

2447

CALSPAN REPORT NUMBER: 8304-5

**VEHICLE-TO-VEHICLE FRONTAL 30 DEGREE, 55% OVERLAP
105.6 kph IMPACT OF A MOVING DEFORMABLE BARRIER
INTO A STATIONARY 1995 MITSUBISHI GALANT S 4-DOOR SEDAN**

CALSPAN TEST NUMBER: Y57-5-1603

March 18, 1996

CALSPAN SRL CORPORATION
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FINAL REPORT

PREPARED FOR:

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Research and Special Programs Administration
Volpe National Transportation Systems Center
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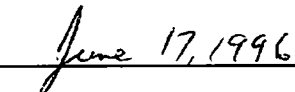
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16. Abstract A 105.6 kph vehicle to vehicle 30 degree, 55% overlap impact test of a Moving Deformable Barrier into a stationary 1995 Mitsubishi Galant S 4-door sedan was performed at the Calspan SRL Corporation crash facility in Buffalo, New York on March 18, 1996. The 1995 Mitsubishi Galant S (Vehicle 1) contained 50th percentile male Hybrid III dummy occupants in the driver and right front passenger positions. Each dummy was restrained by an active 3-point continuous loop belt system and an airbag system. The Vehicle 1 driver dummy appeared to exceed the femur requirements of FMVSS No. 208. All other dummy injury criteria appeared to be below the injury requirements of FMVSS 208 "Occupant Crash Protection".			
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Section 1

PURPOSE AND TEST PROCEDURE

This 105.6 kph 30 degree, 55% overlap frontal vehicle-to-vehicle impact test is part of the Crashworthiness Testing and Analysis Program sponsored by the Research and Special Programs Administration under Contract No. DTRS-57-95-C-00009. The purpose of this Technical Task Directive (TTD 1) is to obtain responses from vehicles and restrained Hybrid III dummies during car-to-car overlapped frontal crashes. The goal is to investigate possible upgrades to the FMVSS 208 frontal test procedure.

This test was performed using a stationary 1995 Mitsubishi Galant S 4-door sedan (Vehicle 1) and a Moving Deformable Barrier (MDB or Vehicle 2). The moving barrier was traveling at 105.6 kph with its longitudinal centerline at a crabbed angle of 15° counterclockwise from the guide rail. Vehicle 1 was positioned 15° clockwise from the guide rail such that the vehicle longitudinal centerlines were 30° apart. The vehicles were positioned so that the left edge of the MDB bumper was tangent to the forward projection of the vehicle 1 centerline while both vehicles were in contact. The point of contact between the two vehicles was designated as the impact point.

The 1995 Mitsubishi Galant S 4-door sedan, contained Part 572 E, 50th percentile male Anthropomorphic Test Devices (ATDs) in the driver and right front passenger seating positions. The ATD was restrained using the vehicle's driver and passenger airbag and 3-point belt system.

Section 2

SUMMARY OF TEST

A stationary 1995 Mitsubishi Galant S 4-door sedan (Vehicle 1) was impacted by a Moving Deformable Barrier (Vehicle 2) traveling forward at 105.6 kph. The vehicles were positioned so that Vehicle 2 impacted Vehicle 1 at a 30 degree, 55% overlap. Vehicle 1's transmission was placed in neutral with the parking brake slightly engaged to prevent the vehicle from rolling prior to the impact. The test was performed at the Calspan Corporation Advanced Technology Center Crash Test Facility on March 18, 1996.

Pre- and Post-test still photographs of the vehicles and dummies can be found in Appendix A. The impact event was documented with one real time movie camera and twelve high speed movie cameras. Vehicle photographic target locations can be found in Figure 5 and movie camera locations can be found in Figure 8.

The nominal vehicle impact points were determined as outlined in the previous section and shown in Figure 1. From film analysis, it was determined the vehicles struck 0.5 inches off target so as to create slightly less frontal overlap.

Two Hybrid III 50th percentile Anthropomorphic Test Devices (ATDs) were placed in the driver and right front passenger seating positions of Vehicle 1. The dummies were positioned according to the dummy placement instructions from the FMVSS 208 "Occupant Crash Protection" Test Procedure. The driver and front right passenger seats of Vehicle 1 were also positioned according to FMVSS 208 instructions. Both seats were set in mid-travel position with the seat backs reclined so that the H point machine back angle measured 26° from vertical with the vehicle rockers level. The steering column was placed in mid-travel position. Both ATD's were restrained using the vehicle's driver and passenger airbag and 3-point belt system.

The 50th percentile male ATDs in the driver and right front passenger positions were instrumented with head, chest, and pelvic triaxial accelerometer packages; chest displacement potentiometers; upper neck force and moment transducers; femur axial force load cells; knee shear force potentiometers; and upper and lower tibia force and moment transducer packages. The driver ATD also contained lower neck force and moment transducers, an additional head accelerometer array, and an additional 8 string pot chest displacement potentiometer array.

The 120 channels of vehicle and dummy transducer data were recorded on a PC based data acquisition system. The data was reduced, filtered and processed as required by the appropriate test procedures using PC based software. Appendix B contains the vehicle and the dummy response data in plotted format.

The 1995 Mitsubishi Galant S (Vehicle 1) driver HIC was 202. The driver's maximum chest acceleration over a three millisecond period was 43.3 gs and the maximum chest compressive displacement was 26 mm. The left femur maximum axial compressive force was 6591 newtons and the right femur maximum axial compressive force was 13366 newtons.

Vehicle 1's passenger HIC was 94. The passenger's maximum chest acceleration over a three millisecond period was 36.8 gs and the maximum chest compressive displacement was 40 mm. The left femur maximum axial compressive force was 2586 newtons and the right femur maximum axial compressive force was 5257 newtons.

Structural damage to the 1995 Mitsubishi Galant S (Vehicle 1) consisted of severe deformation to the left front quarter of the vehicle, roof rail deformation, driver side floor pan intrusion, and the steering column stroked. The vehicle windshield cracked throughout with a 660 mm tear from the passenger-side upper corner of the windshield to the bottom center of the windshield. A 280 mm tear in windshield occurred along the bottom center of windshield.

The honeycomb barrier used on the Moving Deformable Barrier (Vehicle 2) was the DSL-1285 specified barrier used for FMVSS 214D side impact testing. The rear of the barrier face attachment plate was instrumented with 5 load cells.

TEST ANOMALIES

Appendix B contains lists of all data channels. Anomalies occurred in the following data channels:

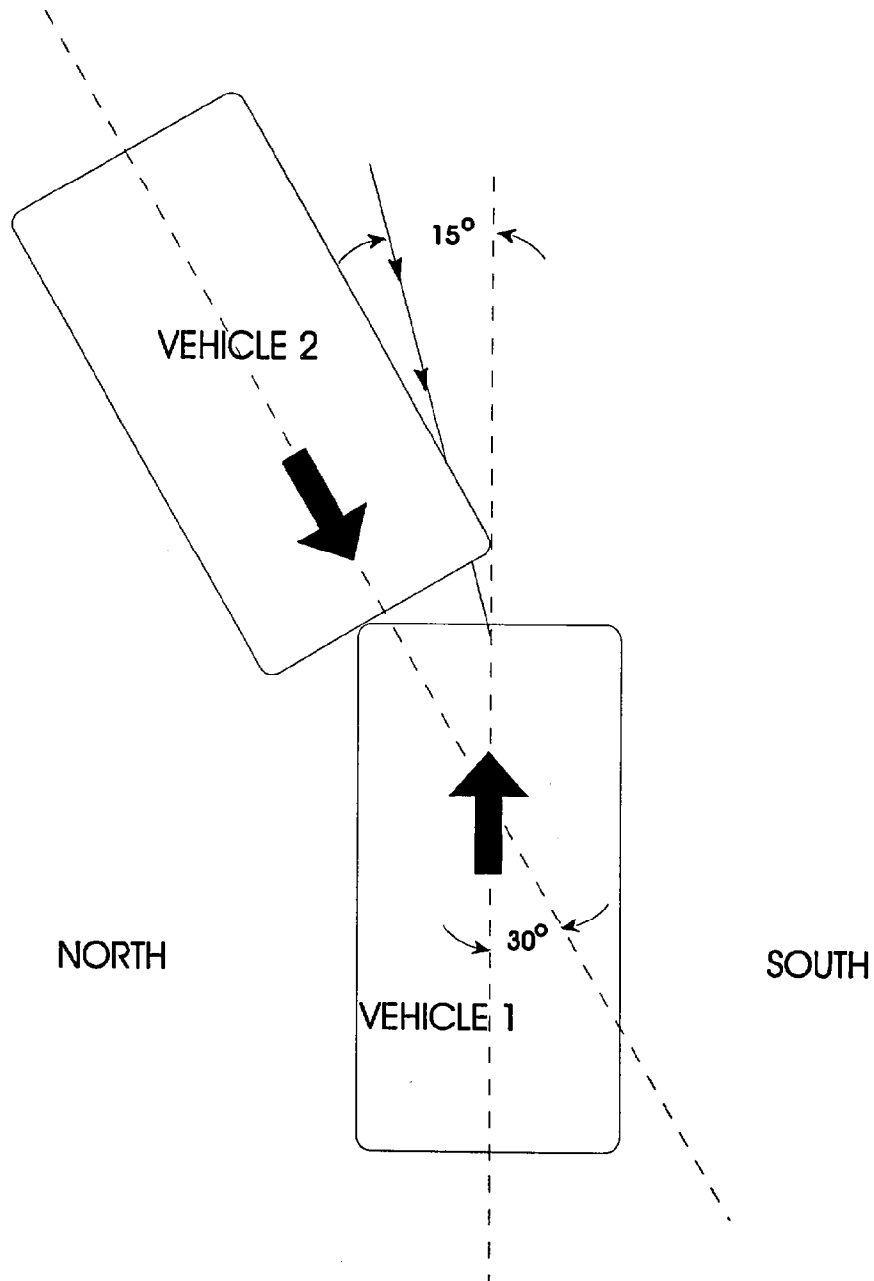
- Vehicle 1 - Left Front Frame Rail X - Data cable damaged after approximately 45 milliseconds.
- Vehicle 1 - Left Front Frame Rail Y - Data cable damaged after approximately 69 milliseconds.
- Vehicle 1 - Left Front Frame Rail Z - Questionable data after approximately 39 milliseconds.
- Vehicle 1 - Right Frame Rail X - Data cable damaged after approximately 105 milliseconds.
- Vehicle 1 - Right Frame Rail Y - Data cable damaged after approximately 96 milliseconds.
- Vehicle 1 - Right Frame Rail Z - Data cable damaged after approximately 109 milliseconds.
- Vehicle 1 - Toe Pan Y - Data cable damaged after approximately 47 milliseconds.

Section 3

VEHICLE AND OCCUPANT INFORMATION

Figure 1

VEHICLE-TO-VEHICLE ANGLED FRONTAL IMPACT LAYOUT



VEHICLE ONE DATA

Table 1

GENERAL TEST AND VEHICLE 1 PARAMETER DATATEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1995 Mitsubishi Galant S 4-door sedan

NHTSA Test No.: RS5602 VIN.: 4A3AJ46G2SE117109

Body Color: Northstar White Date of Manufacture: 12/94

Engine: 4 Cylinders; - C.I.D.; 2.4 Liters; - CC
X Gas; - Diesel; - Turbocharged
- Longitudinal; X Transverse

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

Final Drive: X Front Wheel; - Rear Wheel; - Four Wheel
- A/C; - P/S; X P/B; - P/wdo
X Tilt Wheel; - P/seats; - Cruise Control

Type of Occupant Restraint: driver and passenger airbag and 3-point belt system

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 220 kpa, Rear 200 kpa

Recommended Tire Size: P185/70R14

Recommended Cold Tire Pressure: Front 220 kpa, Rear 200 kpa

Tires on Vehicle: P185/70R14; Manufacturer: Bridgestone

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

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

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

Vehicle Capacity Weight (VCW) = 375 kgs. (A)

No. of Occupants x 68.03 kgs. = 340 kgs. (B)

Rated Cargo and Luggage

Weight (RCLW) A - B = 35 kgs.

GVWR 1780 kgs. GAWR: Front 970 kgs. Rear 810 kgs.

Table 1

GENERAL TEST AND VEHICLE 1 PARAMETER DATA (continued)

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

Right Front	=	<u>381</u>	kgs.	Right Rear	=	<u>238.5</u>	kgs.
Left Front	=	<u>379.5</u>	kgs.	Left Rear	=	<u>252</u>	kgs.
TOTAL FRONT WEIGHT	=	<u>760.5</u>	kgs.	(<u>60.8</u> % of Total Vehicle Weight)			
TOTAL REAR WEIGHT	=	<u>490.5</u>	kgs.	(<u>39.2</u> % of Total Vehicle Weight)			
TOTAL DELIVERED WEIGHT=		<u>1251</u>	kgs.				

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMY:

Right Front	=	<u>402</u>	kgs.	Right Rear	=	<u>337</u>	kgs.
Left Front	=	<u>402</u>	kgs.	Left Rear	=	<u>351</u>	kgs.
TOTAL FRONT WEIGHT	=	<u>804</u>	kgs.	(<u>53.9</u> % of Total Vehicle Weight)			
TOTAL REAR WEIGHT	=	<u>688</u>	kgs.	(<u>46.1</u> % of Total Vehicle Weight)			
TOTAL TEST WEIGHT	=	<u>1492</u>	kgs.				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

Delivered Attitude:	RF	<u>692</u>	;	LF	<u>685</u>	;	RR	<u>687</u>	;	LR	<u>678</u>
Test Attitude:	RF	<u>682</u>	;	LF	<u>680</u>	;	RR	<u>625</u>	;	LR	<u>630</u>
Vehicle's Wheel Base=		<u>2623</u>	mm.								
Location of Vehicle's C.G. =		<u>1210 millimeters rearward of front wheel center</u>									

Table 1

GENERAL TEST AND VEHICLE 1 PARAMETER DATA (continued)POST-IMPACT DATA:

Type of Test: VTV Frontal 30°, 55% overlap Impact Angle: 30 Deg.

Date of Test: March 18, 1996 Time of Test: 13:45

Ambient Temperature: 21 °C at impact area

Temperature in Occupant Compartment: 22 °C

Windshield Molding Temperature: - °C

Required Impact Velocity Range: 108 to 110 kph

Impact Velocity: primary = 105.6 kph, secondary = 105.6 kph

Distance From Front Bumper to Barrier Face When

Entering Speed Trap: 132 cm.

Exiting Speed Trap: 30.5 cm.

VISIBLE DUMMY CONTACT POINTS:

	<u>Driver</u>	<u>Passenger</u>
Head	<u>Face into airbag</u>	<u>Chin with chest</u>
Chest	<u>airbag</u>	<u>airbag</u>
Abdomen	<u>-</u>	<u>-</u>
Left Knee	<u>Lower dash</u>	<u>Center console</u>
Right Knee	<u>Lower dash</u>	<u>Glove box door</u>

	<u>Front</u>		<u>Rear</u>	
	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Door Opening	<u>Closed/Not Operable</u>	<u>Closed/Operable</u>	<u>Closed/Operable</u>	<u>Closed/Operable</u>

	<u>Front</u>		<u>Rear</u>	
<u>Seat Movement</u>	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Seat Back Failure	<u>None</u>	<u>None</u>	<u>N/A</u>	<u>N/A</u>
Seat Shift (mm.)	<u>0.00</u>	<u>0.00</u>	<u>N/A</u>	<u>N/A</u>

Table 2

VEHICLE 1 DUMMY INJURY CRITERIA VALUES

	MAXIMUM ACCELERATION ("G")							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DUMMY (1)	-31.6	-54.9	-28.9	59.2	-42.3	-31.7	-18.9	43.3
DUMMY (2)	-28.7	-53.3	-21.1	53.9	-36.6	-16.8	7.2	36.8

	MAXIMUM FORCE FEMUR LOAD (NEWTONS)	
	RIGHT FEMUR	LEFT FEMUR
DUMMY (1)	-13365.7	-6590.5
DUMMY (2)	-5257.2	-2586.2

	MAXIMUM LOAD (NEWTONS)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
DUMMY (1)	--	--	--
DUMMY (2)	--	--	--

	MAXIMUM ACCELERATION ("G")			
	HIC	t ₁ (SEC)	t ₂ (SEC)	Average Acceleration t ₁ TO t ₂
DUMMY (1)	202	.06144	.09744	31.57
DUMMY (2)	94	.05148	.08748	23.25

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

Figure 2

VEHICLE 1 OCCUPANT CLEARANCE DIMENSIONS (mm)

	DRIVER (mm)	PASSENGER
HH	308	311
NW	526	509
NSW	408	-
NIP	568	633
NH	426	-
CD	564	581
CS	319	-
KDL	200	220
KDR	210	204
1	536	-
2	50	-
SA	26°	26°
PA	24°	23°
ULA	110°	105°
LLA	233°	236°

DISTANCE OF H-POINT FROM TARGET POSITION (mm)		
	Driver	Passenger
Longitudinal	10 behind	10 behind
Vertical	2 above	7 above

Angles taken relative to vertical

SA = Seat Back Angle

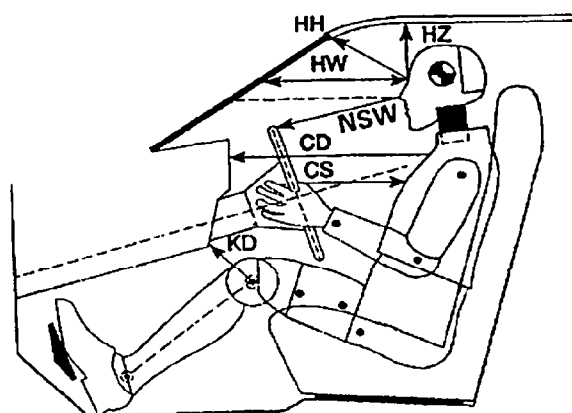
PA = Pelvic Angle

ULA= Upper Leg Angle

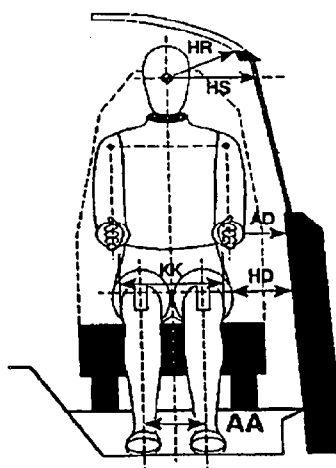
LLA= Lower Leg Angle

	DRIVER (mm)	PASSENGER
HR*	210	210
HS*	310	305
AD	97	116
HD	196	196
KK	312	270
AA	280	230
DT	22°C	22°C

* Measurements taken from intersection of nose and forehead in accordance with revised FMVSS 208 instructions.



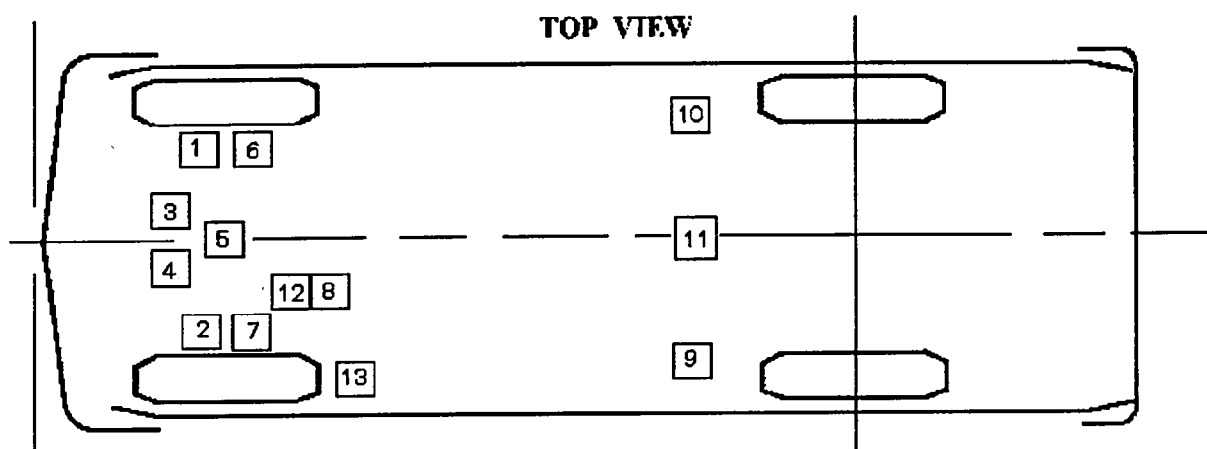
- HH - Head to Windshield Header
- NW - Head to Windshield
- NSW - Nose to Steering Wheel
- NIP - Nose to Instrument Panel
- NH - Nose to Steering Wheel Hub
- CD - Chest to Dash
- CS - Chest to Steering Wheel Hub
- KDL - Knee to Dash Left
- KDR - Knee to Dash Right
- 1 - Nose to Steering Column Target
- 2 - Distance Between Steering Column Targets



- HR - Head to Side Roof
- HS - Head to Side Window
- AD - Arm to Door
- HD - Hip to Door
- KK - Knee to Knee
- AA - Ankle to Ankle
- DT - Dummy Temperature °F

Figure 3

SUMMARY OF VEHICLE 1 ACCELEROMETER DATA



Vehicle: 1995 Mitsubishi Galant S 4-door sedan

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM AMP	msec	MINIMUM AMP	msec	FILTER CLASS
1	Acc #1 RF Frame Rail X	Gs	184.6	189.1	-193.5	197.9	60.0
1	Acc #1 RF Frame Rail Y	Gs	202.3	98.4	-67.1	27.1	60.0
1	Acc #1 RF Frame Rail Z	Gs	298.0	208.3	-327.2	118.0	60.0
2	Acc #2 LF Frame Rail X	Gs	417.7	129.7	-436.1	348.4	60.0
2	Acc #2 LF Frame Rail Y	Gs	259.1	76.4	-256.8	272.0	60.0
2	Acc #2 LF Frame Rail Z	Gs	218.6	79.1	-180.5	41.3	60.0
3	Acc #3 Rt Engine X	Gs	35.7	68.9	-85.4	20.8	60.0
4	Acc #4 Lt Engine X	Gs	48.8	68.2	-111.9	37.3	60.0
5	Acc #5 Engine Bottom X	Gs	14.4	50.6	-44.7	26.0	60.0
5	Acc #5 Engine Bottom Y	Gs	22.3	24.7	-47.1	16.6	60.0
6	Acc #6 Rt Shock Tower X	Gs	3.1	120.1	-44.7	48.6	60.0
6	Acc #6 Rt Shock Tower Y	Gs	10.2	94.7	-28.2	31.9	60.0
7	Acc #7 Lt Shock Tower X	Gs	48.4	68.5	-161.7	31.4	60.0
7	Acc #7 Lt Shock Tower Y	Gs	68.4	44.5	-78.4	31.0	60.0
8	Acc #8 Brake Pedal X	Gs	225.1	52.0	-179.8	36.0	60.0
8	Acc #8 Brake Pedal Y	Gs	203.5	42.4	-213.5	52.3	60.0
8	Acc #8 Brake Pedal Z	Gs	92.0	47.2	-114.6	41.4	60.0
9	Acc #9 LR Compartment X	Gs	1.5	93.0	-24.2	47.3	60.0
9	Acc #9 LR Compartment Y	Gs	7.4	70.7	-17.3	39.6	60.0
10	Acc #10 RR Compartment X	Gs	.4	-3.1	-28.4	47.3	60.0
10	Acc #10 RR Compartment Y	Gs	8.5	72.1	-16.6	39.4	60.0
11	Acc #11 Rear Comp. C/L X	Gs	2.5	120.4	-30.6	52.8	60.0
11	Acc #11 Rear Comp. C/L Y	Gs	7.1	71.3	-21.7	40.0	60.0
12	Acc #12 Toe Pan X	Gs	37.2	62.8	-69.2	34.4	60.0
12	Acc #12 Toe Pan Y	Gs	176.8	353.2	-164.4	343.8	60.0
12	Acc #12 Toe Pan Z	Gs	47.1	70.4	-59.1	37.3	60.0
13	Acc #13 A-Pillar Hinge	Gs	11.2	63.8	-44.4	51.7	60.0

Figure 4

VEHICLE 1 PRE- AND POST-TEST POSITION OF TEST VEHICLE

ACCELEROMETER MOUNTING LOCATIONS

Test Description:	105.6 kph Frontal Vehicle to Vehicle Impact
Test Vehicle:	1995 Mitsubishi Galant S 4-door sedan
Reference Plane:	X: Vehicle plane at rear bumper, positive forward; Y: Vehicle longitudinal centerline, positive to the right; Z: Ground, positive up

VEHICLE No. 1		PRE-TEST AXIS (mm)			POST-TEST AXIS (mm)		
Loc. No.	DESCRIPTION	X	Y	Z	X	Y	Z
1	RIGHT FRONT FRAME RAIL	3438	500	95	3280	370	105
2	LEFT FRONT FRAME RAIL	3438	-440	95	3530	-800	5
3	RIGHT ENGINE TOP	3995	30	785	3700	50	765
4	LEFT ENGINE TOP	4000	-310	790	3585	-290	835
5	ENGINE BOTTOM	3718	80	250	3670	-200	165
6	RIGHT SHOCK TOWER	3830	595	825	3805	480	770
7	LEFT SHOCK TOWER	3830	-600	825	3330	-580	810
8	BRAKE PEDAL	3275	-330	420	3030	-400	265
9	LEFT REAR COMP.	1800	-560	340	1750	560	210
10	RIGHT REAR COMP.	1795	570	330	1745	555	335
11	CENTER REAR COMP.	1875	15	430	1850	15	375
12	DRIVER TOEPAN	3410	-370	300	3315	-320	155
13	DRIVER 'A' PILLAR	3205	-760	620	3120	-750	430

NOTE: Vehicle leveled to pre-test height for post-test measurements.

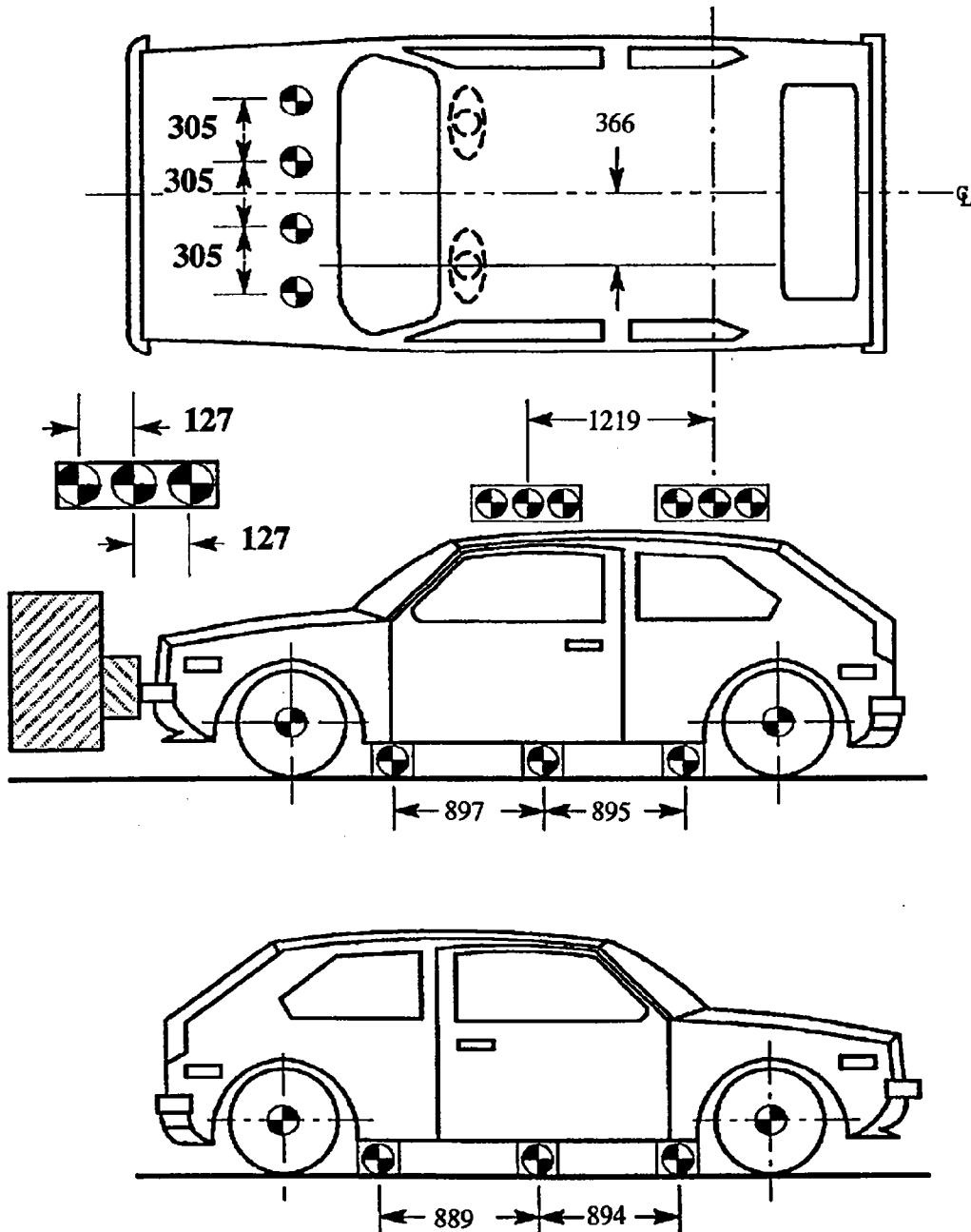
TOEPAN MEASUREMENT LOCATIONS*												
Loc. No.	DRIVER (mm.)						PASSENGER(mm.)					
	PRE-TEST AXIS			POST-TEST AXIS			PRE-TEST AXIS			POST-TEST AXIS		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
1 (lower left)	3305	-560	330	3275	-590	145	3285	155	475	3370	150	255
2 (upper left)	3355	-585	465	3200	-600	315	3435	150	665	3460	140	405
3 (center)	3410	-370	300	3315	-320	155	3375	290	320	3435	310	245
4 (lower right)	3325	-260	275	3285	-220	130	3245	525	255	3340	540	220
5 (upper right)	3445	-260	430	3330	-220	260	3400	510	465	3440	545	420

* Carpet not removed from floor-pan.

Figure 5

VEHICLE 1 TARGET LOCATIONS

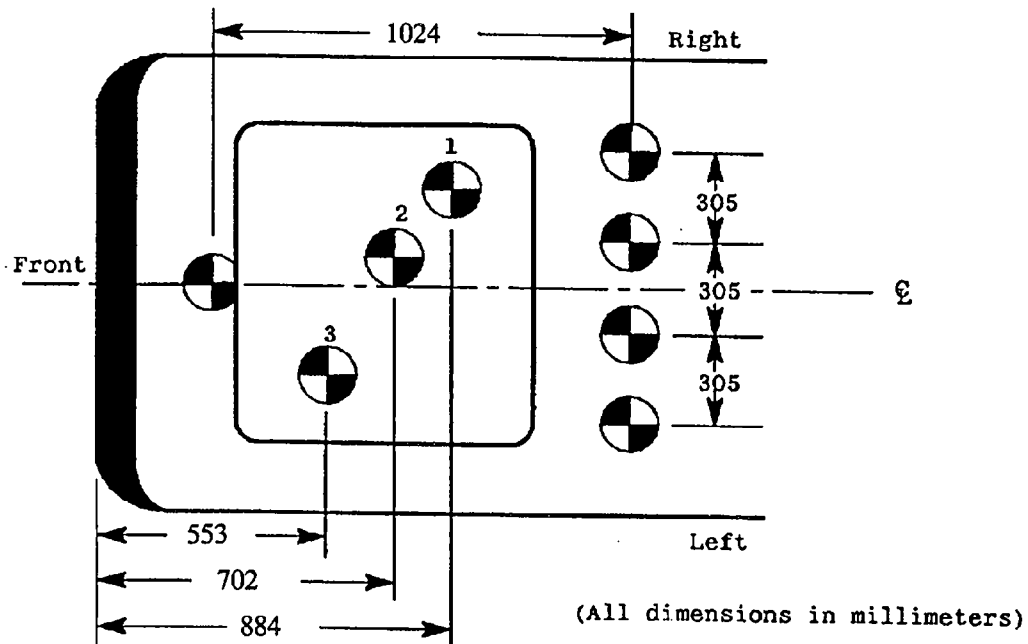
(All dimensions in millimeters)



(Dimensions in millimeters)

Figure 5

VEHICLE 1 TARGET LOCATIONS (continued)
(TOP VIEW OF HOOD AND ENGINE COMPARTMENT)



Note: Drawing not to scale.

- Target 1: Air Cleaner
2: Valve Cover
3: Drivebelt

Figure 6

VEHICLE 1 MEASUREMENT POINTS

(All dimensions in millimeters)

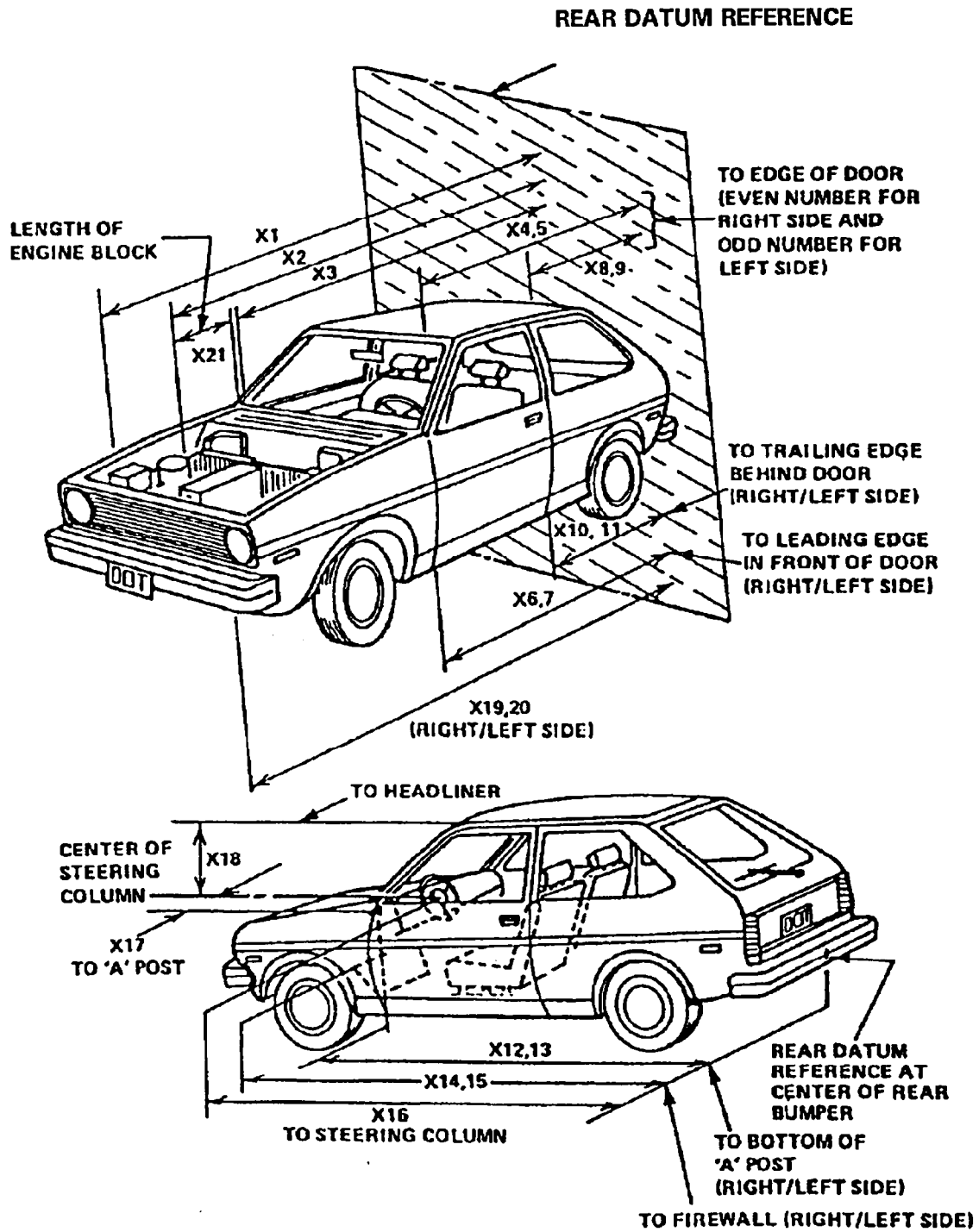


Figure 6

VEHICLE 1 MEASUREMENT POINTS (continued)

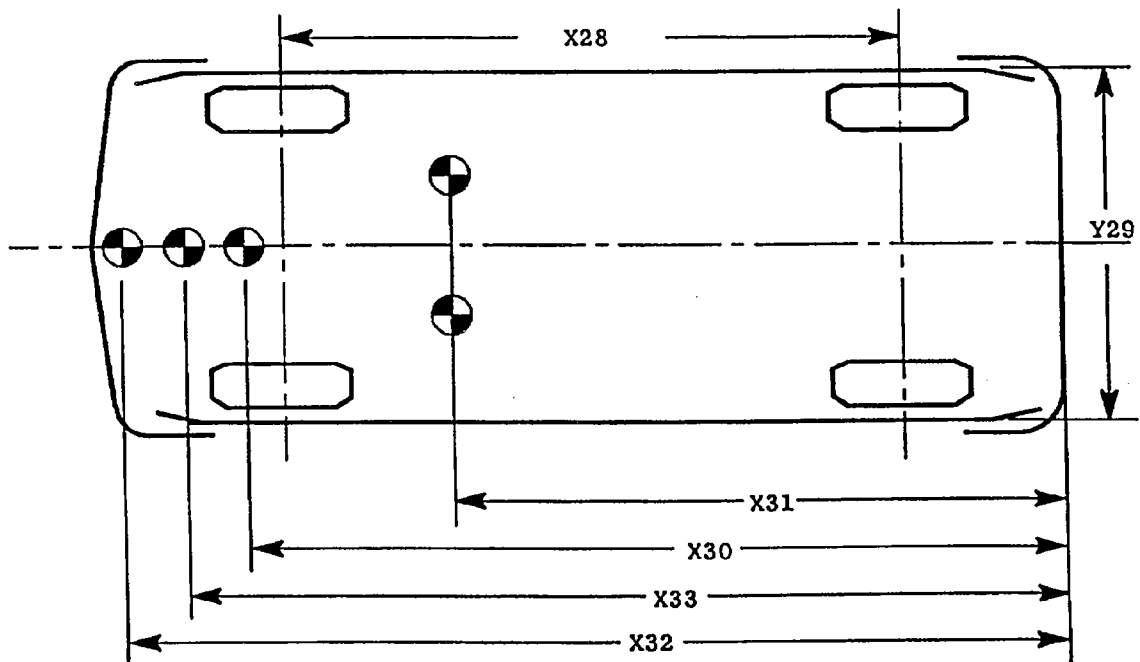
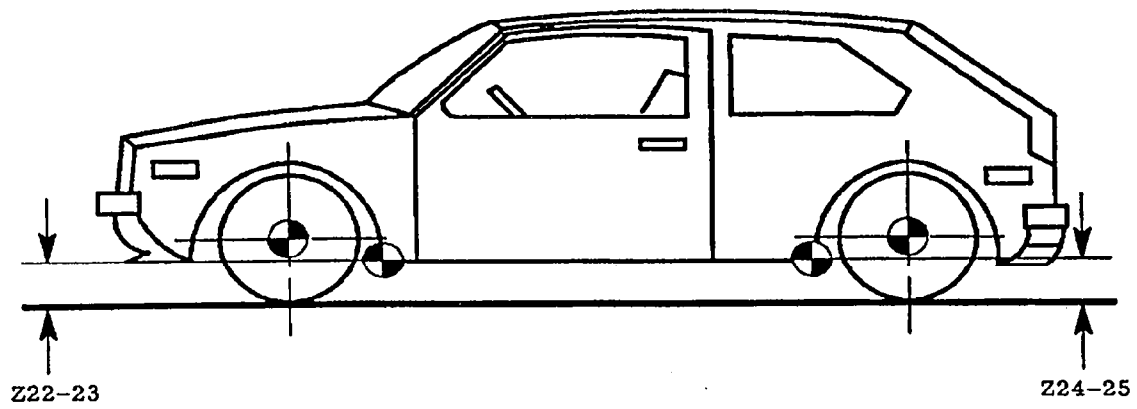


Table 3

VEHICLE 1 MEASUREMENTS

No.	TYPE OF MEASUREMENT	All Dimensions in millimeters		
		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4738	4250	480
X2	Rear Surface of Vehicle to Engine at Centerline	4100	3780	320
X3	Rear Surface of Vehicle to Firewall	3520	3925	-405
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3248	3240	8
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3253	N/A	N/A
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3218	3193	25
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3219	N/A	N/A
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2188	2178	10
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2182	N/A	N/A
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2192	2171	21
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2190	N/A	N/A
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3247	3187	60
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3252	3175	77
X14	Rear Surface of Vehicle to Firewall - Right Side	3510	3445	65
X15	Rear Surface of Vehicle to Firewall - Left Side	3490	3210	280
X16	Rear Surface of Vehicle to Steering Wheel Center	2765	2660	105
X17	Steering Column to "A" Post	400	360	40

N/A - Not Available

Table 3

VEHICLE 1 MEASUREMENTS (continued)

No.	TYPE OF MEASUREMENT	All Dimensions in millimeters		
		Pre-Test	Post-Test	Difference
Z18	Rear of Windshield Header to Steering Wheel Column	435	540	-105
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4590	4505	85
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4595	3925	670
X21	Width of Engine Block	485	485	0
Z22	Right Front Sill to Ground Plane	205	150	55
Z23	Left Front Sill to Ground Plane	195	25	170
Z24	Right Rear Sill to Ground Plane	205	230	-25
Z25	Left Rear Sill to Ground Plane	200	80	120
X26	Firewall to Engine or Transaxle	435	55	380
Z27	Vertical Dim. from Door Sill to Centerline of Steering Column	530	740	-210
X28	Wheelbase of Vehicle	2623	L=2449 R=2661	L=174 R=-38
Y29	Width of Vehicle at Maximum Width Point	1722	N/A	N/A
X30	Rear Surface of Vehicle to Engine Target	4006	3866	140
X31	Rear Surface of Vehicle to Compartment Target	3205	L=3200 R=3203	L=5 R=2
X32	Rear Surface of Vehicle to Bumper Target	4600	N/A	N/A
X33	Rear Surface of Vehicle to Frame Crossmember	4389	4216	173

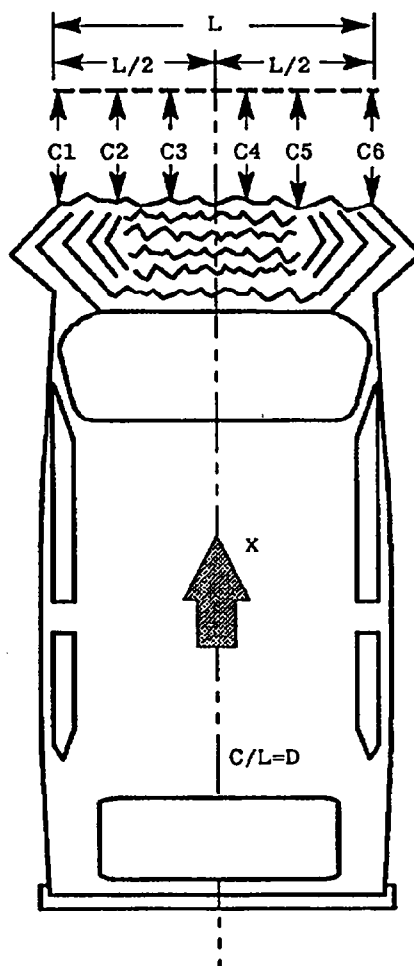
N/A - Not Available

Table 3

VEHICLE 1 MEASUREMENT (continued)

(all dimensions in millimeters)

Measurements taken by NASS field instructors



Location	Pre-Test	Post-Test	Change
C1	4510	3815	695
C2	4670	4060	610
C3	4730	4250	480
C4	4730	4355	375
C5	4665	4505	160
C6	4505	4590	-85

The front bumper was severely damaged during impact, therefore all post-test measurements are estimations. Most of the front bumper was not intact during post-test analysis.

Table 4

VEHICLE 1 FRONTAL PROFILE DATA* (in mm.)

Location		PRE-TEST PROFILE						POST-TEST PROFILE						CHANGE					
		Vehicle Left			Vehicle Right			Vehicle Left			Vehicle Right			Vehicle Left			Vehicle Right		
		pt. 1	pt. 2	pt. 3	pt. 4	pt. 5	pt. 6	pt. 1	pt. 2	pt. 3	pt. 4	pt. 5	pt. 6	pt. 1	pt. 2	pt. 3	pt. 4	pt. 5	pt. 6
Bottom of front Bumper	X	150	295	340	340	285	145	-315	-165	-10	105	210	330	465	460	350	235	75	-185
	Y	-730	-420	-150	130	435	730	-690	-430	-125	145	400	700	-40	10	-25	-15	35	30
	Z	265	270	270	270	275	270	590	510	500	440	360	360	-325	-240	-230	-170	-85	-90
Top of Front Bumper	X	210	370	430	430	365	205	-485	-240	-50	55	205	290	695	610	480	375	160	-85
	Y	-770	-455	-140	155	465	790	-690	-430	-125	145	400	700	-80	-25	-15	10	65	90
	Z	520	515	510	515	515	525	870	780	740	680	620	420	-350	-265	-225	-165	-105	105
Center of Grill	X	100	270	310	305	260	100	-430	-265	-210	-30	40	0	530	535	520	335	220	100
	Y	-750	-430	-125	140	450	750	-690	-430	-125	145	400	700	-60	0	0	-5	50	50
	Z	620	635	615	620	630	630	850	810	770	740	700	650	-230	-175	-155	-120	-70	-20
Front of Hood	X	70	210	285	280	205	60	-540	-390	-210	-55	70	30	610	600	495	335	135	30
	Y	-760	-440	-125	145	445	745	-690	-430	-125	145	400	700	-70	-10	0	0	45	45
	Z	680	705	695	700	710	680	945	920	860	840	770	660	-265	-215	-165	-130	-60	20

* X axis measurements referenced to a plane 4300 mm. forward of rear bumper.

Y axis referenced to vehicle centerline and positive to right.

Z axis referenced to ground and positive up.

Table 4

Additional Measurements (mm.)

	PRE-TEST			POST-TEST			CHANGE		
	X	Y	Z	X	Y	Z	X	Y	Z
Driver IP above left knee	2985	-510	690	2940	-510	540	45	0	150
Driver IP above right knee	2980	-210	700	2900	-185	520	80	-25	180
Pass. IP above left knee	2980	225	695	2975	280	575	5	-65	120
Pass. IP above right knee	2985	490	695	3004	510	605	-19	-20	90
Intrusion of brake pedal	3275	-330	420	3030	-400	265	245	70	155
Intrusion of left foot rest	3305	-560	330	3275	-590	145	30	30	185
Driver 'A' pillar hinge to rear door striker	945	-	-	820	-	-	125	-	-

* - X axis measurements referenced to a plane at rear bumper and positive forward.

Y axis referenced to vehicle centerline and positive to right.

Z axis referenced to ground and positive up.

Table 5
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: RS5602 TEST DATE: March 18, 1996

Vehicle Mfr./Make/Model: 1995 Mitsubishi Galant S 4-door sedan

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 (108.5 kph) 30° , 55% overlap vehicle to vehicle contacting driver side first
- 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.

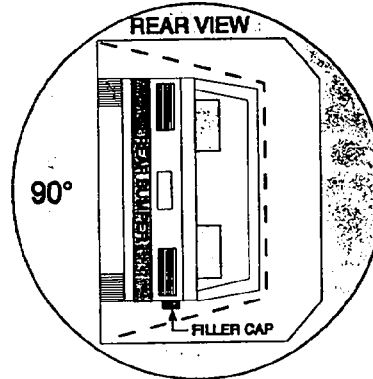
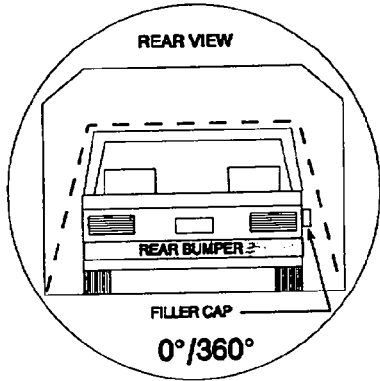
SOLVENT SPILLAGE DETAILS:

None

Table 6
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:
0-90 Deg.

Vehicle NHTSA ID No.:
RS5602



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 1 minutes 55 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 00 seconds
TOTAL 6 minutes 55 seconds
7 minutes

Next whole minute interval

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

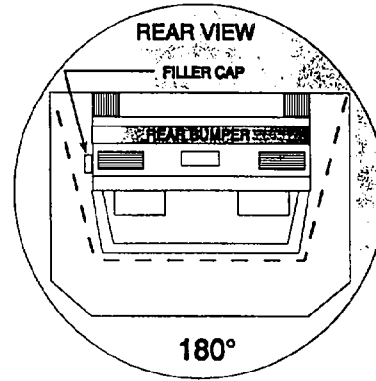
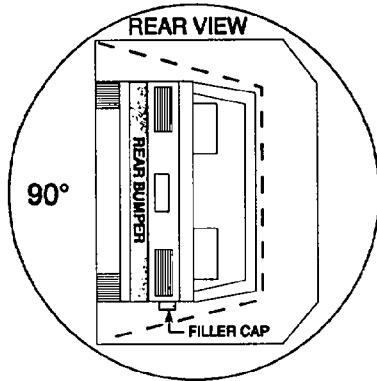
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 6
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
90-180 Deg.

Vehicle NHTSA ID No.:
RS5602



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	57	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	57	seconds
Next whole minute interval	7	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.

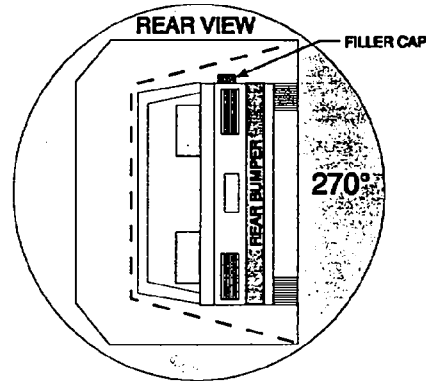
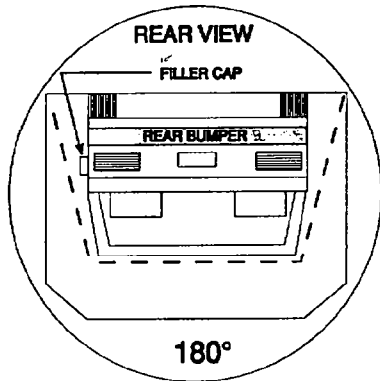
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 6
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
180-270 Deg.

Vehicle NHTSA ID No.:
RS5602



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>2</u>	minutes	<u>03</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>7</u>	minutes	<u>03</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.

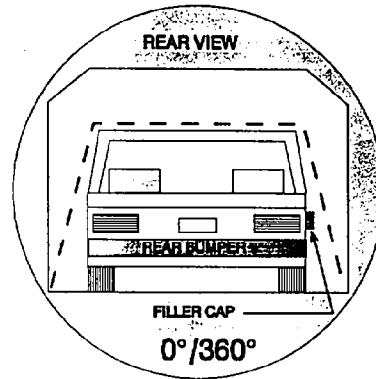
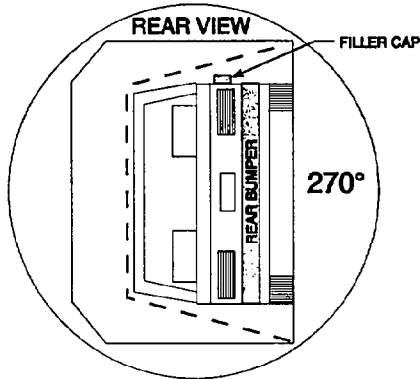
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 6
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
270-360 Deg.

Vehicle NHTSA ID No.:
RS5602



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>52</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>52</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

VEHICLE TWO DATA

Table 7

CRASH TEST SUMMARY FOR MOVING BARRIER

POSITION OF IMPACTOR (MDB) TO THE MONORAIL:

Wheels crabbed 15° to the right when viewed from above.

MDB DETAILS:

Overall Width of Framework Carriage	=	<u>1251</u>	millimeters
Overall Length of MDB (incl. honeycomb impact face)	=	<u>4102</u>	millimeters
Wheelbase of Framework Carriage	=	<u>2598</u>	millimeters
Tread of Framework Carriage (Front & Rear)	=	<u>1880</u>	millimeters
C.G. Location Rearward of Front Axle	=	<u>1013</u>	millimeters

MDB WEIGHT:

Right Front	=	<u>341</u>	kgs.	Right Rear	=	<u>340</u>	kgs.
Left Front	=	<u>528</u>	kgs.	Left Rear	=	<u>150.5</u>	kgs.
TOTAL FRONT WEIGHT	=	<u>869</u>	kgs.	(<u>63.9</u> % of Total Vehicle Weight)			
TOTAL REAR WEIGHT	=	<u>490.5</u>	kgs.	(<u>36.1</u> % of Total Vehicle Weight)			
TOTAL TEST WEIGHT	=	<u>1359.5</u>	kgs.				

MAXIMUM STATIC CRUSH OR HONEYCOMB IMPACT FACE:

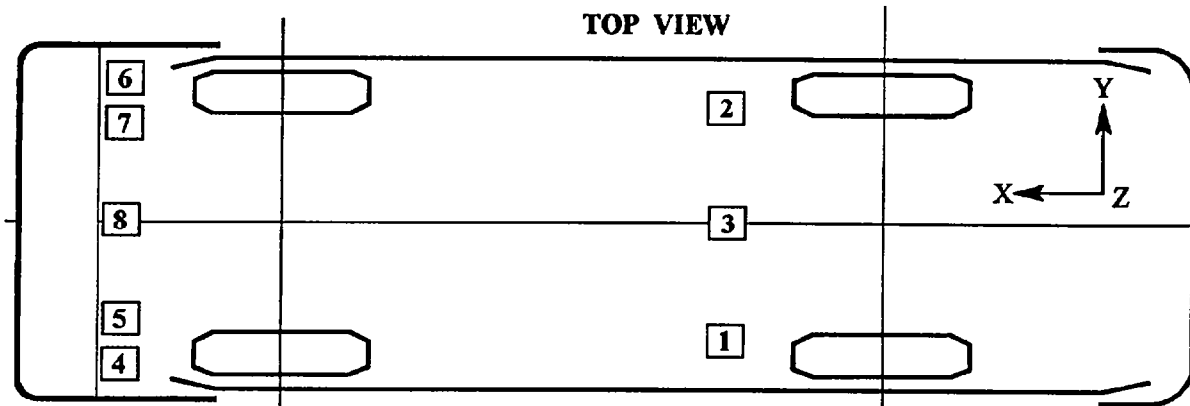
1. Row A at Bumper Level	=	<u>409</u>	millimeters
2. Row B at Mid-Stack Level	=	<u>345</u>	millimeters
3. Row C at Top of Stack Level	=	<u>180</u>	millimeters

INSTRUMENTATION:

Number of MDB Data Channels	=	<u>12</u>
-----------------------------	---	-----------

Figure 7

SUMMARY OF VEHICLE 2 DATA



Vehicle: Moving Deformable Barrier

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	MDB Left Rail X	Gs	3.9	133.9	-38.0	36.2	60.0
1	MDB Left Rail Y	Gs	9.2	48.1	-5.6	62.6	60.0
2	MDB Right Rail X	Gs	3.4	138.0	-30.0	35.6	60.0
2	MDB Right Rail Y	Gs	8.8	95.4	-7.1	48.5	60.0
3	MDB C.G. X	Gs	1.3	301.6	-29.8	36.6	60.0
3	MDB C.G. Y	Gs	8.6	45.1	-4.2	51.2	60.0
3	MDB C.G. Z	Gs	33.4	50.6	-16.5	133.1	60.0
4	MDB Load Cell TR	Nwt	36927.0	26.5	-20749.6	88.8	60.0
5	MDB Load Cell BR	Nwt	37184.5	88.4	-37729.2	39.2	60.0
6	MDB Load Cell TL	Nwt	186954.5	38.2	-16575.3	69.4	60.0
7	MDB Load Cell BL	Nwt	92380.4	59.2	-4743.5	199.2	60.0
8	MDB Load Cell CL	Nwt	142826.4	35.3	-696.7	-4.1	60.0

Table 8

MOVING DEFORMABLE HONEYCOMB BARRIER
(Grid as looking at MDB from front)

Test Date: March 18, 1996 Vehicle: Moving Deformable Barrier

Distance Right of Center																		Distance Left of Center									
Location	813	711	610	508	406	305	203	102	0.0	102	203	305	406	508	610	711	813										
Top of Stack Level	Pre	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188										
	Post	102	127	150	185	224	277	328	361	368	363	358	338	330	338	338	343										
	Crush	-86	-61	-38	-3	36	89	140	173	213	180	175	170	150	142	150	155										
Mid-Stack Level	Pre	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188										
	Post	152	178	198	231	267	305	351	394	452	533	521	495	495	495	490	488										
	Crush	-36	-10	10	43	79	117	163	206	264	302	345	333	307	307	302	300										
Bumper Level	Pre	N/A	86	86	86	86	86	86	86	86	86	86	86	86	86	86	N/A										
	Post	N/A	191	203	224	262	287	300	338	386	452	470	452	432	432	439	N/A										
	Crush	N/A	105	117	138	176	201	214	252	300	366	384	366	346	346	353	N/A										

A positive crush, in the above table, is a movement of that point rearward from its pre-test position.

A negative crush, in the above table, is a movement of that point forward from its pre-test position.

Figure 8

CAMERA POSITIONS FOR VEHICLE TO VEHICLE ANGLED FRONTAL IMPACT

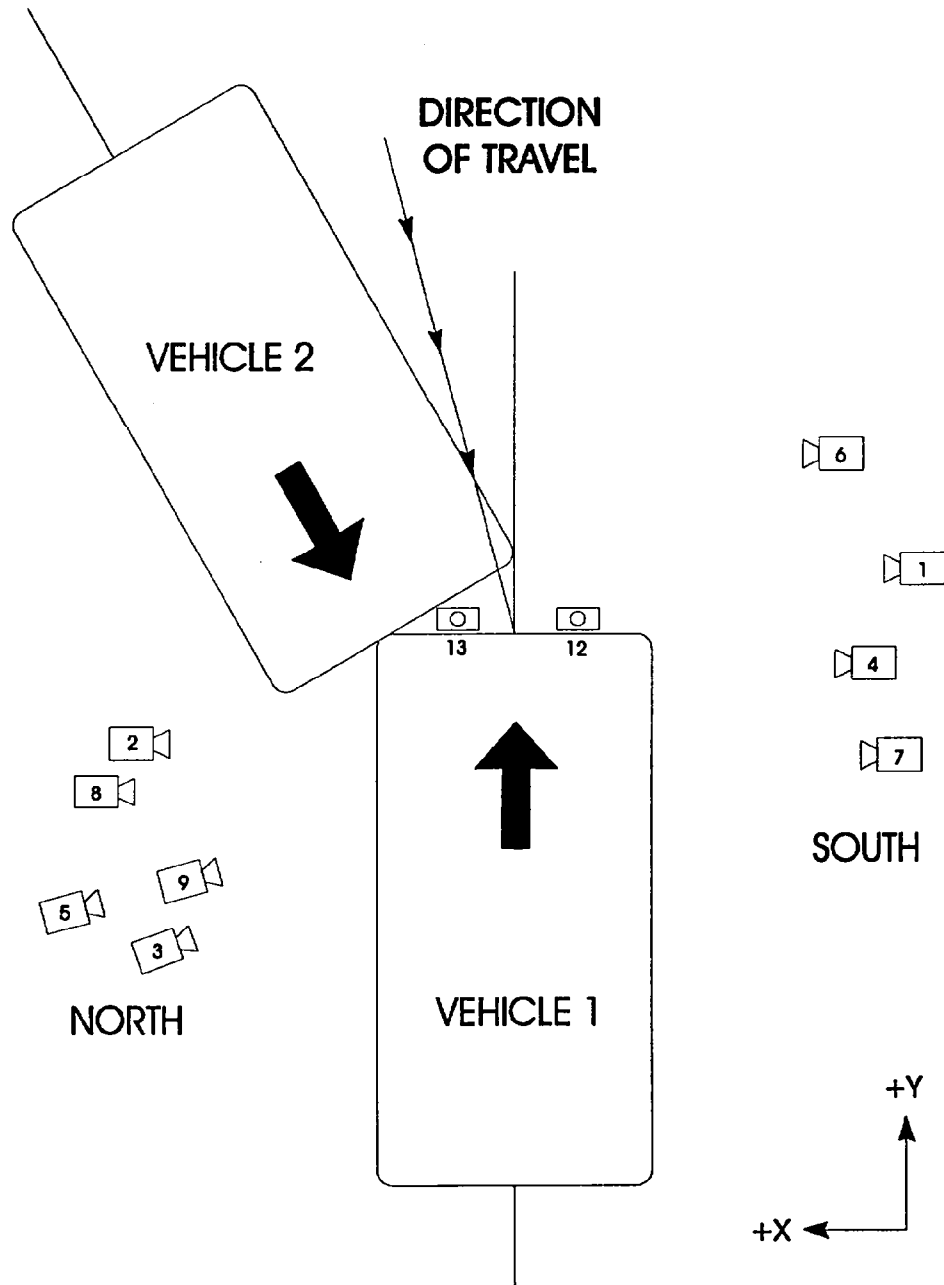


Table 9
HIGH-SPEED CAMERA LOCATIONS
Vehicle: 1995 Mitsubishi Galant S 4-door sedan

Test No. Y57-5-1603

CAMERA Location	VIEW	CAMERA POSITIONS (mm)*			ANGLE** (deg)	LENS (mm)	SPEED (fps)	Camera No.	Lens No.
		X	Y	Z					
1	Real-Time Camera	-	-	-	-	-	24	-	-
2	Overall Camera	7341	-2489	1321	-4.4	13	730	1333	C21880
3	North Impact Point	2896	-3632	1118	-3.5	28	760	1692	5107277
4	South Impact Point	-7925	-279	1295	-5	25	780	1627	C7477
5	Moving Barrier North Side View	7239	-4470	1245	-1.9	35	840	1330	142
6	Moving Barrier South Side View	-6528	3912	1067	-3	25	810	1328	C14951
7	Vehicle 1 Passenger Side View	-9296	-2210	1245	-1	35	780	1663	A1264
8	Vehicle 1 Driver Side View	8560	813	1295	-4.1	35	790	1650	A1281
9	Vehicle 1 Driver and Interior View	9423	-2159	1867	-4.8	50	720	1325	11699
10	Vehicle 1 Passenger belt/D-ring View	-	-	-	-	7.5	450	2000	C23844
11	Vehicle 1 Driver belt/D-ring View	-	-	-	-	8	670	2029	204
12	Overhead Overall View	940	-500	9805	-90	13	730	1326	C9836
13	Overhead Close-up	940	-300	9805	-90	25	770	1332	62

*X = film plane to Vehicle 1 longitudinal centerline, positive left (North Side)

Y = film plane to Vehicle 1 front bumper centerline

Z = film plane to ground

** = referenced to horizontal plane

APPENDIX A
PHOTOGRAPHS

APPENDIX A

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VEHICLE 2 PHOTOGRAPHS		
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OVERALL TEST SETUP

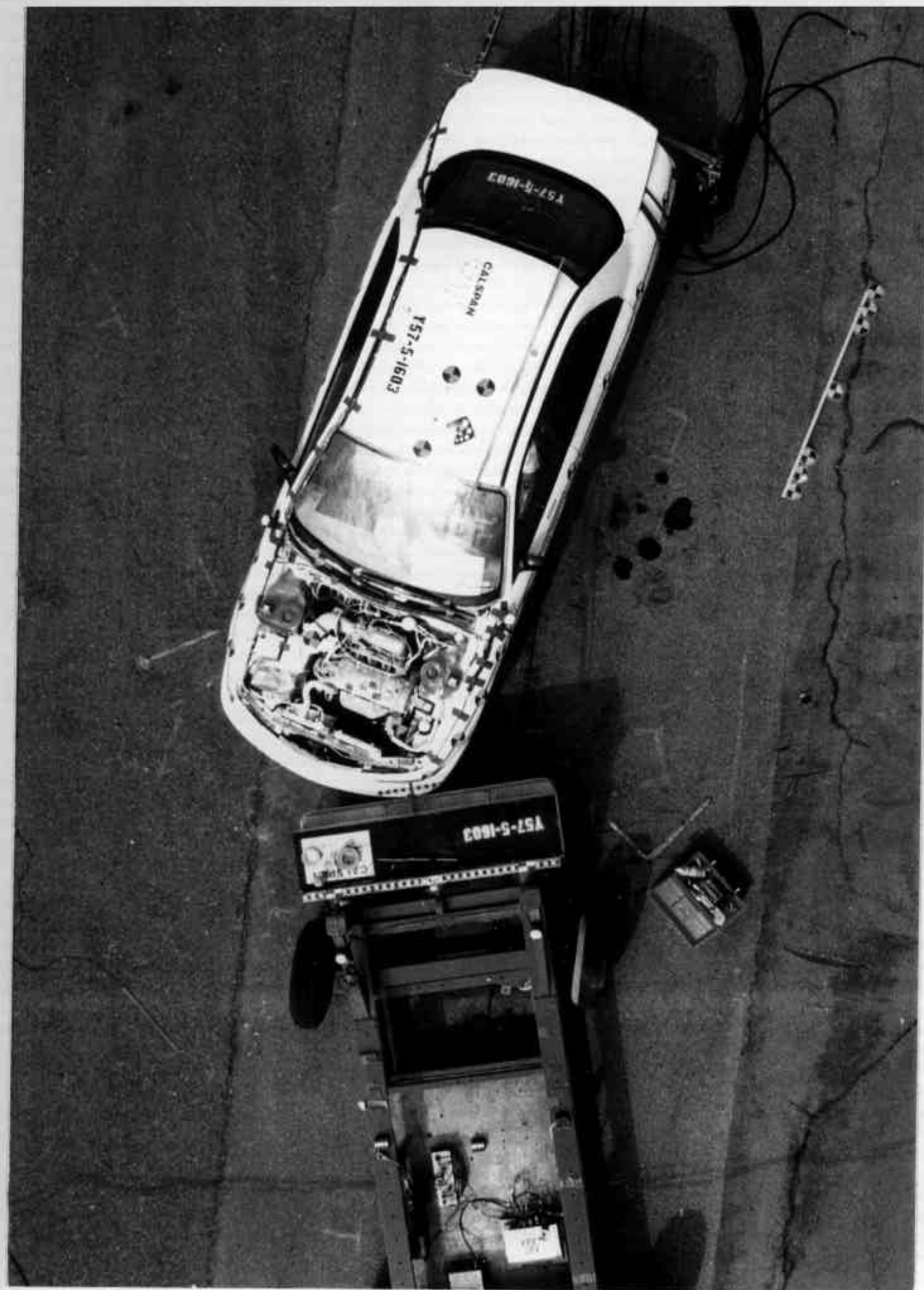


Figure A-1 PRE-TEST OVERHEAD VIEW

PHOTOGRAPH NOT AVAILABLE

PHOTOGRAPH NOT AVAILABLE



Figure A-4 POST-TEST OVERALL SIDE VIEW

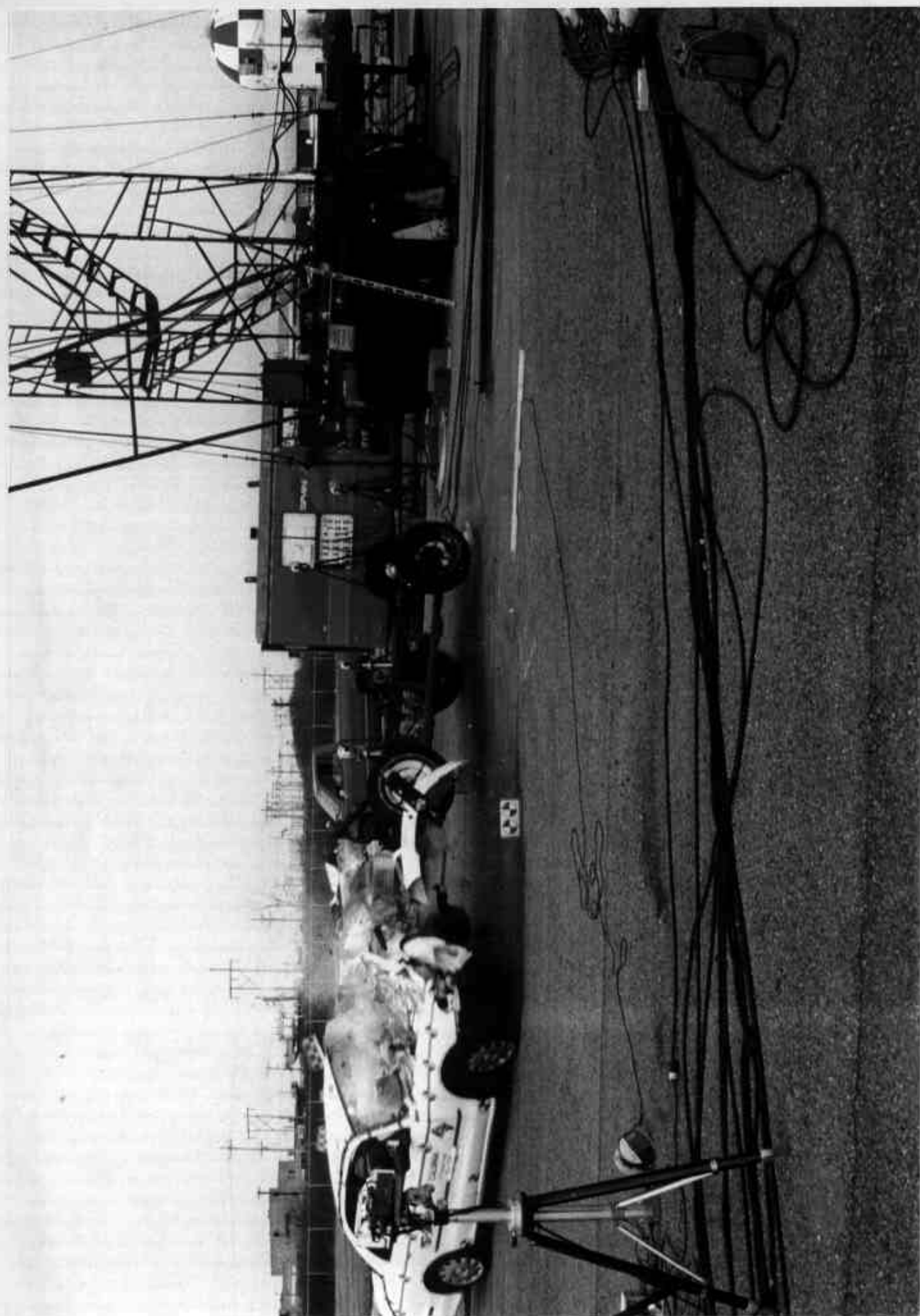


Figure A-5 IMPACT PHOTO

VEHICLE 1 PHOTOGRAPHS



Figure A-6 PRE-TEST FRONT VIEW

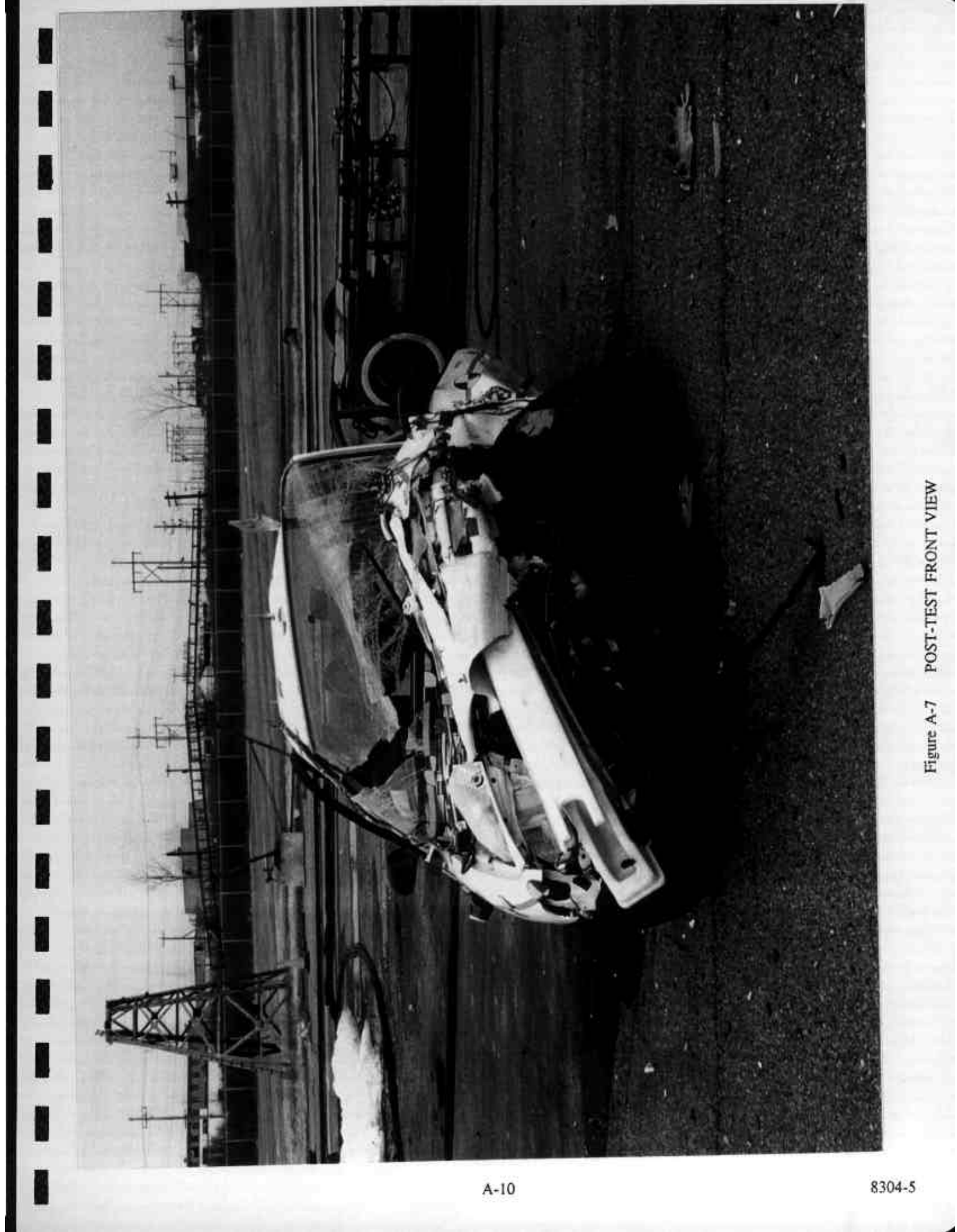


Figure A-7 POST-TEST FRONT VIEW



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



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

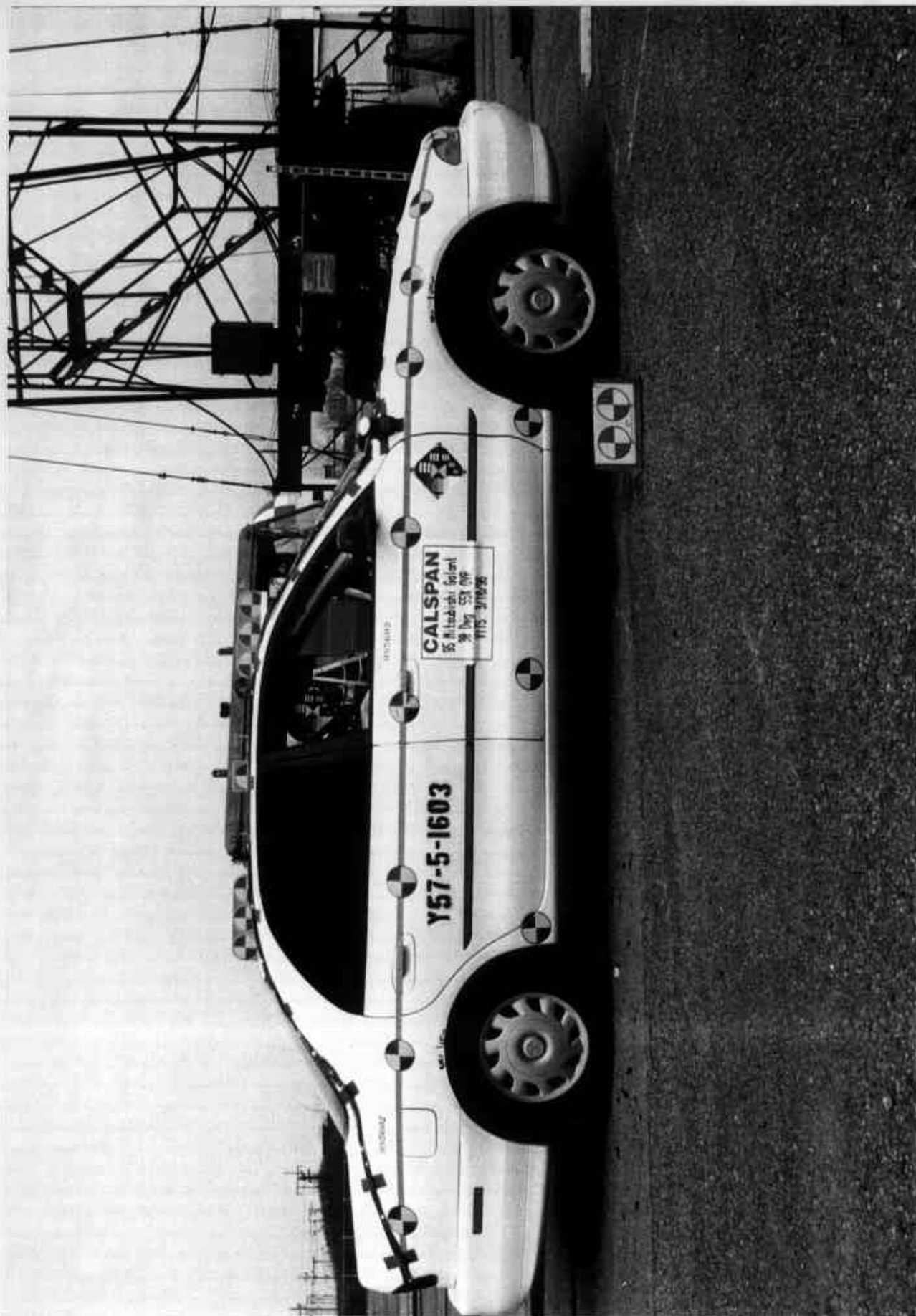


Figure A-10 PRE-TEST RIGHT SIDE VIEW



Figure A-11 POST-TEST RIGHT SIDE VIEW



Figure A-12 PRE-TEST REAR RIGHT THREE-QUARTER VIEW



Figure A-13 POST-TEST REAR RIGHT THREE-QUARTER VIEW



Figure A-14 PRE-TEST REAR VIEW



Figure A-15 POST-TEST REAR VIEW



Figure A-16 PRE-TEST REAR LEFT THREE-QUARTER VIEW



Figure A-17 POST-TEST REAR LEFT THREE-QUARTER VIEW



Figure A-18 PRE-TEST LEFT SIDE VIEW



Figure A-19 POST-TEST LEFT SIDE VIEW



Figure A-20 PRE-TEST FRONT LEFT THREE-QUARTER VIEW



Figure A-21 POST-TEST FRONT LEFT THREE-QUARTER VIEW

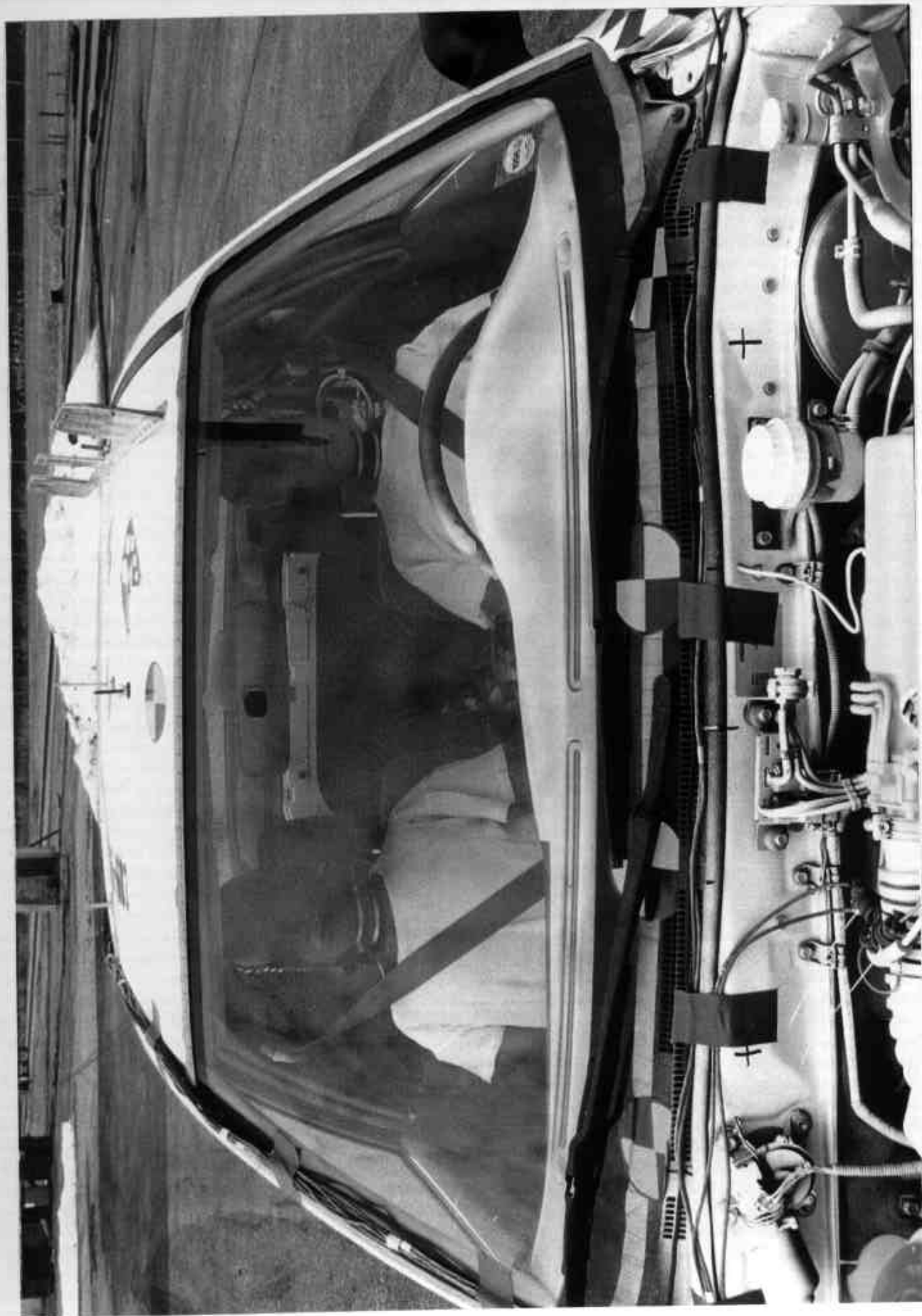


Figure A-22 PRE-TEST WINDSHIELD VIEW

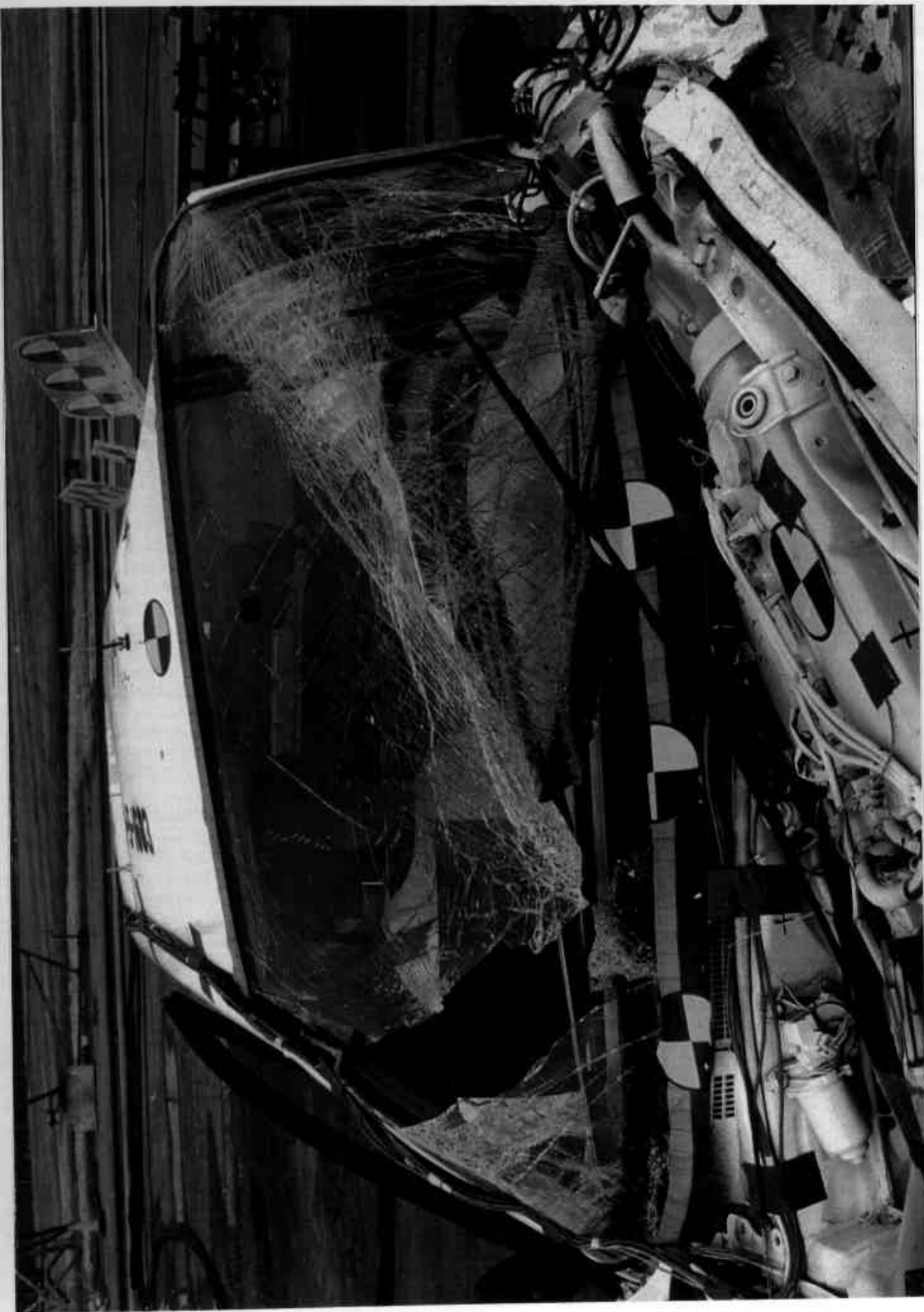


Figure A-23 POST-TEST WINDSHIELD VIEW

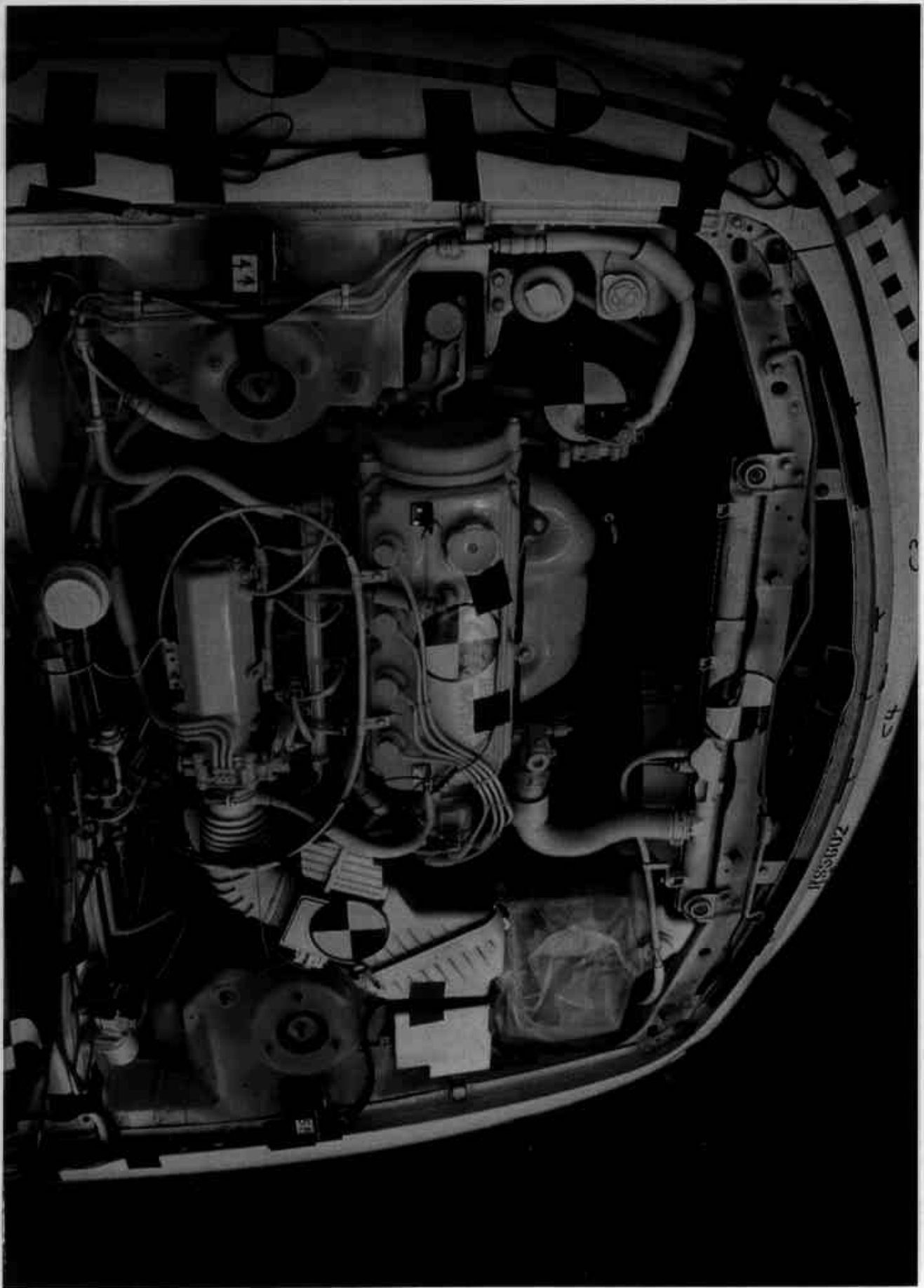


Figure A-24 PRE-TEST OVERHEAD ENGINE COMPARTMENT VIEW



Figure A-25 POST-TEST OVERHEAD ENGINE COMPARTMENT VIEW

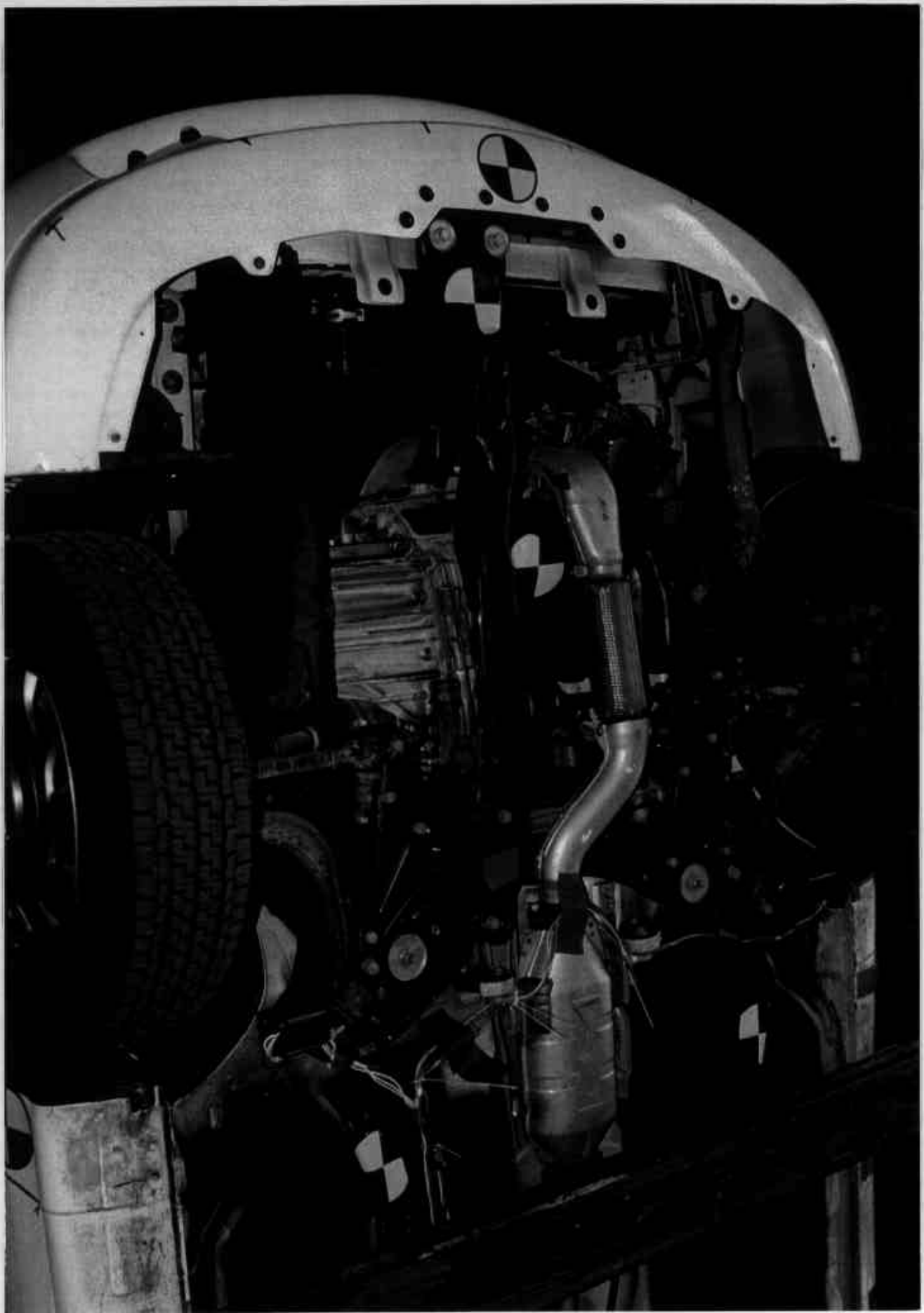


Figure A-26 PRE-TEST UNDERBODY FRONT VIEW

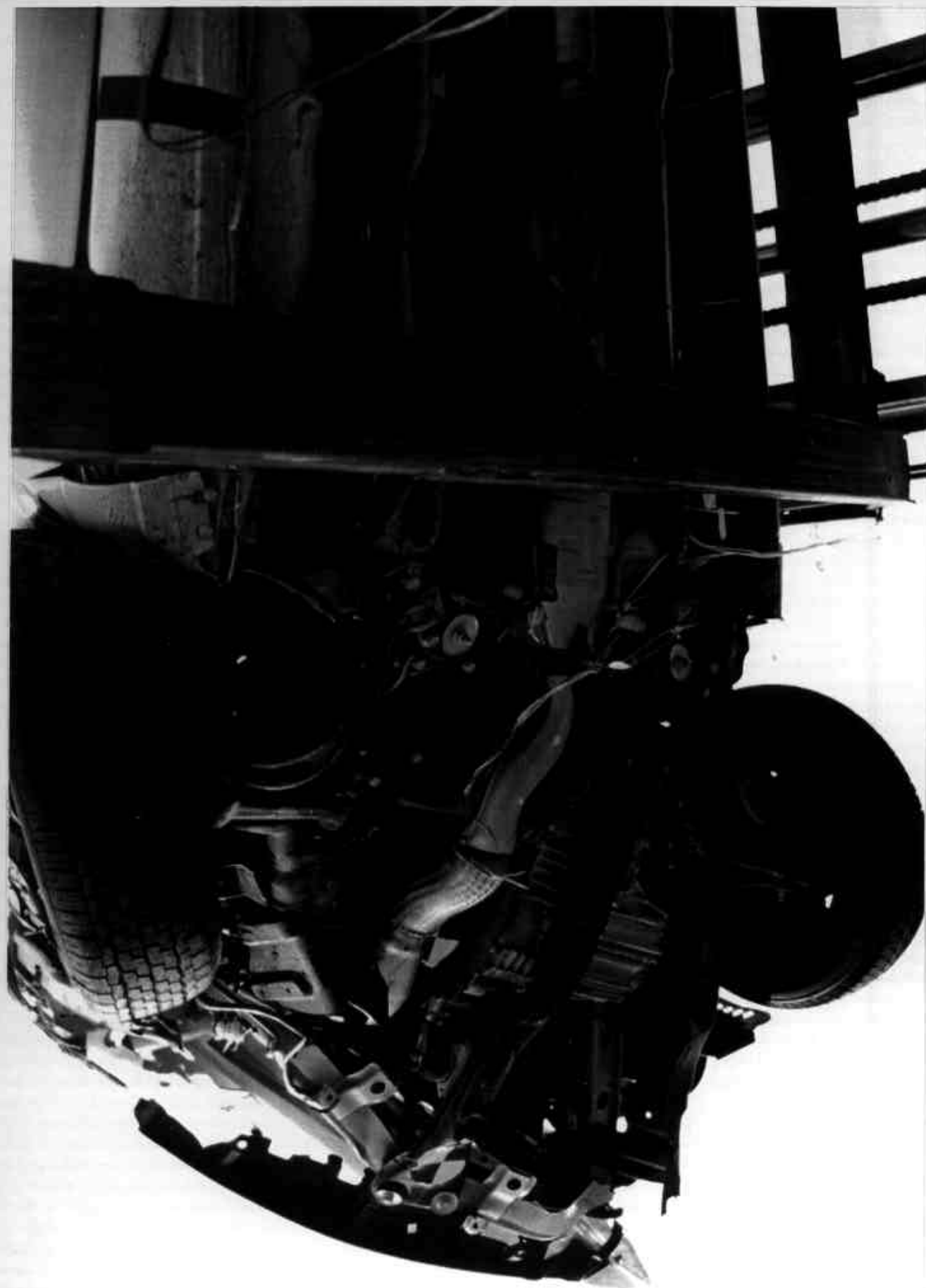


Figure A-27 POST-TEST UNDERBODY FRONT VIEW

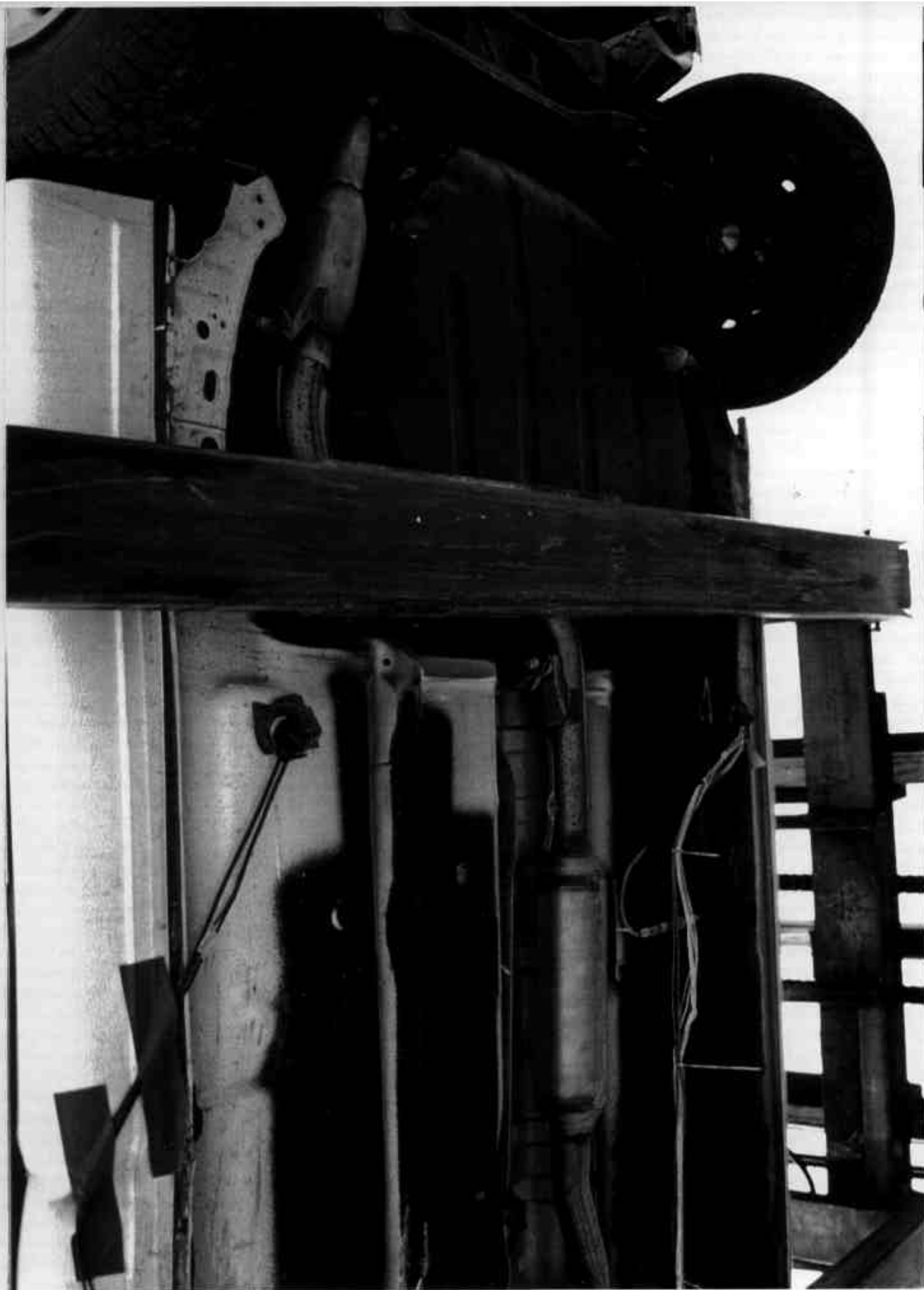


Figure A-28 PRE-TEST UNDERBODY MIDDLE VIEW

PHOTOGRAPH NOT AVAILABLE

PHOTOGRAPH NOT AVAILABLE

PHOTOGRAPH NOT AVAILABLE



Figure A-33 POST-TEST UNDERBODY CLOSE-UP OF FRONT STRUCTURE

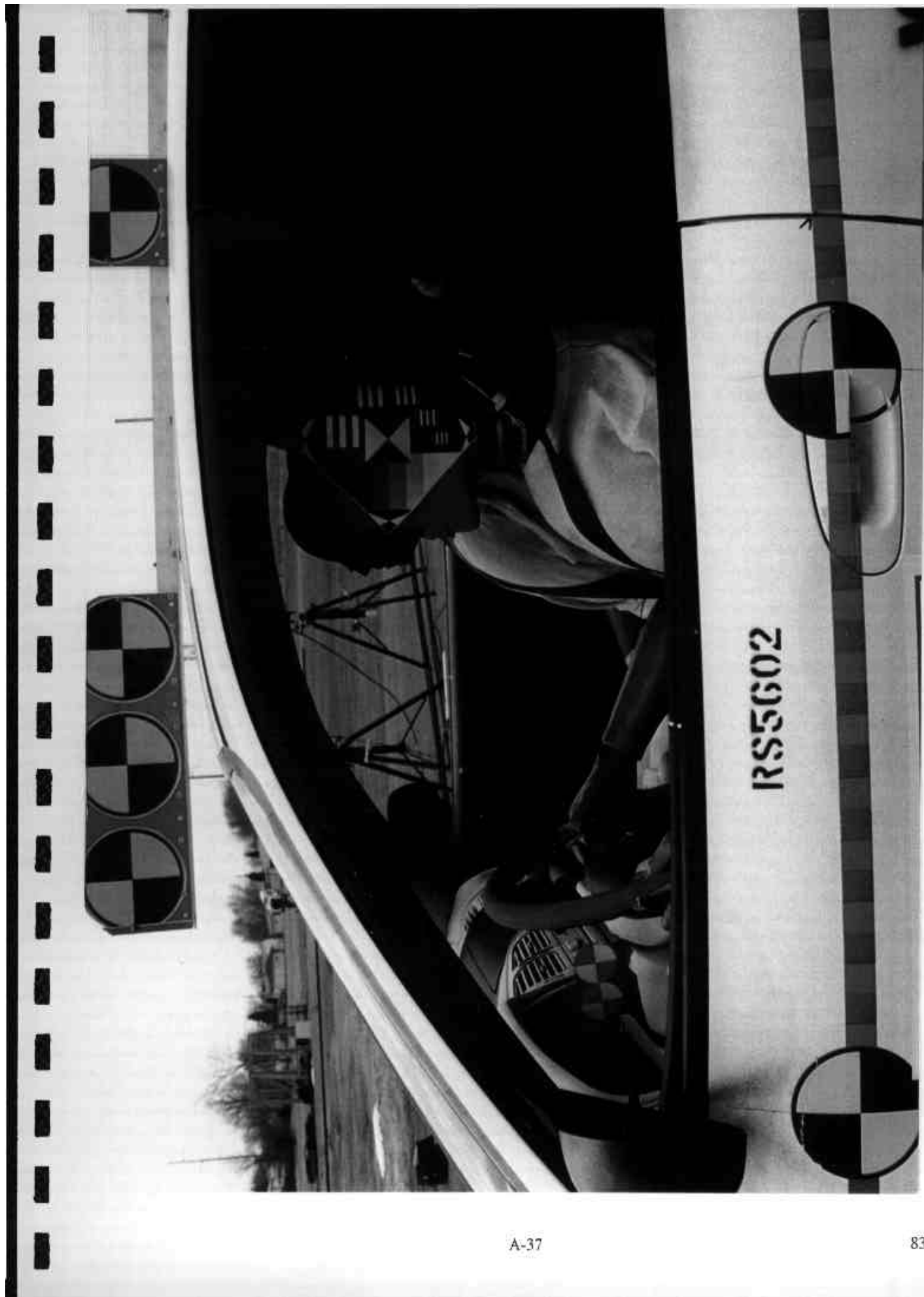


Figure A-34 PRE-TEST DRIVER CLOSE-UP WITH DOOR CLOSED



Figure A-35 POST-TEST DRIVER CLOSE-UP WITH DOOR CLOSED



Figure A-36 PRE-TEST DRIVER CLOSE-UP WITH DOOR OPEN
A-39

PHOTOGRAPH NOT AVAILABLE



Figure A-38 PRE-TEST DRIVER FOOT/LEG CLOSE-UP WITH DOOR OPEN

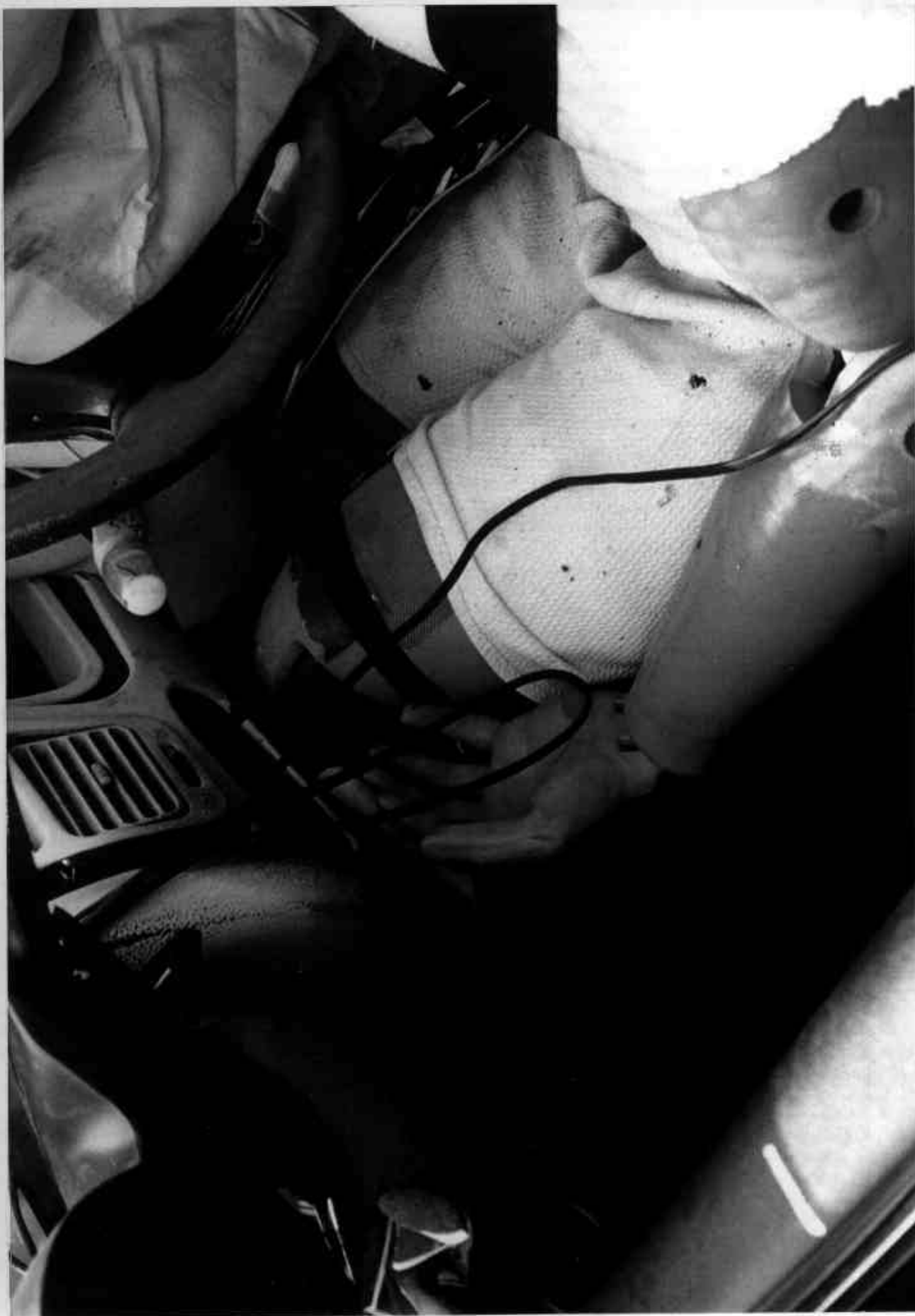


Figure A-39 POST-TEST DRIVER FOOT/LEG CLOSE-UP WITH DOOR OPEN



Figure A-40 PRE-TEST PASSENGER CLOSE-UP WITH DOOR CLOSED



RS5602

Figure A-41 POST-TEST PASSENGER CLOSE-UP WITH DOOR CLOSED



Figure A-42 PRE-TEST PASSENGER CLOSE-UP WITH DOOR OPEN

A-45

8304-5

PHOTOGRAPH NOT AVAILABLE



Figure A-44 PRE-TEST PASSENGER FOOT/LEG CLOSE-UP WITH DOOR OPEN



Figure A-45 POST-TEST PASSENGER FOOT/LEG CLOSE-UP WITH DOOR OPEN



Figure A-46 POST-TEST DRIVER CHEST CONTACT POINT



Figure A-47 POST-TEST PASSENGER CHEST CONTACT POINT

MADE IN U.S.A. DATE DEC. 1994

MANUFACTURED BY DIAMOND-STAR MOTORS CORP.

GVWR 3925 LBS GAWR 2140 LBS GAWR 1785 LBS
1780 KG FR. 970 KG RR. 810 KG

THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY, BUMPER, AND
THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.

4 A 3 A J 4 B G 2 S E 1 1 7 1 0 9



MDH 120907

VEHICLE TYPE: PASSENGER CAR M0900223

Figure A-48 CERTIFICATION PLACARD

PHOTOGRAPH NOT AVAILABLE

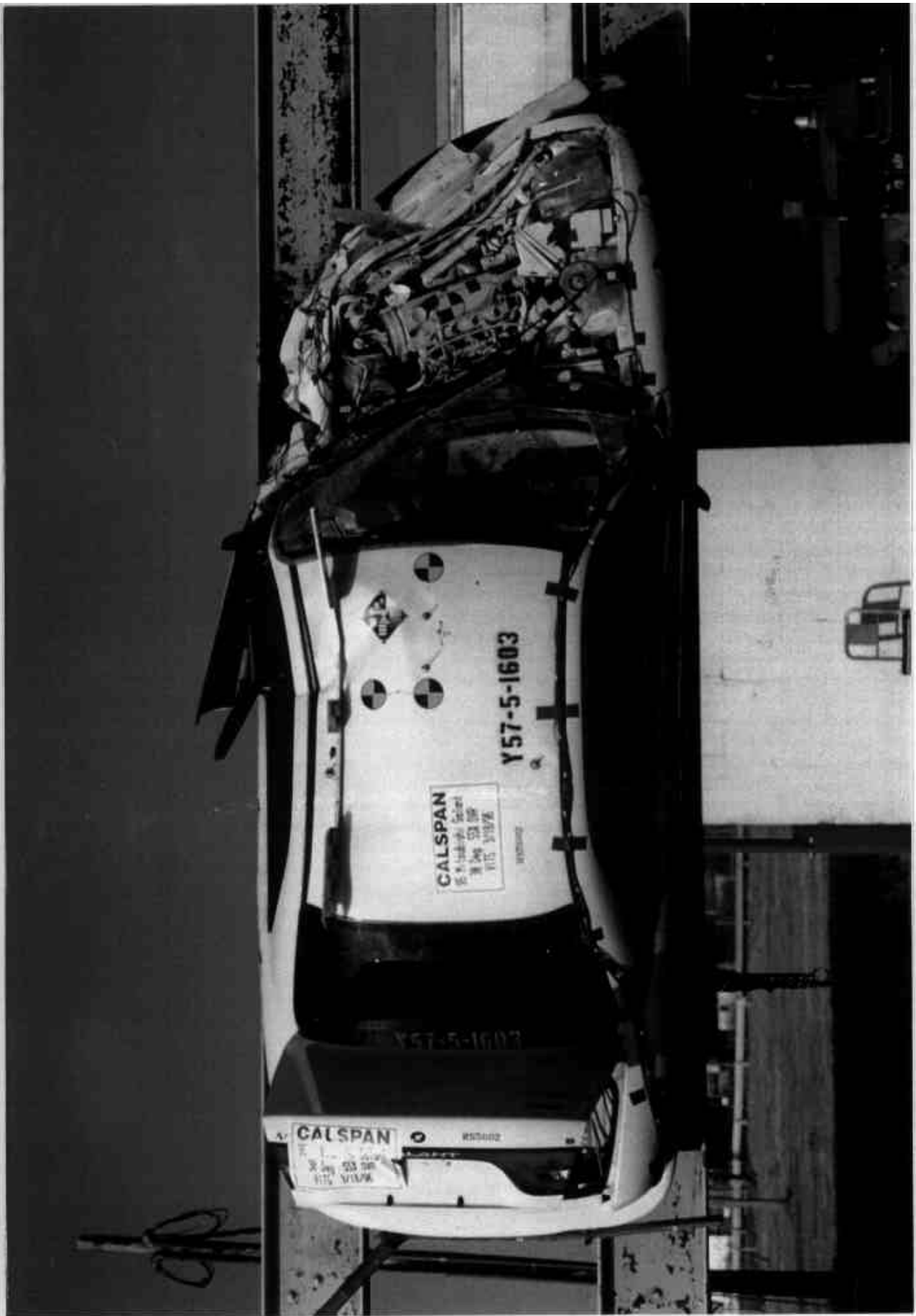


Figure A-50 POST-TEST TOP VIEW

VEHICLE 2 PHOTOGRAPHS



Figure A-51 PRE-TEST MOVING DEFORMABLE BARRIER FRONT VIEW



Figure A-52 POST-TEST MOVING DEFORMABLE BARRIER FRONT VIEW



Figure A-53 PRE-TEST MOVING DEFORMABLE BARRIER RIGHT SIDE VIEW



Figure A-54 POST-TEST MOVING DEFORMABLE BARRIER RIGHT SIDE VIEW

Figure A-55 PRE-TEST MOVING DEFORMABLE BARRIER LEFT SIDE VIEW





Figure A-56 POST-TEST MOVING DEFORMABLE BARRIER LEFT SIDE VIEW

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA

Key: V1 - Vehicle 1
V2 - Vehicle 2 (MDB)
P1 - Position 1 (Driver)
P2 - Position 2 (Right Front Passenger)

Note: Data is presented using the NHTSA coordinate system.

