V24414

REPORT NUMBER: CAL-96-N07

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

NISSAN MOTORS
1996 NISSAN 4 x 2
PICKUP

NHTSA NUMBER: MT5201

CALSPAN TEST NUMBER: 8313-7

March 8, 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.
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Prepared: Michael J. Kilgallon
Michael J. Kilgallon, Project Engineer

Approved: D. J. Travale
David J. Travale, Program Manager
Transportation Research/
Physical Sciences Department

FINAL REPORT ACCEPTED BY:

_____
Manager, New Car Assessment Program (NCAP)

_____
Date of Report Acceptance

_____
Contracting Officer's Tech. Rep. (COTR)

_____
Date of Report Acceptance

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15. *Supplementary Notes*		

16. *Abstract*

A frontal load cell barrier test of a 1996 Nissan 4 x 2 Pickup was performed at Calspan SRL Corporation crash test facility in Buffalo, New York, on March 8, 1996.

The impact velocity was 57.0 kph and the temperature at the barrier face was 21°C. The maximum post-test vehicle crush was 493 mm. The test vehicle was equipped with a 3-point continuous belt system and supplemental driver side airbag.

With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" the driver exceeded the maximum 3 millisecond chest resultant criteria. The passenger appears to comply with the head, chest and femur requirements.

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Section 1

PURPOSE AND TEST PROCEDURE

This 57.0 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 57.0 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 MT5201

A load cell barrier consisting of 36 load cells was impacted by a 1996 Nissan 4 x 2 Pickup at a velocity of 57.0 kph. The test was performed at the Calspan SRL Corporation on March 8, 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 14 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.

The driver (position 1) ATD (Serial No. 150) was used in one previous test (MT5702). Injury criteria were not exceeded by dummy Serial No. 150 in that test. The right-front passenger (position 2) ATD (Serial No. 064) was calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 133 data channels were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Position 2 - Right Foot Rear X sustained a cut wire. Data from this channel has been deleted from this report. Barrier Load Cell D1 did not record accurately. Data from this channel has been deleted from this report. This data was not used in the Load Cell Summation.

The driver's HIC was 757.8. The maximum chest deceleration over 3 milliseconds was 68.4 g's and maximum chest deflection was -48.4 mm. Femur loads were -2924.8 newtons on the left and -2939.7 newtons on the right.

The right front passenger's HIC was 653.0. Maximum chest deceleration over 3 milliseconds was 55.3 g's and maximum chest deflection was 48.0 mm. Femur loads were -1233.5 newtons on the left and -1291.1 newtons on the right.

Table 1

GENERAL TEST AND VEHICLE DATA

Vehicle Year/Make/Model/Body Style: 1996 Nissan 4 x 2 Pickup

NHTSA Test No.: MT5201 VIN.: 1N6SD11SKTC310675

Body Color: Red Date of Manufacture: 1/96

Date Received: 3/1/96

Odometer Reading: 00183

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

Type of Occupant Restraint: 3-point restraint system with supplemental driver side airbag.

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 179 kPa, Rear 241 kPa

Recommended Tire Size: P195/75R14

Recommended Cold Tire Pressure: Front 179 kPa, Rear 241 kPa

Tires on Vehicle: P195/75R14 Manufacturer: Firestone

Number of Occupants:	3	Front;	-	Rear;	-	3rd Seat;	3	TOTAL
Type of Front Seats:	-	Bucket;	X	Bench;	-	Split Bench		
Type of Front Seat Back:	X	Fixed;	-	Adj. with	-	Lever	-	Rot. Knob

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

GVWR 1996 kgs. GAWR: Front 998 kgs. Rear 1154 kgs.

Table 1

GENERAL TEST AND VEHICLE DATA (cont'd)

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

Right Front	= 356.5 kgs.		Right Rear	= 305.0	kgs.
Left Front	= 362.5 kgs.		Left Rear	= 260.0	kgs.

TOTAL FRONT WEIGHT = 719 kgs. (56.0 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 565 kgs. (44.0 % of Total Vehicle Weight)

TOTAL DELIVERED WEIGHT = 1284 kgs.

CALCULATION FOR TARGET TEST WEIGHT:

UDW = Unloaded Delivered Weight 1284 kgs.

RCLW = 136 kgs.

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

Target Test Weight = 1569 kgs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 133 KGS CARGO:

Right Front	= 386 kgs.		Right Rear	= 413	kgs.
Left Front	= 395 kgs.		Left Rear	= 372	kgs.

TOTAL FRONT WEIGHT = 781 kgs. (49.9 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 785 kgs. (50.1 % of Total Vehicle Weight)

TOTAL TEST WEIGHT = 1566 kgs.

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

VEHICLE ATTITUDE (all dimensions in mm):

Delivered Attitude:	RF	743	LF	767	RR	770	LR	793
Test Attitude:	RF	731	LF	750	RR	718	LR	740

Wheel Base: 2650 mm.; C.G. = 1325 mm. rearward of front wheel C/L

Remarks: 54 liters of Stoddard solvent were 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:	March 8, 1996	Time of Test:	14:45

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	4386	C_L	4422	L	4396
	Post-test = R	3910	C_L	3935	L	3935
	Crush = R	476	C_L	487	L	461

Distance from front of test vehicle to point of impact:

R	384	C_L	398	L	420

VISIBLE DUMMY CONTACT POINTS:

	Driver	Passenger
Head	Face with airbag. Rear of head with headrest	Top of head contacted B-pillar. Rear of head with headrest
Chest	Airbag	No Contact
Abdomen	Airbag	No Contact
Left Knee	Knee Bolster	Glove Box Door
Right Knee	Knee Bolster	Glove Box Door

Table 1

GENERAL TEST AND VEHICLE DATA (cont'd)

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

	Front		Rear	
Seat Movement	Left	Right	Left	Right
Seat Back Failure	None	None	-	-
Seat Shift (mm.)	0.0	0.0	-	-

Glazing Damage

Backlight/Windshield: Minor stress fractures in windshield.

Other Notable Impact Effects: None.

Section 3

OCCUPANT AND VEHICLE INFORMATION

I. DATA

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

Table 2

DUMMY INJURY CRITERIA VALUES

NHTSA Test No.: MT5201 Vehicle: 1996 Nissan 4 x 2 Pickup

	MAXIMUM HEAD ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	-58.9	-22.5	50.0	69.8
Position #2 - Passenger	-45.6	5.8	54.9	59.8

	MAXIMUM CHEST ACCELERATION (g's)			
	X	Y	Z	R*
Position #1 - Driver	-68.6	-9.9	16.9	68.4
Position #2 - Passenger	-57.2	14.2	17.7	55.3

* 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	-2924.8	-2939.7
Position #2 - Passenger	-1233.5	-1291.1

	MAXIMUM FORCE - SEAT BELT LOADS (nwt)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
Position #1 - Driver	9412.0	-	11032.3
Position #2 - Passenger	10588.8	11466.7	-

	HEAD INJURY CRITERIA (HIC)			
	HIC**	t_1 (mSec)	t_2 (mSec)	Average Acceleration t_1 to t_2
Position #1 - Driver	757.8	40.44	73.56	55.43
Position #2 - Passenger	653.0	46.80	82.80	50.52

** 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 4 x 2 Pickup

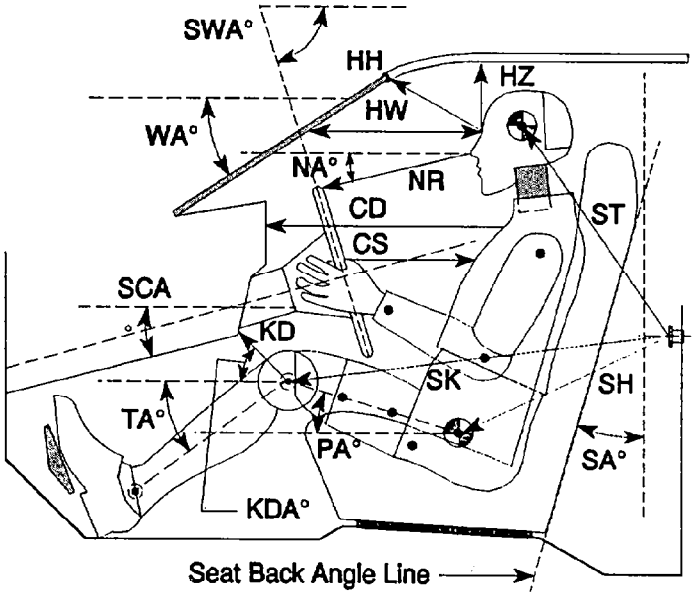
NHTSA Test No.: MT5201 Test Date: March 8, 1996

MAXIMUM VALUES	DRIVER DUMMY ID #150:	PASSENGER DUMMY ID #064:
Neck Load X (nwt)	544.2	344.8
Neck Load Y (nwt)	268.9	≈ 400.0
Neck Load Z (nwt)	3040.0	2457.3
Neck Moment X (nwt-m)	12.2	34.9
Neck Moment Y (nwt-m)	49.1	122.1
Neck Moment Z (nwt-m)	29.7	10.7
Chest Deflection X (mm.)	-48.4	48.0
Time of Max. Occurrence (msec)	55.7	70.9

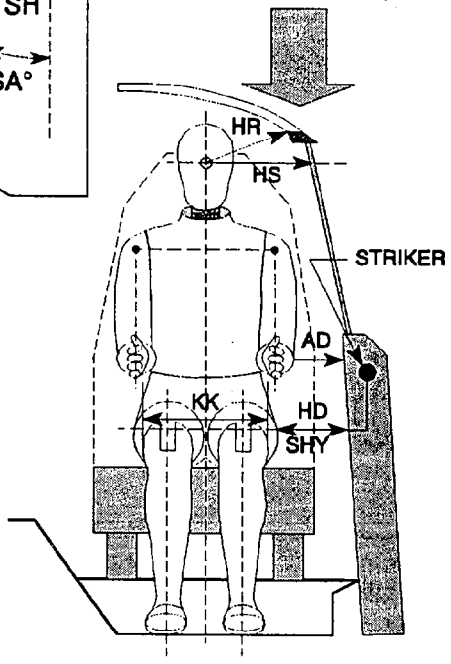
Note: All values listed occur during the primary impact event.

Figure 1

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



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



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

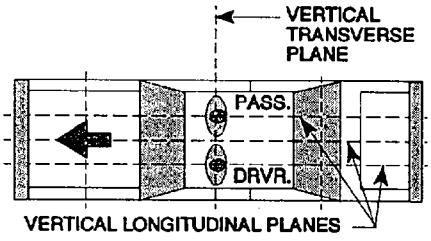


Table 4

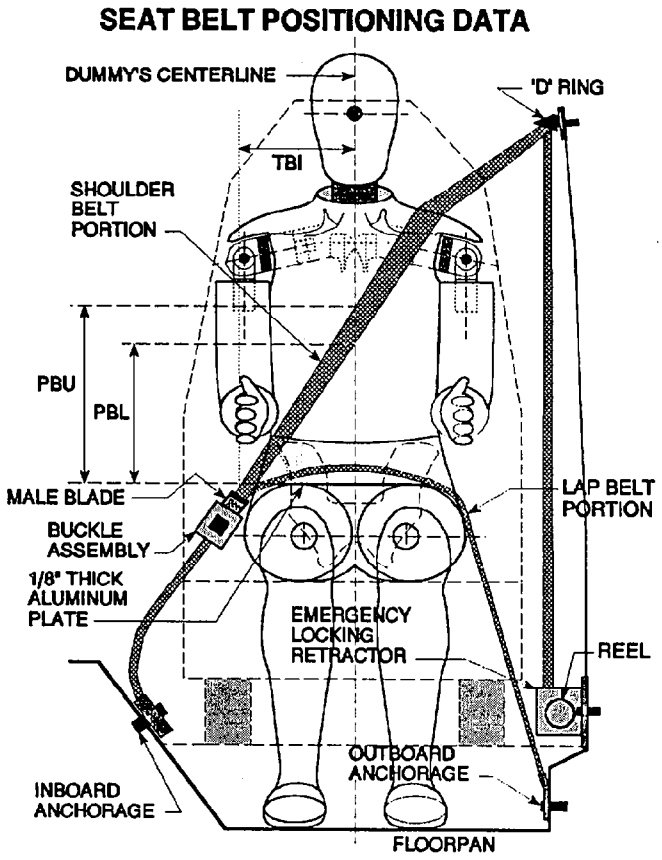
FRONT SEAT OCCUPANT MEASUREMENTS

	DRIVER (Serial #150)			PASS. (Serial # 064)		
WA°	34 deg.			N/A		
SWA°	65 deg.			N/A		
SCA°	25 deg.			N/A		
SA°	Fixed			Fixed		
HZ	175			180		
HH	365			398		
HW	540			559		
HR	230			240		
NR	360	Angle	12 deg.	N/A		
CD	555			574		
CS	266			N/A		
RA	178			N/A		
KDL	215	Angle (KDA)	35 deg.	220		
KDR	215			205	Angle (KDA)	26 deg.
PA°	20 deg.			22.5 deg.		
TA°	30 deg.			40 deg.		
KK	300			265		
ST	607	Angle	20 deg.	597	Angle	18 deg.
SK	655	Angle	96 deg.	665	Angle	88 deg.
SH	279	Angle	115 deg.	274	Angle	117 deg.
SHY	230			230		
HS	302			305		
HD	154			157		
AD	89			86		

Dimensions in millimeters

Figure 2

SEAT BELT POSITIONING DATA



	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	320	330
PBL-- Top surface of alum. plate to belt lower edge	235	235
LAP BELT TENSION	-	-
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.	2520	2510
Shoulder belt length as measured on Part 572 Dummy.	930	920
Lap belt length as measured on Part 572 Dummy.	900	900
SHOULDER BELT SPOOL-OFF DATA:		
As determined mechanically.	31.0	11.0
As determined electronically.	50.5	28.4
BELT STRETCH DATA:		
Measured electronically between shoulder belt load cell and the "D" ring.	31.5 mm/M	49.2 mm/M
Measured mechanically.	0.0	0.0

Dimensions in millimeters

Figure 3

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera information shown in Table 6.

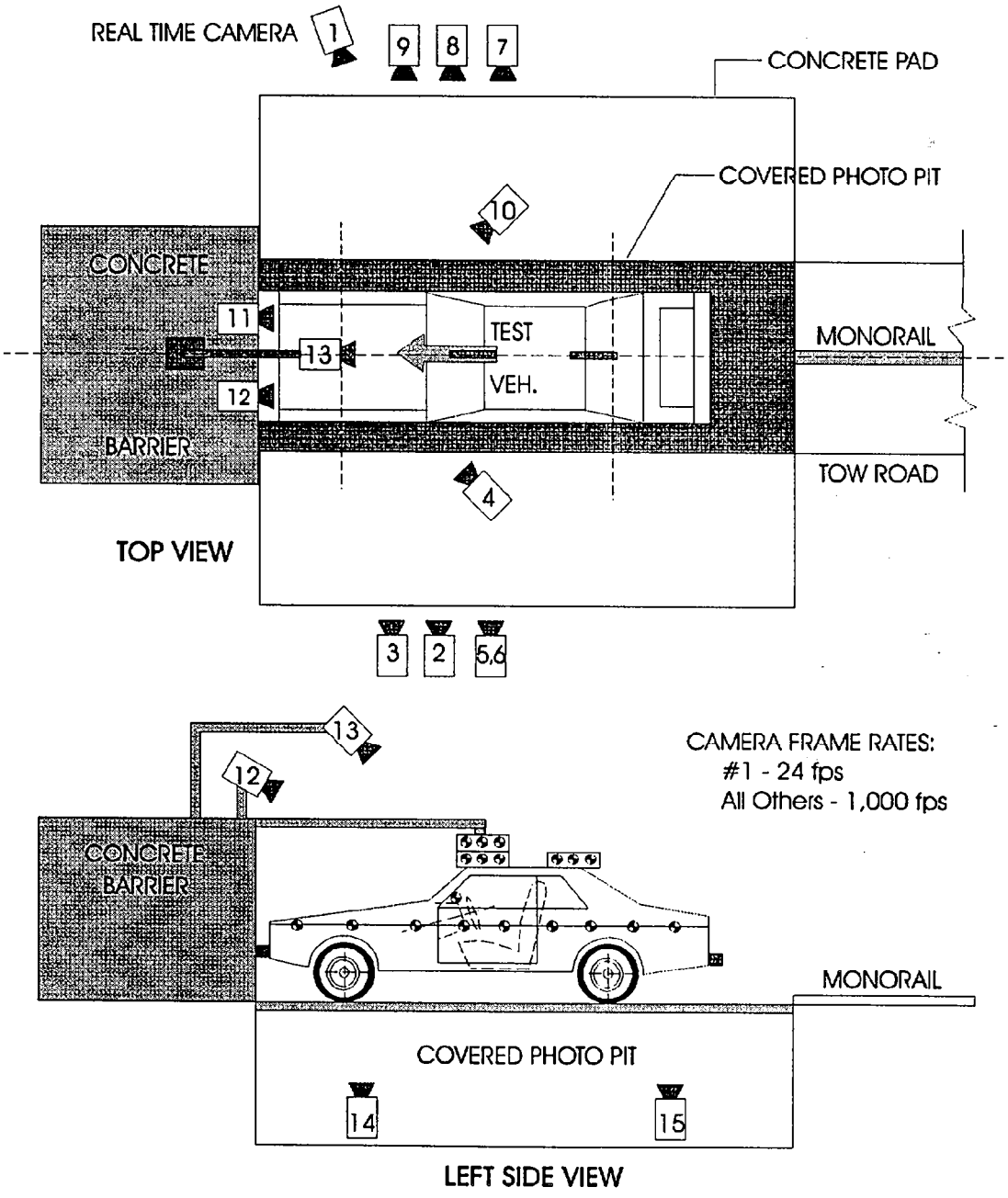


Table 6
HIGH-SPEED CAMERA LOCATIONS

NHTSA Test No.: MT5201 Vehicle: 1996 Nissan 4 x 2 Pickup

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	10516	1041	1181	-3	10060	25	1060
3	Left Side View	9017	686	1328	-5	8561	28	1060
4	Driver and Interior View	5258	3073	2007	-12	-	25	1080
5	Steering Column (Bottom)	9982	1397	1168	-2	9526	35	820
6	Steering Column (Top)	9982	1397	1778	-6	9526	35	910
7	Overall Right Side	9703	1549	1118	-2	9247	25	1020
8	Right Side View	7722	1092	1270	-4	7266	25	910
9	Right Passenger View	8052	1880	1473	-4	7596	35	1040
10	Passenger and Interior View	4597	3378	1829	-8	-	25	1110
11	Passenger Front View	580	0	2000	-35	-	13	1000
12	Driver Front View	580	0	2000	-34	-	13	480
13	Windshield View	0	-530	3048	-54	-	13	1000
14	Pit View of Engine	0	505	-3048	90	-	13	1030
15	Pit View of Fuel Tank	0	3432	-3048	90	-	13	970

*X = film plane to monorail centerline

Y = film plane to impact location

Z = film plane to ground

** = referenced to horizontal plane

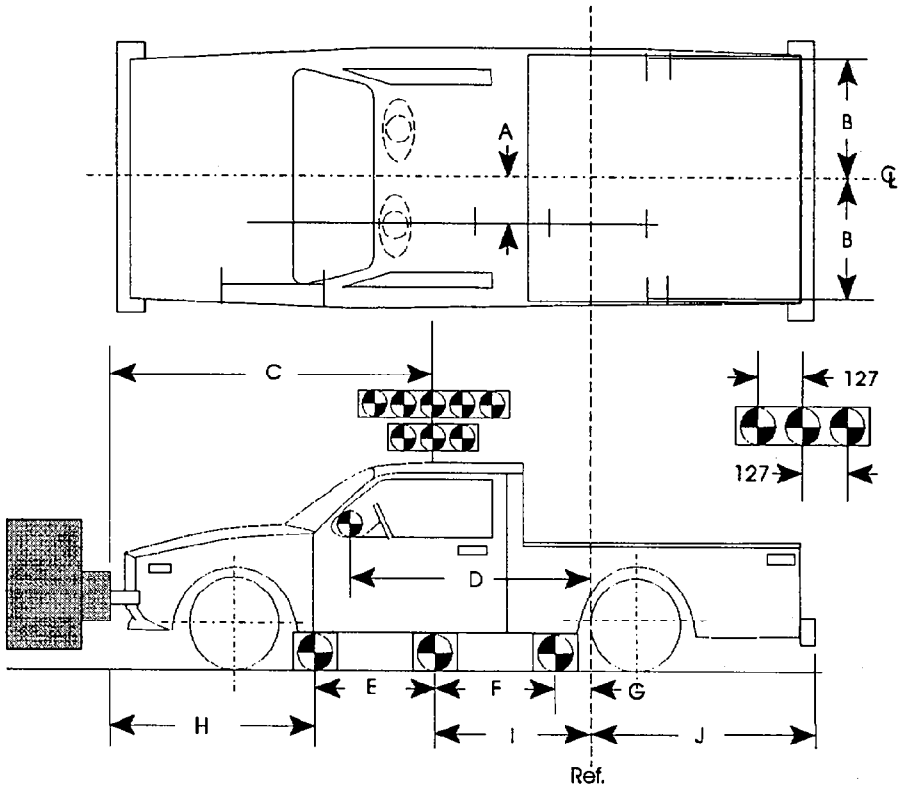
N.T. indicates No Timing

Figure 4

VEHICLE TARGET LOCATIONS

(Dimensions in millimeters)

A	380
B	630
C	2099
D	1516
E	842
F	838
G	160
H	1187
I	998
J	1395
K	145
L	840
M	842
N	1395
O	985
P	1200



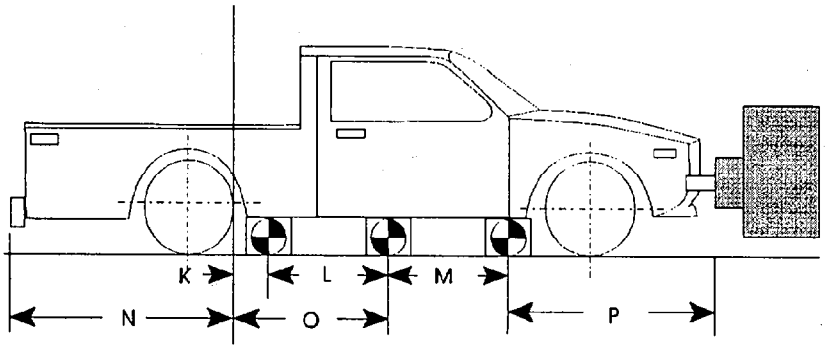
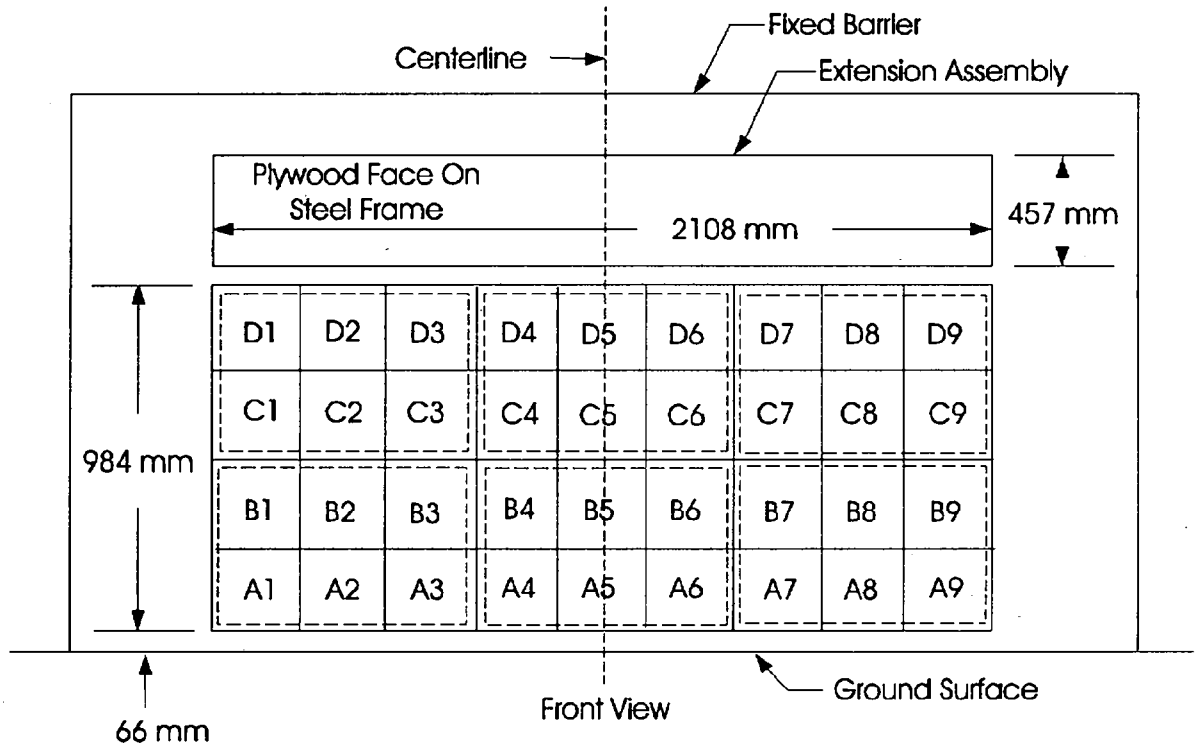


Figure 5

LOAD CELL LOCATIONS ON FIXED BARRIER

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



6 GROUPS OF 6 LOAD CELLS EACH

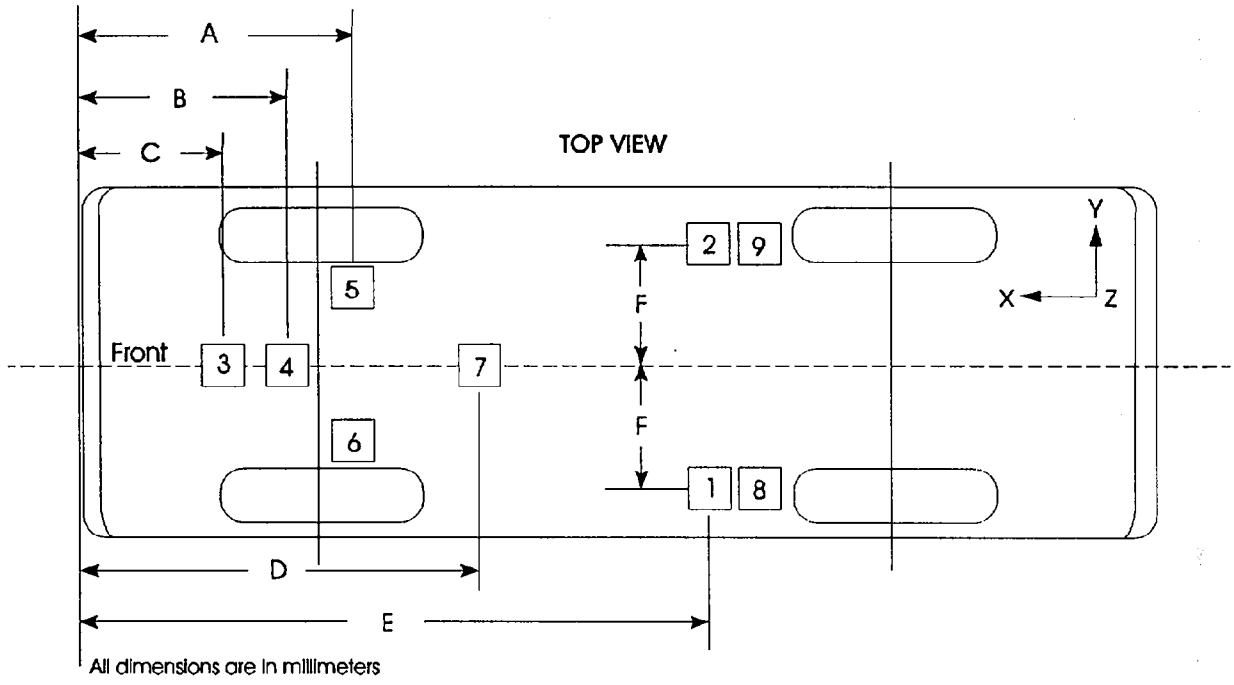
Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

The following data is presented in Appendix B:

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

Figure 6

VEHICLE ACCELEROMETER LOCATIONS



ACCELEROMETER NUMBER*	ACCELEROMETER LOCATION	Distances From Vehicle Front All dimensions in millimeters	
1	Left Rear Seat Crossmember [E/F]	X = 2438	Y = 470
2	Right Rear Seat Crossmember [E/F]	X = 2438	Y = 470
3	Top of engine [C]	575	
4	Bottom of engine [B]	871	
5	Right Disc Brake Caliper [A]	780	
6	Left Disc Brake Caliper [A]	780	
7	Instrument Panel [D]	1449	
8	Left Rear Seat Crossmember [E/F]	X = 2438	Y = 470
9	Right Rear Seat Crossmember [E/F]	X = 2438	Y = 470

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

Figure 7

TEST VEHICLE MEASUREMENTS

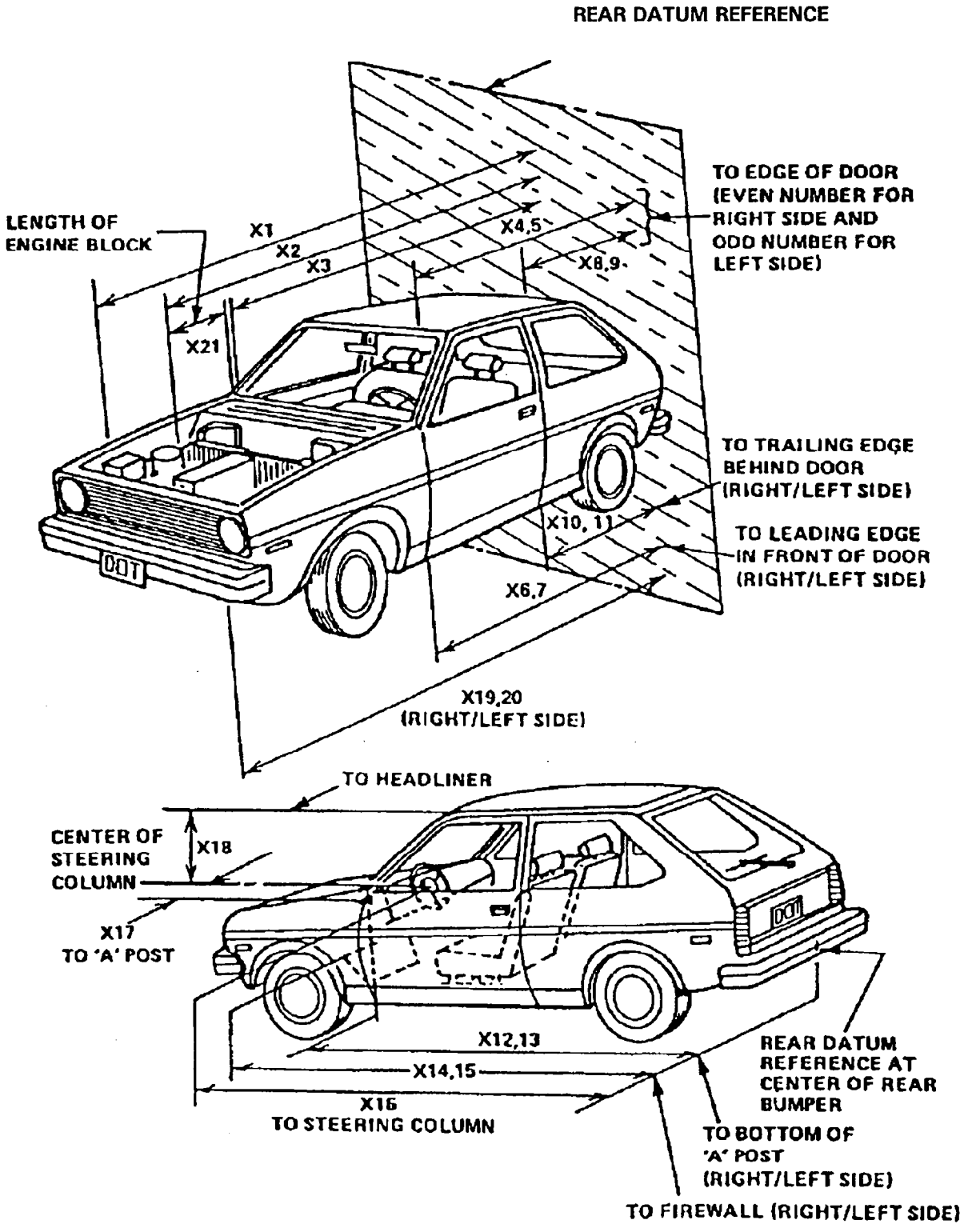


Table 7

VEHICLE MEASUREMENTS

No.		All Dimensions in mm		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	4422	3935	487
X2	Rear Surface of Vehicle to Front of Engine	3960	3790	170
X3	Rear Surface of Vehicle to Firewall	3455	3450	5
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3253	3250	3
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3253	3241	12
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3193	3151	42
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3199	3148	51
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2072	2074	-2
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2075	2071	4
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2072	2033	39
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2074	2030	44
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3220	3185	35
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3237	3175	62
X14	Rear Surface of Vehicle to Firewall, Right Side	3450	3450	0
X15	Rear Surface of Vehicle to Firewall, Left Side	3460	3450	10
X16	Rear Surface of Vehicle to Steering Column	2705	2725	-20
X17	Center of Steering Column to "A" Post	345	330	15
X18	Center of Steering Column to Headliner	440	370	70
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4388	3910	478
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4396	3935	461
X21	Length of Engine Block	460	460	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2955	2955	0
CD	Rear Surface of Vehicle to Center of Dash Panel	2955	2960	-5
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2960	2965	-5

Table 8

ACCIDENT INVESTIGATION DIVISION DATA

FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Nissan 4 x 2 Pickup

NHTSA Test No.: MT5201 VIN: 1N6SD11SKTC310675

Model Year: 1996 Build Date: 1/96 Test Date: March 8, 1996

Vehicle Size Category: Pickup Test Weight: 1566 Kgs

Vehicle Wheelbase: 2650 mm; Front Overhang: 1193 mm; Overall Width: 1525 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions:

C1 = 453 mm

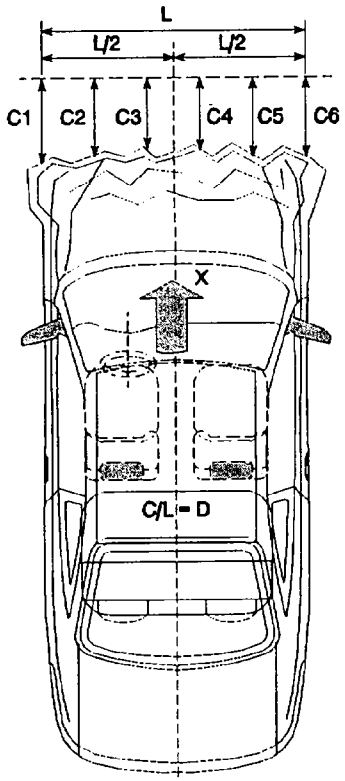
C2 = 472 mm

C3 = 485 mm

C4 = 493 mm

C5 = 485 mm

C6 = 471 mm



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

Longitude Length of Damaged Region: L= 1566 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 14 mm molding.

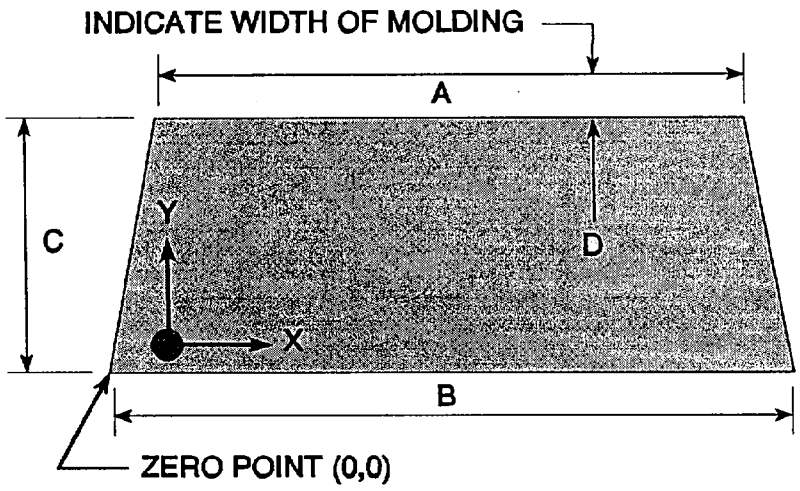
FMVSS 212 REQUIREMENTS:

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	2000	2000	100
LEFT SIDE	2000	2000	100
TOTAL	4000	4000	100

AREA OF RETENTION FAILURE:



FRONT VIEW OF WINDSHIELD

DIMENSIONS	
A	1220
B	1480
C	650
D	14

FAILURE DETAILS: None

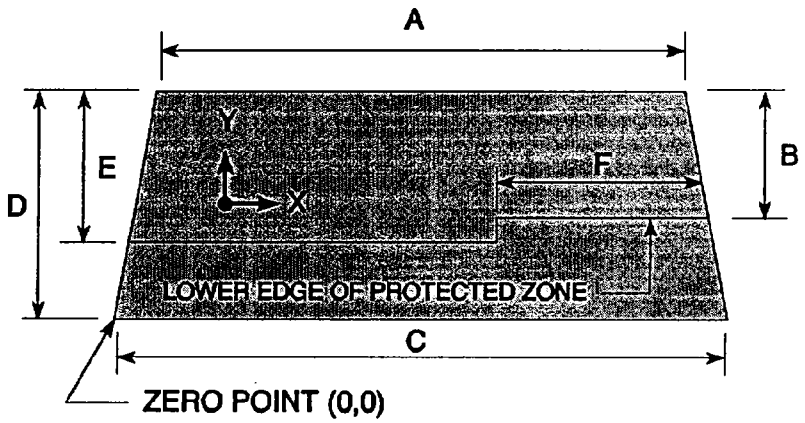
Figure 9

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	1220
B	395
C	1480
D	650
E	420
F	970

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.: MT5201 TEST DATE: March 8, 1996

VEHICLE MAKE/MODEL: 1996 Nissan 4 x 2

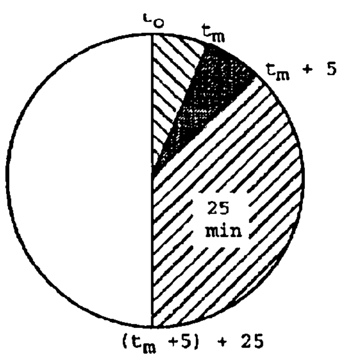
The test vehicle was filled from 92% to 94% of the manufacture's "usable" capacity. The electric fuel pump was operating if it will operate without engine operation. Two Part 572 anthropomorphic test devices were located at each of the front designated seating positions.

= =

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:

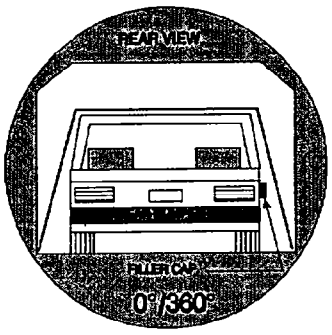
None

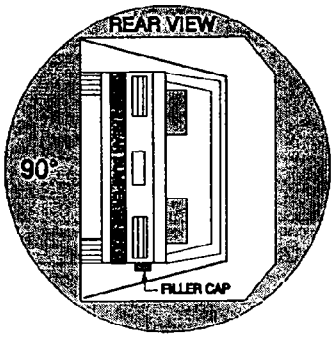
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

NHTSA Test No.:
MT5201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	30	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	30	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 ounce	0 ounce	0 ounce	0 ounce

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

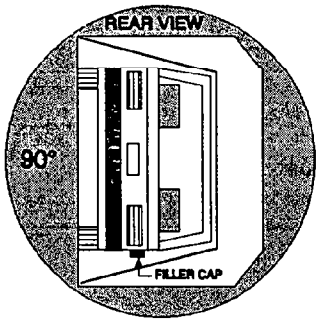
IV. SOLVENT SPILLAGE LOCATION(S): None

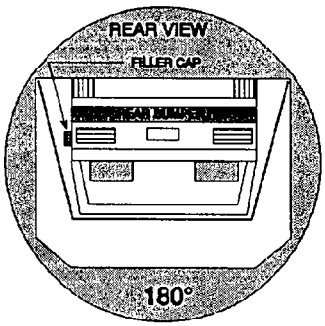
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

NHTSA Test No.:
MT5201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	30	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	30	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 ounce	0 ounce	0 ounce	0 ounce

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

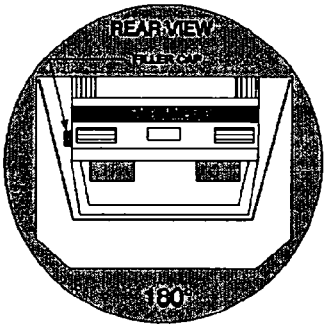
IV. SOLVENT SPILLAGE LOCATION(S): None

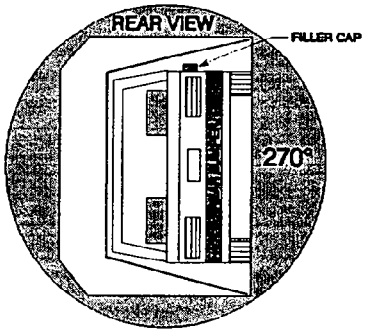
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

NHTSA Test No.:
MT5201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	30	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	30	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 ounce	0 ounce	0 ounce	0 ounce

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

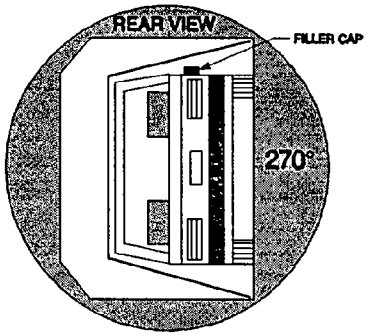
IV. SOLVENT SPILLAGE LOCATION(S): None

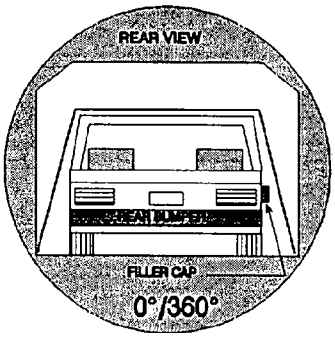
Table 10

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

NHTSA Test No.:
MT5201





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	30	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	30	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

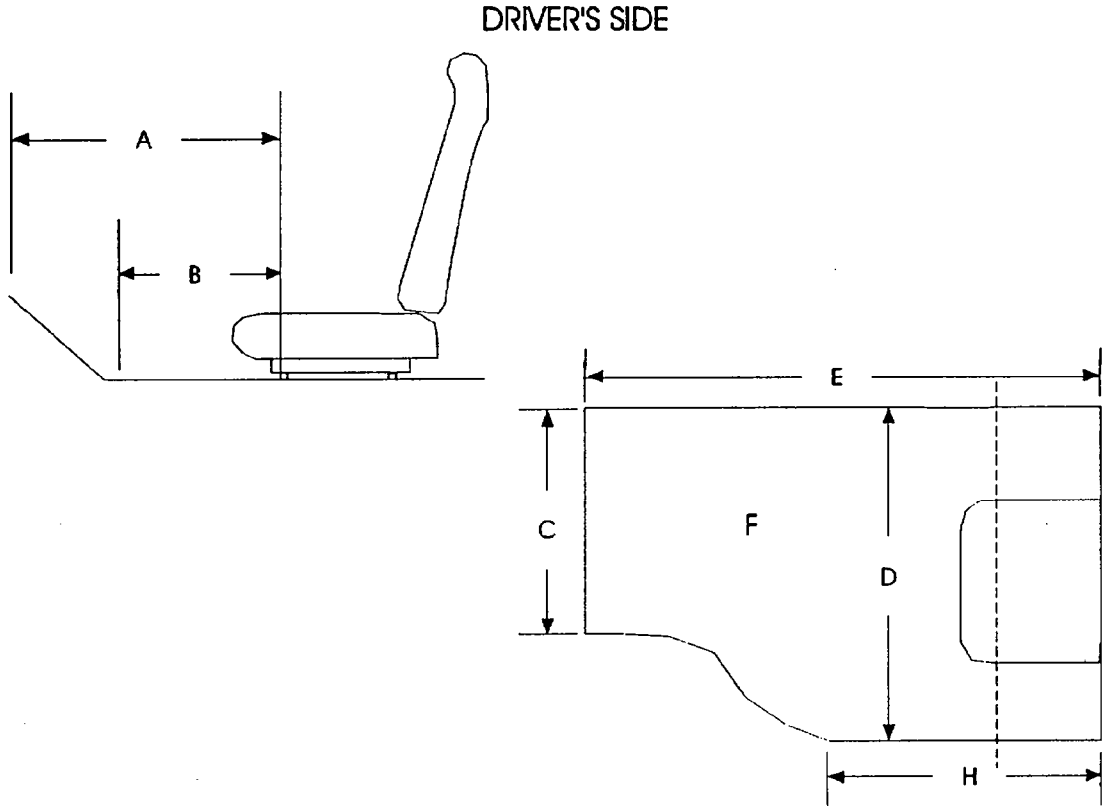
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0 ounce	0 ounce	0 ounce	0 ounce

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

IV. SOLVENT SPILLAGE LOCATION(S): None

Figure 10
DRIVER SIDE FLOORBOARD DEFORMATION

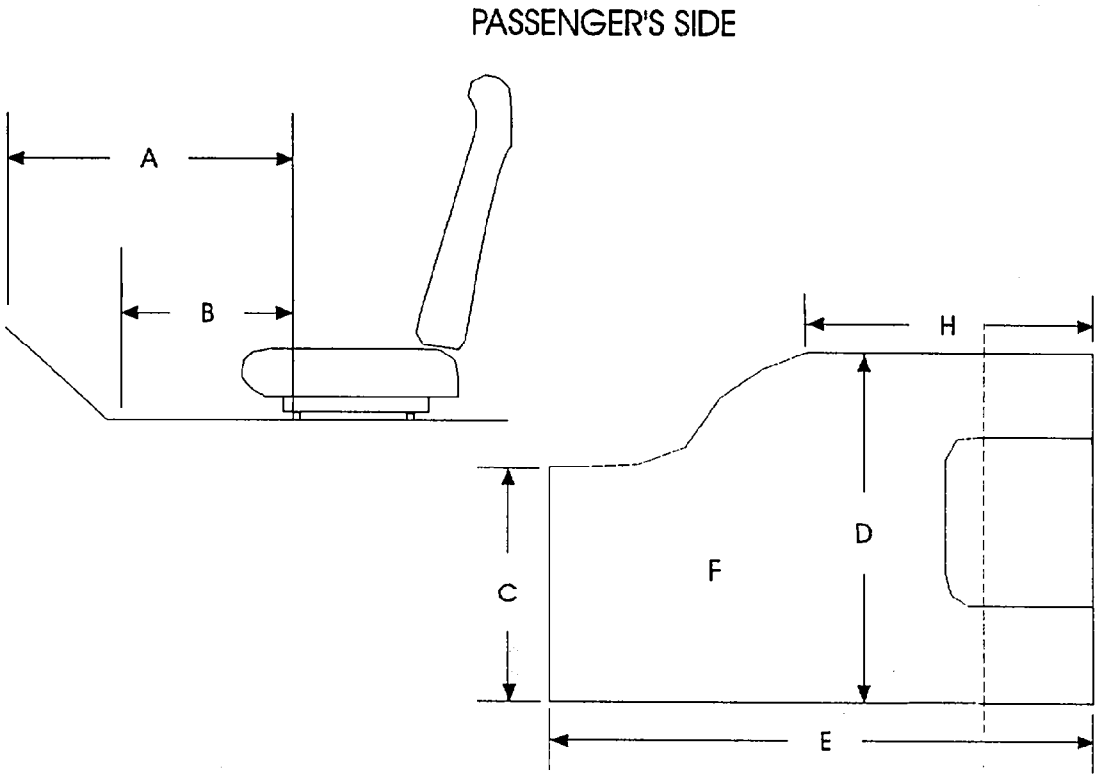


Measurement	Pre-Test	Post-Test	Difference
A	620	630	-10
B	540	530	10
C	440	430	10
D	430	420	10
E	540	530	10
H	300	300	0
F $(cm)^2$	2346	2249	97

Units = mm

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

Figure 11
PASSENGER SIDE FLOORBOARD DEFORMATION

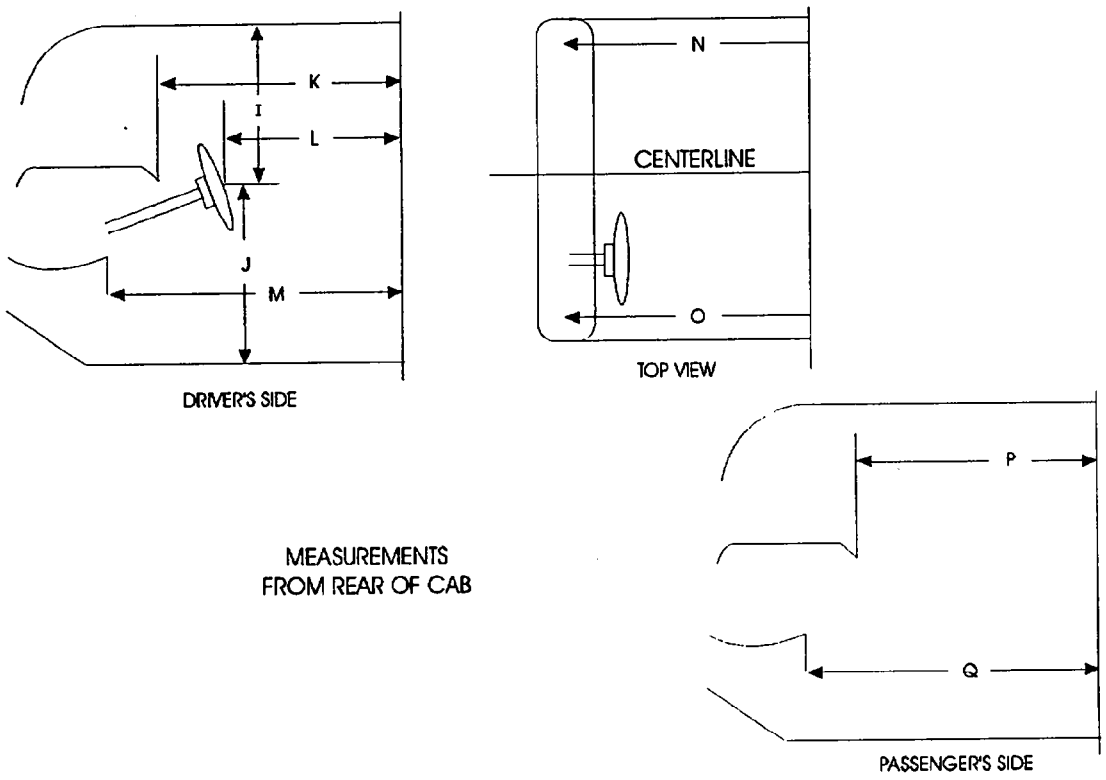


Measurement	Pre-Test	Post-Test	Difference
A	620	620	0
B	520	520	0
C	380	375	5
D	400	390	10
E	520	520	0
H	320	310	10
F $(cm)^2$	2040	1996.5	44

Units = mm

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

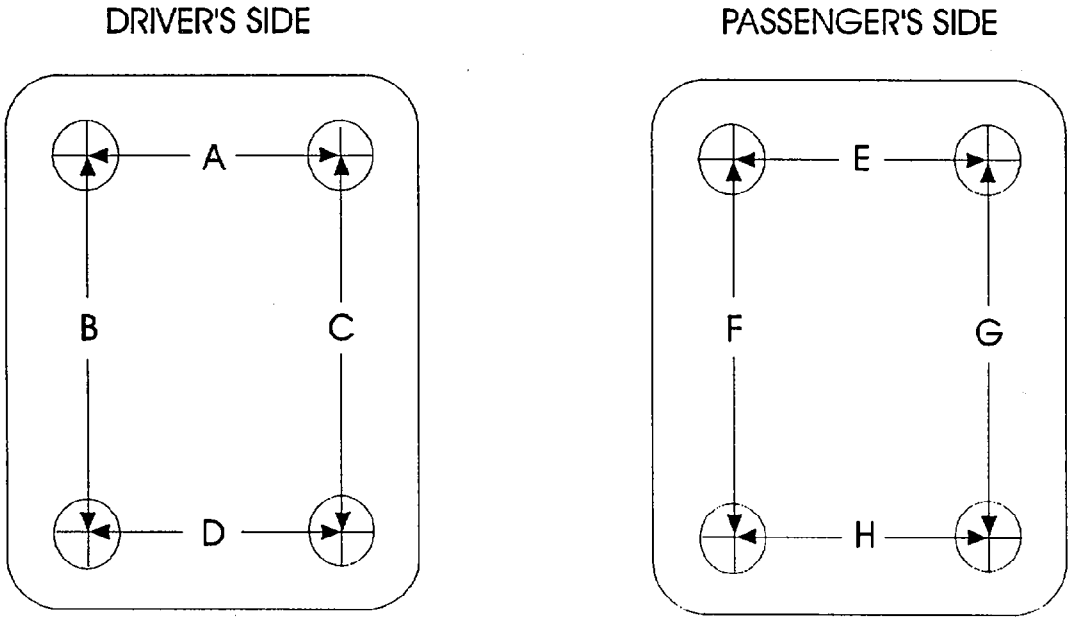
Figure 12
INTERIOR DEFORMATION



Measurement	Pre-Test	Post-Test	Difference
I	435	365	70
J	625	685	-60
K	1000	955	45
L	725	700	25
M	985	915	70
N	975	930	45
O	980	945	35
P	1005	965	40
Q	1020	939	81

Units = mm

Figure 13
FLOORBOARD DEFORMATION



Measurement	Pre-Test	Post-Test	Difference
A	330	345	-15
B	800	825	-25
C	780	810	-30
D	510	515	-5
E	310	290	20
F	800	798	2
G	840	818	22
H	330	331	-1

Units = mm

Appendix A

PHOTOGRAPHS

PHOTOGRAPHS

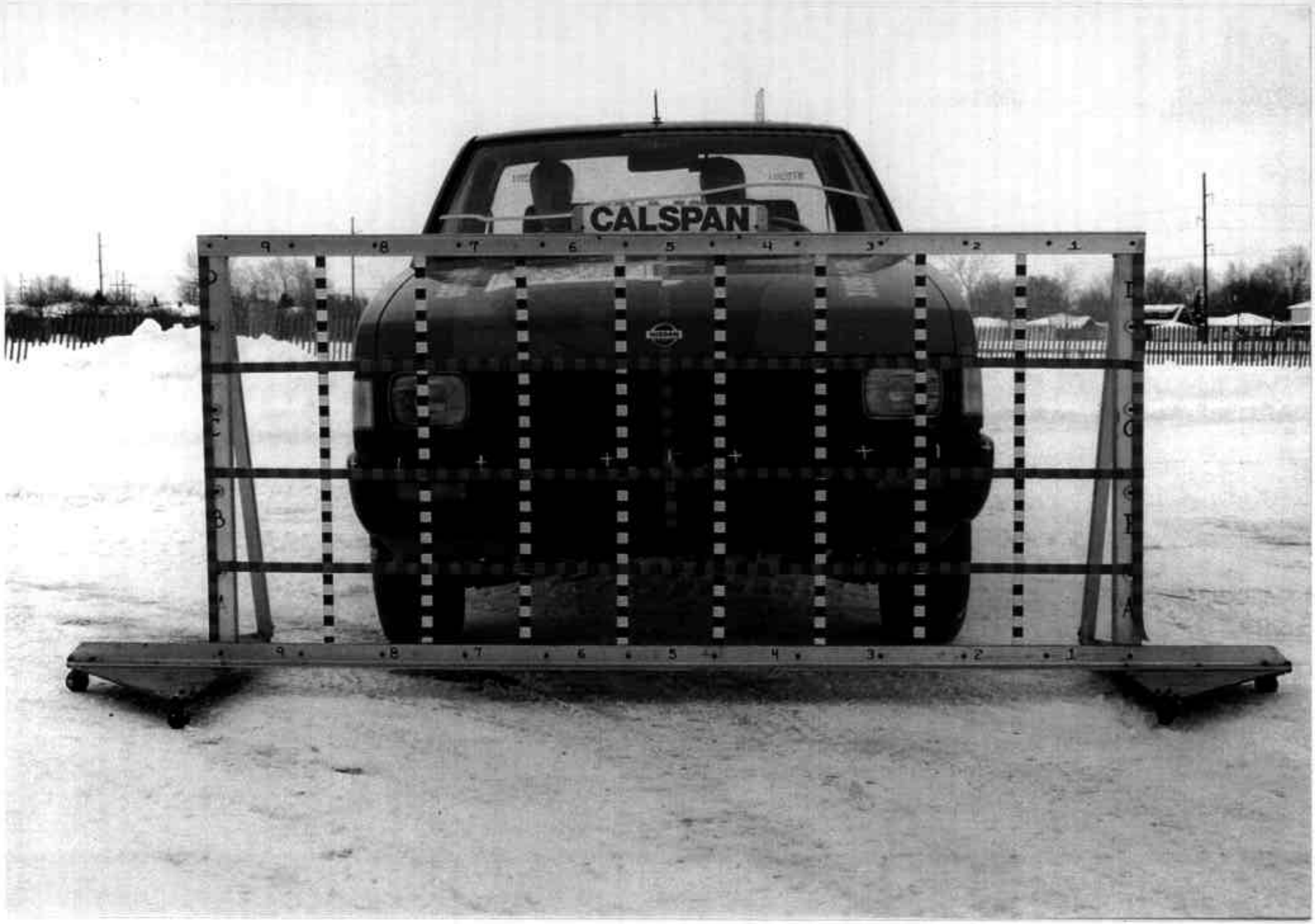


Figure A-1 LOAD CELL LOCATIONS

8313-7

Figure A-2 PRE-TEST FRONT VIEW

Figure A-3 POST-TEST FRONT VIEW

Figure A-4 PRE-TEST LEFT SIDE VIEW

Figure A-5 POST-TEST LEFT SIDE VIEW

Figure A-6 PRE-TEST RIGHT SIDE VIEW

Figure A-7 POST-TEST RIGHT SIDE VIEW

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

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

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

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

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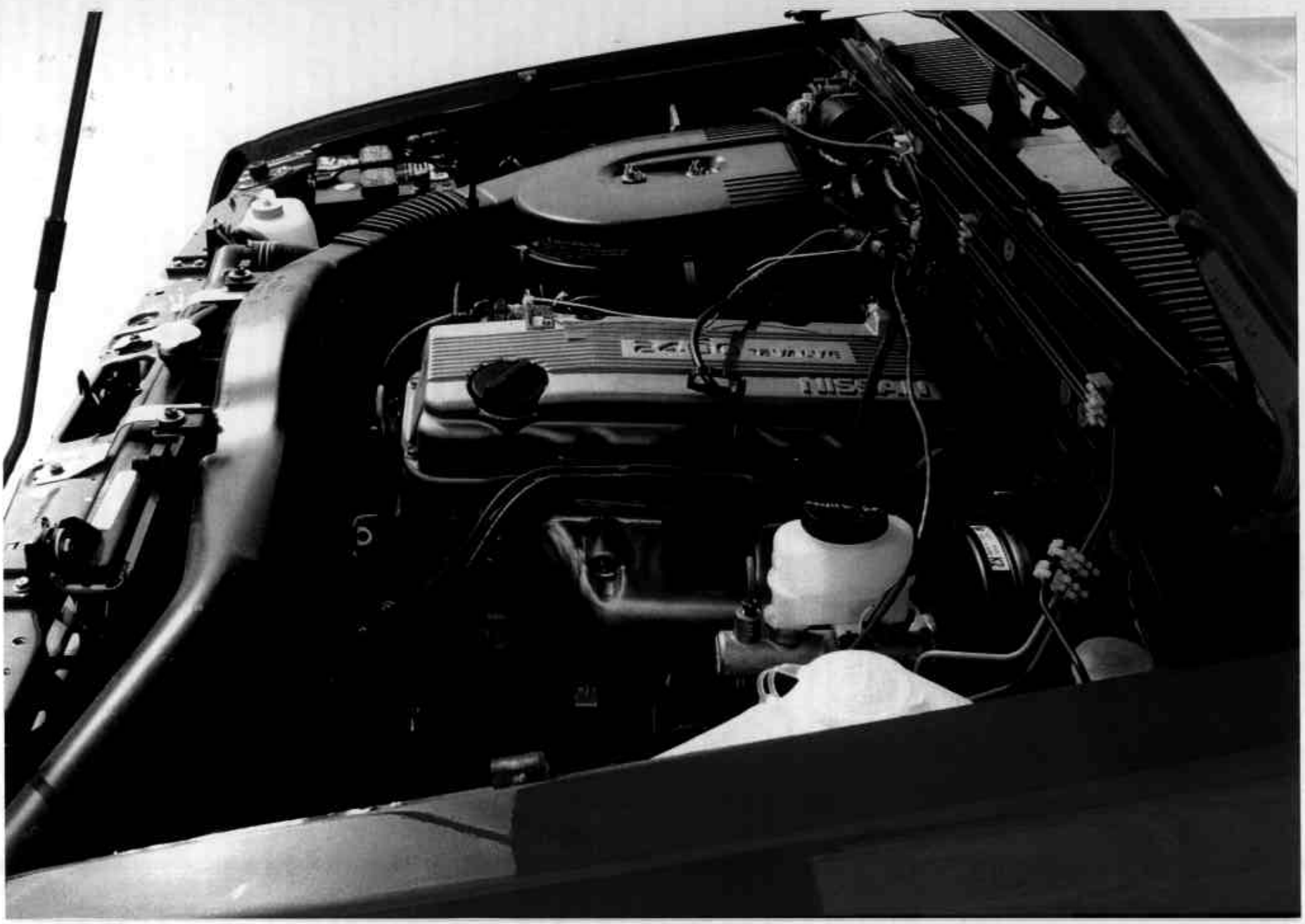
Figure A-12 PRE-TEST WINDSHIELD VIEW

8313-7

Figure A-13 POST-TEST WINDSHIELD VIEW



A-16

8313-7

Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

Figure A-15 FUEL CAP VIEW

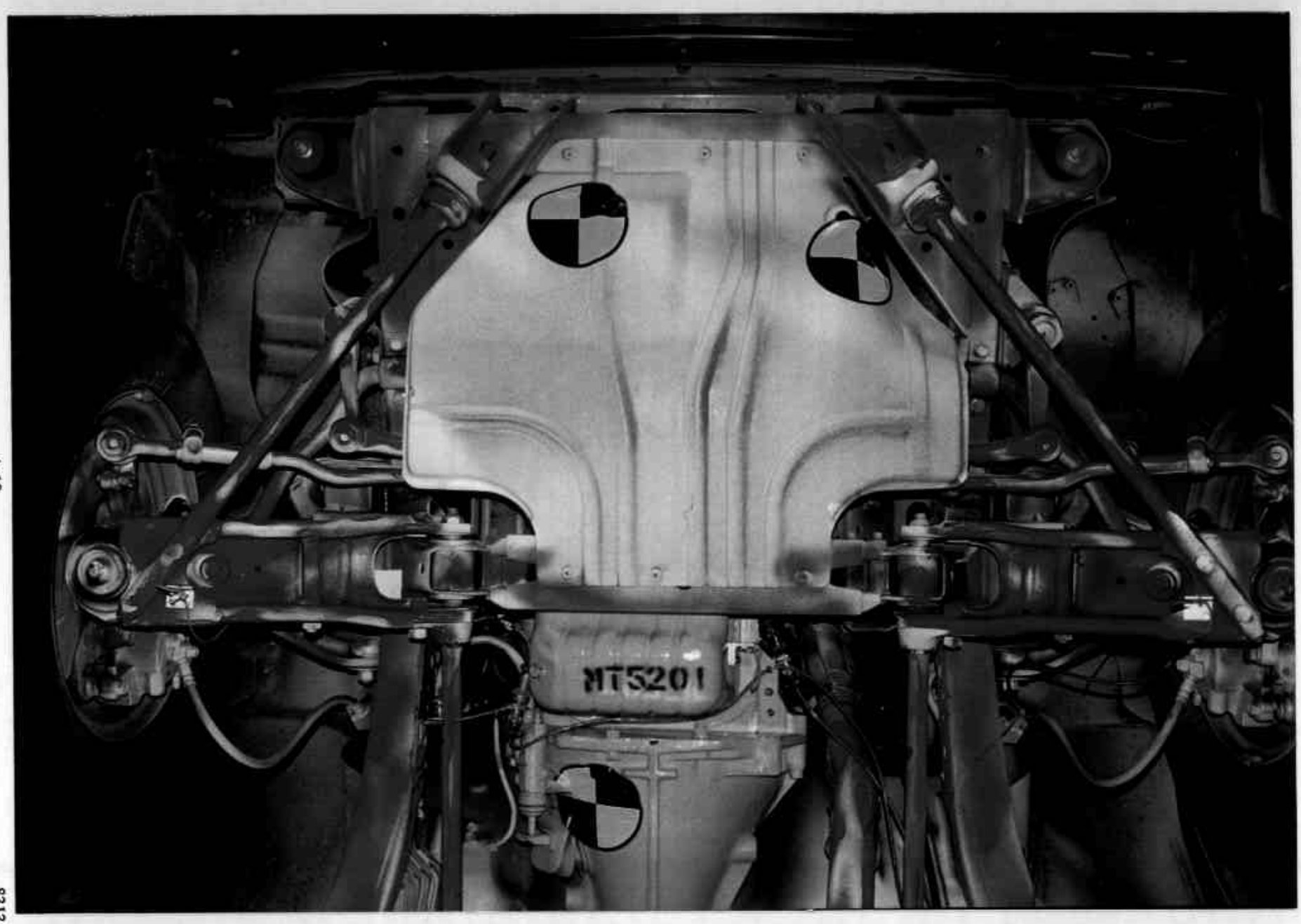


Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

8313-7

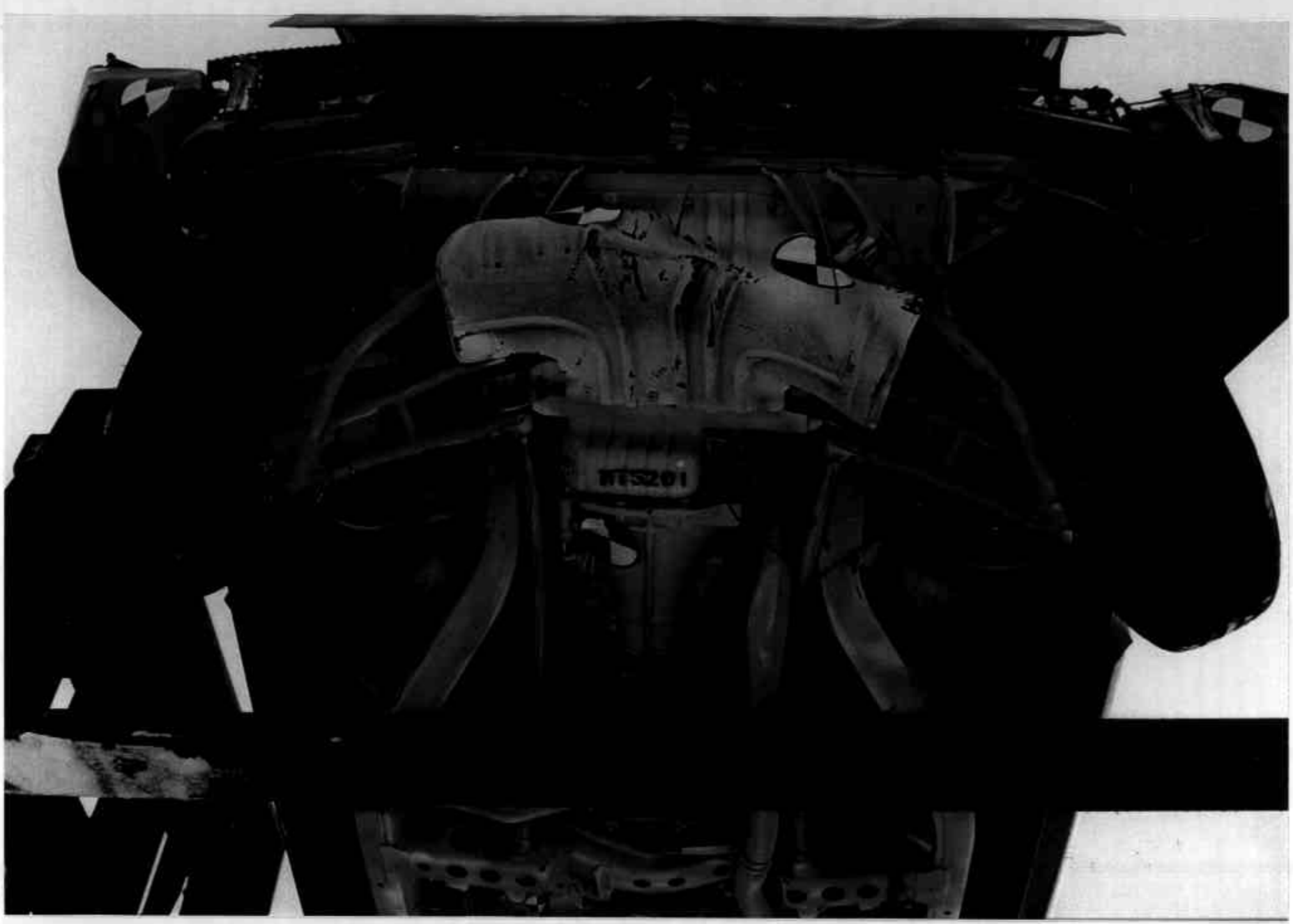


Figure A-17 POST-TEST FRONT UNDERBODY VIEW

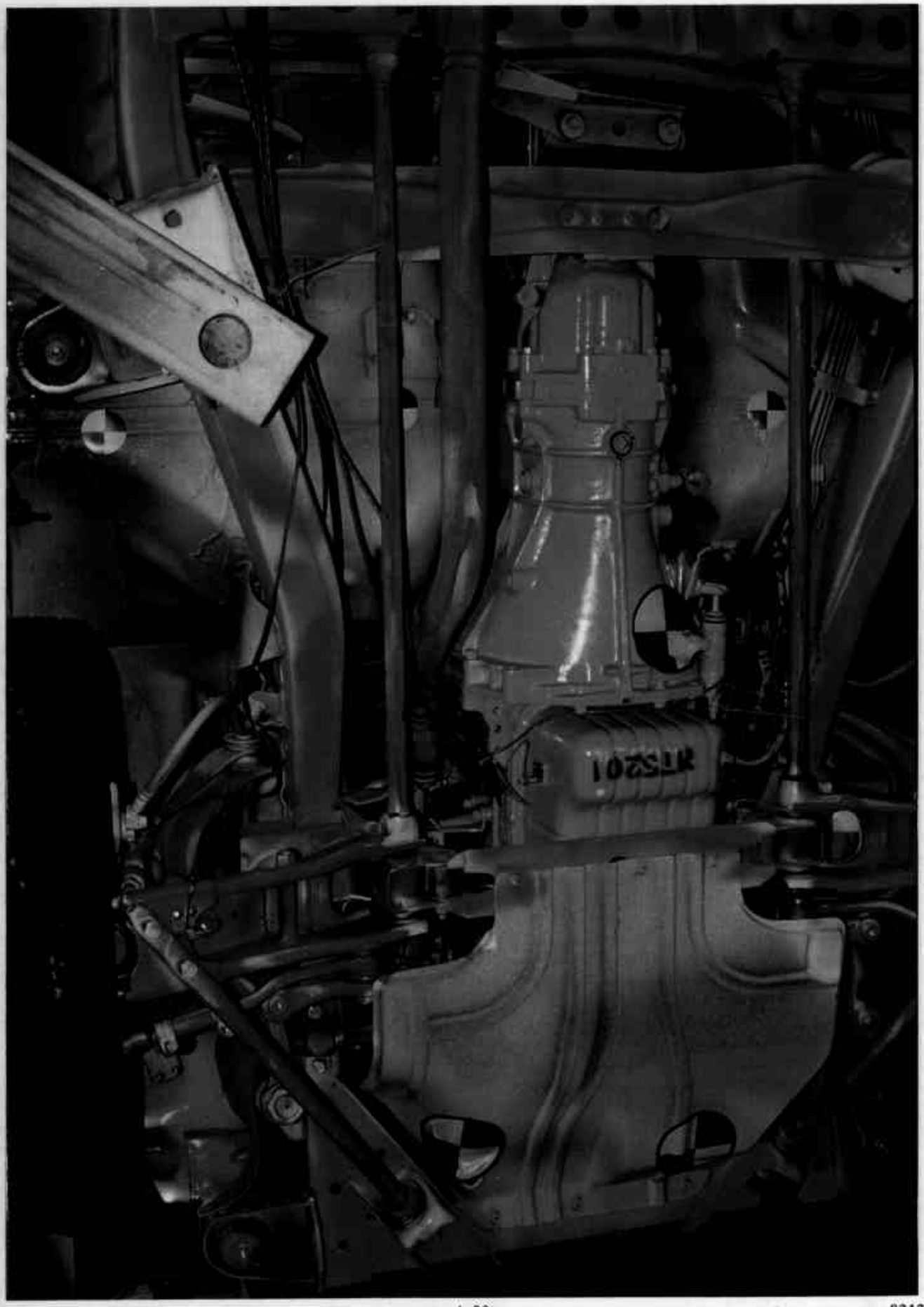


Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

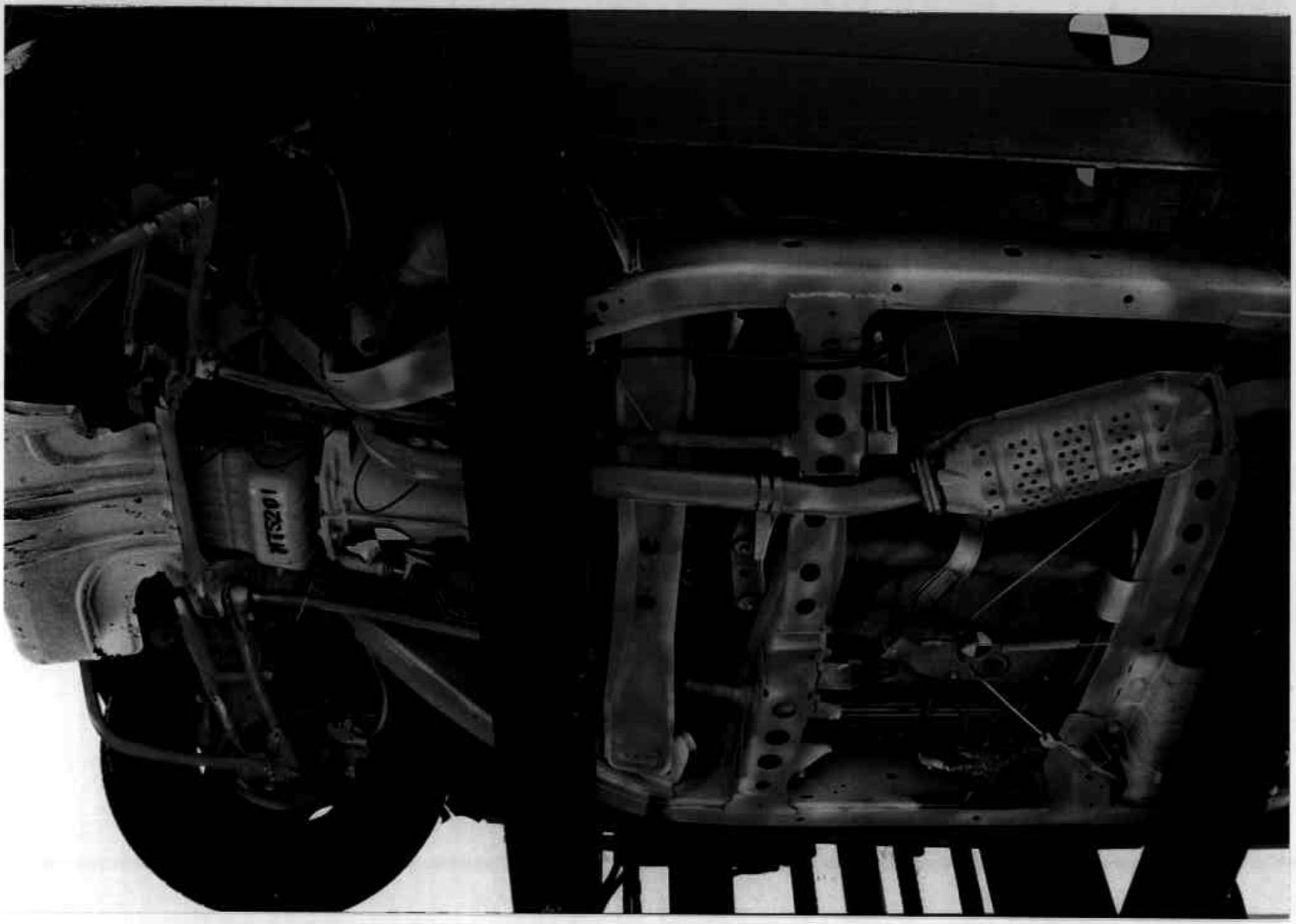


Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW

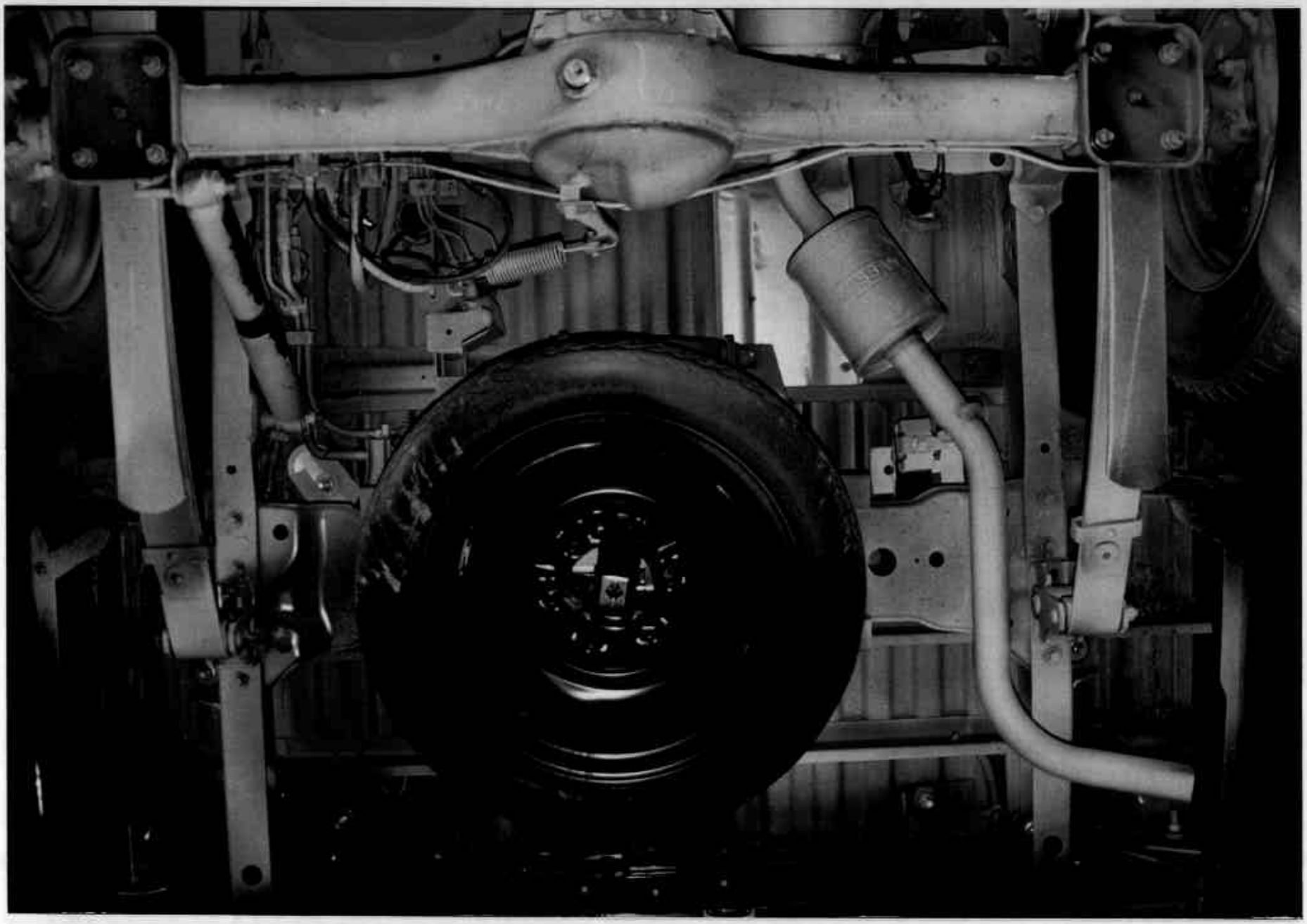


Figure A-20 PRE-TEST REAR UNDERBODY VIEW

Figure A-21 POST-TEST REAR UNDERBODY VIEW

Figure A-22 PRE-TEST DRIVER POSITION VIEW

8313-7

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Figure A-23 POST-TEST DRIVER POSITION VIEW

Figure A-24 PRE-TEST PASSENGER POSITION VIEW

8313-7

Figure A-25 POST-TEST PASSENGER POSITION VIEW

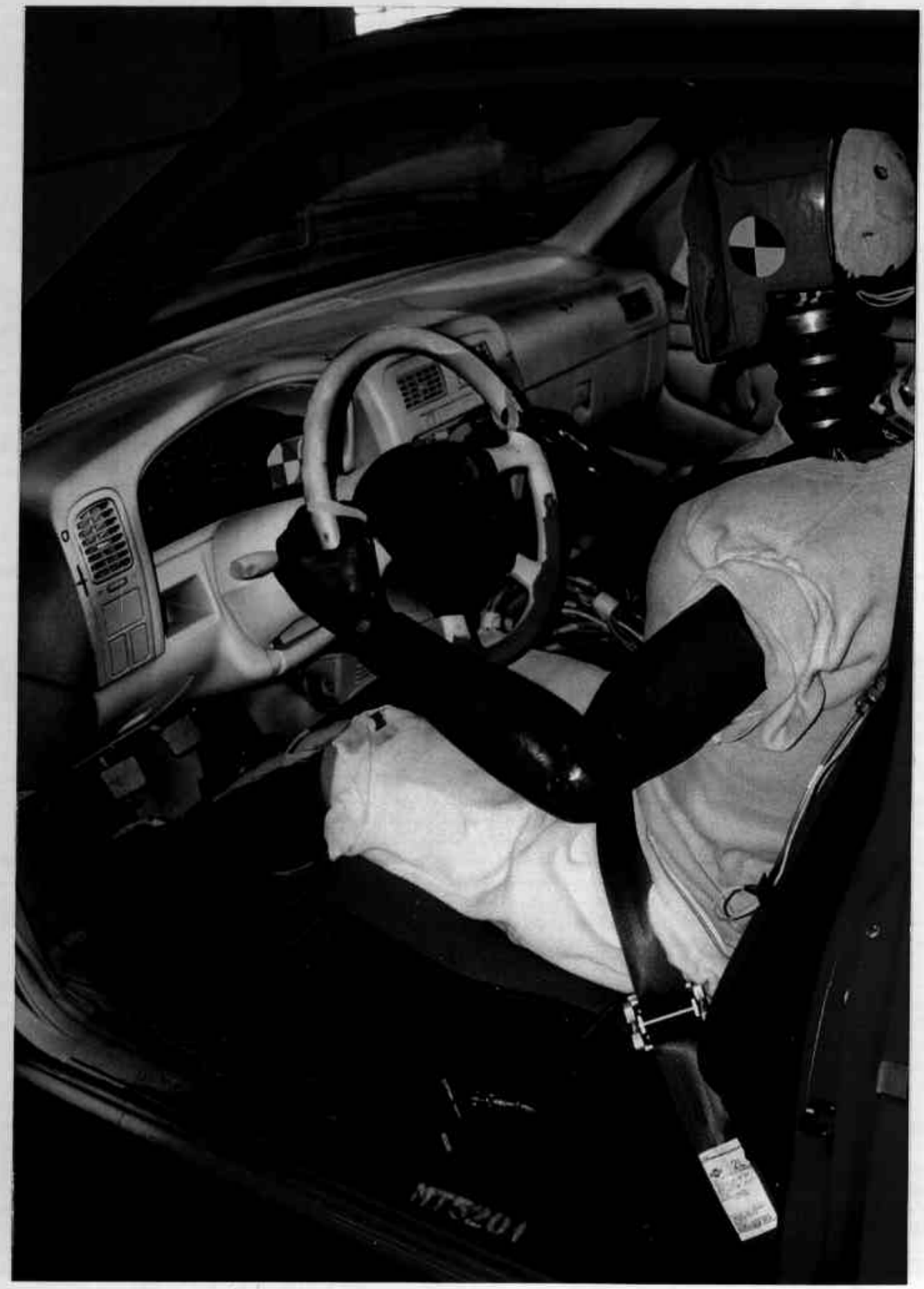

Figure A-26 PRE-TEST DRIVER AND INTERIOR VIEW

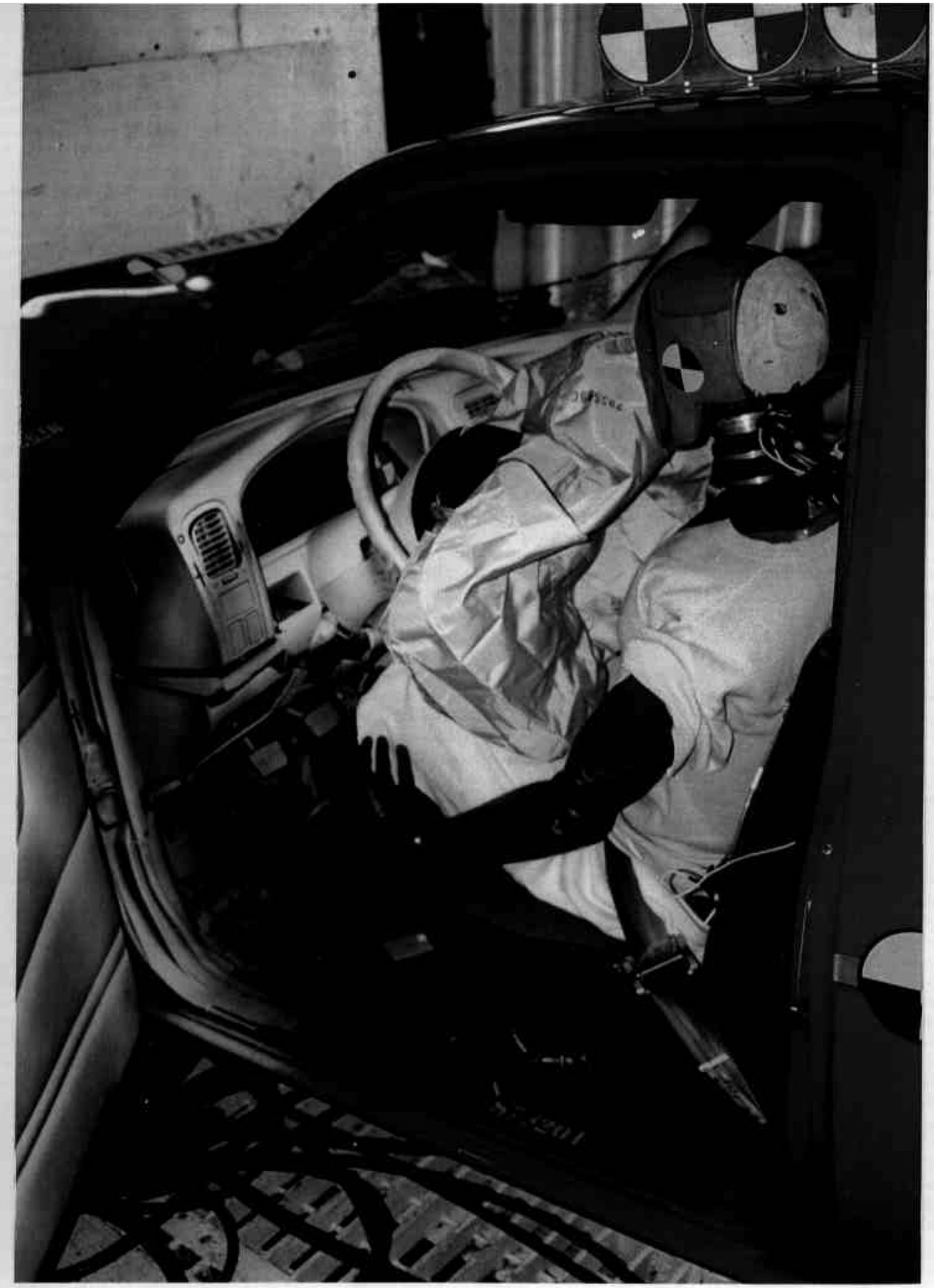

Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW

Figure A-28 PRE-TEST PASSENGER AND INTERIOR VIEW

8313-7

Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW

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Figure A-30 PRE-TEST DRIVER HEAD LOCATION

