V2456

REPORT NUMBER: CAL-96-N10

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

NISSAN MOTOR CO., LTD.
1996 NISSAN PATHFINDER
4 X 4

NHTSA NUMBER: MT5202

CALSPAN TEST NUMBER: 8313-10

Sept. 17, 1996

CALSPAN SRL CORPORATION
TRANSPORTATION SCIENCE CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225

FINAL REPORT

PREPARED FOR:

U. S. Department of Transportation
National Highway Traffic Safety Administration
Office of Market Incentives
400 Seventh Street, S. W.
Room No. 5313 (NRM-20)
Washington, DC 20590

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16. *Abstract*

A frontal load cell barrier test of a 1996 Nissan Pathfinder 4 x 4 was performed at Calspan SRL Corporation crash test facility in Buffalo, New York, on Sept. 17, 1996.

The impact velocity was 57 kph and the temperature at the barrier face was 21°C. The maximum post-test vehicle crush was 575 mm. The test vehicle was equipped with a 3-point continuous belt system and supplemental airbags at both front outboard seating positions.

With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" the driver dummy appears to exceed the maximum HIC criteria. The passenger dummy appears to comply with head, chest and femur requirements.

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Section 1

PURPOSE AND TEST PROCEDURE

This 57 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 57 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 MT5202

A load cell barrier consisting of 36 load cells was impacted by a 1996 Nissan Pathfinder 4 x 4 at a velocity of 57.0 kph. The test was performed at the Calspan SRL Corporation on Sept. 17, 1996. 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 (position 1) ATD (Serial No. 150) and the right-front passenger (position 2) ATD (Serial No. 064) were used in one previous test (MV0200). Injury criteria were not exceeded in that test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 129 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. Vehicle accelerometer number 1 (left rear seat crossmember) data did not record accurately. Data trace and integrations for this channel were omitted from this report. Vehicle accelerometer number 5 (right disc brake caliper) sustained a cut wire after 100 msec of event time. Vehicle accelerometer number 6 (left disc brake caliper) data is intermittent between 125 and 150 msec of event time. Barrier load cell B3 sustained an offset after impact. Barrier load cell C5 was damaged during impact. These 4 data traces will be labeled accordingly.

The driver's HIC was 1107. The maximum chest deceleration over 3 milliseconds was 51.0 g's and maximum chest deflection was -22.6 mm. Femur loads were -2433.3 newtons on the left and -4930.5 newtons on the right.

The right front passenger's HIC was 797. Maximum chest deceleration over 3 milliseconds was 57.0 g's and maximum chest deflection was -22.7 mm. Femur loads were -3140.8 newtons on the left and -3624.6 newtons on the right.

Table 1

GENERAL TEST AND VEHICLE DATA

Vehicle Year/Make/Model/Body Style: 1996 Nissan Pathfinder 4 x 4

NHTSA Test No.: MT5202 VIN.: JN8AR05Y4TW020153

Body Color: Blue Date of Manufacture: 1/96

Date Received: 8/7/96

Odometer Reading: 00341

Engine: 6 Cylinders; - C.I.D.; 3.3 Liters; - CC

X Gas; - Diesel; - Turbocharged

X Longitudinal; - Transverse

Transmission: 5 Speed; X Manual; - Automatic; - Overdrive

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

Accessories: - A/C; X P/S; X P/B; - P/wdo

X Tilt Wheel; - P/seats; - Cruise Control - Other

Type of Occupant Restraint: Driver and passenger position equipped with 3-point restraint system and supplemental airbag

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 179 kPa, Rear 179 kPa

Recommended Tire Size: P235/70R15

Recommended Cold Tire Pressure: Front 179 kPa, Rear 179 kPa

Tires on Vehicle: P235/70R15 Manufacturer: Bridgestone

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

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

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

Rated Cargo and Luggage Weight (RCLW) A-B = 136 kgs.

GVWR 2336 kgs. GAWR: Front 1179 kgs. Rear 1293 kgs.

Table 1

GENERAL TEST AND VEHICLE DATA (cont'd)

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

Right Front = 482 kgs. Right Rear = 419 kgs.

Left Front = 485 kgs. Left Rear = 423 kgs.

TOTAL FRONT WEIGHT = 967 kgs. (53.5 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 842 kgs. (46.5 % of Total Vehicle Weight)

TOTAL DELIVERED WEIGHT = 1,809 kgs.

CALCULATION FOR TARGET TEST WEIGHT:

UDW = Unloaded Delivered Weight 1809 kgs.

VCW = Vehicle Capacity Weight 239 kgs.

DSC = Designated Seating Capacity 5

RCLW = 136 kgs.

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

Target Test Weight = 2094 kgs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 131 KGS CARGO:

Right Front = 502 kgs. Right Rear = 533 kgs.

Left Front = 512 kgs. Left Rear = 542 kgs.

TOTAL FRONT WEIGHT = 1,014 kgs. (48.5 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 1,075 kgs. (51.5 % of Total Vehicle Weight)

TOTAL TEST WEIGHT = 2,089 kgs.

Weight of ballast secured in vehicle trunk area = 91 kgs.

VEHICLE ATTITUDE (all dimensions in mm):

Delivered Attitude:	RF	841	LF	841	RR	870	LR	867
Test Attitude:	RF	839	LF	833	RR	817	LR	814

Wheel Base: 2690 mm.; C.G. = 1384 mm. rearward of front wheel C/L

Remarks: 74 liters 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: Sept. 17, 1996 Time of Test: 13:06

Ambient Temperature: 21 ° 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 = 57.0 kph, secondary = 57.0 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	4440	C_L	4525	L	4440
Post-test = R	3940	C_L	3950	L	3940
Crush = R	500	C_L	575	L	500

Distance from front of test vehicle to point of impact:

R 292 C_L 387 L 337

VISIBLE DUMMY CONTACT POINTS:

	Driver	Passenger
Head	Airbag	Airbag/headrest
Chest	Airbag	Airbag
Abdomen	None	None
Left Knee	Knee bolster	Glove box
Right Knee	Knee bolster	Glove box

Table 1

GENERAL TEST AND VEHICLE DATA (cont'd)

	Front		Rear	
	Left	Right	Left	Right
Door Opening	Operable	Operable	Operable	Operable

	Front		Rear	
Seat Movement	Left	Right	Left	Right
Seat Back Failure	None	None	-	-
Seat Shift (mm.)	None	None	-	-

Glazing Damage

Backlight/Windshield: Windshield cracked throughout and tore on passenger side.

Other Notable Impact Effects: Passenger right hand broke through dash panel. Driver side head rest disengaged from seat back. Driver dummy contacted seat back during rebound. Spare tire under rear of vehicle was dislodged during impact.

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 Test No.: MT5202 Vehicle: 1996 Nissan Pathfinder 4 x 4

	MAXIMUM HEAD ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	-87.9	-17.1	37.7	90.0
Position #2 - Passenger	-74.5	-10.6	36.3	77.1

	MAXIMUM CHEST ACCELERATION (g's)			
	X	Y	Z	R*
Position #1 - Driver	-52.3	-6.2	-14.9	51.0
Position #2 - Passenger	-61.3	12.3	-13.9	57.0

* 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	-2433.3	-4930.5
Position #2 - Passenger	-3140.8	-3624.6

	MAXIMUM FORCE - SEAT BELT LOADS (nwt)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
Position #1 - Driver	8117.9	-	8212.4
Position #2 - Passenger	8529.2	7445.5	-

	HEAD INJURY CRITERIA (HIC)			
	HIC**	t_1 (mSec)	t_2 (mSec)	Average Acceleration t_1 to t_2
Position #1 - Driver	1107	55.20	84.36	67.88
Position #2 - Passenger	797	51.84	87.84	54.71

** 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: 1996 Nissan Pathfinder 4 x 4

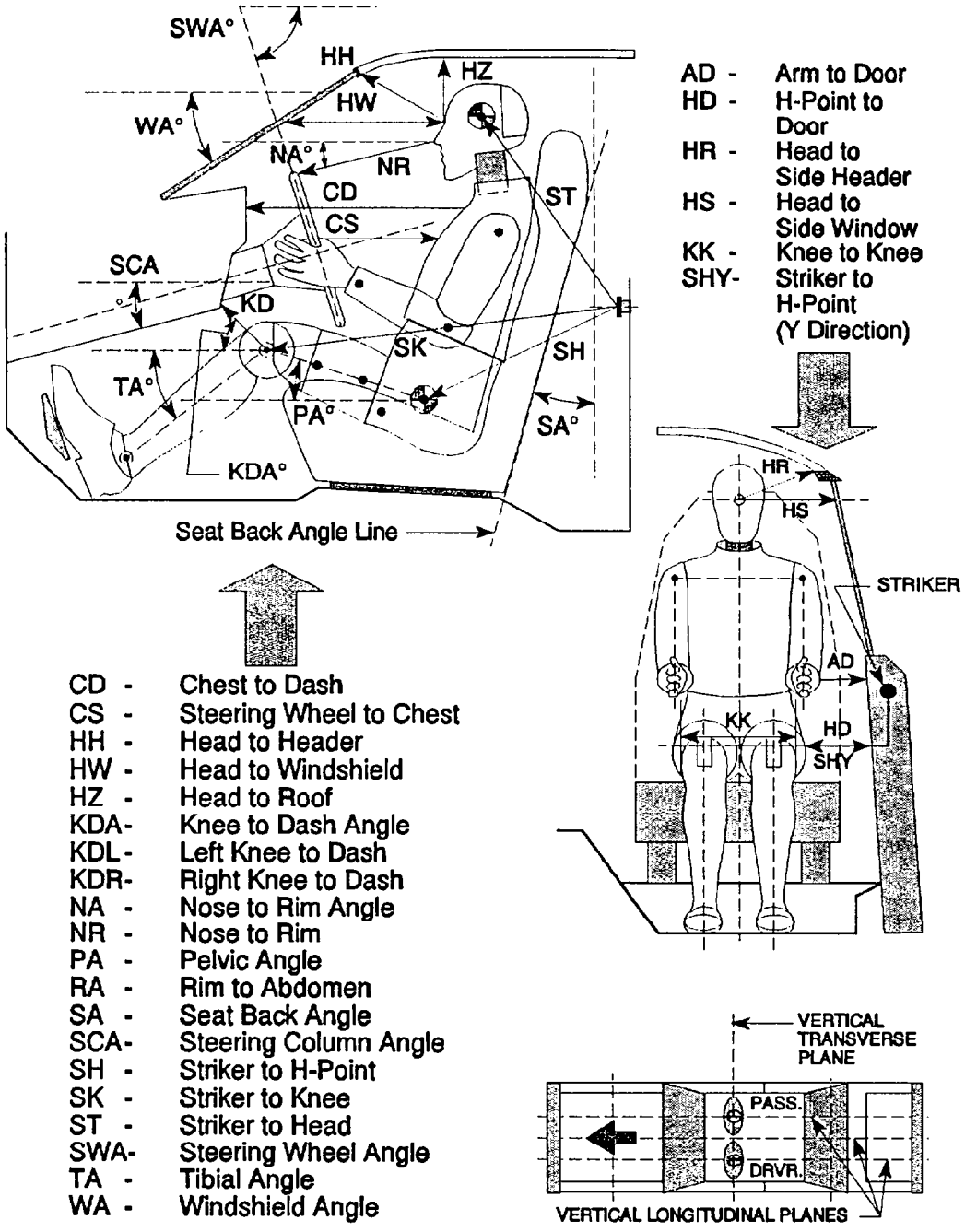
NHTSA Test No.: MT5202 Test Date: Sept. 17, 1996

MAXIMUM VALUES	DRIVER DUMMY ID #150:	PASSENGER DUMMY ID #064:
Neck Load X (nwt)	835.3	913.8
Neck Load Y (nwt)	555.3	1033.0
Neck Load Z (nwt)	3477.9	3374.2
Neck Moment X (nwt-m)	19.4	-24.5
Neck Moment Y (nwt-m)	40.9	-50.1
Neck Moment Z (nwt-m)	20.7	28.6
Chest Deflection X (mm.)	-22.6	-22.7
Time of Max. Occurrence (msec)	72.0	69.8

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

Figure 1

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



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

Table 4

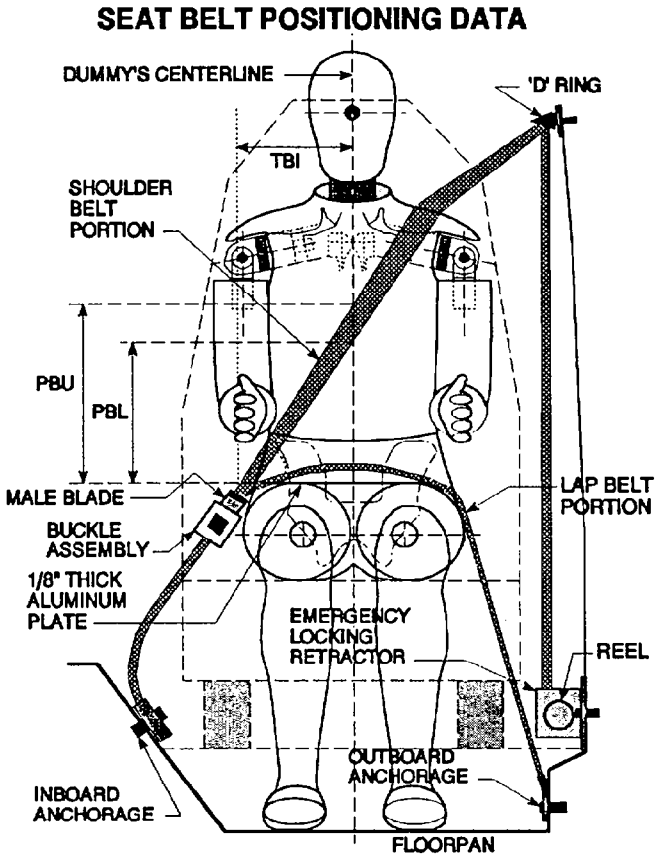
FRONT SEAT OCCUPANT MEASUREMENTS

	DRIVER (Serial #150)			PASS. (Serial # 064)		
WA°	35 deg.			N/A		
SWA°	65 deg.			N/A		
SCA°	25 deg.			N/A		
SA°	25 deg.			25 deg.		
HZ	178			157		
HH	363			394		
HW	558			551		
HR	228			221		
NR	15.5	Angle	13 deg.	N/A		
CD	546			538		
CS	226			N/A		
RA	193			N/A		
KDL	162	Angle (KDA)	35 deg.	134		
KDR	157			140	Angle (KDA)	35 deg.
PA°	22 deg.			25 deg.		
TA°	35 deg.			40 deg.		
KK	261			262		
ST	538	Angle	17 deg.	539	Angle	14 deg.
SK	632	Angle	94 deg.	645	Angle	93 deg.
SH	228	Angle	130 deg.	259	Angle	122 deg.
SHY	190			193		
HS	317			310		
HD	162			170		
AD	91			107		

Dimensions in millimeters

Figure 2

SEAT BELT POSITIONING DATA



	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	230	235
PBL-- Top surface of alum. plate to belt lower edge	310	314
LAP BELT TENSION	Retractor	Retractor
SHOULDER BELT TENSION	10 nwt	10 nwt

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.	2076	2081
Shoulder belt length as measured on Part 572 Dummy.	883	901
Lap belt length as measured on Part 572 Dummy.	937	914
SHOULDER BELT SPOOL-OFF DATA:		
As determined by film analysis.	58	not visible
As determined mechanically.	32	38
As determined electronically.	68.5	64.5
BELT STRETCH DATA:		
Measured electronically between shoulder belt load cell and the "D" ring.	84 mm/M	90.9 mm/M
Measured mechanically.	1 mm/M	1 mm/M

Dimensions in millimeters

Figure 3

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera information shown in Table 6.

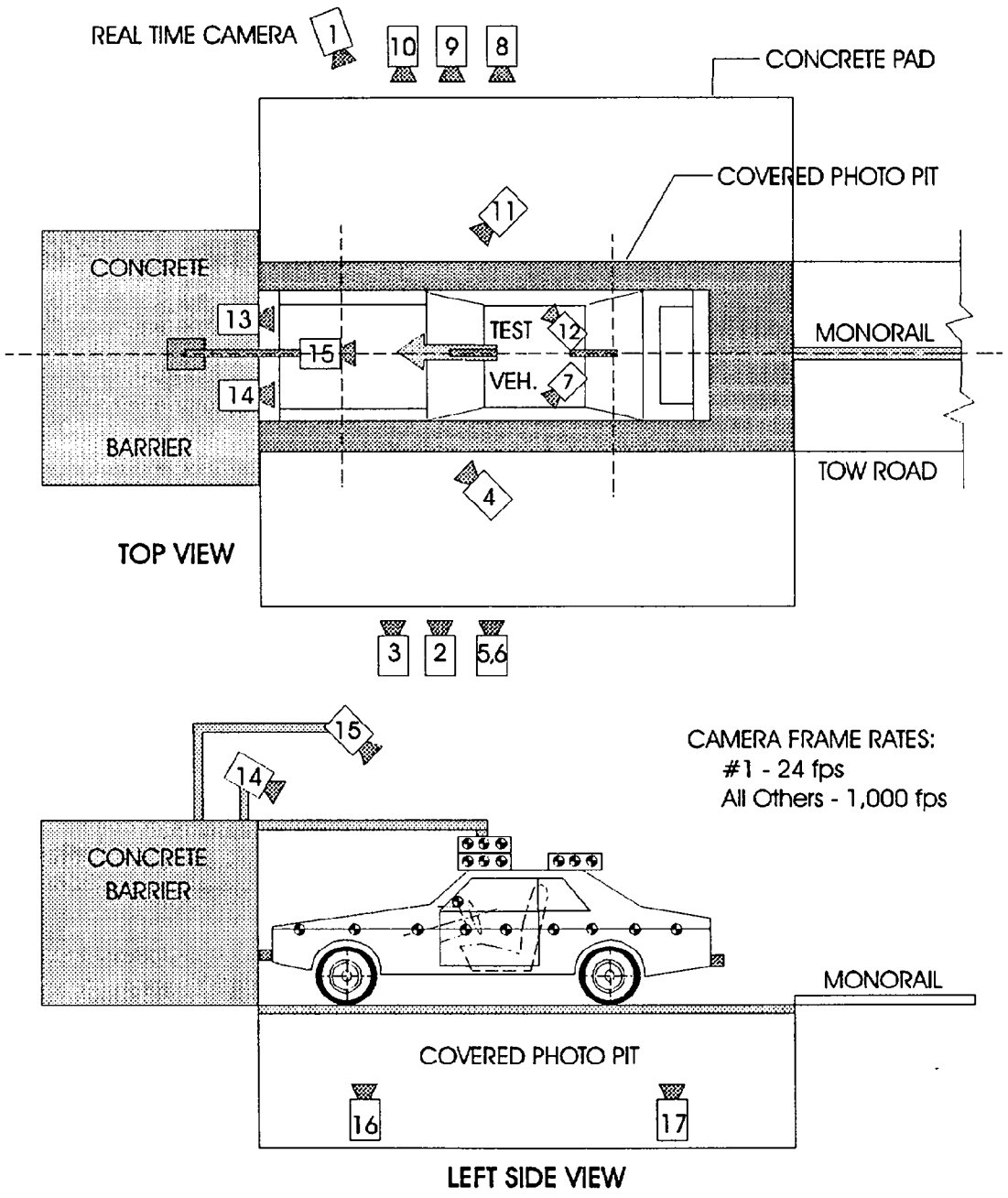


Table 6
HIGH-SPEED CAMERA LOCATIONS

NHTSA Test No.: MT5202 Vehicle: 1996 Nissan Pathfinder 4 x 4

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	6099	1610	1160	-1.9	5731	13	1130
3	Left Side View	8573	737	1225	-2.9	8205	28	760
4	Driver and Interior View	6822	2974	2116	-8.8	-	35	830
5	Steering Column (Bottom)	7066	1397	1174	-2.2	6680	25	980
6	Steering Column (Top)	7066	1397	1781	-7.2	6680	25	930
7	Left Belt	-	-	-	-	-	8	685
8	Overall Right Side	6129	2212	1153	-1.5	5761	13	1145
9	Right Side View	8738	1405	1154	-1.7	8370	25	1115
10	Right Passenger View	8301	1737	1460	-3.1	7933	35	1040
11	Passenger and Interior View	7127	2896	2111	-7.5	-	35	1000
12	Right Belt	-	-	-	-	-	8	770
13	Passenger Front View	580	0	2000	-32	-	13	1020
14	Driver Front View	580	0	2000	-32	-	13	1040
15	Windshield View	0	-530	3048	-51	-	13	1090
16	Pit View of Engine	0	505	-3048	90	-	13	1000
17	Pit View of Fuel Tank	0	3432	-3048	90	-	13	905

*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	360
B	630
C	1220
D	1902
E	356
F	1506
G	841
H	841
I	145
J	1295
K	986
L	1403
M	357
N	145
O	847
P	835
Q	1403
R	992
S	1295

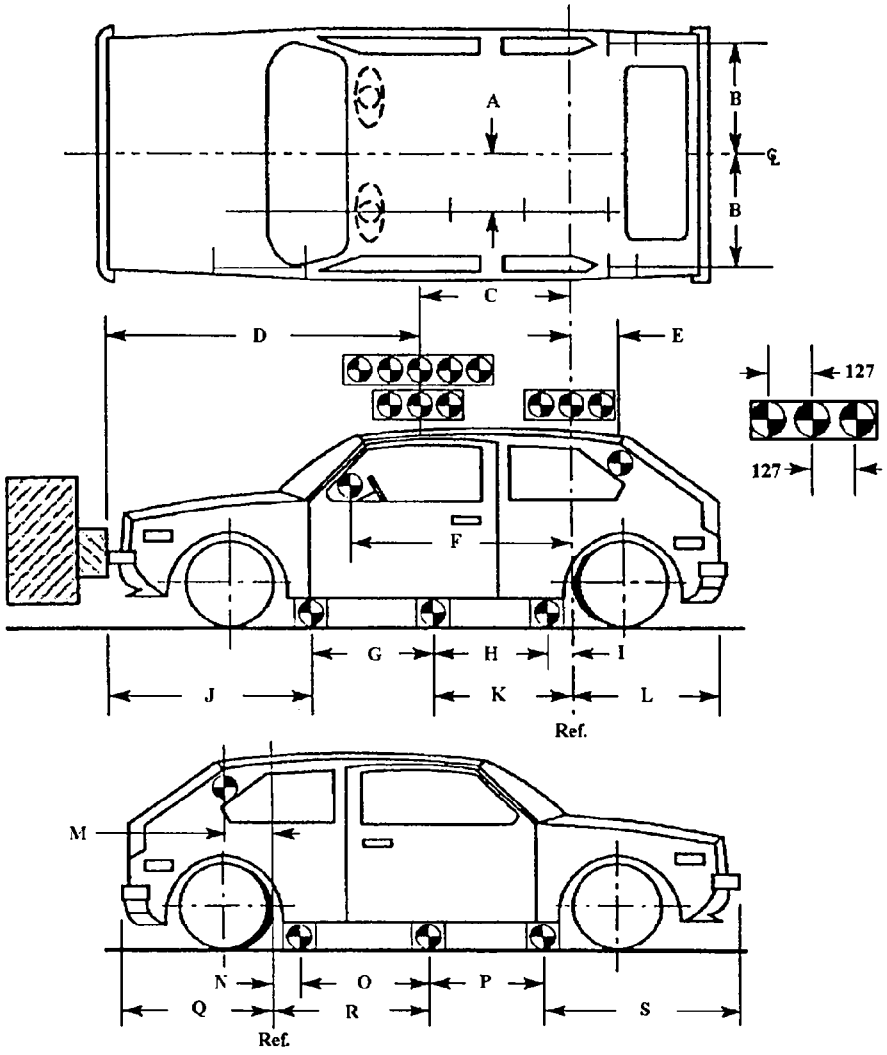
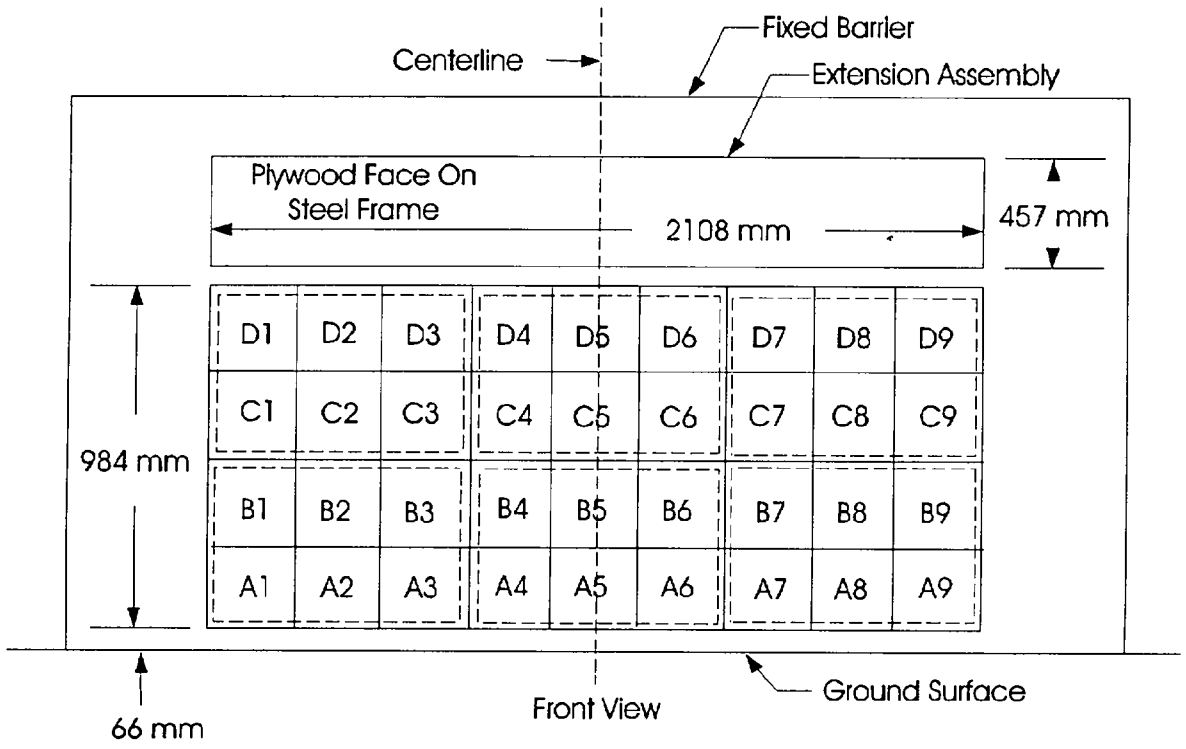


Figure 5

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

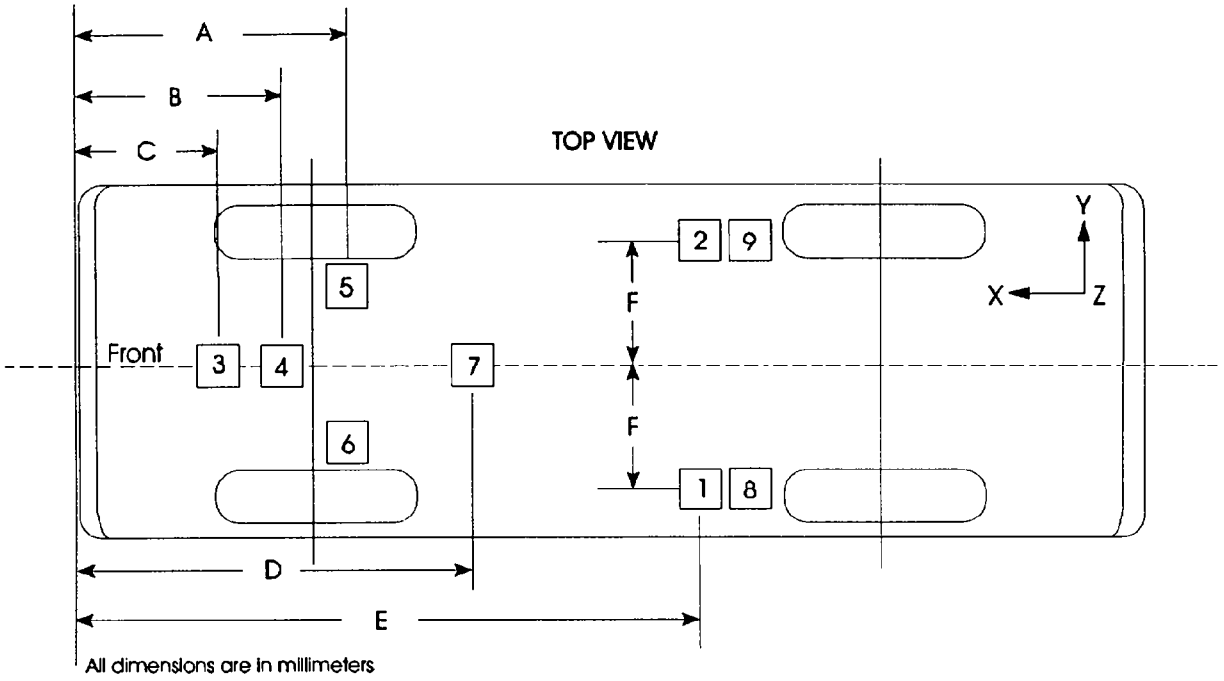
Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

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 = 2785	Y = -435
2	Right Rear Seat Crossmember [E/F]	X = 2785	Y = 370
3	Top of engine [C]	846	
4	Bottom of engine [B]	940	
5	Right Disc Brake Caliper [A]	1137	
6	Left Disc Brake Caliper [A]	1139	
7	Instrument Panel [D]	2477	
8	Left Rear Seat Crossmember [E/F]	X = 2785	Y = -395
9	Right Rear Seat Crossmember [E/F]	X = 2785	Y = 318

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

Figure 7

TEST VEHICLE MEASUREMENTS

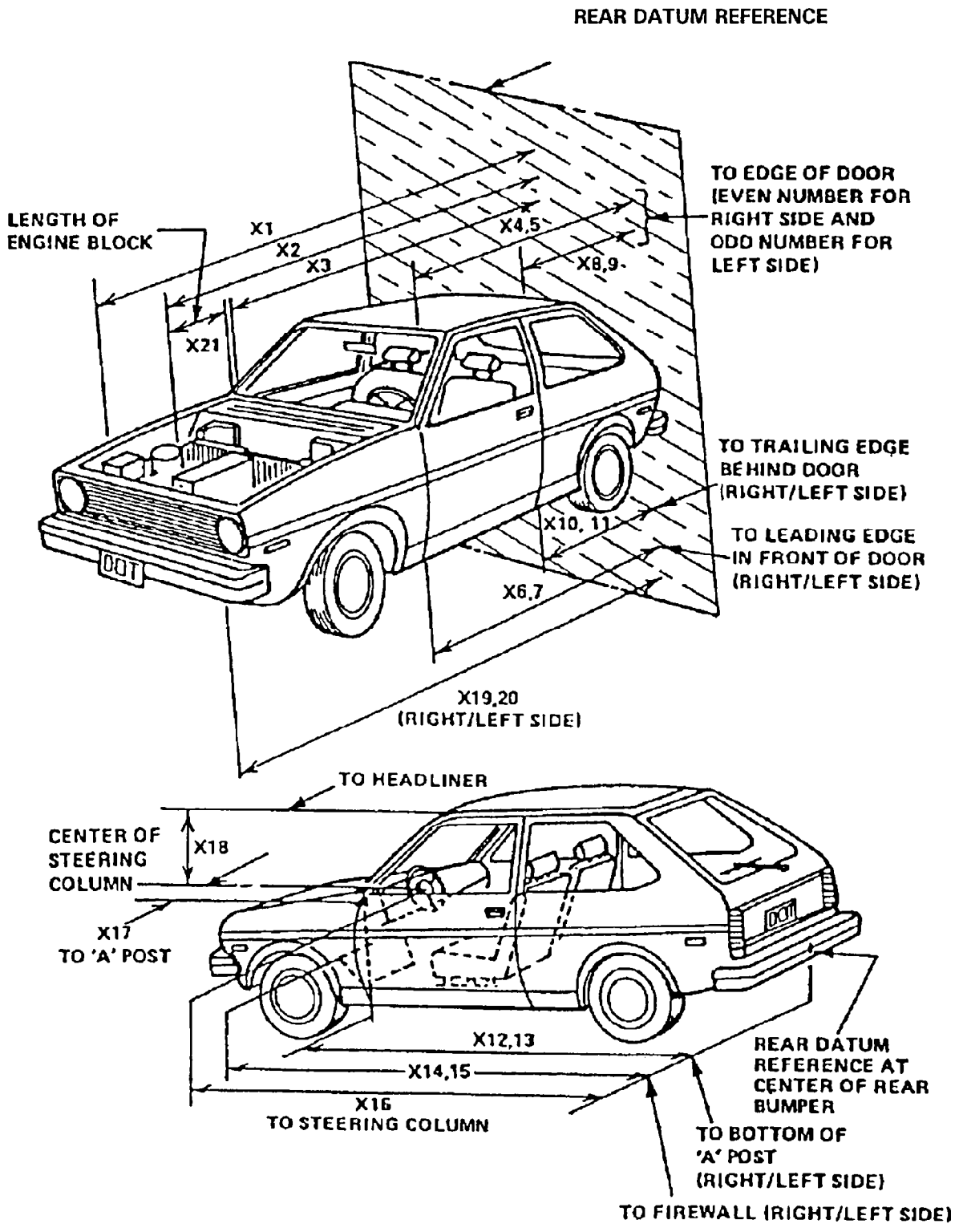


Table 7

VEHICLE MEASUREMENTS

		All Dimensions in mm		
No.		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	4525	3950	575
X2	Rear Surface of Vehicle to Front of Engine	3800	3560	240
X3	Rear Surface of Vehicle to Firewall	3575	3355	220
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3253	3247	6
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3245	3242	3
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3178	3159	19
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3173	3152	21
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2103	2105	-2
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2105	2096	9
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2080	2065	15
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2076	2057	19
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3170	3138	32
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3165	3133	32
X14	Rear Surface of Vehicle to Firewall, Right Side	3445	3360	85
X15	Rear Surface of Vehicle to Firewall, Left Side	3446	3370	76
X16	Rear Surface of Vehicle to Steering Column	2722	2750	-28
X17	Center of Steering Column to "A" Post	400	385	15
X18	Center of Steering Column to Headliner	440	360	80
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4440	3940	500
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4440	3940	500
X21	Length of Engine Block	430	430	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2960	2950	10
CD	Rear Surface of Vehicle to Center of Dash Panel	2945	2935	10
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2935	2930	5

Table 8

ACCIDENT INVESTIGATION DIVISION DATA

FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Nissan Pathfinder 4 x 4

NHTSA Test No.: MT5202 VIN: JN8AR05Y4TW020153

Model Year: 1996 Build Date: 1/96 Test Date: Sept. 17, 1996

Vehicle Size Category: MPV Test Weight: 2089 Kgs

Vehicle Wheelbase: 2690 mm; Front Overhang: 1293 mm; Overall Width: 1745 mm

Collision Deformation Classification (CDC) Code: 12FDEW2

Crush Depth Dimensions:

C1 = 470 mm

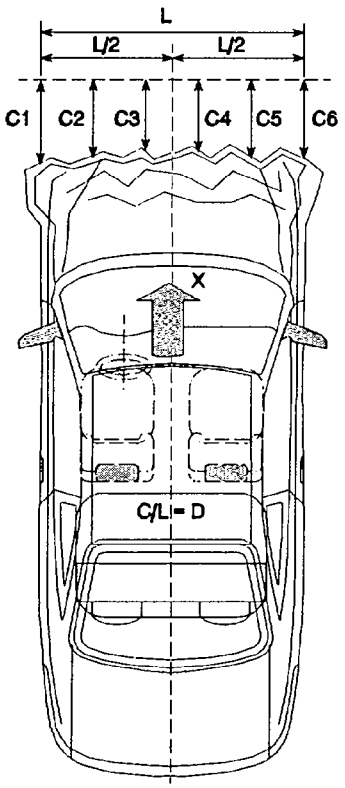
C2 = 555 mm

C3 = 583 mm

C4 = 583 mm

C5 = 550 mm

C6 = 475 mm



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

Longitude Length of Damaged Region: L= 1745 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 12 mm molding.

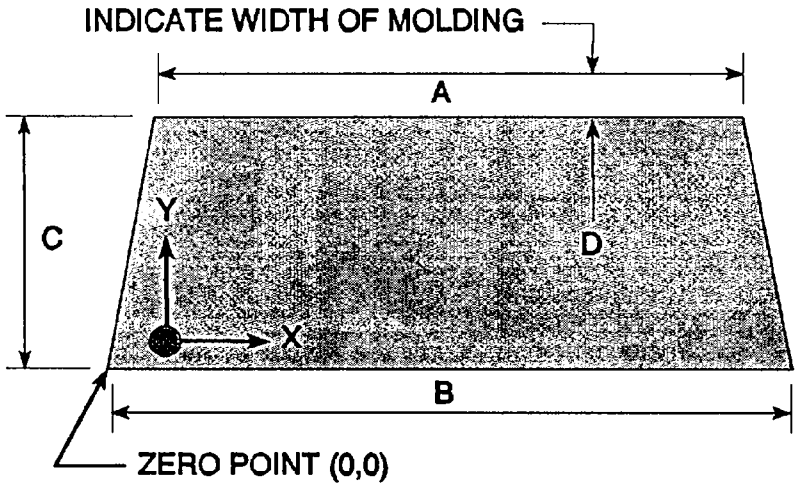
FMVSS 212 REQUIREMENTS:

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	2026	2026	100
LEFT SIDE	2026	2026	100
TOTAL	4,052	4,052	100

AREA OF RETENTION FAILURE:



FRONT VIEW OF WINDSHIELD

DIMENSIONS	
A	1168
B	1466
C	709
D	12

FAILURE DETAILS: None

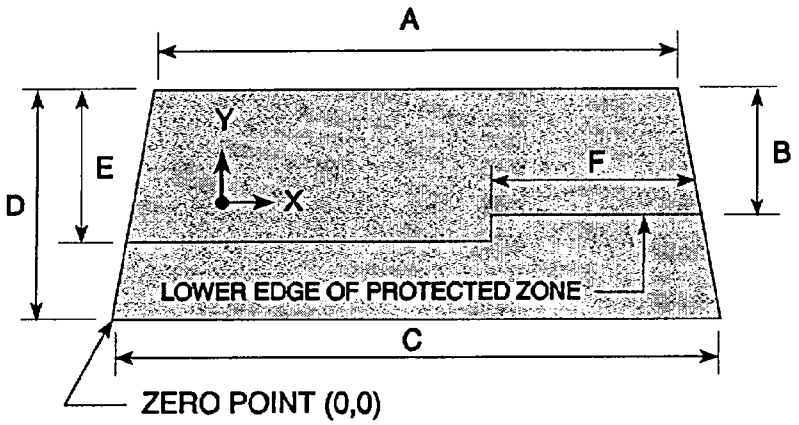
Figure 9

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	1168
B	395
C	1466
D	709
E	487
F	850

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

NHTSA TEST No.: MT5202 TEST DATE: Sept. 17, 1996

VEHICLE MAKE/MODEL: 1996 Nissan Pathfinder

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:

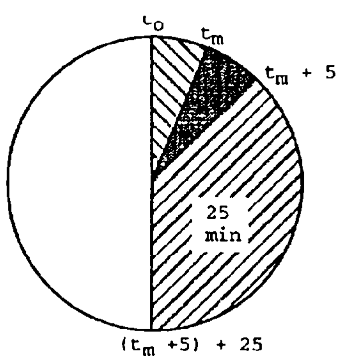
X Frontal (35 mph)

\- 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.

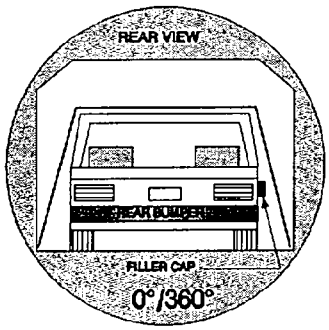
SOLVENT SPILLAGE DETAILS: None

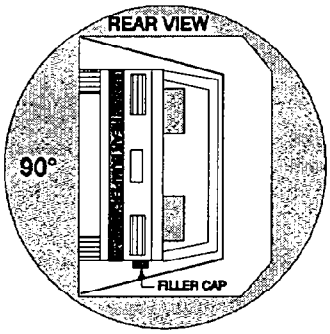
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

NHTSA Test No.:
MT5202





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	39	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	39	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	N/A

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

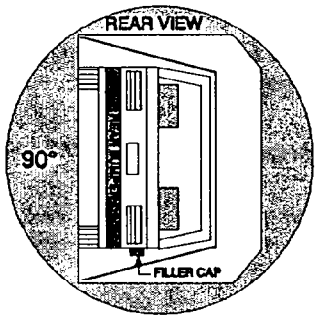
IV. SOLVENT SPILLAGE LOCATION(S): None

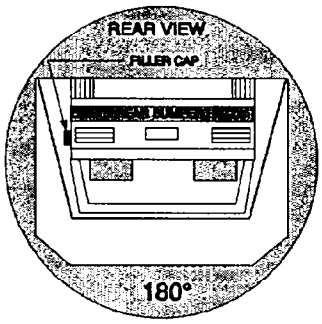
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

NHTSA Test No.:
MT5202





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	06	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	06	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.

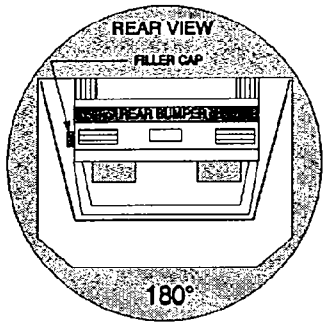
IV. SOLVENT SPILLAGE LOCATION(S): None

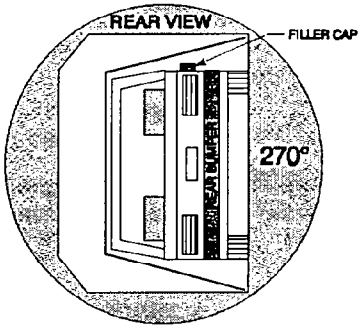
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

NHTSA Test No.:
MT5202





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	58	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	58	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	N/A

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

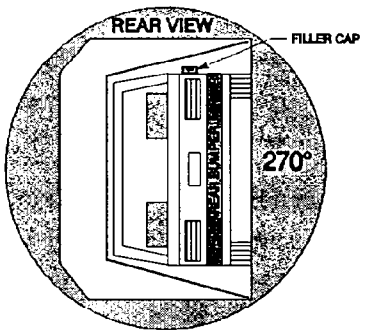
IV. SOLVENT SPILLAGE LOCATION(S): None

Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

NHTSA Test No.:
MT5202



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	21	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	21	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

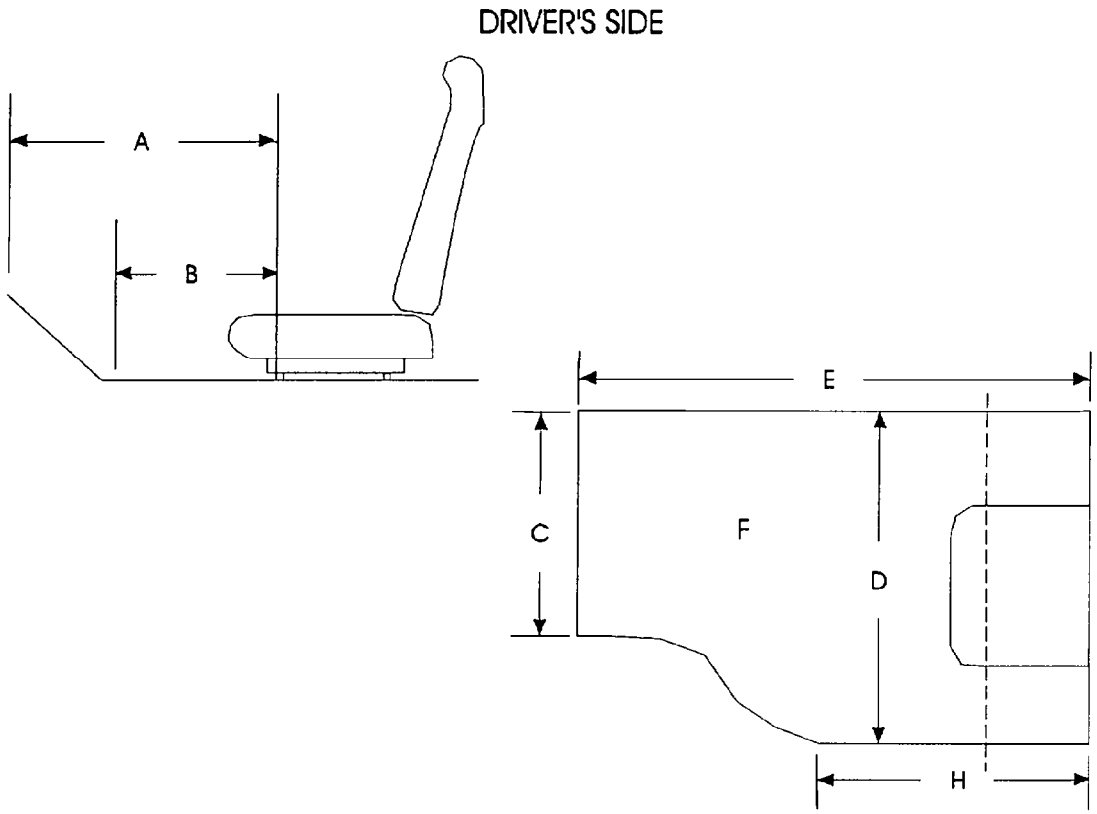
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0

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

IV. SOLVENT SPILLAGE LOCATION(S): None

Figure 10
DRIVER SIDE FLOORBOARD DEFORMATION

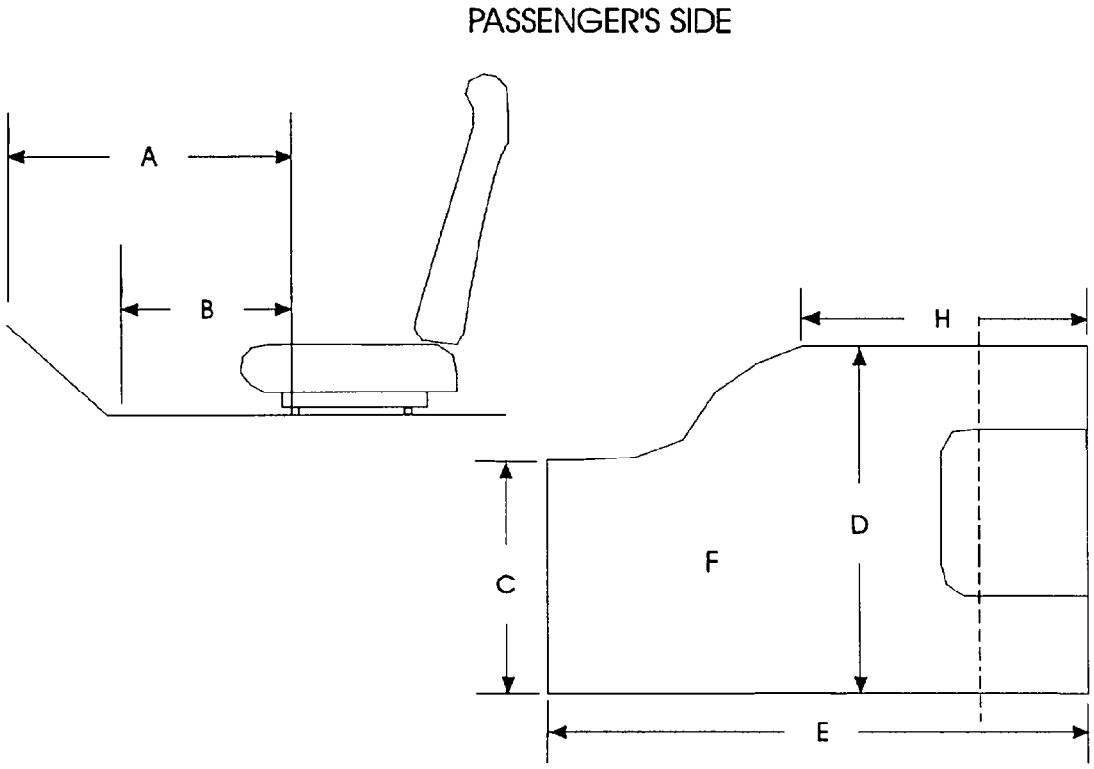


Measurement	Pre-Test	Post-Test	Difference
A	650	580	70
B	565	540	25
C	375	375	0
D	415	385	30
E	900	870	30
H	300	285	15
F $(cm)^2$	3495	3291	204

Units = mm

$F = H \times D + (E - H) \times C$

Figure 11
PASSENGER SIDE FLOORBOARD DEFORMATION

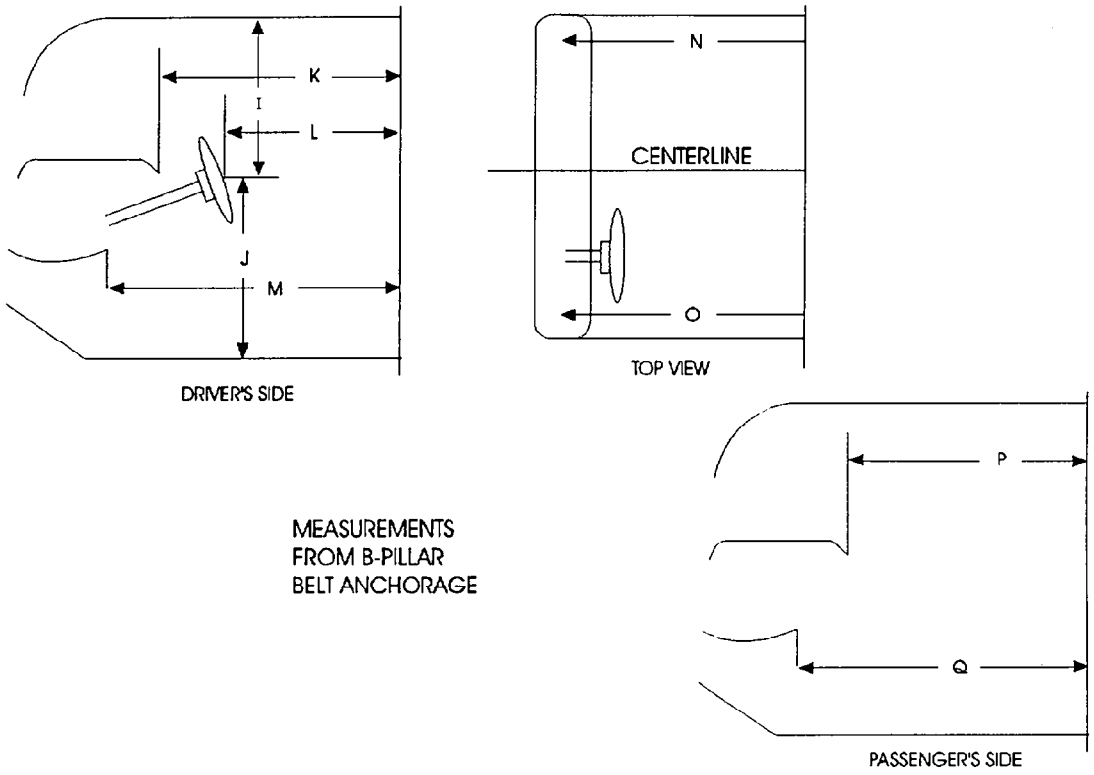


Measurement	Pre-Test	Post-Test	Difference
A	680	565	115
B	540	500	40
C	330	N.A.	N.A.
D	405	290	115
E	900	860	40
H	300	300	0
F $(cm)^2$	3195	N.A.	N.A.

Units = mm

$F = H \times D + (E - H) \times C$

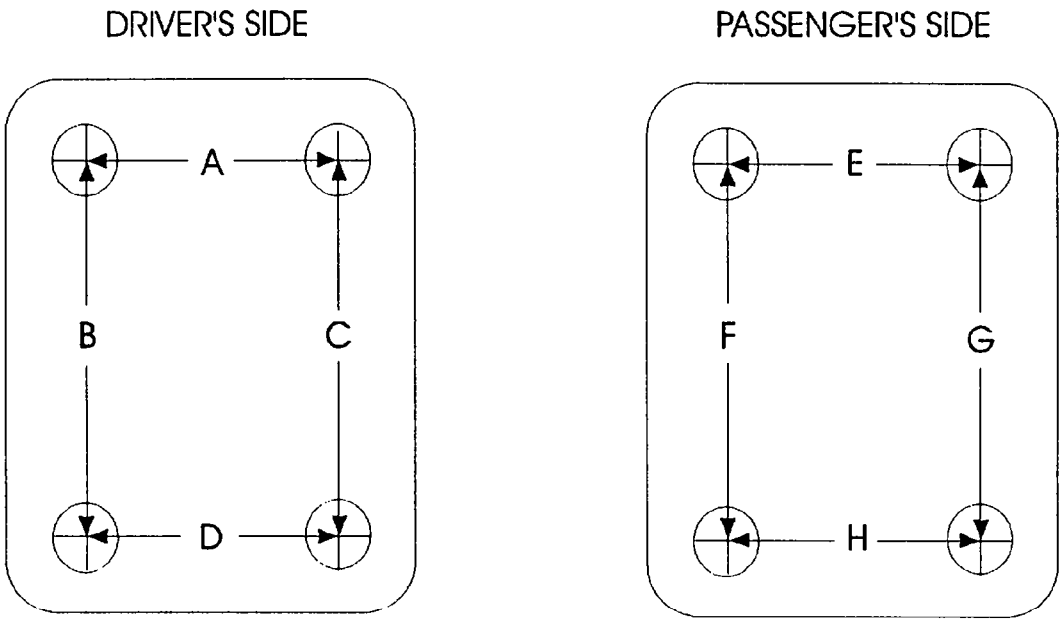
Figure 12
INTERIOR DEFORMATION



Measurement	Pre-Test	Post-Test	Difference
I	430	370	60
J	645	760	-115
K	1595	1570	25
L	1352	1380	-28
M	1585	1510	75
N	1580	1580	0
O	1565	1560	5
P	1610	1600	10
Q	1560	1565	-5

Units = mm

Figure 13
FLOORBOARD DEFORMATION



TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	350	365	-15
B	440	435	5
C	650	540	110
D	360	350	10
E	315	330	-15
F	650	570	80
G	515	520	-5
H	380	340	40

Units = mm

Appendix A

PHOTOGRAPHS

PHOTOGRAPHS

Figure A-1 LOAD CELL LOCATIONS

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Figure A-2 PRE-TEST FRONT VIEW

Figure A-3 POST-TEST FRONT VIEW

Figure A-4 PRE-TEST LEFT SIDE VIEW

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Figure A-5 POST-TEST LEFT SIDE VIEW

8313-10

Figure A-6 PRE-TEST RIGHT SIDE VIEW

Figure A-7 POST-TEST RIGHT SIDE VIEW

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

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

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

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

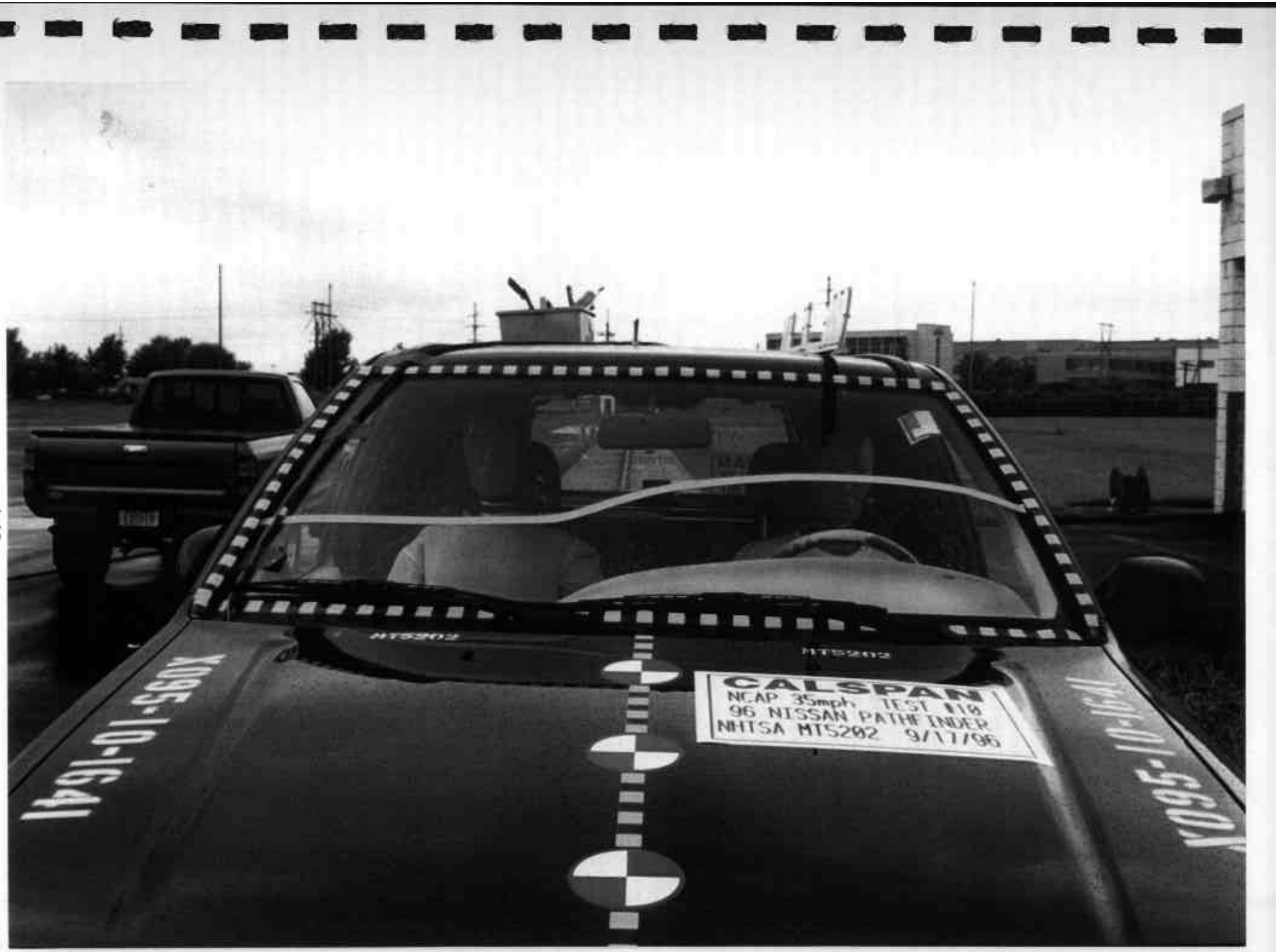


Figure A-12 PRE-TEST WINDSHIELD VIEW

Figure A-13 POST-TEST WINDSHIELD VIEW

Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

Figure A-15 FUEL CAP VIEW

8313-10

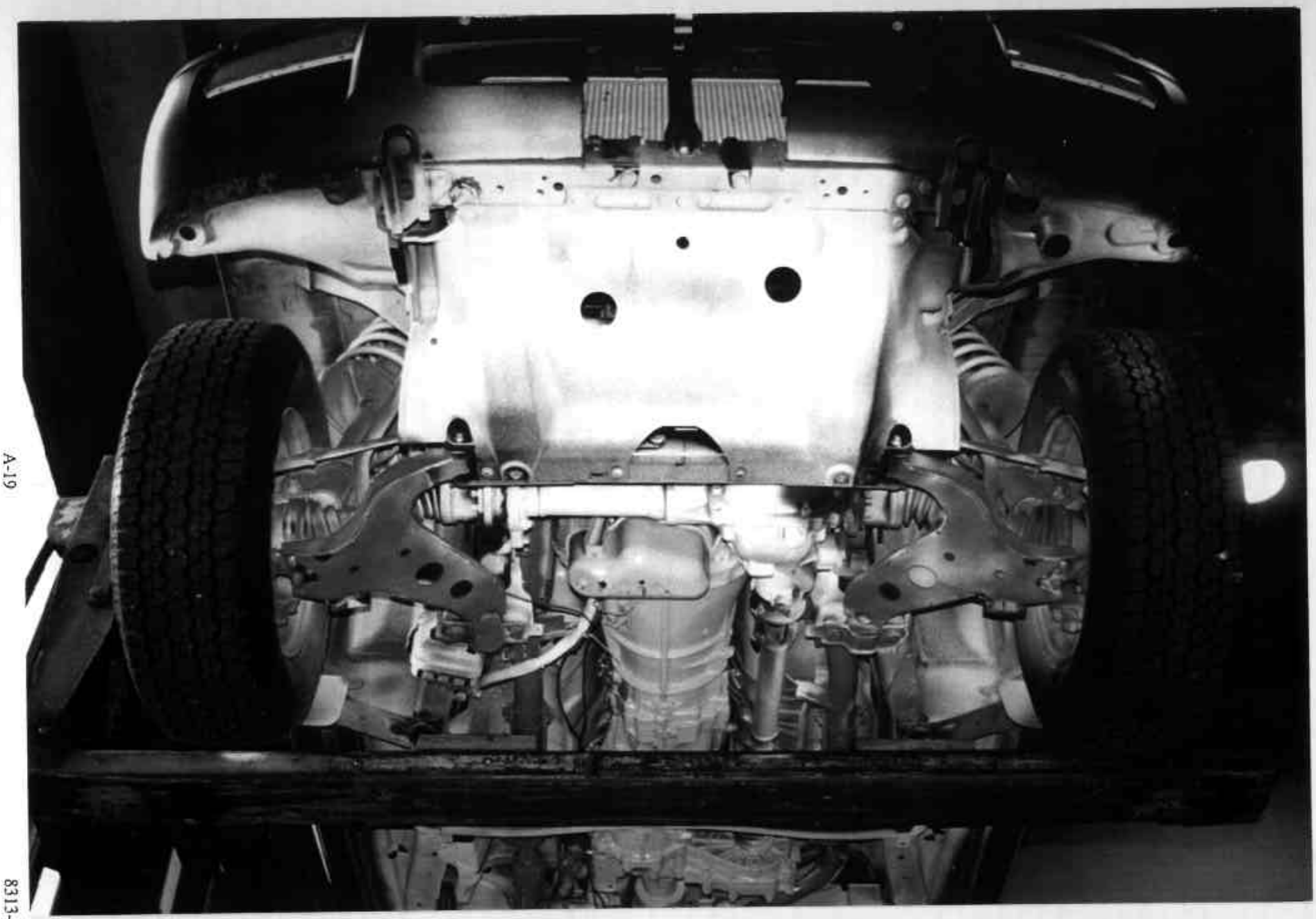
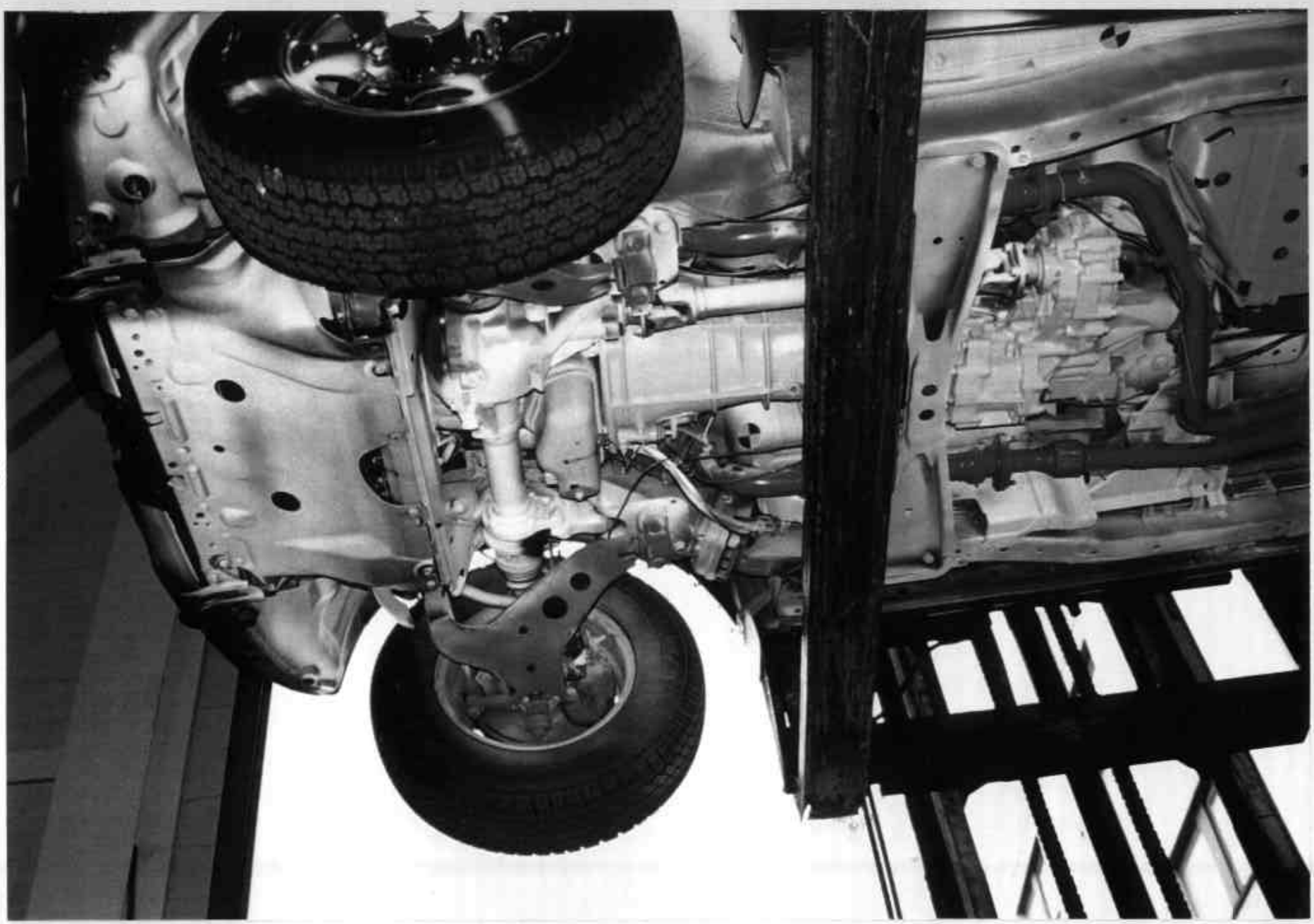


Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

8313-10

Figure A-17 POST-TEST FRONT UNDERBODY VIEW



8313-10

Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW

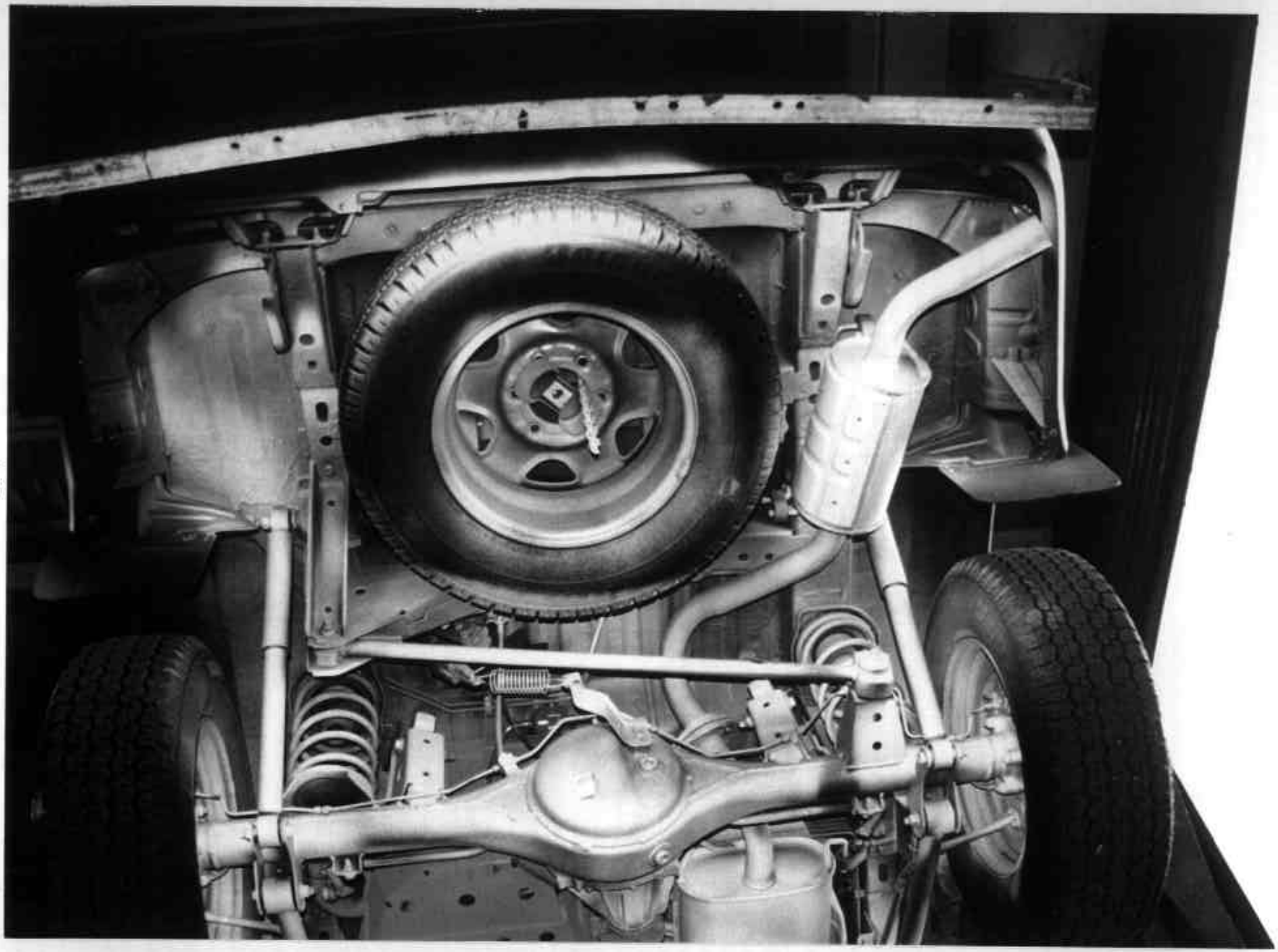


Figure A-20 PRE-TEST REAR UNDERBODY VIEW

Figure A-21 POST-TEST REAR UNDERBODY VIEW

Figure A-22 PRE-TEST DRIVER POSITION VIEW

8313-10

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Figure A-23 POST-TEST DRIVER POSITION VIEW

Figure A-24 PRE-TEST PASSENGER POSITION VIEW

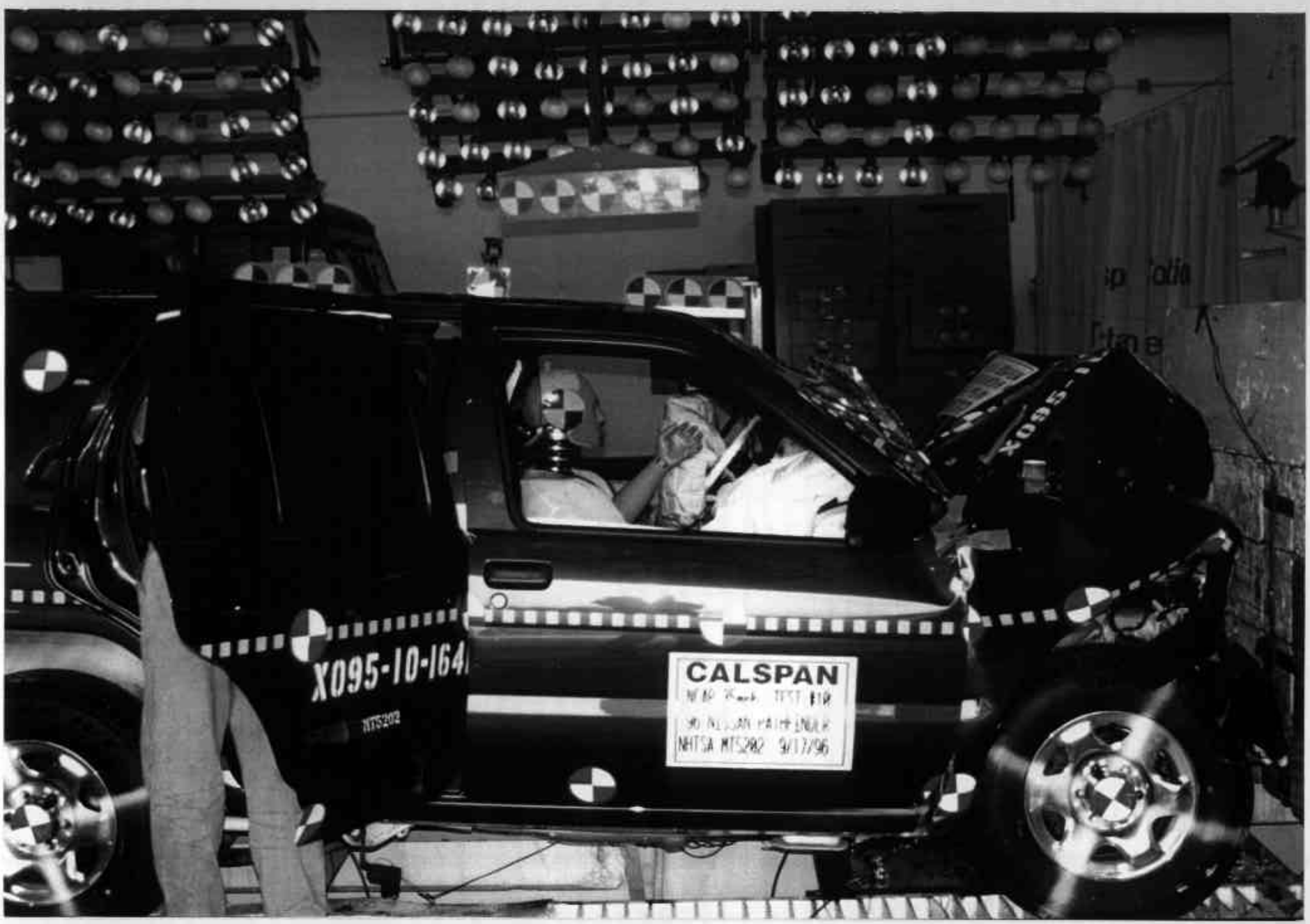

Figure A-25 POST-TEST PASSENGER POSITION VIEW

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 PRE-TEST DRIVER HEAD LOCATION

Figure A-31 POST-TEST DRIVER HEAD LOCATION

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Figure A-32 PRE-TEST PASSENGER HEAD LOCATION

Figure A-33 POST-TEST PASSENGER HEAD LOCATION

A-37

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Figure A-34 PRE-TEST DRIVER FLOOR PAN VIEW

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Figure A-35 POST-TEST DRIVER FLOOR PAN VIEW

Figure A-36 PRE-TEST PASSENGER FLOOR PAN VIEW

A-40

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Figure A-37 POST-TEST PASSENGER FLOOR PAN VIEW

Figure A-38 ROLLOVER VIEW

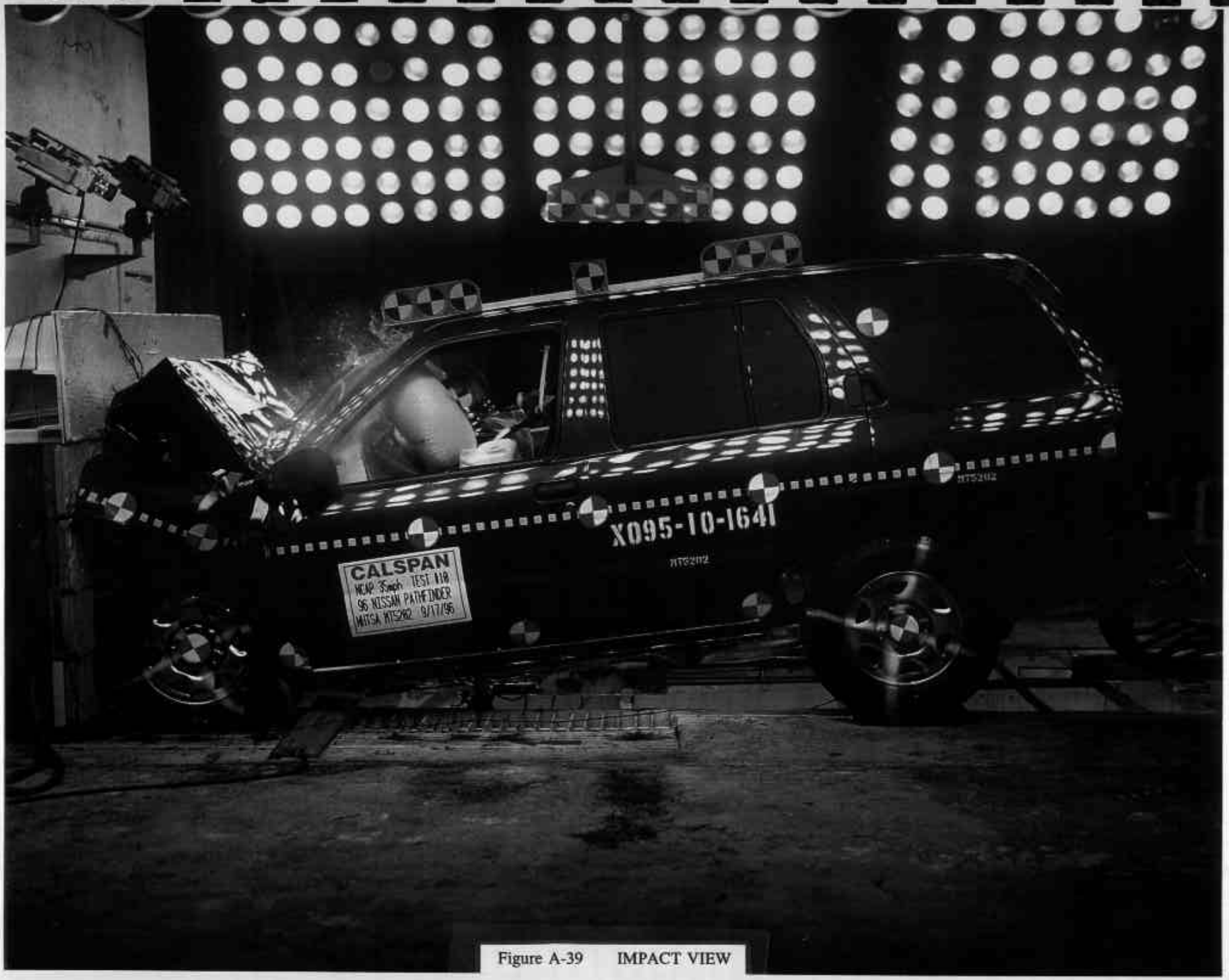


Figure A-39 IMPACT VIEW

Appendix B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

NHTSA TEST NO. MT5202

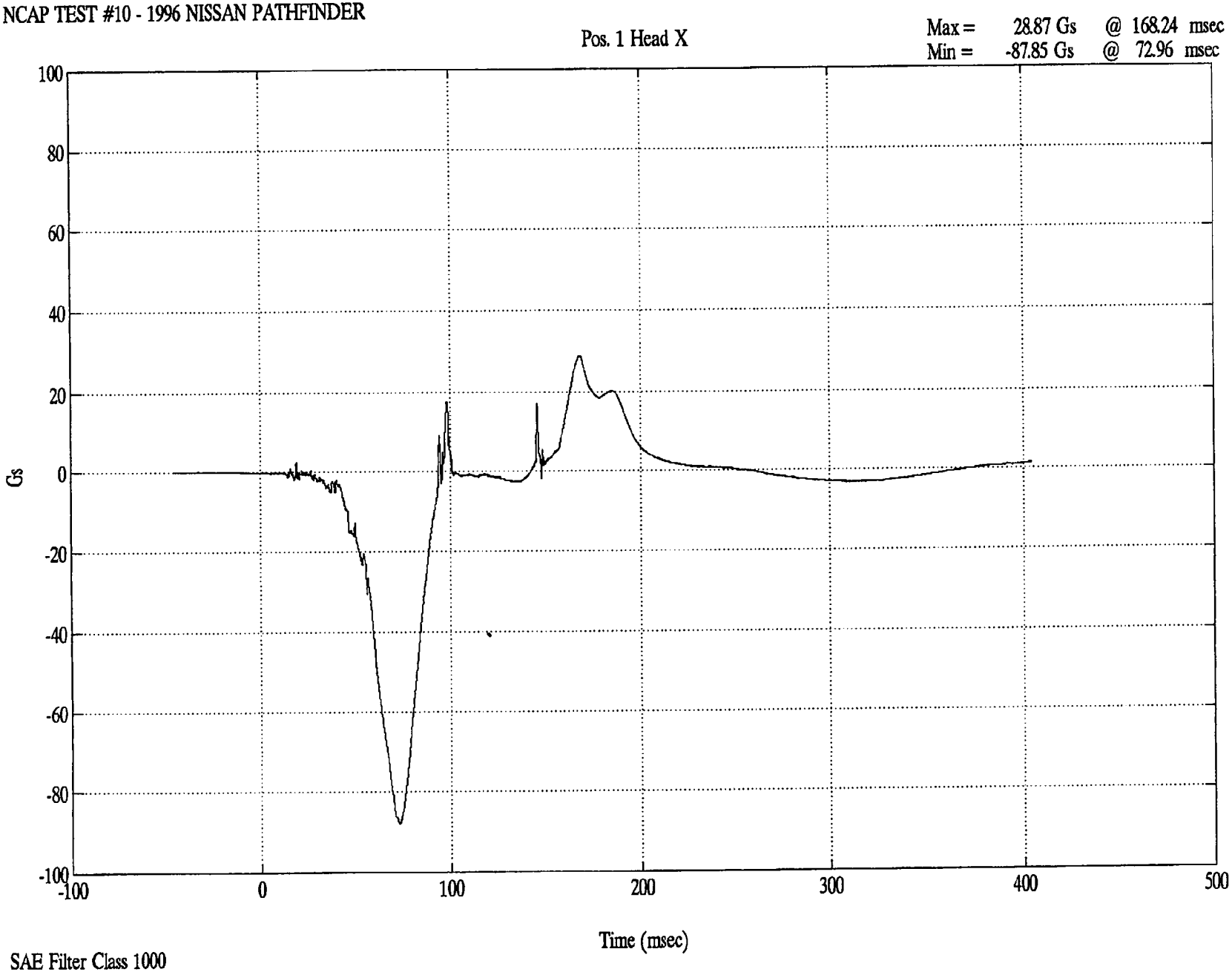
DUMMY DATA

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

Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers

Transducer	DOT/NHTSA Sign Convention (positive unless noted)
Upper Neck Load Cell	Fx Head forward Fy Head left Fz Neck in tension Mx Right ear to right shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower Lumbar)	Fx Chest forward Fy Chest left Fz Spine in tension
Femur Load Cell	Compression is negative
Upper Tibia Load Cell (right and left leg)	Mx Support tibia, load right side center My Support tibia, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fy Foot right w/r to left Fz Tibia in tension Mx Support tibia, press right side center

NCAP TEST #10 - 1996 NISSAN PATHFINDER

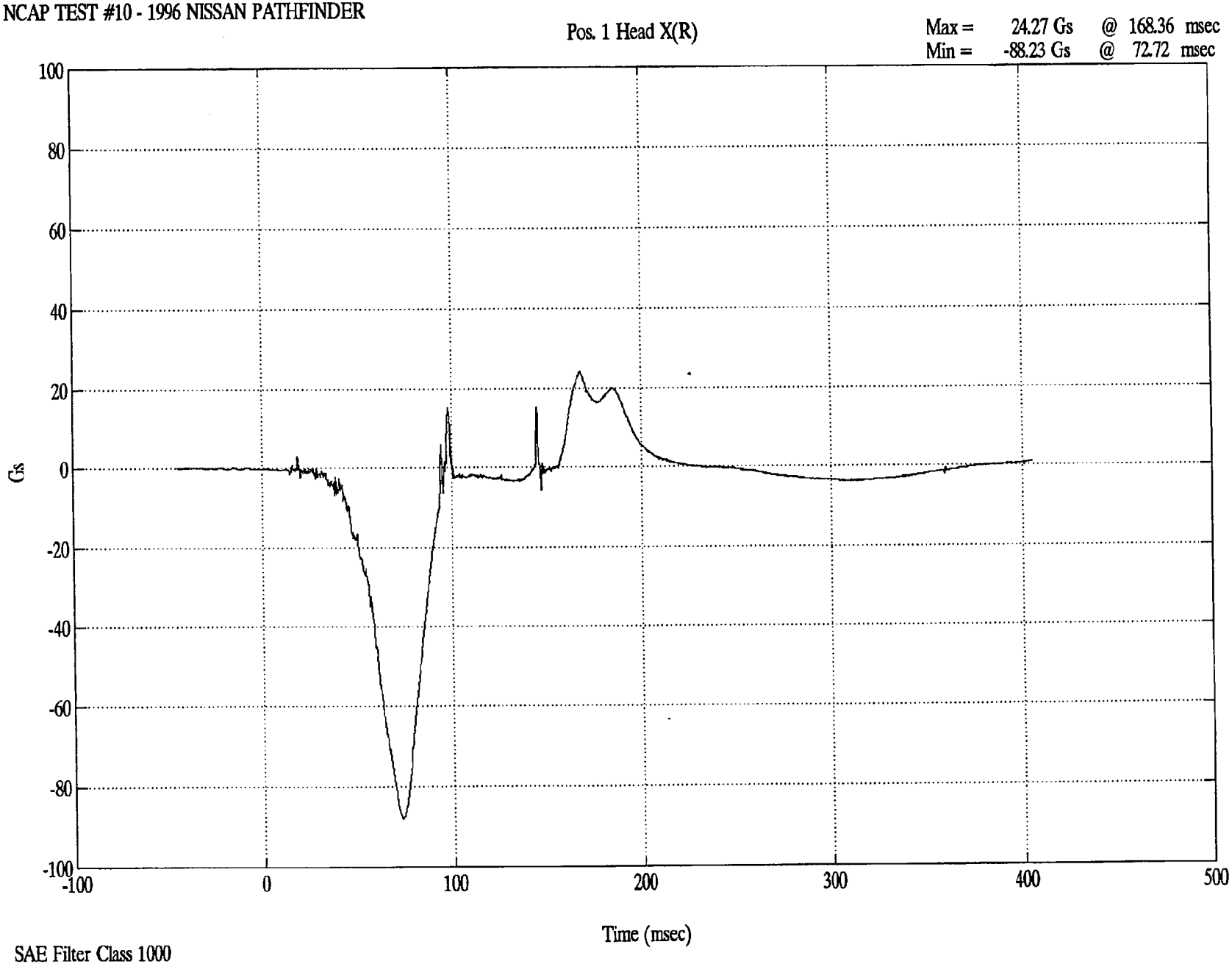


B-4

8313-10

SAE Filter Class 1000

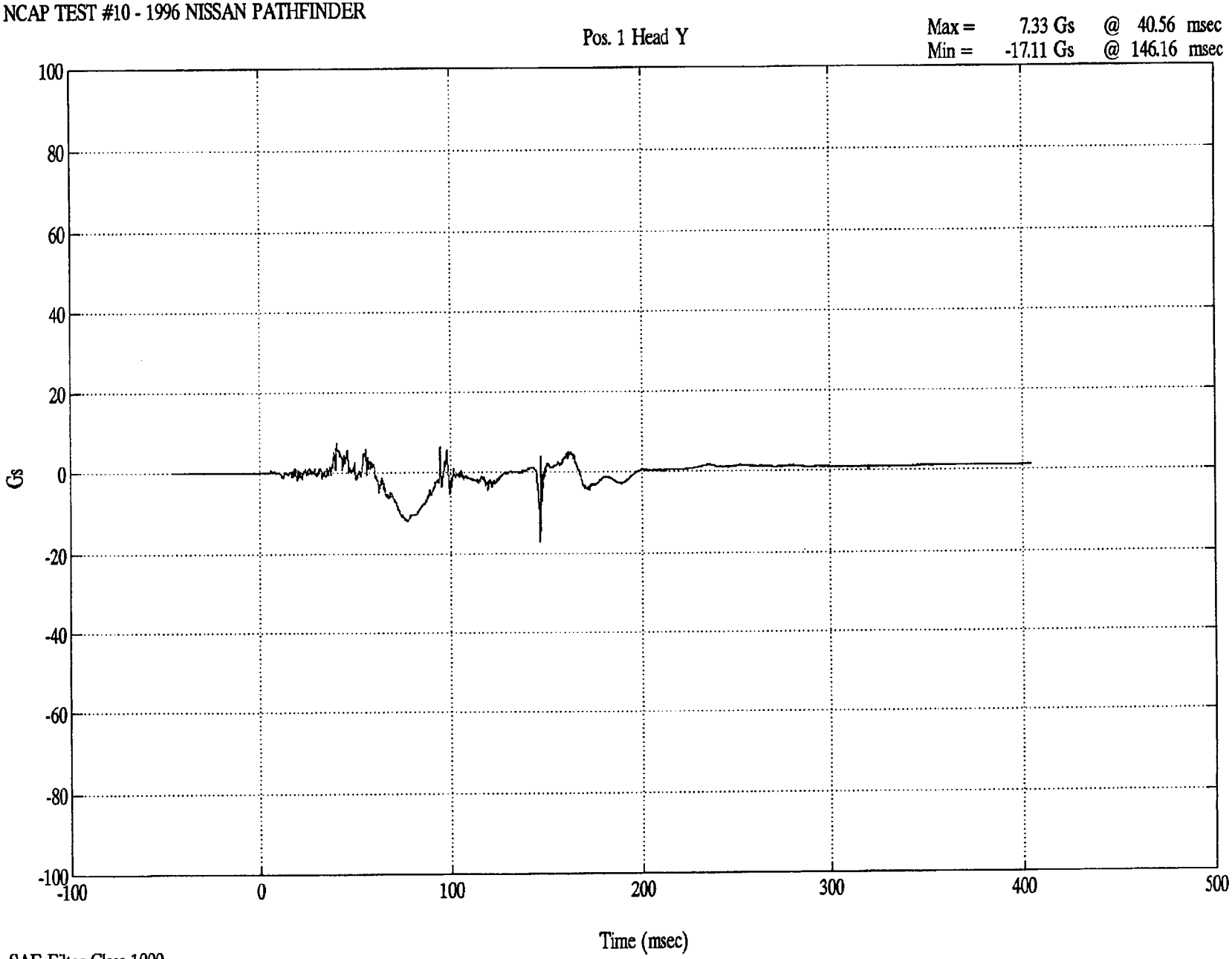
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