FACILITY: track
RUN #: 1603
SERIES #: 1

TEST DATE: 18 Mar 1996
TEST TIME: 14:30:43
BOARD: A

TITLE: VTV TEST #5

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P1 Head X	Gs	10.2	133.1	-31.6	66.8	1000.0
2	P1 Head Y	Gs	6.9	28.0	-54.9	85.7	1000.0
3	P1 Head Z	Gs	26.1	85.9	-28.9	72.2	1000.0
4	P1 HD9Y (X)	Gs	7.7	98.0	-52.1	85.4	1000.0
5	P1 Chest X	Gs	11.5	136.2	-42.3	77.5	180.0
6	P1 Chest Y	Gs	.9	26.2	-31.7	75.4	180.0
7	P1 Chest Z	Gs	18.1	96.4	-18.9	71.4	180.0
8	P1 HD9Y (Z)	Gs	29.1	89.2	-27.4	72.5	1000.0
9	P1 Upper Neck Fx	Nwt	352.7	45.1	-645.6	66.8	1000.0
10	P1 Upper Neck Fy	Nwt	609.8	133.2	-494.9	92.2	1000.0
11	P1 Upper Neck Fz	Nwt	2309.6	73.1	-534.1	136.7	1000.0
12	P1 HD9X (Y)	Gs	5.1	31.9	-26.5	74.6	1000.0
13	P1 Upper Neck Mx	Nwt-M	14.5	203.4	-85.5	91.1	600.0
14	P1 Upper Neck My	Nwt-M	32.2	136.2	-68.2	84.1	600.0
15	P1 Upper Neck Mz	Nwt-M	8.9	150.6	-23.1	106.3	600.0
16	P1 HD9X (Z)	Gs	19.3	100.3	-20.1	71.0	1000.0
17	P1 Head Resultant	Gs	59.2	85.7	.0	-2.4	1000.0
18	P1 Chest Resultant	Gs	45.6	75.4	.0	-.2	180.0
19	P1 Upper Neck Force Res	Nwt	2378.6	73.1	2.2	18.0	1000.0
20	P1 Upper Neck Moment Res	Nwt-M	89.3	91.1	.0	-15.5	600.0

V2 36 ms Fixed Duration HIC SUMMARY: P1 Head Resultant

hic: 201.54
t1 = 61.440 msec
t2 = 97.440 msec
Average G's Over Hic Duration = 31.57

CLIP V2.1 SUMMARY: P1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 43.297 G's
Tstart = 74.8181 ms
Tend = 77.9842 ms
CSI = 256.082

FACILITY: track
RUN #: 1603
SERIES #: 1

TEST DATE: 18 Mar 1996
TEST TIME: 14:30:43
BOARD: B

TITLE: VTV TEST #5

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM AMP	msec	MINIMUM AMP	msec	FILTER CLASS
1	P2 Head X	Gs	7.4	36.8	-28.7	52.8	1000.0
2	P2 Head Y	Gs	9.4	30.8	-53.3	141.0	1000.0
3	P2 Head Z	Gs	6.9	134.3	-21.1	73.9	1000.0
4	P1 HD9Z (X)	Gs	39.1	85.8	-43.5	72.2	1000.0
5	P2 Chest X	Gs	.9	-14.4	-36.6	58.9	180.0
6	P2 Chest Y	Gs	2.7	41.4	-16.8	73.3	180.0
7	P2 Chest Z	Gs	7.2	116.6	-6.0	60.5	180.0
8	P1 HD9Z (Y)	Gs	13.9	25.2	-52.4	89.0	1000.0
9	P2 Upper Neck Fx	Nwt	590.7	73.0	-560.2	56.2	1000.0
10	P2 Upper Neck Fy	Nwt	636.4	137.4	-402.2	56.2	1000.0
11	P2 Upper Neck Fz	Nwt	1117.1	74.9	-738.1	141.6	1000.0
12	P2 Left Femur	Nwt	485.1	31.8	-2586.2	73.0	600.0
13	P2 Upper Neck Mx	Nwt-M	22.1	70.9	-29.7	143.3	600.0
14	P2 Upper Neck My	Nwt-M	72.5	59.2	-18.0	48.6	600.0
15	P2 Upper Neck Mz	Nwt-M	8.7	139.9	-10.8	78.7	600.0
16	P2 Right Femur	Nwt	585.2	51.7	-5257.2	69.1	600.0
17	P2 Head Resultant	Gs	53.9	141.0	.0	-1.1	1000.0
18	P2 Chest Resultant	Gs	38.1	73.6	.0	-17.4	180.0
19	P2 Upper Neck Force Res	Nwt	1342.1	73.7	4.6	23.3	1000.0
20	P2 Upper Neck Moment Res	Nwt-M	72.6	59.2	.2	2.6	600.0

V2 36 ms Fixed Duration HIC SUMMARY: P2 Head Resultant

hic: 93.88
t1 = 51.360 msec
t2 = 87.360 msec
Average G's Over Hic Duration = 23.25

CLIP V2.1 SUMMARY: P2 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 36.841 G's
Tstart = 70.8177 ms
Tend = 74.9951 ms
CSI = 204.741

FACILITY: track
RUN #: 1603
SERIES #: 1

TEST DATE: 18 Mar 1996
TEST TIME: 14:30:43
BOARD: c

TITLE: VTV TEST #5

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P1 Lower Neck Fx	Nwt	533.5	104.8	-1172.1	63.4	1000.0
2	P1 Lower Neck Fy	Nwt	1269.0	75.7	-3090.8	86.0	1000.0
3	P1 Lower Neck Fz	Nwt	3395.7	73.1	-1021.1	97.4	1000.0
4	Chest Displacement #125	mm	.2	4.7	-22.9	69.8	180.0
5	P1 Lower Neck Mx	Nwt-M	85.7	88.0	-93.3	78.8	600.0
6	P1 Lower Neck My	Nwt-M	79.9	130.2	-188.2	72.7	600.0
7	P1 Lower Neck Mz	Nwt-M	20.8	75.8	-169.9	84.5	600.0
8	P1 Chest Deflection	mm	.0	-13.8	-25.7	69.8	180.0
9	Chest Displacement #126	mm	.9	158.4	-14.6	91.2	180.0
10	Chest Displacement #127	mm	.0	16.8	-12.0	69.5	180.0
11	Chest Displacement #128	mm	5.2	74.4	-18.7	101.4	180.0
12	Chest Displacement #129	mm	1.5	426.7	-31.7	70.4	180.0
13	Chest Displacement #130	mm	.0	4.7	-18.4	68.3	180.0
14	Chest Displacement #131	mm	.5	426.7	-41.8	72.7	180.0
15	Chest Displacement #132	mm	.0	-7.1	-26.1	76.7	180.0
16	P1 Right Foot Rear Z	Gs	97.8	42.5	-80.1	68.3	1000.0
17	P1 Lower Neck Force Res	Nwt	3541.6	73.1	2.9	2.2	1000.0
18	P1 Lower Neck Moment Res	Nwt-M	233.3	84.4	.1	-15.7	600.0

FACILITY: track
RUN #: 1603
SERIES #: 1

TEST DATE: 18 Mar 1996
TEST TIME: 14:30:43
BOARD: D

TITLE: VTV TEST #5

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P1 Pelvic X	Gs	12.5	89.9	-77.7	56.4	1000.0
2	P1 Pelvic Y	Gs	27.2	56.4	-23.5	74.4	1000.0
3	P1 Pelvic Z	Gs	23.6	86.4	-7.3	70.9	1000.0
4	P1 Left Femur	Nwt	521.2	39.5	-6590.5	67.4	600.0
5	P1 Right Femur	Nwt	753.7	81.7	-13365.7	56.6	600.0
6	P1 Lt Upper Tibia Mx	Nwt-M	82.0	38.3	-46.5	112.3	600.0
7	P1 Lt Upper Tibia My	Nwt-M	163.5	50.9	-133.2	39.5	600.0
8	P1 Lt Lower Tibia Fx	Nwt	1762.3	46.8	-544.1	58.1	600.0
9	P1 Lt Lower Tibia Fz	Nwt	1183.6	58.4	-1902.9	38.0	600.0
10	P1 Lt Lower Tibia My	Nwt-M	349.5	48.8	-64.2	38.9	600.0
11	P1 Rt Upper Tibia Mx	Nwt-M	214.5	54.1	-75.2	82.8	600.0
12	P1 Rt Upper Tibia My	Nwt-M	87.7	49.7	-86.5	36.0	600.0
13	P1 Rt Lower Tibia Fx	Nwt	1032.5	82.2	-316.7	327.0	600.0
14	P1 Rt Lower Tibia Fz	Nwt	674.3	65.9	-3569.6	36.2	600.0
15	P1 Rt Lower Tibia My	Nwt-M	70.6	50.3	-42.2	45.4	600.0
16	Acc #13 A-Pillar Hinge	Gs	11.2	63.8	-44.4	51.7	60.0
17	P1 Pelvic Res.	Gs	83.9	56.4	.0	2.8	1000.0

FACILITY: track
RUN #: 1603
SERIES #: 1

TEST DATE: 18 Mar 1996
TEST TIME: 14:30:43
BOARD: e

TITLE: VTV TEST #5

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P2 Pelvic X	Gs	5.5	140.3	-48.9	53.8	1000.0
2	P2 Pelvic Y	Gs	6.6	56.4	-18.4	77.3	1000.0
3	P2 Pelvic Z	Gs	12.6	82.2	-4.8	45.1	1000.0
4	P2 Chest Deflection	mm	.0	1.6	-39.8	78.7	180.0
5	P2 Lt Upper Tibia Mx	Nwt-M	65.0	50.5	-73.0	78.0	600.0
6	P2 Lt Upper Tibia My	Nwt-M	30.7	72.0	-73.3	50.8	600.0
7	P2 Lt Lower Tibia Fx	Nwt	506.8	45.1	-641.0	56.4	600.0
8	P2 Lt Lower Tibia Fz	Nwt	593.9	426.5	-2393.6	49.3	600.0
9	P2 Lt Lower Tibia My	Nwt-M	50.9	71.5	-26.1	51.5	600.0
10	P2 Rt Upper Tibia Mx	Nwt-M	185.2	67.2	-68.7	55.8	600.0
11	P2 Rt Upper Tibia My	Nwt-M	55.7	54.4	-86.1	66.7	600.0
12	P2 Rt Lower Tibia Fx	Nwt	1187.8	71.0	-365.0	56.3	600.0
13	P2 Rt Lower Tibia Fz	Nwt	123.6	101.2	-4072.5	71.2	600.0
14	P2 Rt Lower Tibia My	Nwt-M	141.3	69.2	-27.0	52.8	600.0
15	Acc #9 LR Compartment X	Gs	1.5	93.0	-24.2	47.3	60.0
16	Acc #9 LR Compartment Y	Gs	7.4	70.7	-17.3	39.6	60.0
17	P2 Pelvic Res	Gs	50.4	53.8	.1	4.3	1000.0

FACILITY: track
RUN #: 1603
SERIES #: 1

TEST DATE: 18 Mar 1996
TEST TIME: 14:30:43
BOARD: f

TITLE: VTV TEST #5

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P1 Left Knee Shear	mm	.2	40.3	-6.3	69.2	180.0
2	P1 Right Knee Shear	mm	.0	30.1	-.5	117.8	180.0
3	P2 Left Knee Shear	mm	.2	50.9	-1.9	80.0	180.0
4	P2 Right Knee Shear	mm	.2	51.4	-2.6	59.2	180.0
5	Acc #10 RR Compartment X	Gs	.4	-3.1	-28.4	47.3	60.0
6	Acc #10 RR Compartment Y	Gs	8.5	72.1	-16.6	39.4	60.0
7	Acc #8 Brake Pedal X	Gs	225.1	52.0	-179.8	36.0	60.0
8	Acc #8 Brake Pedal Y	Gs	203.5	42.4	-213.5	52.3	60.0
9	Acc #8 Brake Pedal Z	Gs	92.0	47.2	-114.6	41.4	60.0
10	Acc #7 Lt Shock Tower X	Gs	48.4	68.5	-161.7	31.4	60.0
11	Acc #7 Lt Shock Tower Y	Gs	68.4	44.5	-78.4	31.0	60.0
12	Acc #6 Rt Shock Tower X	Gs	3.1	120.1	-44.7	48.6	60.0
13	Acc #6 Rt Shock Tower Y	Gs	10.2	94.7	-28.2	31.9	60.0
14	Acc #3 Rt Engine X	Gs	35.7	68.9	-85.4	20.8	60.0
15	Acc #4 Lt Engine X	Gs	48.8	68.2	-111.9	37.3	60.0
16	Acc #2 LF Frame Rail X	Gs	417.7	129.7	-436.1	348.4	60.0

FACILITY: tape
RUN #: 9603
SERIES #: 1

TEST DATE: 19 Mar 1996
TEST TIME: 10:45:12
BOARD: g

TITLE: VTV TEST #5

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Acc #2 LF Frame Rail Y	Gs	259.1	76.4	-256.8	272.0	60.0
2	Acc #2 LF Frame Rail Z	Gs	218.6	79.1	-180.5	41.3	60.0
3	Acc #1 RF Frame Rail X	Gs	184.6	189.1	-193.5	197.9	60.0
4	Acc #1 RF Frame Rail Y	Gs	202.3	98.4	-67.1	27.1	60.0
5	Acc #1 RF Frame Rail Z	Gs	298.0	208.3	-327.2	118.0	60.0
6	Acc #5 Engine Bottom X	Gs	14.4	50.6	-44.7	26.0	60.0
7	Acc #5 Engine Bottom Y	Gs	22.3	24.7	-47.1	16.6	60.0
8	Acc #12 Toe Pan X	Gs	37.2	62.8	-69.2	34.4	60.0
9	Acc #12 Toe Pan Y	Gs	176.8	353.2	-164.4	343.8	60.0
10	Acc #12 Toe Pan Z	Gs	47.1	70.4	-59.1	37.3	60.0
11	Acc #11 Rear Comp. C/L X	Gs	2.5	120.4	-30.6	52.8	60.0
12	Acc #11 Rear Comp. C/L Y	Gs	7.1	71.3	-21.7	40.0	60.0

FACILITY: tape
RUN #: 603
SERIES #: 1

TEST DATE: 19 Mar 1996
TEST TIME: 10:51:05
BOARD: h

TITLE: VTV TEST #5

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	MDB Left Rail X	Gs	3.9	133.9	-38.0	36.2	60.0
2	MDB Left Rail Y	Gs	9.2	48.1	-5.6	62.6	60.0
3	MDB Right Rail X	Gs	3.4	138.0	-30.0	35.6	60.0
4	MDB Right Rail Y	Gs	8.8	95.4	-7.1	48.5	60.0
5	MDB C.G. X	Gs	1.3	301.6	-29.8	36.6	60.0
6	MDB C.G. Y	Gs	8.6	45.1	-4.2	51.2	60.0
7	MDB C.G. Z	Gs	33.4	50.6	-16.5	133.1	60.0
8	MDB Load Cell TR	Nwt	36927.0	26.5	-20749.6	88.8	60.0
9	MDB Load Cell BR	Nwt	37184.5	88.4	-37729.2	39.2	60.0
10	MDB Load Cell TL	Nwt	186954.5	38.2	-16575.3	69.4	60.0
11	MDB Load Cell BL	Nwt	92380.4	59.2	-4743.5	199.2	60.0
12	MDB Load Cell CL	Nwt	142826.4	35.3	-696.7	-4.1	60.0

TEST NO. Y57-5-1603

VEHICLE DATA

SAE FILTER CHANNEL CLASS

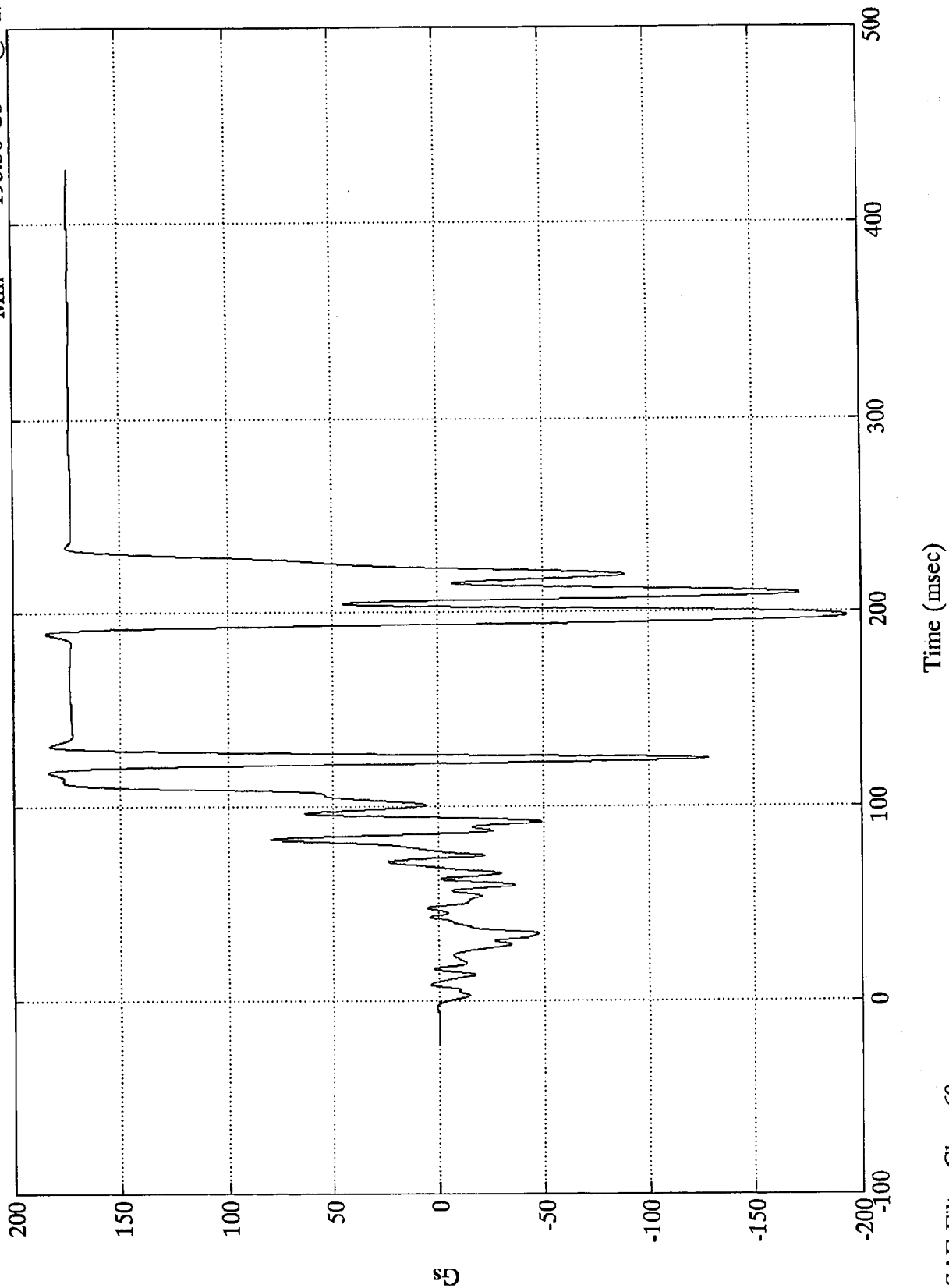
60

VEHICLE ONE DATA

VTV TEST #5

Max = 184.64 Gs @ 189.12 msec
Min = -193.50 Gs @ 197.88 msec

Acc #1 RF Frame Rail X

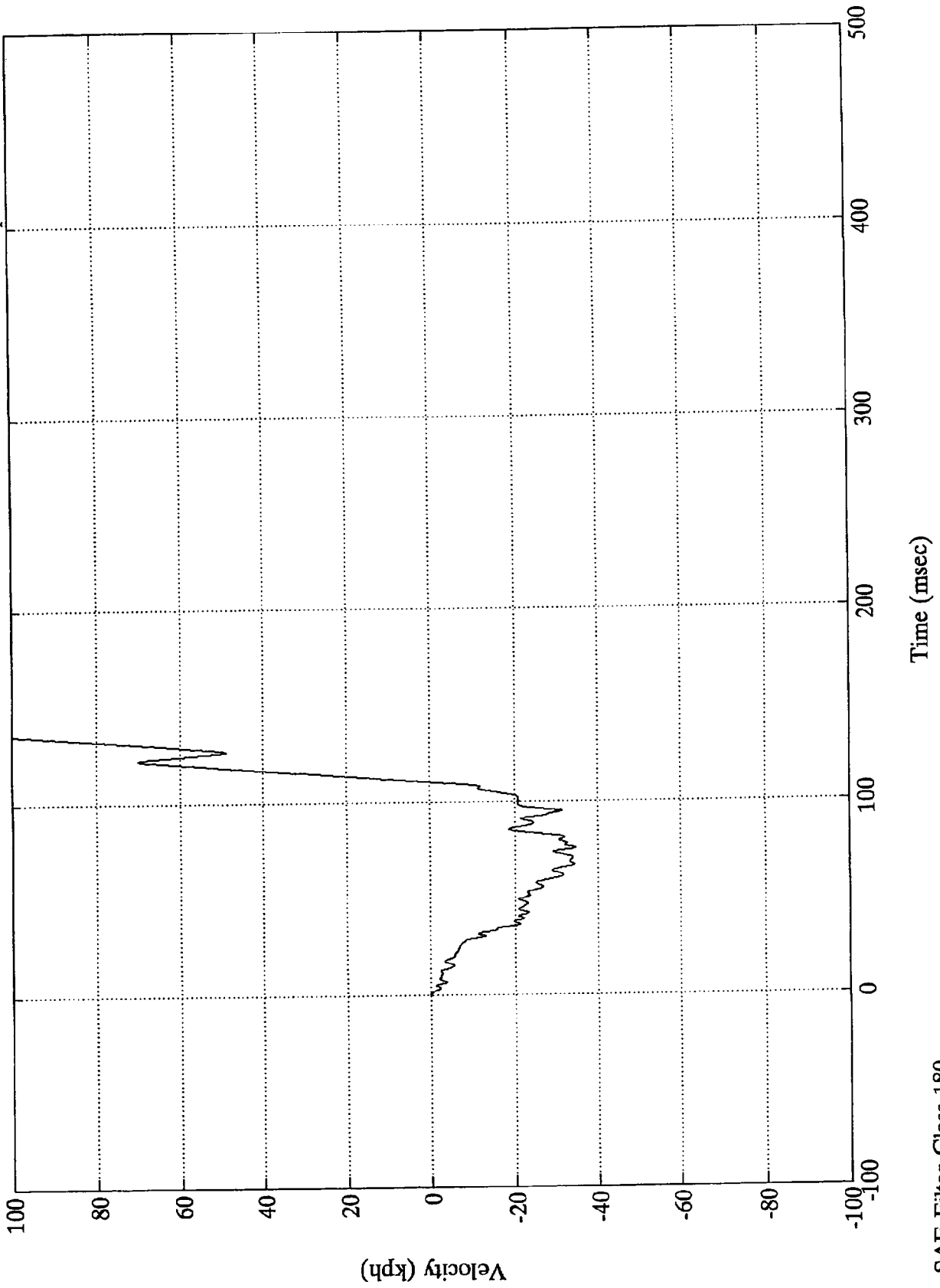


SAE Filter Class 60

VTV TEST #5

Acc #1 RF Frame Rail X

Max = 1585.52kph @ 427.20 msec
Min = -34.71kph @ 76.08 msec

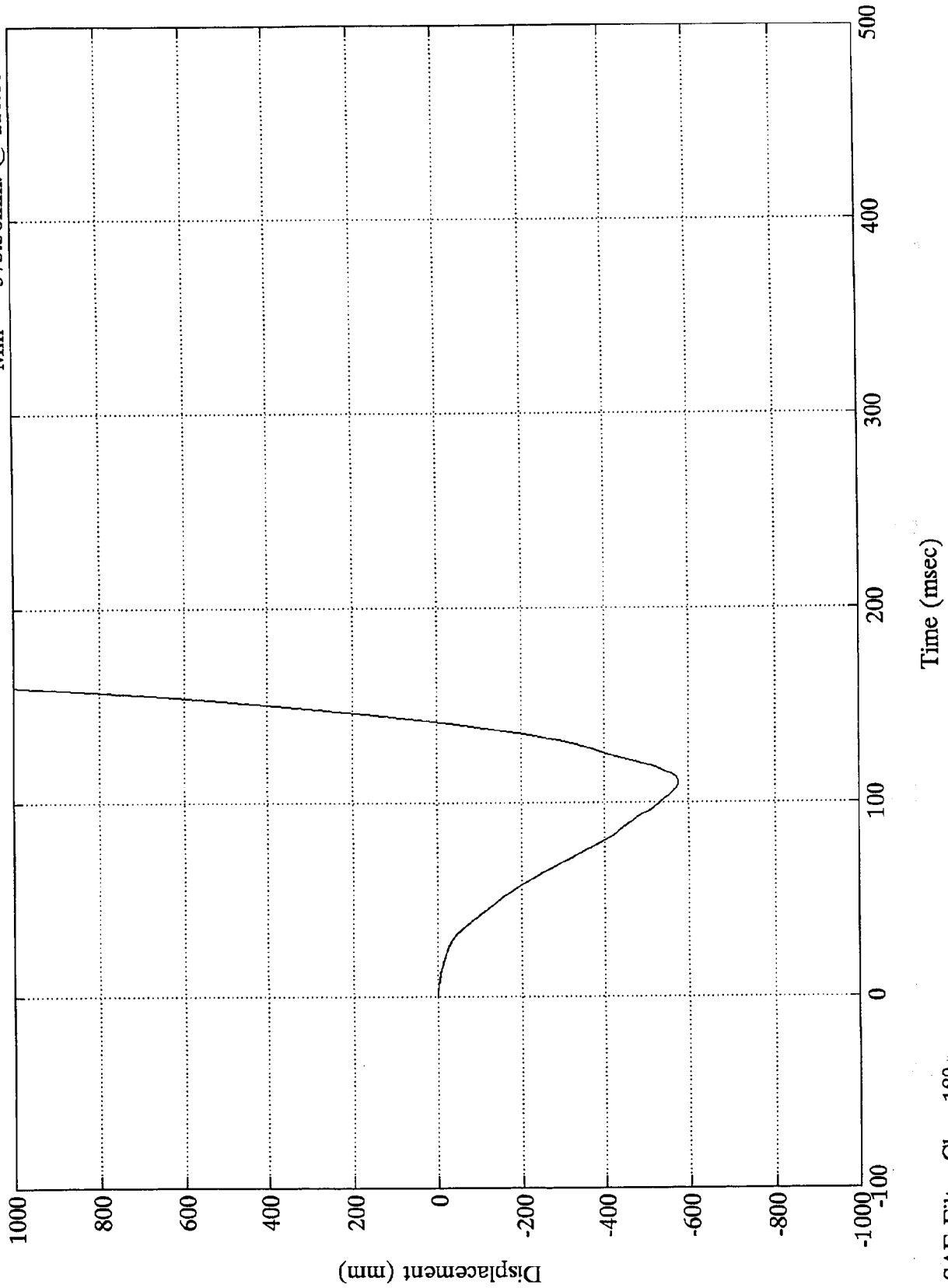


SAE Filter Class 180

VTV TEST #5

Max = 61976.00mm. @ 427.20 msec
Min = -575.56mm. @ 110.88 msec

Acc #1 RF Frame Rail X

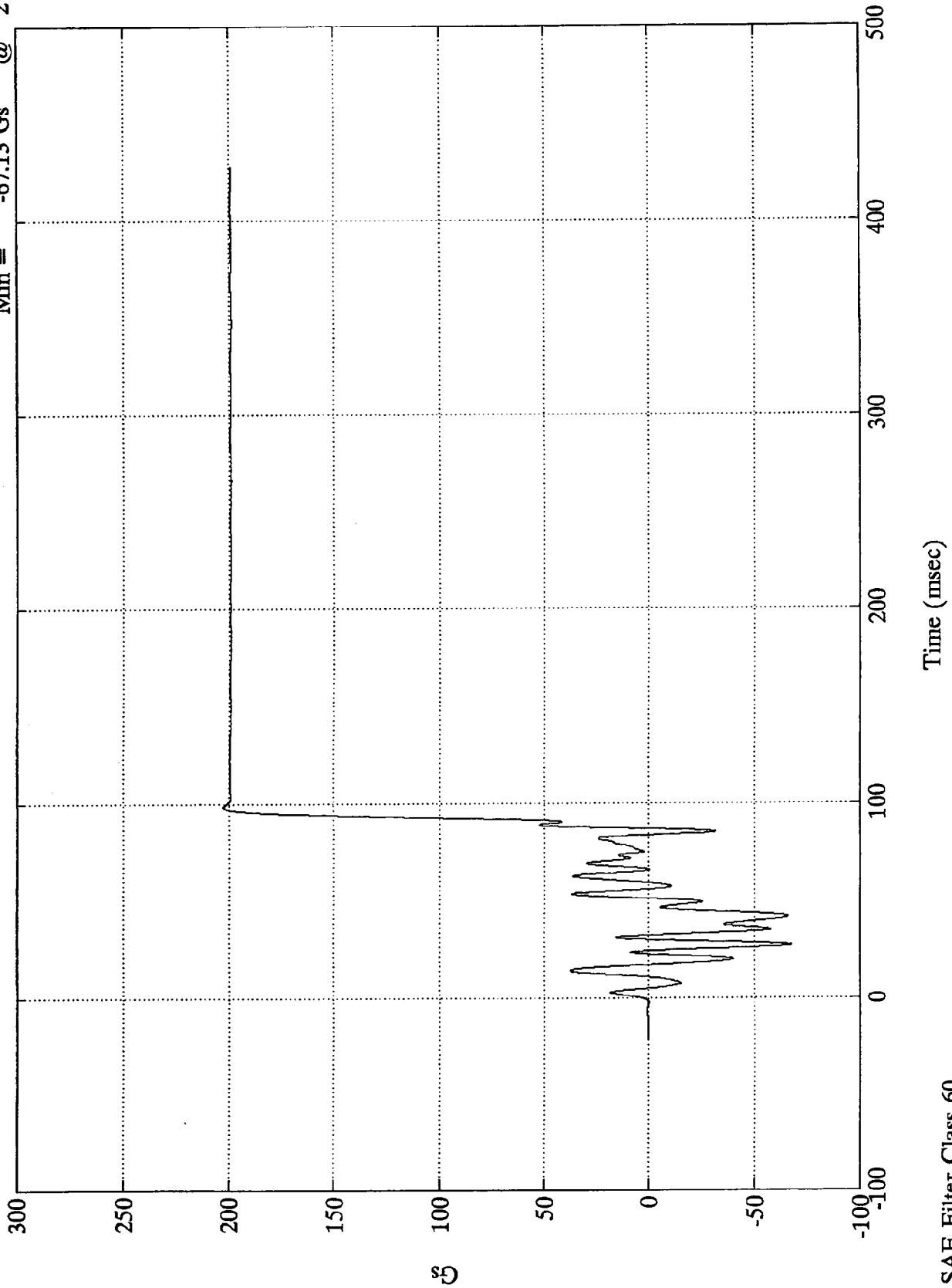


SAE Filter Class 180

VTV TEST #5

Acc #1 RF Frame Rail Y

Max = 202.33 Gs @ 98.40 msec
Min = -67.13 Gs @ 27.11 msec

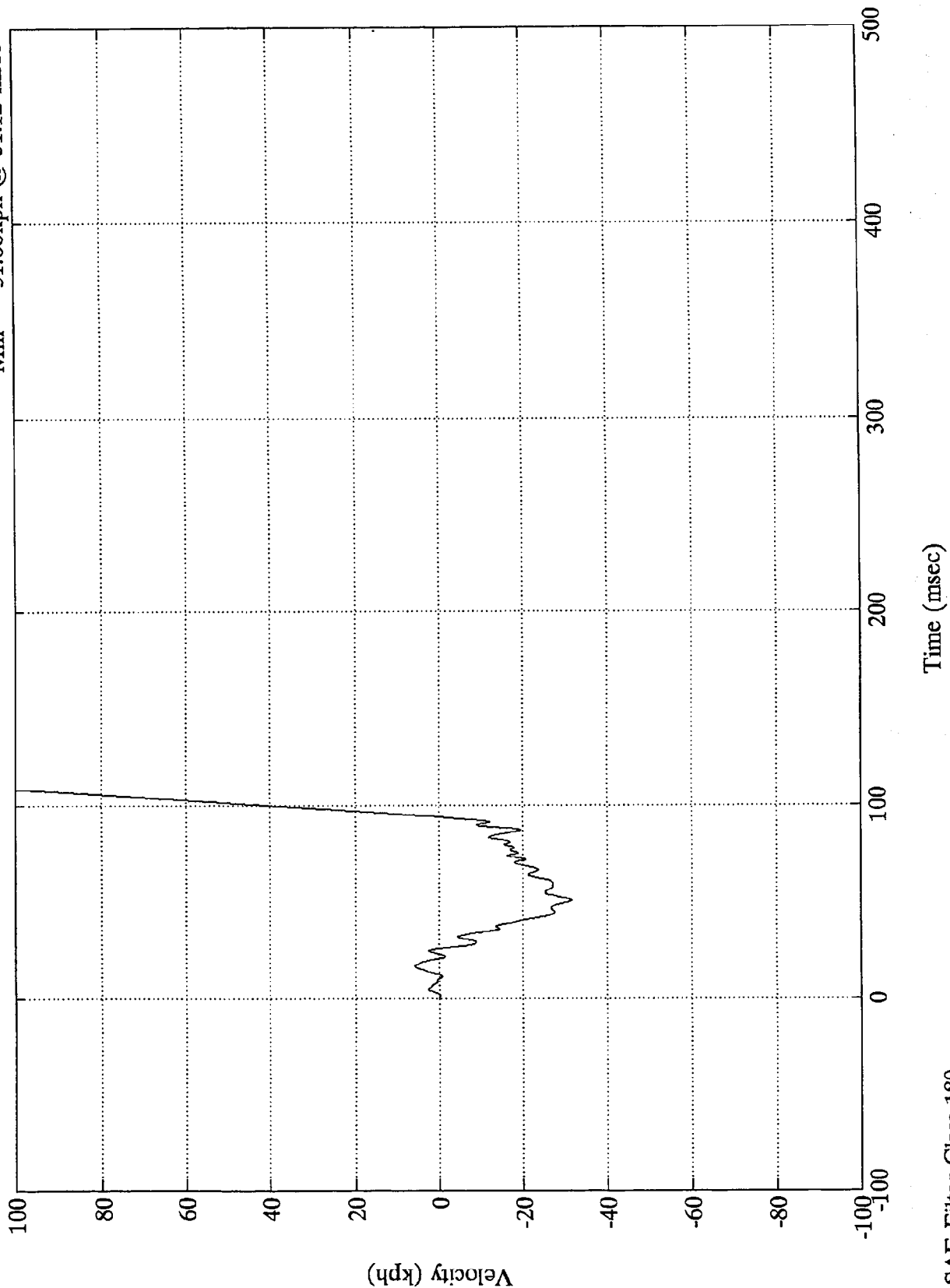


SAE Filter Class 60

VTV TEST #5

Max = 2339.33kph @ 427.20 msec
Min = -31.66kph @ 51.12 msec

Acc #1 RF Frame Rail Y

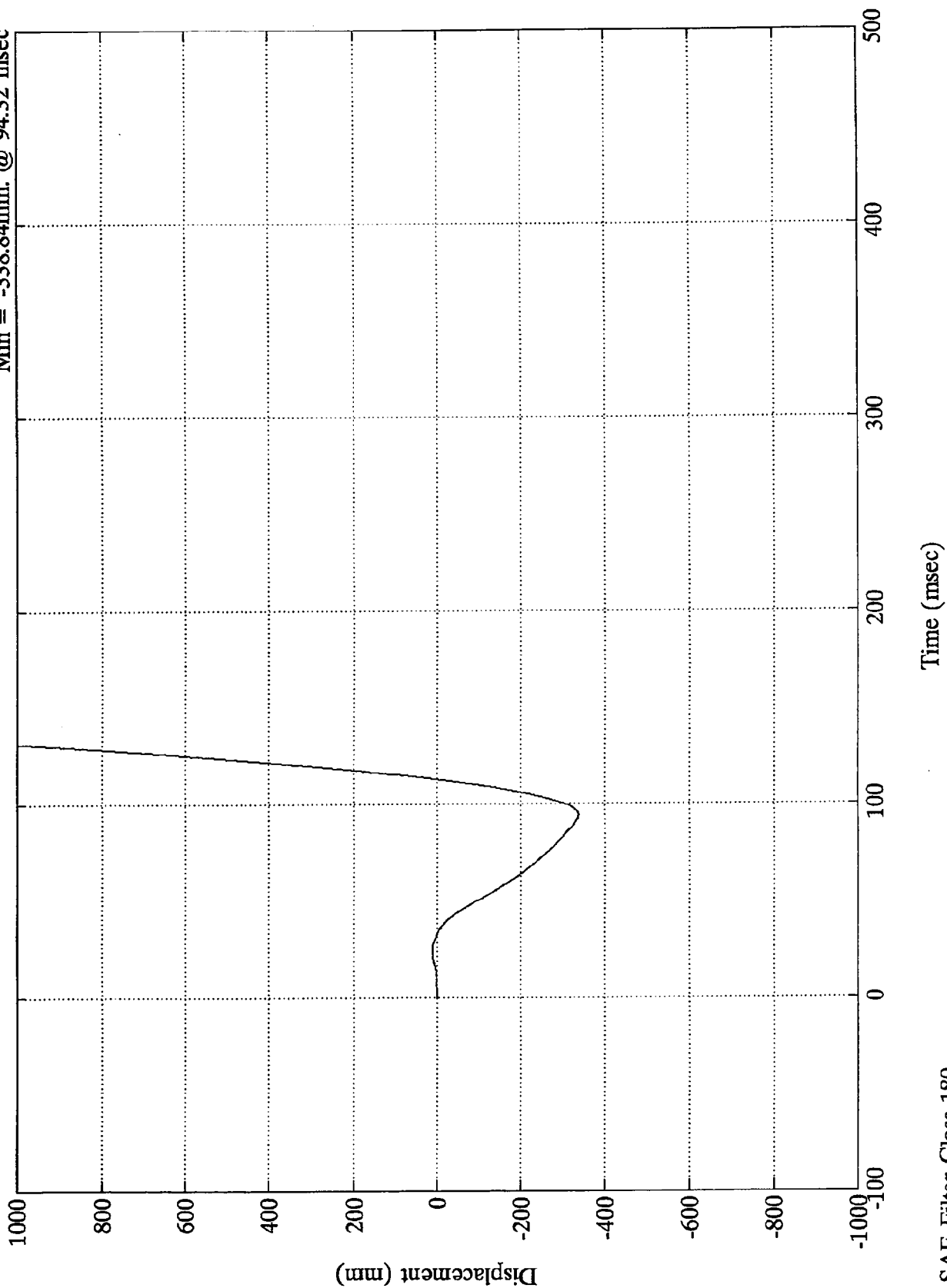


SAE Filter Class 180

VTV TEST #5

Max = 107823.00mm. @ 427.20 msec
Min = -338.84mm. @ 94.32 msec

Acc #1 RF Frame Rail Y

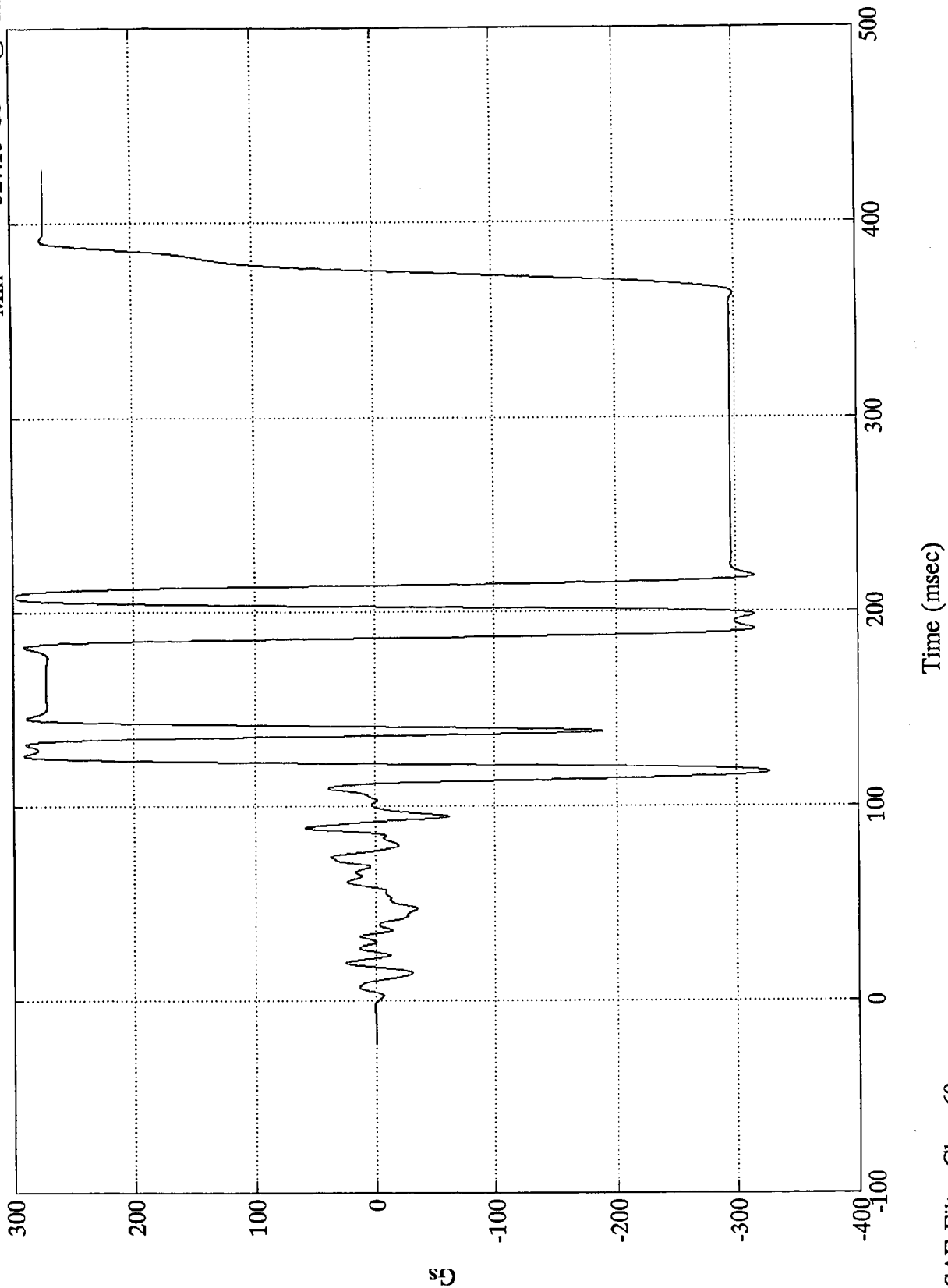


SAE Filter Class 180

VTV TEST #5

Max = 297.95 Gs @ 208.32 msec
Min = -327.15 Gs @ 117.96 msec

Acc #1 RF Frame Rail Z

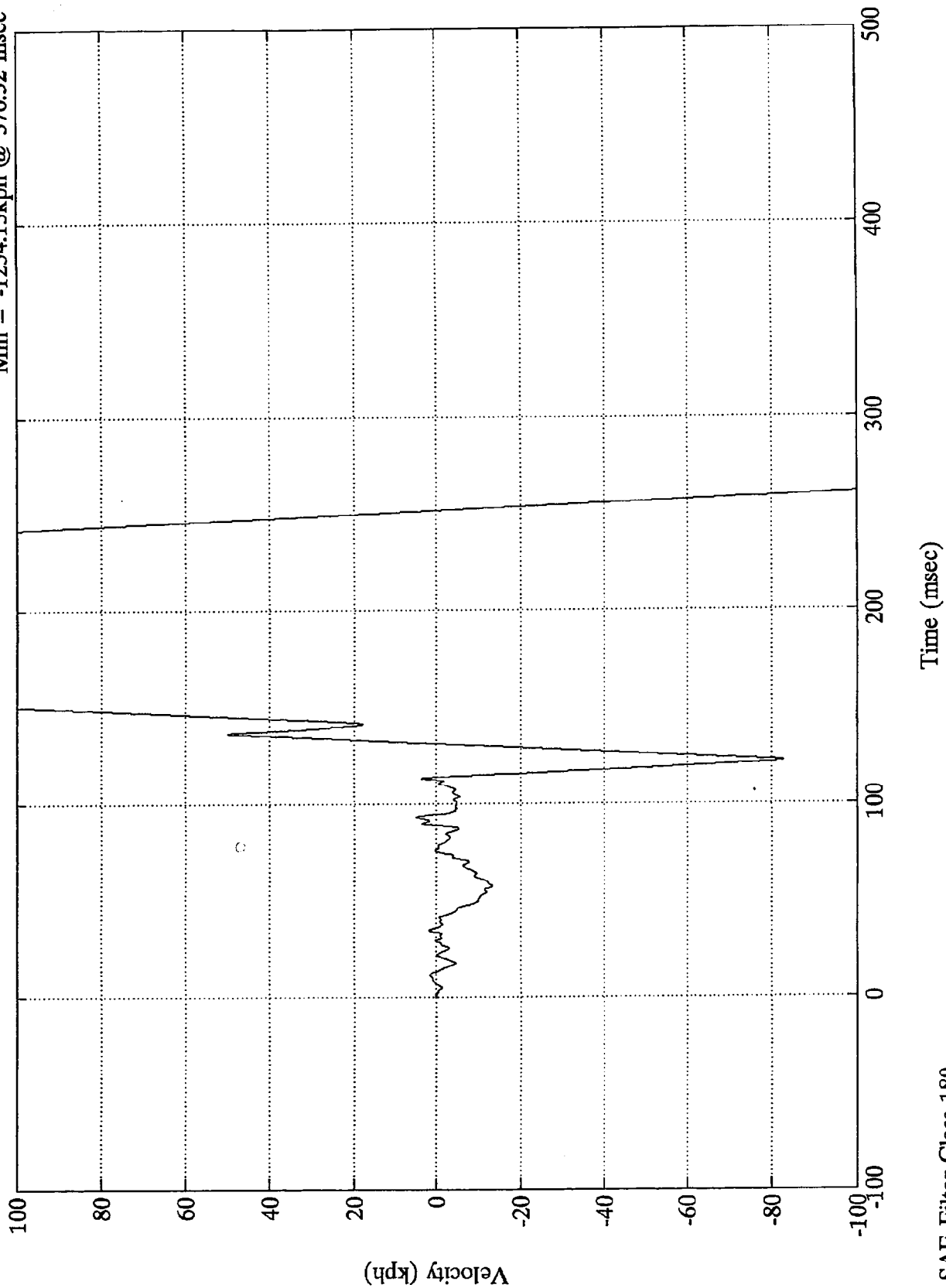


SAE Filter Class 60

VTV TEST #5

Max = 449.65kph @ 186.96 msec
Min = -1254.15kph @ 376.32 msec

Acc #1 RF Frame Rail Z



SAE Filter Class 180

VTV TEST #5

Acc #1 RF Frame Rail Z

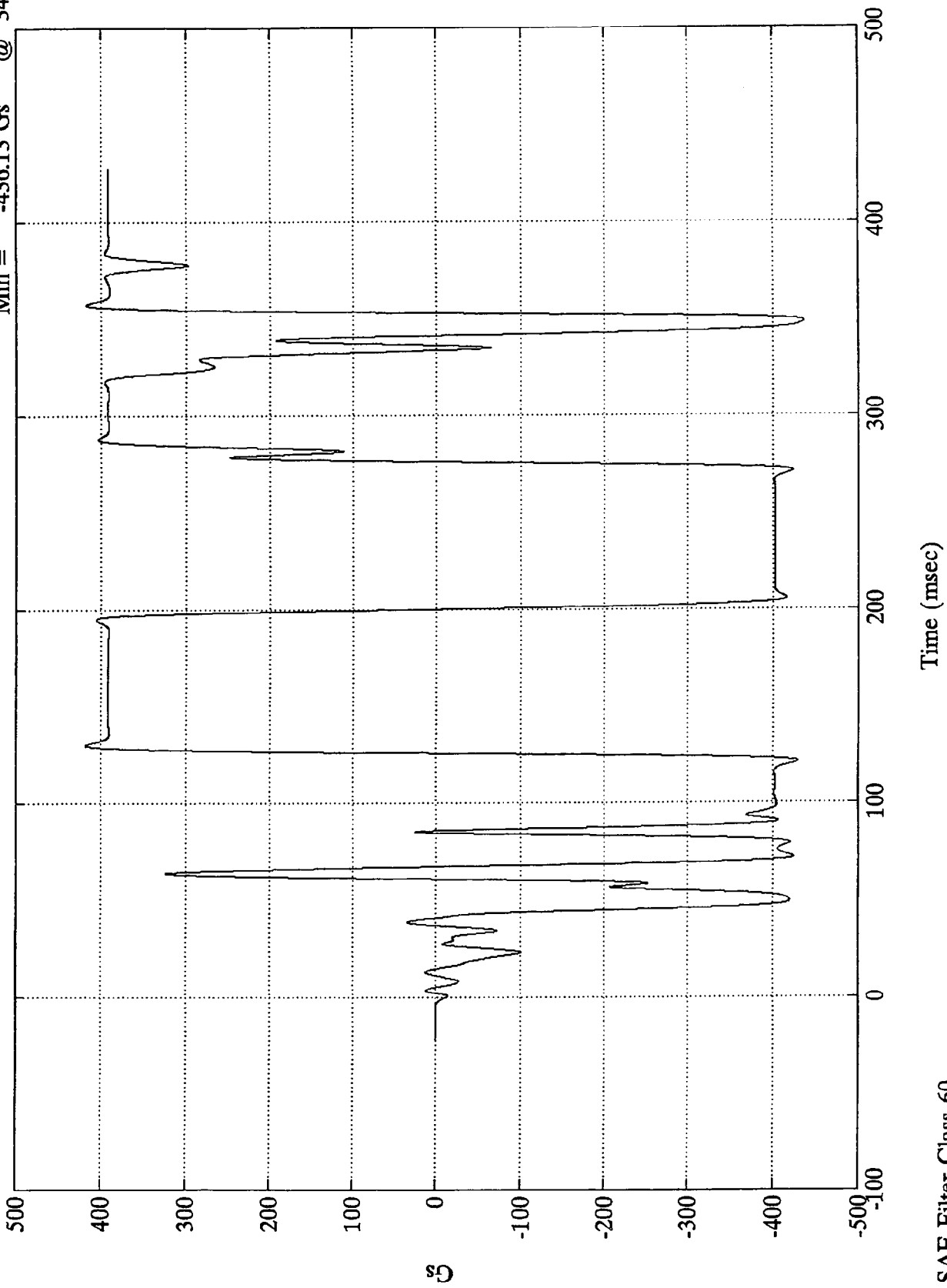
Max = 7485.38mm. @ 252.96 msec
Min = -29946.60mm. @ 427.20 msec



VTV TEST #5

Acc #2 LF Frame Rail X

Max = 417.72 Gs @ 129.72 msec
Min = -436.13 Gs @ 348.36 msec

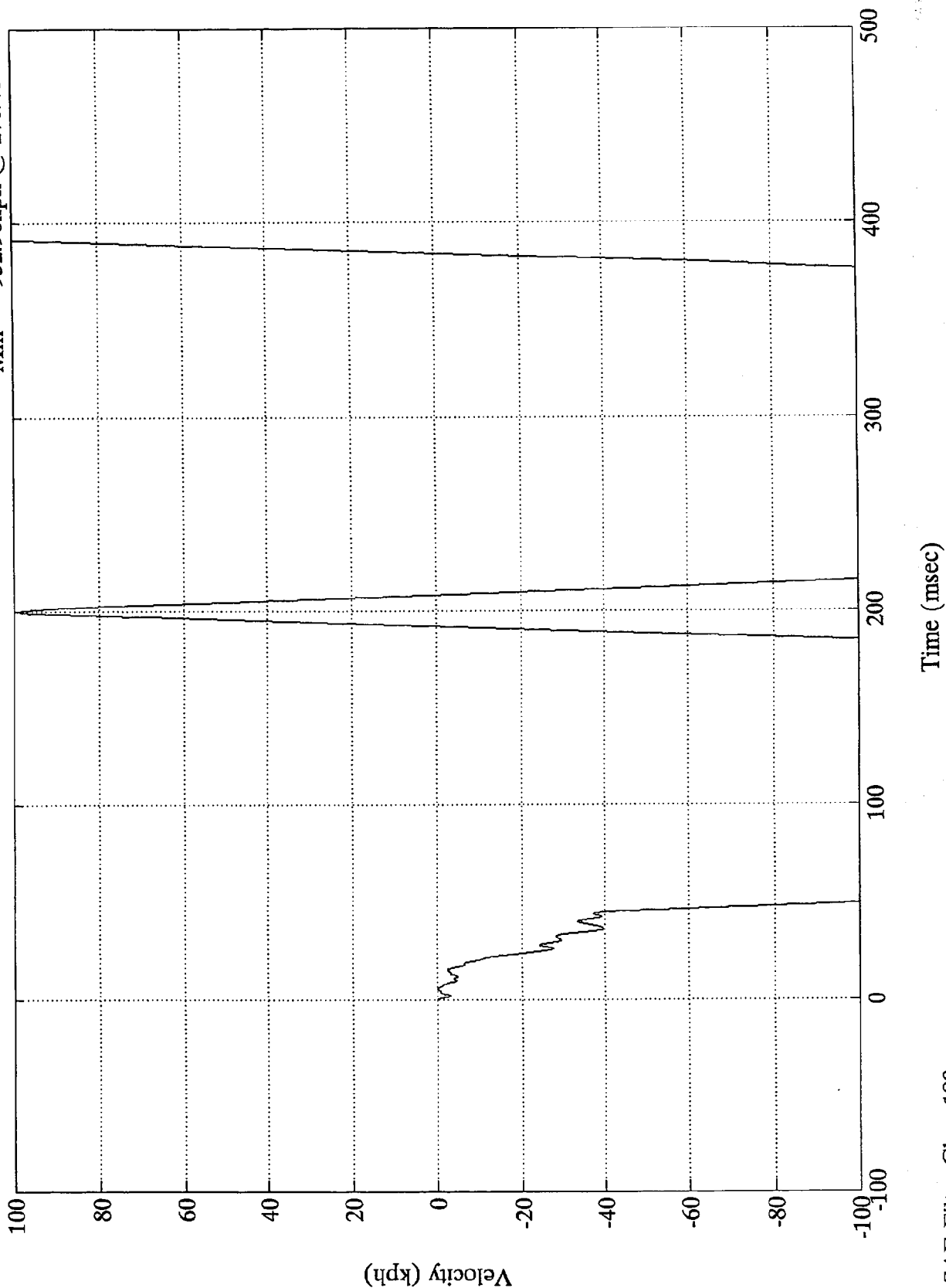


SAE Filter Class 60

VTV TEST #5

Max = 596.68kph @ 427.20 msec
Min = -952.96kph @ 276.48 msec

Acc #2 LF Frame Rail X

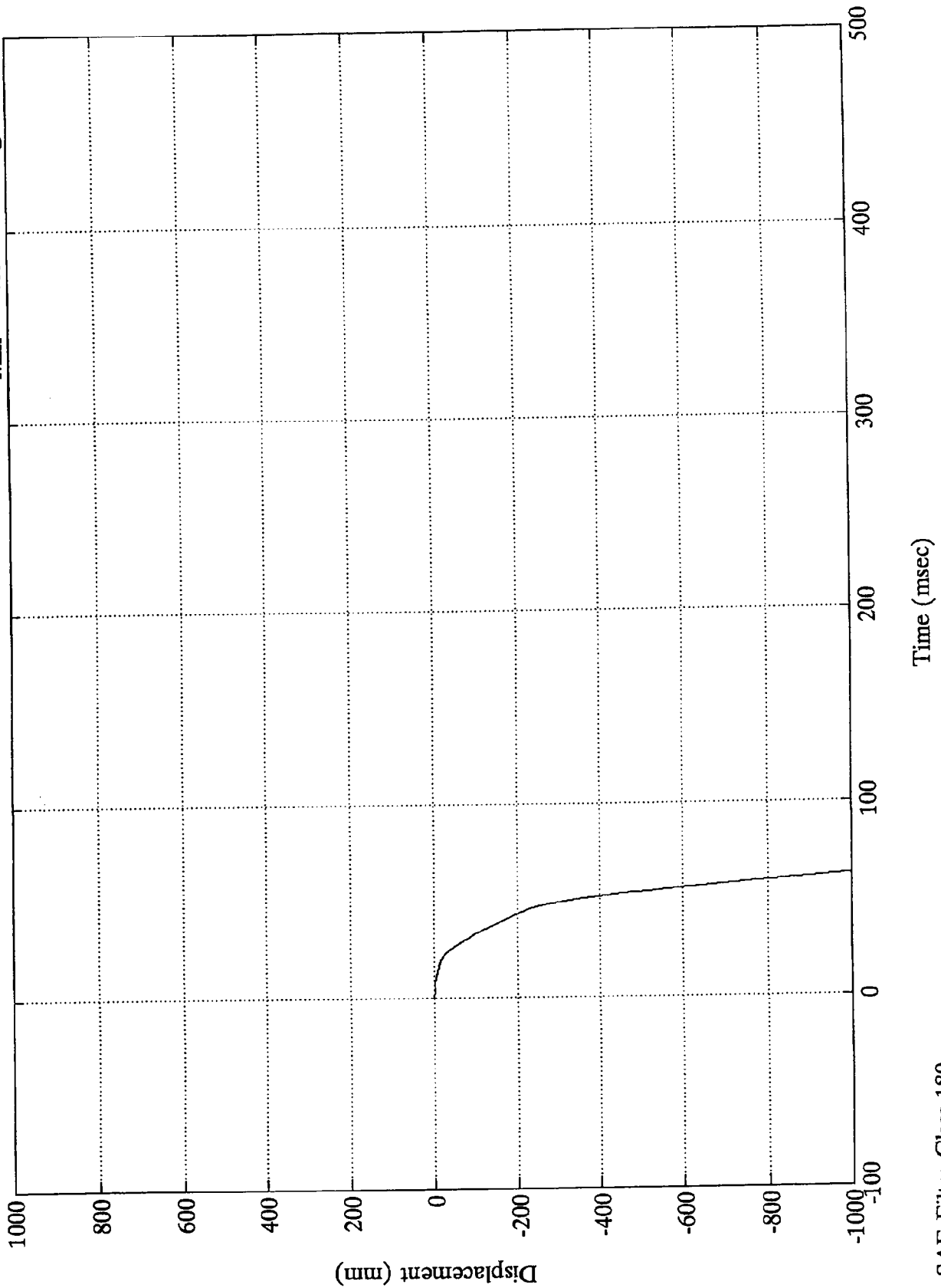


SAE Filter Class 180

VTV TEST #5

Acc #2 LF Frame Rail X

Max = 0.00mm. @ -0.00 msec
Min = -40309.80mm. @ 385.20 msec

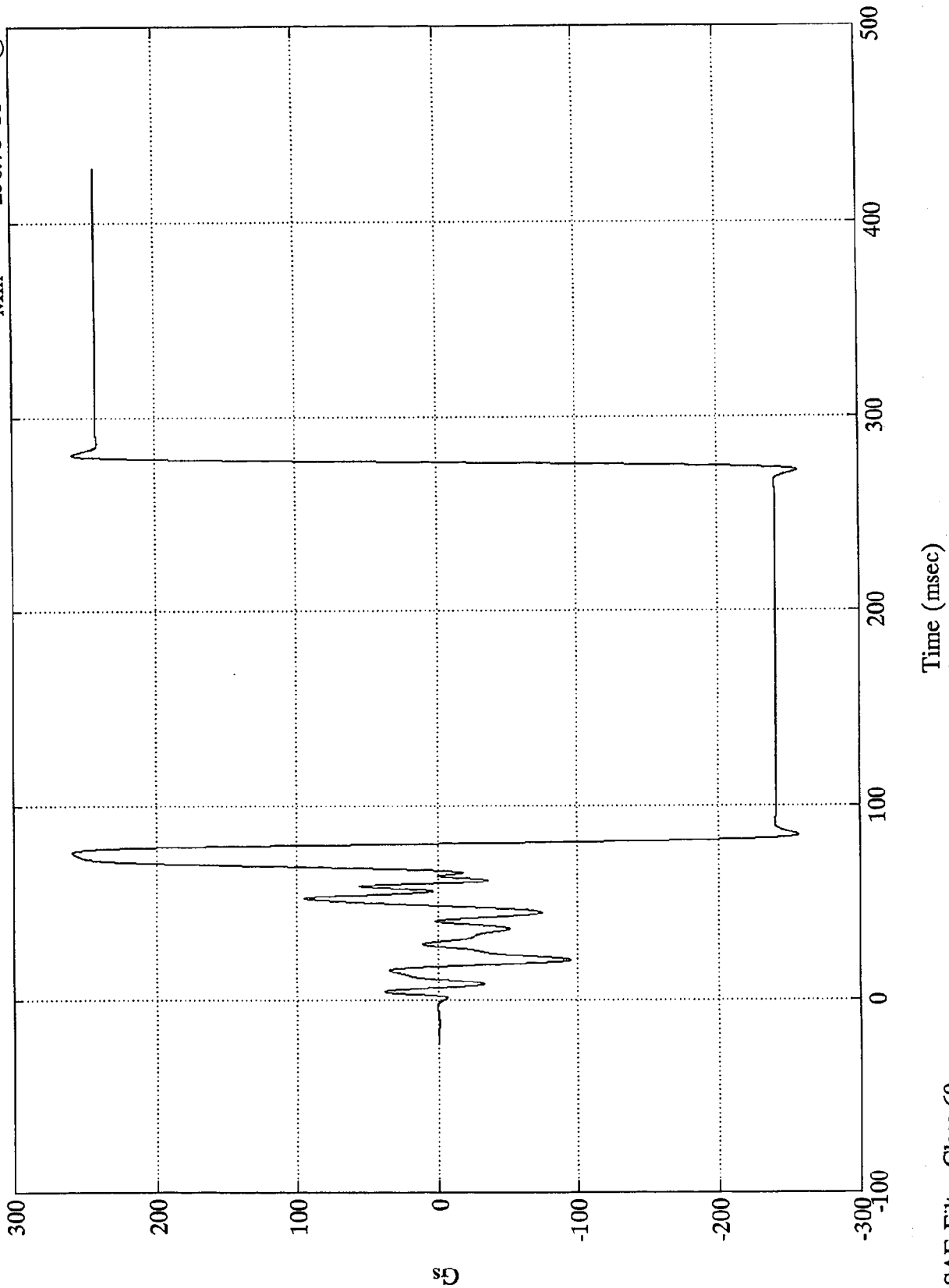


SAE Filter Class 180

VTV TEST #5

Max = 259.12 Gs @ 76.44 msec
Min = -256.76 Gs @ 272.04 msec

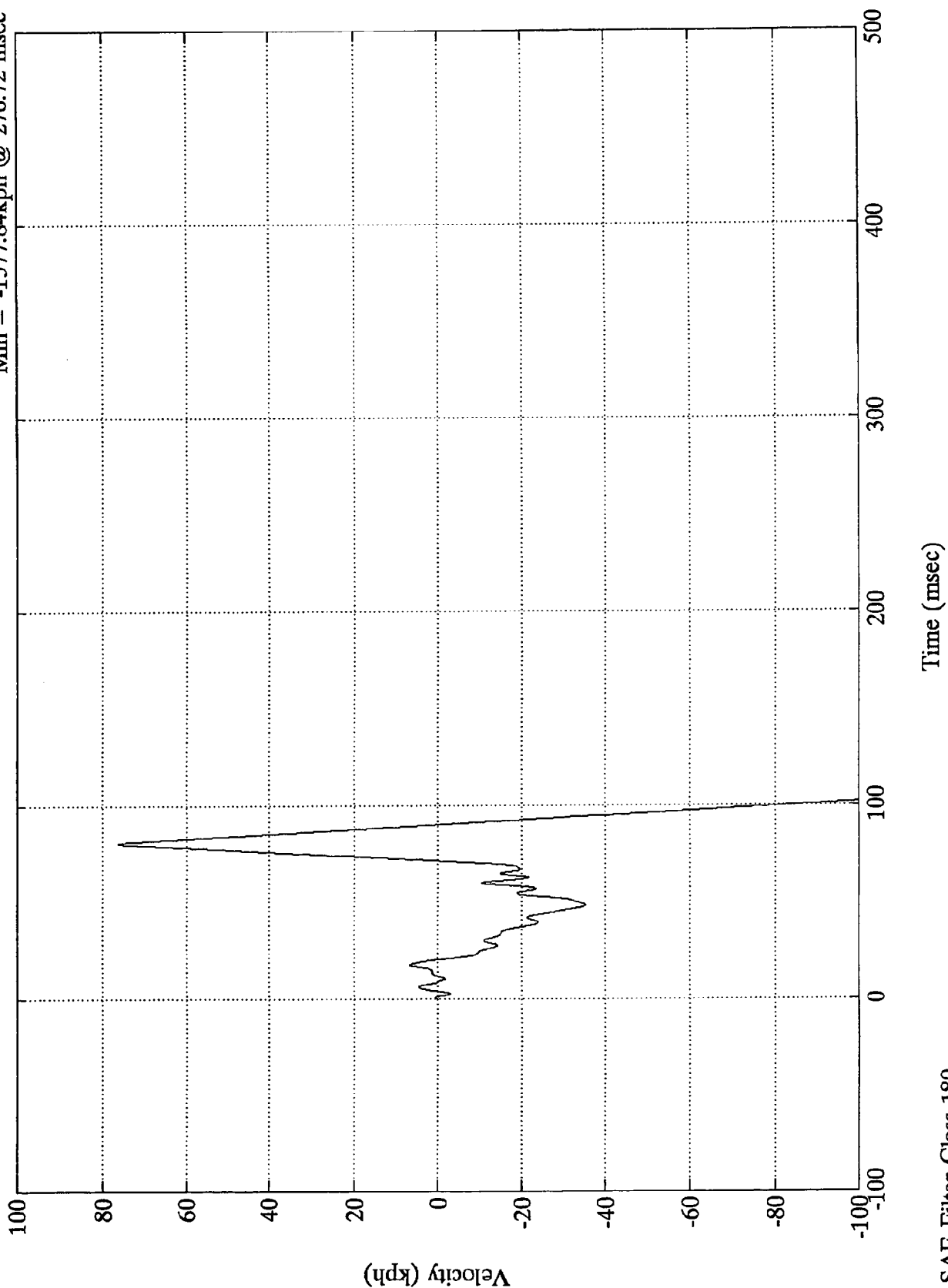
Acc #2 LF Frame Rail Y



SAE Filter Class 60

VTV TEST #5

Acc #2 LF Frame Rail Y
Max = 76.30kph @ 80.88 msec
Min = -1577.84kph @ 276.72 msec

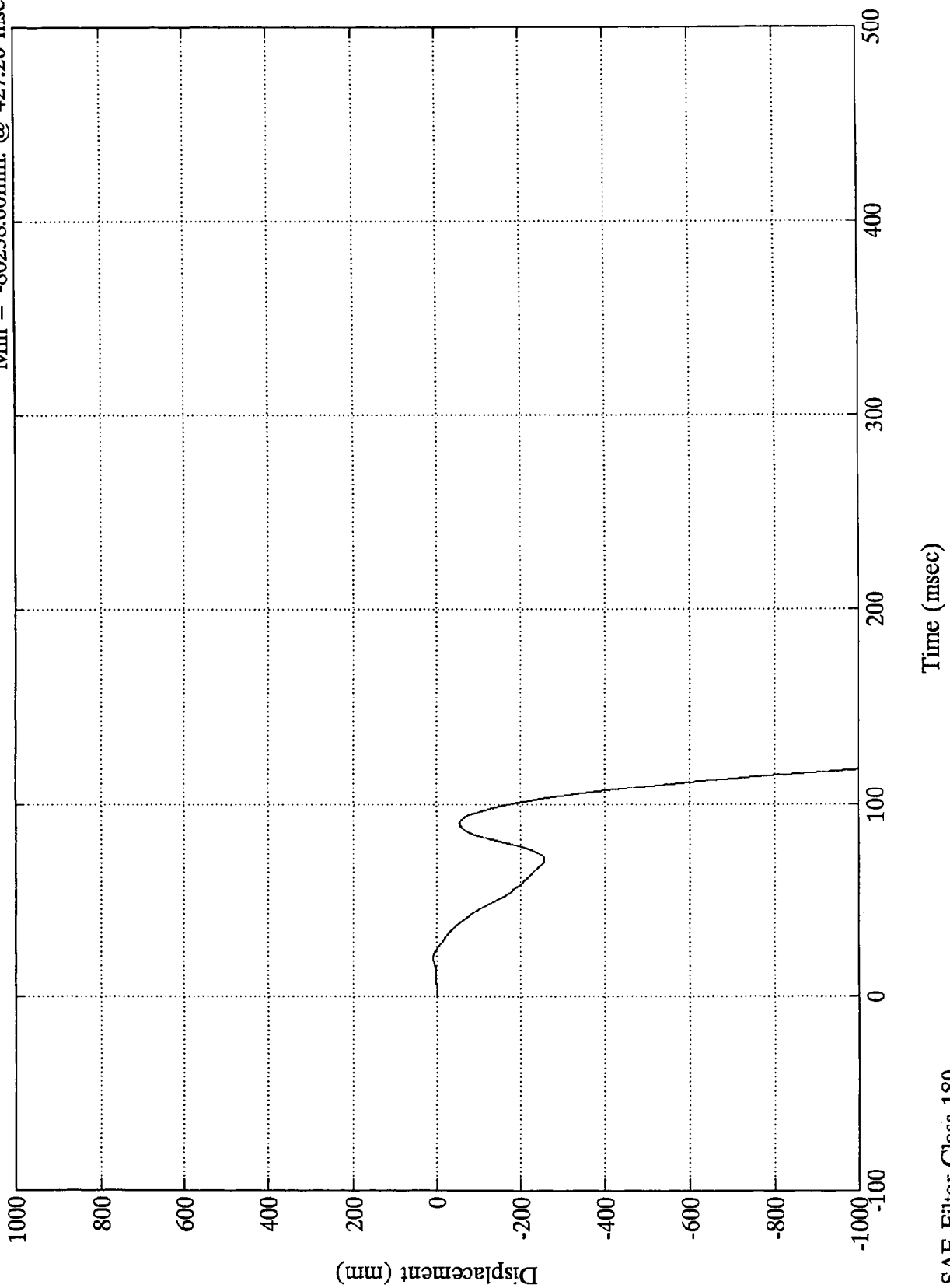


SAE Filter Class 180

VTV TEST #5

Acc #2 LF Frame Rail Y

Max = 9.23mm. @ 20.40 msec
Min = -80238.60mm. @ 427.20 msec

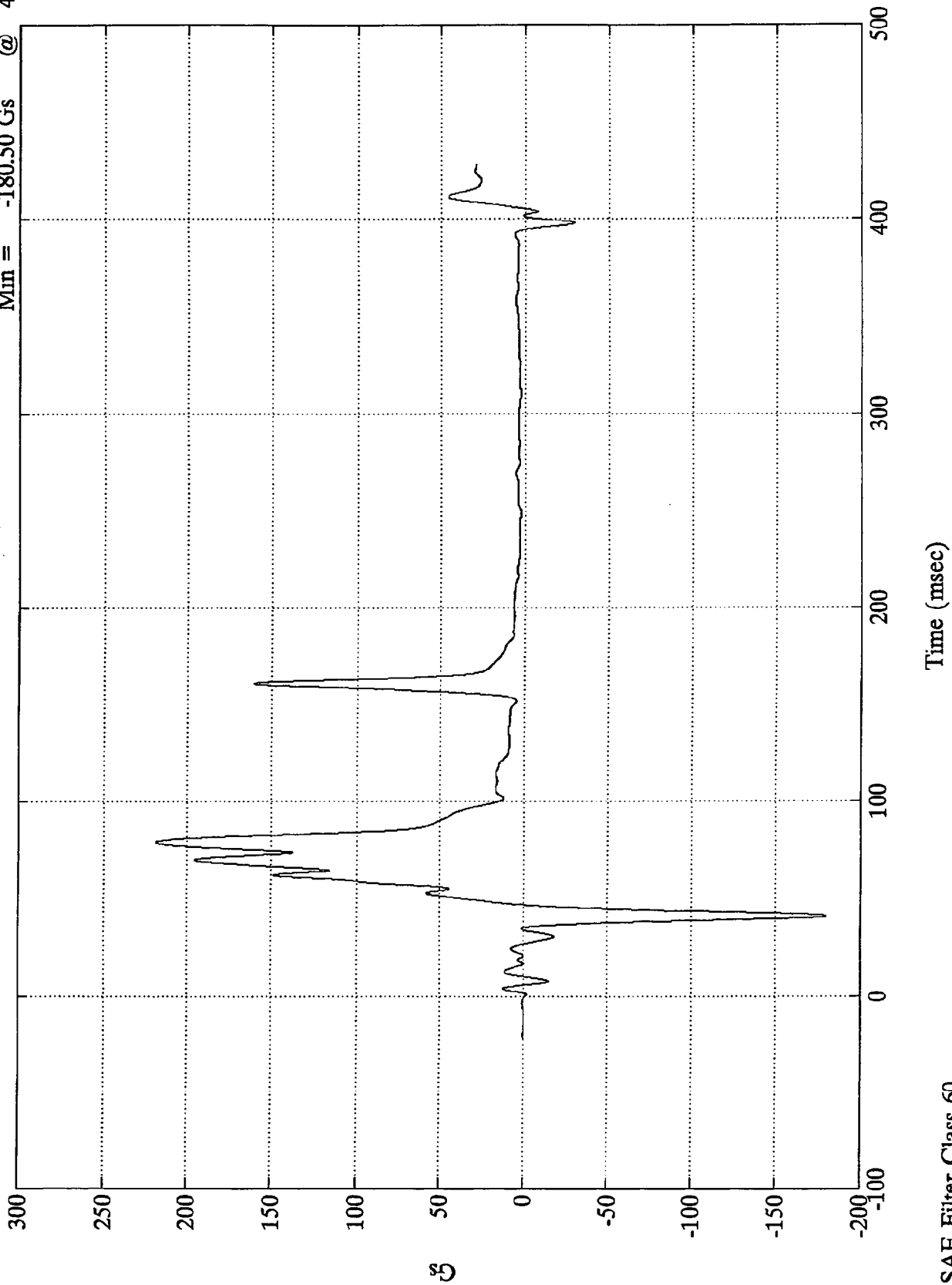


SAE Filter Class 180

VTV TEST #5

Acc #2 LF Frame Rail Z

Max = 218.58 Gs @ 79.08 msec
Min = -180.50 Gs @ 41.28 msec

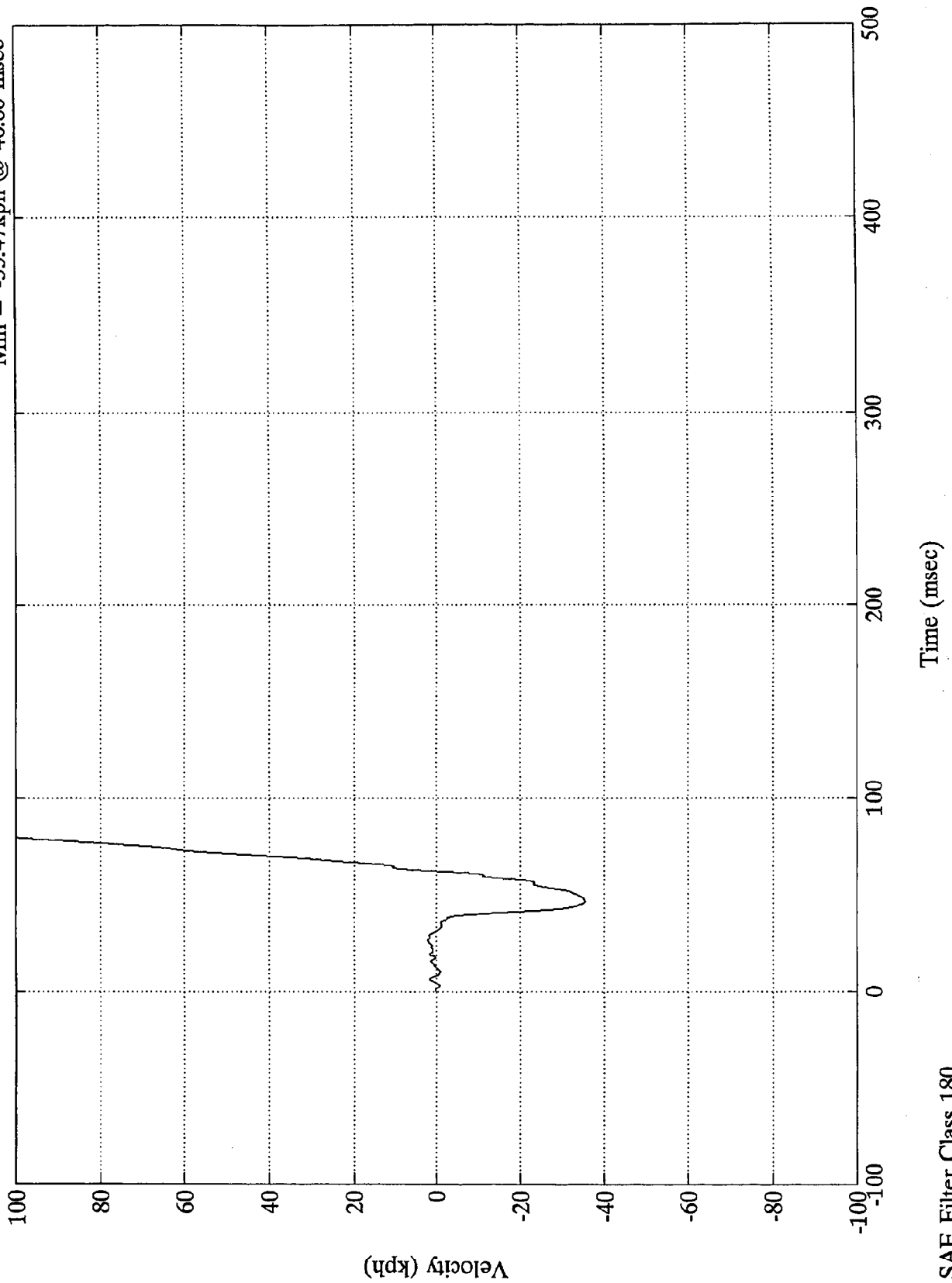


SAE Filter Class 60

VTV TEST #5

Acc #2 LF Frame Rail Z

Max = 269.92kph @ 427.20 msec
Min = -35.47kph @ 46.80 msec

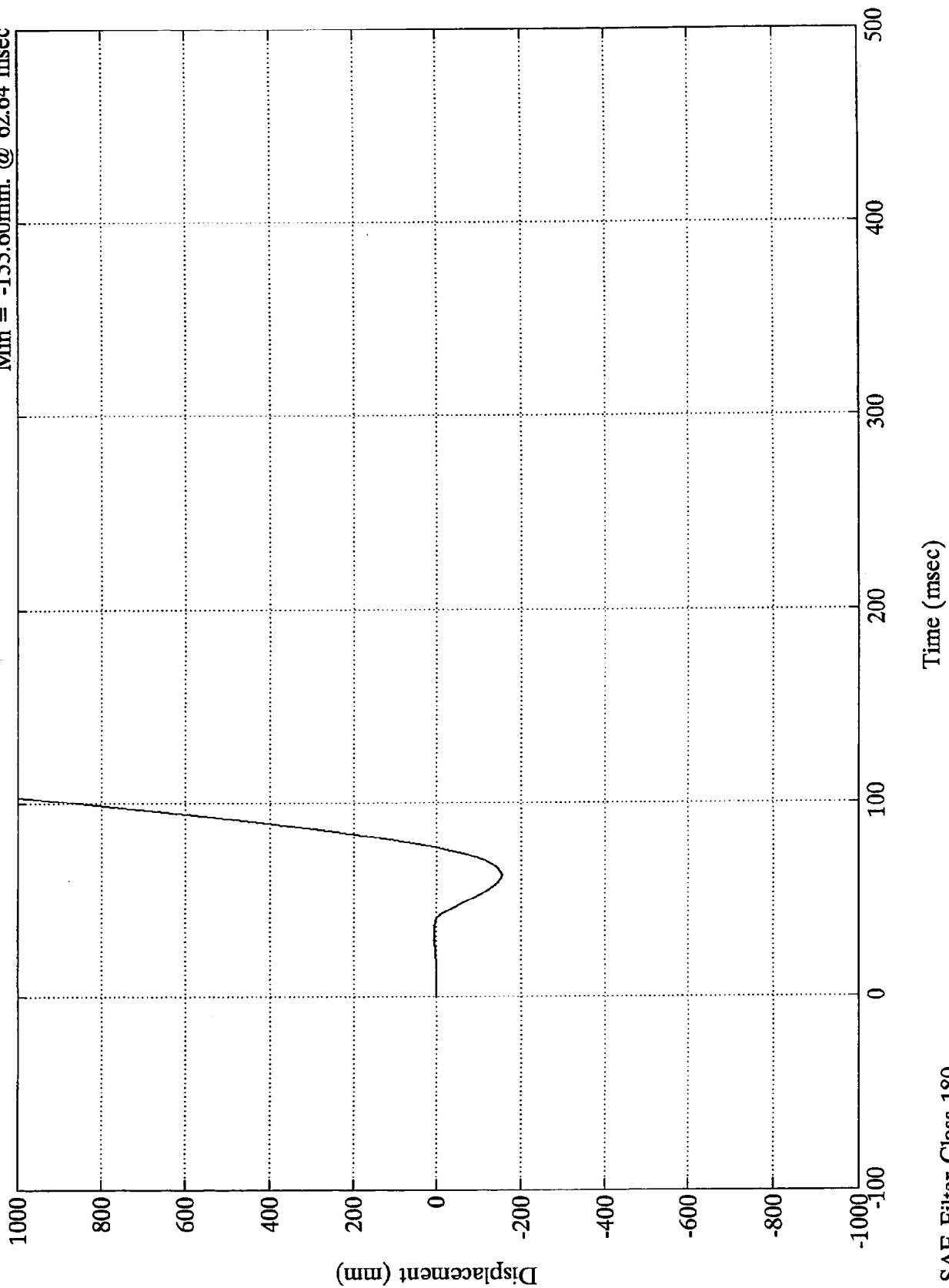


SAE Filter Class 180

VTV TEST #5

Acc #2 LF Frame Rail Z

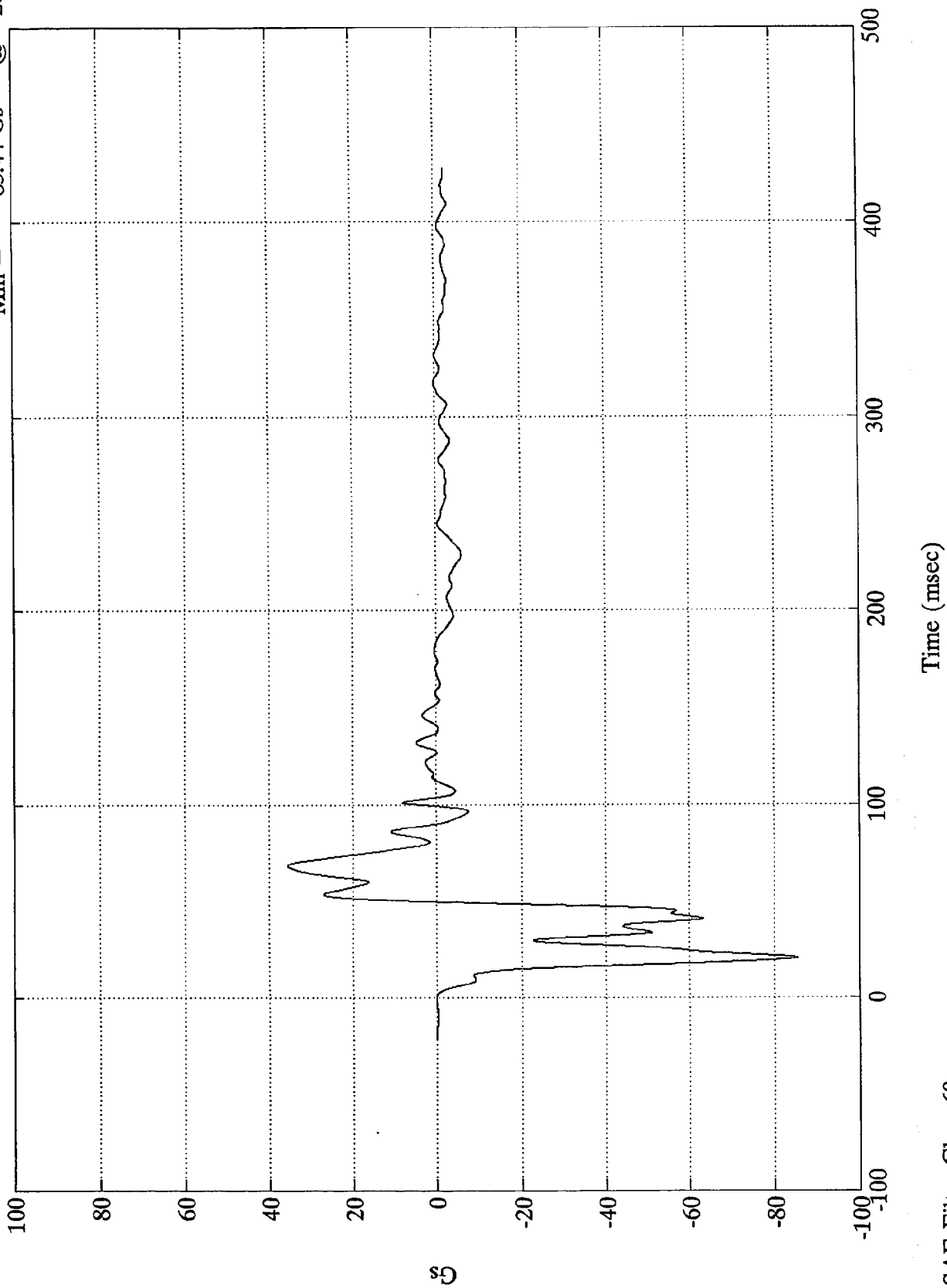
Max = 21178.52mm. @ 427.20 msec
Min = -155.60mm. @ 62.64 msec



SAE Filter Class 180

VTV TEST #5

Acc #3 Rt Engine X Max = 35.70 Gs @ 68.87 msec
 Min = -85.44 Gs @ 20.76 msec

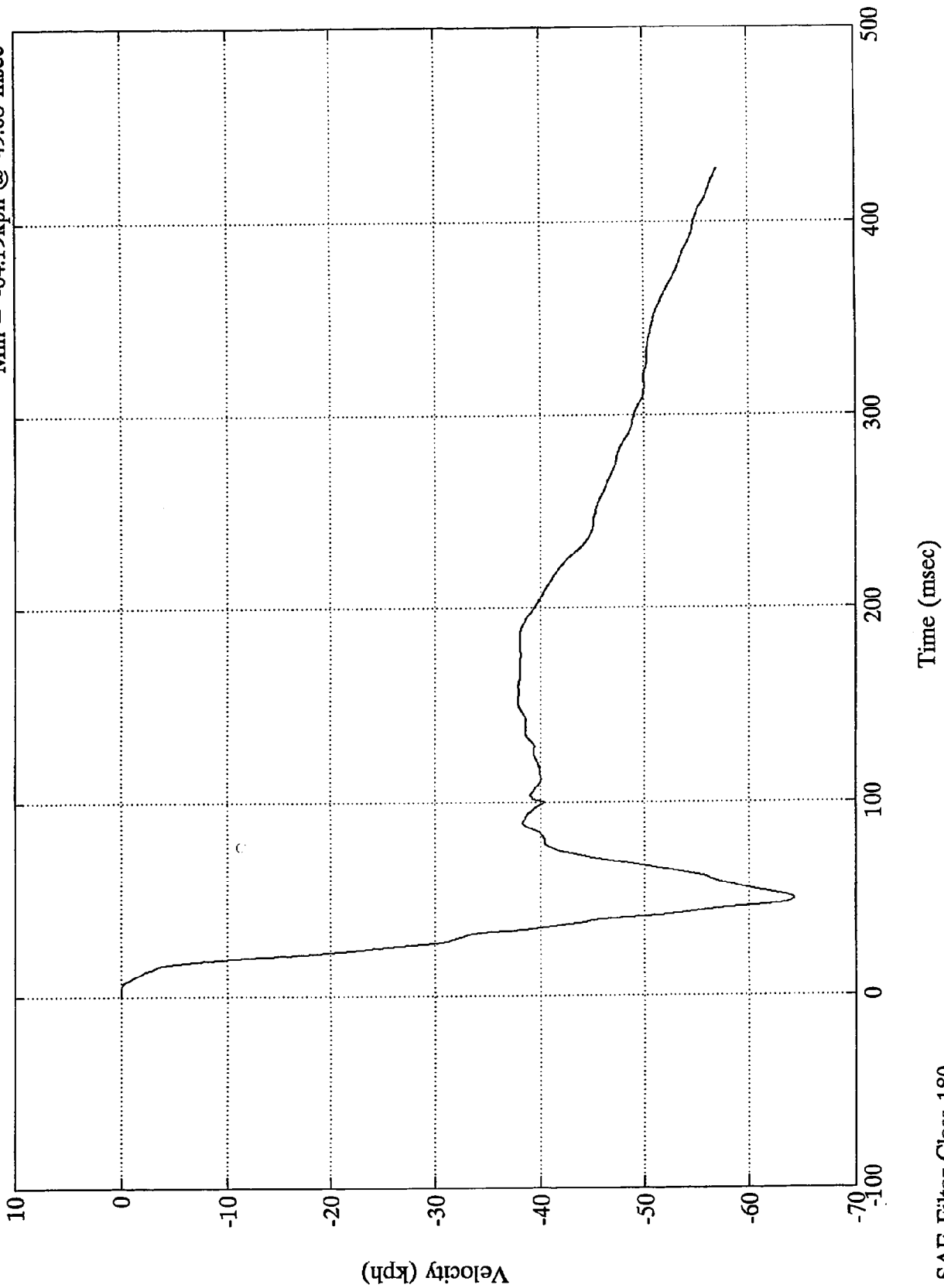


SAE Filter Class 60

VTV TEST #5

Max = 0.00kph @ 0.96 msec
Min = -64.19kph @ 49.68 msec

Acc #3 Rt Engine X



SAE Filter Class 180

VTV TEST #5

Acc #3 Rt Engine X

Max = 0.00mm. @ 1.44 msec
Min = -5179.06mm. @ 427.20 msec

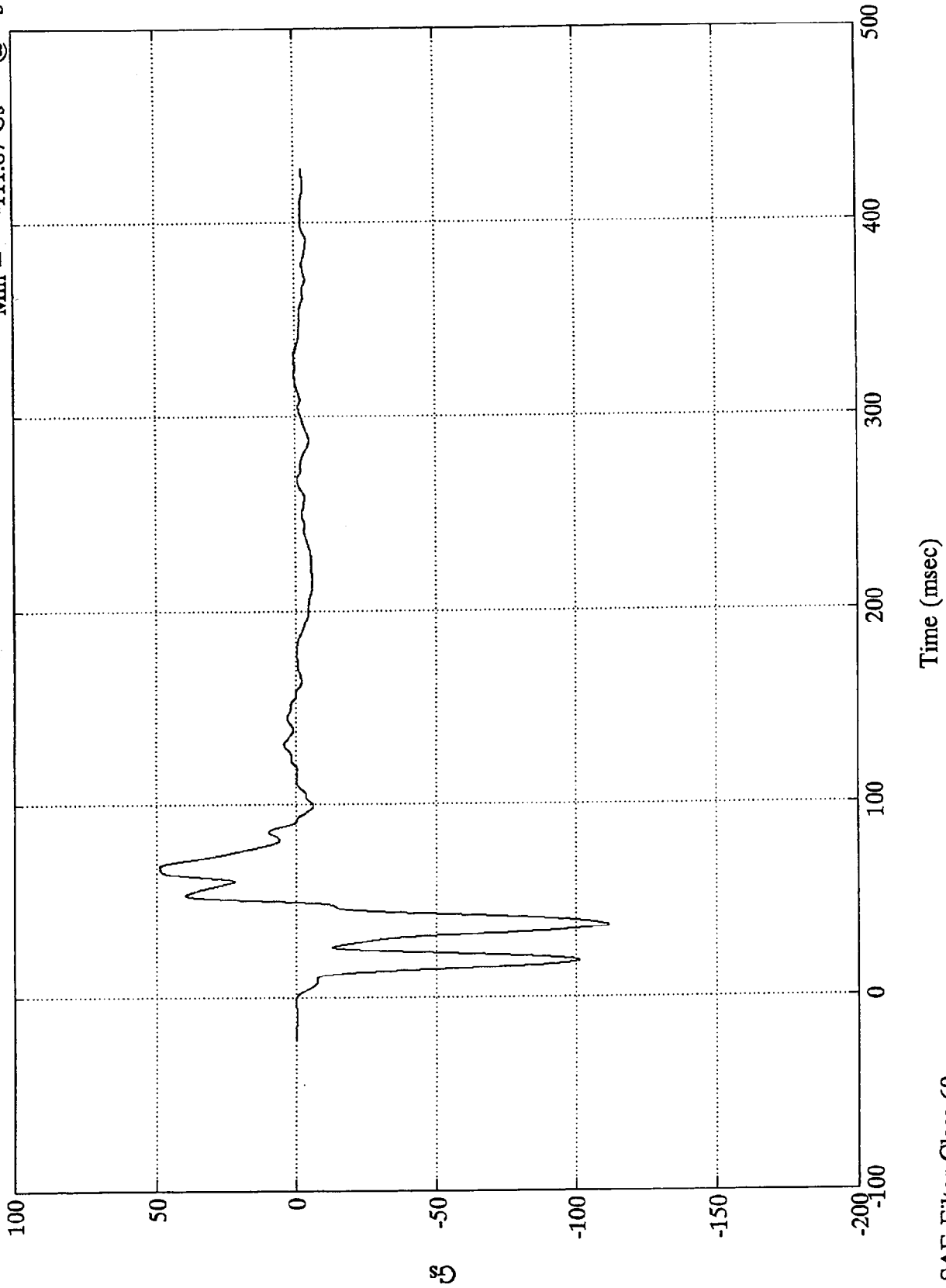


SAE Filter Class 180

VTV TEST #5

Acc #4 Lt Engine X

Max = 48.84 Gs @ 68.16 msec
Min = -111.87 Gs @ 37.31 msec

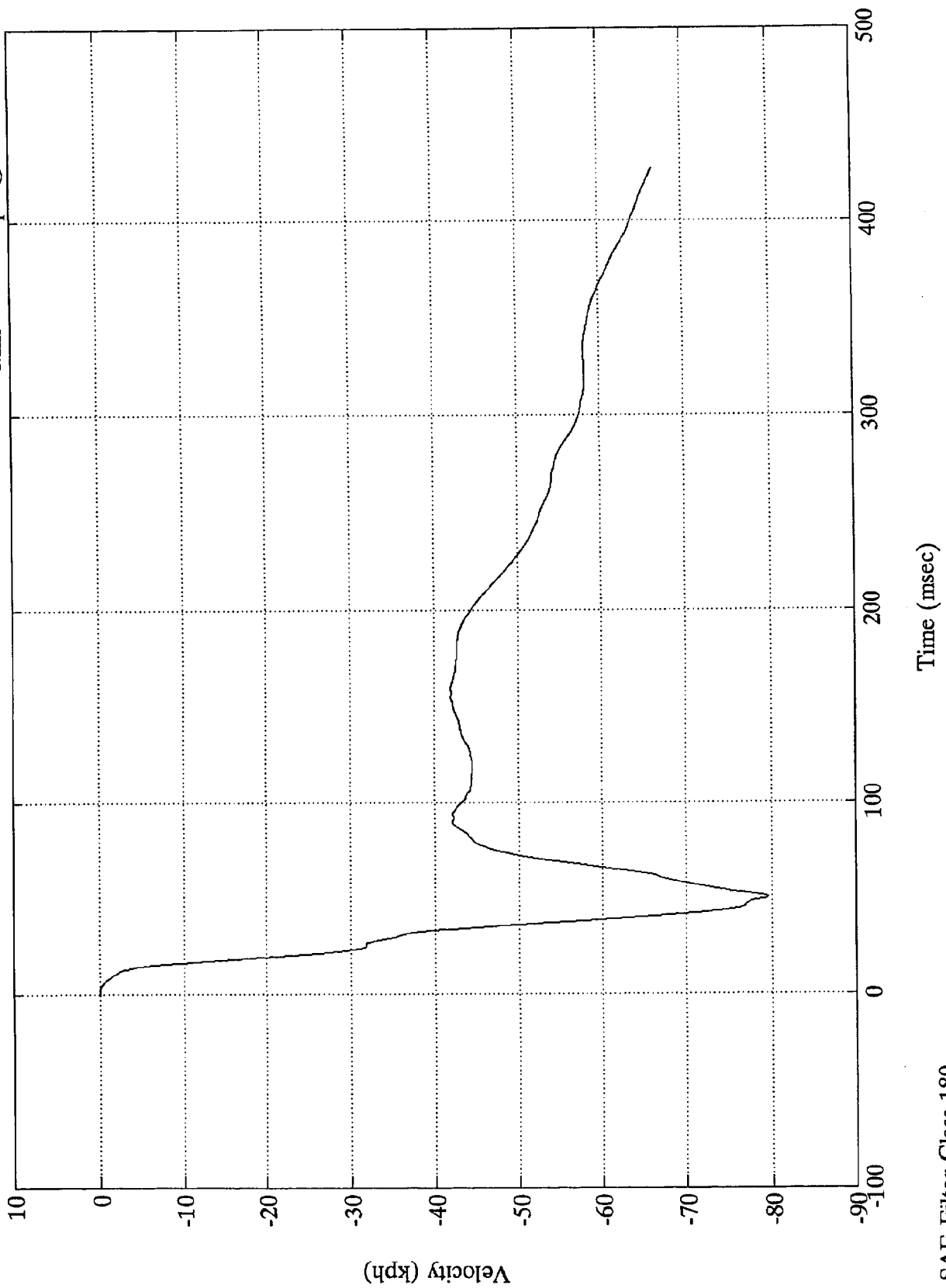


SAE Filter Class 60

VTV TEST #5

Acc #4 Lt Engine X

Max = 0.00kph @ 0.72 msec
Min = -79.56kph @ 49.92 msec

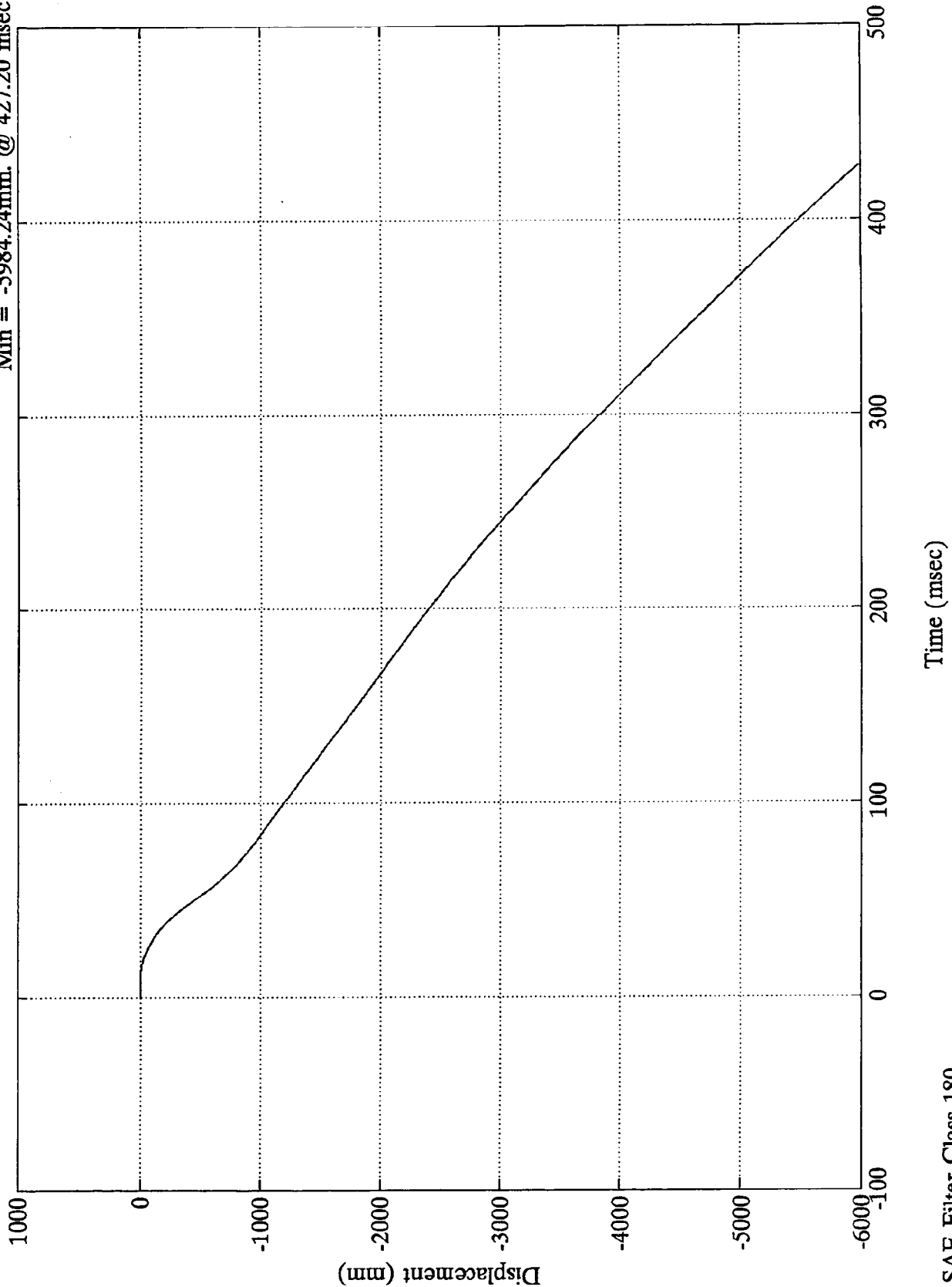


SAE Filter Class 180

VTV TEST #5

Acc #4 Lt Engine X

Max = 0.00mm. @ 0.96 msec
Min = -5984.24mm. @ 427.20 msec



SAE Filter Class 180

VTV TEST #5

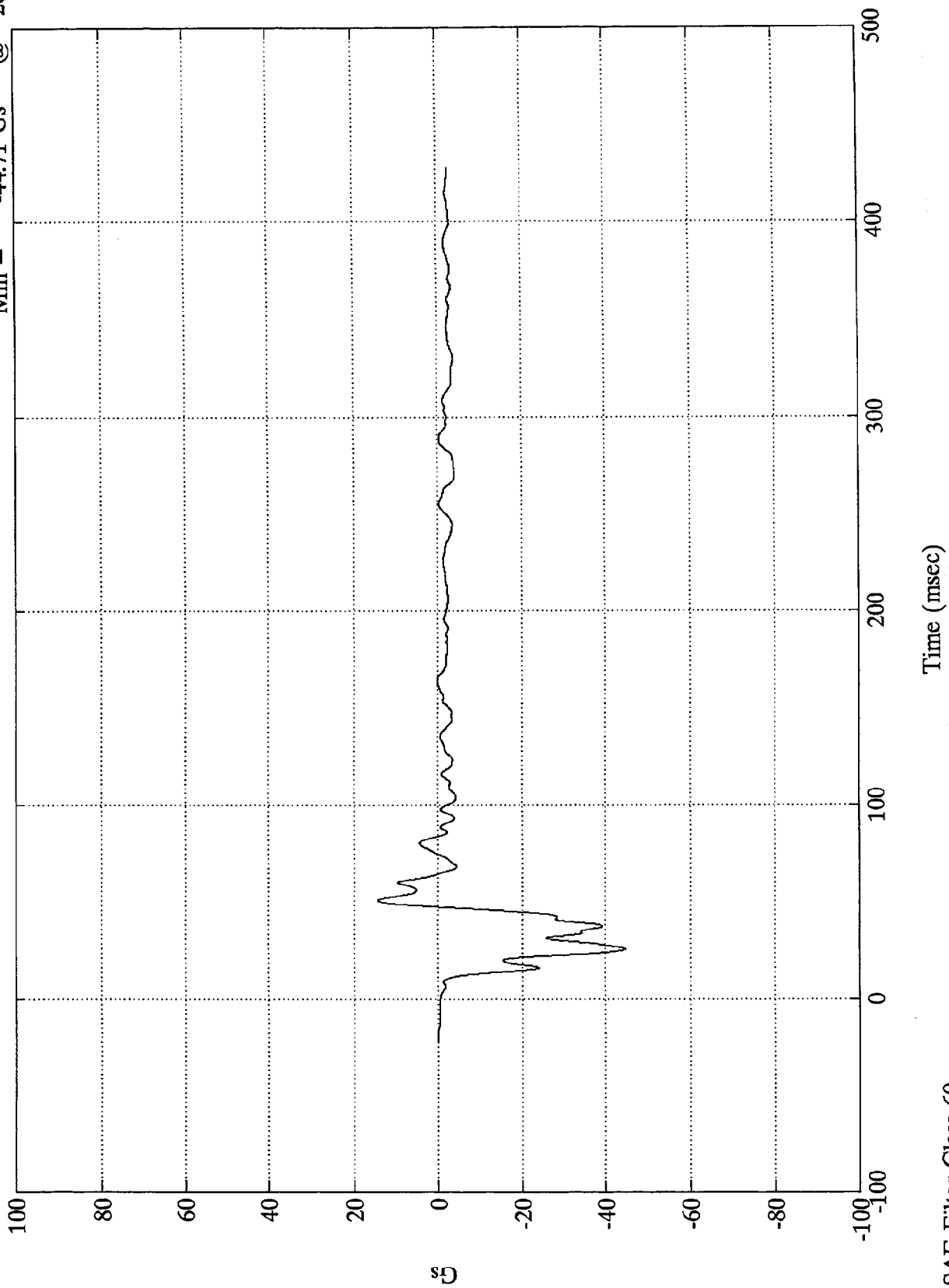
Acc #5 Engine Bottom X

Max =
Min =

14.40 Gs
-44.71 Gs

@
@

50.64 msec
26.04 msec

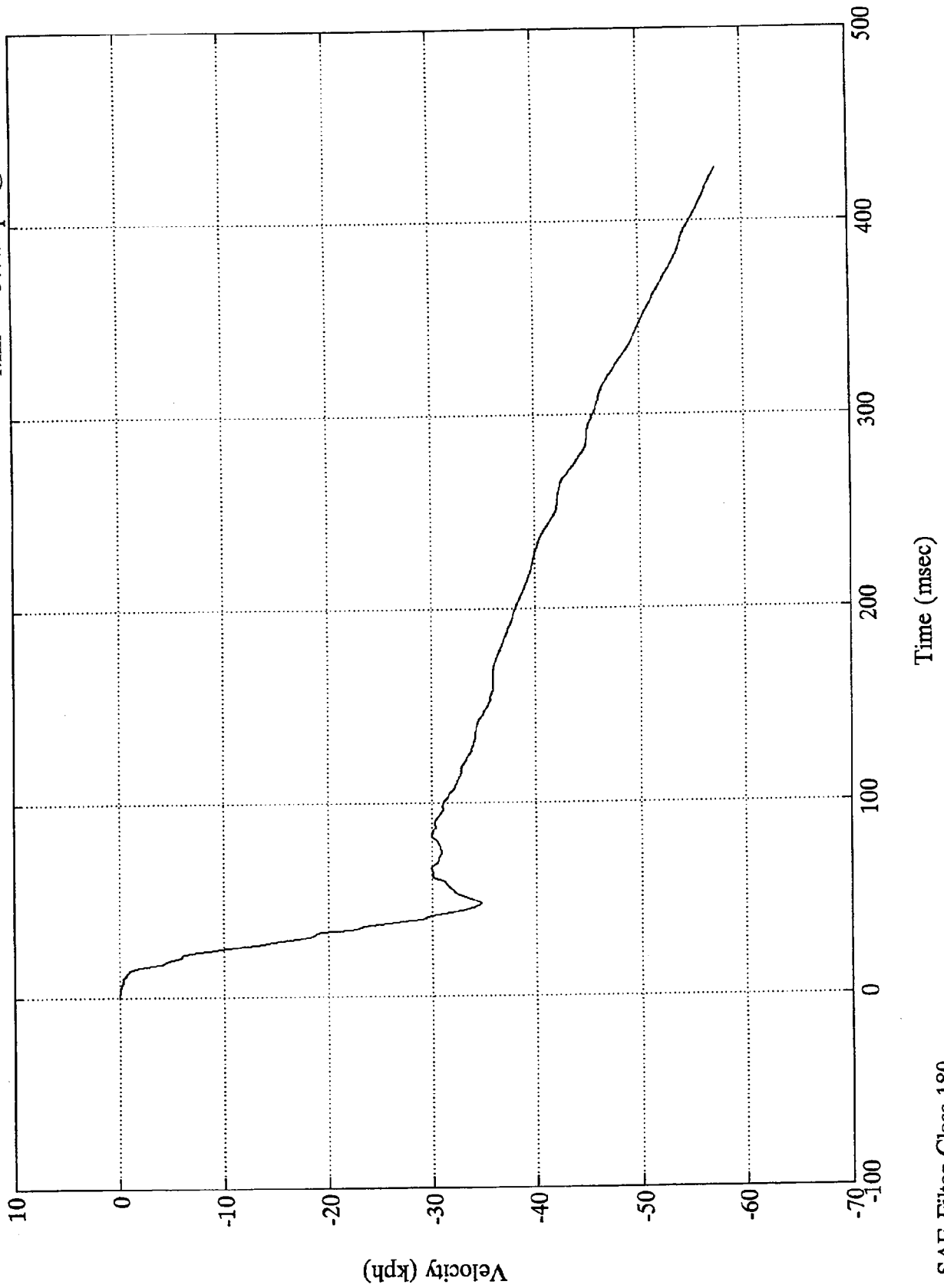


SAE Filter Class 60

VTV TEST #5

Acc #5 Engine Bottom X

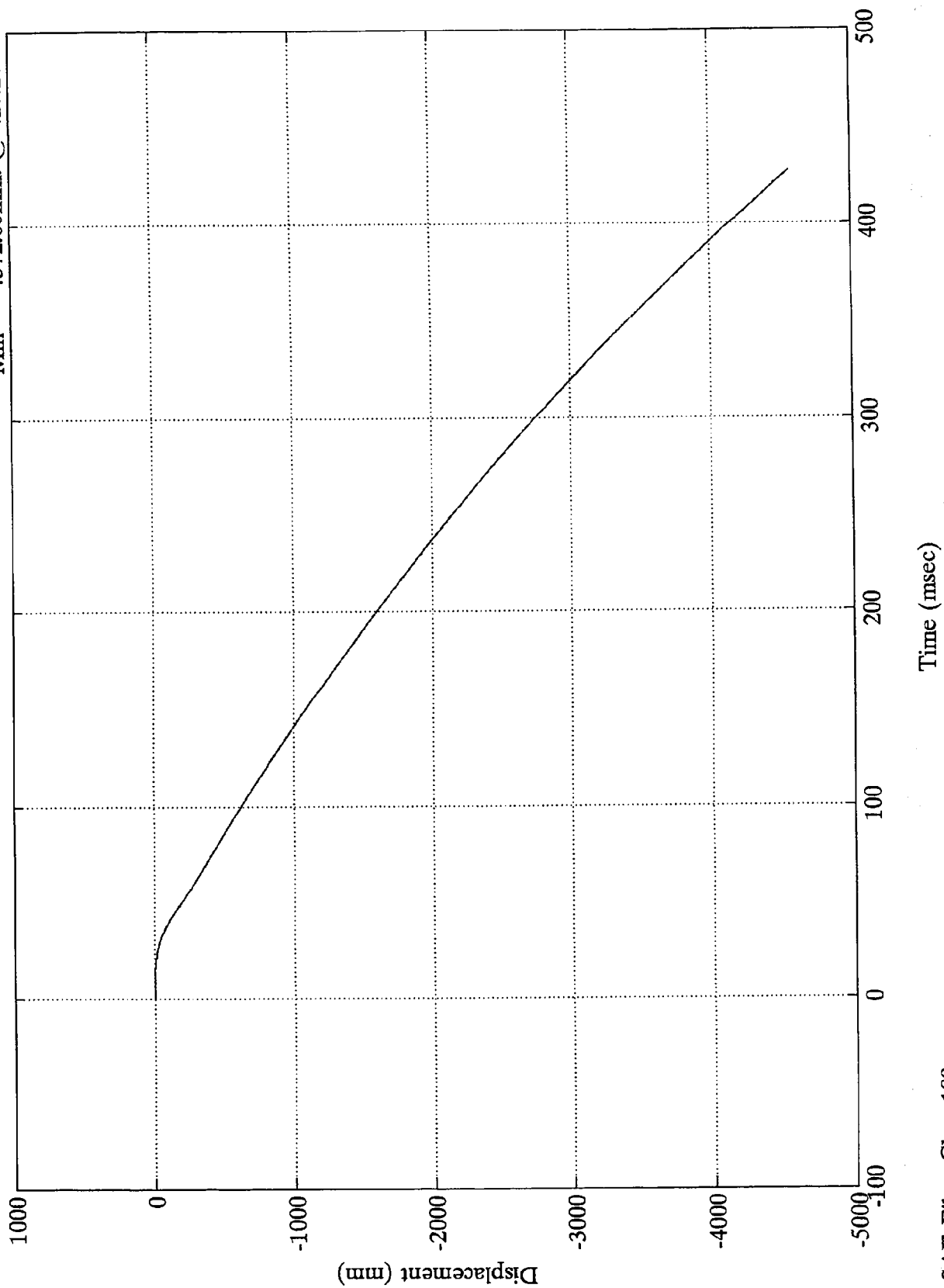
Max = 0.00kph @ -0.00 msec
Min = -57.41kph @ 427.20 msec



SAE Filter Class 180

VTV TEST #5

Acc #5 Engine Bottom X
Max = 0.00mm. @ -0.00 msec
Min = -4572.00mm. @ 427.20 msec

