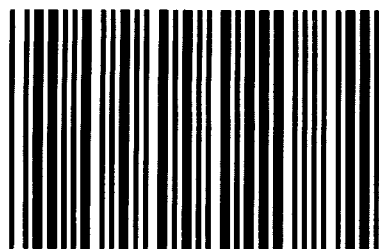


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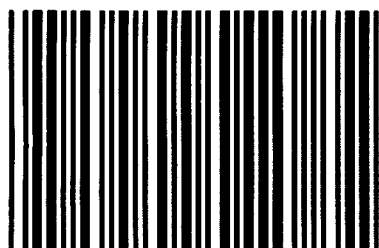
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2443

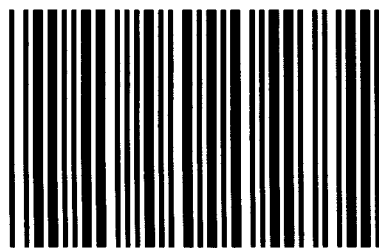
2443

1st Bar Code = 6.70 cpi, 1.25in high, 2:1 ratio;
x=1, dx=6.5; y=2 dy=1.25
2nd Bar Code =6.70 cpi, 1.25in high, 2:1 ratio;
x=1, dx=6.5; y=5 dy=1.25



2443

2443



FLSP

V2 443

REPORT NUMBER: 208-CAL-96-04
212-CAL-96-04
301-CAL-96-04

**VEHICLE SAFETY COMPLIANCE TESTING FOR OCCUPANT CRASH PROTECTION
WINDSHIELD MOUNTING, WINDSHIELD ZONE INTRUSION (PARTIAL)
AND FUEL SYSTEM INTEGRITY**

NISSAN MOTOR COMPANY LTD.
1996 NISSAN PATHFINDER XE
4X4 MPV

NHTSA NUMBER: CT5203

CALSPAN TEST NUMBER: 8353-2

April 17, 1996

CALSPAN CORPORATION
ADVANCED TECHNOLOGY CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225



FINAL REPORT

PREPARED FOR:

U. S. Department of Transportation
National Highway Traffic Safety Administration
ENFORCEMENT
Office of Vehicle Safety Compliance
400 Seventh Street, S. W.
Room No. 6115 (NEF-30)
Washington, DC 20590

66115

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Approval Date: June 3, 1996

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Accepted By: 

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				6. Performing Organization Code CAL	
7. Author(s) Vincent Paolini, Project Engineer David J. Travale, Program Manager Report prepared by: Cathryn A. Harrower				8. Performing Organization Report No. 8353-2	
9. Performing Organization Name and Address Calspan SRL Corporation P.O. Box 400 Buffalo, New York 14225				10. Work Unit No.	
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15. Supplementary Notes					
16. Abstract A 30 mph vehicle safety compliance test was conducted on a 1996 Nissan Pathfinder XE 4x4 MPV. This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on April 17, 1996. The purpose of this test was to determine compliance with the performance requirements of the following Federal Motor Vehicle Safety Standards: 1. FMVSS No. 208, "Occupant Crash Protection" 2. FMVSS No. 212, "Windshield Mounting" 3. FMVSS No. 219 (partial), "Windshield Zone Intrusion" 4. FMVSS No. 301, "Fuel System Integrity" The test mode was perpendicular (0°) and the impact velocity was 29.2 mph. The ambient temperature at the impact face was 70 °F. The subject test vehicle appears to comply with the requirements of FMVSS Nos. 208, 212, 219 (partial) and 301. <u>Type of Restraint System:</u> The test vehicle was equipped with a driver Airbag and a passenger Airbag restraint system. The manual seat belts were not used for this test					
17. Key Words Compliance Testing Safety Engineering FMVSS 208			18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division ; Mail Code: NAD-52 400 Seventh , S.W., Room 5108, Washington, D.C. 20590 Telephone No. (202) 366-4946 Attn: Robert Hornickle		
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Section 1

PURPOSE AND TEST PROCEDURE

This 30 mph frontal barrier impact test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 208, 212, 219 (partial) and 301 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by Calspan Advanced Technology Center under Contract No. DTNH22-93-D-11089. The purpose of this test was to determine if the subject vehicle, a 1996 Nissan Pathfinder XE 4x4 MPV, meets the performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS No. 212, "Windshield Mounting"; FMVSS No. 219 (partial), "Windshield Zone Intrusion"; and FMVSS No. 301, "Fuel System Integrity". This compliance test was conducted using the requirements found in the OVSC Laboratory Test Procedure No. TP-208-09, dated March 15, 1993.

Section 2

SUMMARY OF TEST NUMBER CT5203

A frontal barrier was impacted by a 1996 Nissan Pathfinder XE 4x4 MPV at a velocity of 29.2 mph. The test was performed at the Calspan Corporation Advanced Technology Center on April 17, 1996. Pre- and Post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by one real-time camera and 14 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 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 OVSC Laboratory Test Procedure.

Both ATDs were fully instrumented with head and chest three axis (x, y, and z) accelerometers, chest displacement potentiometers and left/right femur load cells. These ATDs had been certified prior to the test.

The 46 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle and dummy response data traces. The Position 2 Right Lower Tibia Force (Z) transducer sustained a cut wire at approximately 60 milliseconds. The Position 2 Right Lower Tibia Moment (Y) data contained noise disturbances from approximately 163 to 300 milliseconds.

The driver's HIC was 423. The maximum chest deceleration over 3 milliseconds was 50.8 g's with -1.8 inches of deflection. The maximum force on the driver's left femur was -1328.3 pounds and -1033.1 pounds on the right femur.

The right front passenger's HIC was 809. The maximum chest deceleration over 3 milliseconds was 52.7 g's with -1.1 inches of deflection. Loads of -1474.0 and -1496.2 pounds were recorded on the left and right femurs respectively.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No. :	<u>CT5203</u>	Test Mode :	<u>30 mph Frontal Barrier</u>
Test Date :	<u>April 17, 1996</u>	Time:	<u>12:16</u> Temperature : <u>70</u> °F
Vehicle Make/Model/Body Style :	<u>1996 Nissan Pathfinder XE 4x4 MPV</u>		
Vehicle Test Weight :	<u>4618</u>	lbs	
Vehicle/Barrier Impact Angle :	<u>0</u>	°	
Impact Velocity :	<u>29.2</u>	mph	
Maximum Static Crush :	<u>16.6</u>	inches	
Vehicle Rebound :	<u>4.0</u>	inches	
<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Type :	<u>Part 572E</u>	<u>Part 572E</u>	
Restraint System :	<u>Airbag</u>	<u>Airbag</u>	
Number of Data Channels :	<u>46</u>		
Number of Cameras :	<u>1</u>	Real Time	
	<u>14</u>	High Speed	
<u>DOOR OPENING DATA :</u>	<u>Closed/Operable</u>	- Left Front	
	<u>Closed/Operable</u>	- Right Front	
Front Seat(s) Data :	<u>DRIVER</u>	<u>PASSENGER</u>	
Seat Track Failure :	<u>0.0</u>	<u>0.0</u>	
	Inches of shift		
Seat Back Failure :	<u>None</u>	<u>None</u>	
<u>VISIBLE DUMMY CONTACT POINTS :</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Head :	Face - into airbag, top of head - sunvisor, rear of head - headrest	Face - into airbag, top of head - sunvisor, rear of head - headrest	
Abdomen :	<u>Airbag</u>	<u>Airbag</u>	
Chest	<u>Airbag</u>	<u>Airbag</u>	
Knees	<u>Knee bolster</u>	<u>Glove box door</u>	

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 1996 Nissan Pathfinder XE 4x4 MPV

NHTSA No. : CT5203 ; VIN: JN8AR05Y5TW014376 ; Color : Beige

Engine Data: 6 cylinders; - CID; 3.3 Liters; - cc

Placement : X Longitudinal or In-Line; - Transverse of Lateral

Transmission Data : 5 speeds; X Manual; - Automatic; - Overdrive

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

Major Options : X A/C; X Pwr.Strg.; X Pwr. Brakes

- Pwr. Windows; - Pwr. Door Locks; X Tilt Wheel

Date Received : 3/11/96 ; Odometer Reading 00038 miles

Selling Dealer : M. Barney's Super Sport Nissan

& Address: 3676 Sheridan Drive, Amherst, N.Y. 14226

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : Nissan Motor Company Ltd.

Date of Manufacture 12/95

GVWR : 5150 lbs.; GAWR: 2600 lbs. FRONT; 2850 lbs. REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 26 psi FRONT

26 psi REAR

Recommended Tire Size : P235/70R15

* Recommended Cold Tire Pressure : 26 psi FRONT; 26 psi REAR

Size of Tires on Test Vehicle: 235/70R15 ; Manufacturer: General

Vehicle Capacity Data :

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

Number of Occupants: 2 Front; 3 Rear; 5 Total

Vehicle Capacity Weight (VCW) = 1152 lbs.

No. of Occupants x 150 lbs. = 750 lbs.

Rated Cargo/Luggage Weight (RCLW) = 300 lbs.

*Tire pressure used for test

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

Right Front	=	1063	lbs.	Right Rear	=	875	lbs.
Left Front	=	1170	lbs.	Left Rear	=	890	lbs.
TOTAL FRONT	=	2,233	lbs.	TOTAL REAR	=	1,765	lbs.

TOTAL DELIVERED WEIGHT = 3,998 lbs.

% of Total Front of Vehicle Weight = 55.9 % of Total Rear Weight = 44.1 %

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight	=	3,998	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	300	lbs.
Weight of 2 p.572 Dummies @ 167 each	=	334	lbs.
TARGET TEST WEIGHT	=	4,632	lbs.

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 286 POUNDS OF CARGO WEIGHT:

Right Front	=	1153	lbs.	Right Rear	=	1153	lbs.
Left Front	=	1164	lbs.	Left Rear	=	1148	lbs.
TOTAL FRONT	=	2,317	lbs.	TOTAL REAR	=	2,301	lbs.

TOTAL TEST WEIGHT = 4,618 lbs.

% of Total Front Weight = 50.2 % % of Total Rear Weight = 49.8 %

Weight of Ballast Secured in Vehicle Trunk Area = 321 lbs.

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in inches) :

AS DELIVERED :	RF	33.0	LF	32.6	RR	34.9	LR	34.3
FULLY LOADED :	RF	32.6	LF	32.3	RR	33.1	LR	32.4
AS TESTED :	RF	32.7	LF	32.3	RR	33.1	LR	32.4

Vehicle's Wheel Base : 106.3 in.

Location of Vehicle's C.G. : 53.0 inches rearward of front wheel center.

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual	=	21.1	gallons
Usable Capacity Figure Furnished by COTR	=	20.9	gallons
Test Volume Range (92 to 94% of Usable Capacity)	=	19.2	to 19.6 gallons
ACTUAL TEST VOLUME	=	19.6	gallons (with entire fuel system filled)

Table 3

POST IMPACT DATATYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
 Test Date : April 17, 1996 Time: 12:16 Temperature: 70 °F
 Vehicle NHTSA No. : CT5203
 Required Impact Velocity Range : 28.9 to 29.9 mph

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

Trap No. 1 = 29.2 mph; Trap No. 2 = 29.2 mph
 Distance from vehicle to barrier : (1) entering trap = 52 inches
 (2) exiting trap = 12 inches

VEHICLE STATIC CRUSH: (For frontal and rear impacts only.)

Vehicle Length:

Pre-Test Right = 174.5 ; C/L = 177.9 ; Left = 174.5
 Post-Test Right = 160.4 ; C/L = 161.3 ; Left = 161.5
 Crush Right = 14.1 ; C/L = 16.6 ; Left = 13.0
 AVERAGE = 14.6 inches

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

Right = 3.6 ; C/L = 4.5 ; Left = 4.0
 AVERAGE = 4.0 inches

DOOR OPENING :

	Left	Right
Front	<u>Operable</u>	<u>Operable</u>
Rear	<u>Operable</u>	<u>Operable</u>

SEAT MOVEMENT :

	Seat Back Failure	Seat Shift
Front	<u>None</u>	<u>0.0</u>
Rear	<u>None</u>	<u>0.0</u>

Table 3

POST IMPACT (cont.)

GLAZING DAMAGE :

None

OTHER NOTABLE IMPACT FEATURES :

Driver side headrest did not stay into seat during impact.

Section 3

OCCUPANT AND VEHICLE DATA

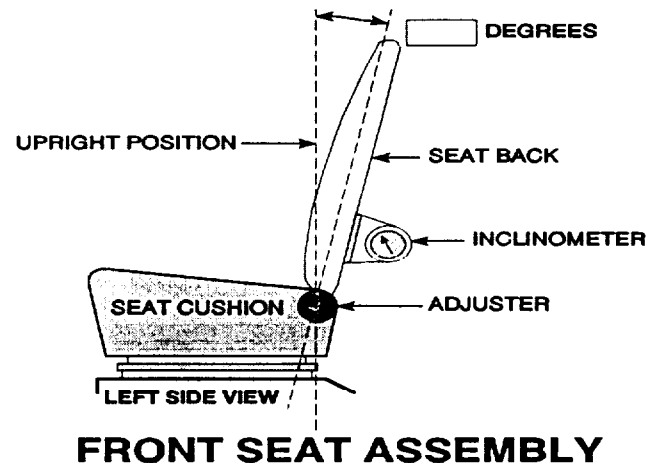
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1996 Vehicle Model: Nissan Pathfinder XE Body Style : 4x4 MPV

1. Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



Seat back angle for driver's seat : 12°

Measurement instructions : Expose seat back frame and measure 12° from vertical along the bottom most portion of seat back.

Seat back angle for passenger's seat : 12°

Measurement instructions : Same as driver.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : Seat placed in 11th detent (closest notch rearward of mid-travel position) from a total of 20 detents

Positioning of the passenger's seat (if applicable) : Same as driver

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 20.9 gallons

B. "Usable Capacity" of the optional equipment fuel tank is - gallons

4. Steering Column Position :

Mid-position

5. Other:

Adjustable D-ring was placed 1 detent down from full up position.

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

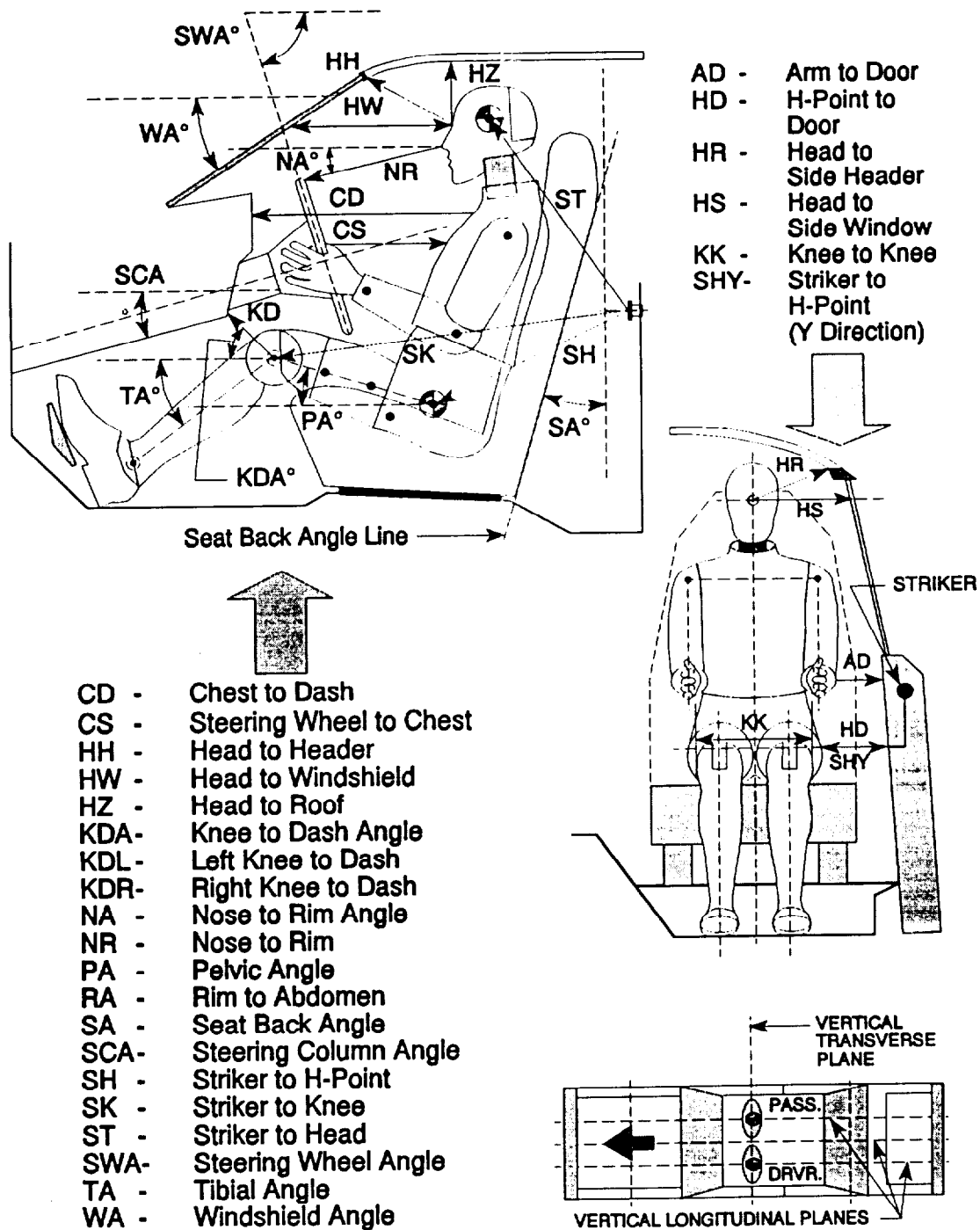


Table 4

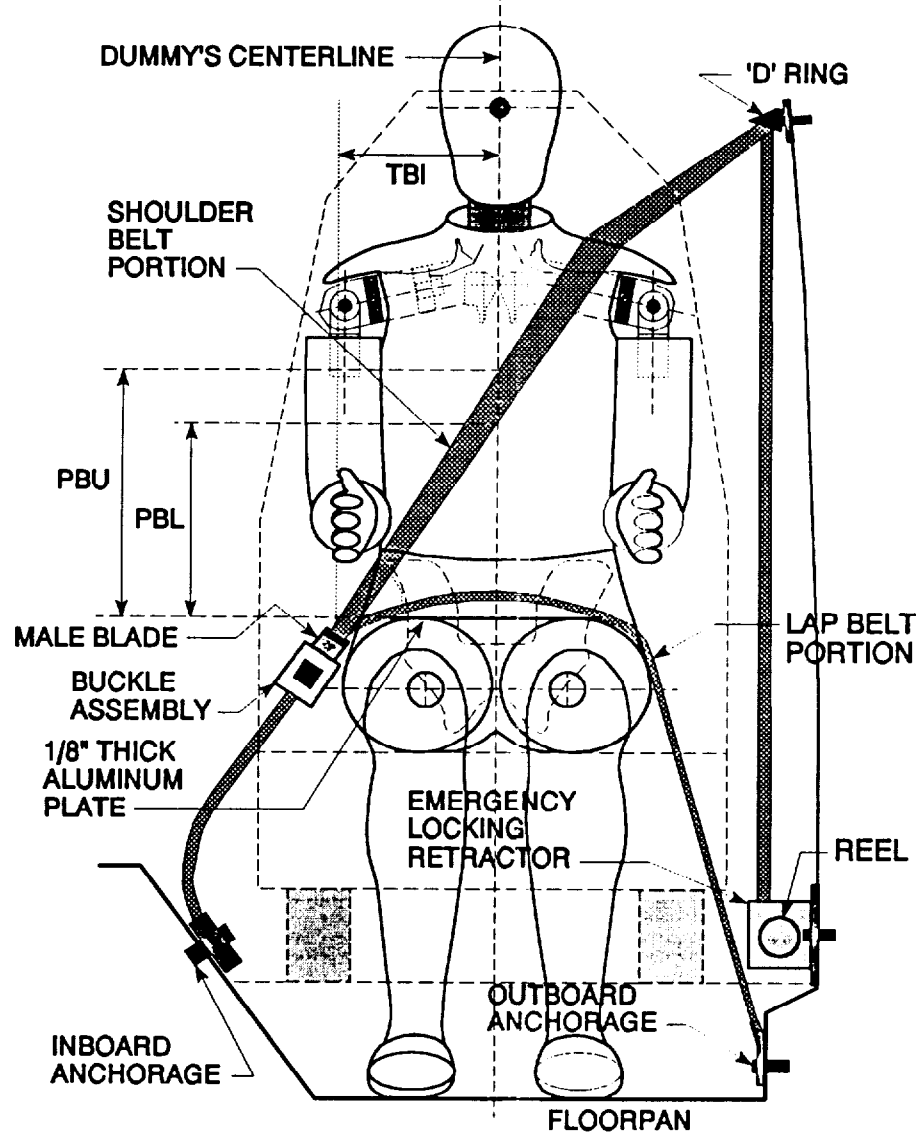
FRONT SEAT OCCUPANT MEASUREMENTS

(All dimensions excluding angles are in inches).

	DRIVER (Serial #341)			PASSENGER (Serial #342)		
WA°	34 deg.			-		
SWA°	65 deg.			-		
SCA°	25 deg.			-		
SA°	12 deg.			12 deg.		
HZ	6.7			6.3		
HH	13.9			14.4		
HW	22.4			22.5		
HR	9.0			8.5		
NR	16.4	Angle	11 deg.	-		
CD	21.7			21.3		
CS	12.8			-		
RA	7.4			-		
KDL/KDA	5.9	Angle	30 deg.	6.2		
KDR/KDA	5.4			6.1	Angle	32 deg.
PA°	24 deg.			24 deg.		
TA°	37 deg.			34 deg.		
KK	12.8			10.6		
ST	21.2	Angle	10 deg.	21.5	Angle	9 deg.
SK	25.6	Angle	89 deg.	24.6	Angle	89 deg.
SH	10.2	Angle	114 deg.	10.1	Angle	112 deg.
SHY	8.4			8.4		
HS	12.7			12.1		
HD	6.2			6.1		
AD	3.4			3.6		

Figure 3

SEAT BELT POSITIONING DATA



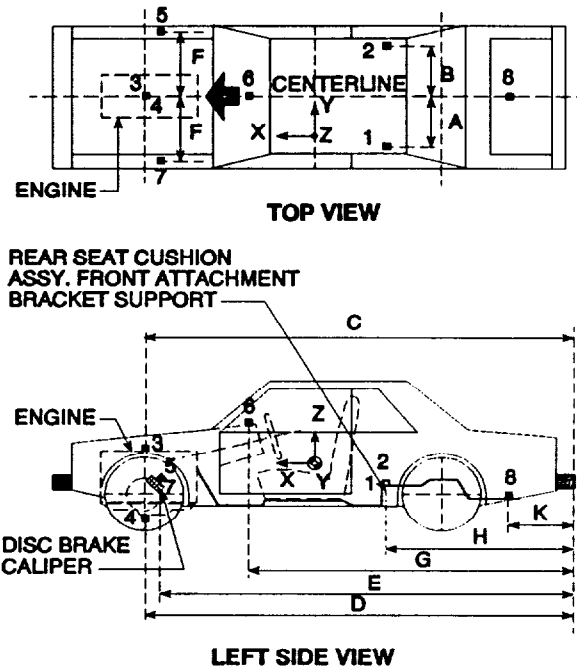
FRONT VIEW OF DUMMY

	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
<u>PBU</u> -- Top surface of alum. plate to upper edge	*	*
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	*	*
<u>TBI</u> -- Distance from torso centerline to buckle	*	*

* Vehicle equipped with airbag, manual seat belt not used for this position.

Figure 4

**VEHICLE ACCELEROMETER LOCATION
AND DATA SUMMARY**



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

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

Table 5

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

DIMENSION	LENGTH (Inches)	
	PRE-TEST VALUES	POST-TEST VALUES
A Left Rear Seat Crossmember Y	16.4	16.4
B Right Rear Seat Crossmember Y	17.1	17.1
C Top of Engine X	142.7	138.1
D Bottom of Engine X	140.1	138.4
E Disc Brake Calipers X	149.4	149.1
F Disc Brake Calipers Y	Right = 21.8 Left = 21.7	Right = 22.1 Left = 21.9
G Instrument Panel X	112.4	10.6
H Rear Seat Crossmembers X	Right = 68.0 Left = 67.0	Right = 68.7 Left = 67.9
K Trunk X	11.8	11.2

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	1.5	148.7	-33.2	37.2
2	Rear Seat X-Member @ Right Side	1.4	244.9	-29.4	8.4
3	Top of Engine Block	21.8	66.5	-82.6	39.4
4	Bottom of Engine	8.2	56.0	-72.4	39.5
5	Disc Brake Caliper @ Right Side	20.8	68.3	-79.4	39.2
6	Instrument Panel	28.7	64.8	-50.4	73.7
7	Disc Brake Caliper @ Left Side	15.4	66.8	-67.9	50.0
8	Trunk	18.1	15.8	-16.8	77.5

CAMERA POSITIONS FOR FRONTAL IMPACTS

CAMERA POSITIONS FOR FRONTAL IMPACTS

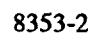


Table 6

HIGH-SPEED CAMERA LOCATIONS

Test No. CT5203 Vehicle: 1996 Nissan Pathfinder XE 4x4 MPV

Camera No.	VIEW	CAMERA POSITIONS (In.)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET (In.)	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	416	67	48	-4	398	25	1010
3	Left Side View	319	41	45.8	-2	301	25	980
4	Driver and Interior View	202	121	77	-11	-	25	1005
5	Steering Column (Bottom)	387	80	46	-2	369	35	1080
6	Steering Column (Top)	387	80	70	-6	369	35	1120
7	Overall Right Side	390	90	52	-4	372	25	1060
8	Right Side View	308	59	51.3	-4	290	25	1070
9	Passenger and Interior View	217	131	78.5	-8	-	28	1100
10	Right Passenger View	331	71	54	-2	-	35	840
11	Windshield View	0	-3	131	-59	-	13	1060
12	Driver Front View	21	17	77	-40	-	8	1000
13	Passenger Front View	21	17	76	-47	-	8	1010
14	Pit View of Engine	0	30	-86	90	-	13	N.T.
15	Pit View of Fuel Tank	0	94	-86	90	-	13	930

*X = film plane to monorail centerline

Y = film plane to impact location

Z = film plane to ground

** = referenced to horizontal plane

N.T. = No Timing

Figure 6

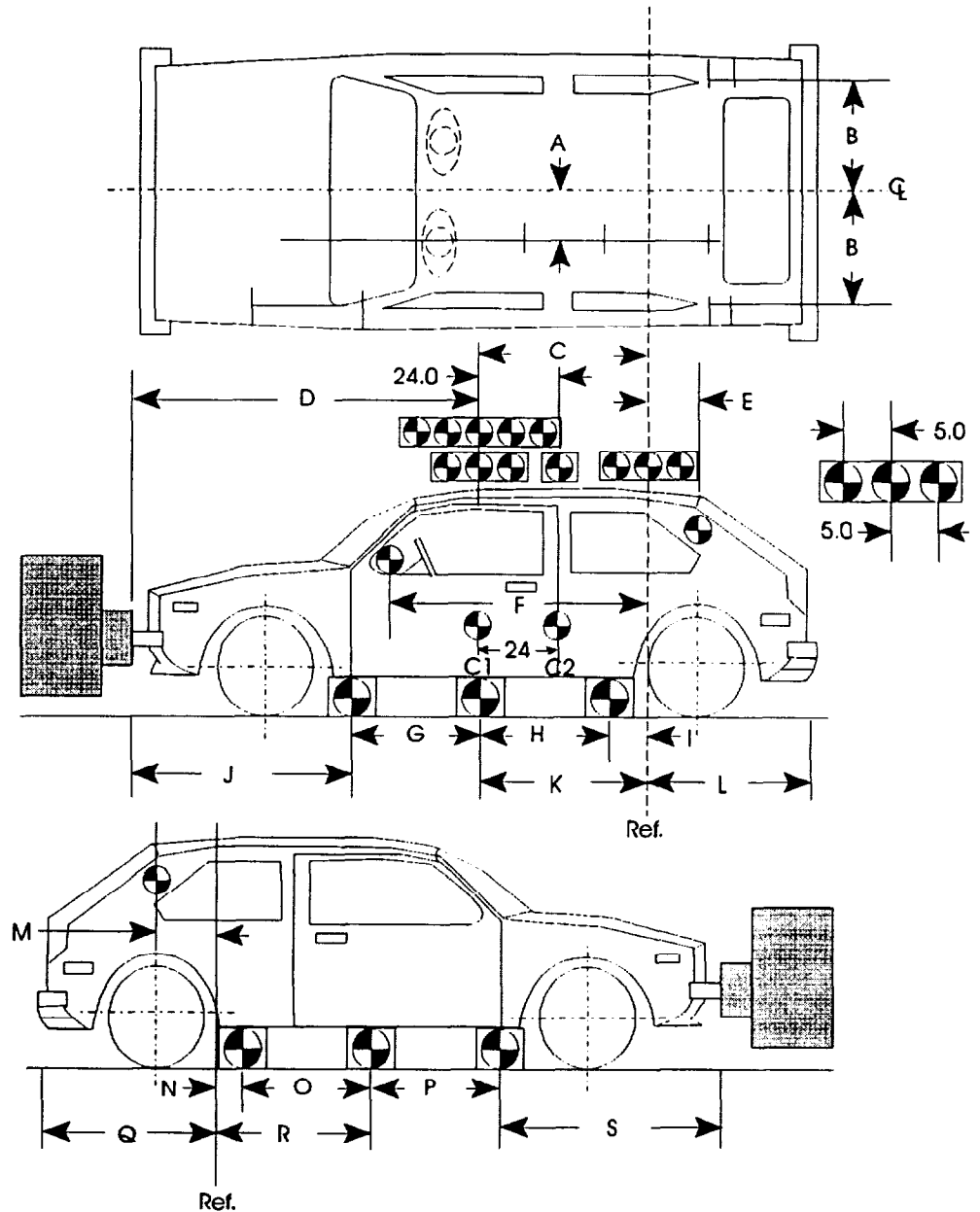
VEHICLE TARGET LOCATIONS
(All dimensions in inches)

Key (Inches)

A =	14.7
B =	22.3

C =	36.0
D =	86.3
E =	11.0
F =	69.2
G =	33.8
H =	33.7
I =	5.0
J =	49.8
K =	38.7
L =	55.6

M =	11.0
N =	4.5
O =	33.7
P =	33.8
Q =	55.6
R =	38.2
S =	50.3



Note: Targets on front fender are 12.0 inches apart. Targets rearward of front fender are 24.0 inches apart.

Figure 7

TEST VEHICLE MEASUREMENTS

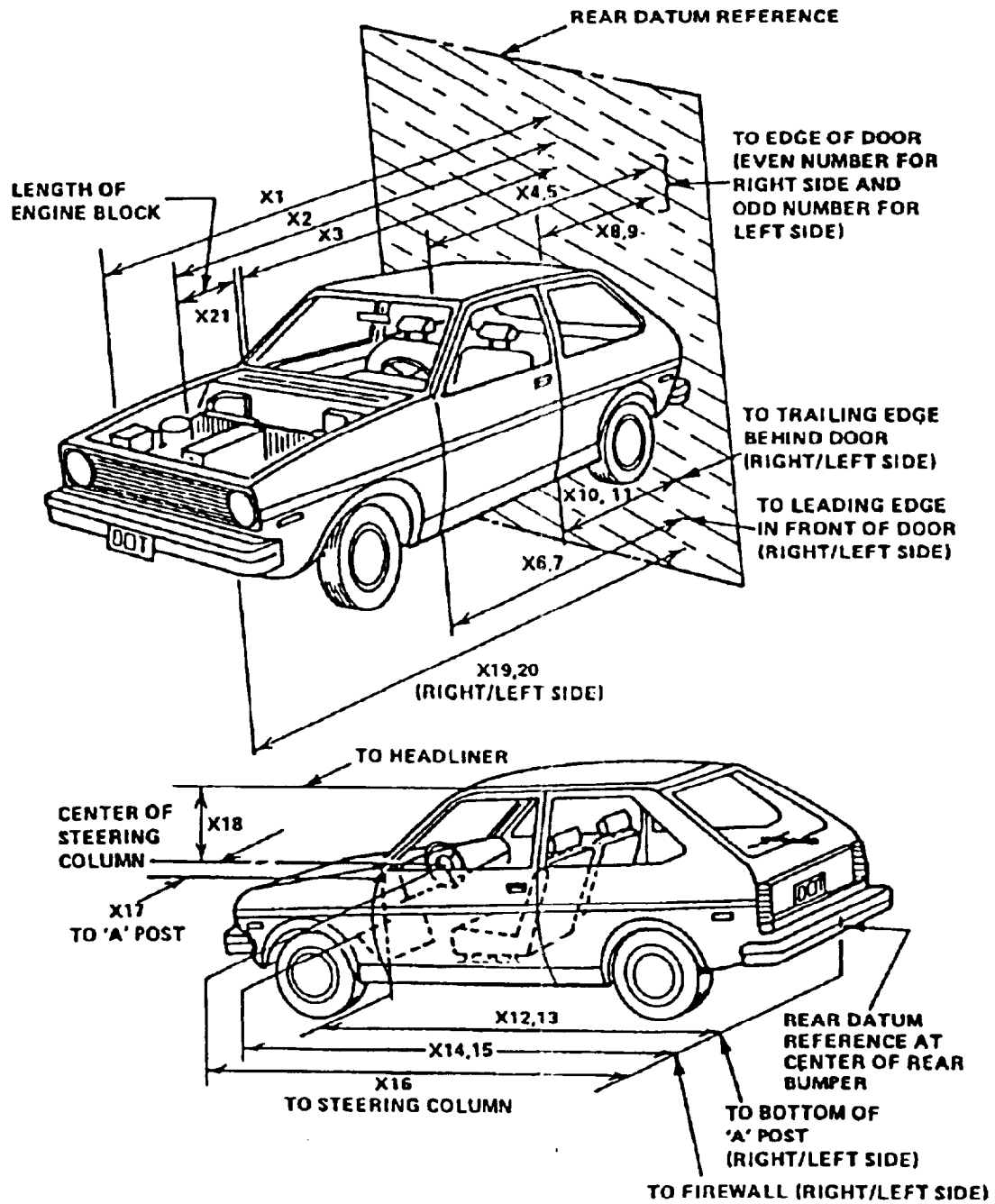


Table 7

VEHICLE MEASUREMENTS

No.		All Dimensions in inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	177.9	161.3	16.6
X2	Rear Surface of Vehicle to Front of Engine	149.2	144.5	4.7
X3	Rear Surface of Vehicle to Firewall	136.5	134.7	1.8
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	128.6	128.2	0.4
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	128.4	127.9	0.5
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	125.3	124.6	0.7
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	125.0	124.1	0.9
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	83.2	82.6	0.6
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	82.9	82.4	0.5
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	81.9	81.4	0.5
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	81.7	81.1	0.6
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	125.8	125.8	0.0
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	125.6	125.4	0.2
X14	Rear Surface of Vehicle to Firewall, Right Side	135.2	134.5	0.7
X15	Rear Surface of Vehicle to Firewall, Left Side	135.2	134.5	0.7
X16	Rear Surface of Vehicle to Steering Column	107.0	111.3	-4.3
X17	Center of Steering Column to "A" Post	16.0	16.8	-0.8
X18	Center of Steering Column to Headliner	18.0	13.5	4.5
X19	Rear Surface of Vehicle to Right Side of Front Bumper	174.5	160.4	14.1
X20	Rear Surface of Vehicle to Left Side of Front Bumper	174.5	161.5	13.0
X21	Length of Engine Block	17.0	17.0	0.0

Section 4

SUMMARY OF RESULTS OF FMVSS NOS. 208, 212, 219 AND 301

- "Occupant Crash Protection," FMVSS No. 208 Data
- "Windshield Mounting," FMVSS No. 212 Data
- "Windshield Zone Intrusion," FMVSS No. 219 (Partial) Data
- "Fuel System Integrity," FMVSS No. 301

Table 8

DUMMY INJURY CRITERIA VALUESNHTSA No. : CT5203 Vehicle : 1996 Nissan Pathfinder XE 4x4 MPV

	MAXIMUM ACCELERATION (g's)								
	HEAD				CHEST				
	X	Y	Z	R	X	Y	Z	R*	Displacement
Dummy (1)	-54.9	8.1	31.0	59.6	-50.4	5.2	17.3	50.8	-1.8
Dummy (2)	-133.2	-11.9	34.0	137.1	-52.5	-2.9	22.5	52.7	-1.1

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Dummy (1)	-1328.3	-1033.1
Dummy (2)	-1474.0	-1496.2

	HEAD INJURY CRITERIA**			
	HIC	36 millisecond Maximum		Avg. Acc (g)
		t ₁ (msec)	t ₂ (msec)	t ₁ TO t ₂
Dummy (1)	423	63.00	92.76	45.83
Dummy (2)	809	59.64	69.84	91.14

* Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

Table 9

FMVSS NO. 208 - SEAT BELT WARNING SYSTEM CHECK

With occupant in driver's position, the lap belt in stowed position, and ignition switch placed in "Start/On" position:

Log time duration of audible warning signal = 6.0 sec.

Log time duration of reminder light operation = Continuous sec.

With occupant in driver's position, lap belt in use, and the ignition switch placed in "Start/On" position :

Log time duration of audible warning signal
(audible warning should not operate) = - sec.

Log time duration of reminder light operation = 0 sec.

Note wording of visual warning :

Fasten Seat Belt -

Fasten Belt -

Symbol 101 X

Table 10

FMVSS NO. 208 - LABELING AND DRIVER'S MANUAL INFORMATION

Locate label which describes manufacturers maintenance or replacement schedule for crash-deployed occupant protection system.

Describe location :

Label located on driver side sunvisor

The label states, "This system must be inspected 10 years after date of manufacture shown on the certification label, or if the 'airbag' lamp does not go on during ignition, flashes intermittently, or remains on."

Were appropriate instructions concerning maintenance and/or replacement of this system provided ?

YES X NO -

Was a description of the functional operation of the system provided ?

YES X NO -

Is there a reference to the instructions and description of the system on the label ?

YES X NO -

Was an owner's manual provided ?

YES X NO -

Did the owner's manual contain appropriate information concerning maintenance and/or replacement and a description of the functional operation of the system ?

YES X NO -

Table 11

FMVSS NO. 208 - READINESS INDICATOR

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement.

Is the system totally mechanical ? YES - NO X

Describe the location of the readiness indicator :

Readiness indicator located middle of instrument cluster

Is the readiness indicator clearly visible to the driver ? YES X NO -

Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided ?

YES X NO -

Table 12

FMVSS NO. 208 - COMFORT AND CONVENIENCE TEST SUMMARY

Test Vehicle NHTSA No. :	CT5203
Make/Model :	1996 Nissan Pathfinder XE 4x4 MPV
Date of Comfort/Convenience Check :	4/16/96
Technician Performing Check :	VMP
GVWR :	5150

Seat belt comfort and convenience requirements cover vehicles manufactured on or after September 1, 1986, which have a gross vehicle weight rating of 10,000 pounds or less. Exemptions to this rule are belts installed in a walk-in, van-type vehicle and manual Type 2 belt systems installed in the front outboard seating positions of passenger automobiles. On or after September 1, 1989, the exemption of the type 2 manual seat belts installed in the front outboard seating positions of passenger automobiles will change depending on the states' enactment of mandatory usage laws.

Was vehicle built after or on September 1, 1986, and is it equipped with :

1. Automatic seat belts YES - NO X

If yes, go to requirements D1, D2, and D3

2. Manual seat belts* YES X NO -

a. The seat belts, other than Type 2 lap/shoulder belts, are located in the front outboard seating positions of a passenger automobile.

YES - NO X

(Go to requirements D3, D4, D5, and D6)

b. The seat belt system is Type 2 lap/shoulder belt in the front outboard seating positions or the seat belts are located in a walk-in van.

STOP

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

Table 12 (cont.)

D1
CONVENIENCE HOOKS

A convenience hook or other device is provided to stow seat belt webbing to facilitate entering or exiting the vehicle.

YES - NO X

Check the option which applies to this test vehicle:

1. A convenience hook or other device automatically releases the webbing when the automatic belt system is operational and remains in the released mode as long as the vehicle's ignition switch is moved to the "on" or "start" position and the vehicle's drivetrain is engaged.

YES N/A NO N/A

2. A convenience hook or other device automatically releases the webbing when the automatic belt system is operational and remains in the released mode as long as the vehicle's ignition switch is moved to the "on" or "start" position and the vehicle's parking brake is in the released mode (non-engaged)

YES N/A NO N/A

D2
WEBBING TENSION - RELIEVING DEVICE

The seat belt assembly installed in the outboard designated seating position has either manual or automatic tension relieving devices permitting the introduction of slack in the webbing of the shoulder belt ("comfort clips" or "window shade" devices).

YES - NO X

Check the owner's manual and determine the maximum amount of slack recommended by the manufacturer in inches. The recommended slack is _____ inches. Introduce this slack into the shoulder belt before testing the vehicle to comply with the requirements of FMVSS 208 S5.1. A warning is included in the owner's manual that introducing slack beyond the amount specified can significantly reduce the effectiveness of the shoulder belt.

YES N/A NO N/A

(If NO, provide explanation.)

Check the option which applies to this test vehicle:

1. This vehicle is equipped with automatic seat belts and the tension relieving device is cancelled each time the adjacent door is opened.

YES N/A NO N/A

(If NO, provide explanation.)

Table 12 (cont.)

2. This vehicle is equipped with manual belts, required to meet FMVSS 208 S4.6, and the tension relieving device is cancelled each time one of the following options occurs:

a. The adjacent door is opened.	YES	<u>N/A</u>	NO	<u>N/A</u>
b. The latch plate is released from the buckle.	YES	<u>N/A</u>	NO	<u>N/A</u>
3. This is an open-body vehicle, without doors. Does the manual mean to cancel any shoulder belt slack introduced by a tension relieving device to operate properly ?

YES	<u>N/A</u>	NO	<u>N/A</u>
-----	------------	----	------------

(If NO, provide explanation.)

D3 BELT CONTACT FORCE

1. Do not measure the belt contact force if the manual or automatic seat belt assemblies in this vehicle incorporate a webbing tension relieving device. Does the vehicle incorporate a tension relieving device?

YES	<u>-</u>	NO	<u>X</u>
-----	----------	----	----------
2. Seat are adjusted according to instructions in Appendix B.

YES	<u>X</u>	NO	<u>-</u>
-----	----------	----	----------
3. The test dummies are positioned according to dummy position placement instructions in Appendix B and Appendix C.

YES	<u>X</u>	NO	<u>-</u>
-----	----------	----	----------
4. Close the vehicle's adjacent door, pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest, then fasten the latch. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. Measure the contact force exerted by the belt webbing on the dummy's chest. The contact force is 0.4 pounds. Contact the COTR if the contact force exceeds 0.7 pounds.

Table 12 (cont.)