Figure A-31 POST-TEST DRIVER HEAD LOCATION

Figure A-32 PRE-TEST PASSENGER HEAD LOCATION

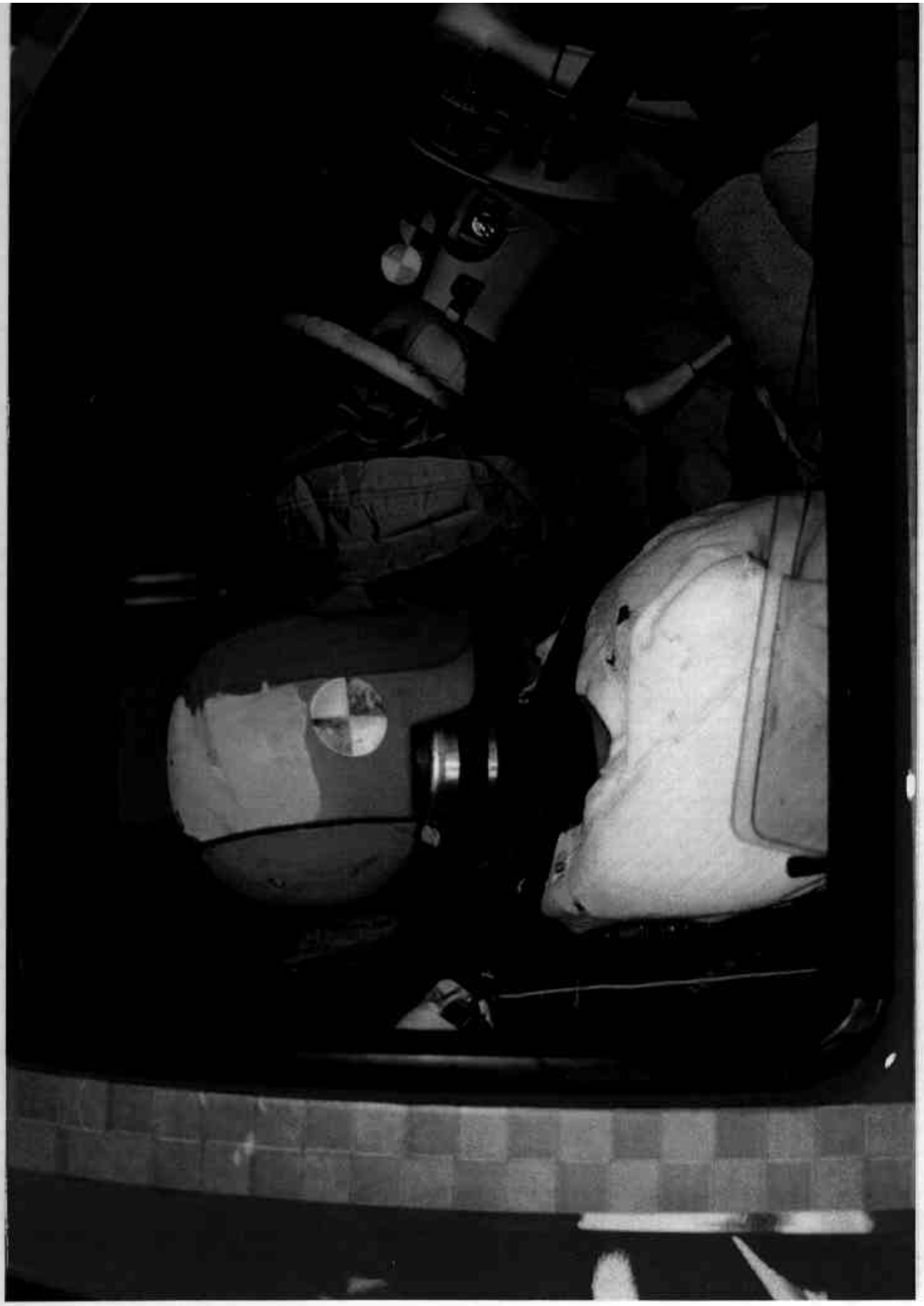

Figure A-33 POST-TEST PASSENGER HEAD LOCATION

Figure A-34 POST-TEST DRIVER FLOOR PAN VIEW

8313-7

Figure A-35 POST-TEST PASSENGER FLOOR PAN VIEW

Figure A-36 IMPACT VIEW

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Figure A-37 ROLLOVER VIEW

Appendix B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

NHTSA TEST NO. MT5201

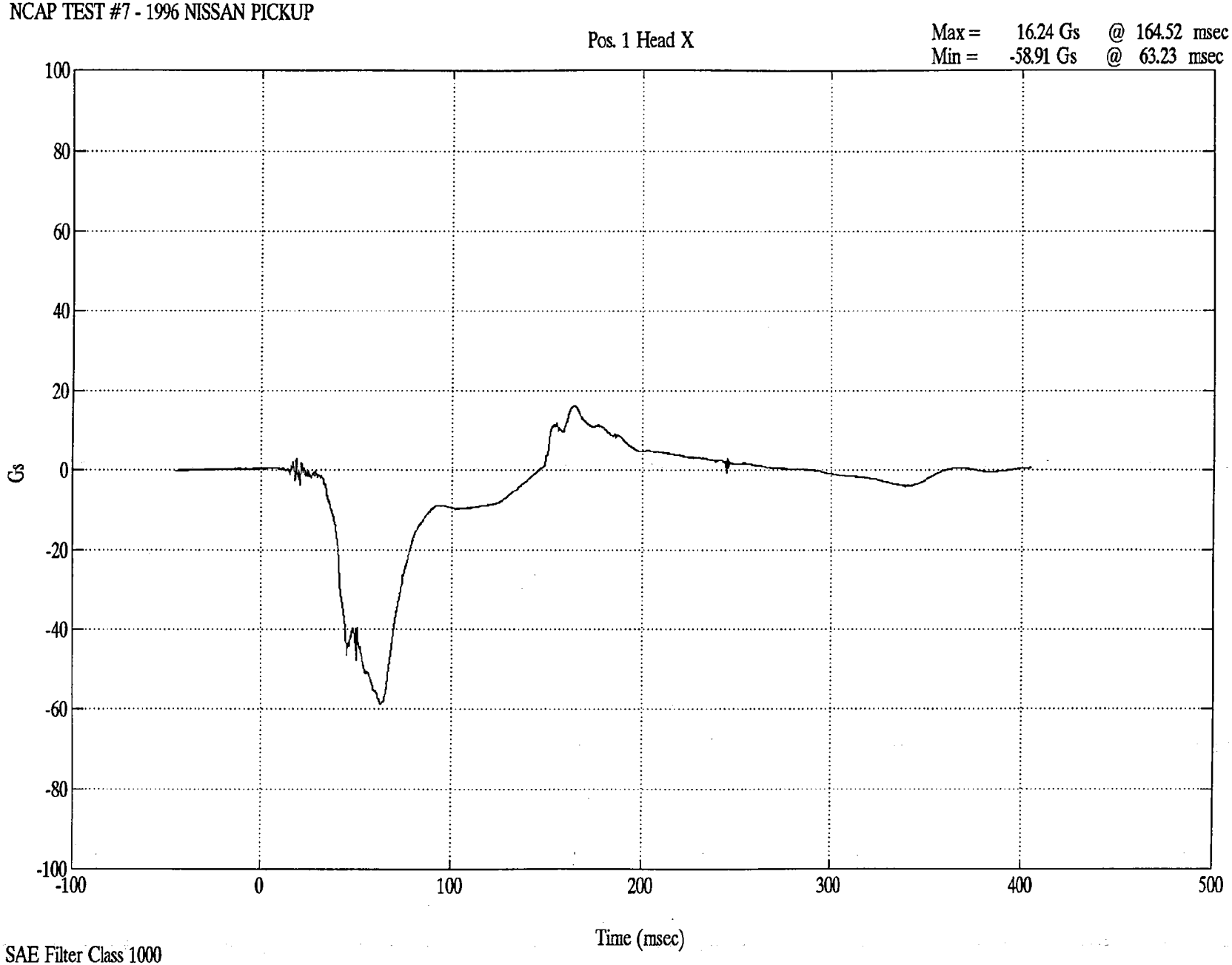
DUMMY DATA

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 #7 - 1996 NISSAN PICKUP



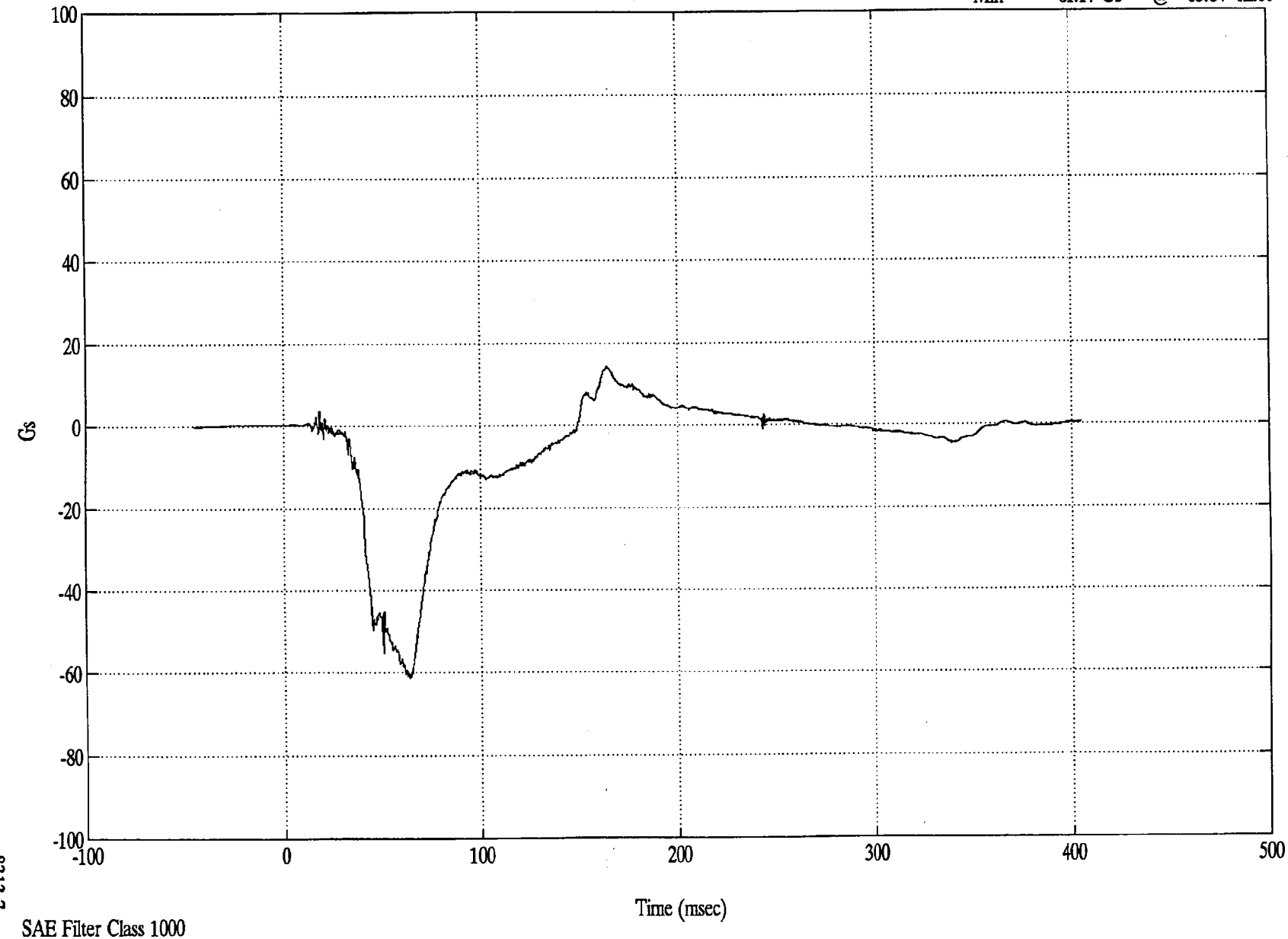
SAE Filter Class 1000

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

Pos. 1 Head X(R)

Max = 14.39 Gs @ 164.16 msec
Min = -61.17 Gs @ 63.84 msec

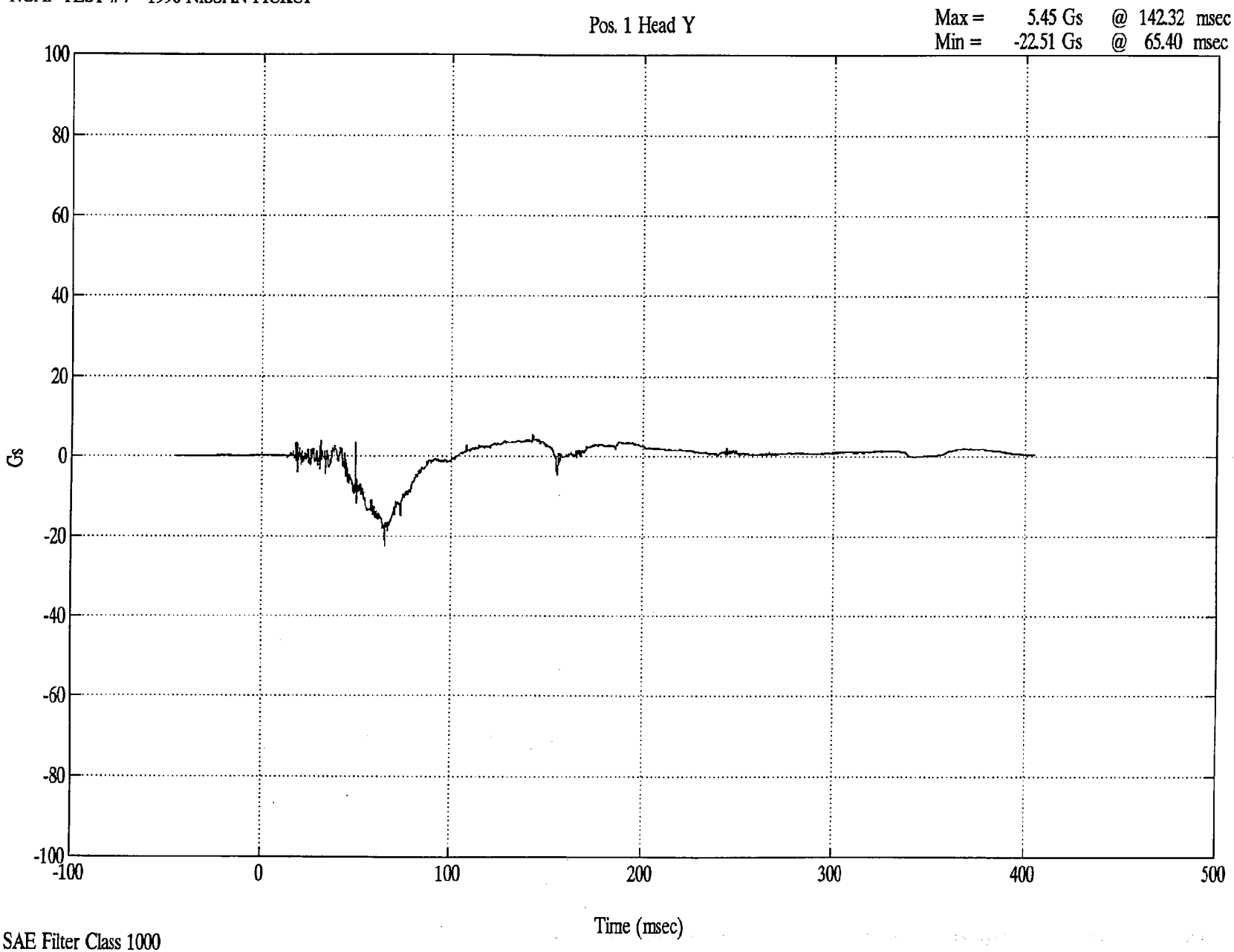


B-5

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

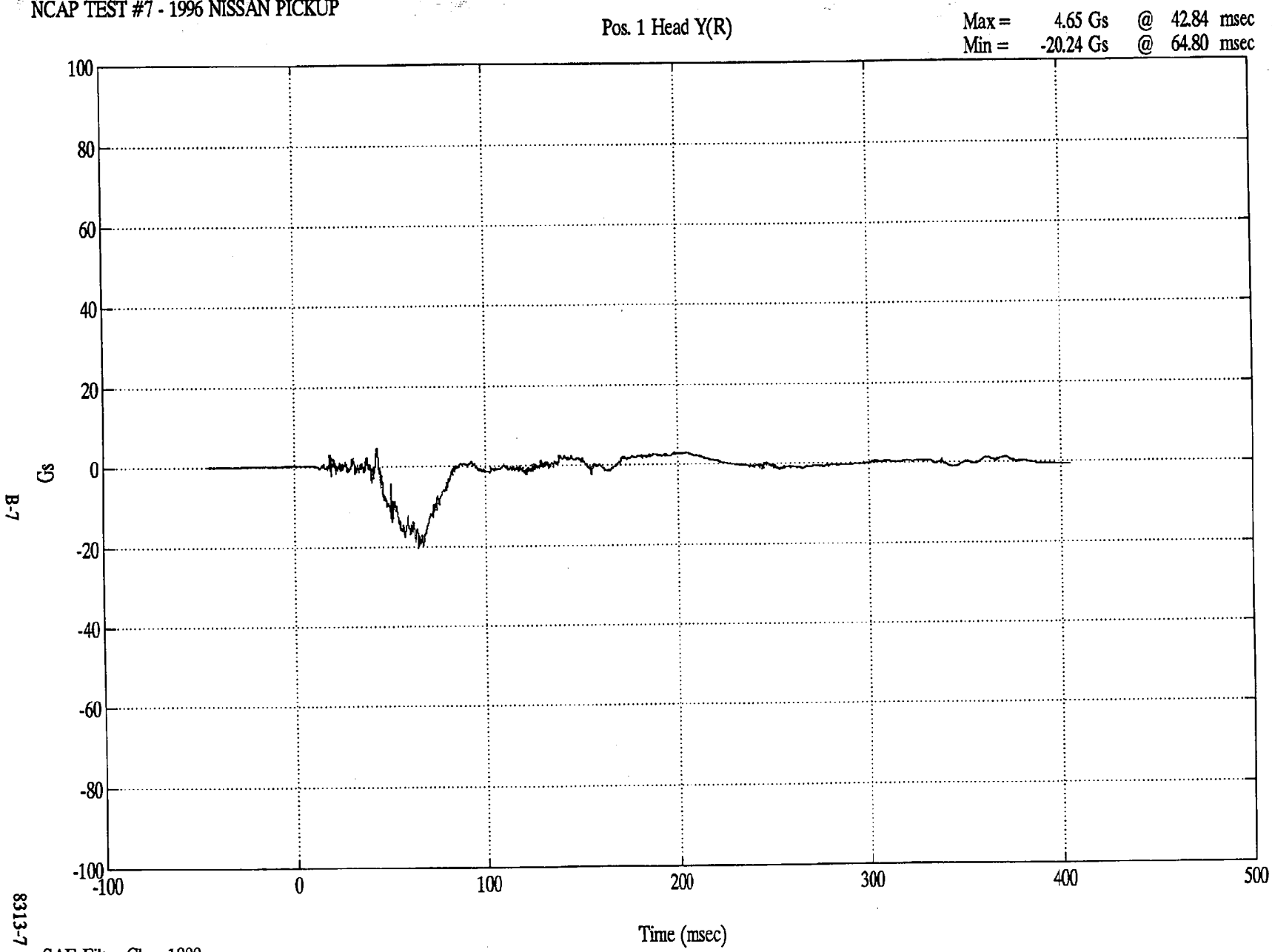


B-6

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

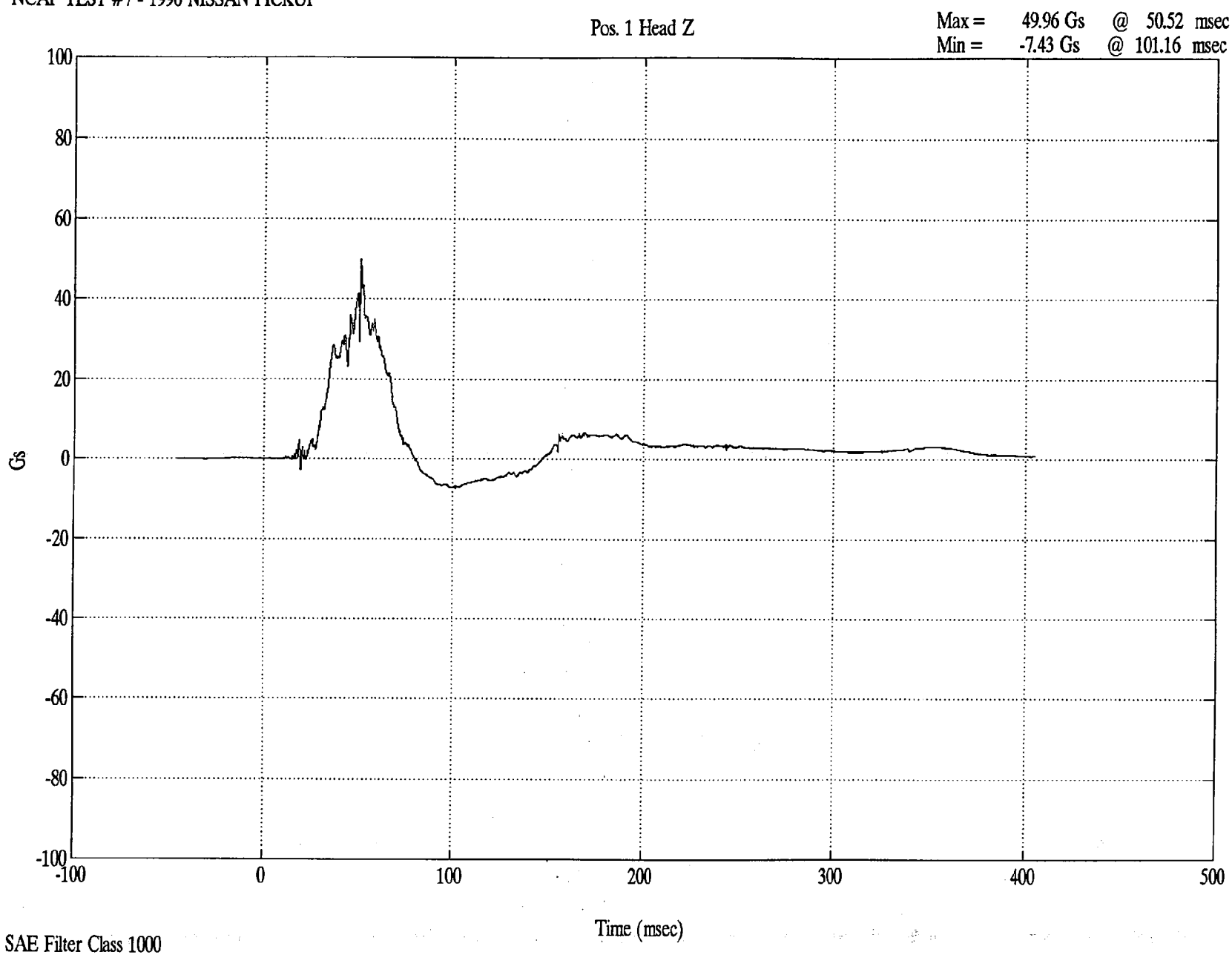


B-7

8313-7

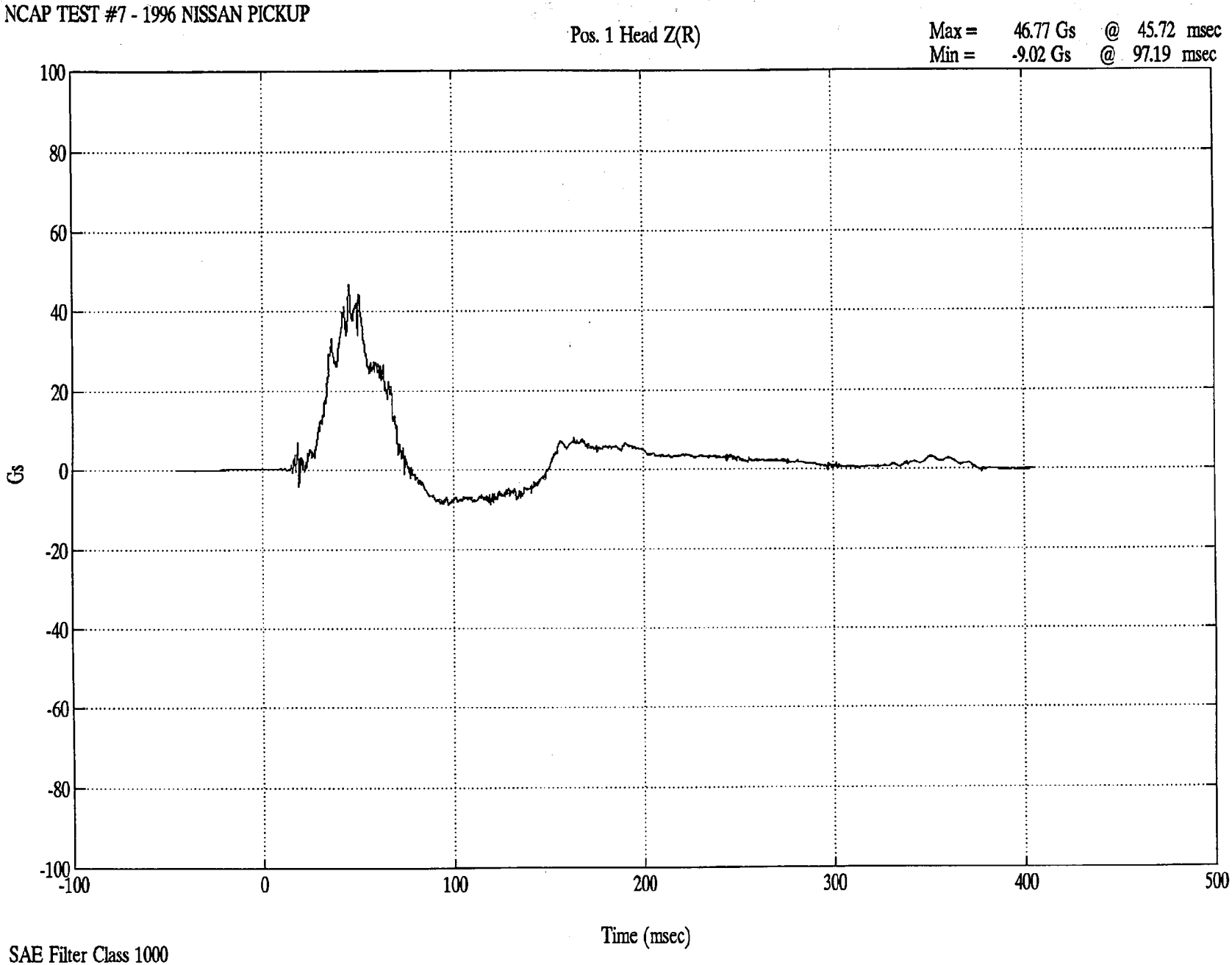
SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 1000

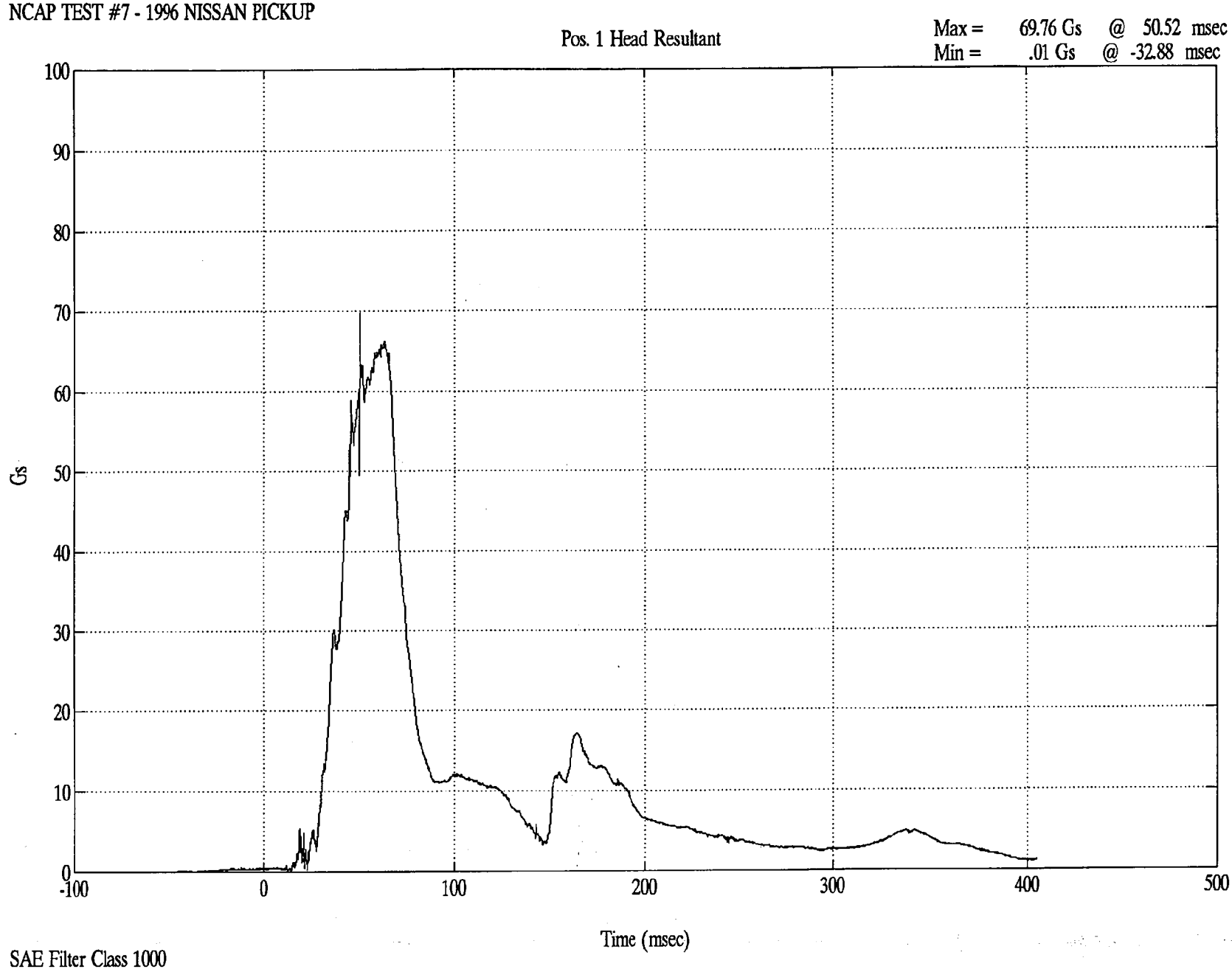
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 1000

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

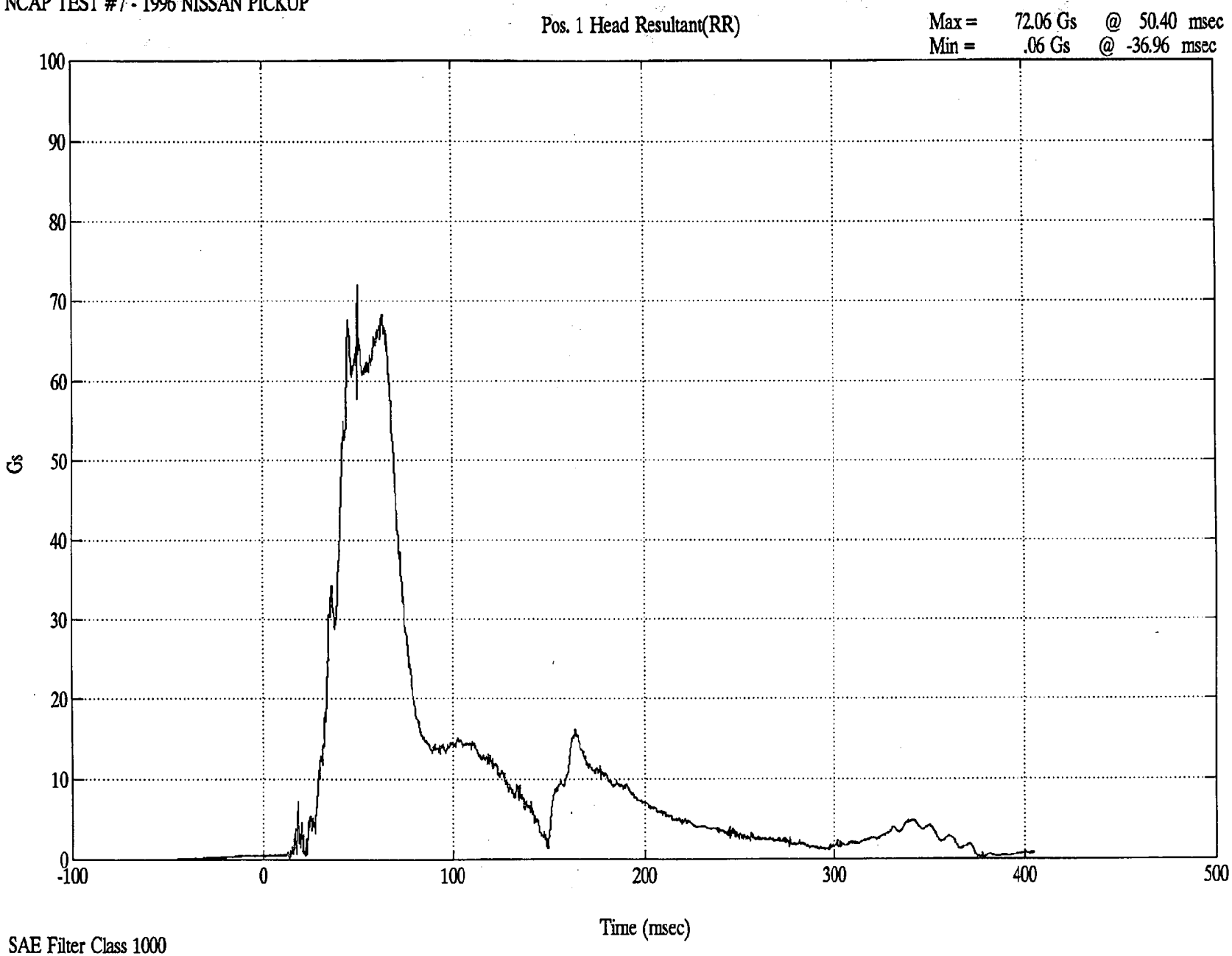


SAE Filter Class 1000

B-10

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

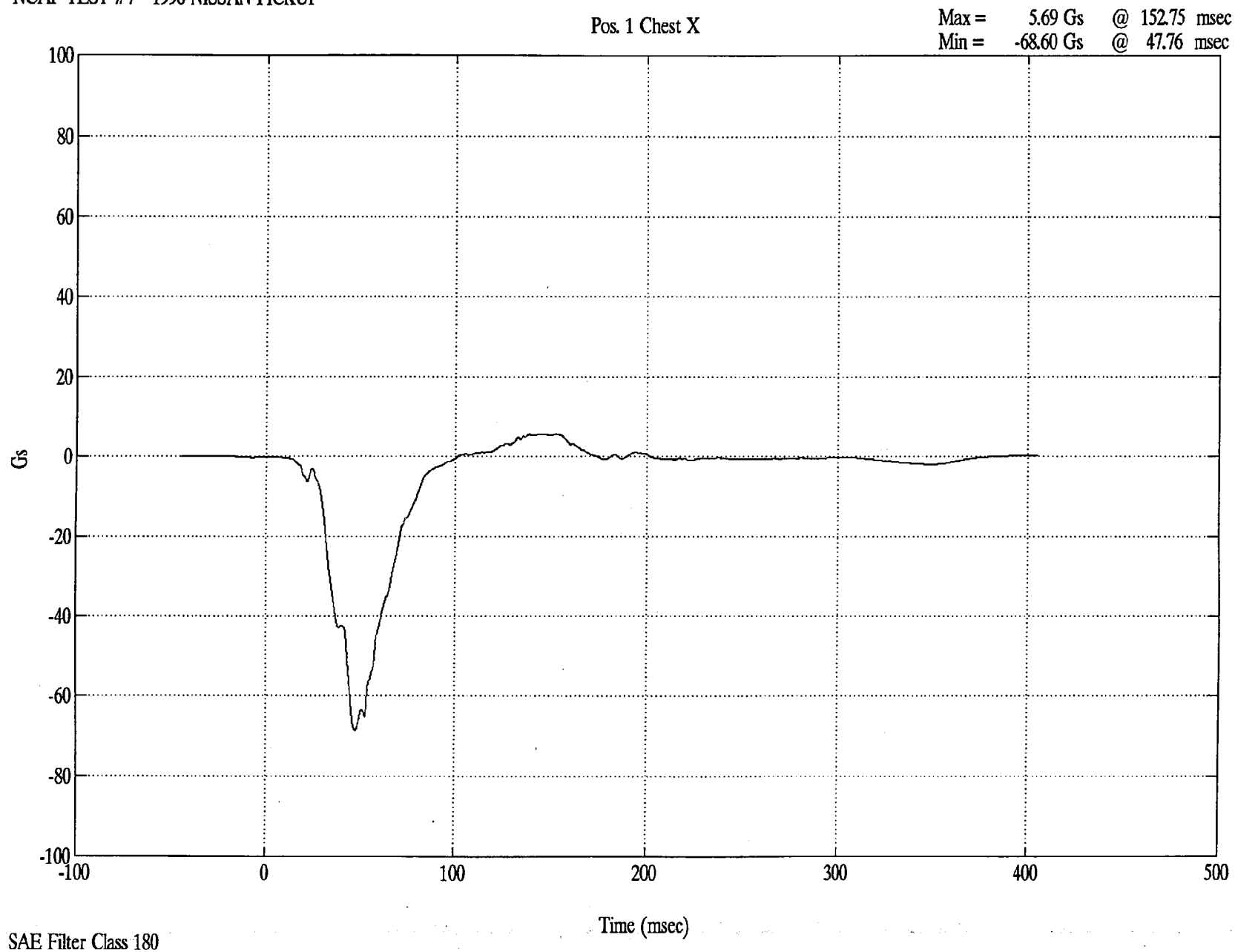


B-11

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

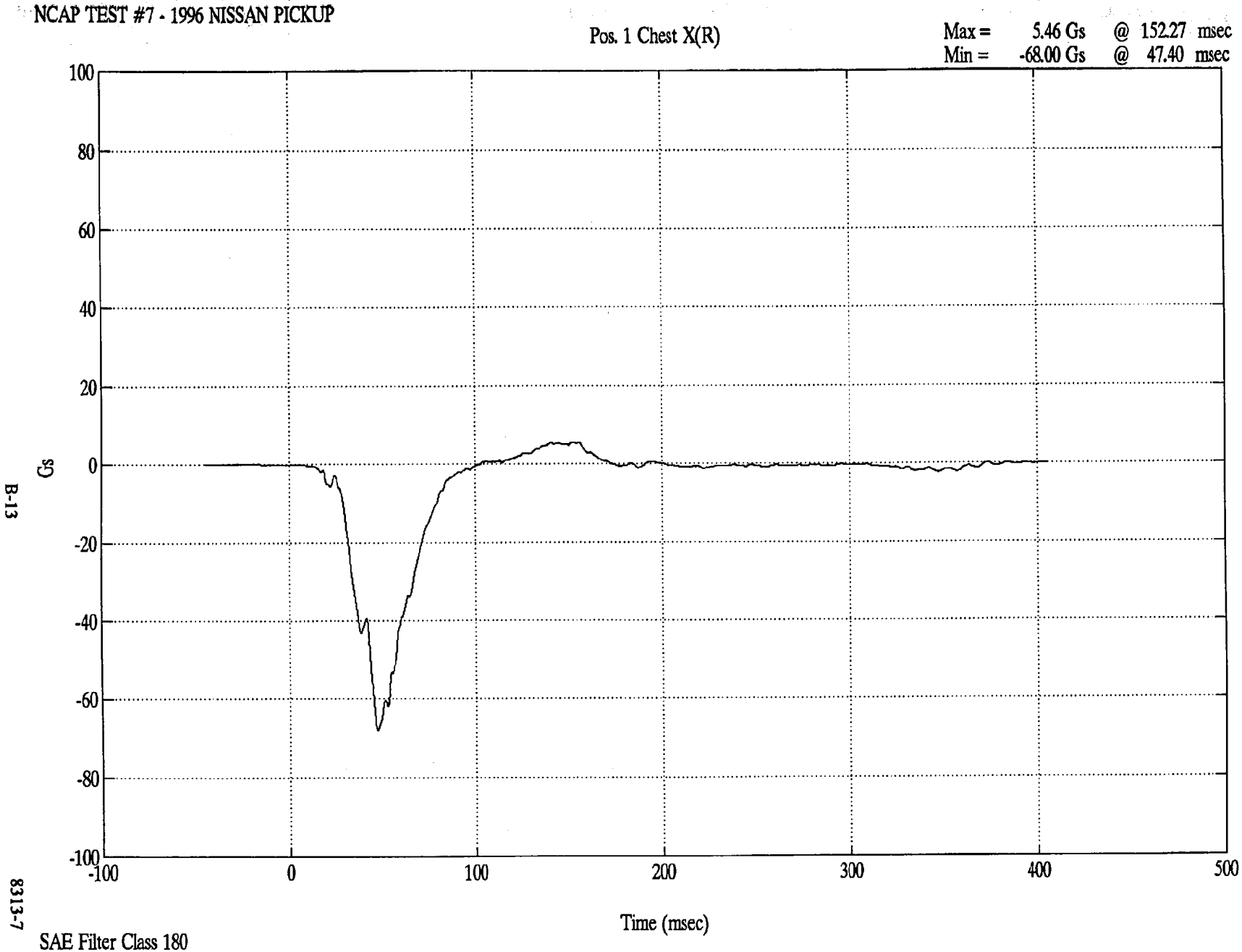


B-12

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

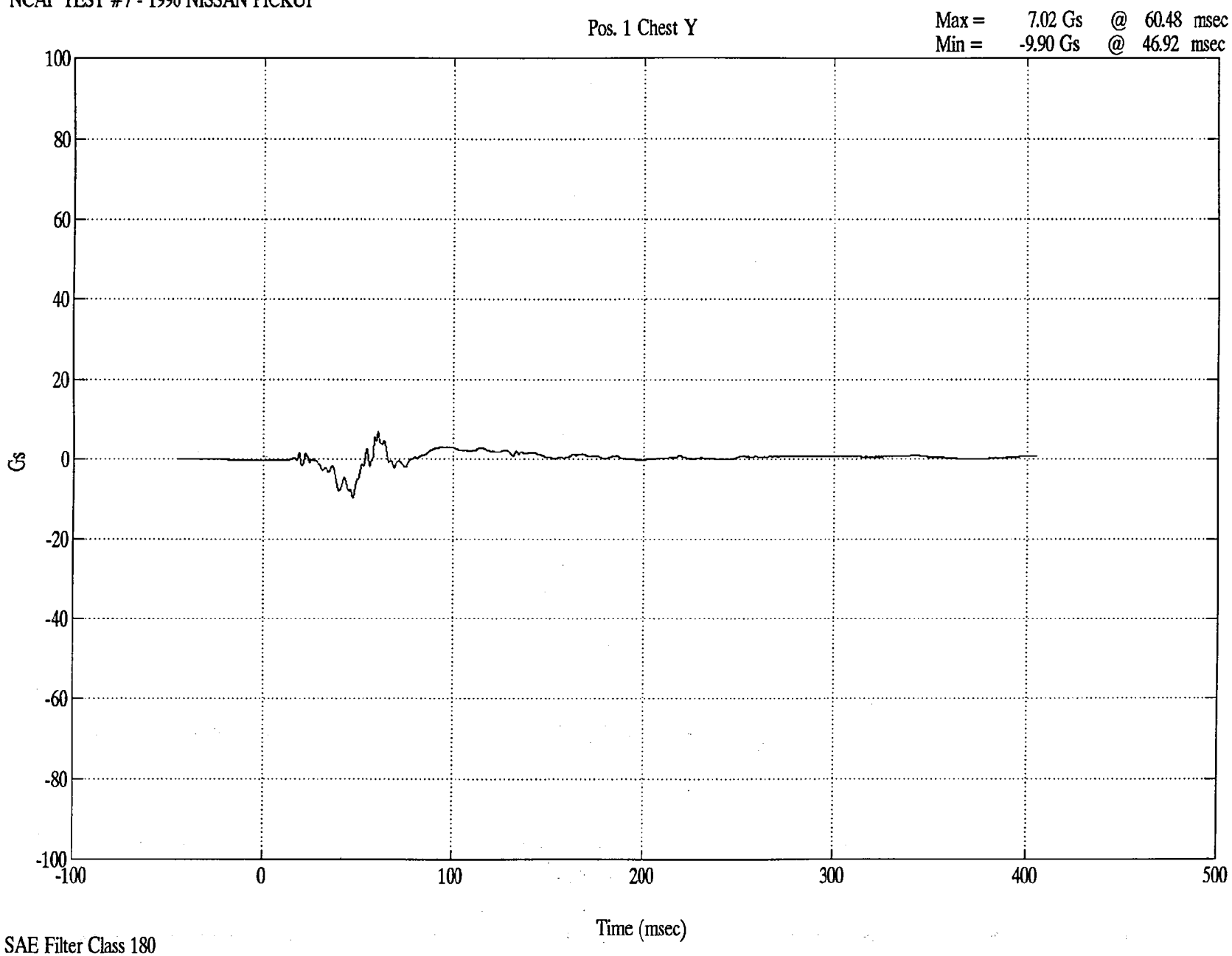


B-13

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

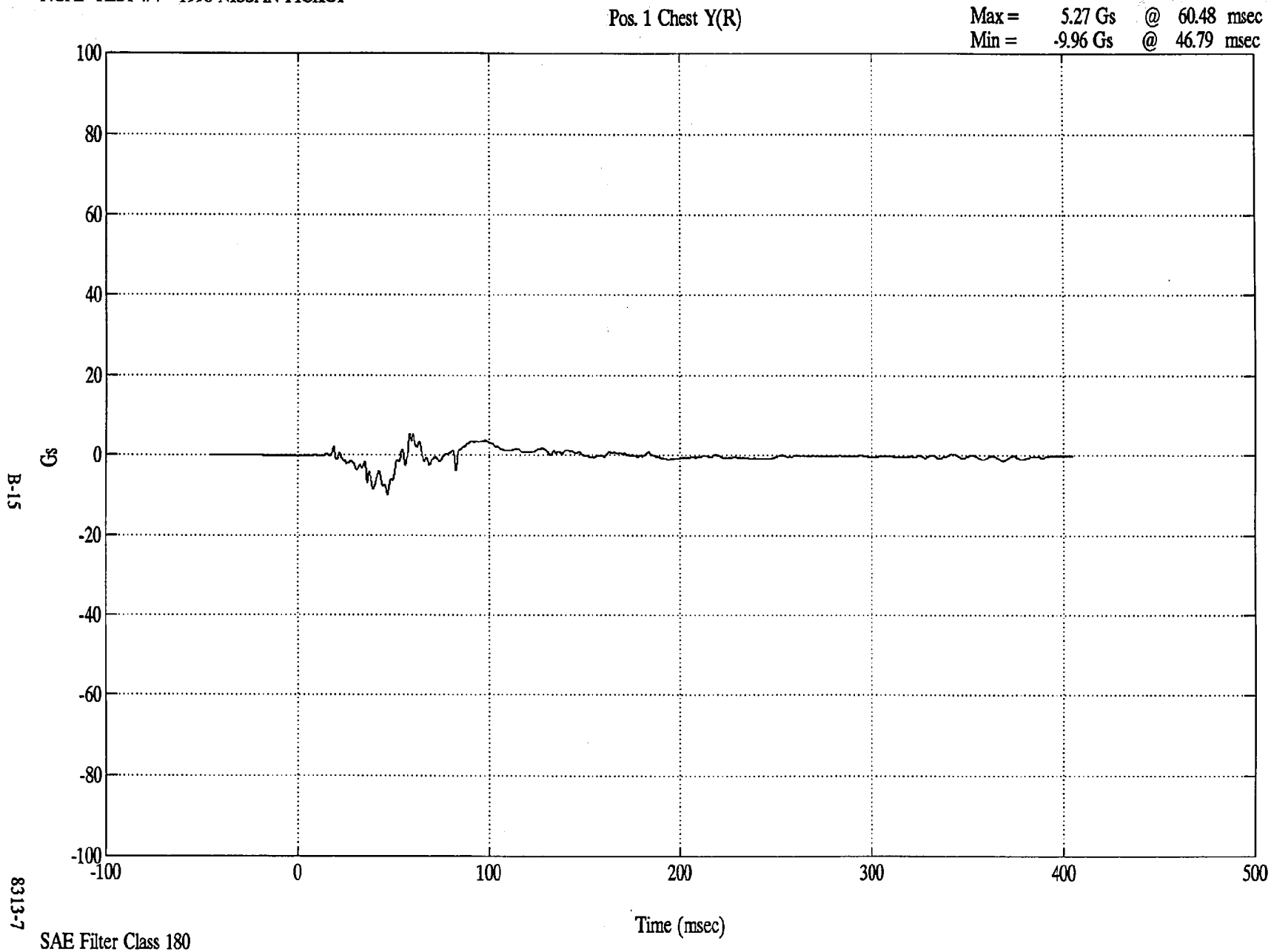


B-14

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

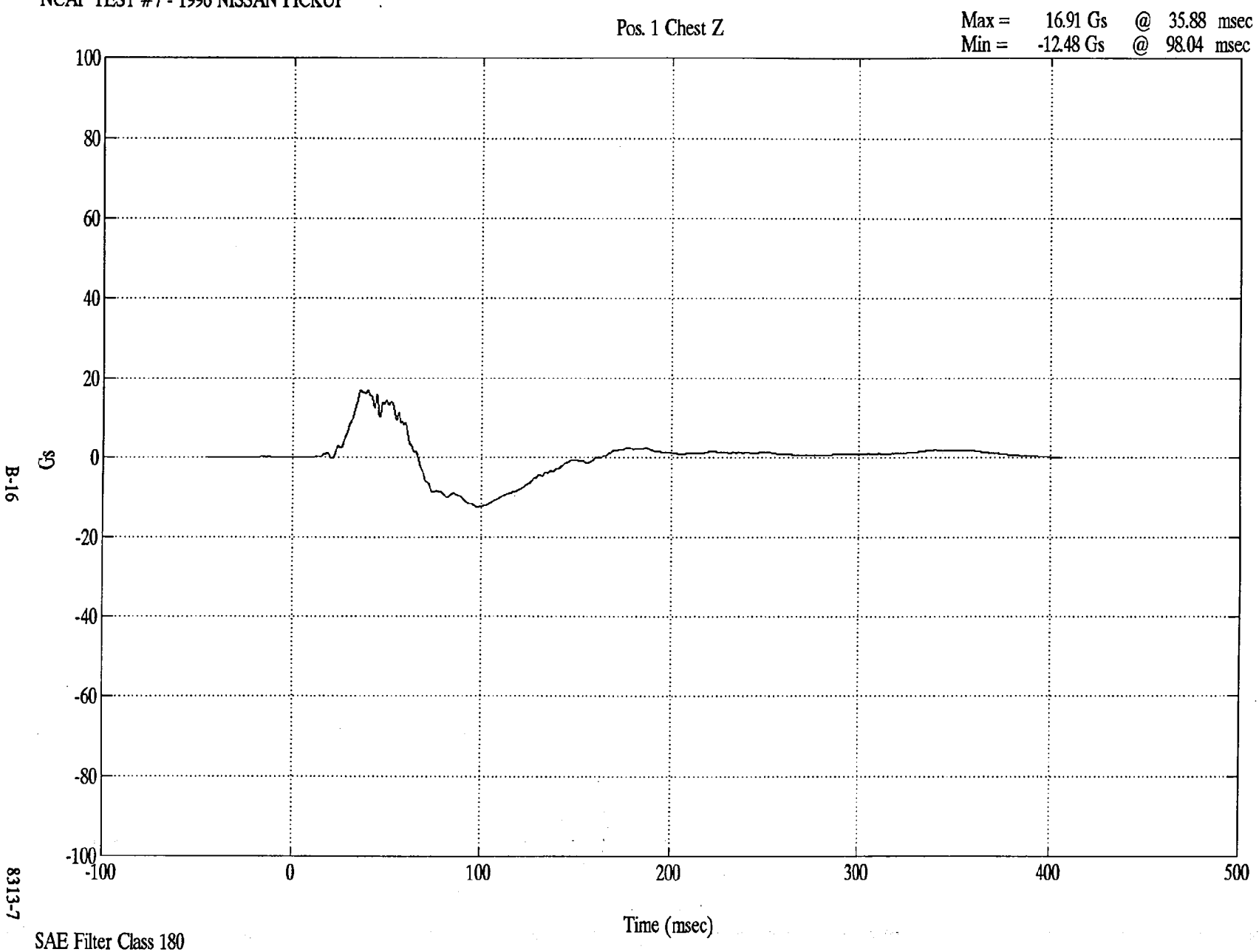


B-15

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

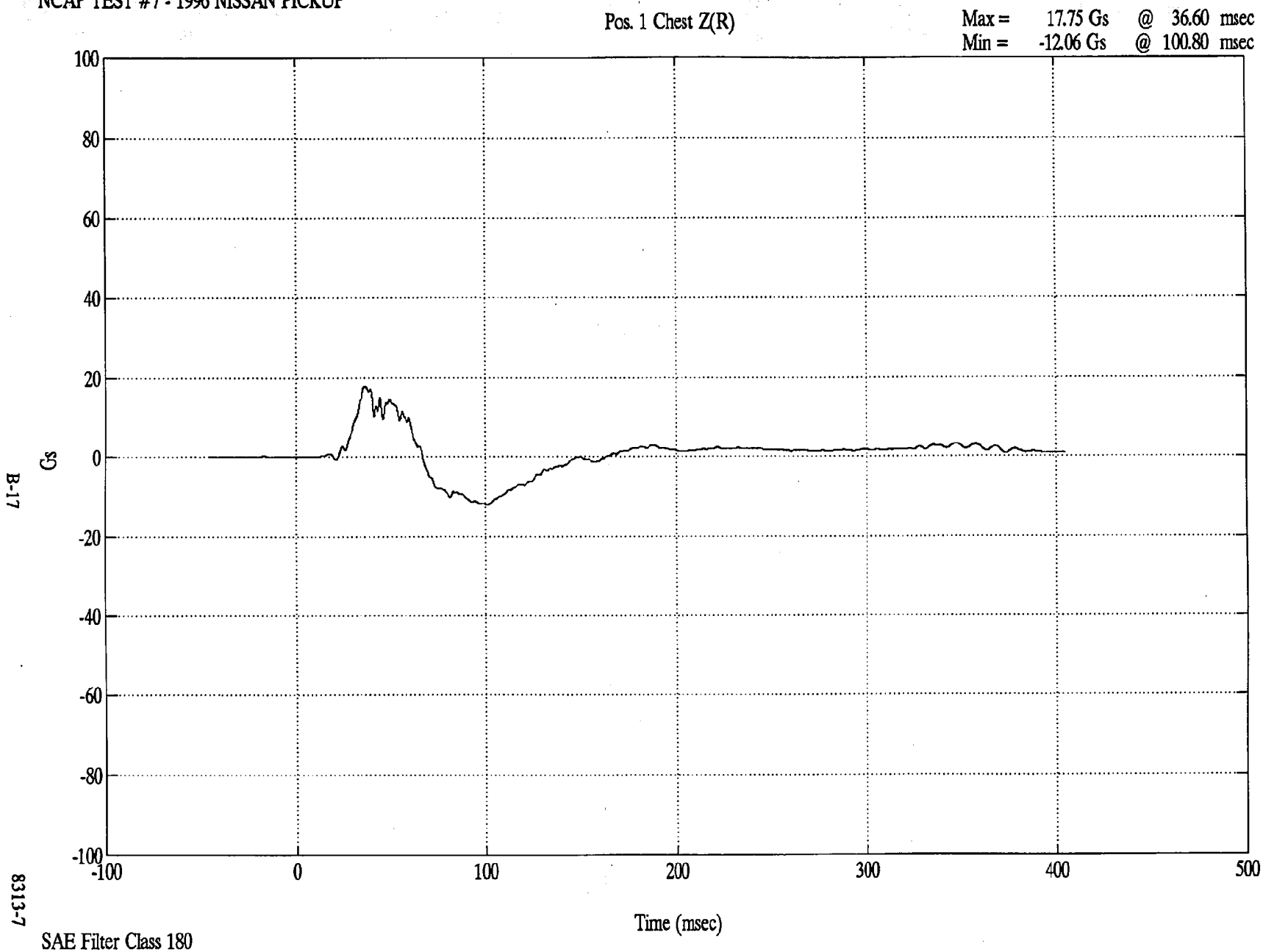


B-16

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

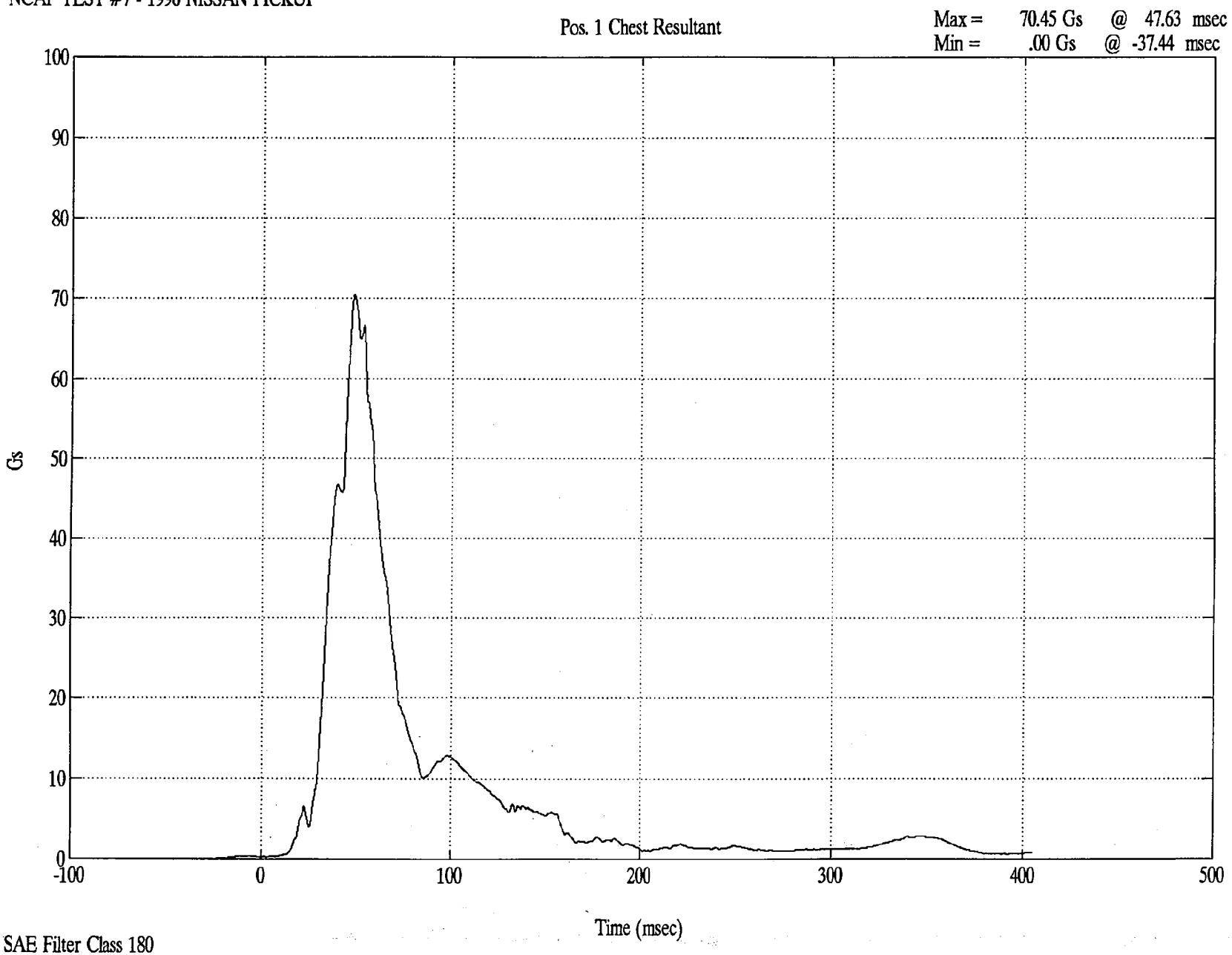


B-17

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

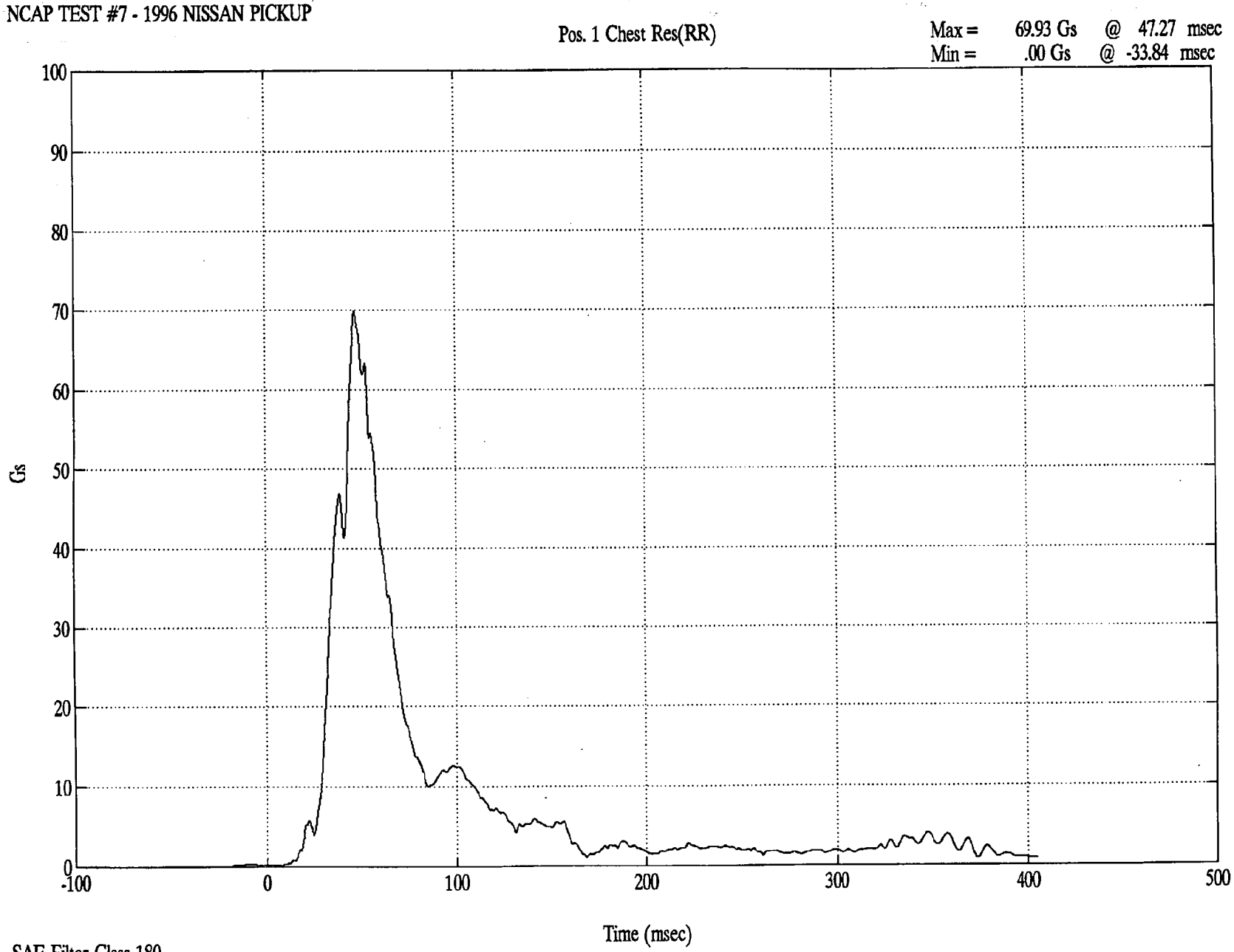


B-18

8313-7

SAE Filter Class 180

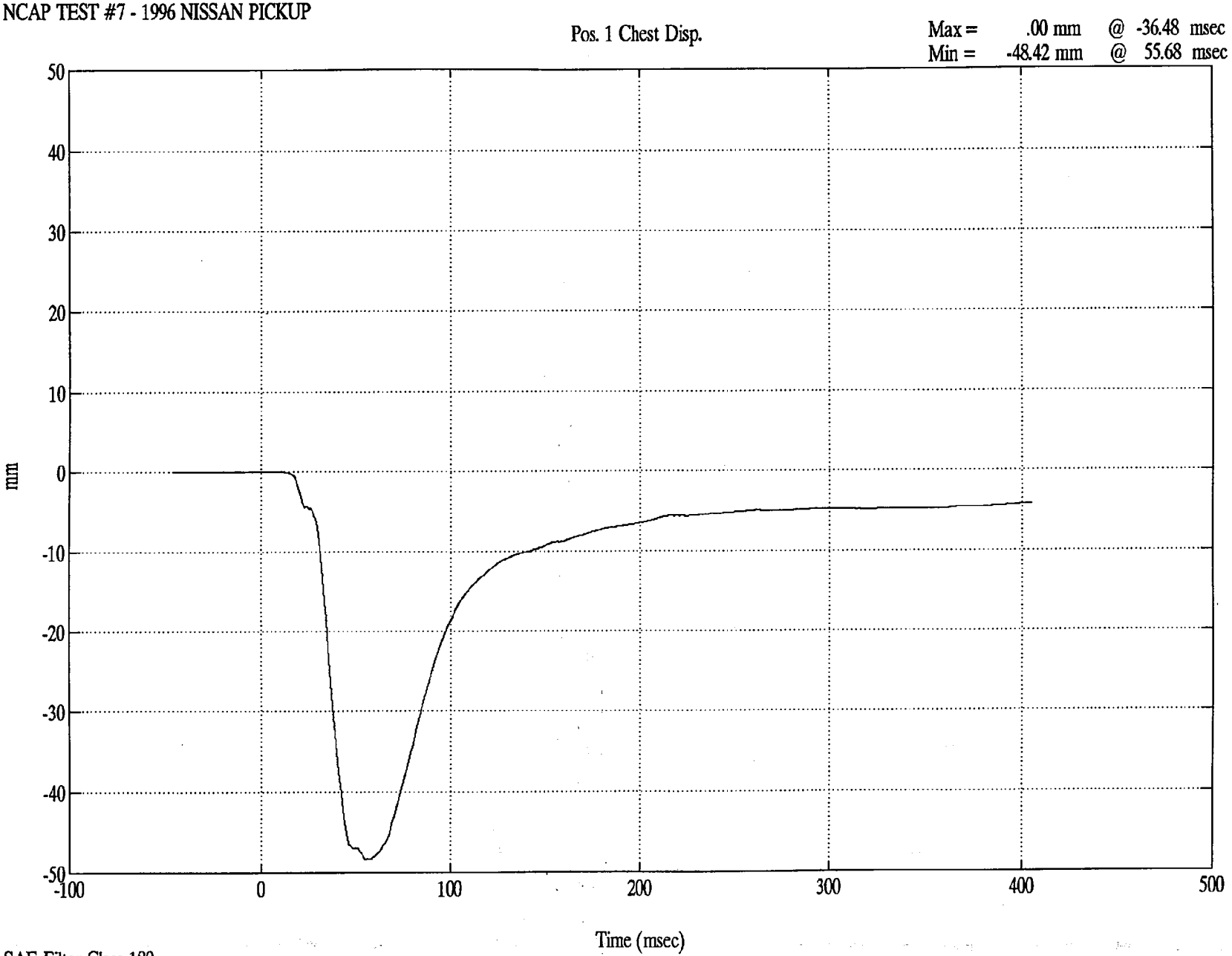
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 180

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

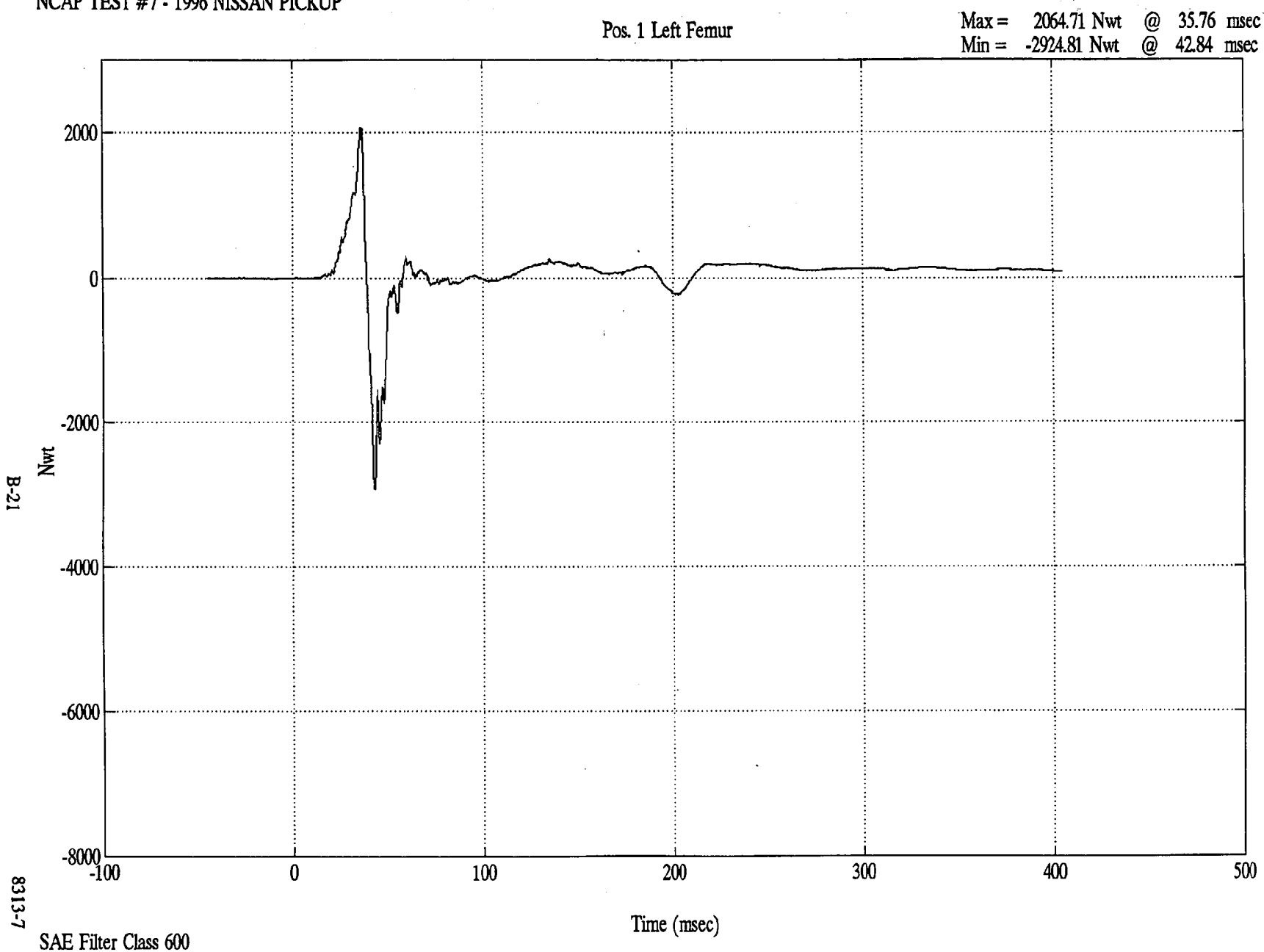


B-20

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

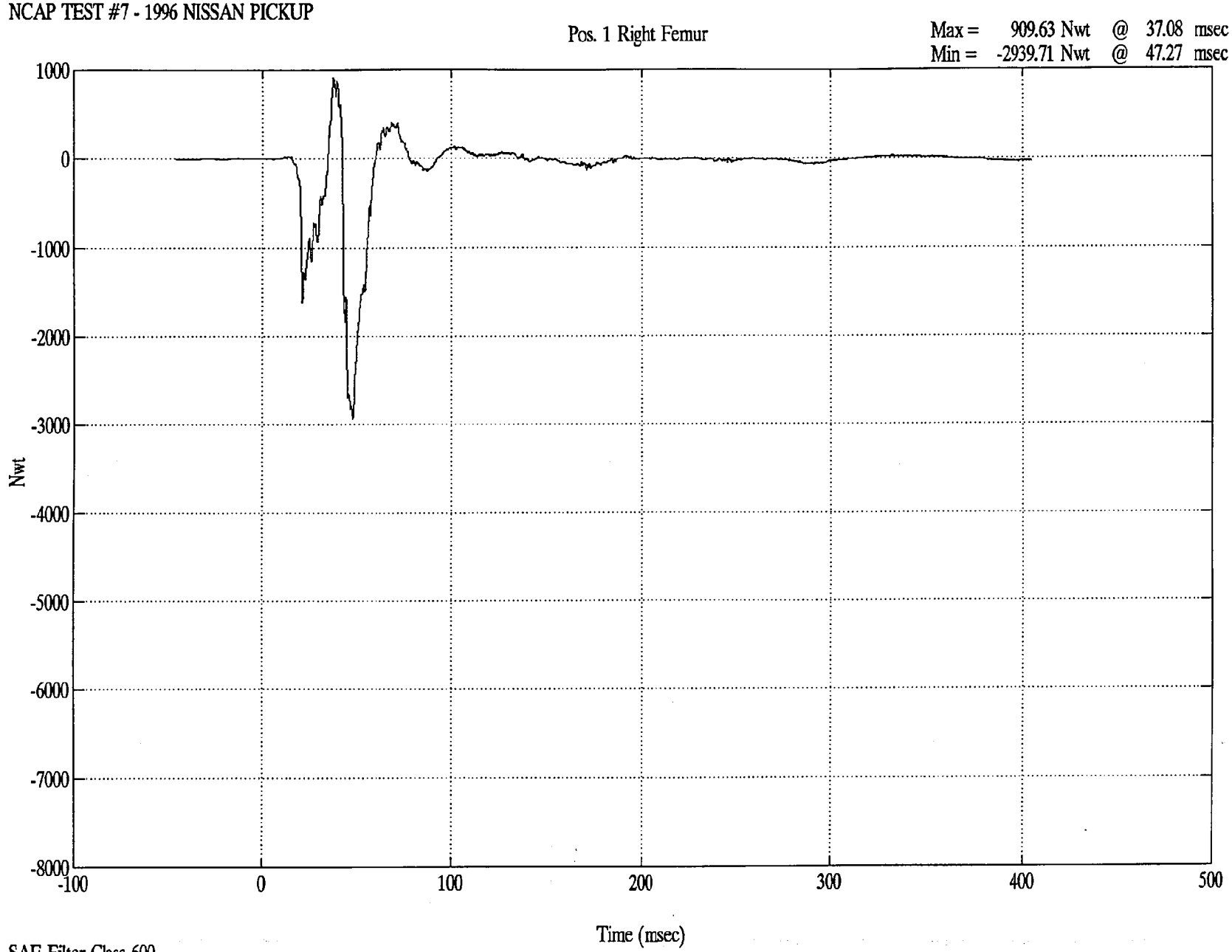


B-21

8313-7

SAE Filter Class 600

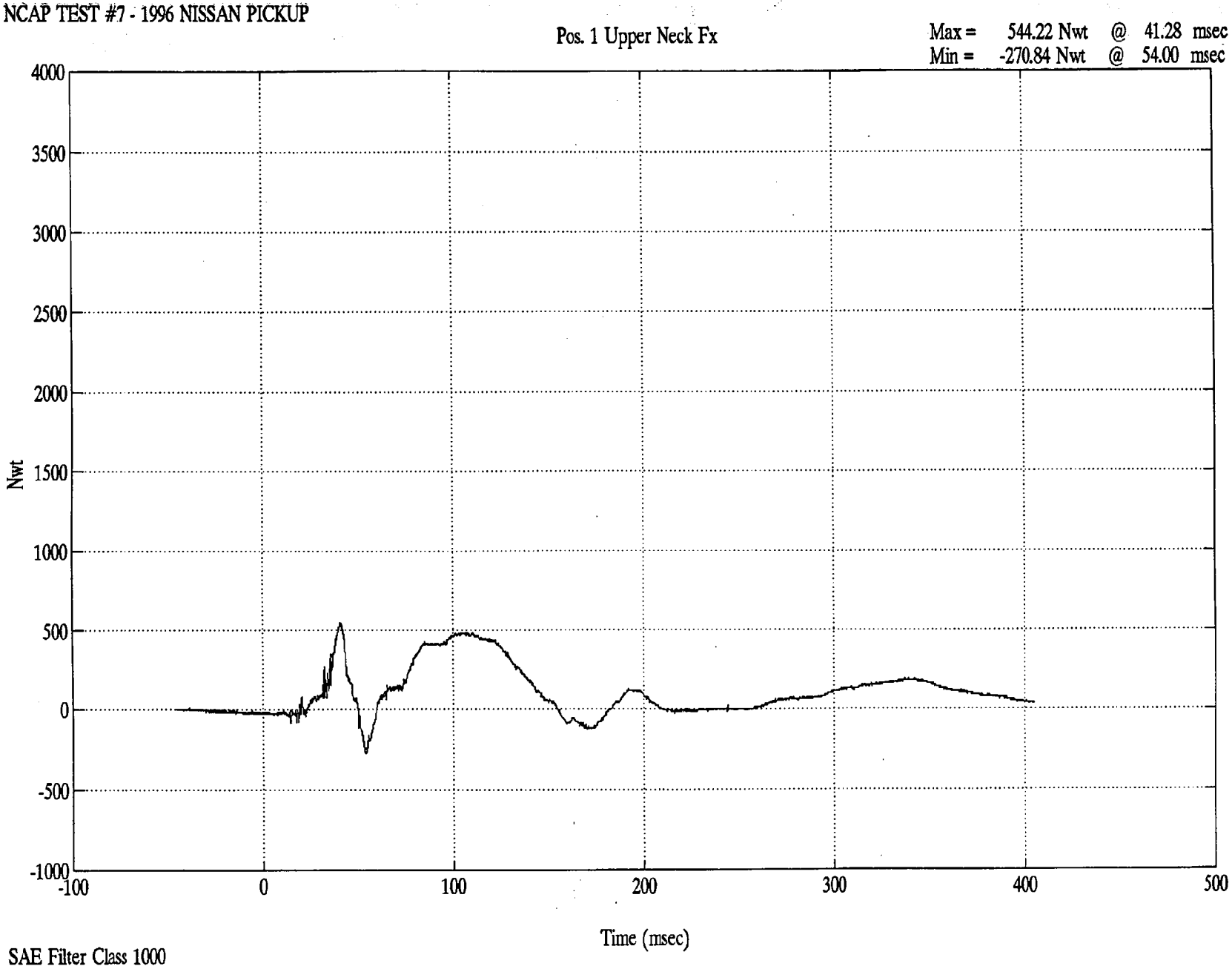
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

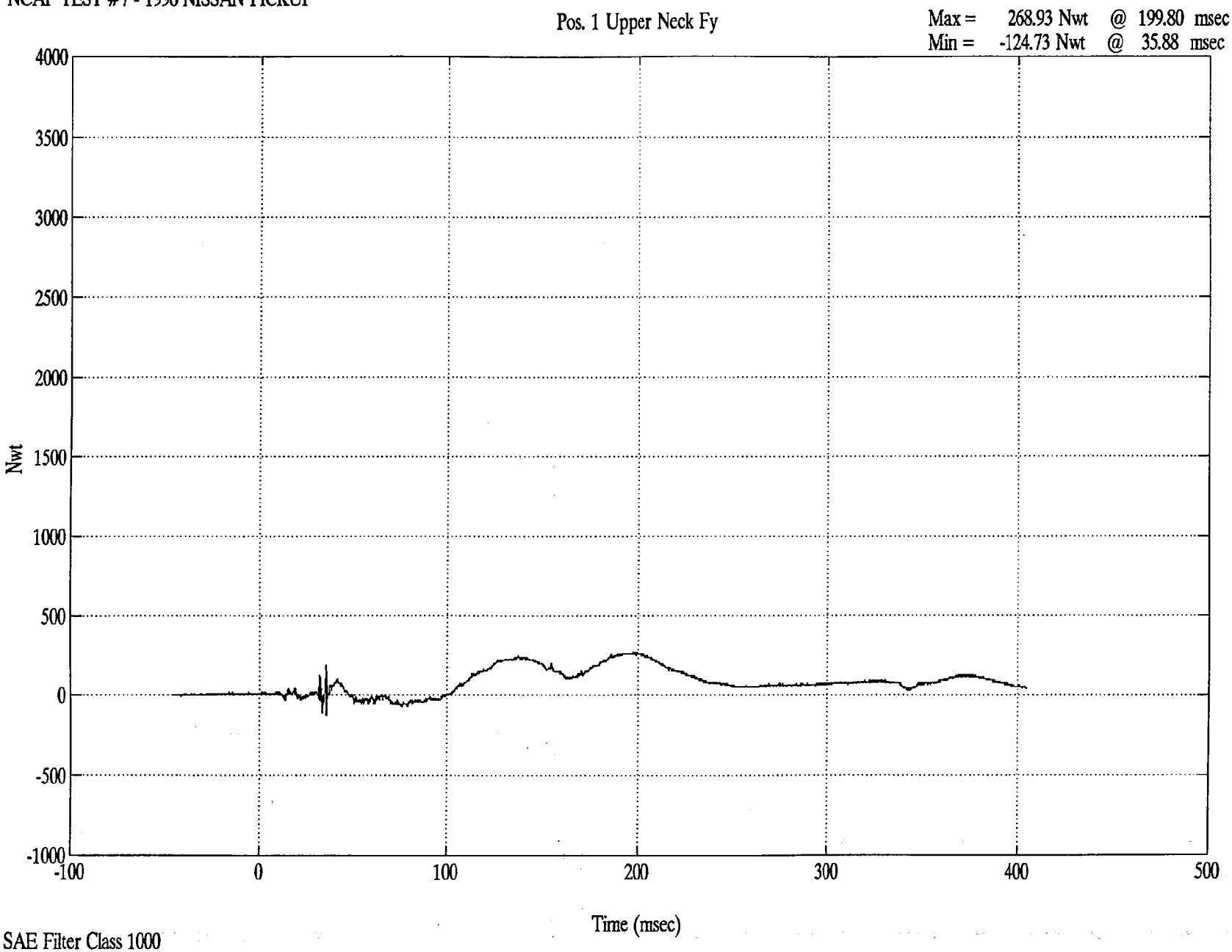


B-23

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

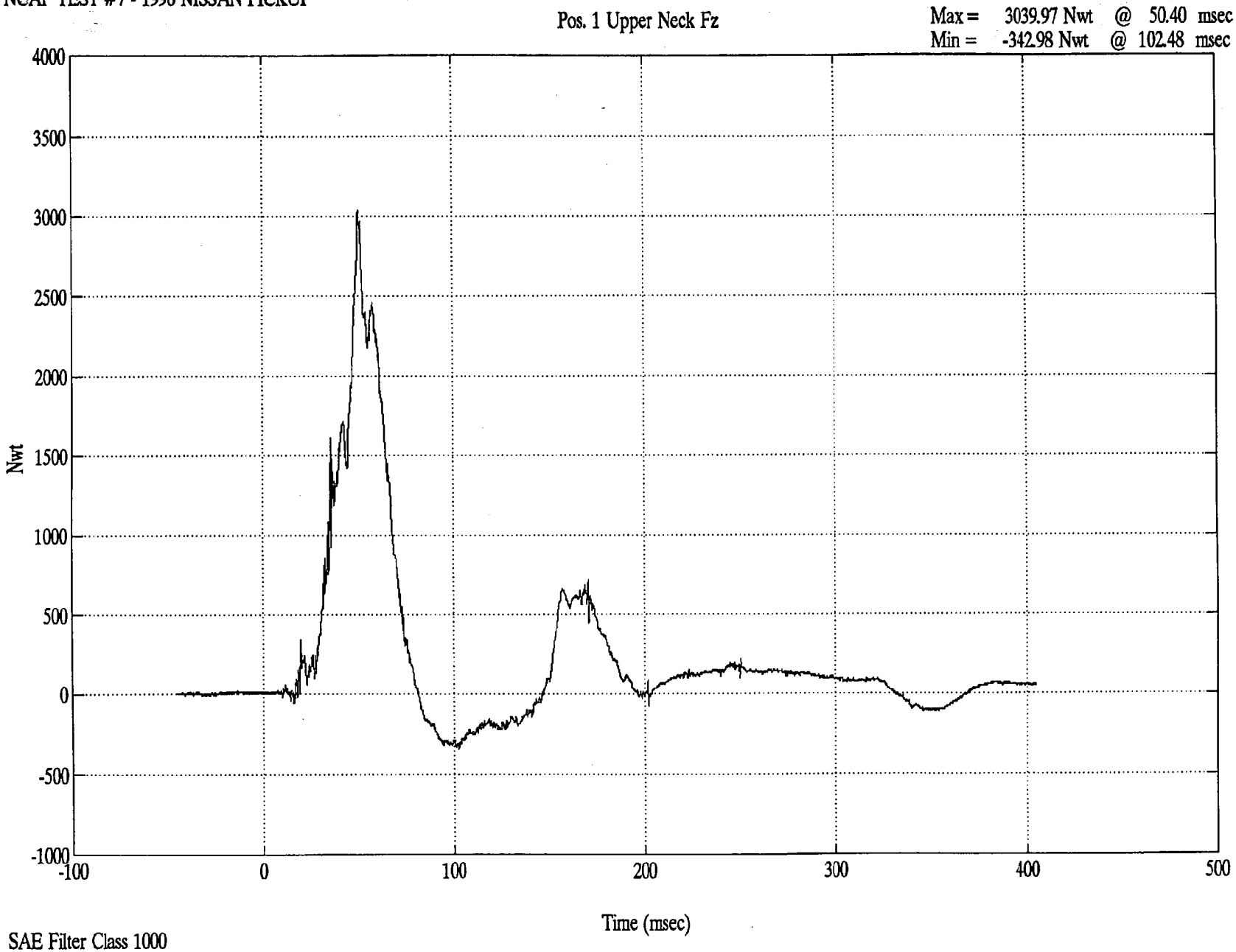


B-24

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

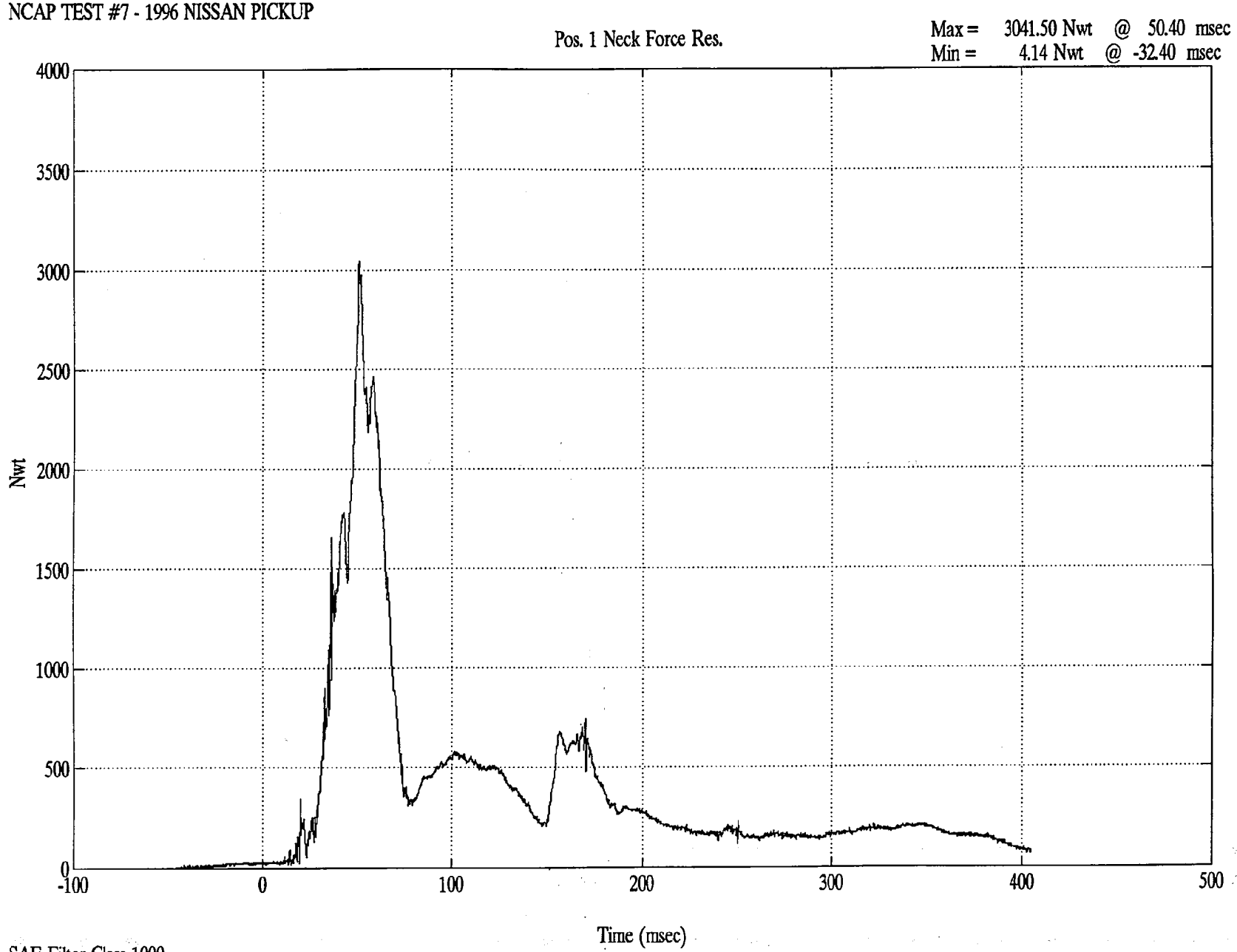


B-25

8313-7

SAE Filter Class 1000

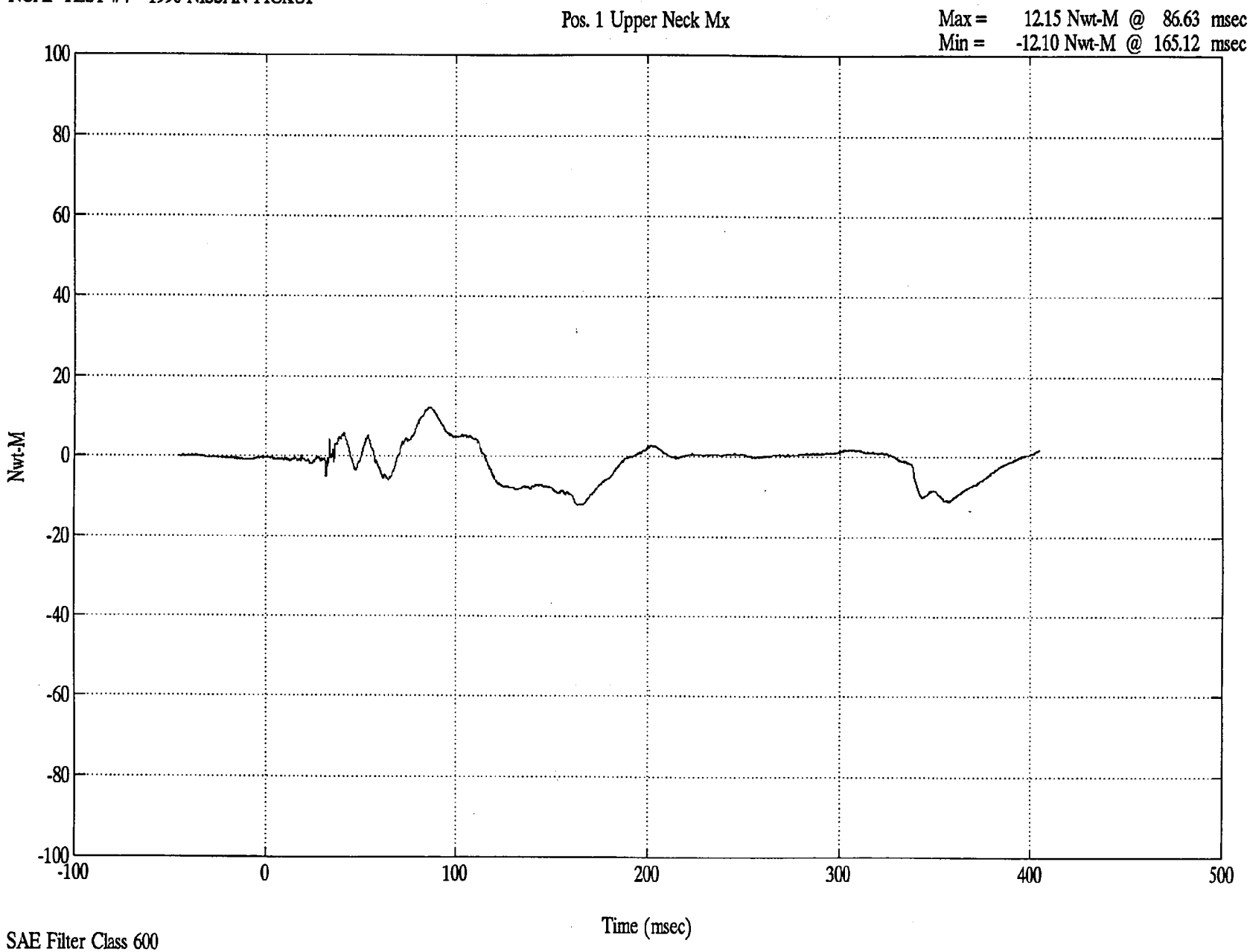
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 1000

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

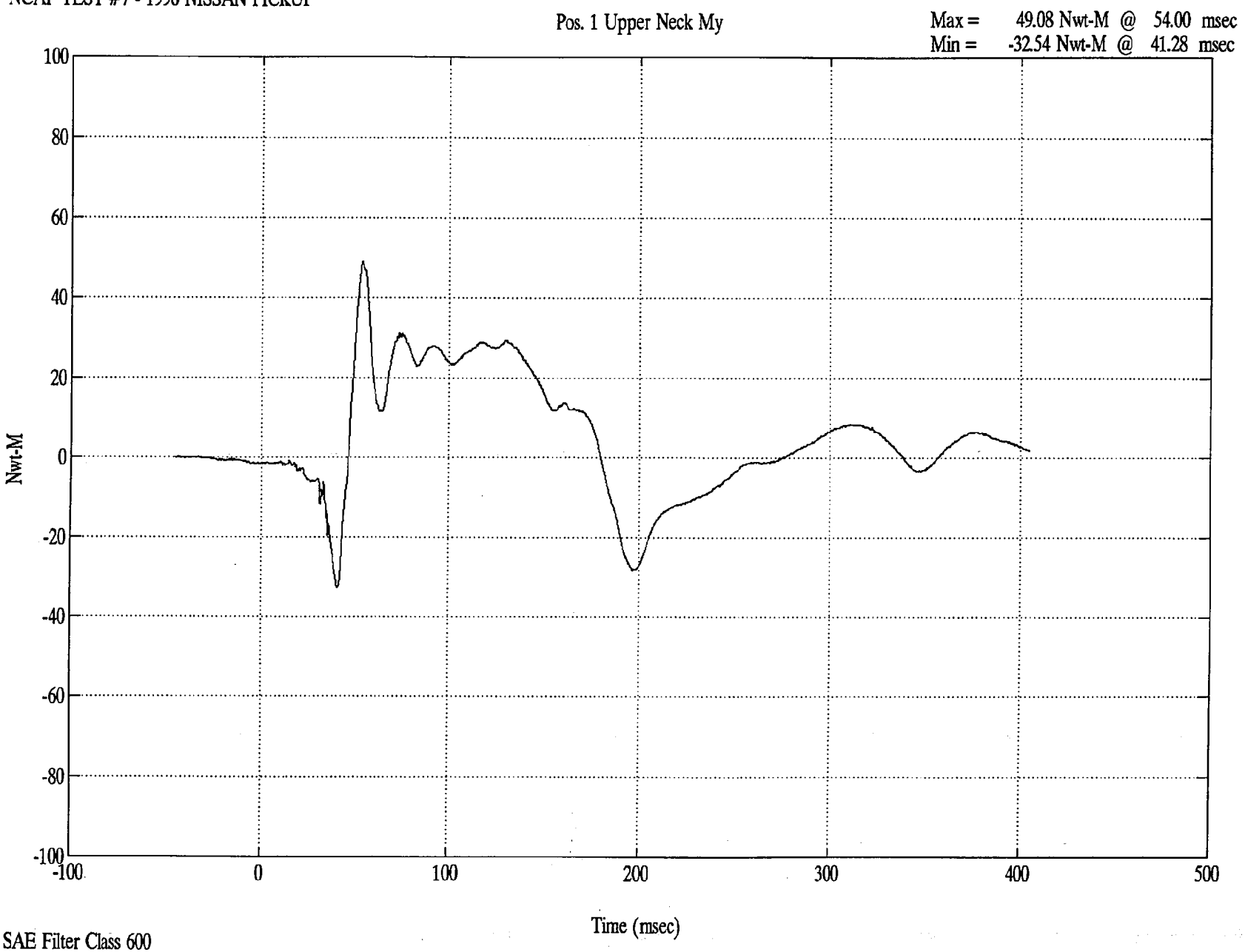


B-27

8313-7

SAE Filter Class 600

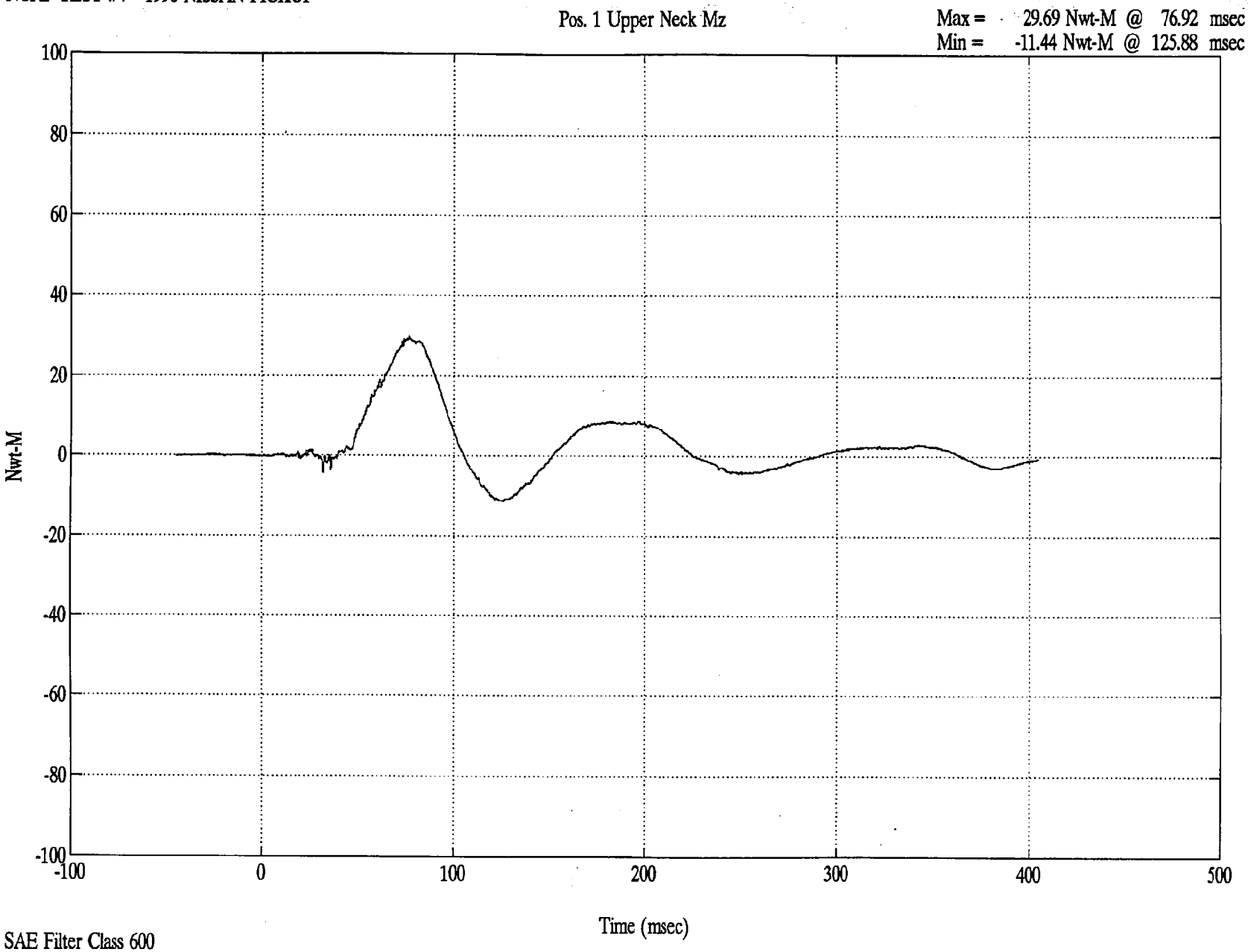
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