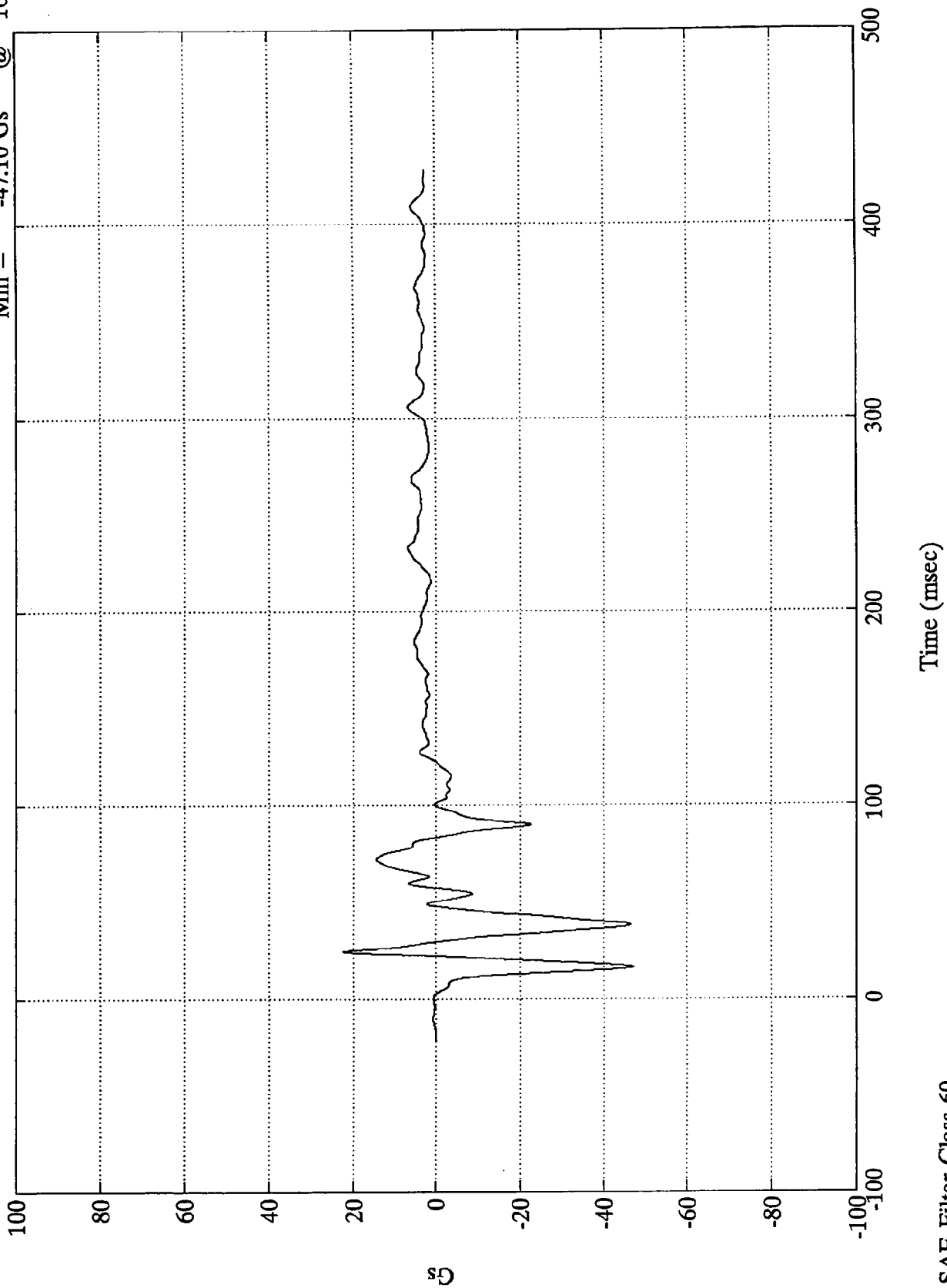


SAE Filter Class 180

VTV TEST #5

Acc #5 Engine Bottom Y

Max = 22.32 Gs @ 24.71 msec
Min = -47.10 Gs @ 16.55 msec

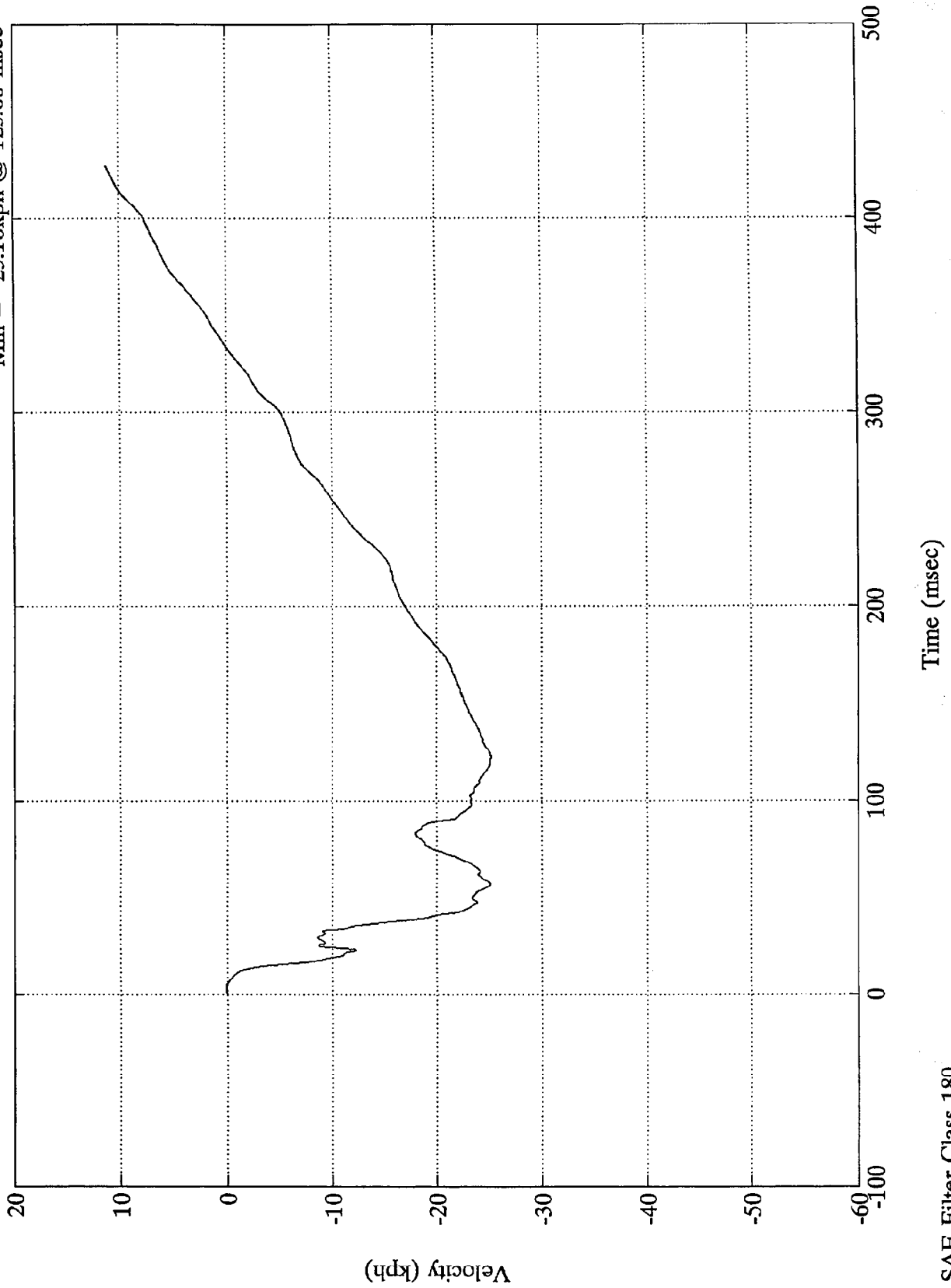


SAE Filter Class 60

VTV TEST #5

Acc #5 Engine Bottom Y

Max = 11.21kph @ 427.20 msec
Min = -25.16kph @ 123.60 msec

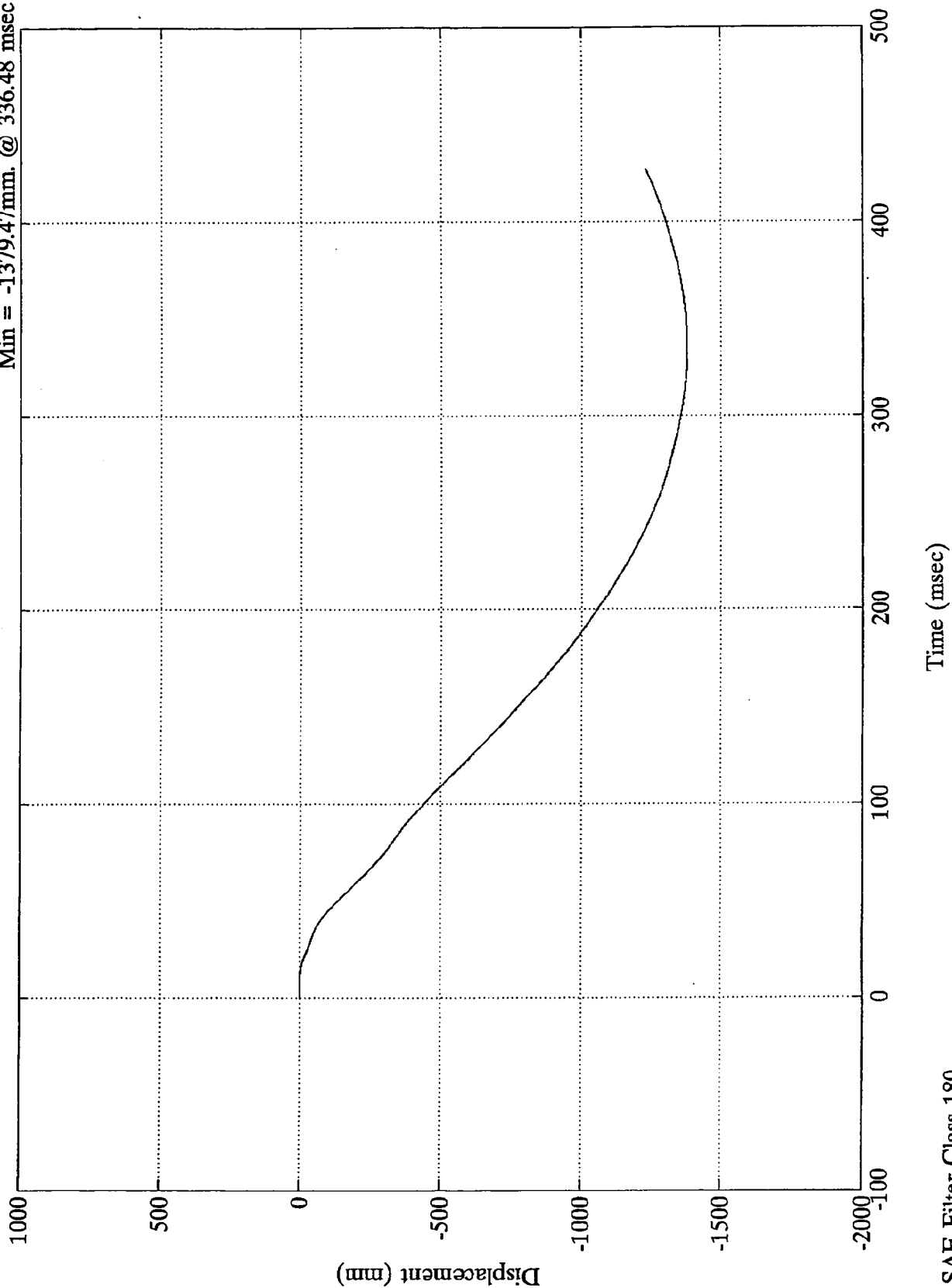


SAE Filter Class 180

VTV TEST #5

Acc #5 Engine Bottom Y

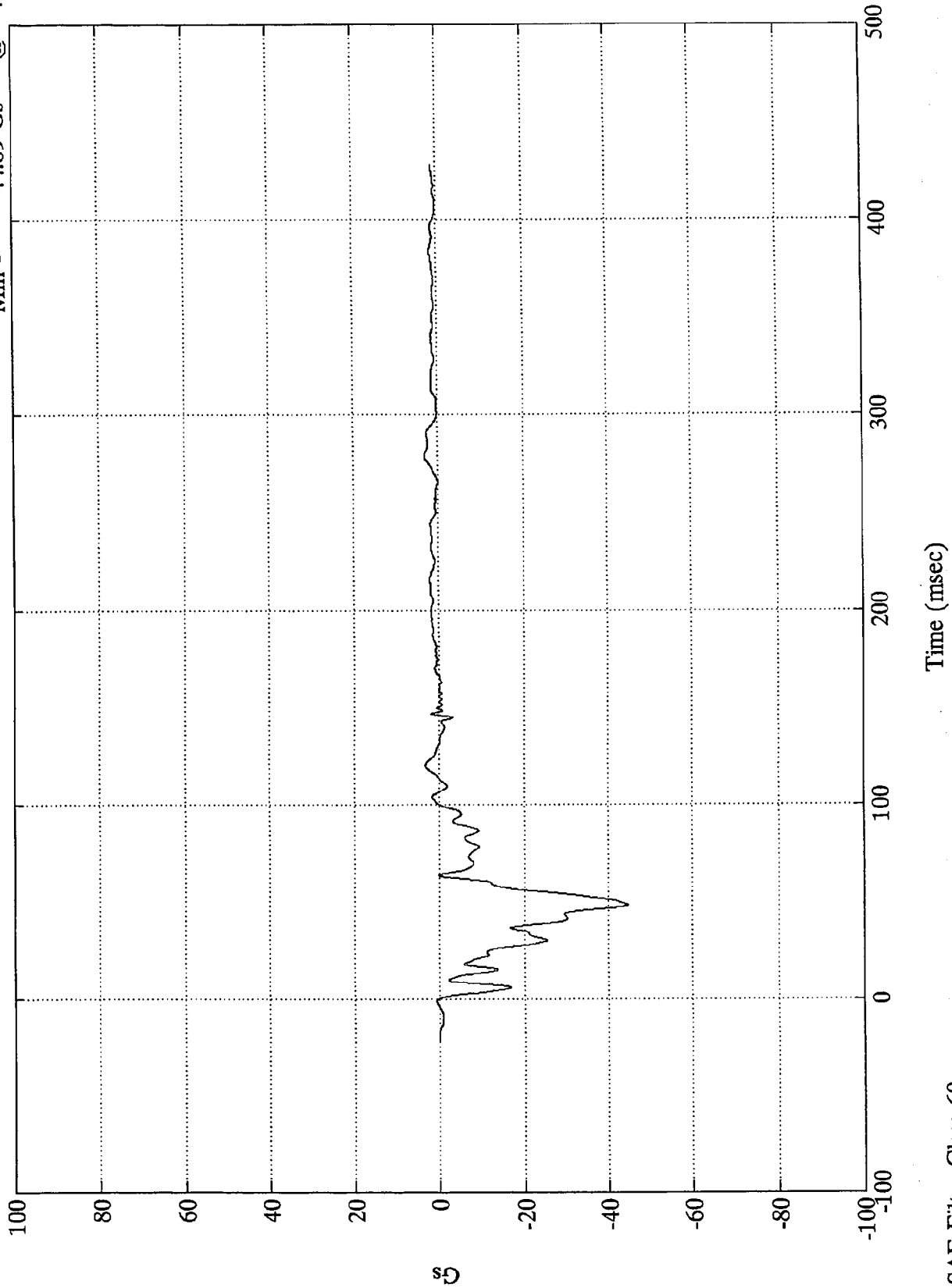
Max = 0.05mm. @ 5.52 msec
Min = -1379.47mm. @ 336.48 msec



SAE Filter Class 180

VTV TEST #5

Acc #6 Rt Shock Tower X
Max = 3.07 Gs @ 120.12 msec
Min = -44.69 Gs @ 48.59 msec

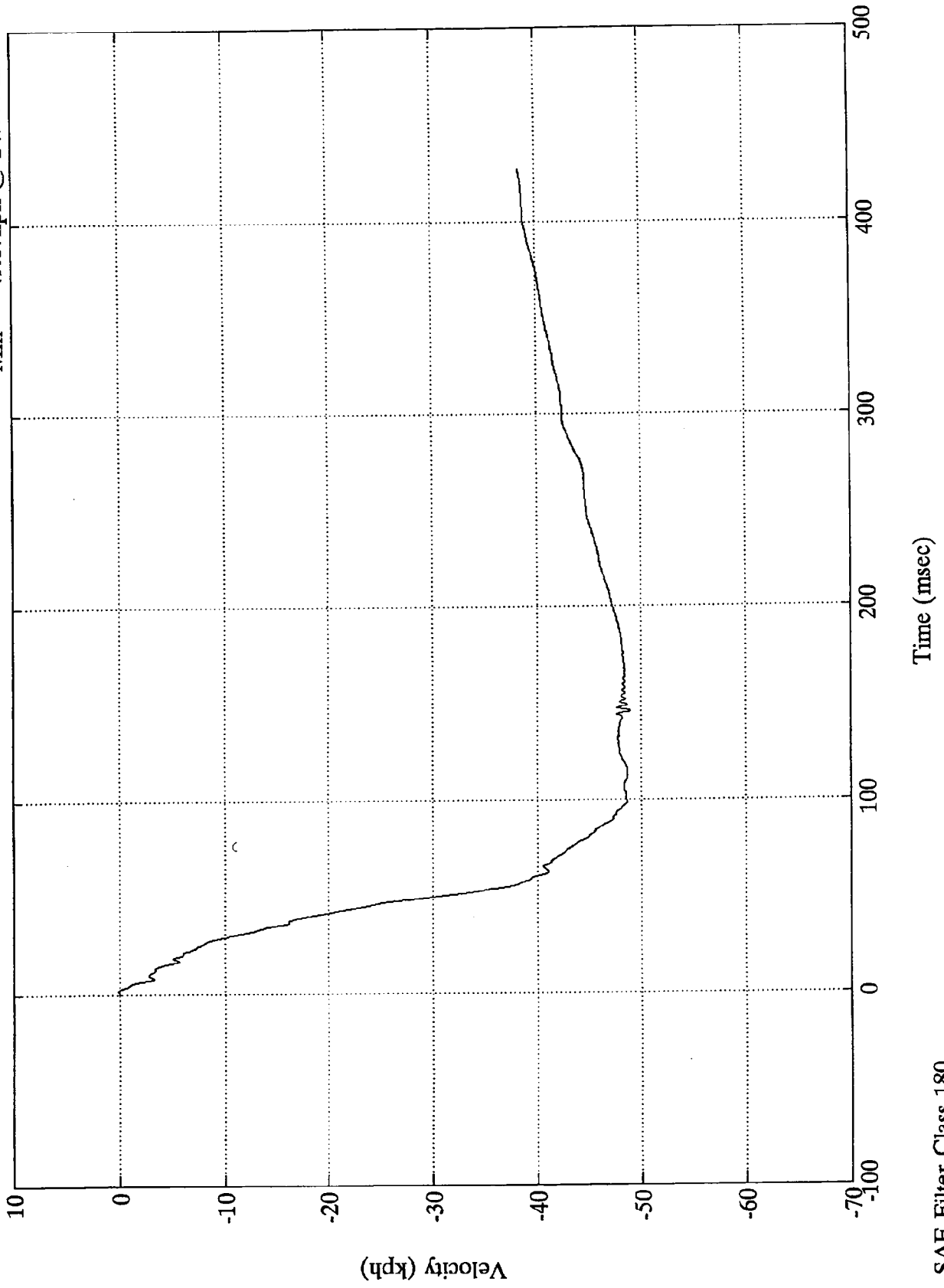


SAE Filter Class 60

VTV TEST #5

Acc #6 Rt Shock Tower X

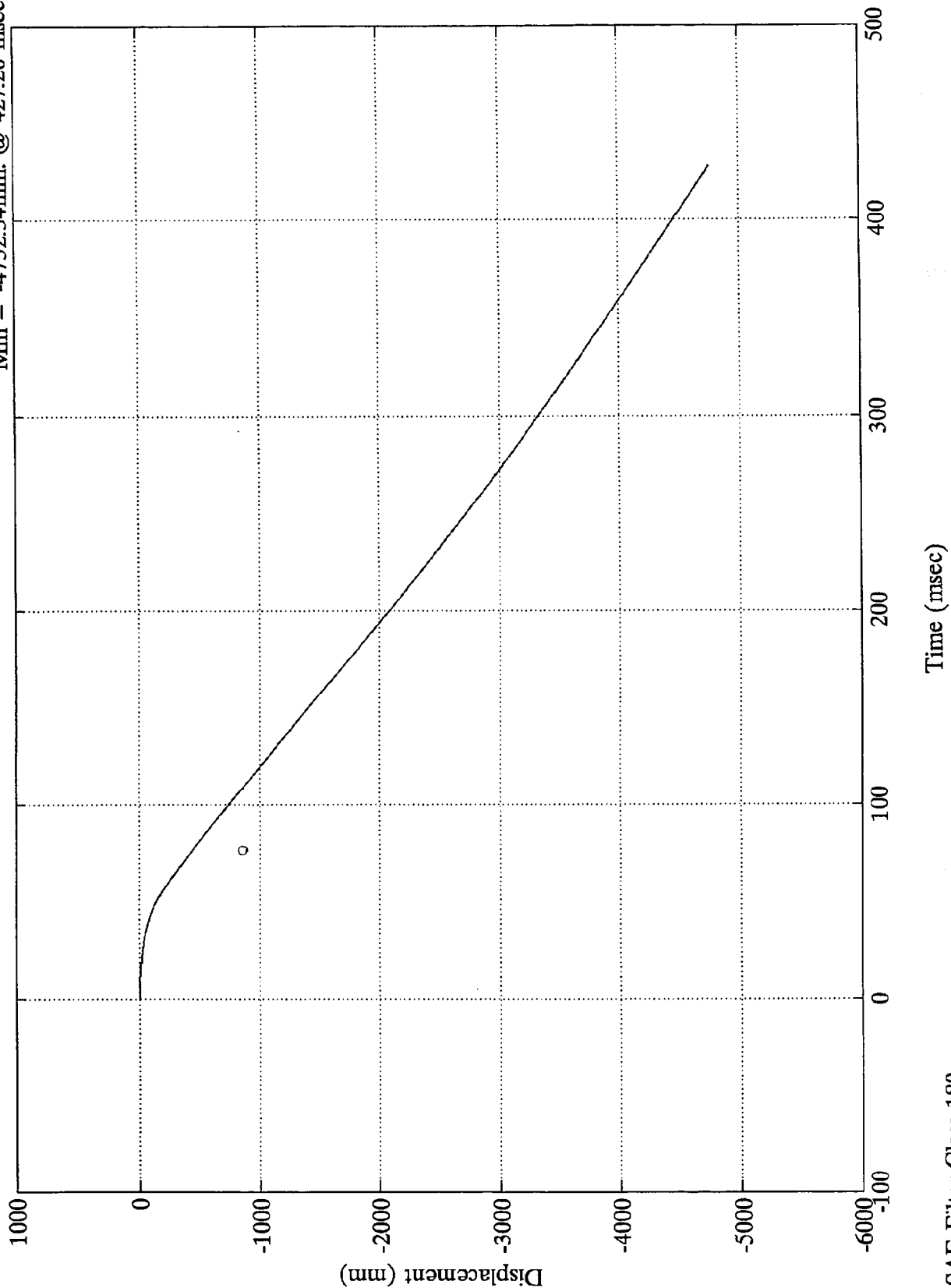
Max = 0.13kph @ 2.16 msec
Min = -49.07kph @ 145.44 msec



SAE Filter Class 180

VTV TEST #5

Acc #6 Shock Tower X
Max = 0.03mm. @ 2.88 msec
Min = -4752.34mm. @ 427.20 msec

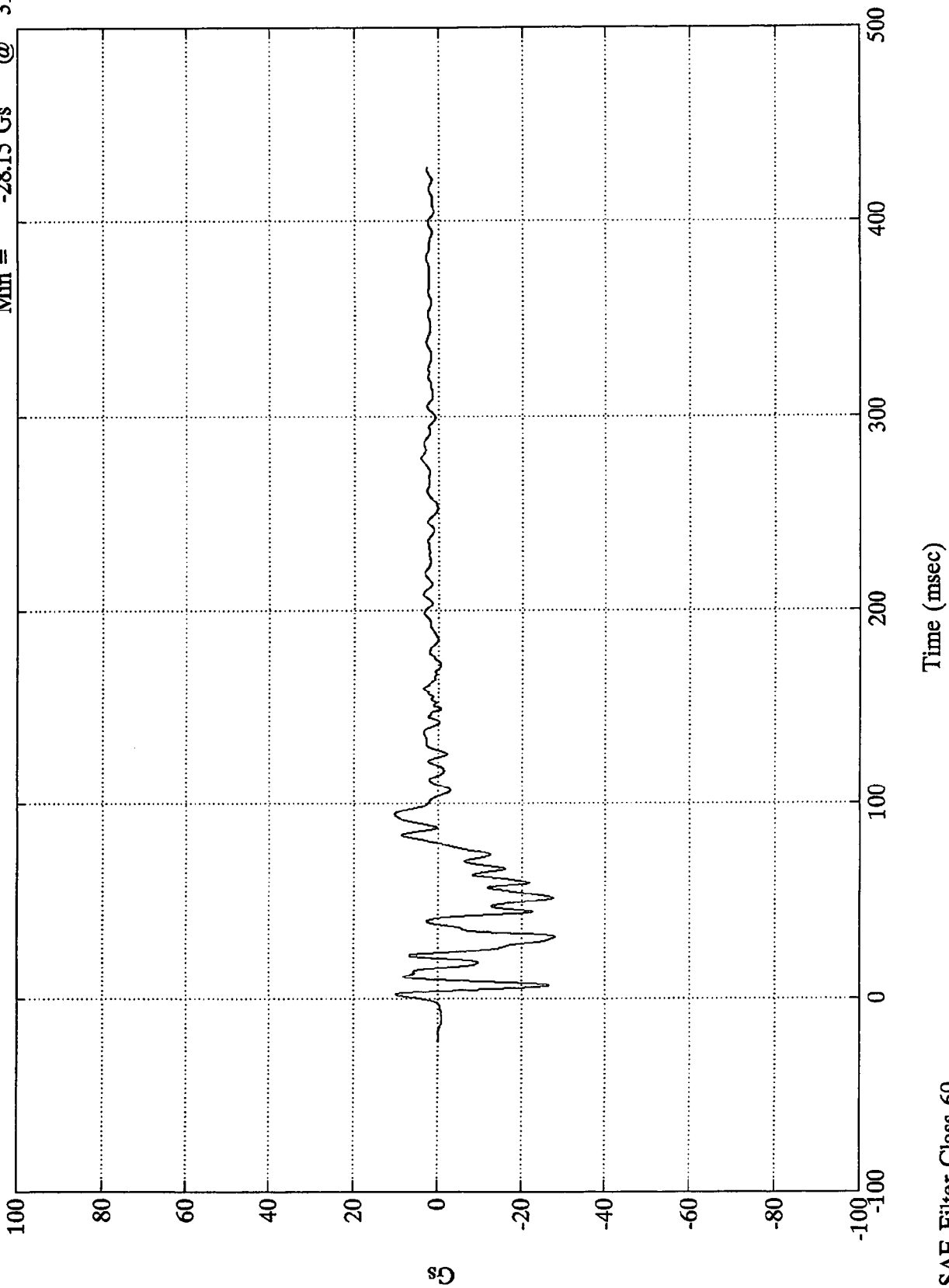


SAE Filter Class 180

VTV TEST #5

Acc #6 Rt Shock Tower Y

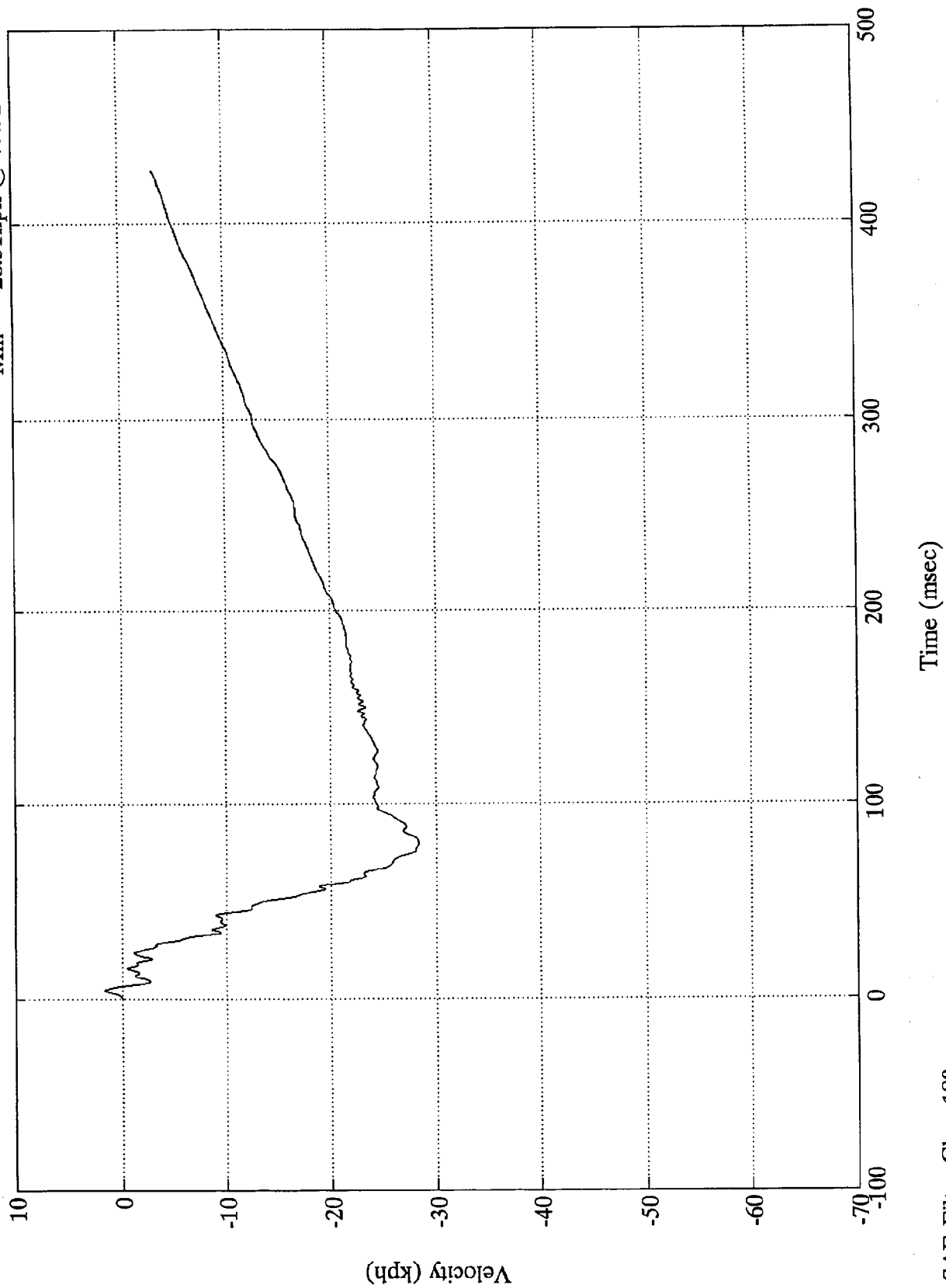
Max =	10.21 Gs	@	94.68 msec
Min =	-28.15 Gs	@	31.92 msec



VTV TEST #5

Acc #6 Rt Shock Tower Y

Max = 1.67kph @ 4.32 msec
Min = -28.31kph @ 79.92 msec

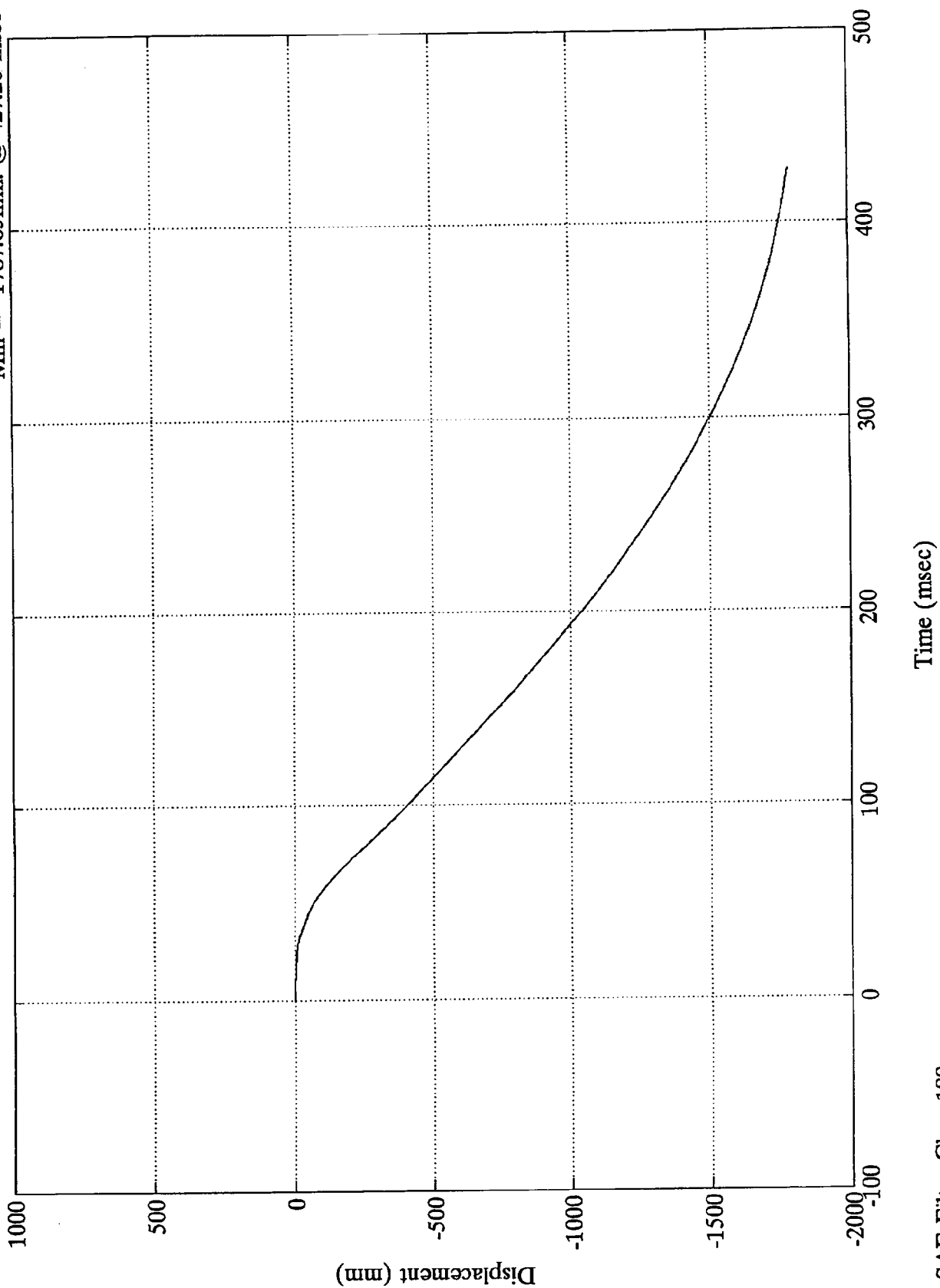


SAE Filter Class 180

VTV TEST #5

Acc #6 Rt Shock Tower Y

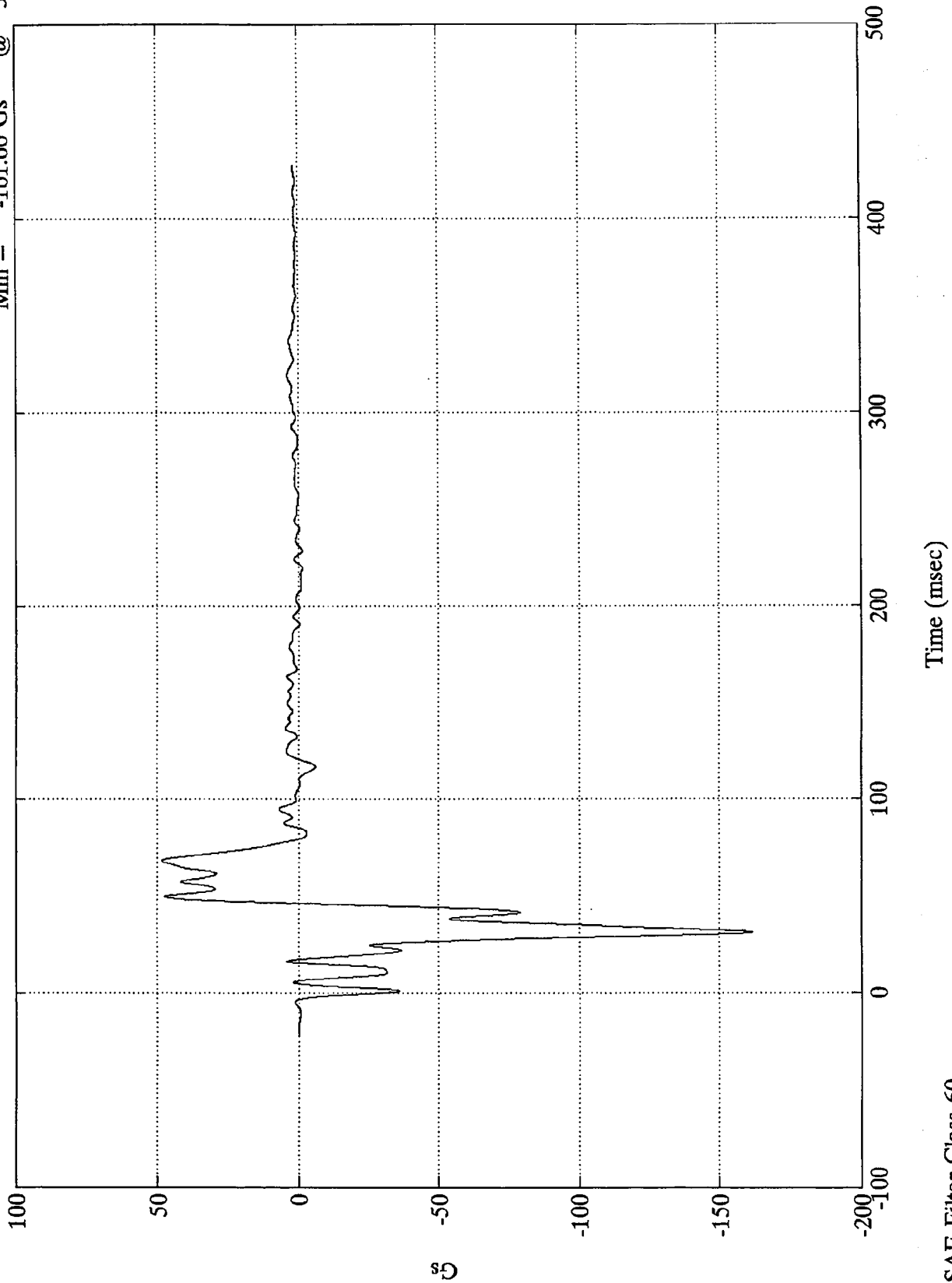
Max = 1.34mm. @ 6.48 msec
Min = -1787.65mm. @ 427.20 msec



SAE Filter Class 180

VTV TEST #5

Acc #7 Lt Shock Tower X
 Max = 48.42 Gs @ 68.52 msec
 Min = -161.66 Gs @ 31.44 msec

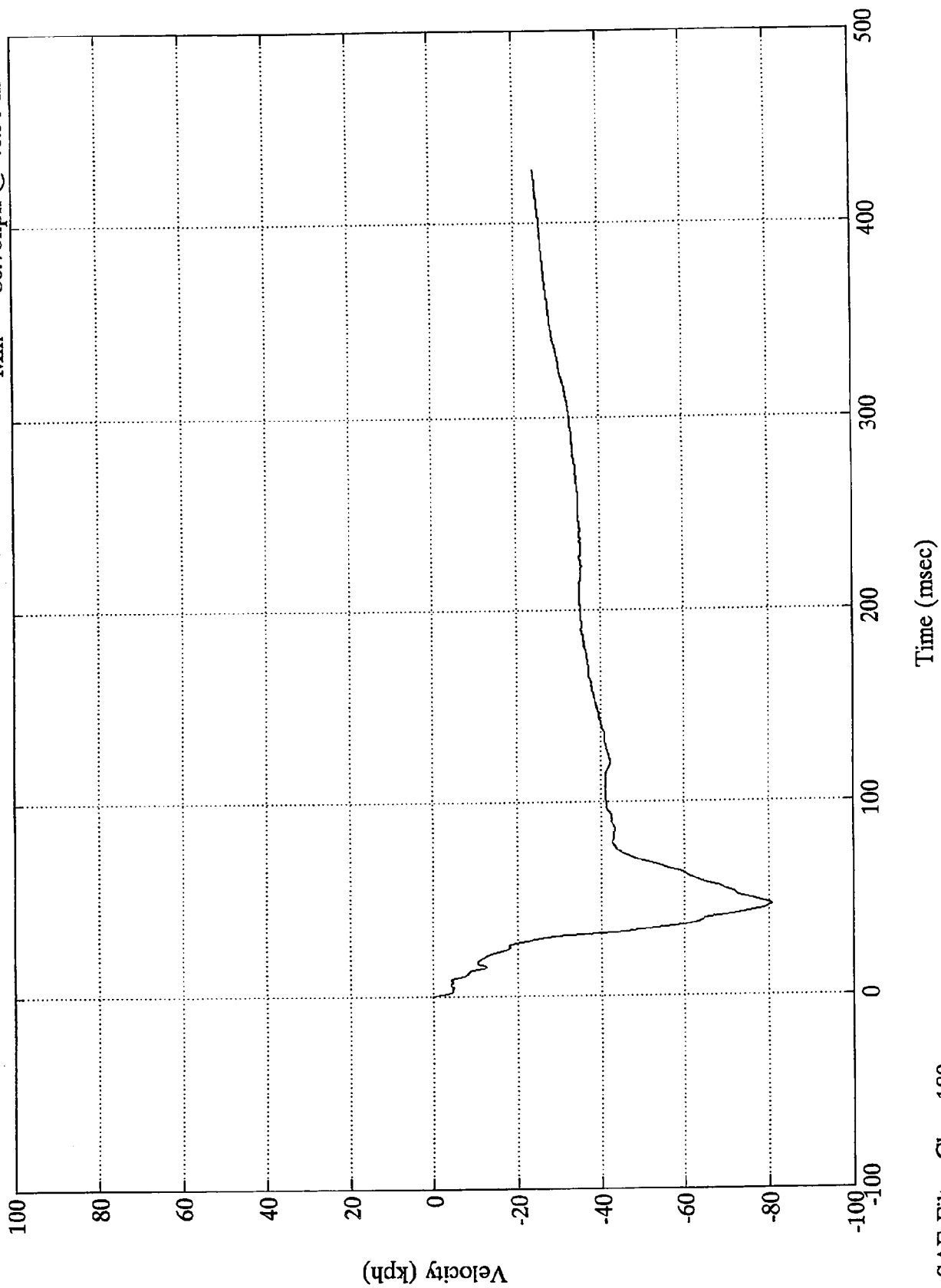


SAE Filter Class 60

VTV TEST #5

Acc #7 Lt Shock Tower X

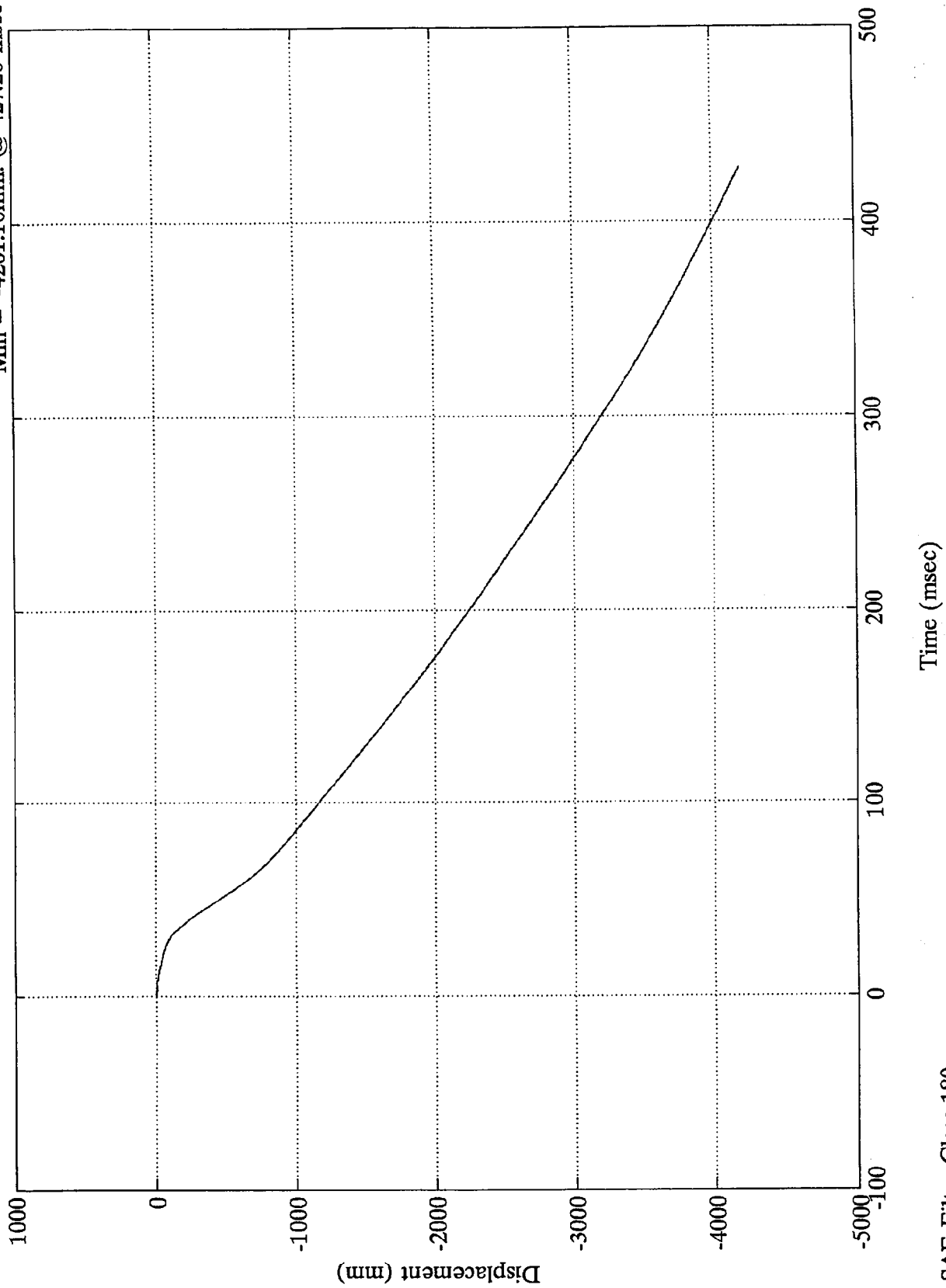
Max = 0.00kph @ -0.00 msec
Min = -80.70kph @ 46.56 msec



SAE Filter Class 180

VTV TEST #5

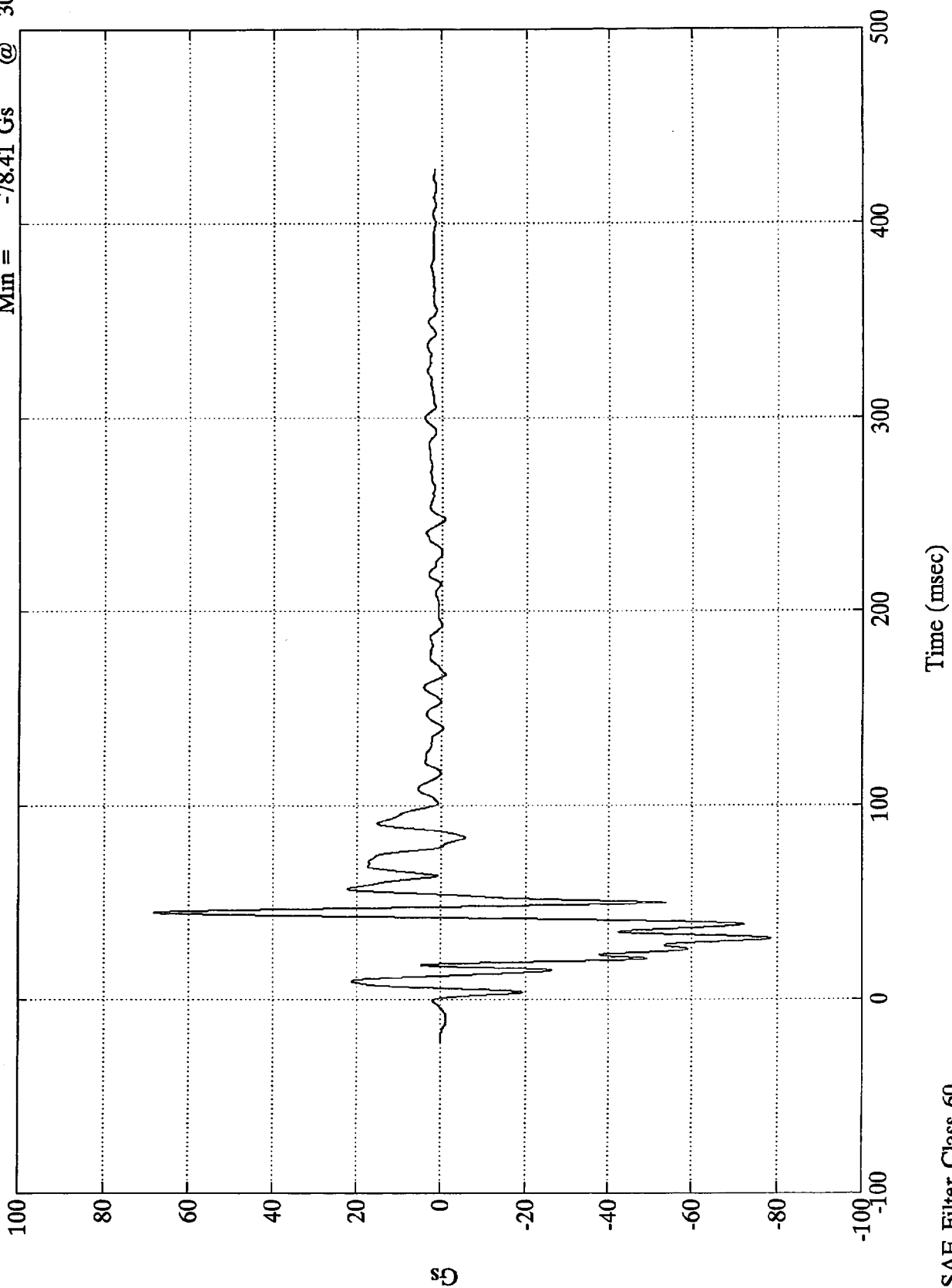
Acc #7 Lt Shock Tower X
Max = 0.00mm. @ -0.00 msec
Min = -4201.16mm. @ 427.20 msec



SAE Filter Class 180

VTV TEST #5

Acc #7 Lt Shock Tower Y
Max = 68.37 Gs @ 44.52 msec
Min = -78.41 Gs @ 30.96 msec

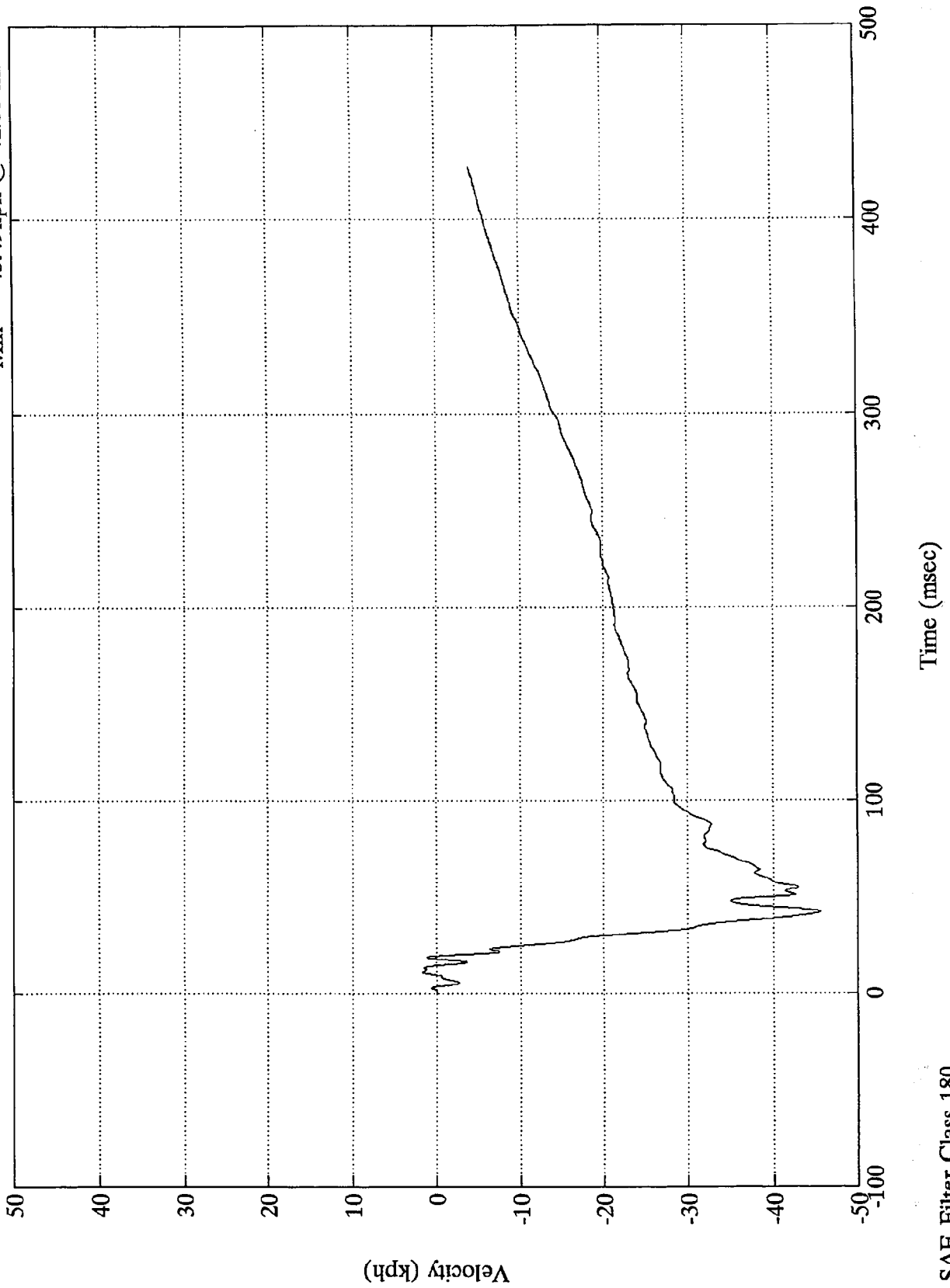


SAE Filter Class 60

VTV TEST #5

Acc #7 Lt Shock Tower Y

Max = 1.70kph @ 11.28 msec
Min = -45.49kph @ 42.00 msec

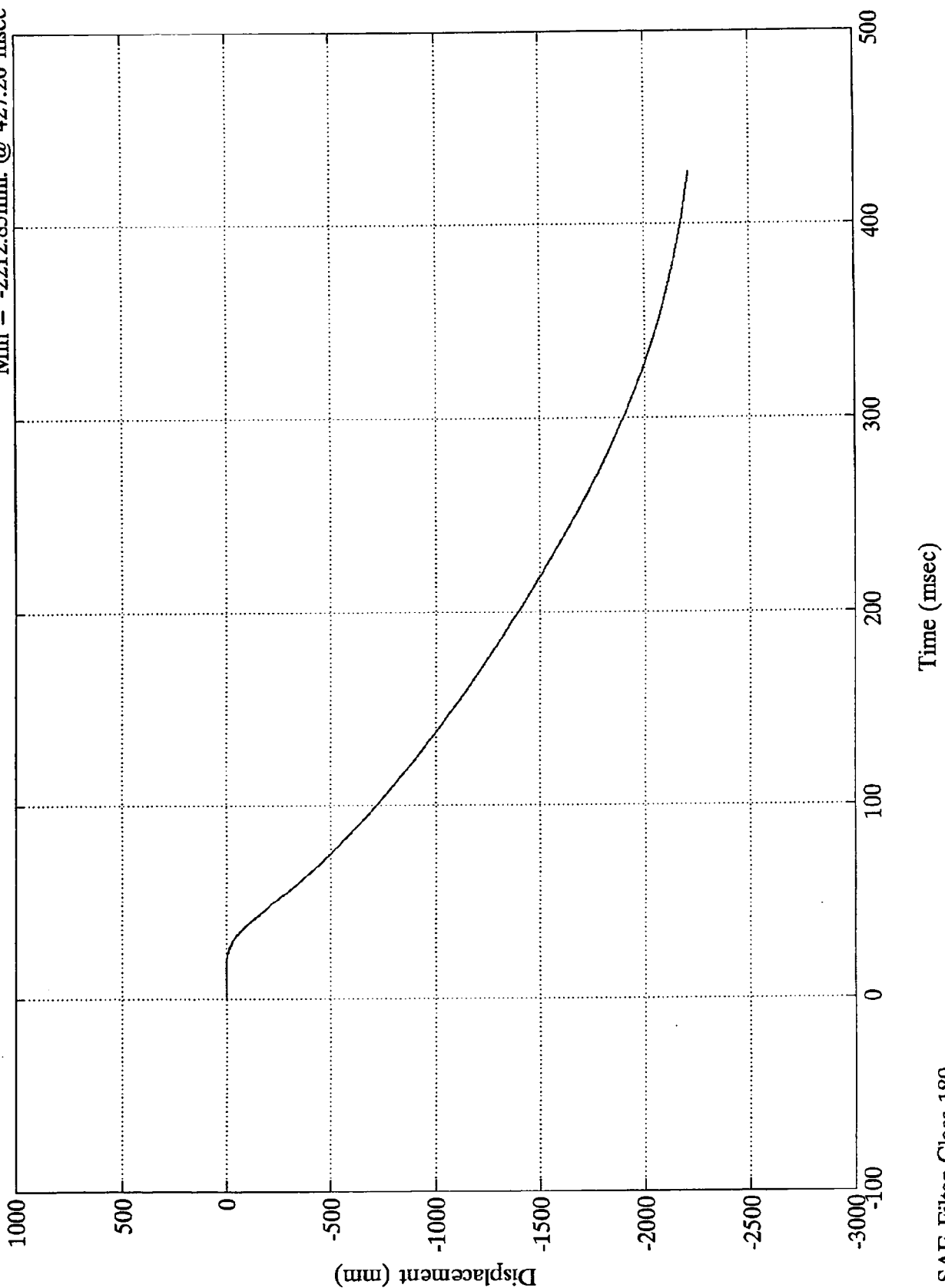


SAE Filter Class 180

VTV TEST #5

Acc #7 Lt Shock Tower Y

Max = 0.25mm. @ 3.84 msec
Min = -2212.85mm. @ 427.20 msec

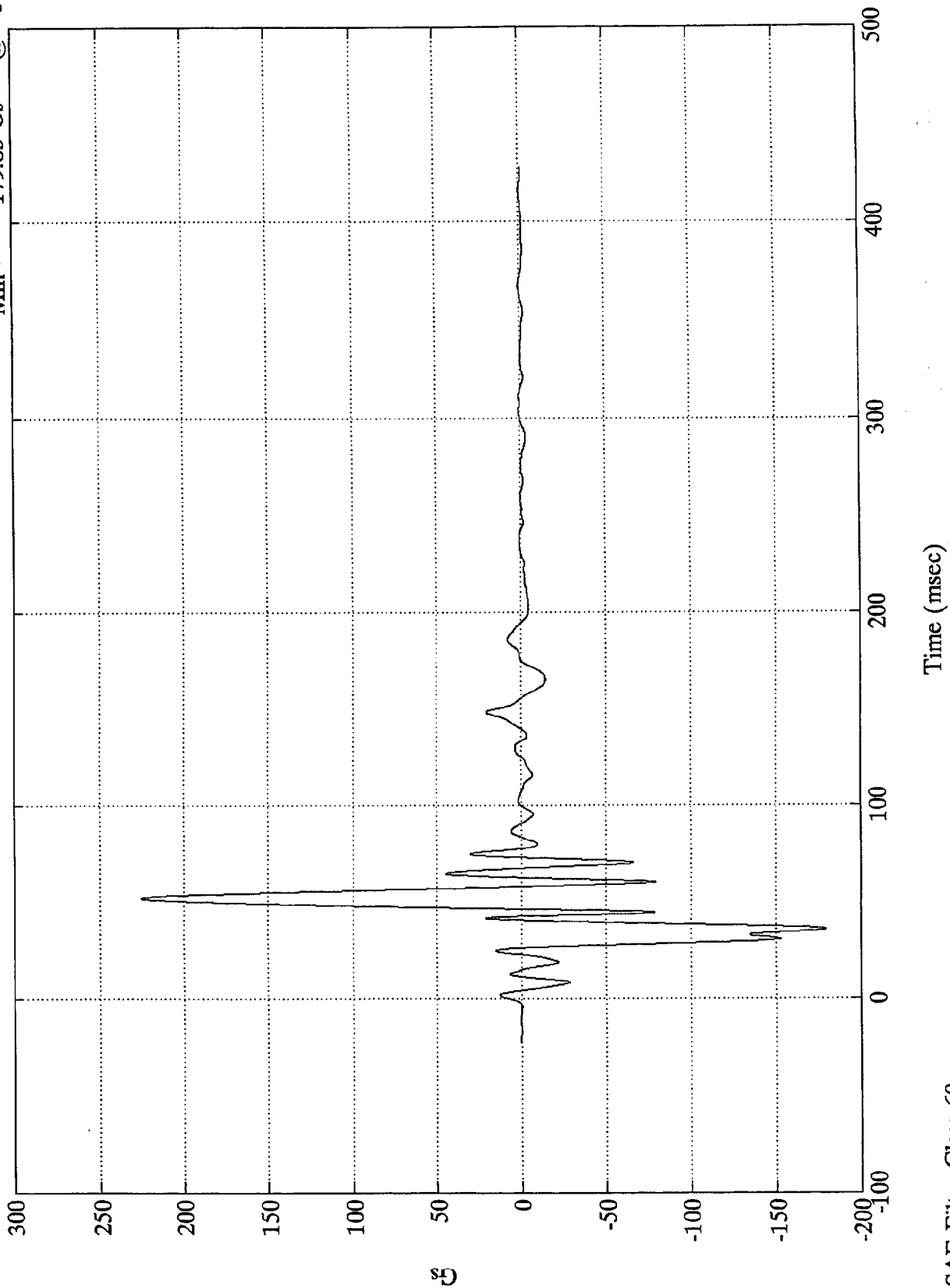


SAE Filter Class 180

VTV TEST #5

Max = 225.05 Gs @ 51.96 msec
Min = -179.83 Gs @ 36.00 msec

Acc #8 Brake Pedal X

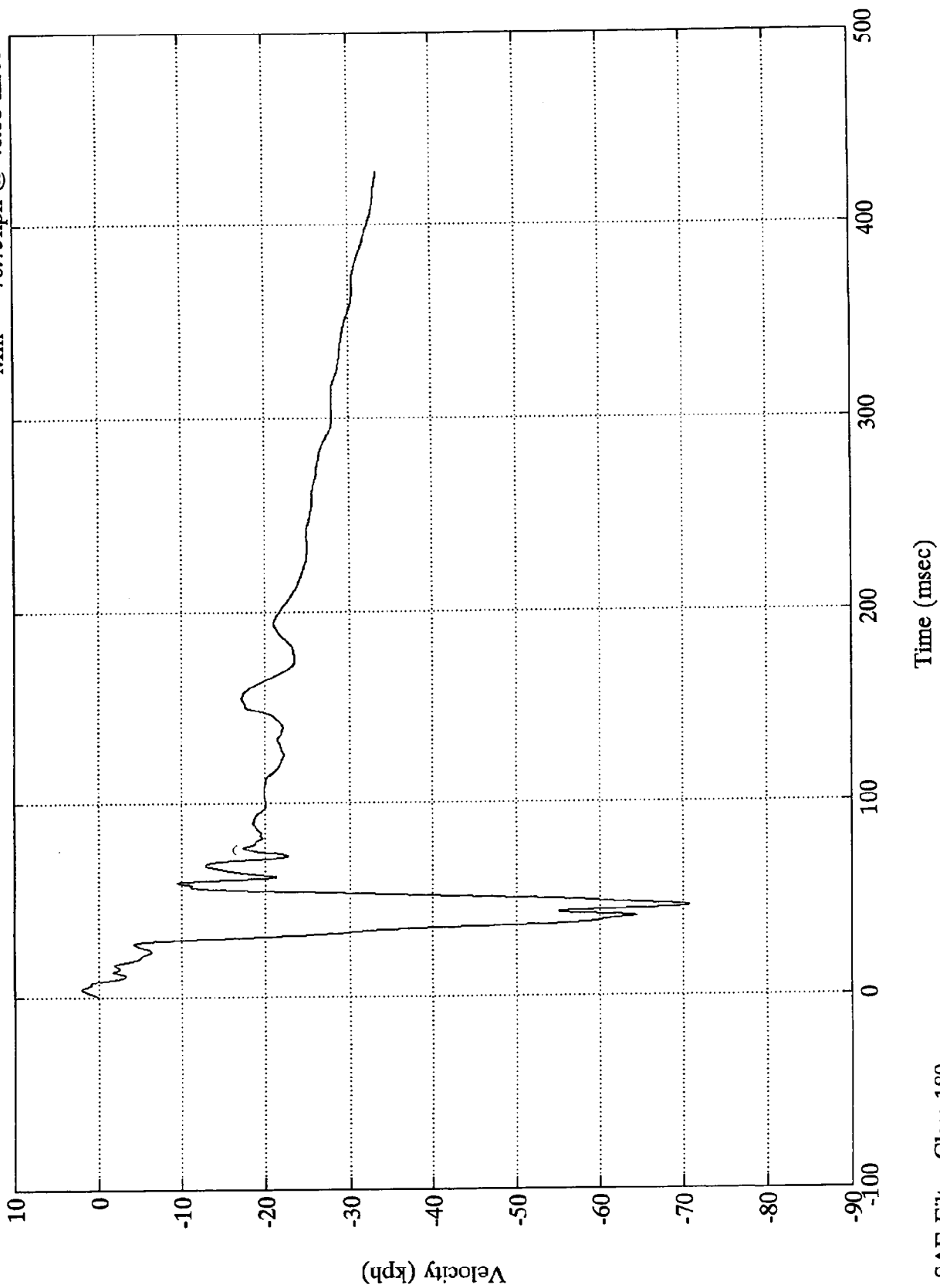


SAE Filter Class 60

VTV TEST #5

Acc #8 Brake Pedal X

Max = 1.99kph @ 4.08 msec
Min = -70.75kph @ 46.08 msec

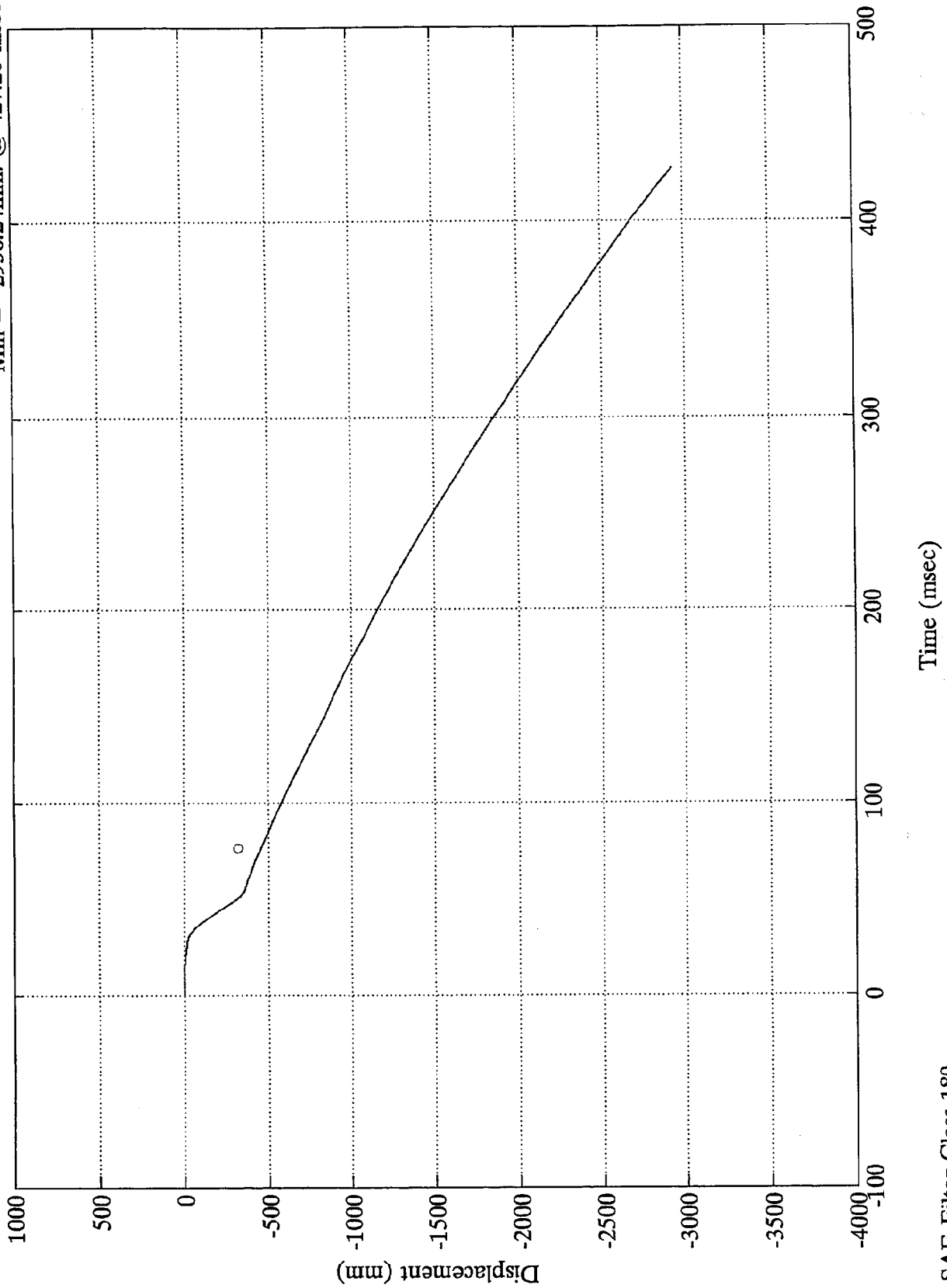


SAE Filter Class 180

VTV TEST #5

Acc #8 Brake Pedal X

Max = 2.39mm. @ 8.16 msec
Min = -2936.24mm. @ 427.20 msec

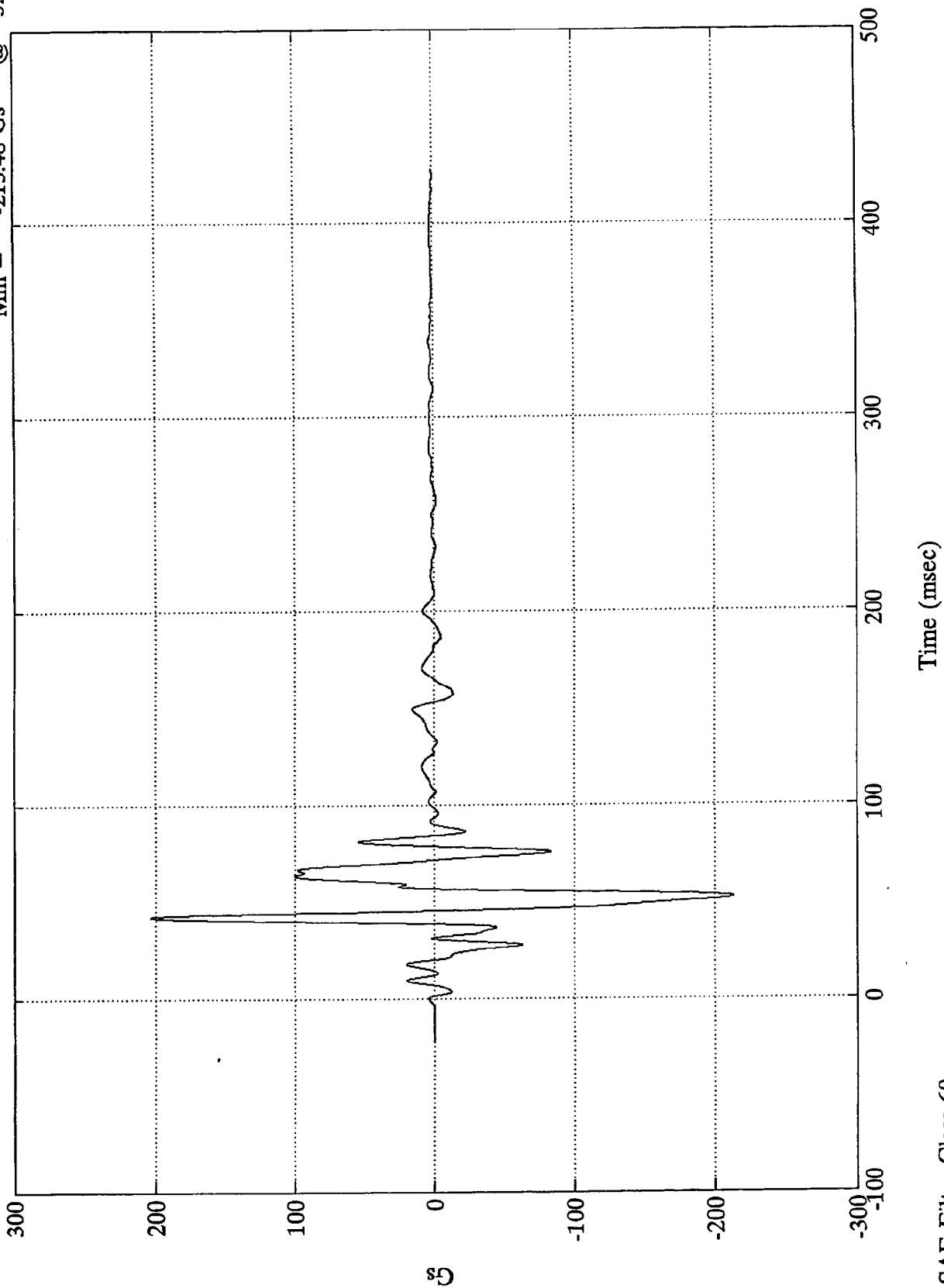


SAE Filter Class 180

VTV TEST #5

Acc #8 Brake Pedal Y

Max = 203.45 Gs @ 42.36 msec
Min = -213.48 Gs @ 52.31 msec



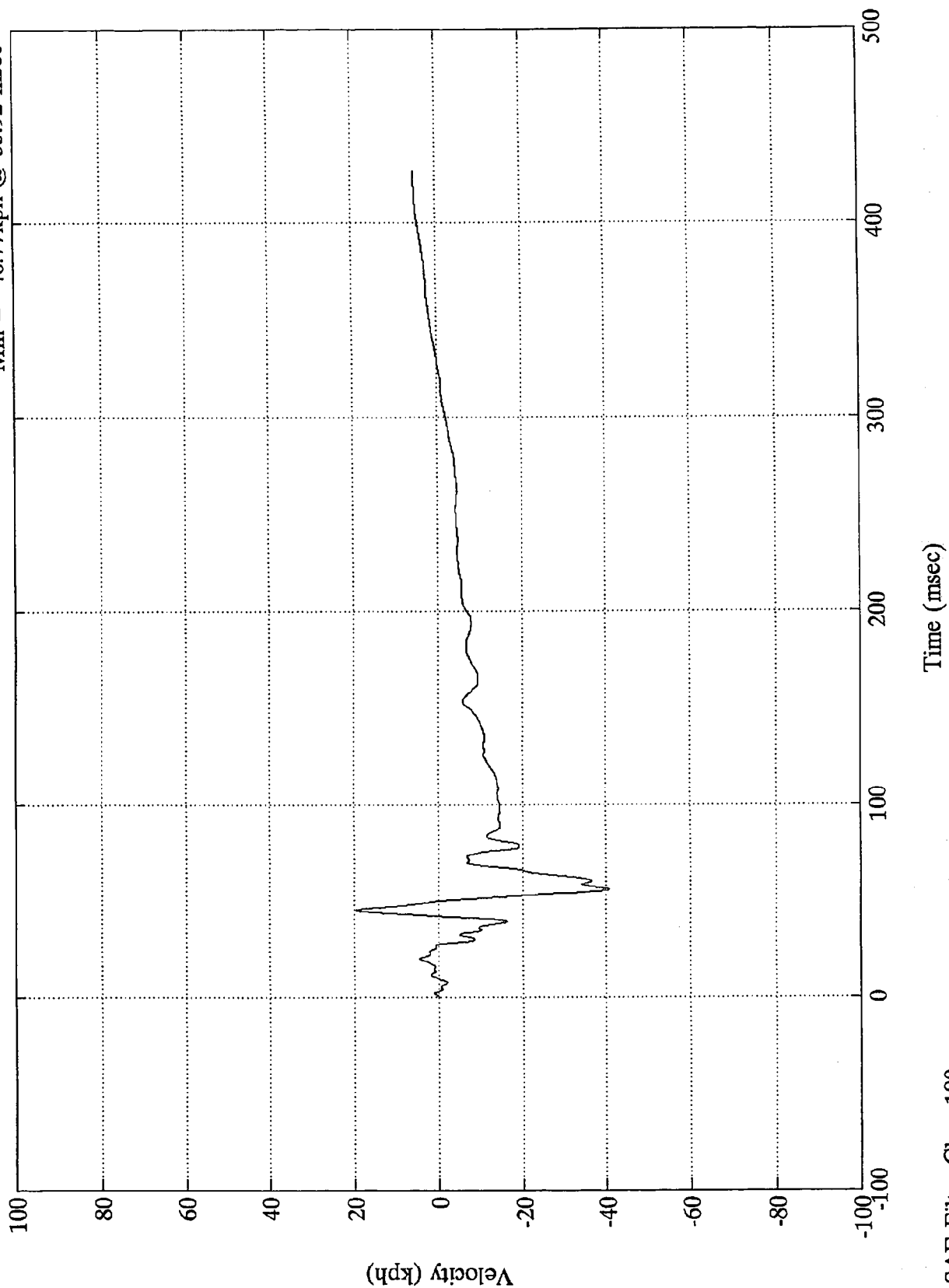
SAE Filter Class 60

VTV TEST #5

Acc #8 Brake Pedal Y

Max = 19.59kph @ 45.36 msec

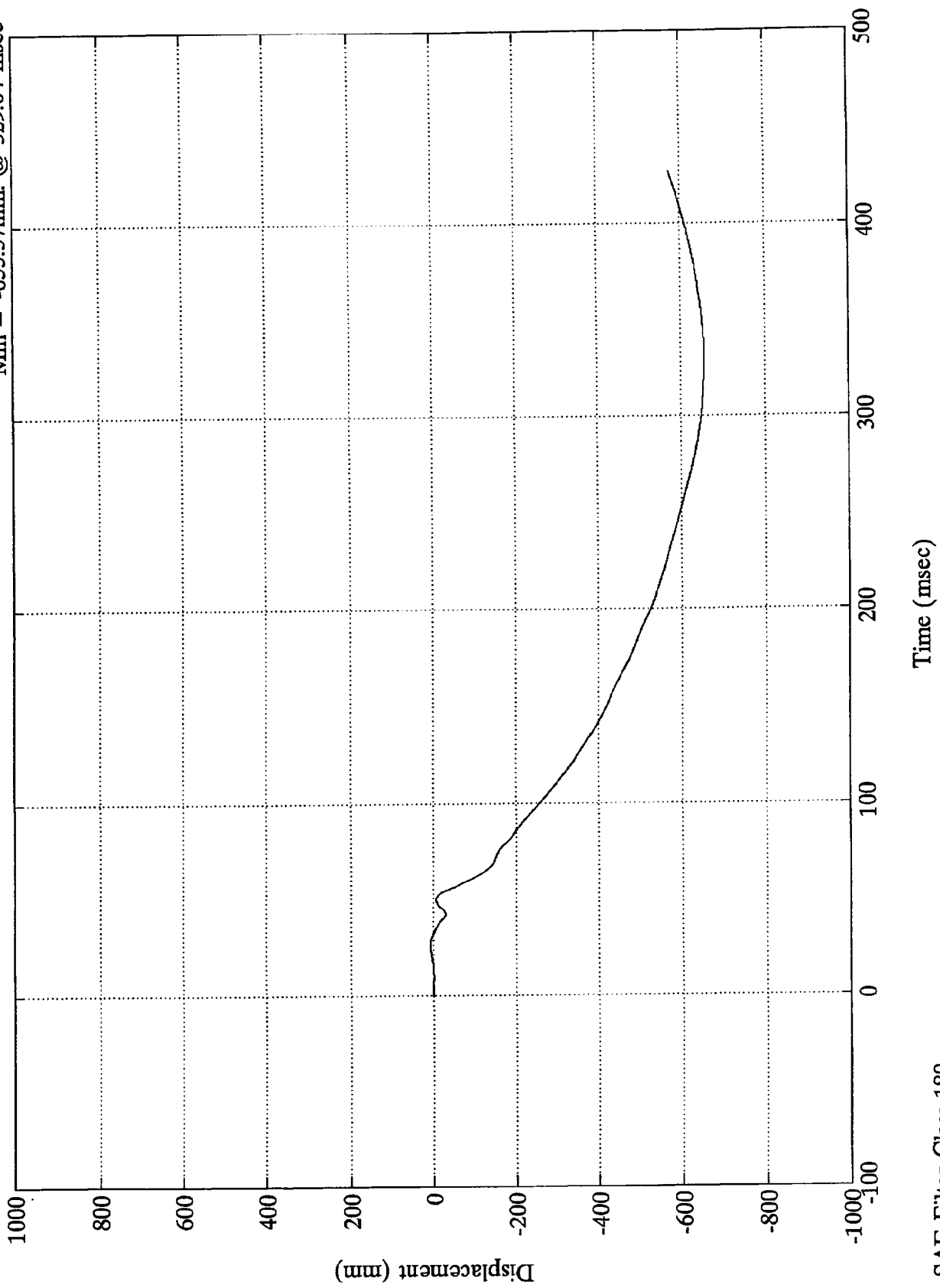
Min = -40.77kph @ 55.92 msec



SAE Filter Class 180

VTV TEST #5

Acc #8 Brake Pedal Y
Max = 7.45mm. @ 27.36 msec
Min = -655.57mm. @ 329.04 msec

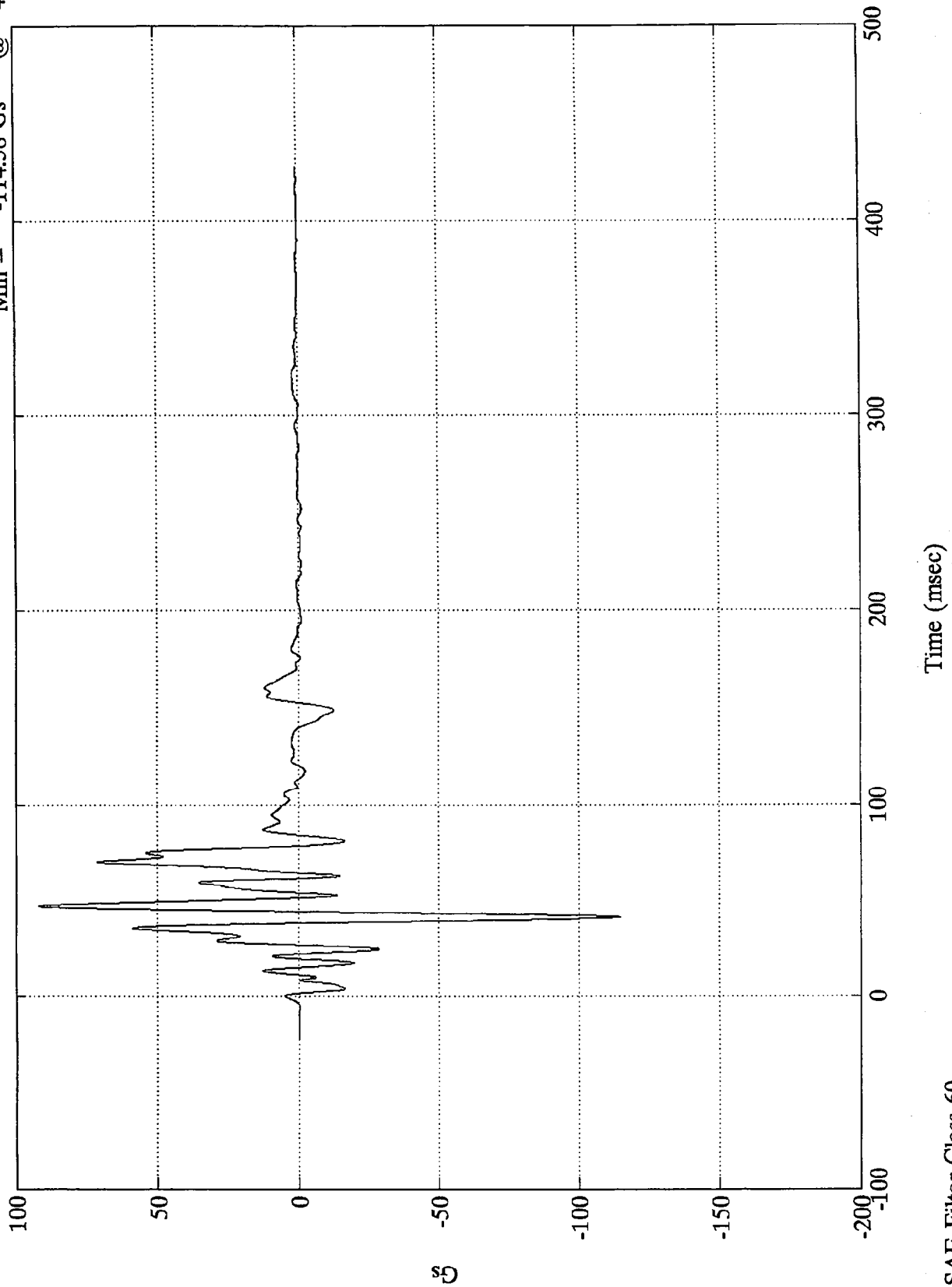


SAE Filter Class 180

VTV TEST #5

Acc #8 Brake Pedal Z

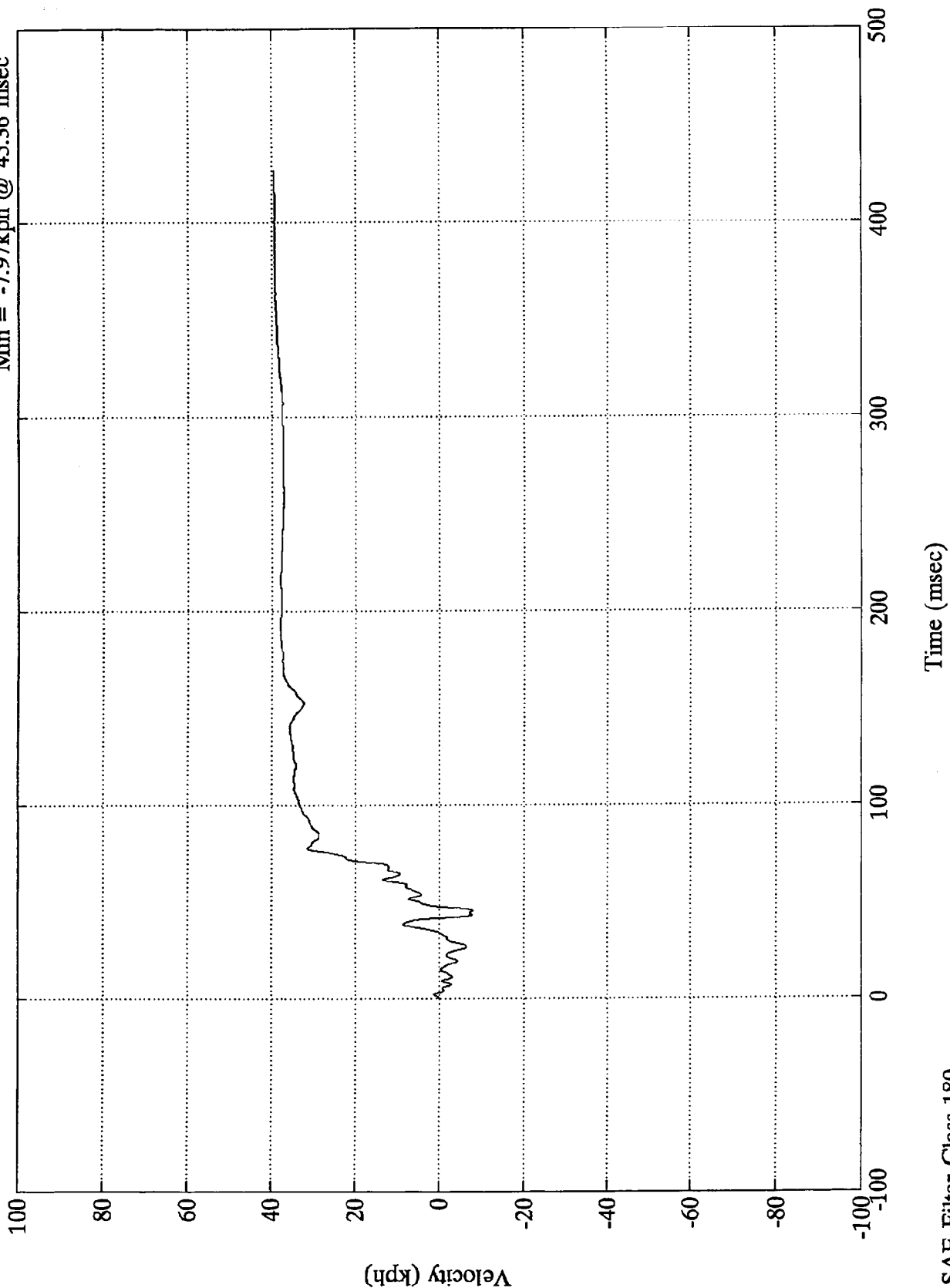
Max =	92.00 Gs	@	47.15 msec
Min =	-114.58 Gs	@	41.40 msec



VTV TEST #5

Acc #8 Brake Pedal Z

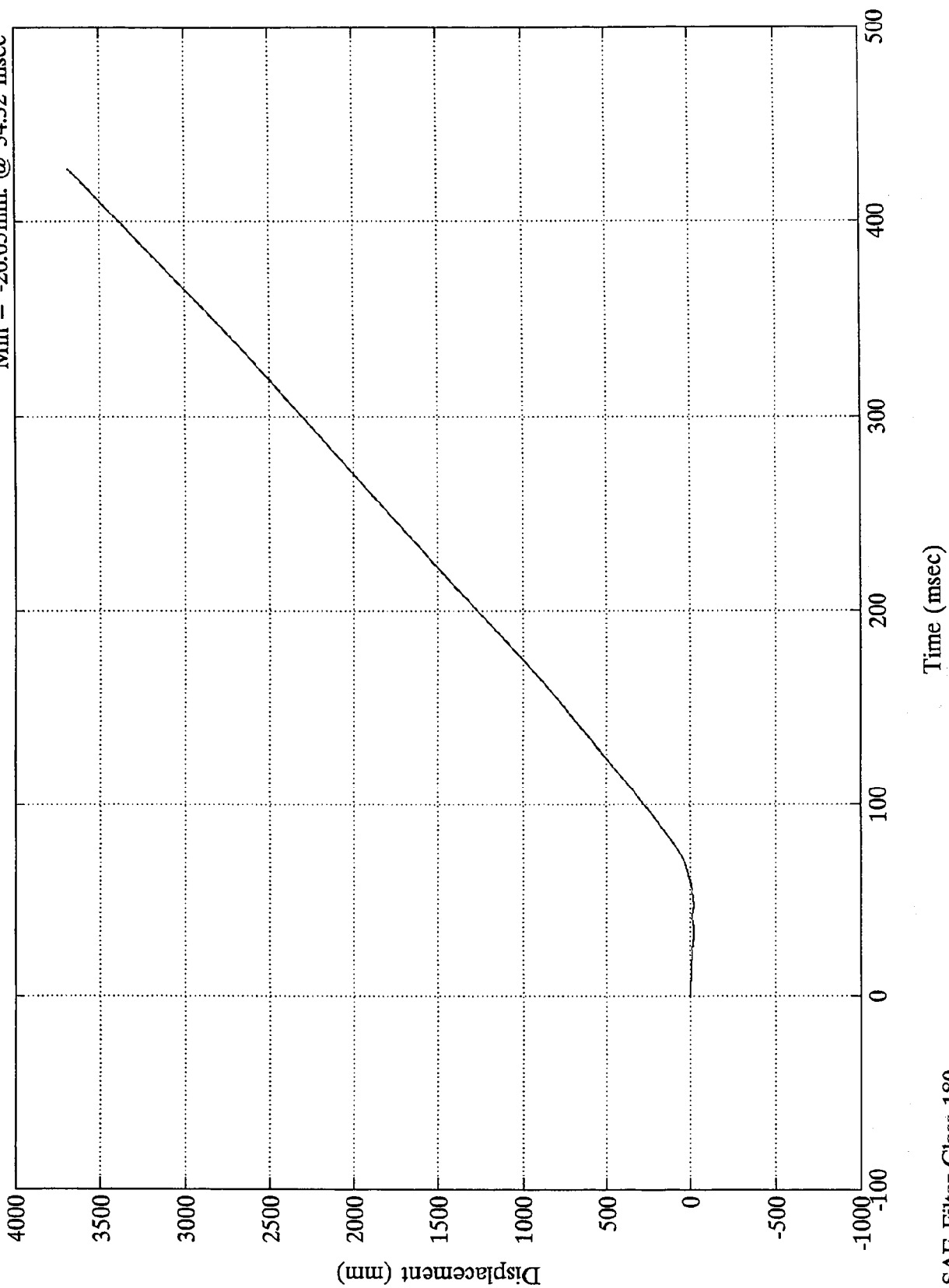
Max = 39.63kph @ 427.20 msec
Min = -7.97kph @ 45.36 msec



SAE Filter Class 180

VTV TEST #5

Acc #8 Brake Pedal Z
Max = 3683.00mm. @ 427.20 msec
Min = -20.05mm. @ 34.32 msec

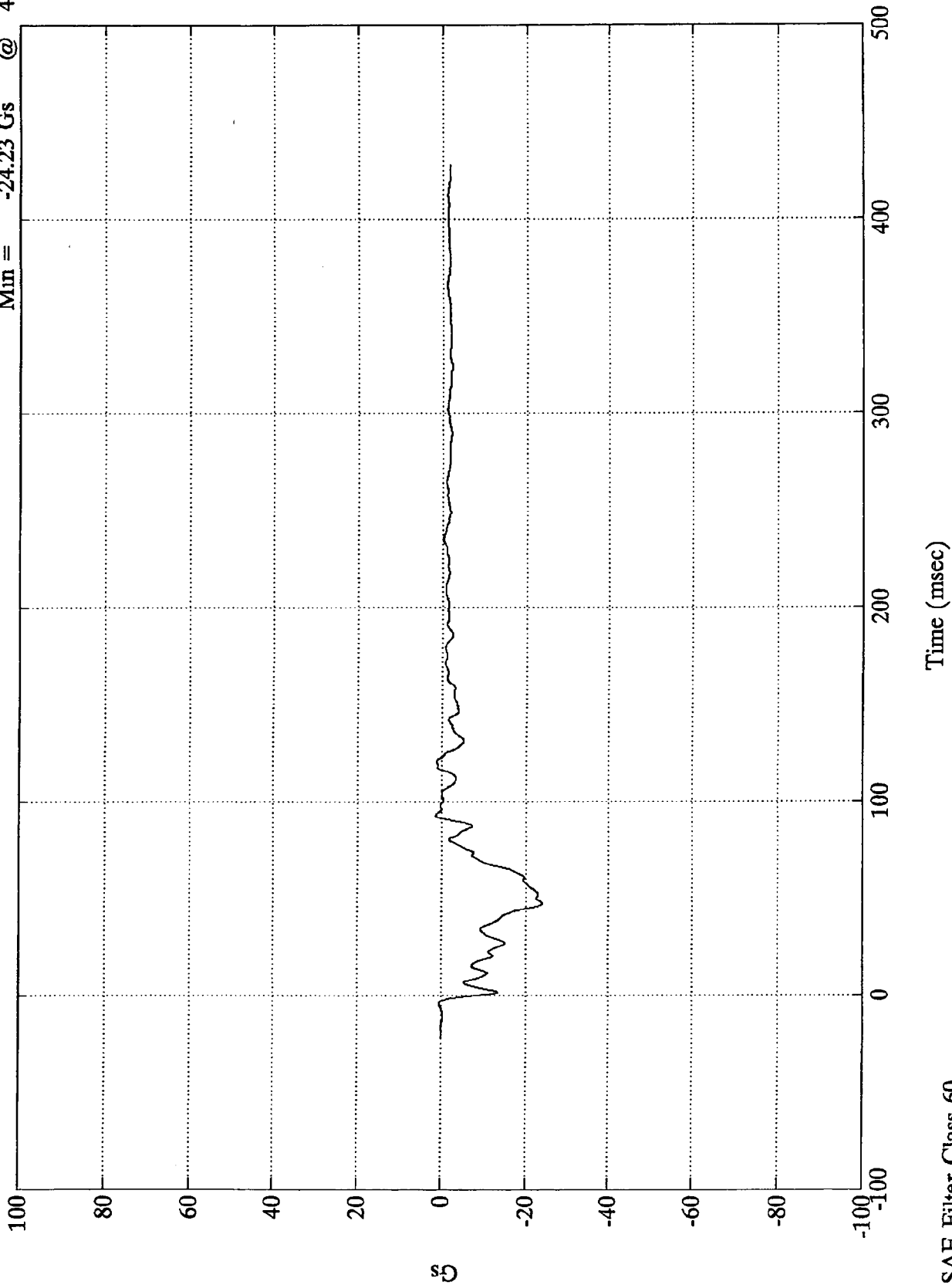


SAE Filter Class 180

VTV TEST #5

Acc #9 LR Compartment X

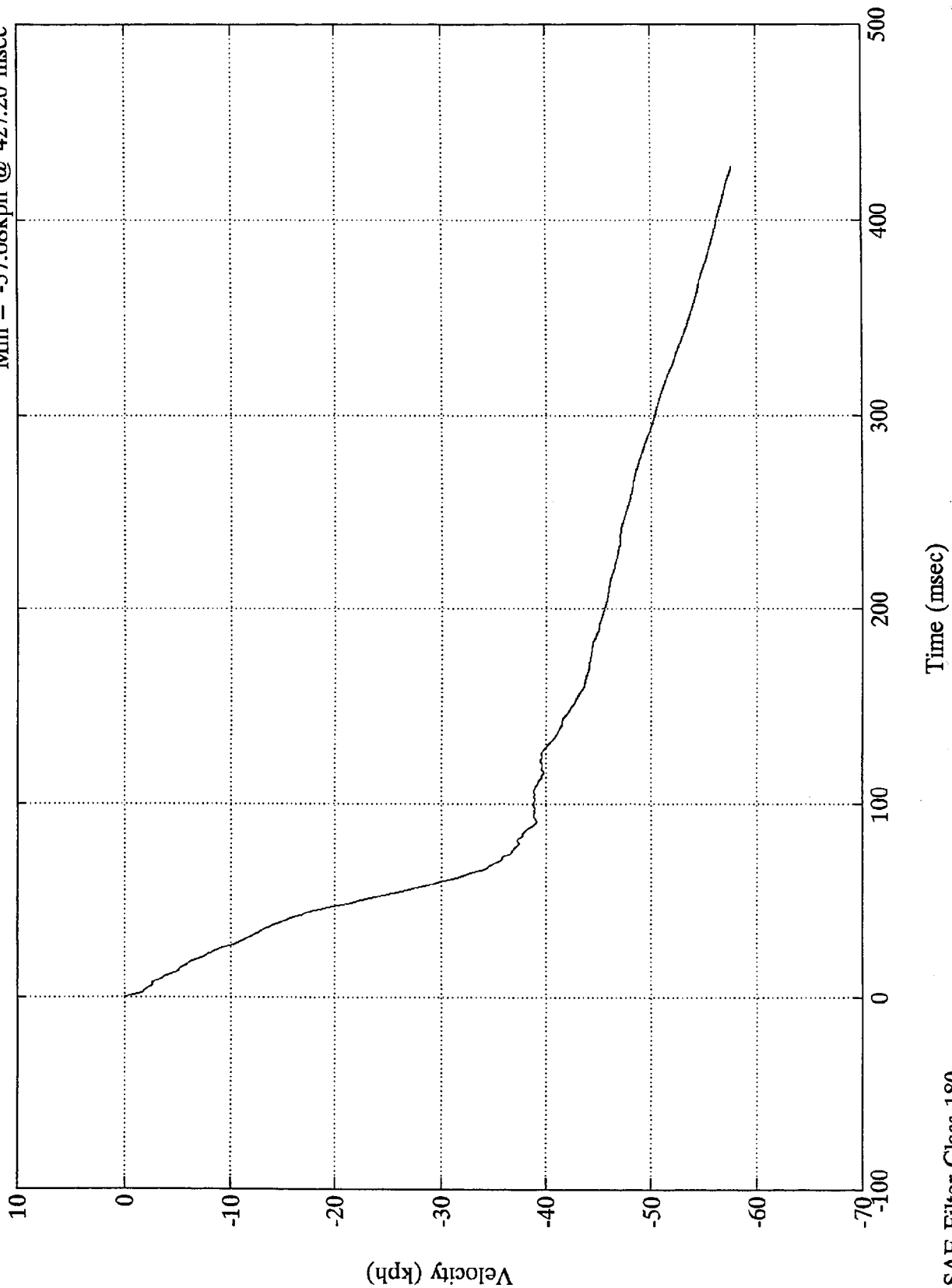
Max = 1.48 Gs @ 93.00 msec
Min = -24.23 Gs @ 47.28 msec



VTV TEST #5

Acc #9 LR Compartment X

Max = 0.00kph @ -0.00 msec
Min = -57.68kph @ 427.20 msec



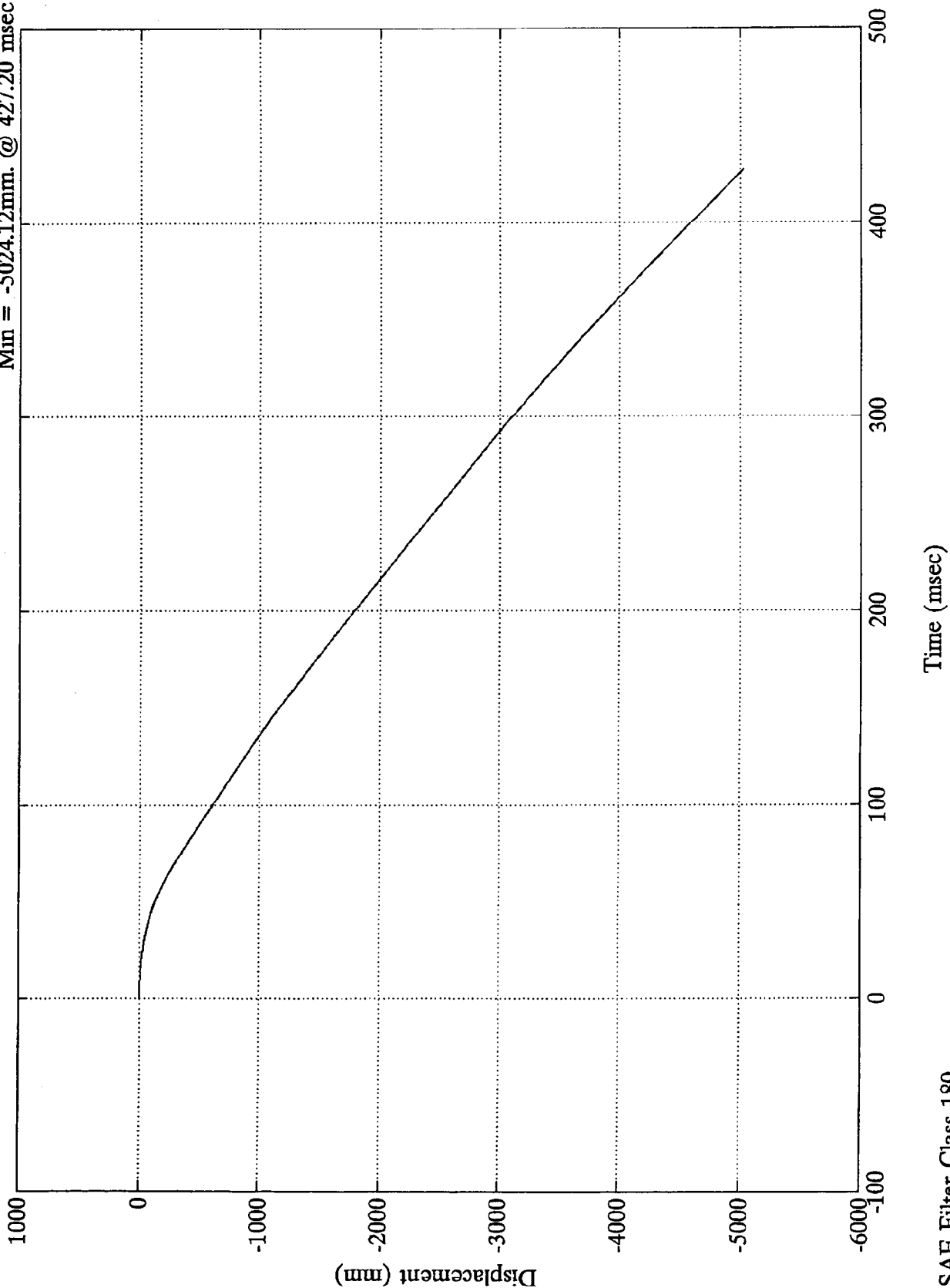
SAE Filter Class 180

VTV TEST #5

Acc #9 LR Compartment X

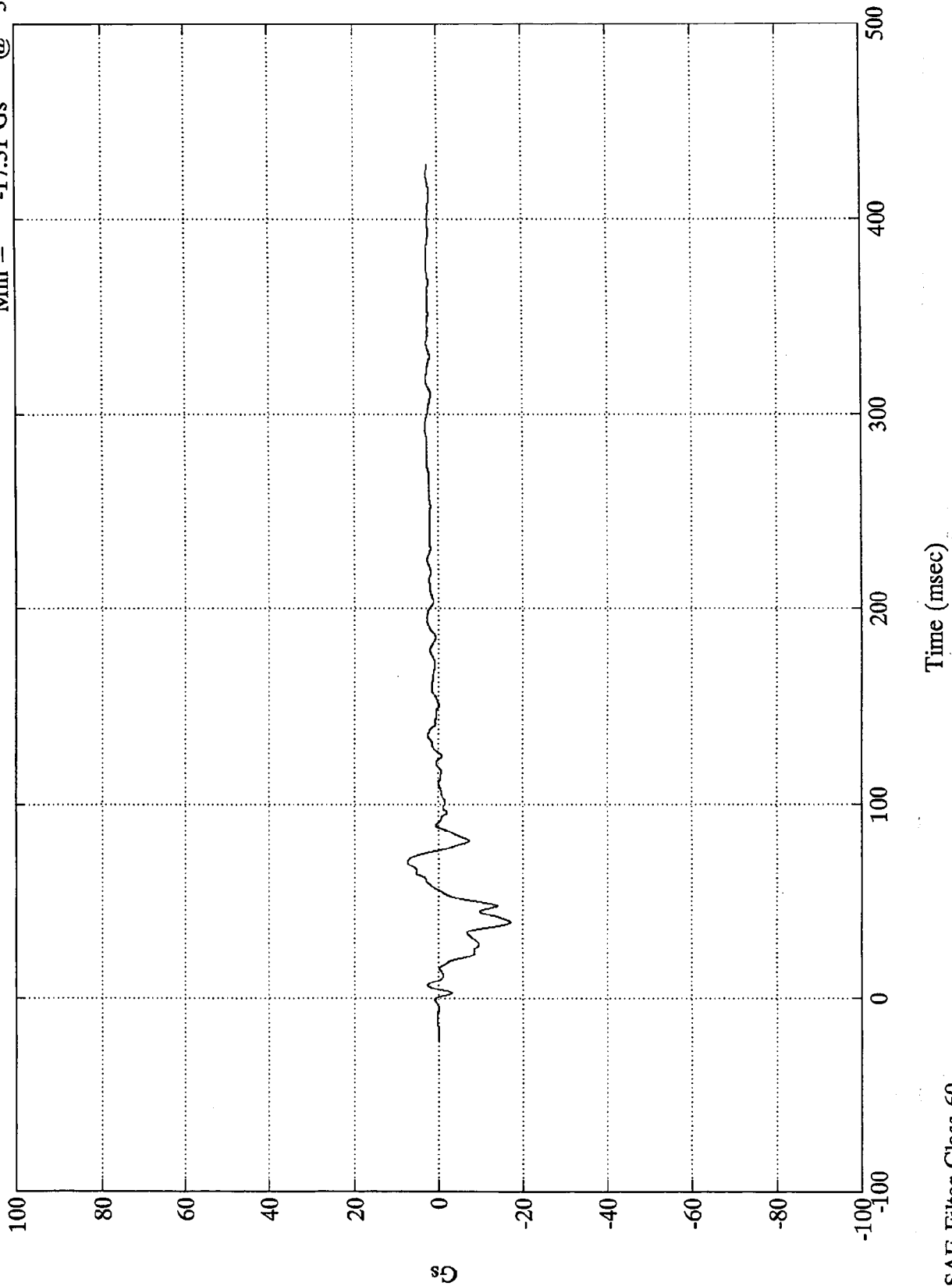
Max = 0.00mm. @ -0.00 msec

Min = -5024.12mm. @ 427.20 msec



VTV TEST #5

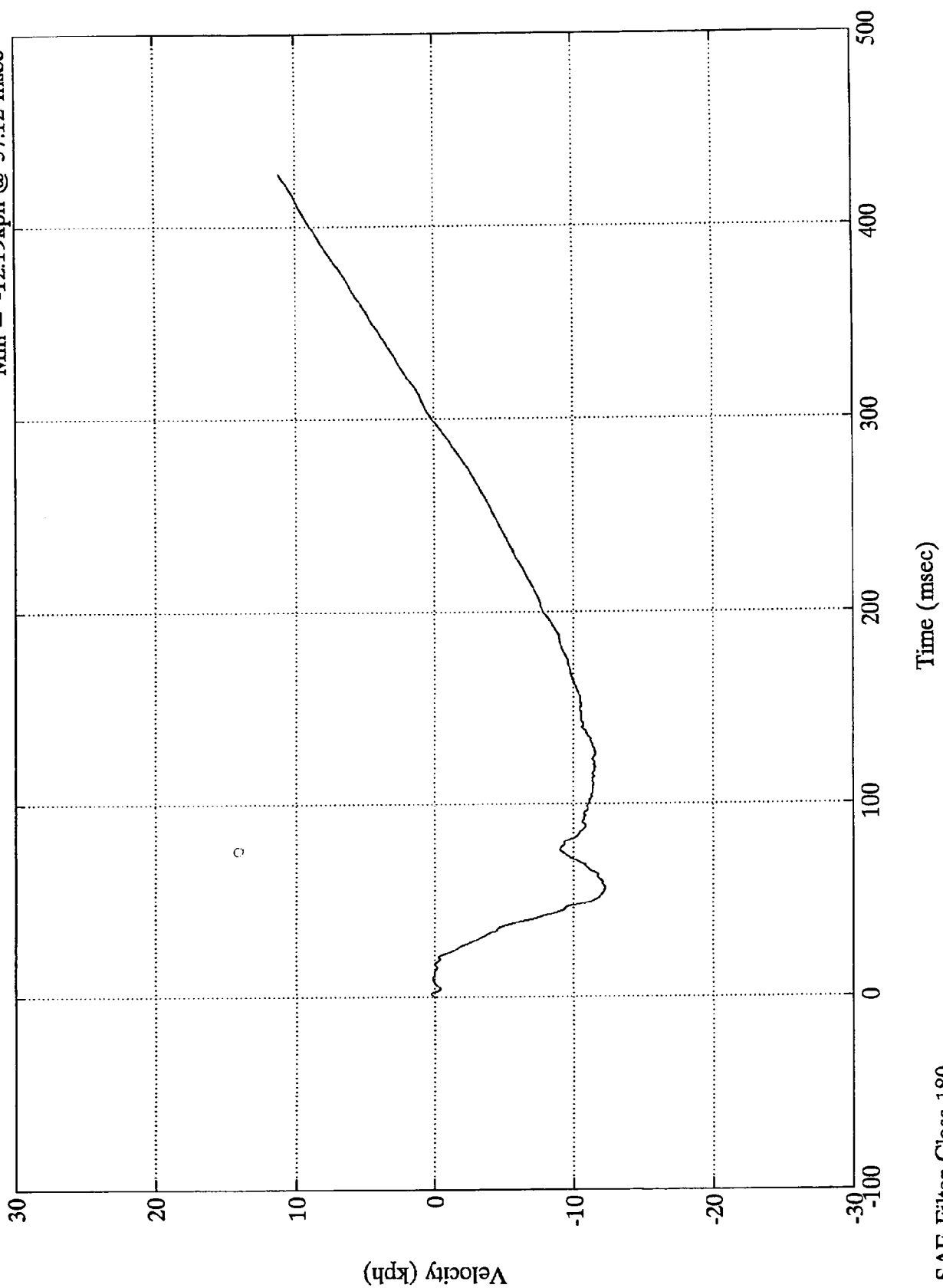
Acc #9 LR Compartment Y Max = 7.40 Gs @ 70.68 msec
Min = -17.31 Gs @ 39.59 msec



SAE Filter Class 60

VTV TEST #5

Acc #9 LR Compartment Y
Max = 11.16kph @ 427.20 msec
Min = -12.19kph @ 57.12 msec

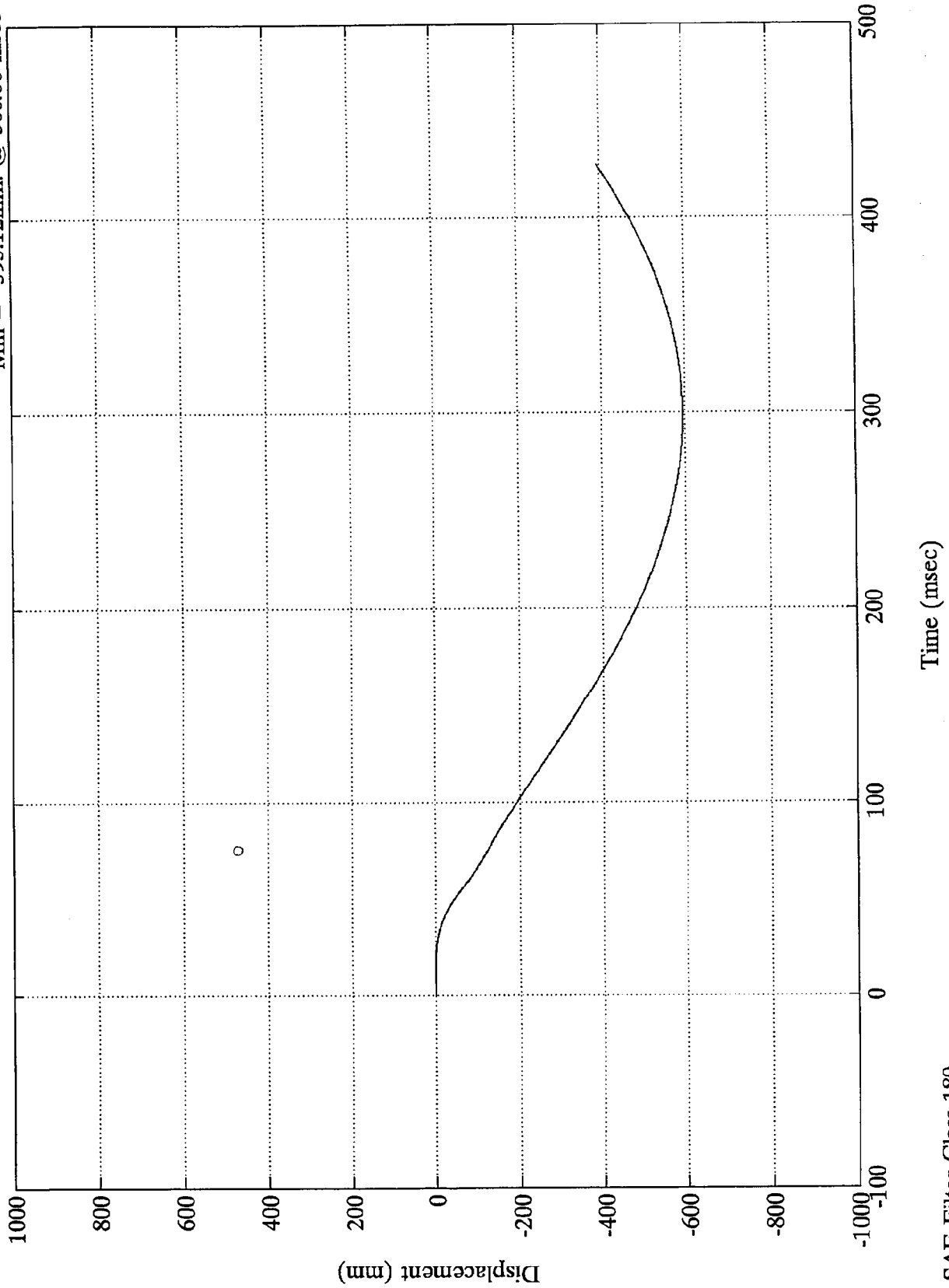


SAE Filter Class 180

VTV TEST #5

Acc #9 LR Compartment Y

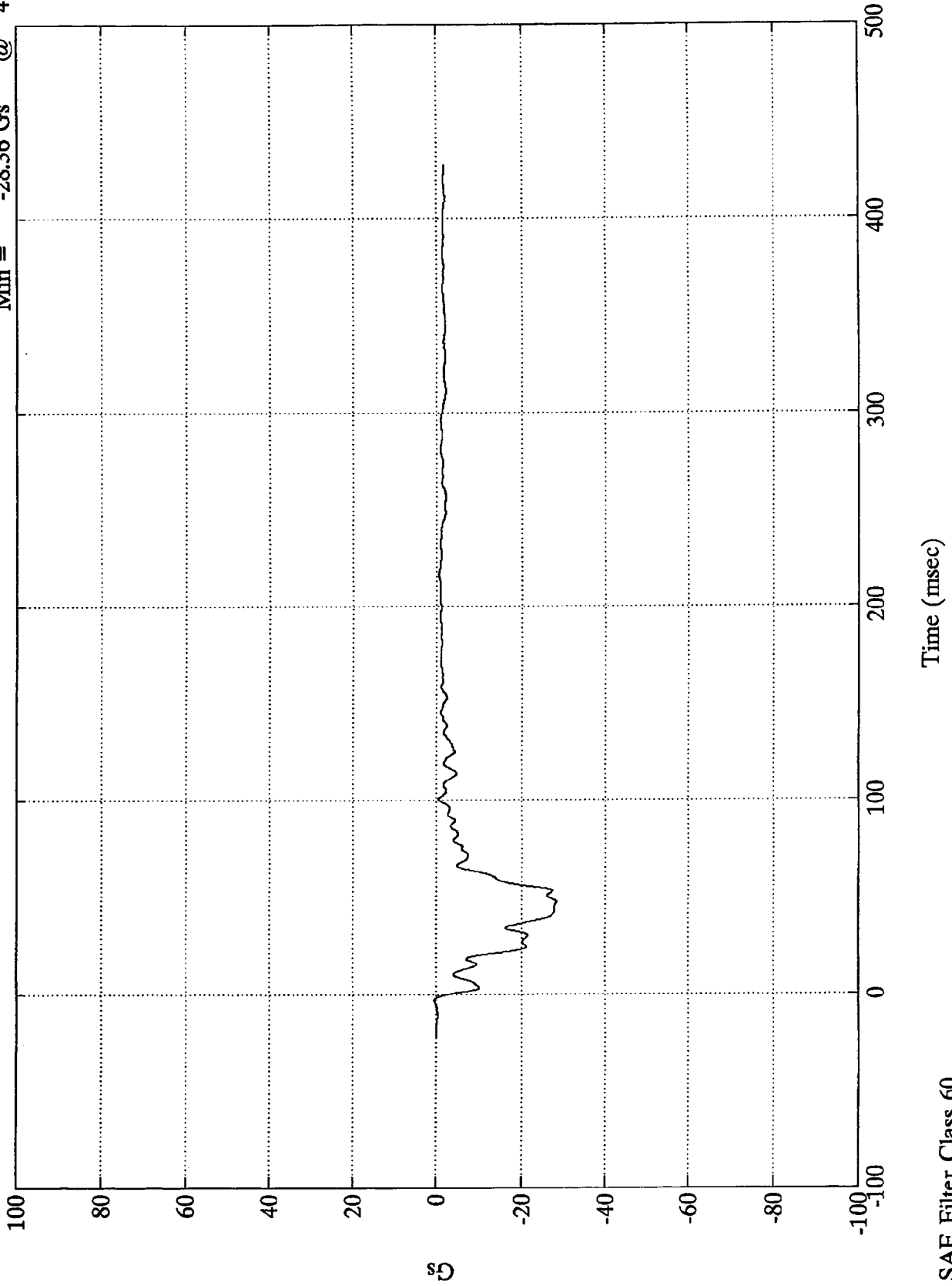
Max = 0.11mm. @ 2.88 msec
Min = -595.12mm. @ 300.00 msec



