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CALSPAN REPORT NUMBER: 8304-2

VEHICLE-TO-VEHICLE FRONTAL 30 DEGREE, 68% OVERLAP
113.0kph IMPACT OF A MOVING DEFORMABLE BARRIER
INTO A STATIONARY 1995 FORD TAURUS GL 4-DOOR SEDAN

CORRECTED

MEAS 3/12/96
per Dave Travale

CALSPAN TEST NUMBER: Y57-2-1548

August 30, 1995

CALSPAN CORPORATION
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FINAL REPORT

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Research and Special Programs Administration
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16. Abstract A 113.0 kph vehicle to vehicle 30 degree, 68% overlap impact test of a Moving Deformable Barrier into a stationary 1995 Ford Taurus GL 4-door sedan was performed at the Calspan Advanced Technology Center crash facility in Buffalo, New York on August 30, 1995. The 1995 Ford Taurus GL (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 had a chest resultant acceleration which exceeded 60 G's and left and right femur compressive loads which exceeded 10012 newtons. All other dummy measurements were below the injury requirements of FMVSS208 "Occupant Crash Protection"					
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Section 1

PURPOSE AND TEST PROCEDURE

This 113.0 kph 30 degree, 68% 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 Ford Taurus GL 4-door sedan (Vehicle 1) and a Moving Deformable Barrier (MDB or Vehicle 2). The moving barrier was traveling at 113.0 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 impact point was designated using an offset measurement at the Vehicle 1 centerline which was 68% of the Vehicle 1 maximum width dimension. From this 68% width point (parallel with the Vehicle 1 centerline), a 15° counterclockwise line tangent to the Vehicle 2 left most point of the bumper was determined. These angles and tangent line determine the impact point.

The 1995 Ford Taurus GL 4-door sedan, contained 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 Ford Taurus GL 4-door sedan (Vehicle 1) was impacted by a Moving Deformable Barrier (Vehicle 2) traveling forward at 113.0 kph. The vehicles were positioned so that Vehicle 2 impacted Vehicle 1 at a 30 degree, 68% 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 August 30, 1995.

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 1.1 inches off target so as to create slightly less 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 to 20° from vertical as measured from the seat back frame 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. Driver shoulder belt tensile forces were also recorded.

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 Ford Taurus GL (Vehicle 1) driver HIC was 621 and the head contacted the airbag and the B-pillar. The driver's maximum chest acceleration over a three millisecond period was 61.8 gs and the maximum chest displacement was -35.2 mm. The left femur maximum axial compressive force was 10194 newtons and the right femur maximum axial compressive force was 15620 newtons.

Vehicle 1's passenger HIC was 261 and the head contacted the airbag and the headrest. The passenger's maximum chest acceleration over a three millisecond period was 59.2 gs and the maximum chest displacement was -46.1 mm. The left femur maximum axial compressive force was 9297 newtons and the right femur maximum axial compressive force was 3539 newtons.

Structural damage to the 1995 Ford Taurus GL (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 440 mm tear across the passenger side lower corner of the windshield and a 1880 mm tear from the passenger-side top corner of the windshield to the driver-side bottom corner of the windshield. A 210 mm windshield molding separation occurred on the passenger side bottom edge of the 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:

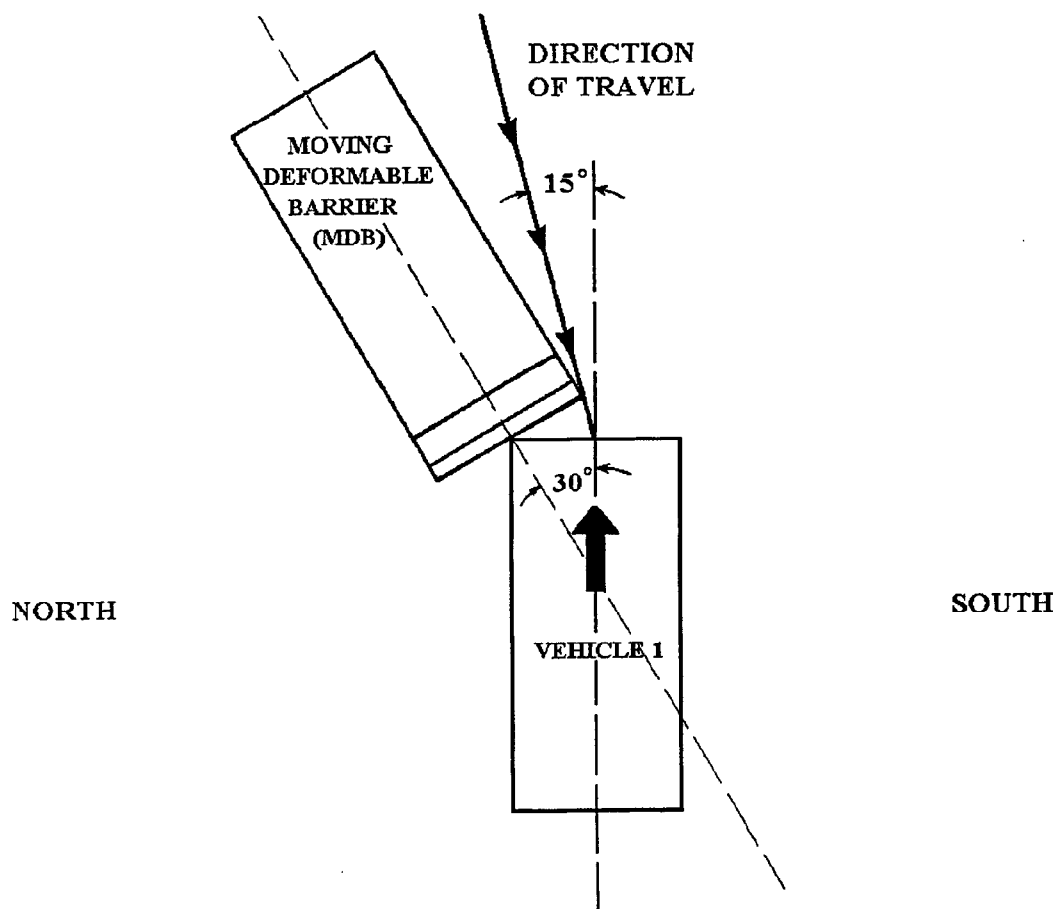
- Vehicle 1 Acc. 10 C/L Rear Compart. Y accelerometer: The accelerometer was inadvertently mounted in the X-direction.
- Position 1 Chest Displacement #126: The potentiometer opened from 160 msec to 170 msec and the resulting data for this region is questionable.
- Position 1 Chest Displacement #128: The potentiometer opened from 157 msec to 174 msec and the resulting data for this region is questionable.

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 Ford Taurus GL 4-door sedan

NHTSA Test No.: - VIN.: 1FALP52U3SG218181

Body Color: Silver Date of Manufacture: 1/95

Engine: 6 Cylinders; - C.I.D.; 3.0 Liters; - CC
X Gas; - Diesel; - Turbocharged
- Longitudinal; X Transverse

Transmission: 4 Speed; - Manual; X Automatic; X Overdrive

Final Drive: X Front Wheel; - Rear Wheel; - Four Wheel
X A/C; X P/S; X P/B; - P/wdo
X Tilt Wheel; - P/seats; X 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 240 kpa, Rear 240 kpa

Recommended Tire Size: P205/65R15

Recommended Cold Tire Pressure: Front 240 kpa, Rear 240 kpa

Tires on Vehicle: P205/65R15; Manufacturer: General

Number of Occupants: 3 Front; 3 Rear; - 3rd Seat; 6 TOTAL

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

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

Vehicle Capacity Weight (VCW) = 499 kgs. (A)

No. of Occupants x 68.03 kgs. = 408 kgs. (B)

Rated Cargo and Luggage

Weight (RCLW) A - B = 91 kgs.

GVWR 2110 kgs. GAWR: Front 1138 kgs. Rear 985 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>454</u>	kgs.	Right Rear	=	<u>269</u>	kgs.
Left Front	=	<u>456</u>	kgs.	Left Rear	=	<u>271</u>	kgs.
TOTAL FRONT WEIGHT	=	<u>910</u>	kgs.	(<u>62.9</u> % of Total Vehicle Weight)			
TOTAL REAR WEIGHT	=	<u>540</u>	kgs.	(<u>37.3</u> % of Total Vehicle Weight)			
TOTAL DELIVERED WEIGHT	=	<u>1,450</u>	kgs.				

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMY:

Right Front	=	<u>477</u>	kgs.	Right Rear	=	<u>326</u>	kgs.
Left Front	=	<u>475</u>	kgs.	Left Rear	=	<u>337</u>	kgs.
TOTAL FRONT WEIGHT	=	<u>952</u>	kgs.	(<u>59.2</u> % of Total Vehicle Weight)			
TOTAL REAR WEIGHT	=	<u>663</u>	kgs.	(<u>41.2</u> % of Total Vehicle Weight)			
TOTAL TEST WEIGHT	=	<u>1,615</u>	kgs.				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

Delivered Attitude:	RF	<u>724</u>	;	LF	<u>719</u>	;	RR	<u>683</u>	;	LR	<u>678</u>
Test Attitude:	RF	<u>730</u>	;	LF	<u>724</u>	;	RR	<u>640</u>	;	LR	<u>631</u>
Vehicle's Wheel Base=		<u>2695</u>	mm.								
Location of Vehicle's C.G. =		<u>1106 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°, 68% overlap Impact Angle: 30 Deg.
 Date of Test: August 30, 1995 Time of Test: 14:00
 Ambient Temperature: 29 °C at impact area
 Temperature in Occupant Compartment: 22 °C
 Windshield Molding Temperature: - °C
 Required Impact Velocity Range: 110.1 to 113.1 kph
 Impact Velocity: primary = 113.0 kph, secondary = 113.0 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>Airbag</u>	<u>Airbag, top and front of head with roof</u>
Chest	<u>Airbag</u>	<u>Airbag</u>
Abdomen	<u>Airbag</u>	<u>Airbag</u>
Left Knee	<u>Bolster to left side of steering column</u>	<u>Left edge of glove compartment door</u>
Right Knee	<u>Bolster to right side of steering column</u>	<u>Right half of glove compartment door</u>

	<u>Front</u>		<u>Rear</u>	
	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Door Opening	<u>Closed/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>6 forward</u>	<u>0</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)	-58.4	79.5	-50.0	86.1	-69.6	17.4	-28.9	61.8
DUMMY (2)	-40.2	-33.1	-37.6	52.9	-56.2	-19.7	-23.5	59.2

	MAXIMUM FORCE FEMUR LOAD (NEWTONS)	
	RIGHT FEMUR	LEFT FEMUR
DUMMY (1)	-15620	-10194
DUMMY (2)	-3539	-9297

	MAXIMUM LOAD (NEWTONS)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
DUMMY (1)	4407	-	-
DUMMY (2)	-	-	-

	MAXIMUM ACCELERATION ("G")			
	HIC	t ₁ (SEC)	t ₂ (SEC)	Average Acceleration t ₁ TO t ₂
DUMMY (1)	621	59.880	87.720	54.86
DUMMY (2)	261	53.160	83.880	37.29

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

Figure 2

VEHICLE 1 OCCUPANT CLEARANCE DIMENSIONS (mm)

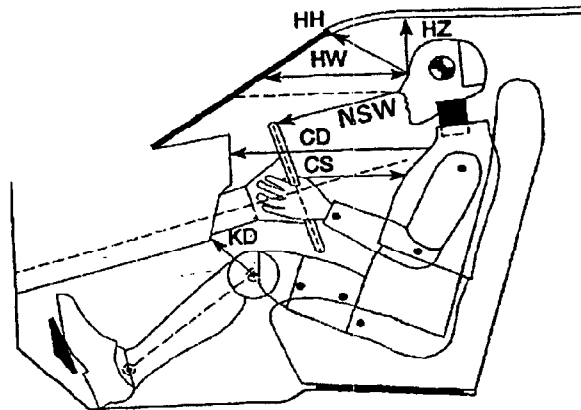
	DRIVER (mm)	PASSENGER
HH	290	310
NW	520	522
NSW	380	-
NIP	506	-
NH	375	-
CD	504	485
CS	276	-
KDL	155	160
KDR	168	164
1	505	-
2	51	-
SA	20°	20°
PA	22°	23°
ULA	105°	106°
LLA	225°	224°

DISTANCE OF H-POINT FROM TARGET POSITION (mm)		
	Driver	Passenger
Longitudinal	4 behind	6 behind
Vertical	1 above	2 above

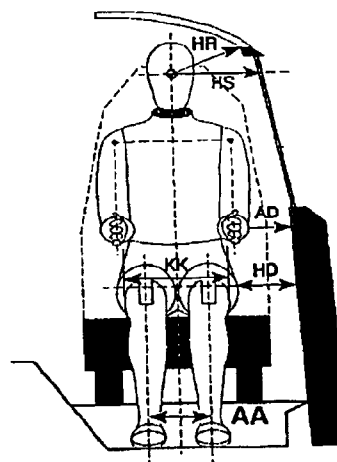
Angles taken relative to vertical
 SA = Seat Back Angle
 PA = Pelvic Angle
 ULA= Upper Leg Angle
 LLA= Lower Leg Angle

	DRIVER (mm)	PASSENGER
HR*	198	189
HS*	305	303
AD	110	110
HD	210	195
KK	318	310
AA	315	248
DT	72 (22°C)	72 (22°C)

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



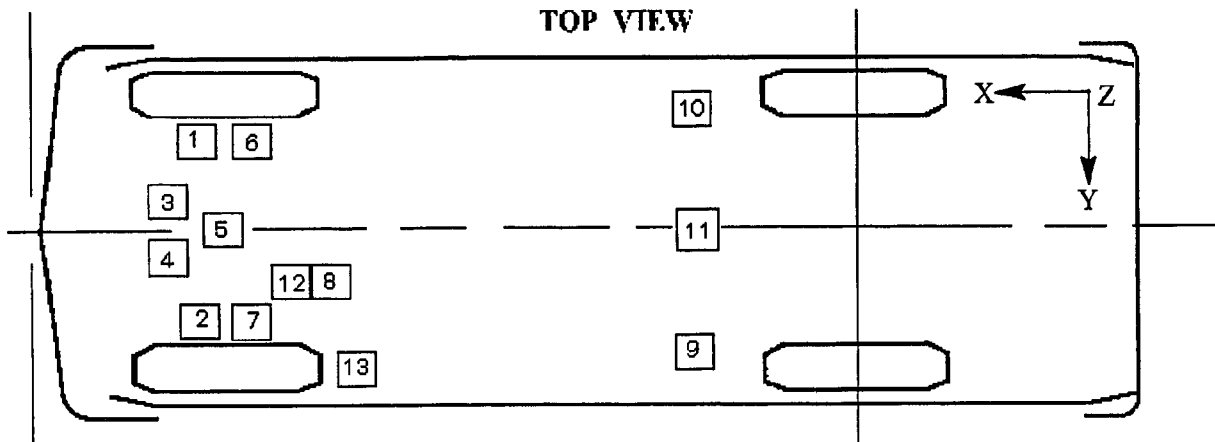
- HH - Head to Windshield Header
- NW - Head to Windshield
- NSW - Nose to Steering Wheel
- NIP - Nose to Instrument Panel
- NH - Nose to Steering Wheel Hub
- CD - Chest to Dash
- CS - Chest to Steering Wheel Hub
- KDL - Knee to Dash Left
- KDR - Knee to Dash Right
- 1 - Nose to Steering Column Target
- 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 Ford Taurus GL 4-door sedan

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM AMP	msec	MINIMUM AMP	msec	FILTER CLASS
1	Acc 1 Rt Ft Frame Rail X	Gs	40.9	50.0	-156.2	33.8	60.0
1	Acc 1 Rt Ft Frame Rail Y	Gs	38.4	16.0	-84.7	33.8	60.0
1	Acc 1 Rt Ft Frame Rail Z	Gs	146.0	40.4	-117.3	33.2	60.0
2	Acc 2 Lt Ft Frame Rail X	Gs	18.7	15.6	-41.2	48.8	60.0
2	Acc 2 Lt Ft Frame Rail Y	Gs	39.2	14.9	-80.1	35.6	60.0
2	Acc 2 Lt Ft Frame Rail Z	Gs	42.5	35.3	-48.8	40.9	60.0
3	Acc 3 Rt Engine X	Gs	61.7	59.3	-125.5	41.9	60.0
4	Acc 4 Lt Engine X	Gs	110.0	52.8	-155.0	41.8	60.0
5	Acc 5 Engine Bottom X	Gs	39.5	53.2	-118.3	36.6	60.0
5	Acc 5 Engine Bottom Y	Gs	33.8	47.9	-85.8	35.9	60.0
6	Acc 6 Rt Shock Tower X	Gs	13.9	62.5	-114.6	51.8	60.0
6	Acc 6 Rt Shock Tower Y	Gs	34.6	56.5	-154.9	48.2	60.0
7	Acc 7 Lt Shock Tower X	Gs	26.3	68.8	-97.9	35.2	60.0
7	Acc 7 Lt Shock Tower Z	Gs	40.3	36.4	-61.7	41.9	60.0
8	Acc 8 Brake Pedal X	Gs	35.7	70.4	-164.8	51.2	60.0
8	Acc 8 Brake Pedal Y	Gs	59.1	36.7	-89.9	51.0	60.0
8	Acc 8 Brake Pedal Z	Gs	138.4	52.0	-52.8	76.0	60.0
9	Acc 9 Lt Rr Compartment X	Gs	2.1	192.0	-49.3	43.6	60.0
9	Acc 9 Lt Rear Compartment Y	Gs	7.0	75.2	-27.7	47.2	60.0
10	Acc 10 Rt Rear Compartment X	Gs	.9	146.2	-46.7	51.8	60.0
10	Acc 10 Rt Rear Compartment Y	Gs	2.8	71.2	-19.0	40.8	60.0
11	Acc 11 C/L Rear Compartment X	Gs	4.3	162.1	-45.6	43.8	60.0
11*	Acc 11 C/L Rear Compartment Y	Gs	4.1	161.2	-45.5	43.7	60.0
12	Acc 12 Toe Pan X	Gs	43.0	51.4	-163.1	44.0	60.0
12	Acc 12 Toe Pan Y	Gs	34.9	51.8	-91.3	45.1	60.0
12	Acc 12 Toe Pan Z	Gs	67.2	46.6	-67.1	51.0	60.0
13	Acc 13 A-Pillar Hinge X	Gs	24.1	63.5	-73.1	49.7	60.0

* Accelerometer was inadvertently mounted to measure in the X-direction.

Figure 4

VEHICLE 1 PRE- AND POST-TEST POSITION OF TEST VEHICLE
ACCELEROMETER MOUNTING LOCATIONS

Test Description: 113.0 kph Frontal Vehicle to Vehicle Impact
 Test Vehicle: 1995 Ford Taurus GL 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	4065	482	178	4030	645	141
2	LEFT FRONT FRAME RAIL	4065	-482	178	3820	-290	221
3	RIGHT ENGINE TOP	4030	210	935	3840	390	850
4	LEFT ENGINE TOP	3970	-80	935	3720	130	980
5	ENGINE BOTTOM	4000	-280	211	3805	-210	276
6	RIGHT SHOCK TOWER	3805	650	975	3820	685	890
7	LEFT SHOCK TOWER	3815	-650	972	3520	-540	1050
8	BRAKE PEDAL	3390	-345	450	3280	-320	370
9	LEFT REAR COMP.	1920	-640	380	1920	-630	425
10	RIGHT REAR COMP.	1905	640	380	1905	635	430
11	CENTER REAR COMP.	1870	-20	460	1870	-25	490
12	DRIVER TOEPAN	3490	-430	315	3375	-410	300
13	DRIVER 'A' PILLAR	3340	-785	860	3200	-790	820

CORRECTED 3/12/96

NOTE: Vehicle leveled to pre-test height for post-test measurements. Carpet not removed from floor-pan.

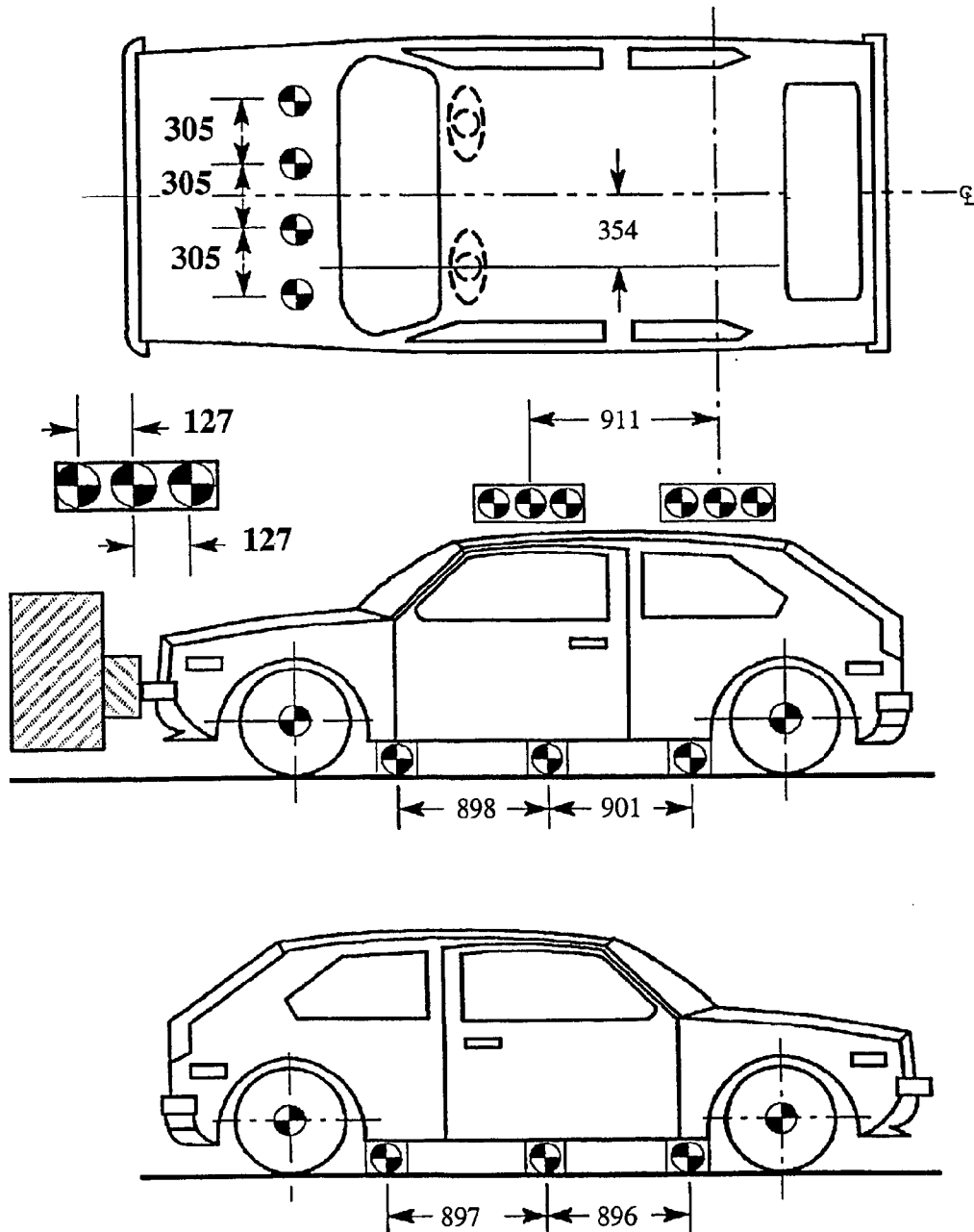
TOEPAN MEASUREMENT LOCATIONS*												
Loc. No.	DRIVER (mm.)						PASSENGER(mm.)					
	PRE-TEST AXIS			POST-TEST AXIS			PRE-TEST AXIS			POST-TEST AXIS		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
1 (lower left)	3358	-565	300	3280	-550	275	3380	150	315	3335	180	244
2 (upper left)	3465	-540	440	3320	-515	460	3355	170	405	3445	200	414
3 (center)	3490	-430	315	3375	-410	300	3455	310	345	3430	280	329
4 (lower right)	3385	-190	270	3360	-180	220	3360	560	315	3370	550	235
5 (upper right)	3525	-250	405	3405	-220	410	3445	535	425	3400	530	305

* Carpet not removed from floor-pan.

Figure 5

VEHICLE 1 TARGET LOCATIONS

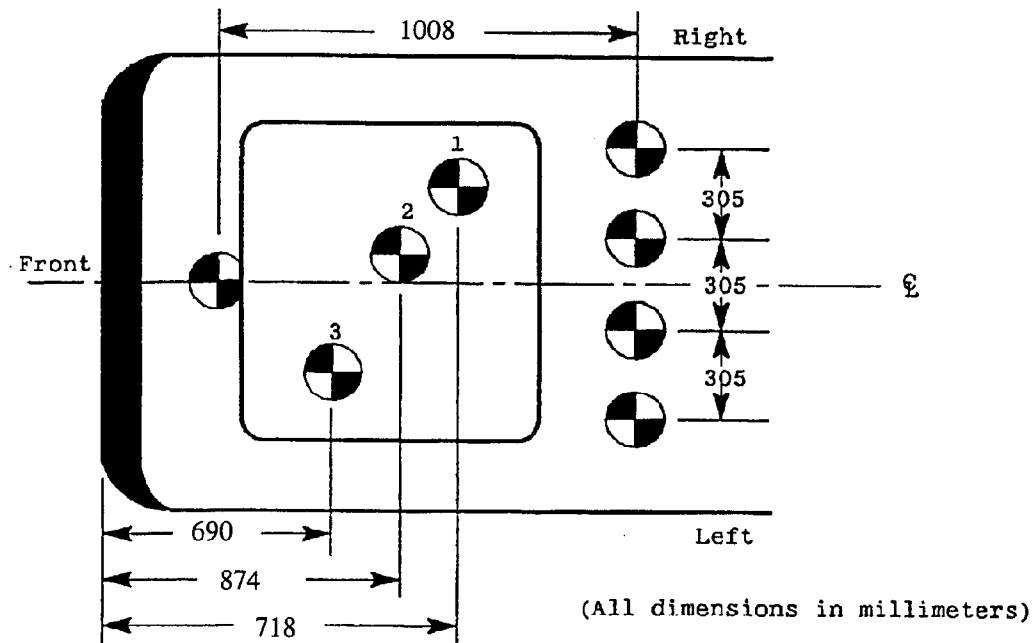
(All dimensions in millimeters)



(Dimensions in millimeters)

Figure 5

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



Note: Drawing not to scale.

Target 1: Alternator
Target 2: Intake Manifold
Target 3: Air cleaner

Figure 6

VEHICLE 1 MEASUREMENT POINTS

(All dimensions in millimeters)

REAR DATUM REFERENCE

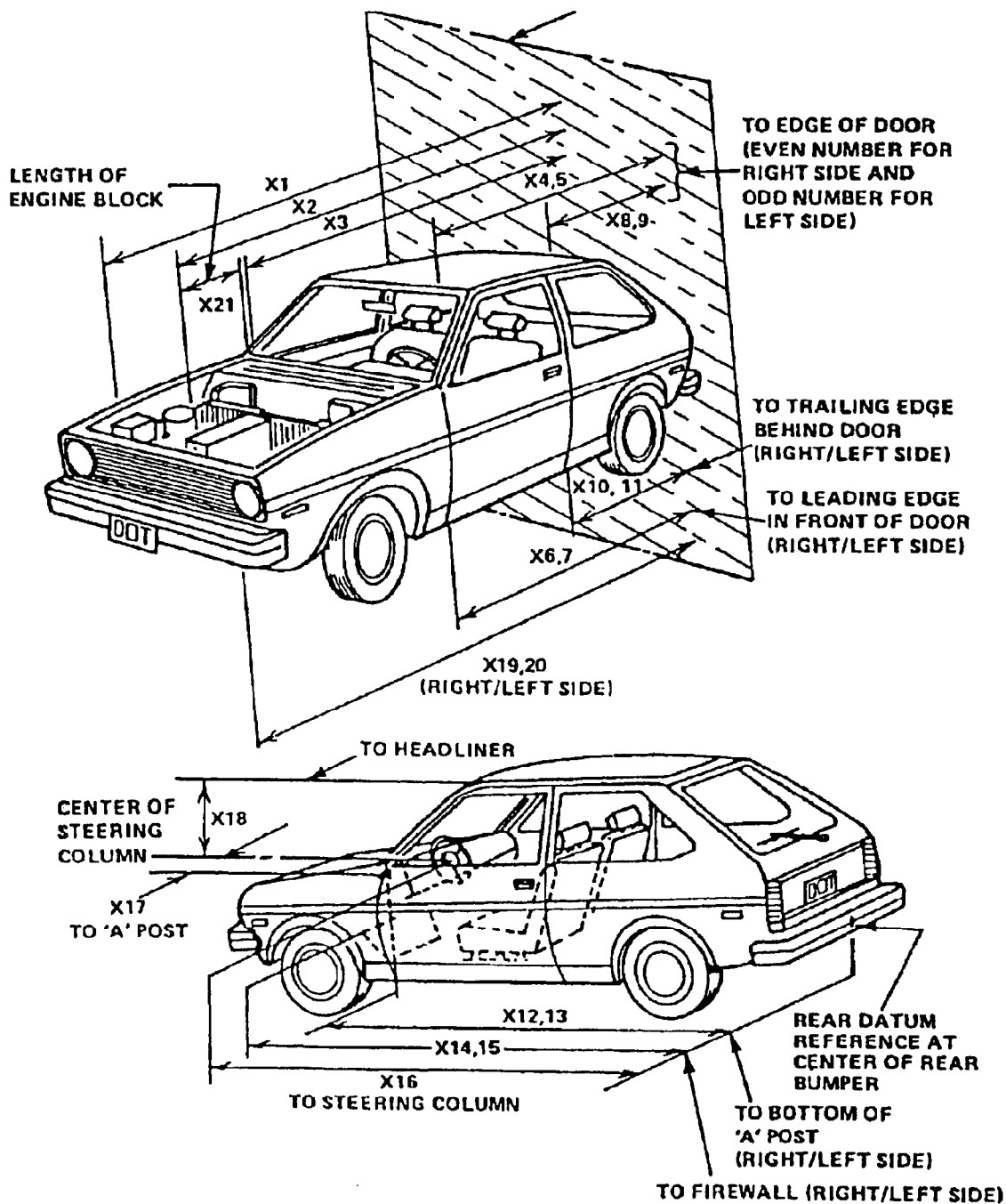


Figure 6

VEHICLE 1 MEASUREMENT POINTS (continued)

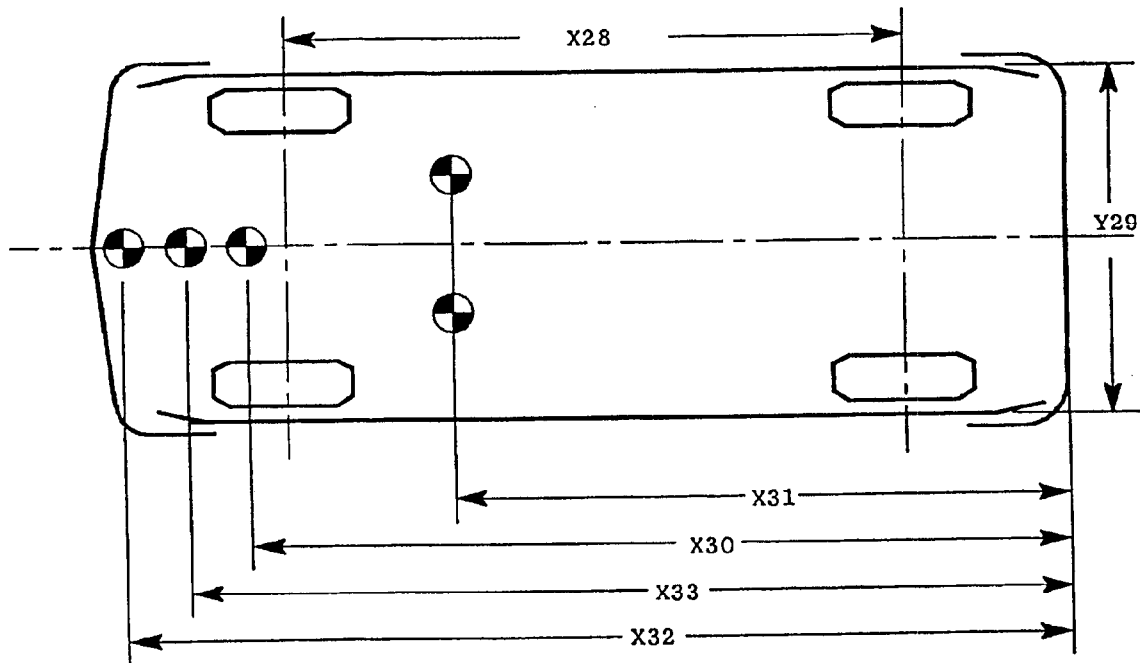
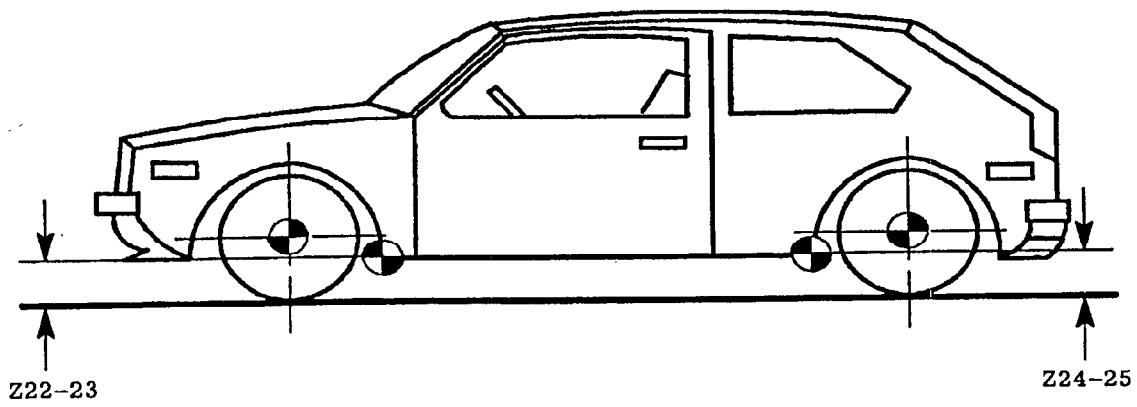


Table 3

VEHICLE 1 MEASUREMENTS

No.	TYPE OF MEASUREMENT	All Dimensions in millimeters		
		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4880	4405	475
X2	Rear Surface of Vehicle to Engine at Centerline	4120	3860	260
X3	Rear Surface of Vehicle to Firewall	3670	3500	170
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3375	3340	35
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3375	3270	105
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3307	3260	47
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3305	3235	70
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2302	2267	35
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2300	2247	53
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2267	2225	42
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2265	2215	50
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3336	3300	36
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3334	3285	49
X14	Rear Surface of Vehicle to Firewall - Right Side	3630	3555	75
X15	Rear Surface of Vehicle to Firewall - Left Side	3630	3285	345
X16	Rear Surface of Vehicle to Steering Wheel Center	2840	2710	130
X17	Steering Column to "A" Post	395	370	25

Table 3

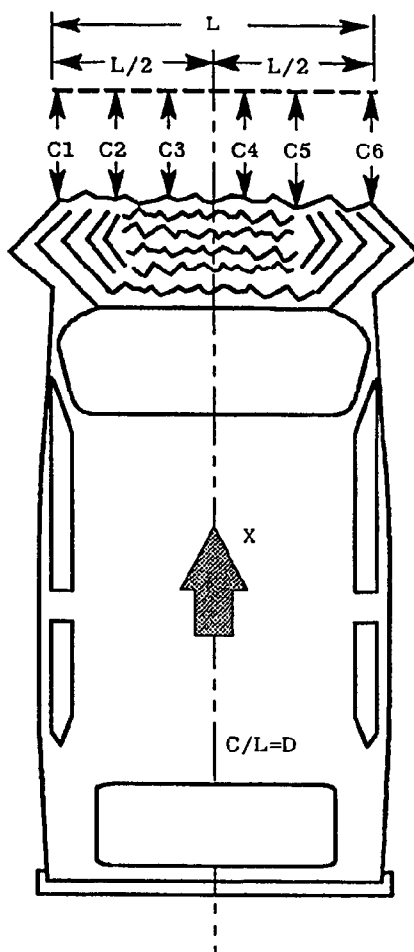
VEHICLE 1 MEASUREMENTS (continued)

No.	TYPE OF MEASUREMENT	All Dimensions in millimeters		
		Pre-Test	Post-Test	Difference
Z18	Rear of Windshield Header to Steering Wheel Column	415	565	-150
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4800	4430	370
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4795	4070	725
X21	Width of Engine Block	410	410	0
Z22	Right Front Sill to Ground Plane	215	178	37
Z23	Left Front Sill to Ground Plane	215	148	67
Z24	Right Rear Sill to Ground Plane	220	216	4
Z25	Left Rear Sill to Ground Plane	210	161	49
X26	Firewall to Engine or Transaxle	252	130	122
Z27	Vertical Dim. from Door Sill to Centerline of Steering Column	530	565	-35
X28	Wheelbase of Vehicle	2693 2693	2710 2710	273 -17
Y29	Width of Vehicle at Maximum Width Point	1810	1820	-10
X30	Rear Surface of Vehicle to Engine Target	4077	3958	119
X31	Rear Surface of Vehicle to Compartment Target	3340	L=3283 R=3328	L=57 R=12
X32	Rear Surface of Vehicle to Bumper Target	4506	4234	272
X33	Rear Surface of Vehicle to Frame Crossmember	4305	4203	102

Table 3

VEHICLE 1 MEASUREMENT (continued)

(all dimensions in millimeters)



Location	Pre-Test	Post-Test	Change
C1	4745	3735	1010
C2	4830	3860	970
C3	4870	4040	830
C4	4870	4345	525
C5	4830	4160	670
C6	4750	4080	670

Table 4

VEHICLE 1 FRONTAL PROFILE DATA* (in mm.)

Location	Axis	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	410	495	560	560	520	350	-370	-185	-30	325	425	420	-780	-680	-590	-235	-95	70
	Y	-715	-455	-220	240	465	690	-400	-280	-50	360	600	860	315	175	170	120	135	170
	Z	403	405	413	413	408	405	640	585	575	600	470	470	237	180	162	187	62	65
Top of Front Bumper	X	445	530	570	570	530	450	-210	-170	-30	275	130	130	-655	-700	-600	-295	-400	-320
	Y	-725	-480	-240	240	480	730	-400	-280	-50	360	600	860	325	200	190	120	120	130
	Z	540	540	545	540	535	535	755	715	690	725	760	760	215	175	145	185	225	225
Center of Grill	X	330	420	460	460	425	340	-390	-360	-245	-15	120	130	-720	-780	-705	-475	-305	-210
	Y	-720	-480	-235	234	475	705	-400	-280	-50	360	600	860	320	200	185	126	125	155
	Z	630	625	675	665	615	615	870	870	870	830	825	760	240	245	195	165	210	145
Front of Hood	X	300	385	418	425	385	300	-410	-250	-275	-70	120	130	-710	-635	-693	-495	-265	-170
	Y	-705	-475	-235	230	475	700	-400	-280	-50	360	600	860	305	195	185	130	125	160
	Z	730	730	730	730	730	730	915	1010	980	940	760	770	185	280	250	210	30	40

* - 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	3035	-500	775	2930	-500	735	-105	0	-40
Driver IP above right knee	3045	-205	780	2900	-205	660	-145	0	-120
Pass. IP above left knee	3045	250	760	2970	250	760	-75	0	0
Pass. IP above right knee	3045	430	760	2985	430	740	-60	0	-20
Intrusion of brake pedal	3390	-345	450	3280	-320	370	-110	25	-80
Intrusion of left foot rest	3358	-565	300	3280	-550	375	-78	15	75
Driver 'A' pillar hinge to rear door striker	980	-	-	840	-	-	-140	-	-

* - 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.: _____ - TEST DATE: August 30, 1995

Vehicle Mfgr./Make/Model: 1995 Ford Taurus GL 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 (113 kph) 30° , 68% 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.

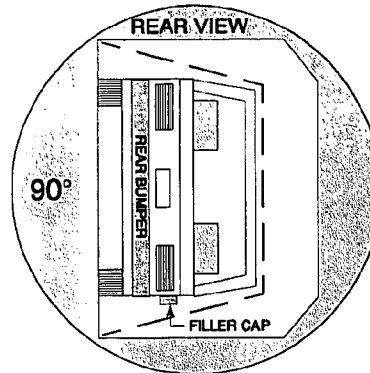
SOLVENT SPILLAGE DETAILS:

None

Table 6
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:
0-90 Deg.

Vehicle NHTSA ID No.:
--



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	2	minutes	02	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	7	minutes	2	seconds
Next whole minute interval	8	minutes		

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

IV. SOLVENT SPILLAGE LOCATION(S):

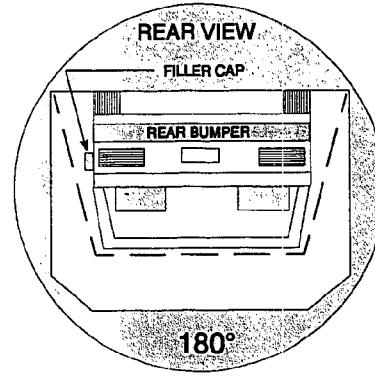
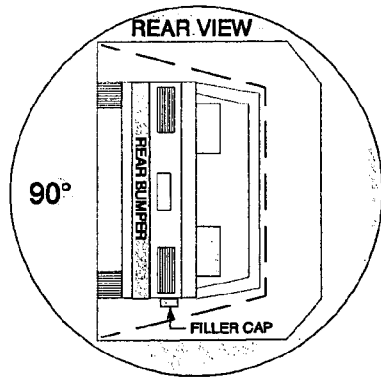
None

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

TEST PHASE:

90-180 Deg.

Vehicle NHTSA ID No.:



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.

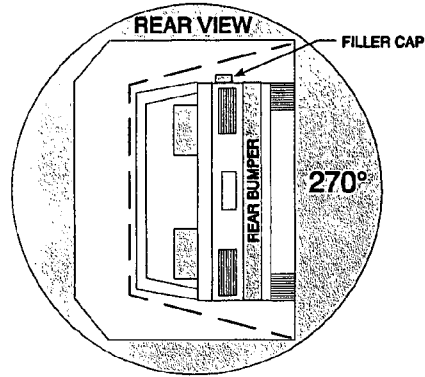
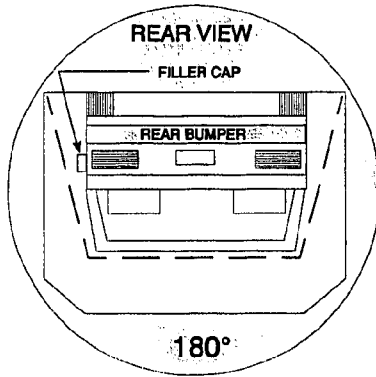
IV. SOLVENT SPILLAGE LOCATION(S):

None

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

TEST PHASE:
180-270 Deg.

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	50	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	50	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.

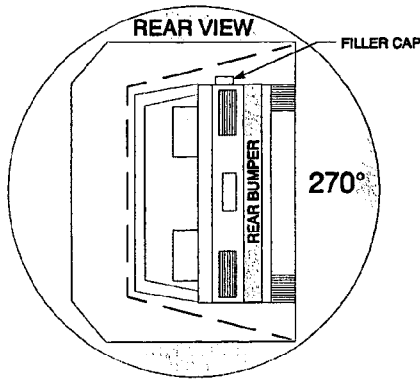
IV. SOLVENT SPILLAGE LOCATION(S):

None

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

TEST PHASE:
270-360 Deg.

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	<u>1</u>	minutes	<u>53</u>	seconds
(Spec. Range = 1 to 3 minutes)				
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>53</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>456.5</u>	kgs.	Right Rear	=	<u>345.0</u>	kgs.
Left Front	=	<u>519.0</u>	kgs.	Left Rear	=	<u>278.5</u>	kgs.
TOTAL FRONT WEIGHT	=	<u>975.5</u>	kgs.	(<u>61.0</u> % of Total Vehicle Weight)			
TOTAL REAR WEIGHT	=	<u>623.5</u>	kgs.	(<u>39.0</u> % of Total Vehicle Weight)			
TOTAL TEST WEIGHT	=	<u>1599.0</u>	kgs.				

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

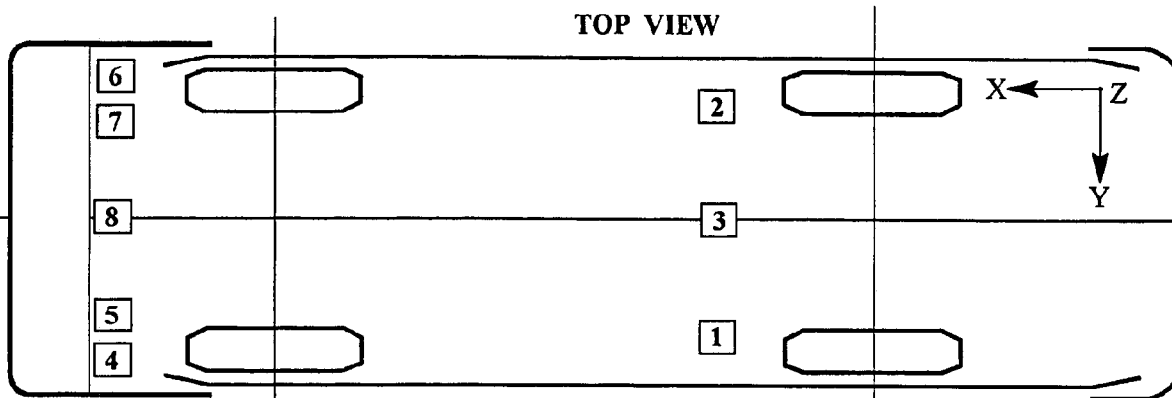
1. Row A at Bumper Level	=	<u>405</u>	millimeters
2. Row B at Mid-Stack Level	=	<u>325</u>	millimeters
3. Row C at Top of Stack Level	=	<u>305</u>	millimeters

INSTRUMENTATION:

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

Figure 7

SUMMARY OF VEHICLE 2 ACCELEROMETER DATA



Vehicle: Moving Deformable Barrier

NUMBER		UNIT	AMP	msec	AMP	msec	CHANNEL	DESCRIPT
							CLASS	
1	Acc 1 MDB Left Rail X	Gs	3.8	128.6	-53.4	36.4		60.0
1	Acc 1 MDB Left Rail Y	Gs	13.6	48.2	-21.7	54.1		60.0
2	Acc 2 MDB Right Rail X	Gs	1.7	165.6	-58.2	36.4		60.0
2	Acc 2 MDB Right Rail Y	Gs	7.0	48.4	-14.4	53.9		60.0
3	Acc 3 MDB C.G. X	Gs	2.6	175.1	-41.8	37.0		60.0
3	Acc 3 MDB C.G. Y	Gs	2.8	71.5	-13.4	59.9		60.0
3	Acc 3 MDB C.G. Z	Gs	25.2	57.2	-14.7	48.8		60.0
4	MDB Load Cell TL	Nwt	199958.5	39.0	-17627.6	79.3		60.0
5	MDB Load Cell BL	Nwt	108525.5	57.8	-6292.3	105.7		60.0
6	MDB Load Cell TR	Nwt	78714.3	38.4	-8449.1	70.4		60.0
7	MDB Load Cell BR	Nwt	52636.3	83.0	-11768.5	38.5		60.0
8	MDB Load Cell CL	Nwt	248285.0	36.0	-9018.4	115.8		60.0

Table 8

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

Test Date:				August 30, 1995				Vehicle:				Moving Deformable Barrier									
Location		Distance Right of Center										Distance Left of Center									
		813	711	610	508	406	305	203	102	0.0	102	203	305	406	508	610	711	813			
Top of Stack Level	Pre	230	230	231	230	230	229	230	230	230	230	230	230	230	230	230	230	230			
	Post	330	320	310	280	310	355	535	520	460	415	420	400	390	400	410	430	460			
	Crush	-100	-90	-79	-50	-80	-126	-305	-290	-230	-185	-190	-170	-160	-170	-180	-200	-230			
Mid-Stack Level	Pre	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230			
	Post	305	330	375	365	390	440	490	545	554	555	535	530	525	530	530	530	540			
	Crush	-75	-100	-145	-135	-160	-210	-260	-315	-324	-325	-305	-300	-295	-300	-300	-300	-310			
Bumper Level	Pre	N/A	130	130	130	130	130	130	130	130	129	130	130	130	130	130	130	N/A			
	Post	N/A	340	385	385	390	410	455	525	535	510	495	475	460	455	455	460	N/A			
	Crush	N/A	-210	-255	-255	-260	-280	-325	-395	-405	-381	-365	-345	-330	-325	-325	-330	N/A			

Figure 8

CAMERA POSITIONS FOR VEHICLE TO VEHICLE ANGLED FRONTAL IMPACT

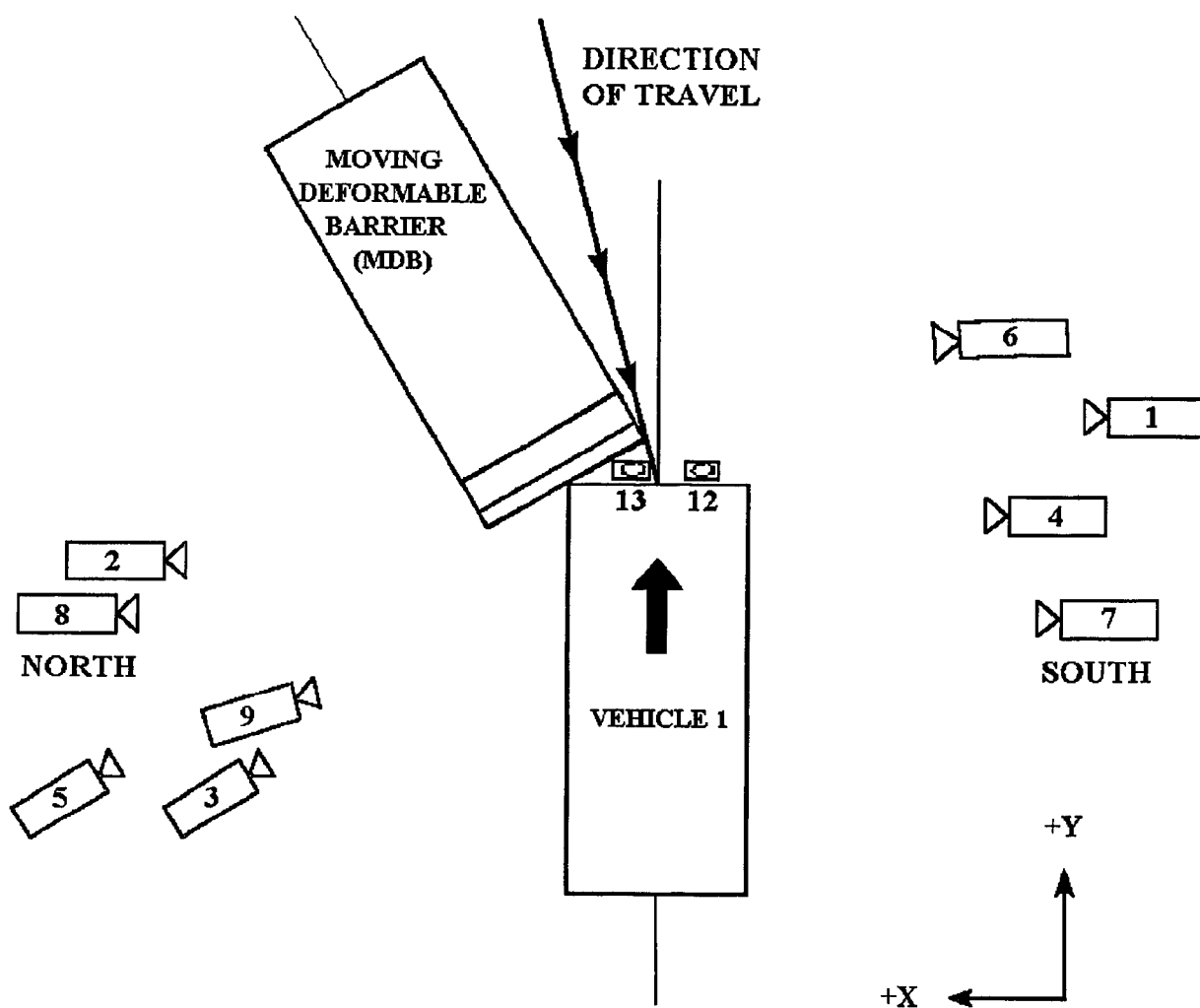


Table 9
HIGH-SPEED CAMERA LOCATIONS
Vehicle: 1995 Ford Taurus GL 4-door sedan,

Test No. Y57-2-1548

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	8770	-3030	1050	-2	13	1000	1333	C21880
3	North Impact Point	7200	-4590	1390	-4	25	980	1692	C14951
4	South Impact Point	-8550	550	1160	-1	25	960	1627	C7477
5	Moving Barrier Right Side View	8230	-3950	1030	-1	25	1020	1330	142
6	Moving Barrier Left Side View	-7450	4210	1030	-1	25	1090	1328	72
7	Vehicle 1 Passenger Side View	-10540	-2360	1495	-3	35	1100	1663	A1264
8	Vehicle 1 Driver Side View	10250	-800	1520	-5	35	1100	1650	A1281
9	Vehicle 1 Driver and Interior View	6800	-4590	1930	-8	35	995	1325	C7914
10	Vehicle 1 Passenger belt/D-ring View	-	-	-	-	7.5	1110	2000	C23844
11	Vehicle 1 Driver belt/D-ring View	-	-	-	-	8	1005	2029	204
12	Overhead Overall View	940	0	9805	-90	13	1060	1326	C9836
13	Overhead Close-up	940	0	9805	-90	25	930	1332	62

*X = film plane to Vehicle 1 longitudinal centerline, positive left

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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OVERALL TEST SETUP



Figure A-1 PRE-TEST OVERHEAD VIEW

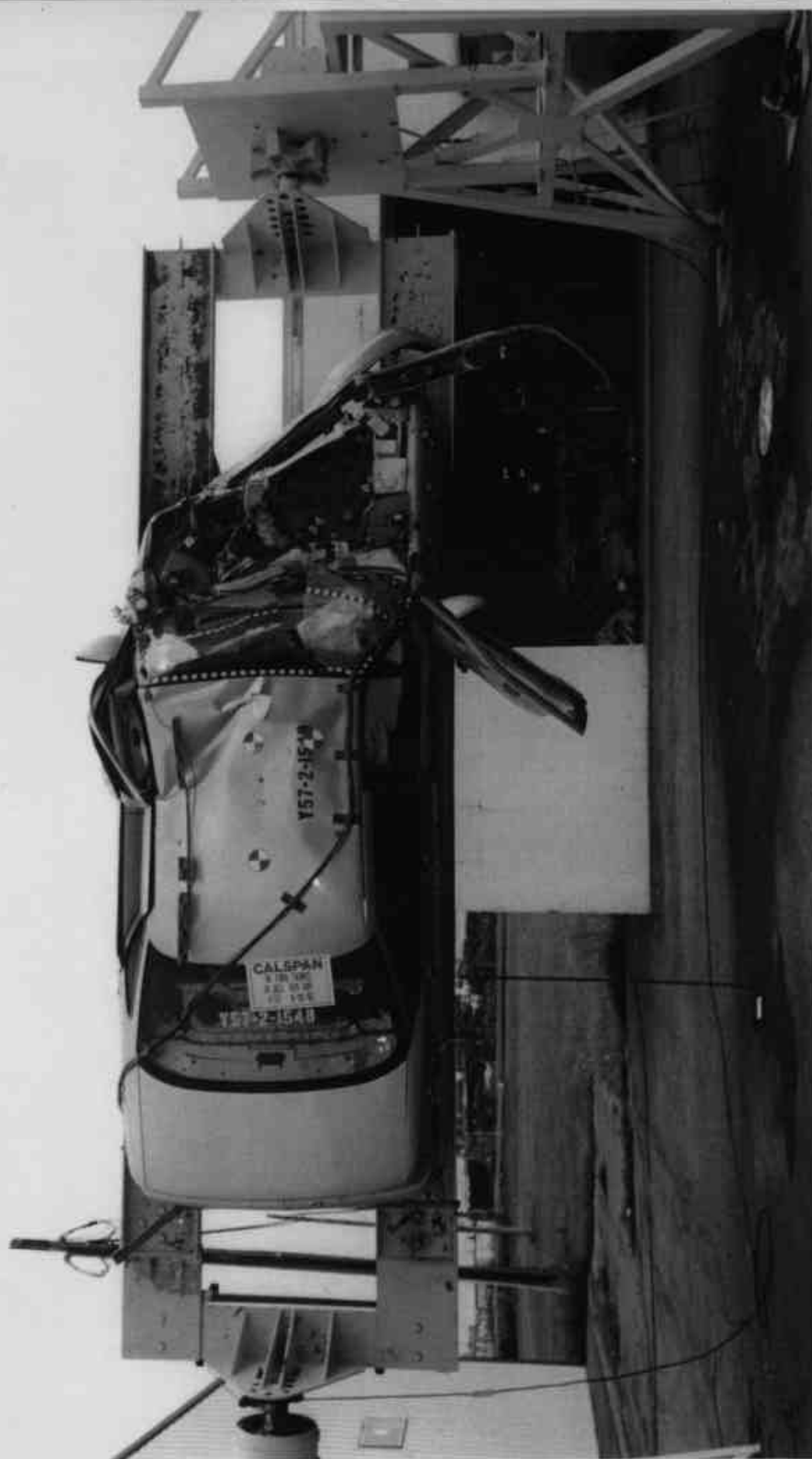


Figure A-2 POST-TEST OVERHEAD VIEW

PHOTOGRAPH NOT AVAILABLE



Figure A-4 POST-TEST OVERALL SIDE VIEW

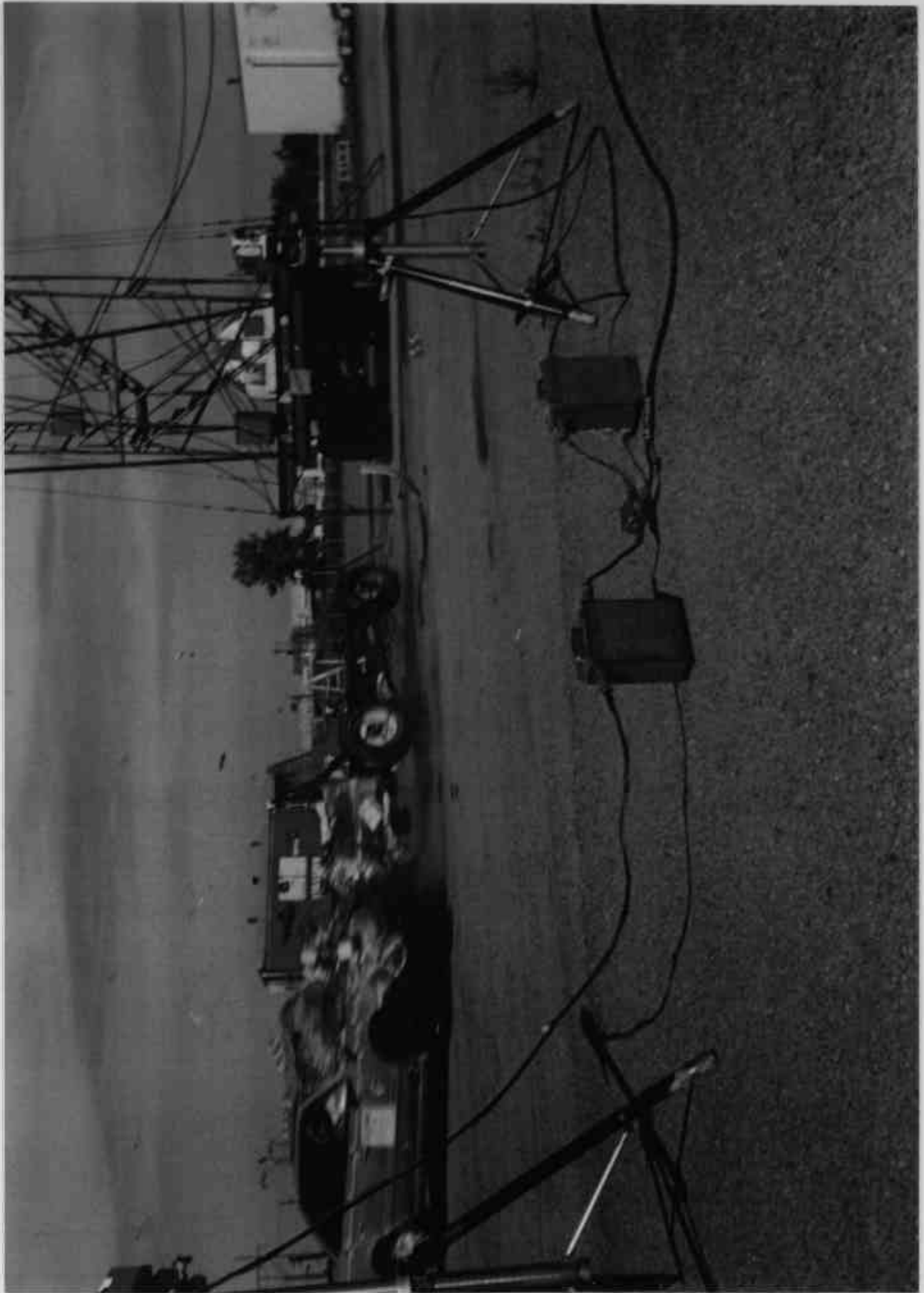


Figure A-5 IMPACT PHOTO

VEHICLE 1 PHOTOGRAPHS



Figure A-6 PRE-TEST FRONT VIEW



Figure A-7 POST-TEST FRONT VIEW

A-10

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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