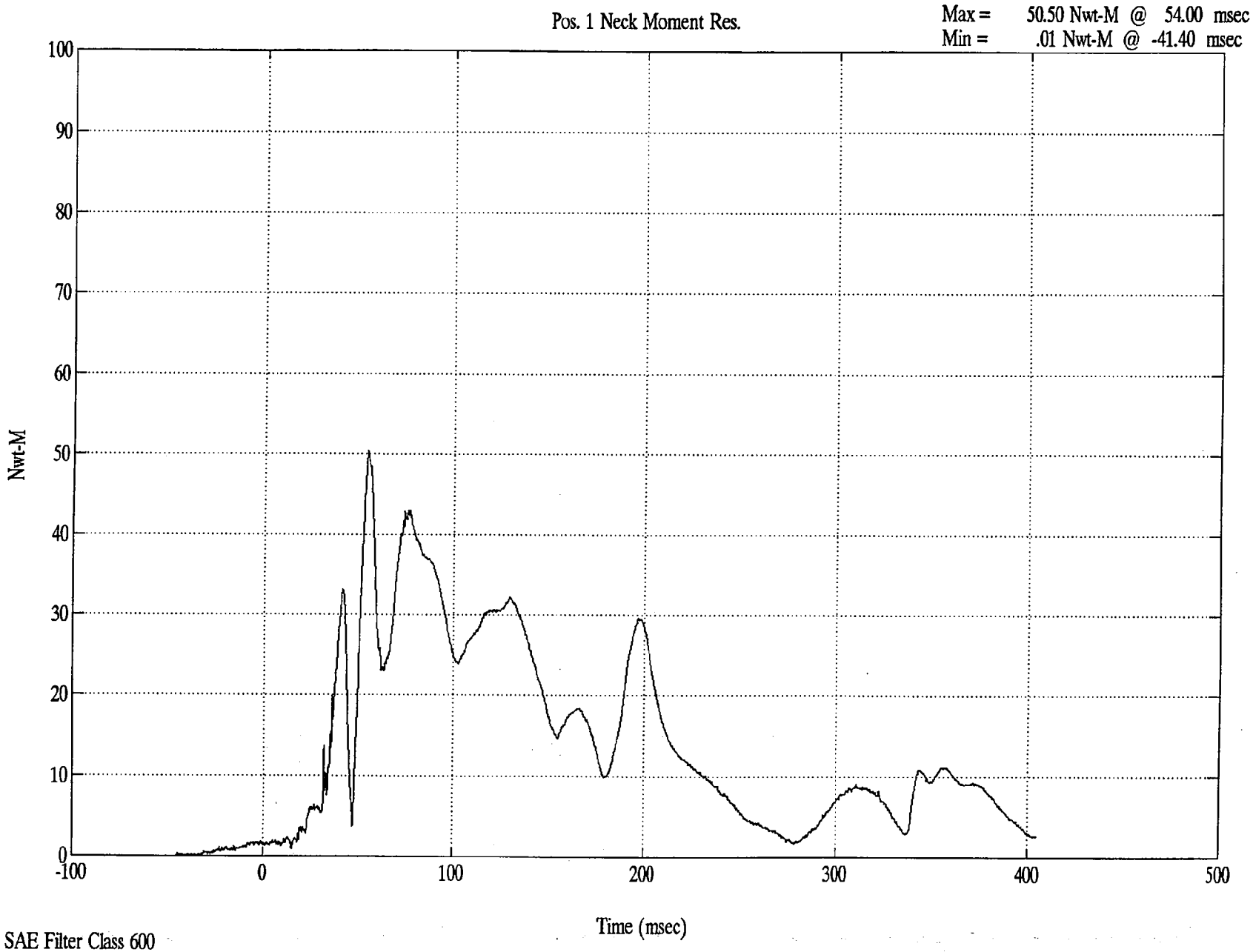


B-29

8313-7

SAE Filter Class 600

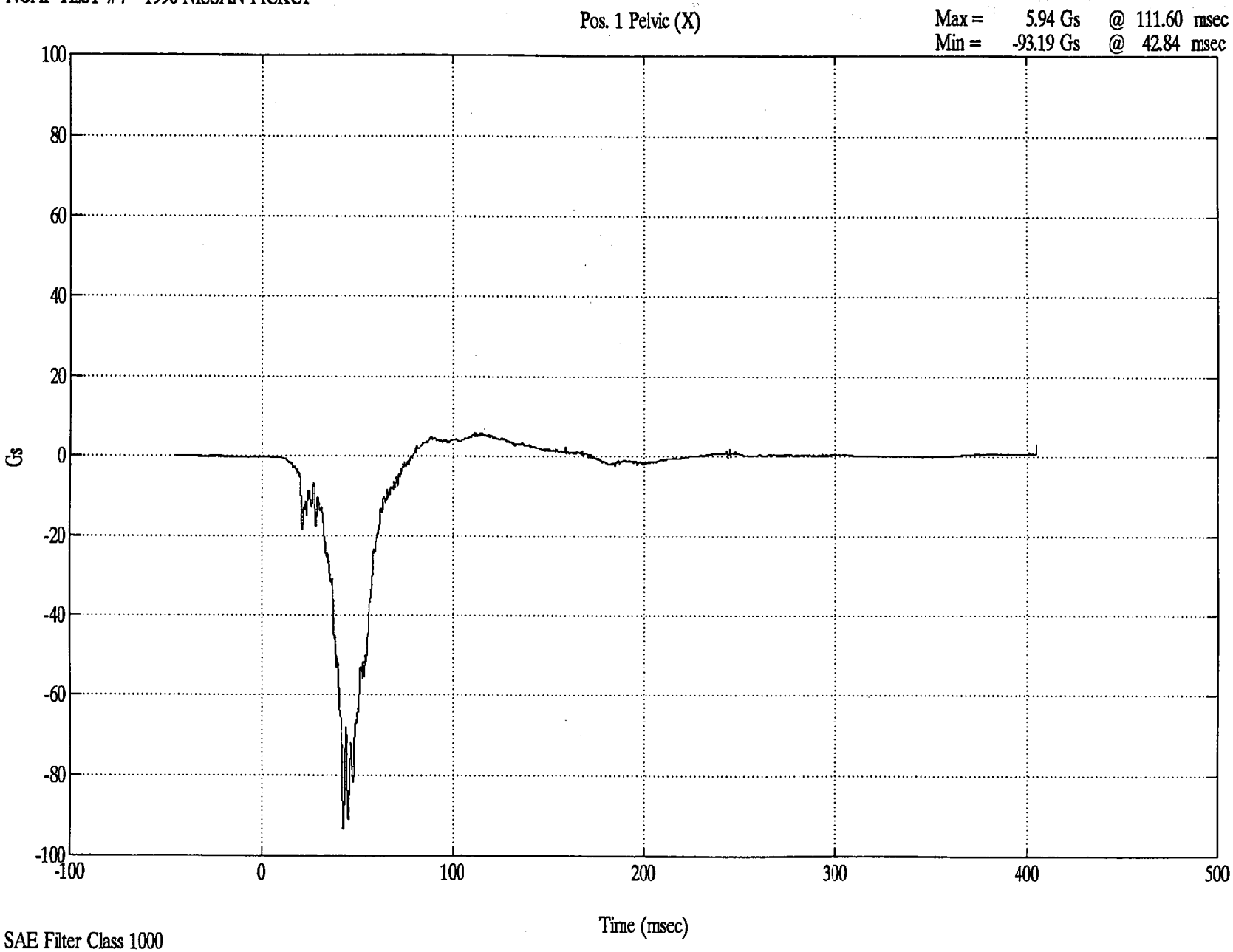
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

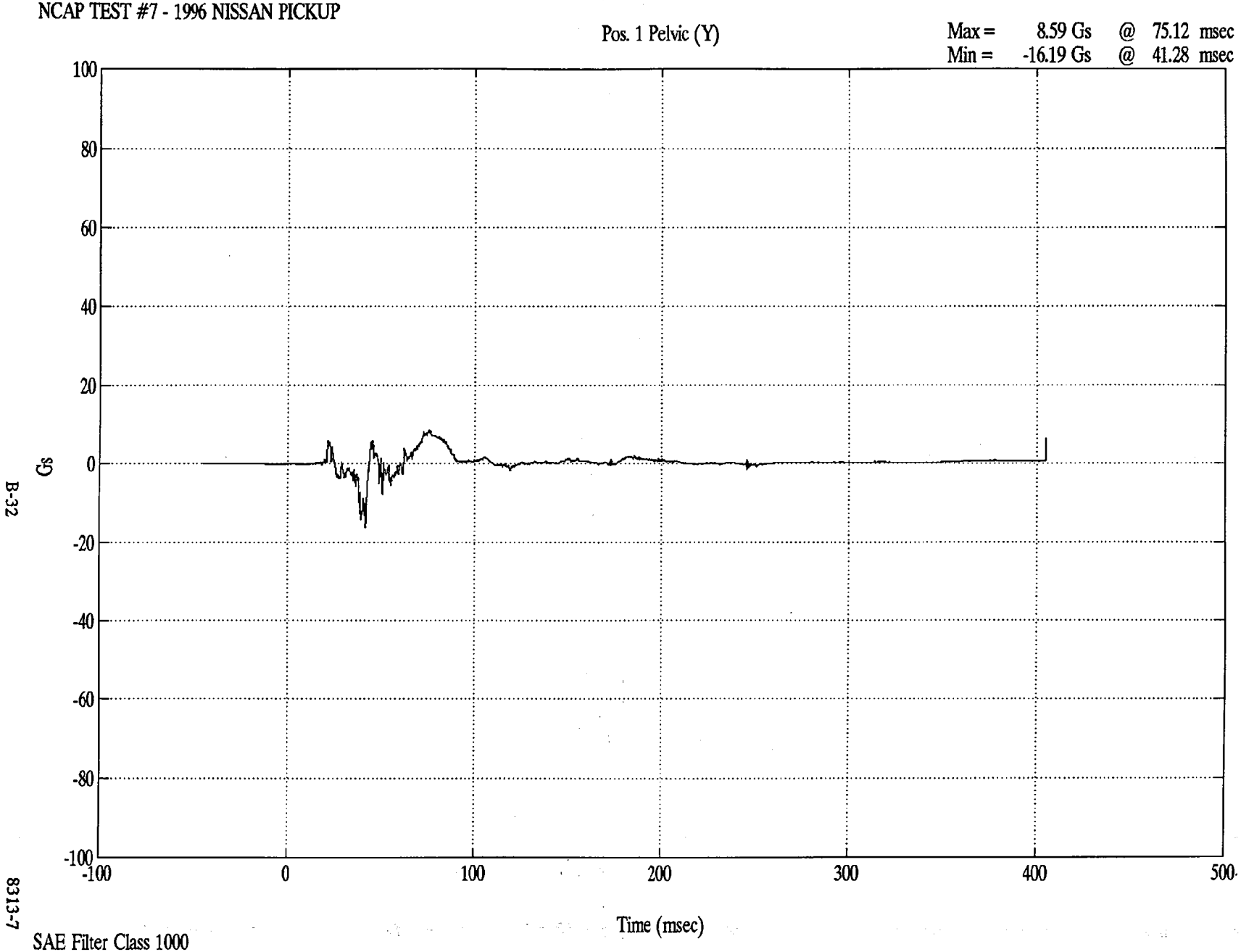


B-31

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

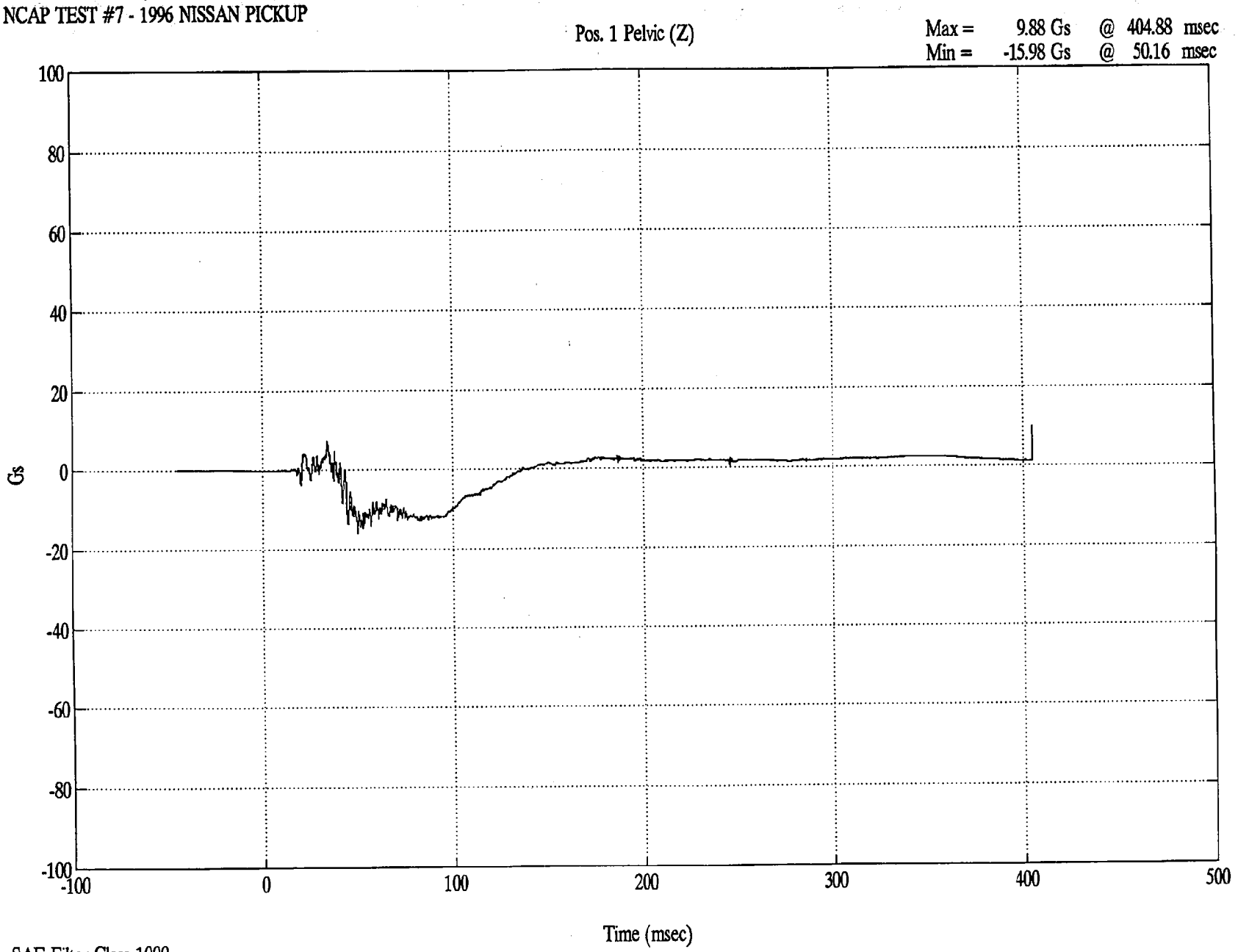


B-32

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

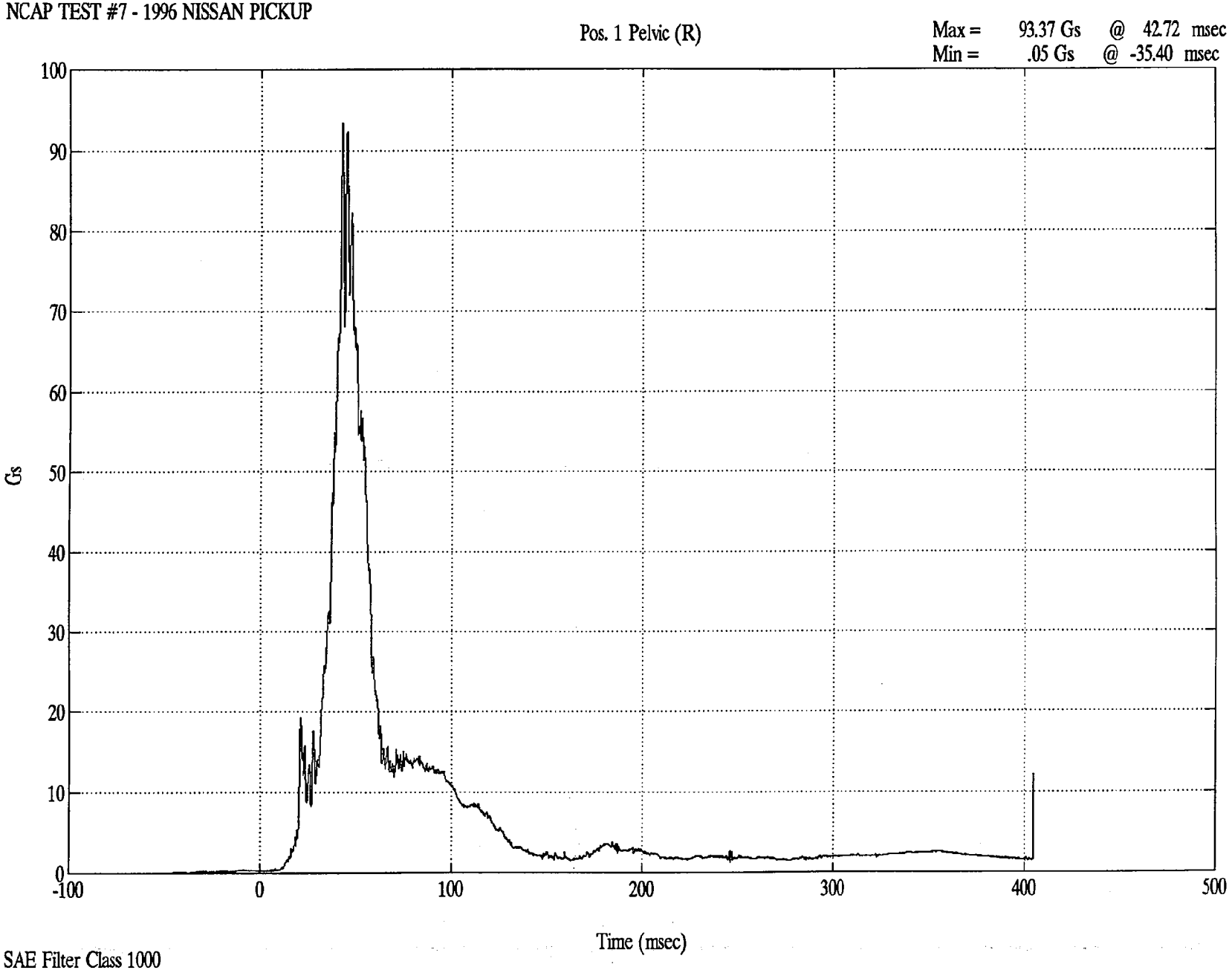


SAE Filter Class 1000

B-33

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

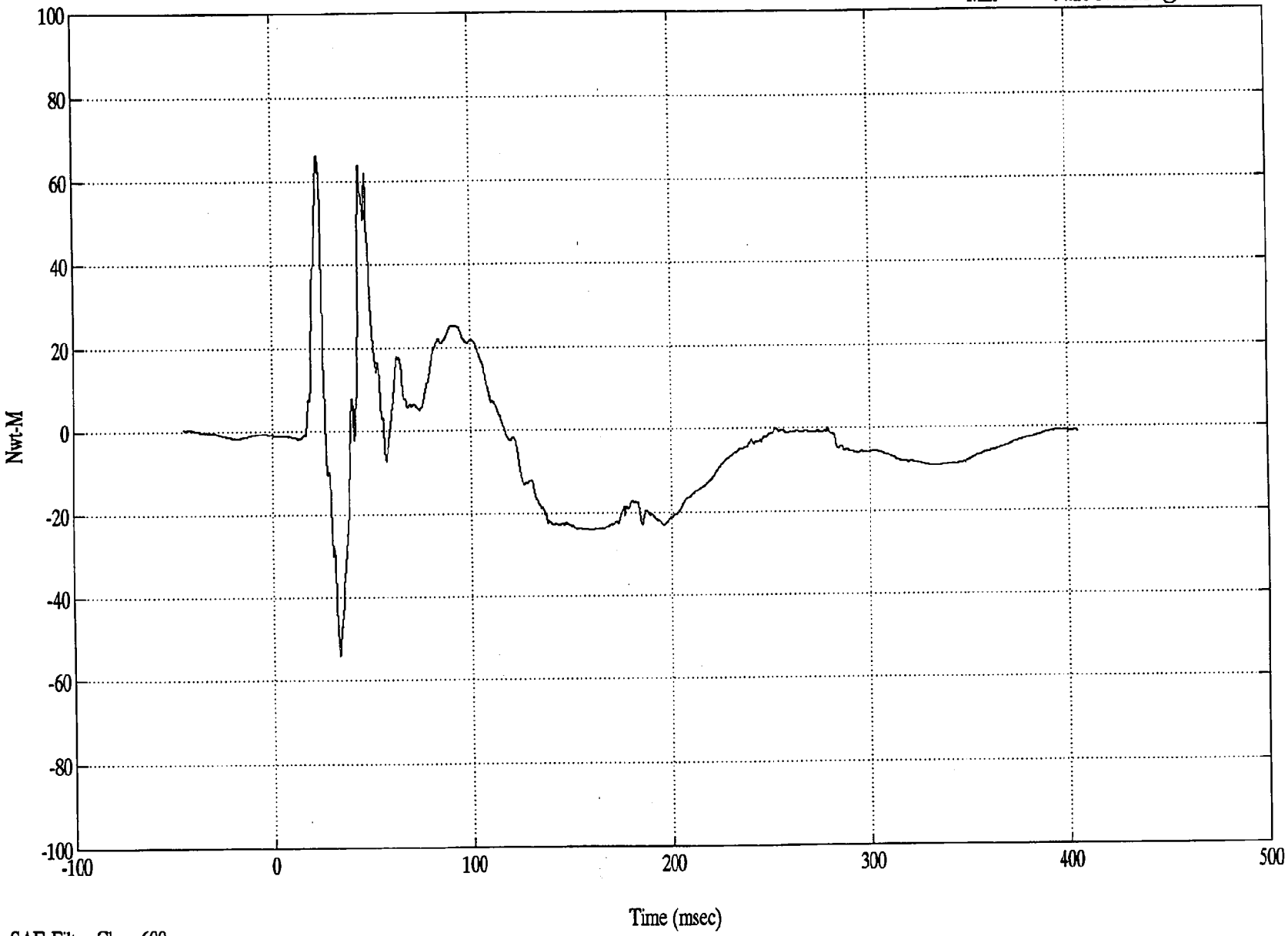


SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

P1 Lt Upper Tibia Mx

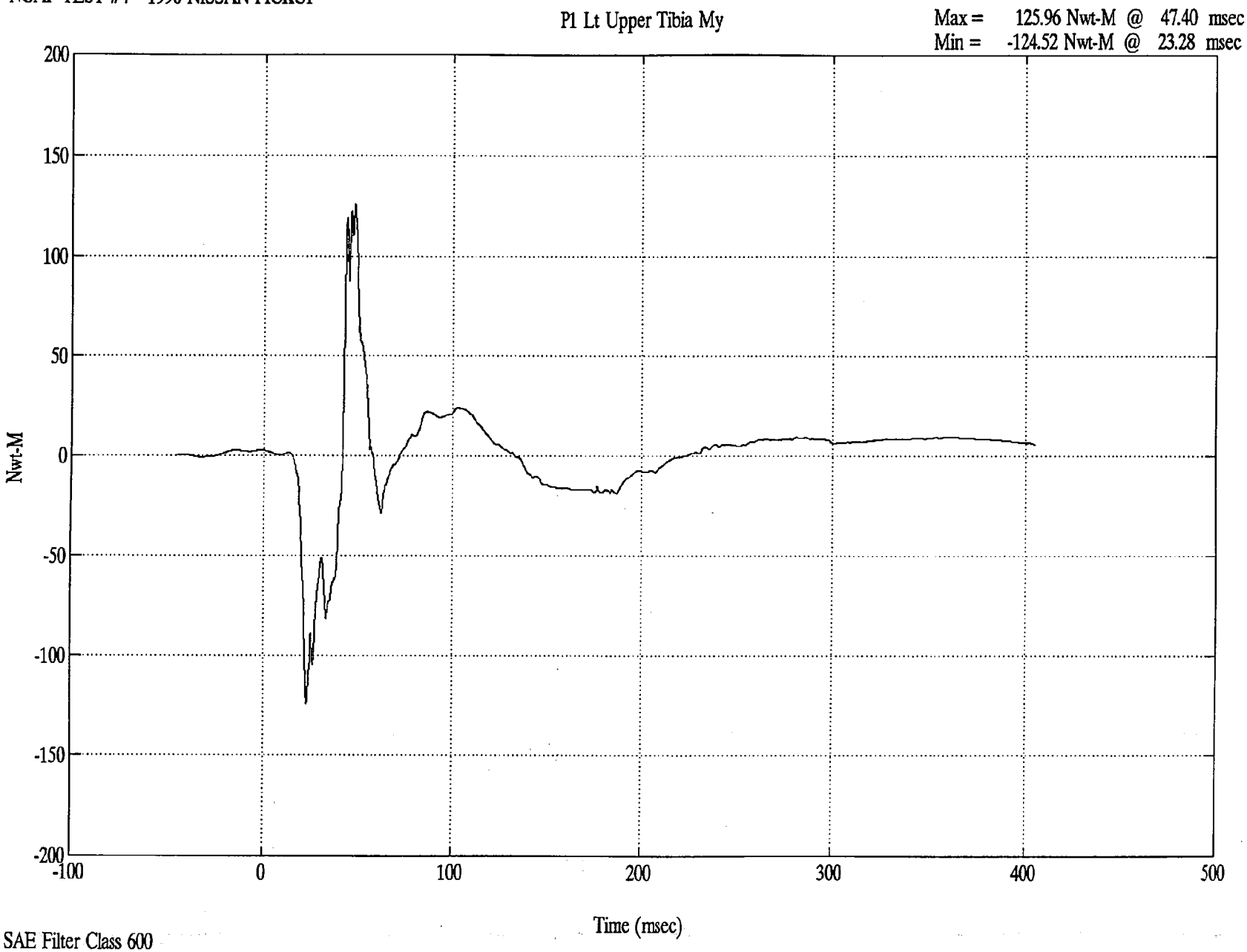
Max = 66.33 Nwt-M @ 23.63 msec
Min = -54.16 Nwt-M @ 33.84 msec



SAE Filter Class 600

8313-7

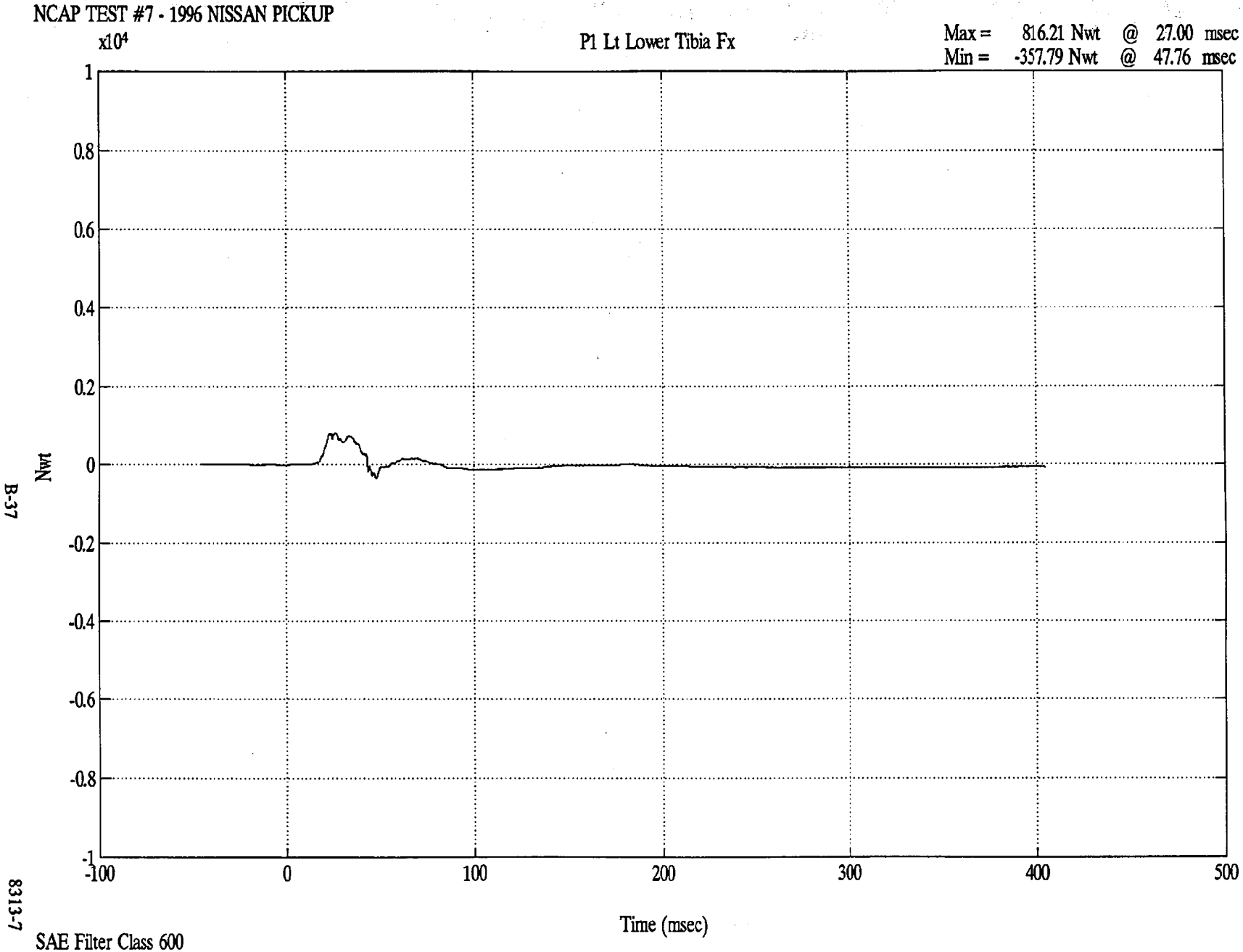
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

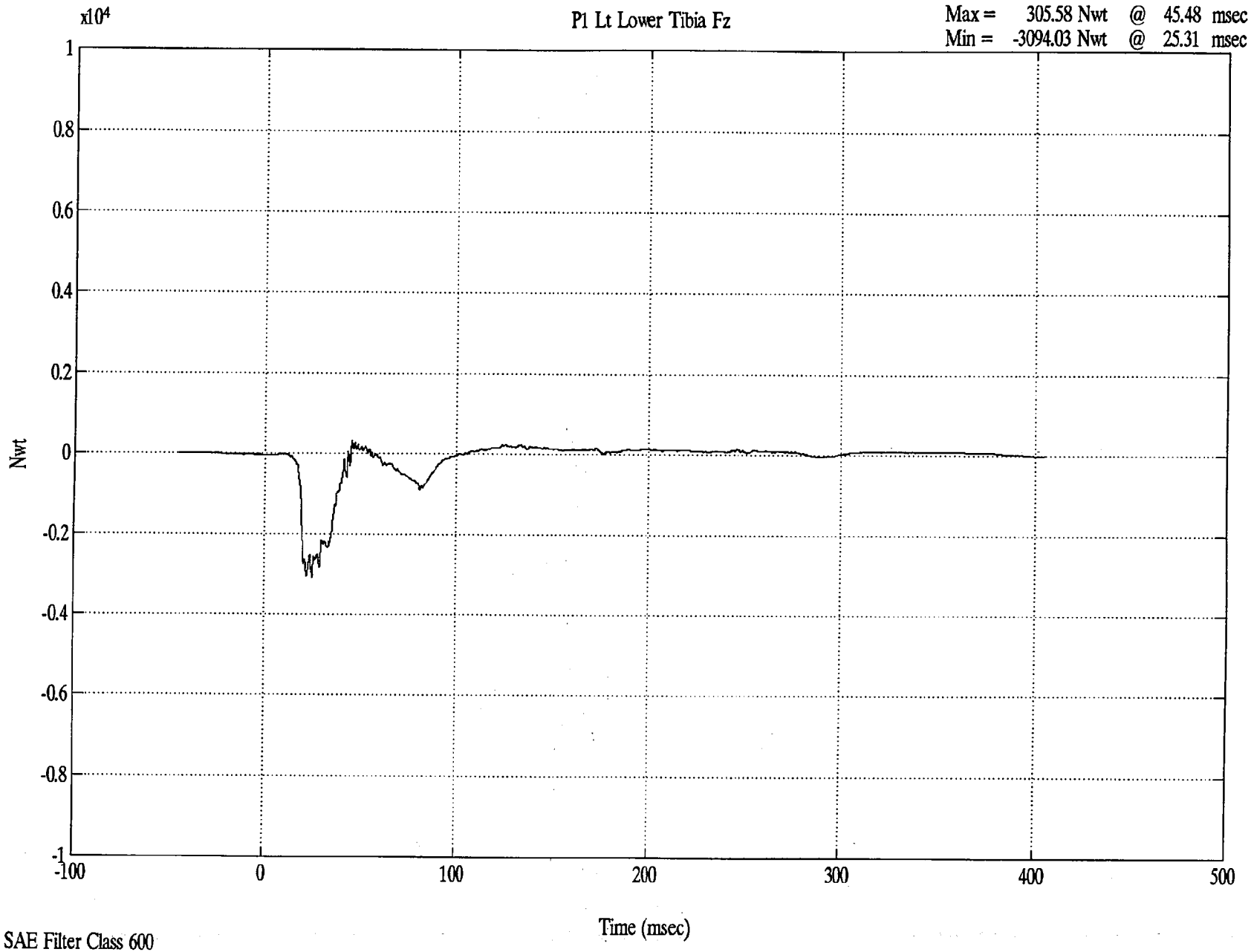


B-37

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

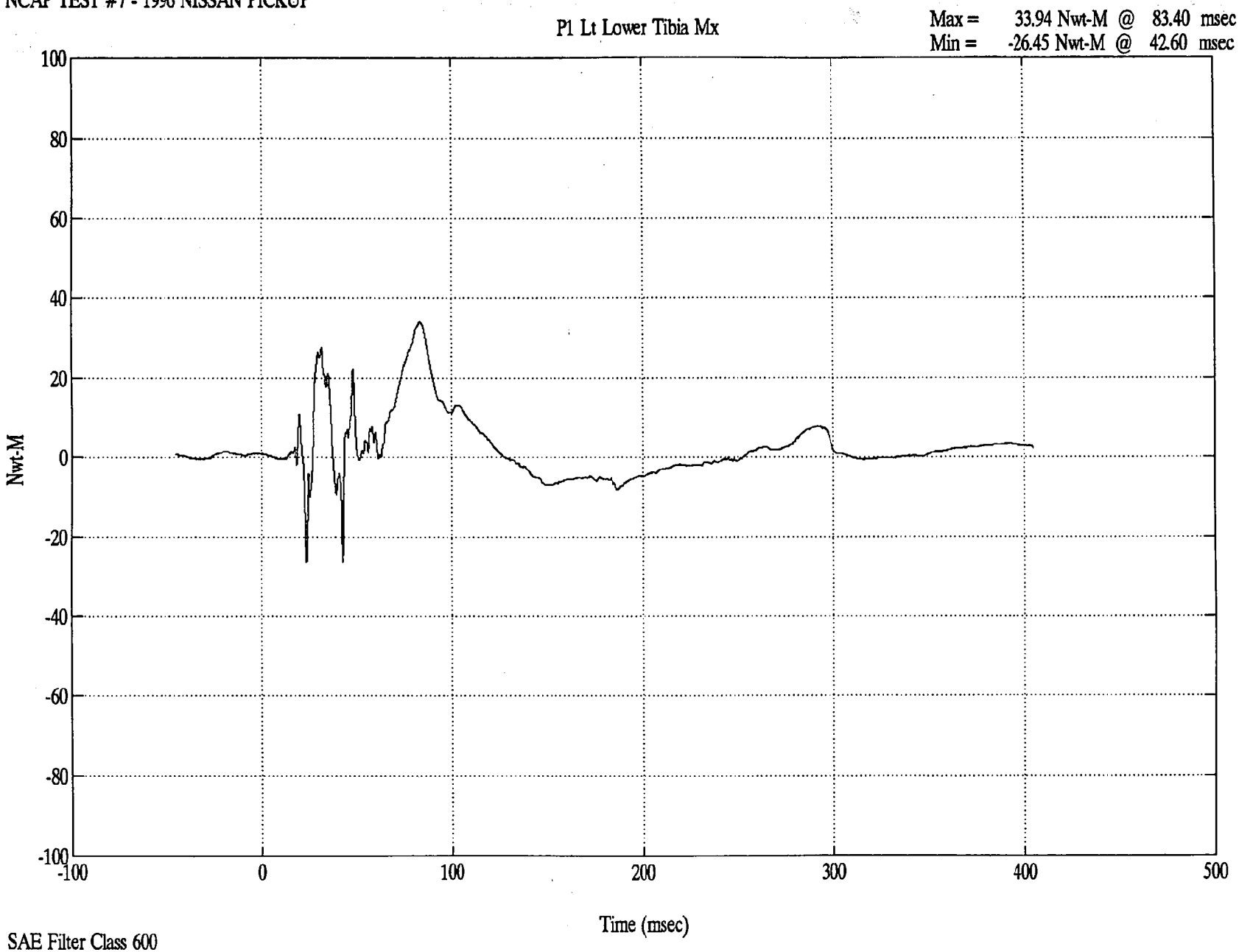


B-38

8313-7

SAE Filter Class 600

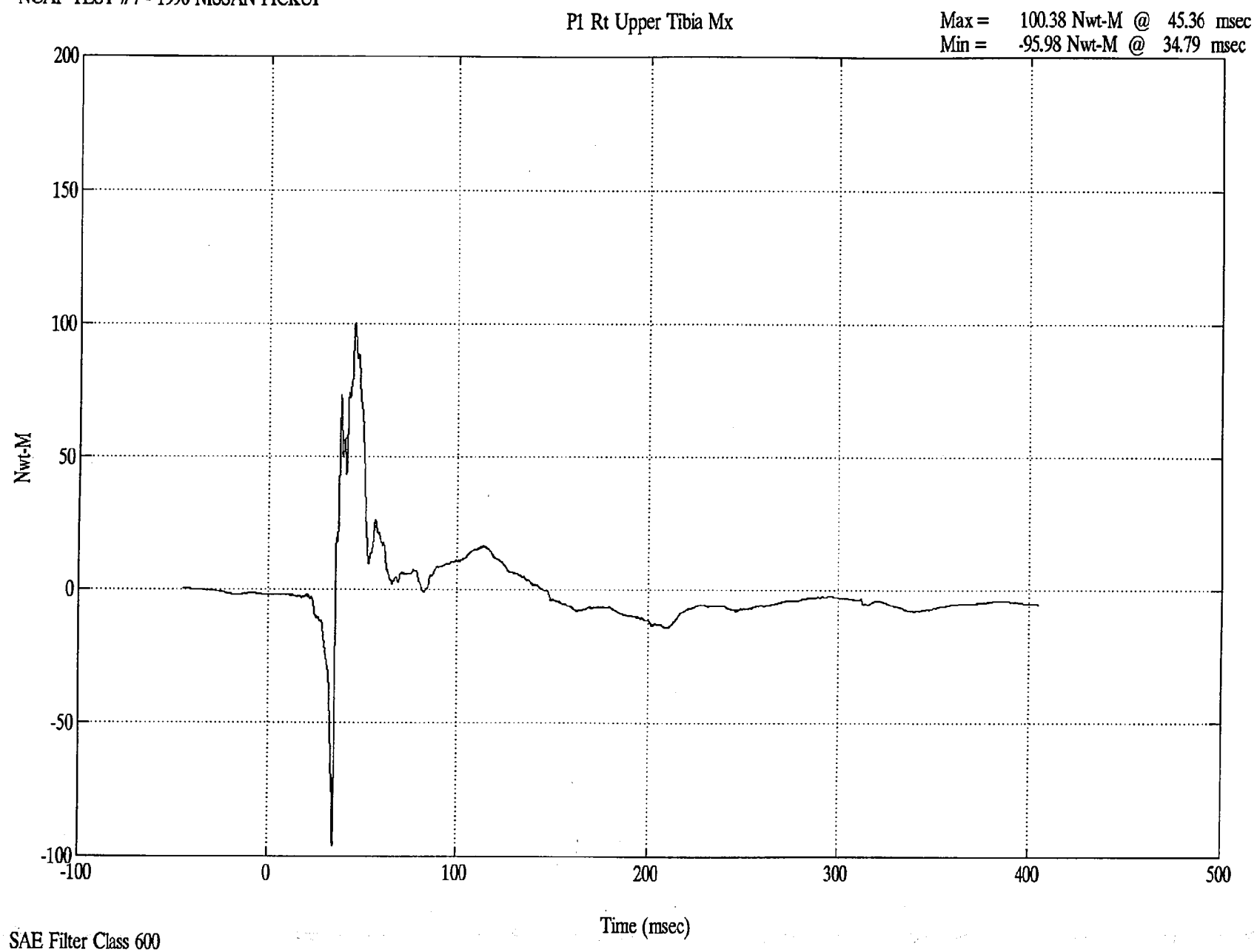
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

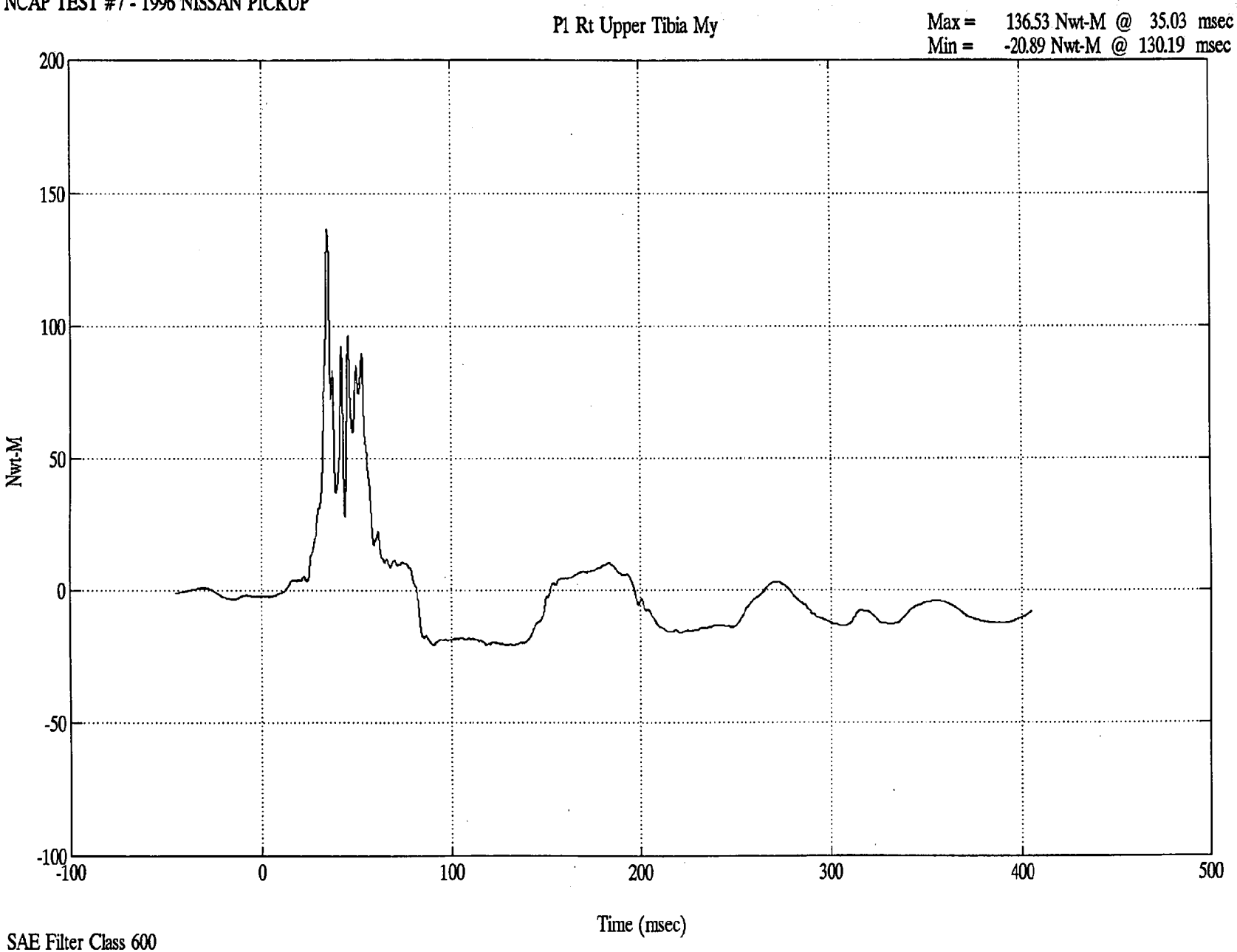


B-40

8313-7

SAE Filter Class 600

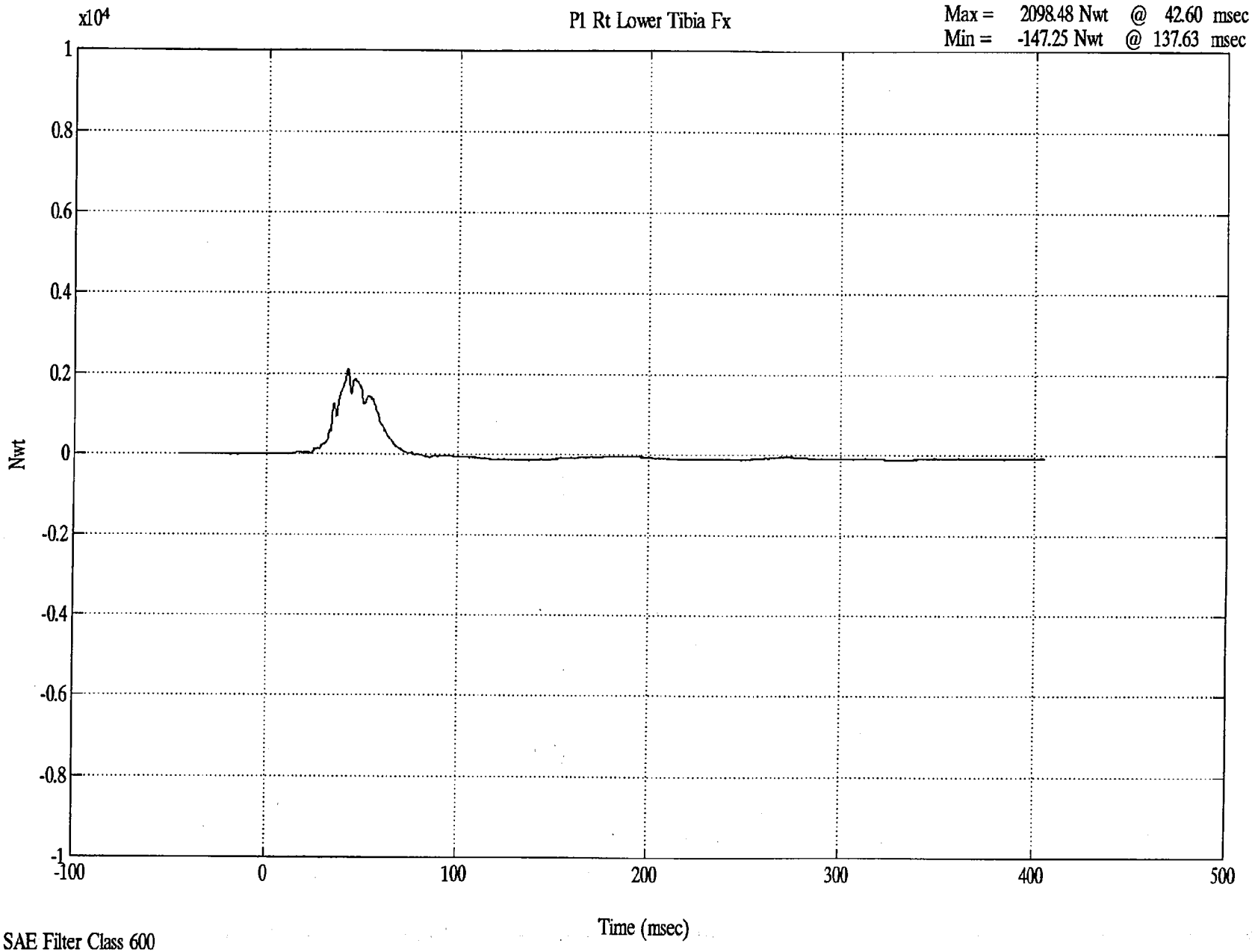
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

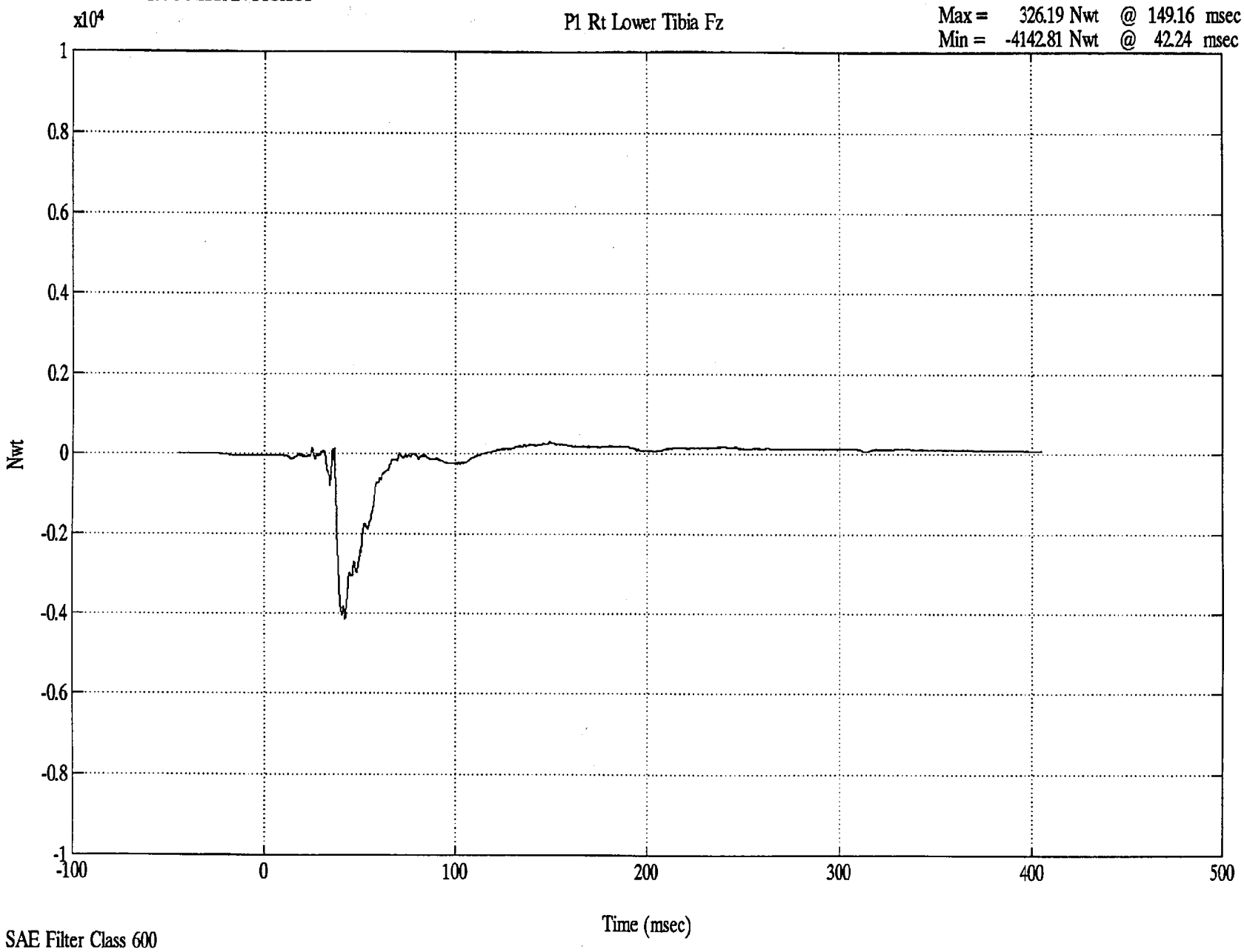
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

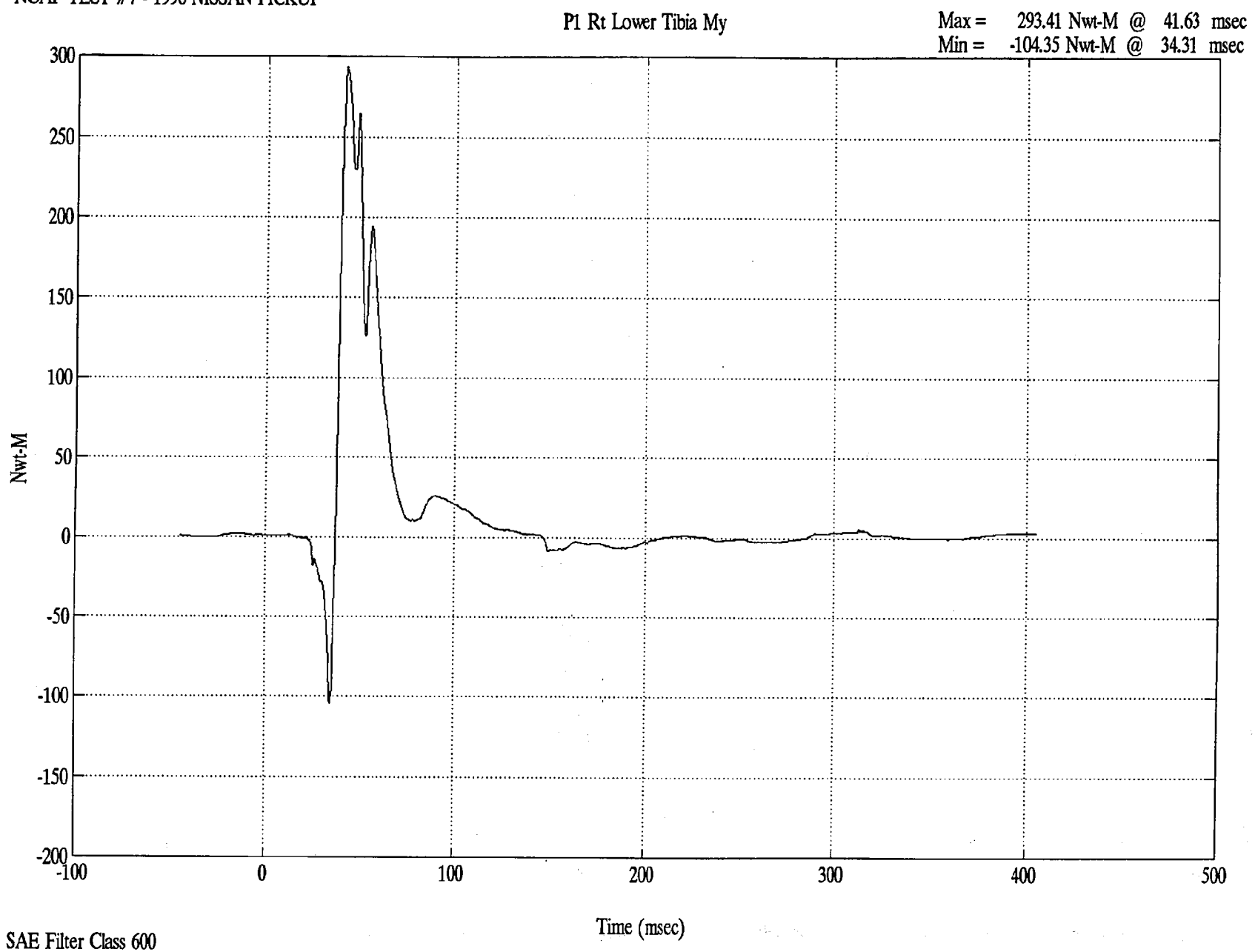


B-43

8313-7

SAE Filter Class 600

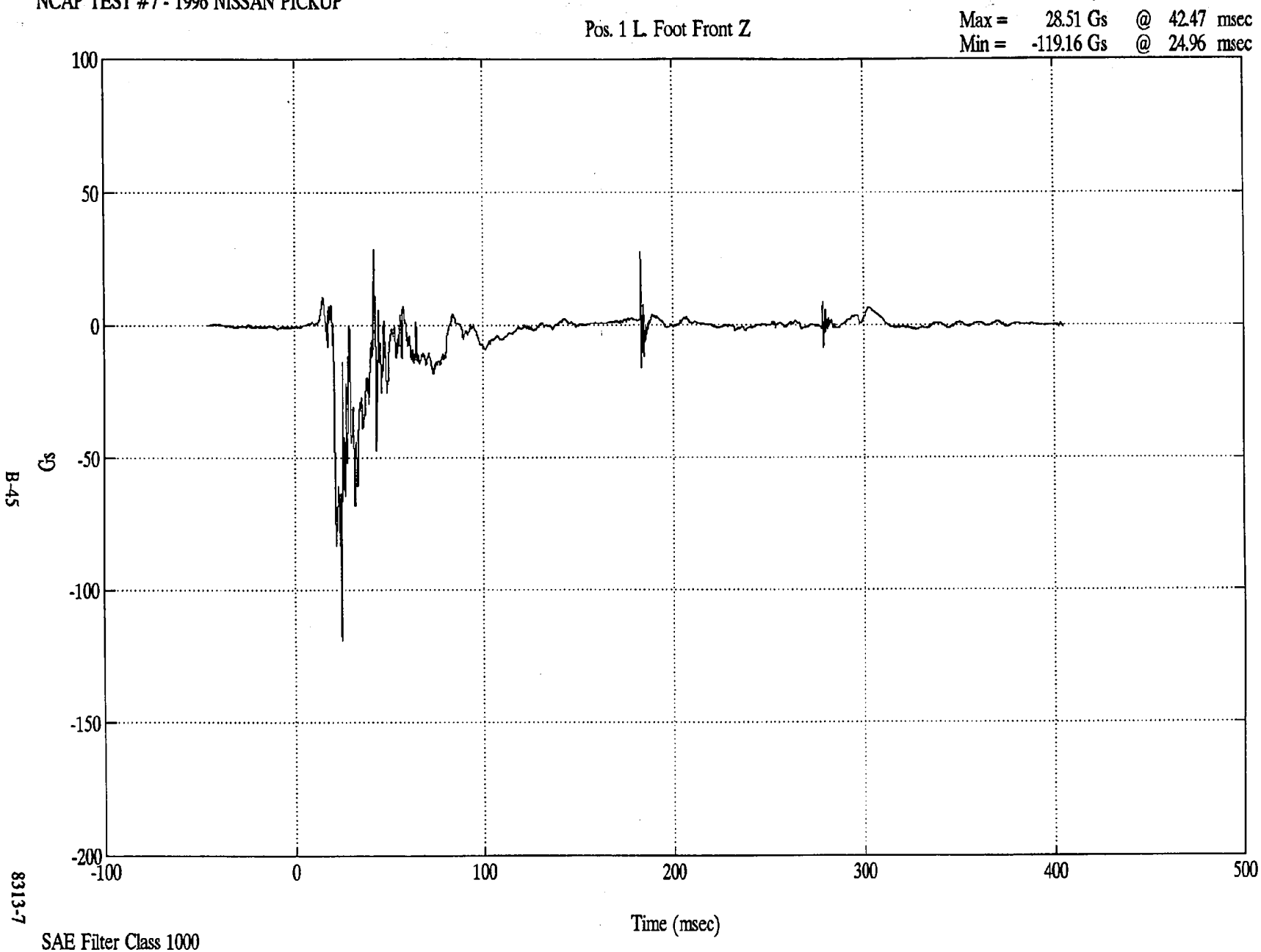
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

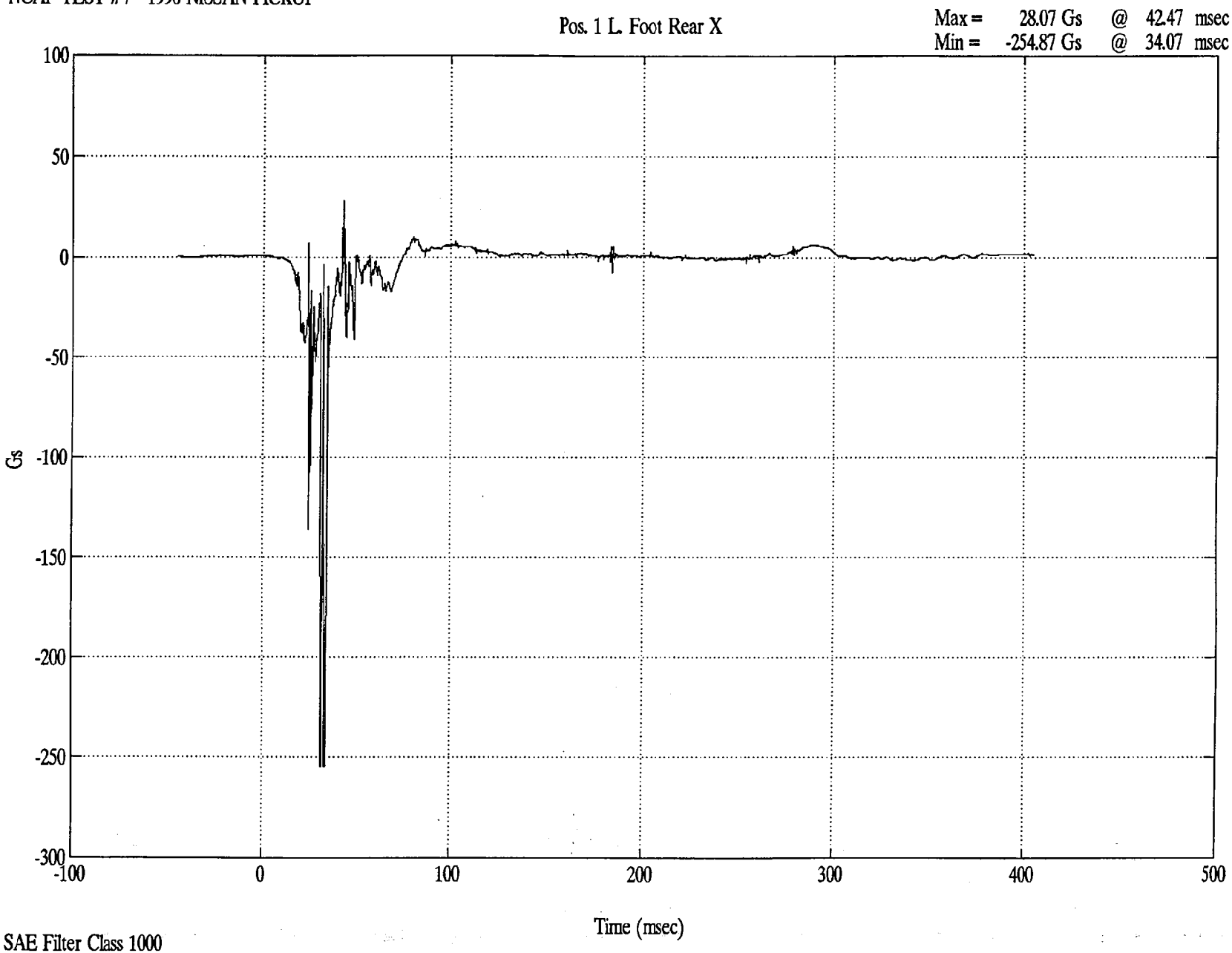


B-45

8313-7

SAE Filter Class 1000

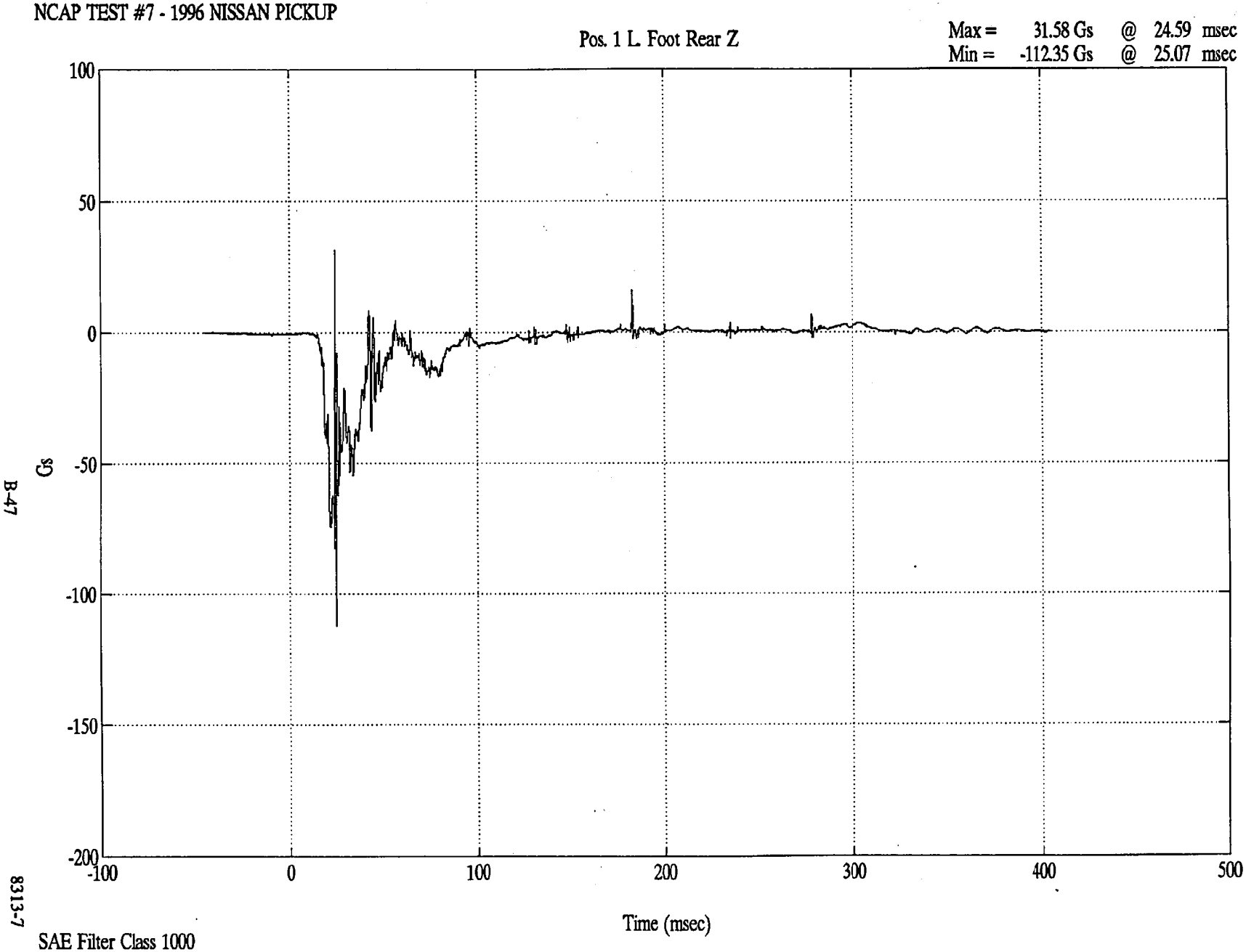
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 1000

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

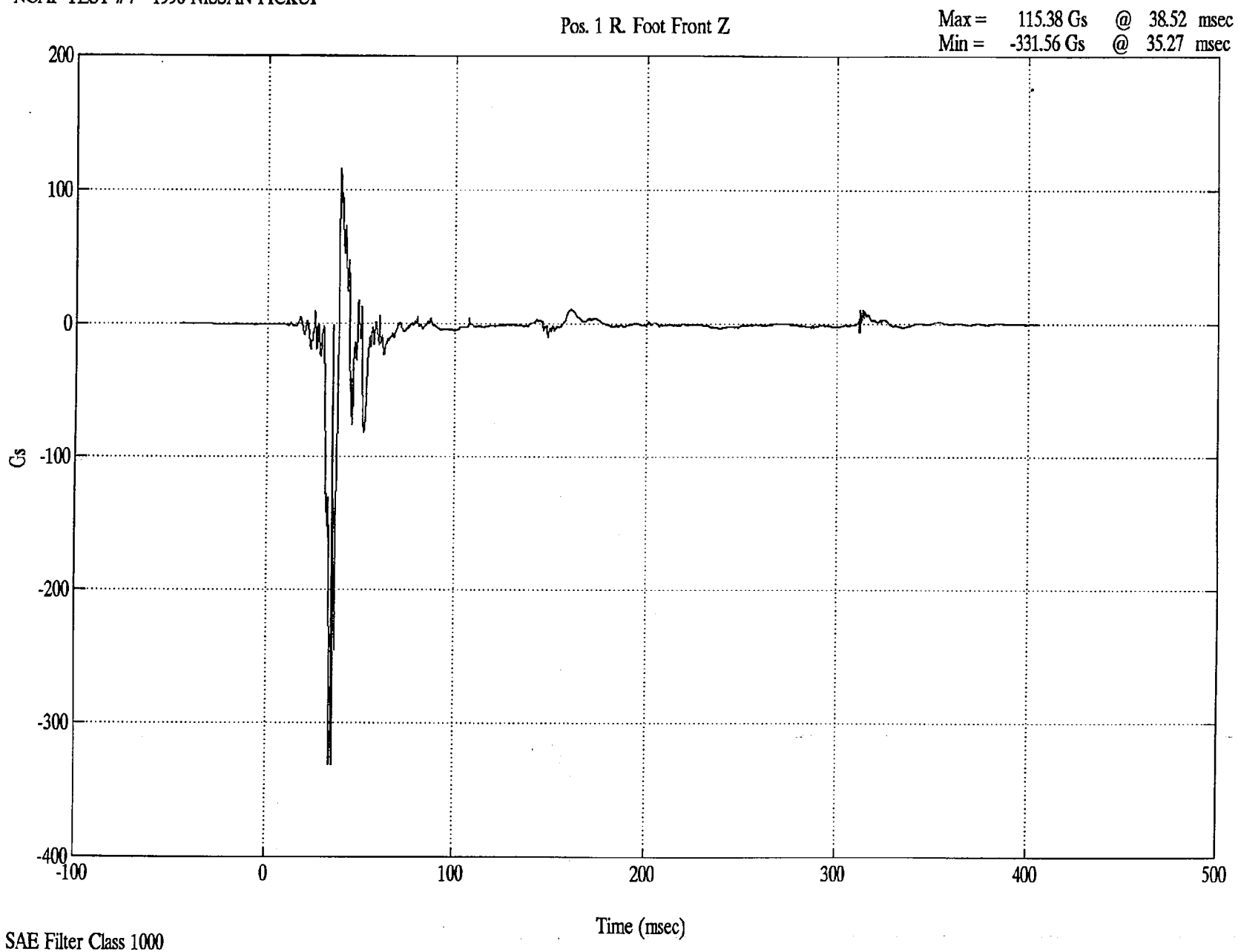


B-47

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

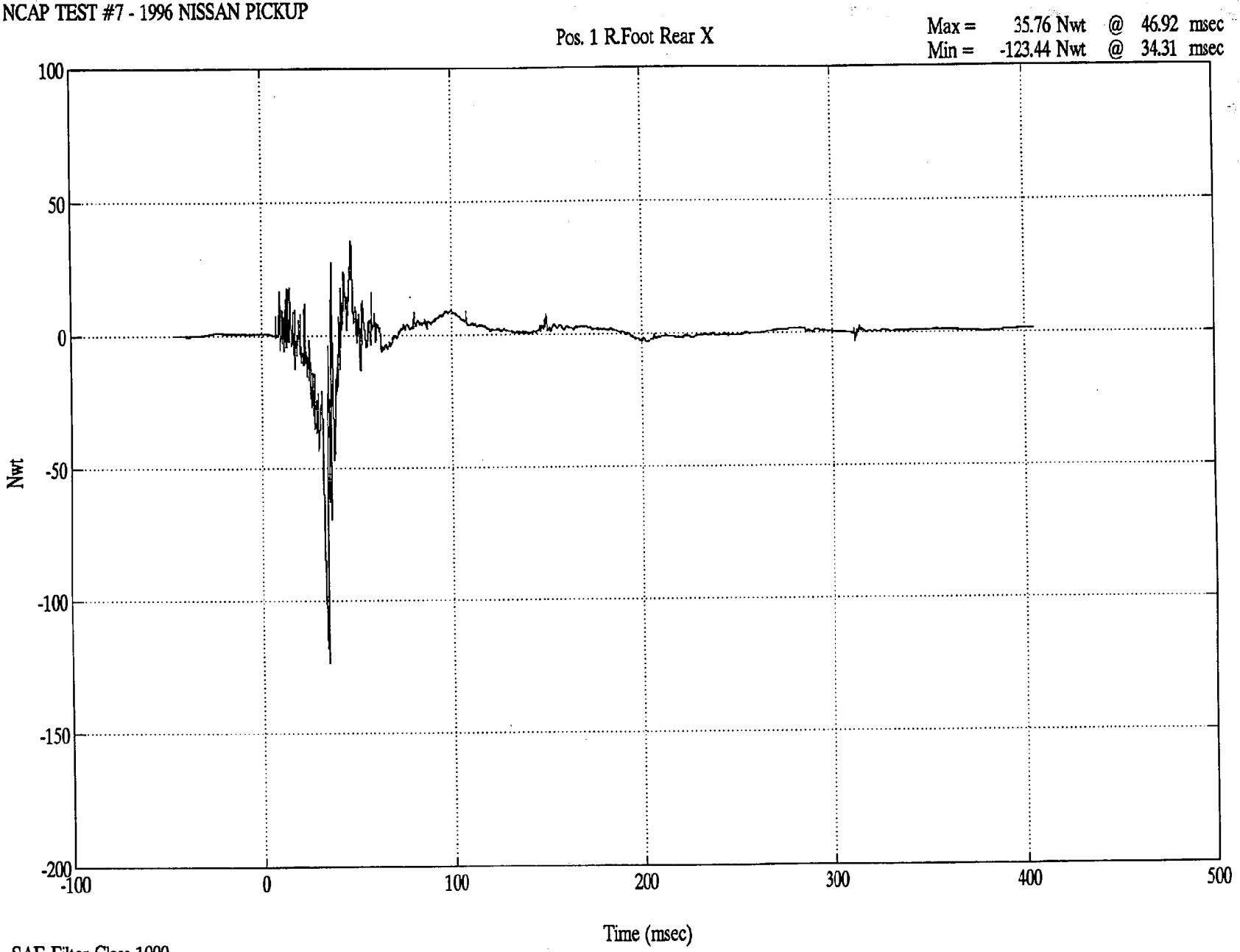


B-48

8313-7

SAE Filter Class 1000

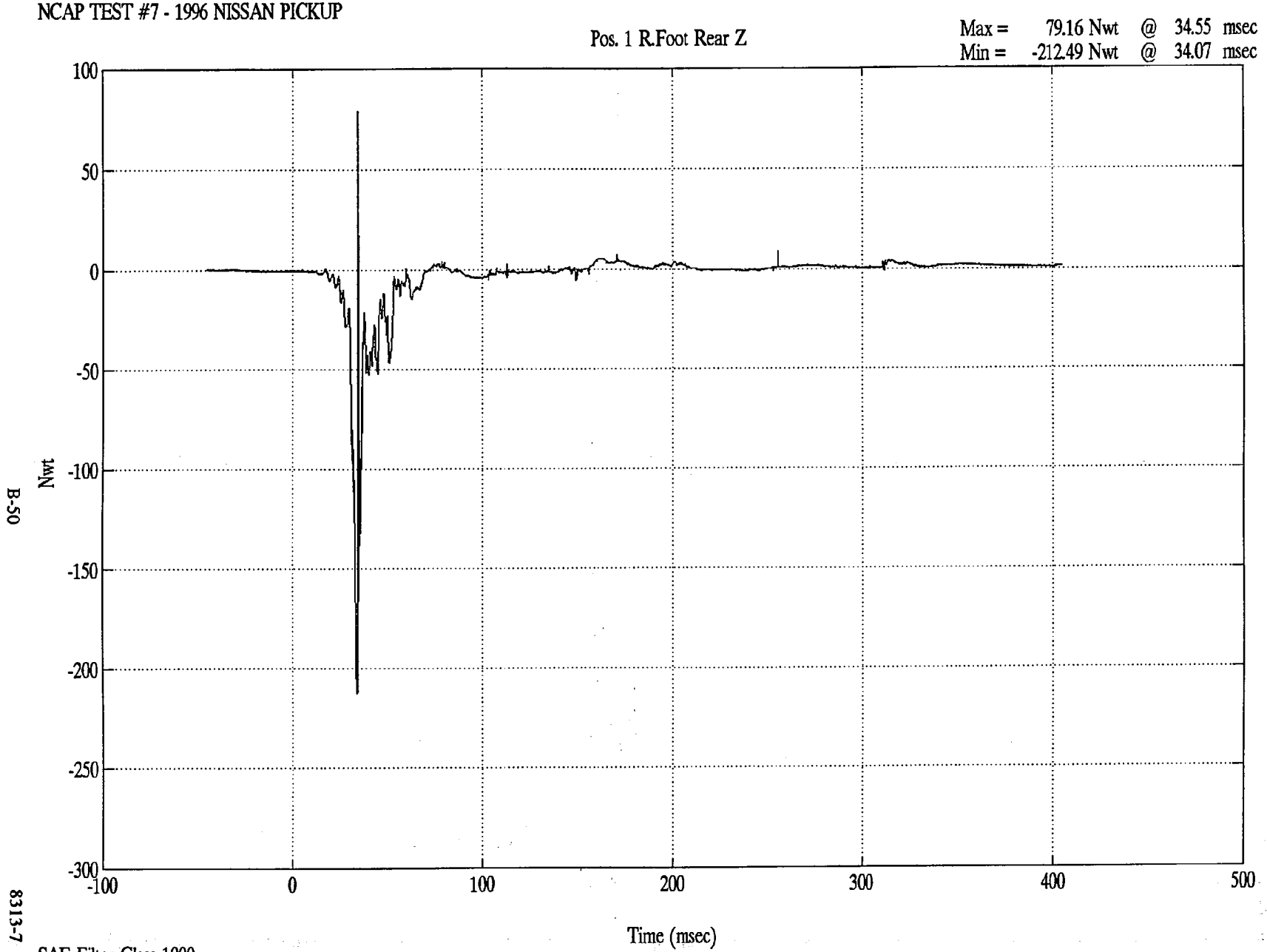
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 1000