SAE Filter Class 180

VTV TEST #5

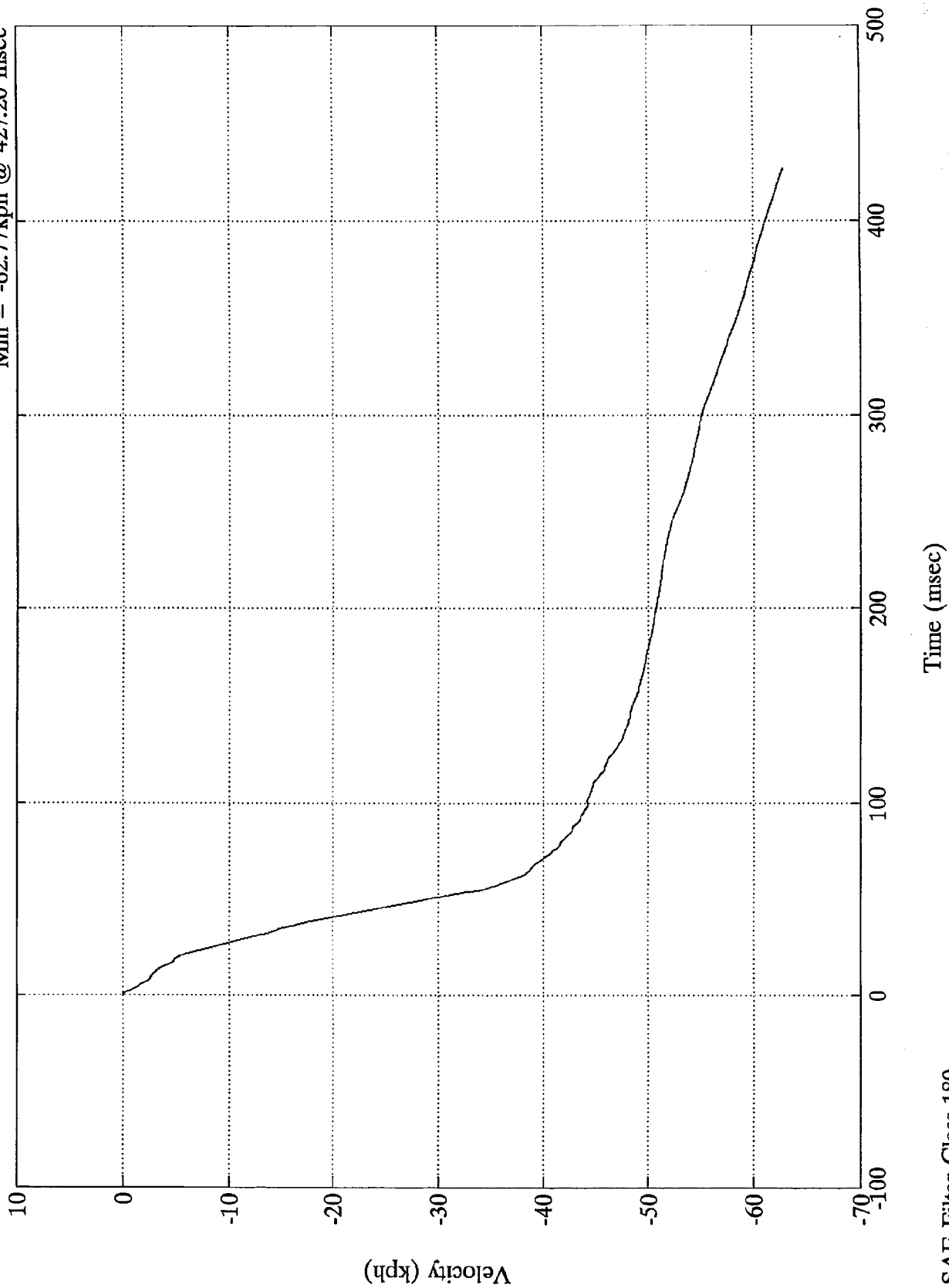
Acc #10 RR Compartment X
Max = .36 Gs @ -3.12 msec
Min = -28.36 Gs @ 47.28 msec



SAE Filter Class 60

VTV TEST #5

Acc #10 RR Compartment X
Max = 0.00kph @ -0.00 msec
Min = -62.77kph @ 427.20 msec

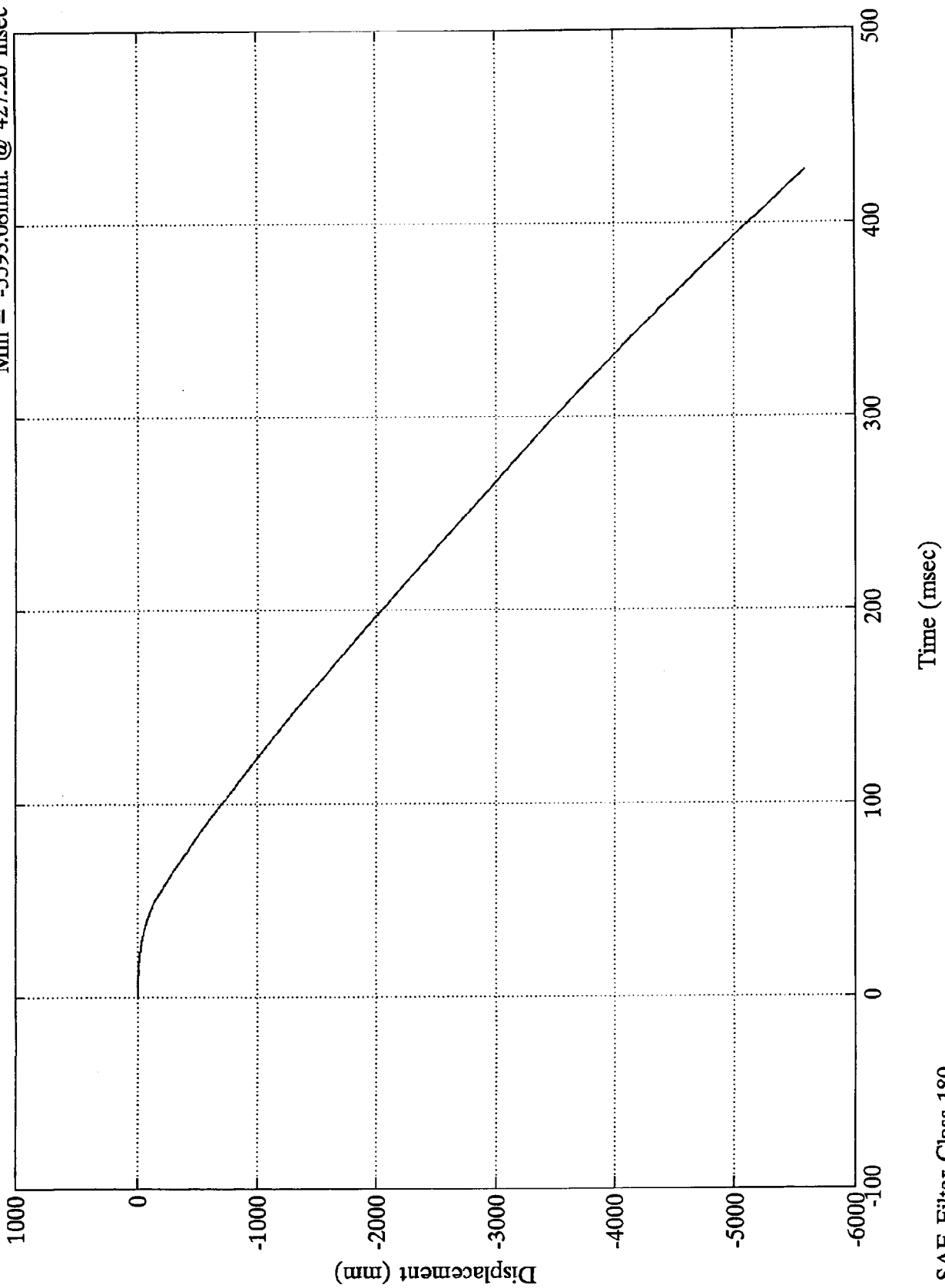


SAE Filter Class 180

VTV TEST #5

Acc #10 RR Compartment X

Max = 0.00mm. @ -0.00 msec
Min = -5593.08mm. @ 427.20 msec

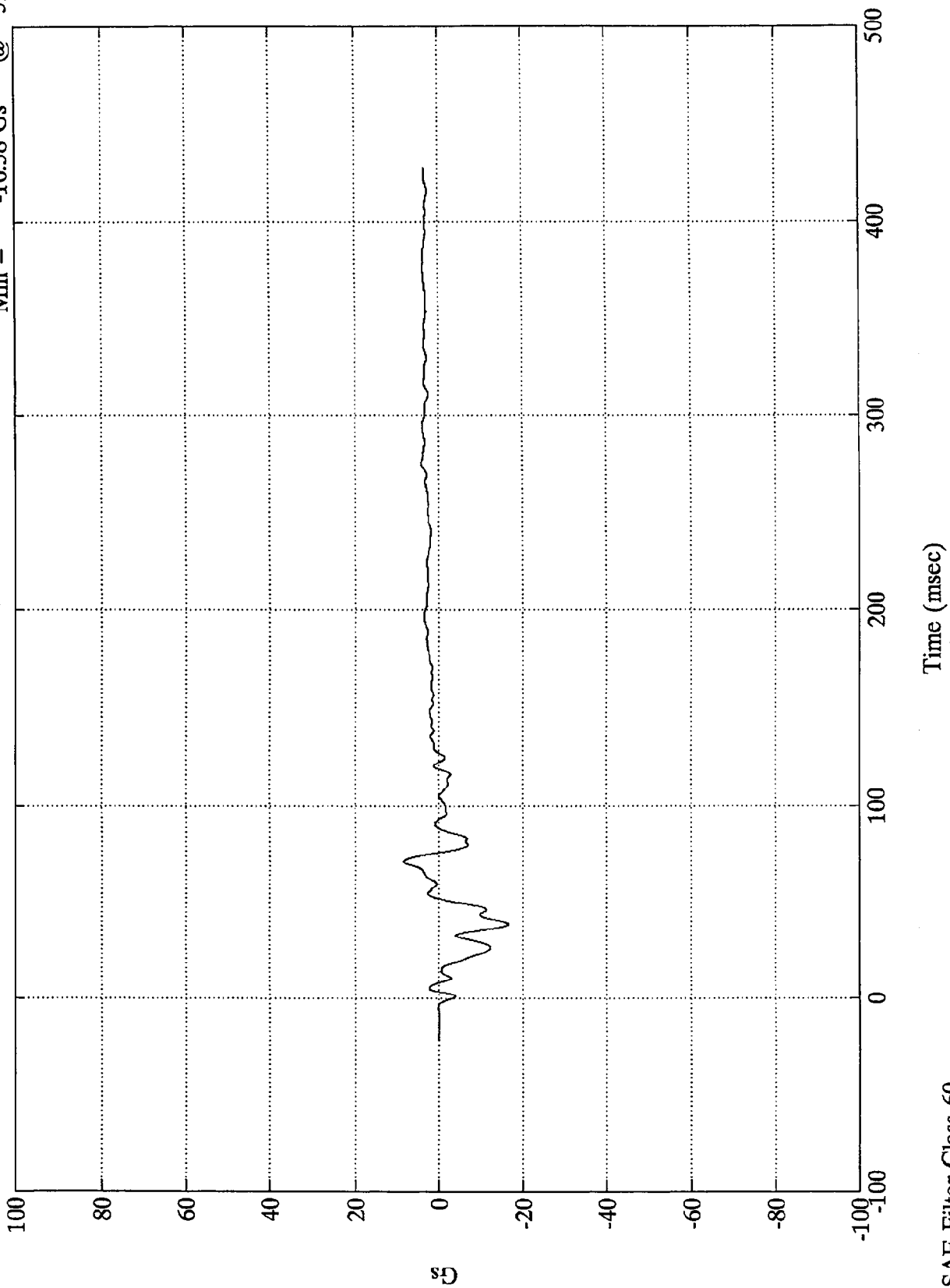


SAE Filter Class 180

VTV TEST #5

Max = 8.48 Gs @ 72.12 msec
 Min = -16.58 Gs @ 39.36 msec

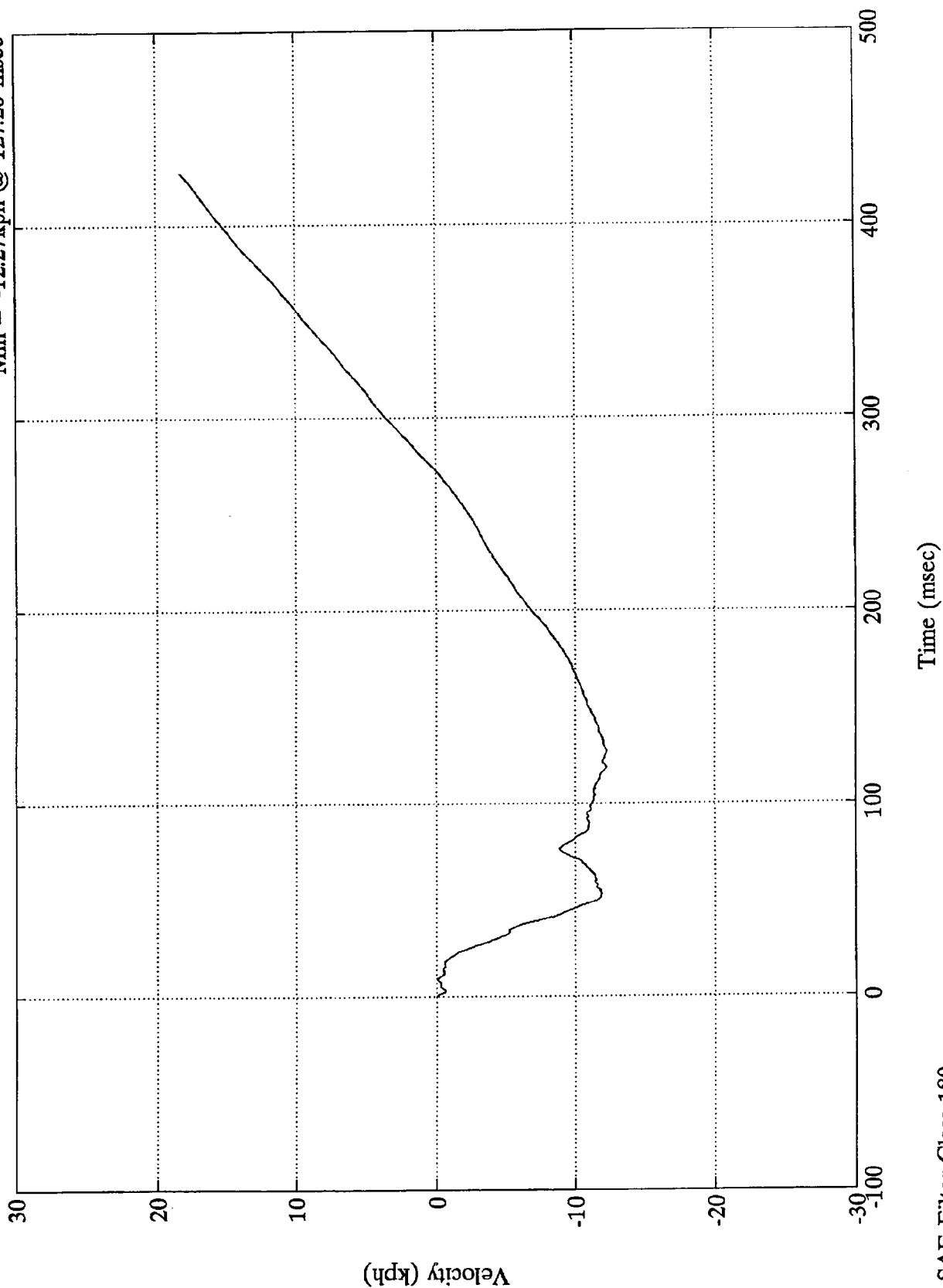
Acc #10 RR Compartment : Y



SAE Filter Class 60

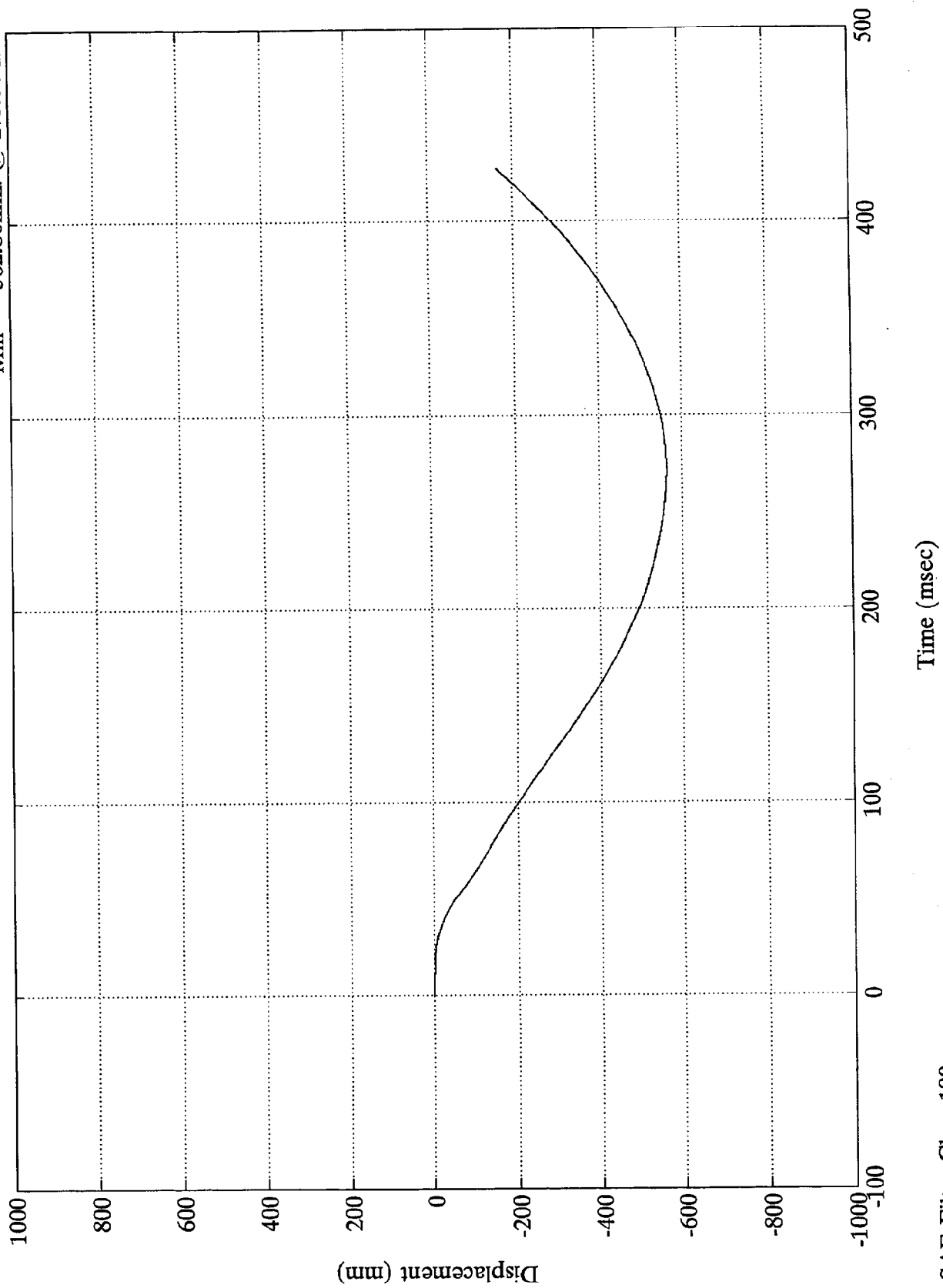
VTV TEST #5

Acc #10 RR Compartment Y
Max = 18.25kph @ 427.20 msec
Min = -12.27kph @ 127.20 msec



VTV TEST #5

Acc #10 RR Compartment Y
Max = 0.00mm. @ -0.00 msec
Min = -562.86mm. @ 275.04 msec



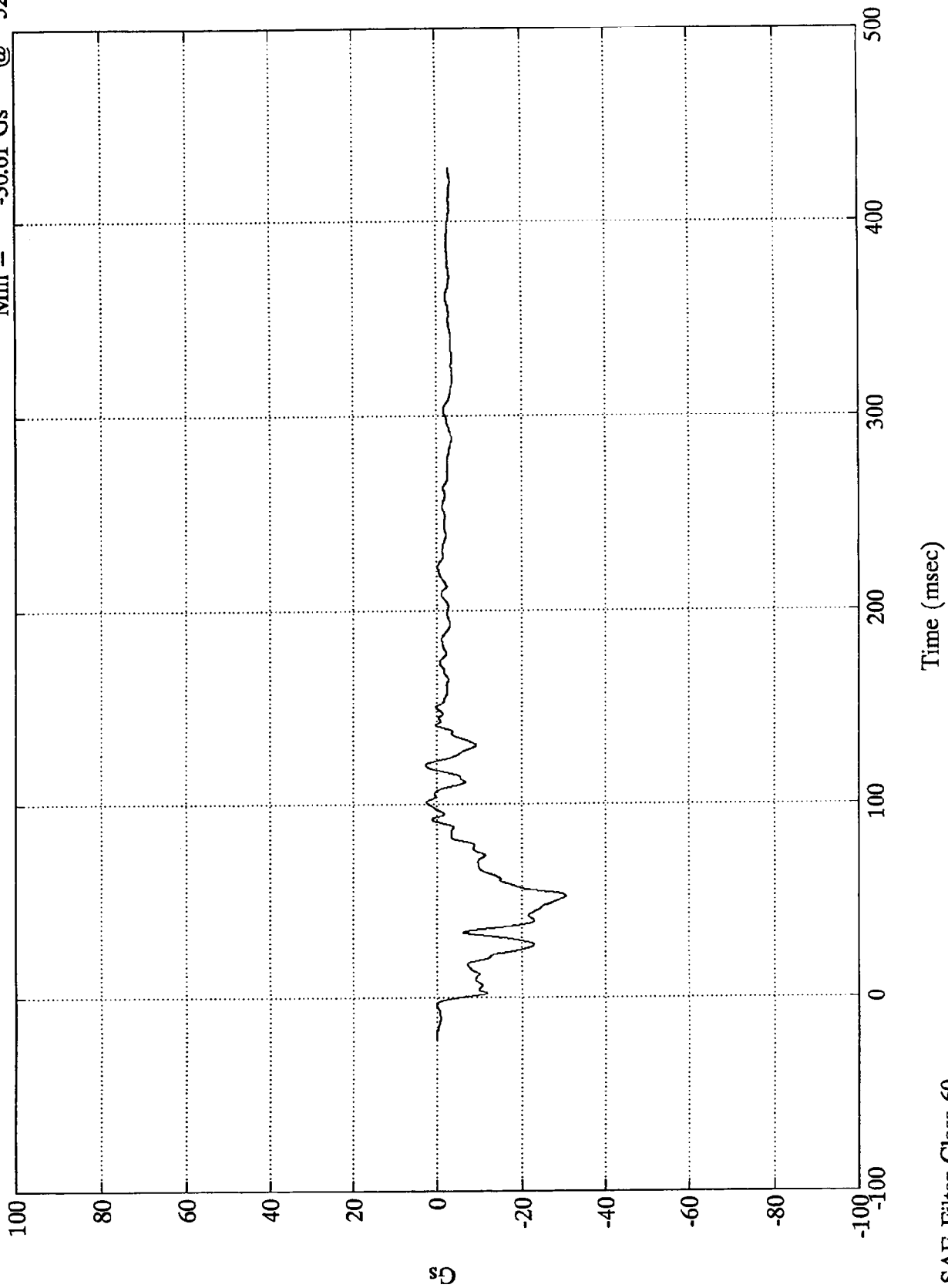
SAE Filter Class 180

8304-5

VTV TEST #5

Max = 2.54 Gs @ 120.36 msec
Min = -30.61 Gs @ 52.79 msec

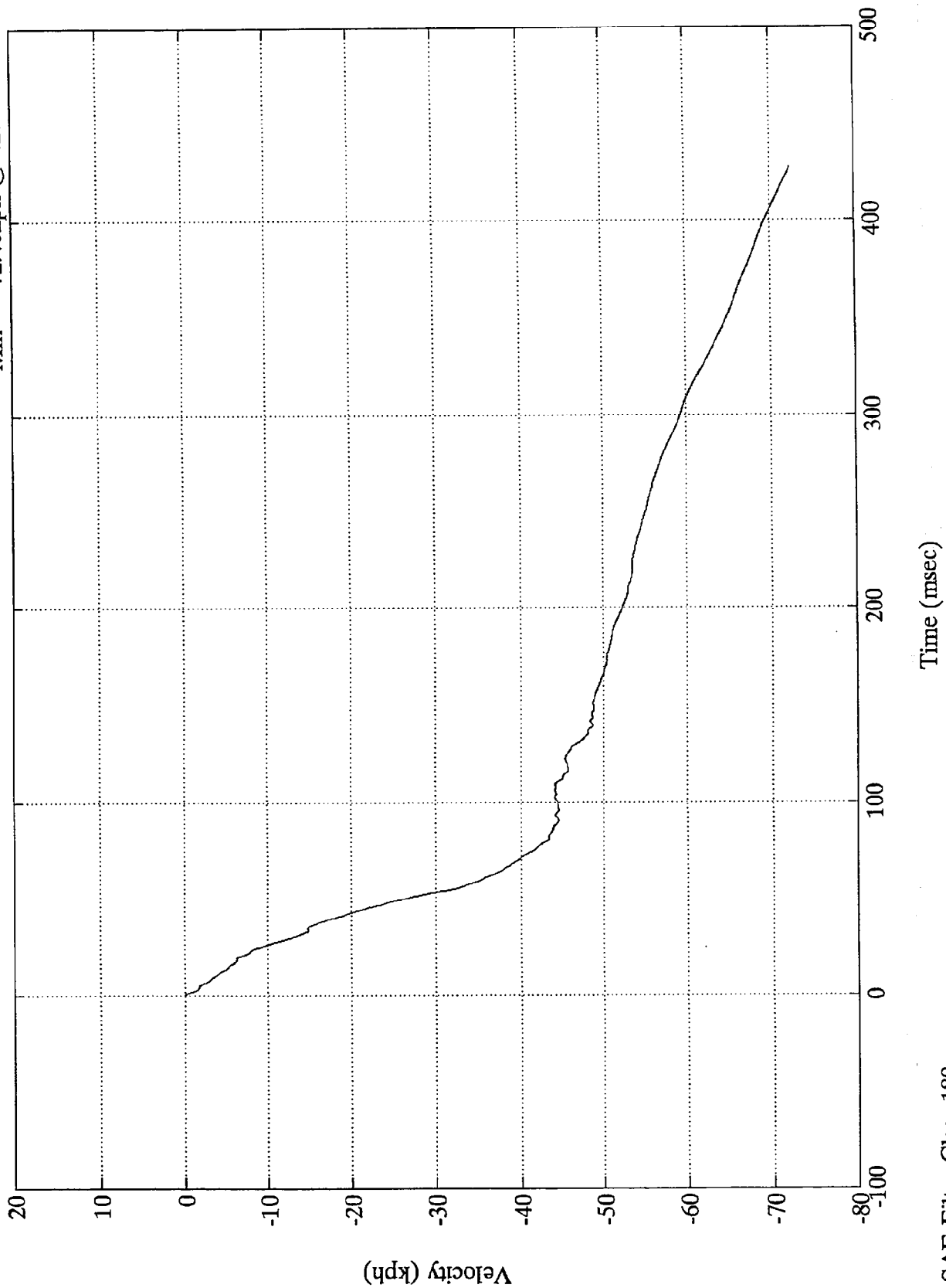
Acc #11 Rear Comp. C/L X



SAE Filter Class 60

VTV TEST #5

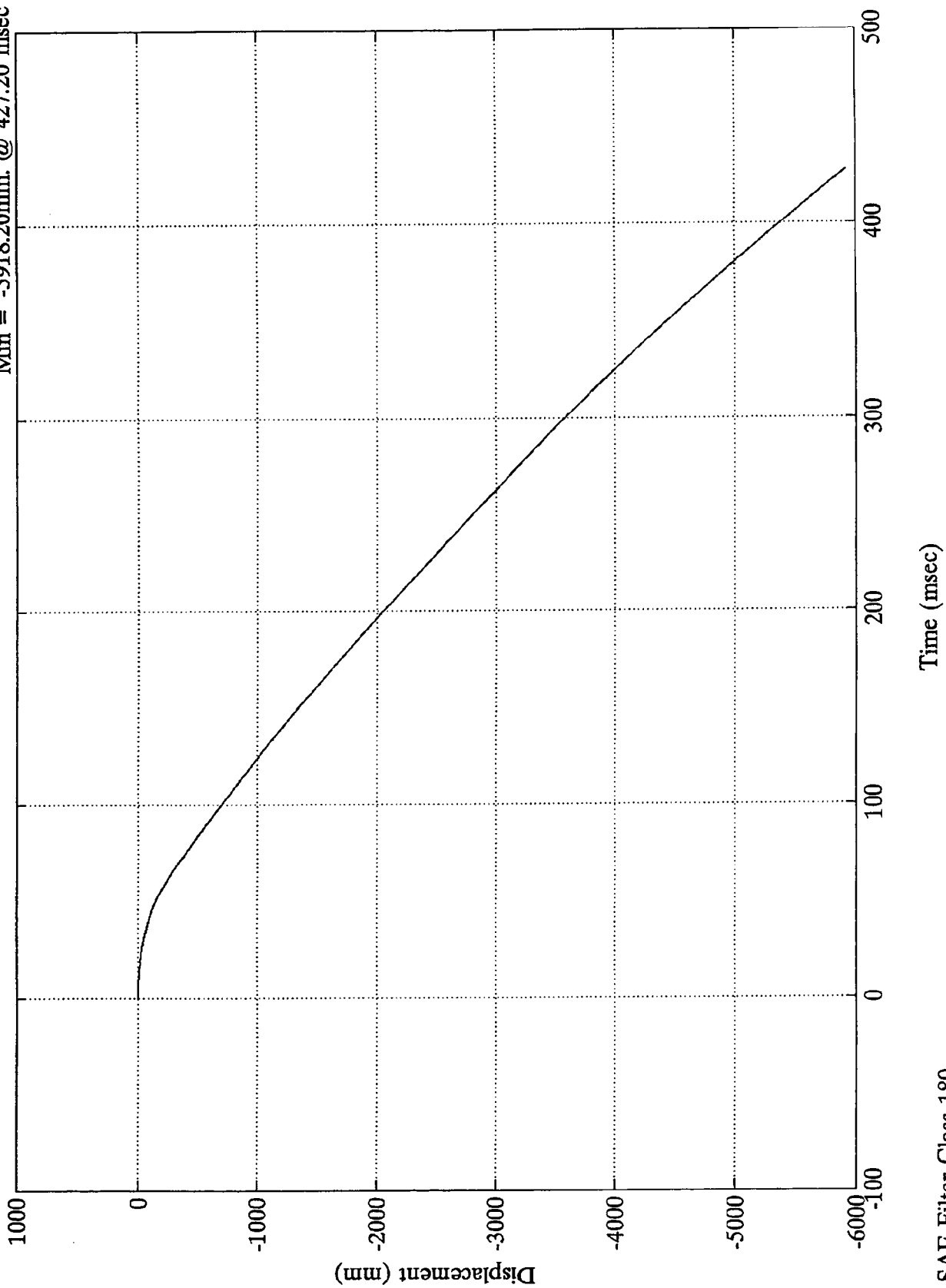
Acc #11 Rear Comp. C/L X
Max = 0.00kph @ -0.00 msec
Min = -72.40kph @ 427.20 msec



SAE Filter Class 180

VTV TEST #5

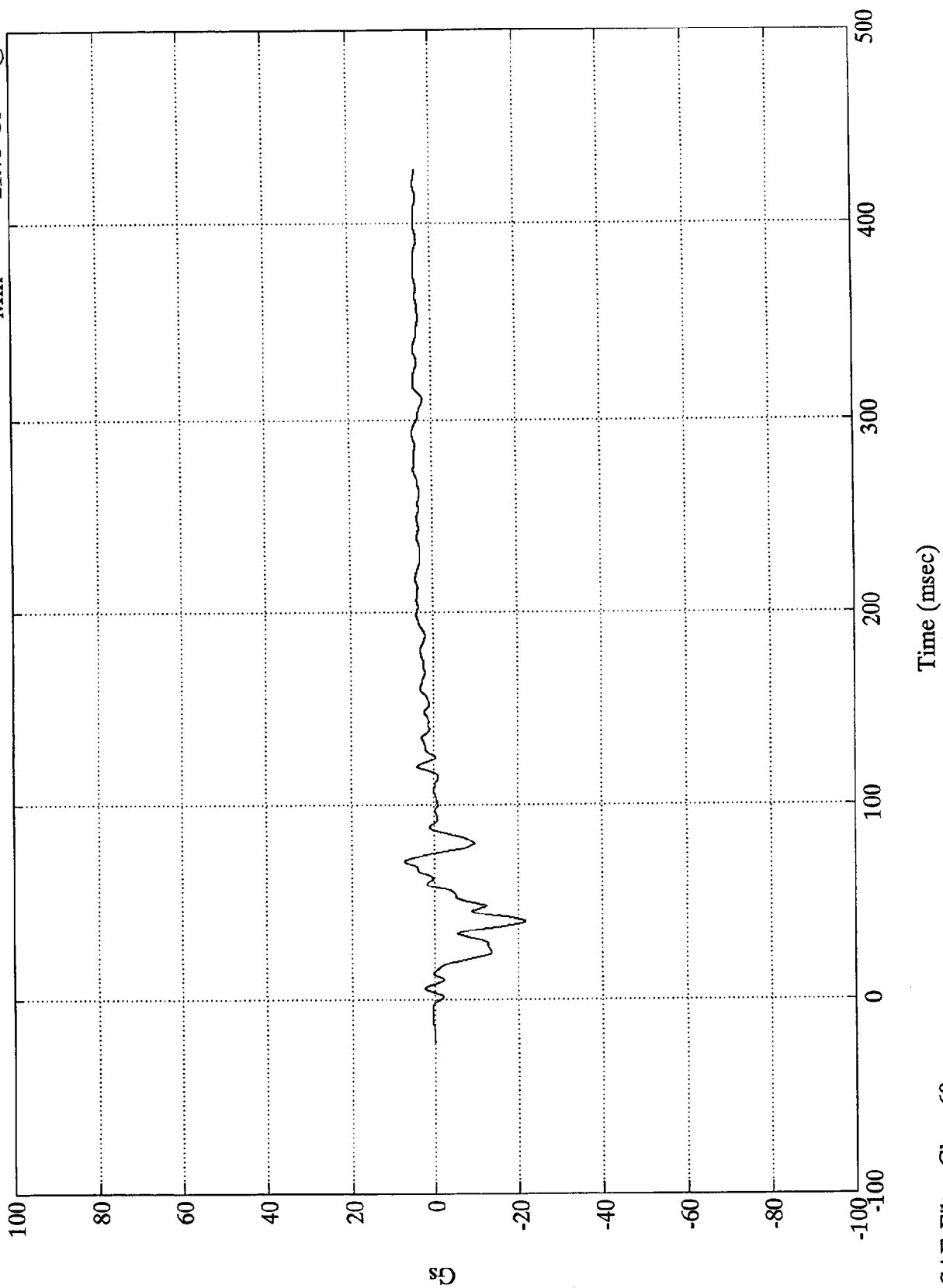
Acc #11 Rear Comp. C/L X
Max = 0.00mm. @ -0.00 msec
Min = -5918.20mm. @ 427.20 msec



SAE Filter Class 180

VTV TEST #5

Acc #11 Rear Comp. C/L Y Max = 7.09 Gs @ 71.27 msec
Min = -21.73 Gs @ 39.95 msec

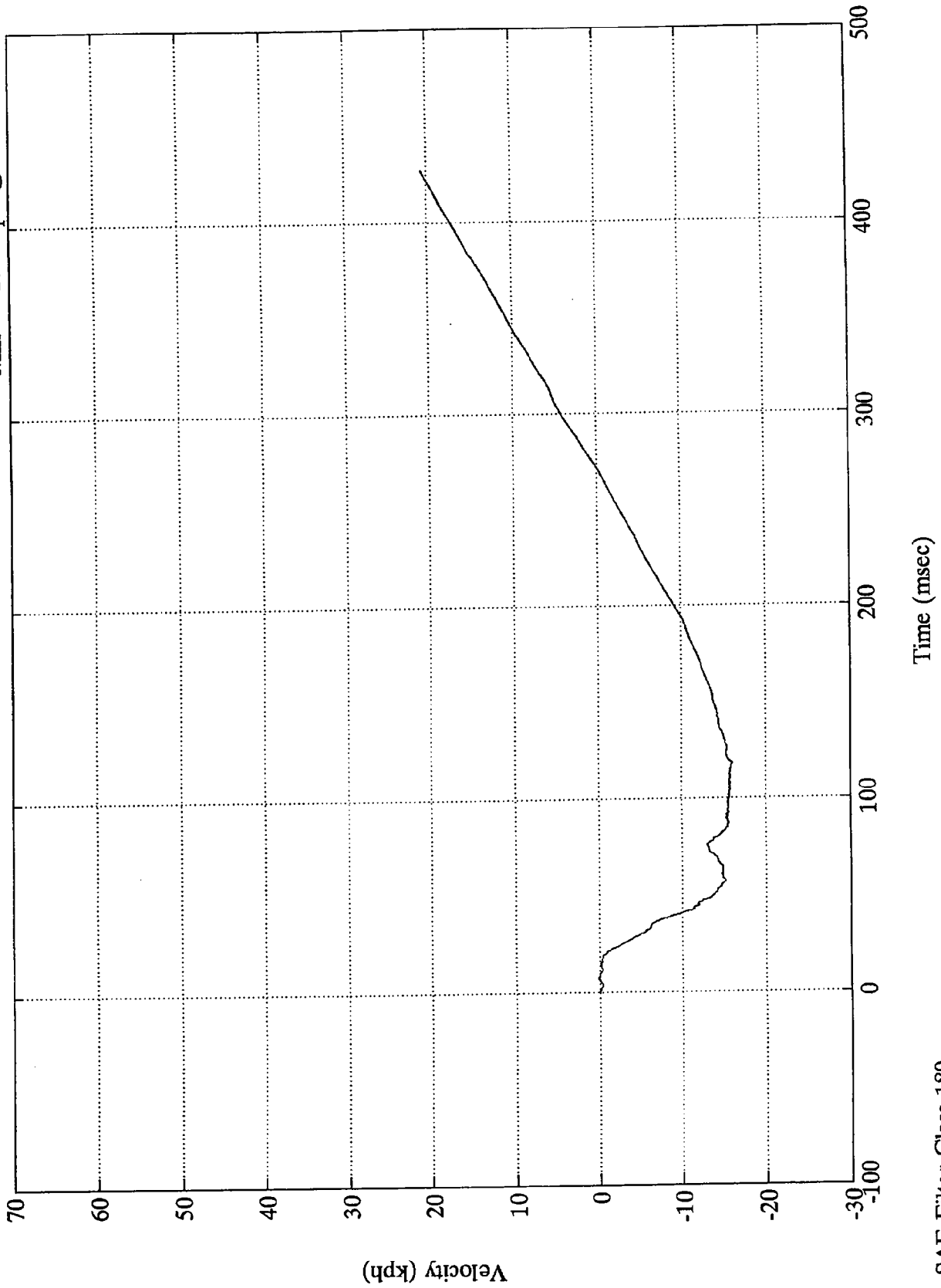


SAE Filter Class 60

VTV TEST #5

Acc #11 Rear Comp. C/L Y

Max = 20.72kph @ 427.20 msec
Min = -15.96kph @ 118.32 msec

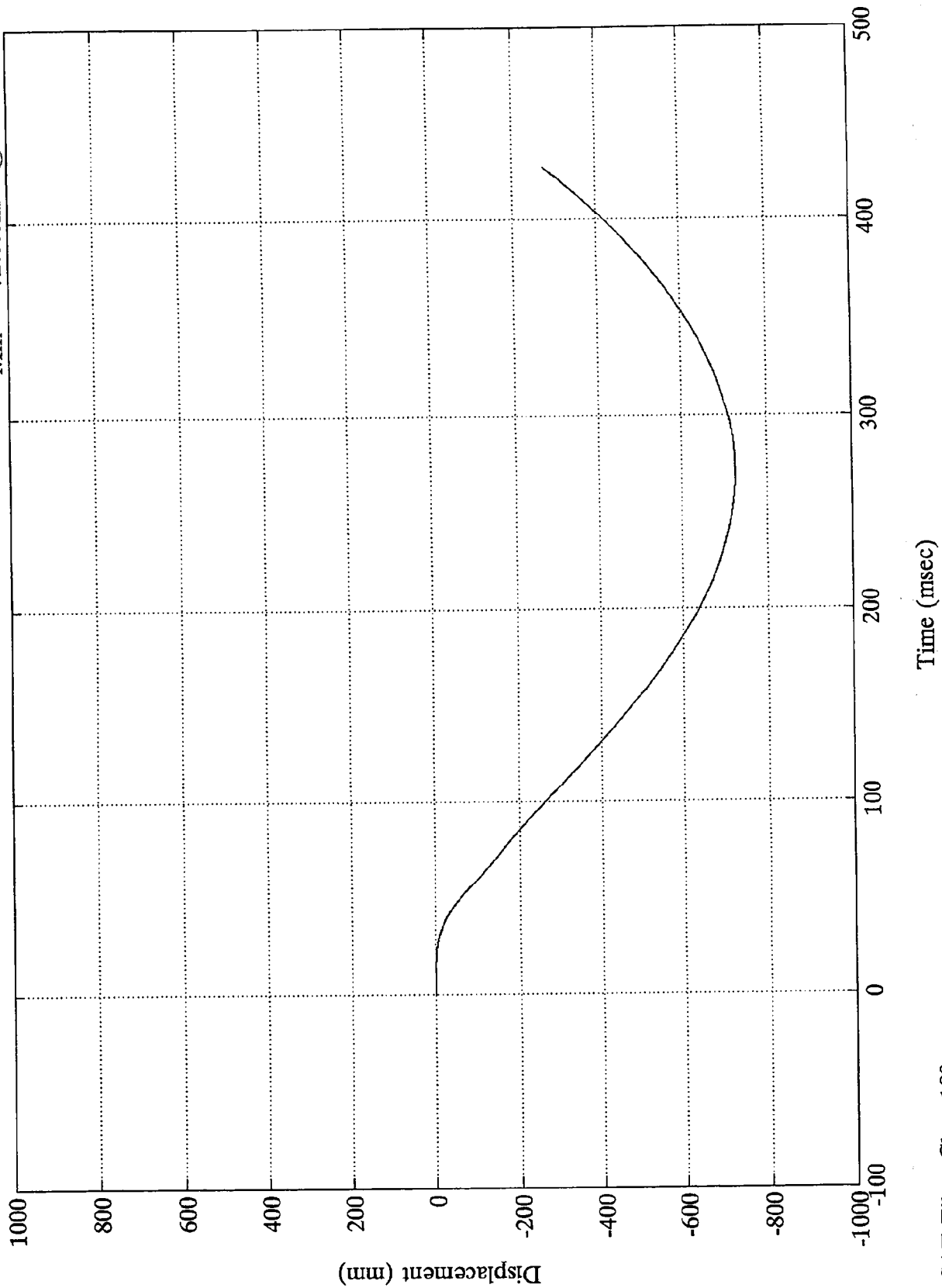


SAE Filter Class 180

VTV TEST #5

Acc #11 Rear Comp. C/L Y

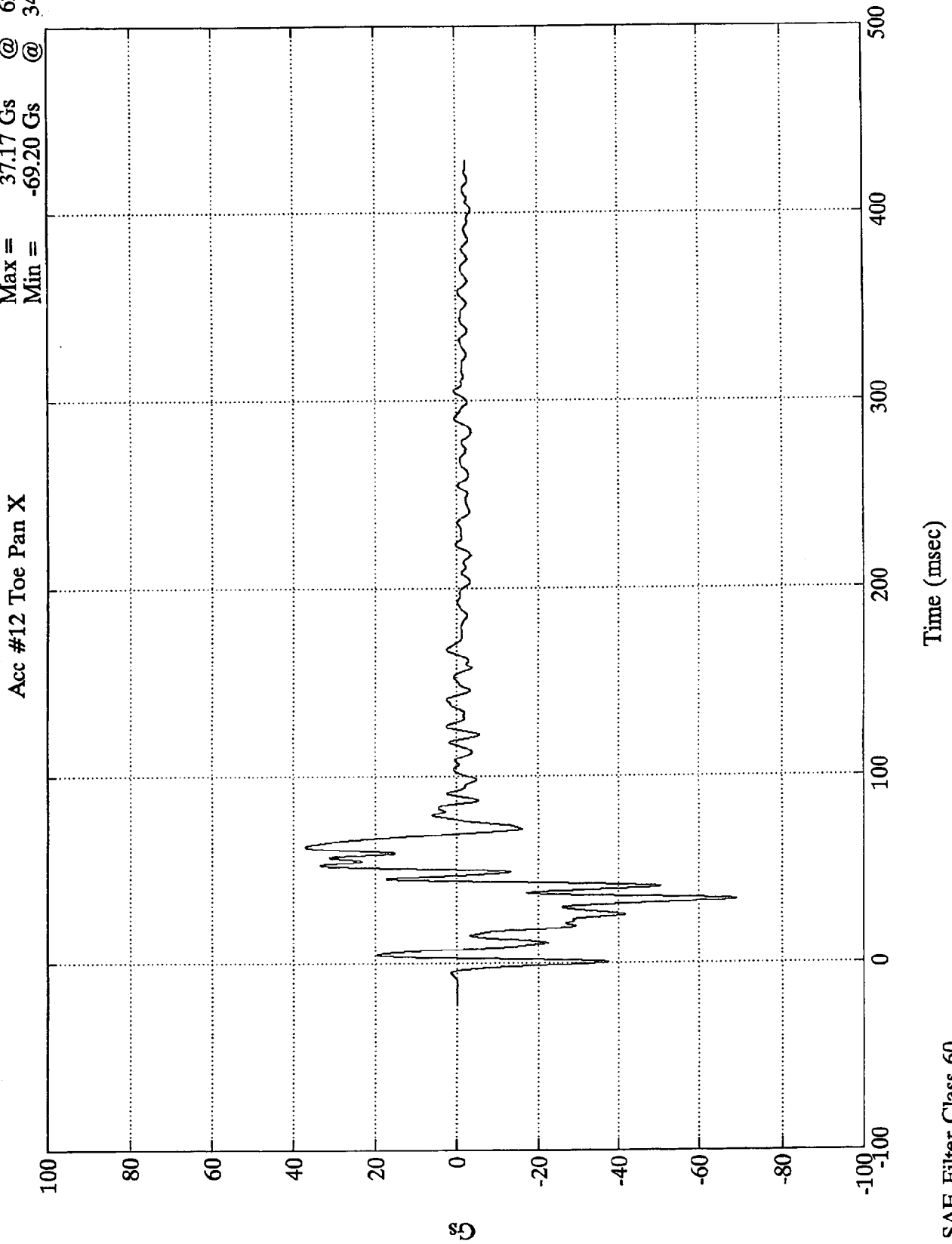
Max = 0.00mm. @ -0.00 msec
Min = -727.46mm. @ 274.32 msec



SAE Filter Class 180

VTV TEST #5

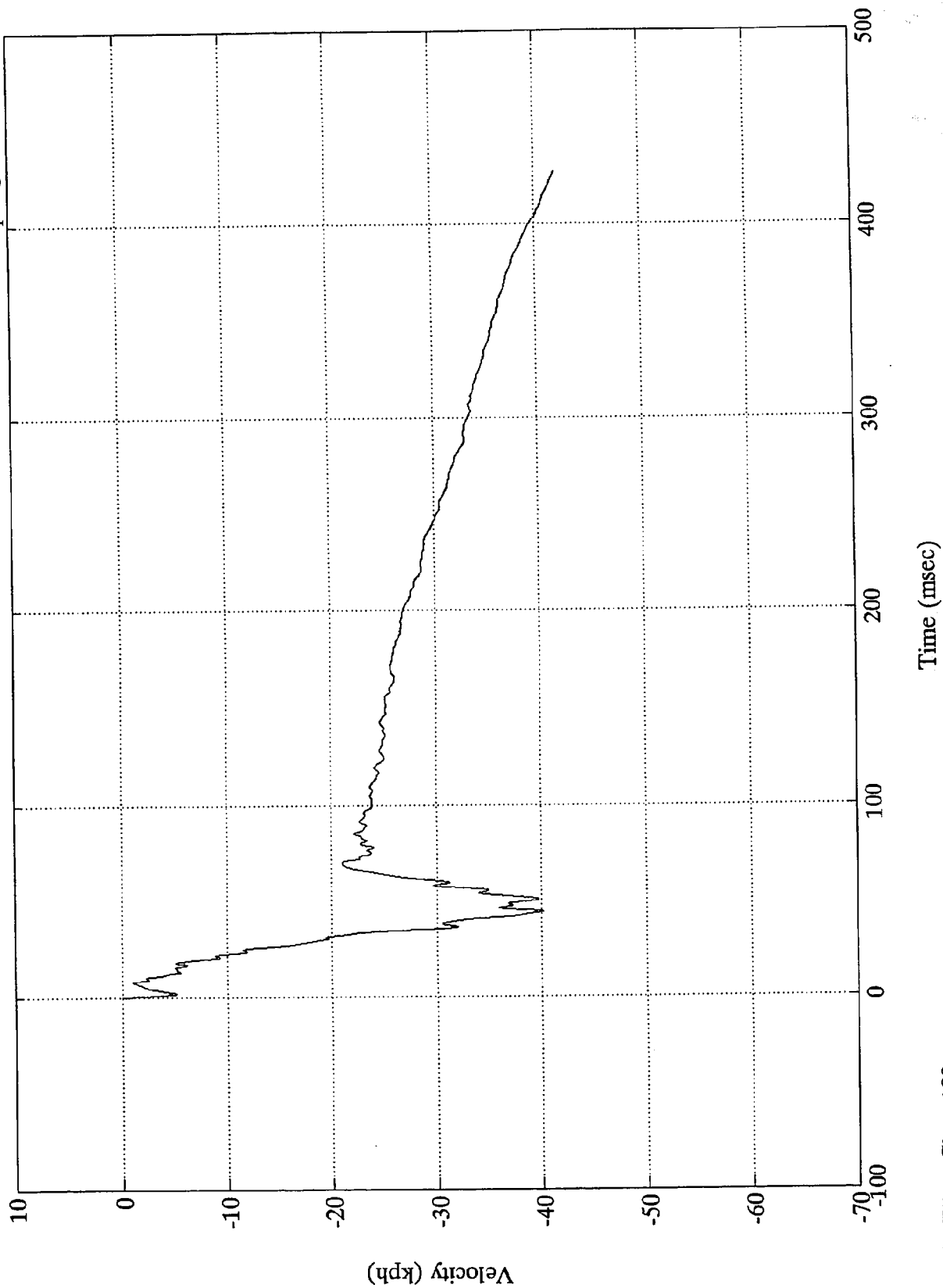
Max = 37.17 Gs @ 62.76 msec
 Min = -69.20 Gs @ 34.43 msec



SAE Filter Class 60

VTV TEST #5

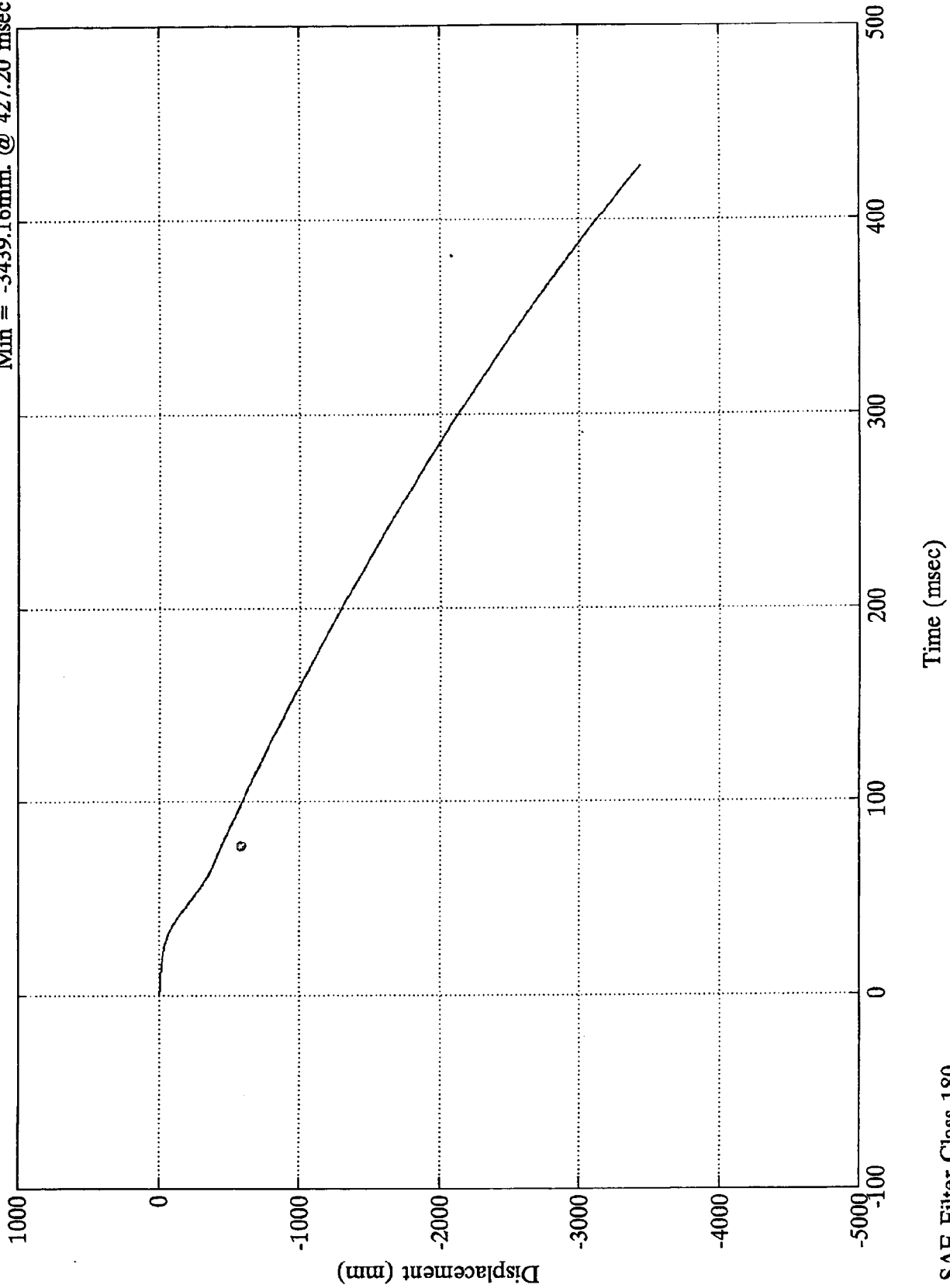
Acc #12 Toe Pan X
Max = 0.00kph @ -0.00 msec
Min = -41.99kph @ 427.20 msec



SAE Filter Class 180

VTV TEST #5

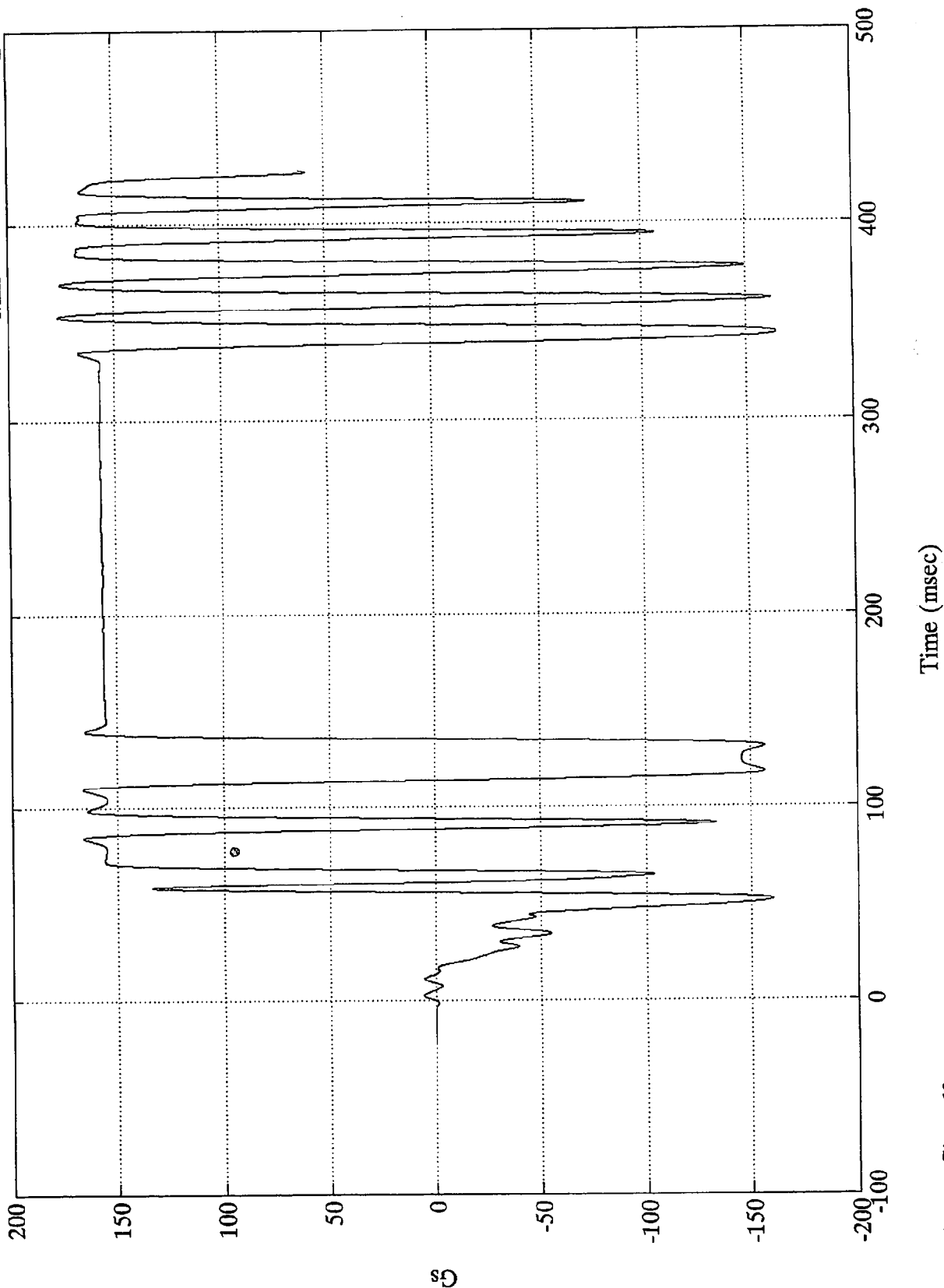
Acc #12 Toe Pan X
Max = 0.00mm. @ -0.00 msec
Min = -3439.16mm. @ 427.20 msec



SAE Filter Class 180

VTV TEST #5

Acc #12 Toe Pan Y
Max = 176.75 Gs @ 353.16 msec
Min = -164.37 Gs @ 343.80 msec

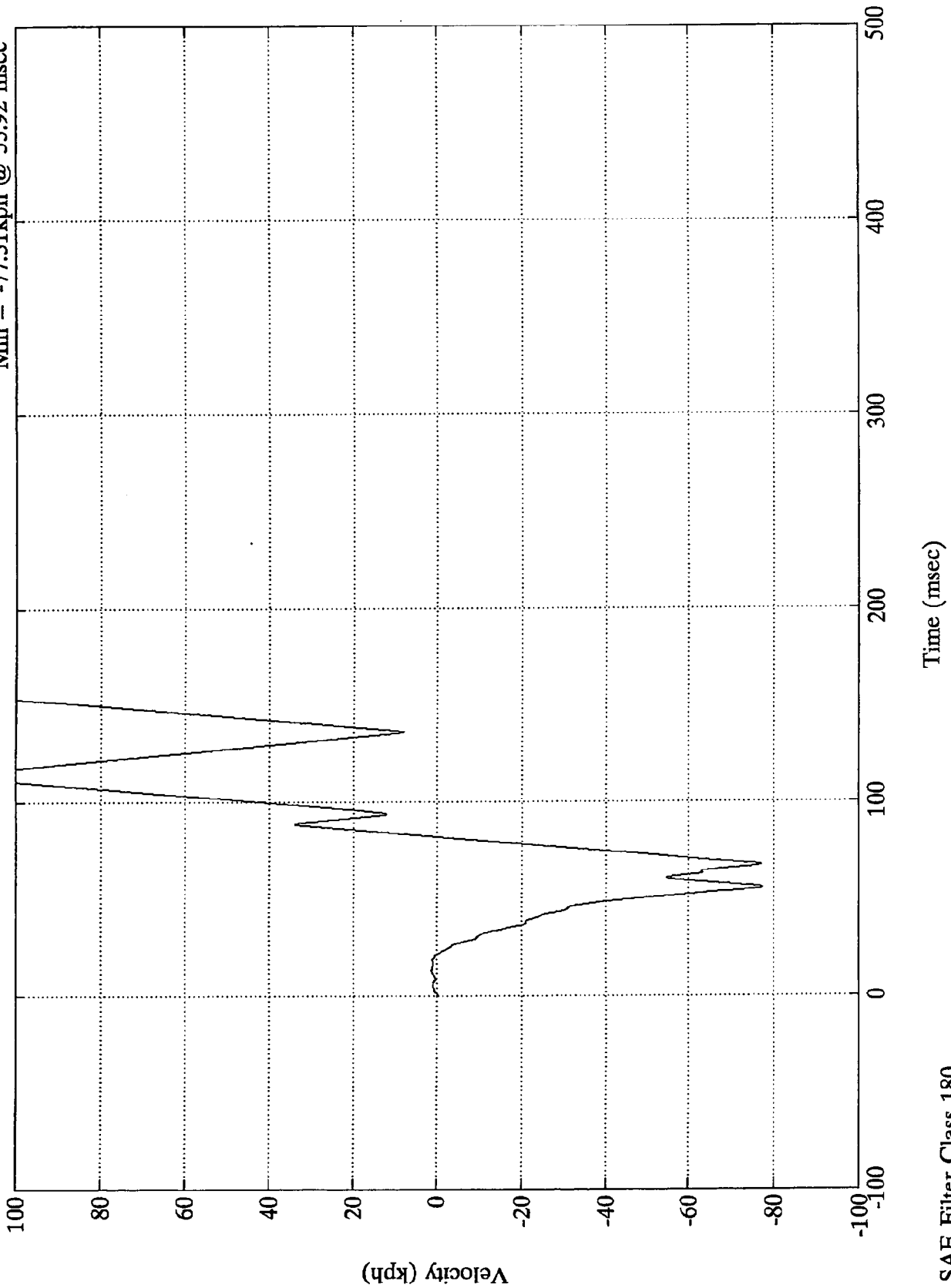


SAE Filter Class 60

VTV TEST #5

Max = 1283.78kph @ 425.52 msec
Min = -77.31kph @ 55.92 msec

Acc #12 Toe Pan Y

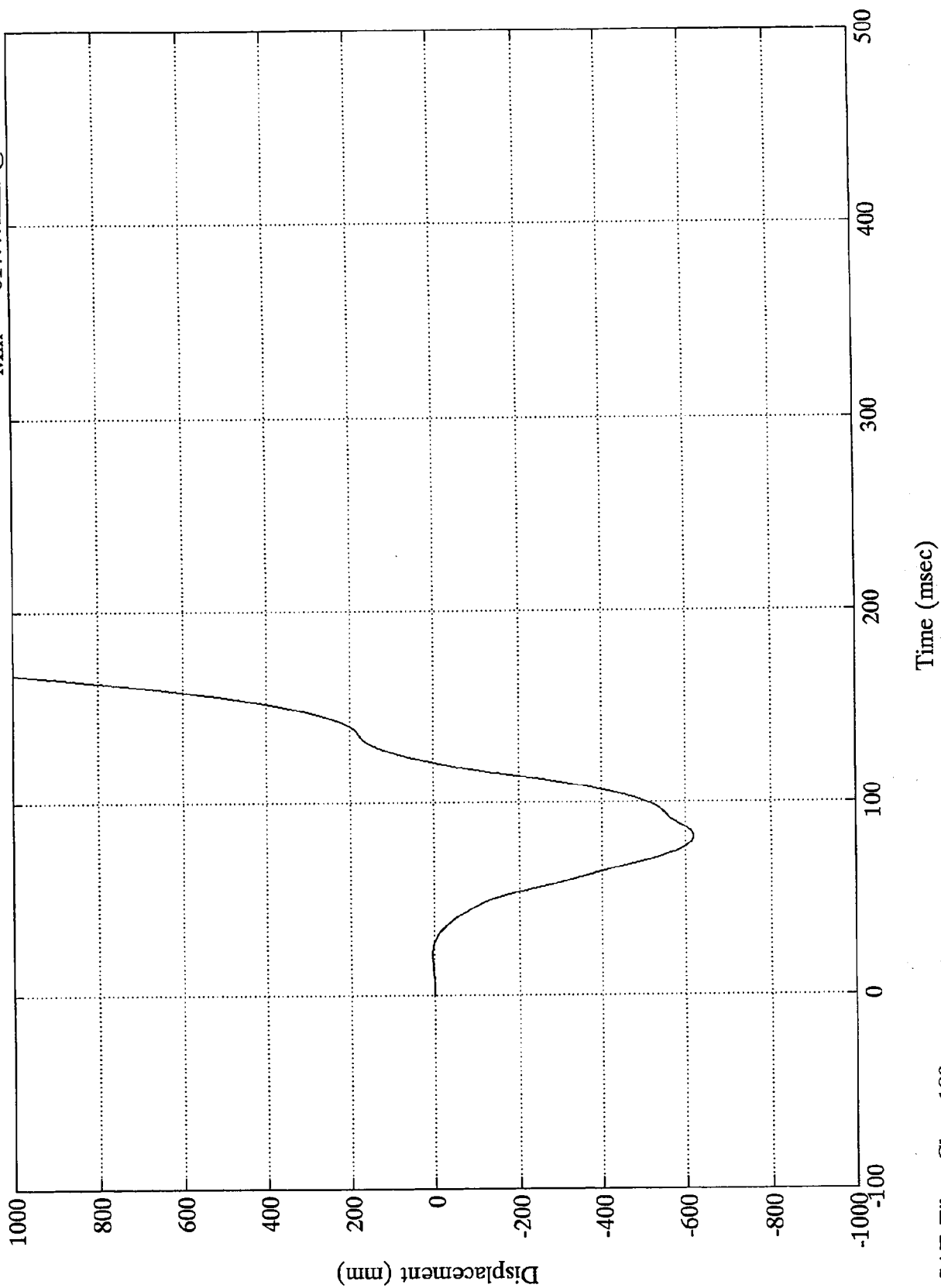


SAE Filter Class 180

VTV TEST #5

Max = 60579.00mm. @ 427.20 msec
Min = -617.47mm. @ 82.56 msec

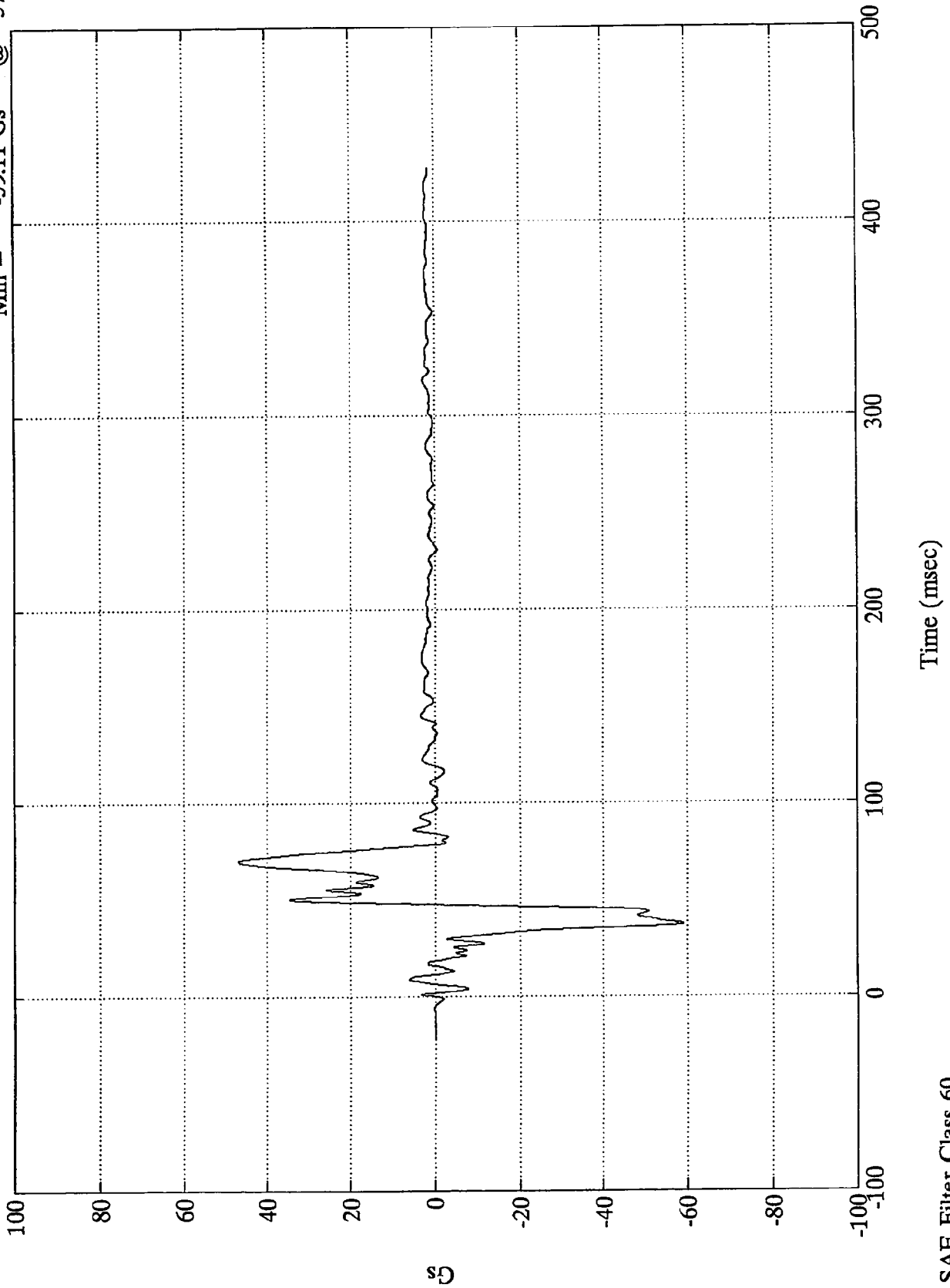
Acc #12 Toe Pan Y



SAE Filter Class 180

VTV TEST #5

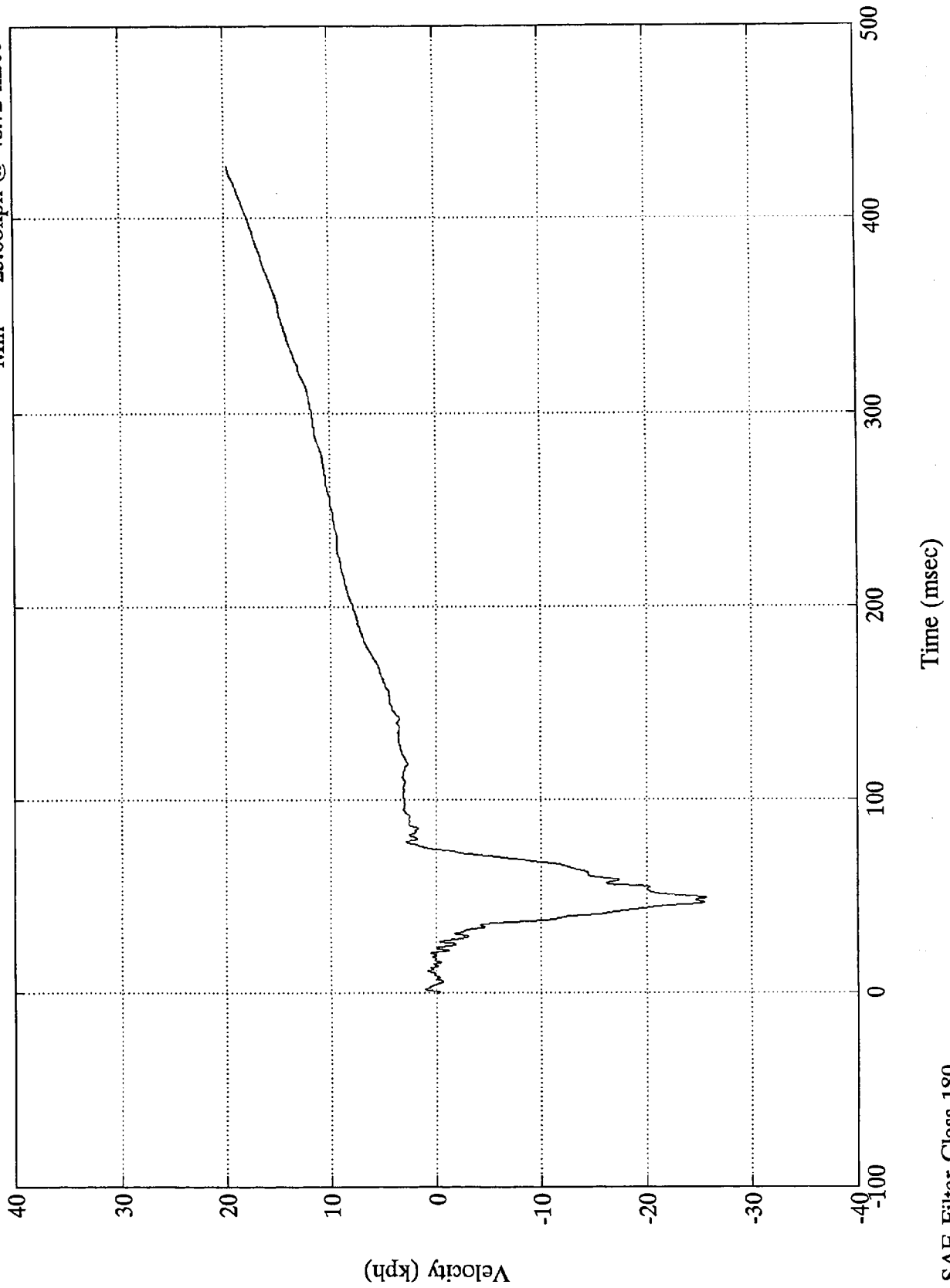
Acc #12 Toe Pan Z
Max = 47.11 Gs @ 70.44 msec
Min = -59.11 Gs @ 37.31 msec



SAE Filter Class 60

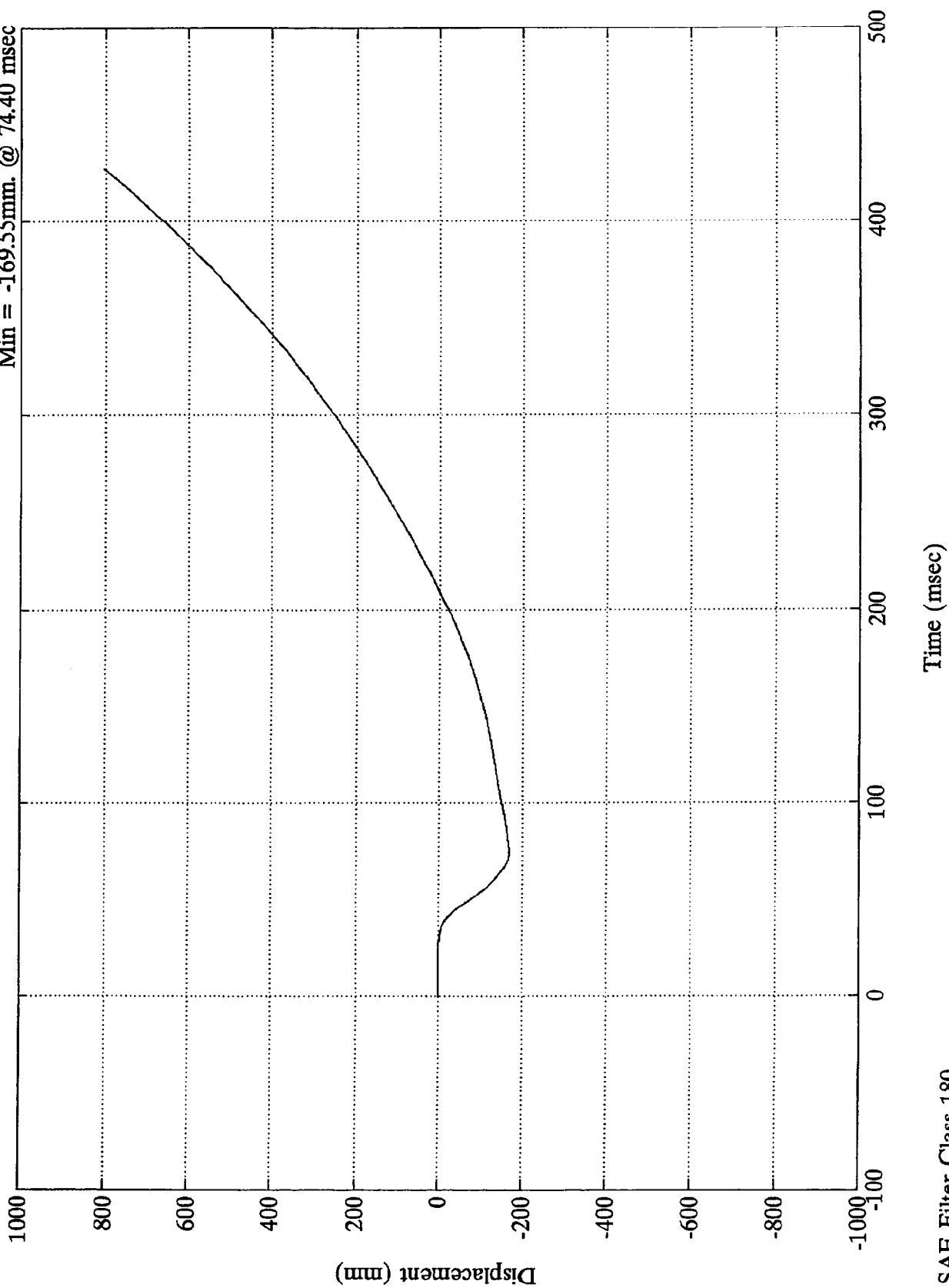
VTV TEST #5

Acc #12 Toe Pan Z
Max = 19.66kph @ 427.20 msec
Min = -25.68kph @ 48.72 msec



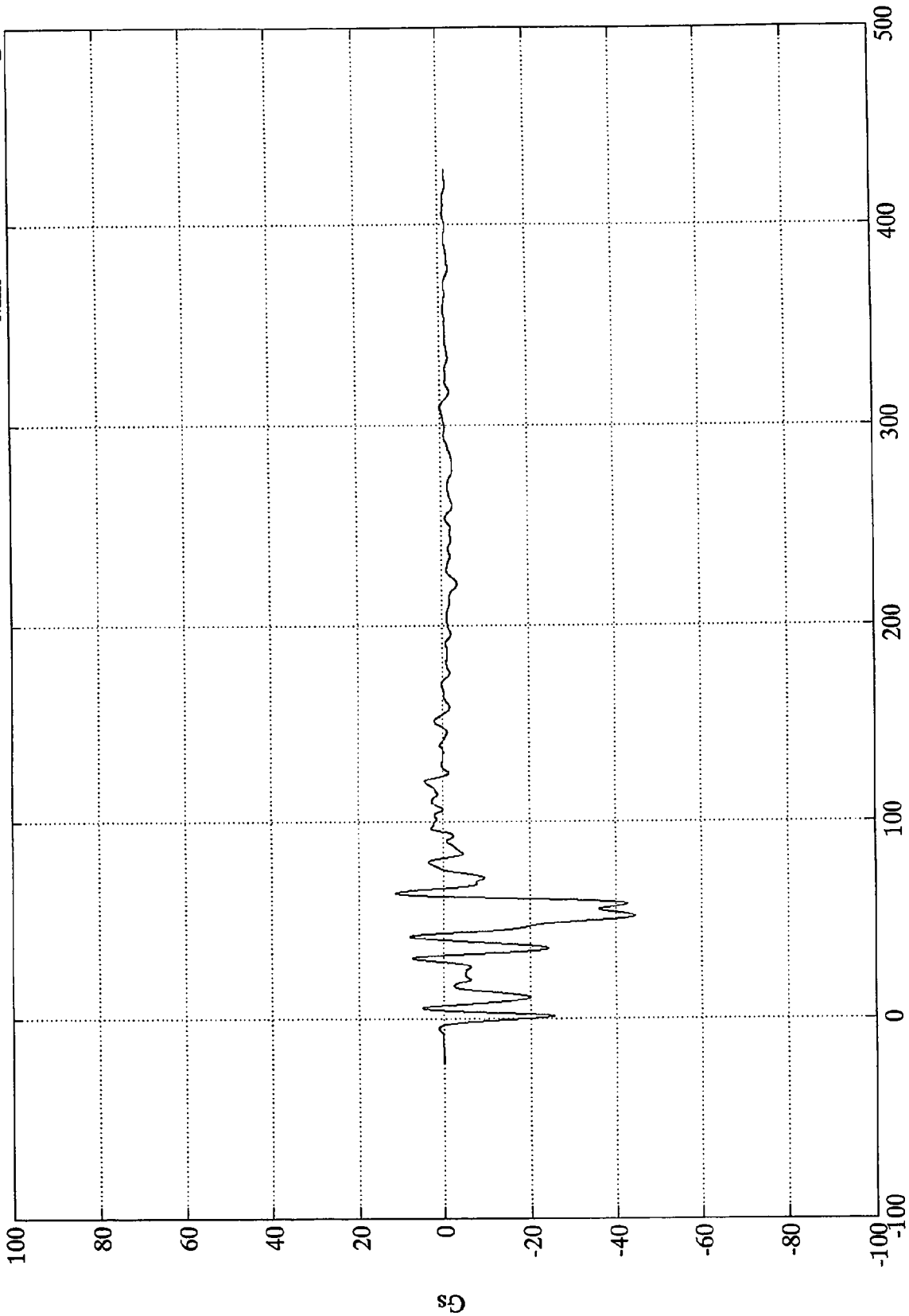
VTV TEST #5

Acc #12 Toe Pan Z
Max = 803.15mm. @ 427.20 msec
Min = -169.55mm. @ 74.40 msec



VTV TEST #5

Acc #13 A-Pillar Hinge
 Max = 11.21 Gs @ 63.84 msec
 Min = -44.44 Gs @ 51.72 msec



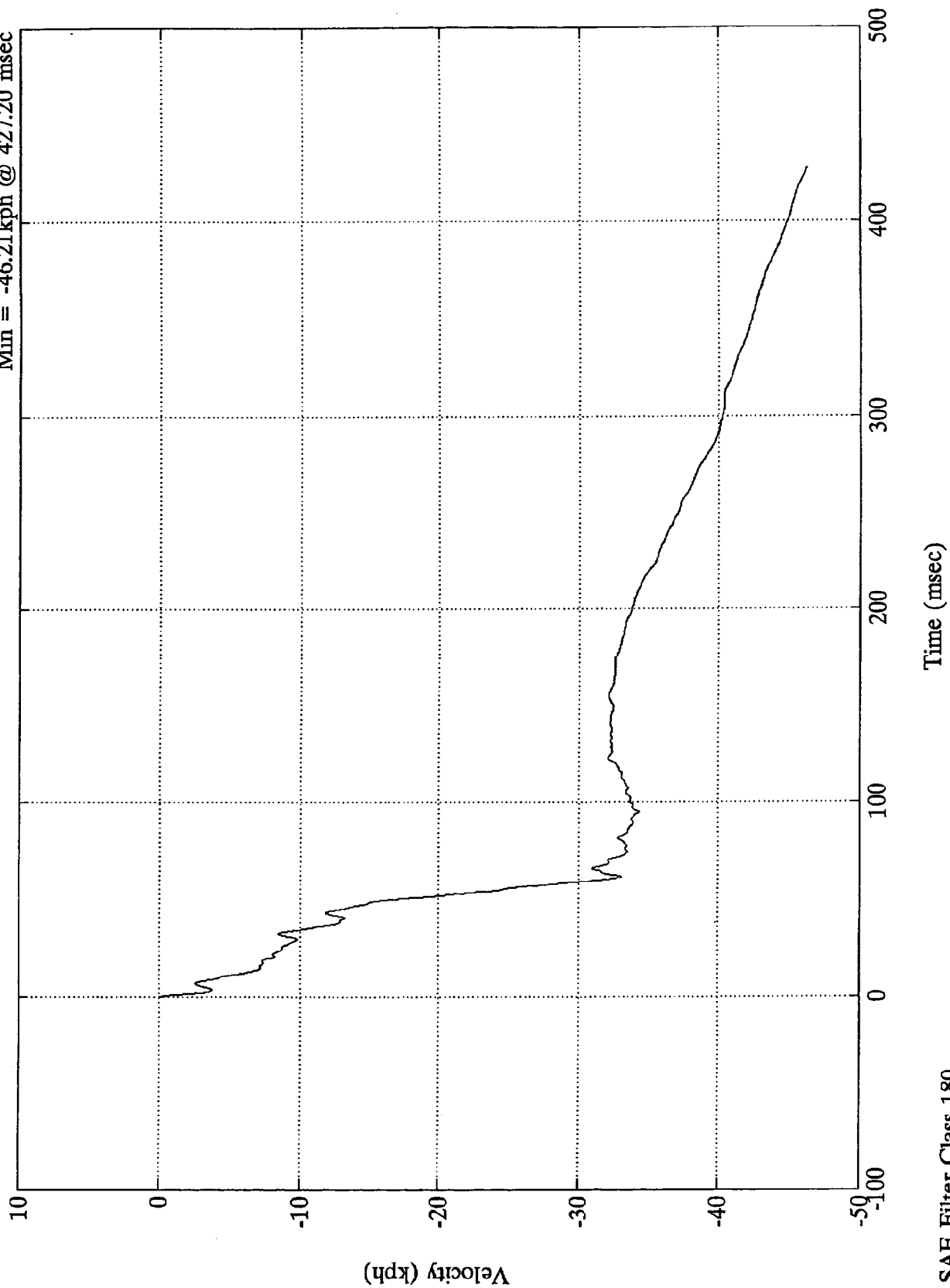
Time (msec)

SAE Filter Class 60

VTV TEST #5

Acc #13 A-Pillar Hinge

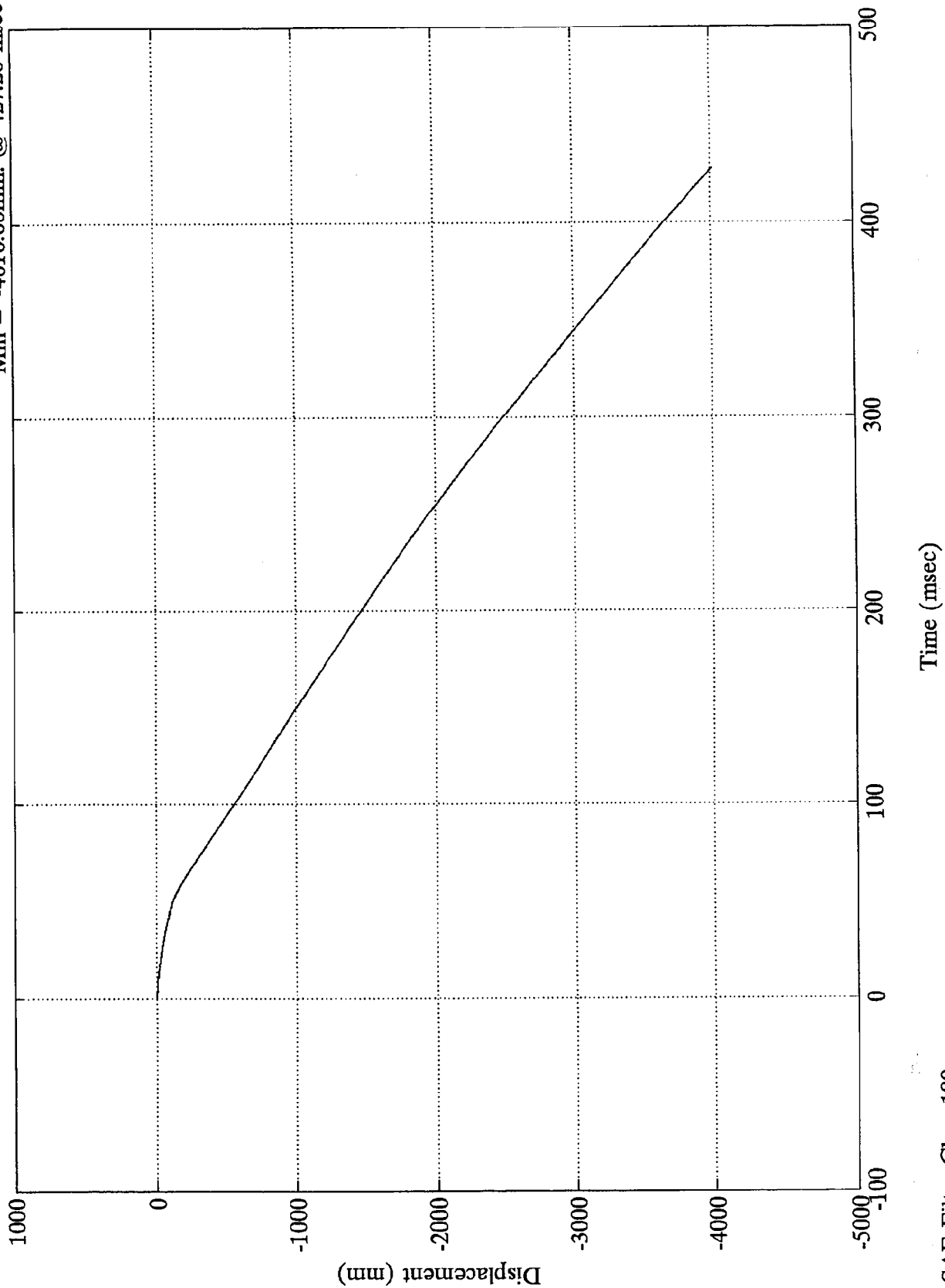
Max = 0.00kph @ -0.00 msec
Min = -46.21kph @ 427.20 msec



SAE Filter Class 180

VTV TEST #5

Acc #13 A-Pillar Hinge
Max = 0.00mm. @ -0.00 msec
Min = -4010.66mm. @ 427.20 msec



SAE Filter Class 180

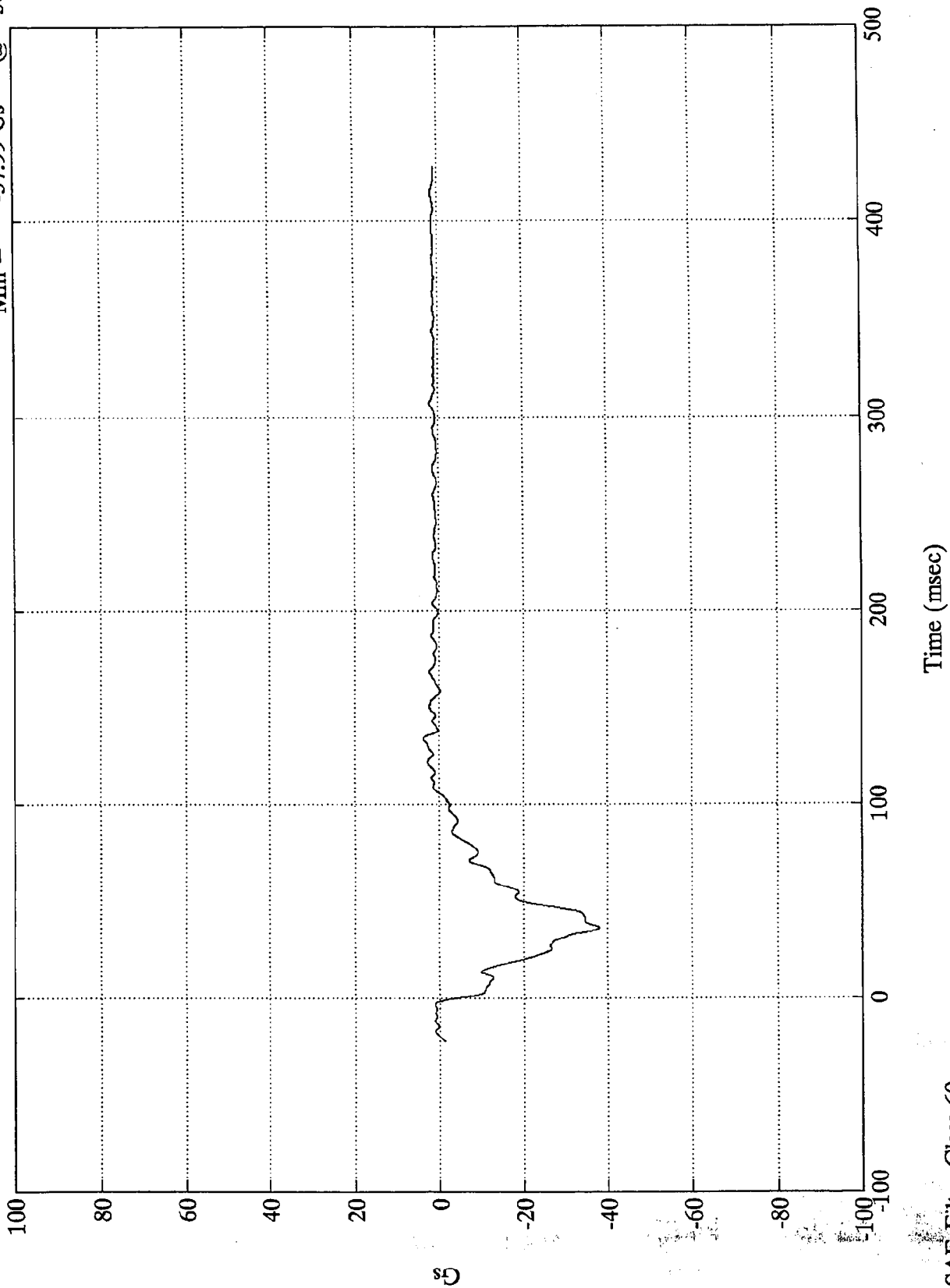
7

VEHICLE TWO DATA
(Moving Deformable Barrier)

VTV TEST #5

Max = 3.91 Gs @ 133.91 msec
Min = -37.99 Gs @ 36.24 msec

MDB Left Rail X

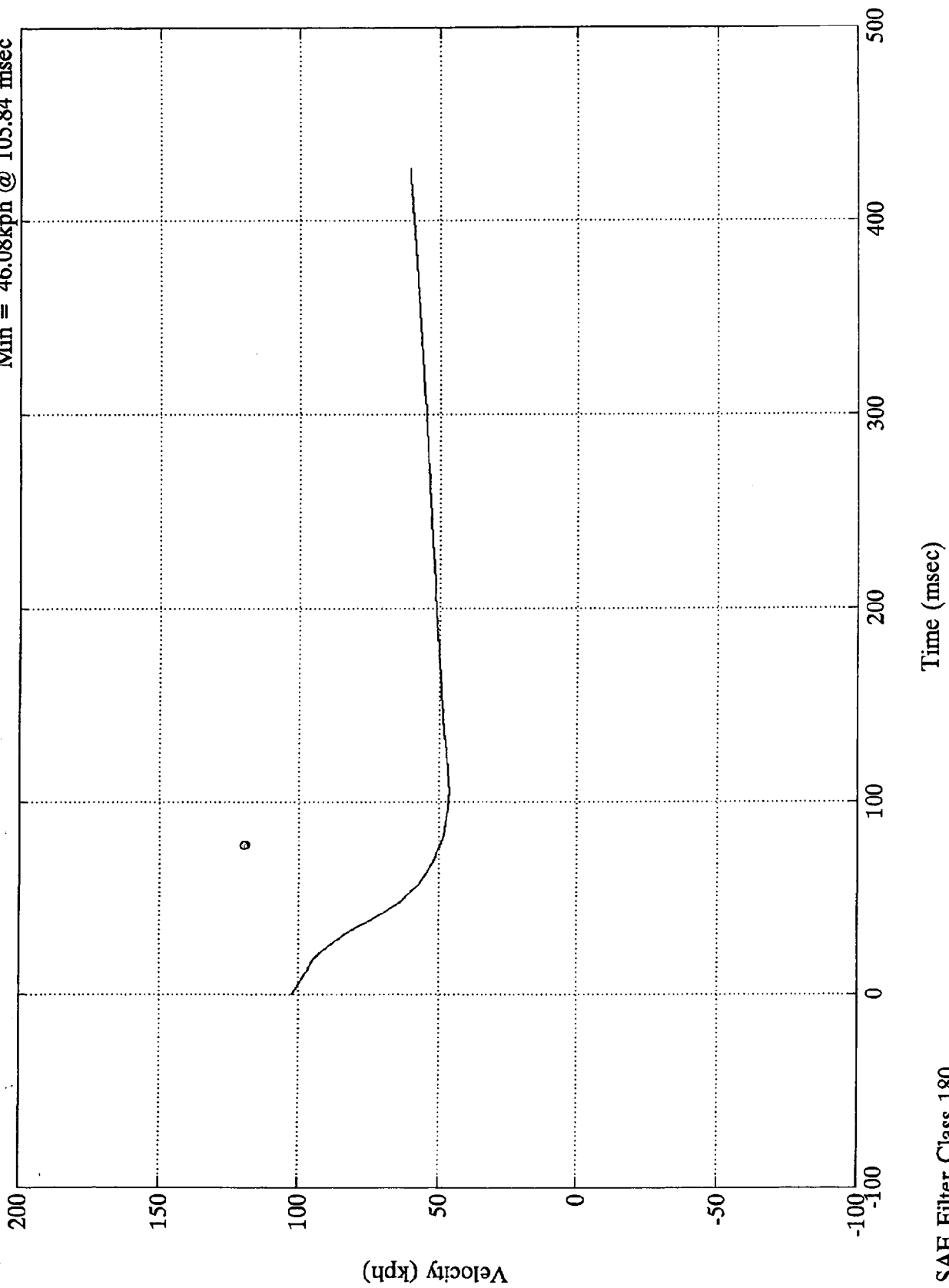


SAE Filter Class 60

VTV TEST #5

Max = 101.97kph @ 0.24 msec
Min = 46.08kph @ 105.84 msec

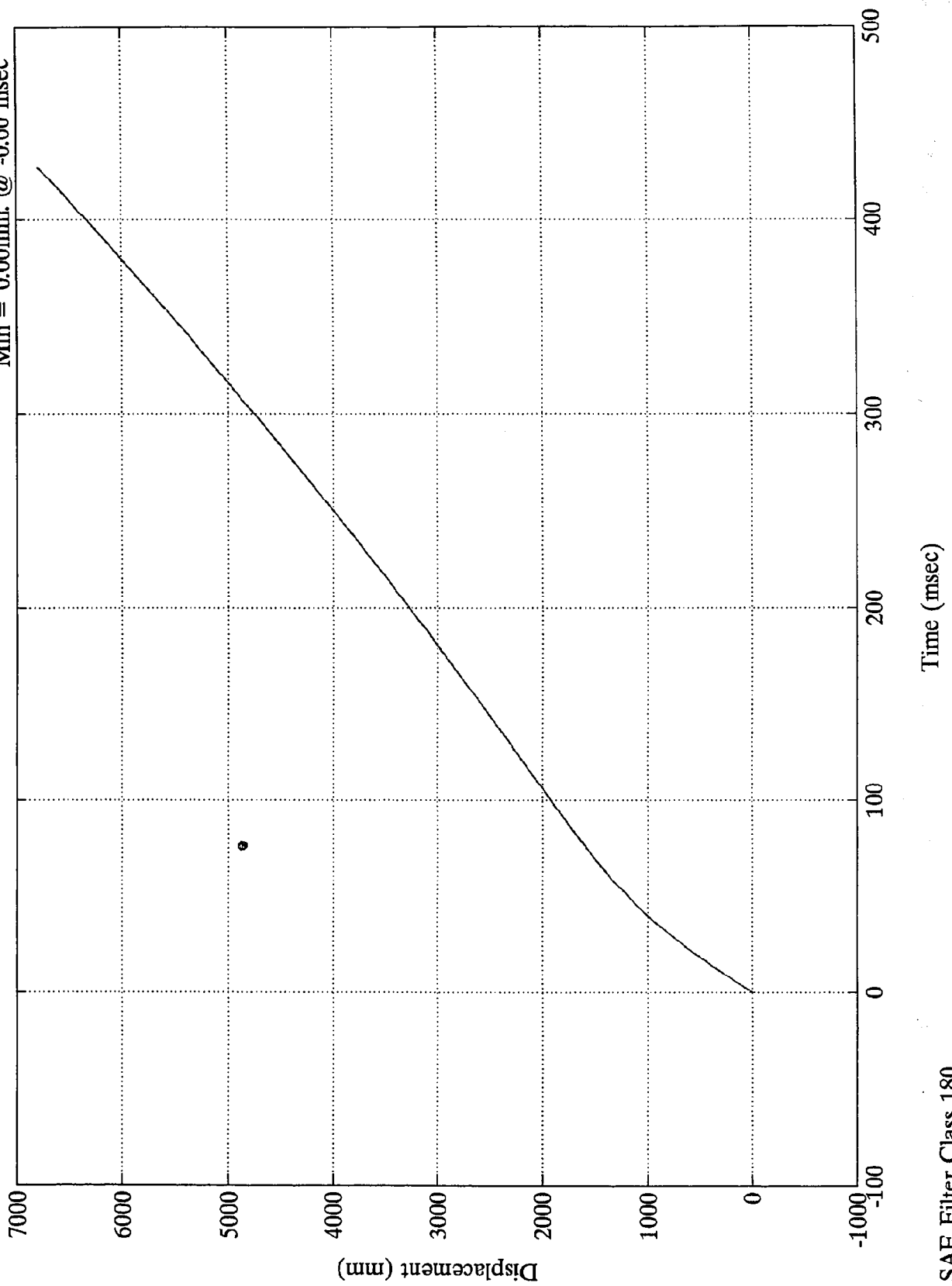
MDB Left Rail X



SAE Filter Class 180

VTV TEST #5

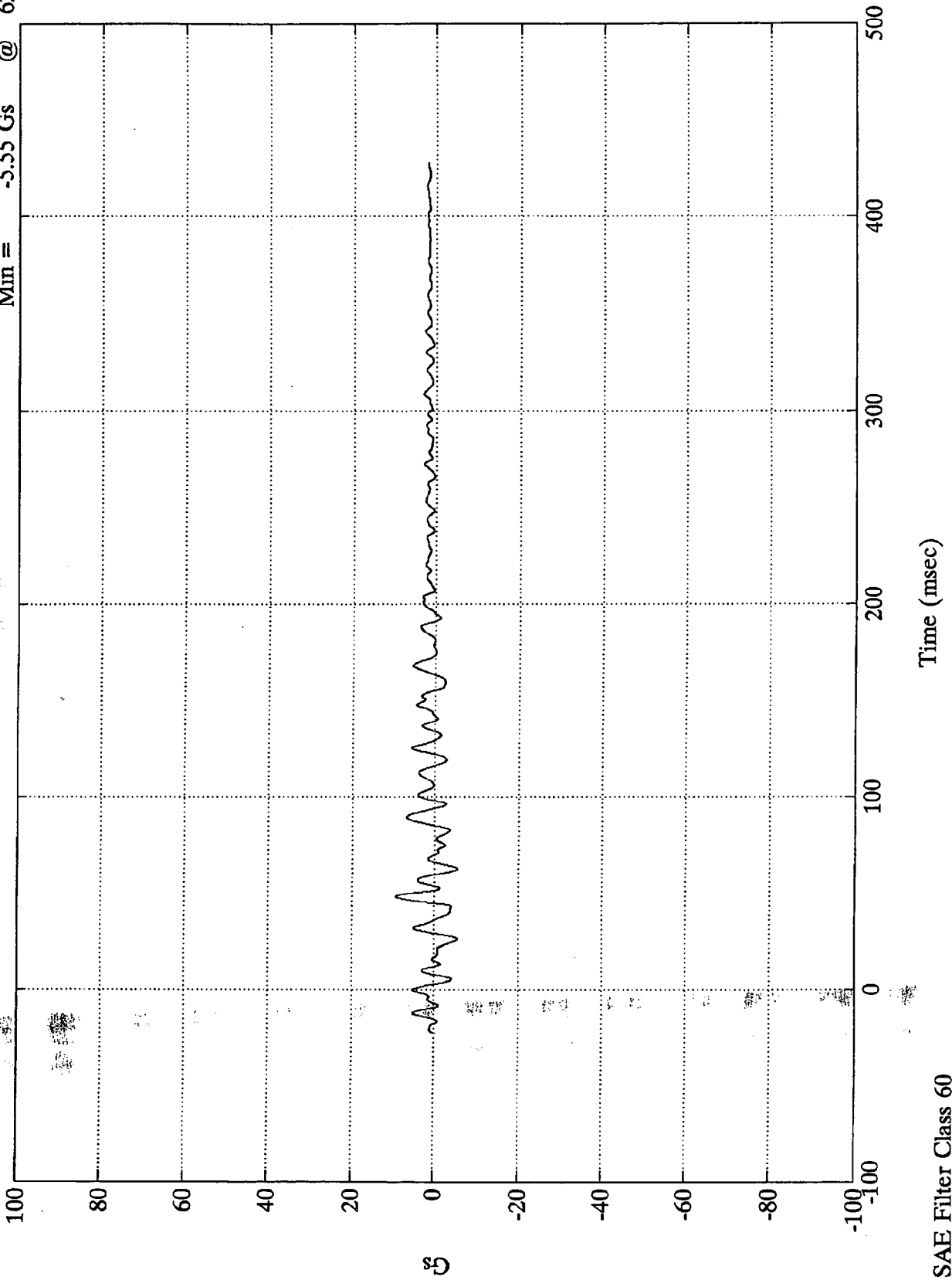
MDB Left Rail X
Max = 6791.96mm. @ 427.20 msec
Min = 0.00mm. @ -0.00 msec