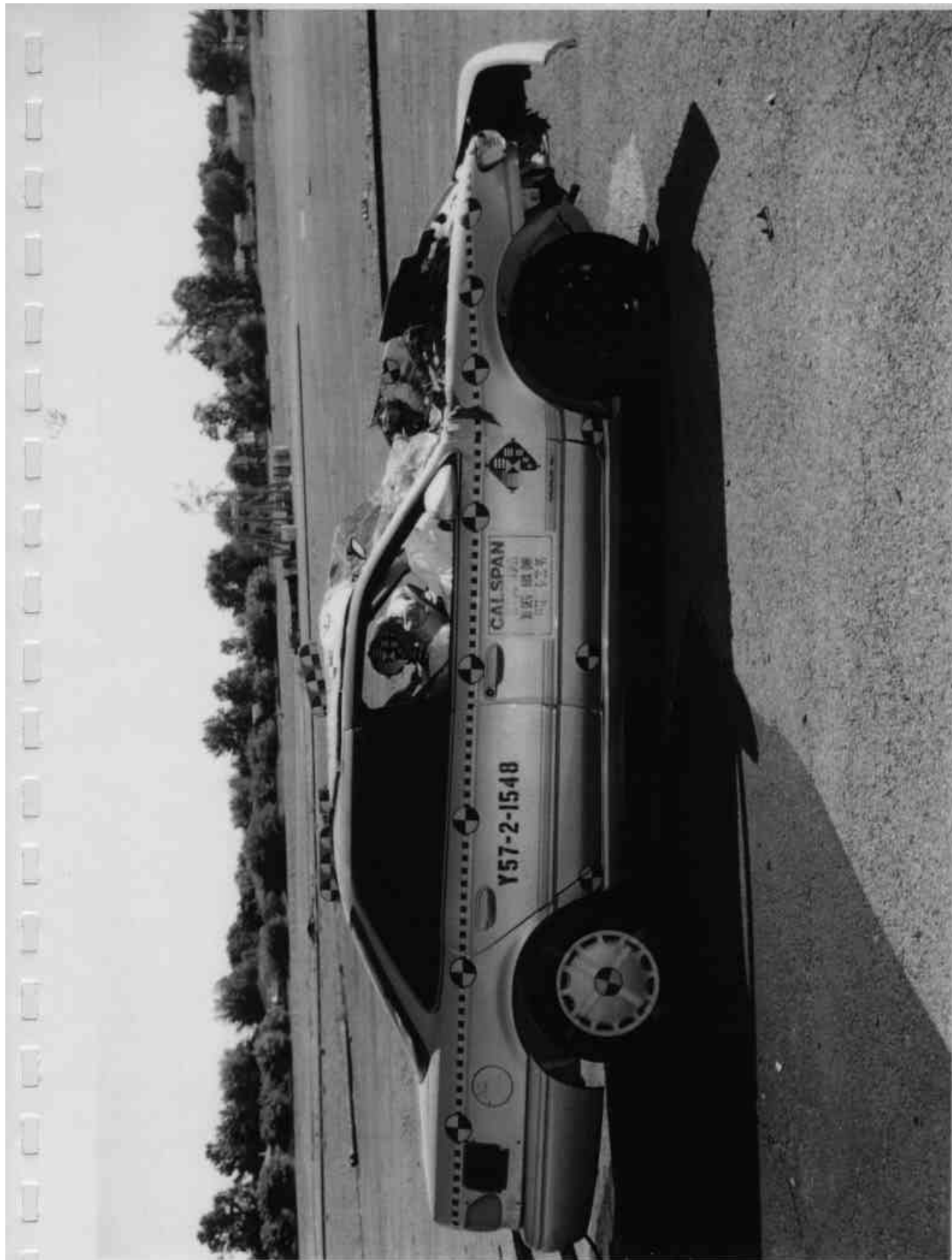


Figure A-11 POST-TEST RIGHT SIDE VIEW



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



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

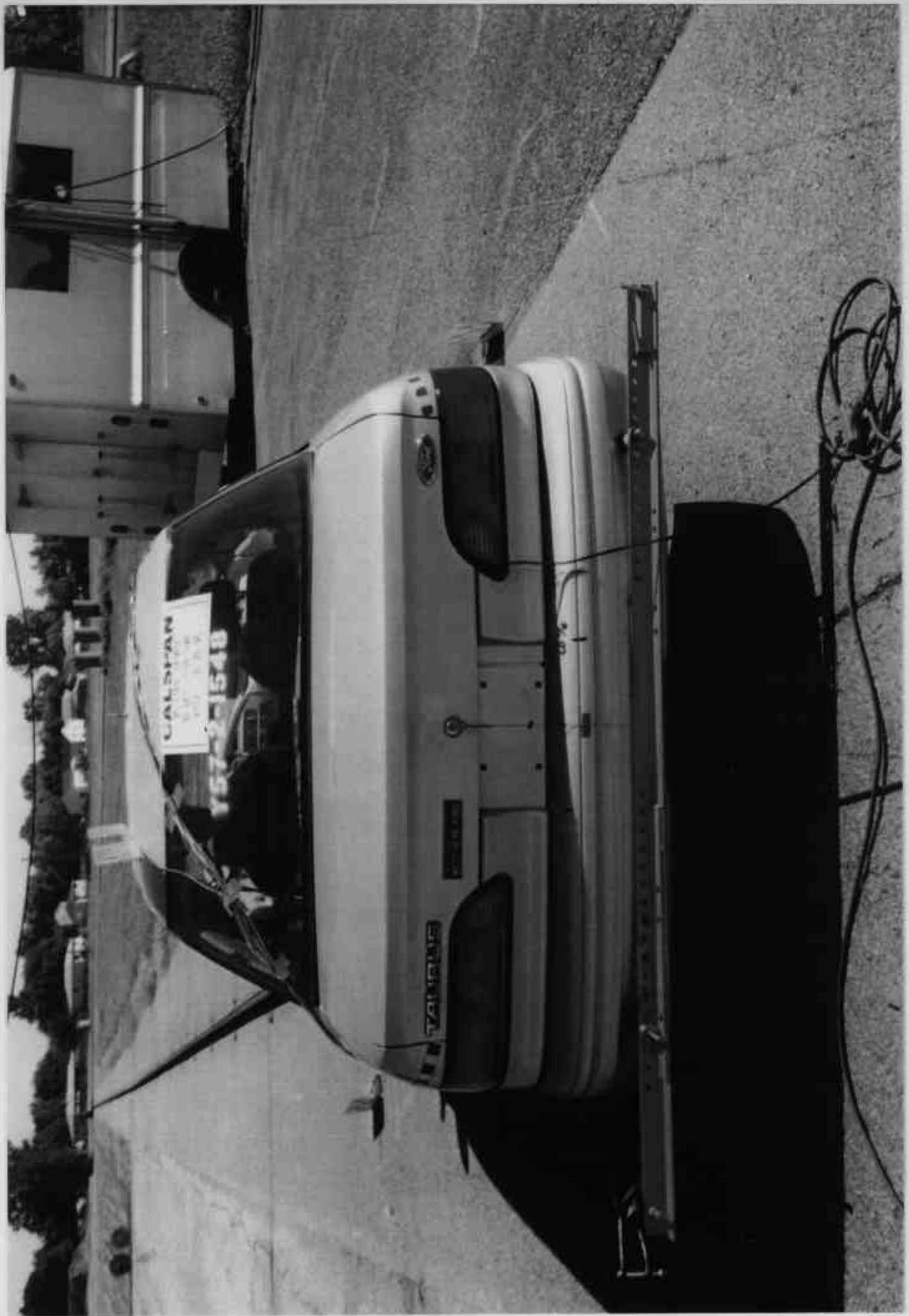


Figure A-14 PRE-TEST REAR VIEW



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

2322



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

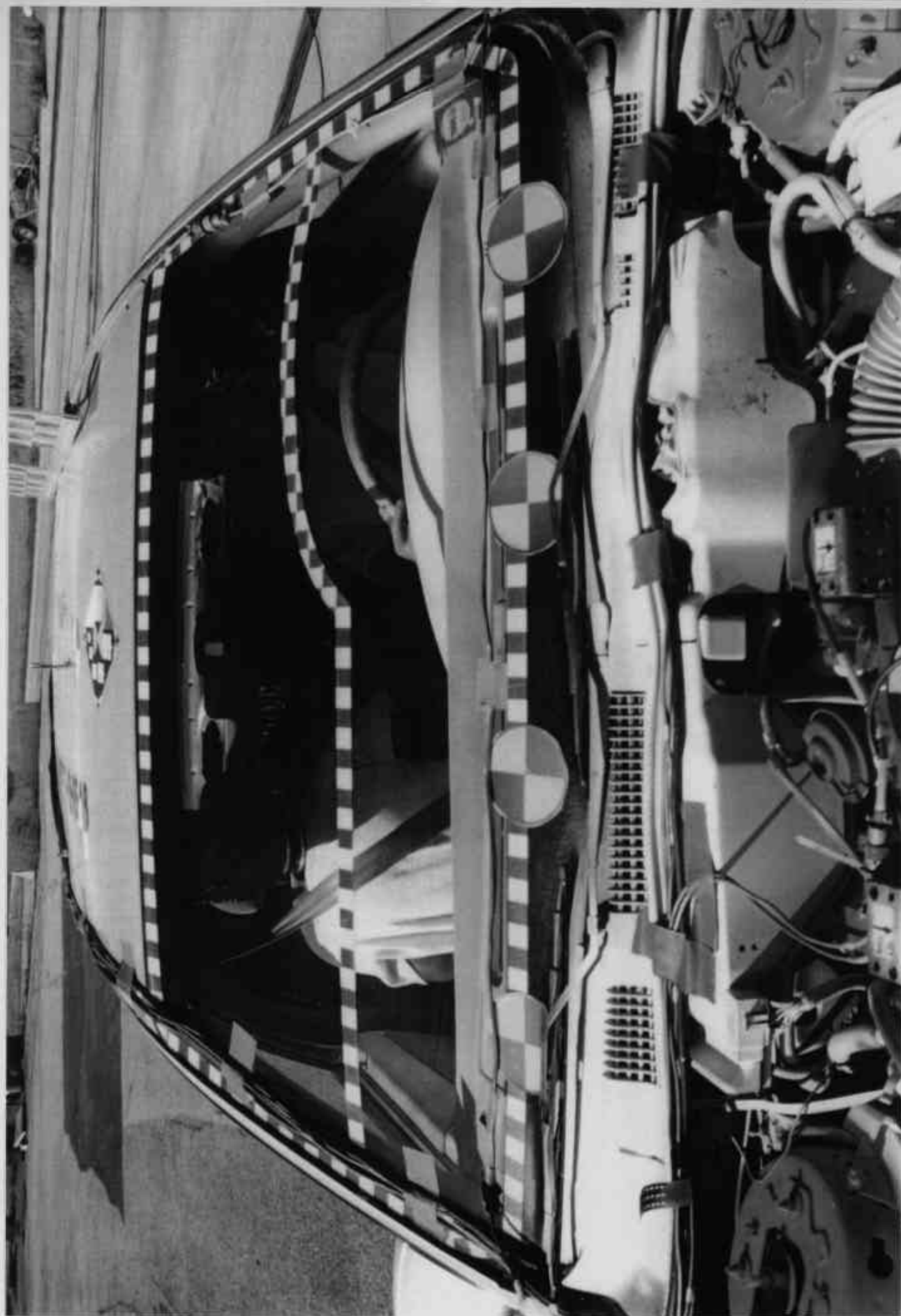


Figure A-22 PRE-TEST WINDSHIELD VIEW



Figure A-23 POST-TEST WINDSHIELD VIEW

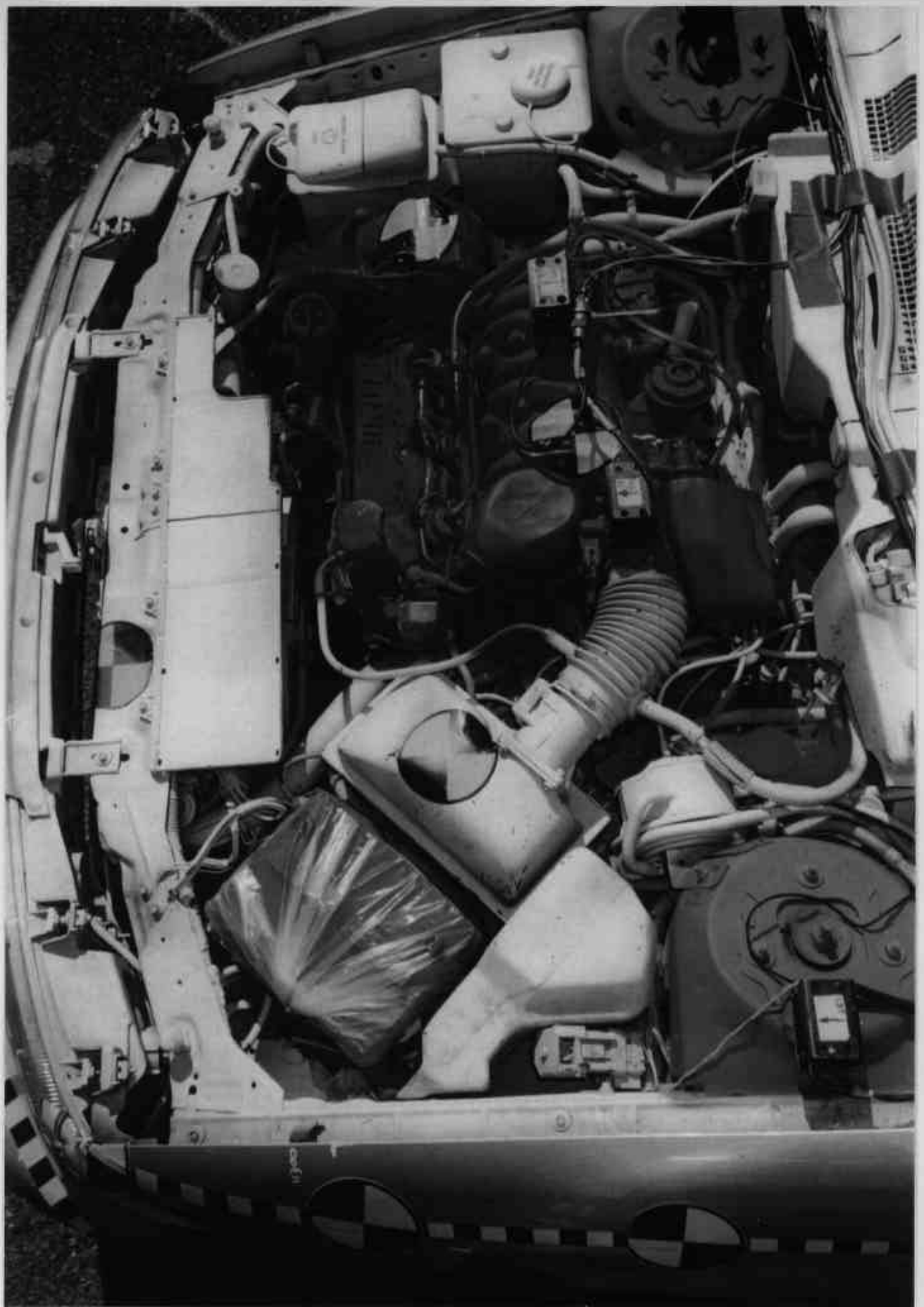


Figure A-24 PRE-TEST OVERHEAD ENGINE COMPARTMENT VIEW

A-27

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Figure A-25 POST-TEST OVERHEAD ENGINE COMPARTMENT VIEW

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8304-2



Figure A-26 PRE-TEST UNDERBODY FRONT VIEW

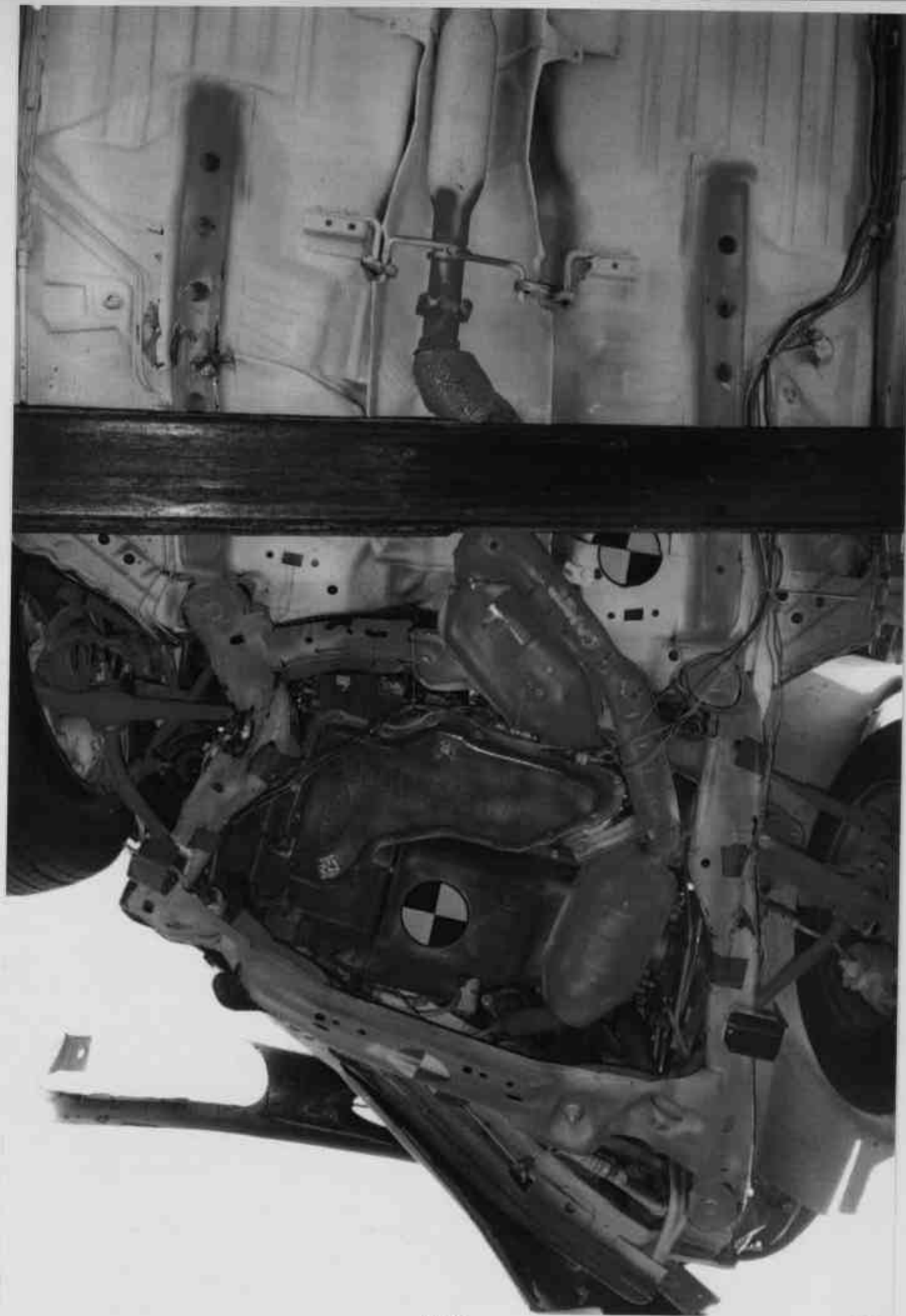


Figure A-27 POST-TEST UNDERBODY FRONT VIEW

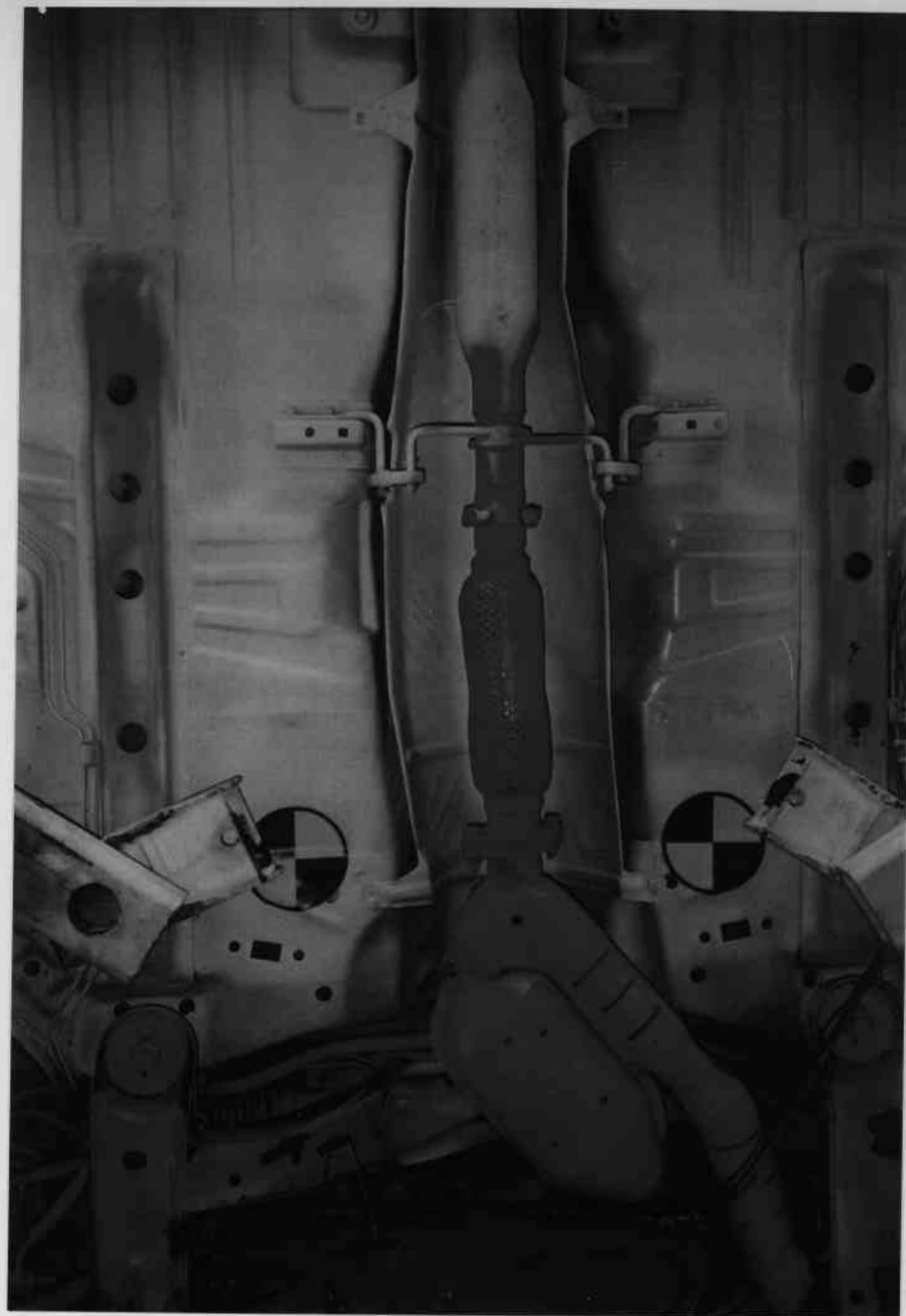


Figure A-28 PRE-TEST UNDERBODY MID VIEW

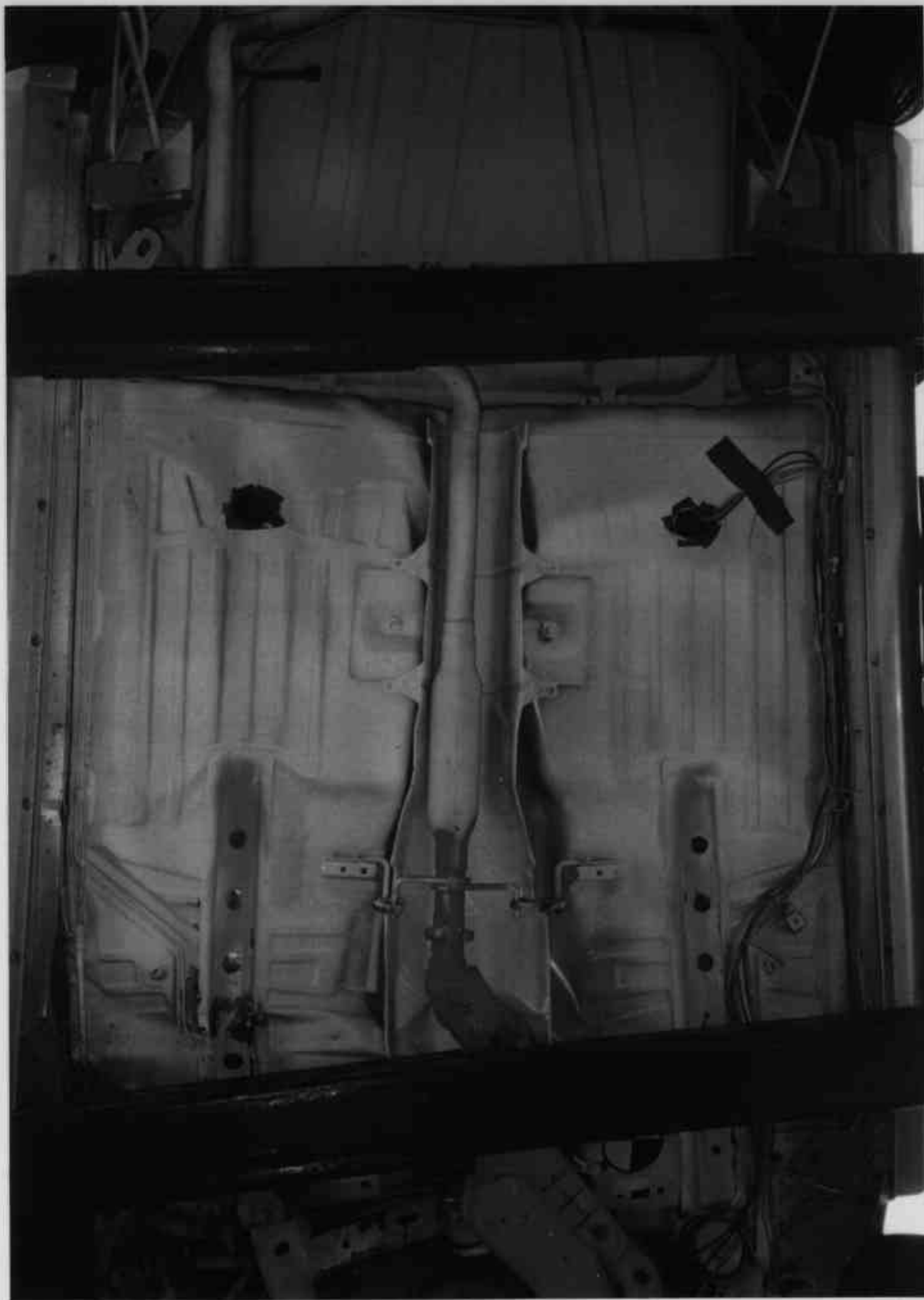


Figure A-29 POST-TEST UNDERBODY MID VIEW



Figure A-30 PRE-TEST UNDERBODY REAR VIEW

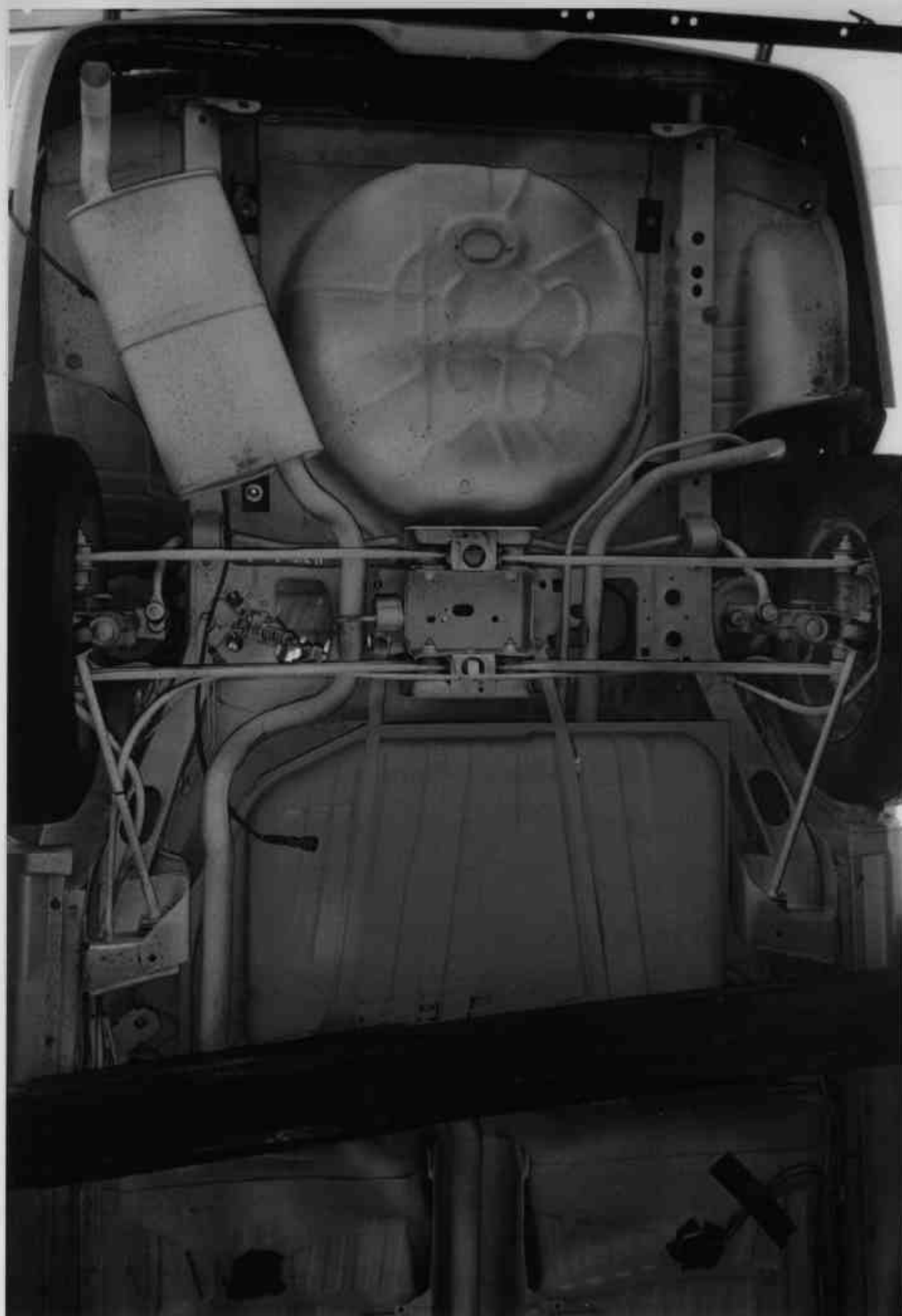


Figure A-31 POST-TEST UNDERBODY REAR VIEW



Figure A-32 PRE-TEST UNDERBODY CLOSE-UP OF FRONT STRUCTURE



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



Figure A-37 POST-TEST DRIVER CLOSE-UP WITH DOOR OPEN
A-40



Figure A-38 PRE-TEST DRIVER FOOT/LEG CLOSE-UP WITH DOOR OPEN
A-41



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



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



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



Figure A-42 PRE-TEST PASSENGER CLOSE-UP WITH DOOR OPEN
A-45



Figure A-43 POST-TEST PASSENGER CLOSE-UP WITH DOOR OPEN

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8304-2



Figure A-44 PRE-TEST PASSENGER FOOT/LEG CLOSE-UP WITH DOOR OPEN
A-47



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

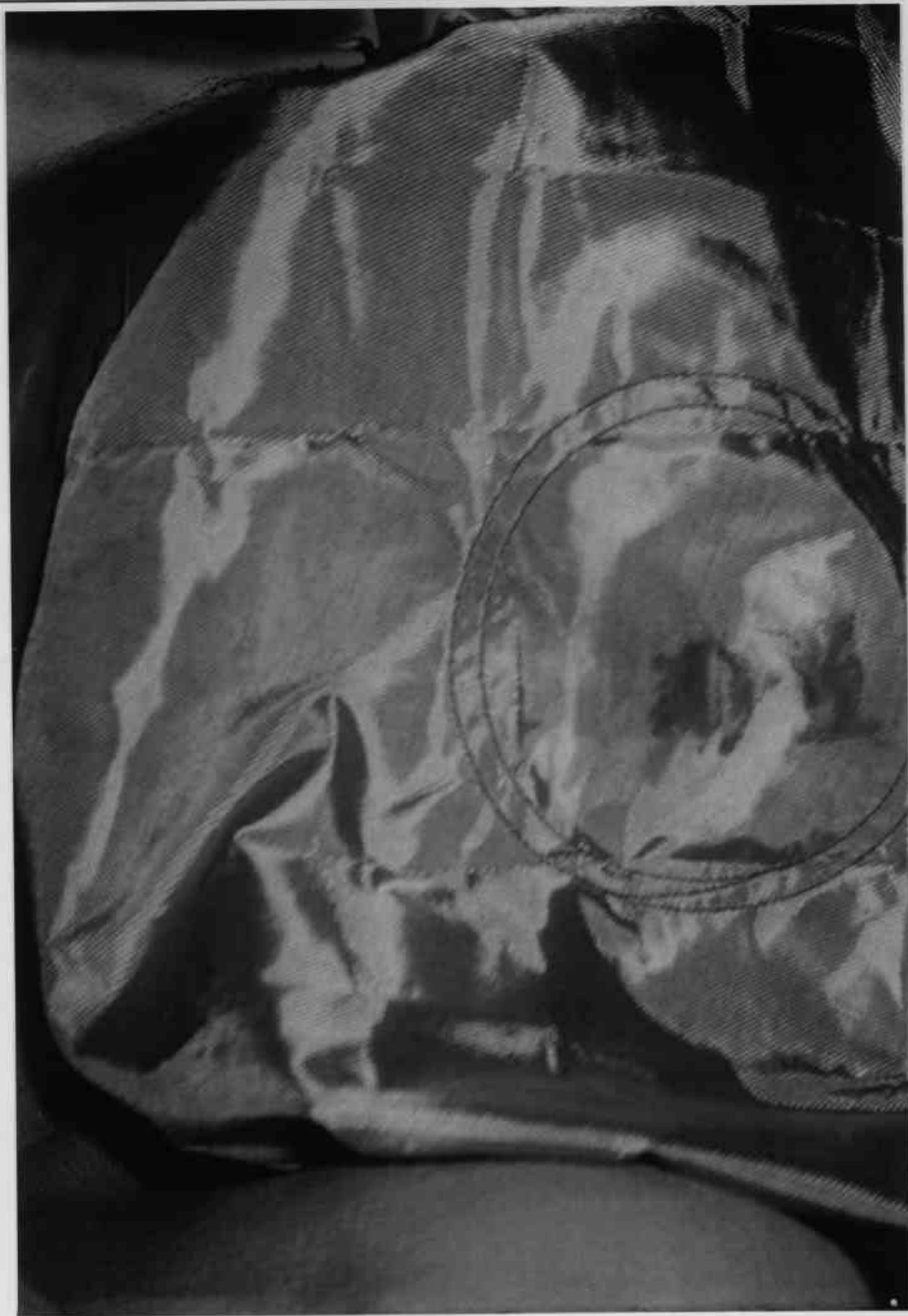


Figure A-46 POST-TEST DRIVER CHEST CONTACT POINT



Figure A-47 POST-TEST PASSENGER CHEST CONTACT POINT

PHOTOGRAPH NOT AVAILABLE

PHOTOGRAPH NOT AVAILABLE

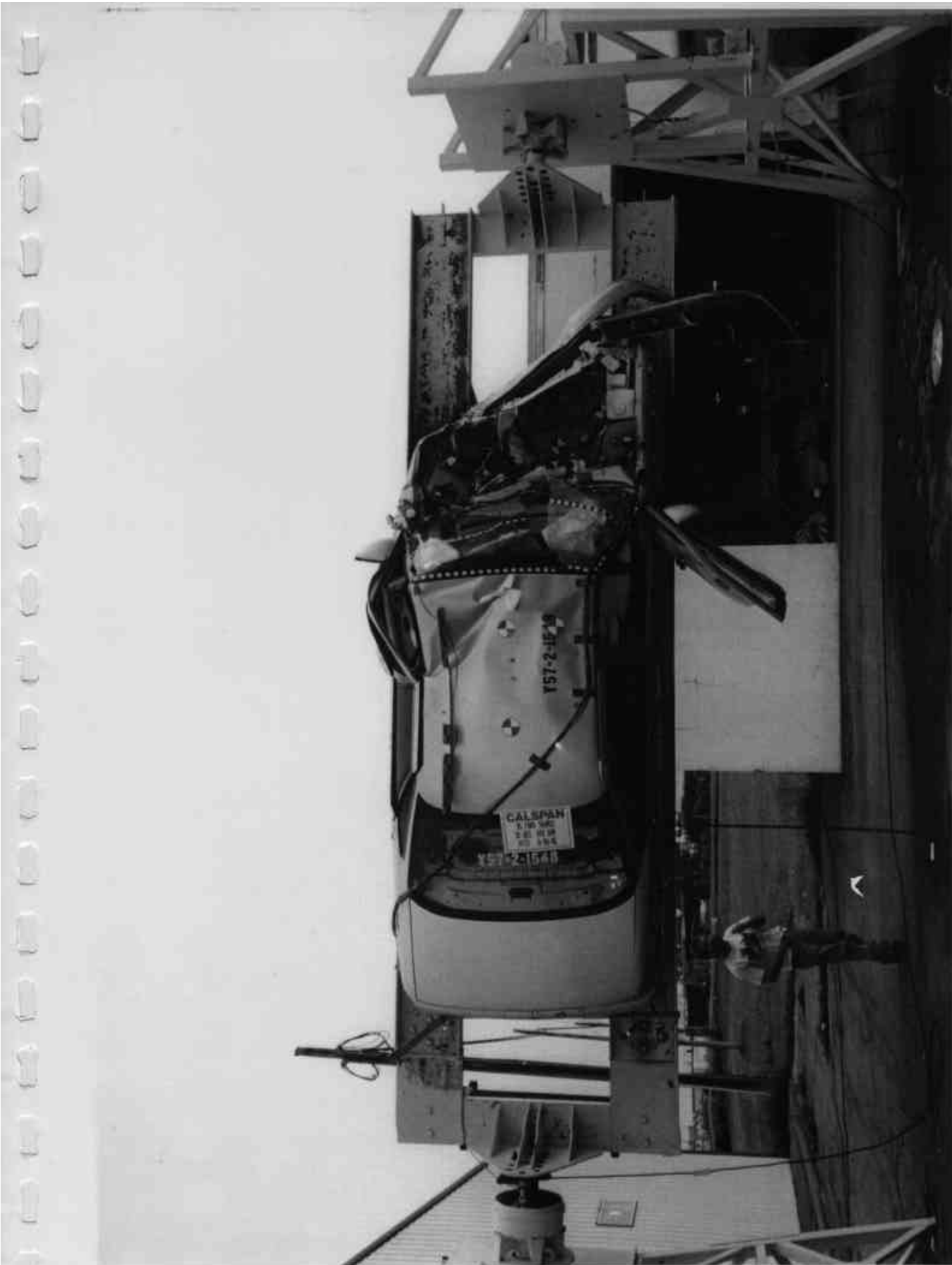


Figure A-50 POST-TEST TOP VIEW

VEHICLE 2 PHOTOGRAPHS

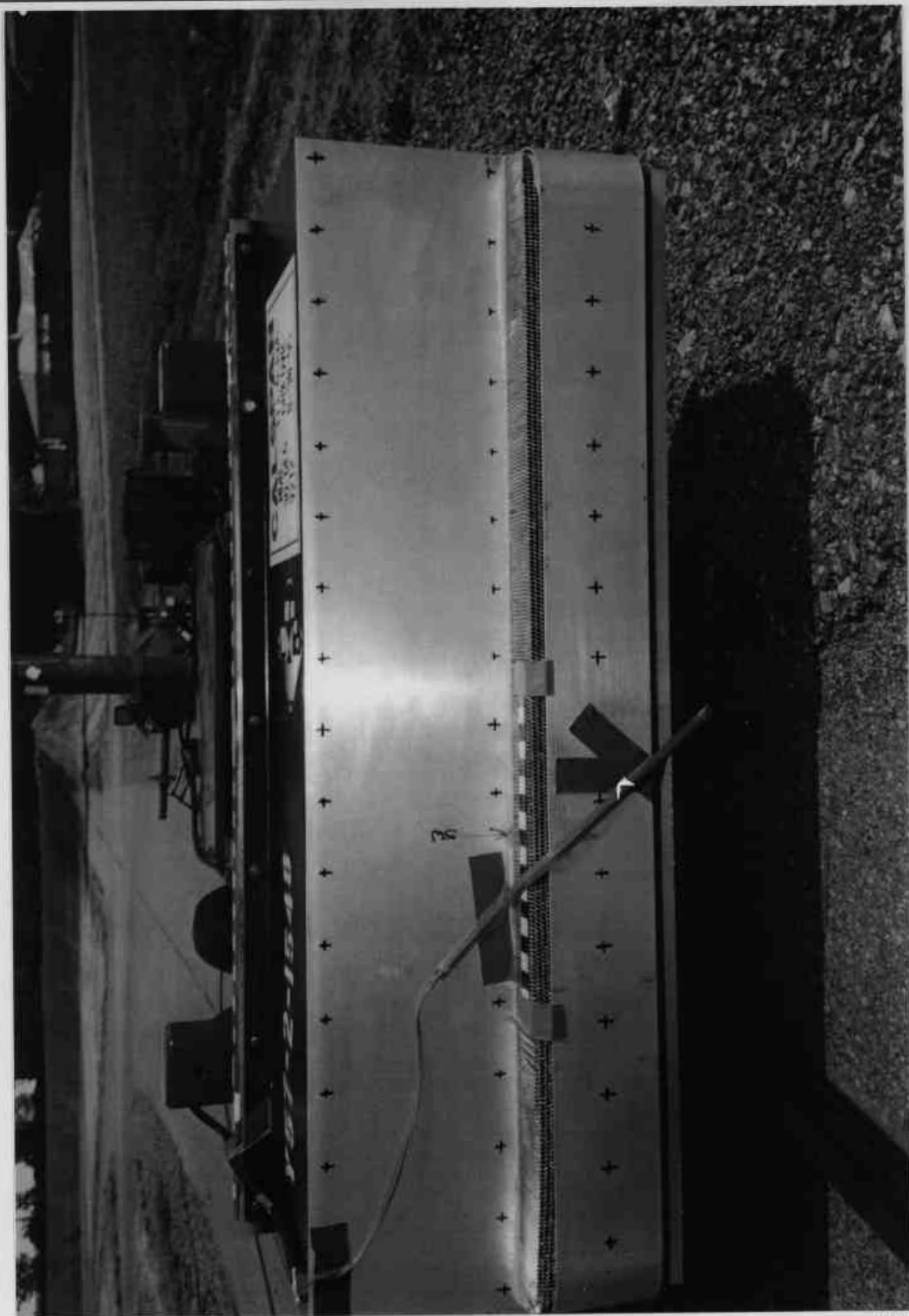


Figure A-51 PRE-TEST MOVING DEFORMABLE BARRIER FRONT VIEW



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

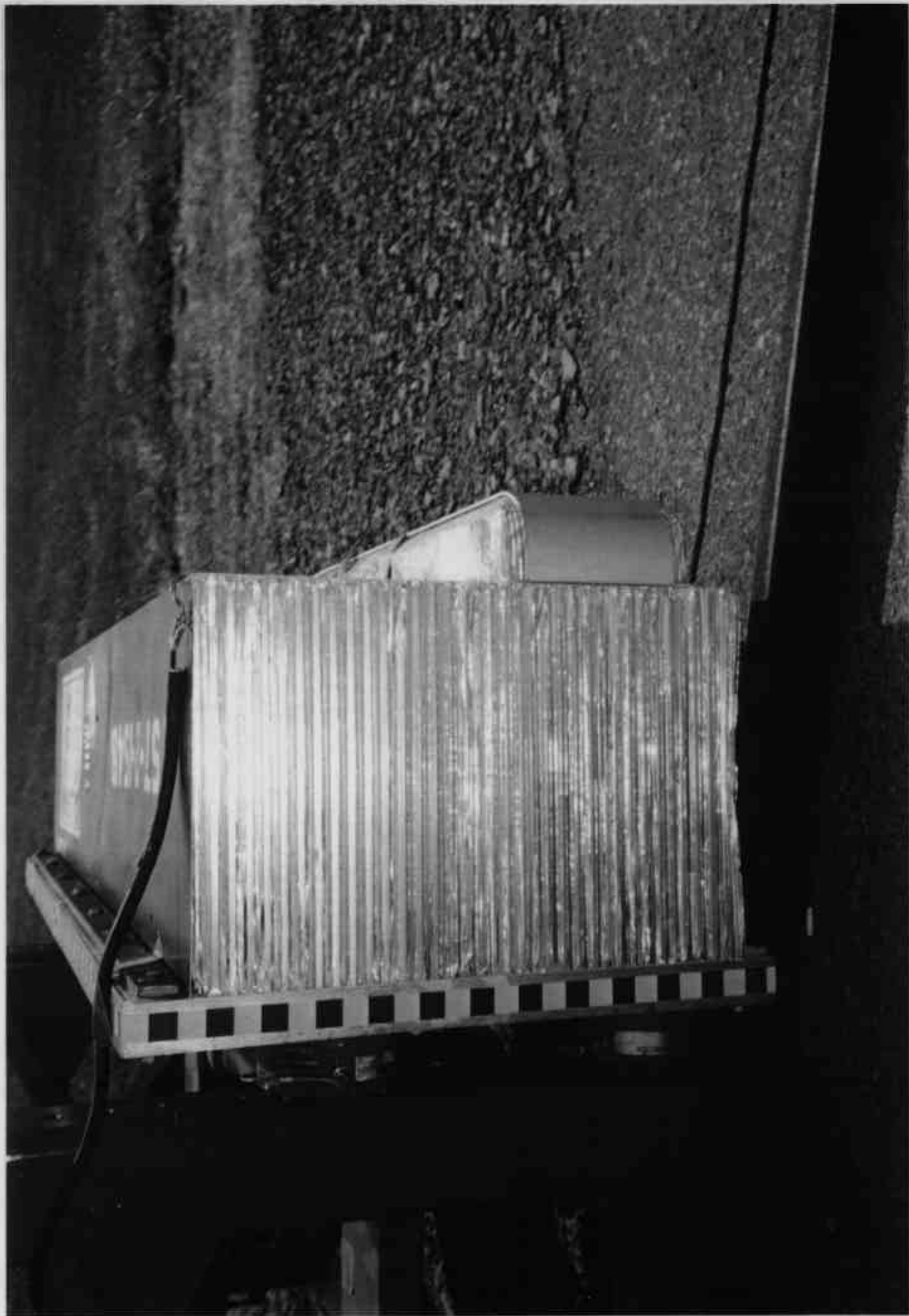


Figure A-53 PRE-TEST MOVING DEFORMABLE BARRIER RIGHT SIDE VIEW



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



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

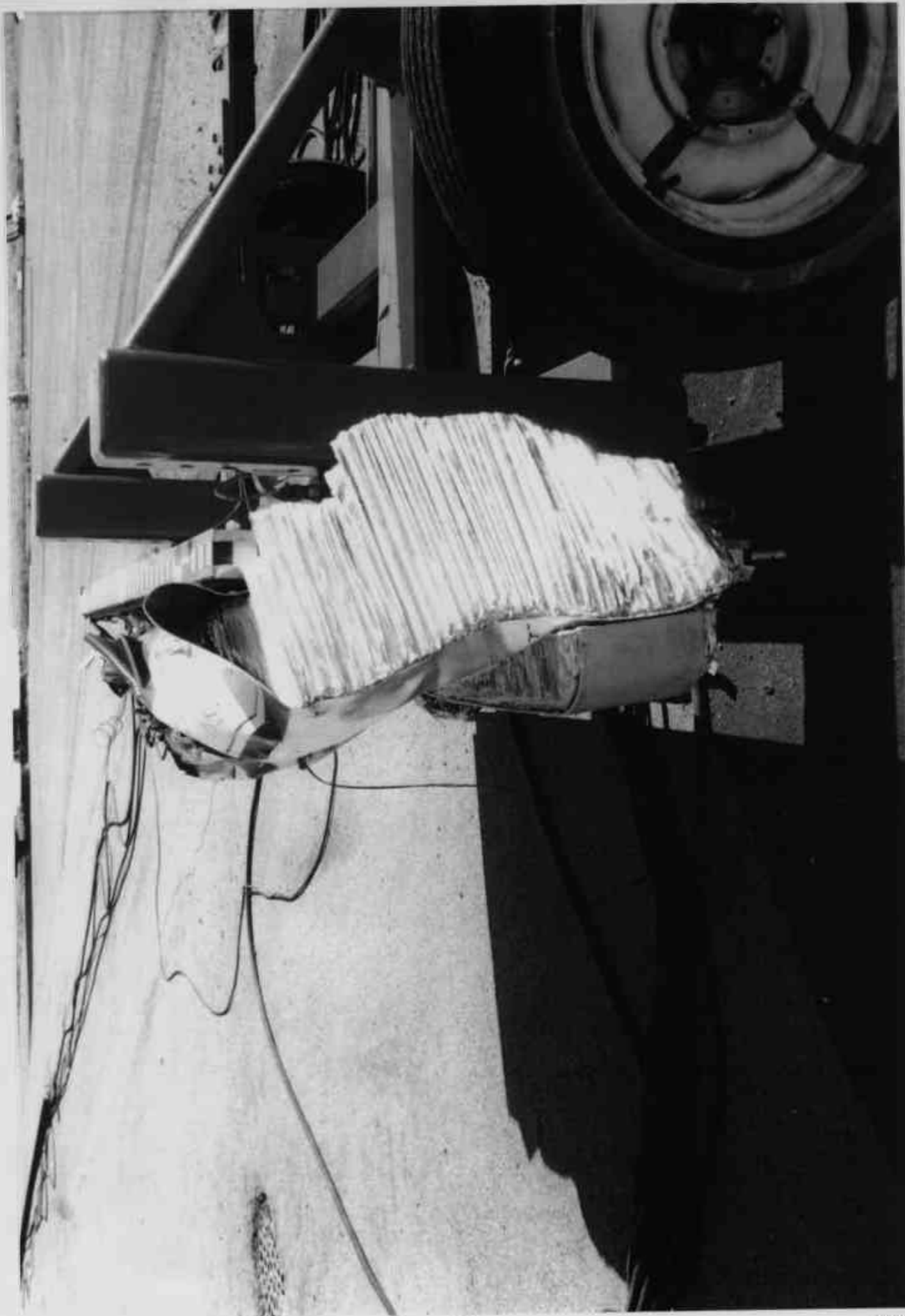


Figure A-56 POST-TEST MOVING DEFORMABLE BARRIER LEFT SIDE VIEW

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 #: 1548
 SERIES #: 1

TEST DATE: 30 Aug 1995
 TEST TIME: 14:48:44
 BOARD: a

TITLE: VTV TEST #2

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P1 Head X	Gs	35.1	154.8	-58.4	75.5	1000.0
2	P1 Head Y	Gs	79.5	153.4	-6.4	93.4	1000.0
3	P1 Head Z	Gs	35.2	80.2	-50.0	61.9	1000.0
4	P1 HD9Y (X)	Gs	30.7	153.1	-53.8	67.3	1000.0
5	P1 Chest X	Gs	17.1	144.1	-69.6	70.2	180.0
6	P1 Chest Y	Gs	17.4	74.3	-13.9	90.8	180.0
7	P1 Chest Z	Gs	17.4	113.2	-28.9	65.6	180.0
8	P1 HD9Y (Z)	Gs	40.6	80.3	-53.4	61.9	1000.0
9	P1 Upper Neck Fx	Nwt	585.2	74.2	-383.7	150.2	1000.0
10	P1 Upper Neck Fy	Nwt	417.0	66.6	-222.2	151.1	1000.0
11	P1 Upper Neck Fz	Nwt	4036.7	67.9	-642.6	113.6	1000.0
12	P1 HD9X (Y)	Gs	71.3	153.7	-12.7	72.7	1000.0
13	P1 Upper Neck Mx	Nwt-M	22.3	63.8	-27.4	79.0	600.0
14	P1 Upper Neck My	Nwt-M	22.5	55.3	-59.7	82.4	600.0
15	P1 Upper Neck Mz	Nwt-M	22.0	78.7	-32.2	113.5	600.0
16	P1 HD9X (Z)	Gs	24.7	97.6	-39.7	61.8	1000.0
17	P1 Head Resultant	Gs	86.9	153.4	.1	15.0	1000.0
18	P1 Chest Resultant	Gs	72.1	70.2	.0	-13.9	180.0
19	P1 Upper Neck Force Res	Nwt	4061.9	67.9	4.8	4.4	1000.0
20	P1 Upper Neck Moment Res	Nwt-M	65.1	81.2	.0	-3.0	600.0

36 ms Fixed Duration HIC SUMMARY: P1 Head Resultant

hic: 620.56
 t1 = 59.880 msec
 t2 = 87.720 msec
 Average G's Over Hic Duration = 54.86

CLIP SUMMARY: P1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 61.820 G's
 Tstart = 68.5200 ms
 Tend = 71.6400 ms
 CSI = 627.606

FACILITY: TRACK
RUN #: 1548
SERIES #: 1

TEST DATE: 30 Aug 1995
TEST TIME: 14:48:44
BOARD: b

TITLE: VTV TEST #2

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P2 Head X	Gs	9.3	102.2	-40.2	62.6	1000.0
2	P2 Head Y	Gs	9.2	341.0	-33.1	131.0	1000.0
3	P2 Head Z	Gs	4.5	42.7	-37.6	64.4	1000.0
4	P1 Chest Disp.	mm	.1	43.3	-35.2	105.8	60.0
5	P2 Chest X	Gs	3.8	134.0	-56.2	74.5	180.0
6	P2 Chest Y	Gs	4.1	391.1	-19.7	75.0	180.0
7	P2 Chest Z	Gs	14.2	108.4	-23.5	63.6	180.0
8	P2 Chest Disp.	mm	1.8	350.9	-46.1	68.6	60.0
9	P1 Lower Neck Fx	Nwt	442.0	107.0	-1543.7	74.6	1000.0
10	P1 Lower Neck Fy	Nwt	3524.1	73.6	-367.0	151.2	1000.0
11	P1 Lower Neck Fz	Nwt	5189.7	67.8	-1141.5	107.6	1000.0
12	P1 HD9Z (X)	Gs	36.2	154.6	-70.2	67.3	1000.0
13	P1 Lower Neck Mx	Nwt-M	36.1	108.2	-168.7	73.6	600.0
14	P1 Lower Neck My	Nwt-M	47.9	378.0	-328.4	68.3	600.0
15	P1 Lower Neck Mz	Nwt-M	190.9	73.1	-51.0	151.3	600.0
16	P1 HD9Z (Y)	Gs	87.9	153.7	-11.5	146.3	1000.0
17	P2 Head Resultant	Gs	52.9	64.3	.0	6.1	1000.0
18	P2 Chest Resultant	Gs	60.7	74.8	.0	-.7	180.0
19	P1 Lwr. Neck Force Res.	Nwt	5737.4	72.6	2.1	6.5	1000.0
20	P1 Lwr. Neck Moment Res.	Nwt-M	401.6	73.1	.0	-12.6	600.0

36 ms Fixed Duration HIC SUMMARY: P2 Head Resultant

hic: 260.80
t1 = 53.160 msec
t2 = 83.880 msec
Average G's Over Hic Duration = 37.29

CLIP SUMMARY: P2 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 59.150 G's
Tstart = 73.3200 ms
Tend = 76.4400 ms
CSI = 565.632