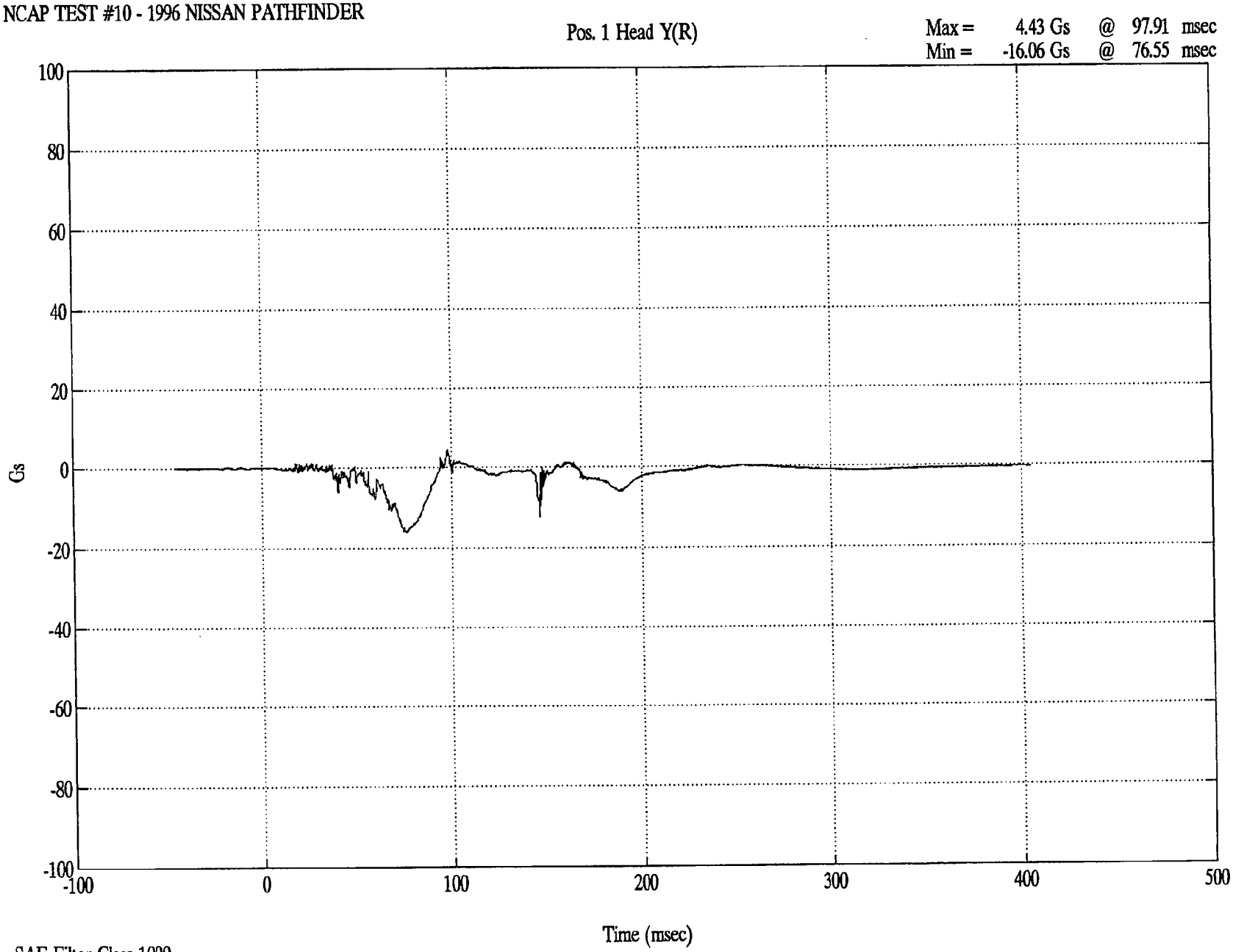
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

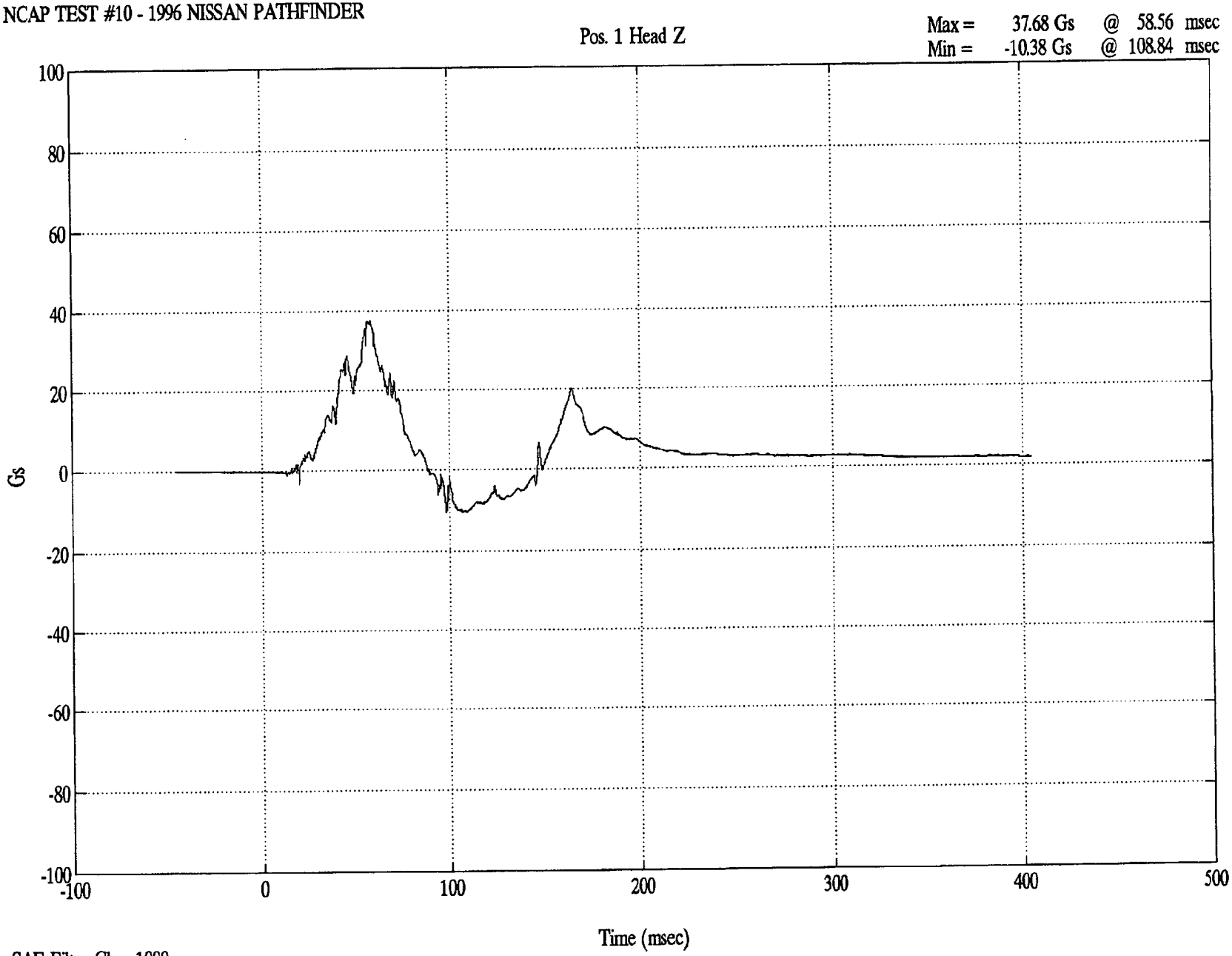


SAE Filter Class 1000

B-7

8313-10

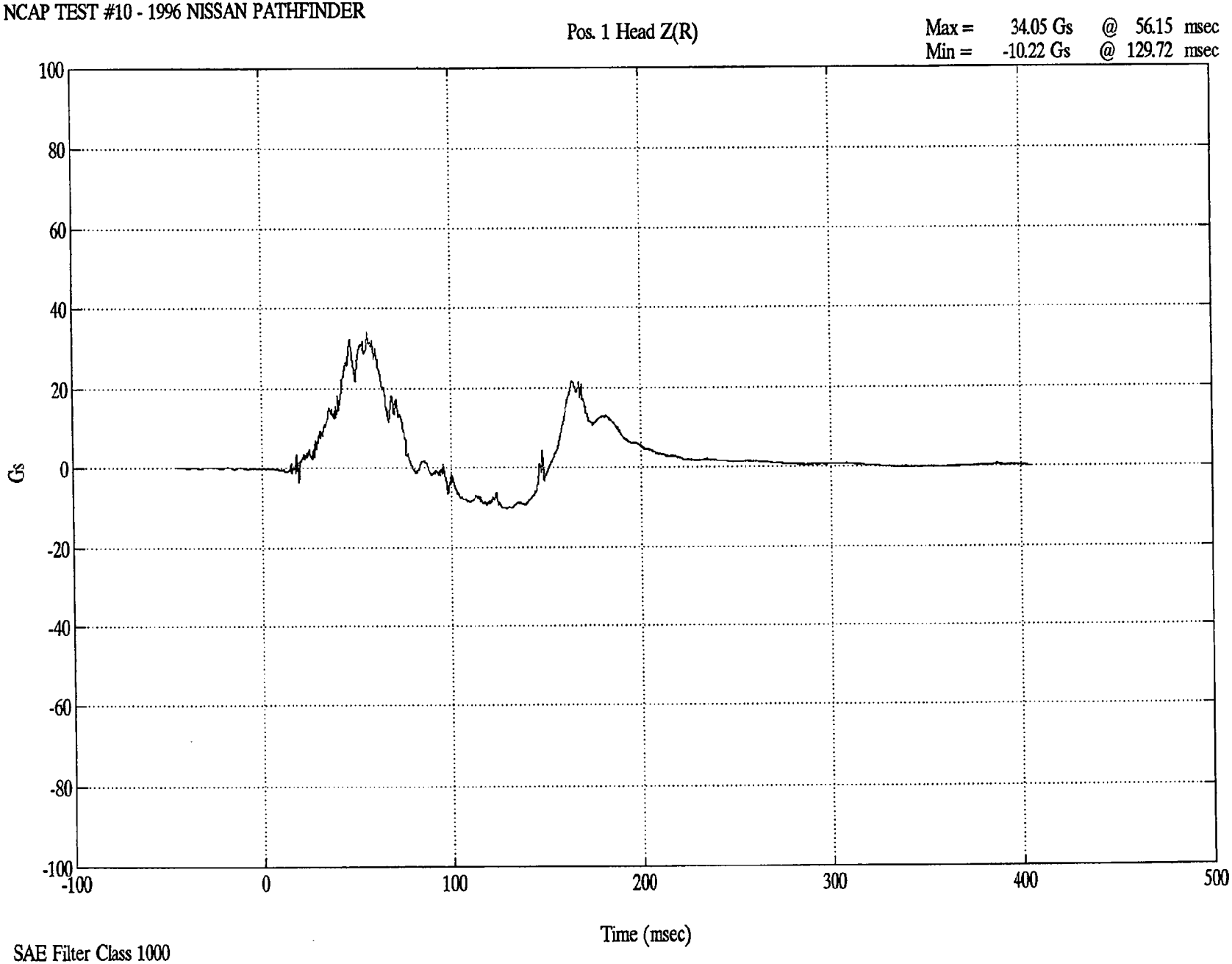
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

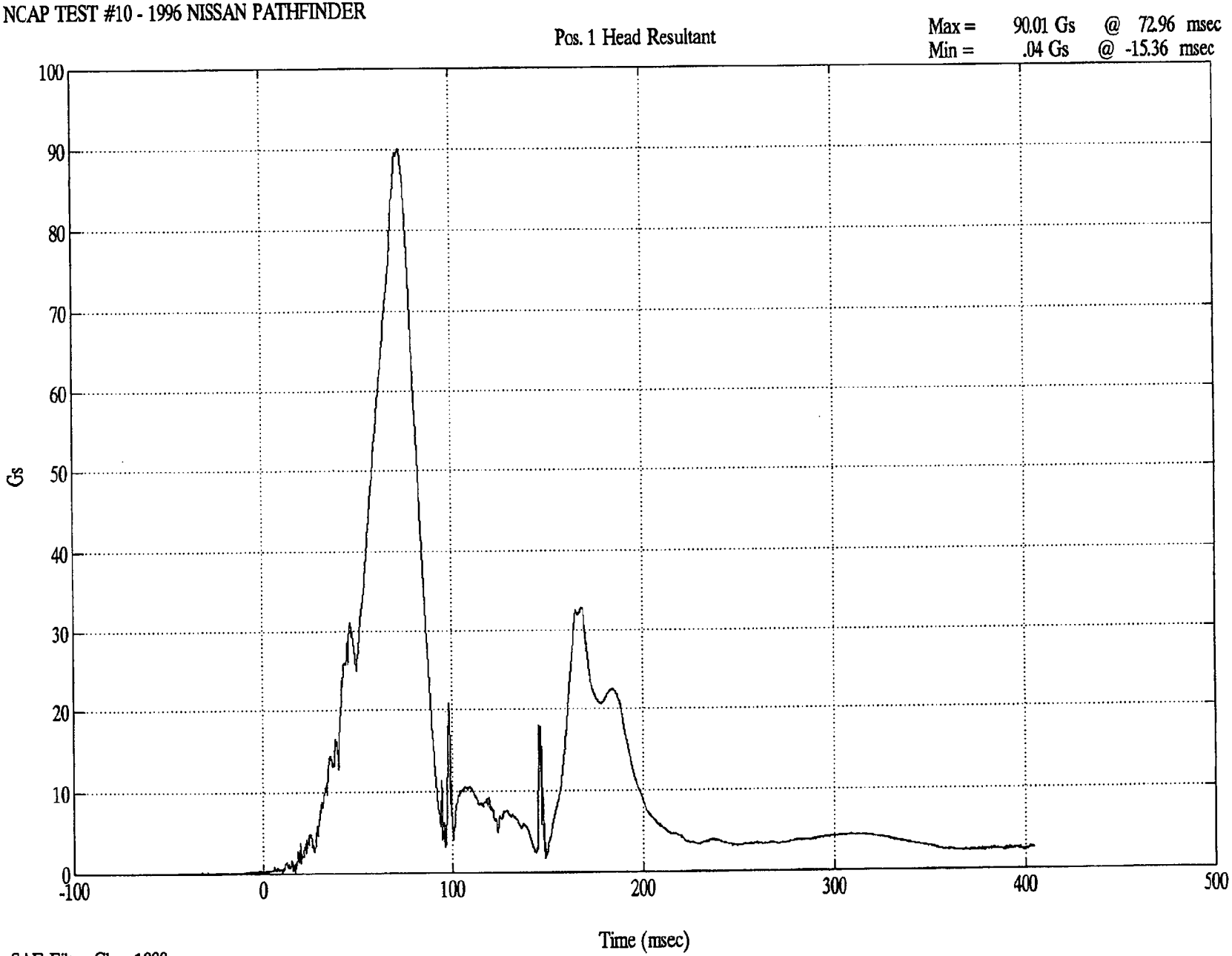
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

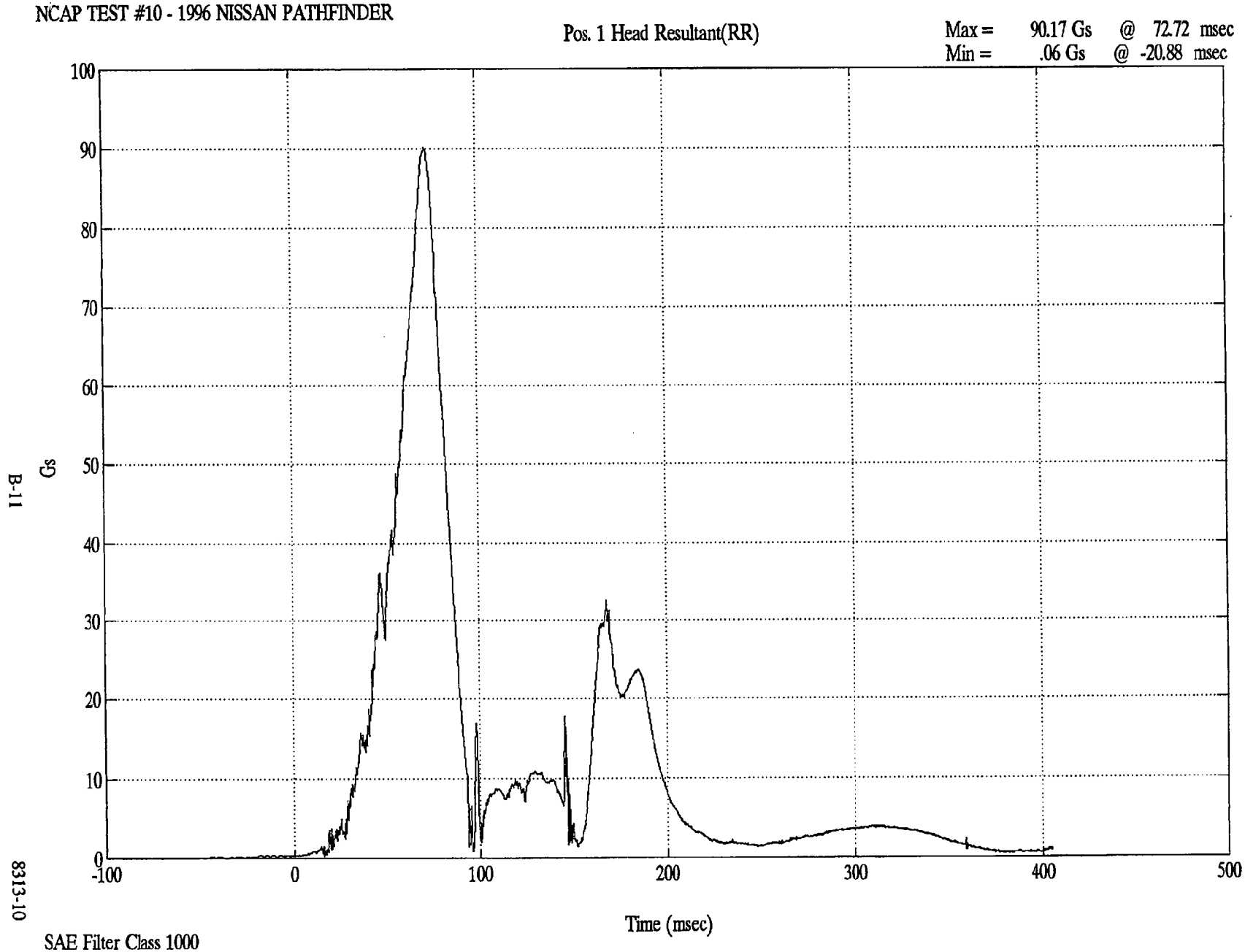
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

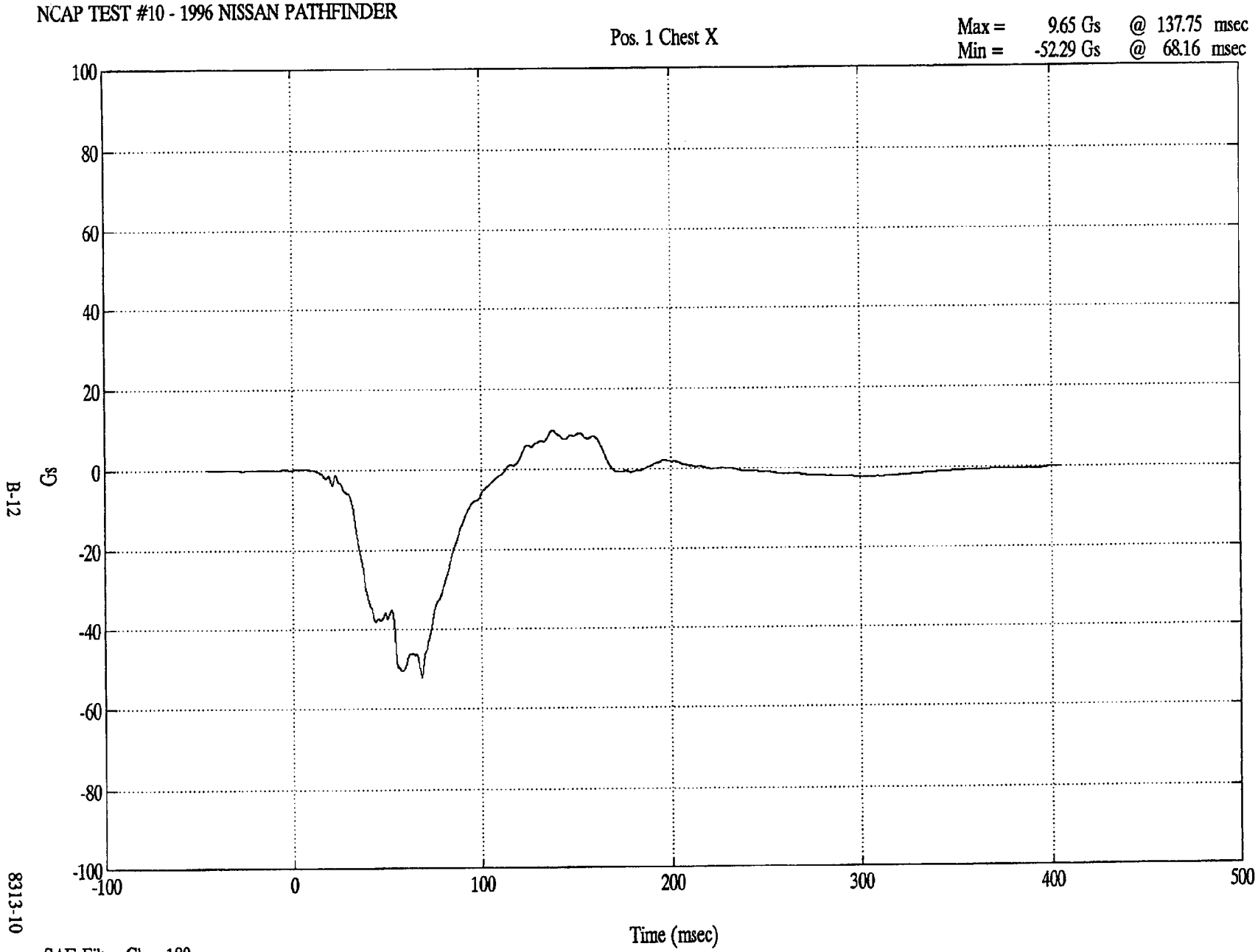


B-11

8313-10

SAE Filter Class 1000

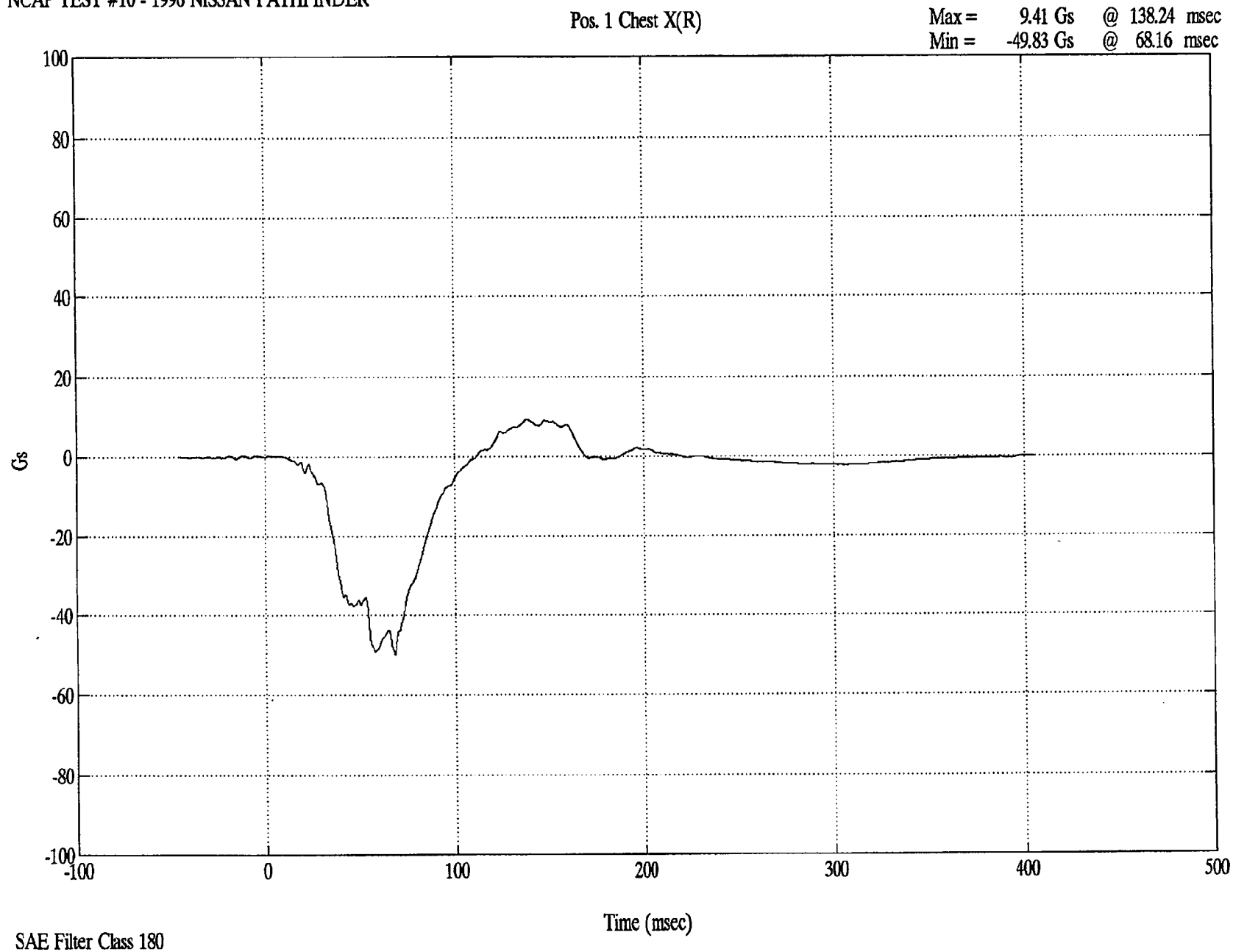
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

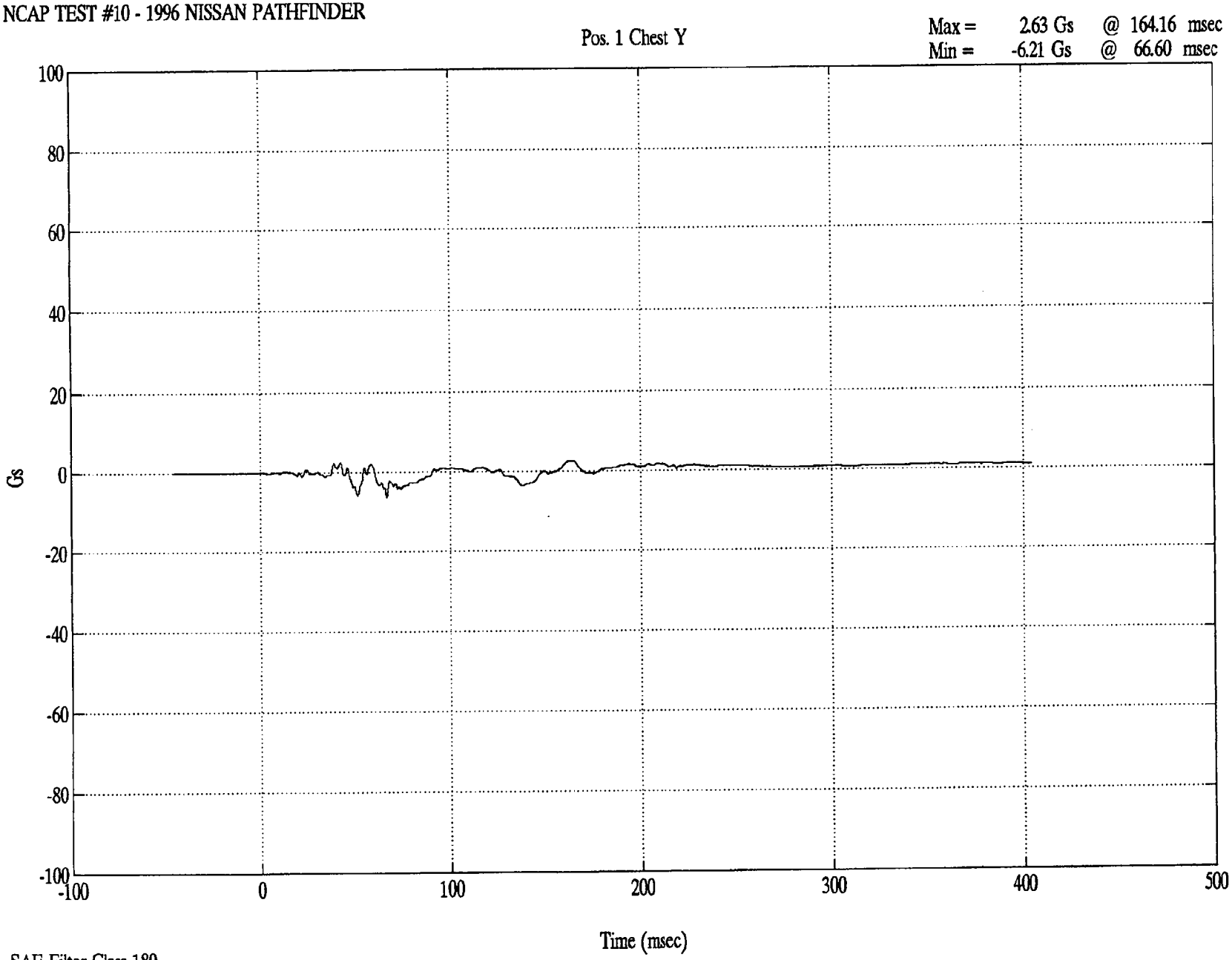


SAE Filter Class 180

B-13

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

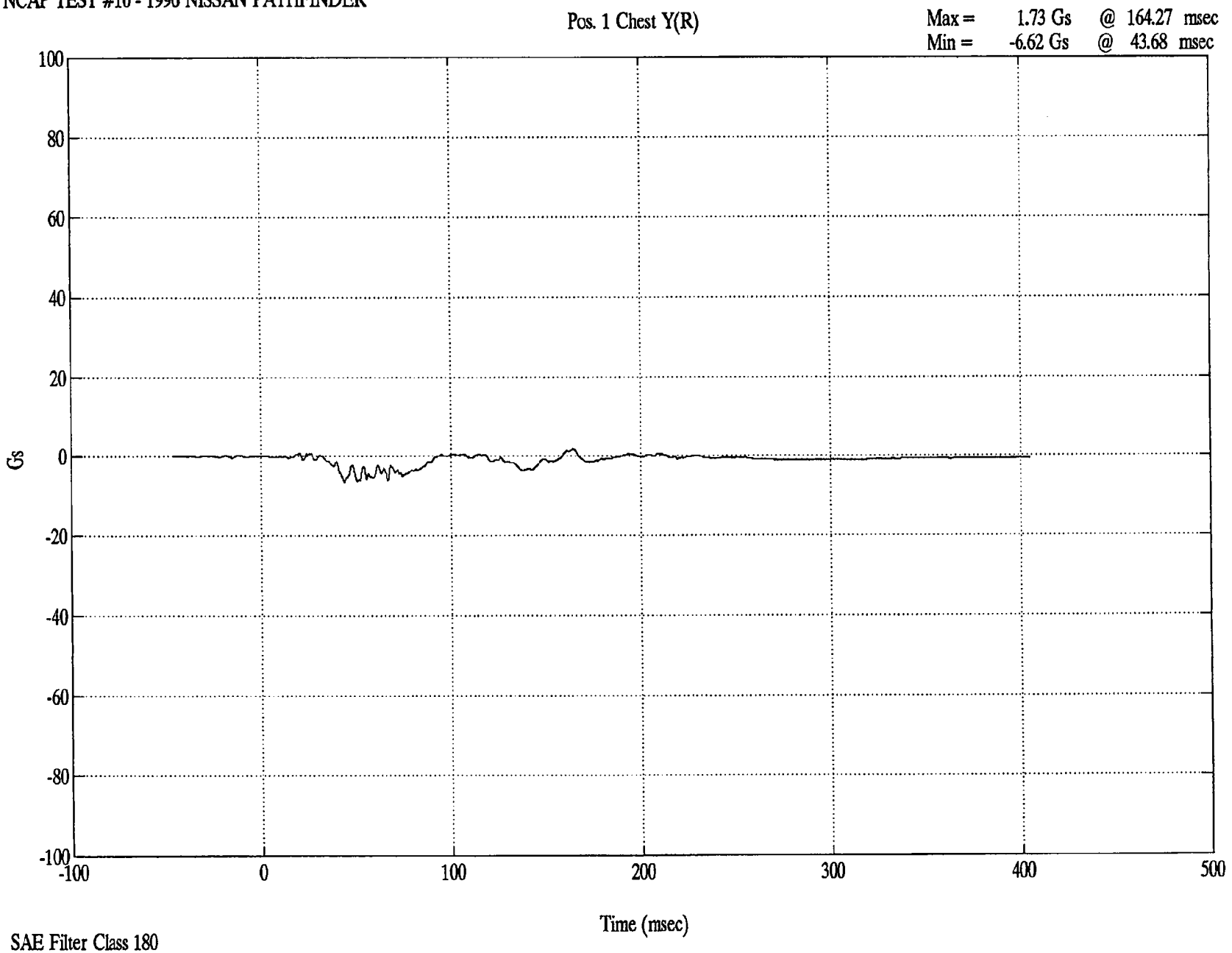


B-14

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

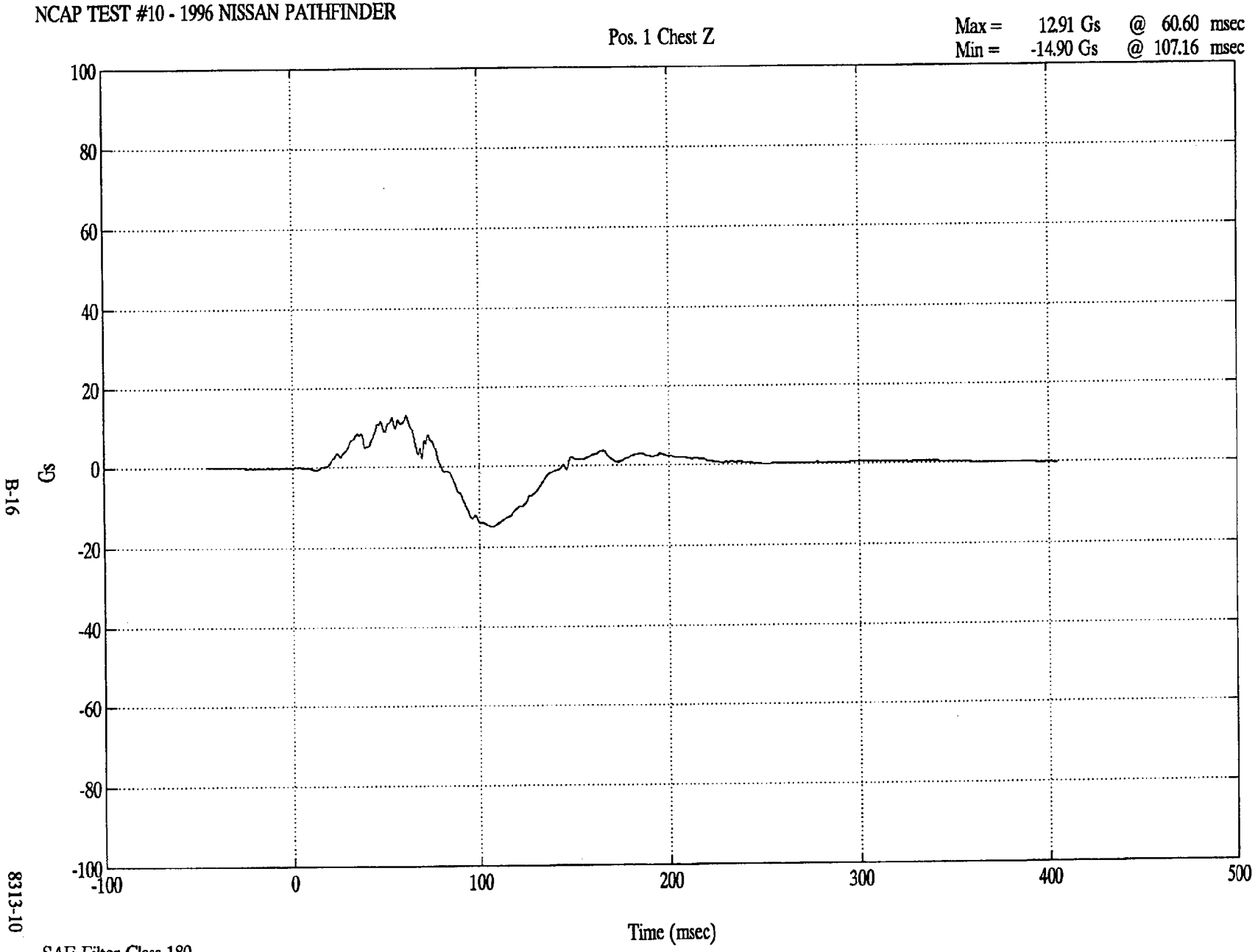


B-15

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

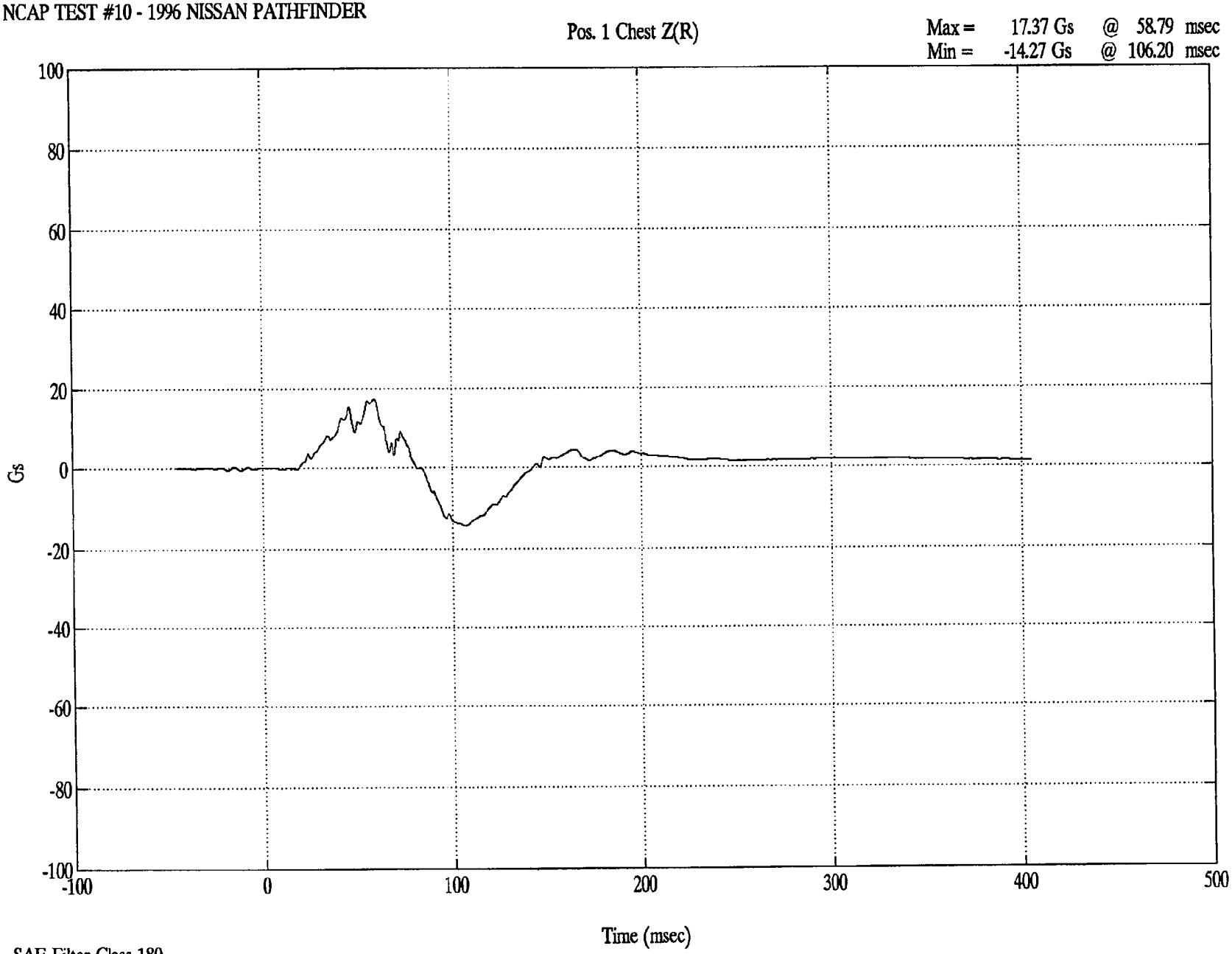


B-16

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

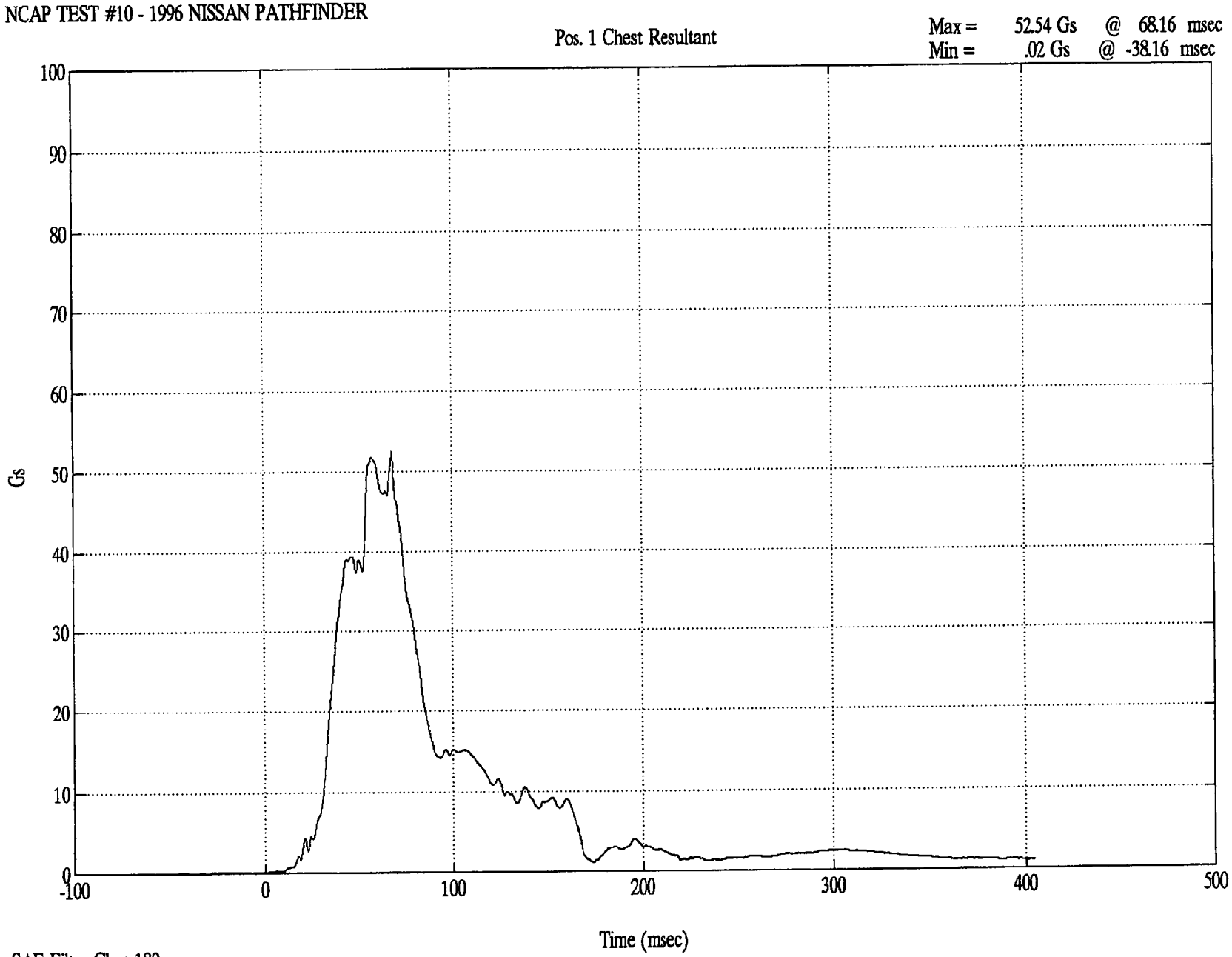


B-17

8313-10

SAE Filter Class 180

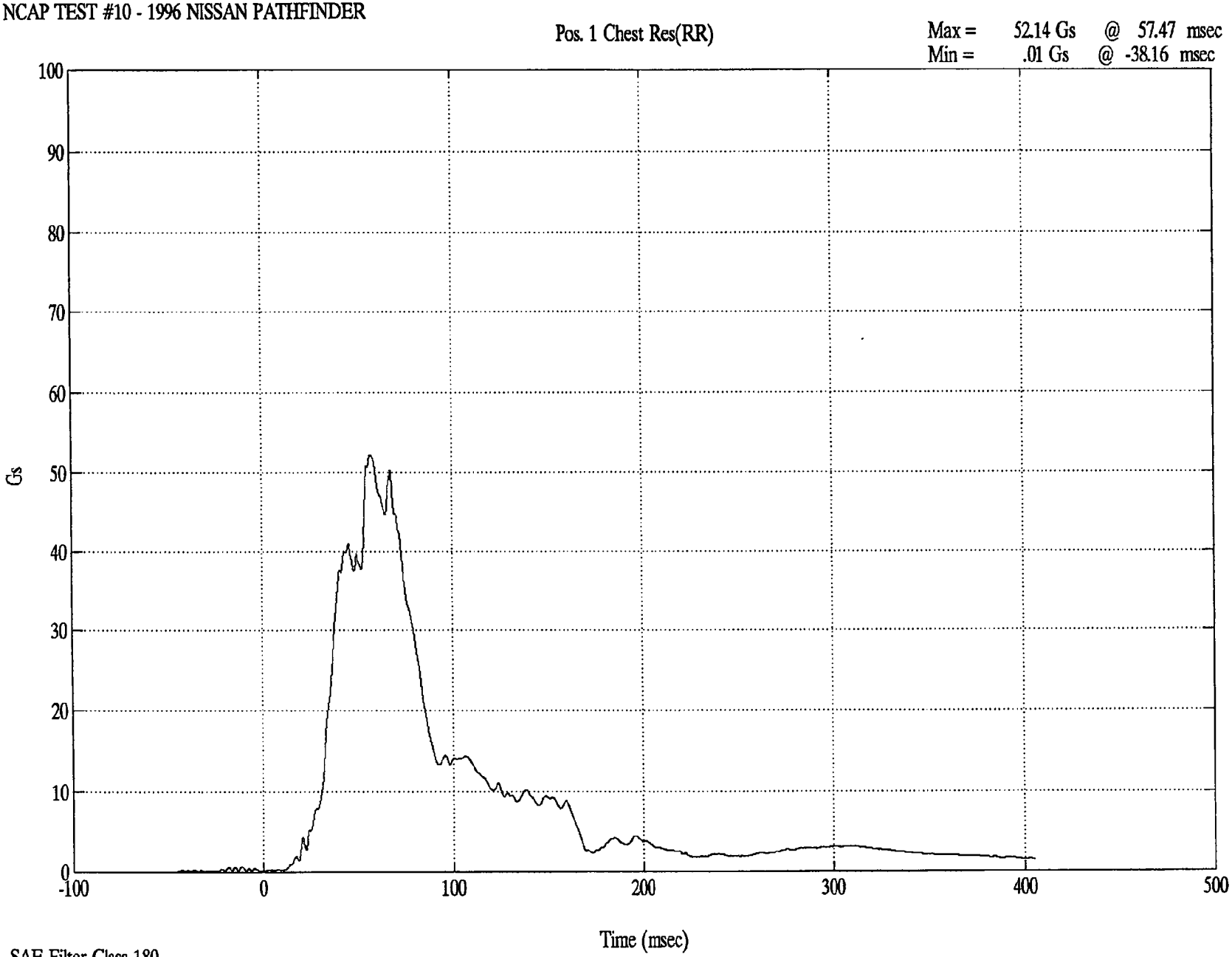
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

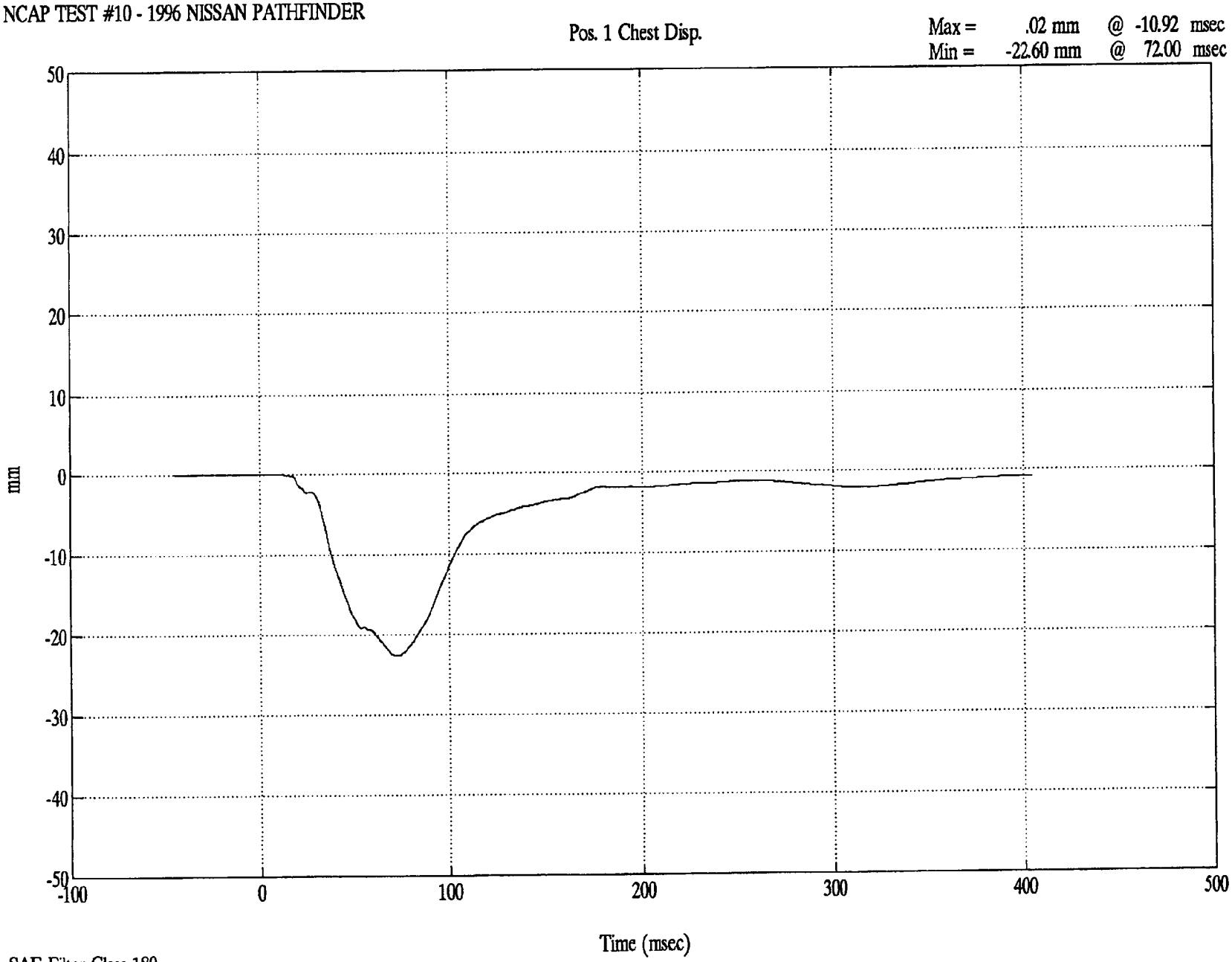
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

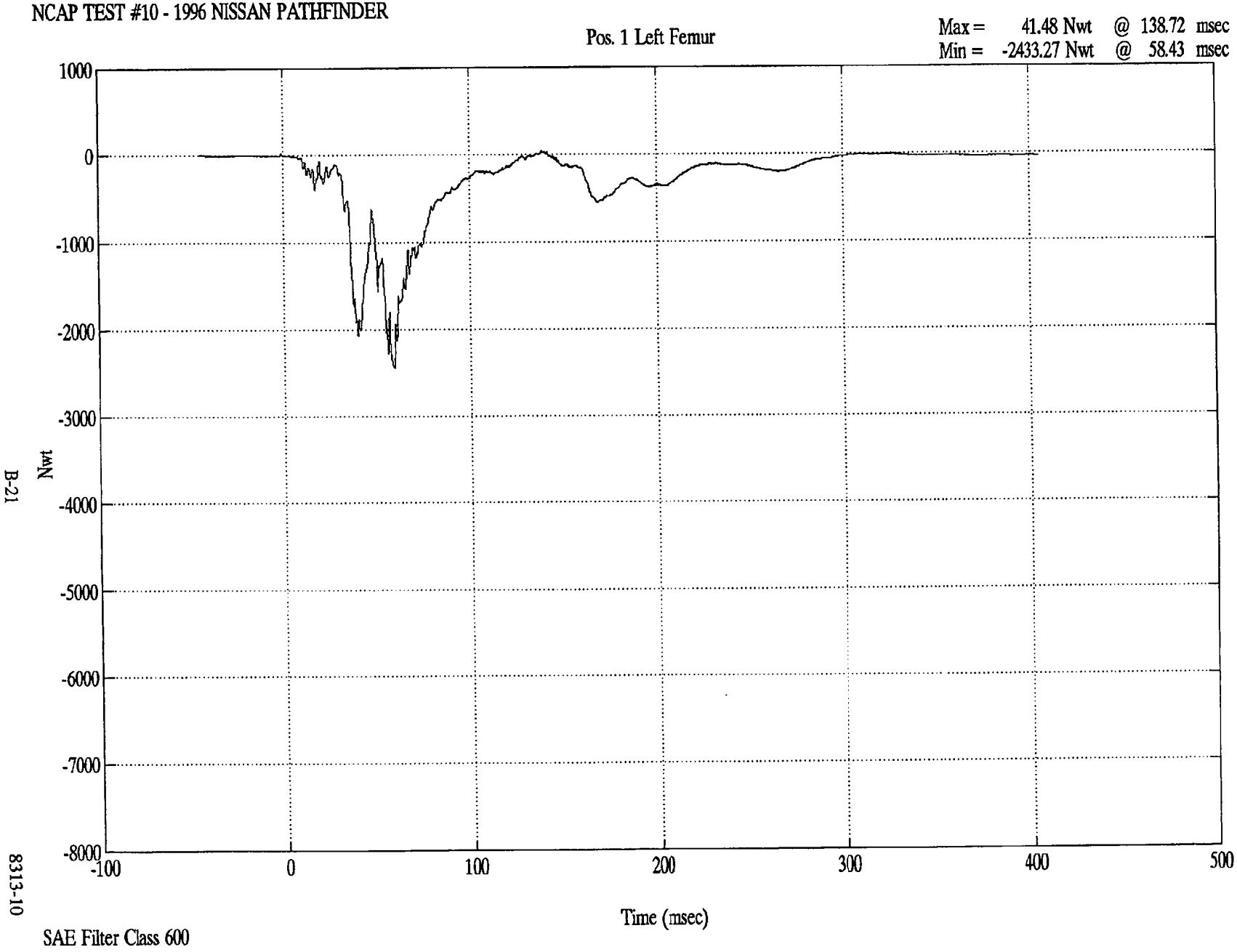
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER



B-21

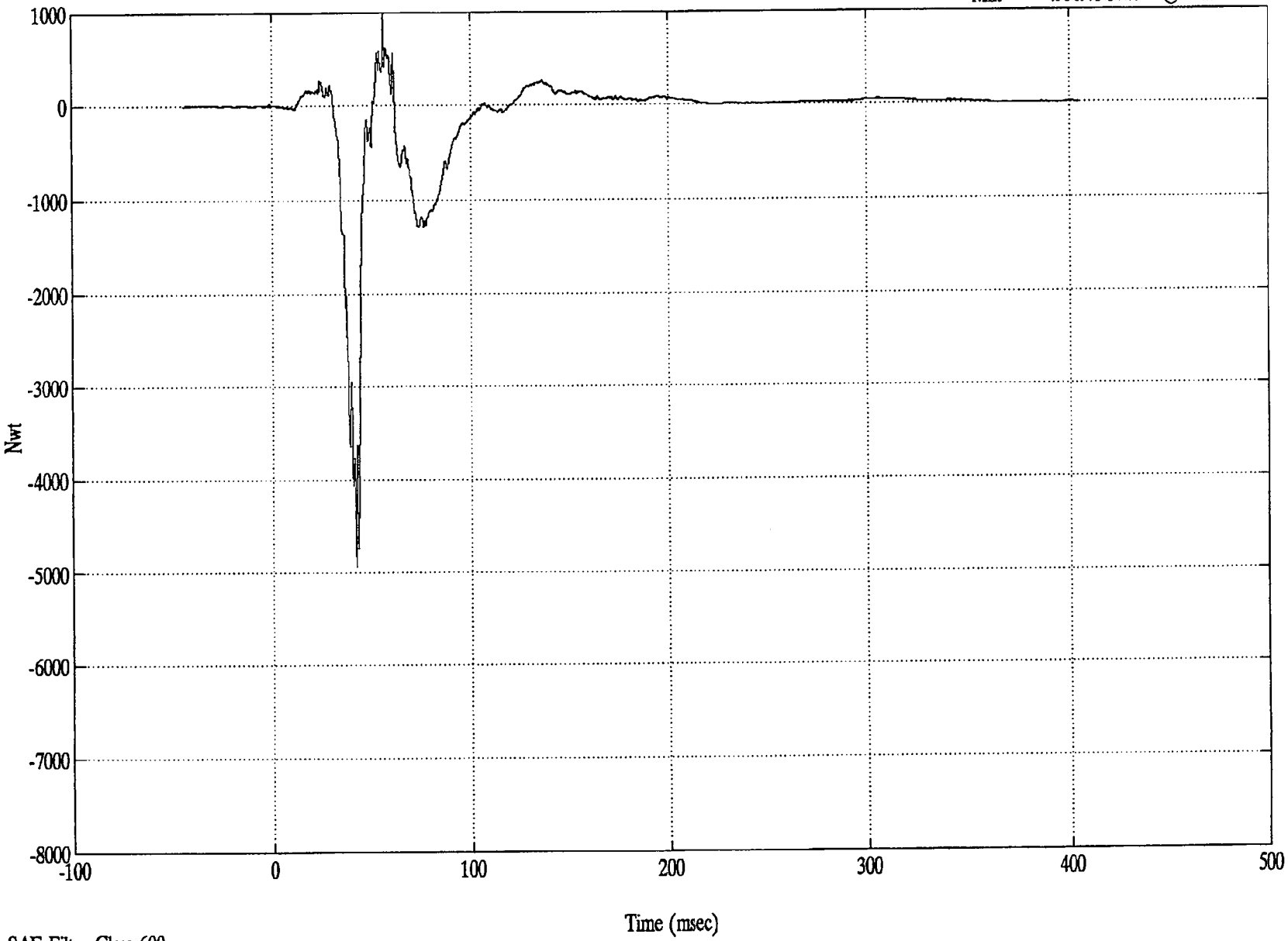
8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

Pos. 1 Right Femur

Max = 999.82 Nwt @ 56.04 msec
Min = -4930.48 Nwt @ 42.00 msec

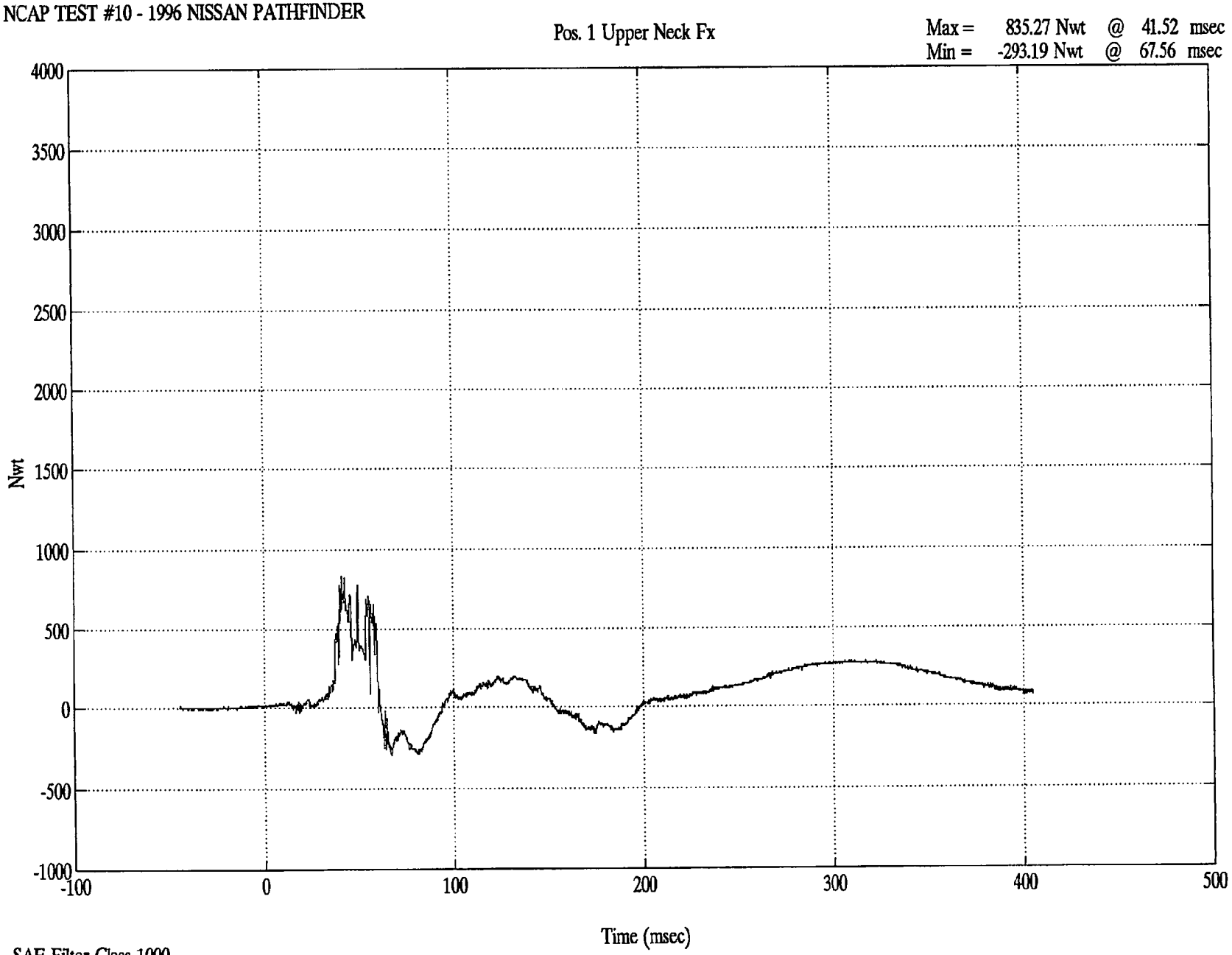


B-22

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER



B-23

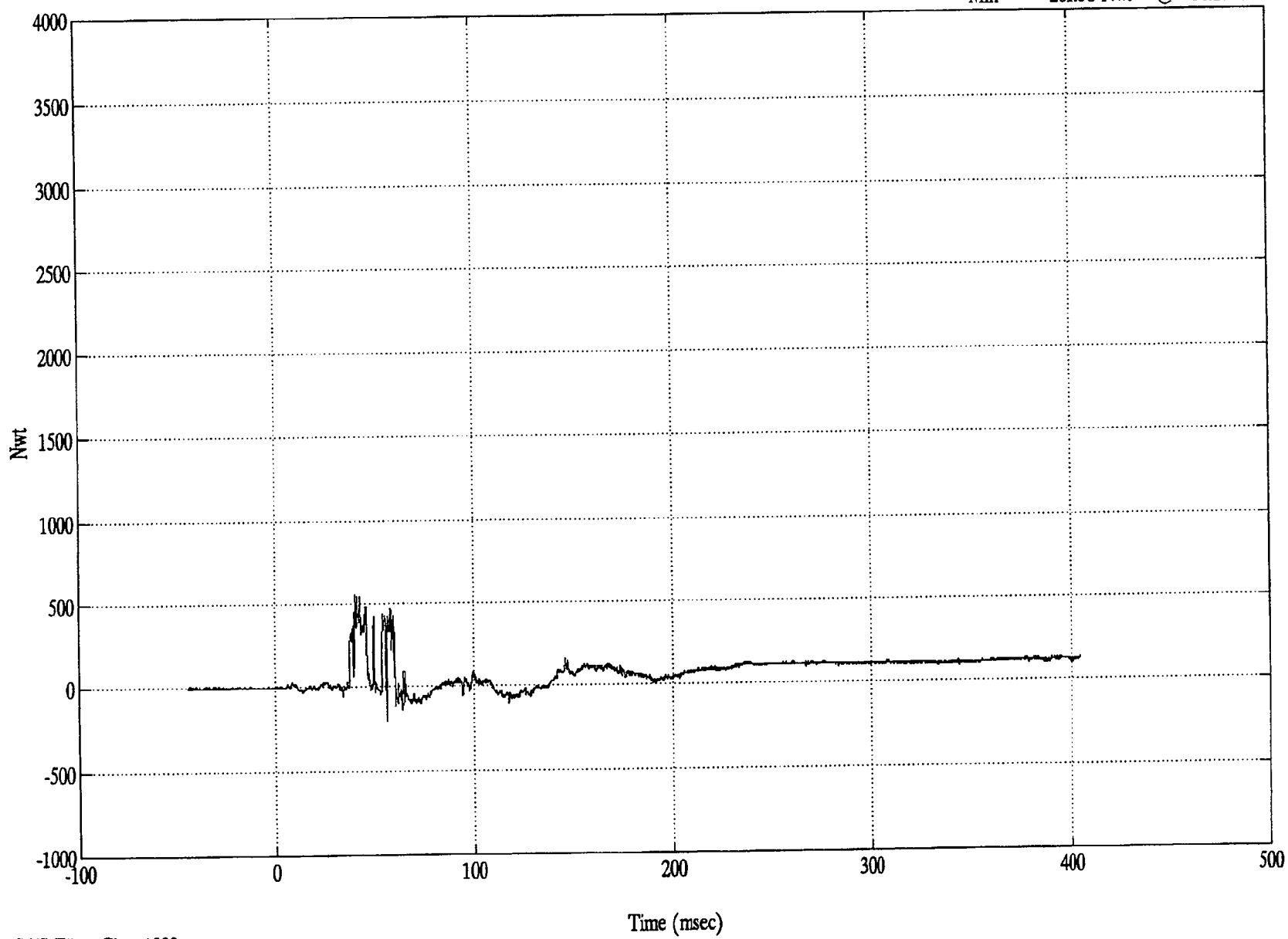
8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

Pos. 1 Upper Neck Fy

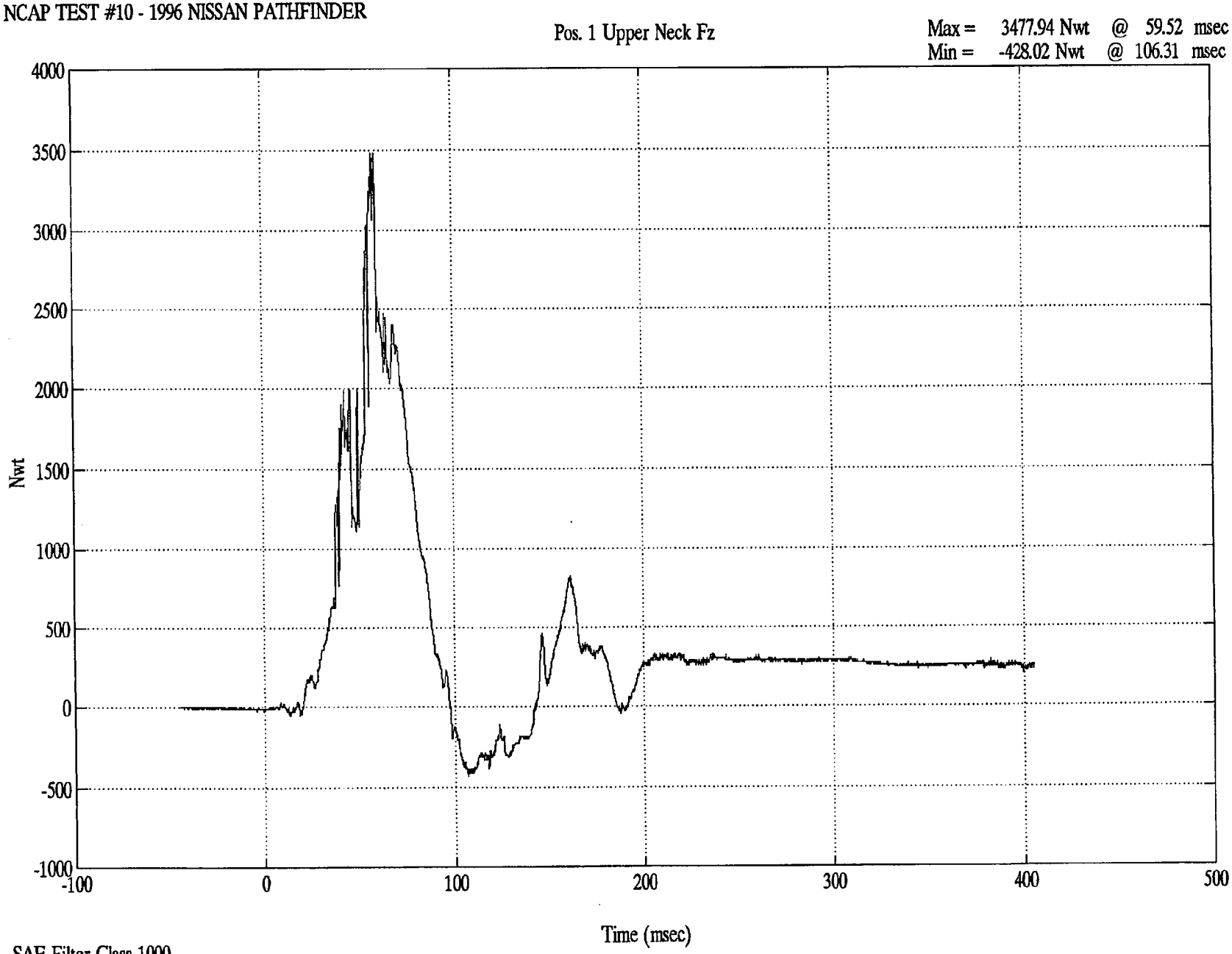
Max = 555.25 Nwt @ 40.56 msec
Min = -201.58 Nwt @ 56.15 msec



SAE Filter Class 1000

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

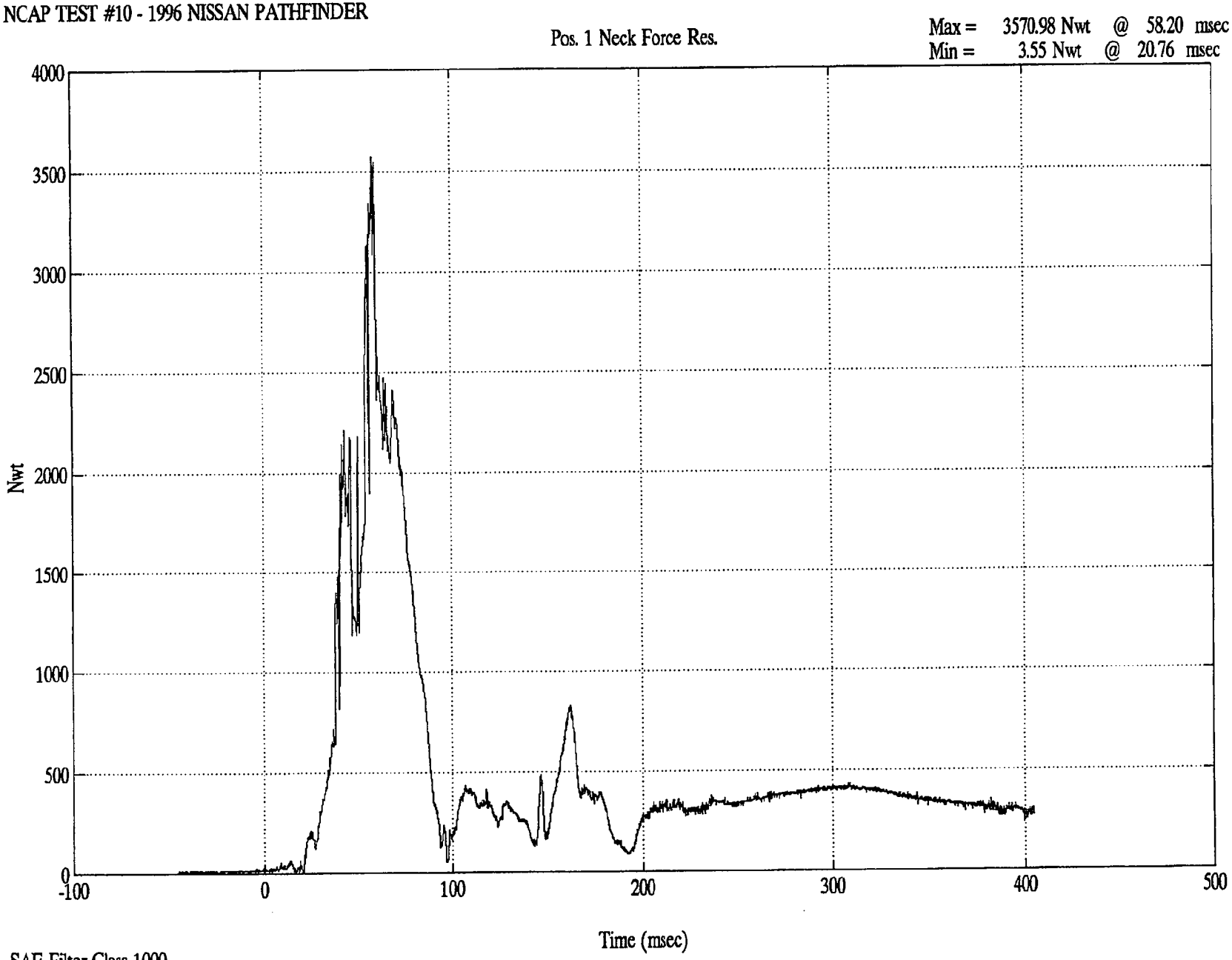


B-25

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

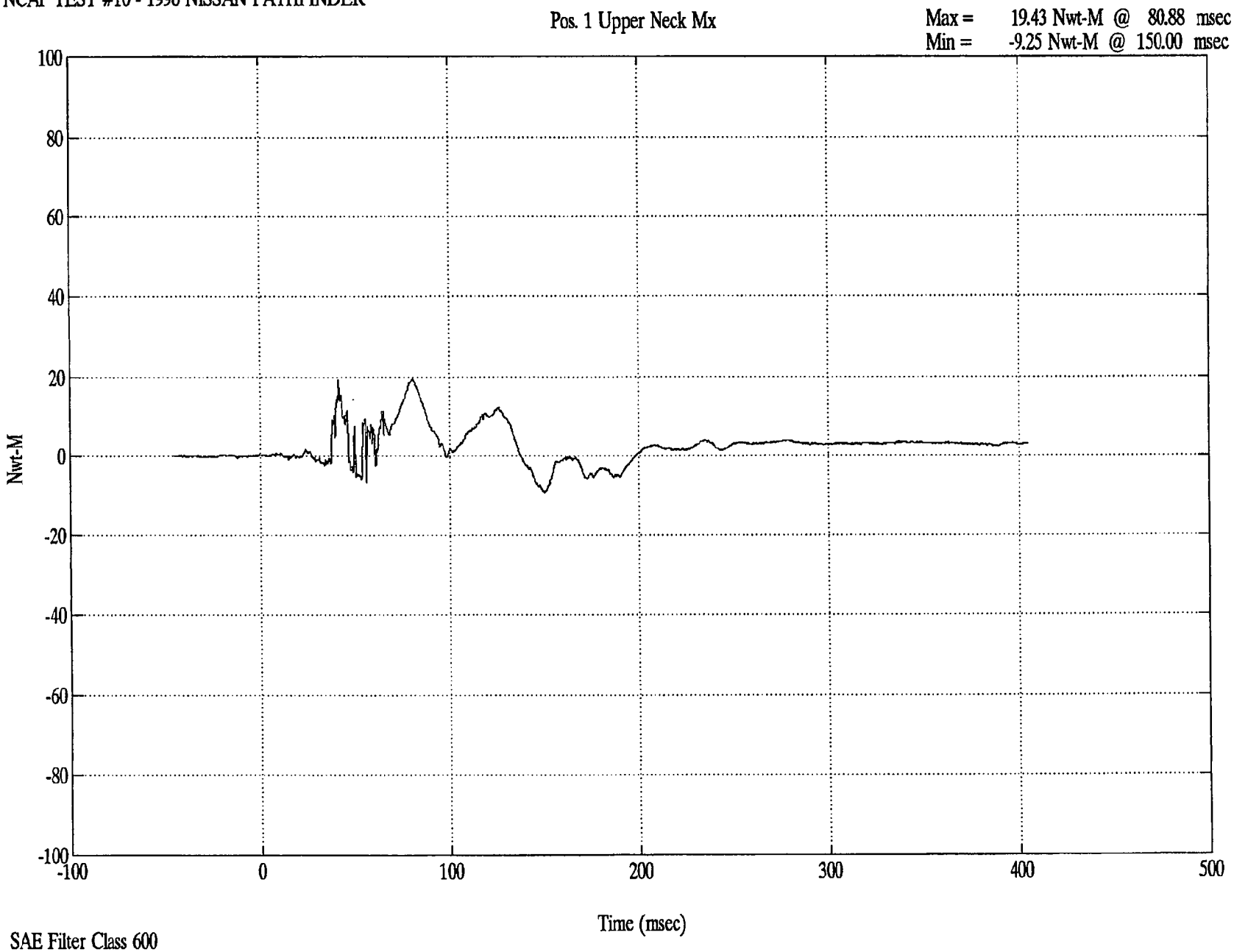


SAE Filter Class 1000

B-26

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

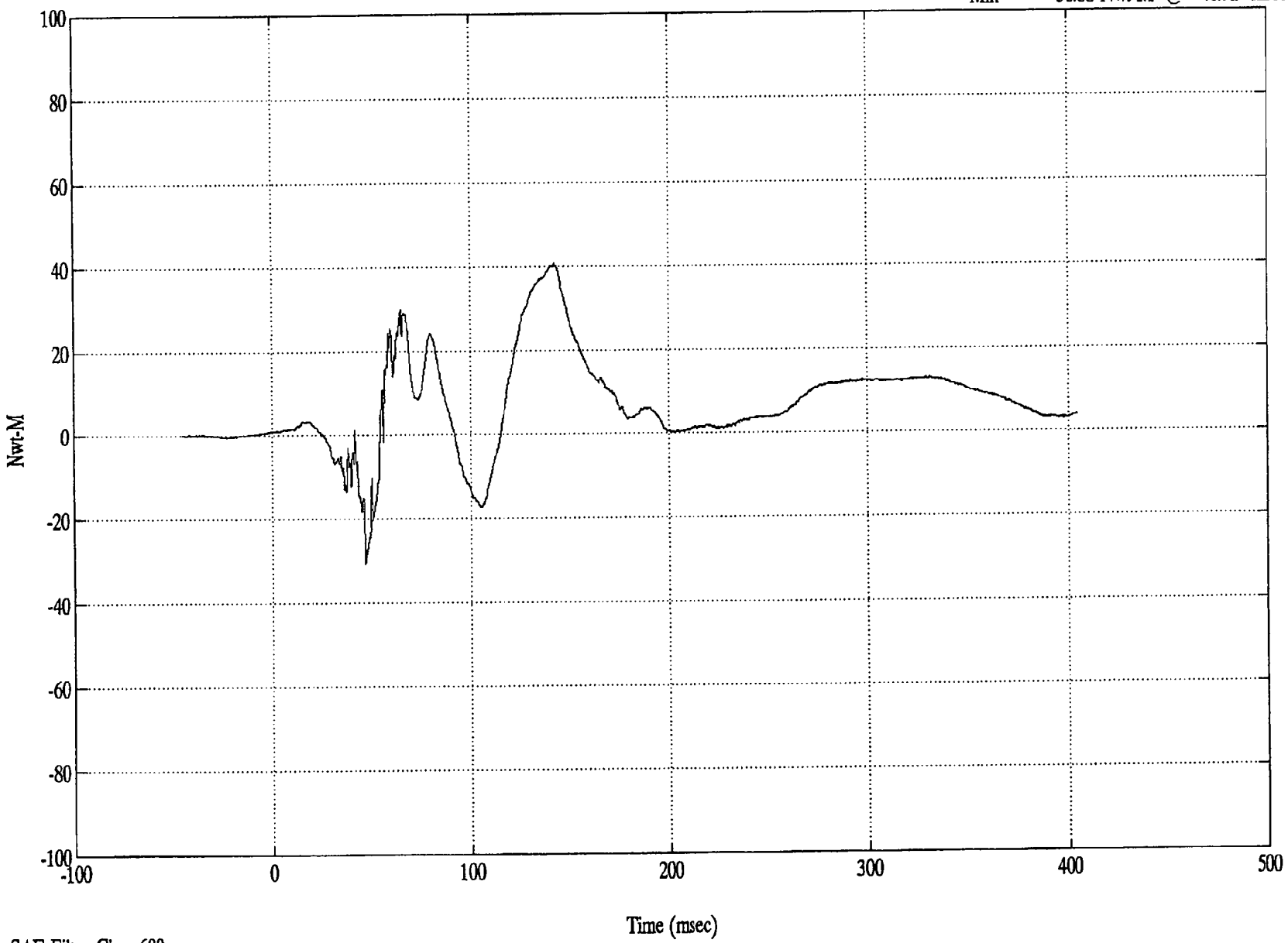


SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

Pos. 1 Upper Neck My

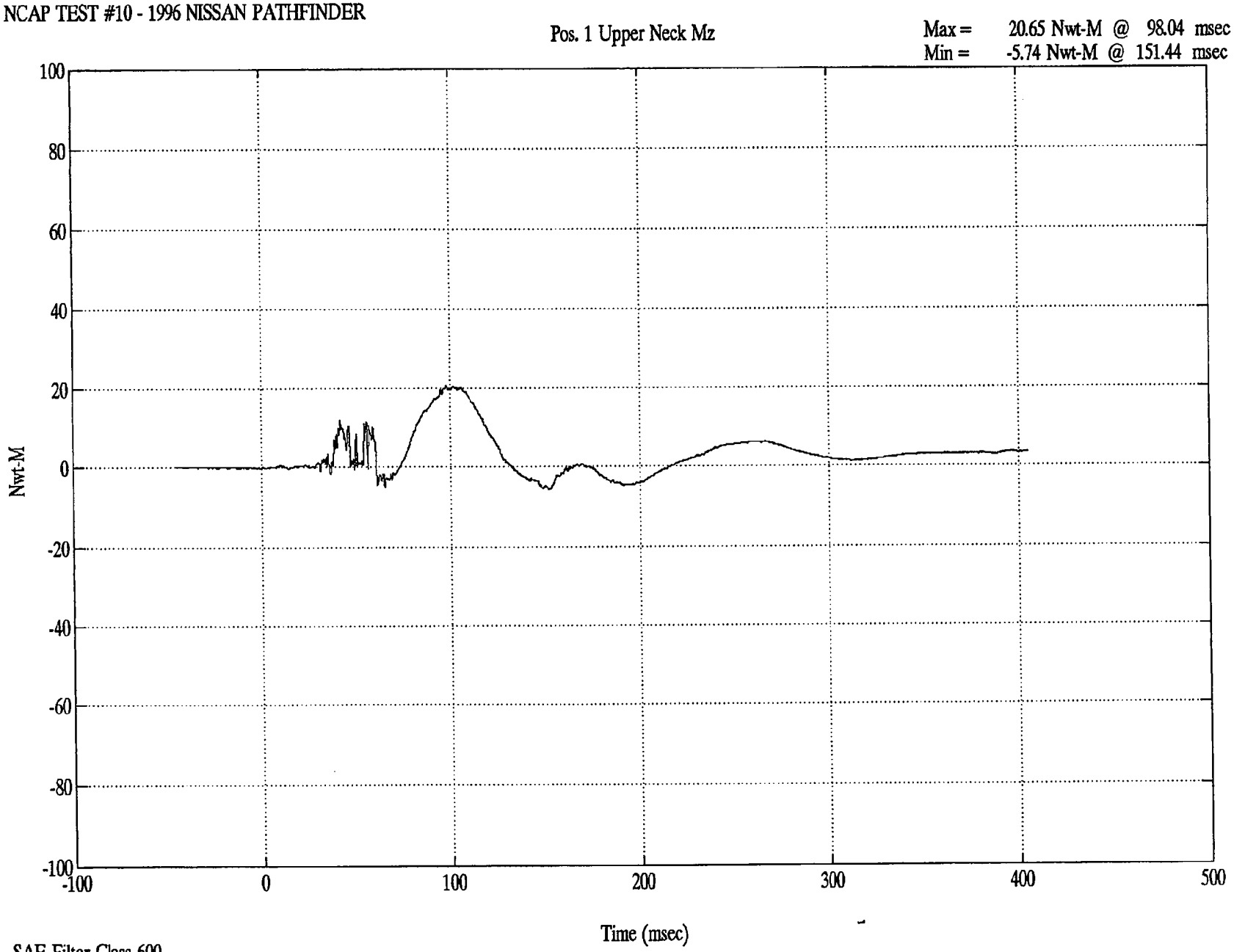
Max = 40.91 Nwt-M @ 142.08 msec
Min = -30.88 Nwt-M @ 46.92 msec



SAE Filter Class 600

8313-10

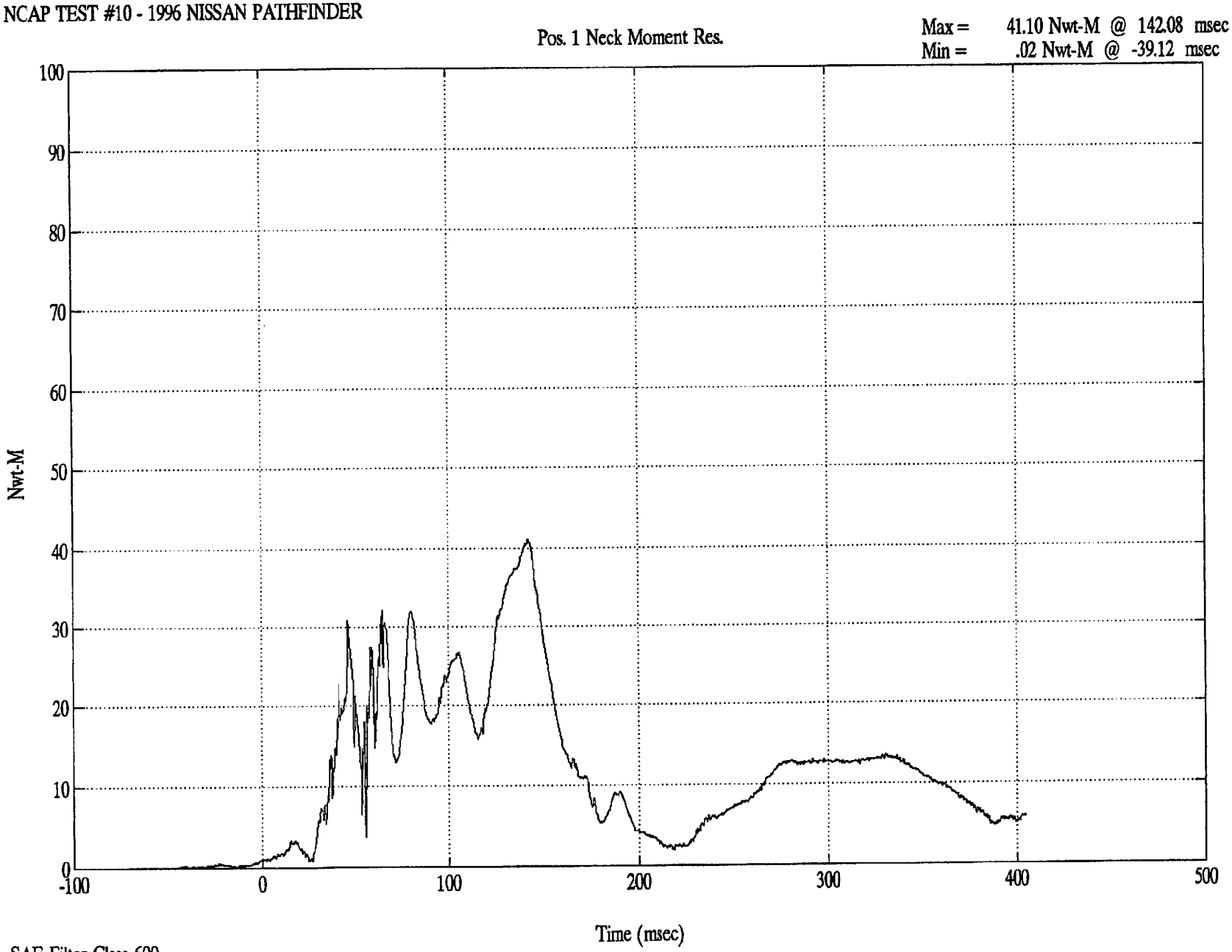
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 600