SAE Filter Class 180

VTV TEST #5

MDB Left Rail Y Max = 9.17 Gs @ 48.11 msec
Min = -5.55 Gs @ 62.64 msec

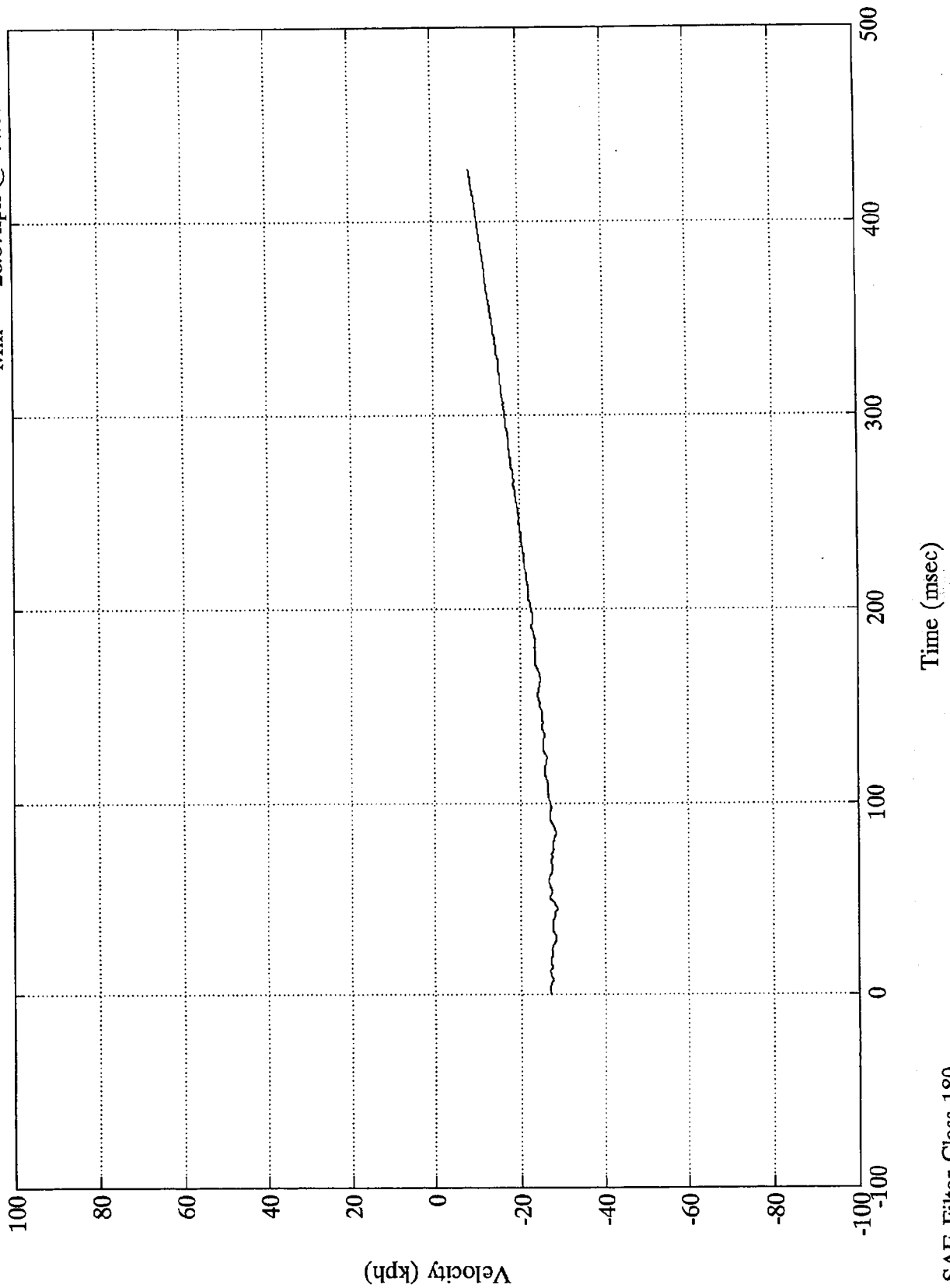


SAE Filter Class 60

VTV TEST #5

Max = -8.72kph @ 427.20 msec
Min = -28.87kph @ 44.88 msec

MDB Left Rail Y

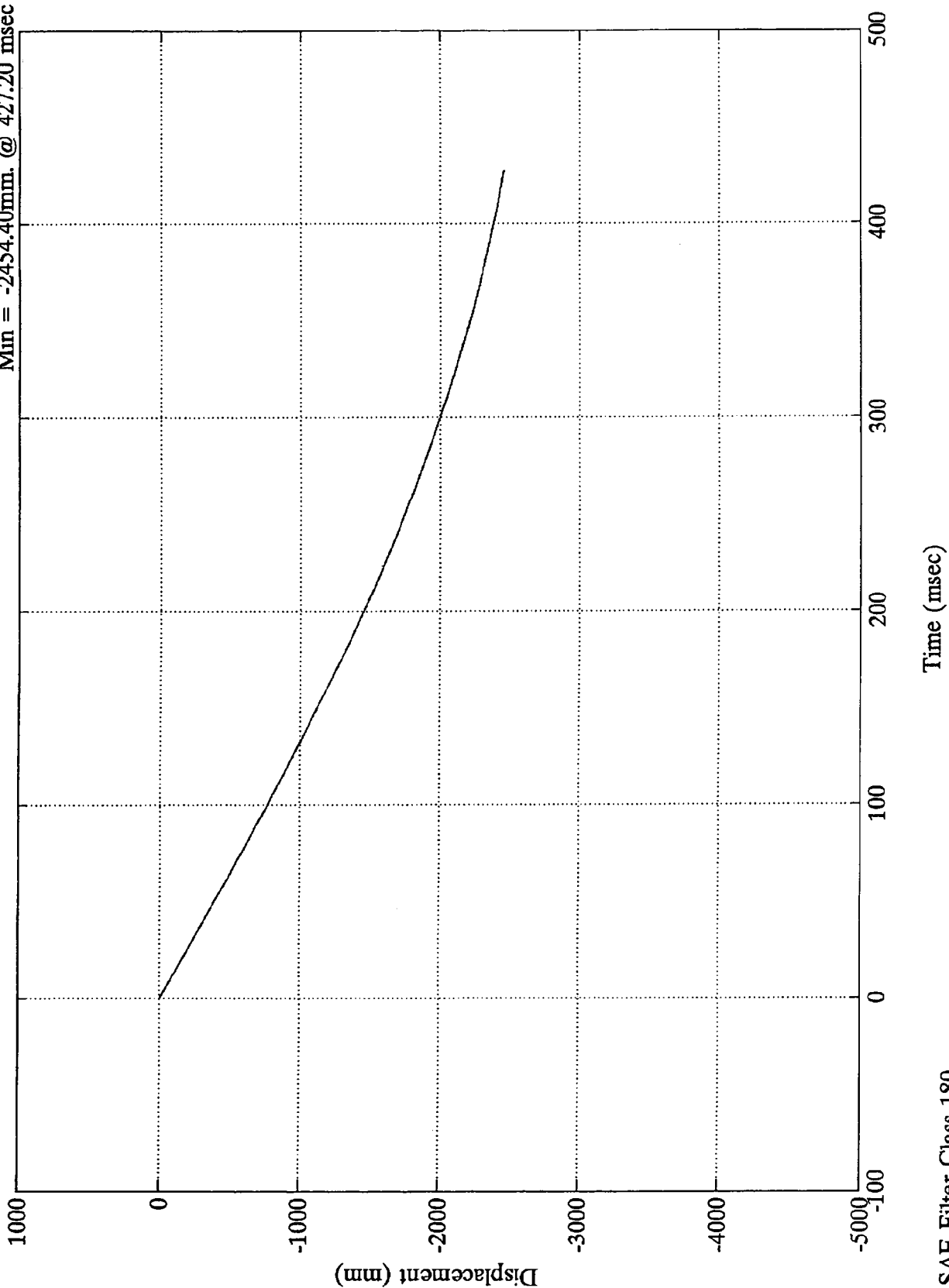


SAE Filter Class 180

VTV TEST #5

Max = 0.00mm. @ -0.00 msec
Min = -2454.40mm. @ 427.20 msec

MDB Left Rail Y

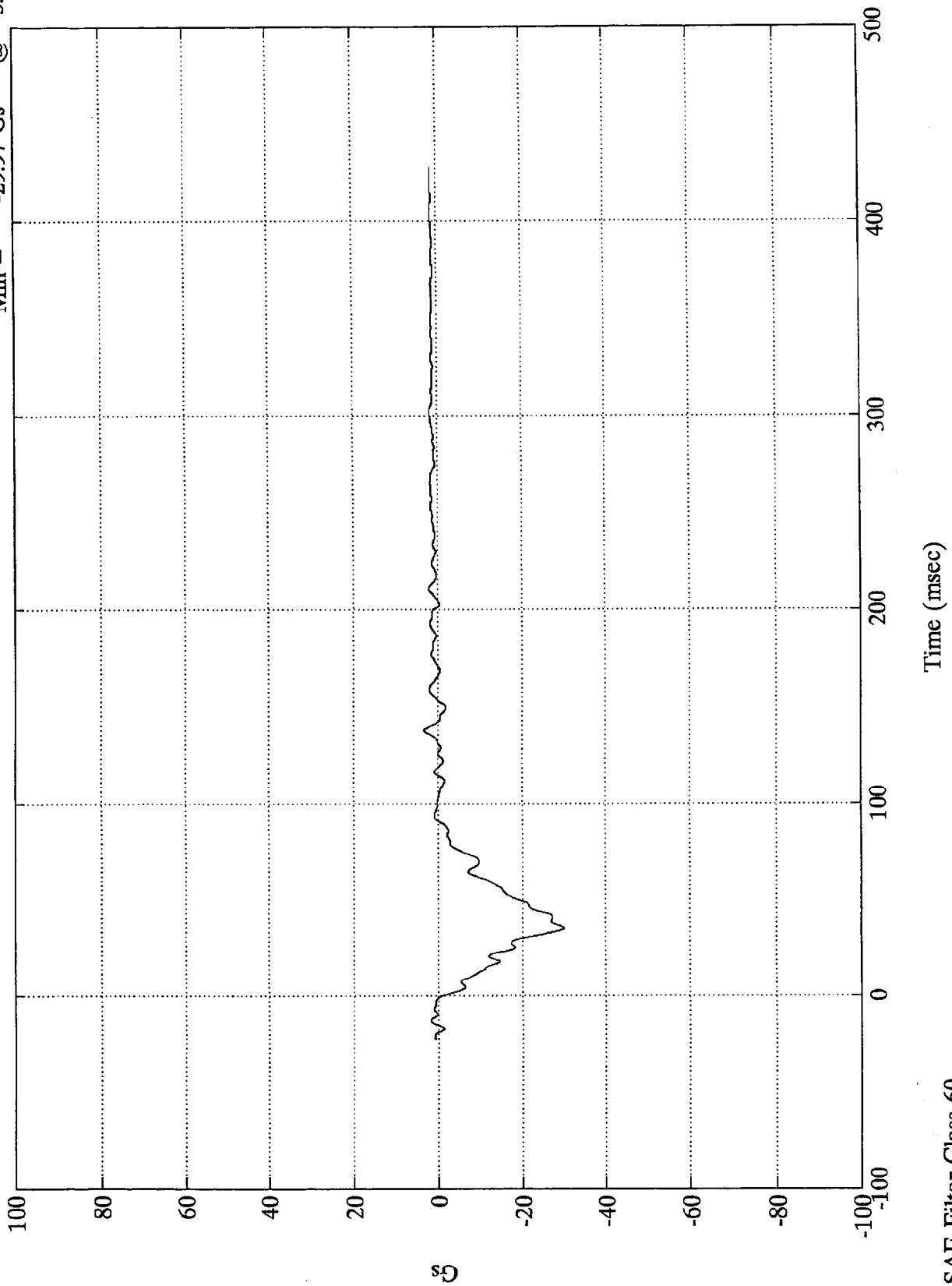


SAE Filter Class 180

VTV TEST #5

MDB Right Rail X

Max = 3.38 Gs @ 138.00 msec
Min = -29.97 Gs @ 35.63 msec

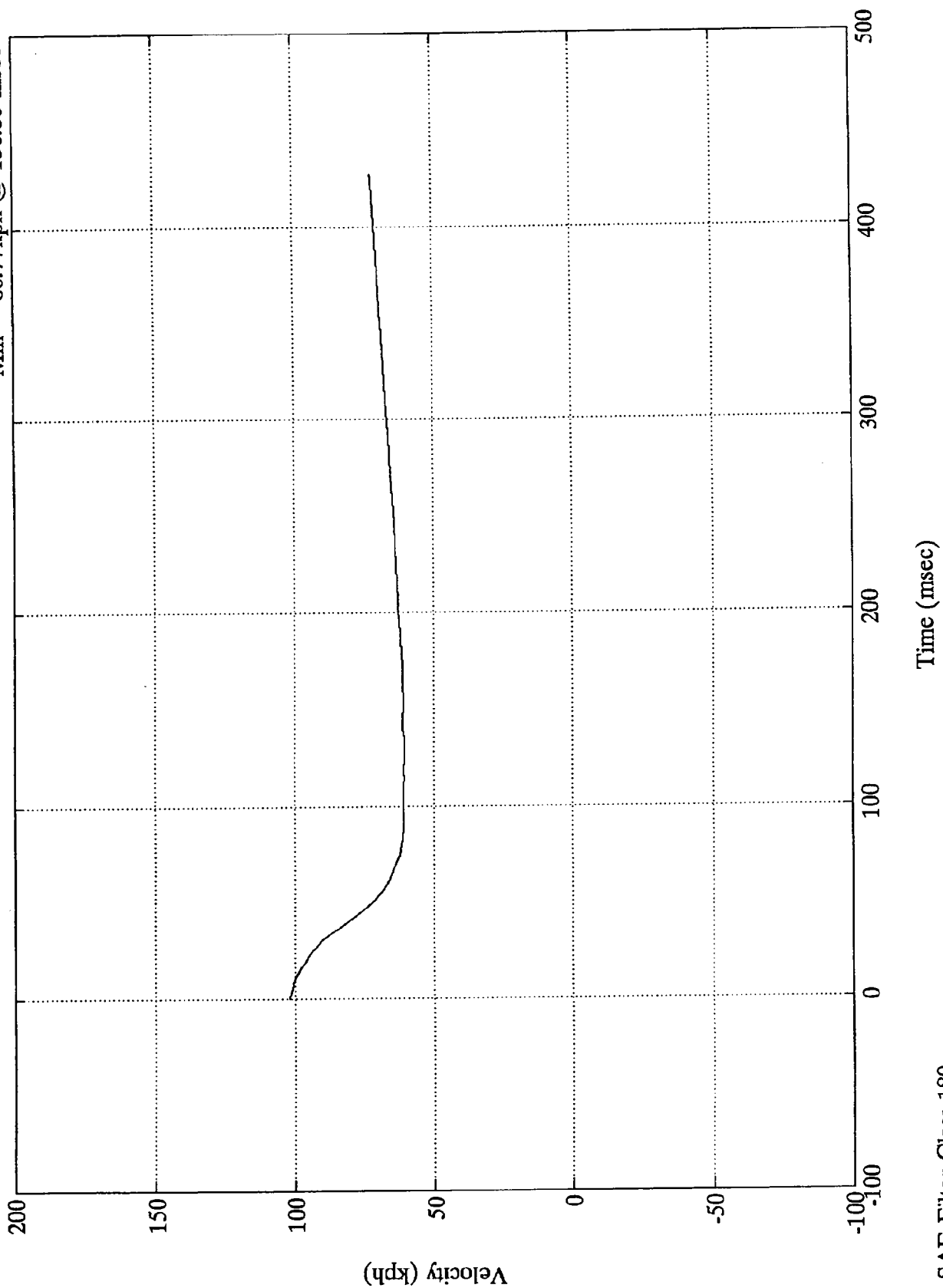


SAE Filter Class 60

VTV TEST #5

MDB Right Rail X

Max = 101.97kph @ 0.48 msec
Min = 60.77kph @ 130.80 msec

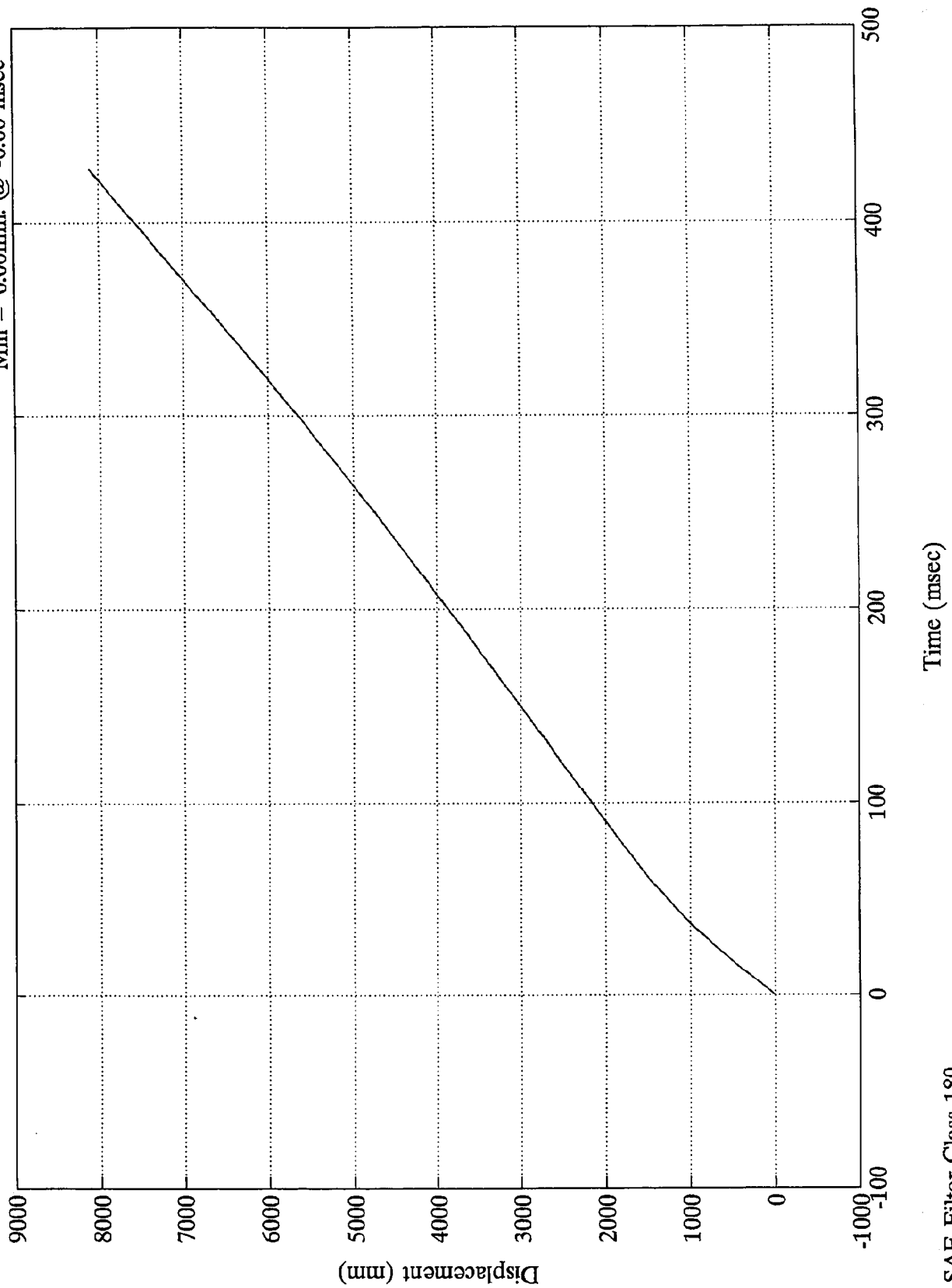


SAE Filter Class 180

VTV TEST #5

MDB Right Rail X

Max = 8105.14mm. @ 427.20 msec
Min = 0.00mm. @ -0.00 msec

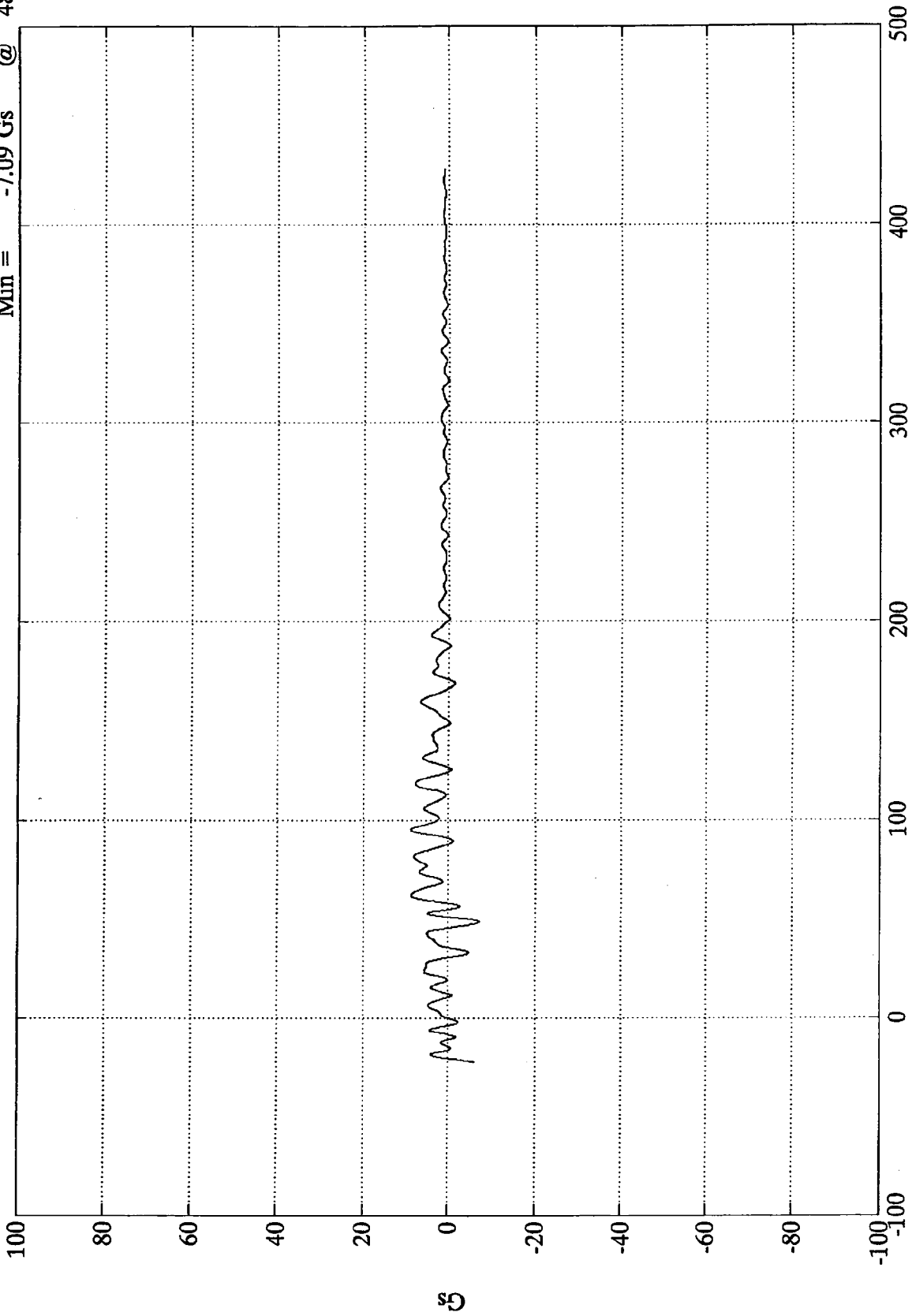


SAE Filter Class 180

VTV TEST #5

Max = 8.83 Gs @ 95.40 msec
Min = -7.09 Gs @ 48.47 msec

MDB Right Rail Y



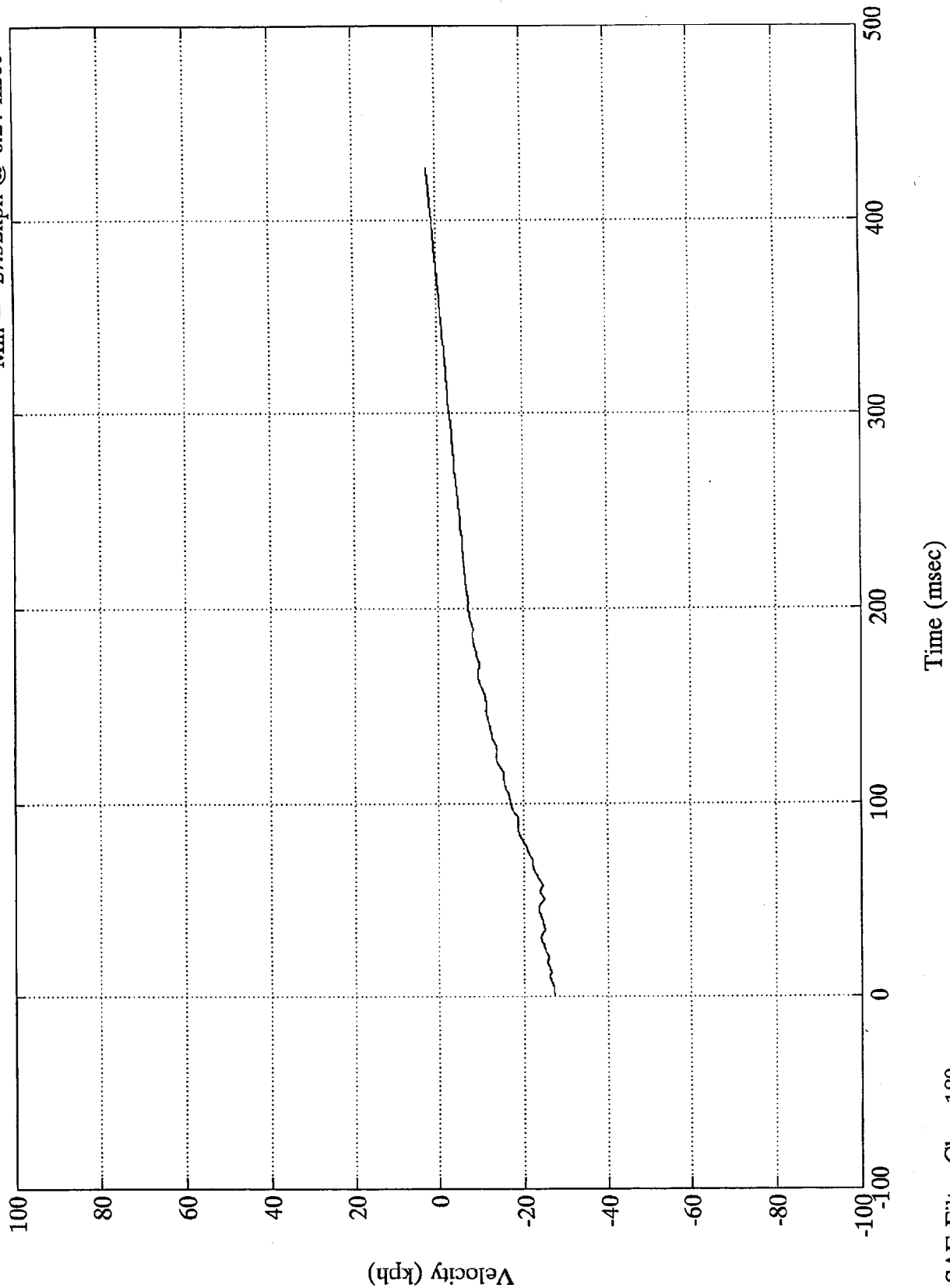
Time (msec)

SAE Filter Class 60

VTV TEST #5

MDB Right Rail Y

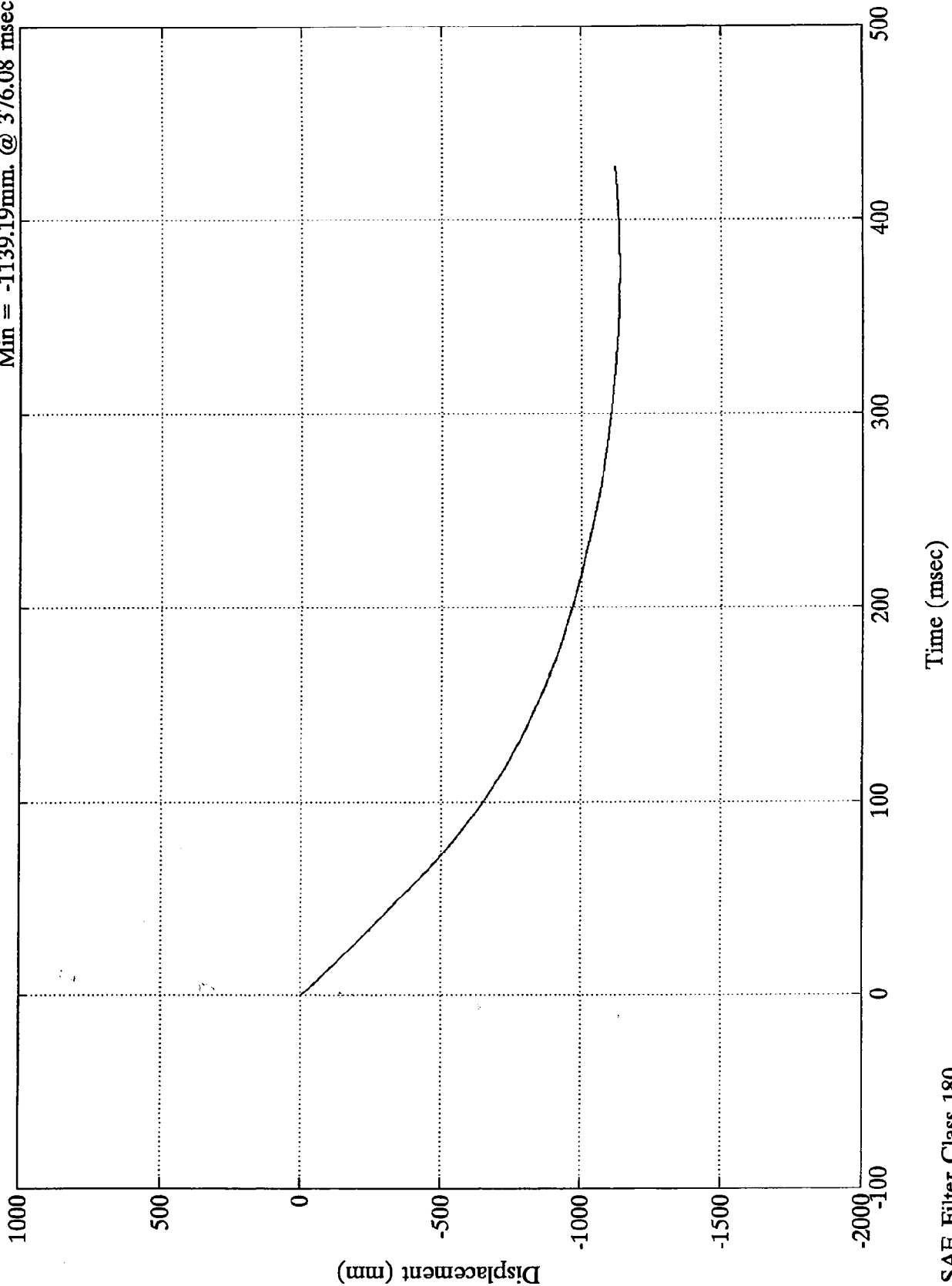
Max = 2.08kph @ 427.20 msec
Min = -27.32kph @ 0.24 msec



SAE Filter Class 180

VTV TEST #5

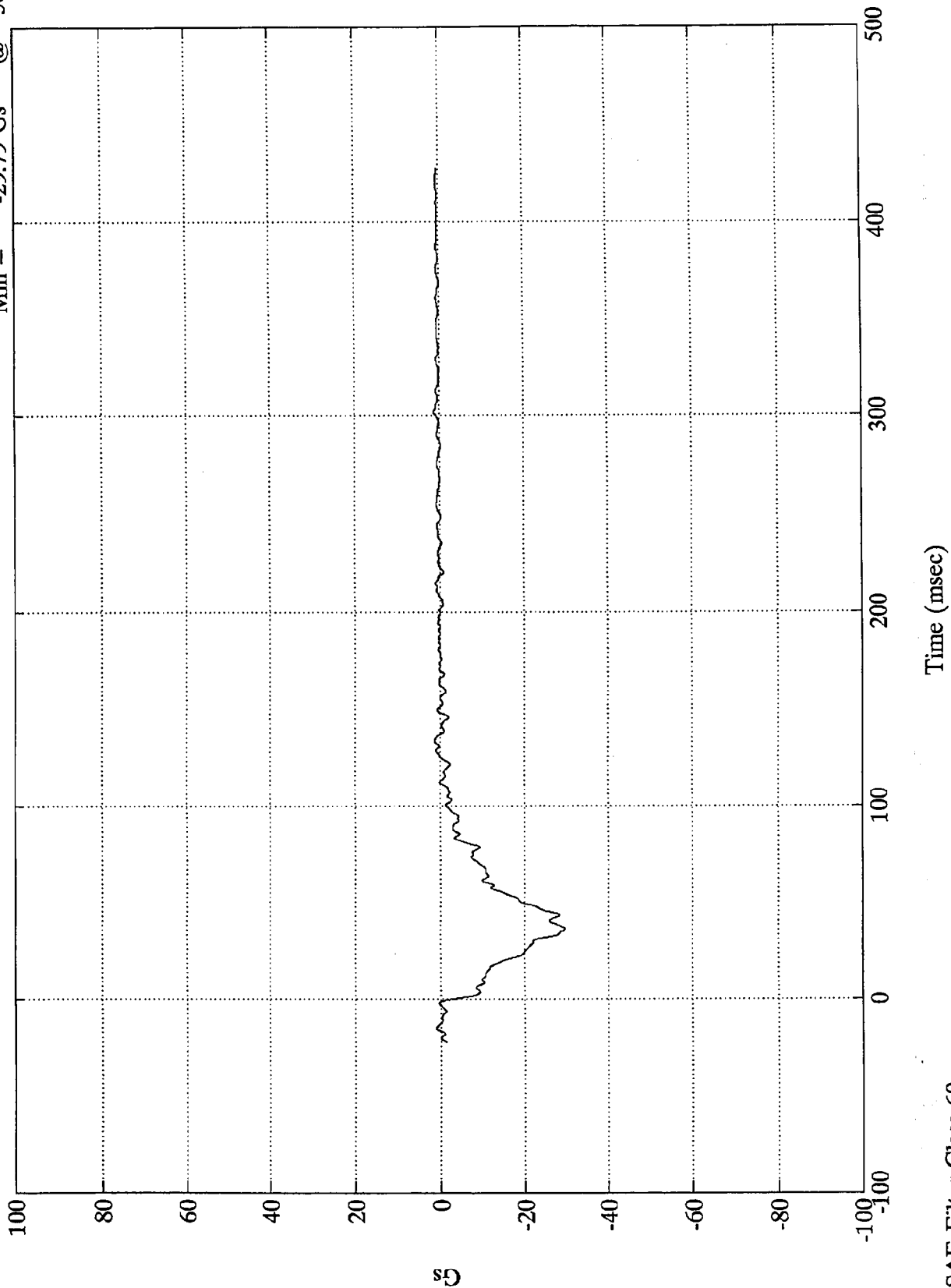
MDB Right Rail Y
Max = 0.00mm. @ -0.00 msec
Min = -1139.19mm. @ 376.08 msec



VTV TEST #5

Max = 1.34 Gs @ 301.56 msec
Min = -29.79 Gs @ 36.60 msec

MDB C.G. X

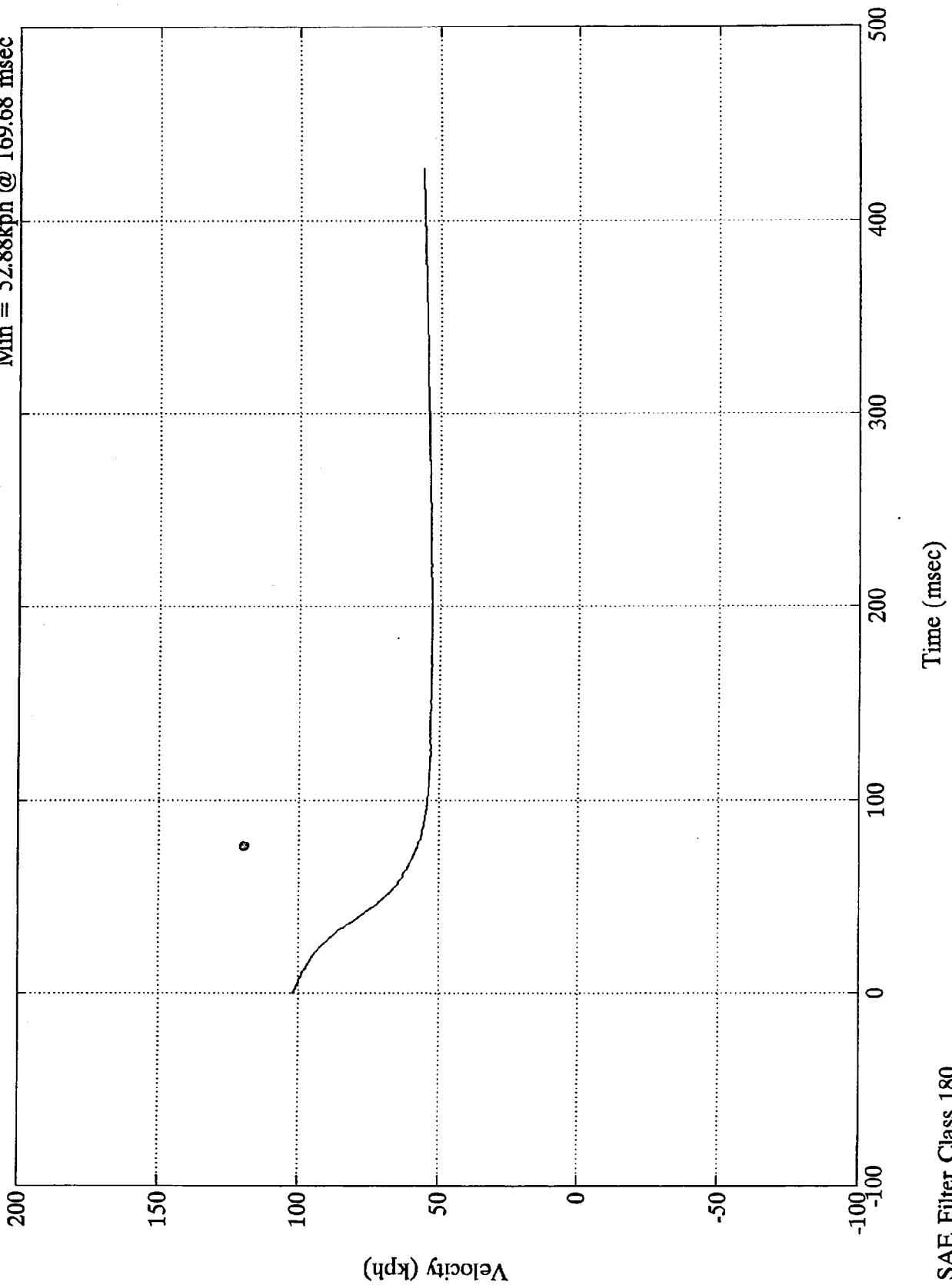


SAE Filter Class 60

VTV TEST #5

Max = 101.97kph @ -0.00 msec
Min = 52.88kph @ 169.68 msec

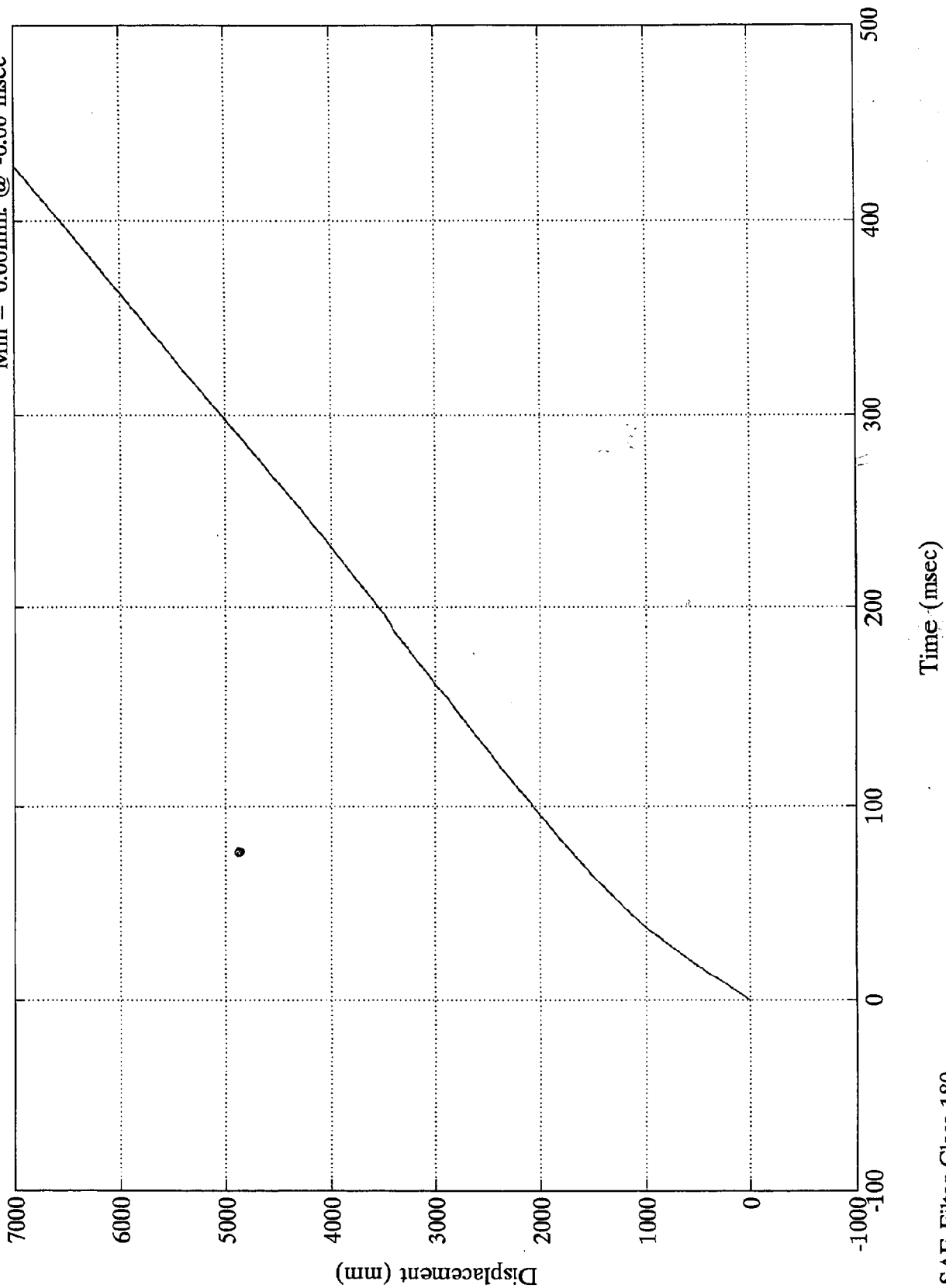
MDB C.G. X



VTV TEST #5

Max = 6990.08mm. @ 427.20 msec
Min = 0.00mm. @ -0.00 msec

MDB C.G. X

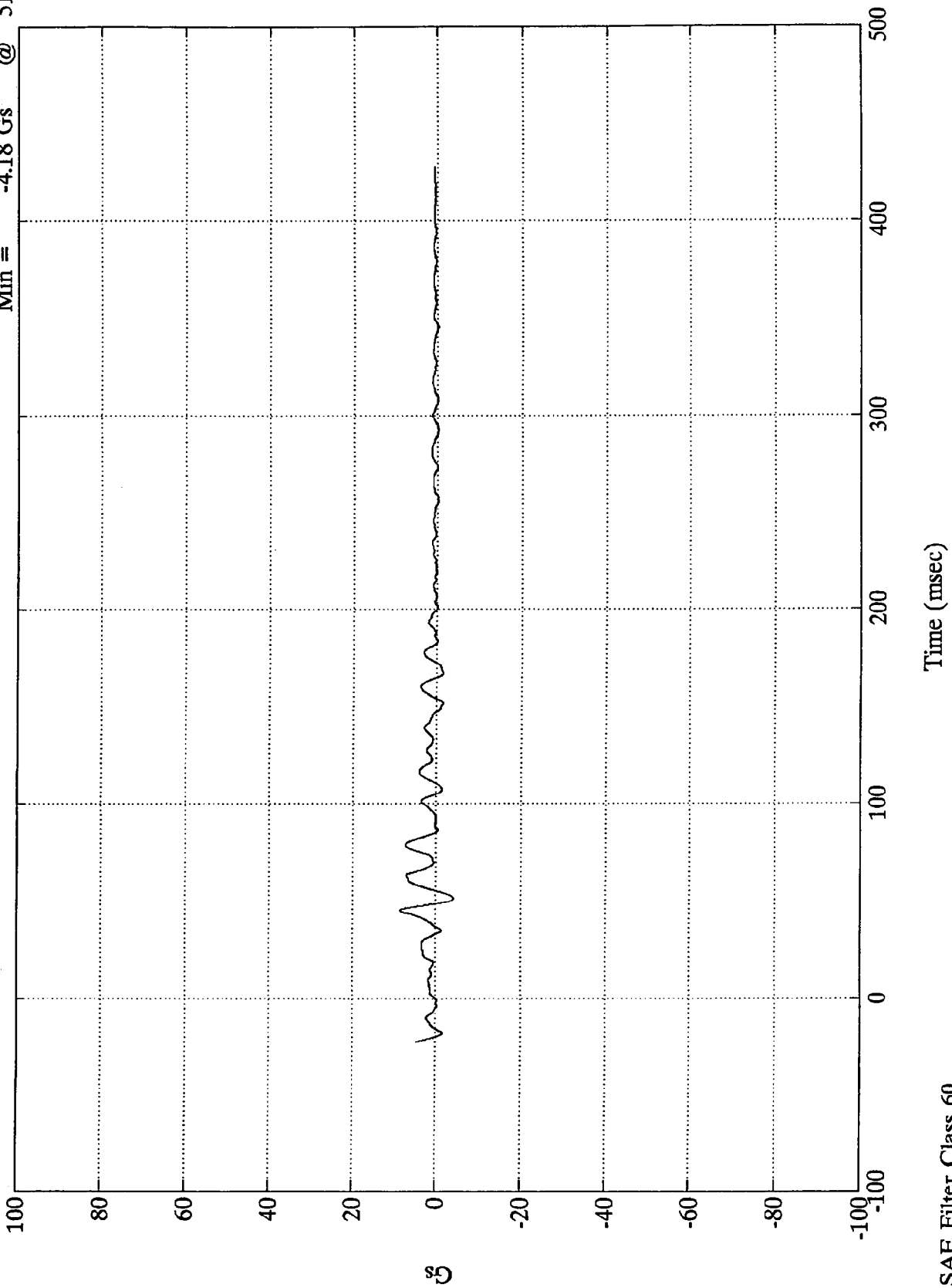


SAE Filter Class 180

VTV TEST #5

MDB C.G. Y

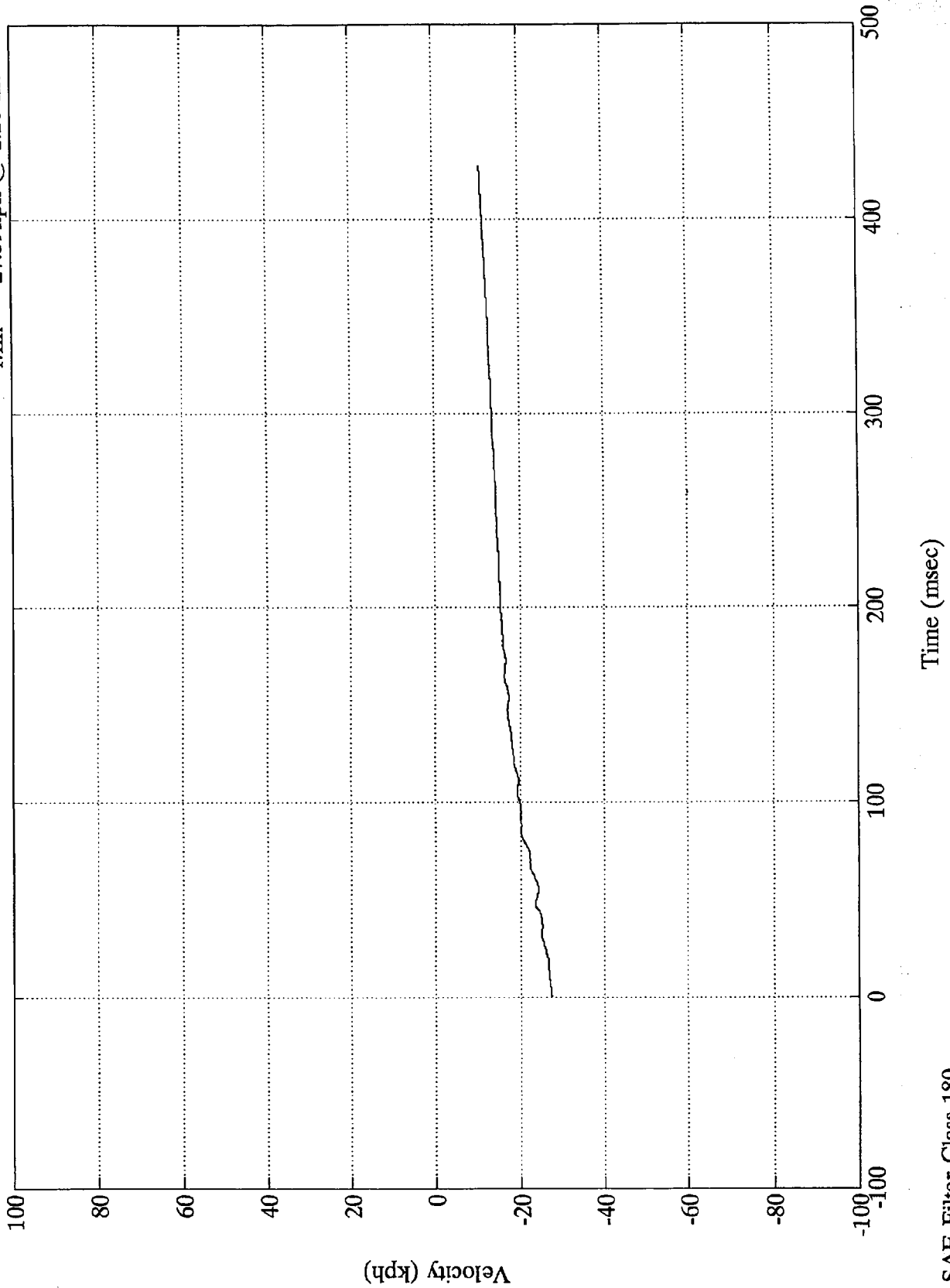
Max = 8.62 Gs @ 45.12 msec
Min = -4.18 Gs @ 51.24 msec



SAE Filter Class 60

VTV TEST #5

MDB C.G. Y
Max = -10.96kph @ 427.20 msec
Min = -27.39kph @ 1.20 msec

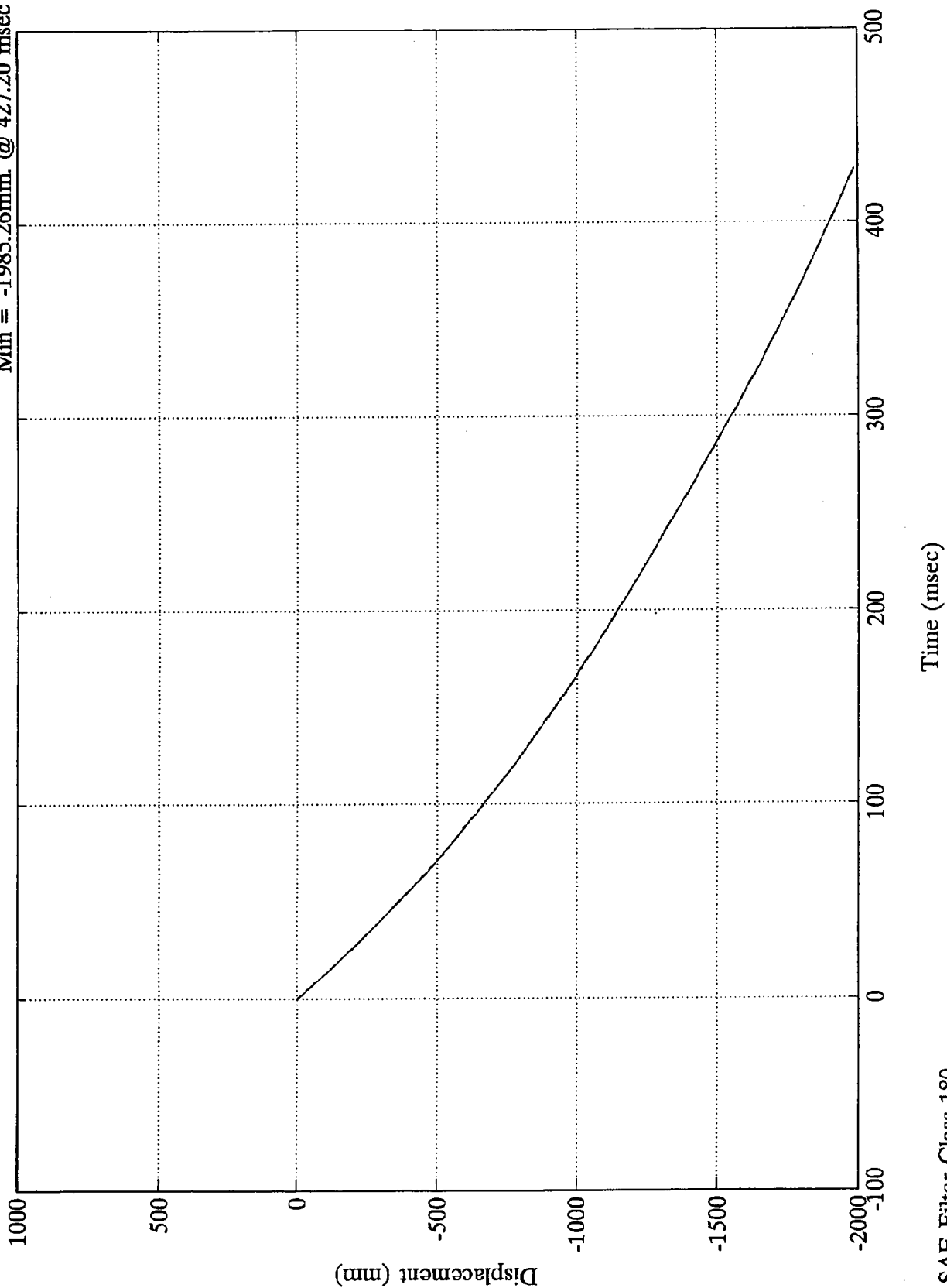


SAE Filter Class 180

VTV TEST #5

Max = 0.00mm. @ -0.00 msec
Min = -1985.26mm. @ 427.20 msec

MDB C.G. Y

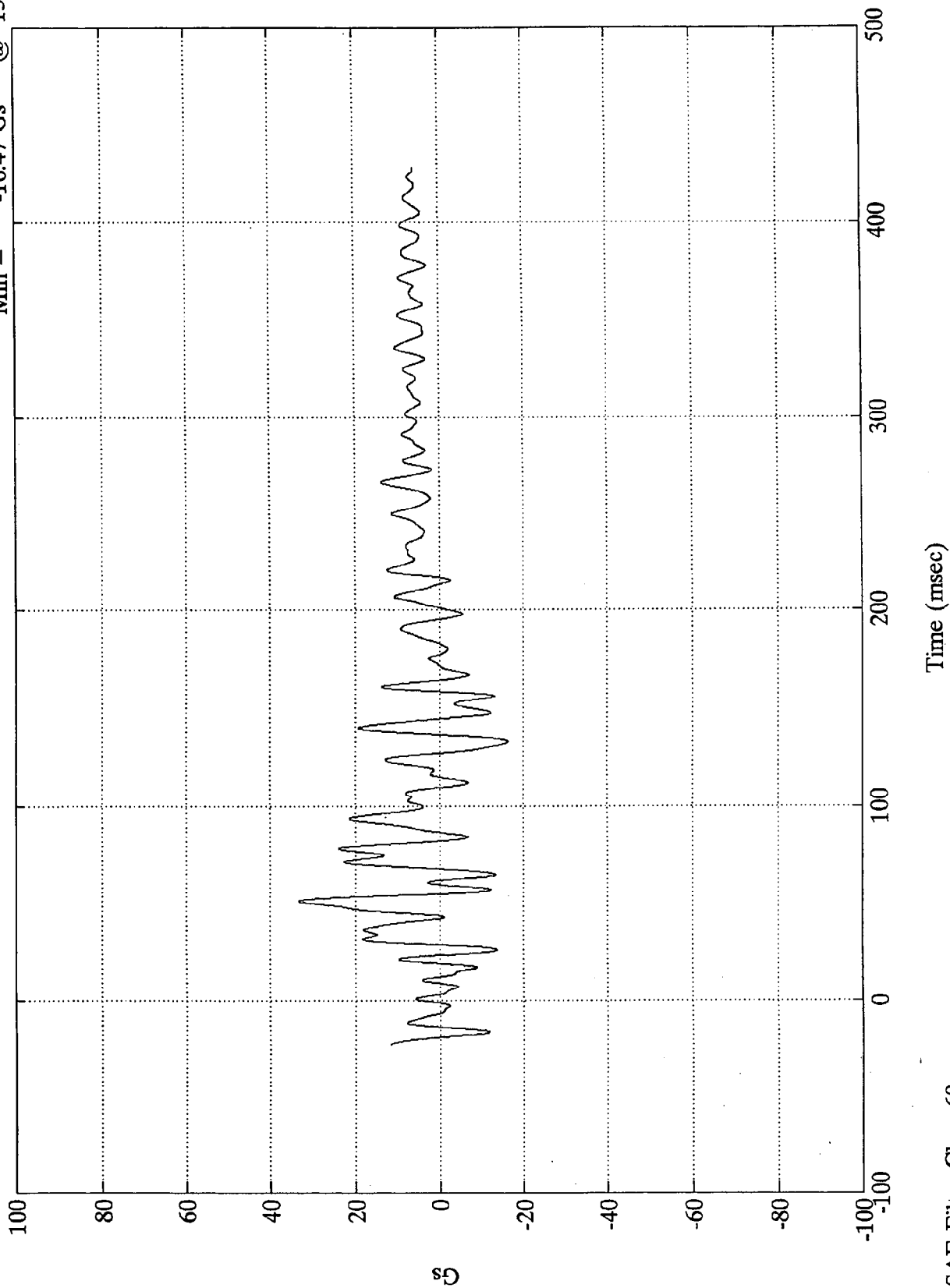


SAE Filter Class 180

VTV TEST #5

MDB C.G. Z

Max =	33.42 Gs	@	50.64 msec
Min =	-16.47 Gs	@	133.08 msec

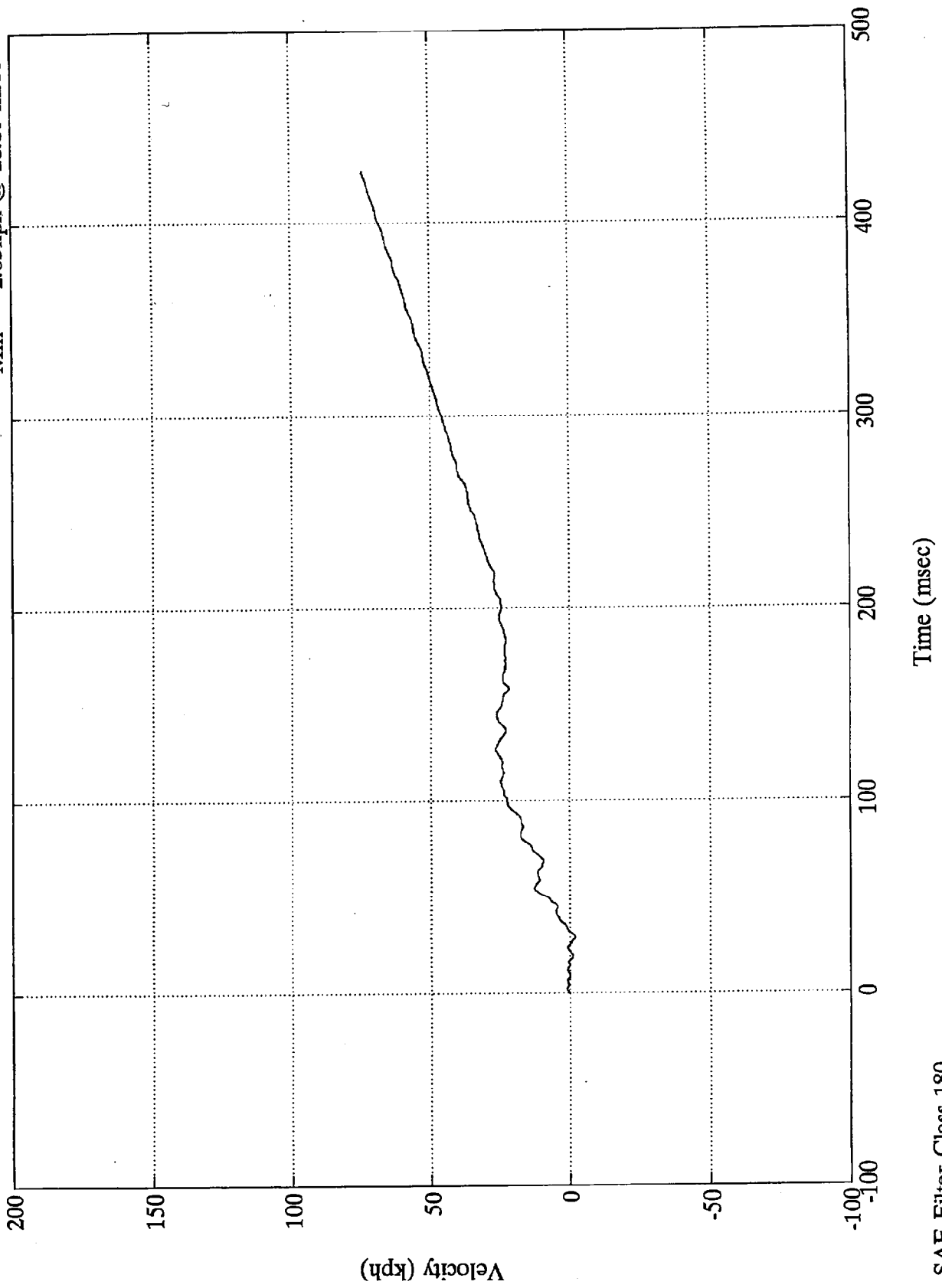


SAE Filter Class 60

VTV TEST #5

MDB C.G. Z

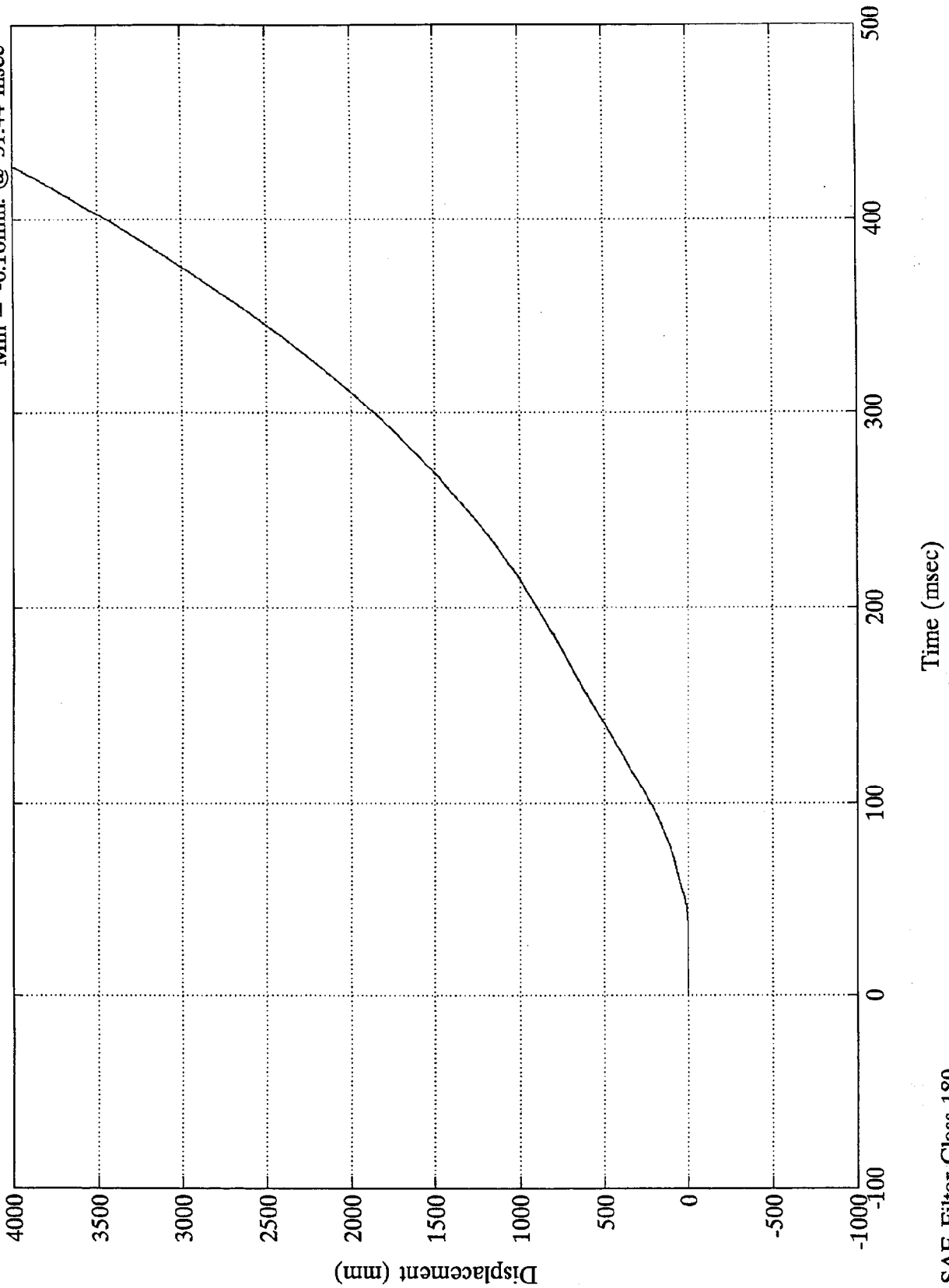
Max = 74.36kph @ 427.20 msec
Min = -2.05kph @ 28.80 msec



VTV TEST #5

Max = 3987.80mm. @ 427.20 msec
Min = -0.16mm. @ 31.44 msec

MDB C.G. Z



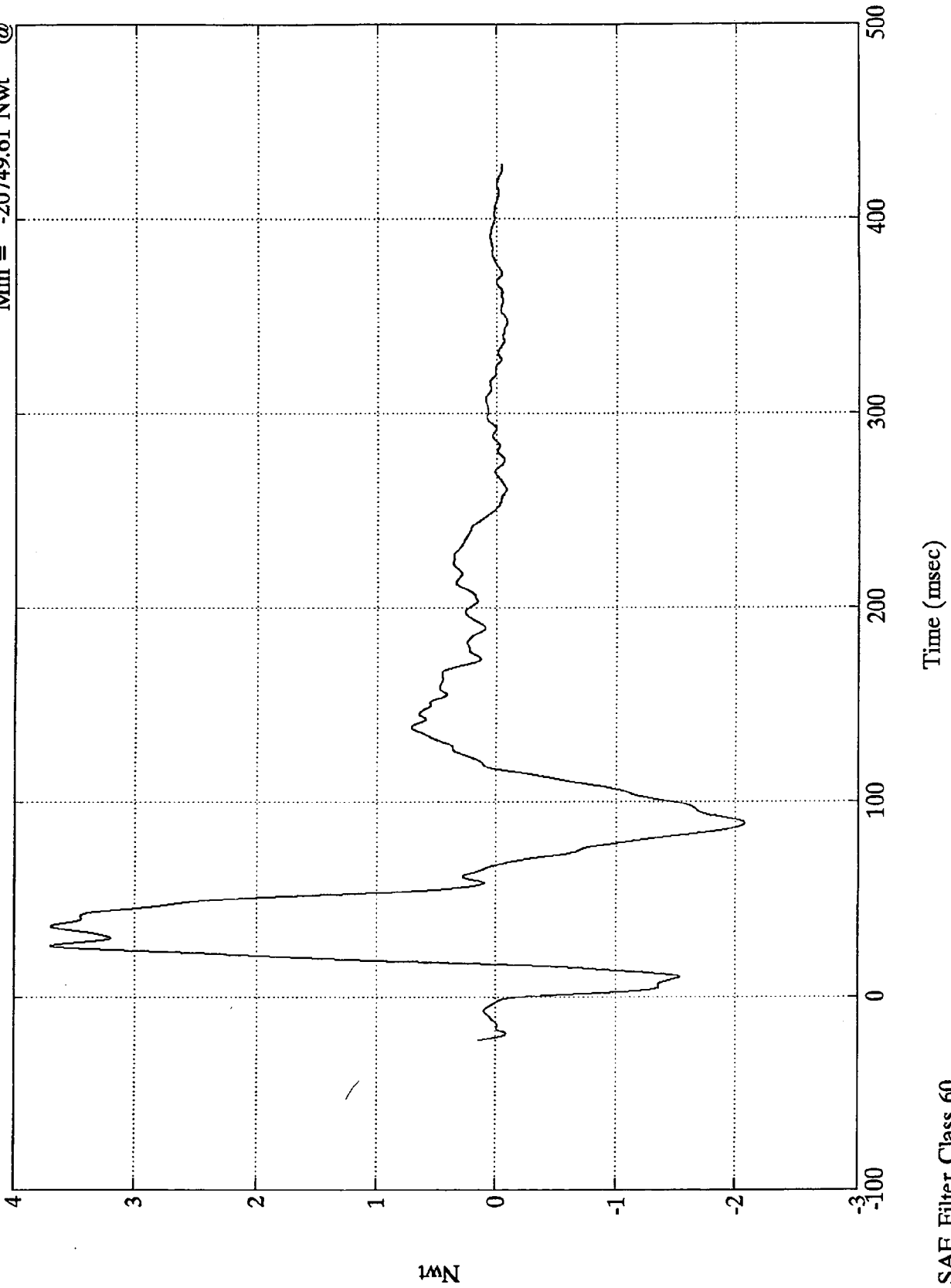
SAE Filter Class 180

VTV TEST #5

$\times 10^4$

MDB Load Cell TR

Max = 36926.96 Nwt @ 26.52 msec
Min = -20749.61 Nwt @ 88.80 msec



Nwt

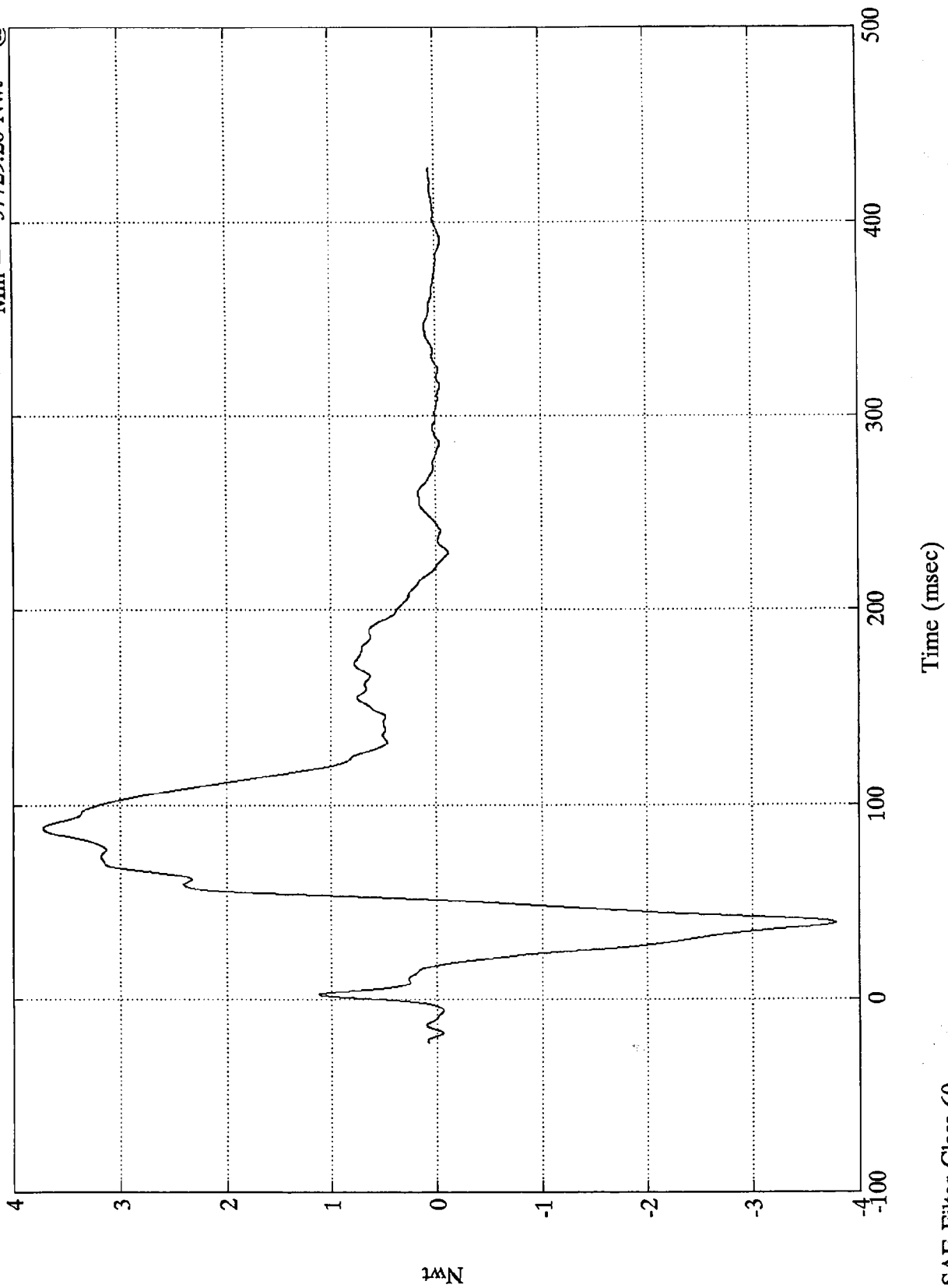
Time (msec)

SAE Filter Class 60

VTV TEST #5
x10⁴

MDB Load Cell BR

Max = 37184.48 Nwt @ 88.44 msec
Min = -37729.20 Nwt @ 39.24 msec



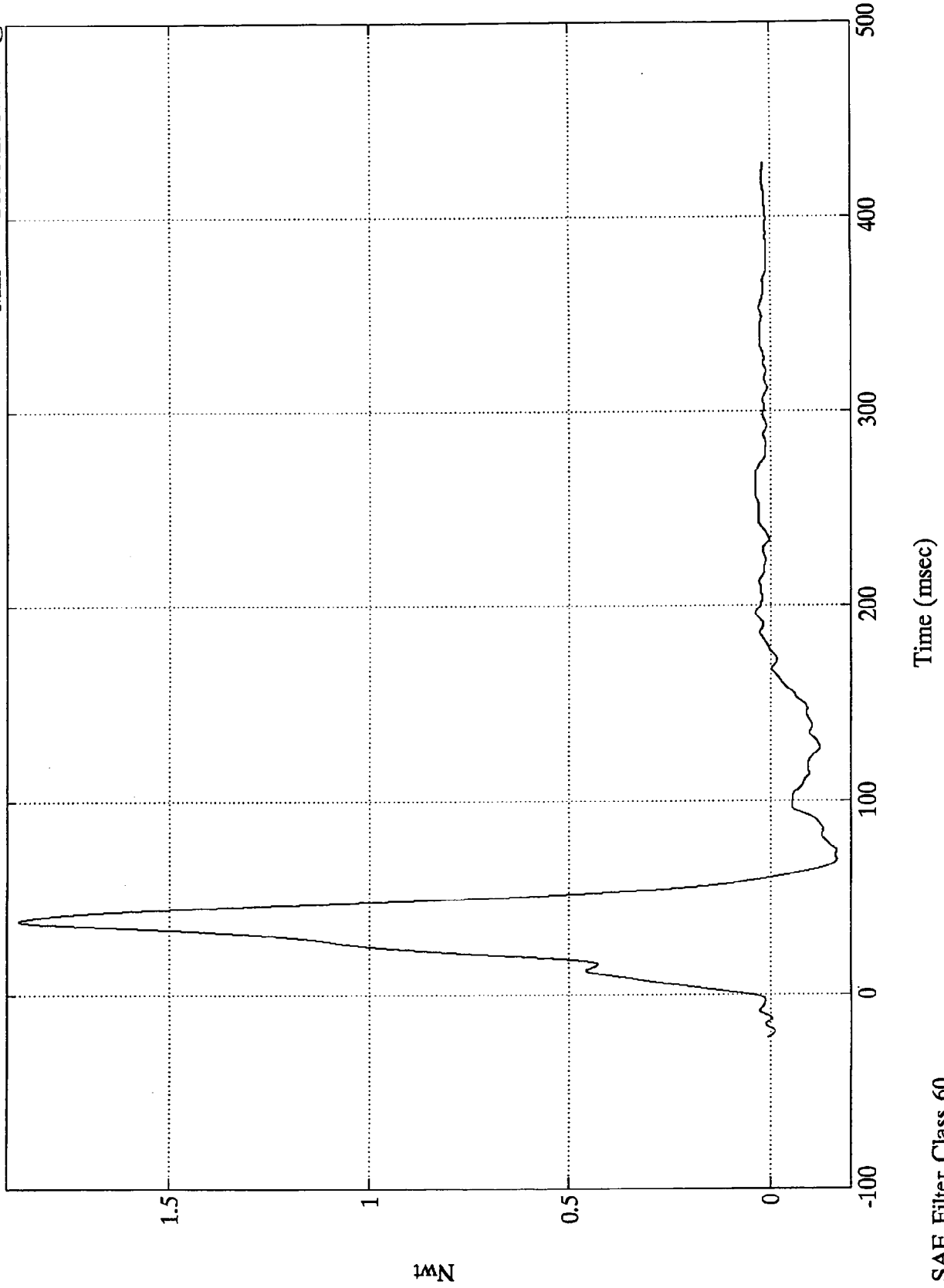
SAE Filter Class 60

VTV TEST #5

$\times 10^5$

MDB Load Cell TL

Max = 186954.51 Nwt @ 38.15 msec
Min = -16575.29 Nwt @ 69.36 msec



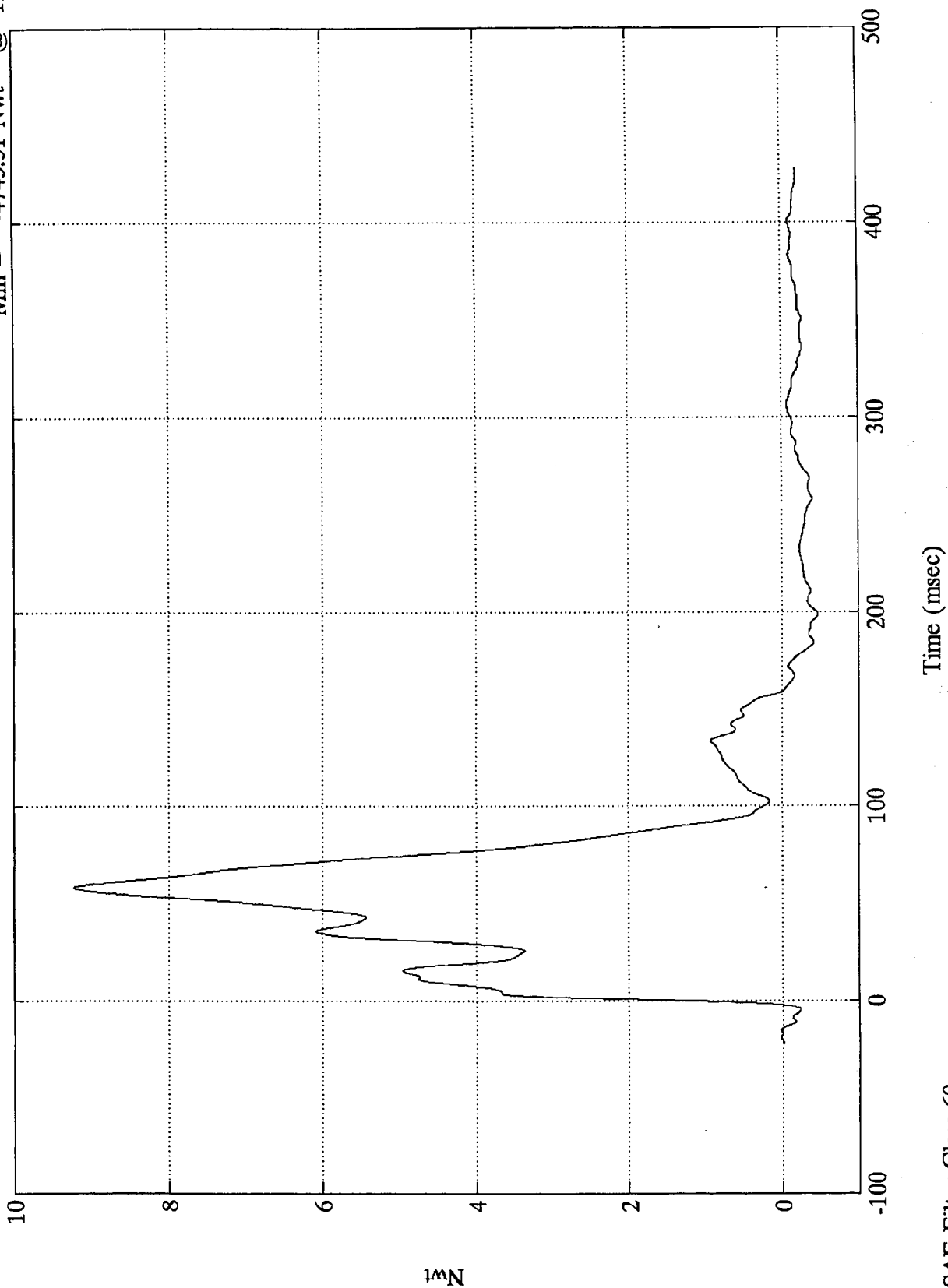
SAE Filter Class 60

VTV TEST #5

$\times 10^4$

MDB Load Cell BL

Max = 92380.44 Nwt @ 59.15 msec
Min = -4743.51 Nwt @ 199.19 msec



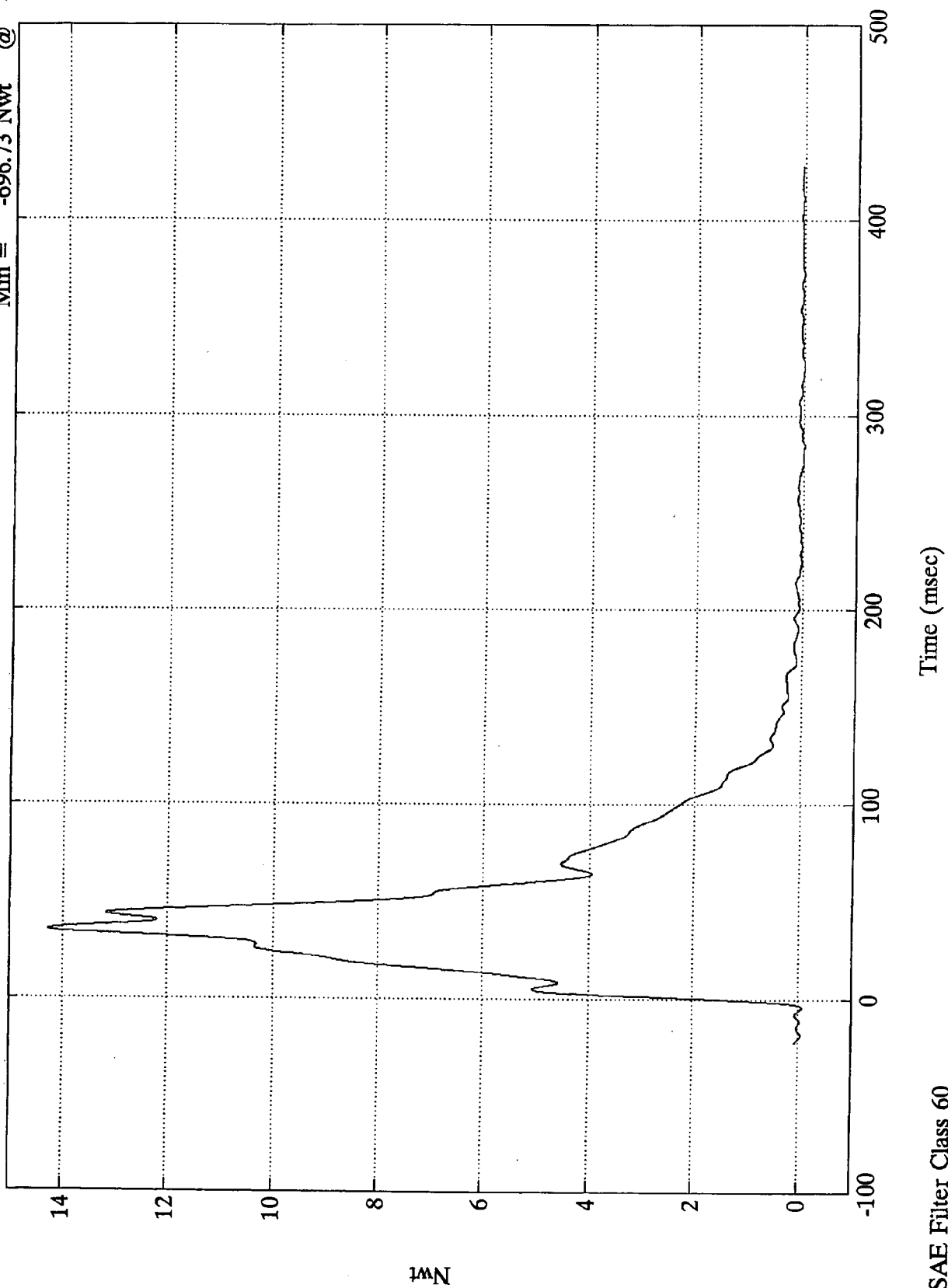
SAE Filter Class 60

VTV TEST #5

$\times 10^4$

MDB Load Cell CL

Max = 142826.37 Nwt @ 35.27 msec
Min = -696.73 Nwt @ -4.08 msec



Nwt

SAE Filter Class 60

TEST NO. Y57-5-1603

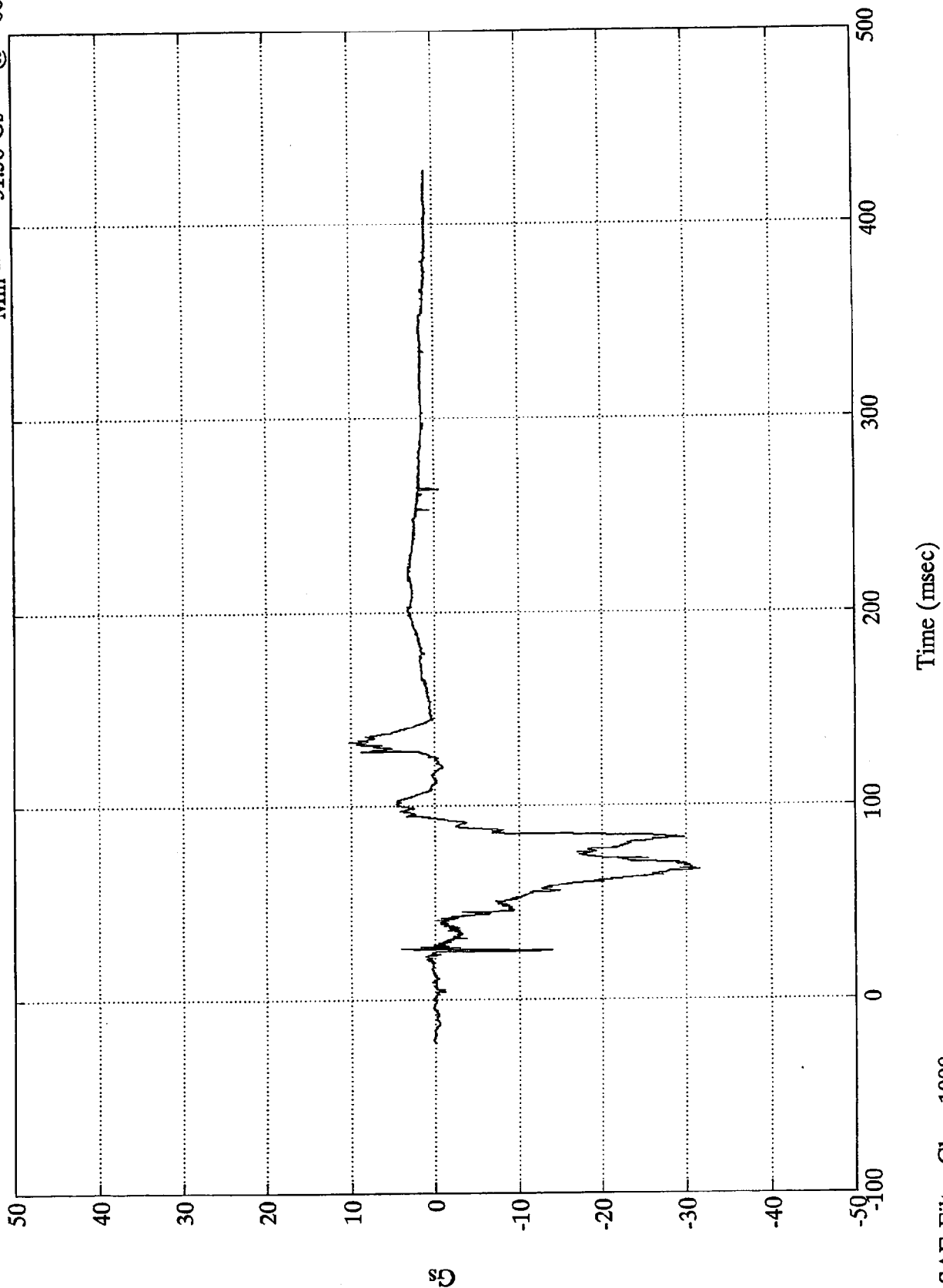
VEHICLE 1 - DUMMY DATA

CHANNEL	SAE FILTER CHANNEL CLASS
Head Accelerations	1000
Chest Accelerations	180
Femur Forces	600
Knee Shear	180
Chest Displacement	180
Neck Forces	1000
Neck Moments	600
Tibia Forces, Moments	600

VTV TEST #5

P1 Head X

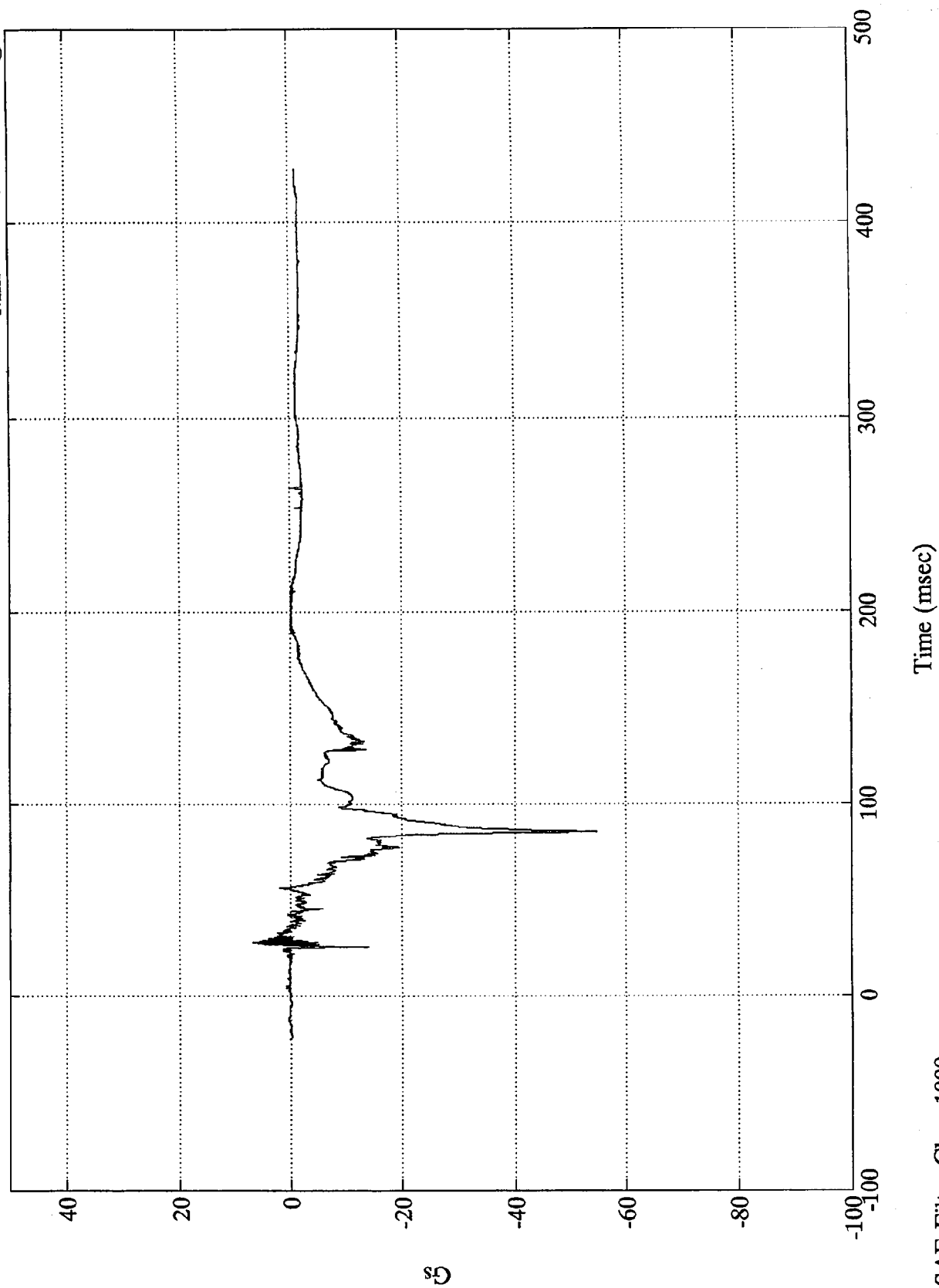
Max = 10.16 Gs @ 133.08 msec
Min = -31.56 Gs @ 66.84 msec



SAE Filter Class 1000

VTV TEST #5

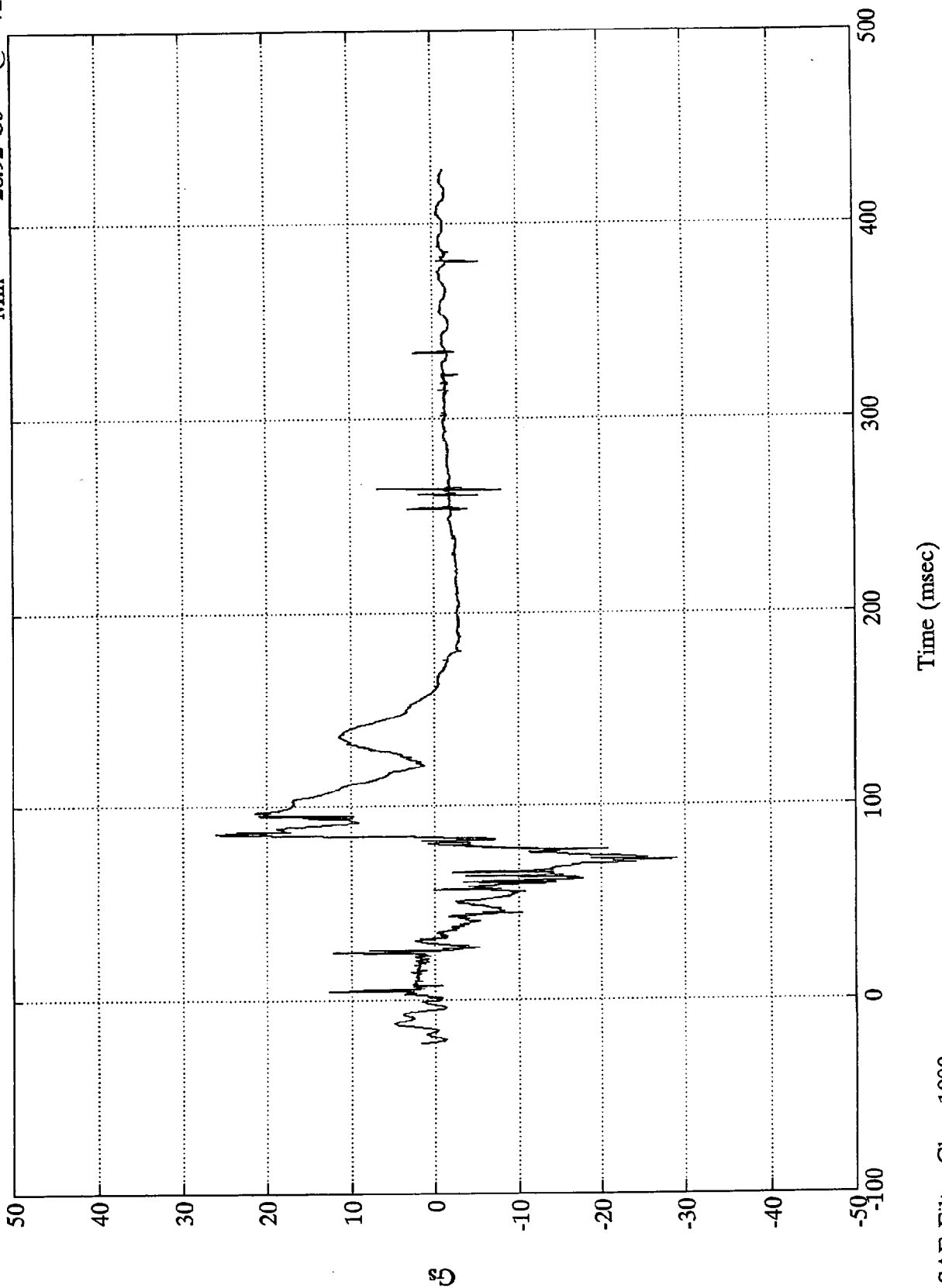
P1 Head Y
Max = 6.87 Gs @ 27.96 msec
Min = -54.85 Gs @ 85.68 msec



VTV TEST #5

Max = 26.09 Gs @ 85.92 msec
Min = -28.92 Gs @ 72.24 msec

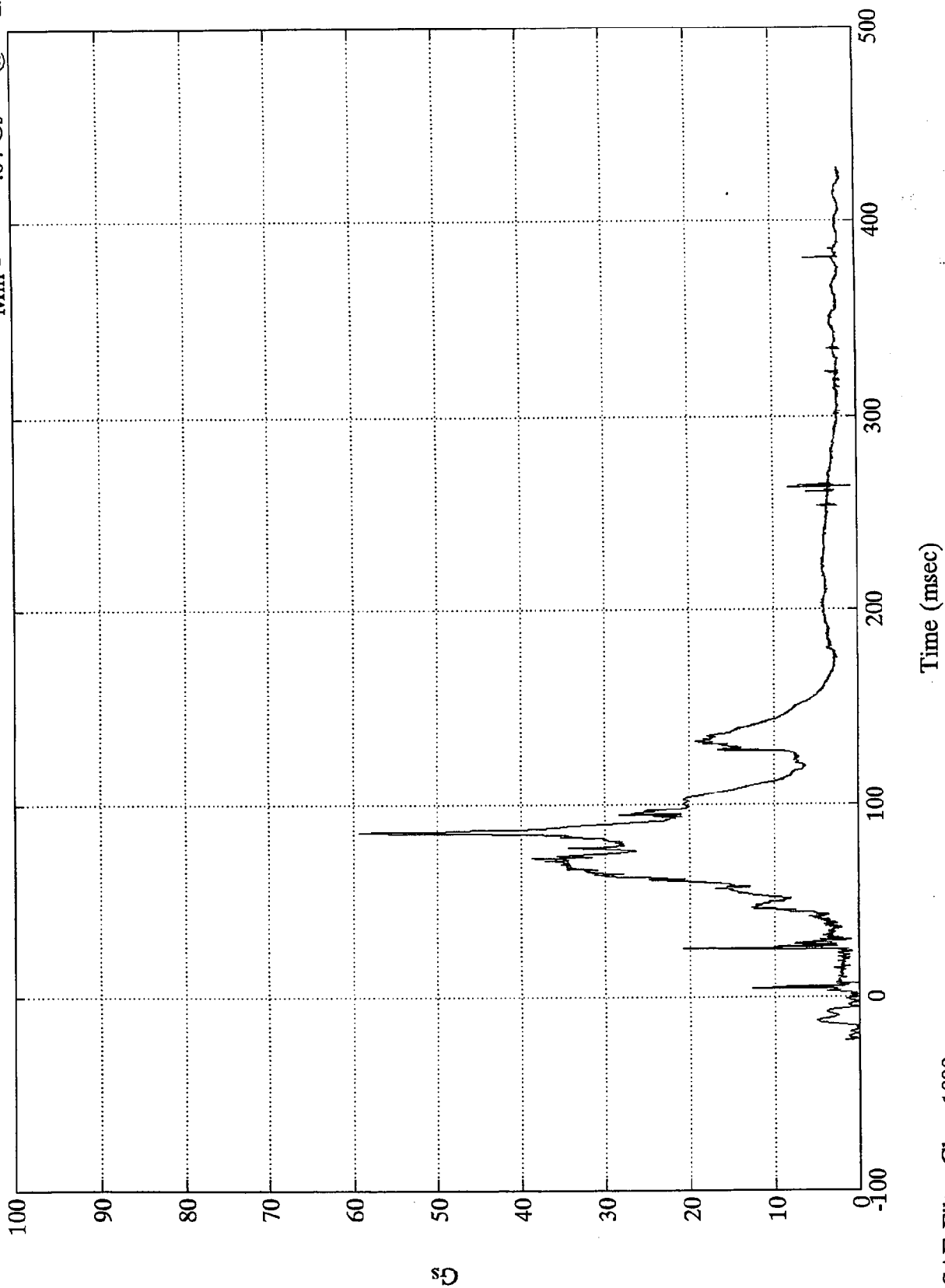
P1 Head Z



SAE Filter Class 1000

VTV TEST #5

P1 Head Resultant
Max = 59.24 Gs @ 85.68 msec
Min = .04 Gs @ -2.40 msec

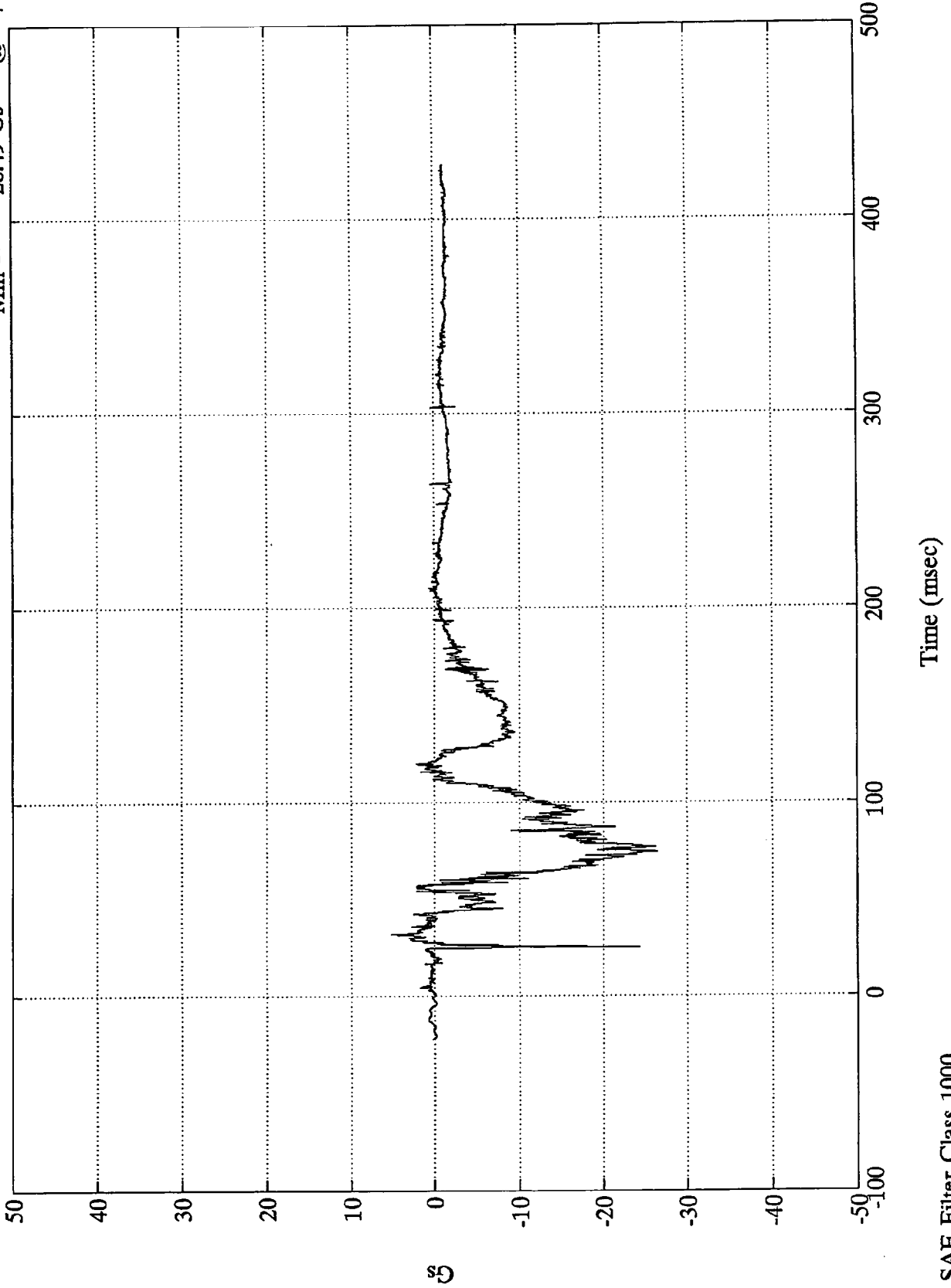


SAE Filter Class 1000

VTV TEST #5

P1 HD9X (Y)

Max = 5.10 Gs @ 31.92 msec
Min = -26.49 Gs @ 74.63 msec

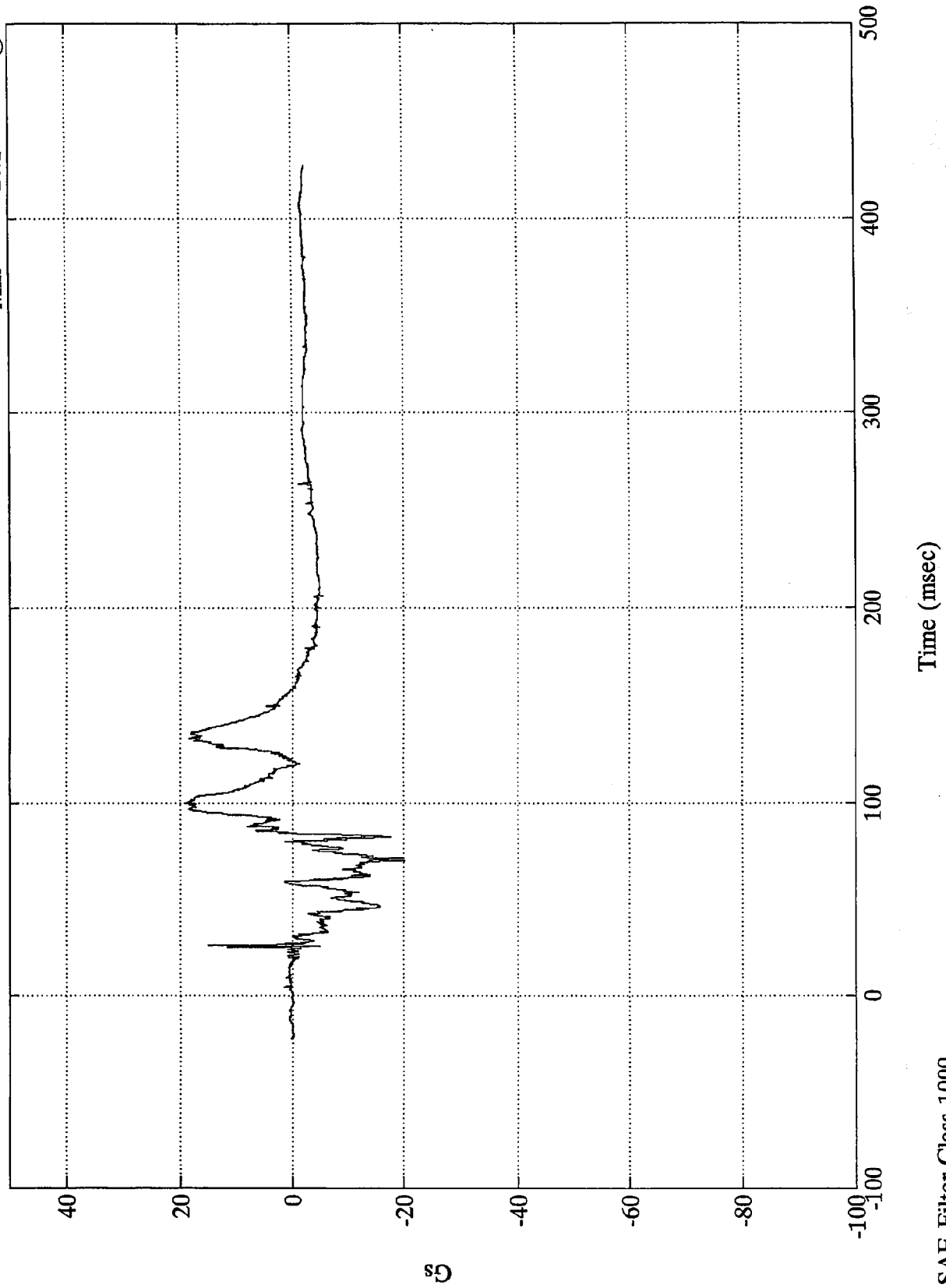


SAE Filter Class 1000

VTV TEST #5

P1 HD9X (Z)

Max = 19.27 Gs @ 100.32 msec
Min = -20.13 Gs @ 71.04 msec

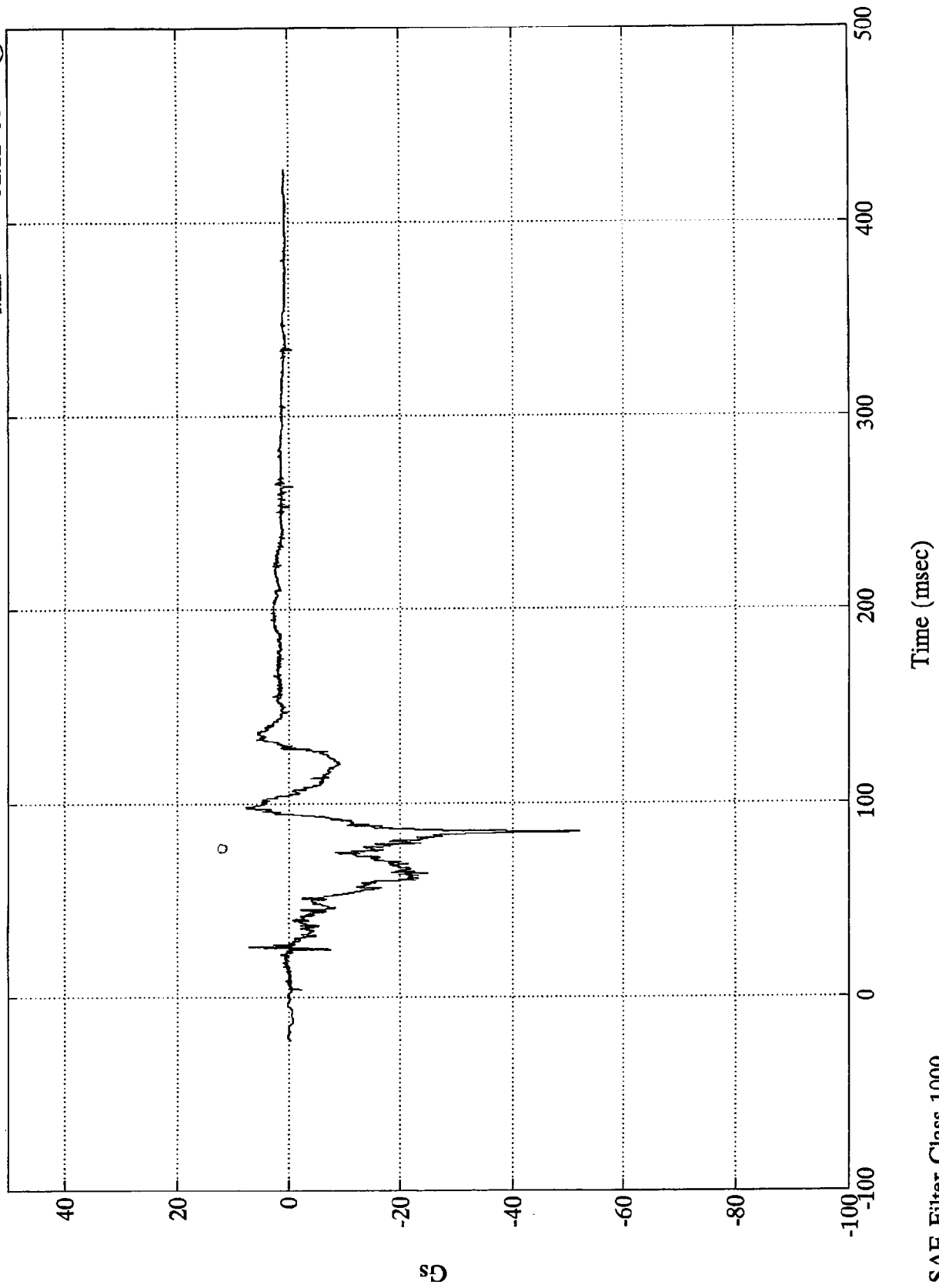


SAE Filter Class 1000

VTV TEST #5

P1 HD9Y (X)

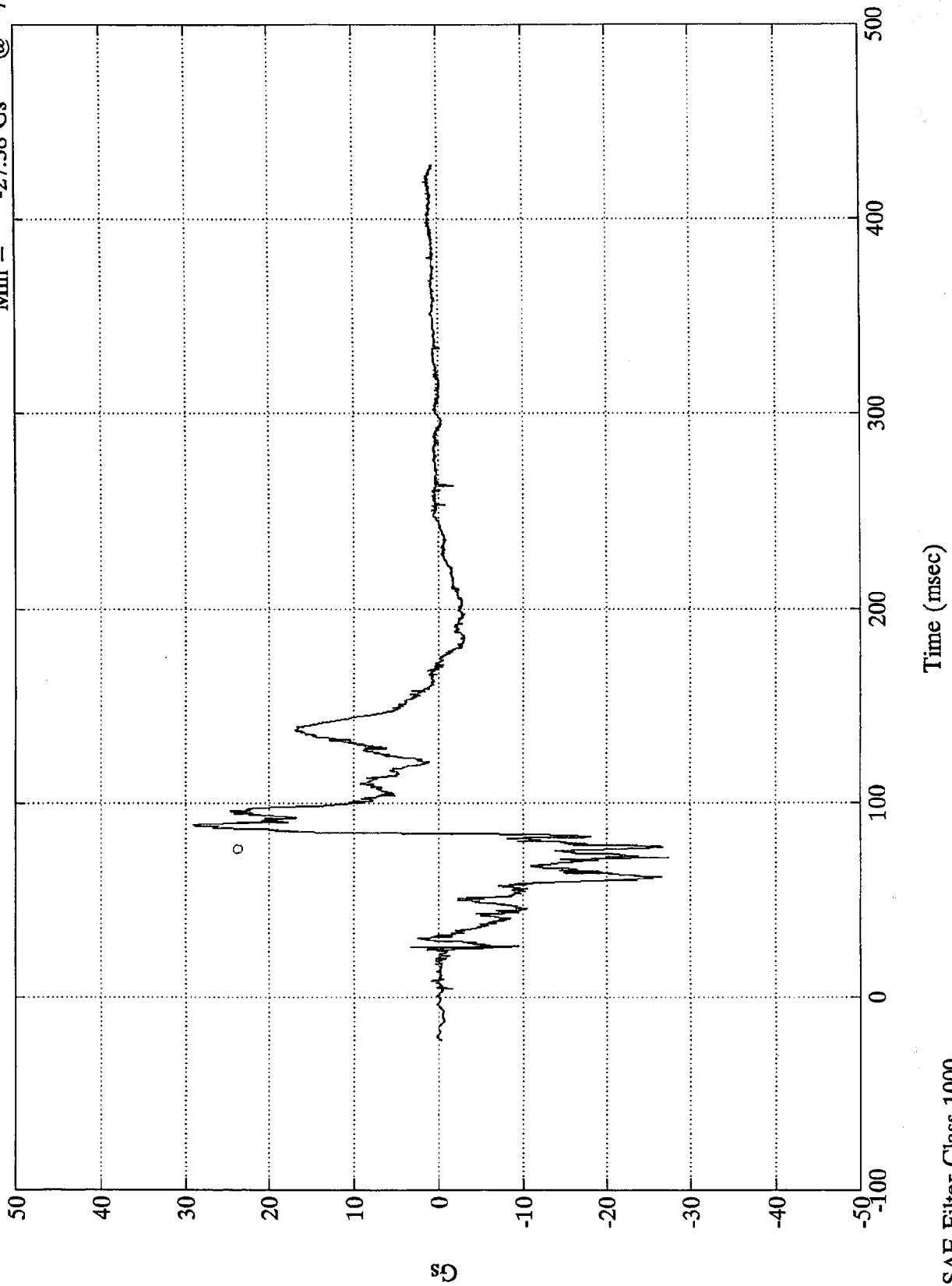
Max = 7.66 Gs @ 98.04 msec
Min = -52.12 Gs @ 85.44 msec



VTV TEST #5

Max = 29.09 Gs @ 89.16 msec
Min = -27.38 Gs @ 72.48 msec

P1 HD9Y (Z)

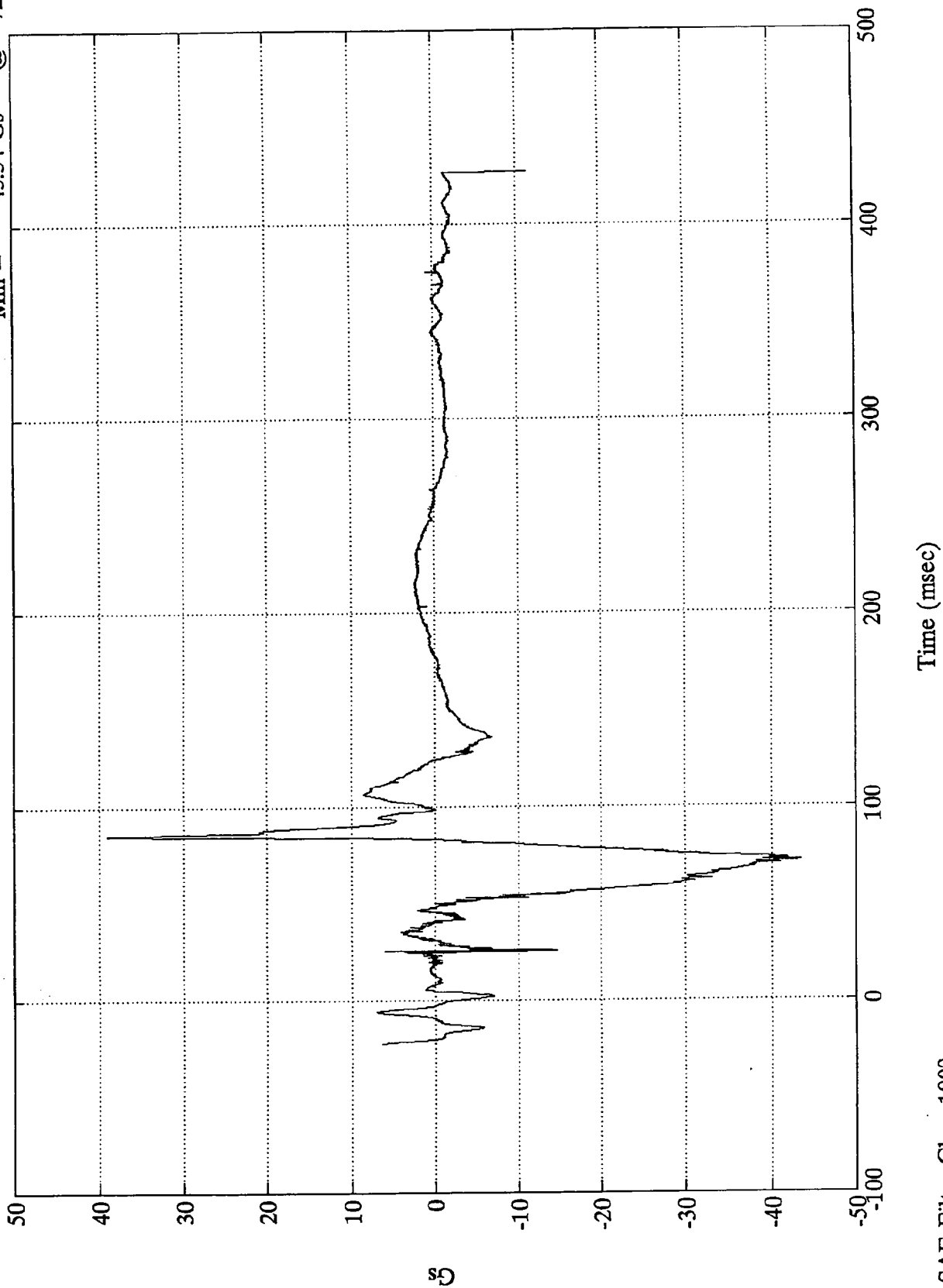


SAE Filter Class 1000

VTV TEST #5

P1 HD9Z (X)

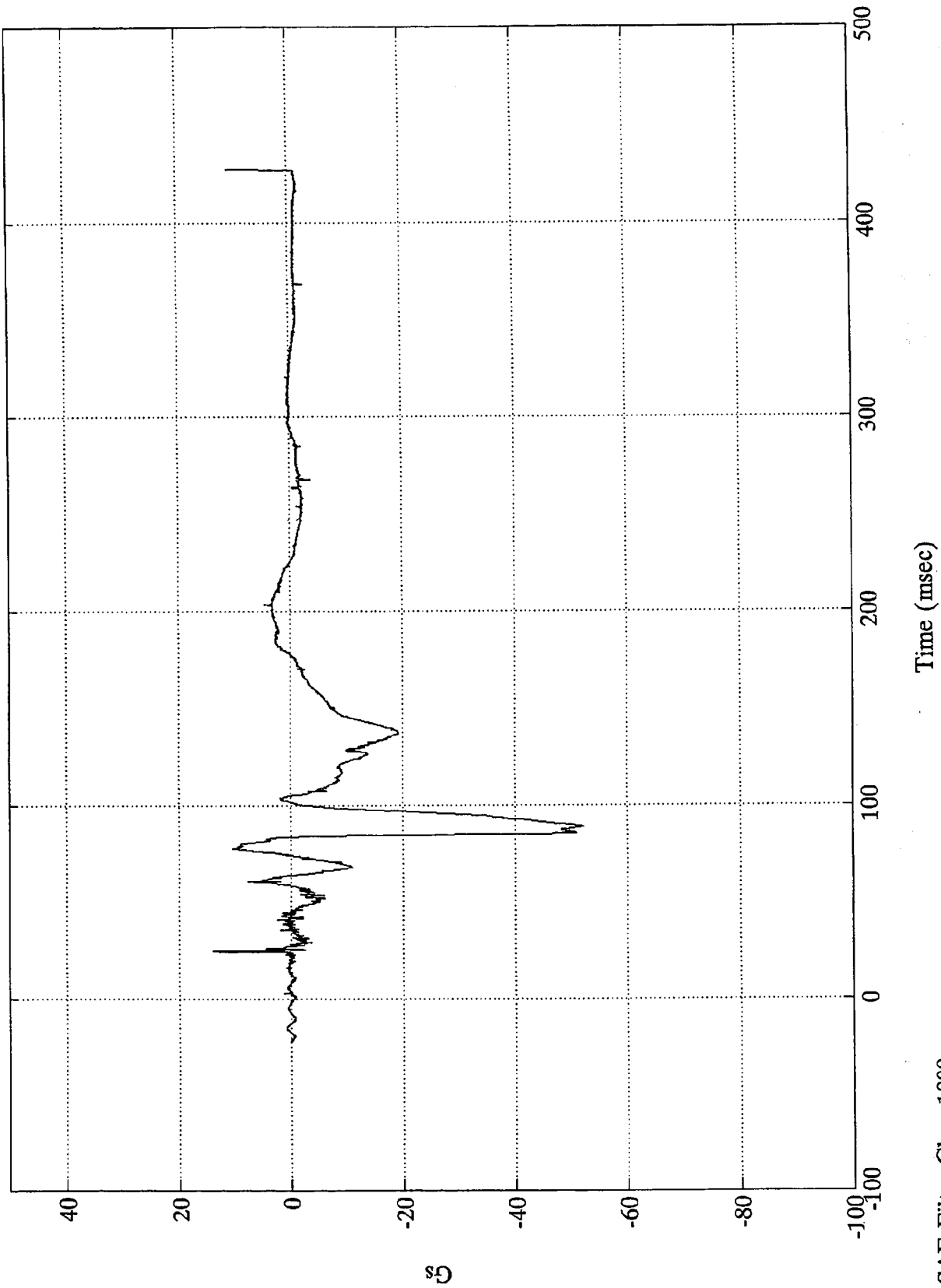
Max = 39.05 Gs @ 85.80 msec
Min = -43.54 Gs @ 72.24 msec