FACILITY: TRACK

RUN #: 1548

SERIES #: 1

TEST DATE: 30 Aug 1995

TEST TIME: 14:48:44

BOARD: c

TITLE: VTV TEST #2

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P1 Left Femur	Nwt	160.1	92.5	-10193.4	64.9	600.0
2	P1 Right Femur	Nwt	1370.2	74.0	-15620.4	57.0	600.0
3	P1 Lt Upper Tibia Mx	Nwt-M	36.6	91.6	-80.5	53.9	600.0
4	P1 Lt Upper Tibia My	Nwt-M	49.1	148.1	-80.1	48.6	600.0
5	P1 Lt Lower Tibia Fy	Nwt	2933.6	50.0	-181.6	143.2	600.0
6	P1 Lt Lower Tibia Fz	Nwt	332.3	137.6	-3724.8	50.4	600.0
7	P1 Lt Lower Tibia Mx	Nwt-M	506.7	51.8	-20.0	34.7	600.0
8	P1 Rt Upper Tibia Mx	Nwt-M	11837.9	53.6	-3557.1	72.8	600.0
9	P1 Rt Upper Tibia My	Nwt-M	2783.2	57.6	-7508.2	49.2	600.0
10	P1 Rt Lower Tibia Fy	Nwt	1909.9	48.5	-1043.5	53.4	600.0
11	P1 Rt Lower Tibia Fz	Nwt	219.7	171.4	-7243.6	51.0	600.0
12	P1 Rt Lower Tibia Mx	Nwt-M	492.9	52.4	-47.0	94.0	600.0
13	P1 Left Knee Shear	mm	.1	40.0	-1.5	53.5	180.0
14	P1 Right Knee Shear	mm	.2	49.0	-4.8	57.6	180.0
15	P1 Lap Belt Load	Nwt	4407.1	71.8	-56.9	150.1	60.0
16	Acc 13 A-Pillar Hinge X	Gs	24.1	63.5	-73.1	49.7	60.0

FACILITY: TRACK
RUN #: 1548
SERIES #: 1

TEST DATE: 30 Aug 1995
TEST TIME: 14:48:44
BOARD: d

TITLE: VTV TEST #2

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P1 Pelvic X	Gs	13.3	111.2	-66.6	56.9	60.0
2	P1 Pelvic Y	Gs	34.1	56.9	-21.2	91.4	60.0
3	P1 Pelvic Z	Gs	14.0	103.0	-4.4	166.0	60.0
4	Chest Displacement #125	mm	.4	185.0	-34.7	67.7	60.0
5	P2 Upper Neck Fx	Nwt	645.5	54.0	-571.5	143.2	1000.0
6	P2 Upper Neck Fy	Nwt	1150.2	143.5	-749.4	15.5	1000.0
7	P2 Upper Neck Fz	Nwt	1853.2	64.4	-1058.6	15.5	1000.0
8	Chest Displacement #126	mm	77.6	165.8	-44.6	67.9	60.0
9	P2 Upper Neck Mx	Nwt-M	31.8	76.2	-75.1	143.2	600.0
10	P2 Upper Neck My	Nwt-M	44.3	69.6	-52.0	54.4	600.0
11	P2 Upper Neck Mz	Nwt-M	20.6	149.9	-31.7	100.1	600.0
12	Chest Displacement #127	mm	9.1	123.4	-13.7	57.5	60.0
13	Chest Displacement #128	mm	93.4	161.6	-8.5	153.5	60.0
14	Chest Displacement #129	mm	20.0	79.4	-17.5	166.0	60.0
15	Chest Displacement #130	mm	.8	156.1	-31.2	68.9	60.0
16	Chest Displacement #131	mm	.1	19.4	-45.4	68.2	60.0
17	P1 Pelvic Res.	Gs	75.1	56.9	.0	-19.6	60.0
18	P2 Upper Neck Force Res	Nwt	1893.0	64.4	5.5	33.6	1000.0
19	P2 Upper Neck Moment Res	Nwt-M	76.4	143.2	.0	-14.8	600.0

FACILITY: TRACK
RUN #: 1548
SERIES #: 1

TEST DATE: 30 Aug 1995
TEST TIME: 14:48:44
BOARD: e

TITLE: VTV TEST #2

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P2 Left Femur	Nwt	578.0	49.3	-9297.4	55.9	600.0
2	P2 Right Femur	Nwt	483.6	52.4	-3539.3	58.3	600.0
3	P2 Lt Upper Tibia Mx	Nwt-M	154.6	58.8	-25.9	427.0	600.0
4	P2 Lt Upper Tibia My	Nwt-M	16.7	190.4	-198.5	49.0	600.0
5	P2 Lt Lower Tibia Fy	Nwt	561.9	53.0	-706.6	52.4	600.0
6	P2 Lt Lower Tibia Fz	Nwt	492.6	69.4	-3406.1	53.8	600.0
7	P2 Lt Lower Tibia Mx	Nwt-M	234.2	54.1	-23.6	48.2	600.0
8	P2 Rt Upper Tibia Mx	Nwt-M	166.2	85.4	-118.7	57.0	600.0
9	P2 Rt Upper Tibia My	Nwt-M	113.6	58.2	-49.1	46.2	600.0
10	P2 Rt Lower Tibia Fy	Nwt	251.1	58.1	-381.4	45.8	600.0
11	P2 Rt Lower Tibia Fz	Nwt	226.8	58.1	-1683.0	90.6	600.0
12	P2 Rt Lower Tibia Mx	Nwt-M	55.8	91.1	-51.2	61.3	600.0
13	P2 Left Knee Shear	mm	.2	424.6	-.4	170.9	180.0
14	P2 Right Knee Shear	mm	.1	48.4	-2.5	94.8	180.0
15	Chest Displacement #132	mm	.1	19.3	-49.4	68.2	60.0
16	Acc 9 Lt Rr Compart X	Gs	2.1	192.0	-49.3	43.6	60.0

FACILITY: TRACK

TEST DATE: 30 Aug 1995

RUN #: 1548

TEST TIME: 14:48:44

SERIES #: 1

BOARD: f

TITLE: VTV TEST #2

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	P2 Pelvic X	Gs	7.3	118.6	-75.5	56.4	60.0
2	P2 Pelvic Y	Gs	6.4	27.1	-27.9	69.5	60.0
3	P2 Pelvic Z	Gs	19.7	87.5	-2.2	49.3	60.0
4	Acc 9 Lt Rear Compart Y	Gs	7.0	75.2	-27.7	47.2	60.0
5	Acc 12 Toeplan X	Gs	43.0	51.4	-163.1	44.0	60.0
6	Acc 12 Toeplan Y	Gs	34.9	51.8	-91.3	45.1	60.0
7	Acc 12 Toeplan Z	Gs	67.2	46.6	-67.1	51.0	60.0
8	Acc 10 Rt Rear Compart X	Gs	.9	146.2	-46.7	51.8	60.0
9	Acc 1 Rt Ft Frame Rail X	Gs	40.9	50.0	-156.2	33.8	60.0
10	Acc 1 Rt Ft Frame Rail Y	Gs	38.4	16.0	-84.7	33.8	60.0
11	Acc 1 Rt Ft Frame Rail Z	Gs	146.0	40.4	-117.3	33.2	60.0
12	Acc 10 Rt Rear Compart Y	Gs	2.8	71.2	-19.0	40.8	60.0
13	Acc 2 Lt Ft Frame Rail X	Gs	18.7	15.6	-41.2	48.8	60.0
14	Acc 2 Lt Ft Frame Rail Y	Gs	39.2	14.9	-80.1	35.6	60.0
15	Acc 2 Lt Ft Frame Rail Z	Gs	42.5	35.3	-48.8	40.9	60.0
16	Acc 11 C/L Rear Compart X	Gs	4.3	162.1	-45.6	43.8	60.0
17	P2 Pelvic Res	Gs	75.9	56.3	.0	-20.0	60.0
18	Acc 12 Toeplan Res	Gs	186.3	44.4	.1	-18.7	60.0
19	Acc 1 Rt Ft Frame Res	Gs	211.4	33.6	.0	-19.2	60.0
20	Acc 2 Lt Ft Frame Res	Gs	95.4	35.5	.0	-19.1	60.0

FACILITY: TAPE
RUN #: 8548
SERIES #: 1

TEST DATE: 31 Aug 1995
TEST TIME: 09:14:41
BOARD: g

TITLE: VTV TEST #2

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Acc 11 C/L Rear Compart Y	Gs	4.1	161.2	-45.5	43.7	60.0

RUN #: 9548
SERIES #: 1

TEST TIME: 09:23:52
BOARD: h

TITLE: VTV TEST #2

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Acc 8 Brake Pedal X	Gs	35.7	70.4	-164.8	51.2	60.0
2	Acc 8 Brake Pedal Y	Gs	59.1	36.7	-89.9	51.0	60.0
3	Acc 8 Brake Pedal Z	Gs	138.4	52.0	-52.8	76.0	60.0
4	Acc 3 Rt Engine X	Gs	61.7	59.3	-125.5	41.9	60.0
5	Acc 4 Lt Engine X	Gs	110.0	52.8	-155.0	41.8	60.0
6	Acc 5 Engine Bottom X	Gs	39.5	53.2	-118.3	36.6	60.0
7	Acc 5 Engine Bottom Y	Gs	33.8	47.9	-85.8	35.9	60.0
8	Acc 6 Rt Shock Tower X	Gs	13.9	62.5	-114.6	51.8	60.0
9	Acc 6 Rt Shock Tower Y	Gs	34.6	56.5	-154.9	48.2	60.0
10	Acc 7 Lt Shock Tower X	Gs	26.3	68.8	-97.9	35.2	60.0
11	Acc 7 Lt Shock Tower Z	Gs	40.3	36.4	-61.7	41.9	60.0
17	Acc 8 Brake Pedal Res	Gs	229.5	51.4	.1	-2.5	60.0

FACILITY: TAPE
RUN #: 9549
SERIES #: 1

TEST DATE: 31 Aug 1995
TEST TIME: 09:33:25
BOARD: i

TITLE: VTV TEST #2

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Acc 3 MDB C.G. X	Gs	2.6	175.1	-41.8	37.0	60.0
2	Acc 3 MDB C.G. Y	Gs	2.8	71.5	-13.4	59.9	60.0
3	Acc 3 MDB C.G. Z	Gs	25.2	57.2	-14.7	48.8	60.0
4	MDB Load Cell TR	Nwt	78714.3	38.4	-8449.1	70.4	60.0
5	MDB Load Cell BR	Nwt	52636.3	83.0	-11768.5	38.5	60.0
6	MDB Load Cell TL	Nwt	199958.5	39.0	-17627.6	79.3	60.0
7	MDB Load Cell BL	Nwt	108525.5	57.8	-6292.3	105.7	60.0
8	MDB Load Cell CL	Nwt	248285.0	36.0	-9018.4	115.8	60.0
9	Acc 1 MDB Left Rail X	Gs	3.8	128.6	-53.4	36.4	60.0
10	Acc 1 MDB Left Rail Y	Gs	13.6	48.2	-21.7	54.1	60.0
11	Acc 2 MDB Right Rail X	Gs	1.7	165.6	-58.2	36.4	60.0
12	Acc 2 MDB Right Rail Y	Gs	7.0	48.4	-14.4	53.9	60.0
17	MDB C.G. Res	Gs	42.0	37.0	.6	-19.2	60.0

TEST NO. Y57-2-1548

VEHICLE DATA

SAE FILTER CHANNEL CLASS

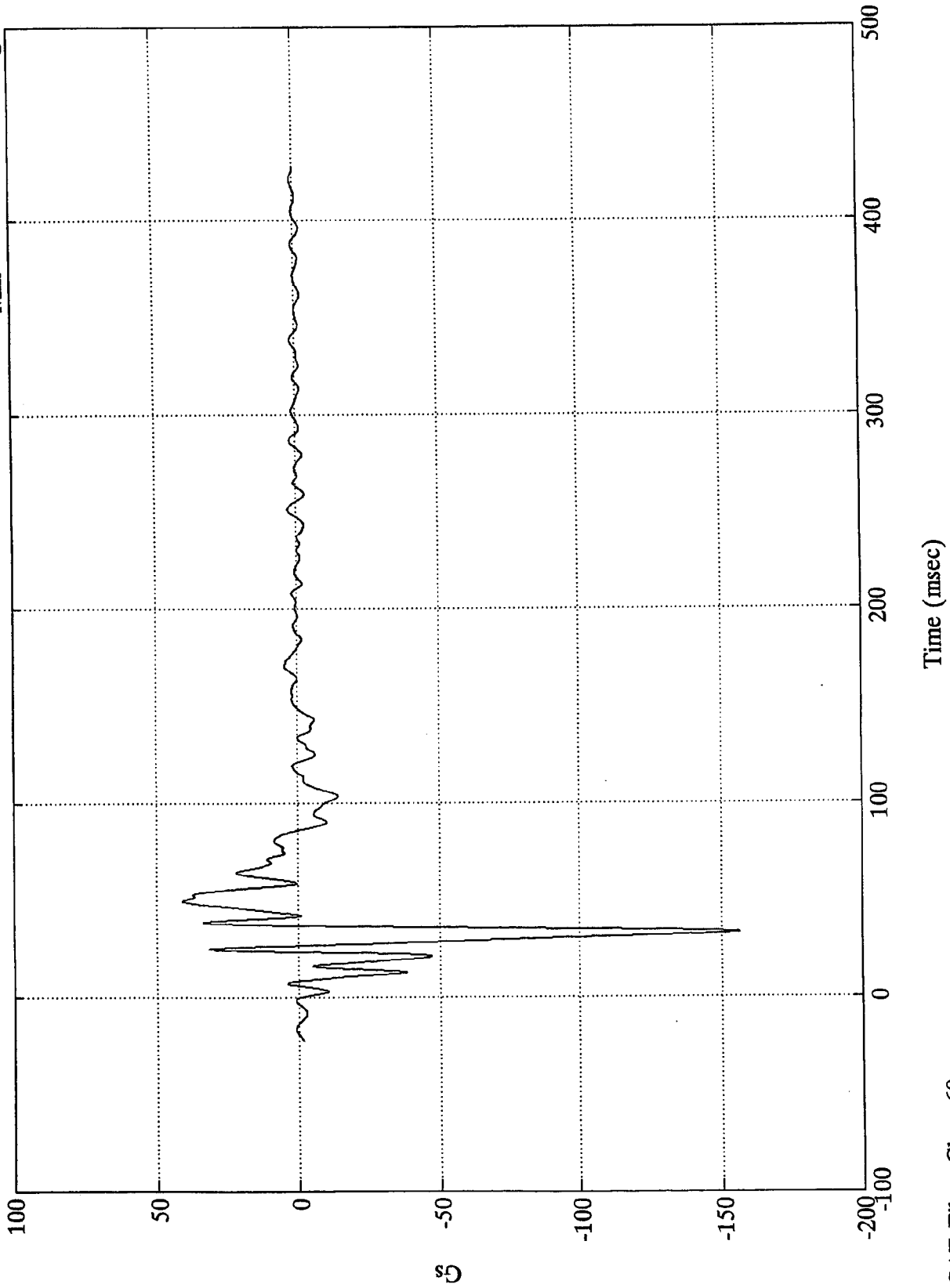
60

VEHICLE ONE DATA

VTV TEST #2

✓
Acc 1 Rt Ft Frame Rail X

Max = 40.93 Gs @ 50.04 msec
Min = -156.24 Gs @ 33.84 msec

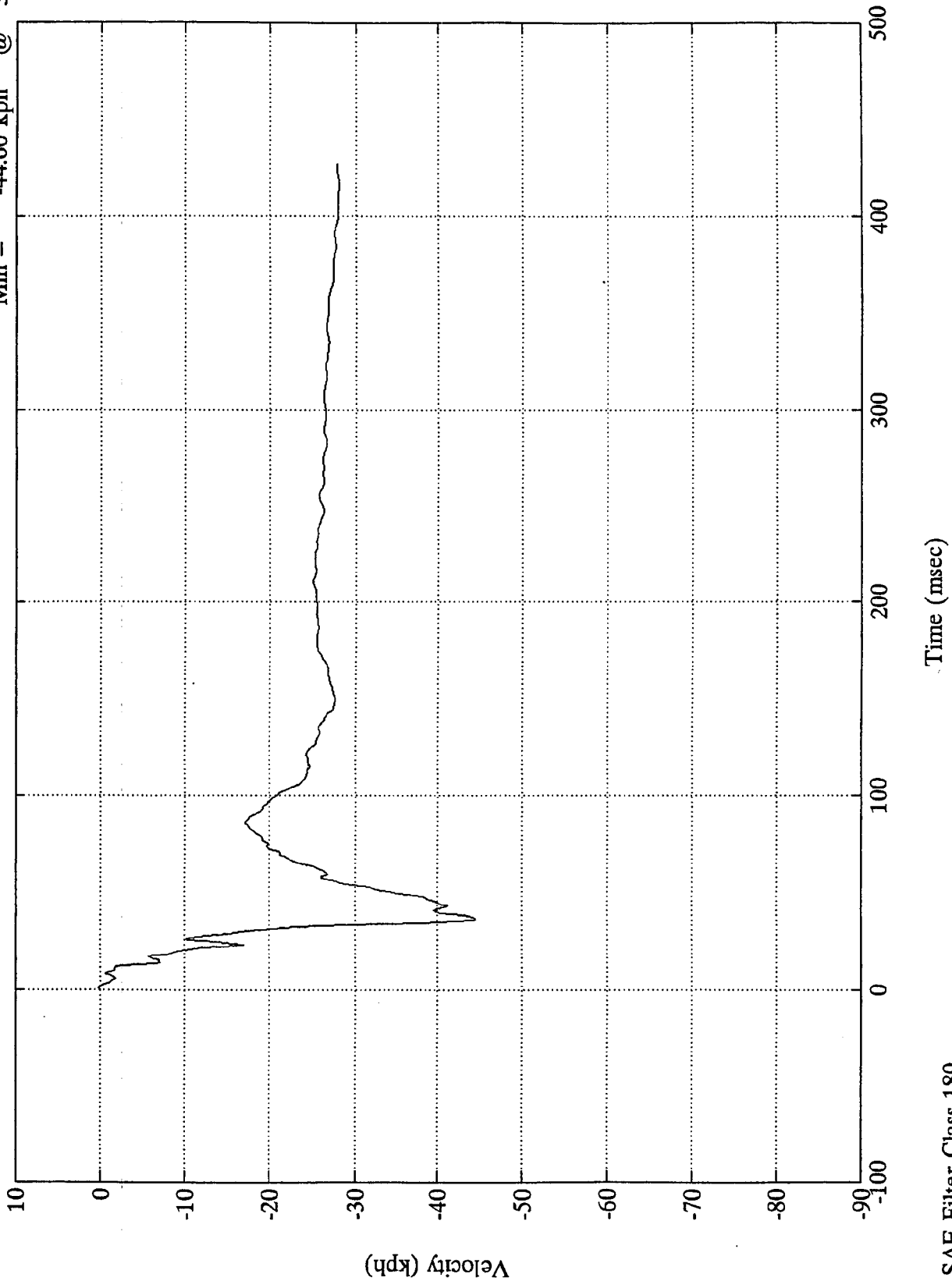


SAE Filter Class 60

VTV TEST #2

✓
Acc 1 Rt Ft Frame Rail X

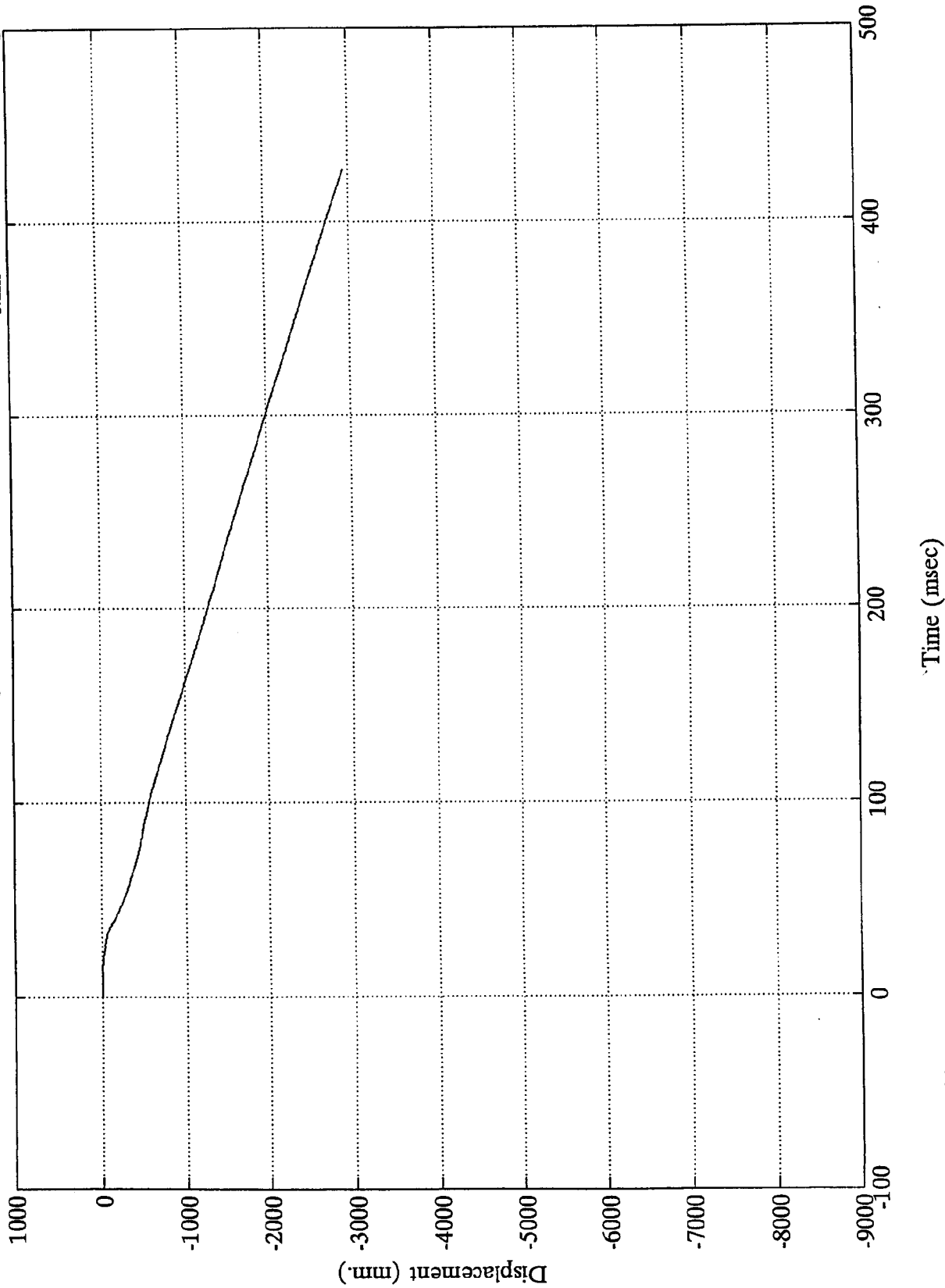
Max = .13 kph @ 1.07 msec
Min = -44.60 kph @ 36.83 msec



VTV TEST #2

Acc 1 Rt Ft Frame Rail X

Max = .04 mm @ 1.79 msec
Min = -2949.46 mm @ 427.32 msec



SAE Filter Class 180

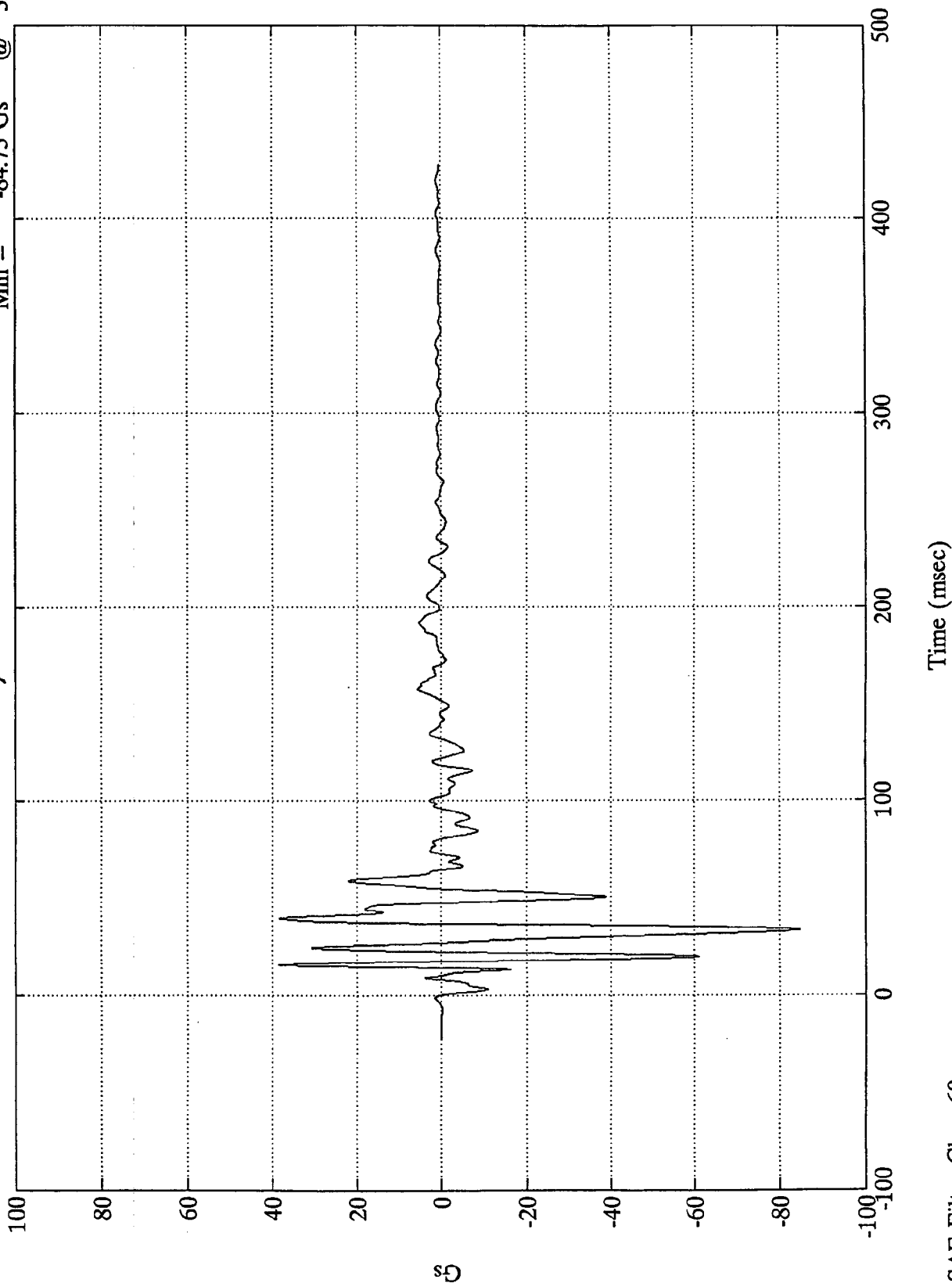
8304-2

VTV TEST #2

✓

Acc 1 R/Ft Frame Rail Y

Max = 38.42 Gs @ 15.96 msec
Min = -84.73 Gs @ 33.84 msec



SAE Filter Class 60

85

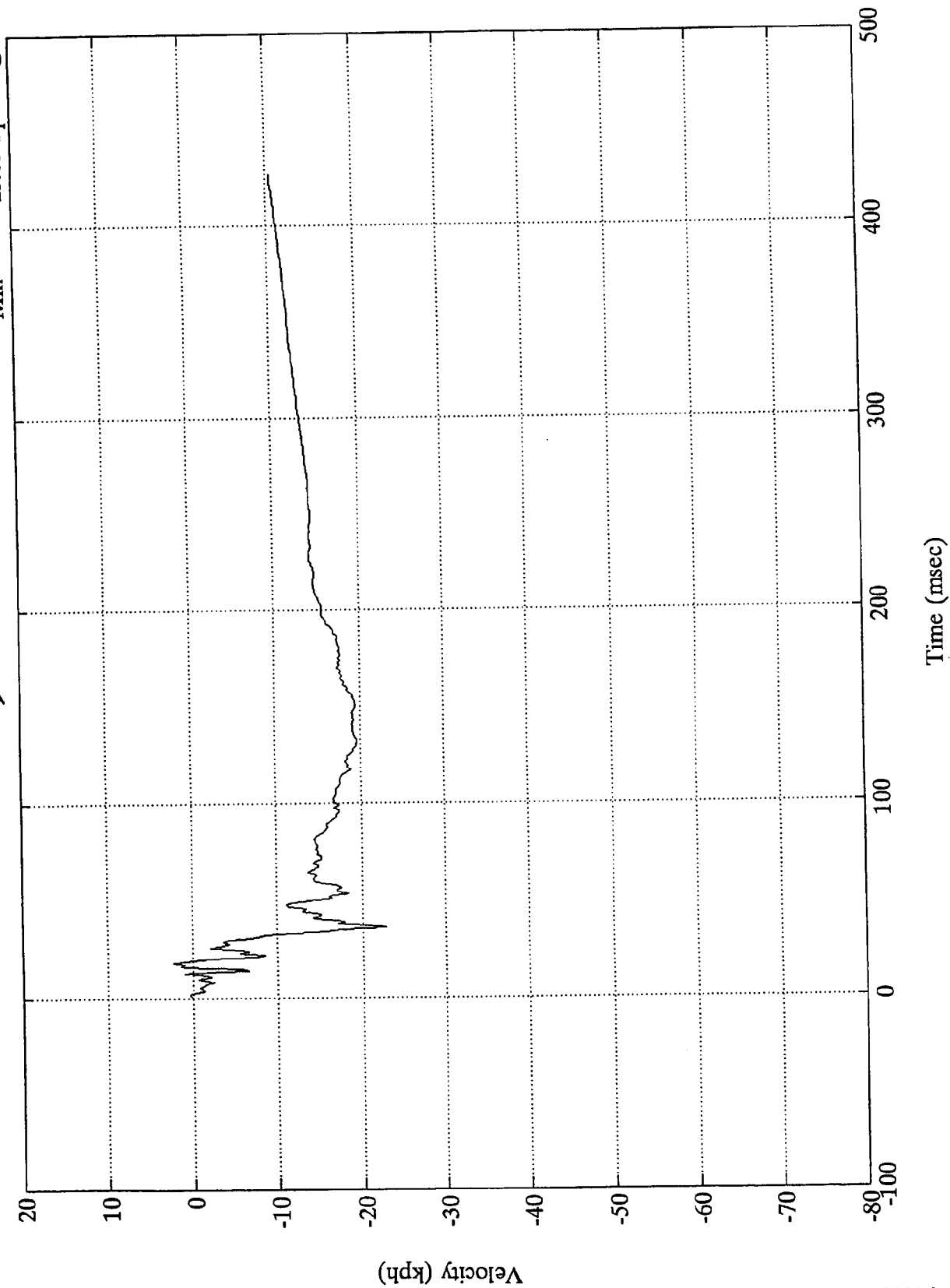
B-16

8304-2

VTV TEST #2

Max = 2.34 kph @ 18.48 msec
Min = -23.03 kph @ 36.72 msec

Acc 1 ~~Rt~~ Ft Frame Rail Y

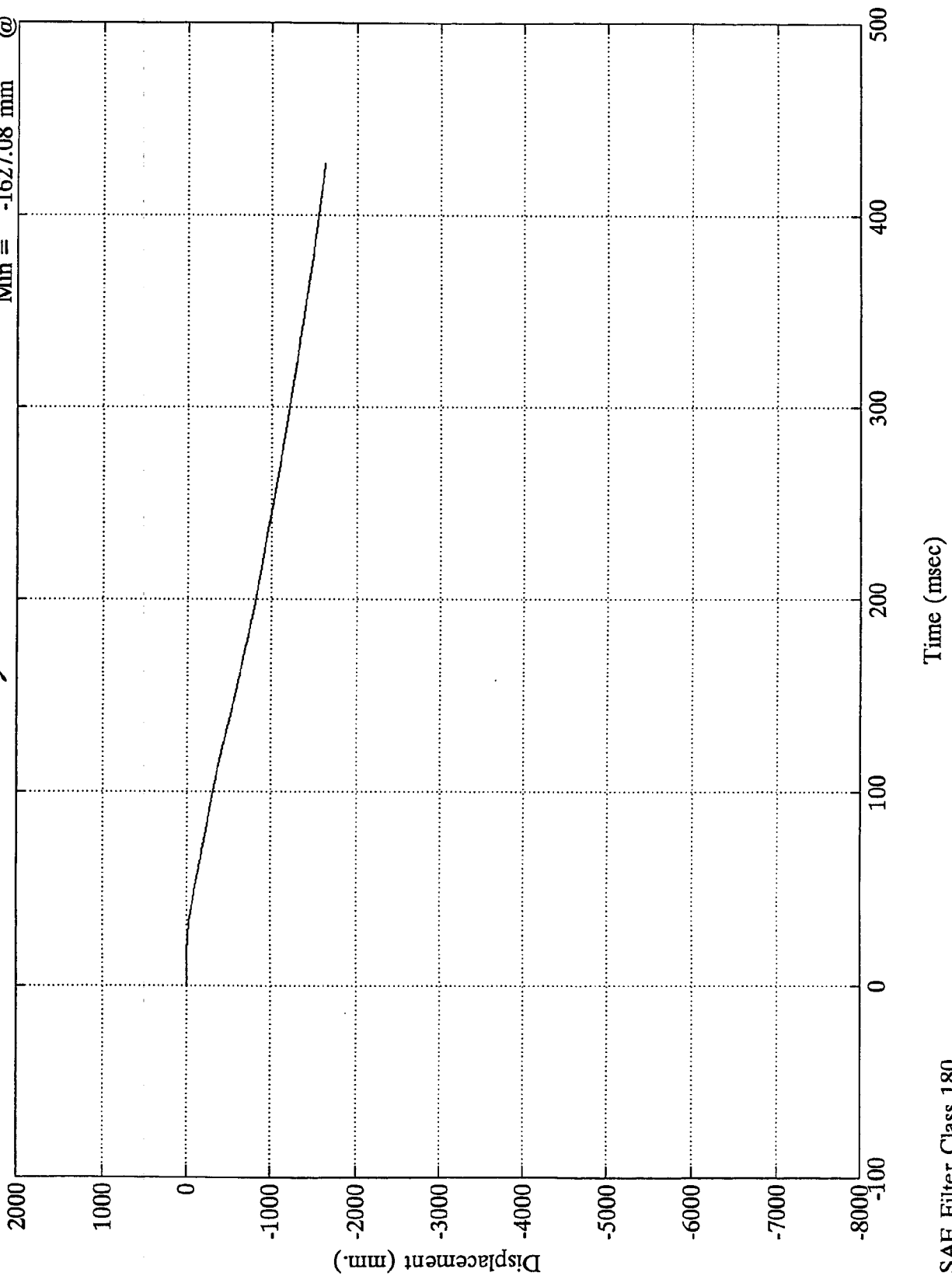


VTV TEST #2

U

Acc 1 Bt Ft Frame Rail Y

Max = .15 mm @ 2.63 msec
Min = -1627.08 mm @ 427.32 msec



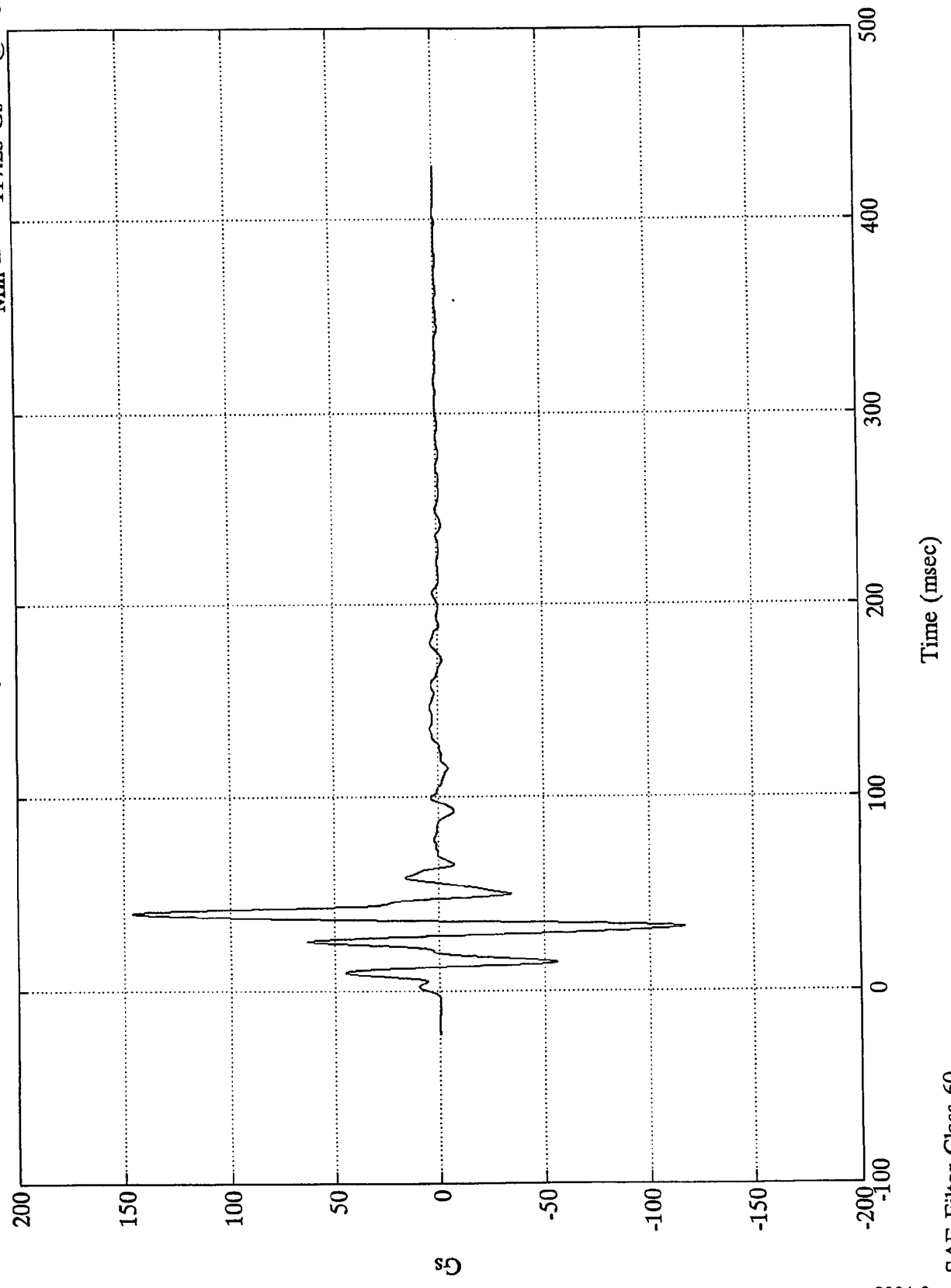
SAE Filter Class 180

8304-2

VTV TEST #2

✓
Acc 1 Rt Ft Frame Rail Z

Max = 146.04 Gs @ 40.44 msec
Min = -117.25 Gs @ 33.24 msec



SAE Filter Class 60

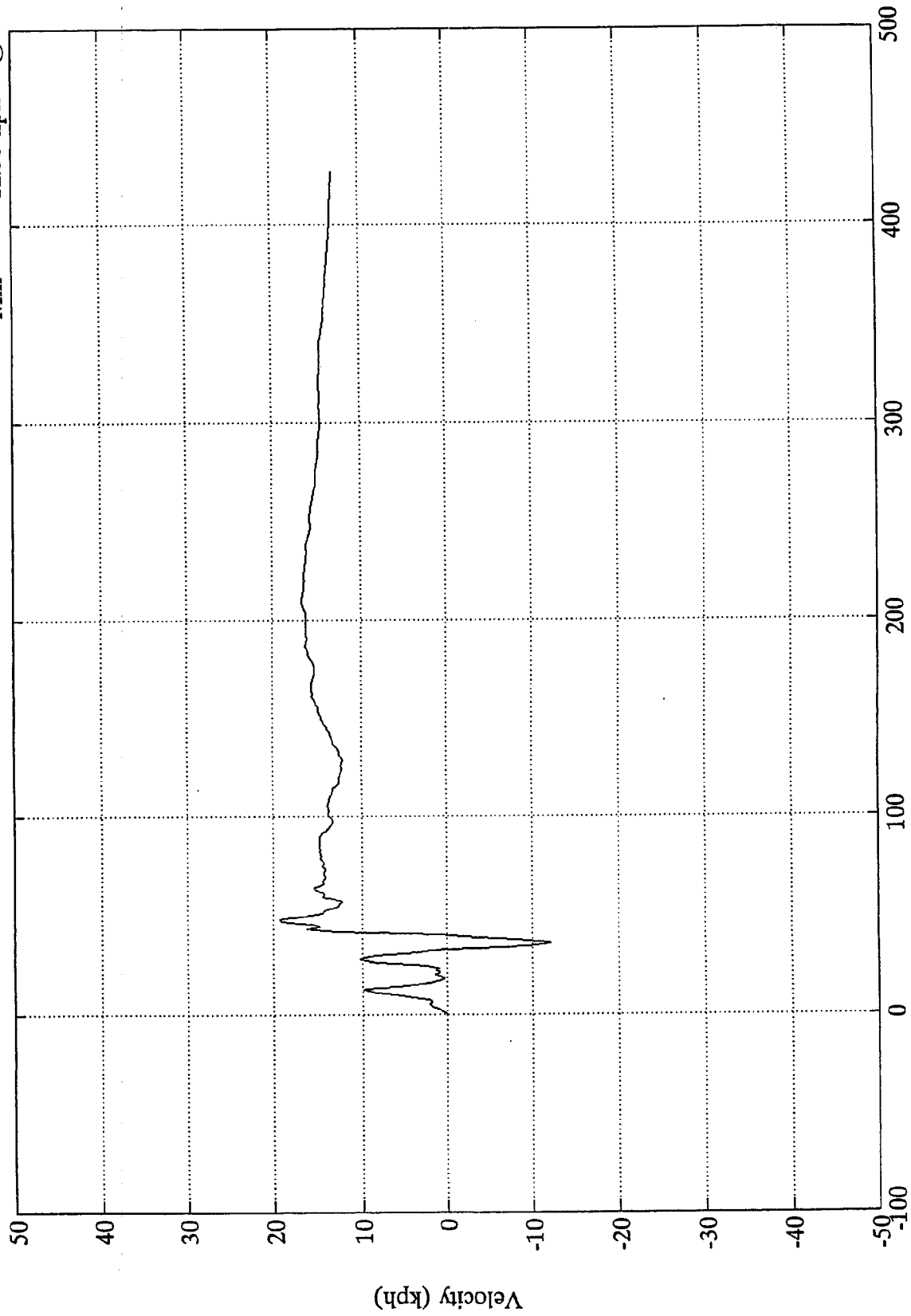
B-19

8304-2

VTV TEST #2

✓
Acc 1 Rt Ft Frame Rail Z

Max = 19.41 kph @ 47.88 msec
Min = -12.38 kph @ 36.35 msec



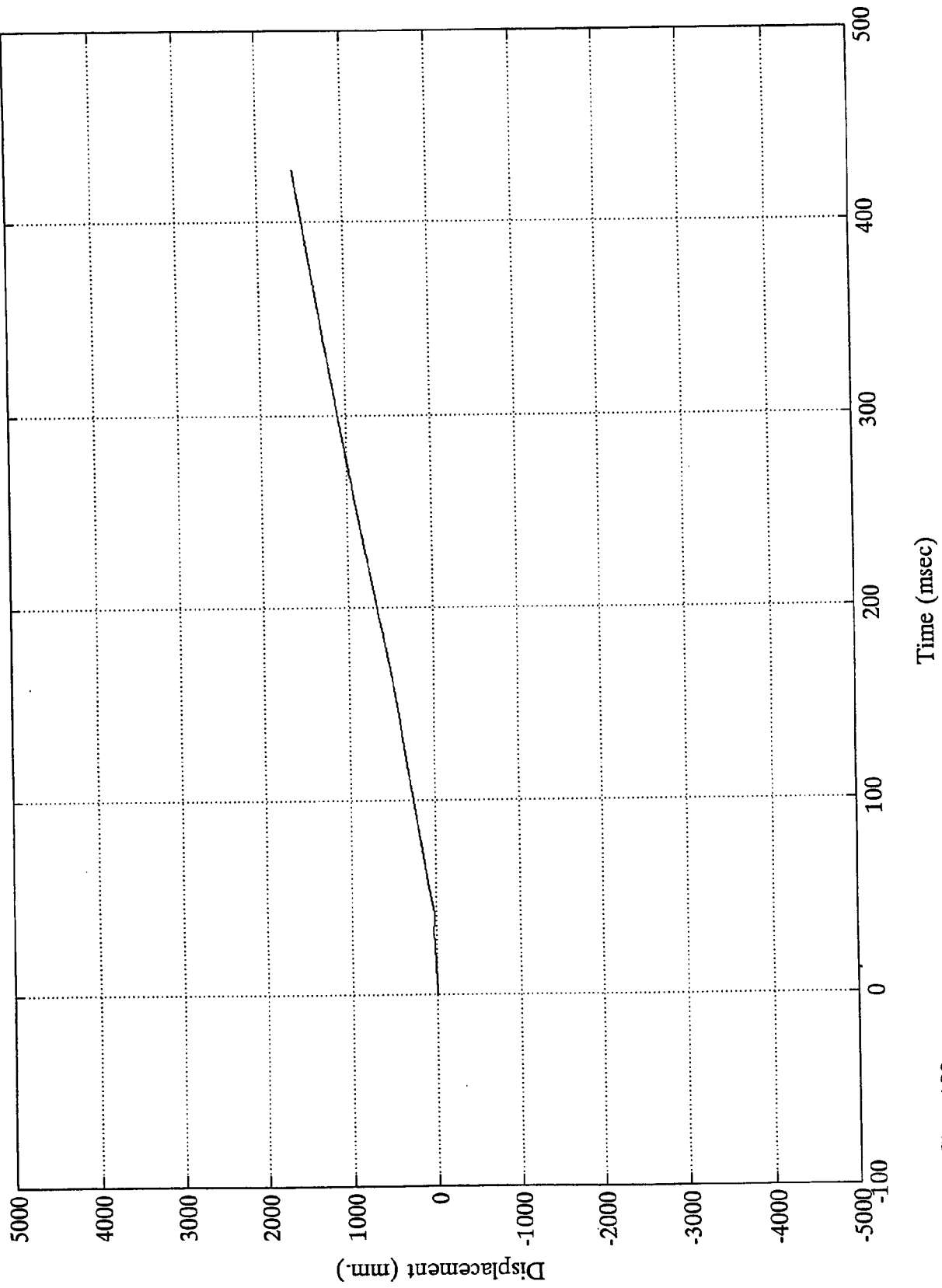
Time (msec)

SAE Filter Class 180

VTV TEST #2

✓
Acc ~~1-Rt~~ Ft Frame Rail Z

Max = 1585.13 mm @ 427.32 msec
Min = .00 mm @ -22.44 msec

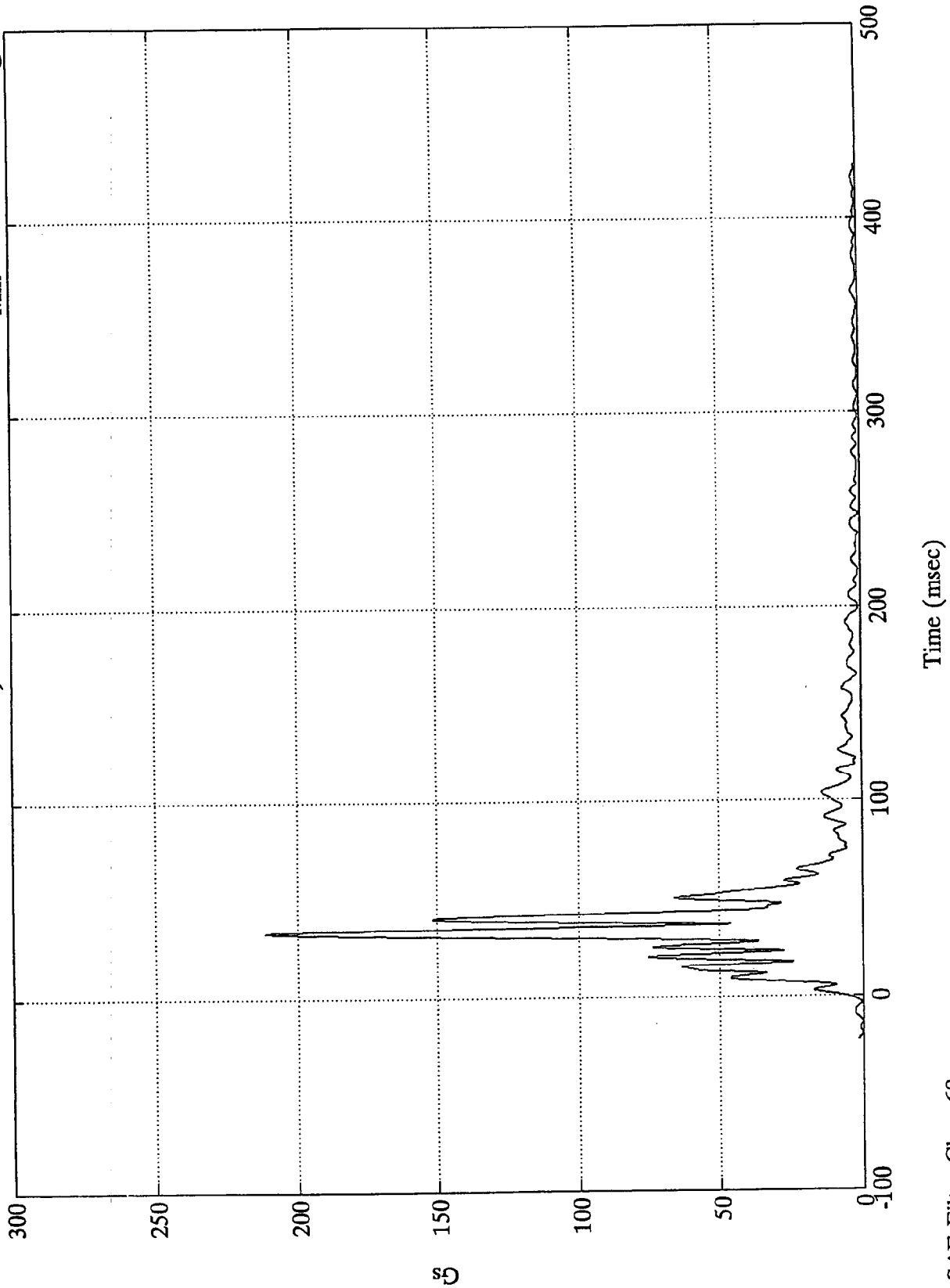


VTV TEST #2

LA

Max = 211.41 Gs @ 33.59 msec
Min = .00 Gs @ -19.20 msec

Rt Ft Frame Res



SAE Filter Class 60

8304-2

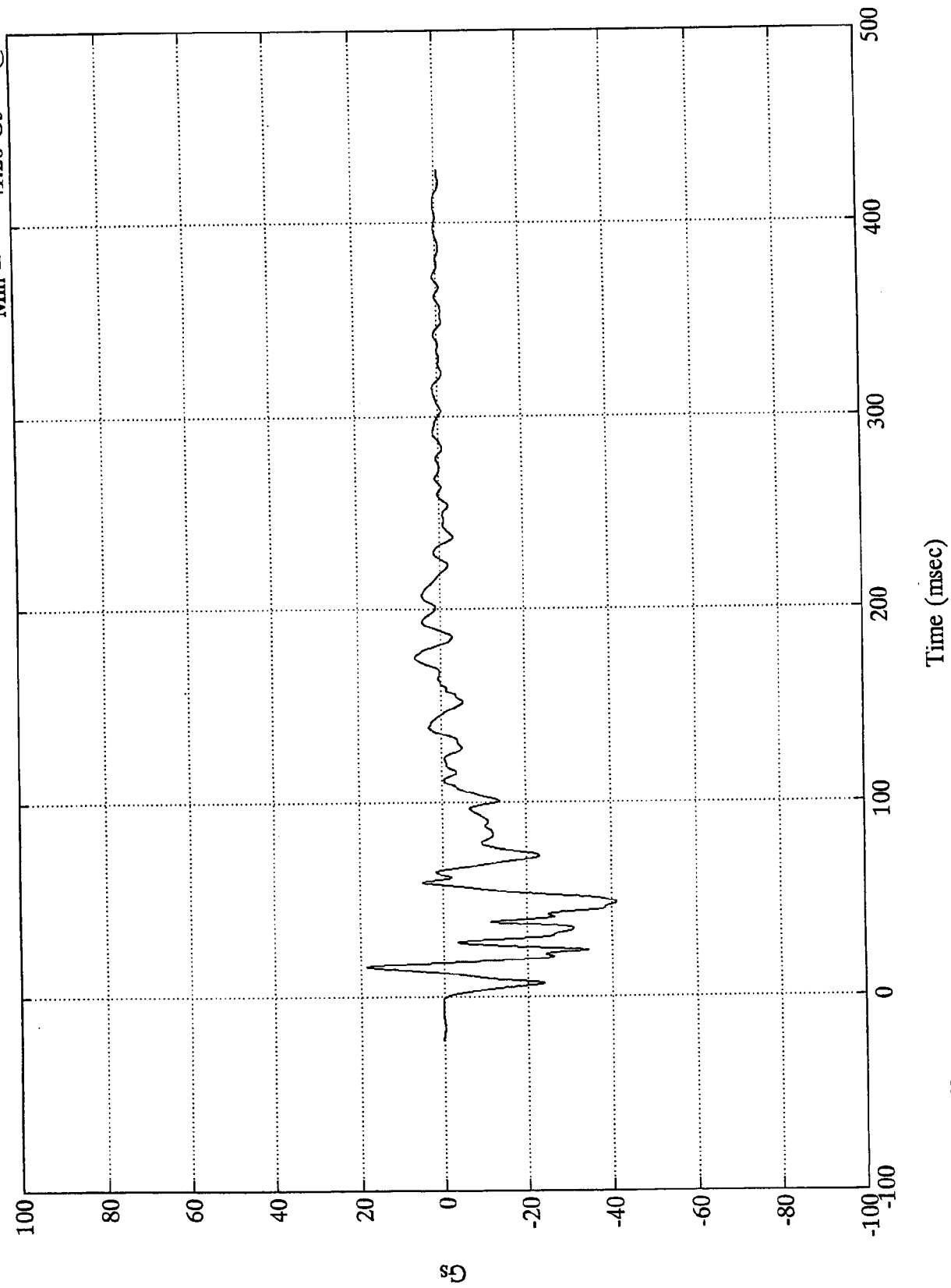
SD

B-22

VTV TEST #2

pk
Acc 2 *Lt* Ft Frame Rail X

Max = 18.66 Gs @ 15.59 msec
Min = -41.20 Gs @ 48.84 msec



Gs

Time (msec)

