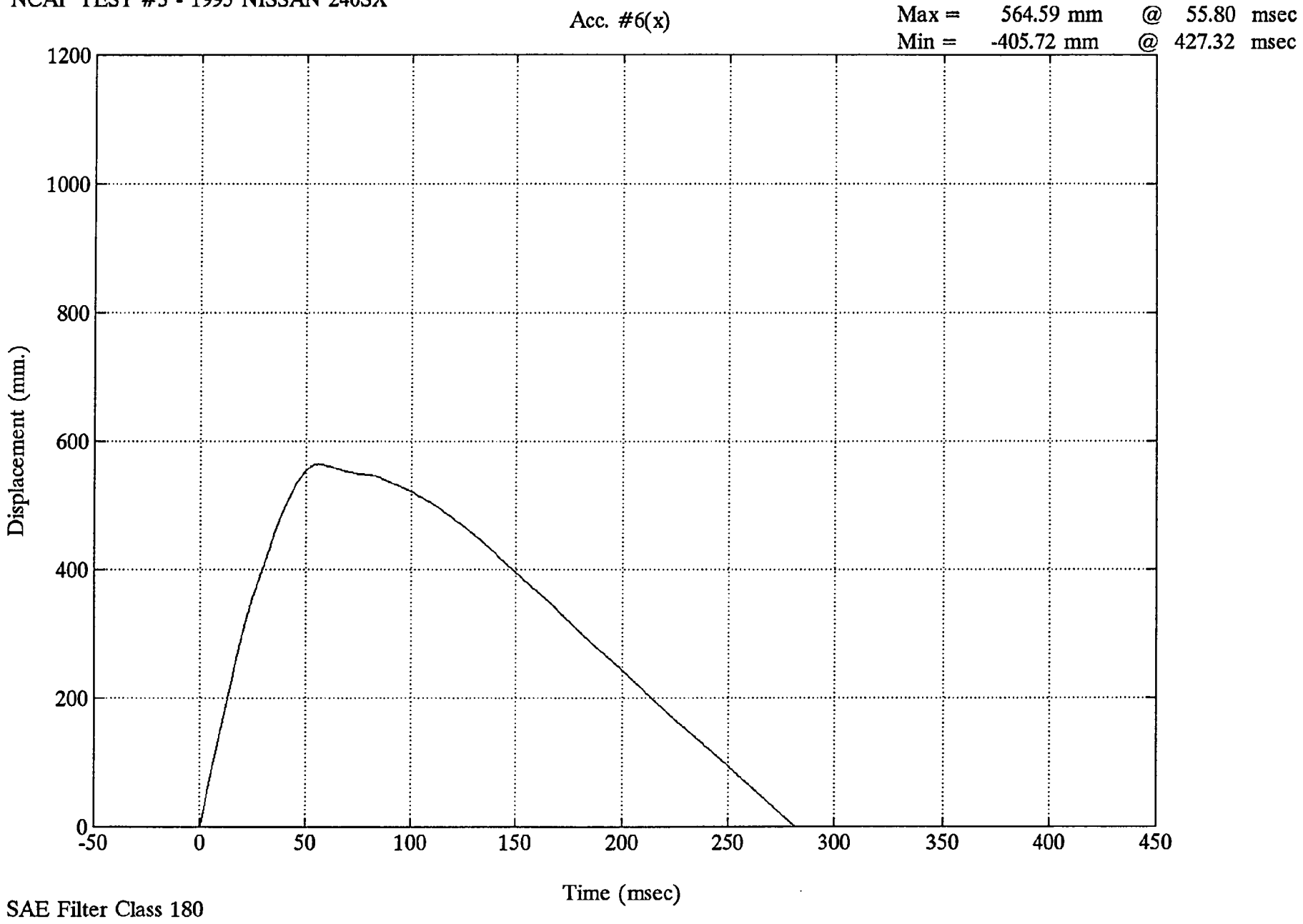
Max = 56.33 kph @ 0.47 msec
Min = -11.84 kph @ 175.56 msec



SAE Filter Class 180

8227-3

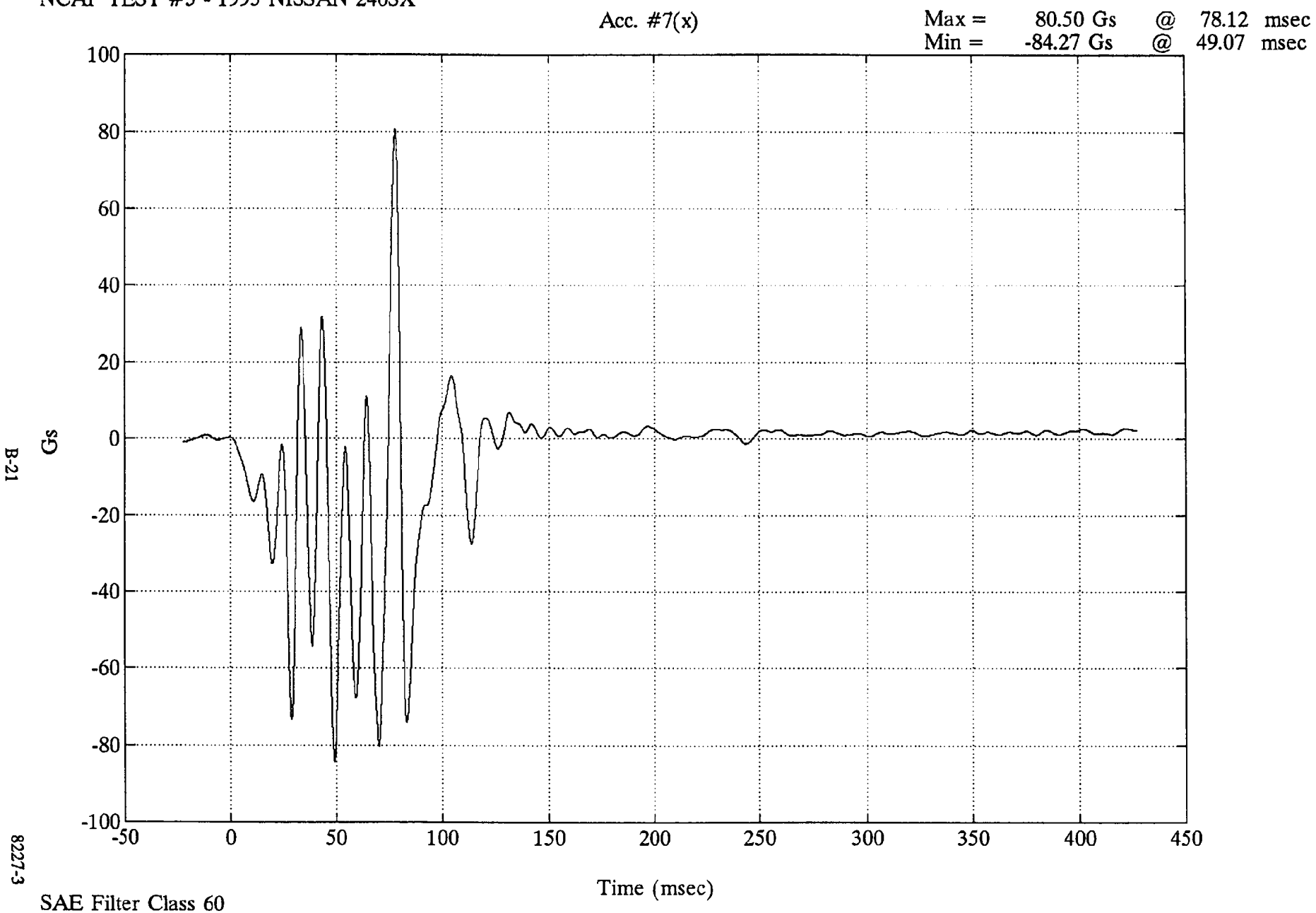
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

8227-3

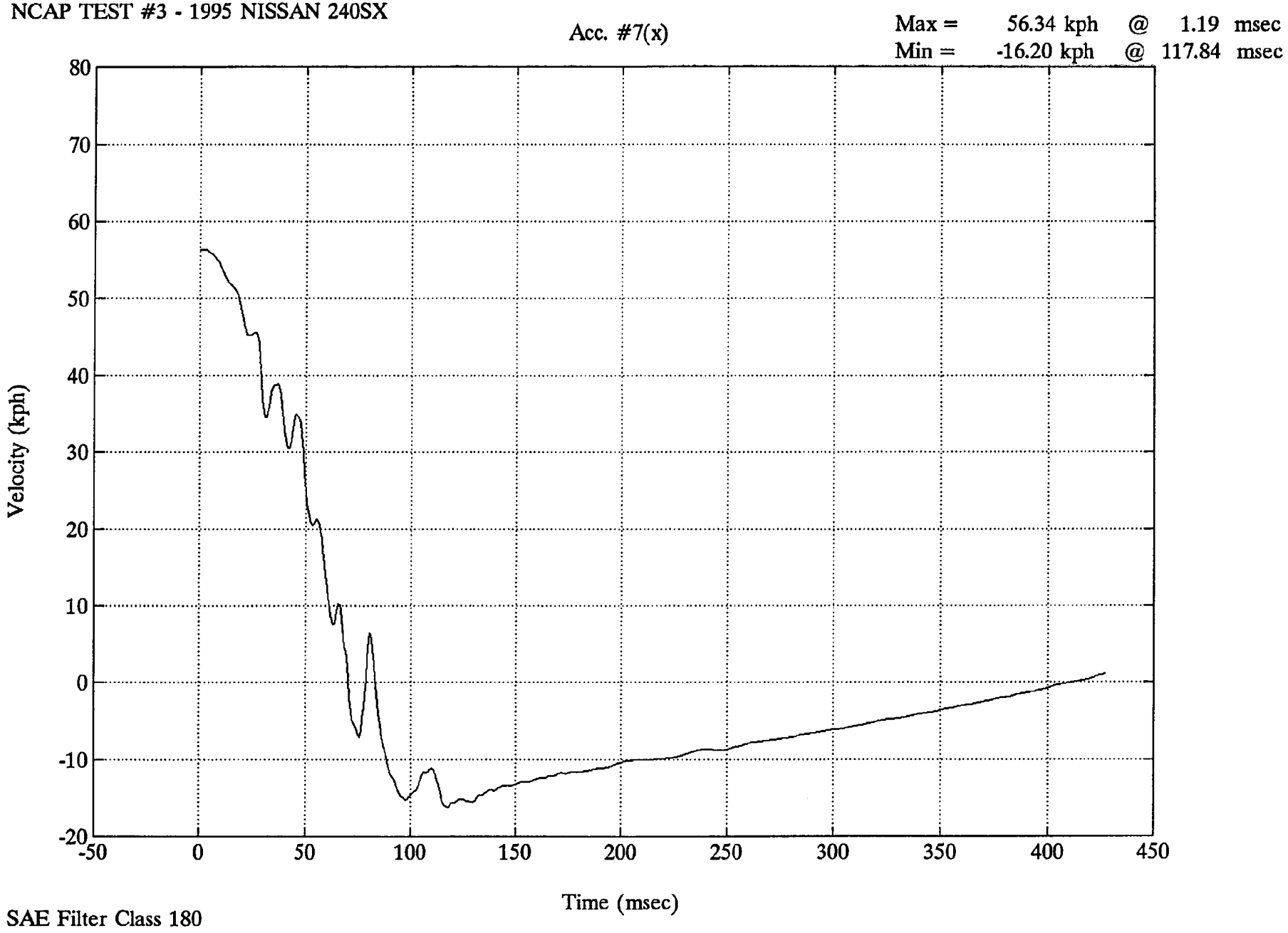
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60

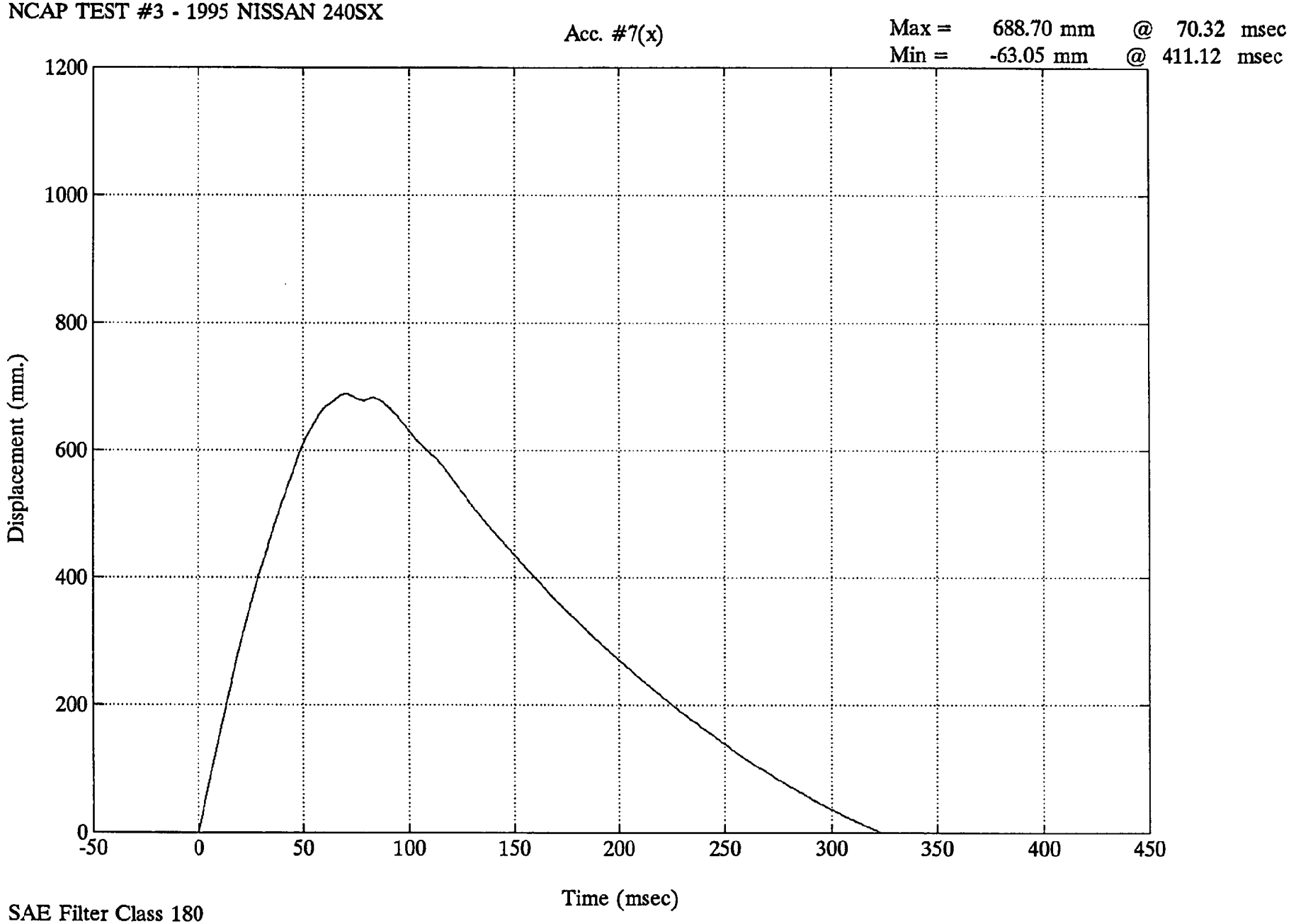
8227-3

NCAP TEST #3 - 1995 NISSAN 240SX



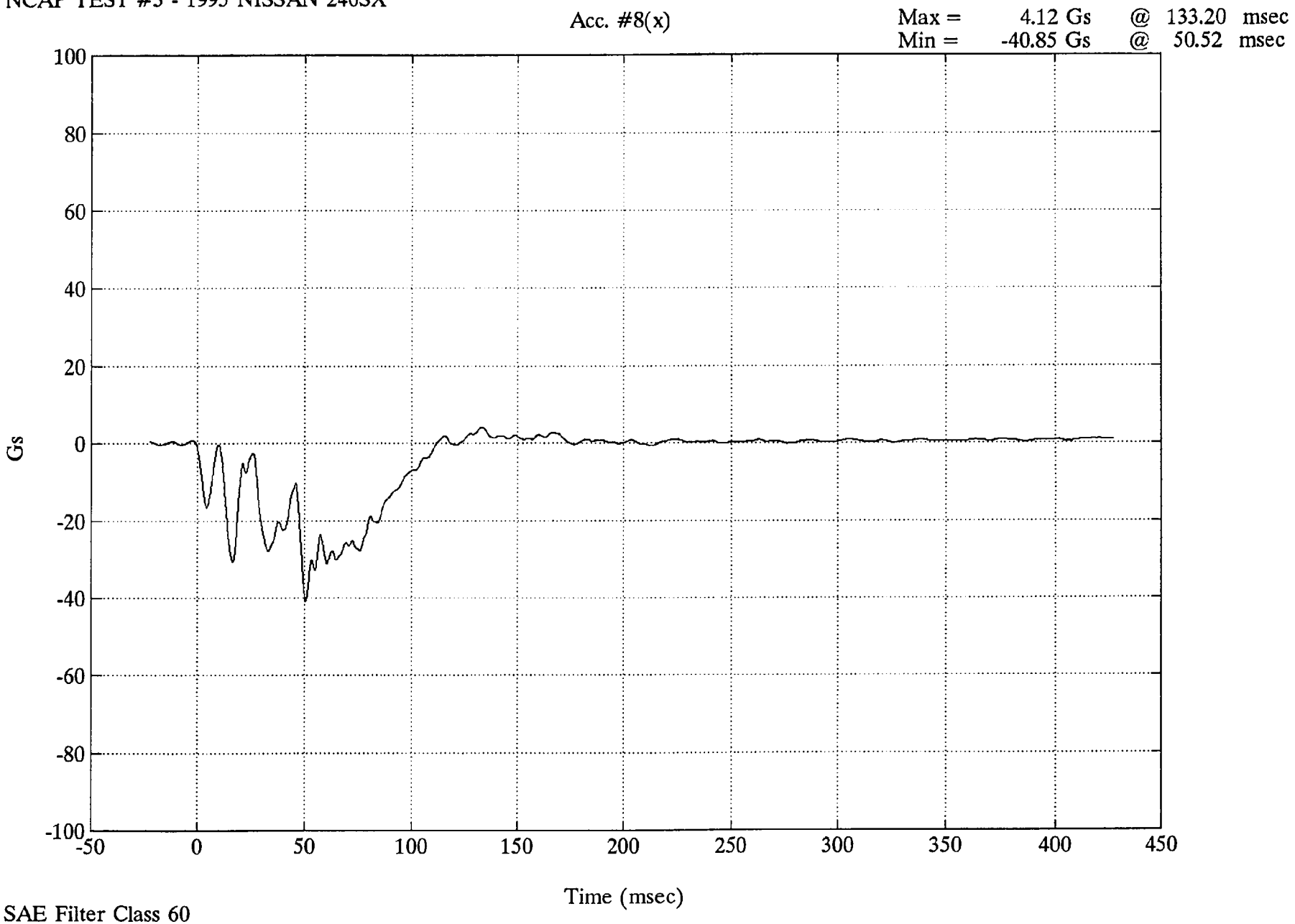
SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

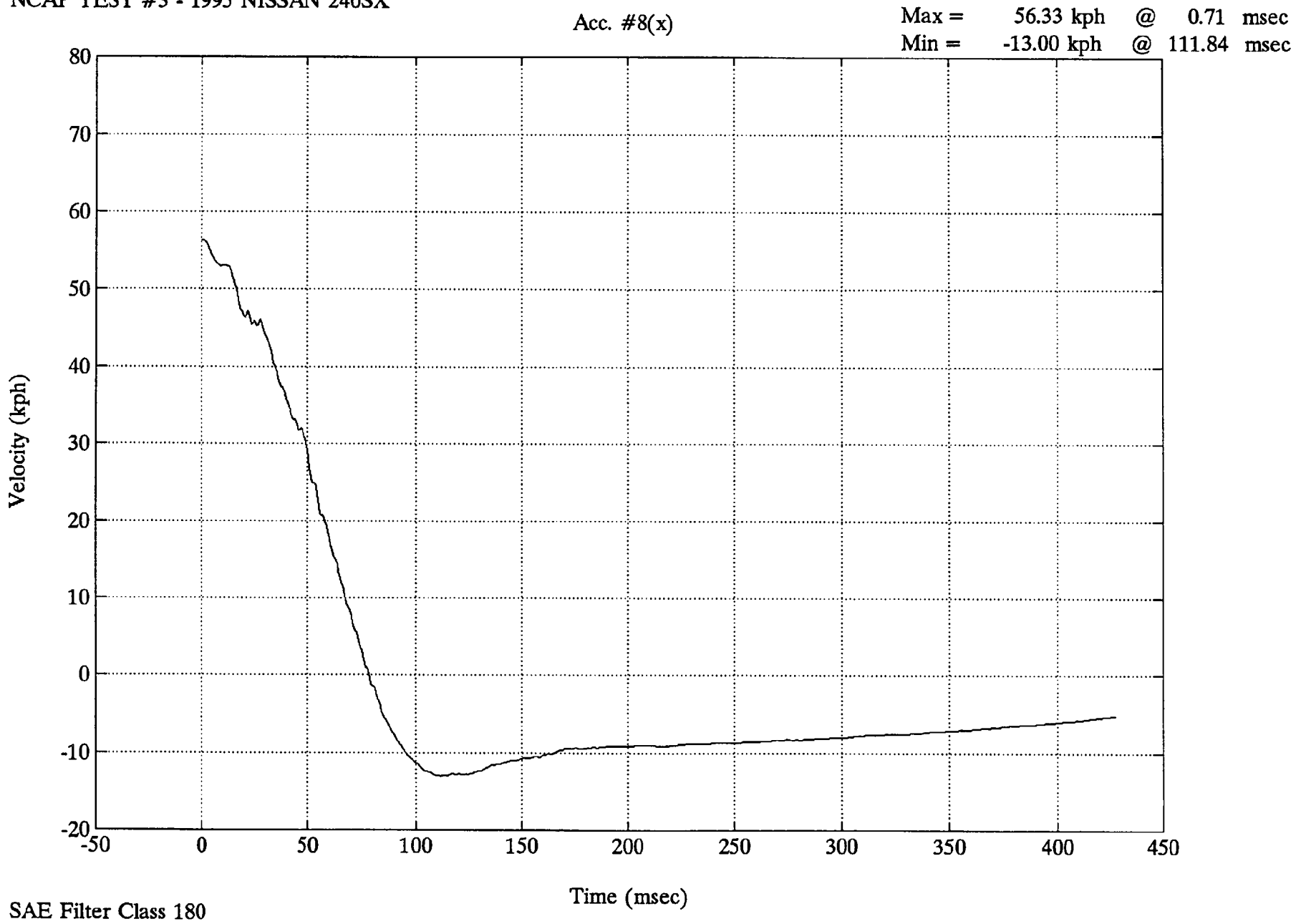
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60

8227-3

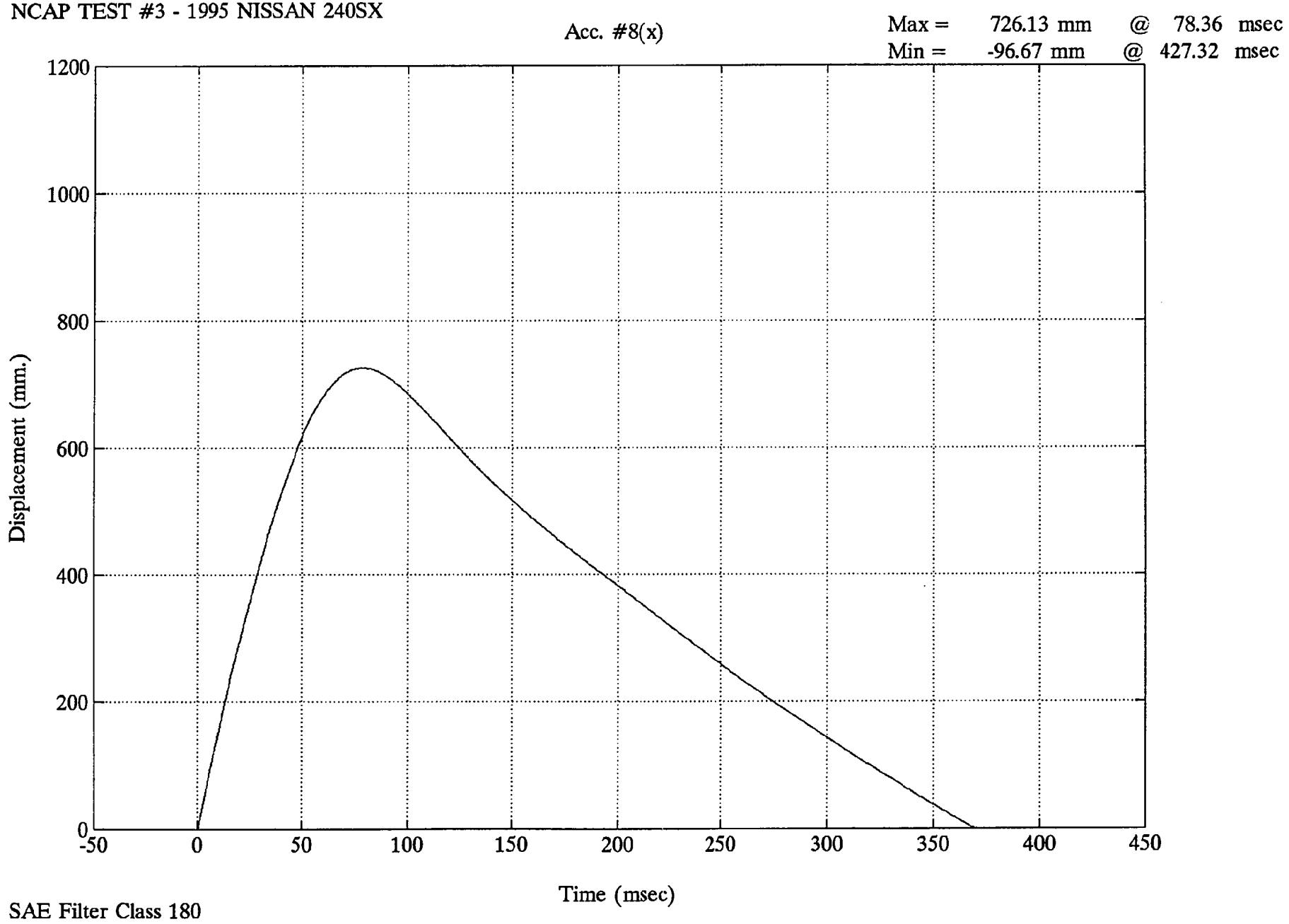
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

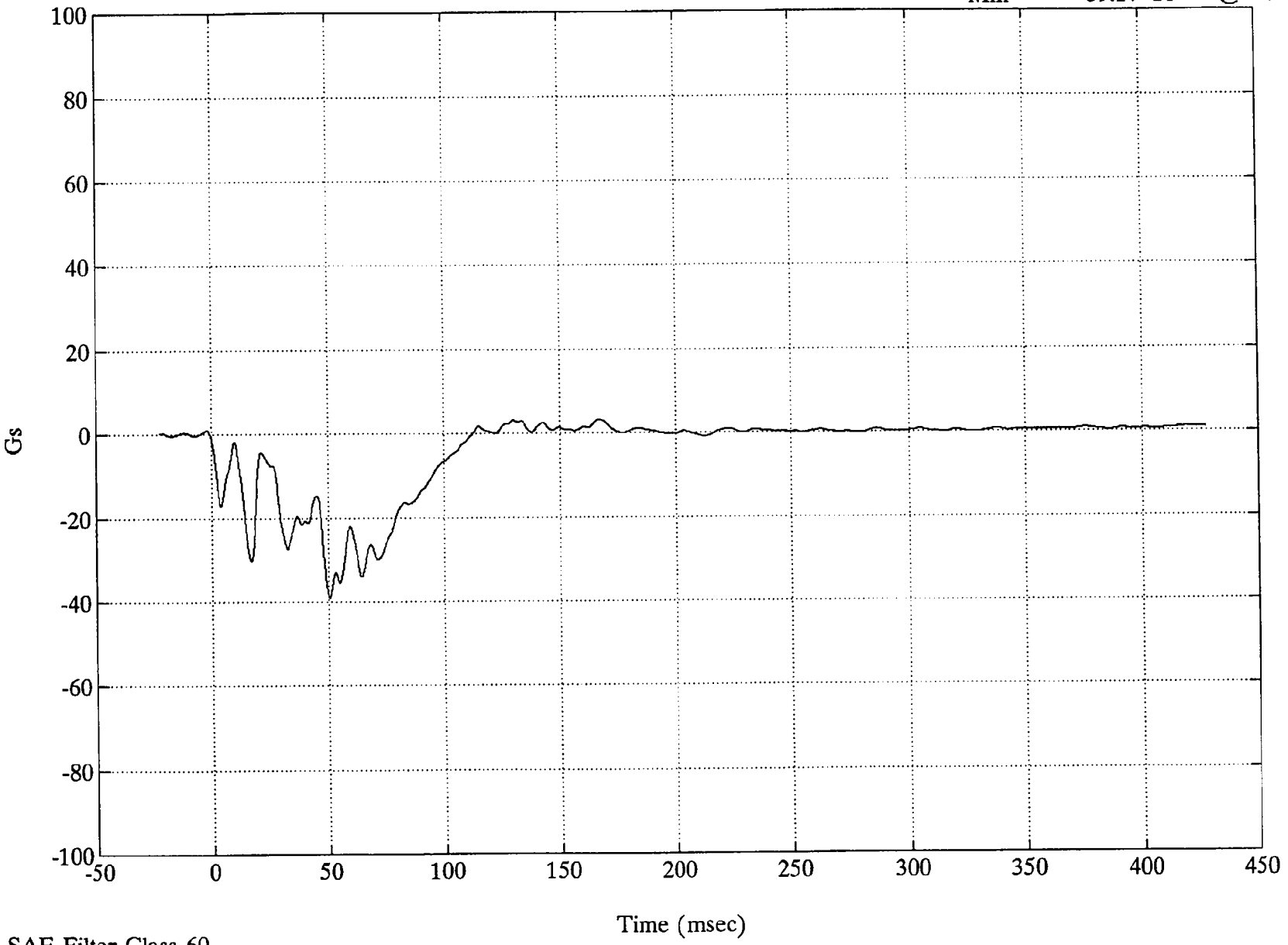


SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

Acc. #9(x)

Max = 3.18 Gs @ 167.16 msec
Min = -39.17 Gs @ 50.40 msec



B-27

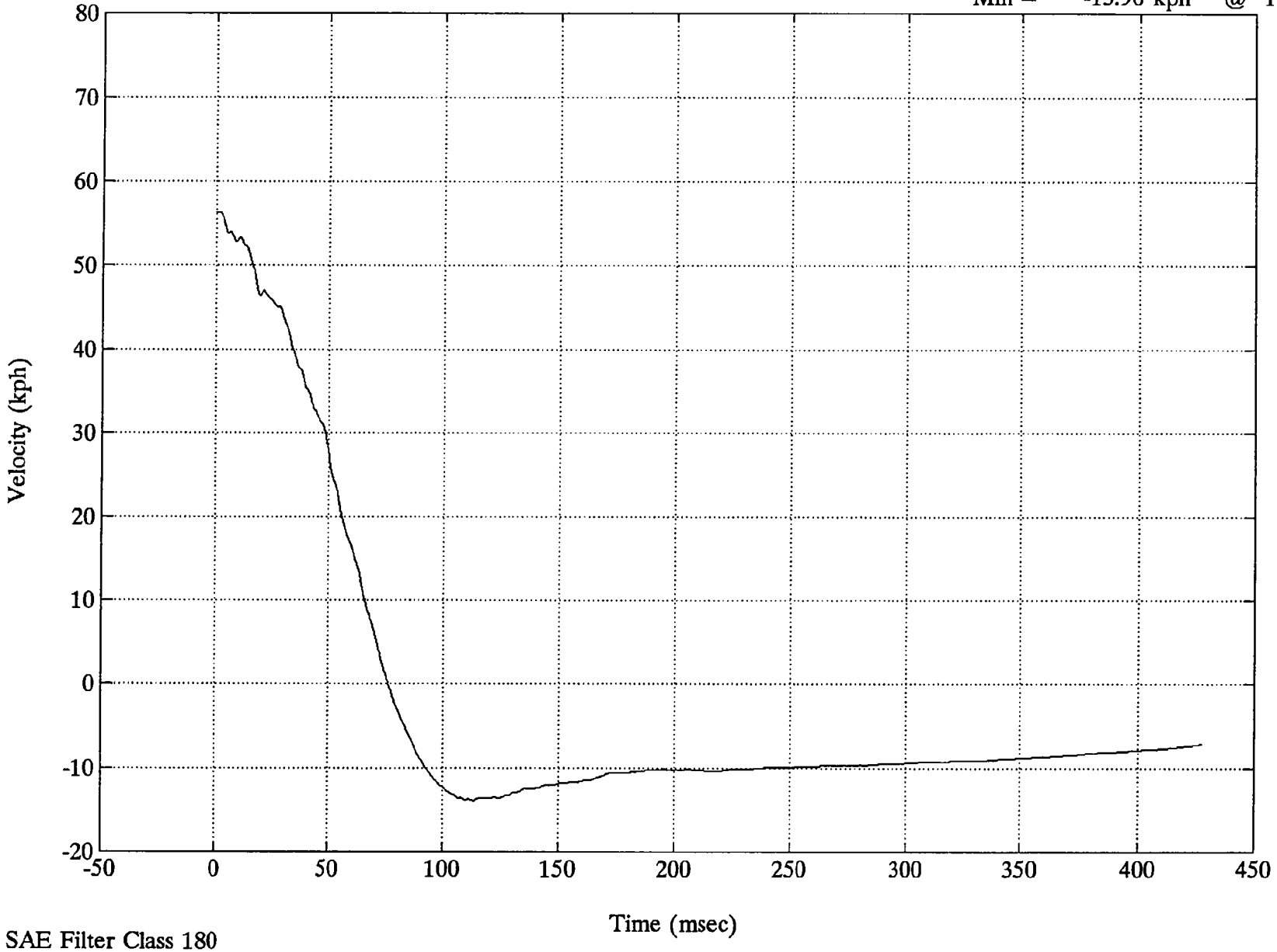
8227-3

SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX

Acc. #9(x)

Max = 56.33 kph @ -0.00 msec
Min = -13.90 kph @ 113.40 msec

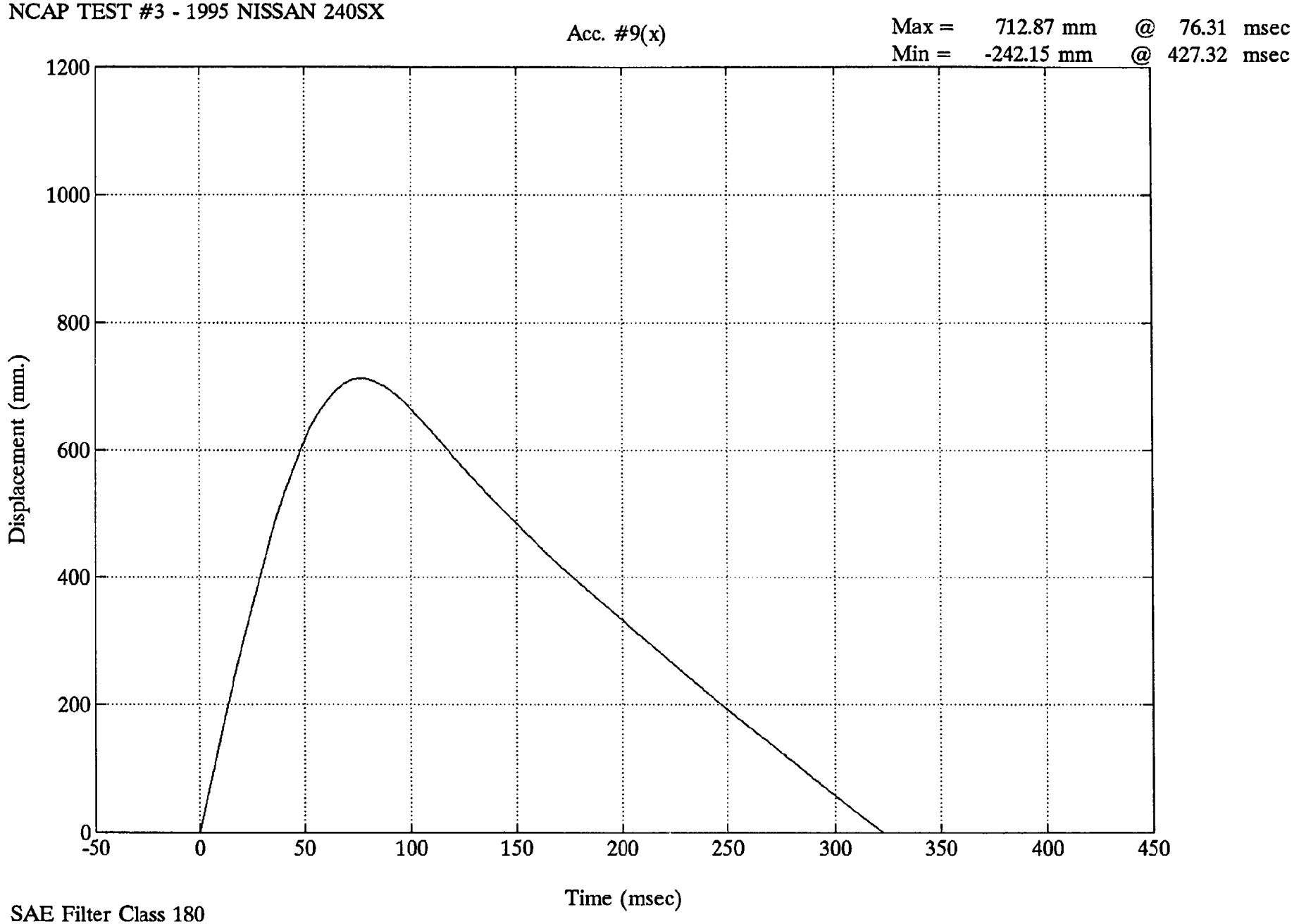


B-28

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 180

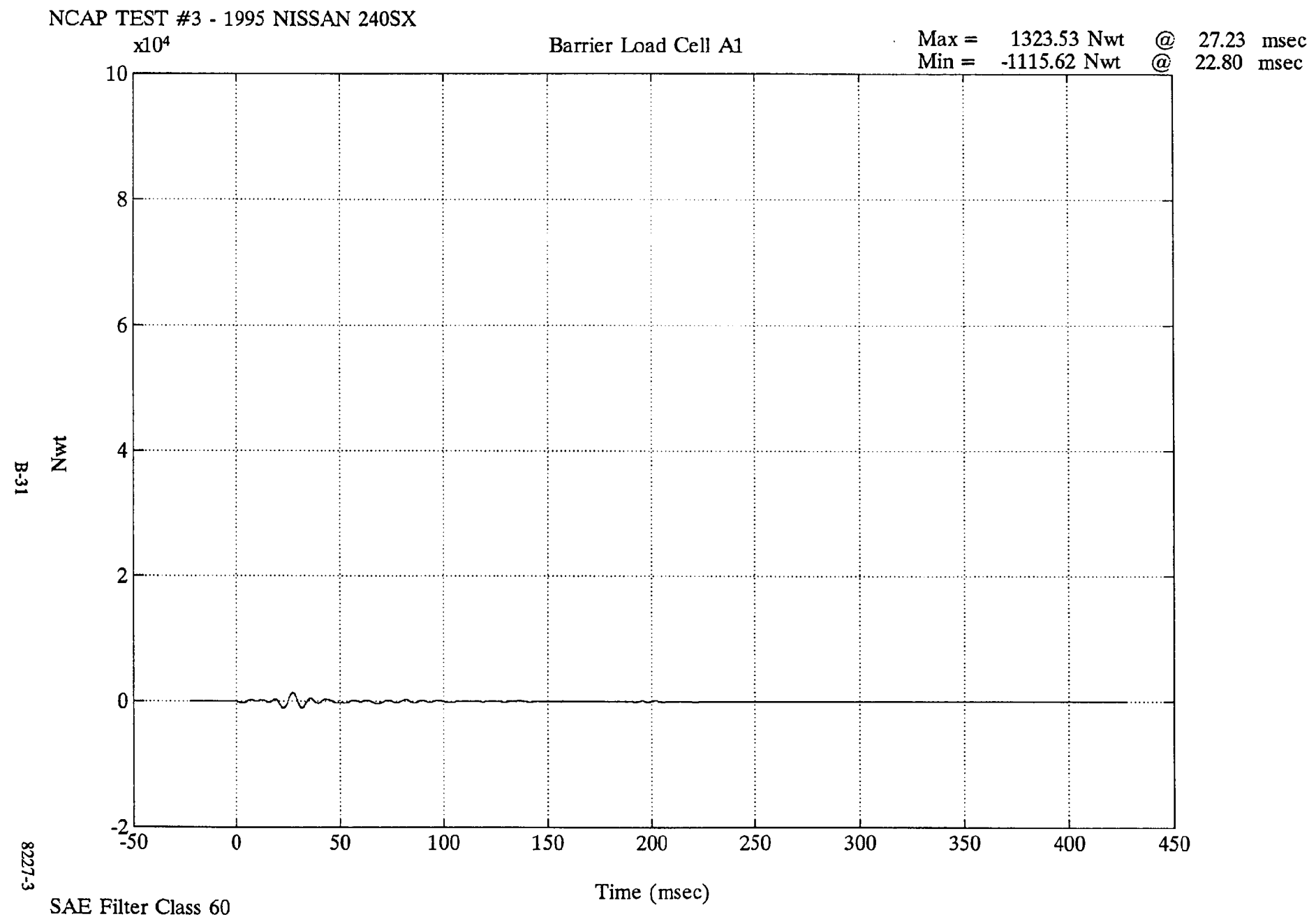
8227-3

TEST NO. MS5201

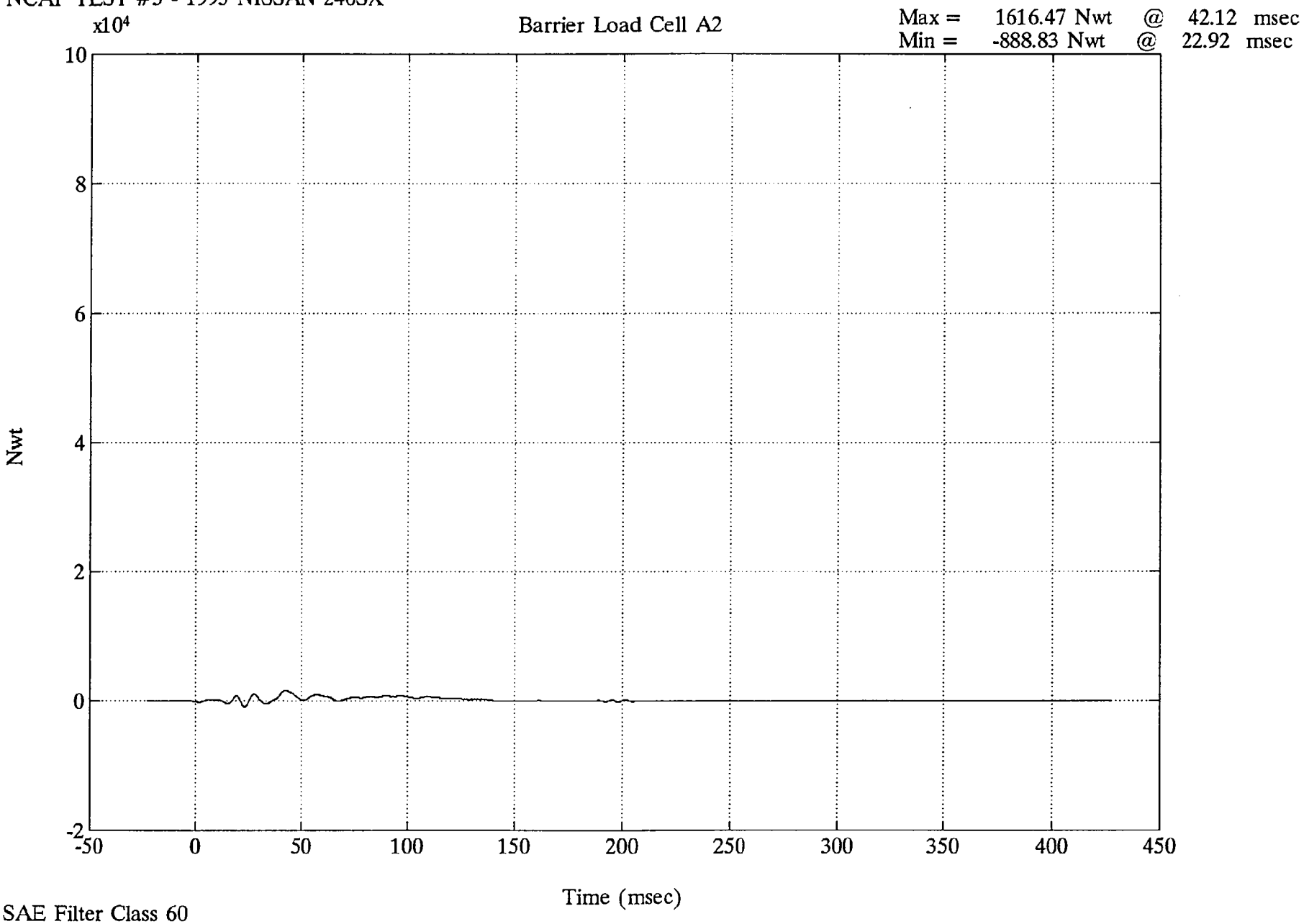
LOAD CELL BARRIER DATA

FILTER CHANNEL CLASS

60


NCAP TEST #3 - 1995 NISSAN 240SX
x10^4
Barrier Load Cell A1
Max = 1323.53 Nwt @ 27.23 msec
Min = -1115.62 Nwt @ 22.80 msec
10
8
6
4
2
0
-2
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
SAE Filter Class 60
B-31
8227-3

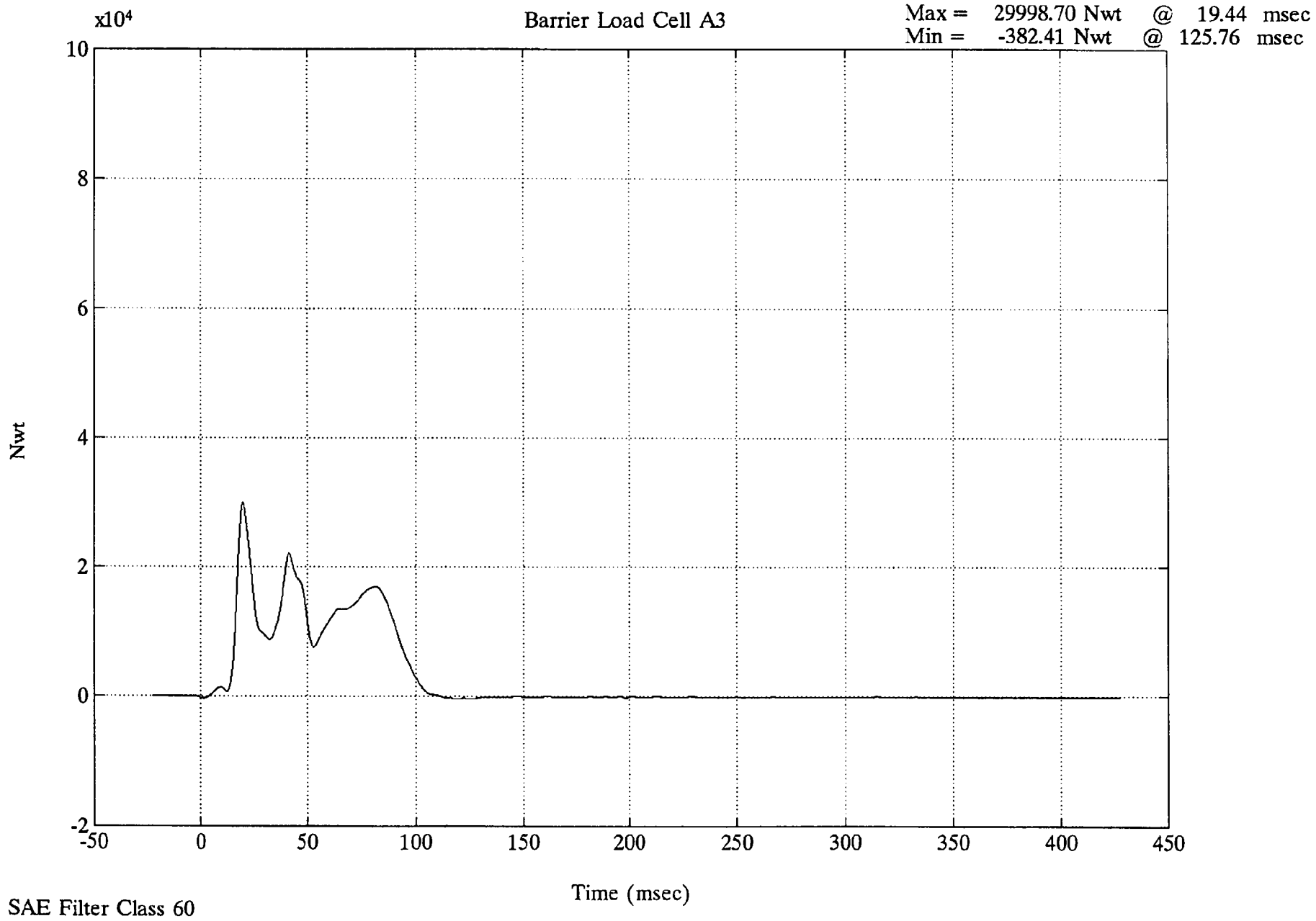
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