8313-10

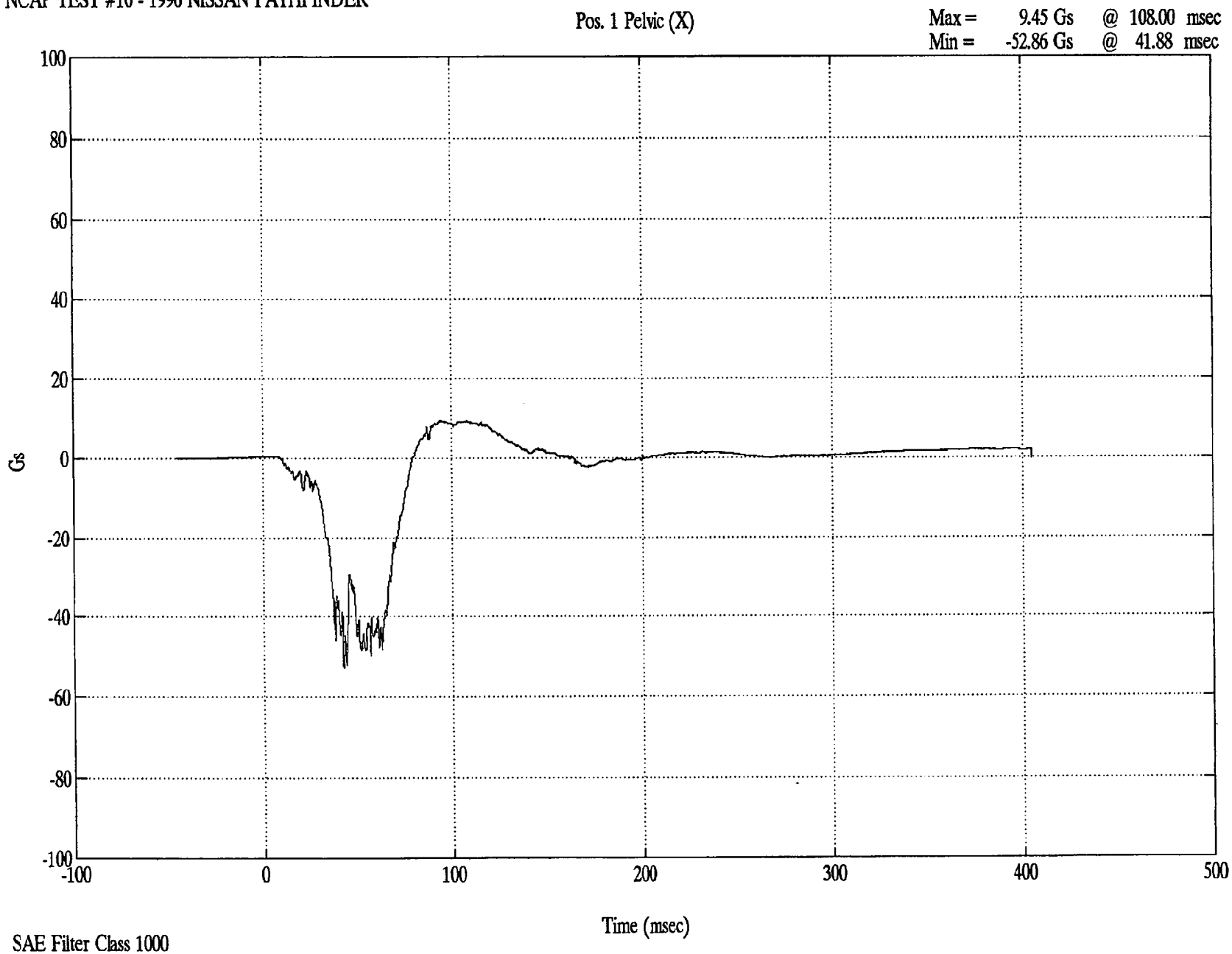
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 600

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

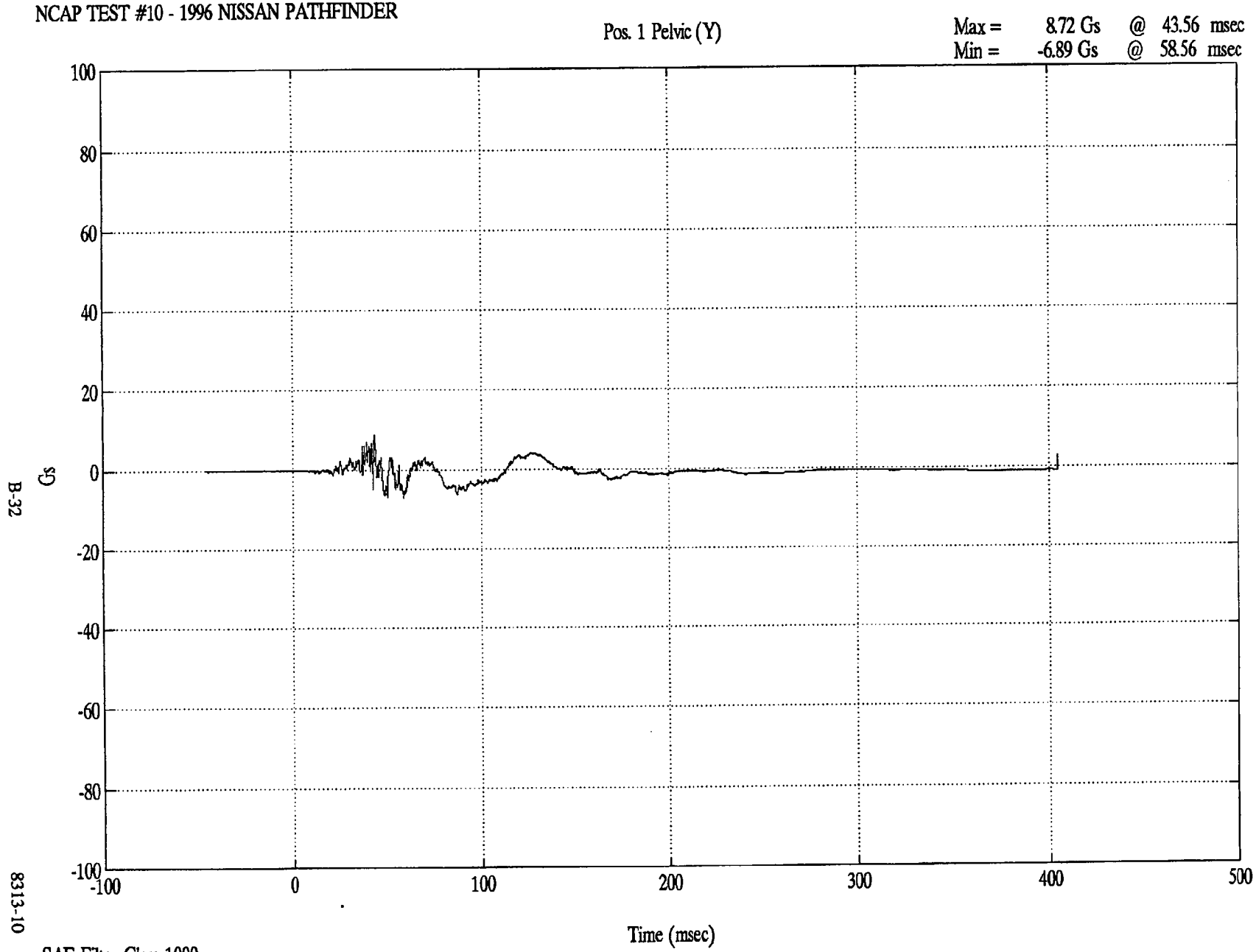


B-31

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

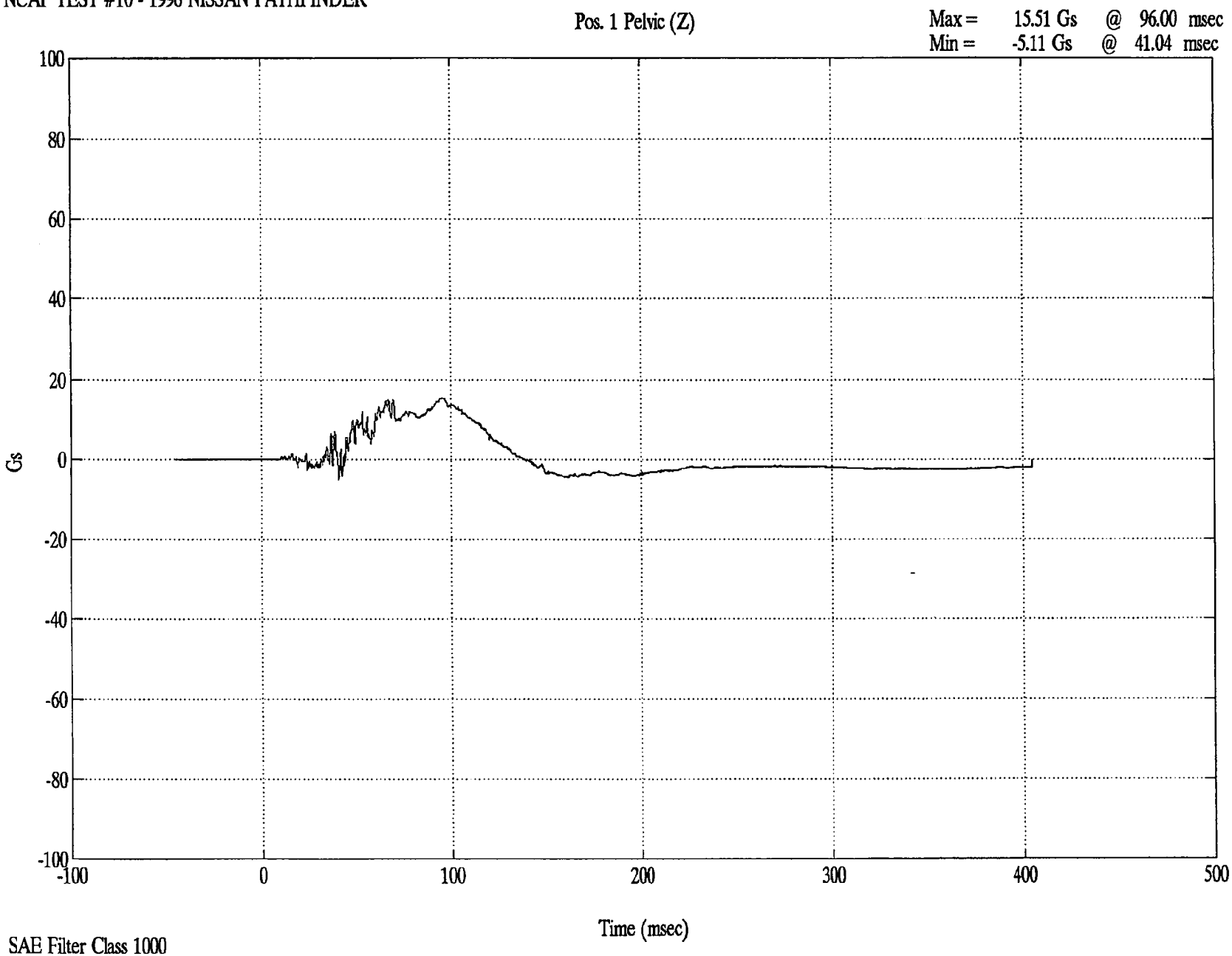


B-32

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

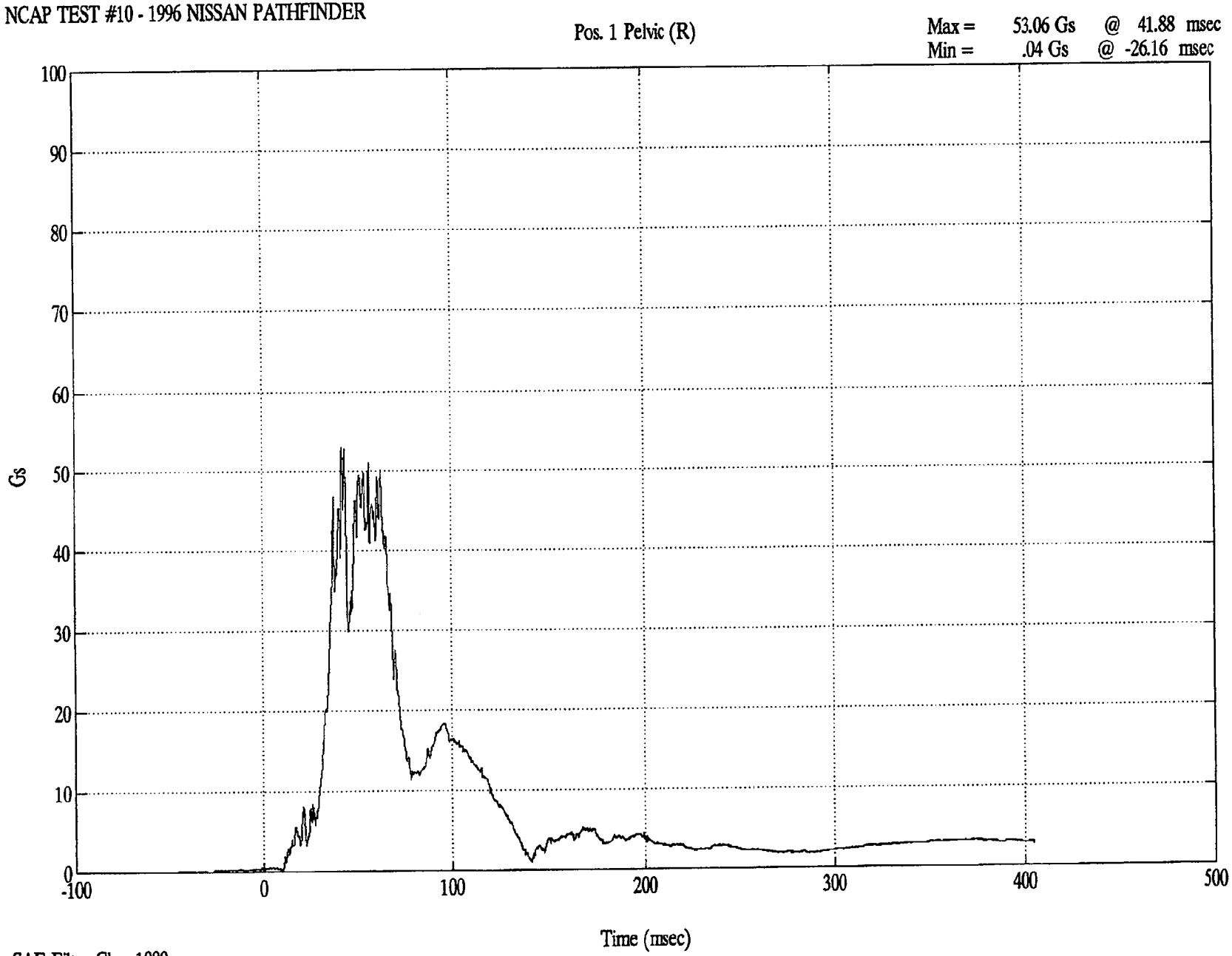


B-33

8313-10

SAE Filter Class 1000

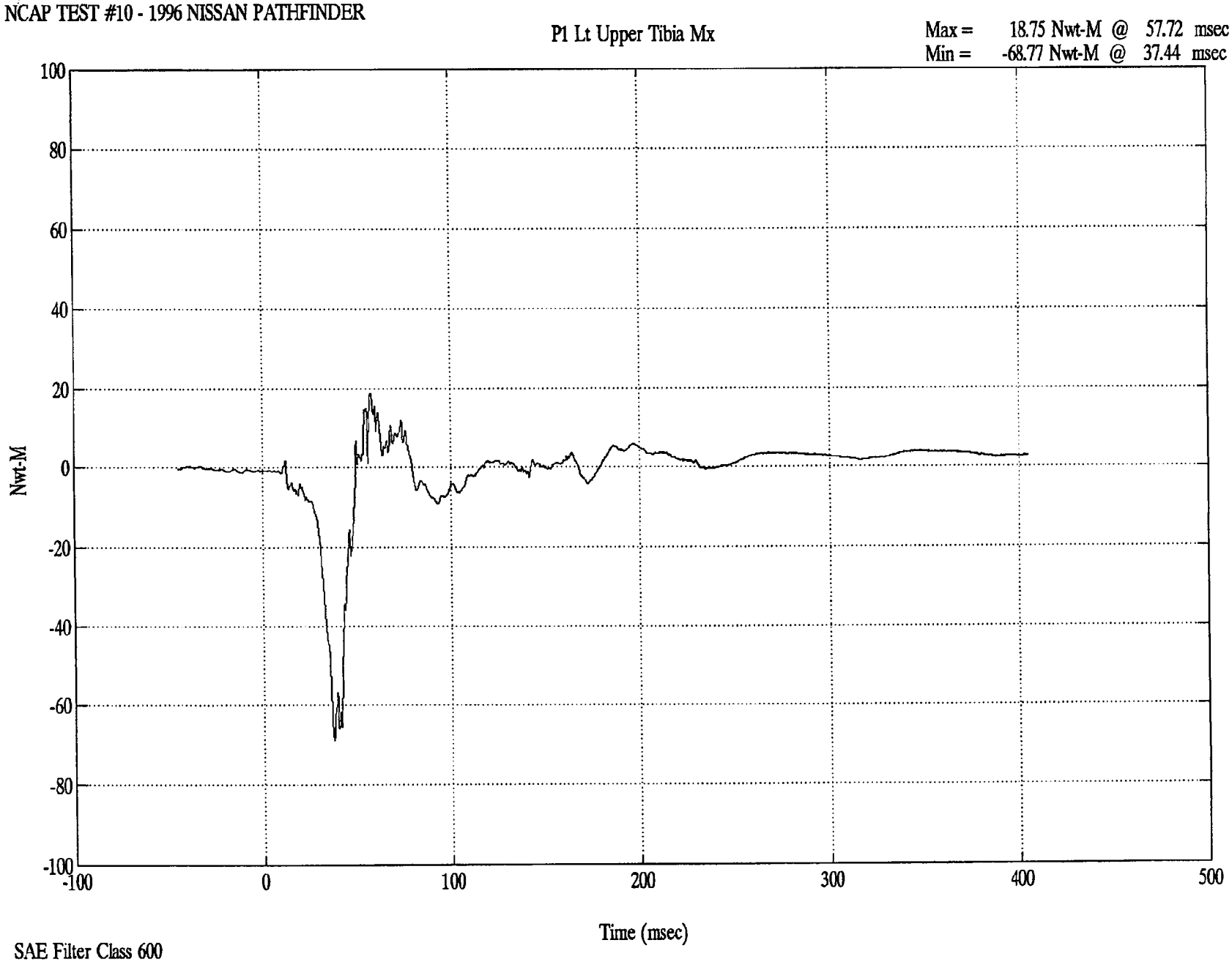
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER



B-35

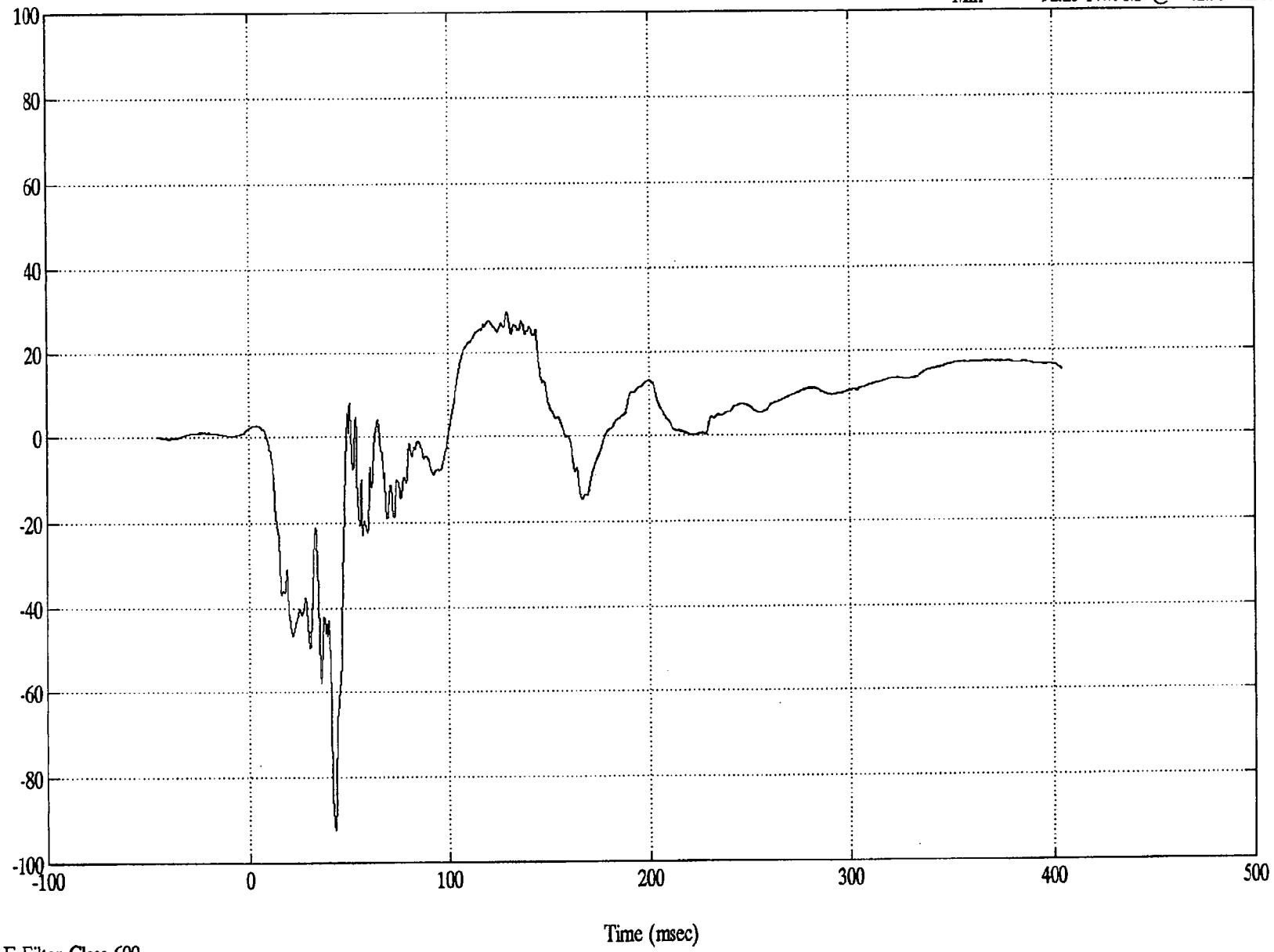
8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

P1 Lt Upper Tibia My

Max = 29.61 Nwt-M @ 129.96 msec
Min = -92.23 Nwt-M @ 42.95 msec

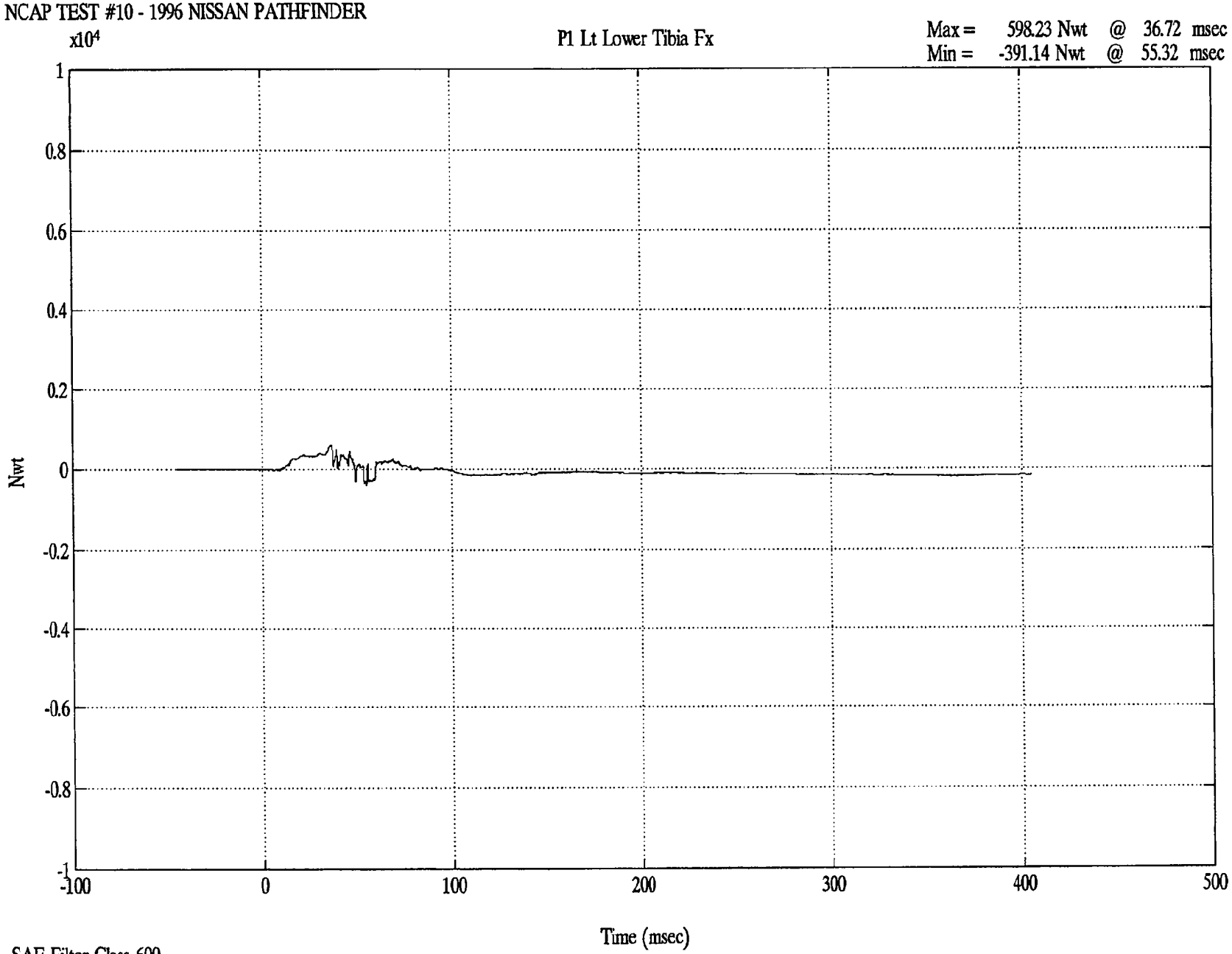


B-36

8313-10

SAE Filter Class 600

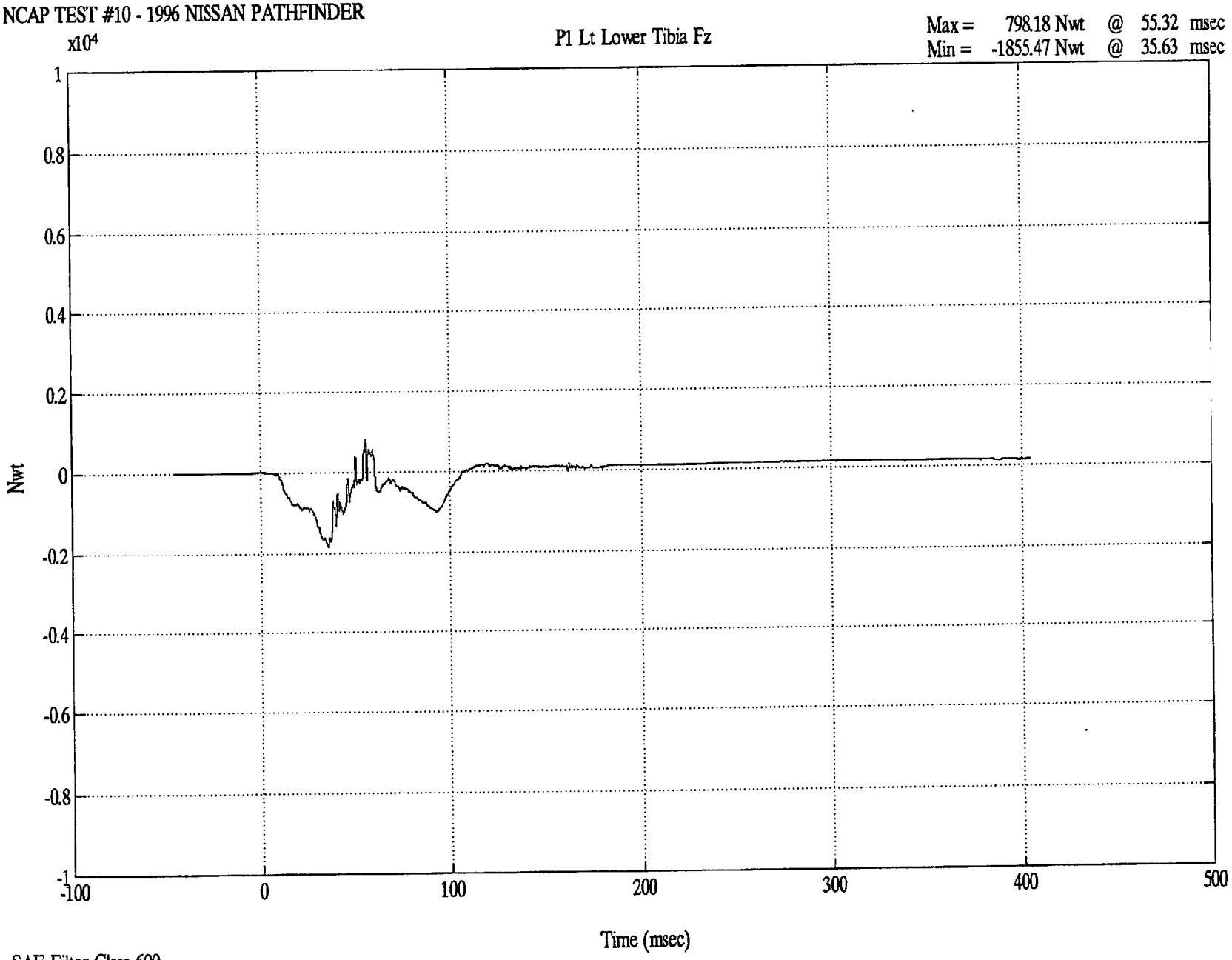
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 600

8313-10

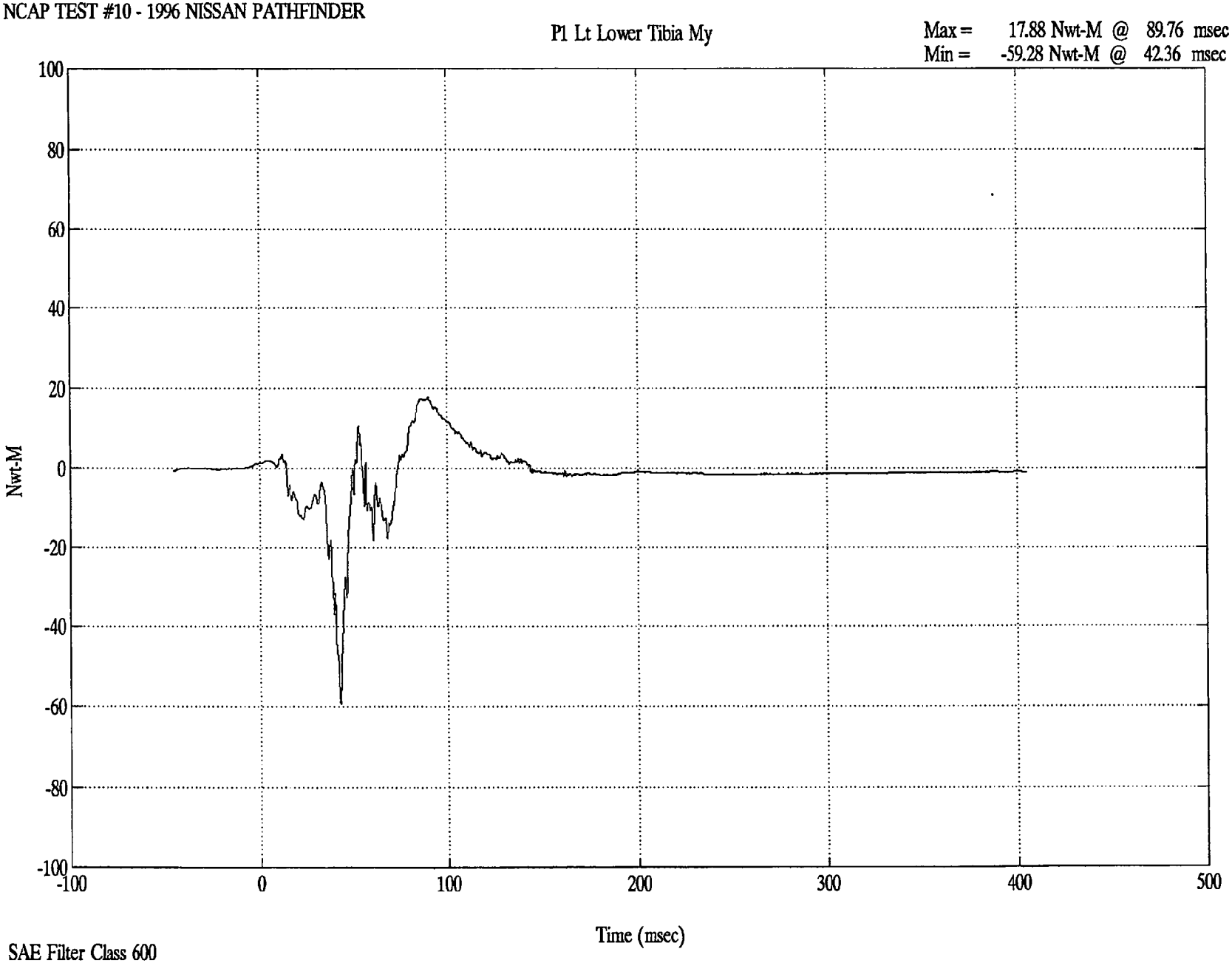
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 600

8313-10

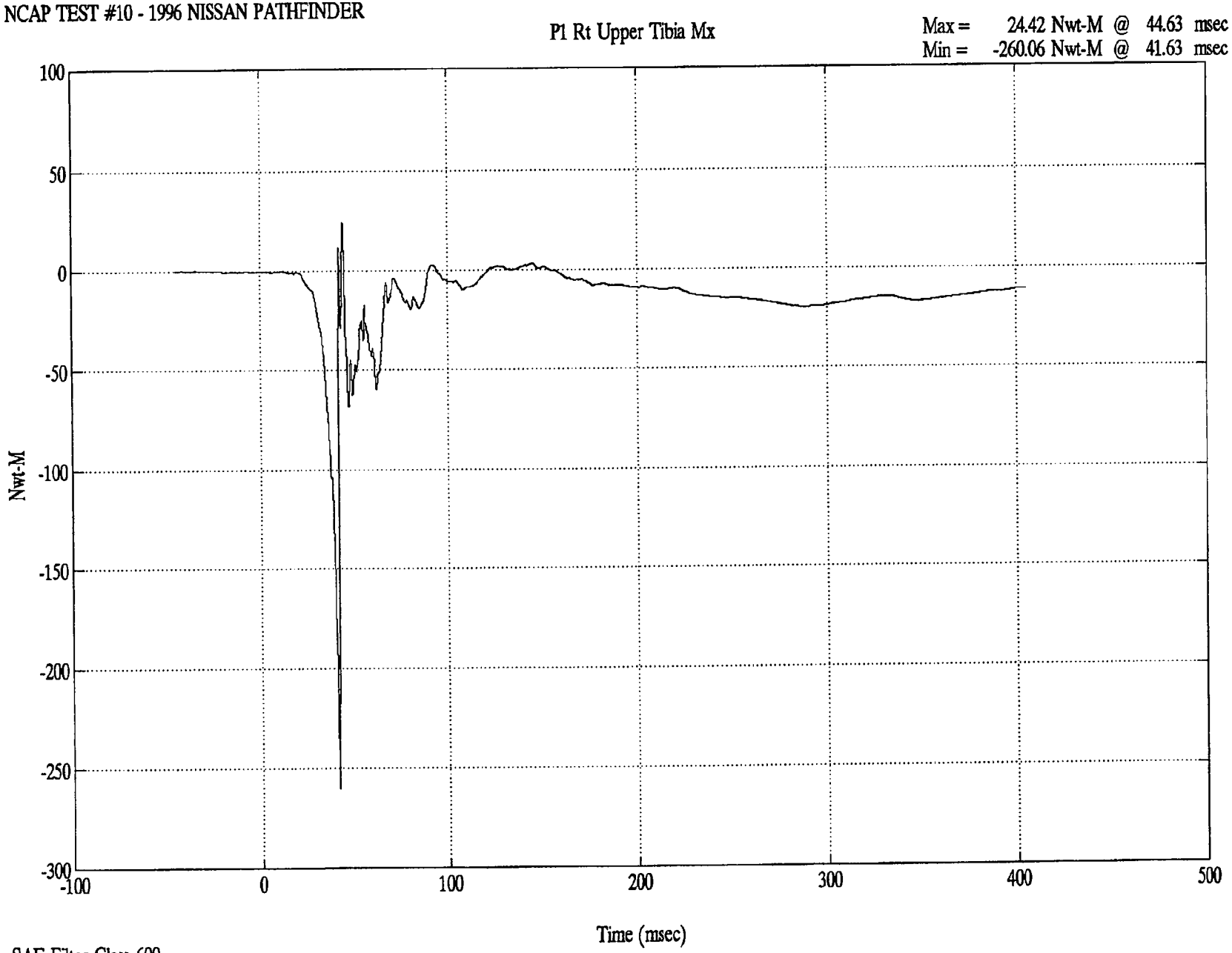
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 600

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

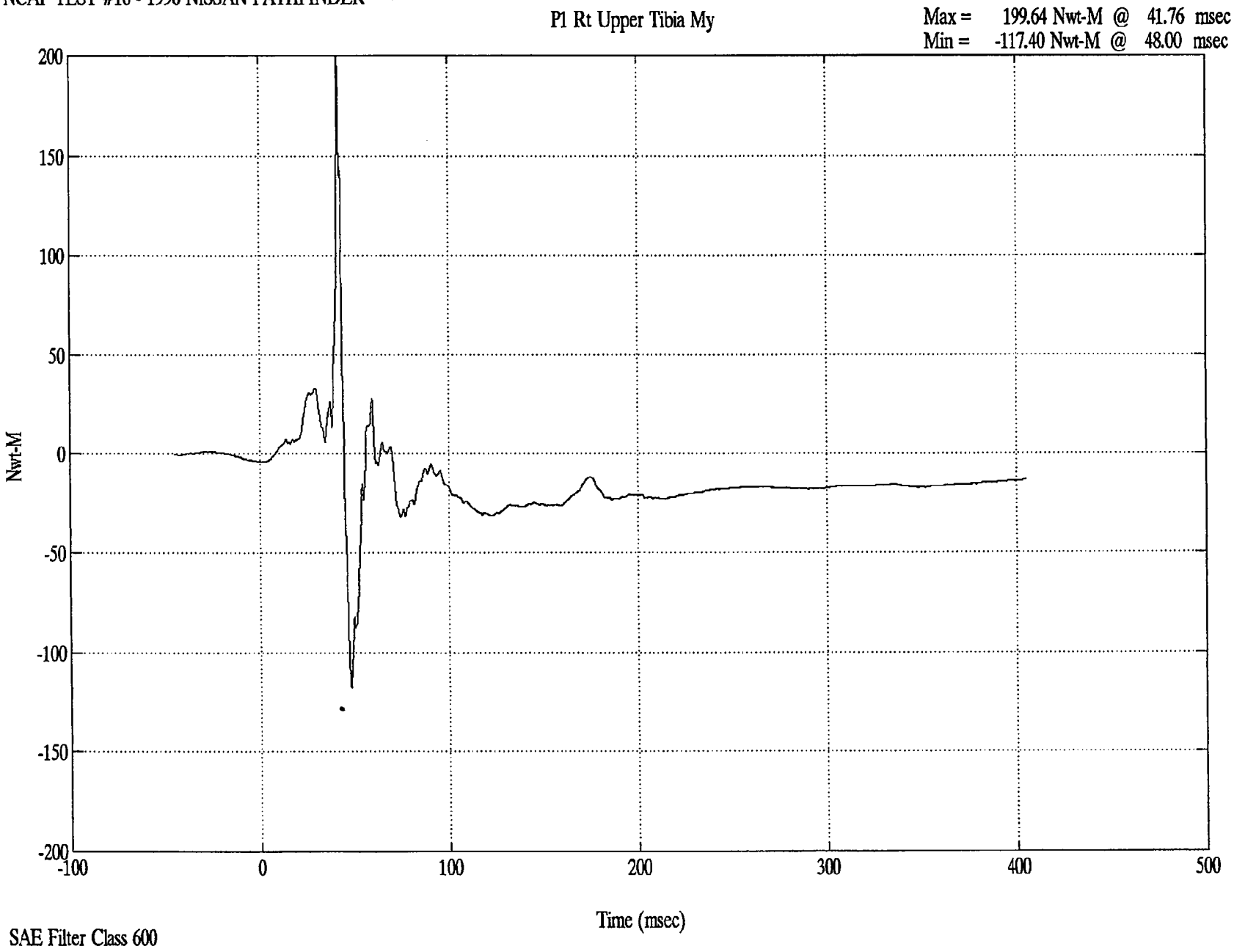


SAE Filter Class 600

B-40

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

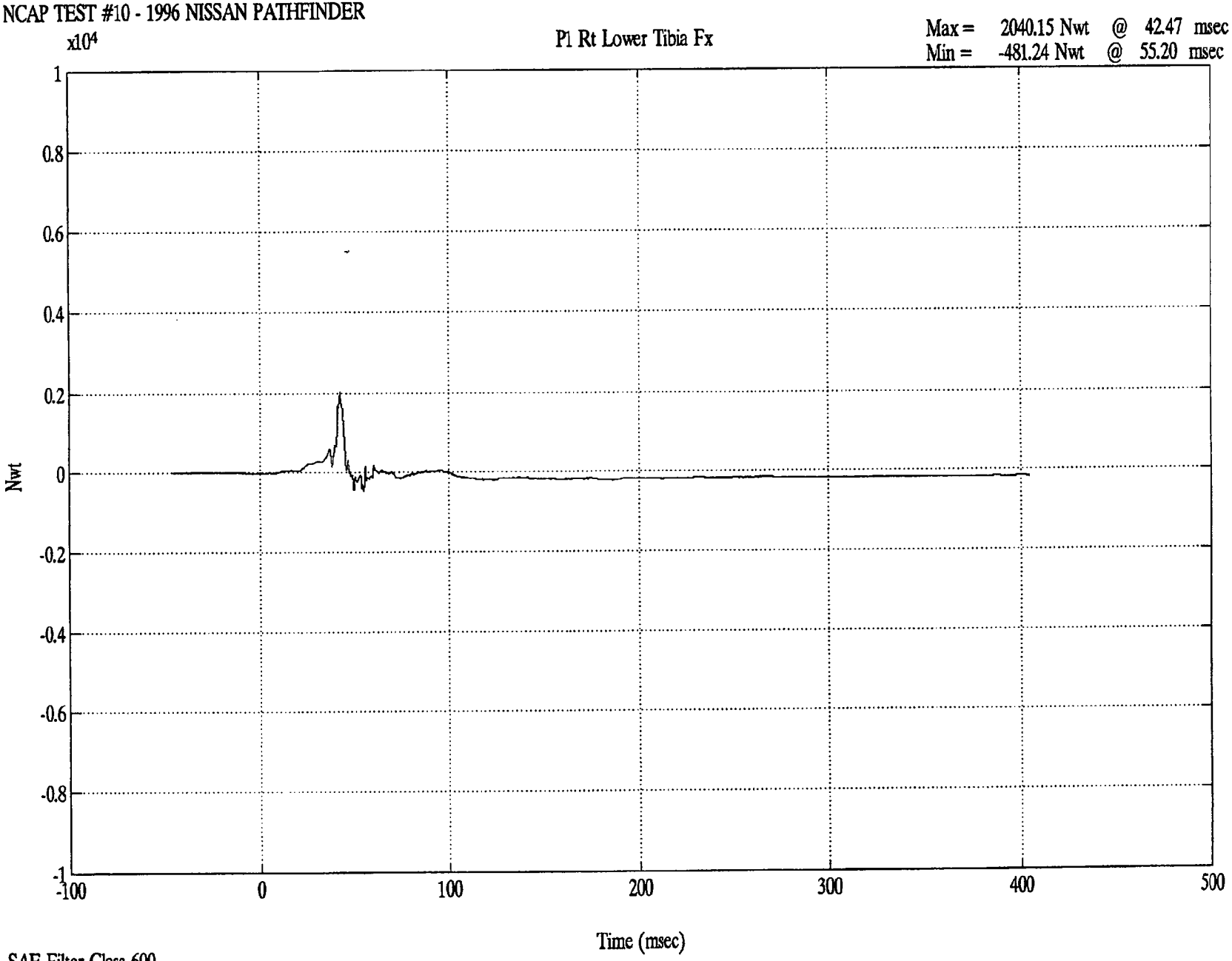


B-41

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

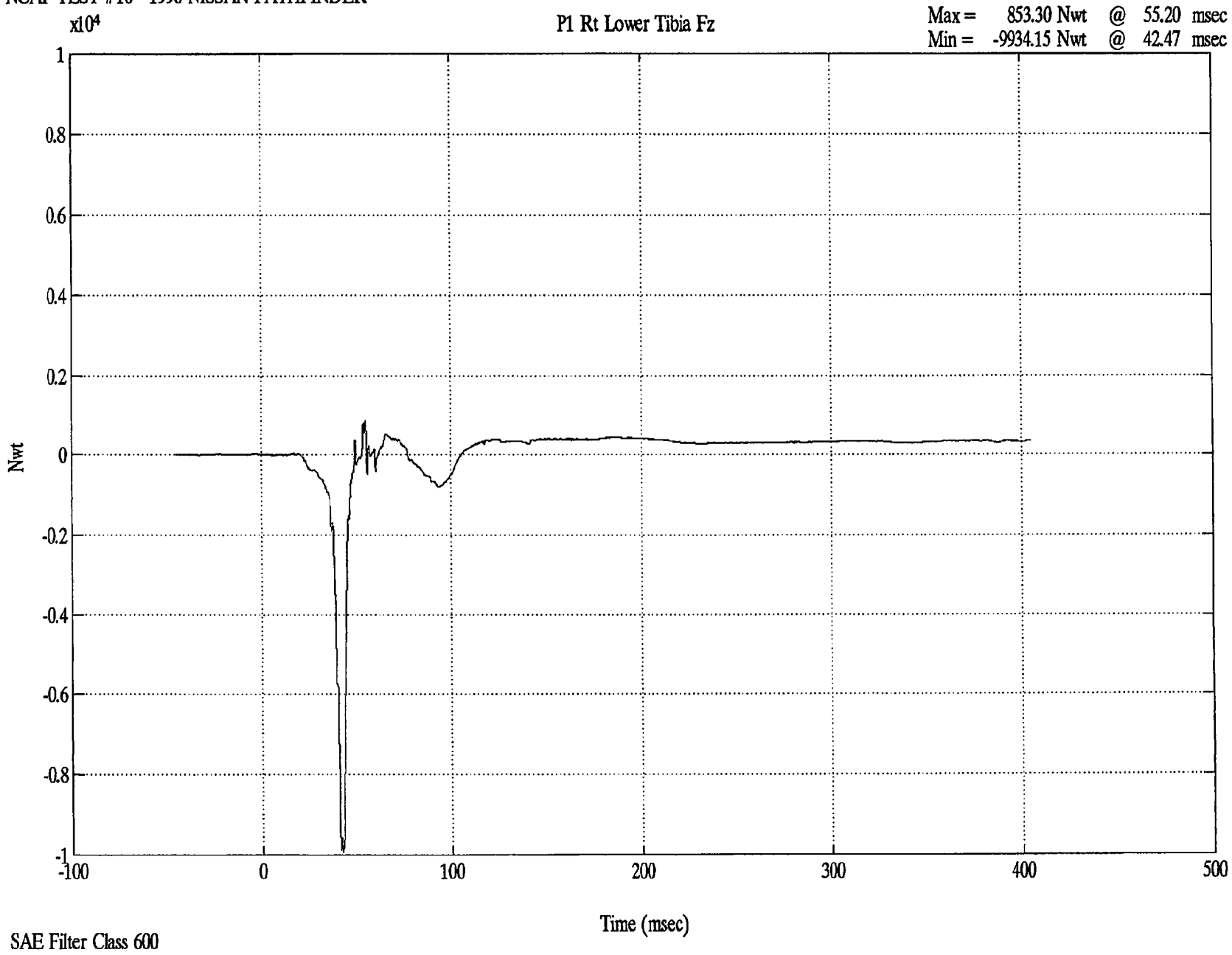


B-42

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

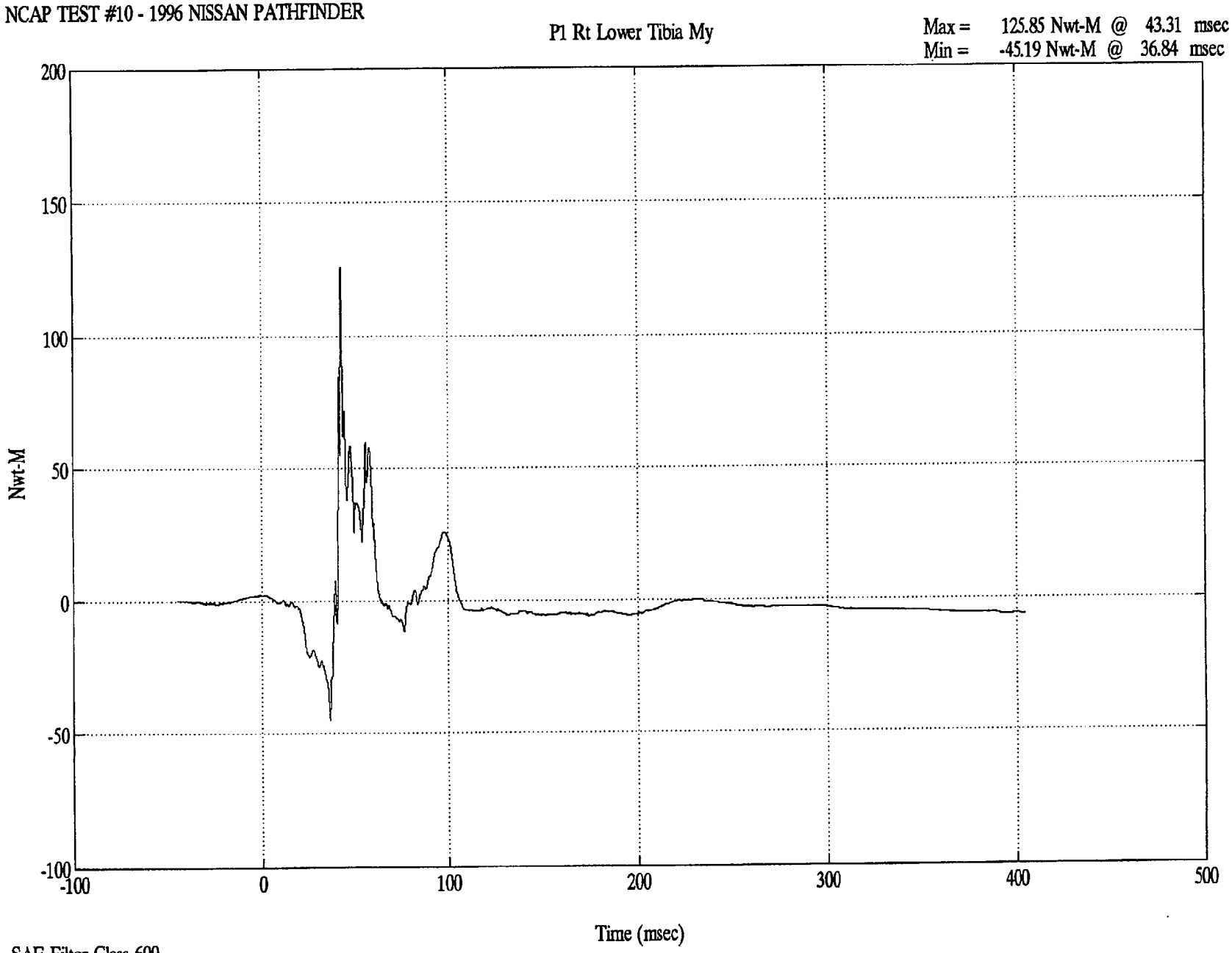


B-43

8313-10

SAE Filter Class 600

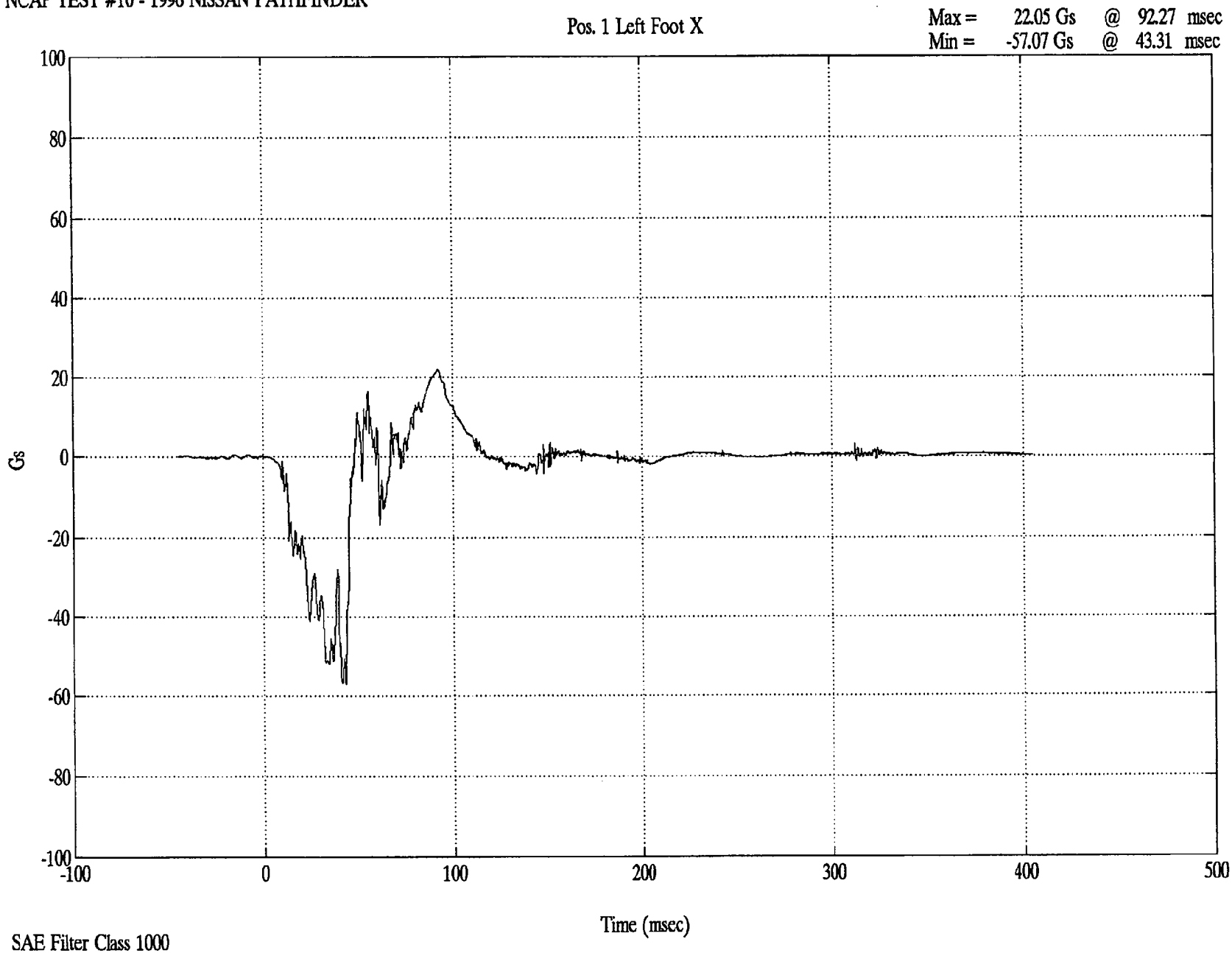
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 600

8313-10

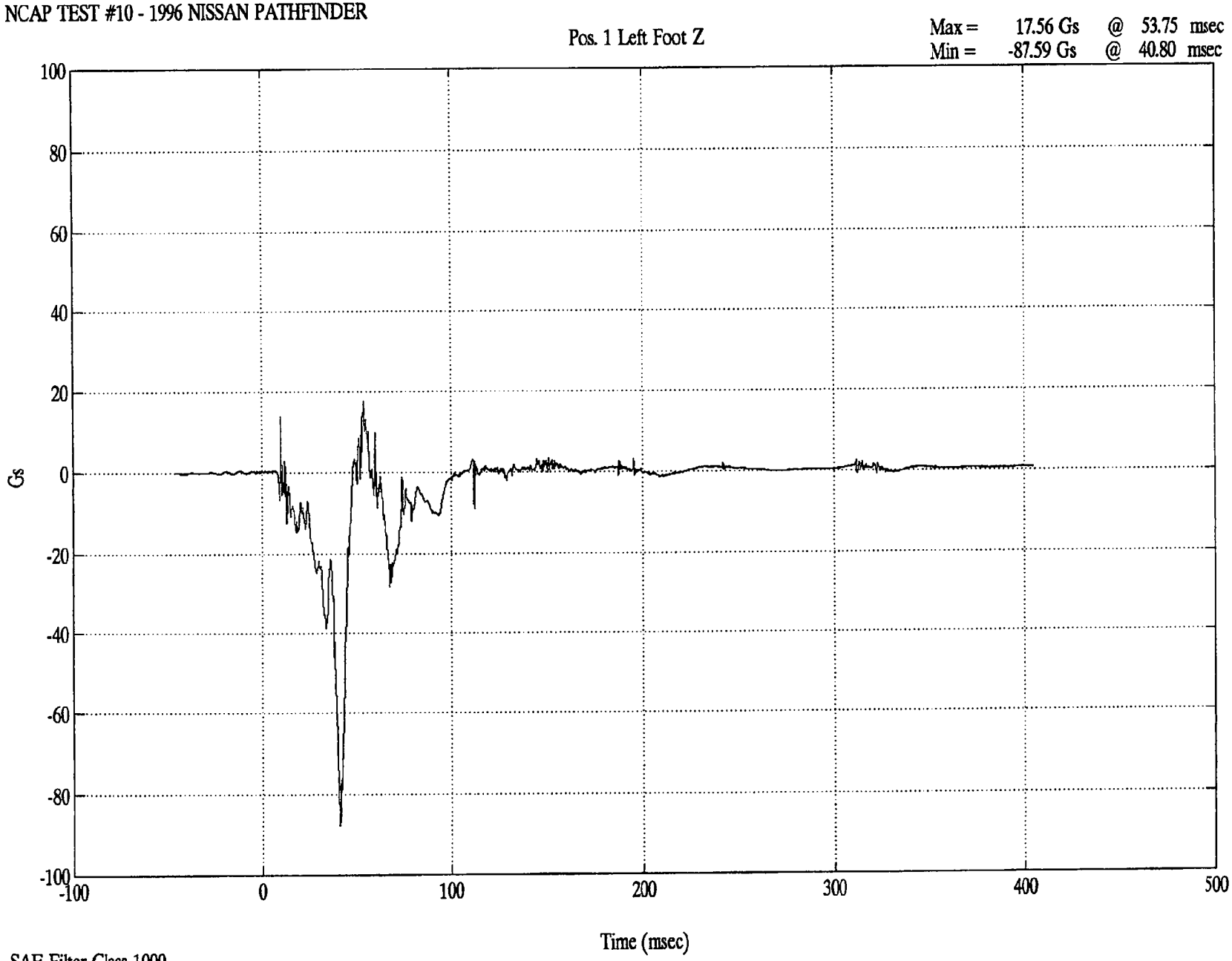
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

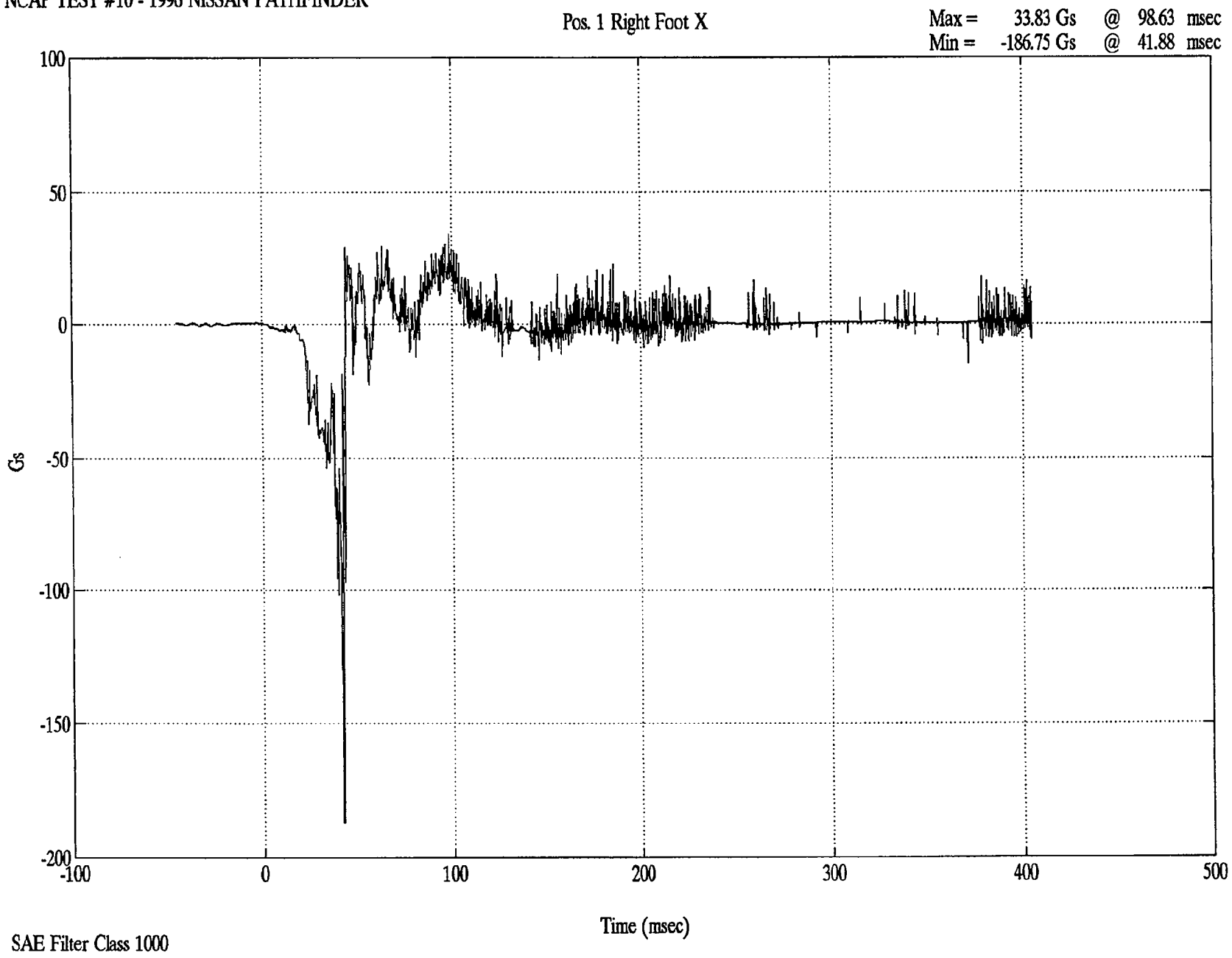
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

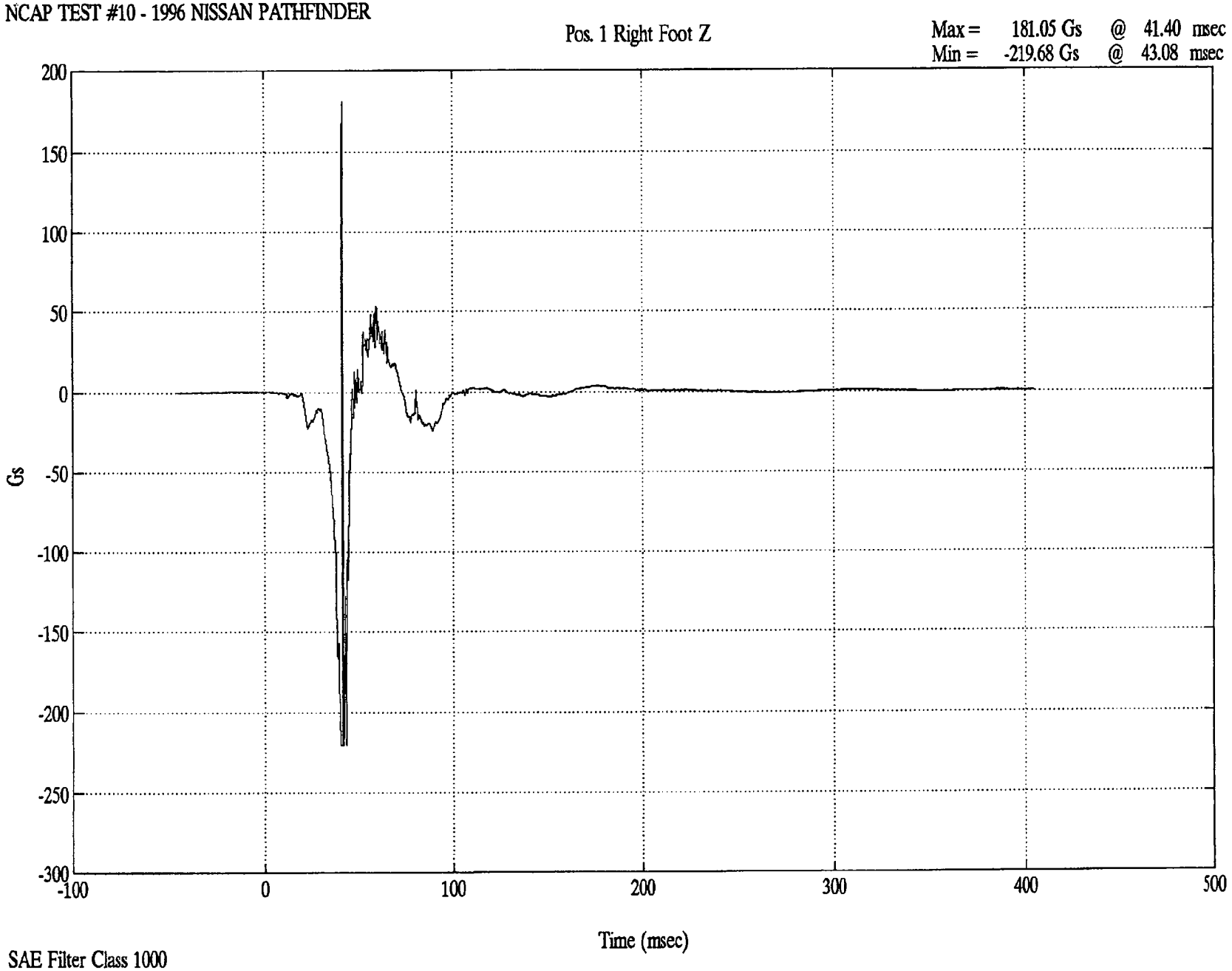


B-47

8313-10

SAE Filter Class 1000

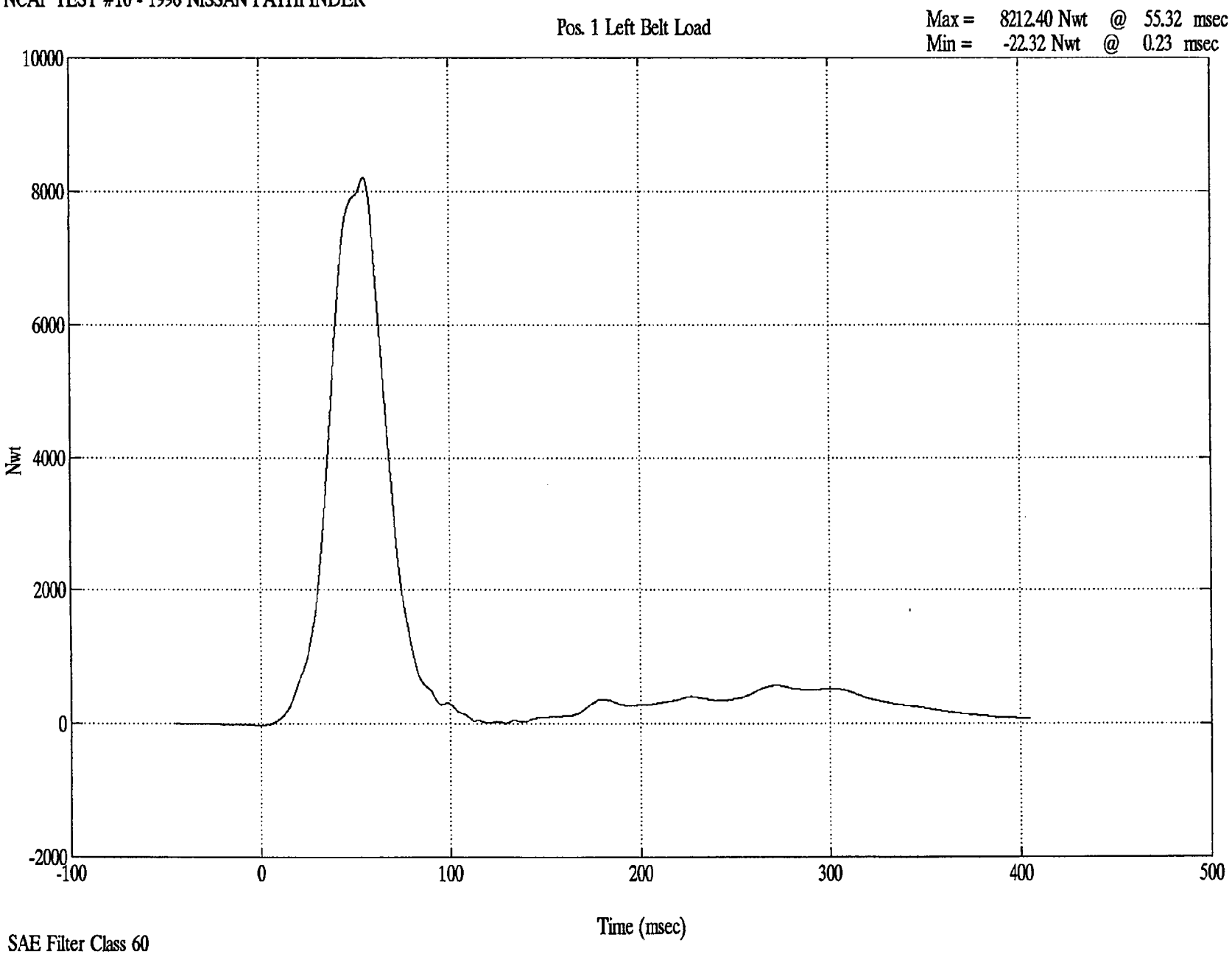
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

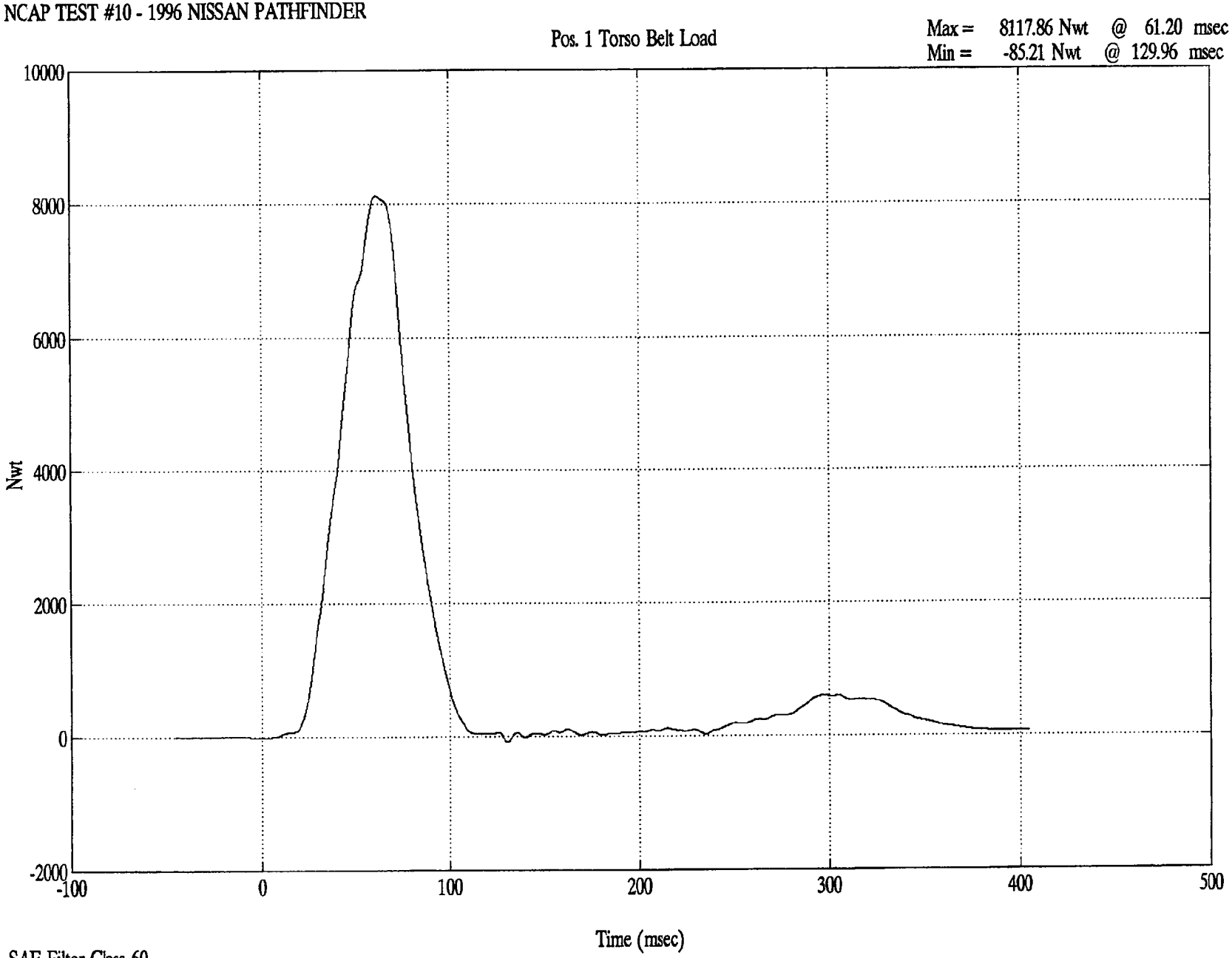
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 60

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

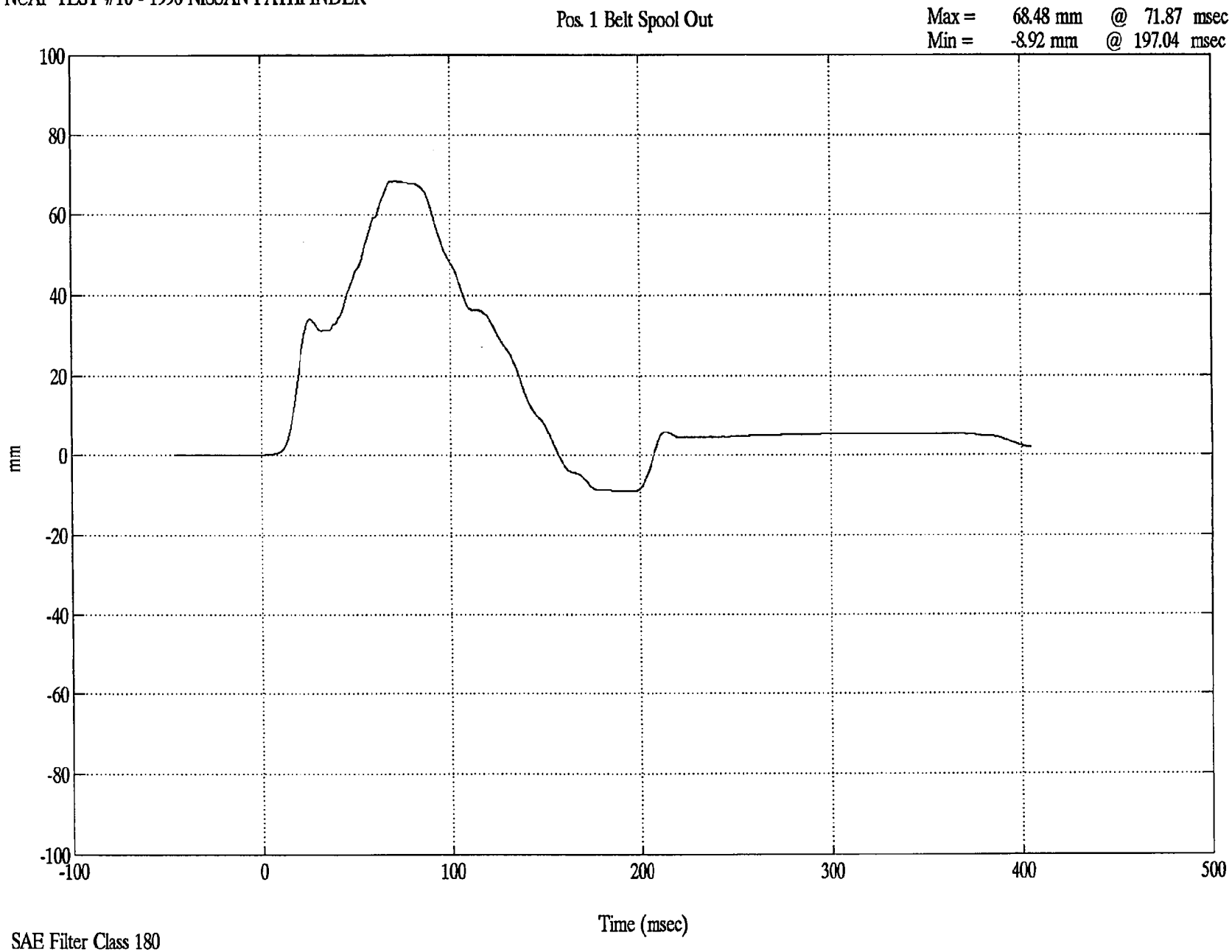


B-50

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

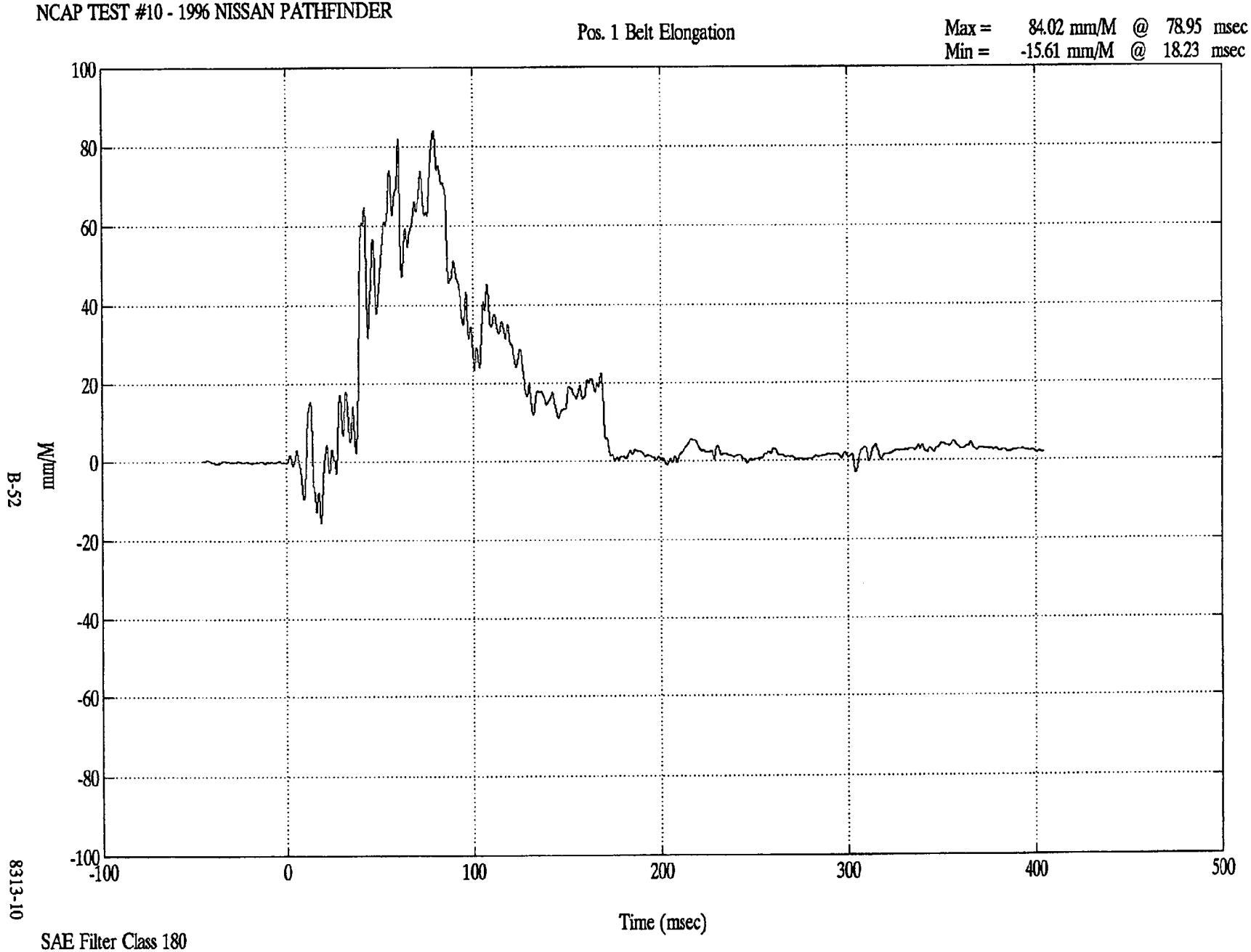


SAE Filter Class 180

B-51

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER



B-52

8313-10

SAE Filter Class 180

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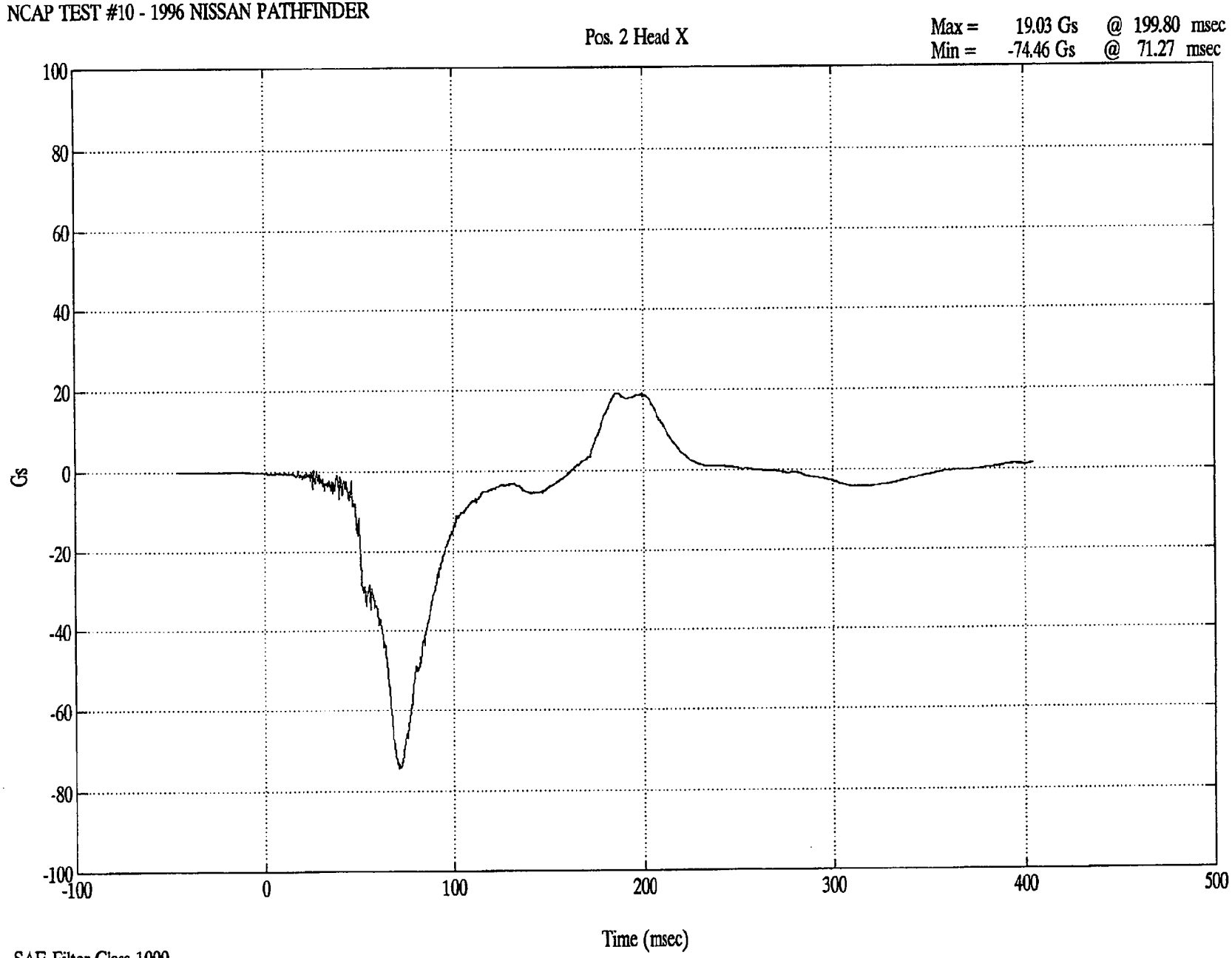
NCAP TEST #10 - 1996 NISSAN PATHFINDER

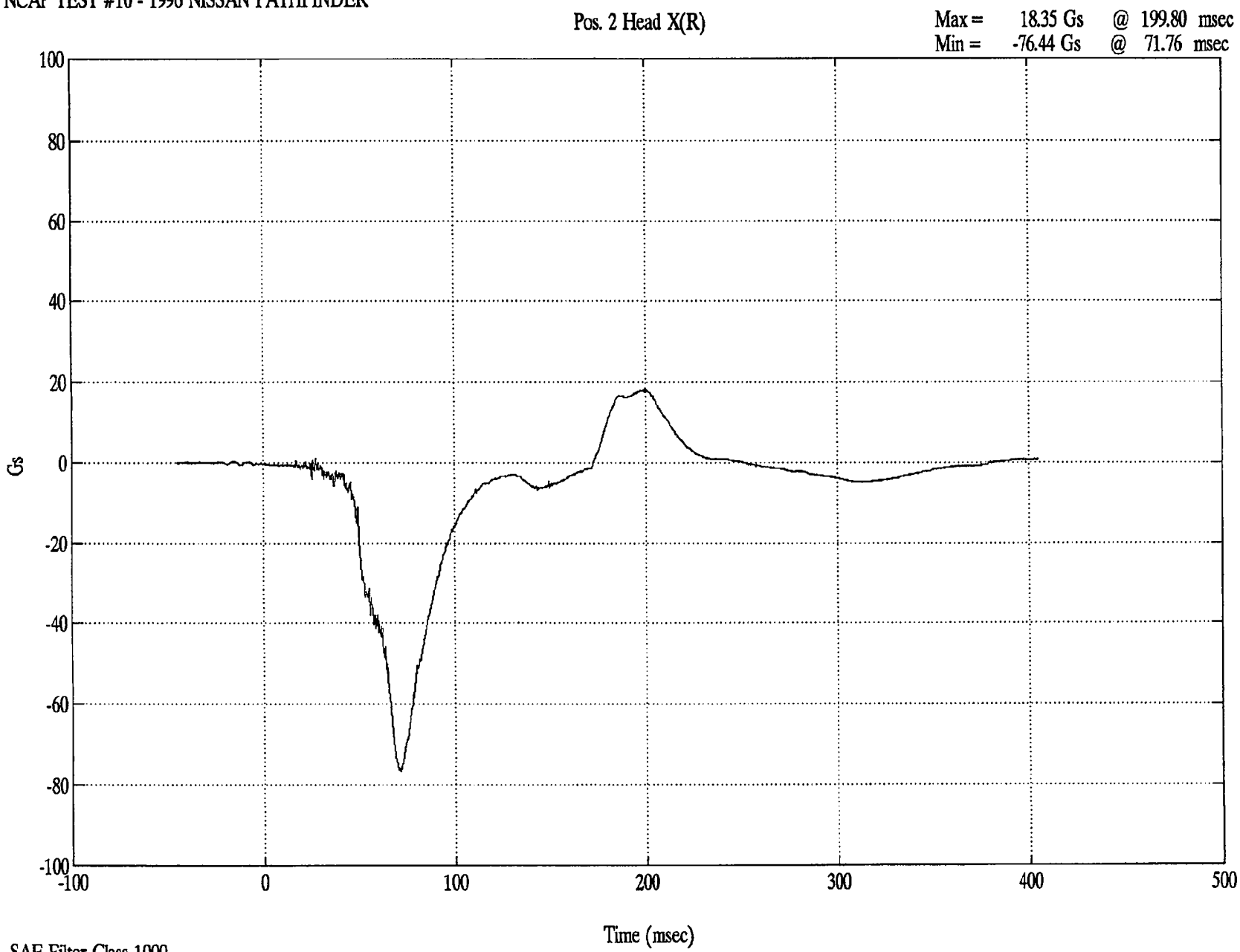


SAE Filter Class 1000

B-54

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

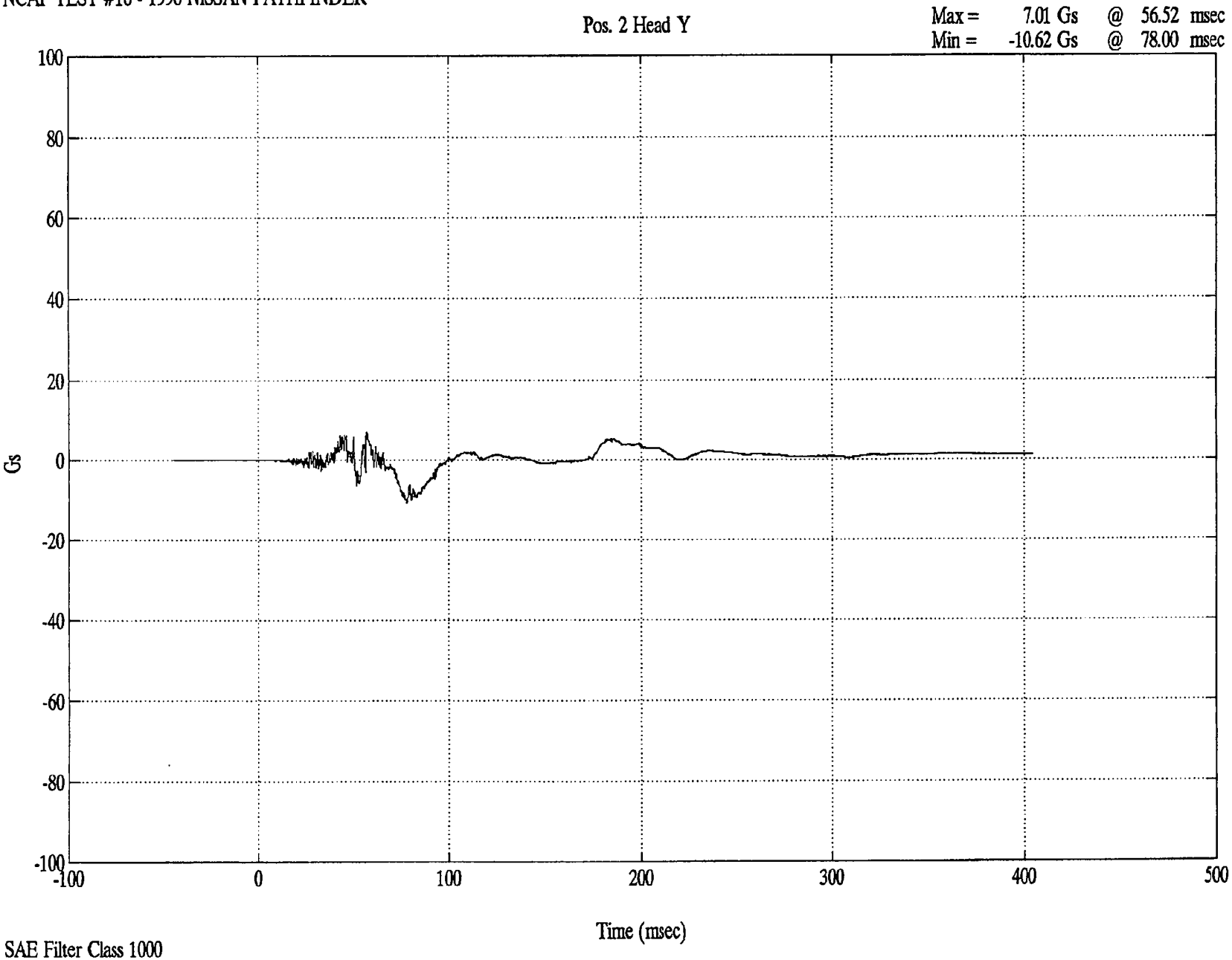


SAE Filter Class 1000

B-55

8313-10

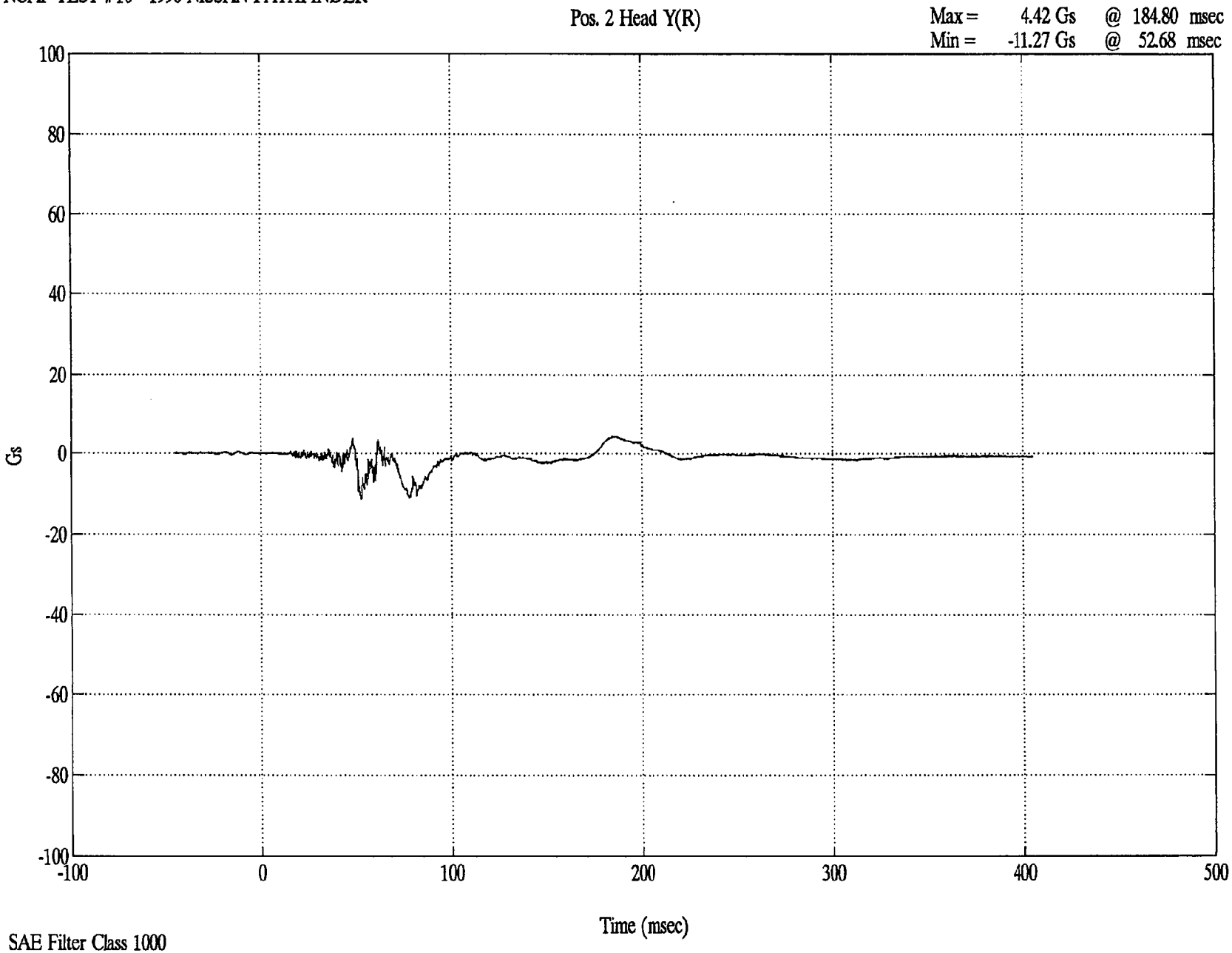
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