D4
LATCHPLATE ACCESSIBILITY

- | | | | | | |
|----|--|-----|--------------|----|--------------|
| 1. | Position the test dummy in the driver's seat or passenger's seat in its forward most adjustment position. | YES | <u> X </u> | NO | <u> - </u> |
| 2. | Attach the inboard and outboard reach string. | YES | <u> X </u> | NO | <u> - </u> |
| 3. | Extend each line backward and outboard to generate arcs of the reach envelope of the test dummy's arms. With the latchplate in the normal stowed position, check to assure that the latchplates are within the reach envelope. | YES | <u> X </u> | NO | <u> - </u> |
| 4. | Using the clearance test block, determine if there is sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latchplate or buckle. | YES | <u> X </u> | NO | <u> - </u> |

D5
RETRACTION

- | | | | | | |
|----|--|-----|--------------|----|--------------|
| 1. | Seats and seat backs are adjusted according to instructions in Appendix B "General Test Conditions" in TP-208-09, dated March 15, 1993. | YES | <u> X </u> | NO | <u> - </u> |
| 2. | Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B and restrain the dummies, using the belt systems for the positions being tested. | YES | <u> X </u> | NO | <u> - </u> |
| 3. | Outboard armrests which are capable of being stowed on vehicle seats shall be placed in their stowed positions. | YES | <u> X </u> | NO | <u> - </u> |
| 4. | Check the option which applies to this test vehicle: | | | | |
| | a. The torso and lap belt webbing of the seat belt system automatically retract to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released. | YES | <u> X </u> | NO | <u> - </u> |

Table 12 (cont.)

b. The torso and lap belt webbing of the seat belt system automatically retract when the seat belt latchplate is released.		YES	<u>X</u>	NO	<u>-</u>
5.	With the webbing and hardware in the stowed position, close the door to assure that the webbing and hardware are prevented from being pinched.	YES	<u>X</u>	NO	<u>-</u>
6.	If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, check to assure that the belt system fully retracts when the tension-relief device is manually deactivated.	YES	<u>N/A</u>	NO	<u>N/A</u>

D6
ACCESSIBILITY

The requirements for accessibility do not apply to:

1. Seats whose seat cushions are removable so that the seat back serves a function other than seating;
2. Seats which are removable;
3. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

If the seats in this vehicle are different than the criteria above, then determine if:

1. Each manual seat belt assembly whose webbing is designed to pass through the seat cushion or between the seat cushion and seat back has one of the following three parts (the seat belt latchplate, the buckle, or the seat belt webbing) on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant).

YES	<u>X</u>	NO	<u>-</u>
-----	----------	----	----------
2. The remaining two seat belt parts are accessible under normal conditions.

YES	<u>X</u>	NO	<u>-</u>
-----	----------	----	----------

Table 12 (cont.)

- | | | | | |
|----|--|-----|--------------|-----------------|
| 3. | The buckle and latchplate pass through the guides or conduits provided and do not fall behind the seat when the following events occur in order: | | | |
| | a. The belt is completely retracted or, if the belt is non-retractable, the belt is unattached. | YES | <u> X </u> | NO <u> - </u> |
| | b. The seat is moved to any position to which it is designed to be adjusted. | YES | <u> X </u> | NO <u> - </u> |
| | c. The seat back, if foldable, is folded forward as far as possible and then moved backward into positions. | YES | <u> X </u> | NO <u> - </u> |
| 4. | Is the inboard receptacle end of the seat belt assembly which is installed in the outboard designated seating position accessible with the center arm rest in any position to which it can be adjusted without moving the armrest? | YES | <u> X </u> | NO <u> - </u> |

D7
LATCH MECHANISM

A seat belt assembly installed in a passenger car, except an automatic belt assembly, shall have a latch mechanism:

- | | | | | |
|----|--|-----|--------------|-----------------|
| 1. | Whose components are accessible to a seated occupant in both the stowed and operational positions. | YES | <u> X </u> | NO <u> - </u> |
| 2. | That releases both the upper torso restraint and the lap belt simultaneously, if the assembly has a lap belt and an upper torso restraint that require unlatching for release of the occupant. | YES | <u> X </u> | NO <u> - </u> |
| 3. | That releases at a single point by a push button action. | YES | <u> X </u> | NO <u> - </u> |

Figure 8

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

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

The windshield is bonded in place with 0.8 inch plastic and rubber trim along sides of windshield and 0.5 inch plastic trim along top of windshield. A 0.4 inch rubber trim in combination with a plastic shroud covers the bottom of the windshield.

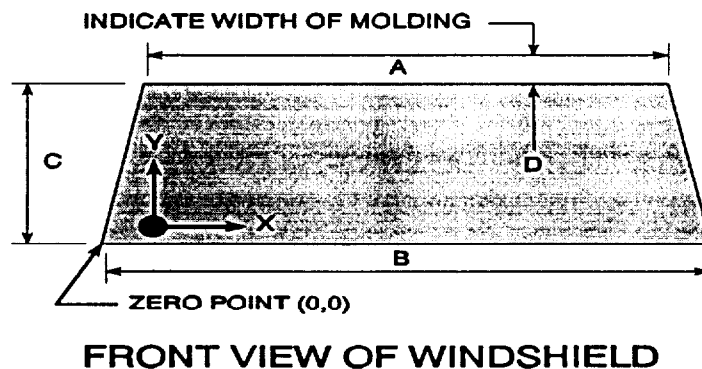
FMVSS 212 REQUIREMENTS :

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

FMVSS 212 TEST DATA :

	WINDSHIELD PERIPHERY		PERCENT RETENTION
	PRE - TEST (in.)	POST - TEST (in.)	
RIGHT SIDE	82.4	82.4	100.0
LEFT SIDE	82.4	82.4	100.0
TOTAL	164.8	164.8	100.0

AREA OF RETENTION FAILURE:



FAILURE DETAILS : None

Figure 9

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

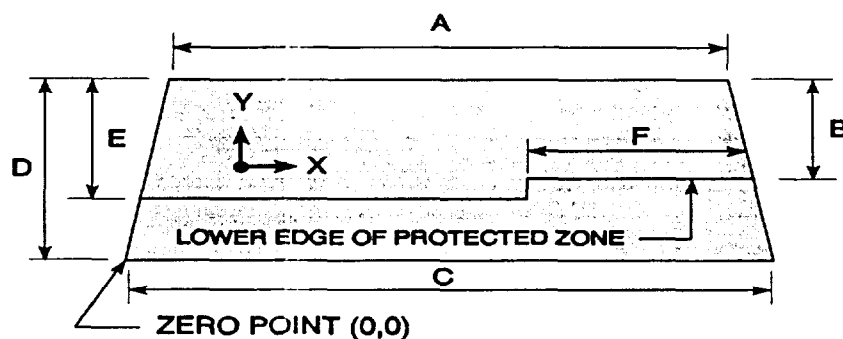
PROTECTED ZONE LOWER EDGE REQUIREMENT :

The lower edge of the protected zone is determined by placing a 6.5" dia. 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, and 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 inches.)

KEY (Inches):

A =	48.0
B =	15.0
C =	60.2
D =	28.3
E =	20.0
F =	33.4



FRONT VIEW OF WINDSHIELD

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 1/4" :

(Show location of penetration on above sketch)

None

COORDINATES		
	X	Y
1		
2		
3		
4		

Table 13

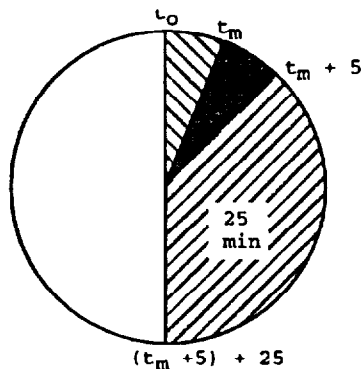
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO. : CT5203 TEST DATE : April 17, 1996Vehicle Mfgr./Make/Model : 1996 Nissan Pathfinder XE 4x4 MPV

Test vehicle fuel tank filled to 92% to 94% of manufacturer's "usable" capacity and with electric fuel pump operating (if it will operate without engine operation). Part 572 test dummies located at each front designated seating position.

TEST VEHICLE IMPACT TYPE : X Frontal (30 mph)
- Oblique (30 mph) with - ° barrier face first
 contacting -
 (driver/passenger) side
- Rear Moving Barrier (30 mph)
- Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:

1. From impact until vehicle motion ceases
2. For five minute period after vehicle motion ceases
3. For next 25 minutes

ACTUAL	MAX ALLOWED
0	1 oz.
0	5 oz.
0	1 oz./1 min.

SOLVENT SPILLAGE DETAILS:

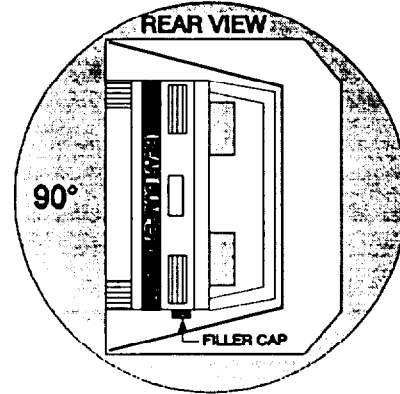
None

Table 14

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE :
0-90 Deg.

Vehicle NHTSA ID No. :
CT5203

**I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :**

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>58</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>58</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. if reqd.
--	----------	----------	----------------------

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	N/A
---	---	---	-----

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

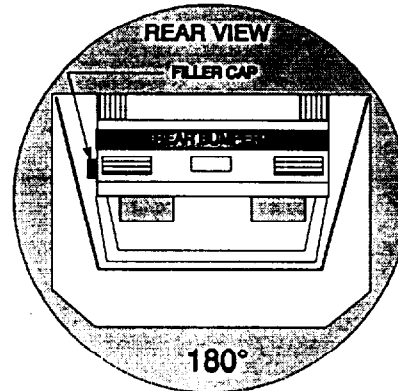
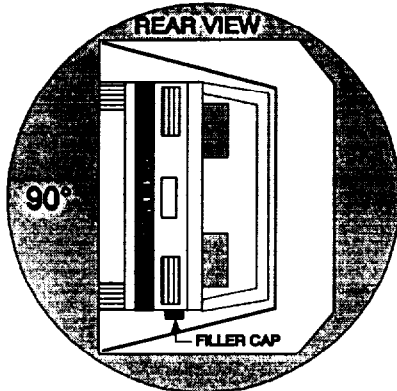
IV. SOLVENT SPILLAGE LOCATION(S) :

None

Table 14
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :
90-180 Deg.

Vehicle NHTSA ID No. :
CT5203



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	05	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	05	seconds
Next whole minute interval	8	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. if reqd.
--	----------	----------	----------------------

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	0
---	---	---	---

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

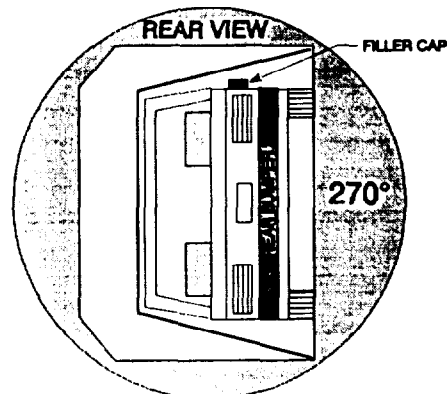
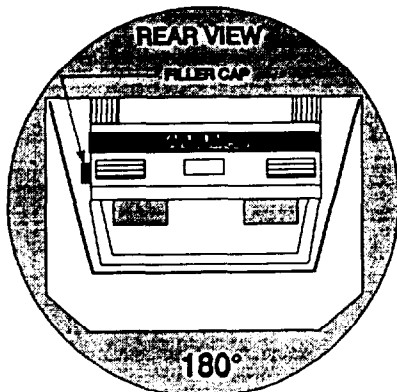
IV. SOLVENT SPILLAGE LOCATION(S) :

None

Table 14
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :
180-270 Deg.

Vehicle NHTSA ID No. :
CT5203



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° 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		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. if reqd.
--	----------	----------	----------------------

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	0
---	---	---	---

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

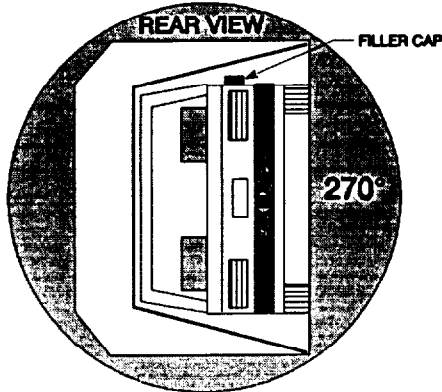
IV. SOLVENT SPILLAGE LOCATION(S) :

None

Table 14
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE :
270-360 Deg.

Vehicle NHTSA ID No. :
CT5203



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>58</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>58</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. if reqd.
--	----------	----------	----------------------

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	N/A
---	---	---	-----

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

IV. SOLVENT SPILLAGE LOCATION(S) :

None

Table 15

POST TEST AIR BAG DATANHTSA No. : CT5203; Test Date: April 17, 1996; Technician: VMPVehicle Model Year/Make/Model: 1996 Nissan Pathfinder XE

A. No. of vent holes: 2 -Driver 2 -Passenger

B. Size of vent holes: (In.²) 1.23 -Driver 0.44 -Passenger

C. Total vent area: (In.²) 2.46 -Driver 0.88 -Passenger

D. Deflated air bag length and width dimensions or, if round, diameter. (In inches)

Driver: ~ 21 -Length; ~ 24 -Width; 24 -Diameter

Passenger: ~ 20 -Height; ~ 24 -Width; ~ 24 -Depth

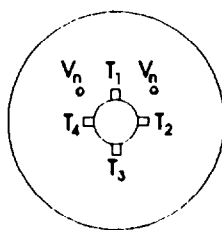
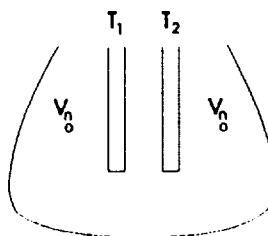
E. Is the air bag tethered?

Driver: X -Yes; - -No; If yes, record length of tether- 8 in.

Passenger: X -Yes; - -No; If yes, record length of tether- 14 in.

Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.

(Note: Not to scale; V_n = Vent hole_n, T_n = Tether_n).

DRIVER
vents underneath bagPASSENGER
vents underneath bag

F. Record part numbers and manufacturer name of the air bag and gas generator.

Driver: Air bag: 228507C

Generator: WM0W095X242612

Passenger: Air bag:

Generator: 2002866D

G. Cut out a 6 inch by 6 inch swatch of the bag material and at least one tether from each bag, mark the vehicle's NHTSA number on the swatch, and send these parts to the COTR with the test report.

Table 16

ACCIDENT INVESTIGATION DIVISION DATA

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1996 Nissan Pathfinder XE 4x4 MPV

VEHICLE NHTSA NO. : CT5203 VIN NO. : JN8AR05Y5TW014376

WHEELBASE: 106.3 in. BUILD DATE: 12/95 TEST DATE: April 17, 1996

VEH SIZE CATEGORY: MPV TEST WEIGHT: 4618 lbs.

FRONT OVERHANG: 32.2 in. OVERALL WIDTH: 68.7 in.

COLLISION DEFORMATION (CDC) CODE: 12FDEW2

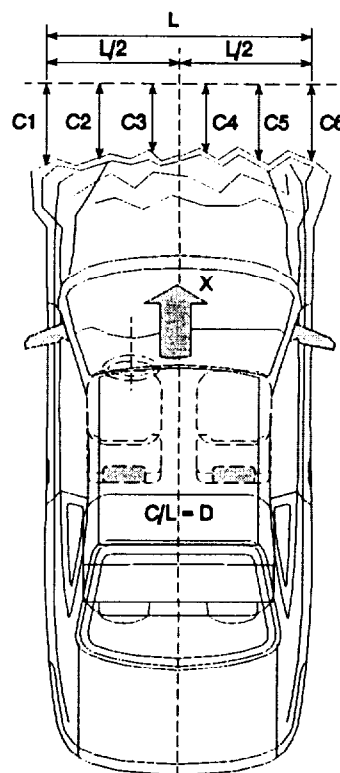
IMPACT MODE: 30 mph zero degree frontal barrier.

CRUSH DEPTH DIMENSIONS: (Inches)

C1 =	<u>11.9</u>	C4 =	<u>16.5</u>
C2 =	<u>15.2</u>	C5 =	<u>15.7</u>
C3 =	<u>16.2</u>	C6 =	<u>12.8</u>

MIDPOINT OF DAMAGE: D=
(Vehicle Longitudinal Centerline) 31.6 in.

LENGTH OF DAMAGE
REGION: L= 63.1 in.



Remarks: None

Table 17
TEST VEHICLE NONCOMPLIANCE NOTICE

NHTSA Contract Lab : Calspan Advanced Technology Center
Lab Project Manager & Telephone No. : David J. Travale (716) 632 - 7500
Date of Test : April 17, 1996 Vehicle NHTSA No. : CT5203
Vehicle Manufacturer : Nissan Motor Company Ltd.
Model Year : 1996 VIN : JN8AR05Y5TW014376
Model : Pathfinder XE Body Style: 4x4 MPV Build Date : 12/95
Dummy Stabilized Temperature at Time of Test : °F (Spec. = 69 - 72 °F)
Impact Velocity : 29.2 mph; Time of Test : 12:16
Type of Automatic Restraint System :
Driver : Airbag
Passenger : Airbag

Failure Details :

The vehicle as tested, appears to comply with the requirements of FMVSS Nos. 208, 212, 219(partial), and 301.

Appendix A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

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A-4	POST -TEST LEFT SIDE VIEW	A-6
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A-11	PRE-TEST PASSENGER SIDE VIEW	A-13
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A-18	POST-TEST PASSENGER KNEE BOLSTER	A-20
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A-23	POST-TEST PASSENGER AIRBAG VIEW	A-25



Figure A-1 PRE-TEST FRONT VIEW



Figure A-2 POST-TEST FRONT VIEW



Figure A-3 PRE-TEST LEFT SIDE VIEW



Figure A-4 POST-TEST LEFT SIDE VIEW



Figure A-5 PRE-TEST RIGHT SIDE VIEW



Figure A-6 POST-TEST RIGHT SIDE VIEW



Figure A-7 PRE-TEST FRONT UNDERBODY VIEW



Figure A-8 POST-TEST FRONT UNDERBODY VIEW



Figure A-9 PRE-TEST DRIVER SIDE VIEW
A-11



Figure A-10 POST-TEST DRIVER SIDE VIEW
A-12



Figure A-11 PRE-TEST PASSENGER SIDE VIEW



Figure A-12 POST-TEST PASSENGER SIDE VIEW

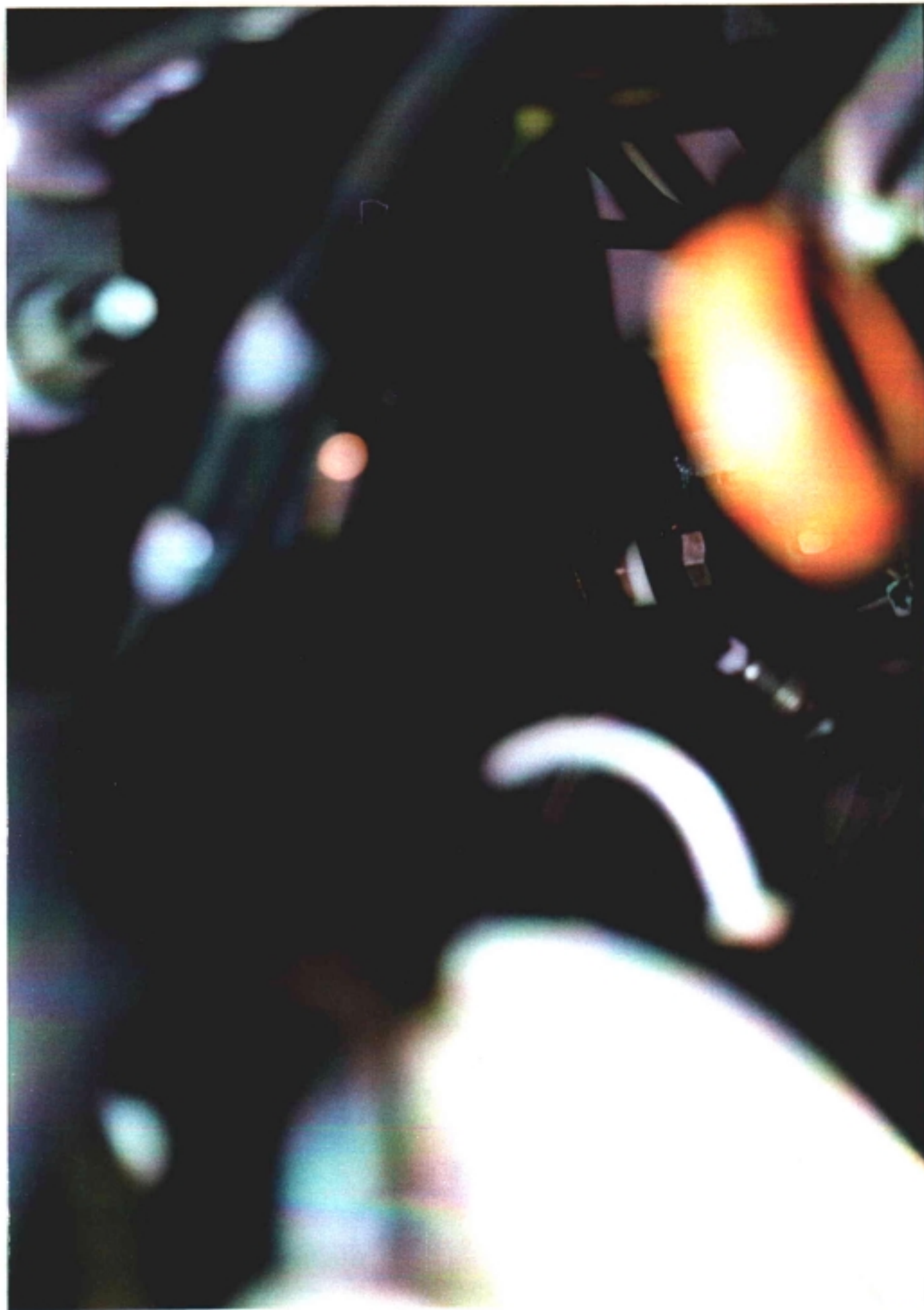


Figure A-13 PRE-TEST UNDERBODY STEERING SHAFT



Figure A-14 POST-TEST UNDERBODY STEERING SHAFT

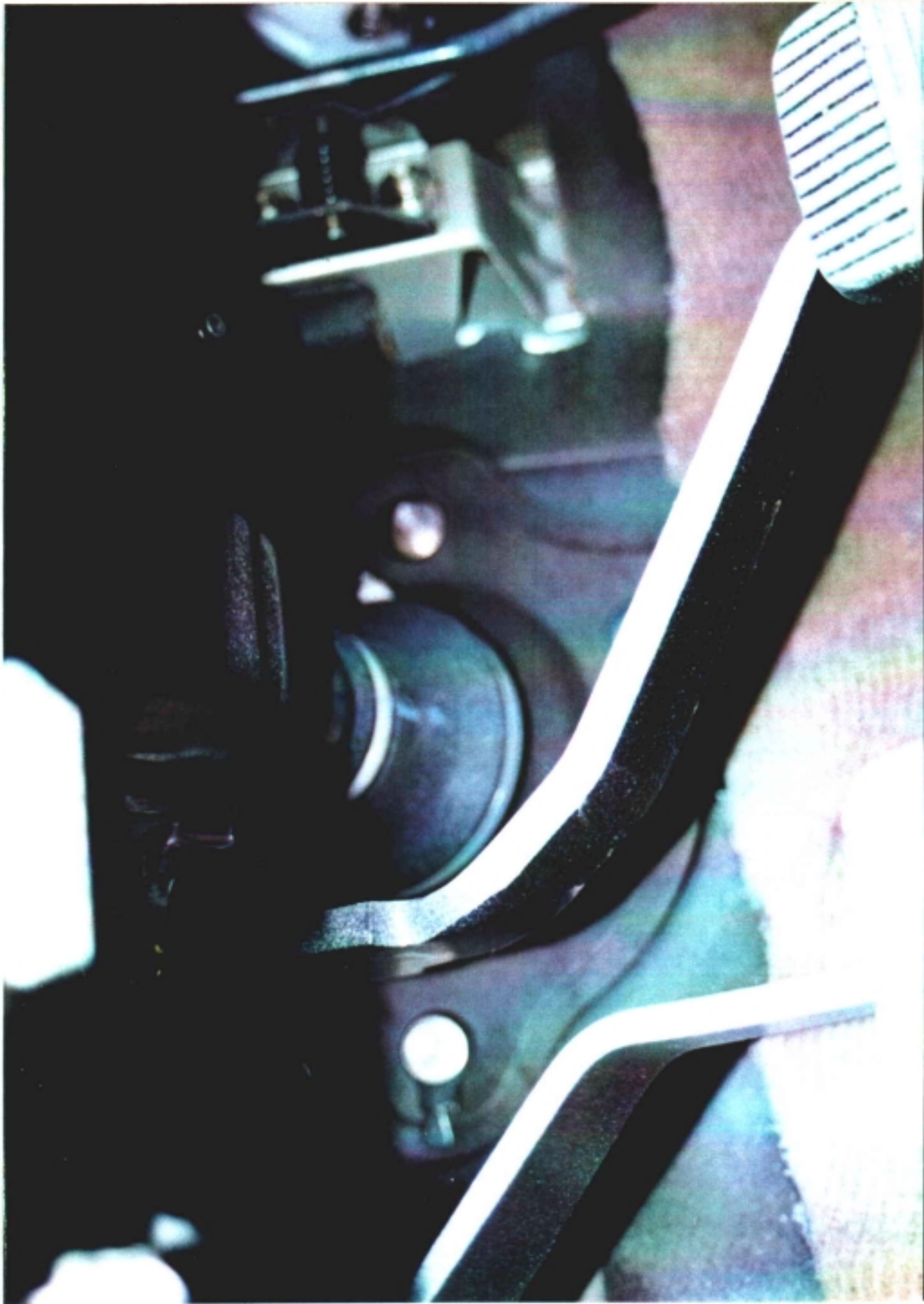


Figure A-15 PRE-TEST STEERING COLUMN/FIREWALL INSIDE VIEW

PHOTOGRAPH NOT AVAILABLE

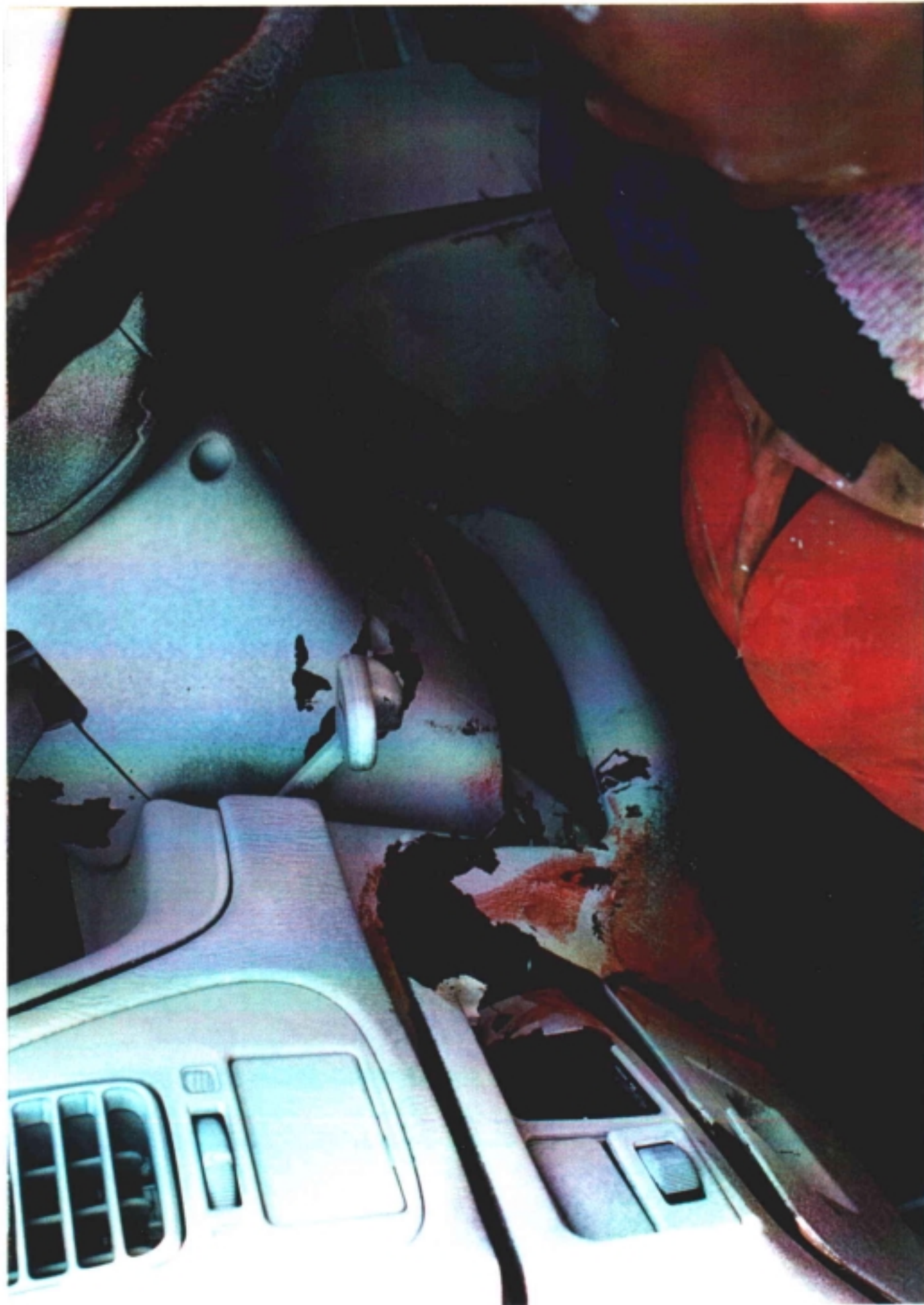


Figure A-17 POST-TEST DRIVER KNEE BOLSTER



Figure A-18 POST-TEST PASSENGER KNEE BOLSTER



Figure A-19 VEHICLE IMPACT

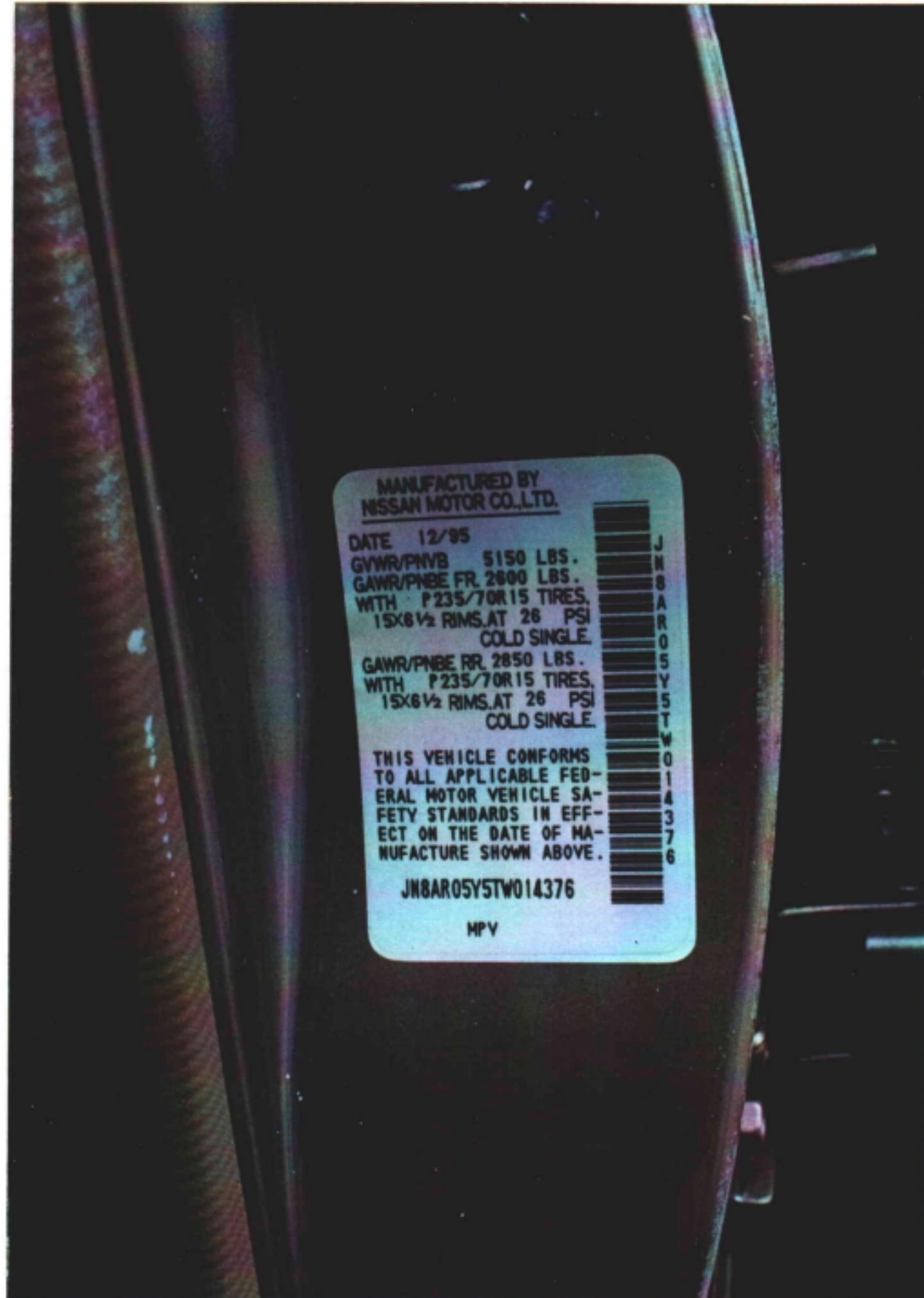


Figure A-20 CERTIFICATION PLACARD
A-22

PHOTOGRAPH NOT AVAILABLE



Figure A-22 POST-TEST DRIVER AIRBAG VIEW



Figure A-23 POST-TEST PASSENGER AIRBAG VIEW

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

NOTE : Data trace scales are automatically scaled at the
request of the COTR. Use caution when
reviewing data.

TEST NO. CT5203

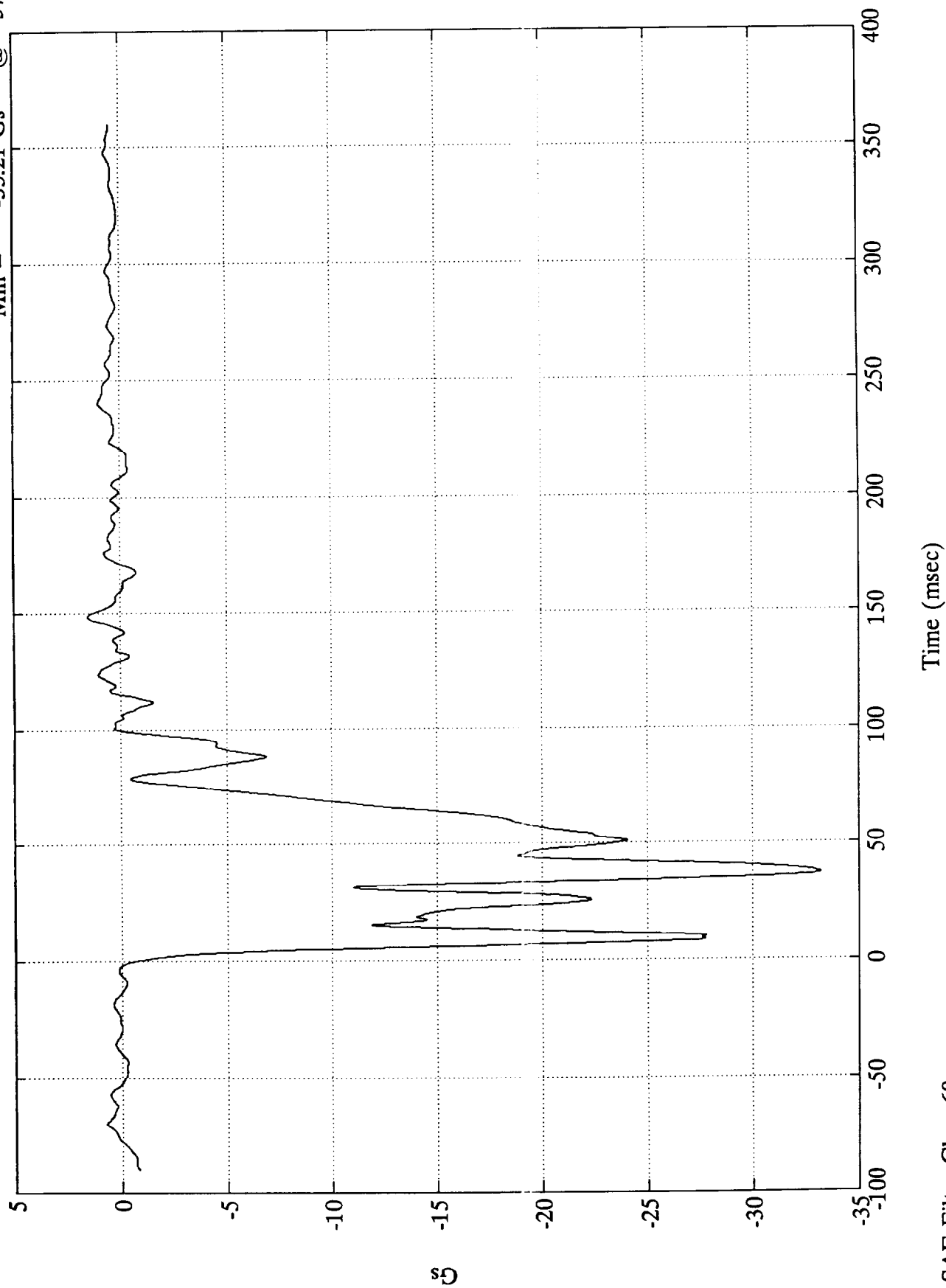
VEHICLE

SAE FILTER CHANNEL CLASS

60

Left Rear X-member X

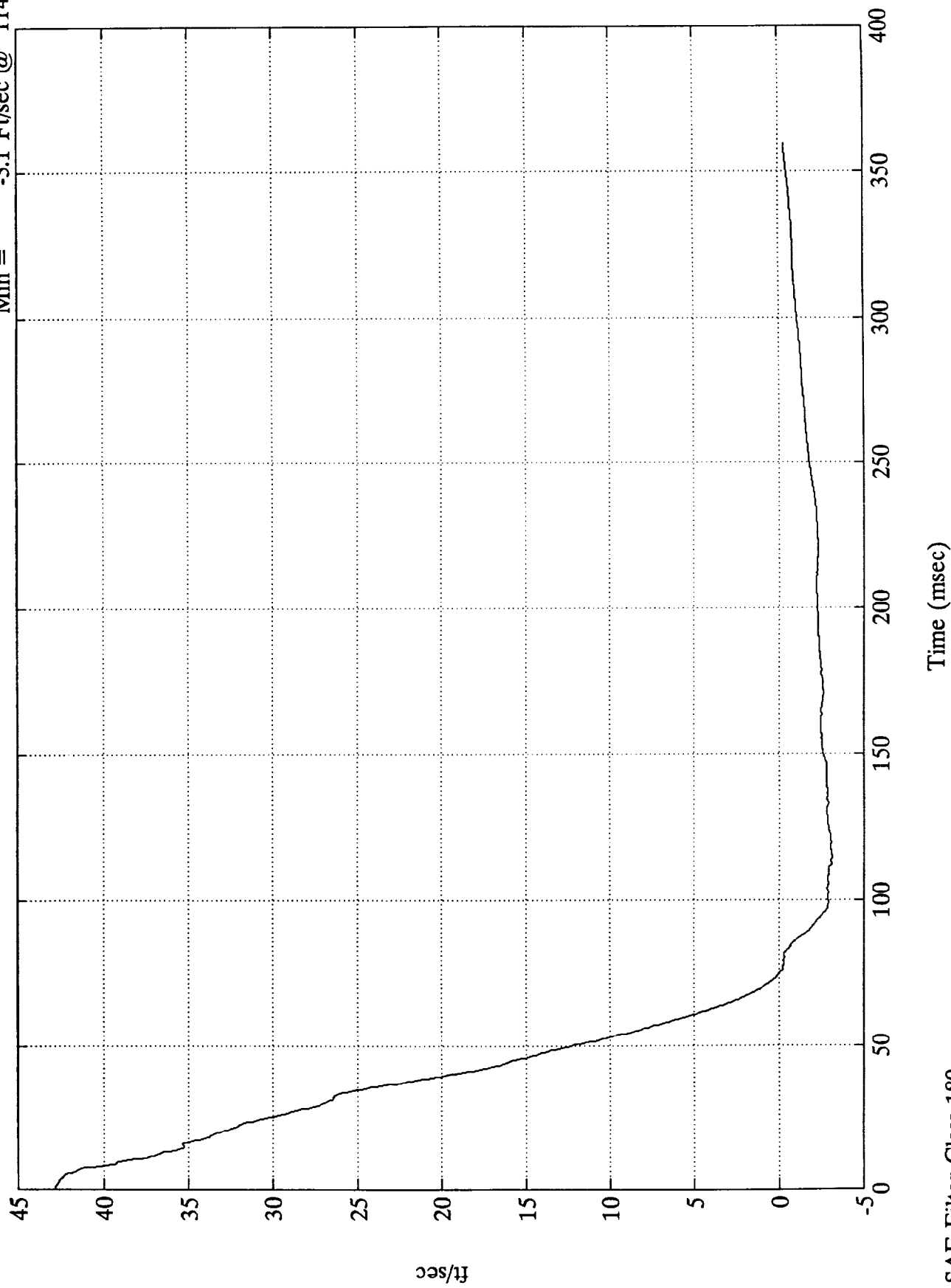
Max = 1.50 Gs @ 148.68 msec
Min = -33.21 Gs @ 37.20 msec



SAE Filter Class 60

1st Integral Left Rear X-member X

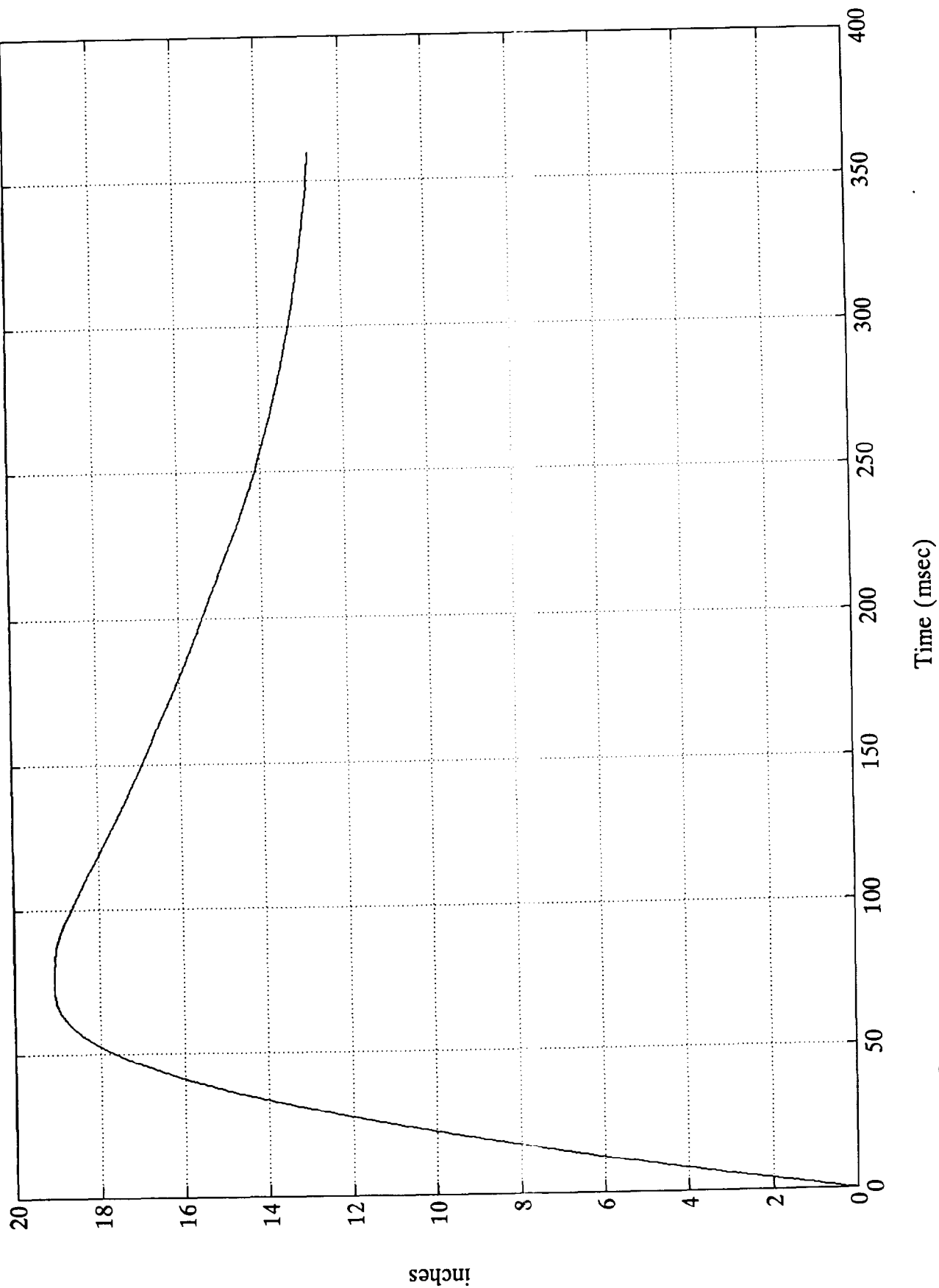
Max = 42.8 Ft/sec @ -0.00 msec
Min = -3.1 Ft/sec @ 114.84 msec