SAE Filter Class 1000

VTV TEST #5

P1 HD9Z (Y) Max = 13.91 Gs @ 25.20 msec
Min = -52.36 Gs @ 89.04 msec

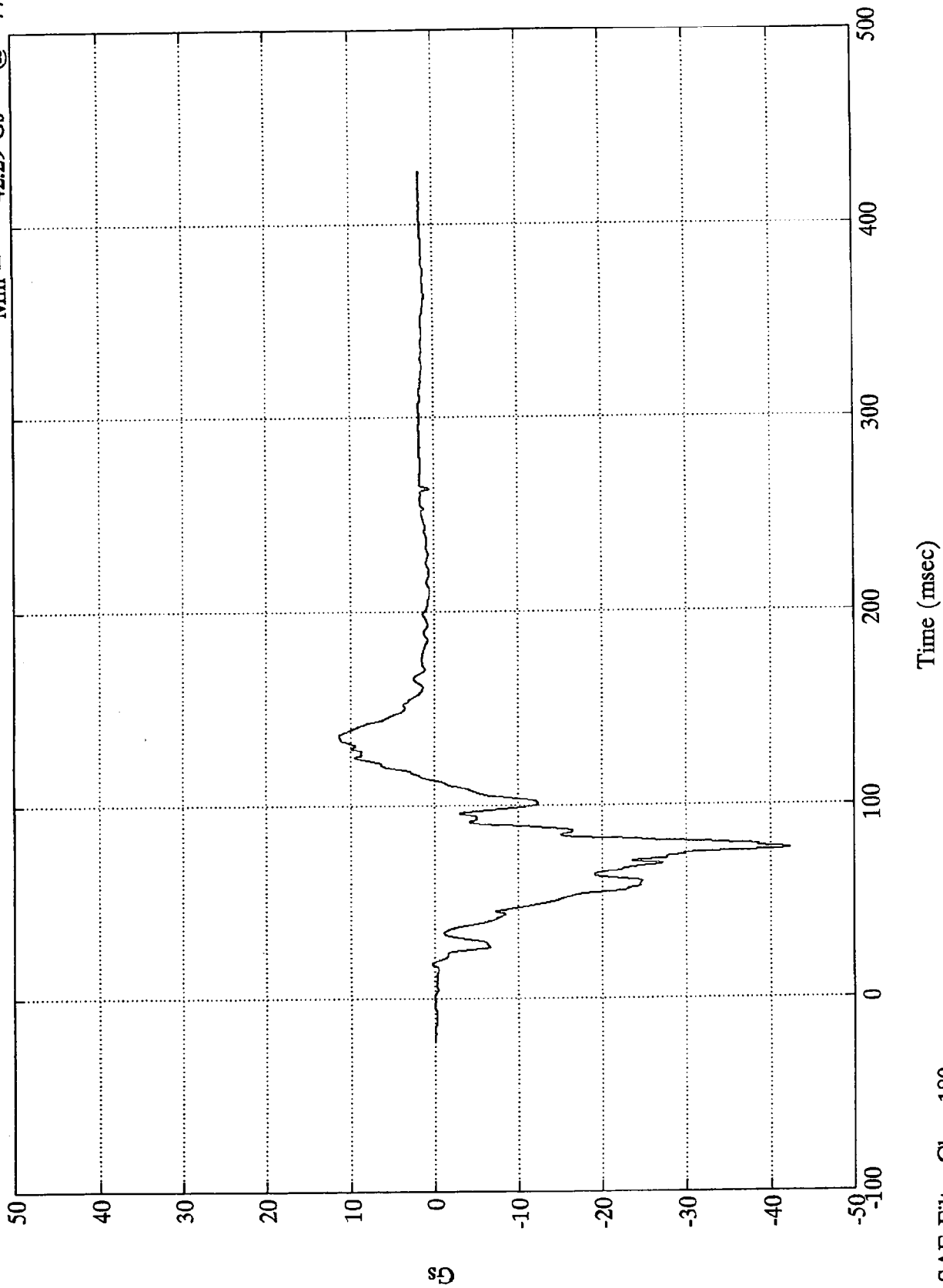


SAE Filter Class 1000

VTV TEST #5

P1 Chest X

Max = 11.45 Gs @ 136.20 msec
Min = -42.29 Gs @ 77.52 msec

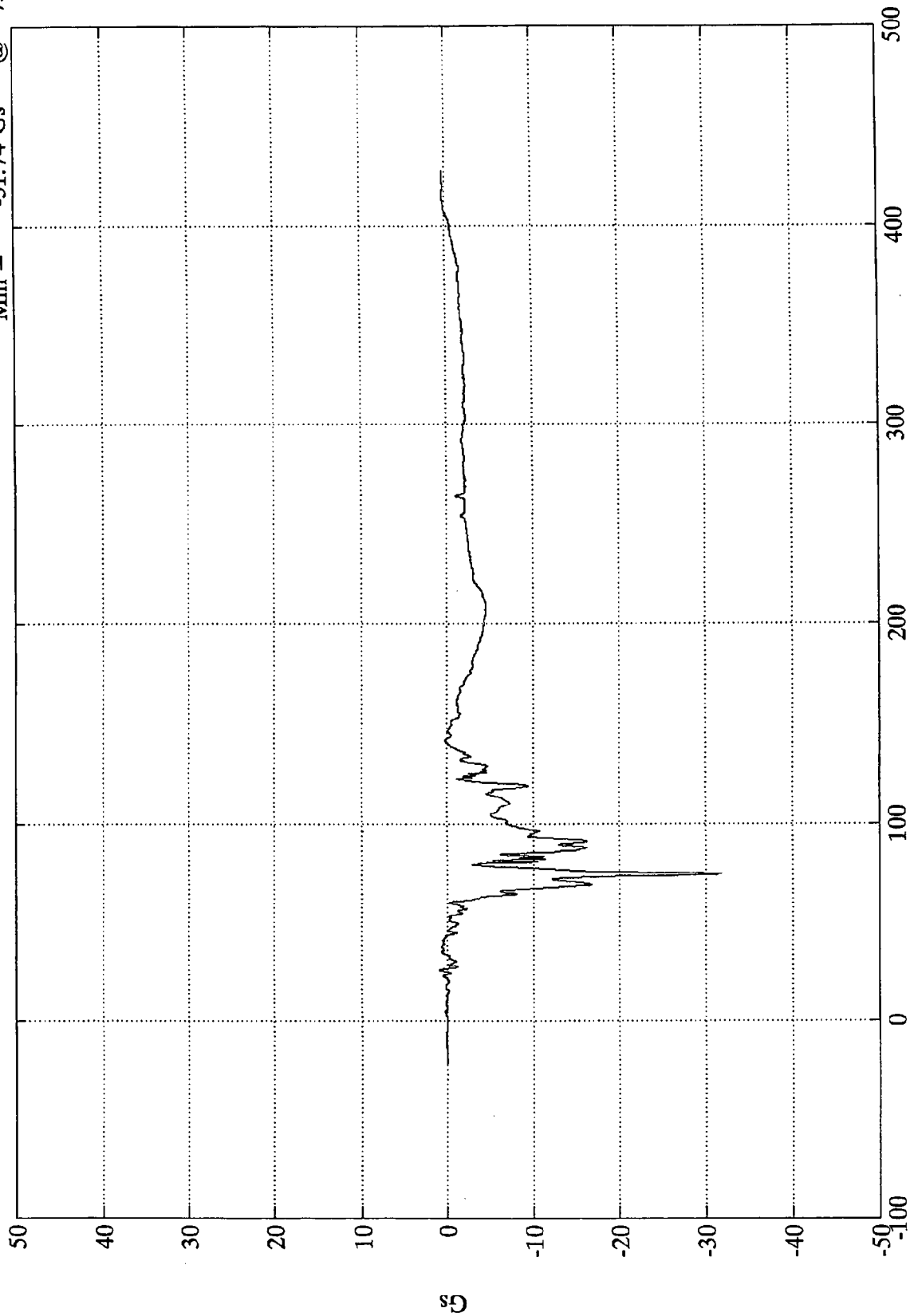


SAE Filter Class 180

VTV TEST #5

Max = .89 Gs @ 26.15 msec
 Min = -31.74 Gs @ 75.36 msec

P1 Chest Y



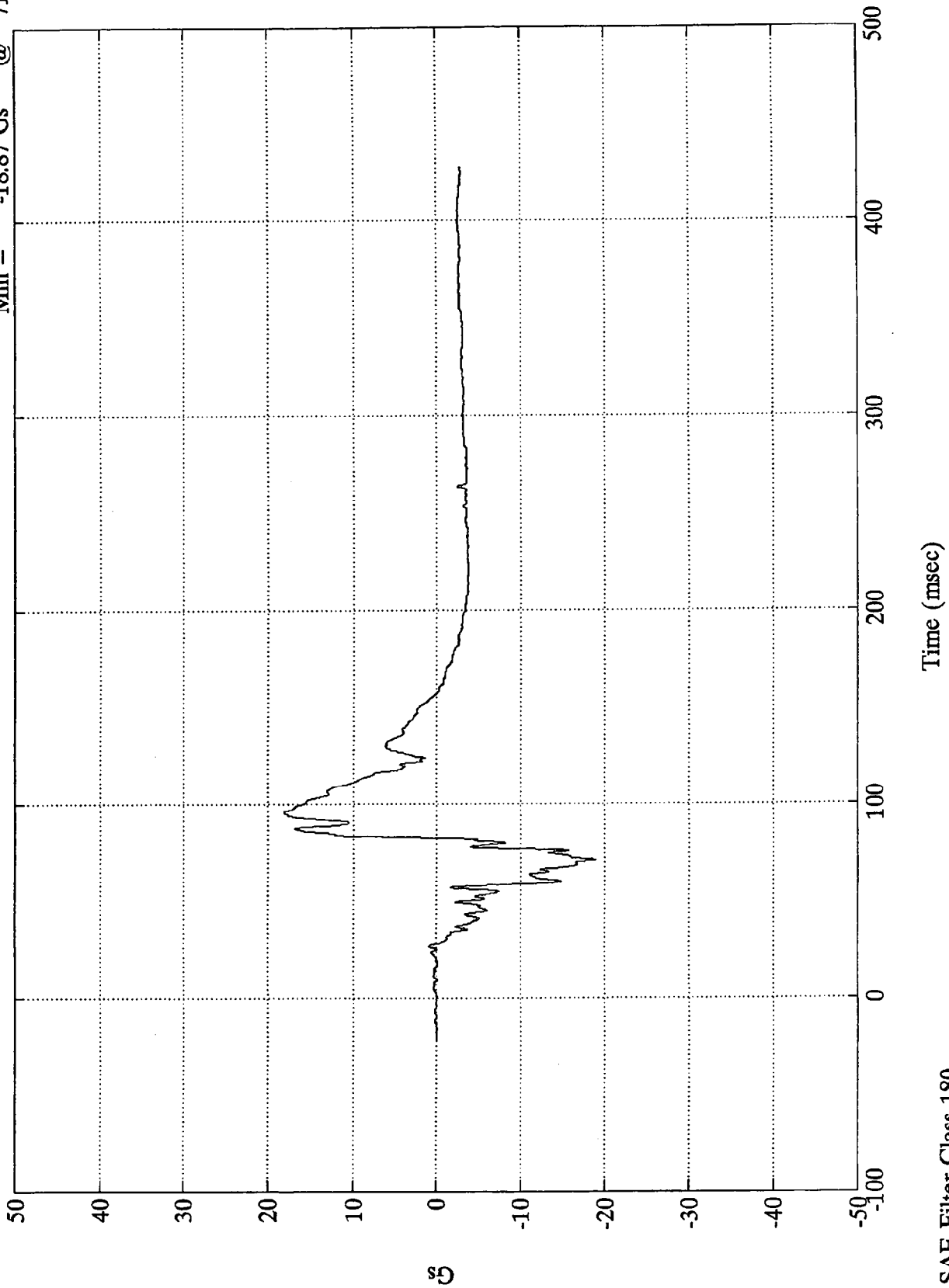
Time (msec)

SAE Filter Class 180

VTV TEST #5

P1 Chest Z

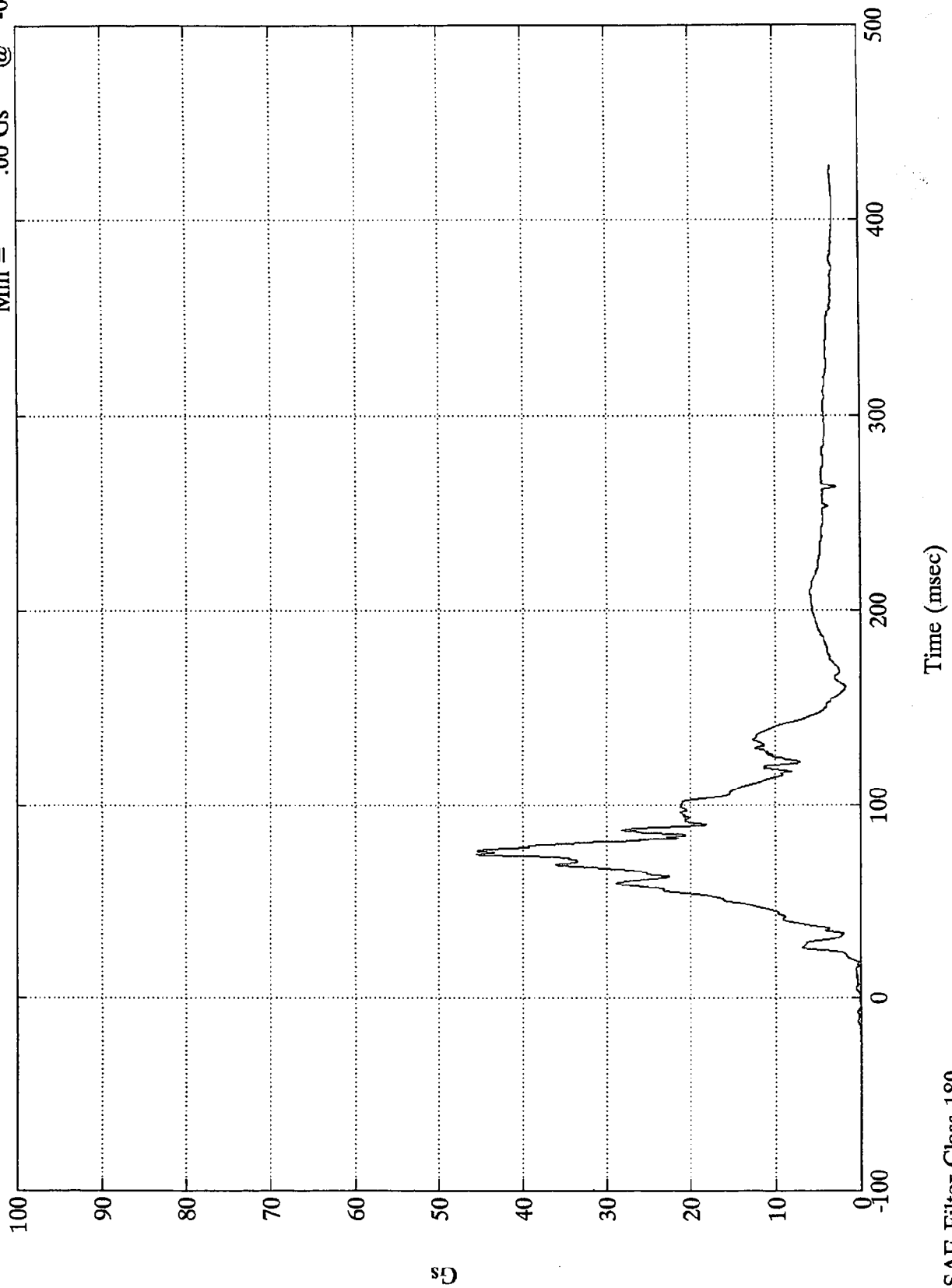
Max = 18.14 Gs @ 96.36 msec
Min = -18.87 Gs @ 71.40 msec



VTV TEST #5

Max = 45.57 Gs @ 75.36 msec
Min = .00 Gs @ -0.24 msec

P1 Chest Resultant

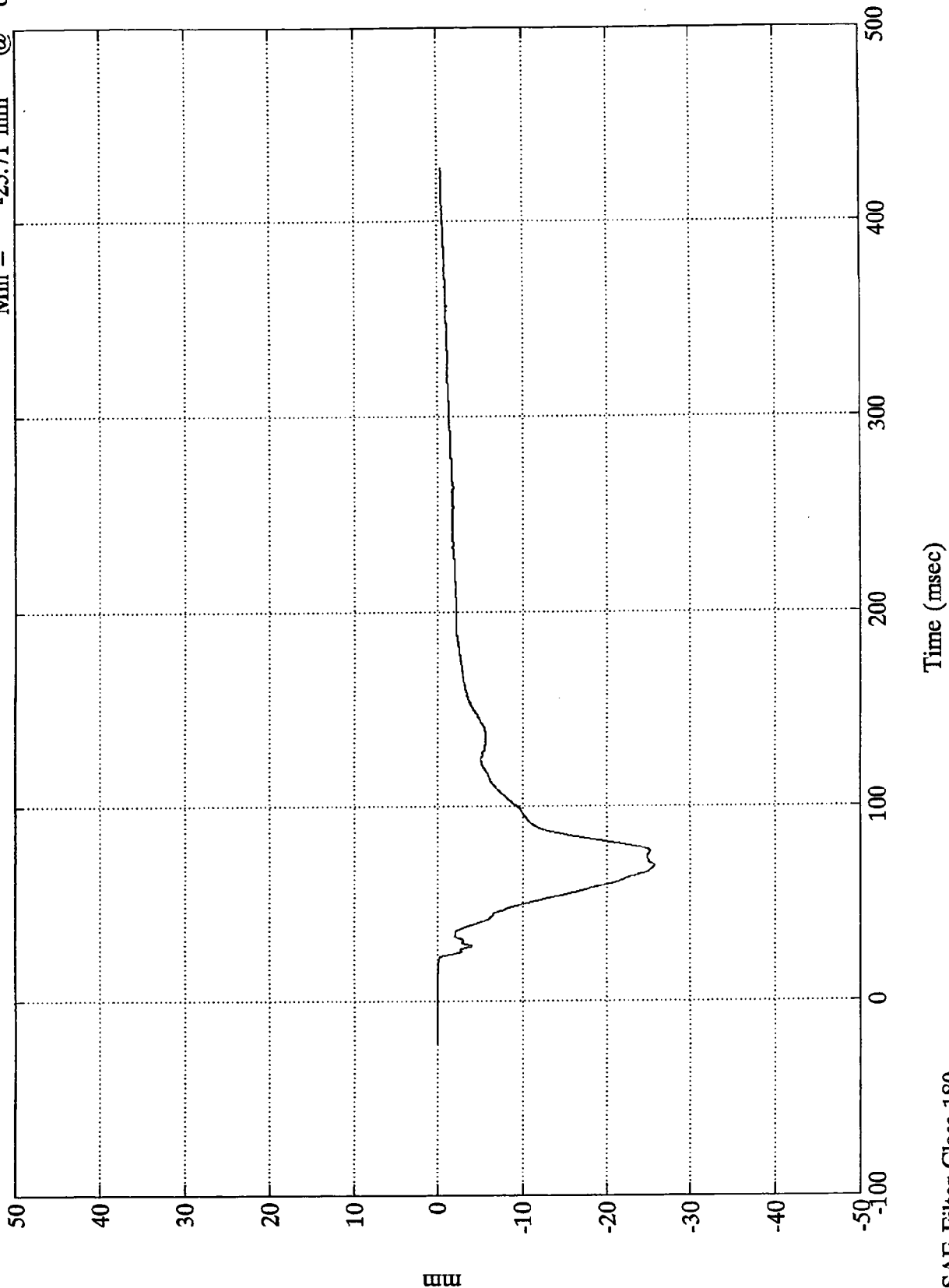


SAE Filter Class 180

VTV TEST #5

Max = .01 mm @ -13.80 msec
Min = -25.71 mm @ 69.83 msec

P1 Chest Deflection

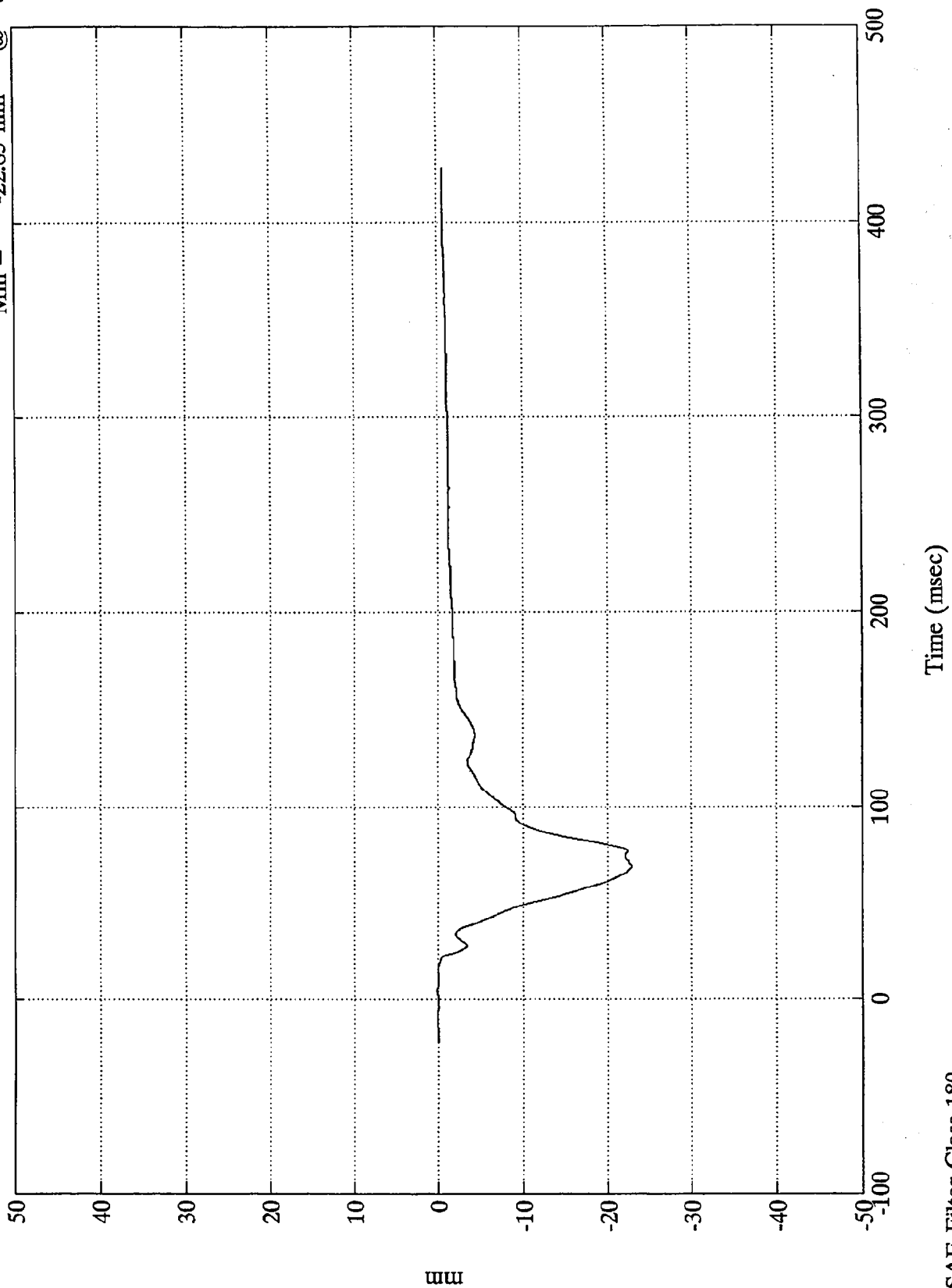


SAE Filter Class 180

VTV TEST #5

Chest Displacement #125

Max = .21 mm @ 4.67 msec
Min = -22.85 mm @ 69.83 msec

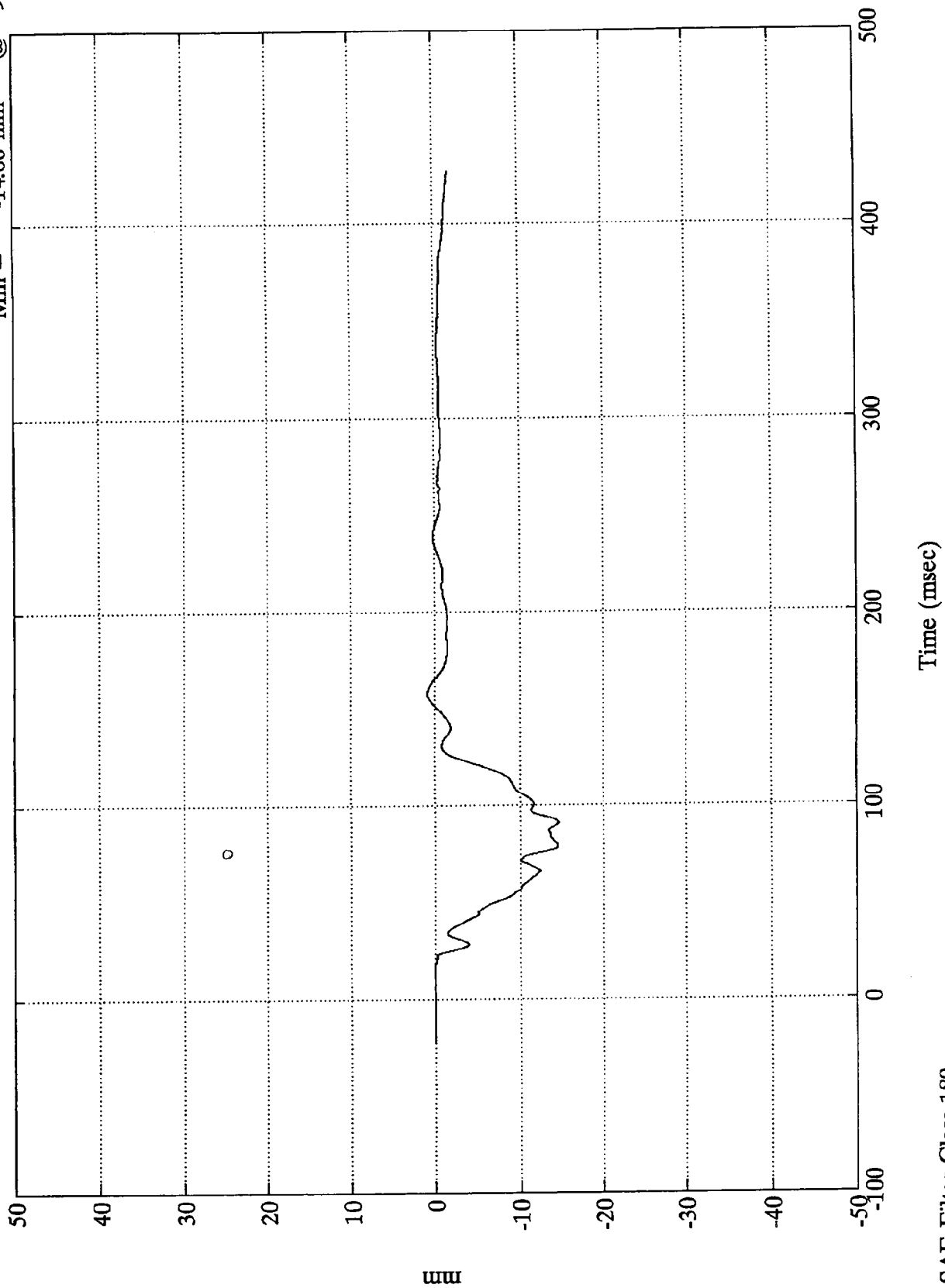


SAE Filter Class 180

VTV TEST #5

Chest Displacement #126

Max = .91 mm @ 158.39 msec
Min = -14.60 mm @ 91.20 msec

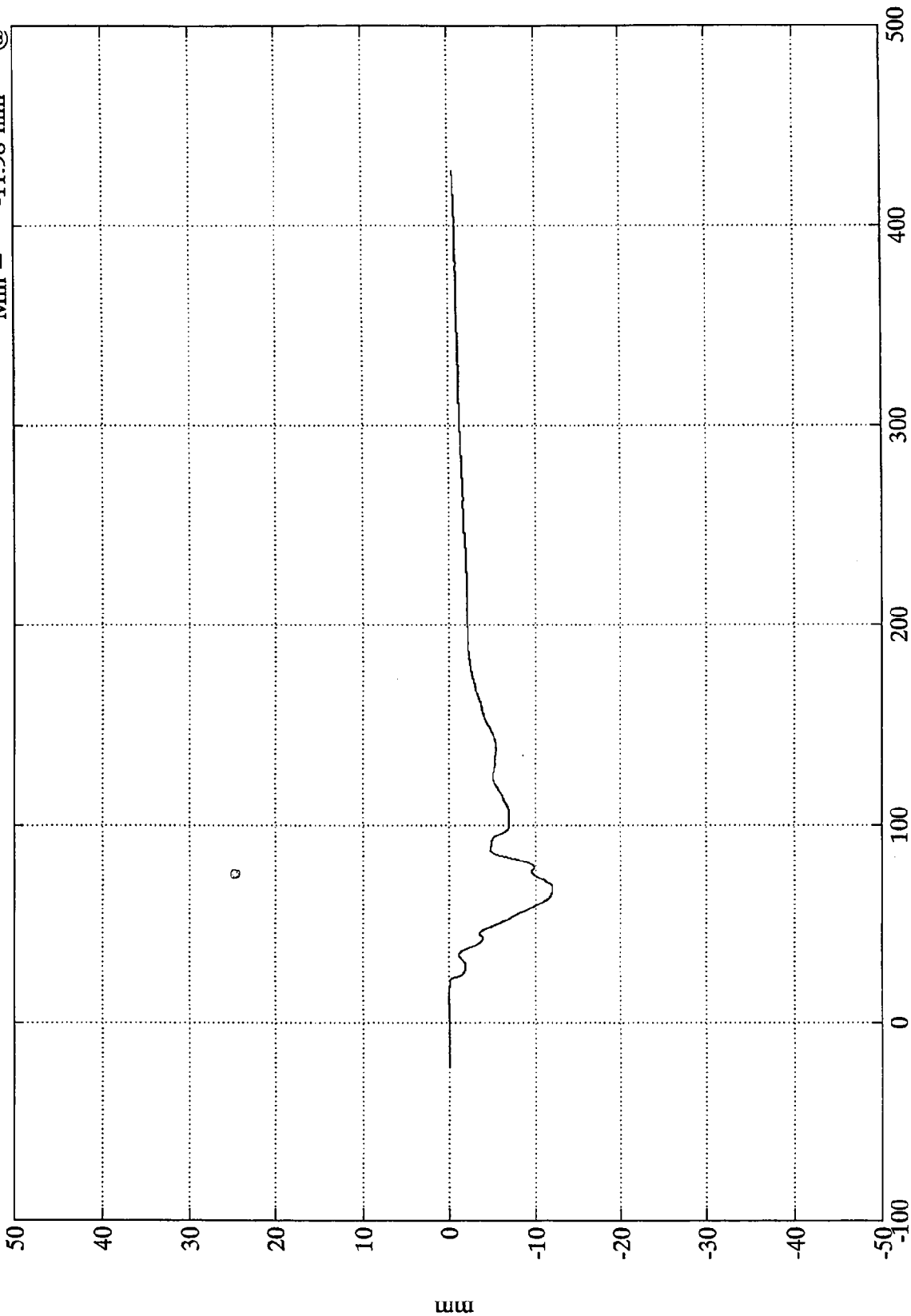


SAE Filter Class 180

VTV TEST #5

Chest Displacement #127

Max = .00 mm @ 16.79 msec
Min = -11.98 mm @ 69.48 msec



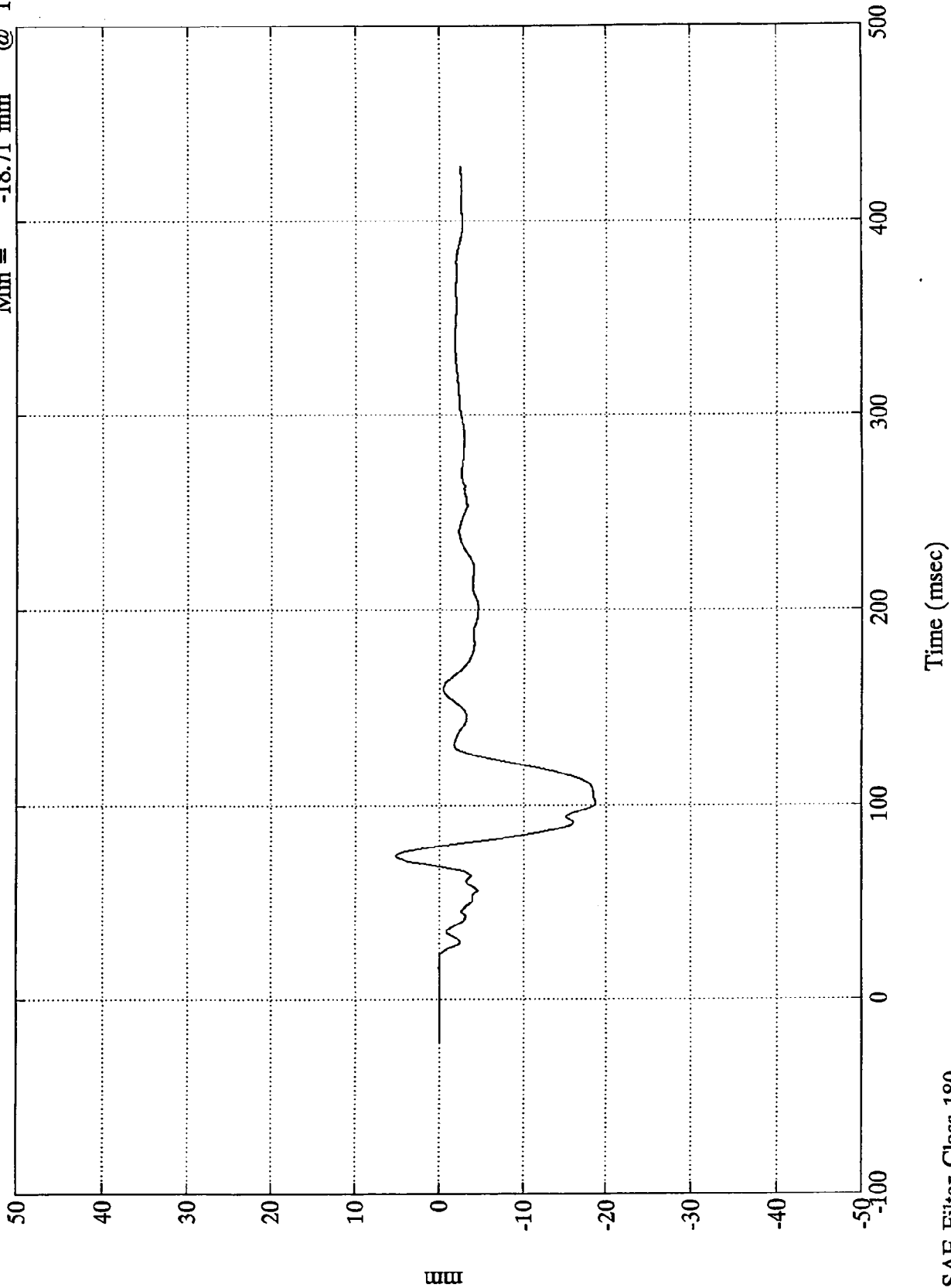
Time (msec)

SAE Filter Class 180

VTV TEST #5

Chest Displacement #128

Max = 5.22 mm @ 74.40 msec
Min = -18.71 mm @ 101.40 msec

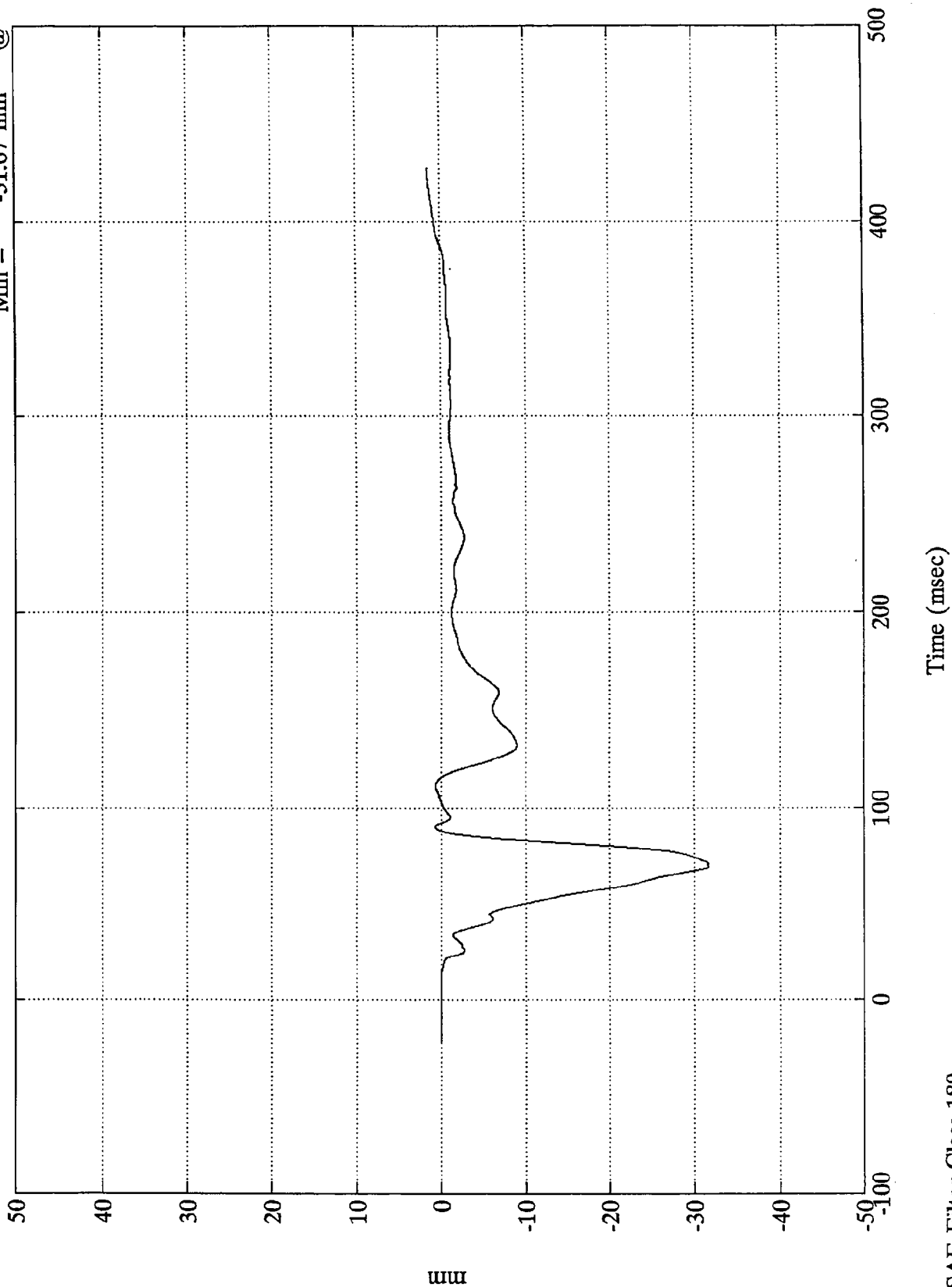


SAE Filter Class 180

VTV TEST #5

Chest Displacement #129

Max = 1.52 mm @ 426.72 msec
Min = -31.67 mm @ 70.44 msec

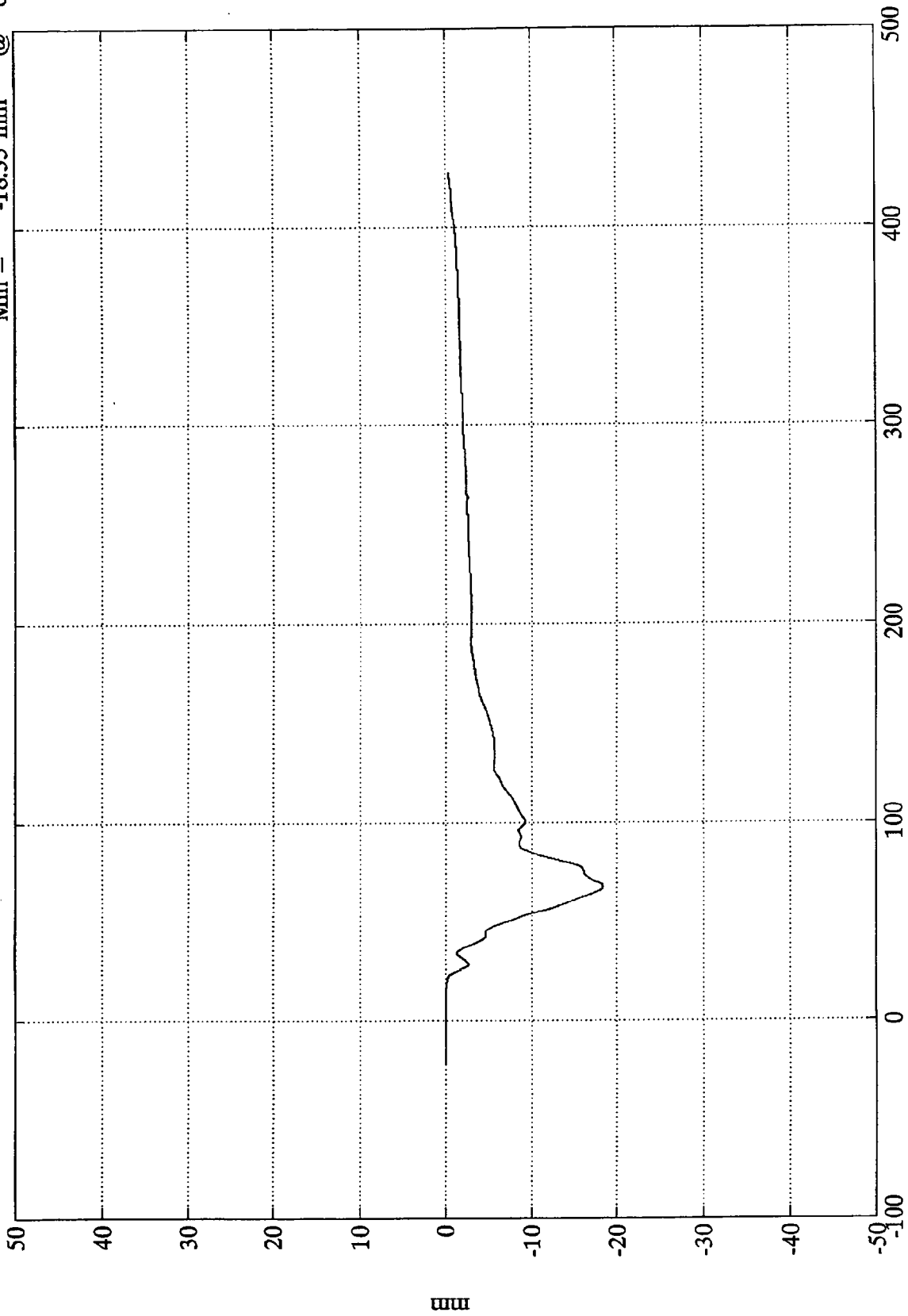


SAE Filter Class 180

VTV TEST #5

Chest Displacement #130

Max = .00 mm @ 4.67 msec
Min = -18.35 mm @ 68.28 msec



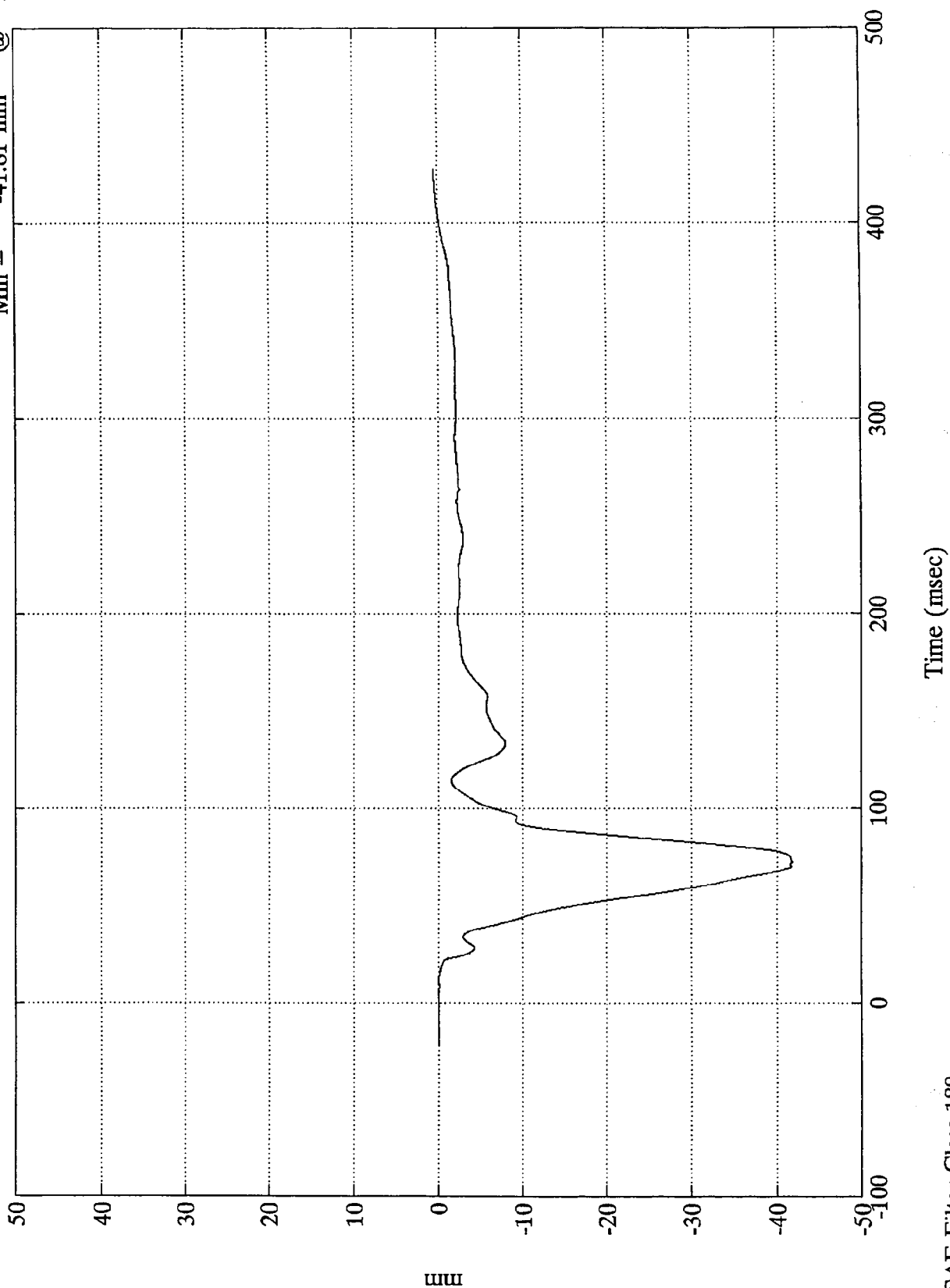
Time (msec)

SAE Filter Class 180

VTV TEST #5

Chest Displacement #131

Max = .49 mm @ 426.72 msec
Min = -41.81 mm @ 72.72 msec

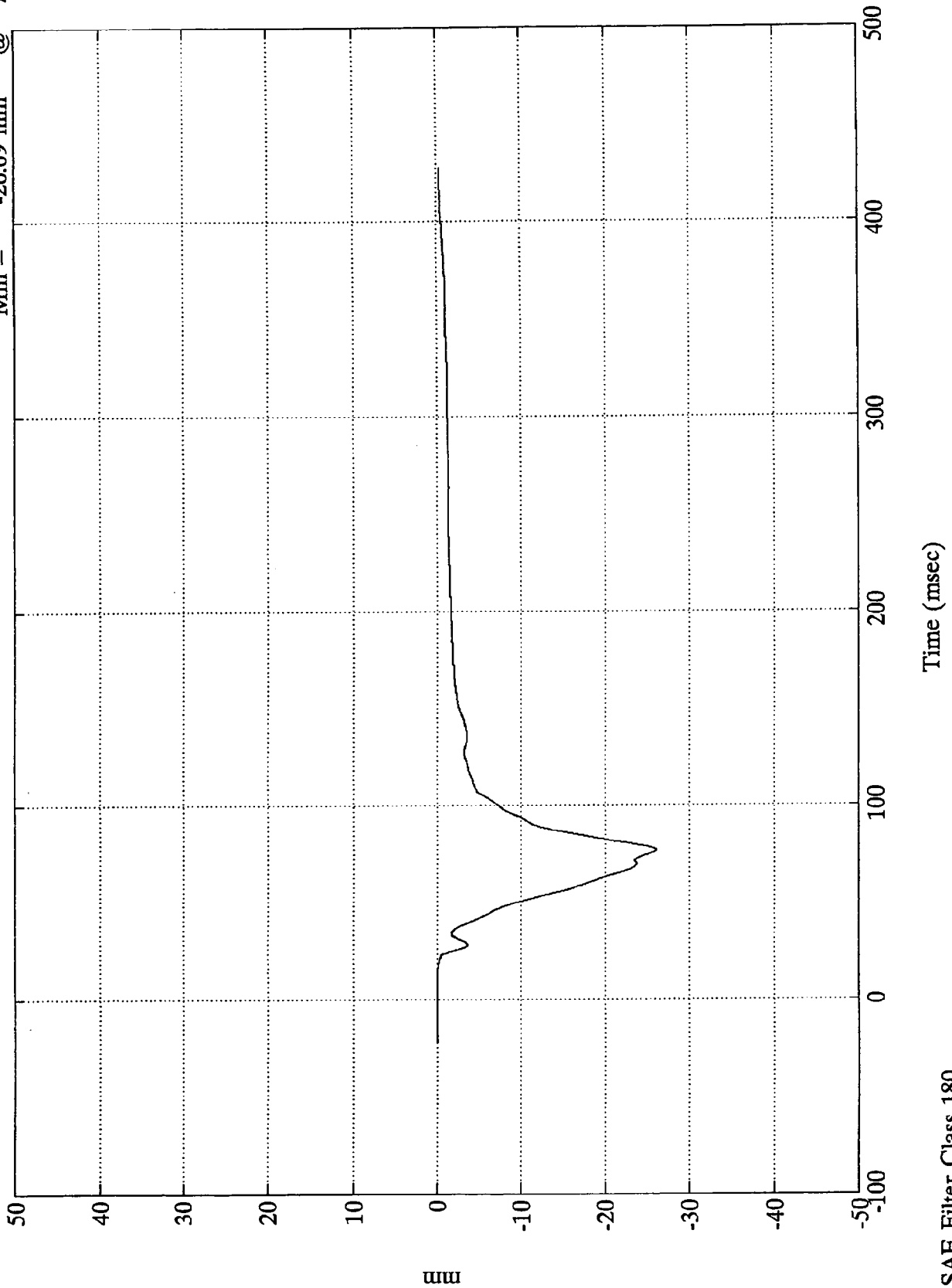


SAE Filter Class 180

VTV TEST #5

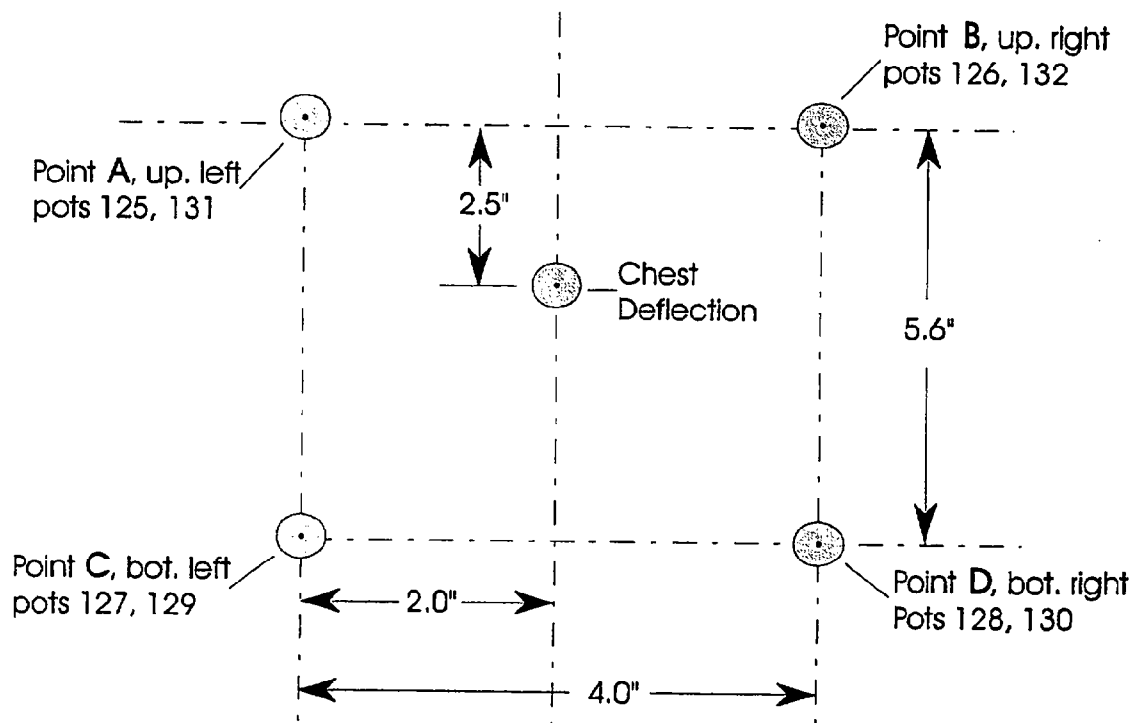
Chest Displacement #132

Max = .01 mm @ -7.08 msec
Min = -26.09 mm @ 76.68 msec



SAE Filter Class 180

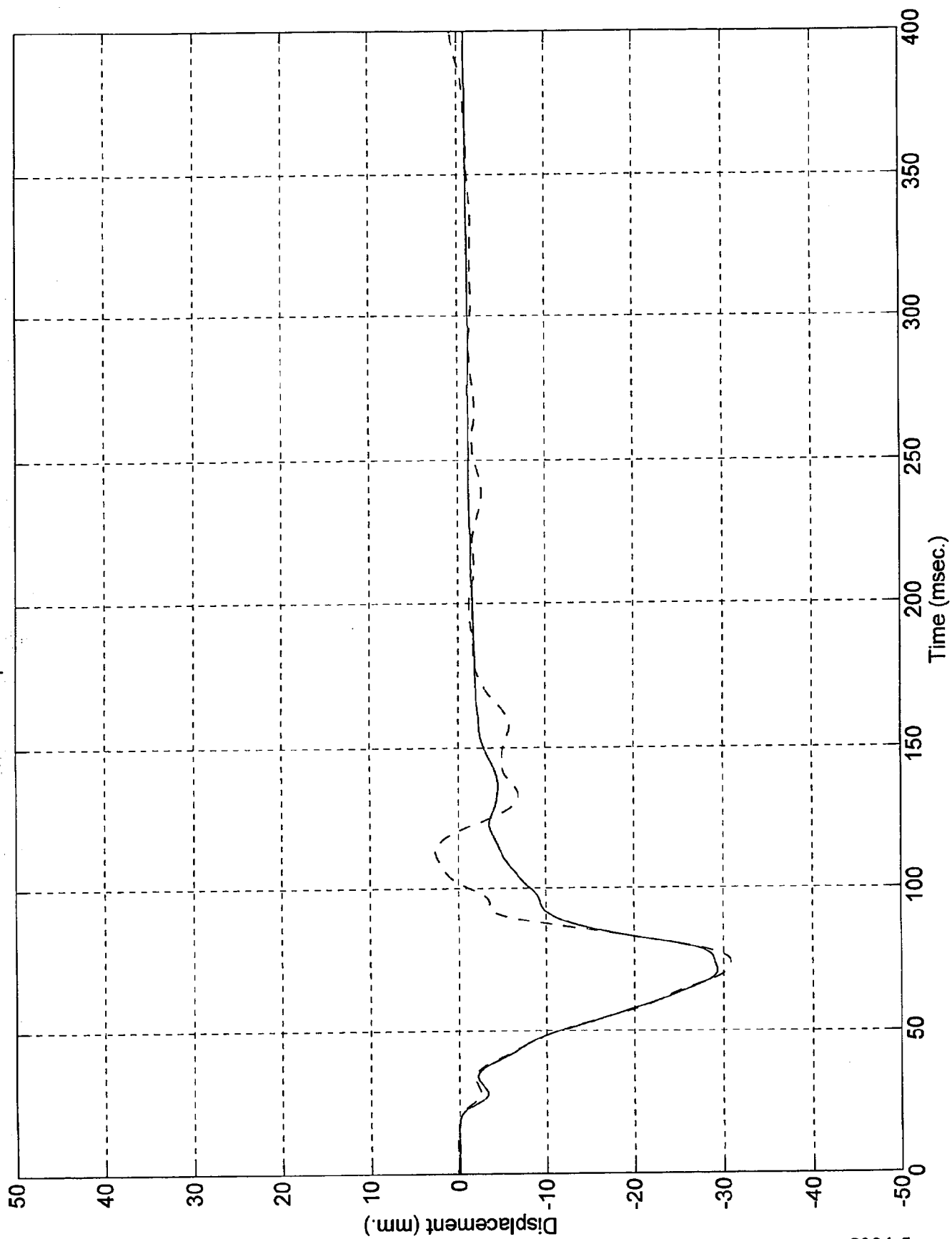
CHEST POTENTIOMETER ARRAY LAYOUT



VIEW LOOKING FORWARD

Note: The following four data traces represent the X and Y displacement of the points A, B, C, and D respectively.

Top Left Deflection

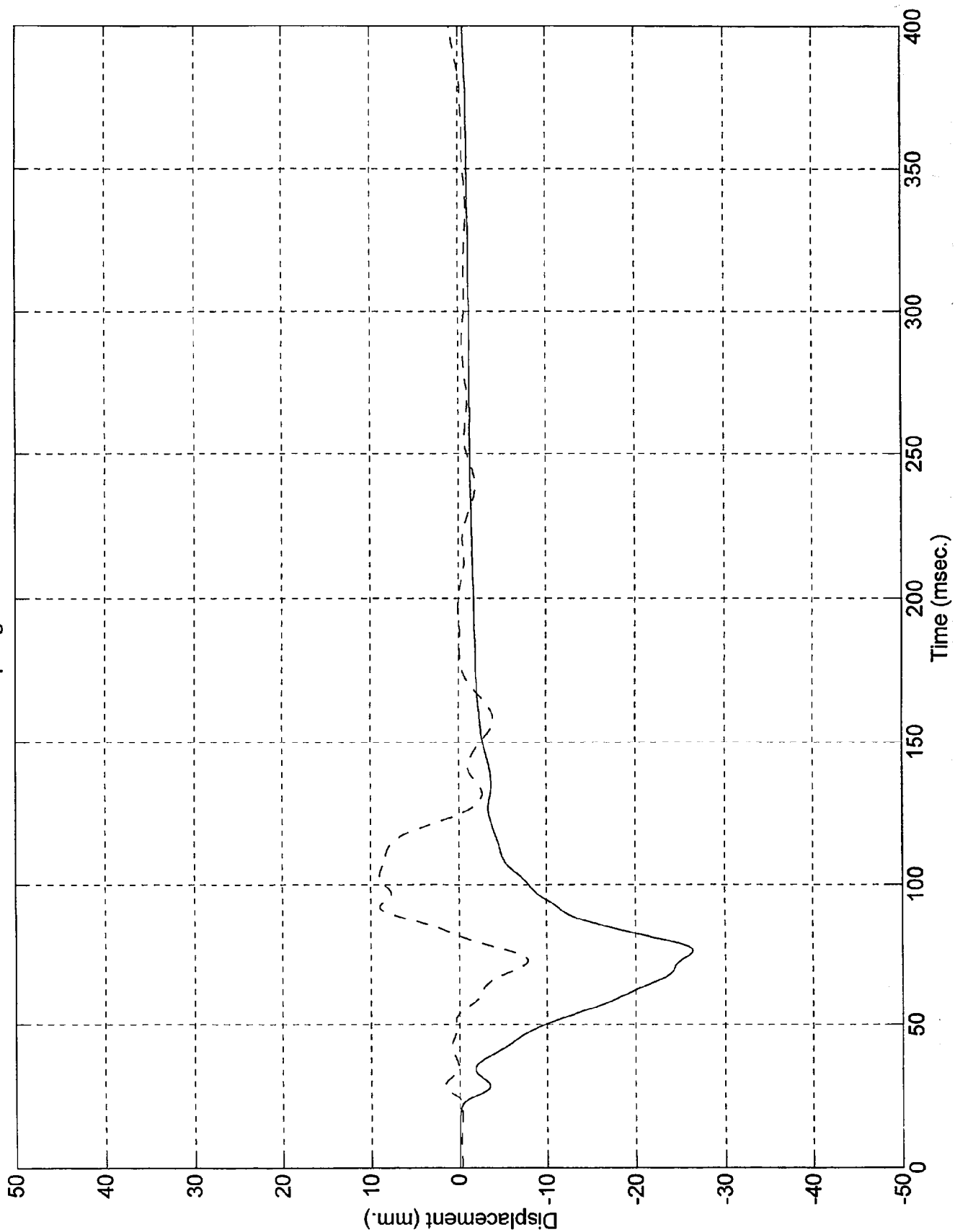


Chest Pot. 125 & 131

B-145

8304-5

Top Right Deflection

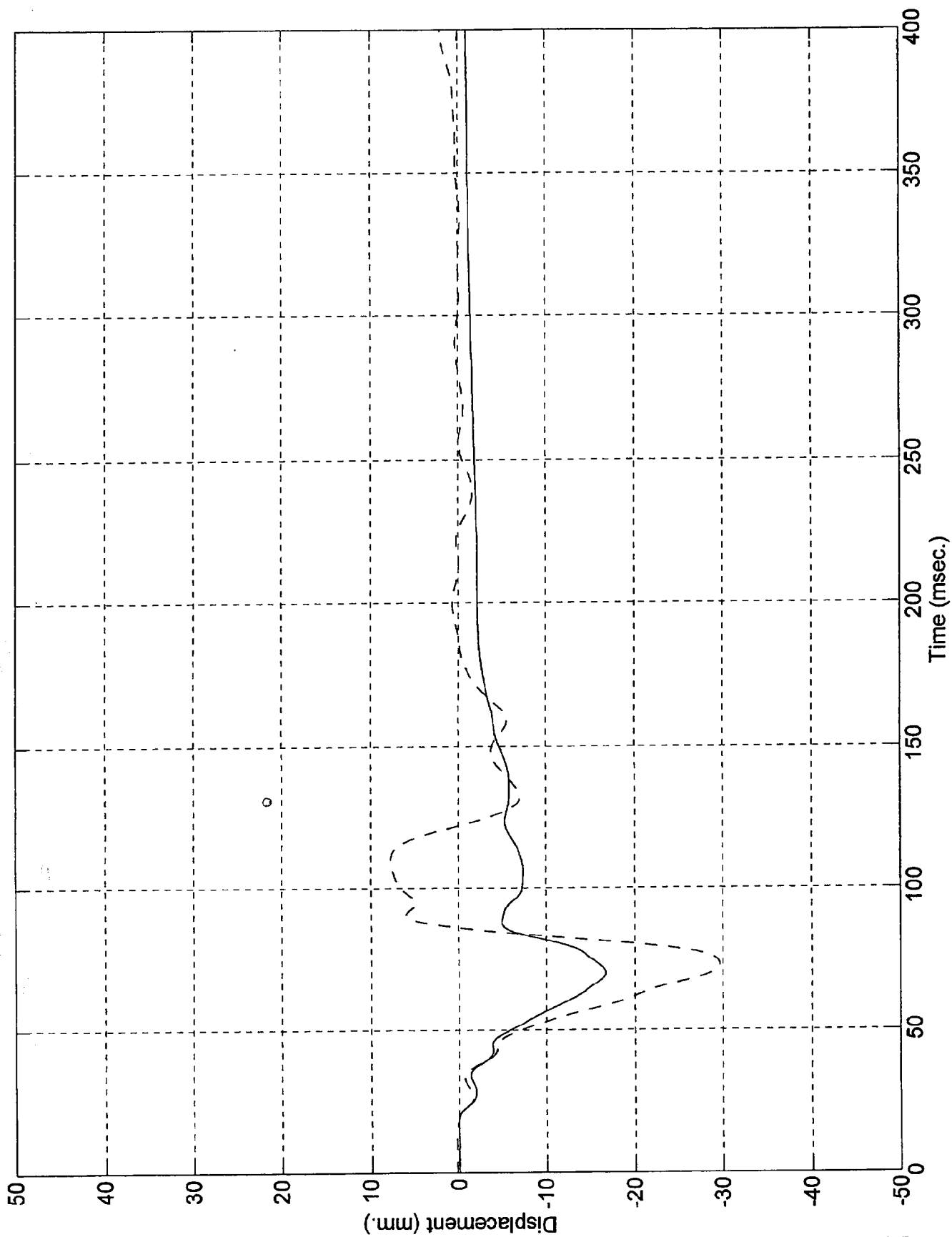


Chest Pot. 126 & 132

- X Displacement

- - - X Displacement

Bottom Left Deflection



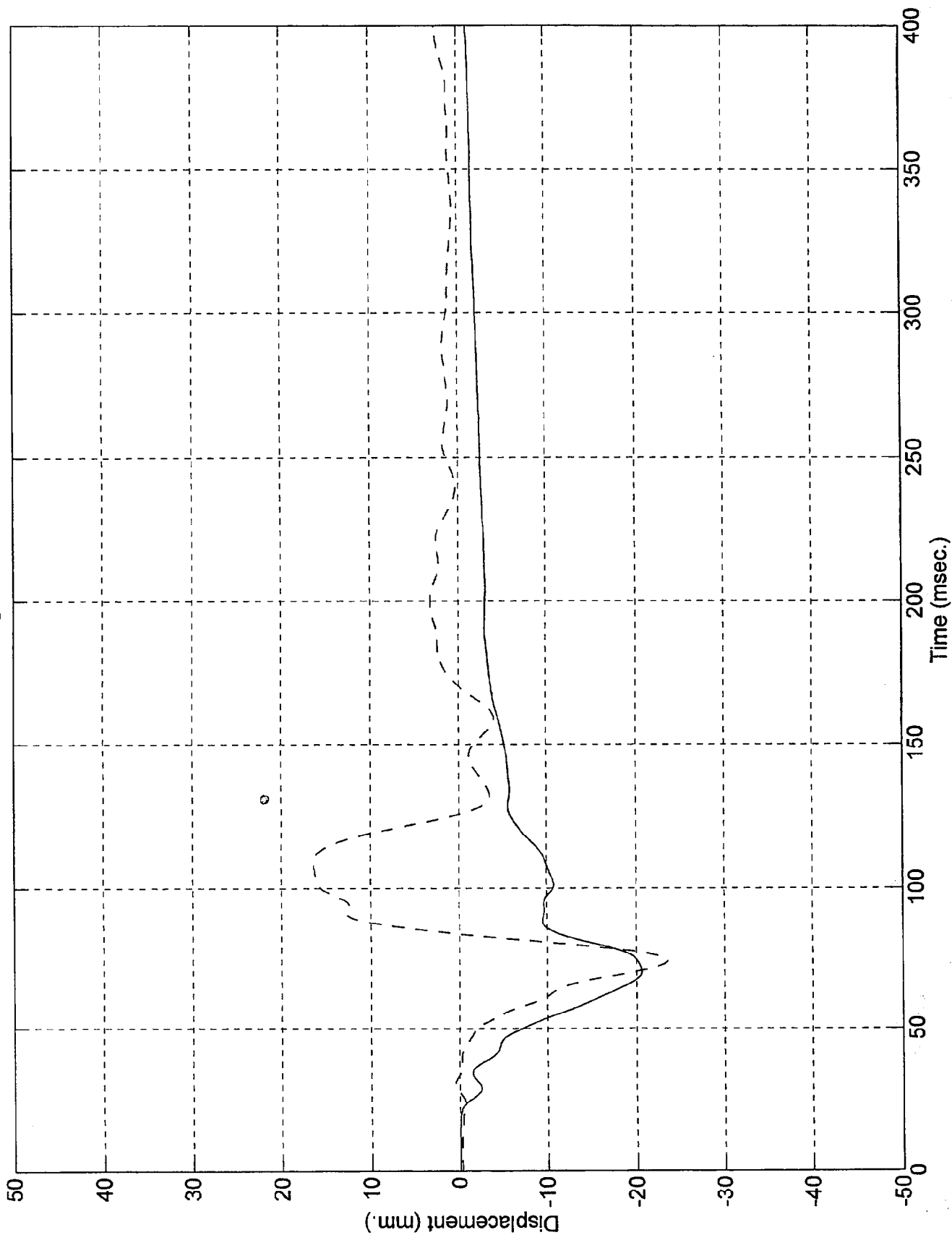
- X Displacement
-- Y Displacement

Chest Pot. 127 & 129

B-147

8304-5

Bottom Right Deflection



Chest Pot. 128 & 130

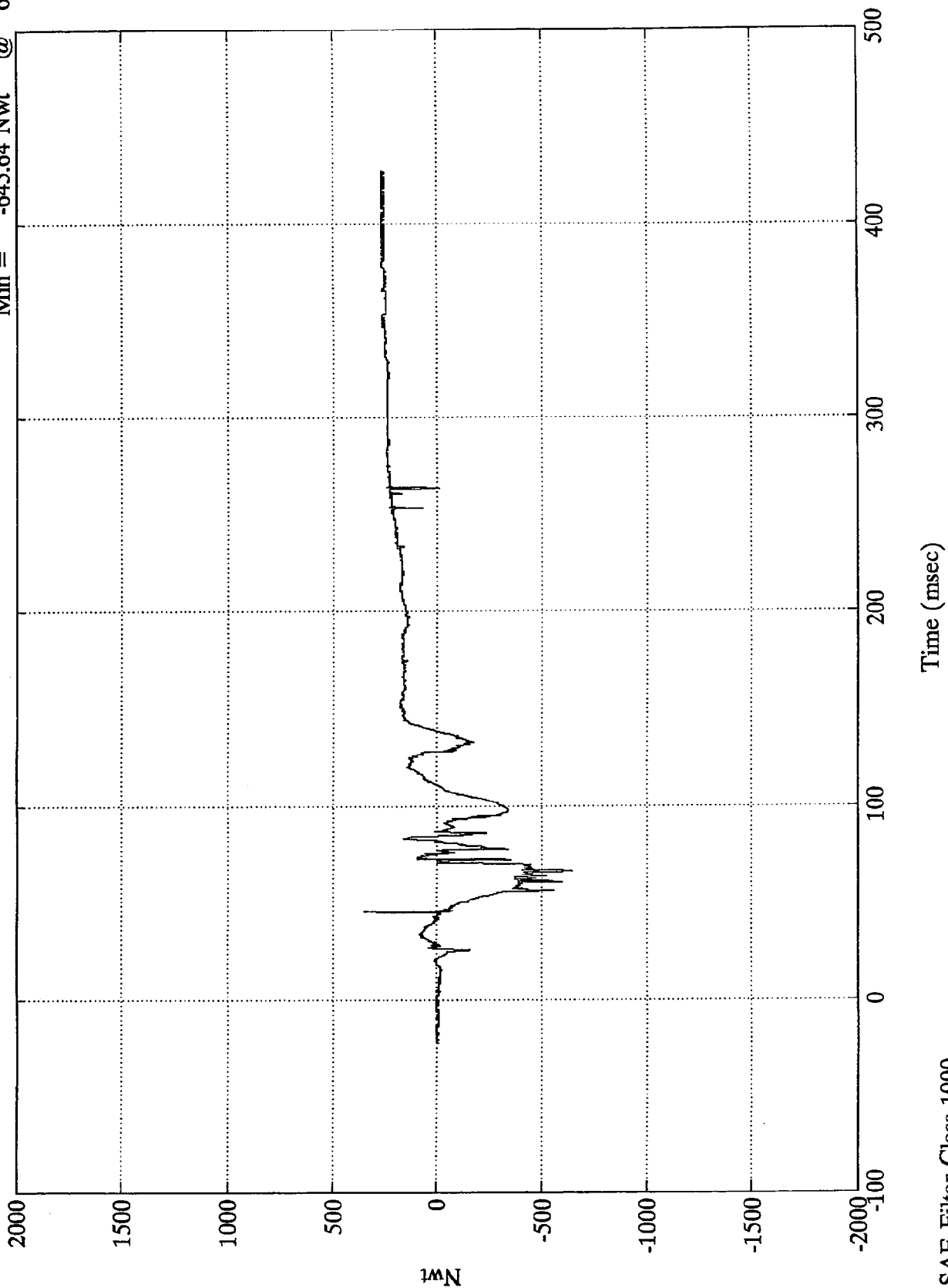
- X Displacement

- - Y Displacement

VTV TEST #5

P1 Upper Neck Fx

Max = 352.72 Nwt @ 45.12 msec
Min = -645.64 Nwt @ 66.84 msec

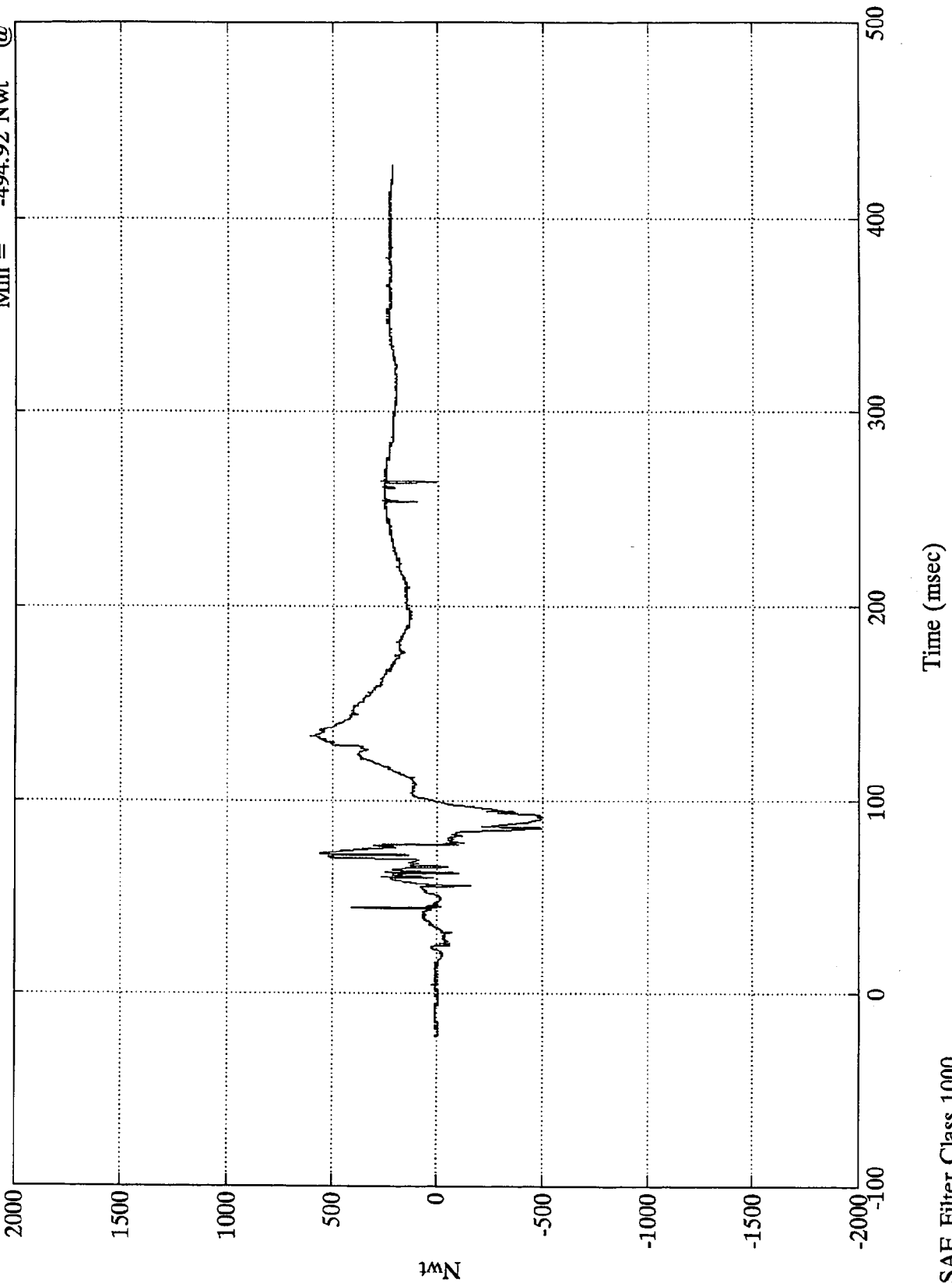


SAE Filter Class 1000

VTV TEST #5

P1 Upper Neck Fy

Max = 609.78 Nwt @ 133.20 msec
Min = -494.92 Nwt @ 92.16 msec

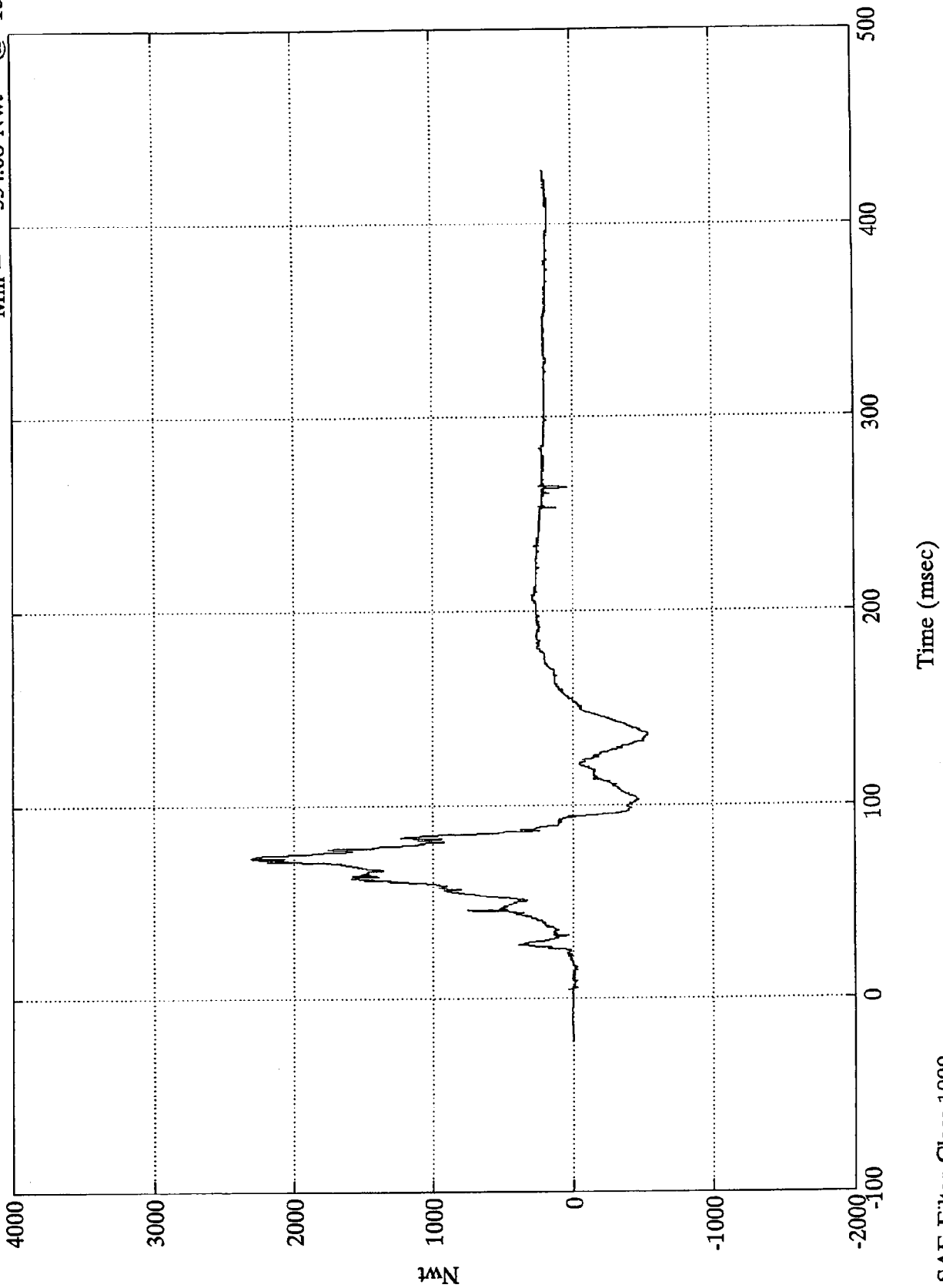


SAE Filter Class 1000

VTV TEST #5

P1 Upper Neck Fz

Max = 2309.59 Nwt @ 73.08 msec
Min = -534.08 Nwt @ 136.68 msec

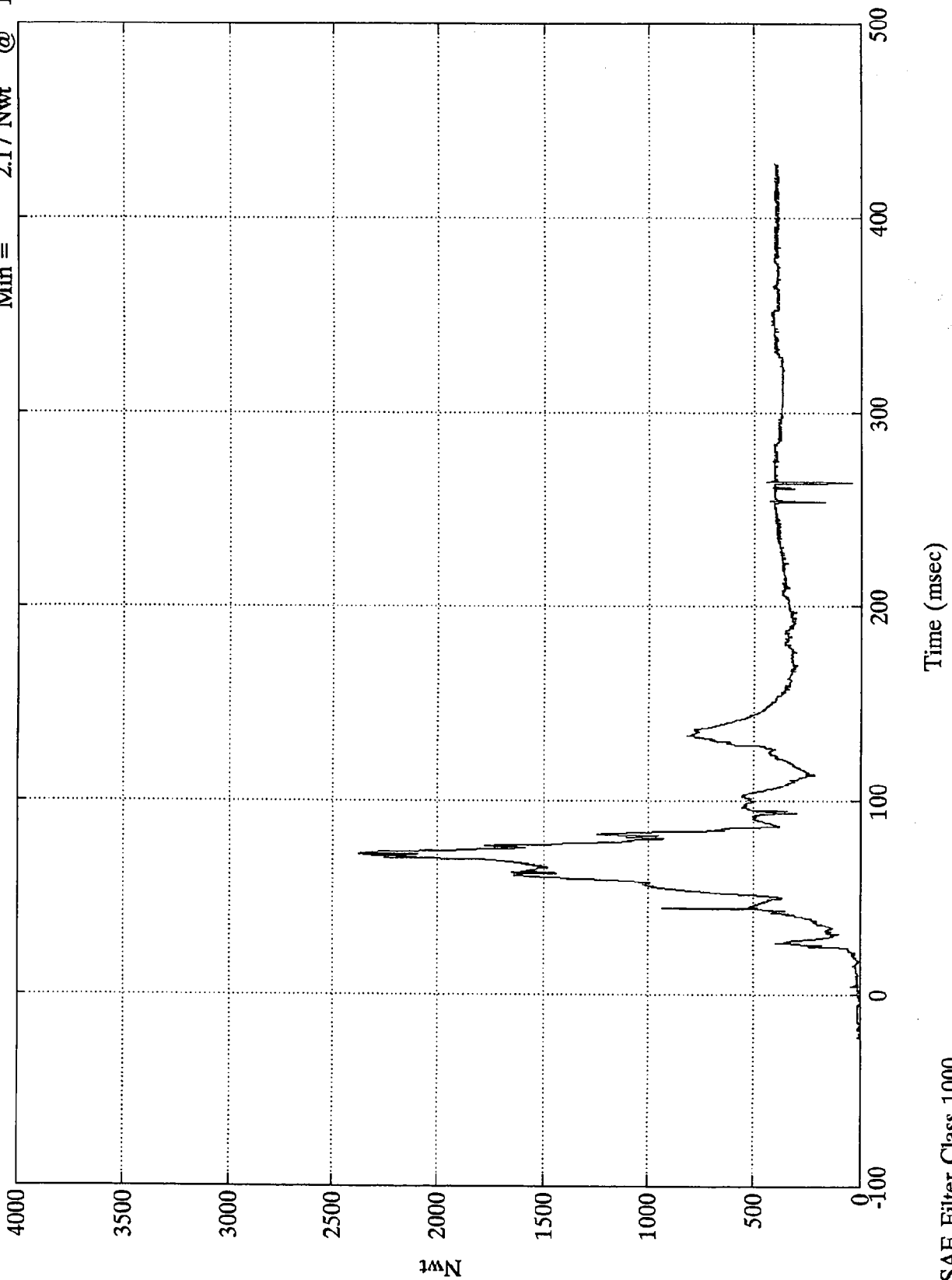


SAE Filter Class 1000

VTV TEST #5

P1 Upper Neck Force Res

Max = 2378.56 Nwt @ 73.08 msec
Min = 2.17 Nwt @ 18.00 msec

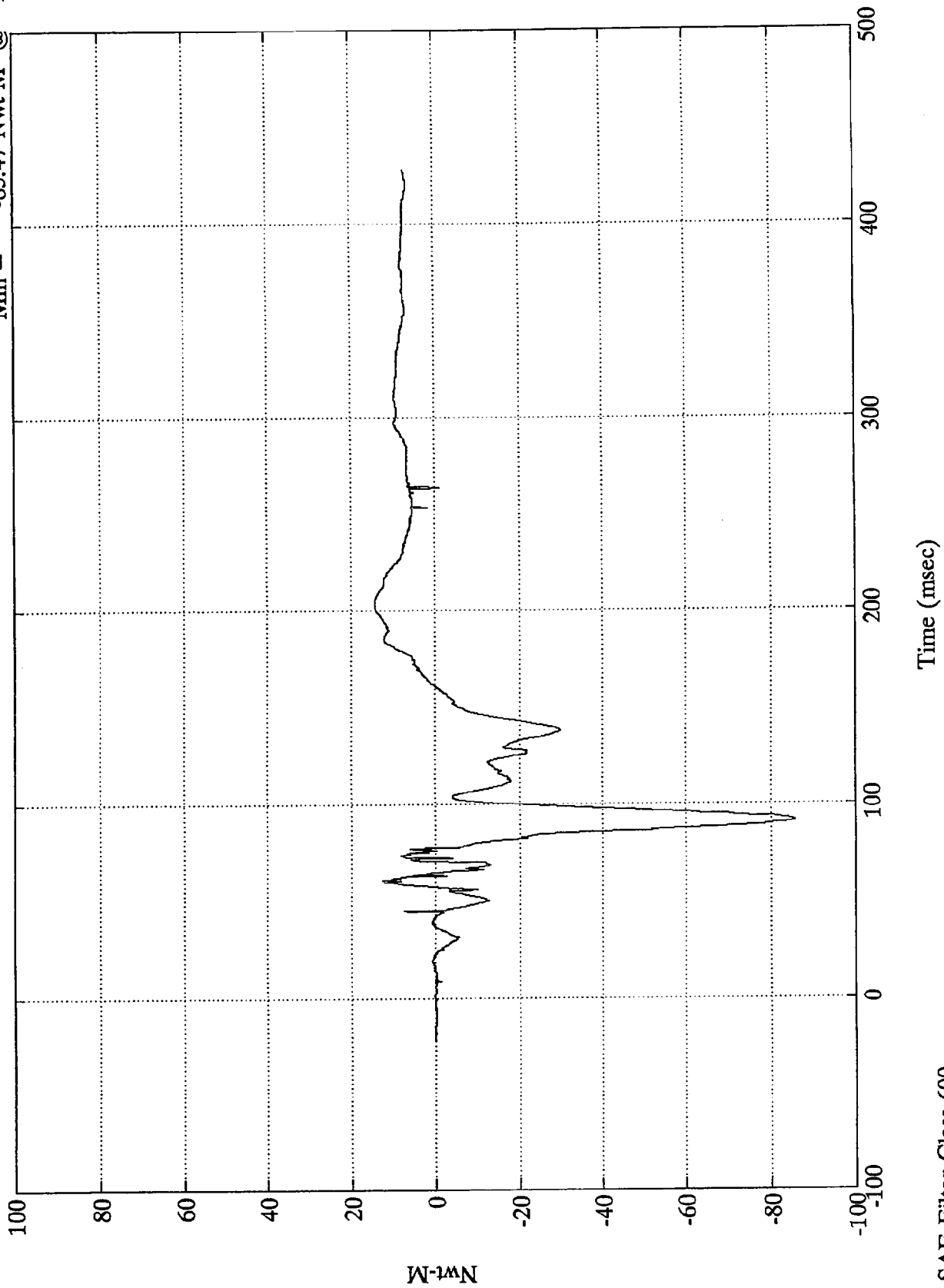


SAE Filter Class 1000

VTV TEST #5

P1 Upper Neck Mx

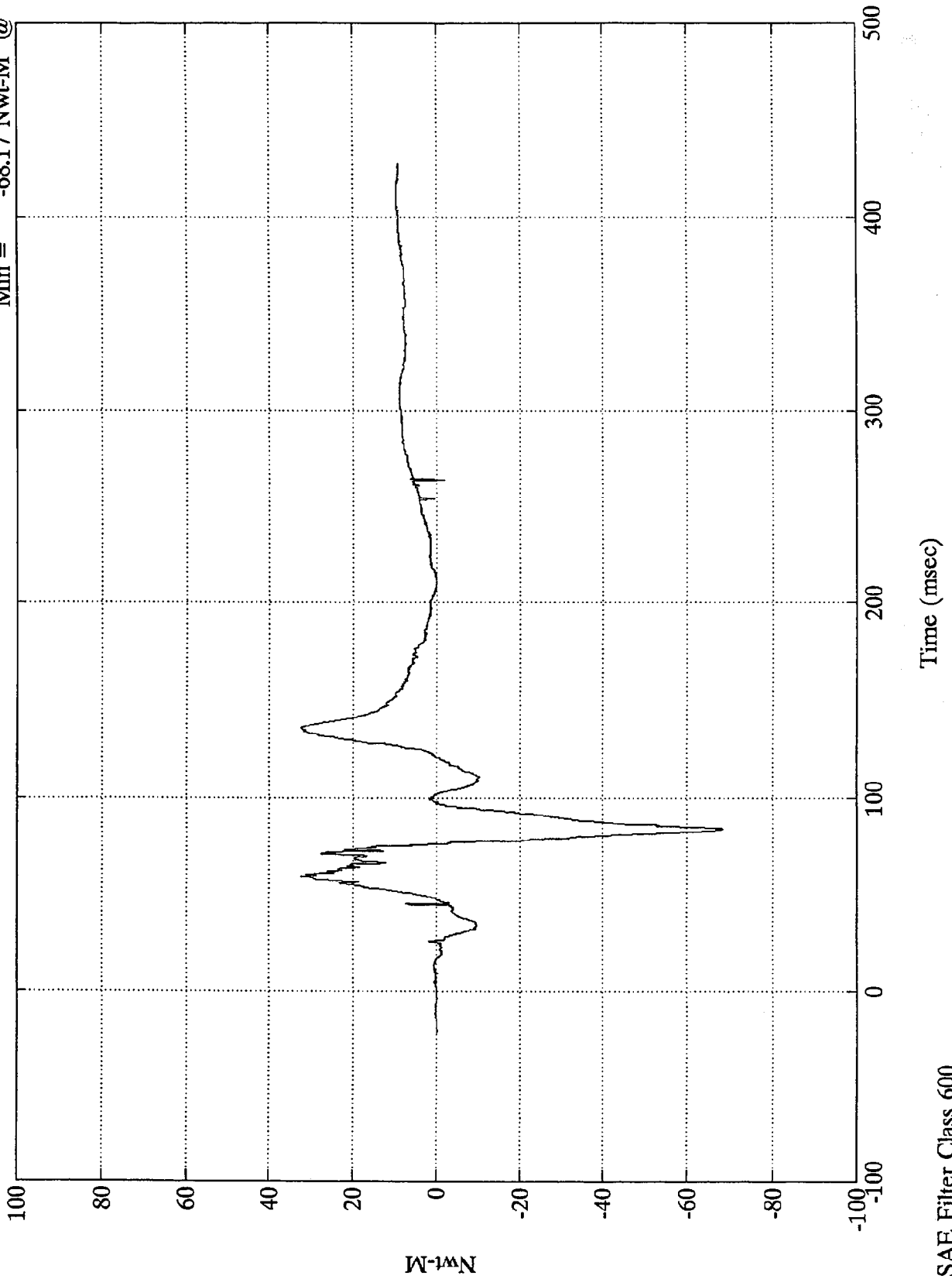
Max = 14.45 Nwt-M @ 203.39 msec
Min = -85.47 Nwt-M @ 91.08 msec



VTV TEST #5

P1 Upper Neck My

Max = 32.22 Nwt-M @ 136.20 msec
Min = -68.17 Nwt-M @ 84.12 msec

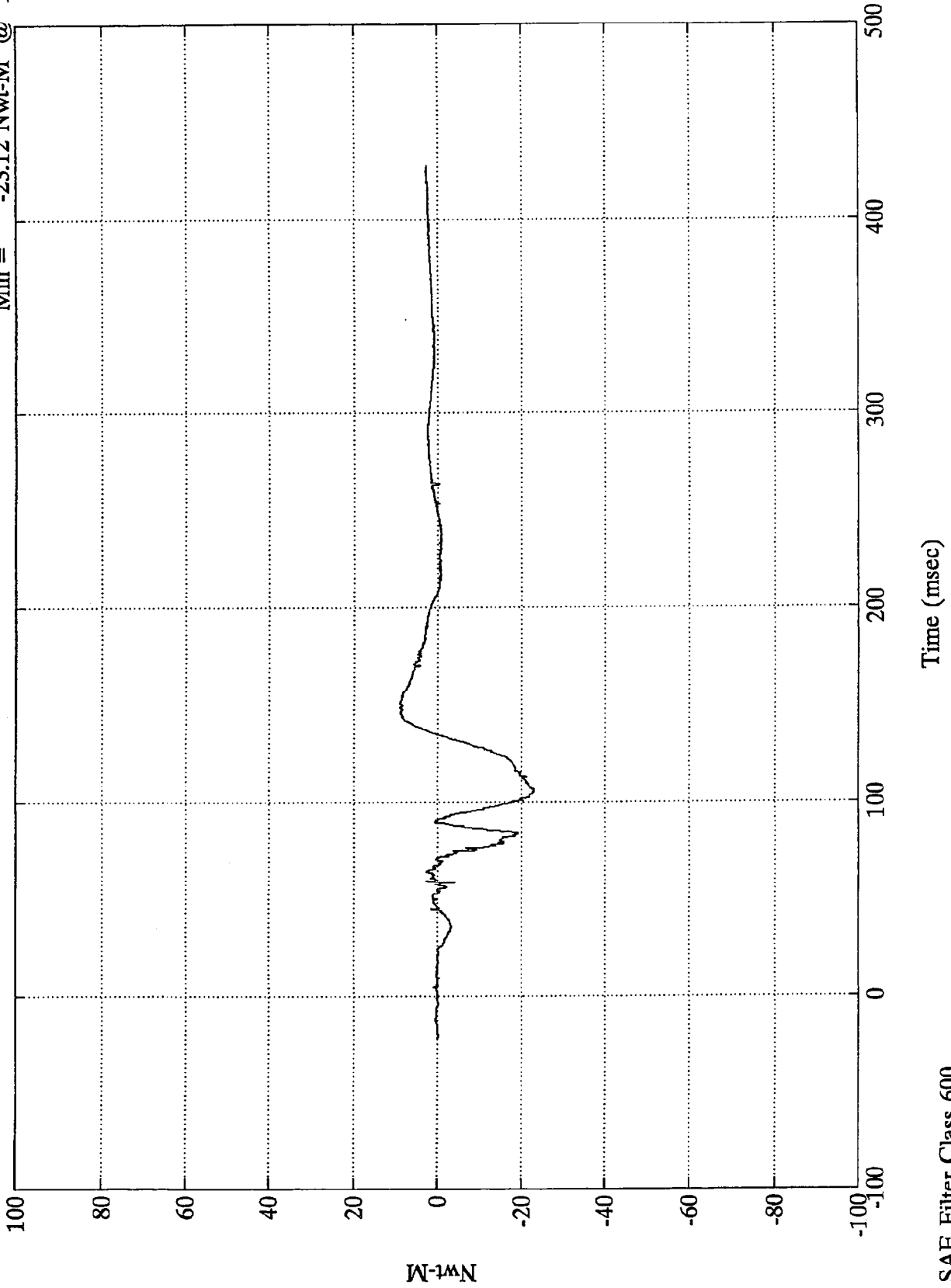


SAE Filter Class 600

VTV TEST #5

P1 Upper Neck Mz

Max = 8.90 Nwt-M @ 150.60 msec
Min = -23.12 Nwt-M @ 106.31 msec

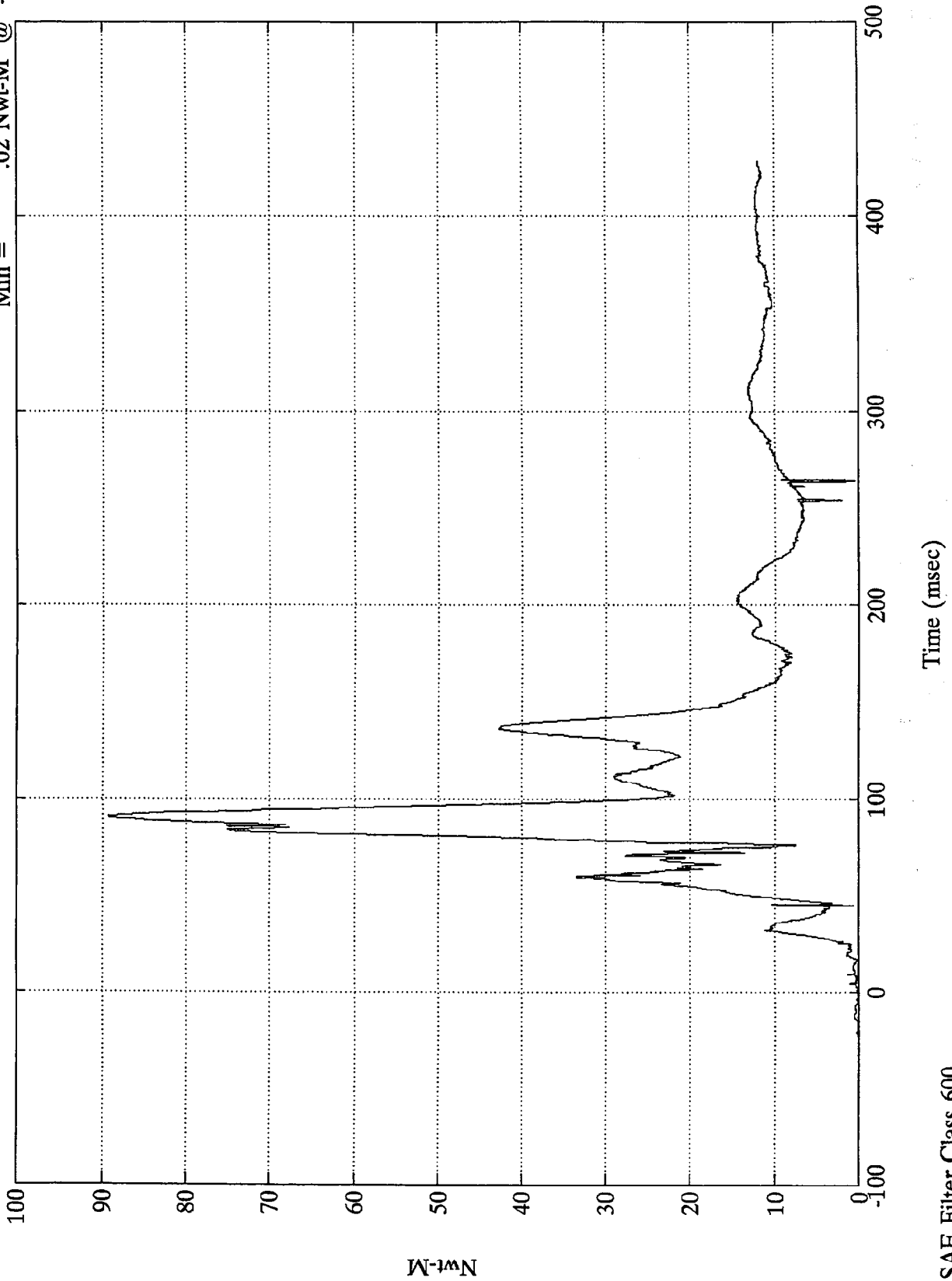


SAE Filter Class 600

VTV TEST #5

P1 Upper Neck Moment Res

Max = 89.32 Nwt-M @ 91.08 msec
Min = .02 Nwt-M @ -15.48 msec

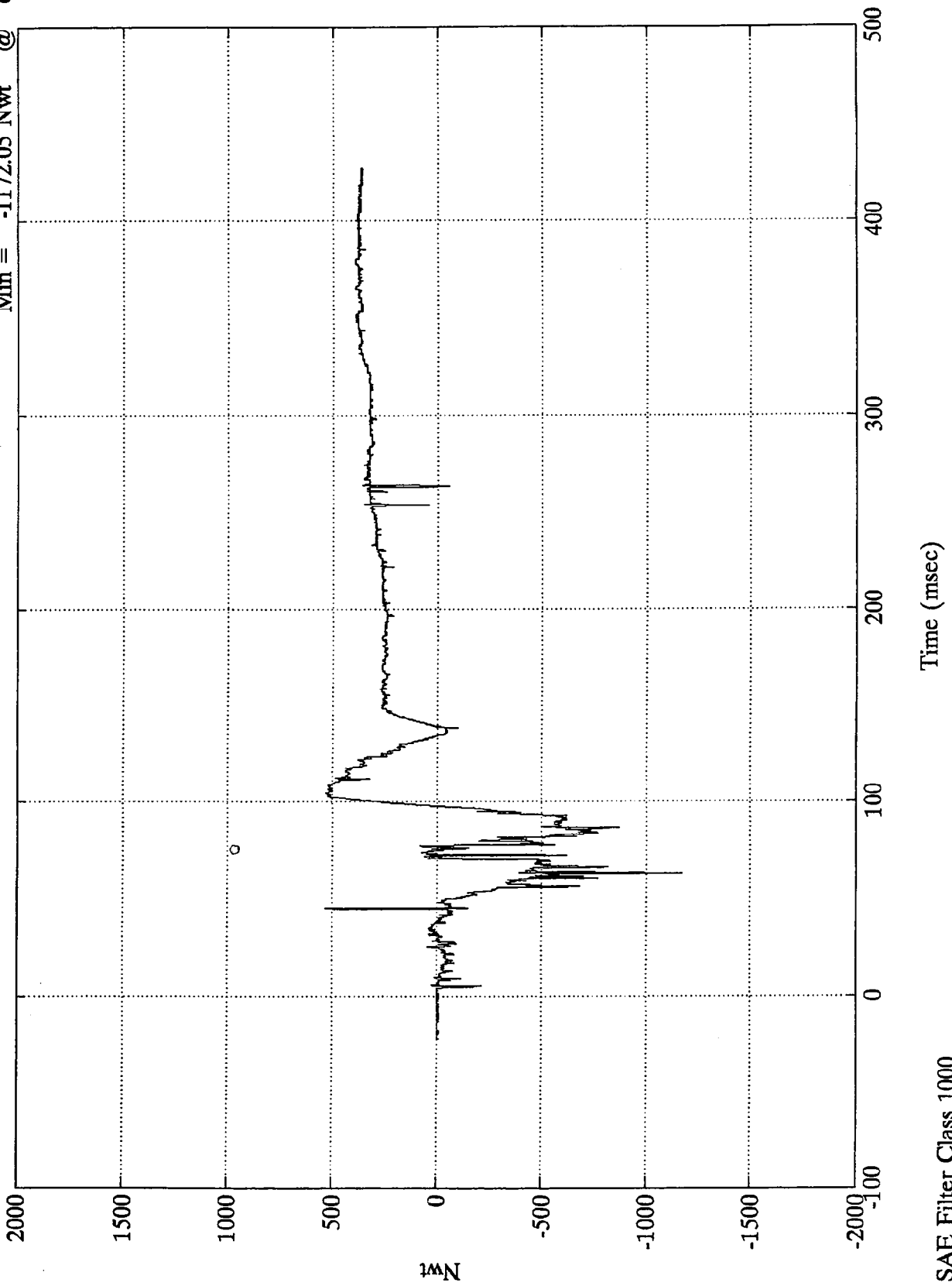


SAE Filter Class 600

VTV TEST #5

P1 Lower Neck Fx

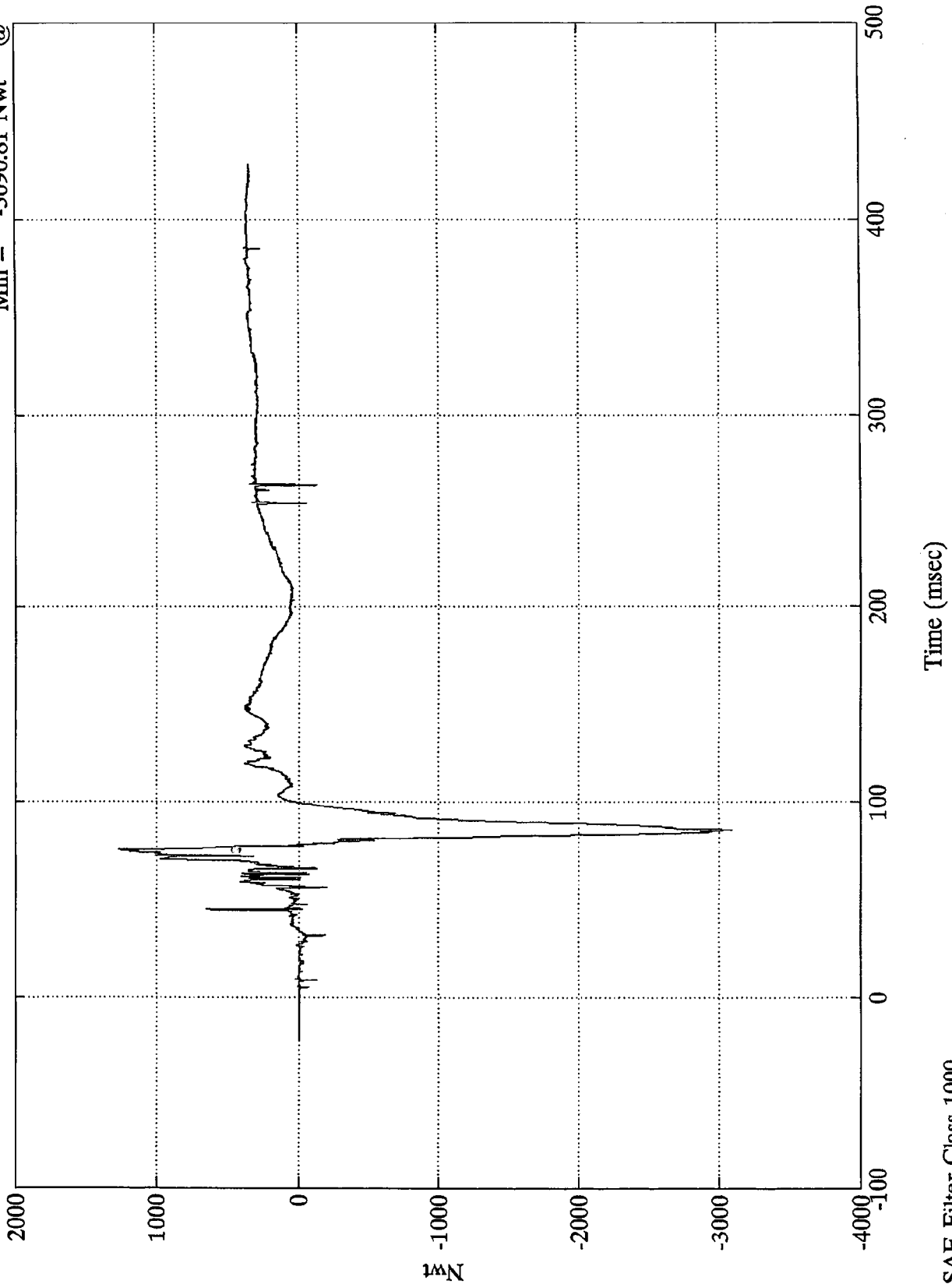
Max = 533.50 Nwt @ 104.76 msec
Min = -1172.05 Nwt @ 63.35 msec



VTV TEST #5

P1 Lower Neck Fy

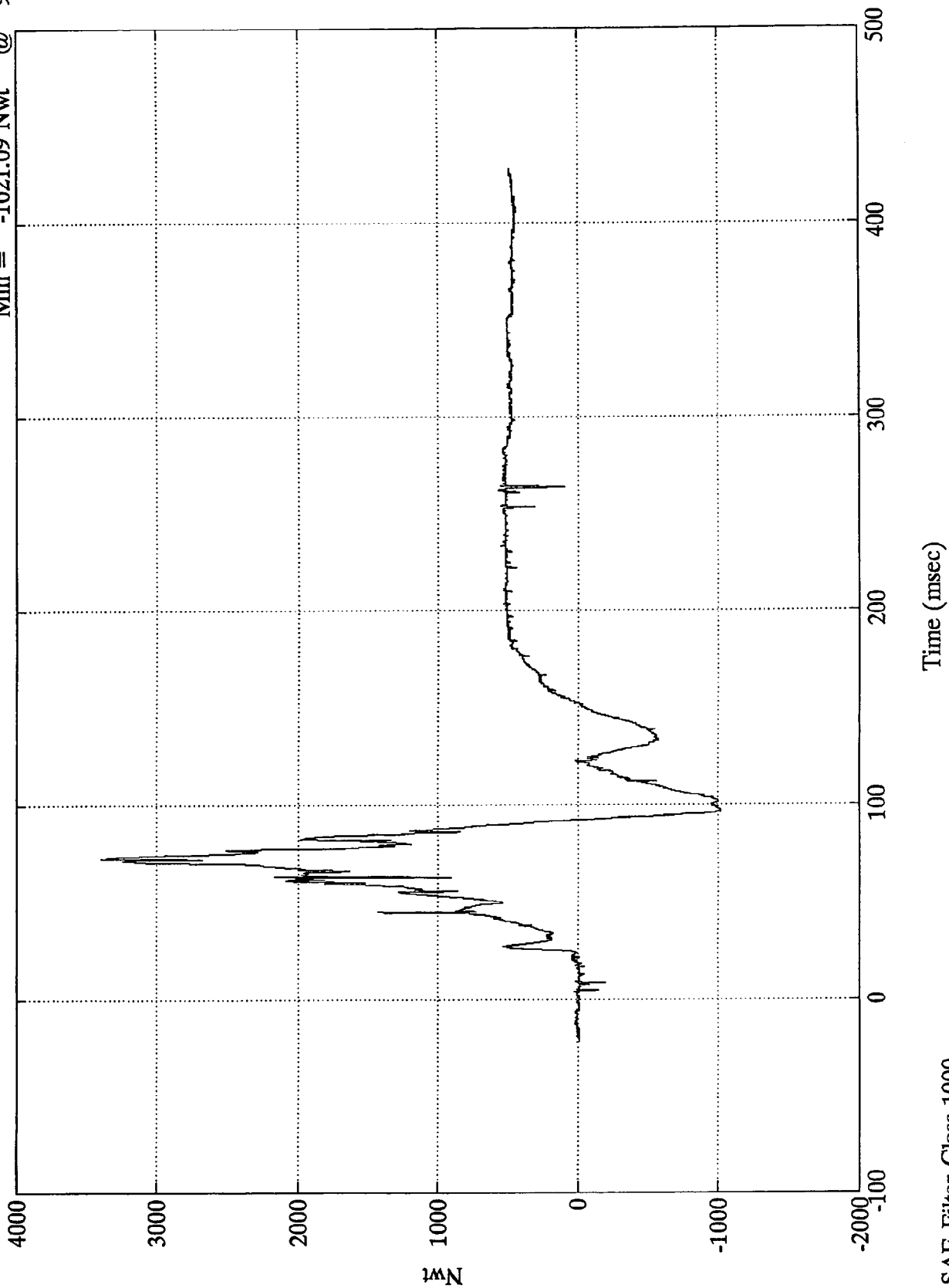
Max = 1269.02 Nwt @ 75.72 msec
Min = -3090.81 Nwt @ 86.04 msec



VTV TEST #5

P1 Lower Neck Fz

Max = 3395.72 Nwt @ 73.08 msec
Min = -1021.09 Nwt @ 97.44 msec

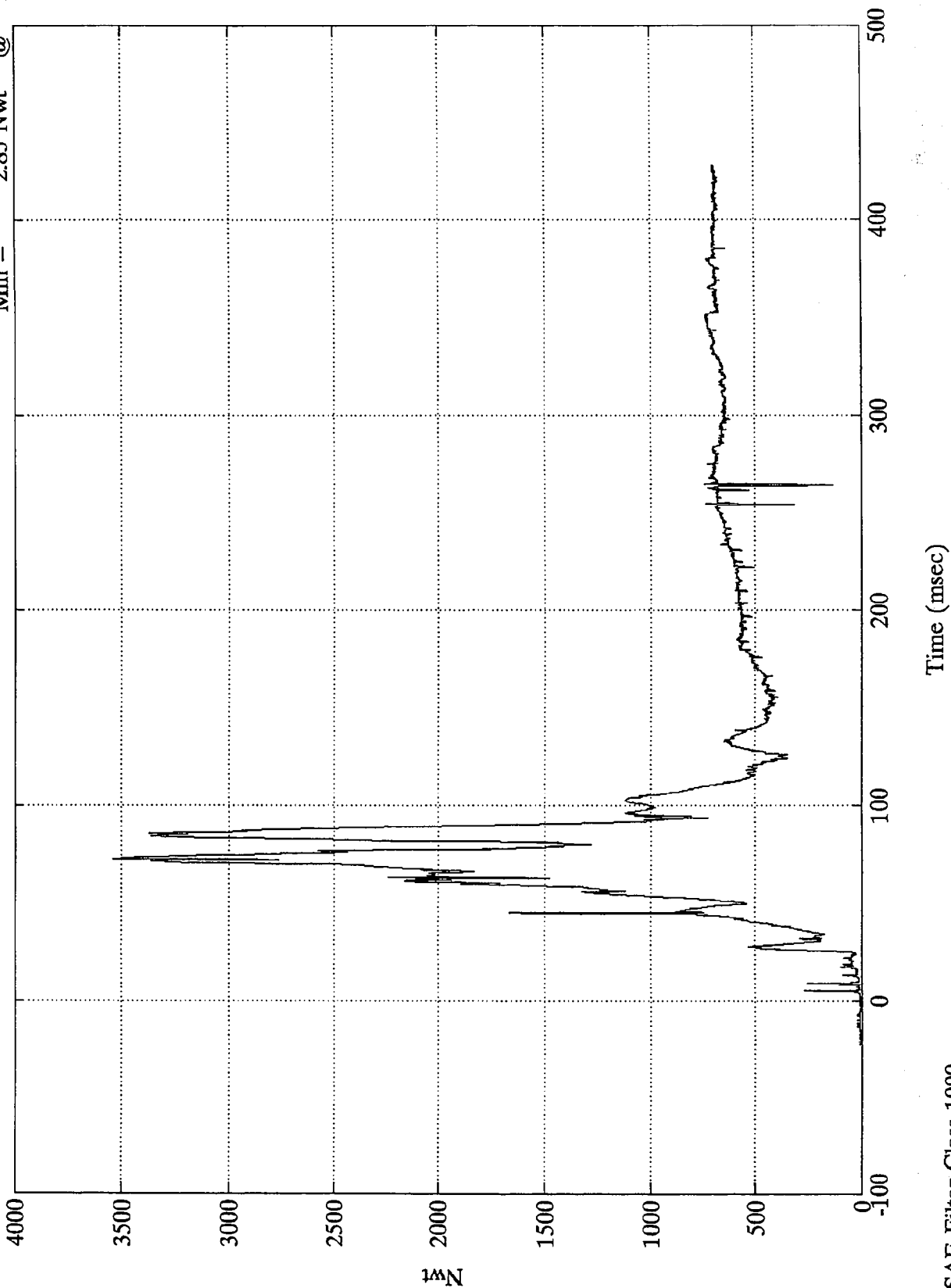


SAE Filter Class 1000

VTV TEST #5

P1 Lower Neck Force Res

Max = 3541.55 Nwt @ 73.08 msec
Min = 2.85 Nwt @ 2.15 msec

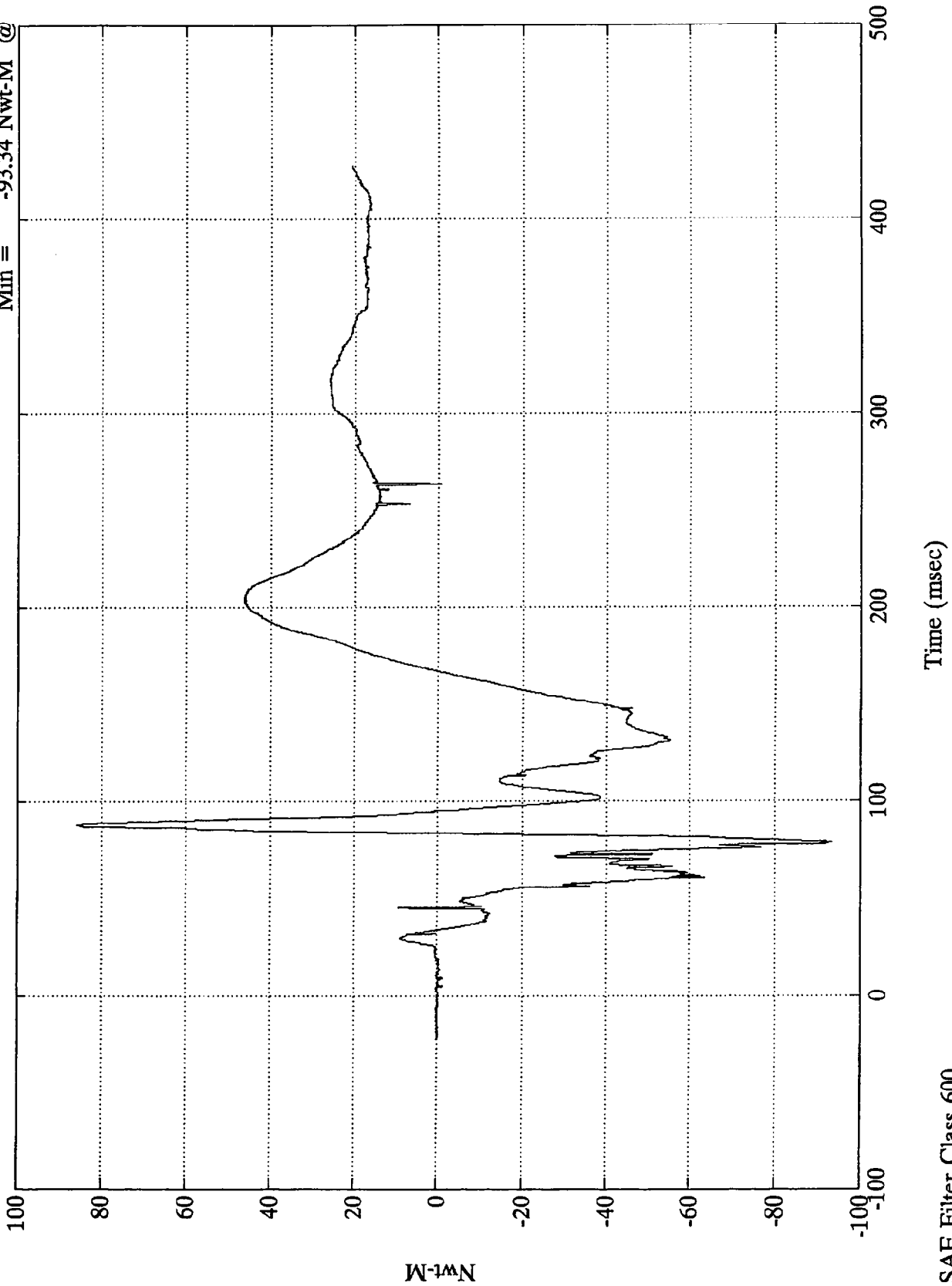


SAE Filter Class 1000

VTV TEST #5

P1 Lower Neck Mx

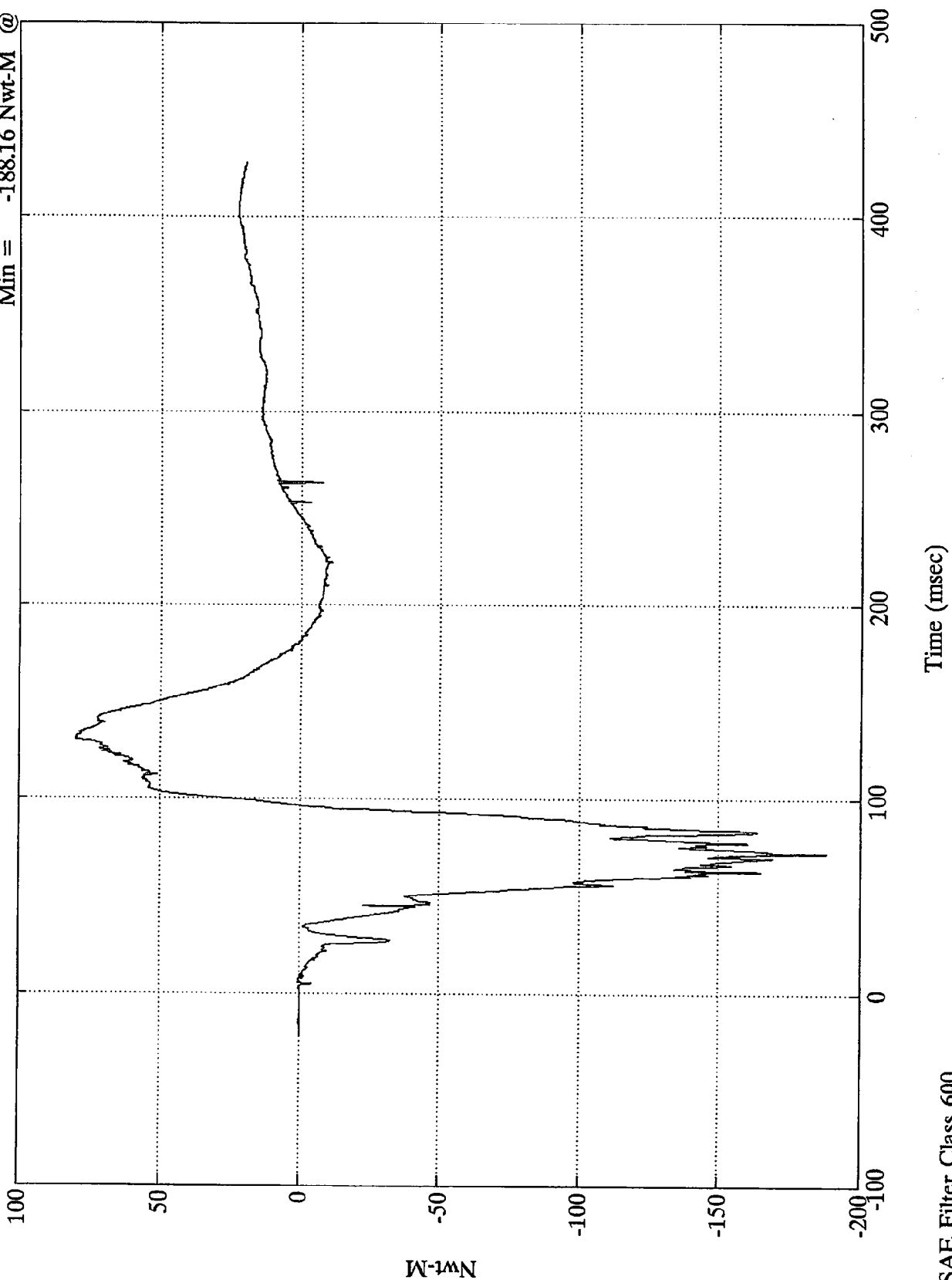
Max = 85.66 Nwt-M @ 87.96 msec
Min = -93.34 Nwt-M @ 78.84 msec