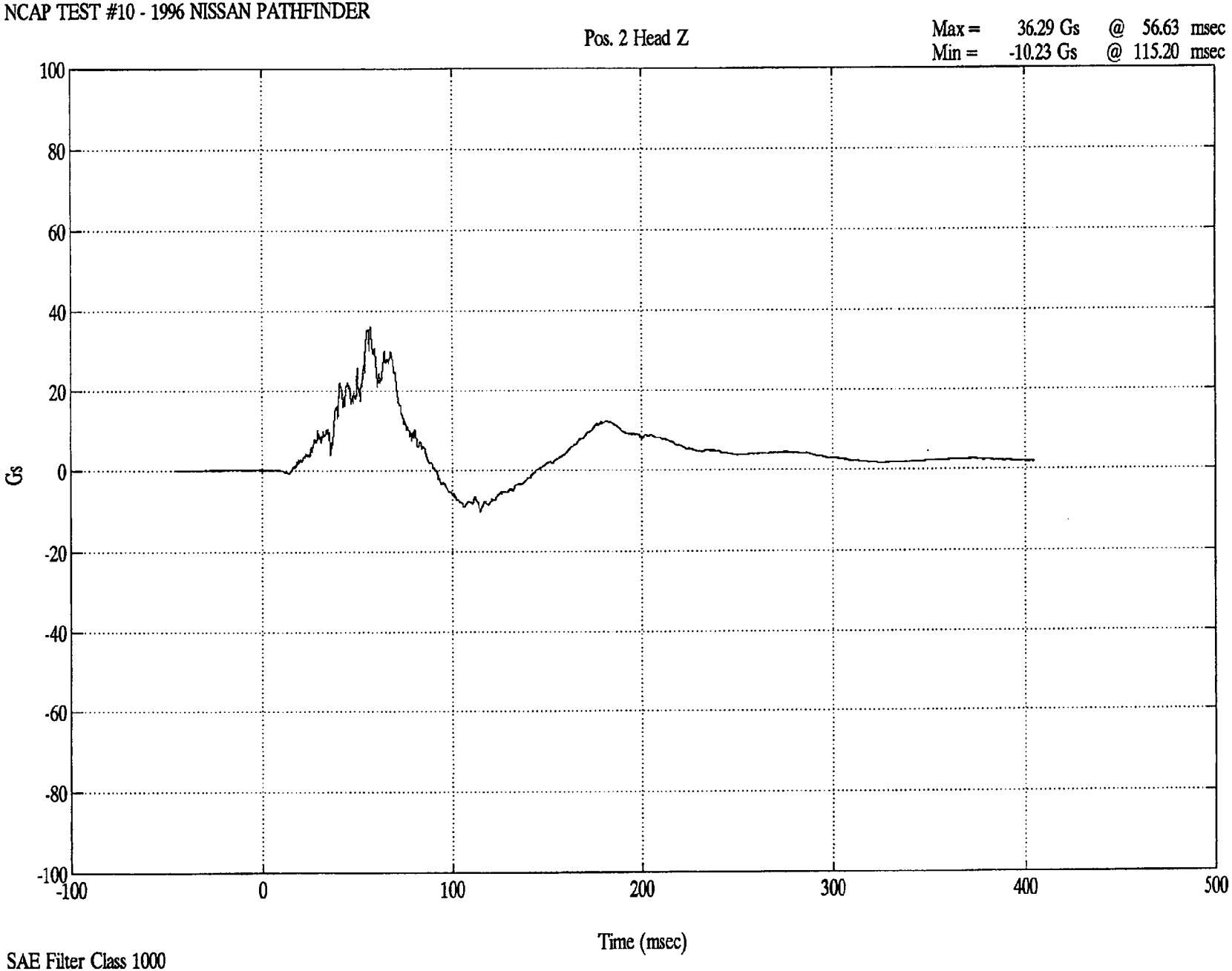


B-57

8313-10

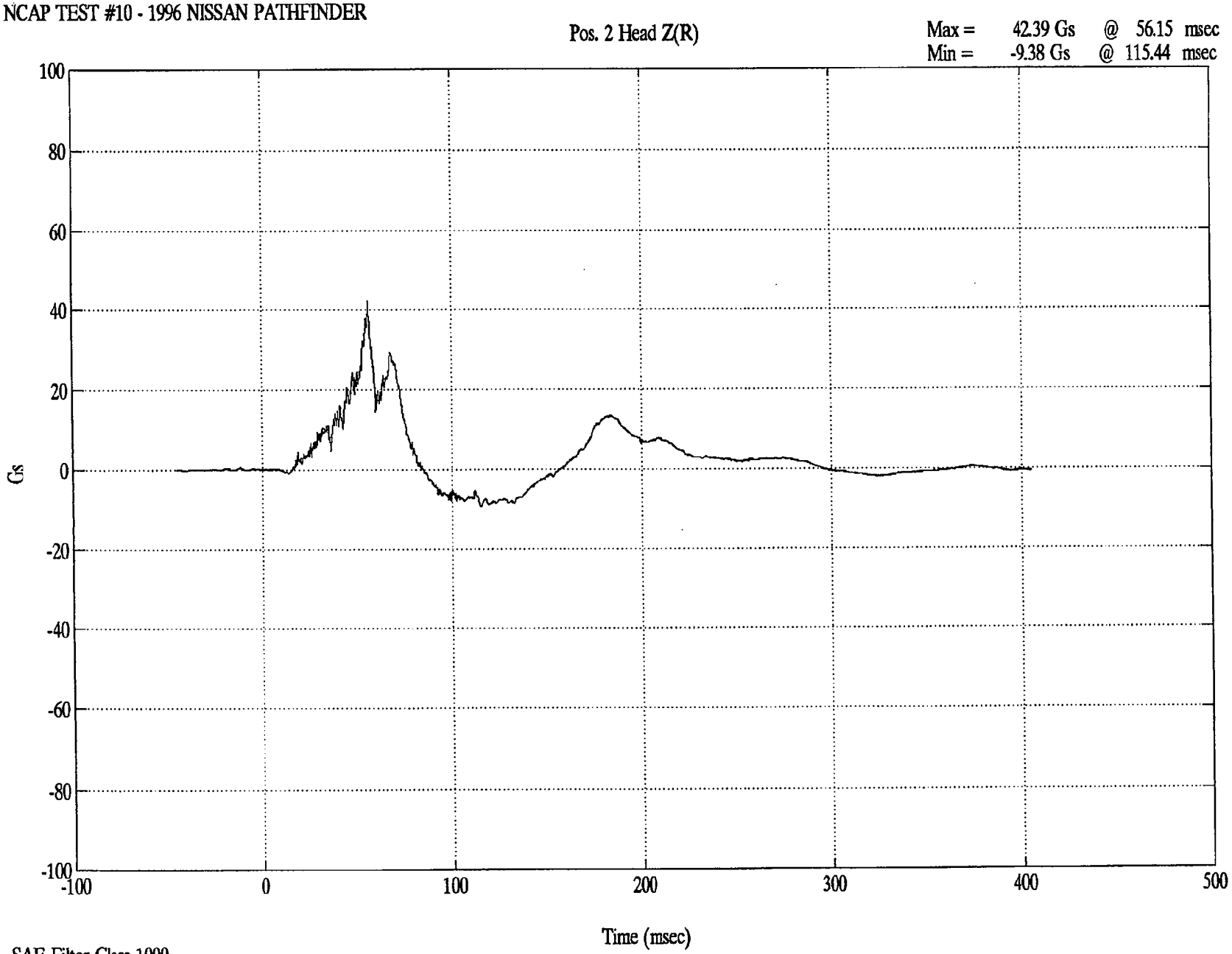
SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

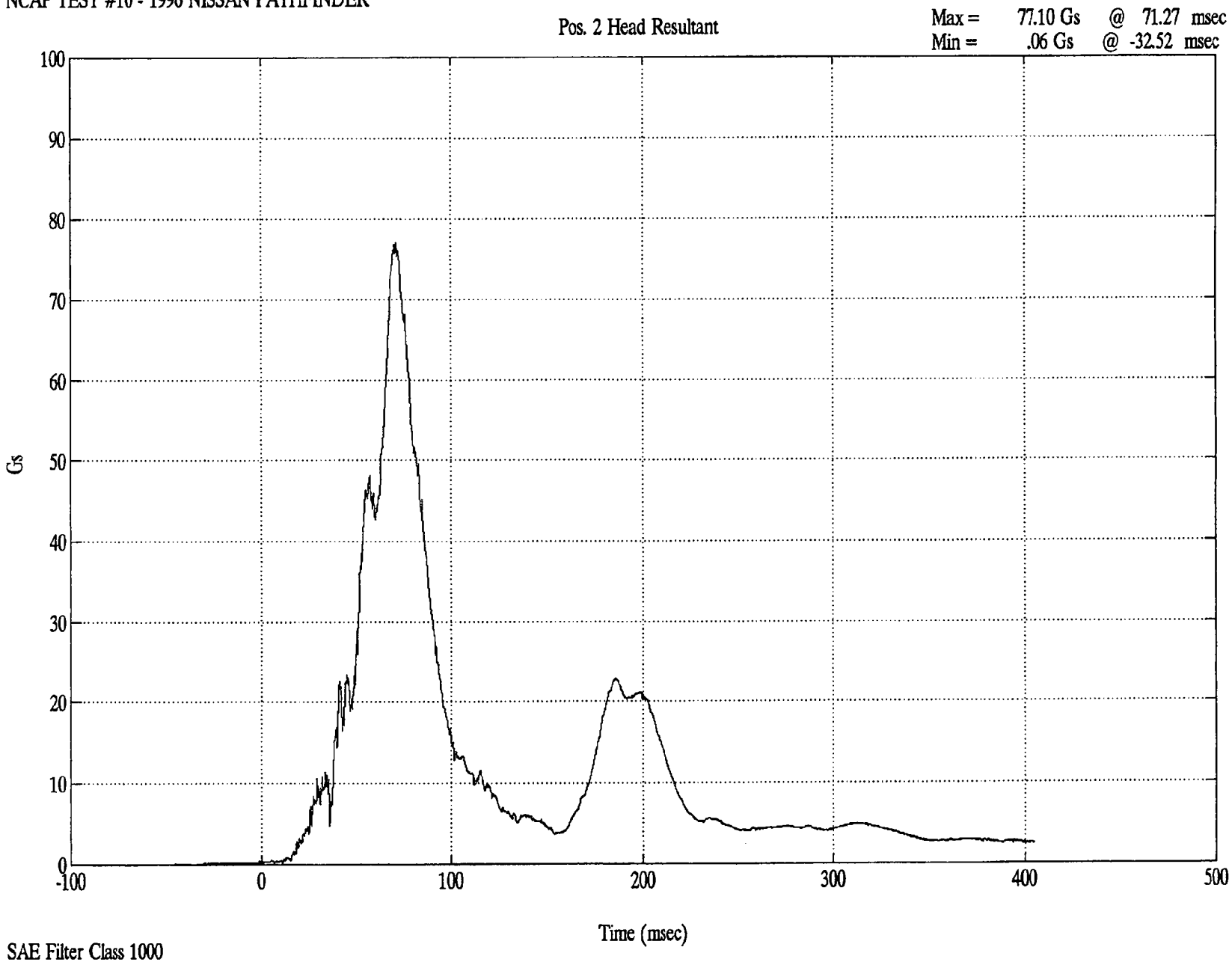
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

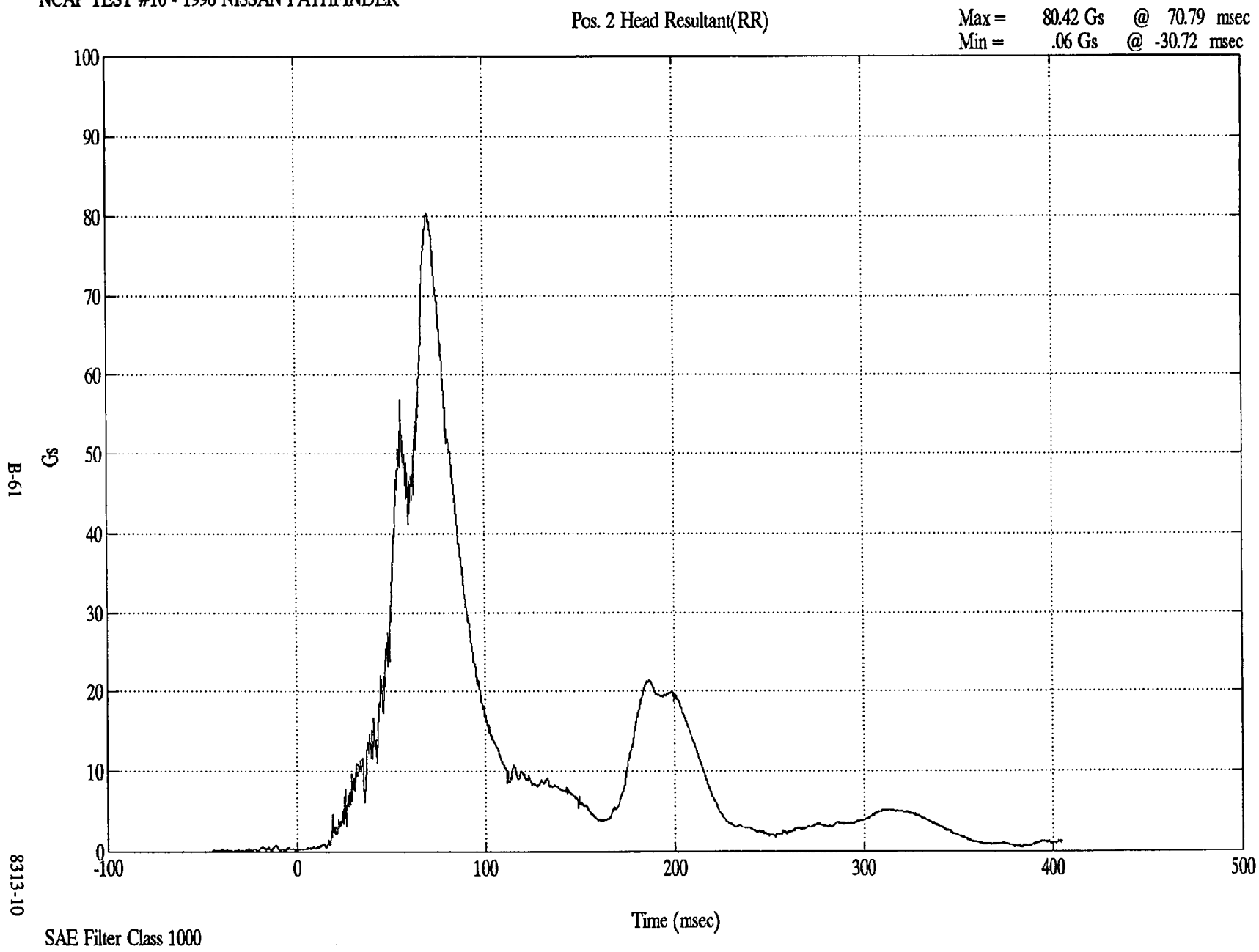
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 1000

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

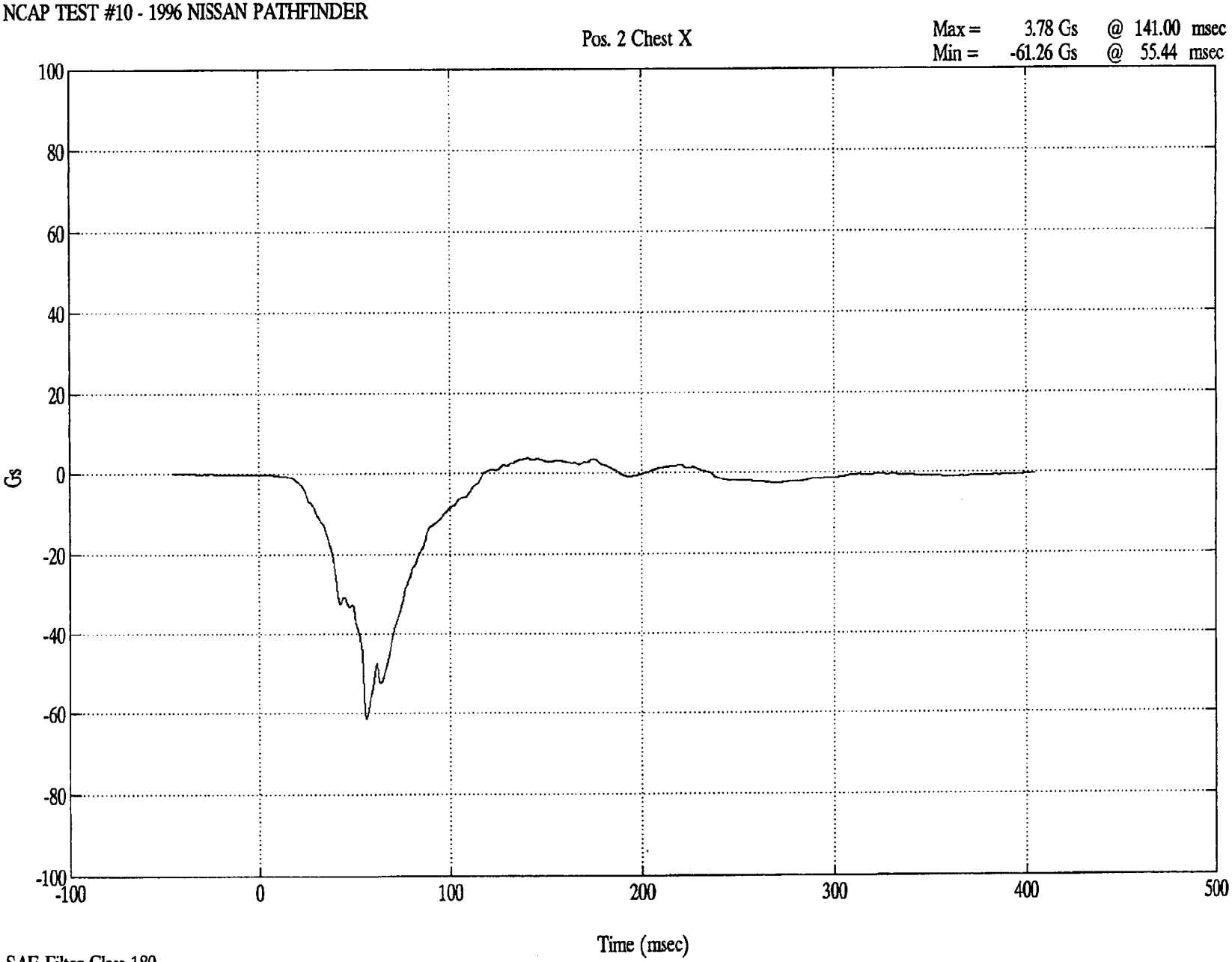


B-61

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

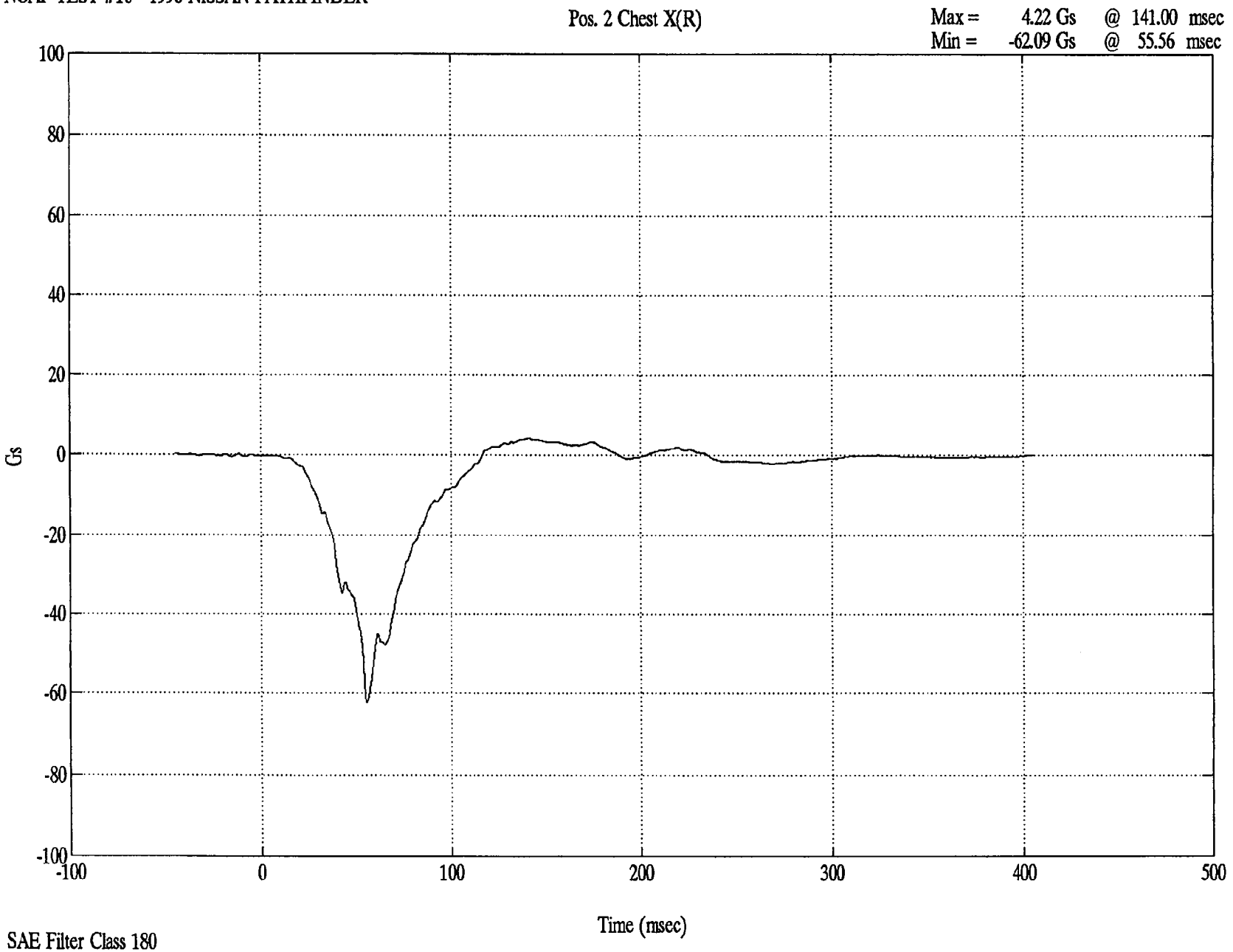


B-62

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

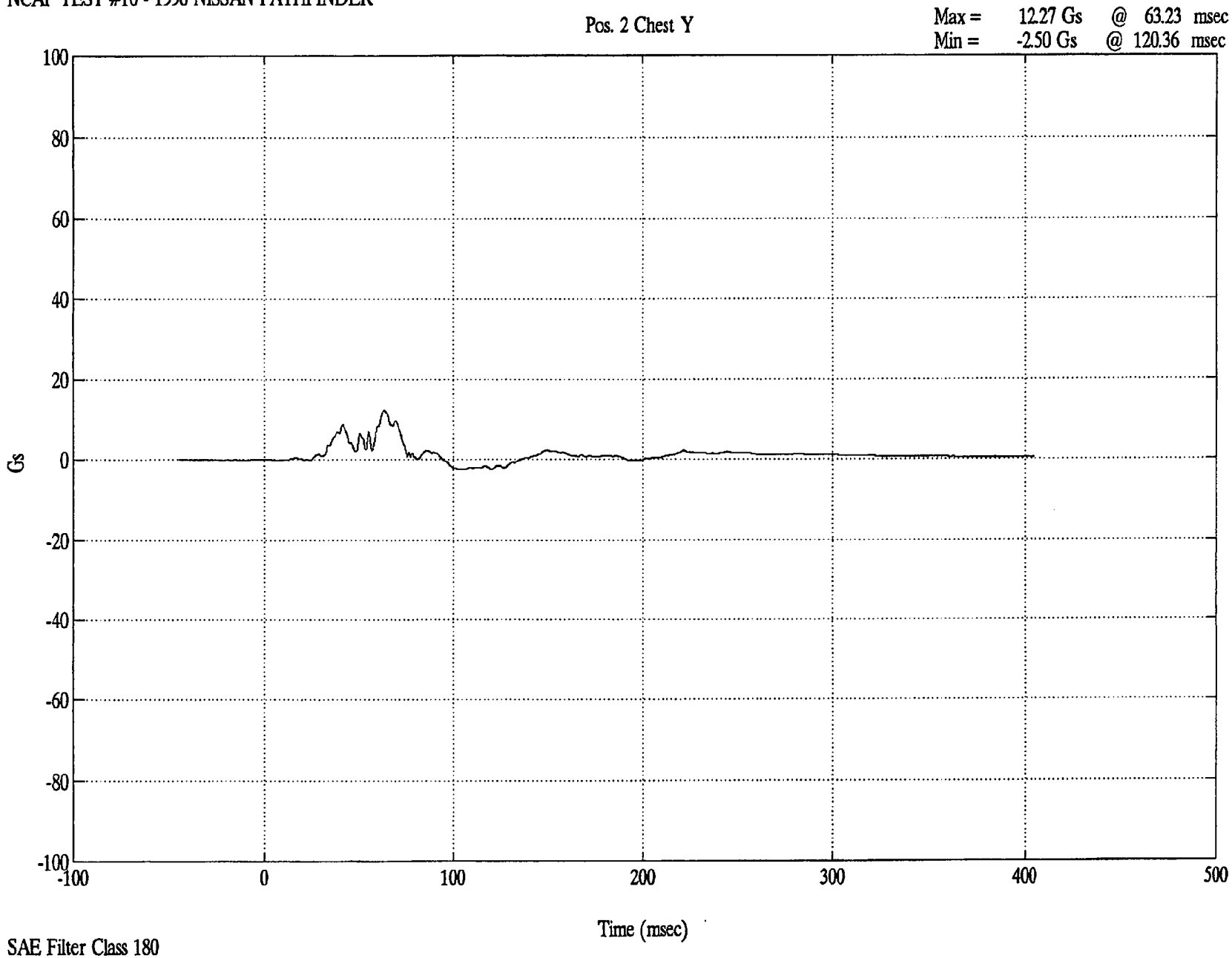


B-63

8313-10

SAE Filter Class 180

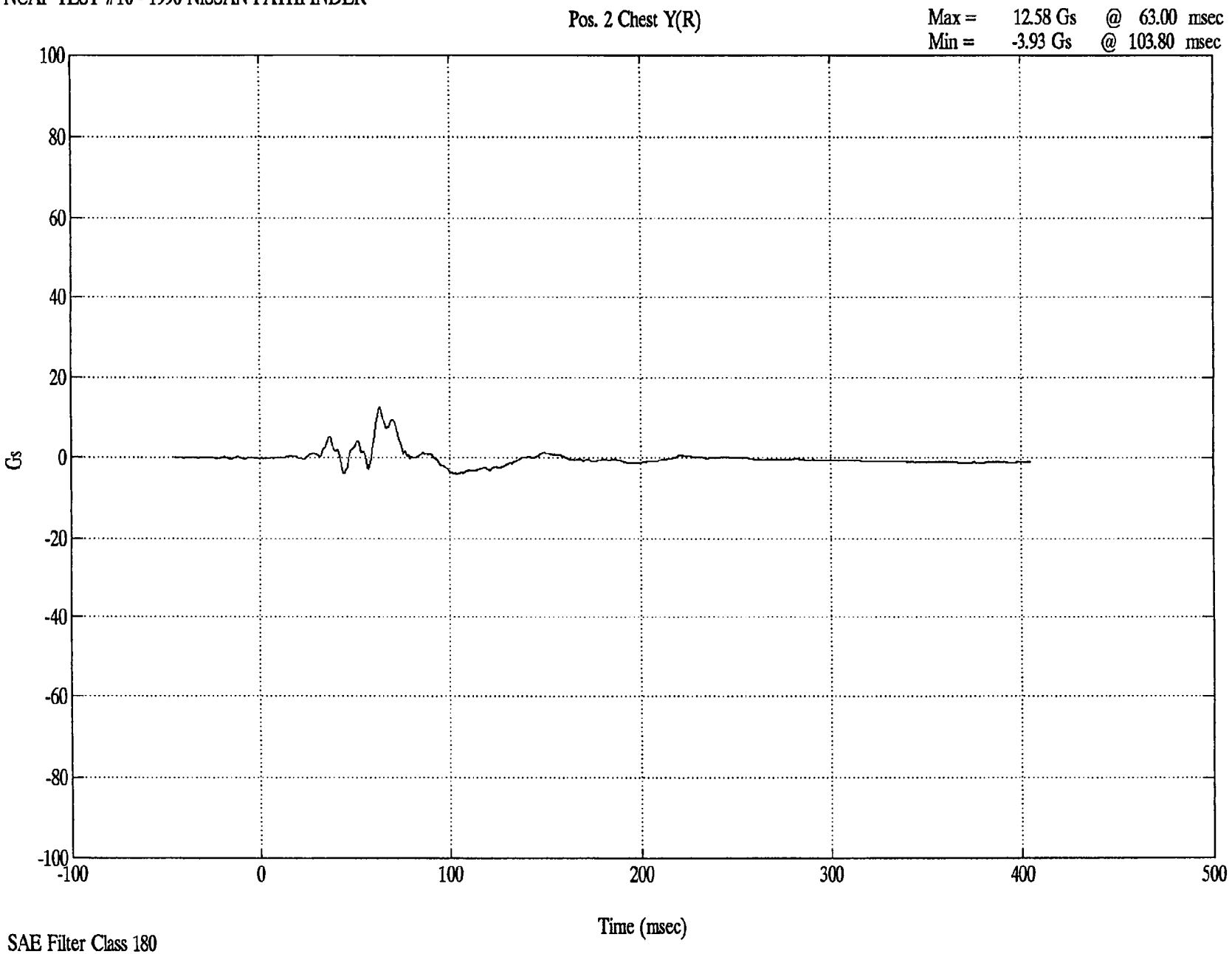
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

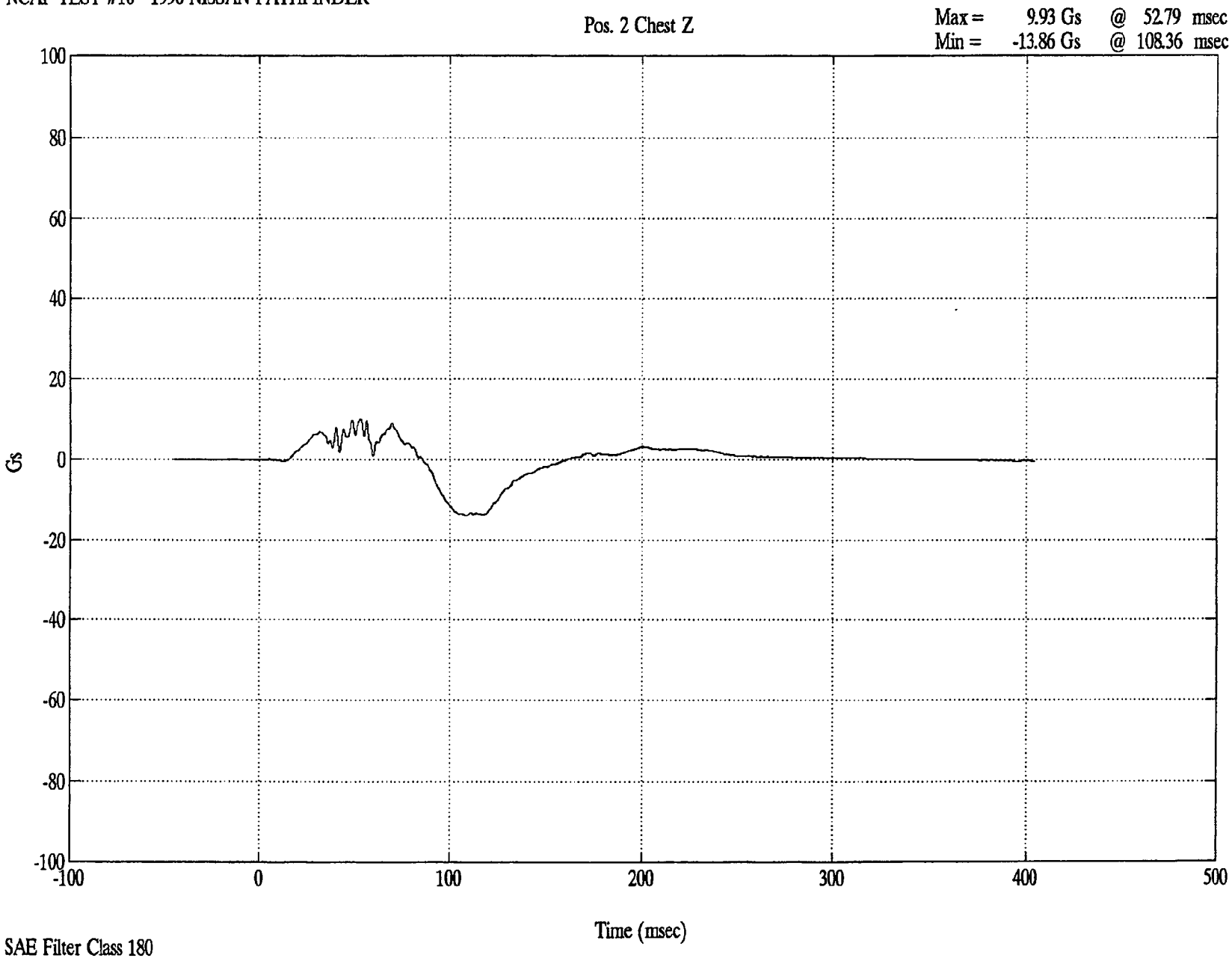


B-65

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

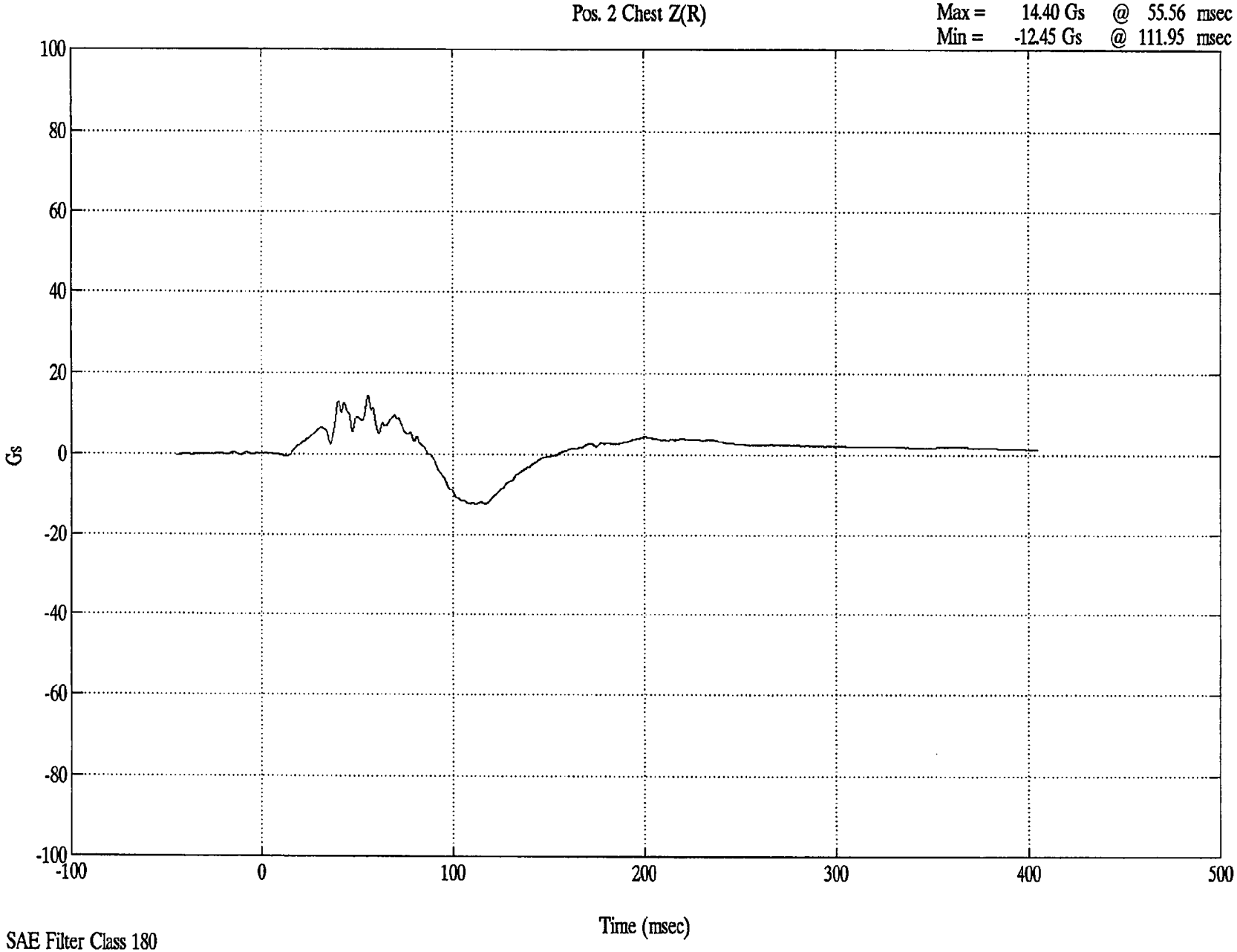


B-66

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

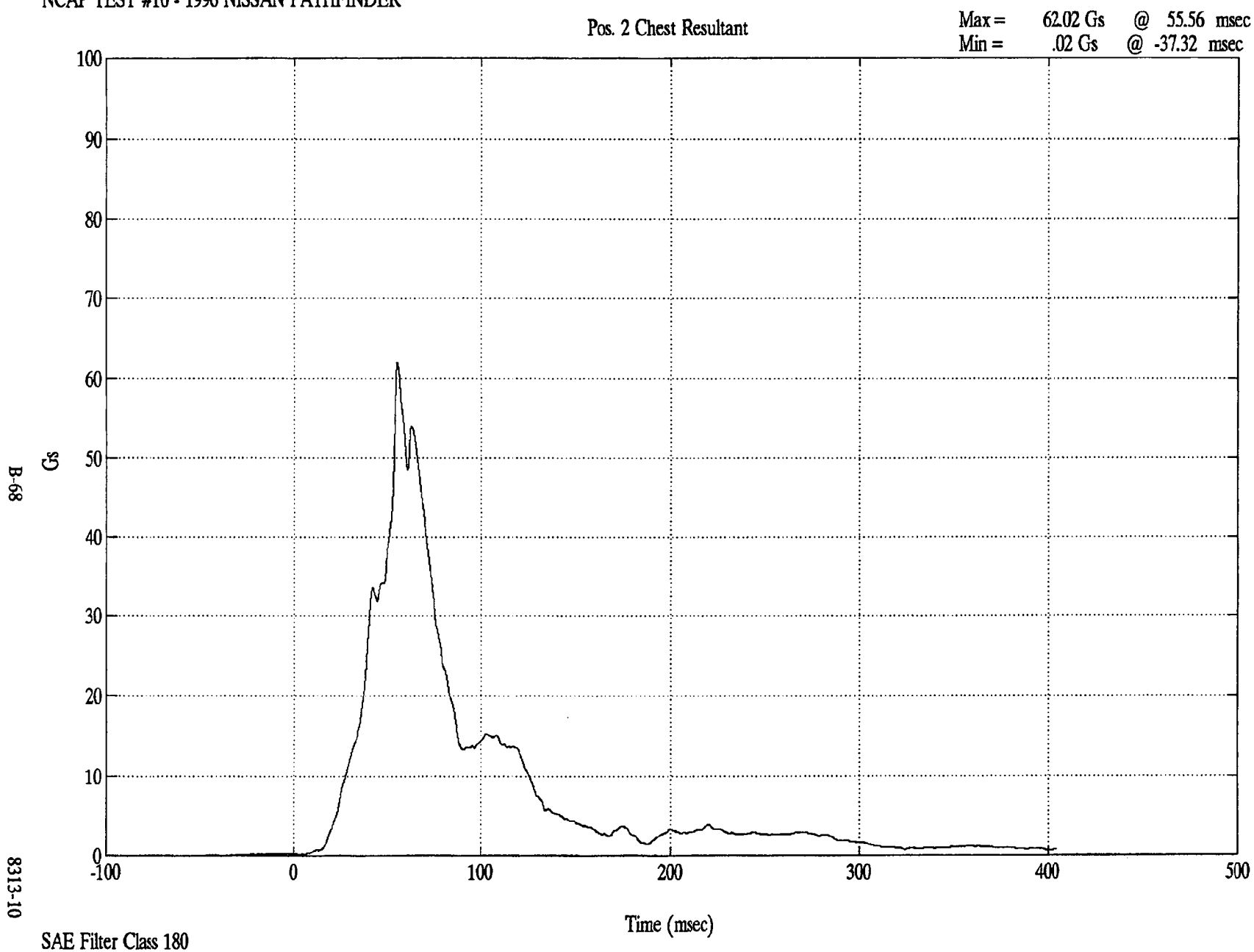


B-67

8313-10

SAE Filter Class 180

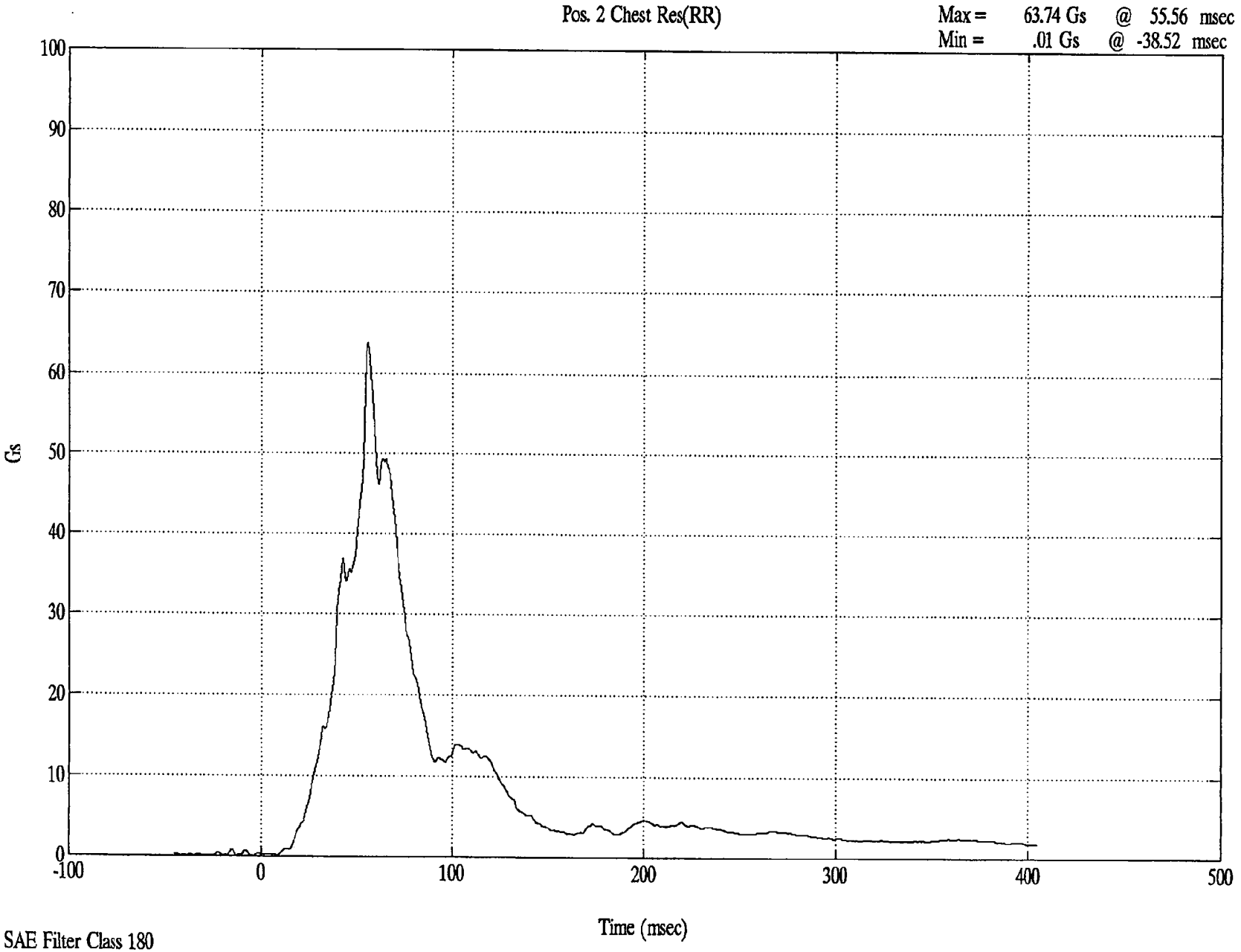
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

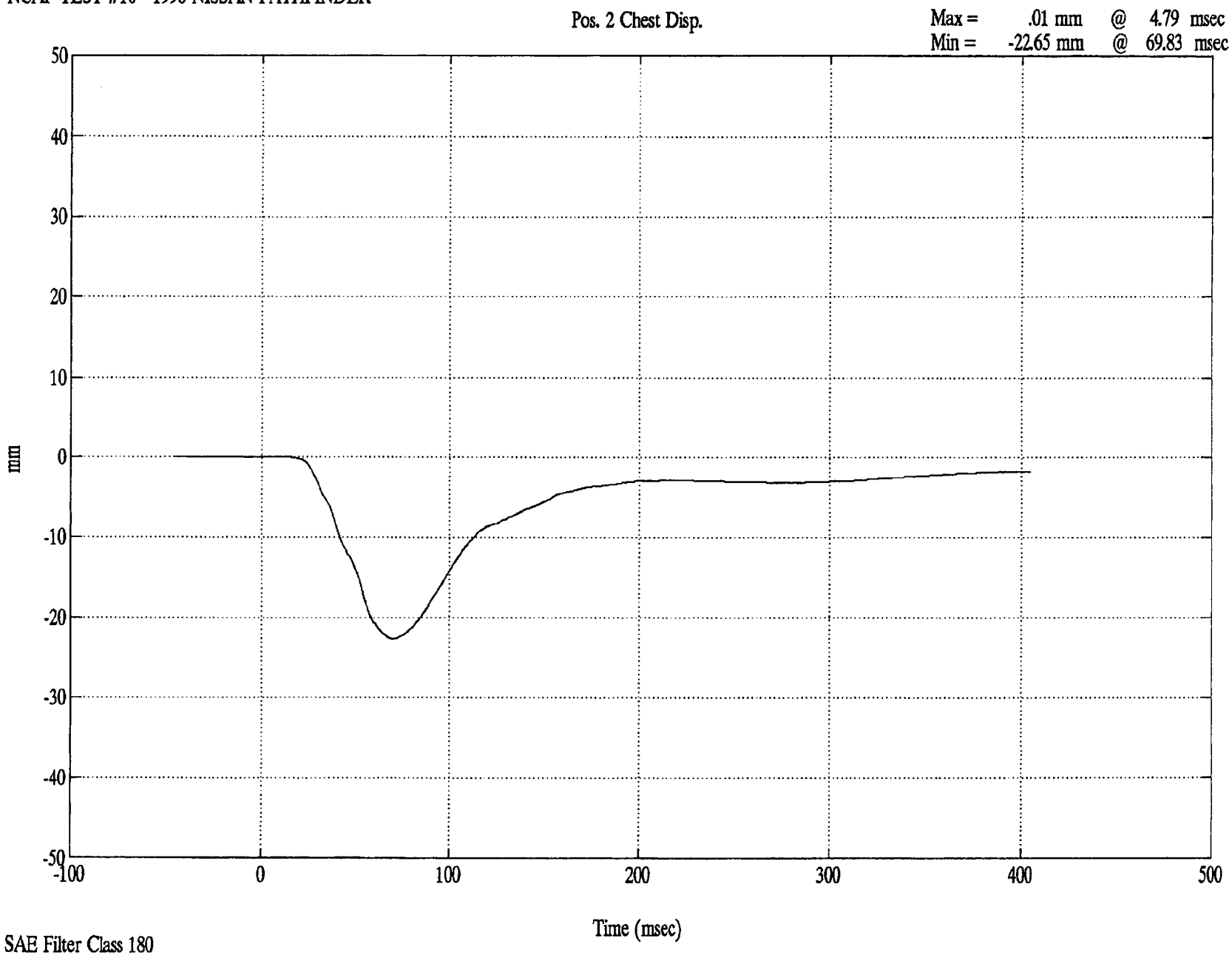
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

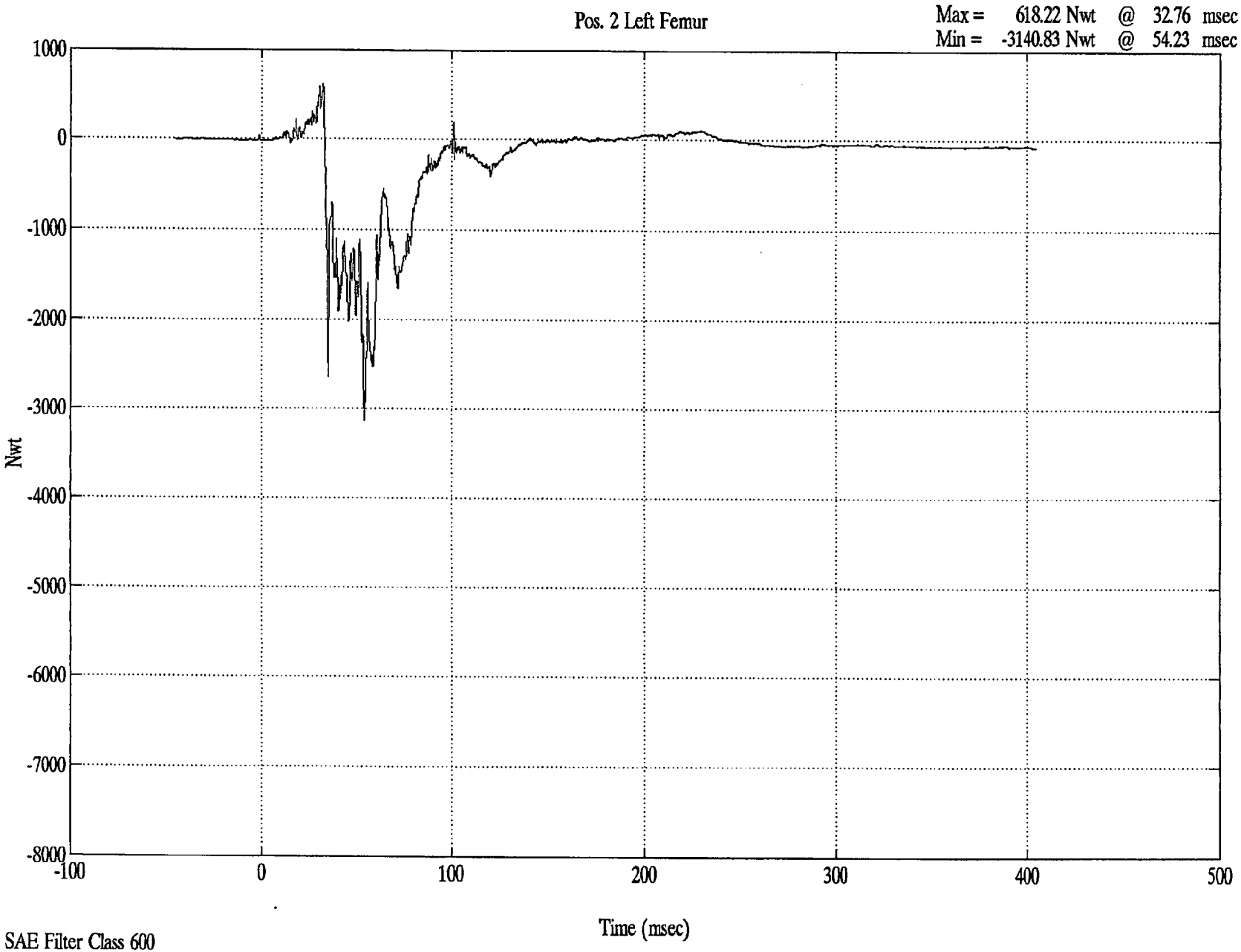


B-70

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

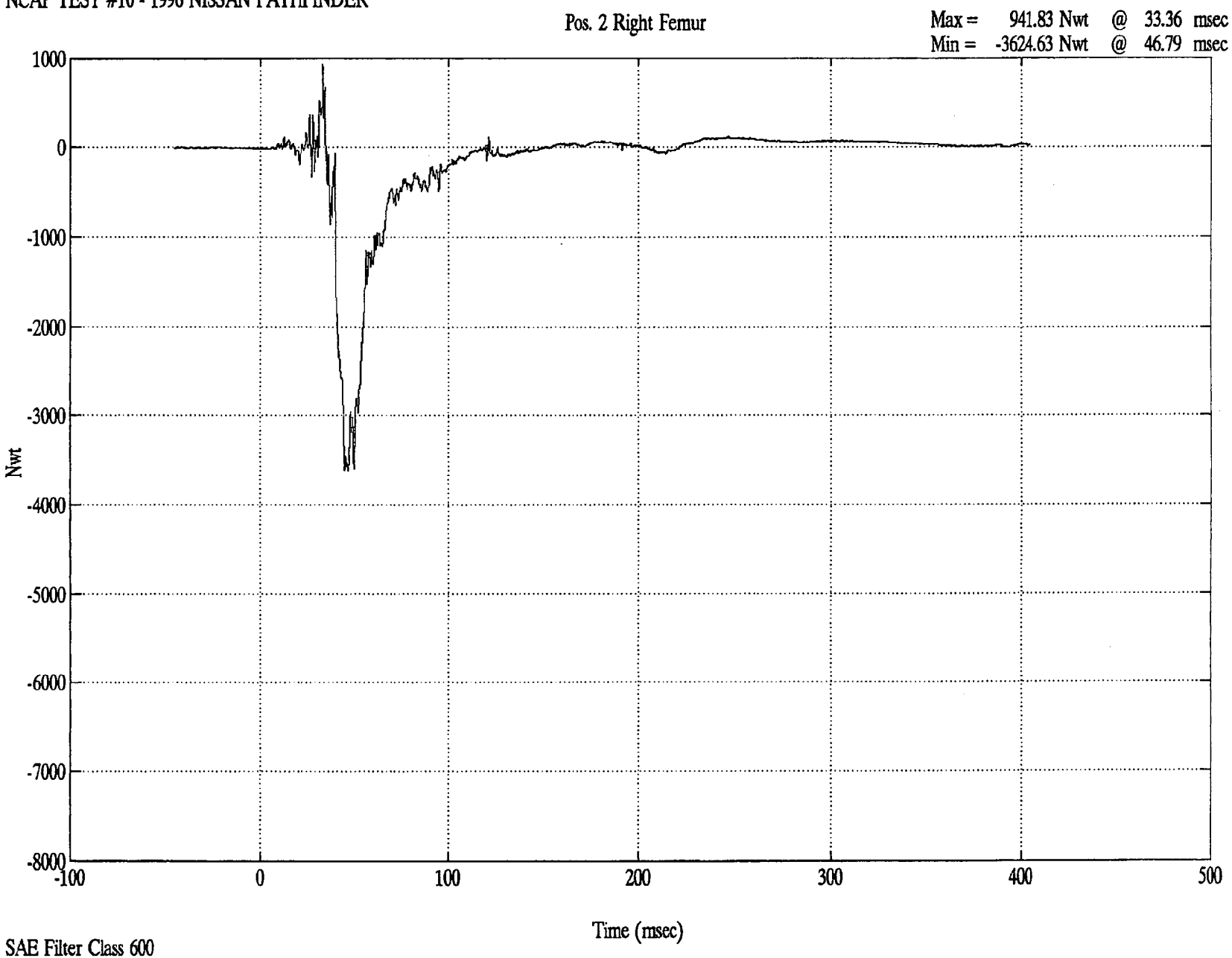


SAE Filter Class 600

B-71

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

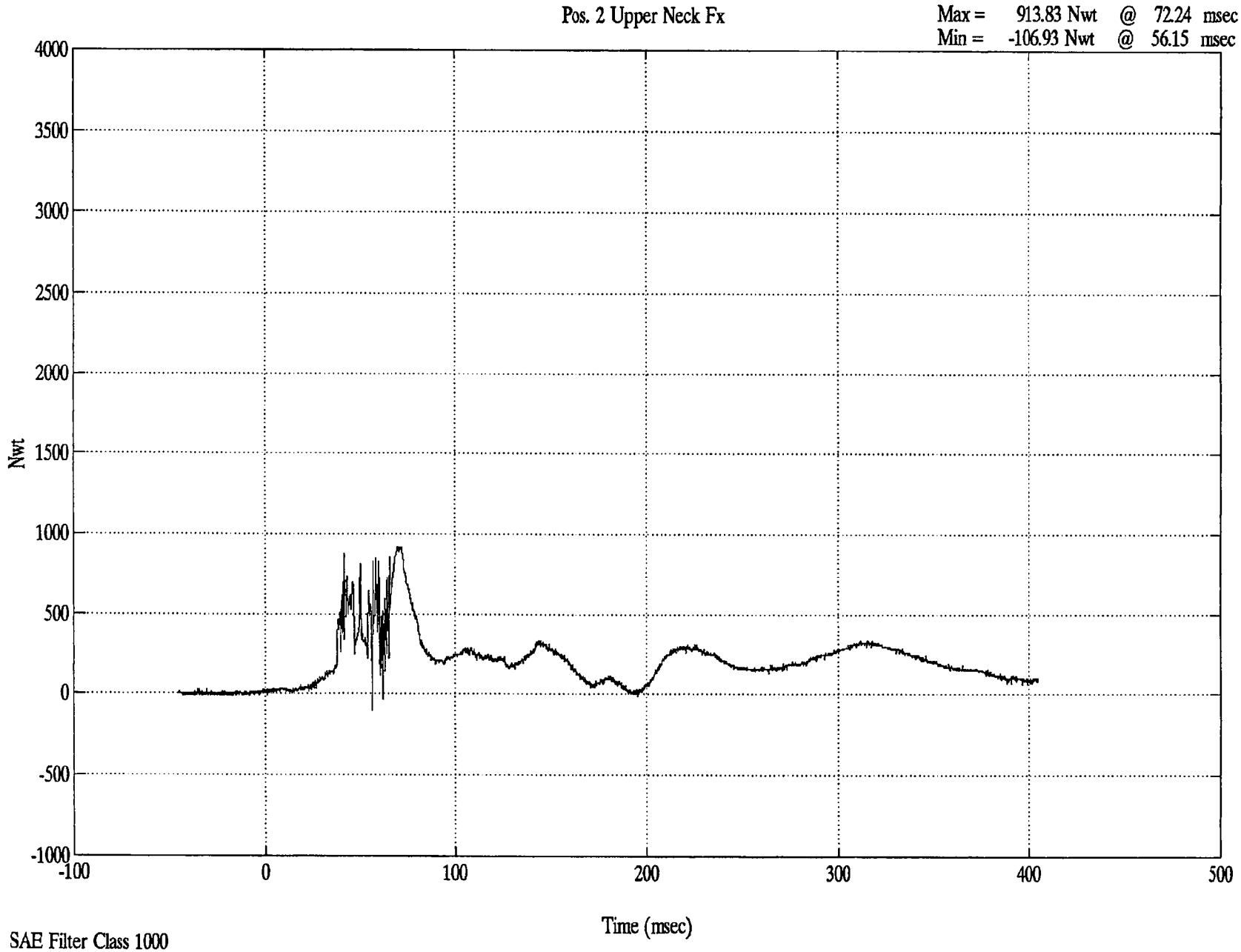


B-72

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

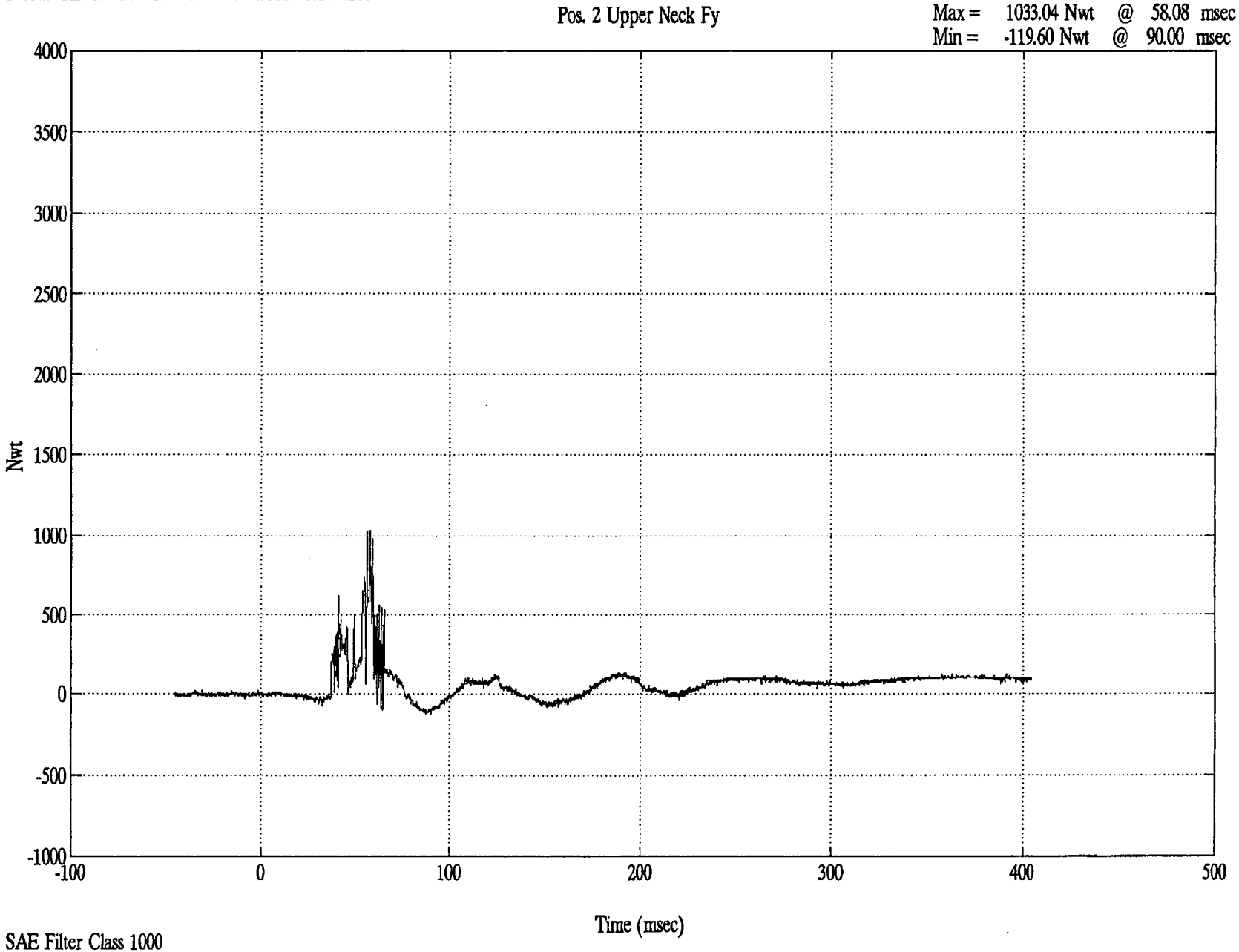


B-73

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

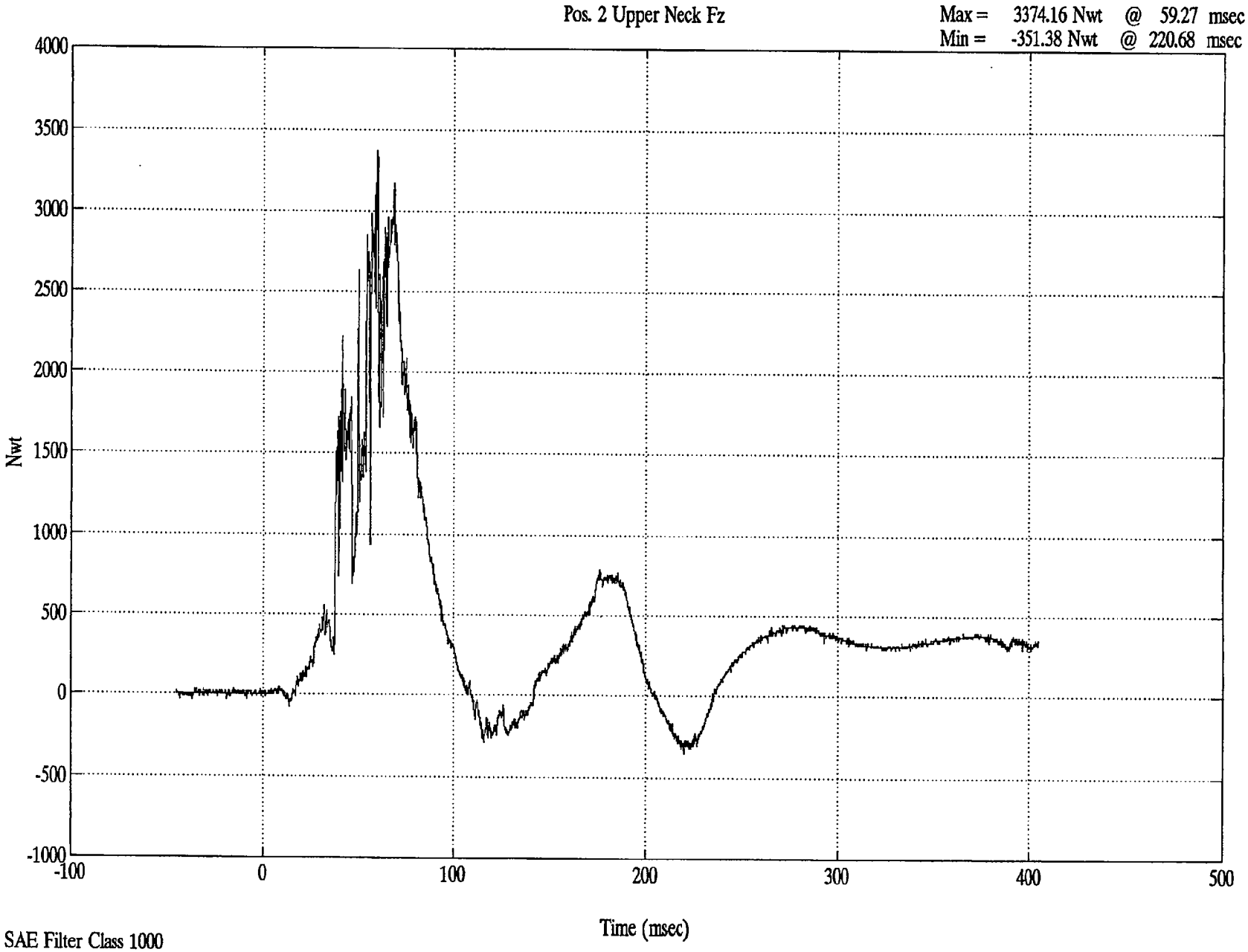


B-74

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

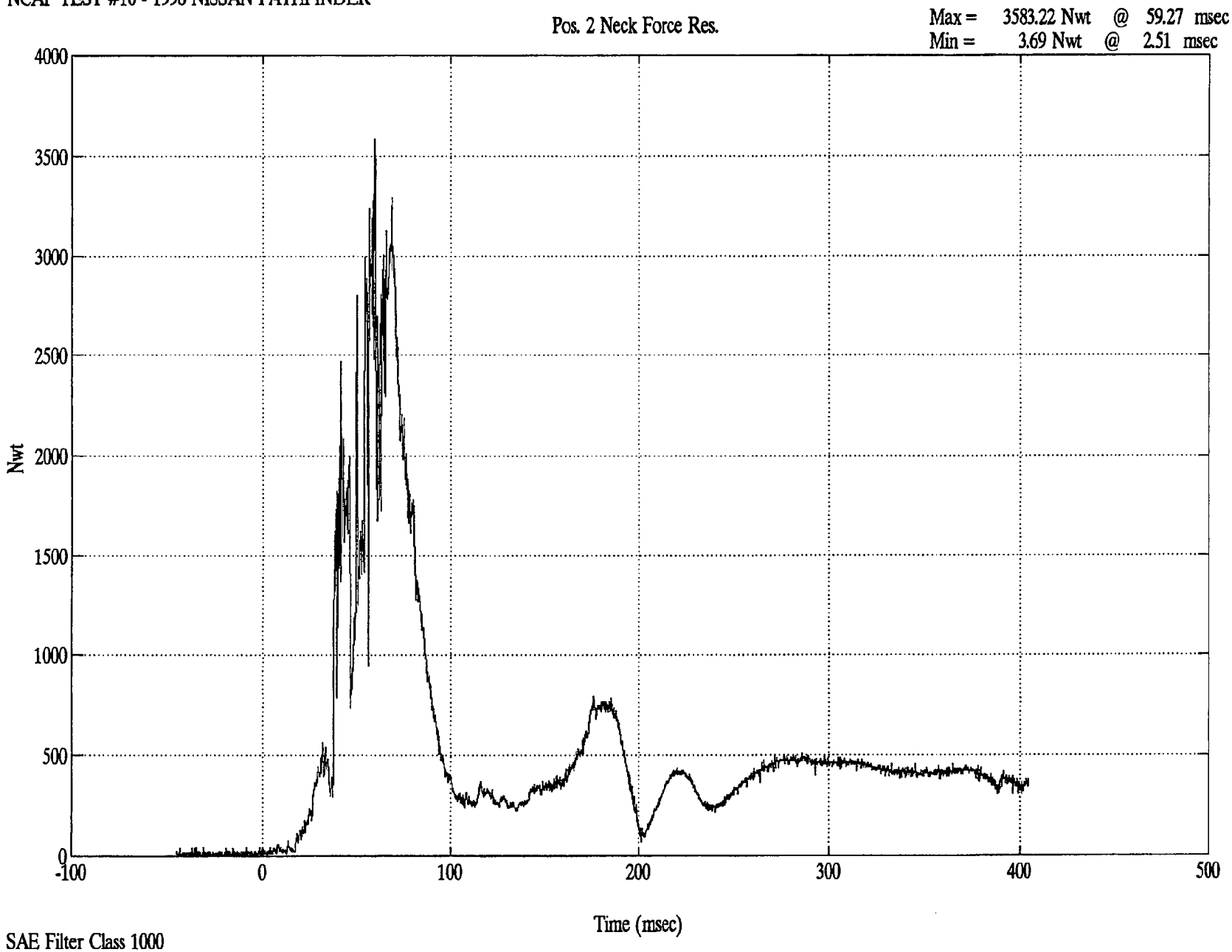


B-75

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

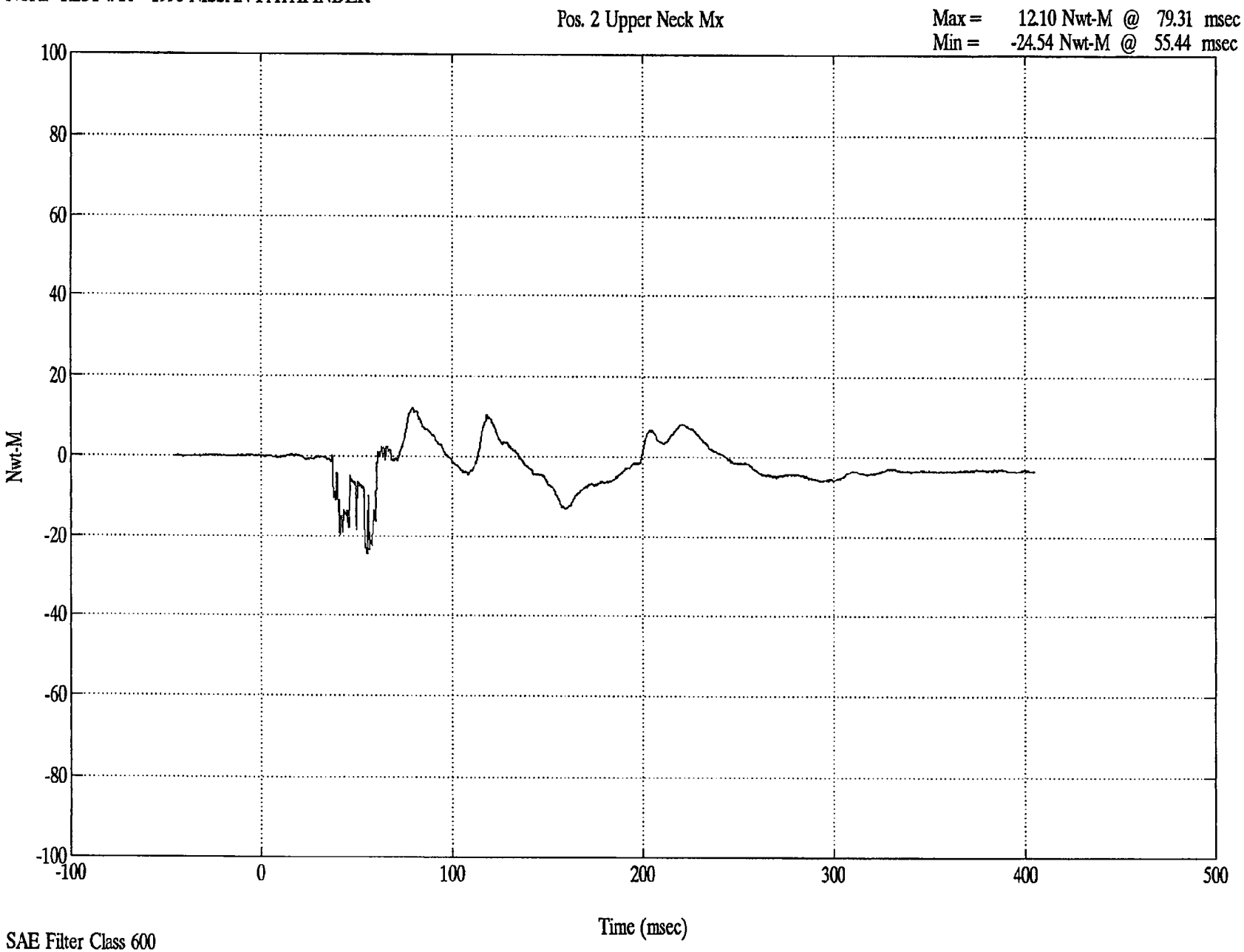


B-76

8313-10

SAE Filter Class 1000

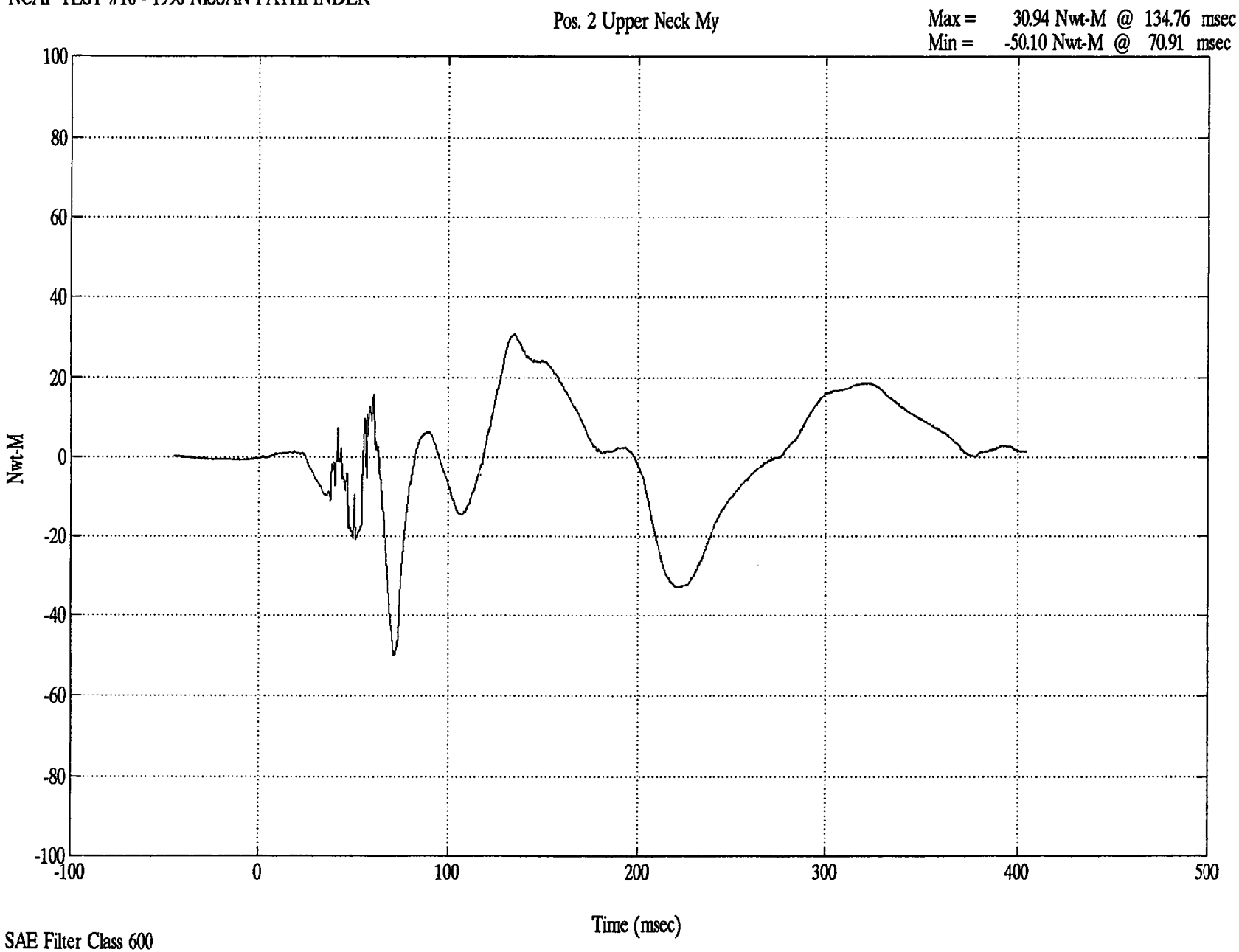
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 600

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER



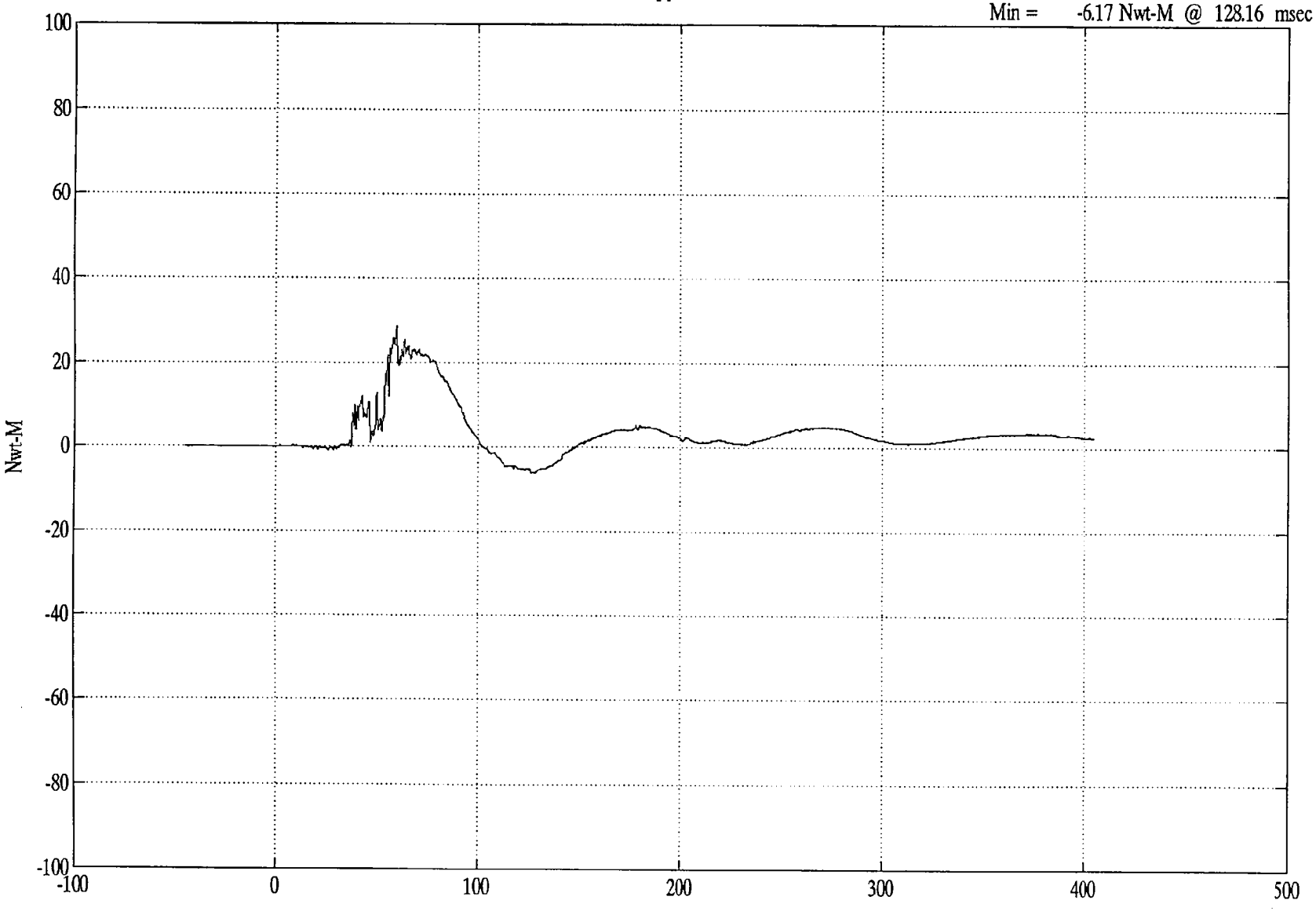
SAE Filter Class 600

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

Pos. 2 Upper Neck Mz

Max = 28.60 Nwt-M @ 59.88 msec
Min = -6.17 Nwt-M @ 128.16 msec

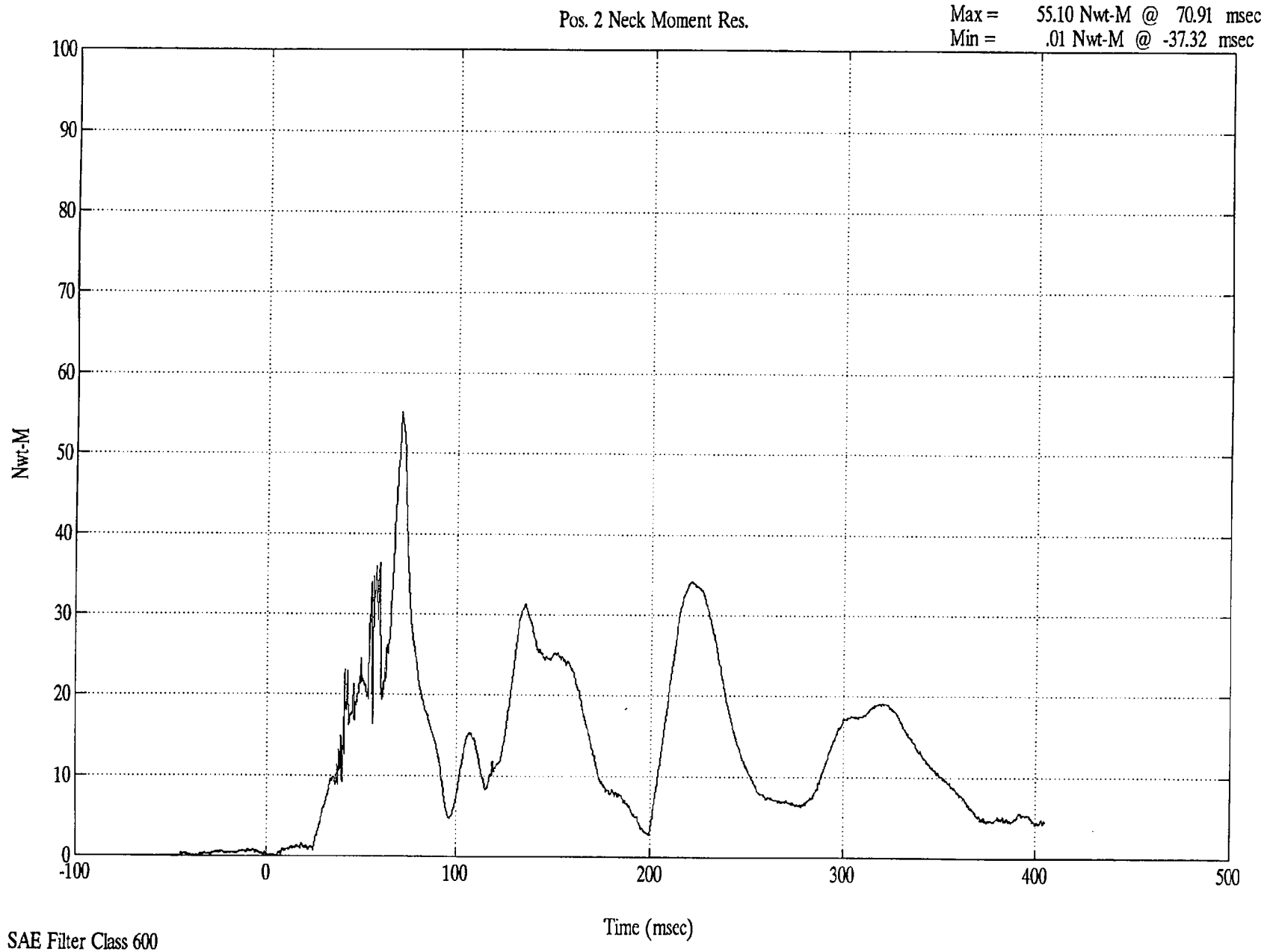


B-79

8313-10

SAE Filter Class 600

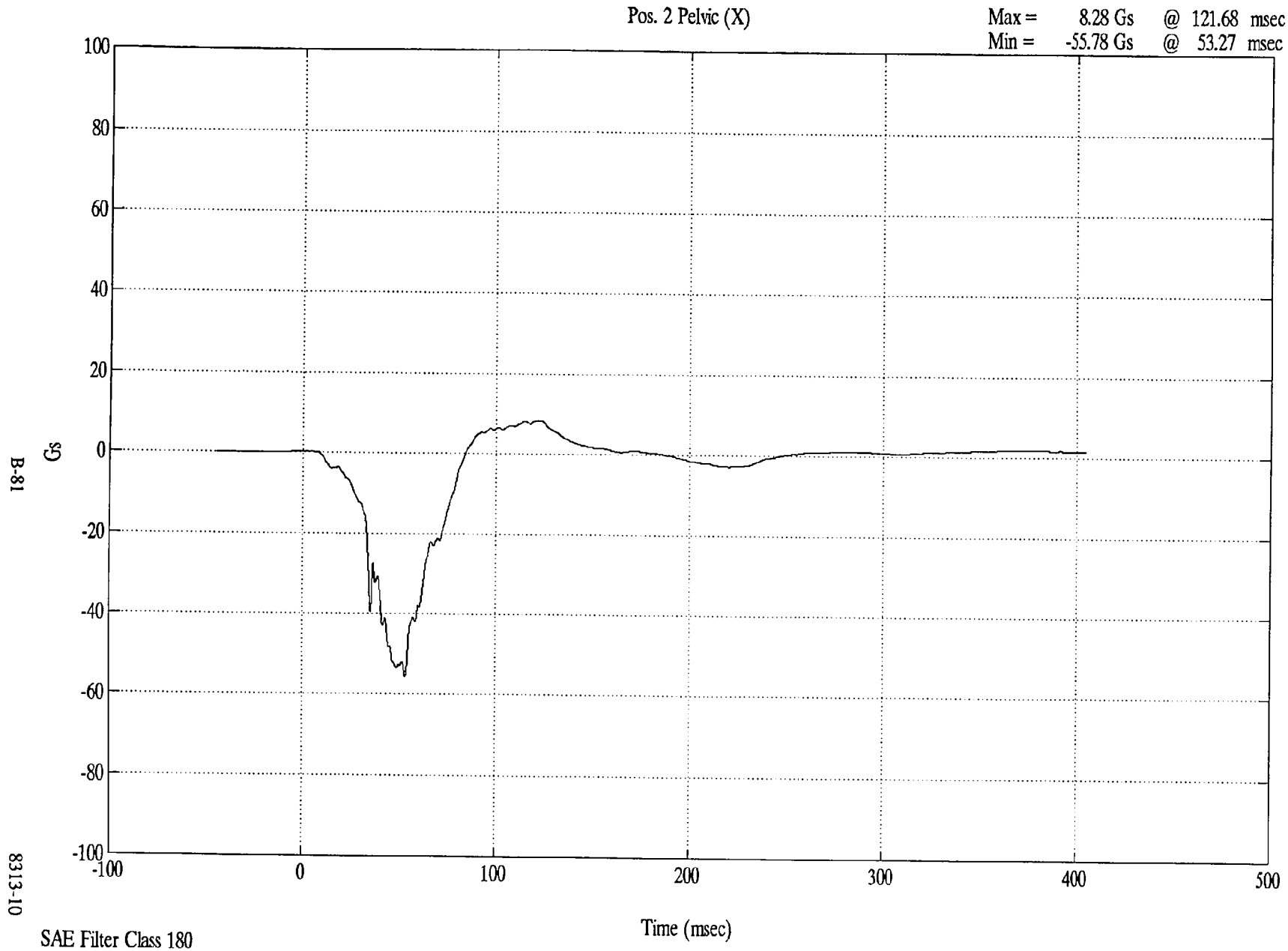
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 600