208 Test #4 - 1996 Nissan Pathfinder

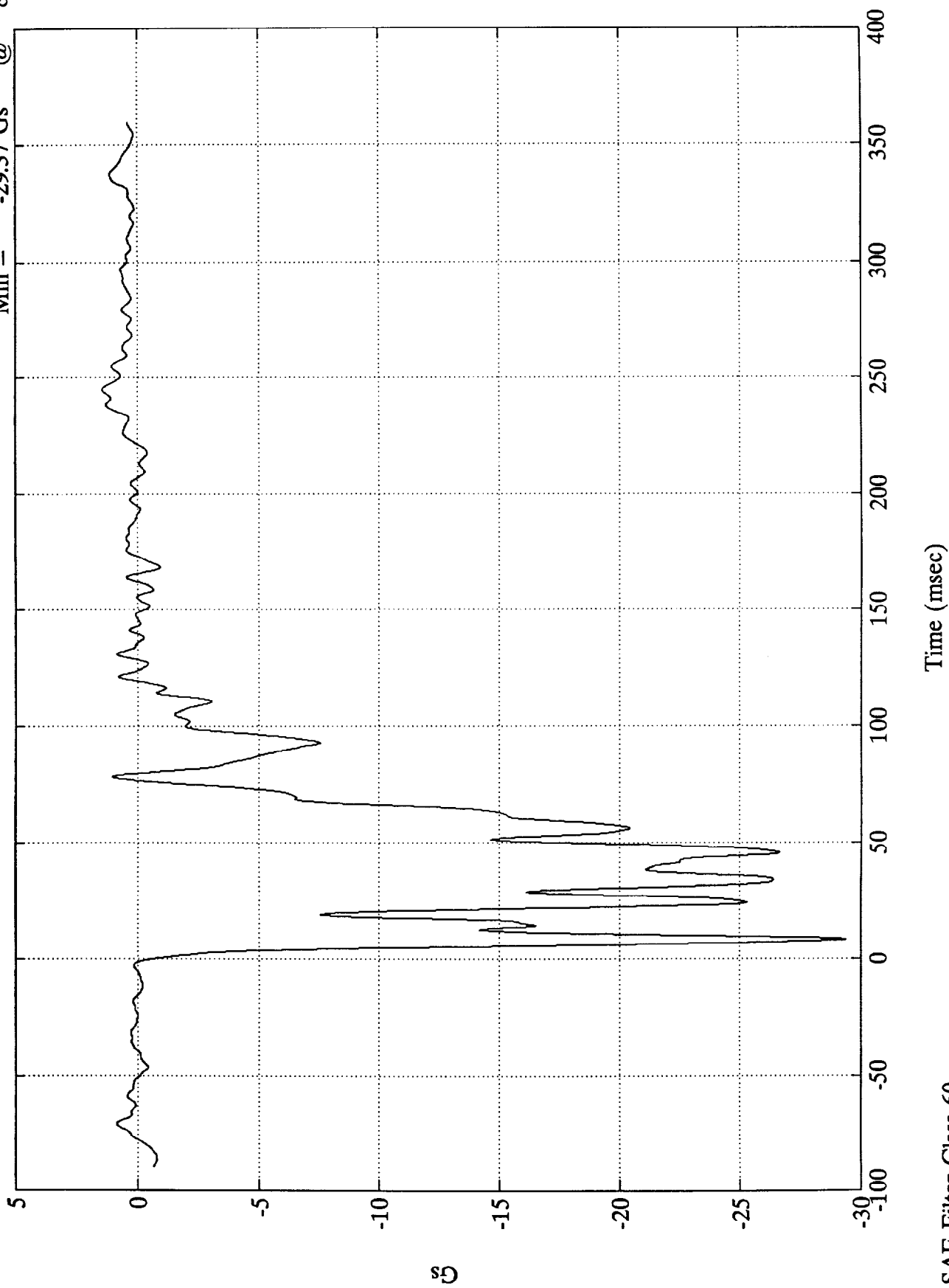
2nd Integral Left Rear X-member X

Max = 19.0 Inches @ 74.63 msec
Min = 0.0 Inches @ -0.00 msec



SAE Filter Class 180

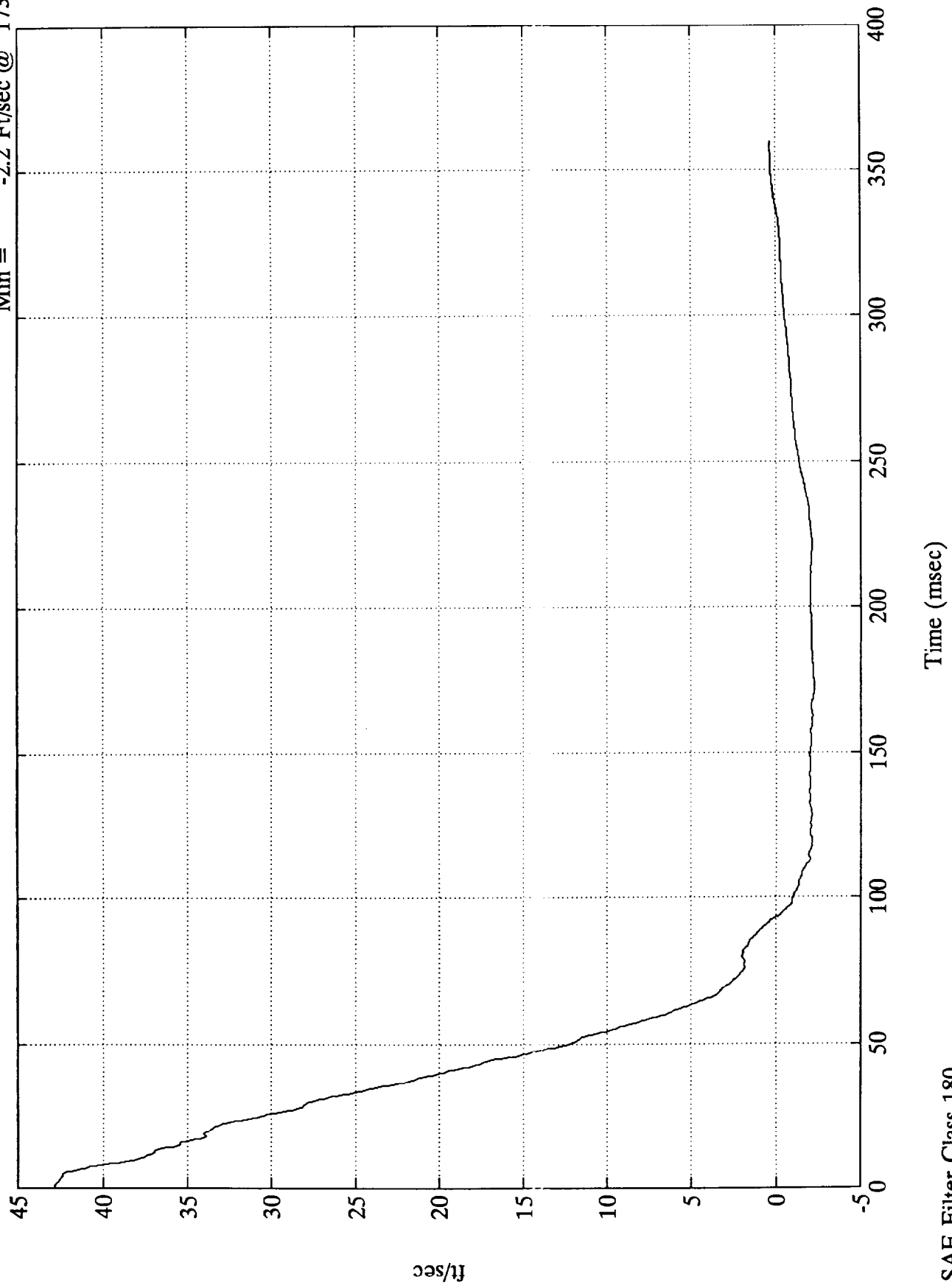
Right Rear X-member X
 Max = 1.44 Gs @ 244.91 msec
 Min = -29.37 Gs @ 8.39 msec



208 Test #4 - 1996 Nissan Pathfinder

1st Integral Right Rear X-member X

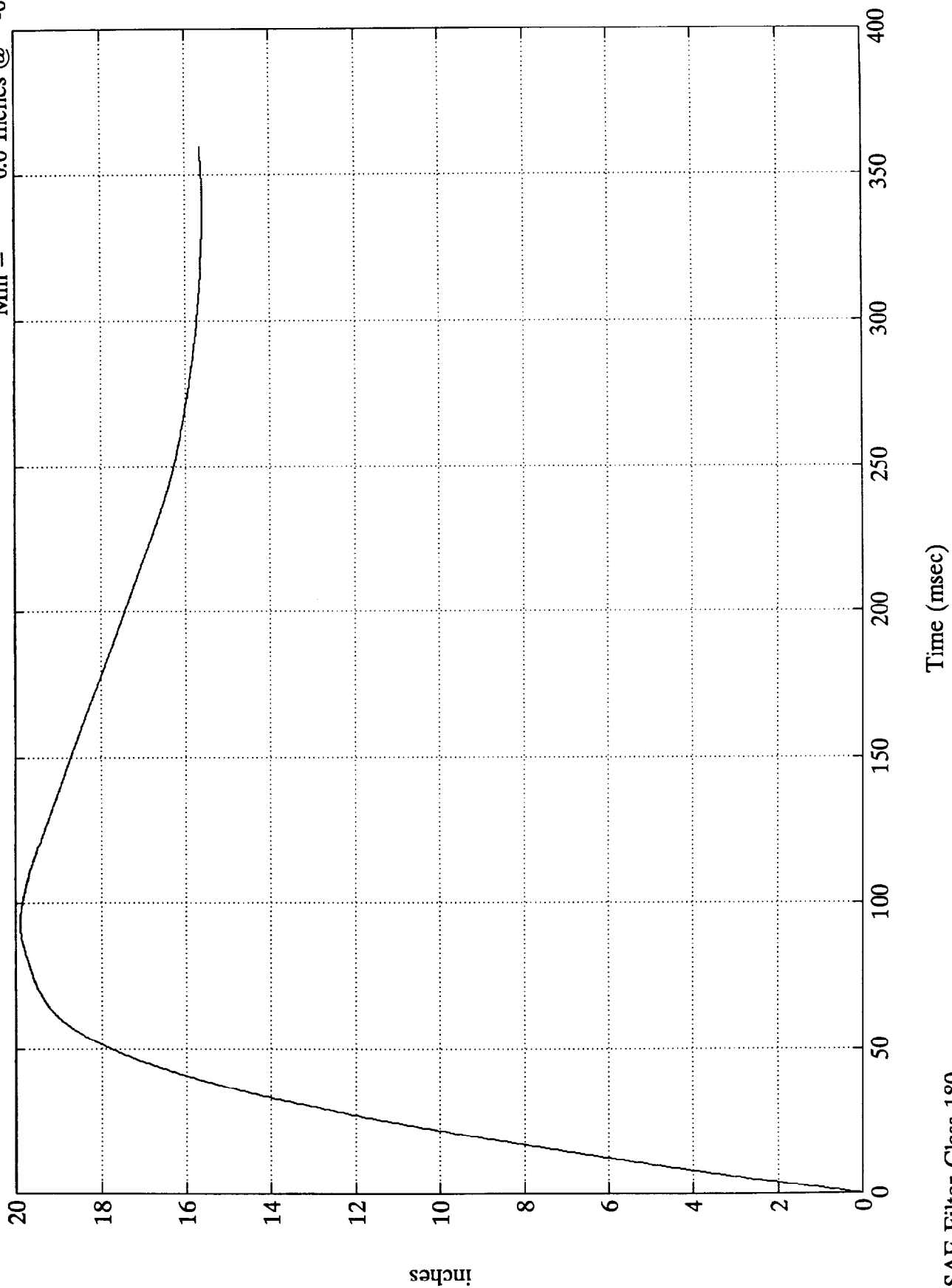
Max = 42.8 Ft/sec @ 0.23 msec
Min = -2.2 Ft/sec @ 173.76 msec



208 Test #4 - 1996 Nissan Pathfinder

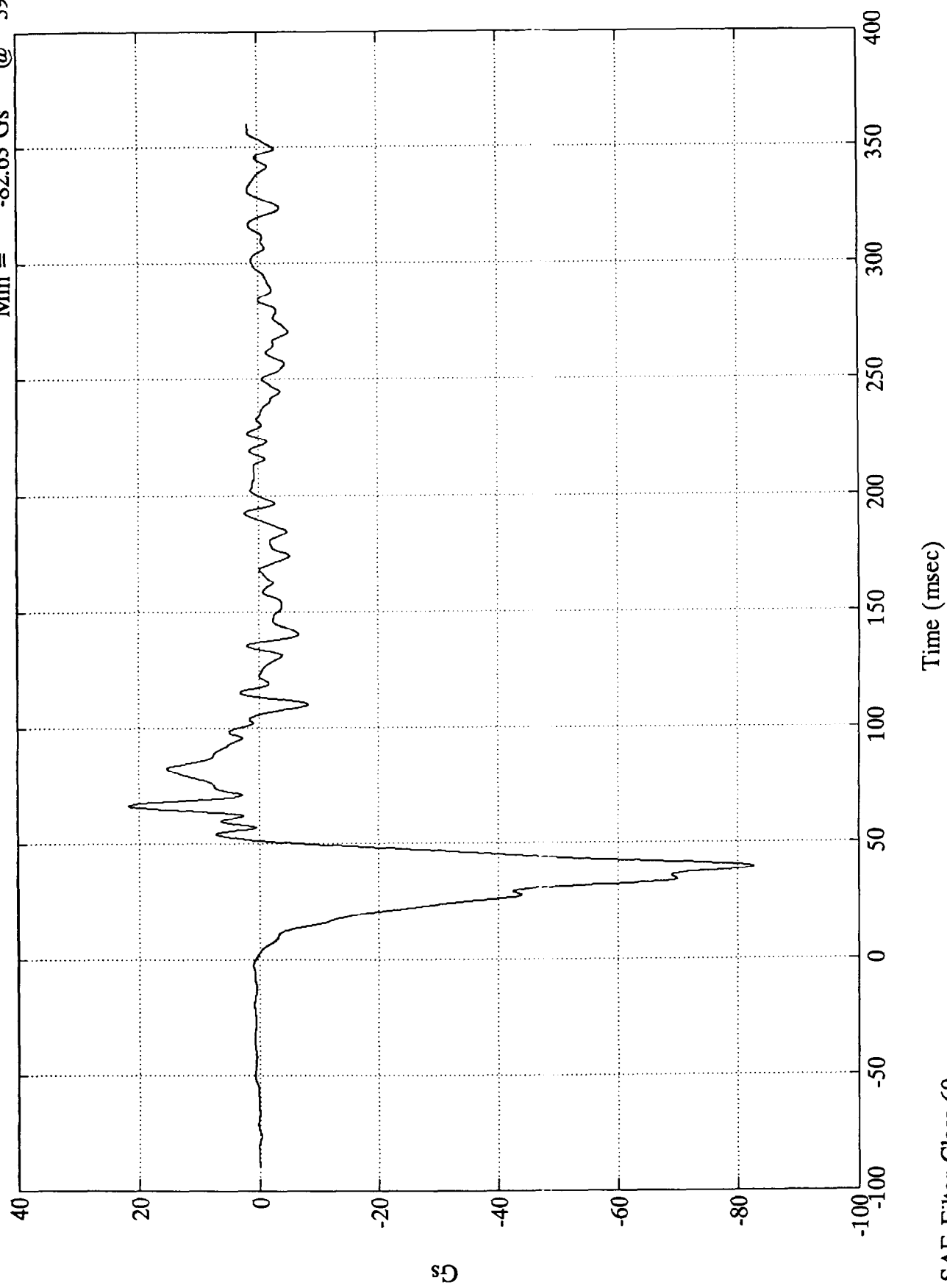
2nd Integral Right Rear X-member X

Max = 19.9 Inches @ 93.12 msec
Min = 0.0 Inches @ -0.00 msec



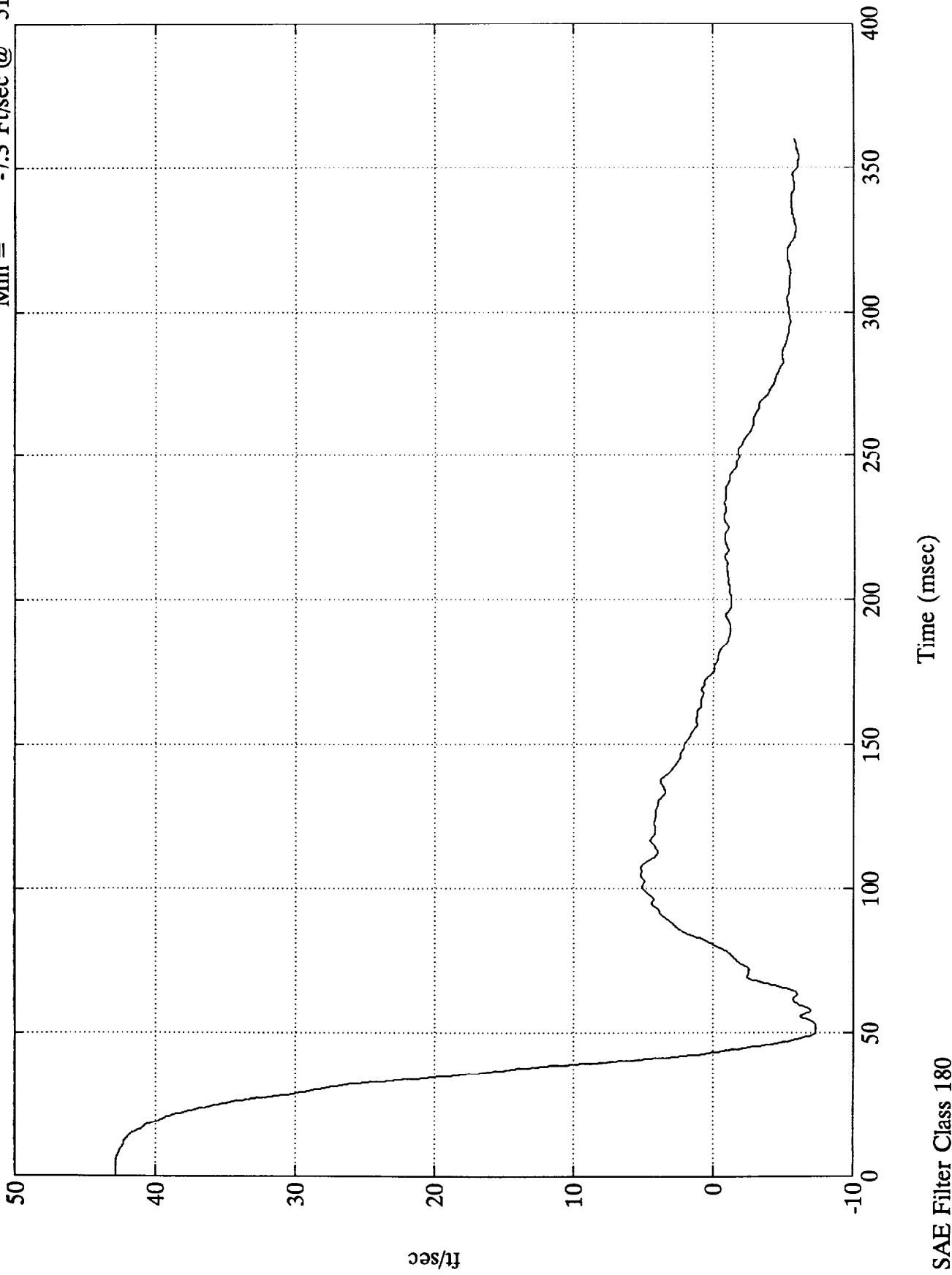
Engine Top X

Max = 21.75 Gs @ 66.48 msec
Min = -82.63 Gs @ 39.36 msec



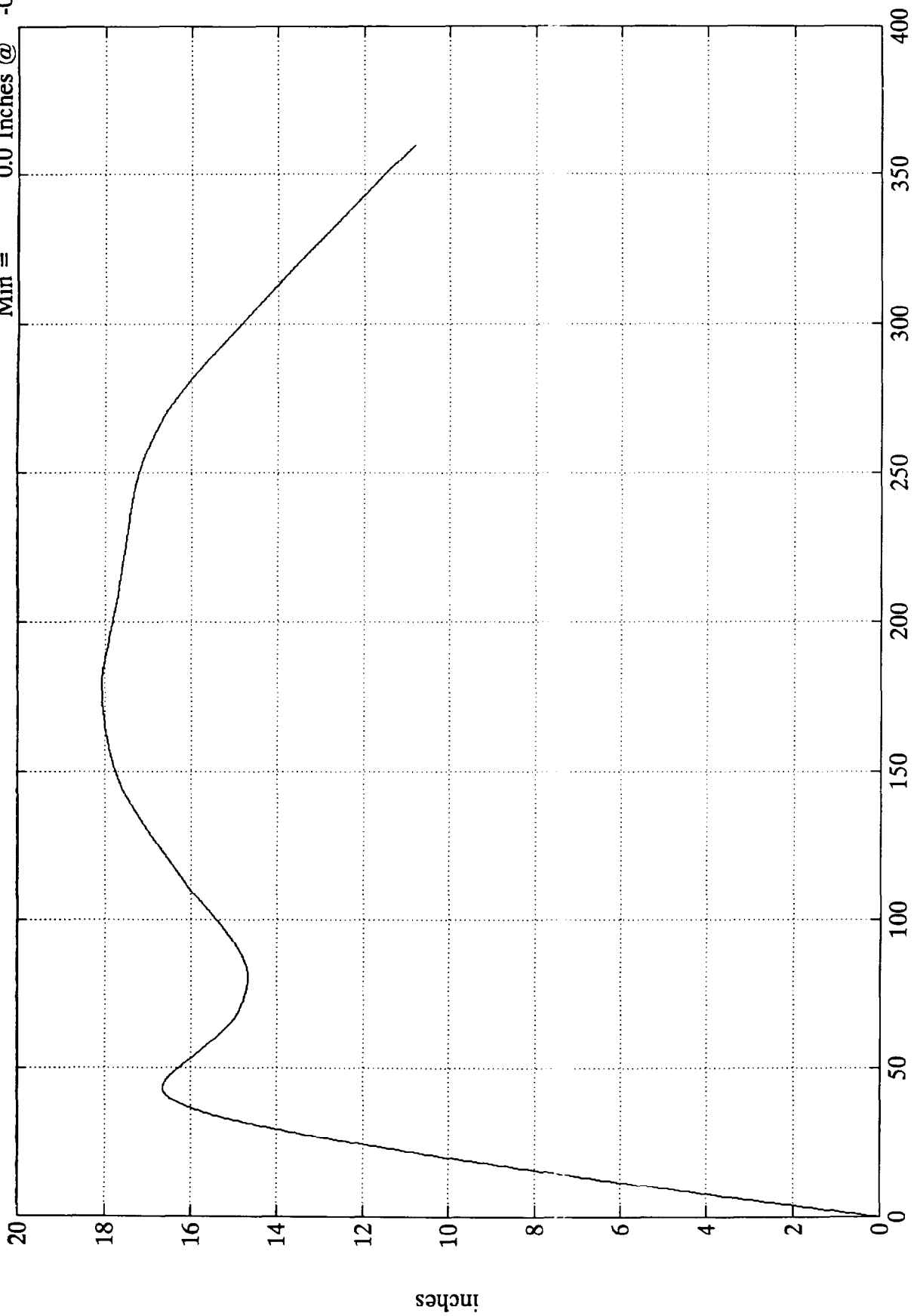
1st Integral Engine Top X

Max = 42.8 Ft/sec @ 2.15 msec
Min = -7.3 Ft/sec @ 51.24 msec



2nd Integral Engine Top X

Max = 18.0 Inches @ 175.31 msec
Min = 0.0 Inches @ -0.00 msec

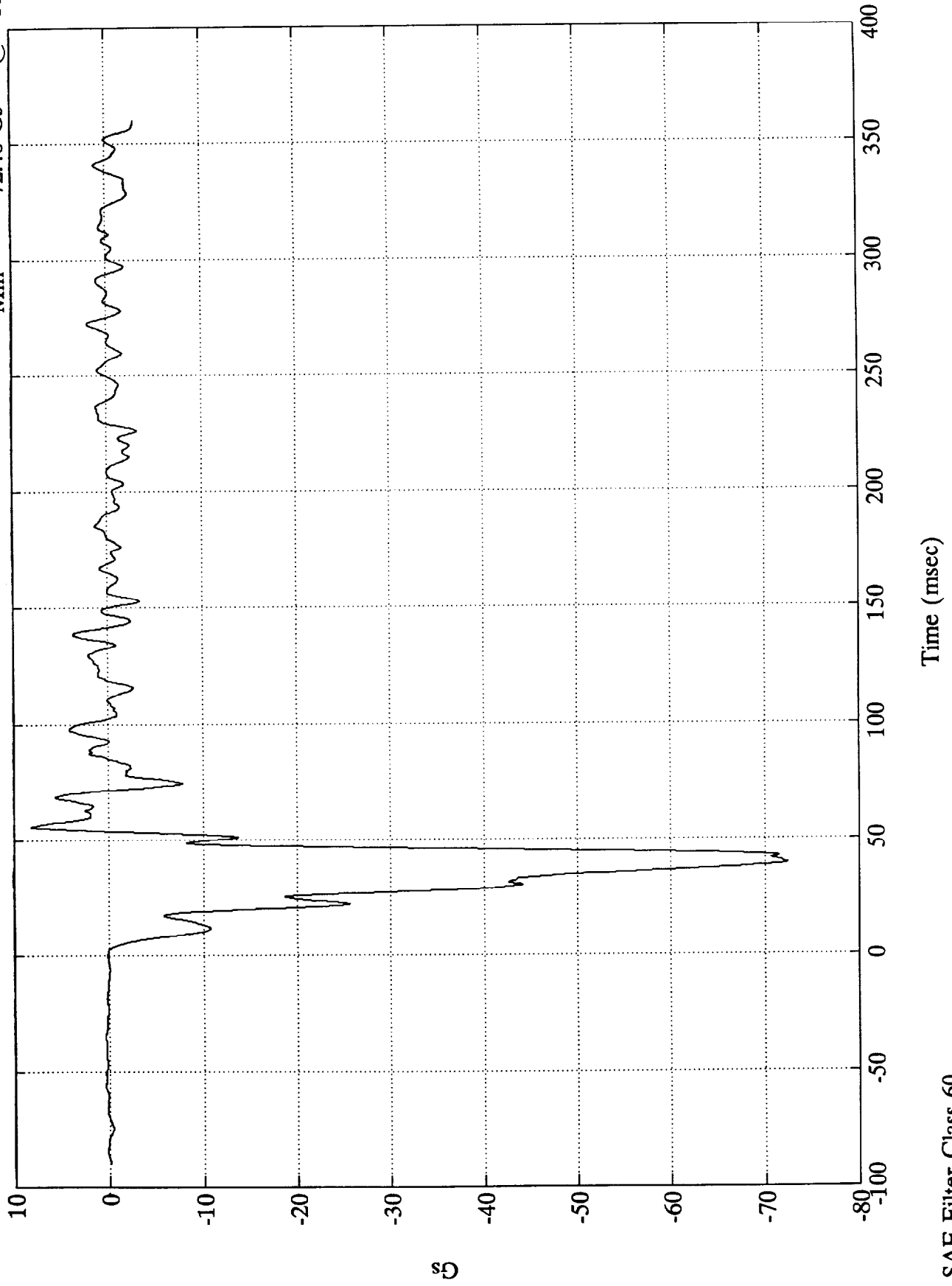


Time (msec)

SAE Filter Class 180

Engine Bottom X

Max = 8.20 Gs @ 56.04 msec
Min = -72.40 Gs @ 39.47 msec



Gs

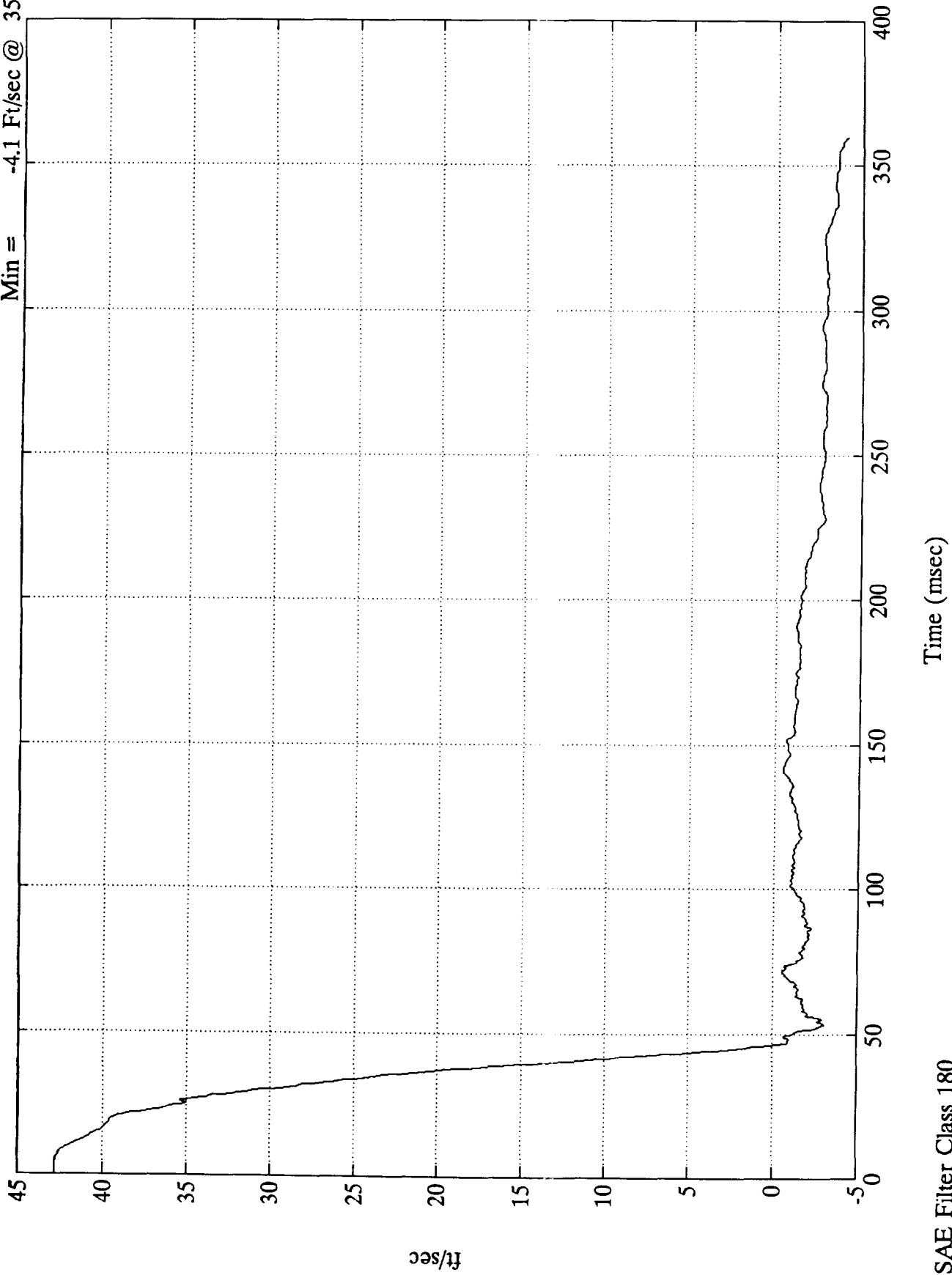
Time (msec)

SAE Filter Class 60

208 Test #4 - 1996 Nissan Pathfinder

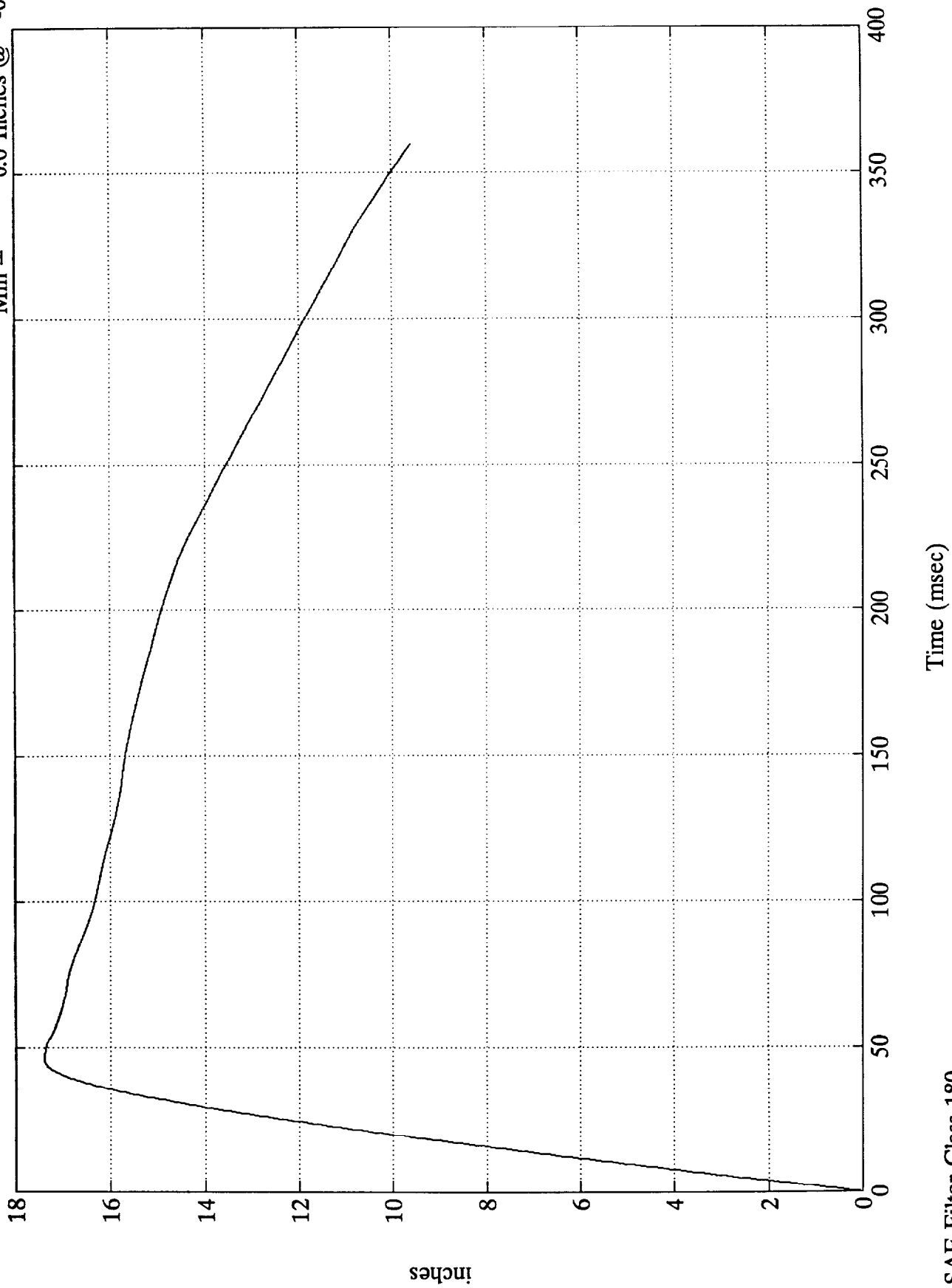
1st Integral Engine Bottom X

Max = 42.8 Ft/sec @ 3.23 msec
Min = -4.1 Ft/sec @ 359.88 msec



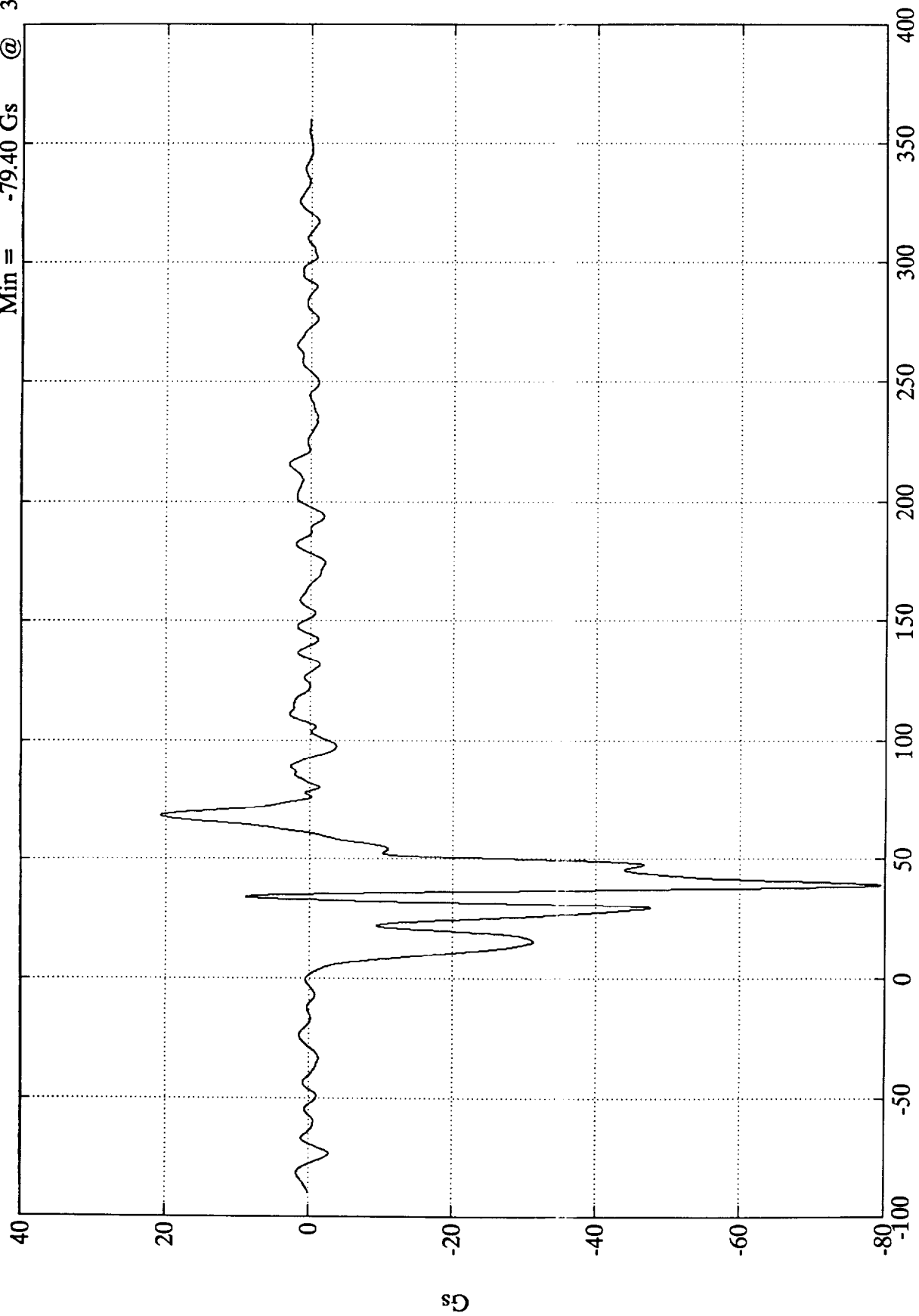
2nd Integral Engine Bottom X

Max = 17.4 Inches @ 46.19 msec
Min = 0.0 Inches @ -0.00 msec



Right Brake Caliper X

Max = 20.75 Gs @ 68.28 msec
Min = -79.40 Gs @ 39.23 msec

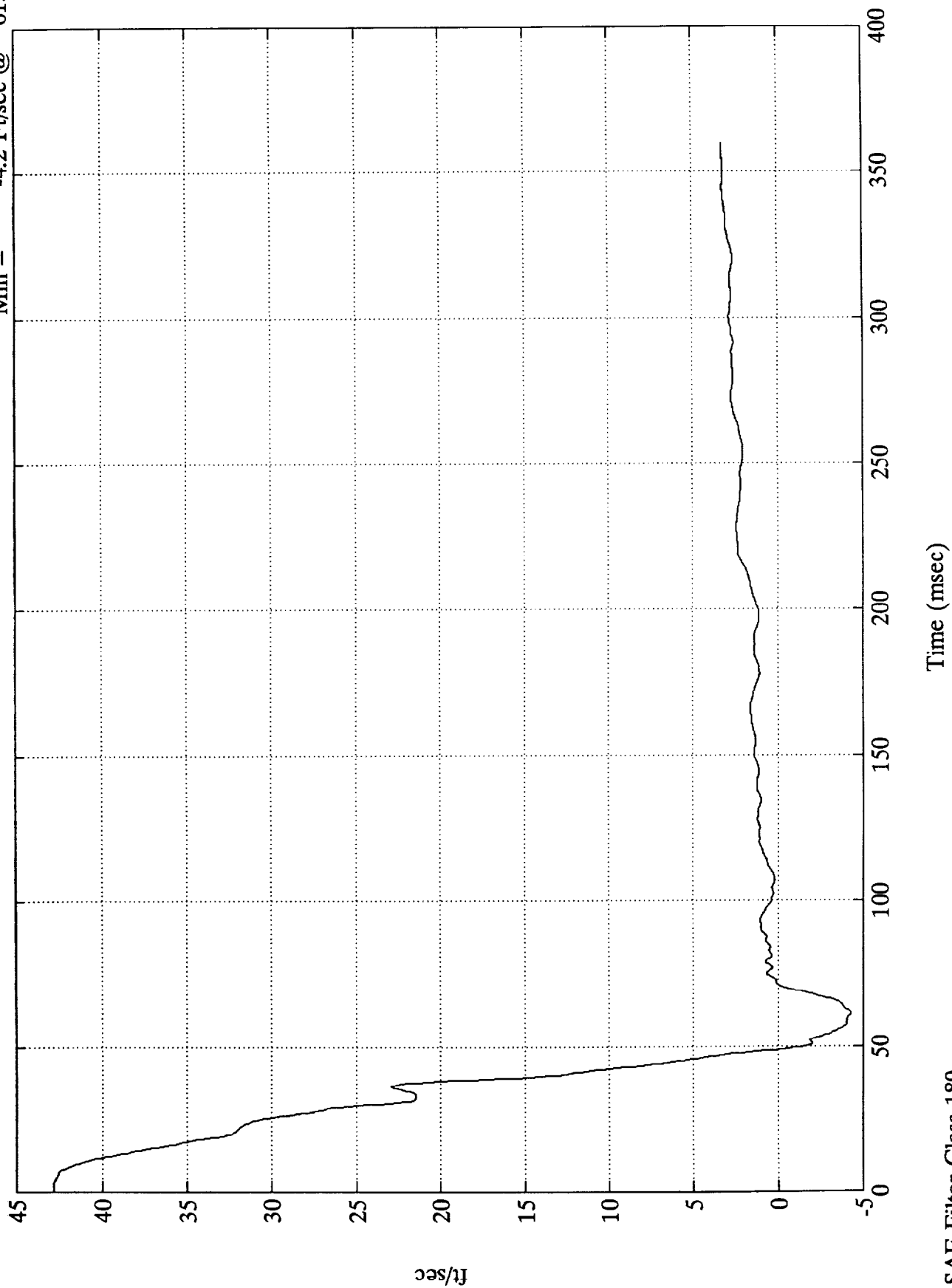


Time (msec)