SAE Filter Class 600

VTV TEST #5

P1 Lower Neck My
Max = 79.90 Nwt-M @ 130.19 msec
Min = -188.16 Nwt-M @ 72.72 msec

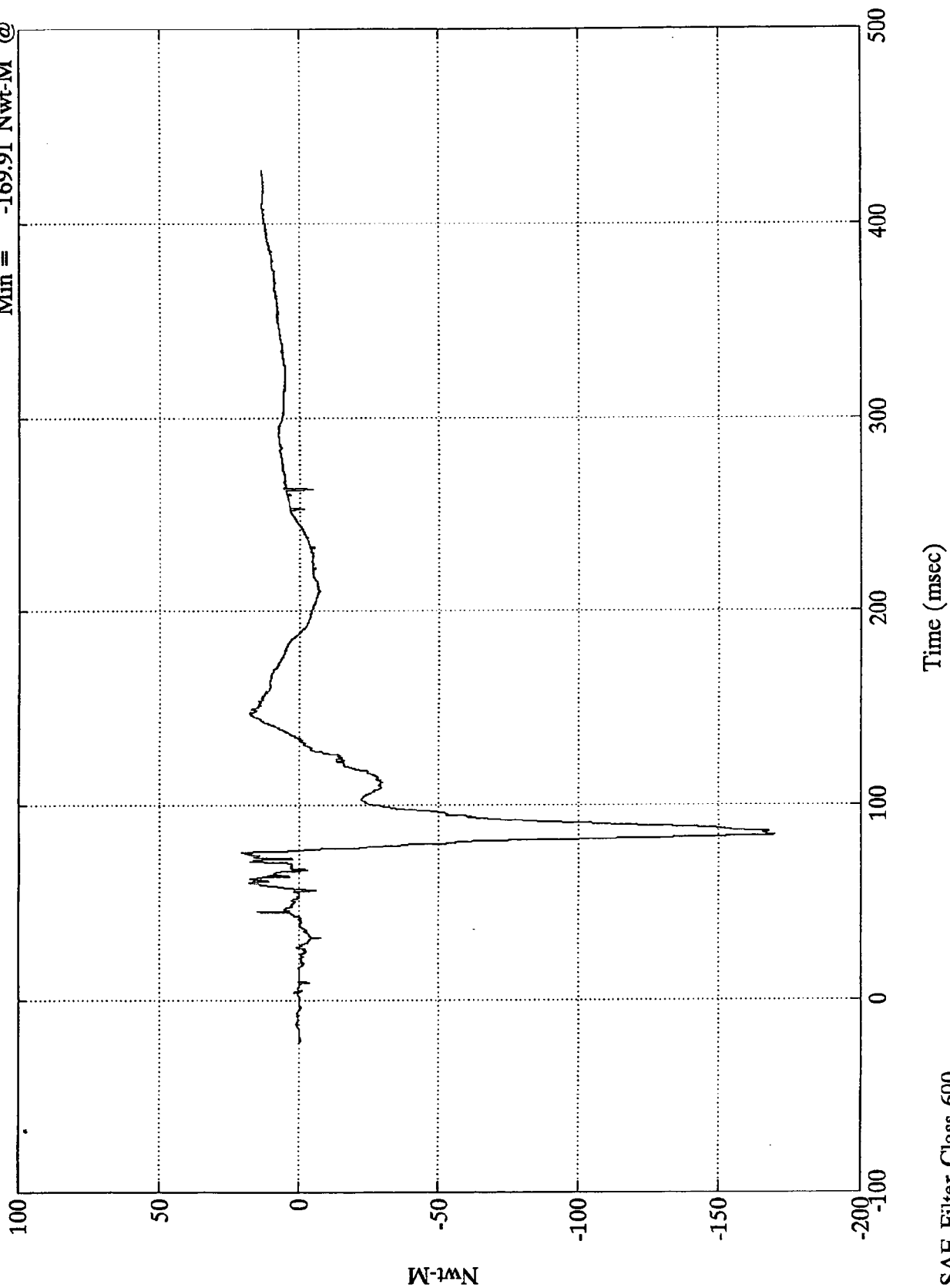


SAE Filter Class 600

VTV TEST #5

Max = 20.80 Nwt-M @ 75.84 msec
Min = -169.91 Nwt-M @ 84.48 msec

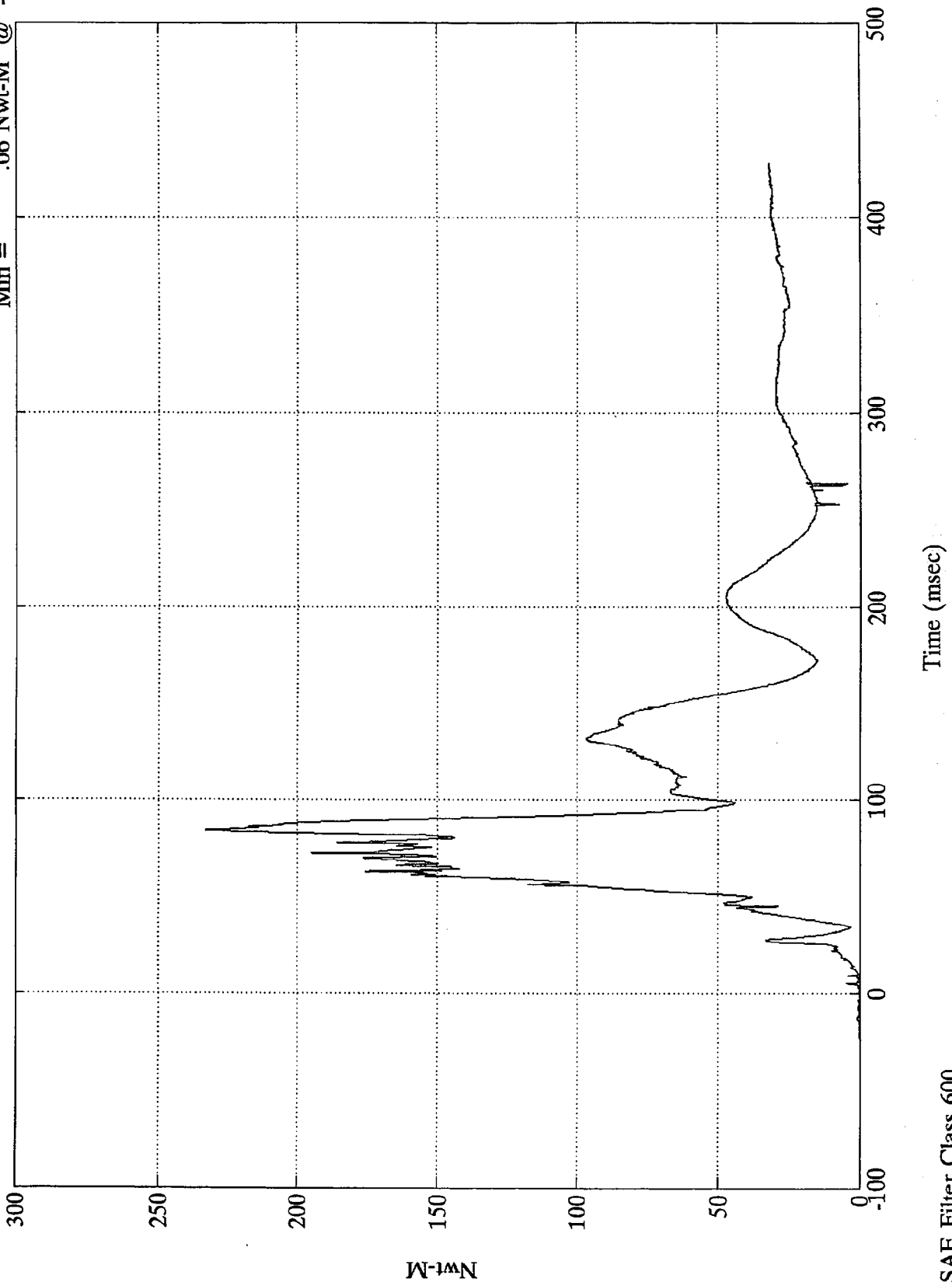
P1 Lower Neck Mz



VTW TEST #5

Max = 233.28 Nwt-M @ 84.36 msec
Min = .06 Nwt-M @ -15.72 msec

P1 Lower Neck Moment Res

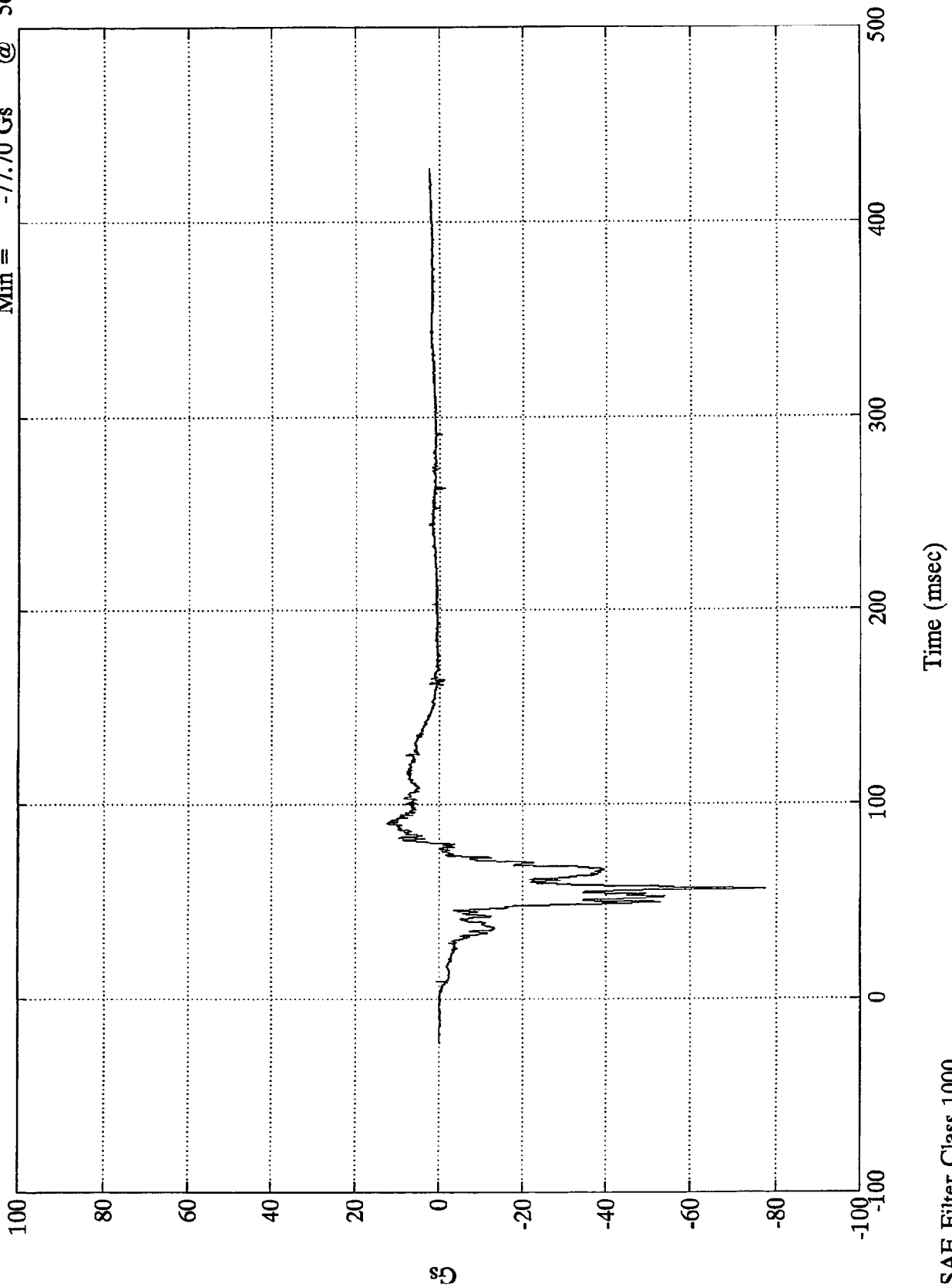


SAE Filter Class 600

VTV TEST #5

P1 Pelvic X

Max = 12.50 Gs @ 89.88 msec
Min = -77.70 Gs @ 56.40 msec

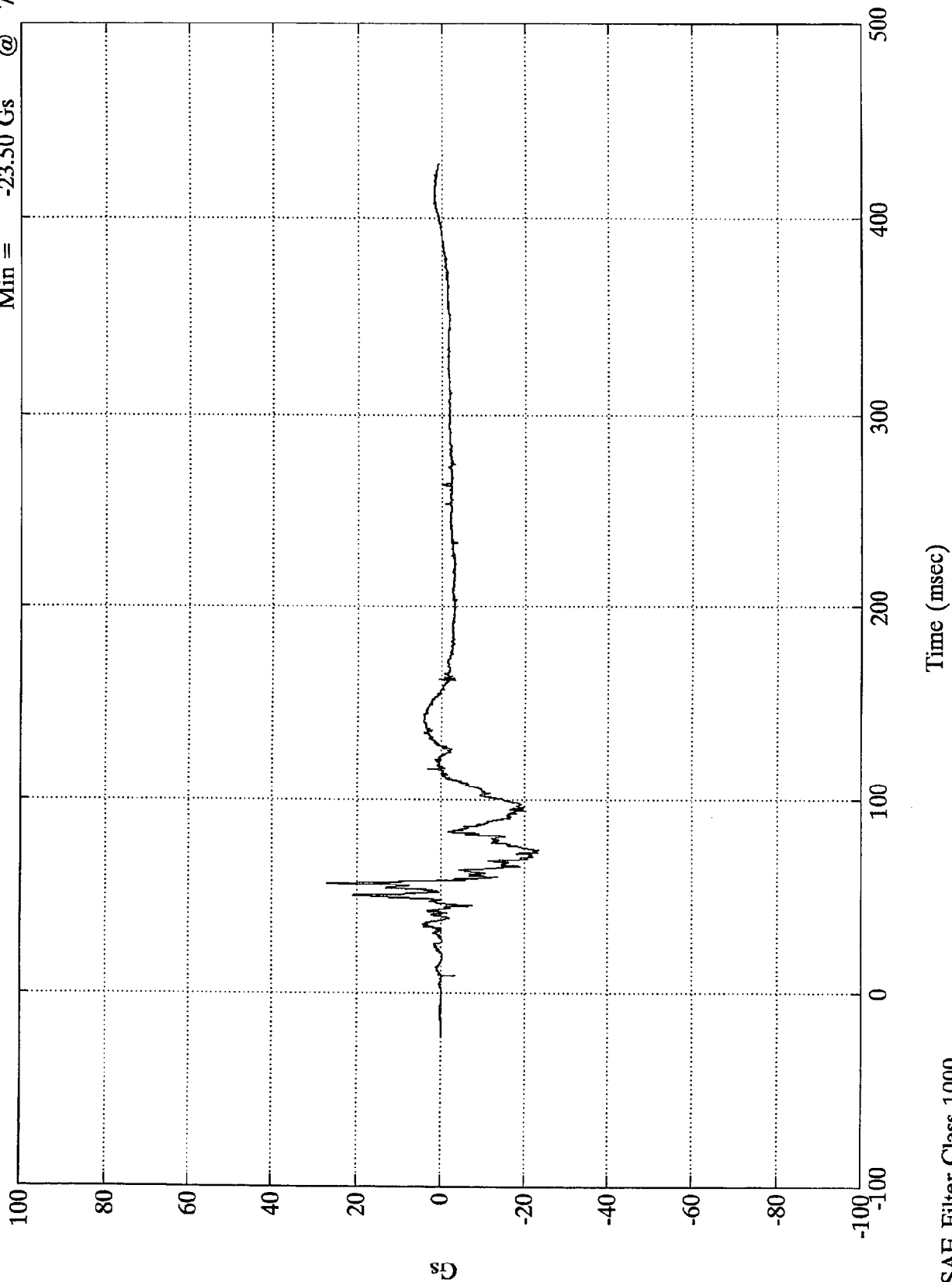


SAE Filter Class 1000

VTV TEST #5

P1 Pelvic Y

Max = 27.15 Gs @ 56.40 msec
 Min = -23.50 Gs @ 74.40 msec

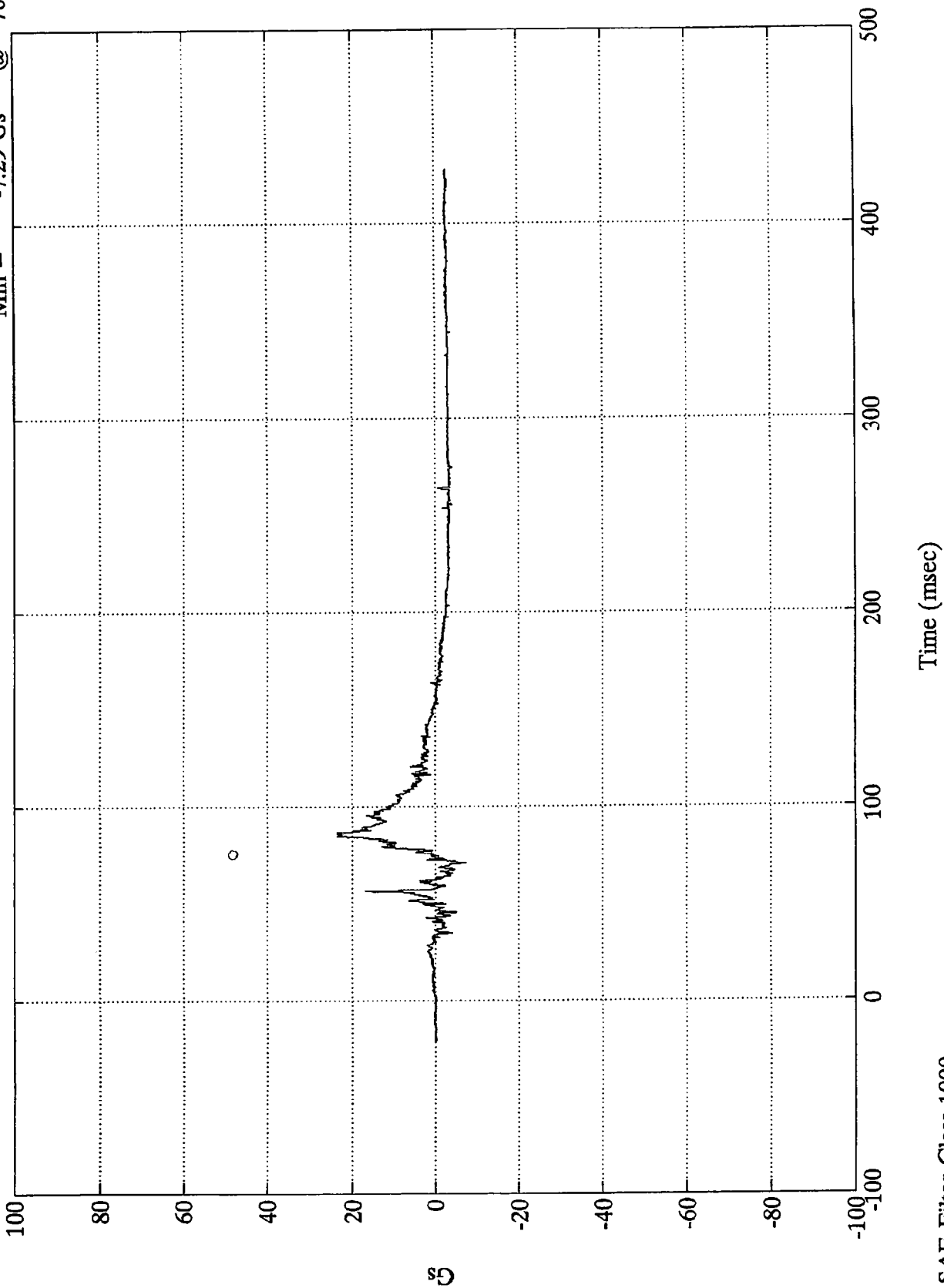


SAE Filter Class 1000

VTV TEST #5

P1 Pelvic Z

Max = 23.60 Gs @ 86.40 msec
Min = -7.29 Gs @ 70.92 msec

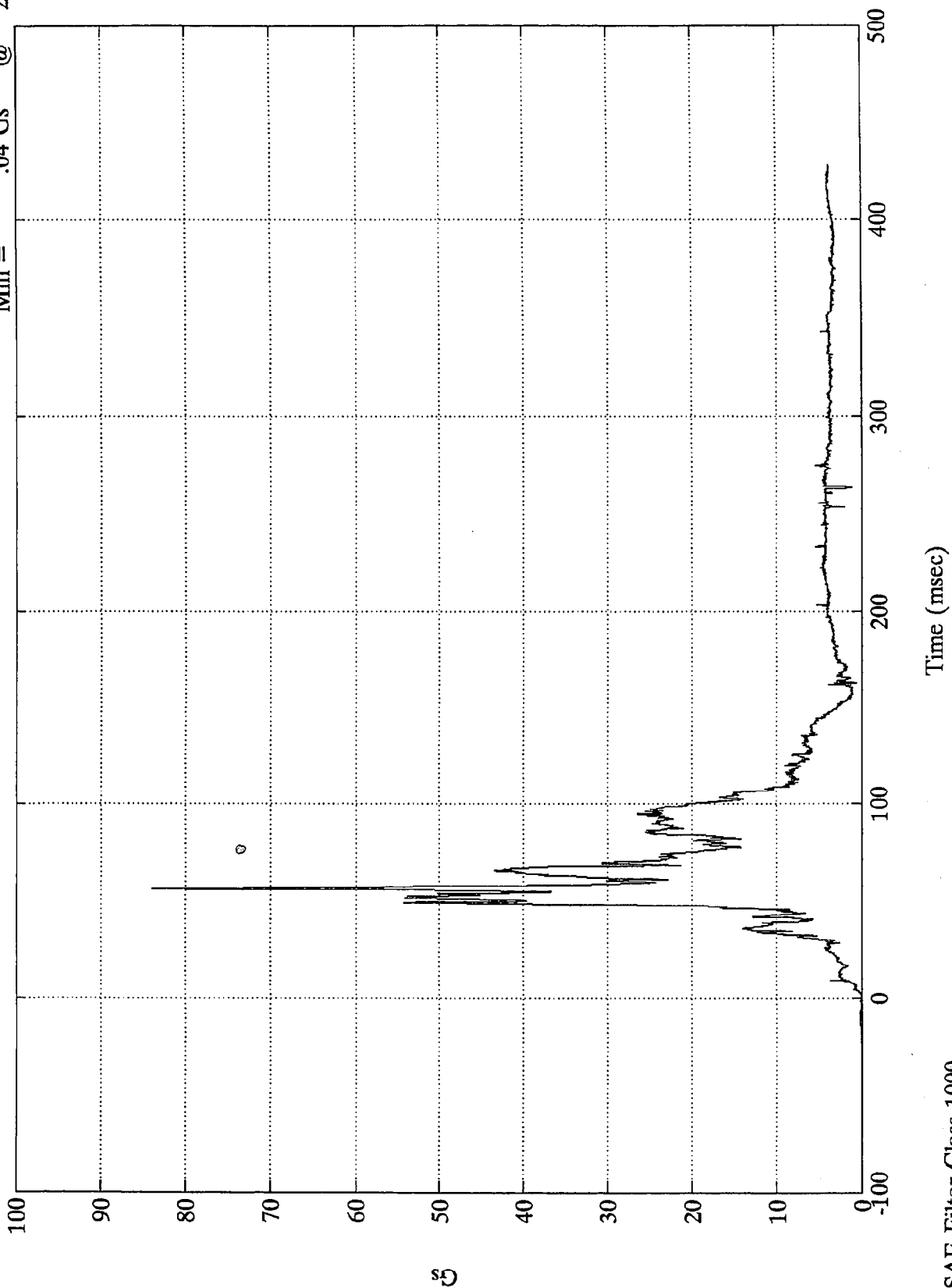


SAE Filter Class 1000

VTV TEST #5

Max = 83.90 Gs @ 56.40 msec
Min = .04 Gs @ 2.75 msec

P1 Pelvic Res.

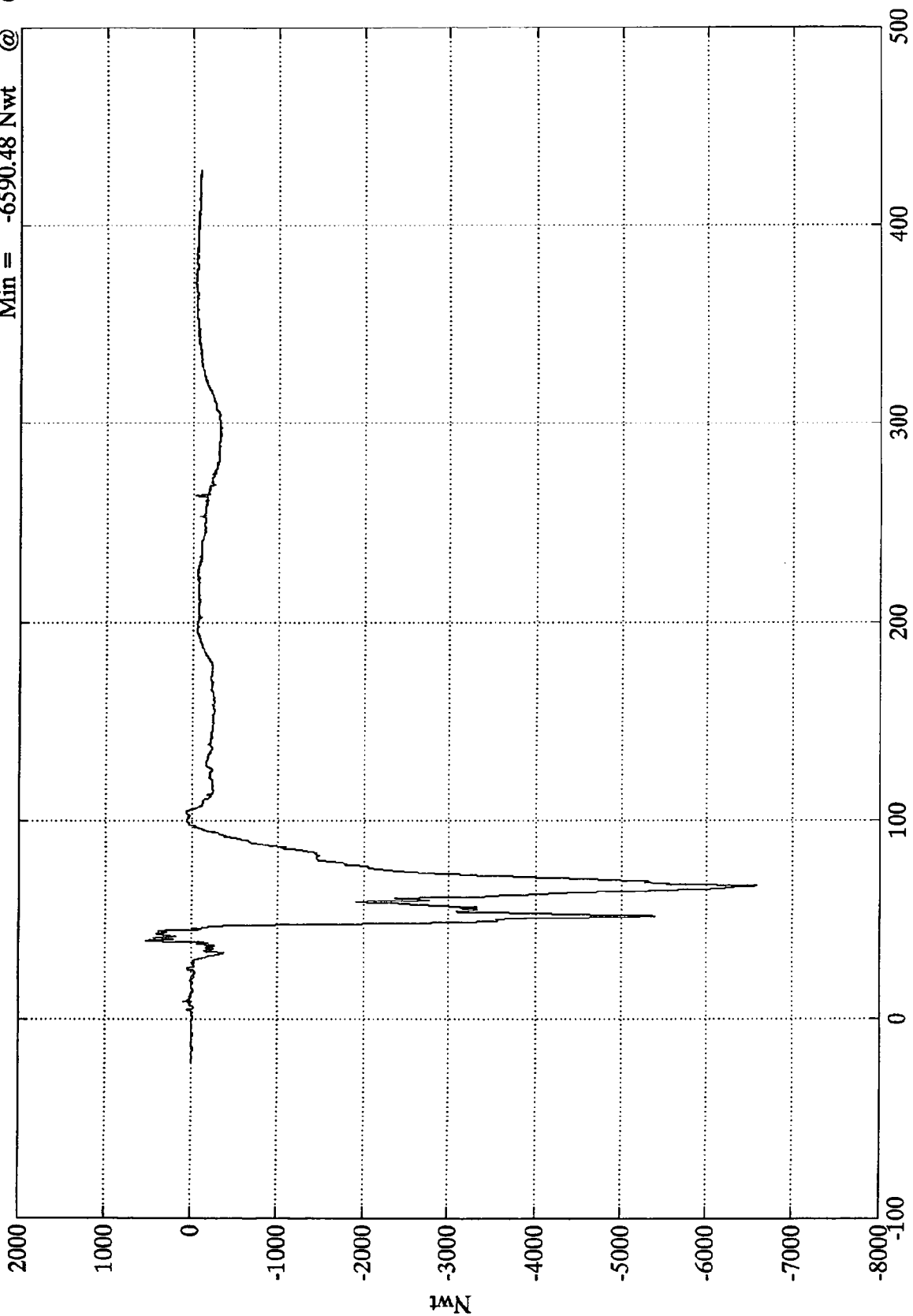


SAE Filter Class 1000

VTV TEST #5

Max = 521.21 Nwt @ 39.47 msec
Min = -6590.48 Nwt @ 67.44 msec

P1 Left Femur



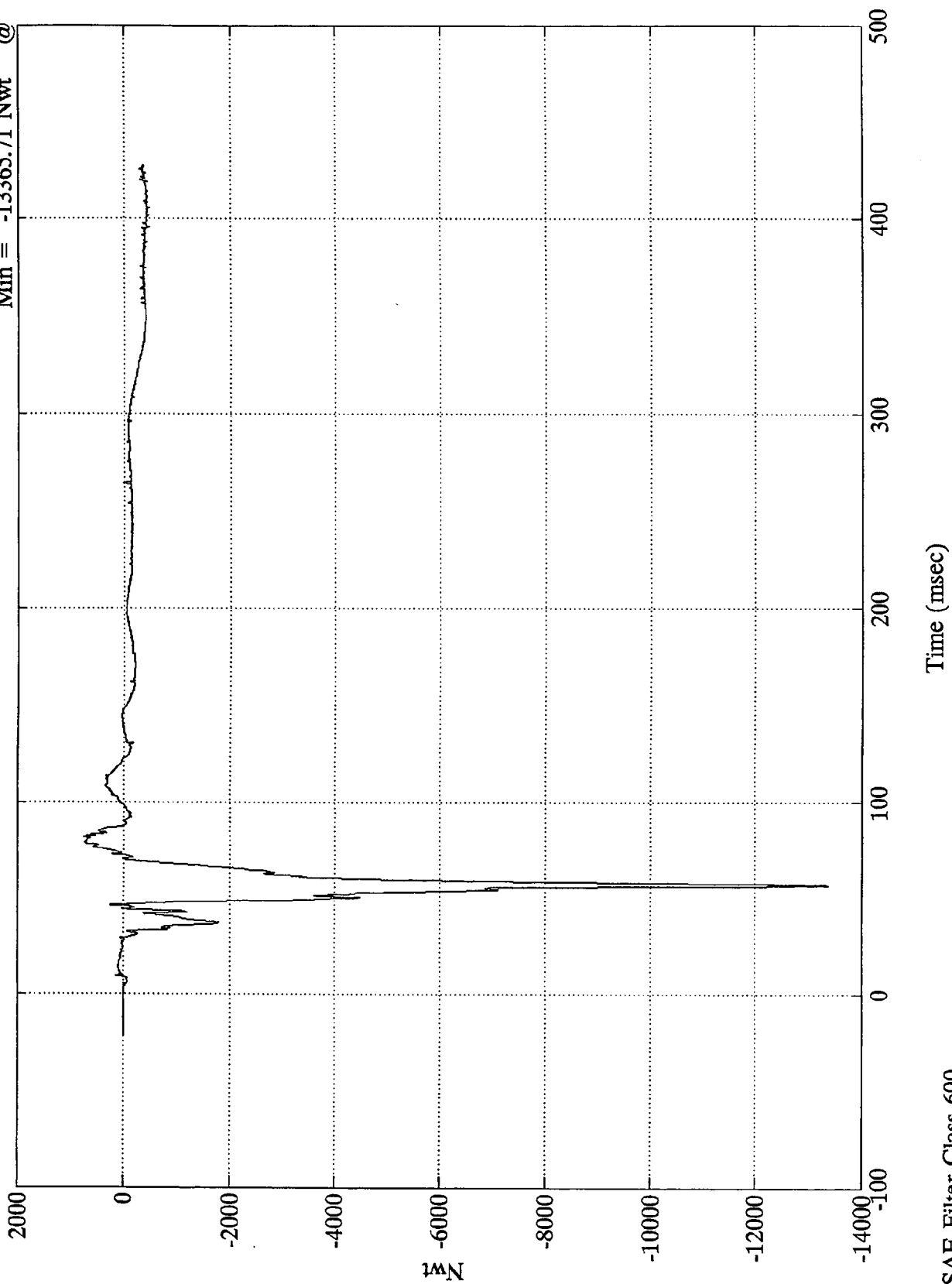
Time (msec)

SAE Filter Class 600

VTV TEST #5

P1 Right Femur

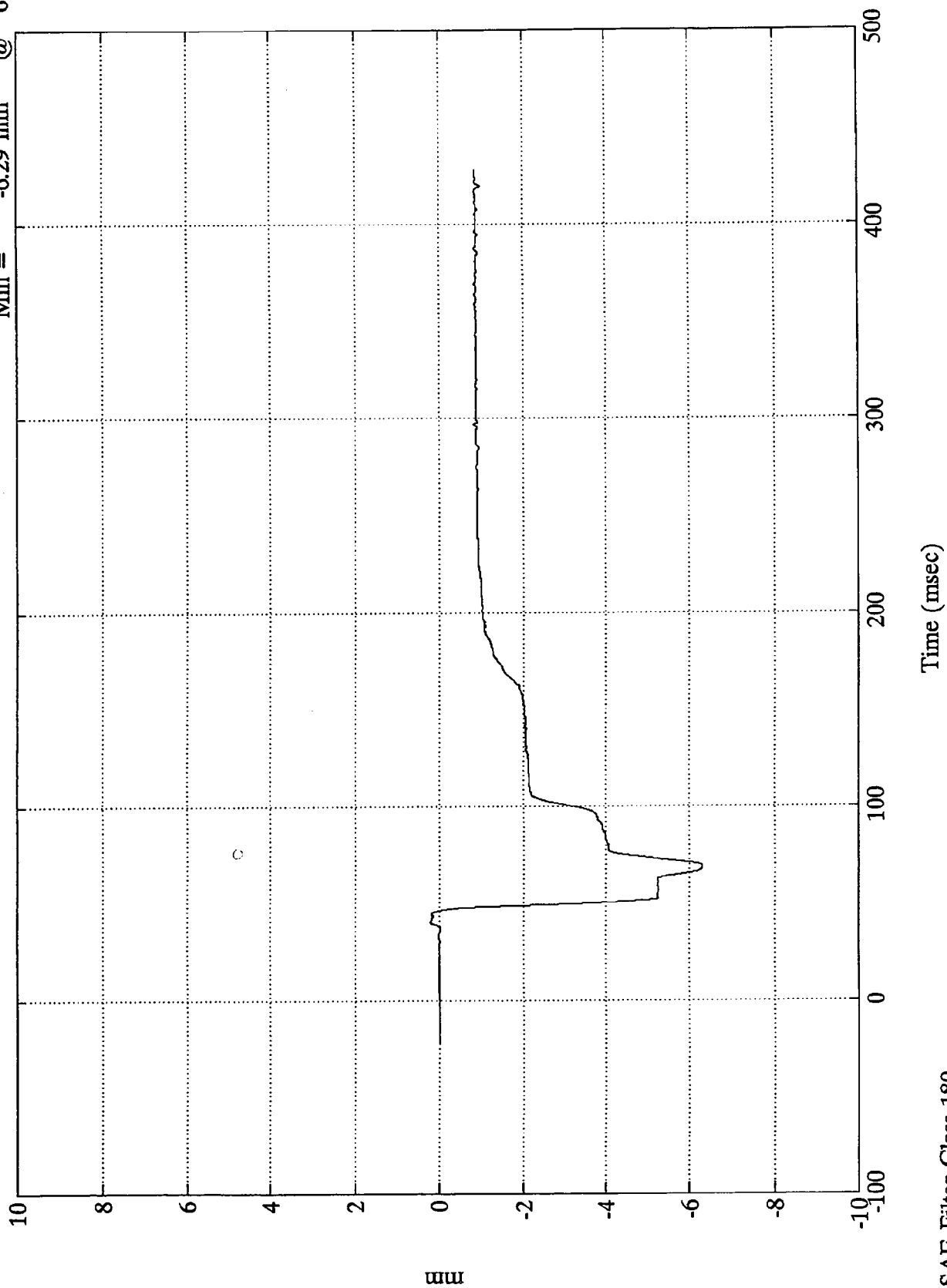
Max = 753.67 Nwt @ 81.72 msec
Min = -13365.71 Nwt @ 56.64 msec



VTV TEST #5

P1 Left Knee Shear

Max = .20 mm @ 40.31 msec
Min = -6.29 mm @ 69.24 msec

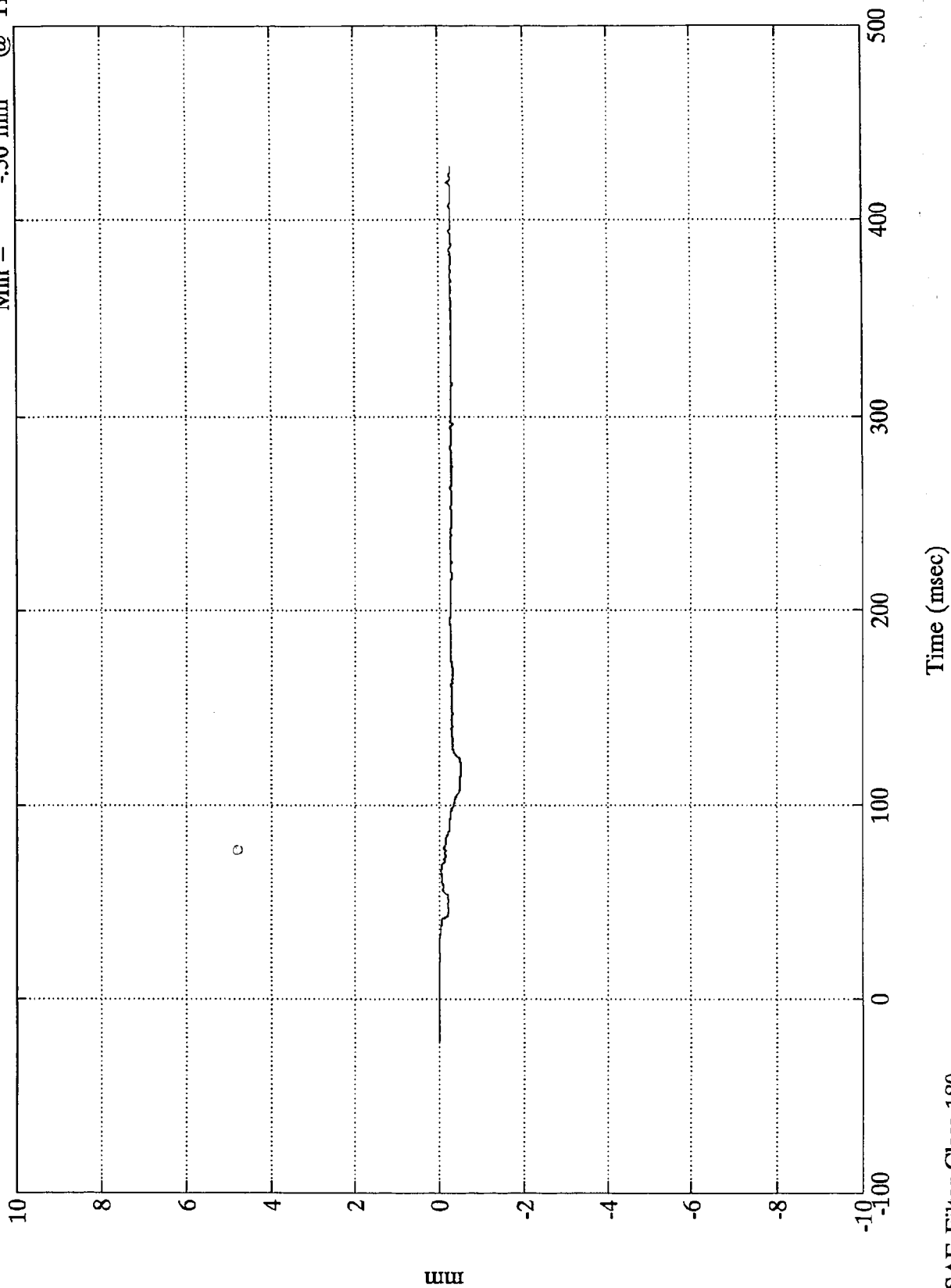


SAE Filter Class 180

VTV TEST #5

P1 Right Knee Shear

Max = .00 mm @ 30.12 msec
Min = -.50 mm @ 117.84 msec

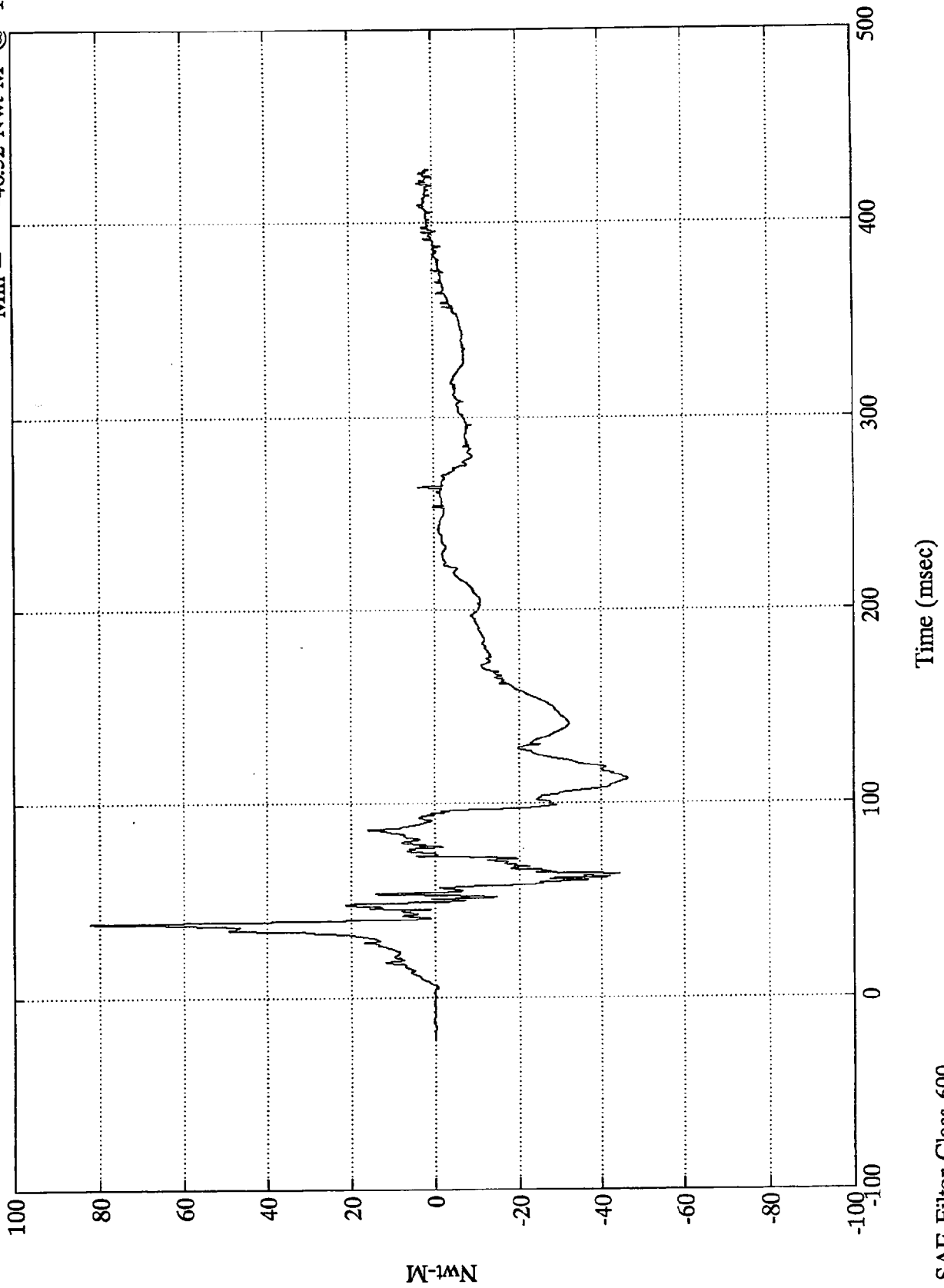


SAE Filter Class 180

VTV TEST #5

P1 Lt Upper Tibia Mx

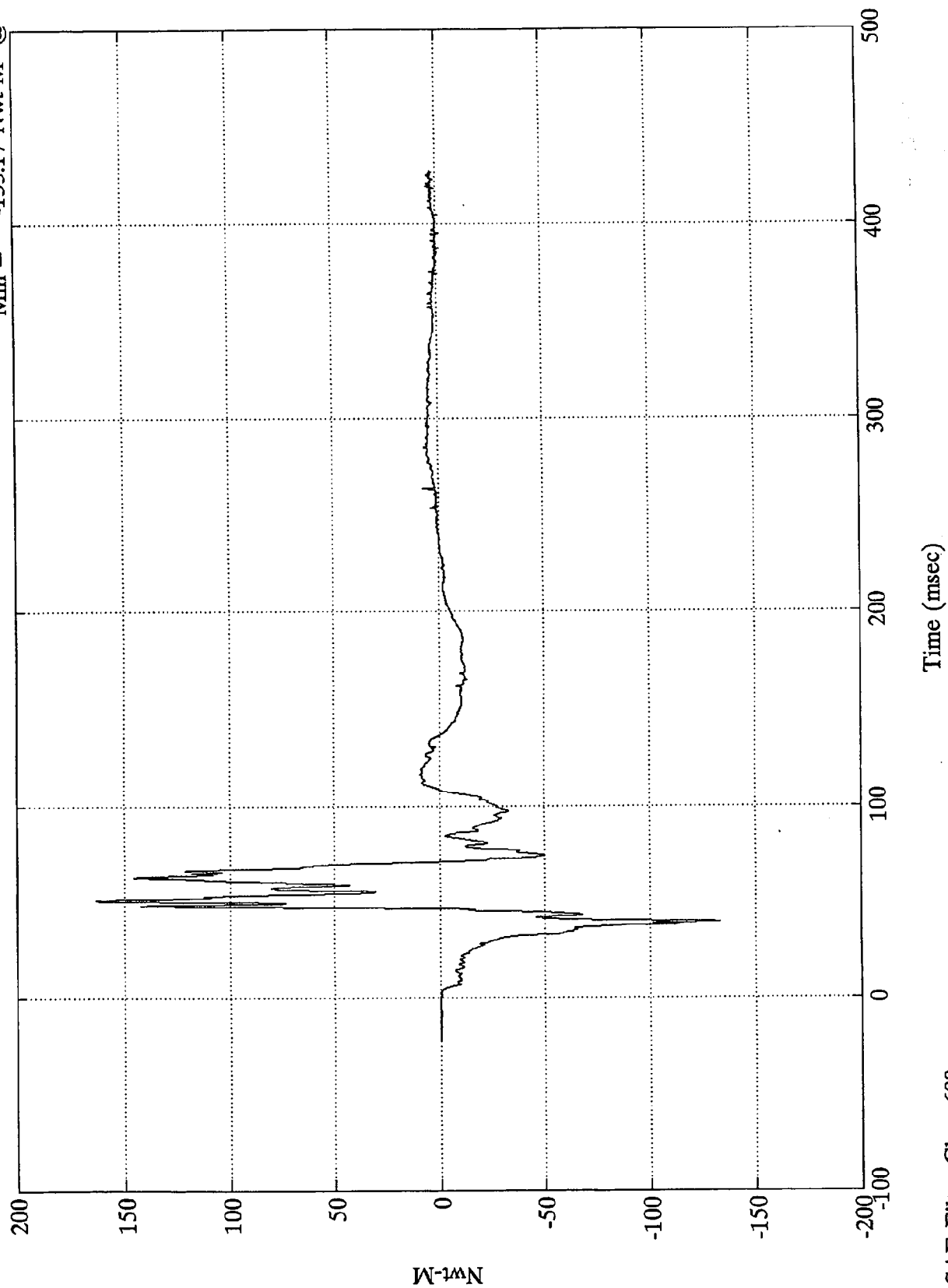
Max = 82.02 Nwt-M @ 38.27 msec
Min = -46.52 Nwt-M @ 112.32 msec



VTV TEST #5

P1 Lt Upper Tibia My

Max = 163.51 Nwt-M @ 50.88 msec
Min = -133.17 Nwt-M @ 39.47 msec

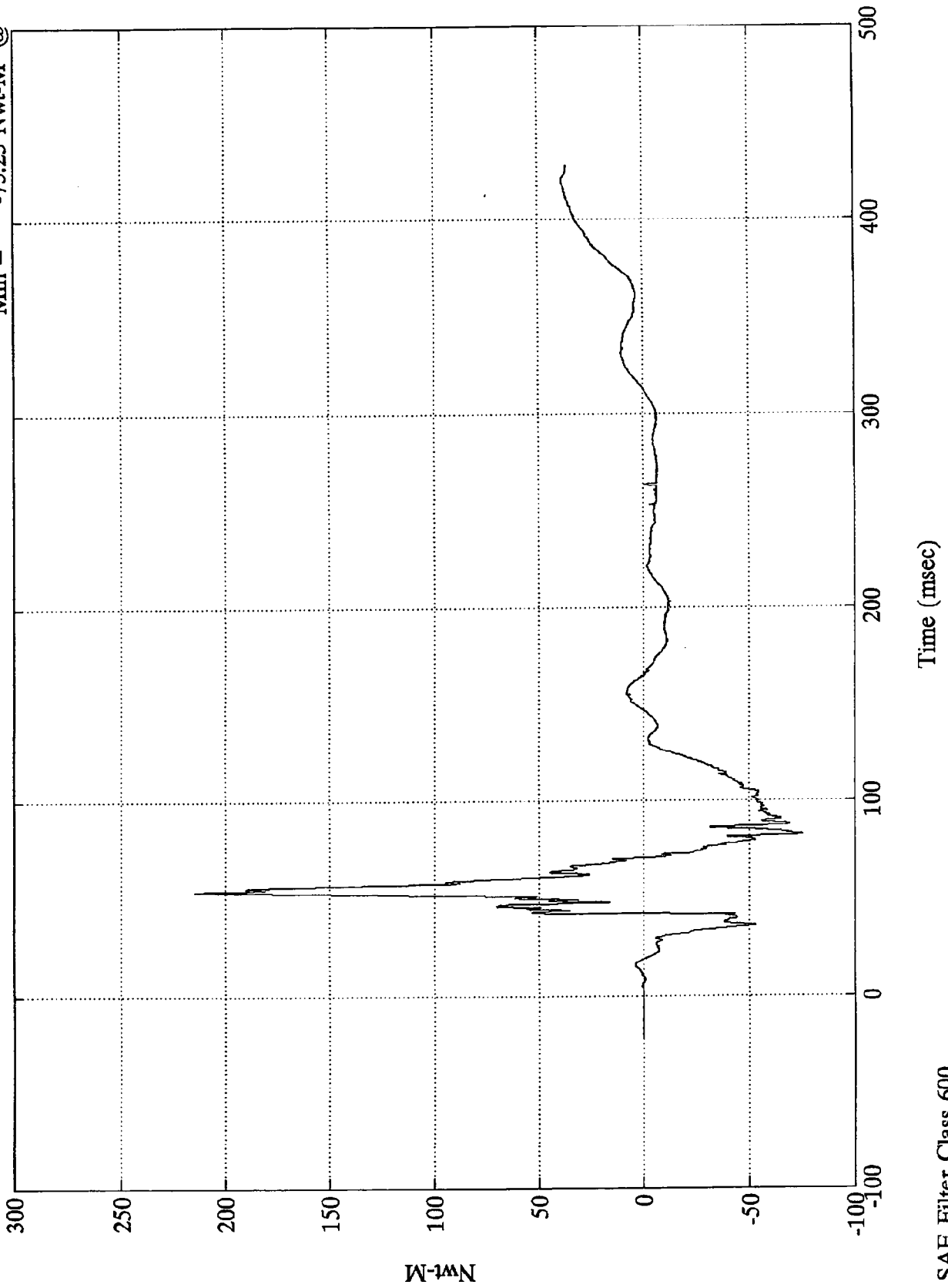


SAE Filter Class 600

VTV TEST #5

P1 Rt Upper Tibia Mx

Max = 214.52 Nwt-M @ 54.11 msec
Min = -75.23 Nwt-M @ 82.80 msec

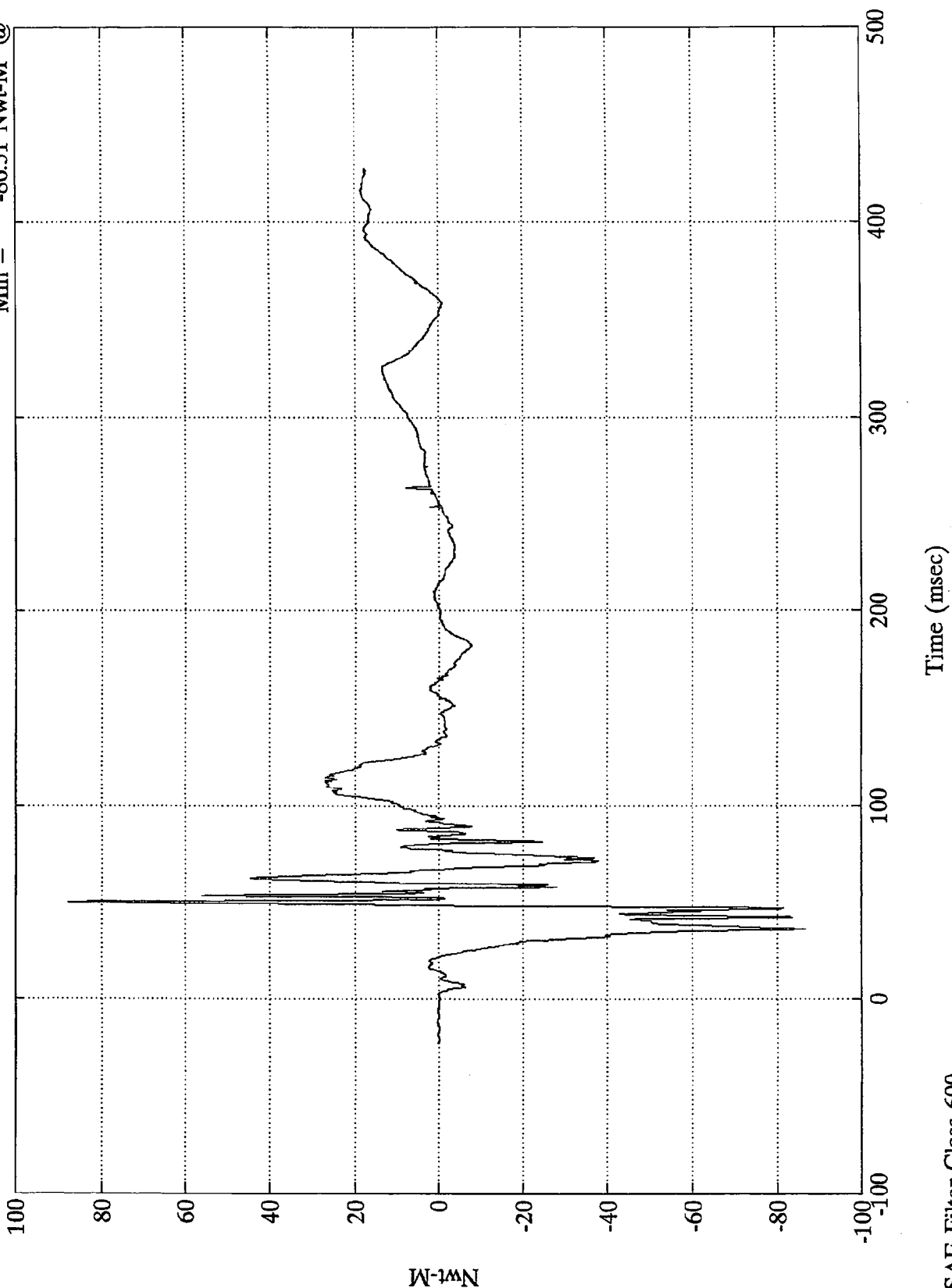


SAE Filter Class 600

VTV TEST #5

P1 Rt Upper Tibia My

Max = 87.66 Nwt-M @ 49.68 msec
Min = -86.51 Nwt-M @ 36.00 msec

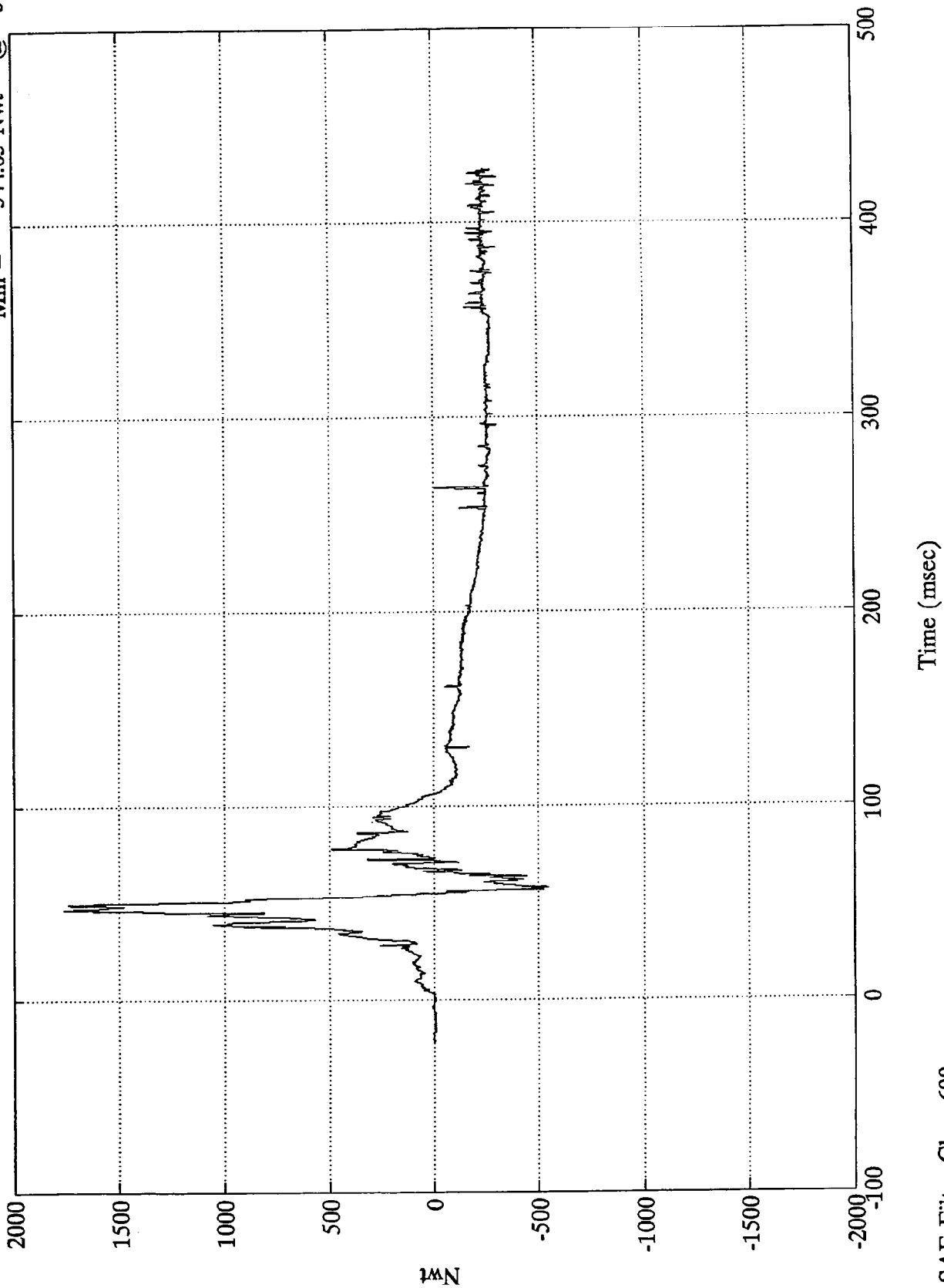


SAE Filter Class 600

VTV TEST #5

P1 Lt Lower Tibia Fx

Max = 1762.26 Nwt @ 46.80 msec
Min = -544.05 Nwt @ 58.08 msec

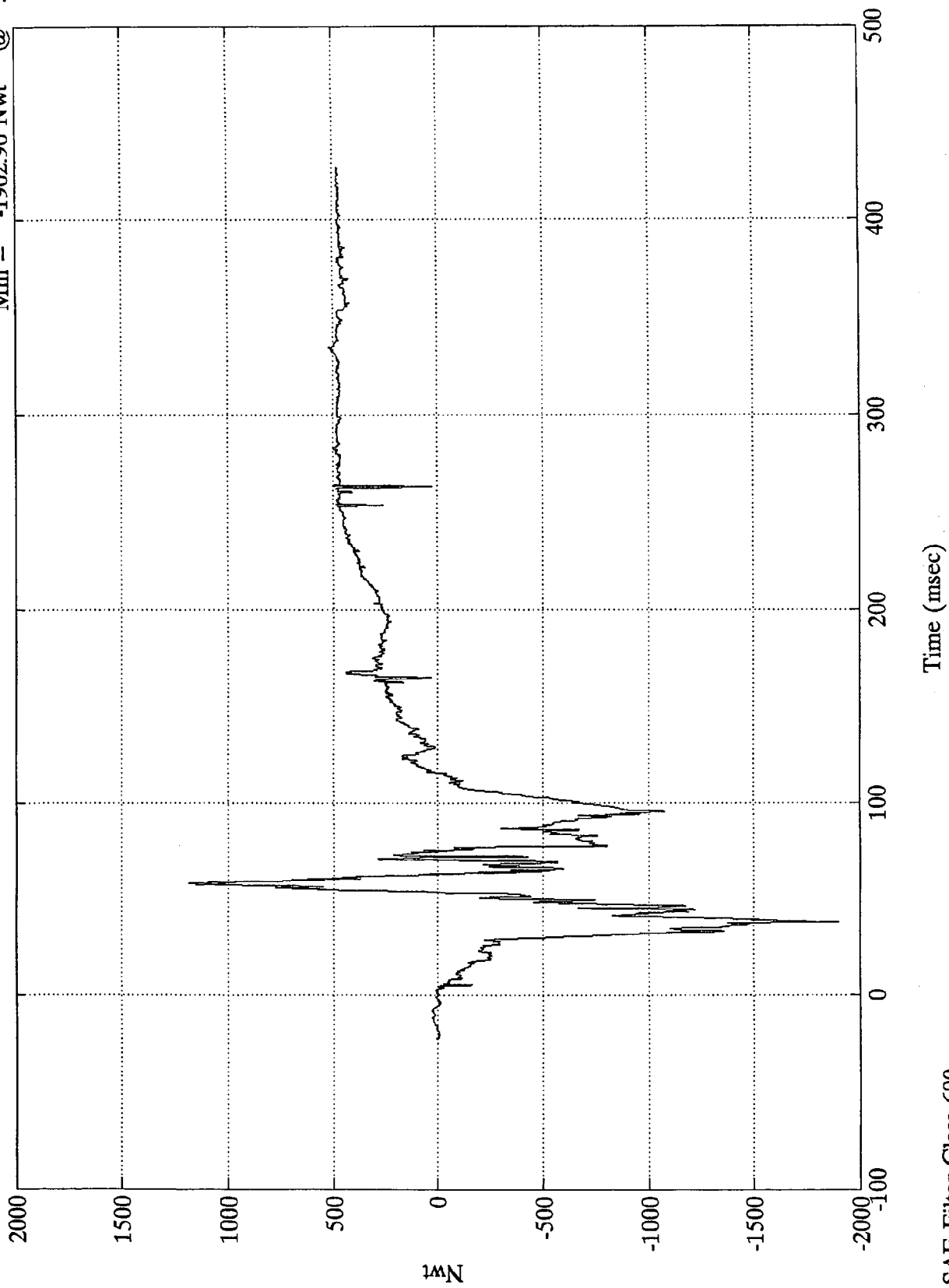


SAE Filter Class 600

VTV TEST #5

P1 Lt Lower Tibia Fz

Max = 1183.64 Nwt @ 58.43 msec
Min = -1902.90 Nwt @ 38.04 msec

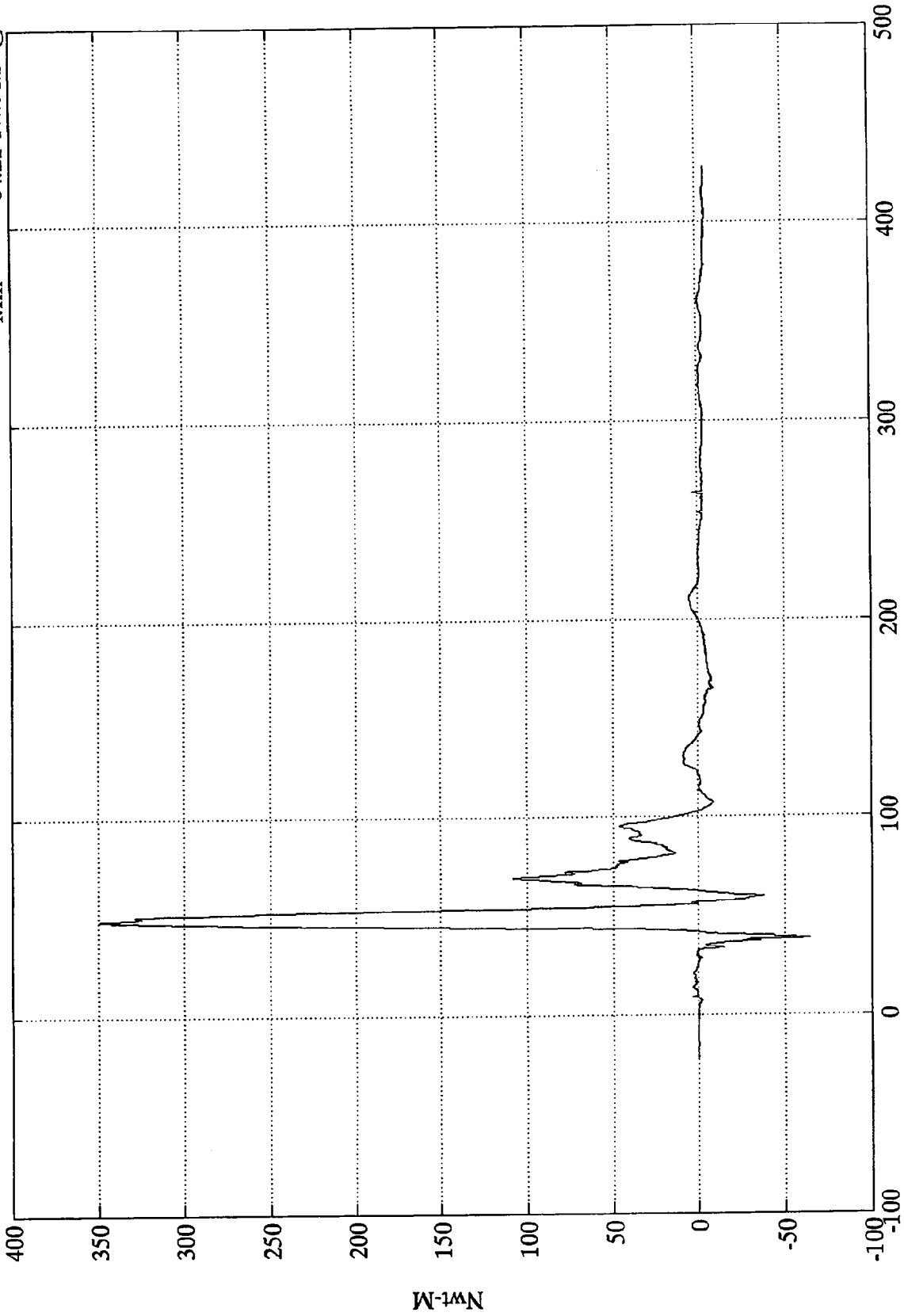


SAE Filter Class 600

VTV TEST #5

P1 Lt Lower Tibia My

Max = 349.45 Nwt-M @ 48.84 msec
Min = -64.21 Nwt-M @ 38.88 msec



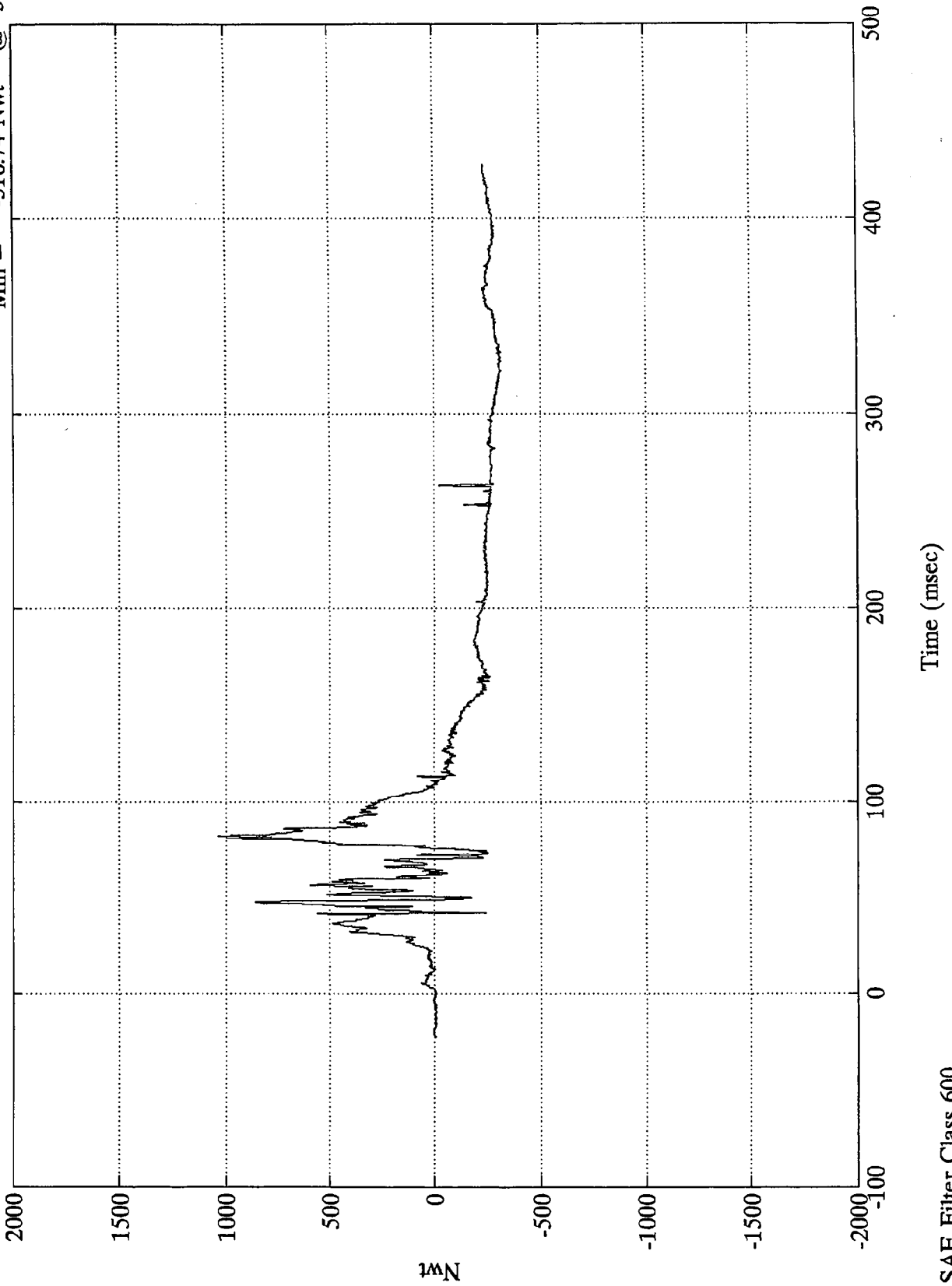
Time (msec)

SAE Filter Class 600

VTV TEST #5

P1 Rt Lower Tibia Fx

Max = 1032.54 Nwt @ 82.20 msec
Min = -316.74 Nwt @ 327.00 msec

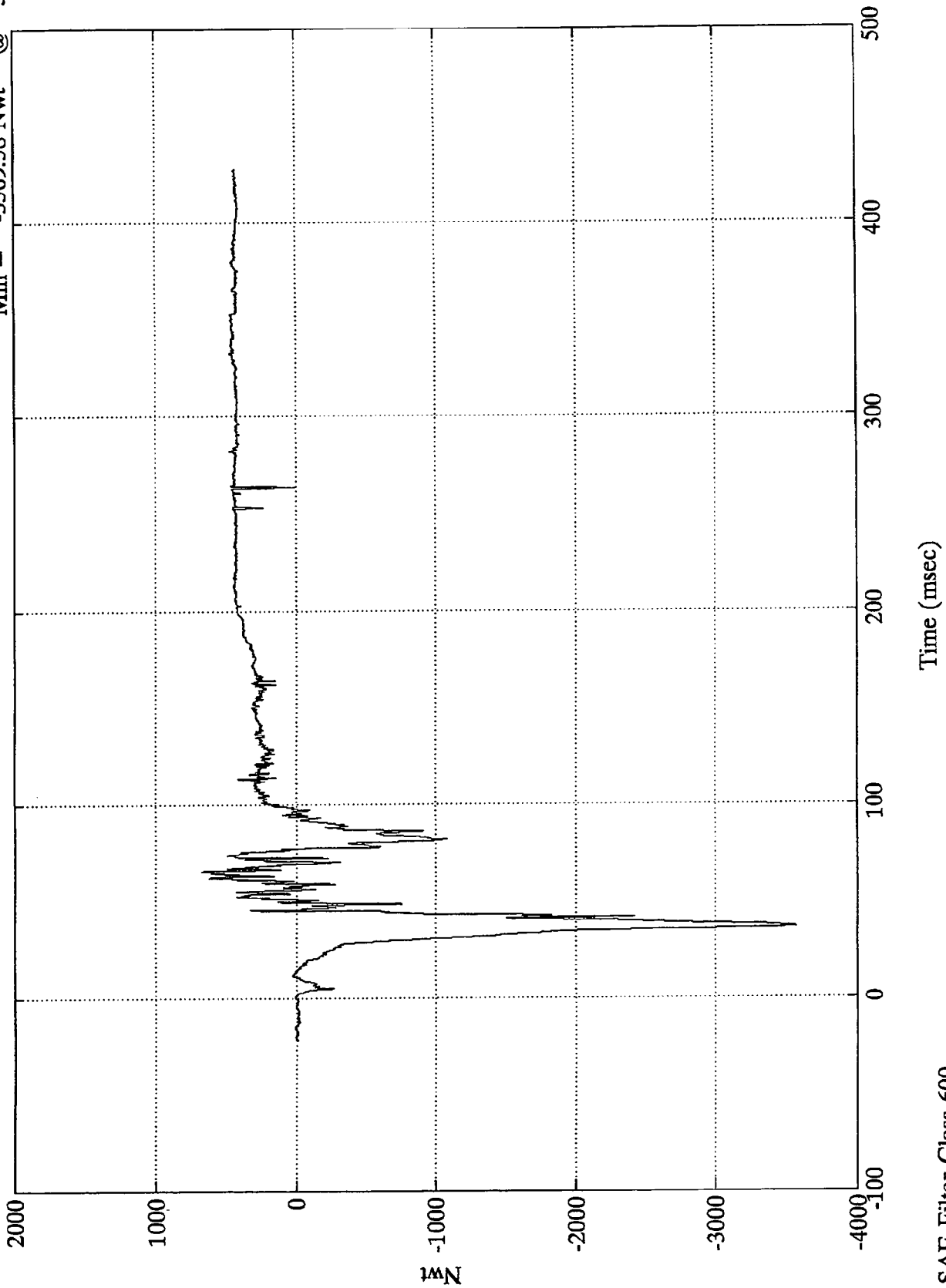


SAE Filter Class 600

VTV TEST #5

P1 Rt Lower Tibia Fz

Max = 674.32 Nwt @ 65.87 msec
Min = -3569.58 Nwt @ 36.24 msec

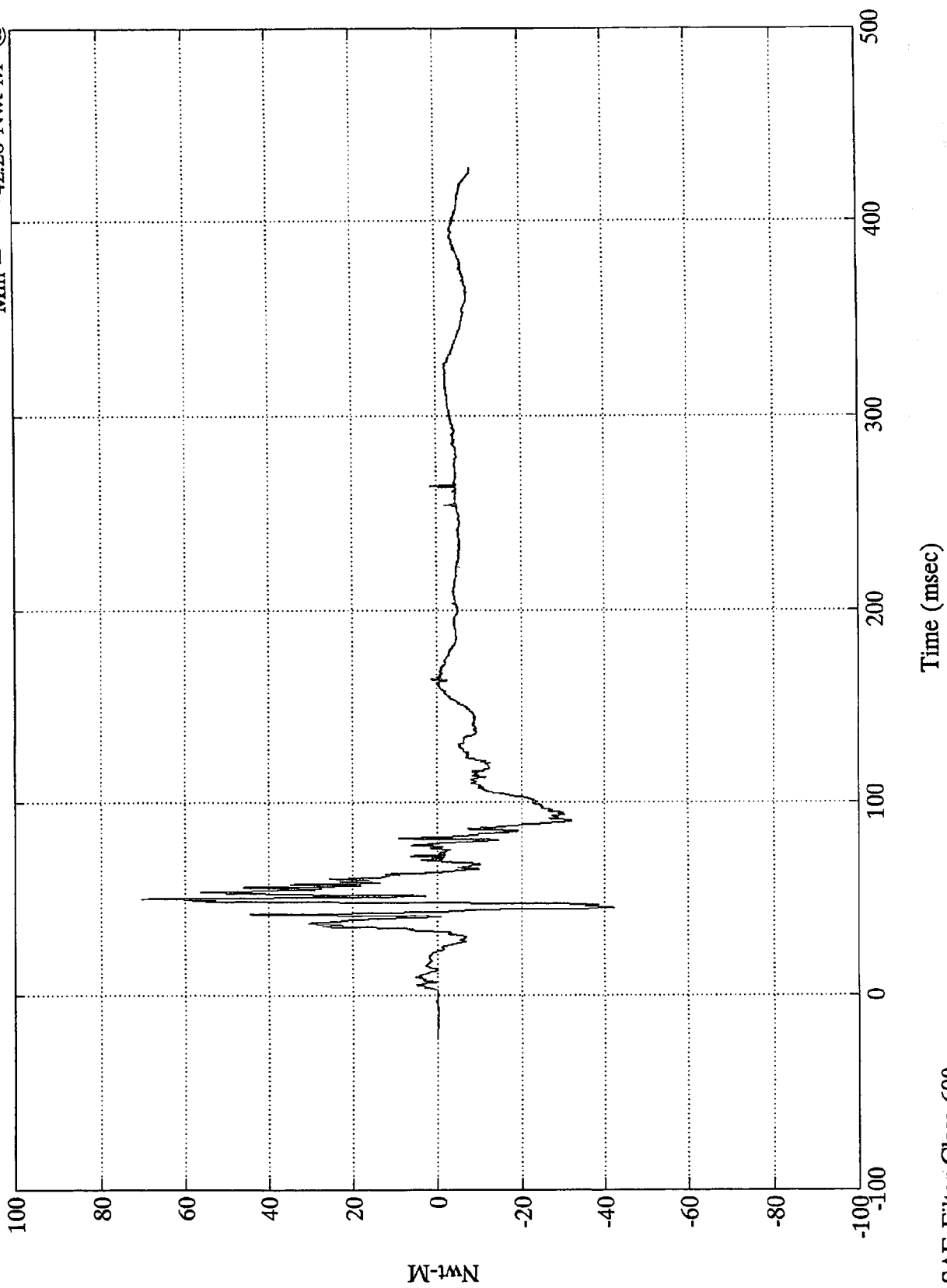


SAE Filter Class 600

VTV TEST #5

P1 Rt Lower Tibia My

Max = 70.55 Nwt-M @ 50.28 msec
Min = -42.20 Nwt-M @ 45.36 msec

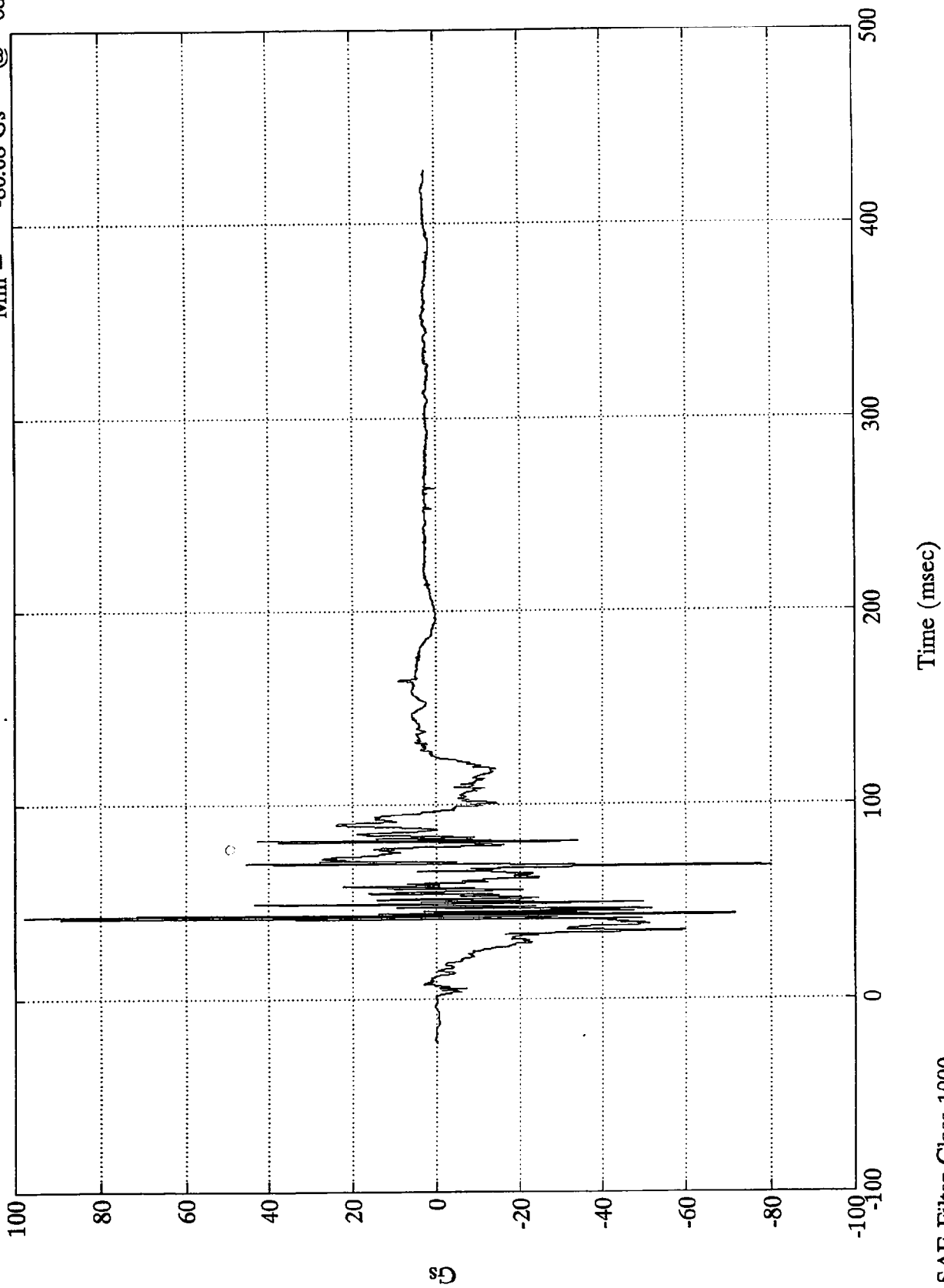


SAE Filter Class 600

VTV TEST #5

P1 Right Foot Rear Z

Max = 97.81 Gs @ 42.47 msec
Min = -80.08 Gs @ 68.28 msec

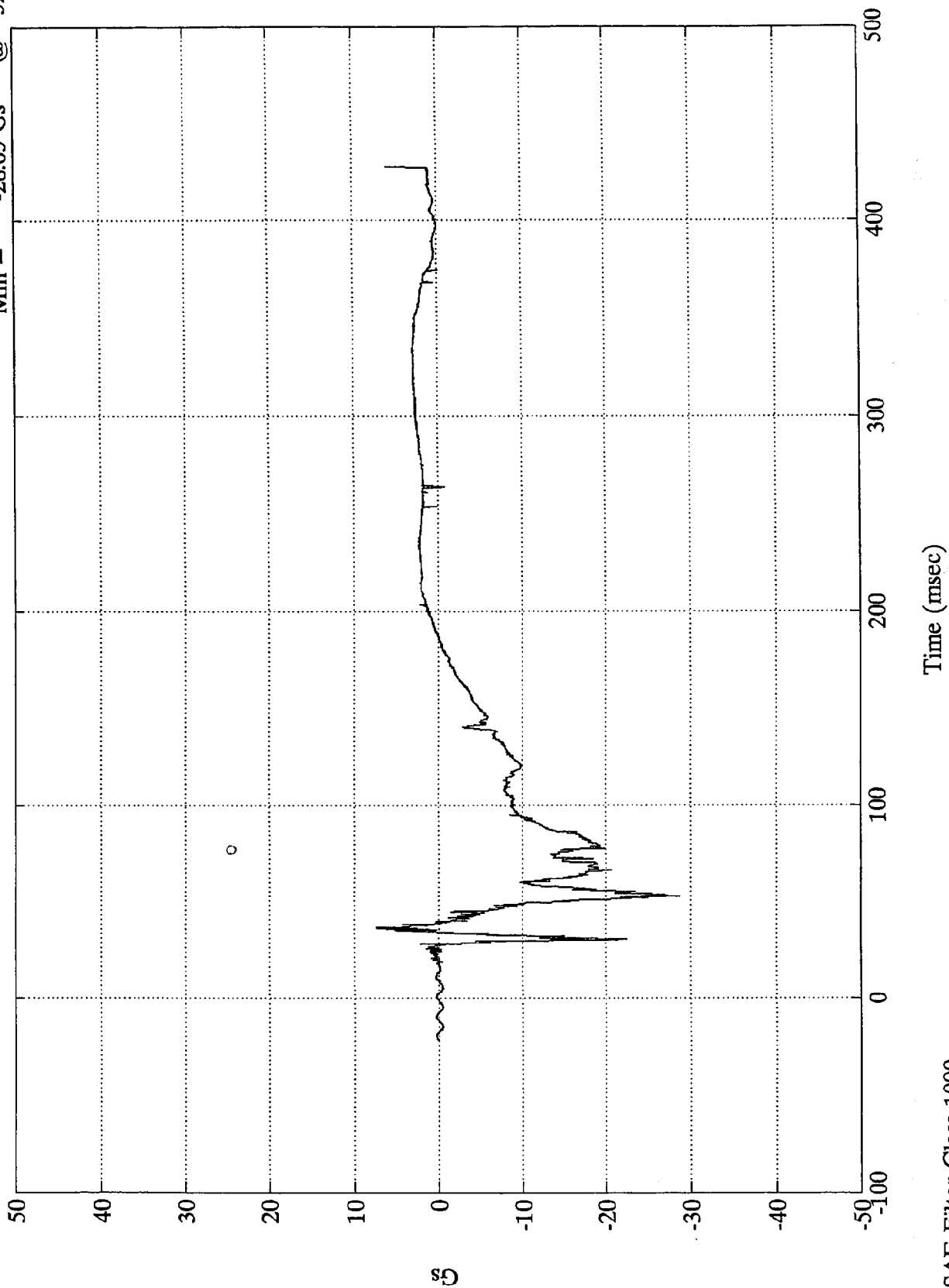


SAE Filter Class 1000

VTV TEST #5

P2 Head X

Max = 7.42 Gs @ 36.84 msec
Min = -28.65 Gs @ 52.79 msec

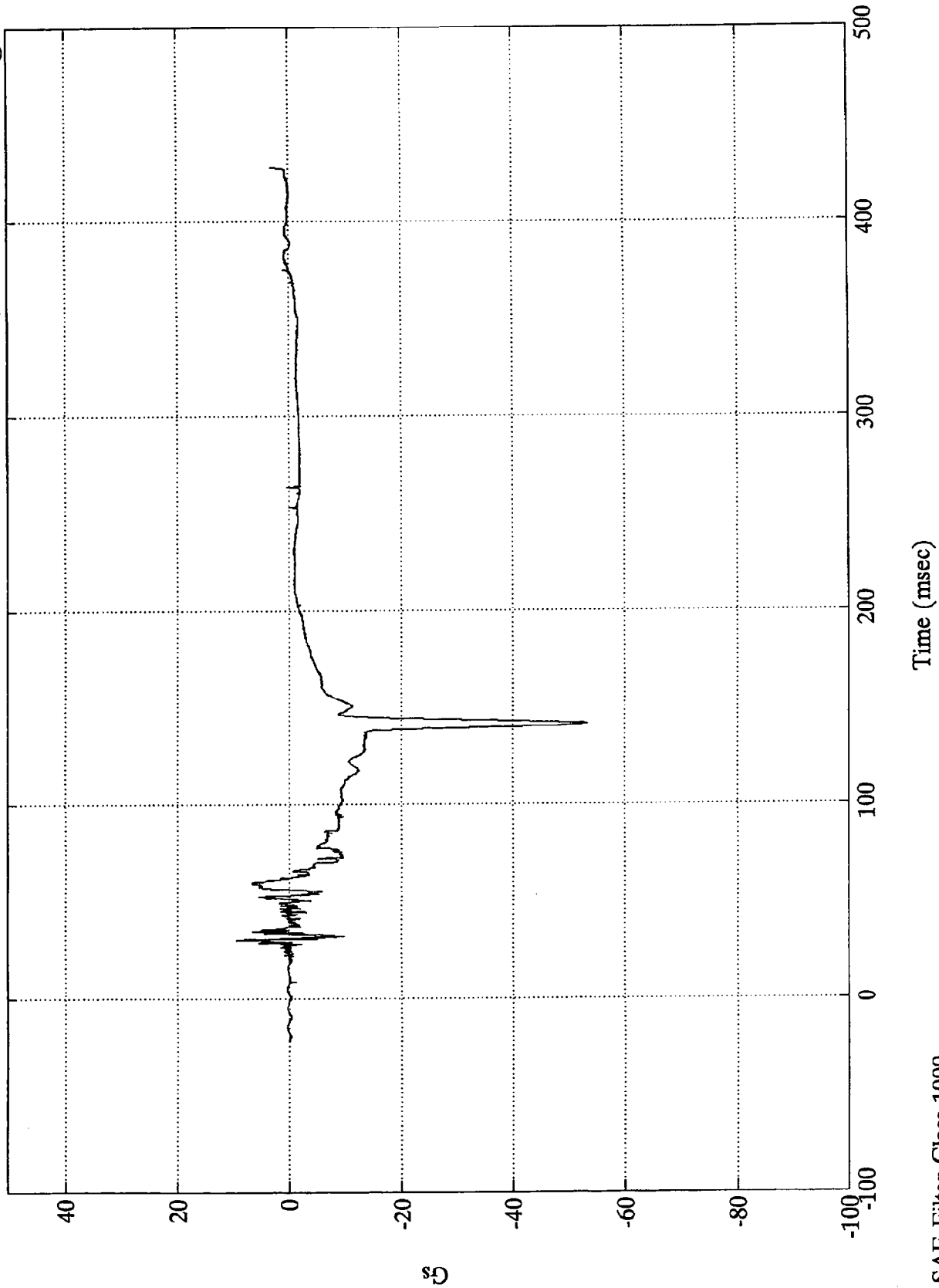


SAE Filter Class 1000

VTV TEST #5

P2 Head Y

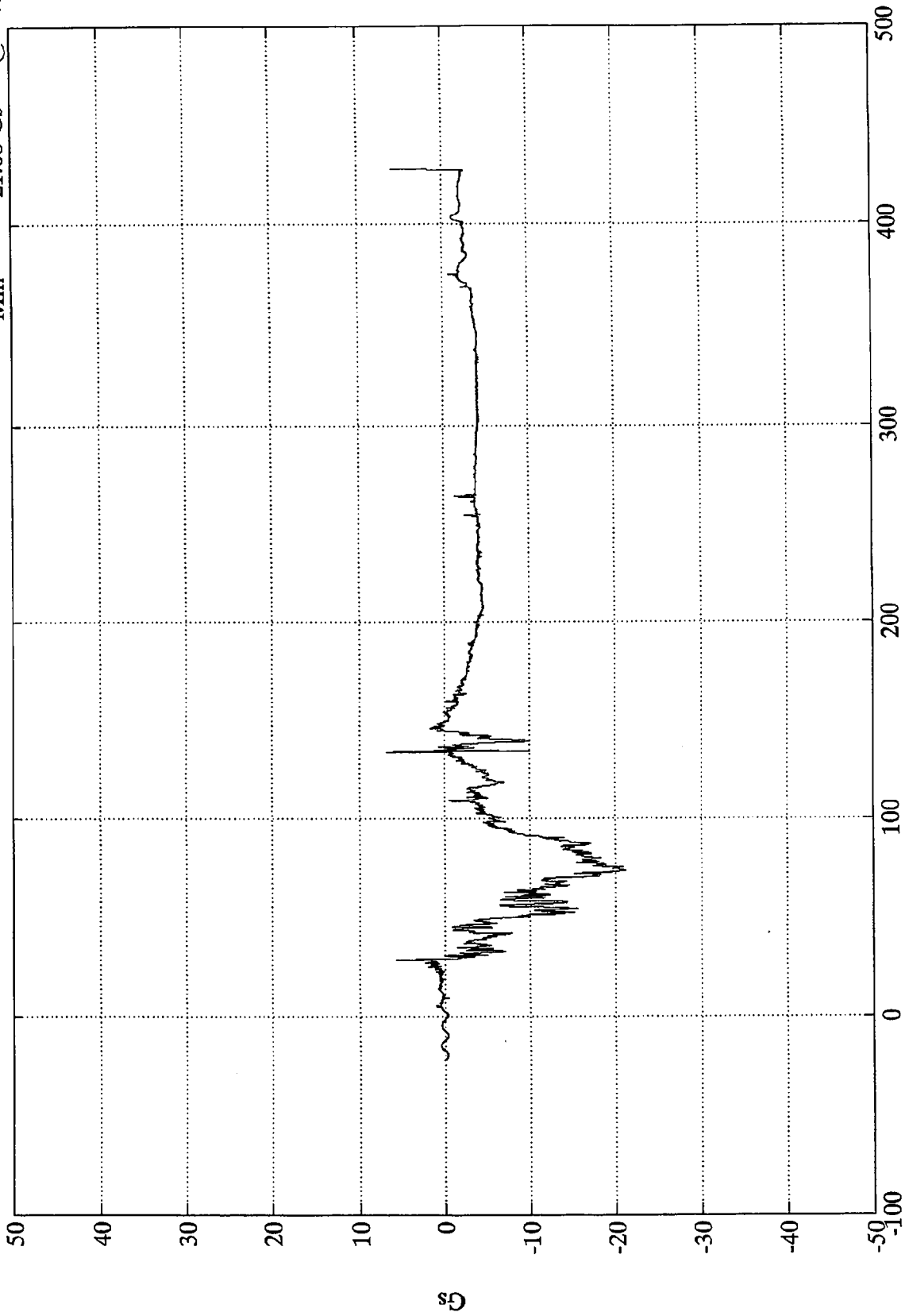
Max = 9.43 Gs @ 30.84 msec
Min = -53.32 Gs @ 141.00 msec



VTV TEST #5

P2 Head Z

Max = 6.86 Gs @ 134.28 msec
Min = -21.08 Gs @ 73.92 msec



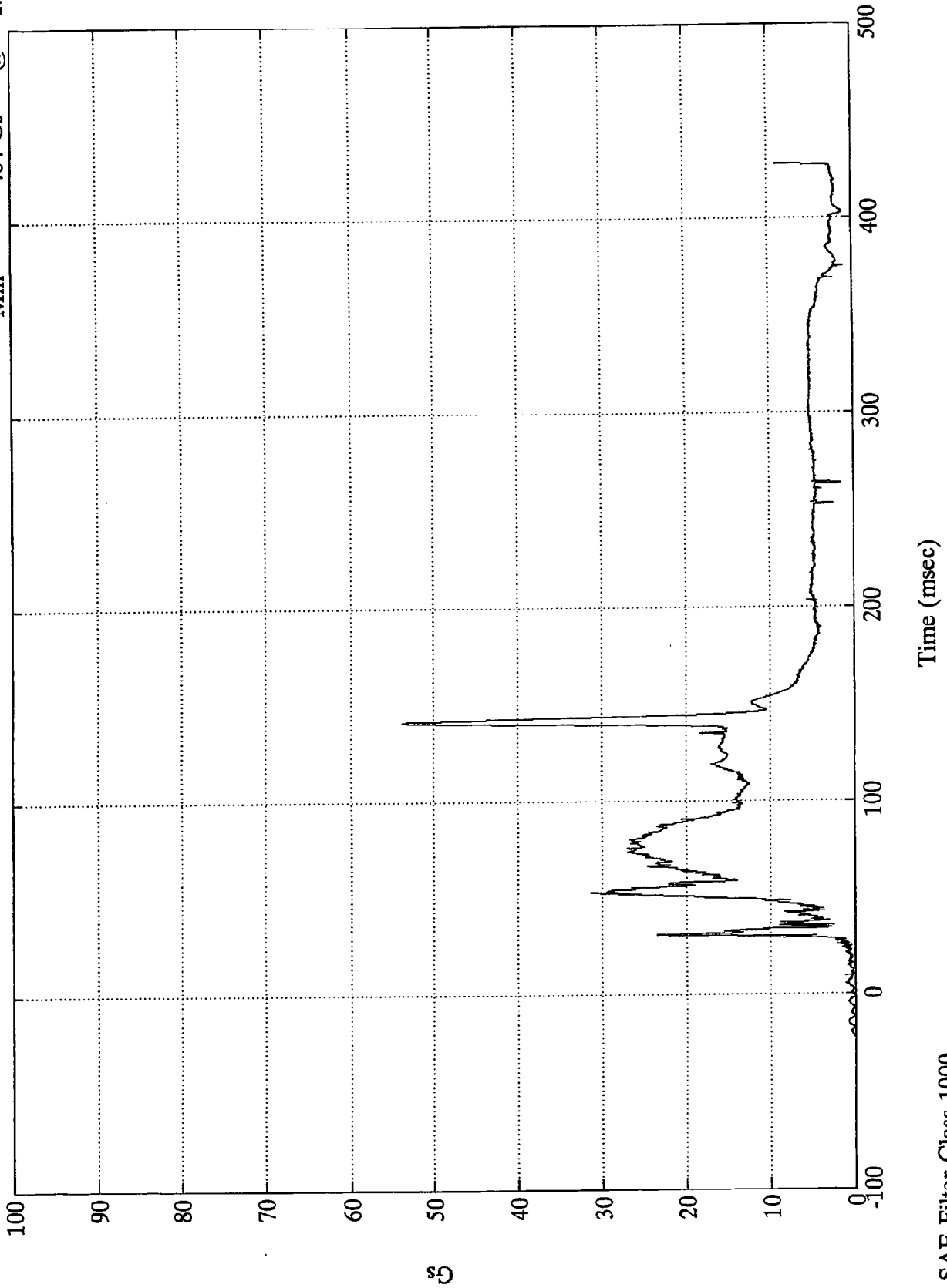
Time (msec)

SAE Filter Class 1000

VTV TEST #5

P2 Head Resultant

Max = 53.86 Gs @ 141.00 msec
Min = .04 Gs @ -1.08 msec

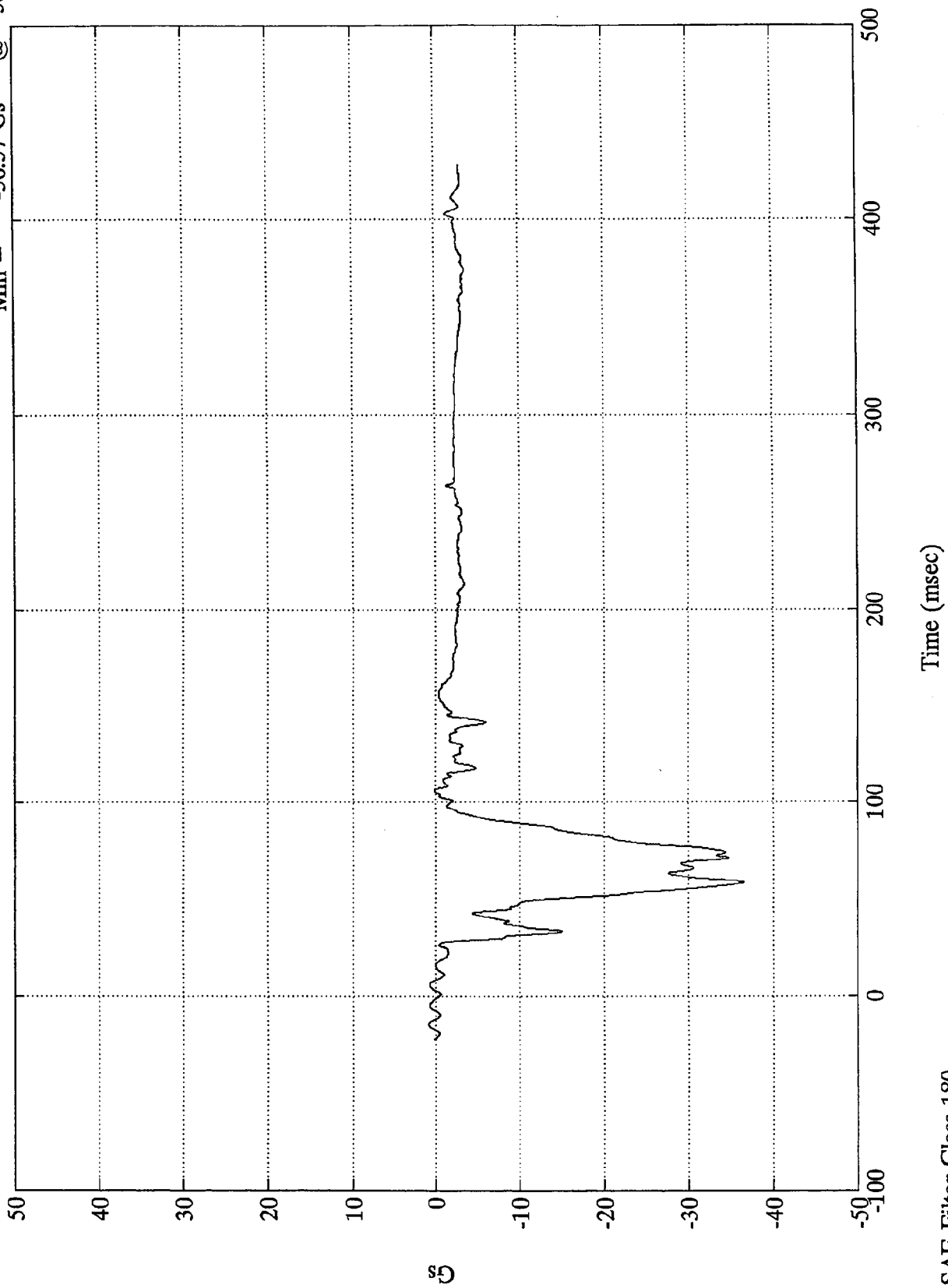


SAE Filter Class 1000

VTV TEST #5

Max = .89 Gs @ -14.40 msec
Min = -36.57 Gs @ 58.91 msec

P2 Chest X

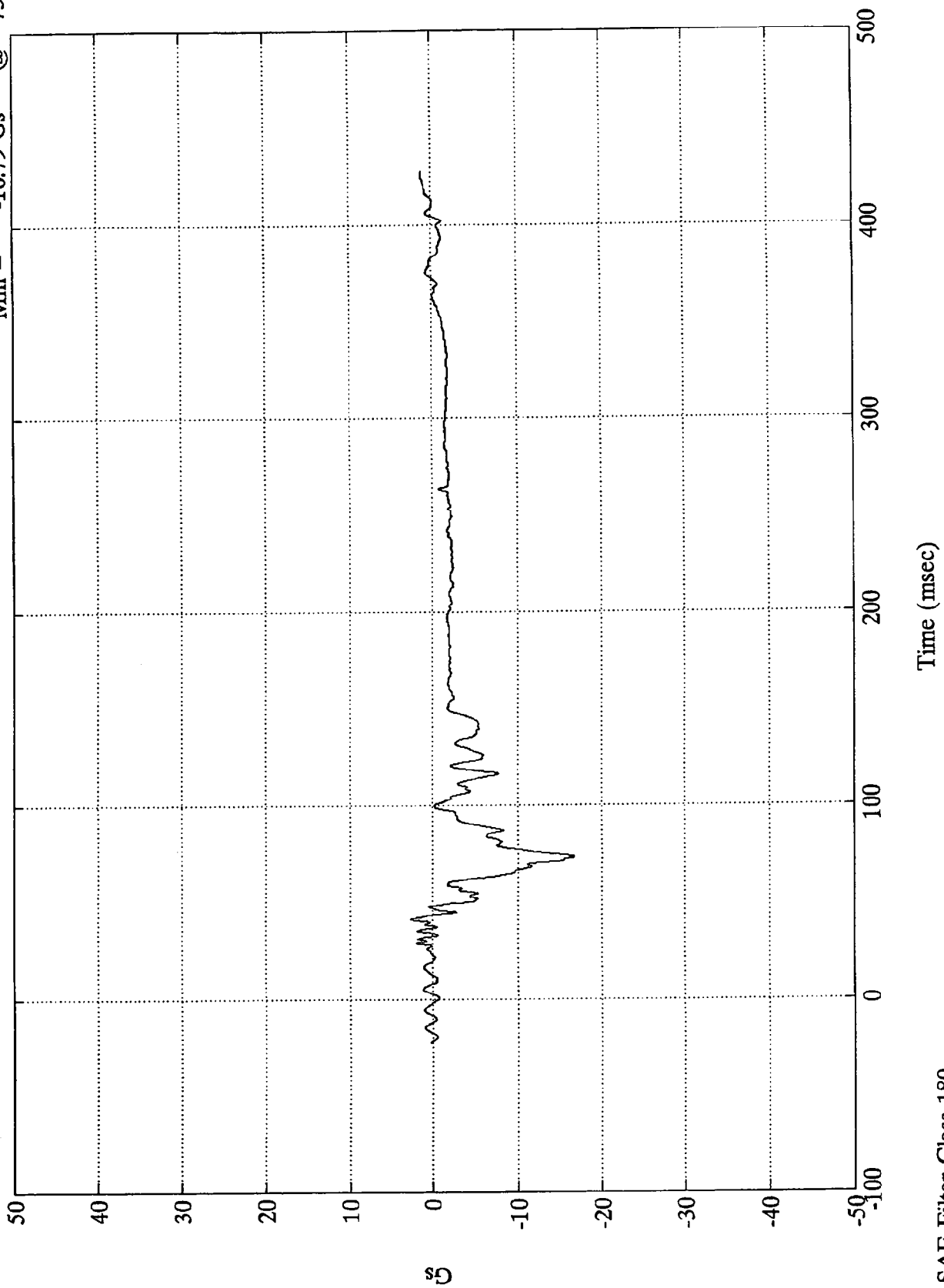


SAE Filter Class 180

VTV TEST #5

P2 Chest Y

Max = 2.71 Gs @ 41.40 msec
Min = -16.79 Gs @ 73.31 msec

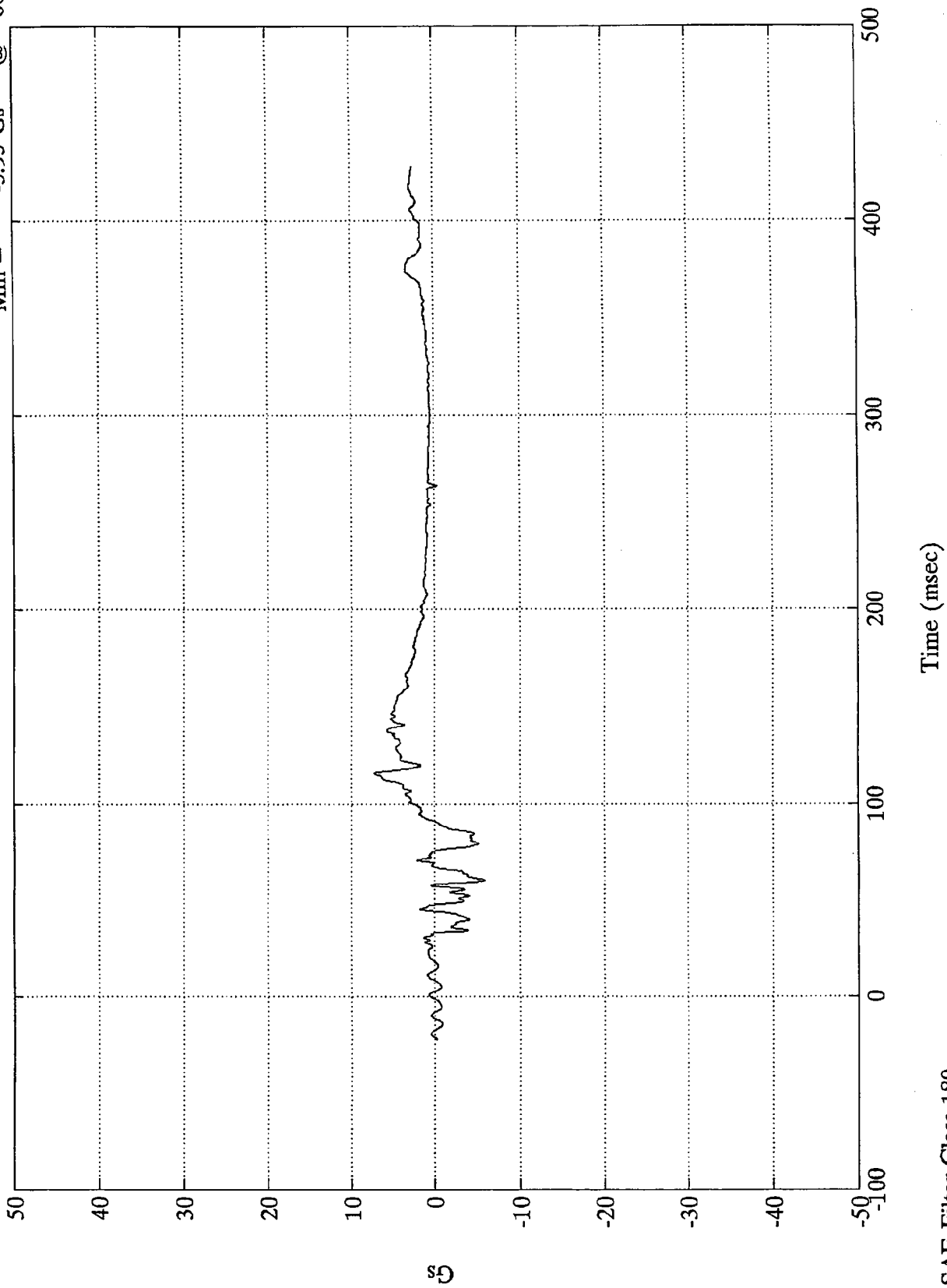


SAE Filter Class 180

VTV TEST #5

P2 Chest Z

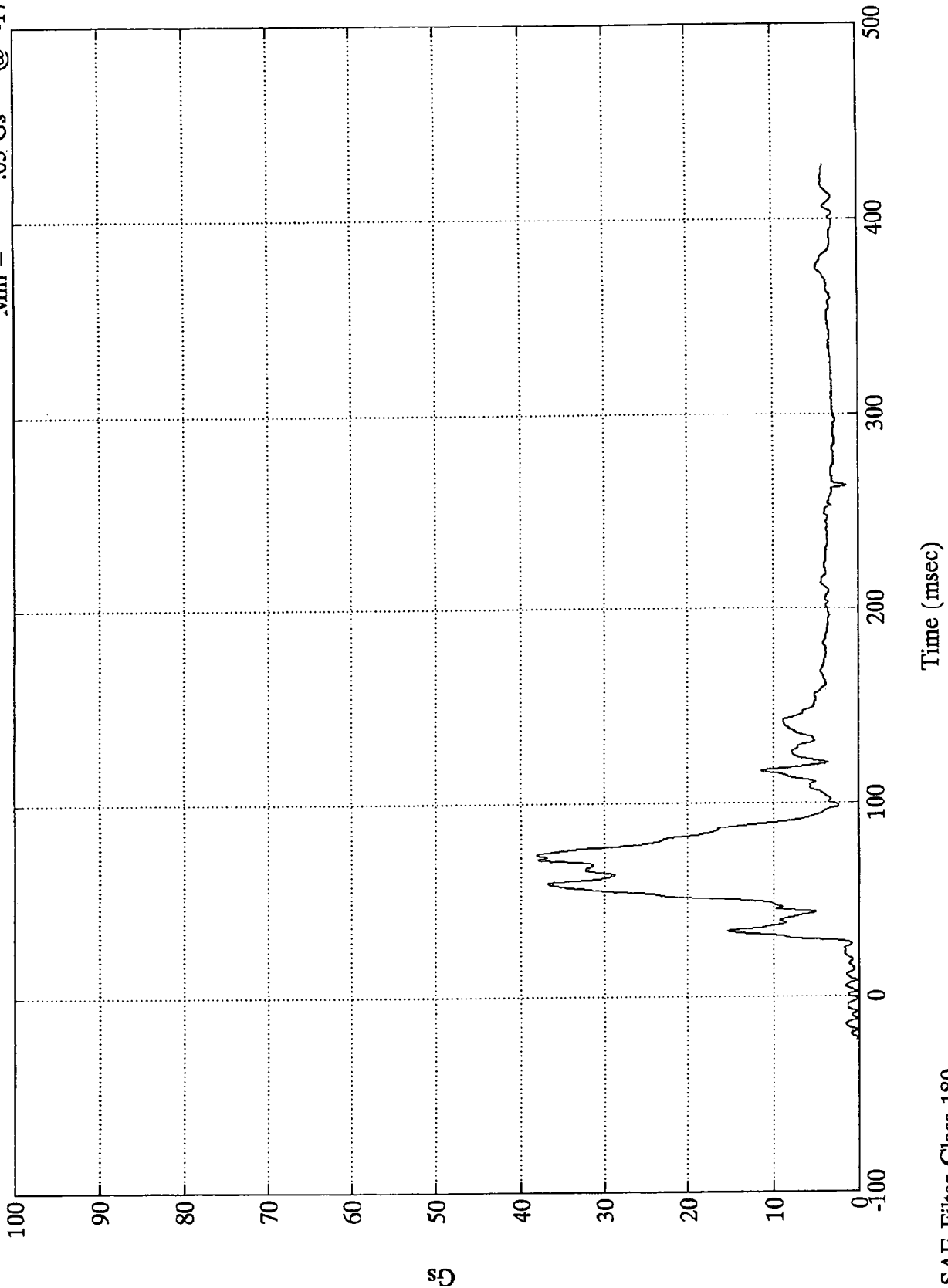
Max = 7.23 Gs @ 116.63 msec
Min = -5.95 Gs @ 60.48 msec