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

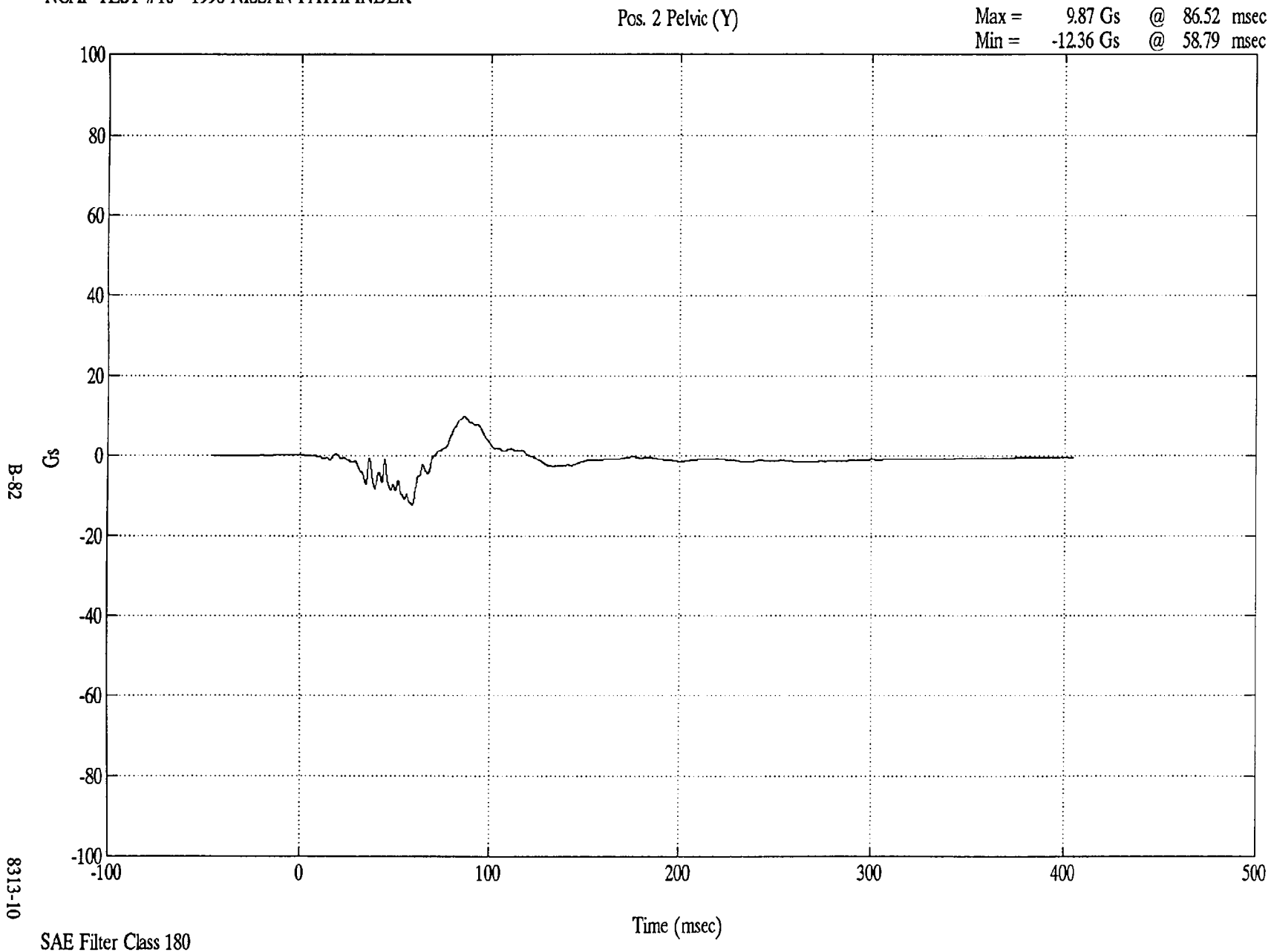


B-81

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

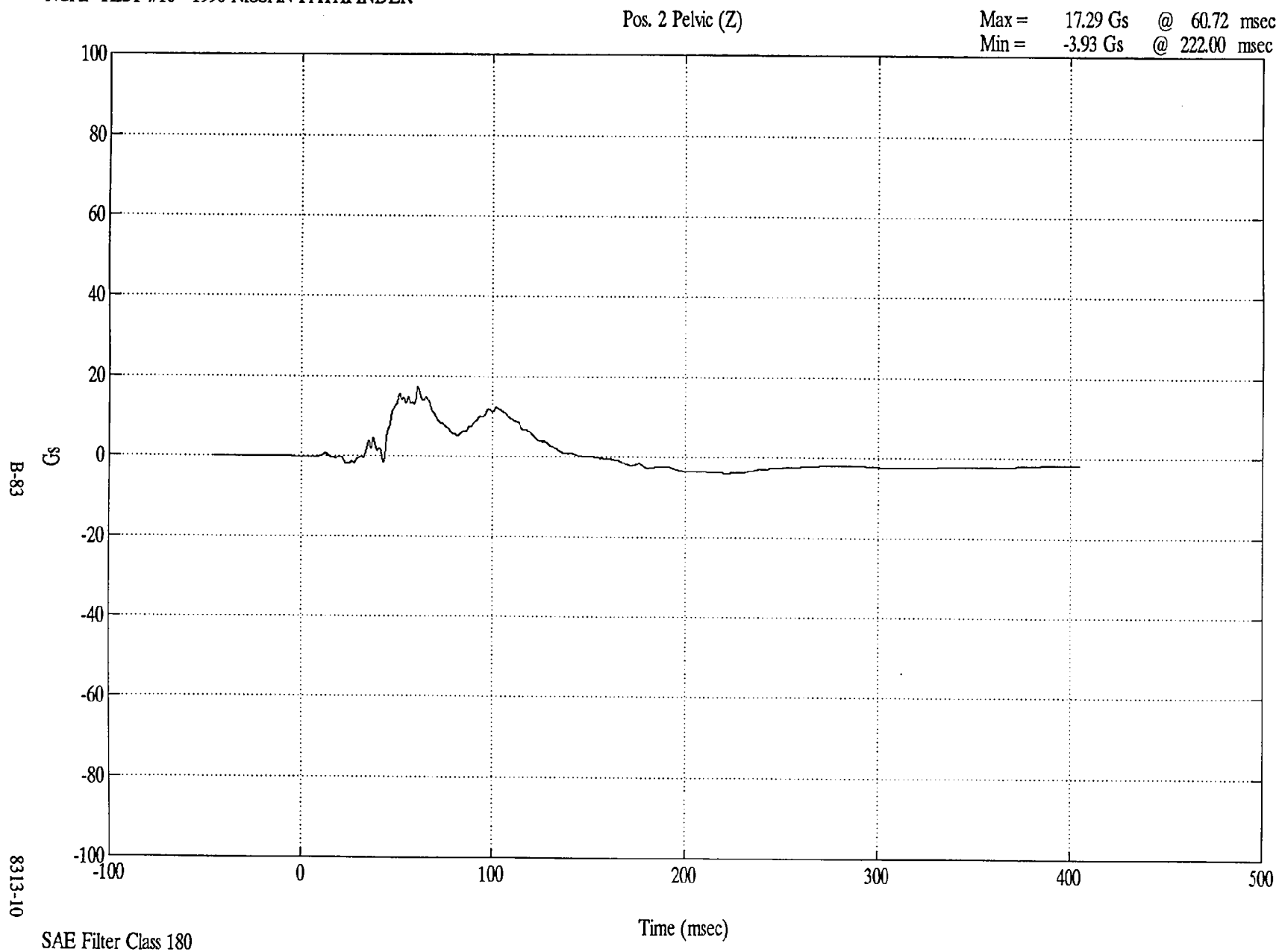


B-82

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

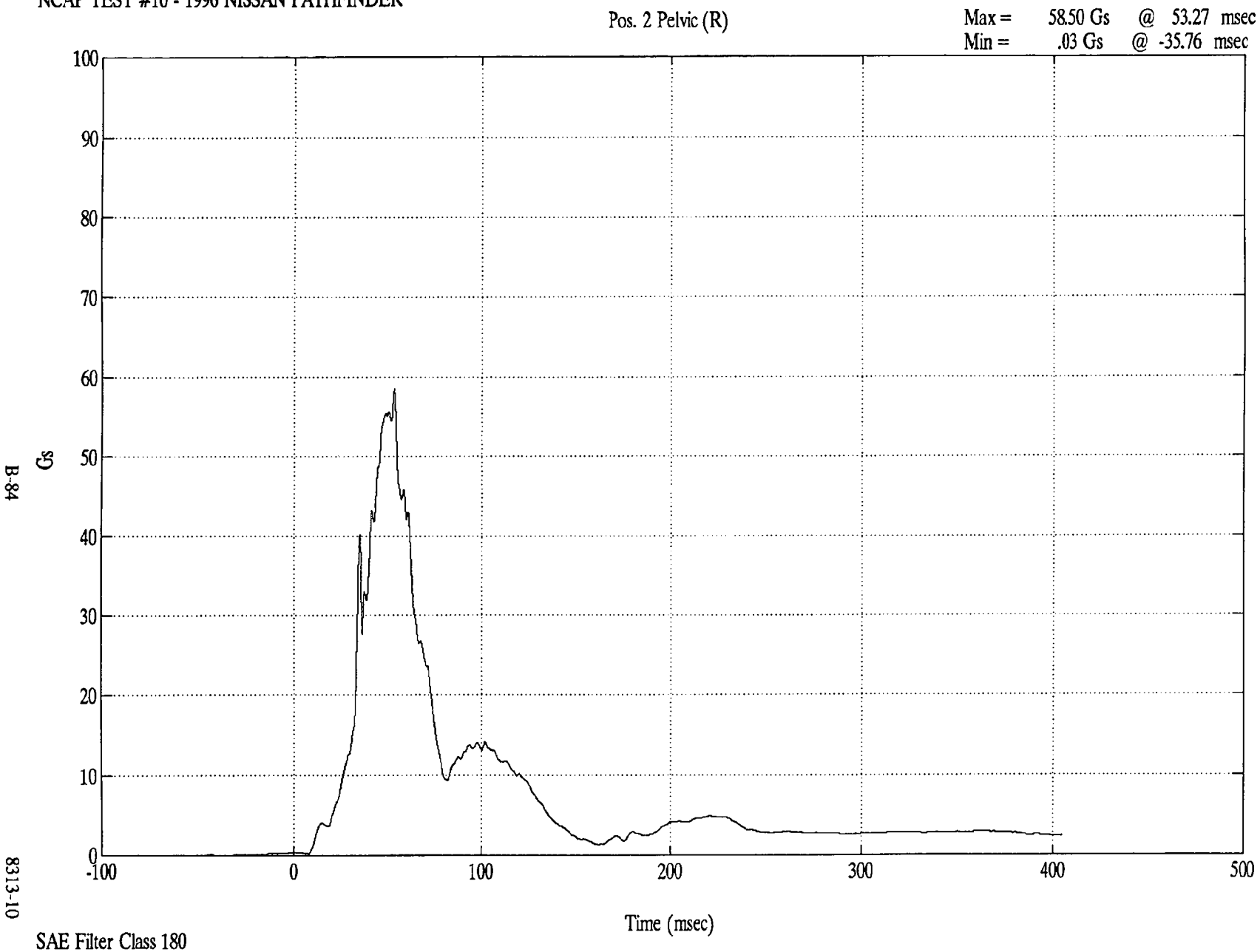


B-83

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

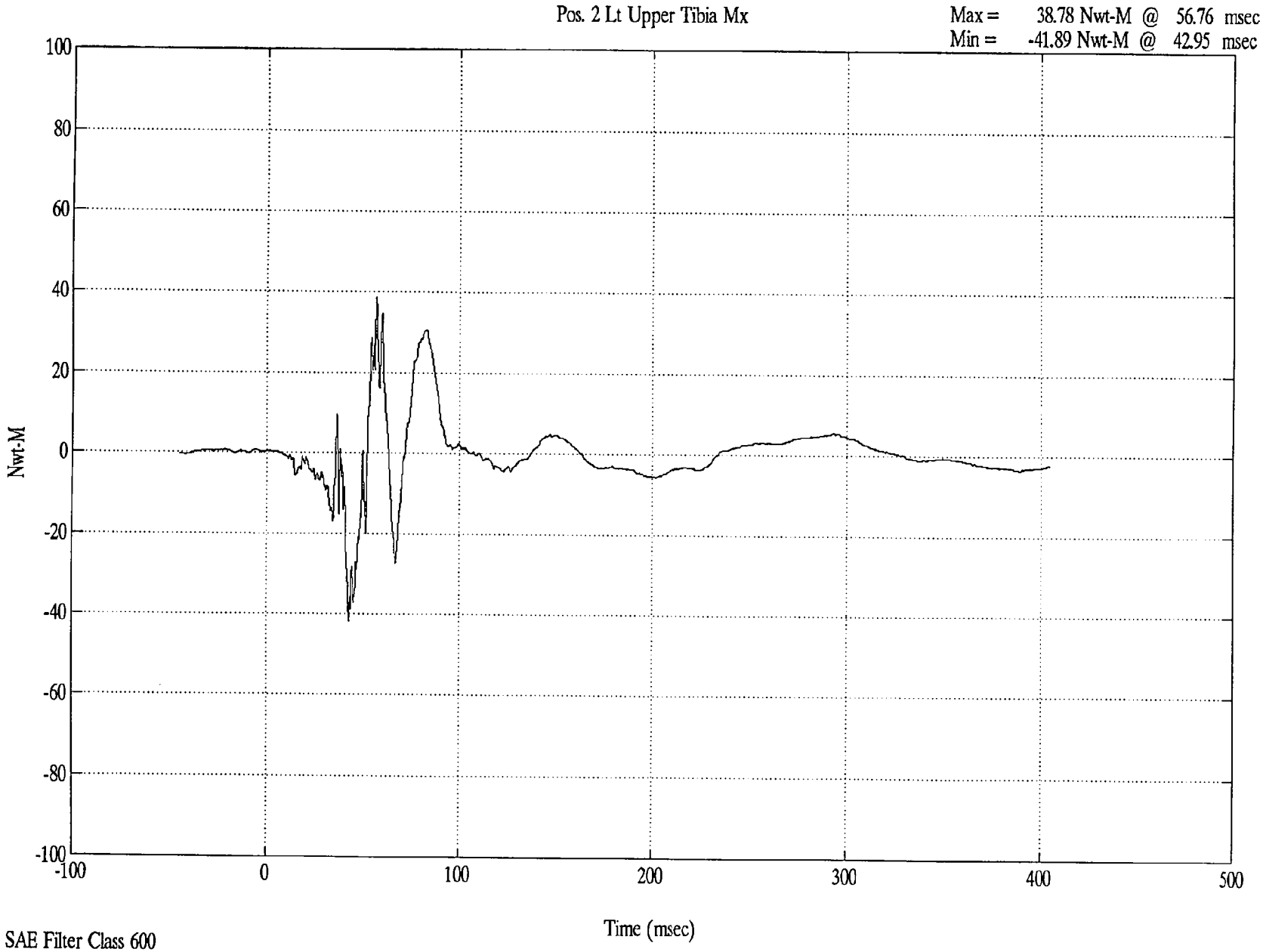


B-84

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER



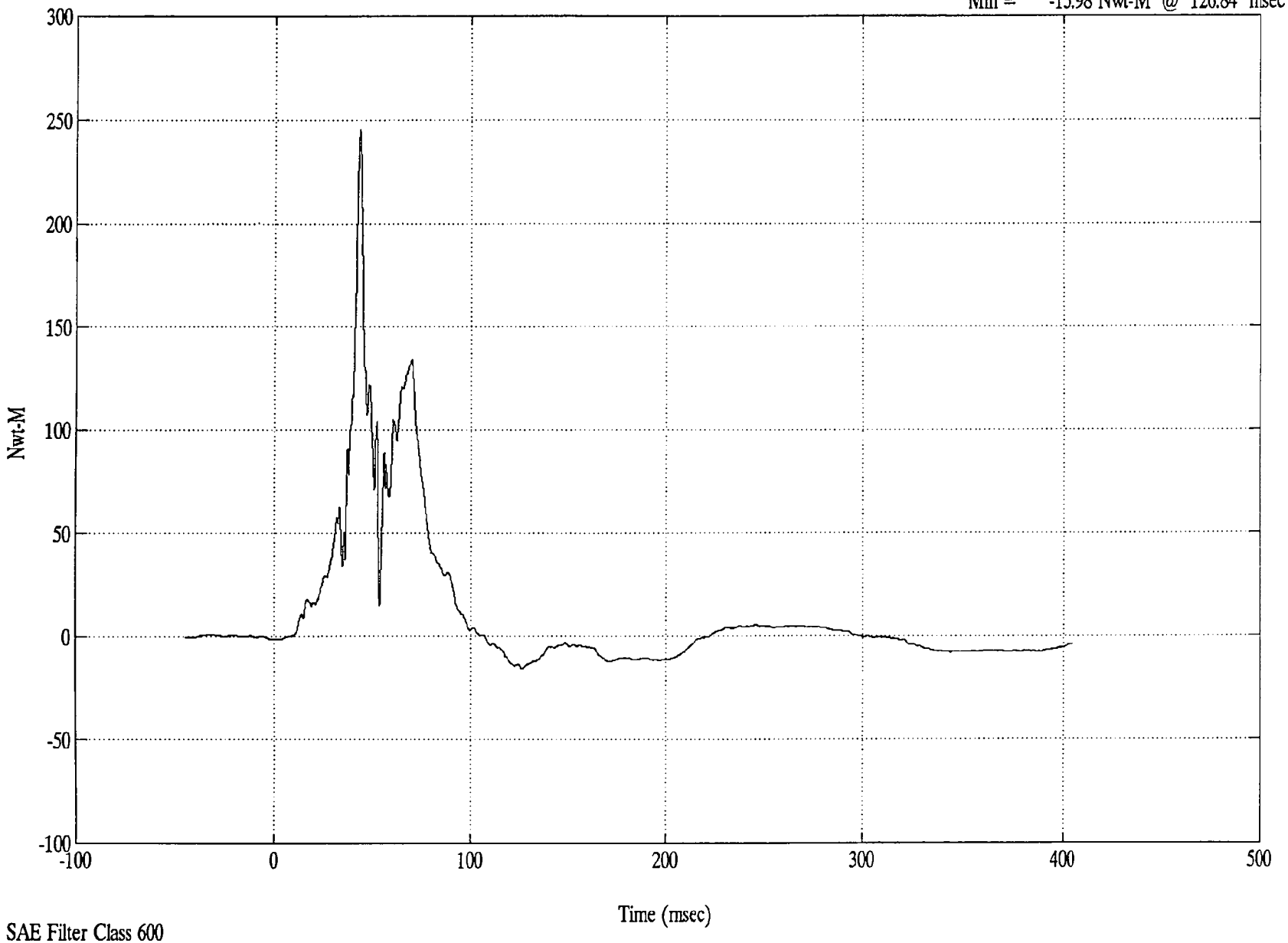
SAE Filter Class 600

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

Pos. 2 Lt Upper Tibia My

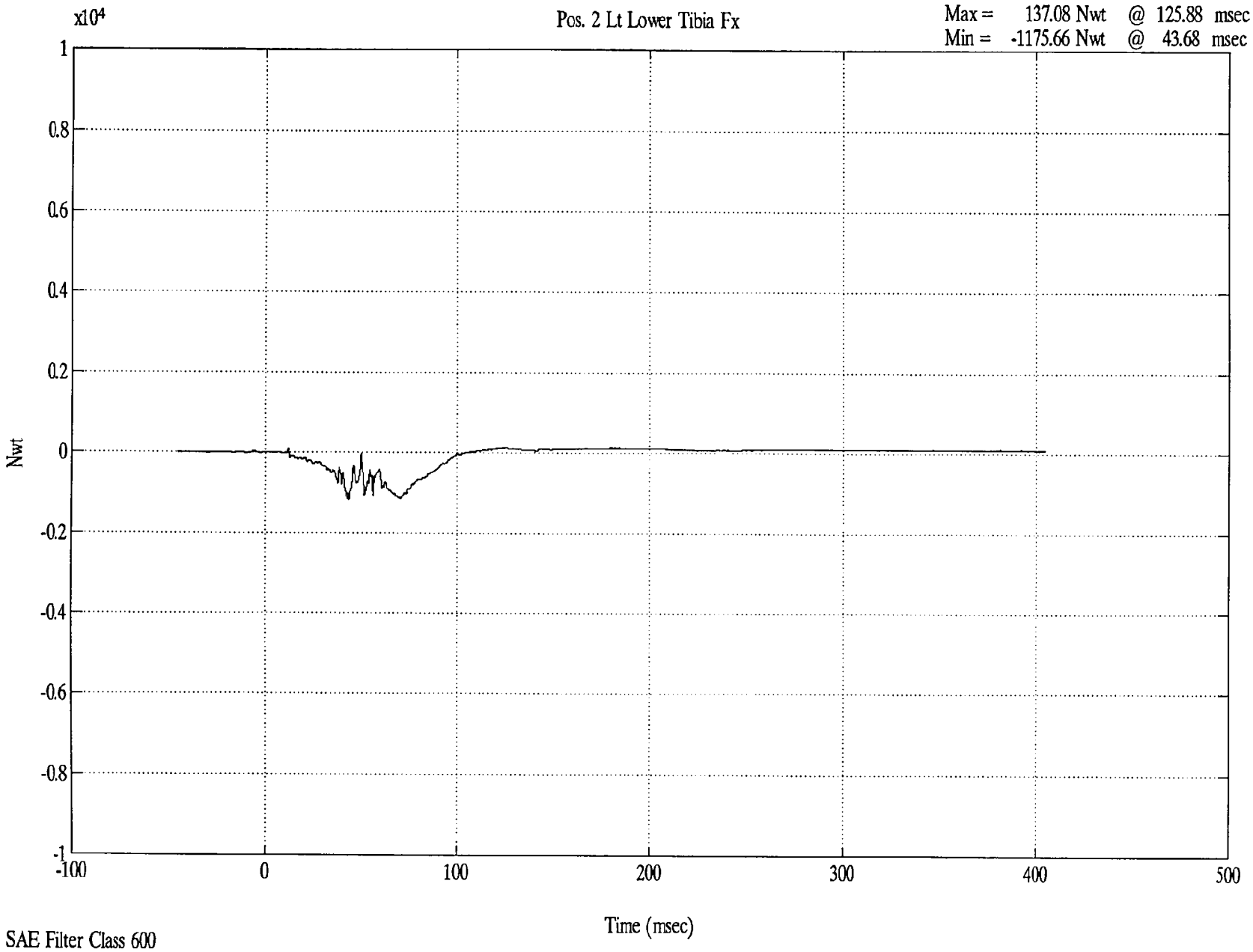
Max = 245.33 Nwt-M @ 43.08 msec
Min = -15.98 Nwt-M @ 126.84 msec



SAE Filter Class 600

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

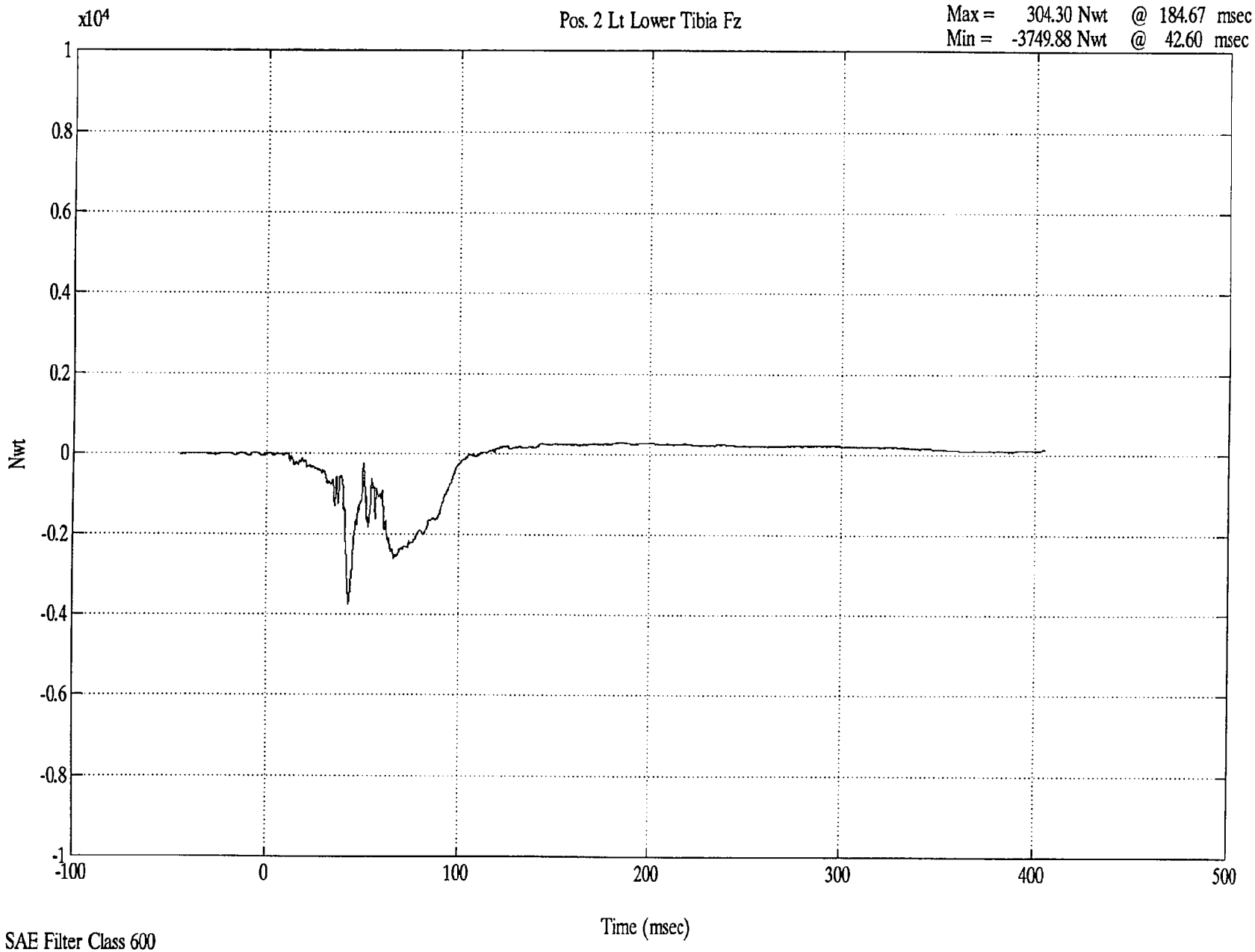


B-87

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

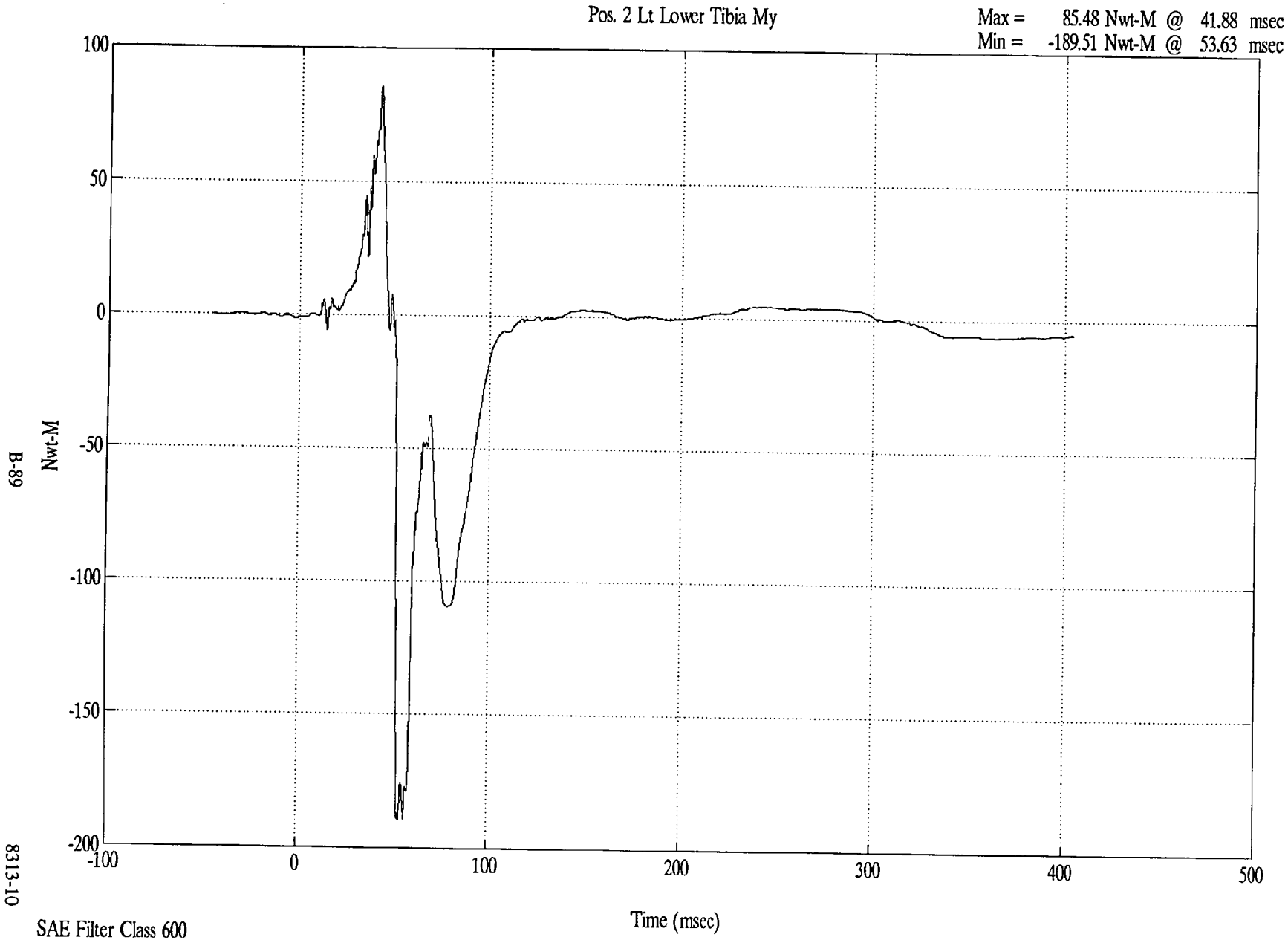


B-88

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER



B-89

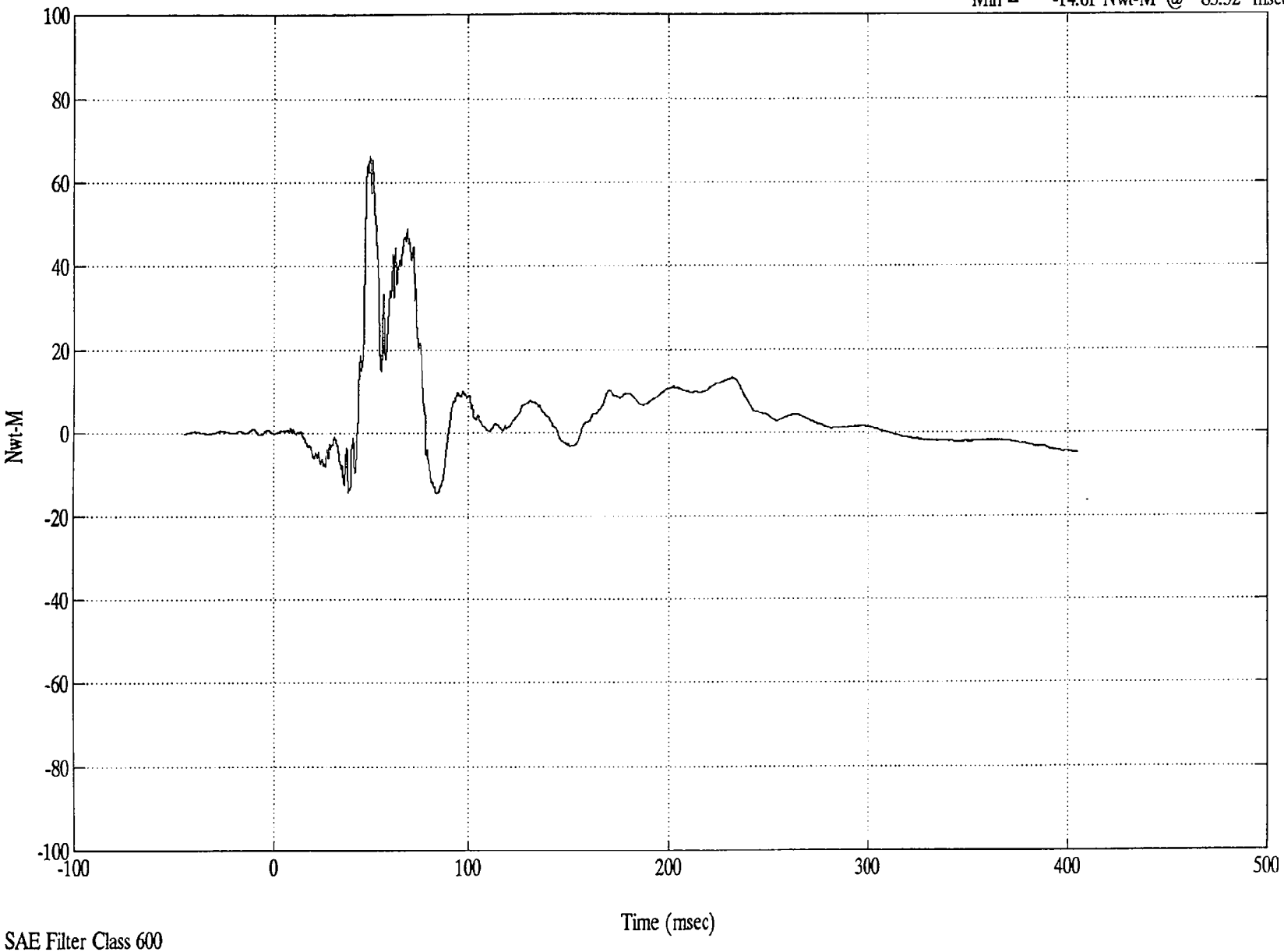
8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

Pos. 2 Rt Upper Tibia Mx

Max = 66.45 Nwt-M @ 49.20 msec
Min = -14.61 Nwt-M @ 83.52 msec

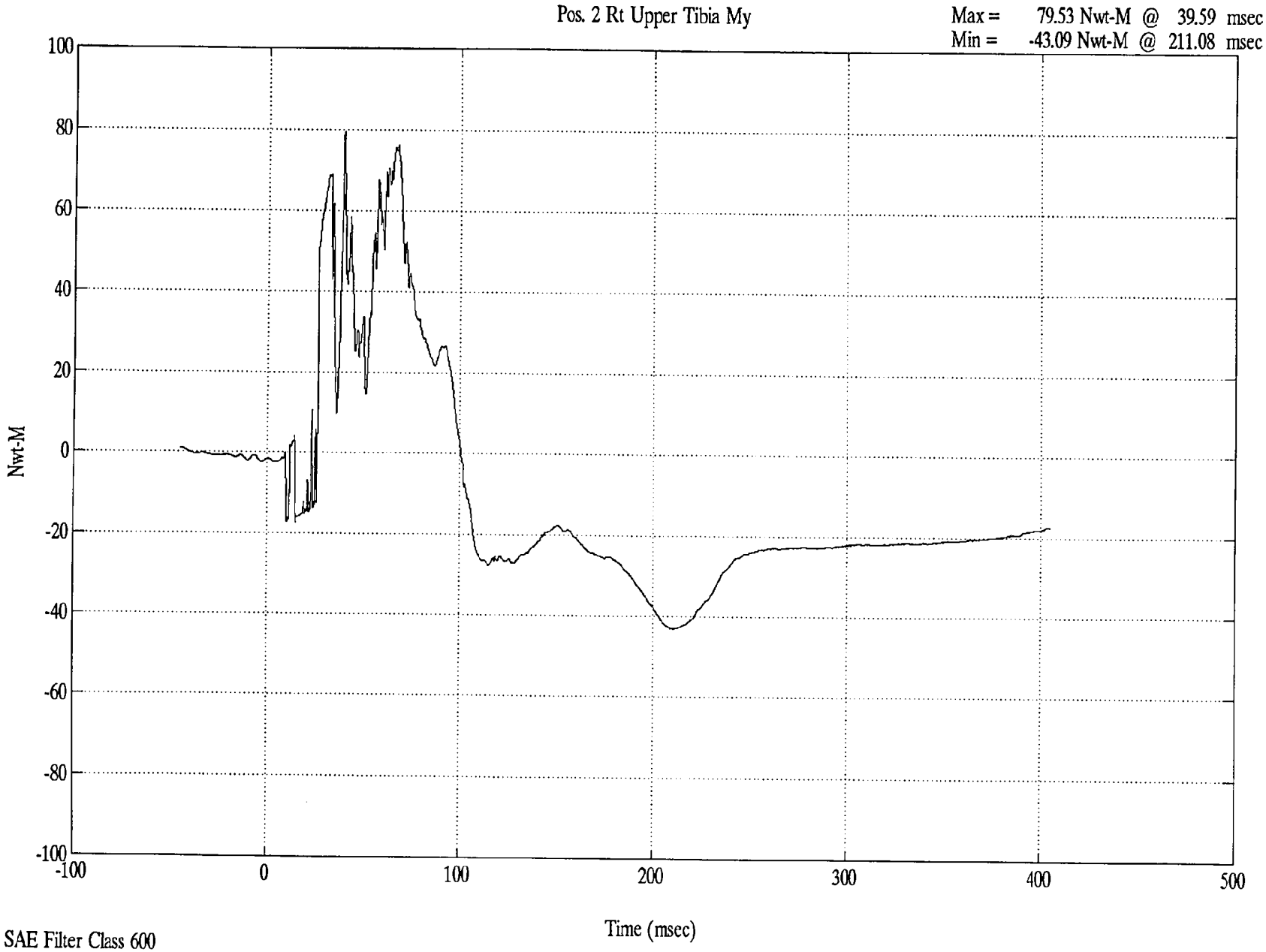


B-90

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

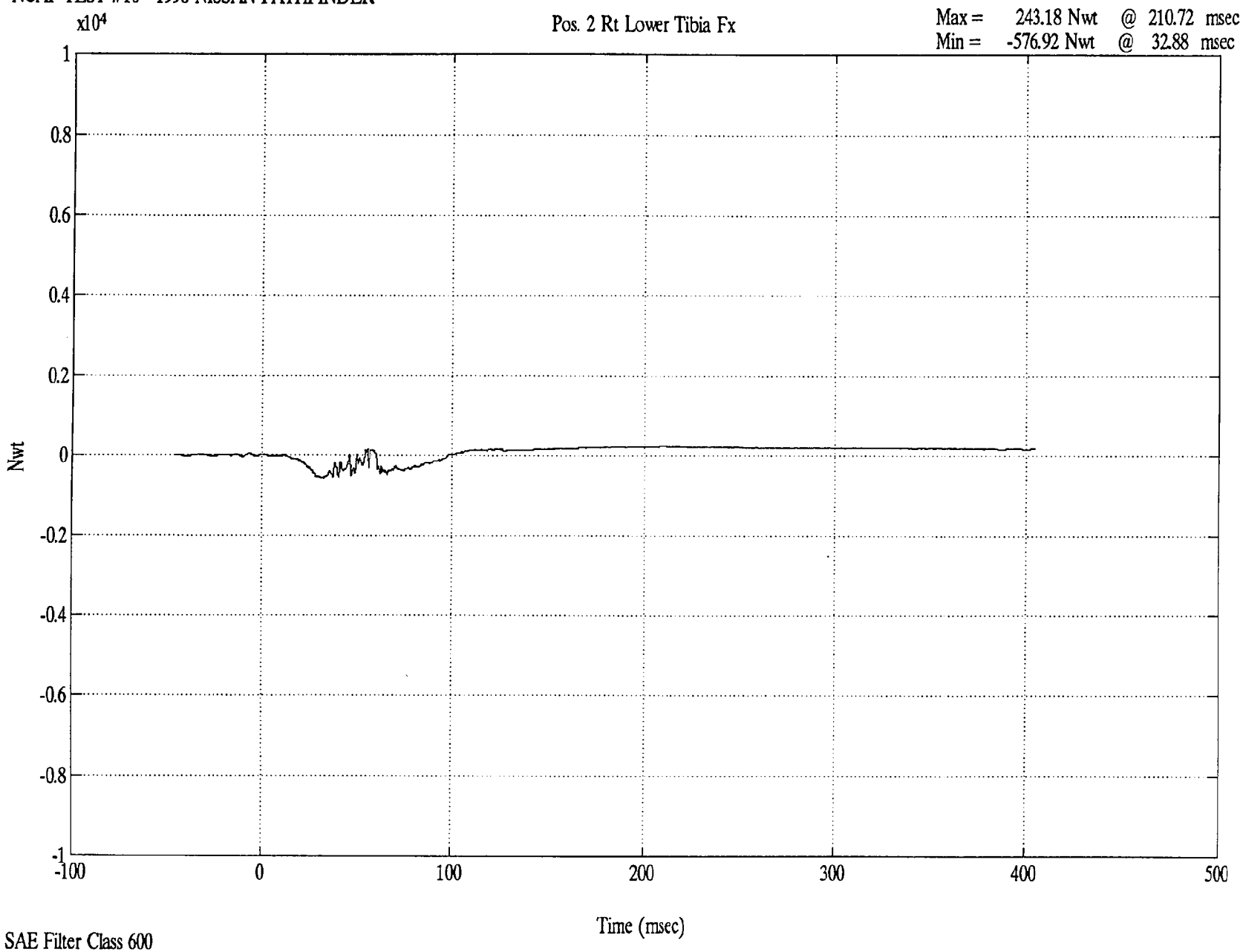


B-91

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

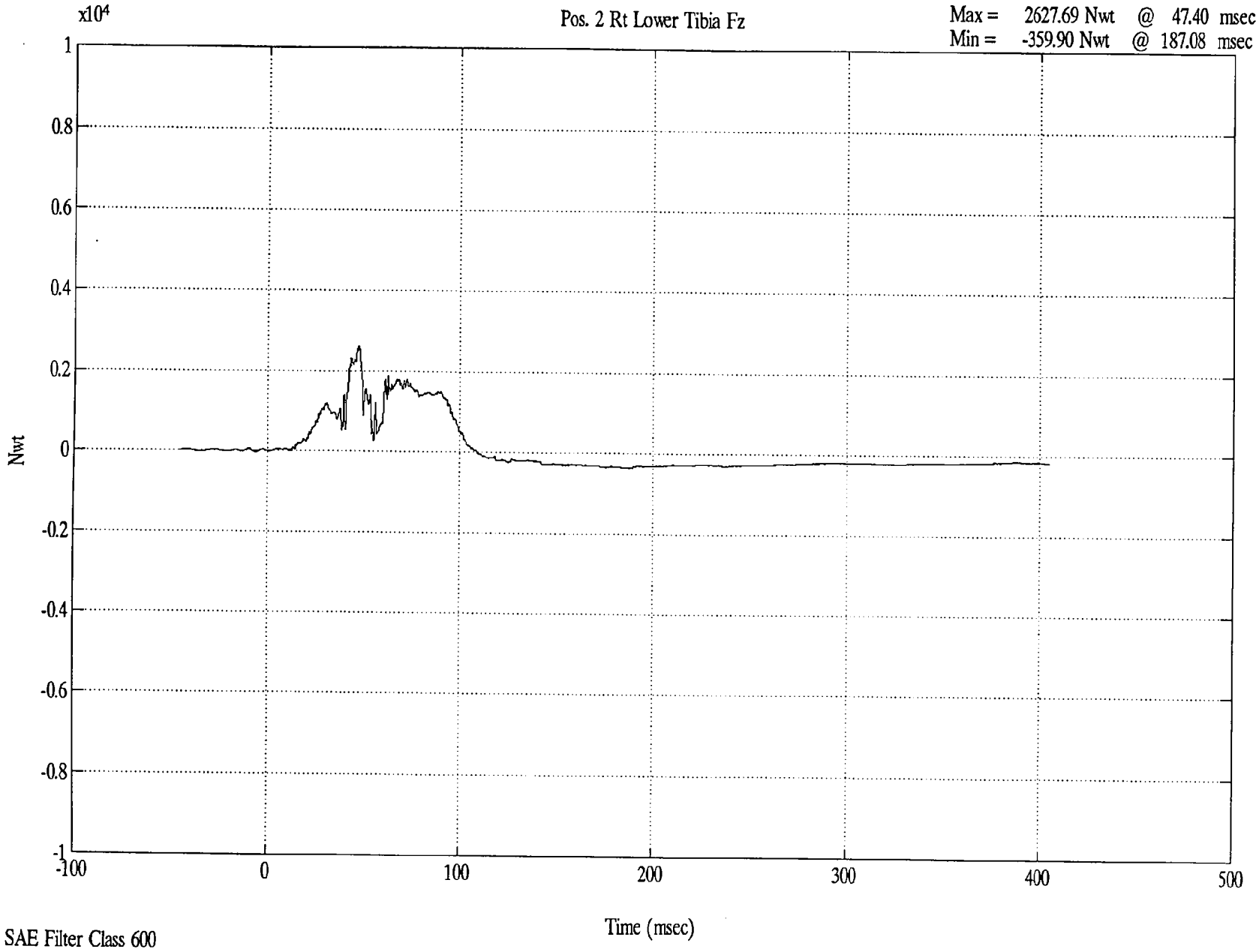


B-92

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

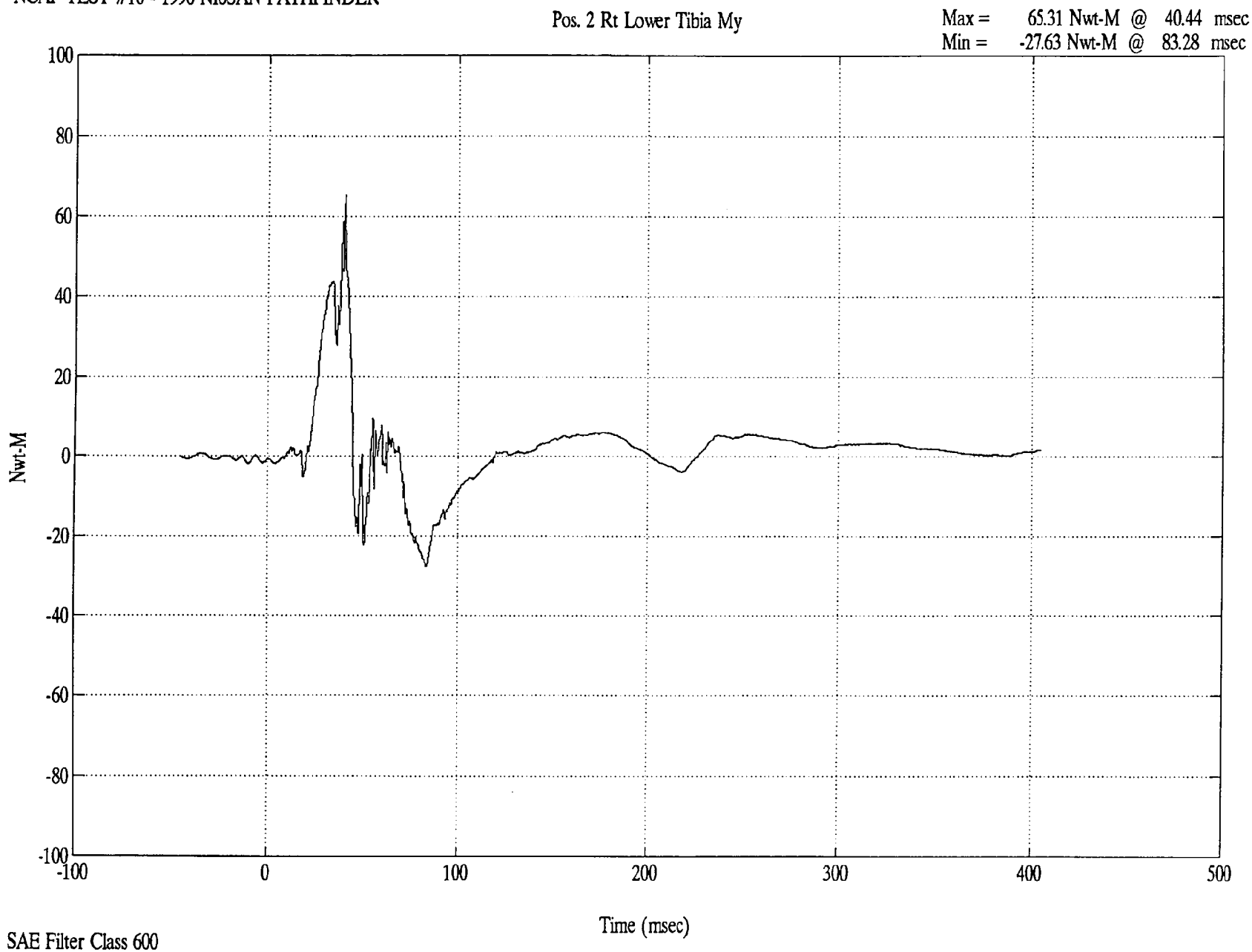


B-93

8313-10

SAE Filter Class 600

NCAP TEST #10 - 1996 NISSAN PATHFINDER

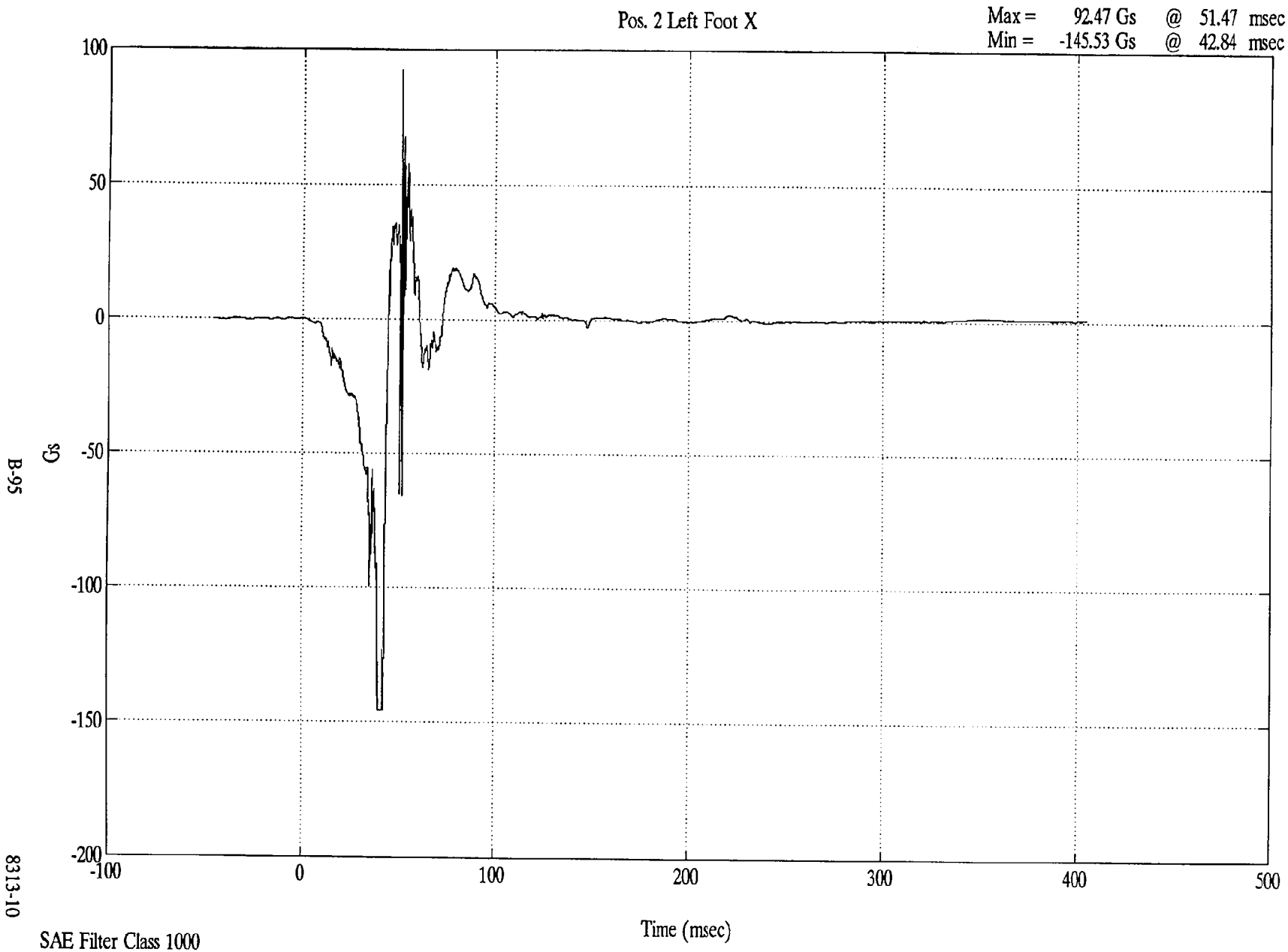


SAE Filter Class 600

B-94

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

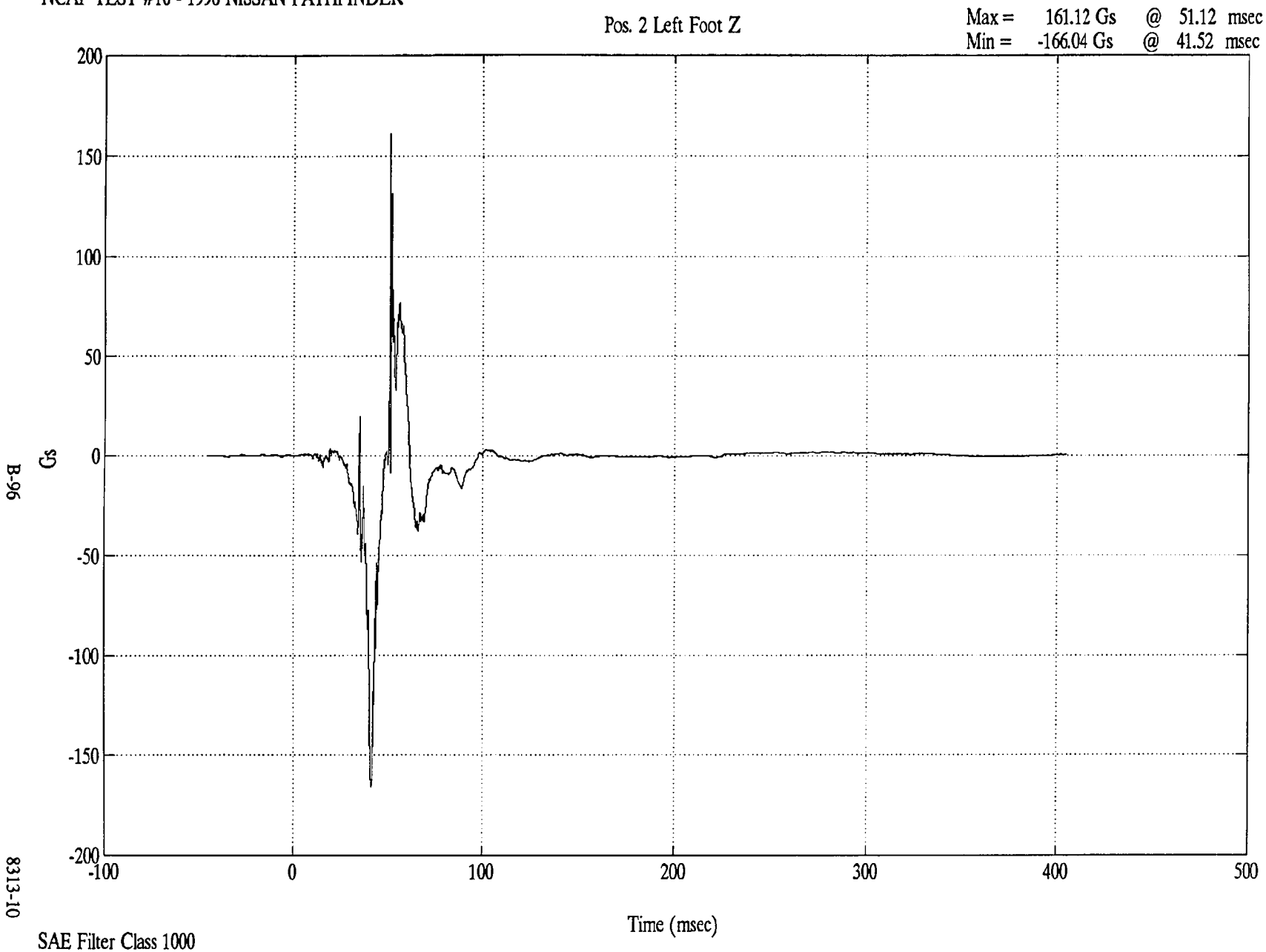


B-95

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

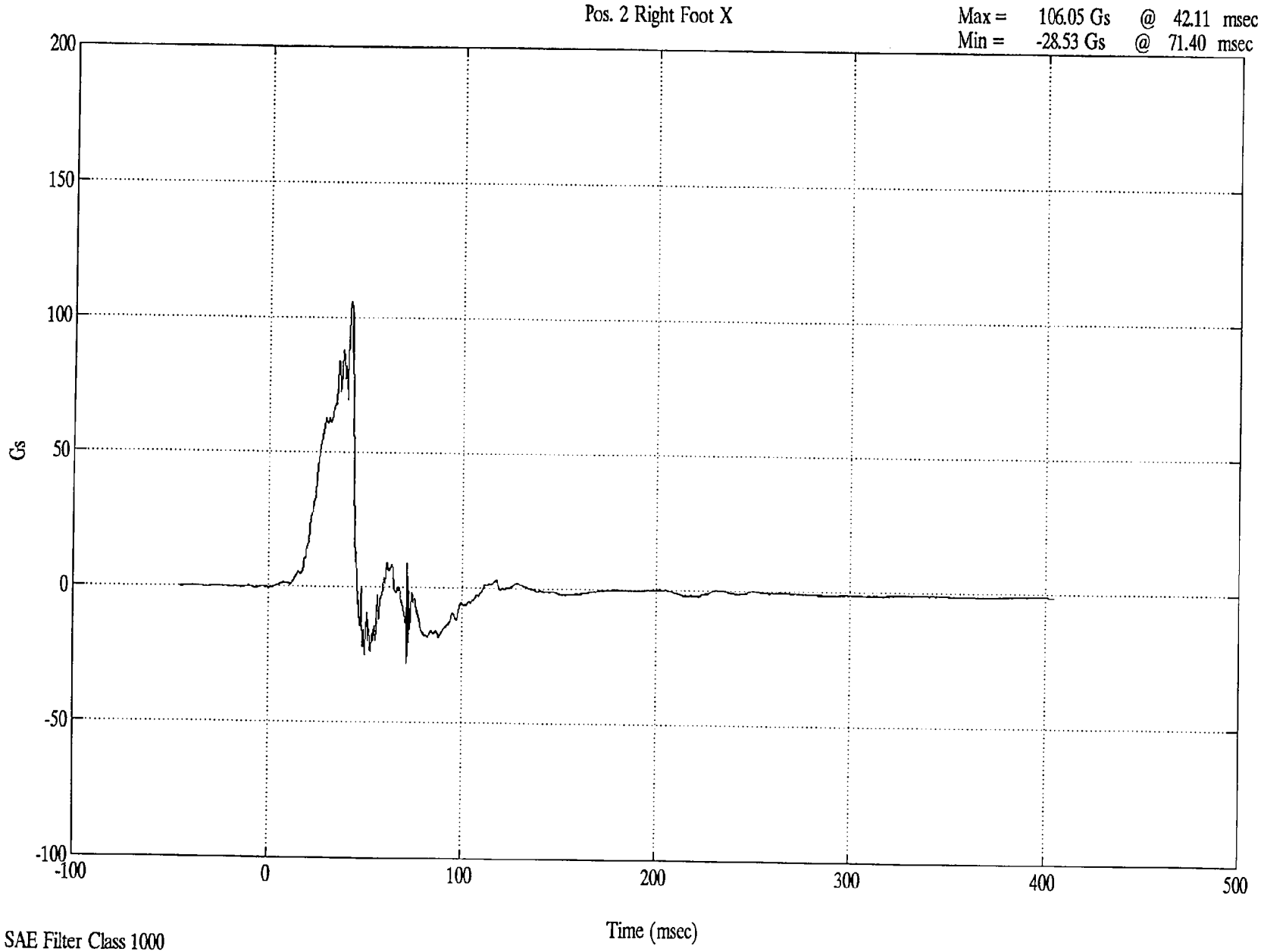


B-96

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER



B-97

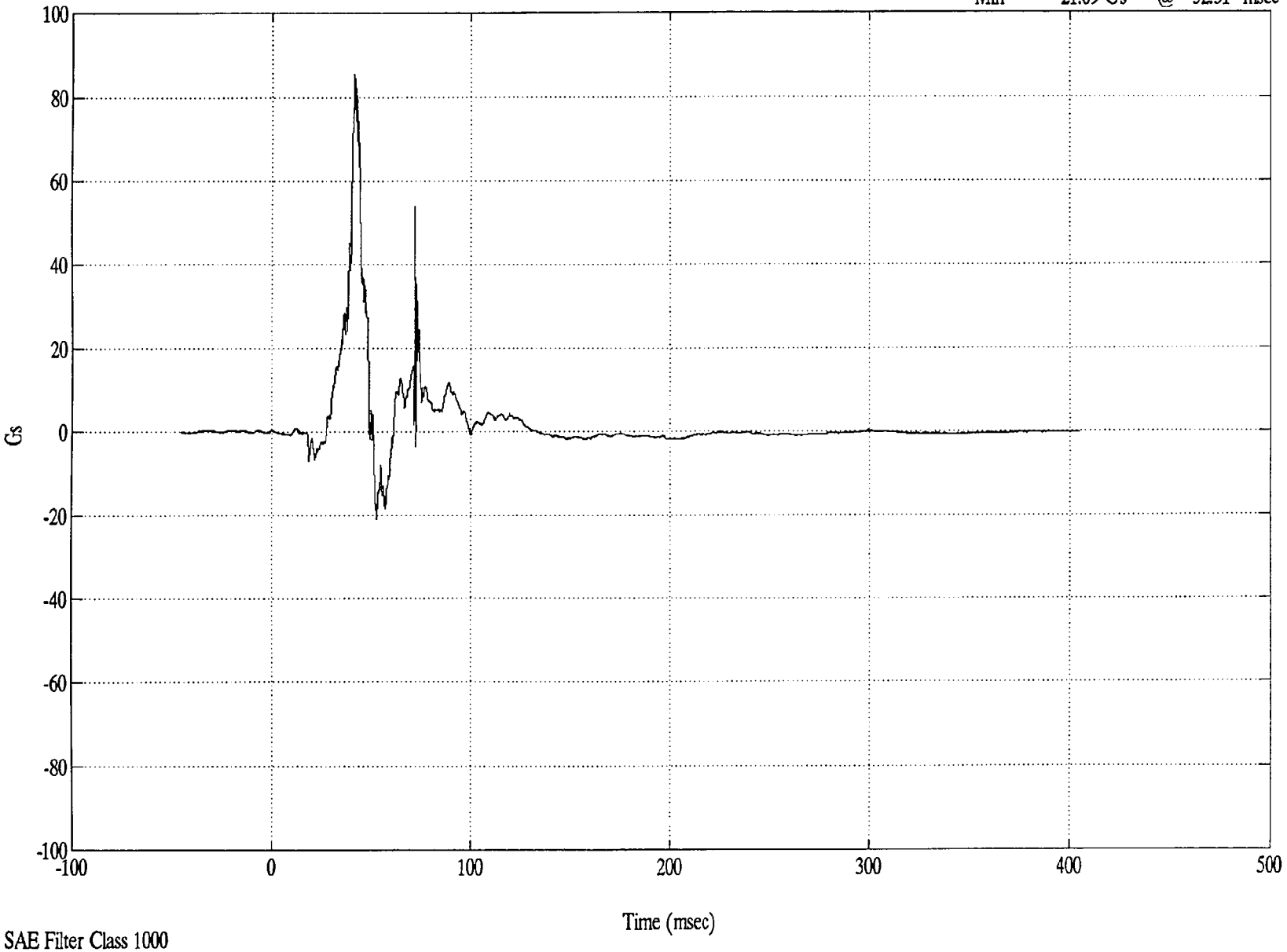
8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

Pos. 2 Right Foot Z

Max = 85.55 Gs @ 41.28 msec
Min = -21.09 Gs @ 52.31 msec

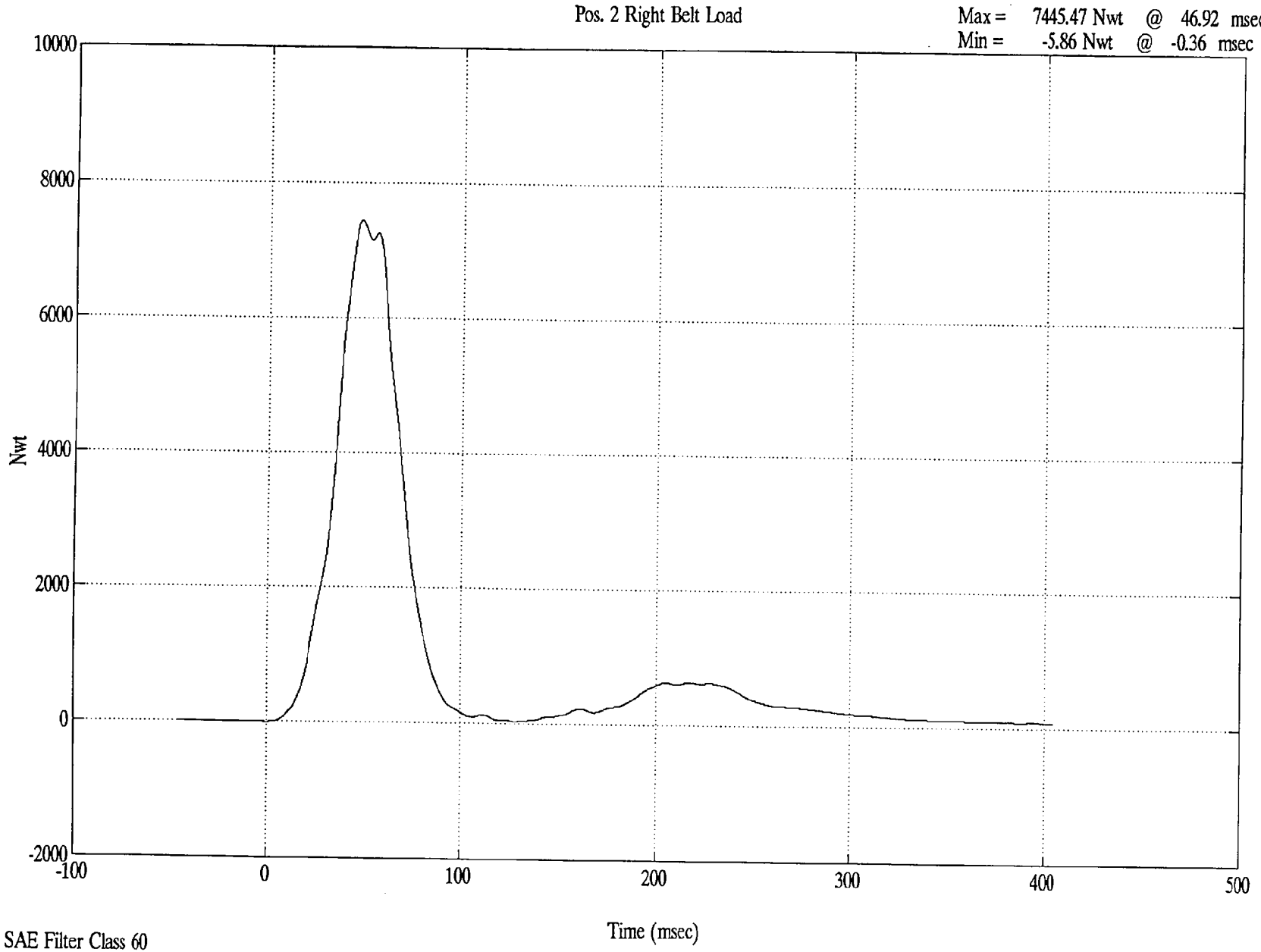


B-98

8313-10

SAE Filter Class 1000

NCAP TEST #10 - 1996 NISSAN PATHFINDER

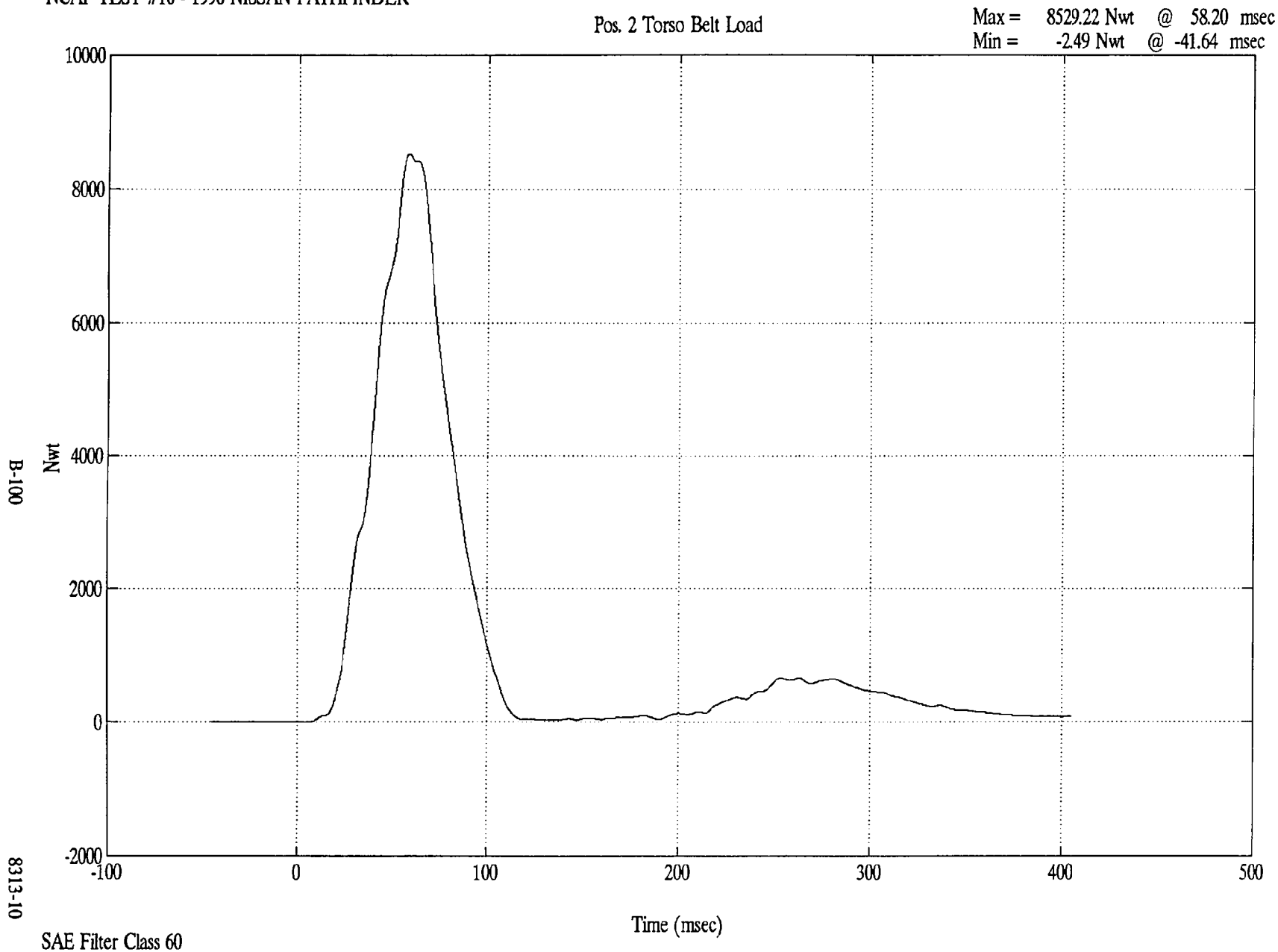


B-99

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

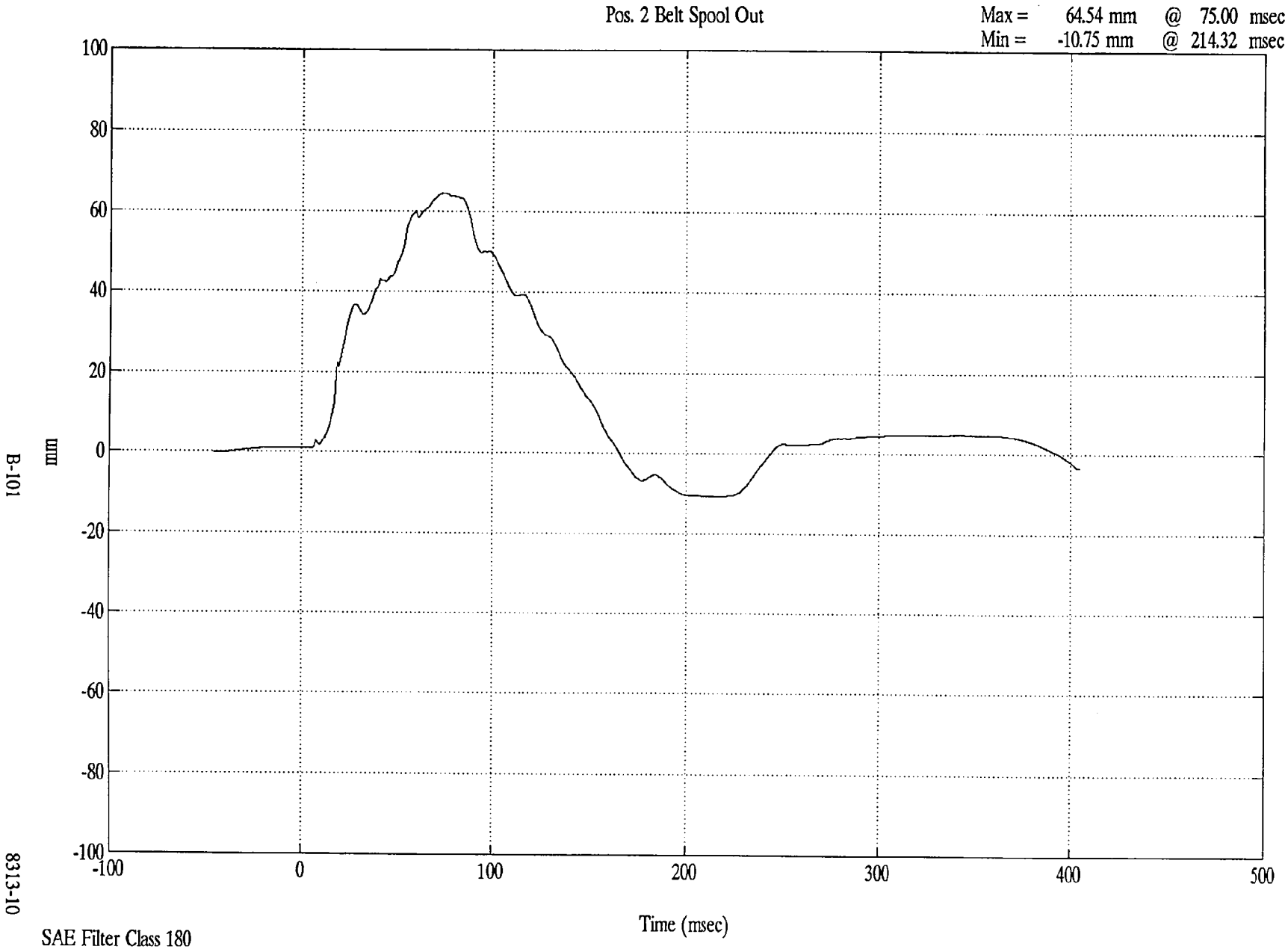


B-100

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

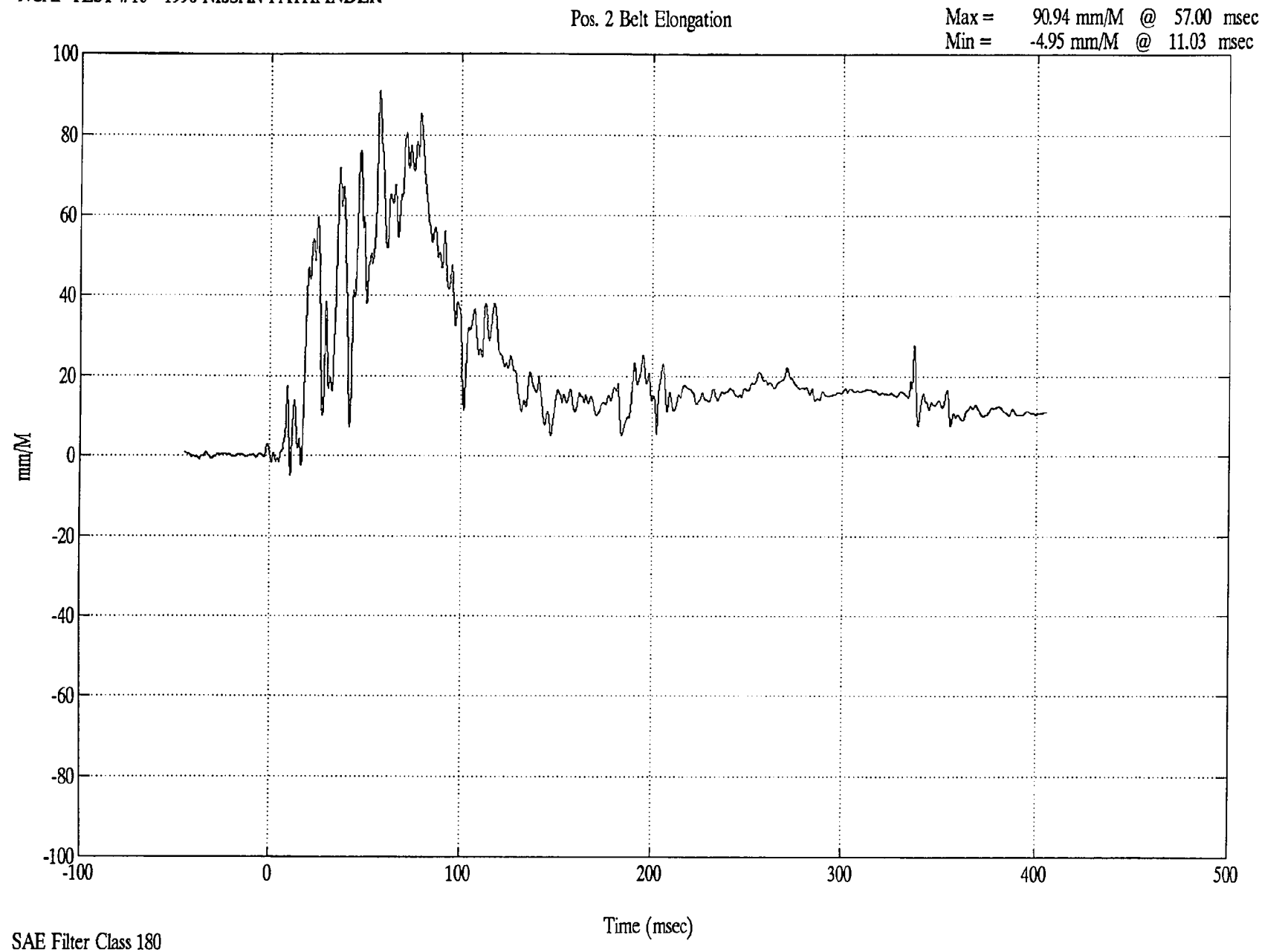


B-101

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER



B-102

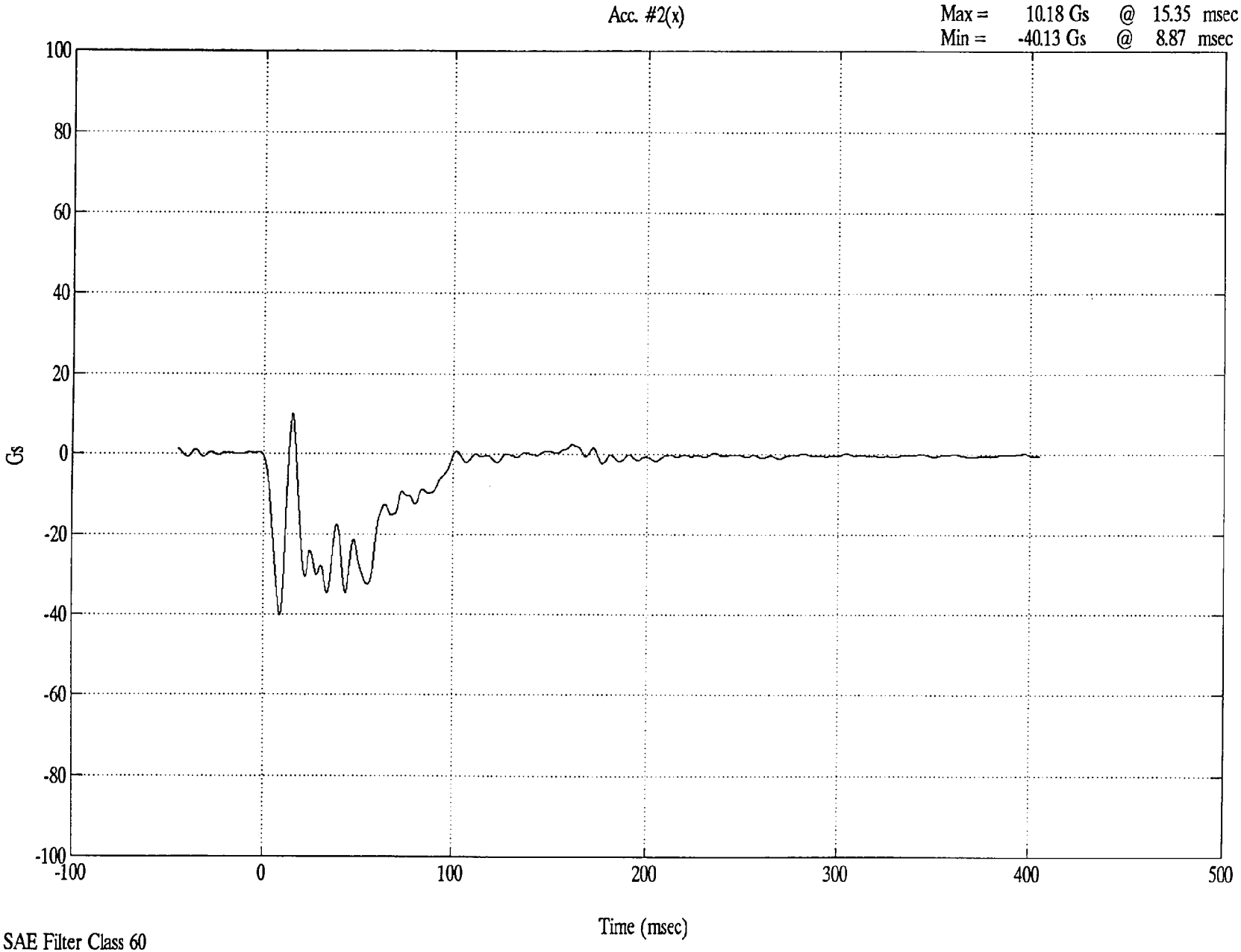
8313-10

SAE Filter Class 180

NHTSA TEST NO. MT5202

VEHICLE DATA	FILTER CHANNEL CLASS
Acceleration	60
Velocity	180
Displacement	180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

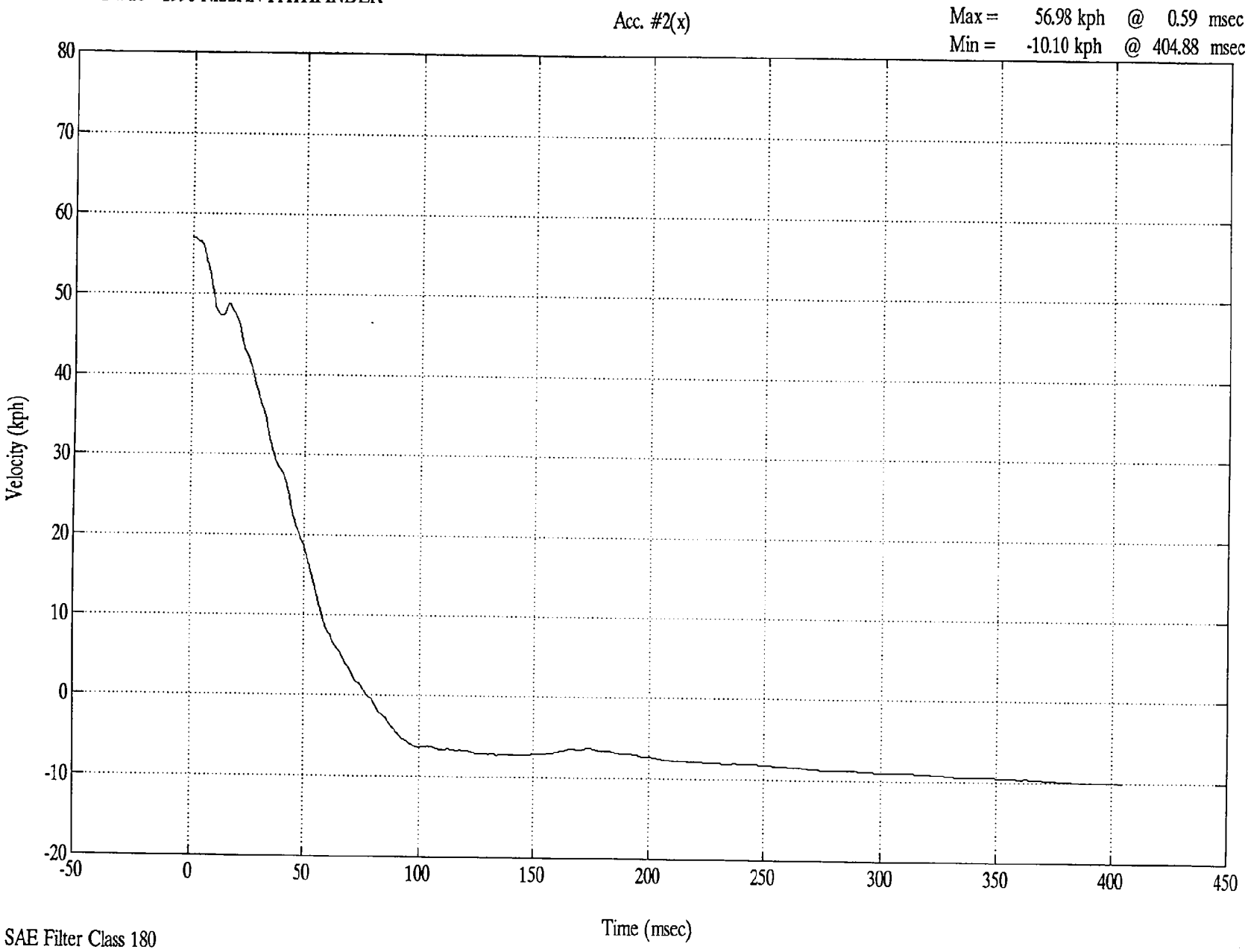


B-104

8313-10

SAE Filter Class 60

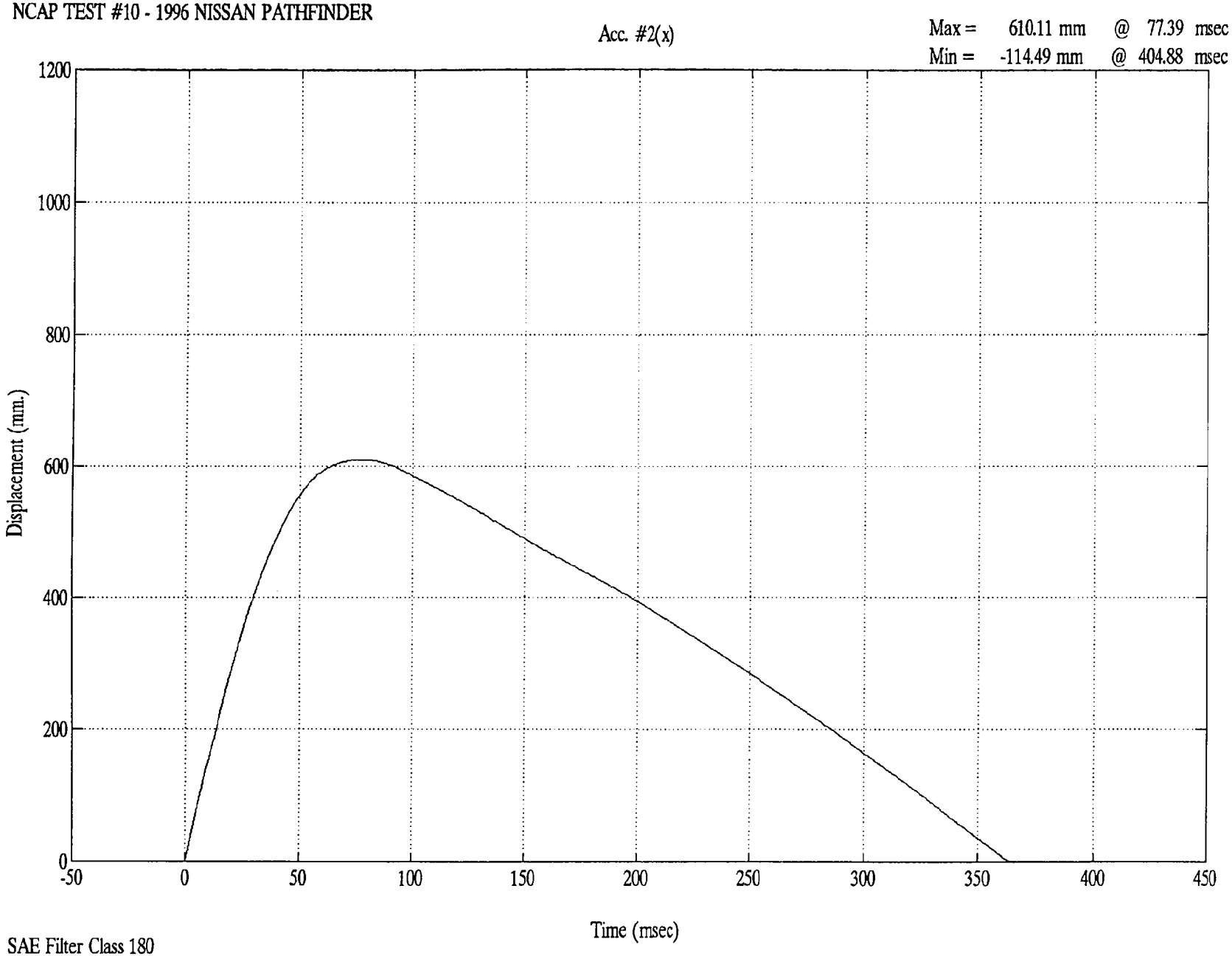
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