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

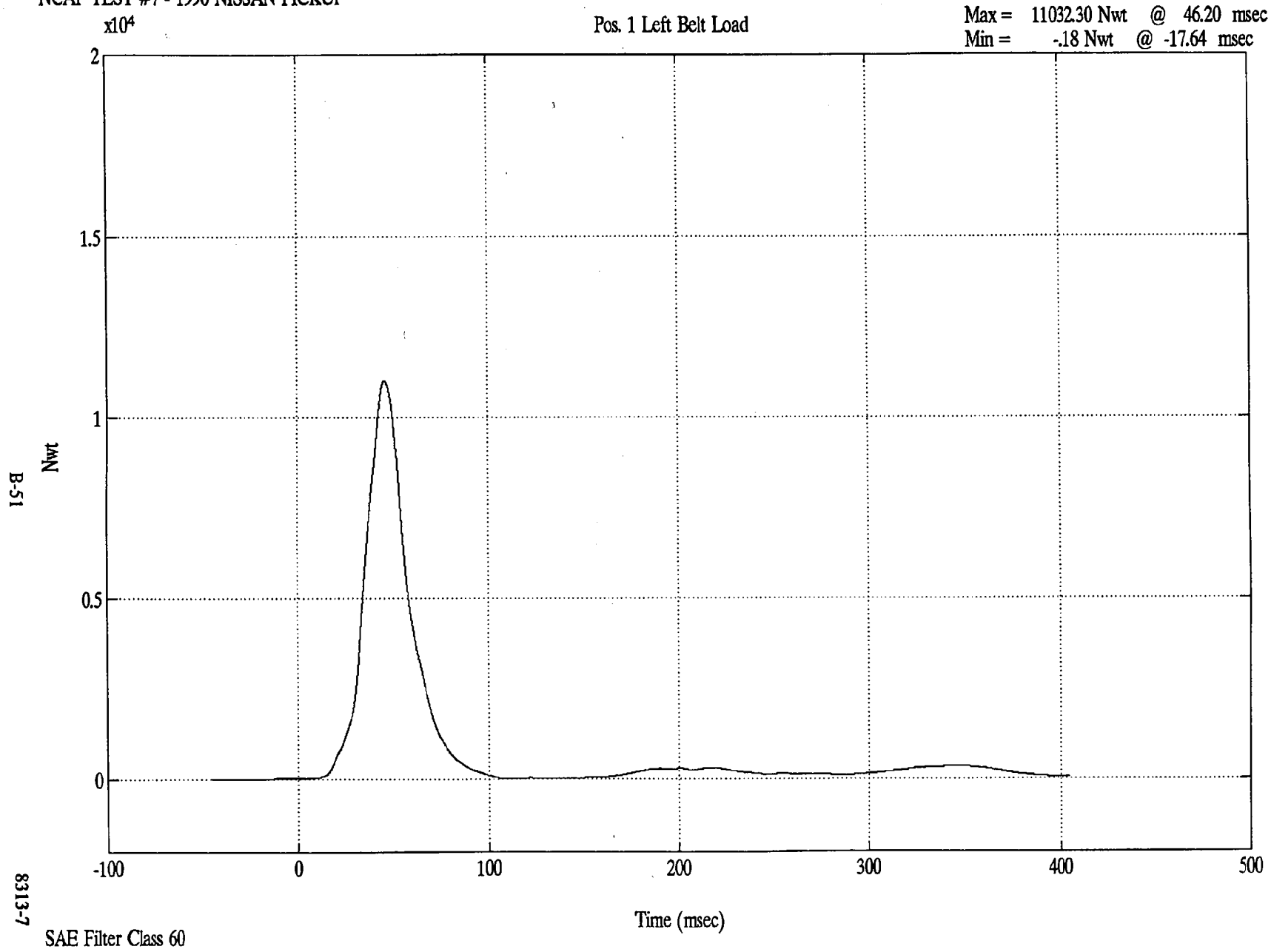


B-50

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

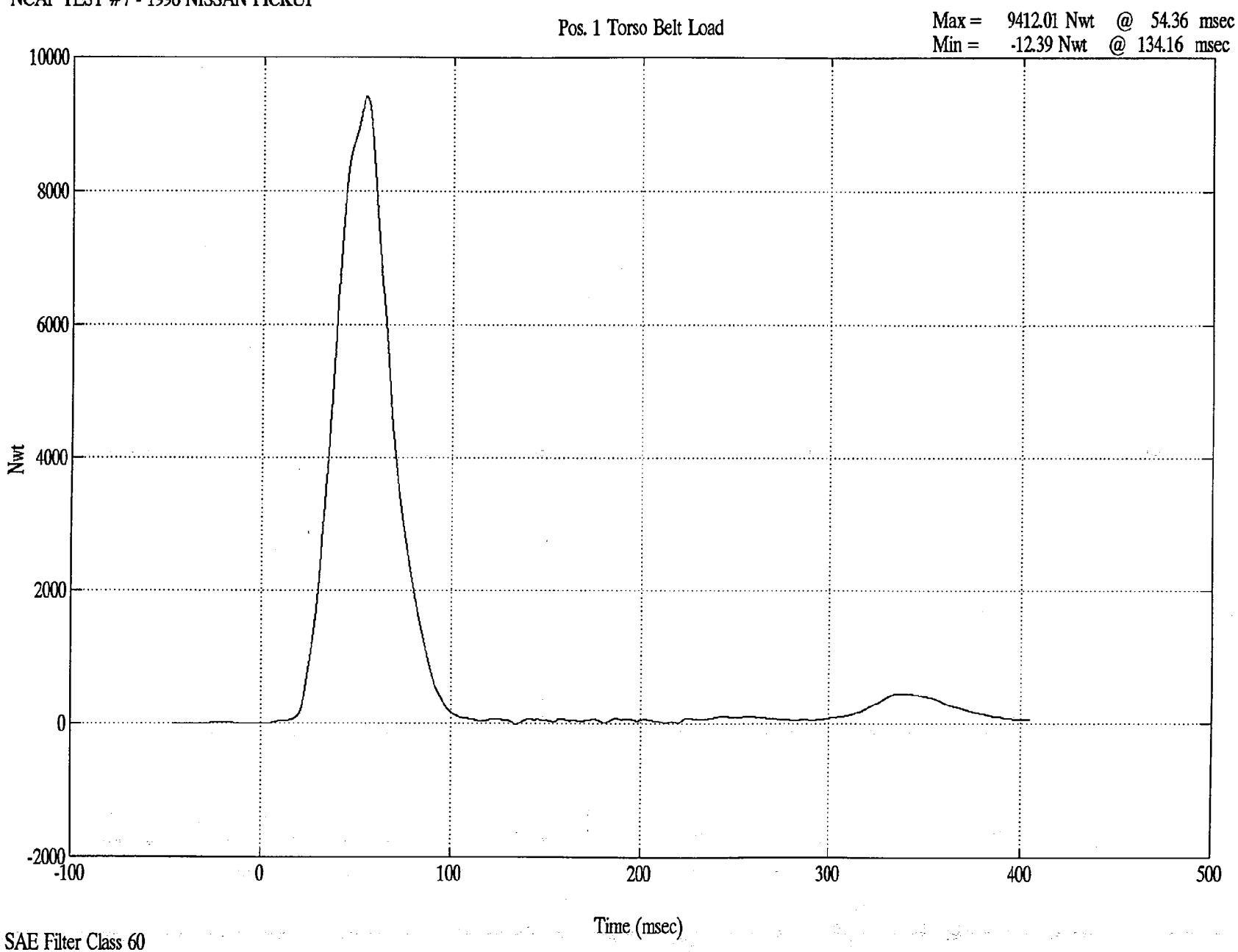


B-51

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

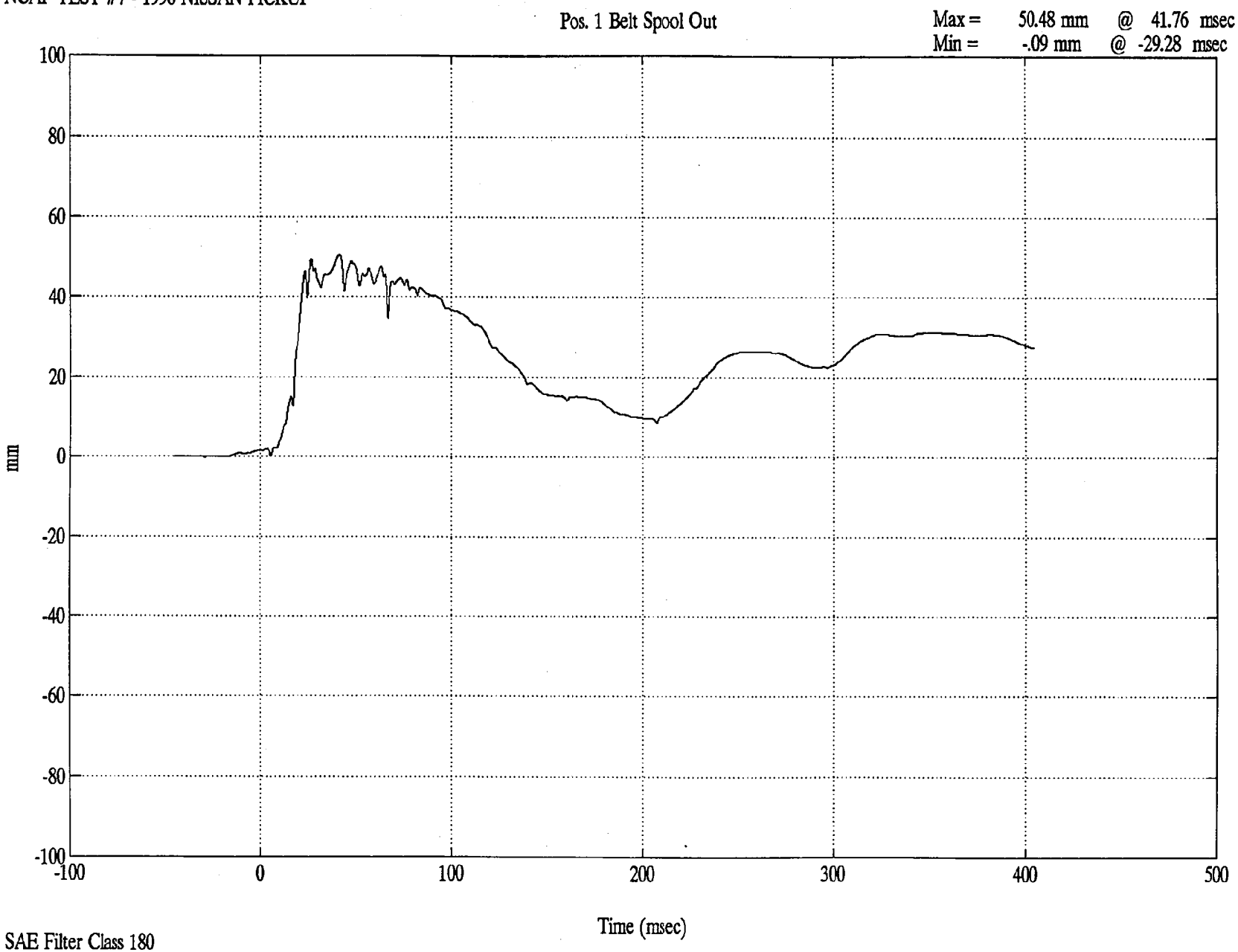


B-52

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

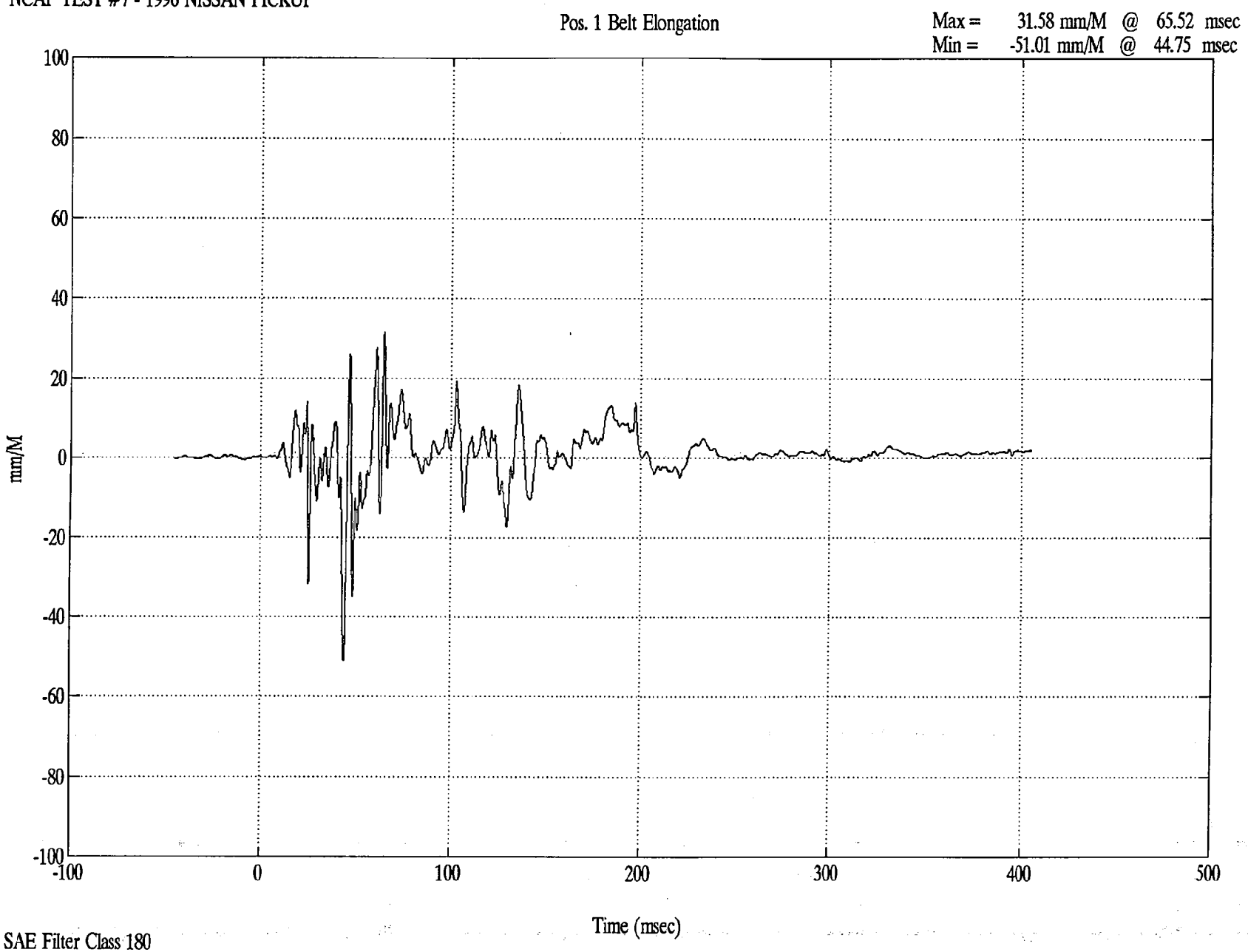


B-53

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

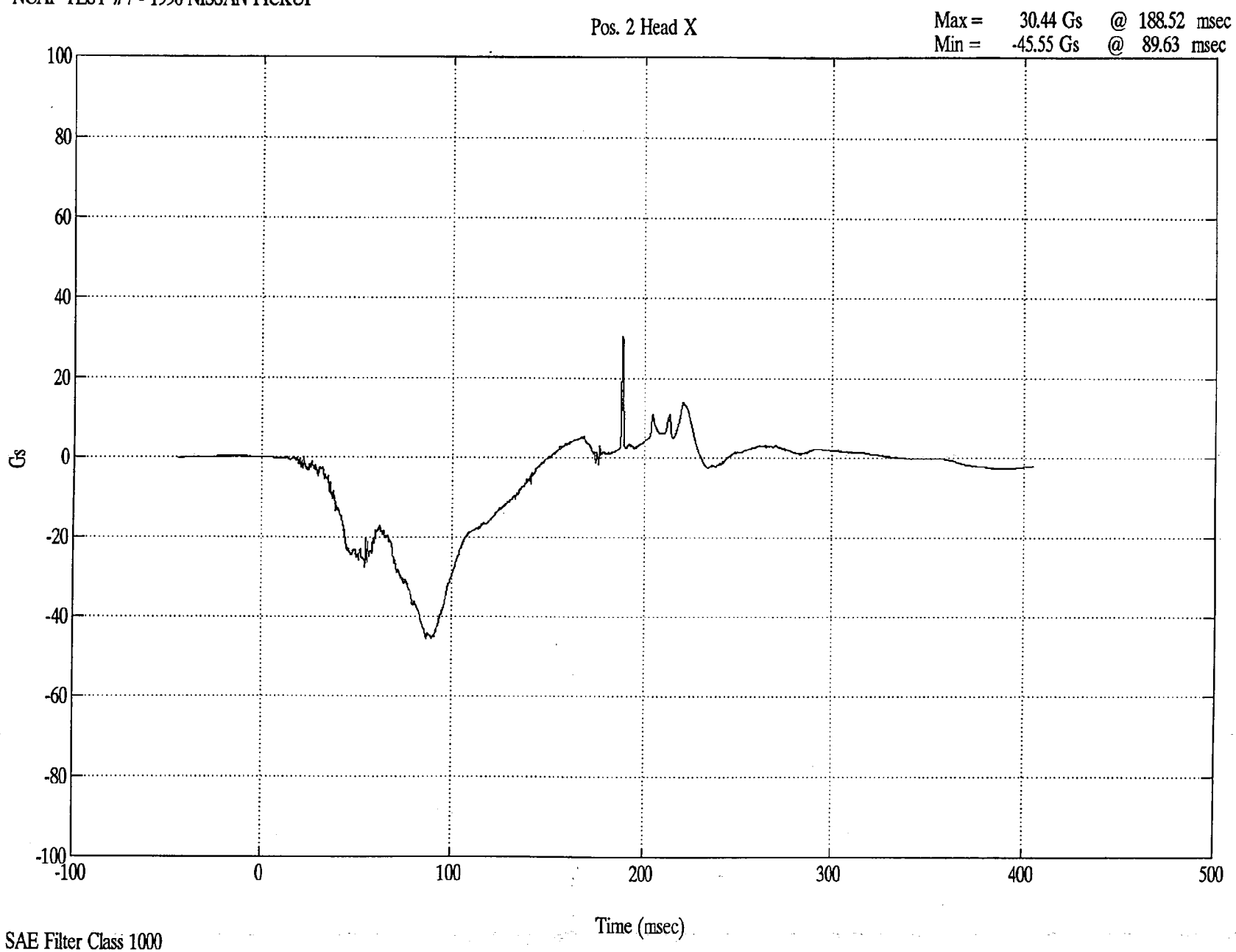


B-54

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

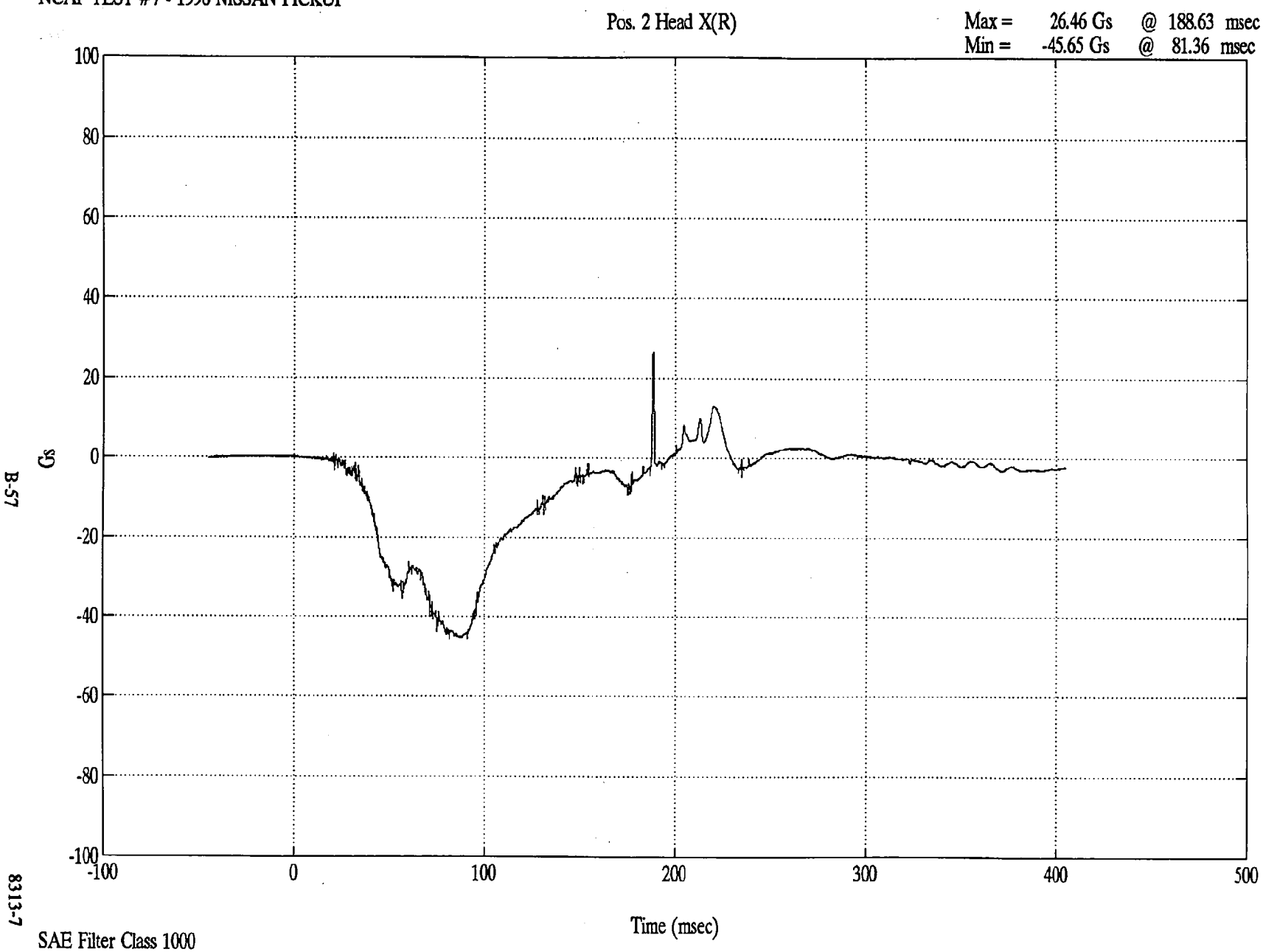


B-56

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

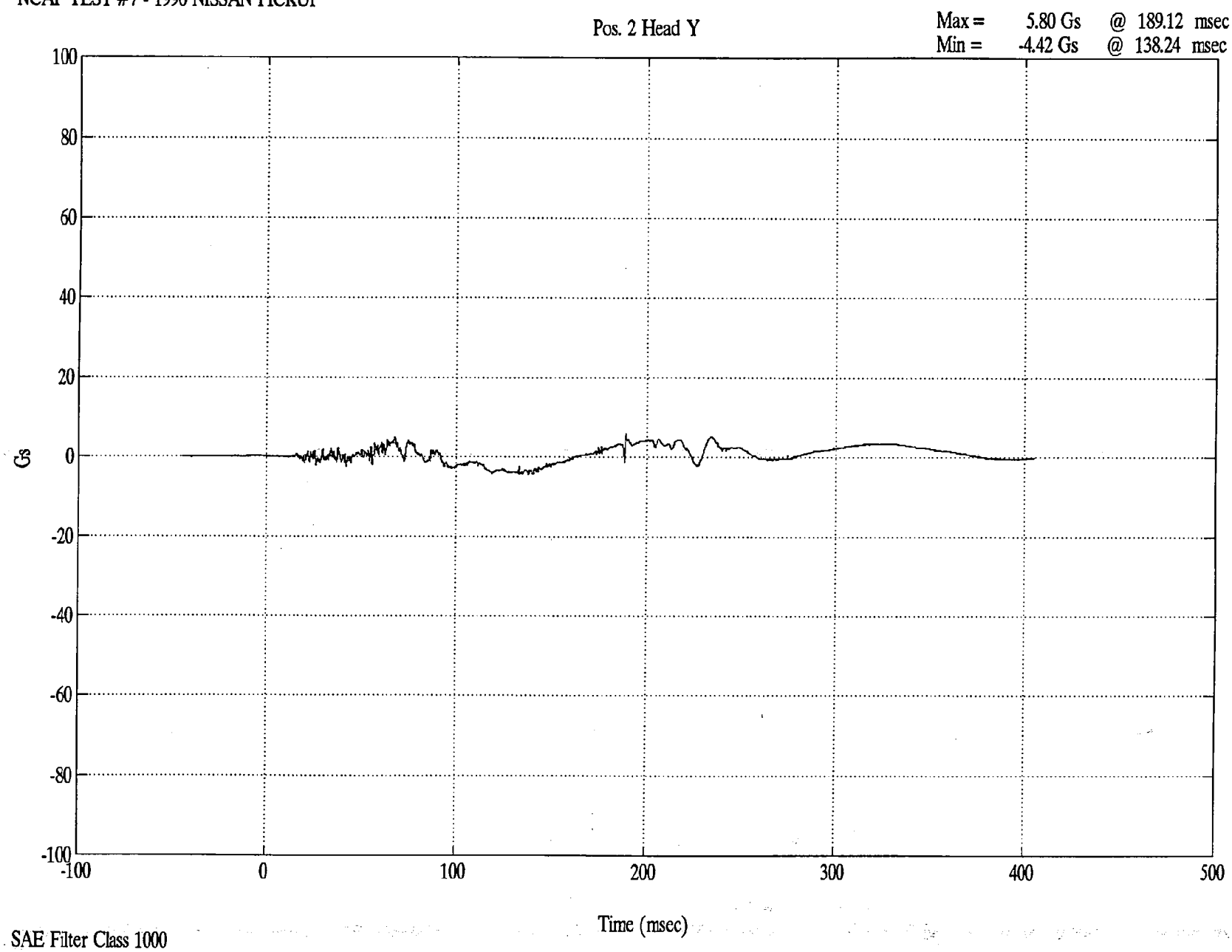


B-57

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

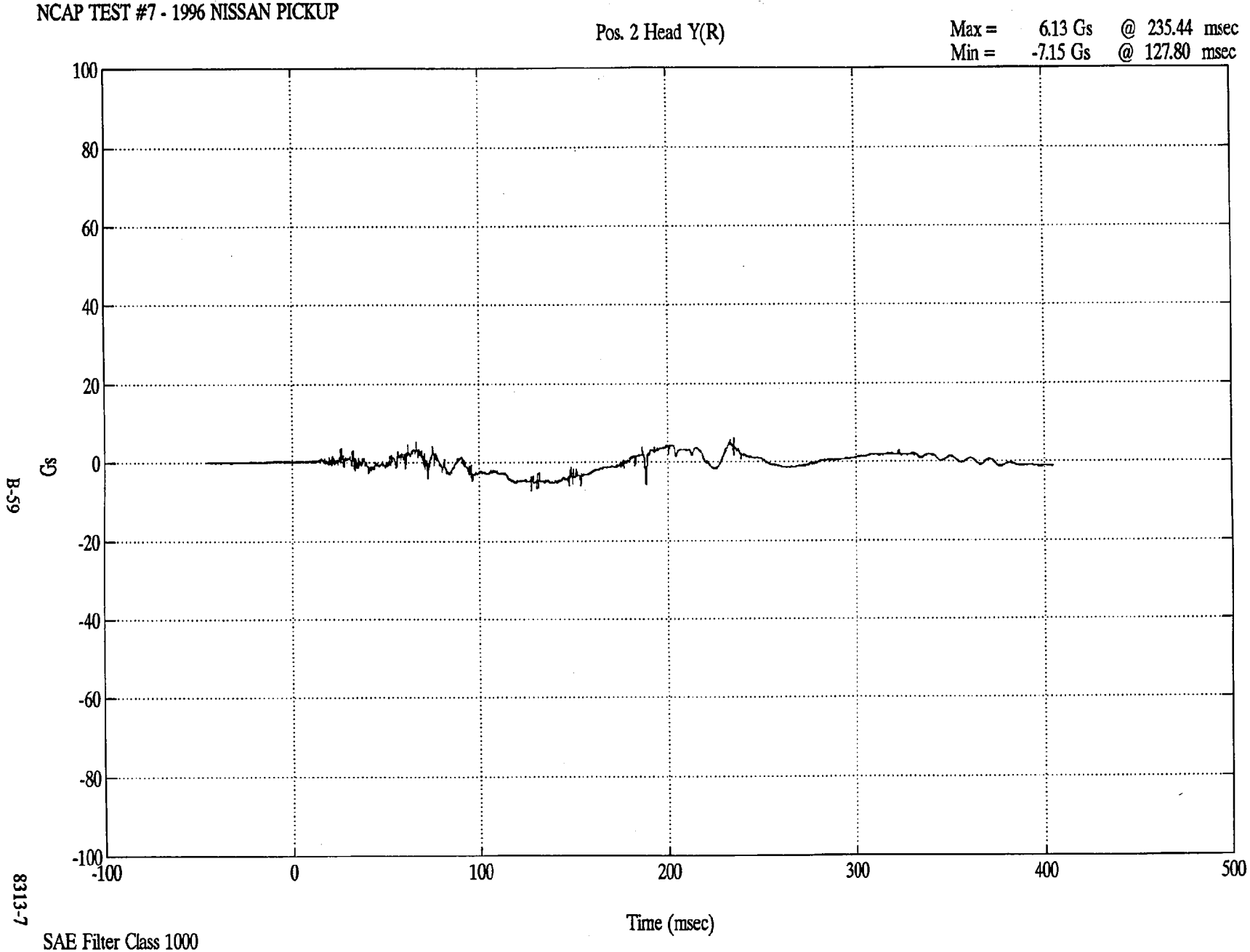


B-58

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

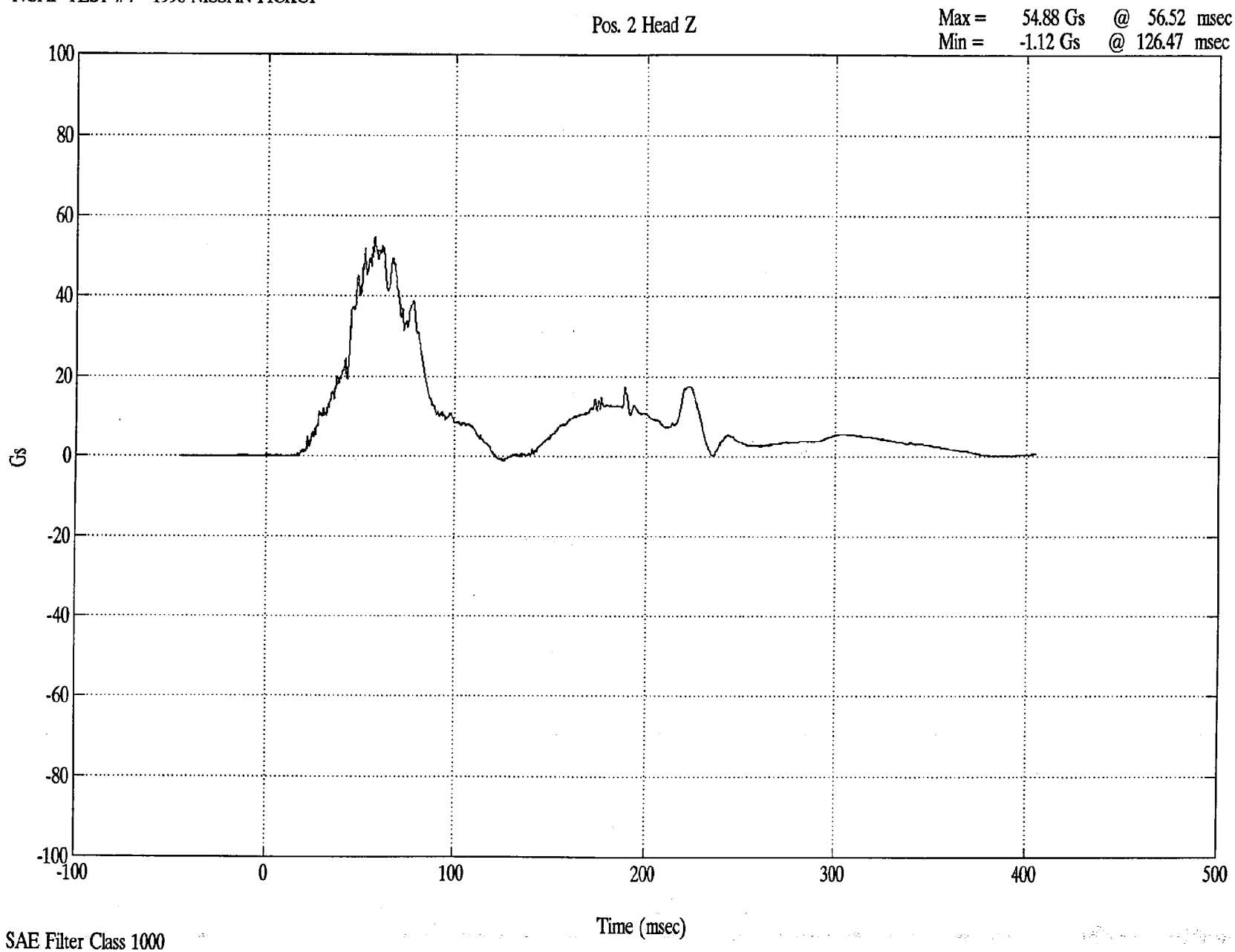


B-59

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

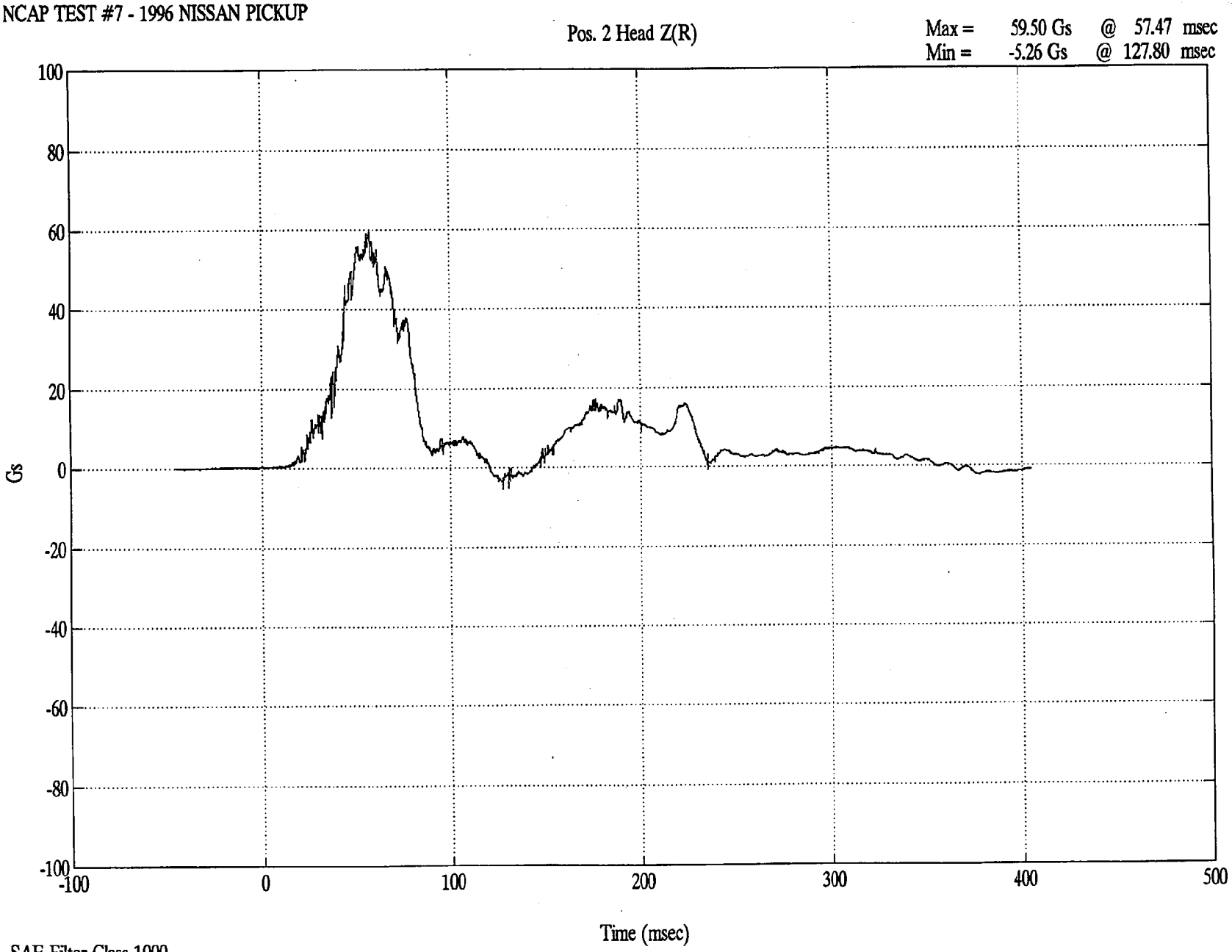


B-60

8313-7

SAE Filter Class 1000

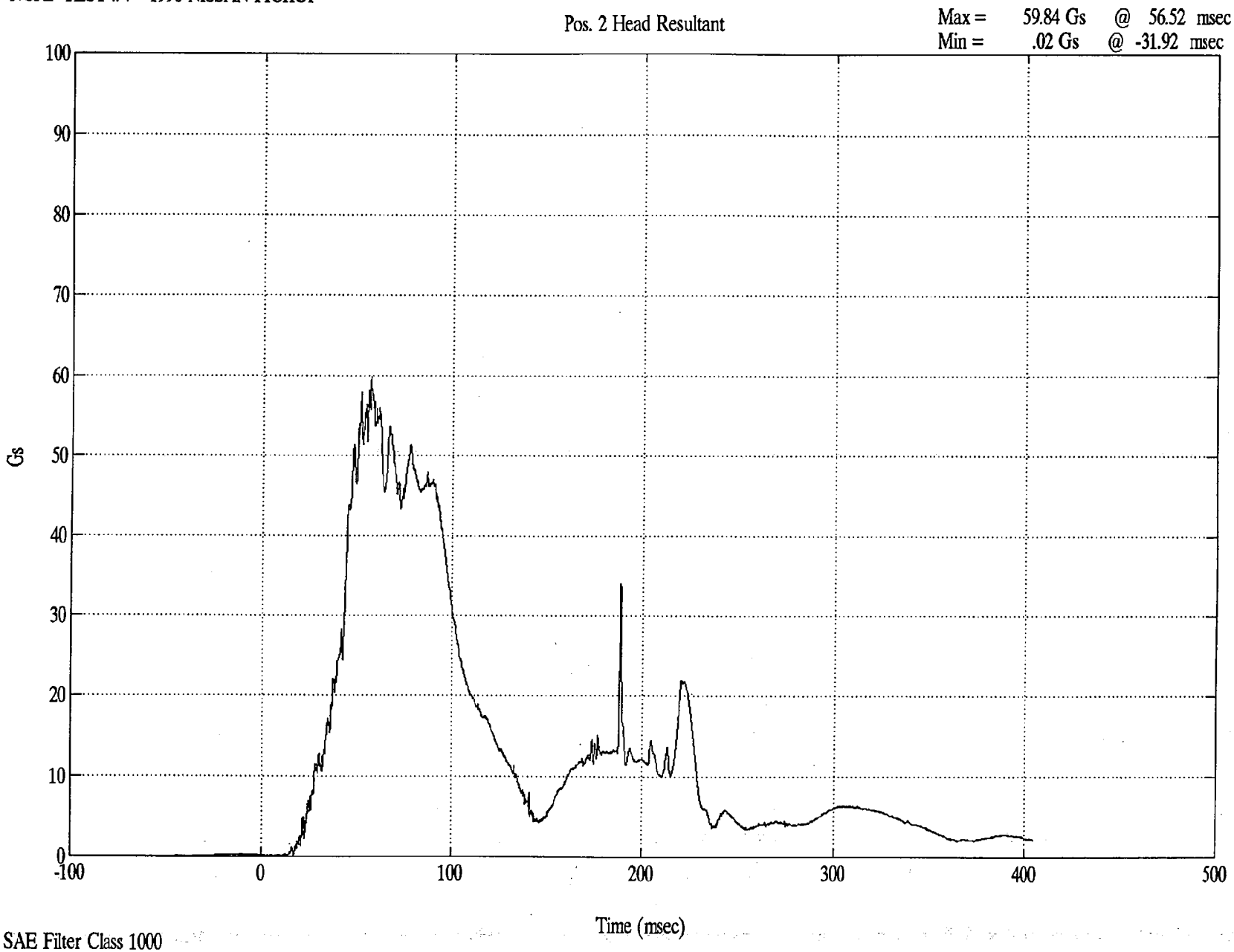
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 1000

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

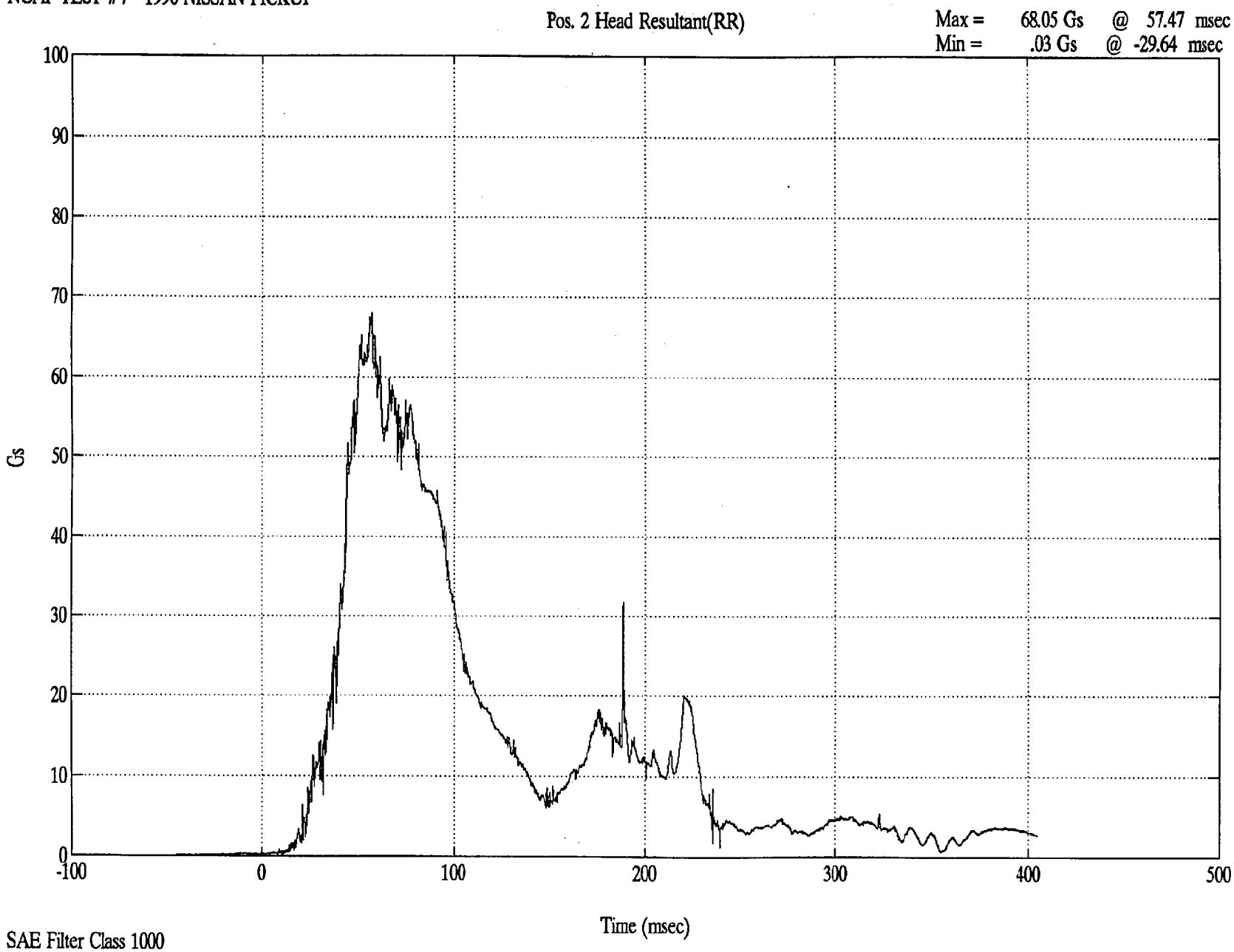


B-62

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

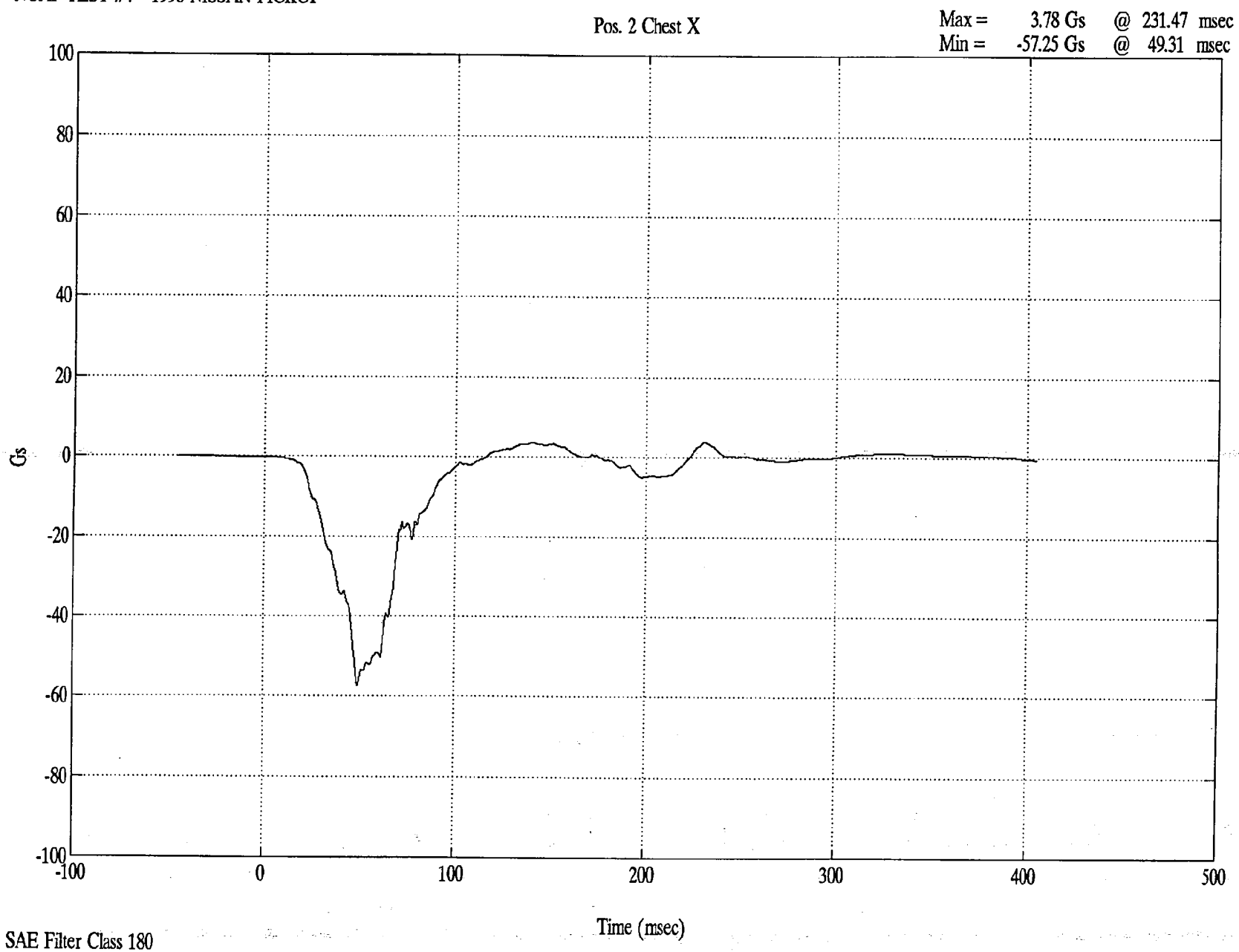


B-63

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

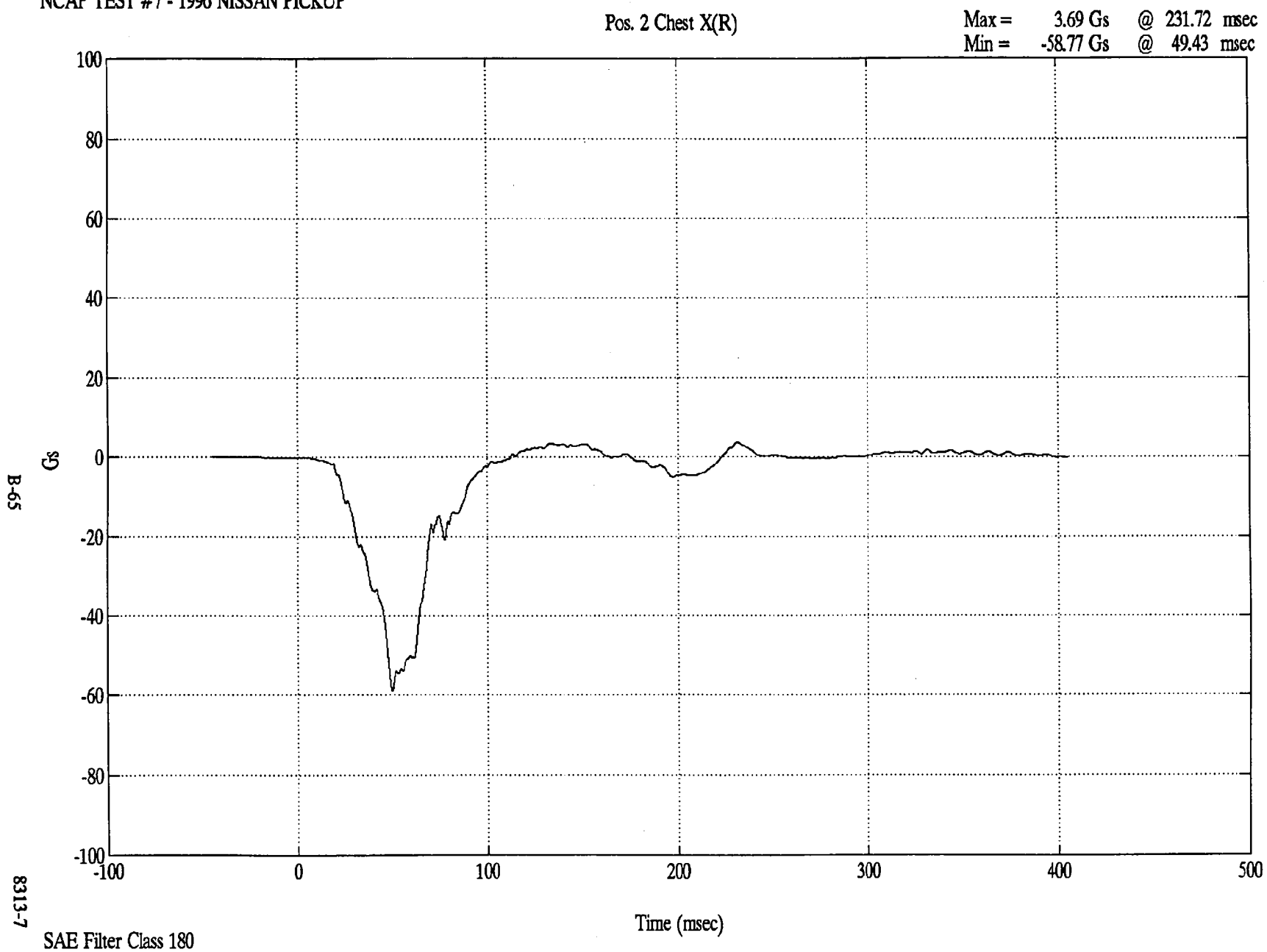


B-64

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

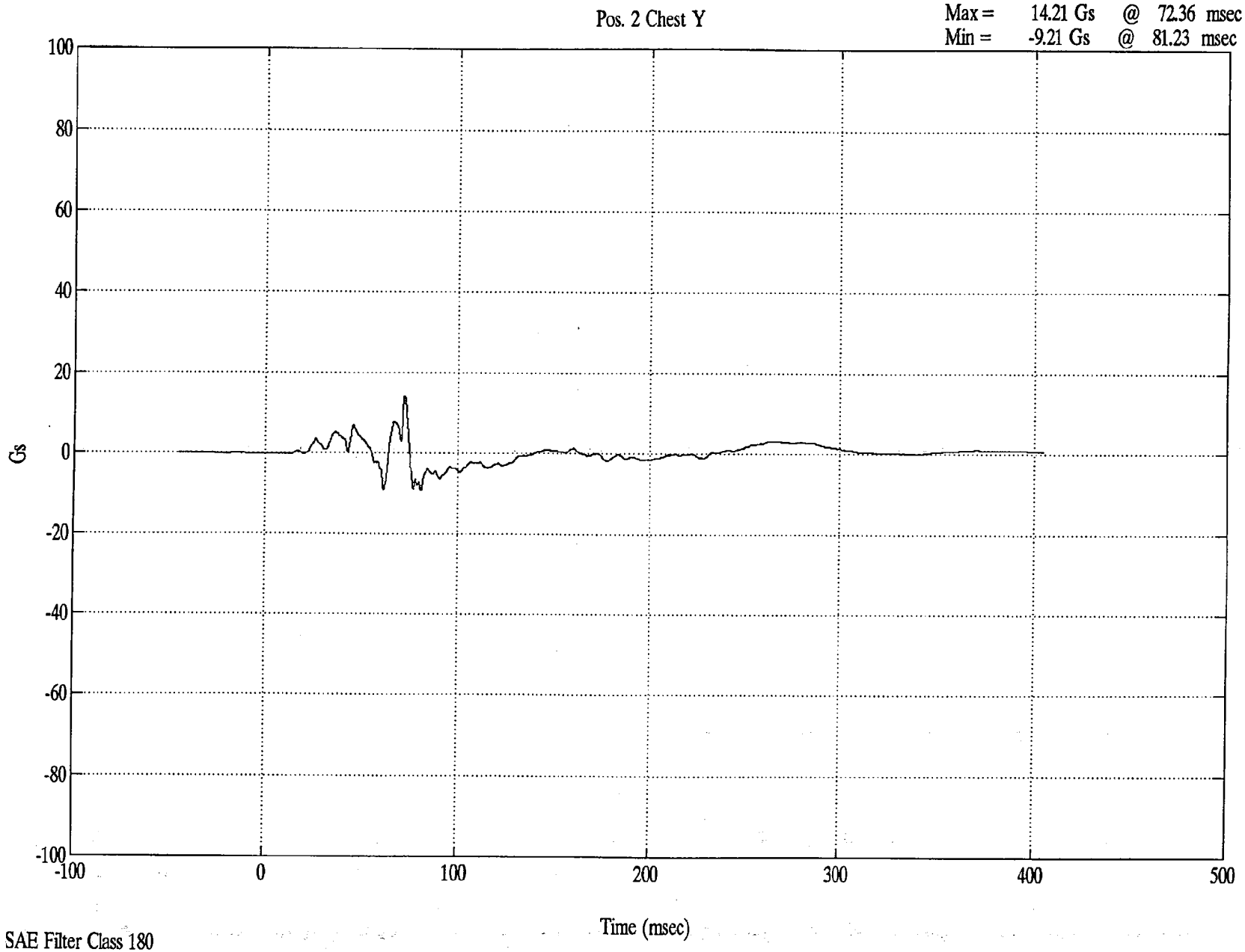


B-65

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

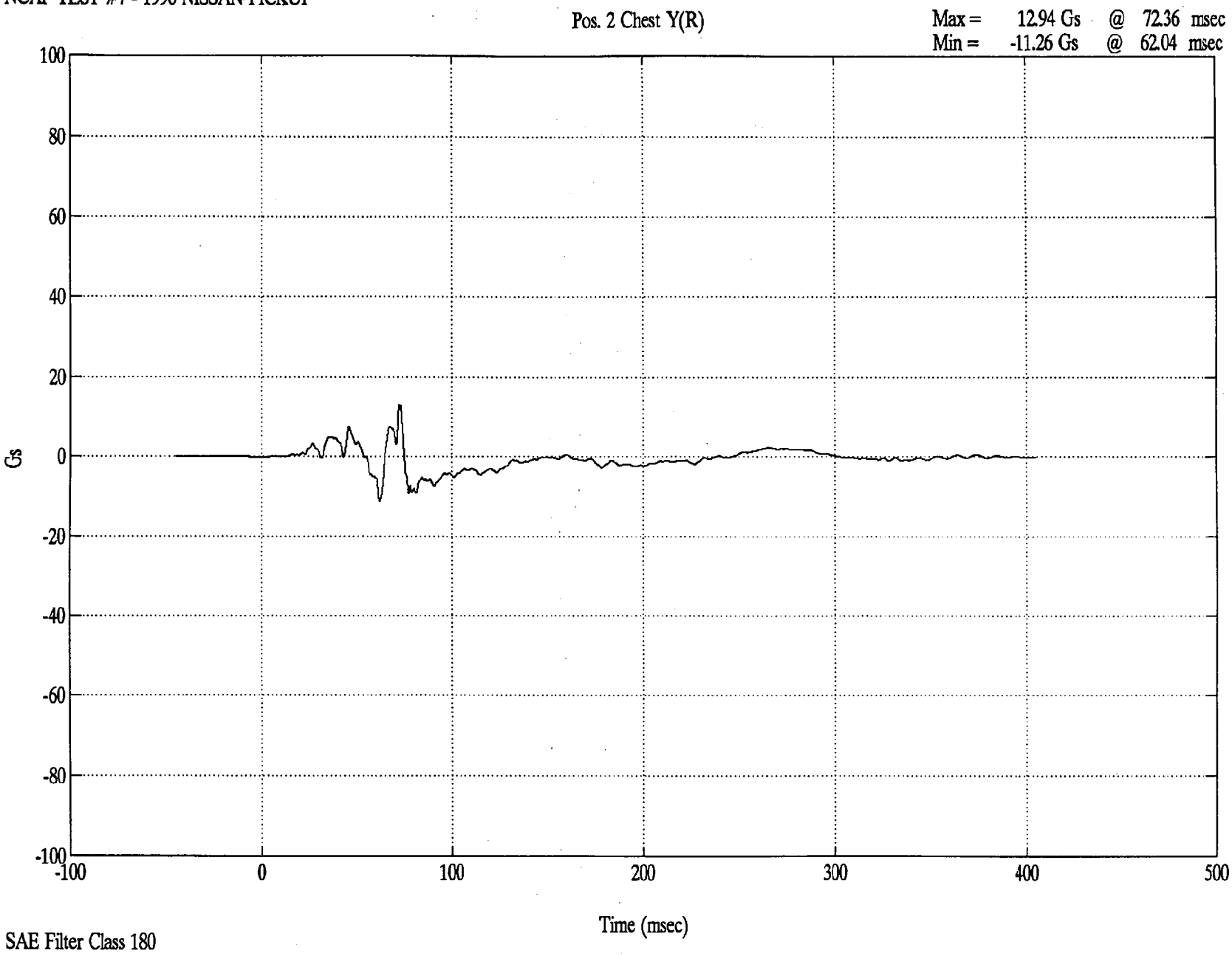


B-66

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

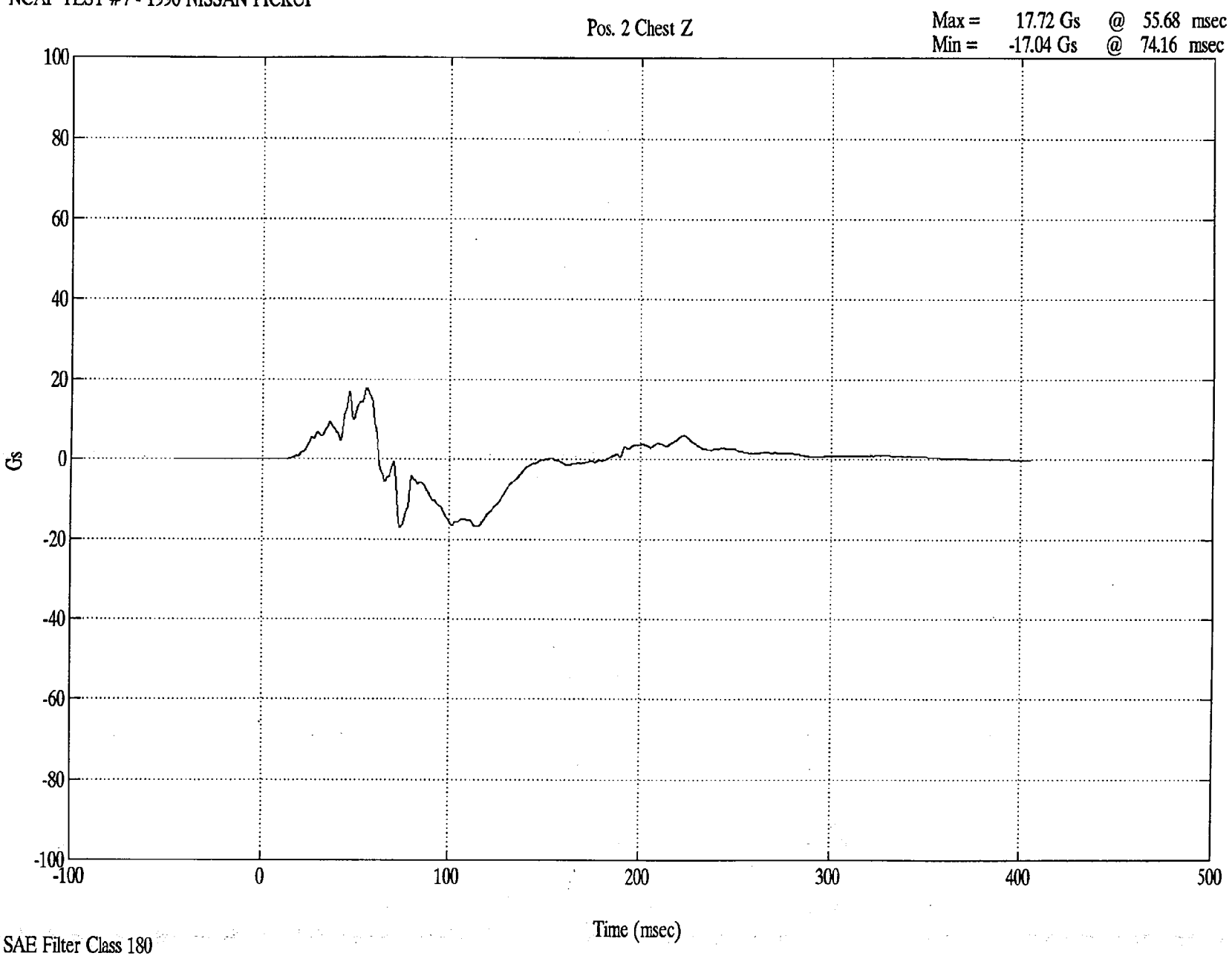


B-67

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

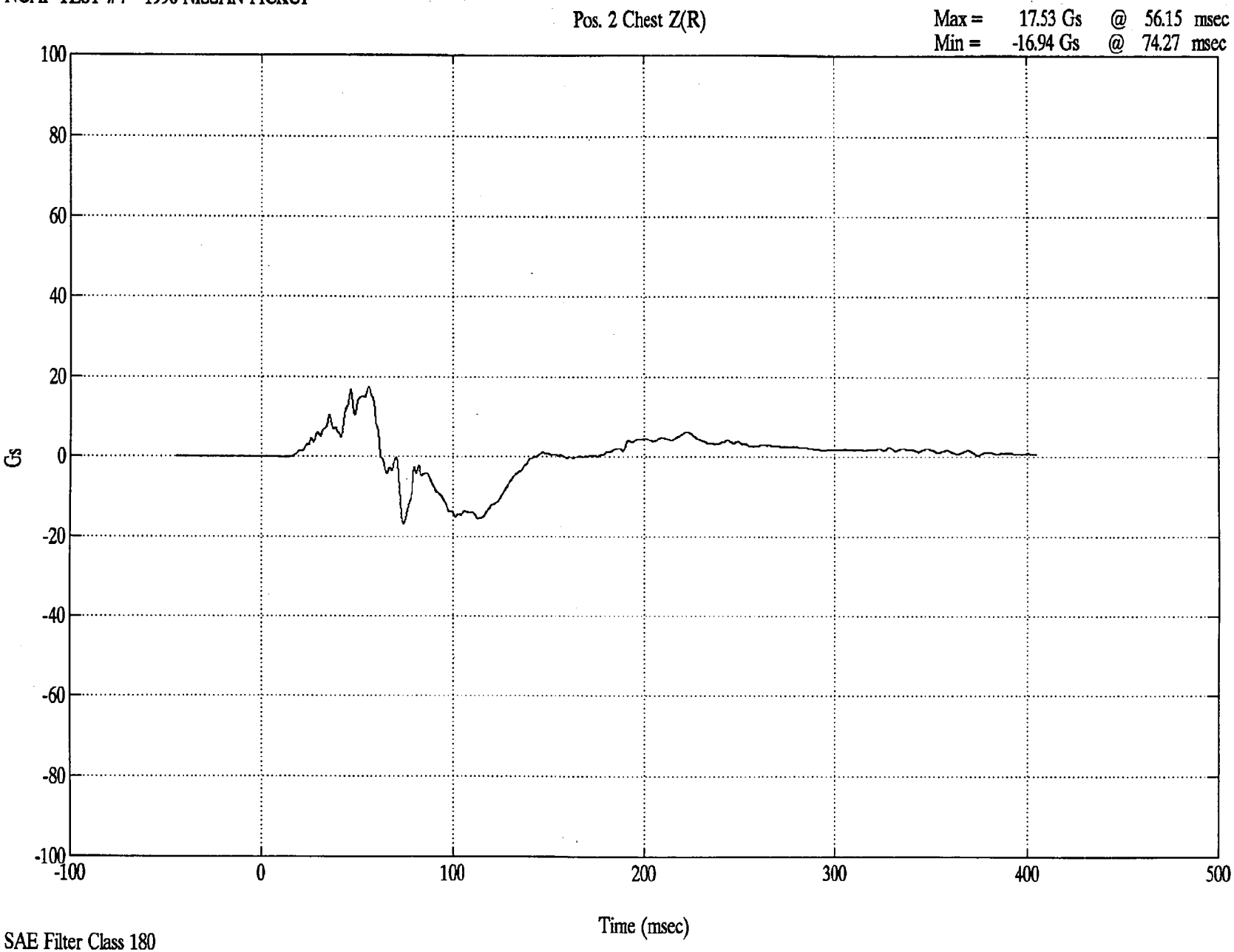


B-68

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

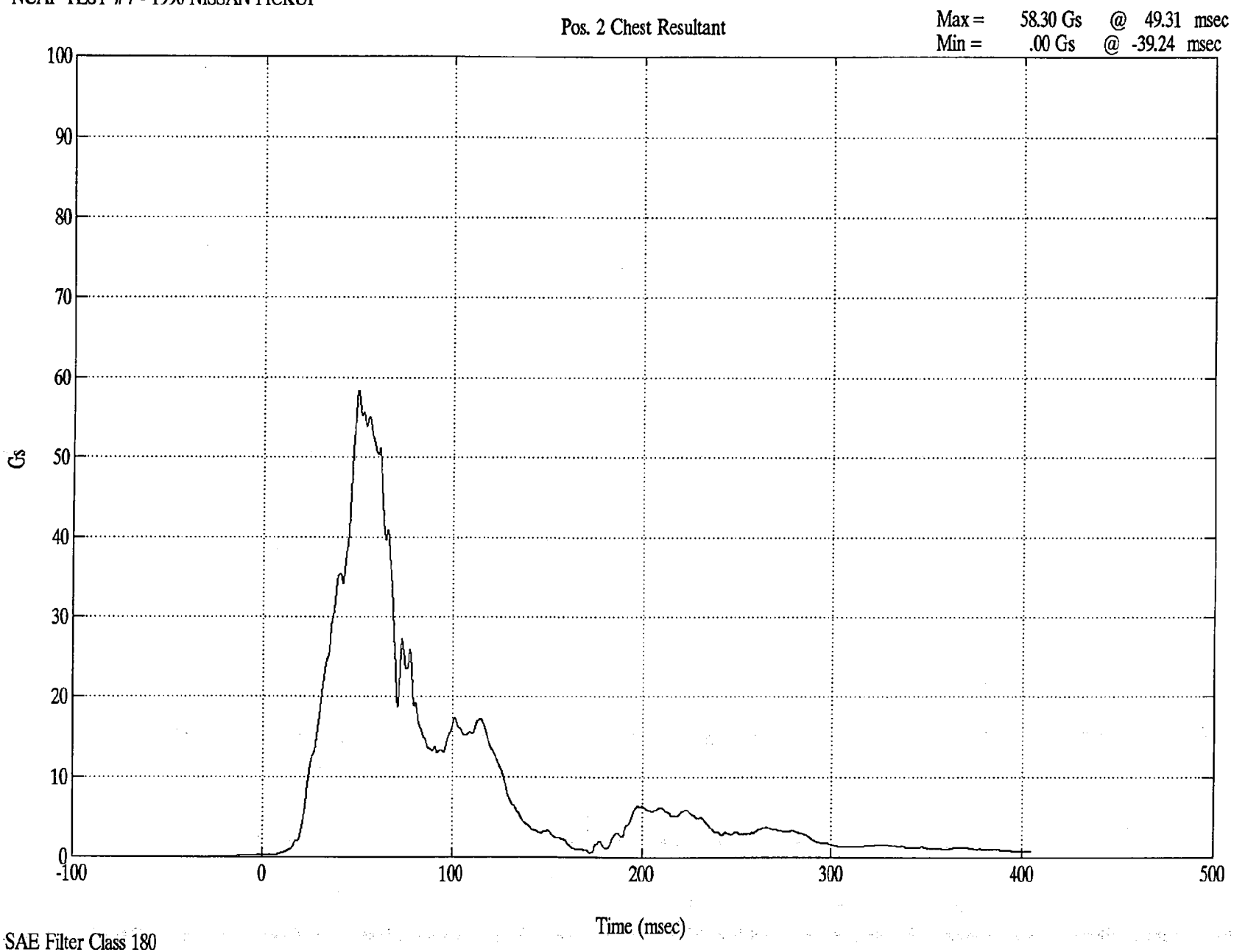


B-69

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

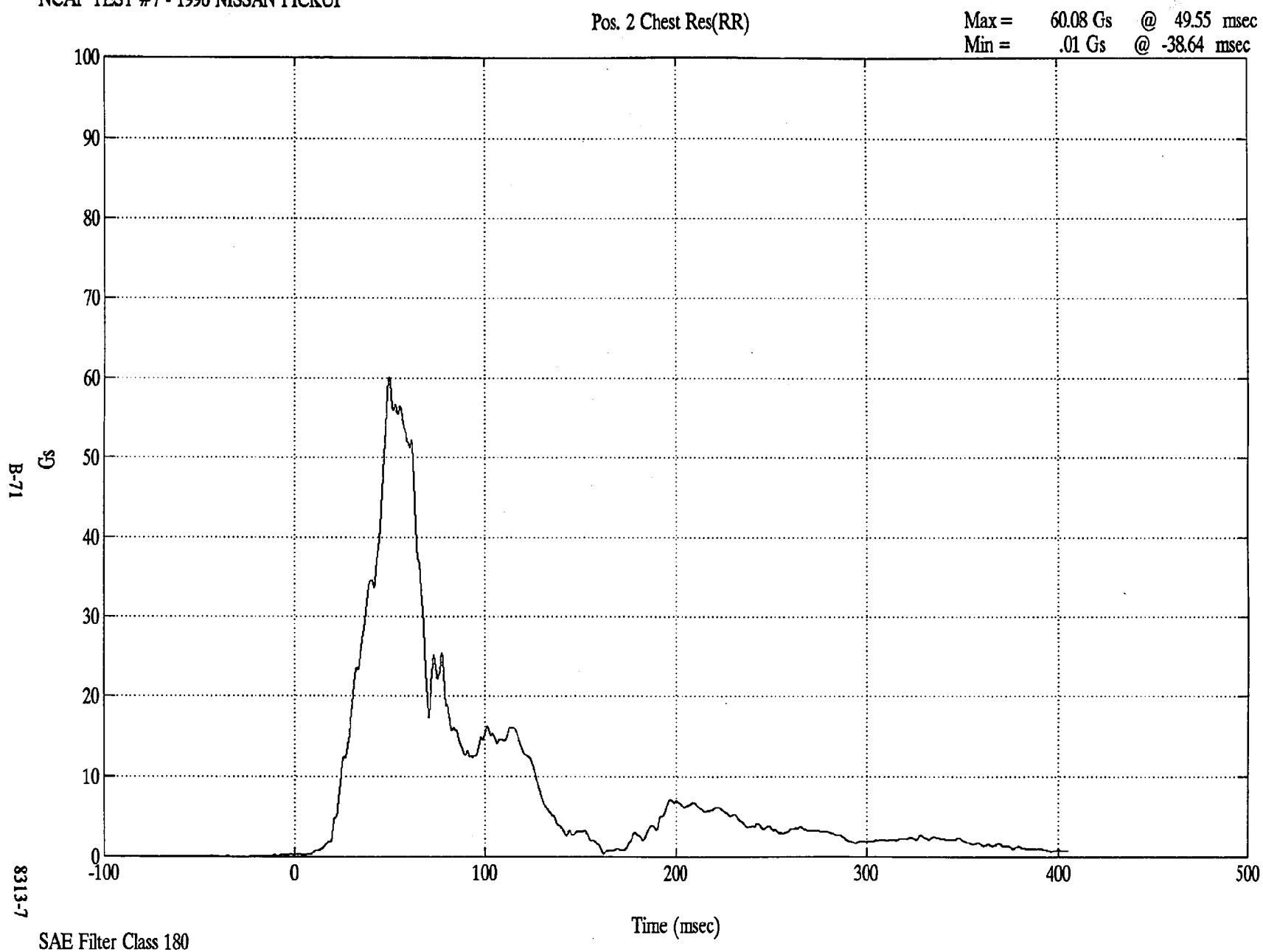


B-70

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

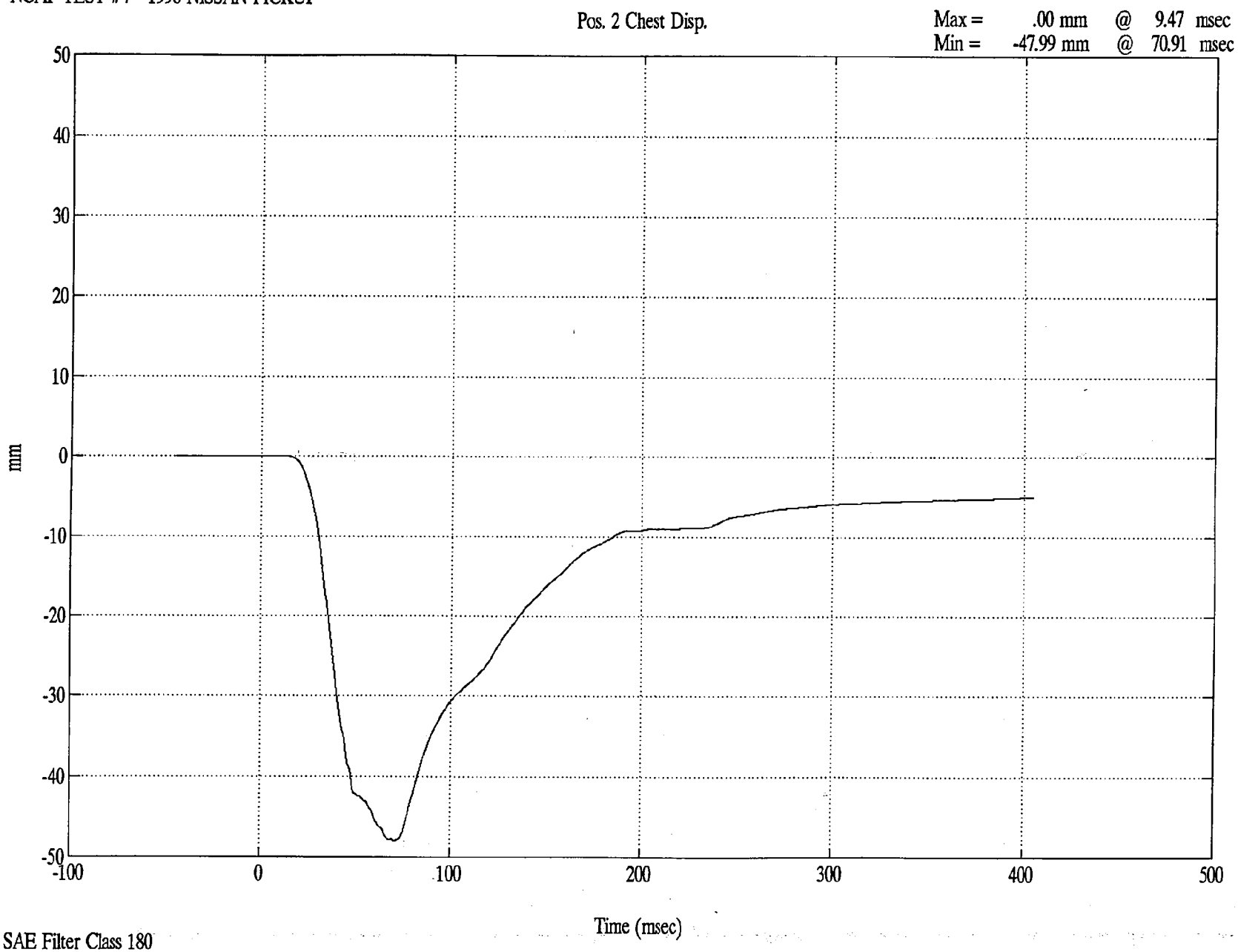


B-71

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

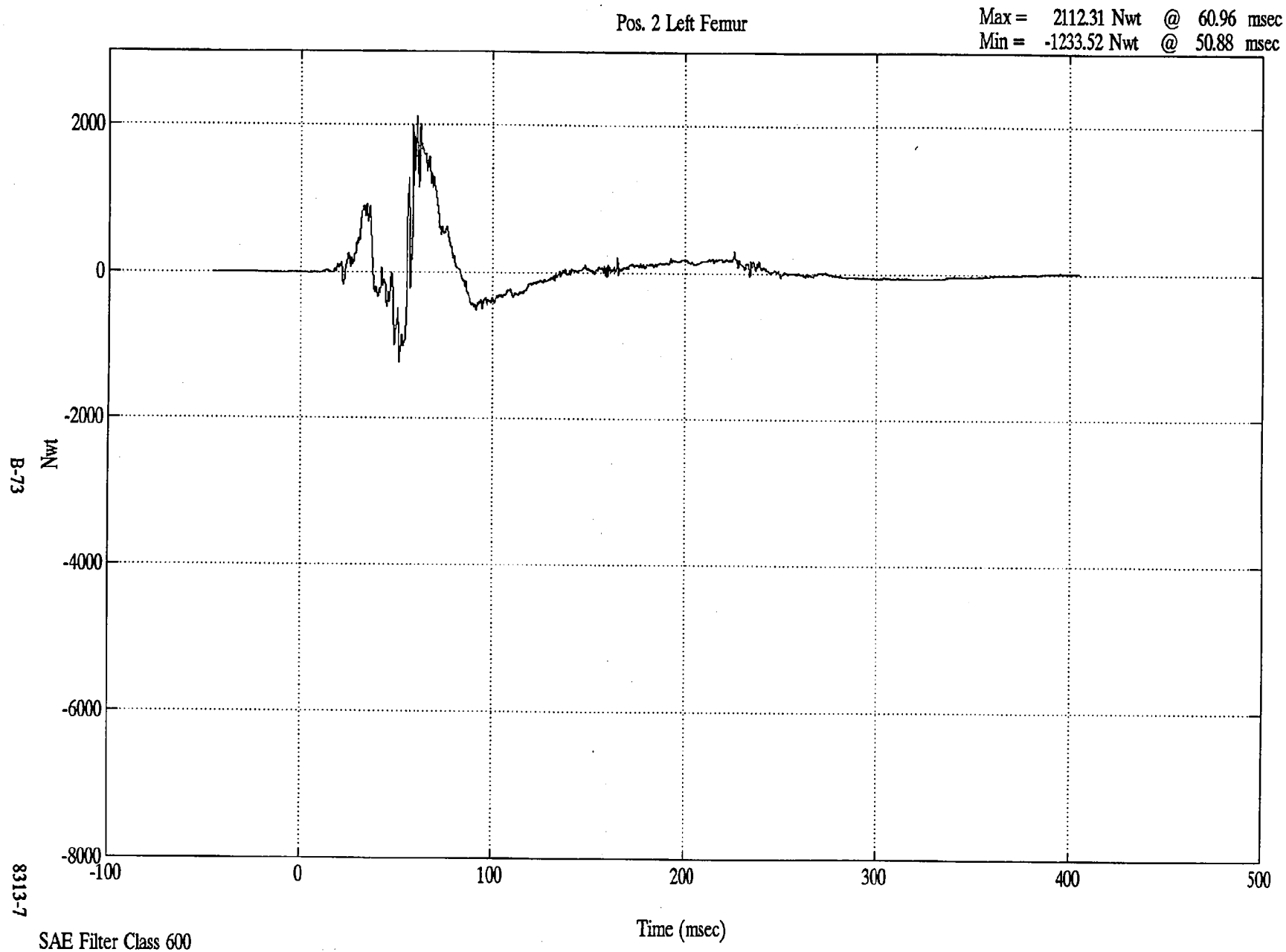


B-72

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

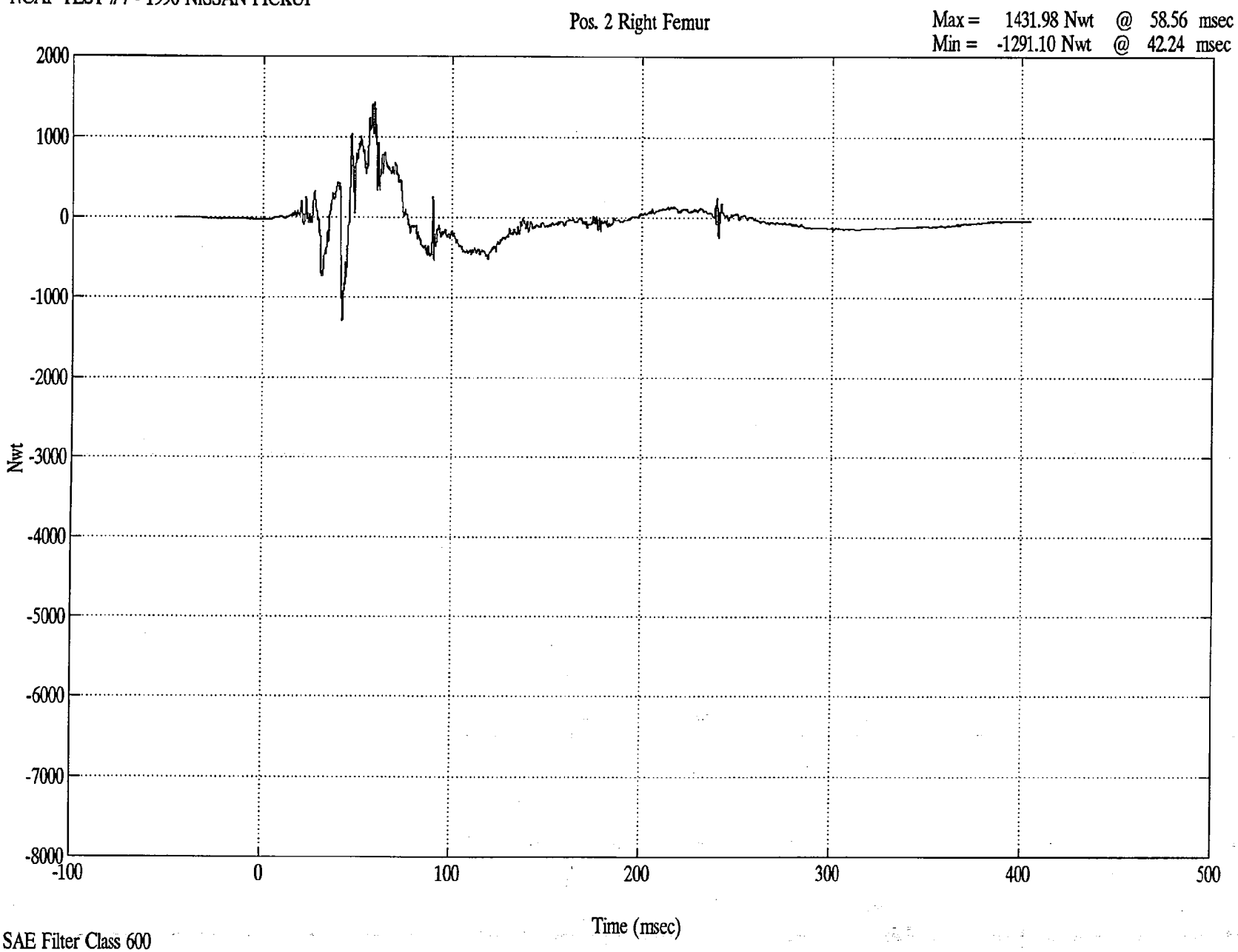


B-73

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

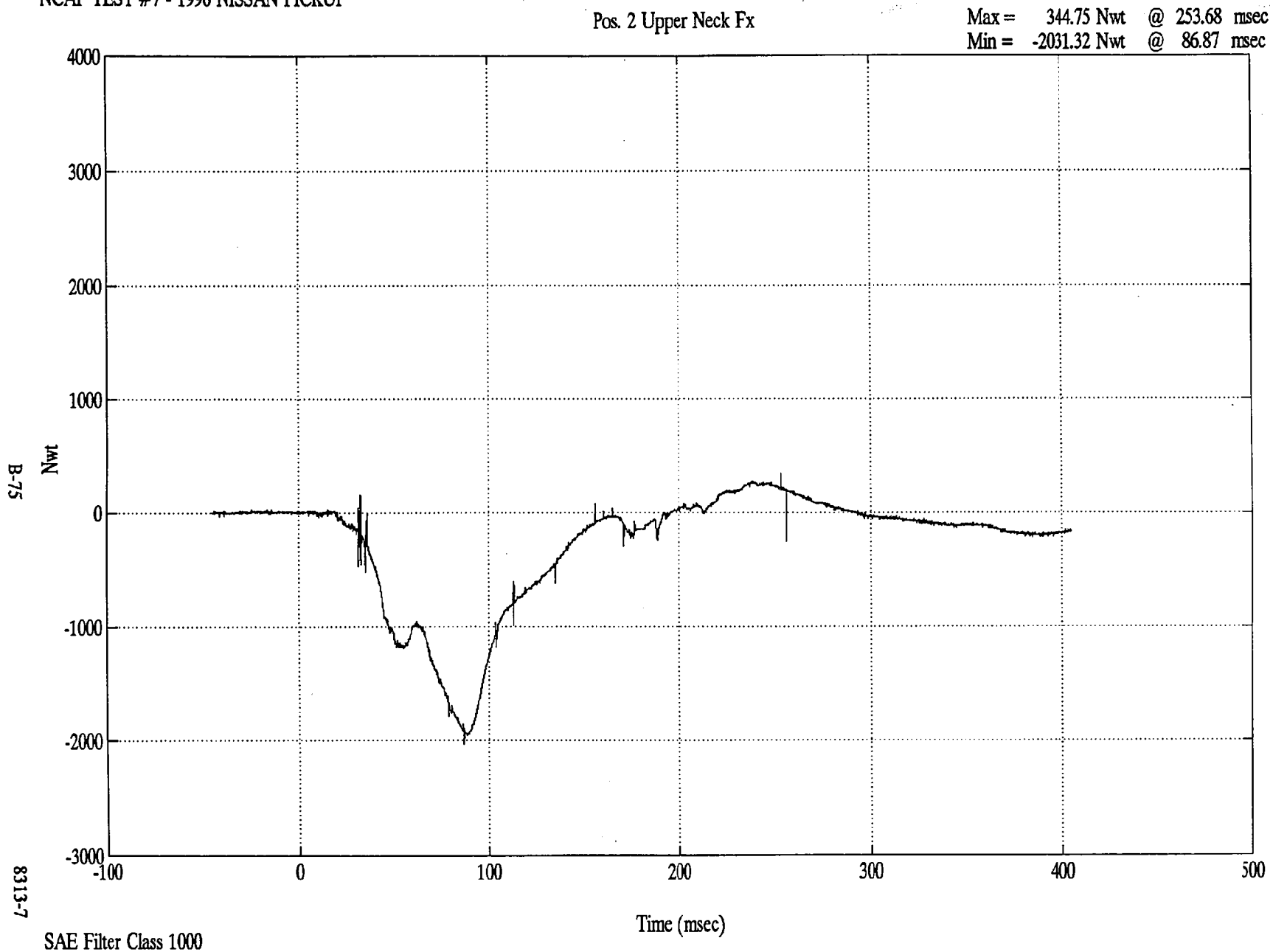


B-74

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

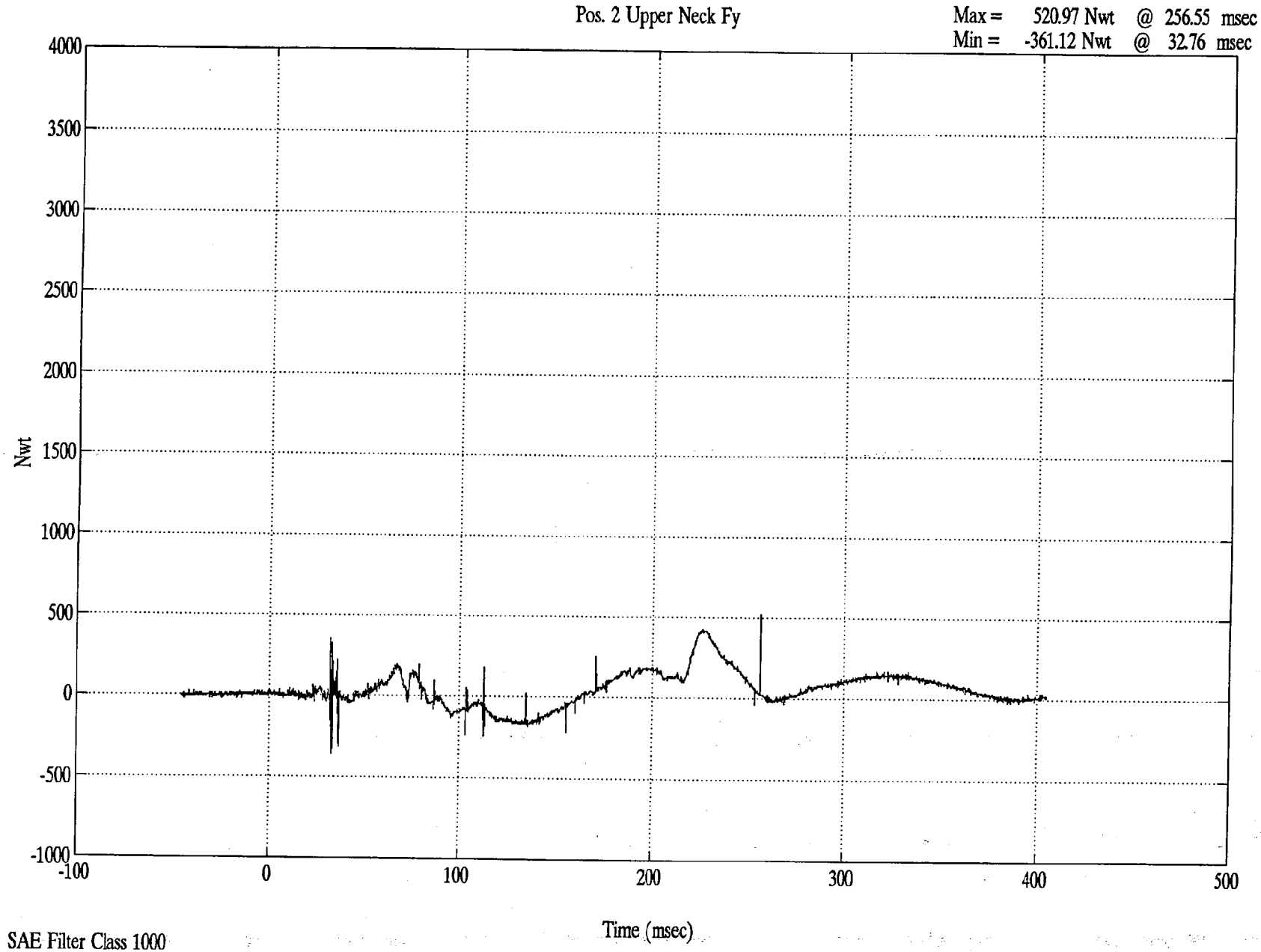


B-75

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

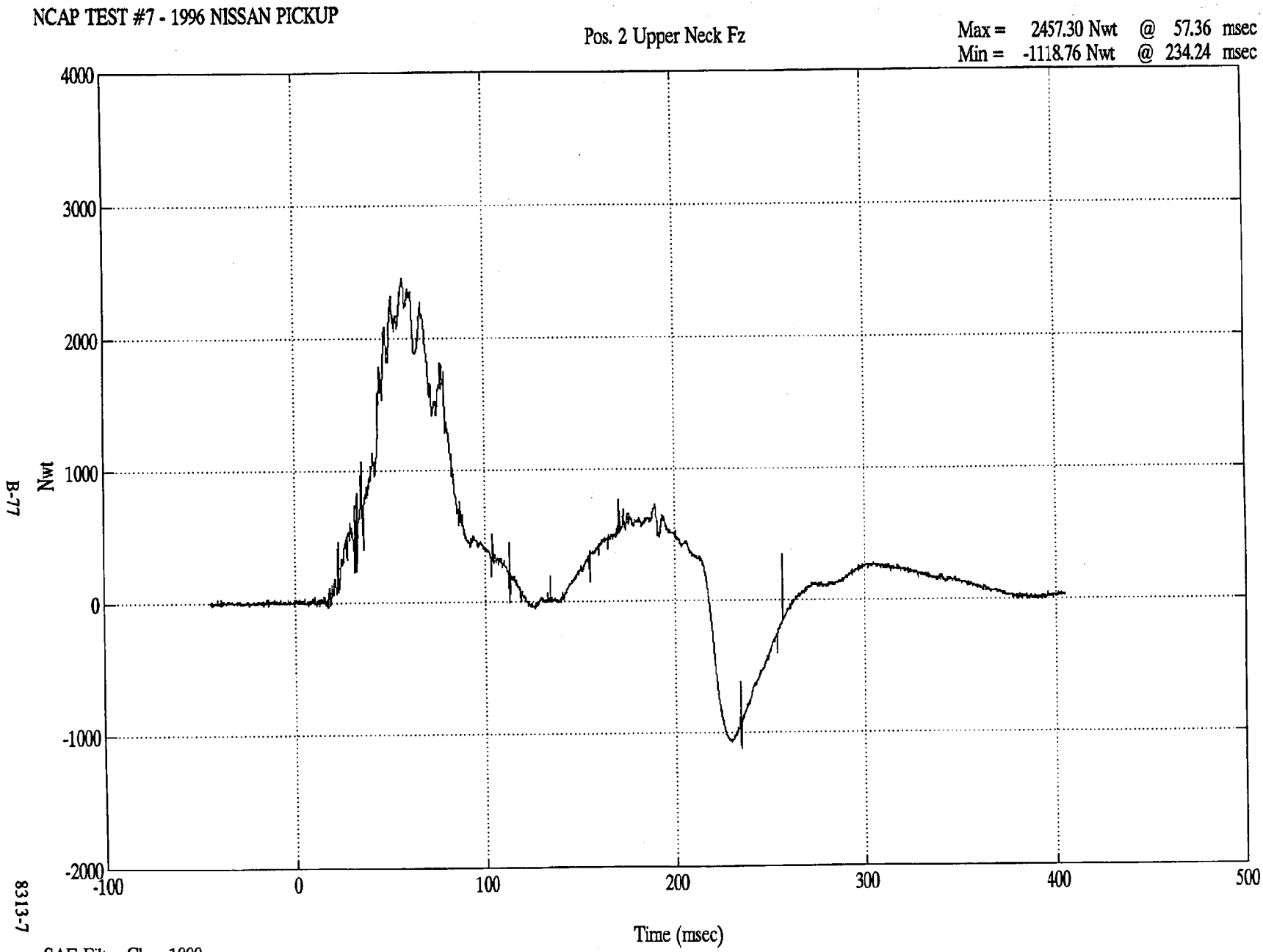


B-76

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

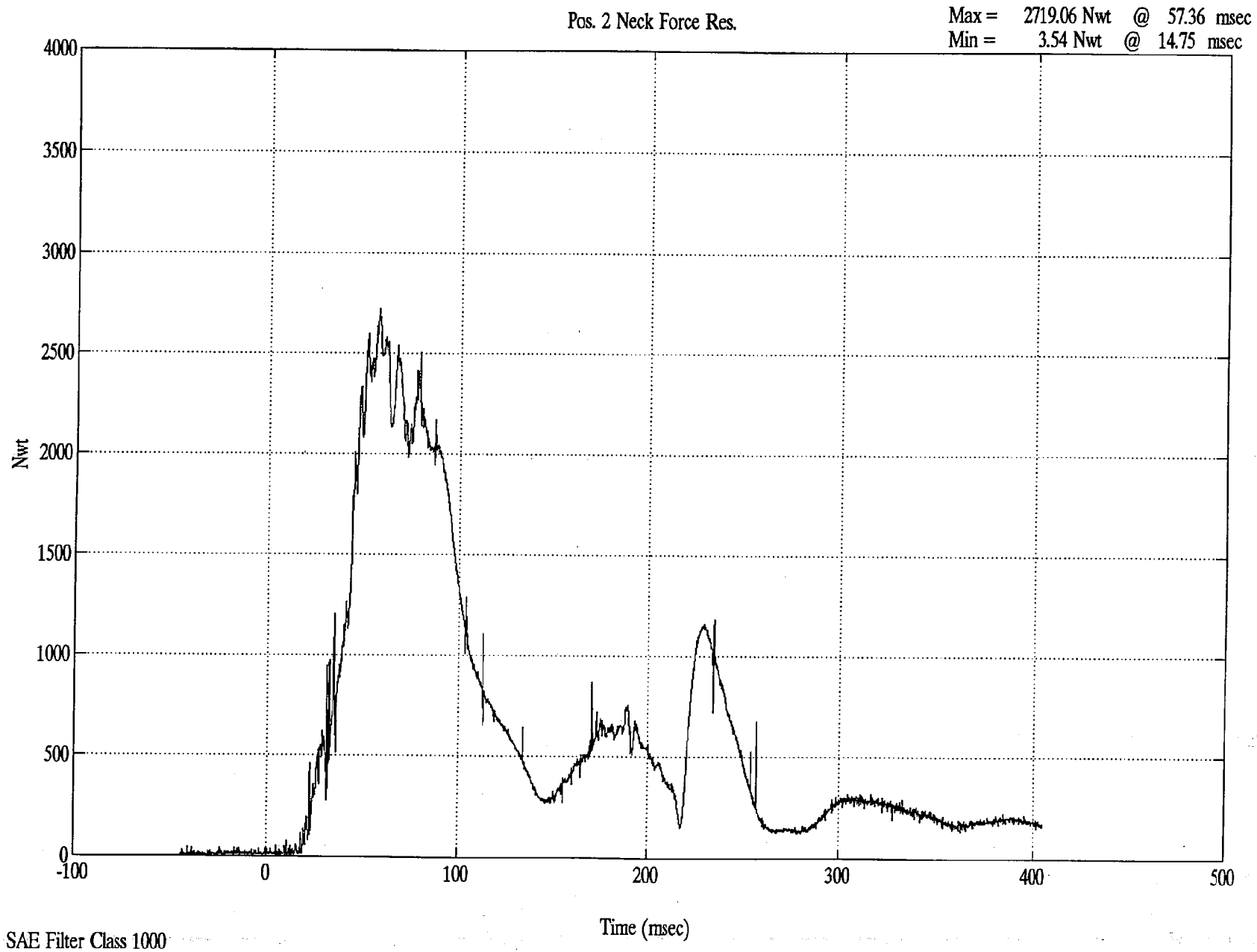


B-77

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

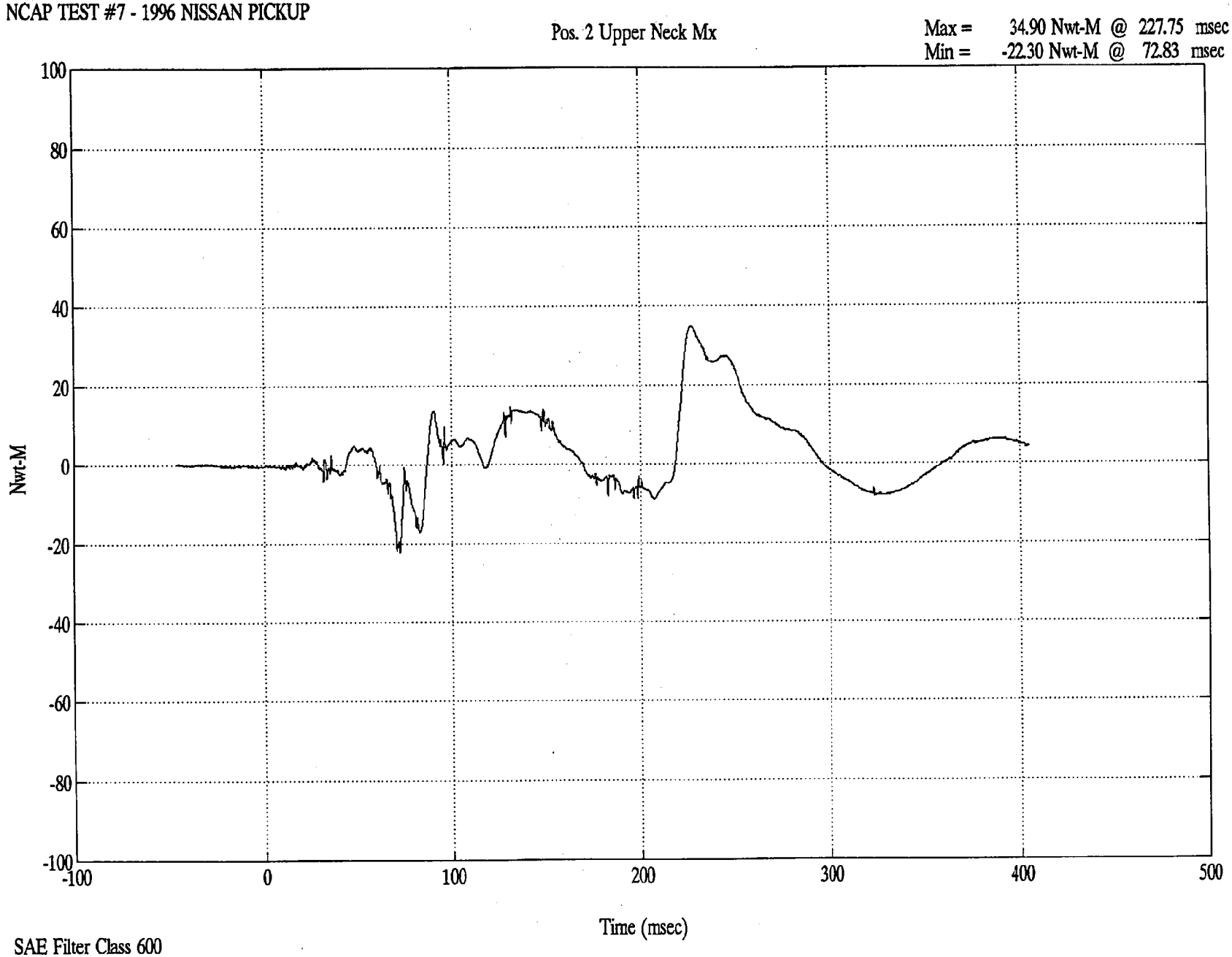


B-78

8313-7

SAE Filter Class 1000

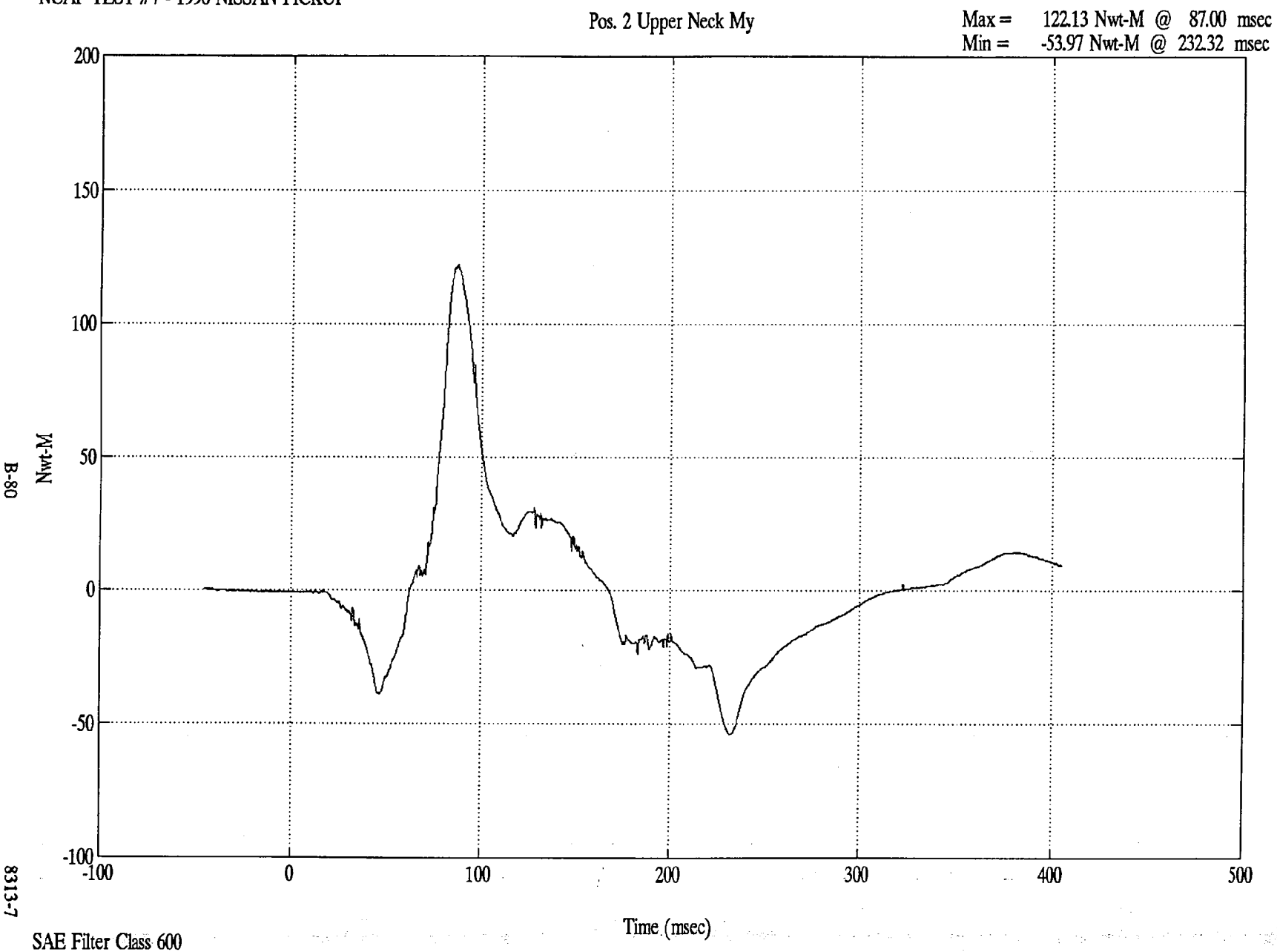
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