SAE Filter Class 60

1st Integral Right Brake Caliper X

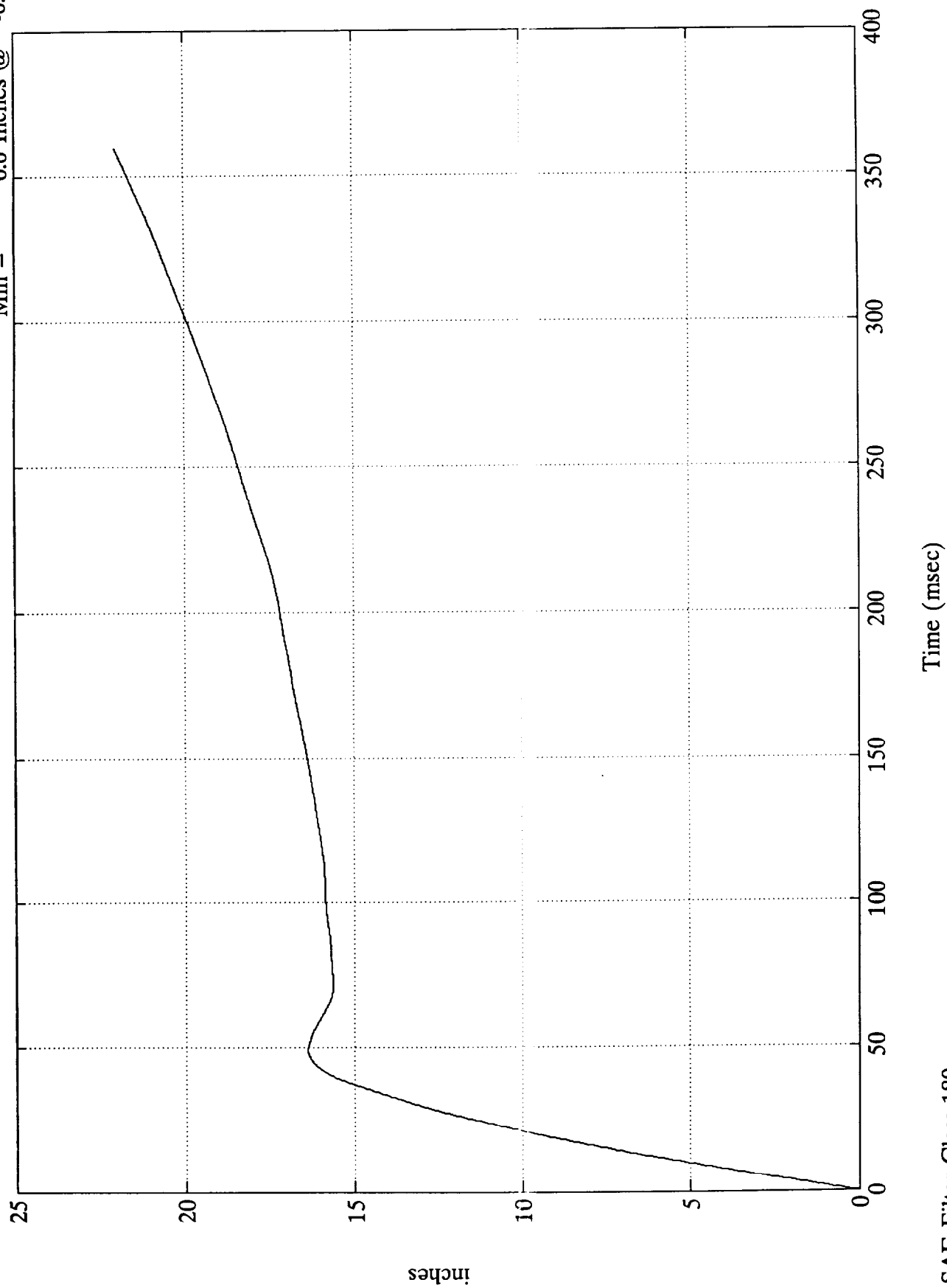
Max = 42.8 Ft/sec @ 1.79 msec
 Min = -4.2 Ft/sec @ 61.32 msec



208 Test #4 - 1996 Nissan Pathfinder

2nd Integral Right Brake Caliper X

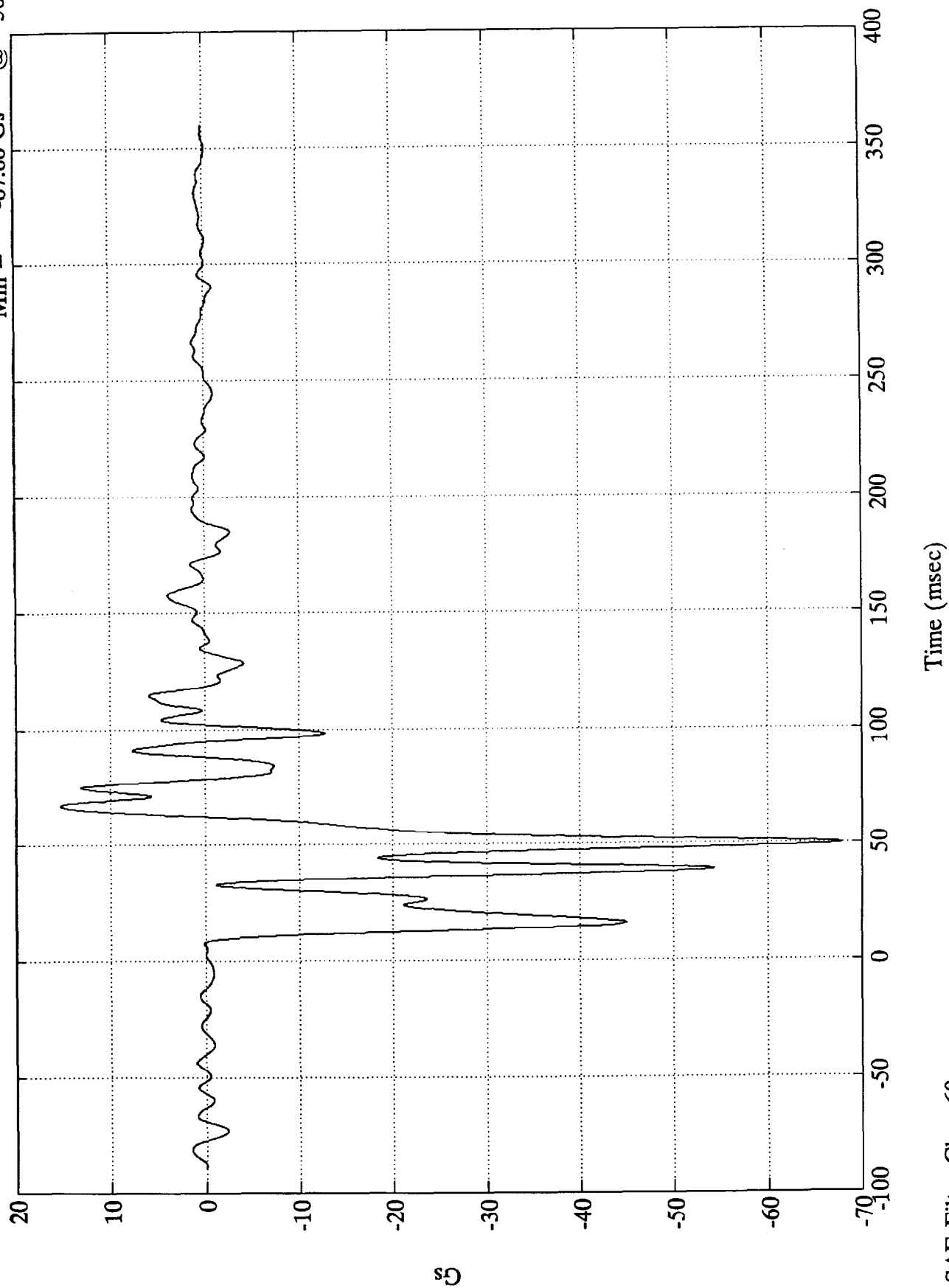
Max = 22.0 Inches @ 359.88 msec
Min = 0.0 Inches @ -0.00 msec



SAE Filter Class 180

Left Brake Caliper X

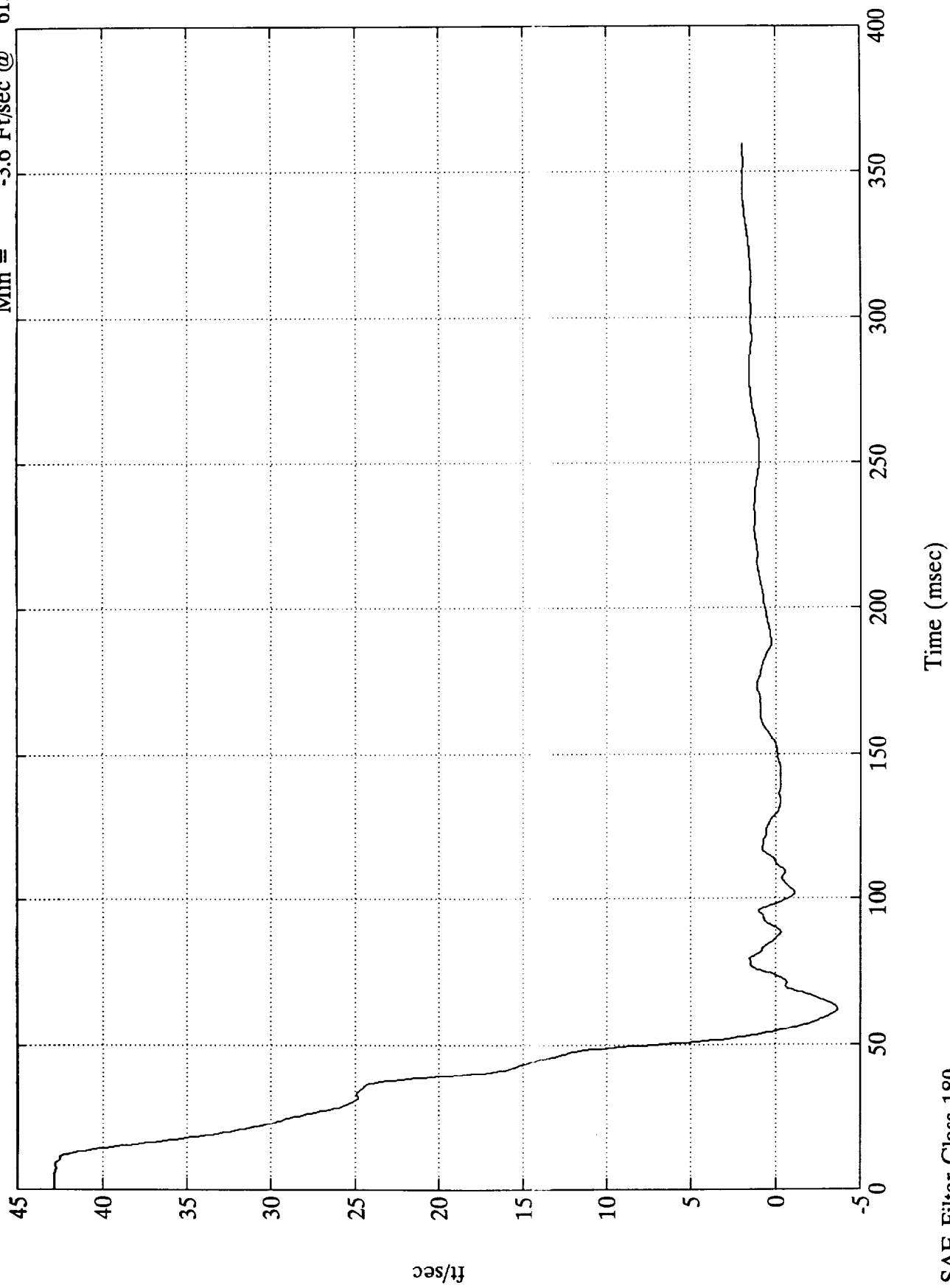
Max = 15.35 Gs @ 66.84 msec
 Min = -67.86 Gs @ 50.04 msec



SAE Filter Class 60

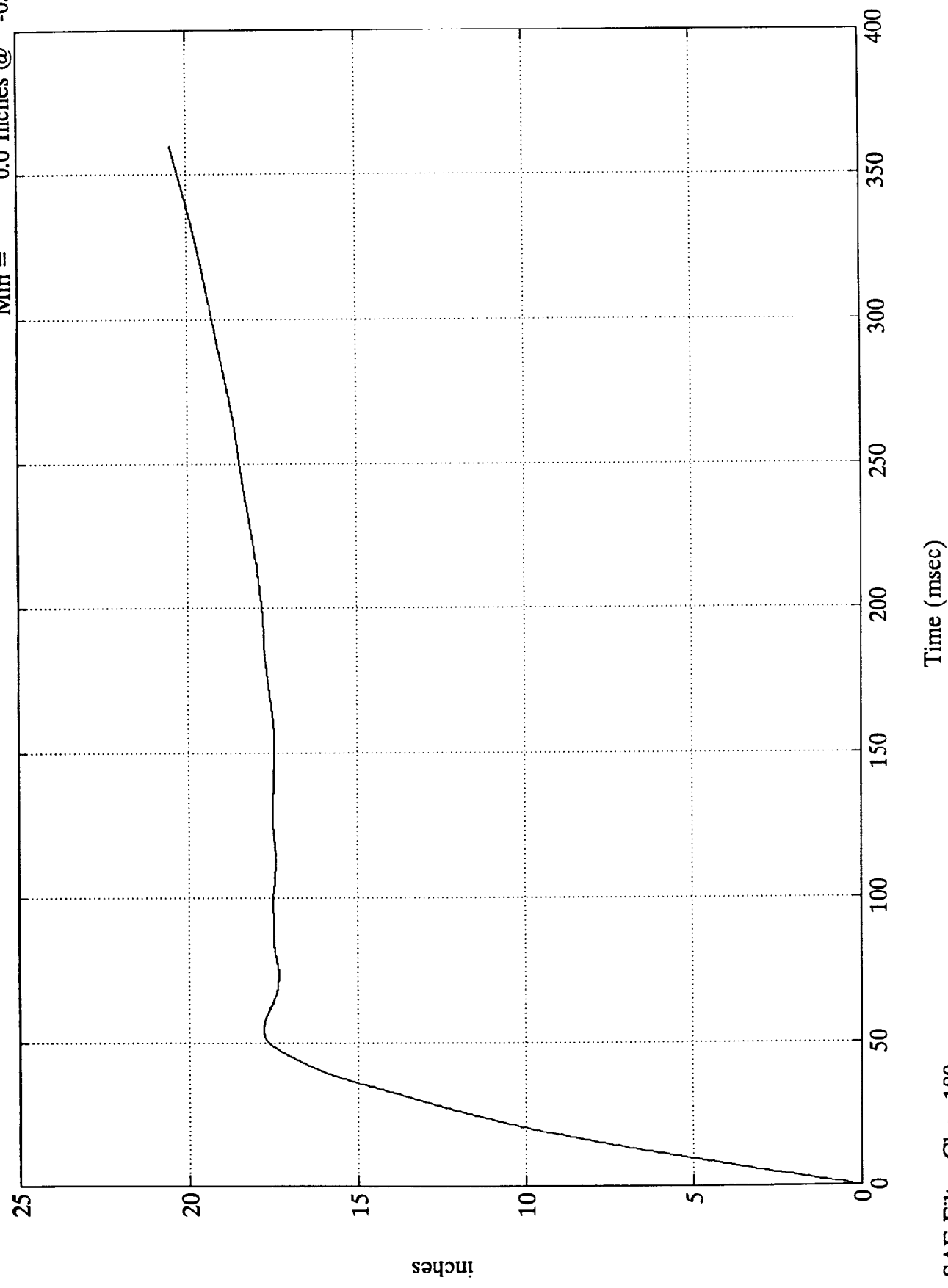
1st Integral Left Brake Caliper X

Max = 42.8 Ft/sec @ 3.59 msec
Min = -3.6 Ft/sec @ 61.92 msec



2nd Integral Left Brake Caliper X

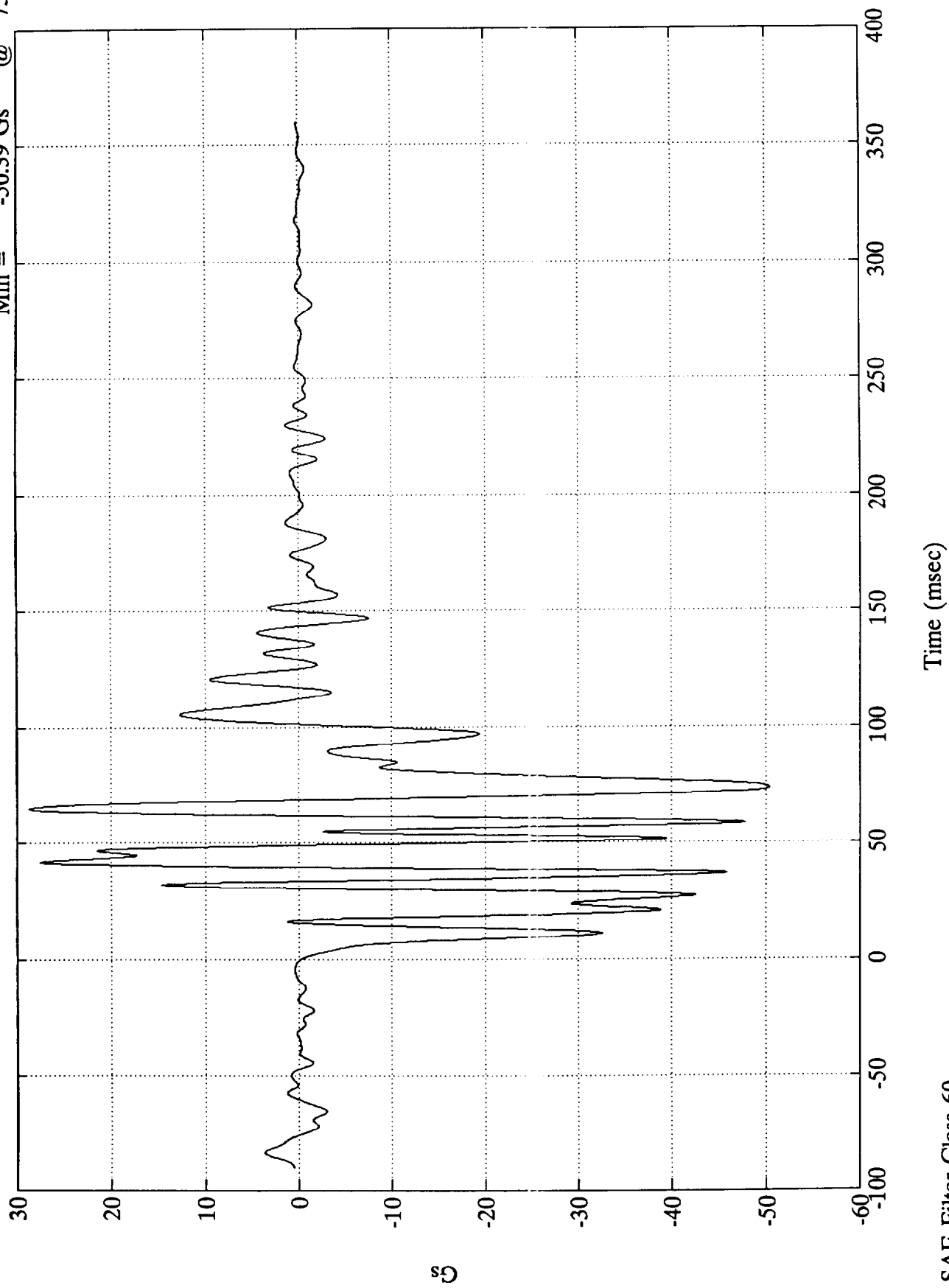
Max = 20.4 Inches @ 359.88 msec
Min = 0.0 Inches @ -0.00 msec



208 Test #4 - 1996 Nissan Pathfinder

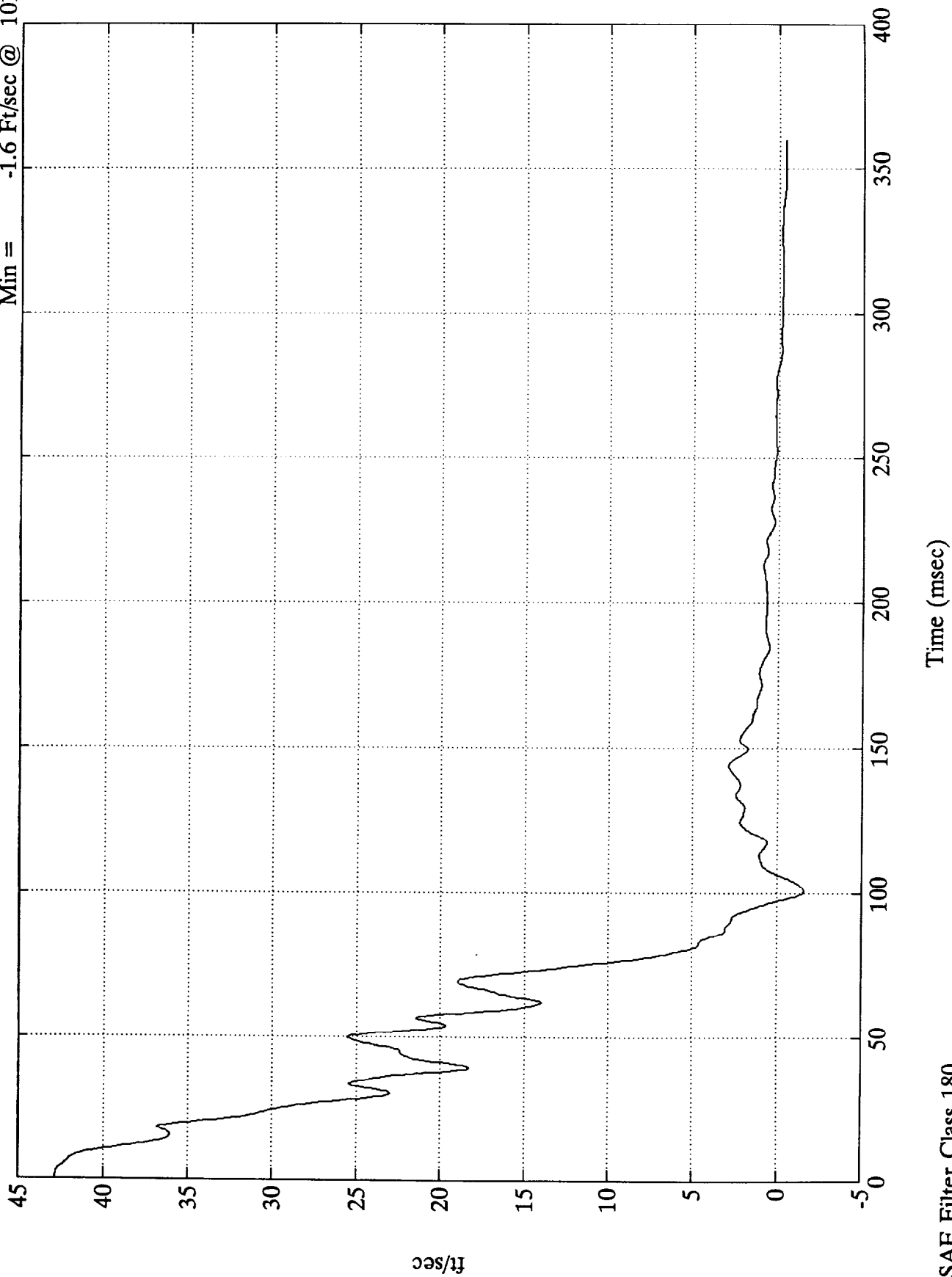
Instrument Panel X

Max = 28.72 Gs @ 64.80 msec
Min = -50.39 Gs @ 73.68 msec



1st Integral Instrument Panel X

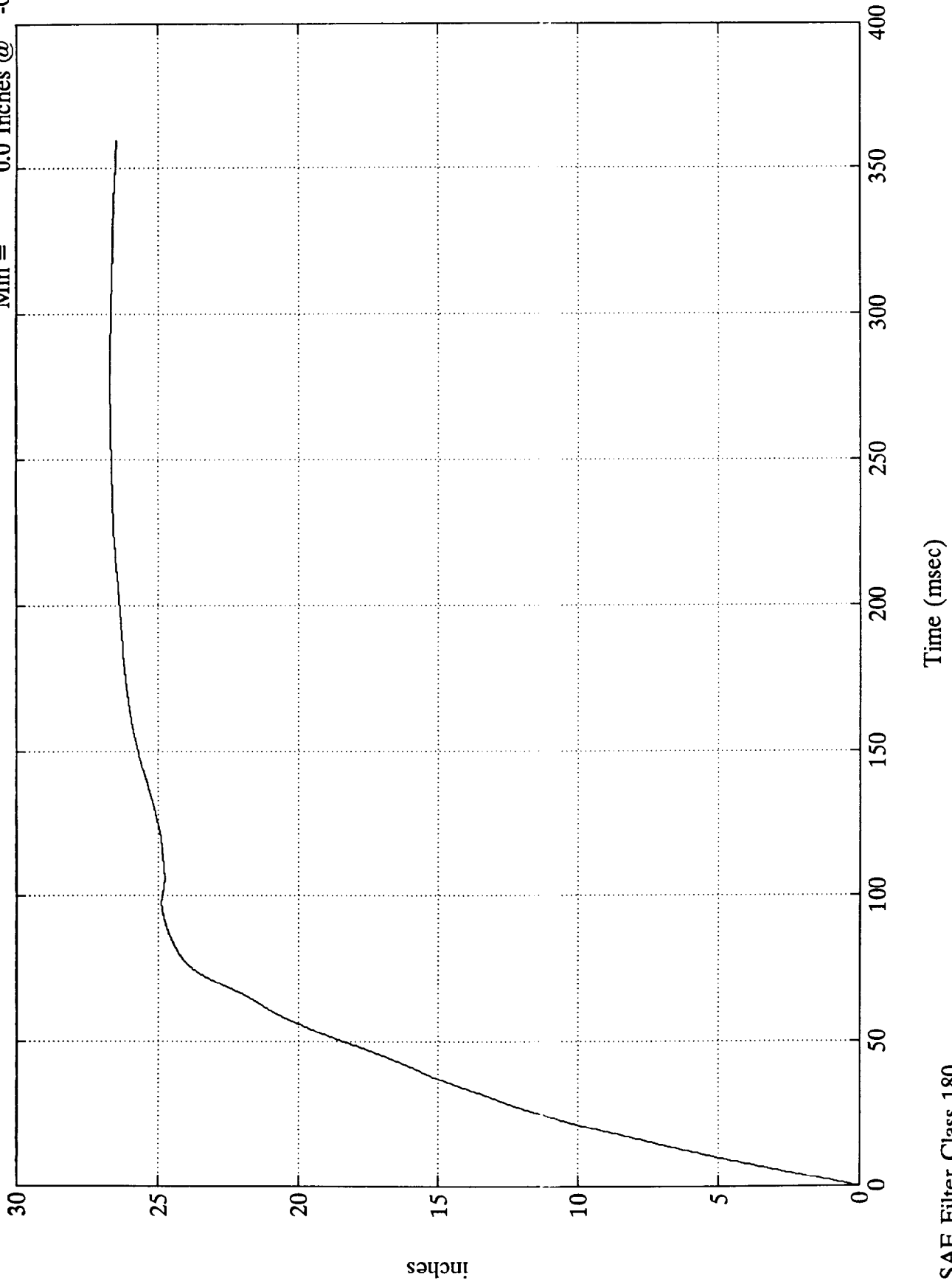
Max = 42.8 Ft/sec @ -0.00 msec
Min = -1.6 Ft/sec @ 101.04 msec



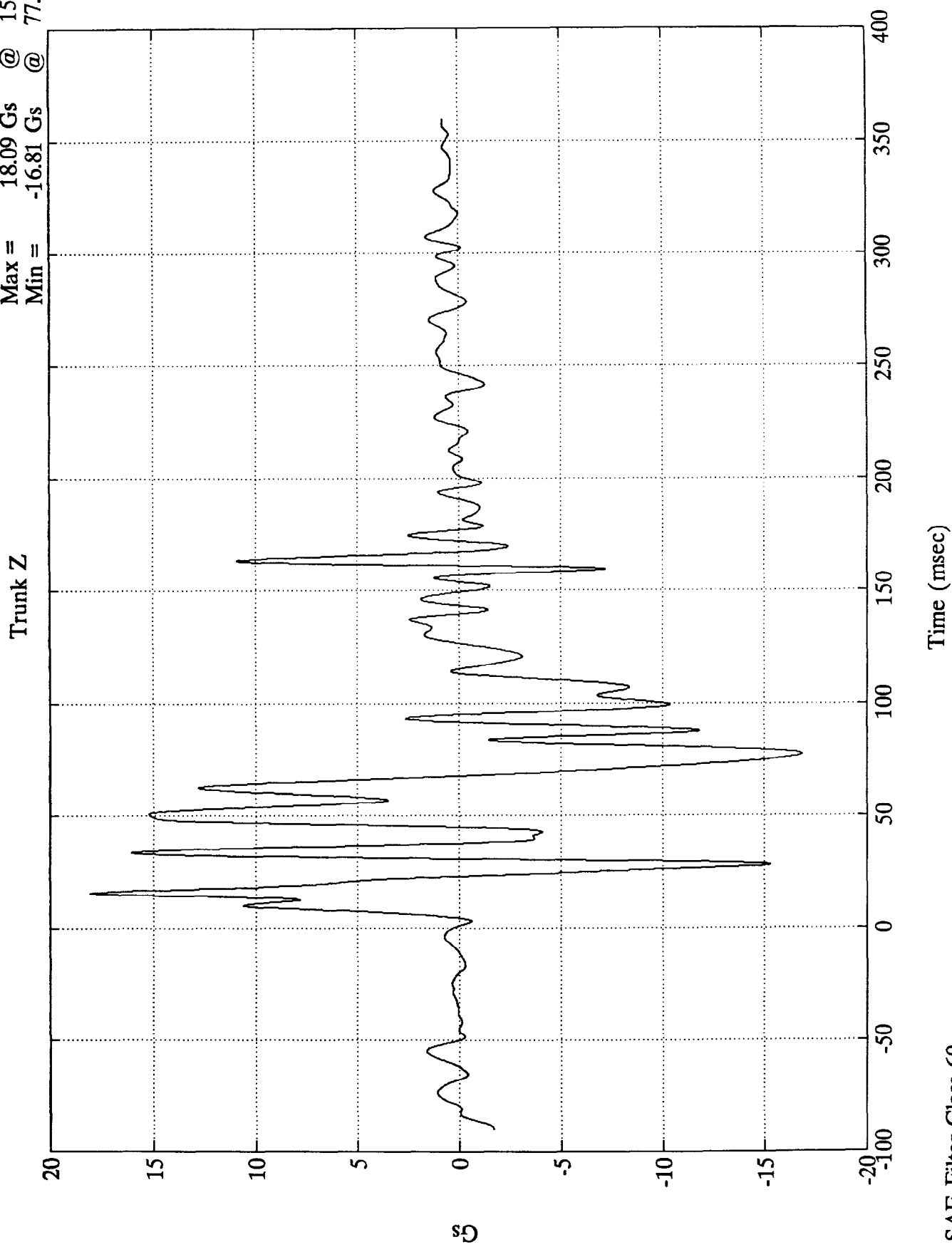
SAE Filter Class 180

2nd Integral Instrument Panel X

Max = 26.7 Inches @ 281.64 msec
Min = 0.0 Inches @ -0.00 msec

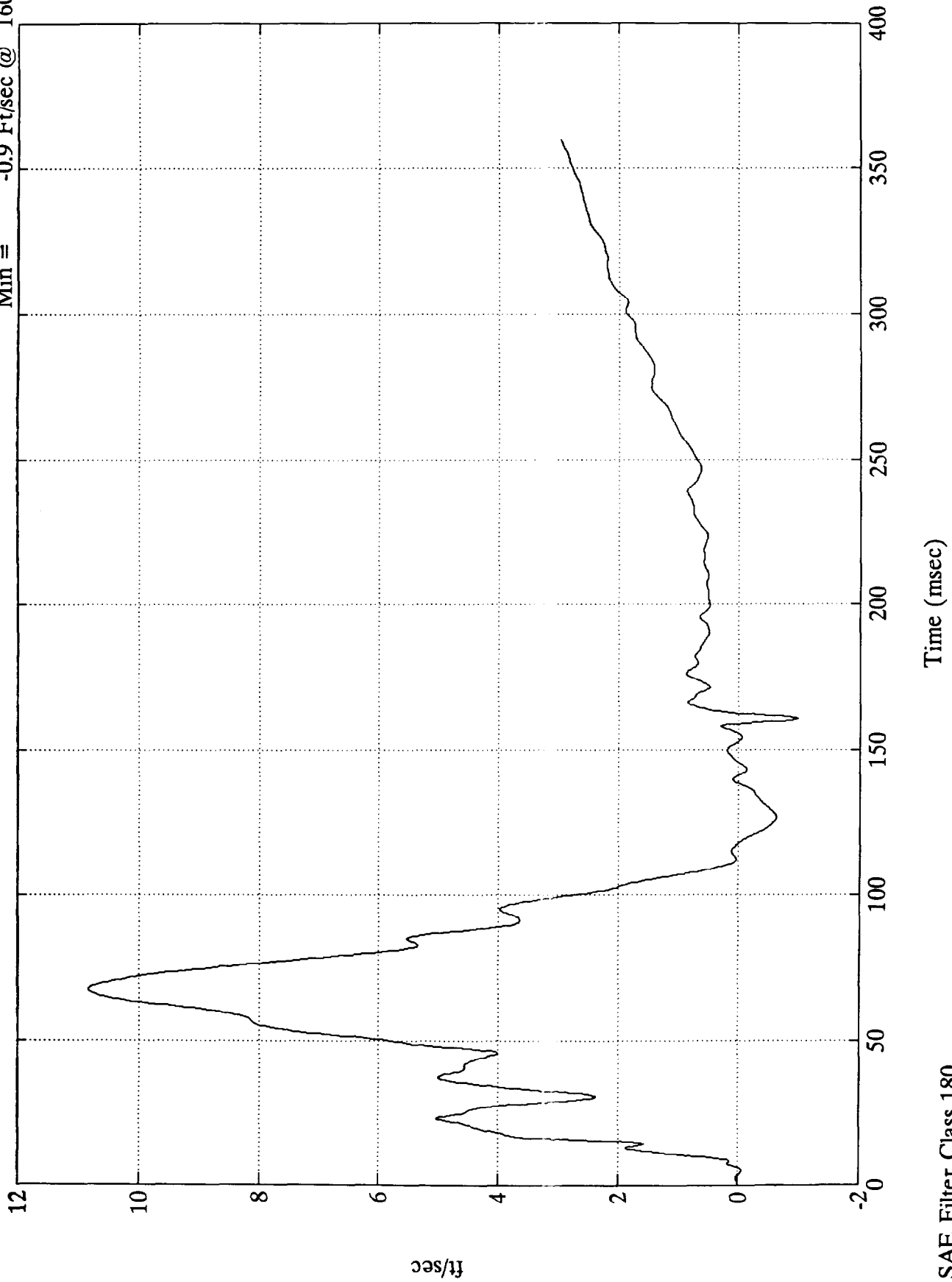


Max = 18.09 Gs @ 15.83 msec
 Min = -16.81 Gs @ 77.51 msec



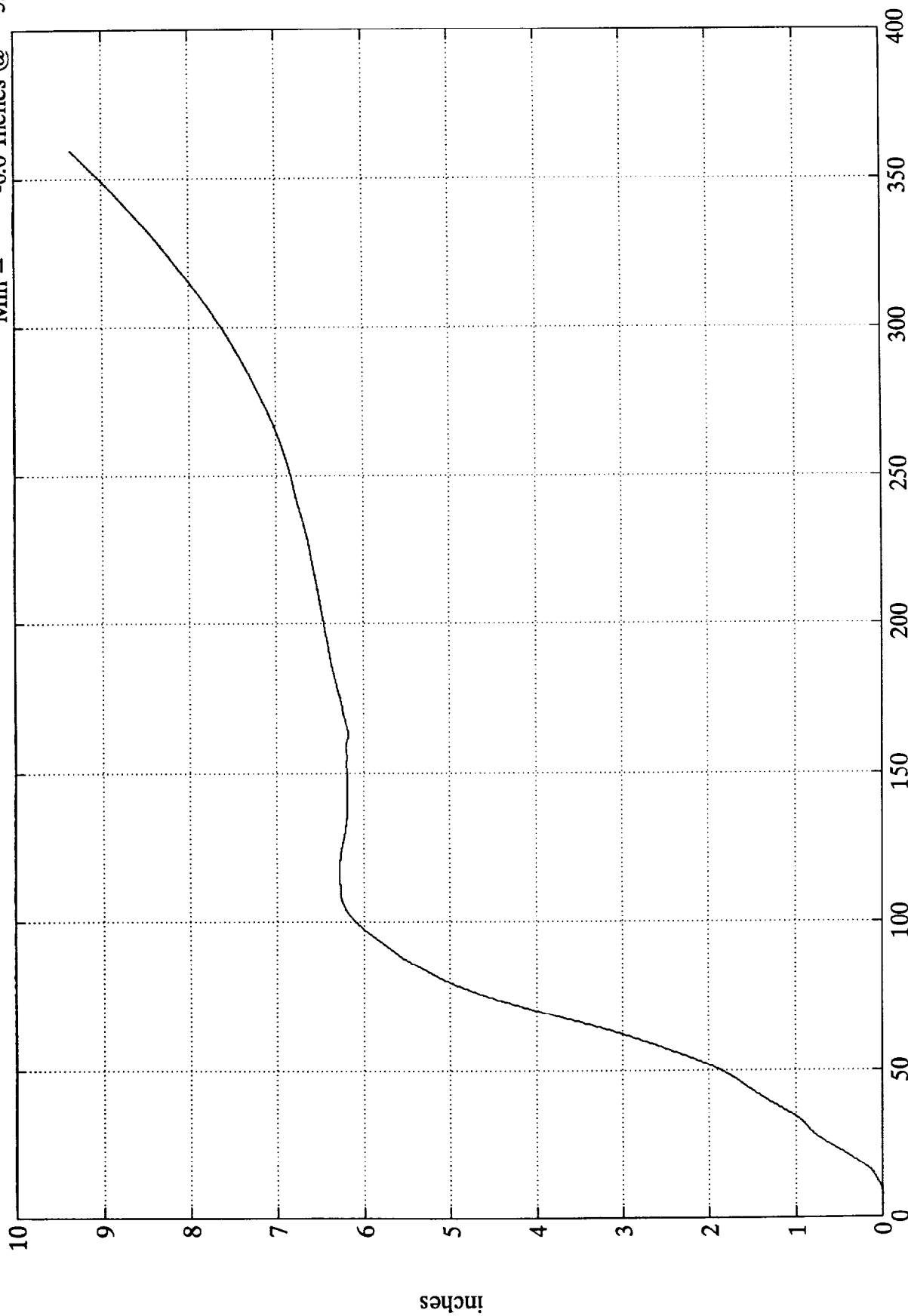
SAE Filter Class 60

1st Integral Trunk Z
Max = 10.8 Ft/sec @ 67.68 msec
Min = -0.9 Ft/sec @ 160.92 msec



2nd Integral Trunk Z

Max = 9.3 Inches @ 359.88 msec
Min = -0.0 Inches @ 5.99 msec



Time (msec)

SAE Filter Class 180

TEST NO. CT5203

<u>DUMMY</u>	<u>SAE FILTER CHANNEL CLASS</u>
Head Accelerations	1000
Chest Accelerations	180
Chest Displacements	180
Femur Forces	600
Tibia Forces, Moments	600

FACILITY: track TEST DATE: 17 Apr 1996
 RUN #: 1608 TEST TIME: 12:16:46
 SERIES #: 1 BOARD: A

TITLE: 208 Test #4 - 1996 Nissan Pathfinder

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Head X	Gs	20.1	219.6	-54.9	71.5	1000.0
2	Pos. 1 Head Y	Gs	8.1	71.9	-3.5	61.0	1000.0
3	Pos. 1 Head Z	Gs	31.0	78.4	-6.8	107.4	1000.0
4	Pos. 1 Left Femur	lbs	60.1	17.4	-1328.3	70.7	600.0
5	Pos. 1 Chest X	Gs	4.1	256.4	-50.4	78.4	180.0
6	Pos. 1 Chest Y	Gs	5.2	82.2	-2.4	37.0	180.0
7	Pos. 1 Chest Z	Gs	17.3	78.8	-8.5	110.5	180.0
8	Pos. 1 Right Femur	lbs	43.5	261.0	-1033.1	68.5	600.0
9	Pos. 2 Head X	Gs	11.0	263.4	-133.2	63.6	1000.0
10	Pos. 2 Head Y	Gs	6.3	163.8	-11.9	61.1	1000.0
11	Pos. 2 Head Z	Gs	34.0	62.8	-19.0	89.4	1000.0
12	Pos. 2 Left Femur	lbs	37.2	186.6	-1474.0	67.3	600.0
13	Pos. 2 Chest X	Gs	3.9	159.5	-52.5	72.8	180.0
14	Pos. 2 Chest Y	Gs	1.7	123.0	-2.9	82.9	180.0
15	Pos. 2 Chest Z	Gs	22.5	65.3	-12.0	121.3	180.0
16	Pos. 2 Right Femur	lbs	33.4	13.9	-1496.2	67.3	600.0
17	Pos. 1 Head Resultant	Gs	59.6	71.5	.1	-35.8	1000.0
18	Pos. 1 Chest Resultant	Gs	53.4	78.5	.0	-69.8	180.0
19	Pos. 2 Head Resultant	Gs	137.1	63.6	.1	-74.6	1000.0
20	Pos. 2 Chest Resultant	Gs	54.2	78.7	.0	-79.7	180.0

V2 36 ms Fixed Duration HIC SUMMARY: Pos. 1 Head Resultant
 hic: 423.22
 t1 = 63.000 msec
 t2 = 92.760 msec
 Average G's Over Hic Duration = 45.83