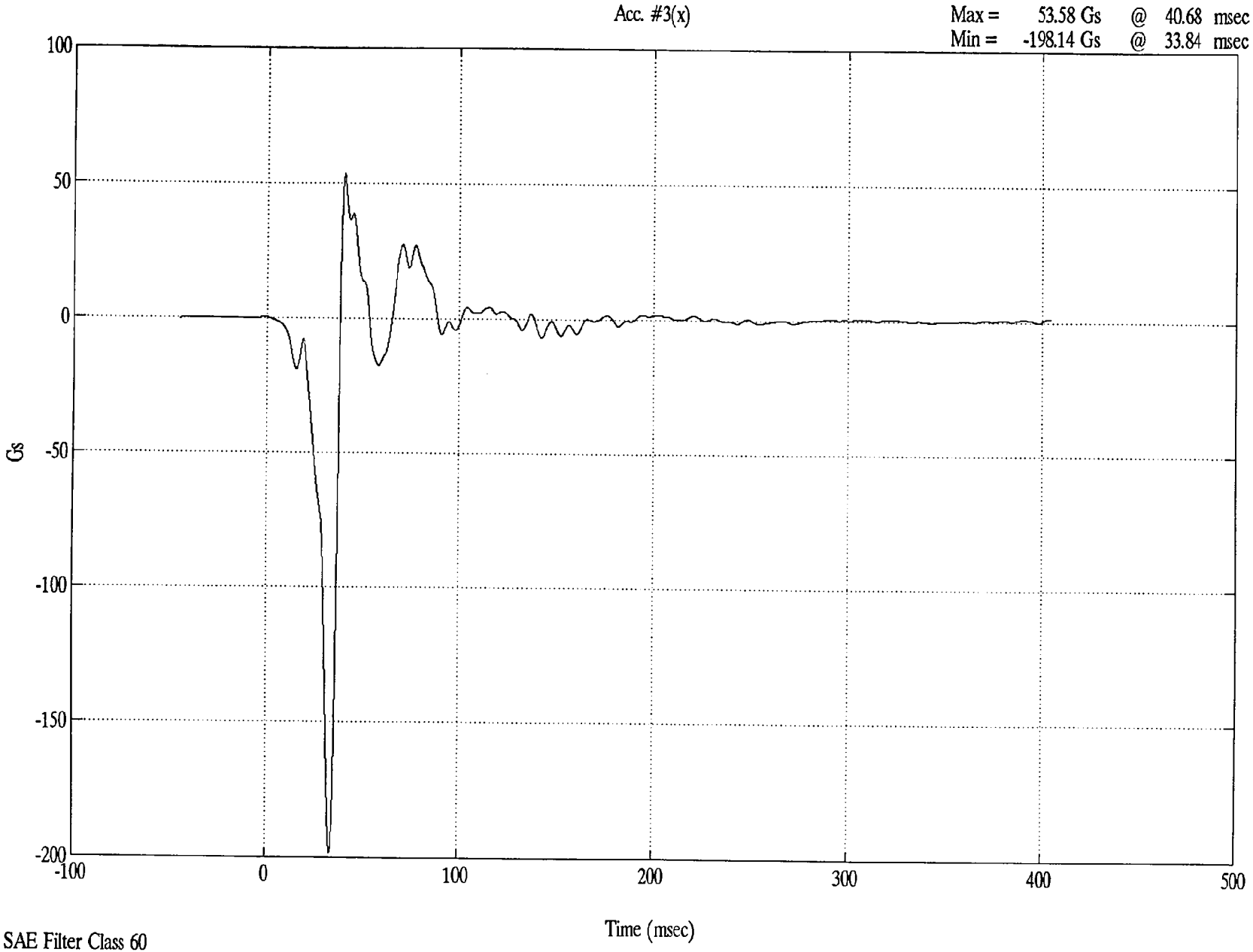
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

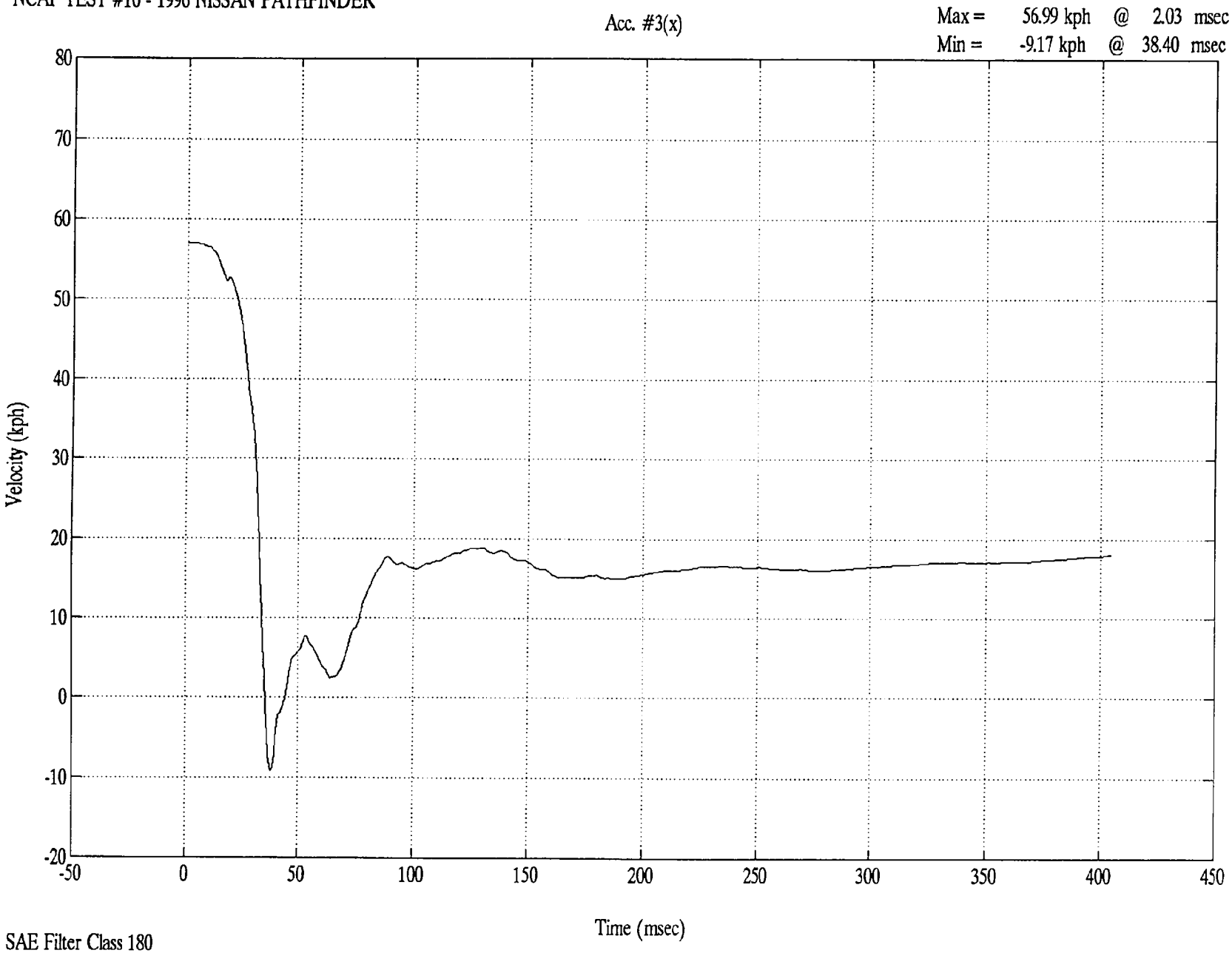


B-107

8313-10

SAE Filter Class 60

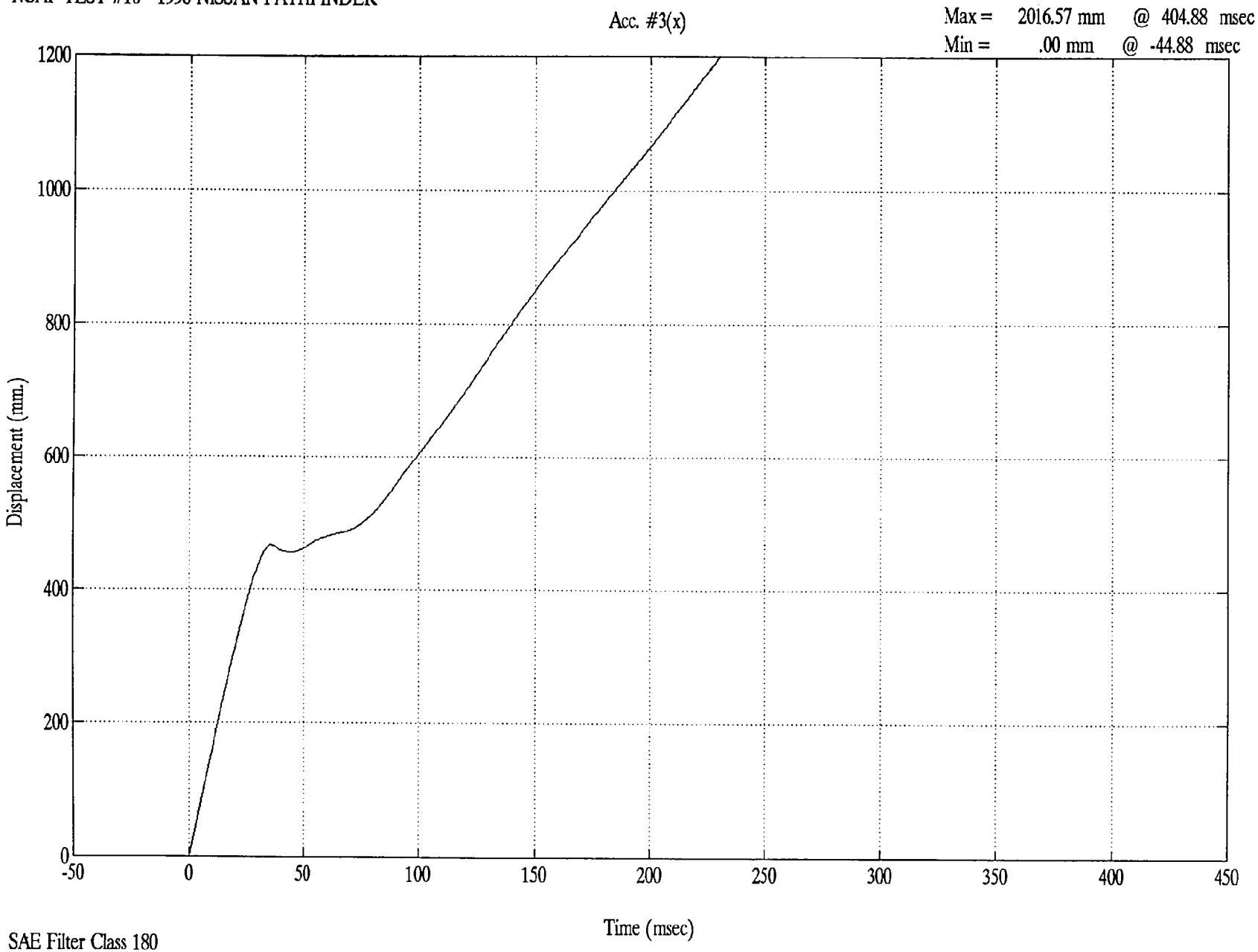
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

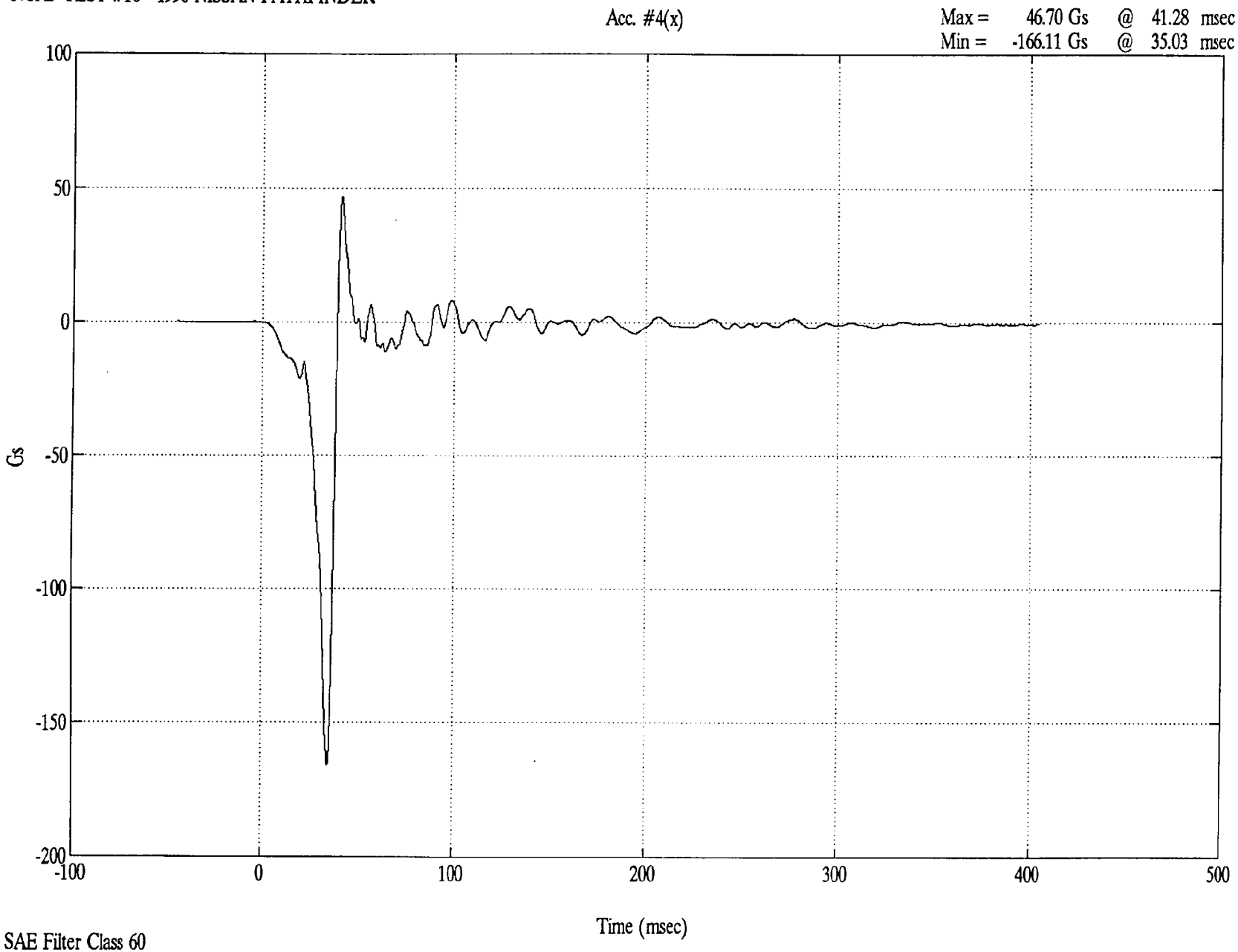
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

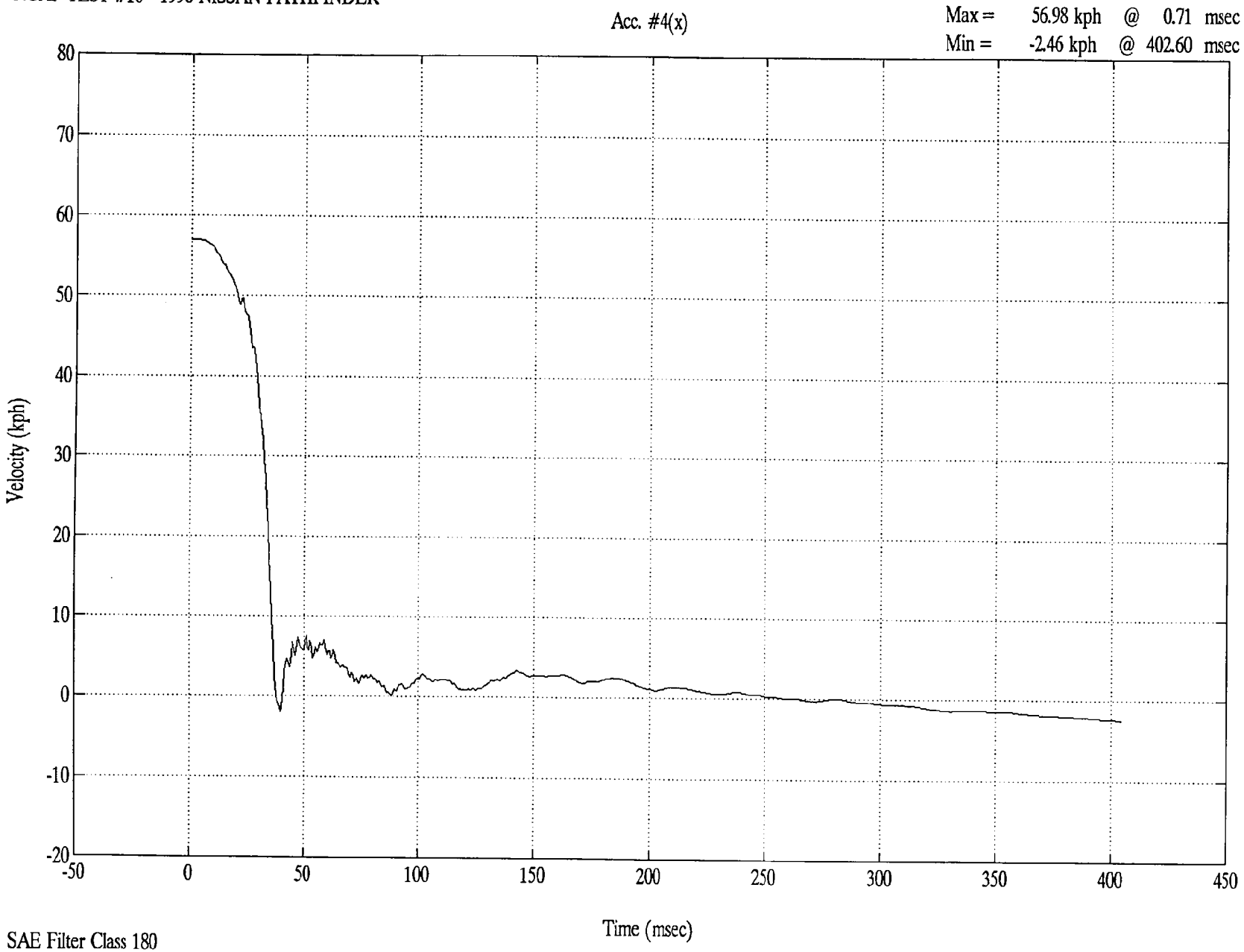


B-110

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

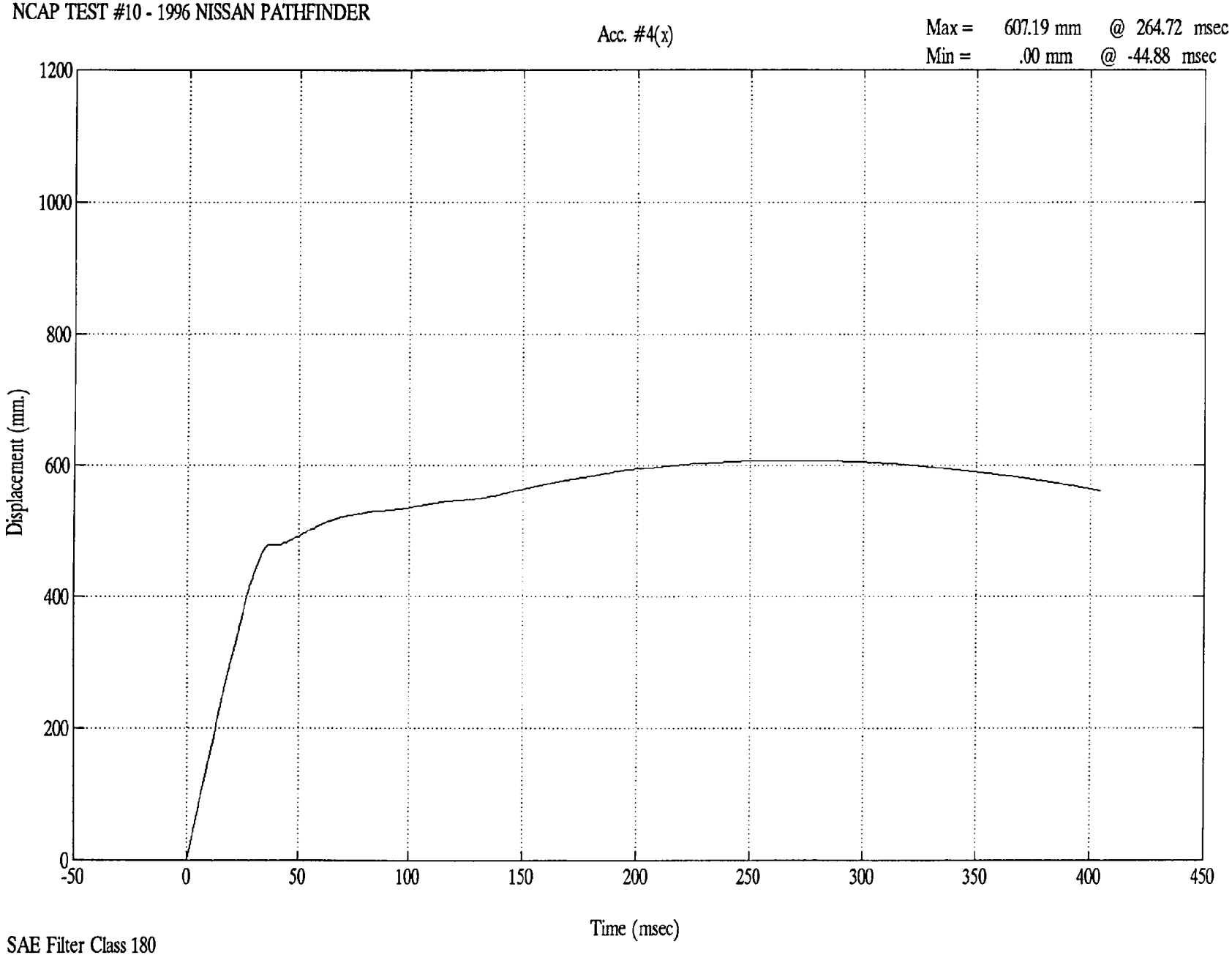


B-111

8313-10

SAE Filter Class 180

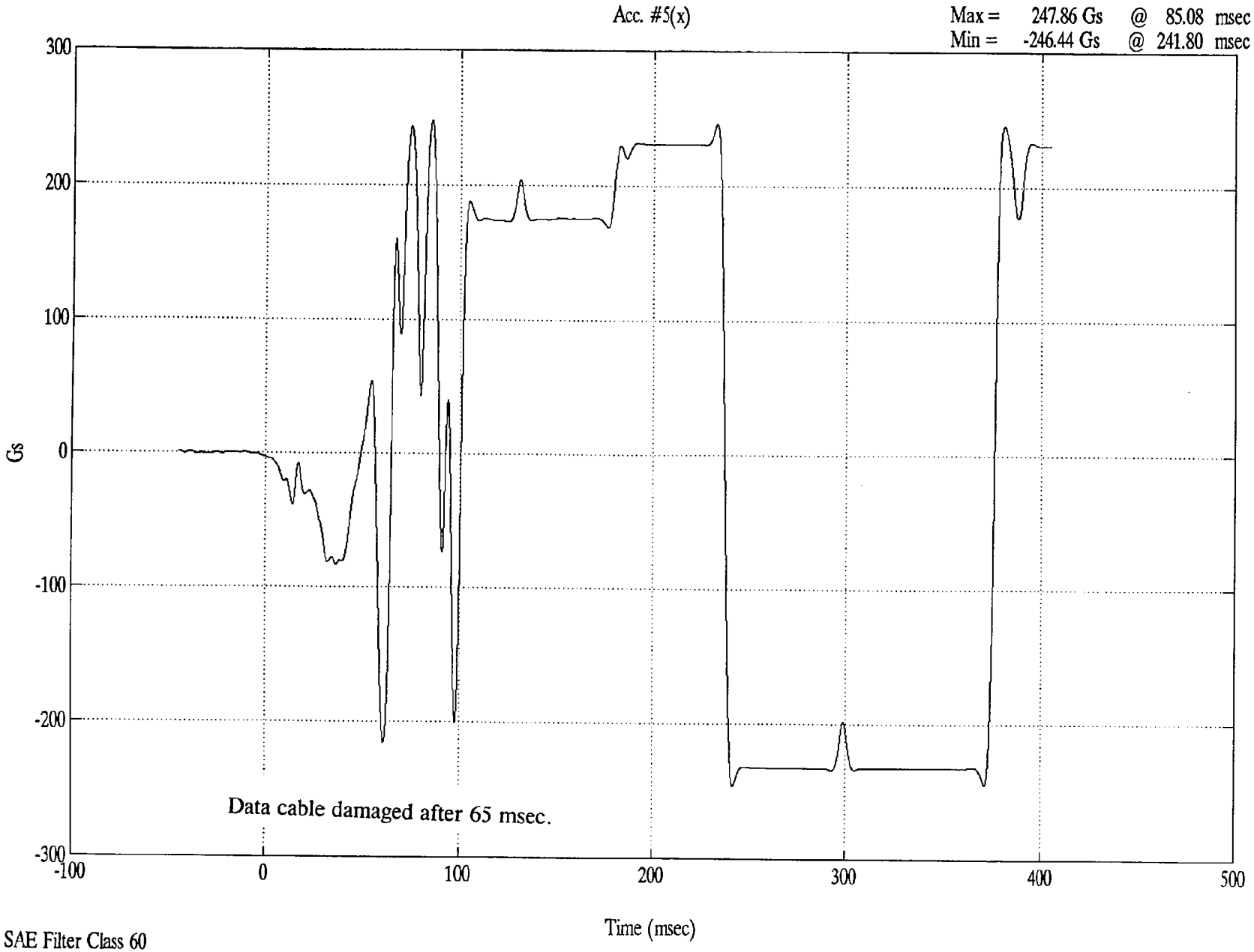
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

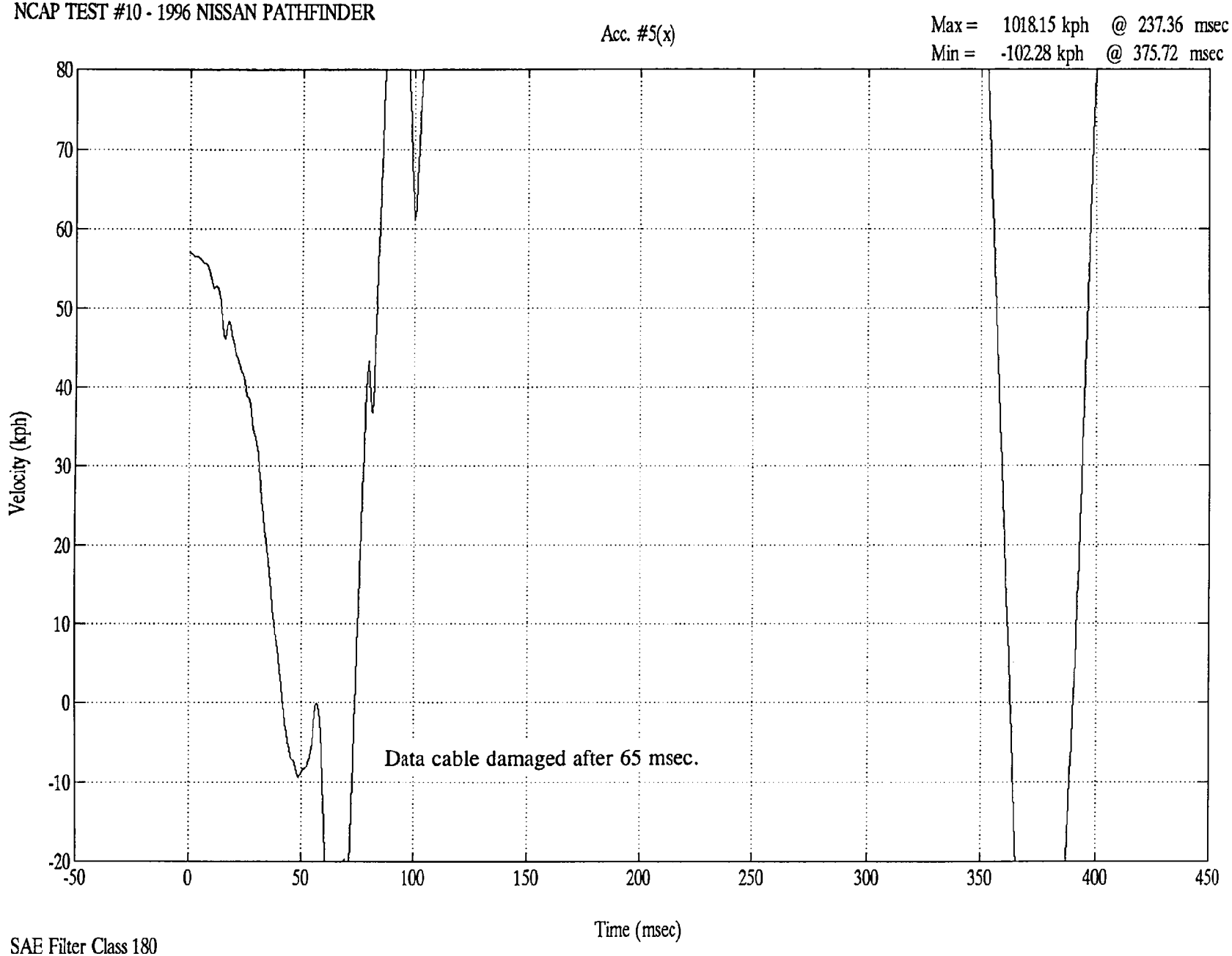


B-113

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

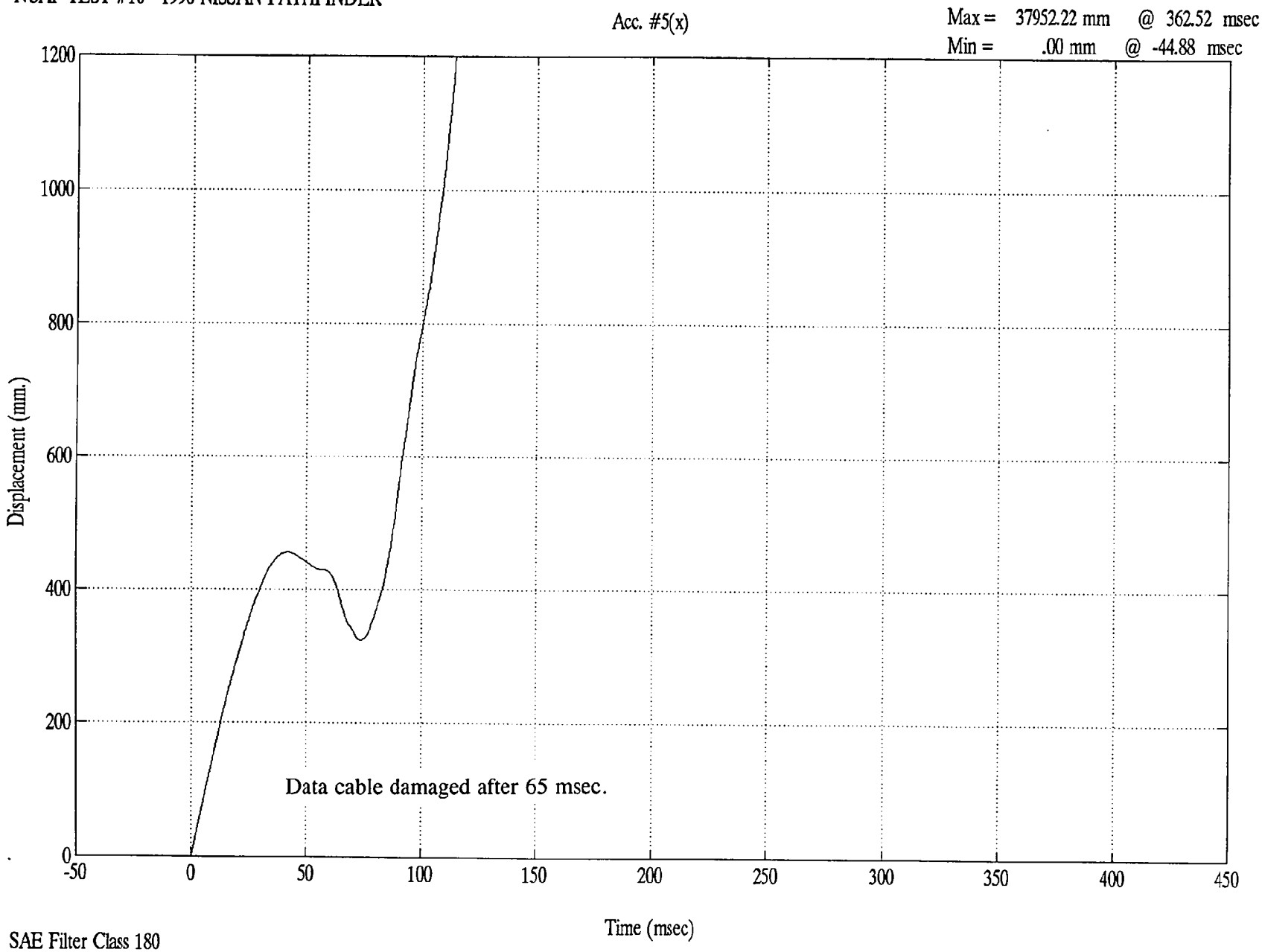


B-114

8313-10

SAE Filter Class 180

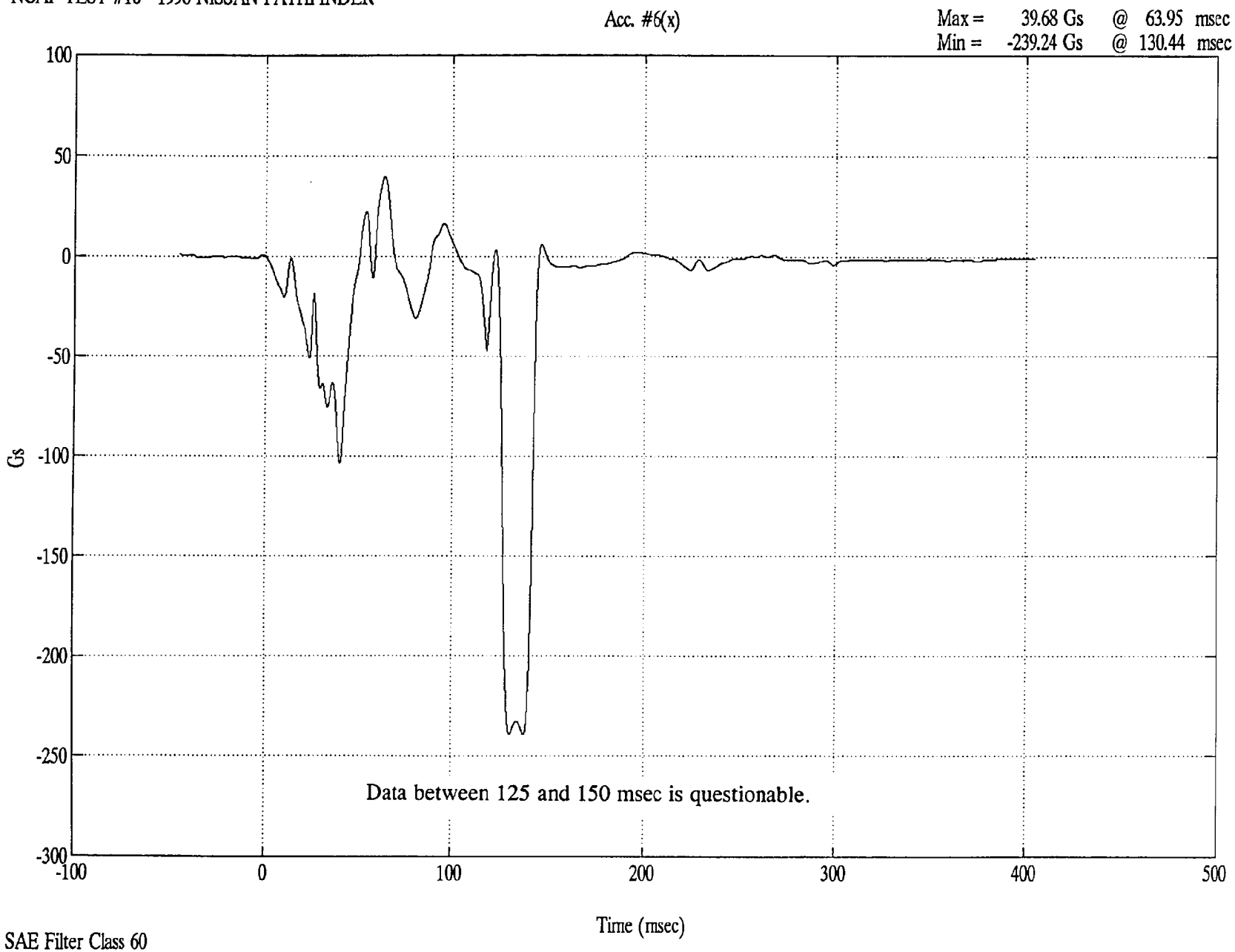
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

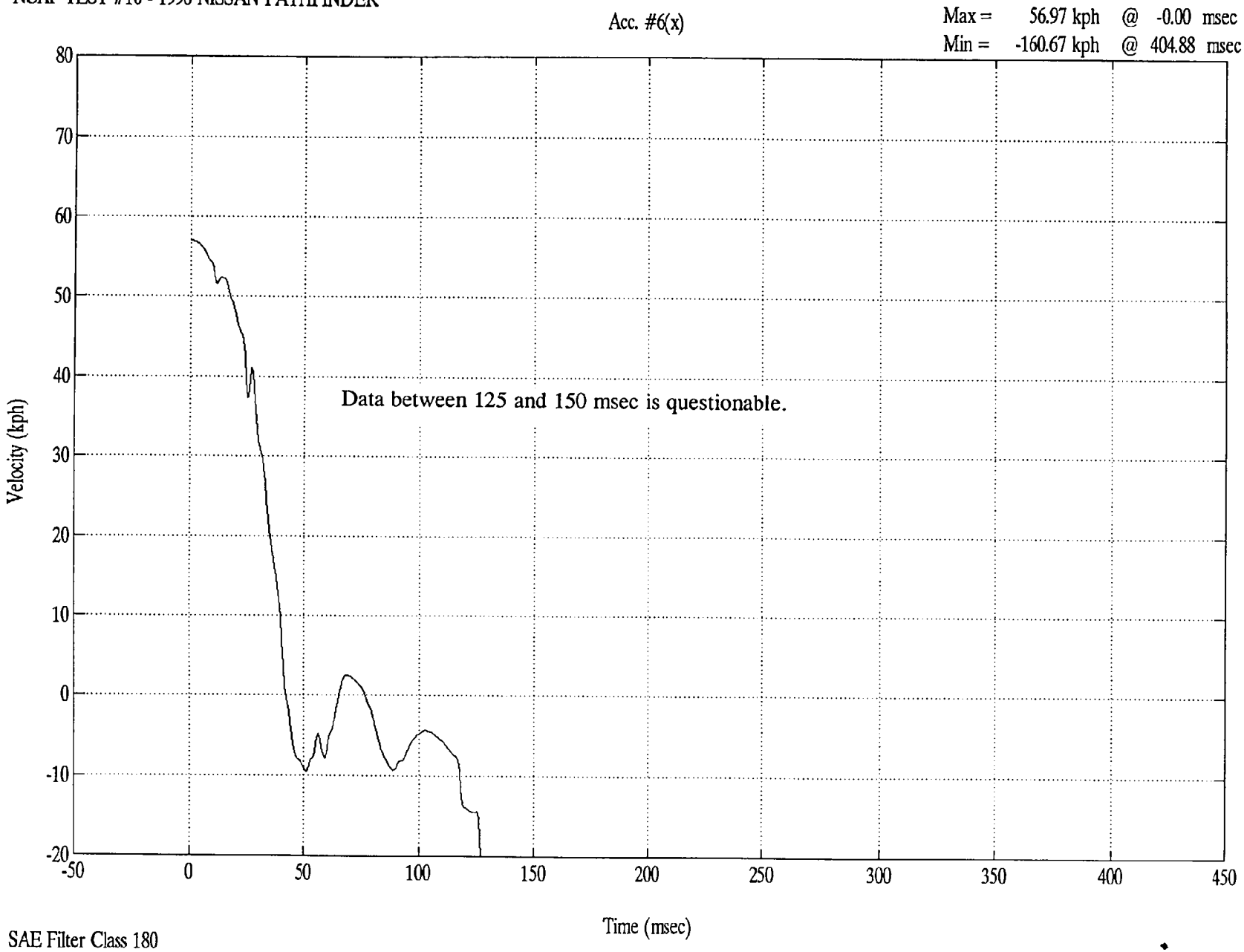


B-116

8313-10

SAE Filter Class 60

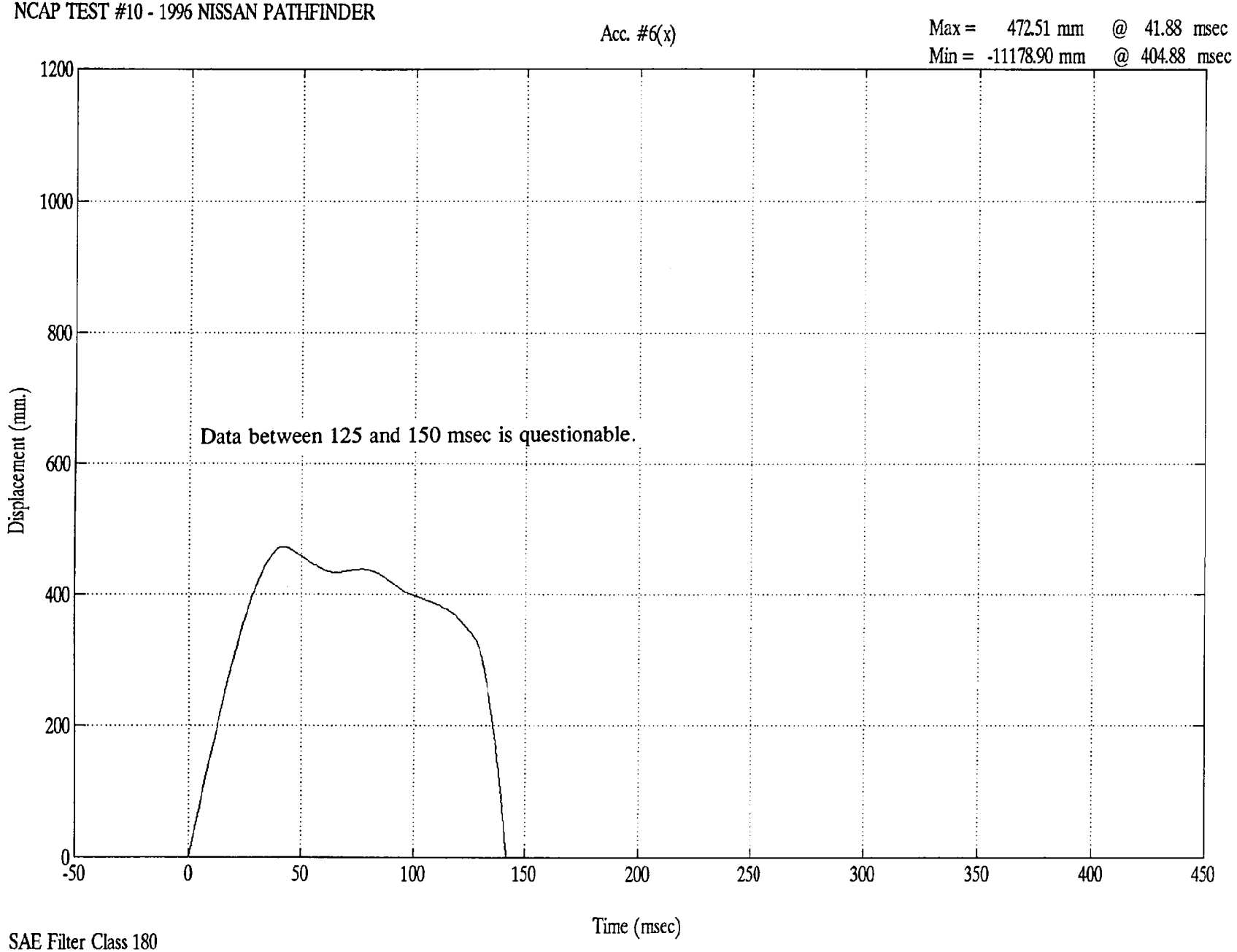
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

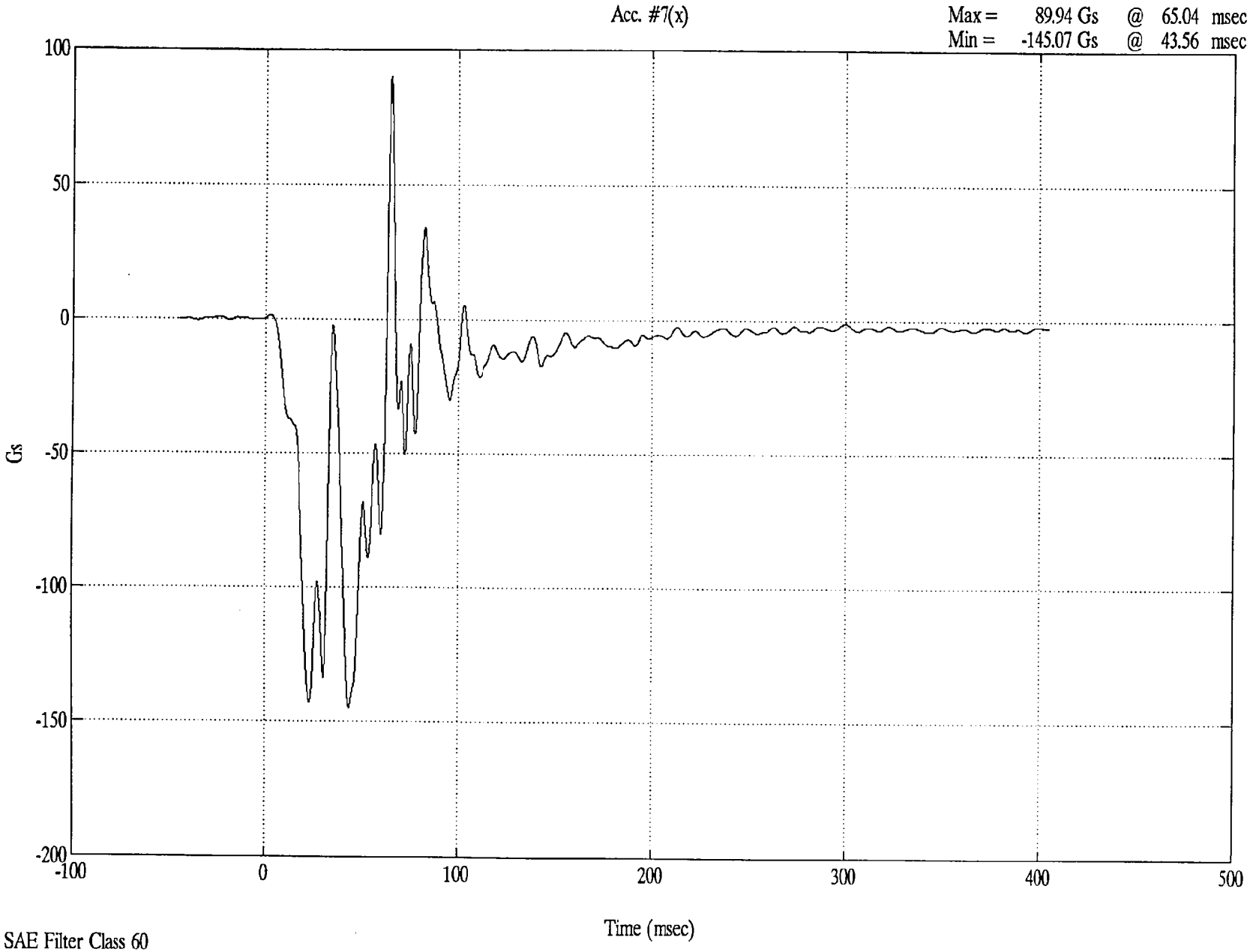


B-118

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

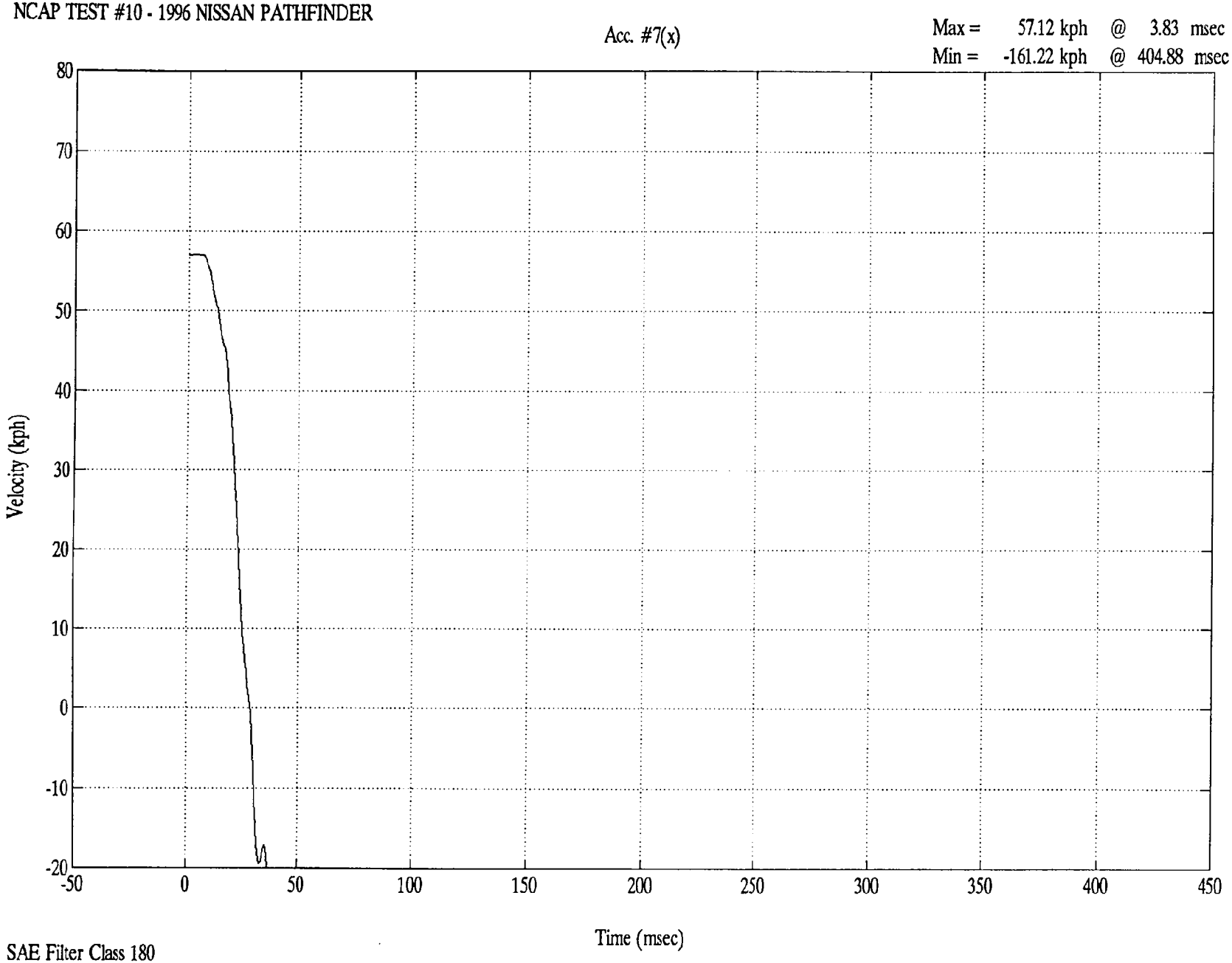


B-119

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

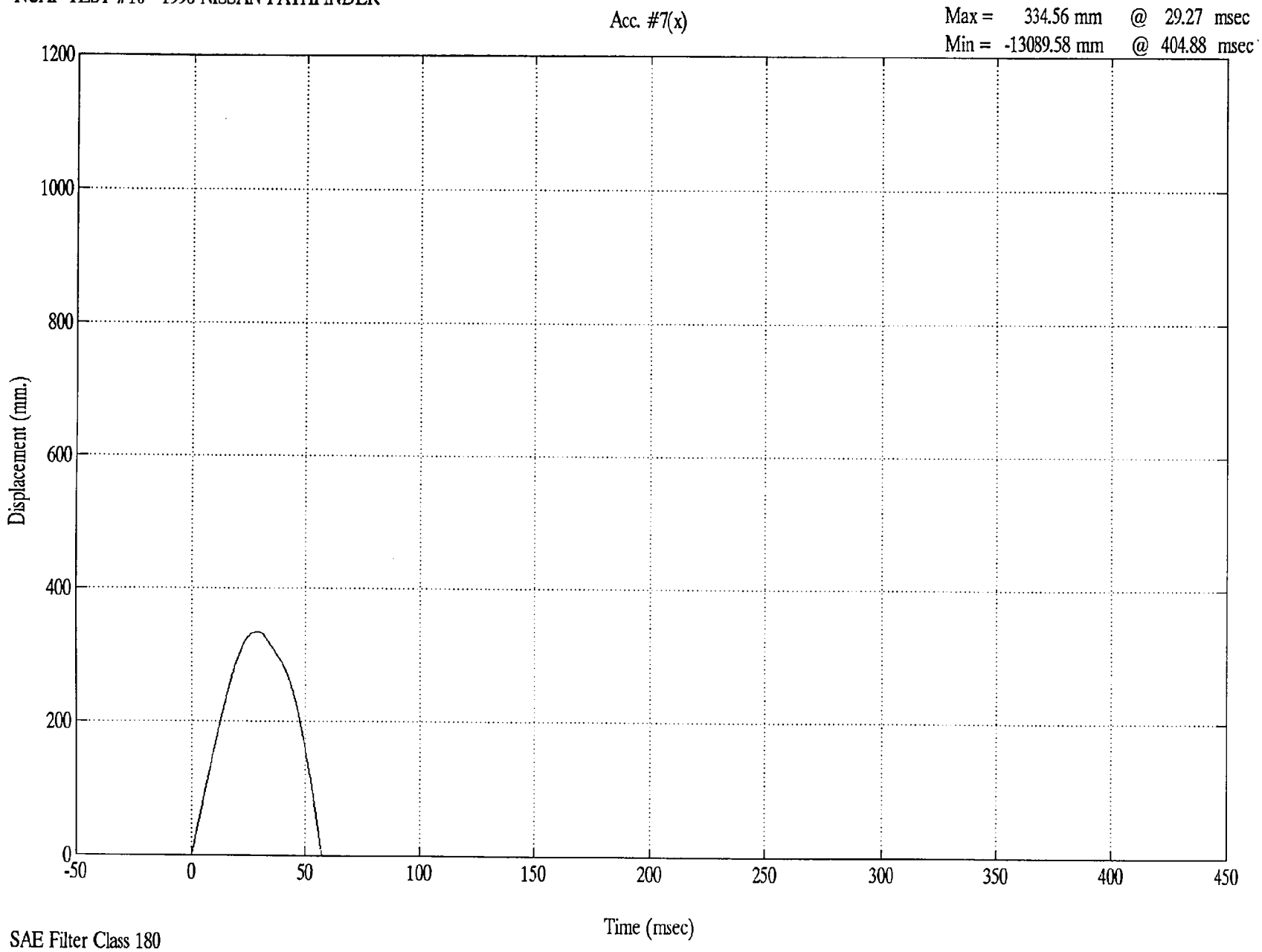


B-120

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER

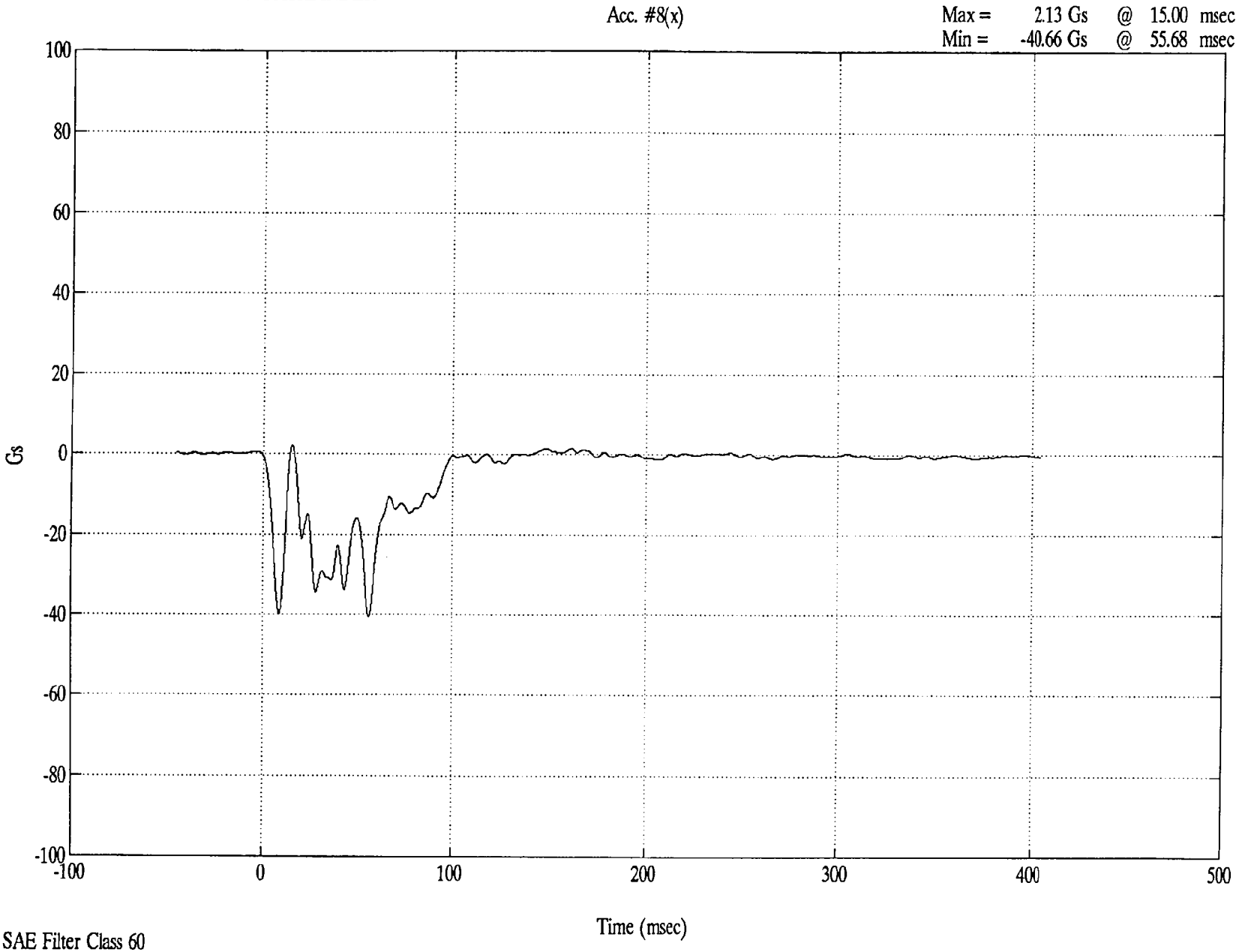


SAE Filter Class 180

B-121

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

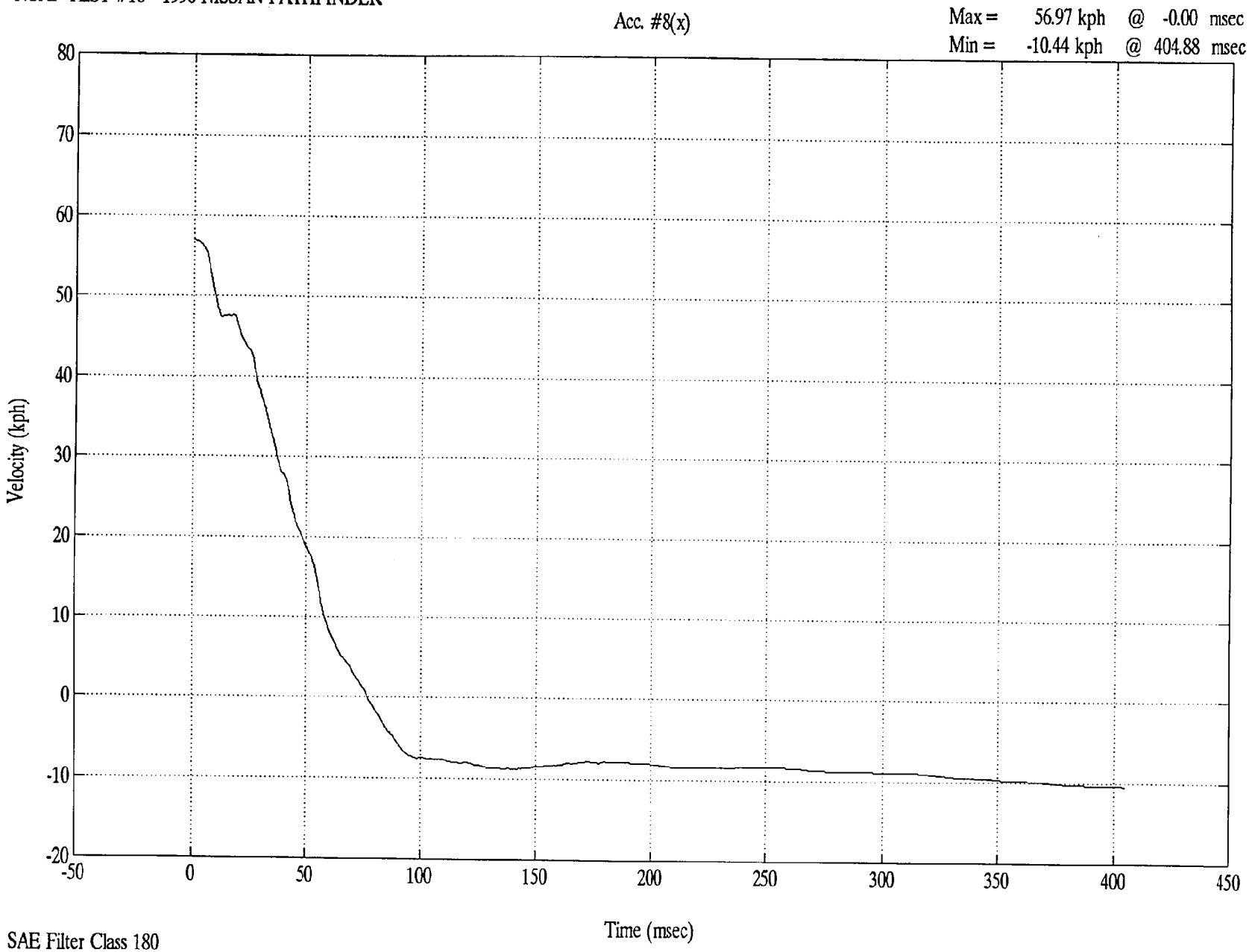


B-122

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

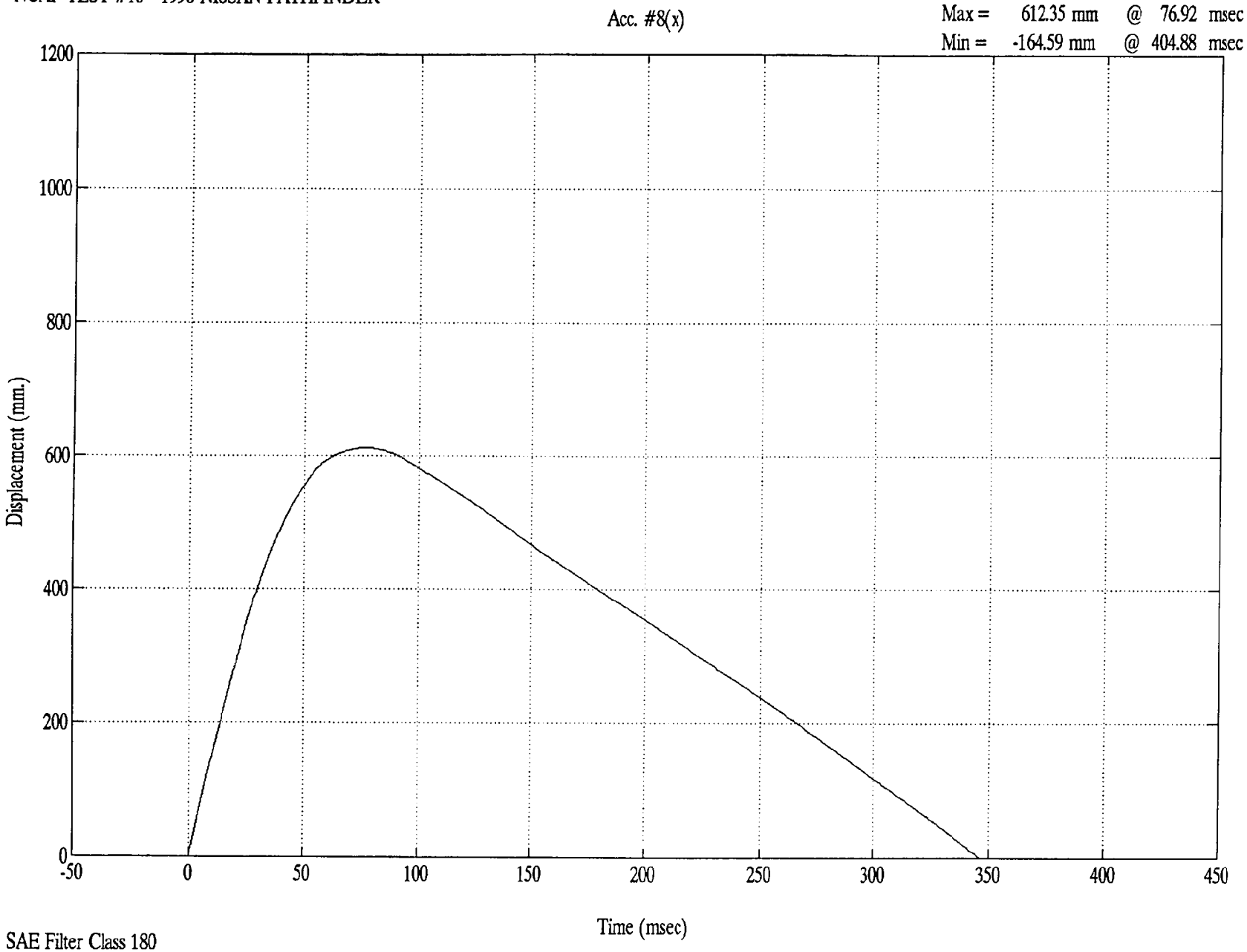


B-123

8313-10

SAE Filter Class 180

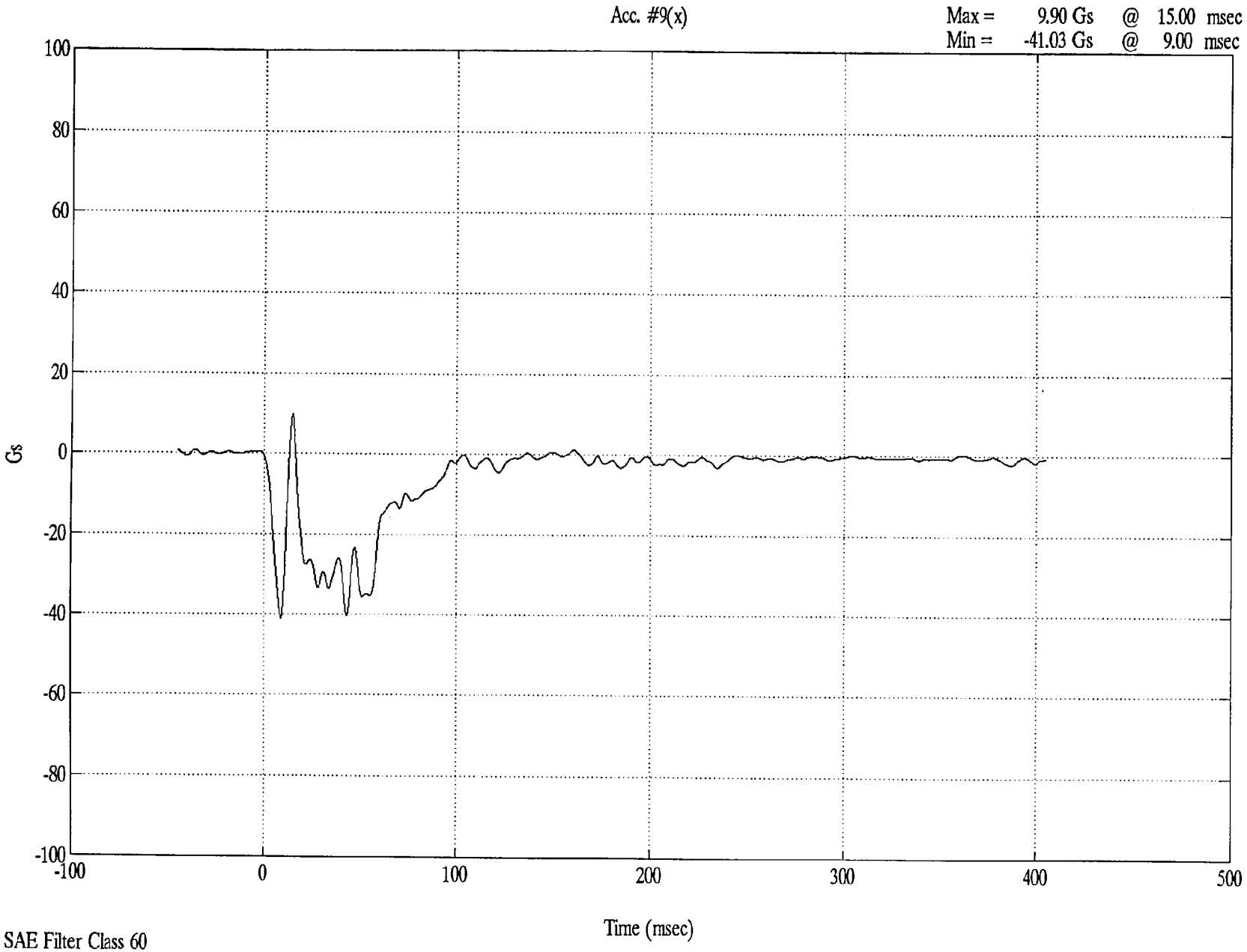
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 180