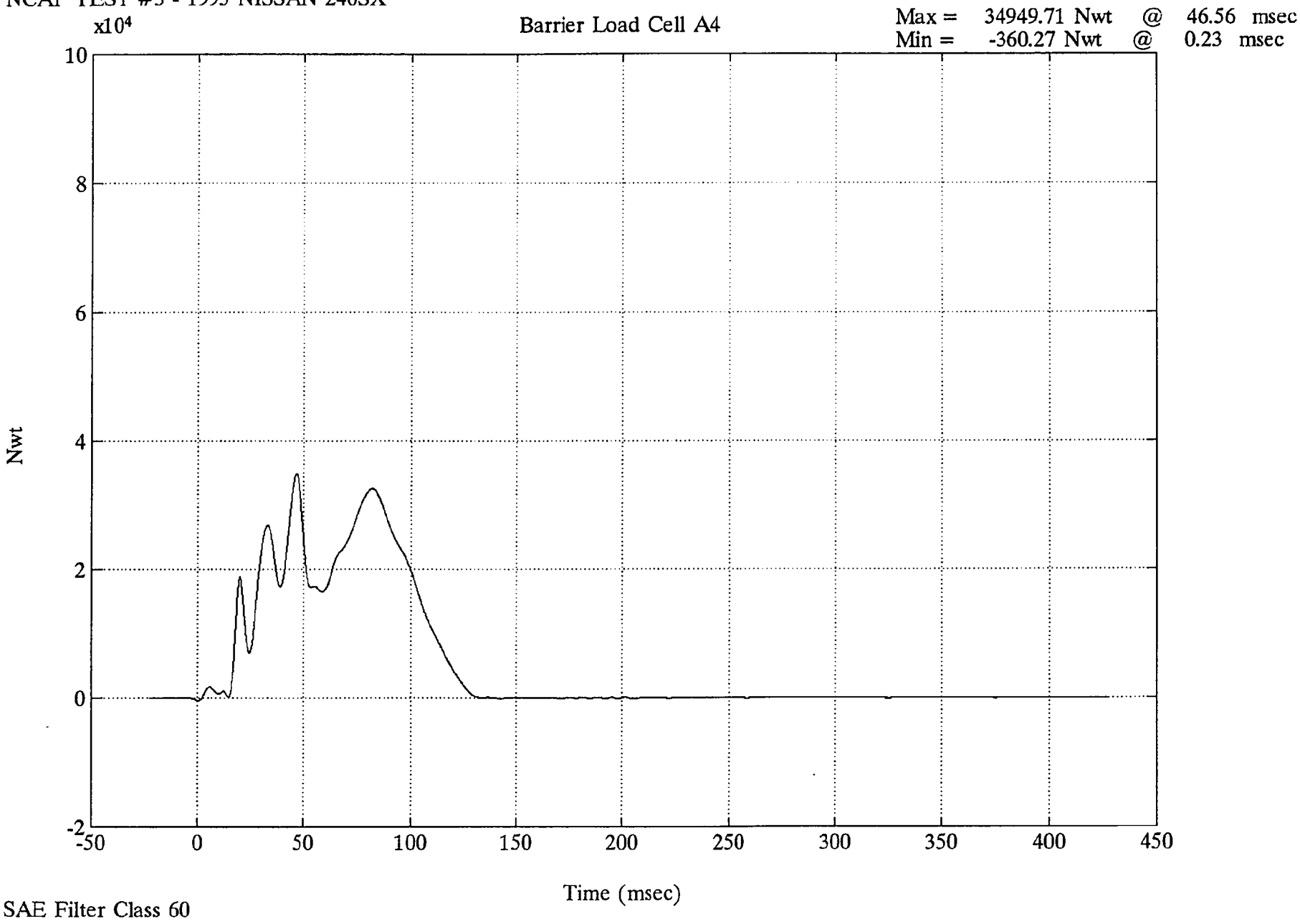


SAE Filter Class 60

B-33

8227-3

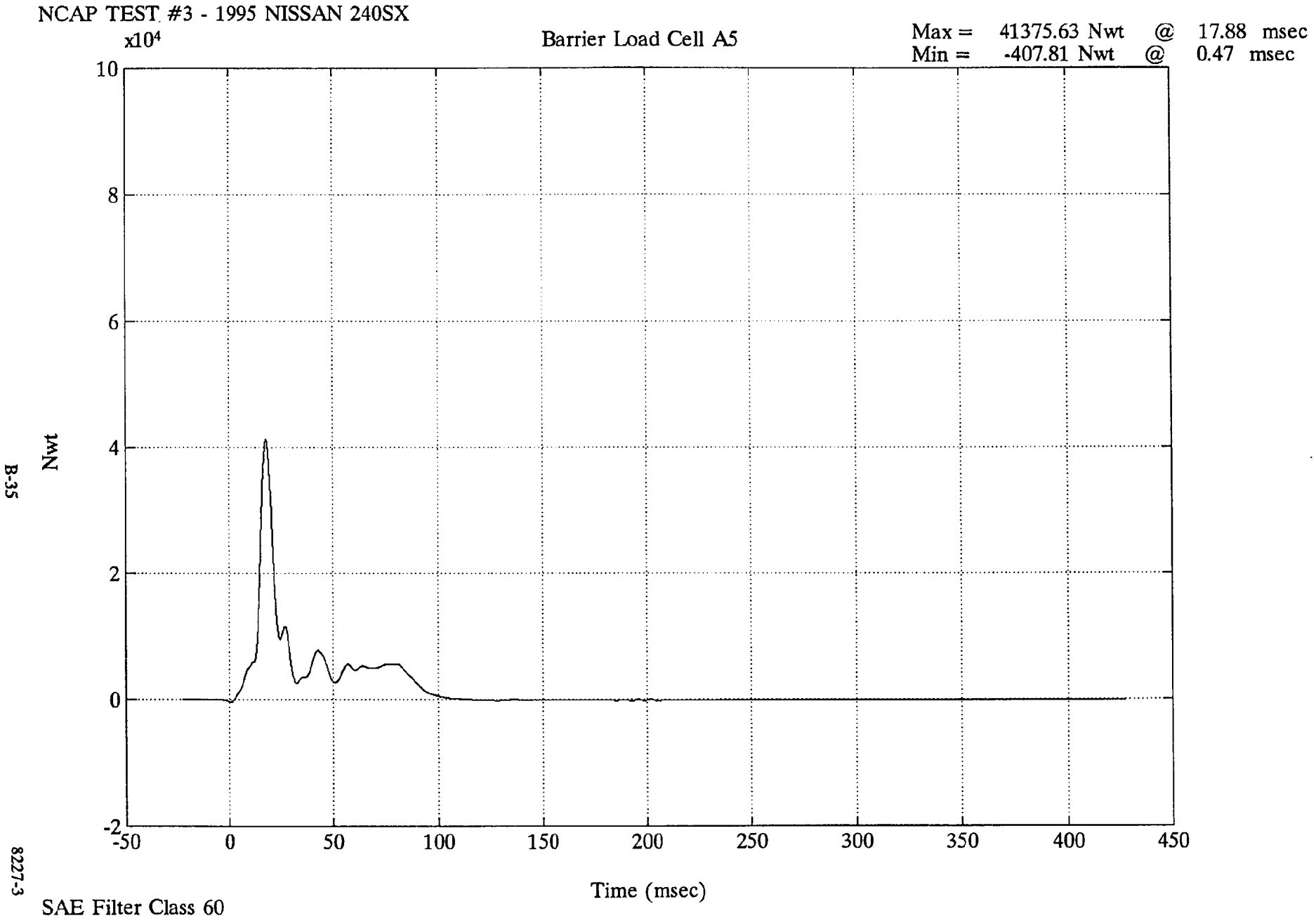
NCAP TEST #3 - 1995 NISSAN 240SX



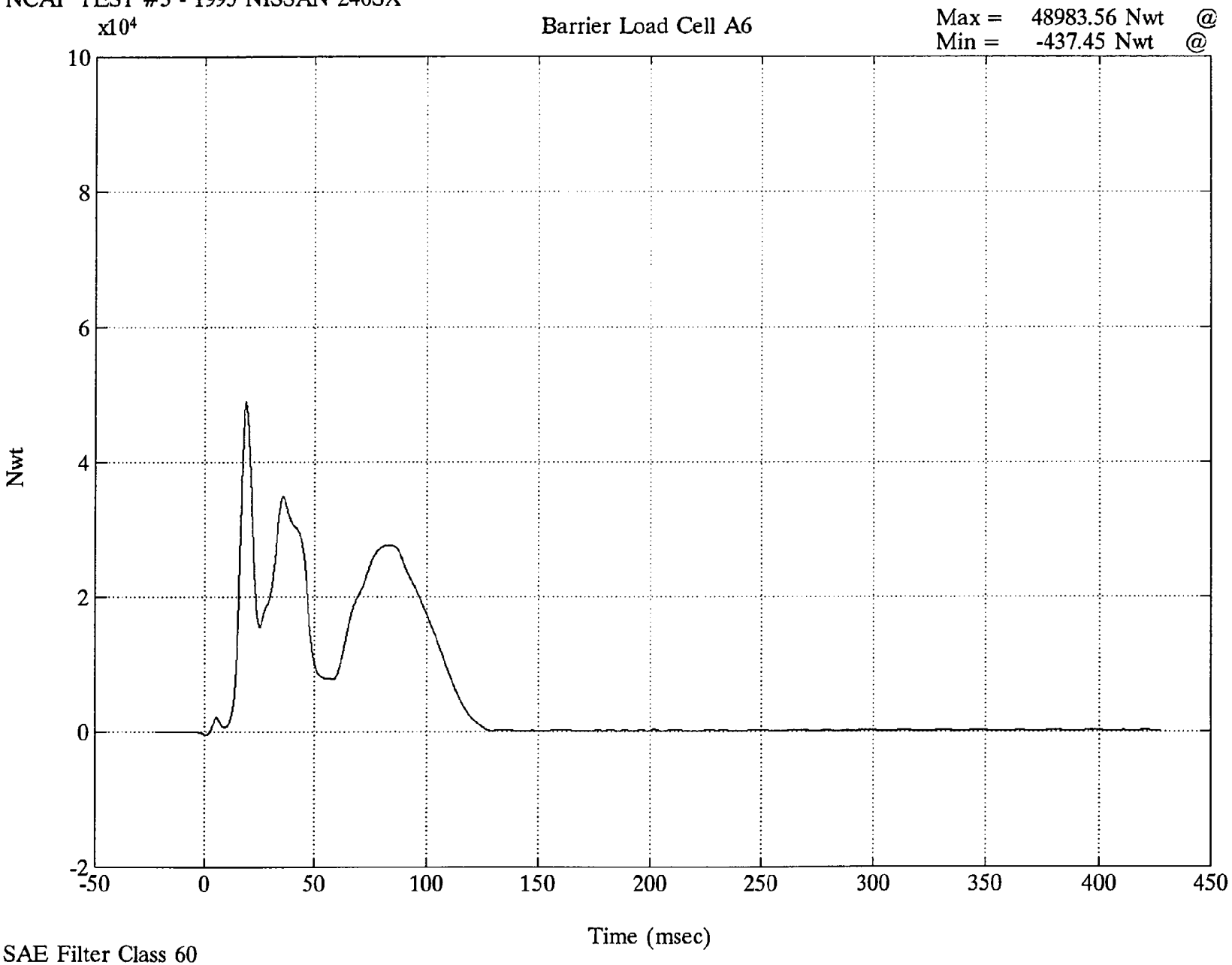
B-34

8227-3

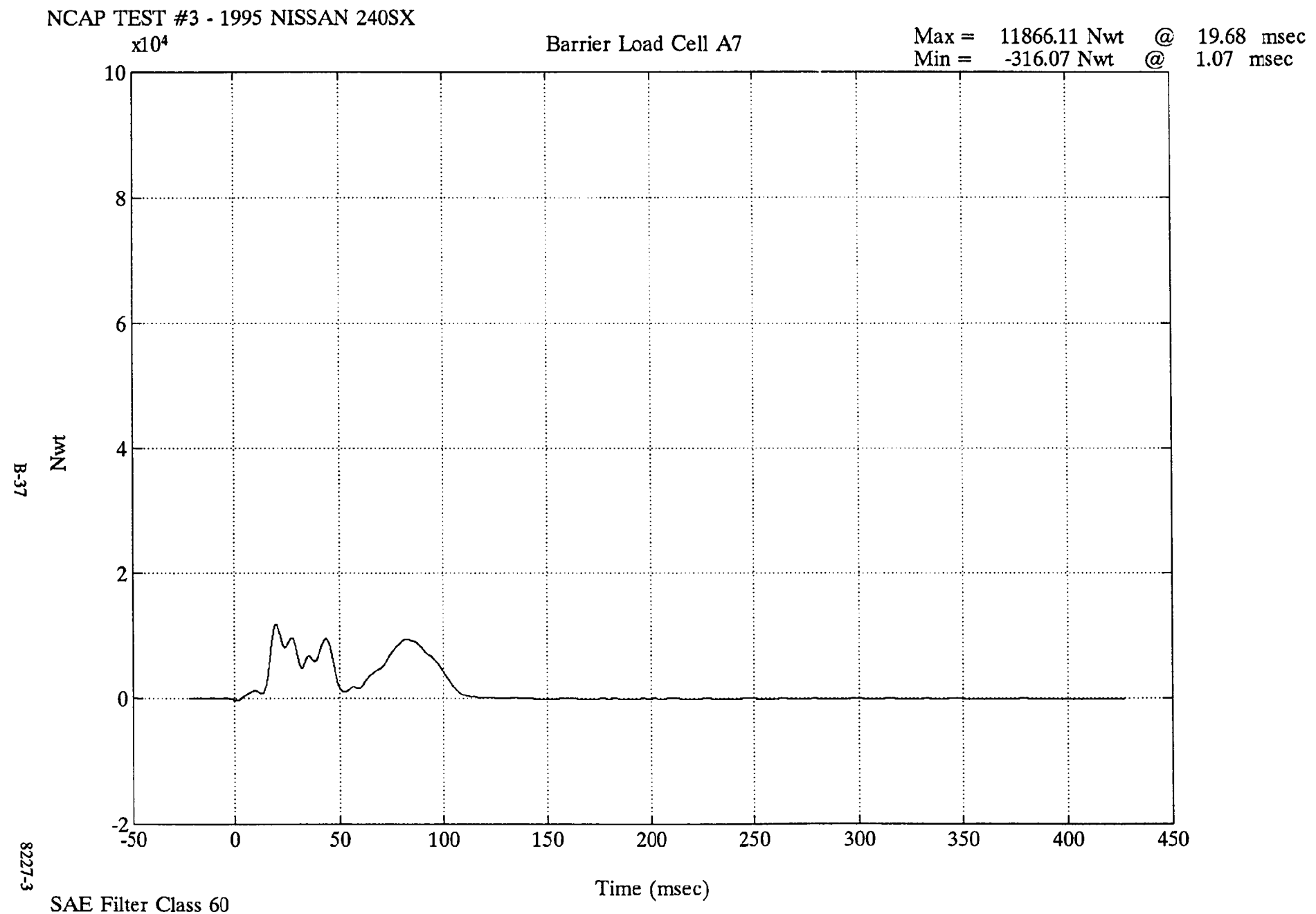
SAE Filter Class 60


NCAP TEST #3 - 1995 NISSAN 240SX
x10^4
Barrier Load Cell A5
Max = 41375.63 Nwt @ 17.88 msec
Min = -407.81 Nwt @ 0.47 msec
10
8
6
4
2
0
-2
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
SAE Filter Class 60
B-35
8227-3

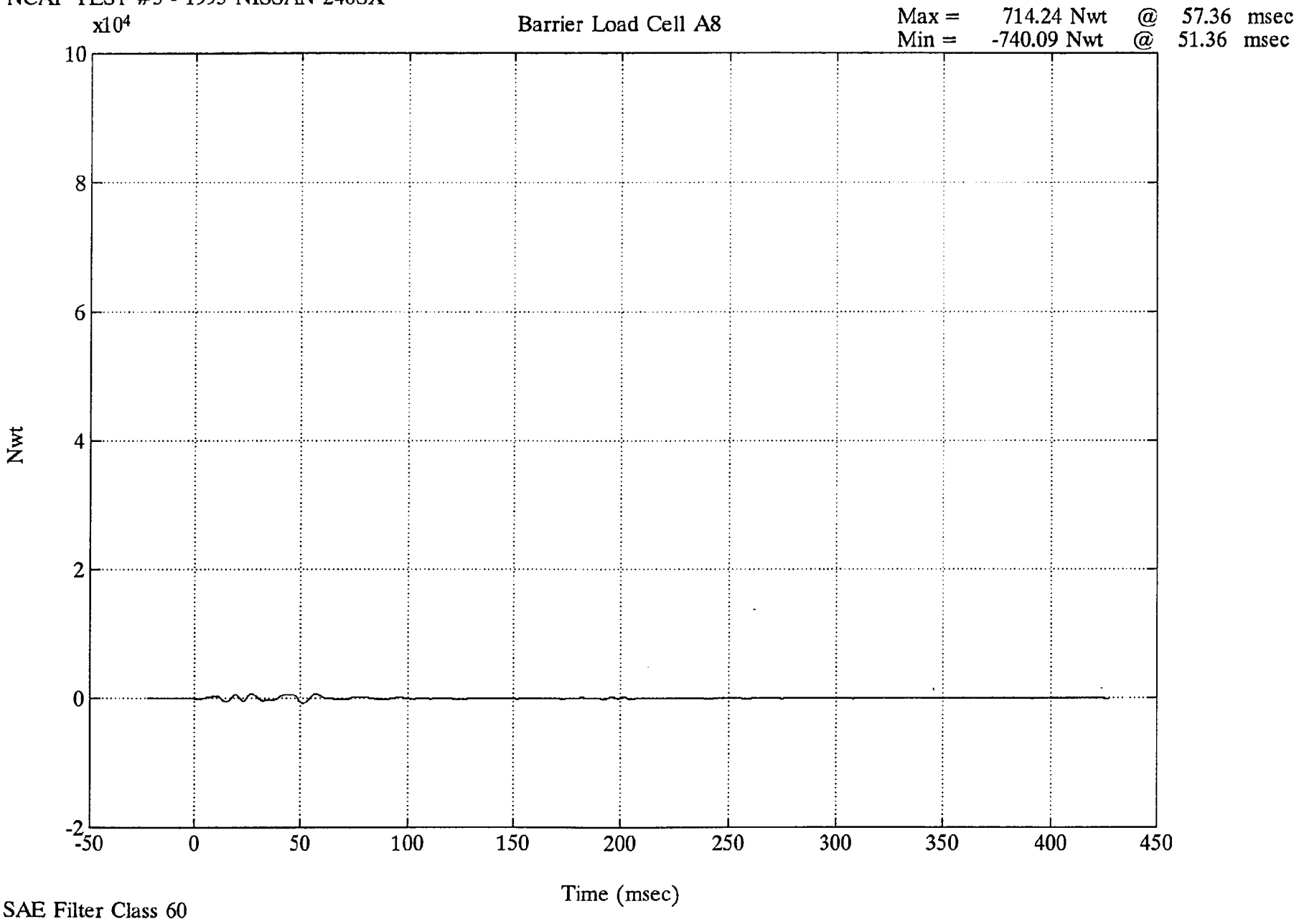
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60


NCAP TEST #3 - 1995 NISSAN 240SX
x10⁴
Barrier Load Cell A7
Max = 11866.11 Nwt @ 19.68 msec
Min = -316.07 Nwt @ 1.07 msec
10
8
6
4
2
0
-2
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
SAE Filter Class 60
B-37
8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

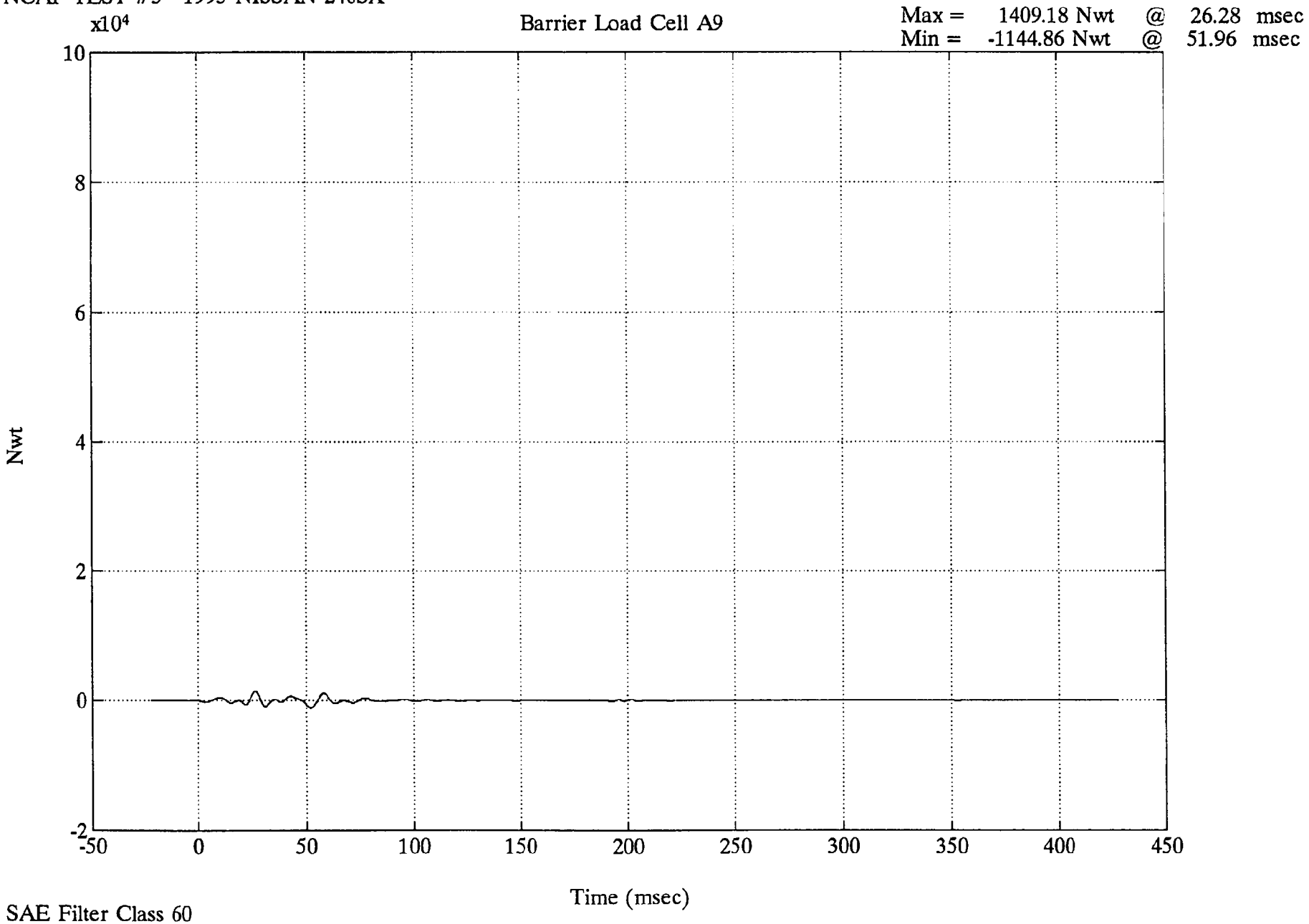


SAE Filter Class 60

B-38

8227-3

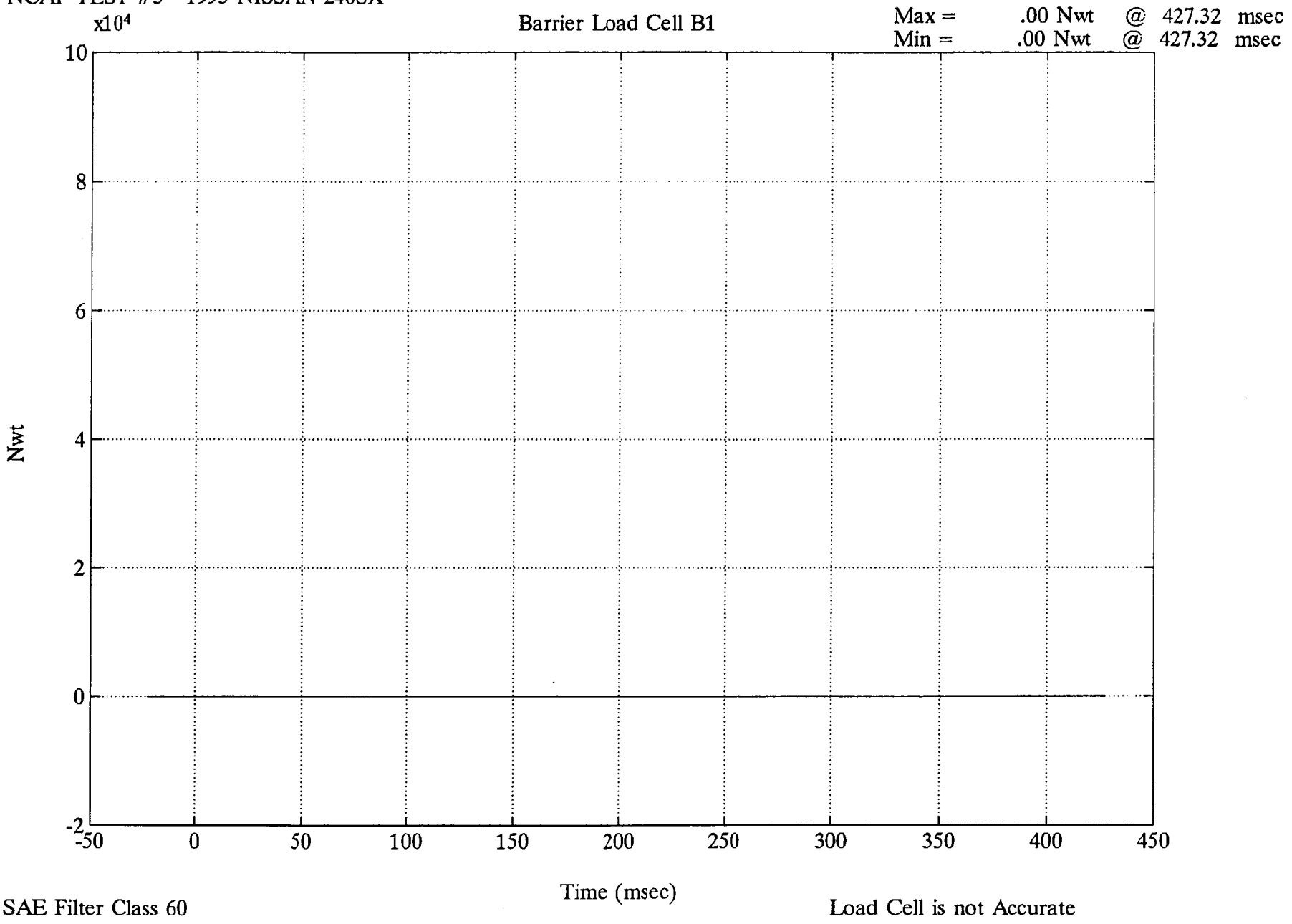
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

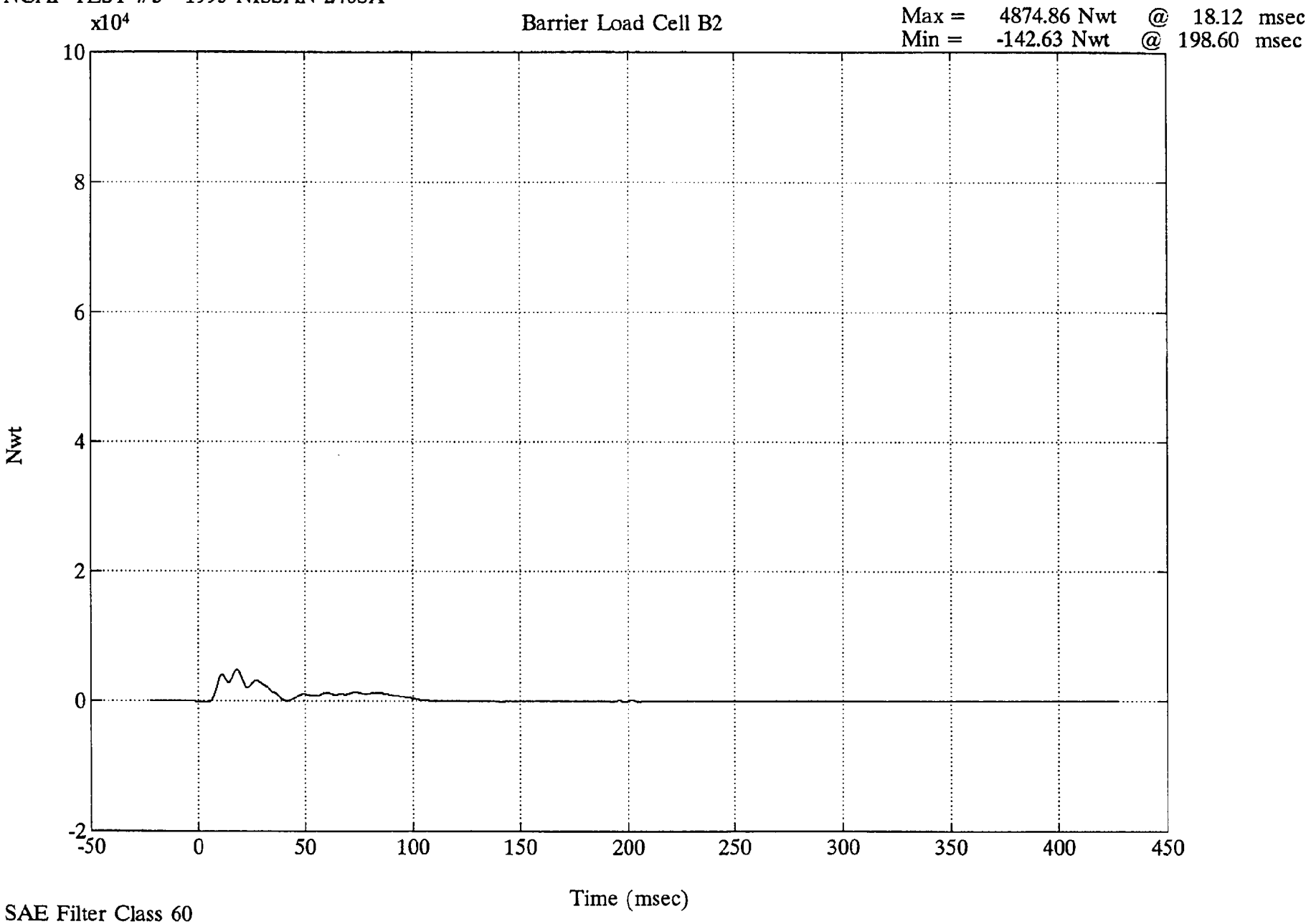


SAE Filter Class 60

Load Cell is not Accurate

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

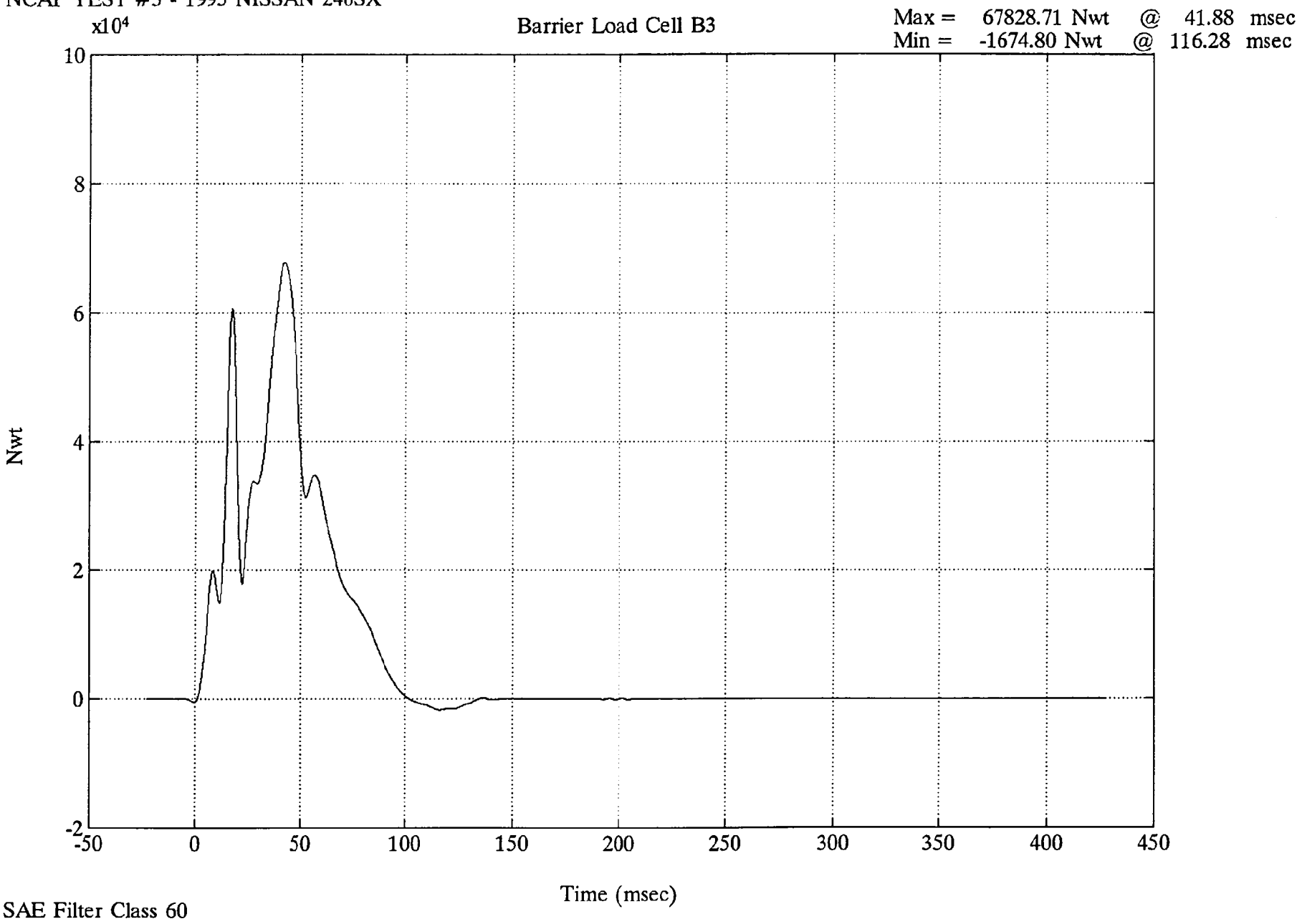


B-41

8227-3

SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX

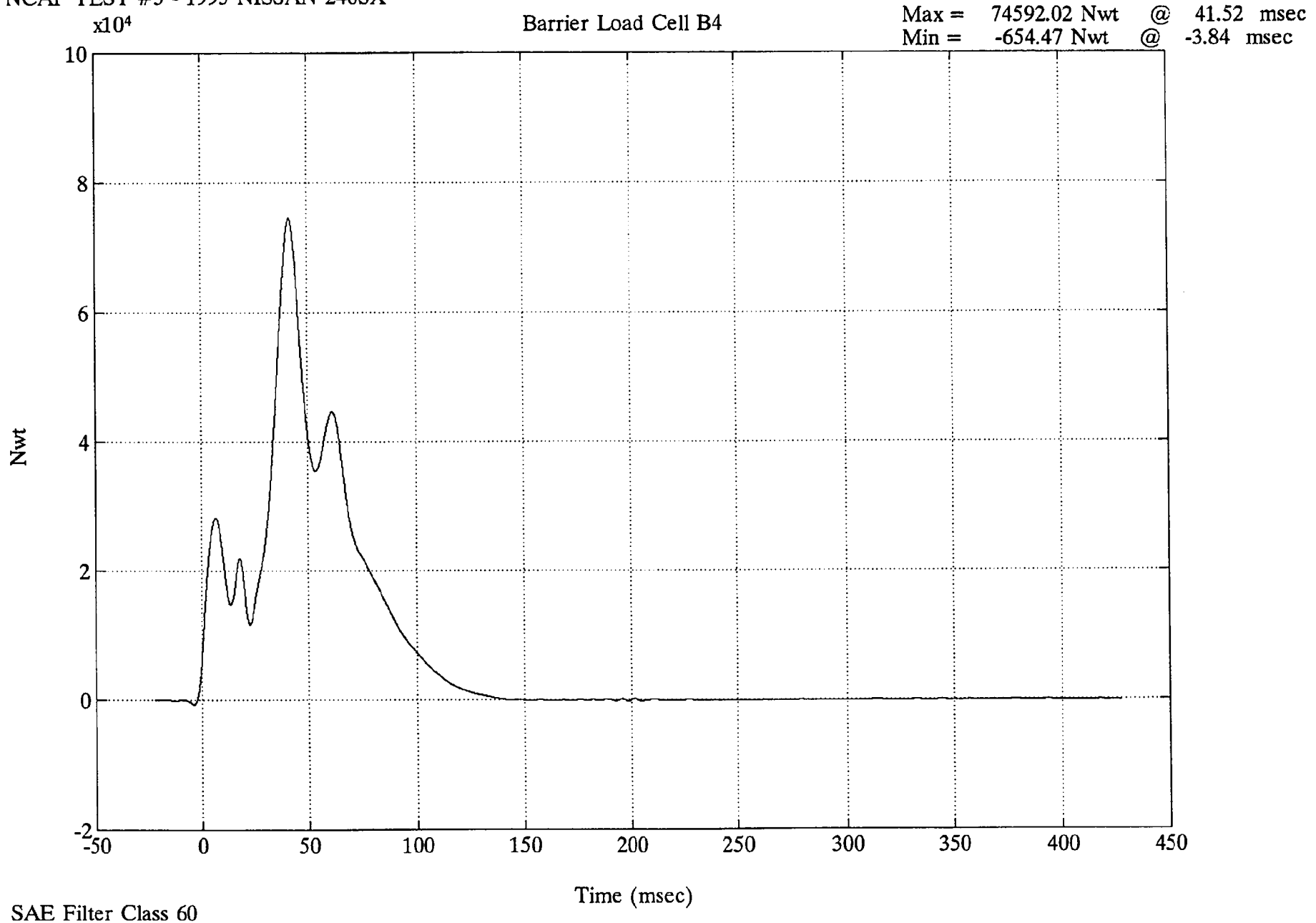


SAE Filter Class 60

B-42

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

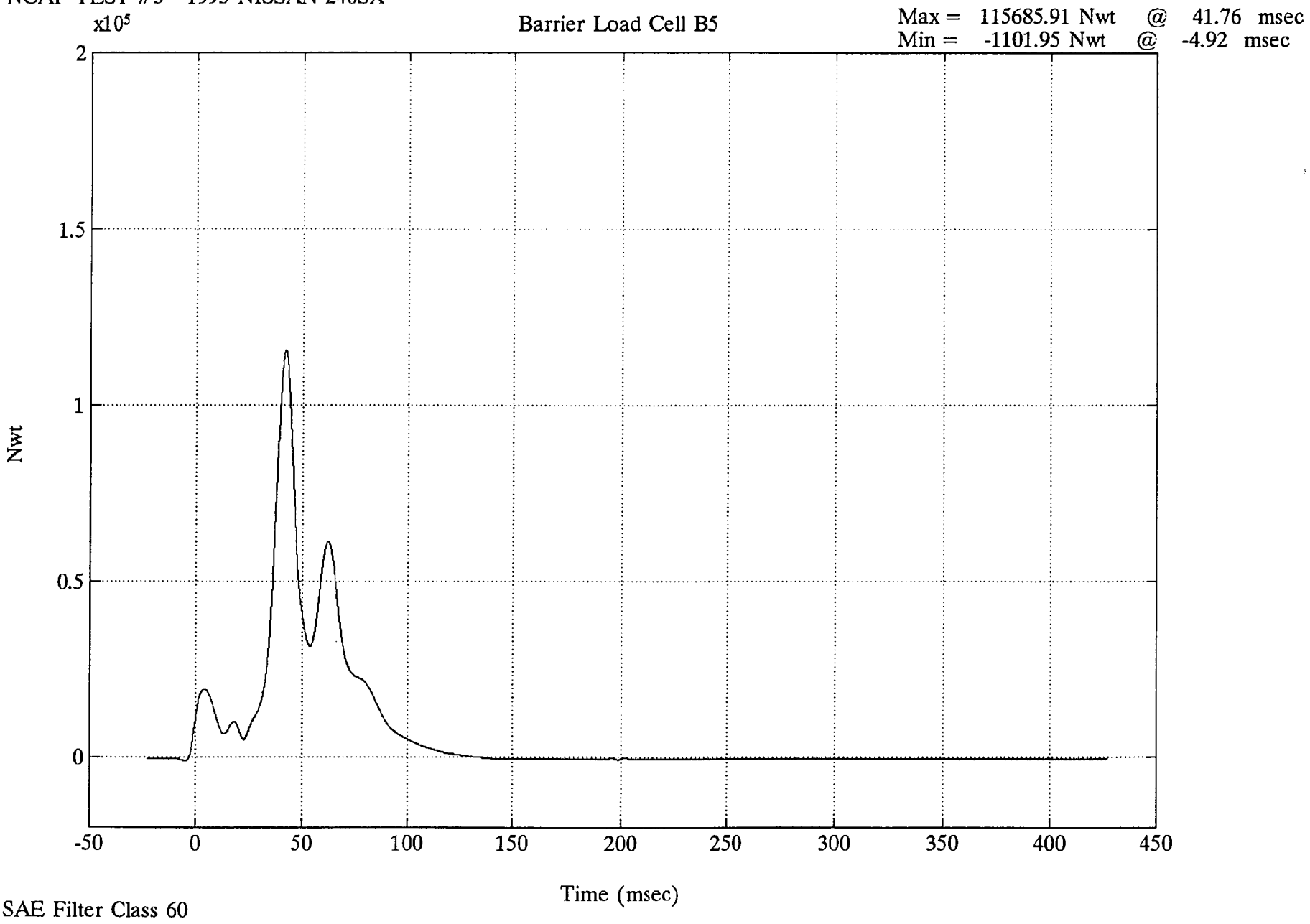


B-43

8227-3

SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60

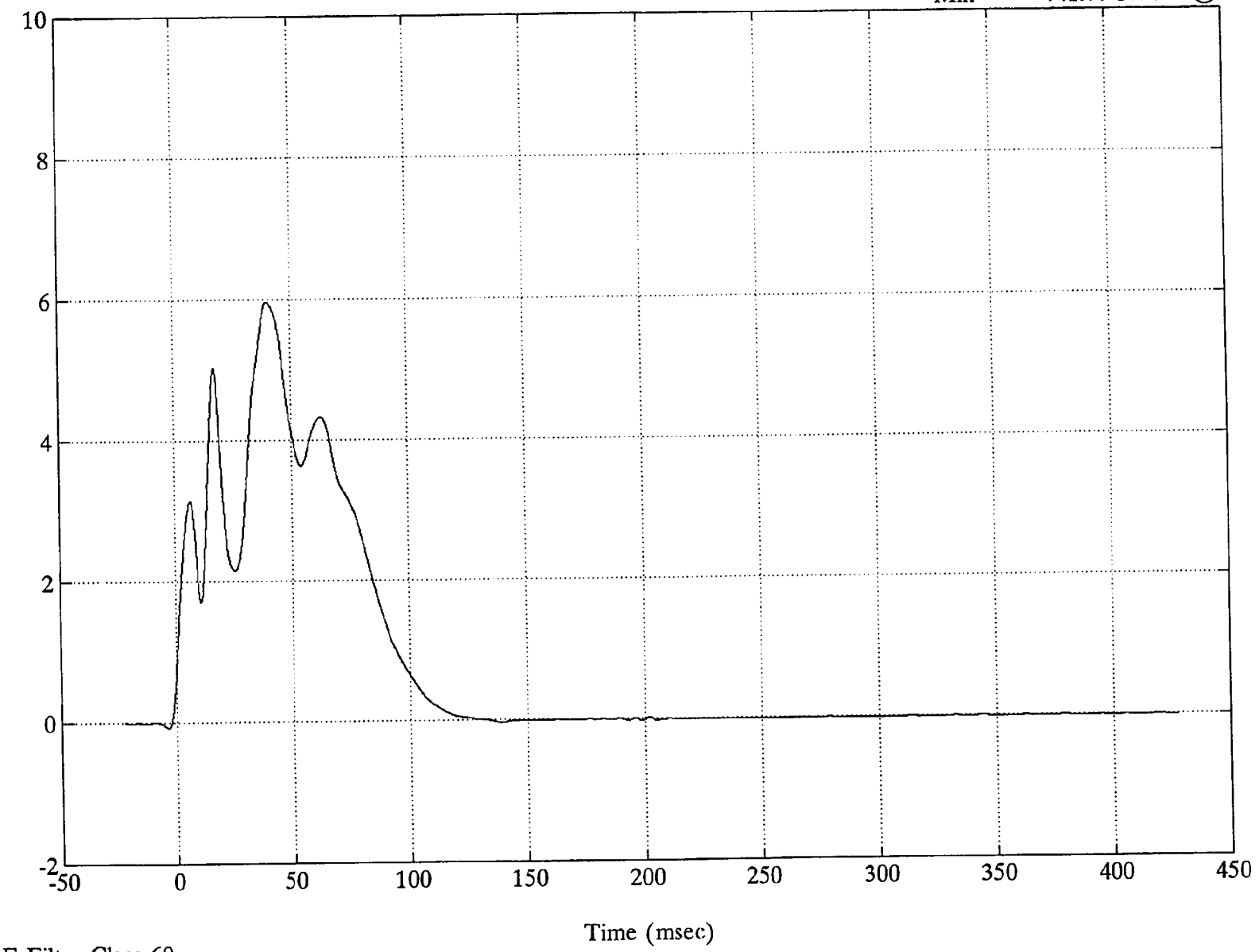
B-44

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

Barrier Load Cell B6

Max = 59640.95 Nwt @ 40.20 msec
Min = -741.77 Nwt @ -3.84 msec

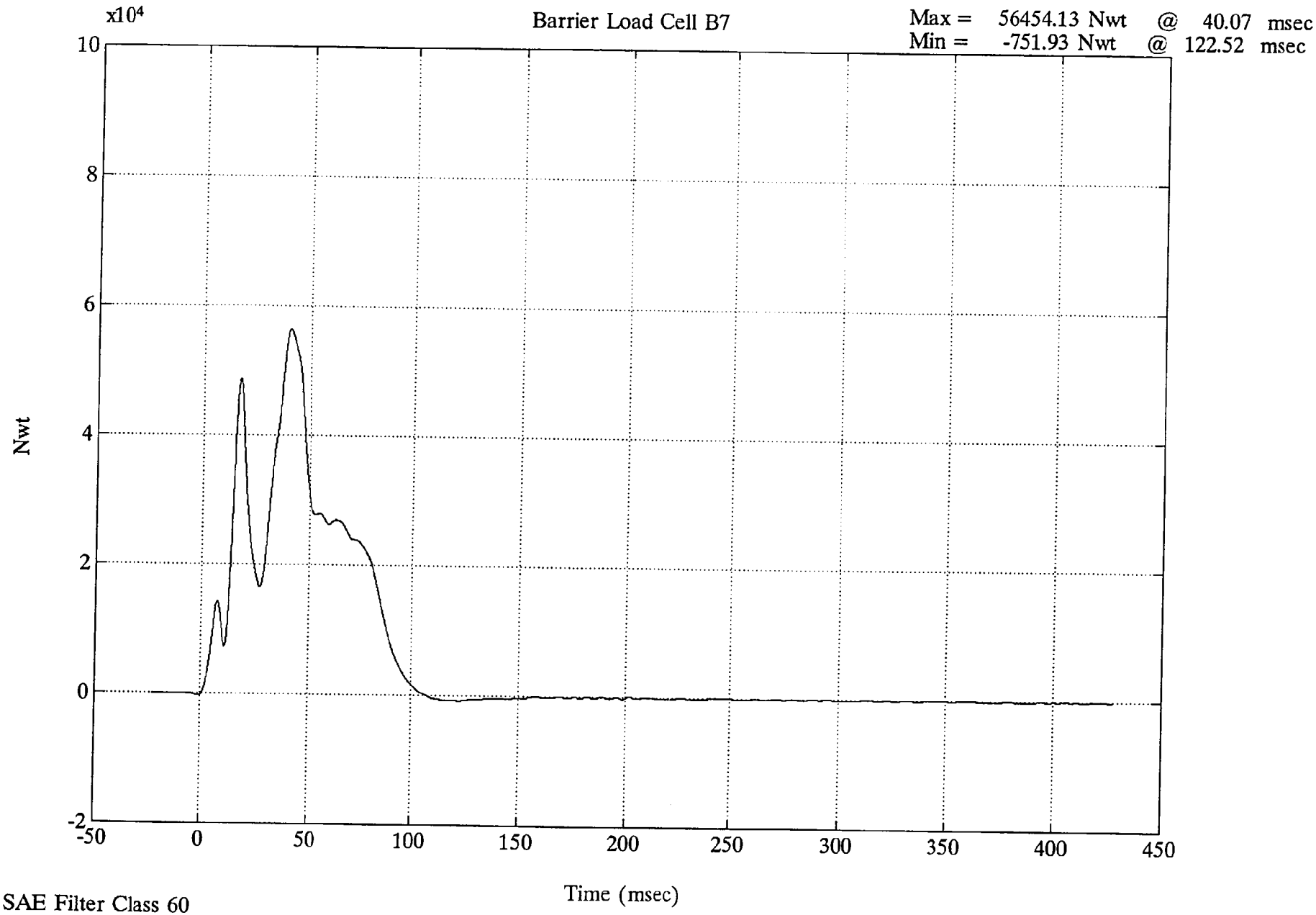


SAE Filter Class 60

B-45

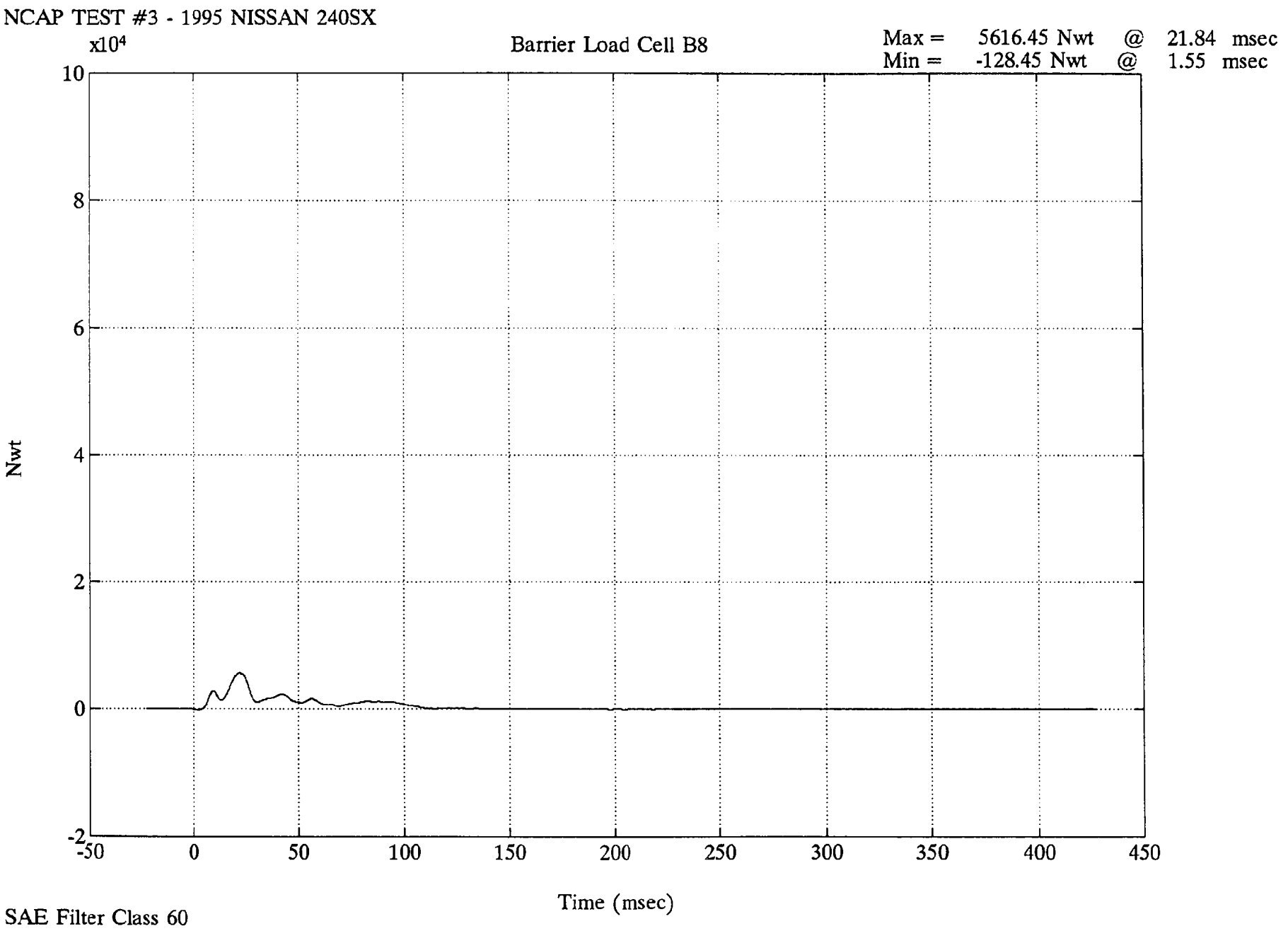
8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