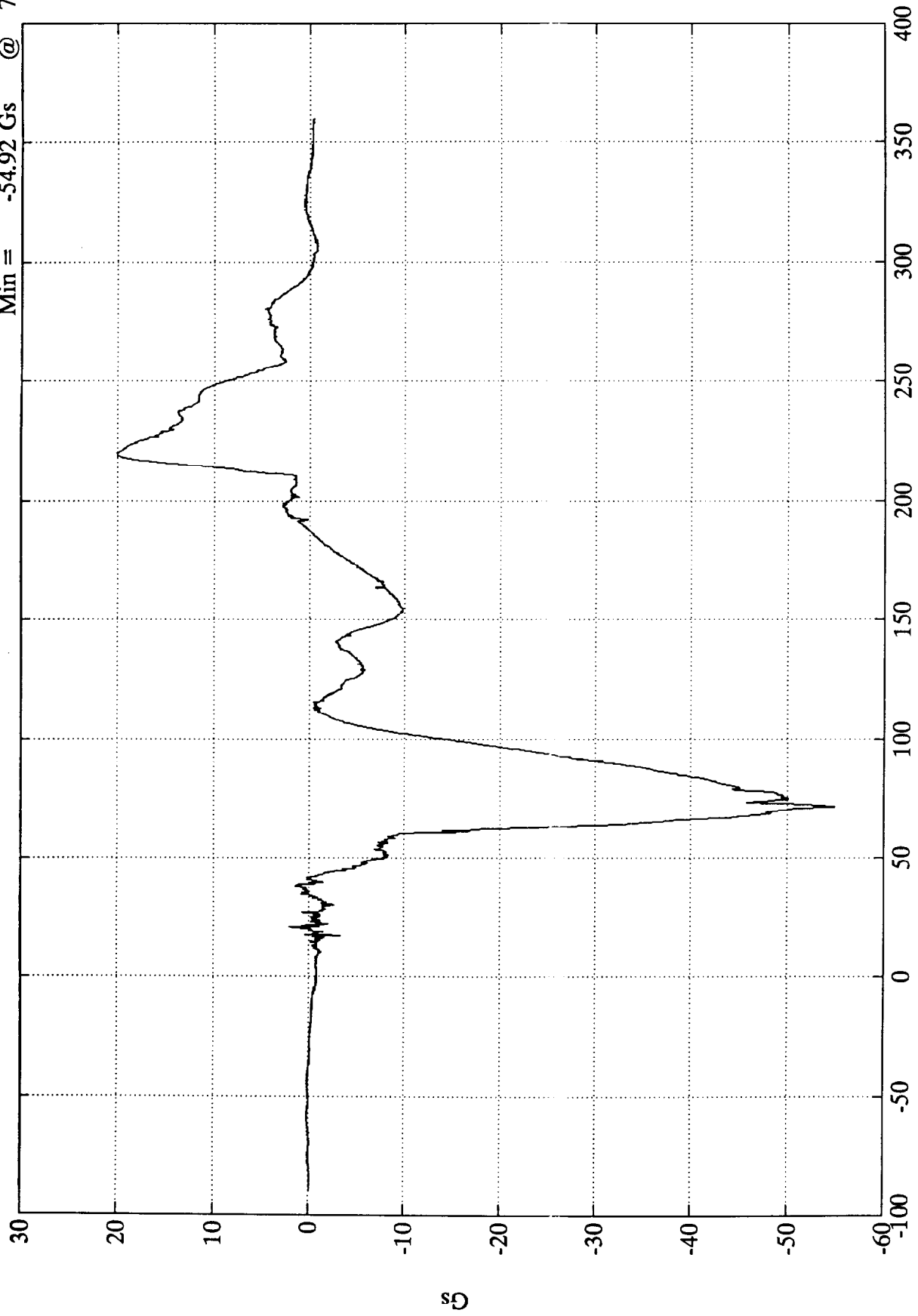
V2 36 ms Fixed Duration HIC SUMMARY: Pos. 2 Head Resultant
 hic: 808.85
 t1 = 59.640 msec
 t2 = 69.840 msec
 Average G's Over Hic Duration = 91.14

CLIP V2.1 SUMMARY: Pos. 1 Chest Resultant
 Peak Resultant (3 ms CLIPPED DURATION) = 50.825 G's
 Tstart = 77.0583 ms
 Tend = 80.0583 ms
 CSI = 374.160

CLIP V2.1 SUMMARY: Pos. 2 Chest Resultant
 Peak Resultant (3 ms CLIPPED DURATION) = 52.718 G's
 Tstart = 77.1104 ms
 Tend = 80.1104 ms
 CSI = 474.330

Pos. 1 Head X

Max = 20.13 Gs @ 219.60 msec
Min = -54.92 Gs @ 71.52 msec



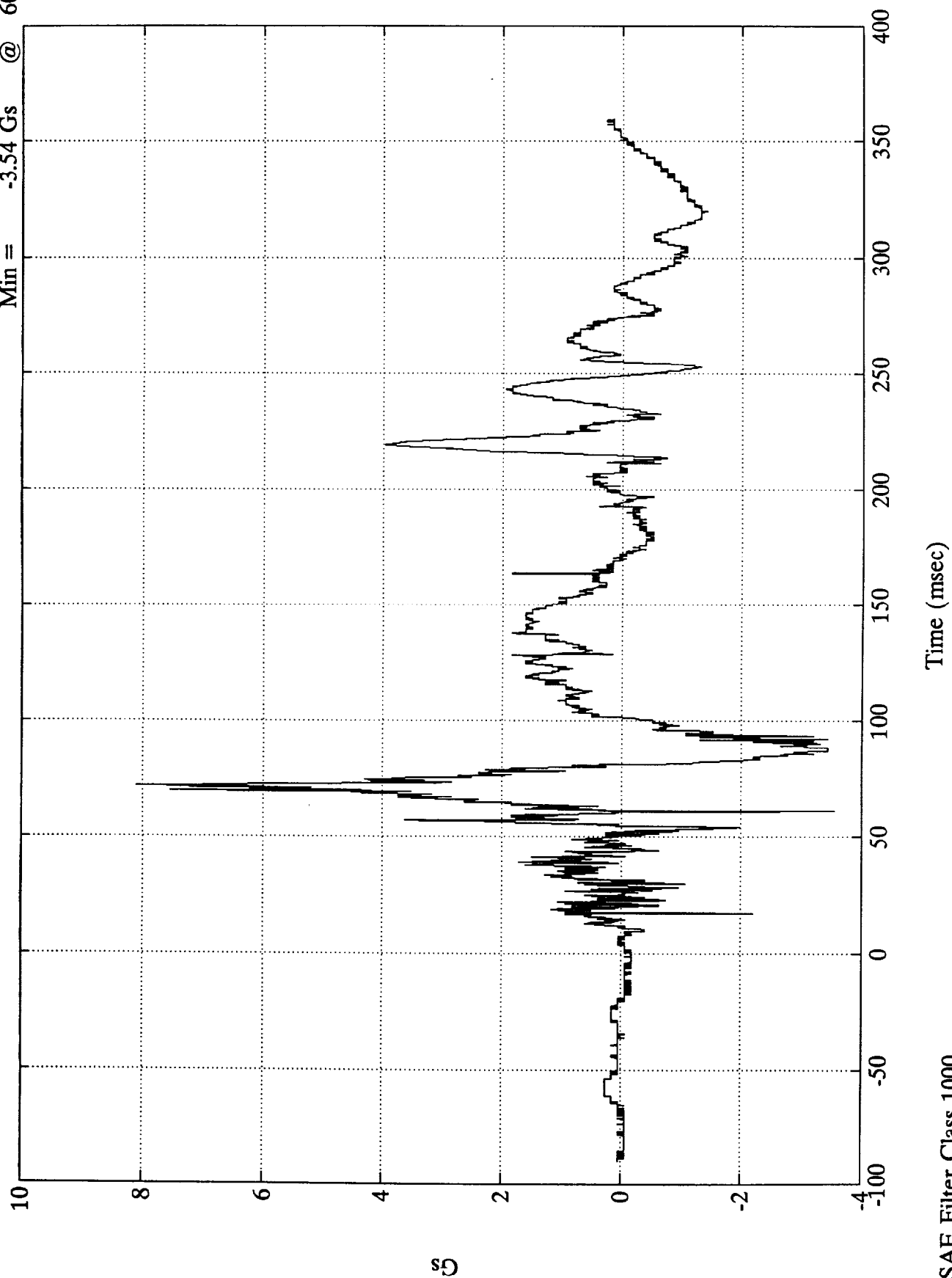
Time (msec)

SAE Filter Class 1000

208 Test #4 - 1996 Nissan Pathfinder

Max = 8.11 Gs @ 71.87 msec
 Min = -3.54 Gs @ 60.96 msec

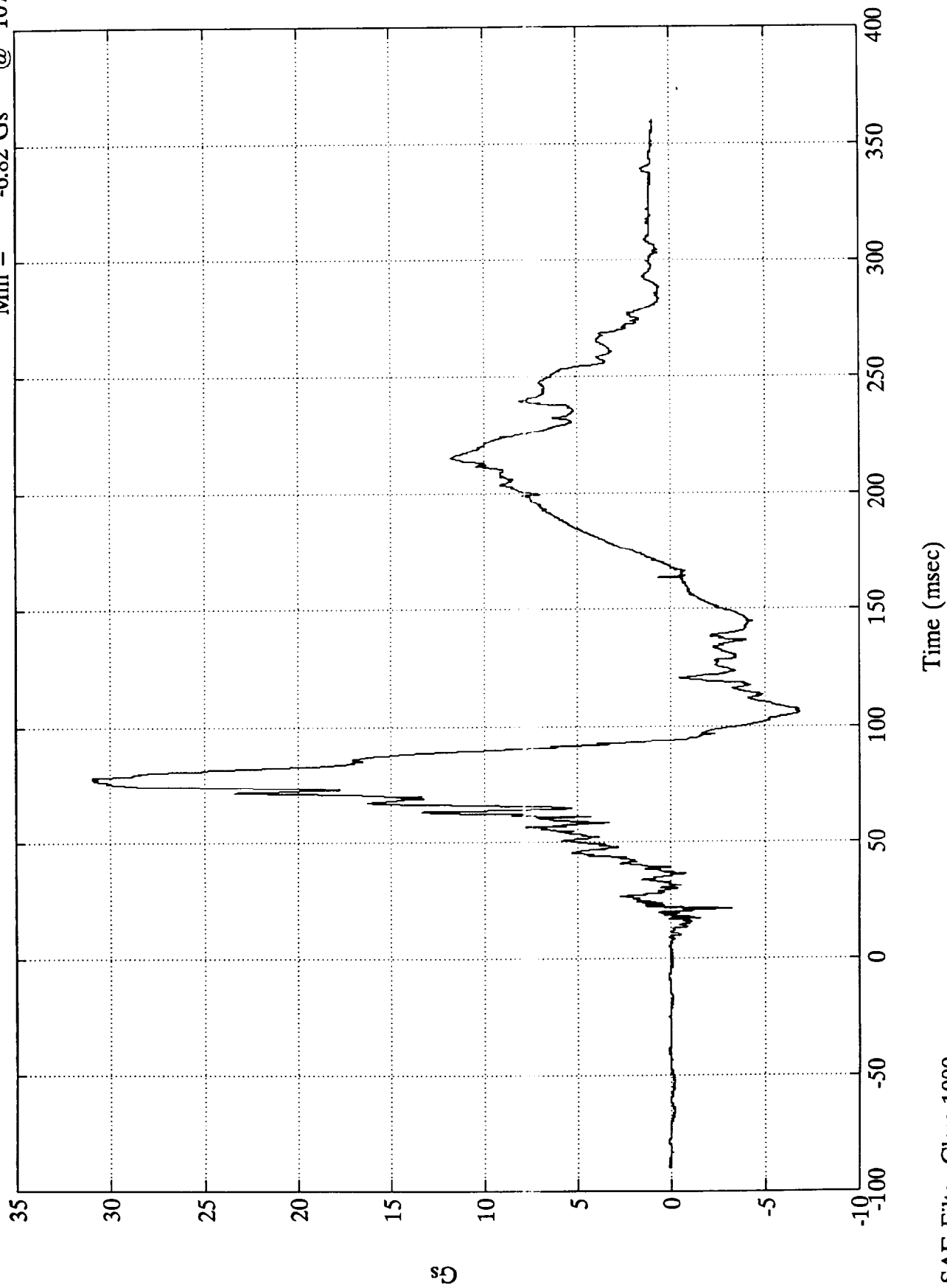
Pos. 1 Head Y



SAE Filter Class 1000

Pos. 1 Head Z

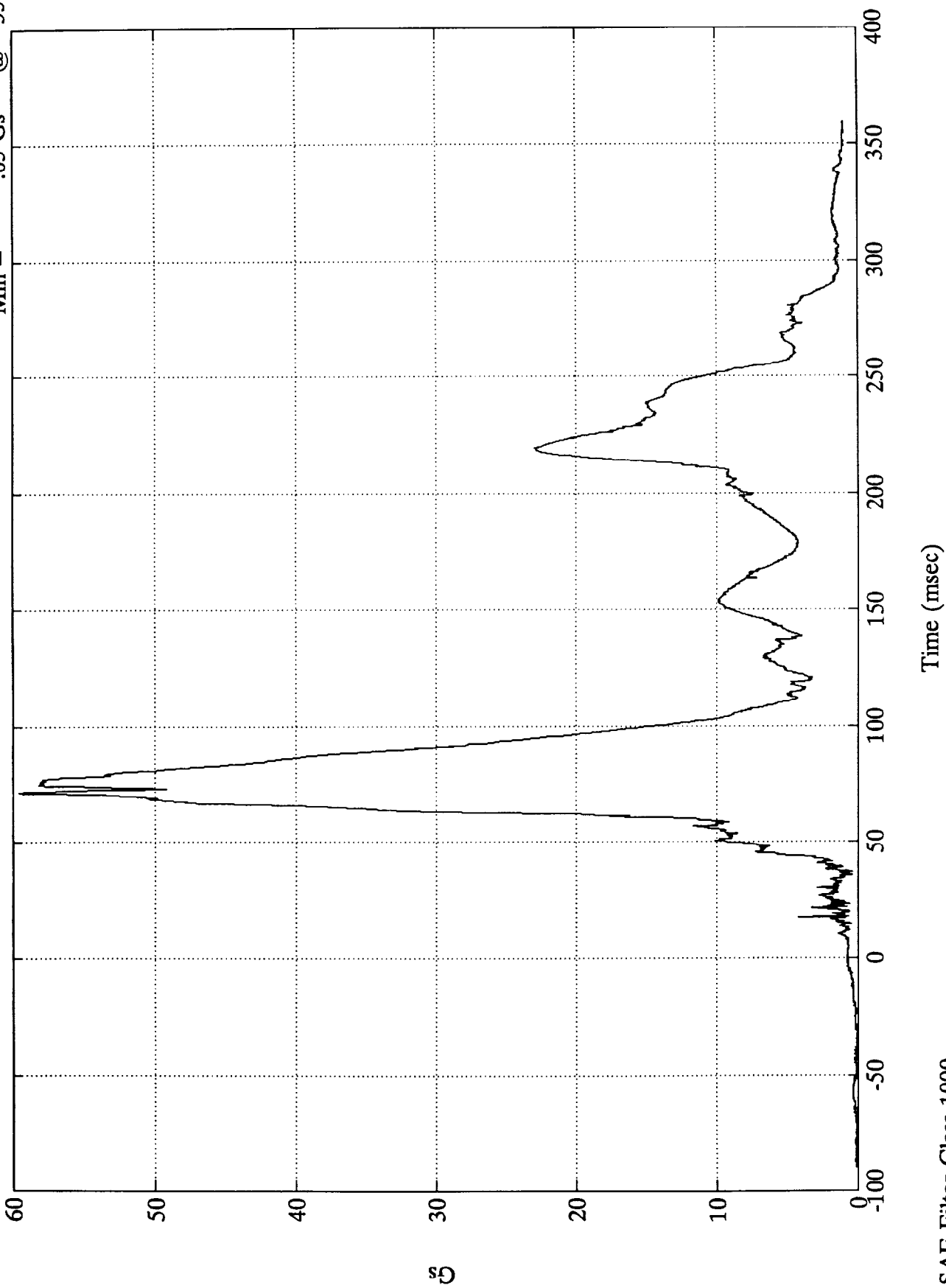
Max = 30.99 Gs @ 78.36 msec
Min = -6.82 Gs @ 107.40 msec



208 Test #4 - 1996 Nissan Pathfinder

Max = 59.59 Gs @ 71.52 msec
 Min = .05 Gs @ -35.76 msec

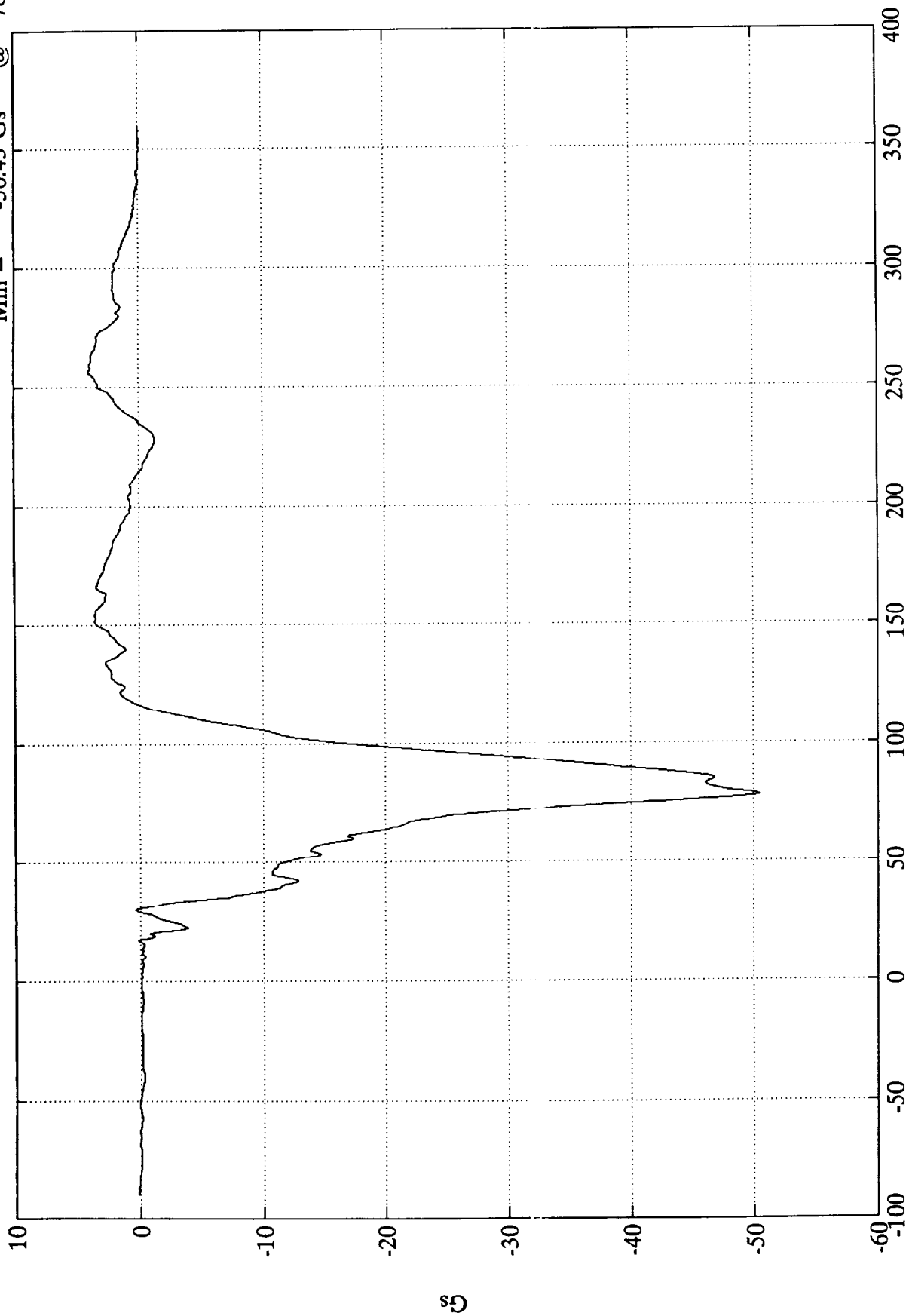
Pos. 1 Head Resultant



208 Test #4 - 1996 Nissan Pathfinder

Pos. 1 Chest X

Max = 4.08 Gs @ 256.44 msec
Min = -50.43 Gs @ 78.36 msec



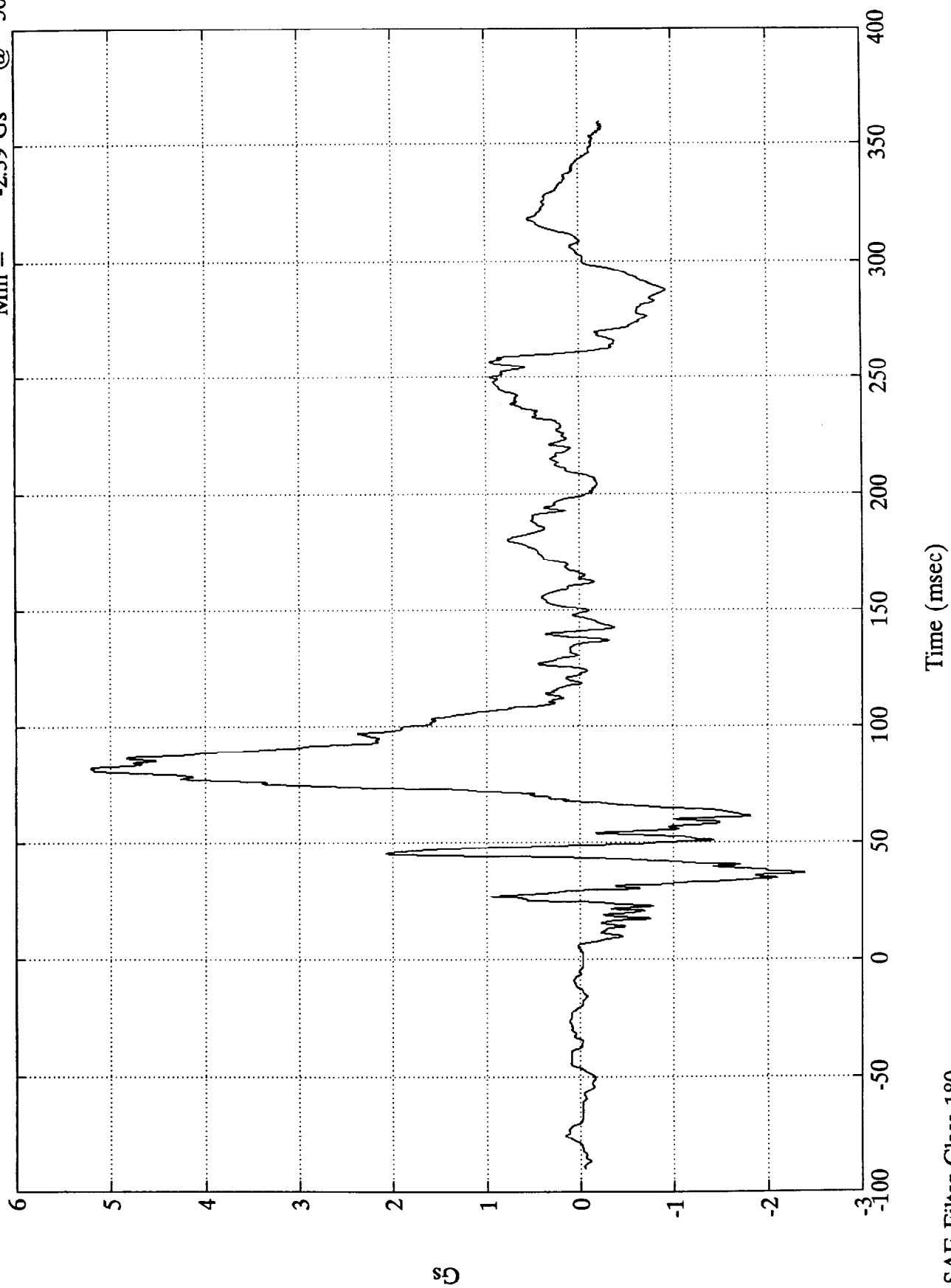
Time (msec)

SAE Filter Class 180

208 Test #4 - 1996 Nissan Pathfinder

Pos. 1 Chest Y

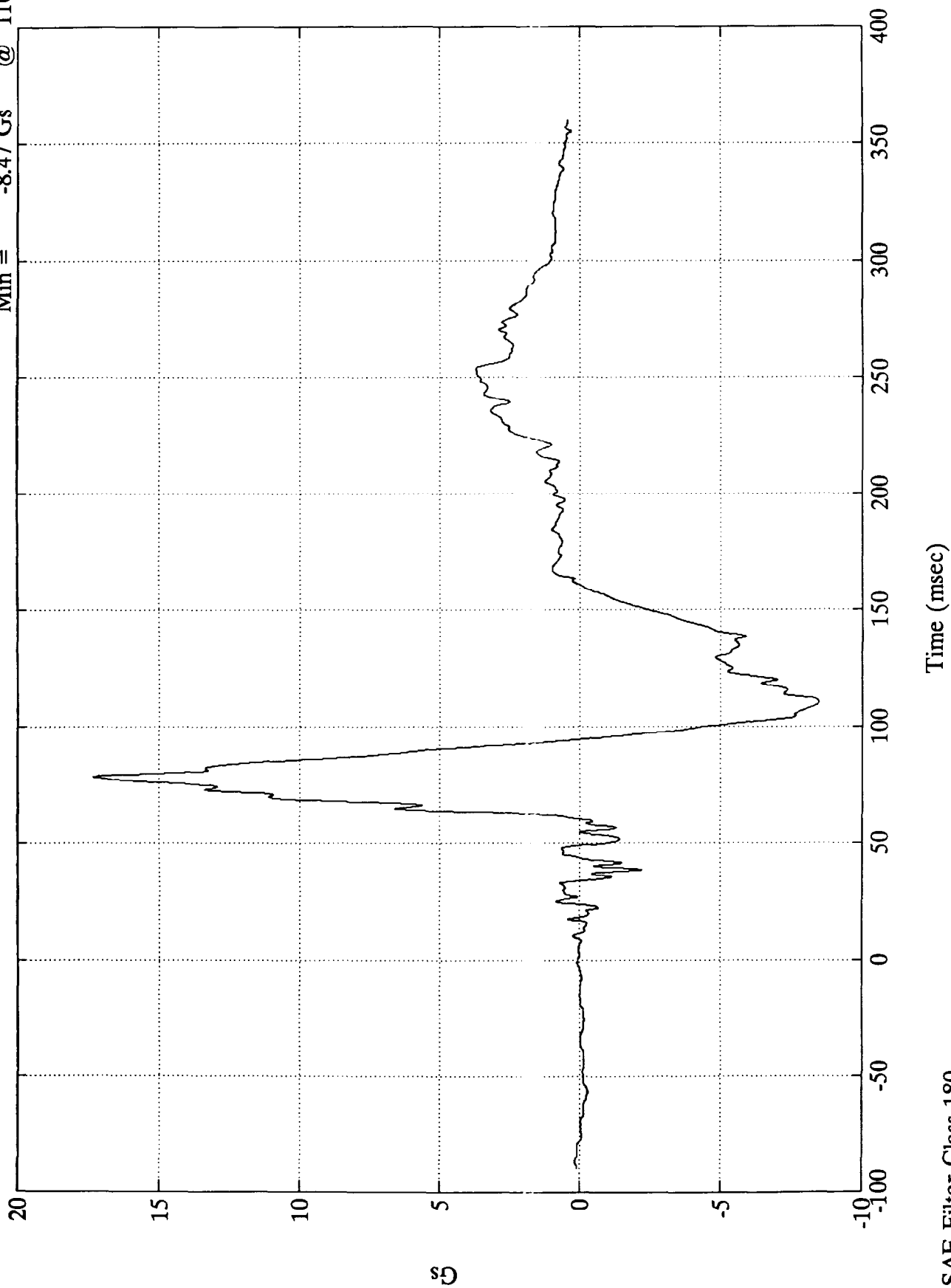
Max = 5.22 Gs @ 82.19 msec
Min = -2.39 Gs @ 36.95 msec



208 Test #4 - 1996 Nissan Pathfinder

Pos. 1 Chest Z

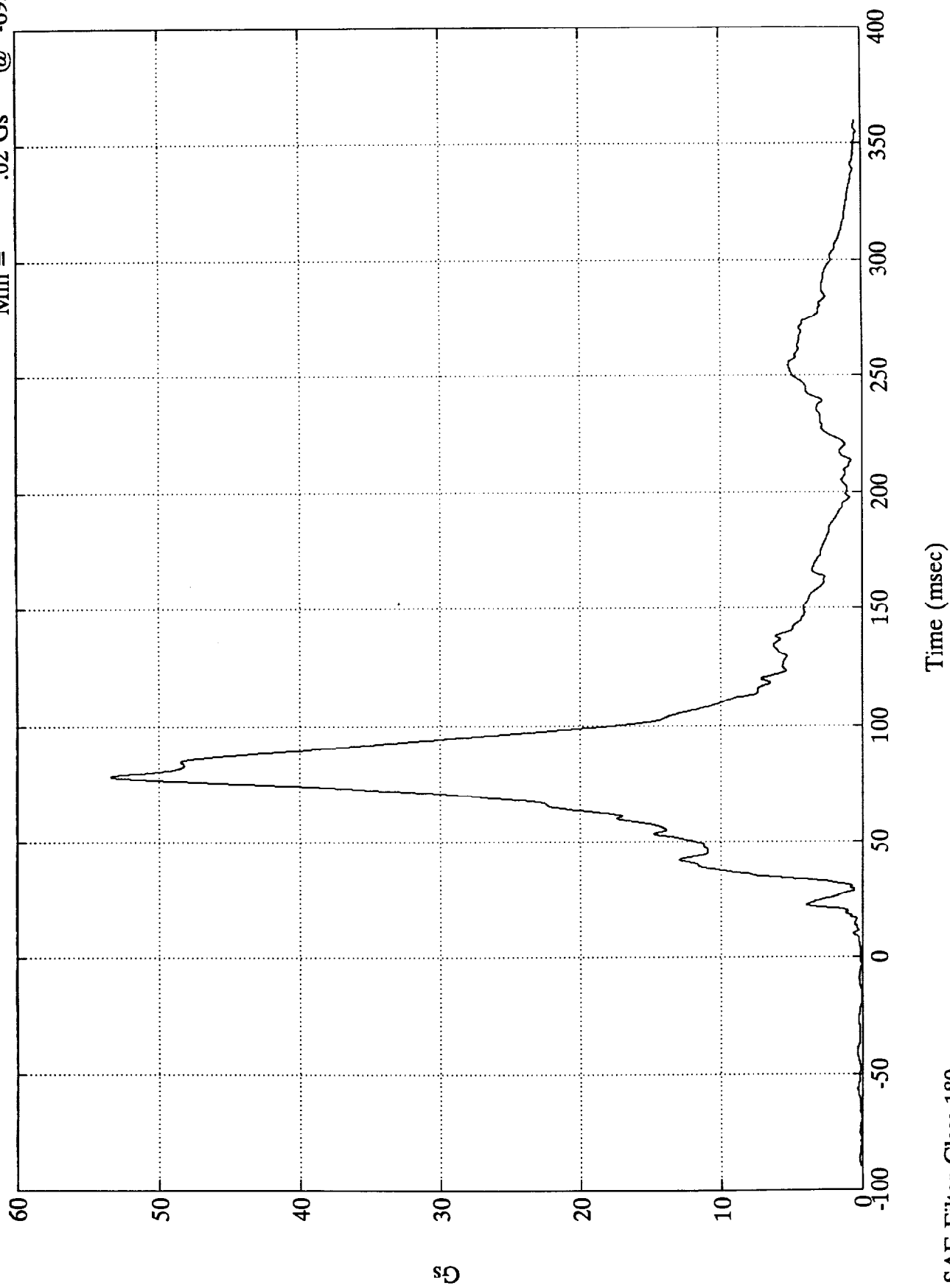
Max = 17.34 Gs @ 78.84 msec
Min = -8.47 Gs @ 110.52 msec



208 Test #4 - 1996 Nissan Pathfinder

Max = 53.44 Gs @ 78.47 msec
 Min = .02 Gs @ -69.84 msec

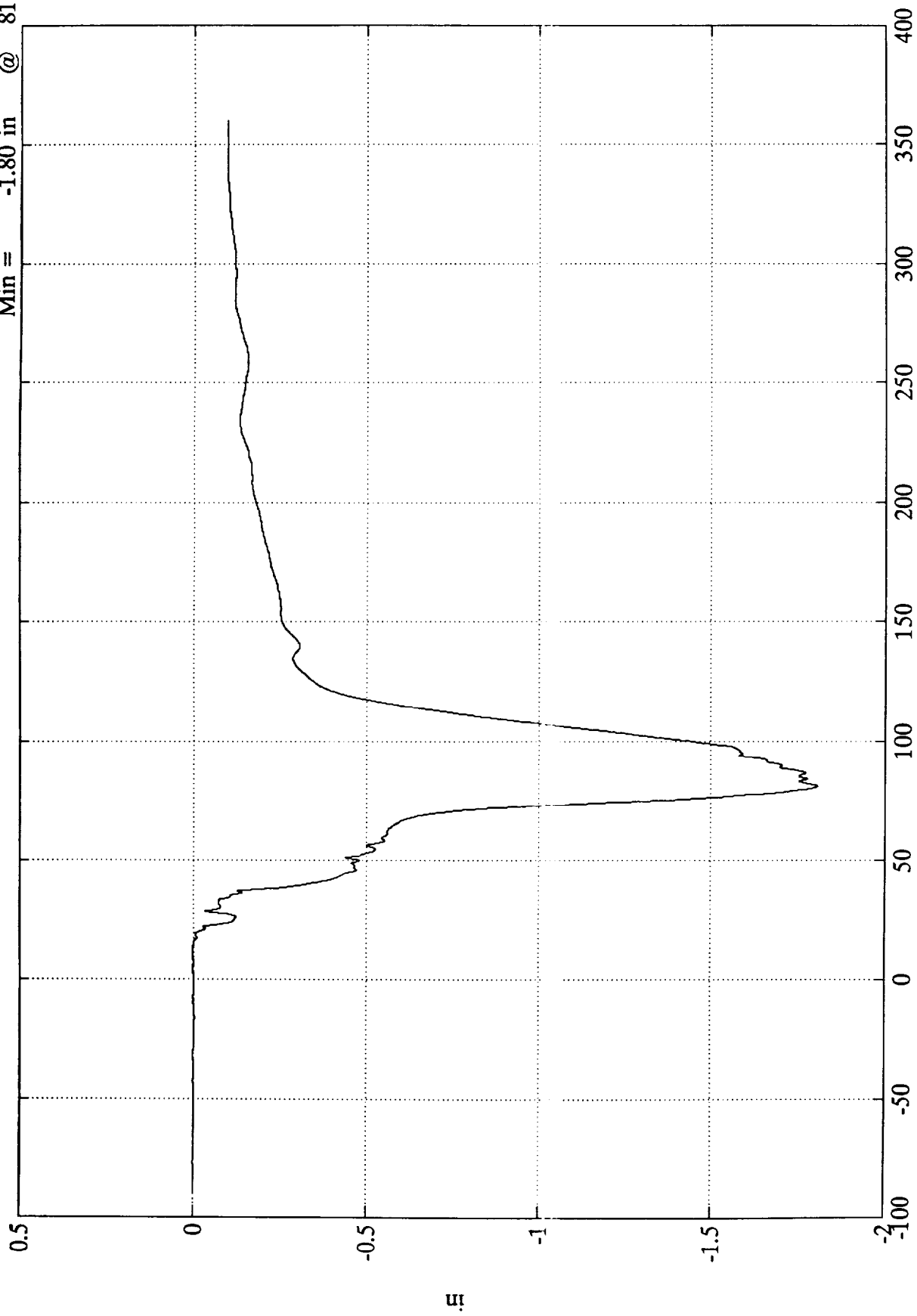
Pos. 1 Chest Resultant



SAE Filter Class 180

Pos. 1 Chest Disp.

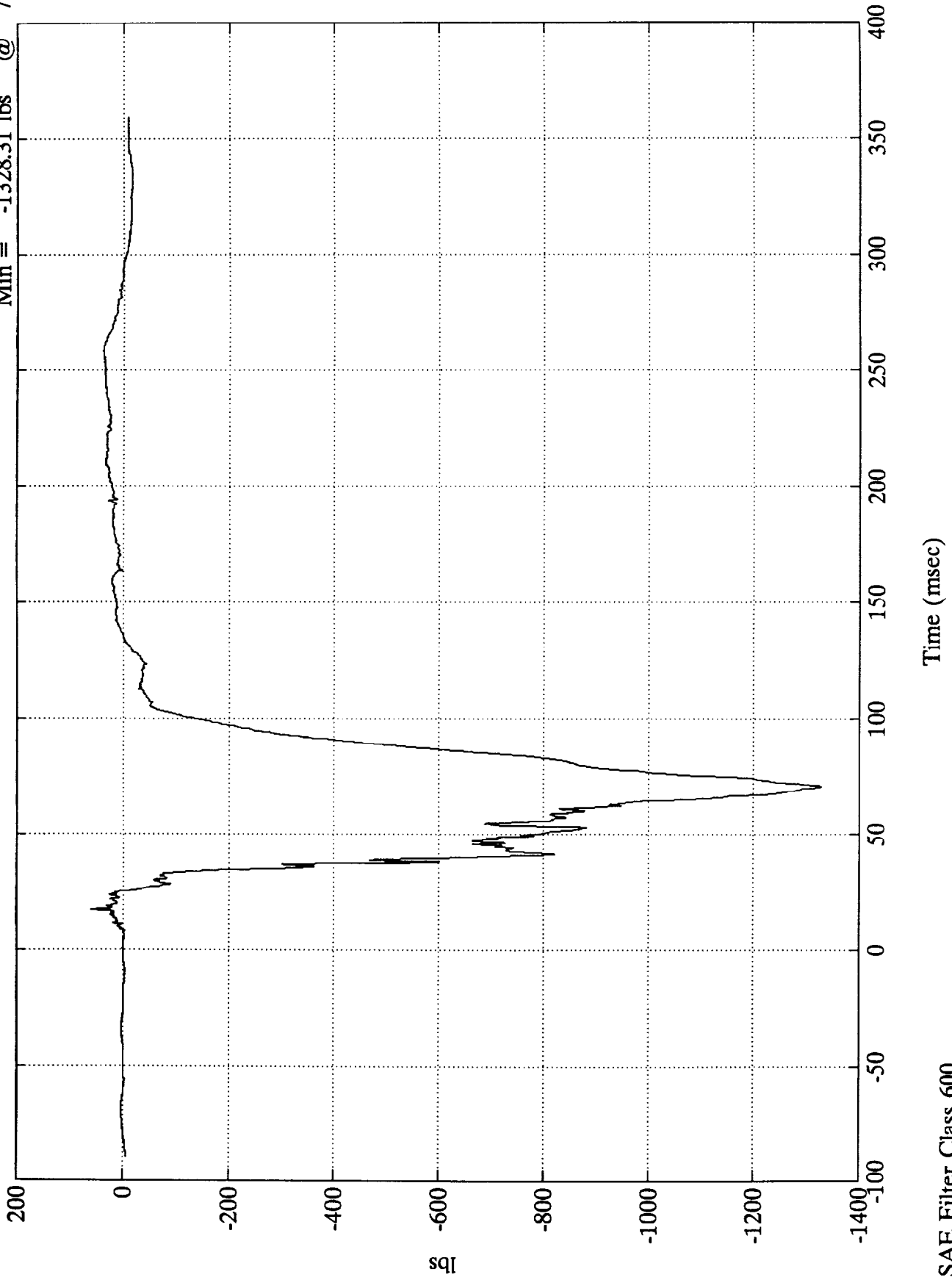
Max = .00 in @ 13.31 msec
Min = -1.80 in @ 81.23 msec



Time (msec)

Pos. 1 Left Femur

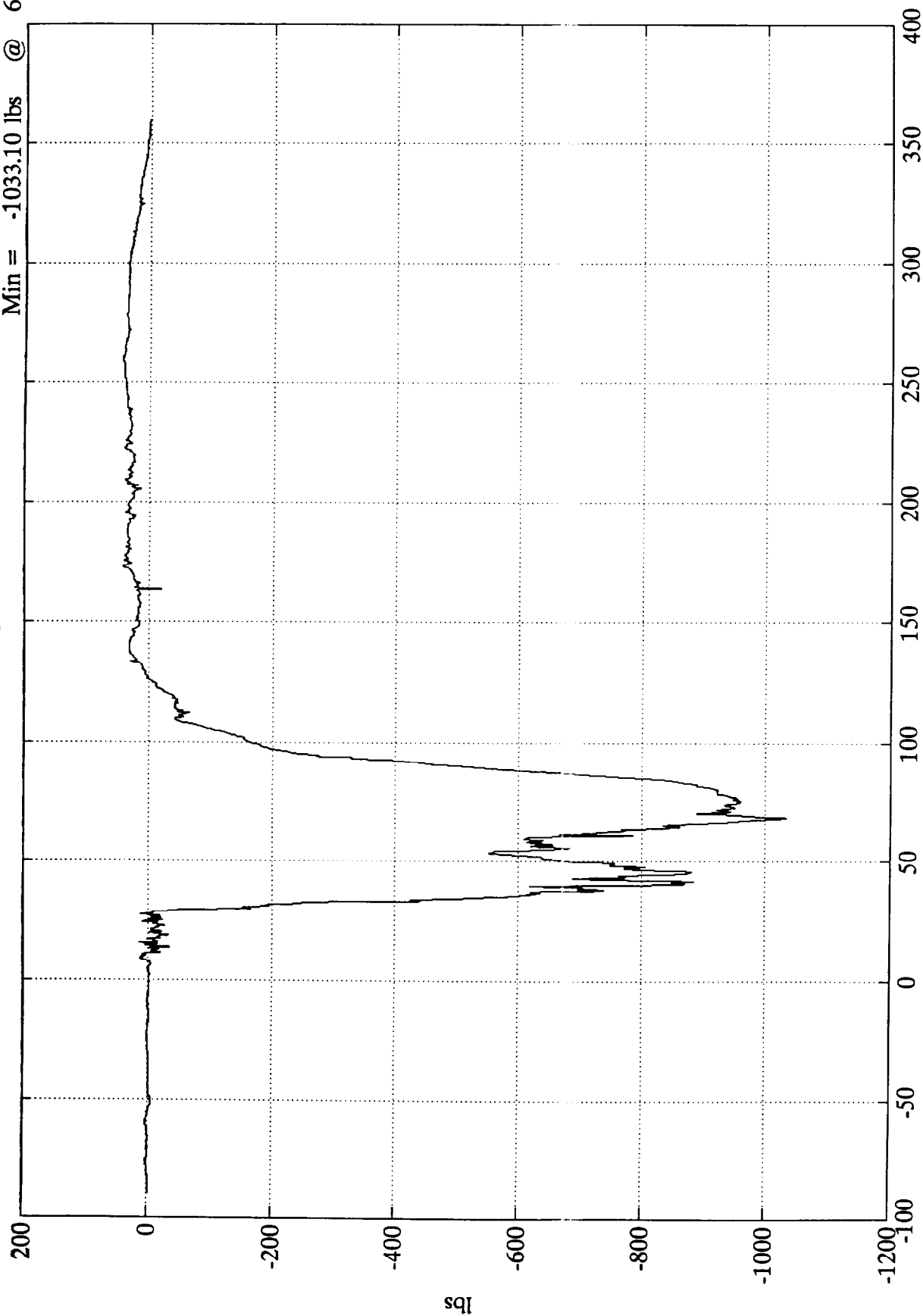
Max = 60.09 lbs @ 17.39 msec
Min = -1328.31 lbs @ 70.68 msec