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

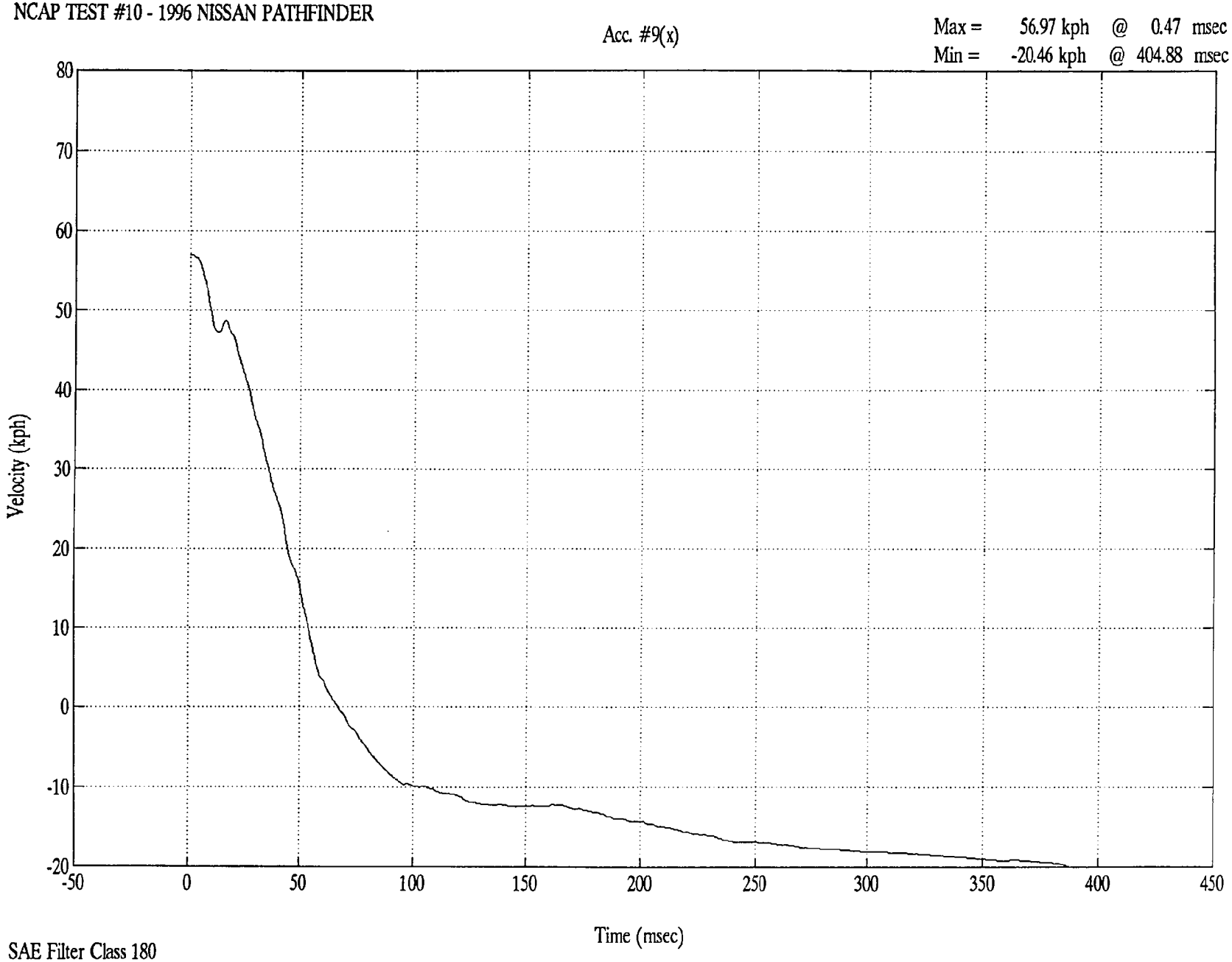


B-125

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

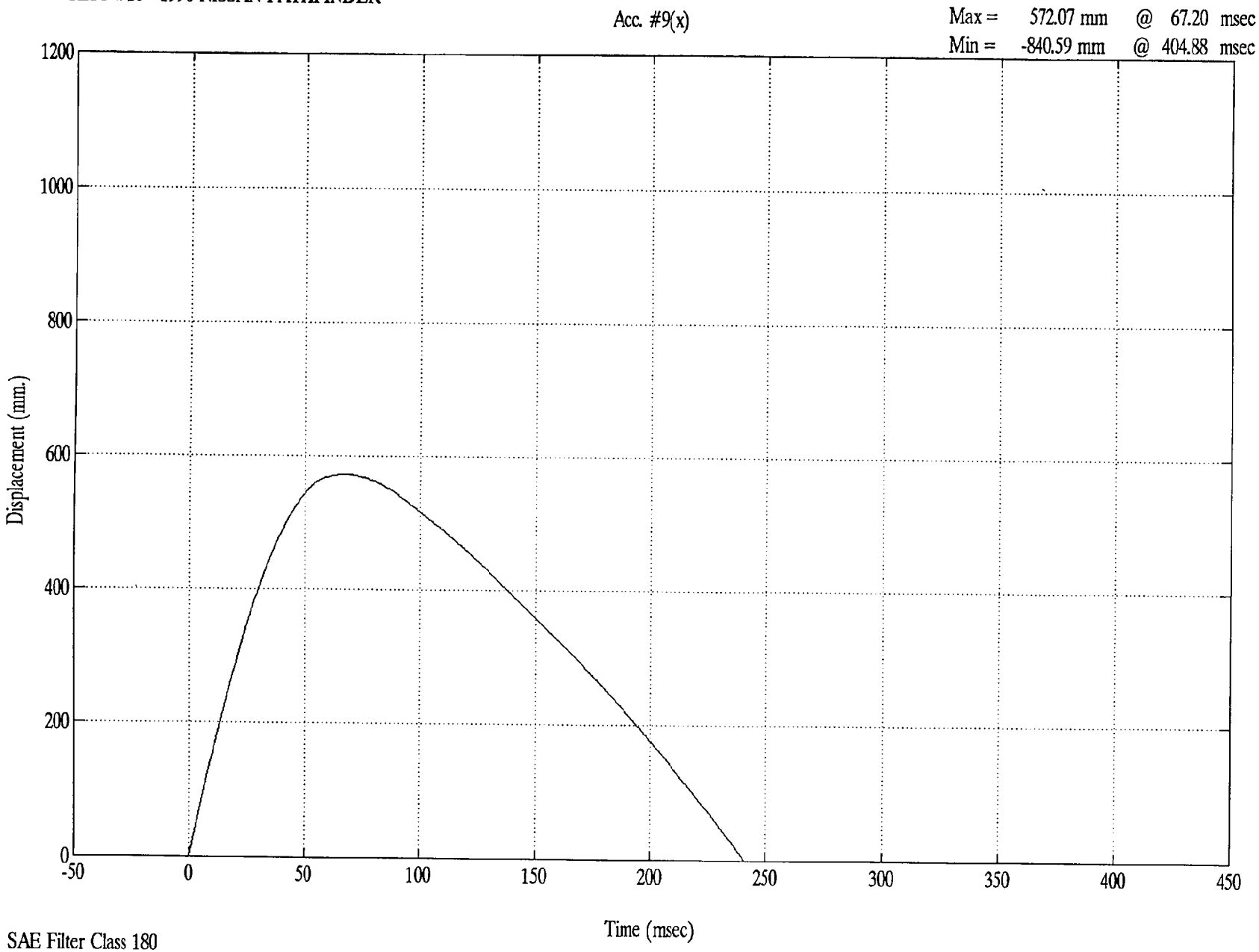


B-126

8313-10

SAE Filter Class 180

NCAP TEST #10 - 1996 NISSAN PATHFINDER



B-127

8313-10

SAE Filter Class 180

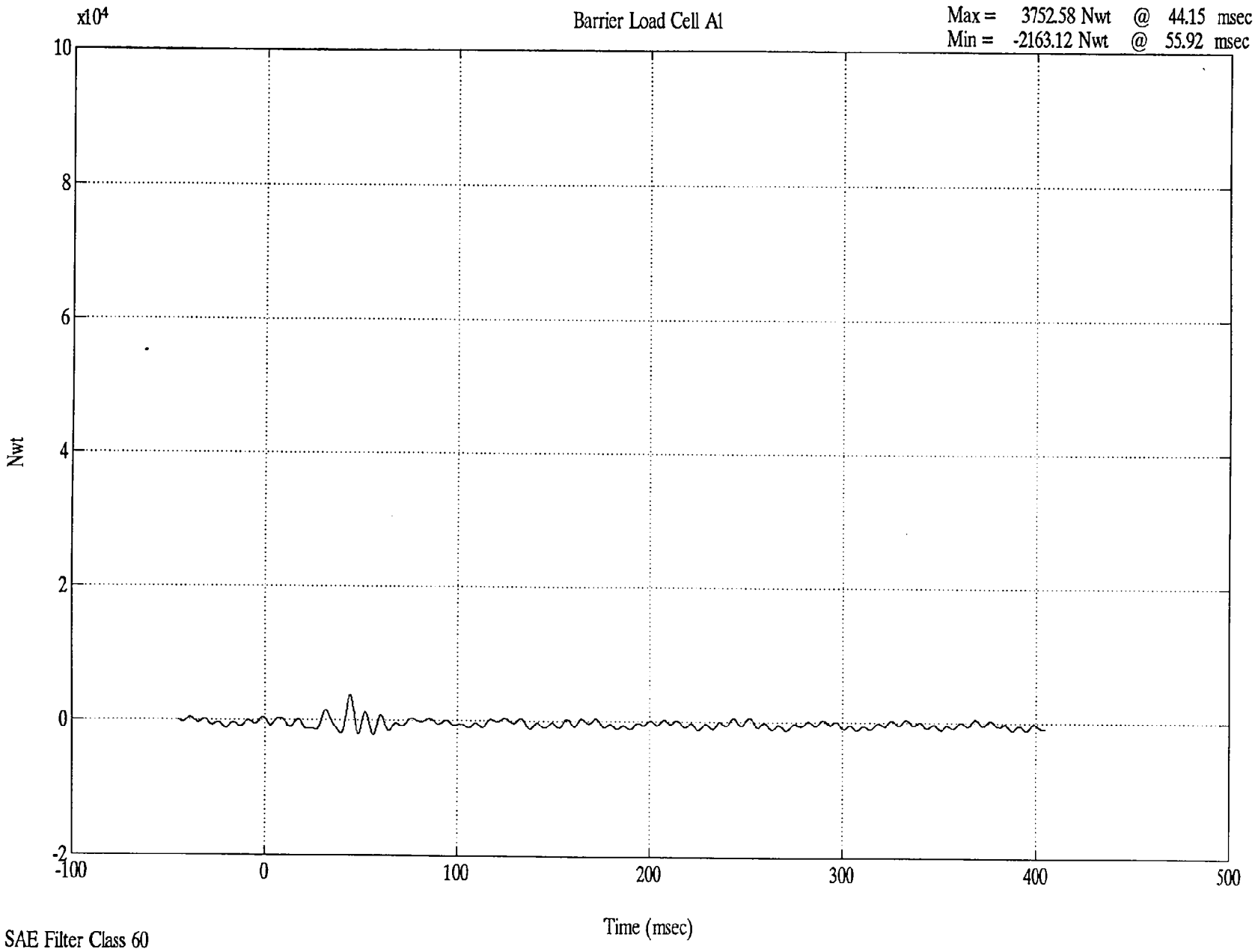
NHTSA TEST NO. MT5202

LOAD CELL BARRIER DATA

FILTER CHANNEL CLASS

60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

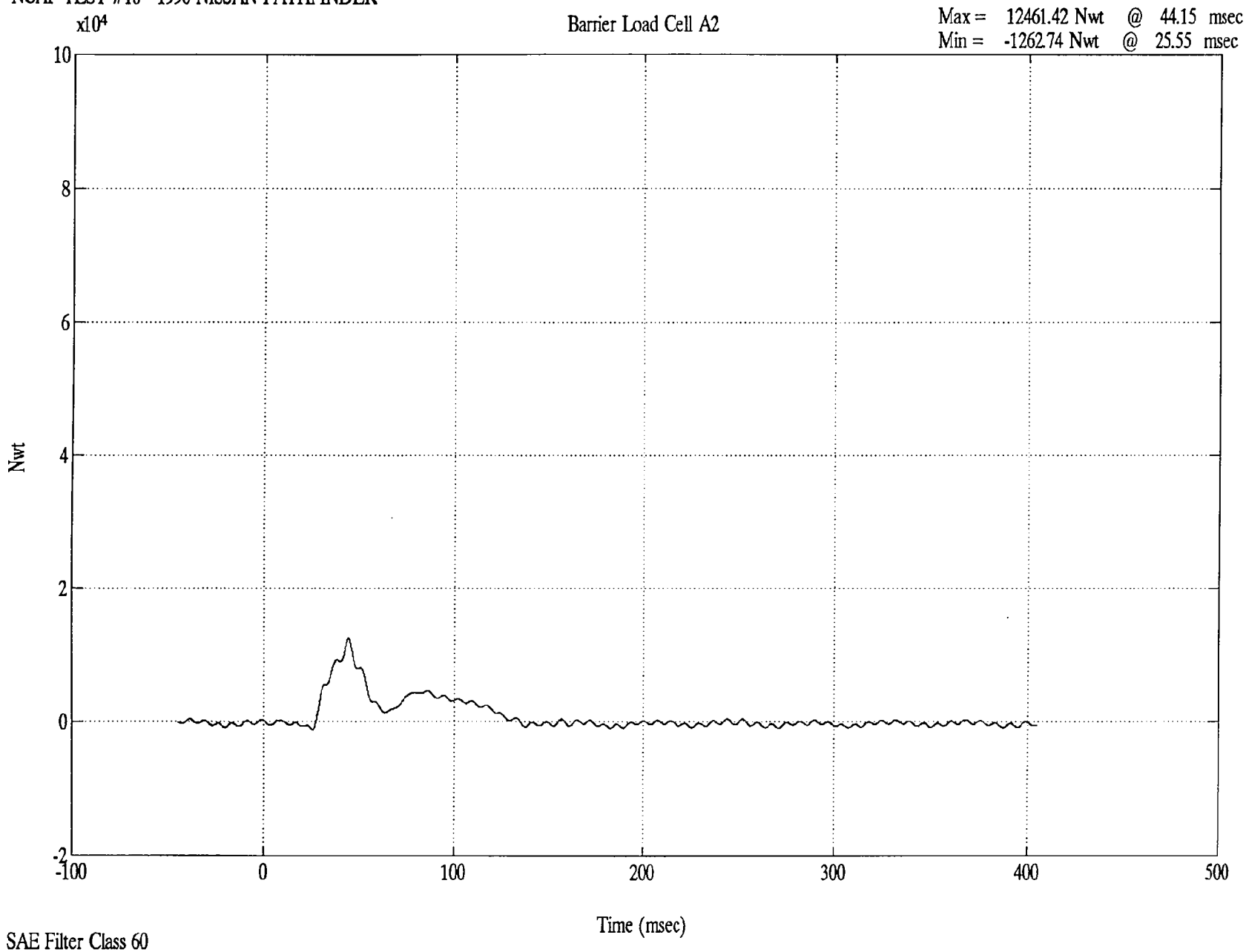


B-129

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

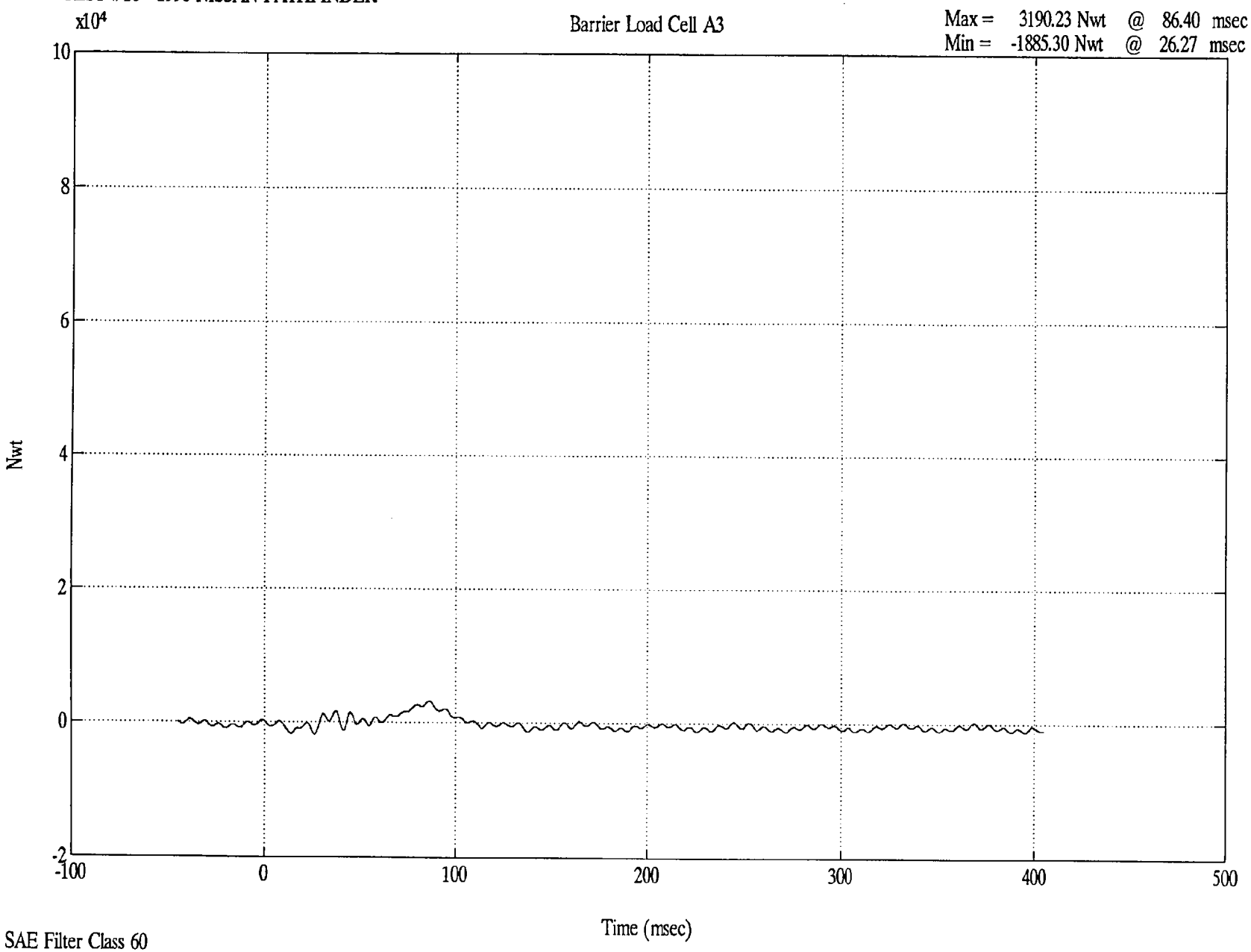


B-130

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

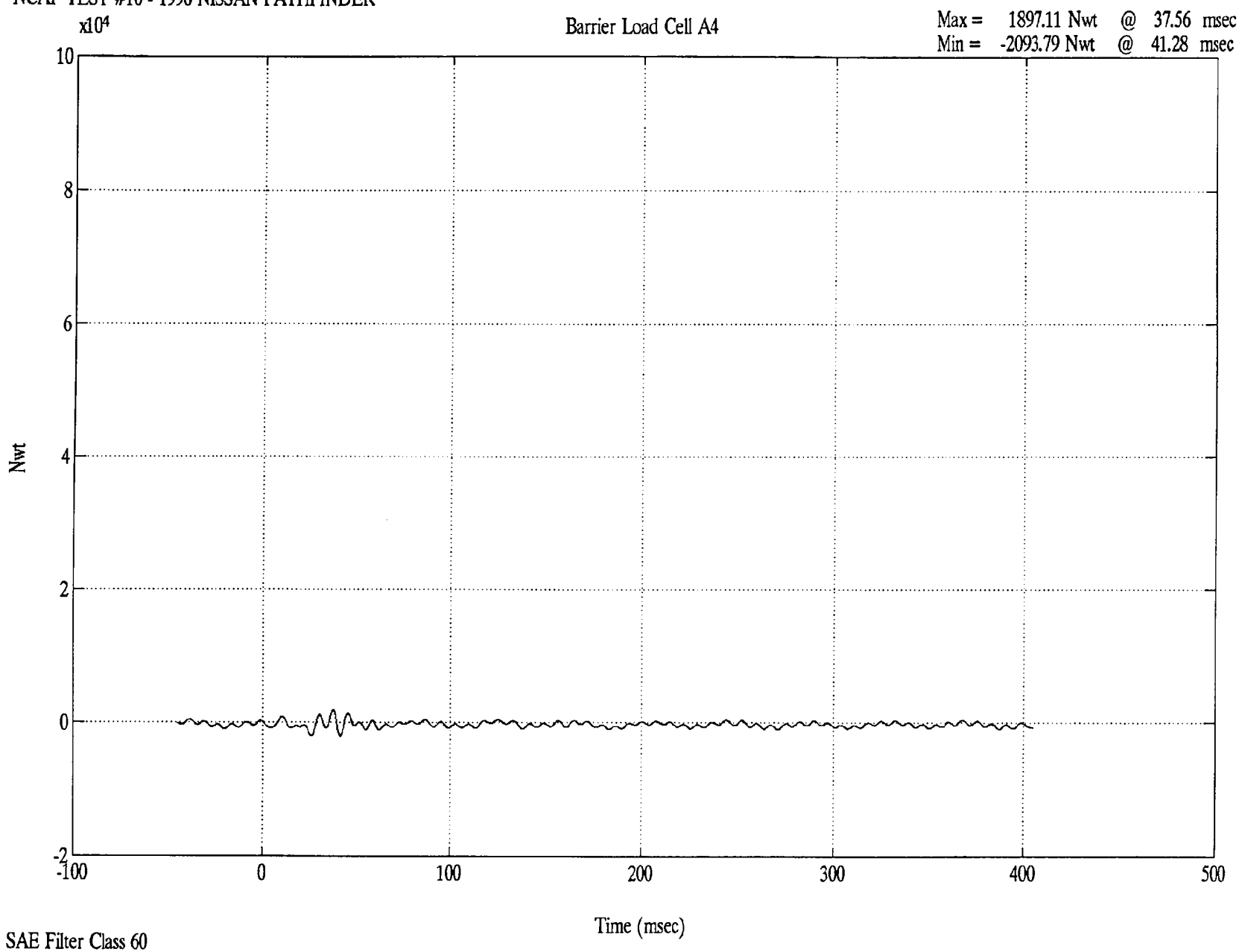


B-131

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

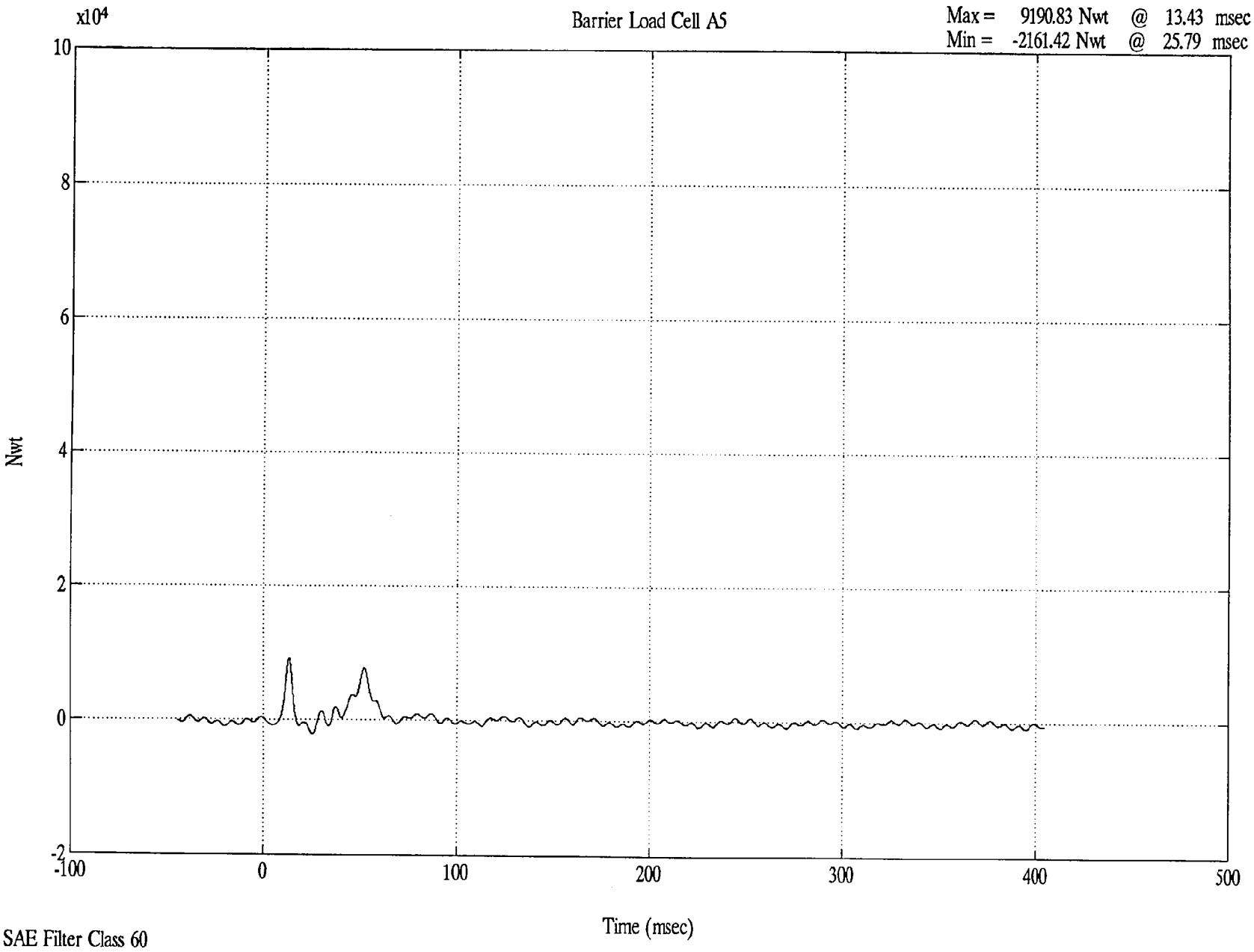


B-132

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

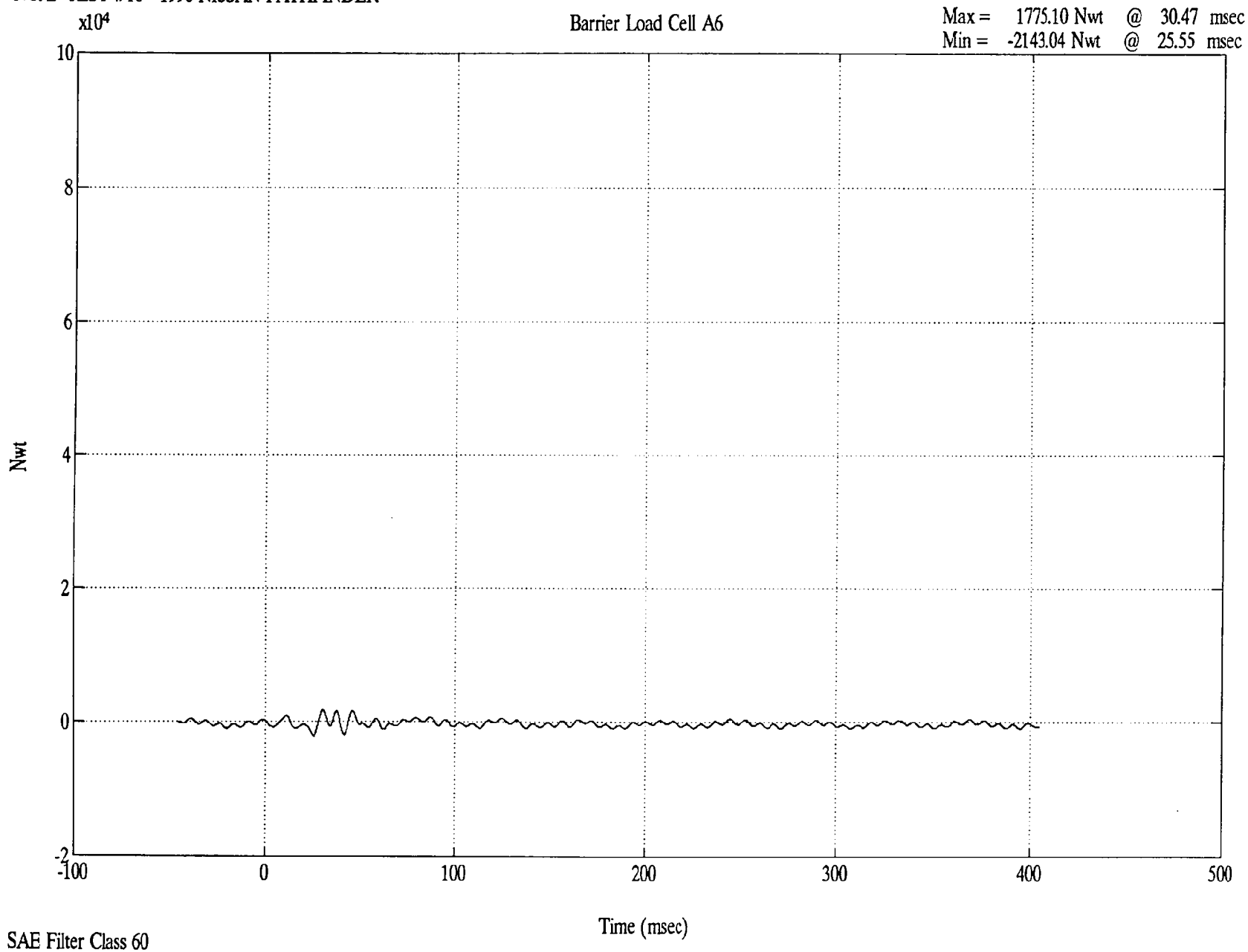


B-133

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

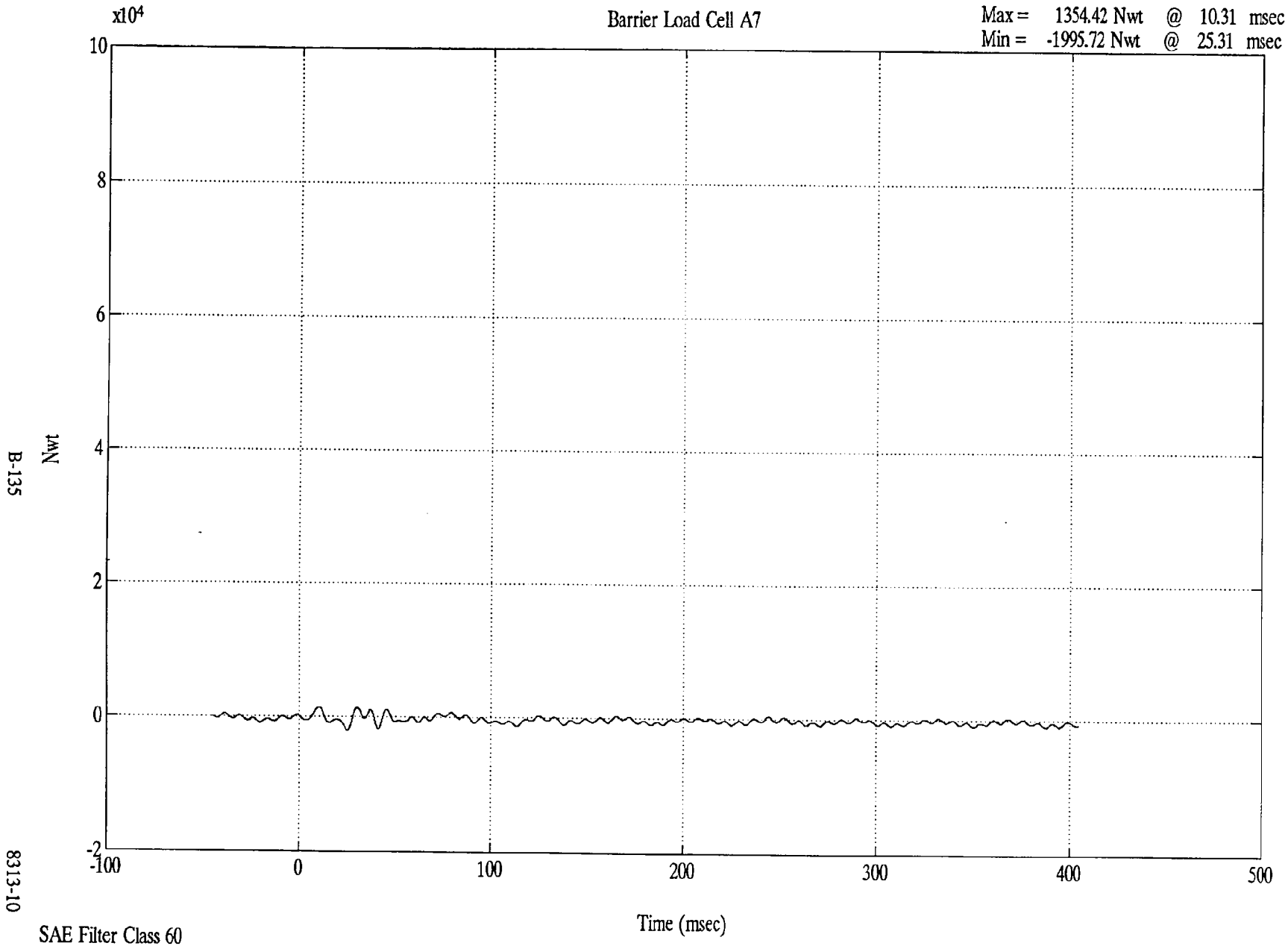


B-134

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

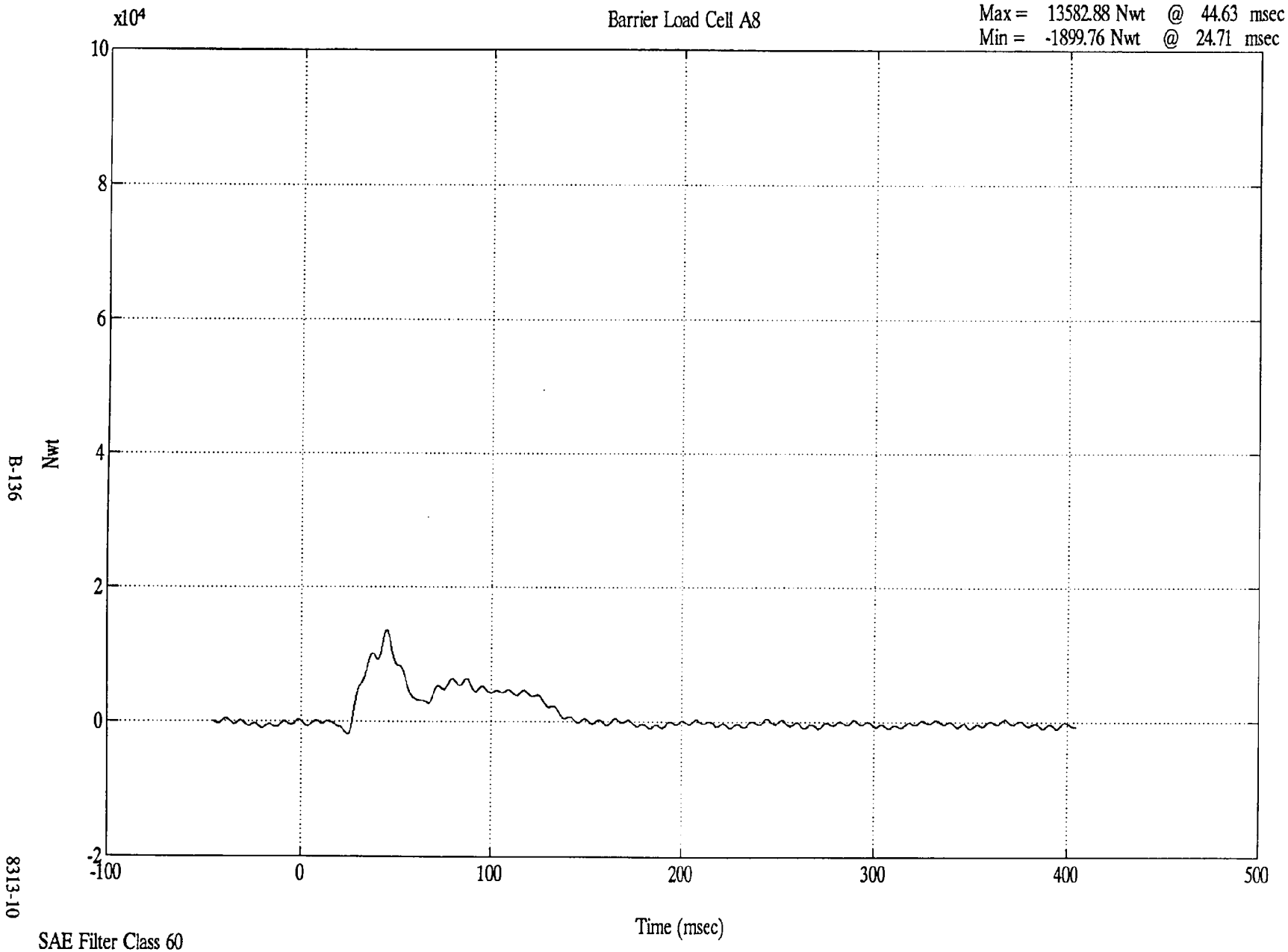


B-135

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

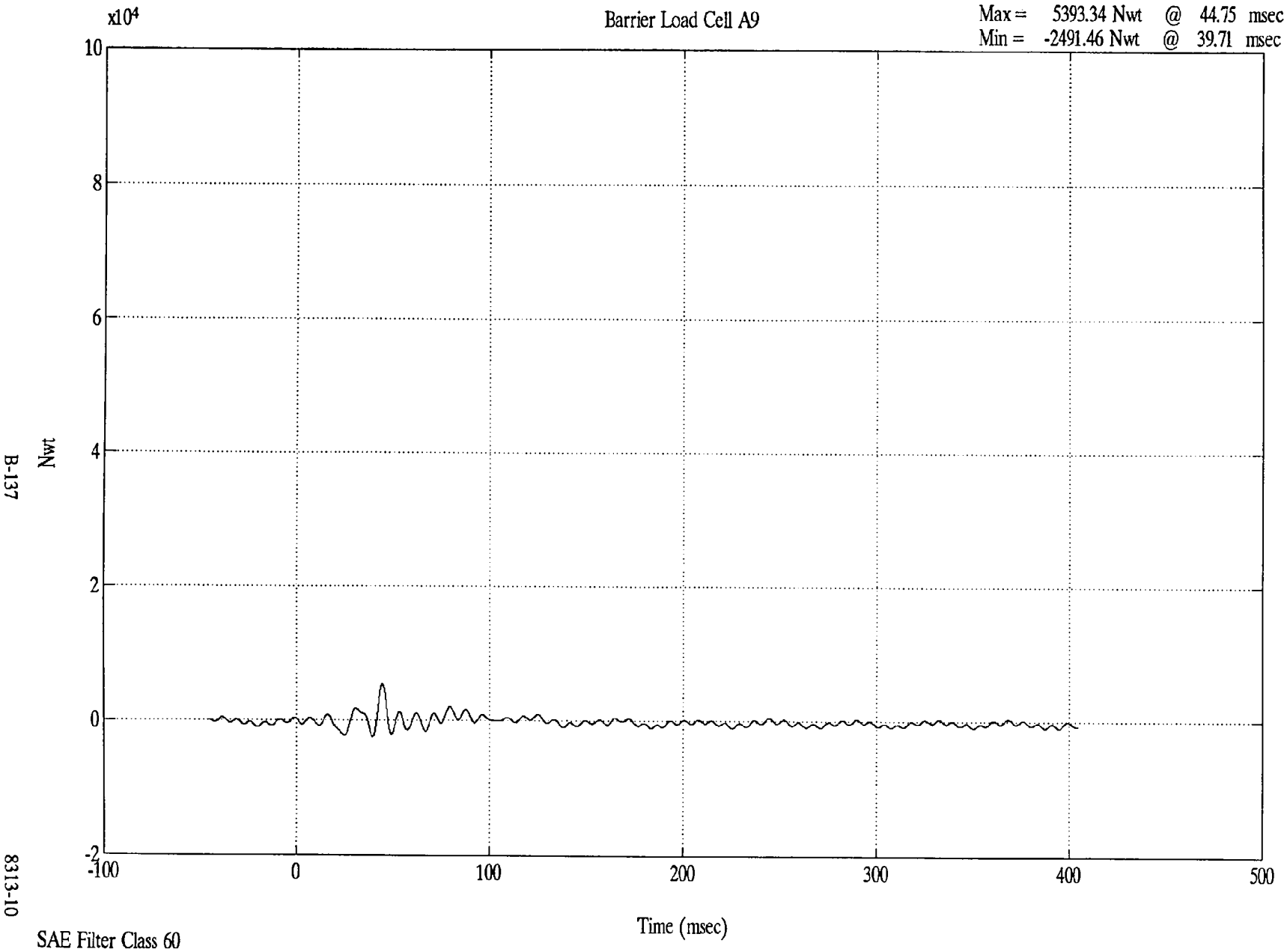


B-136

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

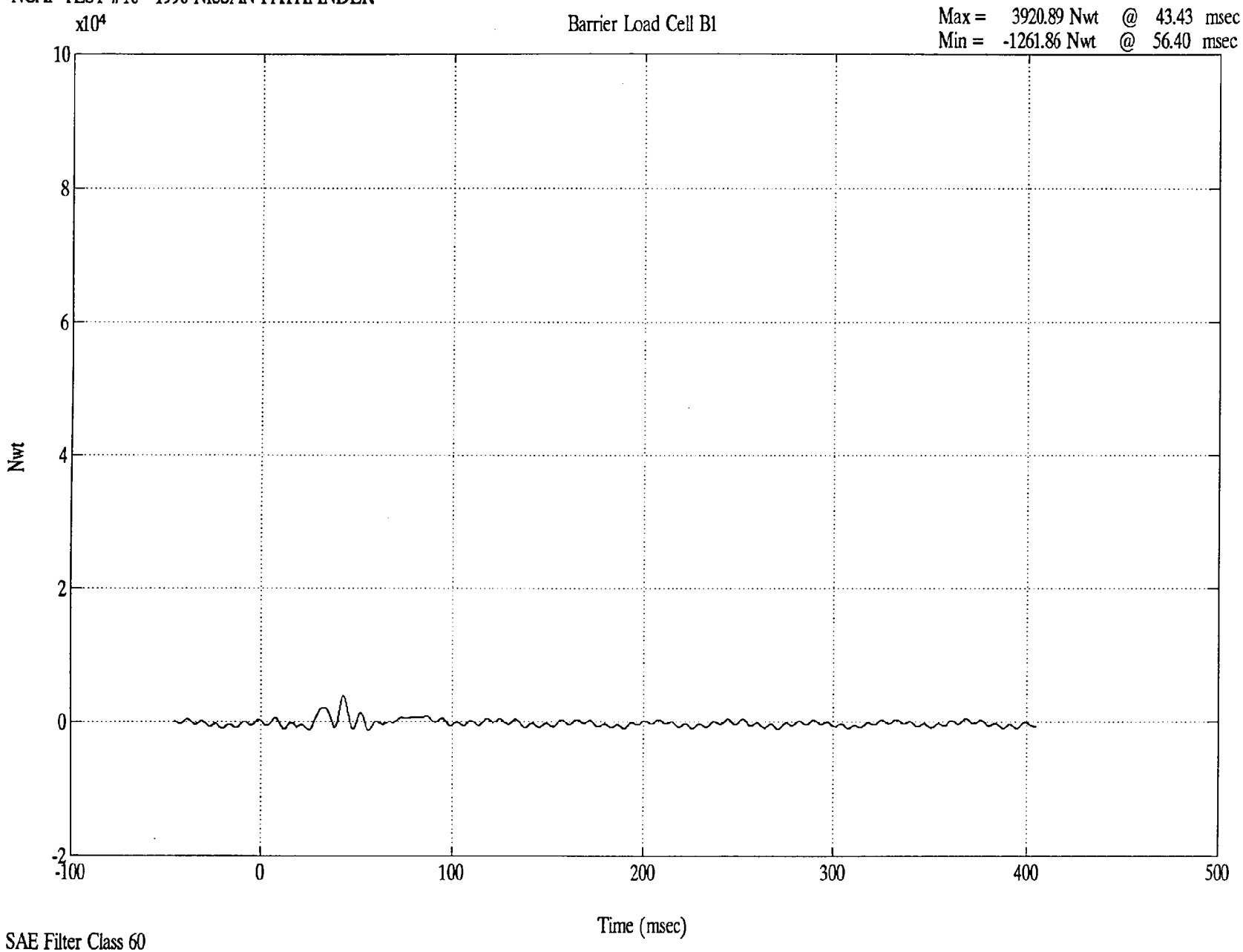


B-137

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

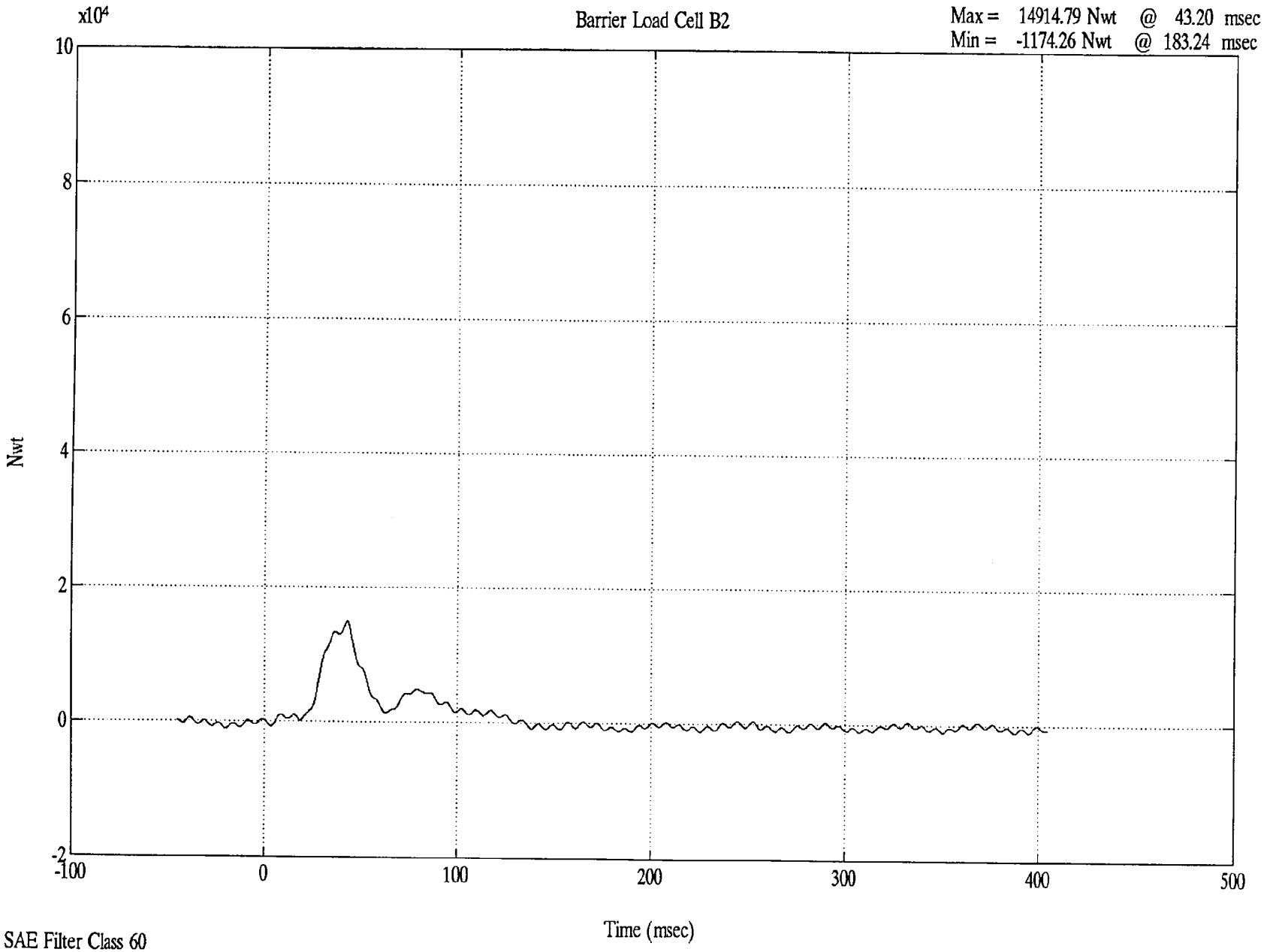


B-138

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

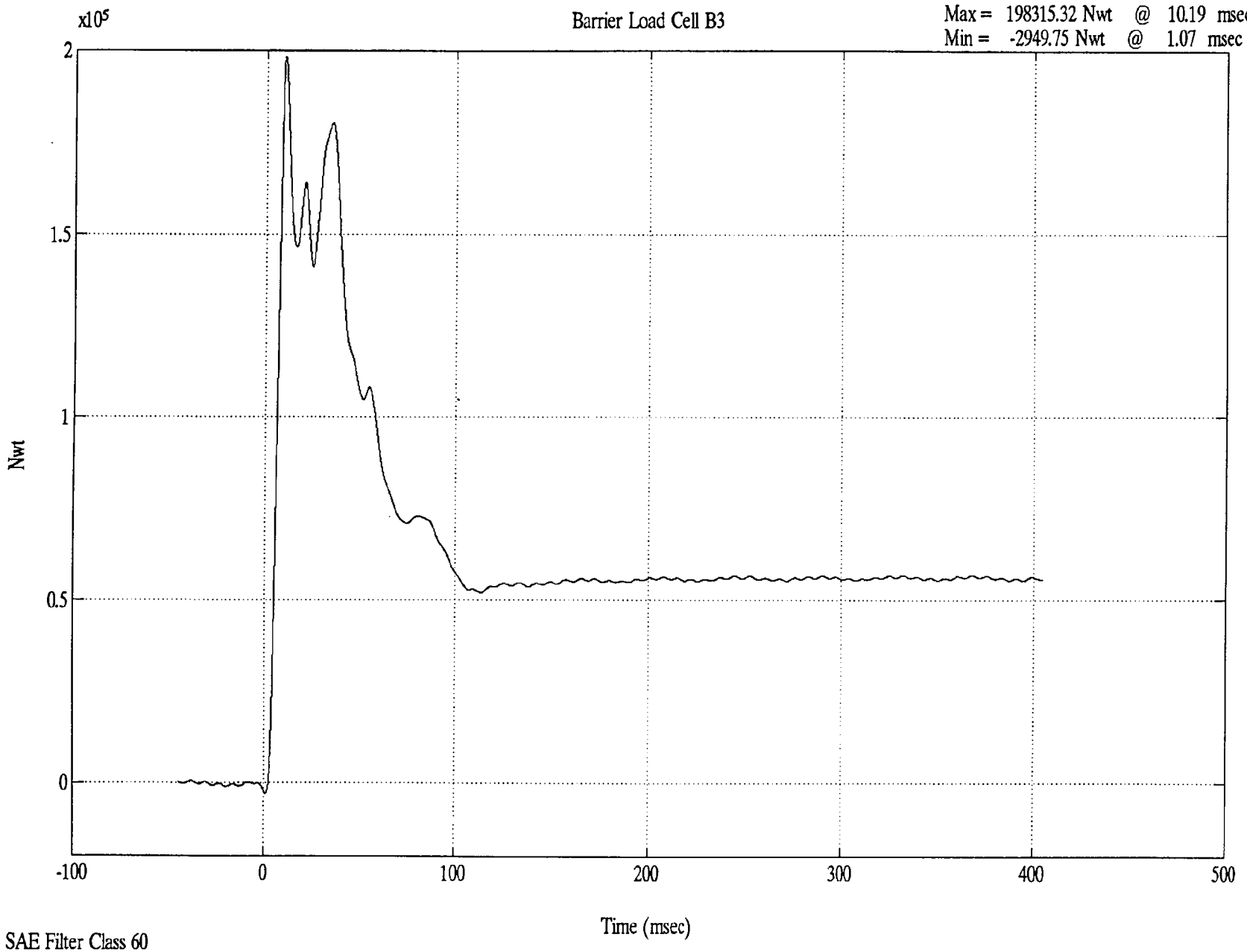


B-139

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

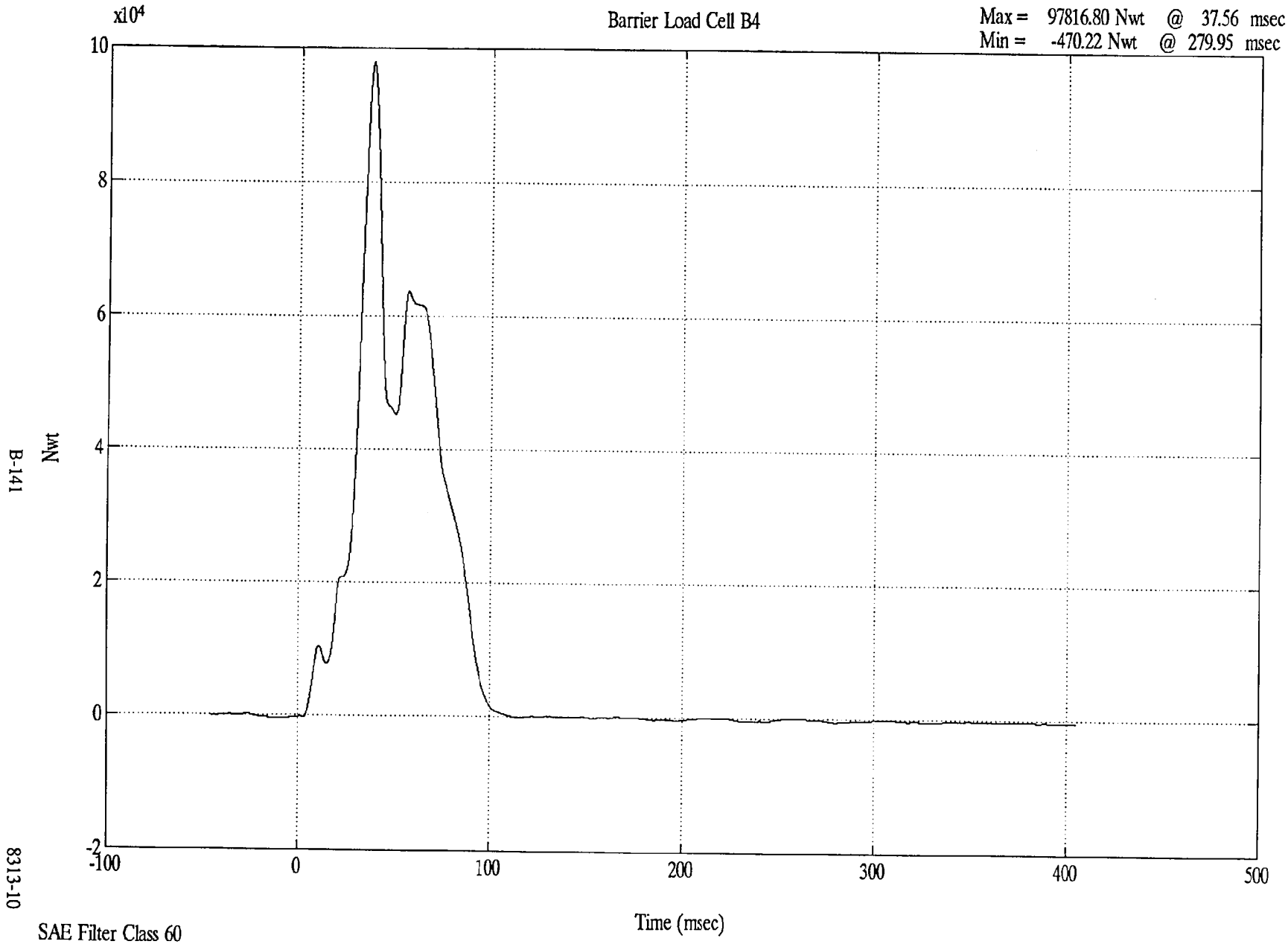


B-140

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

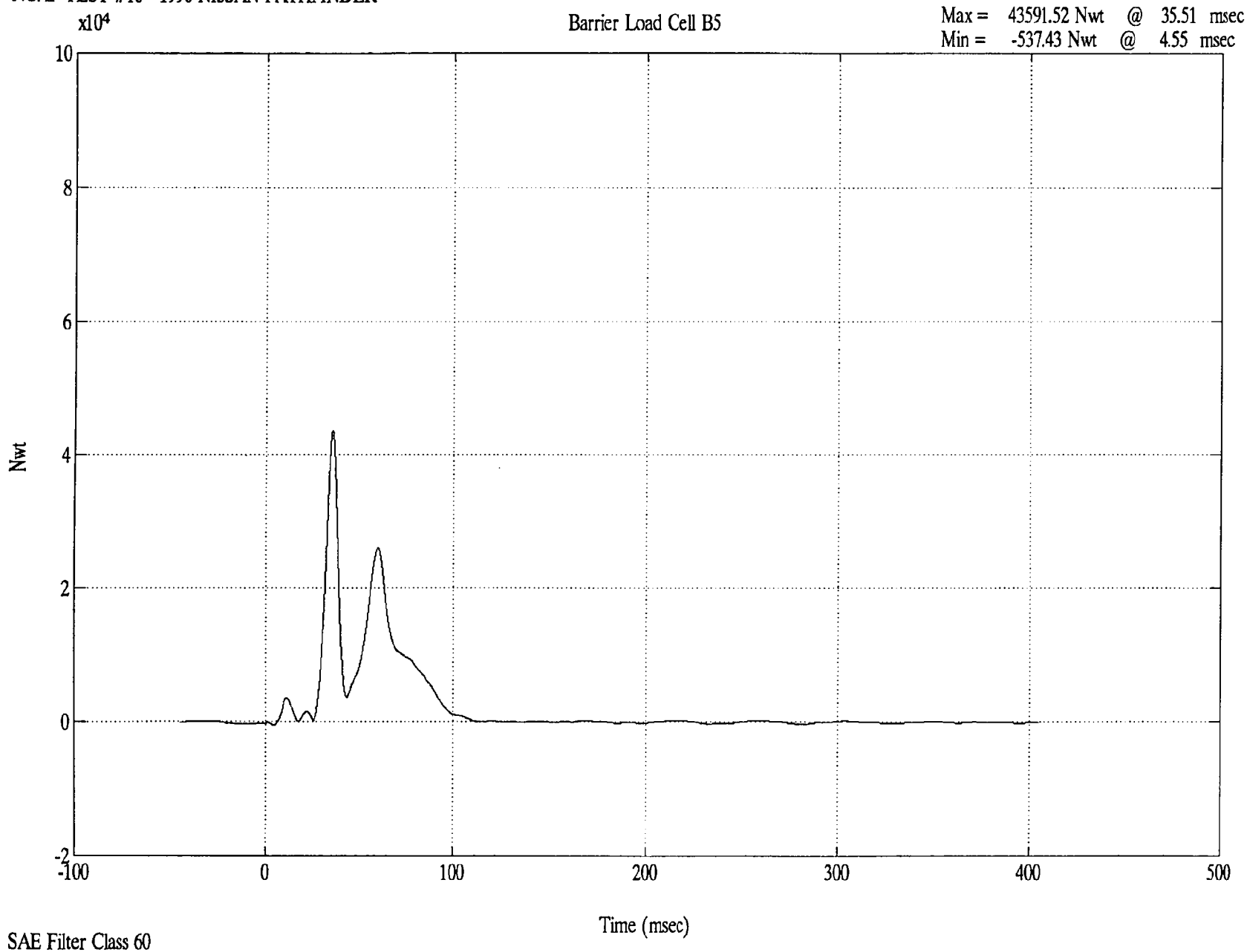


B-141

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

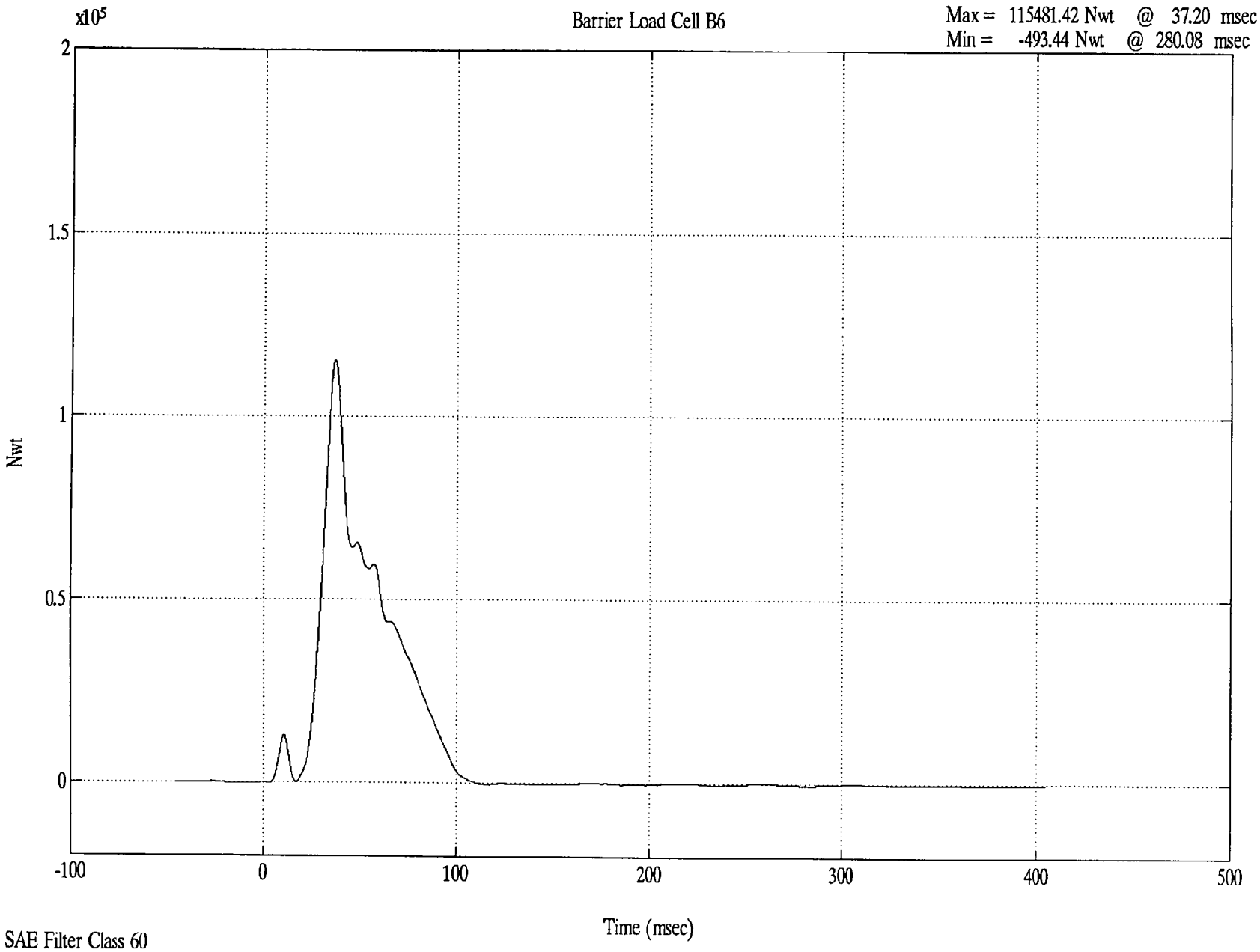


B-142

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

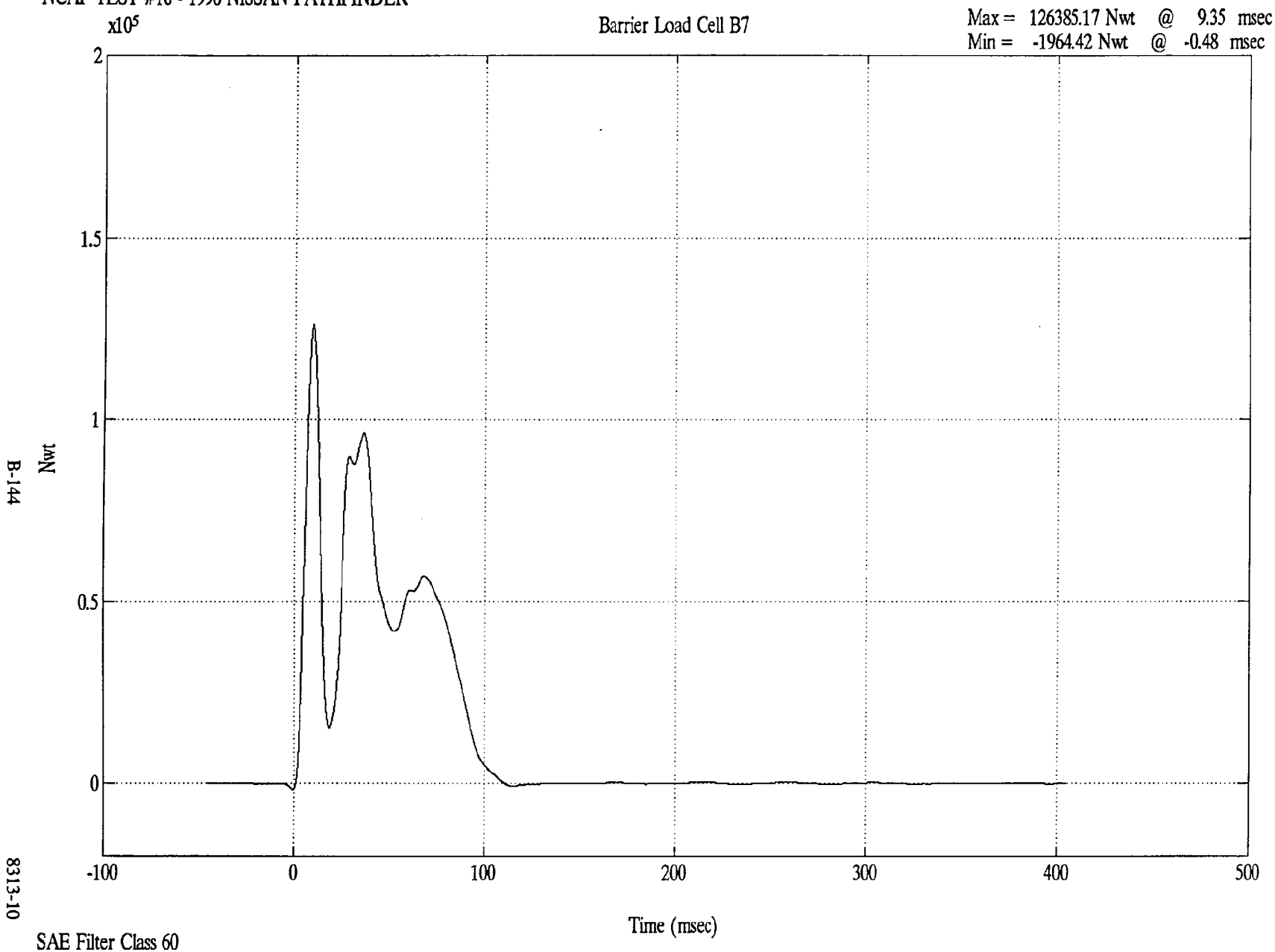


B-143

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

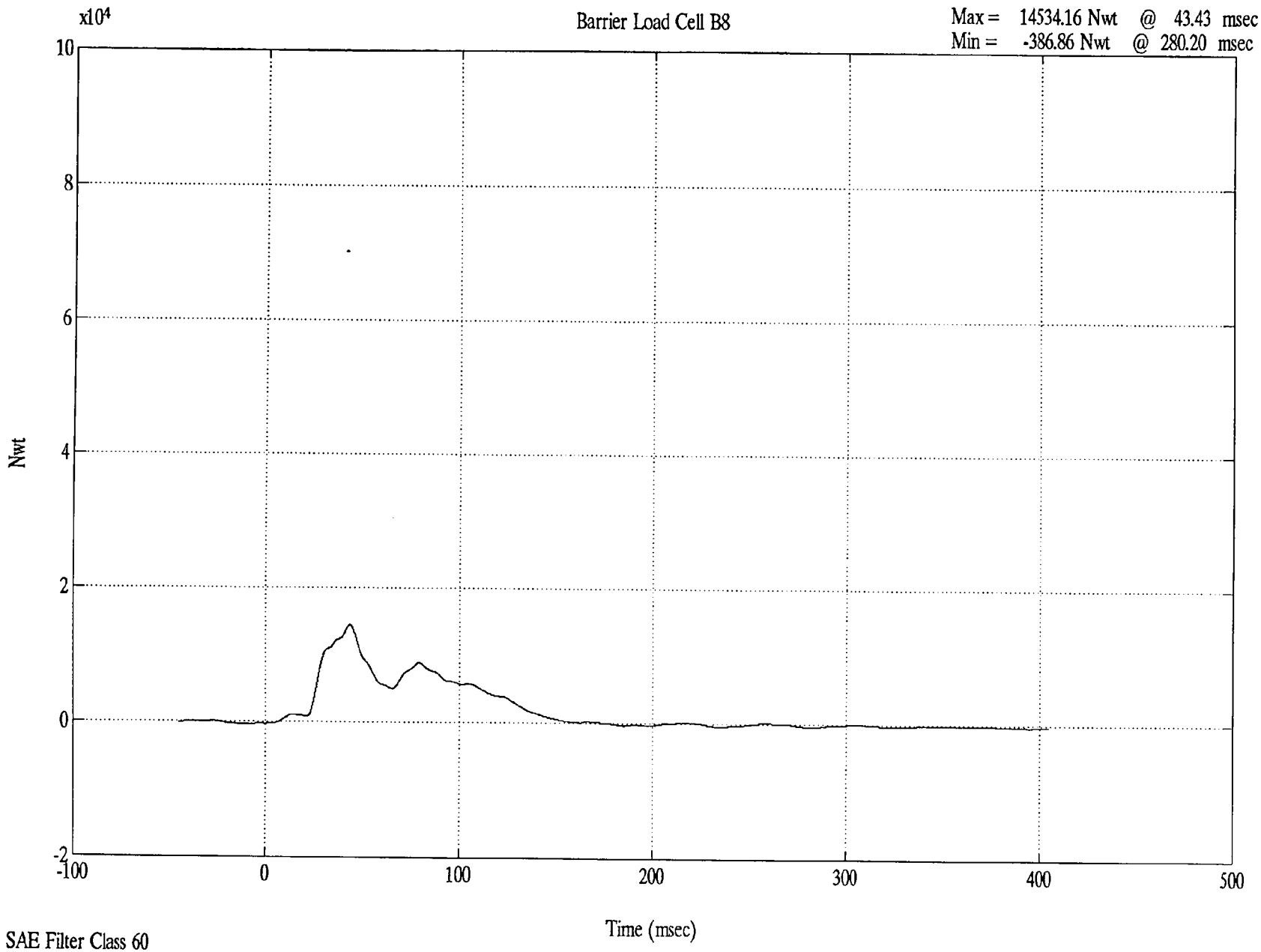


B-144

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

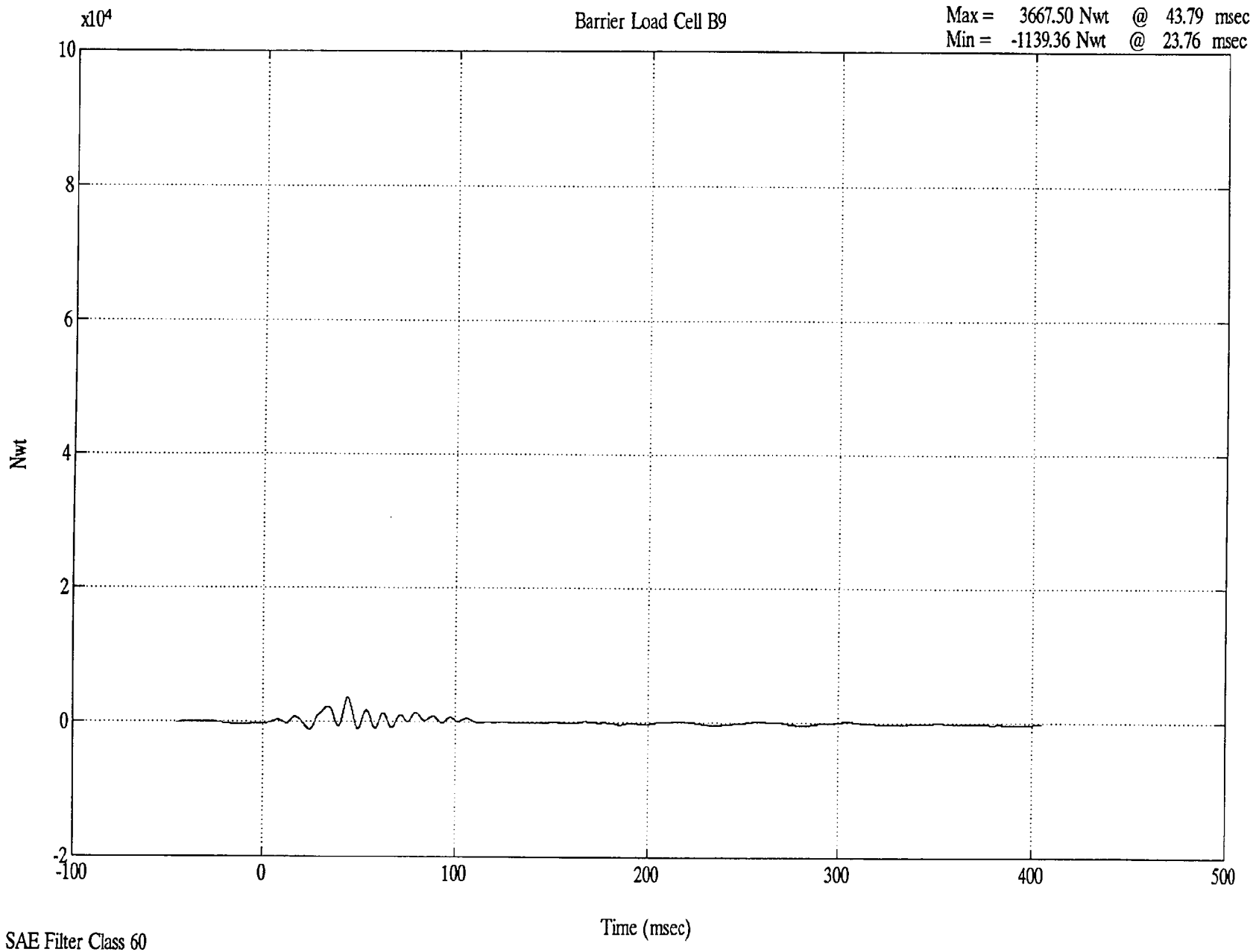


B-145

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

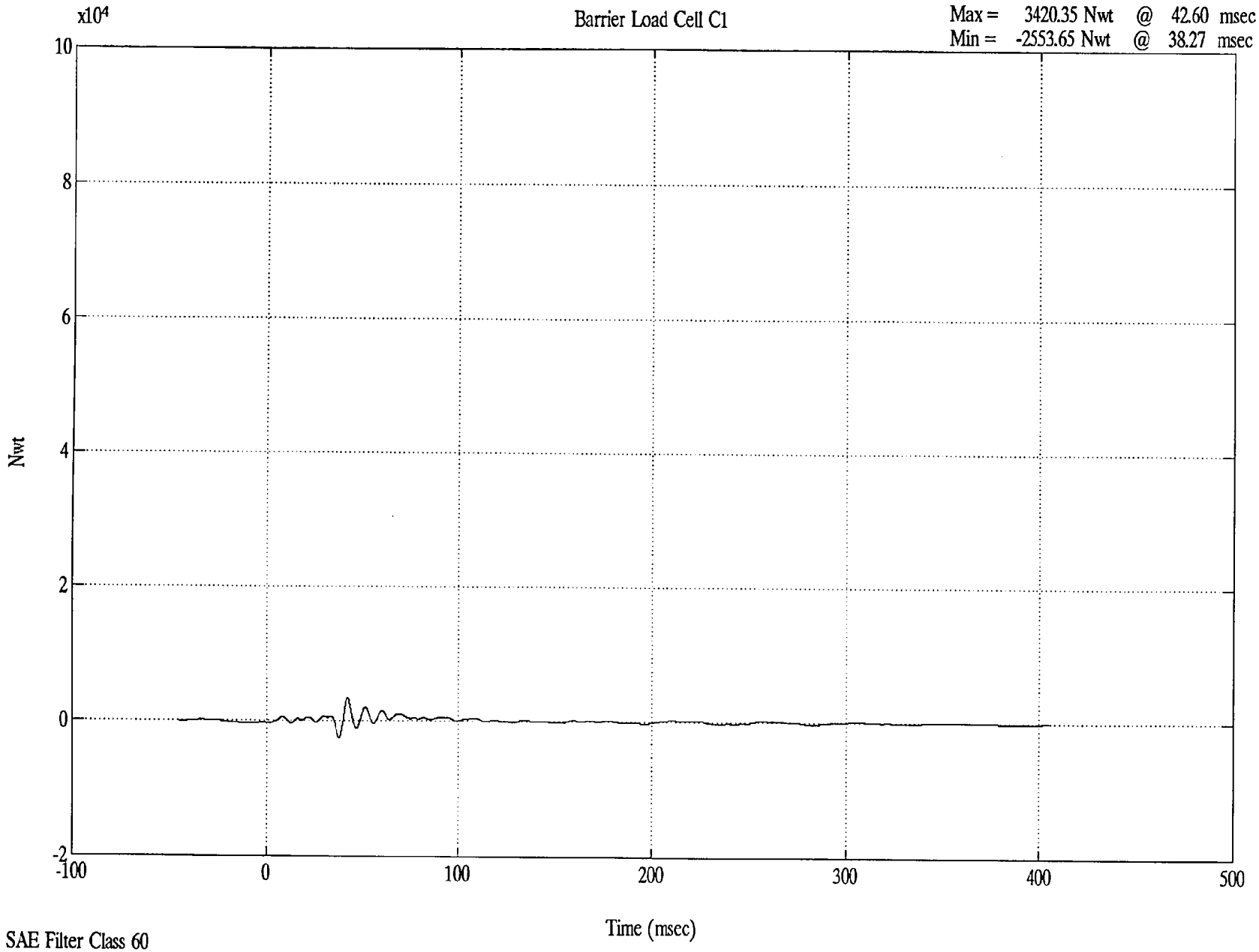


SAE Filter Class 60

B-146

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

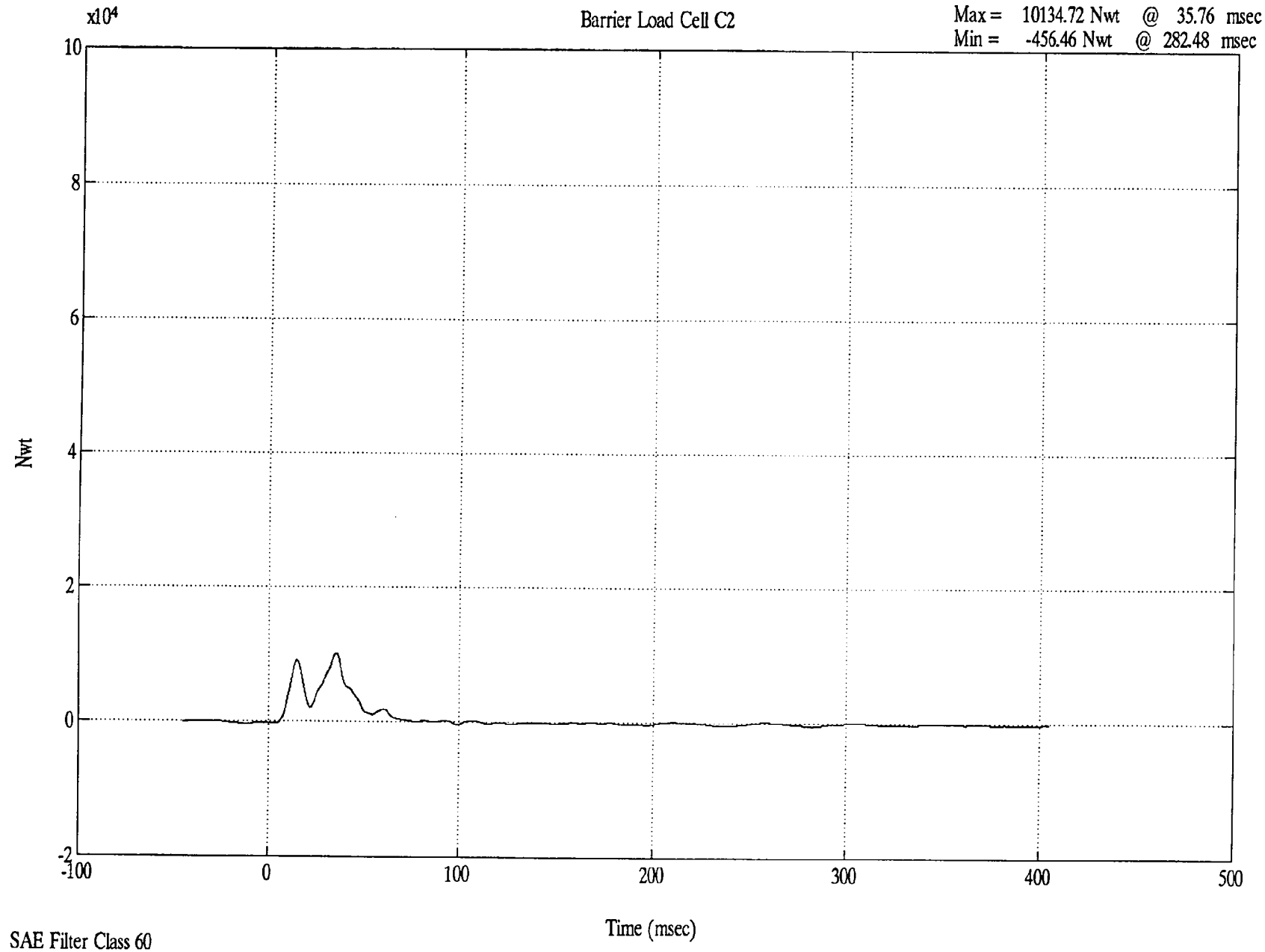


SAE Filter Class 60

B-147

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

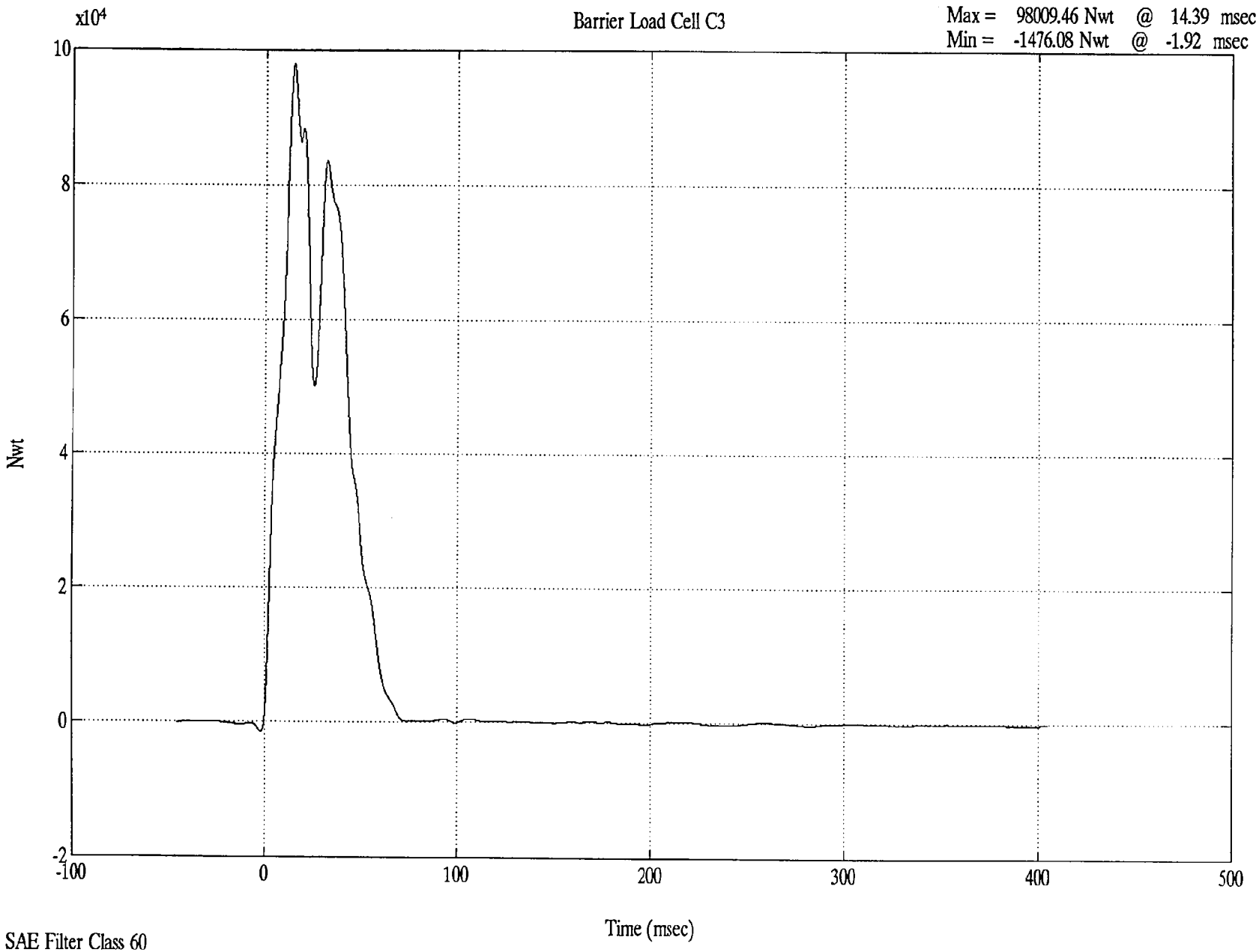


B-148

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

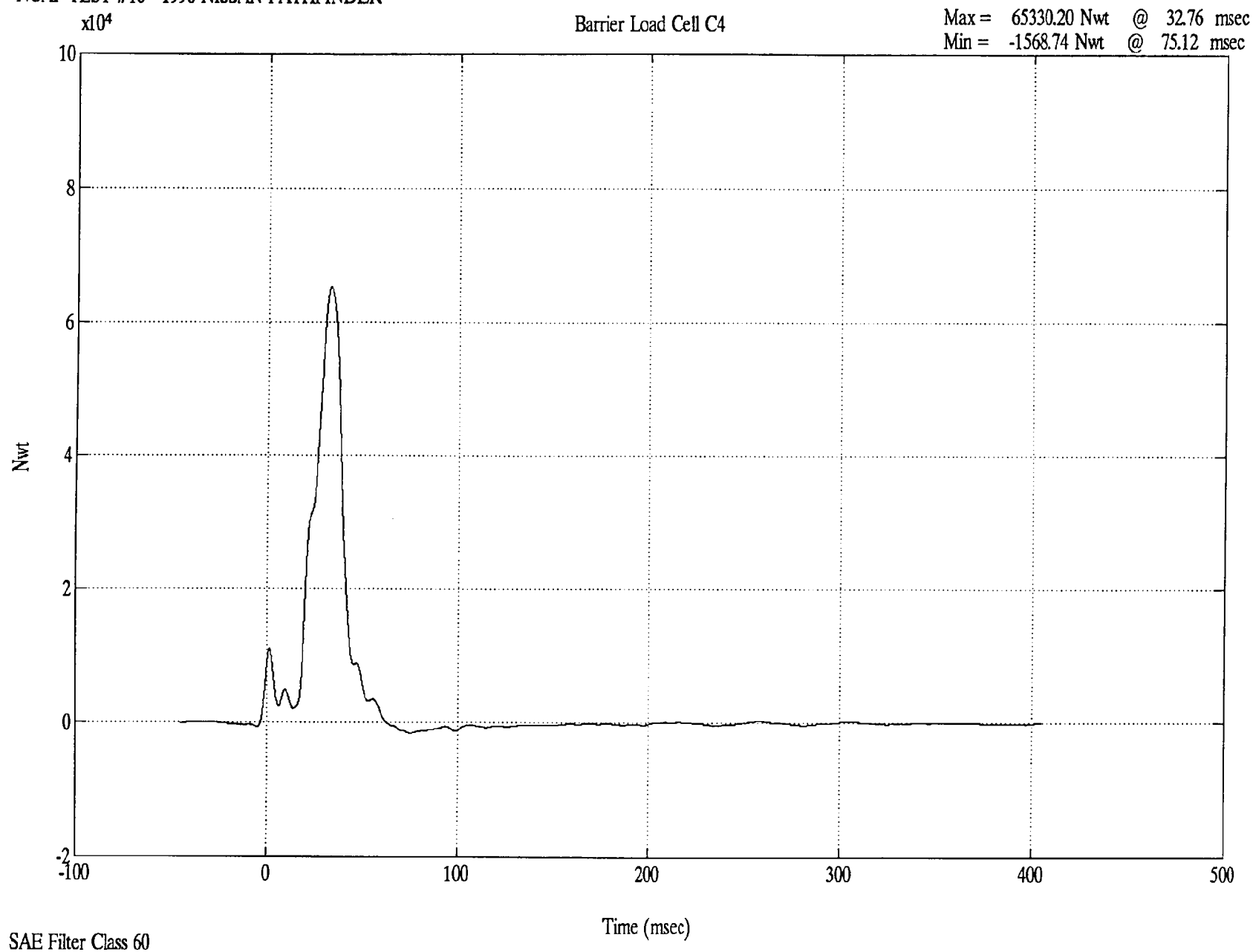


SAE Filter Class 60

B-149

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

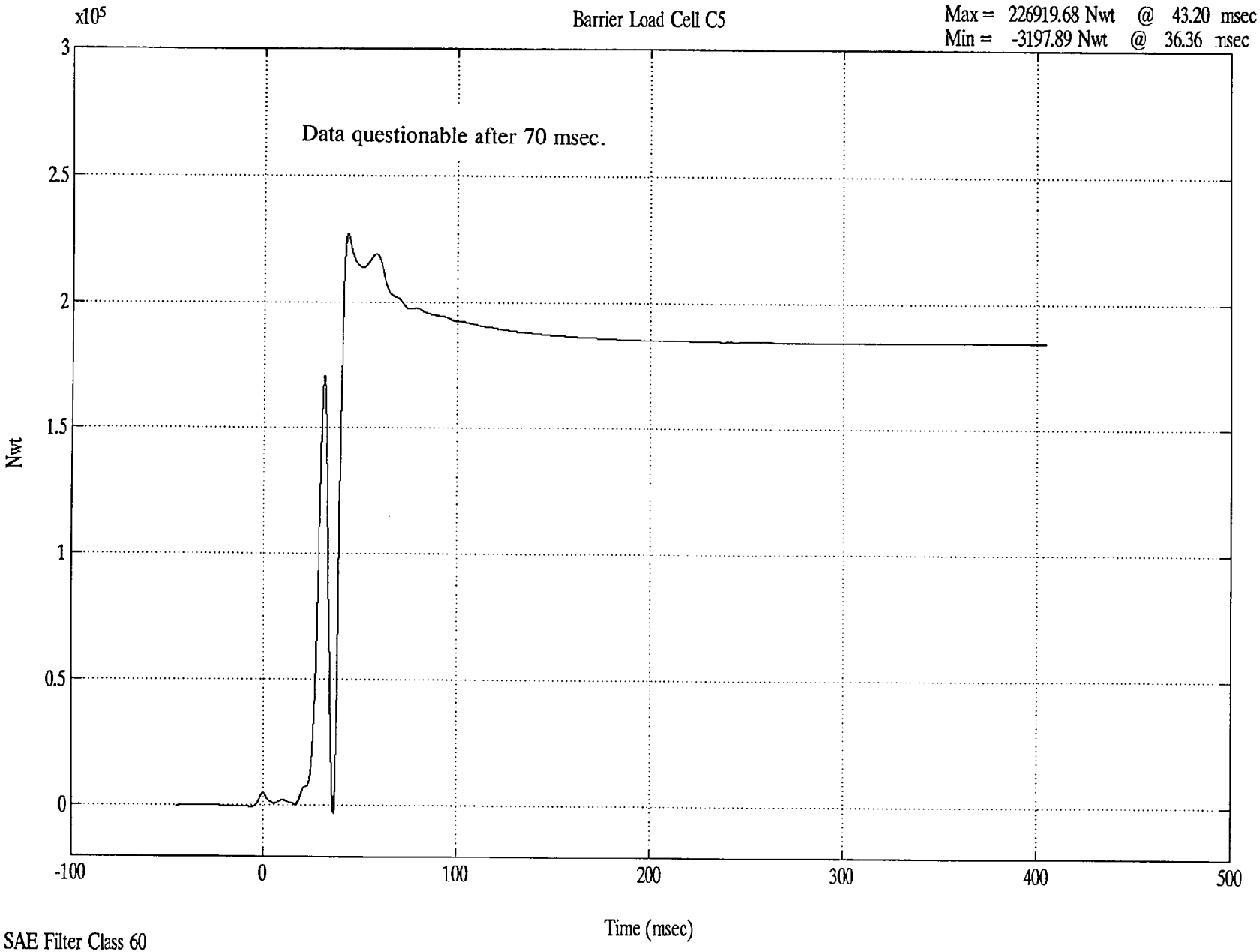


B-150

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

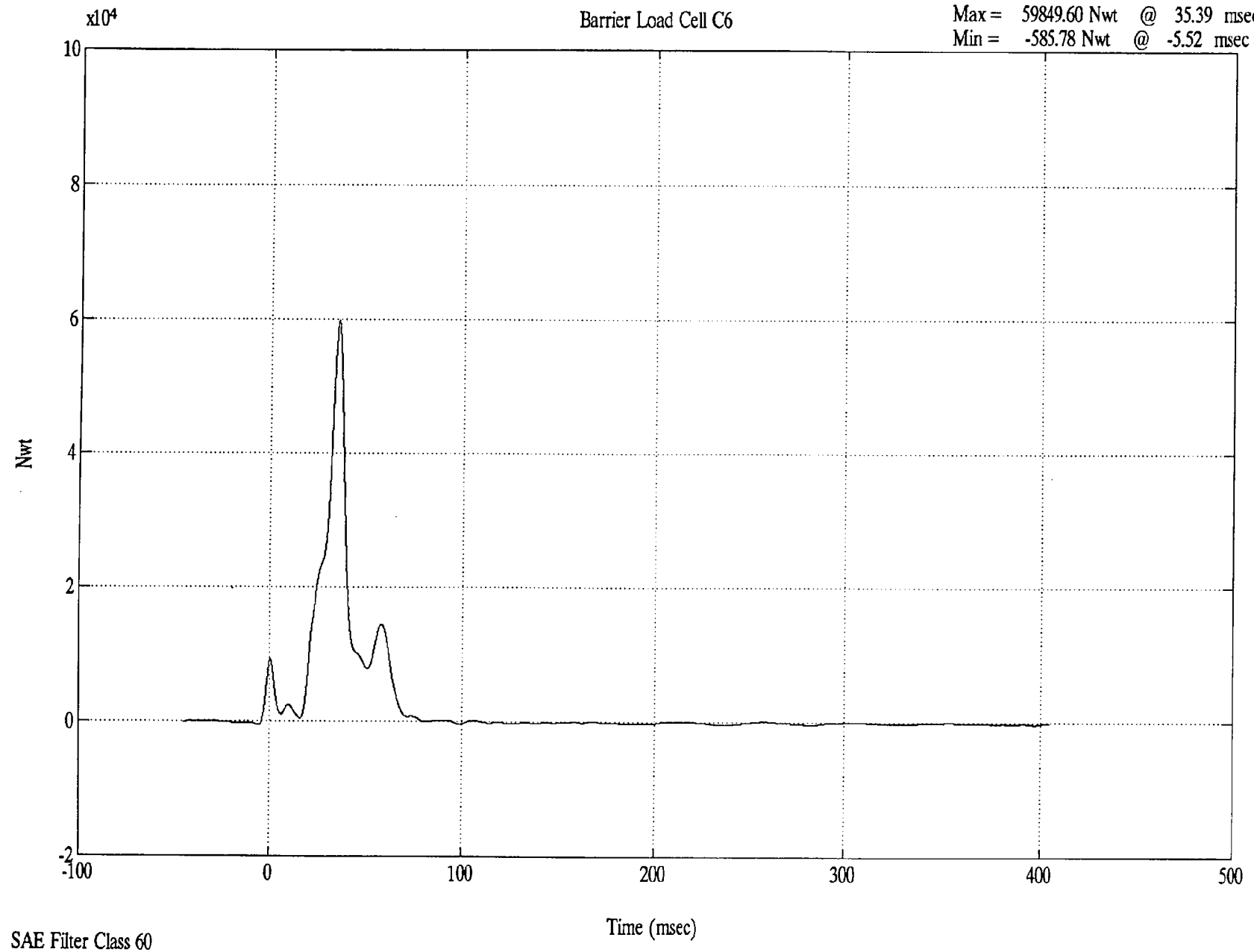


B-151

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

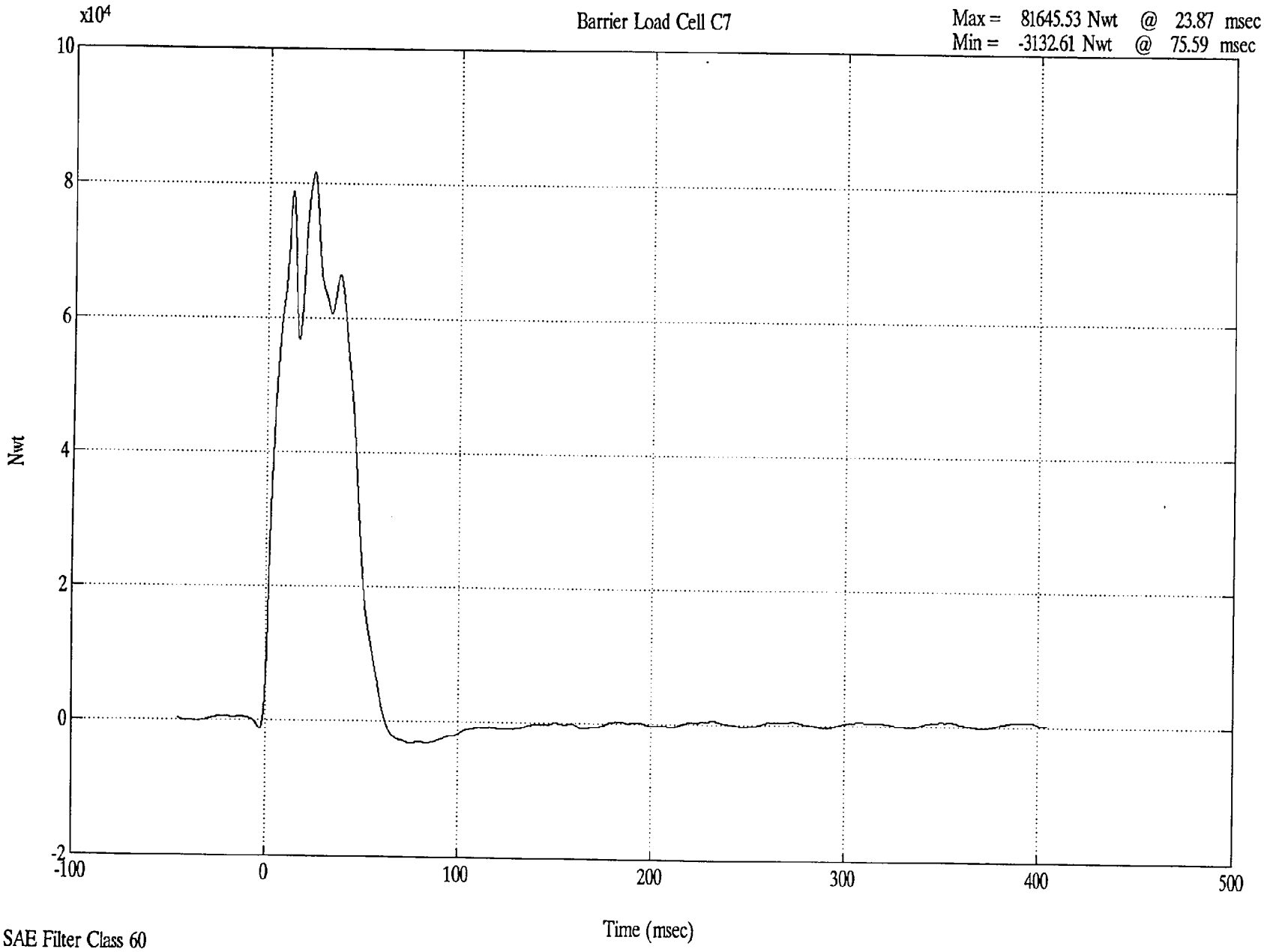


B-152

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

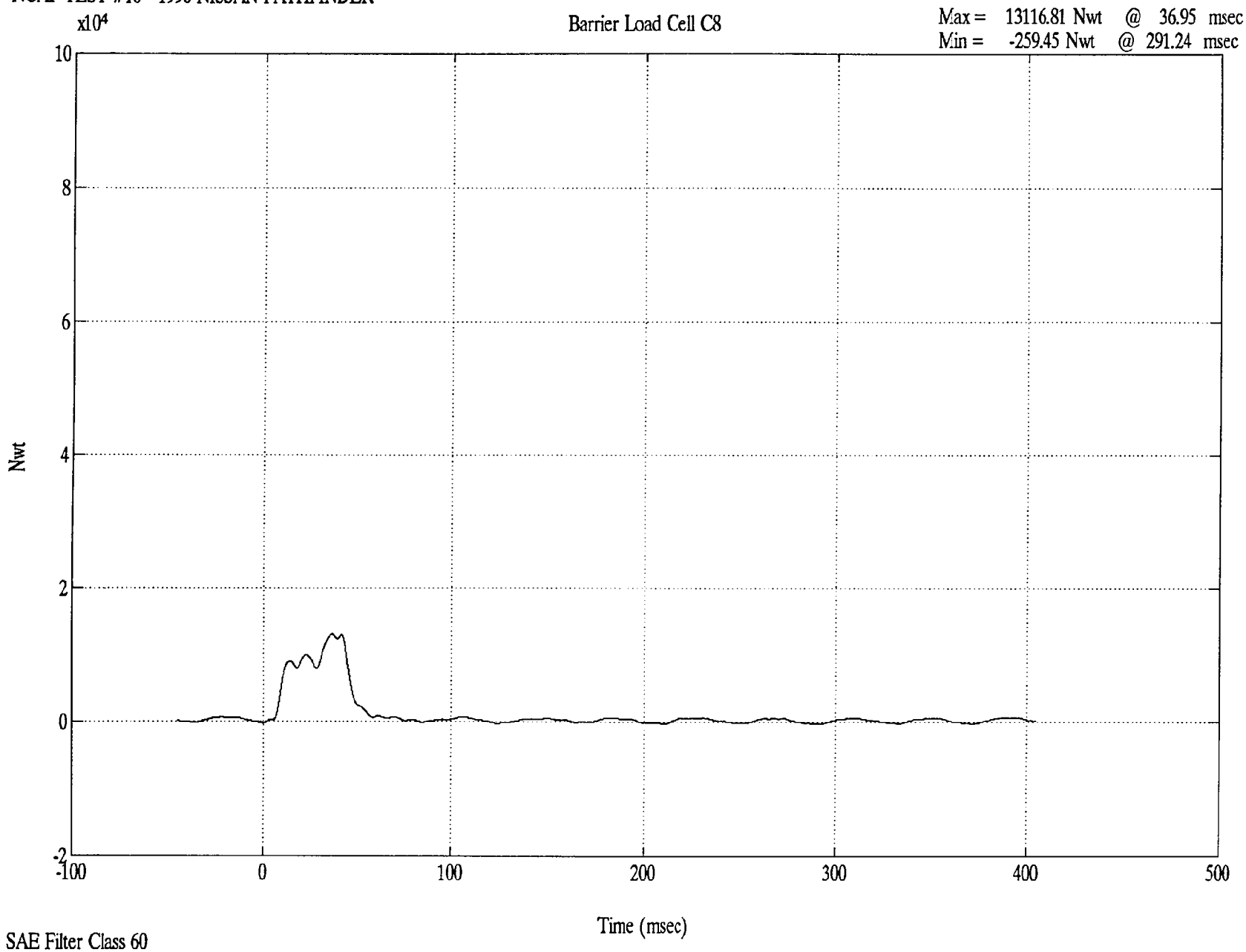


SAE Filter Class 60

B-153

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

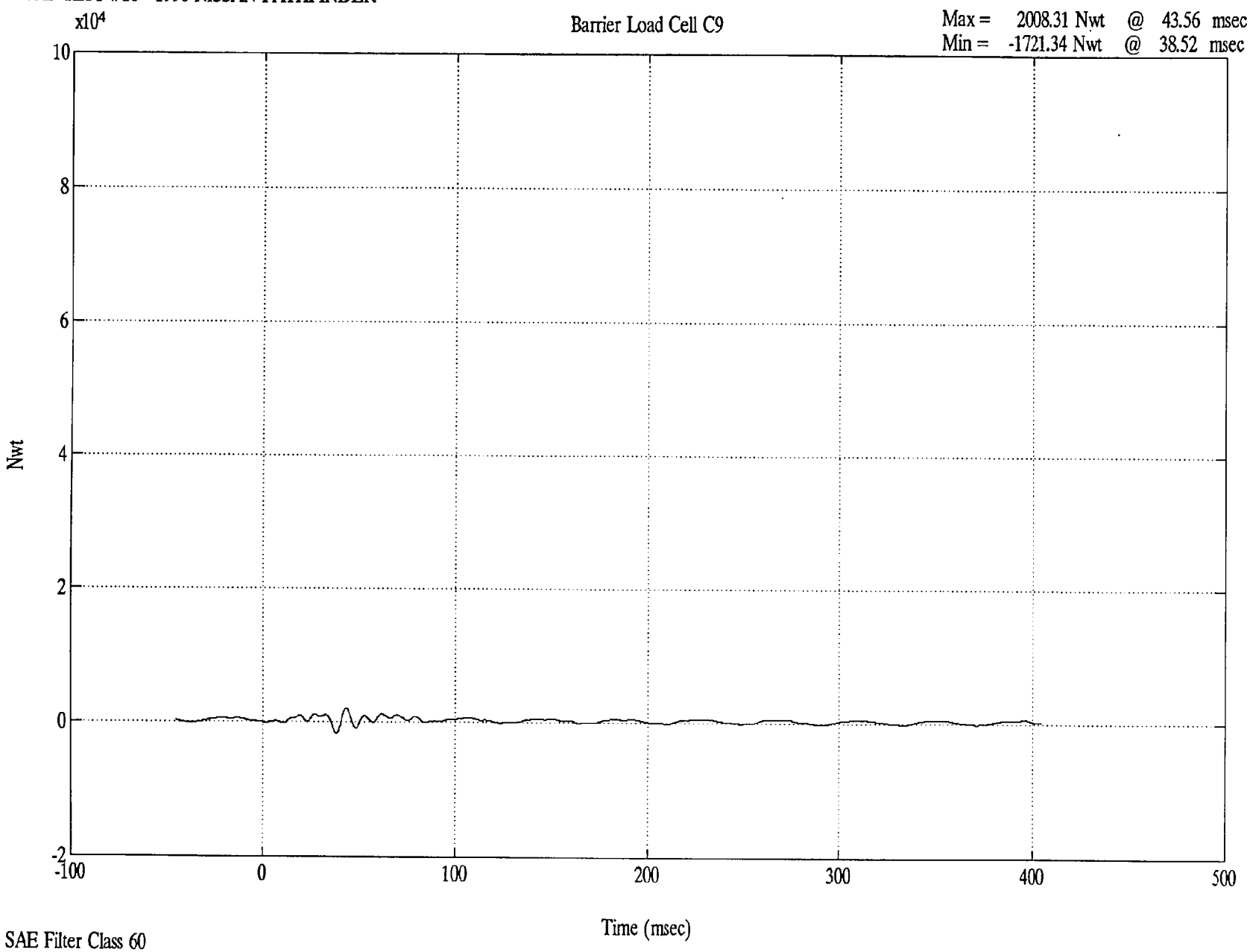


B-154

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

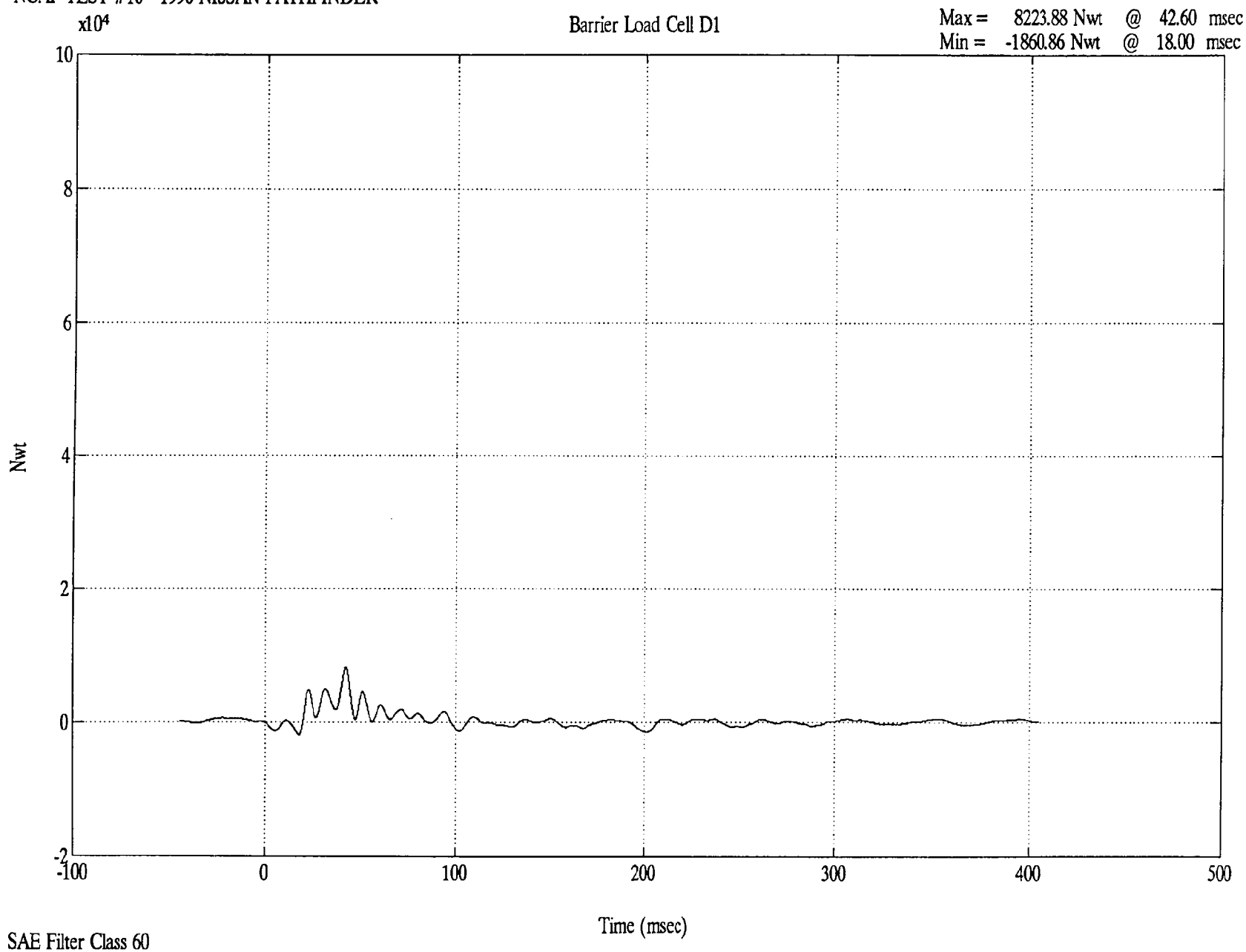


B-155

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

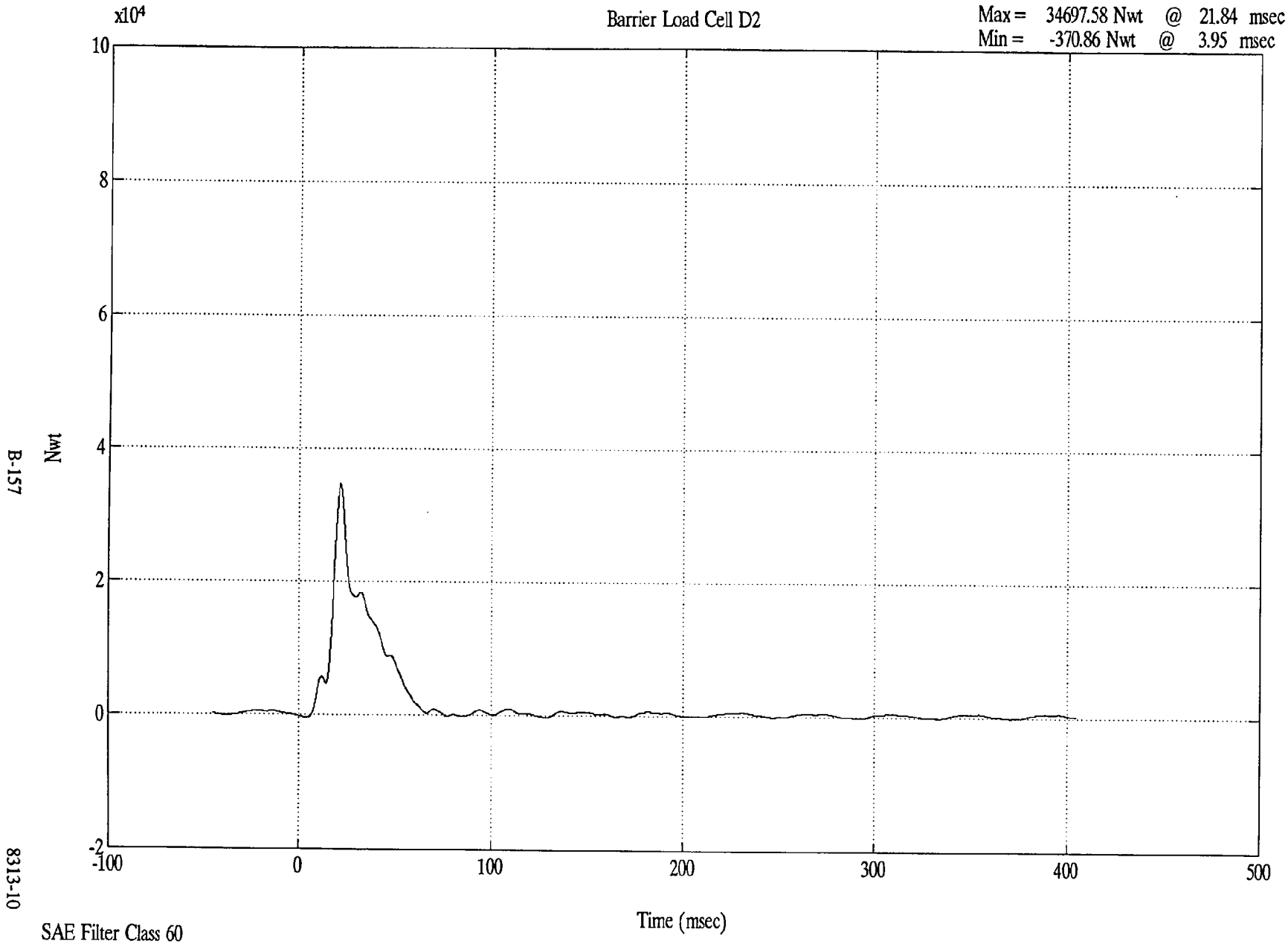


B-156

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

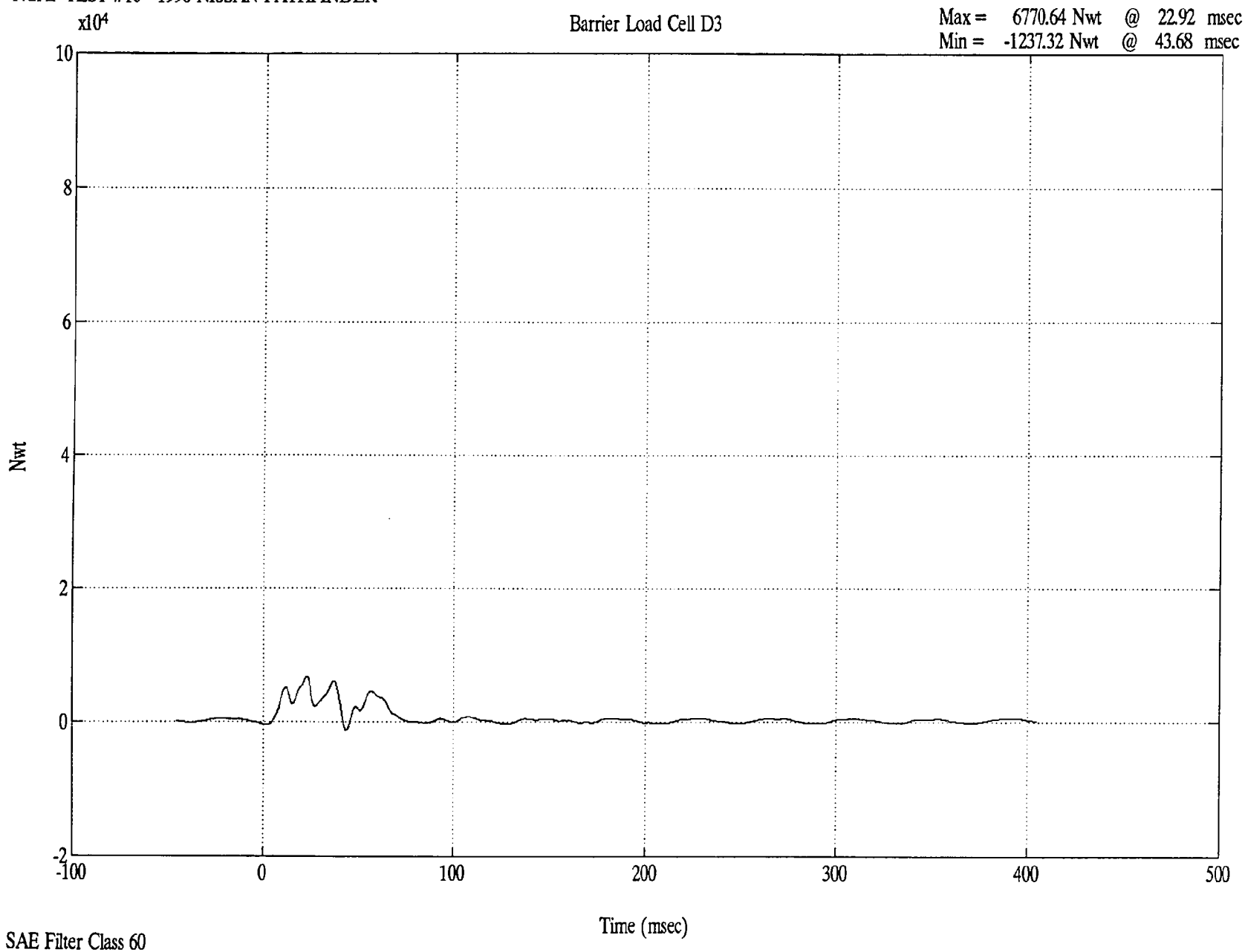


B-157

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

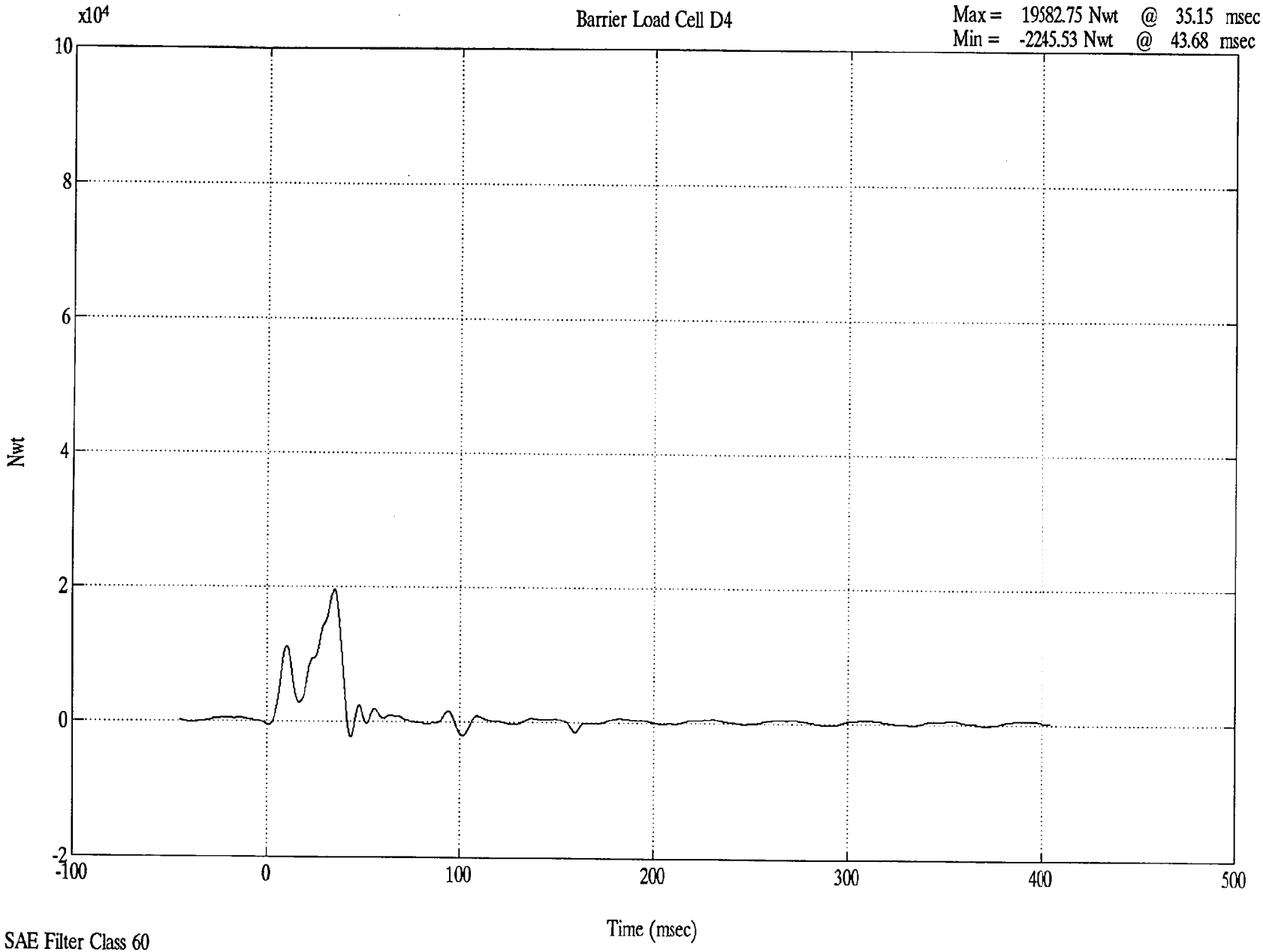


B-158

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

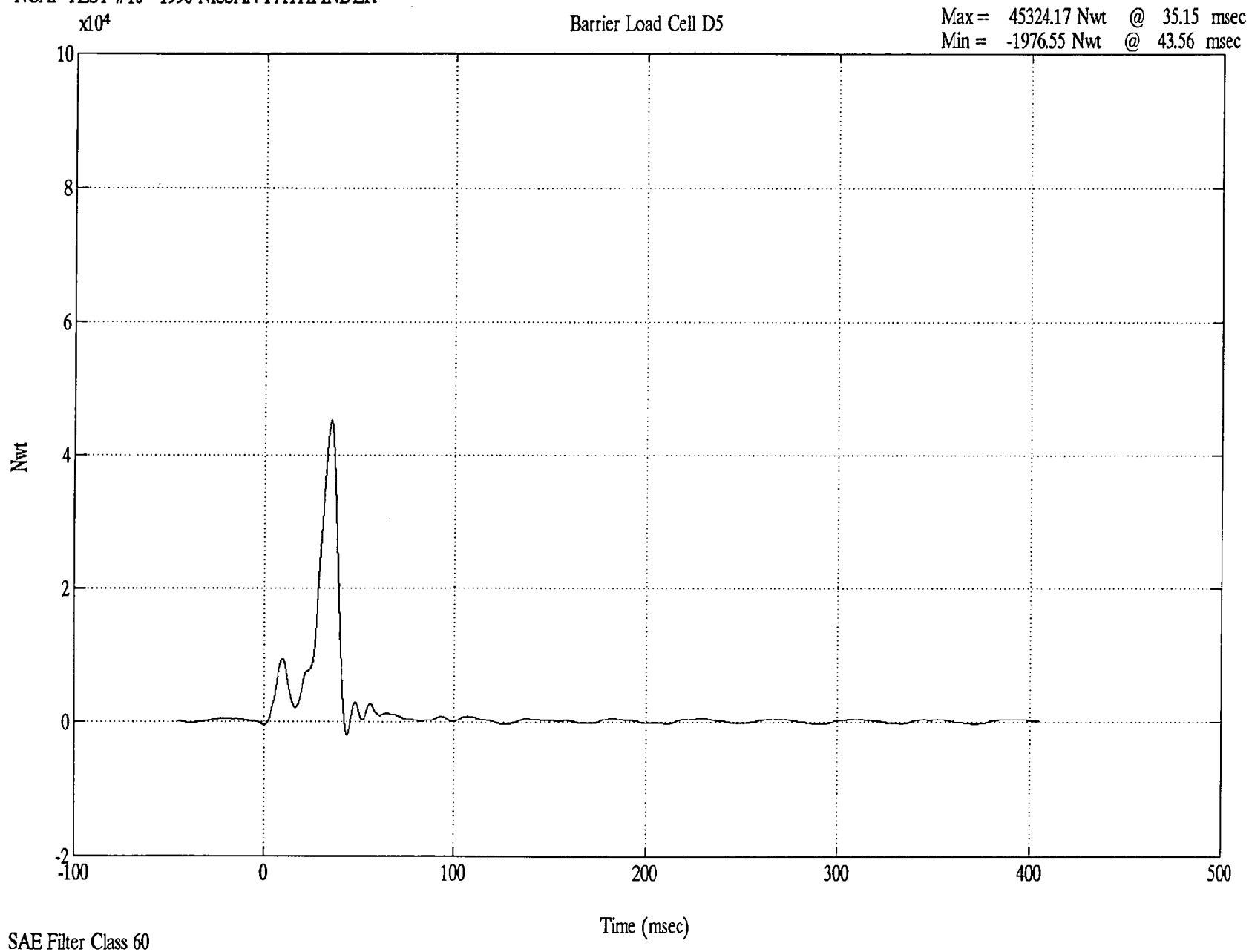


B-159

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

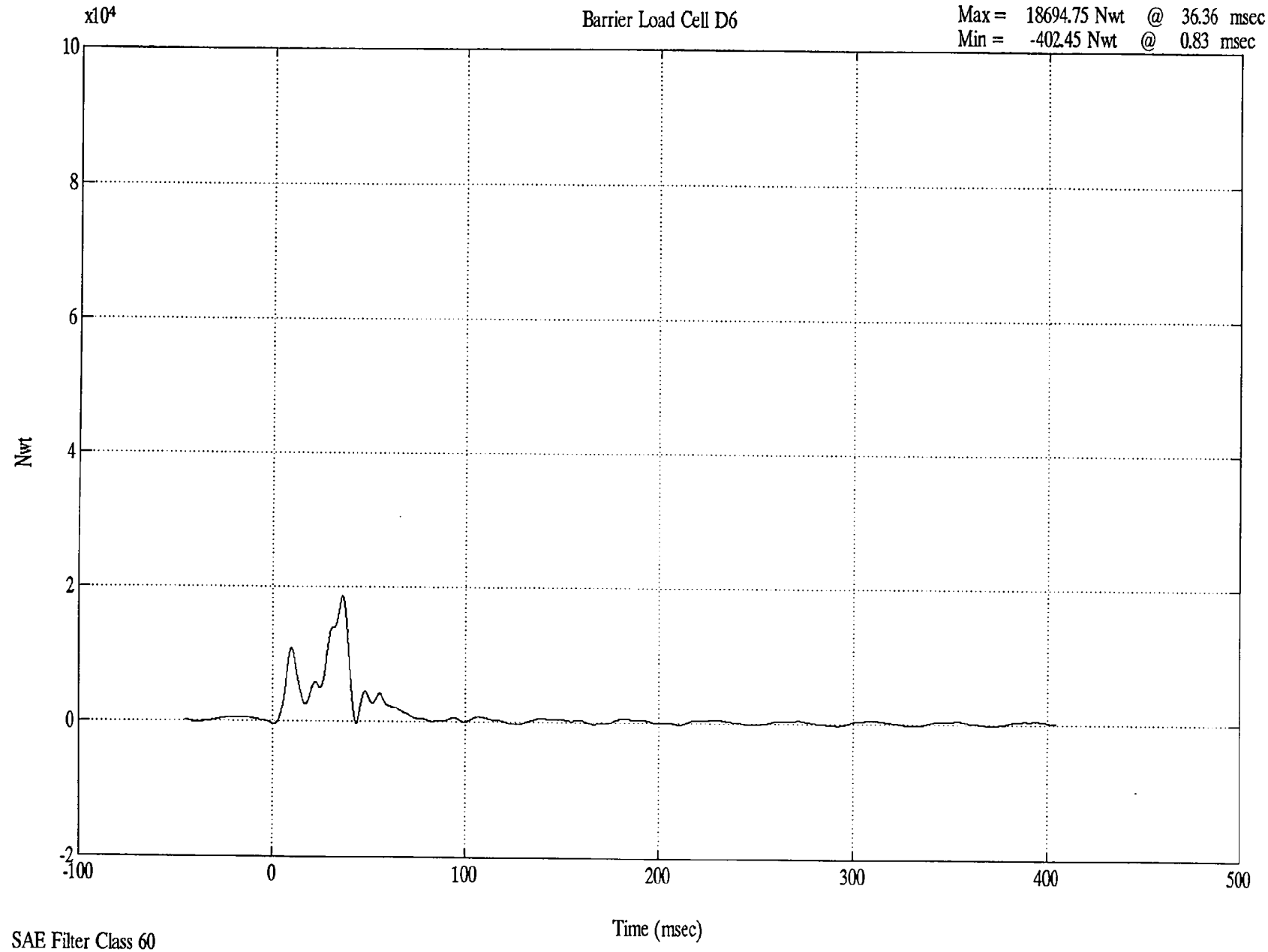


B-160

8313-10

SAE Filter Class 60

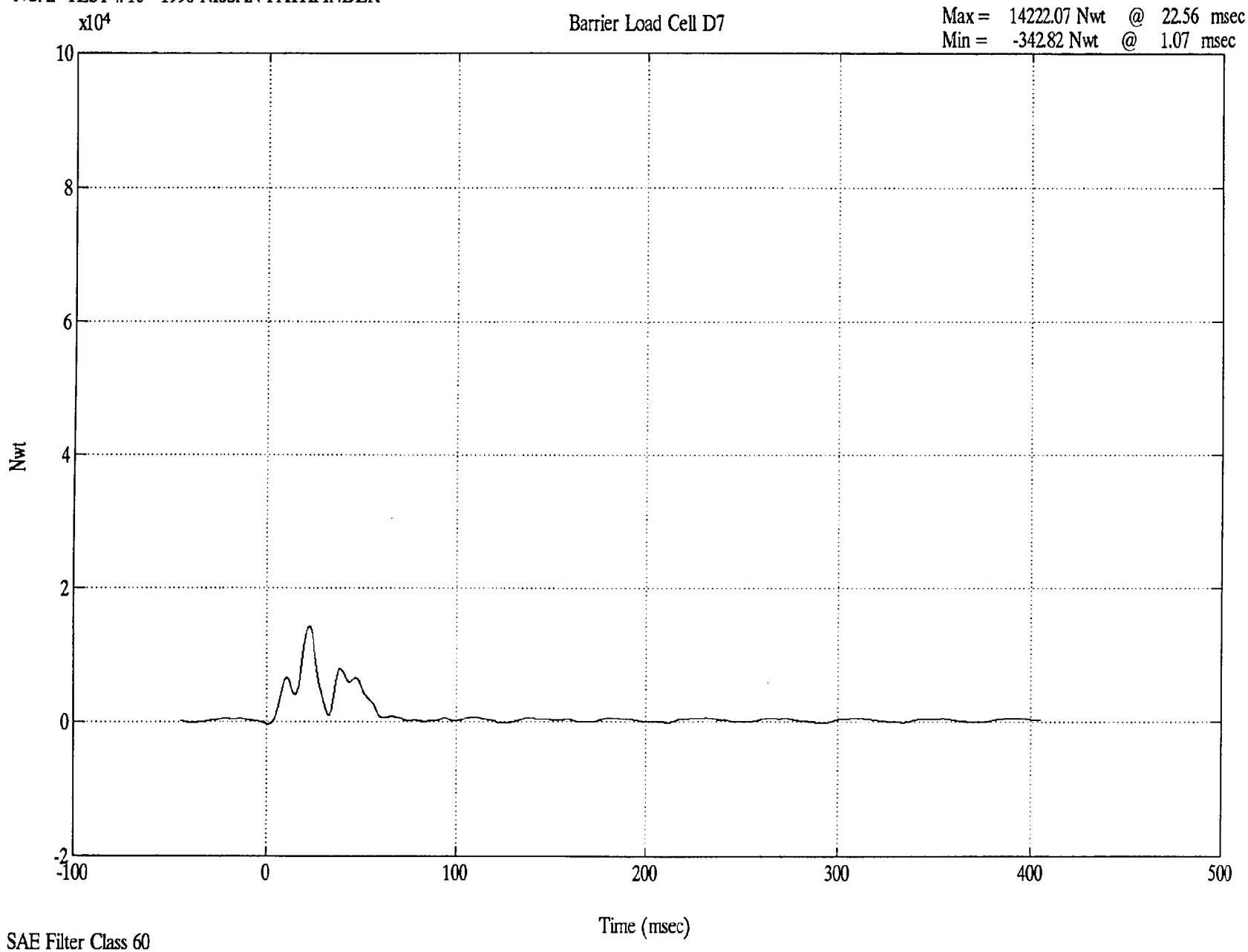
NCAP TEST #10 - 1996 NISSAN PATHFINDER



SAE Filter Class 60

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

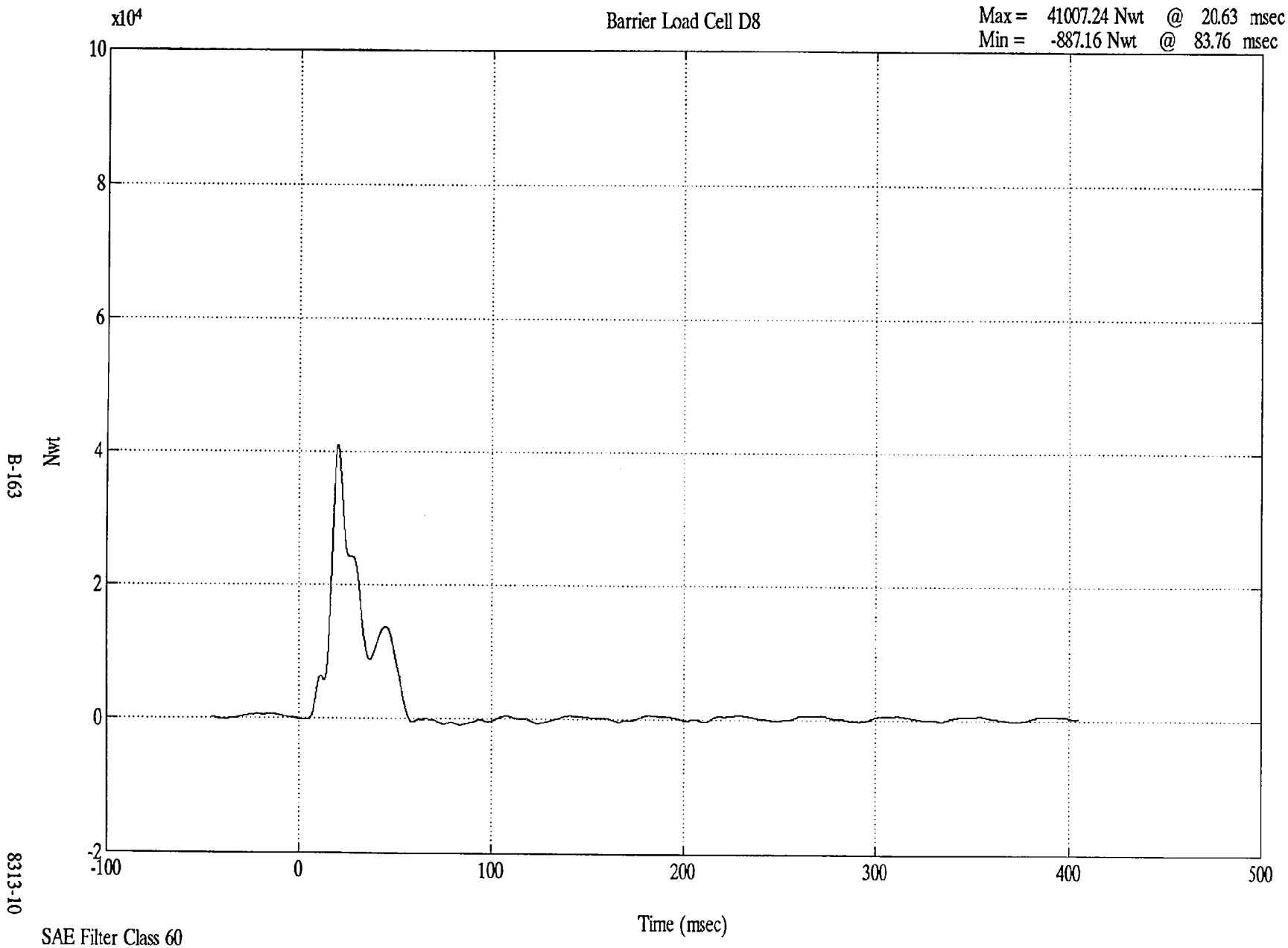


SAE Filter Class 60

B-162

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER

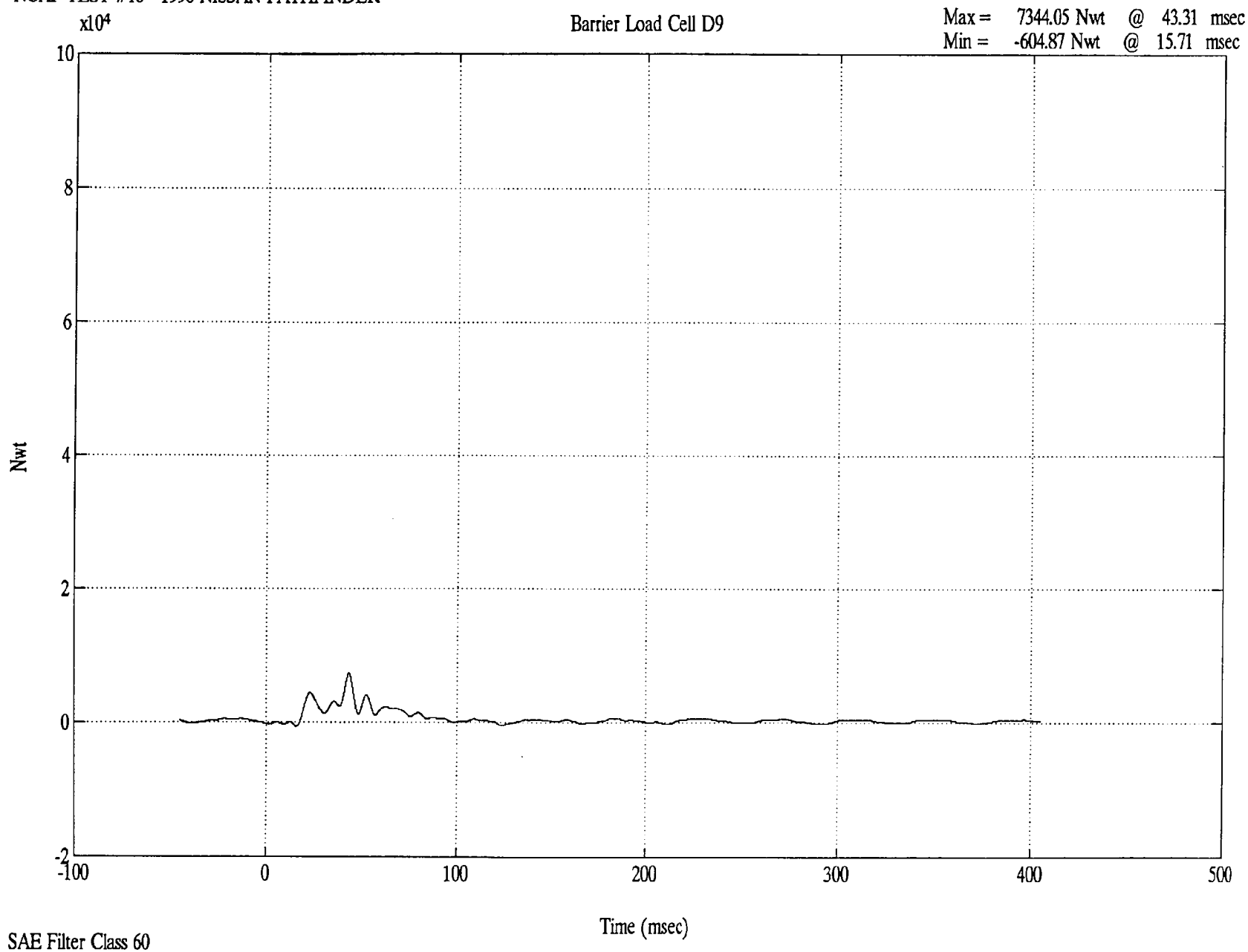


B-163

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER

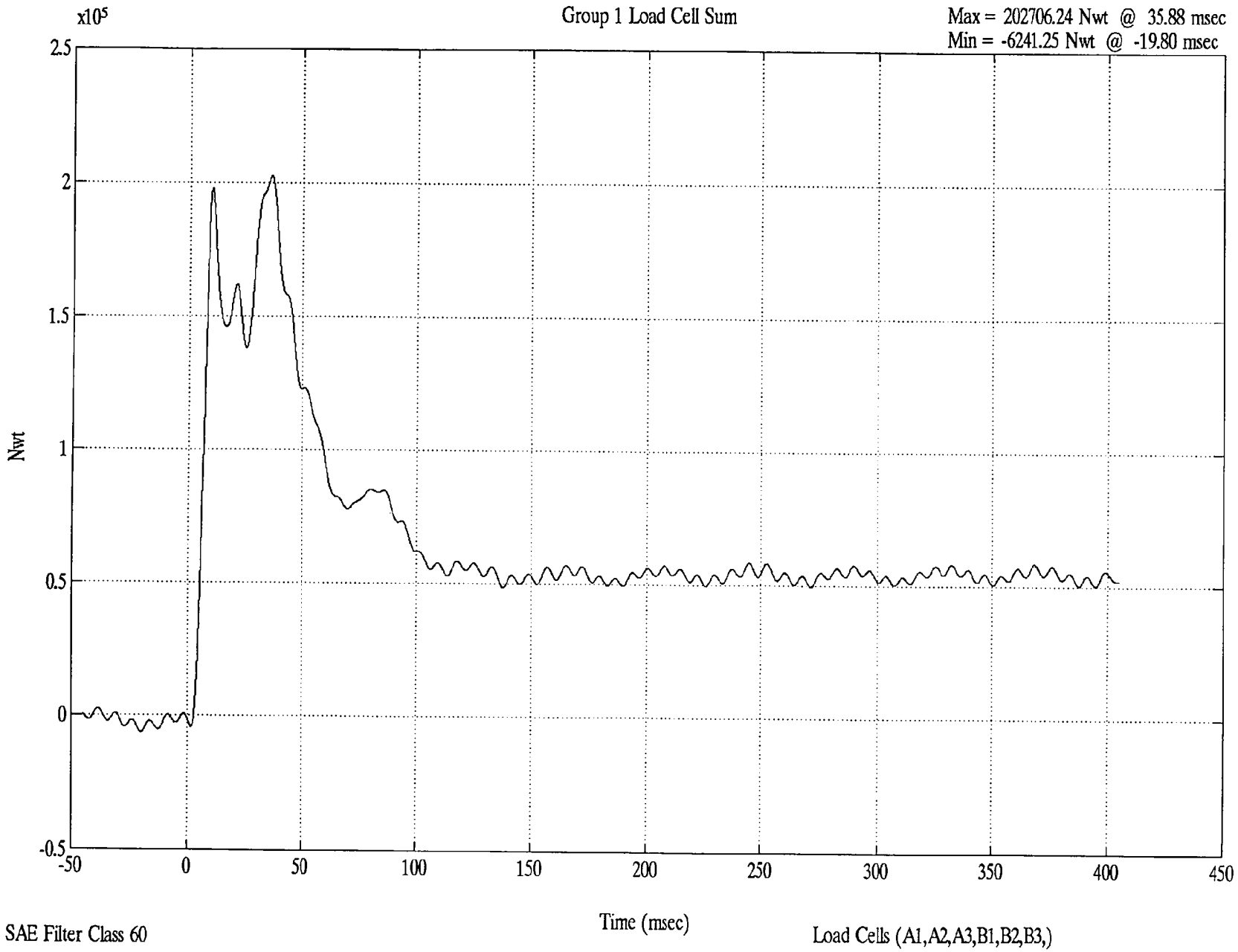


B-164

8313-10

SAE Filter Class 60

NCAP TEST #10 - 1996 NISSAN PATHFINDER



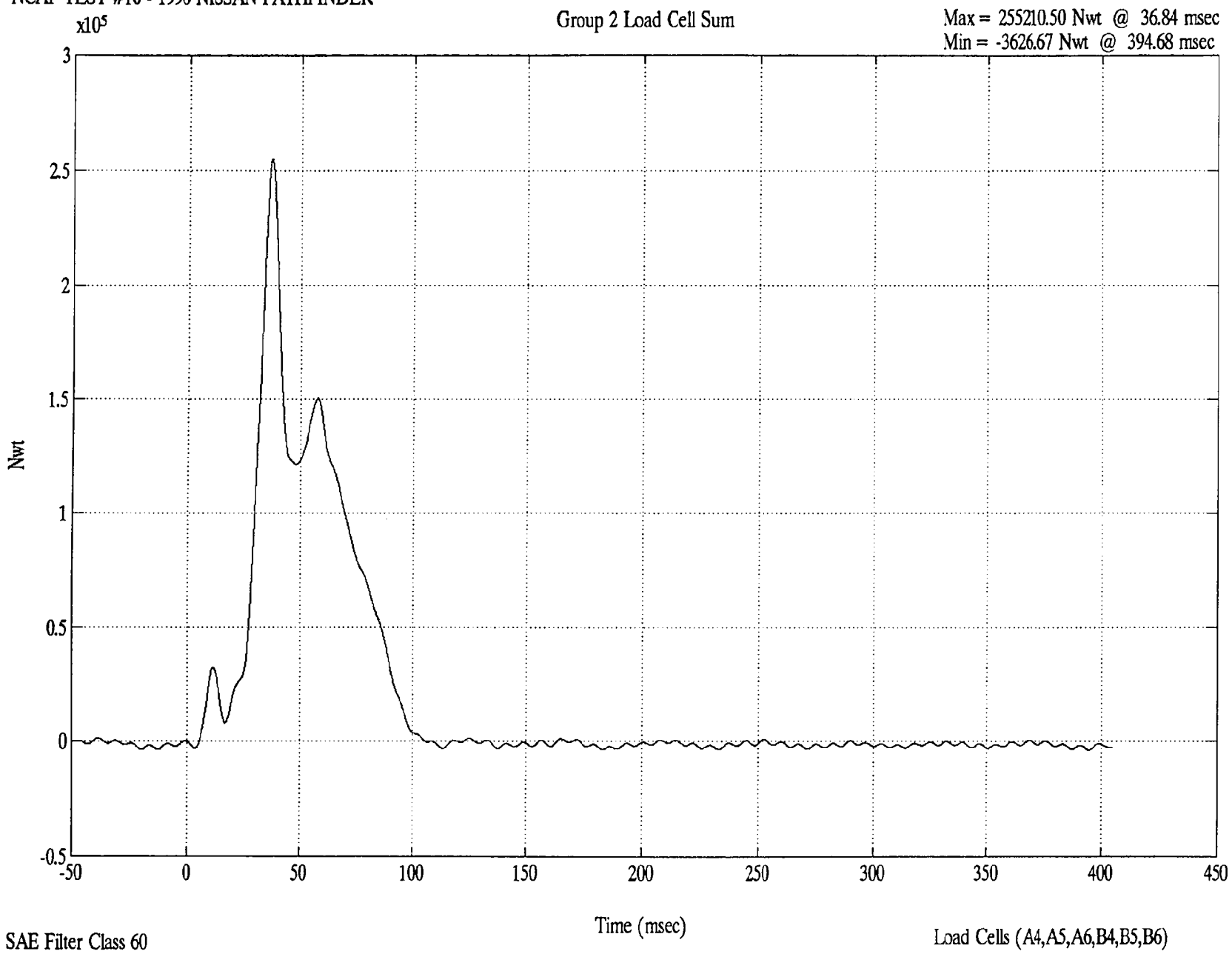
B-165

8313-10

SAE Filter Class 60

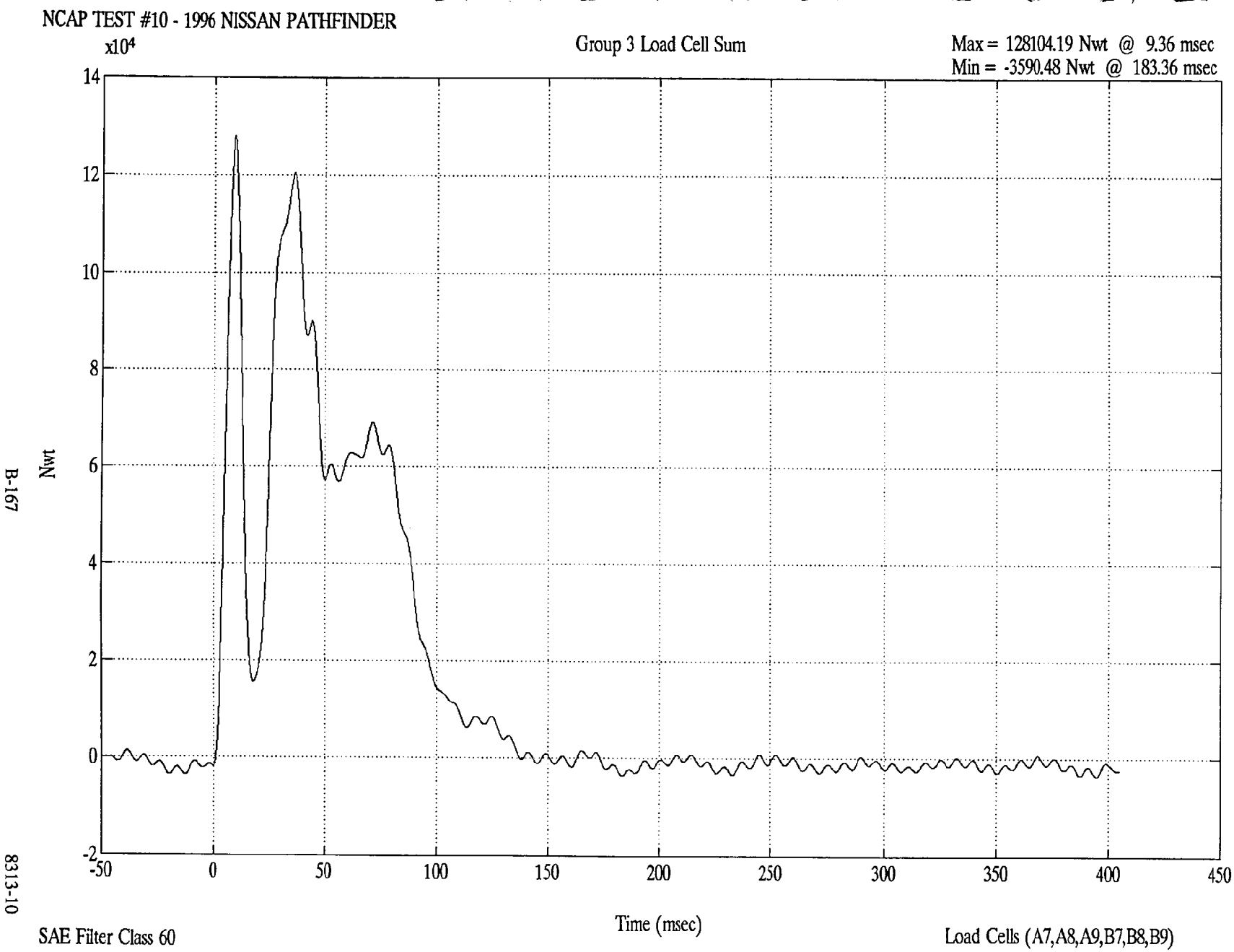
Load Cells (A1,A2,A3,B1,B2,B3,)

NCAP TEST #10 - 1996 NISSAN PATHFINDER

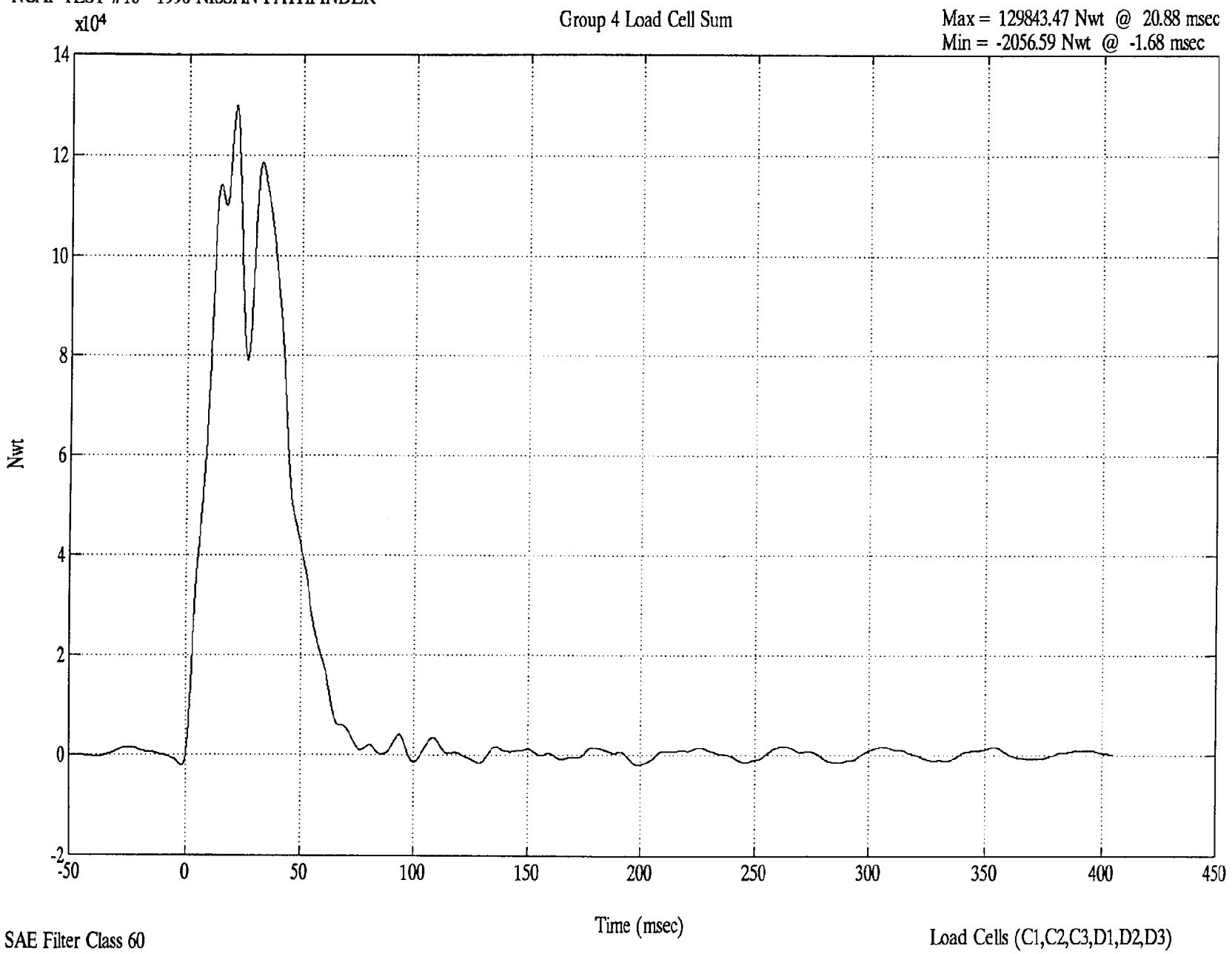


SAE Filter Class 60

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


NCAP TEST #10 - 1996 NISSAN PATHFINDER
x10^4
Group 3 Load Cell Sum
Max = 128104.19 Nwt @ 9.36 msec
Min = -3590.48 Nwt @ 183.36 msec
Nwt
14
12
10
8
6
4
2
0
-2
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
B-167
8313-10
SAE Filter Class 60
Load Cells (A7,A8,A9,B7,B8,B9)

NCAP TEST #10 - 1996 NISSAN PATHFINDER



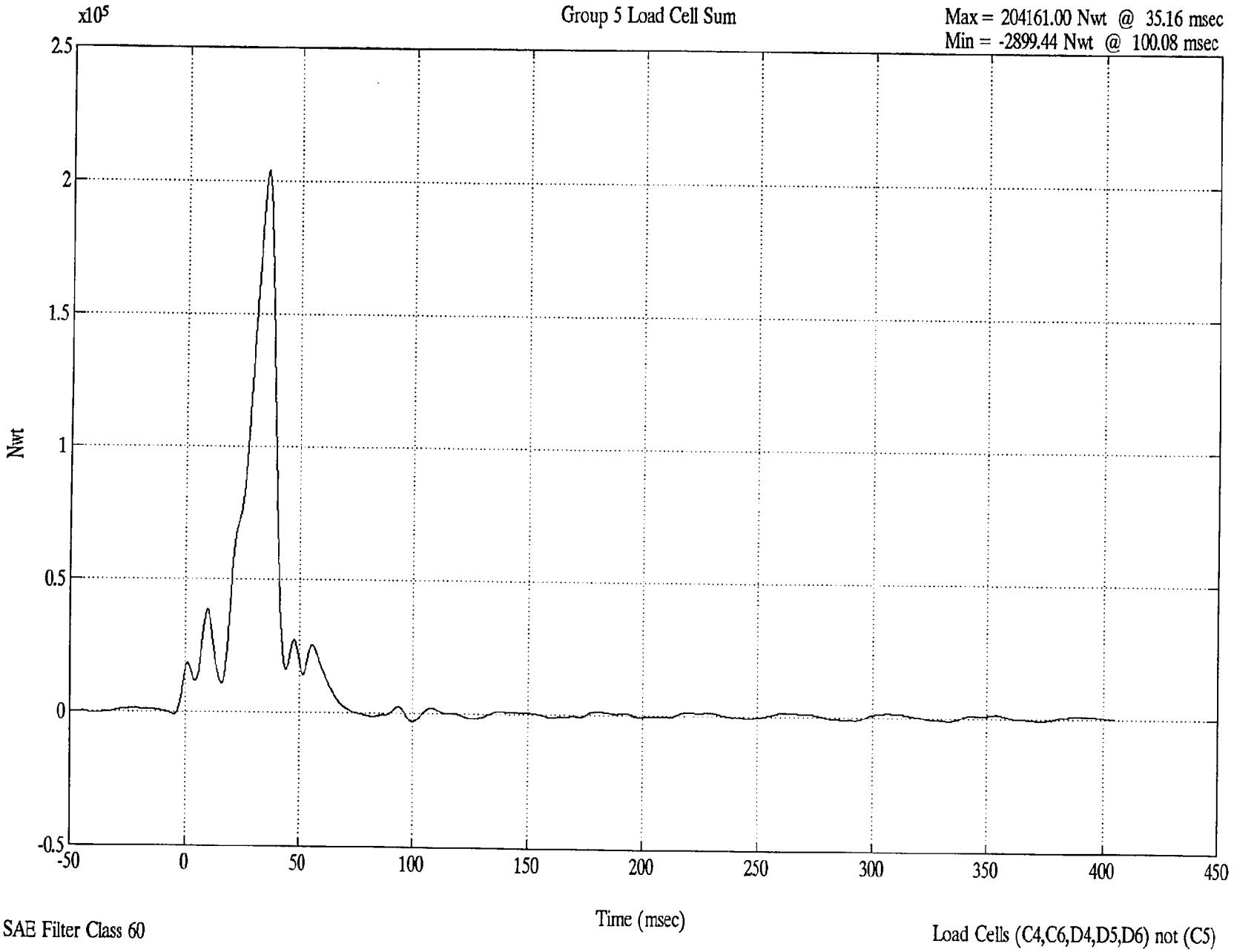
B-168

8313-10

SAE Filter Class 60

Load Cells (C1,C2,C3,D1,D2,D3)

NCAP TEST #10 - 1996 NISSAN PATHFINDER

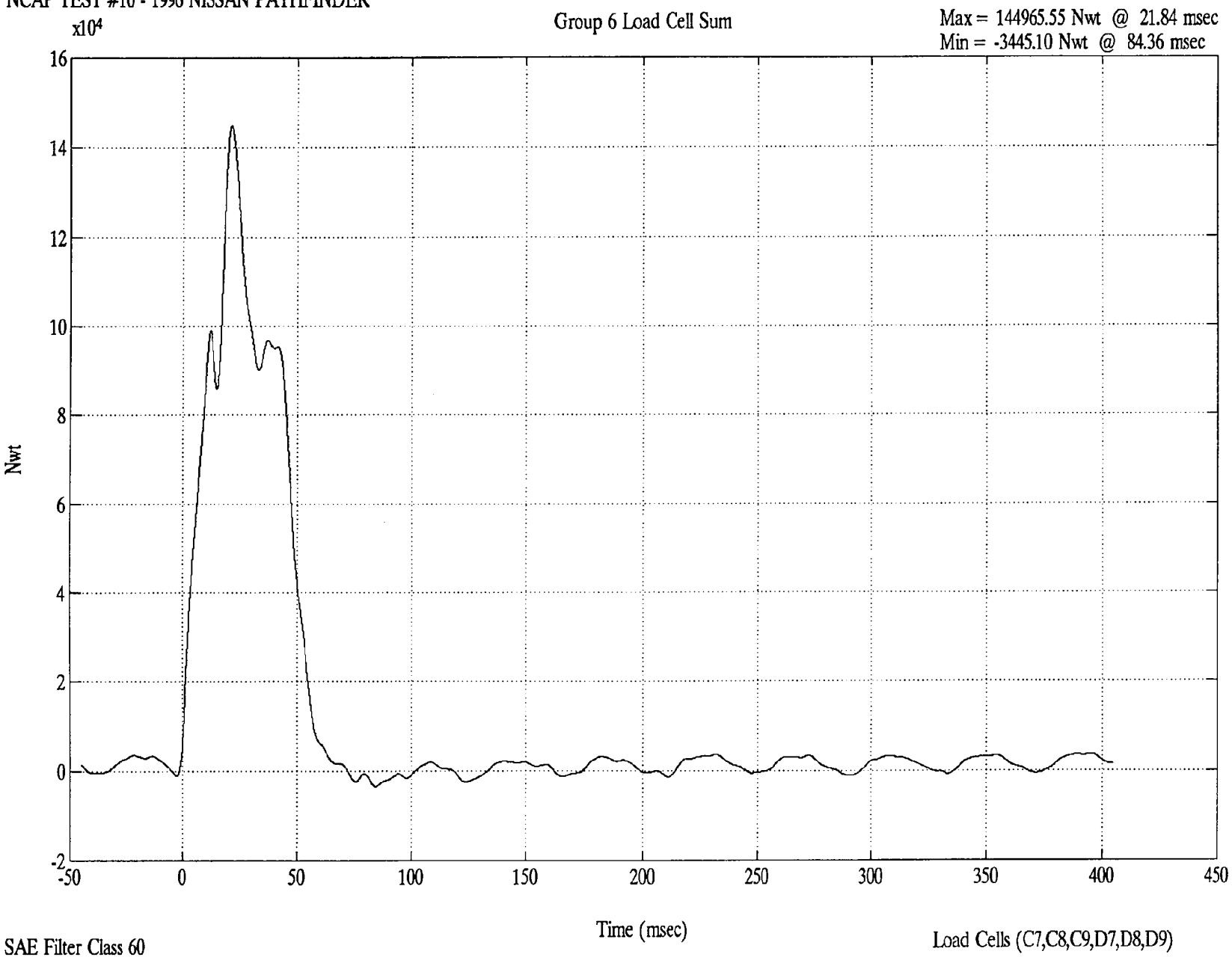


SAE Filter Class 60

Load Cells (C4,C6,D4,D5,D6) not (C5)

8313-10

NCAP TEST #10 - 1996 NISSAN PATHFINDER



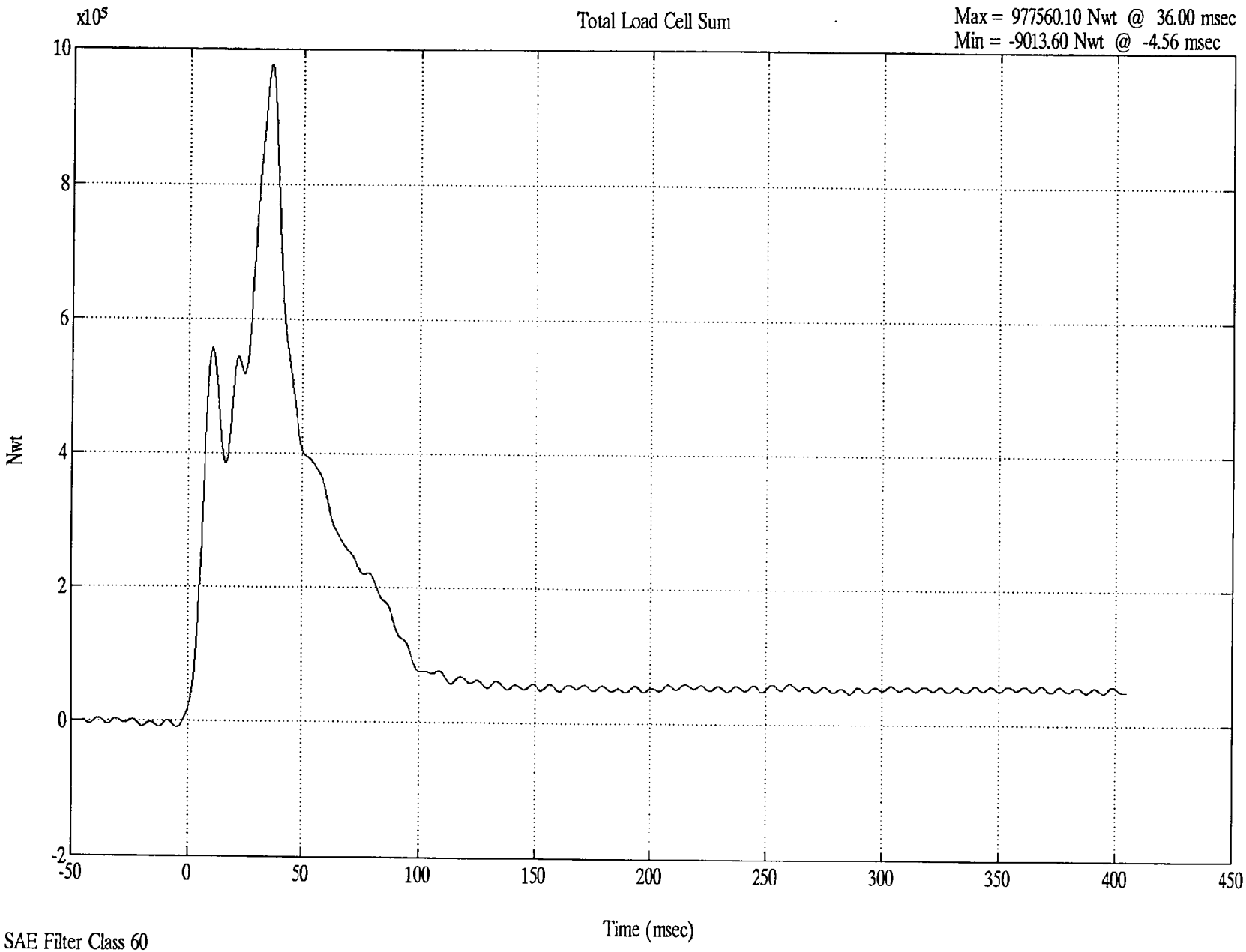
B-170

8313-10

SAE Filter Class 60

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

NCAP TEST #10 - 1996 NISSAN PATHFINDER



B-171

8313-10

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 SRL Corporation. A summary of the test results, and Part 572 specifications are included in this Appendix.

Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	150	8/19/96
#2/Right Front Passenger	064	8/19/96

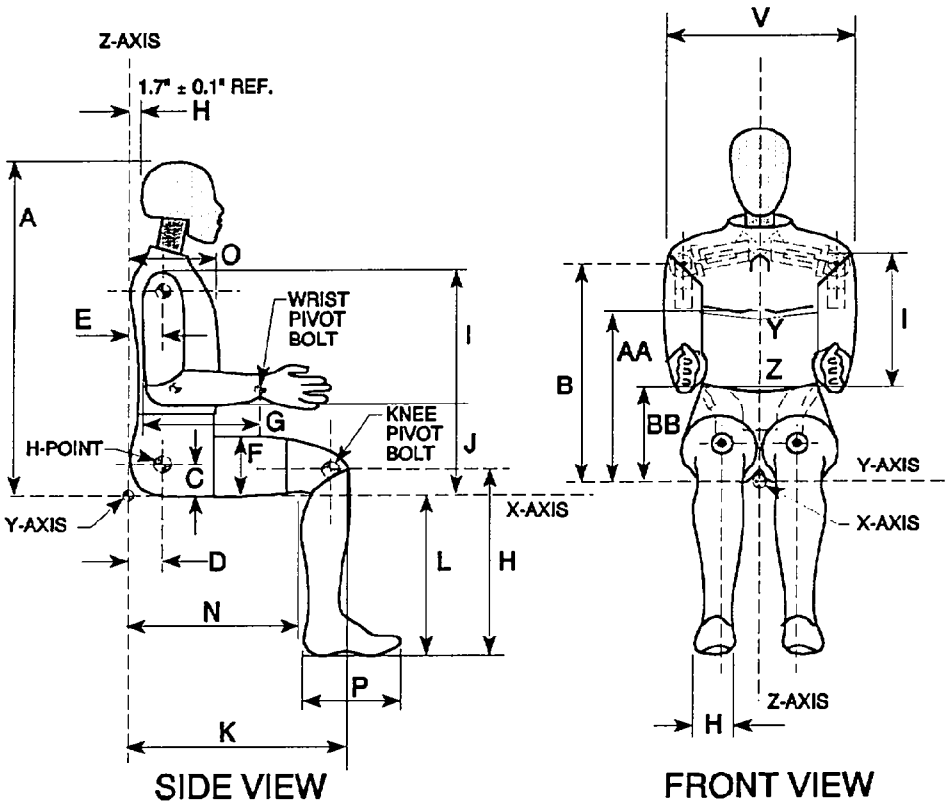
Electronic Test Equipment

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 14

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))

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number: 150
Calspan Sequential Test Number: 2
Date: 8/19/96

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21 Deg C
Relative Humidity			62 %
Location for Chest Circumference	AA	429 - 434 mm	432 mm
Location for Waist Circumference	BB	226 - 231 mm	229 mm
Chest Circumference (With Jacket)	Y	970 - 1001 mm	996 mm
Waist Circumference	Z	815 - 866 mm	864 mm
Chest Depth	O	213 - 229 mm	213 mm
H-Point Height	C	84 - 89 mm	86 mm
H-Point from Backline	D	135 - 140 mm	137 mm
Skull Cap to Backline	H	41 - 46 mm	43 mm
Total Sitting Height	A	879 - 889 mm	884 mm
Thigh Clearance	F	140 - 155 mm	145 mm
Buttock Knee Length	K	579 - 604 mm	594 mm
Buttock Popliteal Length	N	452 - 477 mm	472 mm
Popliteal Height	L	429 - 455 mm	452 mm
Knee Pivot Height	M	485 - 500 mm	498 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	91 mm
Shoulder Breadth	V	422 - 437 mm	429 mm
Shoulder Pivot Height	B	505 - 521 mm	513 mm
Elbow Rest Height	J	190 - 211 mm	206 mm
Shoulder - Elbow Length	I	330 - 345 mm	335 mm
Back of Elbow to Wrist Pivot	G	290 - 305 mm	292 mm

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION

Transportation Sciences Center

PART 572E
HEAD DROP TEST

Dummy Serial Number: 150
Calspan Sequential Test Number: 2
Date: 8/14/96
Workfile: 1501896.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	19 - 25 Deg. C	23.8 Deg. C
Relative Humidity	10% - 70%	55 %
Peak Resultant Acceleration	225 - 275 G's	271.1 G's
Peak Lateral Acceleration	15 G's Max	6.3 G's
Is Acceleration Curve Unimodal?	YES	YES

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION

Transportation Sciences Center

PART 572E
NECK FLEXION TEST

Dummy Serial Number: 150
Calspan Sequential Test Number: 2
Date: 8/15/96
Workfile: 1501896.nf1

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.5 - 22.2 Deg. C	21.1 Deg. F
Relative Humidity		10% - 70%	60 %
Impact Velocity		24.8 - 25.7 Kph	25.0 Kph
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.03 G's
	20 ms	17.60 - 22.60 G's	19.91 G's
	30 ms	12.50 - 18.50 G's	17.54 G's
Max Pendulum G's Above 30 ms		29 G's Max	17.54 G's
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	35.88 ms
D Plane Rotation	Max	64 - 78 Deg	67.92 Deg.
	Time	57 - 64 ms	62.38 ms
Moment About Occipital Condyle	Max	88 - 108 N-M	95.13 N-M
	Time	47 - 58 ms	48.25 ms
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	117.38 ms
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	103.25 ms

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION

Transportation Sciences Center

PART 572E
NECK EXTENSION TEST

Dummy Serial Number: 150
Calspan Sequential Test Number: 2
Date: 8/15/96
Workfile: 1501896.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.5 - 22.2 Deg. C	21.1 Deg. C
Relative Humidity		10% - 70%	60 %
Impact Velocity		21.4 - 22.3 Kph	21.80 Kph
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.20 G's
	20 ms	14.00 - 19.00 G's	15.71 G's
	30 ms	11.00 - 16.00 G's	12.88 G's
Max Pendulum G's Above 30 ms		22 G's Max	12.88 G's
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	41.50 ms
D Plane Rotation	Max	81 - 106 Deg	96.37 Deg.
	Time	72 - 82 ms	78.13 ms
Moment About Occipital Condyle	Max	-80.0/-52.9 N-M	-70.7 N-M
	Time	65 - 79 ms	71.63 ms
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	152.63 ms
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	141.63 ms

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION
Transportation Sciences Center

PART 572E
THORAX IMPACT TEST

Dummy Serial Number: 150
Calspan Sequential Test Number: 2
Date: 8/19/96
Workfile: 1501896.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.5 - 22.2 Deg. C	21.1 Deg. C
Relative Humidity	10% - 70%	62 %
Pendulum Velocity	23.7 - 24.6 Kph	24.13 Kph
Maximum Deflection	64 - 73 mm	70.6 mm
Maximum Resistive Force	5160 - 5894 Newton's	5415 Newton's
Internal Hysteresis	69 - 85 %	70.7 %

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION
Transportation Sciences Center

PART 572E
KNEE IMPACT TEST

Dummy Serial Number: 150
Calspan Sequential Test Number: 2
Date: 8/24/96
Workfile:

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	19 - 25 Deg. C	23.9 Deg. C
Relative Humidity	10% - 70%	58 %
Probe Velocity	7.5 - 7.7 Kph	7.7 Kph
Peak Knee Impact Force	4715 - 5782 N	5059 N
RIGHT KNEE		
Temperature	19 - 25 Deg. C	23.3 Deg. C
Relative Humidity	10% - 70%	59 %
Probe Velocity	7.5 - 7.7 Kph	7.7 Kph
Peak Knee Impact Force	4715 - 5782 N	4770 N

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION

Transportation Sciences Center

PART 572E

EXTERNAL DIMENSIONS

Dummy Serial Number: 064
Calspan Sequential Test Number: 2
Date: 8/19/96

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21.1 Deg C
Relative Humidity			62 %
Location for Chest Circumference	AA	429 - 434 mm	432 mm
Location for Waist Circumference	BB	226 - 231 mm	229 mm
Chest Circumference (With Jacket)	Y	970 - 1001 mm	988 mm
Waist Circumference	Z	815 - 866 mm	846 mm
Chest Depth	O	213 - 229 mm	218 mm
H-Point Height	C	84 - 89 mm	86 mm
H-Point from Backline	D	135 - 140 mm	137 mm
Skull Cap to Backline	H	41 - 46 mm	43 mm
Total Sitting Height	A	879 - 889 mm	884 mm
Thigh Clearance	F	140 - 155 mm	152 mm
Buttock Knee Length	K	579 - 604 mm	599 mm
Buttock Popliteal Length	N	452 - 477 mm	467 mm
Popliteal Height	L	429 - 455 mm	439 mm
Knee Pivot Height	M	485 - 500 mm	493 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	91 mm
Shoulder Breadth	V	422 - 437 mm	427 mm
Shoulder Pivot Height	B	505 - 521 mm	518 mm
Elbow Rest Height	J	190 - 211 mm	203 mm
Shoulder - Elbow Length	I	330 - 345 mm	340 mm
Back of Elbow to Wrist Pivot	G	290 - 305 mm	295 mm

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION
Transportation Sciences Center

PART 572E
HEAD DROP TEST

Dummy Serial Number: 064
Calspan Sequential Test Number: 2
Date: 8/14/96
Workfile: 0641896.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	19 - 25 Deg. C	23.3 Deg. C
Relative Humidity	10% - 70%	59 %
Peak Resultant Acceleration	225 - 275 G's	262.0 G's
Peak Lateral Acceleration	15 G's Max	12.1 G's
Is Acceleration Curve Unimodal?	YES	YES

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION

Transportation Sciences Center

PART 572E
NECK FLEXION TEST

Dummy Serial Number: 064
Calspan Sequential Test Number: 2
Date: 8/15/96
Workfile: 0641896.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.5 - 22.2 Deg. C	21.1 Deg. C
Relative Humidity		10% - 70%	60 %
Impact Velocity		24.8 - 25.7 Kph	25.0 Kph
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.70 G's
	20 ms	17.60 - 22.60 G's	18.89 G's
	30 ms	12.50 - 18.50 G's	15.03 G's
Max Pendulum G's Above 30 ms		29 G's Max	15.03 G's
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.50 ms
D Plane Rotation	Max	64 - 78 Deg.	66.95 Deg.
	Time	57 - 64 ms	63.50 ms
Moment About Occipital Condyle	Max	88 - 108 N-M	89.38 N-M
	Time	47 - 58 ms	52.00 ms
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	118.38 ms
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	105.00 ms

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION
Transportation Sciences Center

PART 572E
NECK EXTENSION TEST

Dummy Serial Number: 064
Calspan Sequential Test Number: 2
Date: 8/15/96
Workfile: 0641896.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.5 - 22.2 Deg. C	21.1 Deg. C
Relative Humidity		10% - 70%	60 %
Impact Velocity		21.4 - 22.3 Kph	21.6 Kph
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	17.23 G's
	20 ms	14.00 - 19.00 G's	14.97 G's
	30 ms	11.00 - 16.00 G's	13.55 G's
Max Pendulum G's Above 30 ms		22 G's Max	13.55 G's
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	43.63 ms