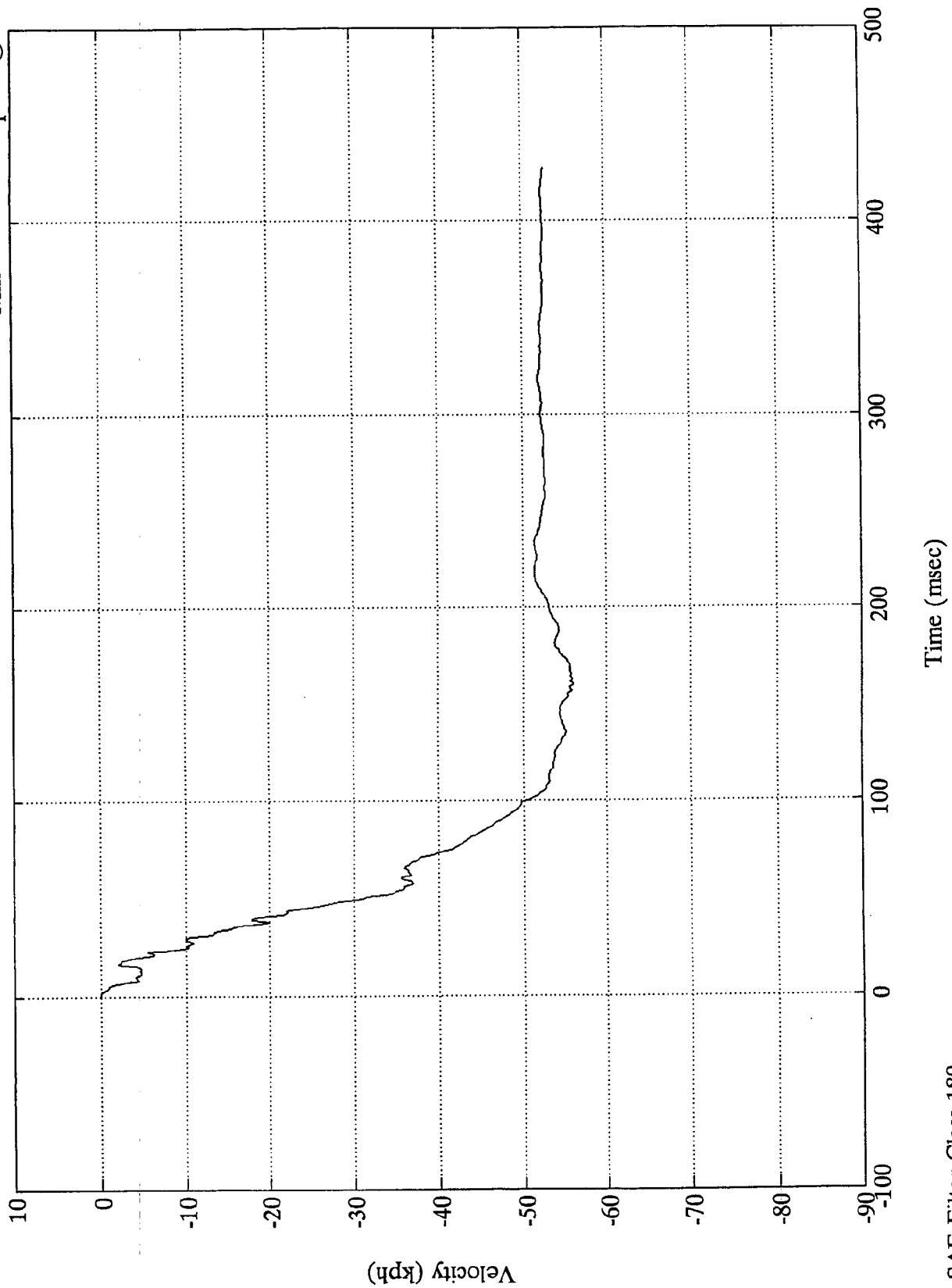
SAE Filter Class 60

VTV TEST #2

Rx

Acc 2 Lt Pt Frame Rail X

Max = .00 kph @ 1.07 msec
Min = -55.96 kph @ 159.96 msec



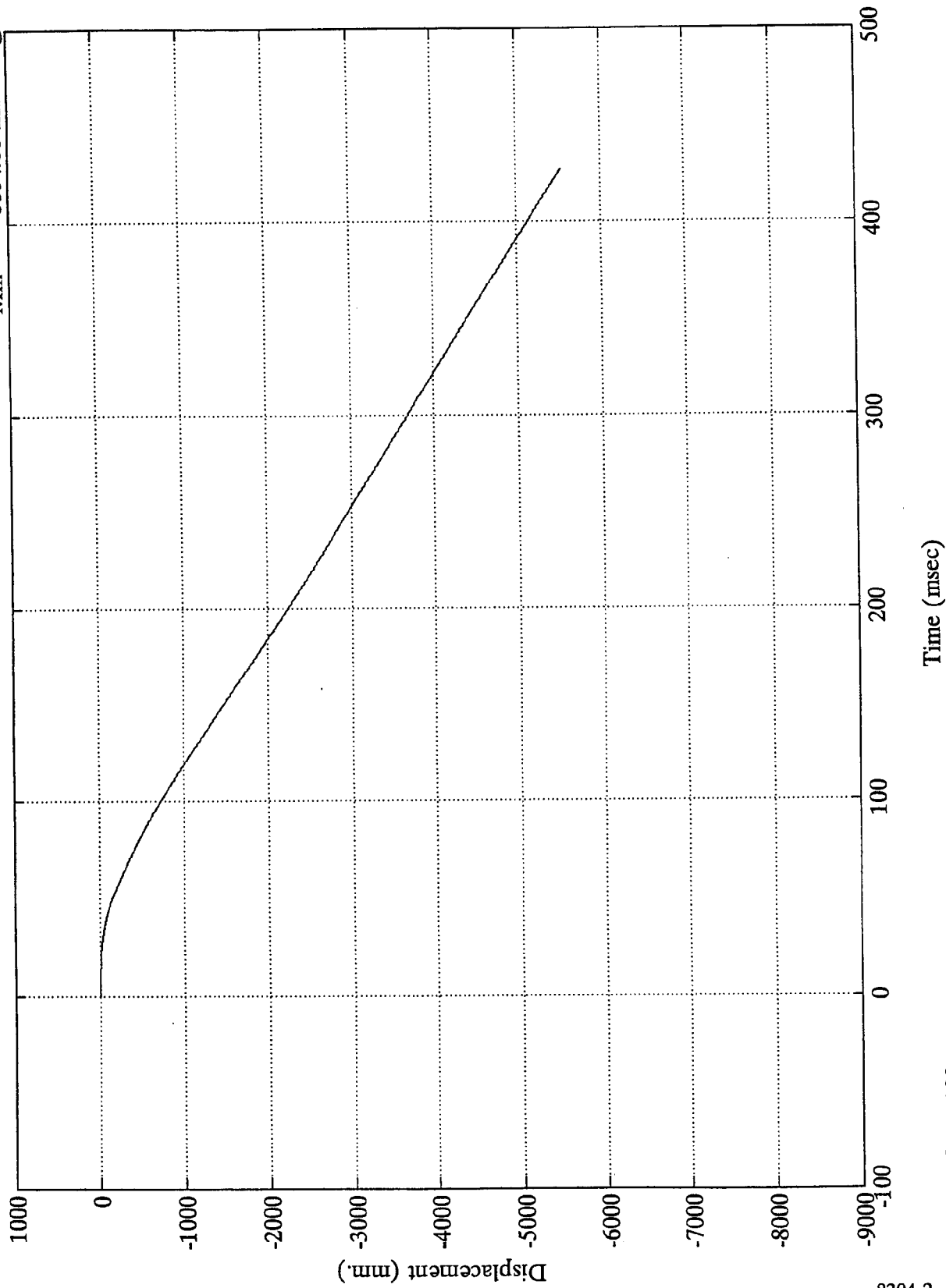
SAE Filter Class 180

VTV TEST #2

24

Acc 2 Lt Ft Frame Rail X

Max = .00 mm @ 1.31 msec
Min = -5534.88 mm @ 427.32 msec



8304-2

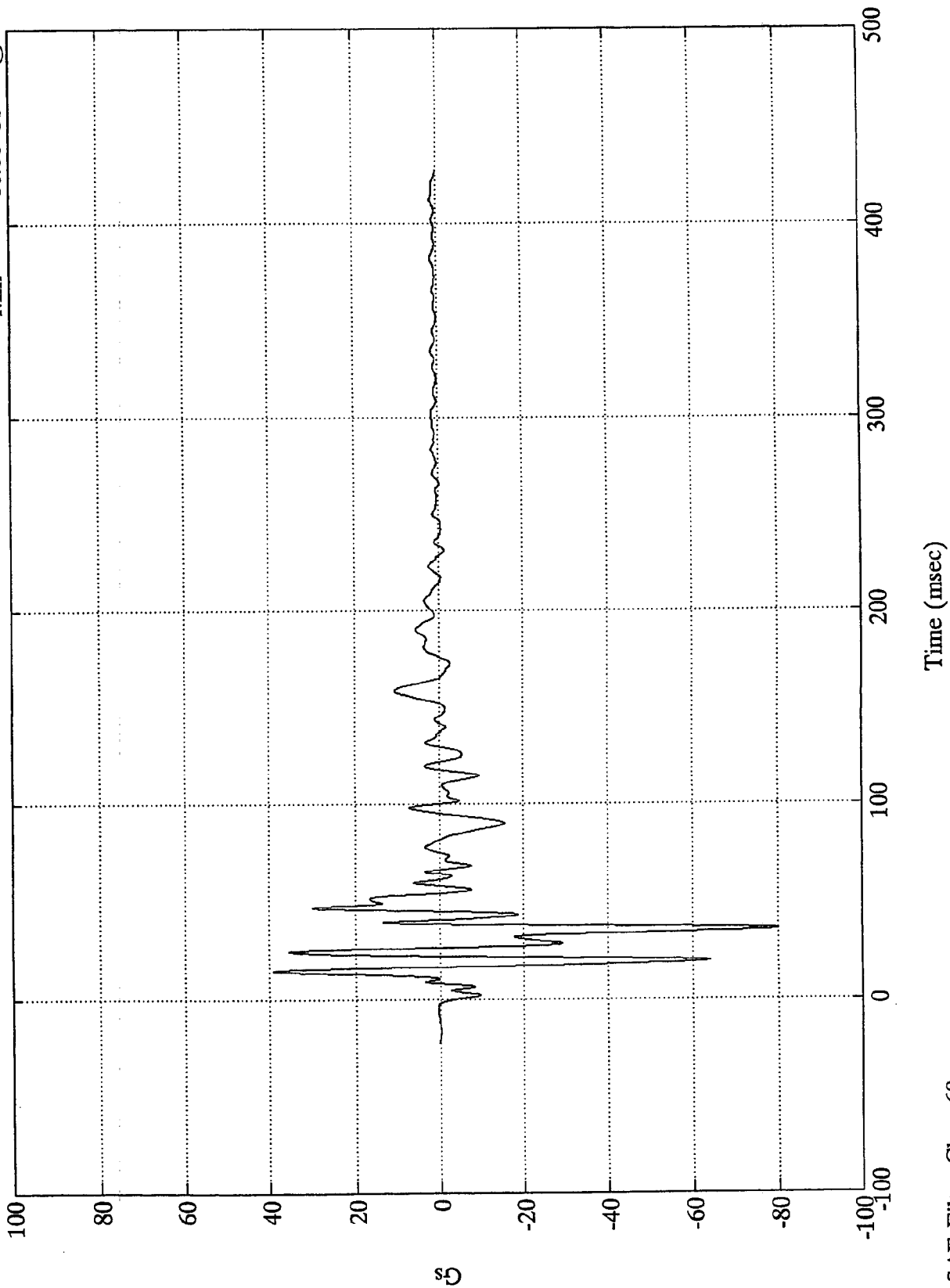
SAE Filter Class 180

B-25

VTV TEST #2

RT
Acc 2 $\frac{1}{4}$ Ft Frame Rail Y

Max = 39.20 Gs @ 14.88 msec
Min = -80.06 Gs @ 35.63 msec



SAE Filter Class 60

Gs

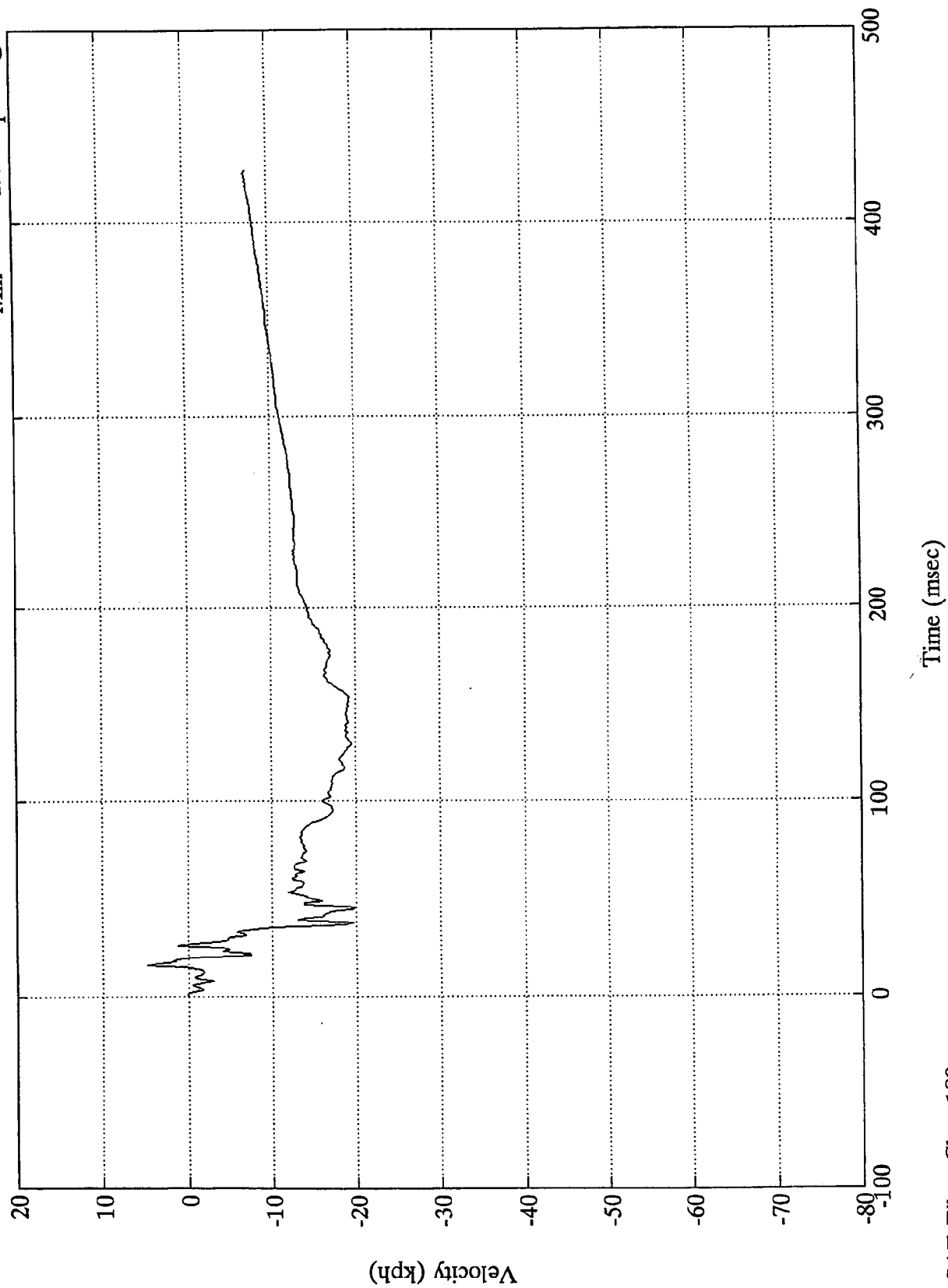
B-26

8304-2

VTV TEST #2

Acc 2 ~~14~~ Ft Frame Rail Y

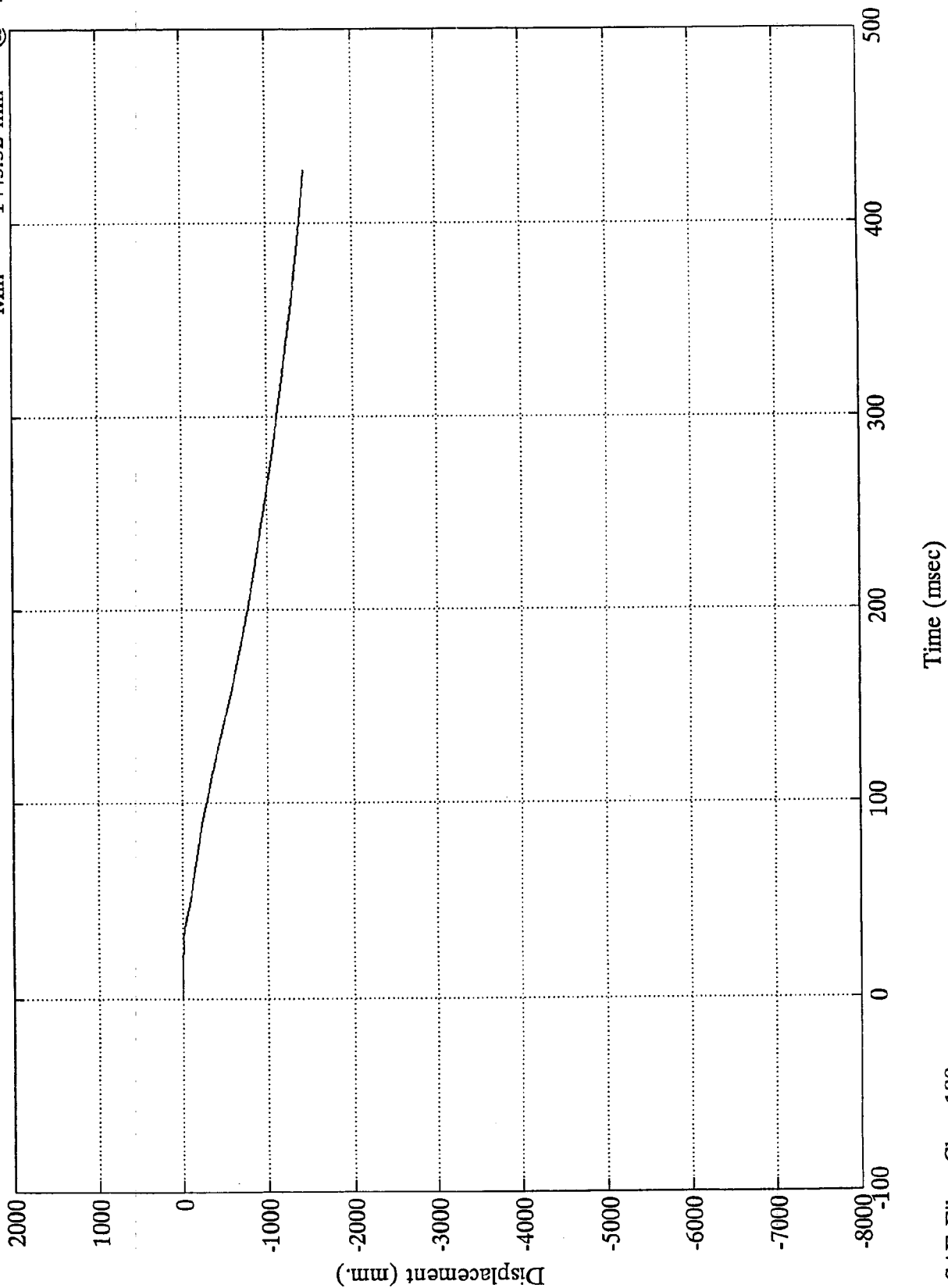
Max = 4.92 kph @ 16.44 msec
Min = -19.98 kph @ 45.48 msec



VTV TEST #2

RT
Acc 2 *14* Ft Frame Rail Y

Max = .02 mm @ 1.55 msec
Min = -1445.52 mm @ 427.32 msec

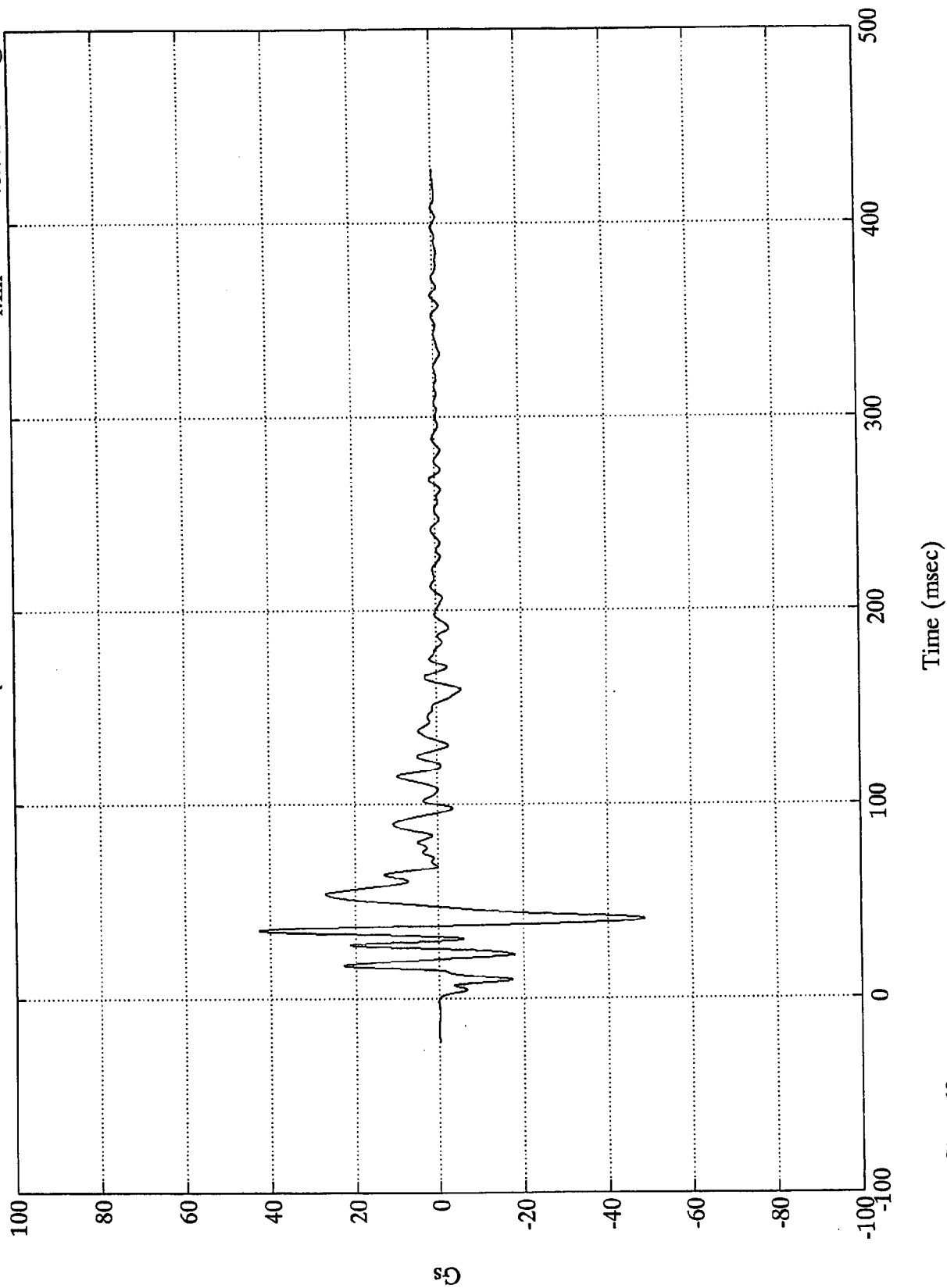


SAE Filter Class 180

VTV TEST #2

24
Acc 2 ~~L~~/Ft Frame Rail Z

Max = 42.48 Gs @ 35.27 msec
Min = -48.77 Gs @ 40.92 msec



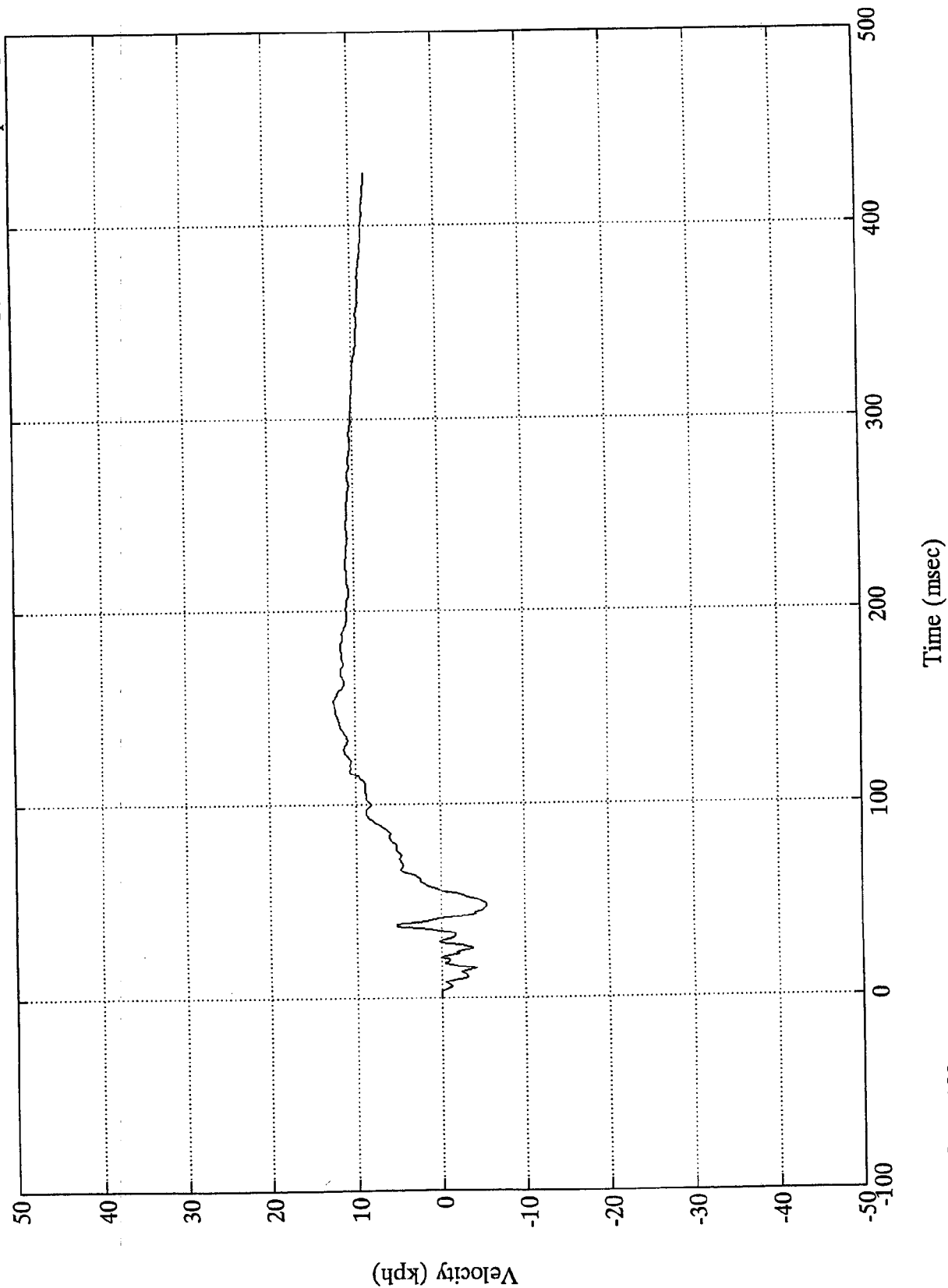
SAE Filter Class 60

8304-2

VTV TEST #2

Rx
Acc 2 ~~1~~ Ft Frame Rail Z

Max = 12.51 kph @ 152.75 msec
Min = -5.43 kph @ 47.52 msec



SAE Filter Class 180

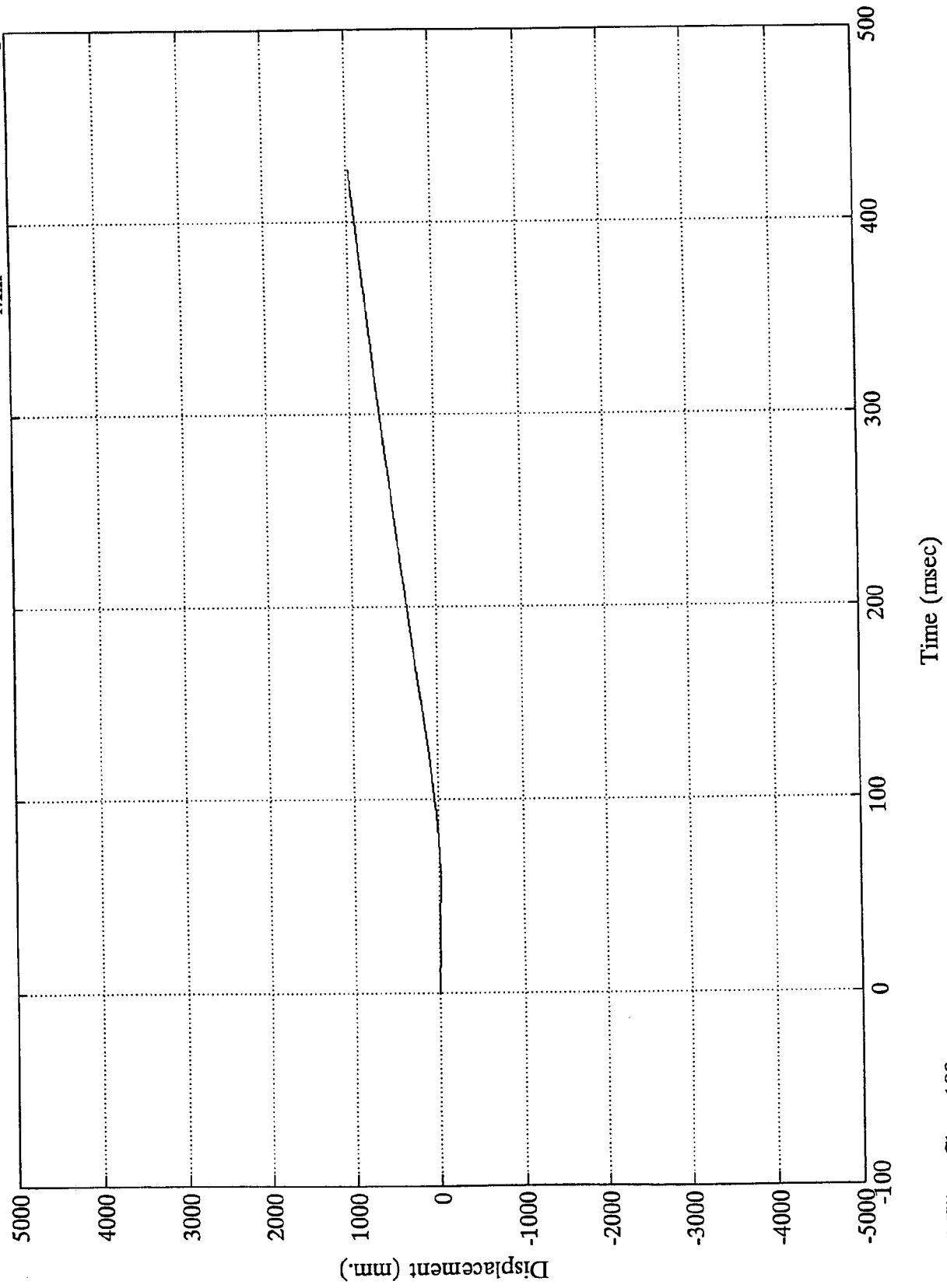
8304-2

B-30

VTV TEST #2

2X
Acc 2 ~~1~~ Ft Frame Rail Z

Max = 969.79 mm @ 427.32 msec
Min = -24.03 mm @ 55.32 msec

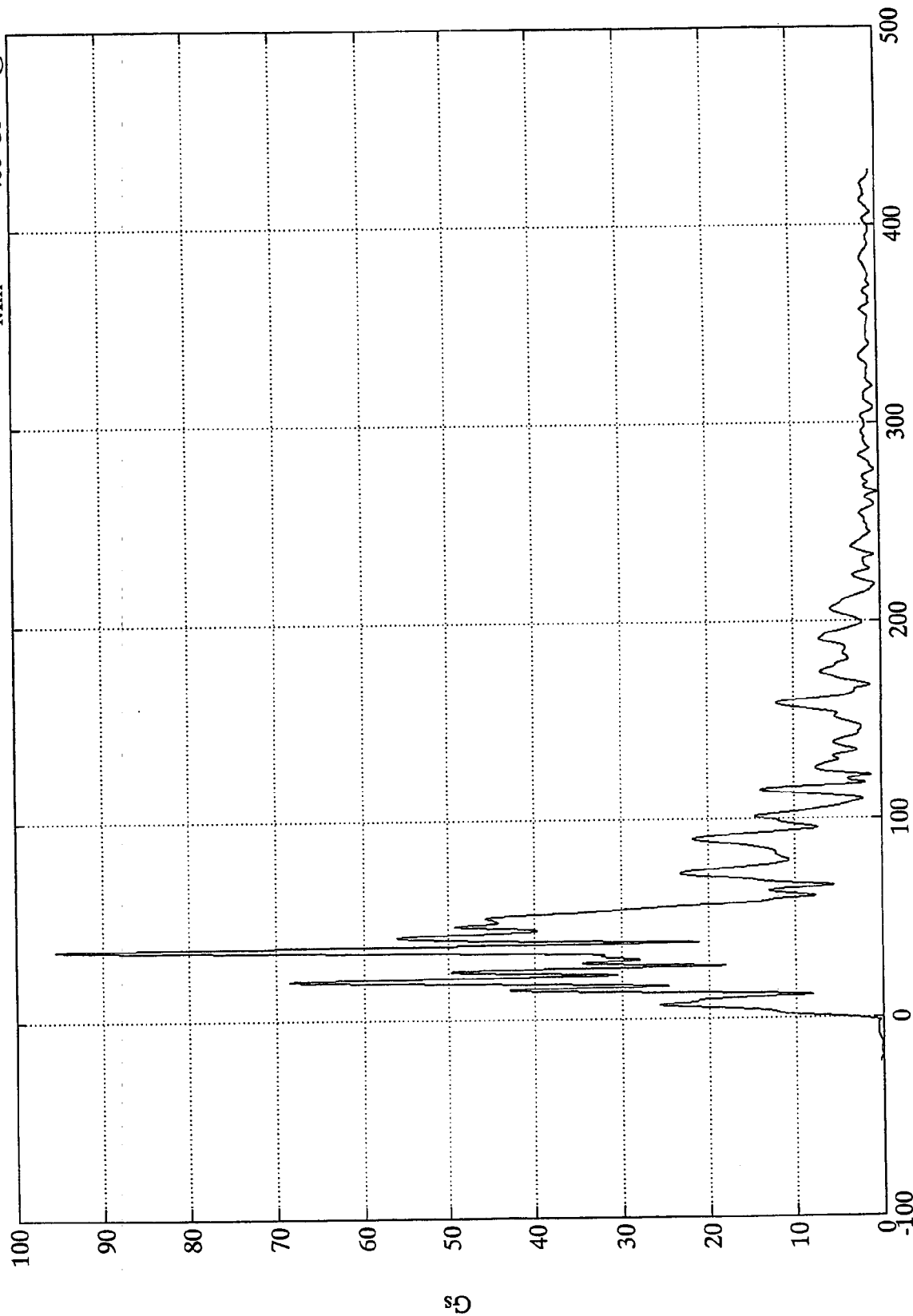


SAE Filter Class 180

8304-2

VTV TEST #2

Lt Ft Frame Res Max = 95.43 Gs @ 35.52 msec
 Min = .00 Gs @ -19.08 msec



Time (msec)

SAE Filter Class 60

8G

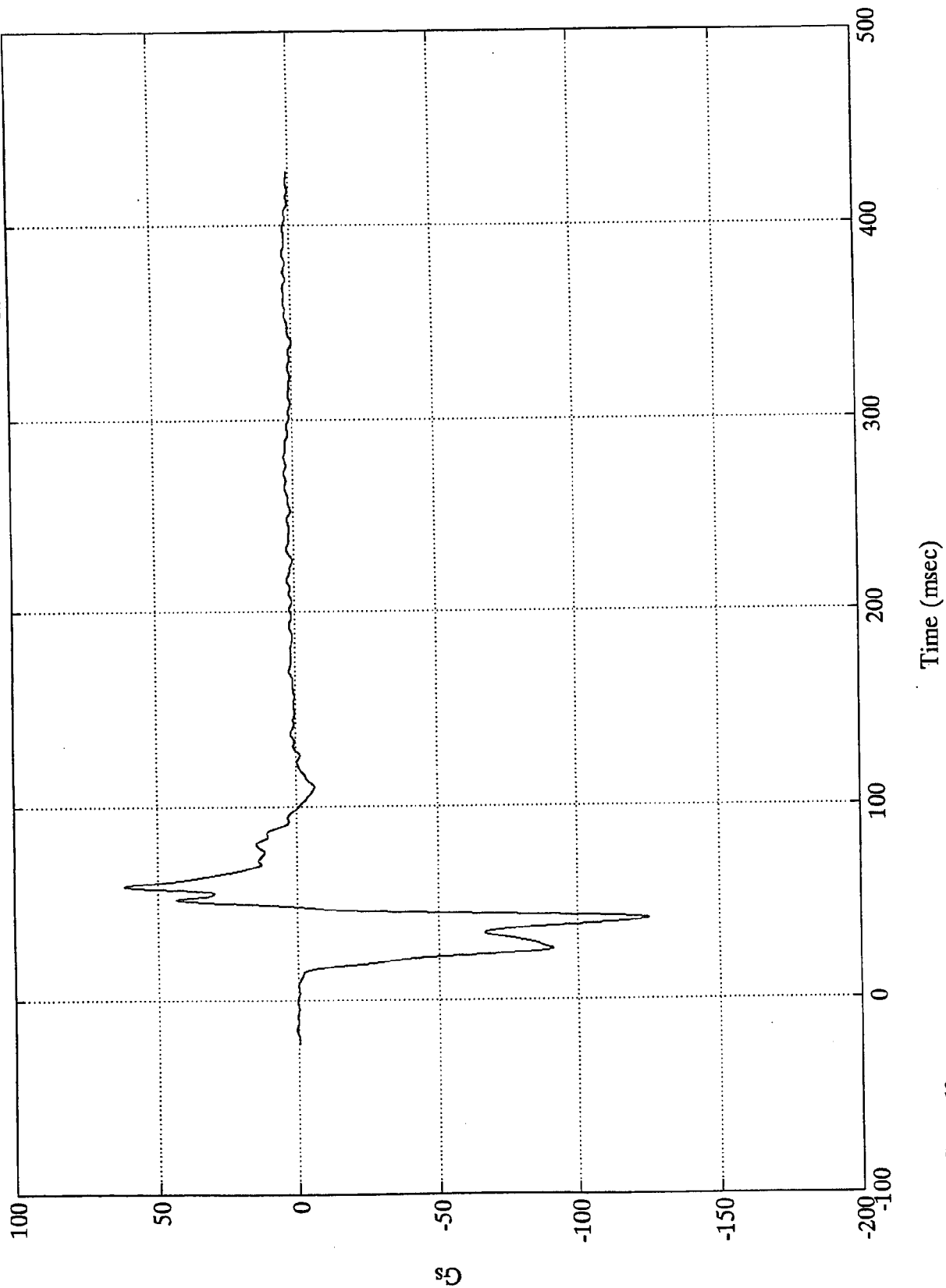
B-32

8304-2

VTV TEST #2

Acc 3 Rt Engine X

Max = 61.73 Gs @ 59.27 msec
Min = -125.49 Gs @ 41.88 msec



50

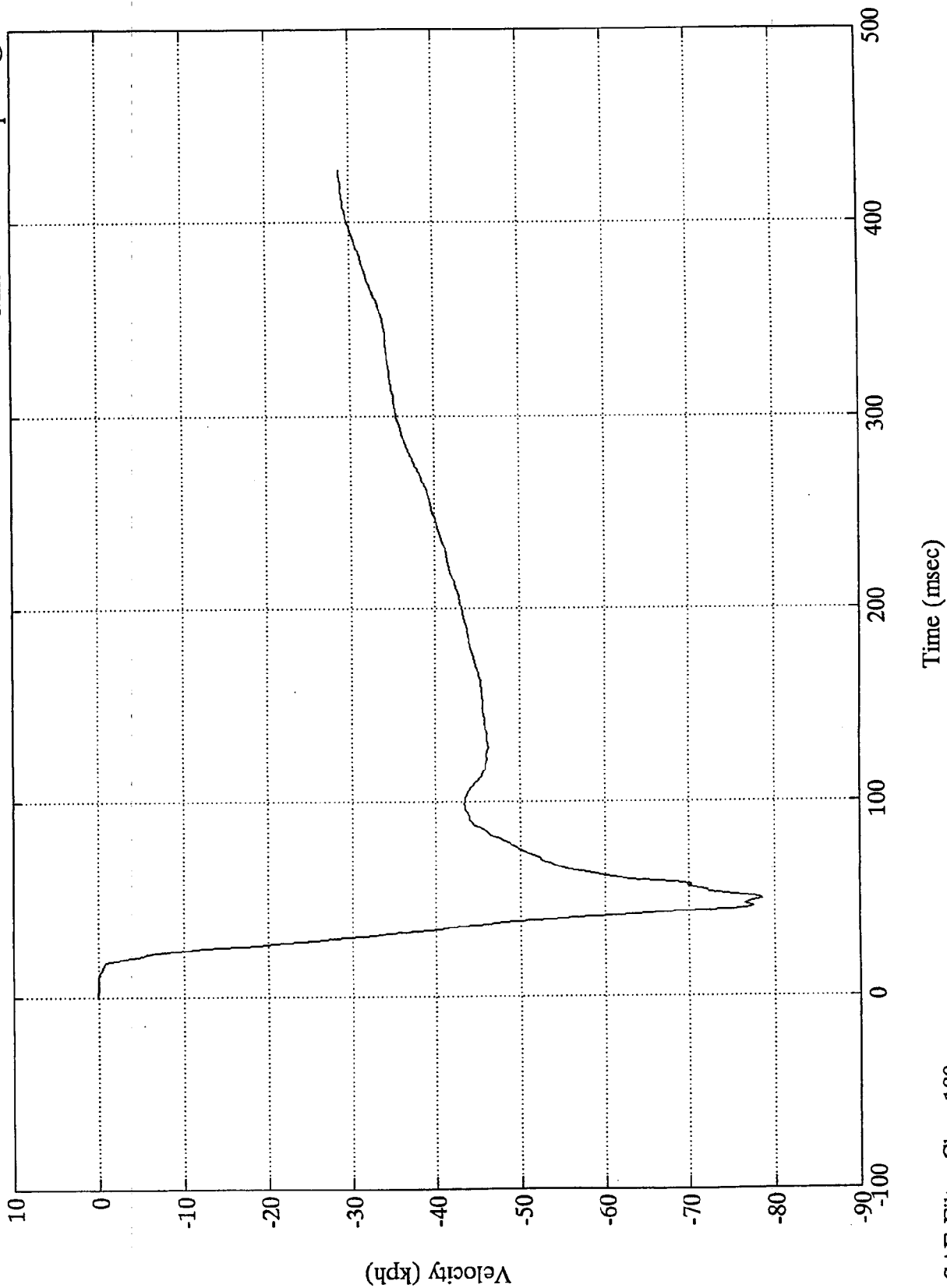
B-33

8304-2

SAE Filter Class 60

VTV TEST #2

Acc 3 Rt Engine X
Max = .02 kph @ 1.43 msec
Min = -78.68 kph @ 49.92 msec

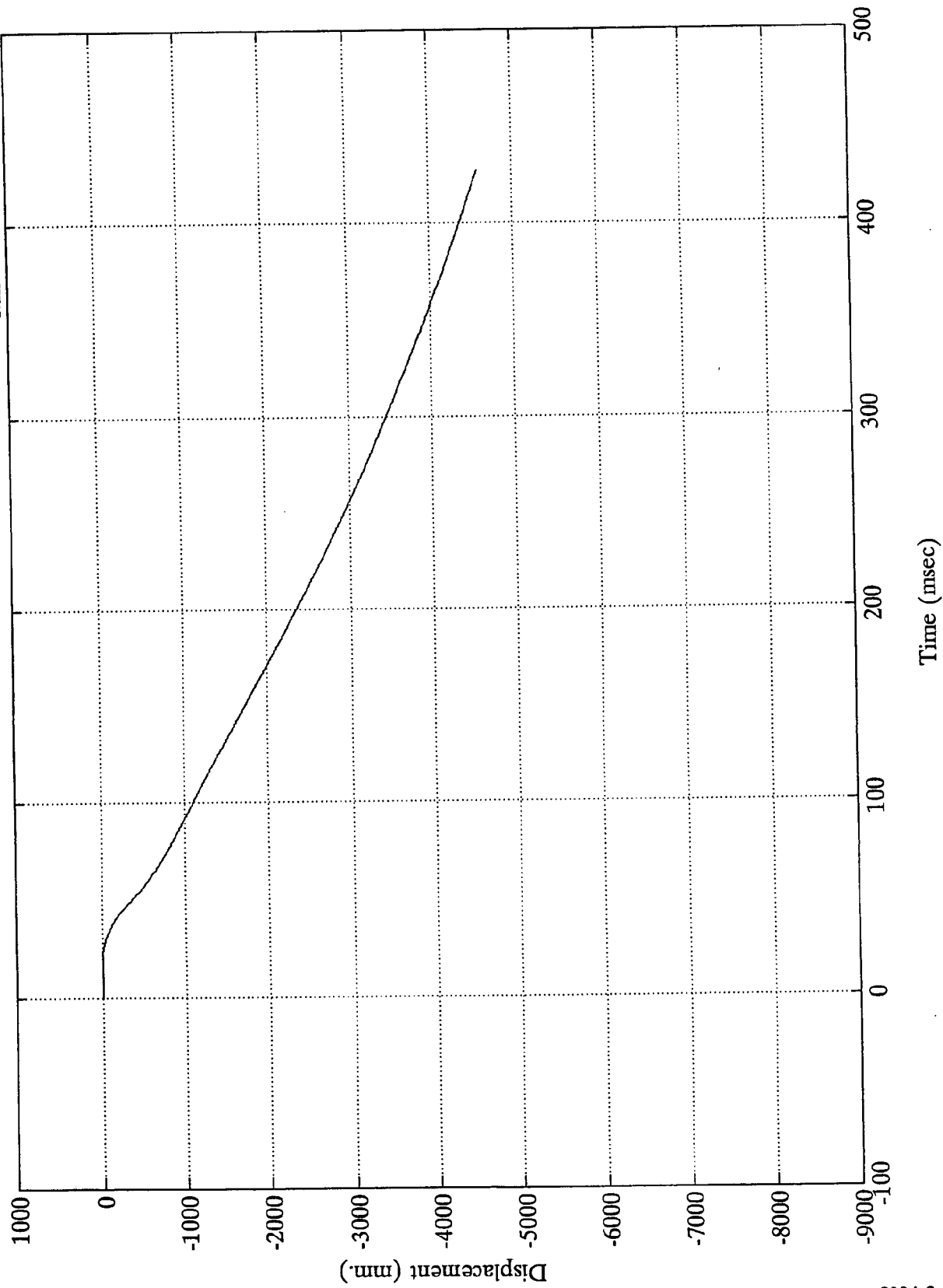


SAE Filter Class 180

VTV TEST #2

Acc 3 Rt Engine X

Max = .01 mm @ 2.87 msec
Min = -4590.36 mm @ 427.32 msec



B-35

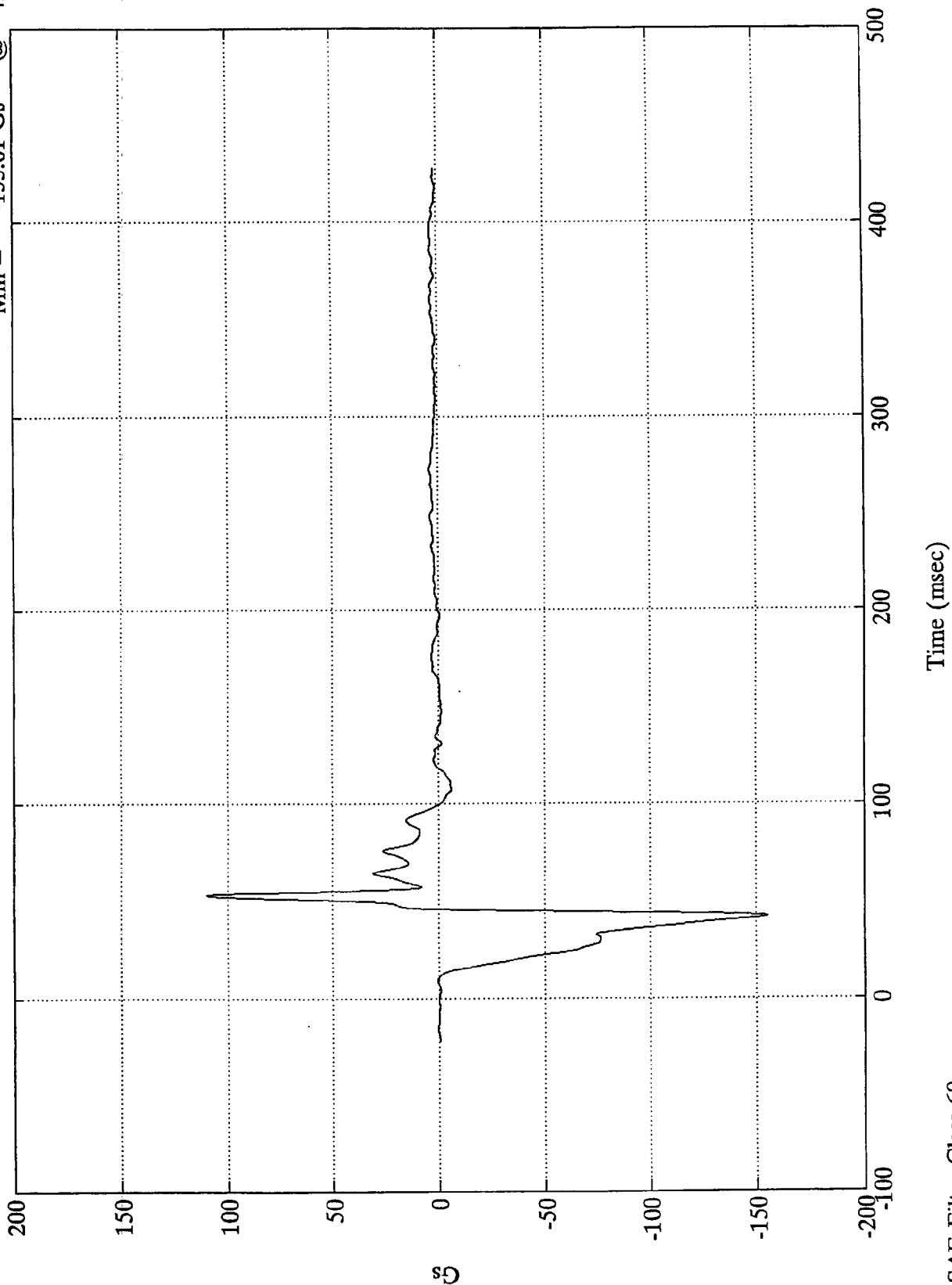
8304-2

SAE Filter Class 180

VTV TEST #2

Acc 4 Lt Engine X

Max = 110.03 Gs @ 52.79 msec
Min = -155.01 Gs @ 41.76 msec



SAE Filter Class 60

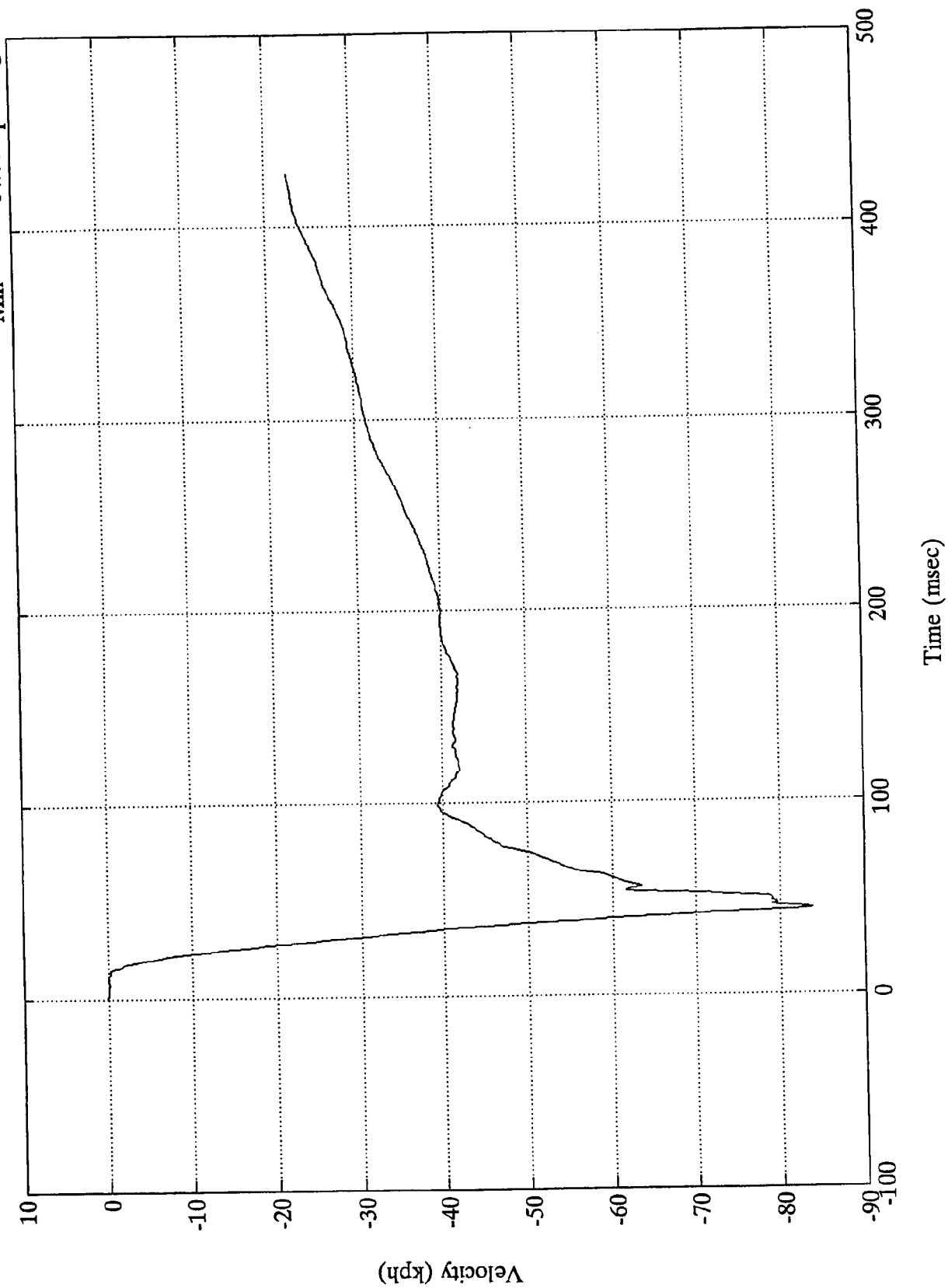
Gs

Time (msec)

VTV TEST #2

Acc 4 Lt Engine X

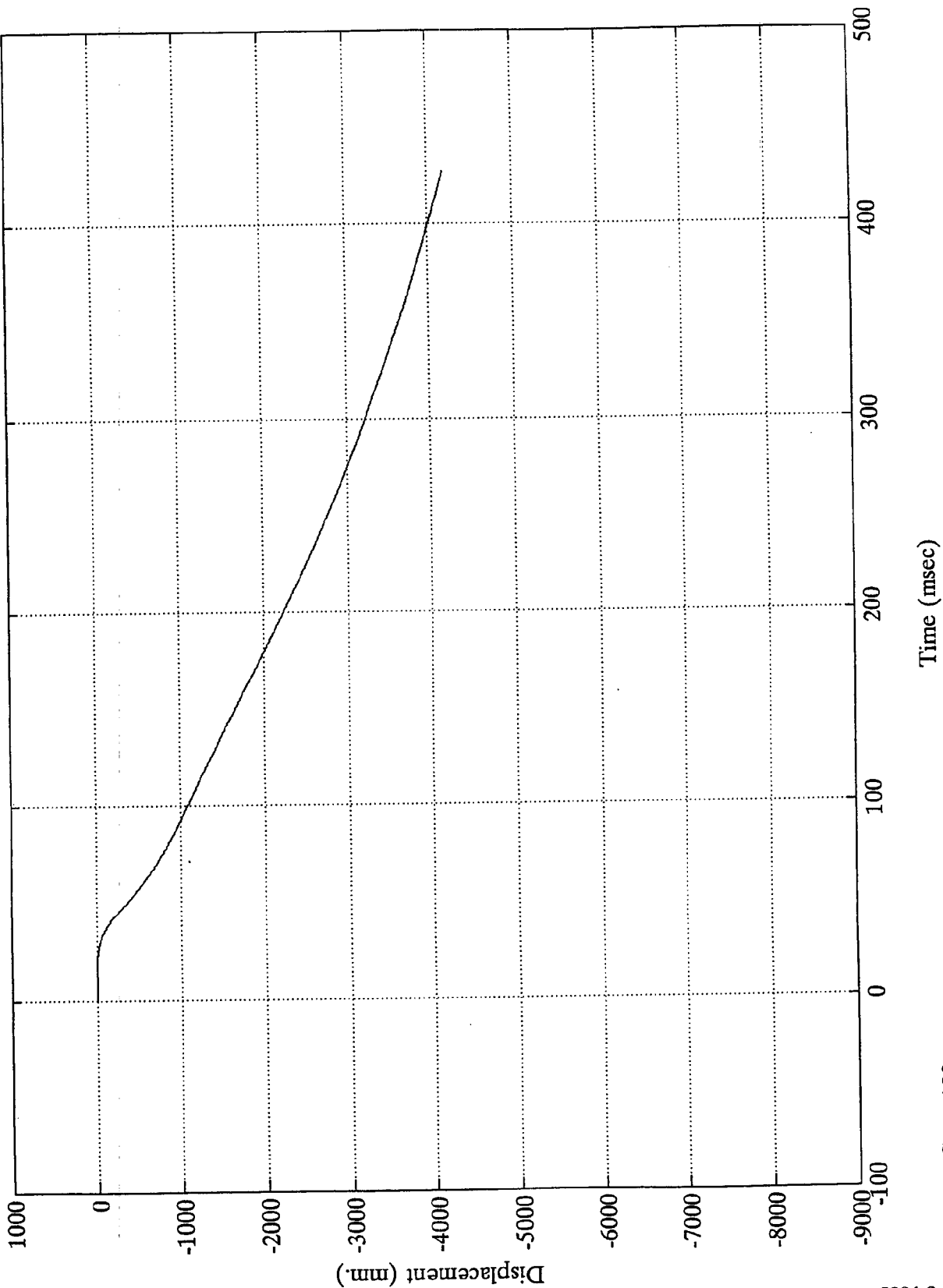
Max = .01 kph @ 1.07 msec
Min = -84.00 kph @ 44.75 msec