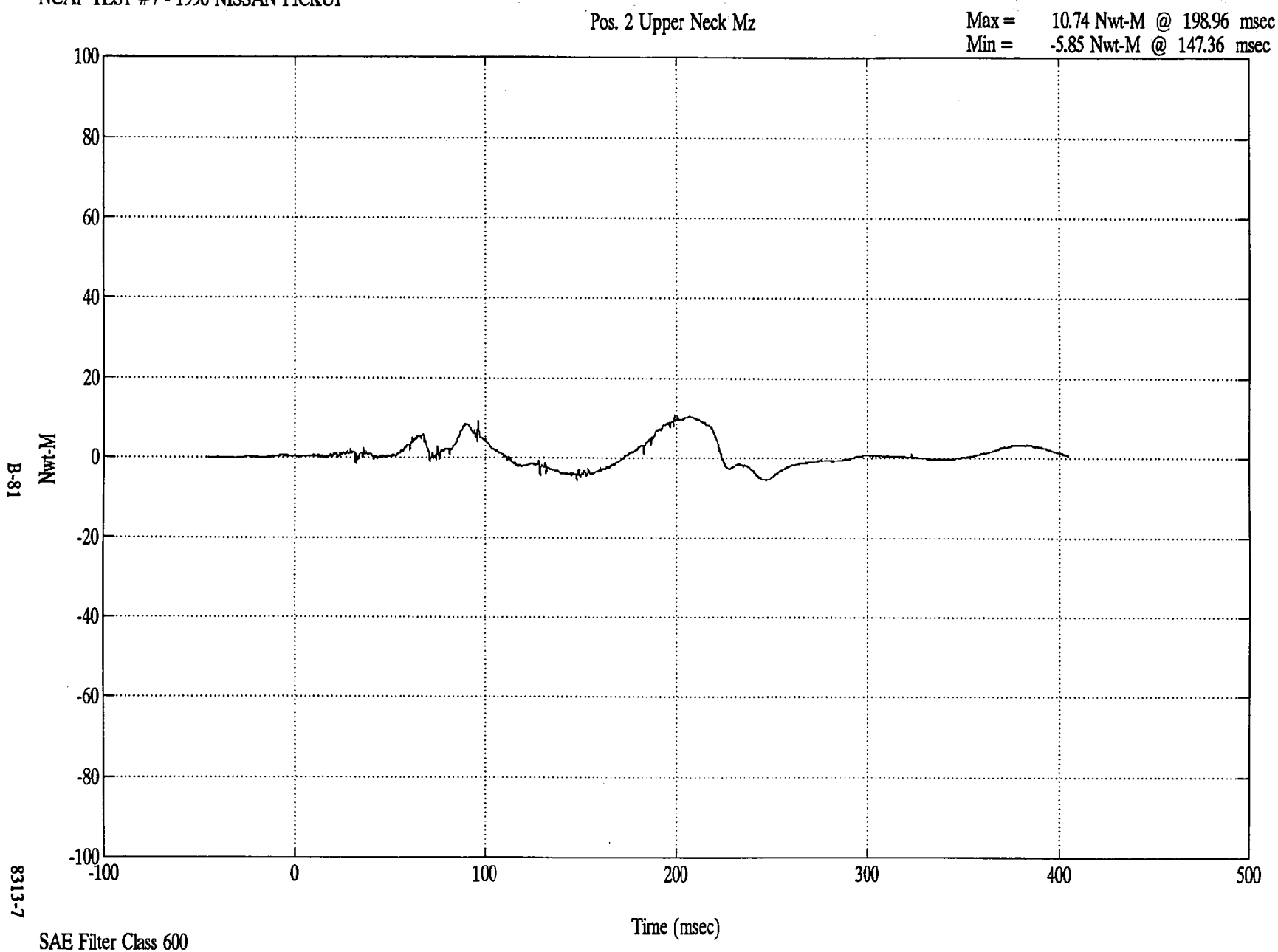


B-80

8313-7

SAE Filter Class 600

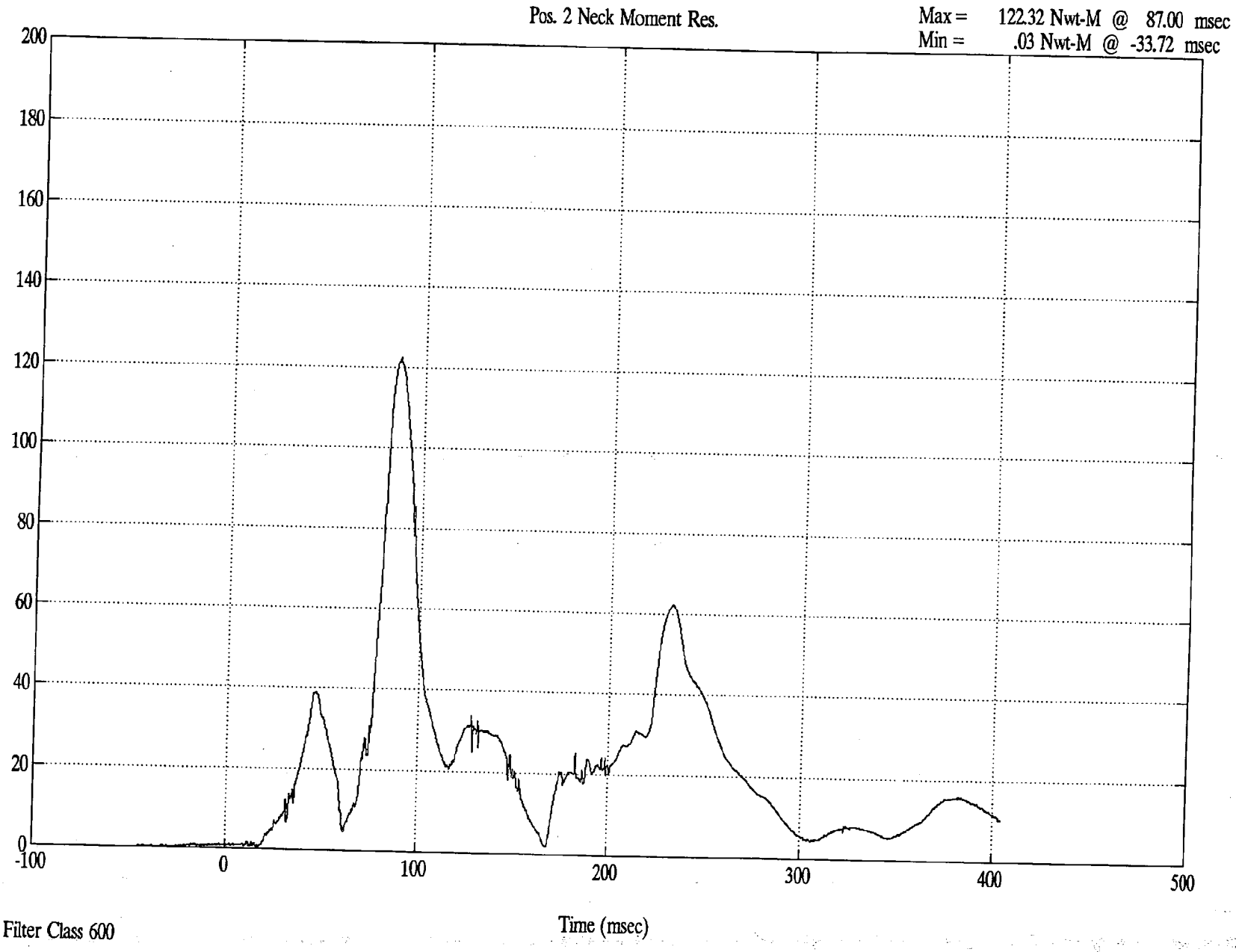
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 600

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

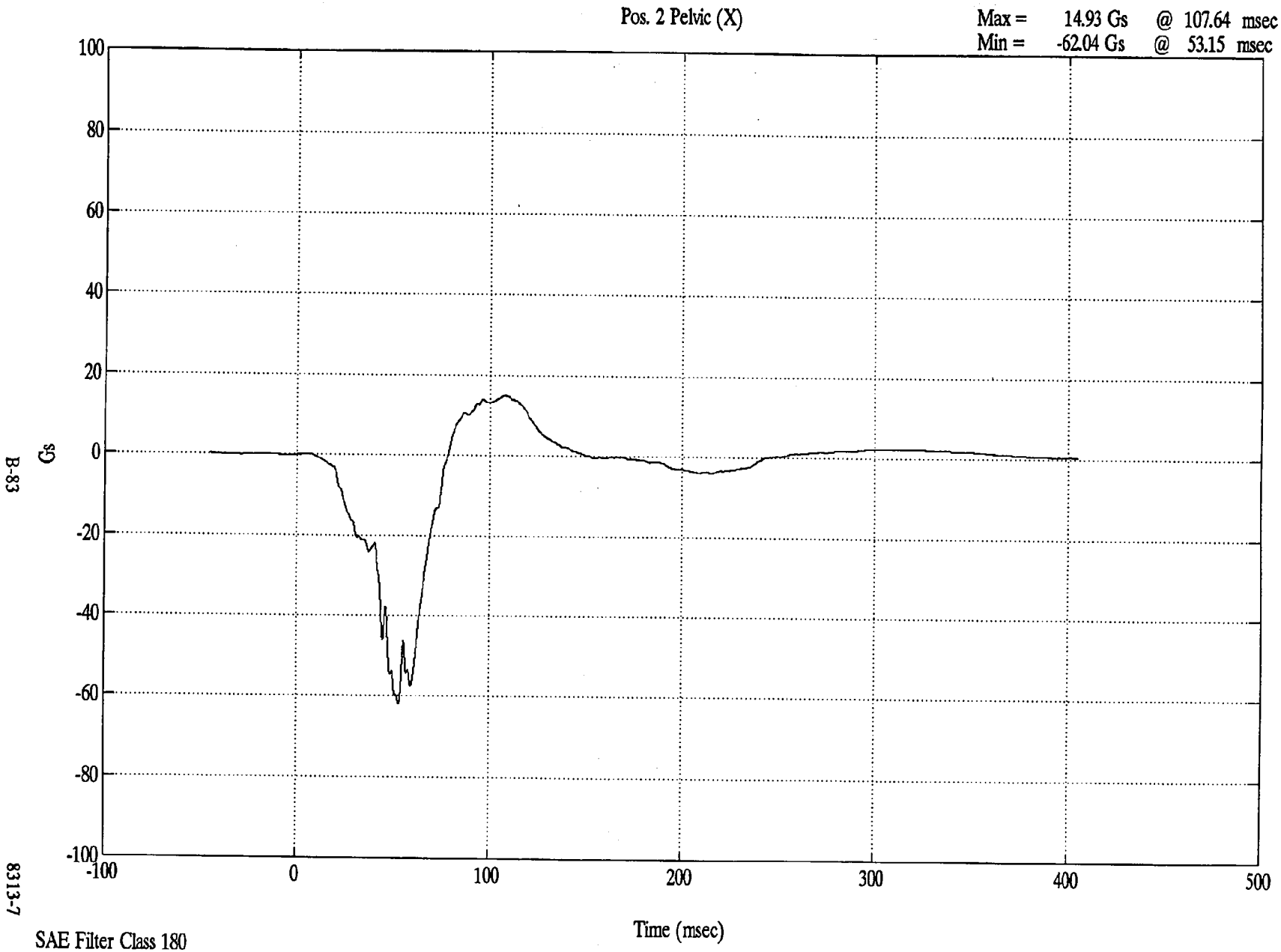


B-82

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

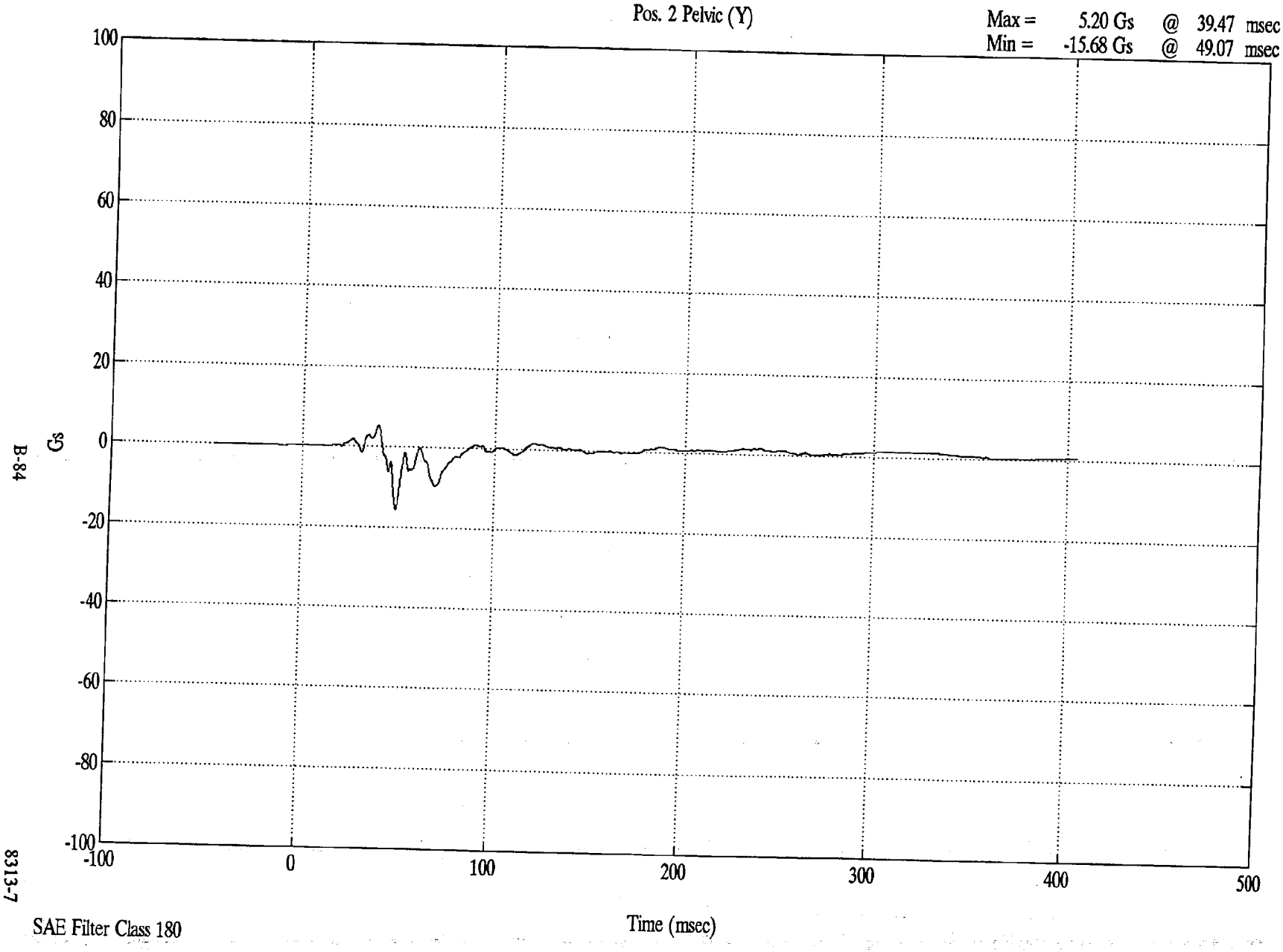


B-83

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

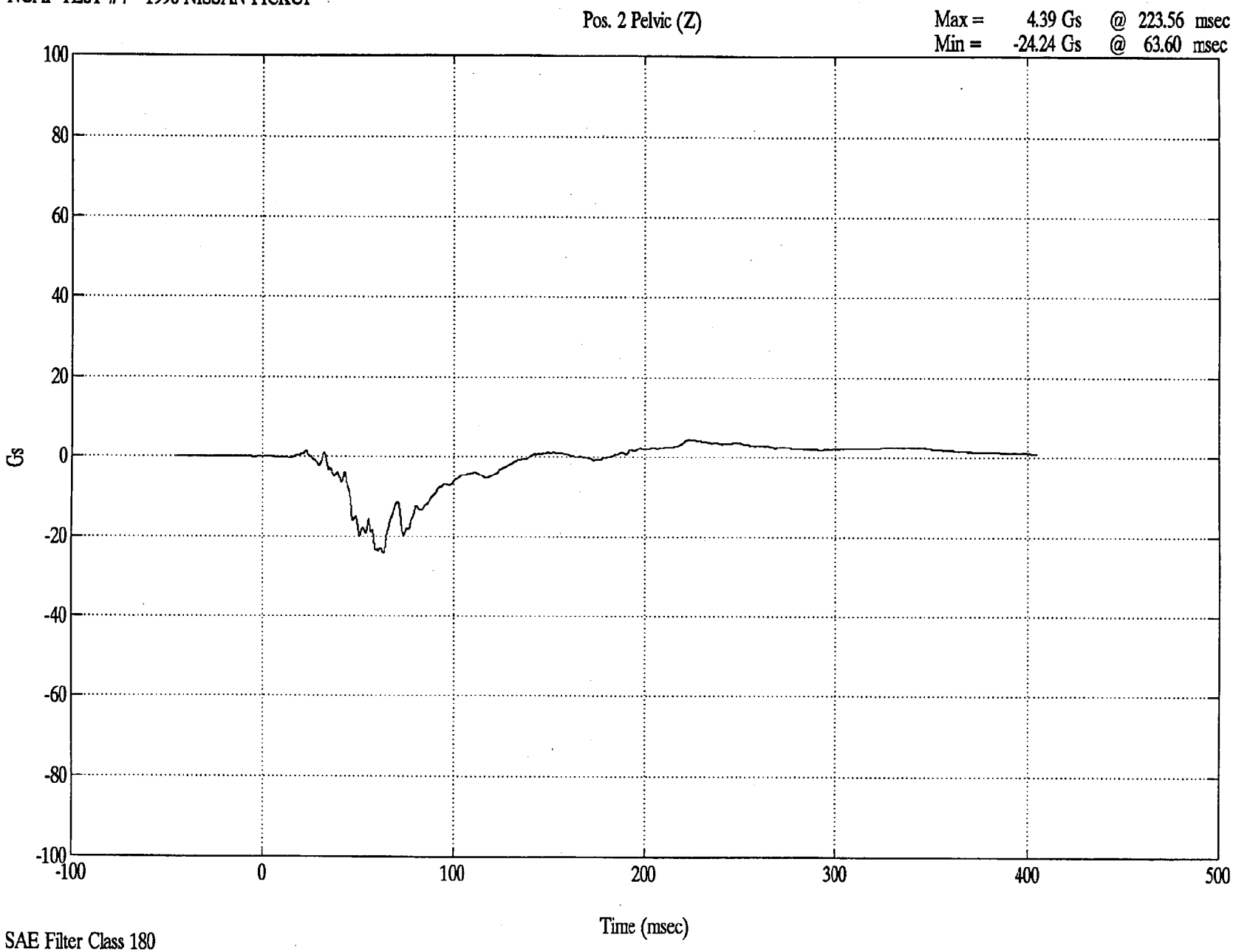


B-84

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

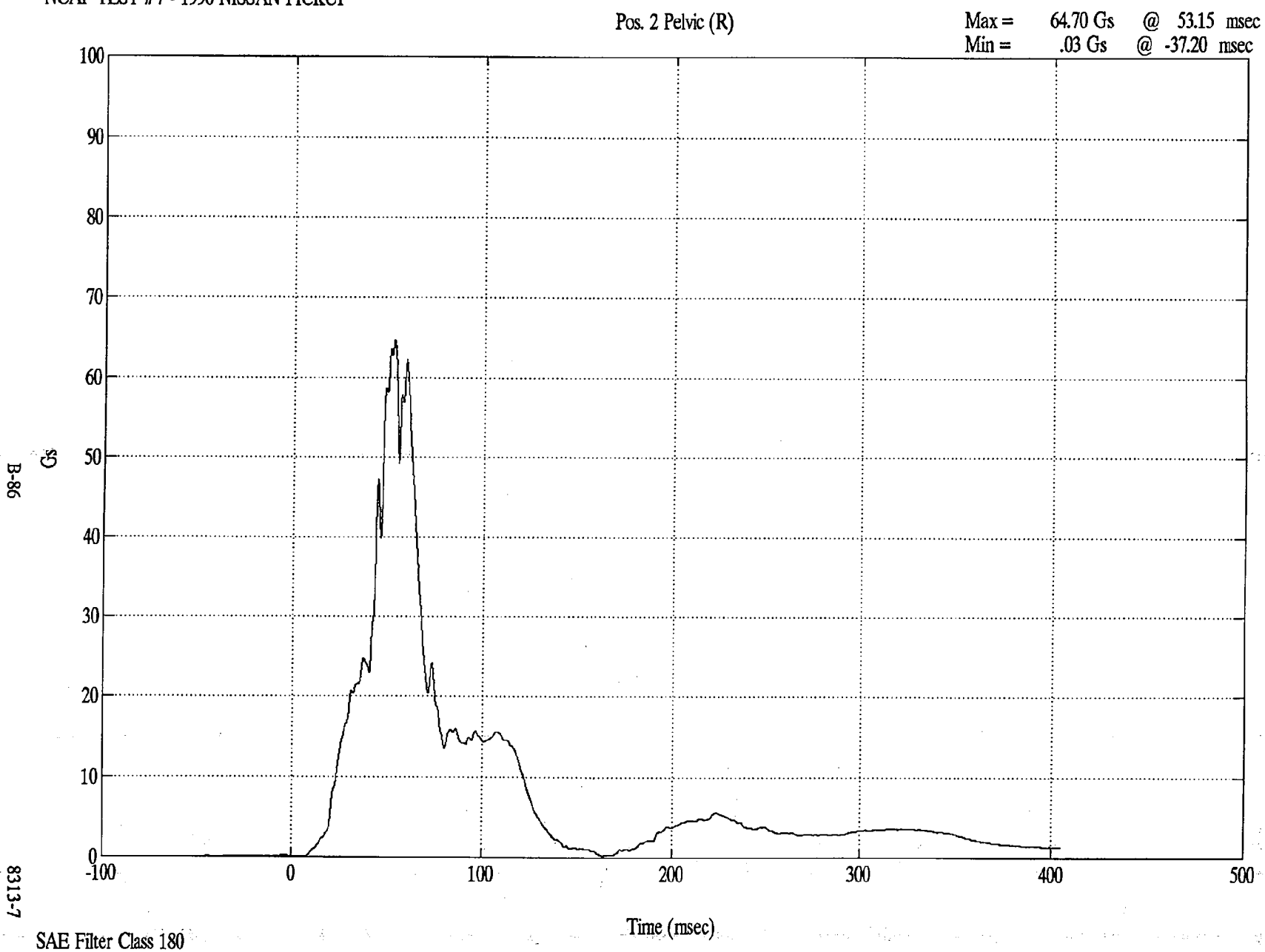


B-85

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP



B-86

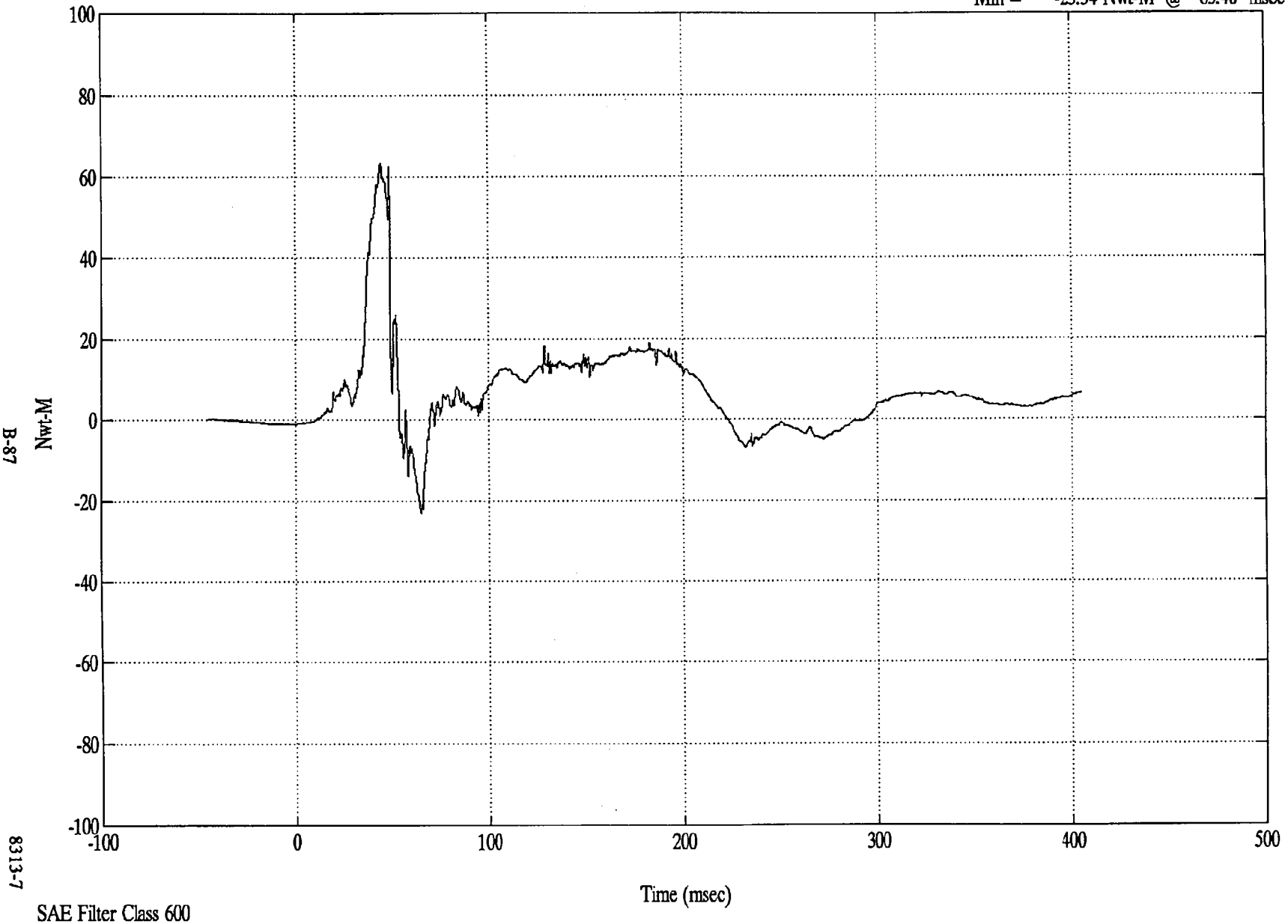
8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

Pos. 2 Lt Upper Tibia Mx

Max = 63.43 Nwt-M @ 44.87 msec
Min = -23.34 Nwt-M @ 65.40 msec

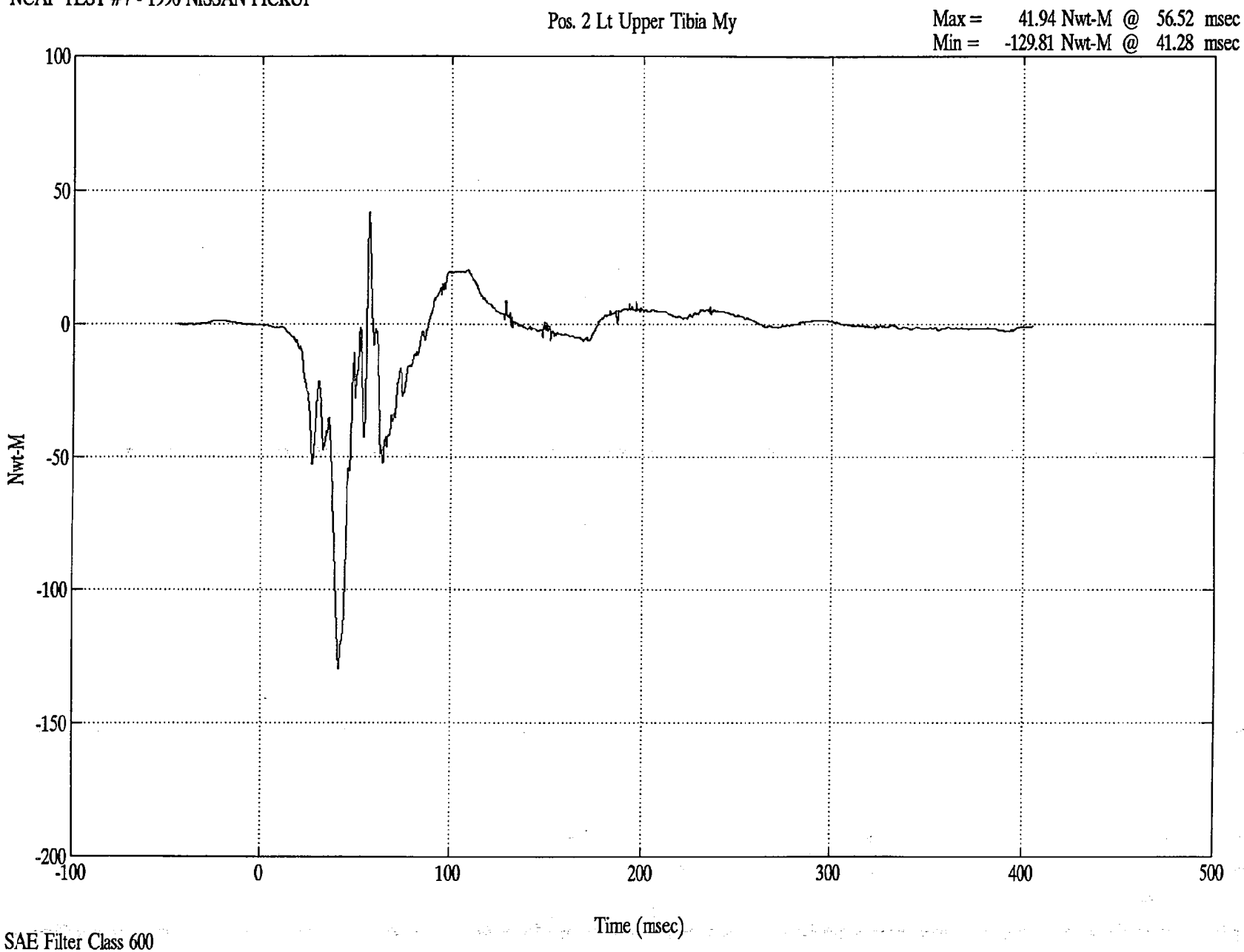


B-87

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

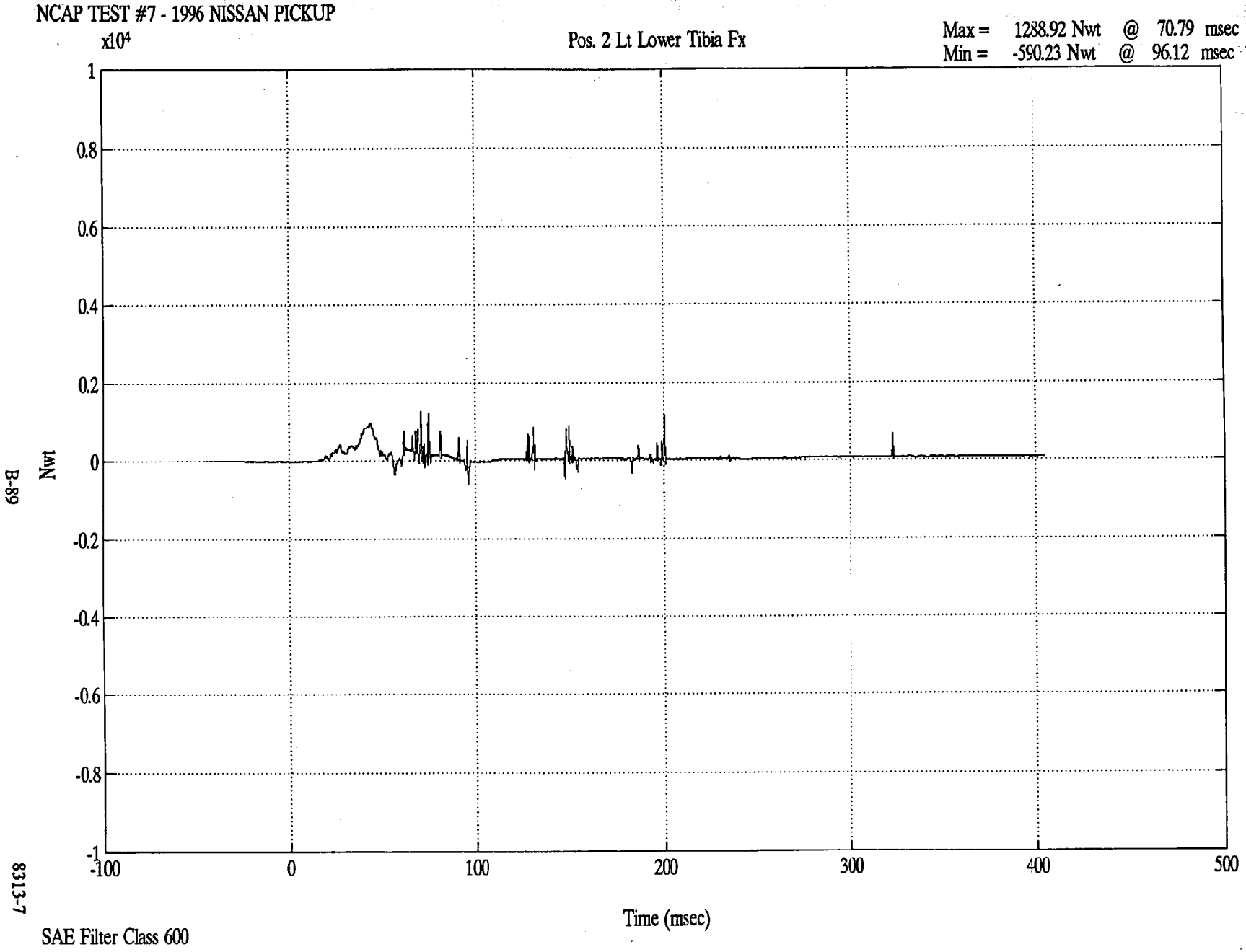


B-88

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

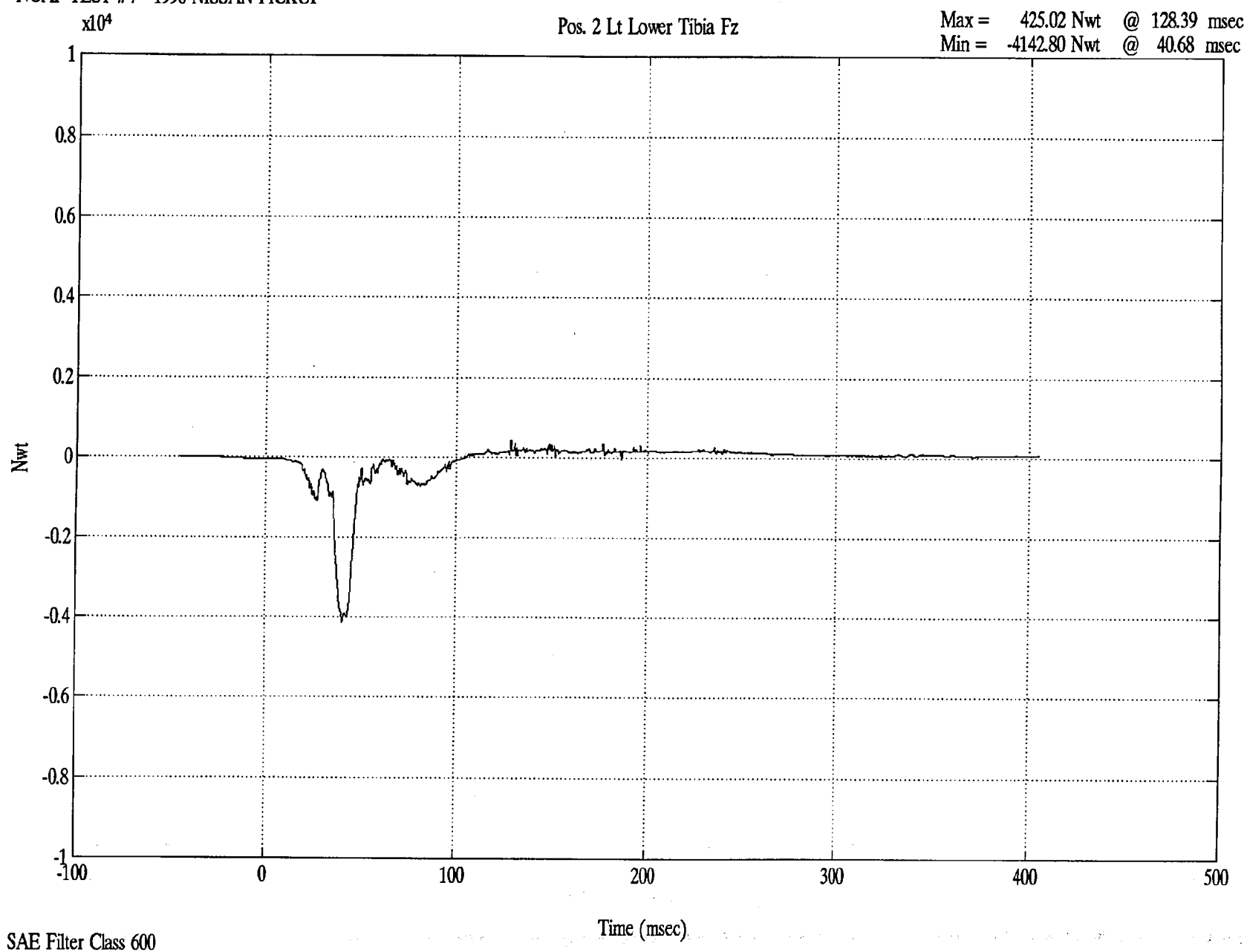


B-89

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP



B-90

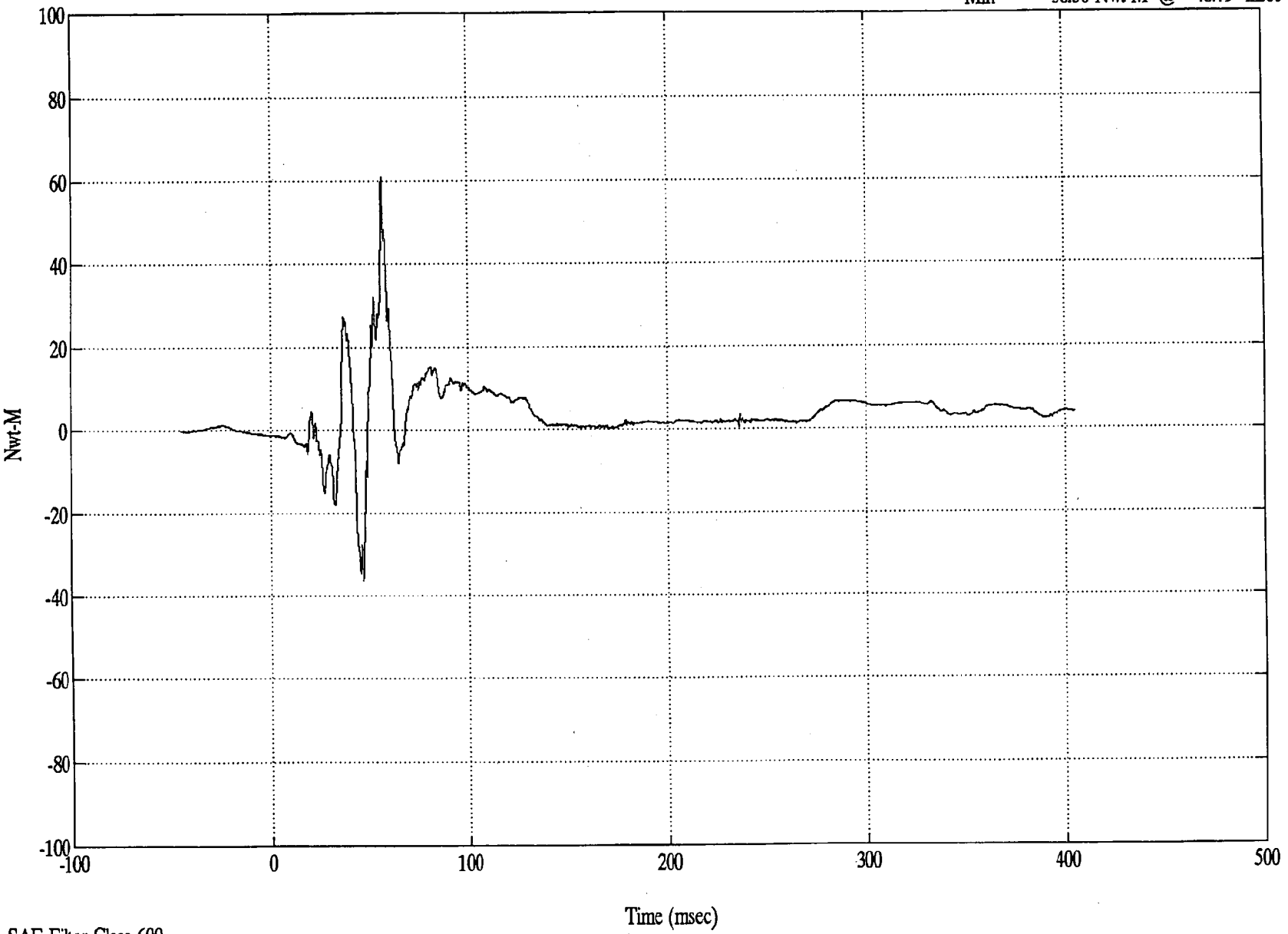
8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

Pos. 2 Lt Lower Tibia My

Max = 60.77 Nwt-M @ 56.52 msec
Min = -36.50 Nwt-M @ 46.79 msec

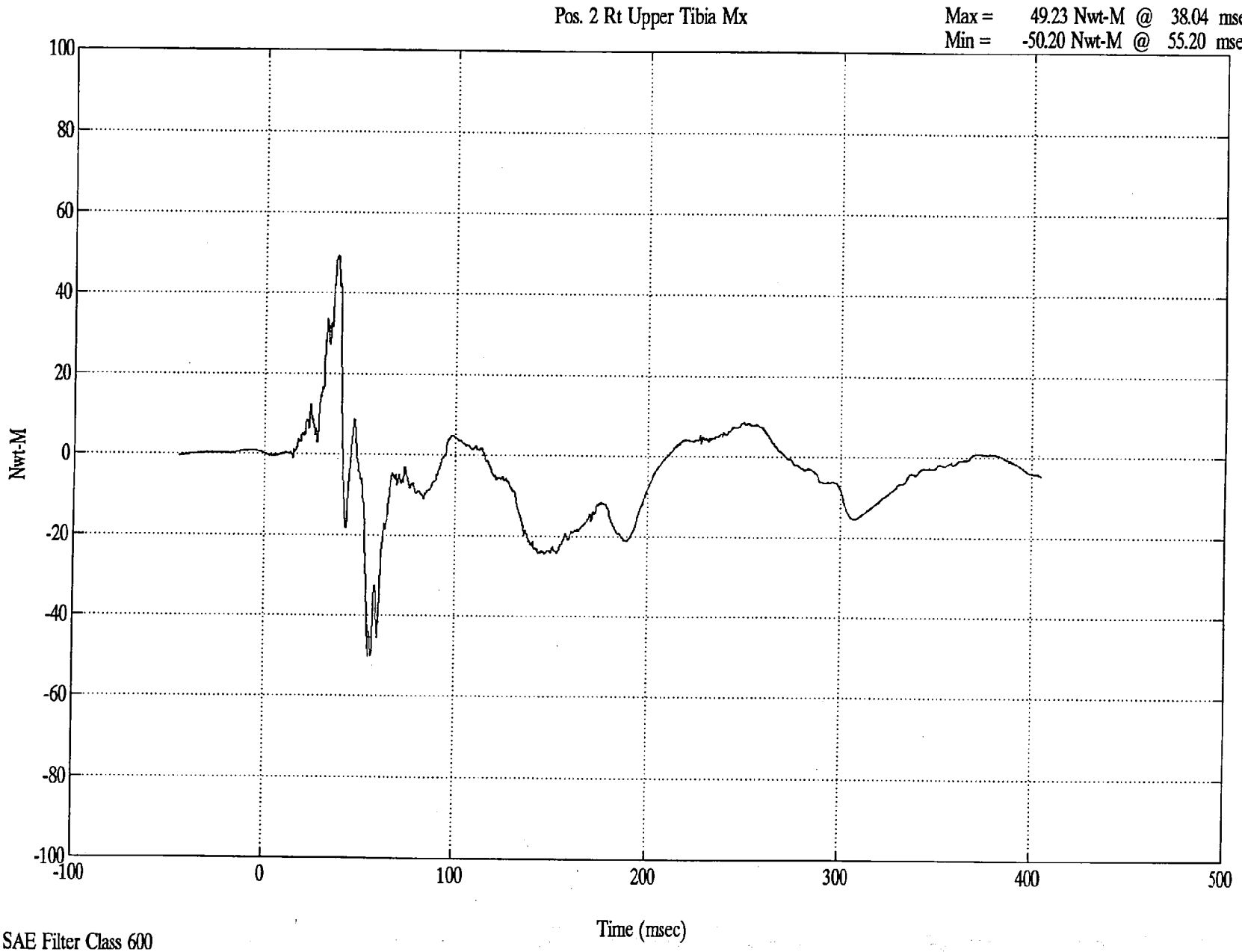


B-91

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

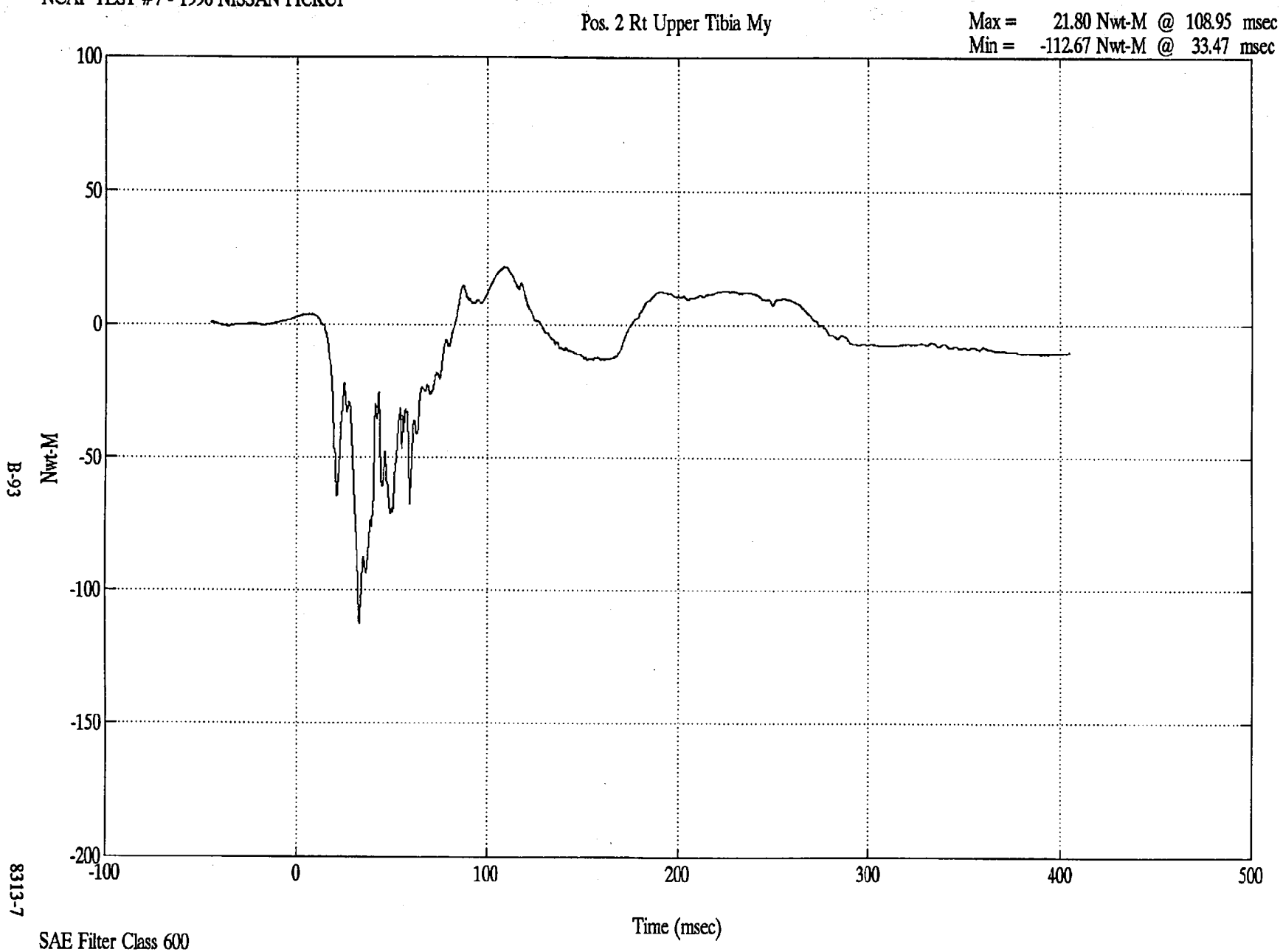


B-92

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

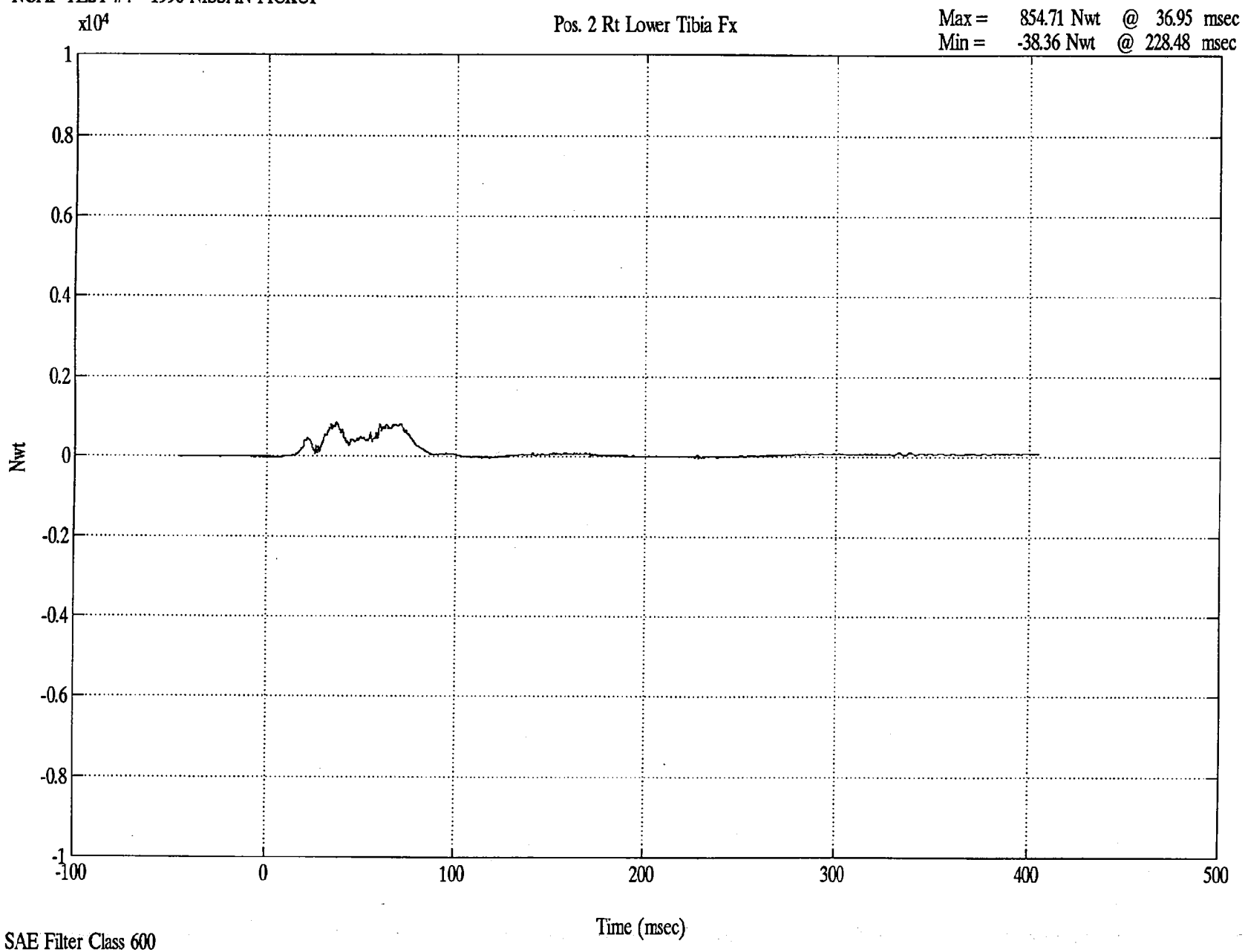


B-93

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

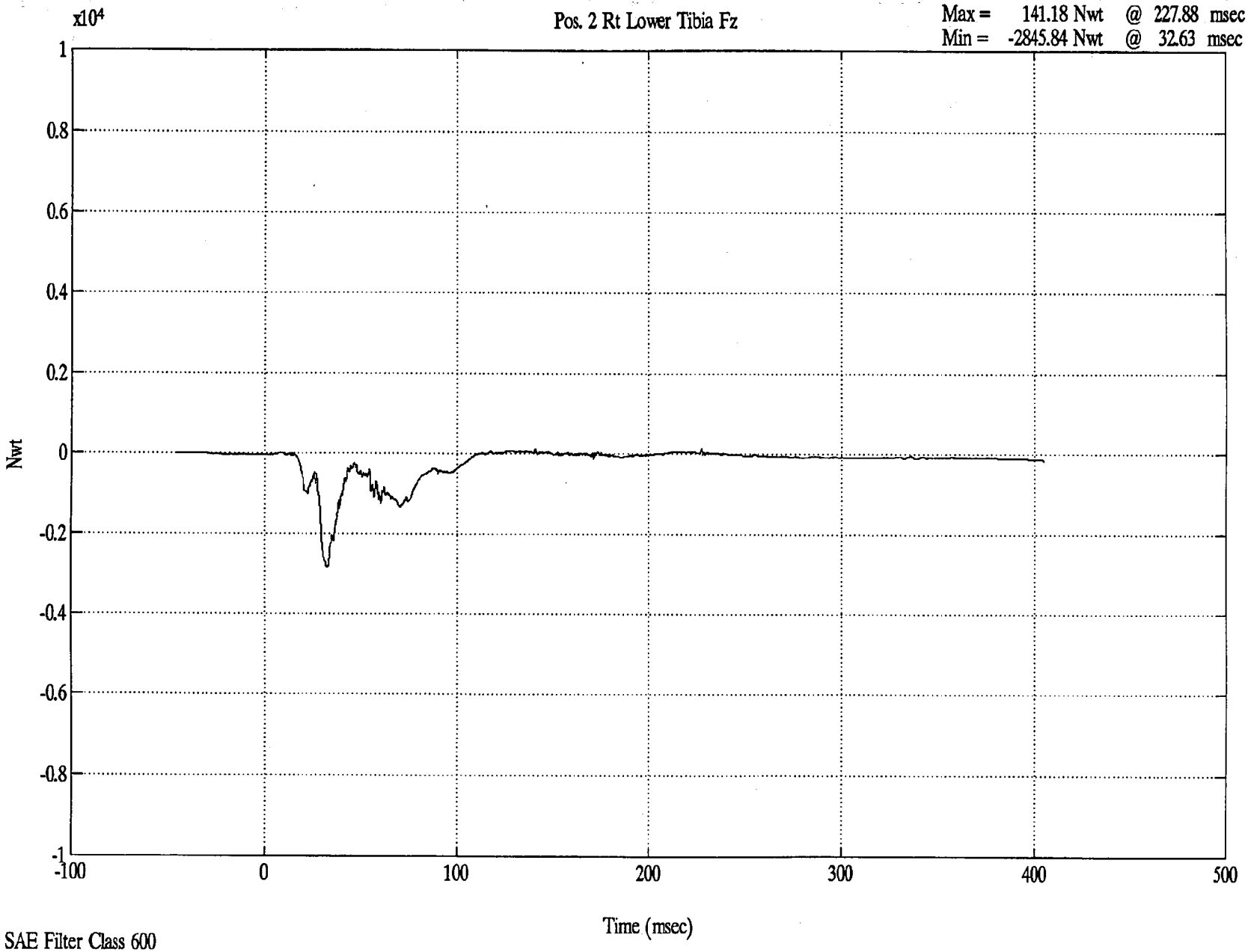


B-94

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

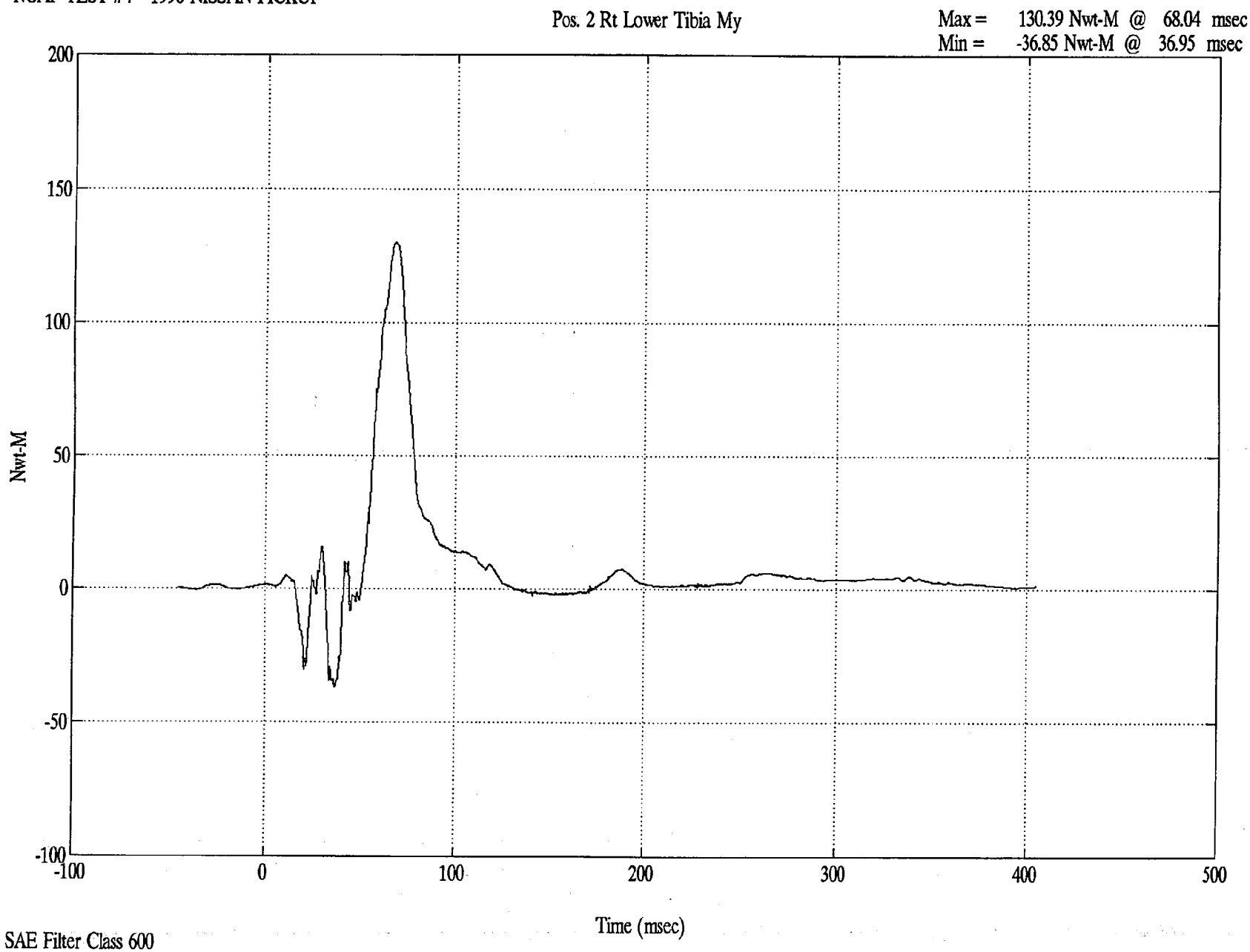


B-95

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

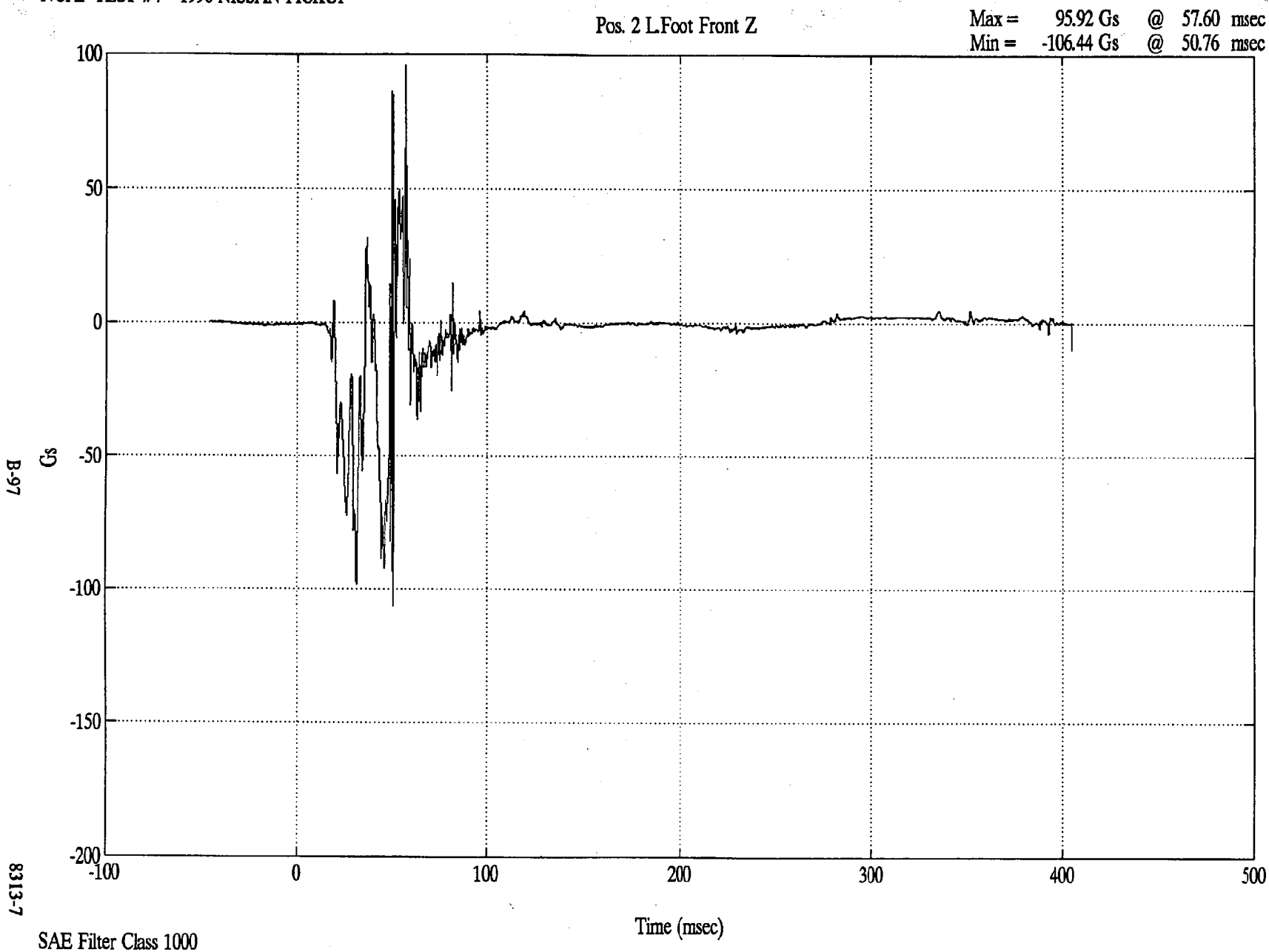


B-96

8313-7

SAE Filter Class 600

NCAP TEST #7 - 1996 NISSAN PICKUP

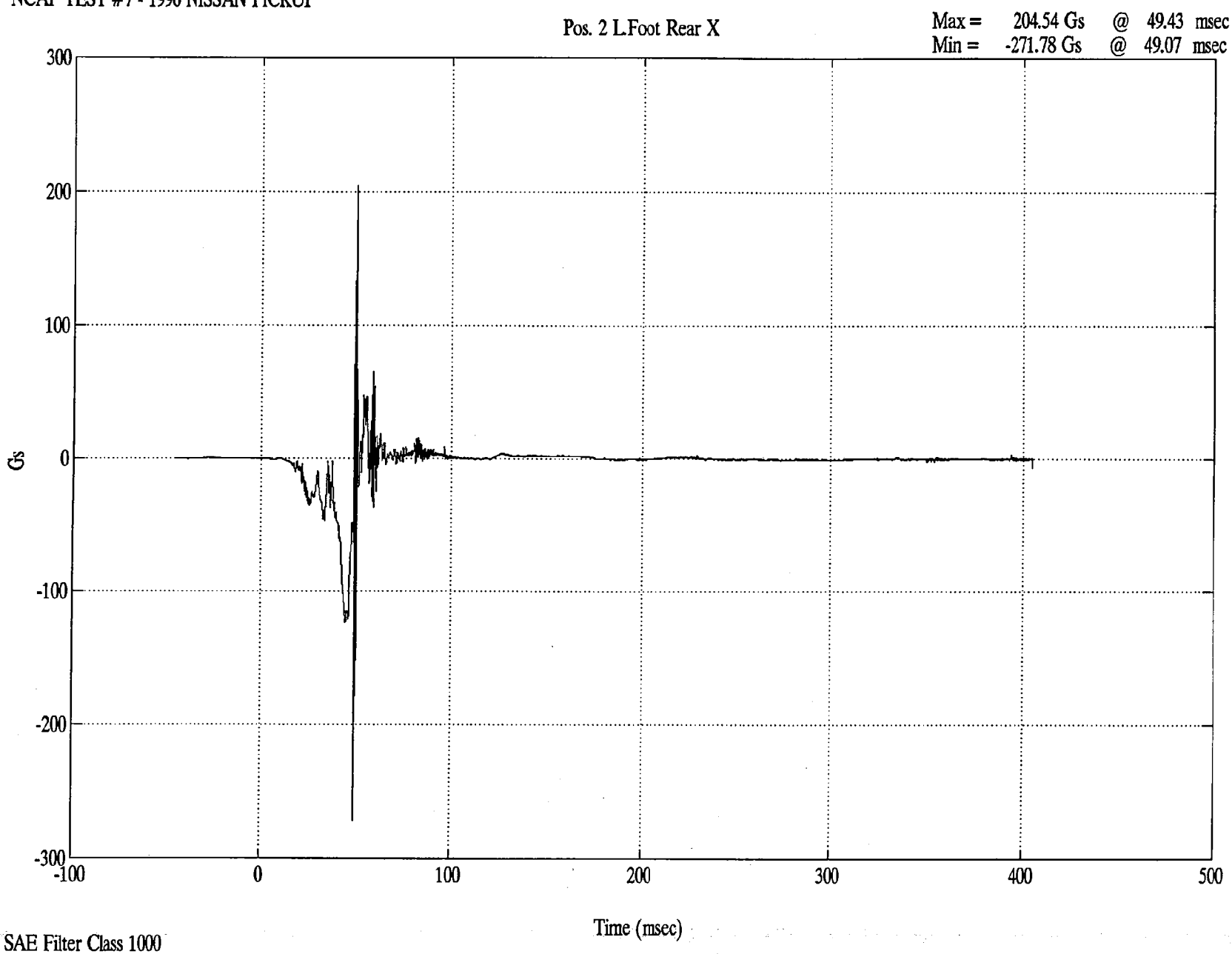


B-97

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

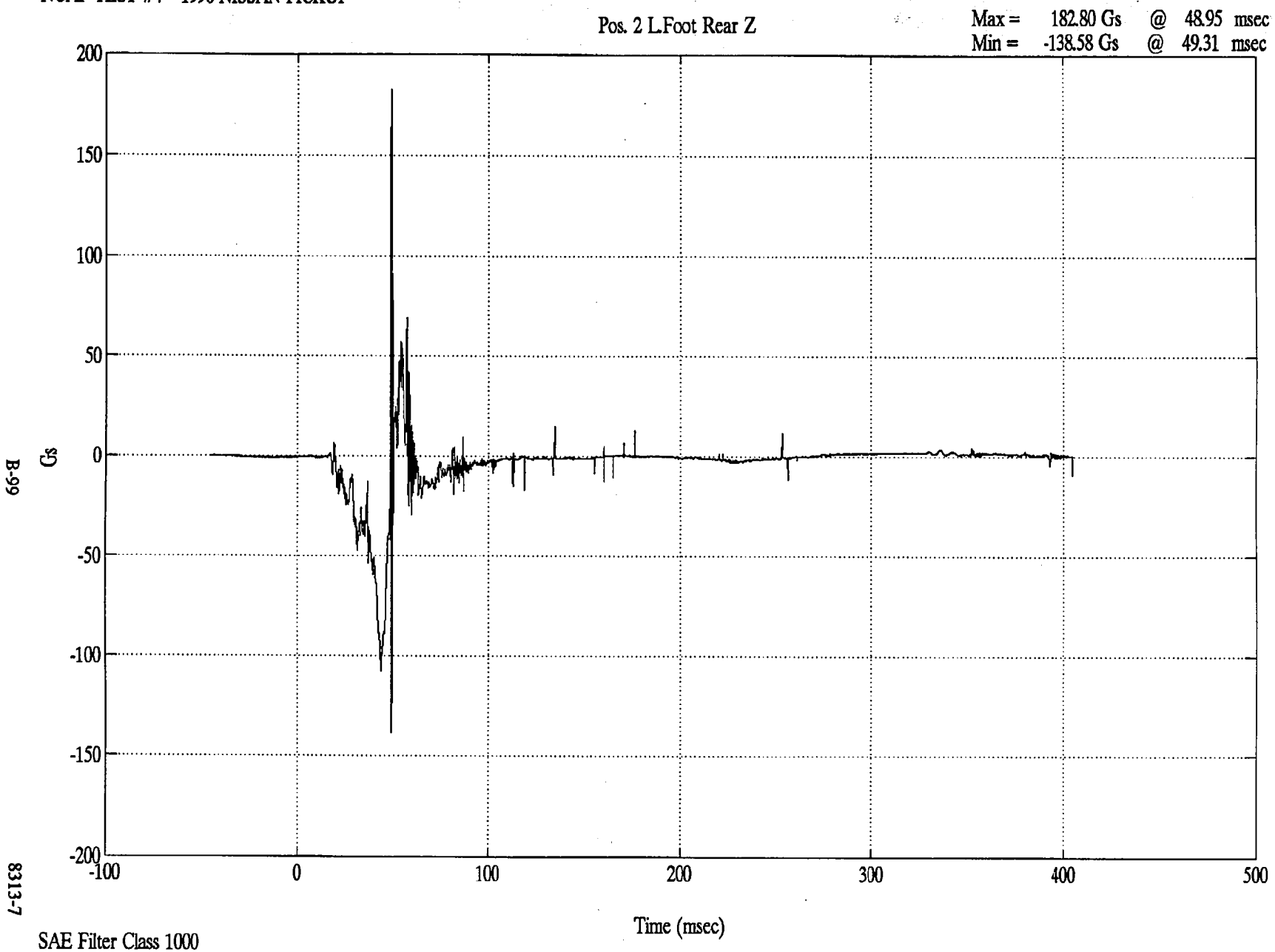


B-98

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

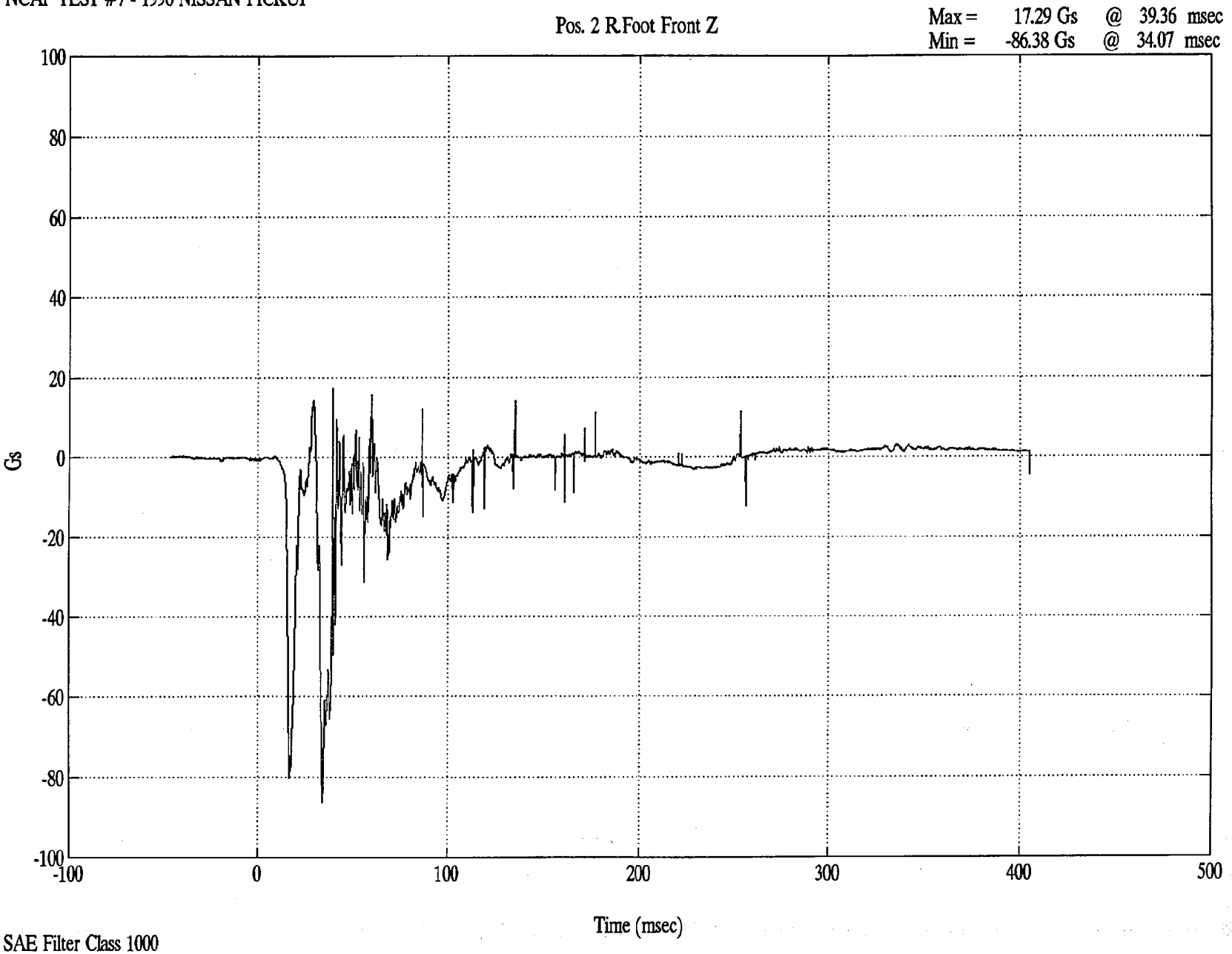


B-99

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

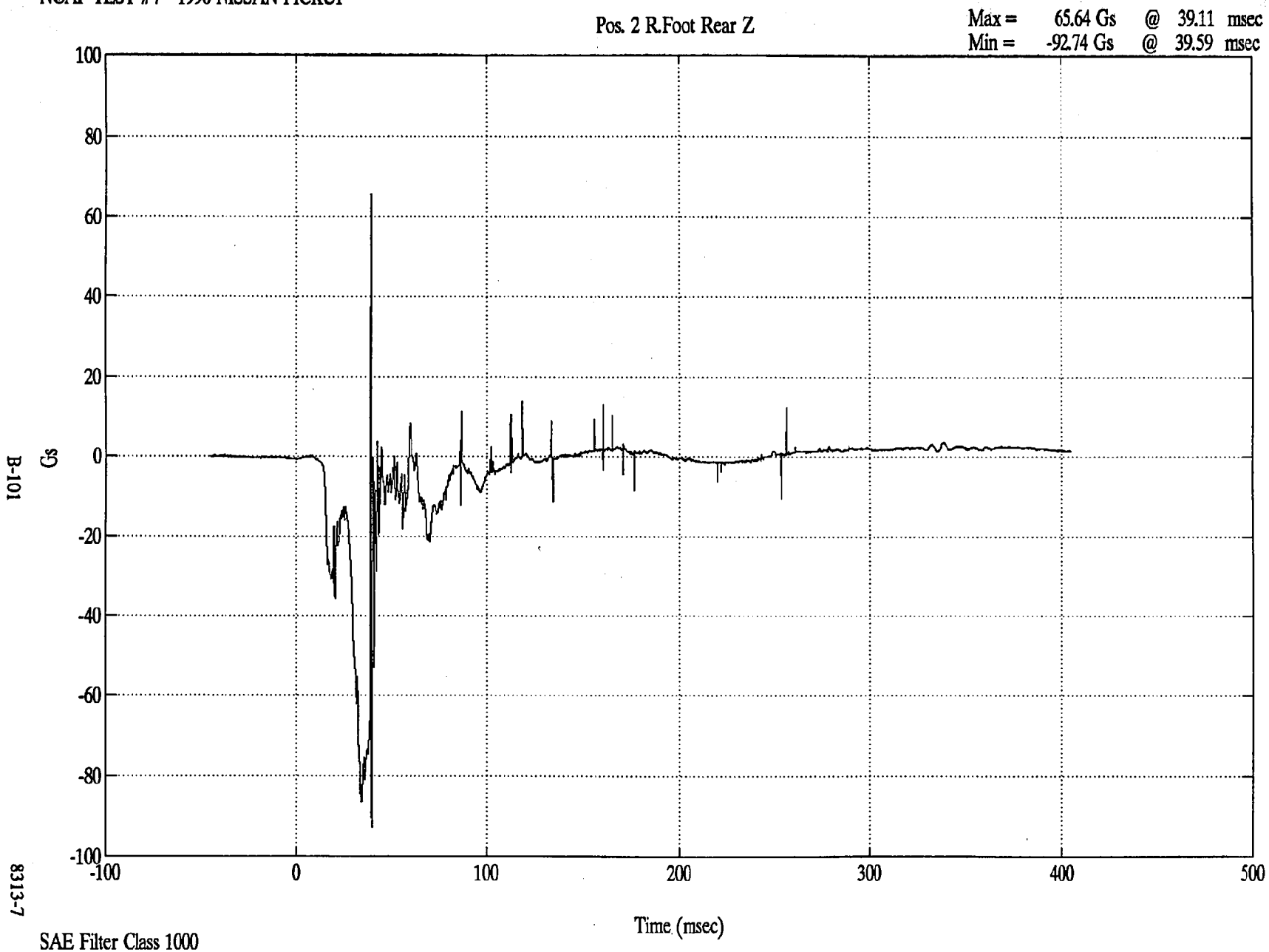


B-100

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

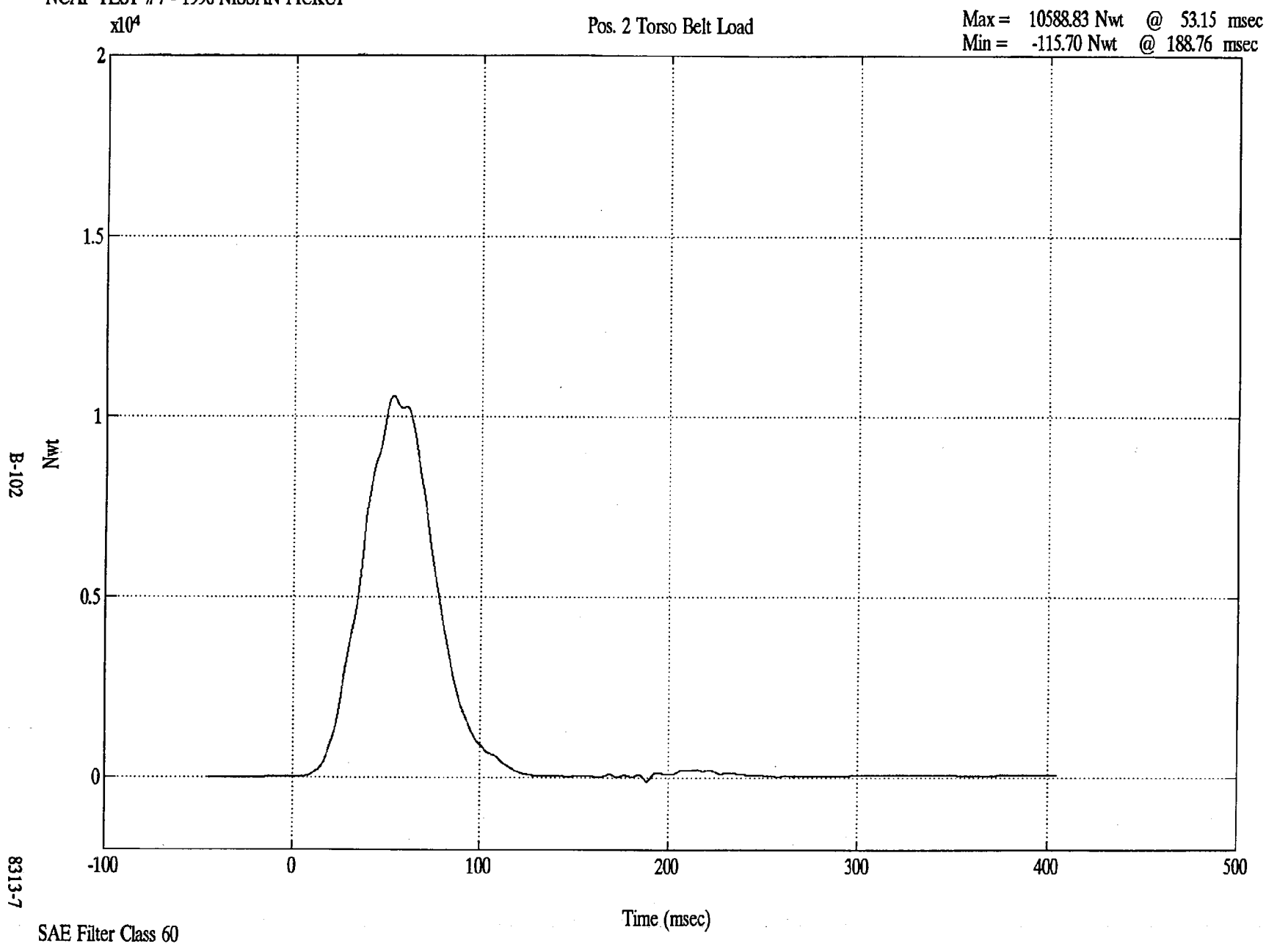


B-101

8313-7

SAE Filter Class 1000

NCAP TEST #7 - 1996 NISSAN PICKUP

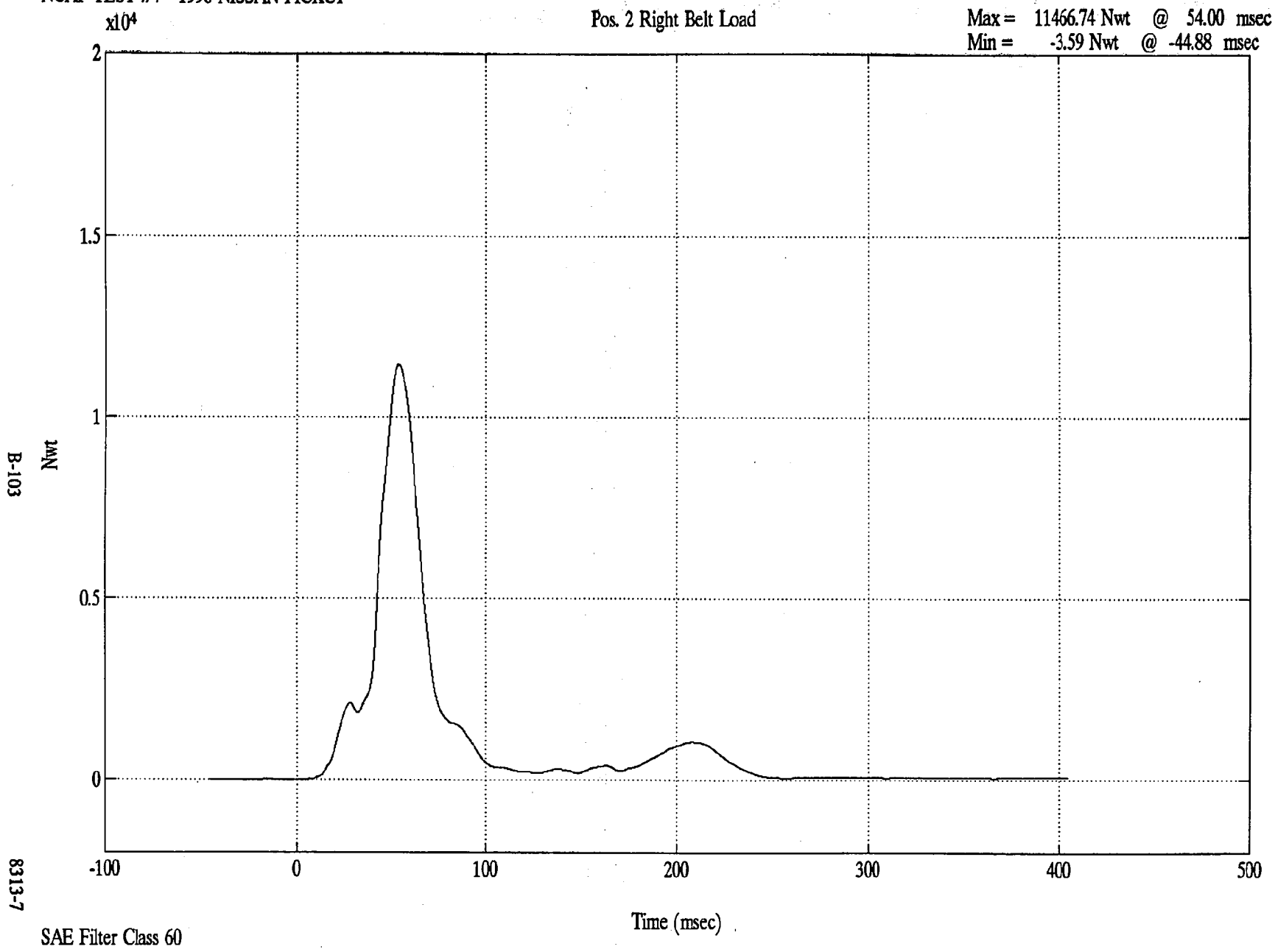


B-102

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

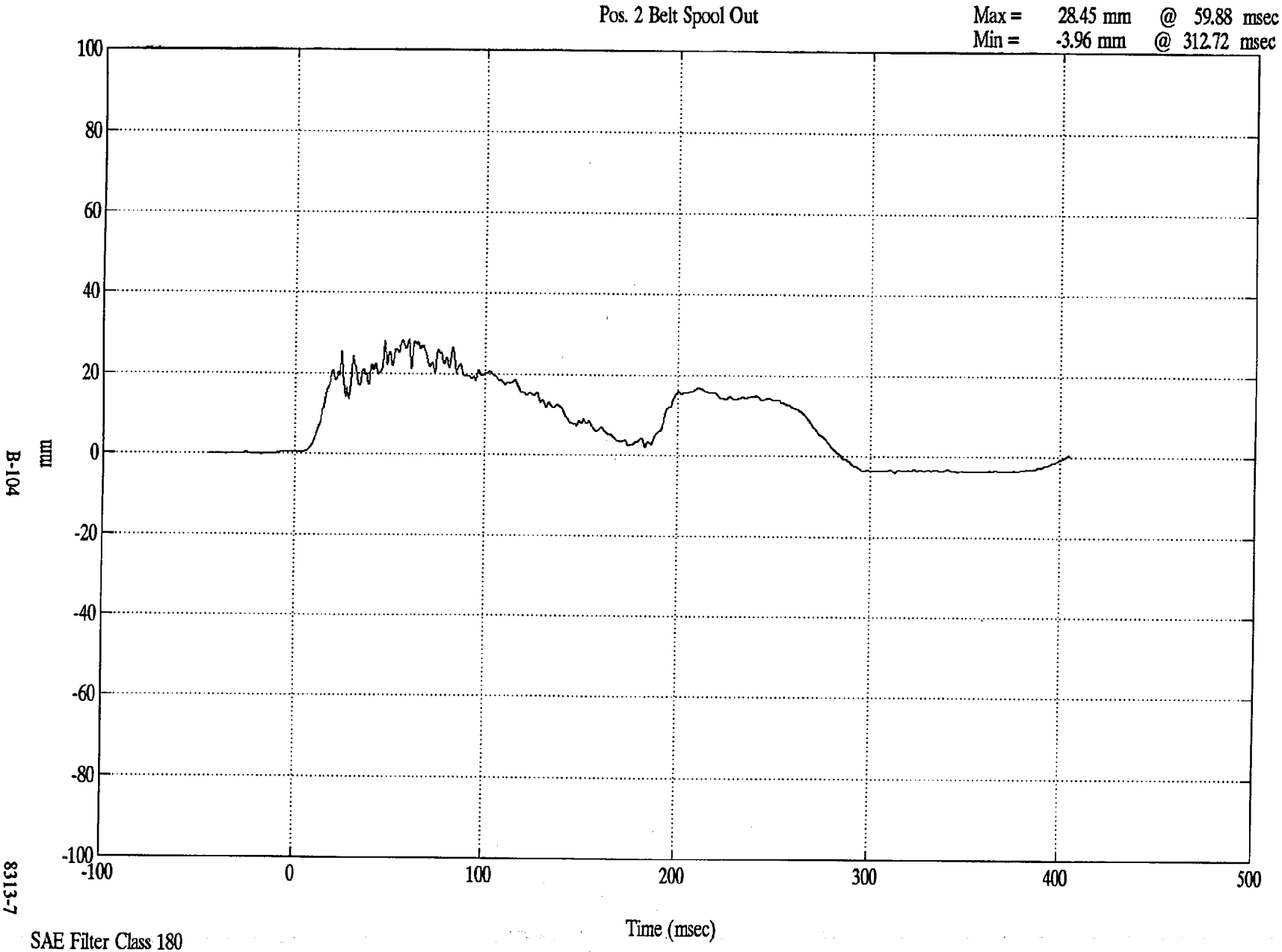


B-103

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

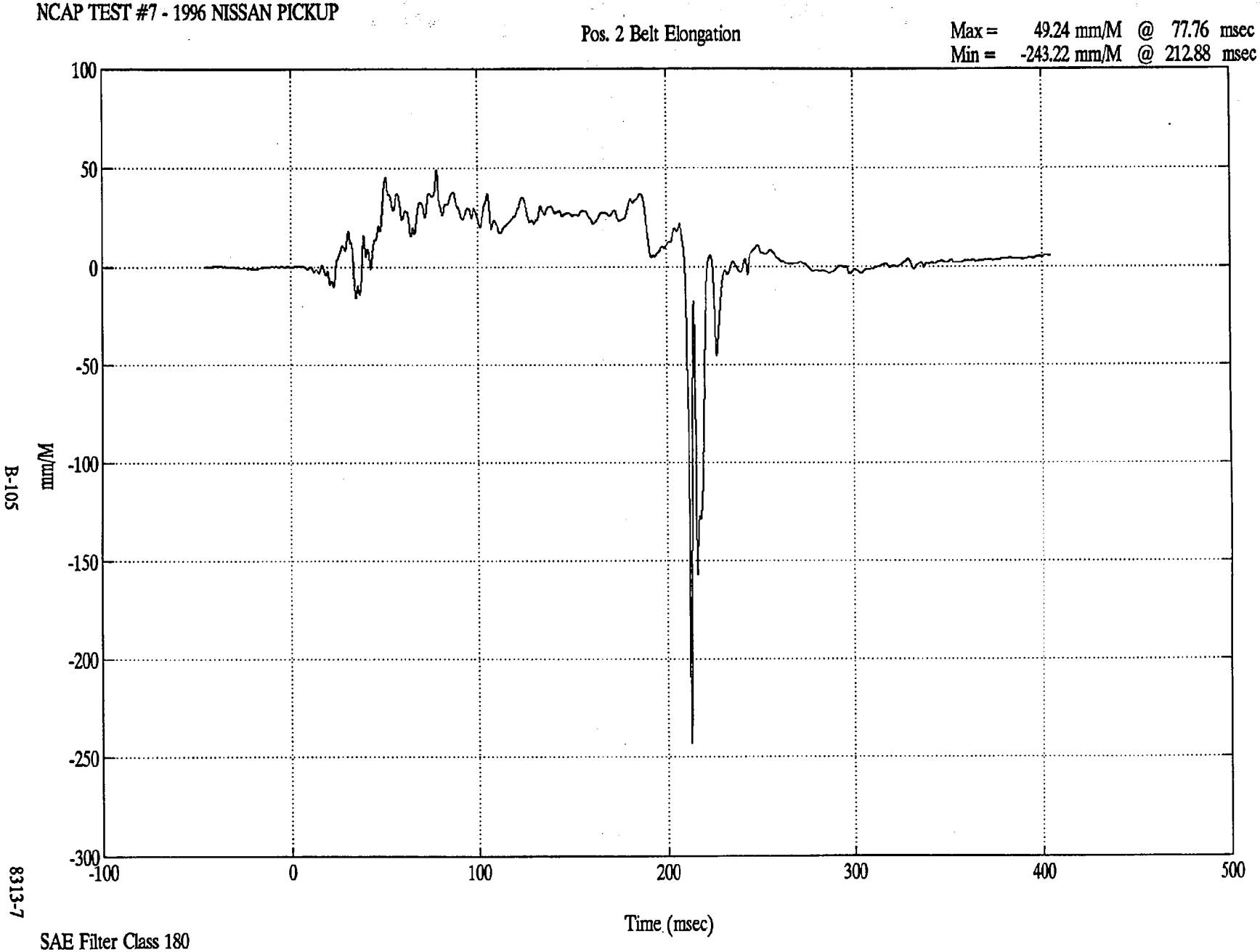


B-104

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP



B-105

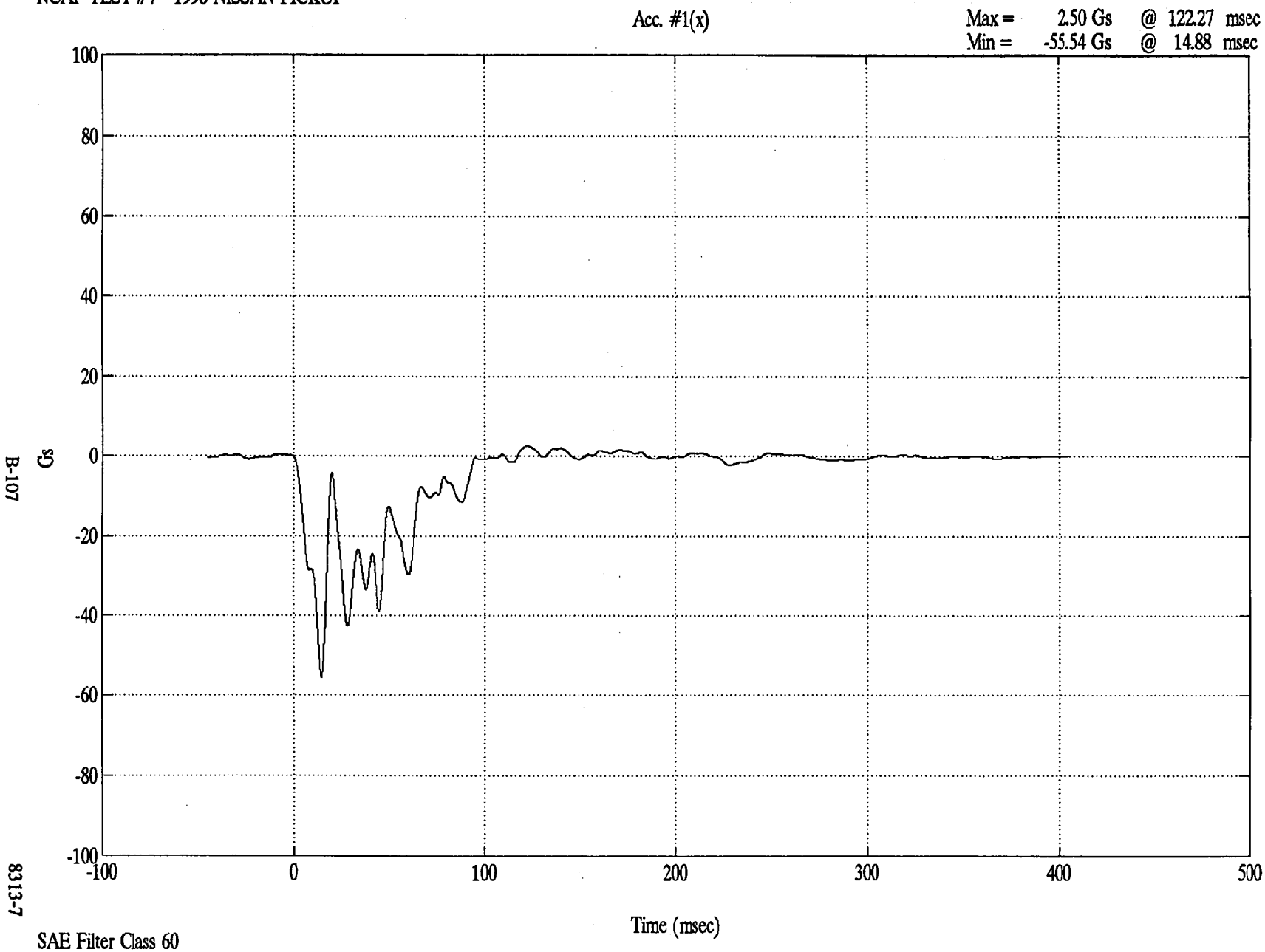
8313-7

SAE Filter Class 180

NHTSA TEST NO. MT5201

VEHICLE DATA	FILTER CHANNEL CLASS
Acceleration	60
Velocity	180
Displacement	180

NCAP TEST #7 - 1996 NISSAN PICKUP

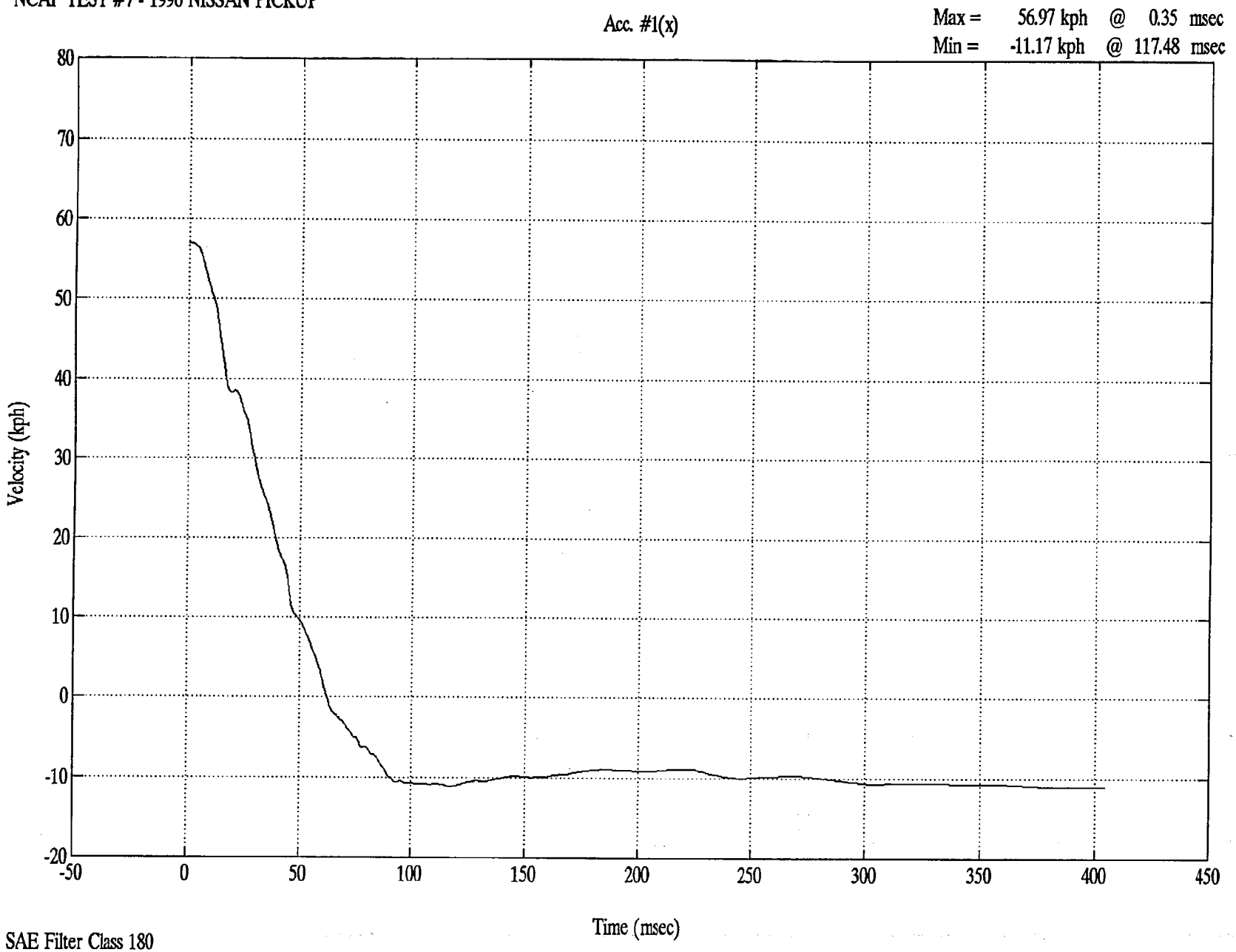


B-107

8313-7

SAE Filter Class 60

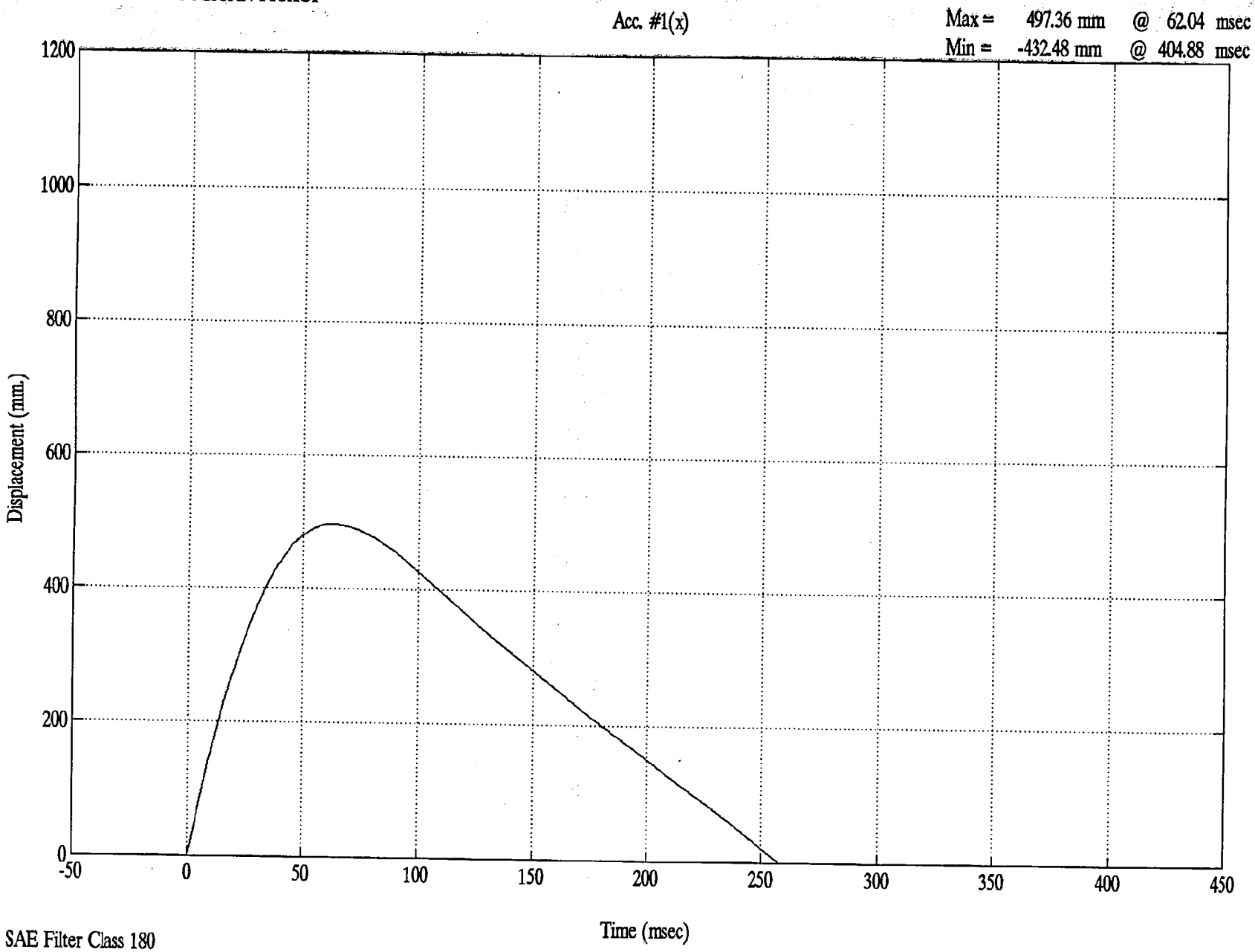
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 180