D Plane Rotation	Max	81 - 106 Deg.	95.02 Deg.
	Time	72 - 82 ms	77.63 ms
Moment About Occipital Condyle	Max	-80.0/-52.9 N-M	-65.19 N-M
	Time	65 - 79 ms	73.50 ms
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	155.38 ms
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	143.13 ms

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number: 064
Calspan Sequential Test Number: 2
Date: 8/18/96
Workfile: 0641896.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.5 - 22.2 Deg. C	21.1 Deg. C
Relative Humidity	10% - 70%	58 %
Pendulum Velocity	23.7 - 24.6 Kph	24.1 Kph
Maximum Deflection	64 - 73 mm	64.0 mm
Maximum Resistive Force	5160 - 5894 Newton's	5598 Newton's
Internal Hysteresis	69 - 85 %	73.6 %

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

CALSPAN SRL CORPORATION
Transportation Sciences Center

PART 572E
KNEE IMPACT TEST

Dummy Serial Number: 064
Calspan Sequential Test Number: 2
Date: 8/24/96
Workfile:

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	19 - 25 Deg. C	23.3 Deg. C
Relative Humidity	10% - 70%	59 %
Probe Velocity	7.5 - 7.7 Kph	7.7 Kph
Peak Knee Impact Force	4715 - 5782 N	4748 N
RIGHT KNEE		
Temperature	19 - 25 Deg. C	23.3 Deg. C
Relative Humidity	10% - 70%	58 %
Probe Velocity	7.5 - 7.7 Kph	7.7 Kph
Peak Knee Impact Force	4715 - 5782 N	5006 N

Remarks: DUMMY COMPONENT MEETS SPECIFICATIONS

Laboratory Technician: Brian Swiecicki

Appendix D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 150)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	ADL98	ENDEVCO	9/96	3/97
	Y	AE8K0	ENDEVCO	9/96	3/97
	Z	ADMB6	ENDEVCO	9/96	3/97
Chest	X	A26A	ENDEVCO	9/96	3/97
	Y	A27A	ENDEVCO	9/96	3/97
	Z	A51A	ENDEVCO	9/96	3/97
Right Femur Load Cell		952	GSE	7/96	1/97
Left Femur Load Cell		951	GSE	7/96	1/97
Neck Load Cell	X	269	DENTON	8/96	2/97
	Y	269	DENTON	8/96	2/97
	Z	269	DENTON	8/96	2/97
Neck Moment	X	269	DENTON	8/96	2/97
	Y	269	DENTON	8/96	2/97
	Z	269	DENTON	8/96	2/97
Chest Deflection Gauge		150	HUMANOID	9/96	3/97
Hybrid III Use Only					
Lap Belt Load Cells		706	LEBOW	9/96	3/97
Shoulder Belt Load Cells		707	LEBOW	9/96	3/97
Spool-Out Potentiometer		M6	MAGNETEK	9/96	3/97
Belt Stretch Transducer		E6	CALSPAN	7/96	1/97

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	AP1A0	ENDEVCO	7/96	1/97
	Y (R)	AC8F6	ENDEVCO	9/96	3/97
	Z (R)	ACCW0	ENDEVCO	9/96	3/97
Chest	X (R)	AHRC9	ENDEVCO	9/96	3/97
	Y (R)	AC7W8	ENDEVCO	9/96	3/97
	Z (R)	ACC06	ENDEVCO	9/96	3/97
Pelvic	X	AL6N5	ENDEVCO	9/96	3/97
	Y	AL6R7	ENDEVCO	9/96	3/97
	Z	A12C	ENDEVCO	9/96	3/97
Left Upper Tibia	Mx	38	DENTON	9/96	3/97
Left Upper Tibia	My	38	DENTON	9/96	3/97
Left Lower Tibia	Fx	32	DENTON	9/96	3/97
Left Lower Tibia	Fz	32	DENTON	9/96	3/97
Left Lower Tibia	My	32	DENTON	9/96	3/97
Right Upper Tibia	Mx	45	DENTON	9/96	3/97
Right Upper Tibia	My	45	DENTON	9/96	3/97
Right Lower Tibia	Fx	41	DENTON	9/96	3/97
Right Lower Tibia	Fz	41	DENTON	9/96	3/97
Right Lower Tibia	My	41	DENTON	9/96	3/97

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacture	Calibration	
				Last	Next
Left Foot	X	AET34	ENDEVCO	9/96	3/97
Left Foot	Z	AKD93	ENDEVCO	9/96	3/97
Right Foot	X	AEW70	ENDEVCO	9/96	3/97
Right Foot	Z	AEWK1	ENDEVCO	8/96	2/97

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	AD4A9	ENDEVCO	9/96	3/97
	Y	AE8T7	ENDEVCO	9/96	3/97
	Z	AF5R7	ENDEVCO	9/96	3/97
Chest	X	AE8R7	ENDEVCO	9/96	3/97
	Y	AF5H9	ENDEVCO	9/96	3/97
	Z	AH5L8	ENDEVCO	9/96	3/97
Right Femur Load Cell		419	GSE	7/96	1/97
Left Femur Load Cell		723	GSE	7/96	1/97
Neck Load Cell	X	576	DENTON	7/96	1/97
	Y	576	DENTON	7/96	1/97
	Z	576	DENTON	7/96	1/97
Neck Moment	X	576	DENTON	7/96	1/97
	Y	576	DENTON	7/96	1/97
	Z	576	DENTON	7/96	1/97
Chest Deflection Gauge		064	HUMANOID	9/96	3/97
Hybrid III Use Only					
Lap Belt Load Cells		635	LEBOW	9/96	3/97
Shoulder Belt Load Cells		711	LEBOW	9/96	3/97
Spool-Out Potentiometer		M8	MAGNETEK	5/96	11/96
Belt Stretch Transducer		E7	CALSPAN	7/96	1/97

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	AC7Y3	ENDEVCO	9/96	3/97
	Y (R)	AC824	ENDEVCO	9/96	3/97
	Z (R)	AC814	ENDEVCO	9/96	3/97
Chest	X (R)	AP1E0	ENDEVCO	9/96	3/97
	Y (R)	AJ9F8	ENDEVCO	9/96	3/97
	Z (R)	AP1A2	ENDEVCO	9/96	3/97
Pelvic	X	AH5F3	ENDEVCO	9/96	3/97
	Y	AL6H7	ENDEVCO	9/96	3/97
	Z	AL6C8	ENDEVCO	9/96	3/97
Left Upper Tibia	Mx	015	DENTON	9/96	3/97
Left Upper Tibia	My	015	DENTON	9/96	3/97
Left Lower Tibia	Fx	011	DENTON	9/96	3/97
Left Lower Tibia	Fz	011	DENTON	9/96	3/97
Left Lower Tibia	My	011	DENTON	9/96	3/97
Right Upper Tibia	Mx	016	DENTON	9/96	3/97
Right Upper Tibia	My	016	DENTON	9/96	3/97
Right Lower Tibia	Fx	012	DENTON	9/96	3/97
Right Lower Tibia	Fz	012	DENTON	9/96	3/97
Right Lower Tibia	My	012	DENTON	9/96	3/97

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacture	Calibration	
				Last	Next
Left Foot	X	AKEB3	ENDEVCO	9/96	3/97
Left Foot	Z	AEW71	ENDEVCO	9/96	3/97
Right Foot	X	AEWJ5	ENDEVCO	8/96	2/97
Right Foot	Z	AEWE3	ENDEVCO	8/96	2/97

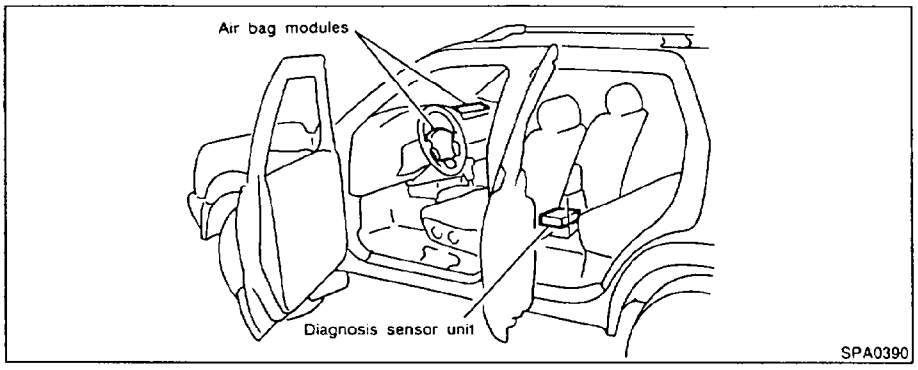
INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	Y25	ICS	8/96	2/97
Right Rear Seat Crossmember	Y171	ICS	8/96	2/97
Top of Engine	X78	ICS	7/96	1/97
Bottom of Engine	Y87	ICS	5/96	11/96
Left Disc Brake Caliper	A44	CEC	9/96	3/97
Right Disc Brake Caliper	A147	CEC	9/96	3/97
Instrument Panel	X81	CEC	5/96	11/96
Left Seat Rear Crossmember (R)	X26	ICS	5/96	11/96
Right Seat Rear Crossmember (R)	Y93	ICS	4/96	10/96

Appendix E

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS



Air bag system

The driver air bag is located in the center of the steering wheel; the front passenger air bag is mounted in the dashboard above the glove box. The air bag system is designed to inflate in higher severity frontal collisions, although it may inflate if the forces in another type of collision are similar to those of a higher severity frontal impact. It may not inflate in certain frontal collisions. Vehicle damage (or lack of it) is not always an indication of proper air bag operation.

When the air bag inflates, a fairly loud noise may be heard, followed by release of smoke. This smoke is not harmful and does not indicate a fire, but care should be taken not to intentionally inhale it, as it may cause irritation and choking. Those with a history of breathing trouble should get fresh air promptly.

Air bags, along with the use of seat belts, help to cushion the impact force on the face and chest of the occupant. They can help save lives and reduce serious injuries. However, an inflating air bag may cause facial abrasions or other injuries. Air bags do not provide restraint to the lower body.

The seat belts should be correctly worn and the driver and passenger seated upright as far as practical away from the steering wheel or dashboard. Since the air bag inflates quickly in order to help protect the occupant, the force of the air bag inflating can increase the risk of injury if the occupant is too close to or is against the air bag module during inflation.

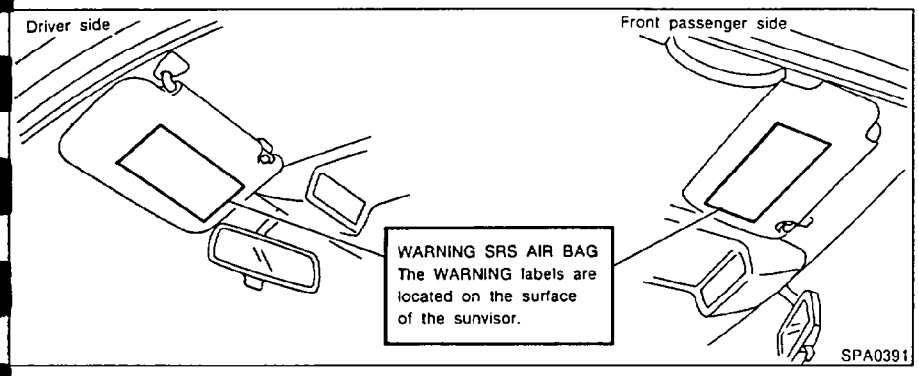
The air bag will deflate quickly after a collision.

After turning the ignition key to the "ON" position, the air bag warning light illuminates. The air bag warning light will turn off after about 7 seconds if the system is operational.

⚠WARNING

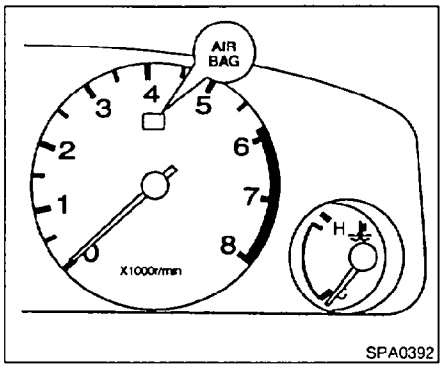
- **Right after inflation, several air bag system components will be hot. Do not touch them; you may severely burn yourself.**
- **No unauthorized changes should be made to any components or wiring of the air bag system. This is to prevent accidental inflation of the air bag or damage to the air bag system.**
- **Tampering with the air bag system may result in serious personal injury. Tampering includes changes to the steering wheel and the instrument panel assembly by placing material over the steering wheel pad and above the dashboard, or by installing additional trim material around the air bag system.**
- **Do not attach any objects to the steering wheel pad and to the instrument panel. Also, do not place any objects between any occupant and the steering wheel or instrument panel. Such objects may become dangerous projectiles and cause injury if the air bag inflates.**
- **Work around and on the air bag system should be done by an authorized NISSAN dealer. Installation of electrical equipment should also be done by an authorized NISSAN dealer. The SRS wiring harnesses* should not be modified or disconnected. Unauthorized electrical test equipment and probing devices should not be used on the air bag system.**
- **SRS wiring harnesses are covered with yellow insulation either just before the harness connectors or for the complete harness, for easy identification.**

WARNING LABELS



Warning labels about the air bag system are placed in the vehicle.

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 diagnosis sensor unit, air bag modules and all related wiring.

After turning the ignition key to the "ON" position, the air bag warning light illuminates. The air bag warning light will turn off after about 7 seconds if 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 goes off within 7 seconds.
2. The air bag light flashes intermittently or remains on (after 7 seconds).
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. Take your vehicle to the nearest authorized NISSAN dealer.

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 noted on the certification label located on the driver side center 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 has inflated, 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.**

SEAT BELTS

PRECAUTIONS ON SEAT BELT USAGE

Your chances of being injured or killed in an accident and/or the severity of injury 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 use a seat belt at all times. Children should be in appropriate child restraints.**
- **The belt should be adjusted properly and to a snug fit. Failure to do so will reduce the effectiveness of the entire restraint system and increase the chance or severity of injury in an accident.**
- **Do not wear the belt inside out or twisted. Be sure the seat belt tongue is securely fastened to the proper buckle.**
- **Do not allow more than one person to use the same belt.**
- **All seat belt assemblies including retractors and attaching hardware should be inspected by your NISSAN dealer after any collision. 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.**
- **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 or across your neck. The belt should be away from your face and neck, but not falling off your shoulder.**
- **Position the lap belt as low as possible AROUND THE HIPS, NOT THE WAIST.**
- **Serious injury or death can occur if the seat belt is not worn properly.**

CHILD SAFETY

Children need adults to help protect them.

All U.S. states and provinces of Canada require the use of approved child restraints for infants and small children. (See "Child restraints for infants and small children" later in this section.)

In addition, there are many types of child restraints available for larger children which should be used for maximum protection.

Infant or small child

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

Children

Children who are too large for child restraints 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.

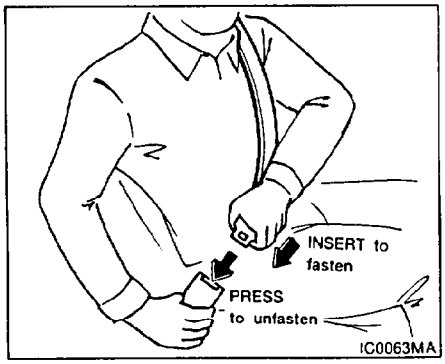
Never let a child stand or kneel on any seat and do not allow a child in the cargo areas while the vehicle is moving.

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 WITH RETRACTOR

⚠WARNING

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

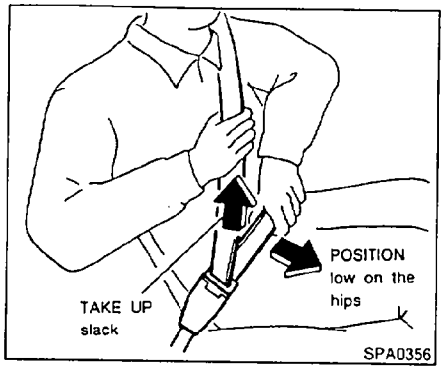
Fastening the belts

1. Adjust the seat.

⚠WARNING

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 Restraint Systems 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

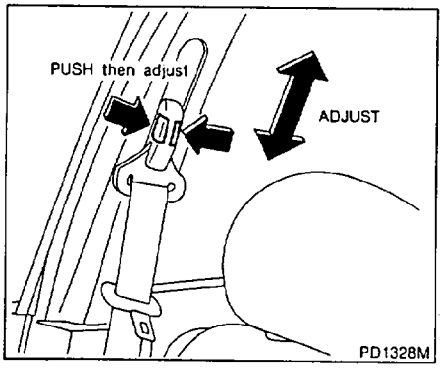
Your seat belt retractors are designed to lock belt movement by two separate methods:

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

You can 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.

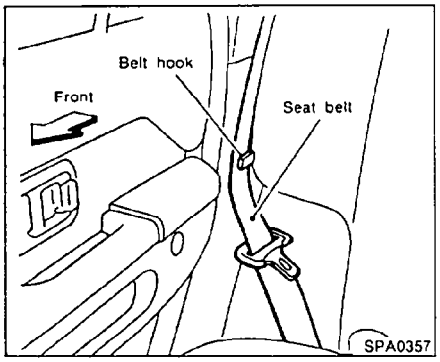


Shoulder belt height adjustment

The shoulder belt anchor height should be adjusted to the position best suited for you (see "Precautions on Seat Belt Usage"). To adjust, push the release button, then move it to the desired position so that the belt passes over the shoulder.

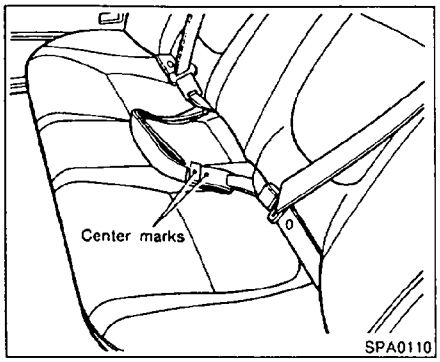
⚠WARNING

After adjustment, release the button and check that it does not move it up and down to make sure the shoulder belt anchor is securely fixed in position.



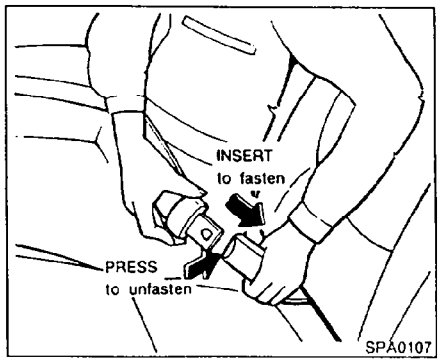
Belt hook

When the rear seat belt is not in use, hook it at the belt hook.



Selecting correct set of belts

The center seat belt buckle and tongue are identified by the "CENTER" mark. The center seat belt tongue can be fastened only into the center seat belt buckle.

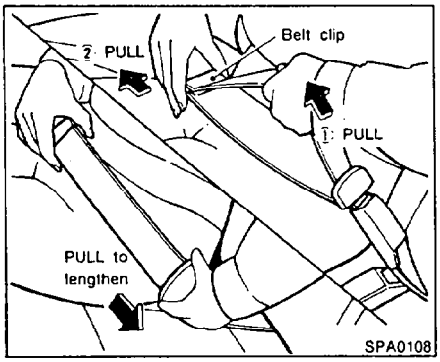


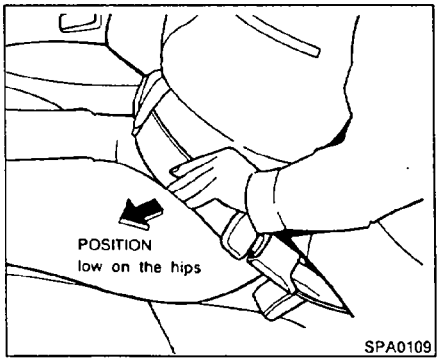
2-POINT TYPE WITH RETRACTOR (Center position of rear seat)

Fastening the belts

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

If the retractor locks and restricts further movement, let the belt rewind into the retractor, then slowly pull the belt out.





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

Unfastening the belts

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

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 right passenger seating position. See your NISSAN dealer for assistance if the extender is required.

⚠WARNING

- **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.**