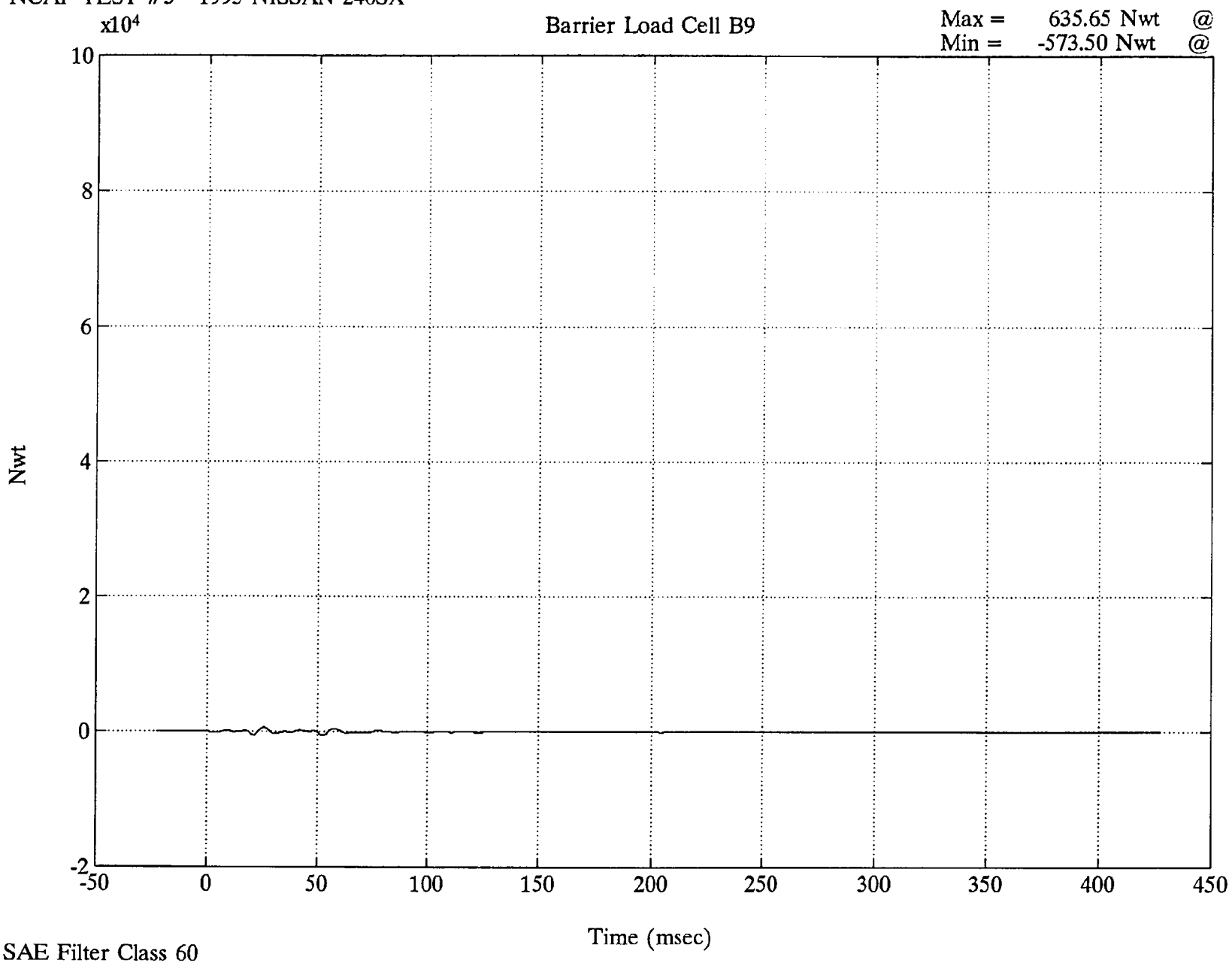


SAE Filter Class 60

8227-3


NCAP TEST #3 - 1995 NISSAN 240SX
x10⁴
Barrier Load Cell B8
Max = 5616.45 Nwt @ 21.84 msec
Min = -128.45 Nwt @ 1.55 msec
10
8
6
4
2
0
-2
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
SAE Filter Class 60
B-47
8227-3

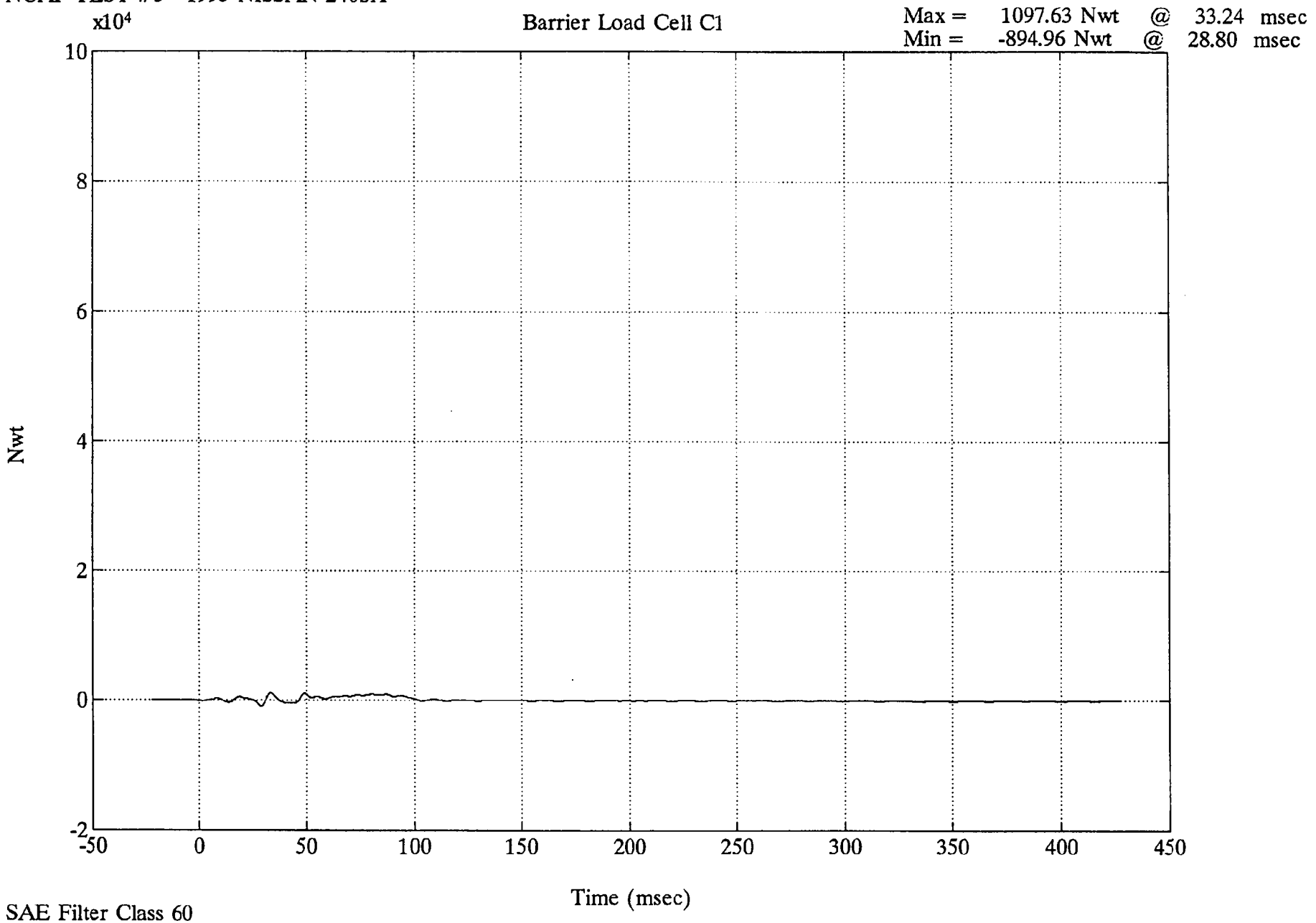
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60

8227-3

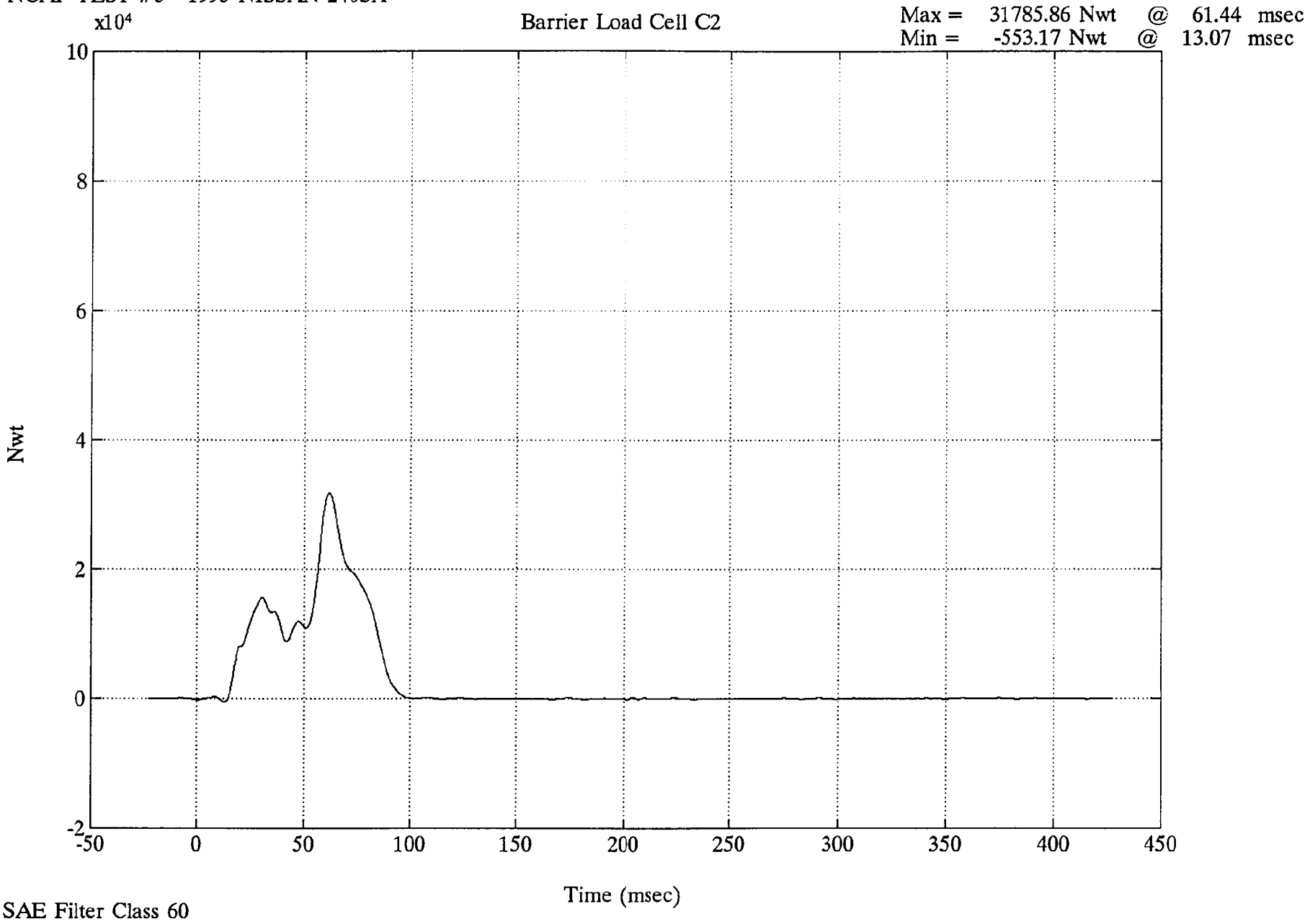
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

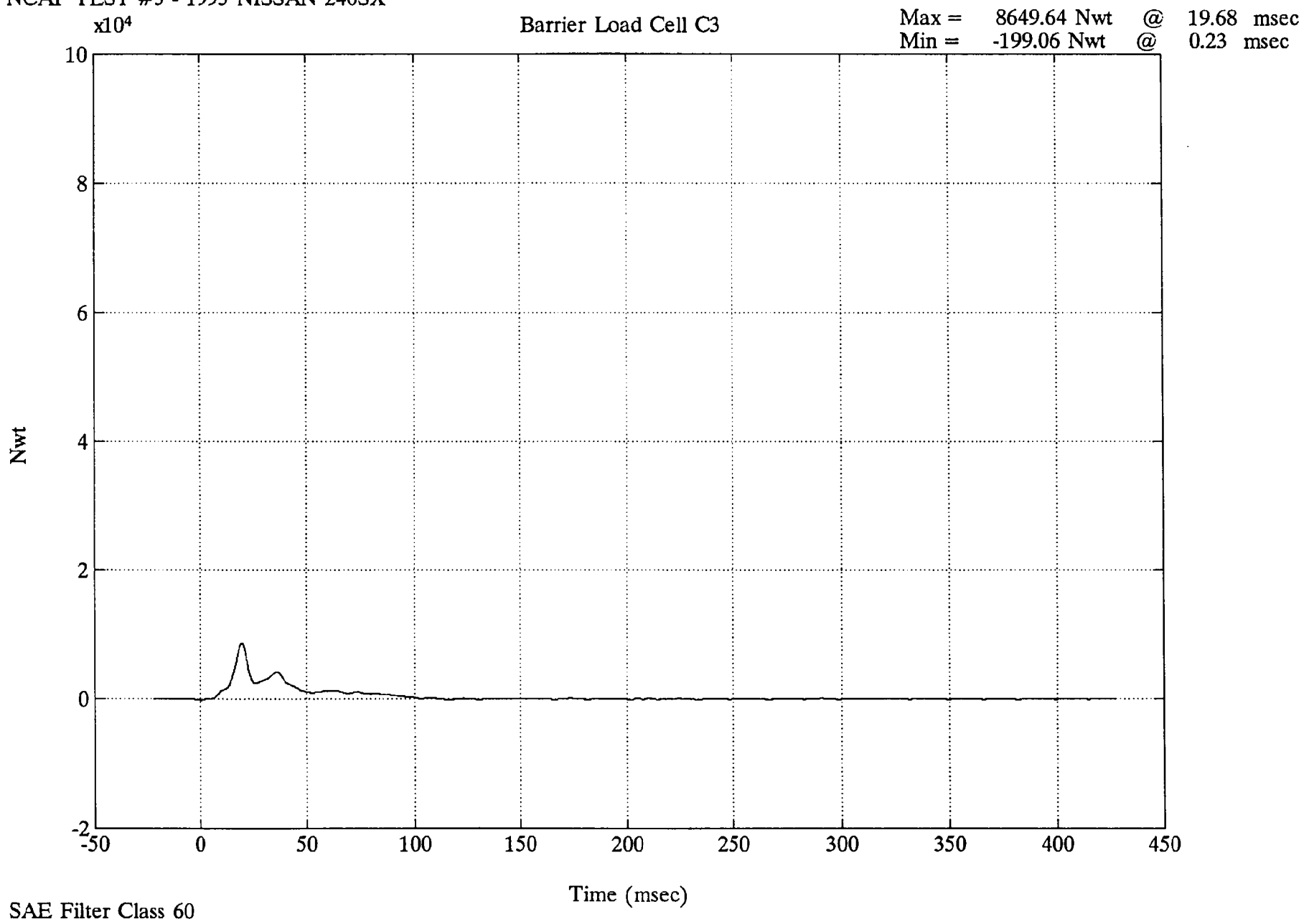


B-50

8227-3

SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX

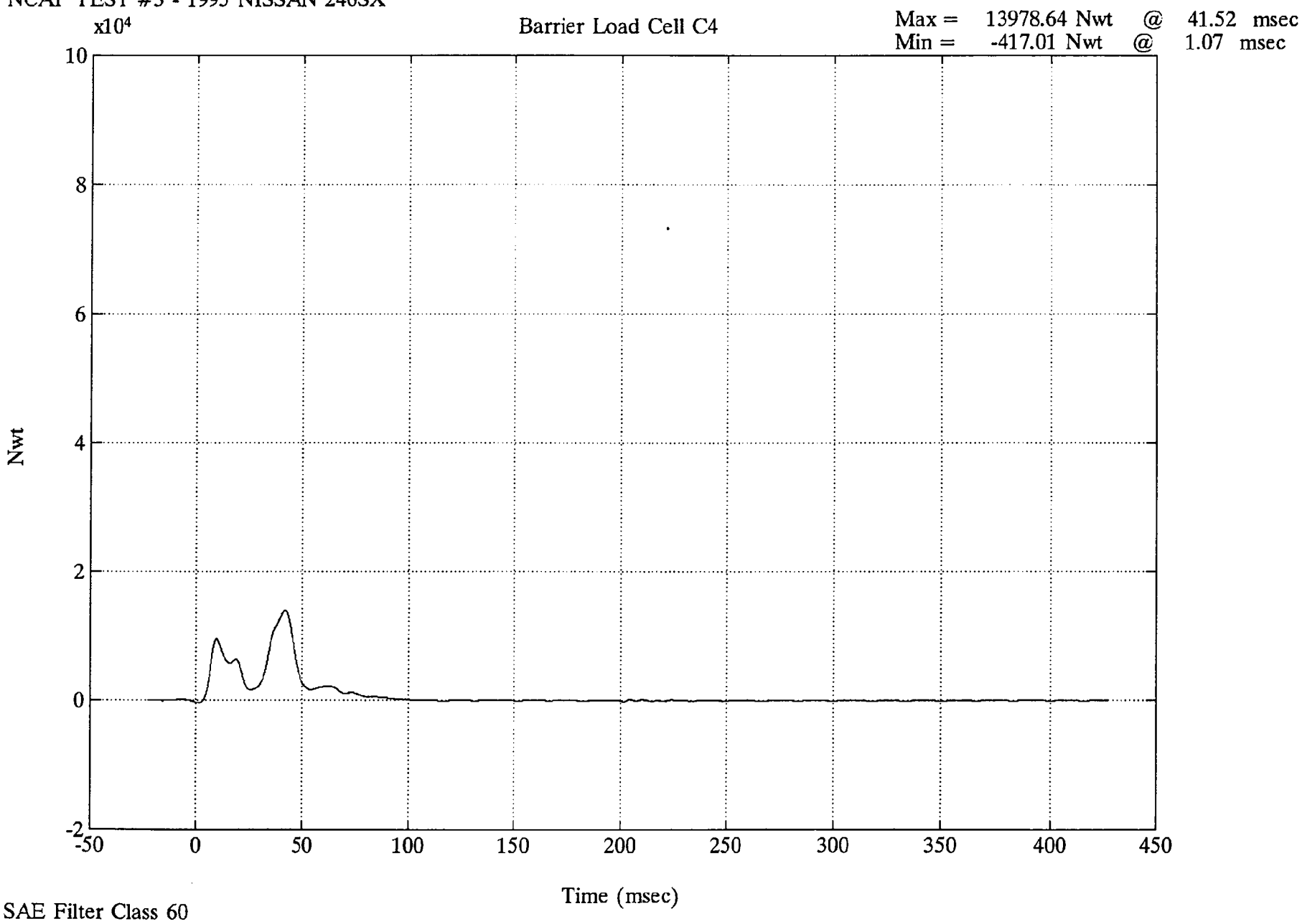


B-51

8227-3

SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX

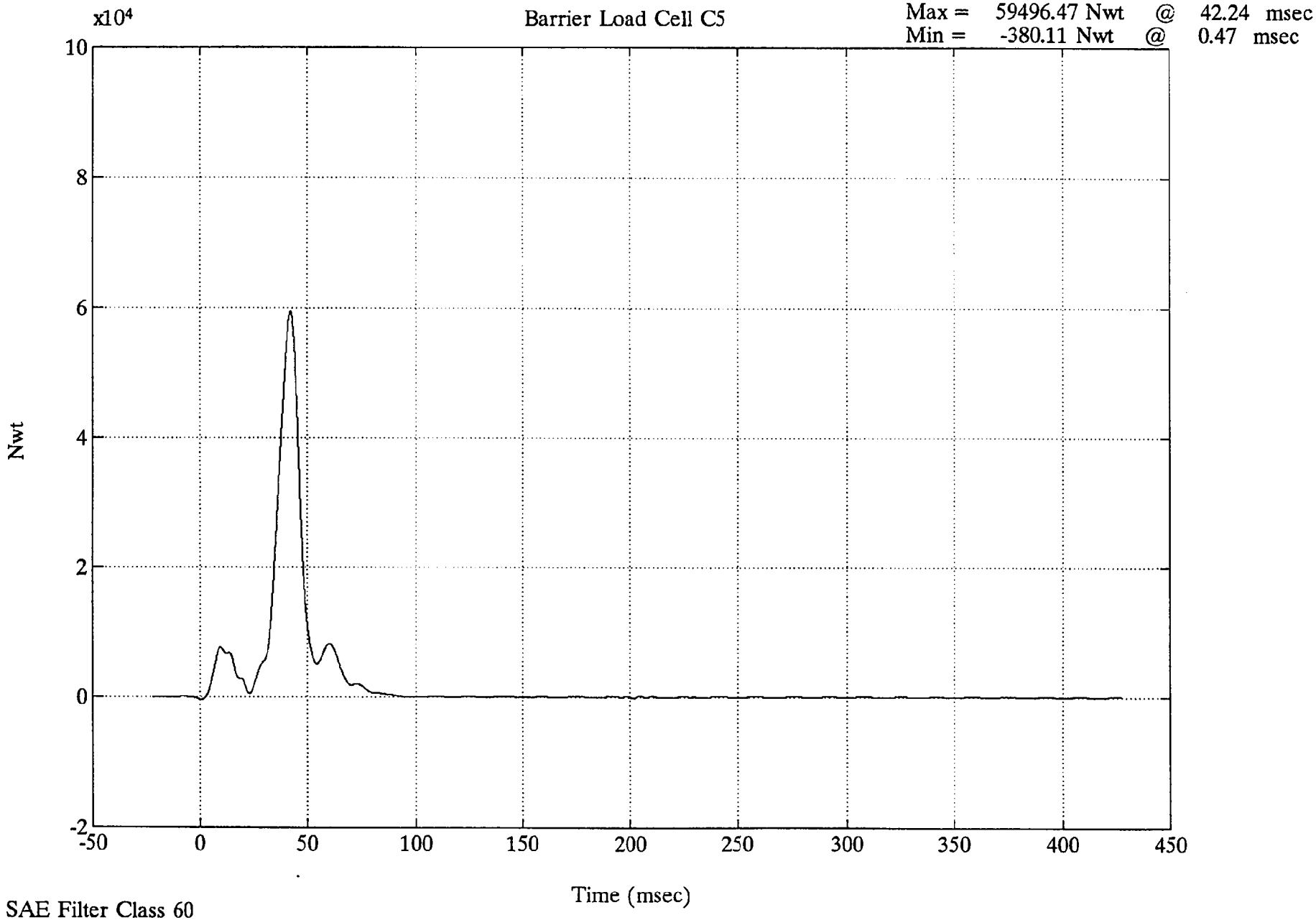


SAE Filter Class 60

B-52

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

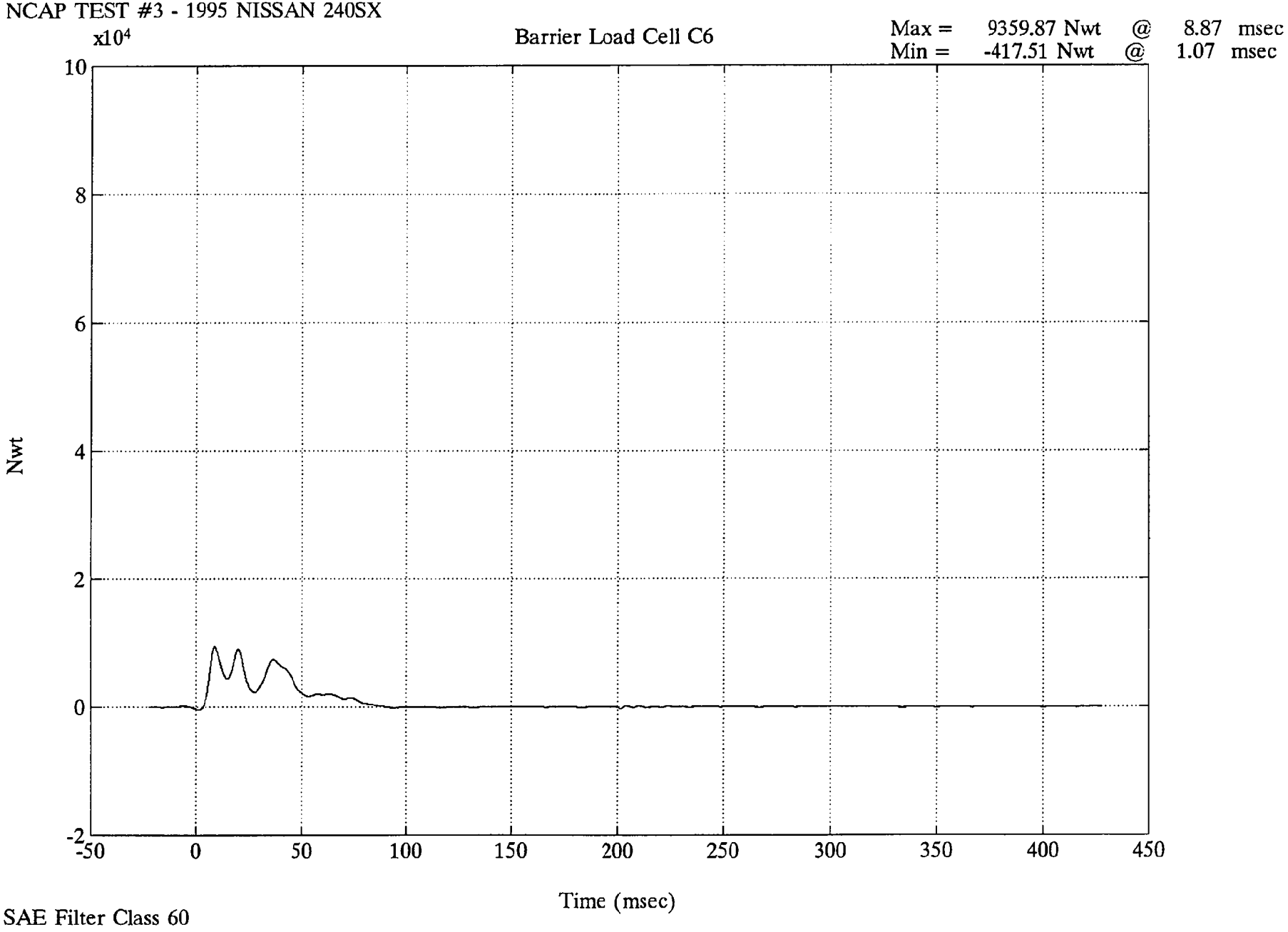


SAE Filter Class 60

B-53

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

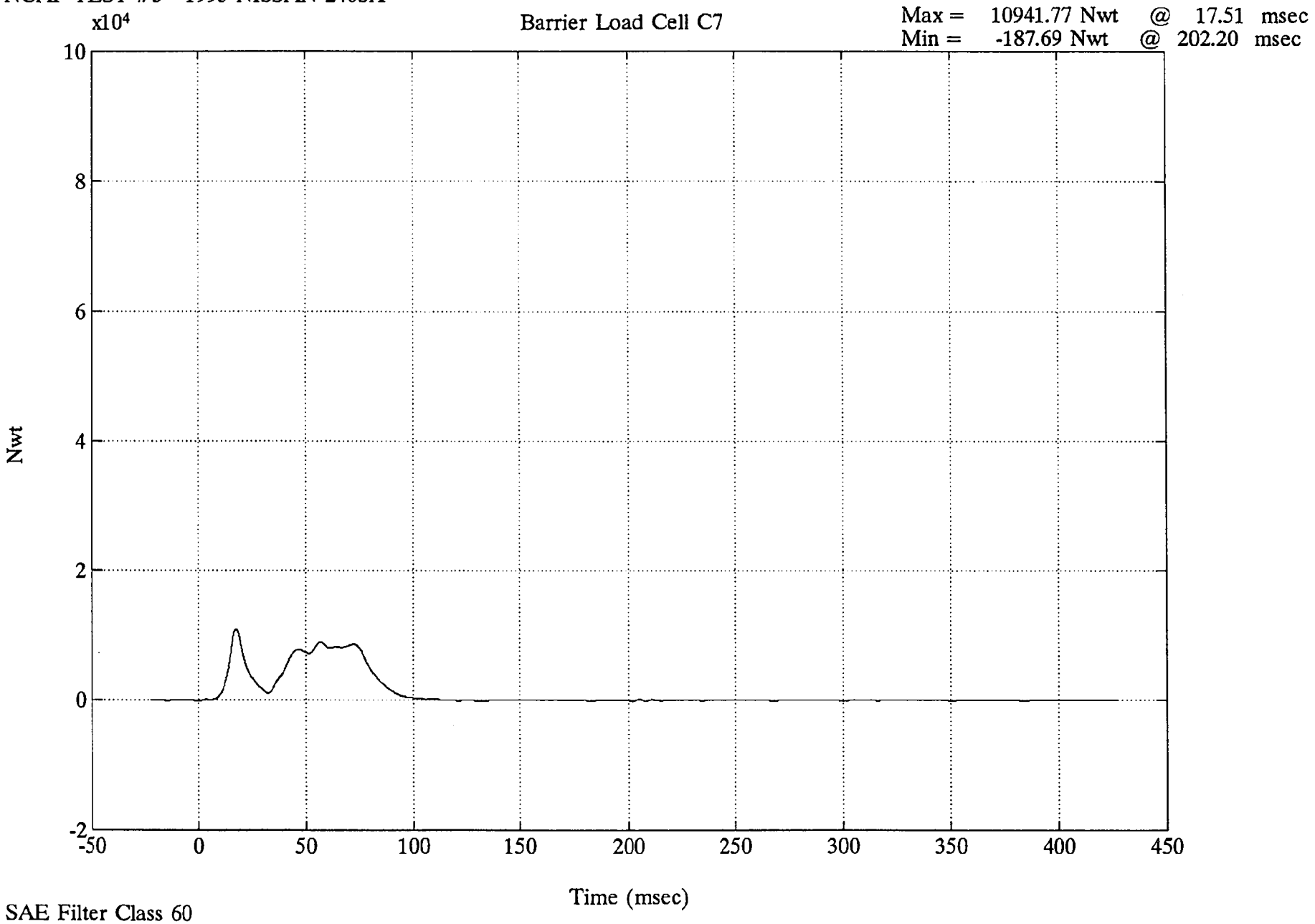


B-54

8227-3

SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX

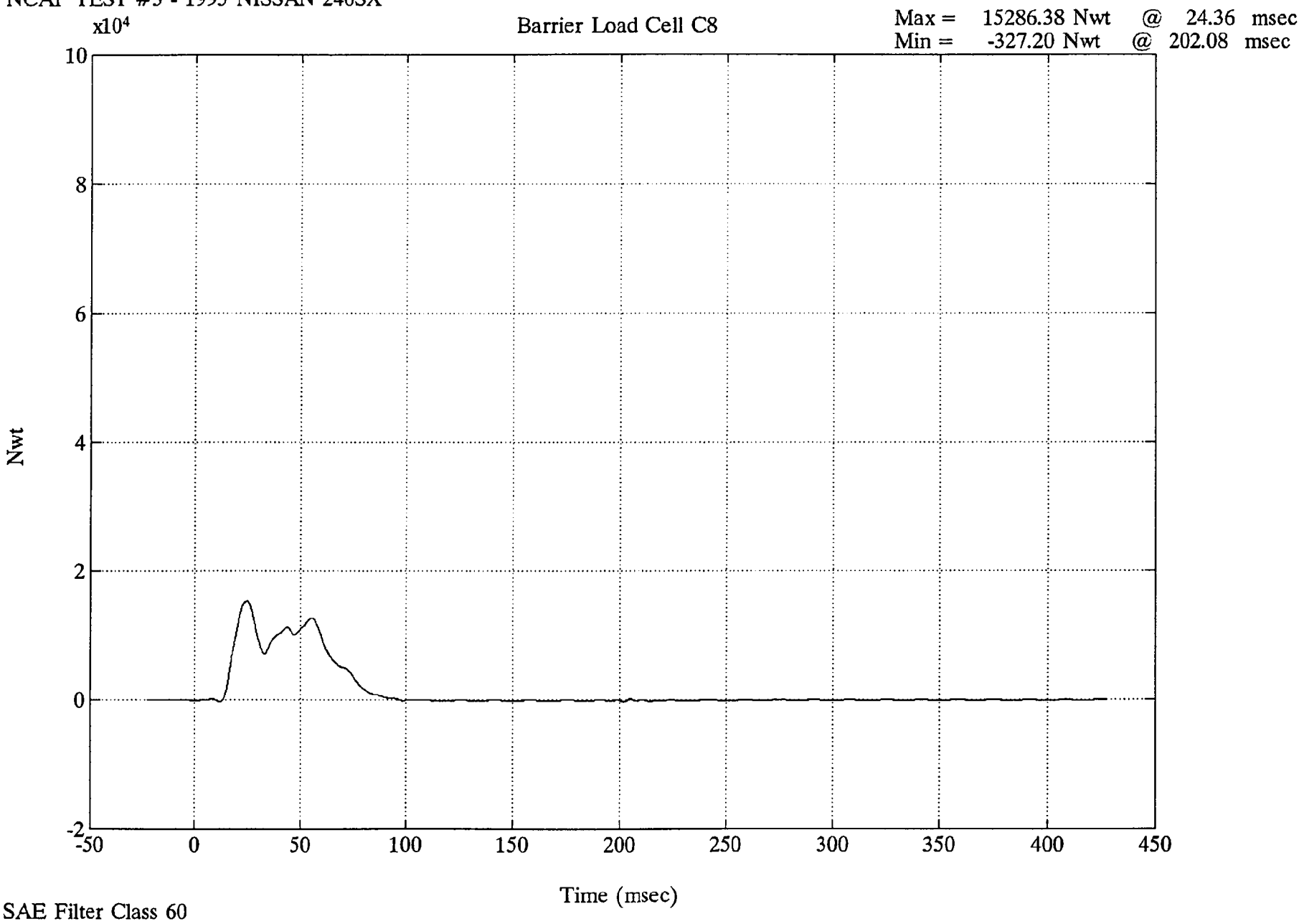


SAE Filter Class 60

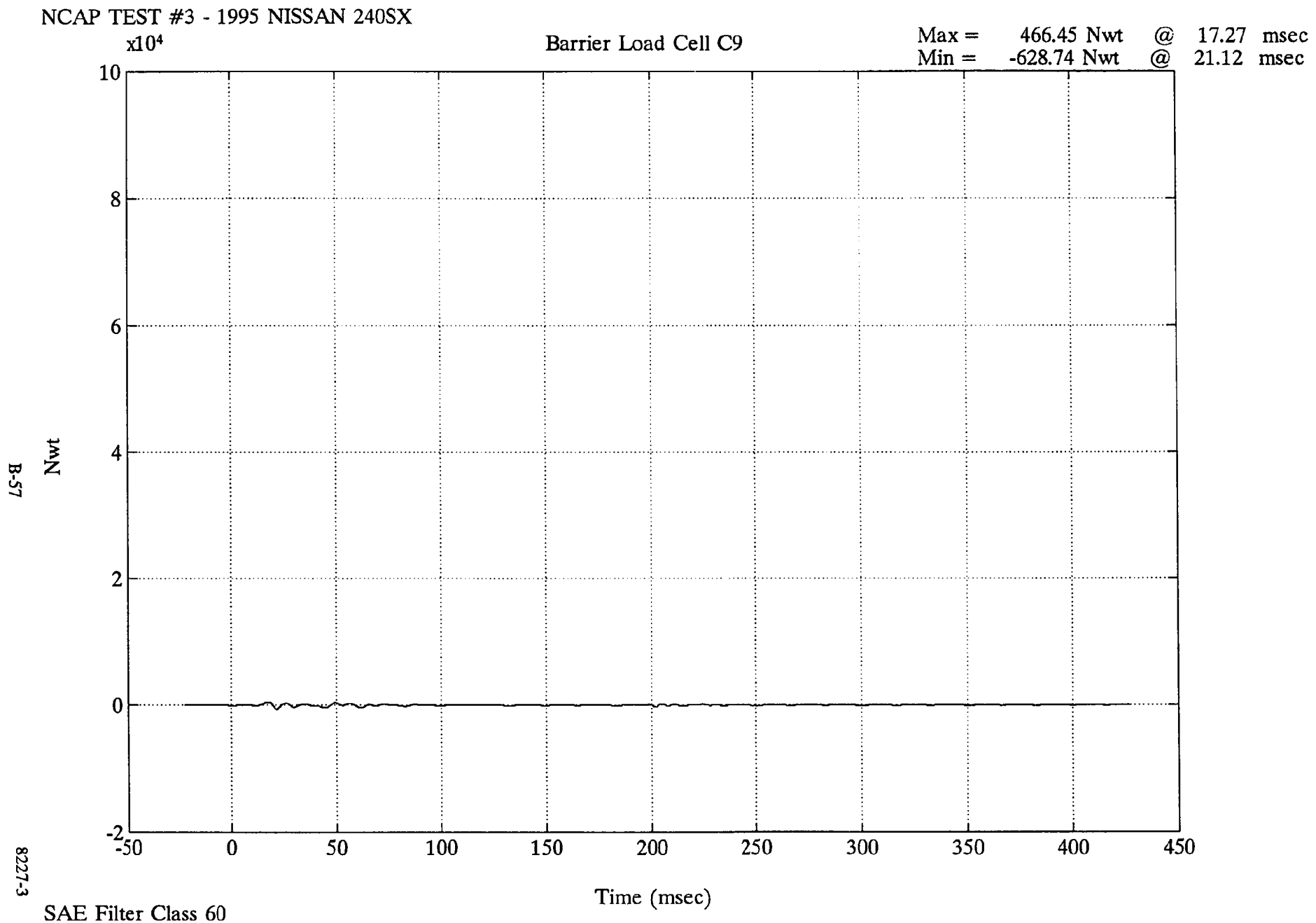
B-55

8227-3

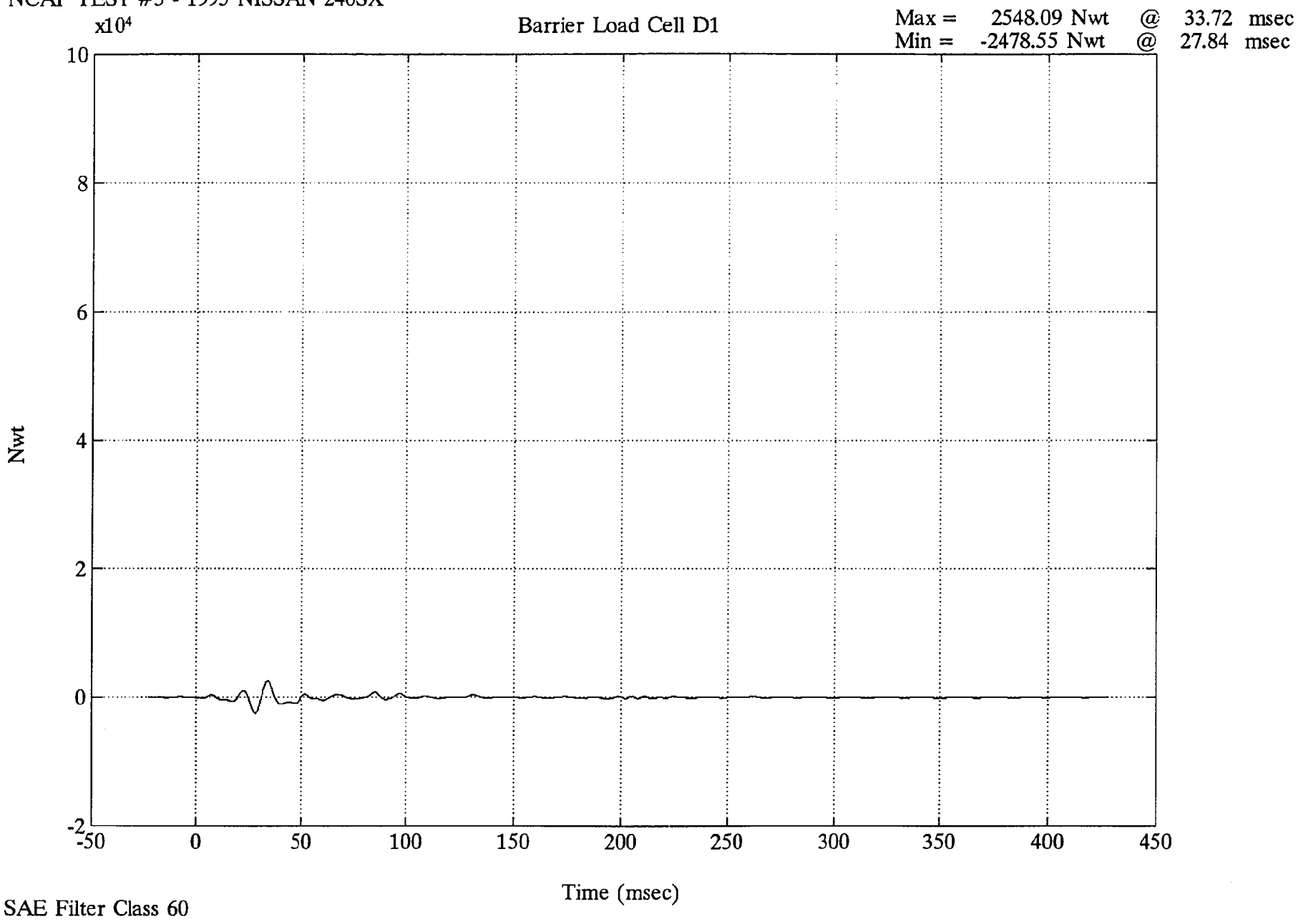
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60


NCAP TEST #3 - 1995 NISSAN 240SX
x10⁴
Barrier Load Cell C9
Max = 466.45 Nwt @ 17.27 msec
Min = -628.74 Nwt @ 21.12 msec
10
8
6
4
2
0
-2
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
B-57
8227-3
SAE Filter Class 60

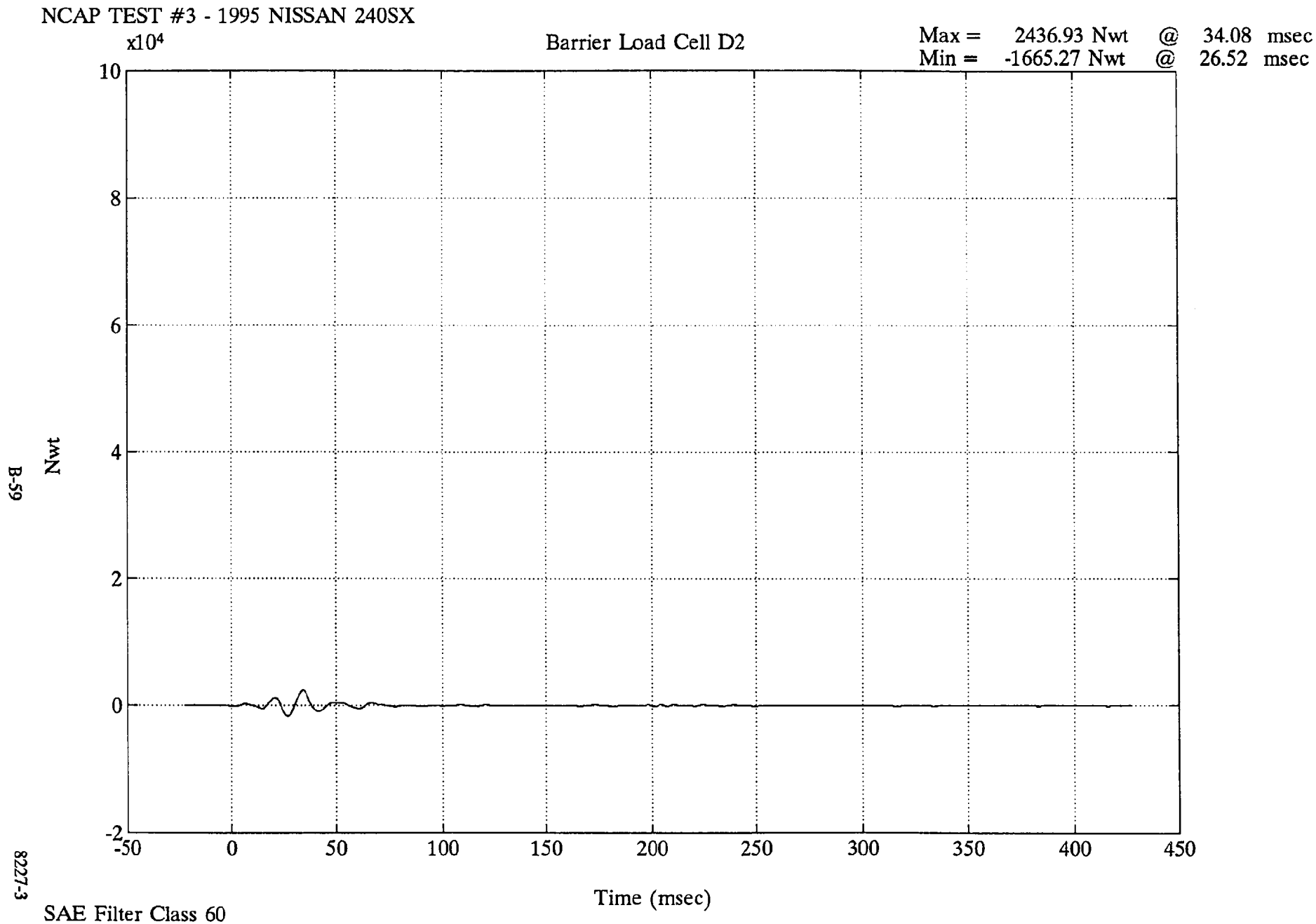
NCAP TEST #3 - 1995 NISSAN 240SX



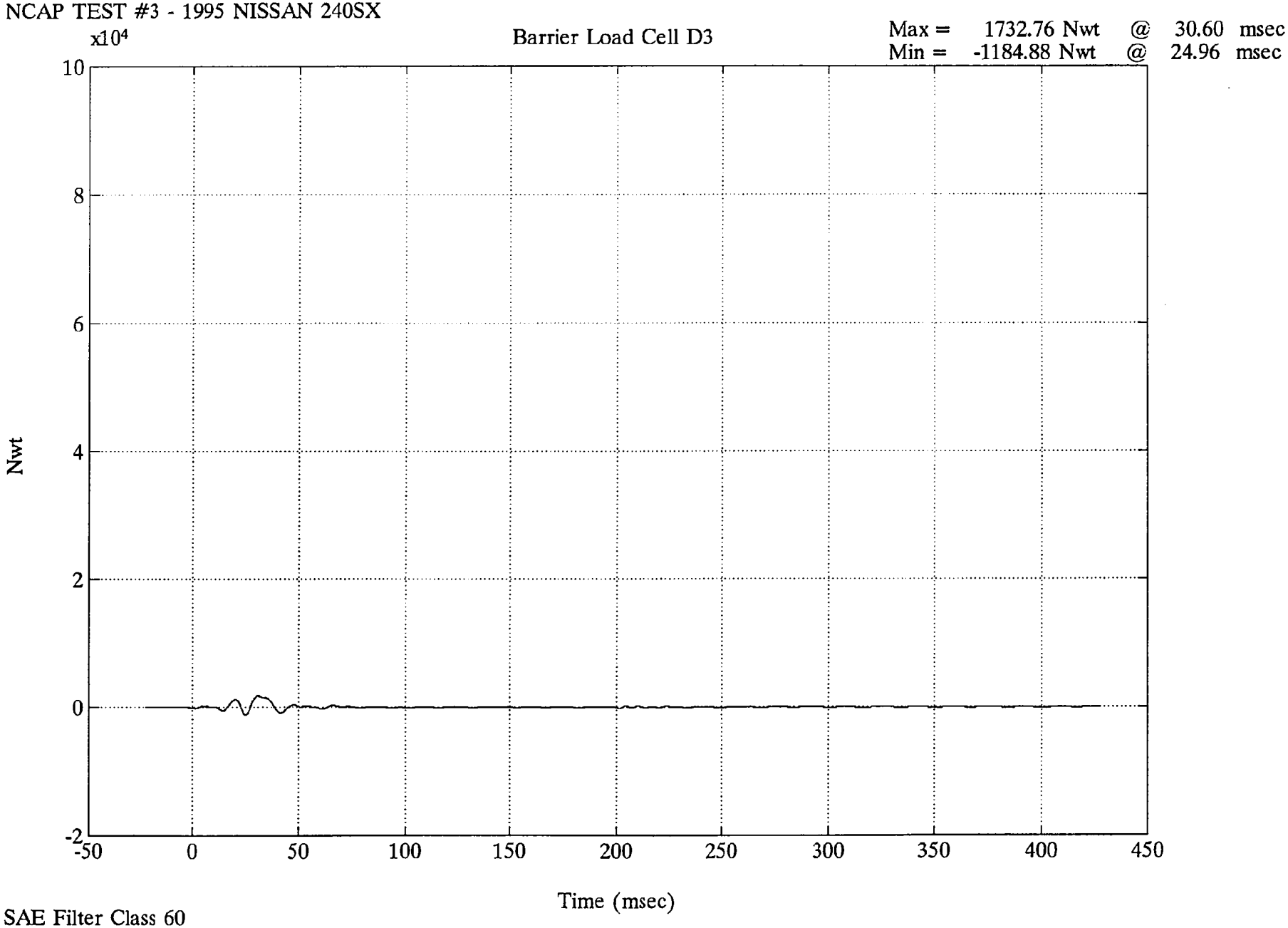
SAE Filter Class 60

B-58

8227-3


NCAP TEST #3 - 1995 NISSAN 240SX
x10⁴
Barrier Load Cell D2
Max = 2436.93 Nwt @ 34.08 msec
Min = -1665.27 Nwt @ 26.52 msec
10
8
6
4
2
0
-2
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
SAE Filter Class 60
B-59
8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