SAE Filter Class 600

Pos. 1 Right Femur

Max = 43.49 lbs @ 261.00 msec
Min = -1033.10 lbs @ 68.52 msec

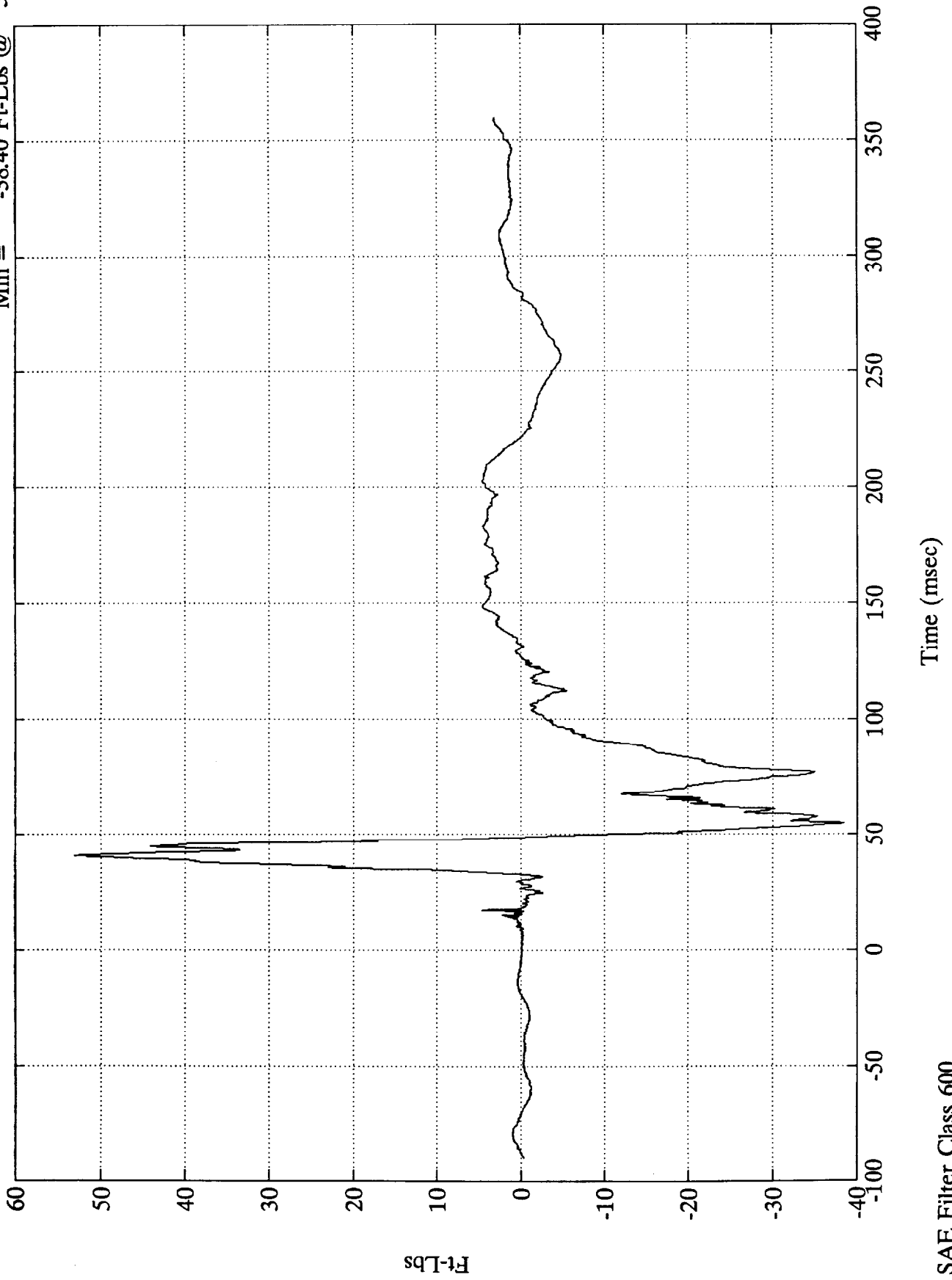


Time (msec)

SAE Filter Class 600

P1 Lt Upper Tibia Mx

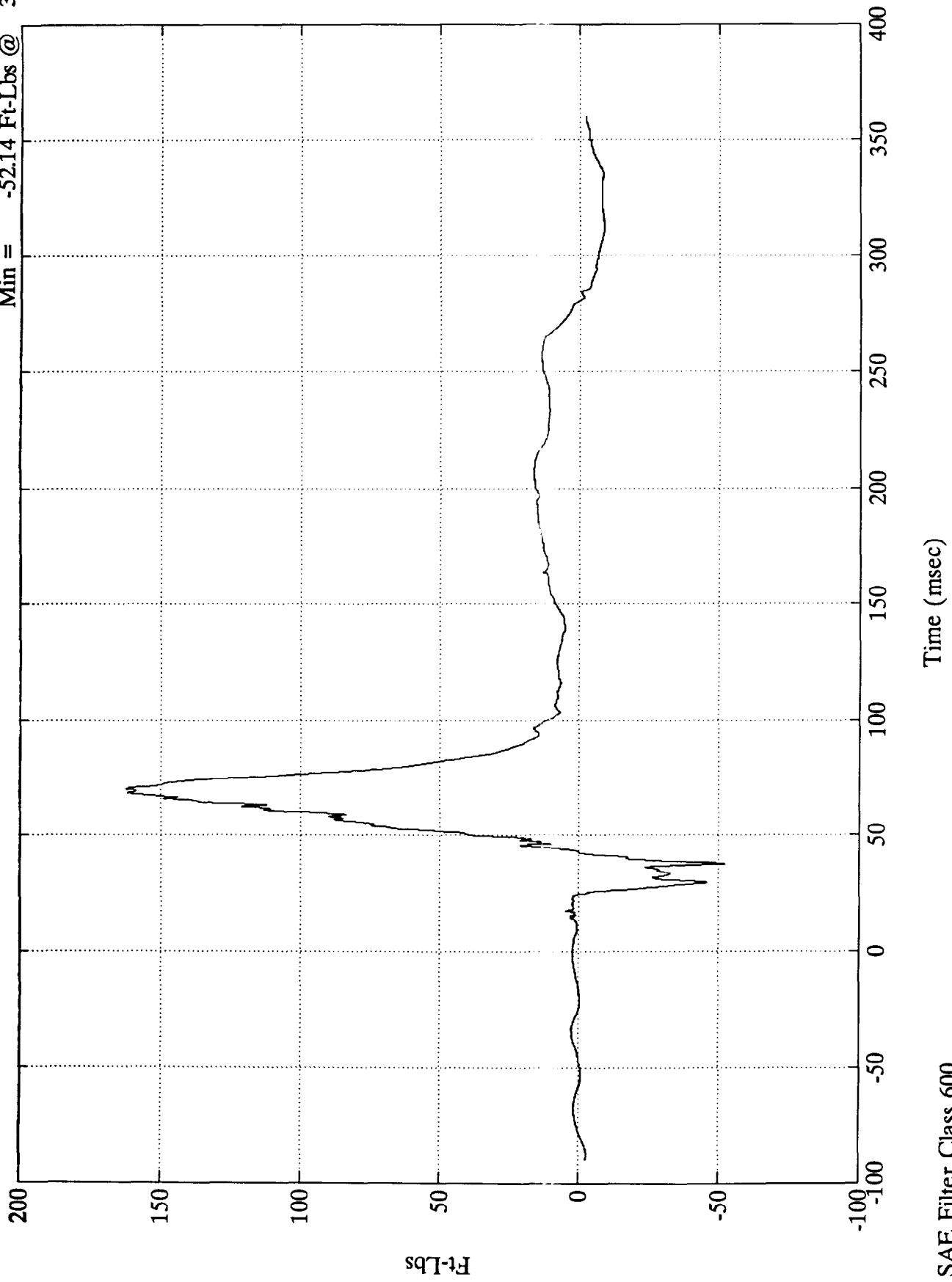
Max = 53.03 Ft-Lbs @ 40.92 msec
Min = -38.40 Ft-Lbs @ 55.08 msec



SAE Filter Class 600

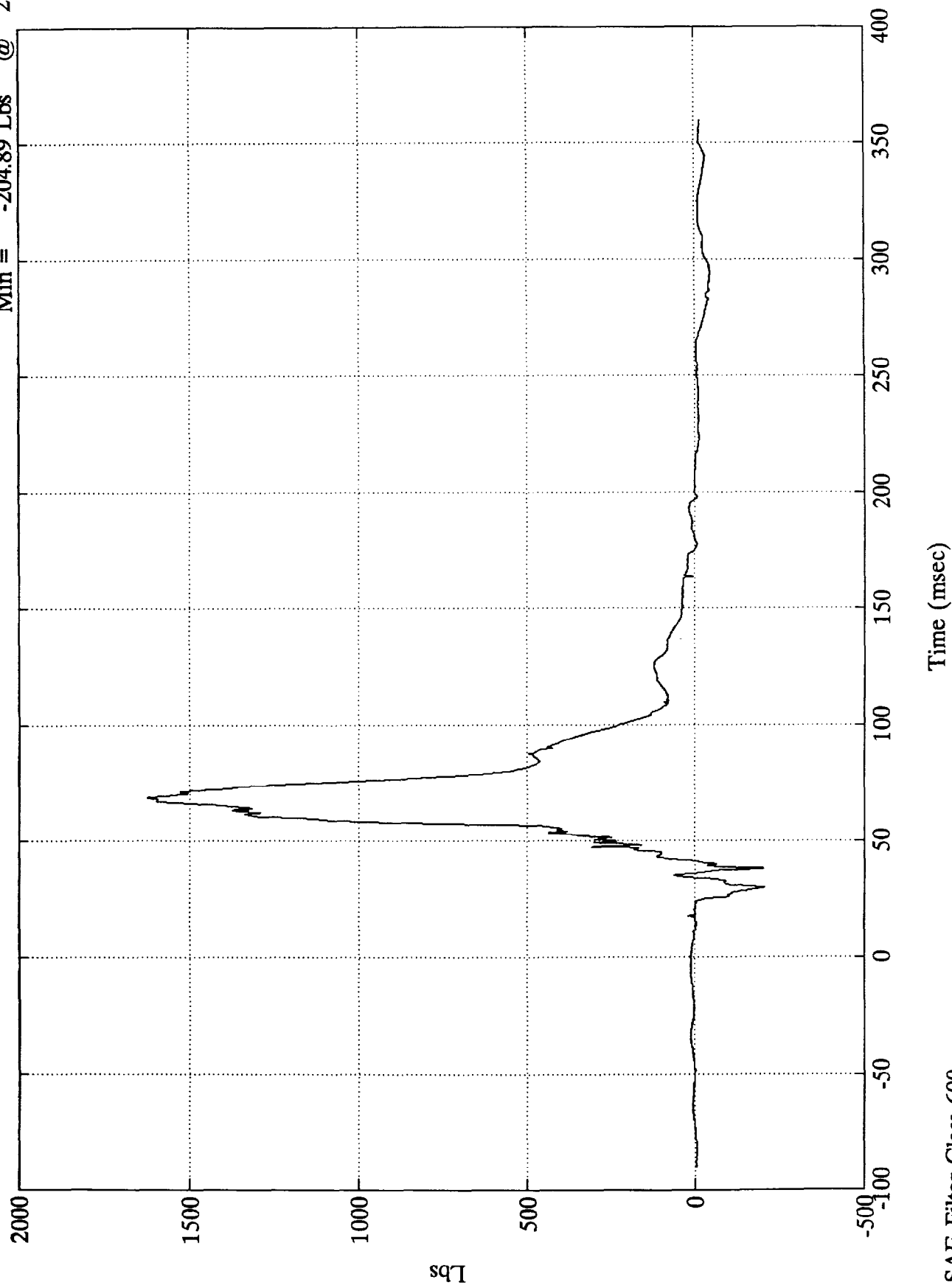
P1 Lt Upper Tibia My

Max = 162.49 Ft-Lbs @ 70.44 msec
Min = -52.14 Ft-Lbs @ 37.79 msec



Max = 1624.66 Lbs @ 68.52 msec
 Min = -204.89 Lbs @ 29.76 msec

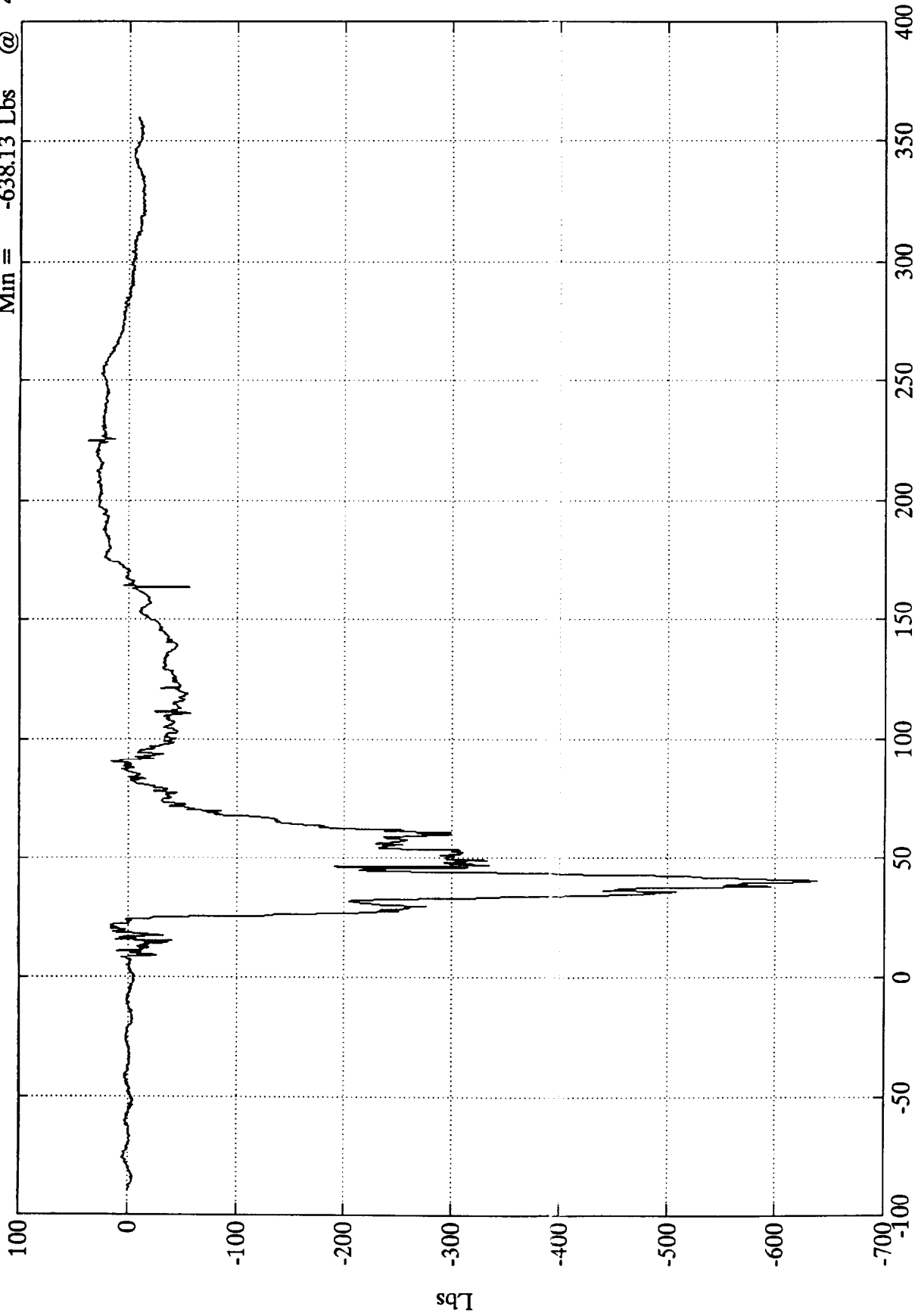
P1 Lt Lower Tibia Fx



SAE Filter Class 600

Max = 37.90 Lbs @ 224.76 msec
Min = -638.13 Lbs @ 40.44 msec

P1 Lt Lower Tibia Fz

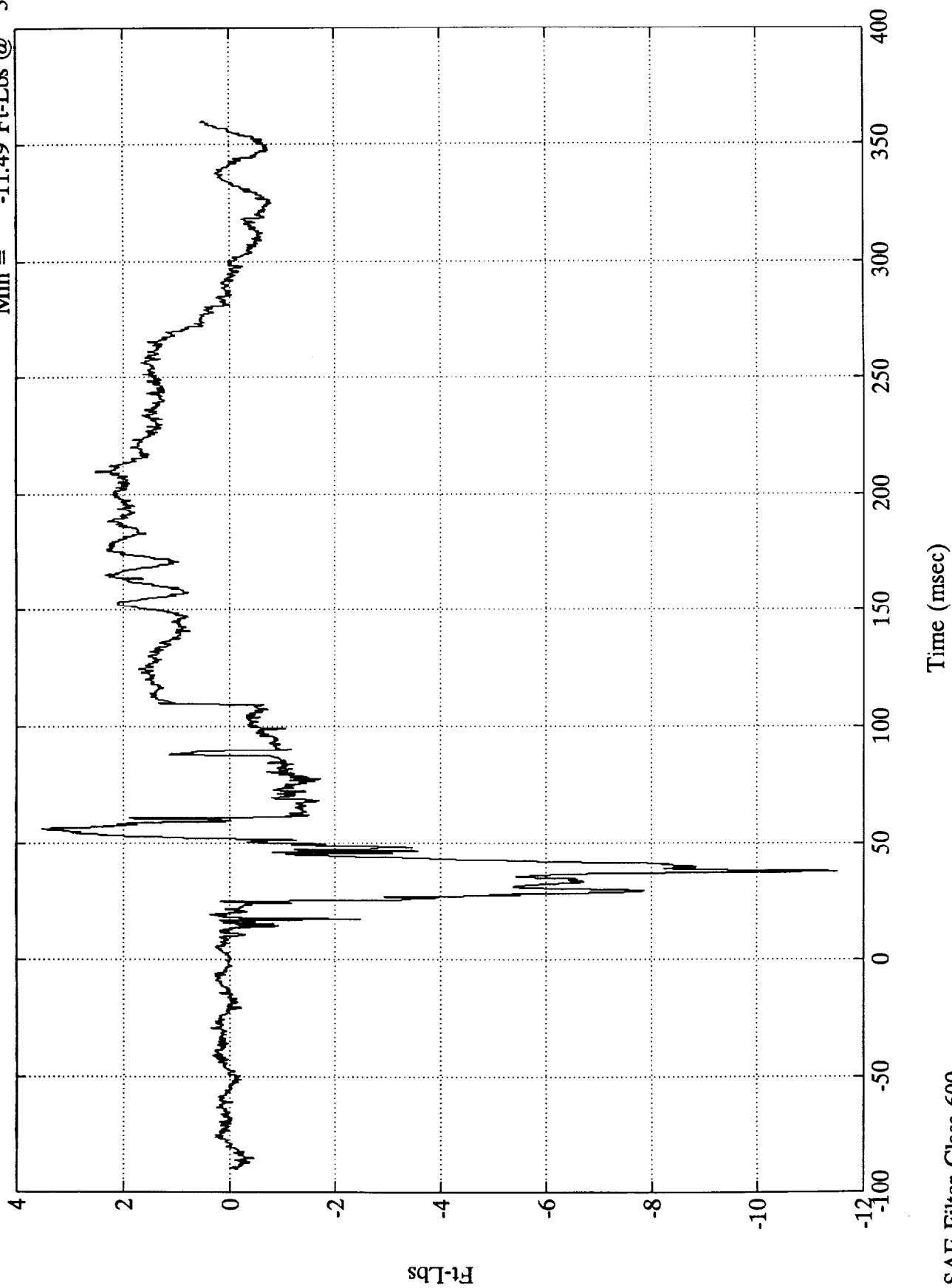


Time (msec)

SAE Filter Class 600

Max = 3.51 Ft-Lbs @ 56.28 msec
 Min = -11.49 Ft-Lbs @ 38.15 msec

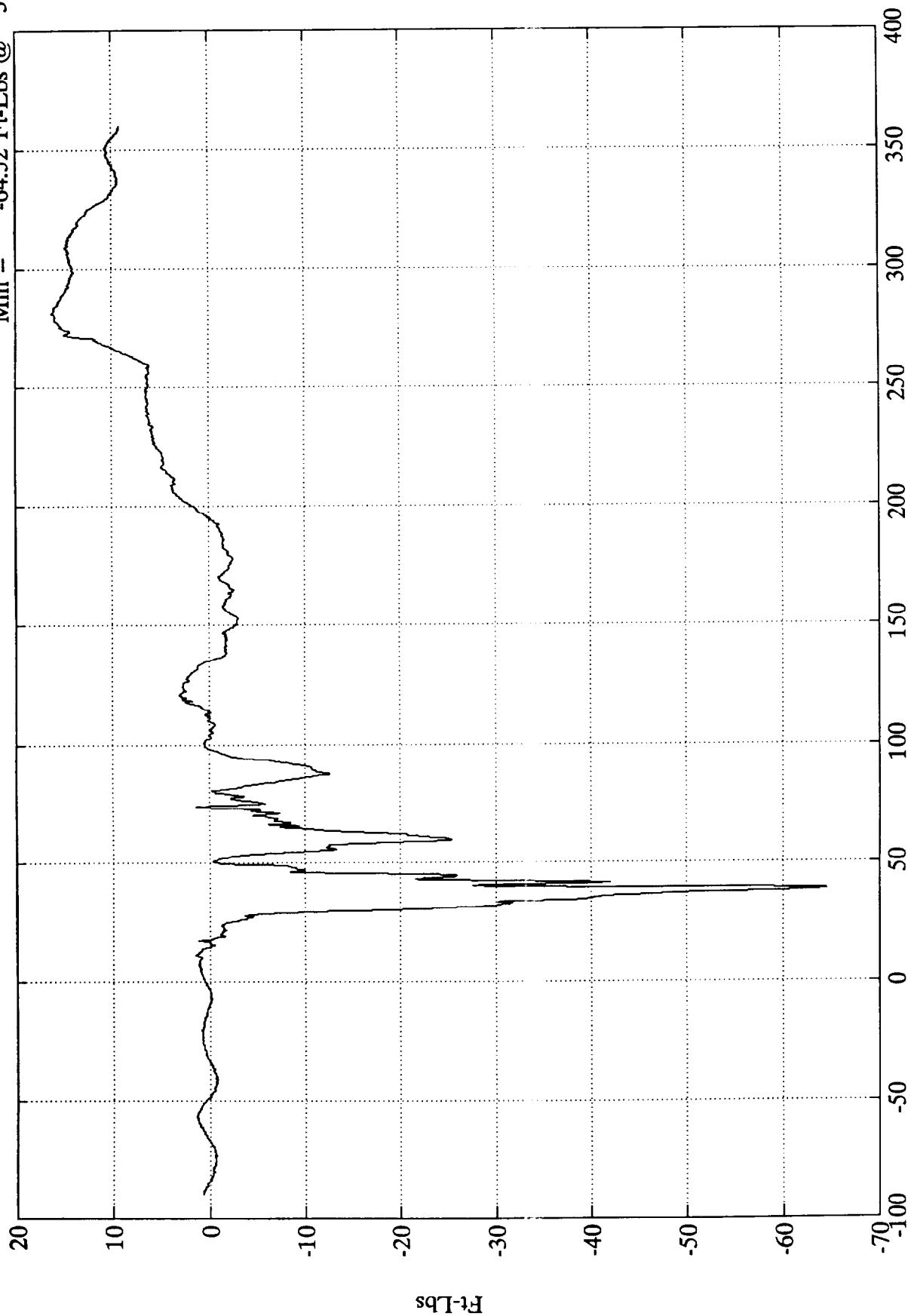
P1 Lt Lower Tibia My



SAE Filter Class 600

P1 Rt Upper Tibia Mx

Max = 16.25 Ft-Lbs @ 281.27 msec
Min = -64.52 Ft-Lbs @ 39.00 msec

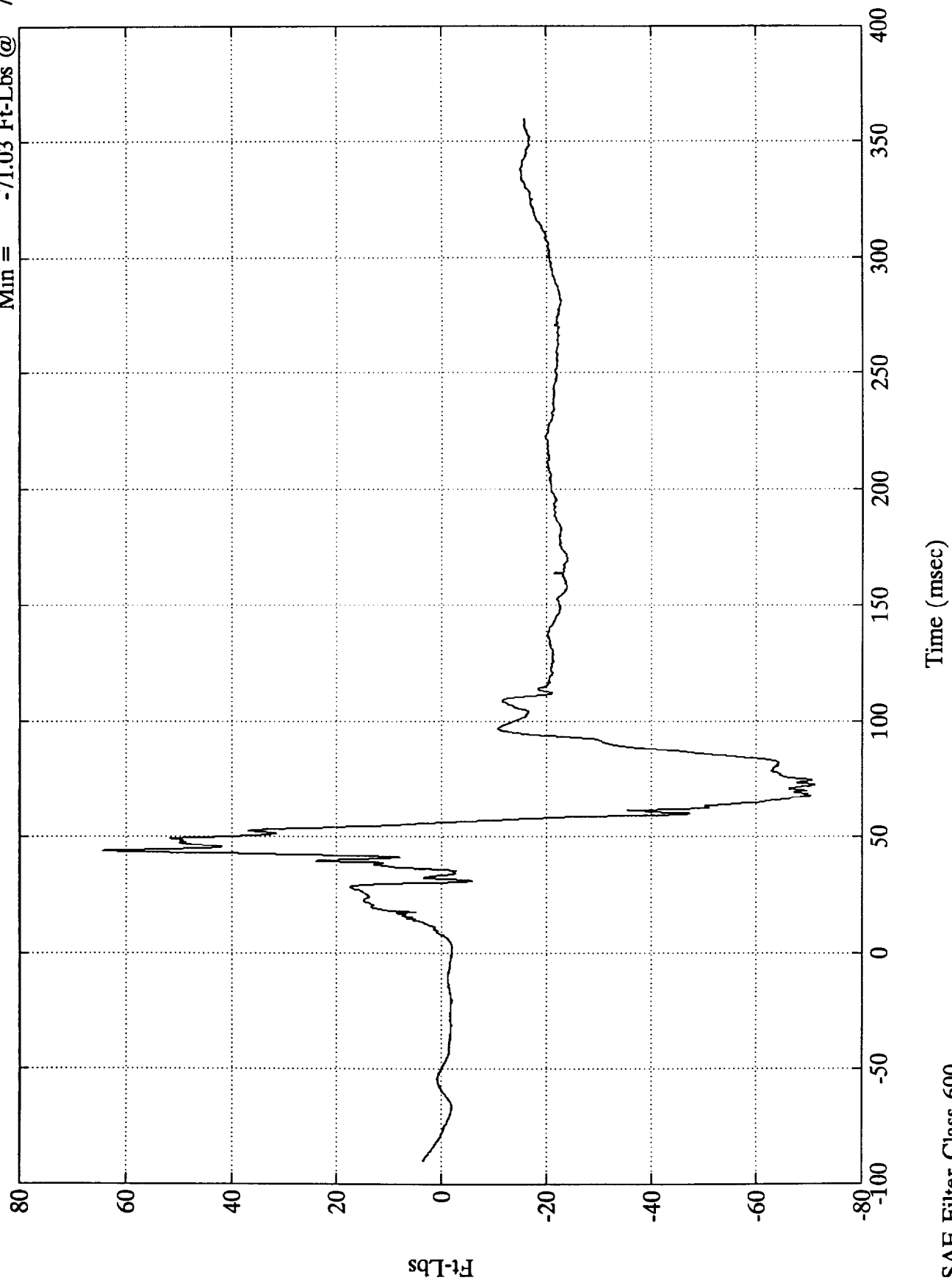


Time (msec)

SAE Filter Class 600

P1 Rt Upper Tibia My

Max = 64.43 Ft-Lbs @ 43.79 msec
Min = -71.03 Ft-Lbs @ 72.59 msec

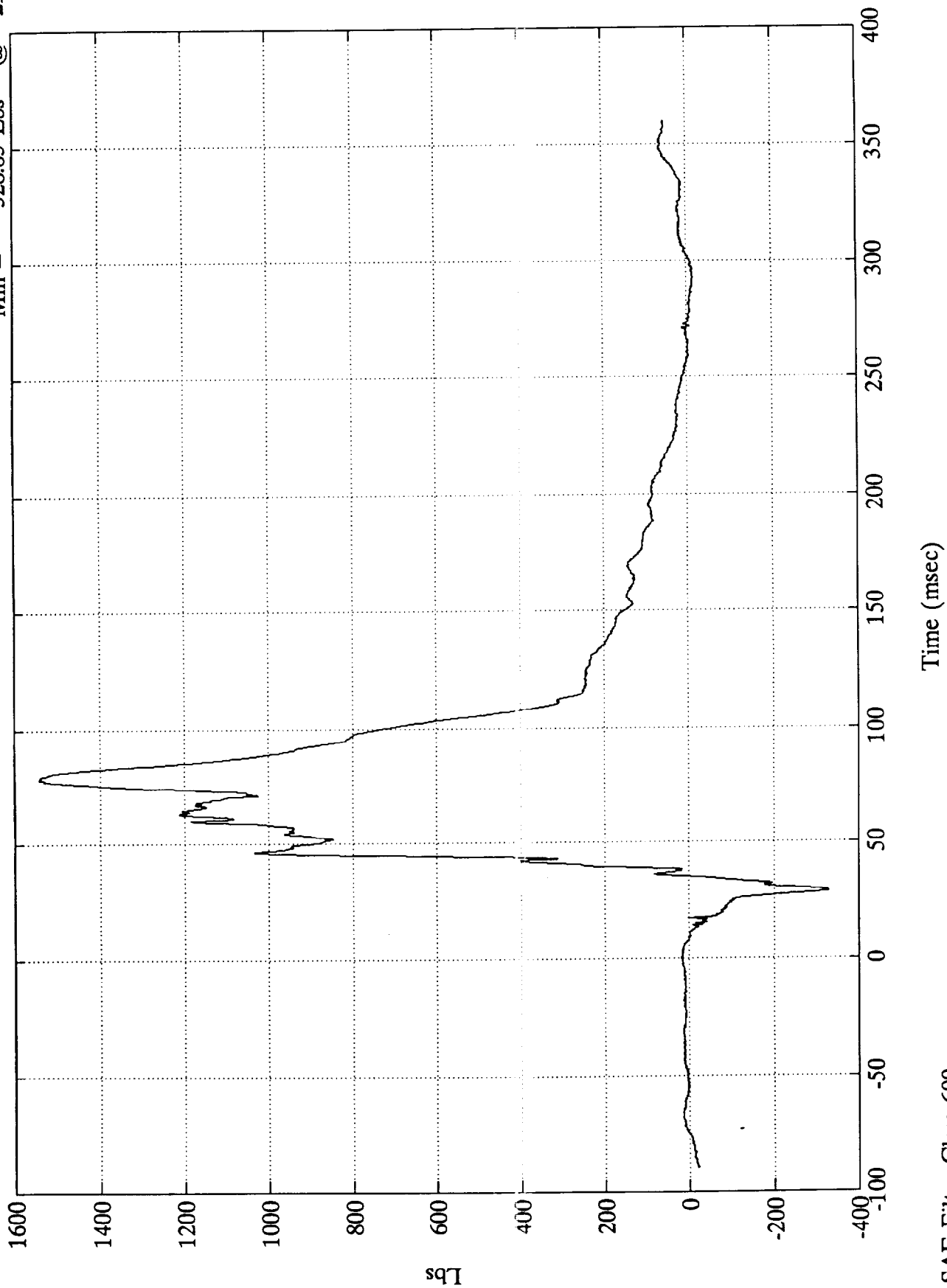


SAE Filter Class 600

208 Test #4 - 1996 Nissan Pathfinder

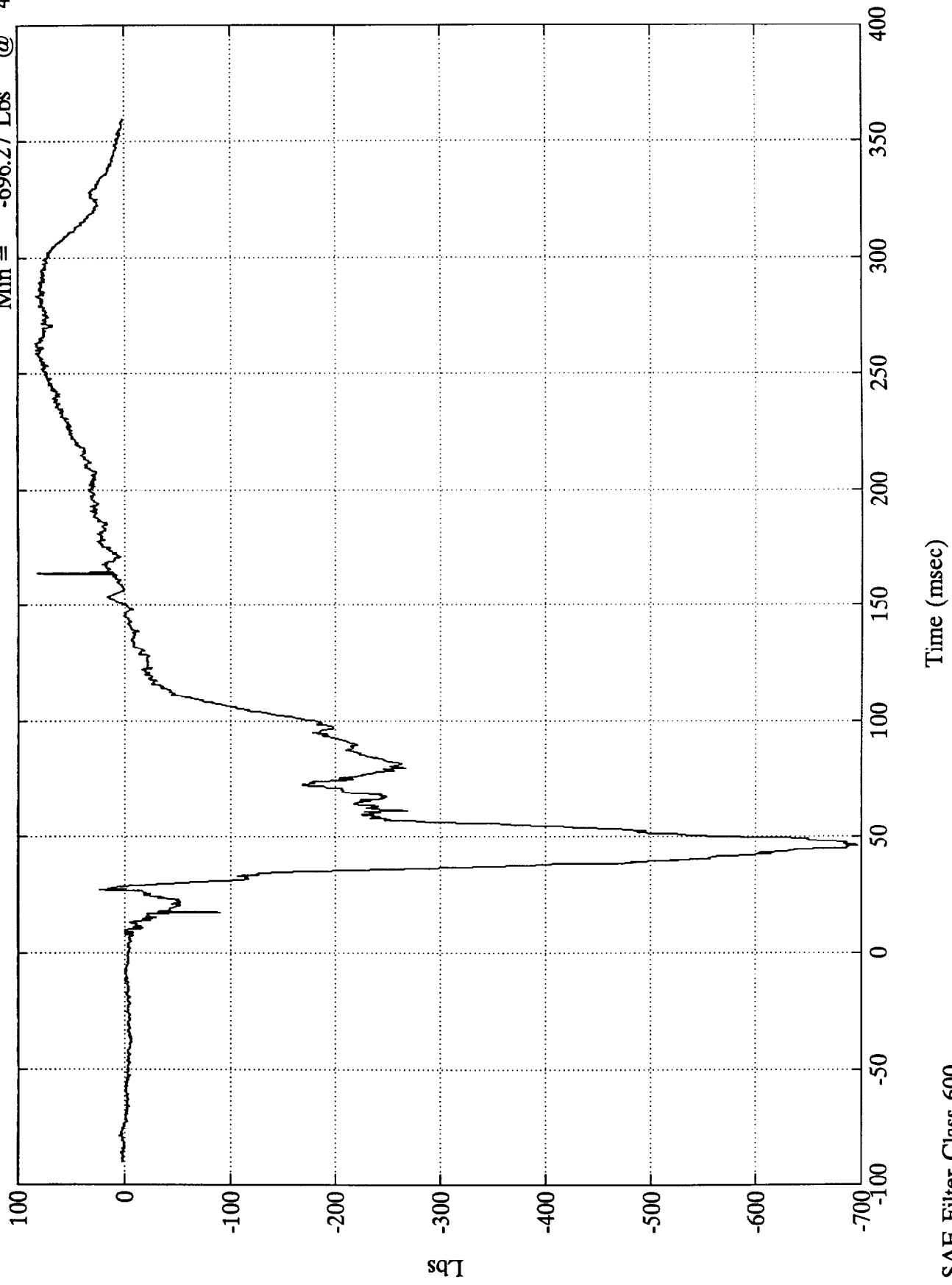
P1 Rt Lower Tibia Fx

Max = 1541.87 Lbs @ 78.84 msec
Min = -328.85 Lbs @ 29.03 msec



SAE Filter Class 600

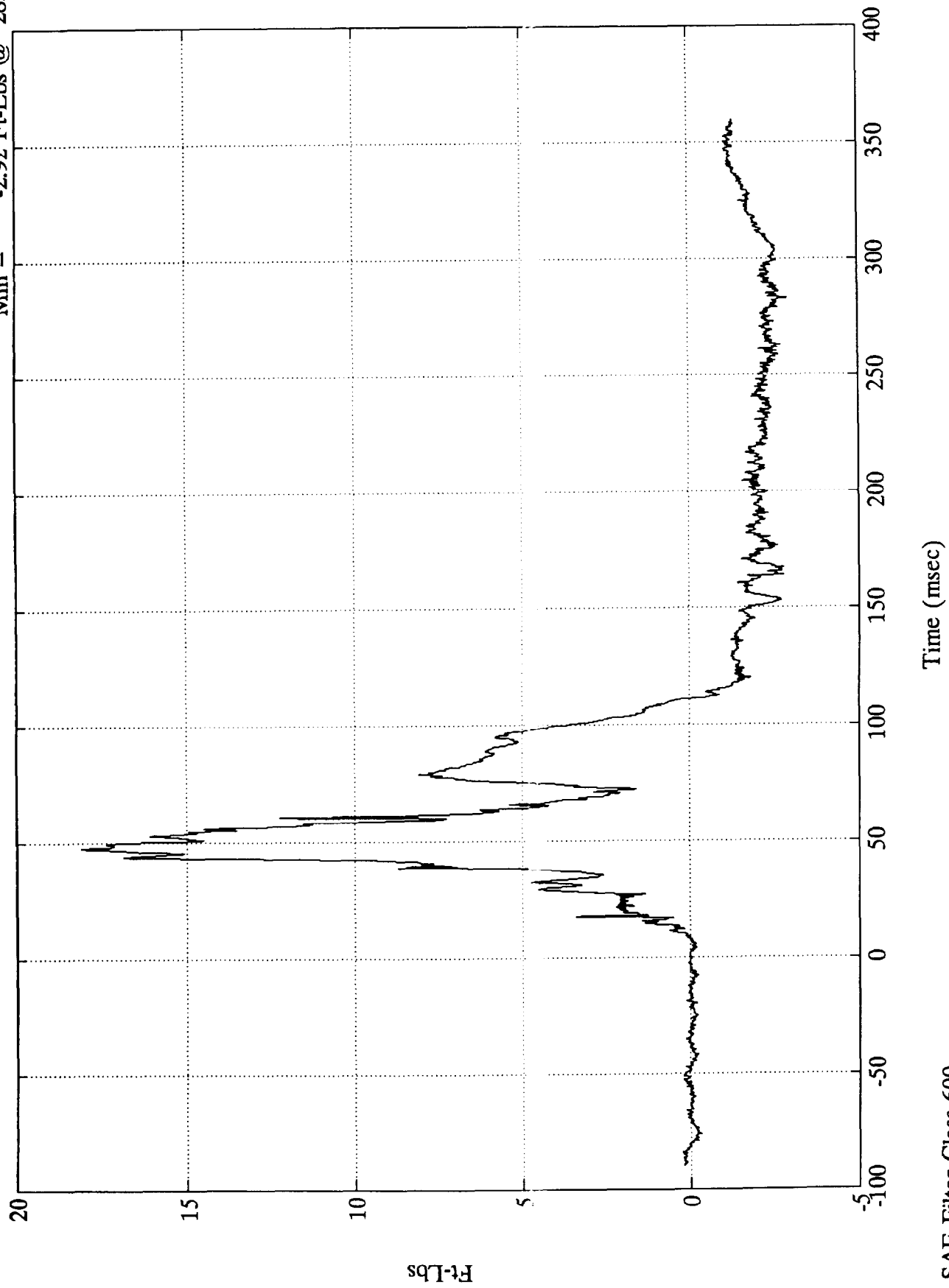
P1 Rt Lower Tibia Fz
Max = 84.21 Lbs @ 263.16 msec
Min = -696.27 Lbs @ 46.31 msec