VTV TEST #2

Acc 4 Lt Engine X

Max = .00 mm @ 2.03 msec
Min = -4182.13 mm @ 427.32 msec



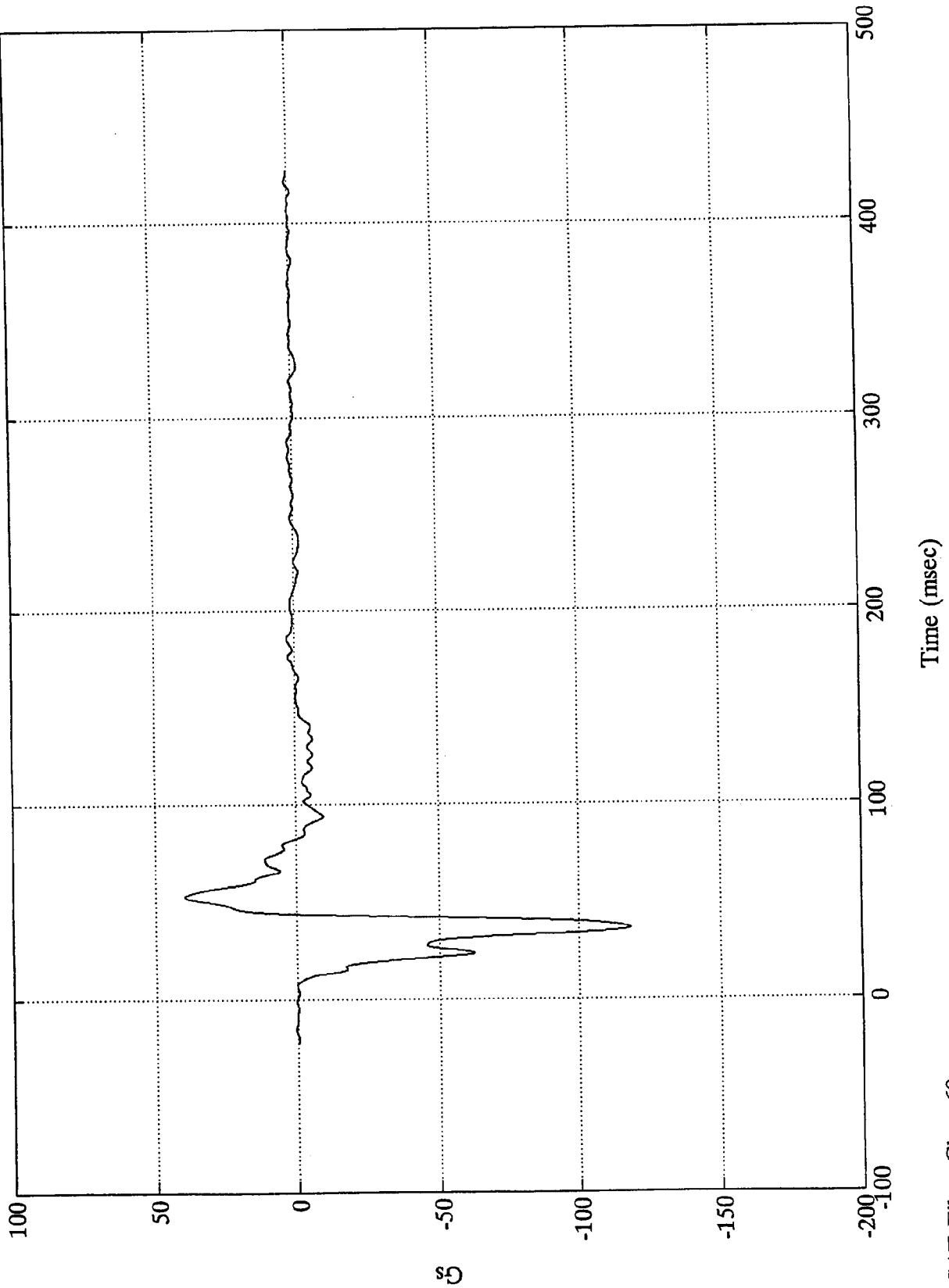
SAE Filter Class 180

8304-2

VTV TEST #2

Acc 5 Engine Bottom X

Max = 39.54 Gs @ 53.15 msec
Min = -118.29 Gs @ 36.60 msec

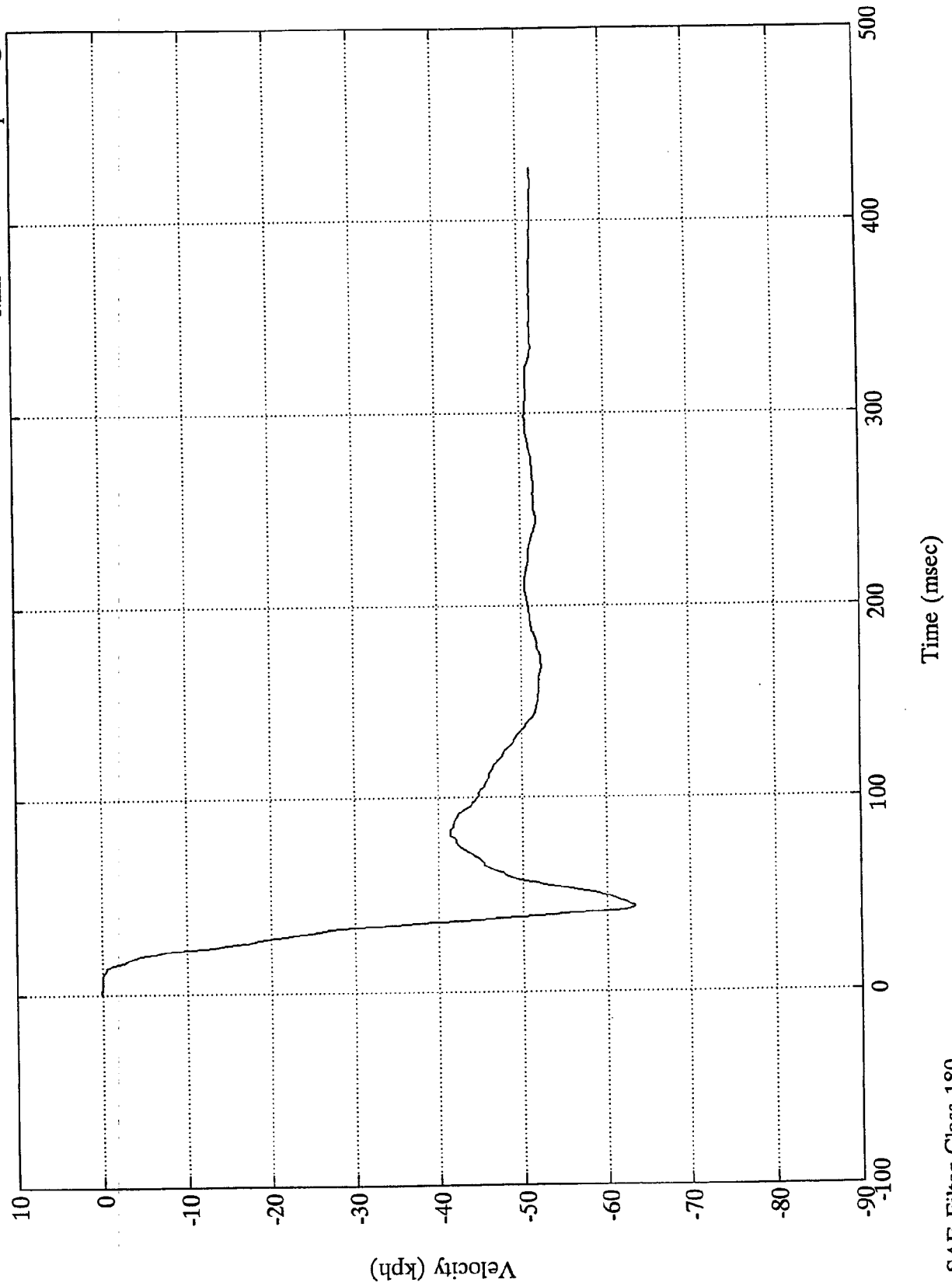


SAE Filter Class 60

VTV TEST #2

Acc 5 Engine Bottom X

Max = .02 kph @ 1.43 msec
Min = -63.42 kph @ 43.44 msec



B-40

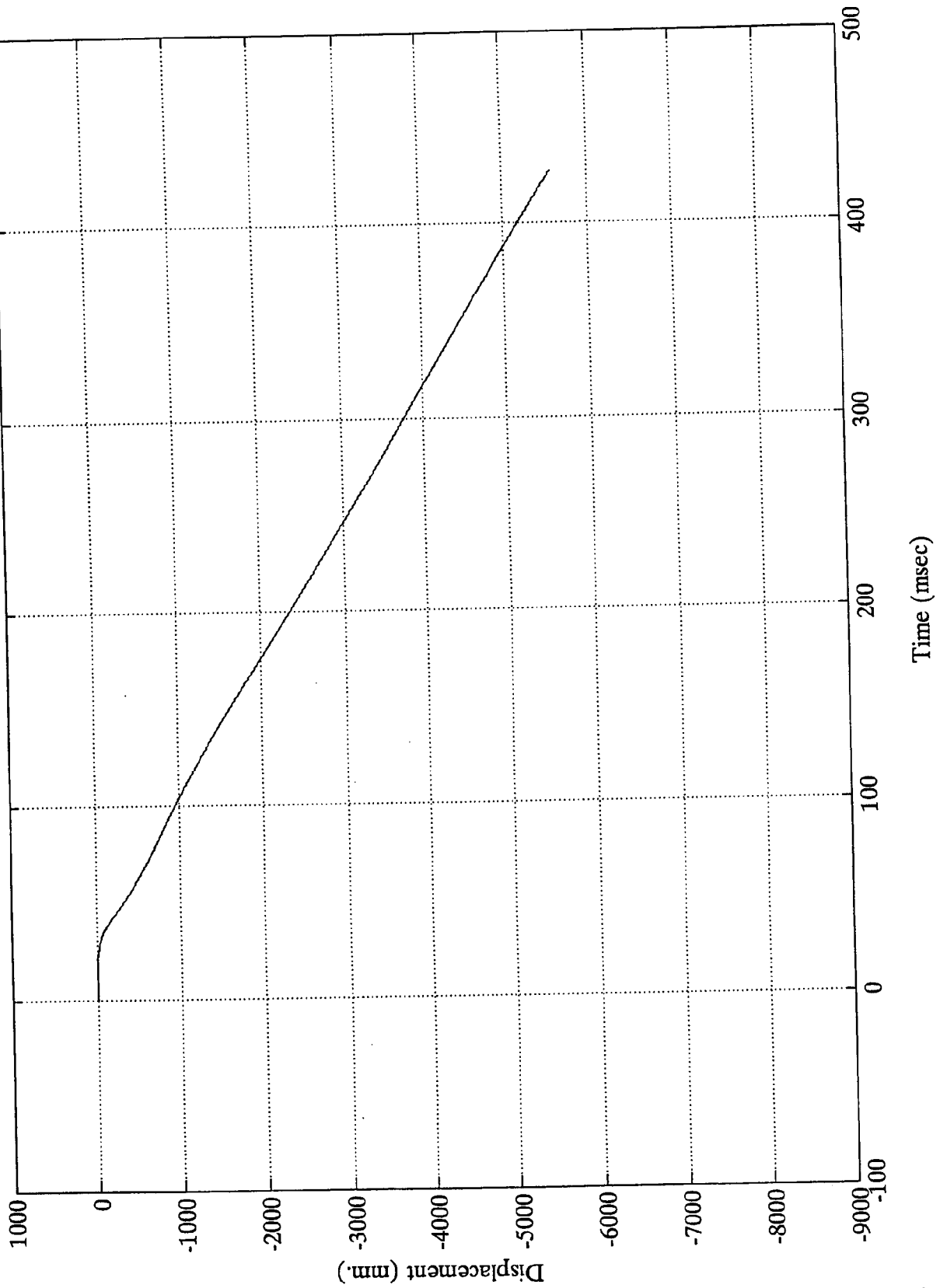
8304-2

SAE Filter Class 180

VTV TEST #2

Acc 5 Engine Bottom X

Max = .01 mm @ 2.63 msec
Min = -5574.40 mm @ 427.32 msec



SAE Filter Class 180

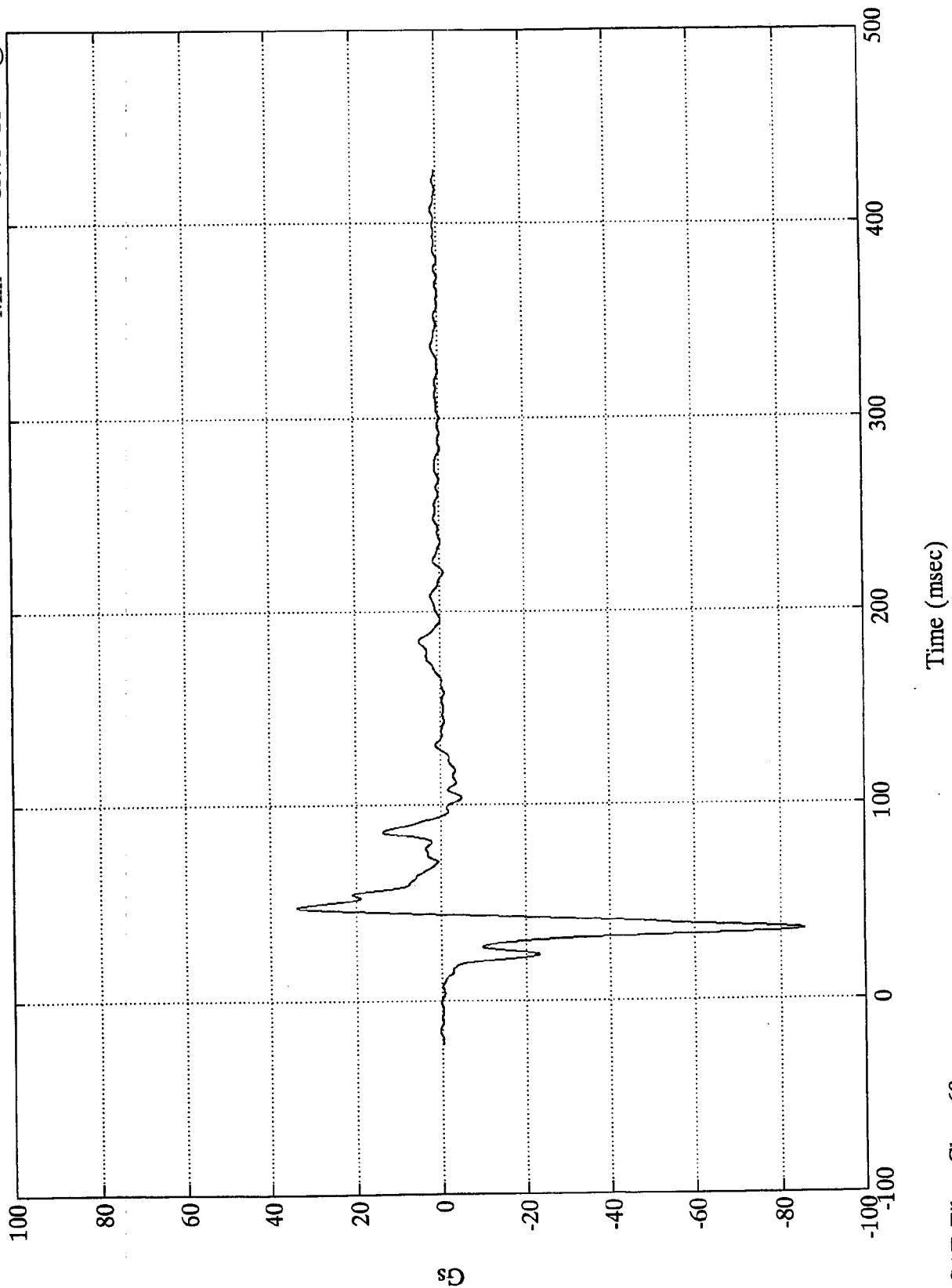
8304-2

B-41

VTV TEST #2

Acc 5 Engine Bottom Y

Max = 33.84 Gs @ 47.88 msec
Min = -85.75 Gs @ 35.88 msec



SAE Filter Class 60

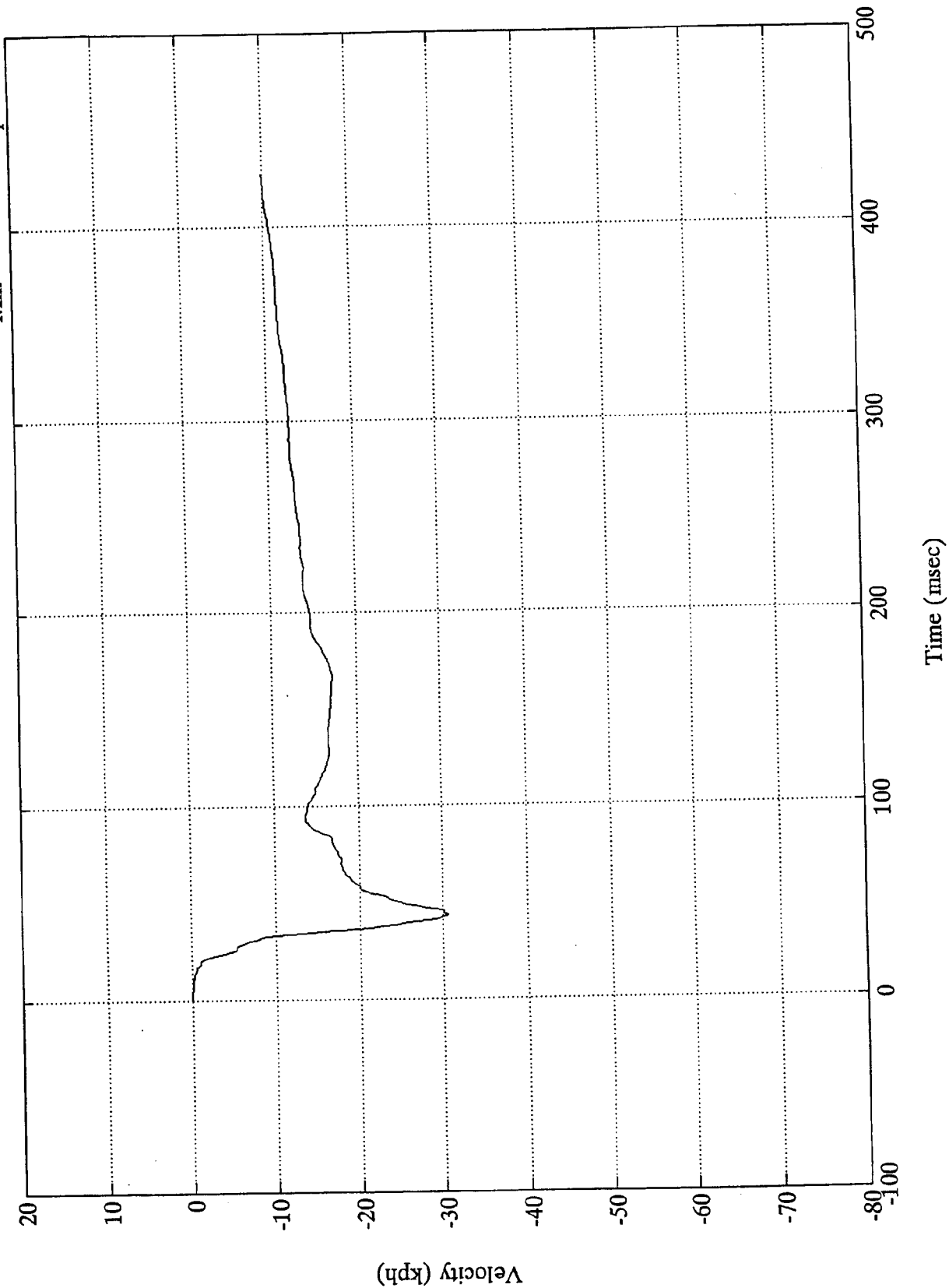
8304-2

B-42

VTV TEST #2

Acc 5 Engine Bottom Y

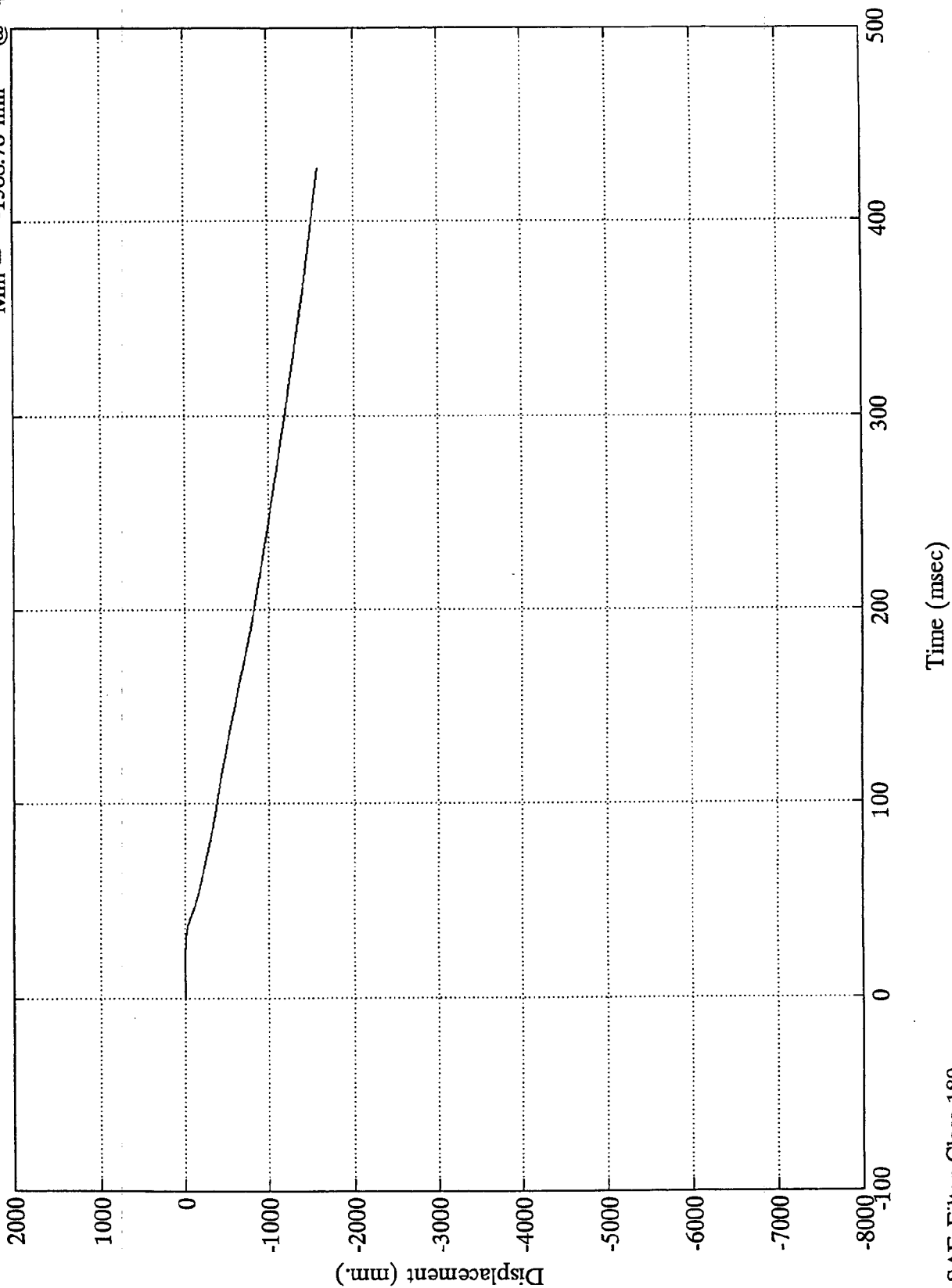
Max = .01 kph @ 1.31 msec
Min = -30.64 kph @ 43.56 msec



VTV TEST #2

Acc 5 Engine Bottom Y

Max = .01 mm @ 2.39 msec
Min = -1588.78 mm @ 427.32 msec



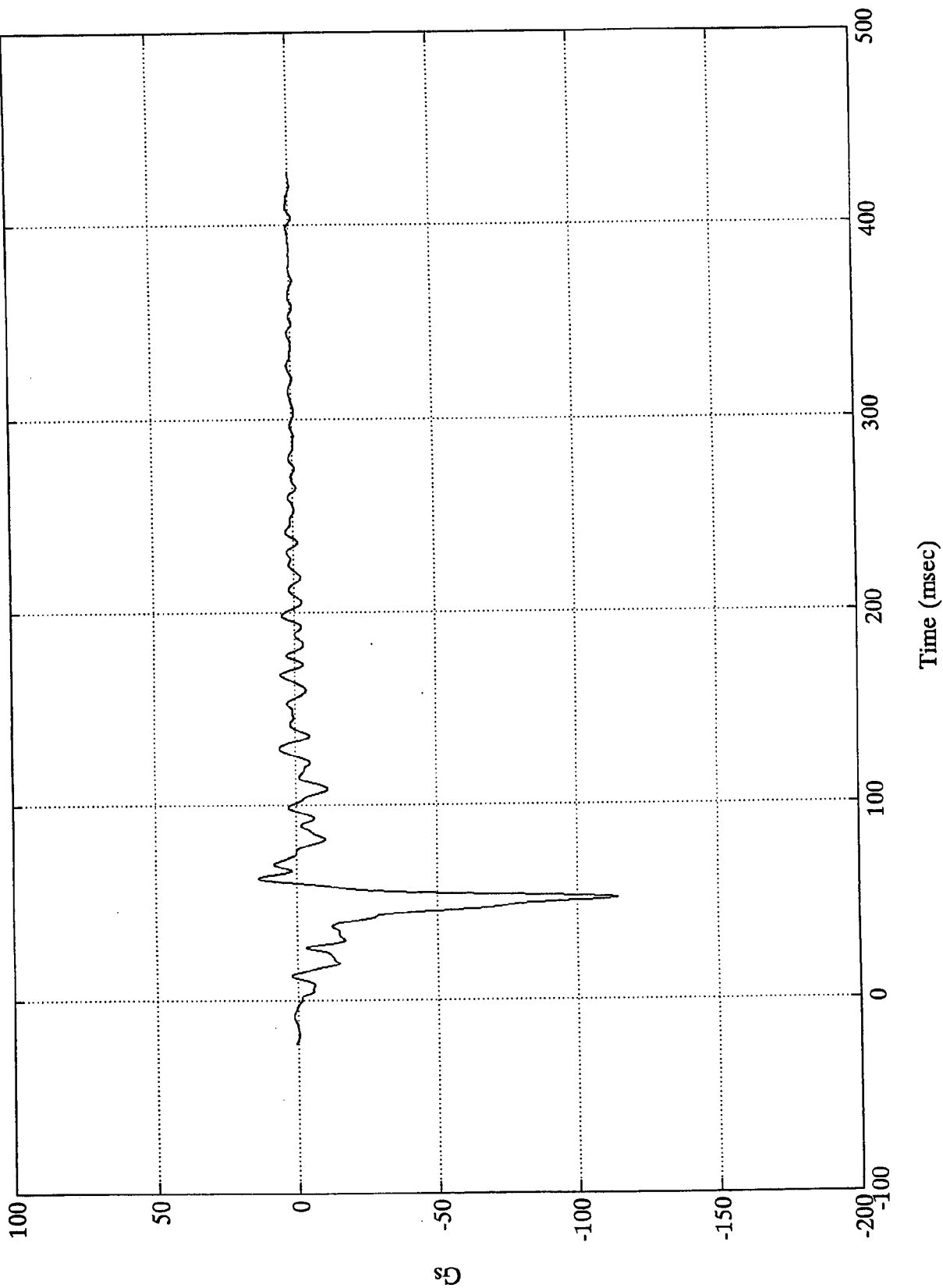
SAE Filter Class 180

8304-2

VTV TEST #2

Acc 6 Rt Shock Tower X

Max = 13.94 Gs @ 62.52 msec
Min = -114.58 Gs @ 51.84 msec



50

B-45

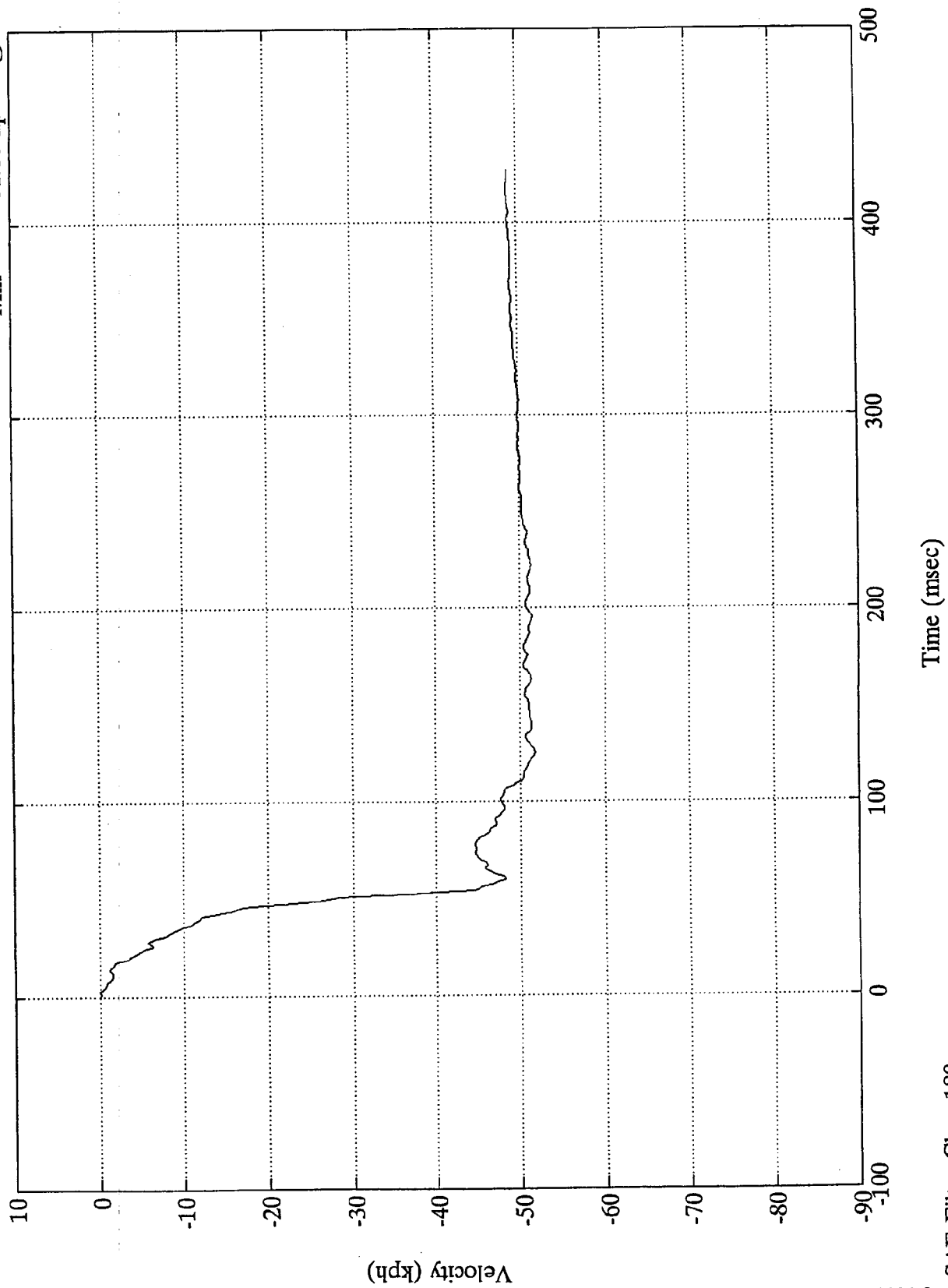
8304-2

SAE Filter Class 60

VTV TEST #2

Max = .02 kph @ 2.87 msec
Min = -51.80 kph @ 125.52 msec

Acc 6 Rt Shock Tower X



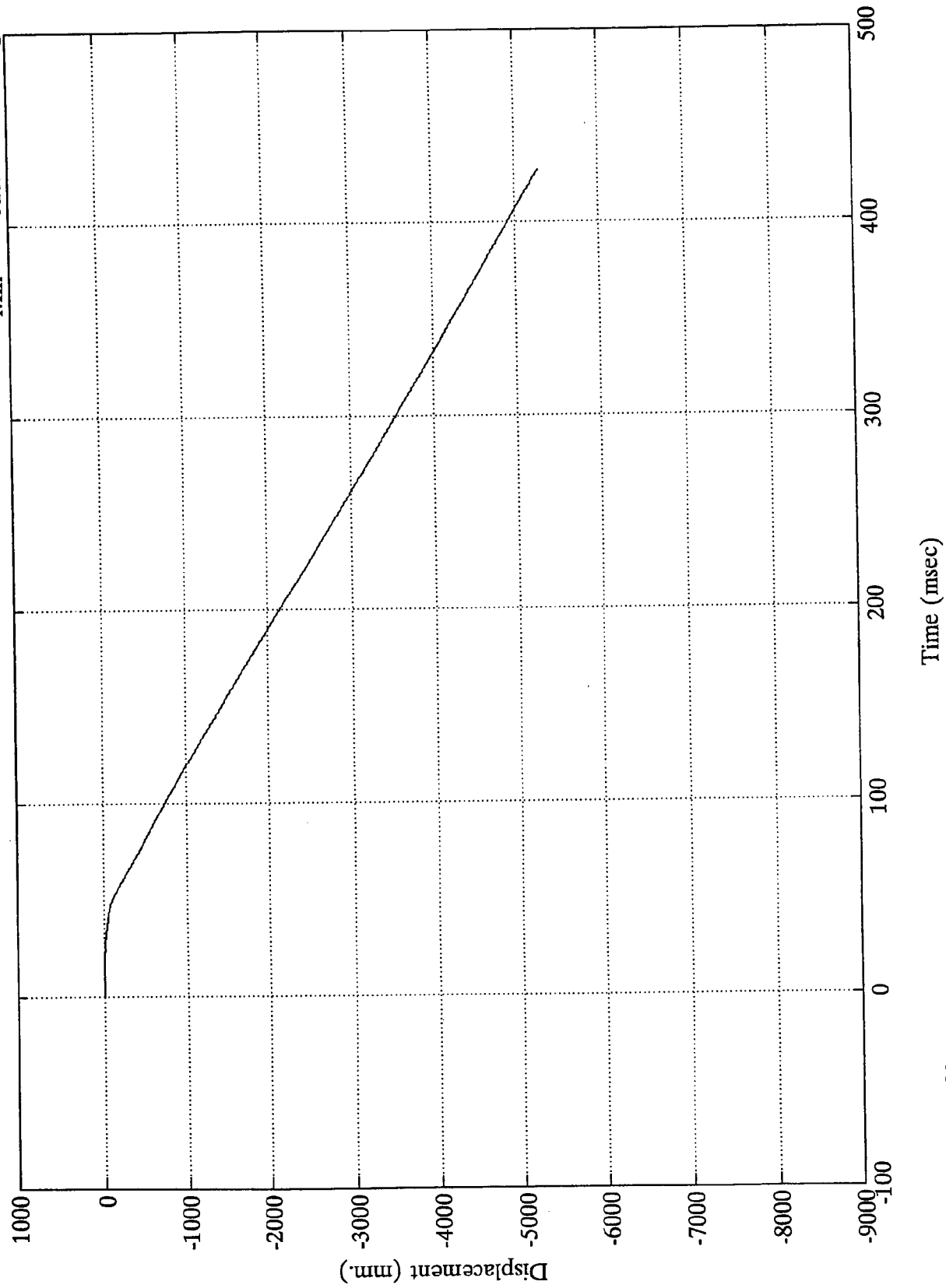
8304-2

SAE Filter Class 180

VTV TEST #2

Acc 6 Rt Shock Tower X

Max = .00 mm @ -0.00 msec
Min = -5289.35 mm @ 427.32 msec



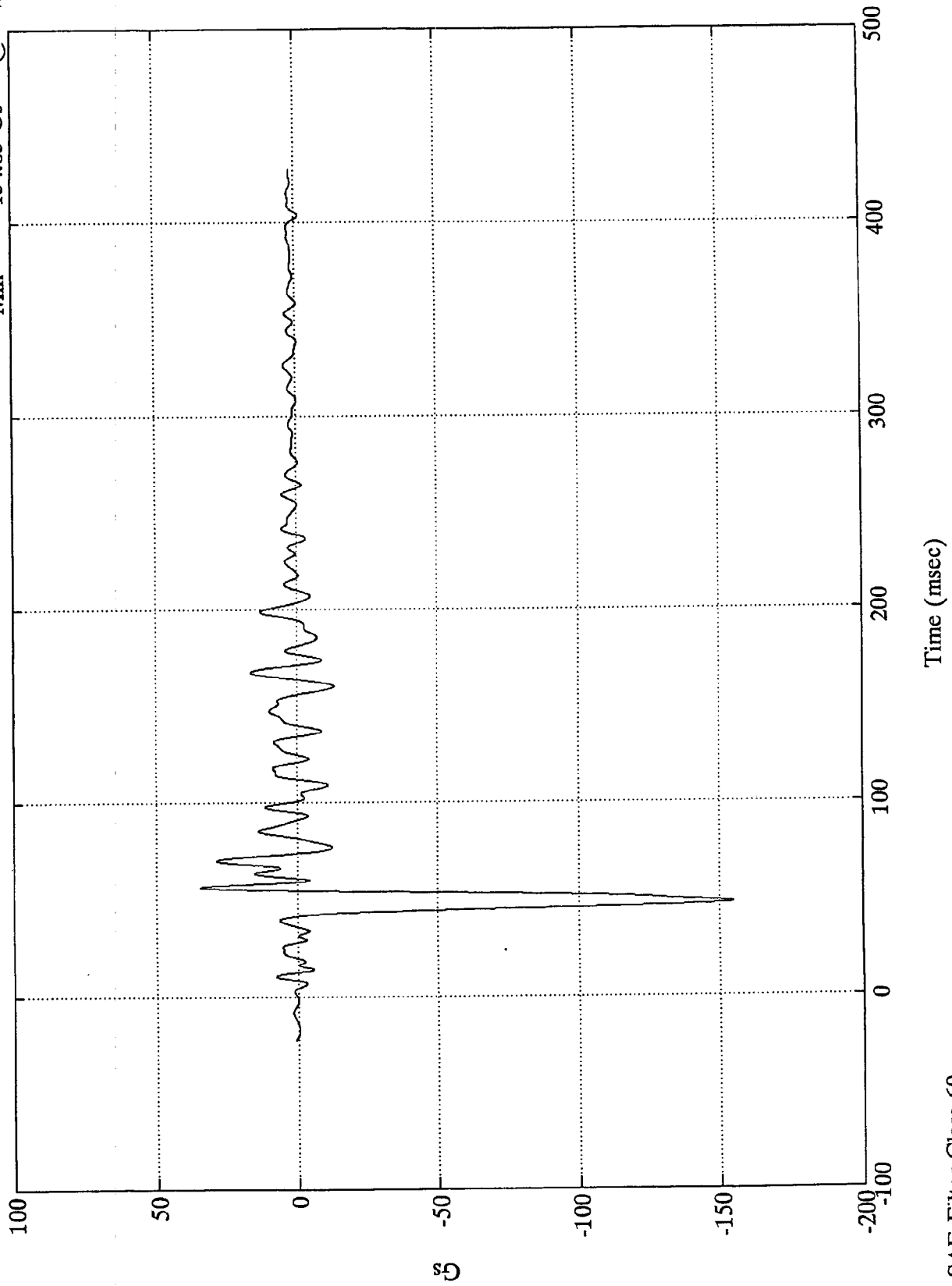
SAE Filter Class 180

8304-2

B-47

VTV TEST #2

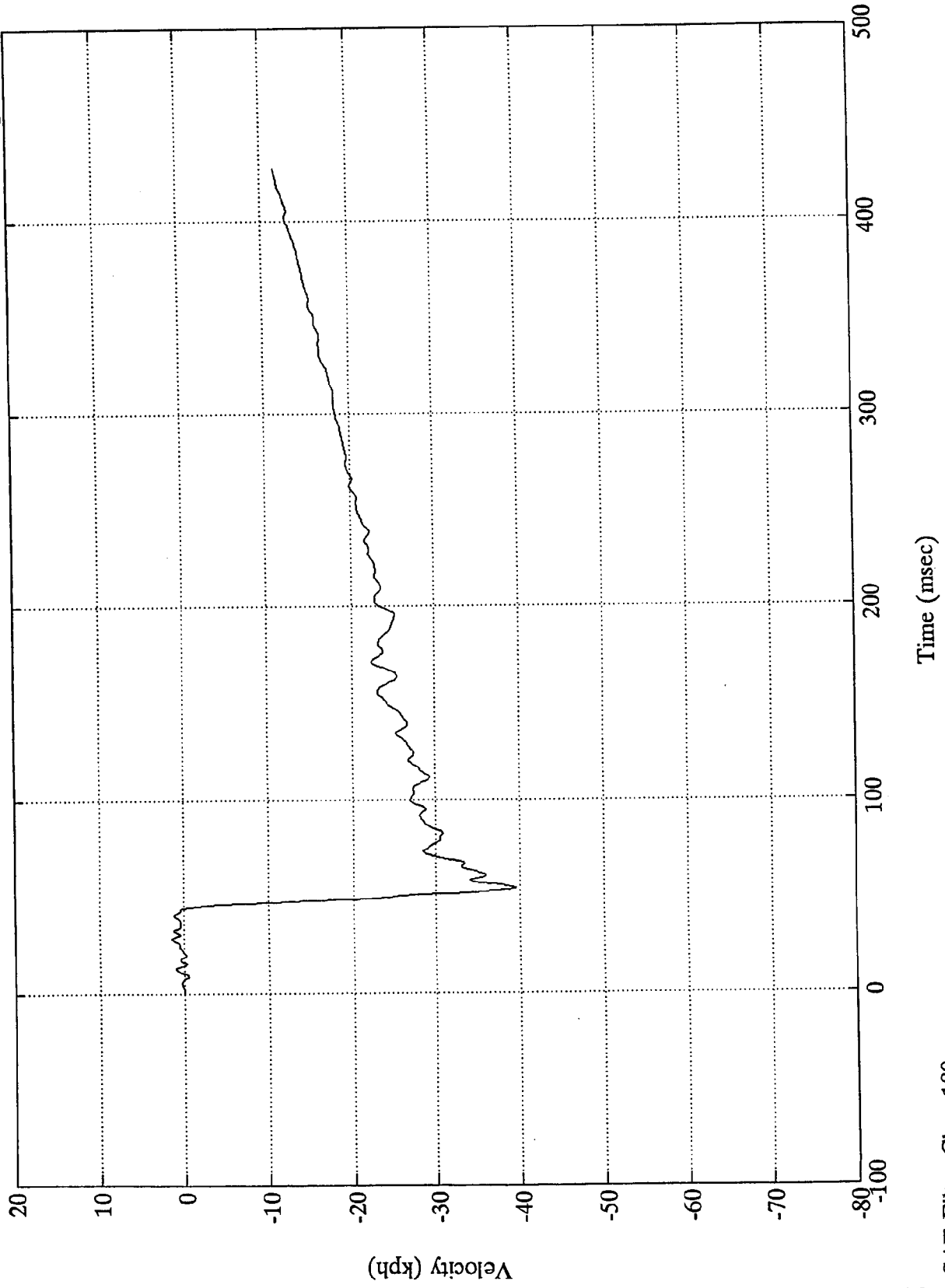
Acc 6 Rt Shock Tower Y
Max = 34.57 Gs @ 56.52 msec
Min = -154.85 Gs @ 48.24 msec



VTV TEST #2

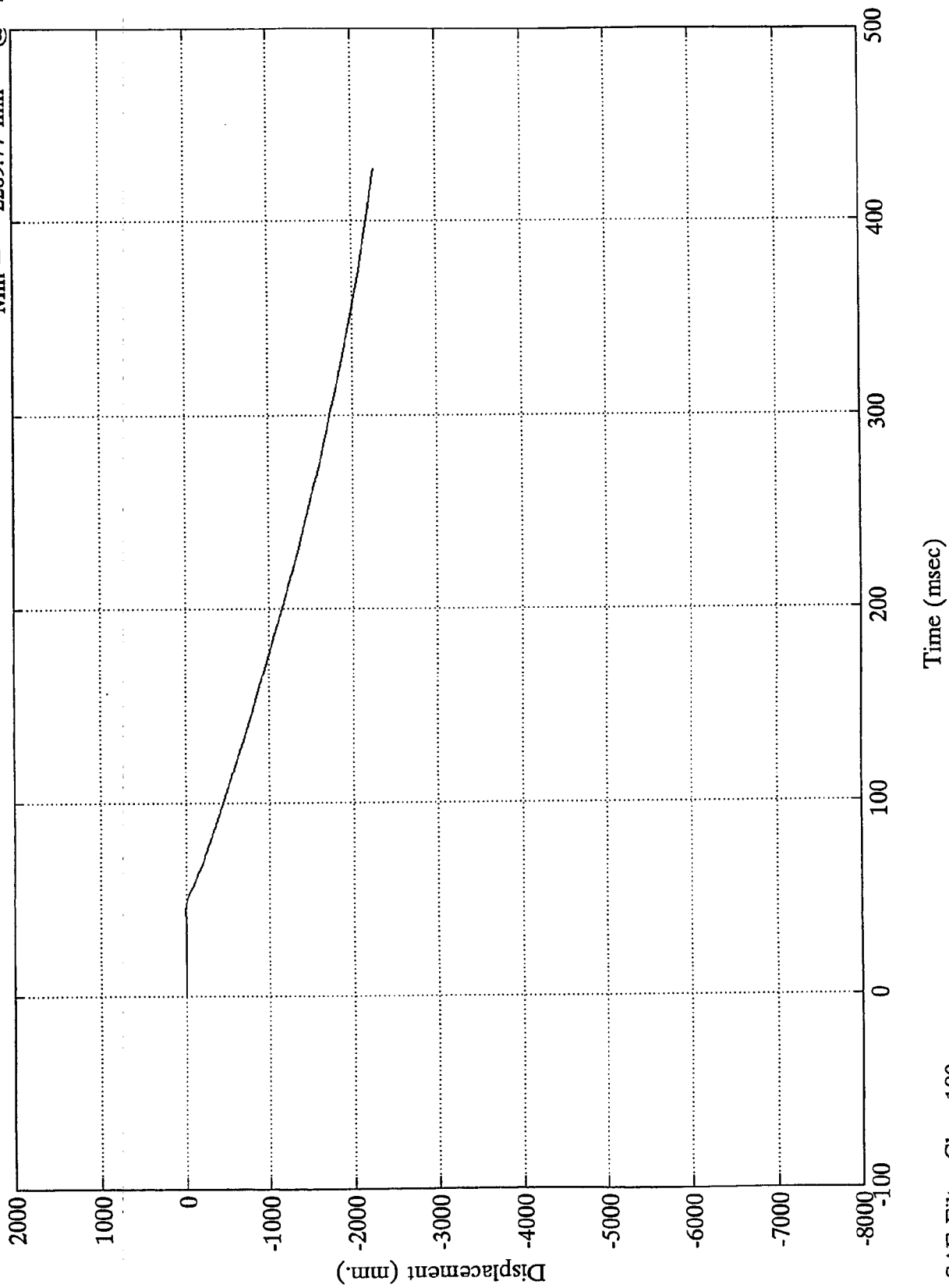
Acc 6 Rt Shock Tower Y

Max = 1.47 kph @ 28.68 msec
Min = -39.61 kph @ 54.48 msec



VTV TEST #2

Acc 6 Rt Shock Tower Y
Max = 5.22 mm @ 44.64 msec
Min = -2269.77 mm @ 427.32 msec



SAE Filter Class 180

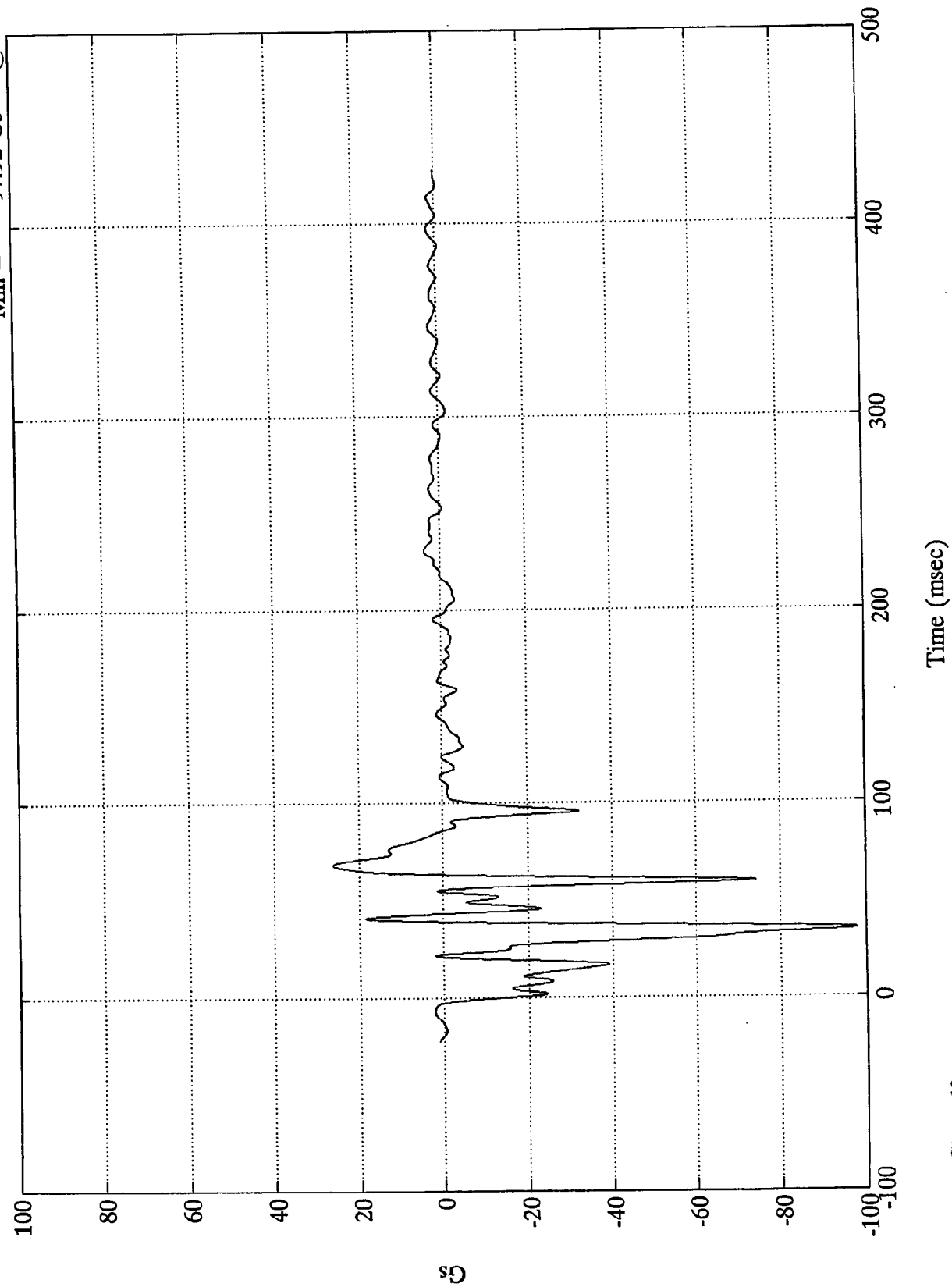
8304-2

B-50

VTV TEST #2

Max = 26.28 Gs @ 68.76 msec
Min = -97.92 Gs @ 35.15 msec

Acc 7 Lt Shock Tower X



SAE Filter Class 60

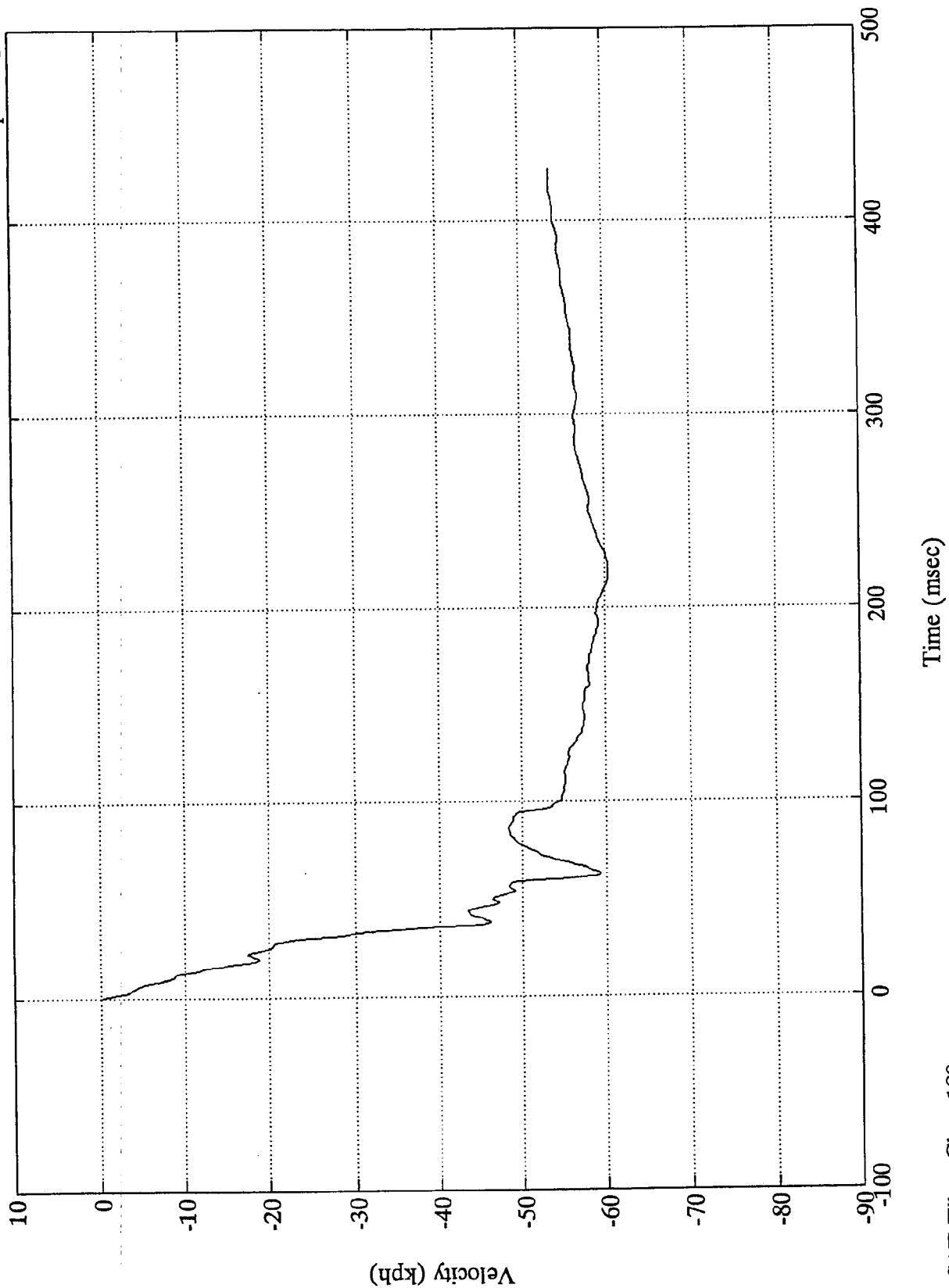
8304-2

B-51

VTV TEST #2

Acc 7 Lt Shock Tower X

Max = .00 kph @ -0.00 msec
Min = -60.40 kph @ 217.20 msec



SAE Filter Class 180

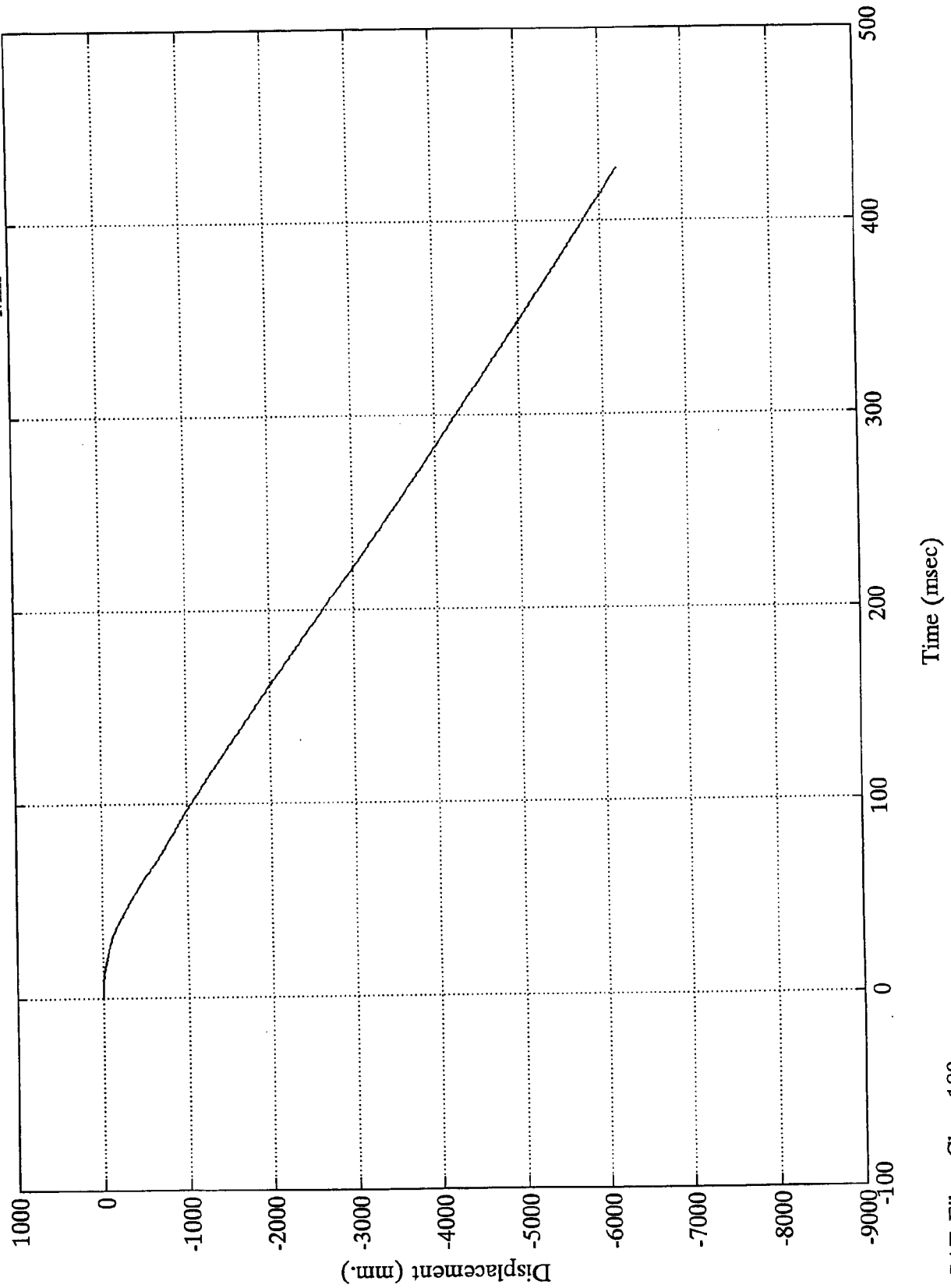
8304-2

B-52

VTV TEST #2

Acc 7 Lt Shock Tower X

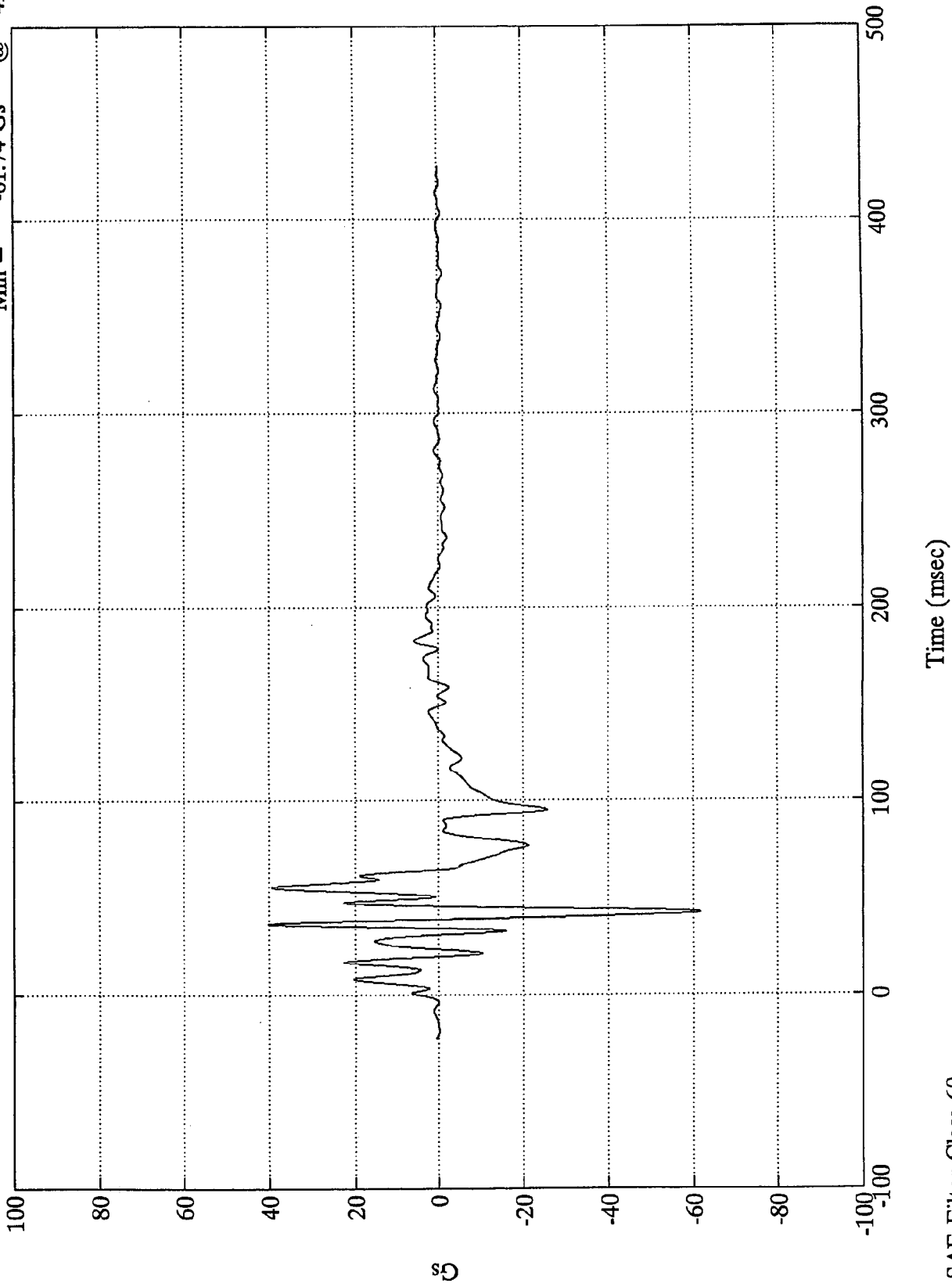
Max = .00 mm @ -0.00 msec
Min = -6210.68 mm @ 427.32 msec