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

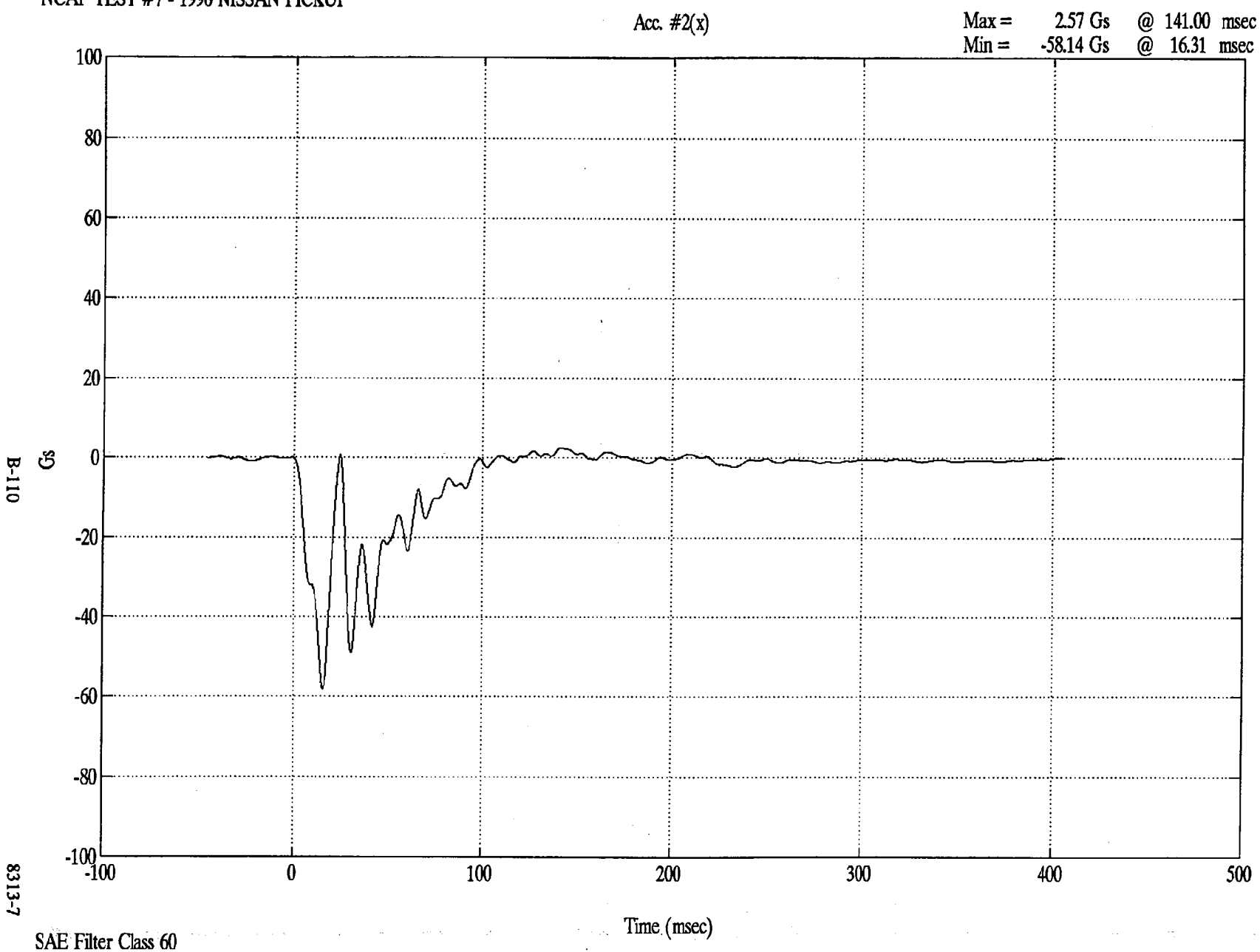


B-109

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

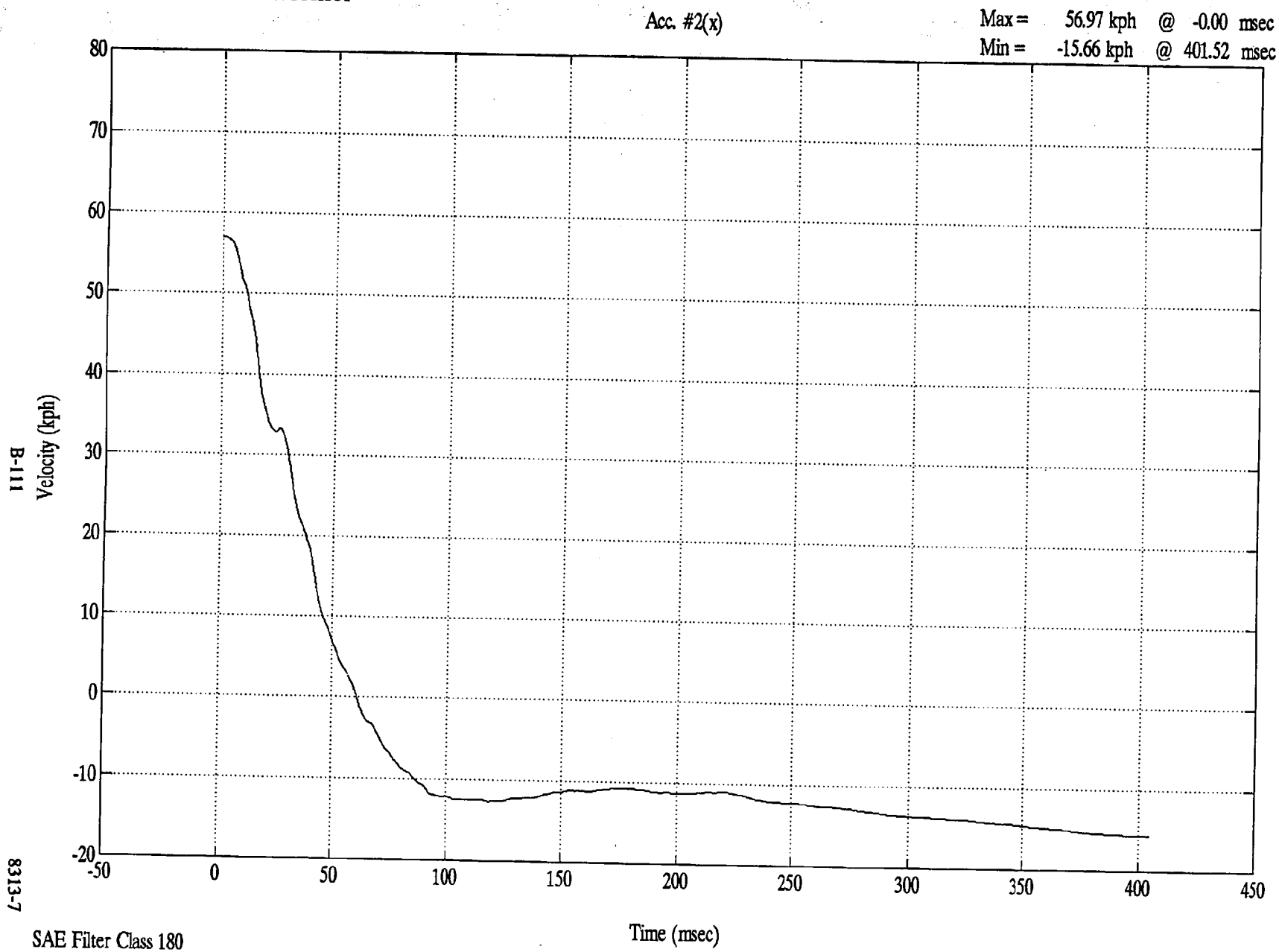


B-110

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

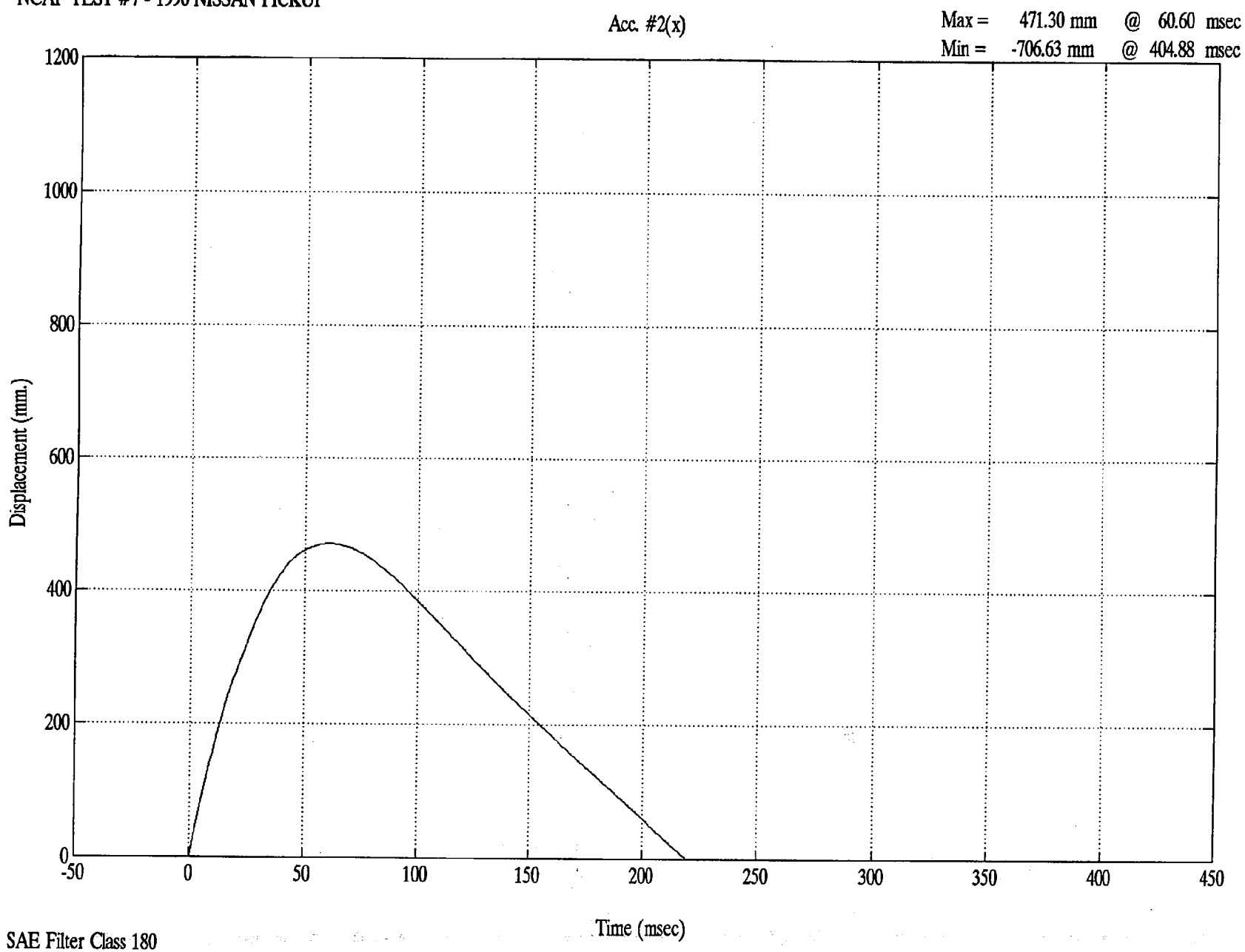


B-111

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

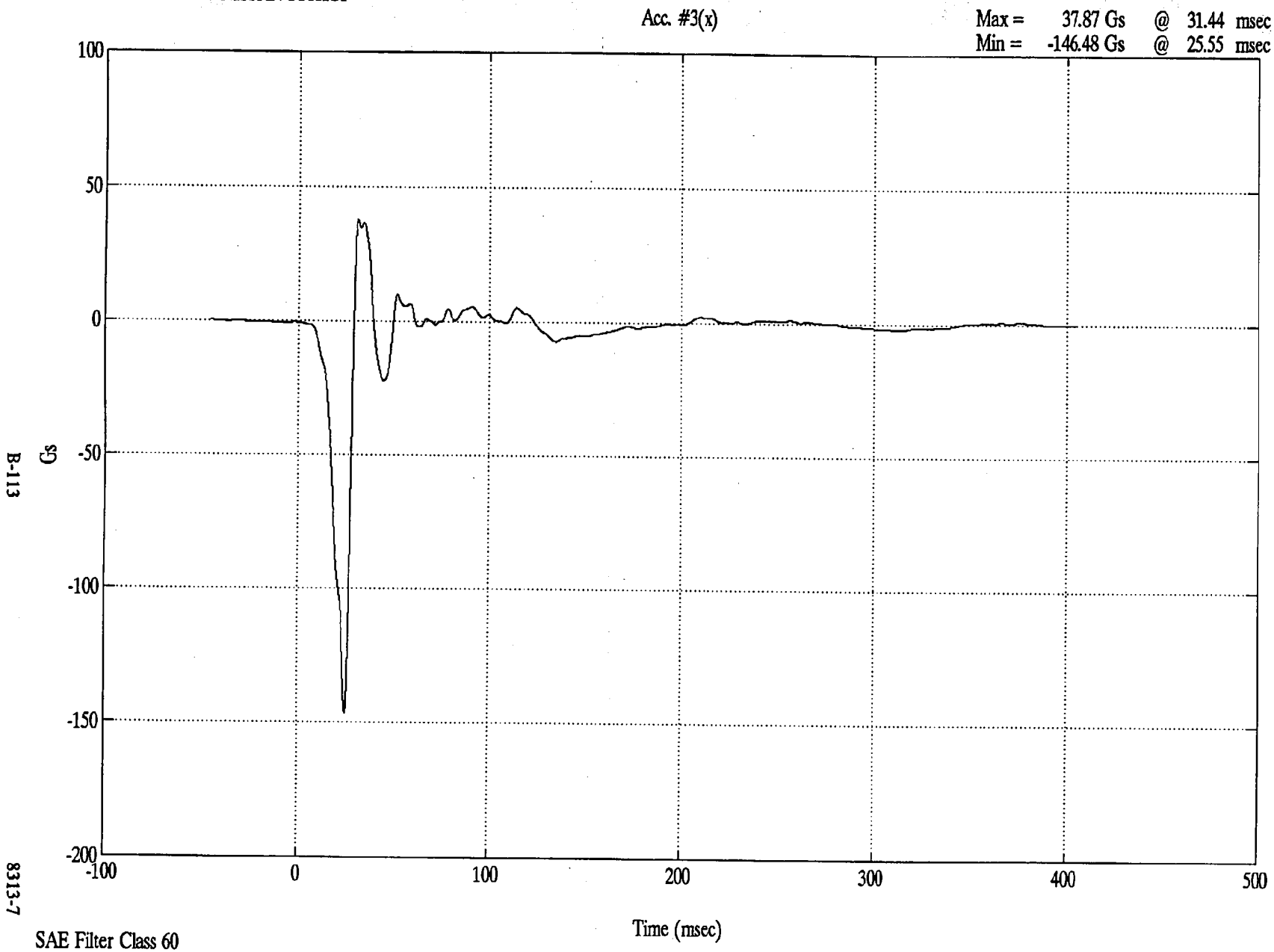


B-112

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

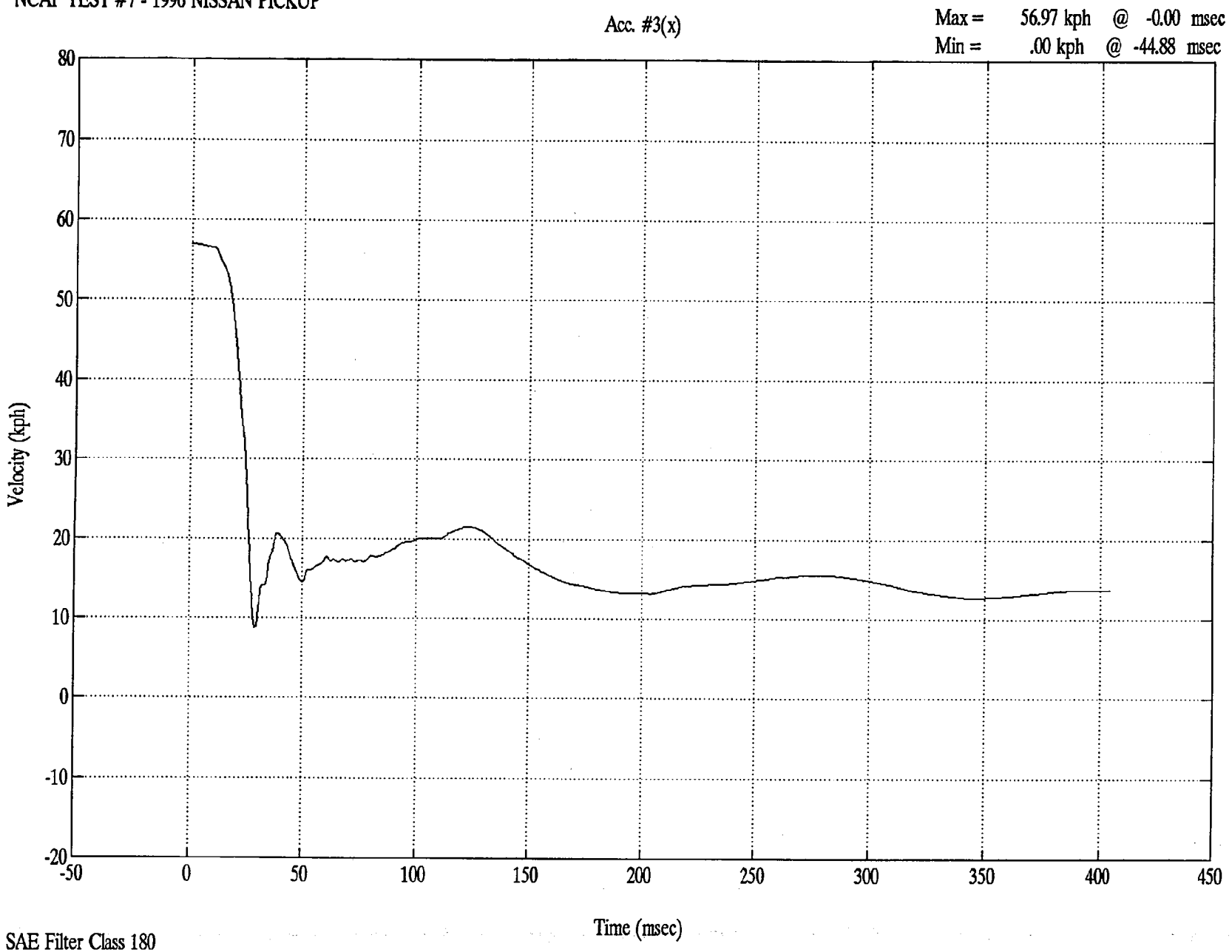


B-113

8313-7

SAE Filter Class 60

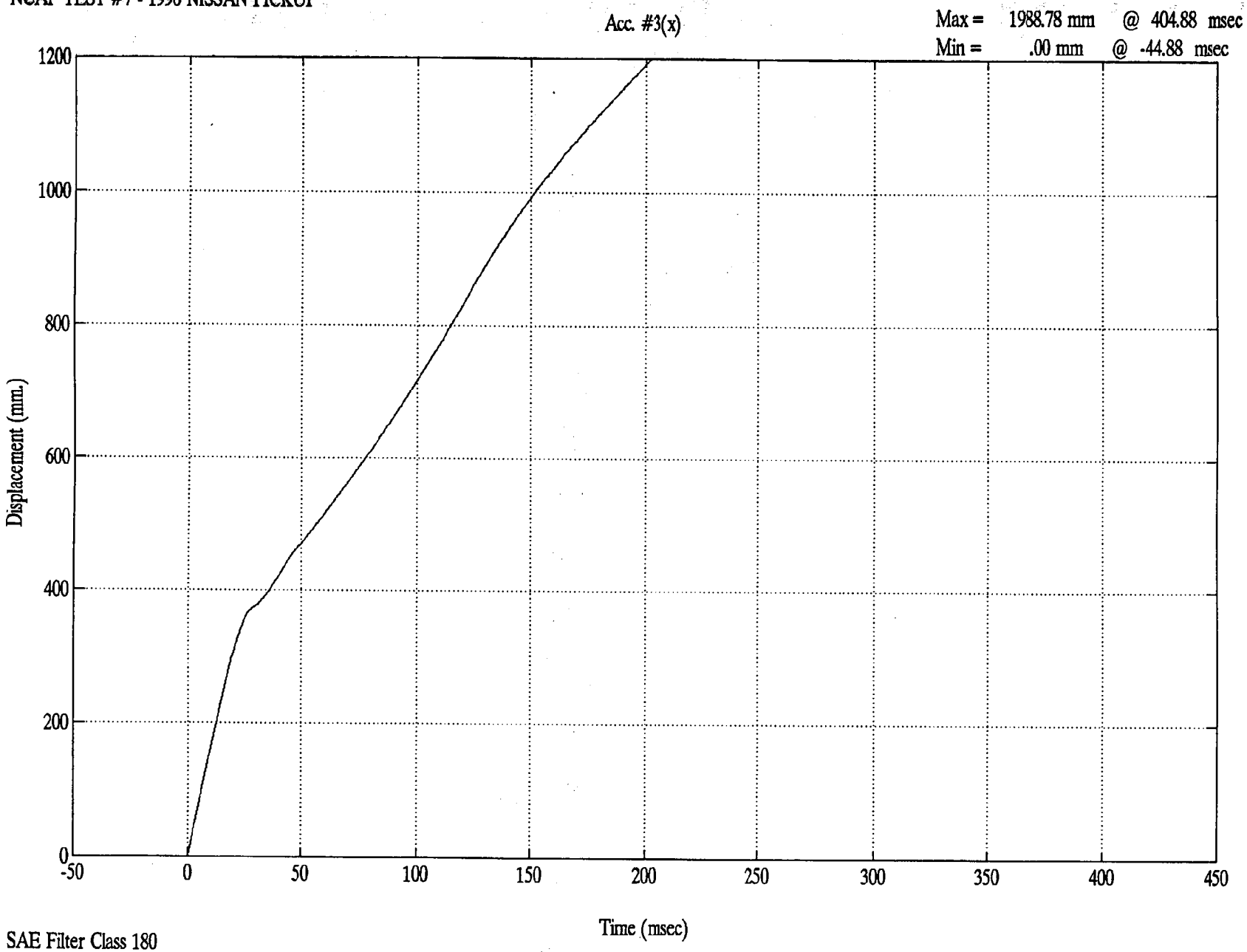
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 180

8313-7

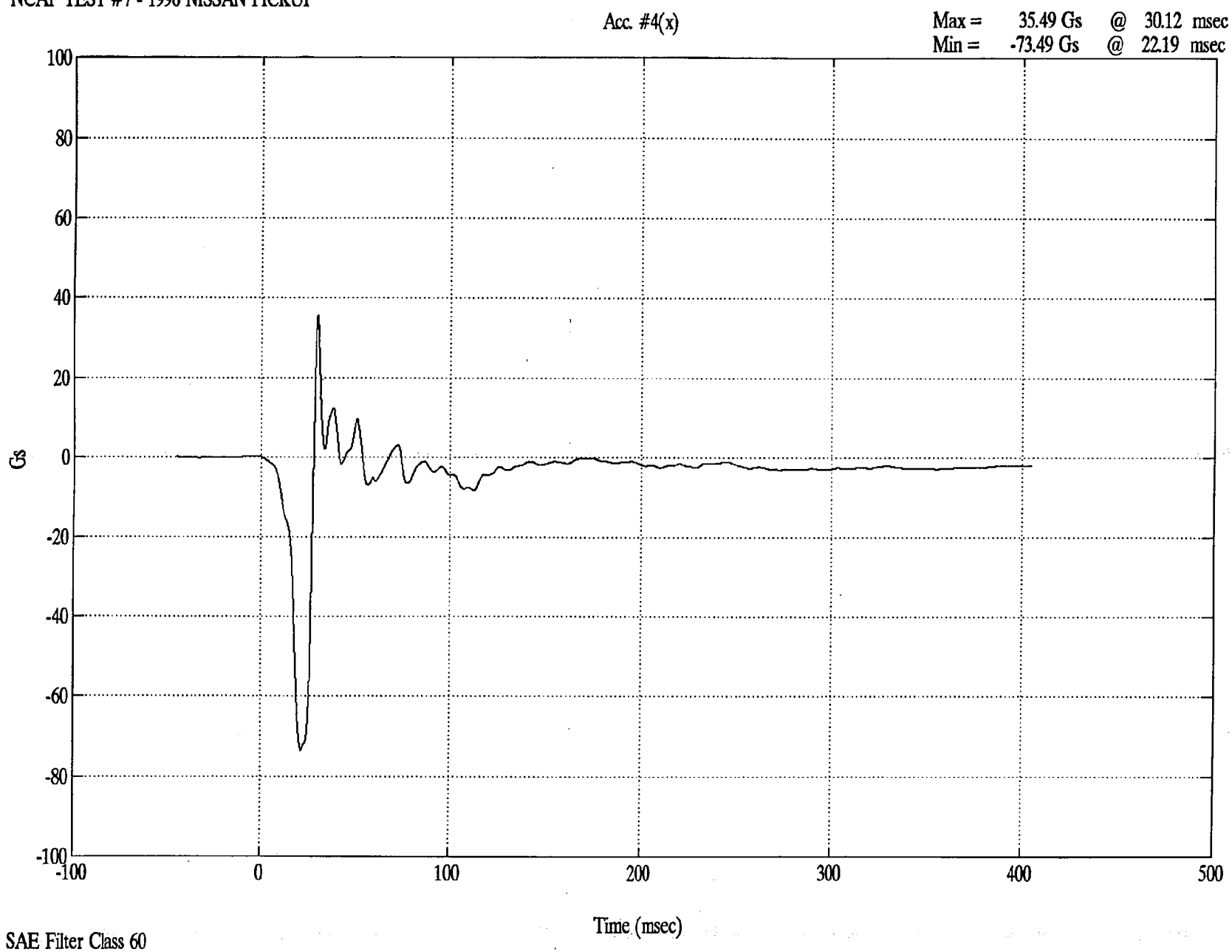
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 180

8313-7

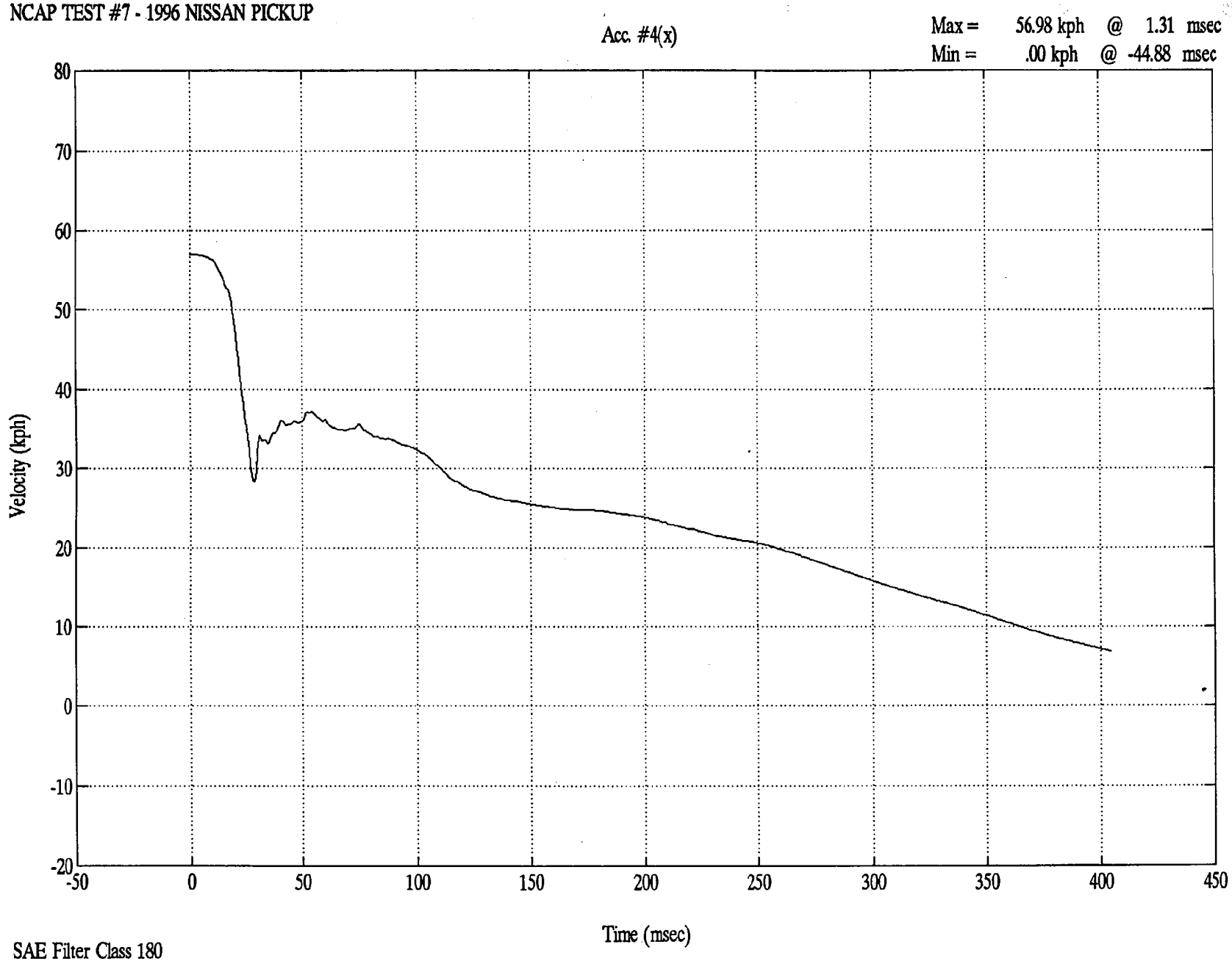
NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 60