208 Test #4 - 1996 Nissan Pathfinder

P1 Rt Lower Tibia My

Max = 18.14 Ft-Lbs @ 47.75 msec
Min = -2.92 Ft-Lbs @ 283.19 msec

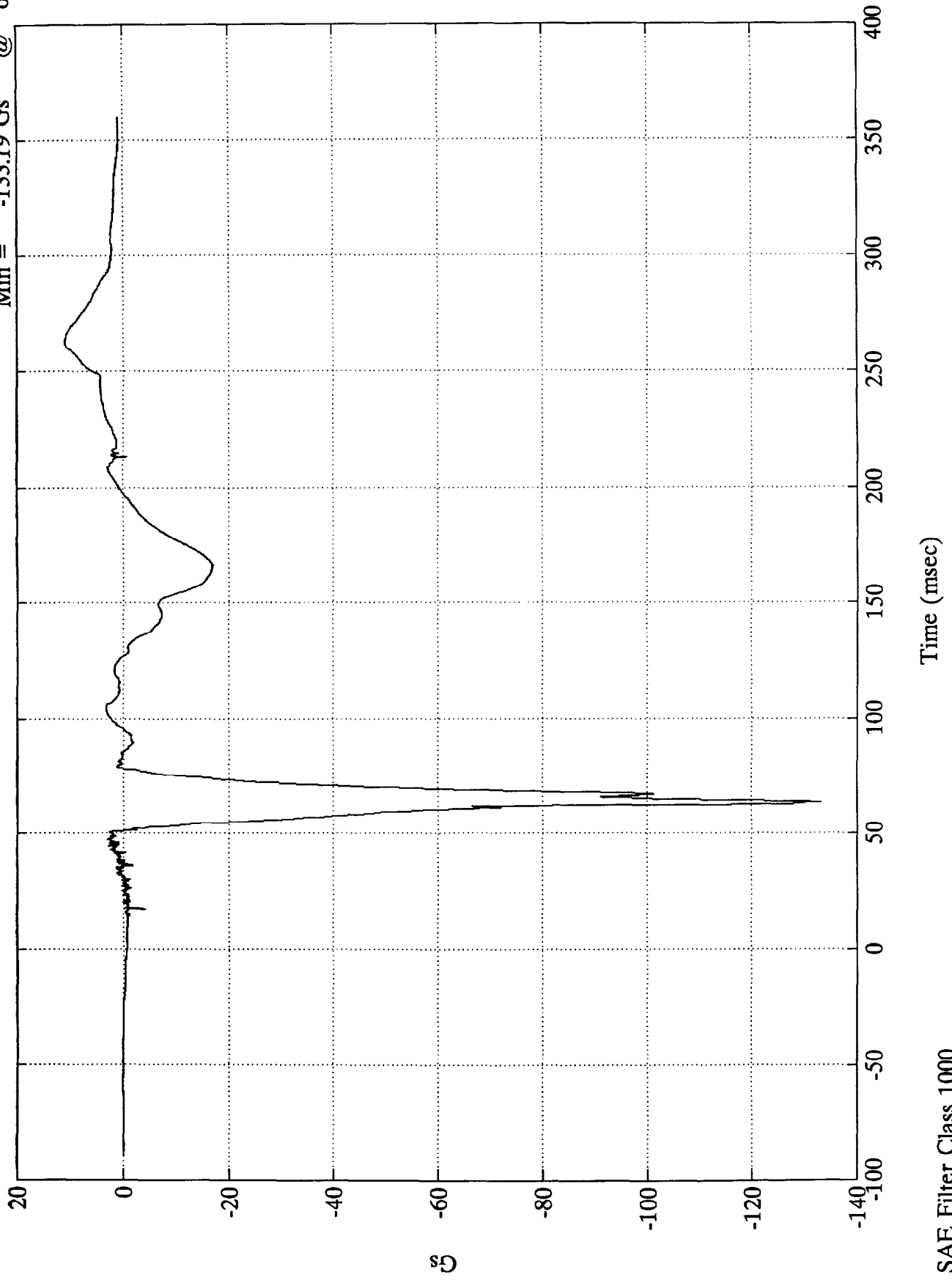


SAE Filter Class 600

208 Test #4 - 1996 Nissan Pathfinder

Pos. 2 Head X

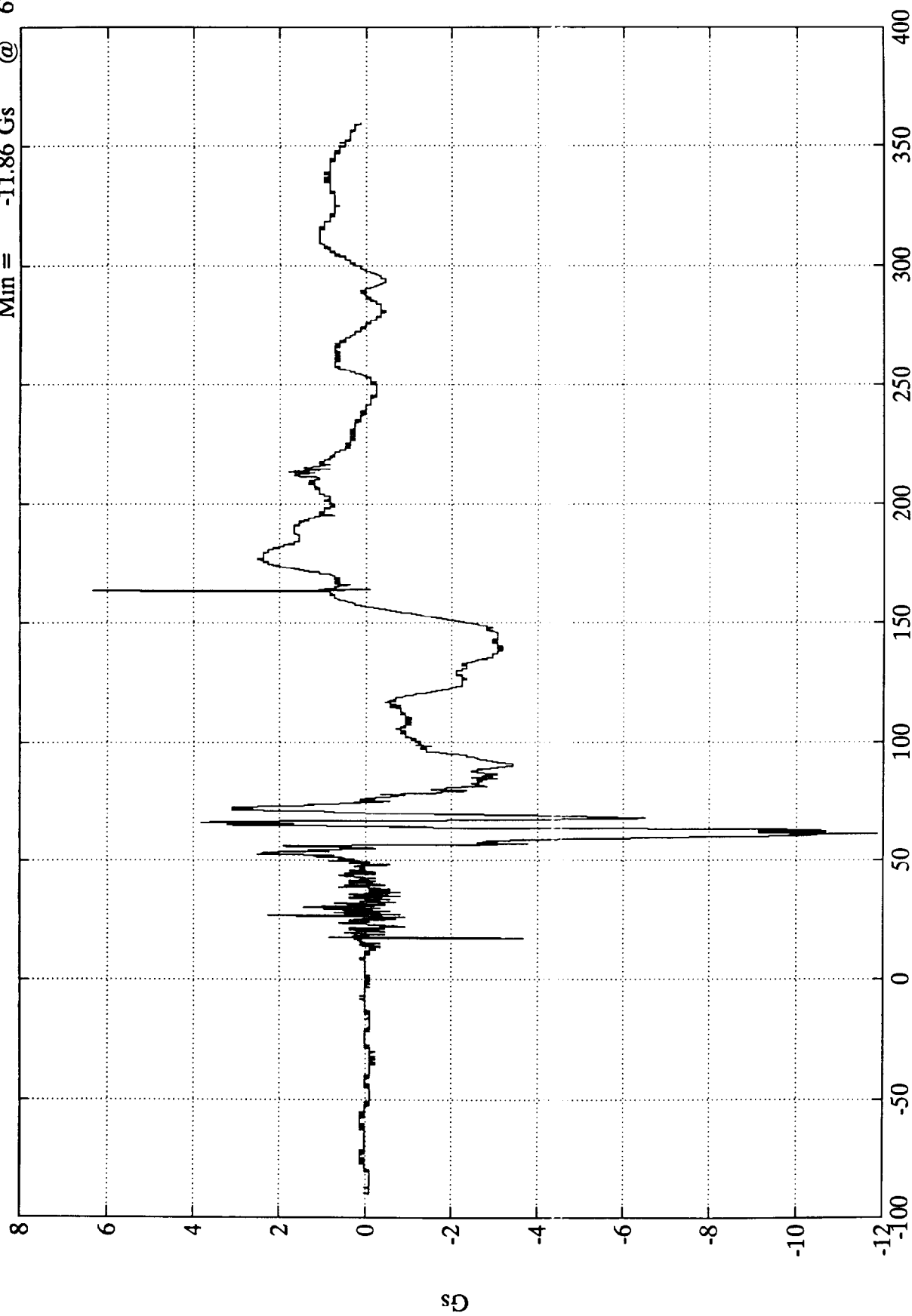
Max = 11.00 Gs @ 263.40 msec
 Min = -133.19 Gs @ 63.60 msec



SAE Filter Class 1000

Pos. 2 Head Y

Max = 6.31 Gs @ 163.80 msec
Min = -11.86 Gs @ 61.08 msec

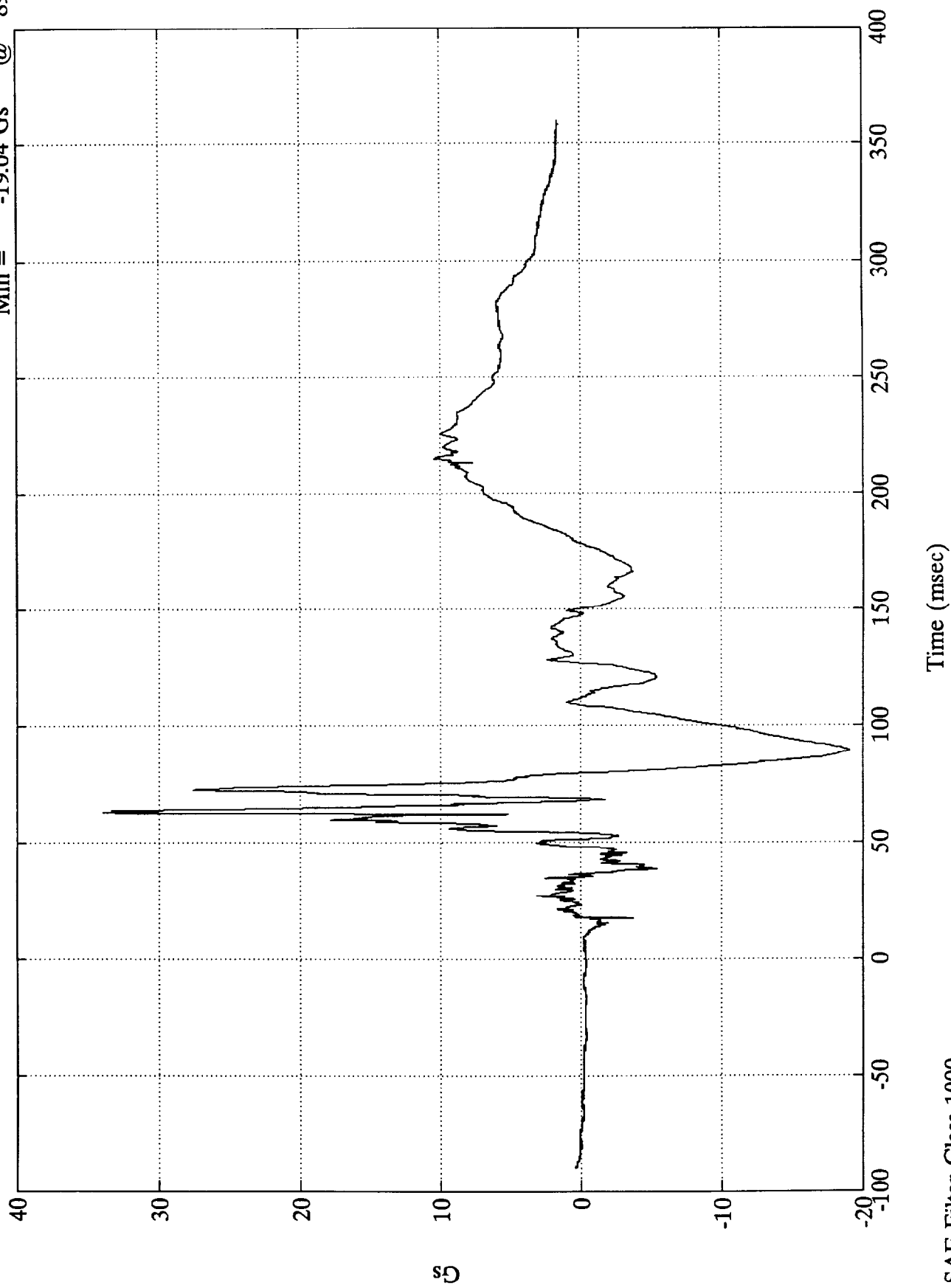


Time (msec)

SAE Filter Class 1000

Pos. 2 Head Z

Max = 33.96 Gs @ 62.76 msec
 Min = -19.04 Gs @ 89.40 msec

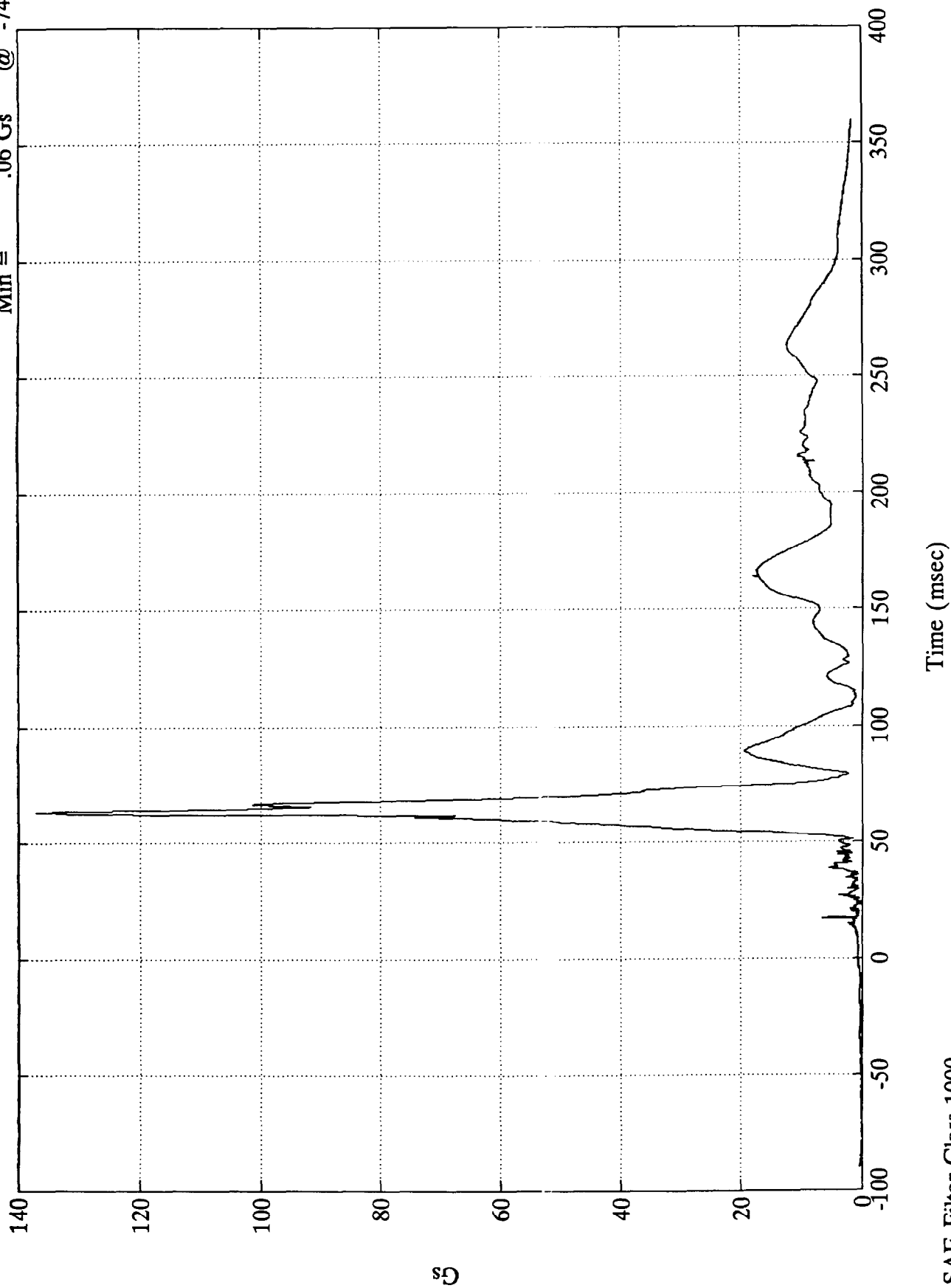


SAE Filter Class 1000

208 Test #4 - 1996 Nissan Pathfinder

Pos. 2 Head Resultant

Max = 137.06 Gs @ 63.60 msec
Min = .06 Gs @ -74.64 msec

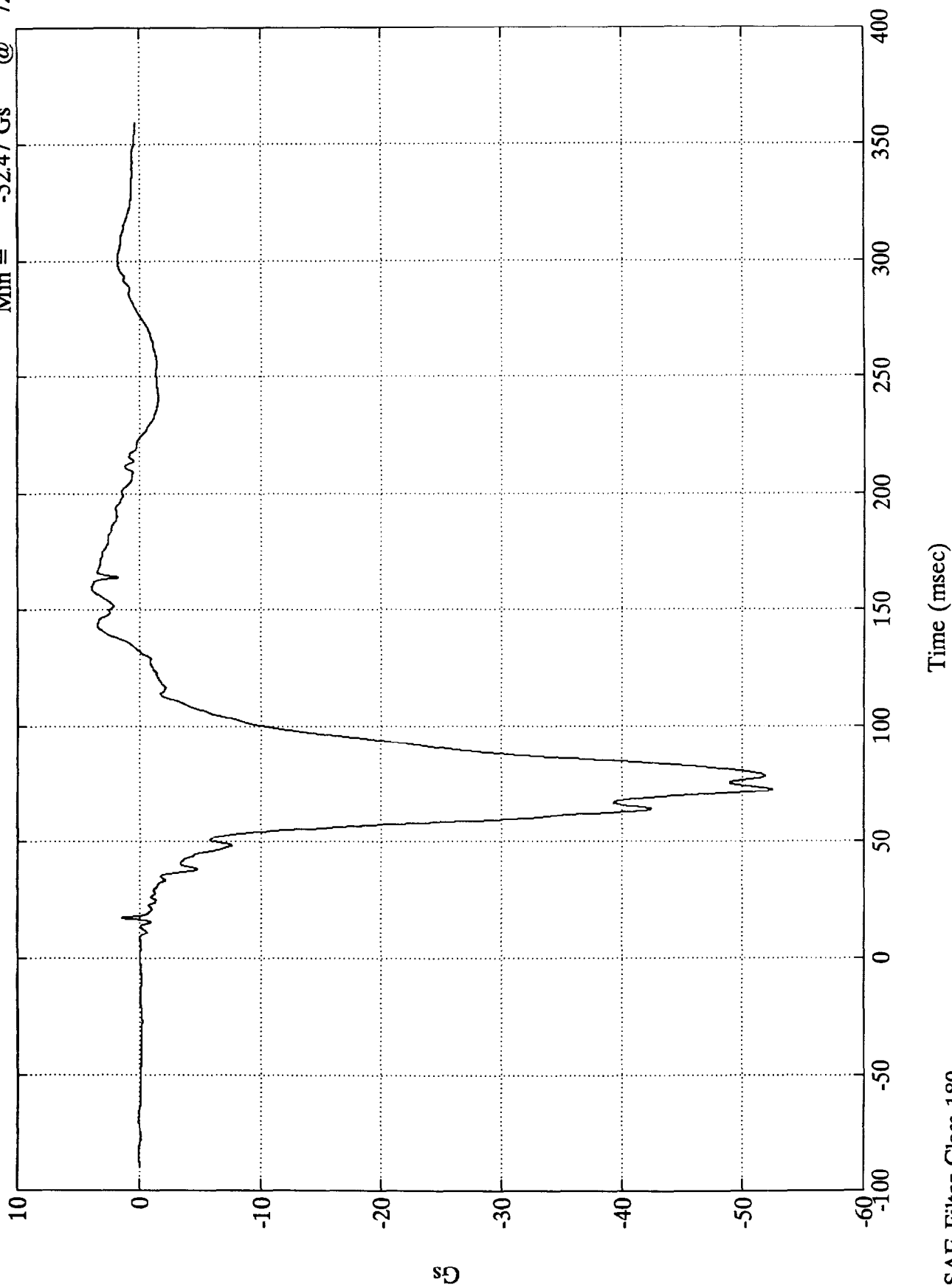


SAE Filter Class 1000

208 Test #4 - 1996 Nissan Pathfinder

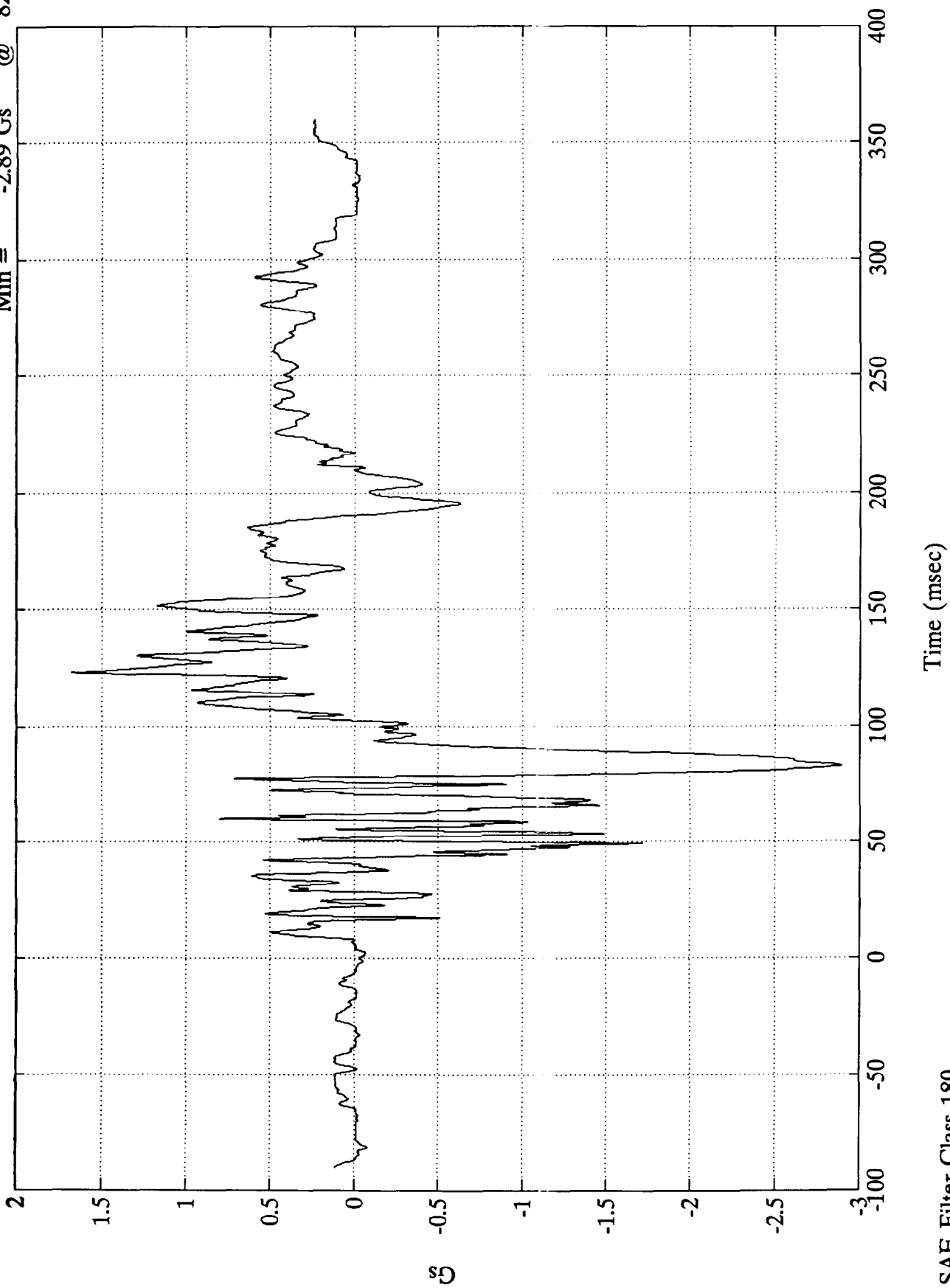
Pos. 2 Chest X

Max = 3.93 Gs @ 159.48 msec
Min = -52.47 Gs @ 72.83 msec



SAE Filter Class 180

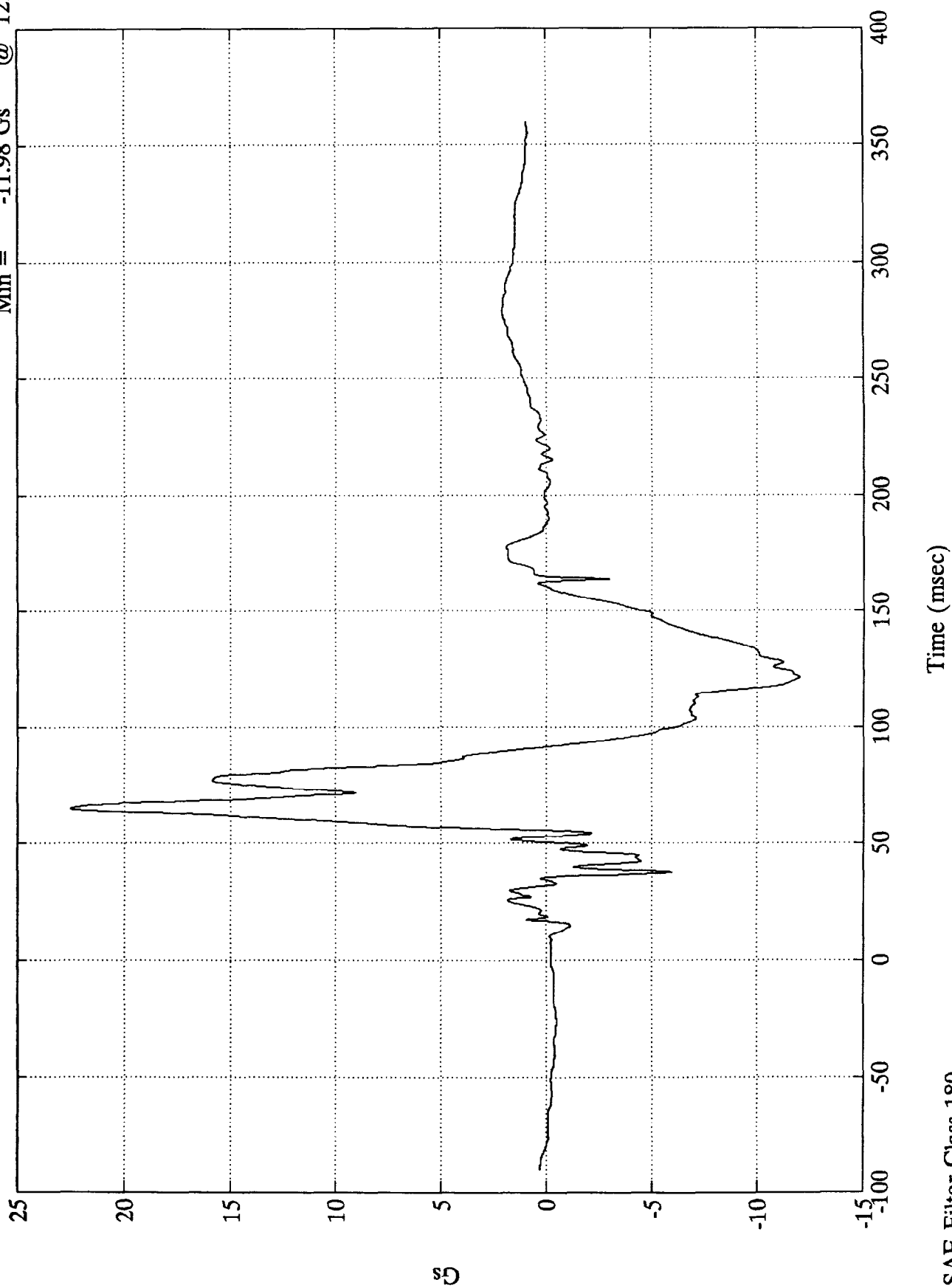
Pos. 2 Chest Y
 Max = 1.67 Gs @ 123.00 msec
 Min = -2.89 Gs @ 82.91 msec



208 Test #4 - 1996 Nissan Pathfinder

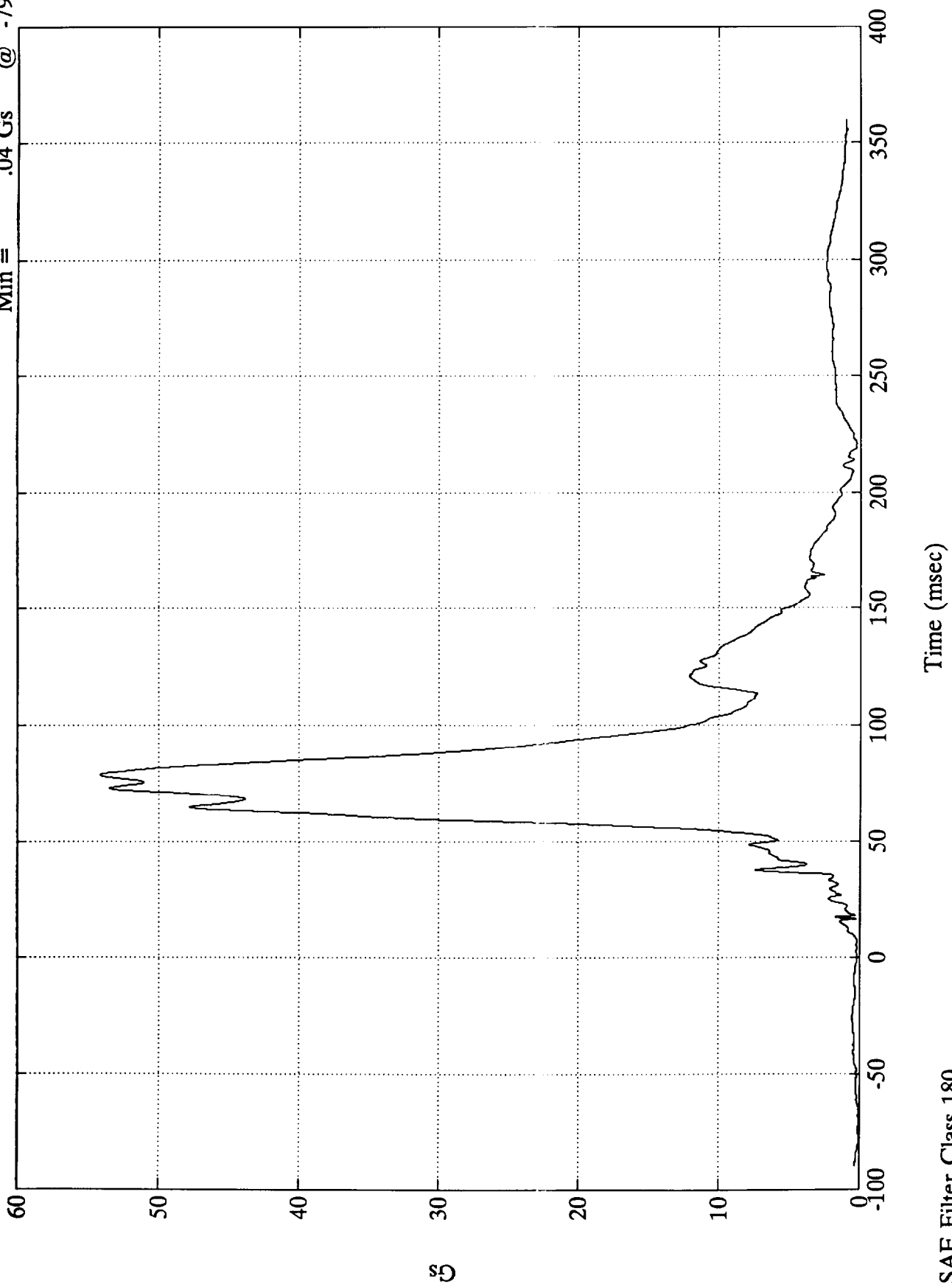
Pos. 2 Chest Z

Max = 22.53 Gs @ 65.27 msec
Min = -11.98 Gs @ 121.31 msec



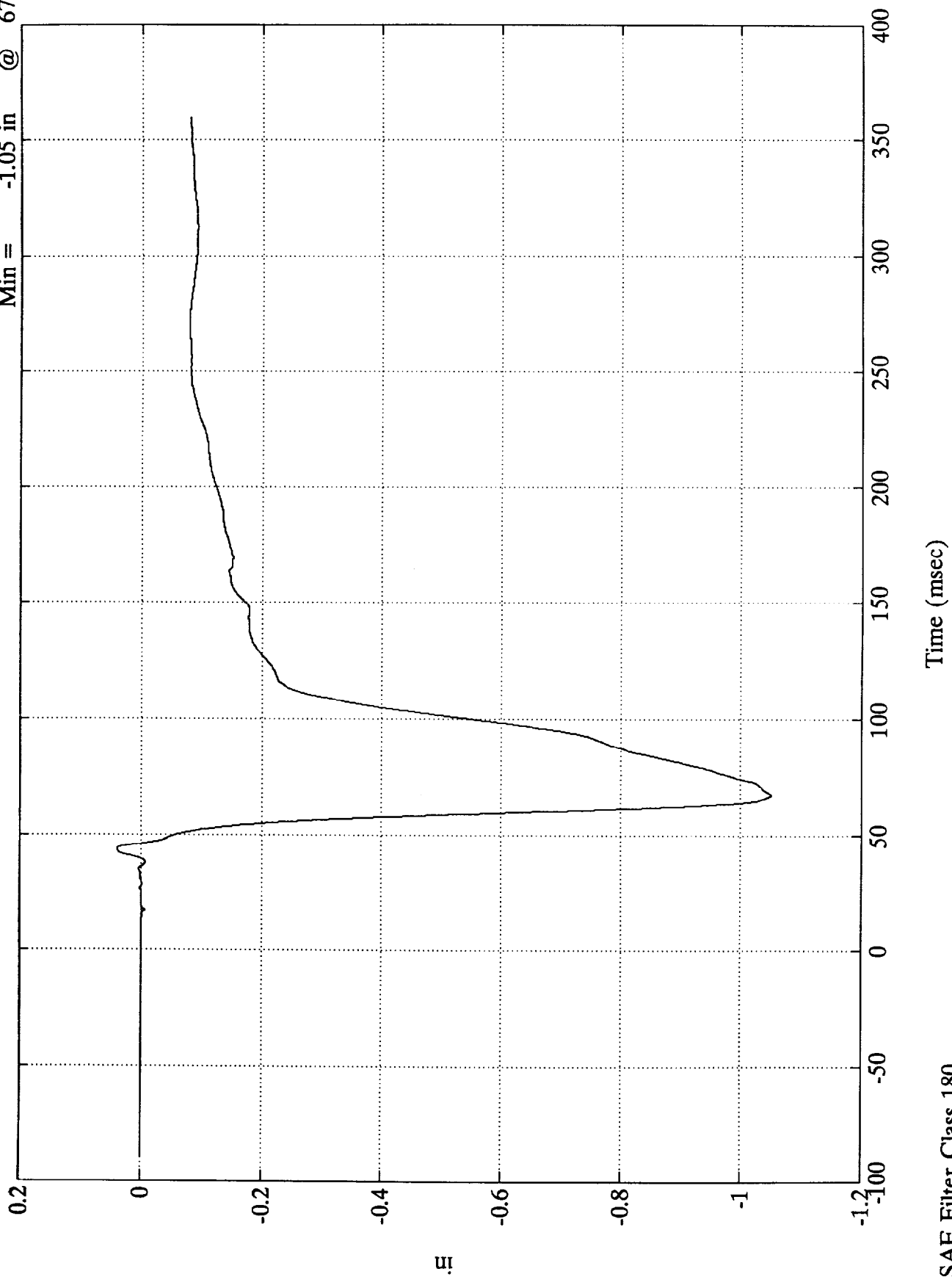
Pos. 2 Chest Resultant

Max = 54.19 Gs @ 78.72 msec
Min = .04 Gs @ -79.68 msec



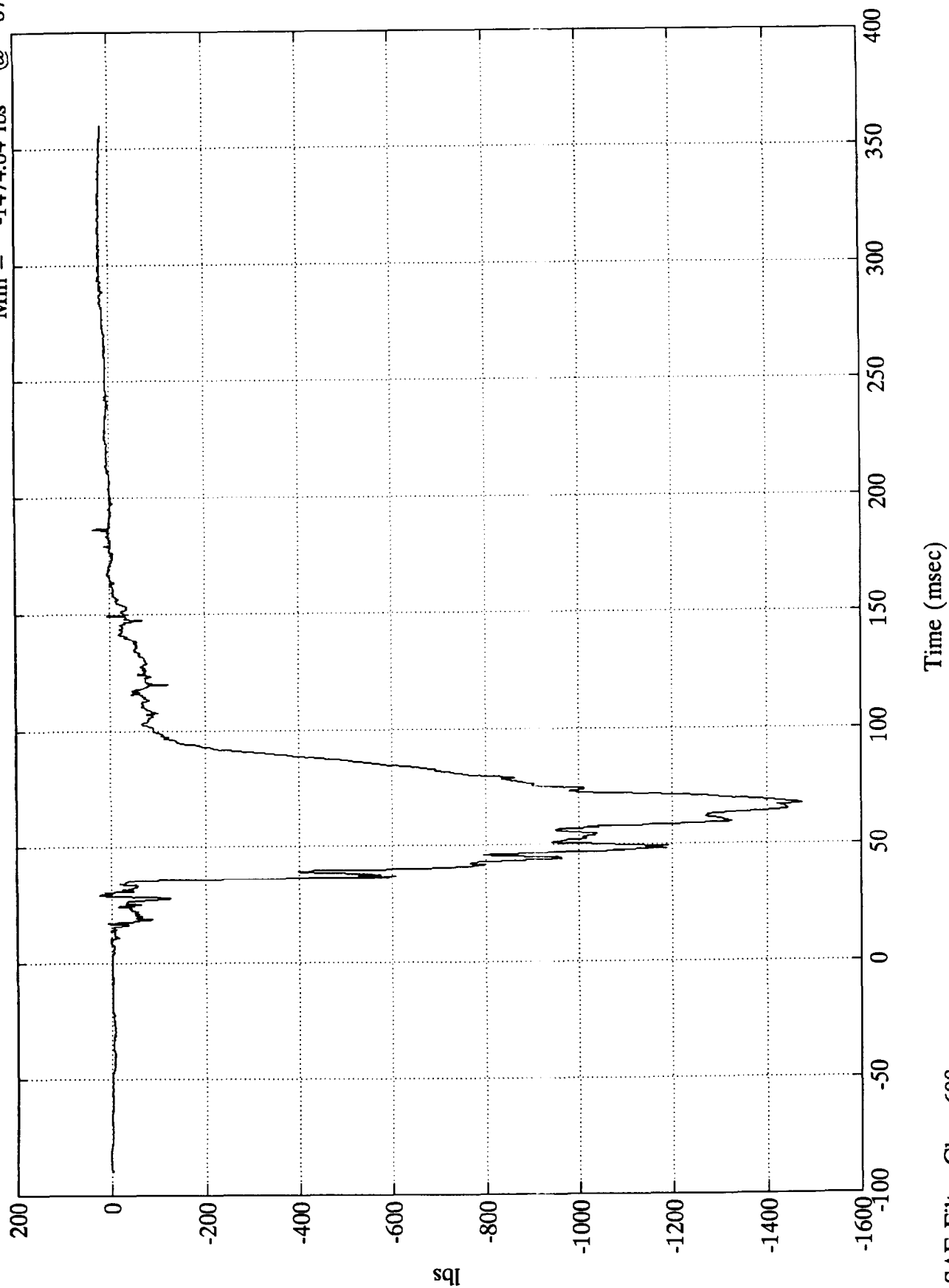
Pos. 2 Chest Disp.

Max = .03 in @ 44.15 msec
Min = -1.05 in @ 67.32 msec



Pos. 2 Left Femur

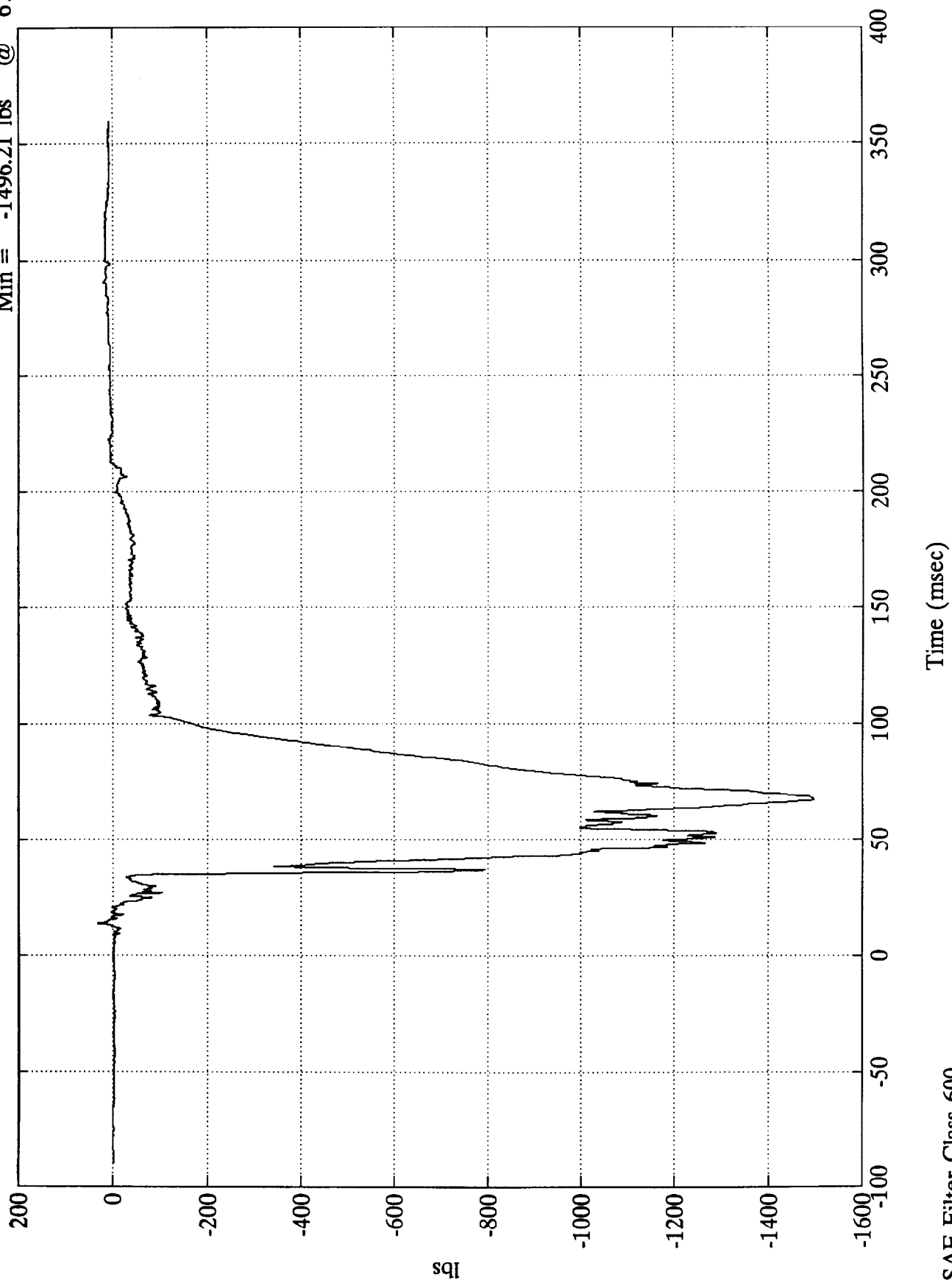
Max = 37.20 lbs @ 186.60 msec
Min = -1474.04 lbs @ 67.32 msec



SAE Filter Class 600

Pos. 2 Right Femur

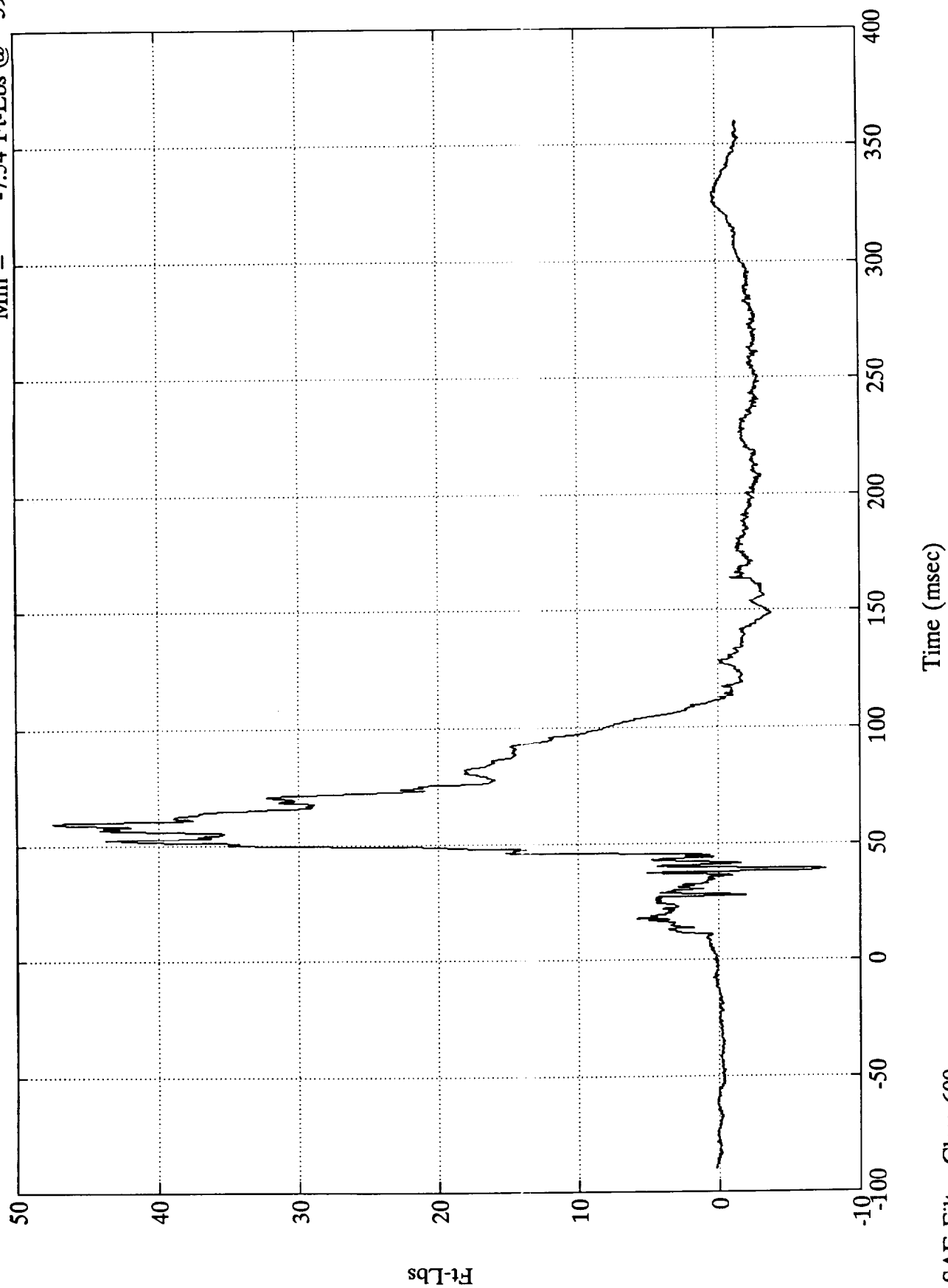
Max = 33.35 lbs @ 13.91 msec
 Min = -1496.21 lbs @ 67.32 msec