VTV TEST #2

Acc 7 Lt Shock Tower Z

Max = 40.33 Gs @ 36.36 msec
 Min = -61.74 Gs @ 41.88 msec



SAE Filter Class 60

8304-2

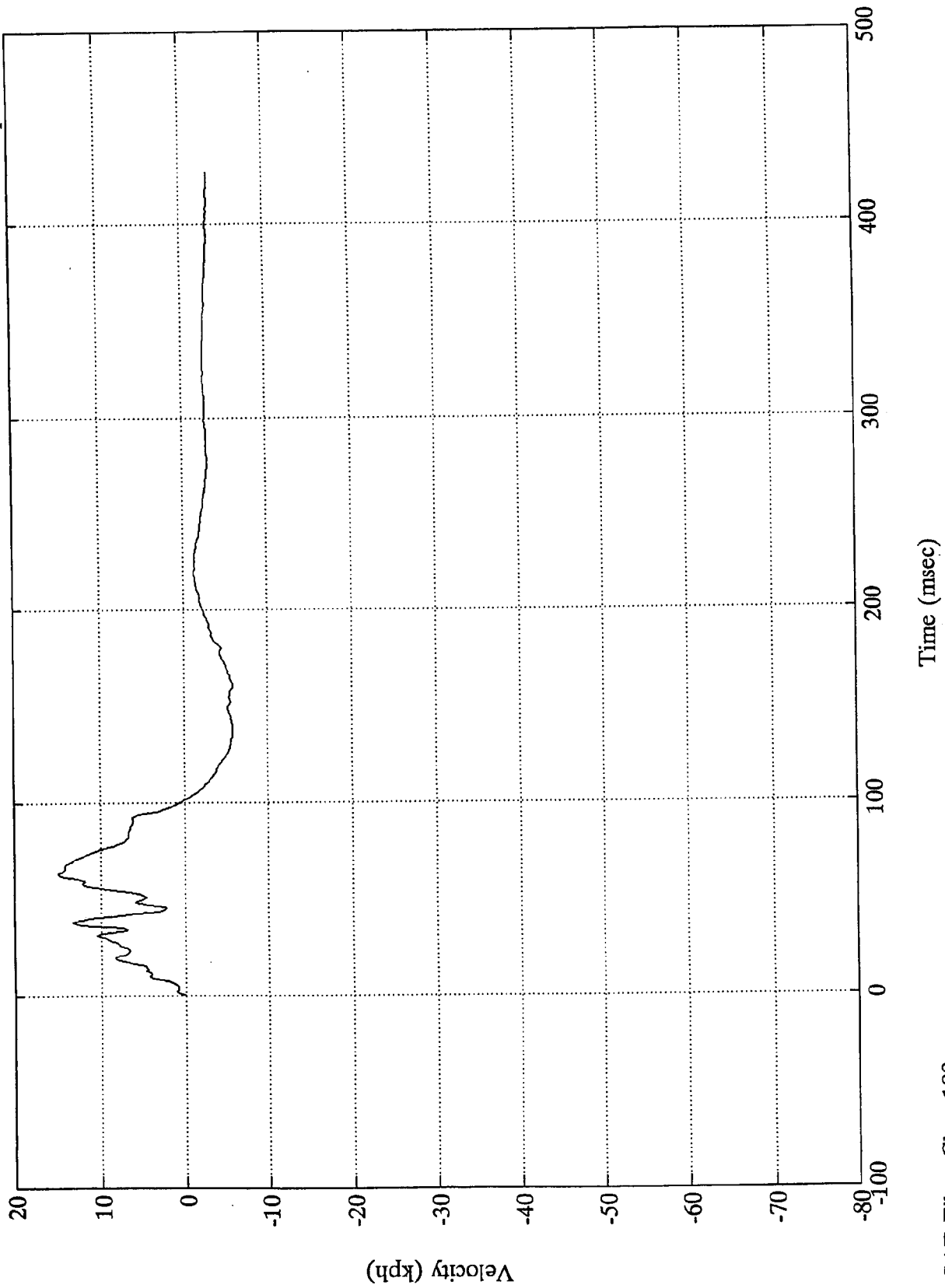
SD

B-54

VTV TEST #2

Acc 7 Lt Shock Tower Z

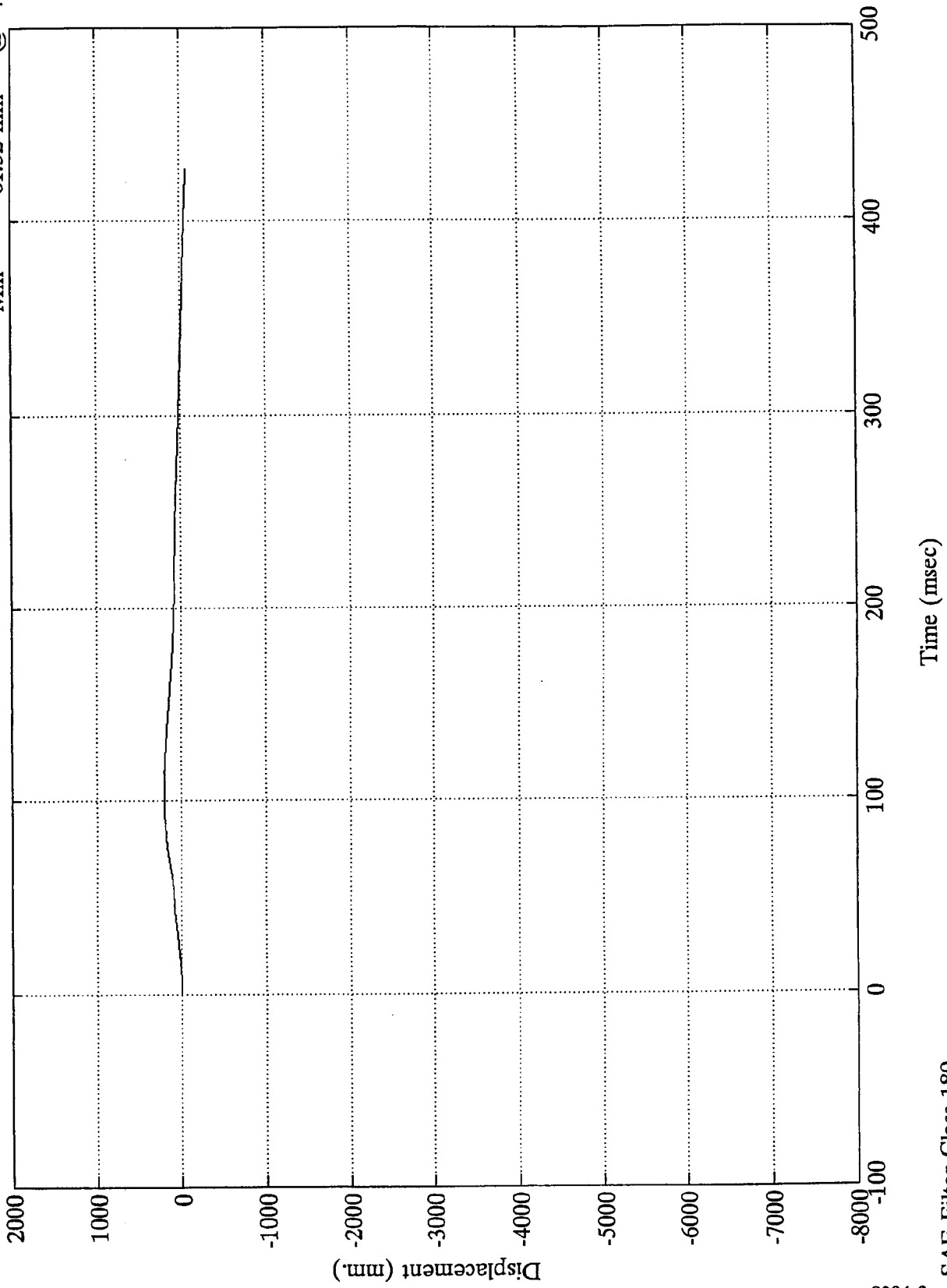
Max = 14.90 kph @ 63.23 msec
Min = -5.84 kph @ 160.92 msec



VTV TEST #2

Max = 204.42 mm @ 101.52 msec
Min = -81.32 mm @ 427.32 msec

Acc 7 Lt Shock Tower Z

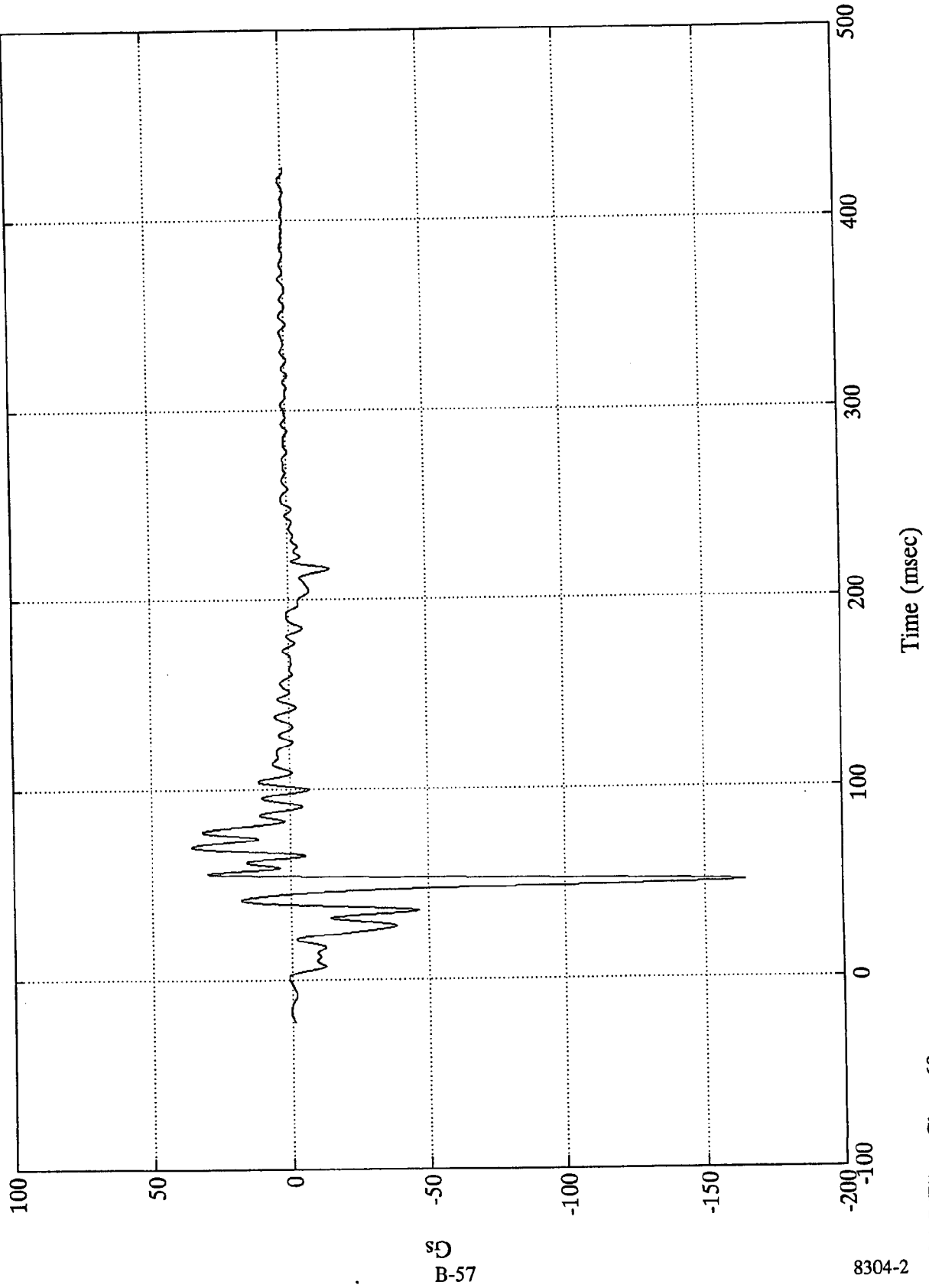


SAE Filter Class 180

VTV TEST #2

Acc 8 Brake Pedal X

Max = 35.69 Gs @ 70.44 msec
Min = -164.80 Gs @ 51.24 msec



B-57

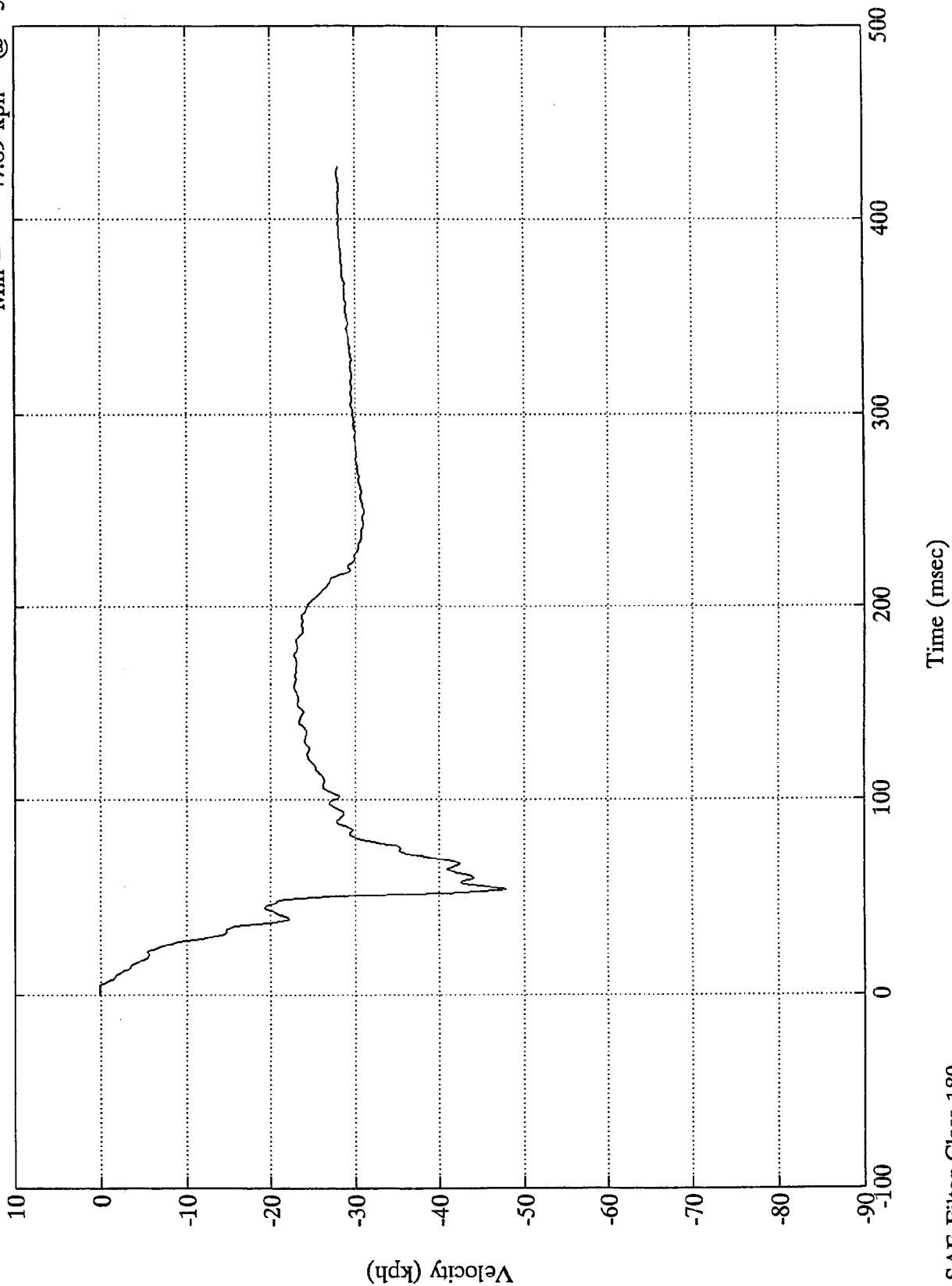
8304-2

SAE Filter Class 60

VTV TEST #2

Max = .11 kph @ 3.47 msec
Min = -47.89 kph @ 54.12 msec

Acc 8 Brake Pedal X

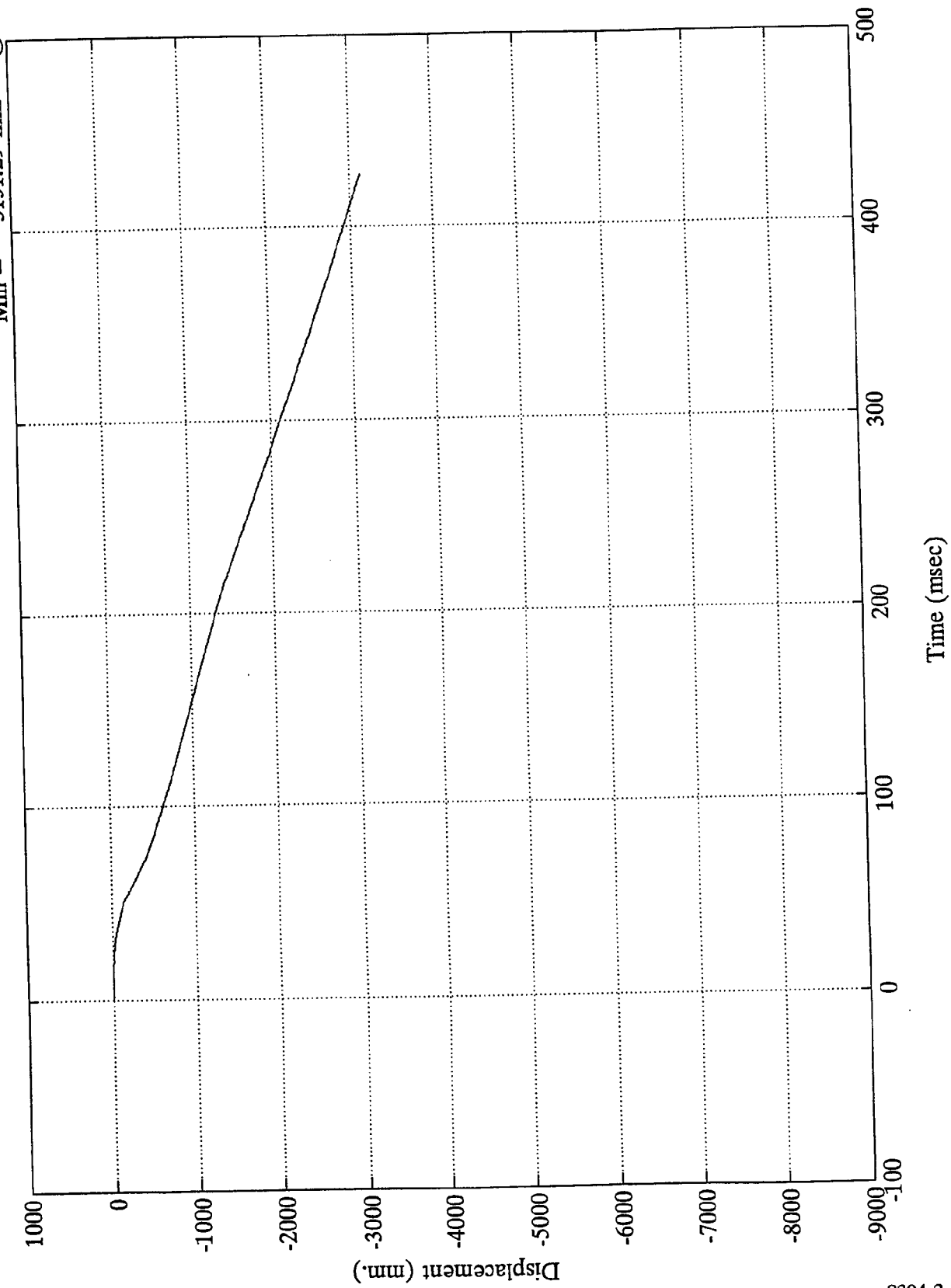


SAE Filter Class 180

VTV TEST #2

Acc 8 Brake Pedal X

Max = .10 mm @ 5.51 msec
Min = -3131.29 mm @ 427.32 msec



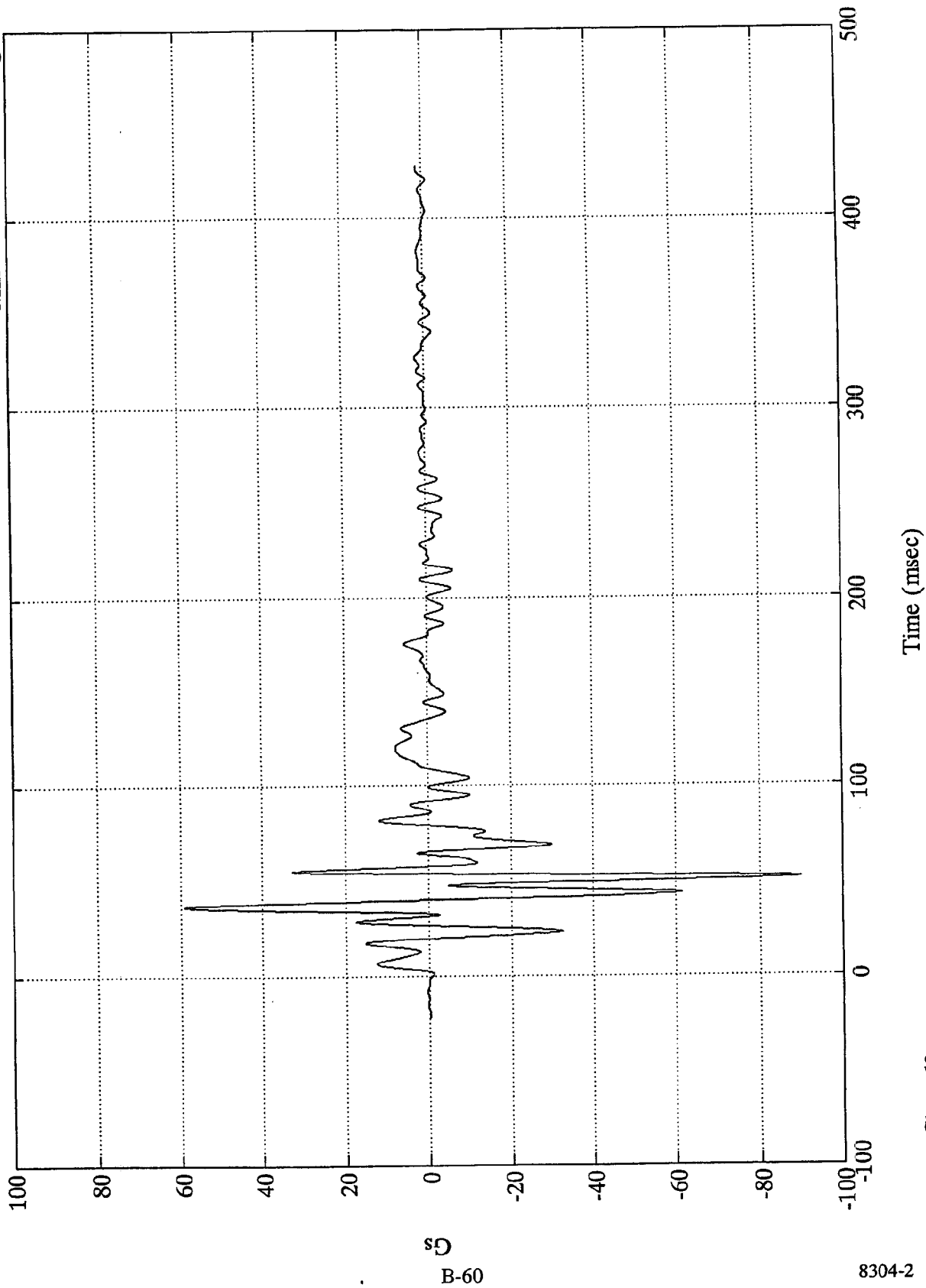
8304-2

SAE Filter Class 180

VTV TEST #2

Acc 8 Brake Pedal Y

Max =	59.05 Gs	@	36.72 msec
Min =	-89.87 Gs	@	51.00 msec



SAE Filter Class 60

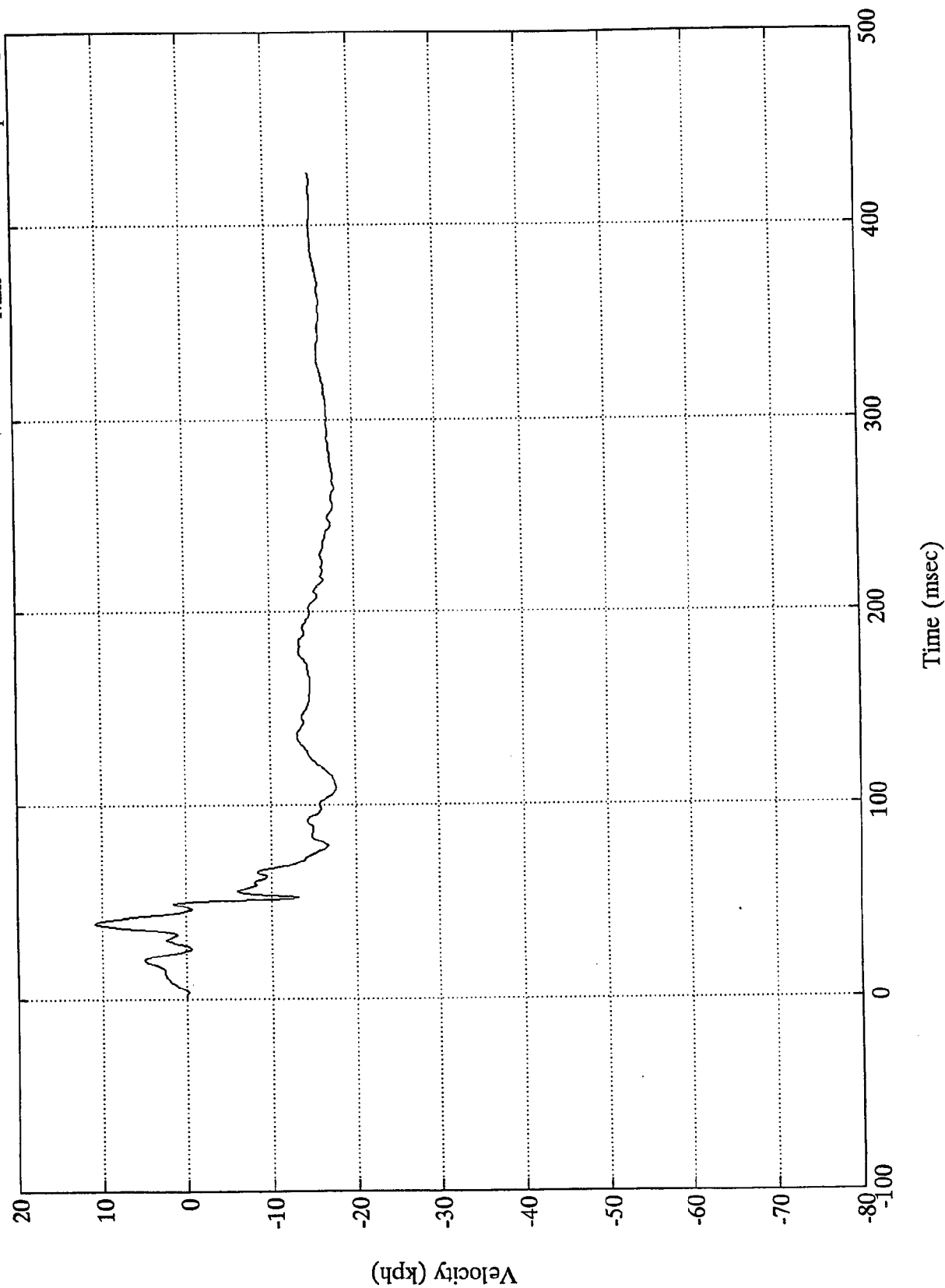
8304-2

B-60

VTV TEST #2

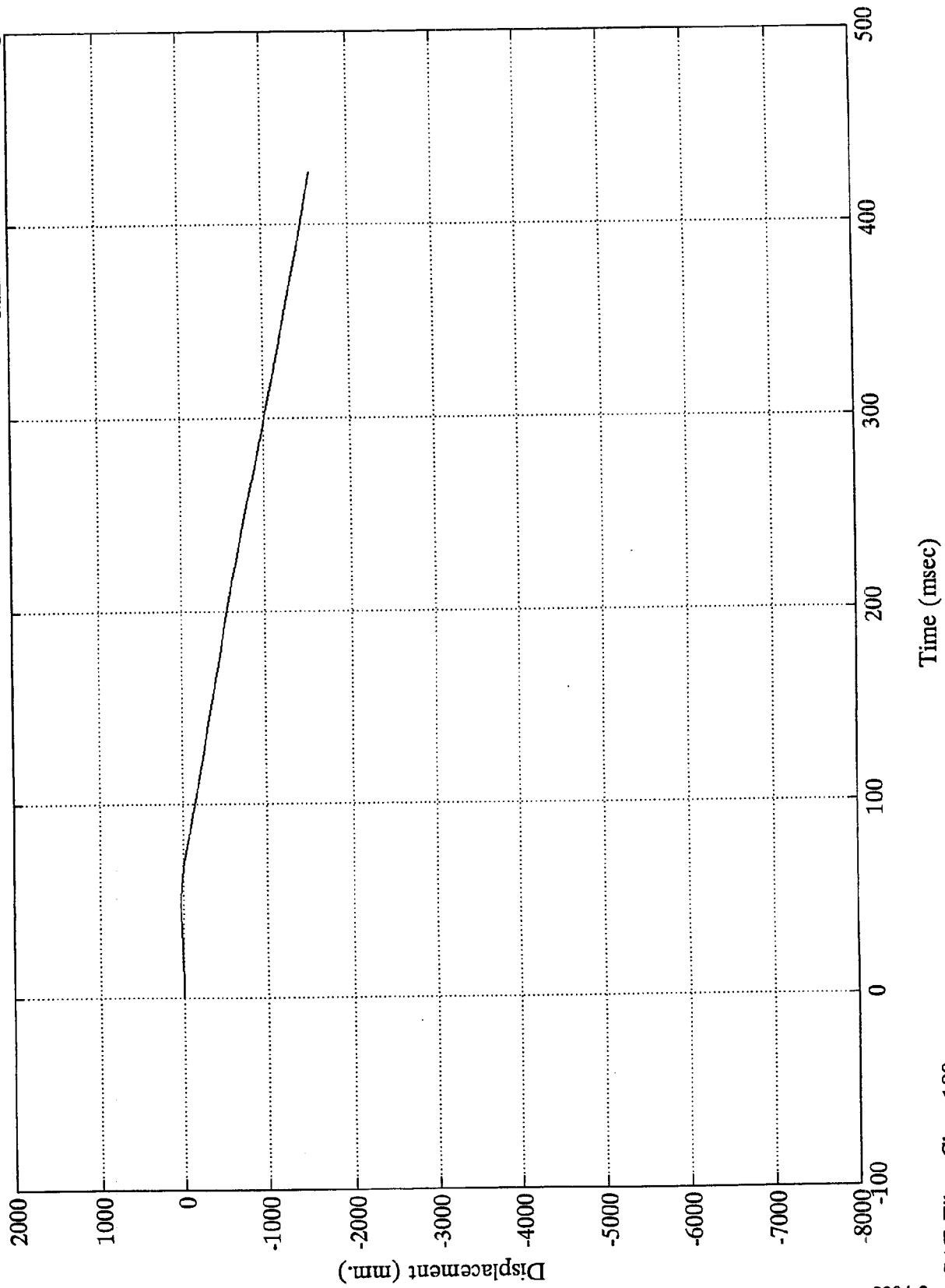
Acc 8 Brake Pedal Y

Max = 10.70 kph @ 39.59 msec
Min = -17.75 kph @ 264.36 msec



VTV TEST #2

Acc 8 Brake Pedal Y
Max = 37.02 mm @ 50.28 msec
Min = -1567.78 mm @ 427.32 msec



B-62

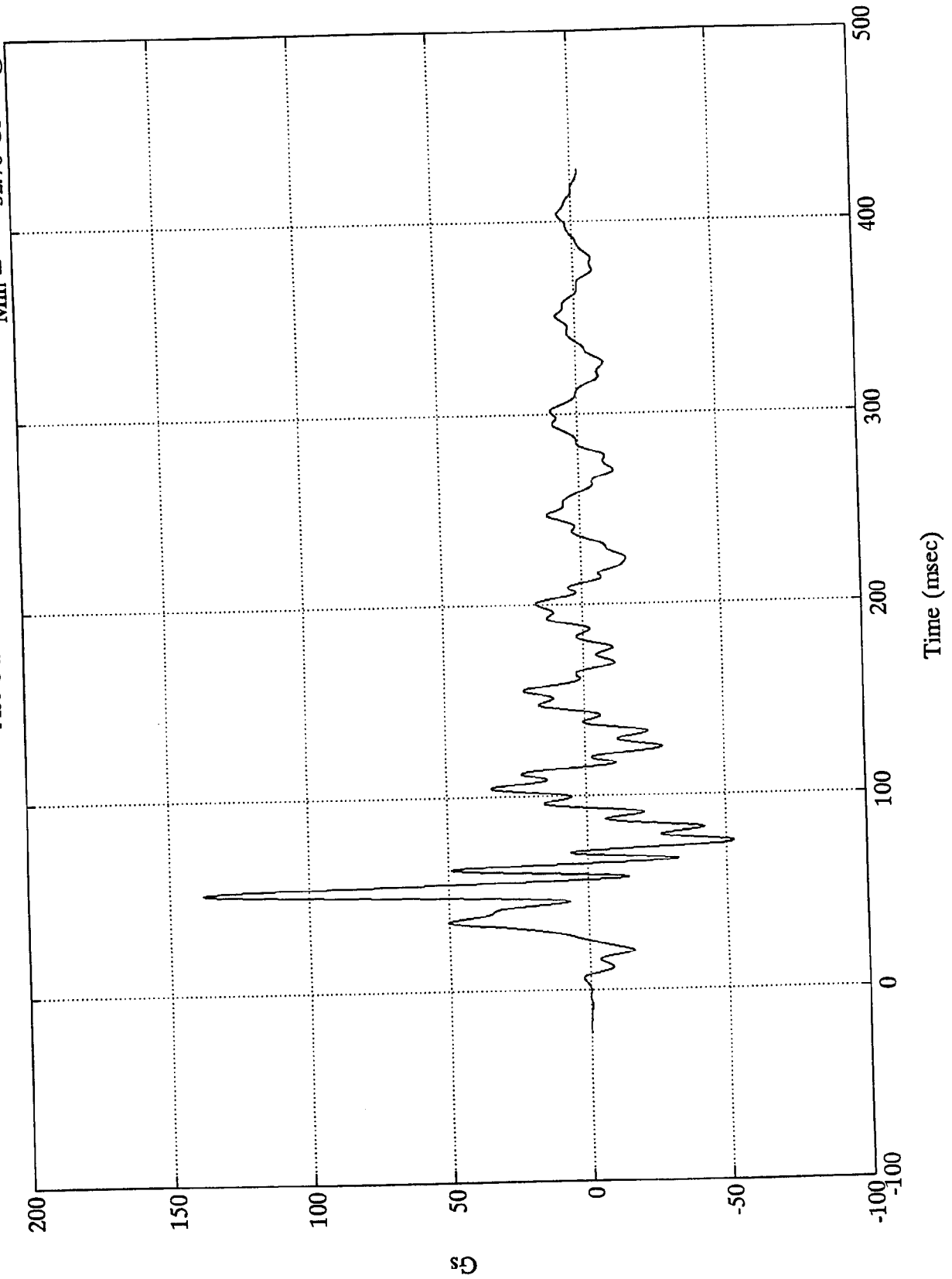
8304-2

SAE Filter Class 180

Max = 138.37 Gs @ 51.96 msec
Min = -52.76 Gs @ 75.95 msec

Acc 8 Brake Pedal Z

VTV TEST #2



50
B-63

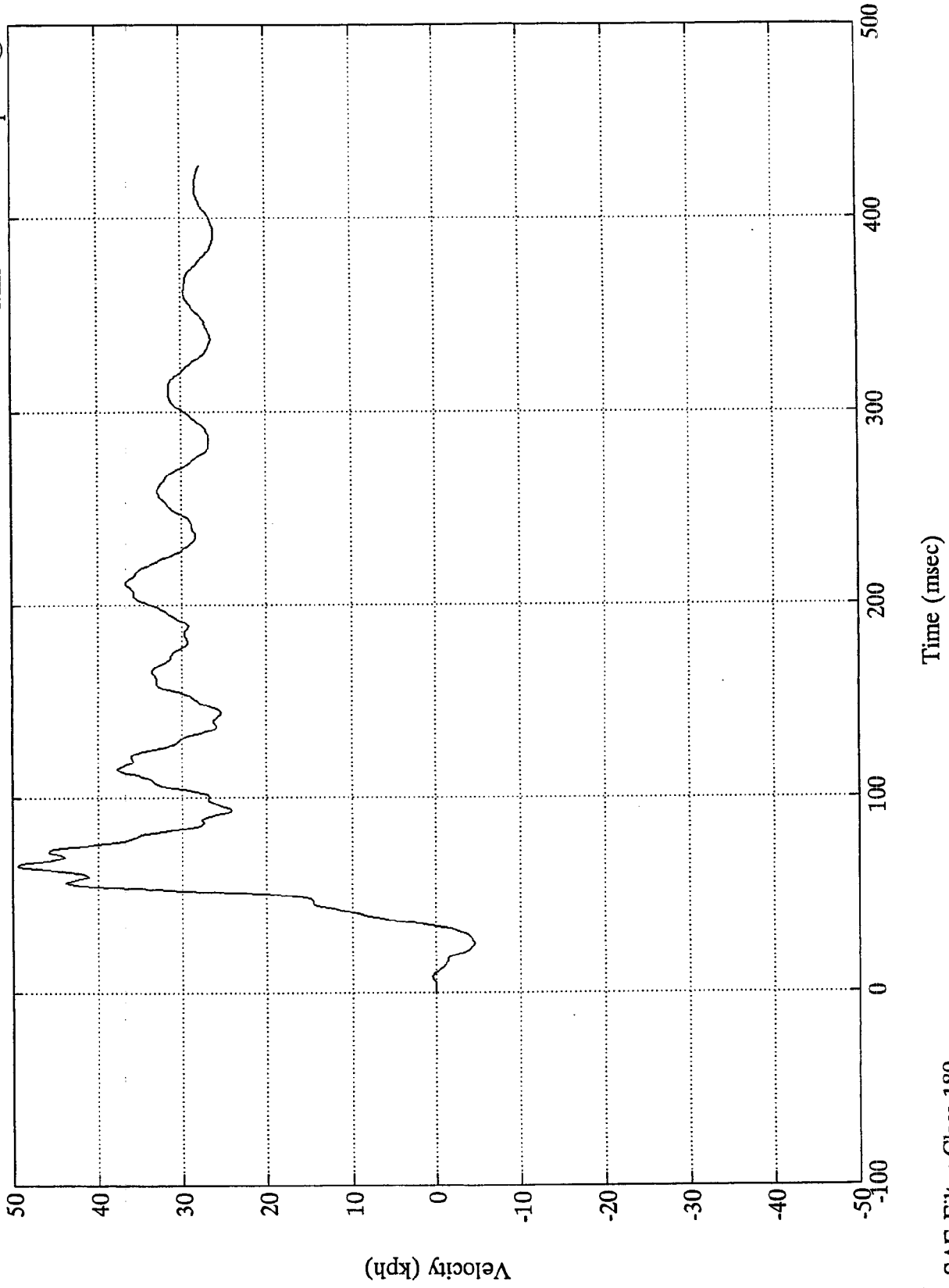
SAE Filter Class 60

8304-2

VTV TEST #2

Max = 49.41 kph @ 65.28 msec
Min = -4.67 kph @ 25.91 msec

Acc 8 Brake Pedal Z



SAE Filter Class 180

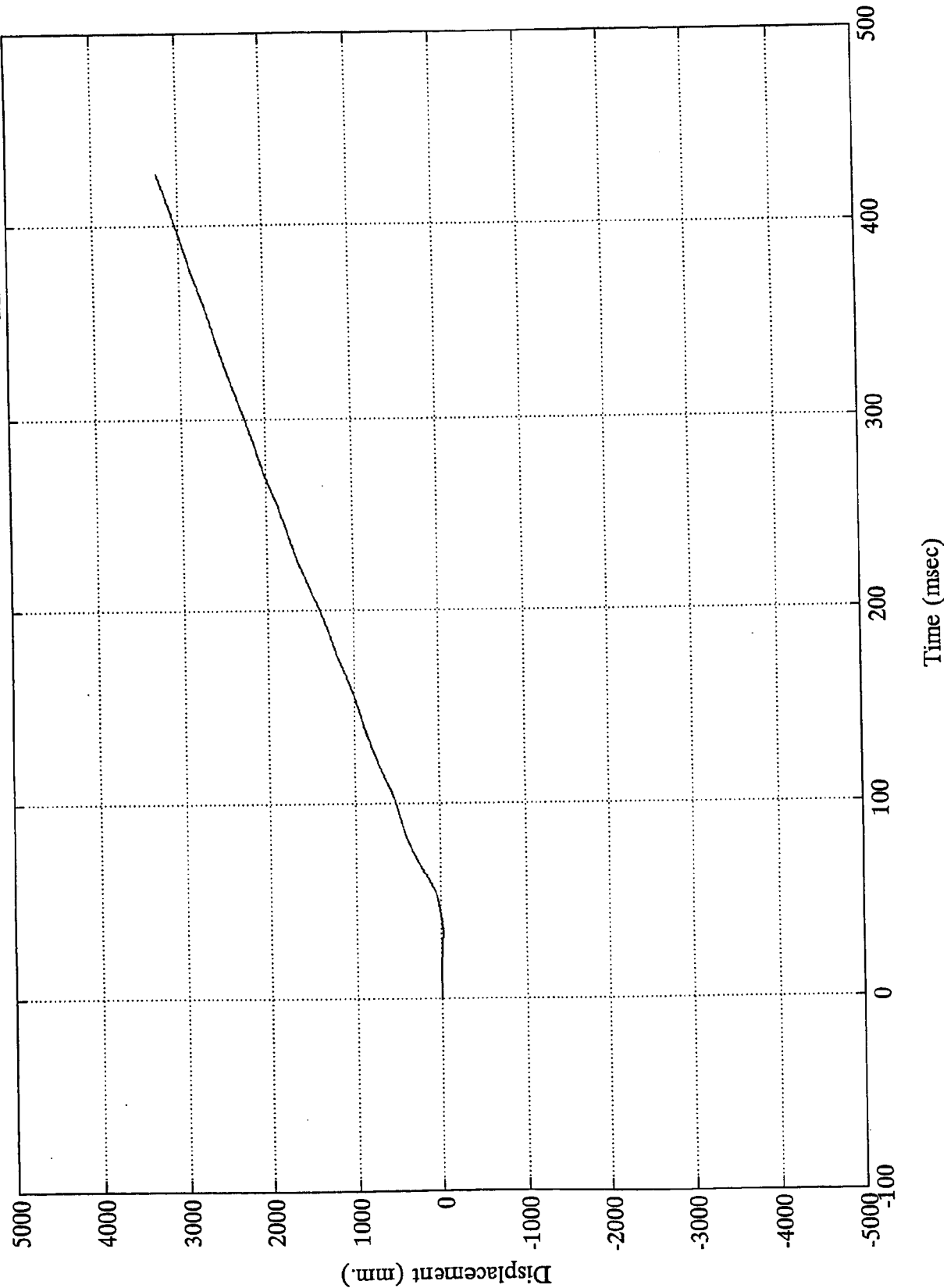
8304-2

B-64

VTV TEST #2

Acc 8 Brake Pedal Z

Max = 3246.25 mm @ 427.32 msec
Min = -16.78 mm @ 34.32 msec

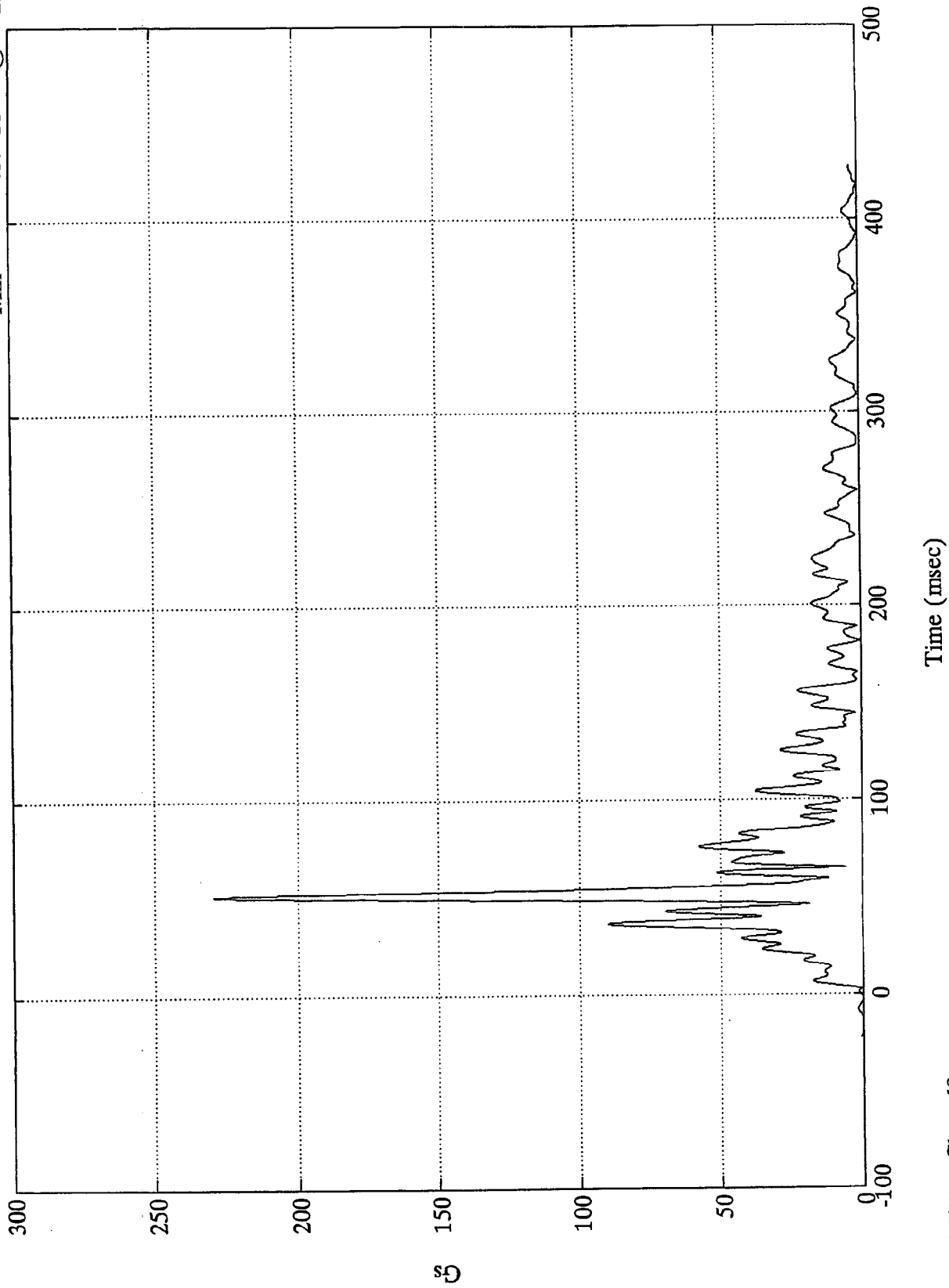


SAE Filter Class 180

VTV TEST #2

Max = 229.53 Gs @ 51.36 msec
Min = .07 Gs @ -2.52 msec

Brake Pedal Res



SAE Filter Class 60

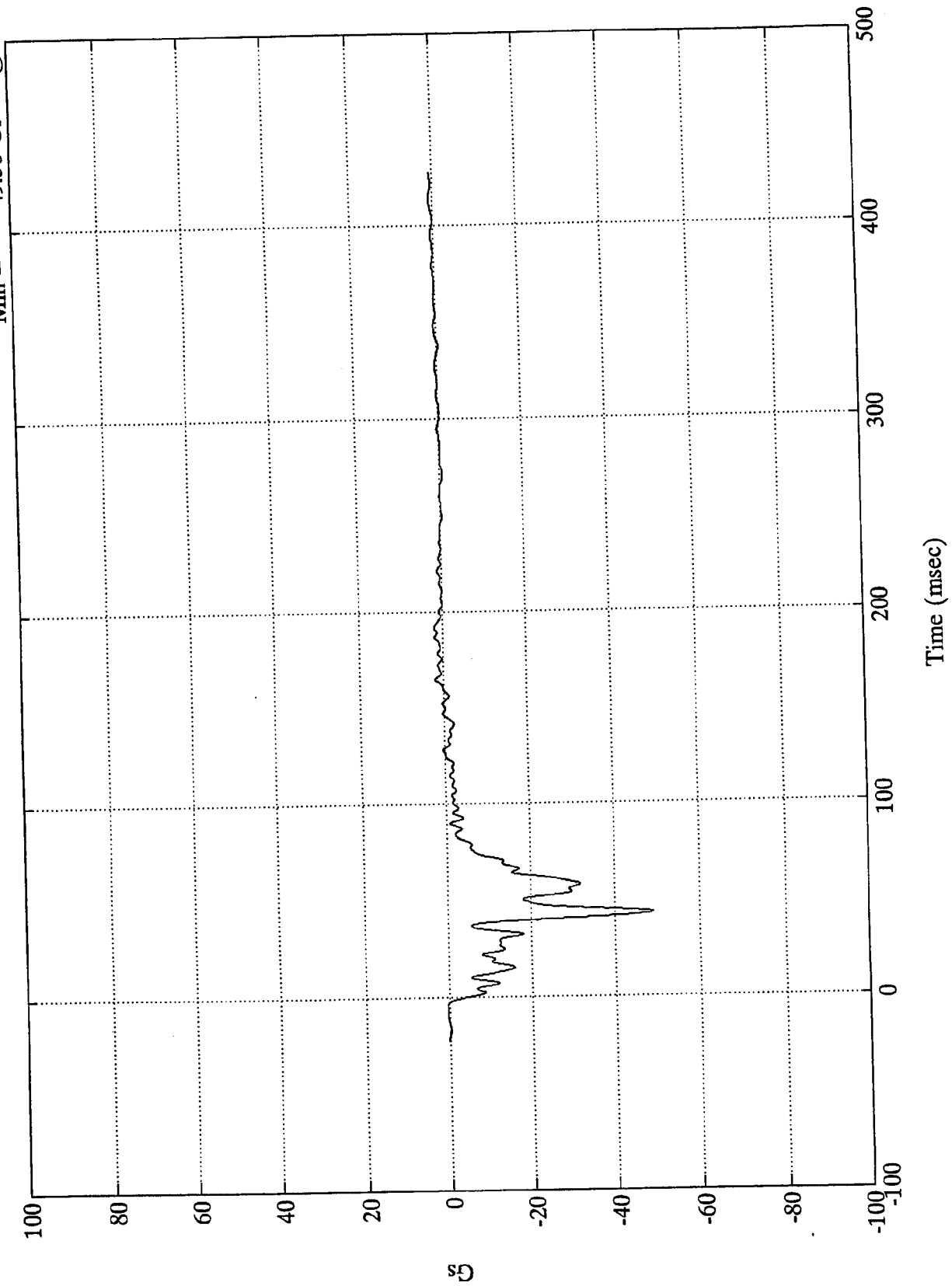
50

B-66

8304-2

VTV TEST #2

Acc 9 Lt Rr Compartment X
Max = 2.12 Gs @ 192.00 msec
Min = -49.30 Gs @ 43.56 msec