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

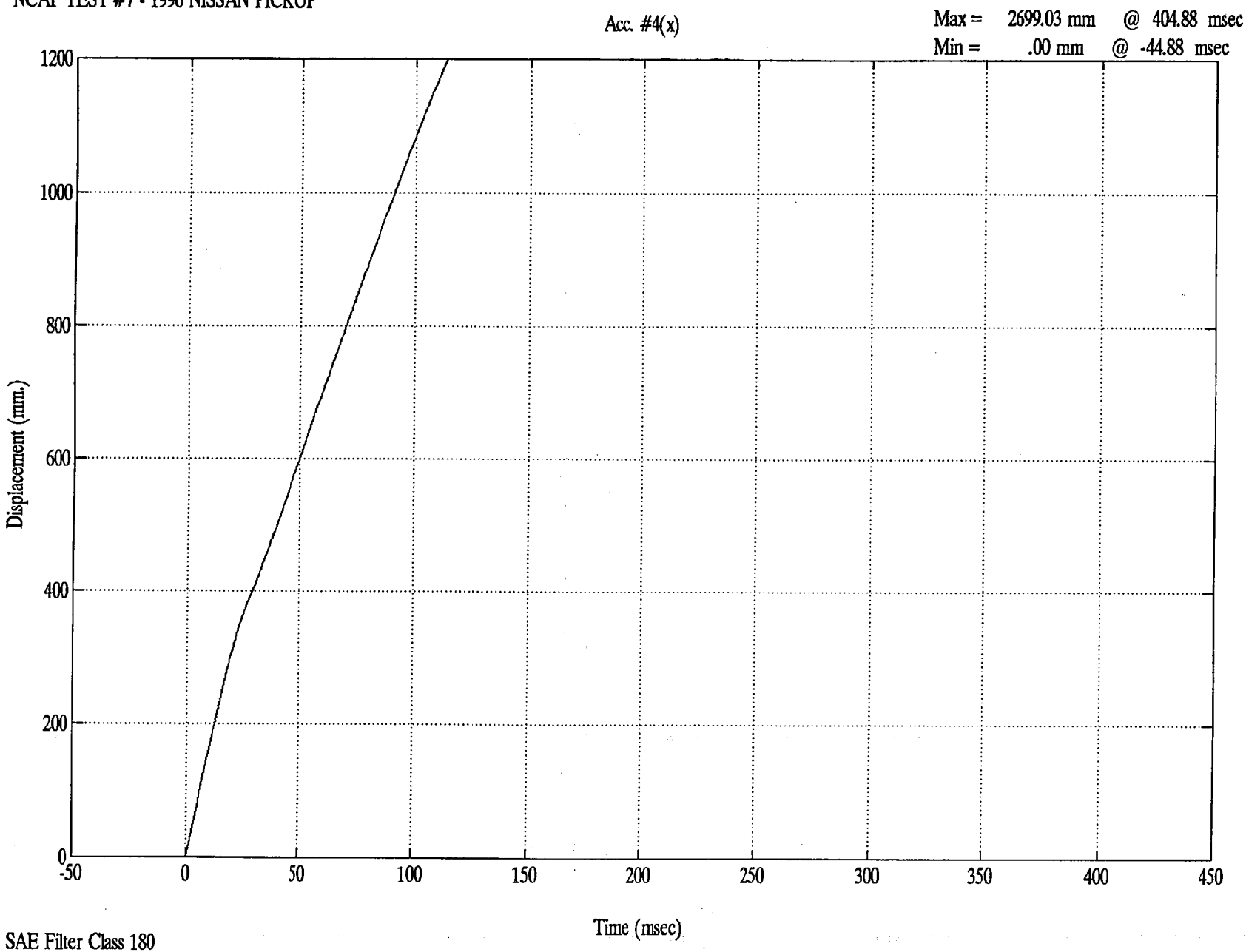


B-117

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

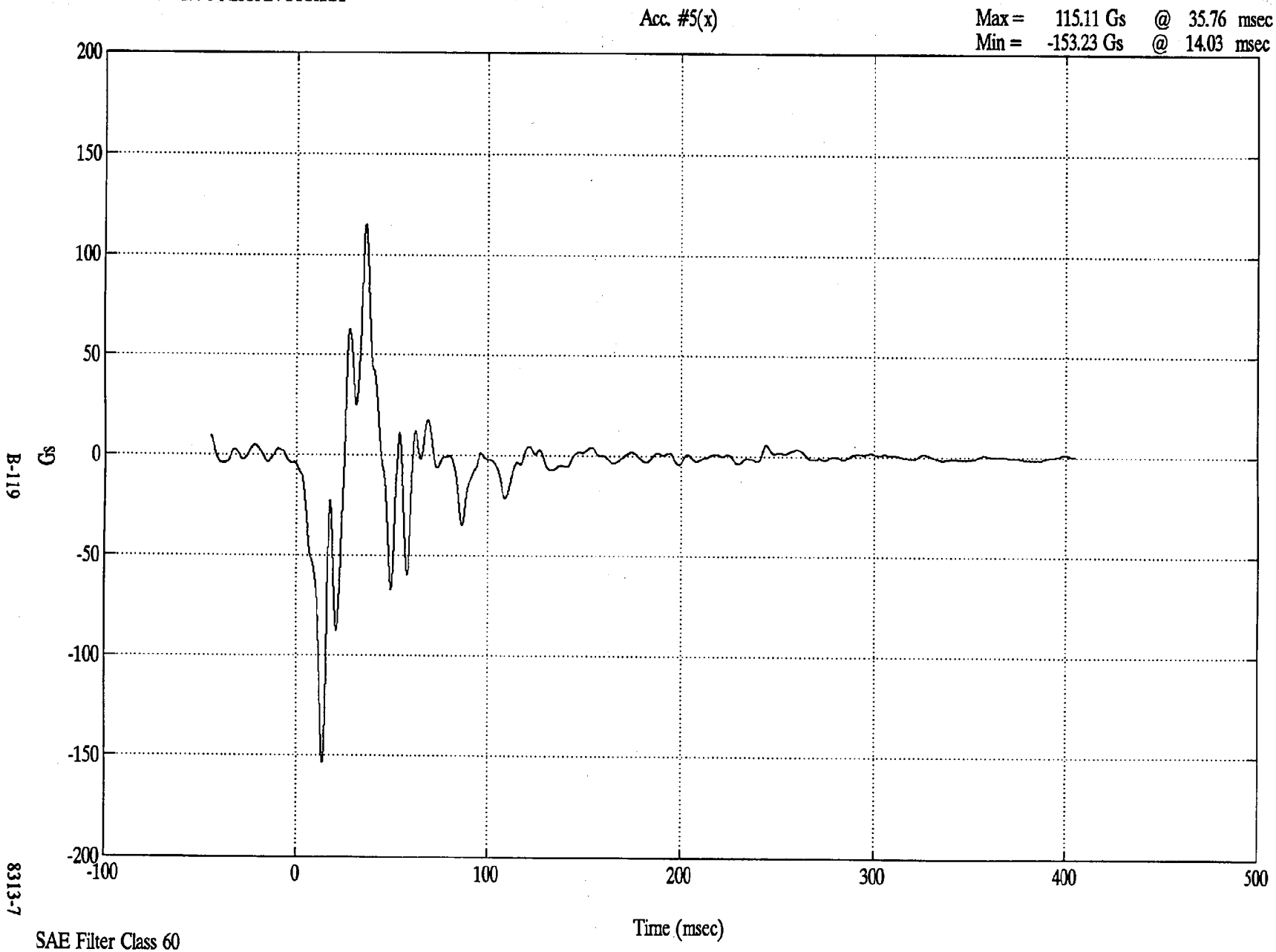


B-118

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

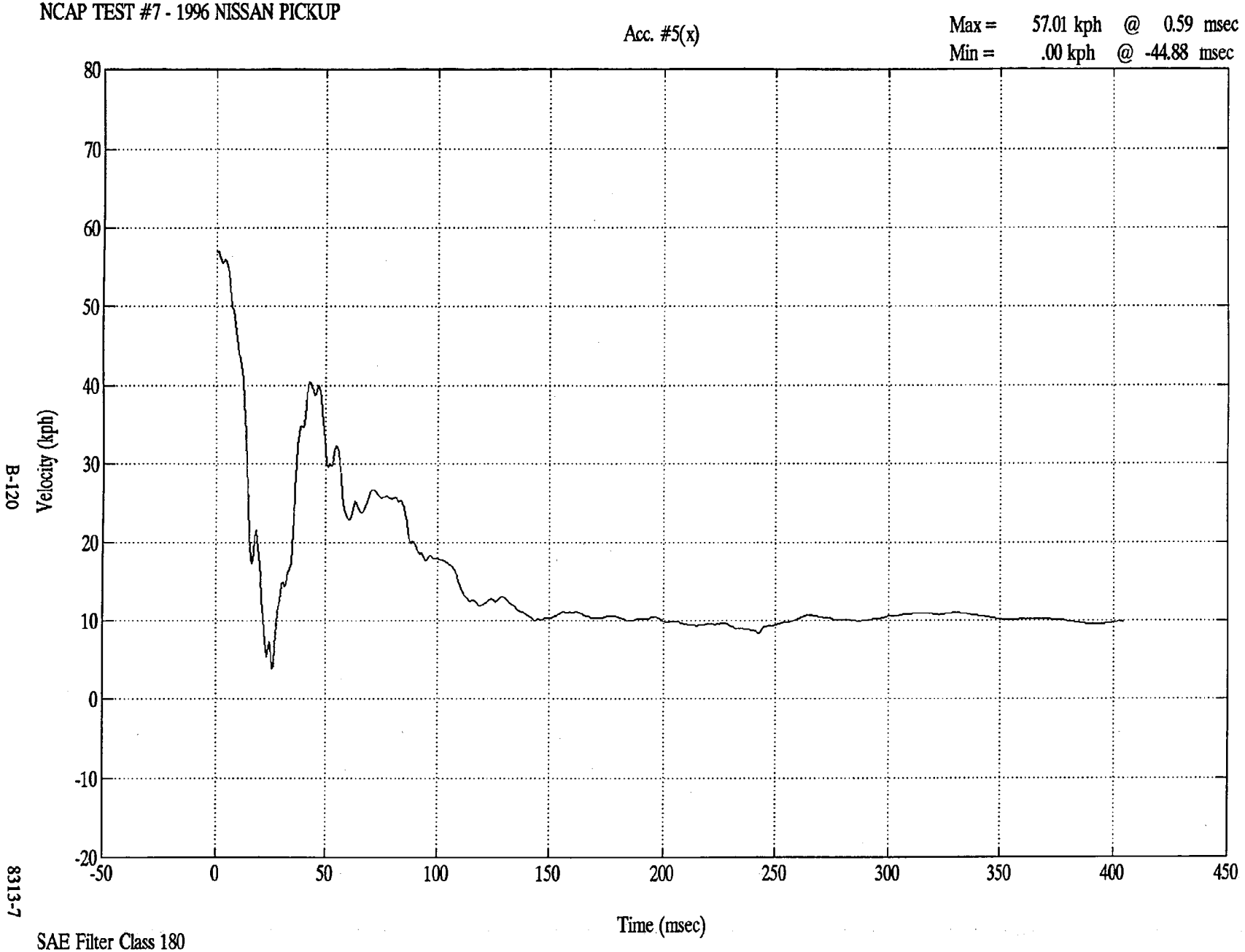


B-119

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

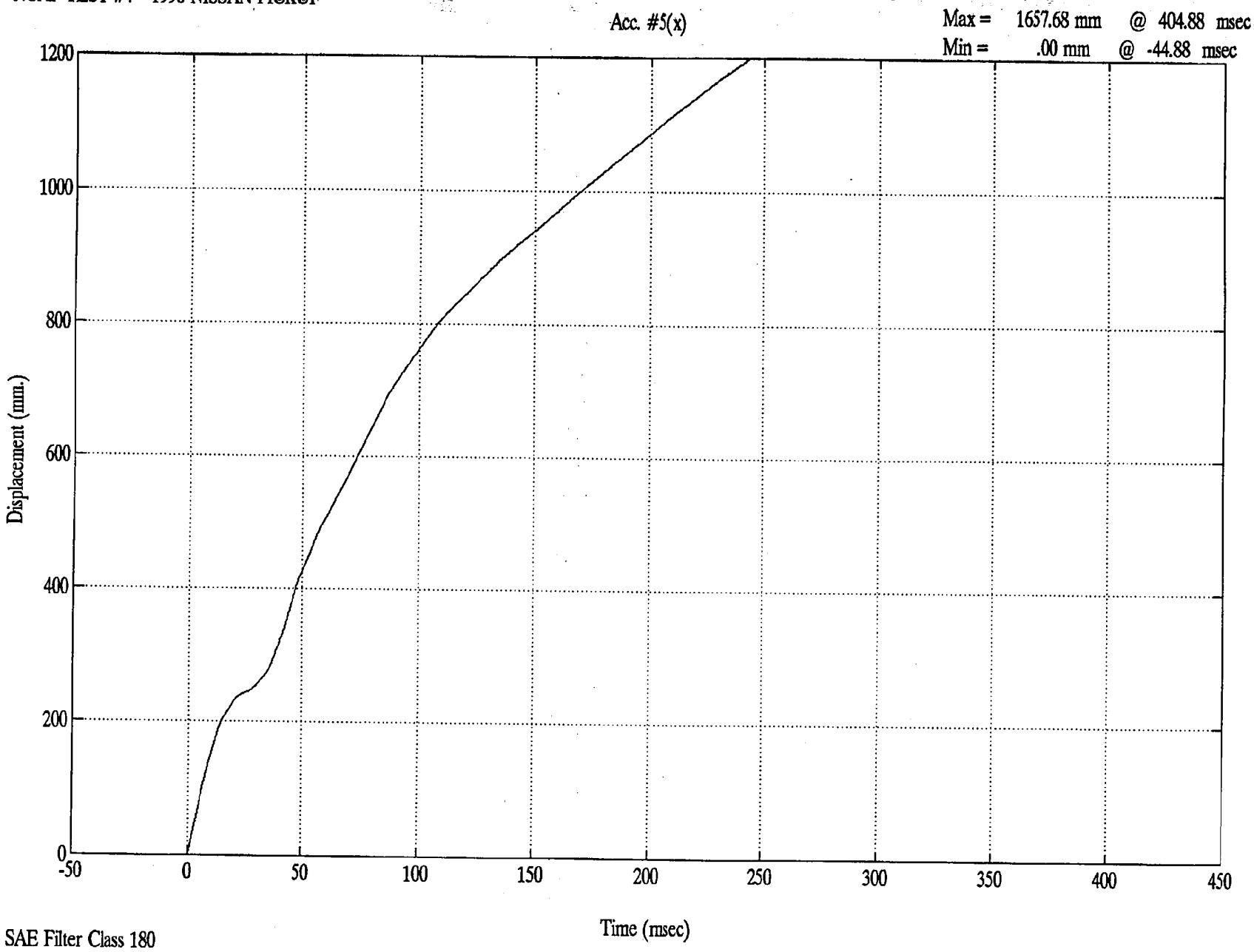


B-120

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

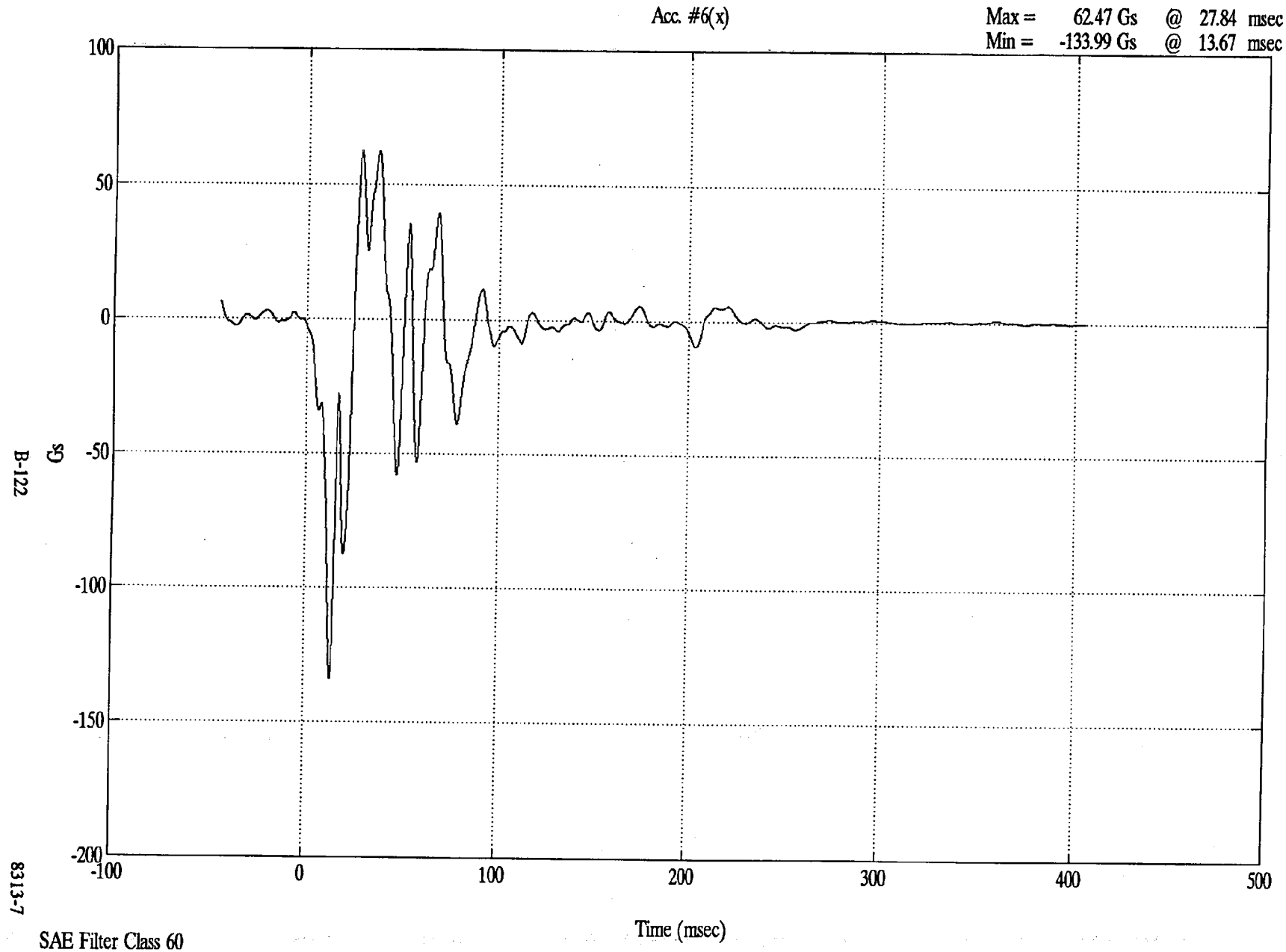


B-121

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

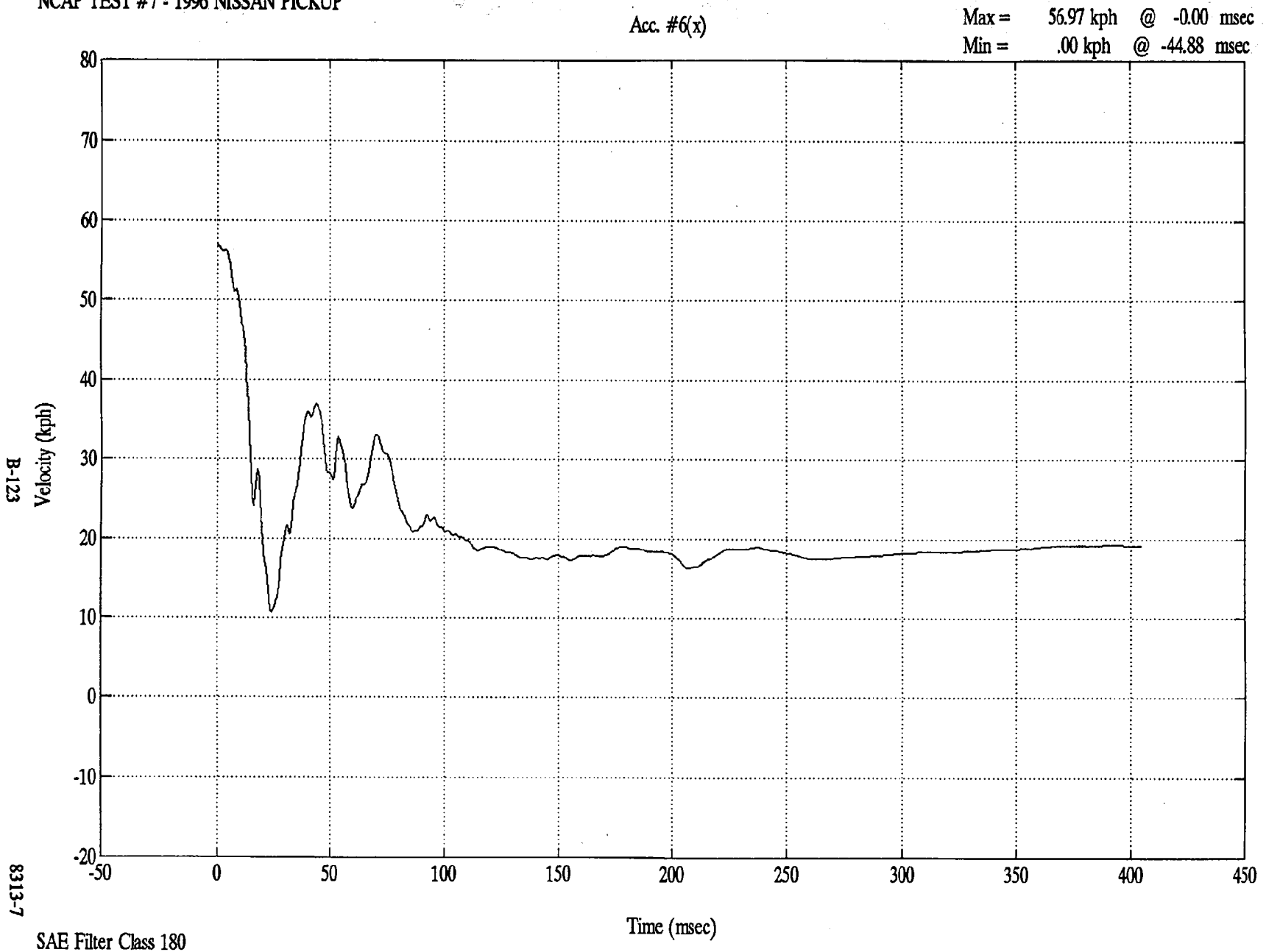


B-122

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

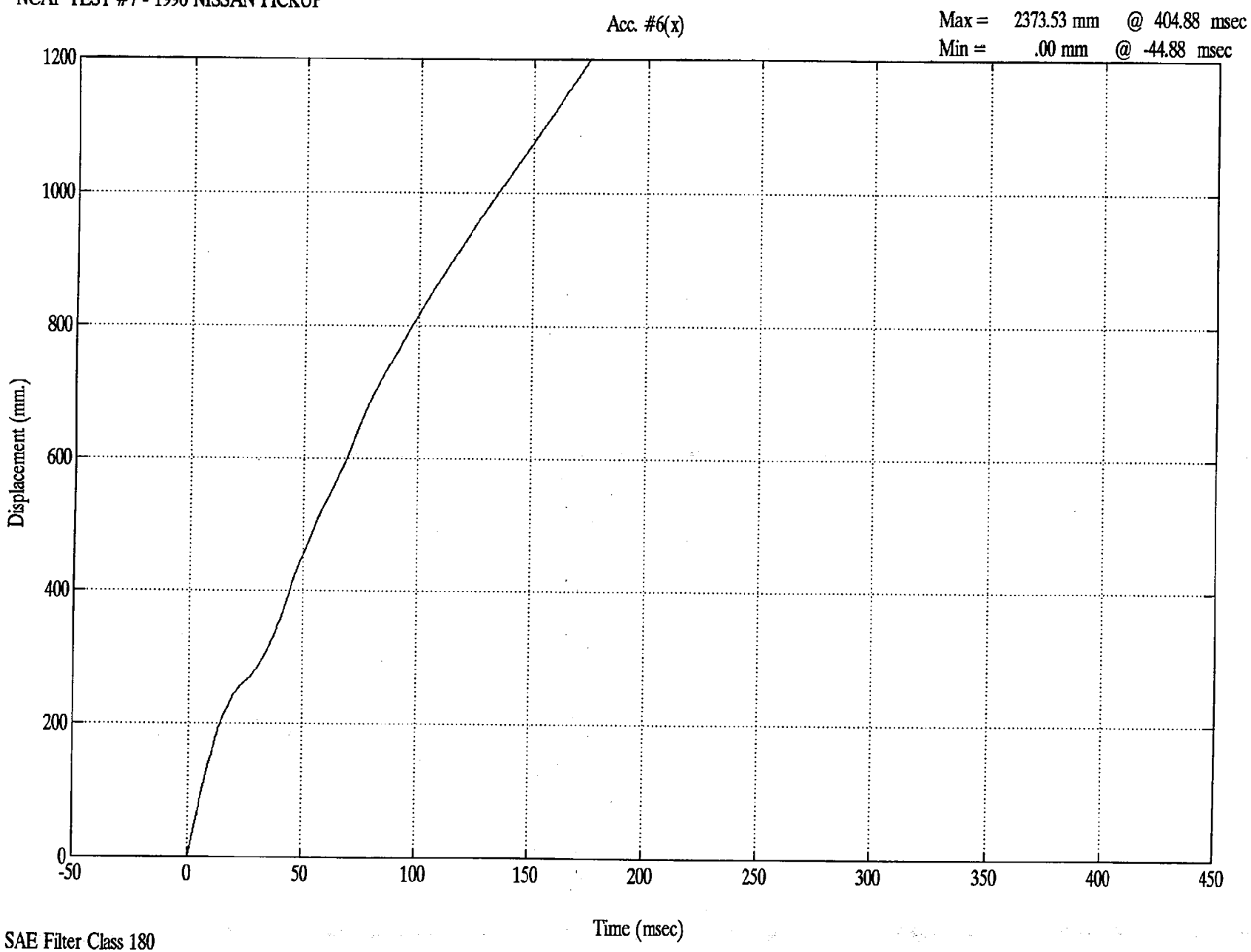


B-123

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

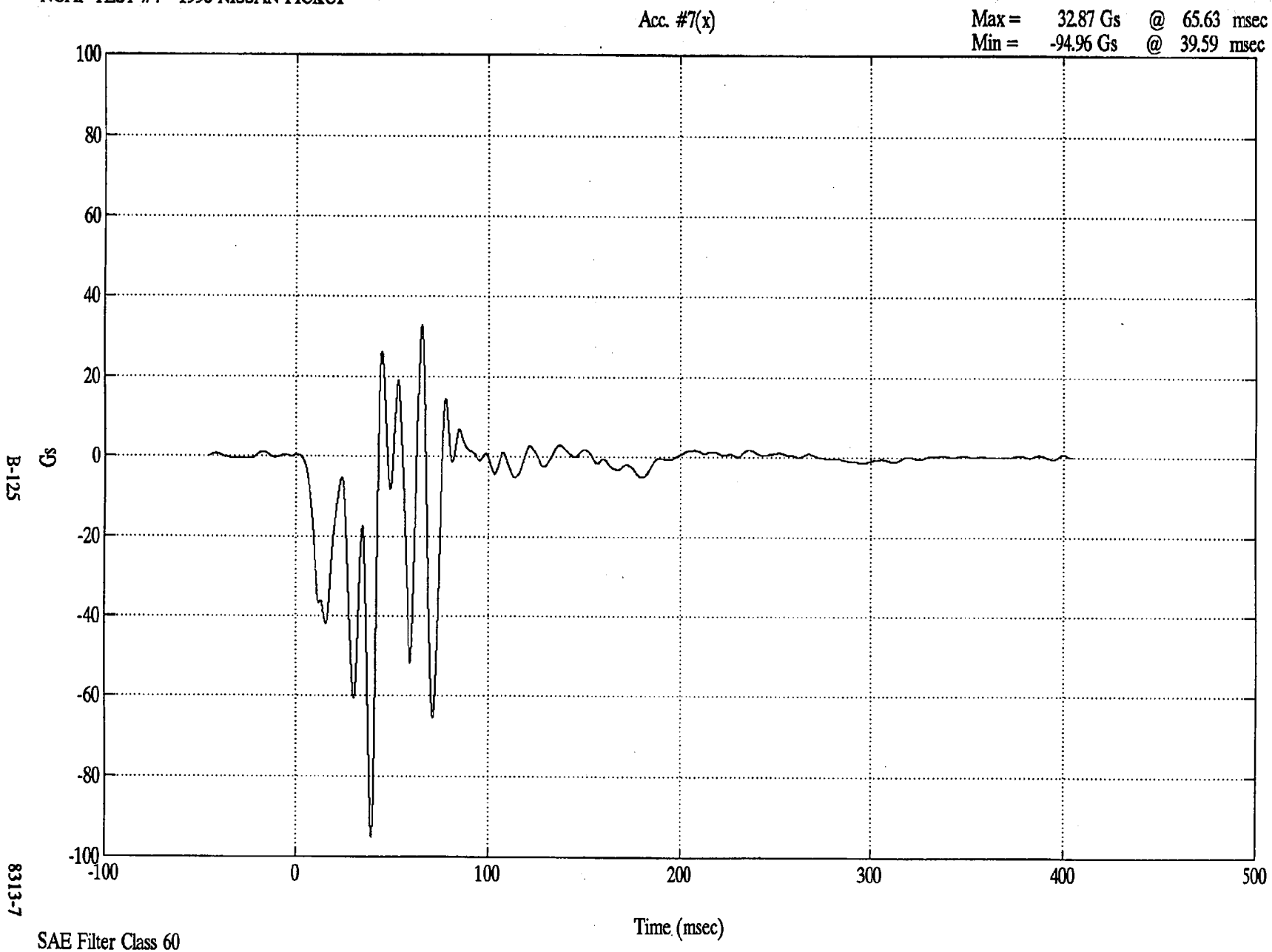


B-124

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

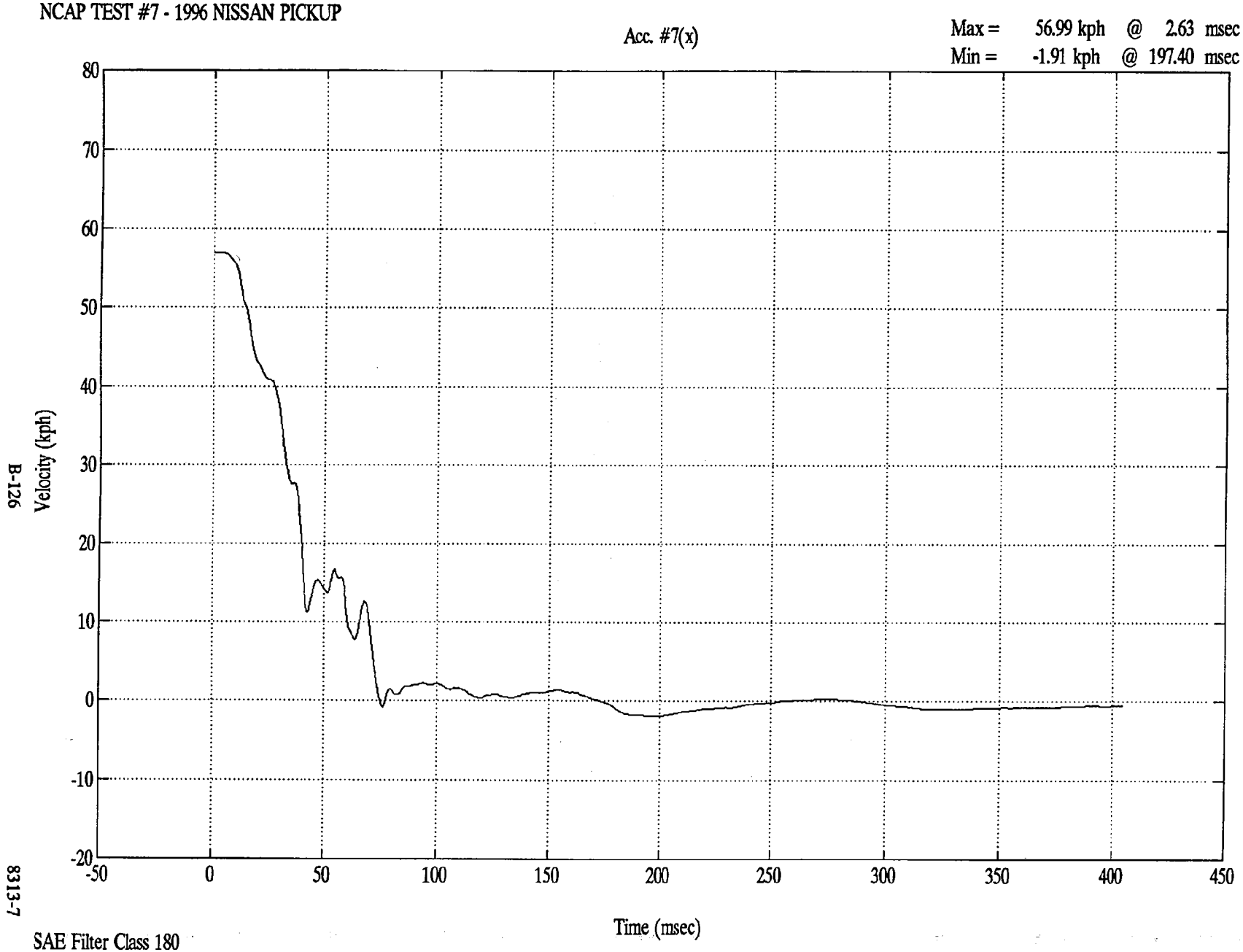


B-125

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

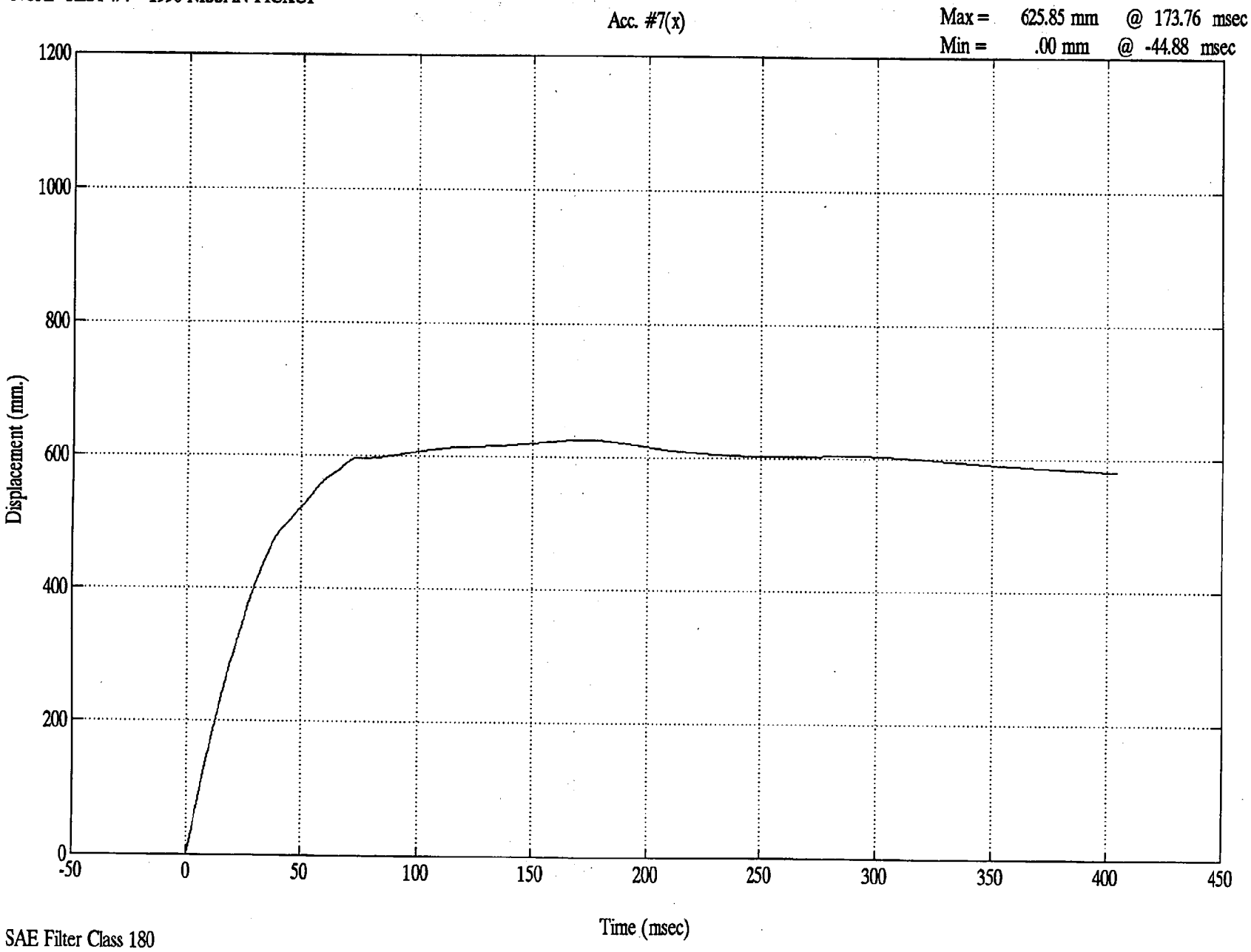


B-126

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

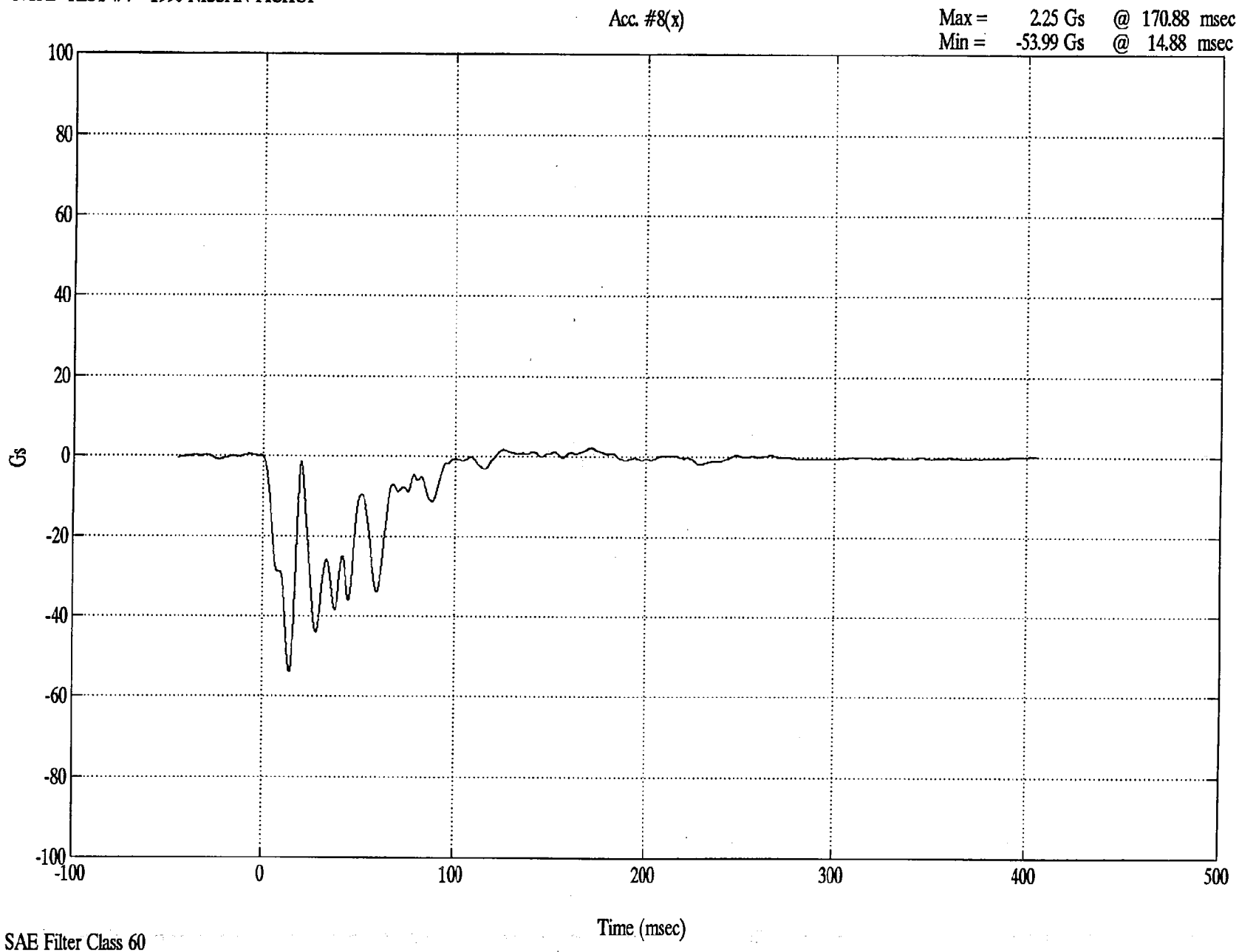


B-127

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

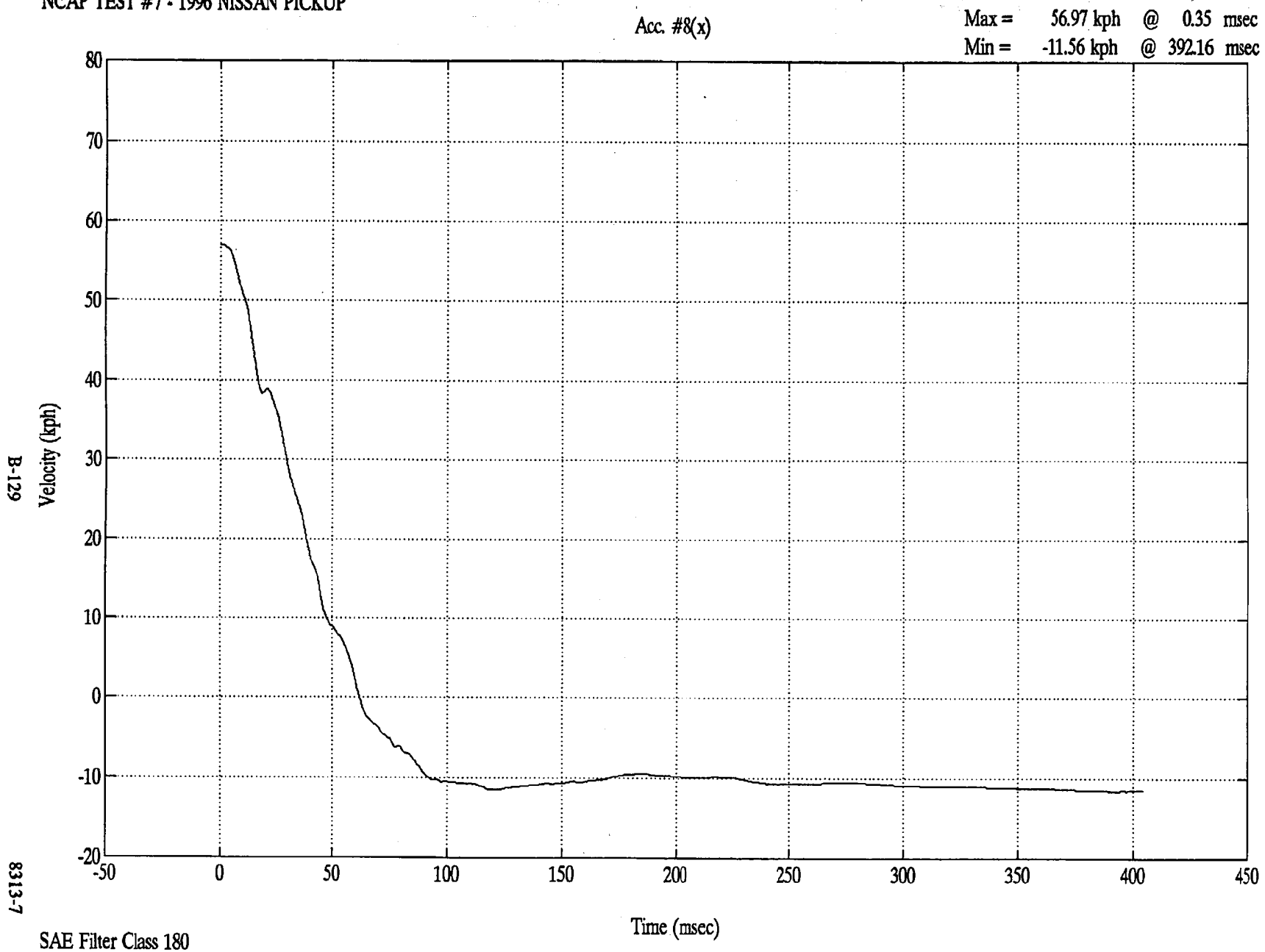


B-128

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

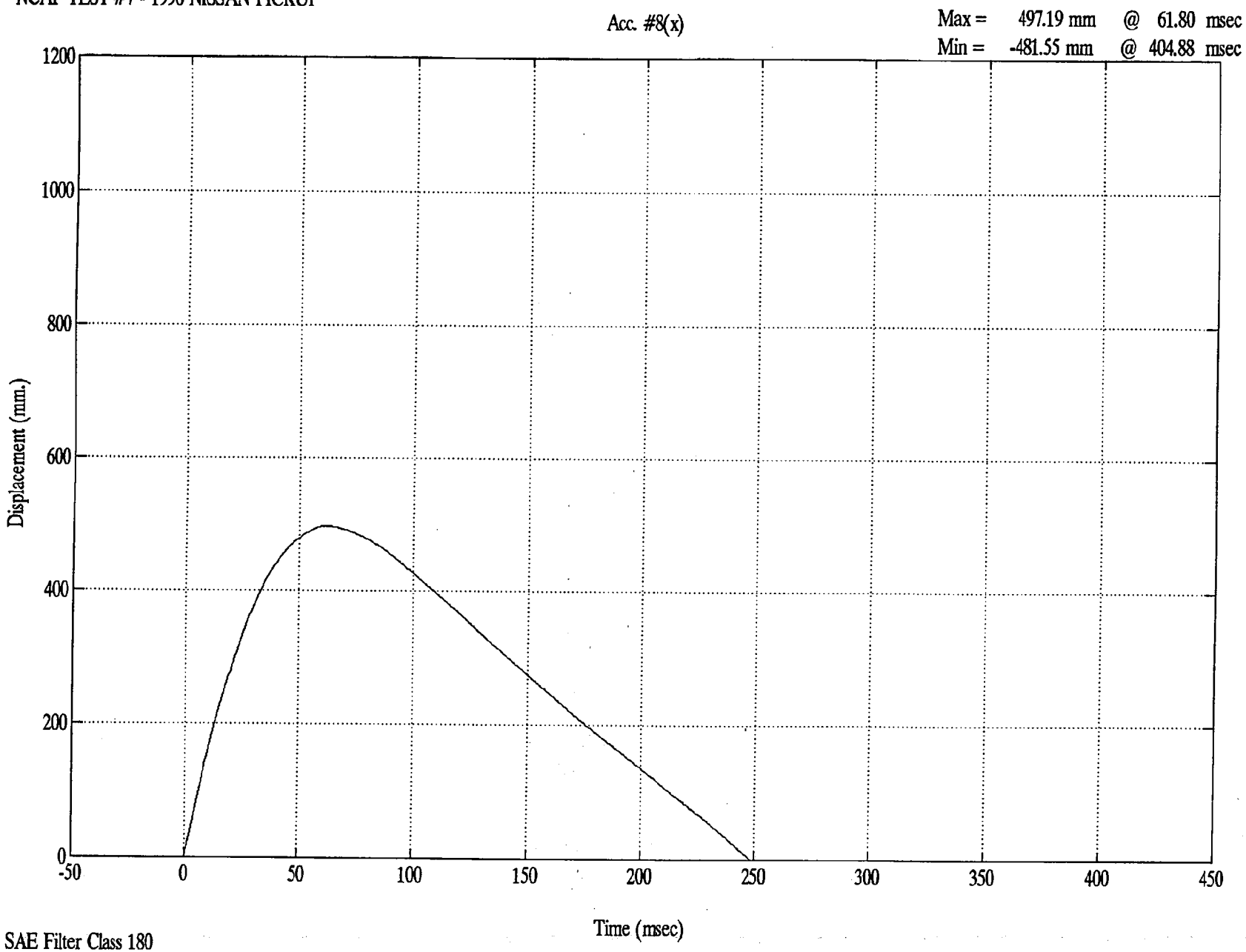


B-129

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

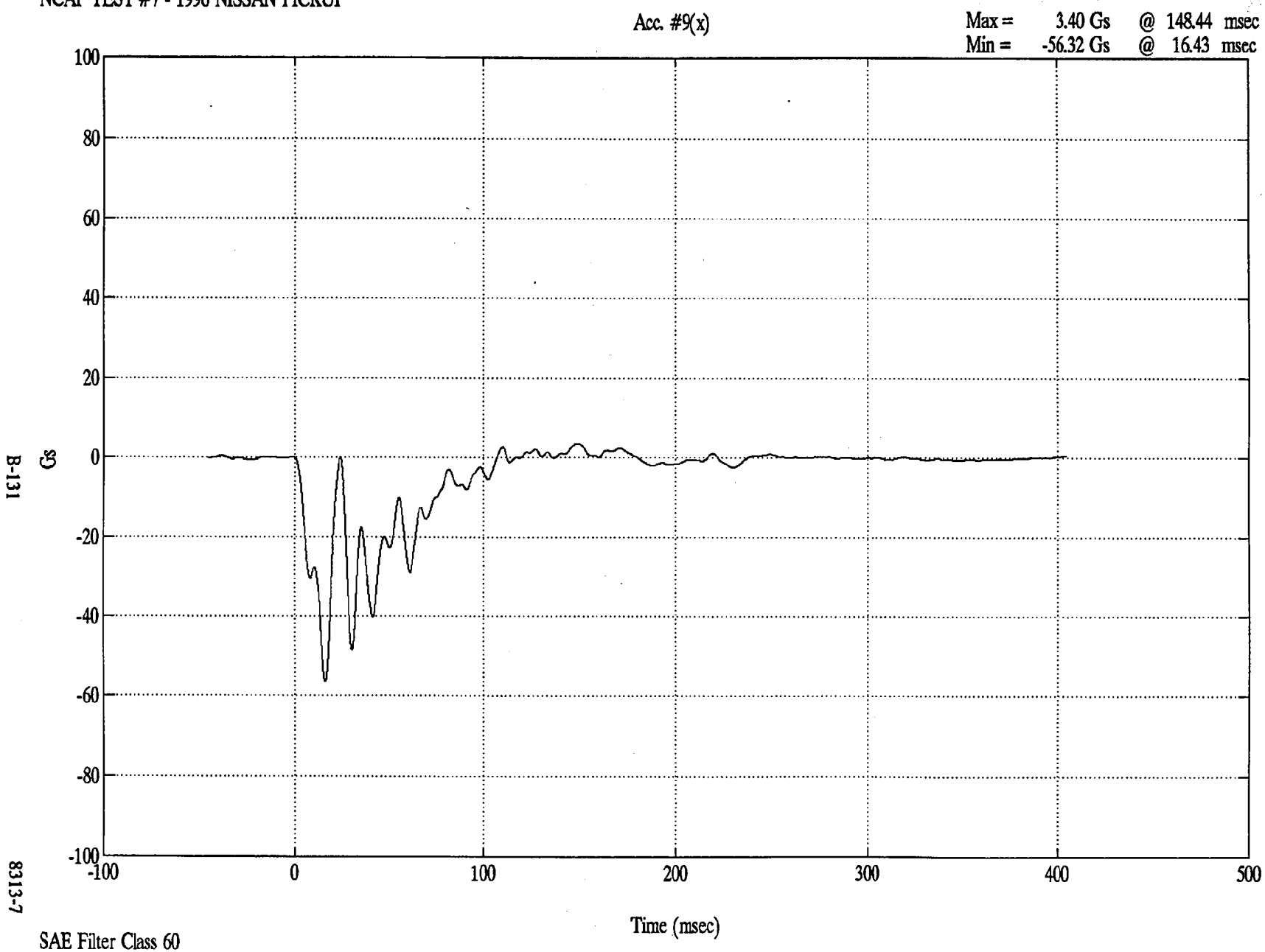


B-130

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP

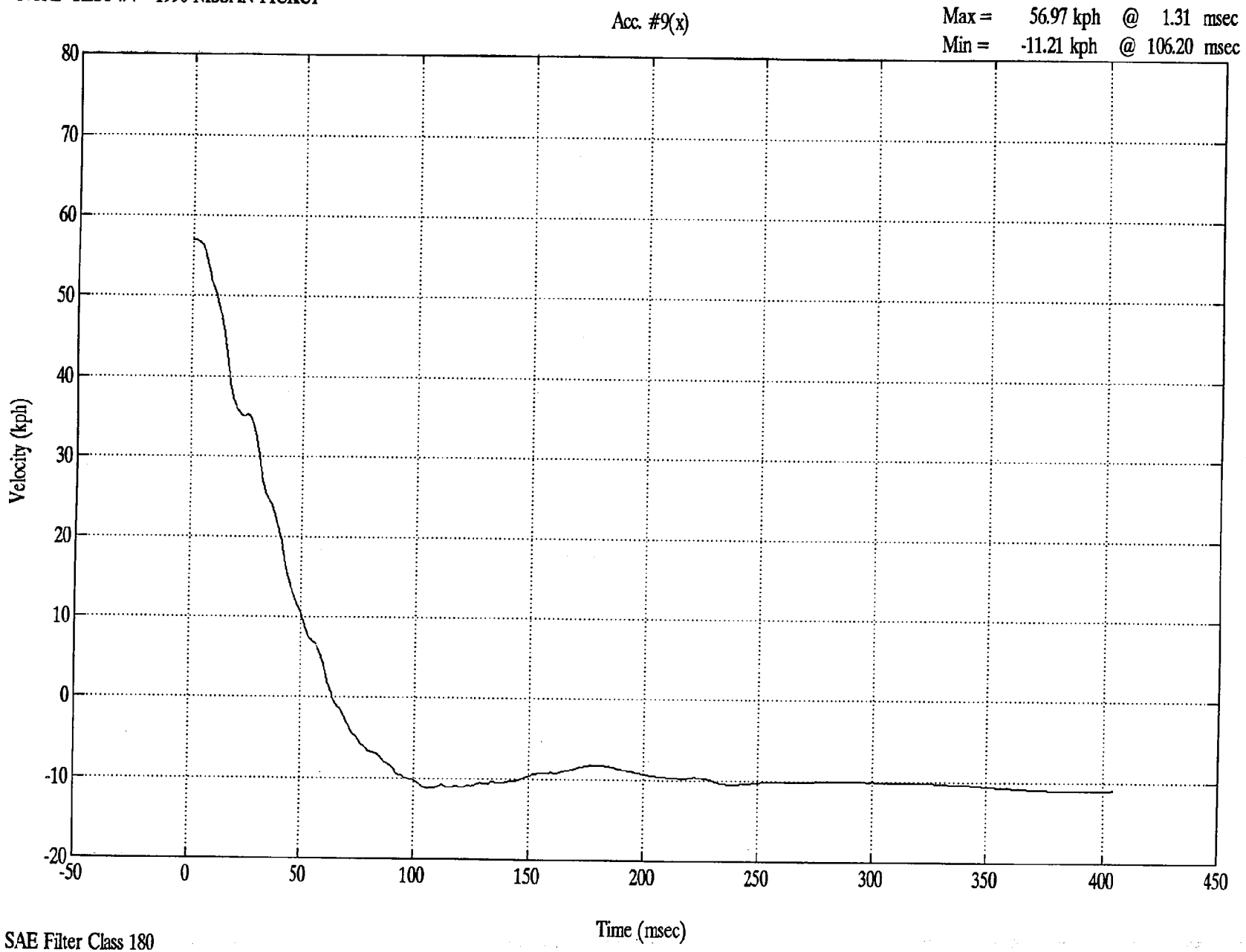


B-131

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

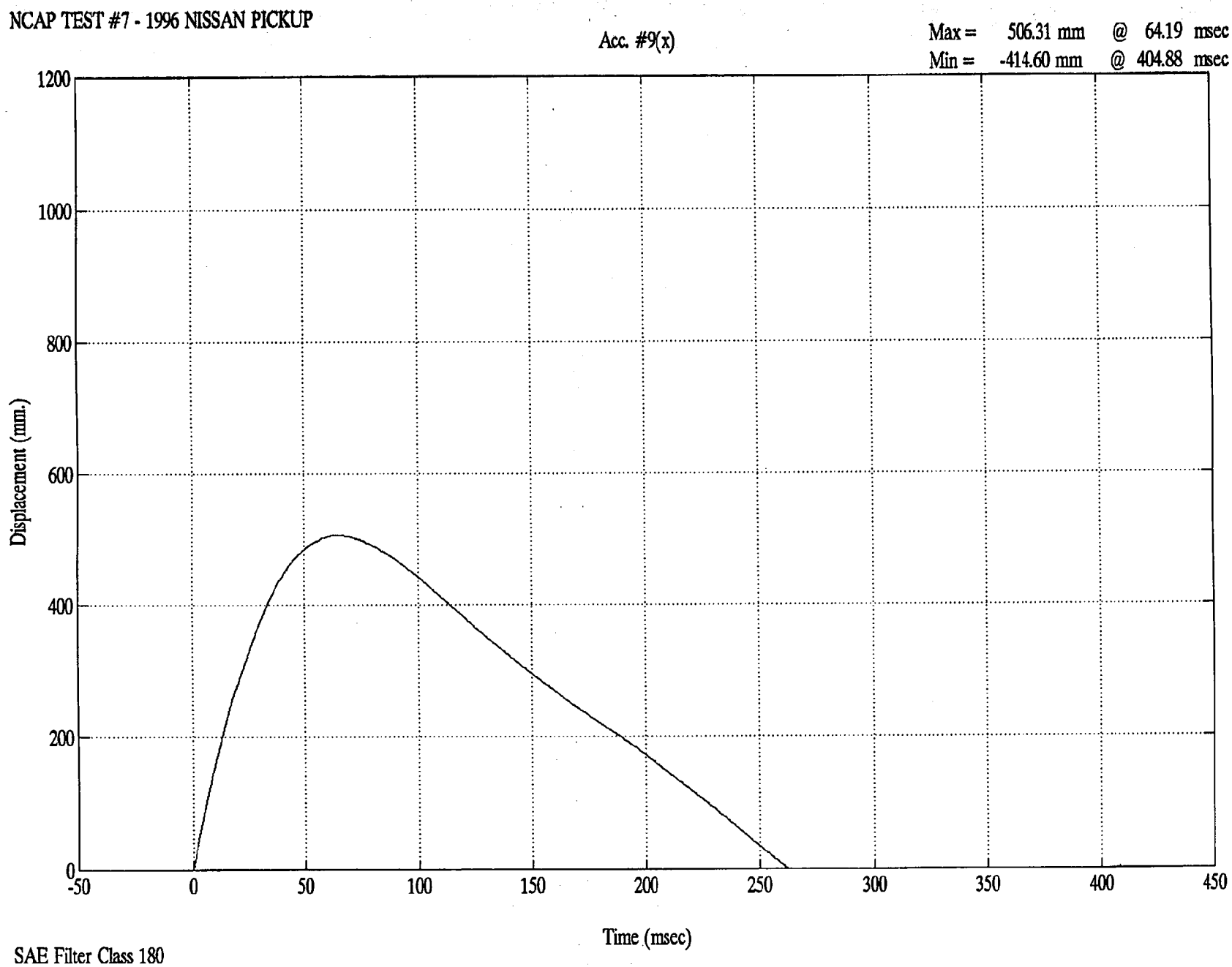


B-132

8313-7

SAE Filter Class 180

NCAP TEST #7 - 1996 NISSAN PICKUP



B-133

8313-7

SAE Filter Class 180

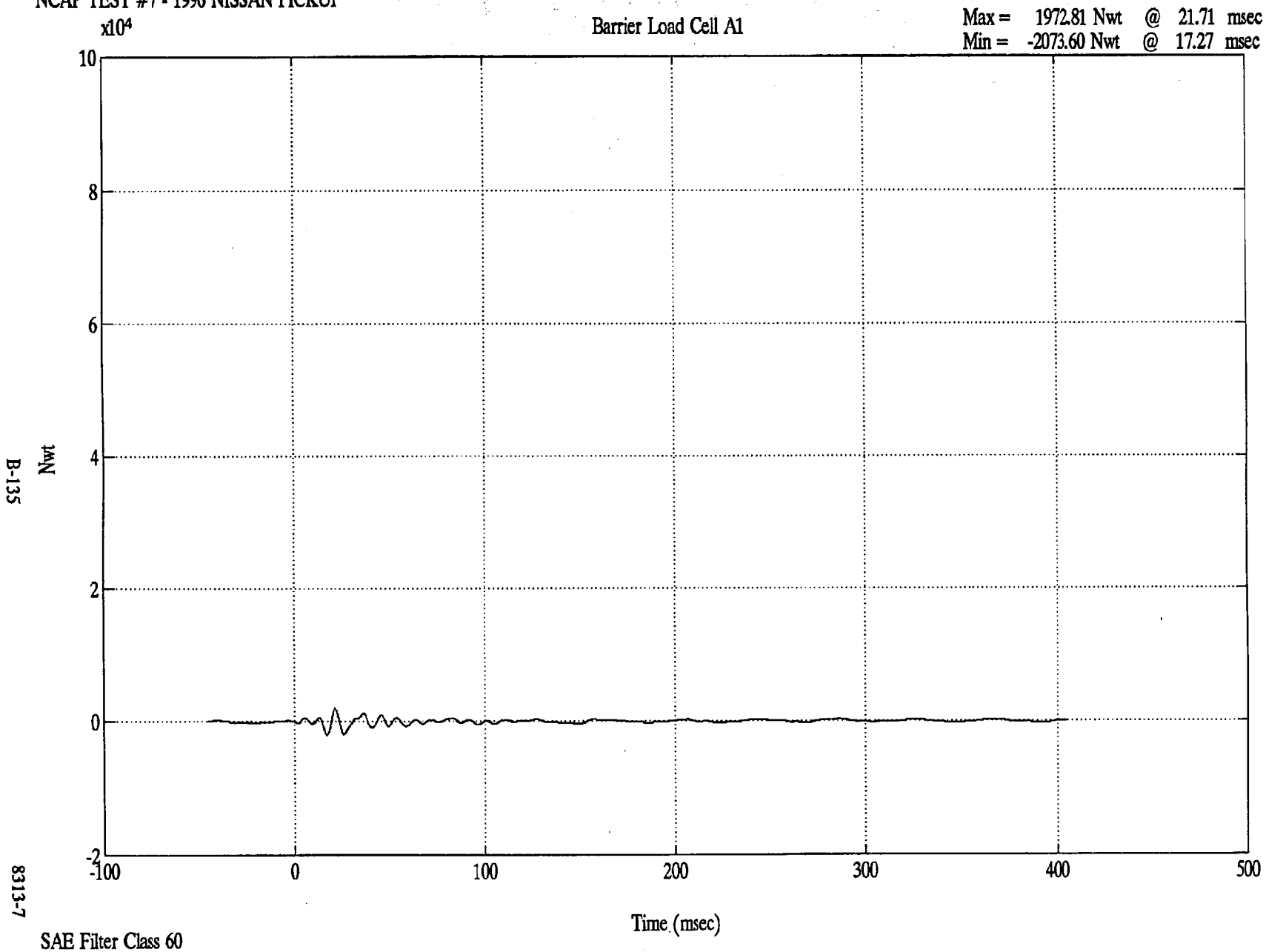
NHTSA TEST NO. MT5201

LOAD CELL BARRIER DATA

FILTER CHANNEL CLASS

60

NCAP TEST #7 - 1996 NISSAN PICKUP

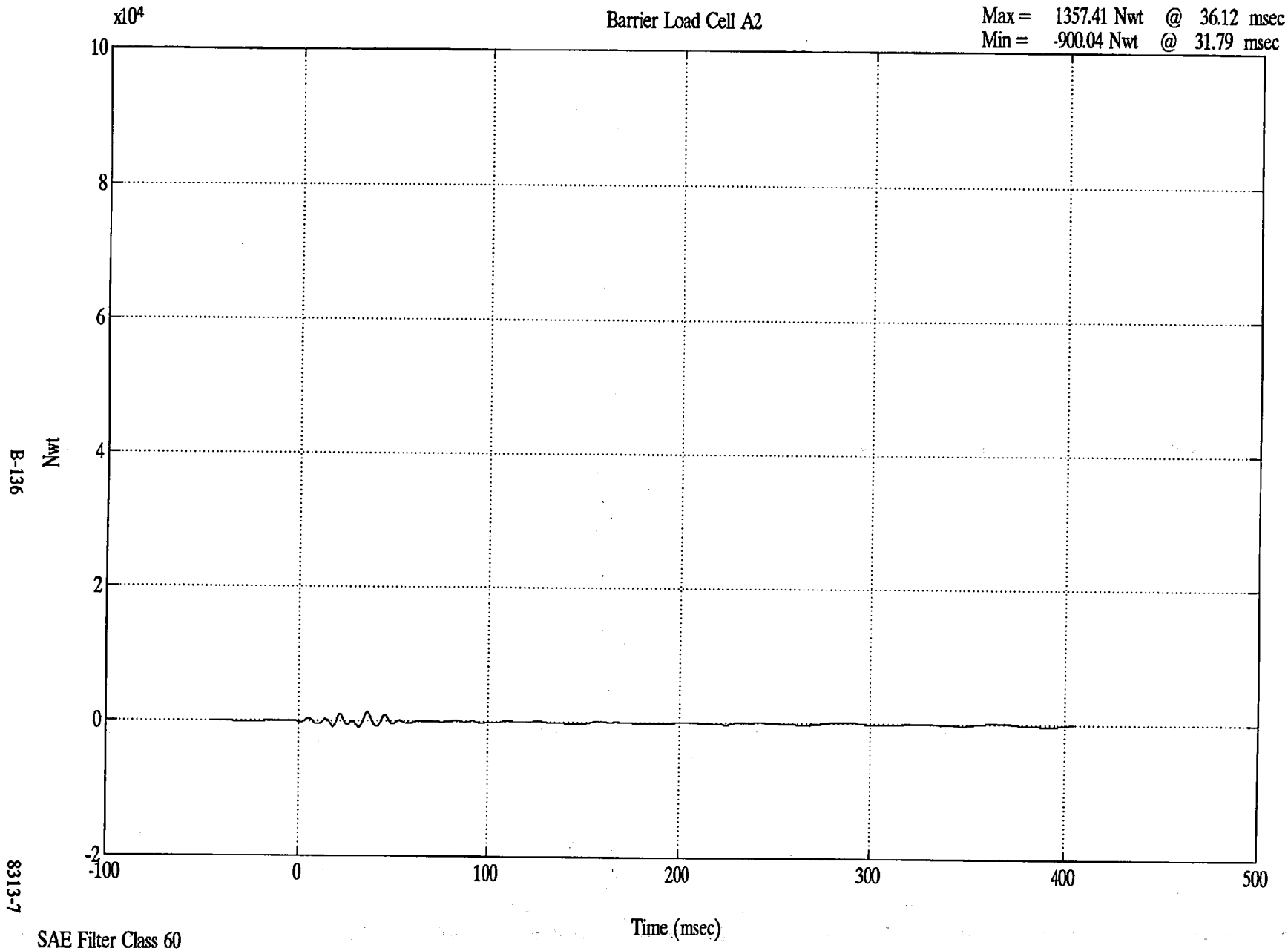


B-135

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

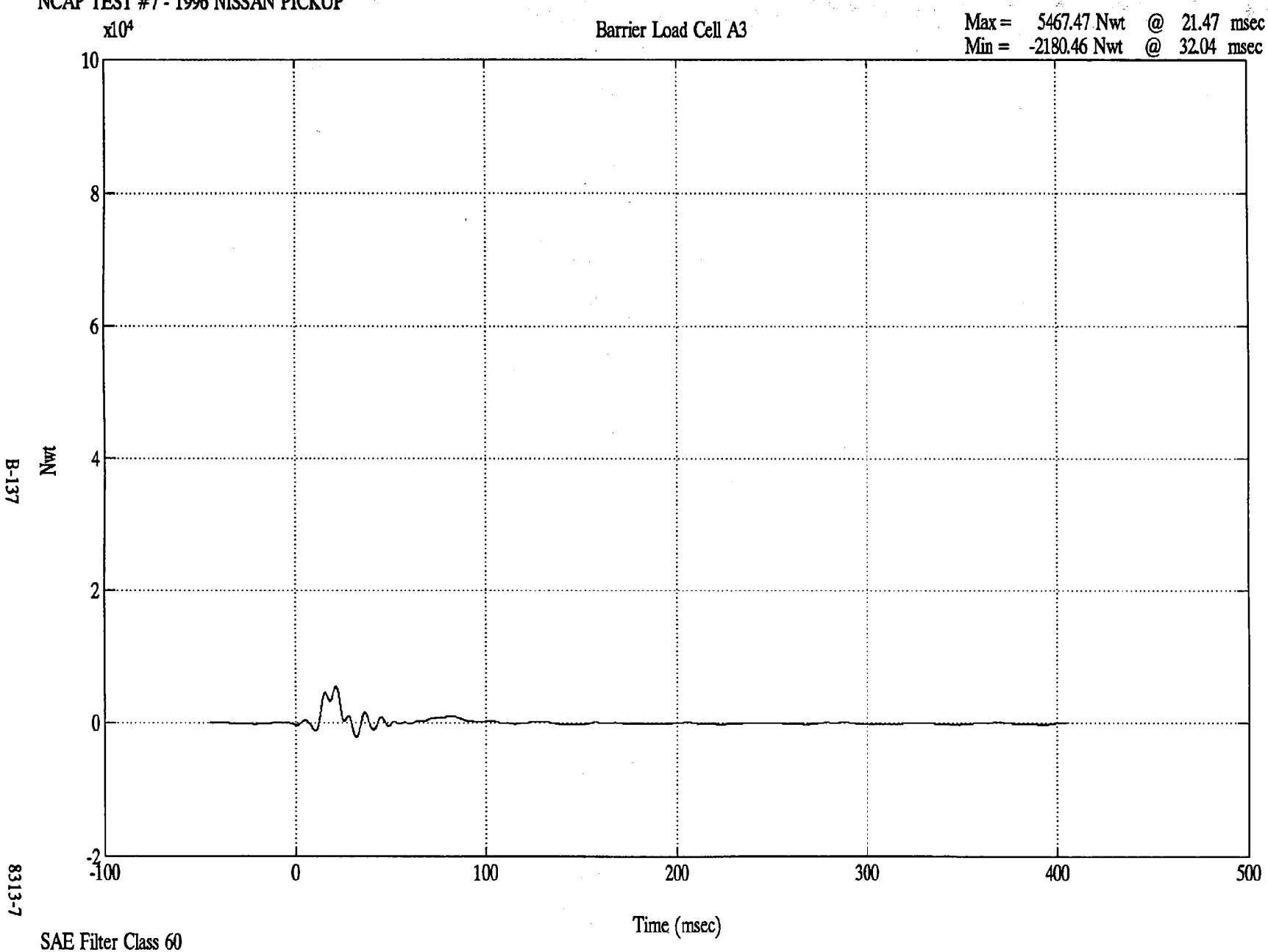


B-136

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

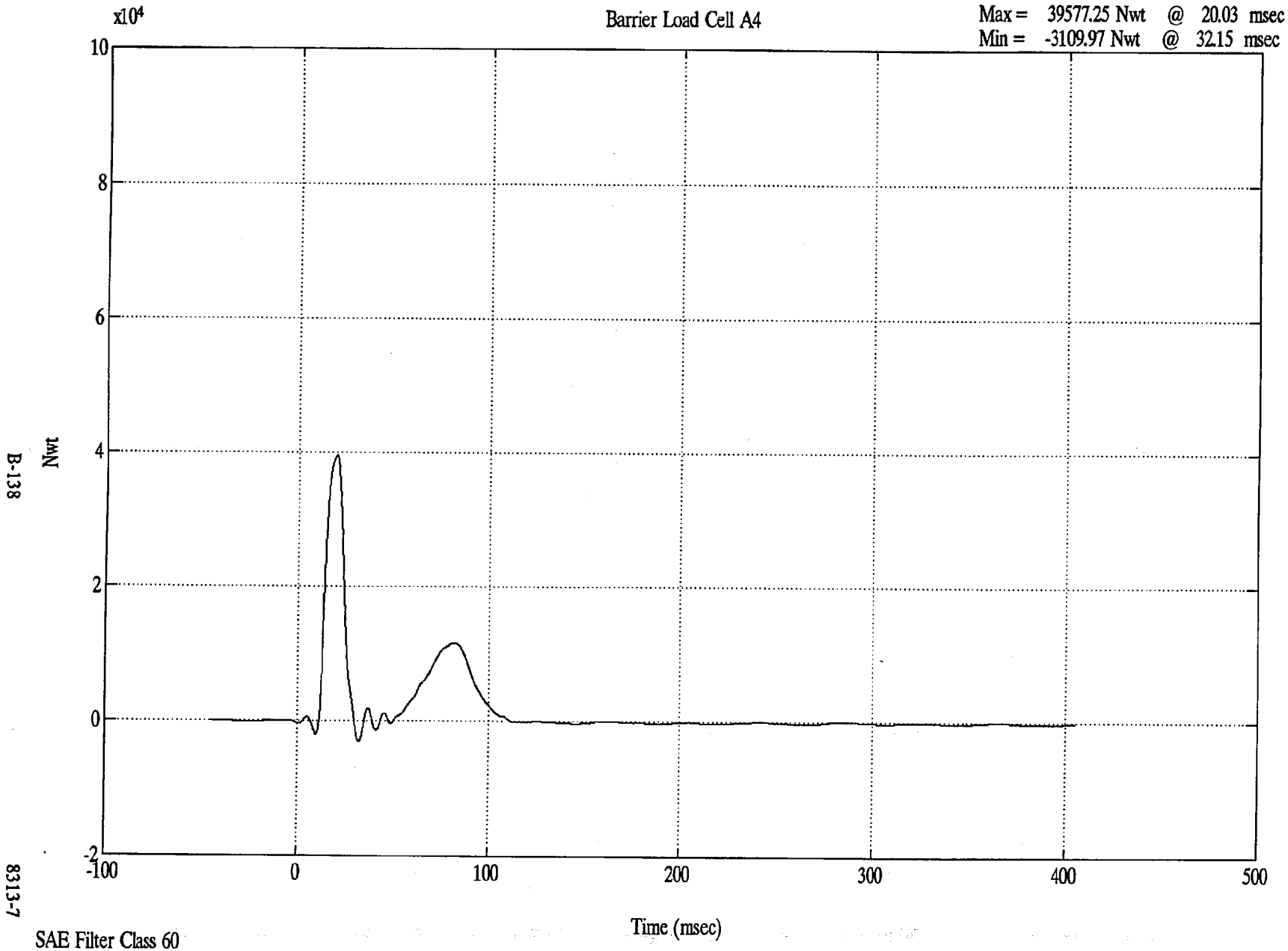


B-137

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

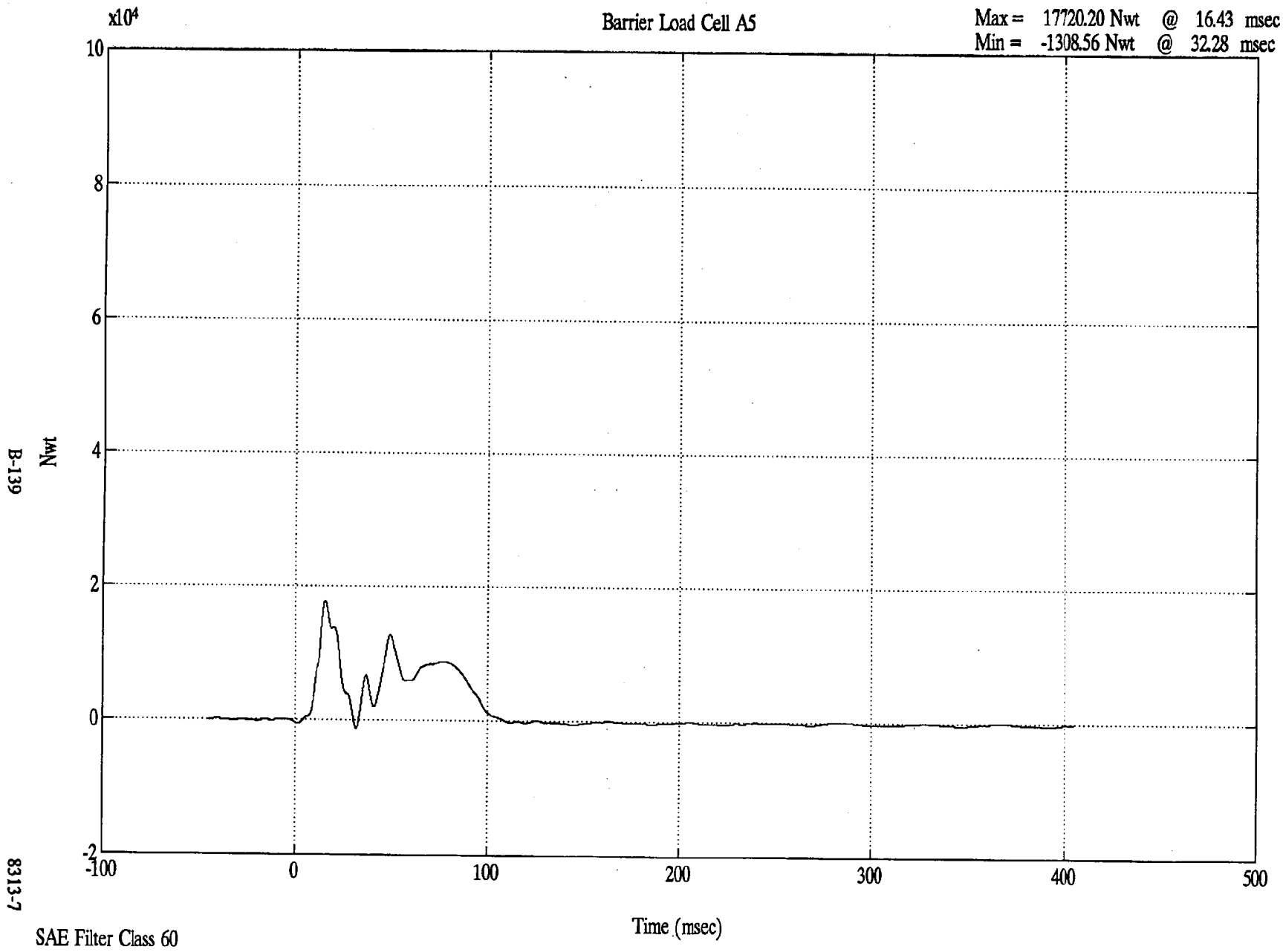


B-138

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

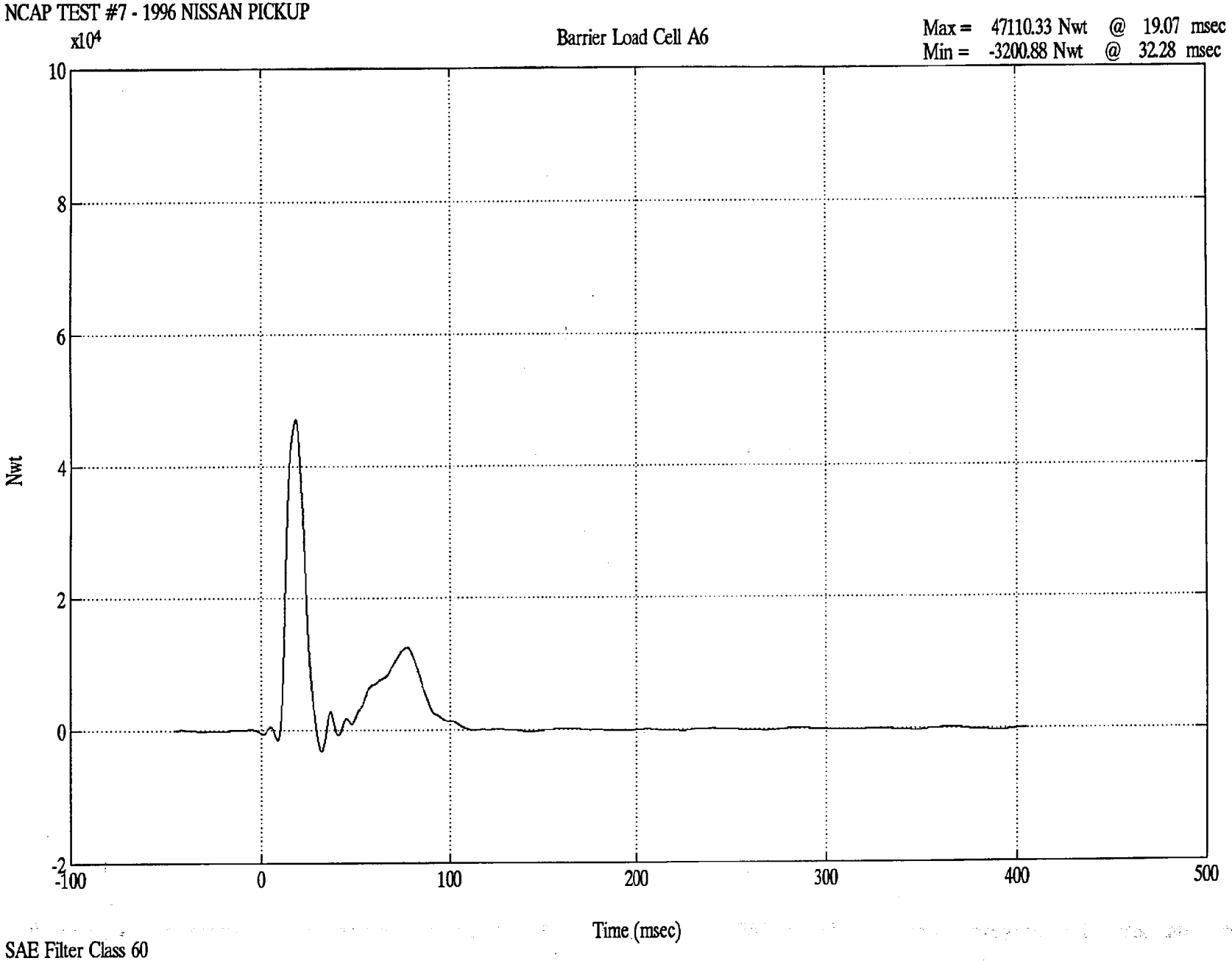


B-139

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

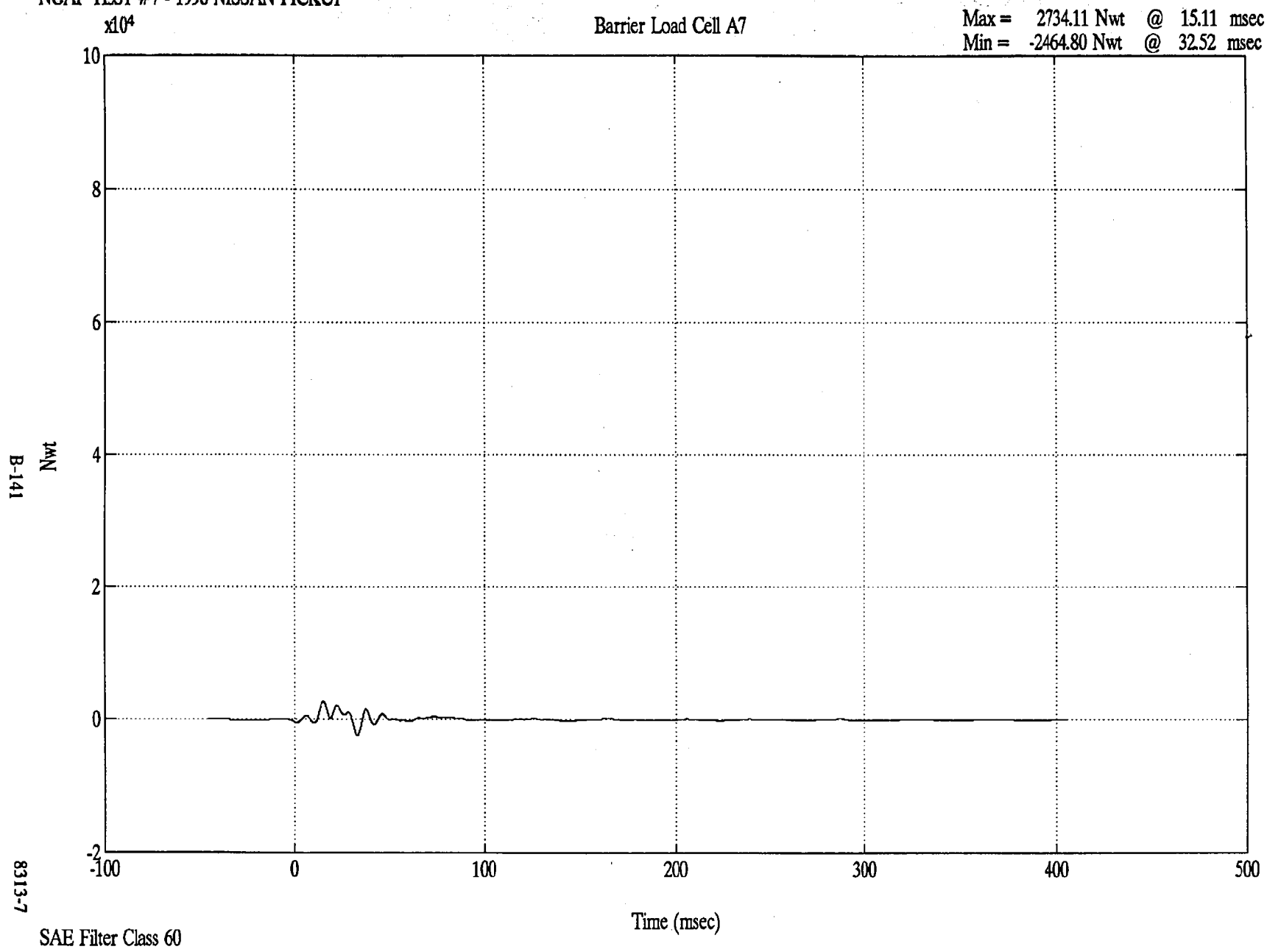


B-140

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

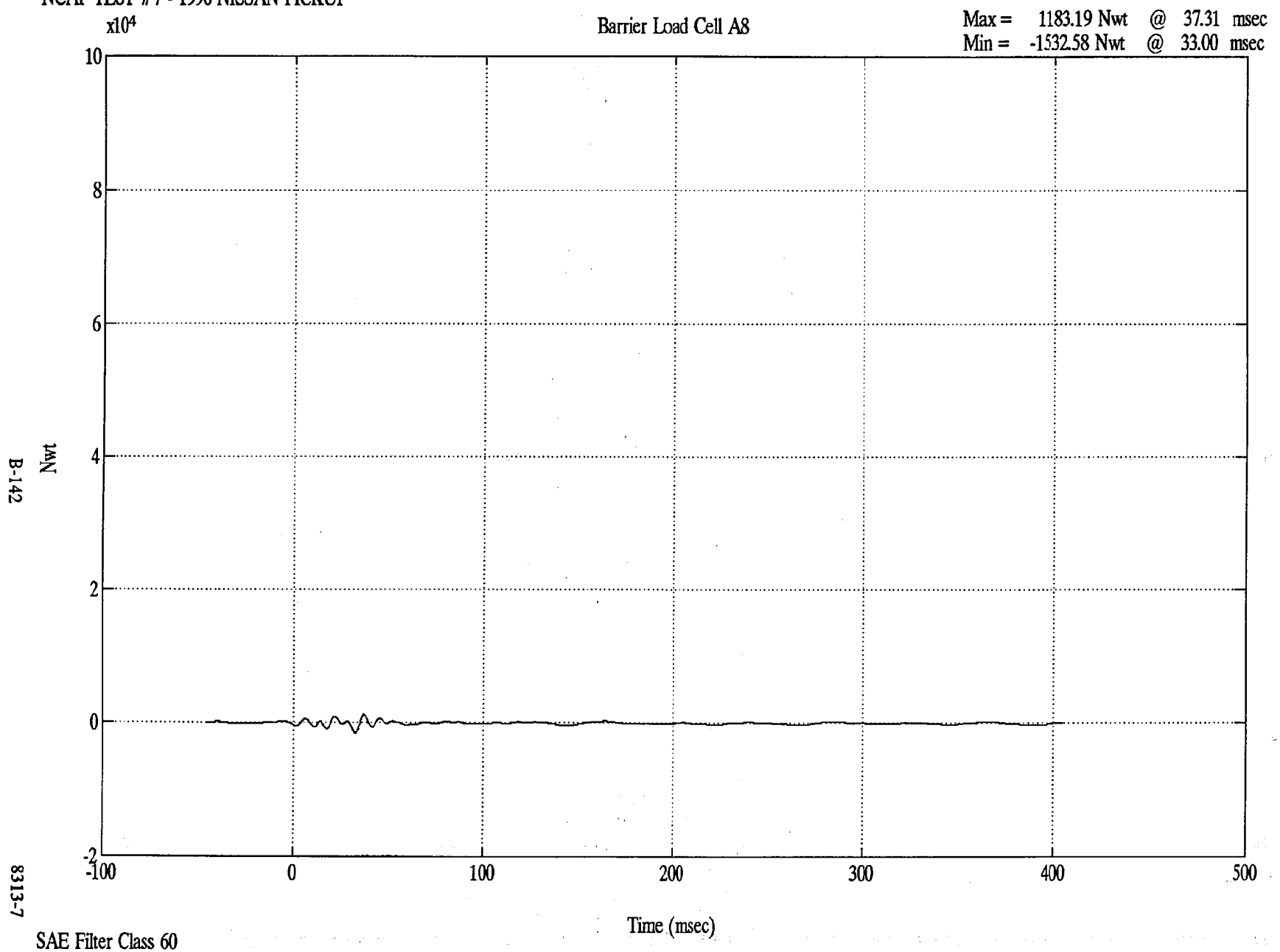


B-141

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

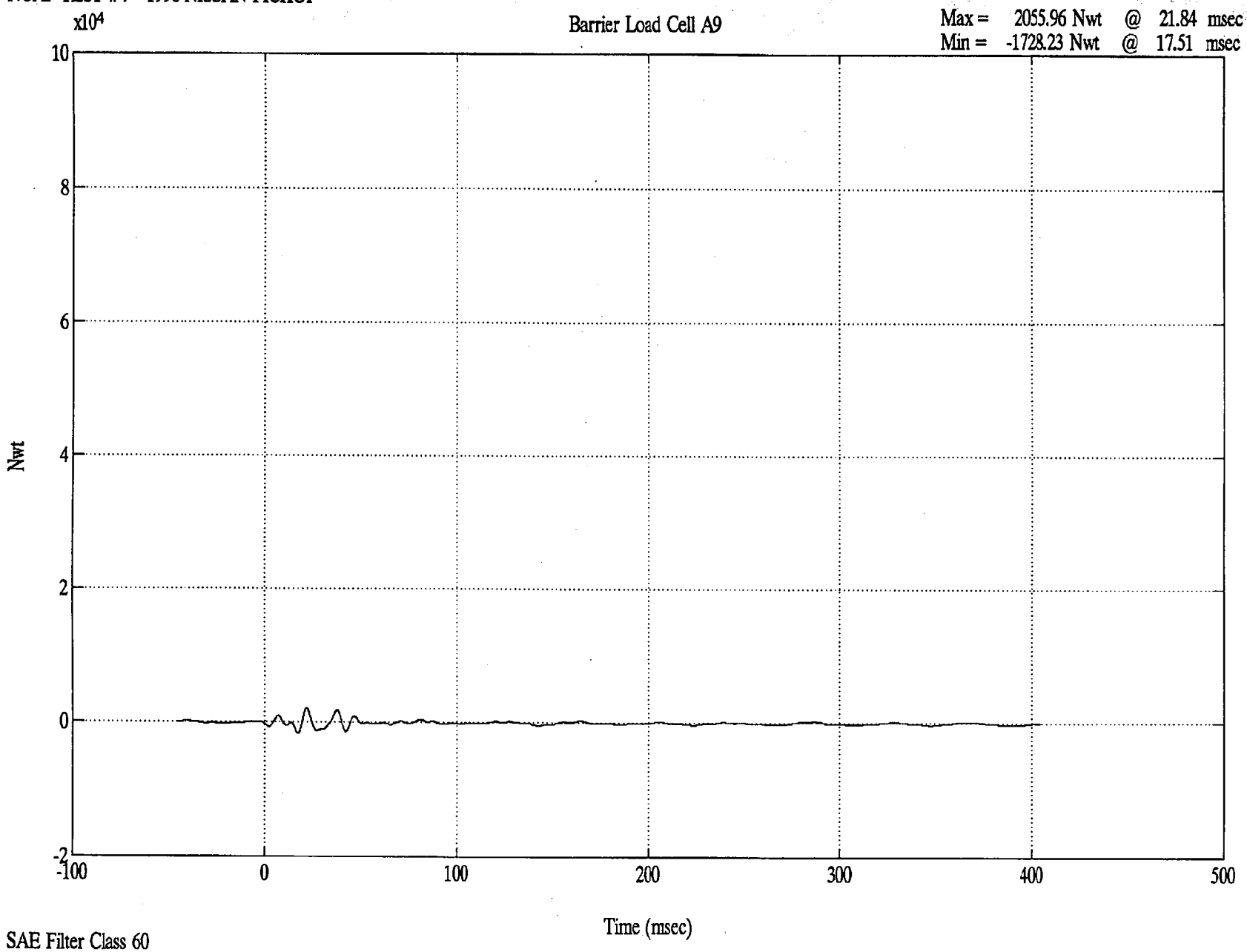


B-142

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

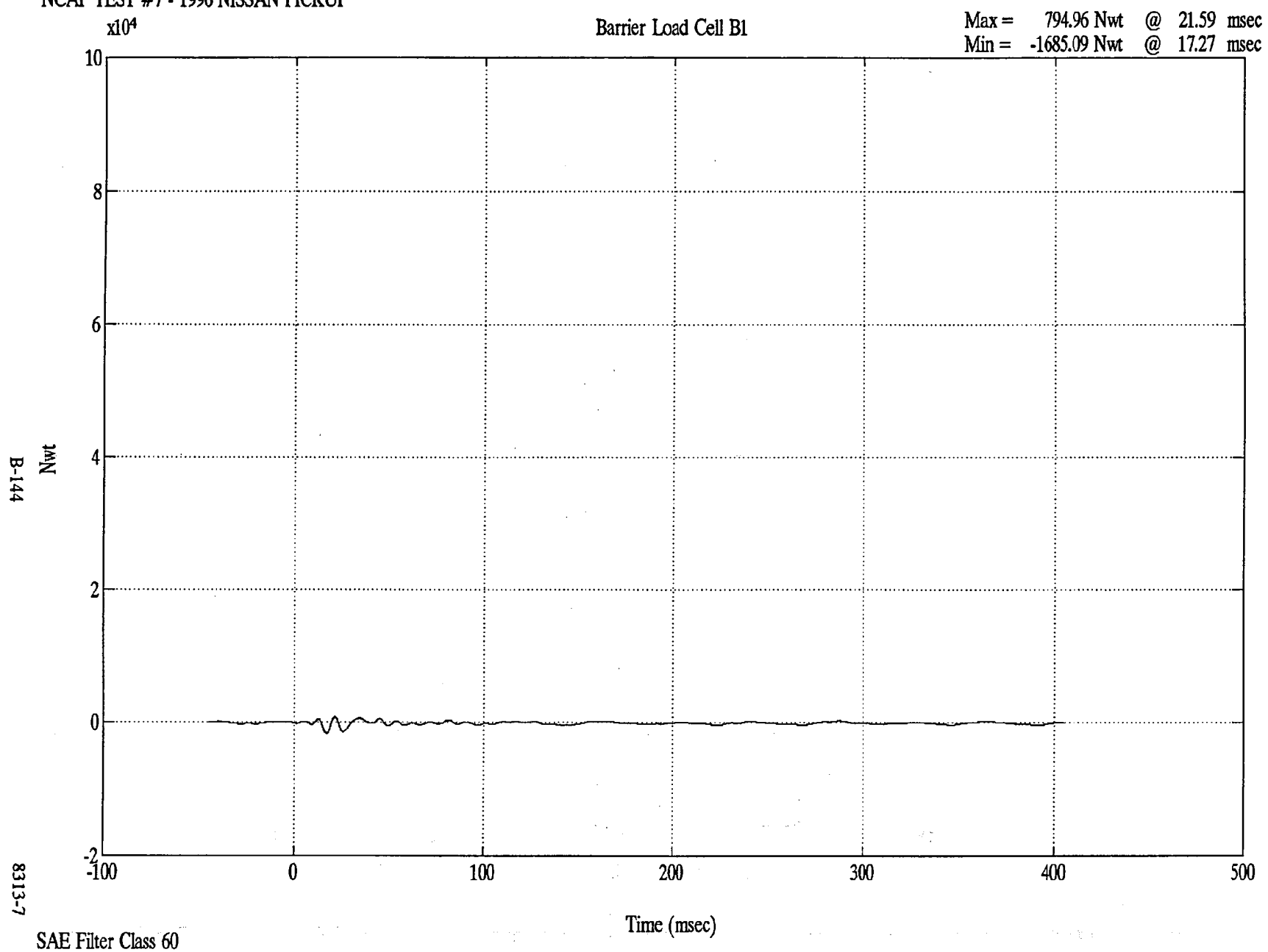


B-143

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

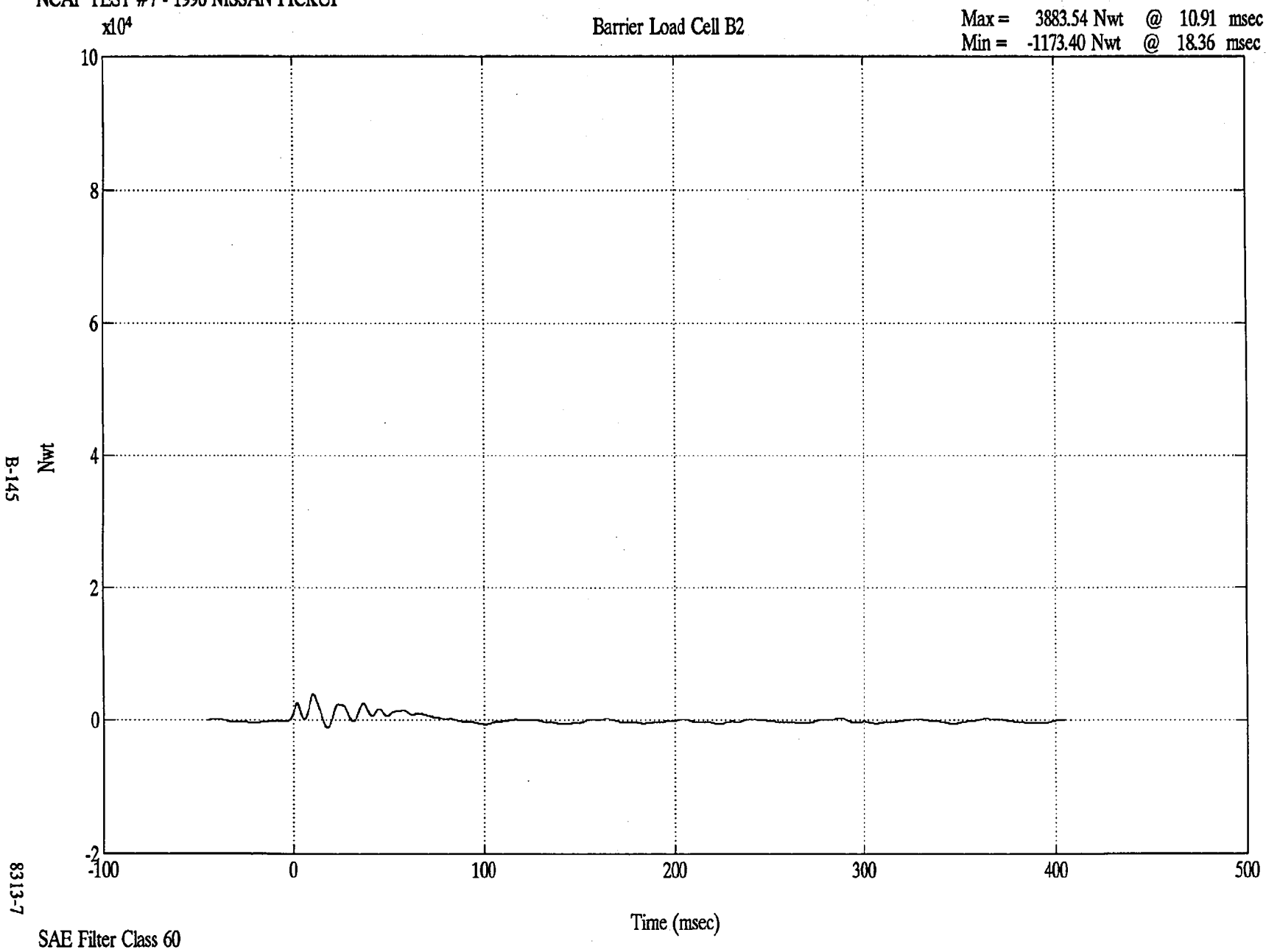


SAE Filter Class 60

B-144

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

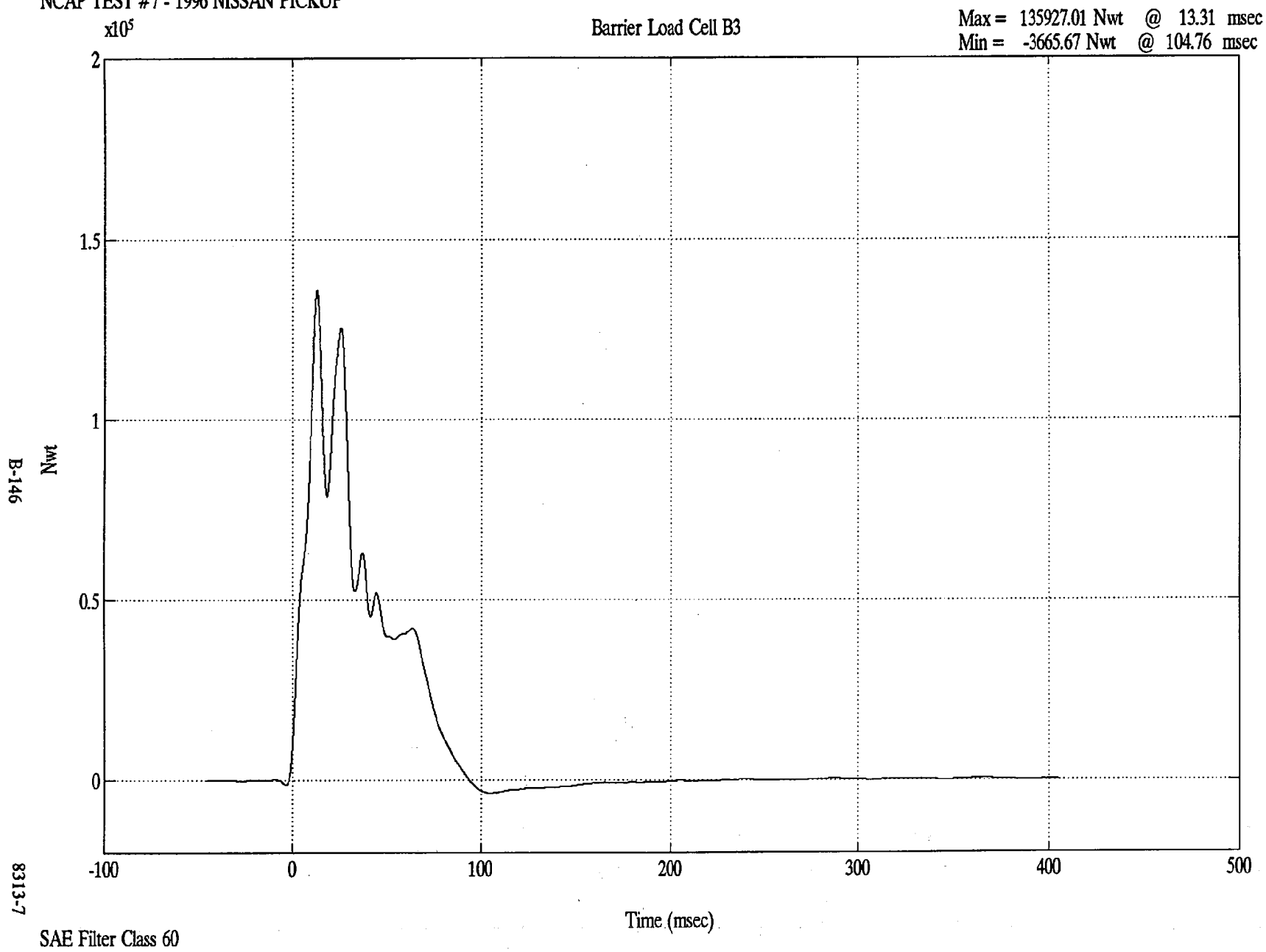


B-145

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

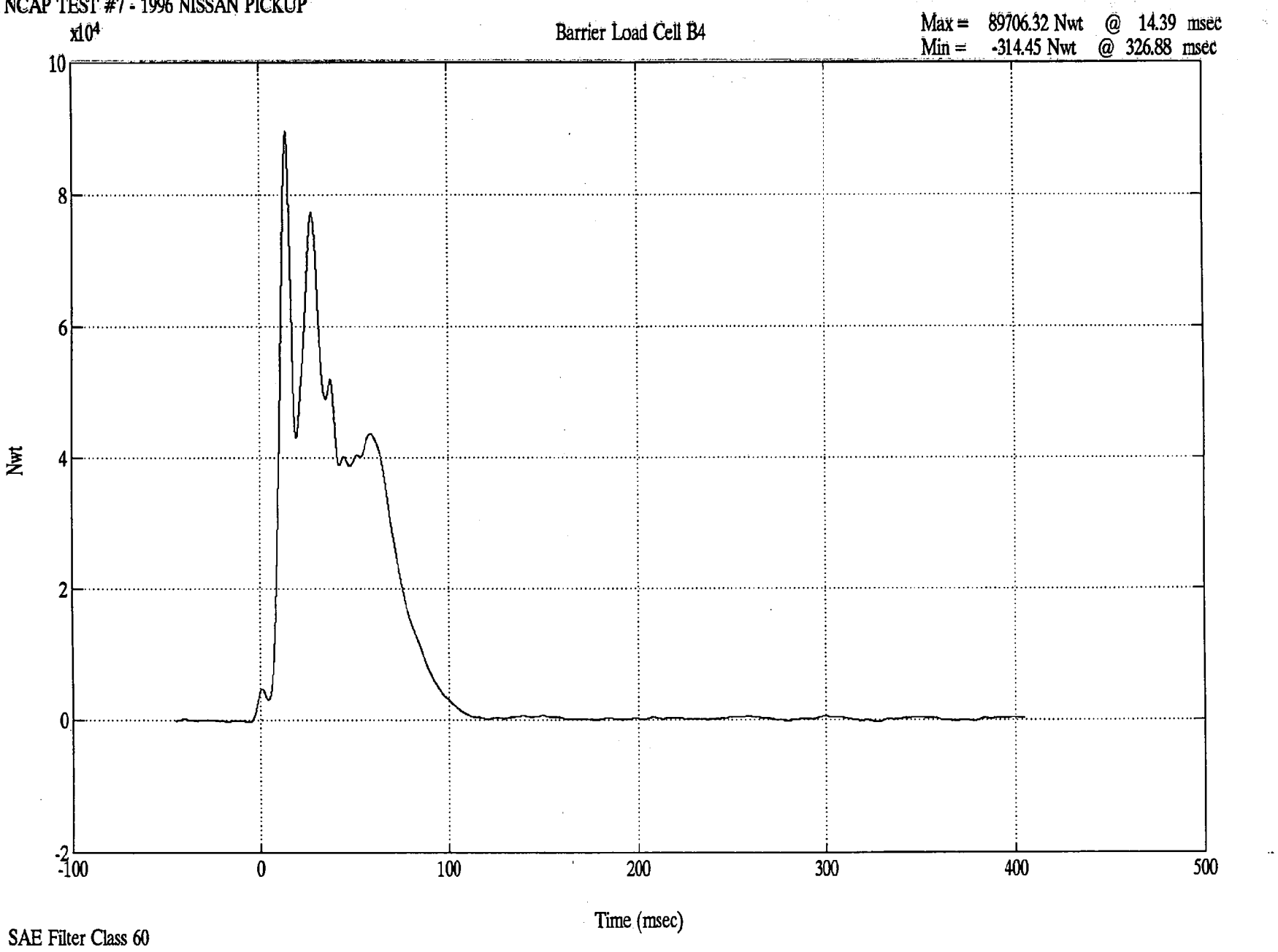


B-146

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

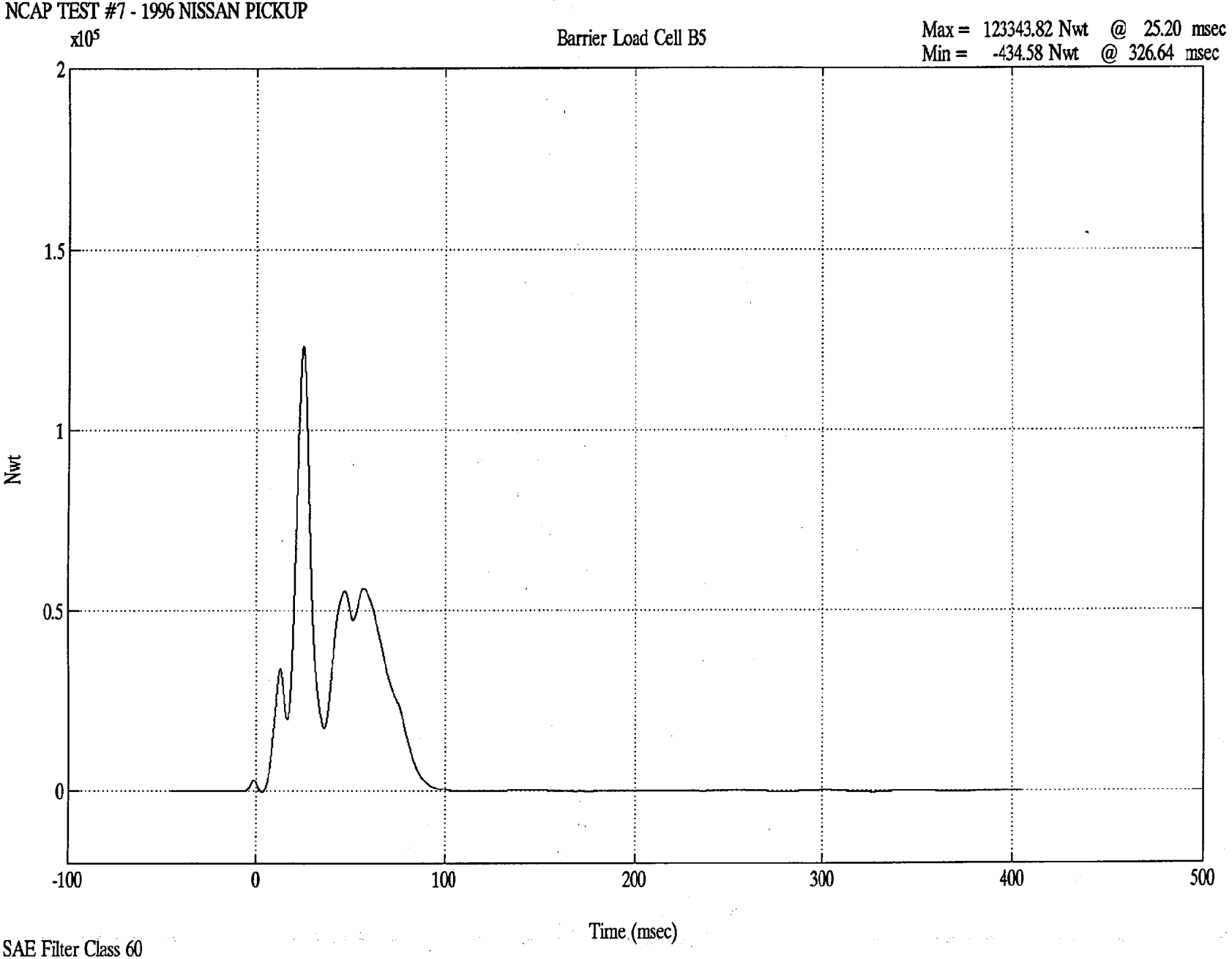


B-147

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

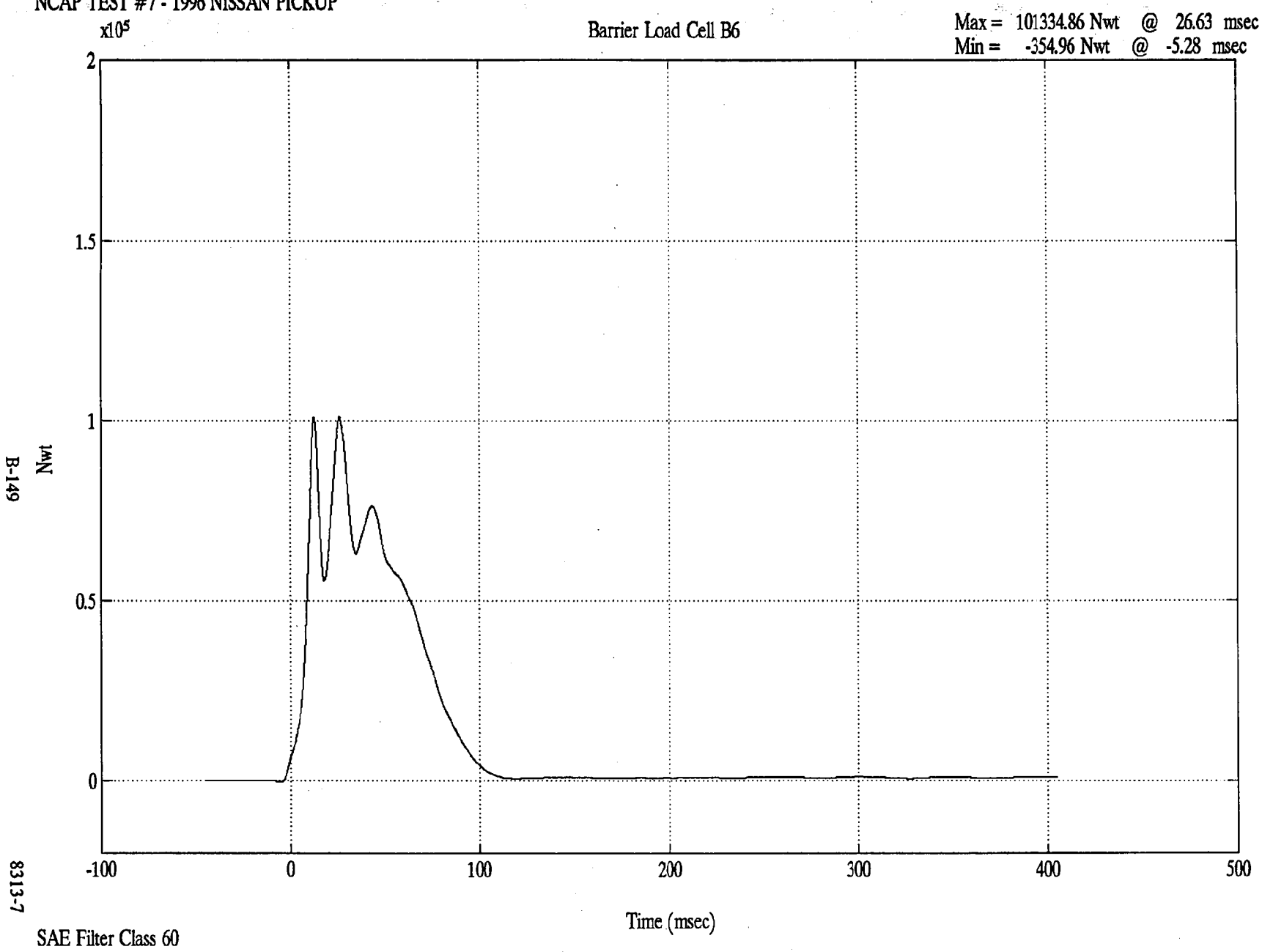


B-148

8313-7

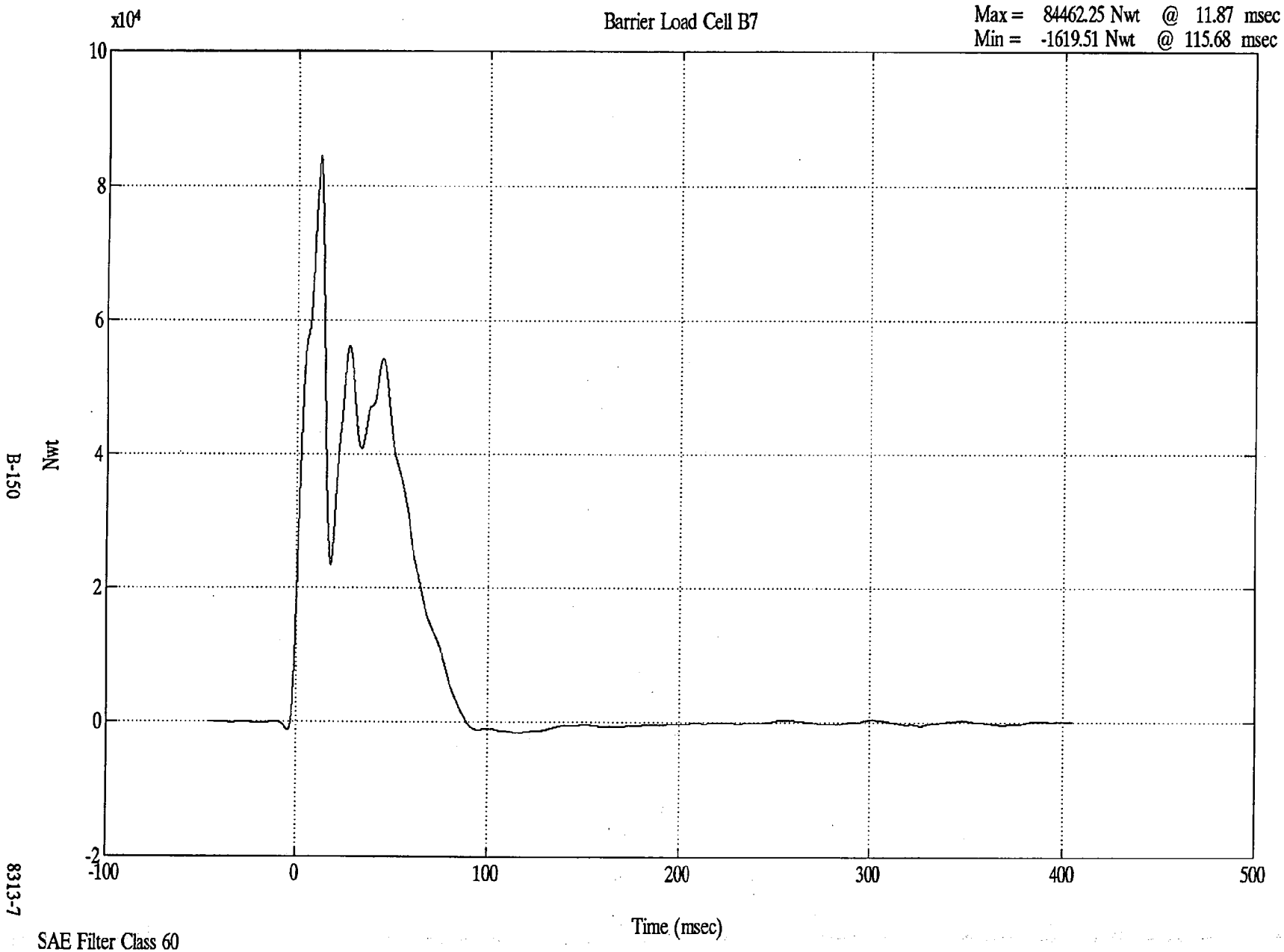
SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP



SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

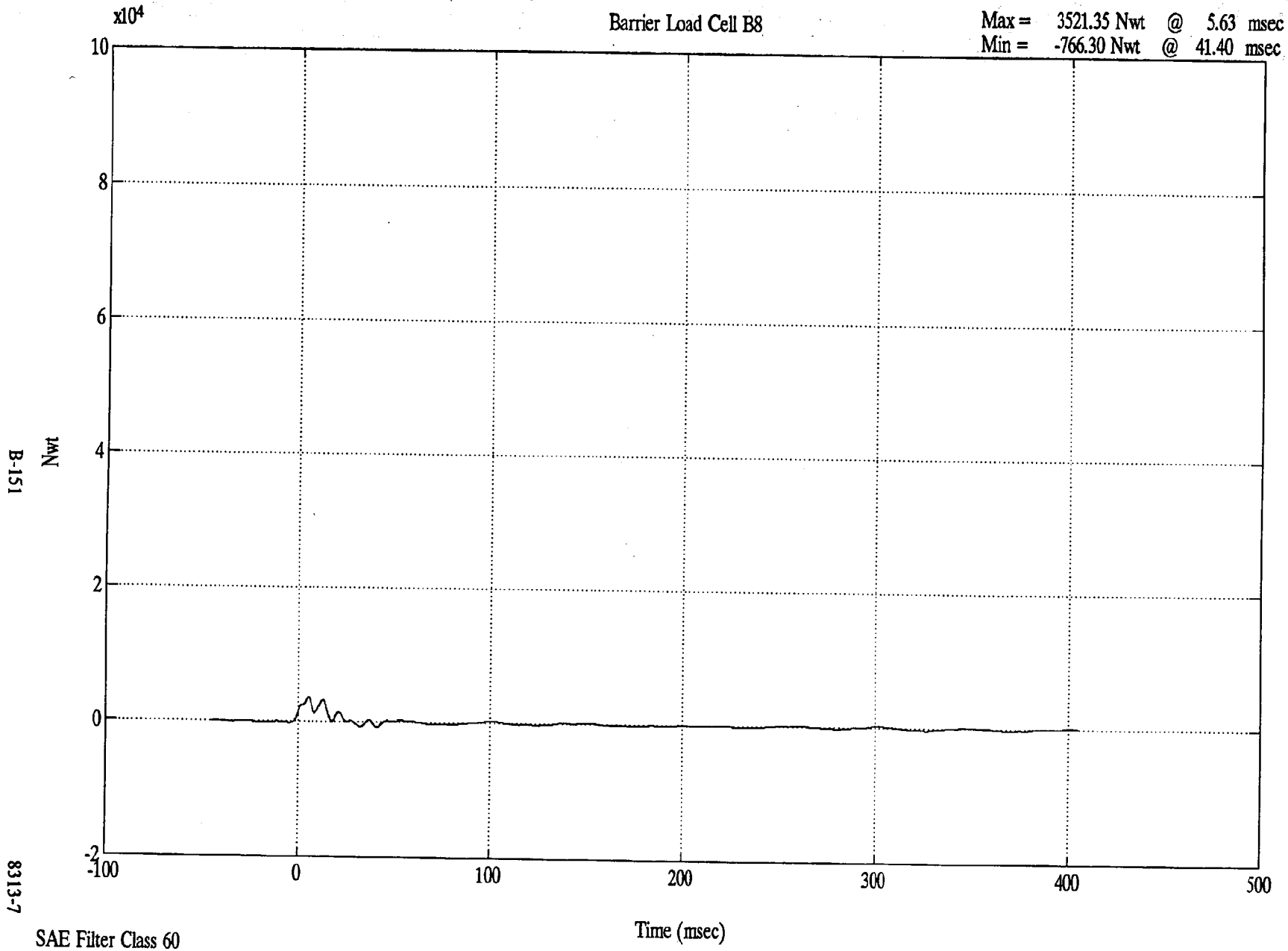


B-150

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

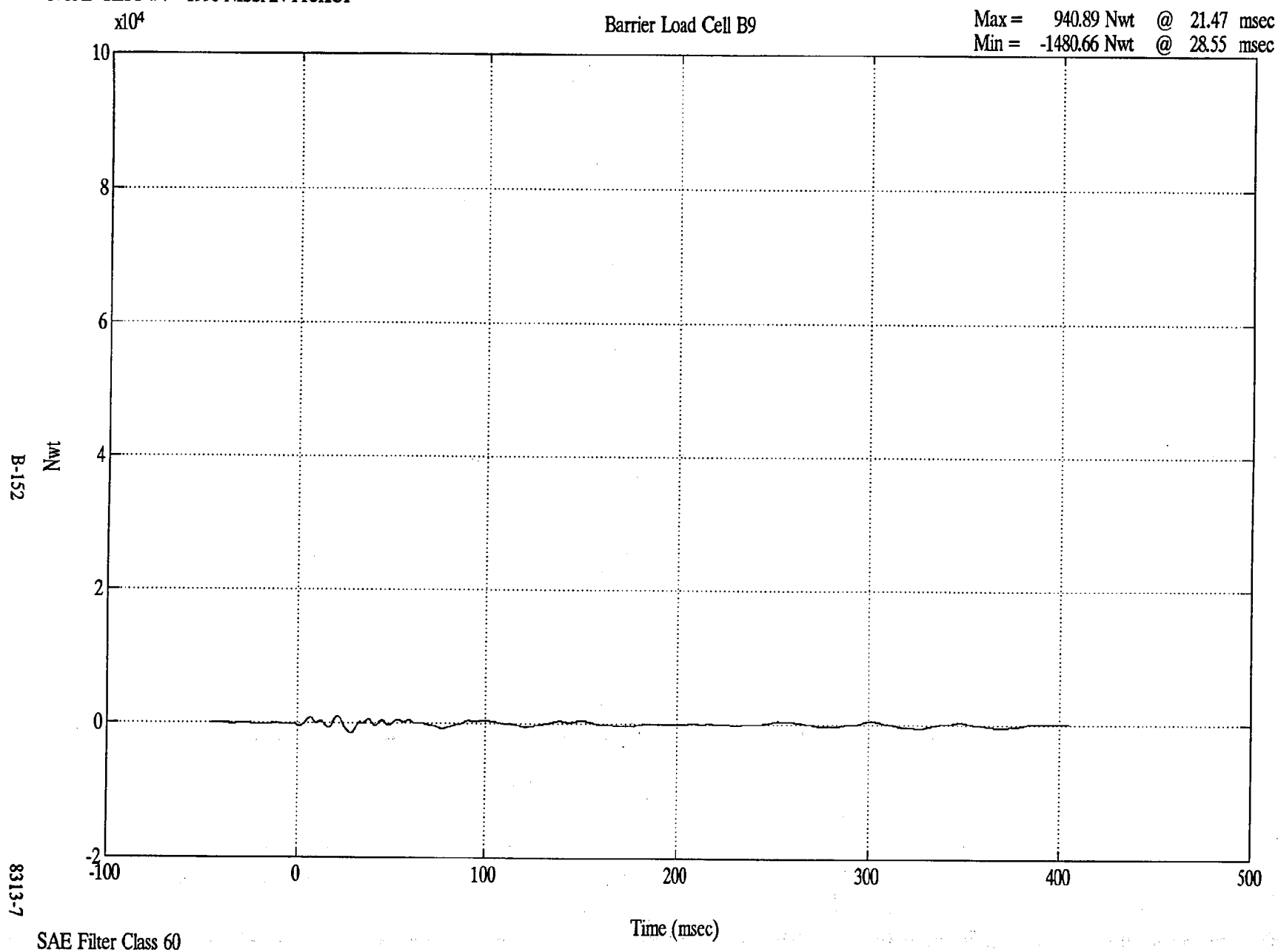


B-151

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

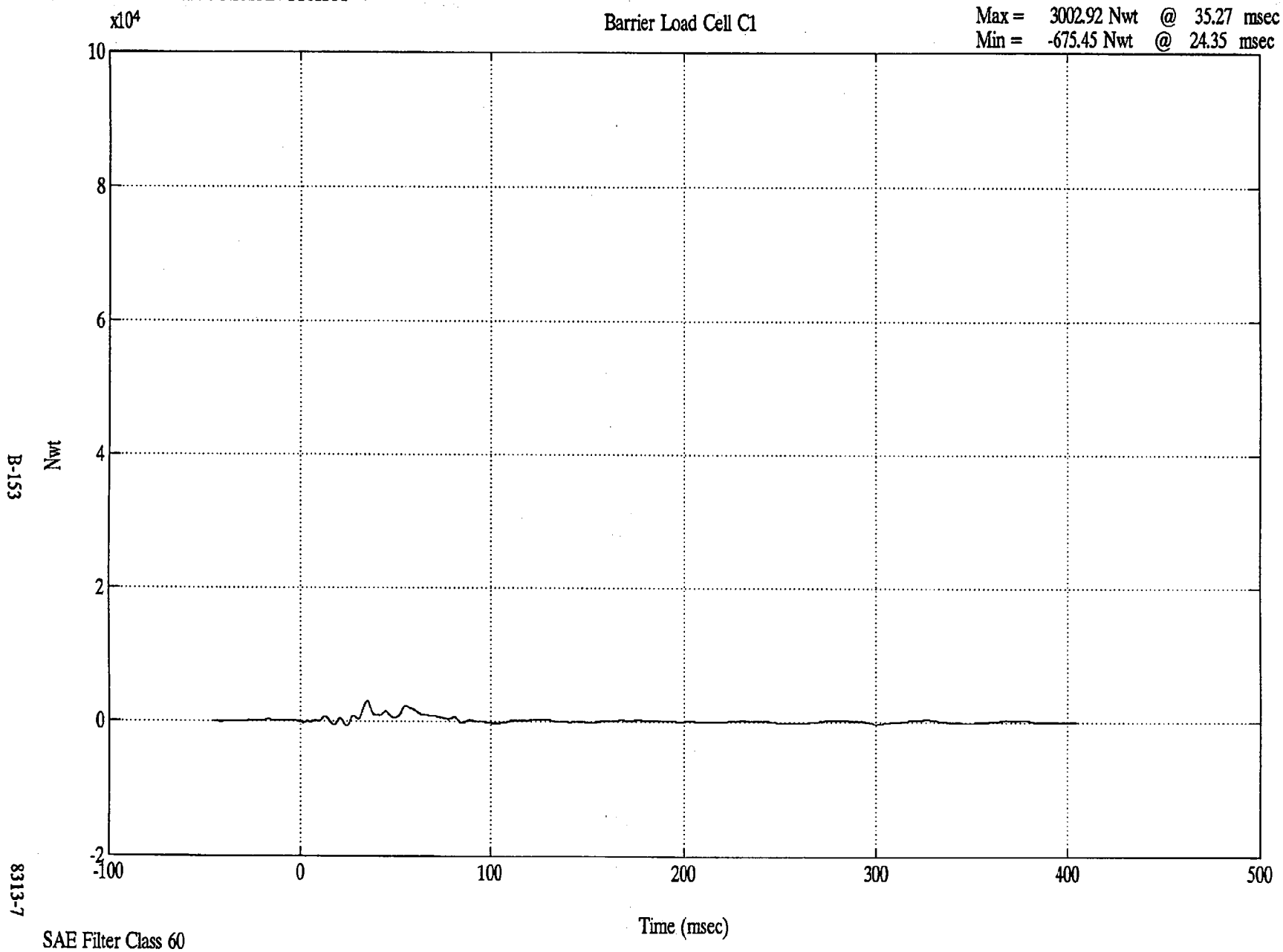


B-152

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

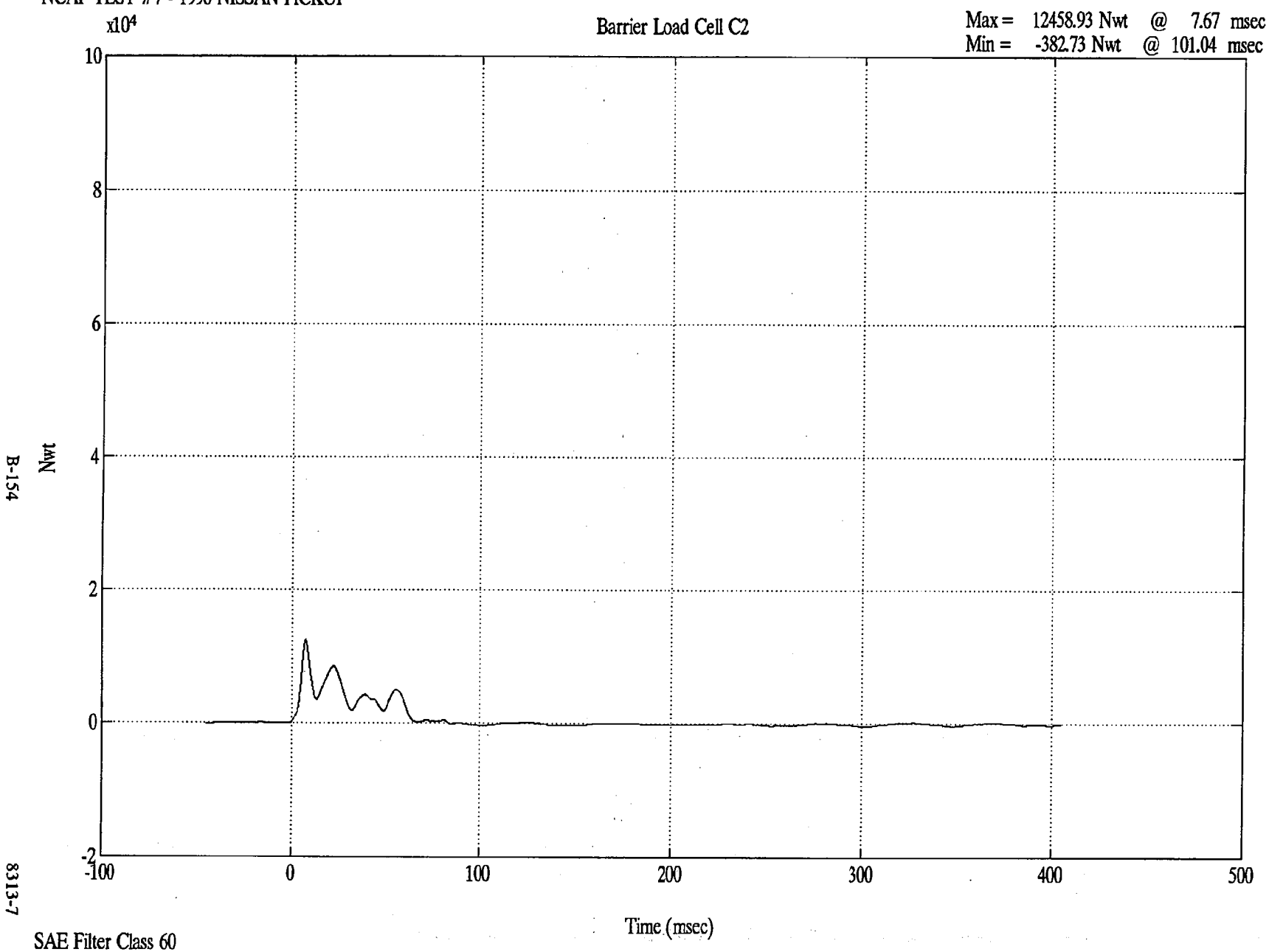


B-153

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

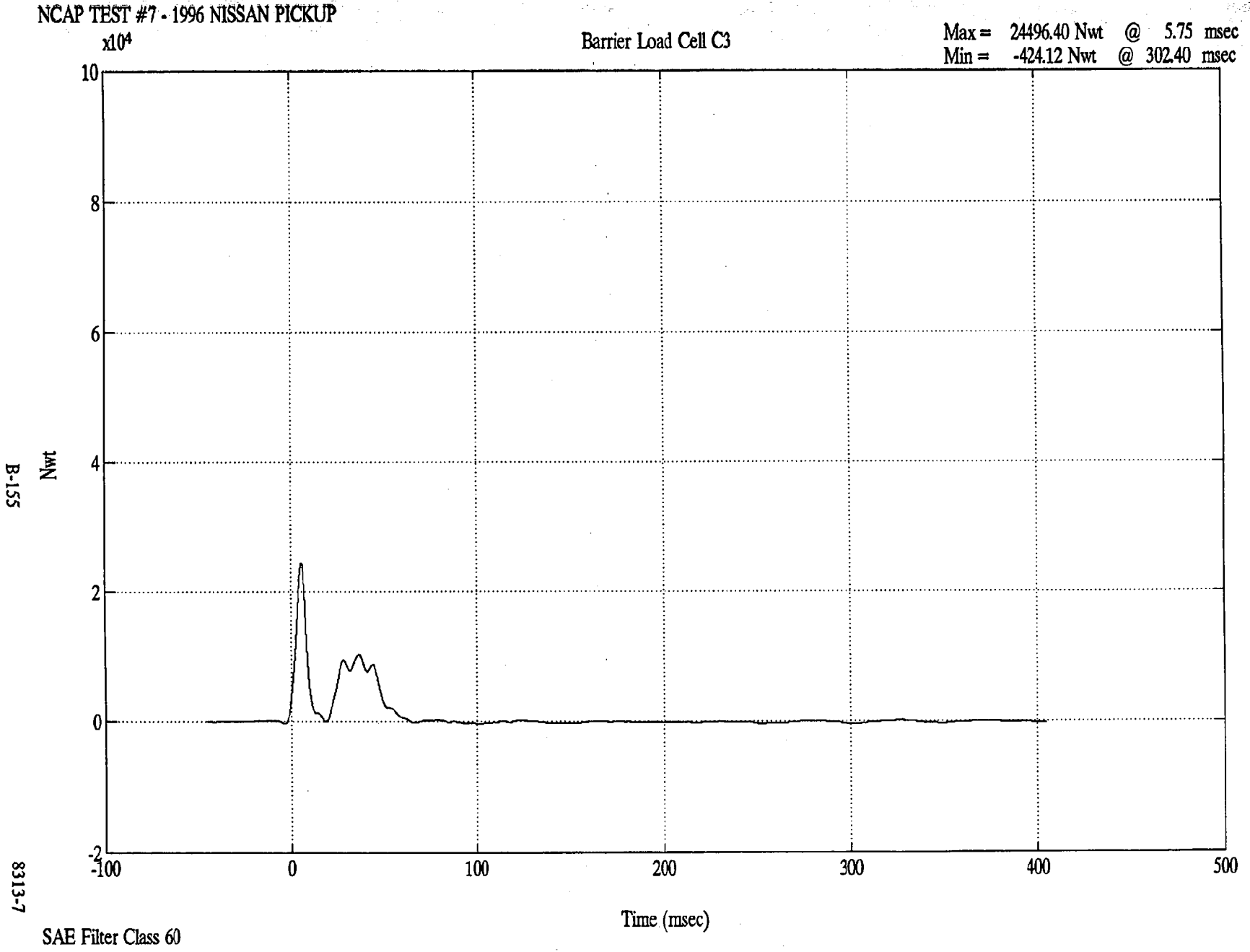


B-154

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

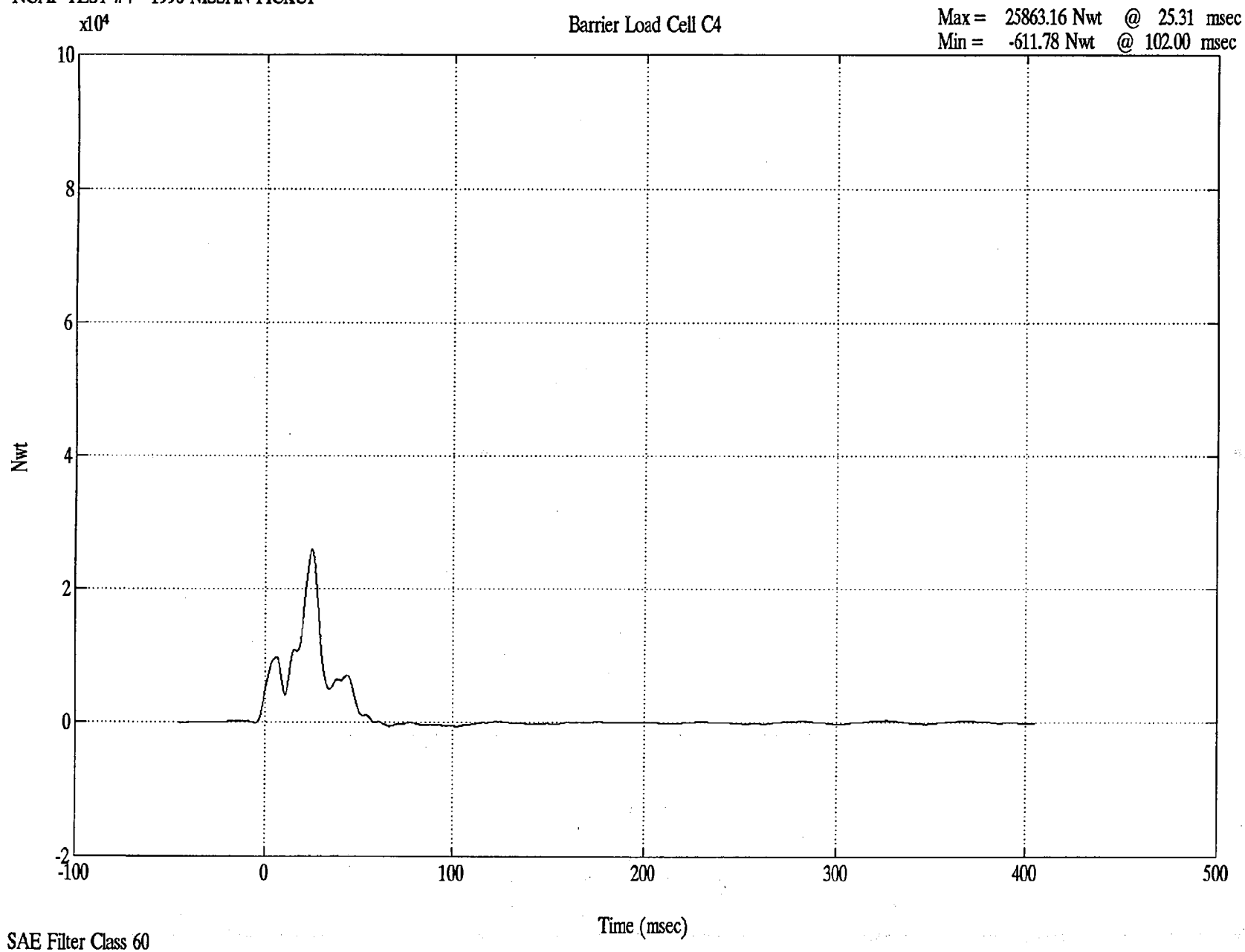


B-155

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

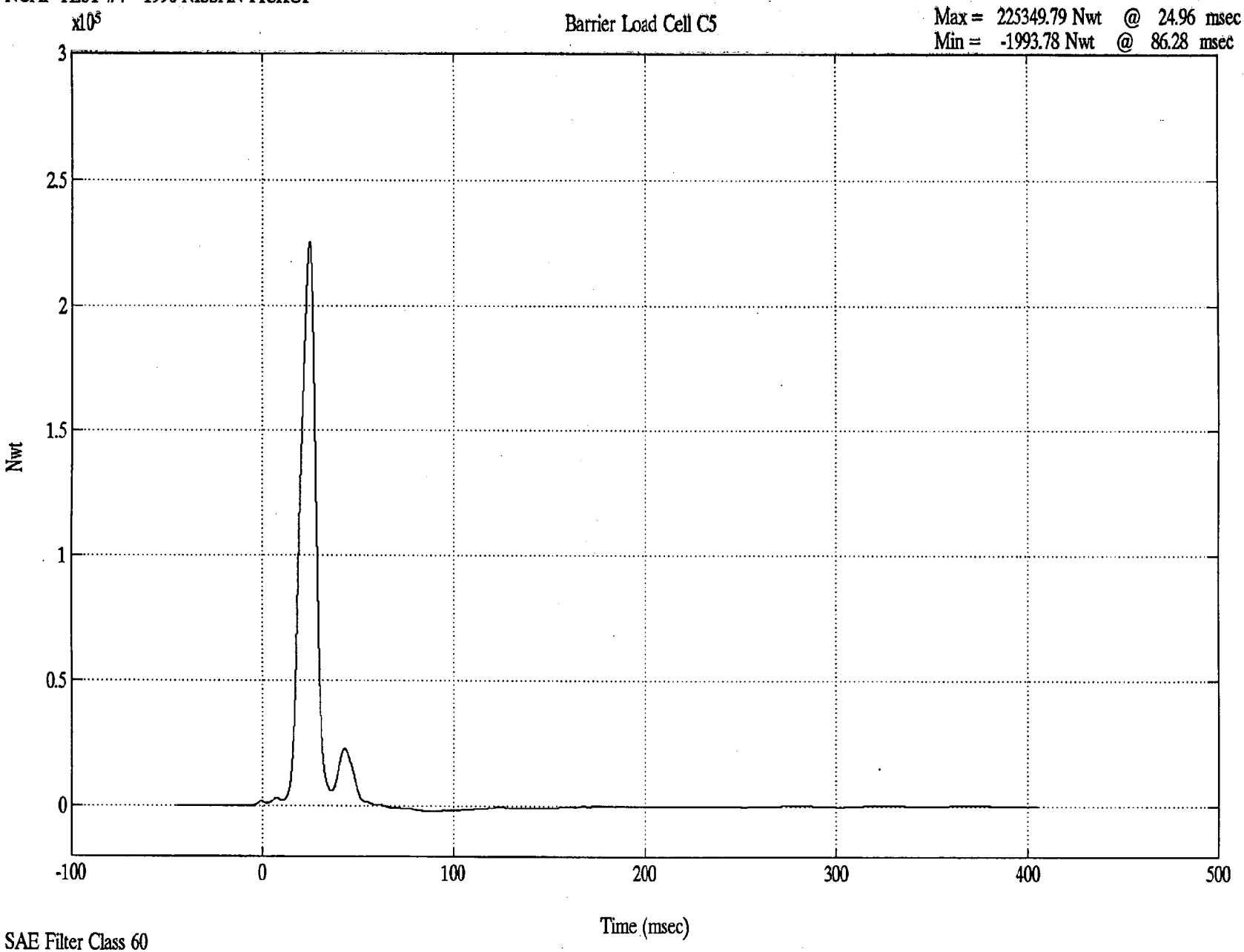


B-156

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

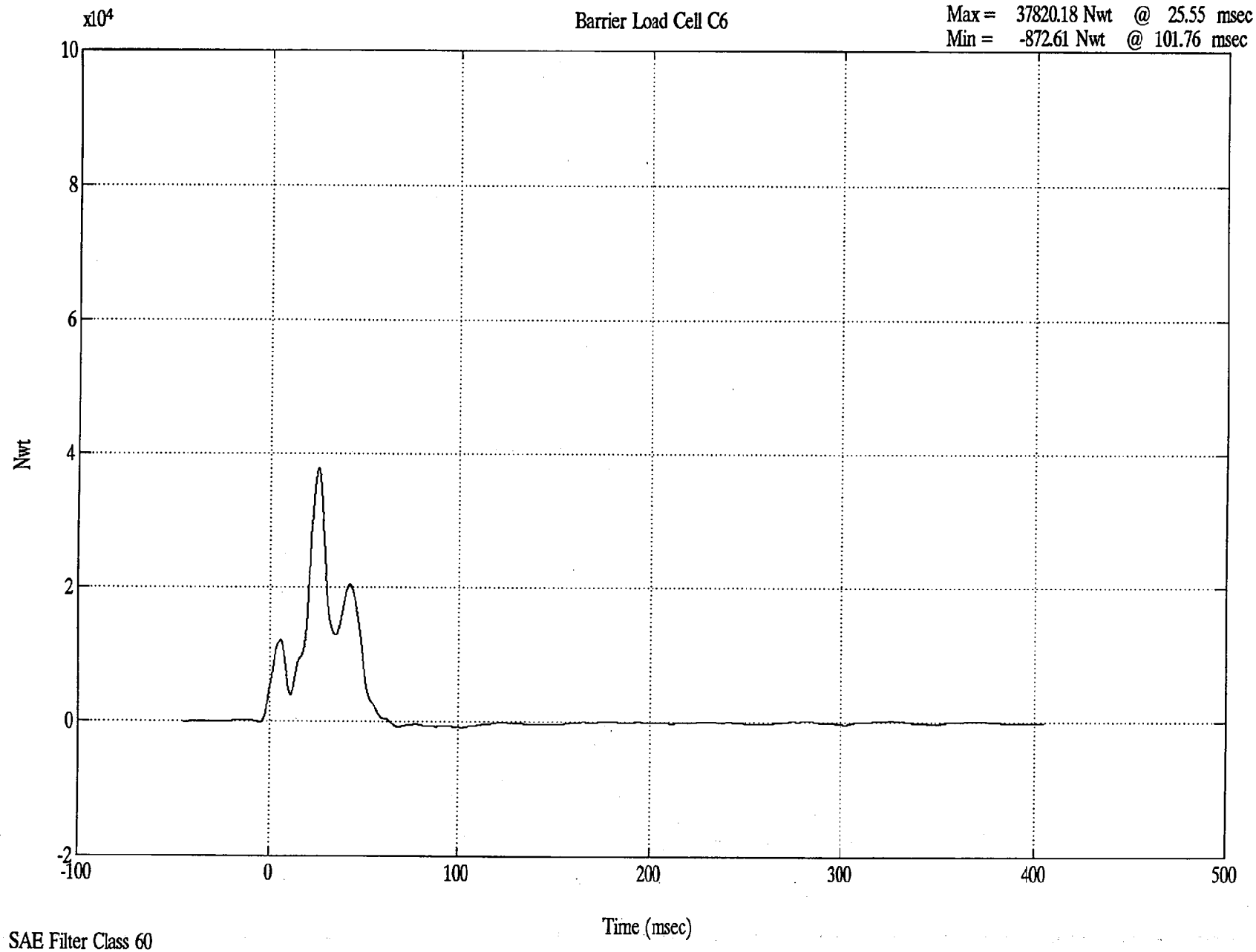


B-157

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

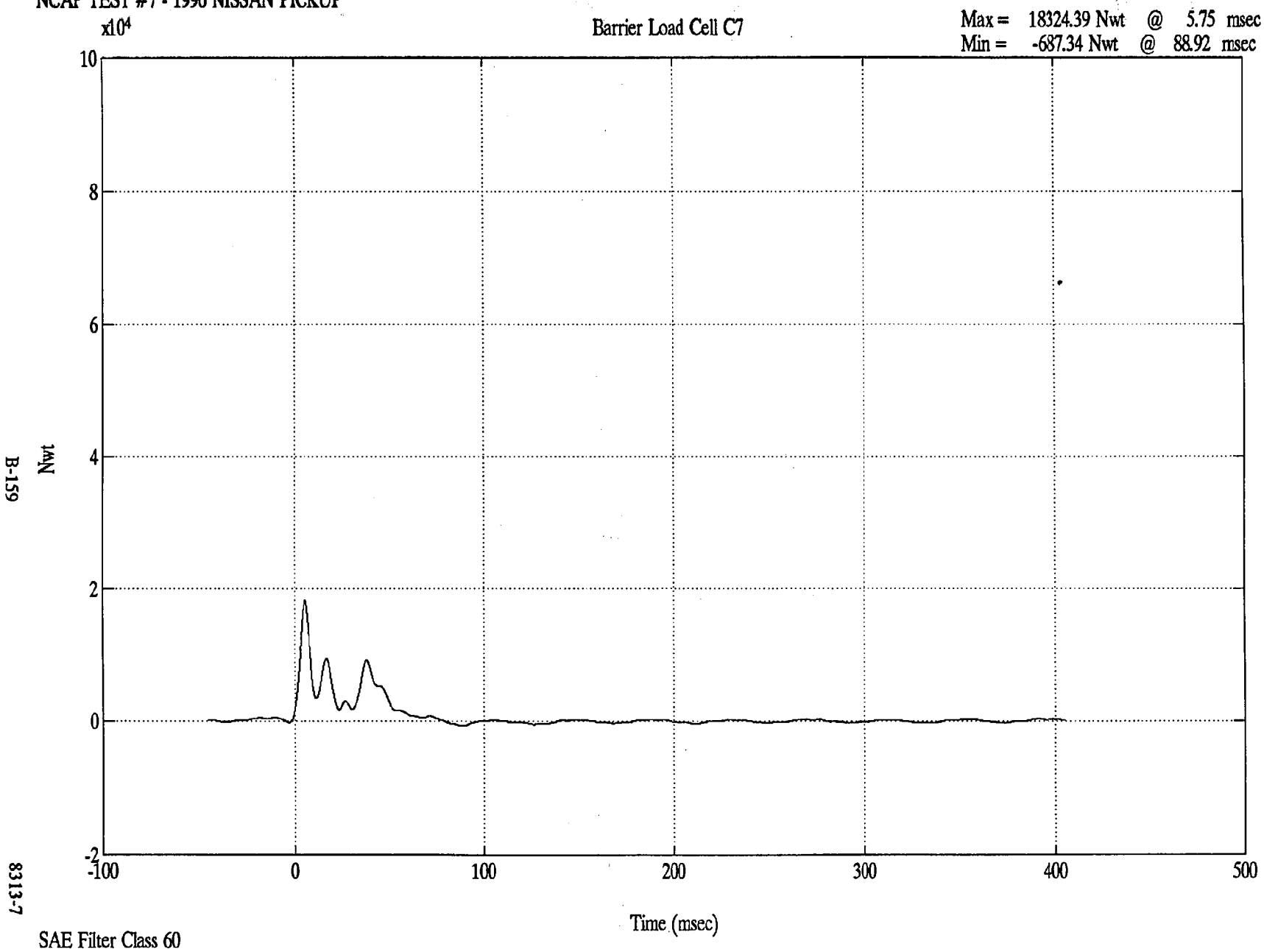


B-158

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

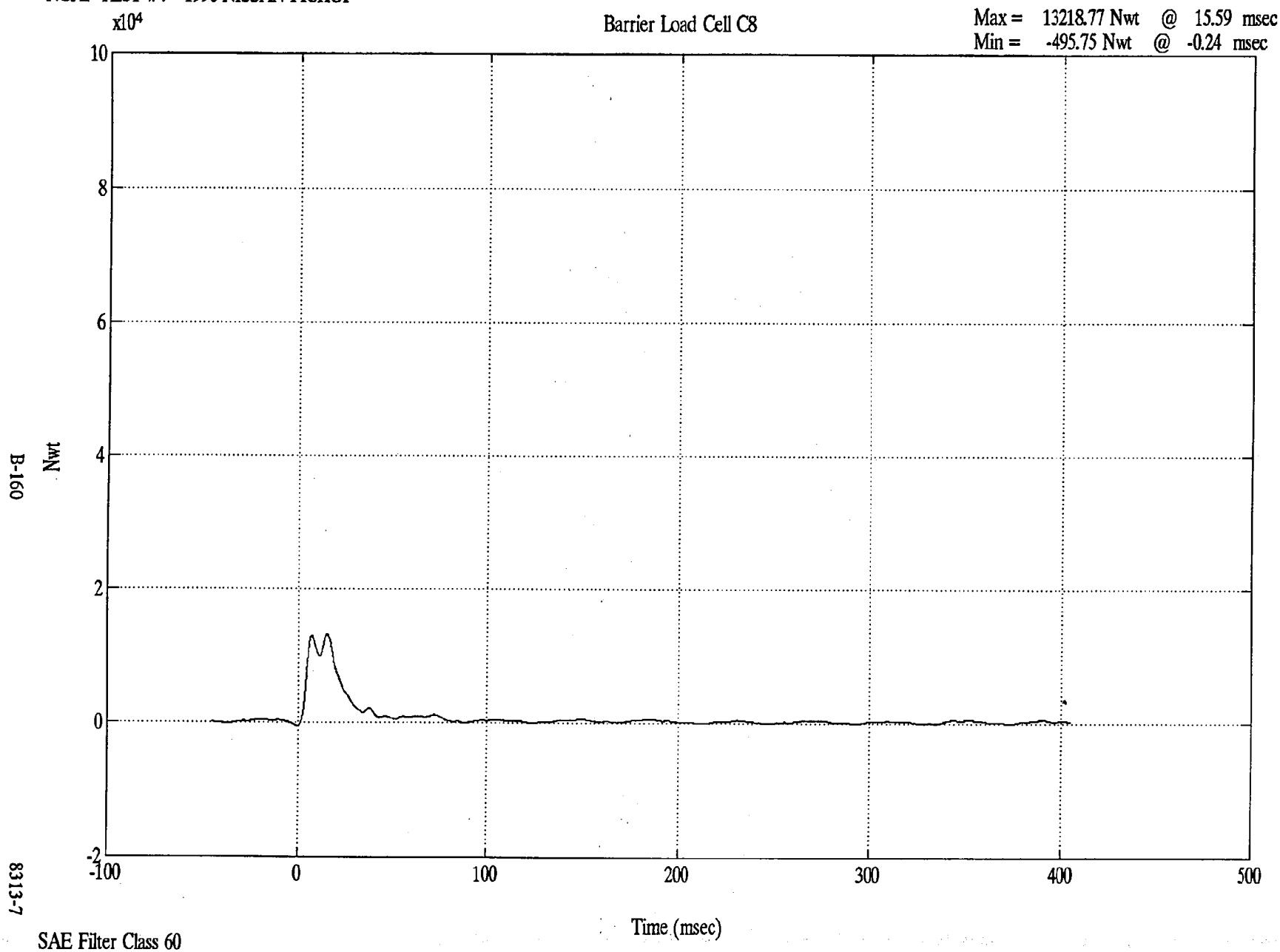


B-159

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

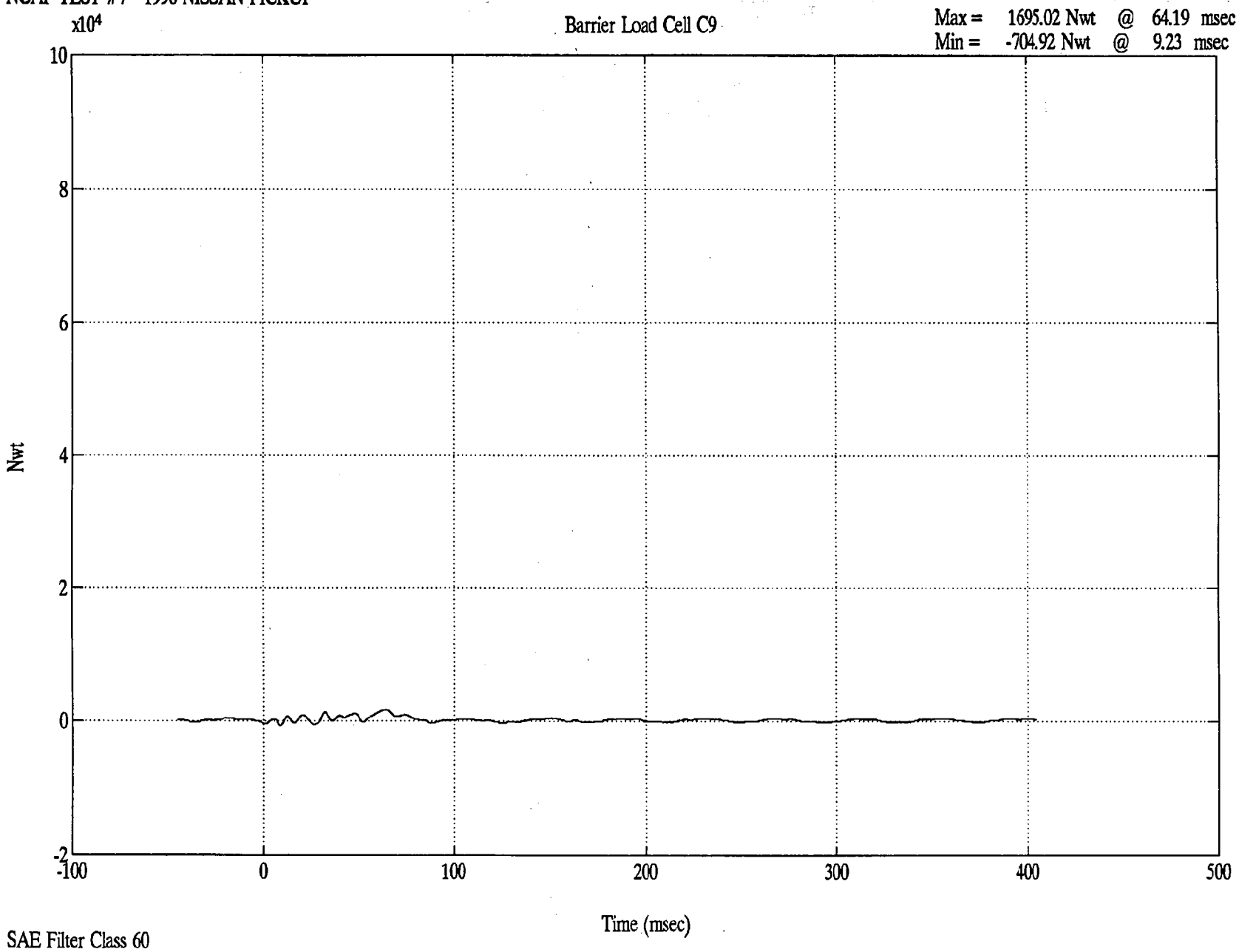


B-160

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

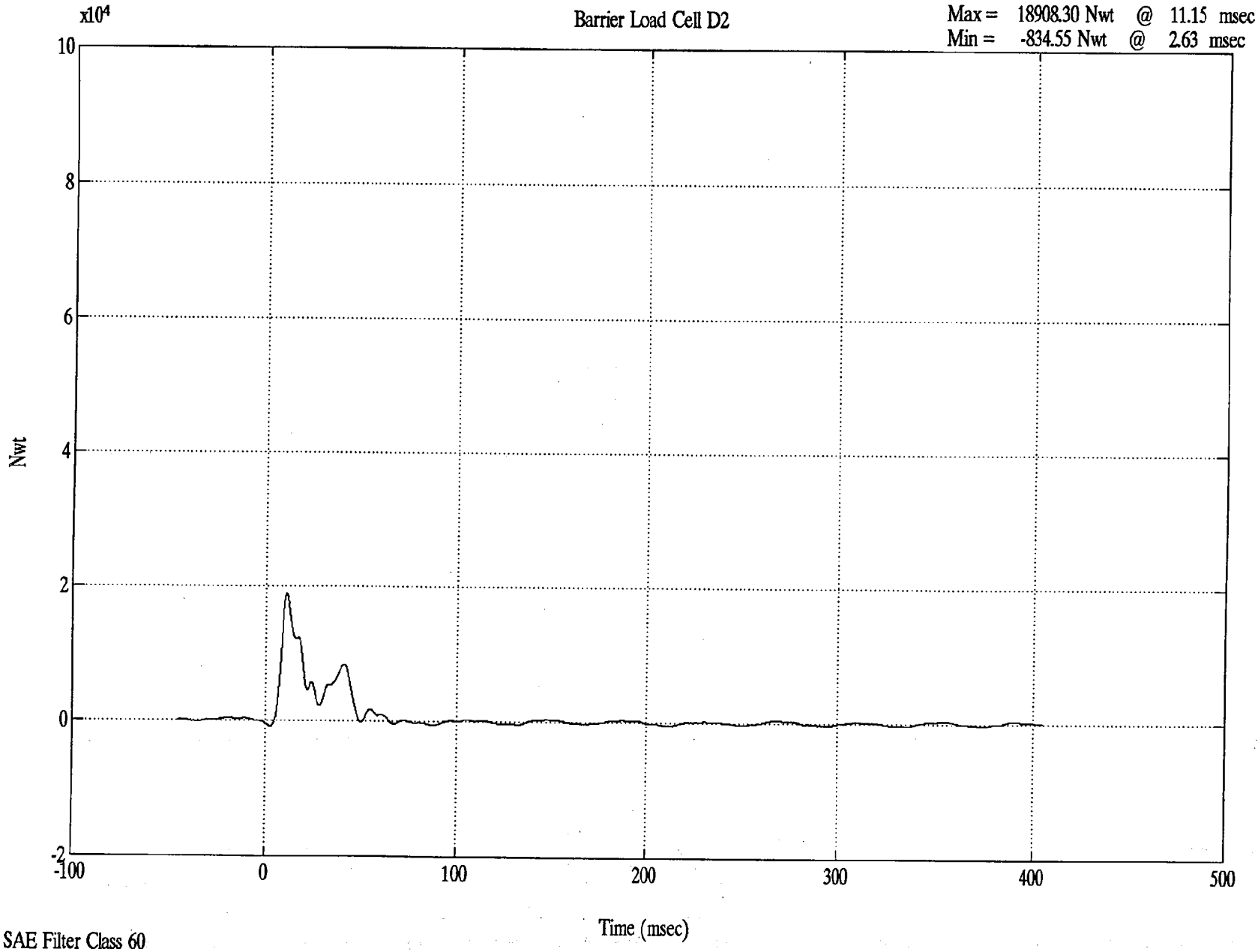


B-161

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

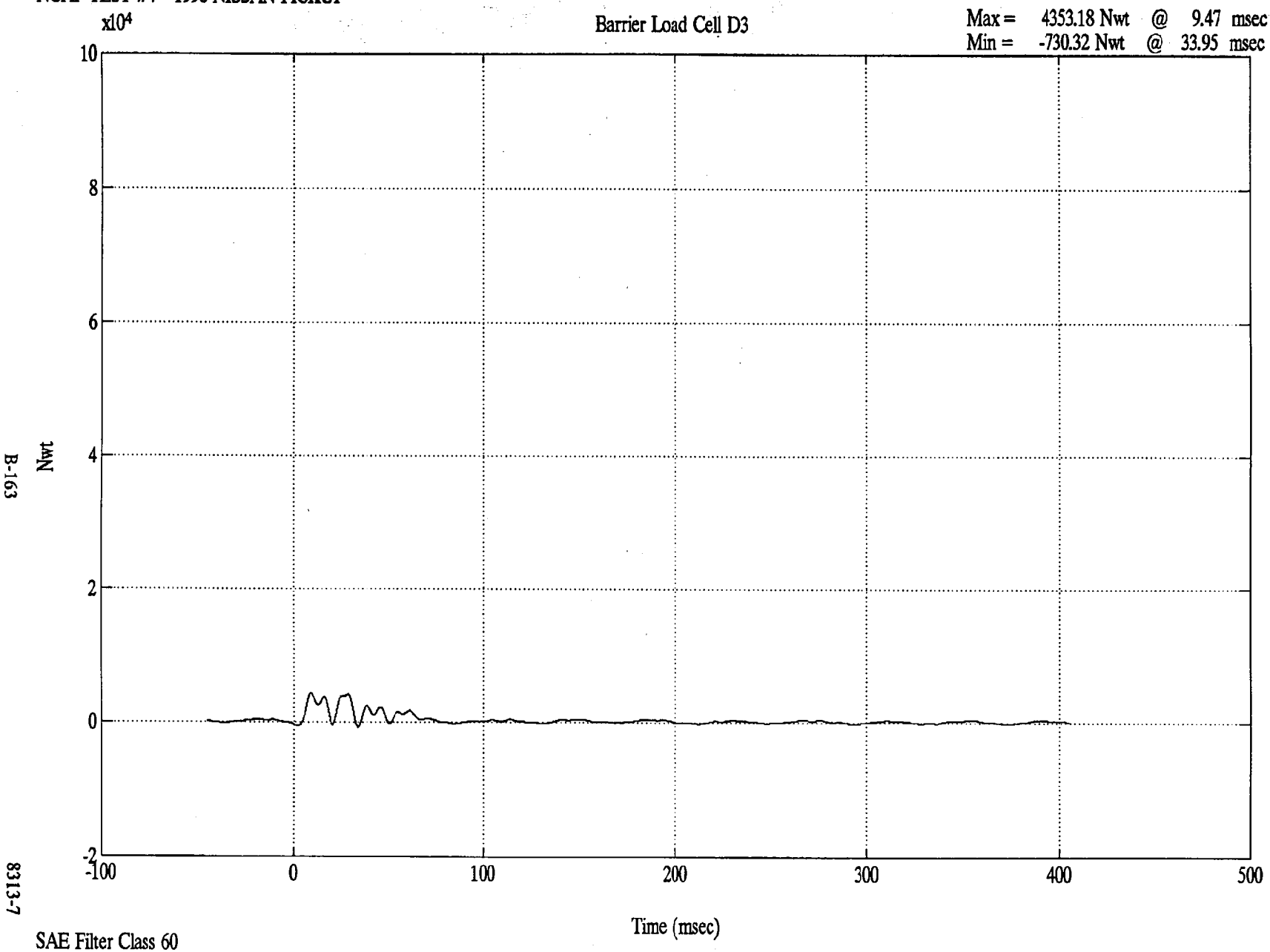


SAE Filter Class 60

B-162

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

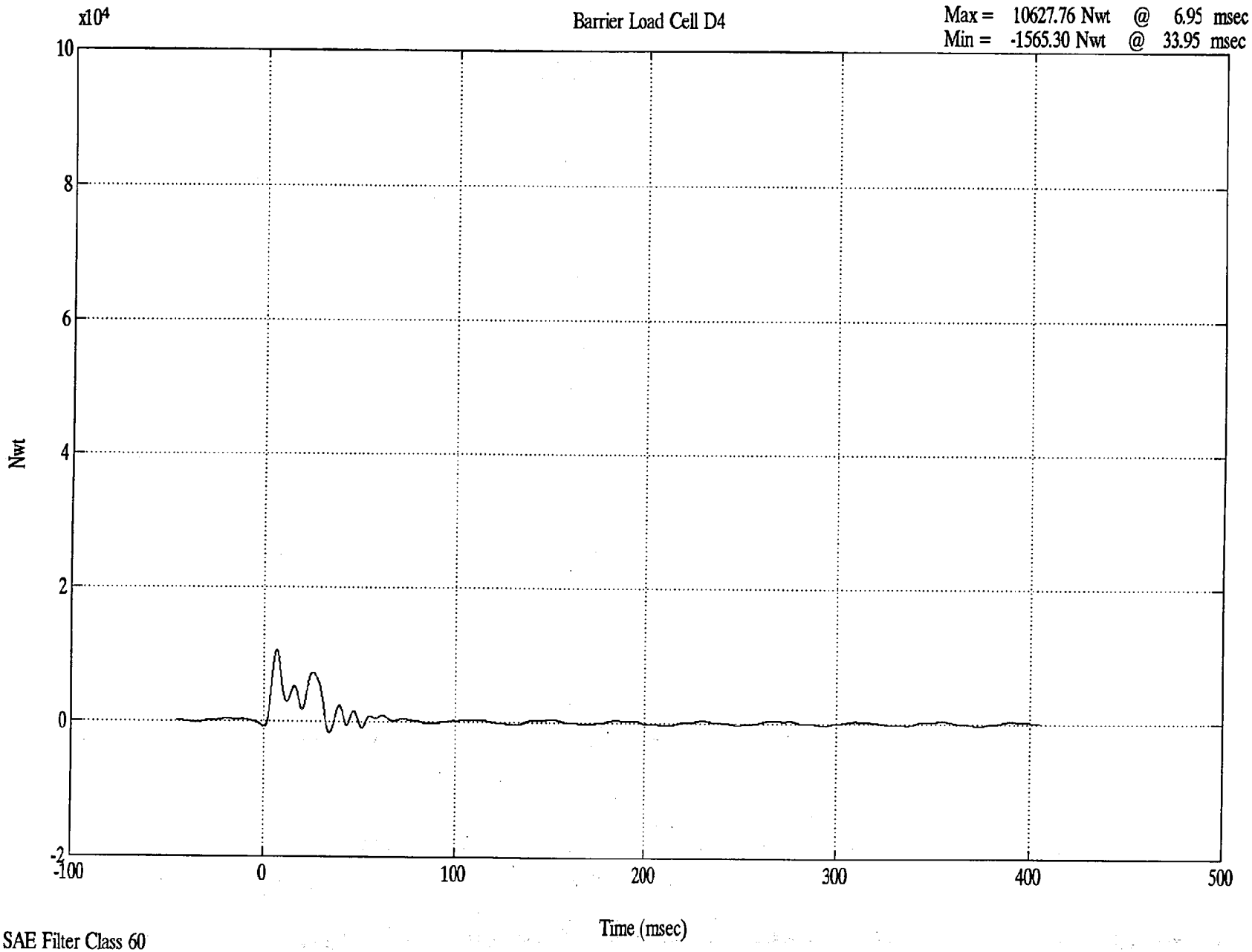


B-163

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

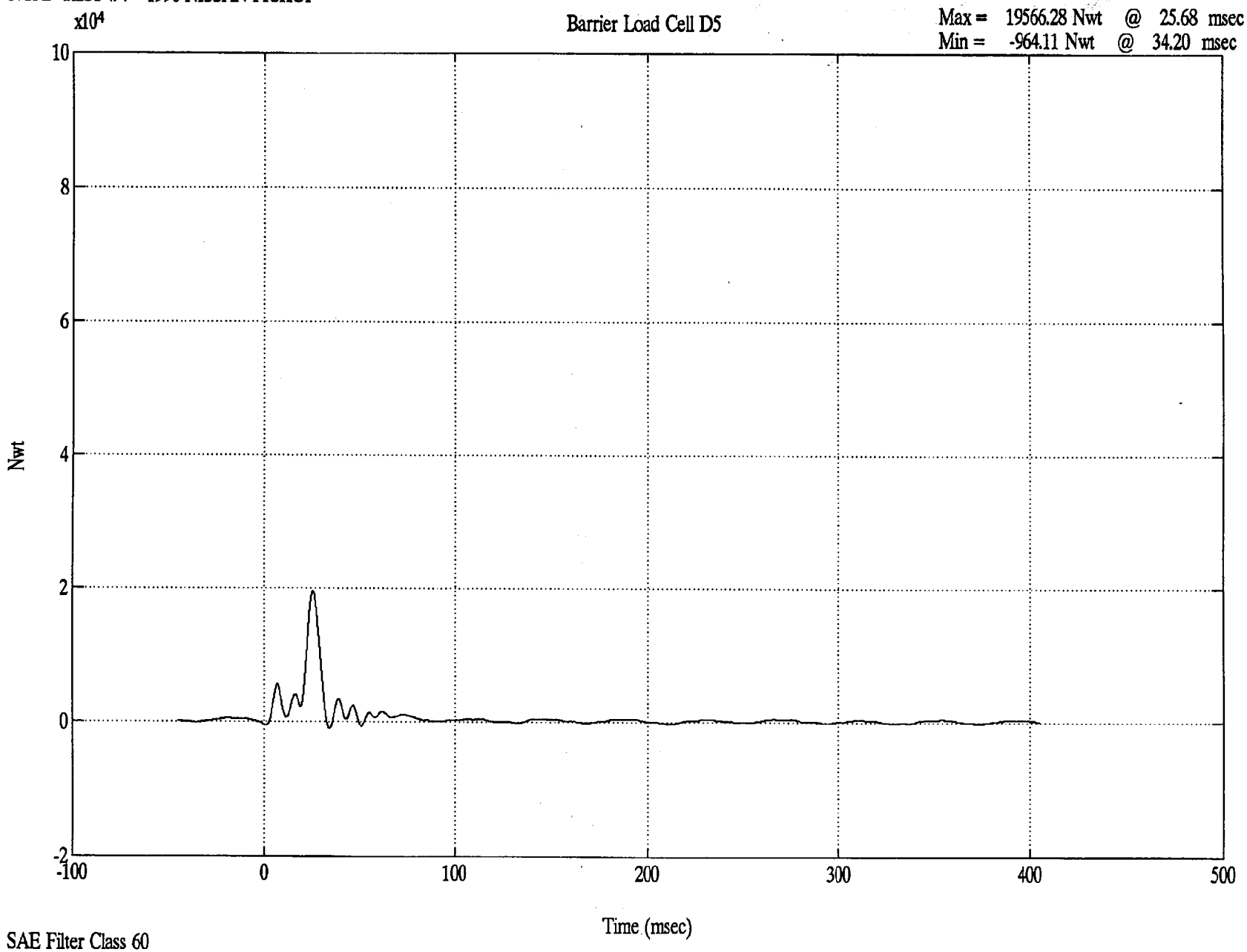


SAE Filter Class 60

B-164

8313-7

NCAP TEST #7 - 1996 NISSAN PICKUP

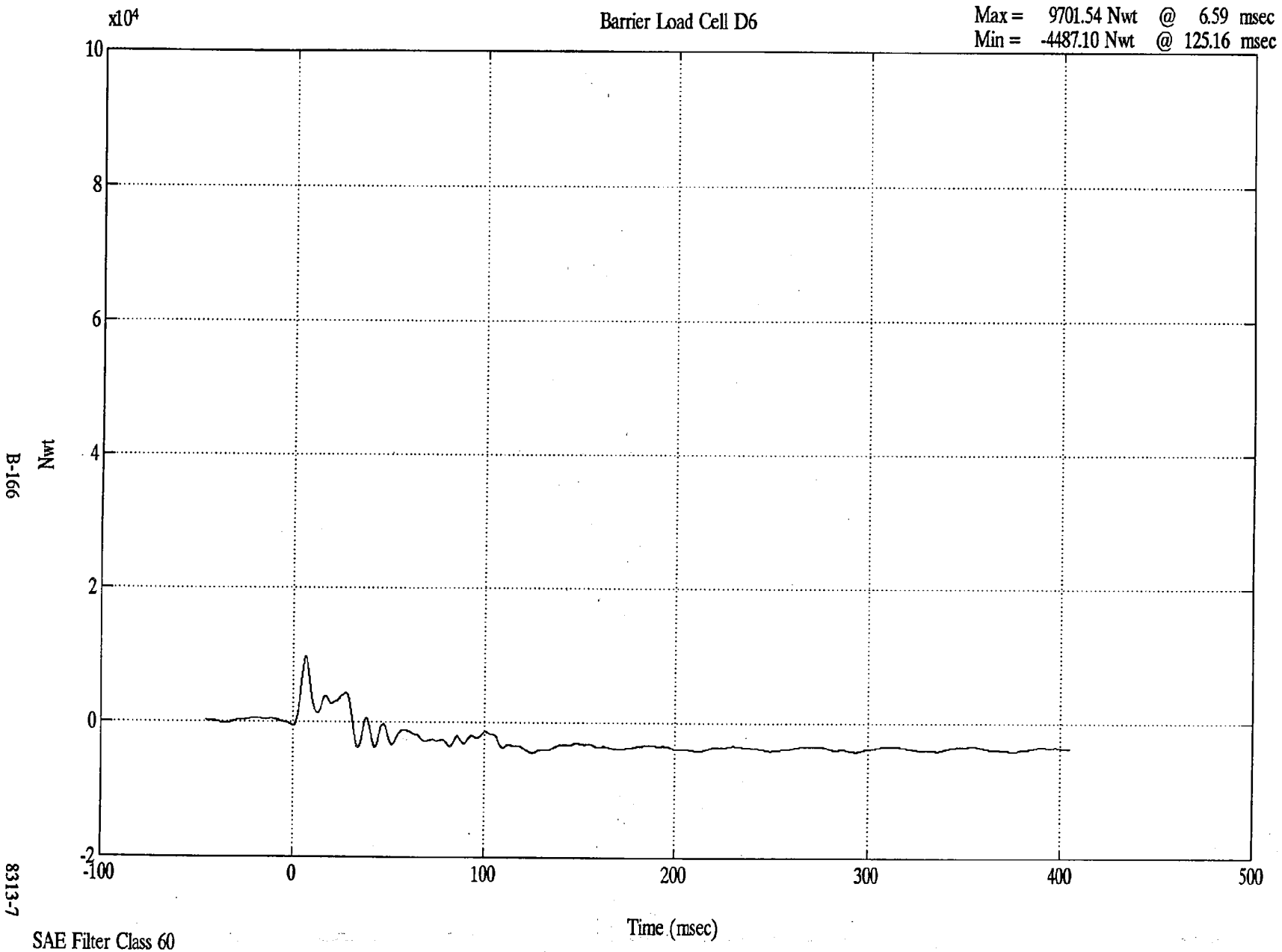


B-165

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

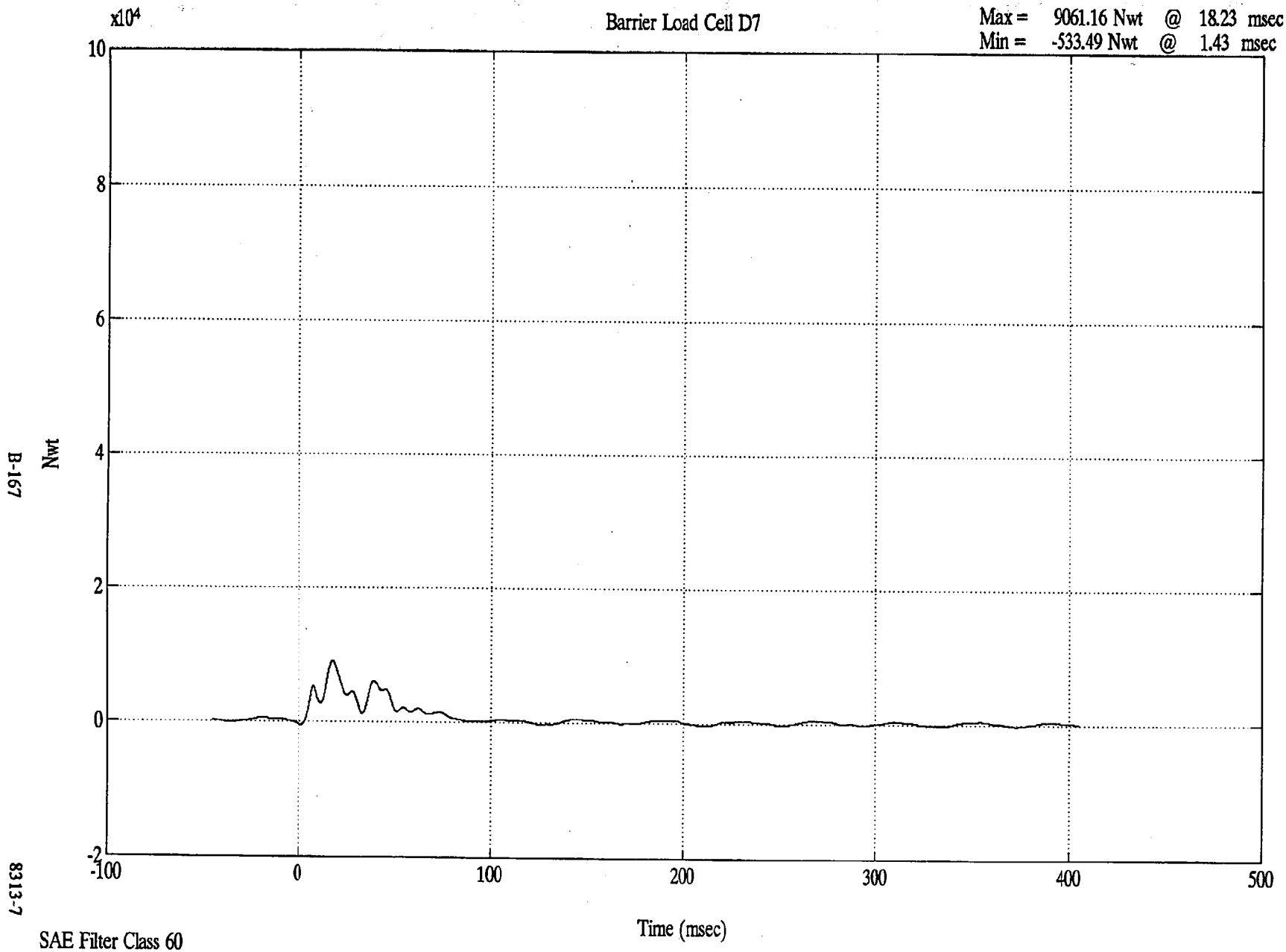


B-166

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP



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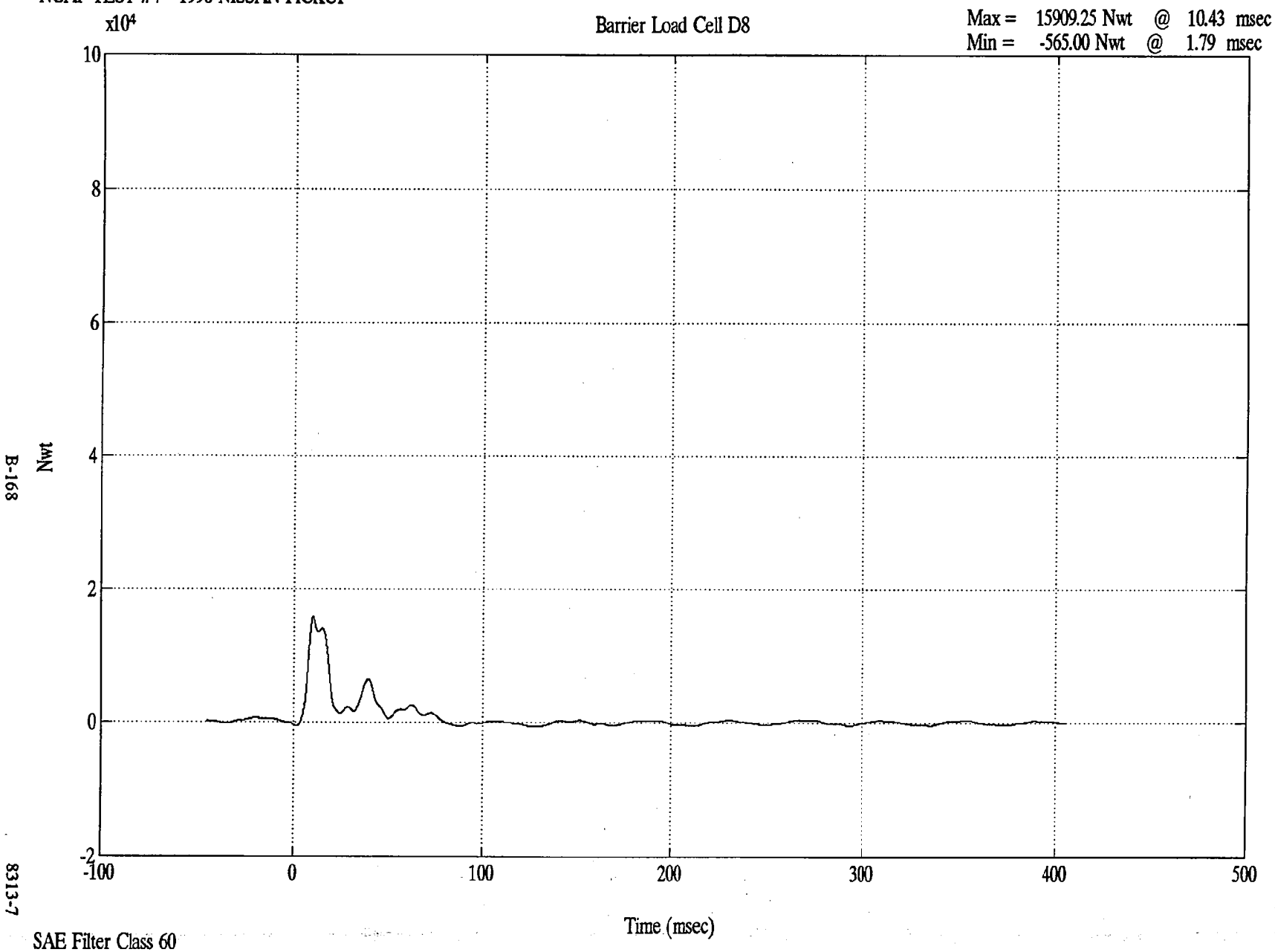
8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

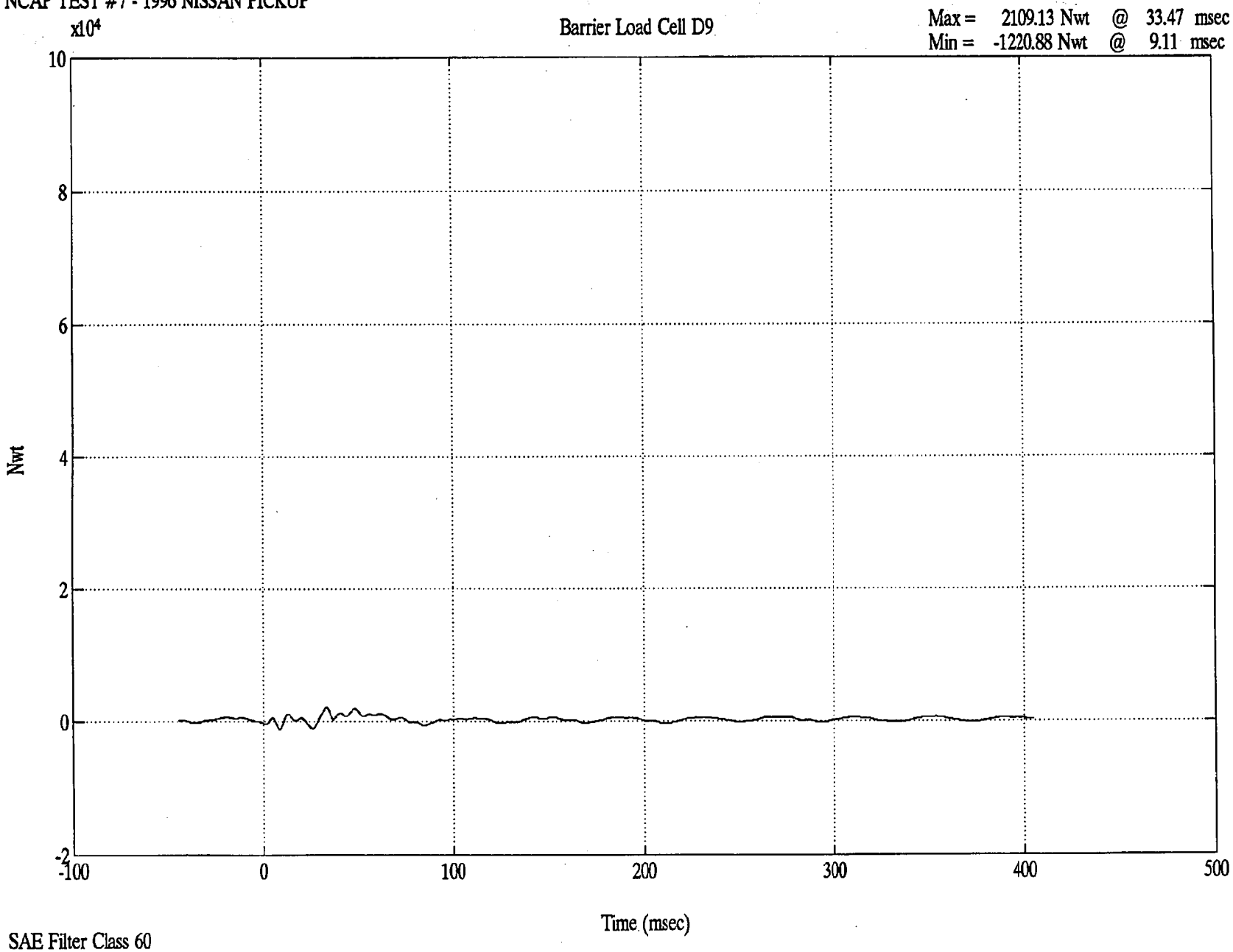


B-168

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP

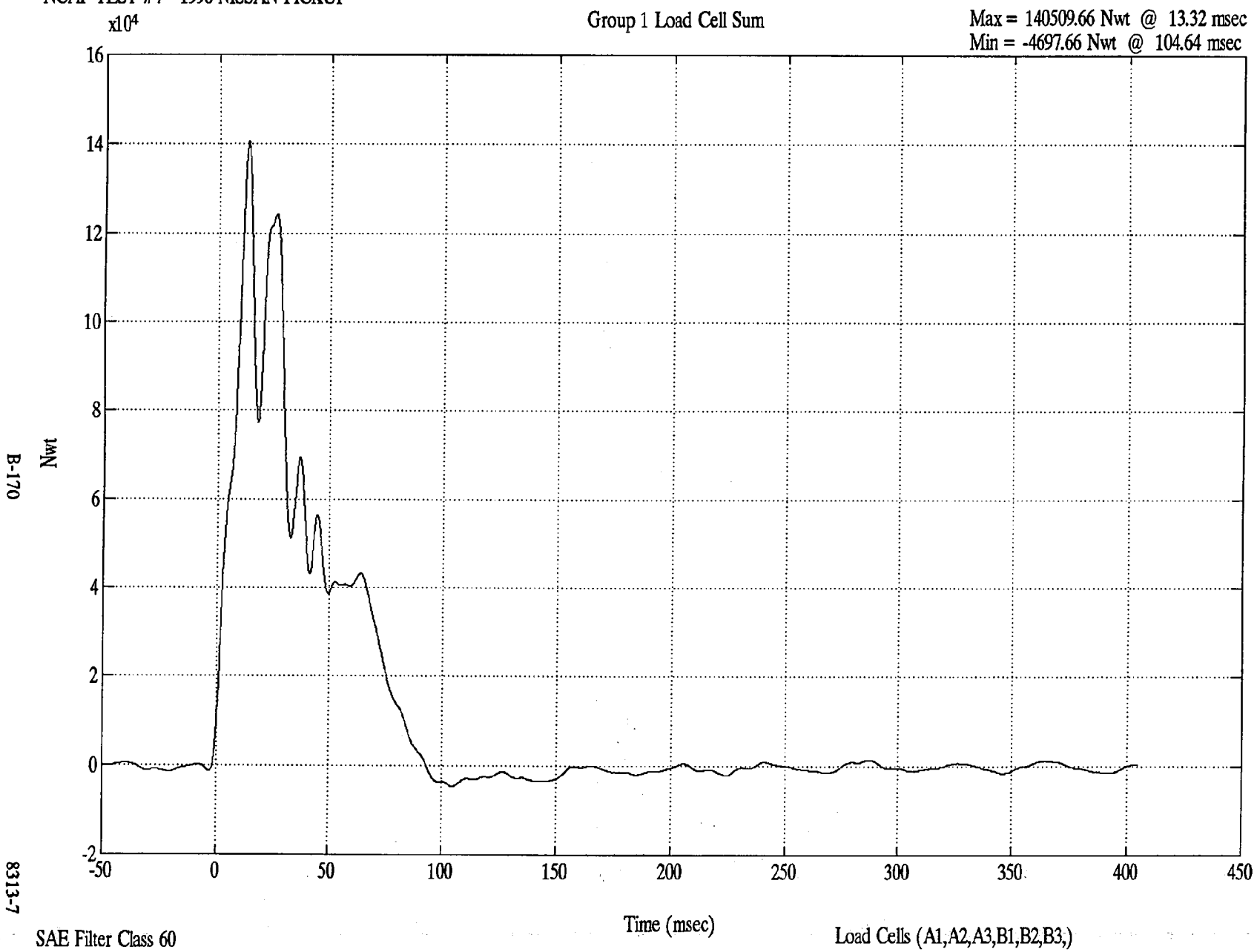


B-169

8313-7

SAE Filter Class 60

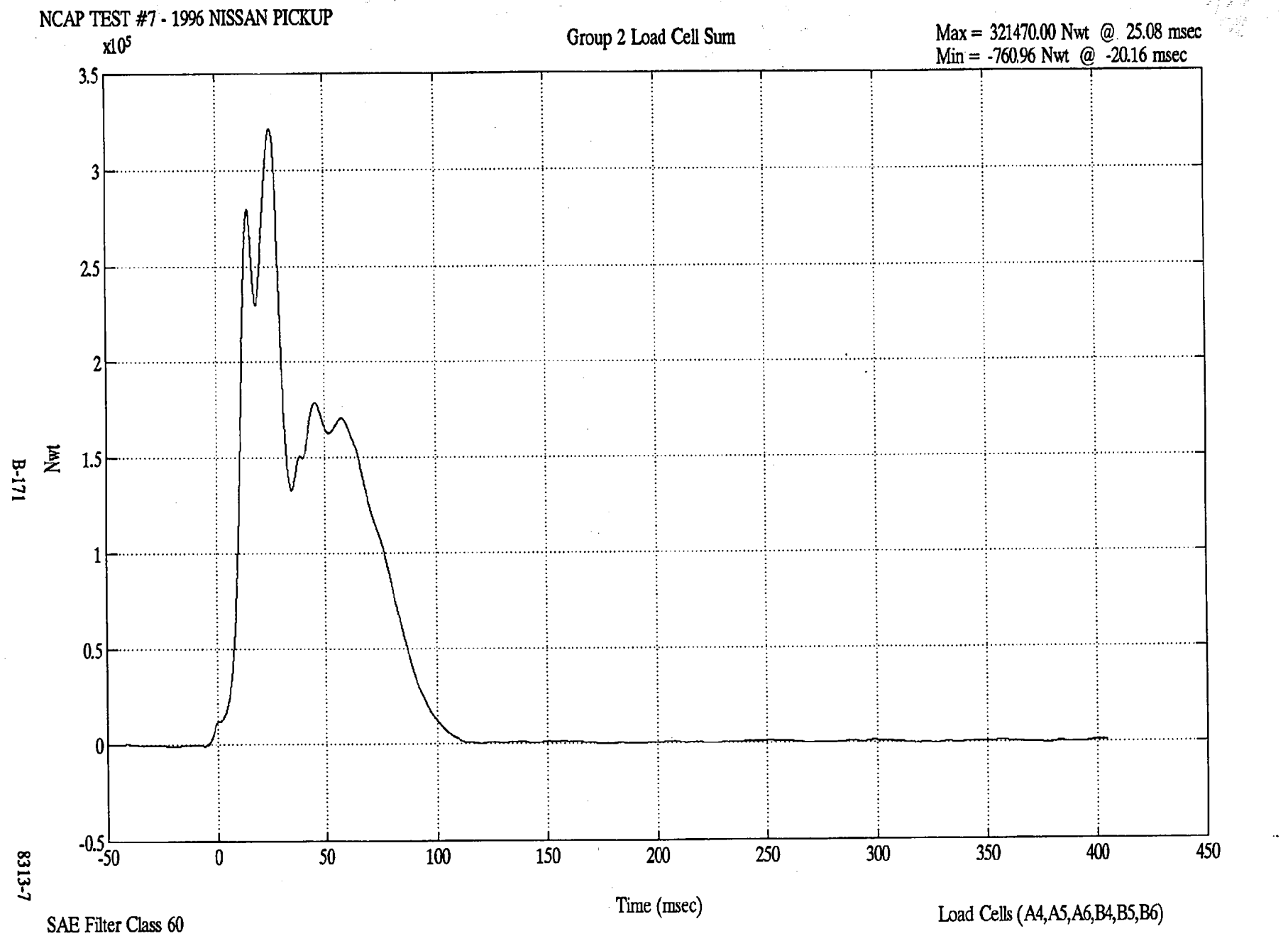
NCAP TEST #7 - 1996 NISSAN PICKUP



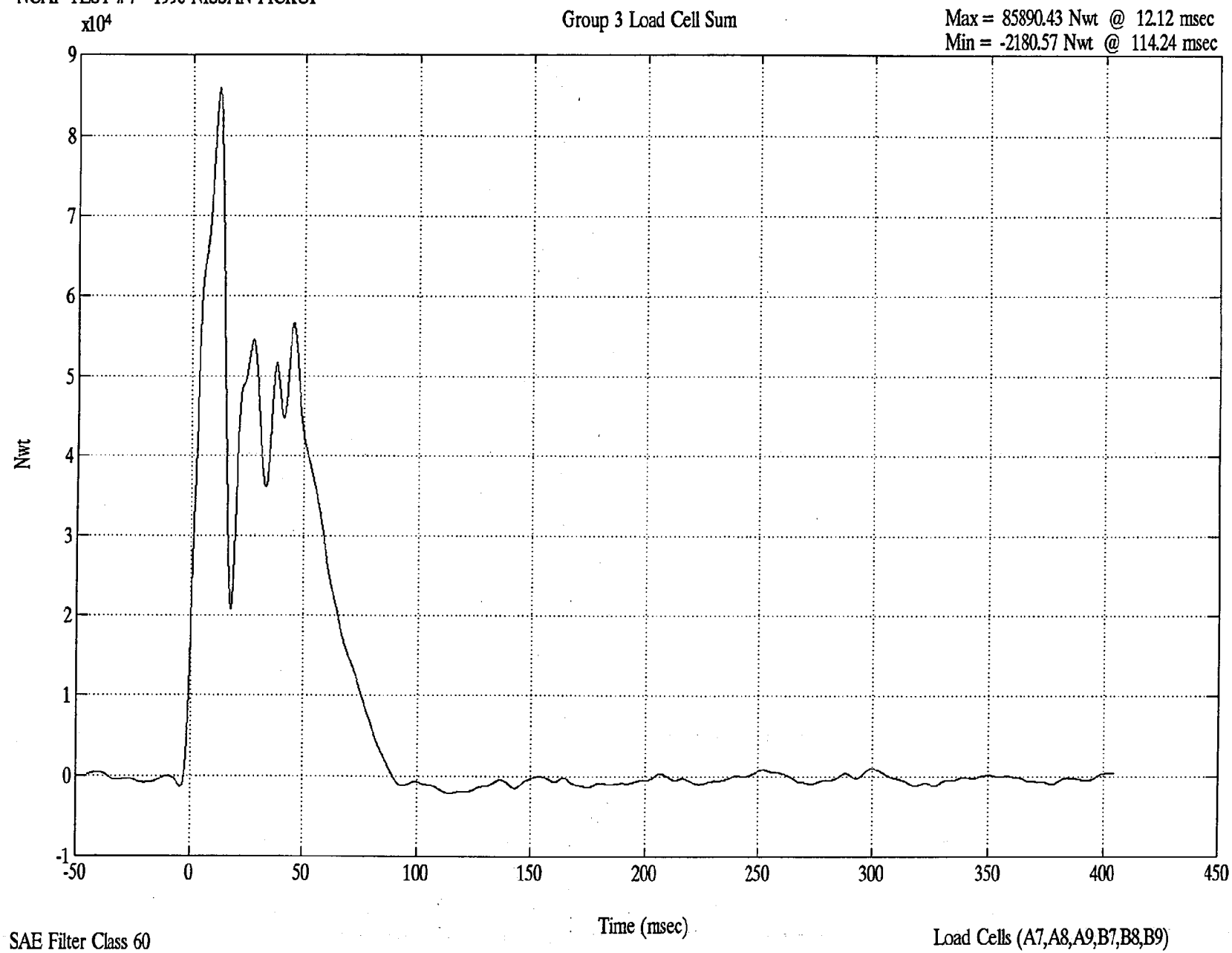
B-170

8313-7

SAE Filter Class 60


NCAP TEST #7 - 1996 NISSAN PICKUP
Group 2 Load Cell Sum
Max = 321470.00 Nwt @ 25.08 msec
Min = -760.96 Nwt @ -20.16 msec
x10^5
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
Nwt
-50
0
50
100
150
200
250
300
350
400
450
Time (msec)
B-171
8313-7
SAE Filter Class 60
Load Cells (A4,A5,A6,B4,B5,B6)

NCAP TEST #7 - 1996 NISSAN PICKUP



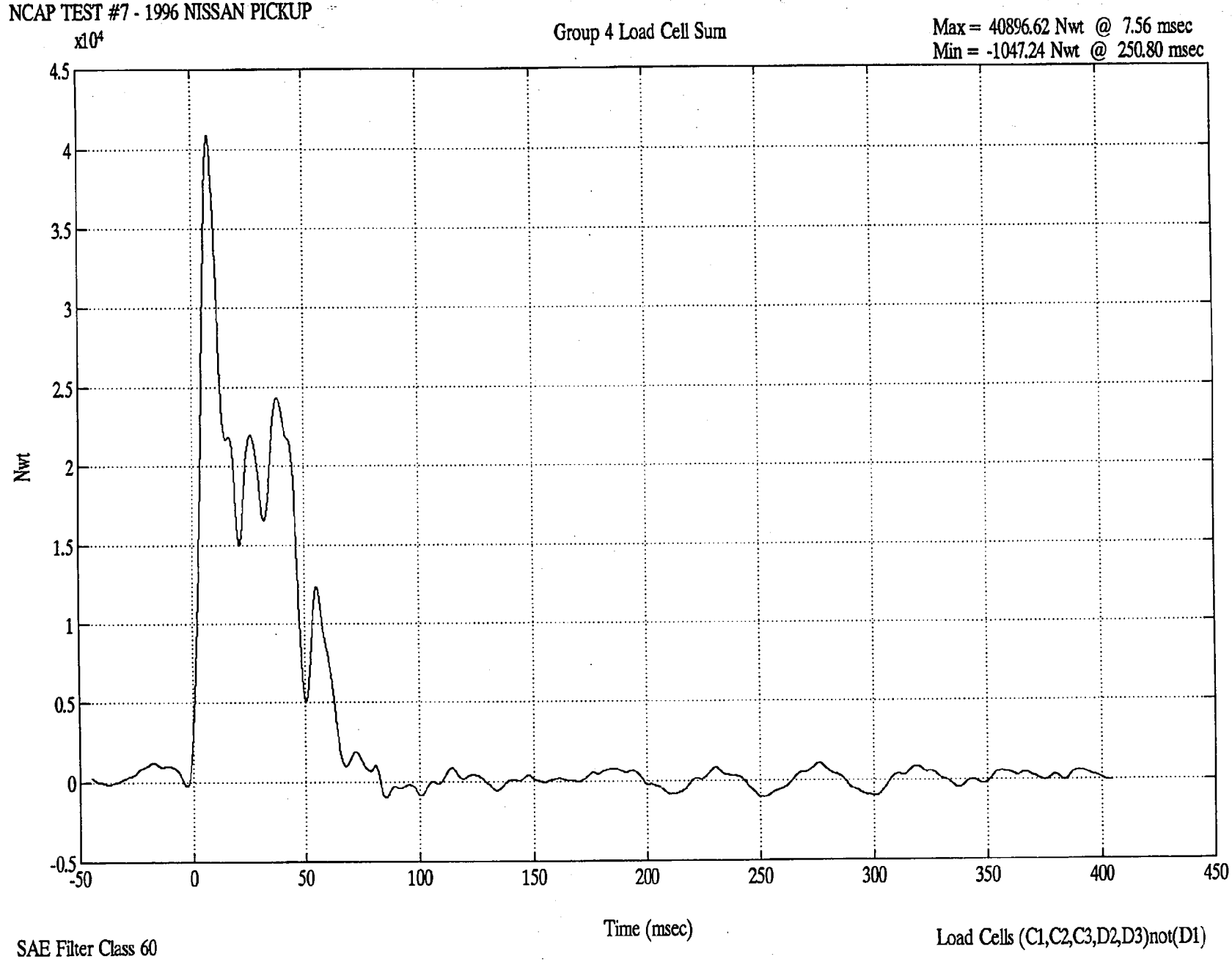
B-172

8313-7

SAE Filter Class 60

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

NCAP TEST #7 - 1996 NISSAN PICKUP

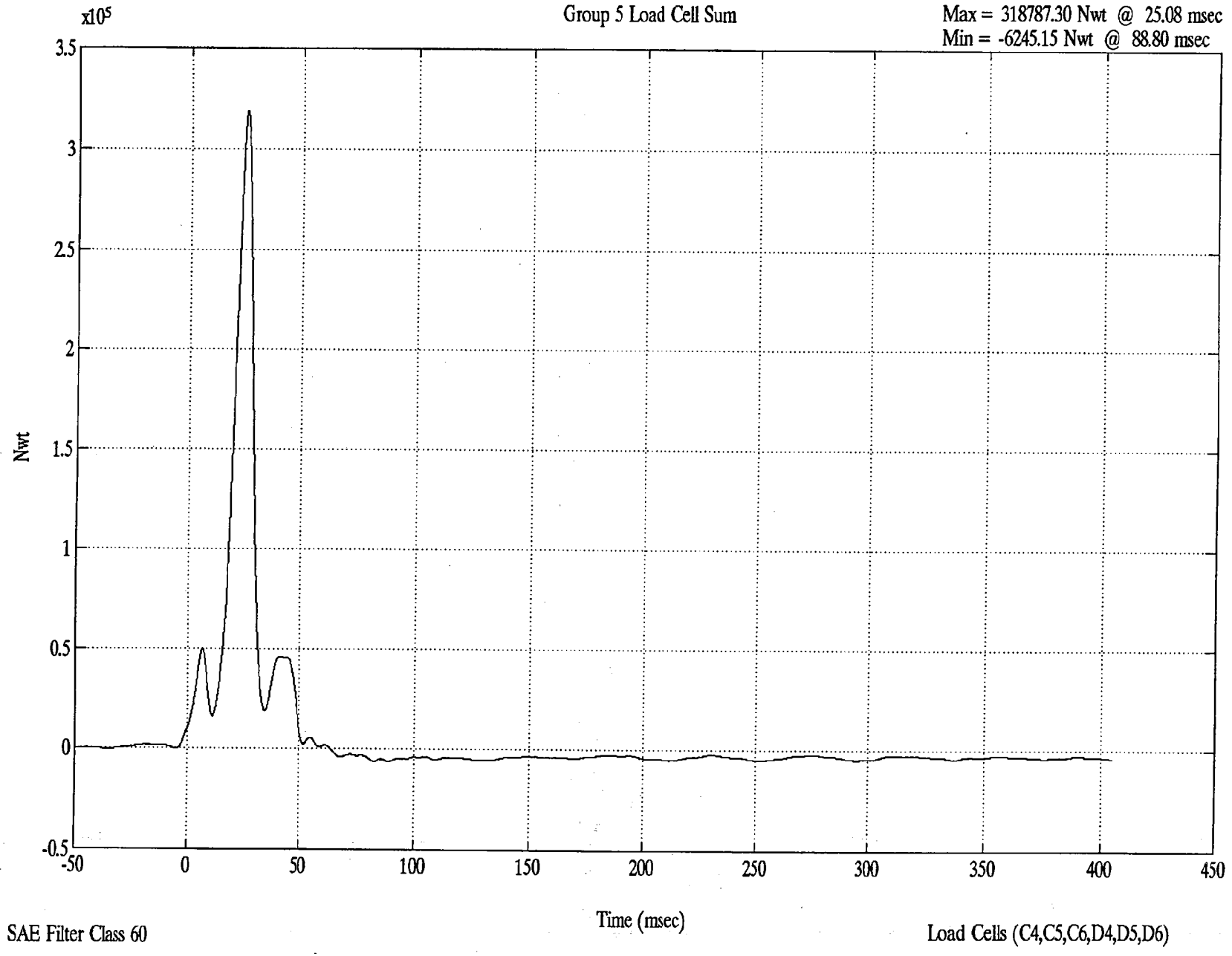


B-173

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP



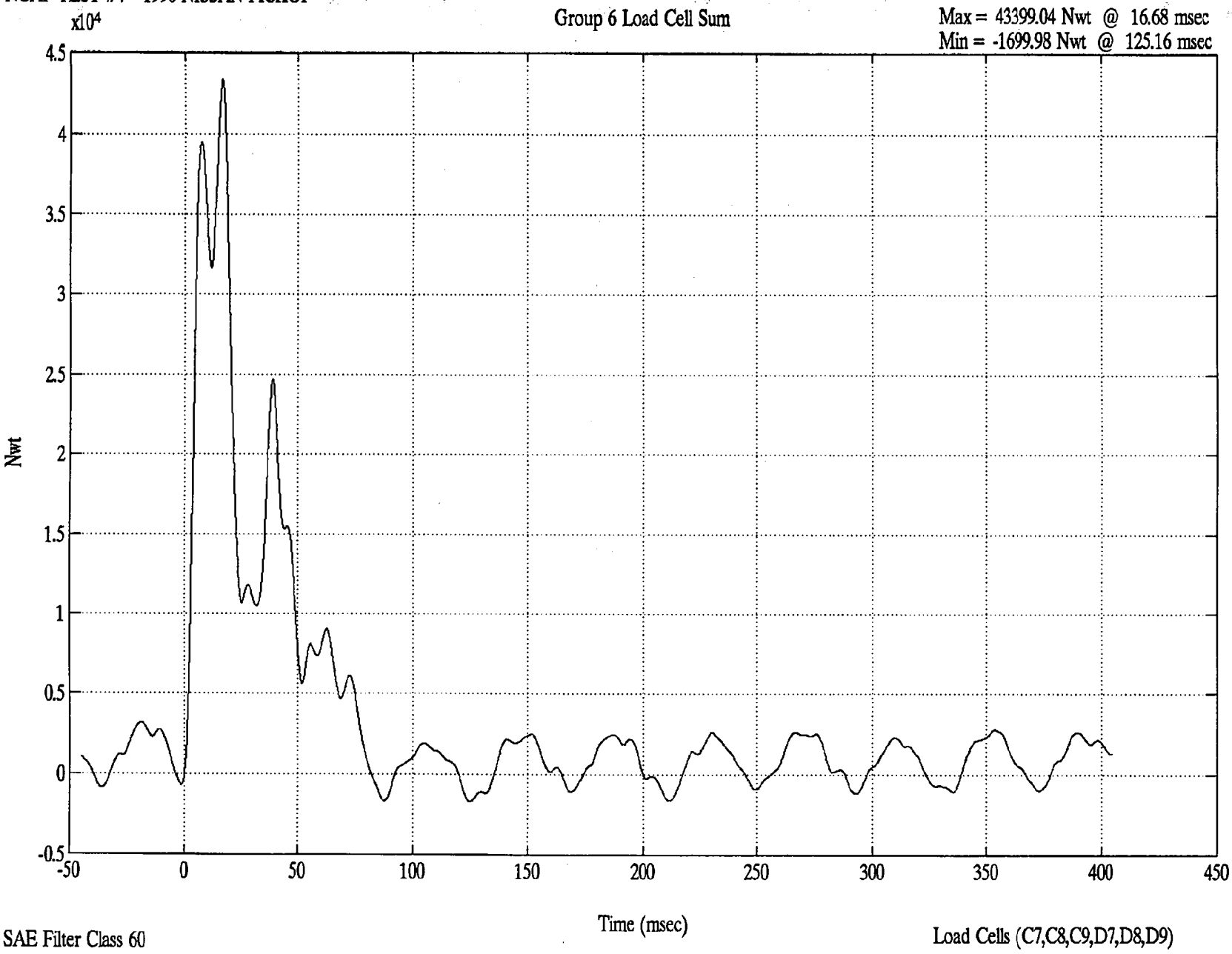
B-174

8313-7

SAE Filter Class 60

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

NCAP TEST #7 - 1996 NISSAN PICKUP

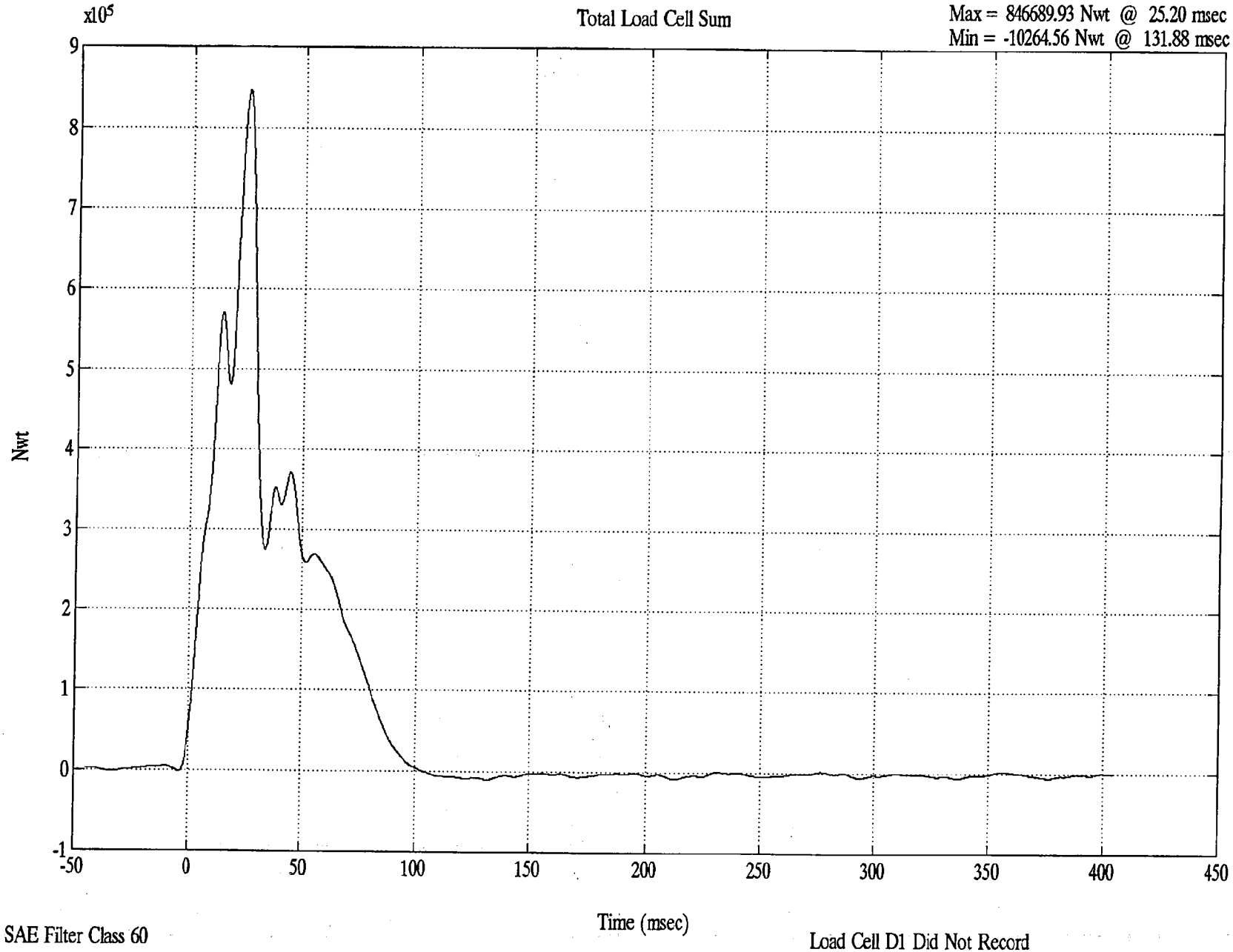


B-175

8313-7

SAE Filter Class 60

NCAP TEST #7 - 1996 NISSAN PICKUP



B-176

8313-7

SAE Filter Class 60

Load Cell D1 Did Not Record

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	2/28/96
#2/Right Front Passenger	064	3/6/96

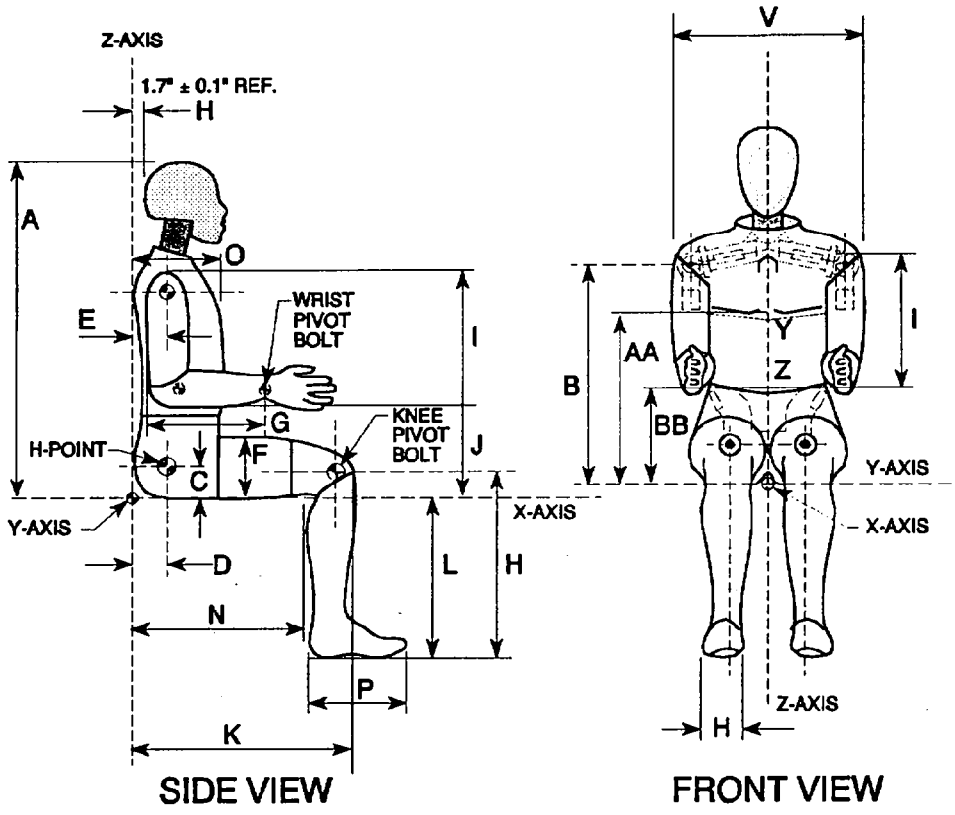
Electronic Test Equipment

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))

HYBRID III EXTERNAL DIMENSIONS

S/N 150 HUMANOID

DUMMY SERIAL NO. 150 DATE: 2/28/96

TEMPERATURE		21 DEG. C
RELATIVE HUMIDITY		30 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)	429-434 mm	432 mm
LOCATION FOR WAIST CIRCUMFERENCE (BB)	226-231 mm	228 mm
CHEST CIRCUMFERENCE (Y)	970-1001 mm	993 mm
WAIST CIRCUMFERENCE (Z)	836-866 mm	864 mm
CHEST DEPTH (O)	213-229 mm	213 mm
H-POINT HEIGHT (C)	84-89 mm	86 mm
H-POINT FROM SEAT BACK (D)	135-140 mm	137 mm
SKULL CAP TO BACKLINE (H)	41-46 mm	43 mm
TOTAL SITTING HEIGHT (A)	879-889 mm	886 mm
THIGH CLEARANCE (F)	140-155 mm	145 mm
BUTTOCK KNEE LENGTH (K)	580-605 mm	594 mm
BUTTOCK POPLITAL LENGTH (N)	452-477 mm	470 mm
POPLITEAL LENGTH (L)	430-455 mm	452 mm
KNEE PIVOT HEIGHT (M)	485-501 mm	498 mm
FOOT LENGTH (P)	252-267 mm	257 mm
FOOT BREADTH (W)	91-107 mm	96 mm
SHOULDER PIVOT FROM BACKLINE (E)	84-94 mm	94 mm
SHOULDER BREADTH (V)	422-437 mm	427 mm
SHOULDER PIVOT HEIGTH (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

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

HEAD DROP TEST

HYBRID III

DATE : 2/27/96

CALSPAN SEQUENTIAL NUMBER 3 HY3 SN: 150 HEAD DROP CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PEAK RESULTANT ACCELERATION	225 - 275 G'S	235.3 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	12.8 G'S
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK FLEXION TEST

HYBRID III

DATE : 2/27/96 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 3 HY3 SN: 150 CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY		10% - 70%	30 %
IMPACT VELOCITY		24.8 - 25.7 KPH	25.45 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	23.97 G'S
	20 MS	17.60 - 22.60 G'S	21.7 G'S
	30 MS	12.50 - 18.50 G'S	15.91 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	15.91 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	34.88 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	70.03 DEG.
	TIME	57 - 64 MS	59.5 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	102.6 N-M
	TIME	47 - 58 MS	49.5 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	116.5 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	97 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK EXTENSION TEST

HYBRID III

DATE : 2/27/96 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 3 HY3 SN: 150 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY		10% - 70%	30 %
IMPACT VELOCITY		21.4 - 22.3 KPH	21.6 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	17.3 G'S
	20 MS	14.00 - 19.00 G'S	15.34 G'S
	30 MS	11.00 - 16.00 G'S	12.91 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	12.91 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	41.38 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	94.9 DEG.
	TIME	72 - 82 MS	78.38 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-66.3 N-M
	TIME	65 - 79 MS	72.5 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	156.5 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	147.5 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

THORAX IMPACT TEST

HYBRID III

DATE : 2/26/96

CALSPAN SEQUENTIAL NUMBER 3 HY3 SN 150 H.S. THORAX CAL

TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.5 - 22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	24.0 KPH
MAXIMUM DEFLECTION	64 - 73 mm	64.3 mm
MAXIMUM RESISTIVE FORCE	5160 - 5894 NEWTONS	5742 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	75.7 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 2/28/96 KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 3 HY3 SN: 150 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5680 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 2/28/96 KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 3 HY3 SN: 150 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5573 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

HYBRID III EXTERNAL DIMENSIONS

S/N HUMANOID

DUMMY SERIAL NO. 064 DATE: 3/6/96

TEMPERATURE			21 DEG. C
RELATIVE HUMIDITY			30 %
LOCATION FOR CHEST CIRCUMFERENCE	(AA)	429-434 mm	432 mm
LOCATION FOR WAIST CIRCUMFERENCE	(BB)	226-231 mm	228 mm
CHEST CIRCUMFERENCE	(Y)	970-1001 mm	985 mm
WAIST CIRCUMFERENCE	(Z)	836-866 mm	846 mm
-16Y-			
CHEST DEPTH	(O)	213-229 mm	218 mm
H-POINT HEIGHT	(C)	84-89 mm	86 mm
H-POINT FROM SEAT BACK	(D)	135-140 mm	137 mm
SKULL CAP TO BACKLINE	(H)	41-46 mm	43 mm
TOTAL SITTING HEIGHT	(A)	879-889 mm	884 mm
THIGH CLEARANCE	(F)	140-155 mm	152 mm
BUTTOCK KNEE LENGTH	(K)	580-605 mm	599 mm
BUTTOCK POPLITAL LENGTH	(N)	452-477 mm	467 mm
POPLITEAL LENGTH	(L)	430-455 mm	439 mm
KNEE PIVOT HEIGHT	(M)	485-501 mm	495 mm
FOOT LENGTH	(P)	252-267 mm	257 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 HEIGTH	(B)	505-521 mm	518 mm
ELBOW REST HEIGHT	(J)	190-211 mm	203 mm
SHOULDER-ELBOW LENGTH	(I)	330-345 mm	338 mm
BACK OF ELBOW TO WRIST PIVOT	(G)	290-305 mm	295 mm

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

HEAD DROP TEST

HYBRID III

DATE : 3/6/96

CALSPAN SEQUENTIAL NUMBER 4 HY3 SN: 064 HEAD DROP CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PEAK RESULTANT ACCELERATION	225 - 275 G'S	243 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	3.1 G'S
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK FLEXION TEST

HYBRID III

DATE : 3/6/96 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 4 HY3 SN: 064 CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY		10% - 70%	30 %
IMPACT VELOCITY		24.8 - 25.7 KPH	25.3 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	22.69 G'S
	20 MS	17.60 - 22.60 G'S	20.31 G'S
	30 MS	12.50 - 18.50 G'S	16.32 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	16.32 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	37.75 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	69.11 DEG.
	TIME	57 - 64 MS	57 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	97.6 N-M
	TIME	47 - 58 MS	51.13 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	116 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	104.88 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK EXTENSION TEST

HYBRID III

DATE : 3/6/96 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 4 HY3 SN: 064 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY		10% - 70%	30 %
IMPACT VELOCITY		21.4 - 22.3 KPH	21.6 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	18.68 G'S
	20 MS	14.00 - 19.00 G'S	15.71 G'S
	30 MS	11.00 - 16.00 G'S	11.79 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	11.79 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	39.75 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	95.32 DEG.
	TIME	72 - 82 MS	75.25 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-65.58 N-M
	TIME	65 - 79 MS	68.5 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	151.38 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	140.88 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

THORAX IMPACT TEST

HYBRID III

DATE : 3/6/96

CALSPAN SEQUENTIAL NUMBER 4 HY3 SN 064 H.S. THORAX CAL

TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.5 - 22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	23.9 KPH
MAXIMUM DEFLECTION	64 - 73 mm	64.5 mm
MAXIMUM RESISTIVE FORCE	5160 - 5894 NEWTONS	5867 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	75.5 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 3/6/96 KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 4 HY3 SN: 064 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5280 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 3/6/96 KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 4 HY3 SN: 064 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5551 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

Appendix D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 150)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	ADL98	ENDEVCO	10/95	4/96
	Y	AE8K0	ENDEVCO	10/95	4/96
	Z	ADMB6	ENDEVCO	10/95	4/96
Chest	X	A26A	ENDEVCO	10/95	4/96
	Y	A27A	ENDEVCO	10/95	4/96
	Z	A51A	ENDEVCO	10/95	4/96
Right Femur Load Cell		952	GSE	1/96	7/96
Left Femur Load Cell		951	GSE	1/96	7/96
Neck Load Cell	X	269	DENTON	11/95	5/96
	Y	269	DENTON	11/95	5/96
	Z	269	DENTON	11/95	5/96
Neck Moment	X	269	DENTON	11/95	5/96
	Y	269	DENTON	11/95	5/96
	Z	269	DENTON	11/95	5/96
Chest Deflection Gauge		150	HUMANOID	1/96	7/96
Hybrid III Use Only					
Lap Belt Load Cells		706	LEBOW	1/96	7/96
Shoulder Belt Load Cells		707	LEBOW	1/96	7/96
Spool-Out Potentiometer		M7	MAGNETEK	11/95	5/96
Belt Stretch Transducer		E6	CALSPAN	11/95	5/96

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	AC827	ENDEVCO	3/96	9/96
	Y (R)	AC8F6	ENDEVCO	3/96	9/96
	Z (R)	ACCW0	ENDEVCO	3/96	9/96
Chest	X (R)	AHRC9	ENDEVCO	3/96	9/96
	Y (R)	AC7W8	ENDEVCO	3/96	9/96
	Z (R)	ACC06	ENDEVCO	3/96	9/96
Pelvic	X	AL6N5	ENDEVCO	1/96	7/96
	Y	AL6R7	ENDEVCO	1/96	7/96
	Z	A12C	ENDEVCO	1/96	7/96
Left Upper Tibia	Mx	38	DENTON	10/95	4/96
Left Upper Tibia	My	38	DENTON	10/95	4/96
Left Lower Tibia	Fy	32	DENTON	10/95	4/96
Left Lower Tibia	Fz	32	DENTON	10/95	4/96
Left Lower Tibia	Mx	32	DENTON	10/95	4/96
Right Upper Tibia	Mx	45	DENTON	10/95	4/96
Right Upper Tibia	My	45	DENTON	10/95	4/96
Right Lower Tibia	Fy	41	DENTON	10/95	4/96
Right Lower Tibia	Fz	41	DENTON	10/95	4/96
Right Lower Tibia	Mx	41	DENTON	10/95	4/96

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacture	Calibration	
				Last	Next
Left Foot Front	Z	AET34	ENDEVCO	3/96	9/96
Left Foot Rear	X	AKD93	ENDEVCO	3/96	9/96
Left Foot Rear	Z	AEW70	ENDEVCO	3/96	9/96
Right Foot Front	Z	AET76	ENDEVCO	1/96	7/96
Right Foot Rear	X	AA4C5	ENDEVCO	1/96	7/96
Right Foot Rear	Z	AET22	ENDEVCO	1/96	7/96

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	AD4A9	ENDEVCO	10/95	4/96
	Y	AE8T7	ENDEVCO	10/95	4/96
	Z	AF5R1	ENDEVCO	10/95	4/96
Chest	X	AE8R7	ENDEVCO	3/96	9/96
	Y	AF5H9	ENDEVCO	3/96	9/96
	Z	AH5L8	ENDEVCO	3/96	9/96
Right Femur Load Cell		419	GSE	1/96	7/96
Left Femur Load Cell		418	GSE	1/96	7/96
Neck Load Cell	X	446	DENTON	11/95	5/96
	Y	446	DENTON	11/95	5/96
	Z	446	DENTON	11/95	5/96
Neck Moment	X	446	DENTON	11/95	5/96
	Y	446	DENTON	11/95	5/96
	Z	446	DENTON	11/95	5/96
Chest Deflection Gauge		064	HUMANOID	11/95	5/96
Hybrid III Use Only					
Lap Belt Load Cells		710	LEBOW	1/96	7/96
Shoulder Belt Load Cells		711	LEBOW	1/96	7/96
Spool-Out Potentiometer		M8	MAGNETEK	11/95	5/96
Belt Stretch Transducer		E7	CALSPAN	11/95	5/96

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	AC7Y3	ENDEVCO	10/95	4/96
	Y (R)	AC824	ENDEVCO	10/95	4/96
	Z (R)	AC814	ENDEVCO	10/95	4/96
Chest	X (R)	AP1E0	ENDEVCO	3/96	9/96
	Y (R)	AJ9F8	ENDEVCO	3/96	9/96
	Z (R)	AP1A2	ENDEVCO	3/96	9/96
Pelvic	X	AH5F3	ENDEVCO	1/96	7/96
	Y	AL6H7	ENDEVCO	1/96	7/96
	Z	AL6C8	ENDEVCO	1/96	7/96
Left Upper Tibia	Mx	015	DENTON	10/95	4/96
Left Upper Tibia	My	015	DENTON	10/95	4/96
Left Lower Tibia	Fy	011	DENTON	10/95	4/96
Left Lower Tibia	Fz	011	DENTON	10/95	4/96
Left Lower Tibia	Mx	011	DENTON	10/95	4/96
Right Upper Tibia	Mx	016	DENTON	10/95	4/96
Right Upper Tibia	My	016	DENTON	10/95	4/96
Right Lower Tibia	Fy	012	DENTON	10/95	4/96
Right Lower Tibia	Fz	012	DENTON	10/95	4/96
Right Lower Tibia	Mx	012	DENTON	10/95	4/96

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacture	Calibration	
				Last	Next
Left Foot Front	Z	AKEB3	ENDEVCO	1/96	7/96
Left Foot Rear	X	AEYW0	ENDEVCO	1/96	7/96
Left Foot Rear	Z	AEW71	ENDEVCO	12/95	6/96
Right Foot Front	Z	AEWE3	ENDEVCO	1/96	7/96
Right Foot Rear	X	AEWJ5	ENDEVCO	12/95	6/96
Right Foot Rear	Z	AEWK1	ENDEVCO	11/95	5/96

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	Y25	ICS	1/96	7/96
Right Rear Seat Crossmember	Y22	ICS	1/96	7/96
Top of Engine	Y26	ICS	1/96	7/96
Bottom of Engine	Y171	ICS	1/96	7/96
Left Disc Brake Caliper	Y17	ICS	12/95	6/96
Right Disc Brake Caliper	X81	ICS	11/95	5/96
Instrument Panel	A145	CEC	12/95	6/96
Left Seat Rear Crossmember (R)	Y89	ICS	12/95	6/96
Right Seat Rear Crossmember (R)	X28	ICS	11/95	5/96

Appendix E

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

SEAT BELTS

PRECAUTIONS ON SEAT BELT USAGE

Your chances of being injured 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 supplemental air bag.

Some states, provinces or territories may specify 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 properly adjusted to a snug fit. Failure to do so reduces the effectiveness of the entire restraint system and increases 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 after any collision at your NISSAN dealer. NISSAN recommends that all seat belt assemblies in use during a collision be replaced unless the collision was minor and the belts show no damage and continue to operate properly. Seat belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.**
- **Never carry more people in the vehicle than there are seat belts.**
- **Never allow anyone to ride in the cargo area or in a slide-in camper or other type cargo area cover while the vehicle is in motion. These areas do not contain seat belts. It is not designed for passengers. They could be injured in sudden braking or collision.**
- **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 outer 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 for more information.)

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 seated in child restraints that comply with Federal Motor Vehicle Safety Standards or Canadian Motor Vehicle Safety Standards. You should choose a child restraint which fits your vehicle and always follow the manufacturer's instructions for installation and use.

Children

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

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 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.

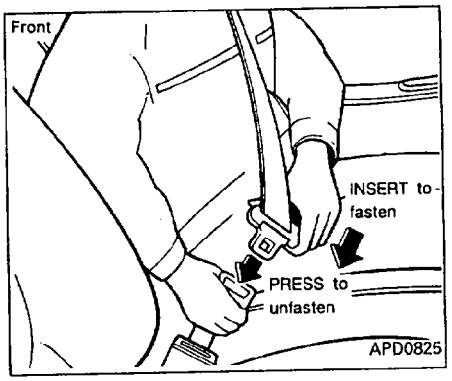
Never let a child stand or kneel on any seat and do not allow a child in the cargo areas while the vehicle is moving.

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

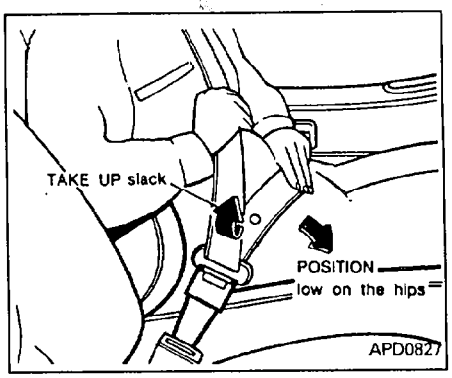
1. Adjust the seat.

⚠ 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 permits the belt to move, and allows 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 has a cinching mechanism for child seat installation. It is referred to as the automatic locking mode.

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

⚠ WARNING

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

Unfastening the belts

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

Checking seat belt operation

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

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

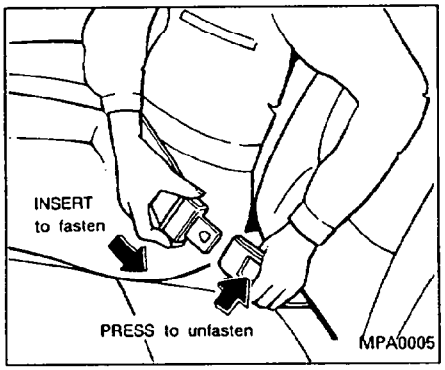
To increase your confidence in the belts, check the operation as follows:

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

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

Replacing front seat belt (3-point type only)

The front seat belts are shock absorber types. Replace the belt when the loop has been pulled out and "REPLACE BELT" is visible. This indicator means the seat belt has been overstressed.

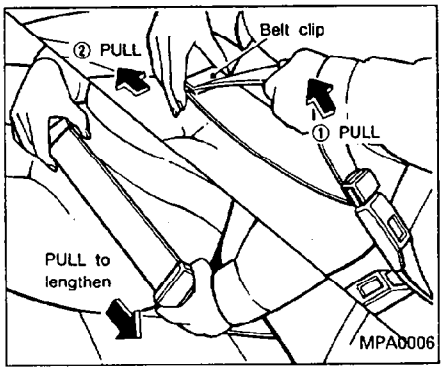


2-POINT TYPE WITHOUT RETRACTOR (Center of bench seat)

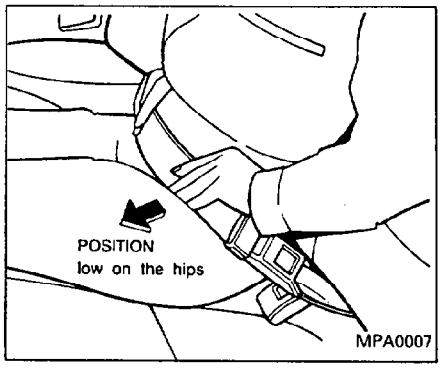
The center seat belt buckle and tongue are identified by the CENTER mark. The center seat belt tongue can be fastened only into the center seat belt buckle.

Fastening the belts

1. Insert the tongue into the buckle until it snaps.



2. To lengthen, hold the tongue at a right angle to the belt and pull on the belt. To shorten, pull the free end of the belt away from the tongue, then pull the belt clip to take up the slack.



3. Position the lap belt **low on the hips** as illustrated.

Unfastening the belts

To unfasten the belt, press the button on the buckle.

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.**

SEAT BELT MAINTENANCE

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