SAE Filter Class 600

P2 Lt Upper Tibia Mx

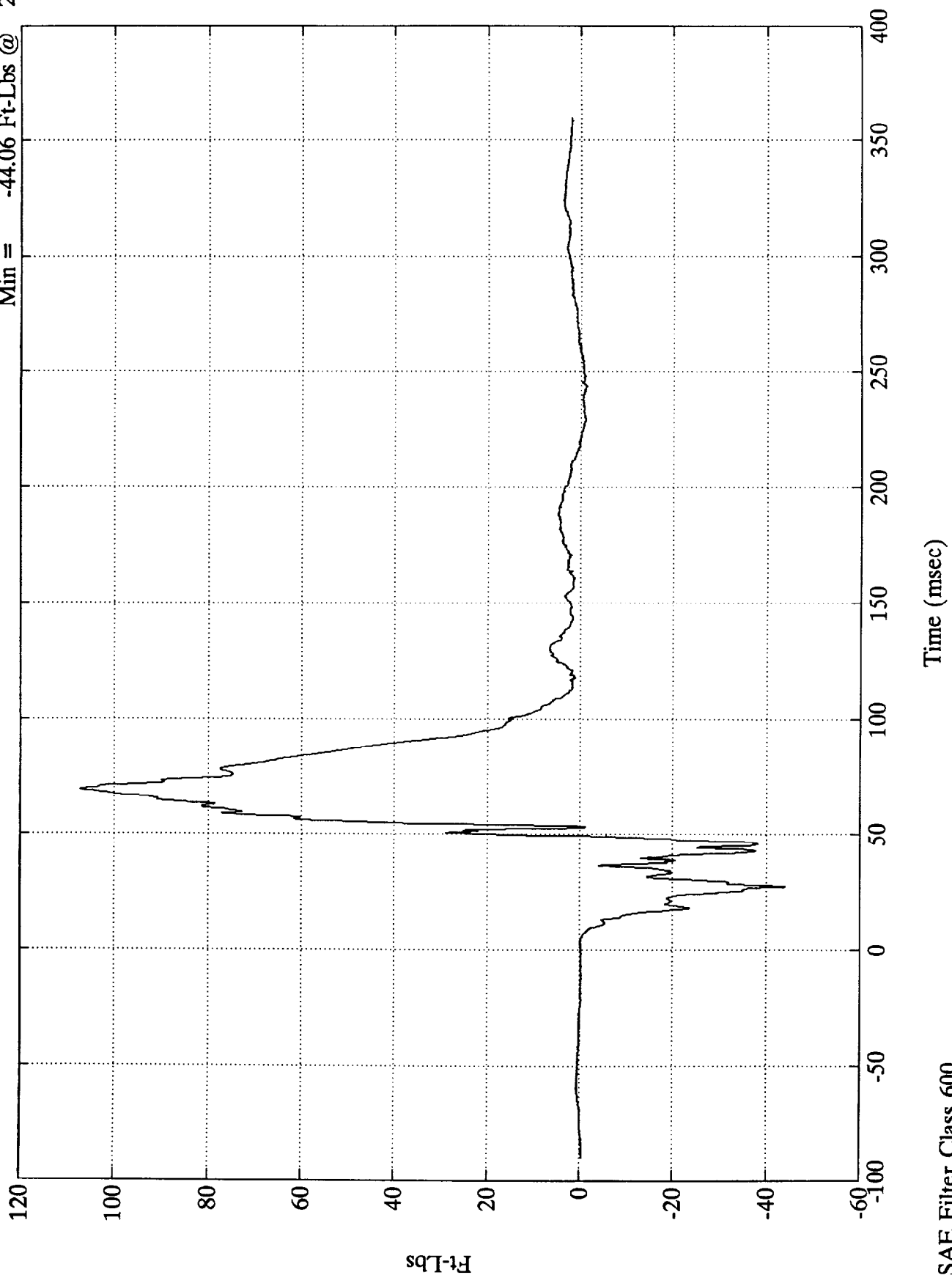
Max = 47.47 Ft-Lbs @ 59.76 msec
Min = -7.54 Ft-Lbs @ 39.23 msec



SAE Filter Class 600

P2 Lt Upper Tibia My

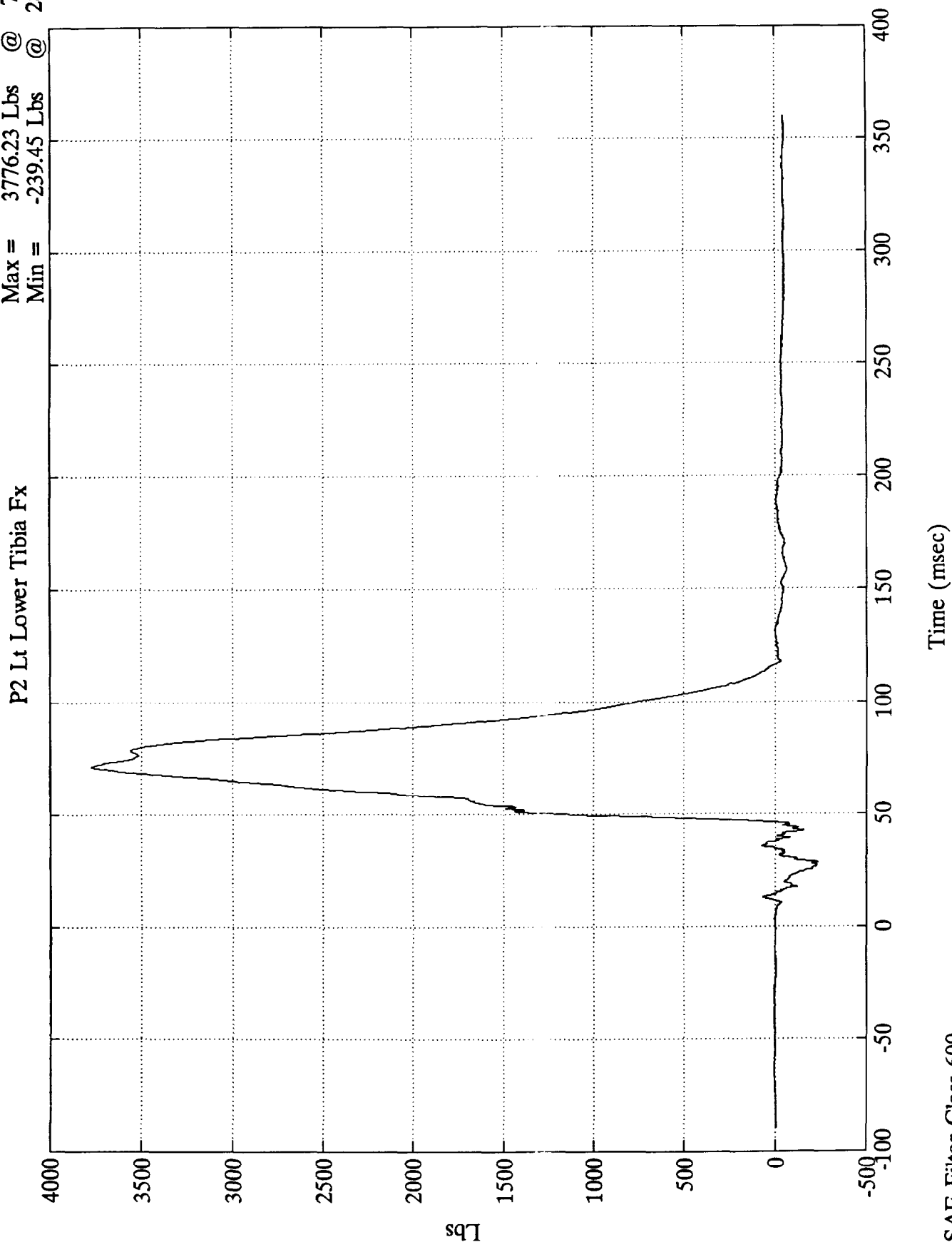
Max = 107.37 Ft-Lbs @ 69.36 msec
Min = -44.06 Ft-Lbs @ 27.84 msec



SAE Filter Class 600

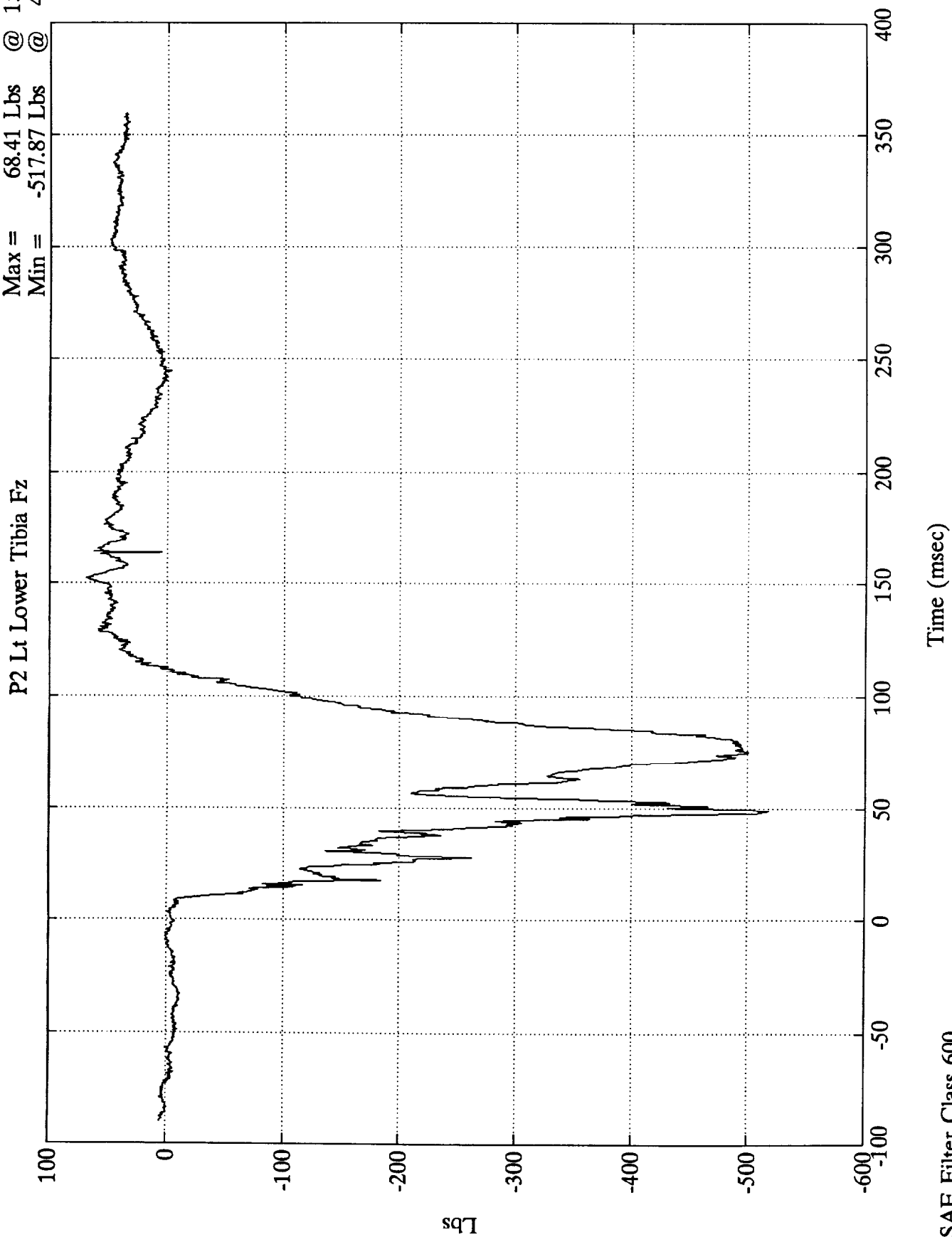
208 Test #4 - 1996 Nissan Pathfinder

Max = 3776.23 Lbs @ 71.27 msec
Min = -239.45 Lbs @ 28.44 msec

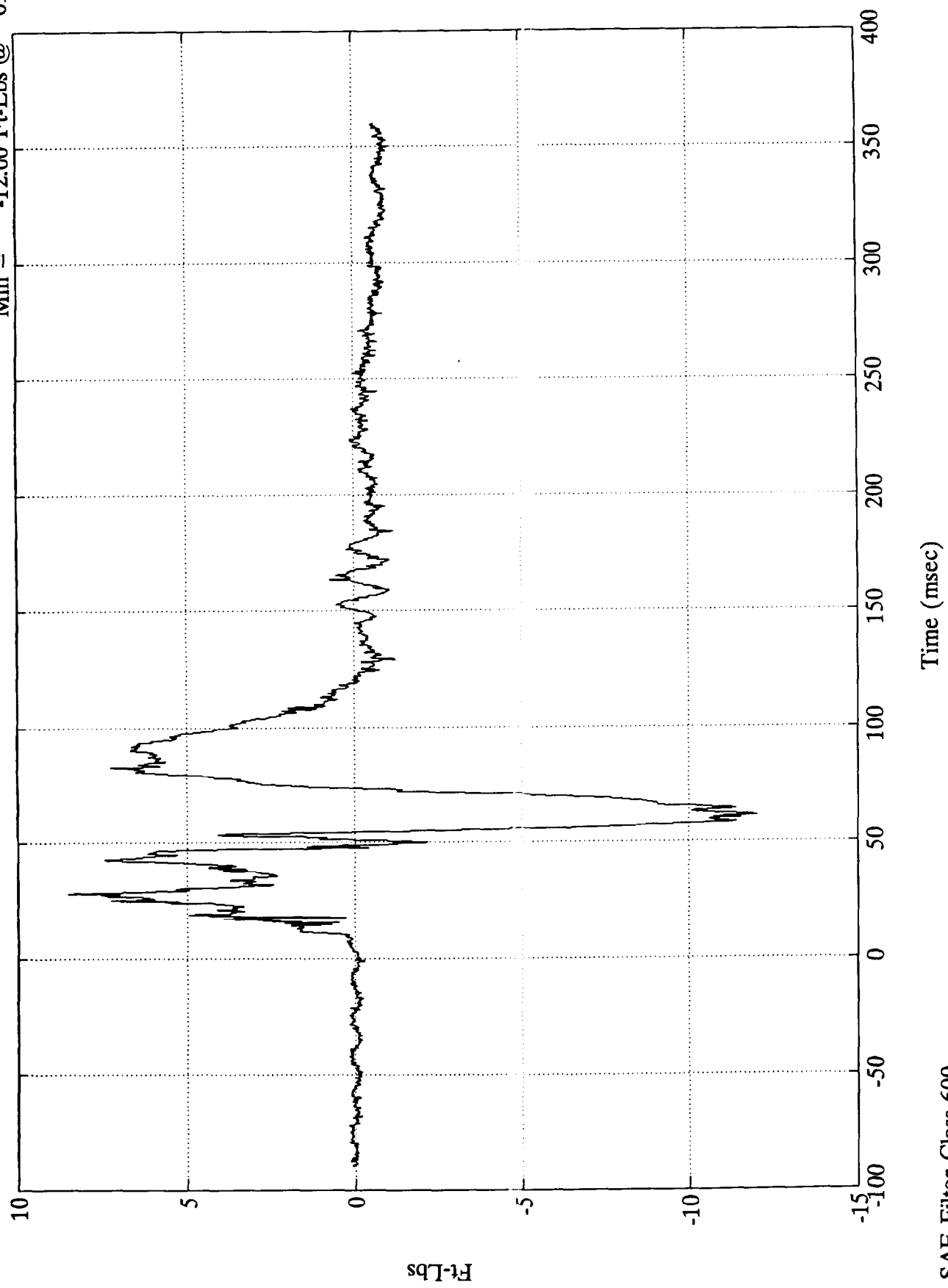


SAE Filter Class 600

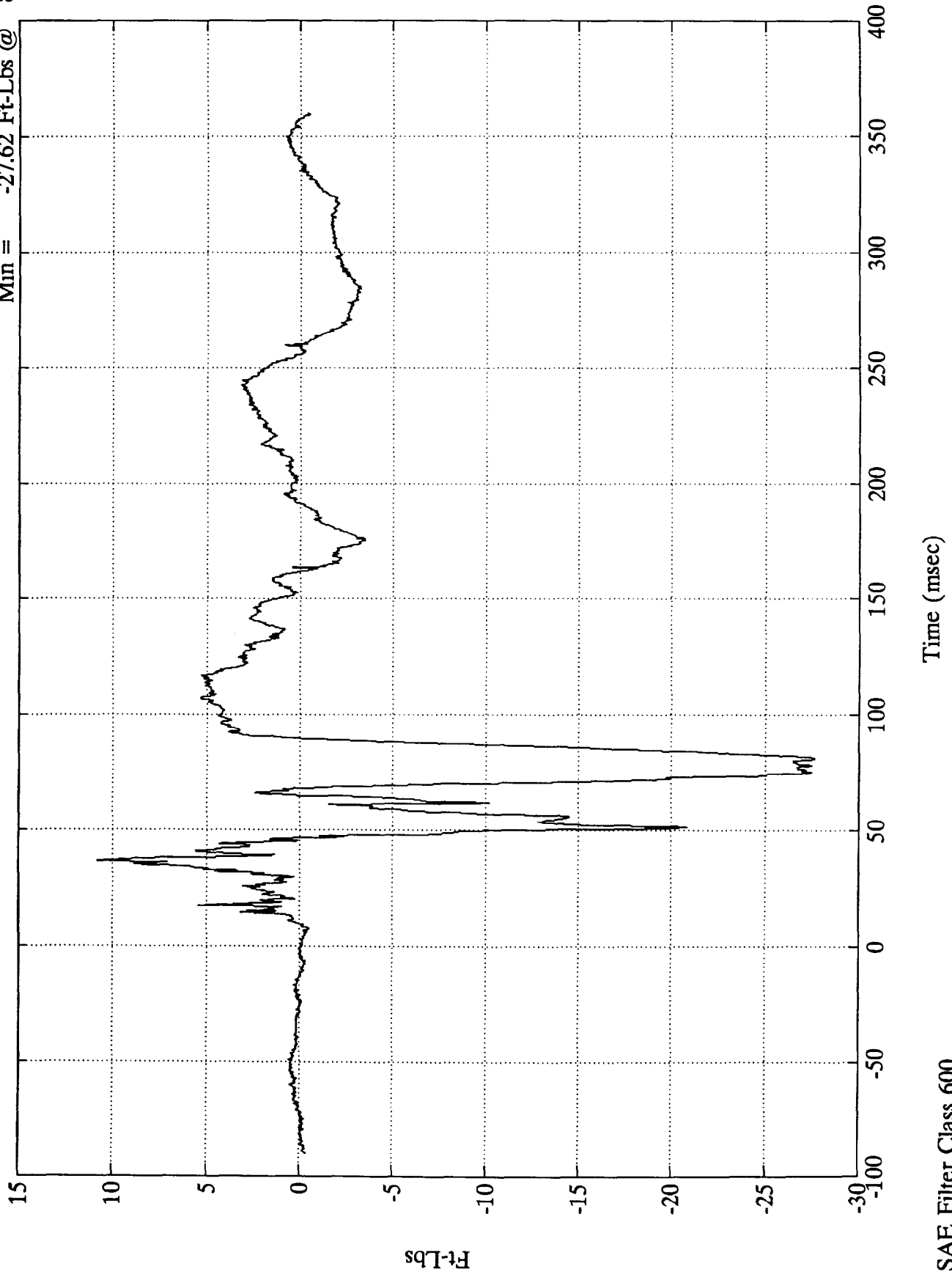
Max = 68.41 Lbs @ 152.63 msec
Min = -517.87 Lbs @ 48.84 msec



P2 Lt Lower Tibia My
Max = 8.51 Ft-Lbs @ 28.07 msec
Min = -12.00 Ft-Lbs @ 61.56 msec

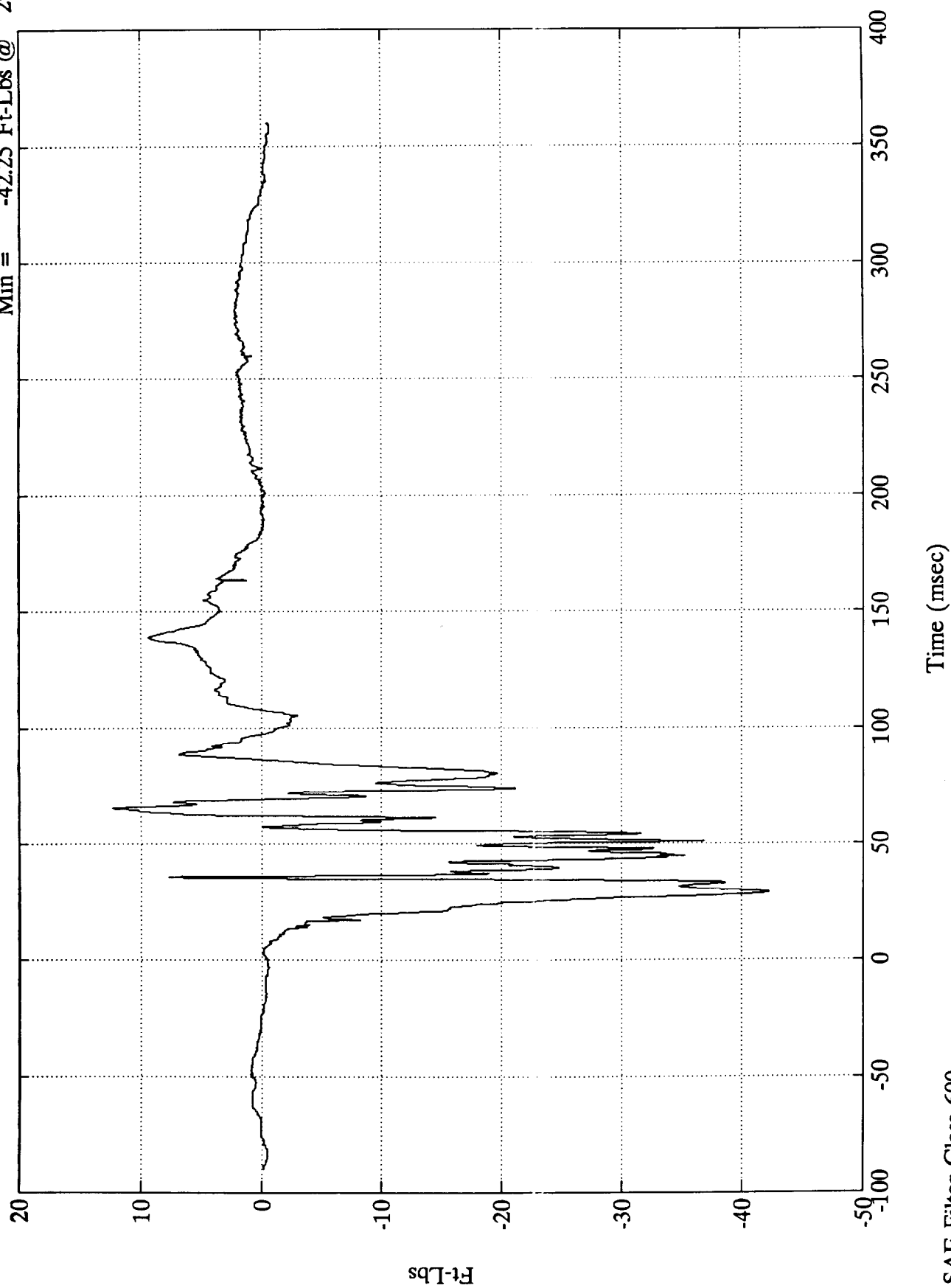


P2 Rt Upper Tibia Mx
Max = 10.81 Ft-Lbs @ 37.08 msec
Min = -27.62 Ft-Lbs @ 81.12 msec



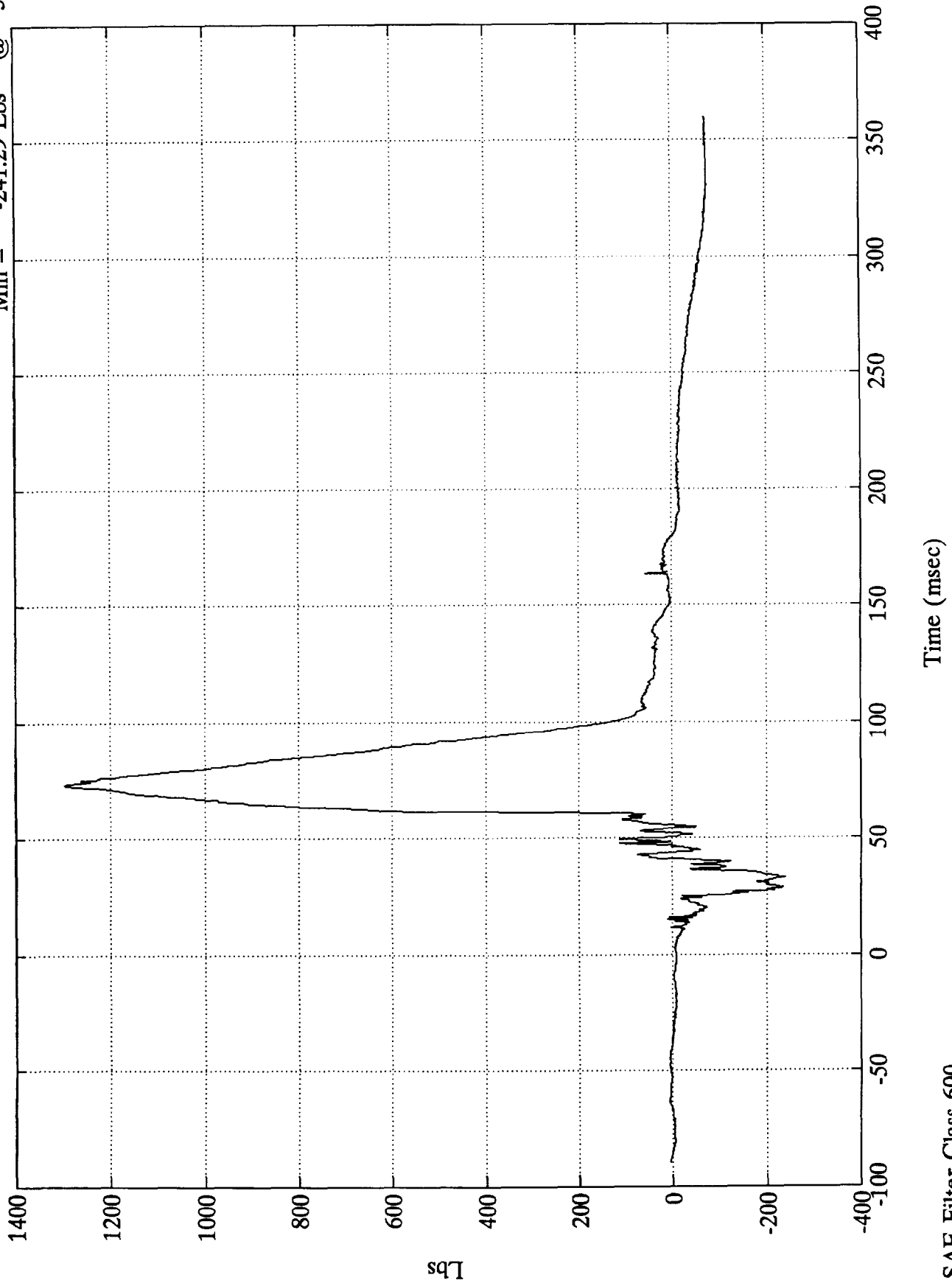
Max = 12.32 Ft-Lbs @ 65.52 msec
 Min = -42.25 Ft-Lbs @ 29.27 msec

P2 Rt Upper Tibia My



Max = 1296.87 Lbs @ 73.31 msec
Min = -241.29 Lbs @ 33.00 msec

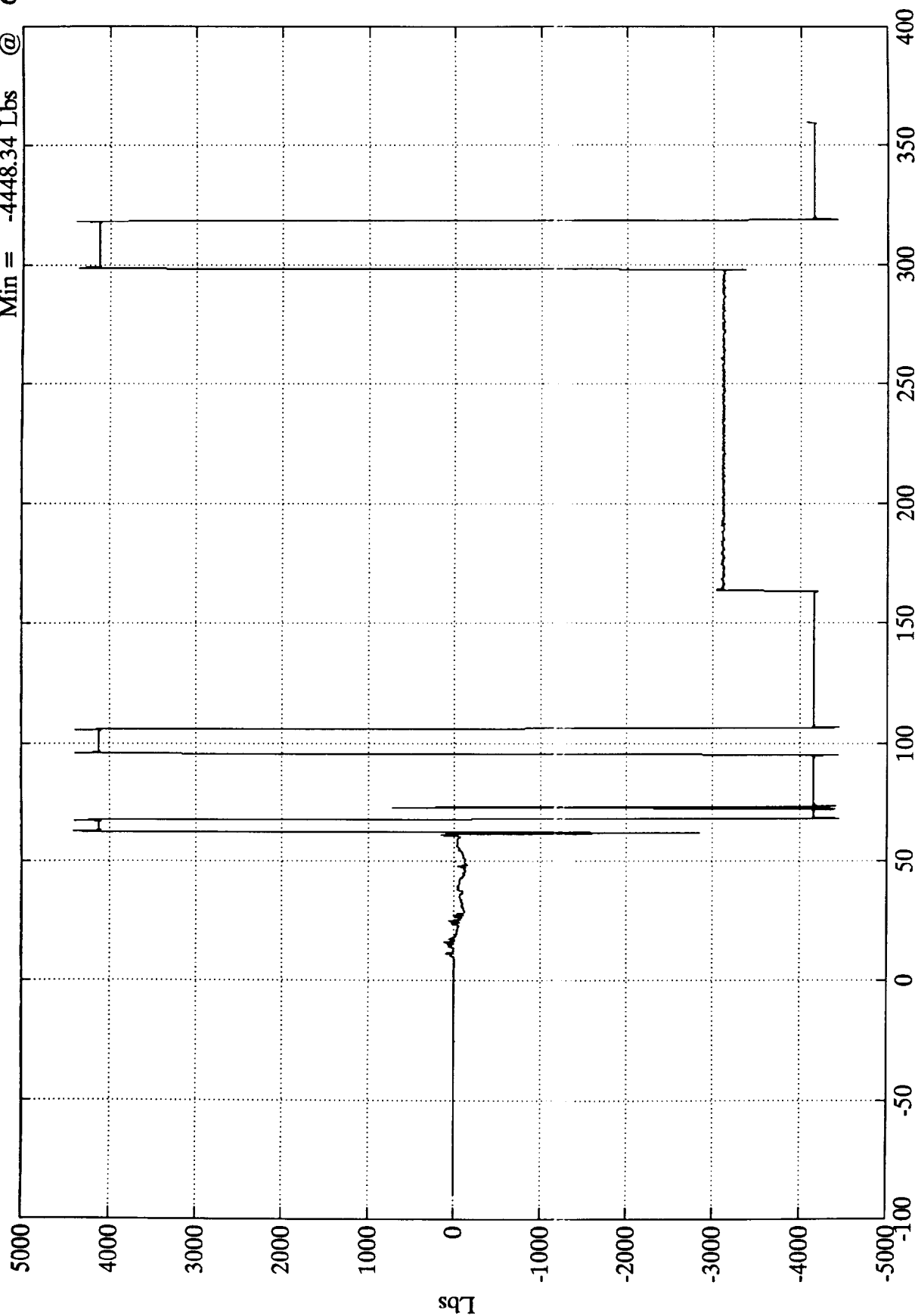
P2 Rt Lower Tibia Fx



SAE Filter Class 600

Max = 4411.25 Lbs @ 62.64 msec
Min = -4448.34 Lbs @ 68.15 msec

P2 Rt Lower Tibia Fz



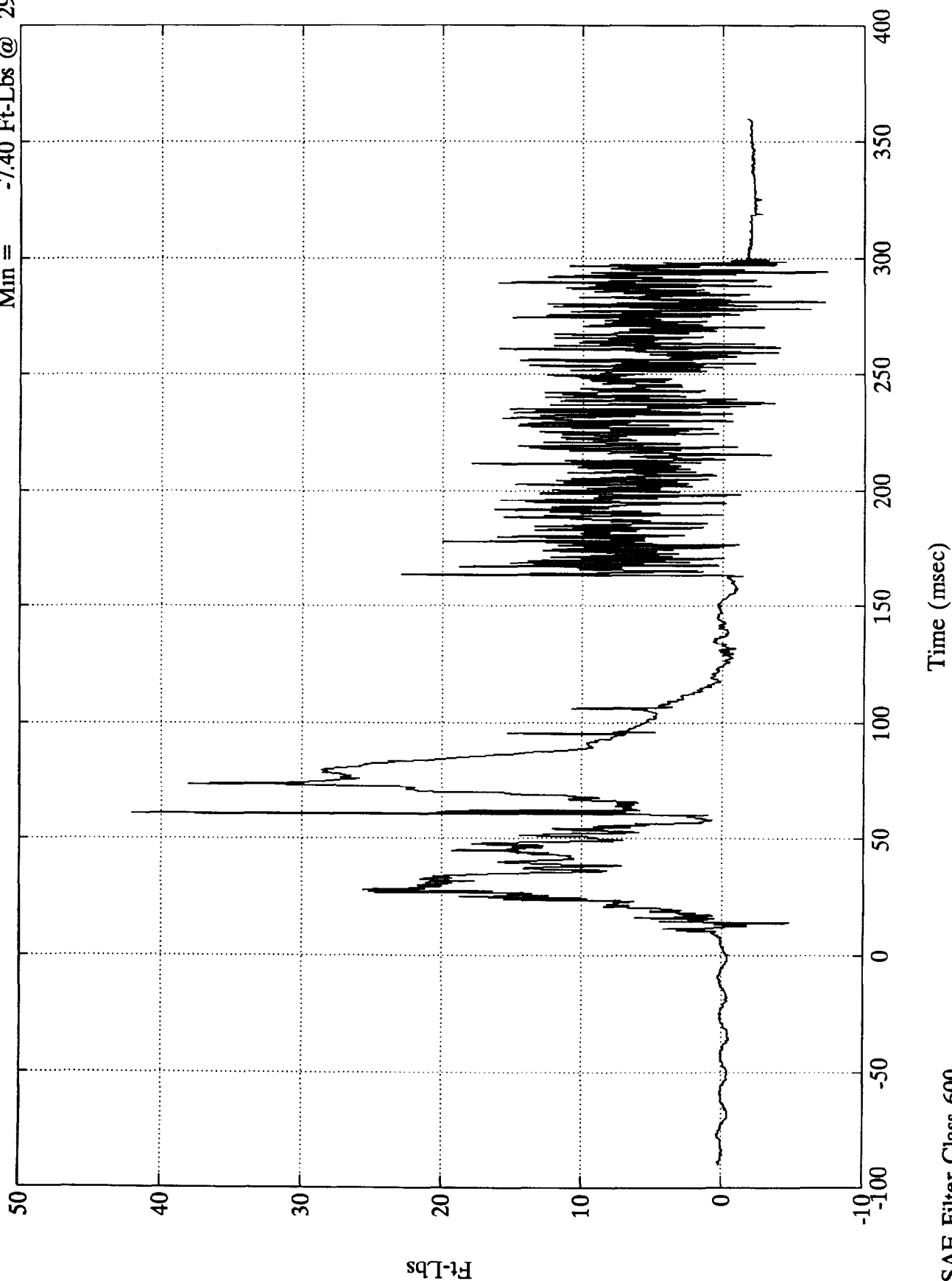
Time (msec)

SAE Filter Class 600

Cut wire at approximately 60 milliseconds

P2 Rt Lower Tibia My

Max = 42.08 Ft-Lbs @ 60.96 msec
Min = -7.40 Ft-Lbs @ 293.76 msec



SAE Filter Class 600

Data contained noise disturbances from approximately 163 to 300 milliseconds.

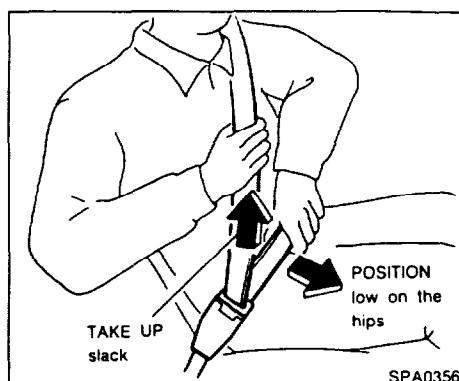
Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

WARNING

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

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



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

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

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

2-26

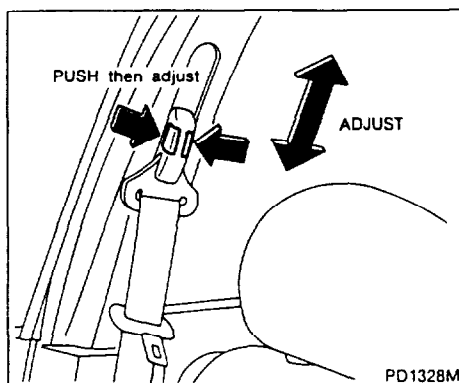
- 1) When the belt is pulled quickly from the retractor.

- 2) When the vehicle slows down rapidly.

You can check the operation as follows:

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

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



Shoulder belt height adjustment

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

WARNING

After adjustment, release the button and check that it does not move it up and down to make sure the shoulder belt

2-27

When the cinching mechanism is activated the seat belt cannot be withdrawn again until the seat belt tongue is detached from the buckle and fully retracted. Refer to "Child Restraint Systems for Infants and Small Children" later in this section for more information.

WARNING

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

Unfastening the belts

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

Checking seat belt operation

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

anchor is securely fixed in position.

SUPPLEMENTAL RESTRAINT SYSTEM (AIR BAG SYSTEM)

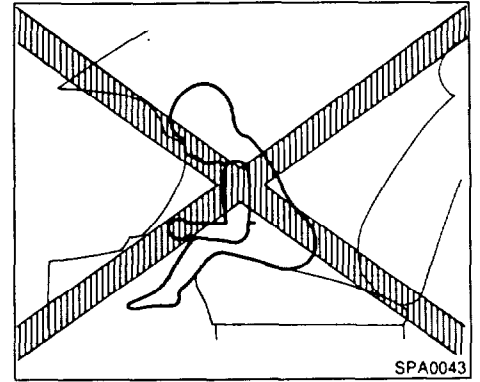
This Supplemental Restraint System section contains important information concerning the driver and passenger air bags. The Supplemental Restraint System Air Bag can help reduce impact force to the driver and to the front passenger in certain frontal collisions. The air bags are designed to **supplement** the crash protection provided by the driver and passenger seat belts and are **not a substitute** for them. The seat belts should always be correctly worn and the driver and front passenger seated a suitable distance from the steering wheel and instrument panel. (See "Seat belts" for instructions and precautions on seat belt usage.)

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

WARNING

The air bags ordinarily will not inflate in the event of a side impact, rear impact, roll over, or lower severity frontal collision; so always wear your seat belts to

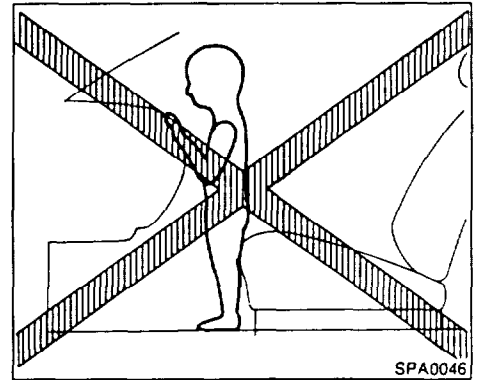
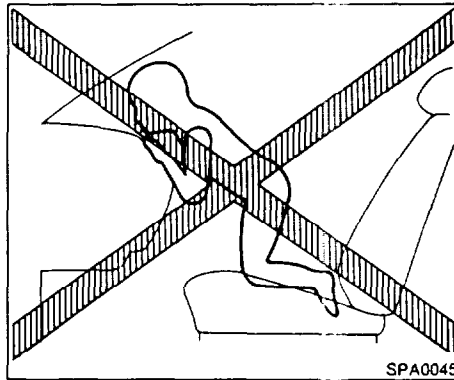
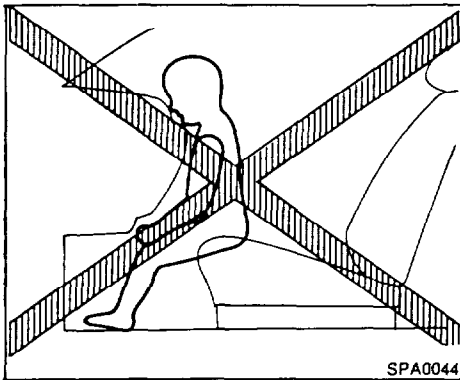
help reduce the risk or severity of injury in various kinds of accidents.



WARNING

The seat belts and the air bags are most effective when you are sitting back and upright in the seat. Air bags inflate with great force. If you are unrestrained, leaning forward, sitting sideways or out of position in any way, you are at greater risk of injury or death in a crash and may also receive serious or fatal injuries from the air bag if you are up against it when it inflates. Always sit back against the seatback and use the seat belts.

2-18



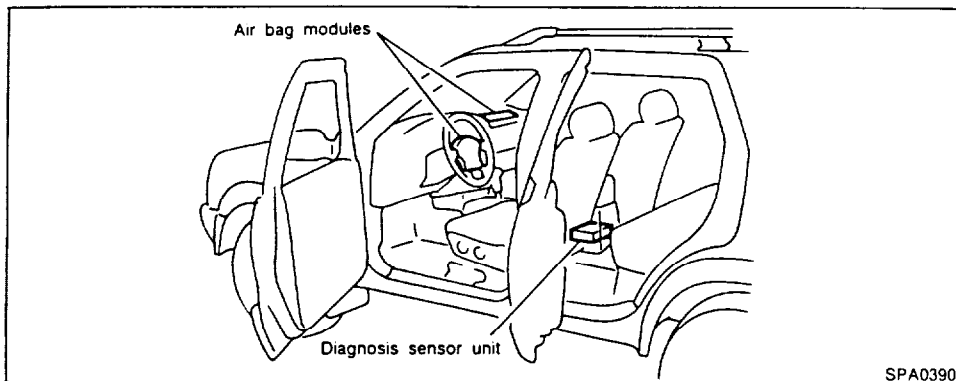
WARNING

Never let children ride unrestrained as shown in the previous illustrations.

Children may be severely injured or killed when the air bag inflates if they are not properly restrained.

Also, never install a rear-facing child restraint in the front seat. See "Child restraints for infants and small children" for details.

2-19



Air bag system

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

When the air bag inflates, a fairly loud noise

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

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

2-20

damage to the air bag system.

- **Tampering with the air bag system may result in serious personal injury. Tampering includes changes to the steering wheel and the instrument panel assembly by placing material over the steering wheel pad and above the dashboard, or by installing additional trim material around the air bag system.**
- **Do not attach any objects to the steering wheel pad and to the instrument panel. Also, do not place any objects between any occupant and the steering wheel or instrument panel. Such objects may become dangerous projectiles and cause injury if the air bag inflates.**
- **Work around and on the air bag system should be done by an authorized NISSAN dealer. Installation of electrical equipment should also be done by an authorized NISSAN dealer. The SRS wiring harnesses* should not be modified or disconnected. Unautho-**

ized electrical test equipment and probing devices should not be used on the air bag system.

- * **SRS wiring harnesses are covered with yellow insulation either just before the harness connectors or for the complete harness, for easy identification.**

2-21

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

The air bag will deflate quickly after a collision.

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

⚠ WARNING

- **Right after inflation, several air bag system components will be hot. Do not touch them; you may severely burn yourself.**
- **No unauthorized changes should be made to any components or wiring of the air bag system. This is to prevent accidental inflation of the air bag or**