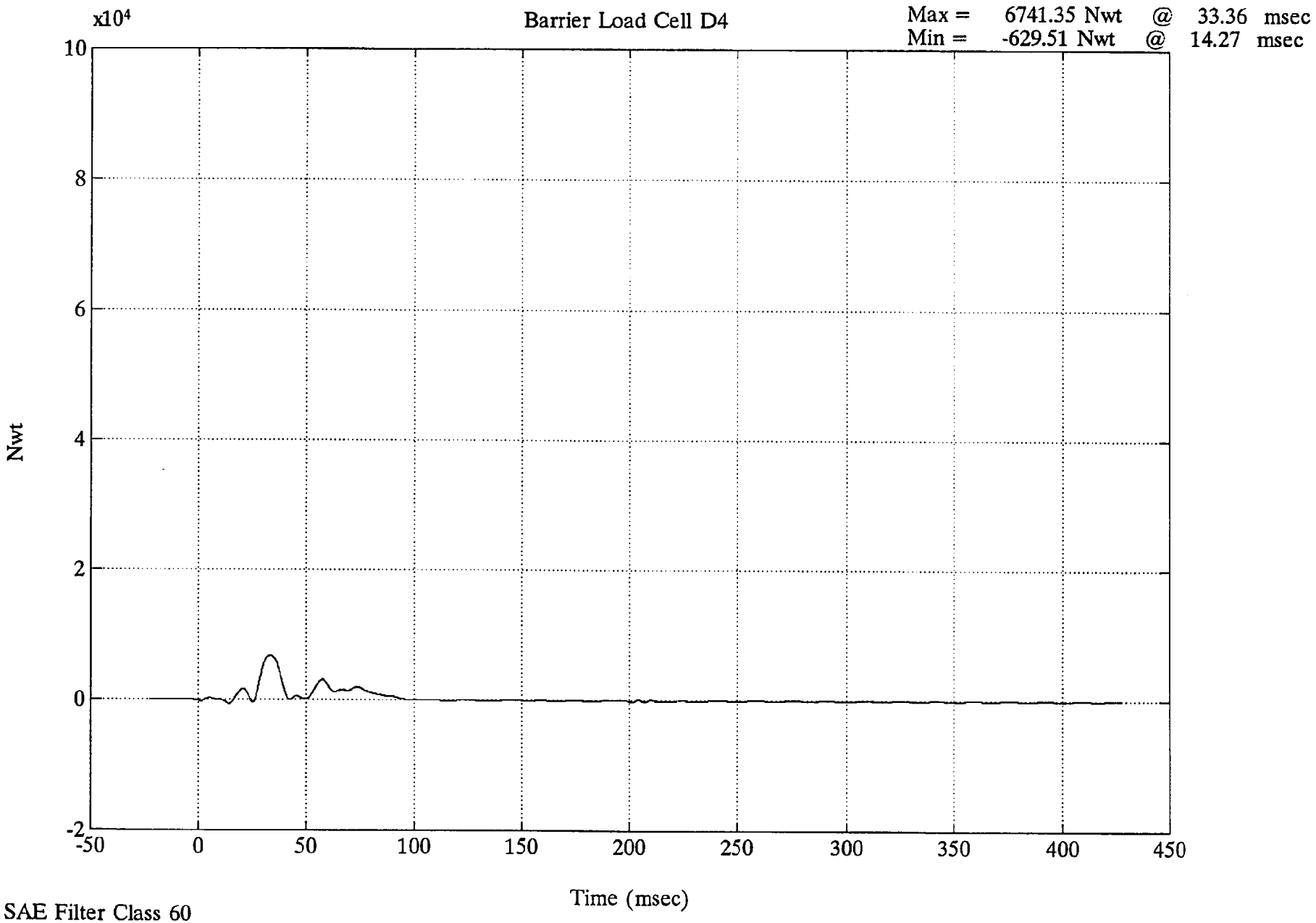


SAE Filter Class 60

B-60

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

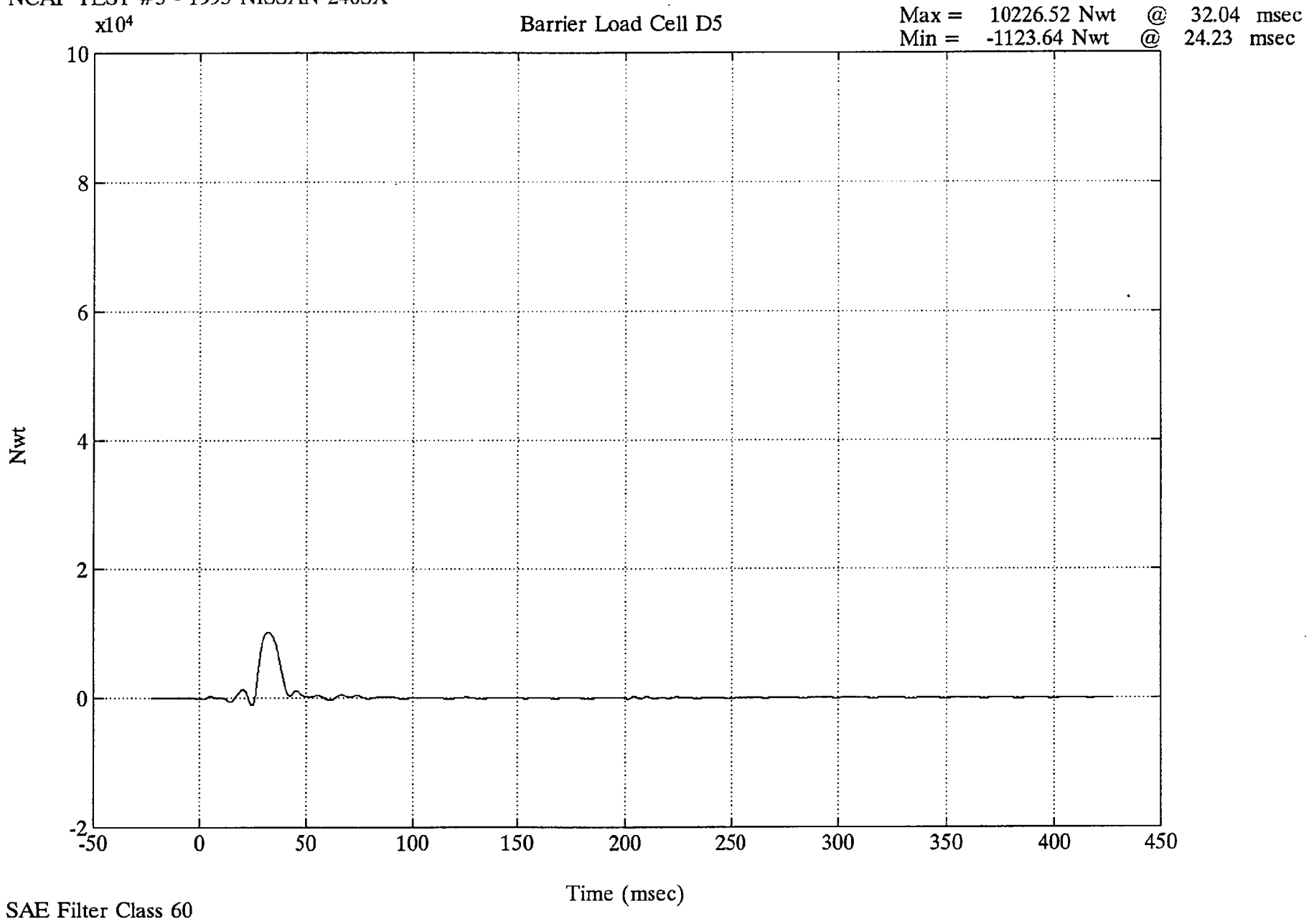


SAE Filter Class 60

B-61

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

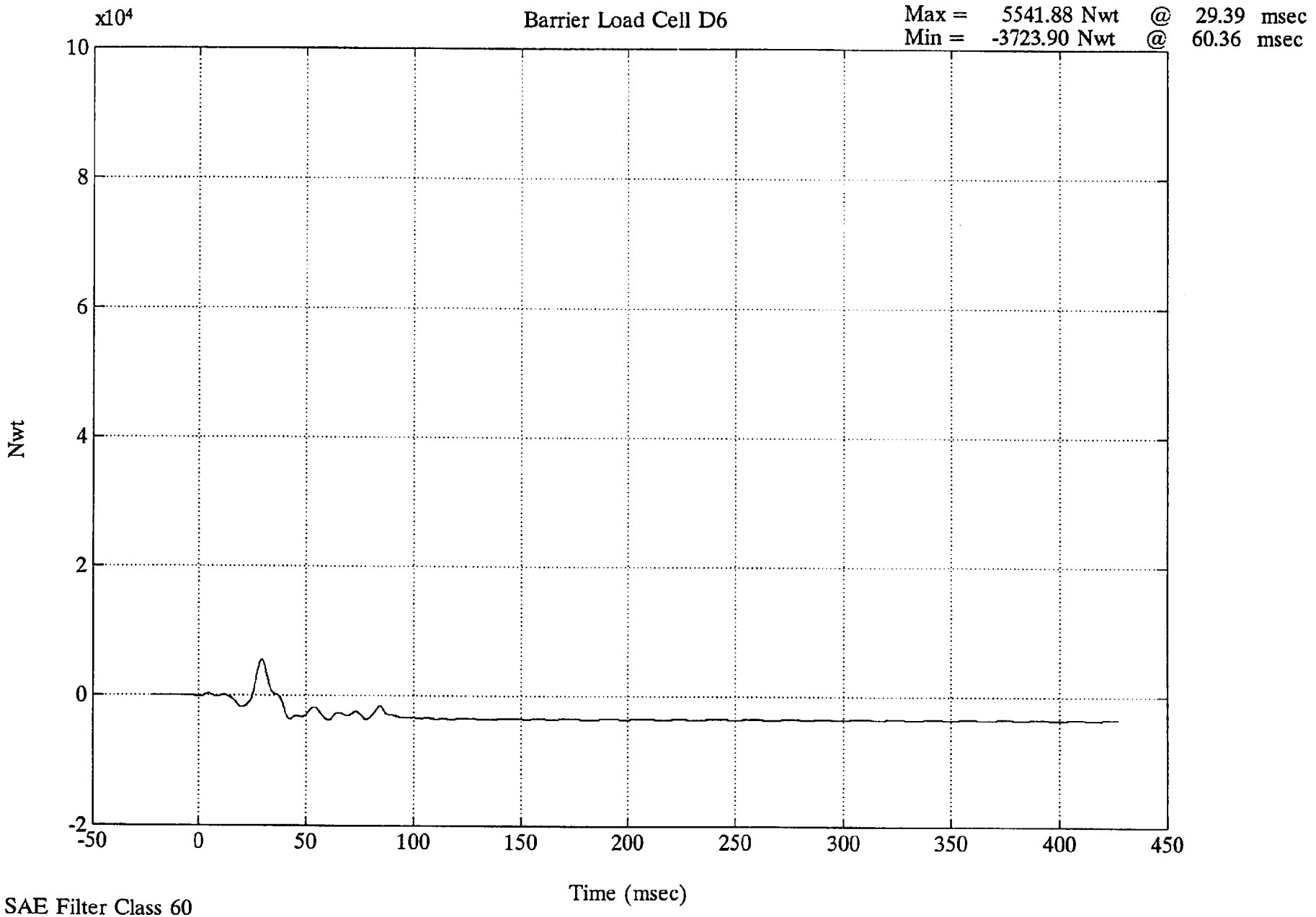


SAE Filter Class 60

B-62

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

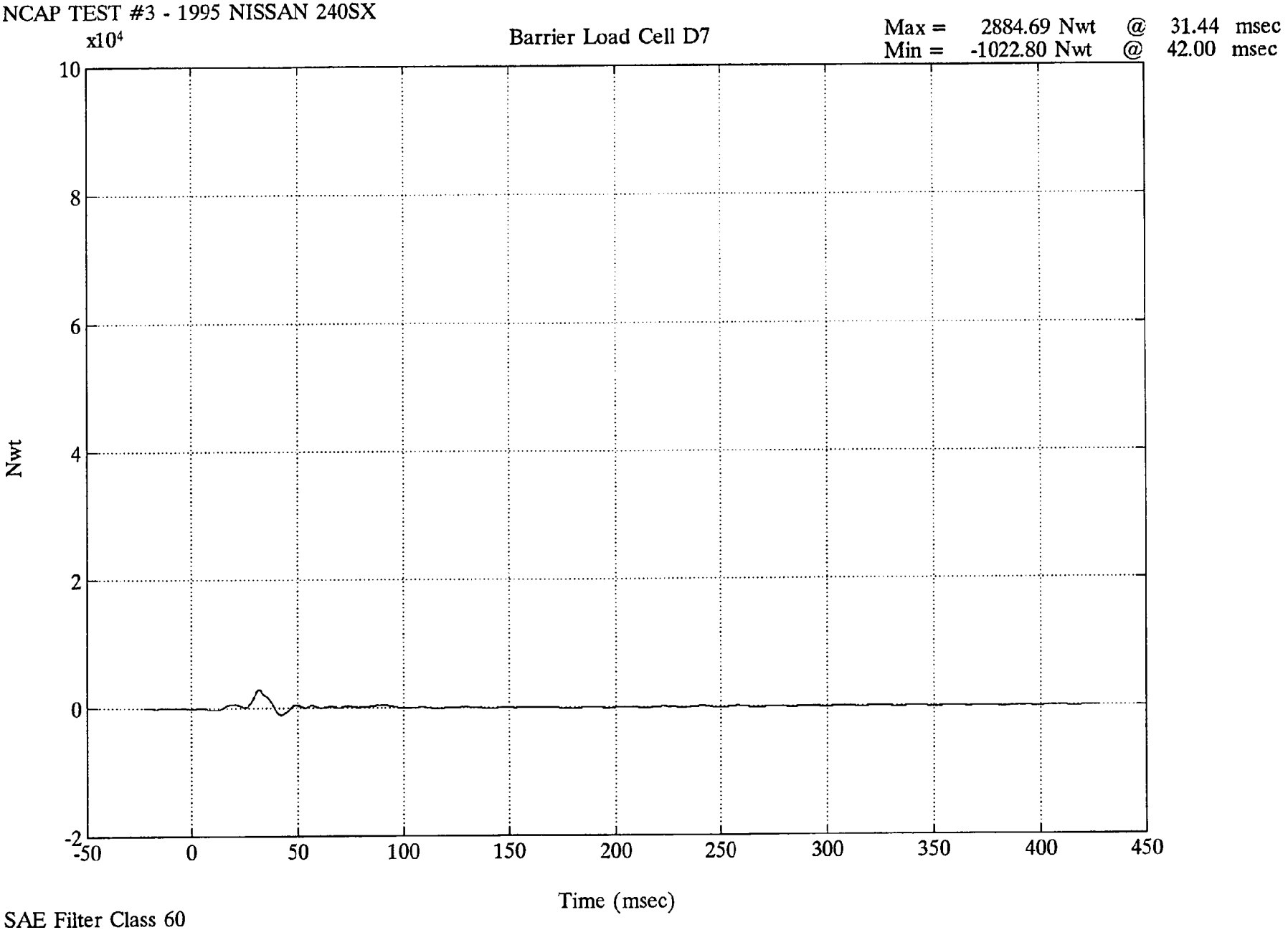


SAE Filter Class 60

B-63

8227-3

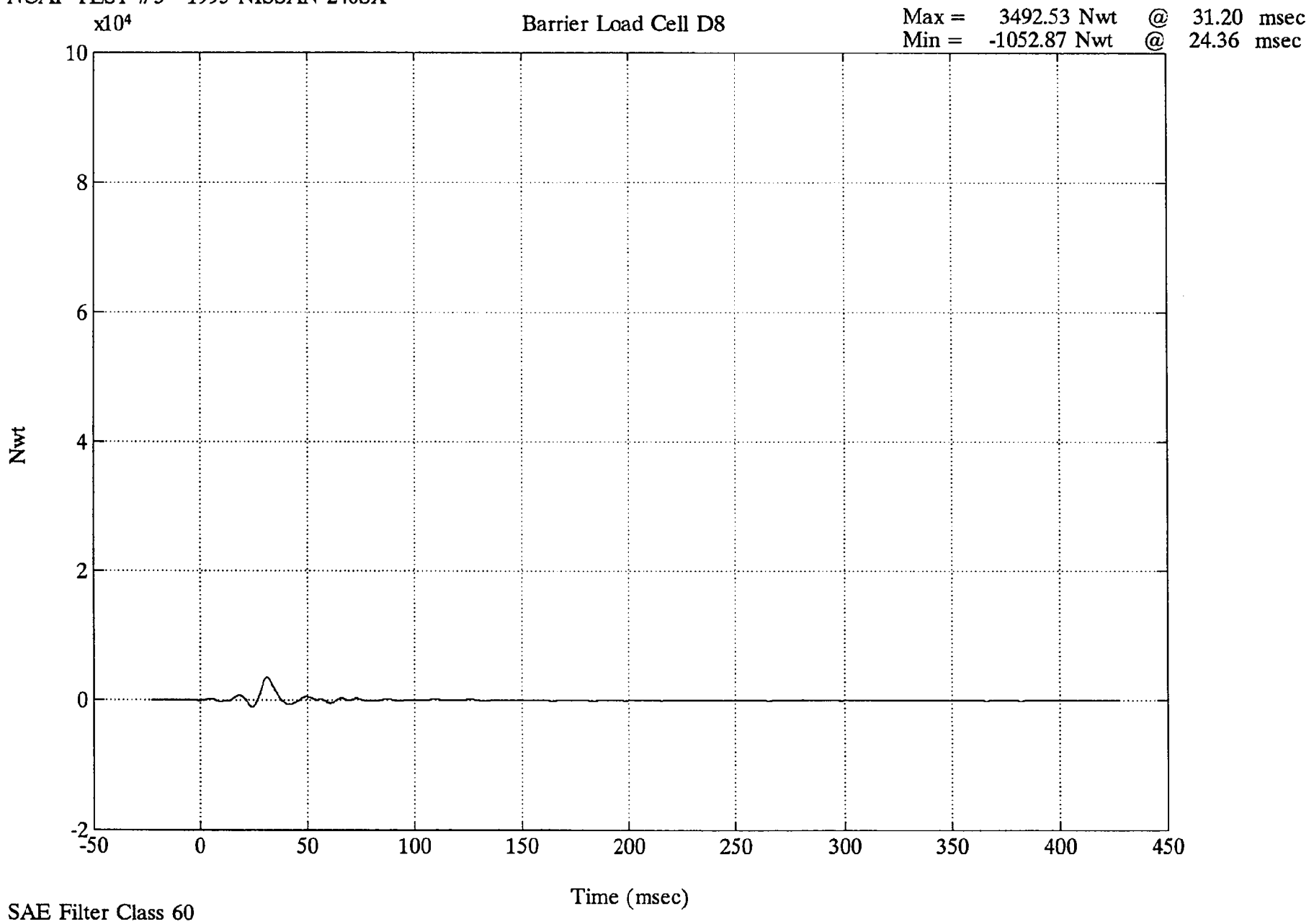
NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 60

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

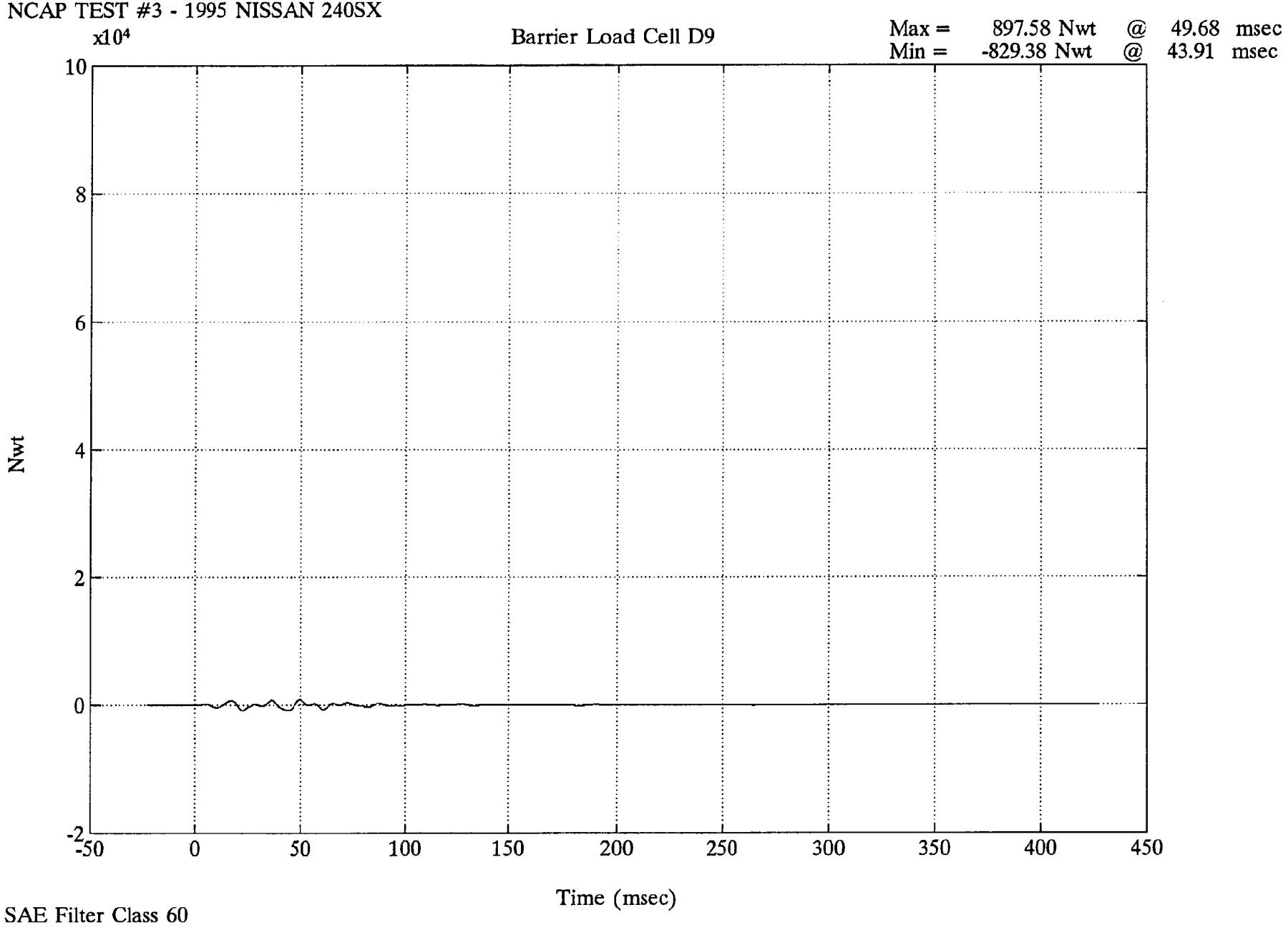


SAE Filter Class 60

B-65

8227-3

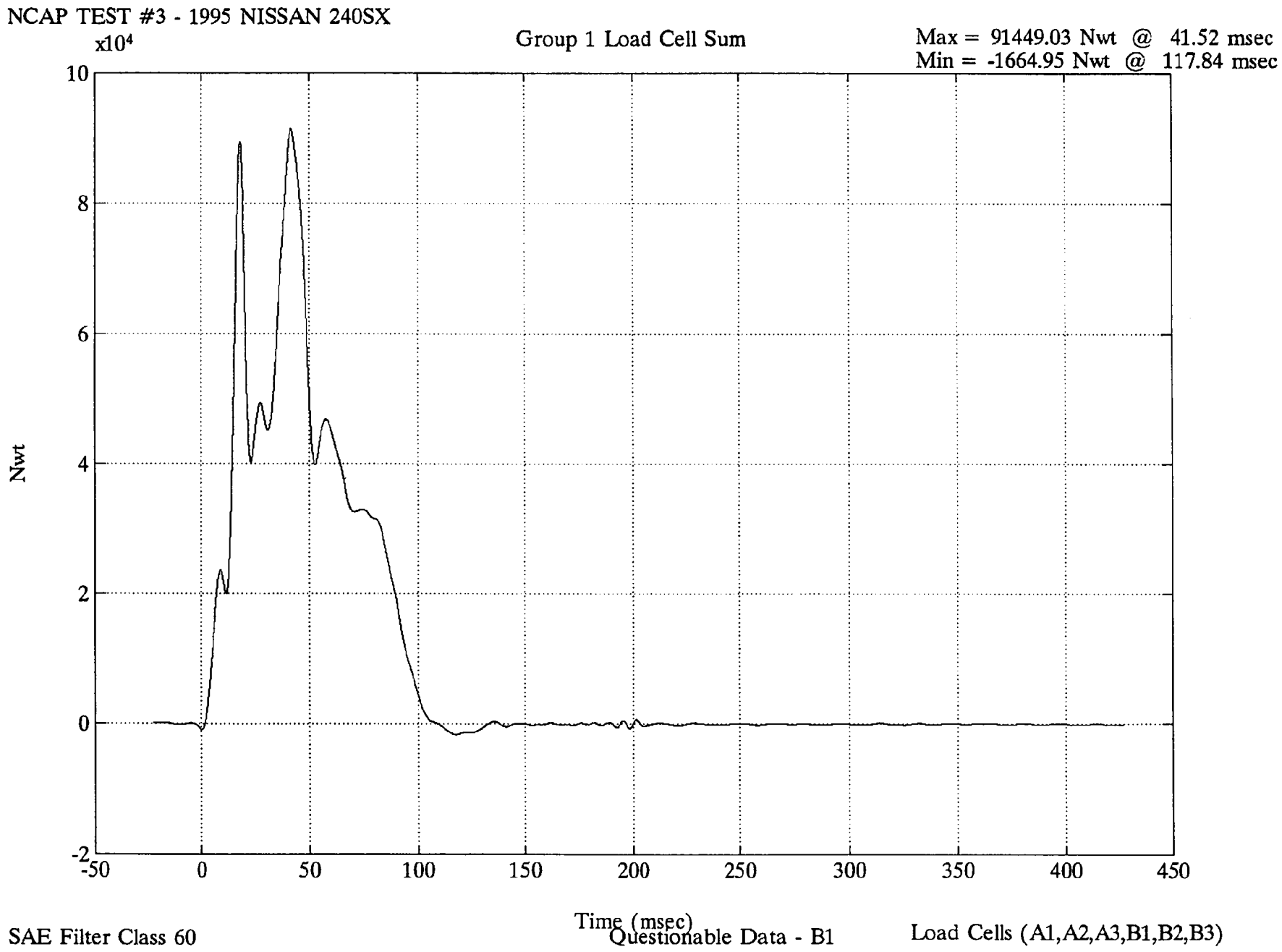
NCAP TEST #3 - 1995 NISSAN 240SX

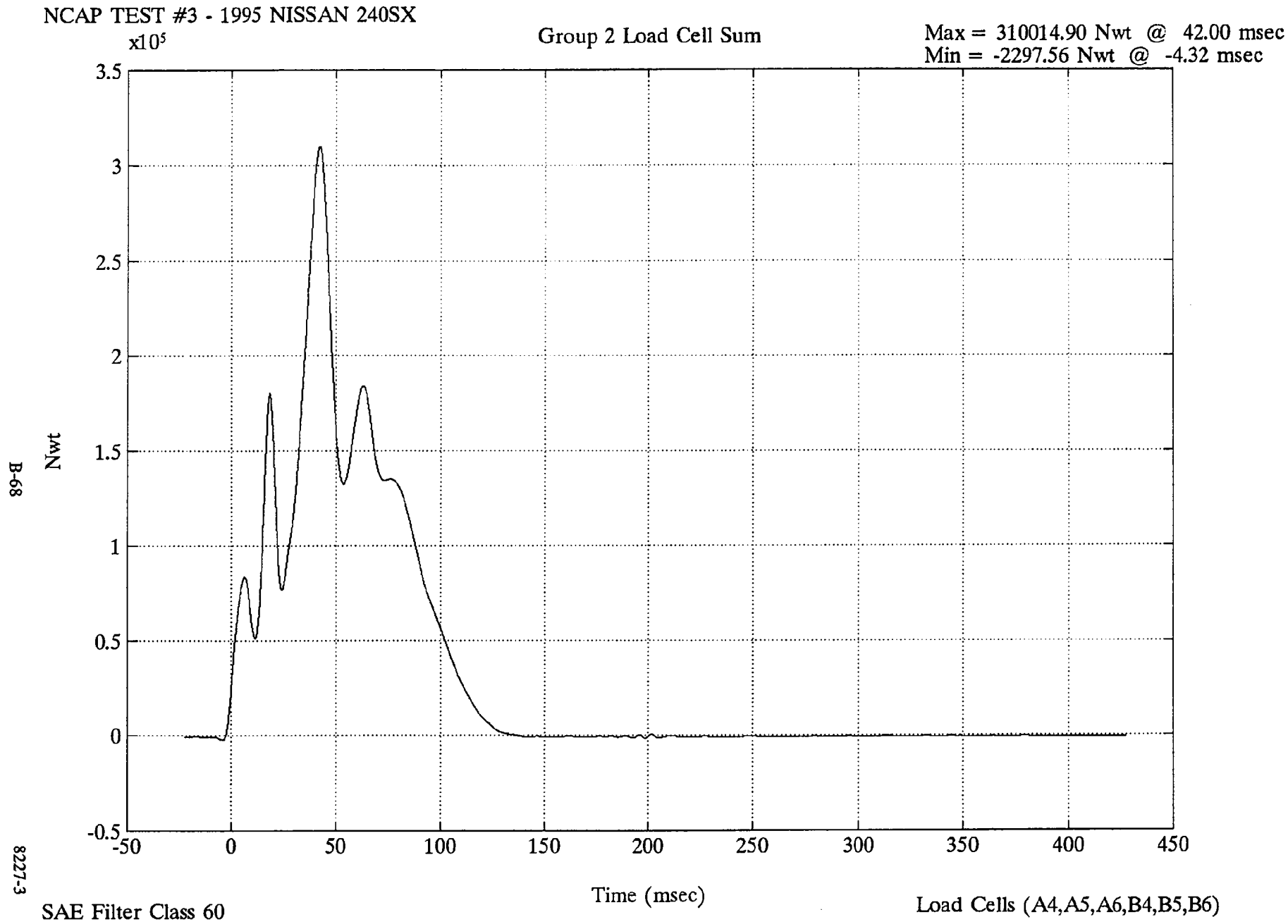


B-66

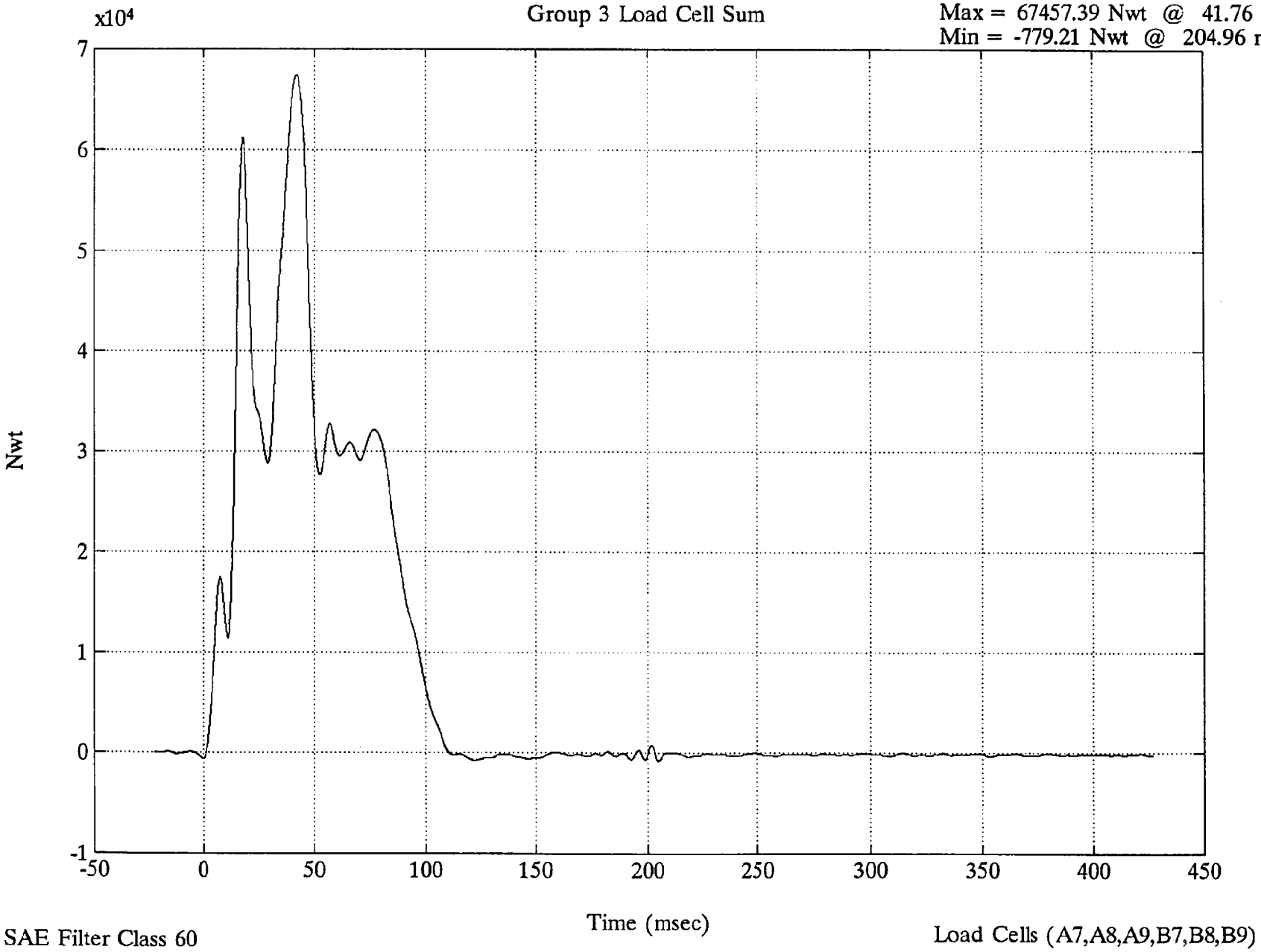
8227-3

SAE Filter Class 60


NCAP TEST #3 - 1995 NISSAN 240SX
x10^4
Group 1 Load Cell Sum
Max = 91449.03 Nwt @ 41.52 msec
Min = -1664.95 Nwt @ 117.84 msec
10
8
6
4
2
0
-2
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
SAE Filter Class 60
Questionable Data - B1
Load Cells (A1,A2,A3,B1,B2,B3)
B-67
8227-3


NCAP TEST #3 - 1995 NISSAN 240SX
x10^5
Group 2 Load Cell Sum
Max = 310014.90 Nwt @ 42.00 msec
Min = -2297.56 Nwt @ -4.32 msec
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
SAE Filter Class 60
Load Cells (A4,A5,A6,B4,B5,B6)
B-68
8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

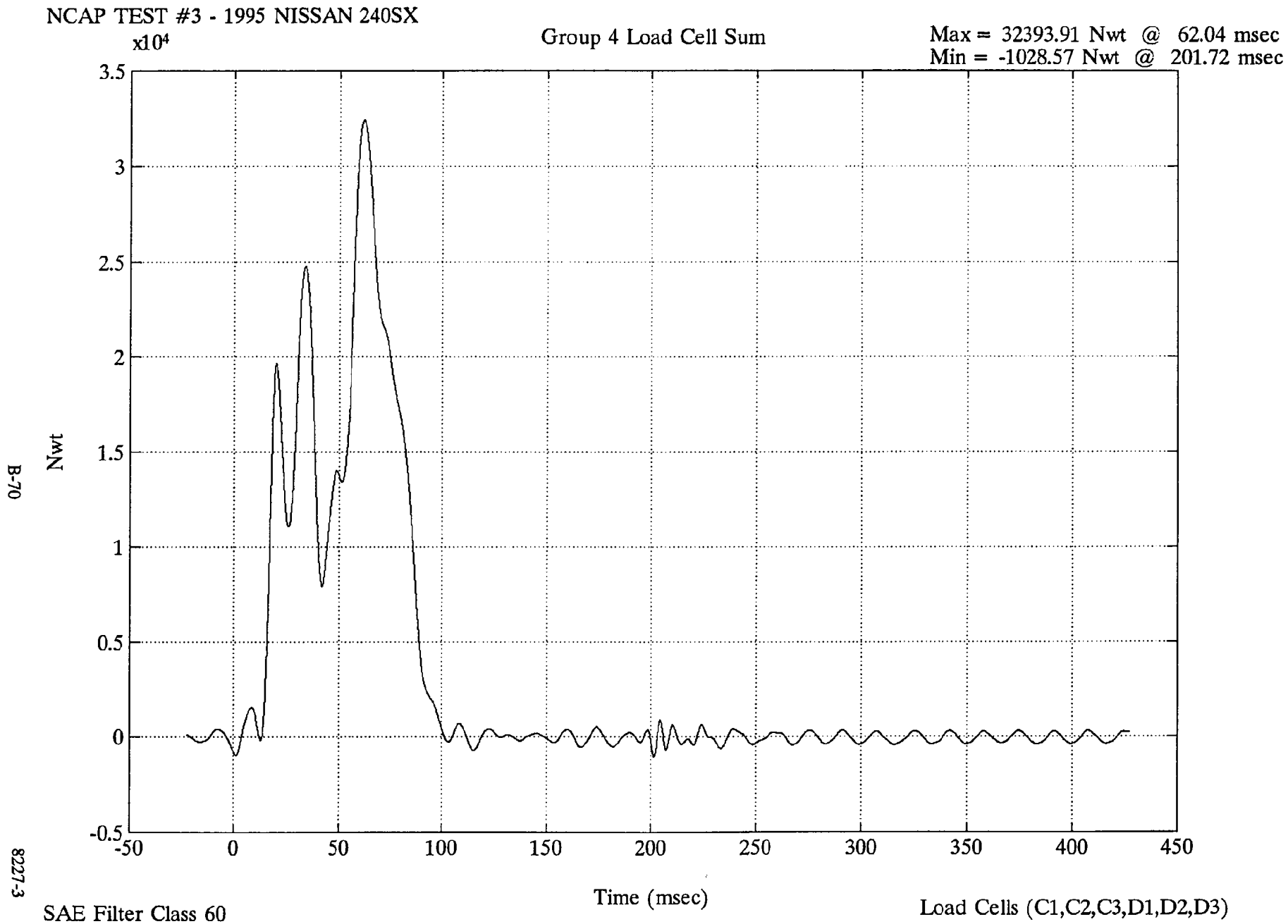


SAE Filter Class 60

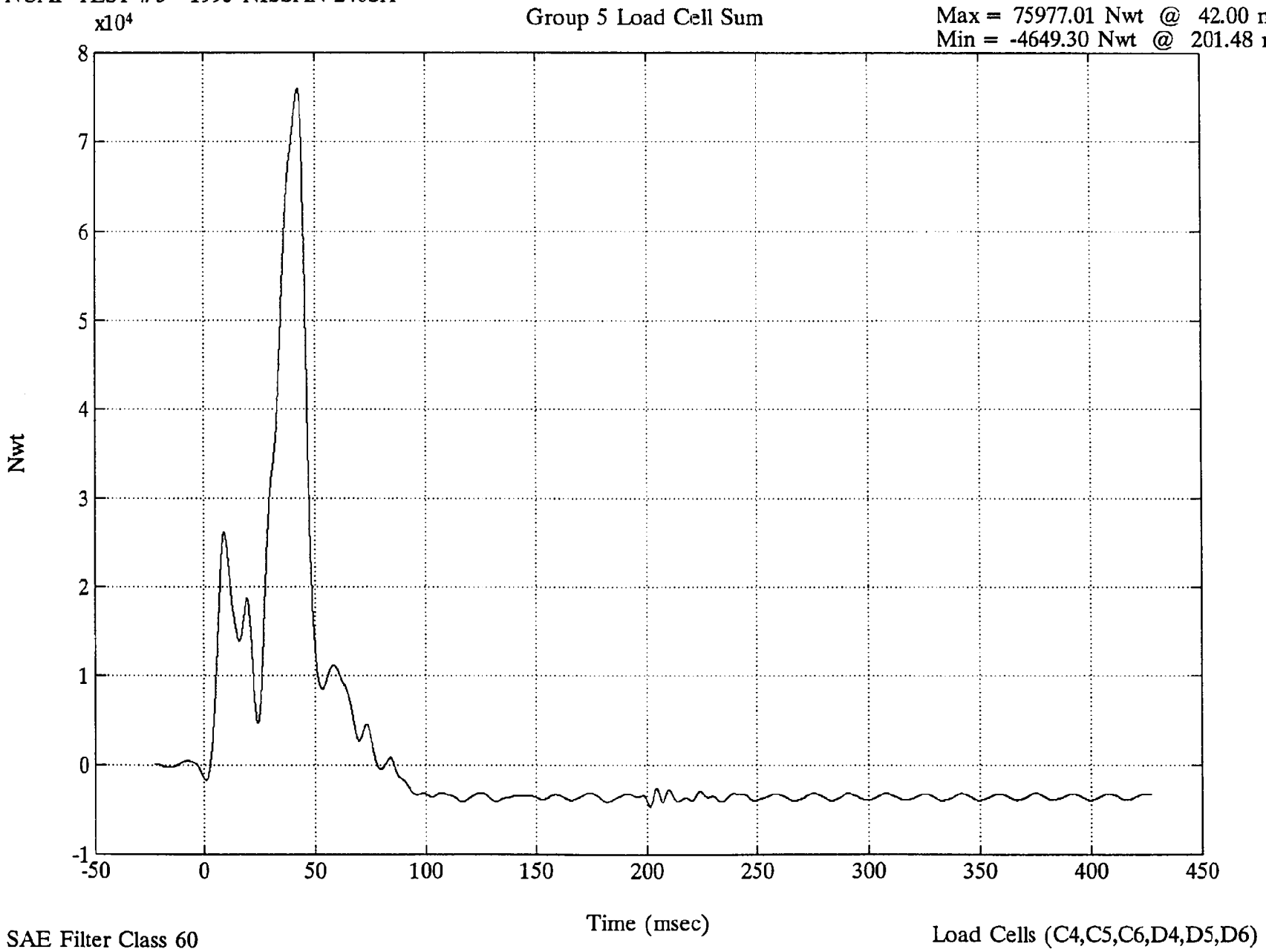
Load Cells (A7,A8,A9,B7,B8,B9)

B-69

8227-3


NCAP TEST #3 - 1995 NISSAN 240SX
x10⁴
Group 4 Load Cell Sum
Max = 32393.91 Nwt @ 62.04 msec
Min = -1028.57 Nwt @ 201.72 msec
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
SAE Filter Class 60
Load Cells (C1,C2,C3,D1,D2,D3)
B-70
8227-3