SAE Filter Class 180

VTV TEST #5

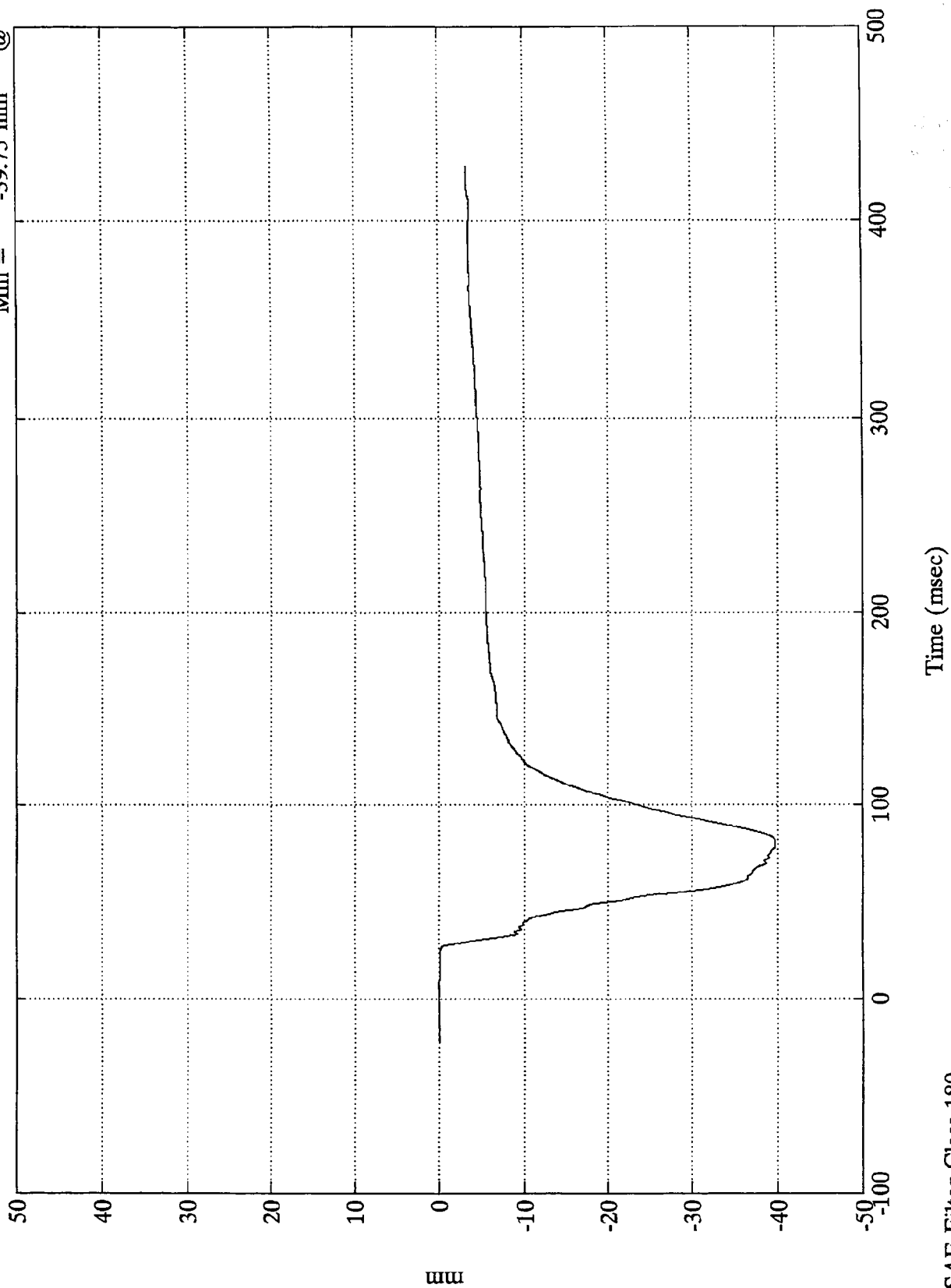
P2 Chest Resultant
Max = 38.09 Gs @ 73.55 msec
Min = .03 Gs @ -17.40 msec



VIV TEST #5

Max = .00 mm @ 1.55 msec
Min = -39.75 mm @ 78.72 msec

P2 Chest Deflection

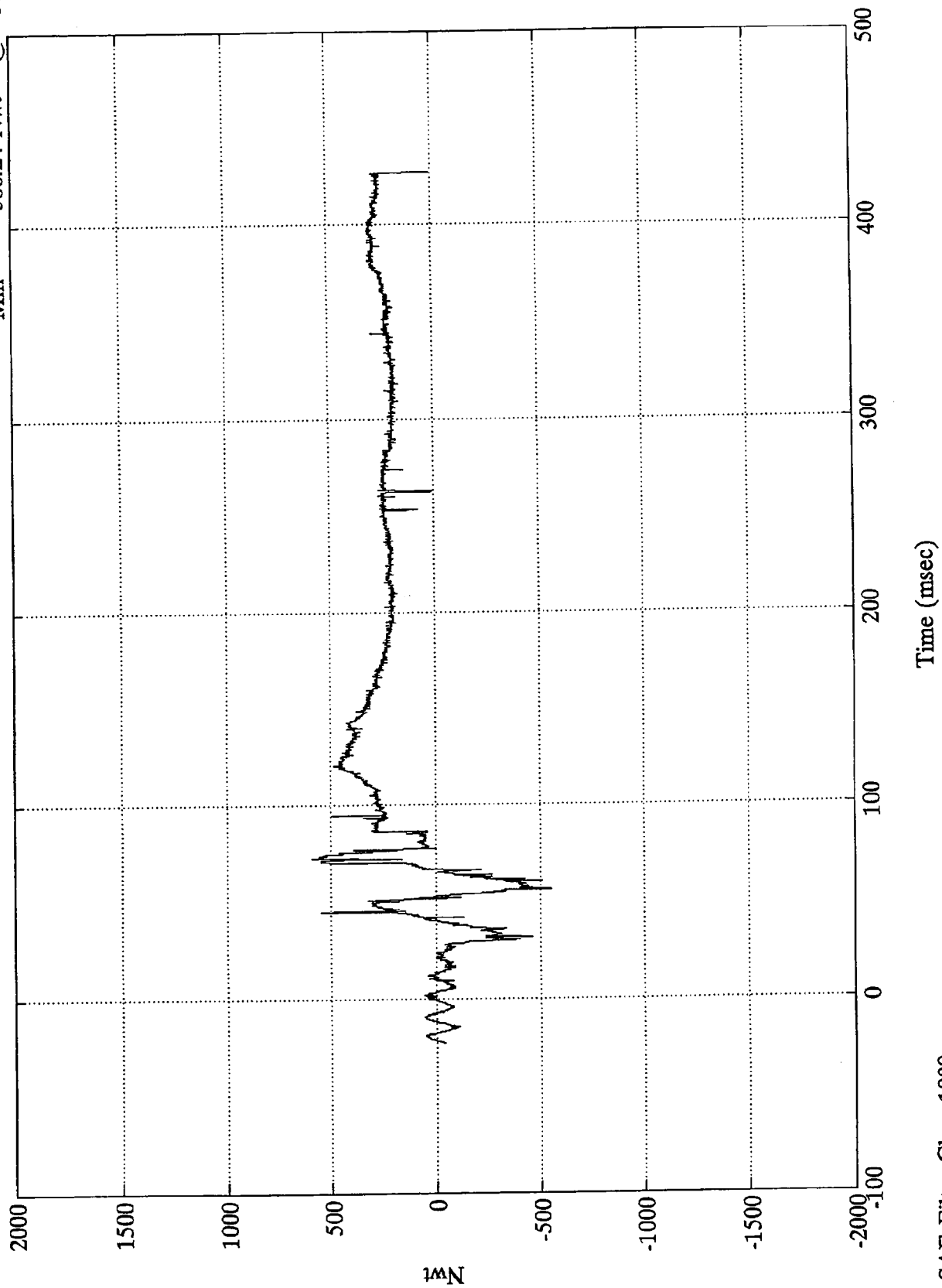


SAE Filter Class 180

VTV TEST #5

P2 Upper Neck Fx

Max = 590.70 Nwt @ 72.96 msec
Min = -560.24 Nwt @ 56.16 msec

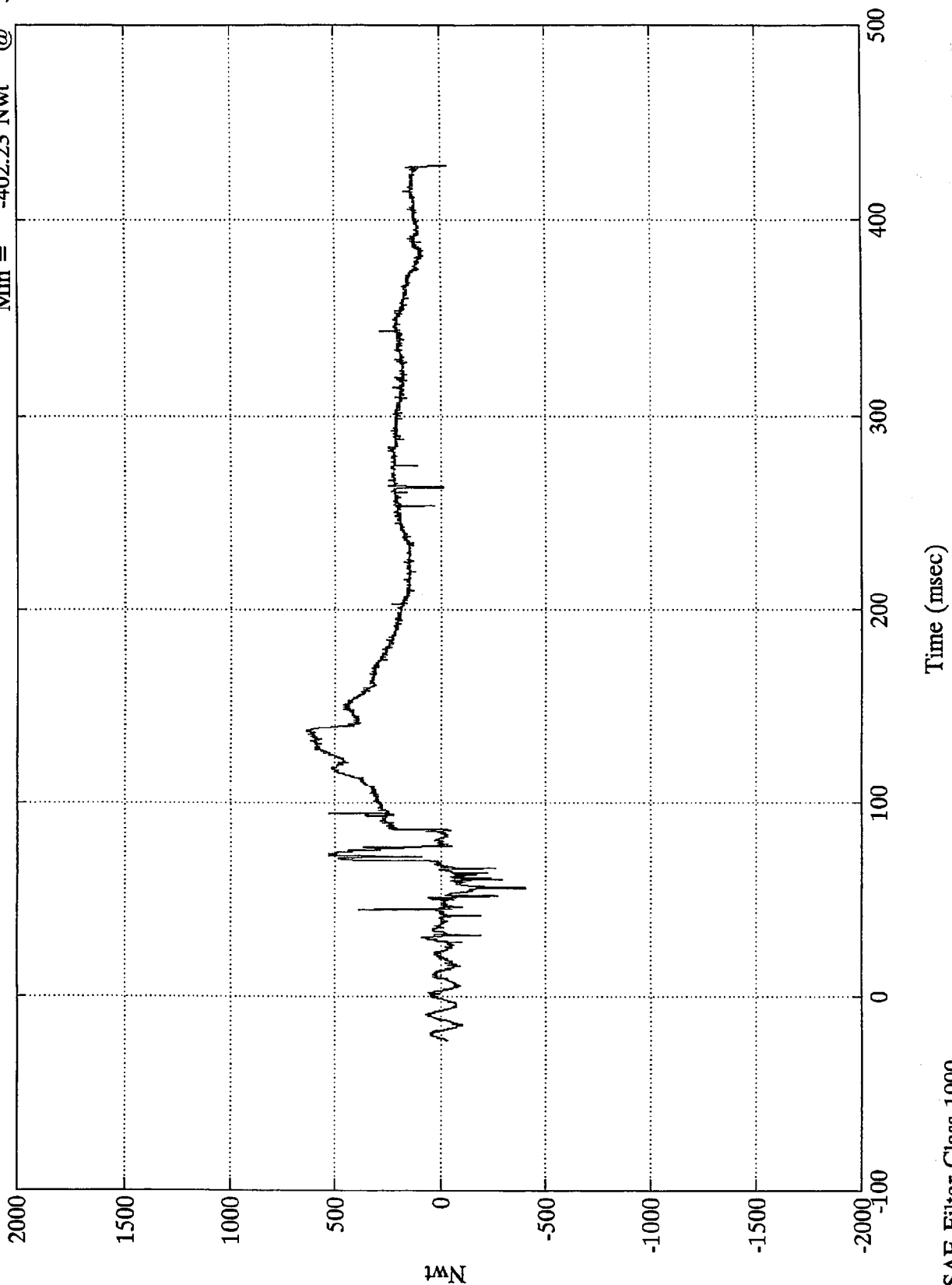


SAE Filter Class 1000

VTV TEST #5

P2 Upper Neck Fy

Max = 636.44 Nwt @ 137.39 msec
Min = -402.23 Nwt @ 56.16 msec

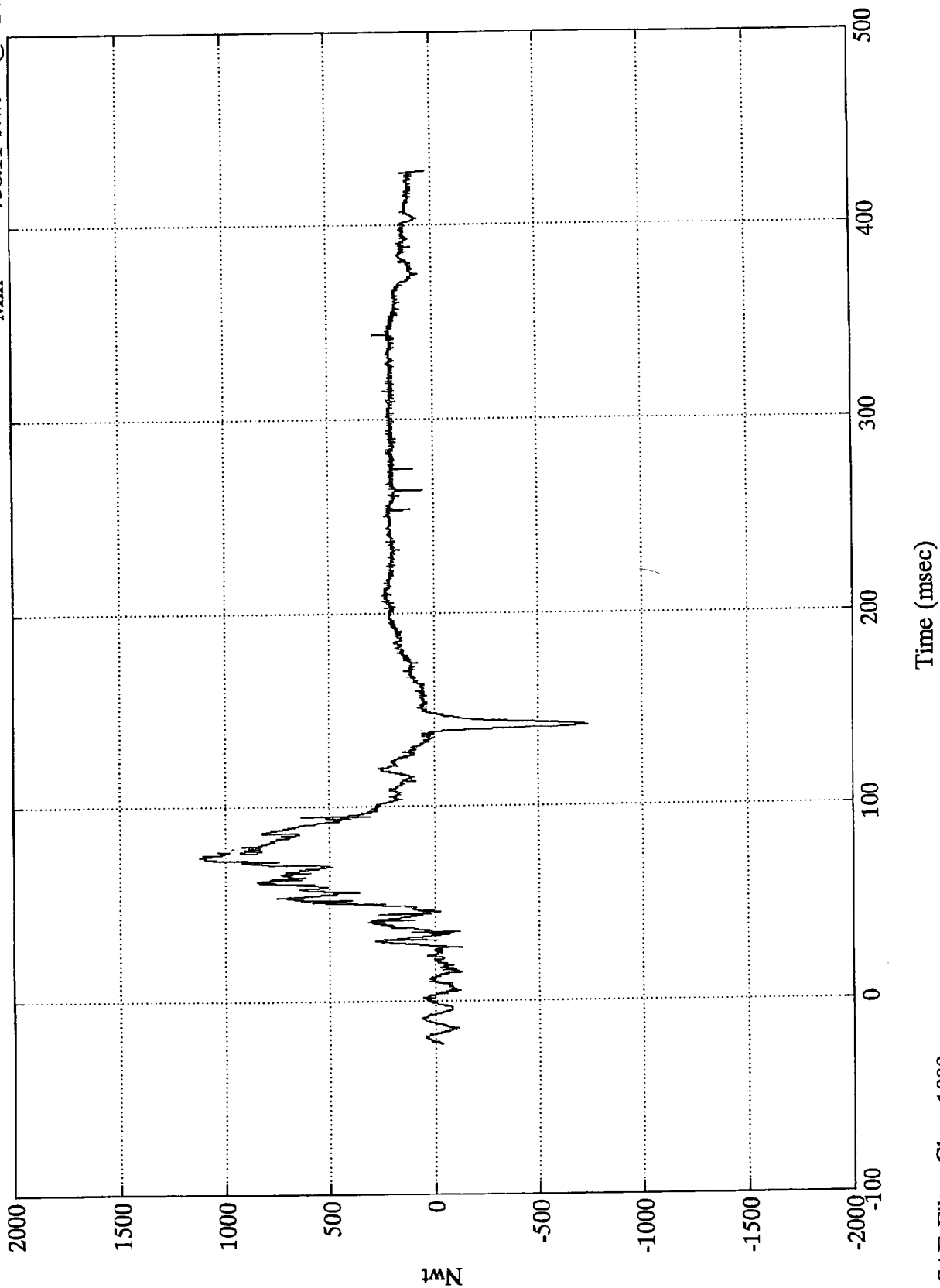


SAE Filter Class 1000

VTV TEST #5

P2 Upper Neck Fz

Max = 1117.14 Nwt @ 74.88 msec
Min = -738.11 Nwt @ 141.59 msec

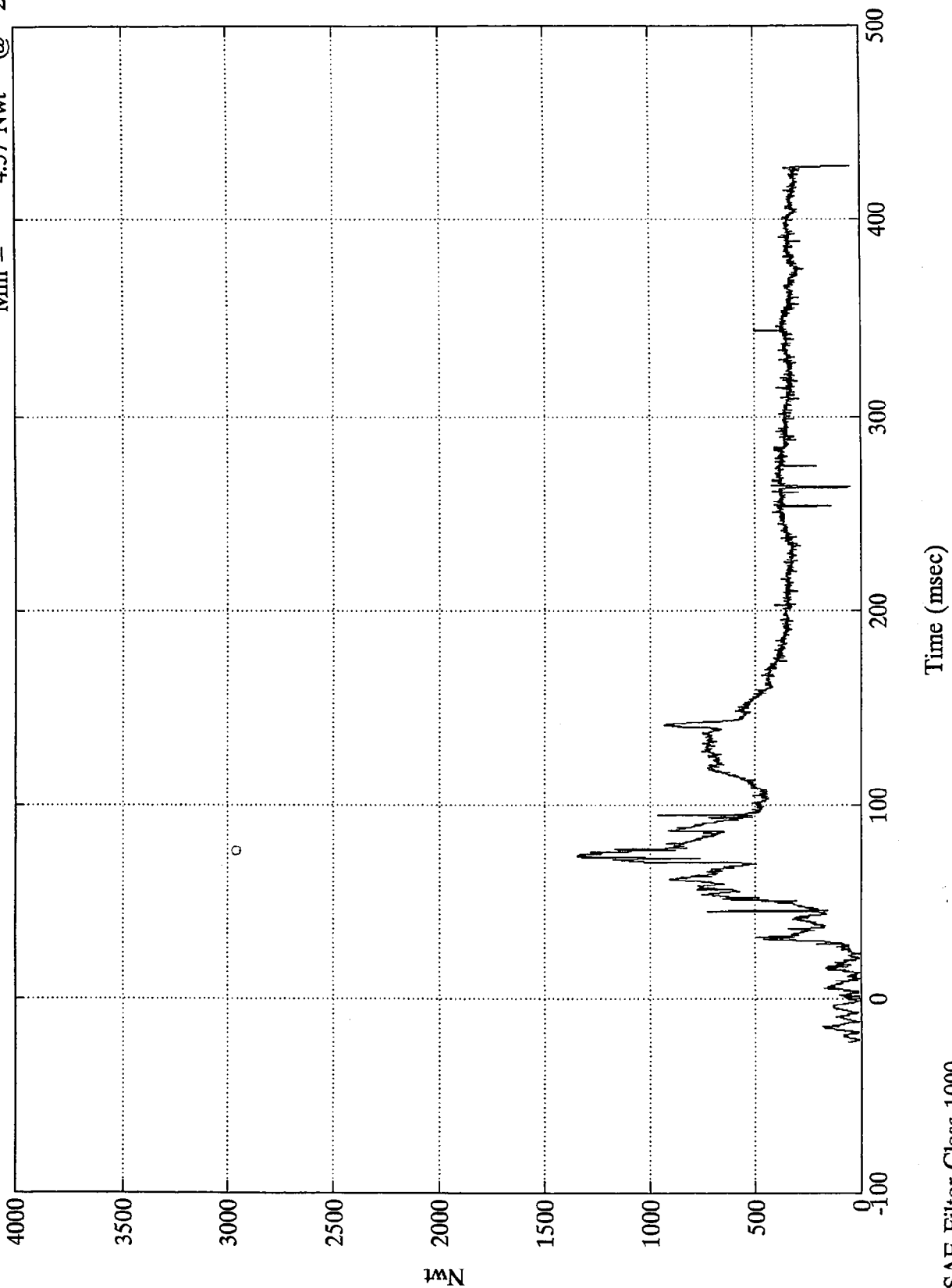


SAE Filter Class 1000

VTV TEST #5

P2 Upper Neck Force Res

Max = 1342.12 Nwt @ 73.68 msec
Min = 4.57 Nwt @ 23.28 msec

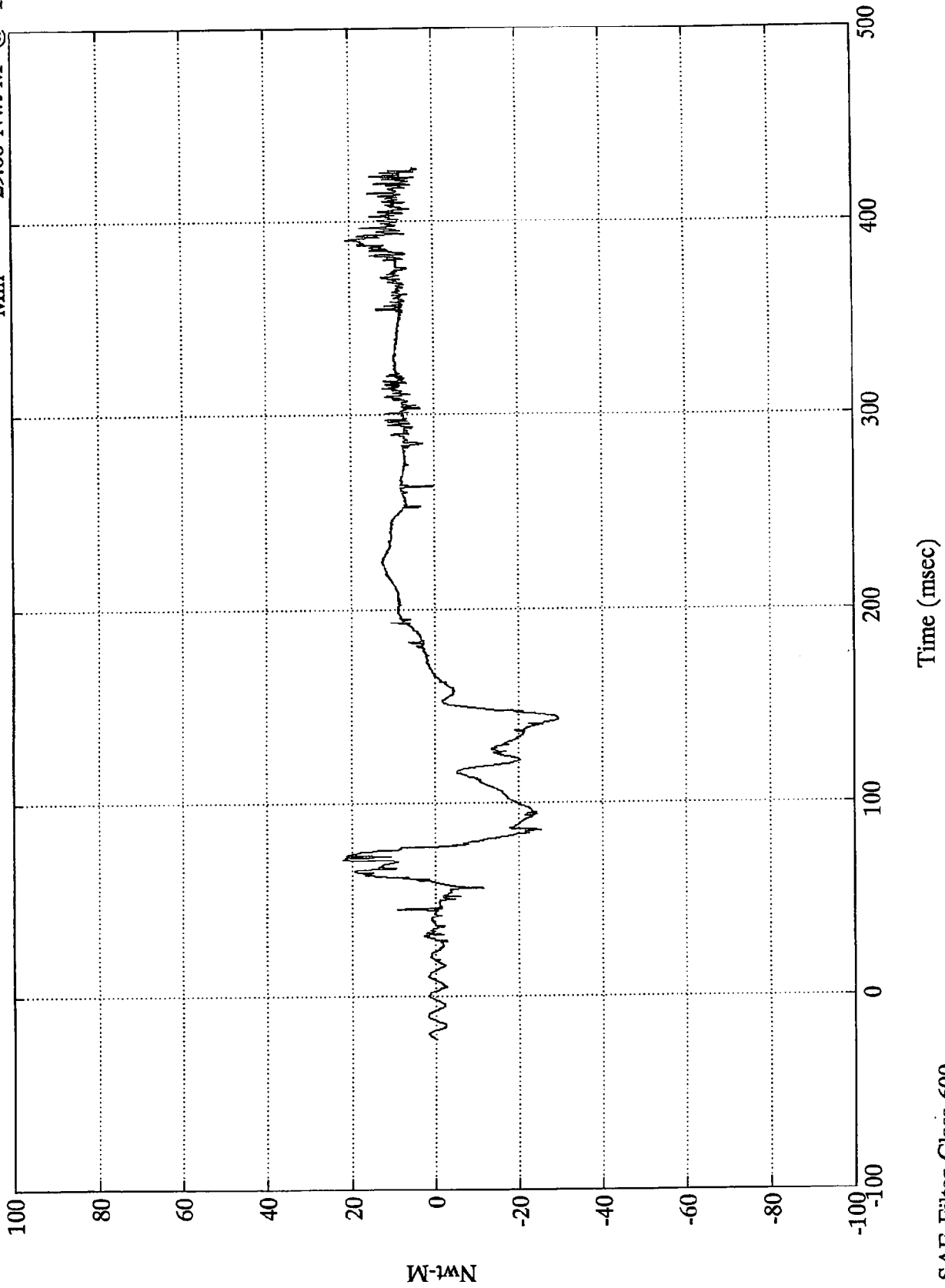


SAE Filter Class 1000

VTV TEST #5

P2 Upper Neck Mx

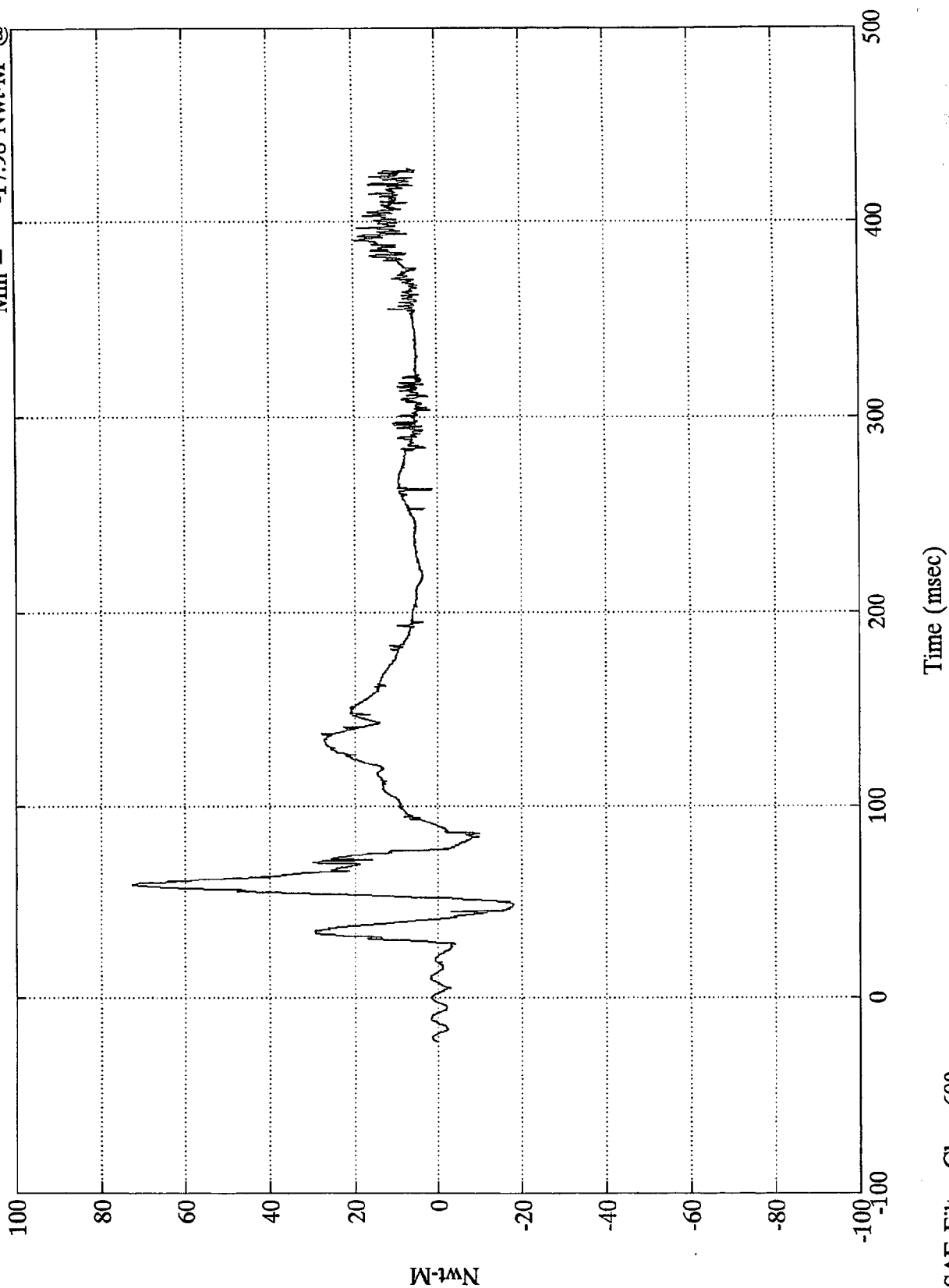
Max = 22.11 Nwt-M @ 70.92 msec
Min = -29.66 Nwt-M @ 143.27 msec



VTV TEST #5

Max = 72.47 Nwt-M @ 59.15 msec
Min = -17.98 Nwt-M @ 48.59 msec

P2 Upper Neck My

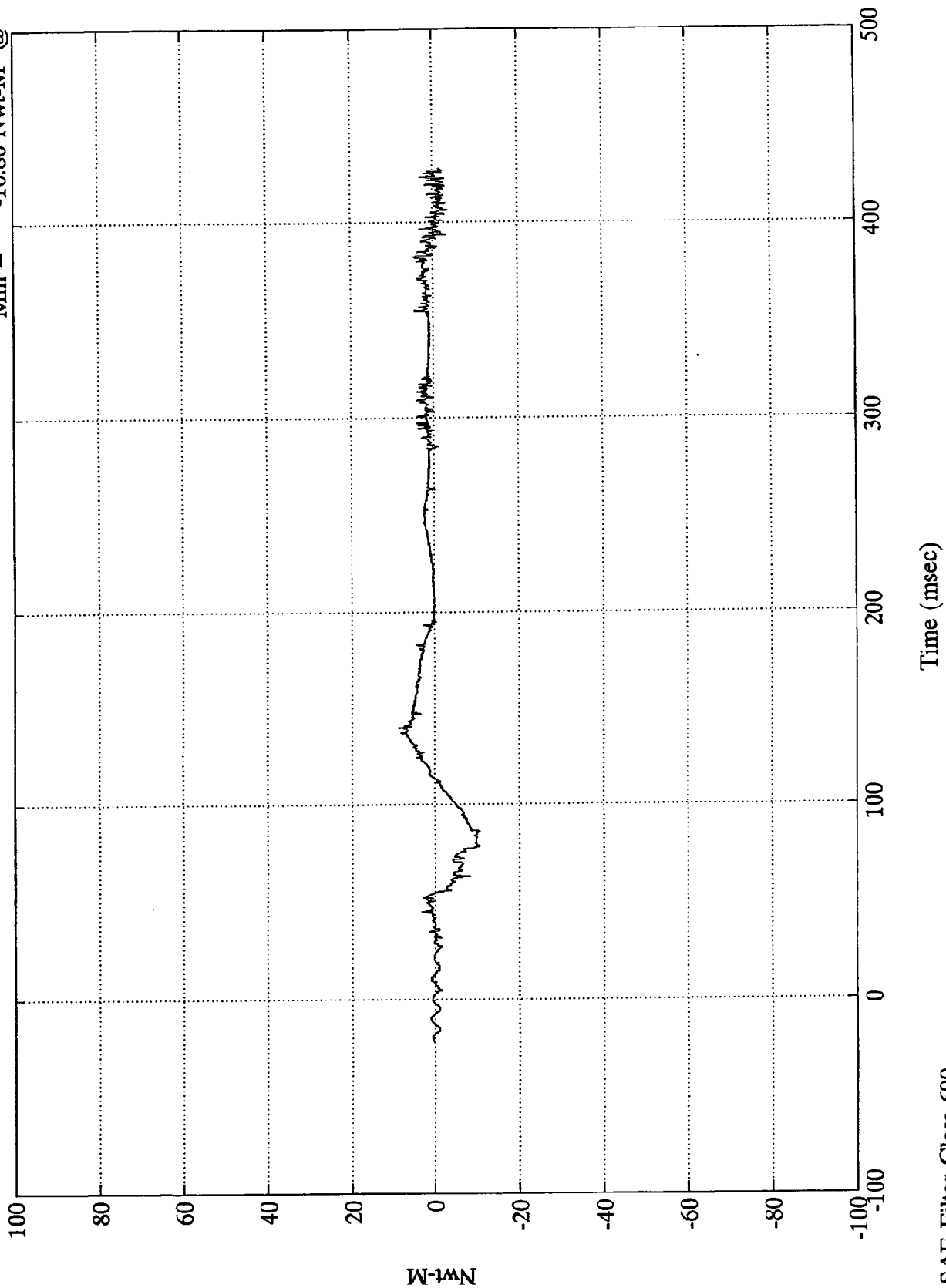


SAE Filter Class 600

VIV TEST #5

P2 Upper Neck Mz

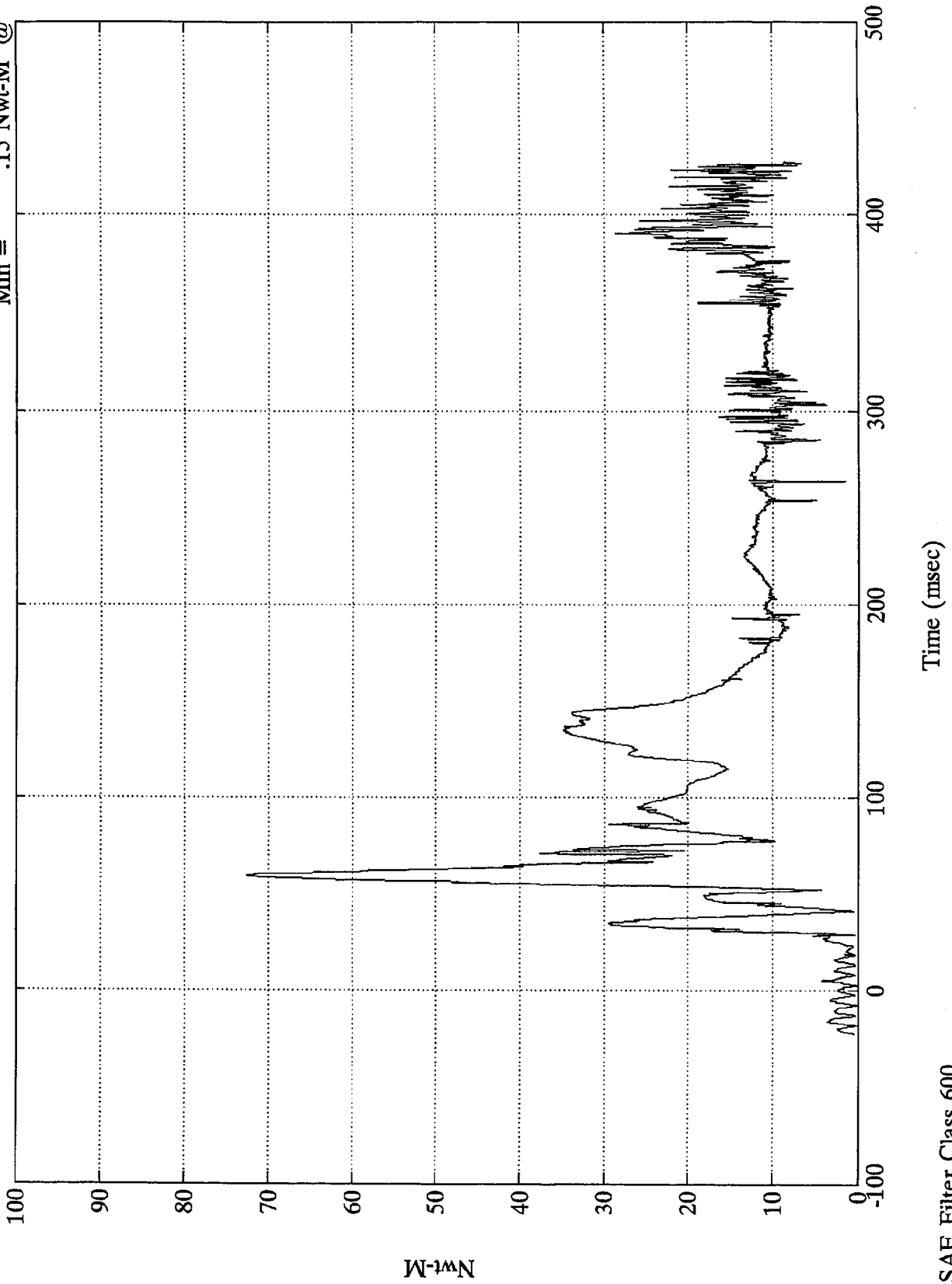
Max = 8.67 Nwt-M @ 139.92 msec
Min = -10.80 Nwt-M @ 78.72 msec



VTV TEST #5

P2 Upper Neck Moment Res

Max = 72.56 Nwt-M @ 59.15 msec
Min = .15 Nwt-M @ 2.63 msec

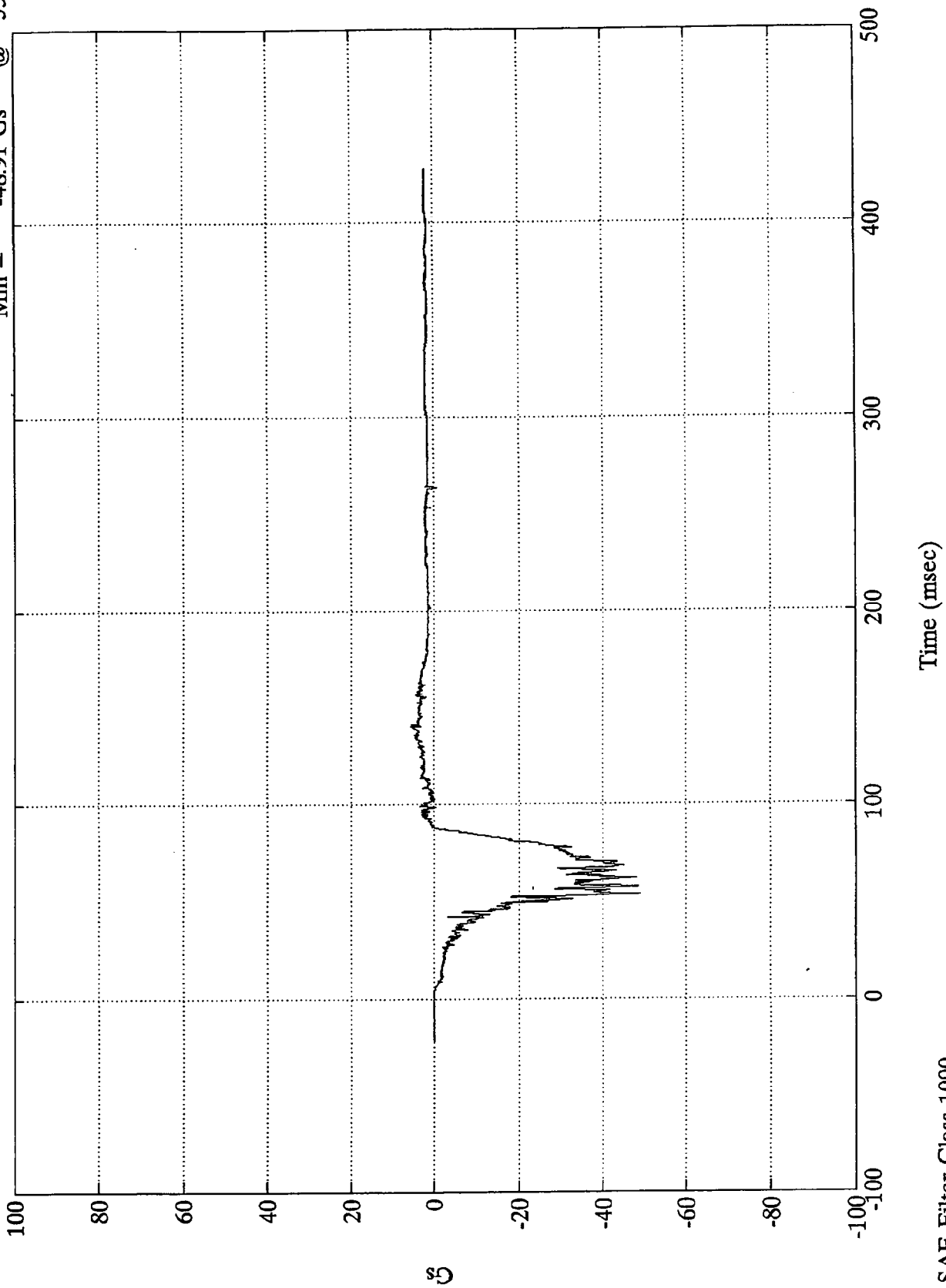


SAE Filter Class 600

VTV TEST #5

P2 Pelvic X

Max = 5.53 Gs @ 140.28 msec
Min = -48.91 Gs @ 53.75 msec

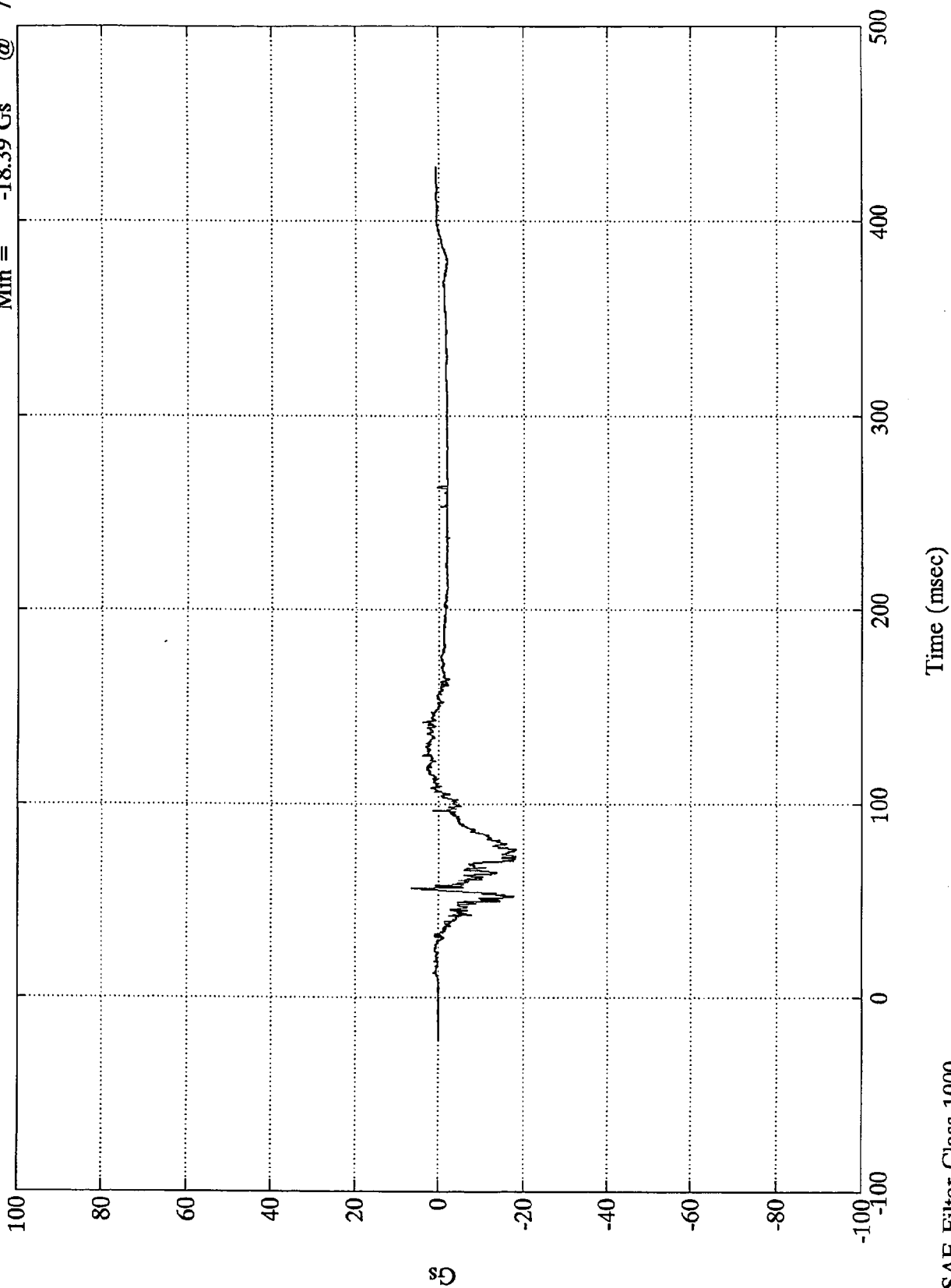


SAE Filter Class 1000

VTV TEST #5

Max = 6.59 Gs @ 56.40 msec
Min = -18.39 Gs @ 77.27 msec

P2 Pelvic Y

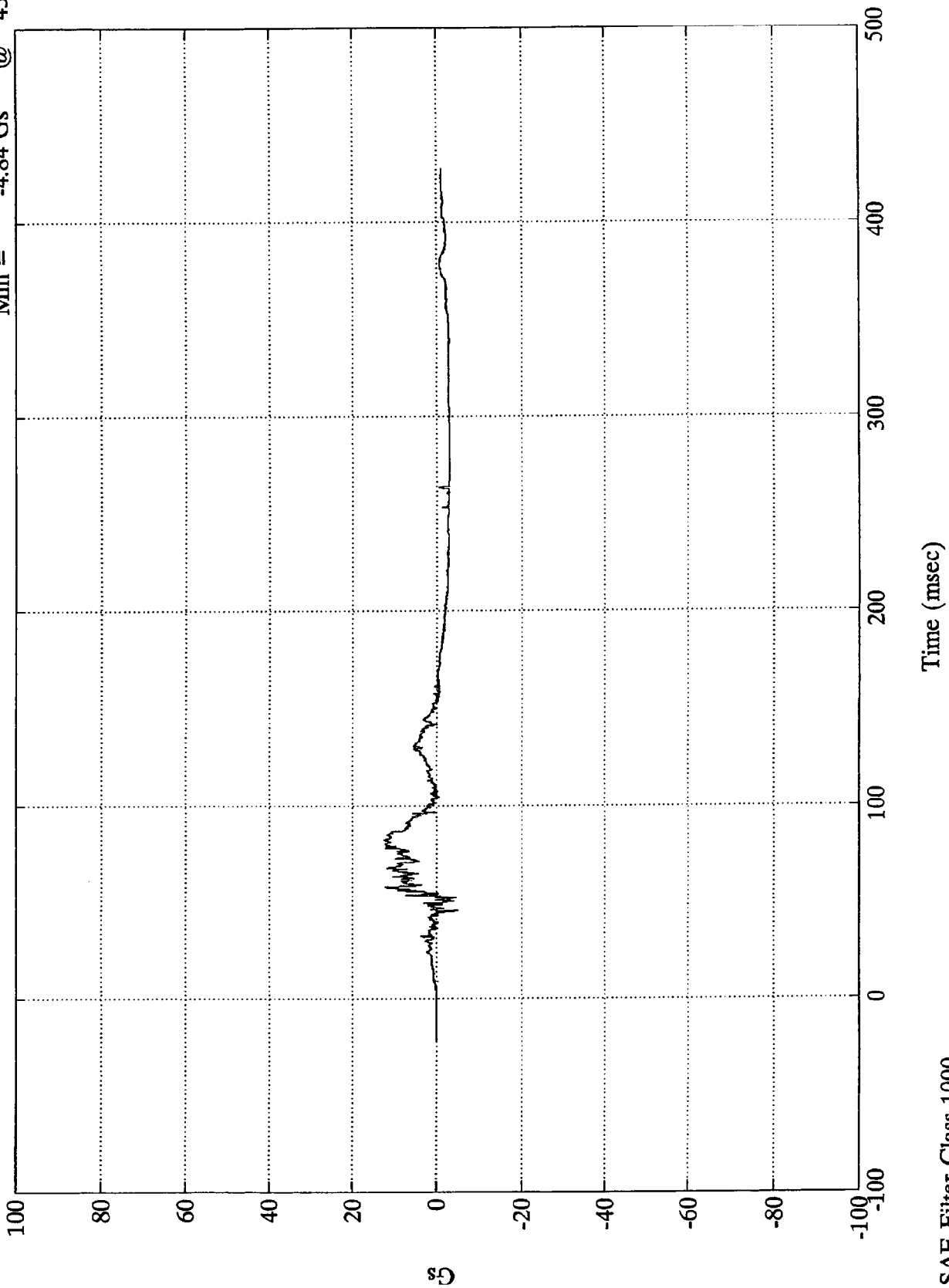


SAE Filter Class 1000

VTV TEST #5

P2 Pelvic Z

Max = 12.60 Gs @ 82.20 msec
Min = -4.84 Gs @ 45.12 msec

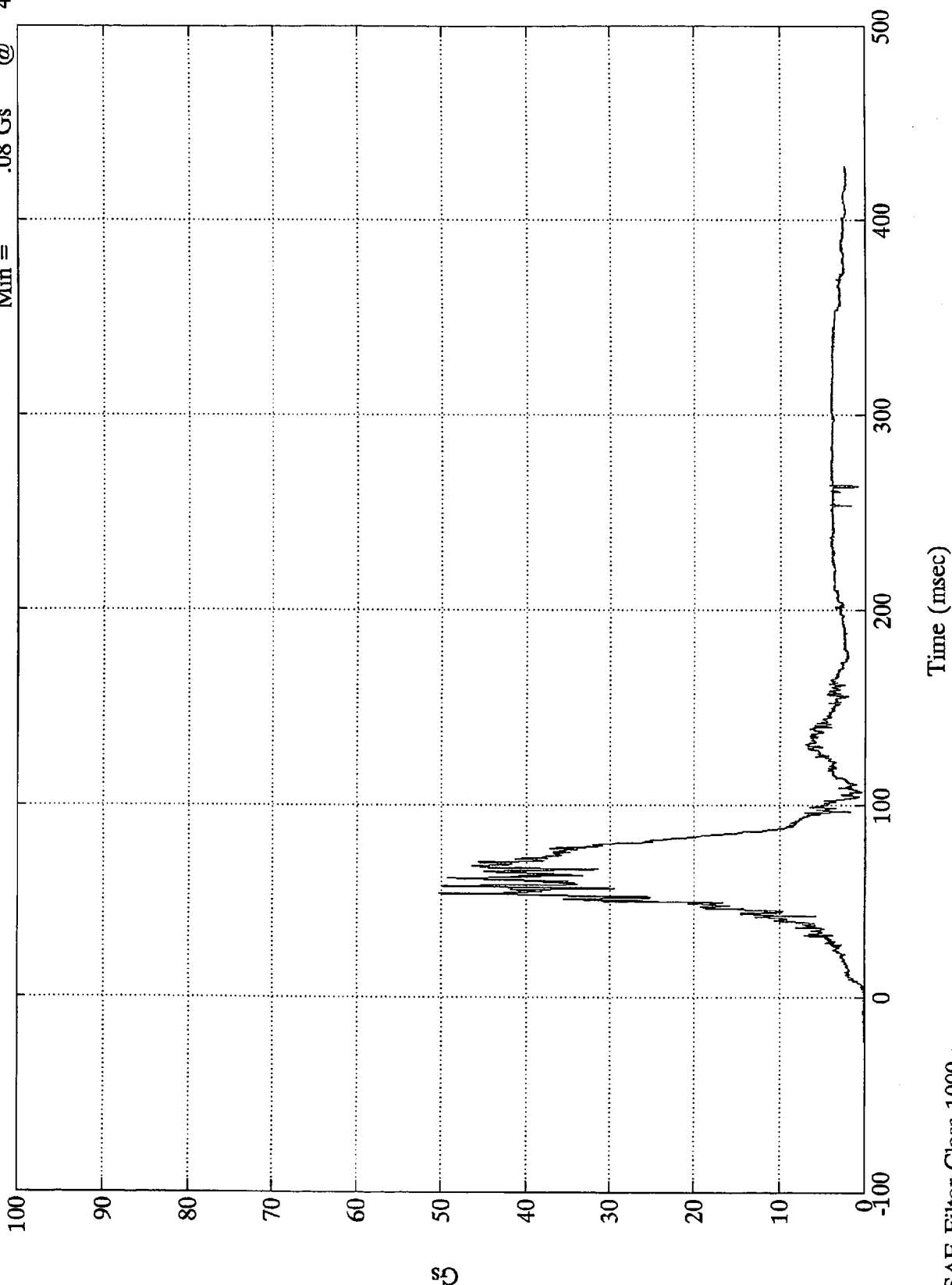


SAE Filter Class 1000

VTV TEST #5

Max = 50.38 Gs @ 53.75 msec
 Min = .08 Gs @ 4.31 msec

P2 Pelvic Res

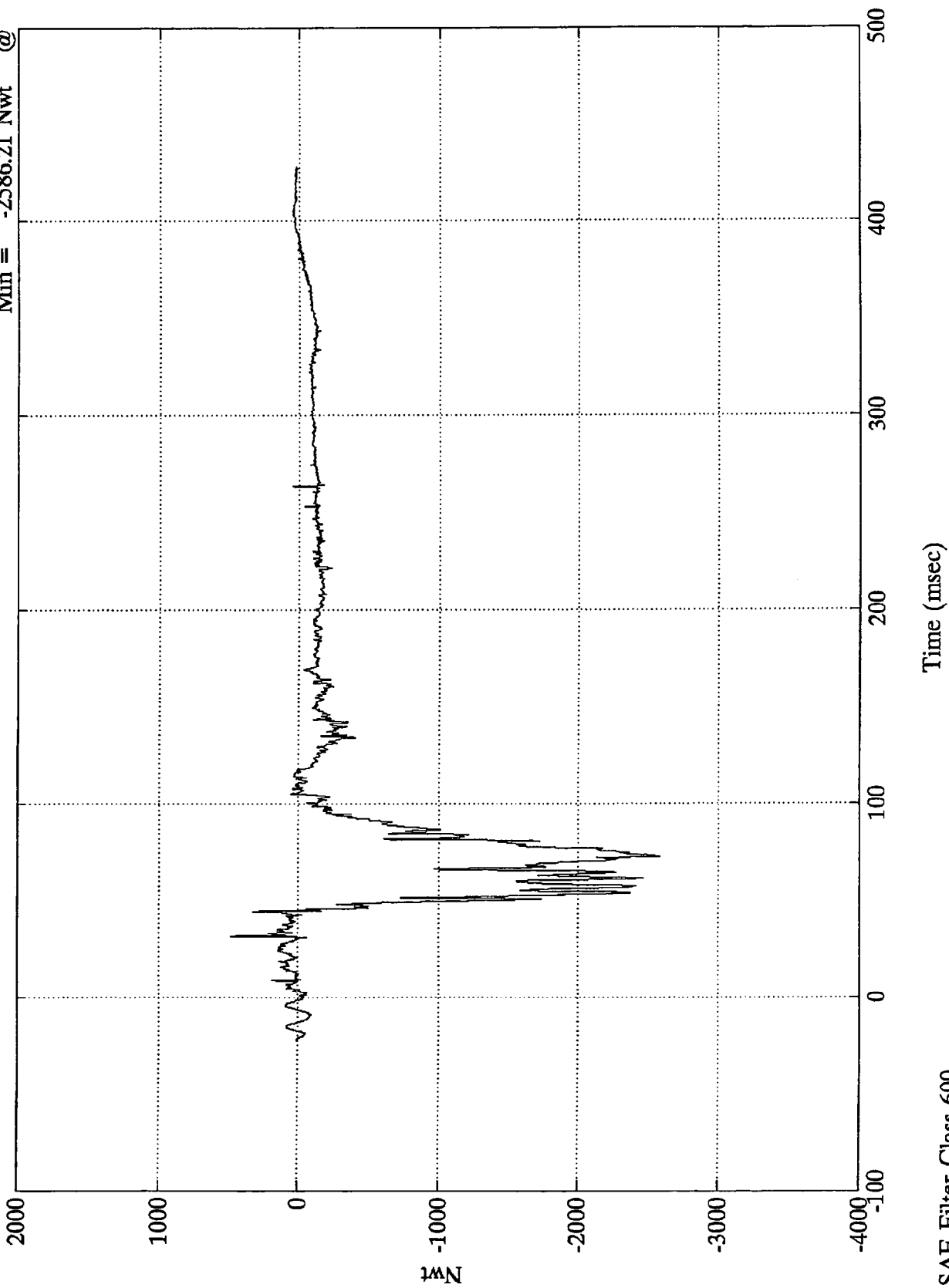


SAE Filter Class 1000

VTV TEST #5

P2 Left Femur

Max = 485.06 Nwt @ 31.80 msec
Min = -2586.21 Nwt @ 72.96 msec

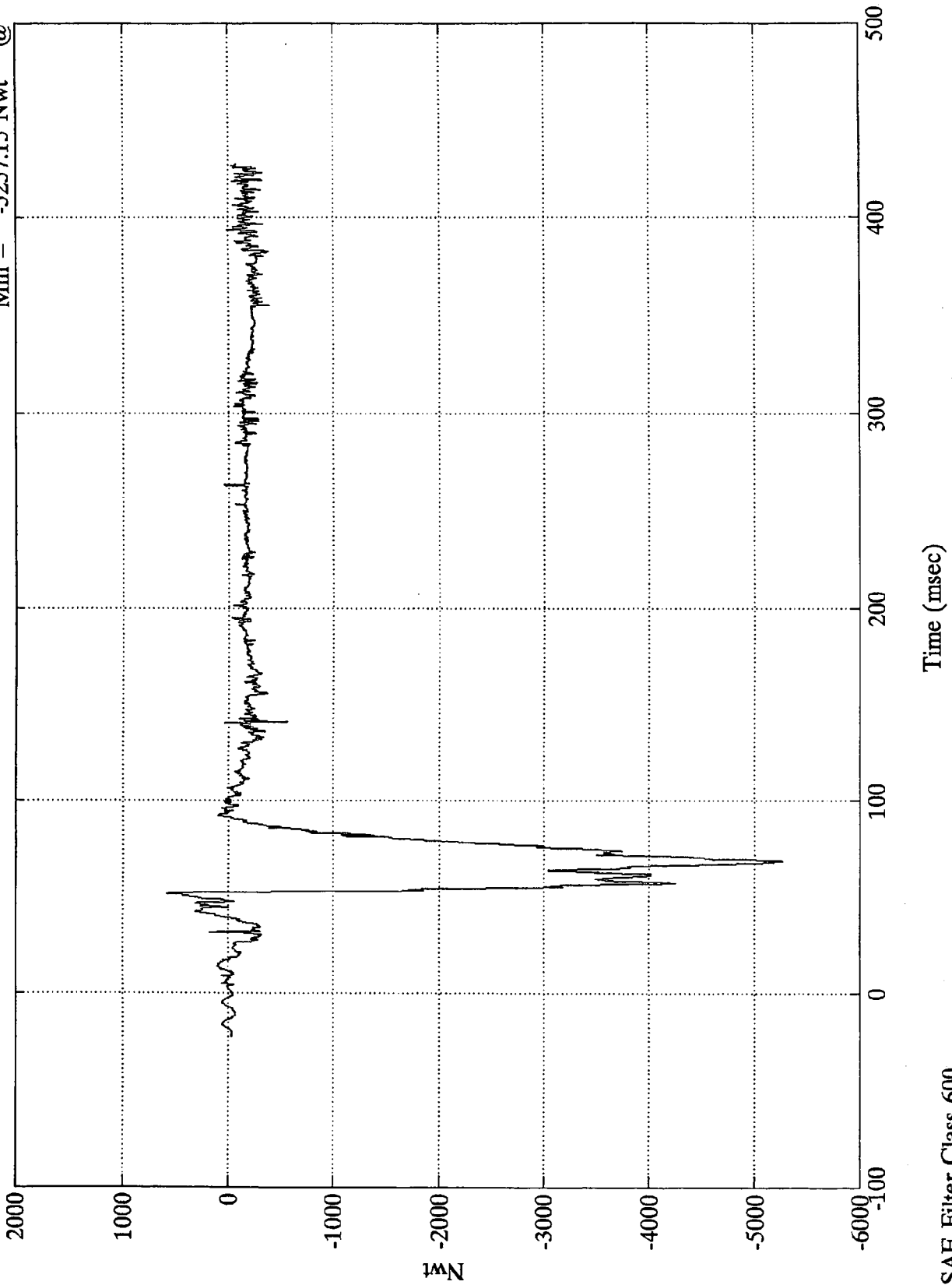


SAE Filter Class 600

VTV TEST #5

P2 Right Femur

Max = 585.21 Nwt @ 51.72 msec
Min = -5257.15 Nwt @ 69.12 msec

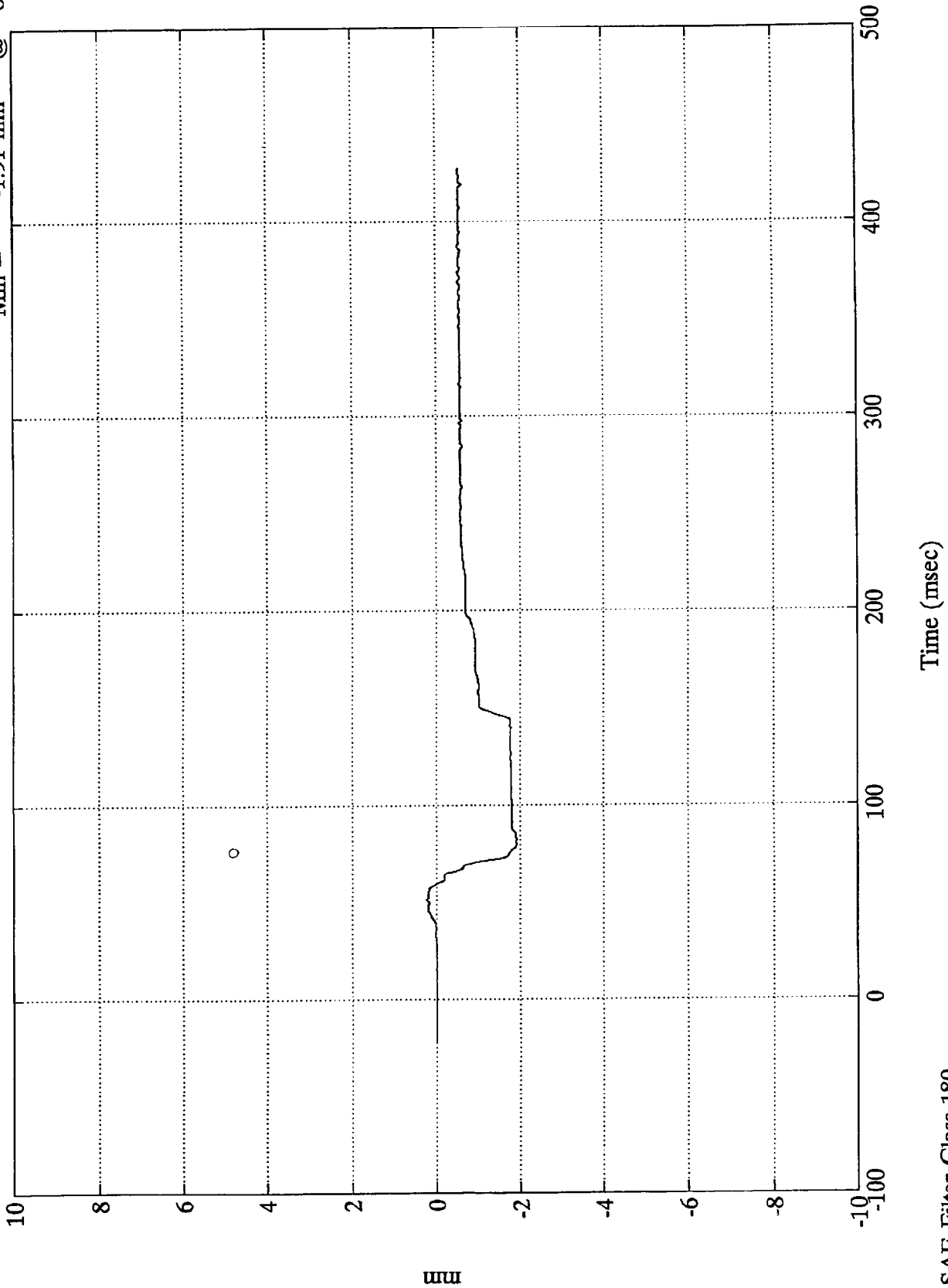


SAE Filter Class 600

VTV TEST #5

P2 Left Knee Shear

Max = .24 mm @ 50.88 msec
Min = -1.91 mm @ 80.04 msec

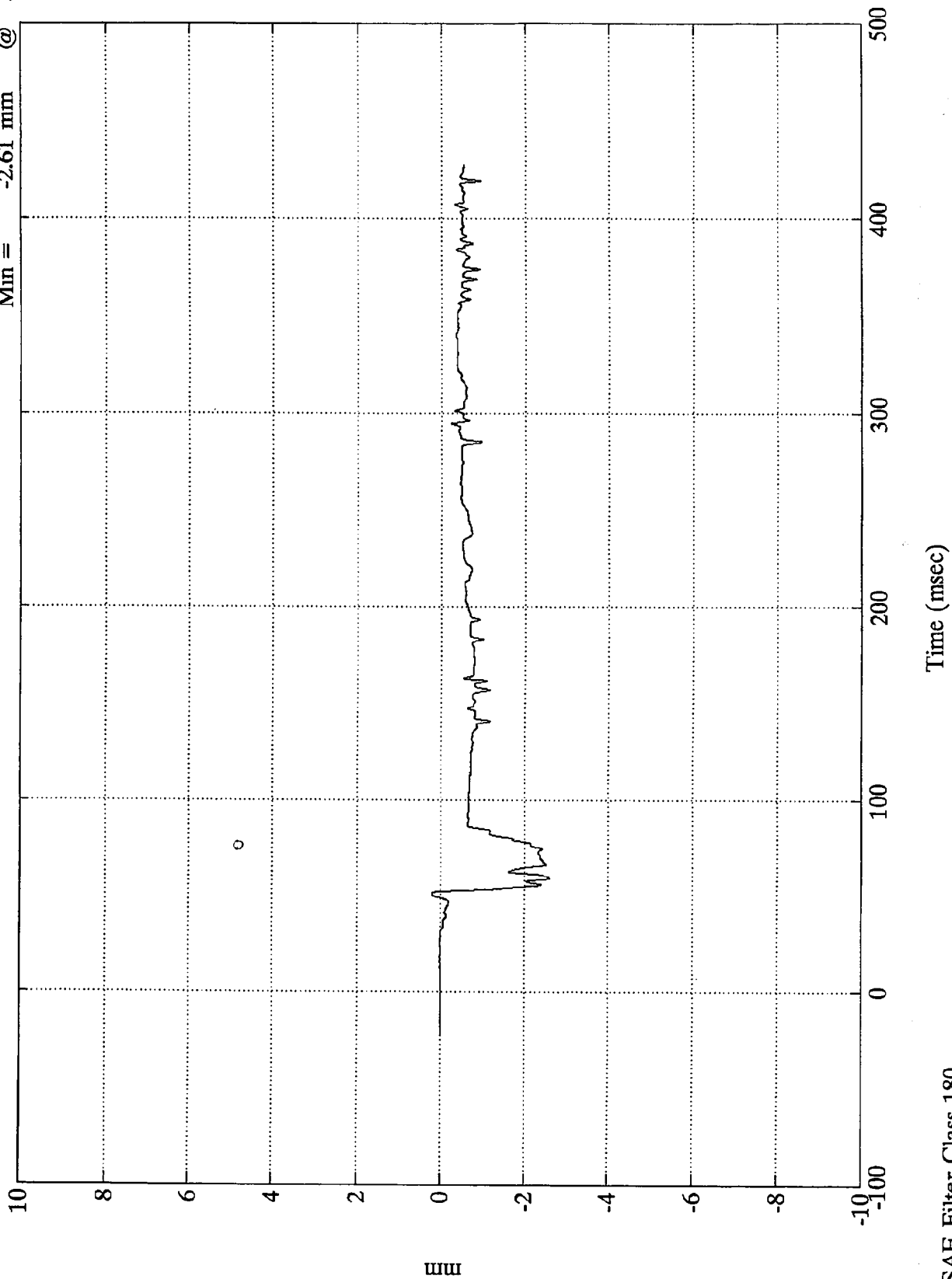


SAE Filter Class 180

VTV TEST #5

P2 Right Knee Shear

Max = .21 mm @ 51.36 msec
Min = -2.61 mm @ 59.15 msec

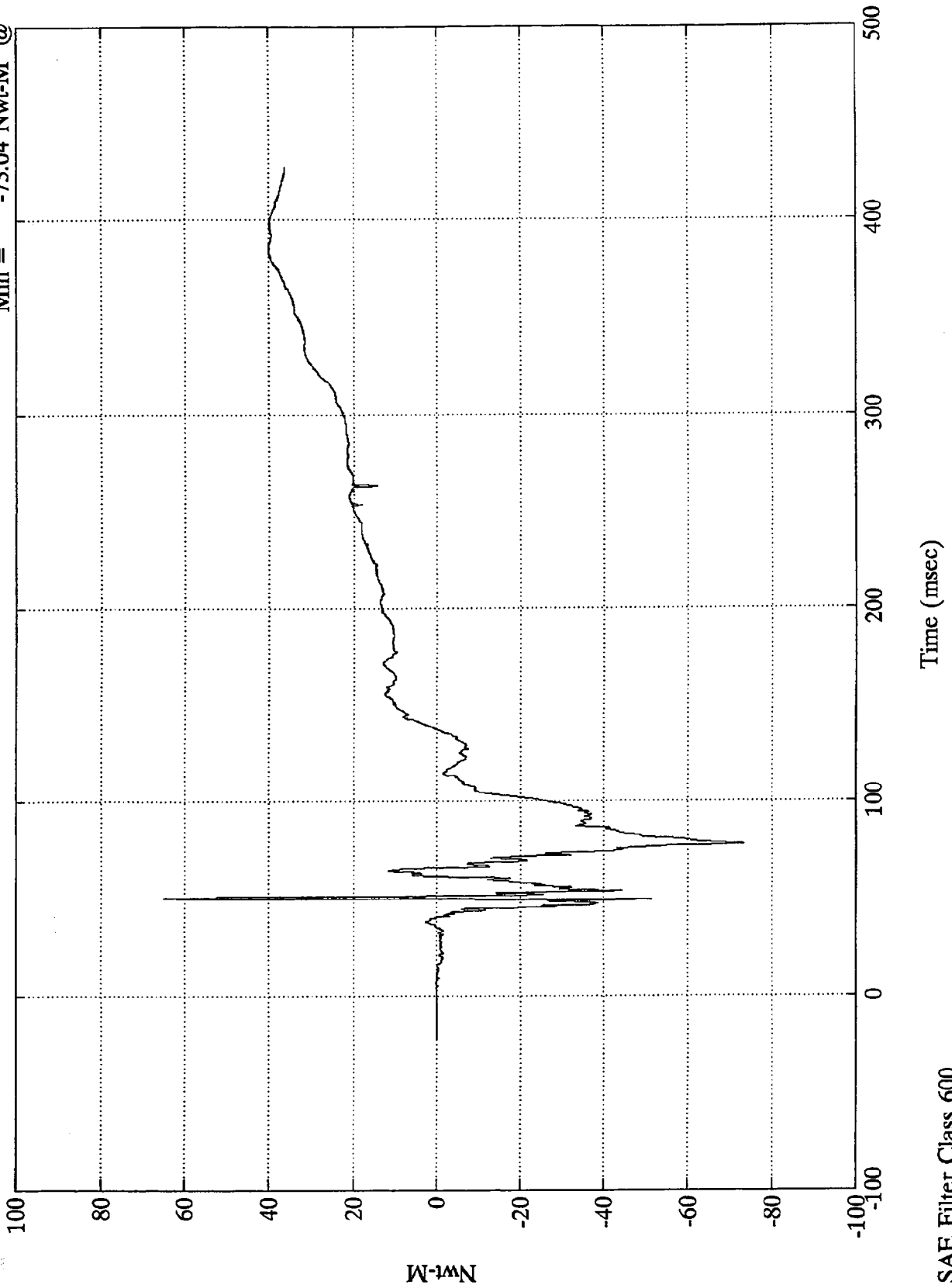


SAE Filter Class 180

VTV TEST #5

P2 Lt Upper Tibia Mx

Max = 65.00 Nwt-M @ 50.52 msec
Min = -73.04 Nwt-M @ 78.00 msec

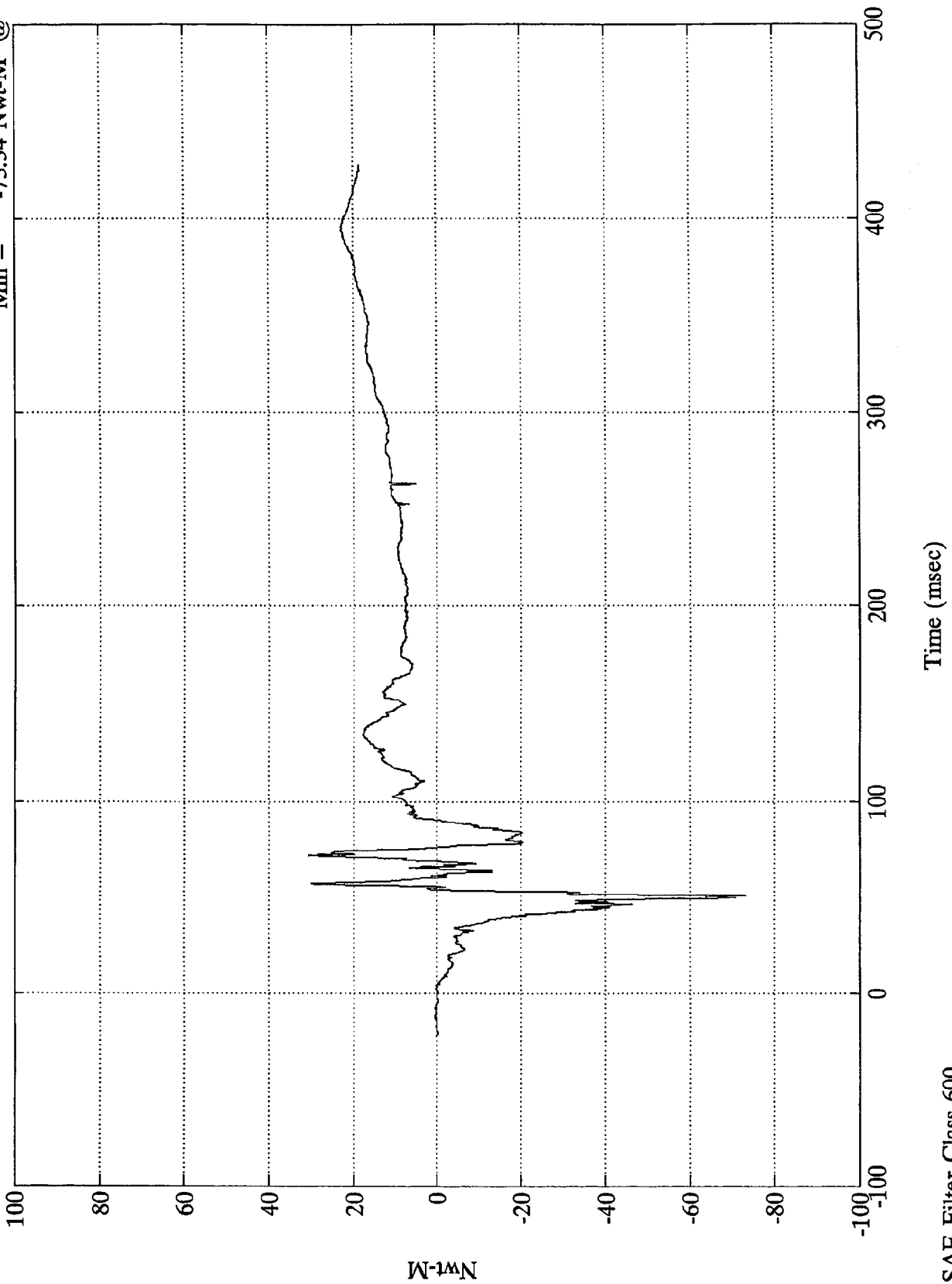


SAE Filter Class 600

VTV TEST #5

P2 Lt Upper Tibia My

Max = 30.70 Nwt-M @ 72.00 msec
Min = -73.34 Nwt-M @ 50.76 msec

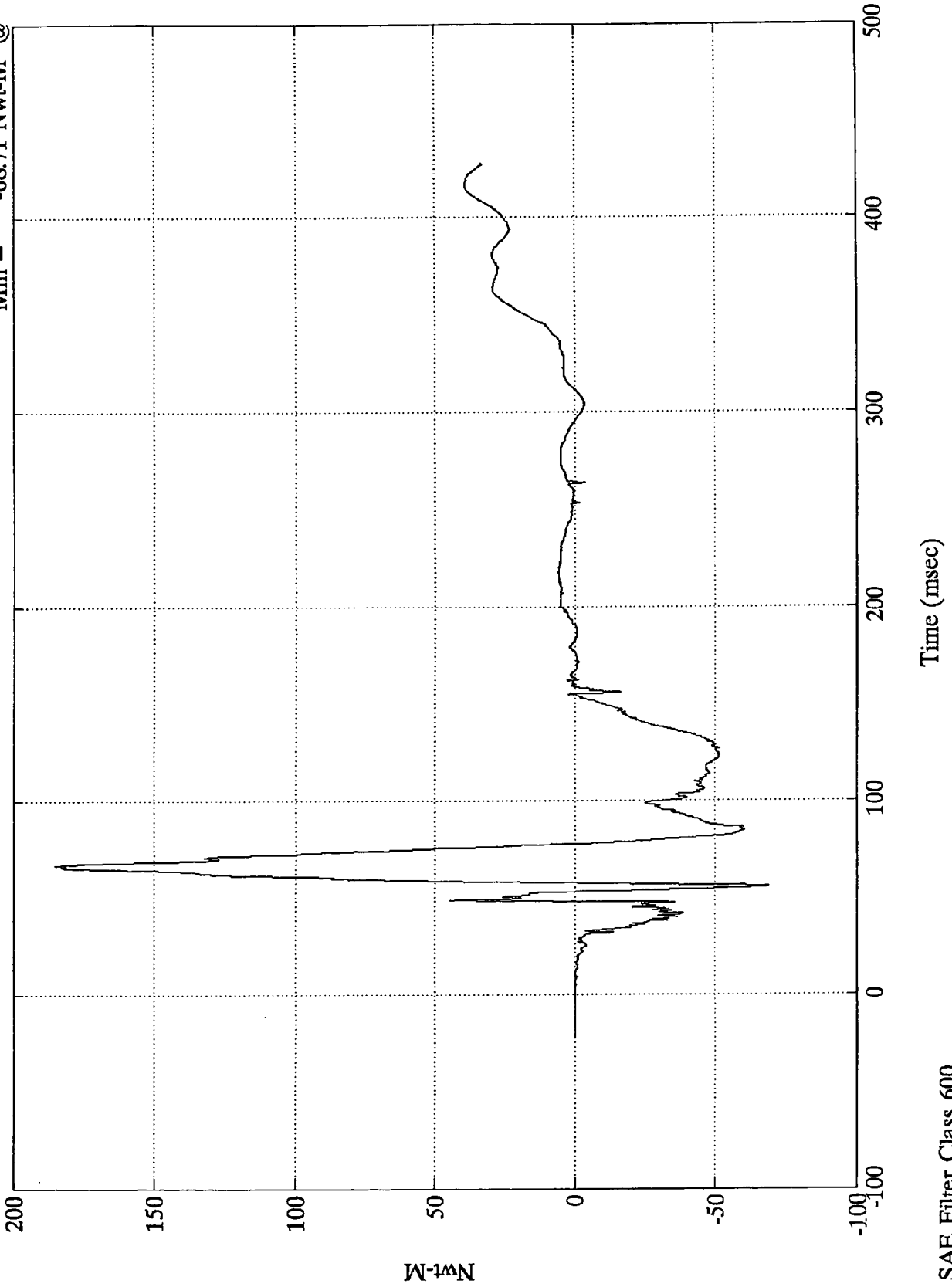


SAE Filter Class 600

VTV TEST #5

P2 Rt Upper Tibia Mx

Max = 185.15 Nwt-M @ 67.20 msec
Min = -68.71 Nwt-M @ 55.80 msec

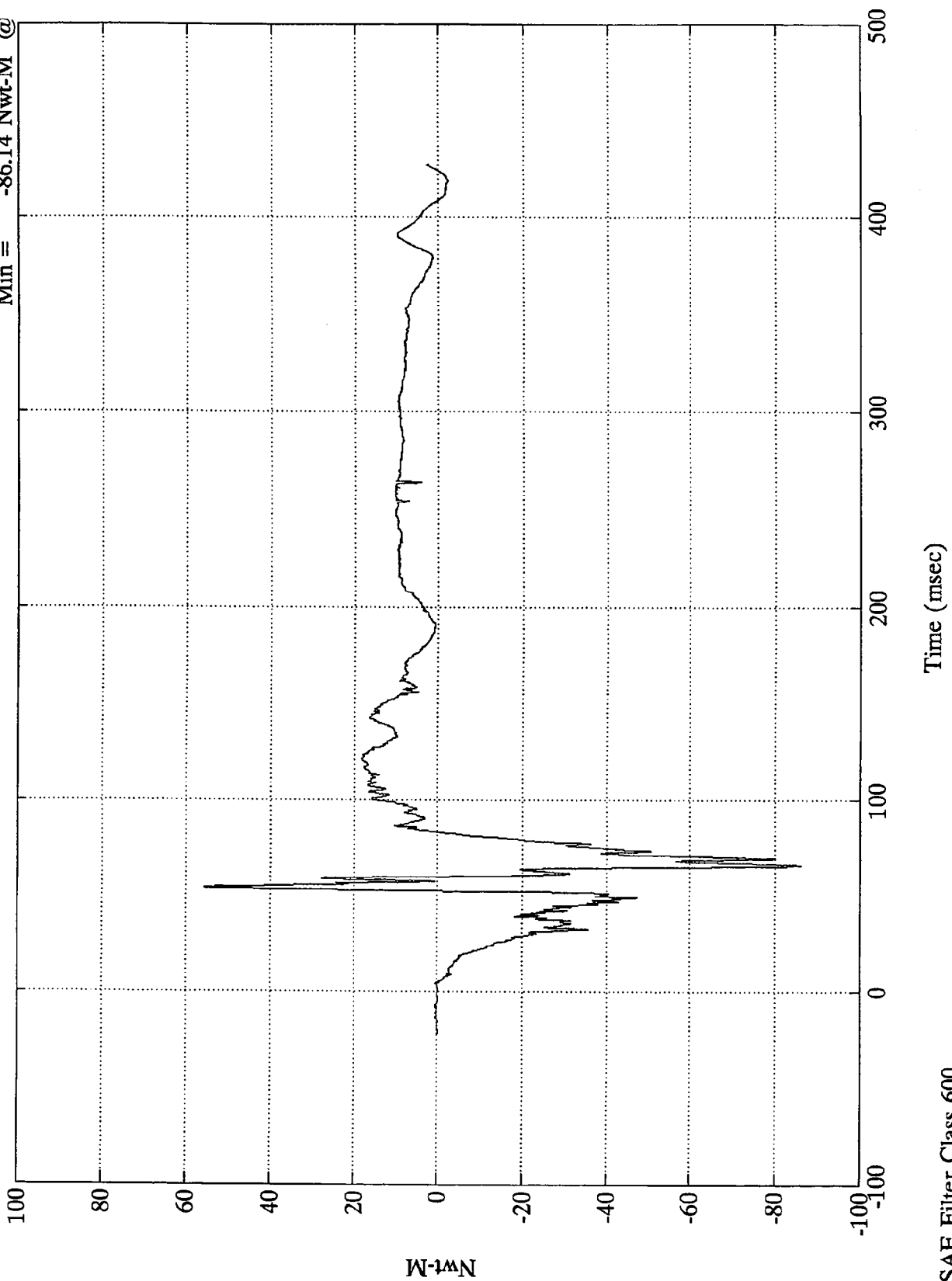


SAE Filter Class 600

VTV TEST #5

P2 Rt Upper Tibia My

Max = 55.68 Nwt-M @ 54.36 msec
Min = -86.14 Nwt-M @ 66.72 msec

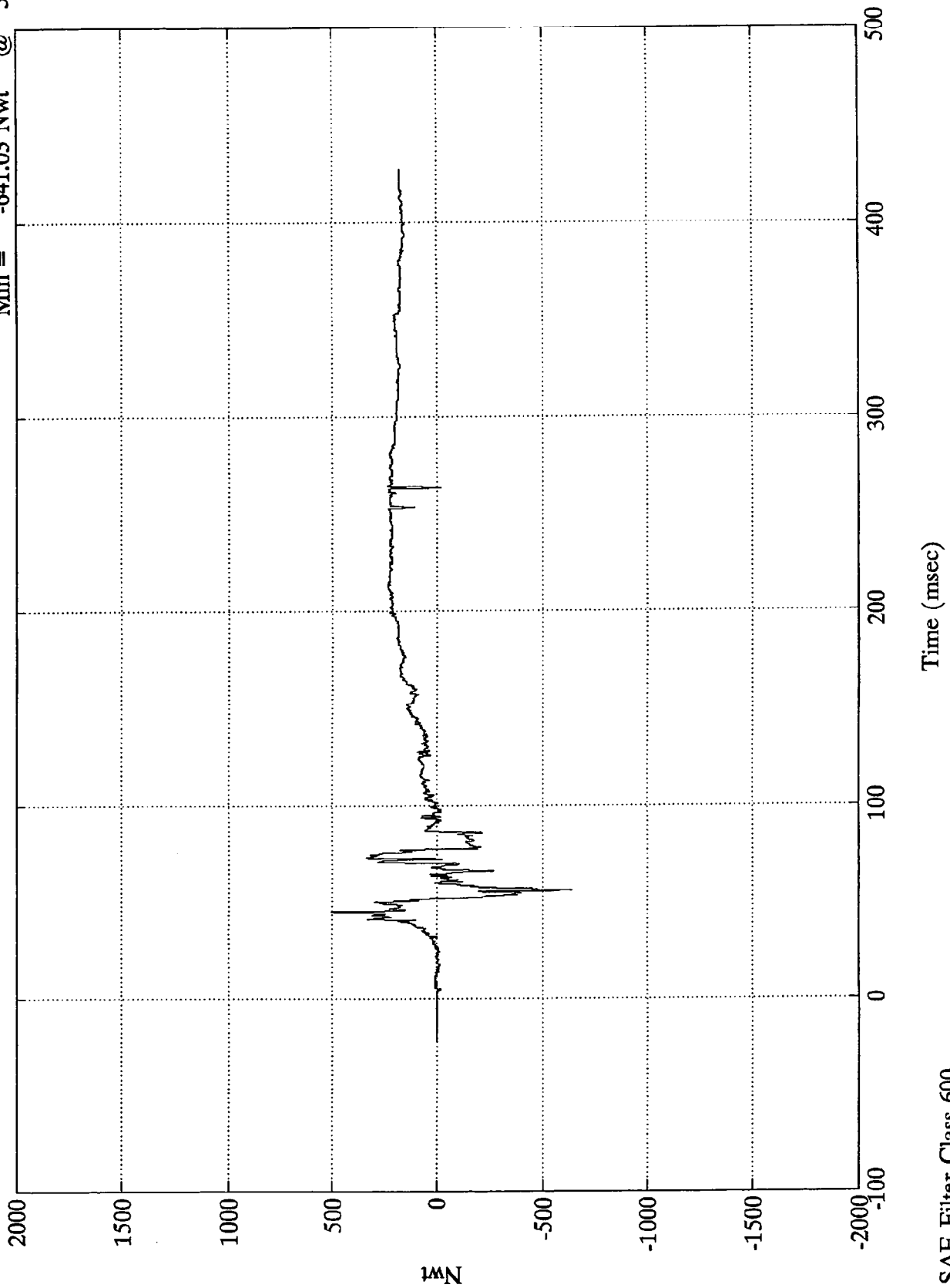


SAE Filter Class 600

VTV TEST #5

P2 Lt Lower Tibia Fx

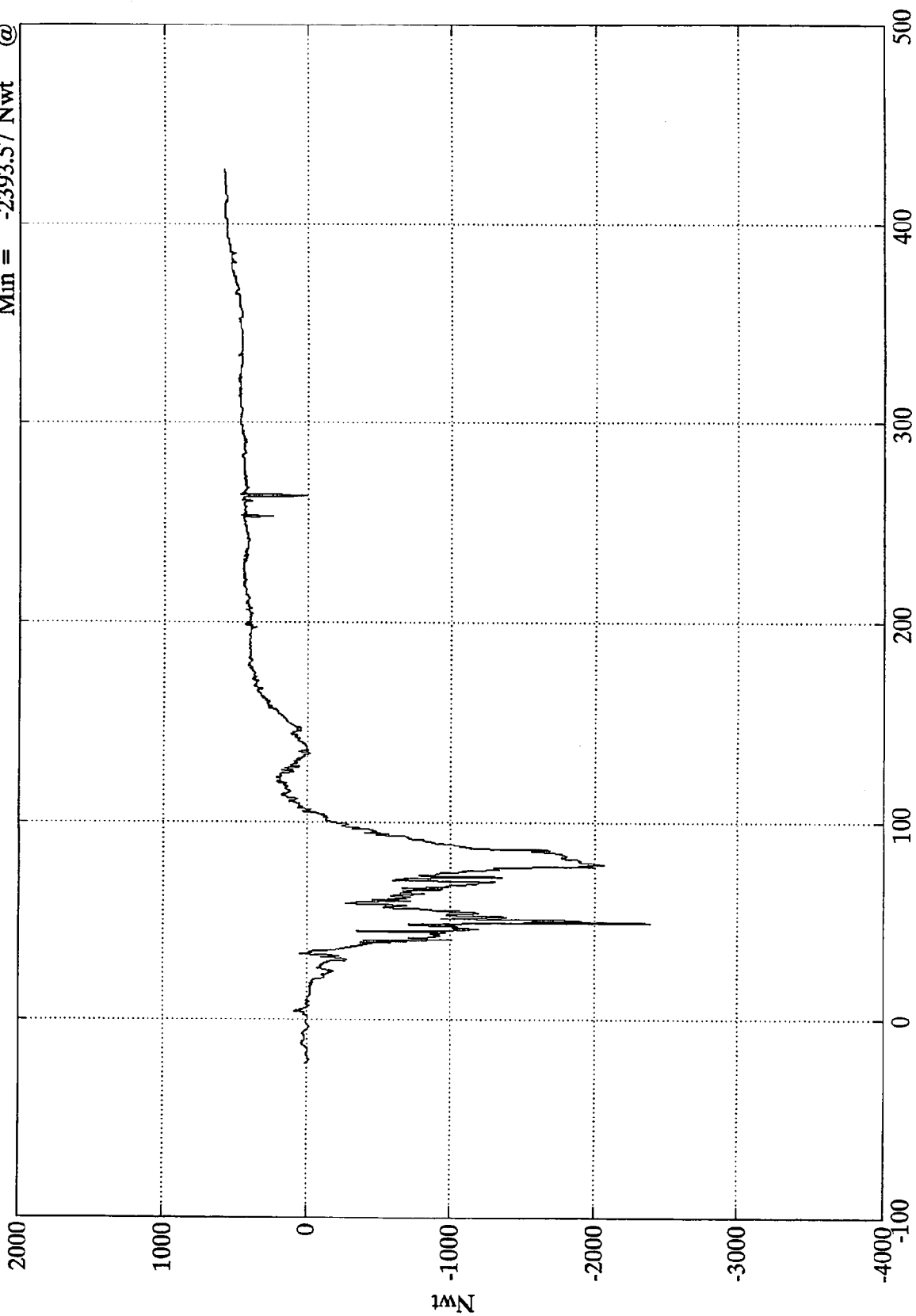
Max = 506.80 Nwt @ 45.12 msec
Min = -641.03 Nwt @ 56.40 msec



VTV TEST #5

P2 Lt Lower Tibia Fz

Max = 593.90 Nwt @ 426.48 msec
Min = -2393.57 Nwt @ 49.31 msec



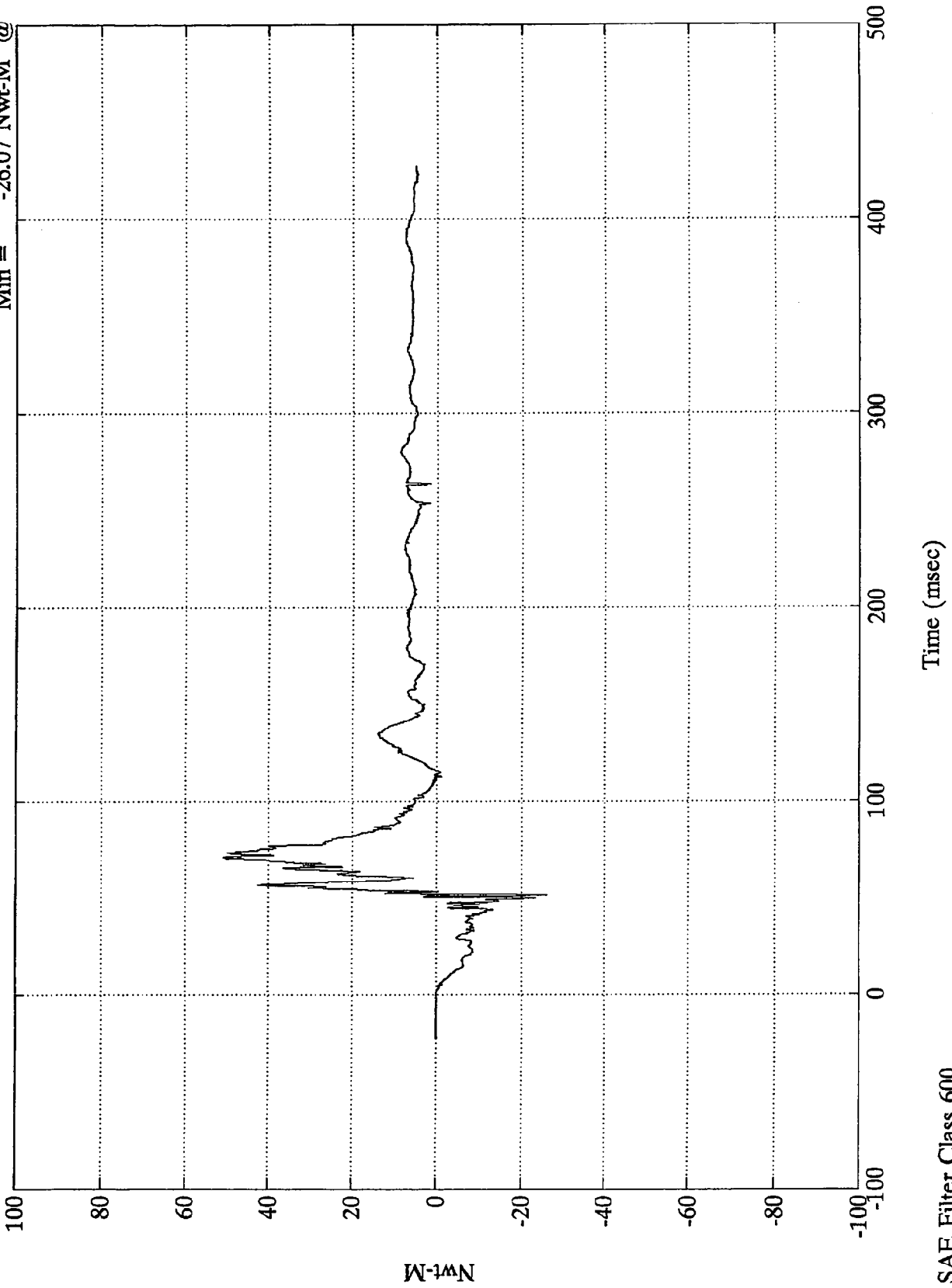
Time (msec)

SAE Filter Class 600

VTV TEST #5

P2 Lt Lower Tibia My

Max = 50.93 Nwt-M @ 71.52 msec
Min = -26.07 Nwt-M @ 51.48 msec

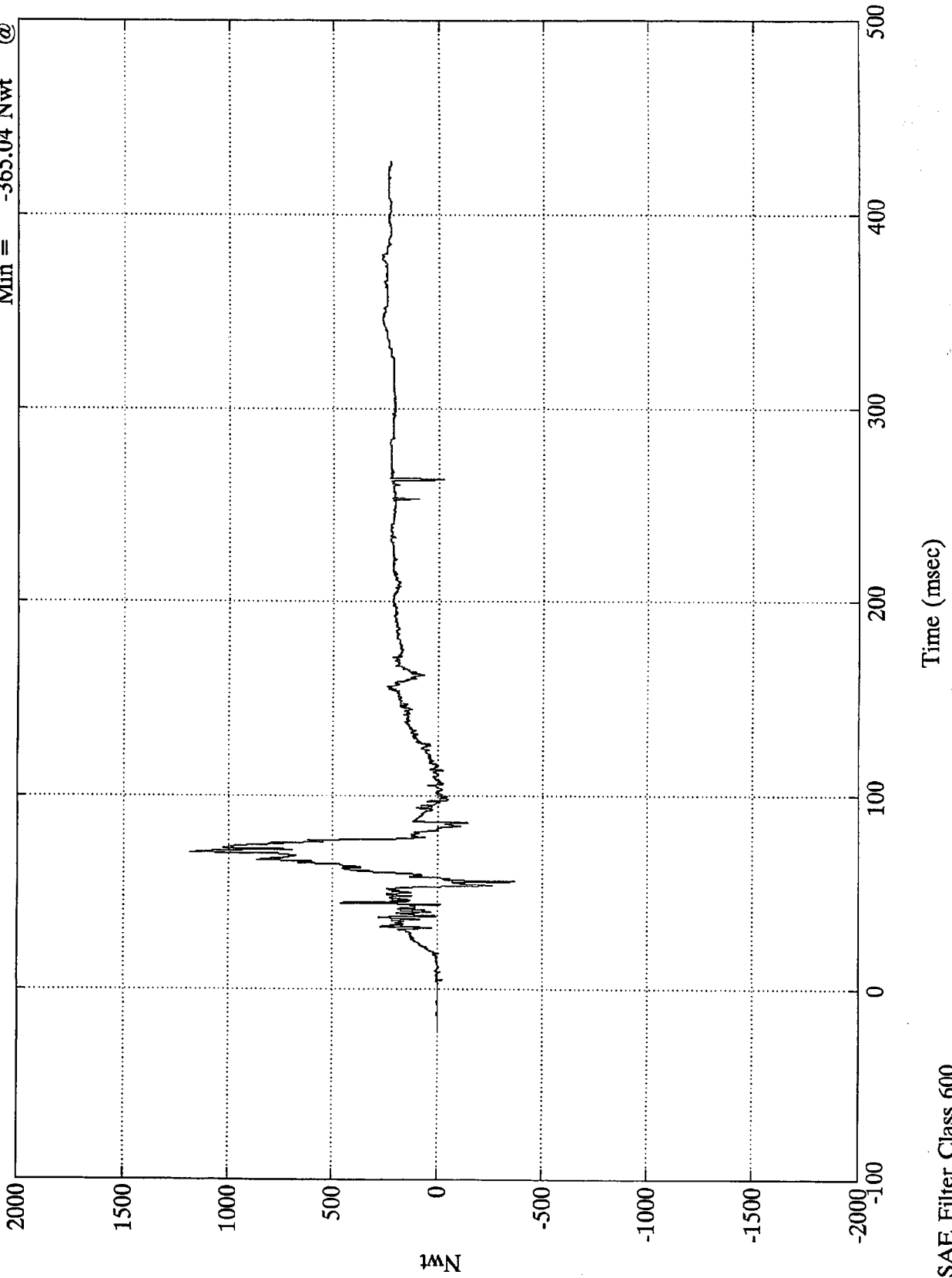


SAE Filter Class 600

VTV TEST #5

P2 Rt Lower Tibia Fx

Max = 1187.80 Nwt @ 71.04 msec
Min = -365.04 Nwt @ 56.28 msec

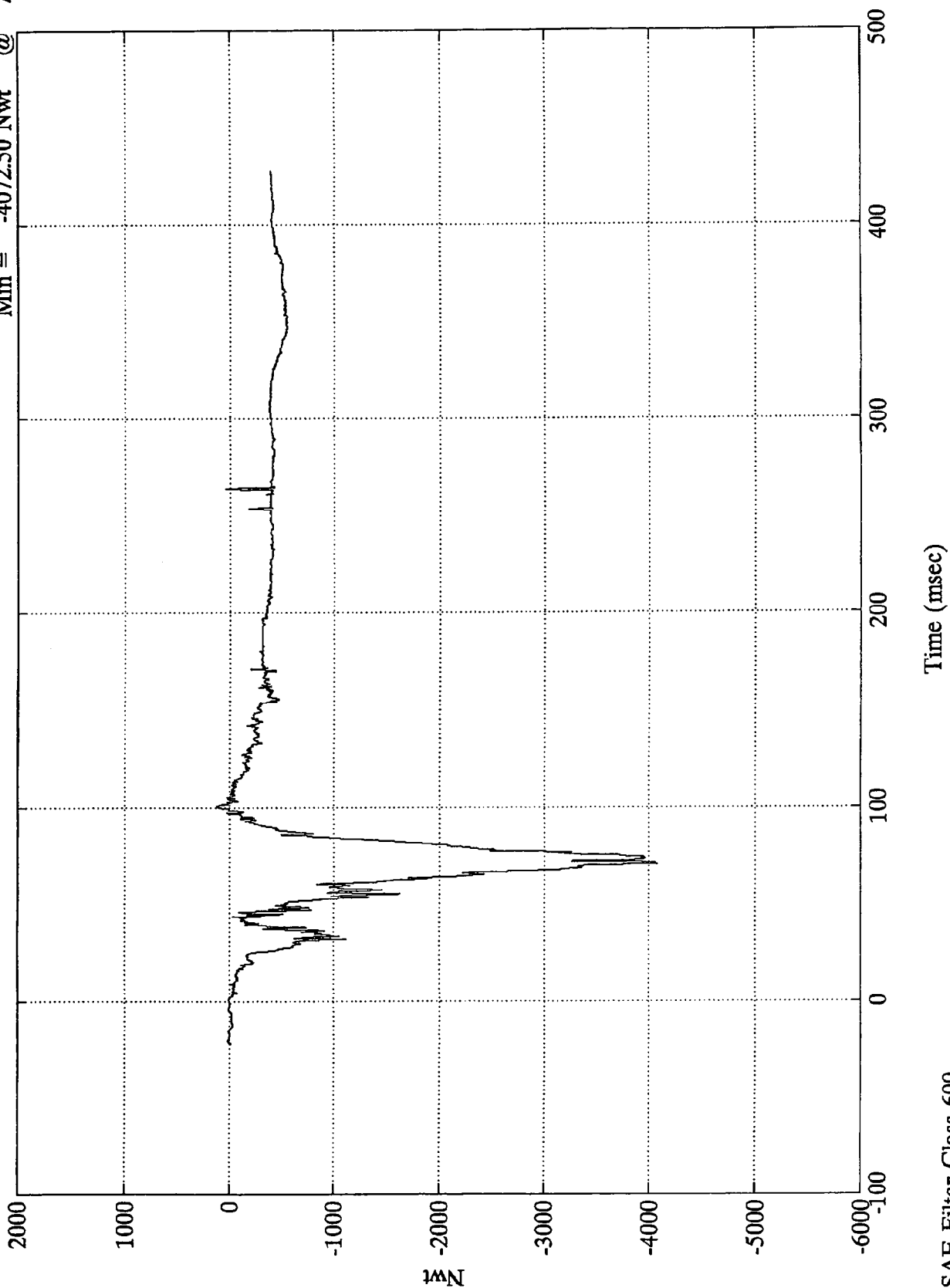


SAE Filter Class 600

VTV TEST #5

P2 Rt Lower Tibia Fz

Max = 123.63 Nwt @ 101.16 msec
Min = -4072.50 Nwt @ 71.16 msec

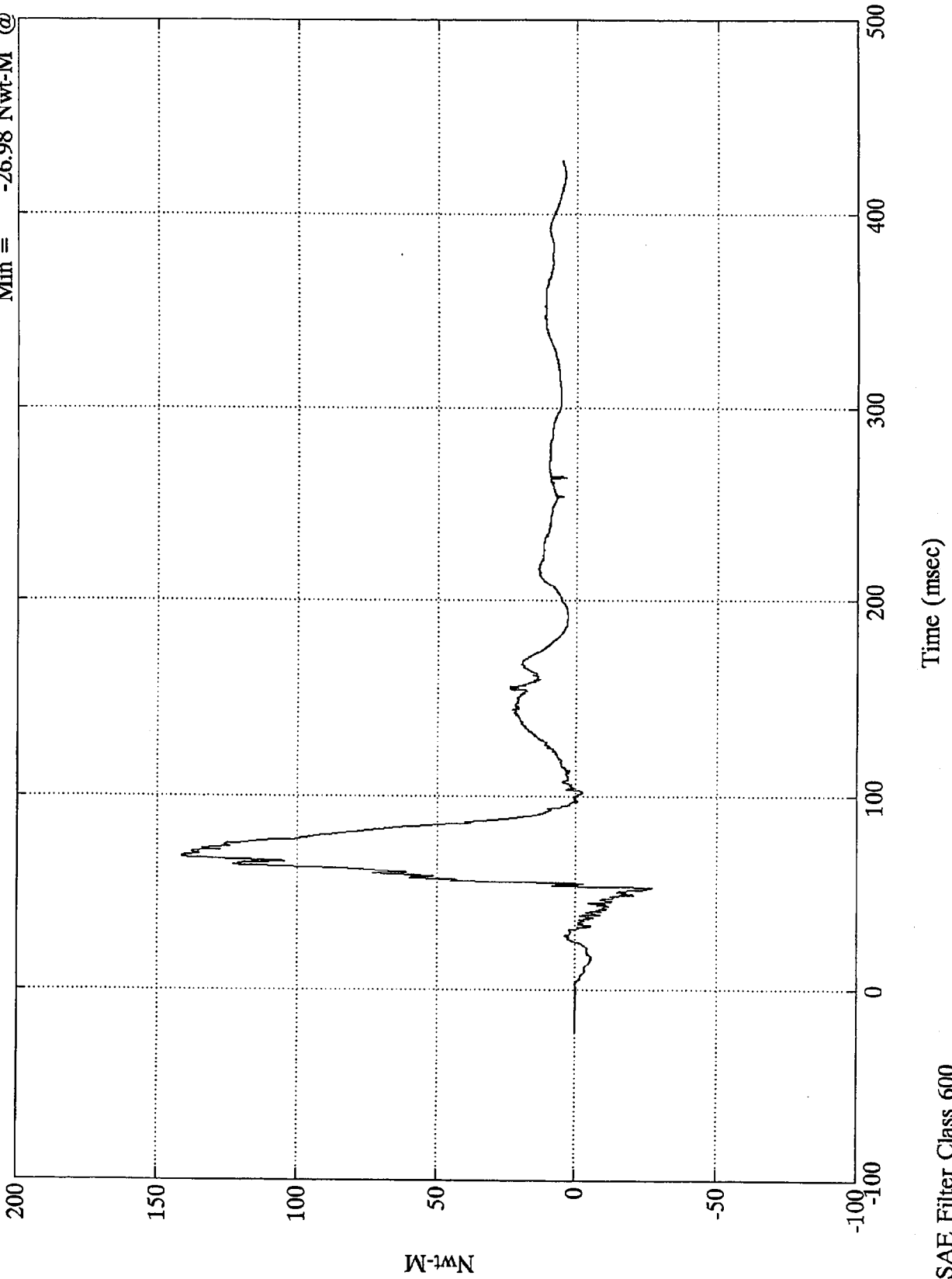


SAE Filter Class 600

VTV TEST #5

P2 Rt Lower Tibia My

Max = 141.28 Nwt-M @ 69.24 msec
Min = -26.98 Nwt-M @ 52.79 msec



SAE Filter Class 600

Nwt-M

Time (msec)

APPENDIX C

**PART 572E DUMMY CONFIGURATION AND
PERFORMANCE VERIFICATION DATA SHEETS**

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

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

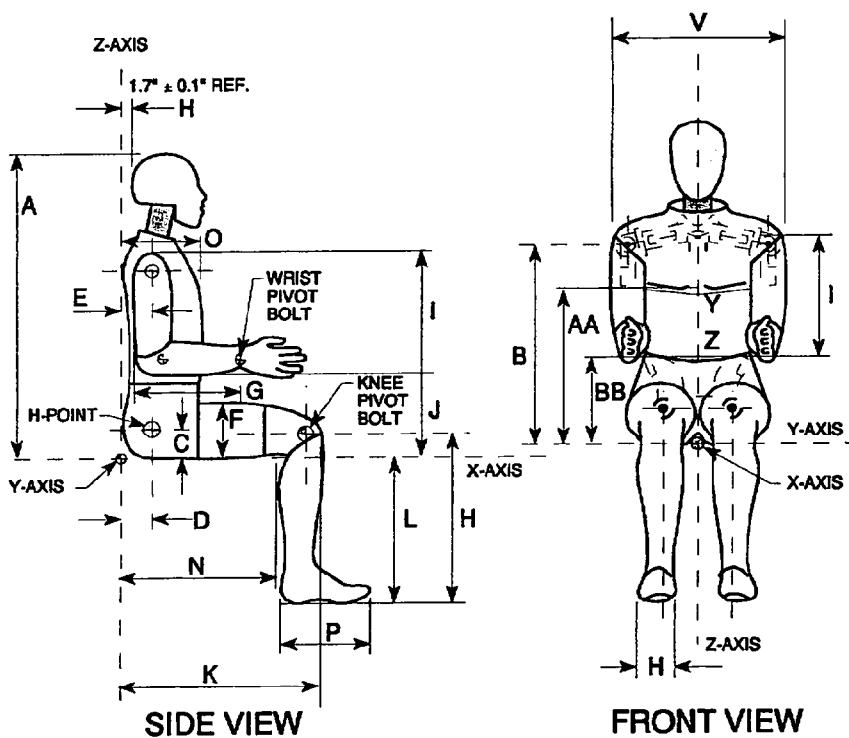
Dummy serial numbers and certification dates are:

<u>Serial No.</u>	<u>Completion Date</u>
061	1-22-96
245	1-22-96

FIGURE 9

EXTERNAL DIMENSIONS SETUP SPECIFICATIONS

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))

VEHICLE 1, POSITION 1 - DRIVER DUMMY

Serial No.: 061

HYBRID III EXTERNAL DIMENSIONS

S/N 061 HUMANOID

DUMMY SERIAL NO. 061

DATE: 2/25/95

TEMPERATURE		21 DEG. C
RELATIVE HUMIDITY		26 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)	429-434 mm	432 mm
LOCATION FOR WAIST CIRCUMFERENCE (BB)	226-231 mm	229 mm
CHEST CIRCUMFERENCE (Y)	970-1001 mm	1000 mm
WAIST CIRCUMFERENCE (Z)	836-866 mm	851 mm
CHEST DEPTH (O)	213-229 mm	216 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	155 mm
BUTTOCK KNEE LENGTH (K)	580-605 mm	592 mm
BUTTOCK POPLITAL LENGTH (N)	452-477 mm	465 mm
POPLITEAL LENGTH (L)	430-455 mm	450 mm
KNEE PIVOT HEIGHT (M)	485-501 mm	493 mm
FOOT LENGTH (P)	252-267 mm	256 mm
FOOT BREADTH (W)	91-107 mm	96 mm
SHOULDER PIVOT FROM BACKLINE (E)	84-94 mm	89 mm
SHOULDER BREADTH (V)	422-437 mm	427 mm
SHOULDER PIVOT HEIGHT (B)	505-521 mm	511 mm
ELBOW REST HEIGHT (J)	190-211 mm	196 mm
SHOULDER-ELBOW LENGTH (I)	330-345 mm	340 mm
BACK OF ELBOW TO WRIST PIVOT (G)	290-305 mm	295 mm

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
HEAD DROP TEST
HYBRID III

DATE : 2/21/95

CALSPAN SEQUENTIAL NUMBER 1

HY3 SN: 061 HEAD DROP CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	32 %
PEAK RESULTANT ACCELERATION	225 - 275 G'S	270 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	10.7 G'S
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
NECK EXTENSION TEST
HYBRID III

DATE : 2/24/95

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 1

HY3 SN: 061 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY		10% - 70%	28 %
IMPACT VELOCITY		21.4 - 22.3 KPH	22.16 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	18.35 G'S
	20 MS	14.00 - 19.00 G'S	15.71 G'S
	30 MS	11.00 - 16.00 G'S	14.97 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	14.97 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	44 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	92.15 DEG.
	TIME	72 - 82 MS	77.88 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-57.7 N-M
	TIME	65 - 79 MS	72.63 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	159.63 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	135.5 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
NECK FLEXION TEST
HYBRID III

DATE : 2/23/95

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 1

HY3 SN: CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY		10% - 70%	31 %
IMPACT VELOCITY		24.8 - 25.7 KPH	25.6 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	25.64 G'S
	20 MS	17.60 - 22.60 G'S	20.66 G'S
	30 MS	12.50 - 18.50 G'S	18.31 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	18.31 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	38.38 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	68.7 DEG.
	TIME	57 - 64 MS	59.75 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	92.6 N-M
	TIME	47 - 58 MS	50.75 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	121.25 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	102.13 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
THORAX IMPACT TEST
HYBRID III

DATE : 1/16/96

CALSPAN SEQUENTIAL NUMBER 3

HY3 SN 061 H.S. THORAX CAL

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.5 - 22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	24.1 KPH
MAXIMUM DEFLECTION	64 - 73 mm	65 mm
MAXIMUM RESISTIVE FORCE	5160 - 5894 NEWTONS	5826 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	75 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
KNEE IMPACT TEST
HYBRID III

DATE : 1/16/96

KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN: 061 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	70 DEG. C
RELATIVE HUMIDITY	10% - 70%	30 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5142 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
KNEE IMPACT TEST
HYBRID III

DATE : 1/22/96

KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 3

HY3 SN: 061 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	4795 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY I.D. NUMBER: 061

A. DUMMY INSTRUMENTS

1. HEAD ACCELEROMETER

HX LONGITUDINAL

HY LATERAL

HZ VERTICAL

2. CHEST ACCELEROMETER

CX LONGITUDINAL

CY LATERAL

CZ VERTICAL

3. FEMUR LOAD CELLS

LEFT SIDE

RIGHT SIDE

MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
ENDEVCO	AF5B3	1/96	7/96
ENDEVCO	AF5F7	1/96	7/96
ENDEVCO	AF5E1	1/96	7/96
ENDEVCO	A84J	1/96	7/96
ENDEVCO	A57G	1/96	7/96
ENDEVCO	AF8W7	1/96	7/96
GSE	231	12/95	6/96
GSE	232	12/95	6/96

B. CALIBRATION LABORATORY
INSTRUMENTS

1. PENDULUM ACC.

2. TEST PROBE
ACCELEROMETER

3. LUMBAR FLEXION TEST
PUSH FORCE GAUGE

4. ABDOMINAL COMPRESS.
TEST FORCE GAUGE

5. ABDOMINAL COMPRESS.
TEST FORCE GAUGE

MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
CEC	A160	8/95	2/96
CEC	A177	8/95	2/96
TRANS- DUCER INC	20051	12/95	6/96
BLH	72952	12/95	6/96
CIC	567-11	12/95	6/96

VEHICLE 1, POSITION 2 - FRONT PASSENGER DUMMY

Serial No.: 245

HYBRID III EXTERNAL DIMENSIONS

S/N 245 HUMANOID

DUMMY SERIAL NO. 245

DATE: 6/15/95

TEMPERATURE		21 DEG. C
RELATIVE HUMIDITY		44 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)	429-434 mm	432 mm
LOCATION FOR WAIST CIRCUMFERENCE (BB)	226-231 mm	229 mm
CHEST CIRCUMFERENCE (Y)	970-1001 mm	991 mm
WAIST CIRCUMFERENCE (Z)	836-866 mm	856 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	152 mm
BUTTOCK KNEE LENGTH (K)	580-605 mm	594 mm
BUTTOCK POPLITAL LENGTH (N)	452-477 mm	465 mm
POPLITEAL LENGTH (L)	430-455 mm	444 mm
KNEE PIVOT HEIGHT (M)	485-501 mm	488 mm
FOOT LENGTH (P)	252-267 mm	259 mm
FOOT BREADTH (W)	91-107 mm	96 mm
SHOULDER PIVOT FROM BACKLINE (E)	84-94 mm	91 mm
SHOULDER BREADTH (V)	422-437 mm	427 mm
SHOULDER PIVOT HEIGHT (B)	505-521 mm	513 mm
ELBOW REST HEIGHT (J)	190-211 mm	203 mm
SHOULDER-ELBOW LENGTH (I)	330-345 mm	335 mm
BACK OF ELBOW TO WRIST PIVOT (G)	290-305 mm	295 mm

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
HEAD DROP TEST
HYBRID III

DATE : 1/22/96

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN: 245 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	247.2 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	3.9 G'S
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN BRIAN SWIECICKI

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
NECK EXTENSION TEST
HYBRID III

DATE : 2/23/95

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 1

HY3 SN: 245 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY		10% - 70%	29 %
IMPACT VELOCITY		21.4 - 22.3 KPH	22.16 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	18.69 G'S
	20 MS	14.00 - 19.00 G'S	14.17 G'S
	30 MS	11.00 - 16.00 G'S	14.36 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	14.36 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	45.5 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	84.27 DEG.
	TIME	72 - 82 MS	75.63 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-65.14 N-M
	TIME	65 - 79 MS	70.5 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	147.63 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	129.75 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
NECK FLEXION TEST

HYBRID III

DATE : 2/23/95

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 1

HY3 SN: 245 CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY		10% - 70%	29 %
IMPACT VELOCITY		24.8 - 25.7 KPH	25.56 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	22.73 G'S
	20 MS	17.60 - 22.60 G'S	20.06 G'S
	30 MS	12.50 - 18.50 G'S	17.99 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	17.99 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	40.63 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	67.53 DEG.
	TIME	57 - 64 MS	59.88 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	92.26 N-M
	TIME	47 - 58 MS	53.38 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	118.13 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	98.5 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
THORAX IMPACT TEST
HYBRID III

DATE : 2/17/95

CALSPAN SEQUENTIAL NUMBER 1

HY3 SN 245 H.S. THORAX

CAL

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.5 - 22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY	10% - 70%	29 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	23.7 KPH
MAXIMUM DEFLECTION	64 - 73 mm	65.3 mm
MAXIMUM RESISTIVE FORCE	5160 - 5894 NEWTONS	5888 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	73.1 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
KNEE IMPACT TEST
HYBRID III

DATE : 3/16/95

KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 1

HY3 SN: 245 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	4871 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
KNEE IMPACT TEST
HYBRID III

DATE : 3/16/95

KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 1

HY3 SN: 245 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	4808 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY I.D. NUMBER: 245

A. DUMMY INSTRUMENTS

1. HEAD ACCELEROMETER

HX LONGITUDINAL

HY LATERAL

HZ VERTICAL

2. CHEST ACCELEROMETER

CX LONGITUDINAL

CY LATERAL

CZ VERTICAL

3. FEMUR LOAD CELLS

LEFT SIDE

RIGHT SIDE

MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
ENDEVCO	ADL50	10/95	4/96
ENDEVCO	A59J	10/95	4/96
ENDEVCO	AC2P5	10/95	4/96
ENDEVCO	A33A	10/95	4/96
ENDEVCO	FB32L	10/95	4/96
ENDEVCO	AD395	10/95	4/96
GSE	449	12/95	6/96
GSE	450	12/95	6/96

B. CALIBRATION LABORATORY INSTRUMENTS

1. PENDULUM ACC.

2. TEST PROBE ACCELEROMETER

3. LUMBAR FLEXION TEST PUSH FORCE GAUGE

4. ABDOMINAL COMPRESS. TEST FORCE GAUGE

5. ABDOMINAL COMPRESS. TEST FORCE GAUGE

MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
CEC	A160	8/95	2/96
CEC	A177	8/95	2/96
TRANS- DUCER INC	20051	12/95	6/96
BLH	72952	12/95	6/96
CIC	567-11	12/95	6/96