50

B-67

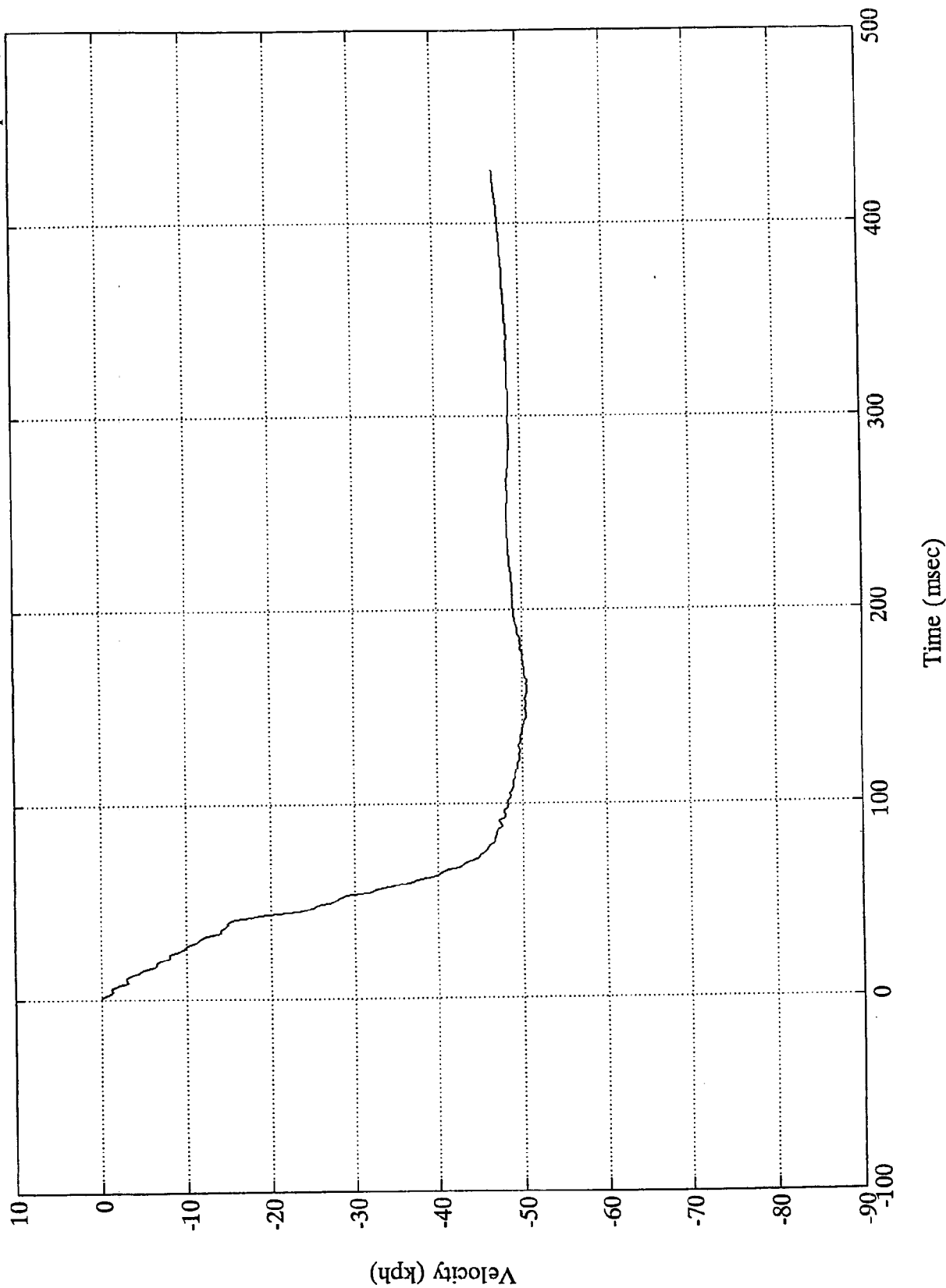
8304-2

SAE Filter Class 60

VTV TEST #2

Max = .00 kph @ -0.00 msec
Min = -50.63 kph @ 158.52 msec

Acc 9 Lt Rr Compartment X



SAE Filter Class 180

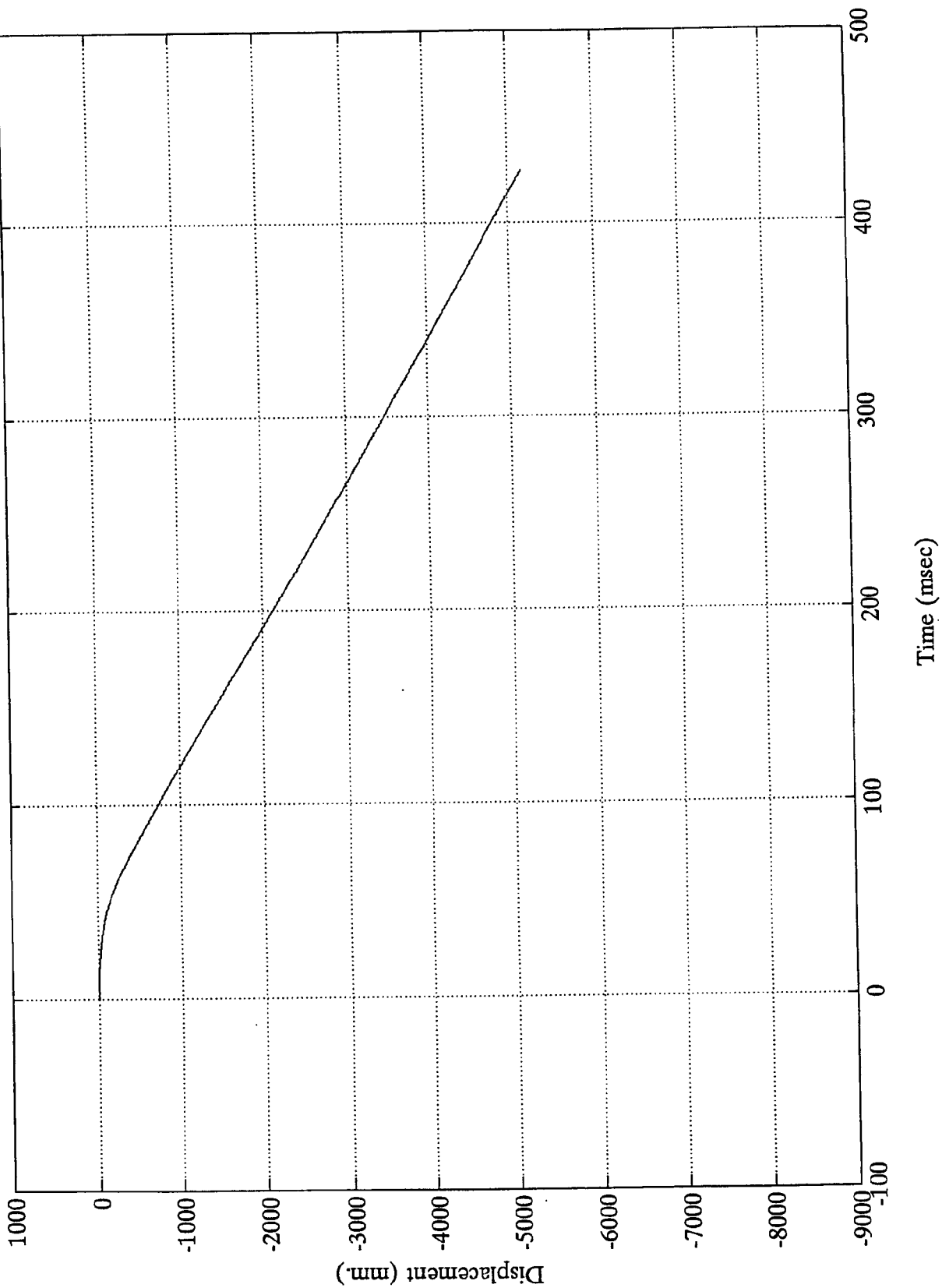
8304-2

B-68

VTV TEST #2

Acc 9 Lt Rr Compartment X

Max = .00 mm @ -0.00 msec
Min = -5167.97 mm @ 427.32 msec

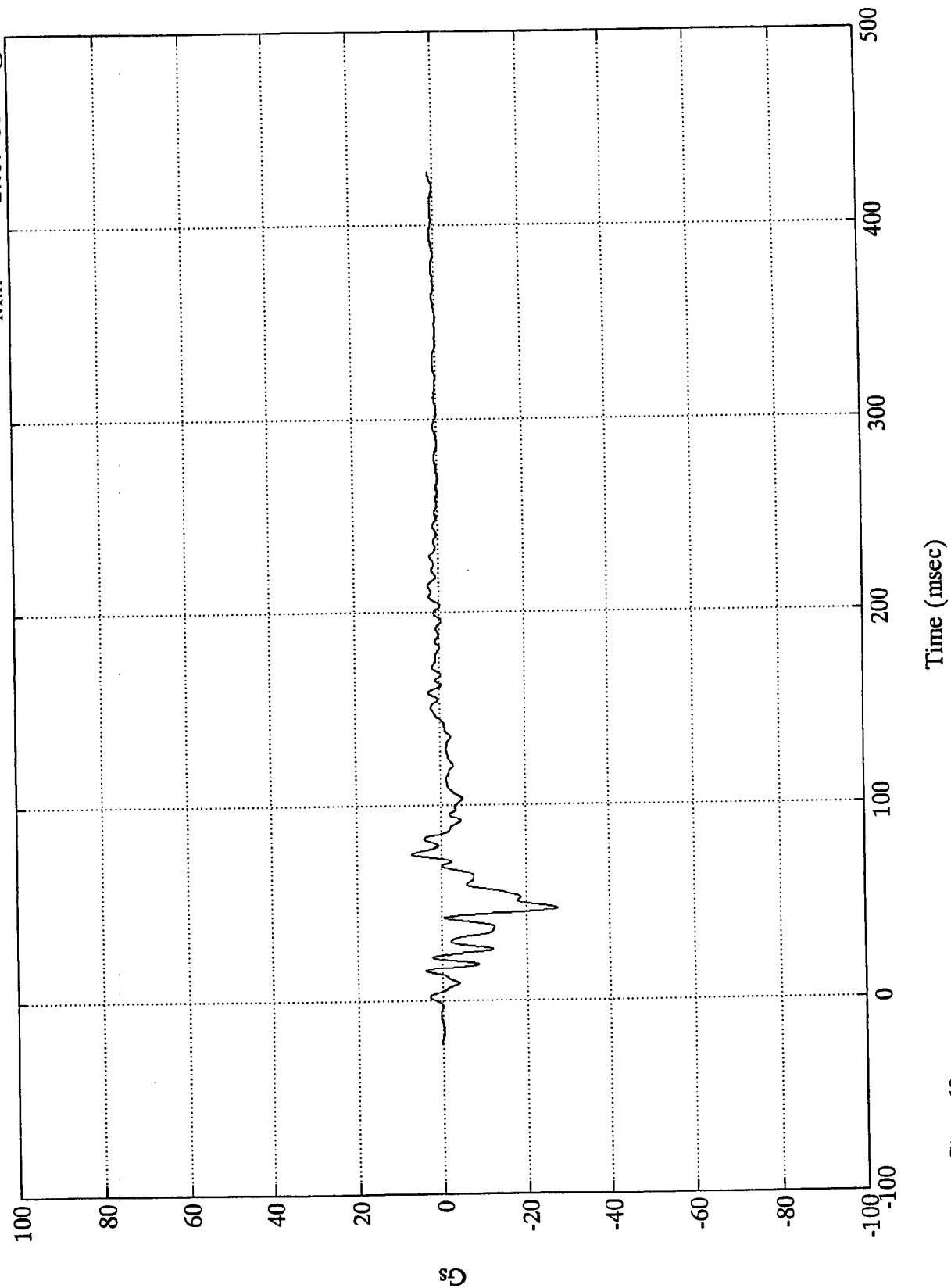


SAE Filter Class 180

VTV TEST #2

Acc 9 Lt Rear Compart Y

Max = 6.97 Gs @ 75.23 msec
Min = -27.67 Gs @ 47.15 msec



SAE Filter Class 60

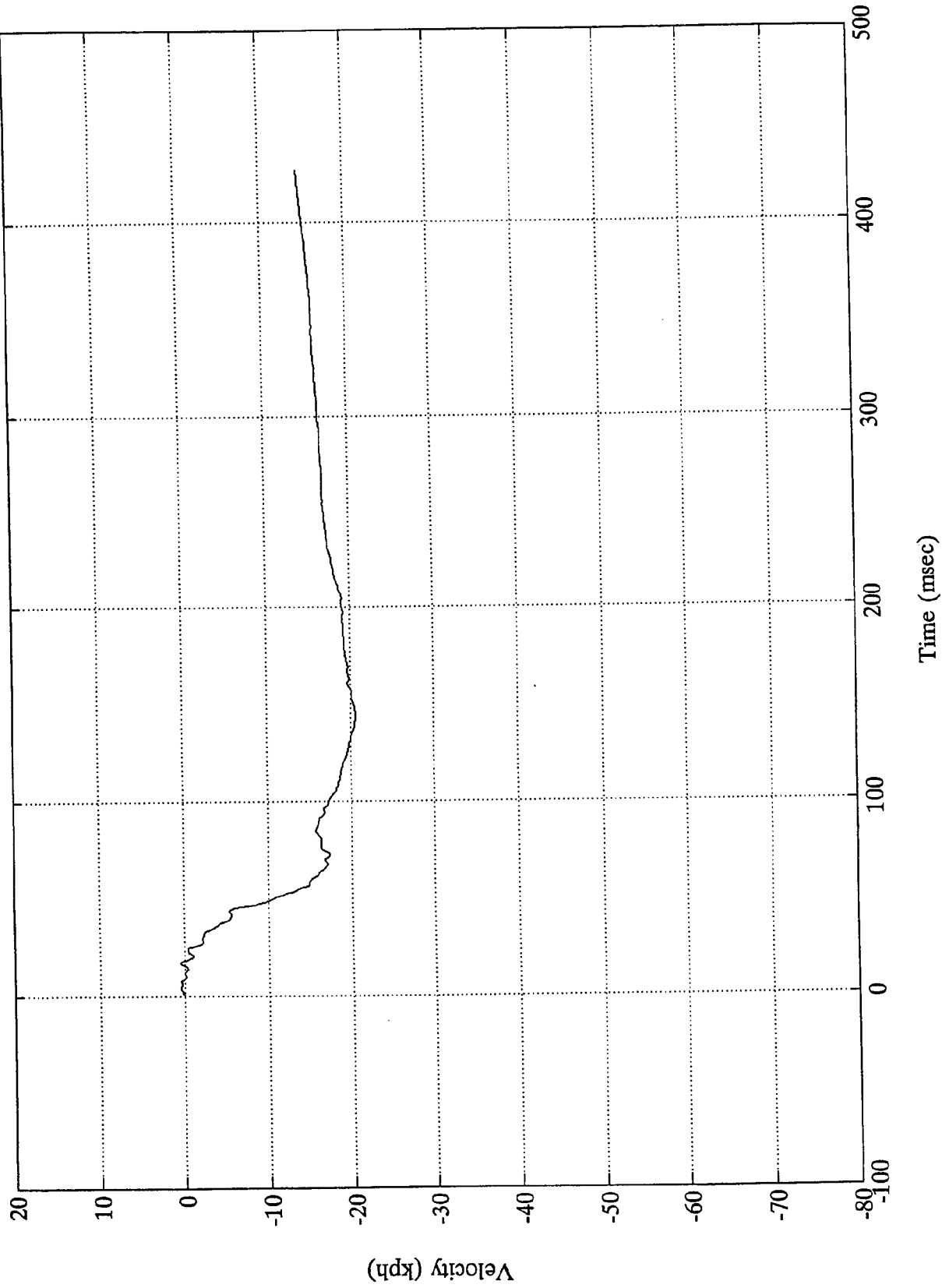
8304-2

B-70

VTV TEST #2

Acc 9 Lt Rear Compartment Y

Max = .48 kph @ 4.31 msec
Min = -20.64 kph @ 144.48 msec



B-71

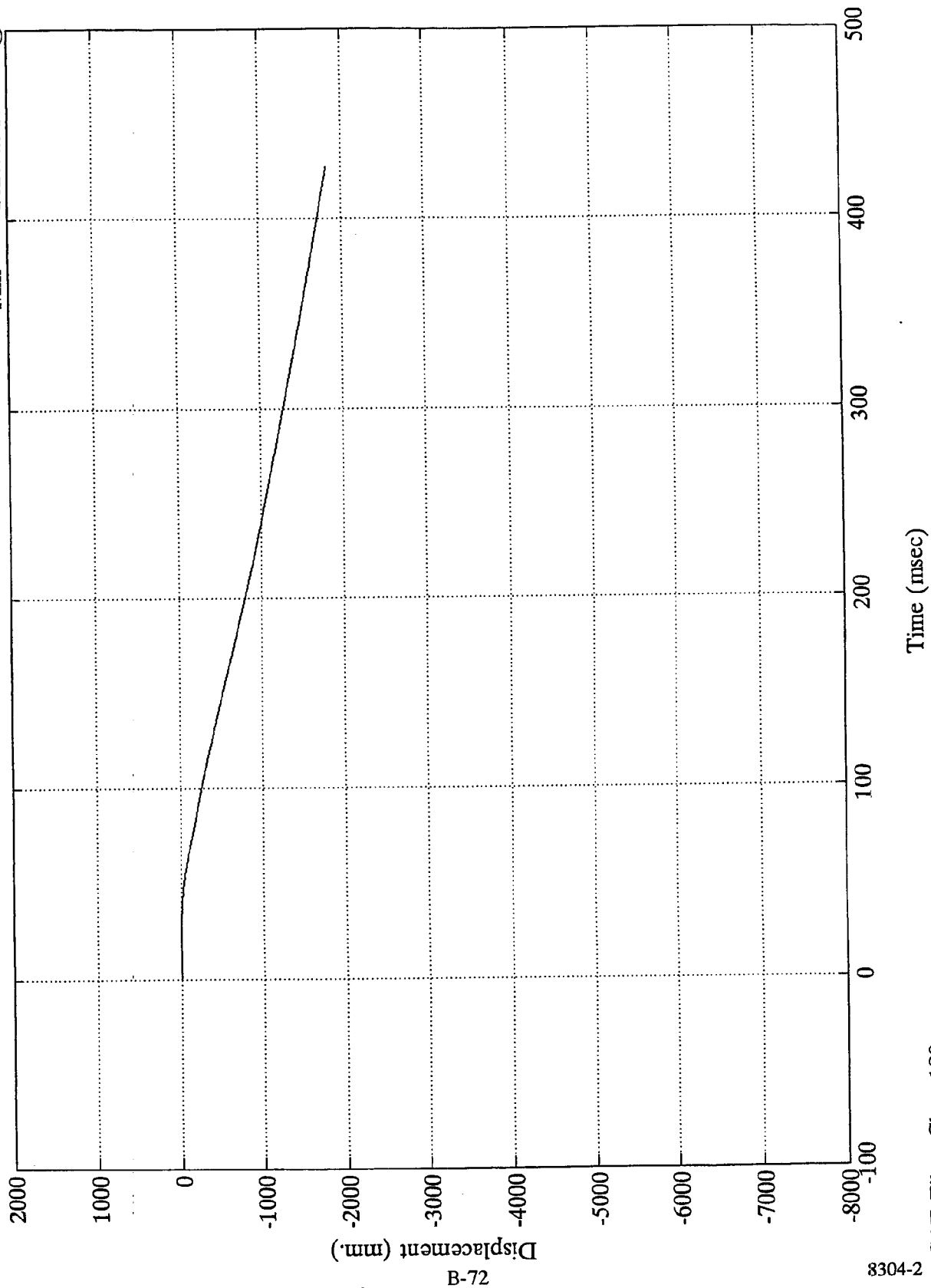
8304-2

SAE Filter Class 180

VTV TEST #2

Acc 9 Lt Rear Compartment Y

Max = .73 mm @ 9.35 msec
Min = -1827.42 mm @ 427.32 msec



SAE Filter Class 180

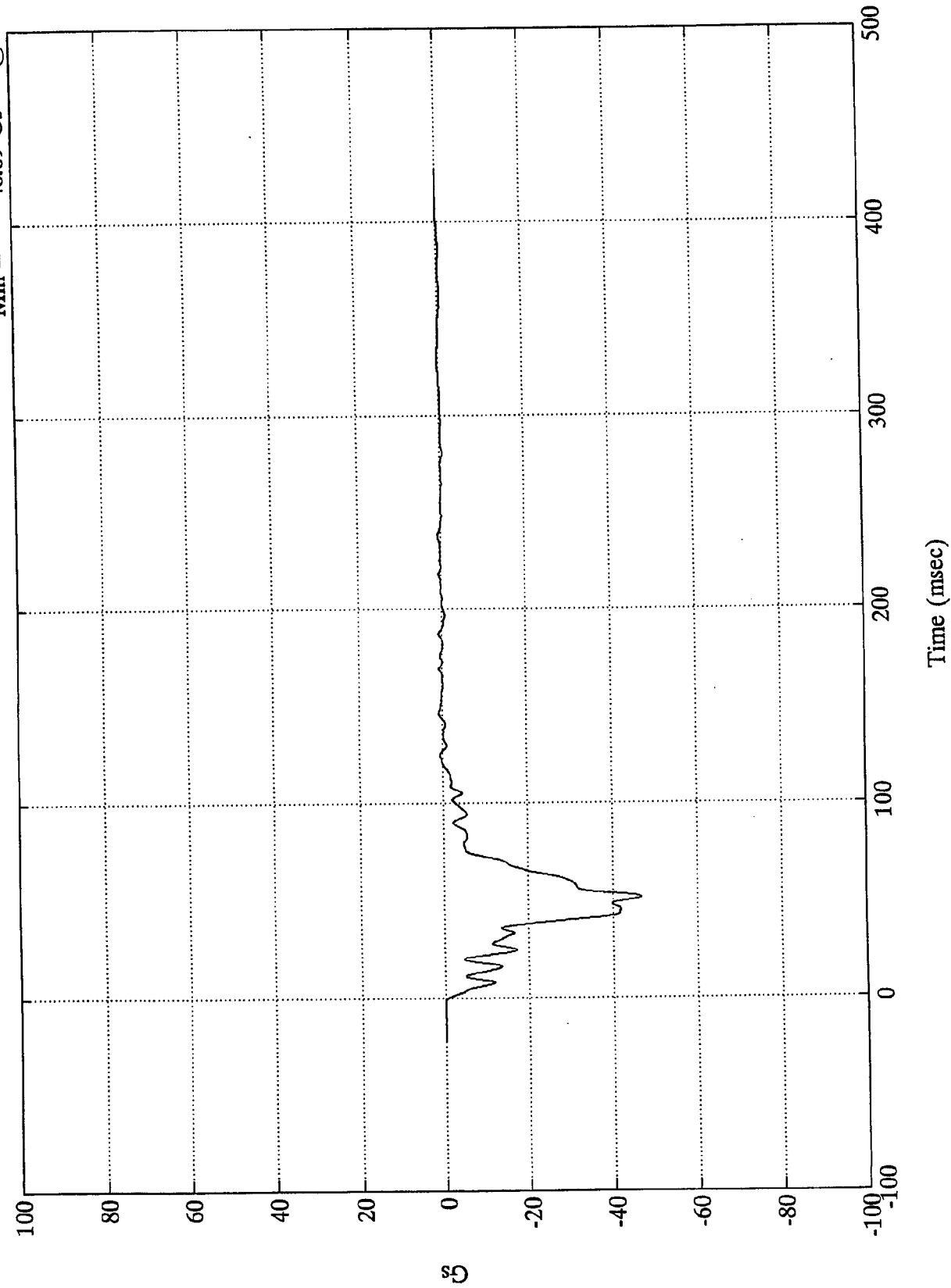
8304-2

B-72

VTV TEST #2

Acc 10 Rt Rear Compart X

Max = .92 Gs @ 146.16 msec
Min = -46.69 Gs @ 51.84 msec



Gs

Time (msec)

SAE Filter Class 60

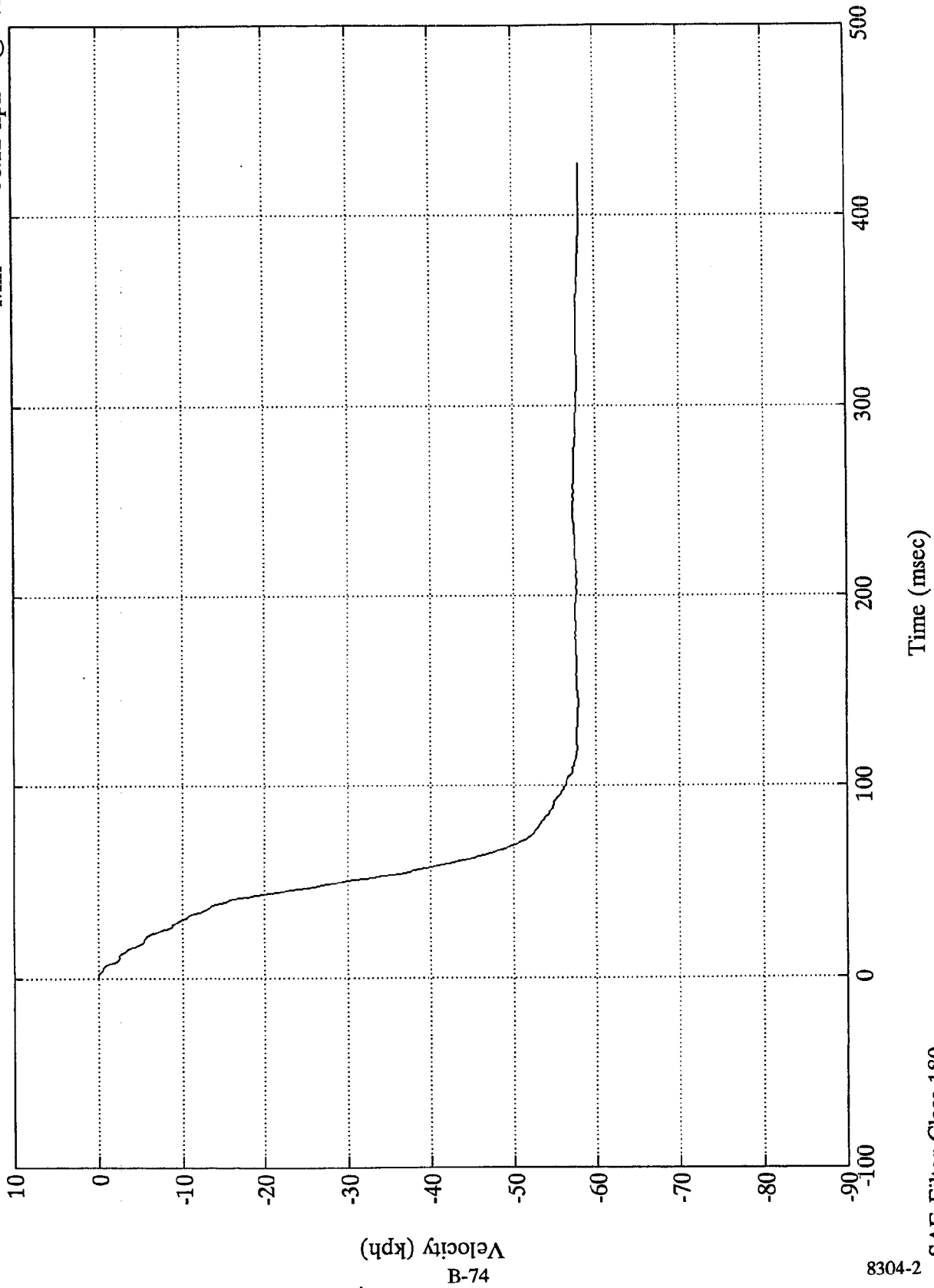
8304-2

B-73

VTV TEST #2

Acc 10 Rt Rear Compart X

Max = .00 kph @ -0.00 msec
Min = -58.12 kph @ 401.40 msec



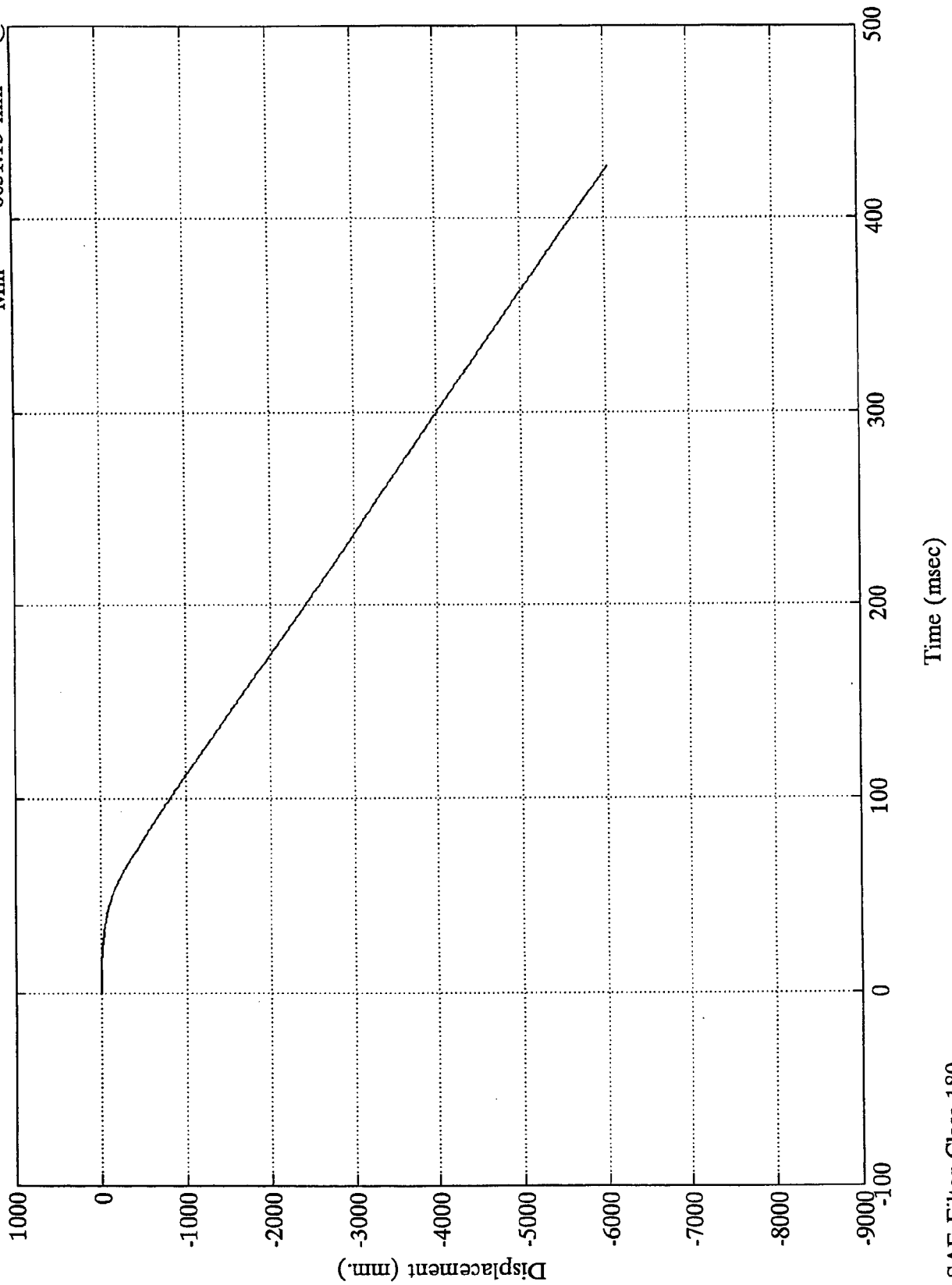
B-74

8304-2

SAE Filter Class 180

VTV TEST #2

Acc 10 Rt Rear Compartment X
Max = .00 mm @ -0.00 msec
Min = -6051.15 mm @ 427.32 msec



B-75

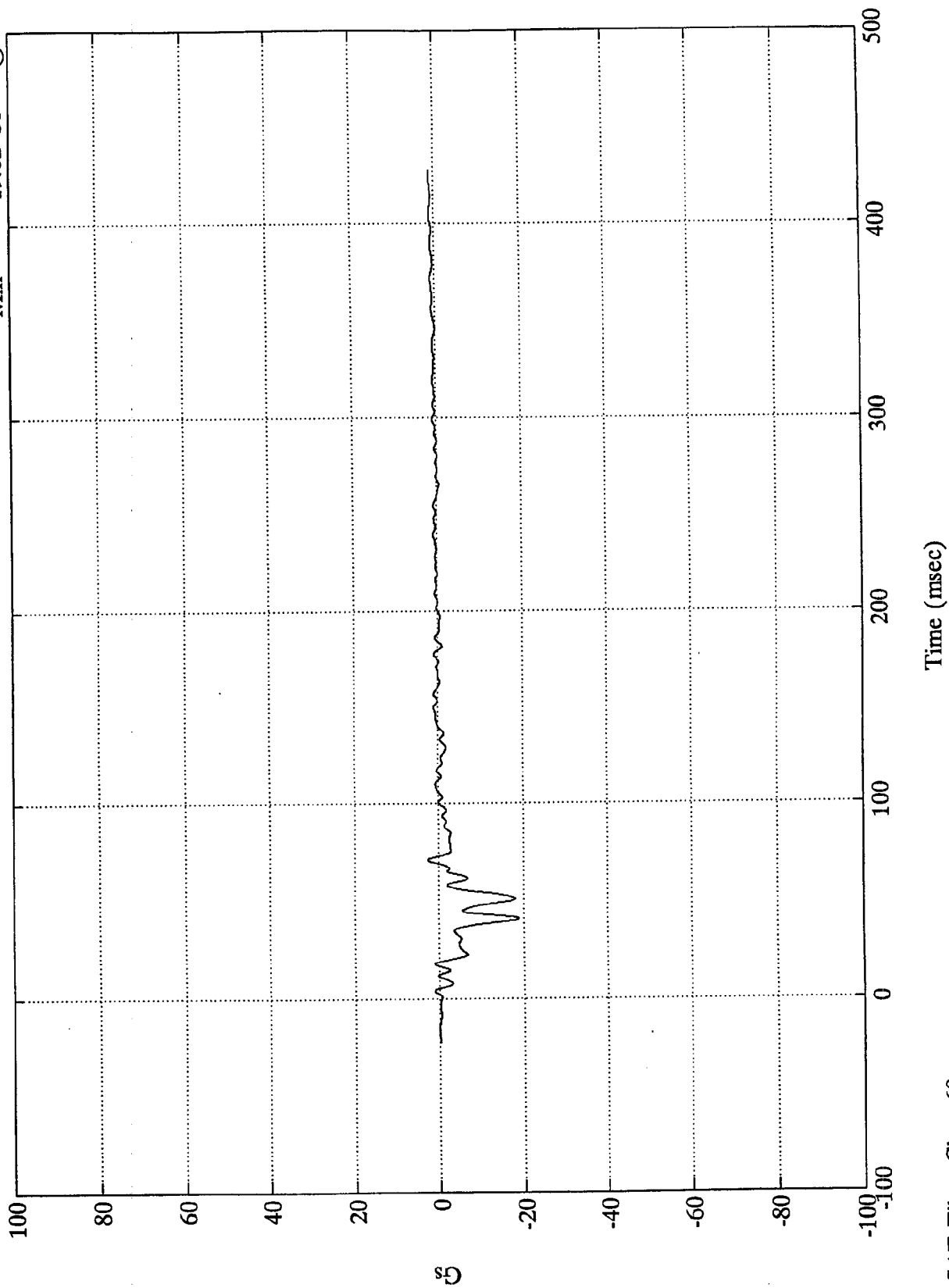
8304-2

SAE Filter Class 180

VTV TEST #2

Acc 10 Rt Rear Compartment Y

Max =	2.77 Gs	@	71.16 msec
Min =	-19.02 Gs	@	40.80 msec



B-76

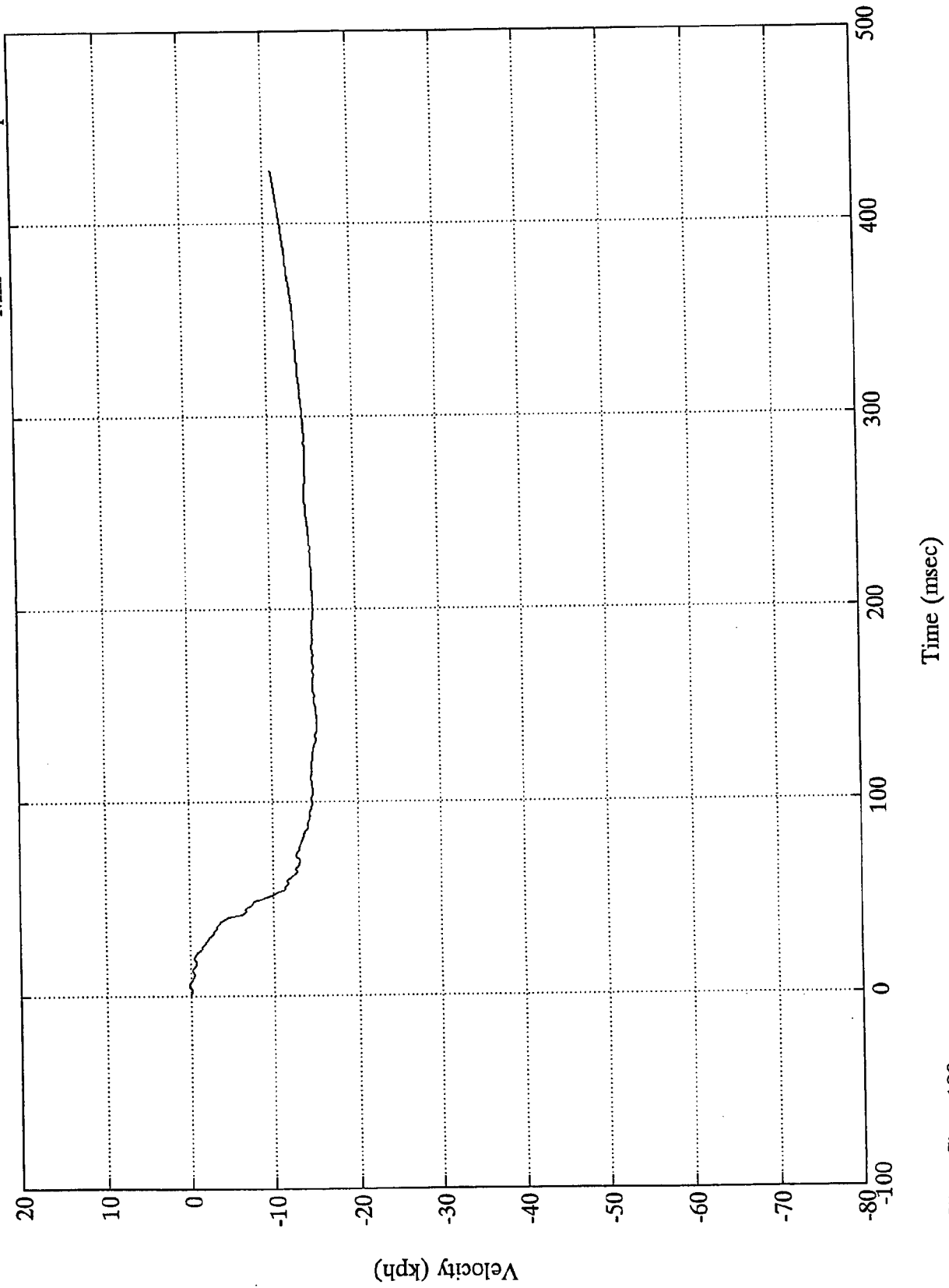
8304-2

SAE Filter Class 60

VTV TEST #2

Acc 10 Rt Rear Compart Y

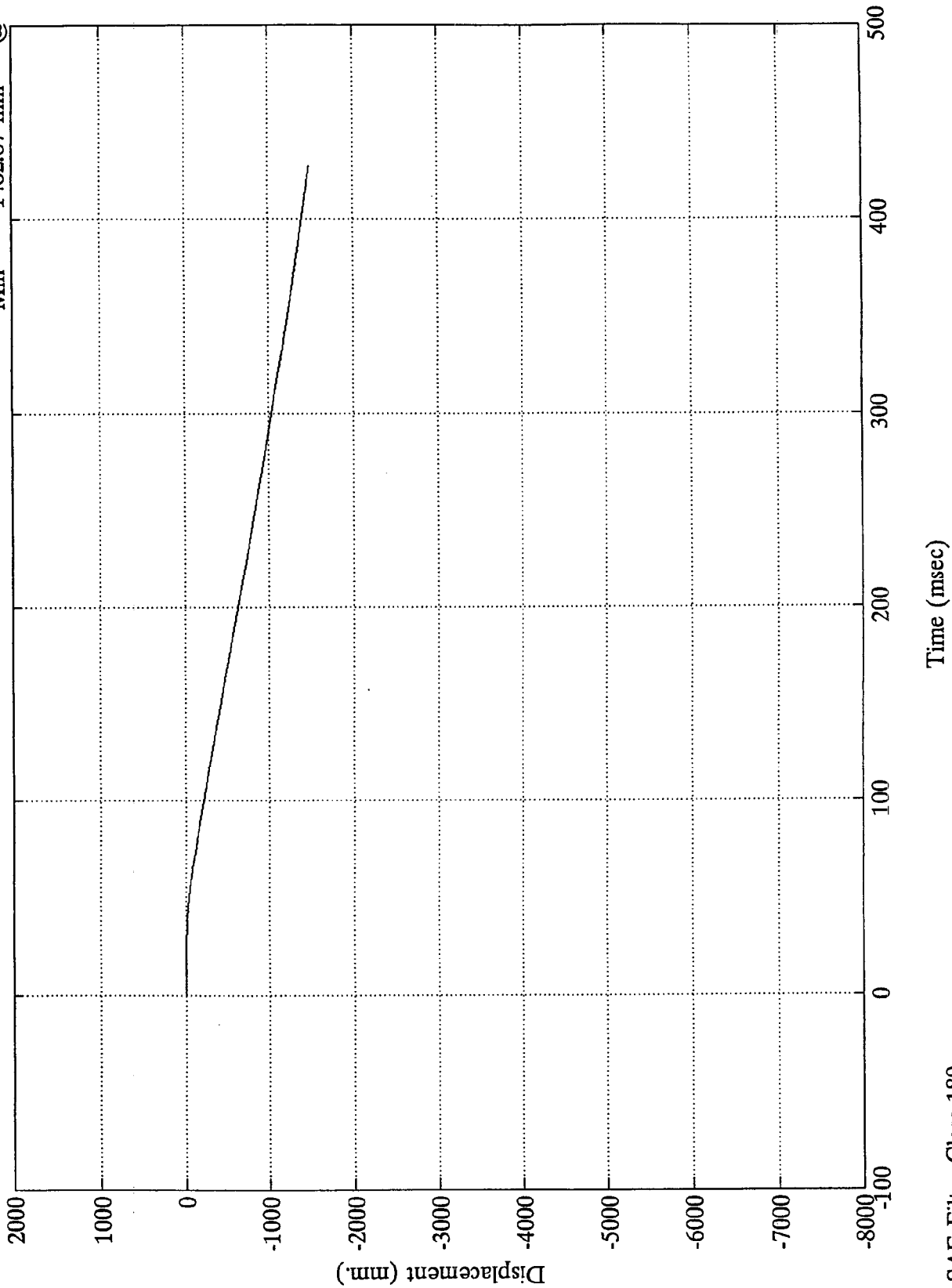
Max = .16 kph @ 5.75 msec
Min = -15.37 kph @ 138.72 msec



VTV TEST #2

Acc 10 Rt Rear Compart Y

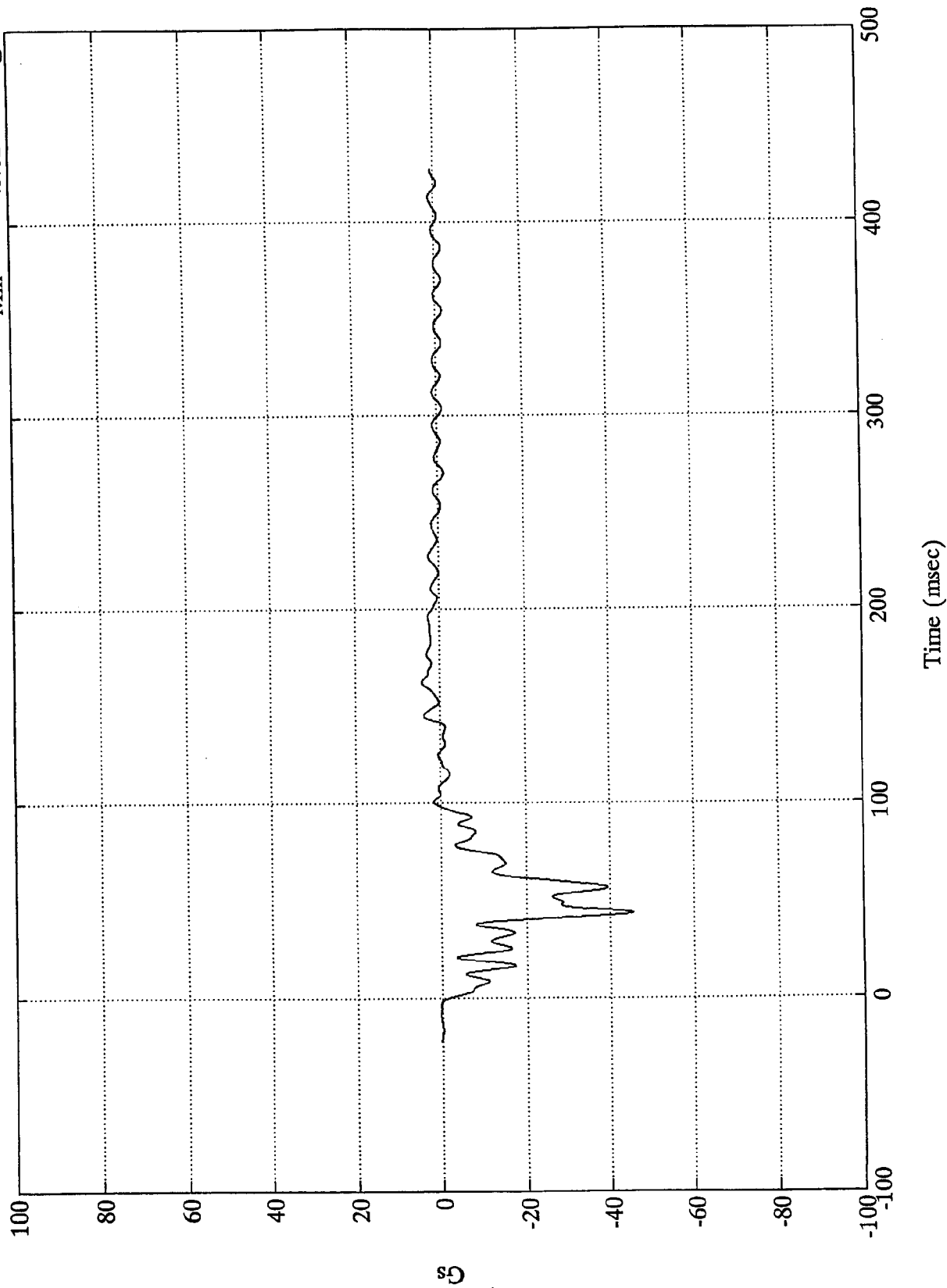
Max = .00 mm @ -0.00 msec
Min = -1482.87 mm @ 427.32 msec



SAE Filter Class 180

VTV TEST #2

Acc 11 C/L Rear Compart X Max = 4.31 Gs @ 162.11 msec
 Min = -45.62 Gs @ 43.79 msec



8304-2

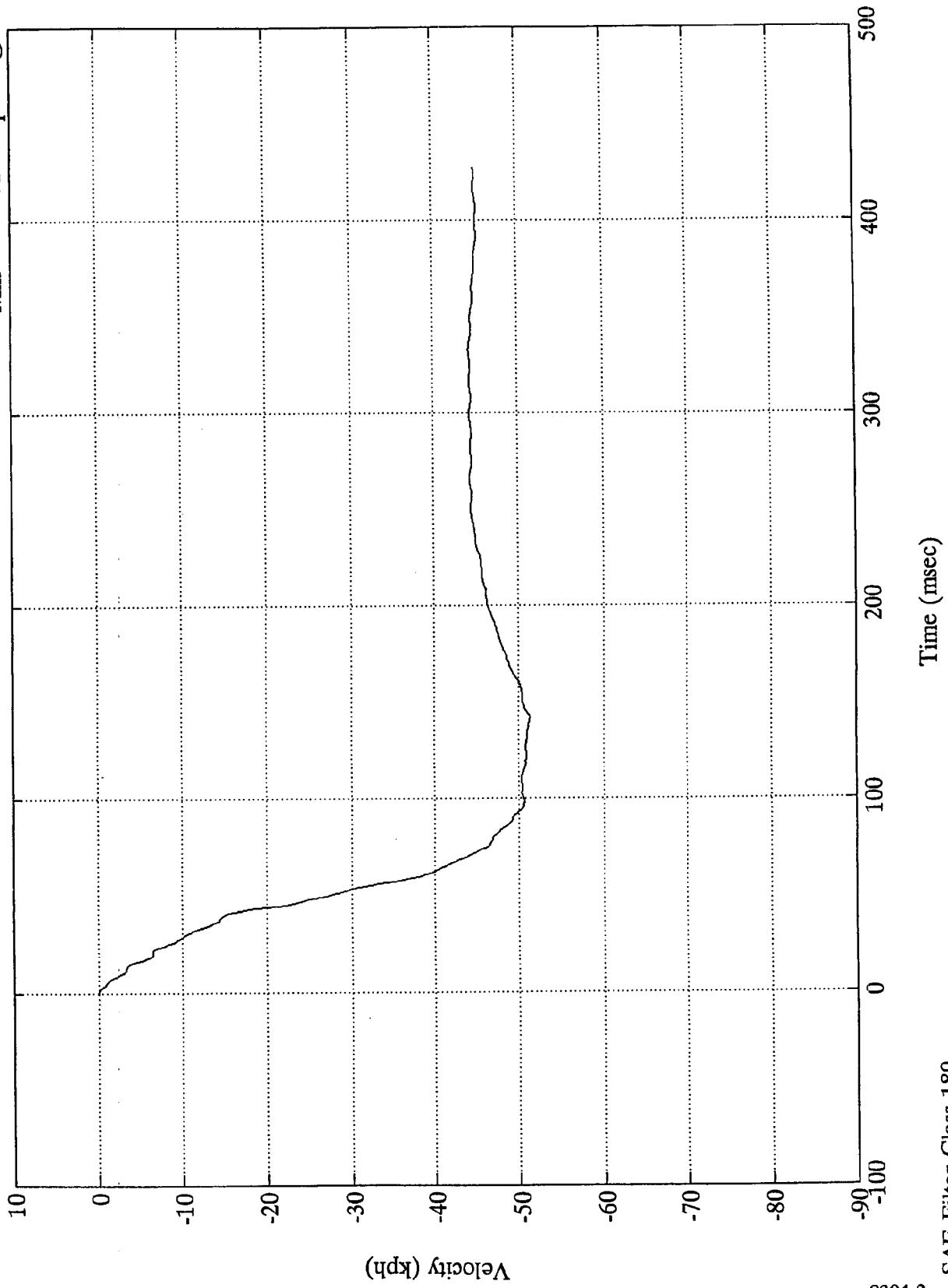
B-79

SAE Filter Class 60

VTV TEST #2

Acc 11 C/L Rear Compartment X

Max = .00 kph @ -0.00 msec
Min = -51.41 kph @ 142.32 msec



B-80

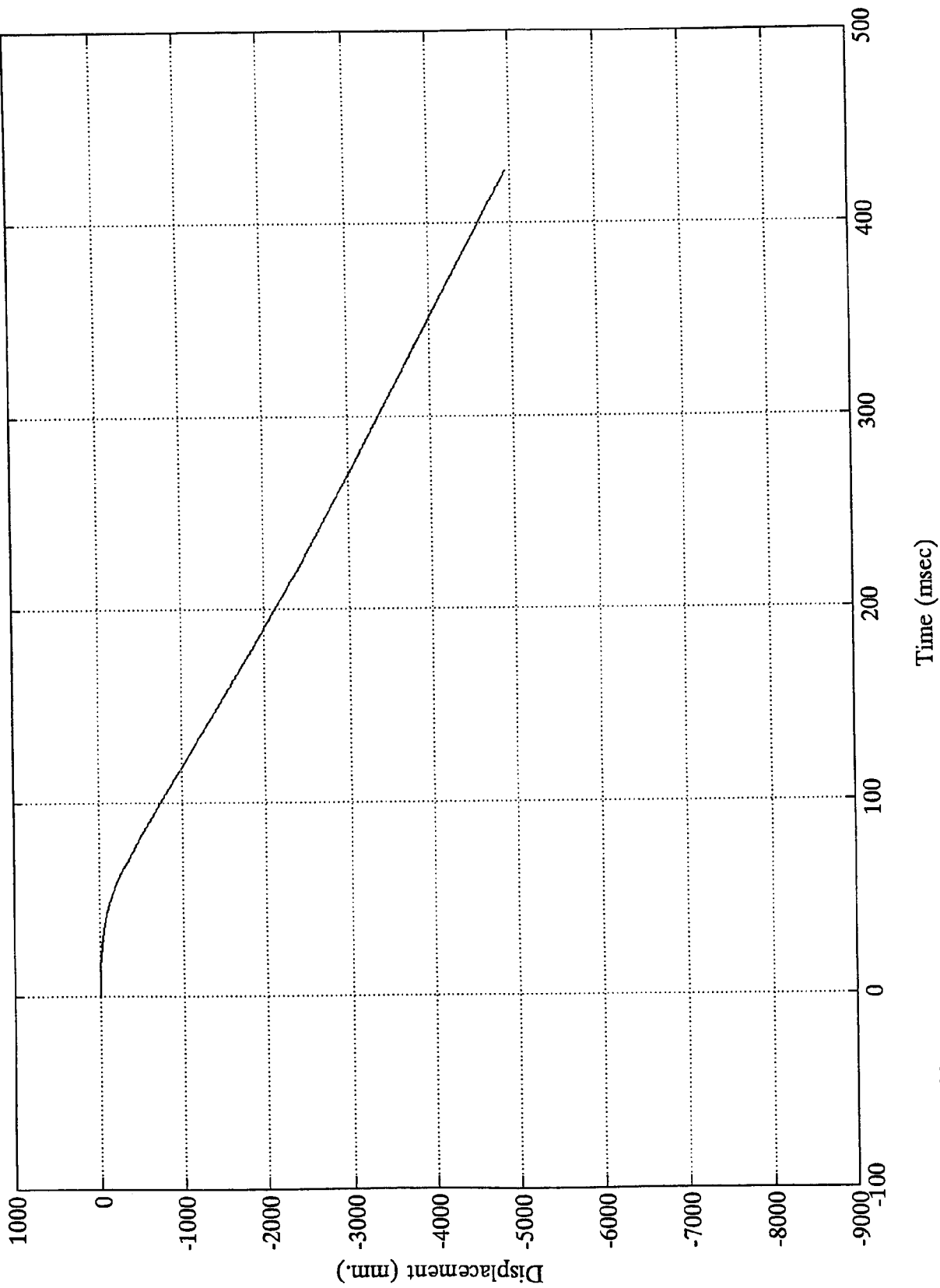
8304-2

SAE Filter Class 180

VTV TEST #2

Acc 11 C/L Rear Compart X

Max = .00 mm @ -0.00 msec
Min = -4954.13 mm @ 427.32 msec



SAE Filter Class 180

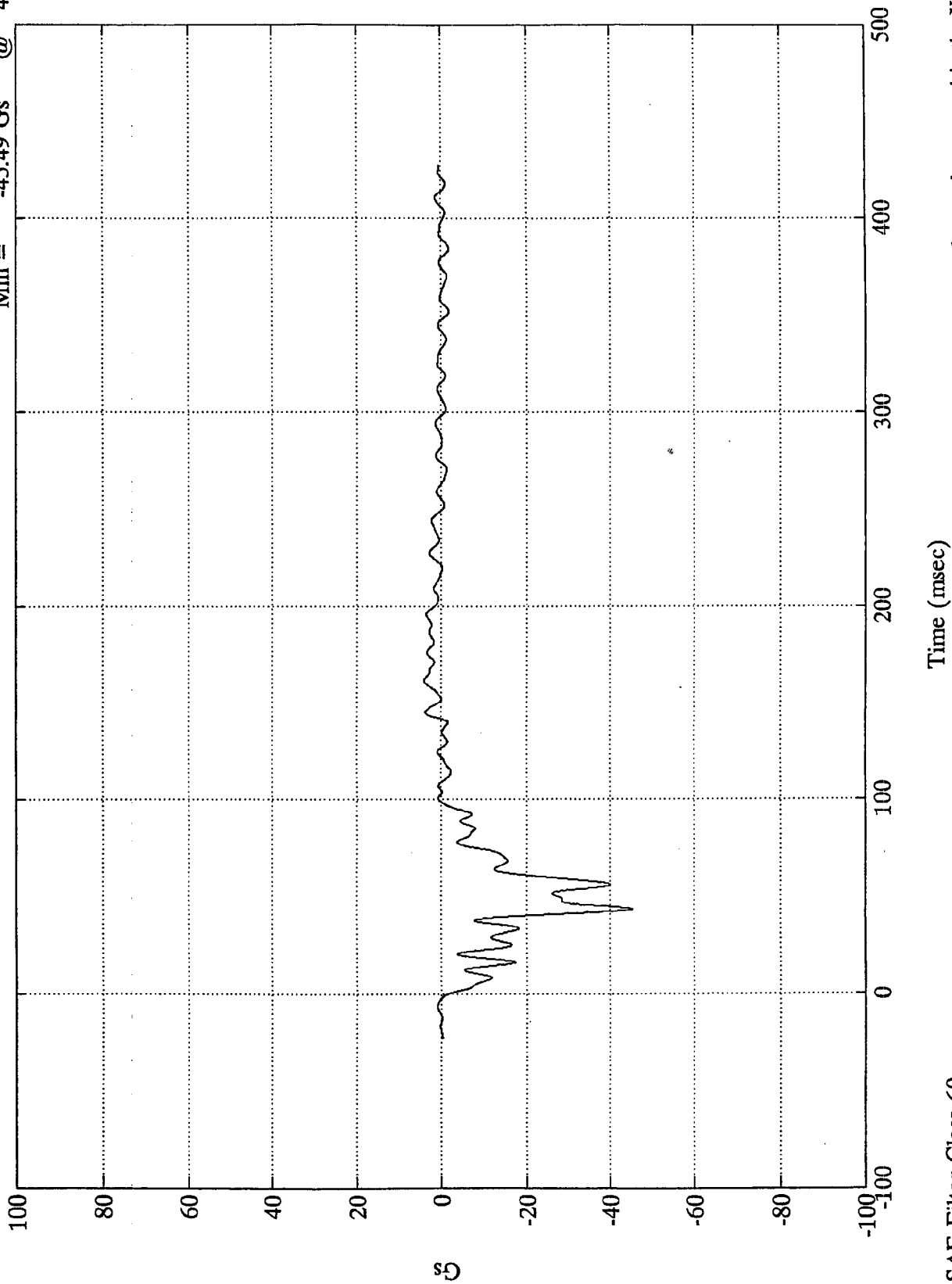
8304-2

18-81

VTV TEST #2

Acc 11 C/L Rear Compart Y

Max = 4.11 Gs @ 161.16 msec
Min = -45.49 Gs @ 43.68 msec



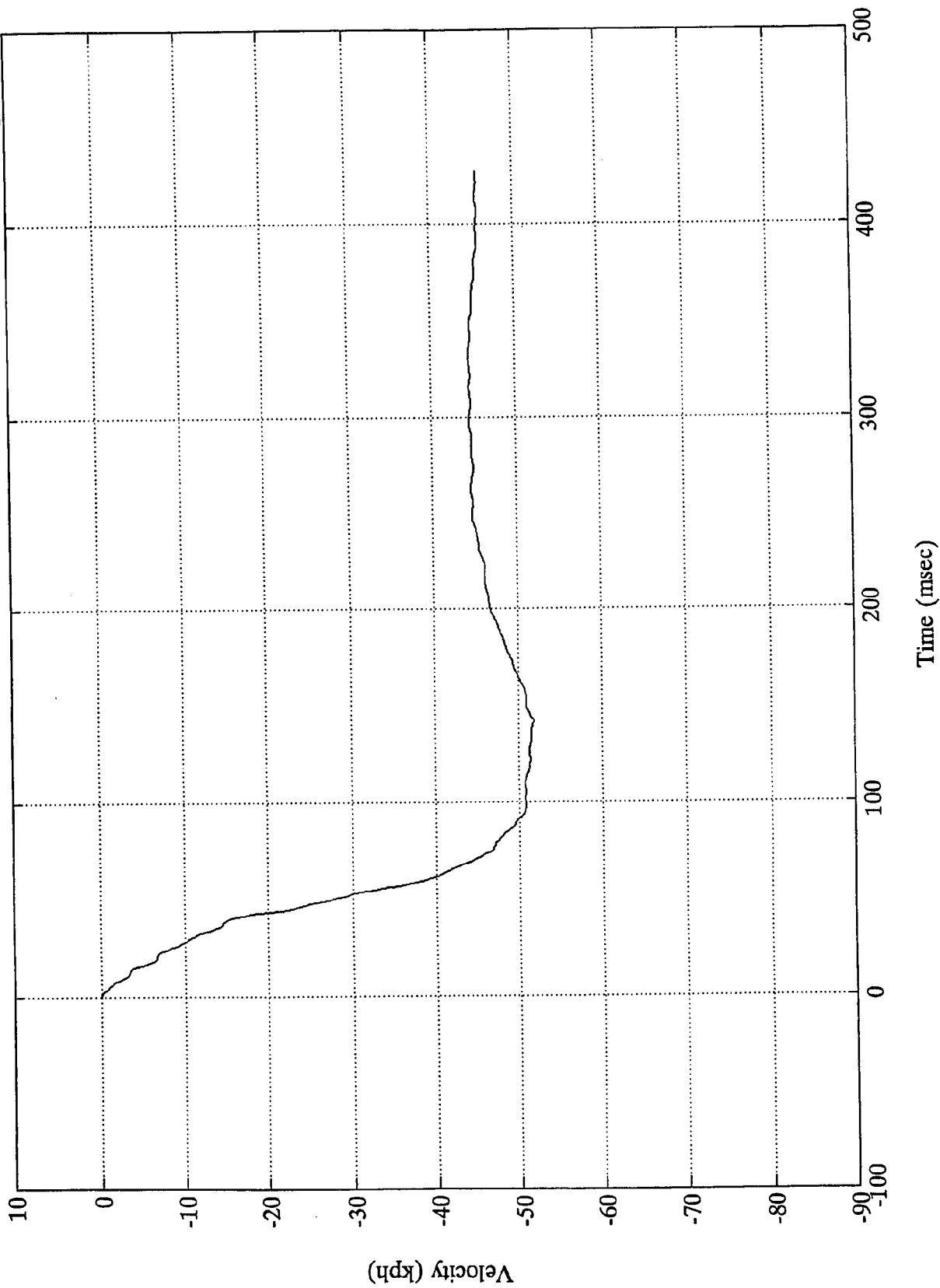
SAE Filter Class 60

The accelerometer was inadvertently mounted in the X-direction.

VTV TEST #2

Acc 11 C/L Rear Compartment Y

Max = .00 kph @ -0.00 msec
Min = -51.93 kph @ 141.96 msec



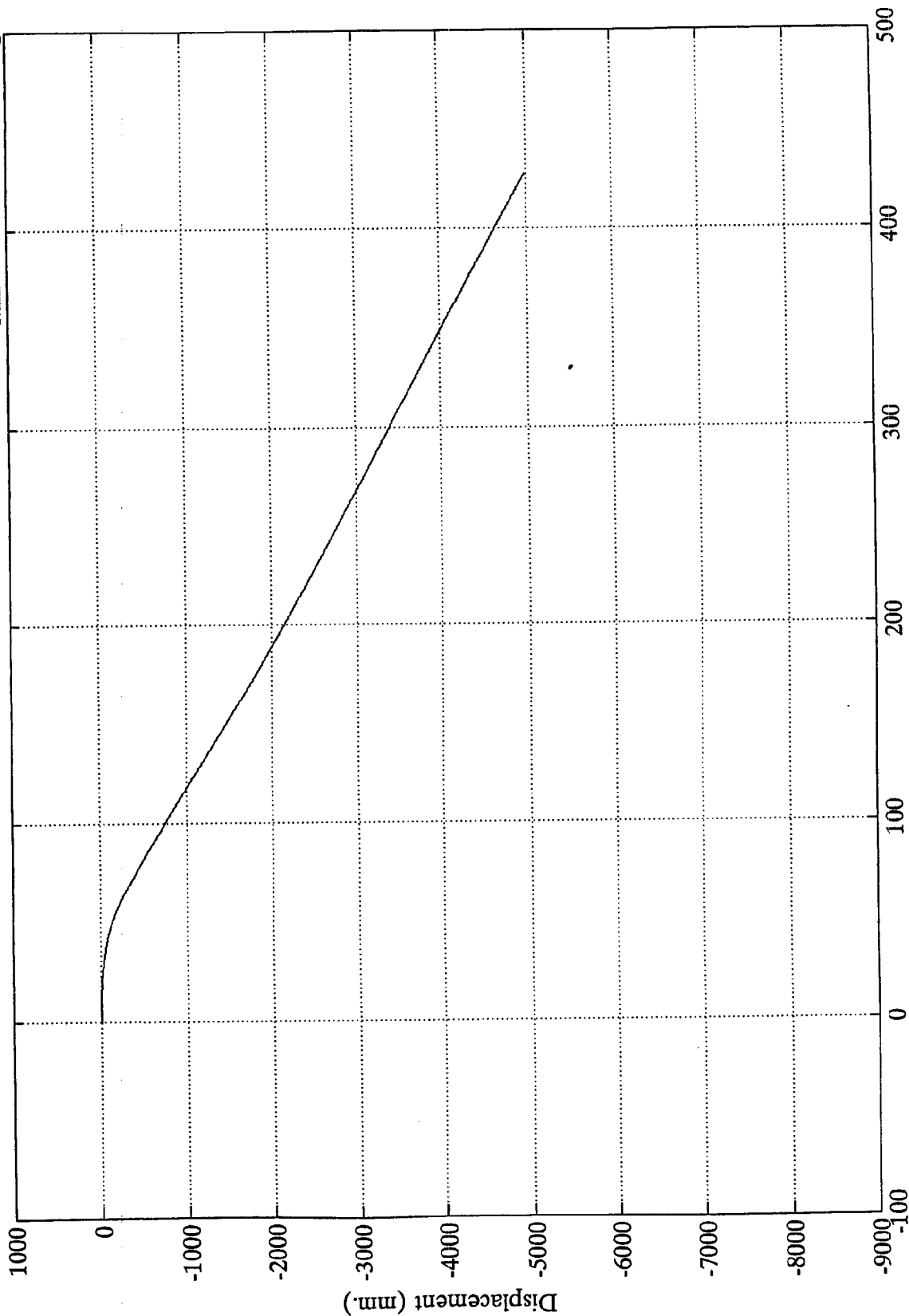
SAE Filter Class 180

The accelerometer was inadvertently mounted in the X-direction.