NCAP TEST #3 - 1995 NISSAN 240SX



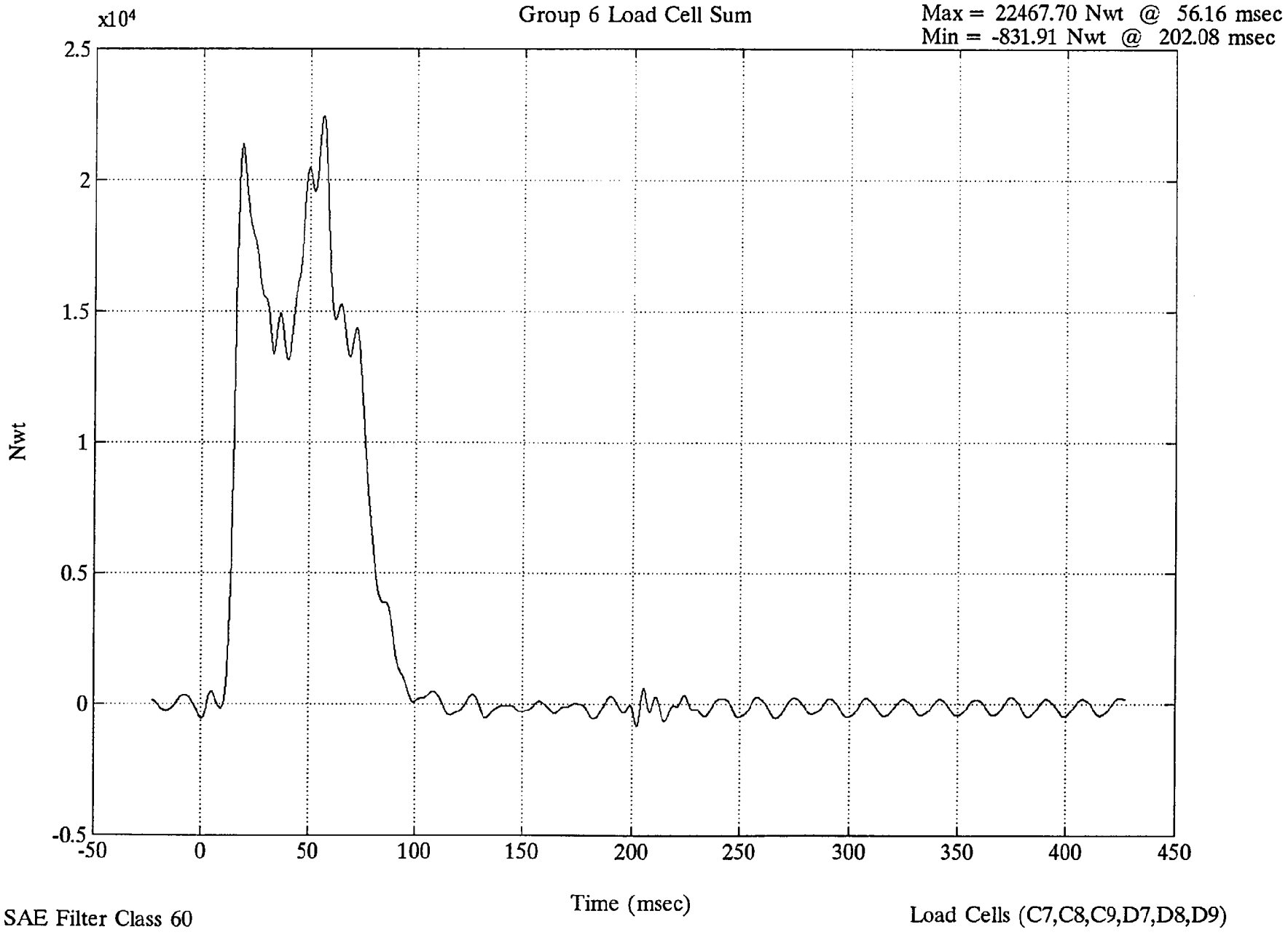
SAE Filter Class 60

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

B-71

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX



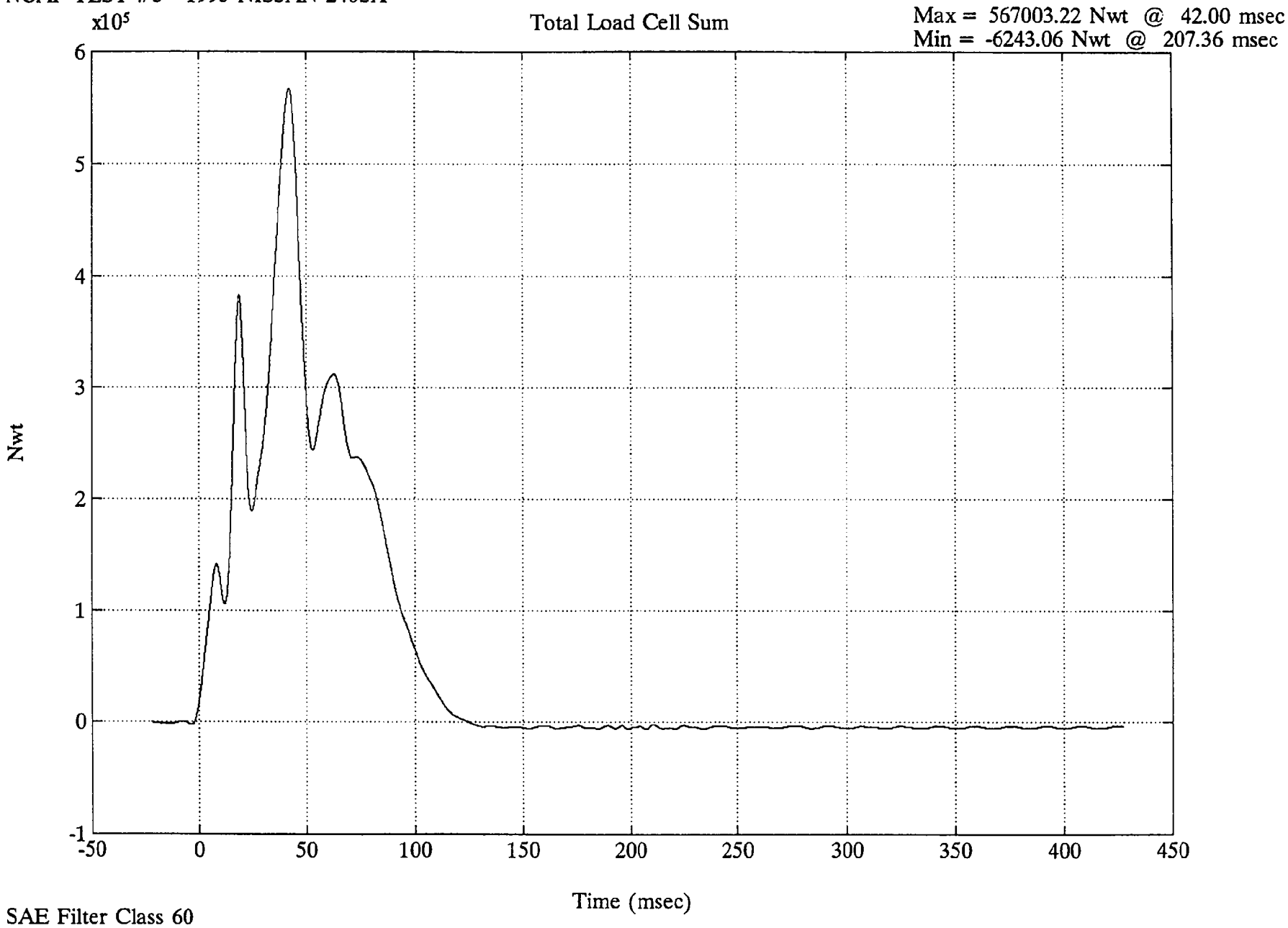
SAE Filter Class 60

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

B-72

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX



B-73

8227-3

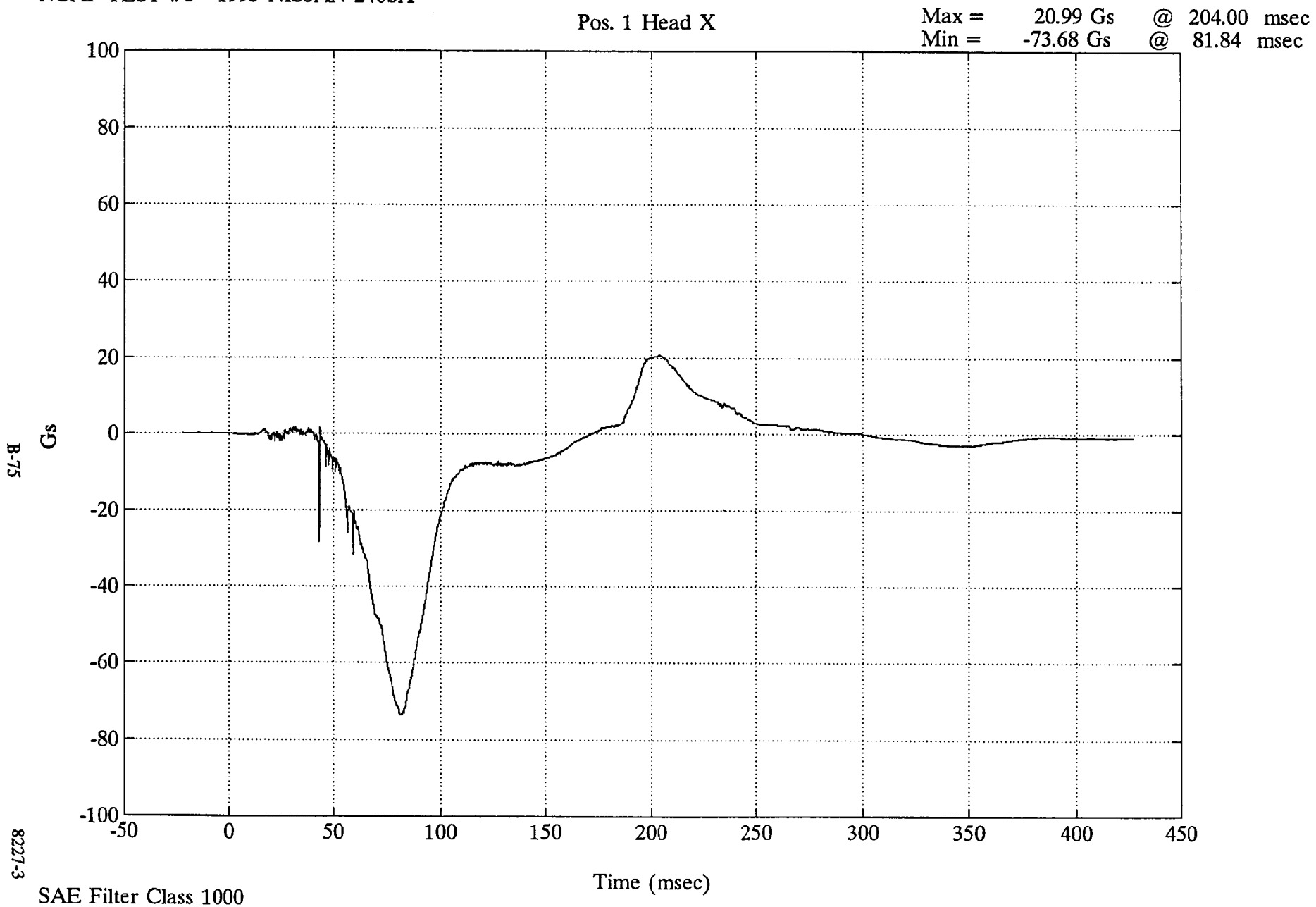
SAE Filter Class 60

TEST NO. MS5201

DUMMY DATA

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

NCAP TEST #3 - 1995 NISSAN 240SX

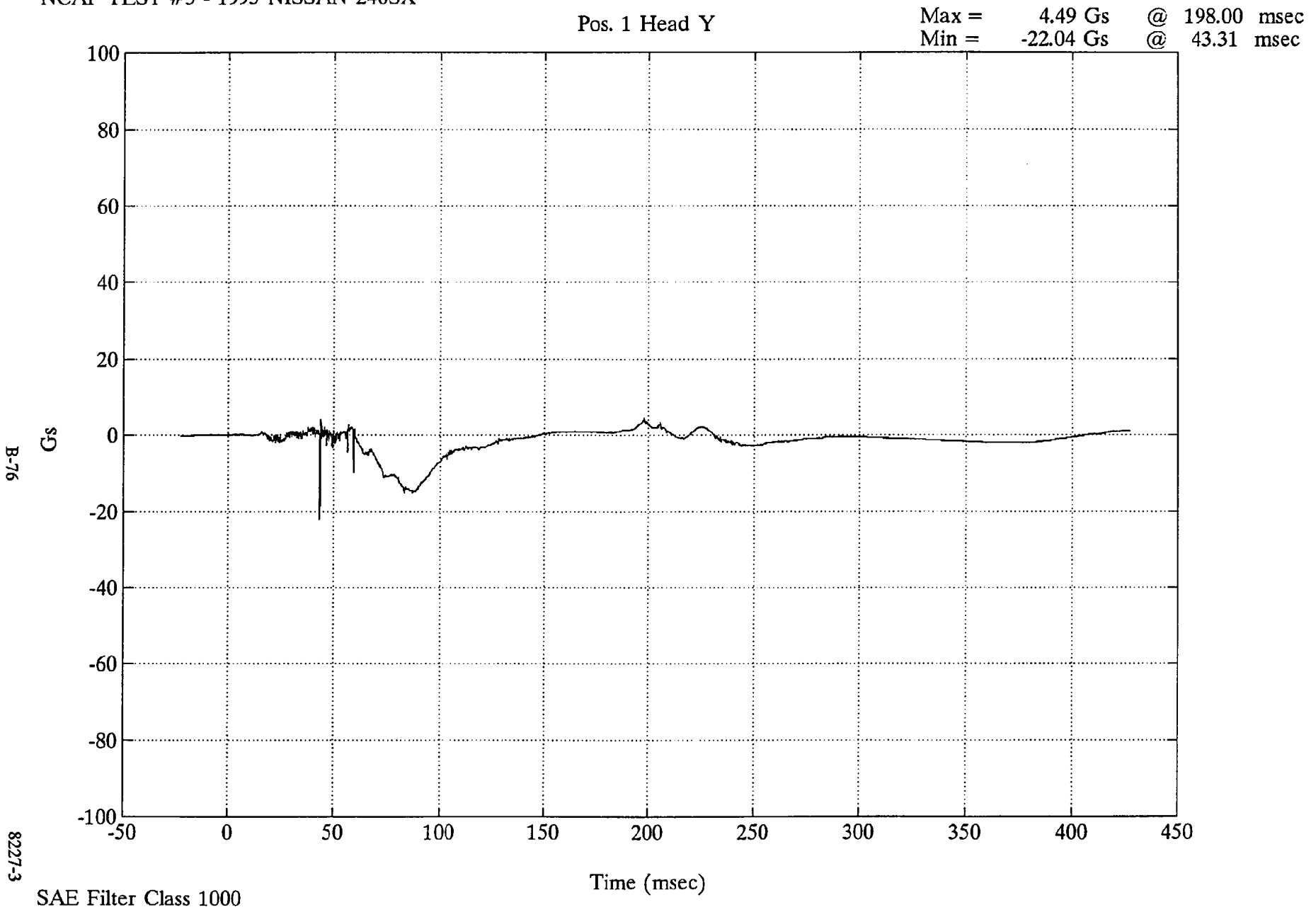


B-75

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

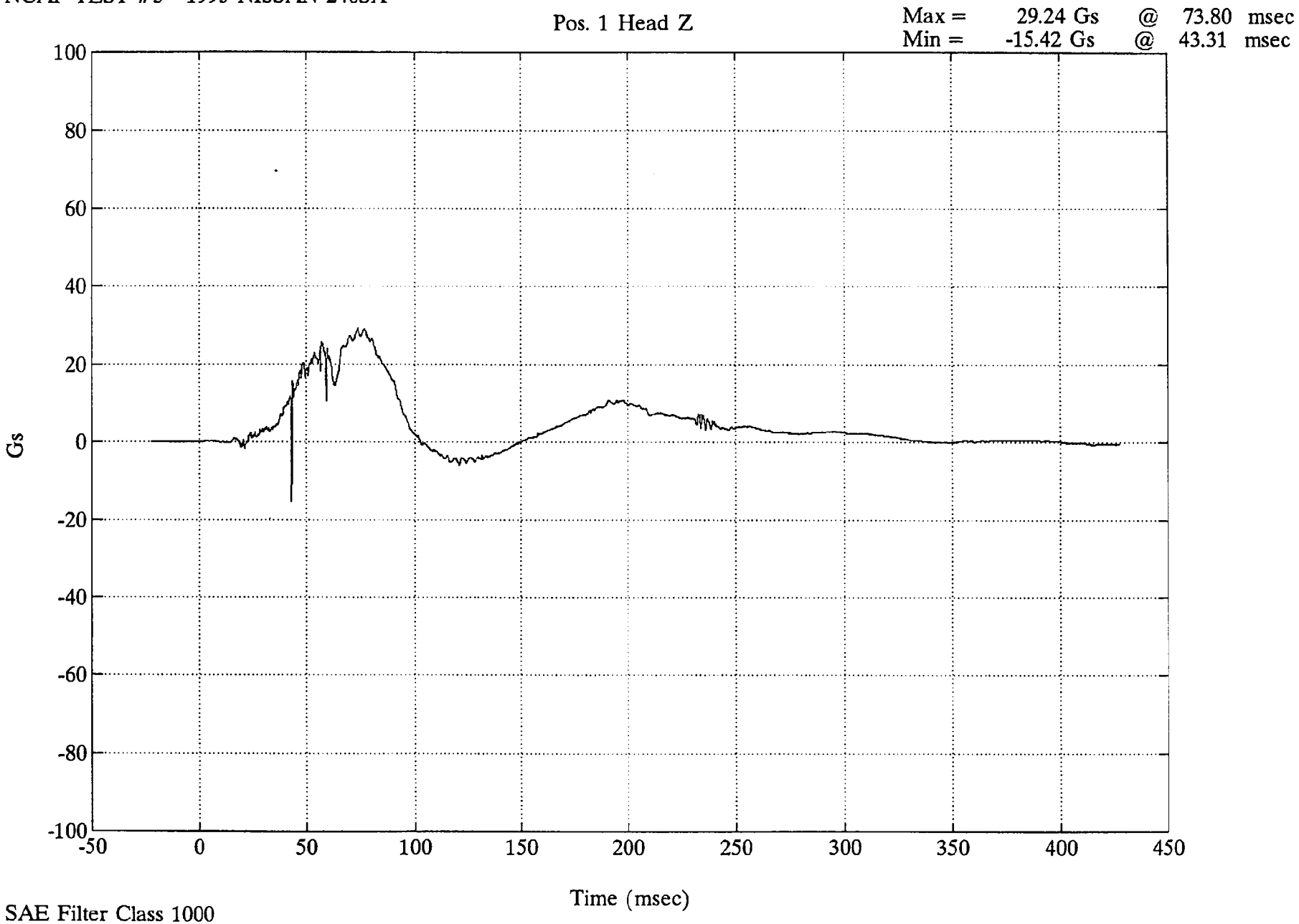


B-76

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX



B-77

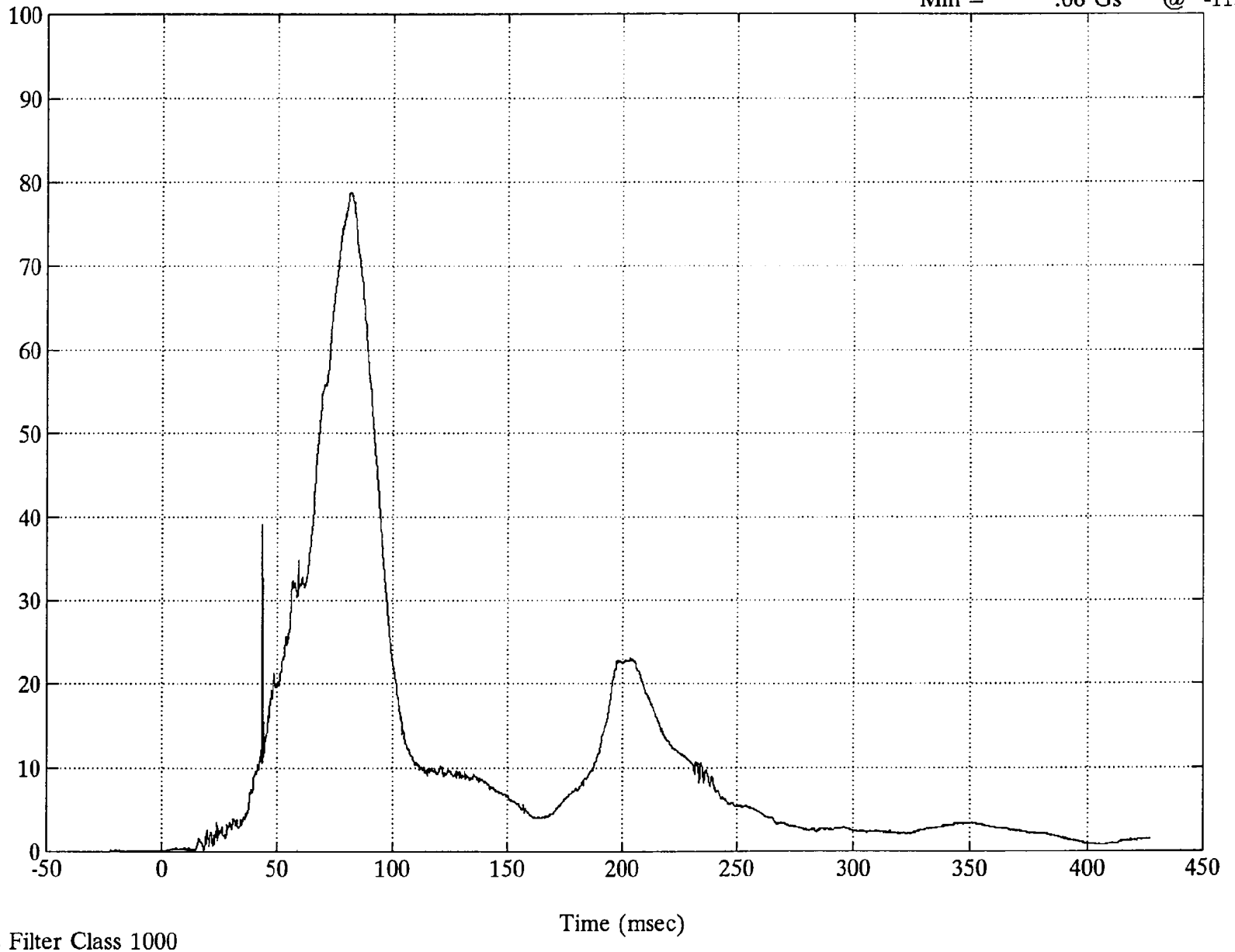
8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 1 Head Resultant

Max = 78.79 Gs @ 81.84 msec
Min = .06 Gs @ -11.04 msec

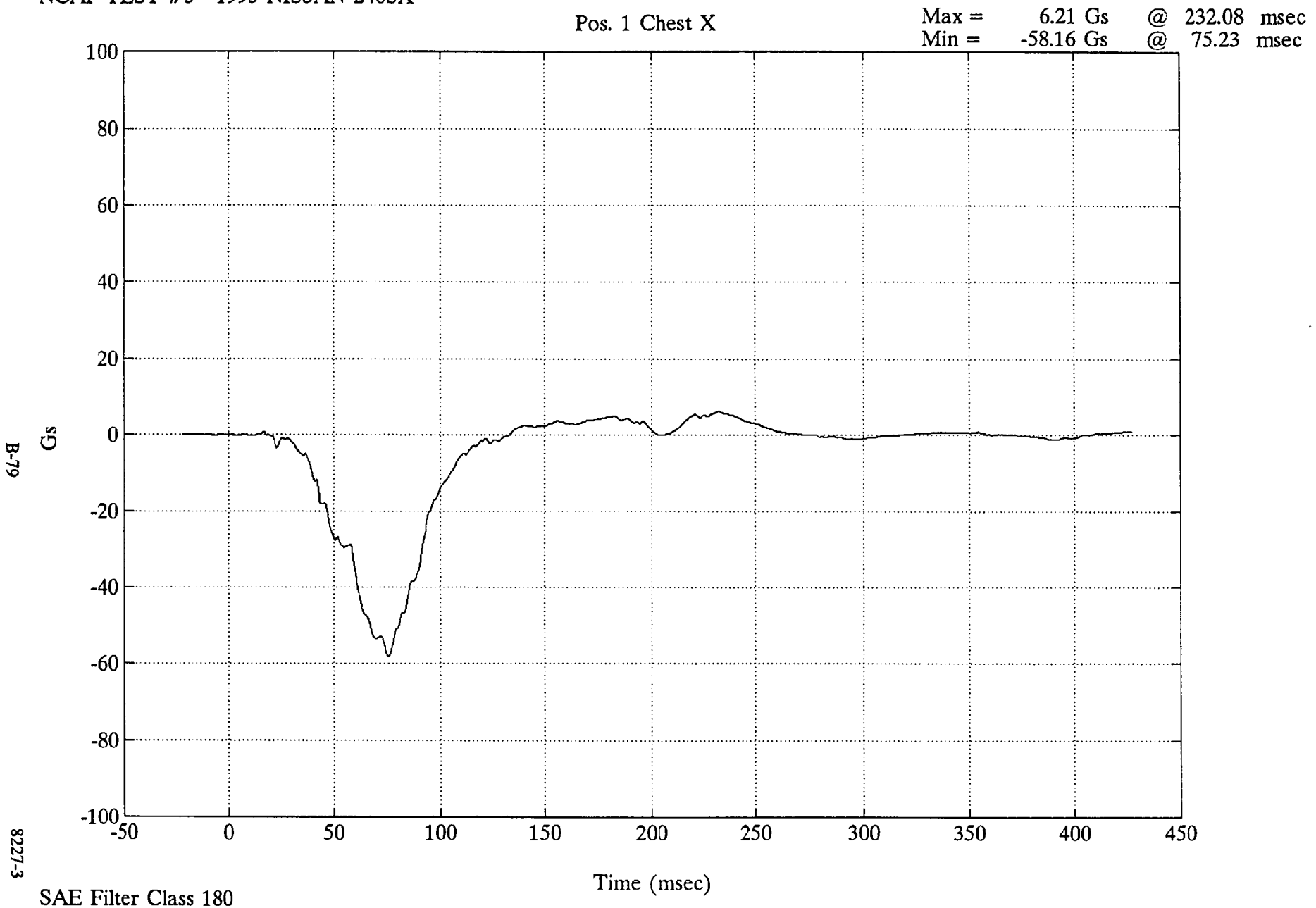


B-78

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

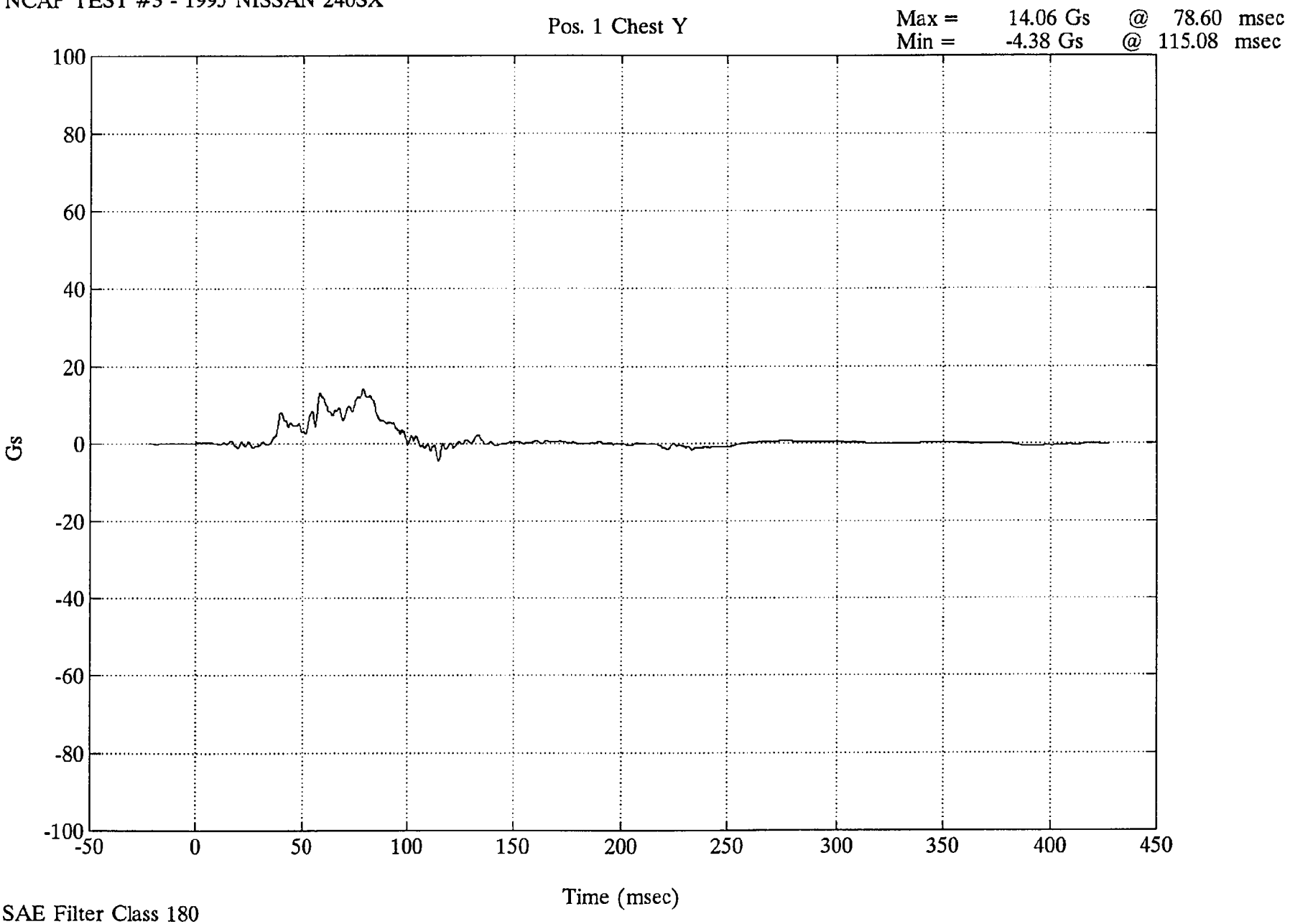


B-79

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

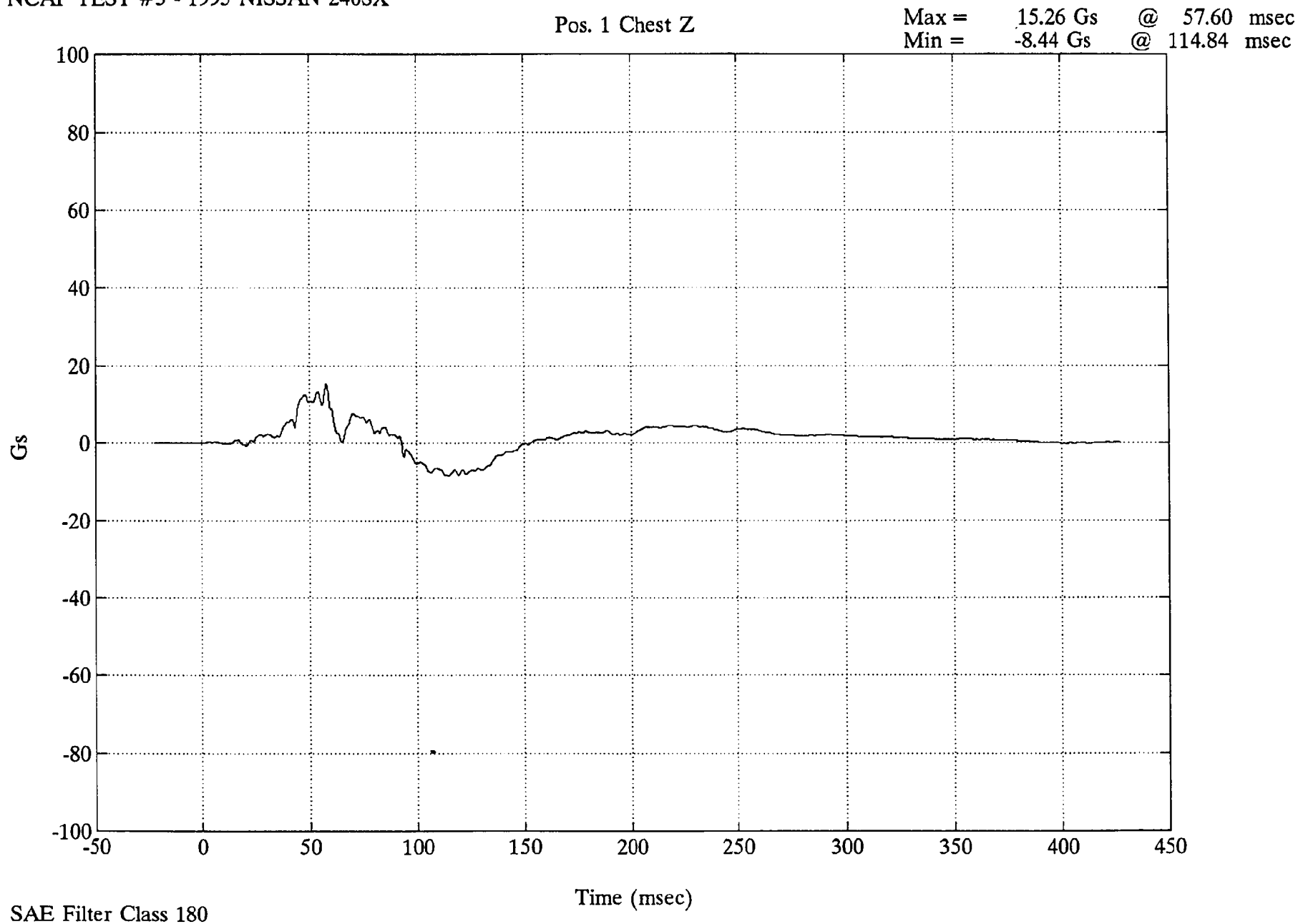


B-80

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX



B-81

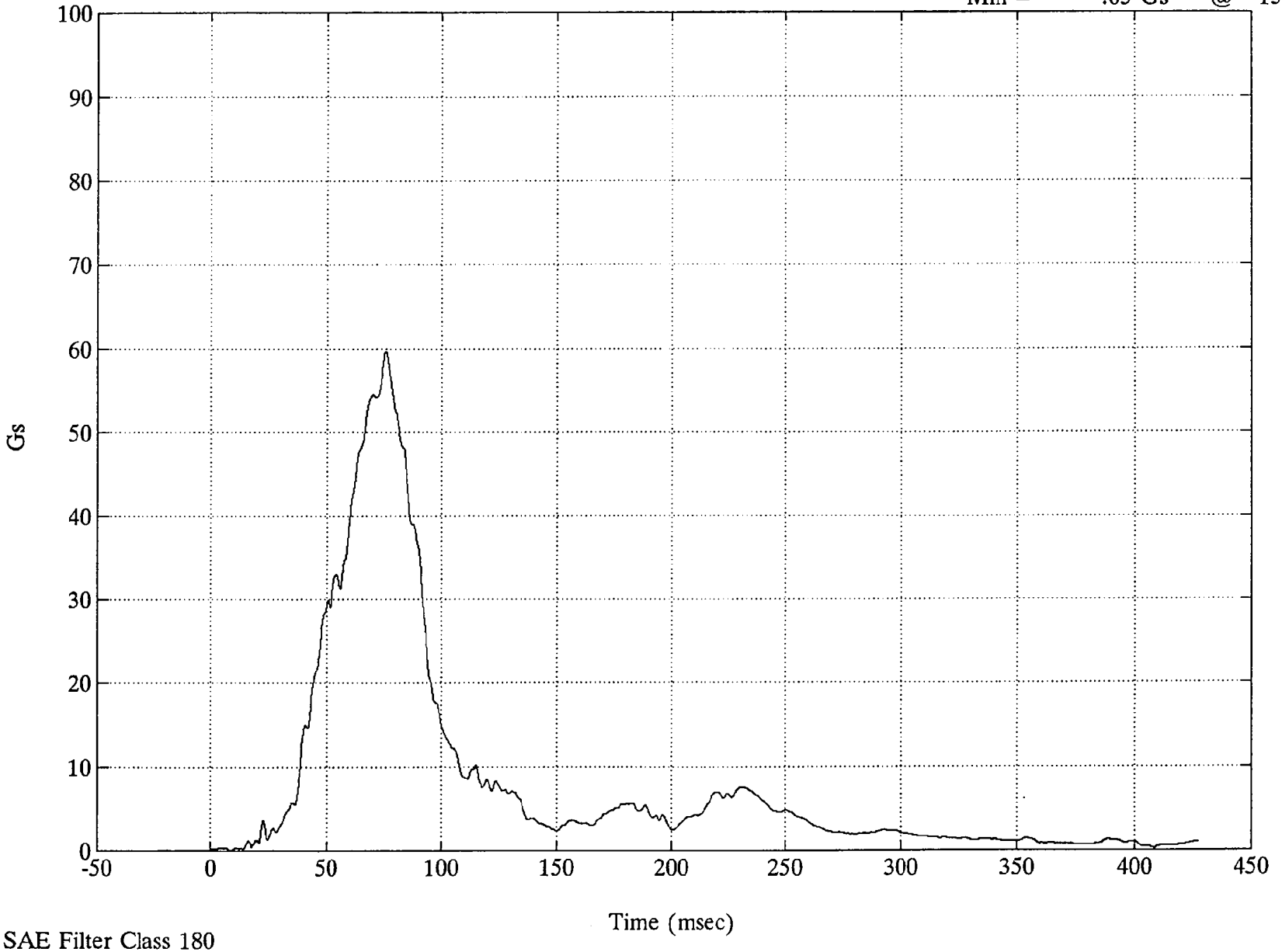
8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 1 Chest Resultant

Max = 59.61 Gs @ 75.36 msec
Min = .05 Gs @ -15.96 msec

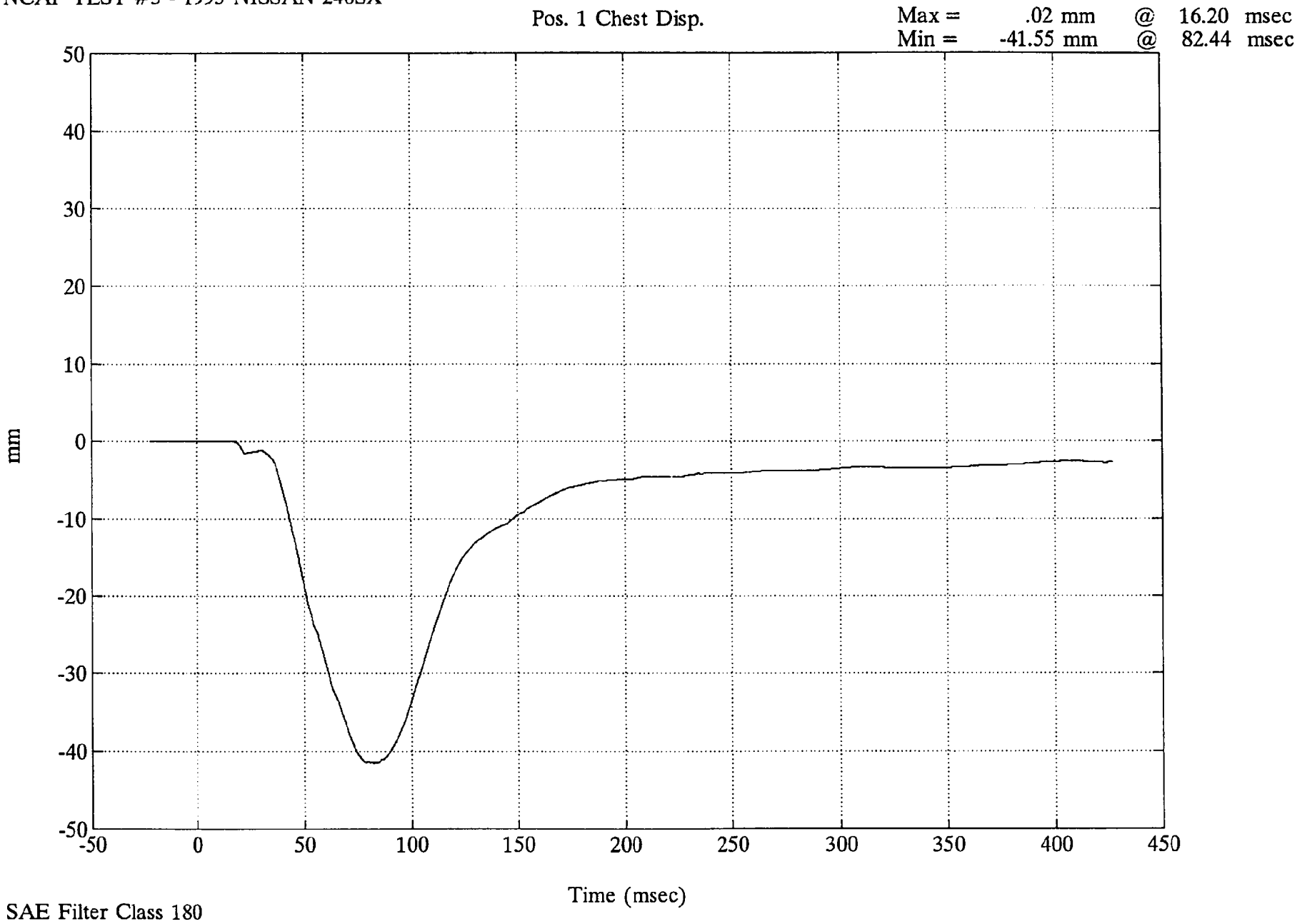


B-82

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

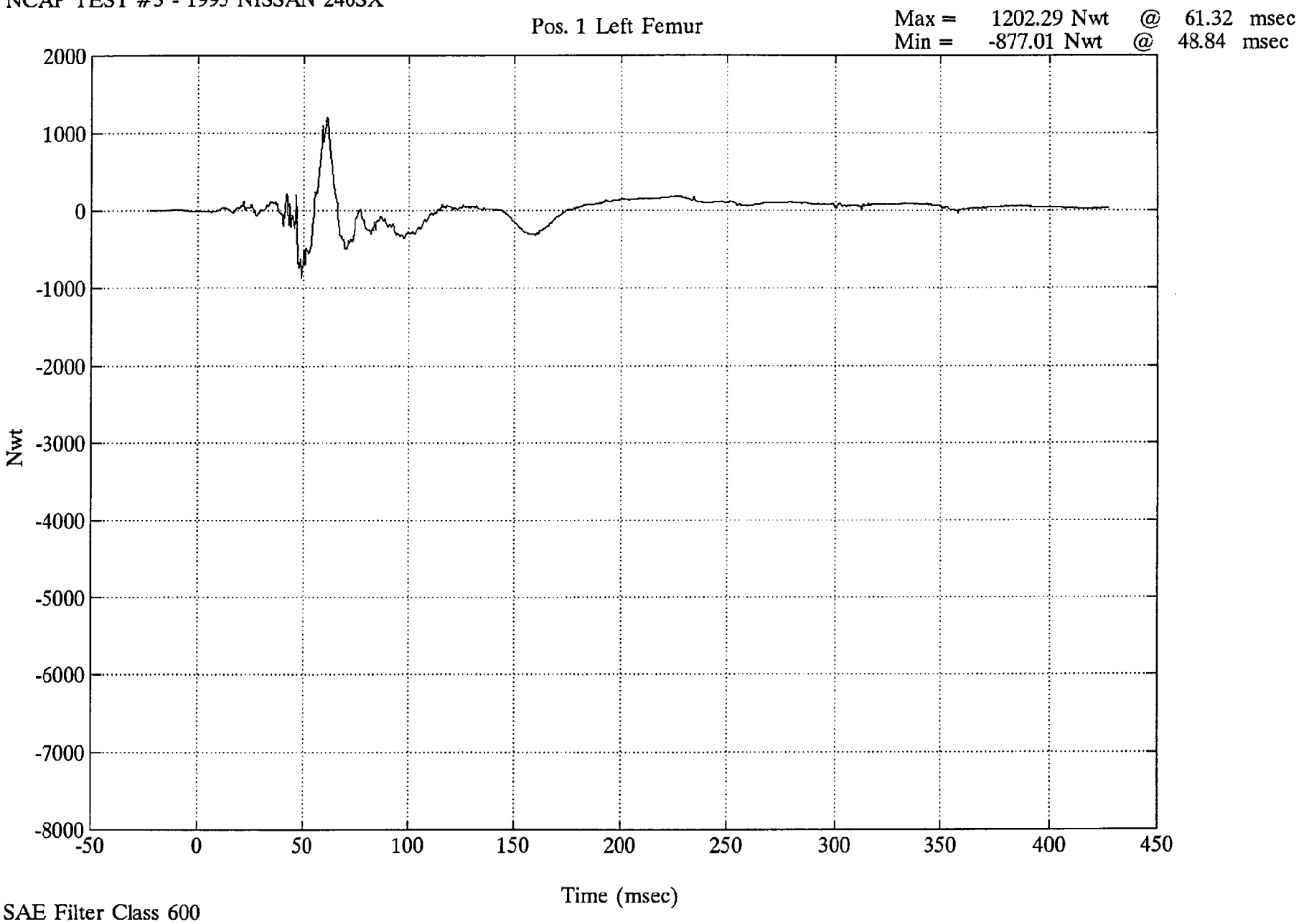


B-83

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

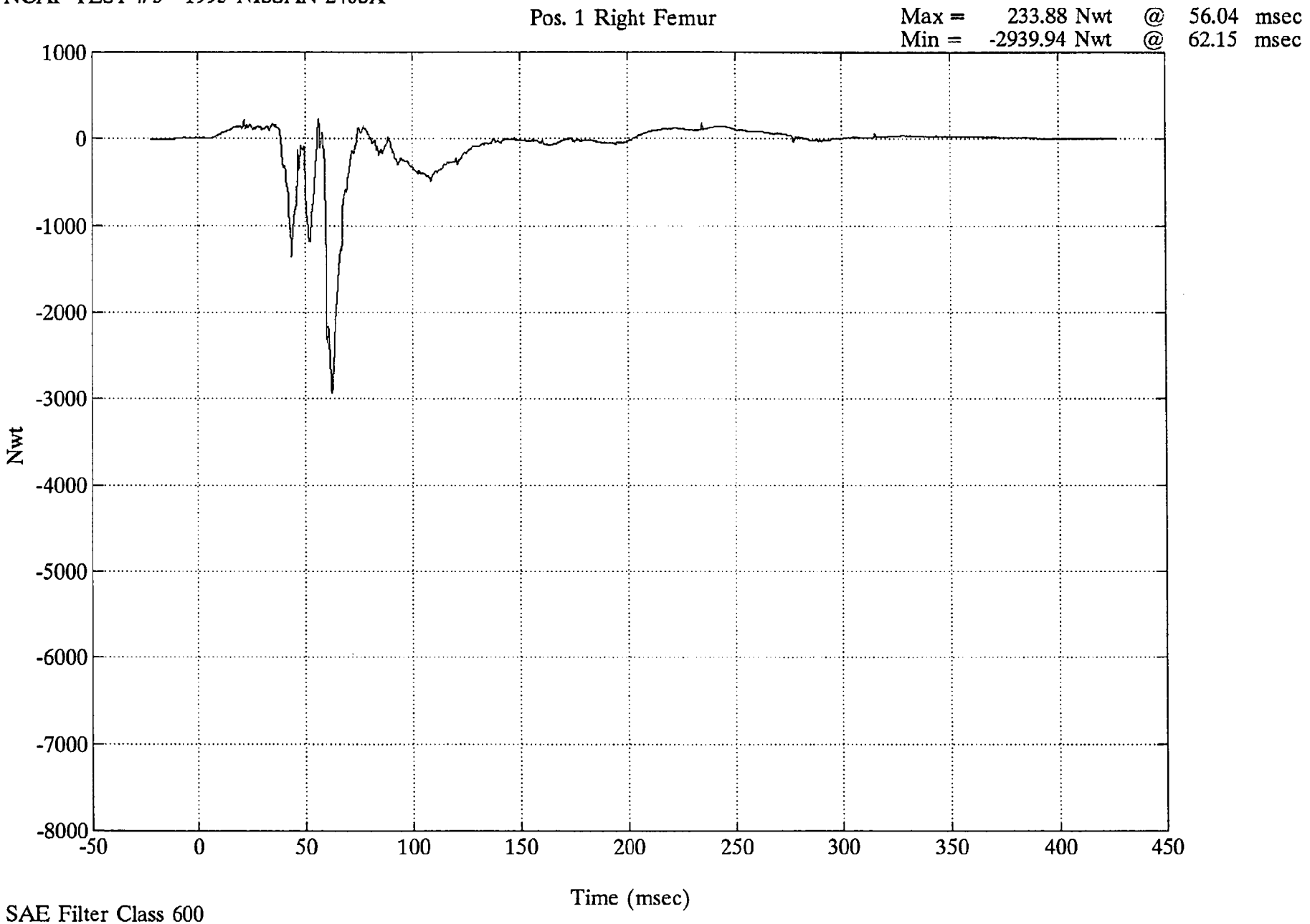


B-84

8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX

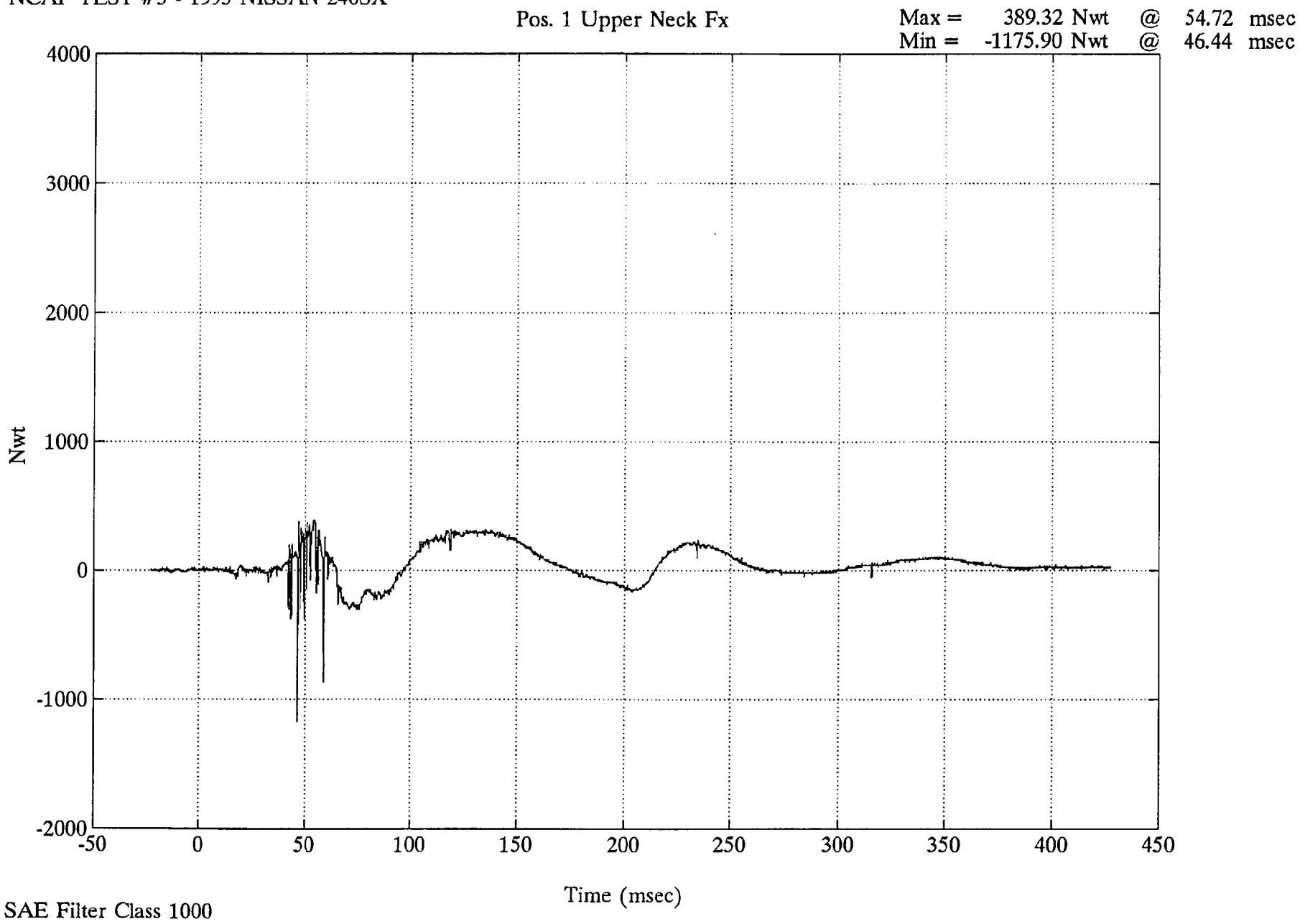


B-85

8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX

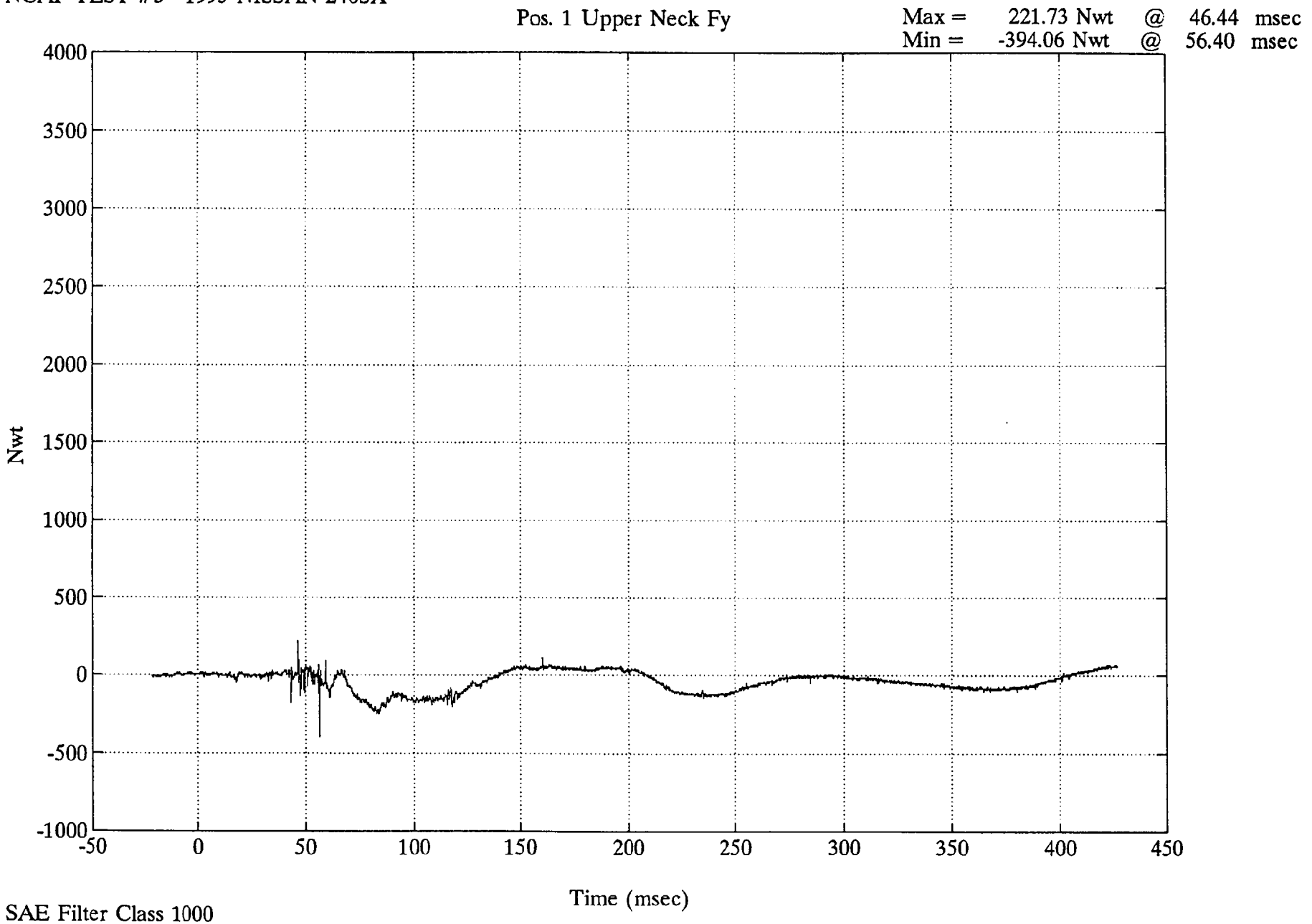


B-86

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX



B-87

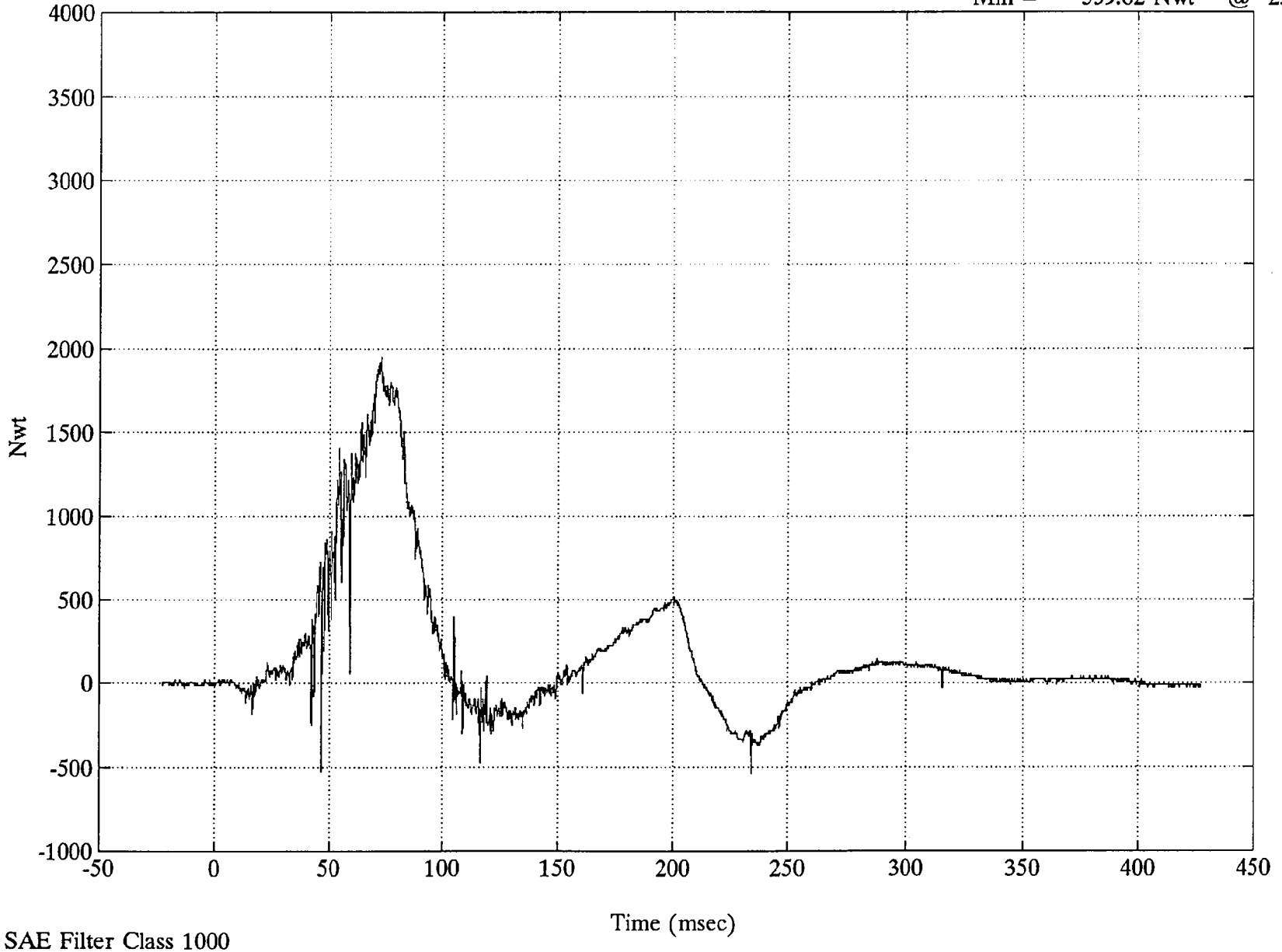
8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 1 Upper Neck Fz

Max = 1950.70 Nwt @ 73.08 msec
Min = -539.62 Nwt @ 234.60 msec

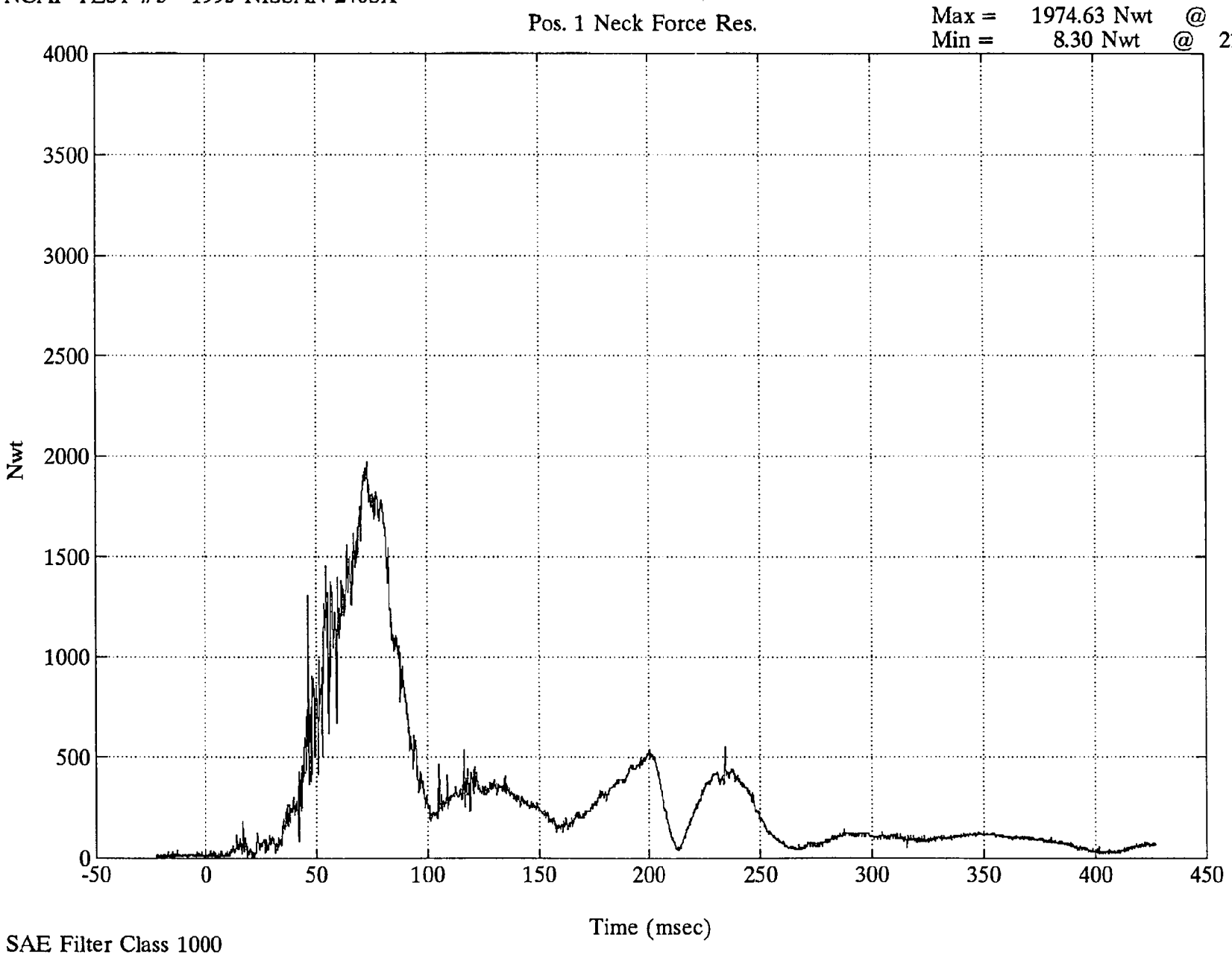


B-88

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX



B-89

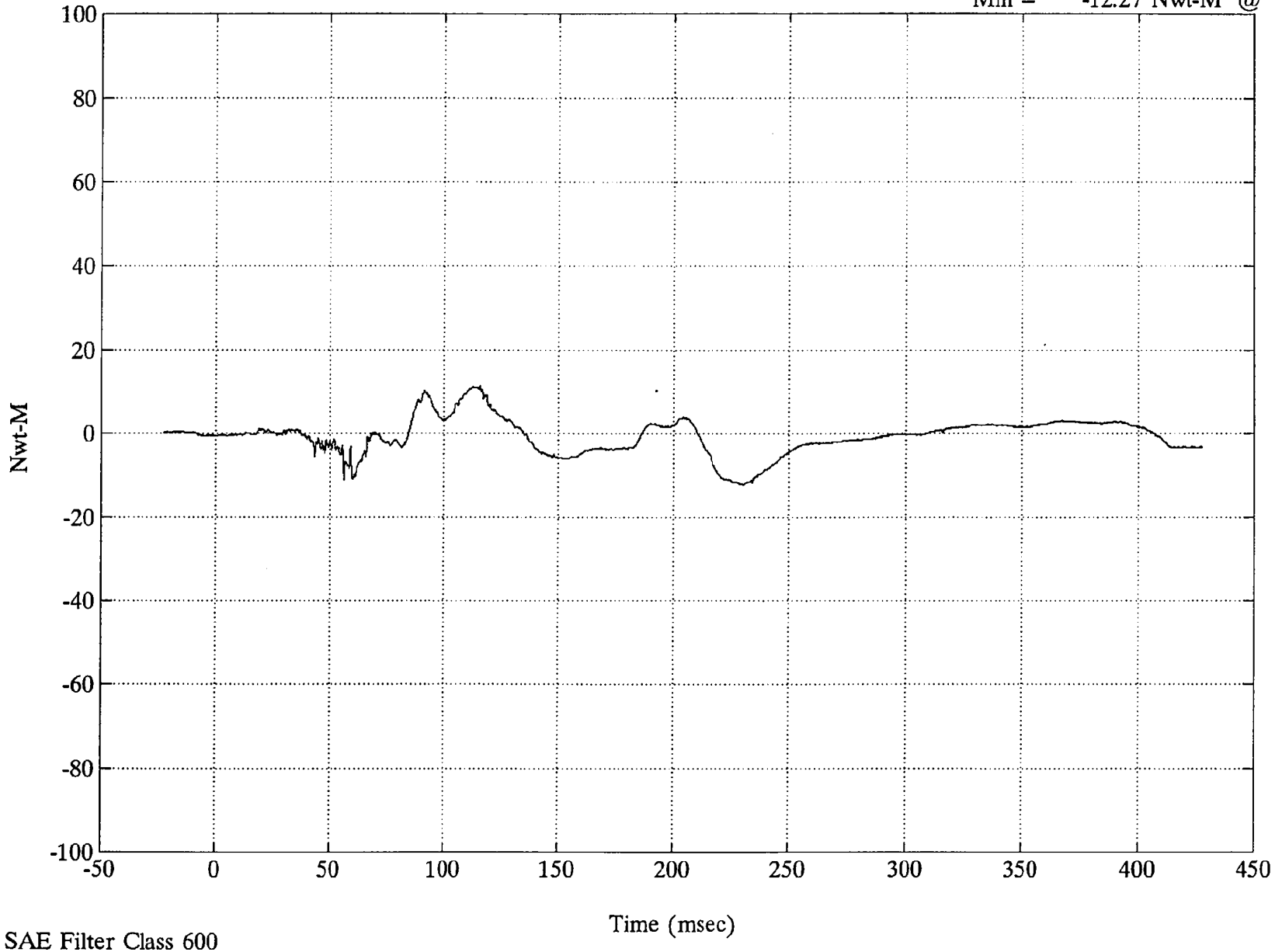
8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 1 Upper Neck Mx

Max = 11.52 Nwt-M @ 115.80 msec
Min = -12.27 Nwt-M @ 230.88 msec

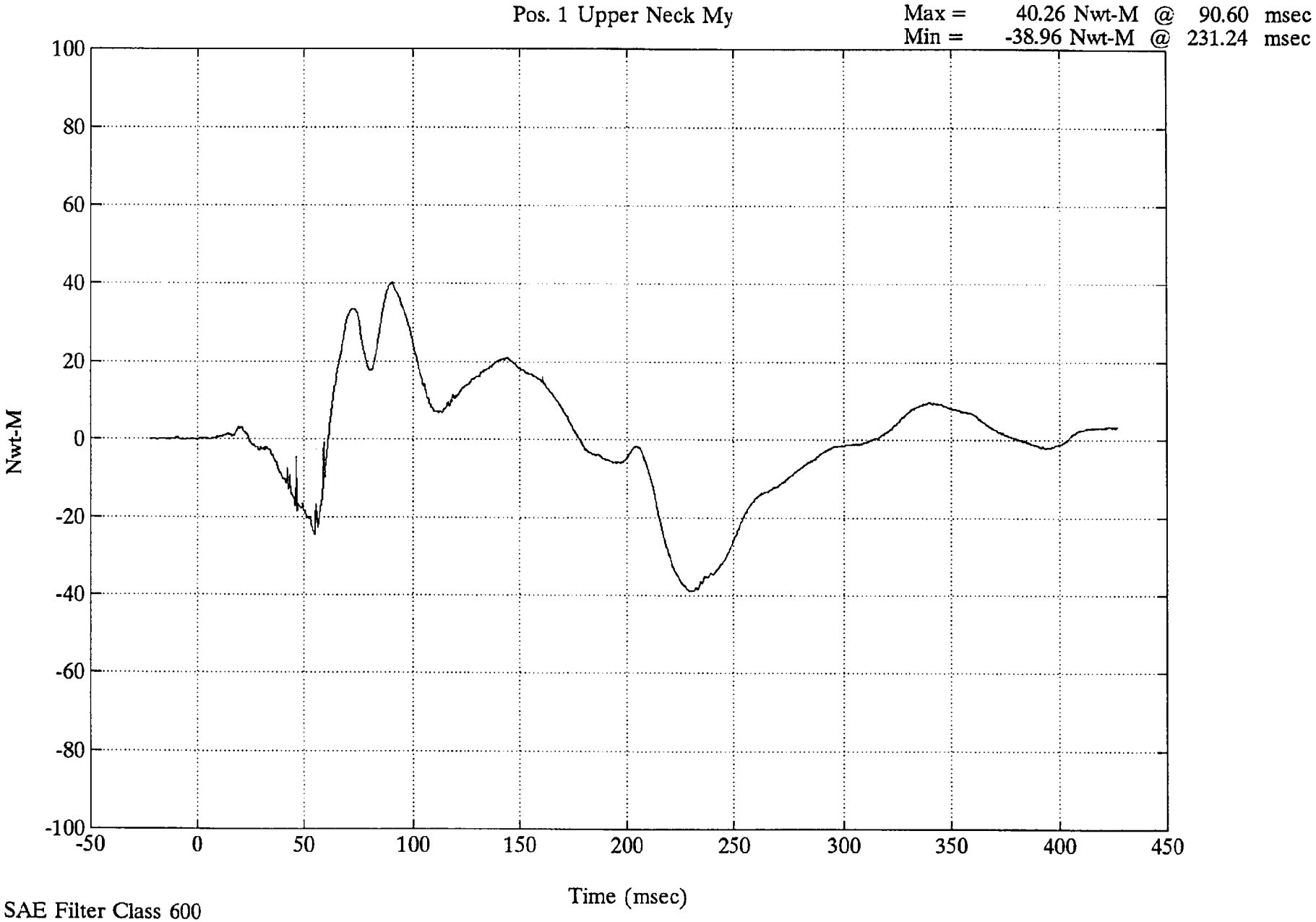


B-90

8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX



B-91

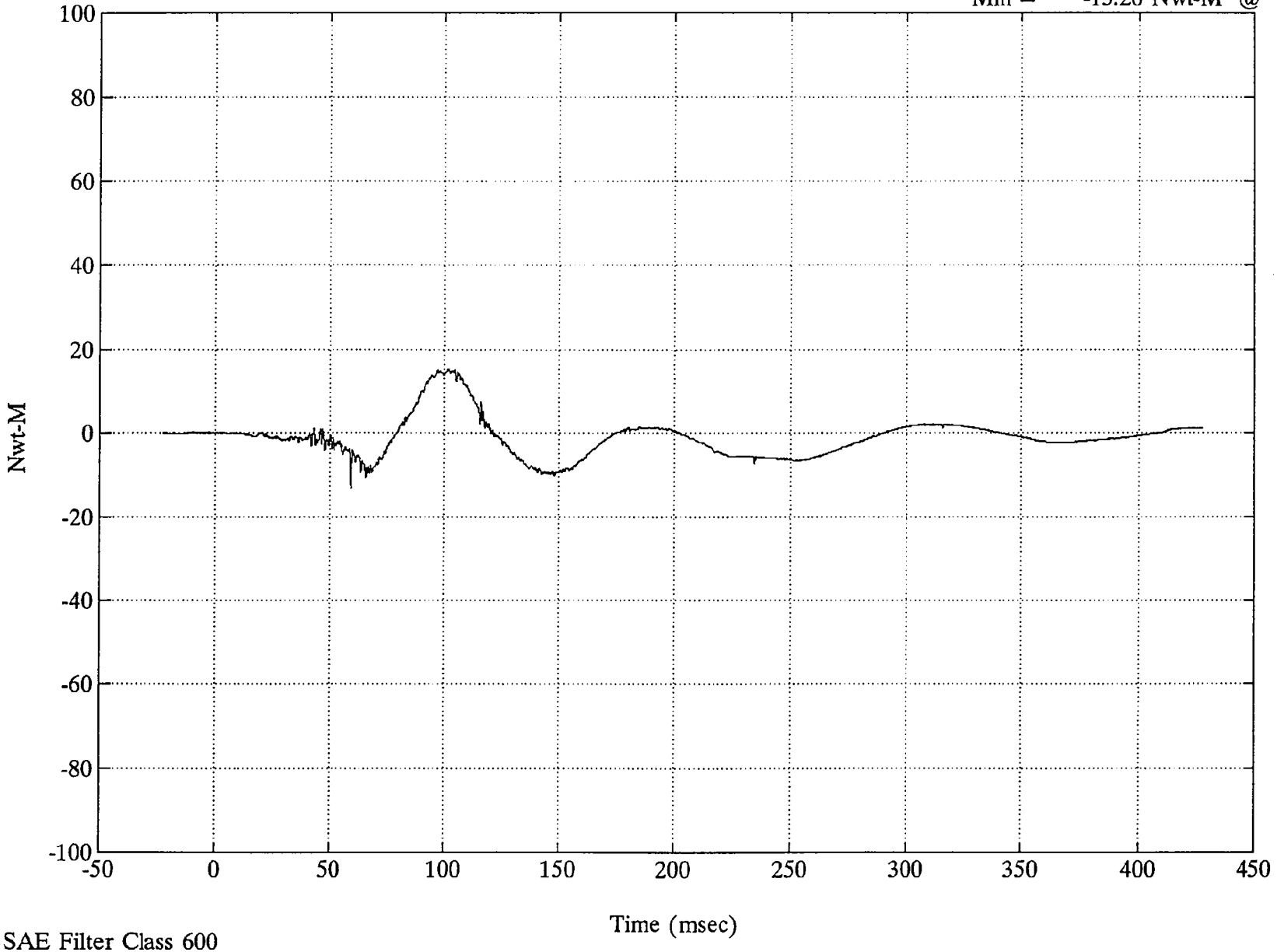
8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 1 Upper Neck Mz

Max = 15.31 Nwt-M @ 101.76 msec
Min = -13.26 Nwt-M @ 59.15 msec

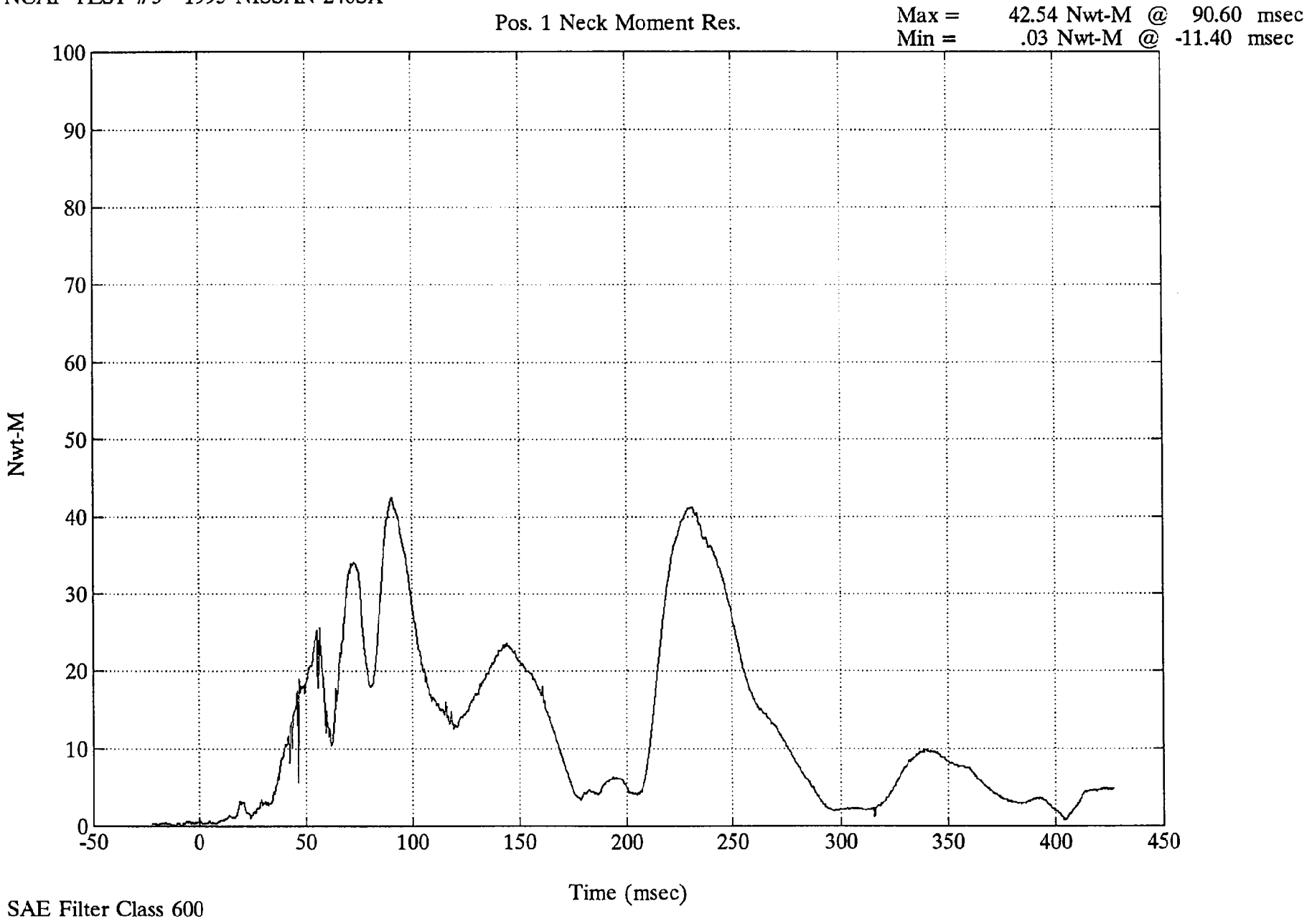


B-92

8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX

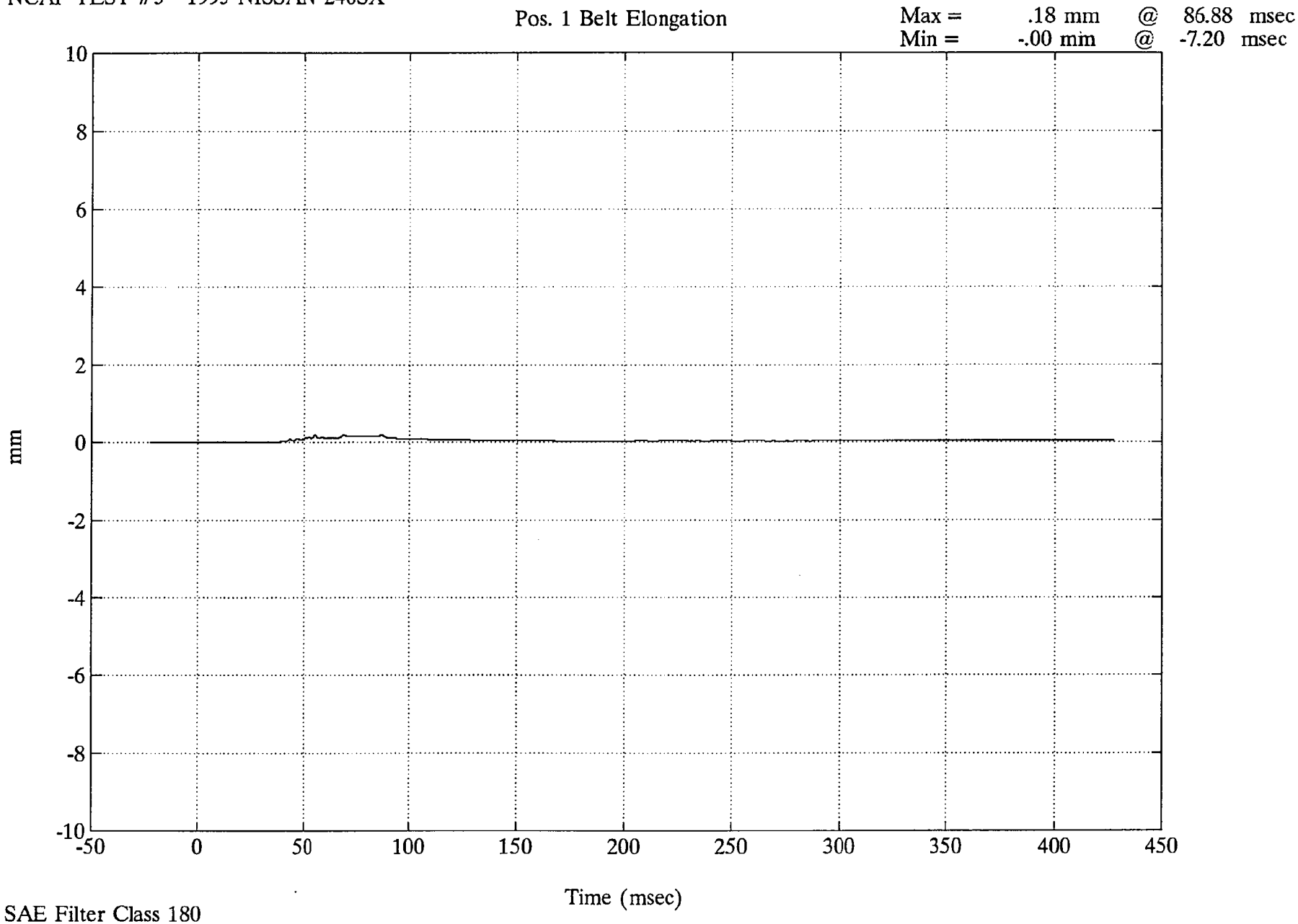


SAE Filter Class 600

B-93

8227-3

NCAP TEST #3 - 1995 NISSAN 240SX

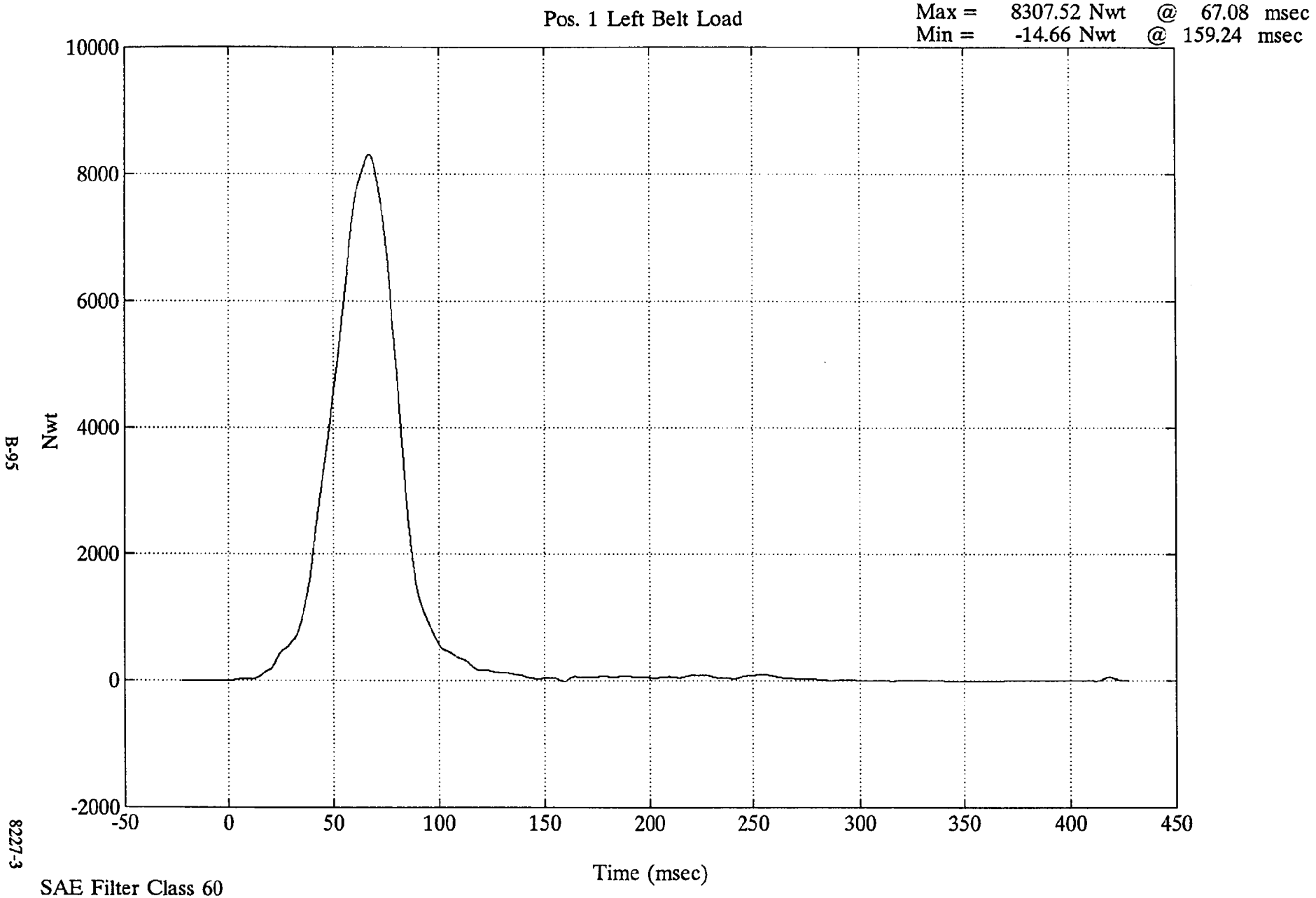


B-94

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

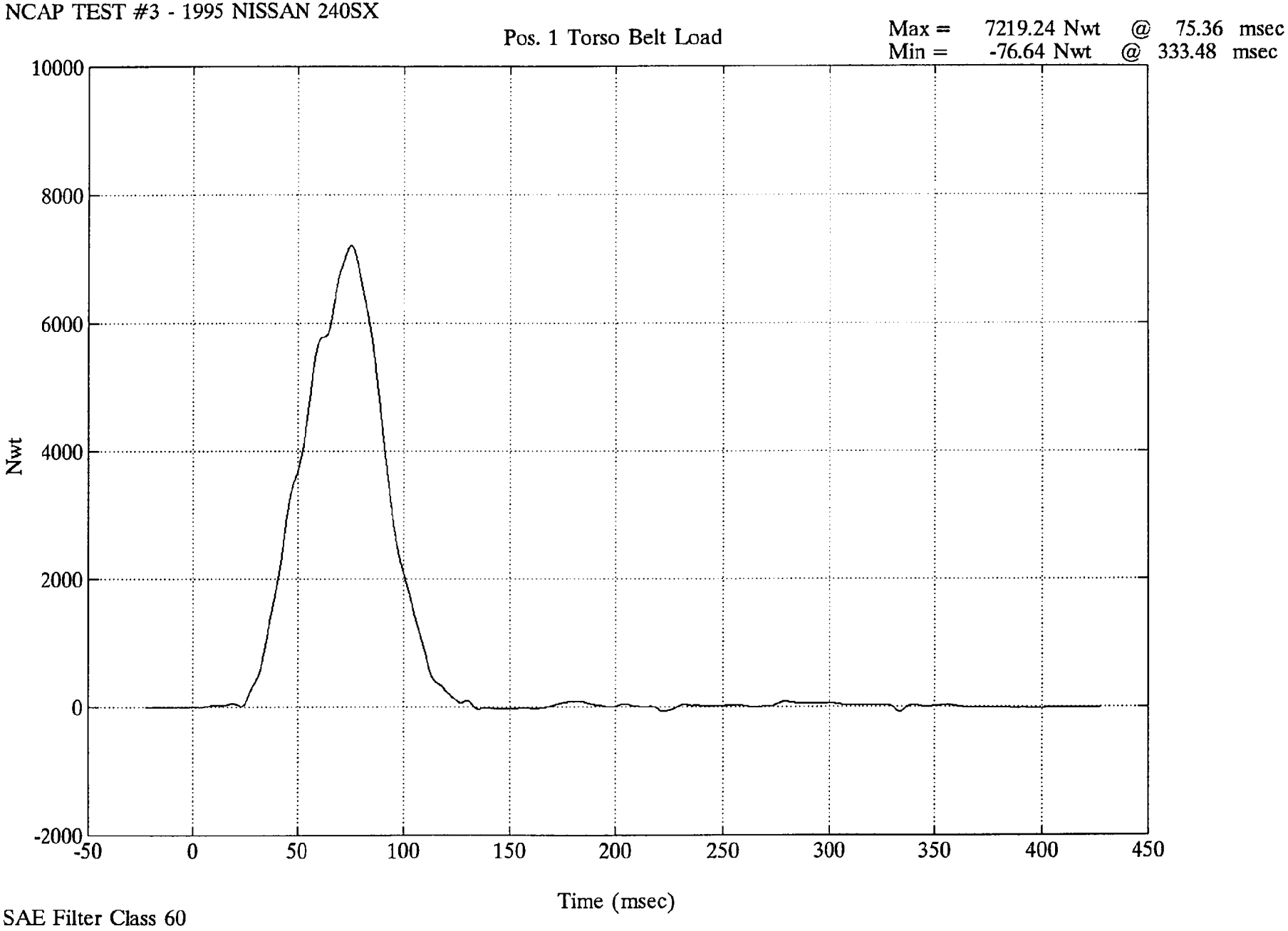


B-95

8227-3

SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX

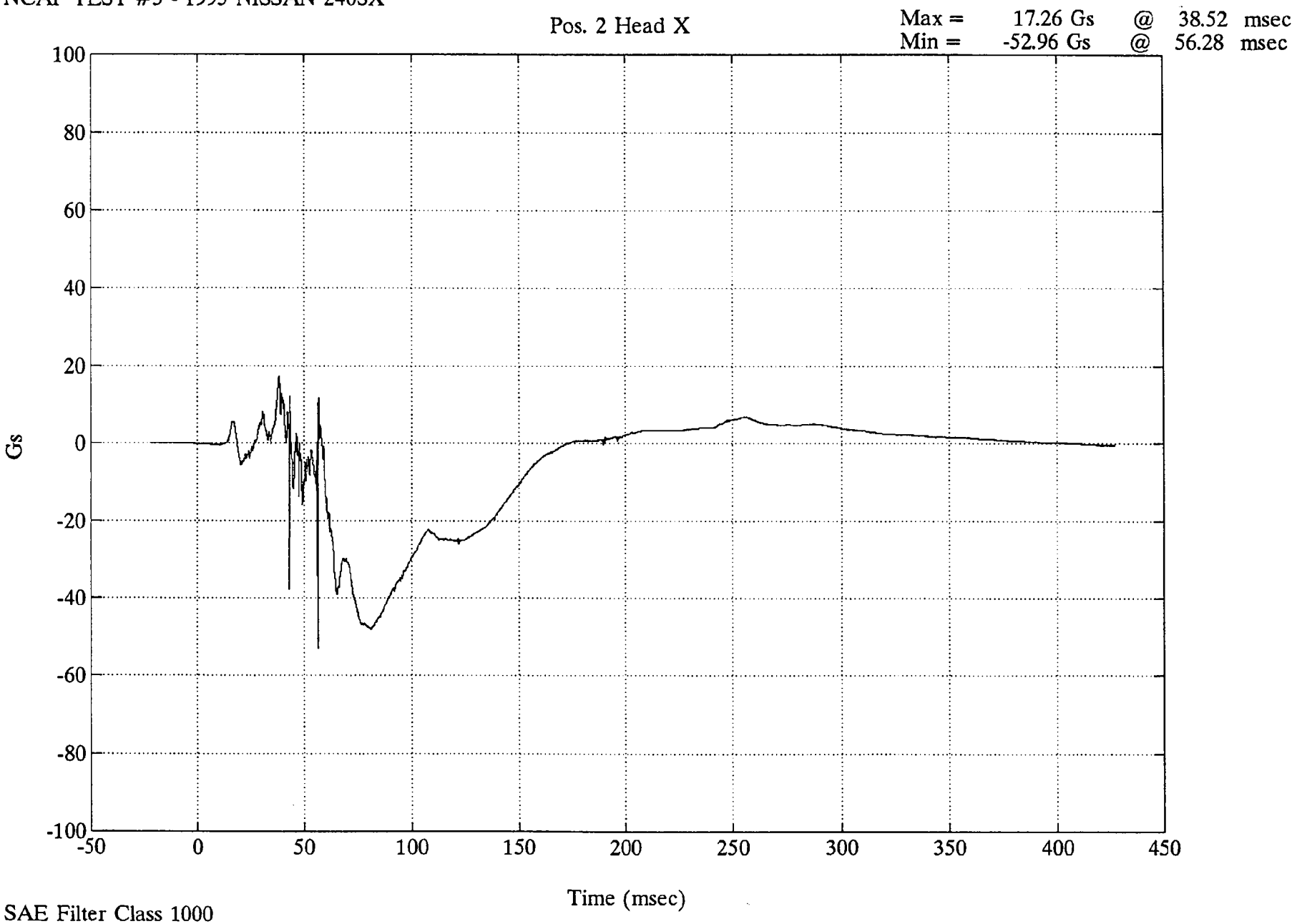


B-96

8227-3

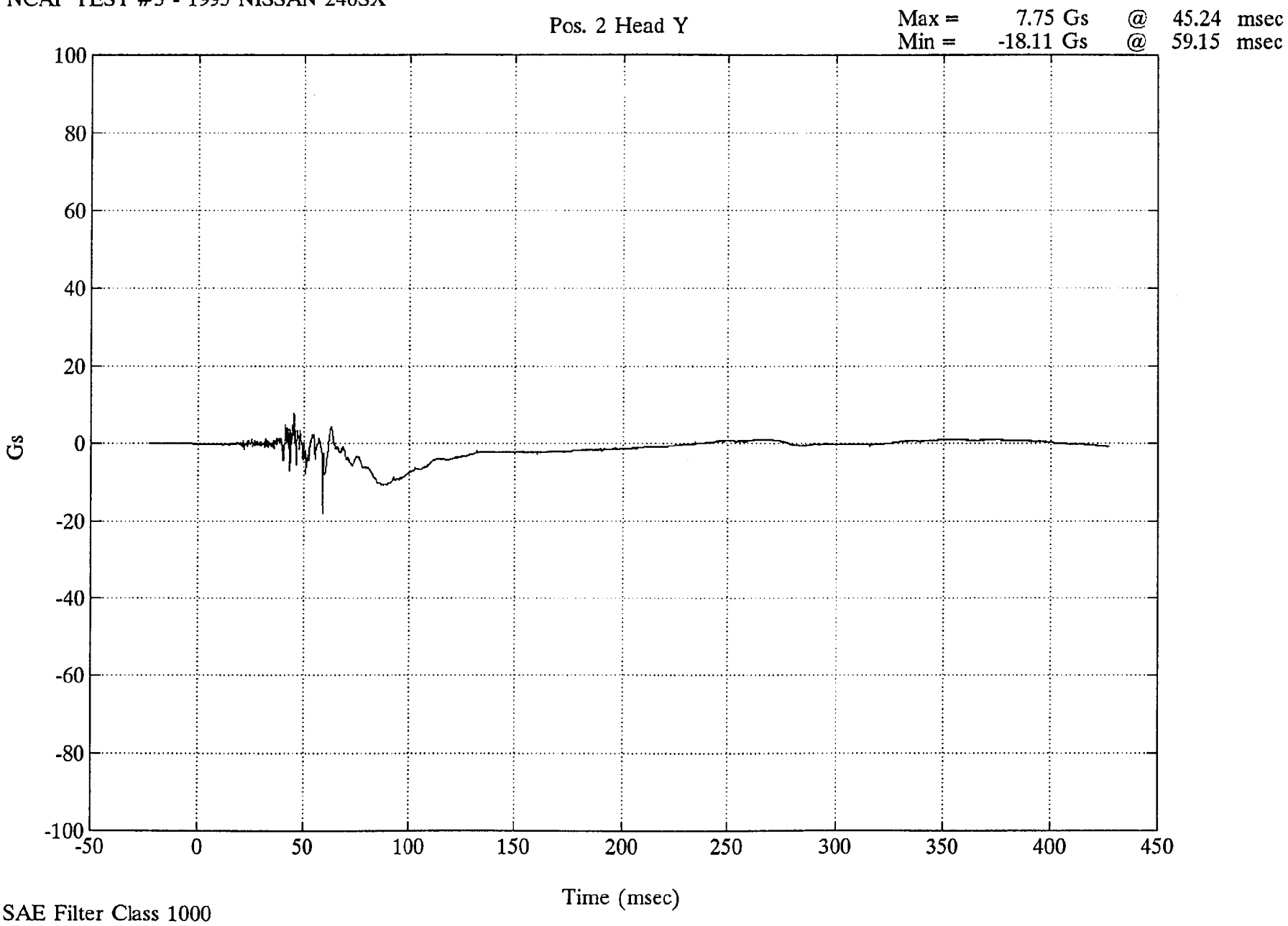
SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX



SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

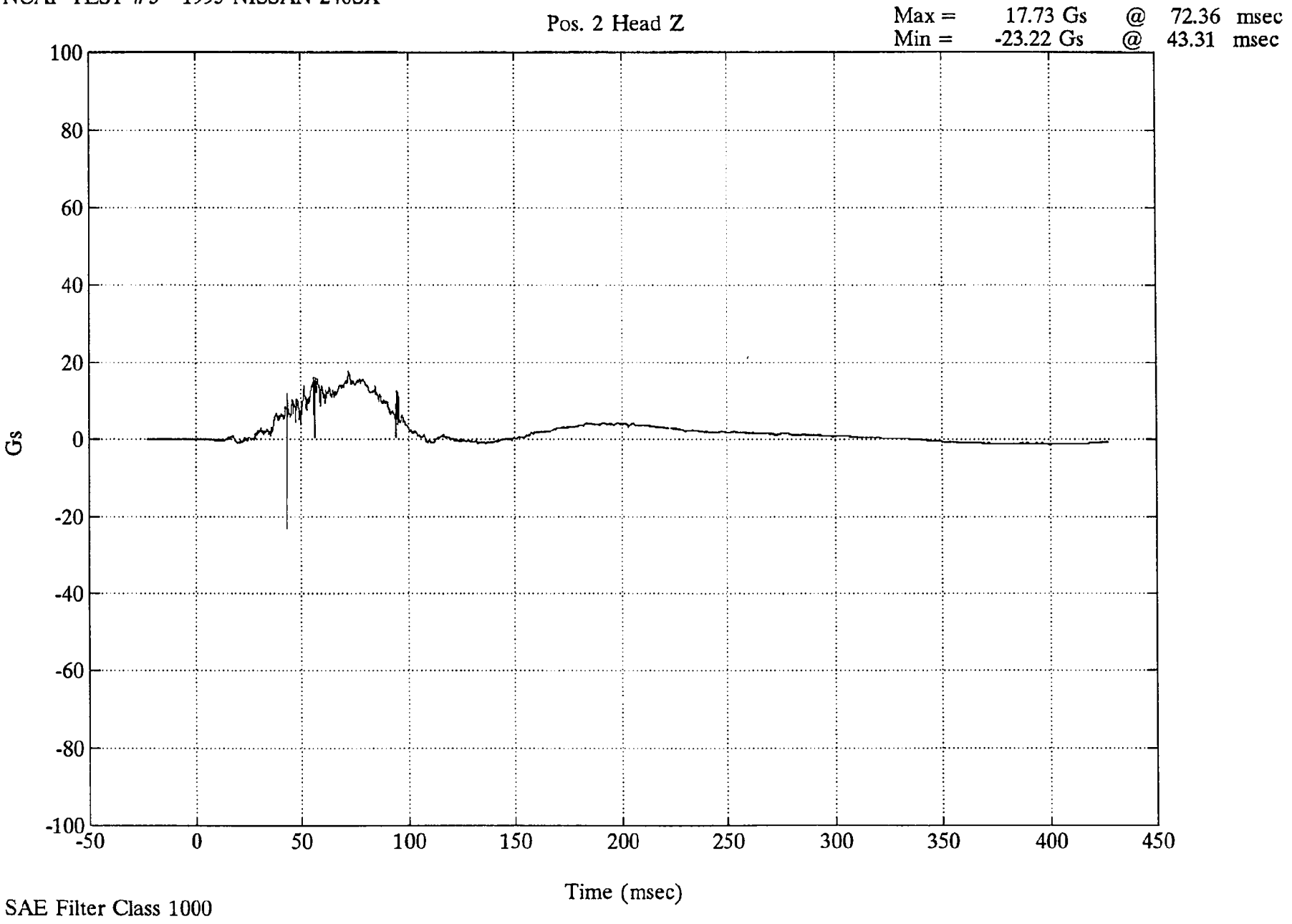


B-98

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

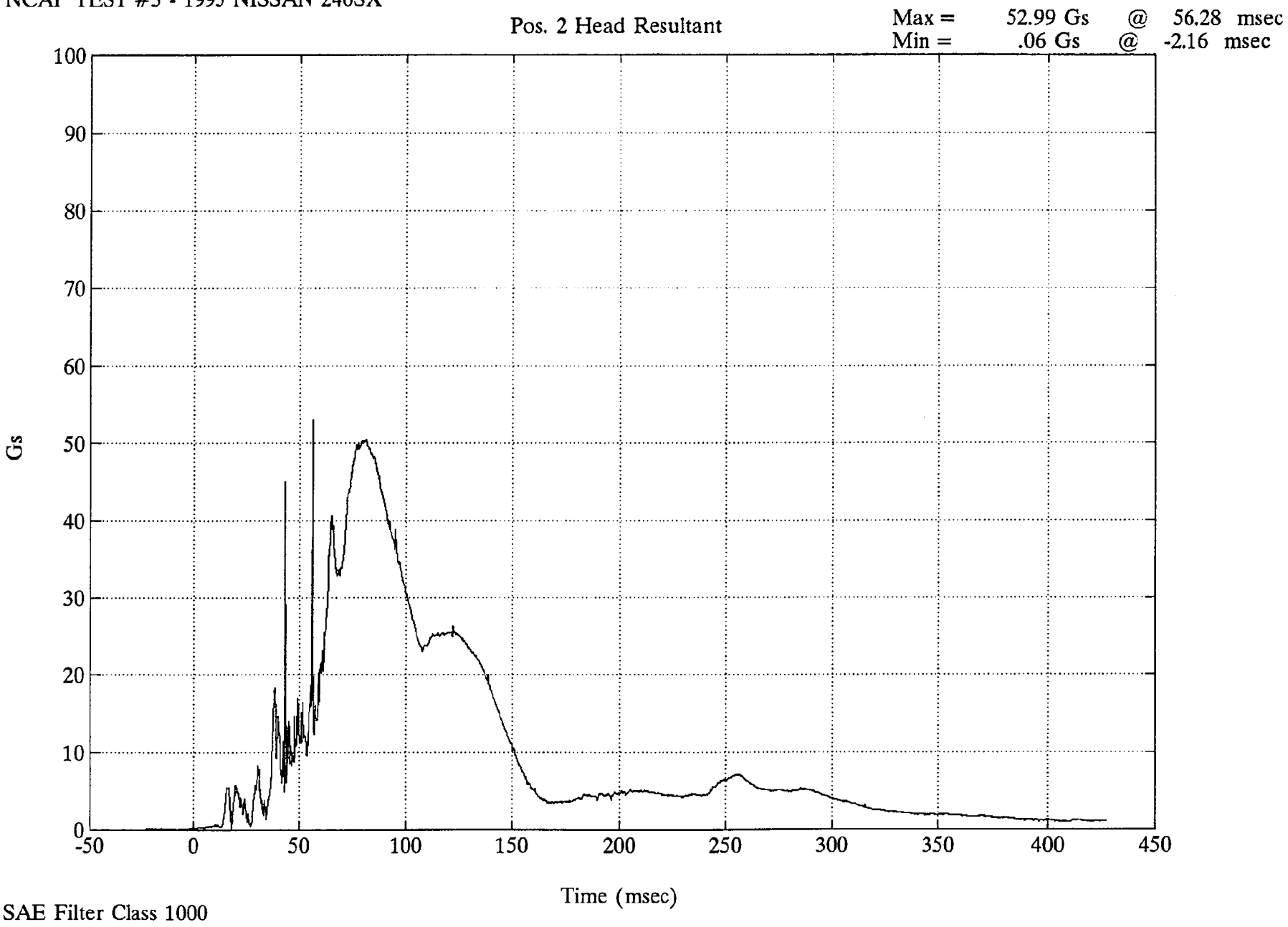


B-99

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

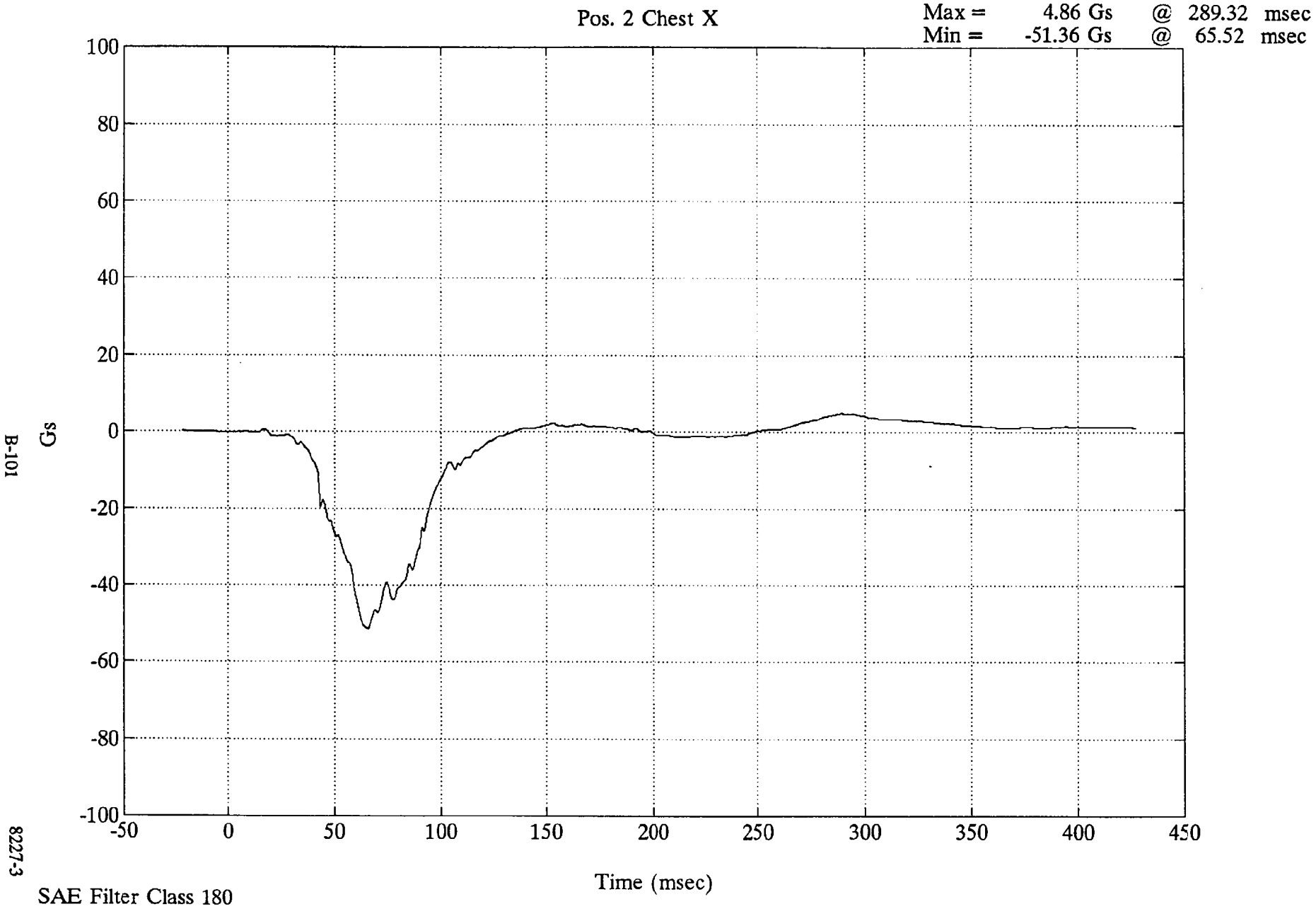


B-100

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

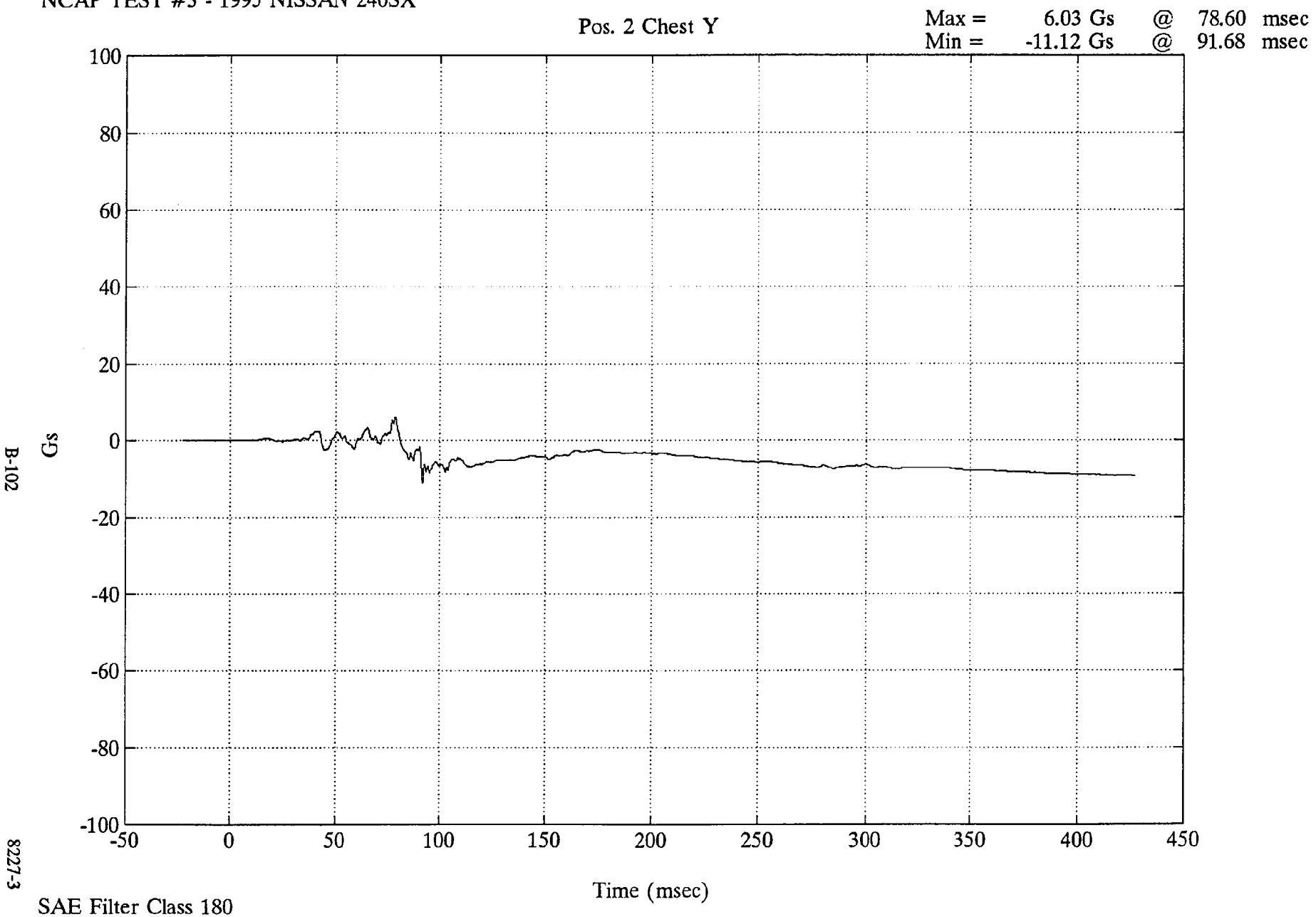


B-101

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

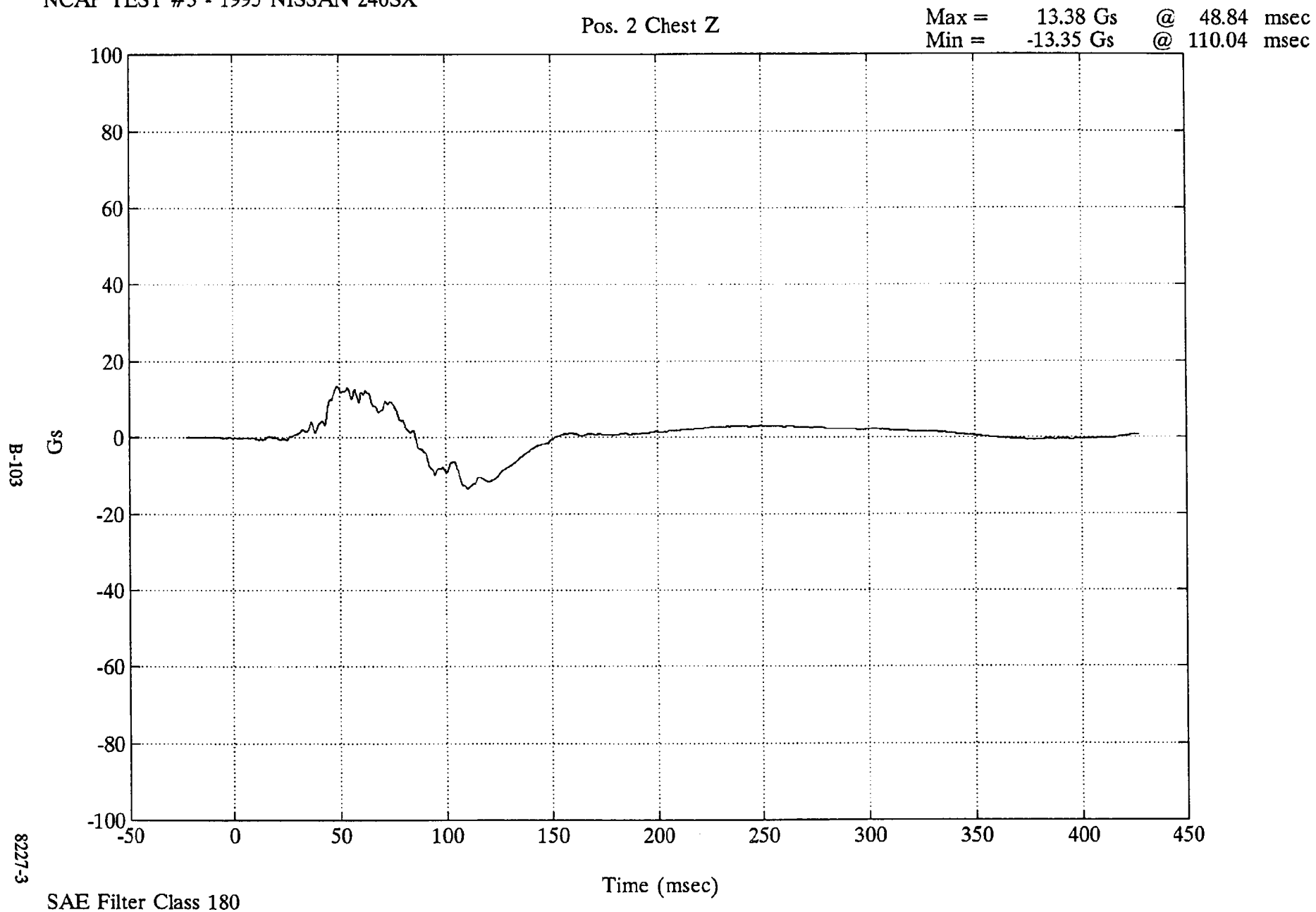


B-102

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

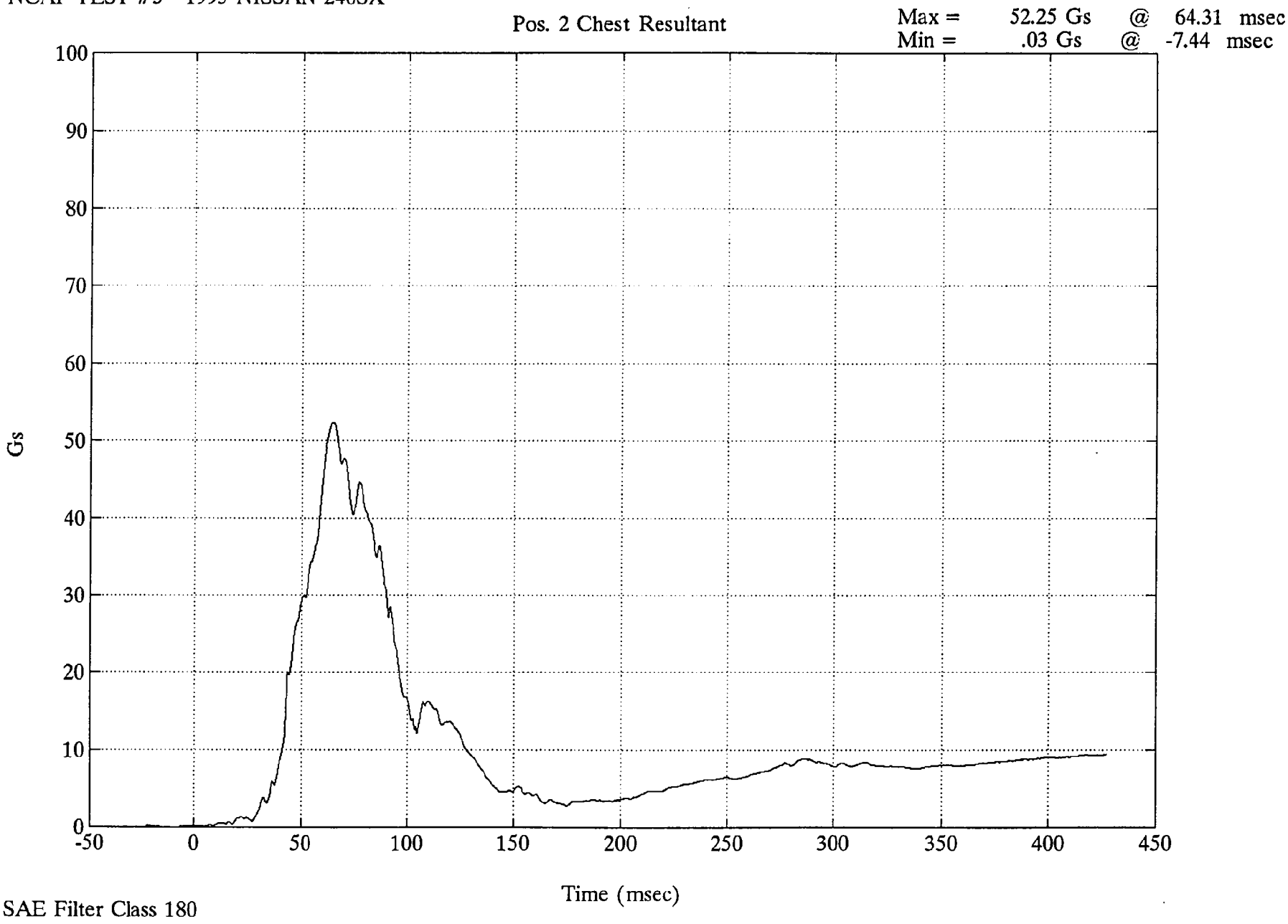


B-103

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

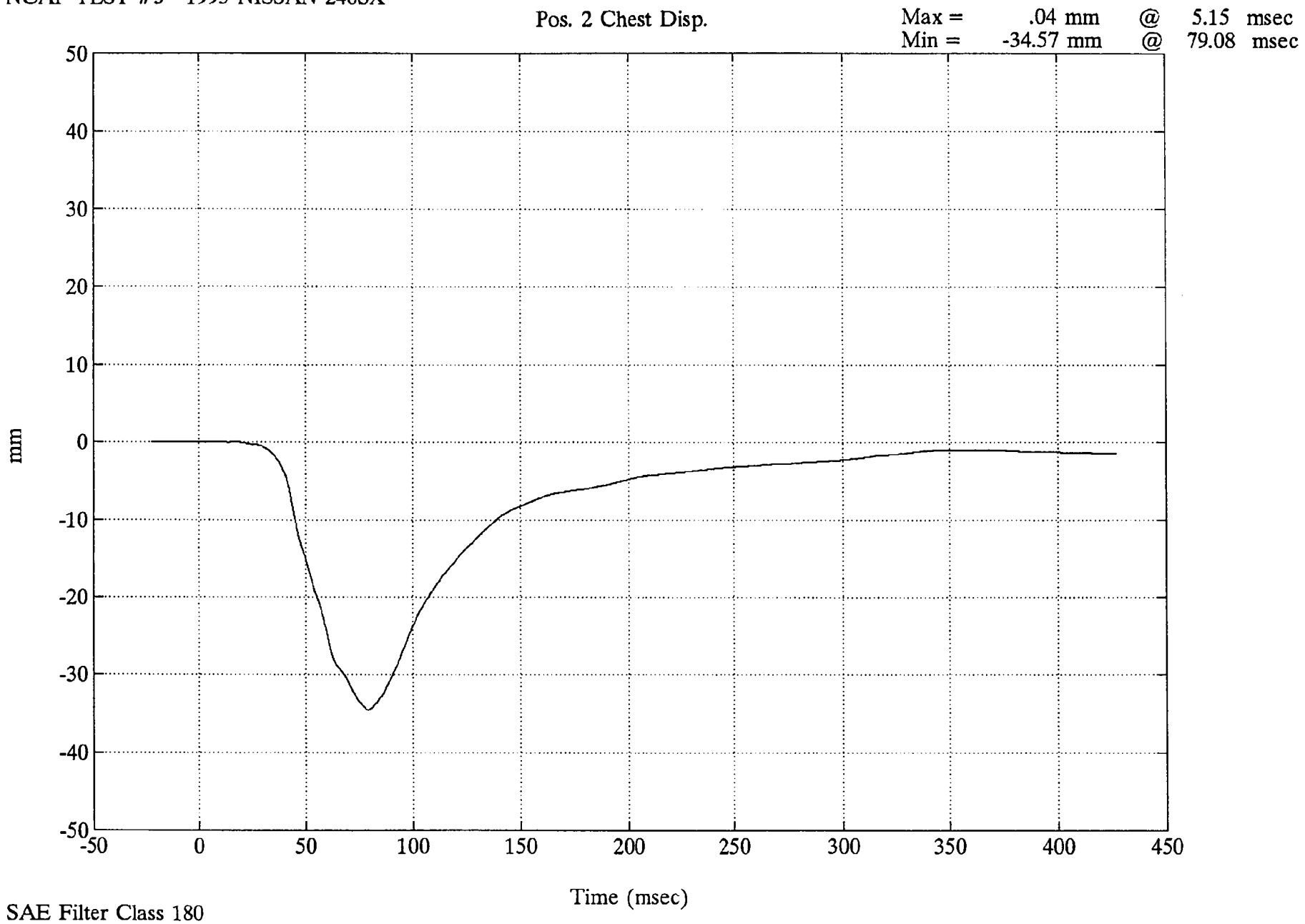


B-104

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

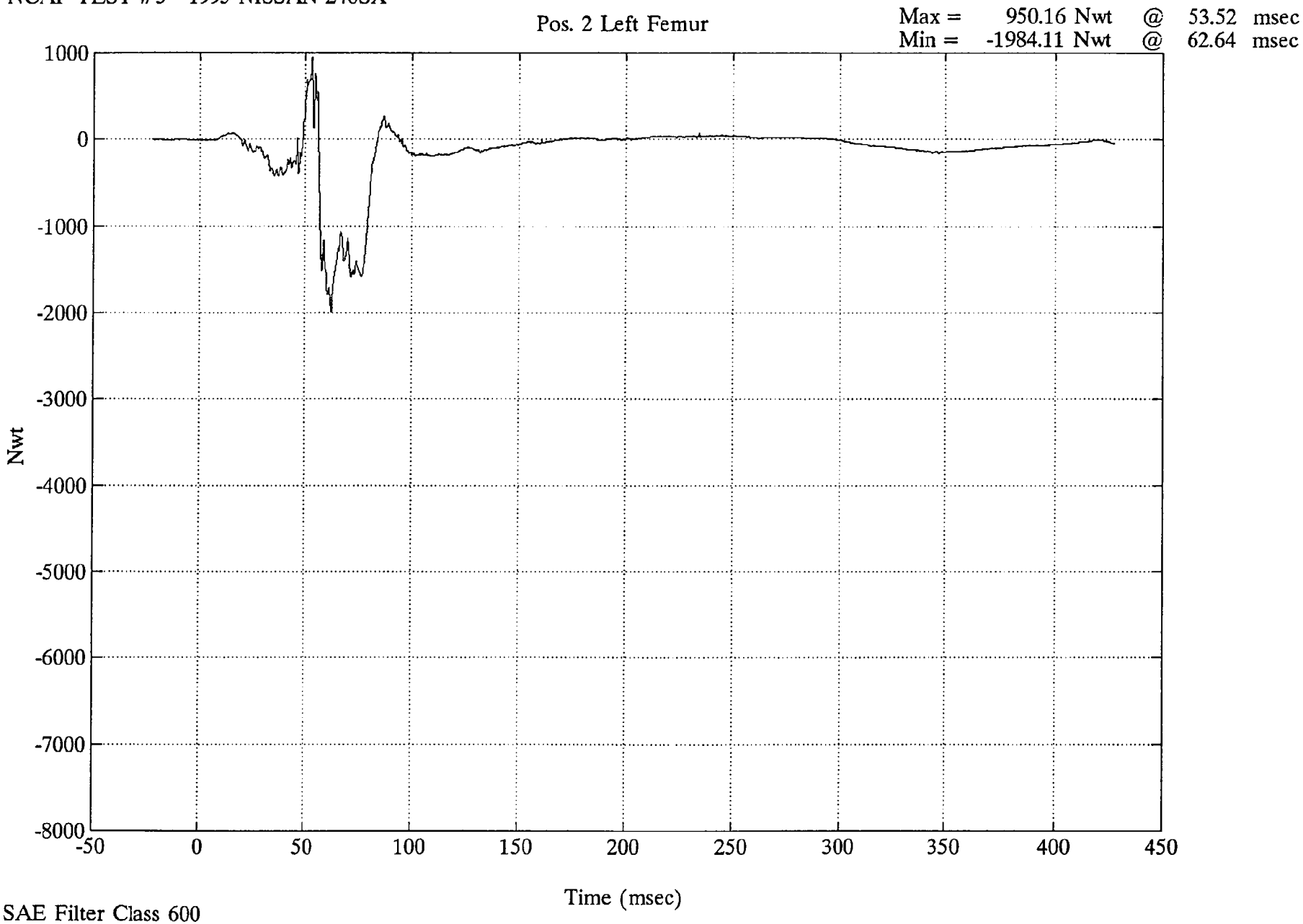


B-105

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX



B-106

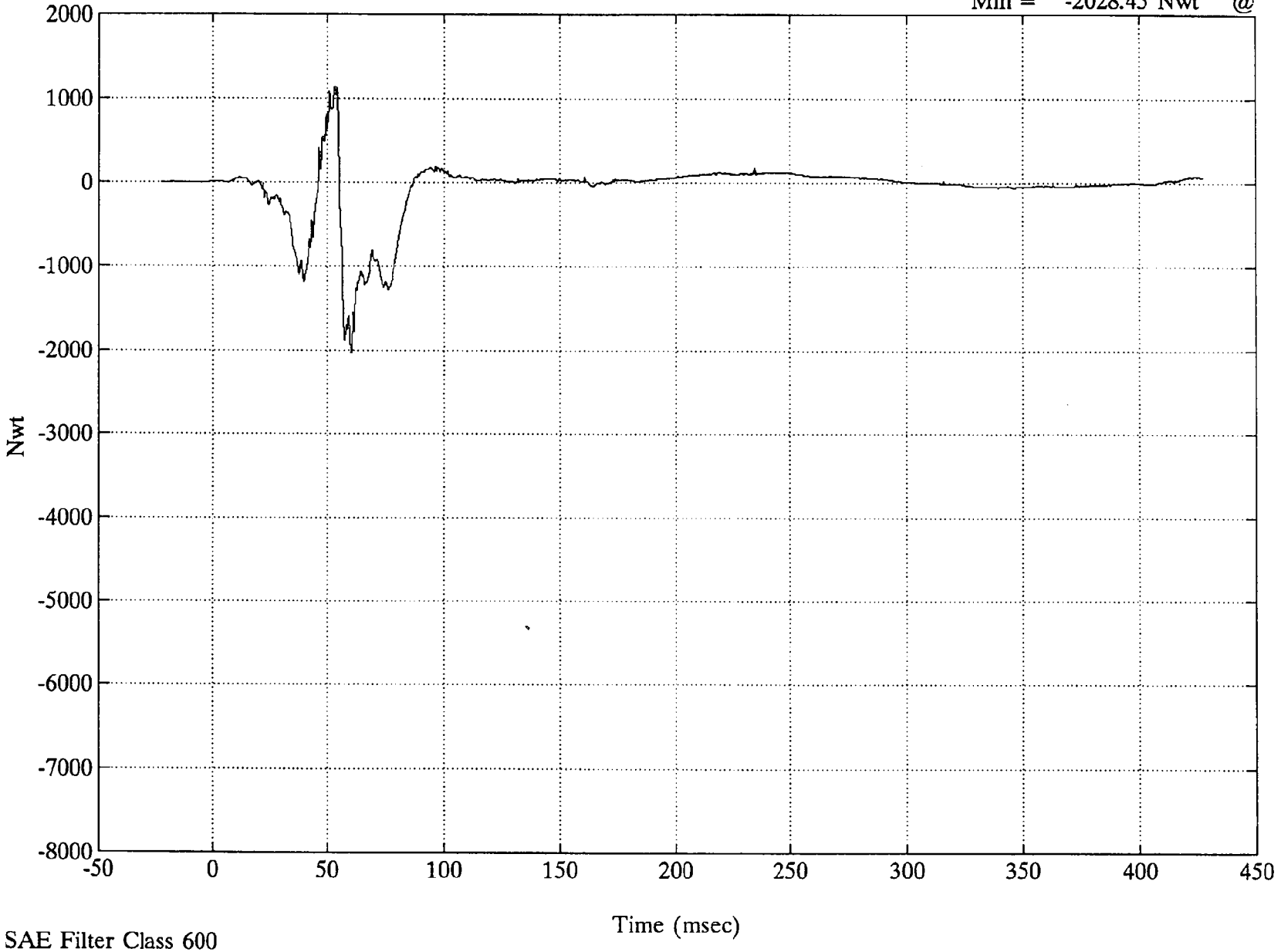
8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 2 Right Femur

Max = 1137.78 Nwt @ 53.15 msec
Min = -2028.45 Nwt @ 60.36 msec



B-107

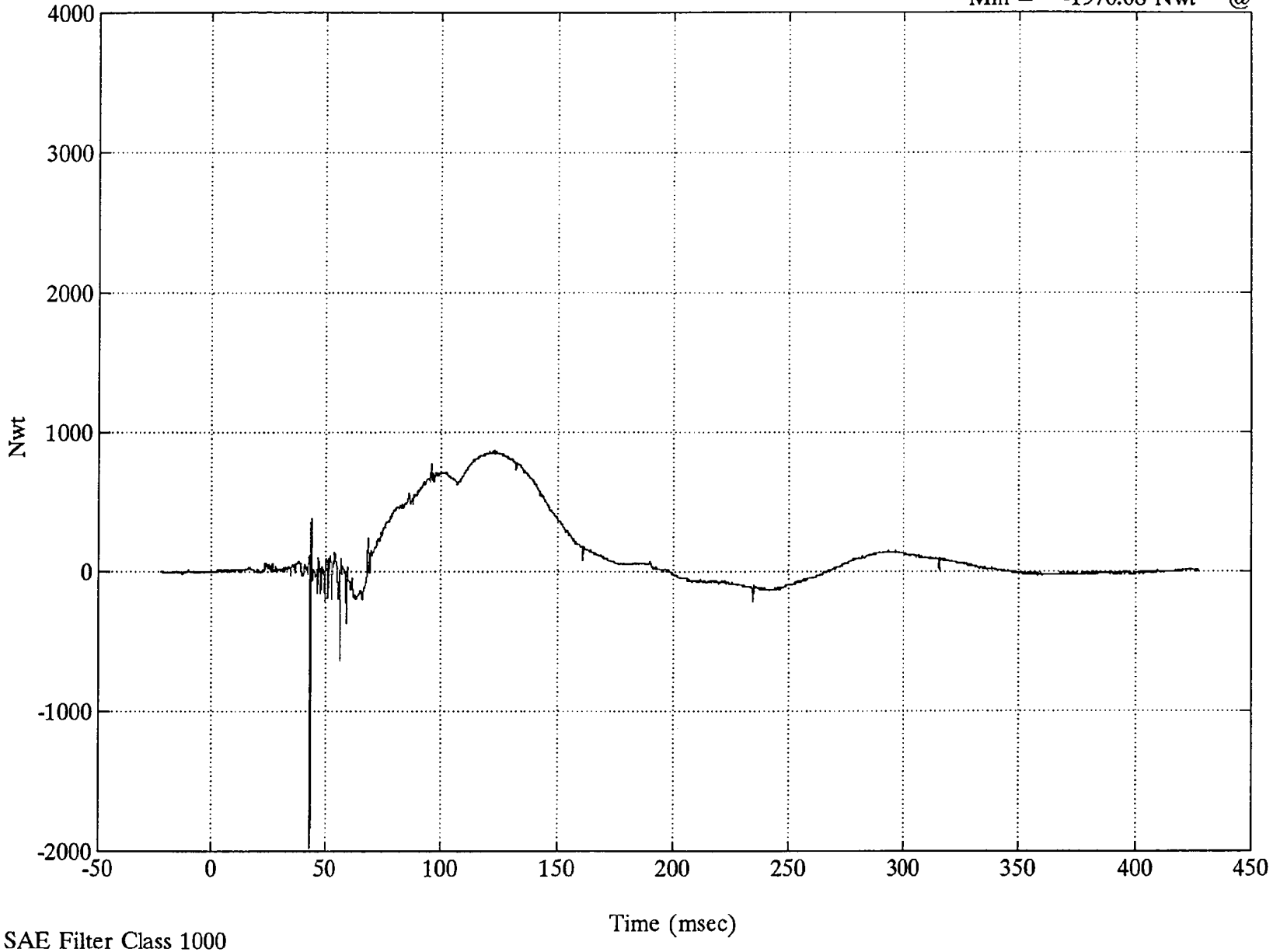
8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 2 Upper Neck Fx

Max = 875.67 Nwt @ 122.76 msec
Min = -1970.08 Nwt @ 43.31 msec



B-108

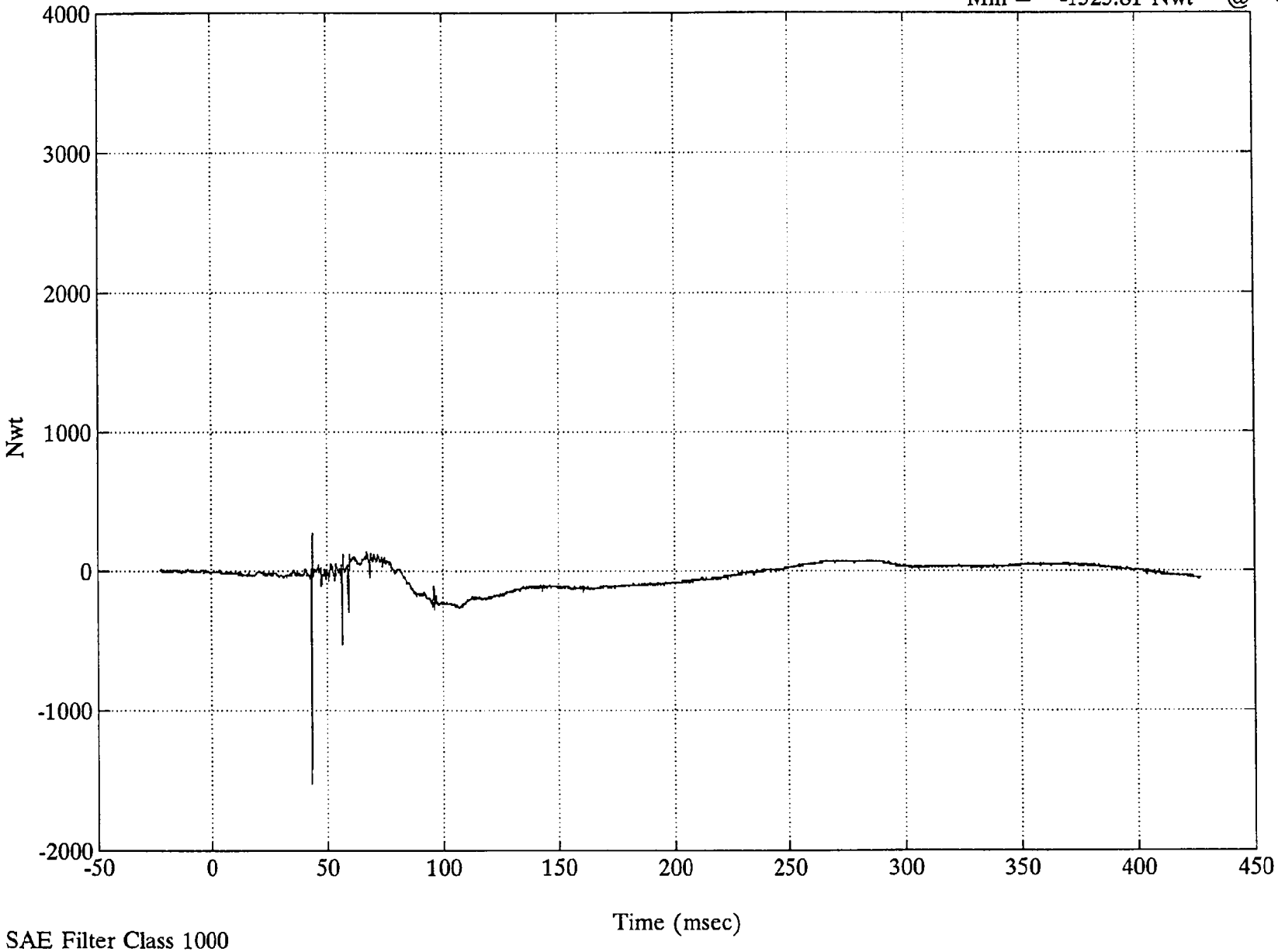
8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 2 Upper Neck Fy

Max = 274.36 Nwt @ 43.79 msec
Min = -1525.81 Nwt @ 43.31 msec

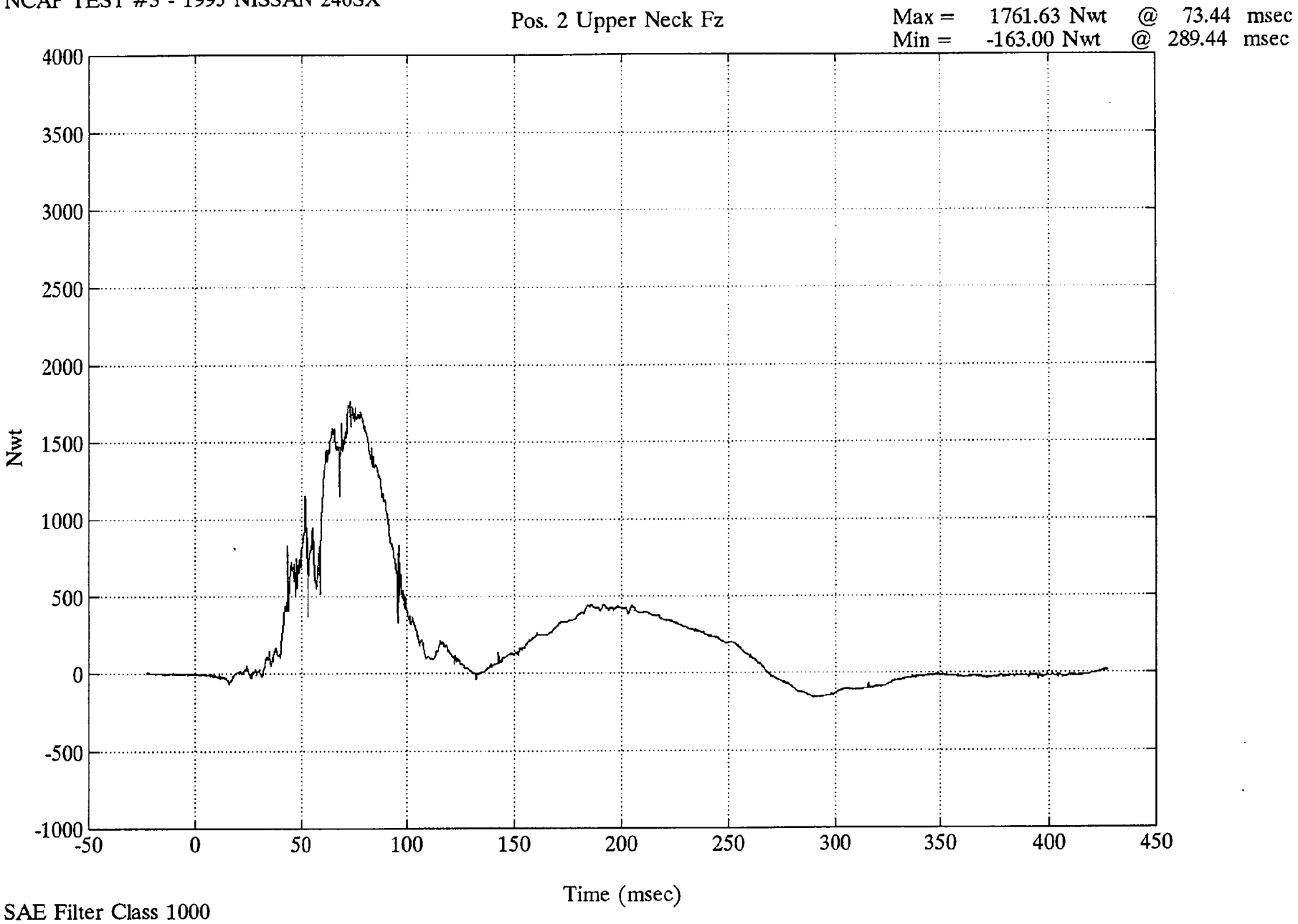


B-109

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

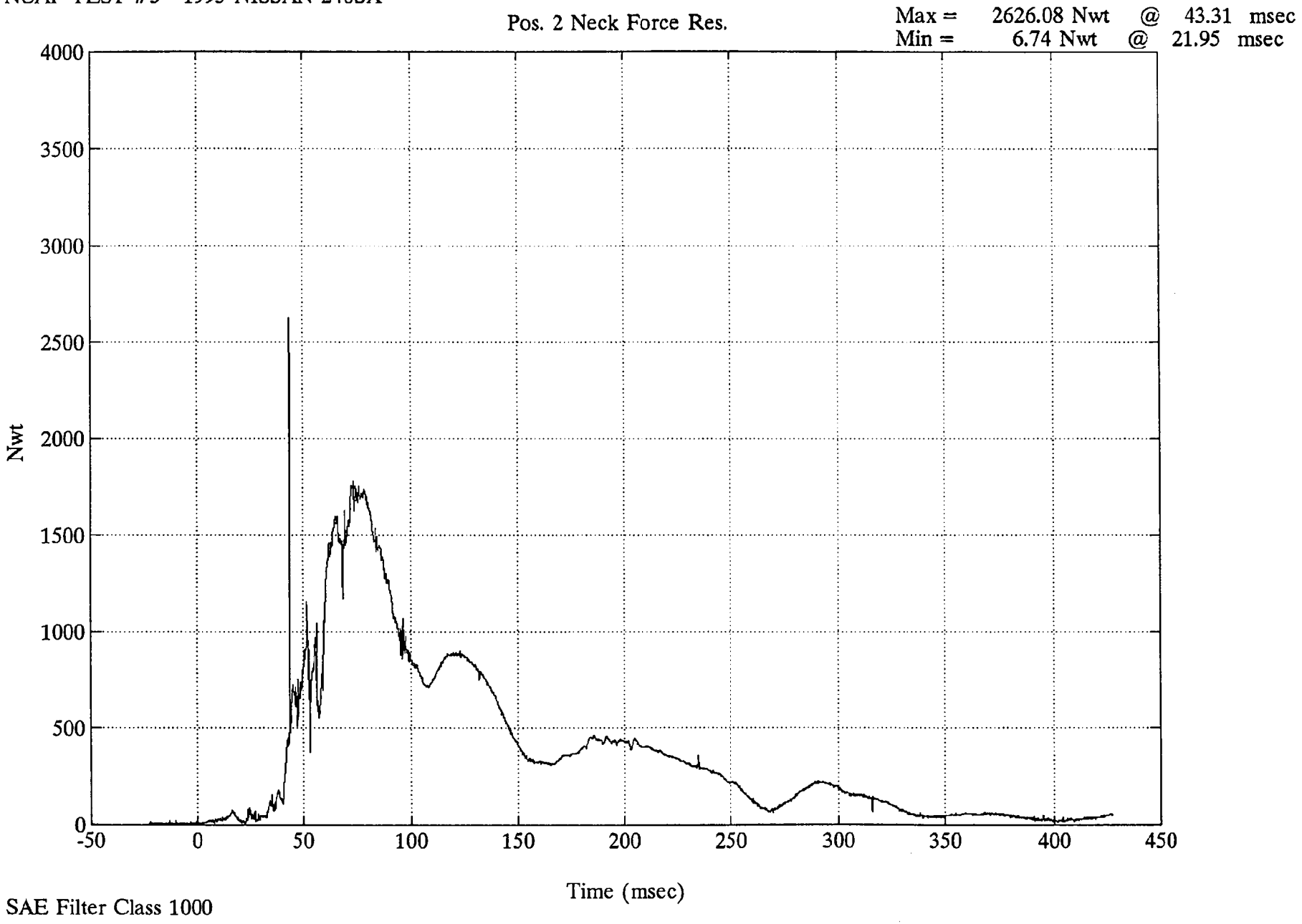


B-110

8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX



B-111

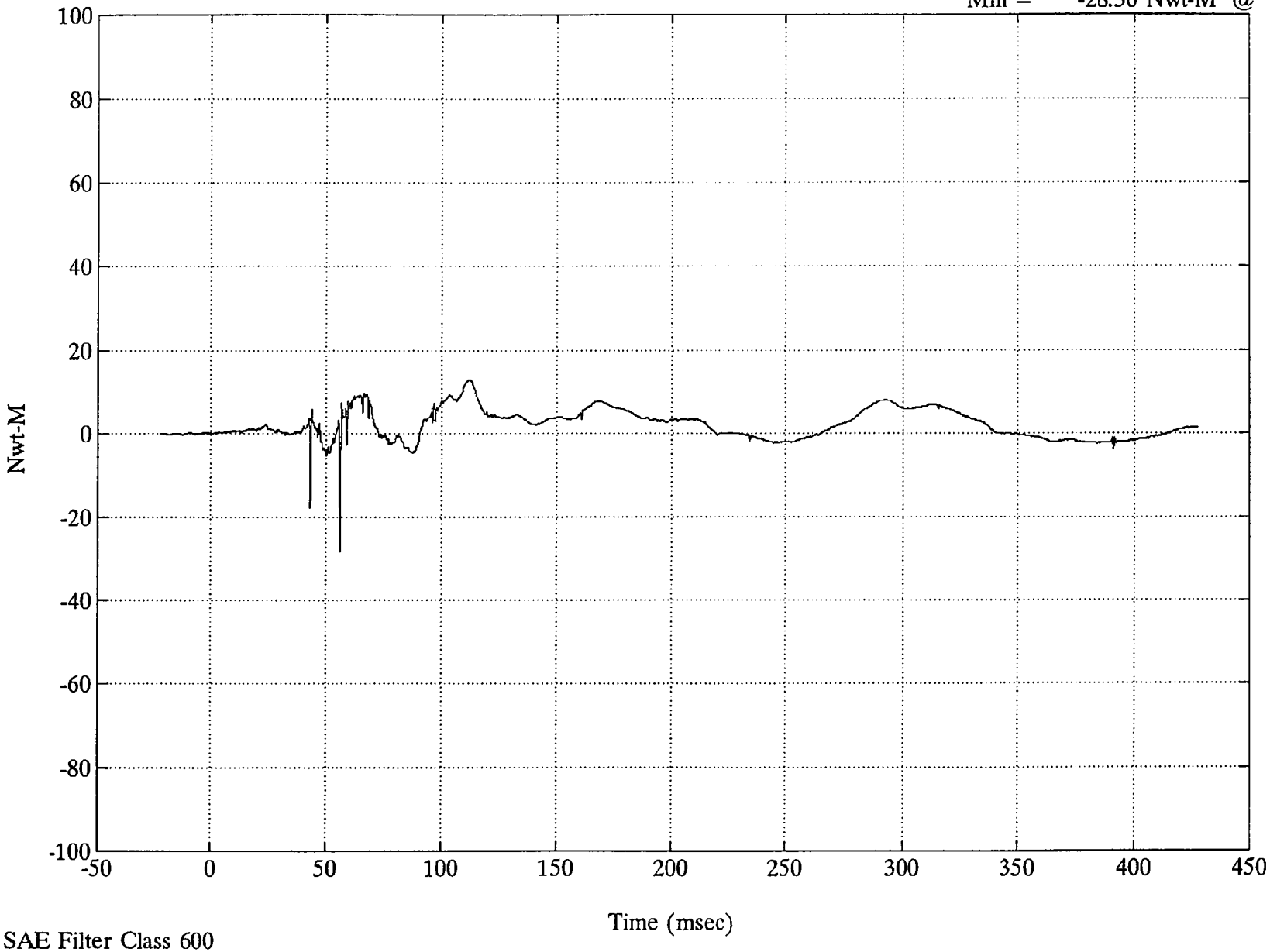
8227-3

SAE Filter Class 1000

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 2 Upper Neck Mx

Max = 12.82 Nwt-M @ 112.20 msec
Min = -28.30 Nwt-M @ 56.40 msec



B-112

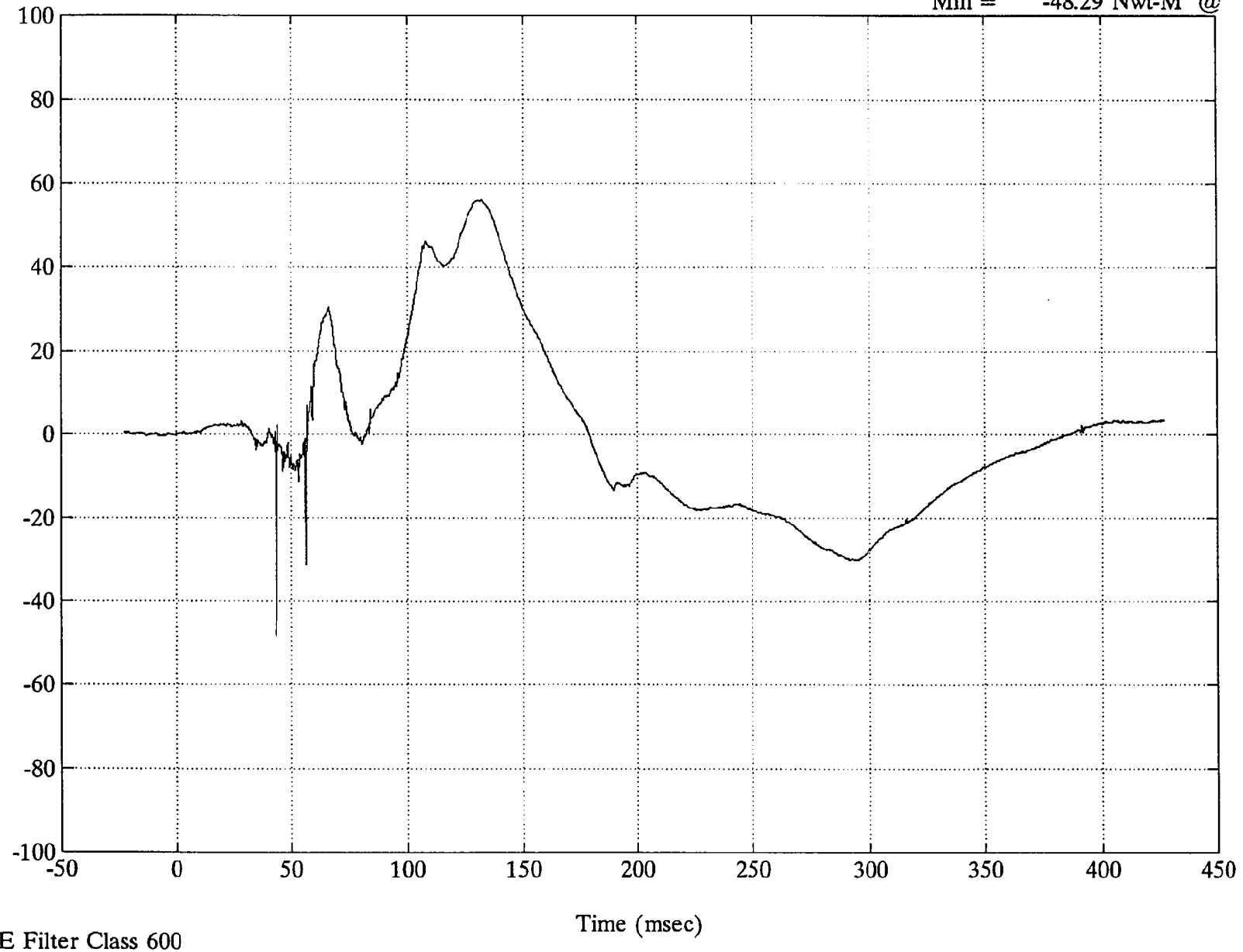
8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 2 Upper Neck My

Max = 56.17 Nwt-M @ 132.36 msec
Min = -48.29 Nwt-M @ 43.31 msec



B-113

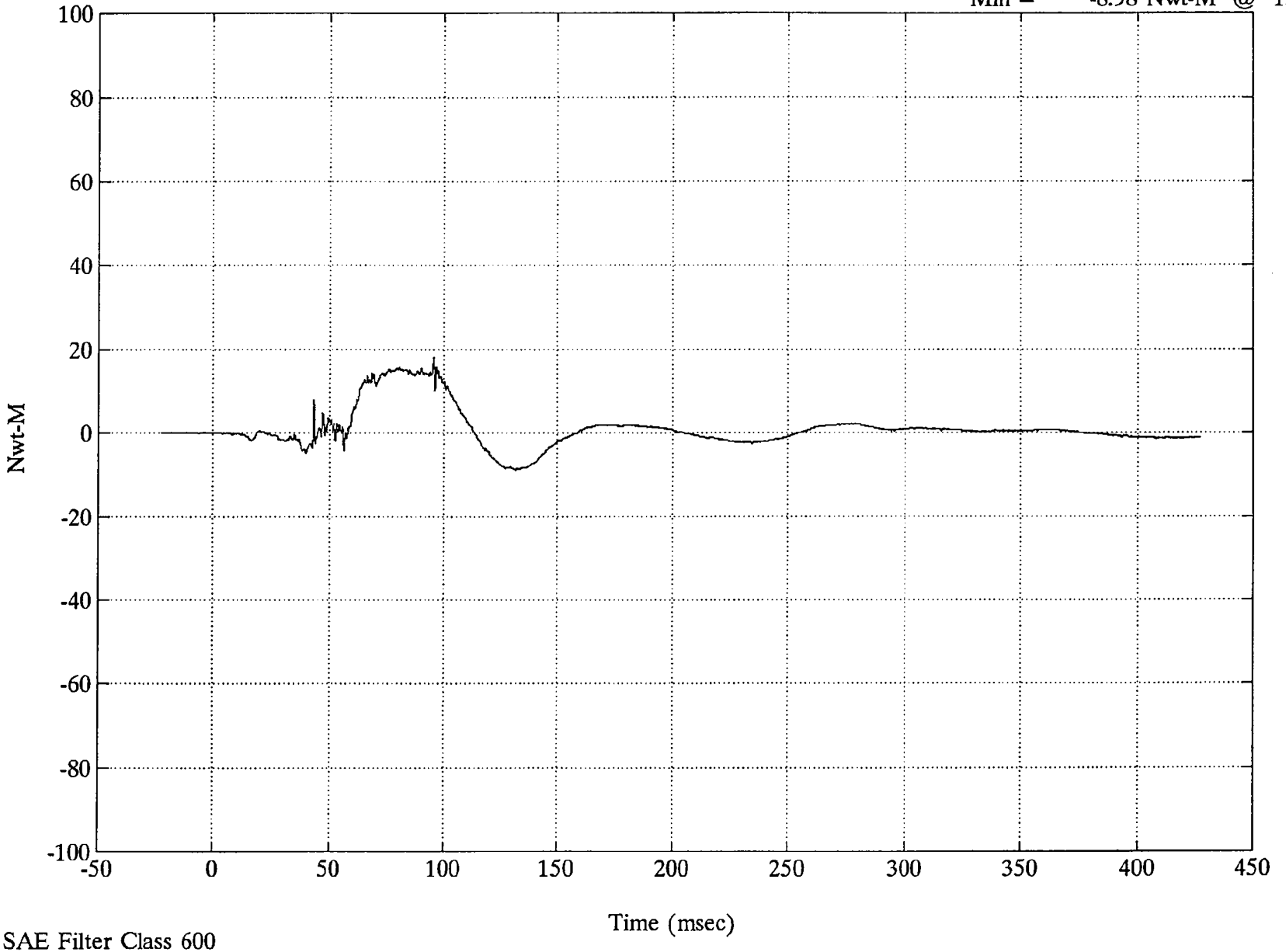
8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 2 Upper Neck Mz

Max = 18.25 Nwt-M @ 95.76 msec
Min = -8.98 Nwt-M @ 131.88 msec

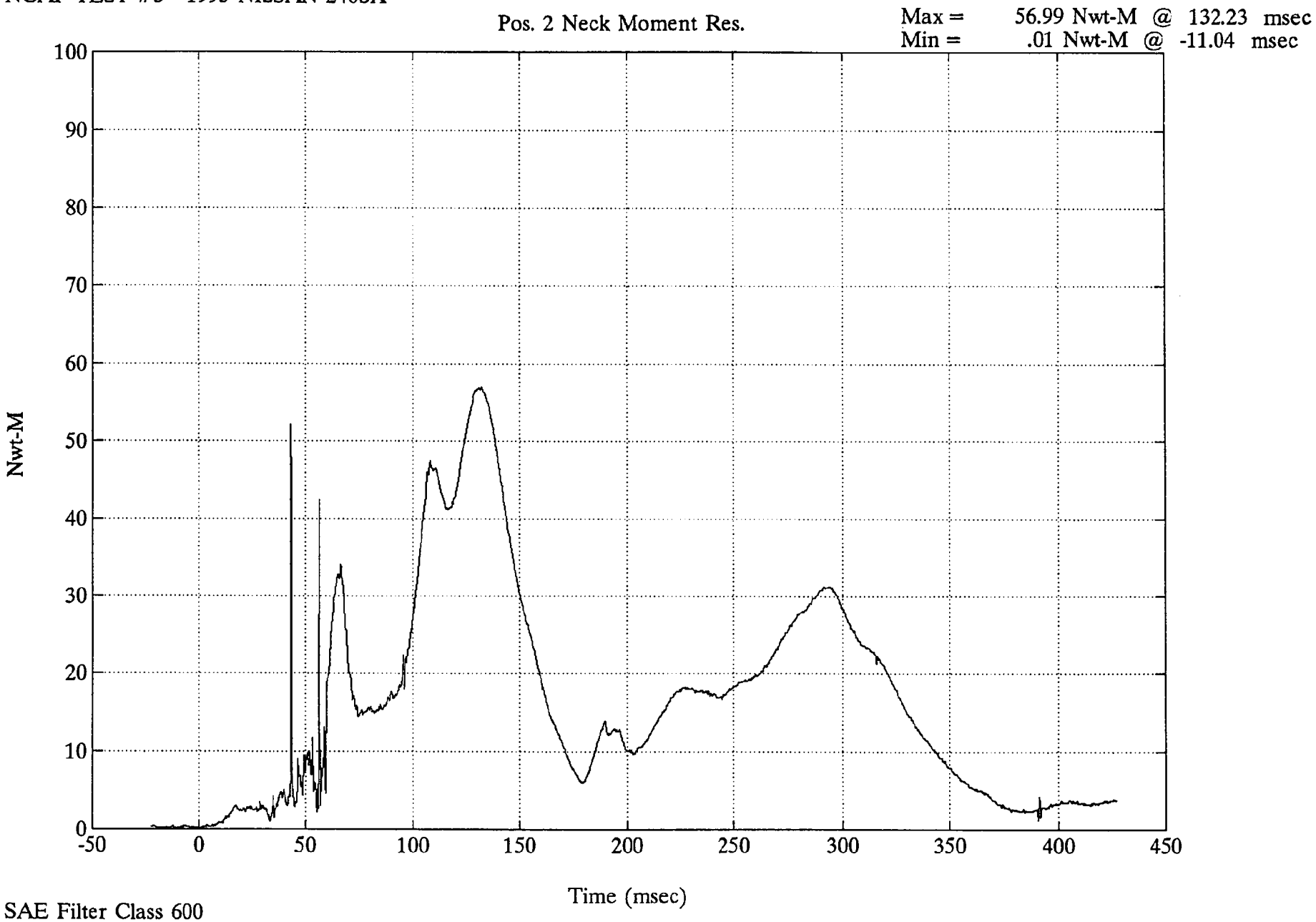


B-114

8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX



B-115

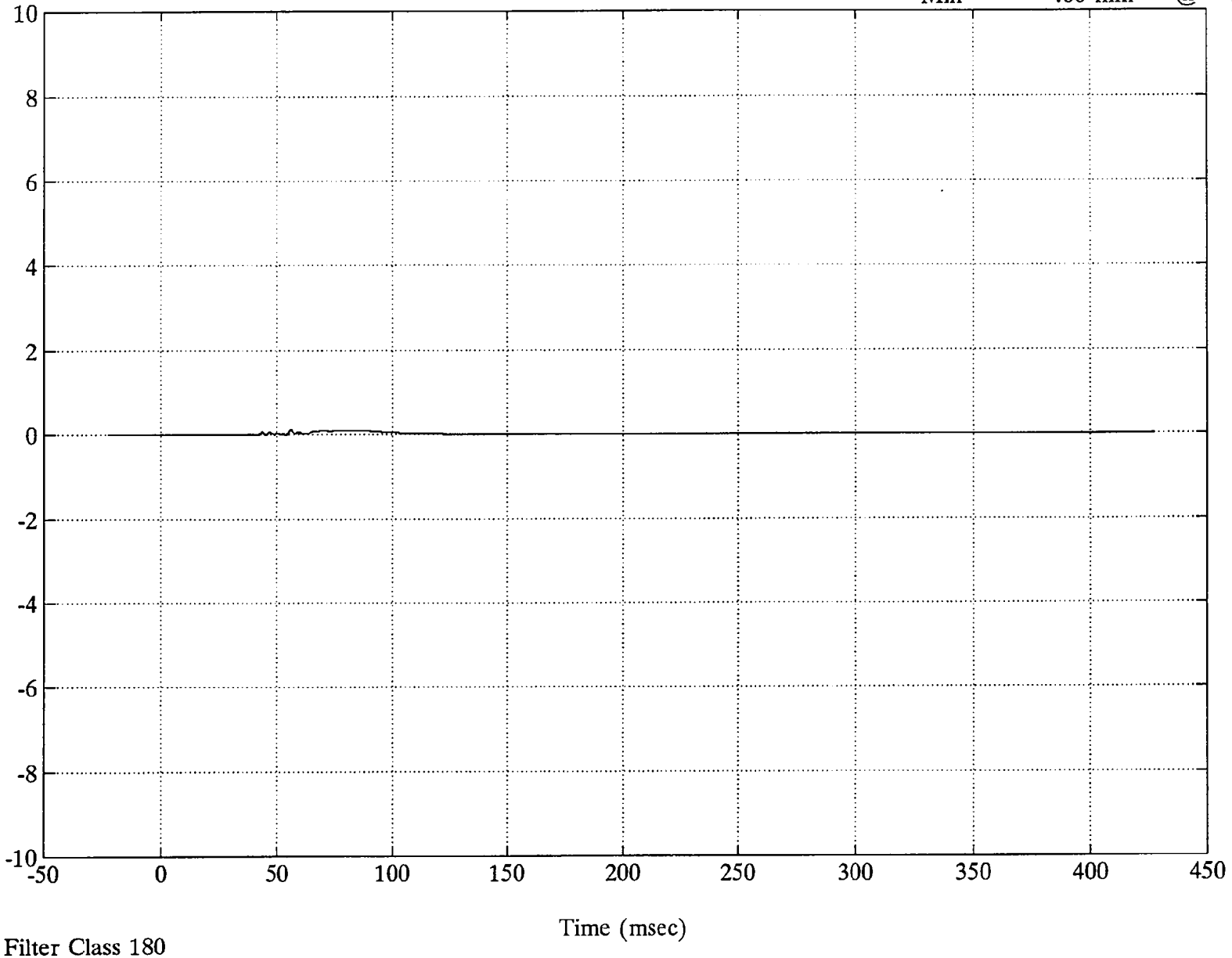
8227-3

SAE Filter Class 600

NCAP TEST #3 - 1995 NISSAN 240SX

Pos. 2 Belt Elongation

Max = .11 mm @ 55.92 msec
Min = -.00 mm @ 45.00 msec

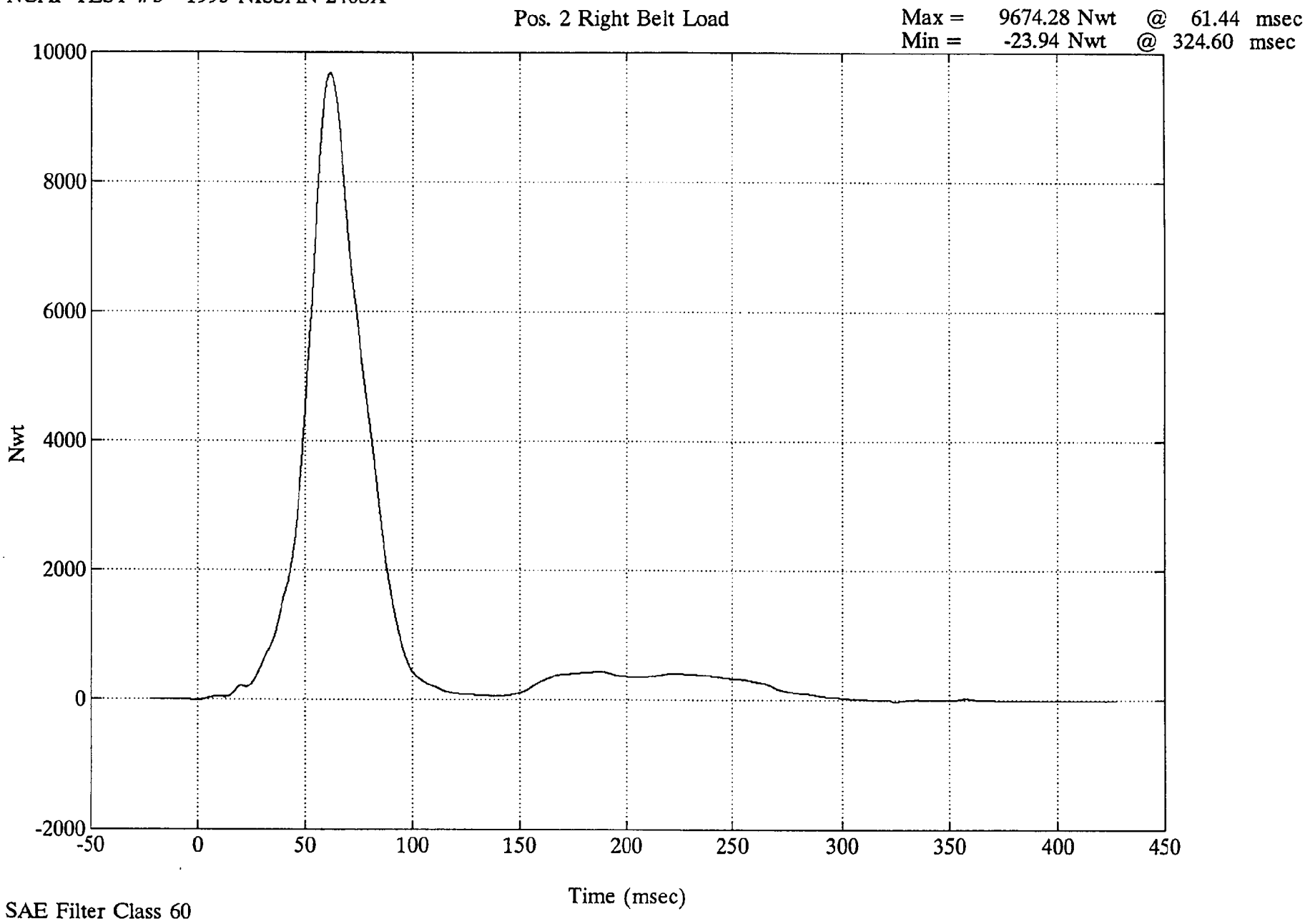


B-116

8227-3

SAE Filter Class 180

NCAP TEST #3 - 1995 NISSAN 240SX

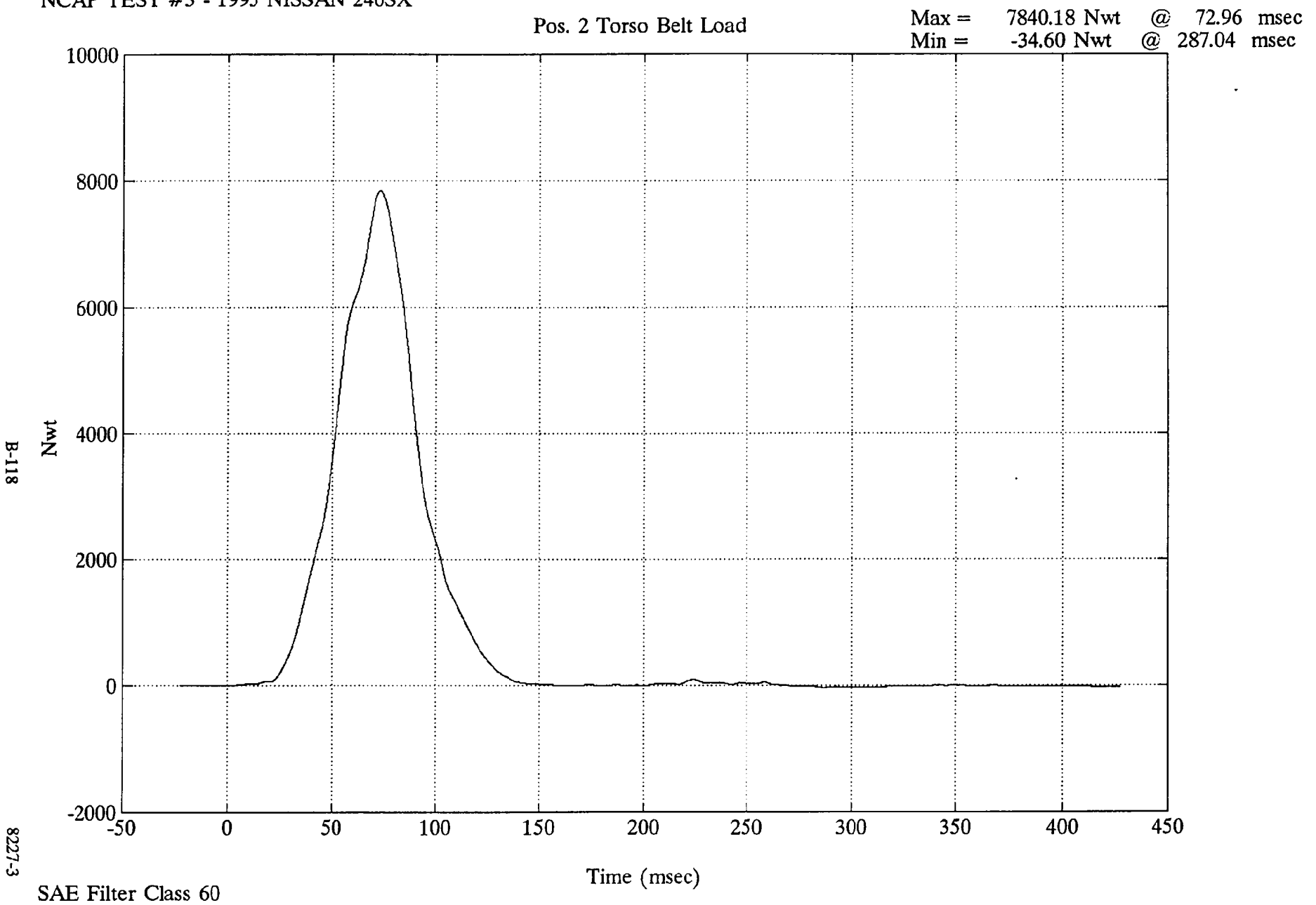


B-117

8227-3

SAE Filter Class 60

NCAP TEST #3 - 1995 NISSAN 240SX



B-118

8227-3

SAE Filter Class 60

Appendix C

PART 572B/E 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:

Serial No.	Completion Date
45	10/3/94
245	10/3/94

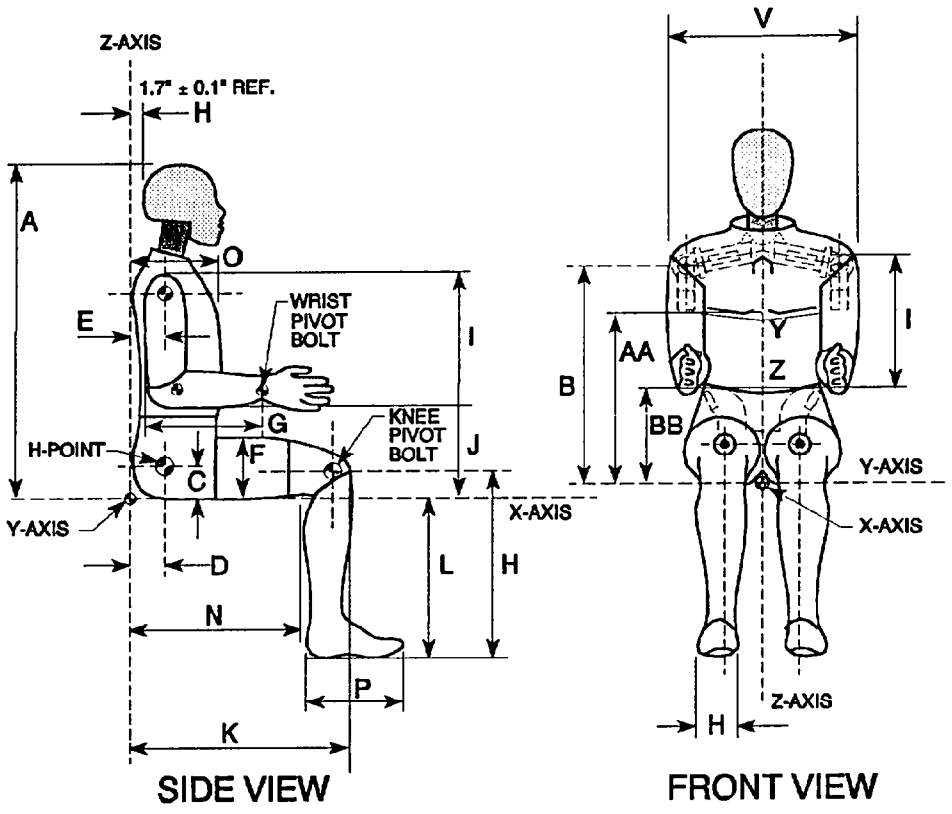
Electronic Test Equipment

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 7

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude. (REF: S572.31(A)(6))

HYBRID III EXTERNAL DIMENSIONS

S/N 45 HUMANOID

DUMMY SERIAL NO. 45 DATE: 10/3/94

TEMPERATURE			20.5 DEG. C
RELATIVE HUMIDITY			51 %
LOCATION FOR CHEST CIRCUMFERENCE	(AA)	429-434 mm	432 mm
LOCATION FOR WAIST CIRCUMFERENCE	(BB)	226-231 mm	228 mm
CHEST CIRCUMFERENCE	(Y)	970-1001 mm	1000 mm
WAIST CIRCUMFERENCE	(Z)	815-866 mm	866 mm
CHEST DEPTH	(O)	213-229 mm	213 mm
H-POINT HEIGHT	(C)	84-89 mm	89 mm
H-POINT FROM SEAT BACK	(D)	135-140 mm	137 mm
SKULL CAP TO BACKLINE	(H)	41-46 mm	43 mm
TOTAL SITTING HEIGHT	(A)	879-889 mm	879 mm
THIGH CLEARANCE	(F)	140-155 mm	147 mm
BUTTOCK KNEE LENGTH	(K)	580-605 mm	602 mm
BUTTOCK POPLITAL LENGTH	(N)	452-477 mm	475 mm
POPLITEAL LENGTH	(L)	430-455 mm	447 mm
KNEE PIVOT HEIGHT	(M)	485-501 mm	487 mm
FOOT LENGTH	(P)	252-267 mm	259 mm
FOOT BREADTH	(W)	91-107 mm	101 mm
SHOULDER PIVOT FROM BACKLINE	(E)	84-94 mm	94 mm
SHOULDER BREADTH	(V)	422-437 mm	426 mm
SHOULDER PIVOT HEIGTH	(B)	505-521 mm	510 mm
ELBOW REST HEIGHT	(J)	190-211 mm	195 mm
SHOULDER-ELBOW LENGTH	(I)	330-345 mm	337 mm
BACK OF ELBOW TO WRIST PIVOT	(G)	290-305 mm	292 mm

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

HEAD DROP TEST

HYBRID III

DATE : 9/28/94

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN: 045 HEAD DROP CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	53 %
PEAK RESULTANT ACCELERATION	225 - 275 G'S	226.5 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	3.4 G'S
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK FLEXION TEST

HYBRID III

DATE : 10/3/94

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN:045 CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	52 %
IMPACT VELOCITY		24.8 - 25.7 KPH	25.45 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	23.49 G'S
	20 MS	17.60 - 22.60 G'S	18.59 G'S
	30 MS	12.50 - 18.50 G'S	18.36 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	21.96 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	42 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	68.8 DEG.
	TIME	57 - 64 MS	59.88 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	104.2 N-M
	TIME	47 - 58 MS	52.5 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	119.5 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	98 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK EXTENSION TEST

HYBRID III

DATE : 10/3/94 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN:045 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	51 %
IMPACT VELOCITY		21.4 - 22.3 KPH	22.05 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	17.97 G'S
	20 MS	14.00 - 19.00 G'S	16.16 G'S
	30 MS	11.00 - 16.00 G'S	12.97 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	20.06 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	45.25 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	87.08 DEG.
	TIME	72 - 82 MS	76.13 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-65.6 N-M
	TIME	65 - 79 MS	69.63 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	148 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	126.25 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

THORAX IMPACT TEST

HYBRID III

DATE : 9/27/94

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN 045 H.S. THORAX CAL

TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	57 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	23.7 KPH
MAXIMUM DEFLECTION	64 - 73 mm	64 mm
MAXIMUM RESISTIVE FORCE	5160 - 5894 NEWTONS	5782 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	72.7 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 9/27/94 KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN: 045 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	54 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5280 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 9/27/94 KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN: 045 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	55 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5080 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

HYBRID III EXTERNAL DIMENSIONS

S/N 245 HUMANOID

DUMMY SERIAL NO. 245 DATE: 10/3/94

TEMPERATURE		20.5 DEG. C
RELATIVE HUMIDITY		51 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)	429-434 mm	431 mm
LOCATION FOR WAIST CIRCUMFERENCE (BB)	226-231 mm	228 mm
CHEST CIRCUMFERENCE (Y)	970-1001 mm	998 mm
WAIST CIRCUMFERENCE (Z)	815-866 mm	863 mm
CHEST DEPTH (O)	213-229 mm	213 mm
H-POINT HEIGHT (C)	84-89 mm	89 mm
H-POINT FROM SEAT BACK (D)	135-140 mm	137 mm
SKULL CAP TO BACKLINE (H)	41-46 mm	43 mm
TOTAL SITTING HEIGHT (A)	879-889 mm	889 mm
THIGH CLEARANCE (F)	140-155 mm	152 mm
BUTTOCK KNEE LENGTH (K)	580-605 mm	596 mm
BUTTOCK POPLITAL LENGTH (N)	452-477 mm	464 mm
POPLITEAL LENGTH (L)	430-455 mm	447 mm
KNEE PIVOT HEIGHT (M)	485-501 mm	487 mm
FOOT LENGTH (P)	252-267 mm	256 mm
FOOT BREADTH (W)	91-107 mm	96 mm
SHOULDER PIVOT FROM BACKLINE (E)	84-94 mm	89 mm
SHOULDER BREADTH (V)	422-437 mm	426 mm
SHOULDER PIVOT HEIGTH (B)	505-521 mm	518 mm
ELBOW REST HEIGHT (J)	190-211 mm	205 mm
SHOULDER-ELBOW LENGTH (I)	330-345 mm	335 mm
BACK OF ELBOW TO WRIST PIVOT (G)	290-305 mm	294 mm

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

HEAD DROP TEST

HYBRID III

DATE : 9/29/94

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN: 245 HEAD DROP CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	55 %
PEAK RESULTANT ACCELERATION	225 - 275 G'S	242.1 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	3.8 G'S
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK FLEXION TEST

HYBRID III

DATE : 9/30/94 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN:245 CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	49 %
IMPACT VELOCITY		24.8 - 25.7 KPH	25.45 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	25.13 G'S
	20 MS	17.60 - 22.60 G'S	20.95 G'S
	30 MS	12.50 - 18.50 G'S	17.35 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	18.73 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	41.88 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	75.43 DEG.
	TIME	57 - 64 MS	58.5 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	105.9 N-M
	TIME	47 - 58 MS	54.13 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	119.13 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	97.5 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK EXTENSION TEST

HYBRID III

DATE : 10/3/94

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN:245 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	51 %
IMPACT VELOCITY		21.4 - 22.3 KPH	22.05 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	17.82 G'S
	20 MS	14.00 - 19.00 G'S	17.23 G'S
	30 MS	11.00 - 16.00 G'S	13.79 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	14.33 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	46 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	91.63 DEG.
	TIME	72 - 82 MS	75 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-68.6 N-M
	TIME	65 - 79 MS	71.75 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	152.25 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	132.25 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

THORAX IMPACT TEST

HYBRID III

DATE : 9/29/94

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN 245 H.S. THORAX CAL

TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	52 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	23.7 KPH
MAXIMUM DEFLECTION	64 - 73 mm	64 mm
MAXIMUM RESISTIVE FORCE	5160 - 5894 NEWTONS	5858 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	75.1 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 10/29/94 KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN: 245 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	54 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5262 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 9/29/94 KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN: 245 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	54 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5235 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

Appendix D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #245	Manufacturer	Calibration	
				Last	Next
Head	X	AF5B3	ENDEVCO	6-94	12-94
	Y	AF5F7	ENDEVCO	8-94	2-95
	Z	AF5E1	ENDEVCO	8-94	2-95
Chest	X	A12C	ENDEVCO	4-94	10-94
	Y	A60C	ENDEVCO	4-94	10-94
	Z	A84G	ENDEVCO	4-94	10-94
Right Femur Load Cell		952	GSE	7-94	1-95
Left Femur Load Cell		951	GSE	7-94	1-95
Neck Load Cell	X	269	DENTON	8-94	2-95
	Y	269	DENTON	8-94	2-95
	Z	269	DENTON	8-94	2-95
Neck Moment	X	269	DENTON	8-94	2-95
	Y	269	DENTON	8-94	2-95
	Z	269	DENTON	8-94	2-95
Chest Deflection Gauge		245	HUMANOID	8-94	2-95
Hybrid III Use Only					
Lap Belt Load Cells		706	LEBOW	7-94	1-95
Shoulder Belt Load Cells		707	LEBOW	7-94	1-95
Spool-Out Potentiometer		N/A	SERVONIC INST.	-	-
Belt Stretch Transducer		E1	CALSPAN	8-94	2-95

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY	Serial #45	Manufacturer	Calibration	
			Last	Next
Head X	ADL50	ENDEVCO	8-94	2-95
Y	A59J	ENDEVCO	8-94	2-95
Z	A73A	ENDEVCO	8-94	2-95
Chest X	ADL98	ENDEVCO	8-94	2-95
Y	AC209	ENDEVCO	8-94	2-95
Z	ADBM6	ENDEVCO	8-94	2-95
Right Femur Load Cell	955	GSE	7-94	1-95
Left Femur Load Cell	954	GSE	7-94	1-95
Neck Load Cell X	076	DENTON	8-94	2-95
Y	076	DENTON	8-94	2-95
Z	076	DENTON	8-94	2-95
Neck Moment X	076	DENTON	8-94	2-95
Y	076	DENTON	8-94	2-95
Z	076	DENTON	8-94	2-95
Chest Deflection Gauge	45	HUMANOID	8-94	2-95
Hybrid III Use Only				
Lap Belt Load Cells	713	LEBOW	7-94	1-95
Shoulder Belt Load Cells	714	LEBOW	7-94	1-95
Spool-Out Potentiometer	N/A	SERVONIC INST.	-	-
Belt Stretch Transducer	E5	CALSPAN	8-94	2-95

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

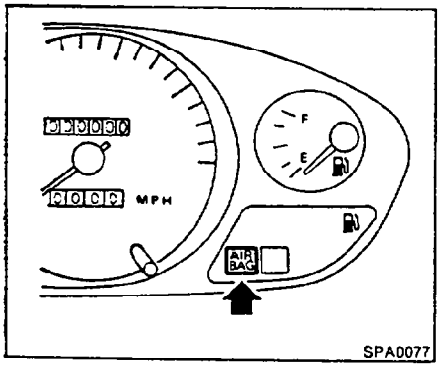
(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	A149	CEC	8-94	2-95
Right Rear Seat Crossmember	A89	CEC	7-94	1-95
Top of Engine	A150	CEC	8-94	2-95
Bottom of Engine	A175	CEC	7-94	1-95
Left Disc Brake Caliper	A185	CEC	7-94	1-95
Right Disc Brake Caliper	A157	CEC	8-94	2-95
Instrument Panel	A152	CEC	5-94	11-94
Center Rear Crossmember	A69	CEC	9-94	3-95
Vehicle Rear Z	A44	CEC	8-94	2-95

Appendix E

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

AIR BAG WARNING LIGHT



The air bag light, displaying "AIR BAG" in the instrument panel, monitors the circuits of the air bag. The circuits monitored by the air bag light are the crash zone sensor, tunnel sensor, safing sensor and all related wiring.

When the ignition key is in the "ON" or "START" position, the air bag light will illuminate for about 7 seconds and then turn off. This means the system is operational.

If any of the following conditions occurs, the air bag needs servicing and should be taken to your nearest authorized NISSAN dealer:

1. The air bag light does not come on for 7 seconds and then goes off as described above.
2. The air bag light flashes intermittently or remains on.
3. The air bag light does not come on at all.

Under these conditions, the Supplemental Restraint System Air Bag will not operate properly. It must be checked and repaired.

Repair and replacement procedure

The air bag system is designed to inflate on a one-time-only basis. As a reminder, unless it is damaged, the air bag light will remain illuminated after inflation has occurred. Repair and replacement of the air bag system should be done only by authorized NISSAN dealers.

To ensure long-term functioning, the system must be inspected 10 years after the date of manufacture as noted on the certification label located on the driver side front pillar.

When maintenance work is required on the vehicle, the air bag system and related parts should be pointed out to the person conducting the maintenance. The ignition key should always be in the "LOCK" position when working under the hood or inside the vehicle.

WARNING:

- **Once the air bag inflates, the air bag module will not function again and must be replaced. The air bag module cannot be repaired.**
- **After an air bag inflates, the front instrument panel assembly should be replaced by your NISSAN dealer.**
- **The air bag system should be inspected by an authorized NISSAN dealer if there is any damage to the front end portion of the vehicle or replaced if the air bag has inflated.**
- **When selling your vehicle, we request that you inform the buyer about the air bag system and guide the buyer to the appropriate sections in this Owner's Manual.**
- **If you need to dispose of an air bag or**

scrap the vehicle, contact an authorized NISSAN dealer. Correct air bag disposal procedures are set forth in the appropriate NISSAN Service Manual. Incorrect disposal procedures could cause personal injury.

PRECAUTIONS ON SEAT BELT USAGE

Your chances of being injured in an accident and/or the severity of injury or killed may be greatly reduced if you are wearing your seat belt and it is properly adjusted. NISSAN strongly encourages you and all of your passengers to buckle up every time you drive, even if your seating position includes an air bag.

Some states, provinces or territories require that seat belts be worn at all times when a vehicle is being driven.

WARNING:

- **Every person who drives or rides in this vehicle should wear a seat belt at all times. Children should be in appropriate child restraints.**
- **The belt should be adjusted to a snug fit. Failure to do so will reduce the effectiveness of the entire restraint system.**
- **Do not wear the belt inside out or twisted.**
- **Do not allow more than one person to use the same belt.**
- **All seat belt assemblies including retractors and attaching hardware should be inspected after any collision by your NISSAN dealer. NISSAN recommends that all seat belt assemblies in use during a collision be replaced unless the collision was minor and the belts show no damage and continue to operate properly. Seat belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.**
- **Your vehicle has seating and seat belts for four (4) occupants, two (2) in the front seats and two (2) in the rear. Never carry more people in the vehicle than there are seat belts.**

If the seat belt warning lamp glows continuously while the ignition is turned "ON" with all doors closed and all seat belts fastened, it may indicate a malfunction in the system. Have the system checked by your NISSAN dealer.

Be sure to observe the following cautions when using seat belts. Failure to do so could increase the chance and/or severity of injury in an accident.

- **Always route the shoulder belt over your shoulder and across your chest. Never run the belt under your arm. Serious injury can occur if seat belt is not worn properly.**
- **Position the lap belt as low as possible AROUND THE HIPS, NOT THE WAIST.**

Infant or small child

Nissan recommends that infants or small children be seated in a child restraint systems that comply with Federal Motor Vehicle Safety Standards or Canadian Motor Vehicle Safety Standards. You should choose a child restraint system which fits your vehicle and always follow the manufacturer's instructions for installation and use.

Children

Children who are too large for child restraint systems should be seated and restrained by the seat belts which are provided.

NISSAN recommends that children sit in the rear seat if possible. According to accident statistics, children are safer when properly restrained in the rear seat than in the front seat.

If the child's seating position has a shoulder belt that fits close to the face or neck, the use of a booster seat (commercially available) may help overcome this. The booster seat should raise the child so that the shoulder belt is properly positioned across the top, middle portion of the shoulder and the lap belt is low on the hips. The booster seat should fit the vehicle seat and have a label certifying that it complies with Federal Motor Vehicle Safety Standards or Canadian Motor Vehicle Safety Standards. Once the child has grown so the shoulder belt is no longer on or near the face and neck, use the shoulder belt without the booster seat.

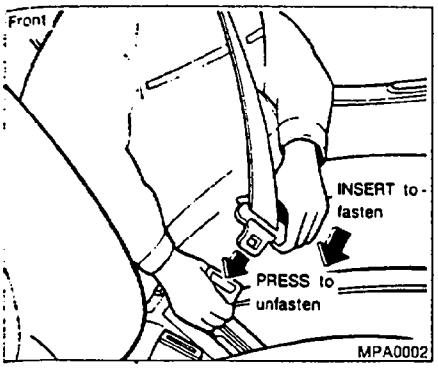
Never let a child stand or kneel on any seat and do not allow a child in the cargo areas while the vehicle is moving.

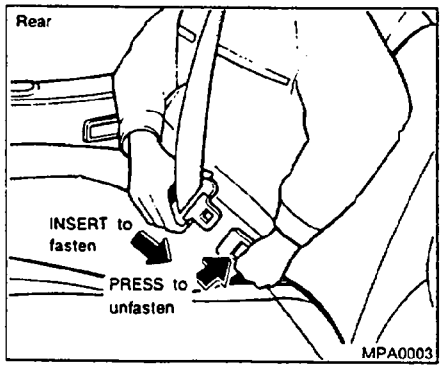
Pregnant women

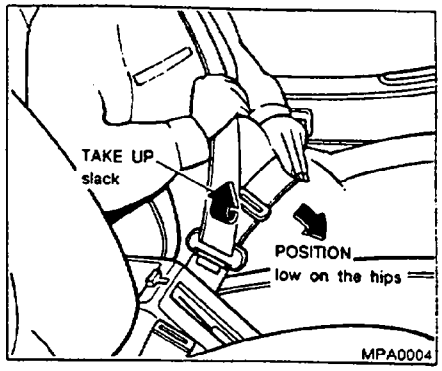
Nissan recommends that pregnant women use seat belts. Contact your doctor for specific recommendations. The lap belt should be worn snug and positioned as low as possible around the hips, not the waist.

Injured persons

Nissan recommends that injured persons use seat belts, depending on the injury. Check with your doctor for specific recommendations.







3-POINT TYPE SEAT BELT WITH RETRACTOR

Every person who drives or rides in this vehicle should wear a seat belt at all times.

Fastening the belts

1. Adjust the seat.

The seatback should not be reclined any more than needed for comfort. Seat belts are most effective when the passenger sits well back and straight up in the seat. If the seat is reclined, the risk of sliding under the lap belt and being injured is increased.

2. Slowly pull the seat belt out of the retractor and insert the tongue into the buckle until it snaps.

The retractor is designed to lock during a sudden stop or on impact. A slow pulling motion will permit the belt to move, and allow you some freedom of movement in the seat.

3. Position the lap belt portion **low on the hips** as shown.
4. Pull the shoulder belt portion toward the retractor to take up extra slack.

The front seat passenger side seat belt and rear 3-point seat belts have a cinching mechanism for child seat installation. It is referred to as the automatic locking mode.

When the cinching mechanism is activated the seat belt cannot be withdrawn again until the seat belt tongue is detached from the buckle and fully retracted. Refer to "Child restraints for infants and small children" later in this section for more information.

WARNING:

The automatic locking mode should be used only for child seat installation. During normal seat belt use by a passenger, the locking mode should not be activated. If it is activated it may cause uncomfortable seat belt tension.

Unfastening the belts

To unfasten the belt, press the button on the buckle. The seat belt will automatically retract.

Checking seat belt operation (3-point type with retractor)

Your seat belt retractors are designed to lock belt movement by two separate methods:

1) When the belt is pulled quickly from the retractor.
2) When the vehicle slows down rapidly.

To increase your confidence in the belts, check the operation as follows:

- Grasp the shoulder belt and pull quickly forward. The retractor should lock and restrict further belt movement.

If the retractor does not lock during this check or if you have any question about belt operation, see your NISSAN dealer.

SEAT BELT EXTENDERS

If, because of body size or driving position, it is not possible to properly fit the lap-shoulder belt and fasten it, an extender is available which is compatible with the installed seat belts. The extender adds approximately 8 inches (200 mm) of length and may be used for either the driver or front passenger seating position. See your NISSAN dealer for assistance if the extender is required.

- **Only NISSAN belt extenders, made by the same company which made the original equipment belts, should be used with NISSAN belts.**
- **Persons who can use the standard seat belt should not use an extender. Such unnecessary use could result in serious personal injury in the event of an accident.**

SEAT BELT MAINTENANCE

- **To clean the belt webbings,** apply a mild soap solution or any solution recommended for cleaning upholstery or carpets. Then brush it, wipe with a cloth and allow it to dry in the shade. Do not allow the belts to retract until they are completely dry.
- **Periodically check to see that the belt and the metal components** such as buckles, tongues, retractors, flexible wires and anchors work properly. If loose parts, deterioration, cuts or other damage on the webbing is found, the entire belt assembly should be replaced.

CHILD RESTRAINTS FOR INFANTS AND SMALL CHILDREN

Infants and small children should **always** be placed in an infant or child restraint while riding in the vehicle.

WARNING:

Children and infants should never be carried on your lap. It is not possible for even the strongest adult to resist the forces of an accident. The child could be crushed between the adult and parts of the vehicle. Also, do not put the same seat belt around both your child and yourself. In general, child restraints are designed to be installed with the lap portion of a three-point type seat belt.

Nissan recommends that the child restraint be installed in the rear seat. According to accident statistics, children are safer when properly restrained in the rear seat than in the front seat.

An improperly installed child restraint could lead to serious injury in an accident.

Child restraints specially designed for infants and small children are offered by several manufacturers. When selecting any child restraint, keep the following points in mind:

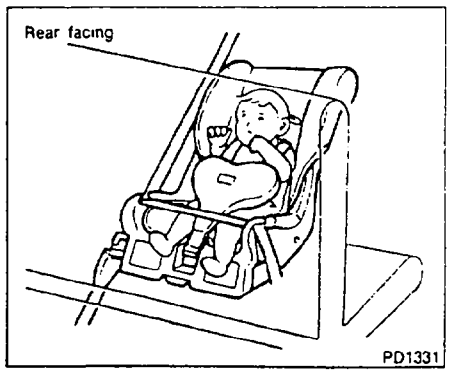
1) Choose only a restraint with a label certifying that it complies with Federal Motor Vehicle Safety Standard 213 or Canadian Motor Vehicle Safety Standard 213.
2) Place your child in the child restraint and check the various adjustments to be sure the child restraint is compatible with your child. Always follow all of the recommended procedures.
3) Check the child restraint in your vehicle to be sure it is compatible with the vehicle's seat belt system.

WARNING:

- **Never install a rear-facing child restraint in the front seat. See "Installation on front passenger seat" for details.**
- **Follow all of the child restraint manufacturer's instructions for installation and use. When purchasing a child restraint, be sure to select one which will fit your child and vehicle as it may not be possible to properly install some types of child restraints in your vehicle.**

  Improper use of a child restraint can result in increased injuries for both the infant or child and other occupants in the vehicle.
- **When your child restraint is not in use, store it in the trunk or keep it secured with a seat belt to prevent it from being thrown forward in case of a sudden stop or accident.**
- **Remember that a child restraint left in a closed vehicle can become very hot. Check the seating surface and buckles before placing your child in the child restraint.**
- **After attaching a child restraint, test the seat before you place the child in it. Tilt it from side to side. Try to tug it forward and check to see if the belt holds it in place. If the restraint is not secure, tighten the belt as necessary, or put the restraint in another seat and test it again.**
- **If the child restraint is not anchored properly, the risk of a child being injured in a collision or a sudden stop greatly increases.**
- **Adjustable seatbacks should be positioned to fit the child seat, but as upright as possible.**

- **All U.S. states and some provinces or territories of Canada require that infants and small children be restrained in approved child restraints at all times while the vehicle is being operated.**
- **For a front facing child restraint, if the seat position where it is installed has a 3-point type lap/shoulder belt, check to make sure the shoulder belt does not go in front of the child's face or neck. If it does, put the shoulder belt behind the child restraint.**
- **If the seat belt in the position where the child restraint is installed requires a locking clip and it is not used, injuries could result from the child restraint tipping over during normal vehicle braking or cornering.**



Installation on rear outboard seating positions

WARNING:

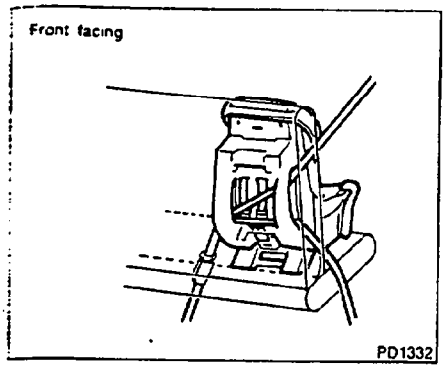
- **The 3-point belt on your vehicle is equipped with a locking mode retractor which must be used when installing a child restraint.**
- **Failure to do so will result in the child restraint not being properly secured. It could tip over or otherwise be unsecured and cause injury to the child in a sudden stop or collision.**

When you install a child restraint in a rear outboard seat, follow these steps:

1. Position the child restraint on the seat. It can be placed in a forward facing or rear facing direction, depending on the size of the child. Always follow the restraint manufacturer's instructions.
2. Route the seat belt tongue through the child restraint and insert it into the buckle until you hear and feel the latch engage.

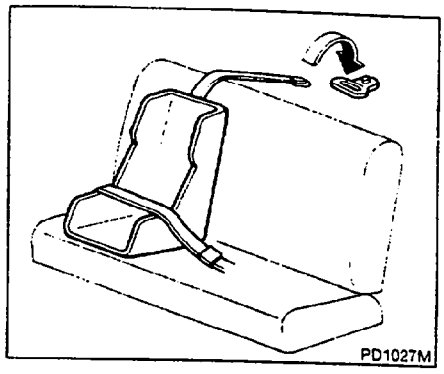
Be sure to follow the child restraint manufacturer's instructions for belt routing.

3. Pull on the shoulder belt until all of the belt is fully extended and a click is heard. At this time, the belt retractor is in the automatic locking mode (child restraint mode). (It will revert back to "emergency locking" when the belt is fully retracted.)
4. Allow the belt to retract. A clicking sound will be heard as the belt retracts. This indicates that the retractor is in the automatic locking mode. Pull down on the belt to remove any slack in the belt.



5. Before placing the child in the child restraint, use force to tilt the child restraint from side to side, and tug it forward to make sure that it is securely held in place.
6. Check that the retractor is in the automatic locking mode by trying to pull more belt out of the retractor. If you cannot pull any more belt webbing out of the retractor, the belt is in the automatic locking mode.
7. Check to make sure that the child restraint is properly secured prior to each use. If the belt is not locked, repeat steps 3 through 6.

After the child restraint is removed and the seat belt is allowed to wind back into the retractor, the automatic locking mode (child restraint mode) is canceled; the seat belt may be used as normal and will only lock during a sudden stop or impact.



Top strap child restraint anchorage

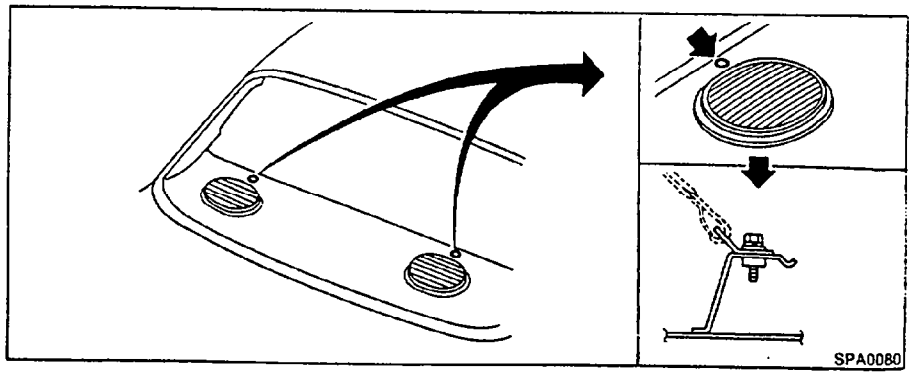
If your child restraint has a top strap, install the anchor bracket to the provided anchor point. Secure the child restraint with the lap portion of an outboard 3-point belt and latch the top strap hook onto the anchor bracket. To install the anchor bracket, a metric bolt of the dimensions listed below must be used.

Bolt diameter: 8.0 mm
Bolt length: more than 0.79 in (20 mm)
Thread pitch: 1.25 mm

The top strap should be secured to the attaching bolt which provides the straight-

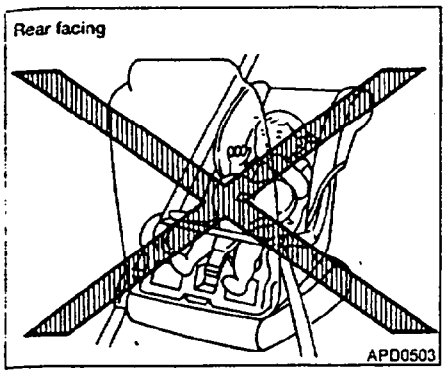
est installation of the top strap.

Child restraint anchor points are designed to withstand only those loads imposed by correctly fitted child restraints. Under no circumstances are they to be used for adult seat belts or harnesses.



Anchor point locations

Anchor points are located under the rear parcel shelf finisher. **When installing a top strap child restraint on the rear seat for the first time, consult your NISSAN dealer for details.**



Installation on front passenger seat

WARNING:

Never install a rear-facing child restraint in the front passenger seat. Air bags inflate with great force. A rear-facing child restraint could be struck by the air bag in a crash and could seriously injure or kill your child.

If you install a forward-facing child restraint in the front passenger seat, place the passenger seat as far back as possible.

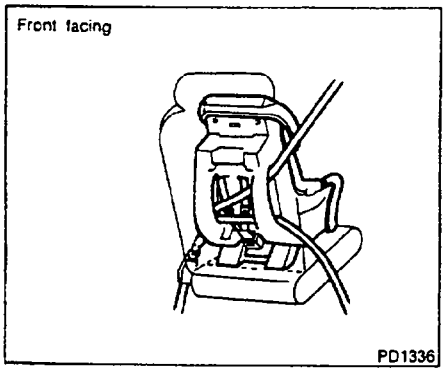
A child restraint with a top strap should not be used in the front passenger seat.

WARNING:

- **The 3-point belt in your vehicle is equipped with a locking mode retractor which must be used when installing a child restraint.**
- **Failure to use the retractor's locking mode may result in the child restraint not being properly secured. The restraint could tip over or otherwise be unsecured and cause injury to the child in a sudden stop or collision.**

When you install a child restraint in the front seat, follow these steps:

1. Position the child restraint on the front passenger seat. **It should be placed in a forward-facing direction only.** Move the seat as far back from the instrument panel as possible. Always follow the child restraint manufacturer's instructions. **Child restraints for infants must be used in the rear-facing direction and therefore must not be used in the front seat.**
2. Route the seat belt tongue through the child restraint and insert the belt tongue into the buckle until you hear and feel the latch engage.

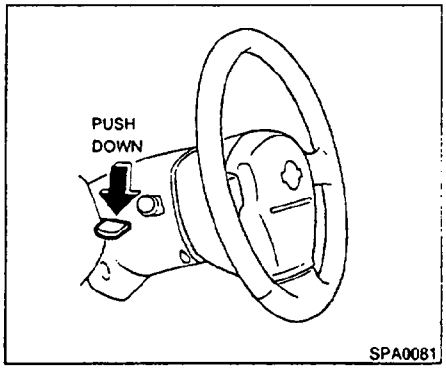


Be sure to follow the child restraint manufacturer's instructions for belt routing.

3. Pull on the shoulder belt until all of the belt is fully extended and a click is heard. At this time, the belt retractor is in the automatic locking mode (child restraint mode). (It will revert back to "emergency locking" when the belt is fully retracted.)
4. Allow the belt to retract. A clicking sound will be heard as the belt retracts. This indicates that the retractor is in the automatic locking mode. Pull down on the belt to remove any slack in the belt.
5. Before placing the child in the child restraint, use force to tilt the child restraint from side to side, and tug it forward to make sure that it is securely held in place.
6. Check that the retractor is in the automatic locking mode by trying to pull more belt out of the retractor. If you cannot pull any more belt webbing out of the retractor, the belt is in the automatic locking mode.
7. Check to make sure that the child restraint is properly secured prior to each use. If the lap belt is not locked, repeat steps 3 through 6.

After the child restraint is removed and the seat belt is allowed to wind back into the retractor, the automatic locking mode (child restraint mode) is canceled; the seat belt may be used as normal and will only lock during a sudden stop or impact.

TILTING STEERING WHEEL



Tilt operation

Push the lock lever and while holding it, adjust the steering wheel up or down to the desired position.

WARNING:

Do not adjust the steering wheel while driving.