VTV TEST #2

Acc 11 C/L Rear Compart Y

Max = .00 mm @ -0.00 msec
Min = -4989.06 mm @ 427.32 msec



Time (msec)

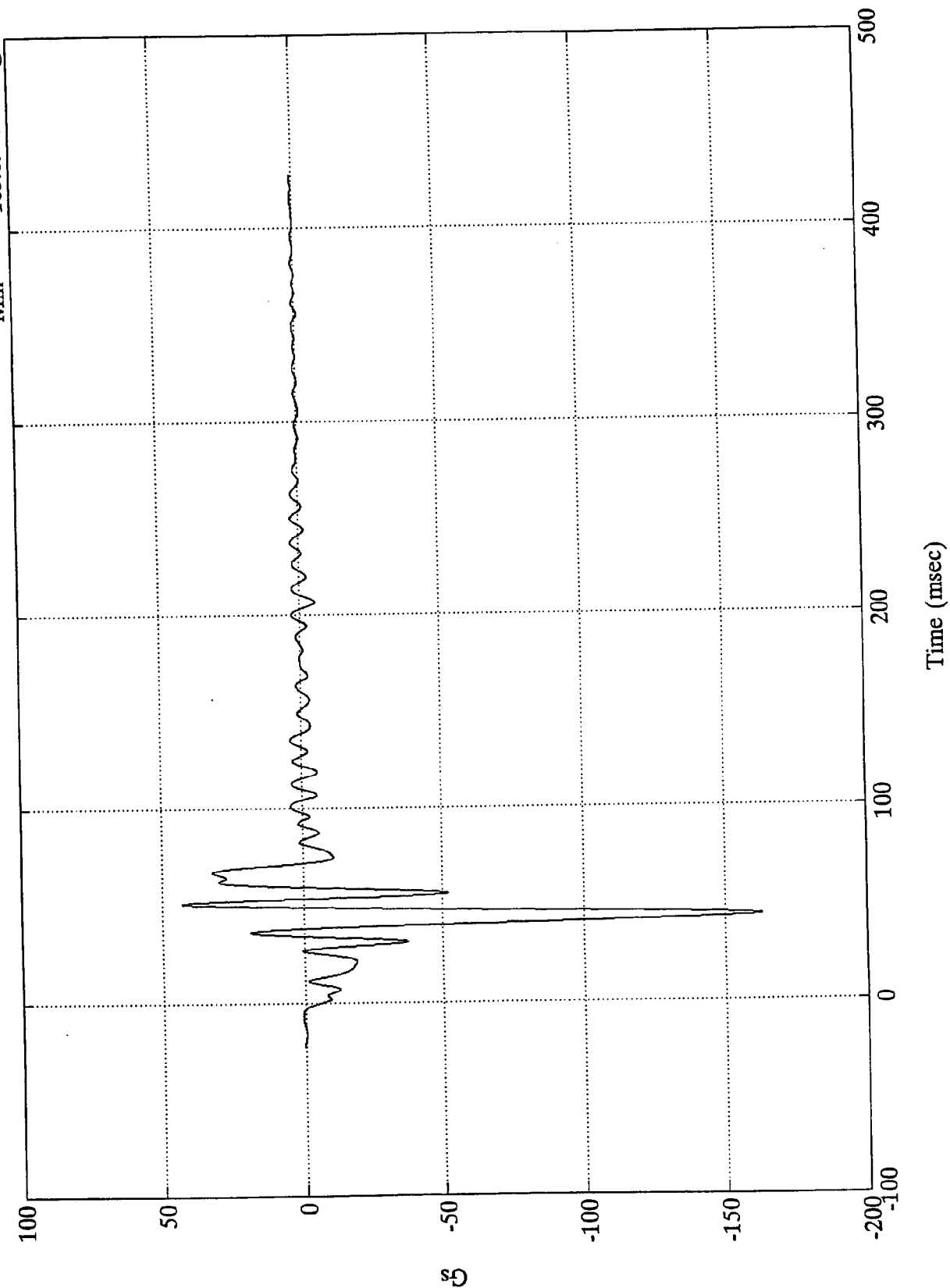
SAE Filter Class 180

The accelerometer was inadvertently mounted in the X-direction.

VTV TEST #2

Acc 12 Toepan X

Max = 43.03 Gs @ 51.36 msec
Min = -163.09 Gs @ 44.04 msec

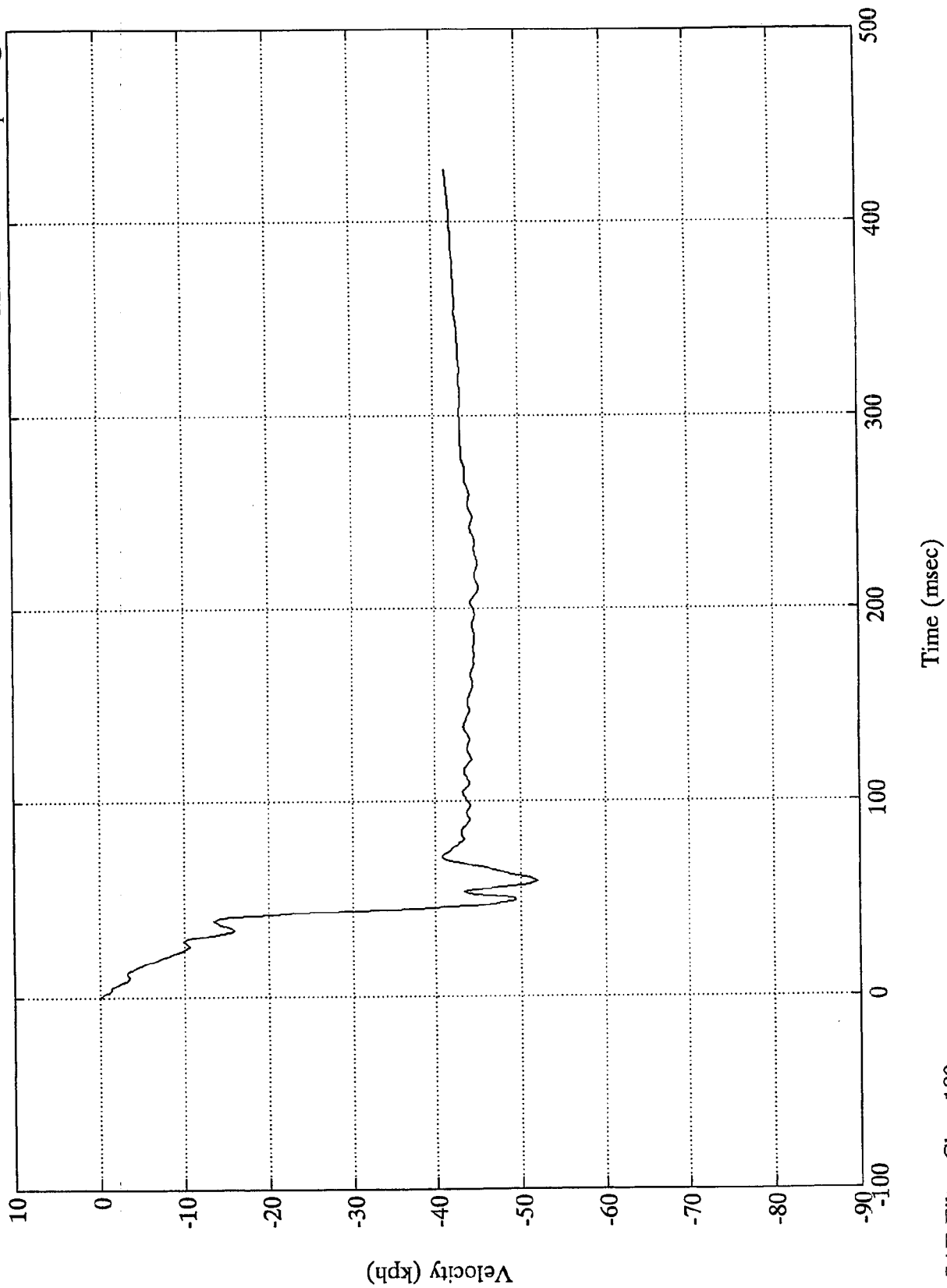


SAE Filter Class 60

VTV TEST #2

Acc 12 Toepan X

Max = .00 kph @ -0.00 msec
Min = -52.05 kph @ 58.92 msec



SAE Filter Class 180

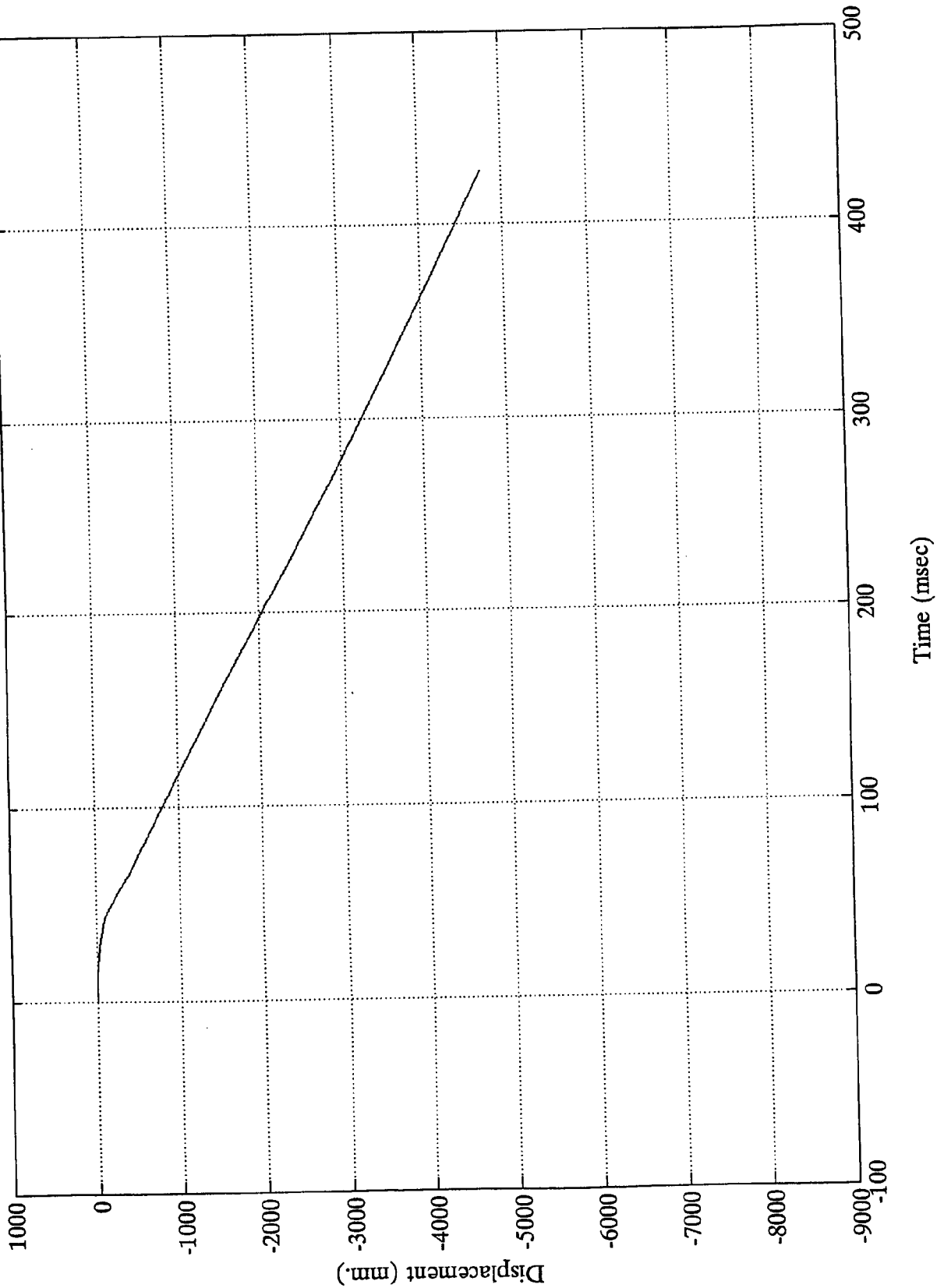
8304-2

B-86

VTV TEST #2

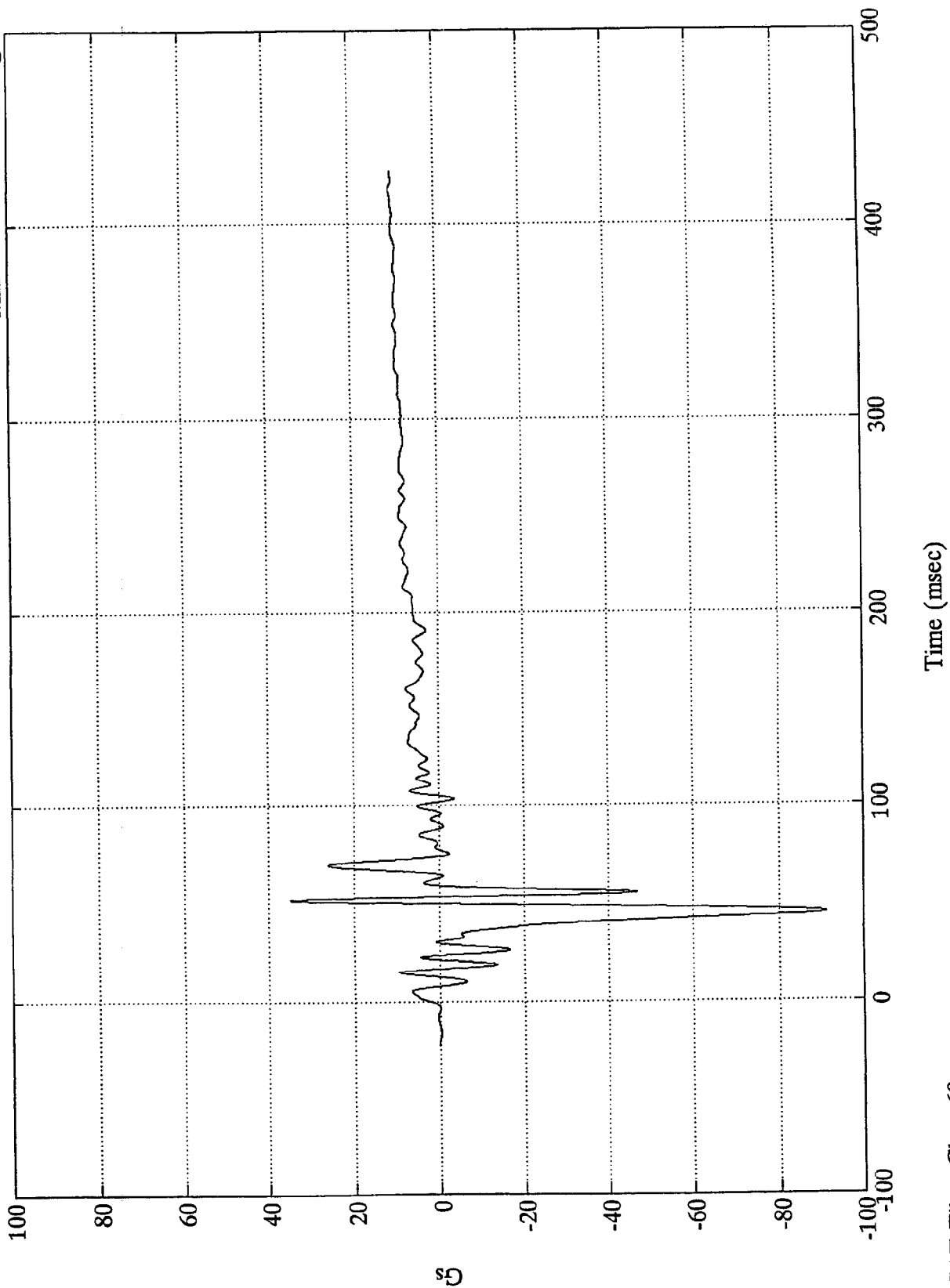
Acc 12 Toe pan X

Max = .00 mm @ -0.00 msec
Min = -4759.61 mm @ 427.32 msec



VTV TEST #2

Acc 12 Toe pan Y
Max = 34.87 Gs @ 51.84 msec
Min = -91.34 Gs @ 45.12 msec

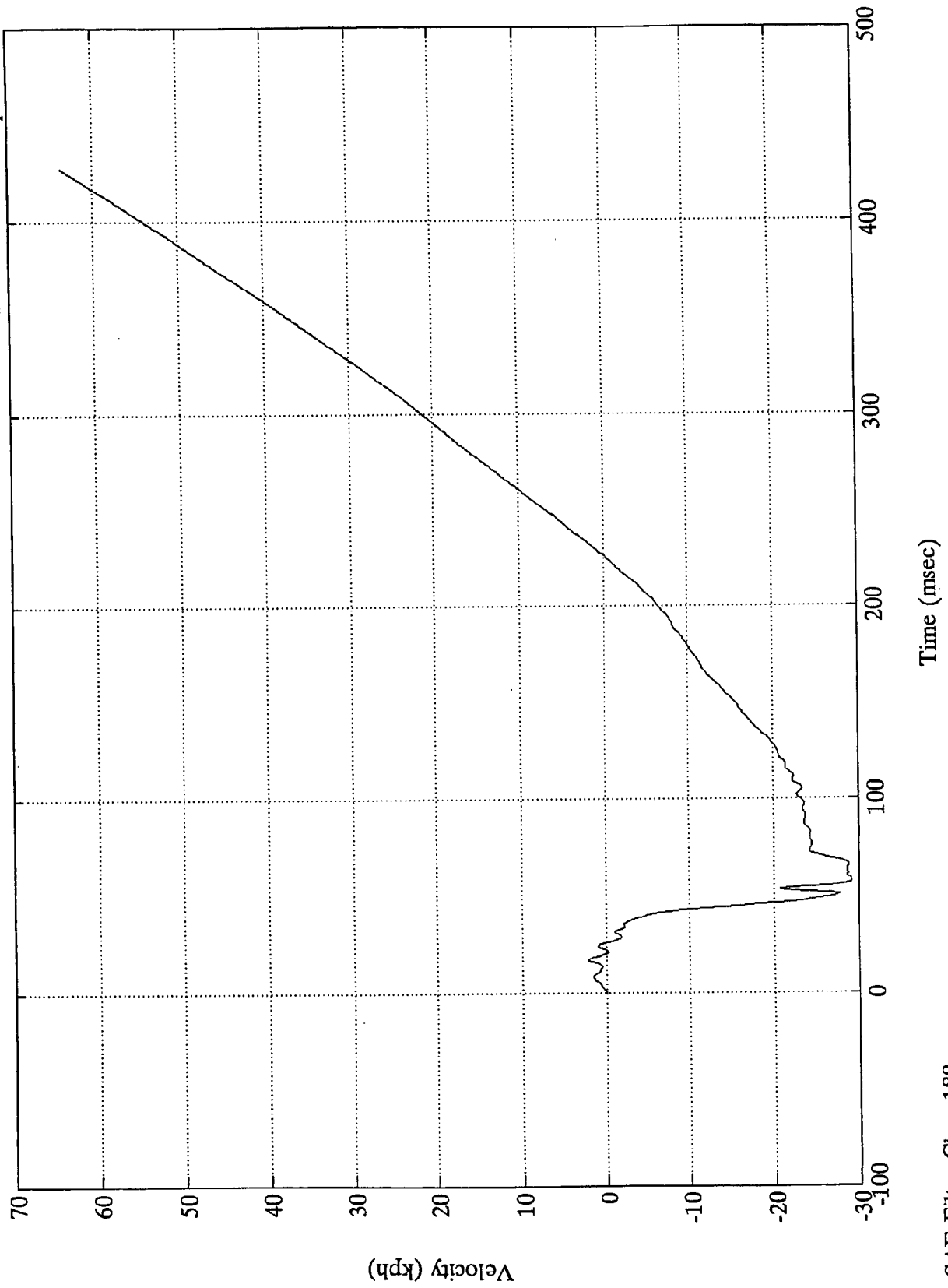


SAE Filter Class 60

VTV TEST #2

Acc 12 Toepan Y

Max = 63.81 kph @ 427.32 msec
Min = -29.13 kph @ 57.24 msec

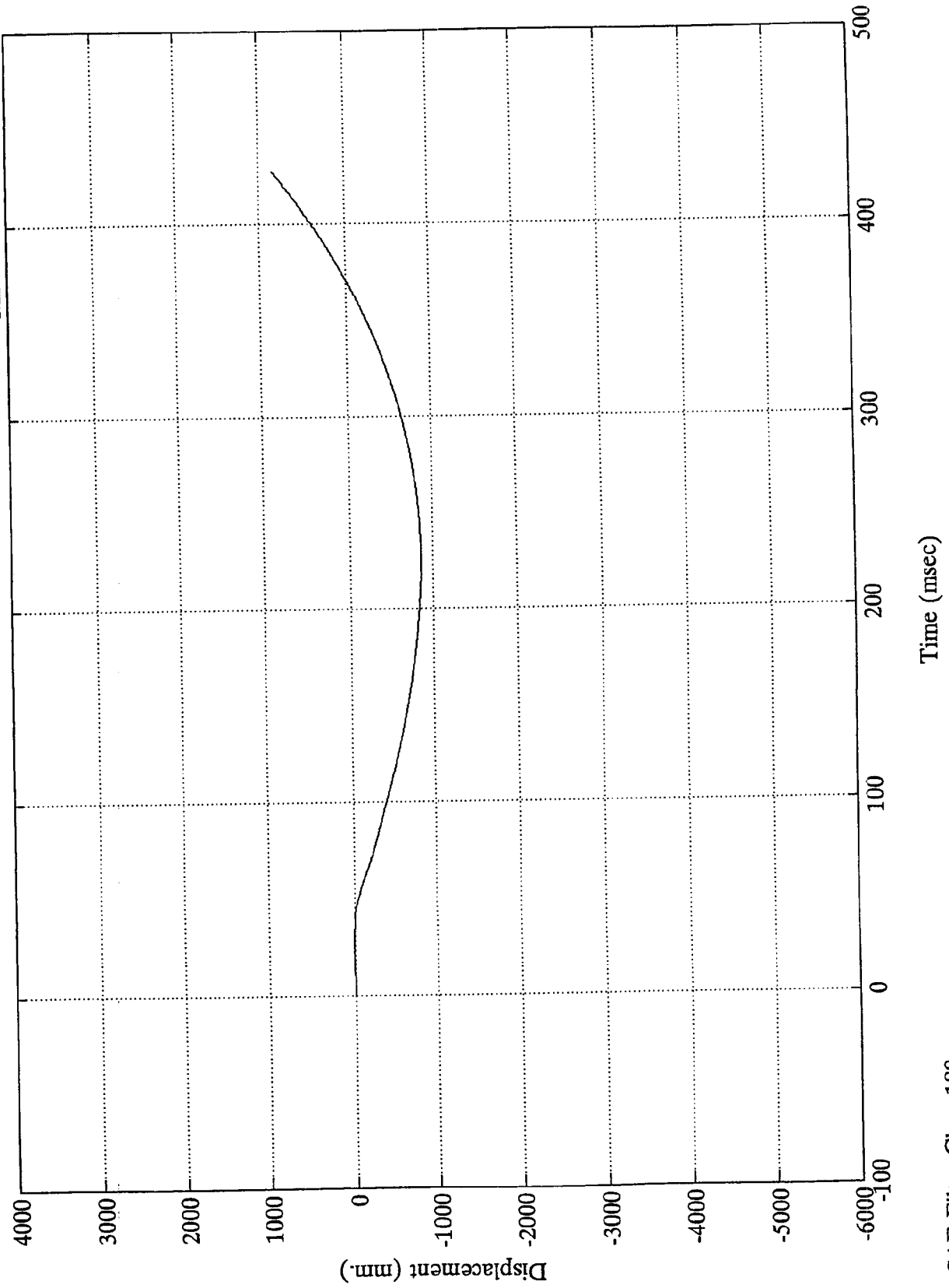


SAE Filter Class 180

VTV TEST #2

Acc 12 Toepan Y

Max = 846.33 mm @ 427.32 msec
Min = -853.43 mm @ 226.92 msec



B-90

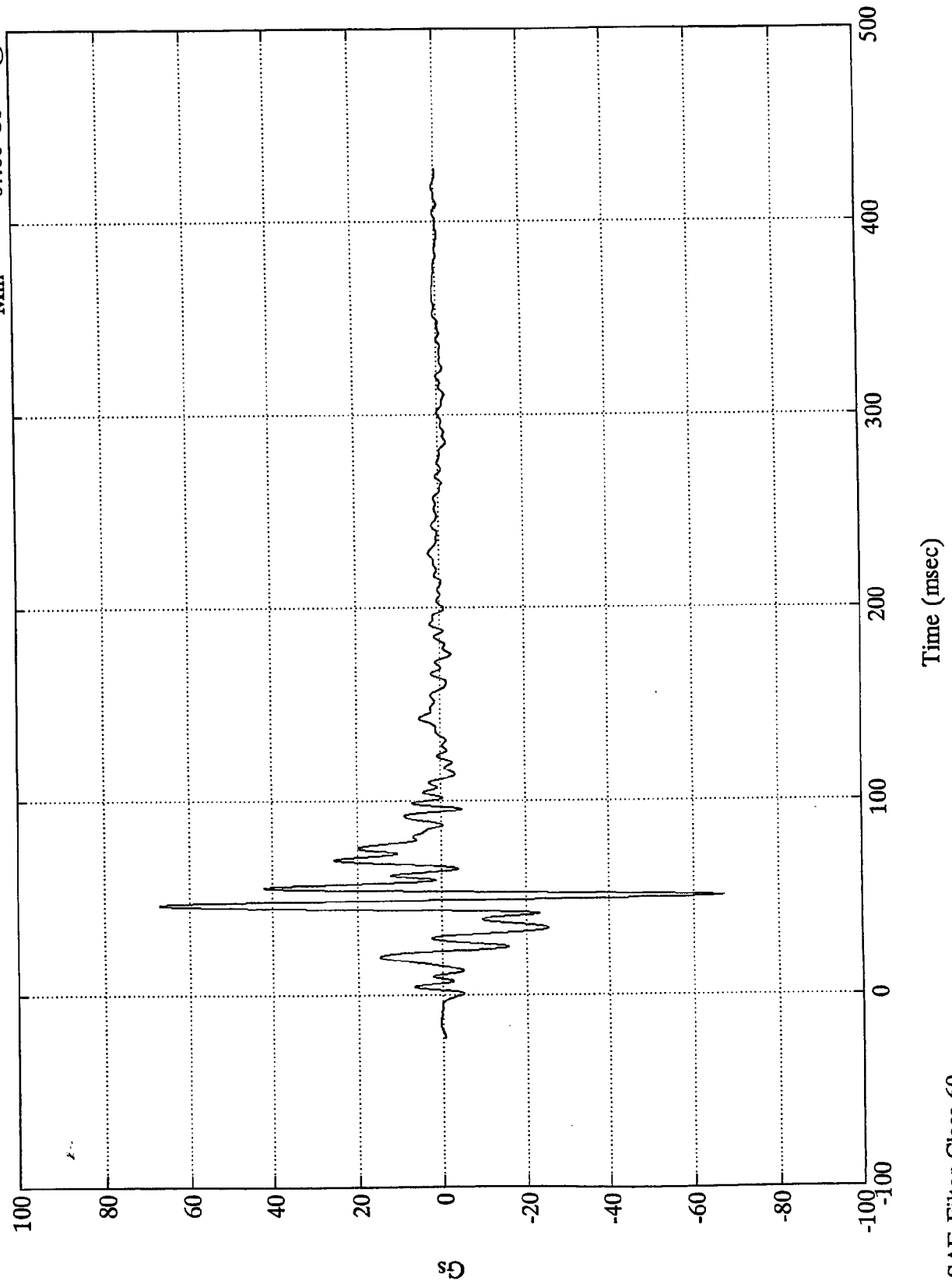
8304-2

SAE Filter Class 180

VTV TEST #2

Acc 12 Toe pan Z

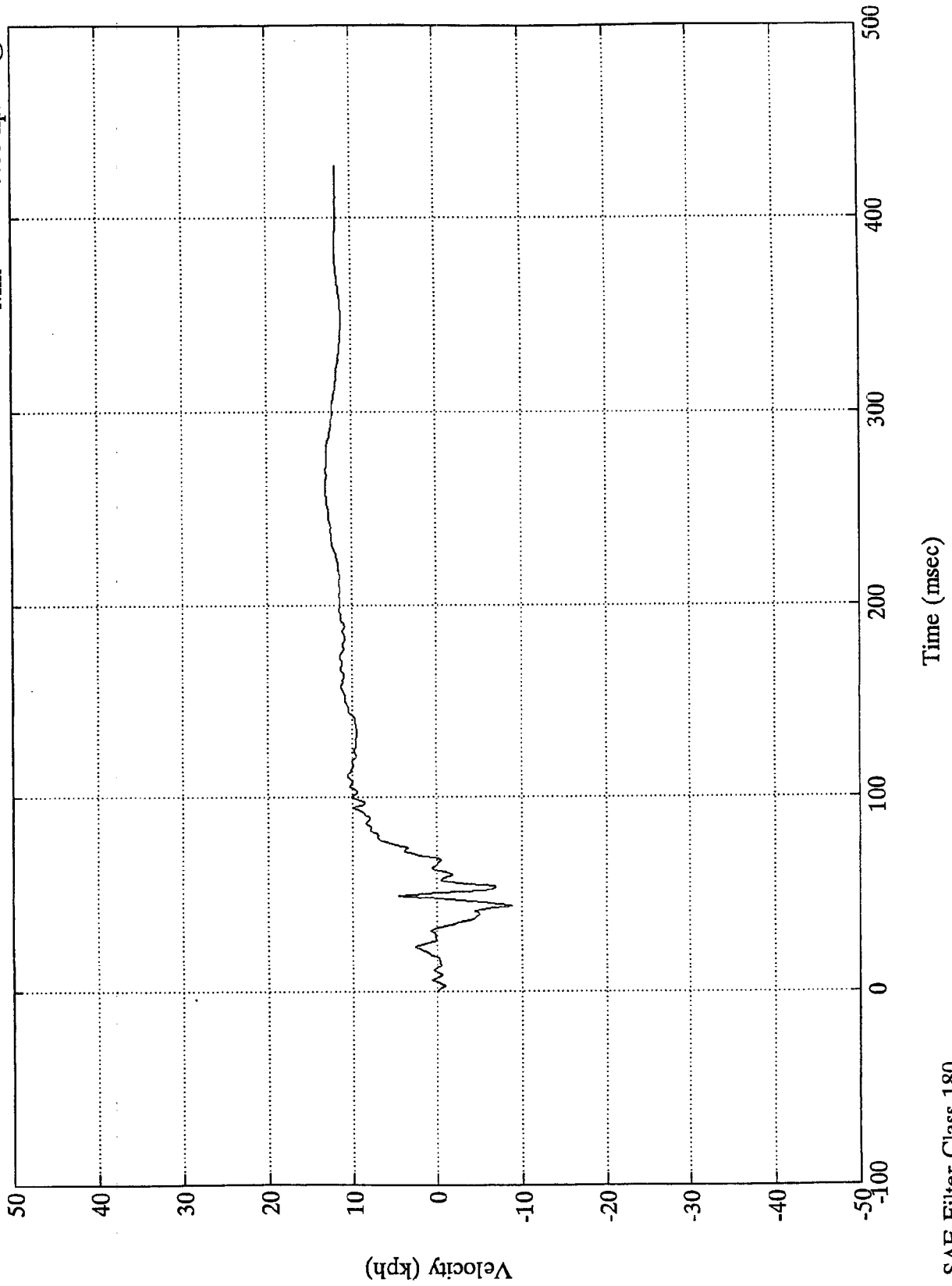
Max = 67.24 Gs @ 46.56 msec
Min = -67.06 Gs @ 51.00 msec



SAE Filter Class 60

VTV TEST #2

Acc 12 Toe pan Z
Max = 13.15 kph @ 259.20 msec
Min = -9.00 kph @ 43.92 msec

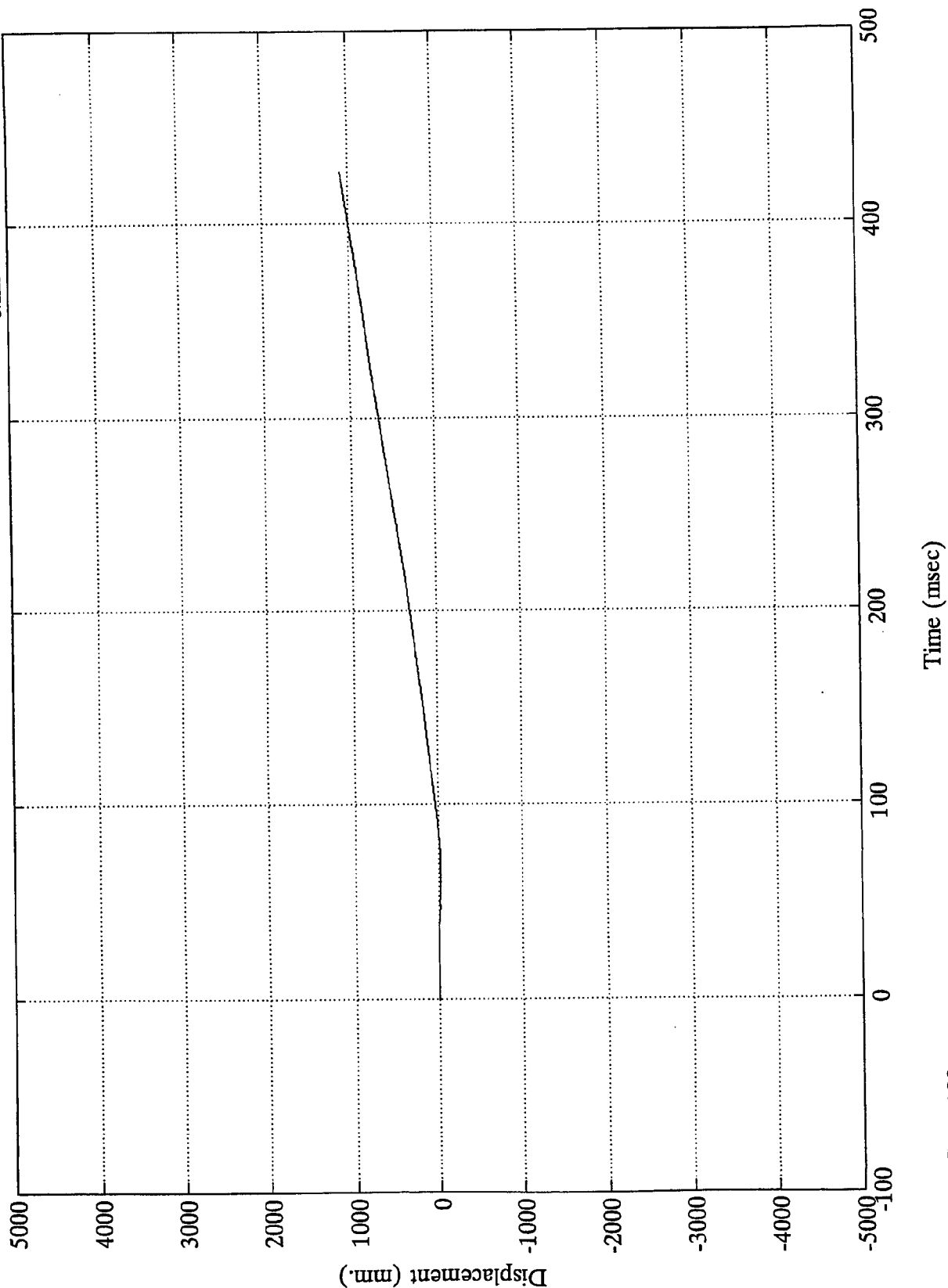


SAE Filter Class 180

VTV TEST #2

Acc 12 Toe pan Z

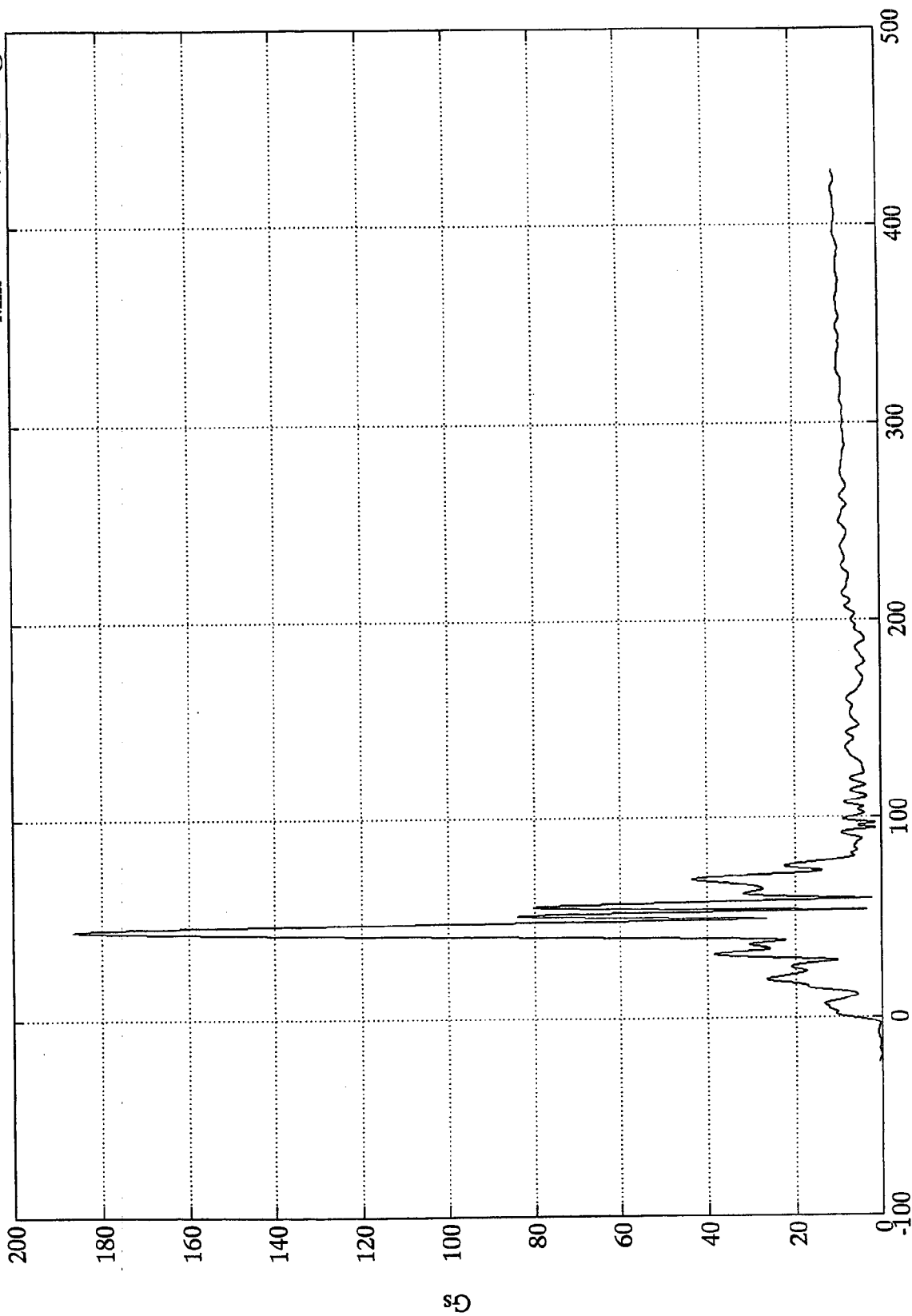
Max = 1086.30 mm @ 427.32 msec
Min = -24.22 mm @ 62.16 msec



VTV TEST #2

Max = 186.28 Gs @ 44.40 msec
Min = .07 Gs @ -18.72 msec

Toe pan Res



Time (msec)

SAE Filter Class 60

85

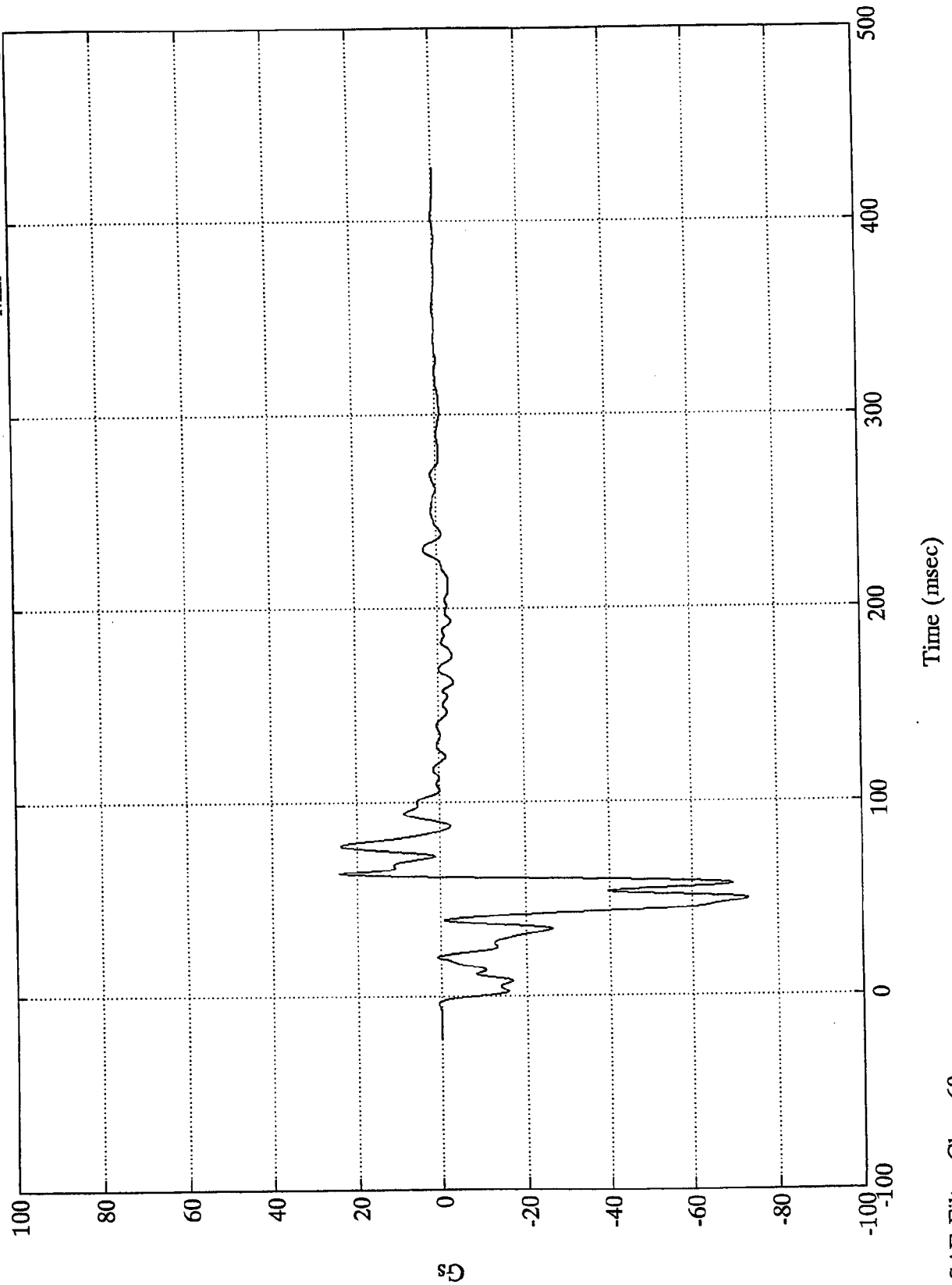
B-94

8304-2

VTV TEST #2

Acc 13 A-Pillar Hinge X

Max = 24.09 Gs @ 63.48 msec
Min = -73.12 Gs @ 49.68 msec



SAE Filter Class 60

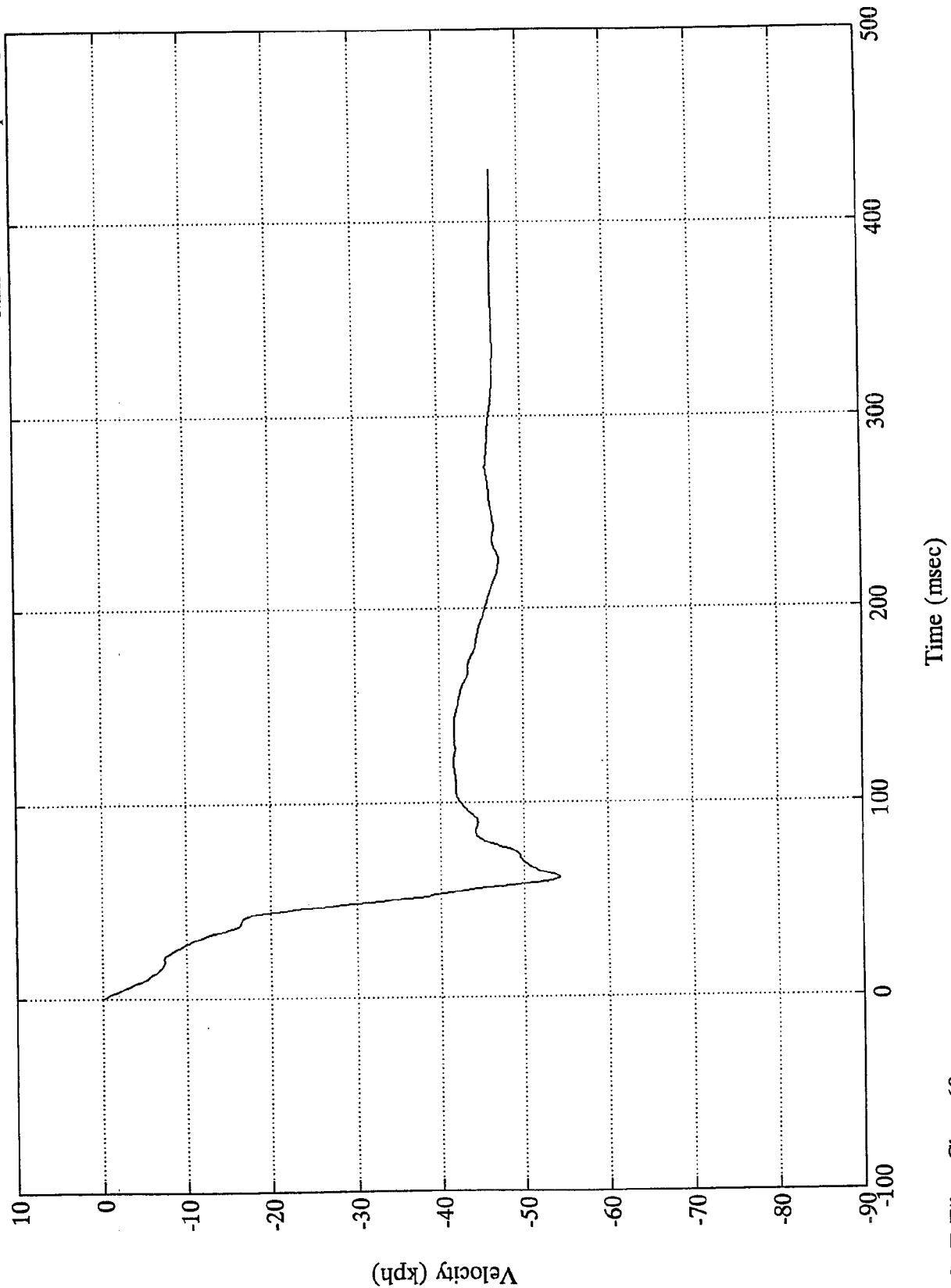
8304-2

B-95

VTV TEST #2

Acc 13 A-Pillar Hinge X

Max = .00 kph @ -0.00 msec
Min = -54.27 kph @ 61.32 msec



SAE Filter Class 60

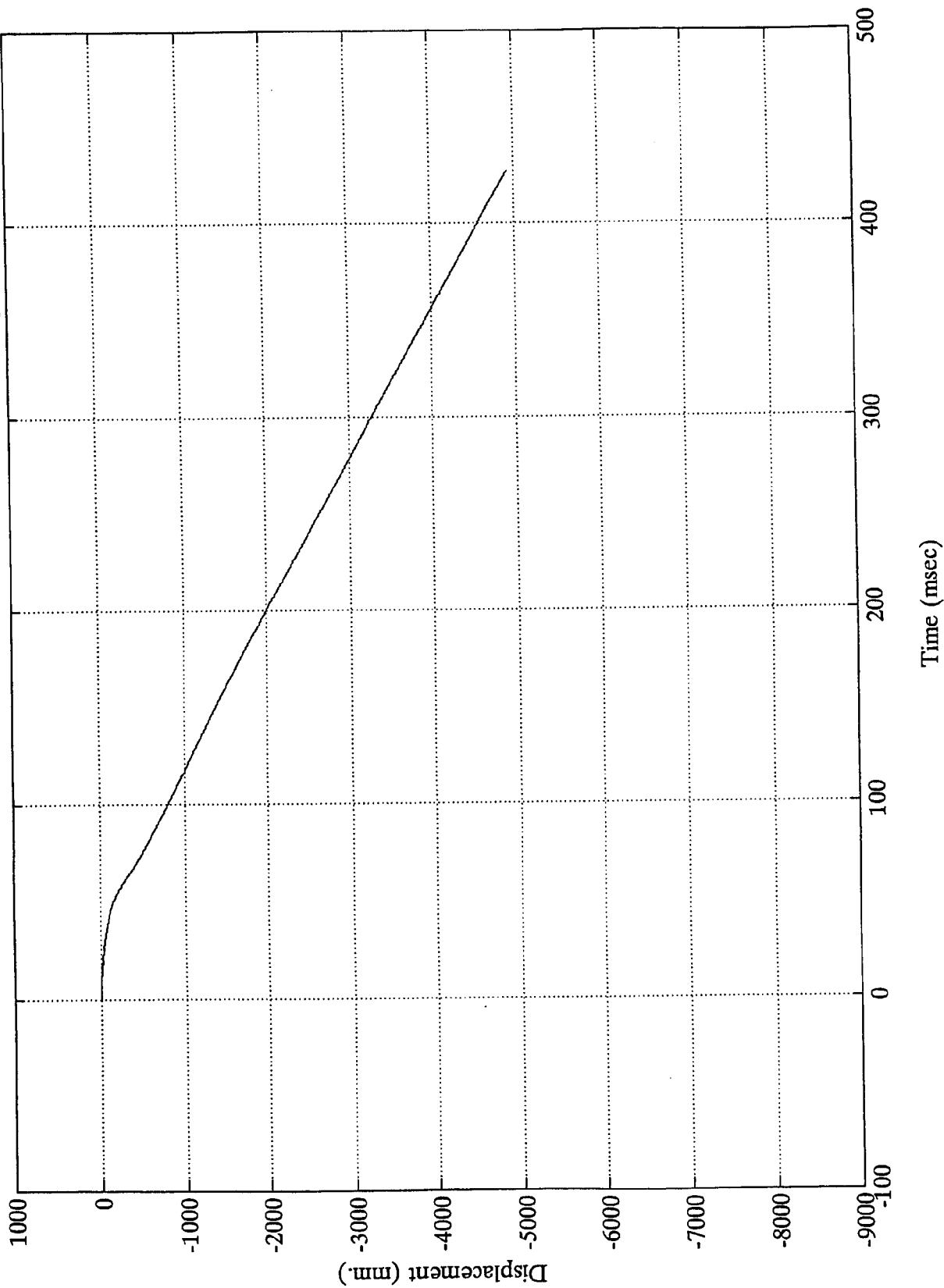
8304-2

B-96

VTV TEST #2

Acc 13 A-Pillar Hinge X

Max = .00 mm @ -0.00 msec
Min = -4923.63 mm @ 427.32 msec

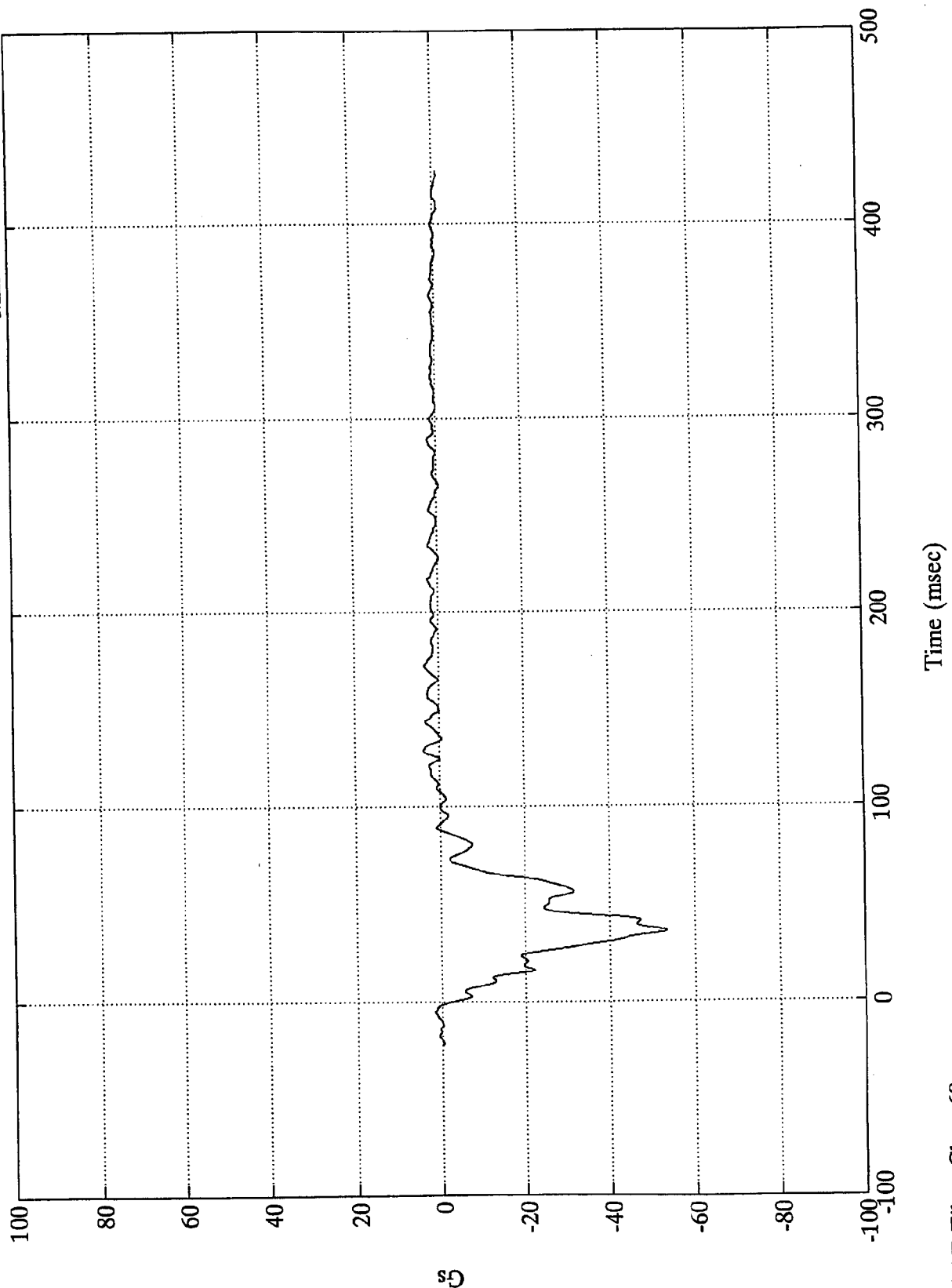


VEHICLE TWO DATA

VTV TEST #2

Acc 1 MDB Left Rail X

Max = 3.83 Gs @ 128.64 msec
Min = -53.39 Gs @ 36.36 msec



5G

B-99

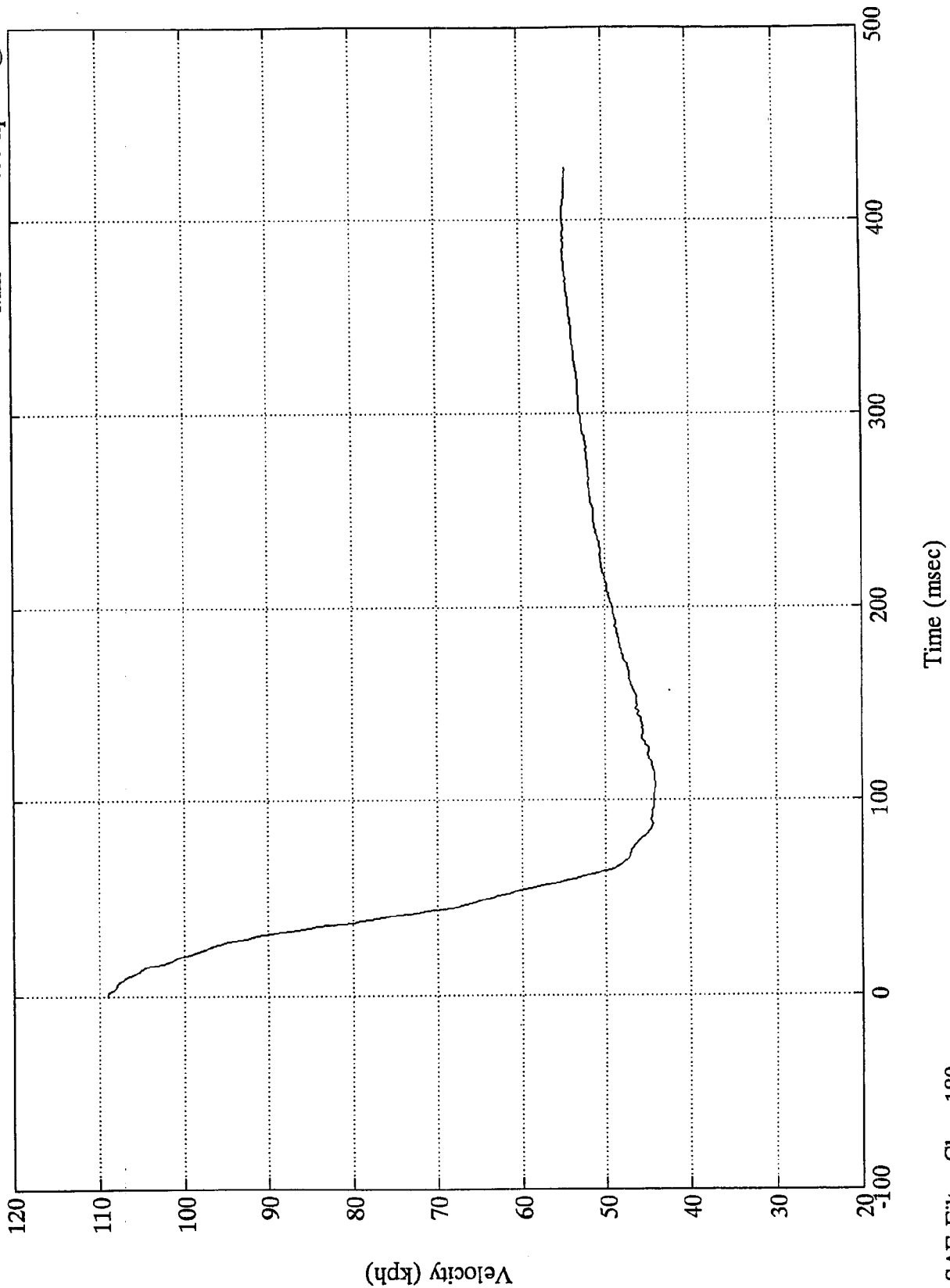
SAE Filter Class 60

8304-2

VTV TEST #2

Acc 1 MDB Left Rail X

Max = 109.15 kph @ 0.47 msec
Min = .00 kph @ -22.44 msec



SAE Filter Class 180

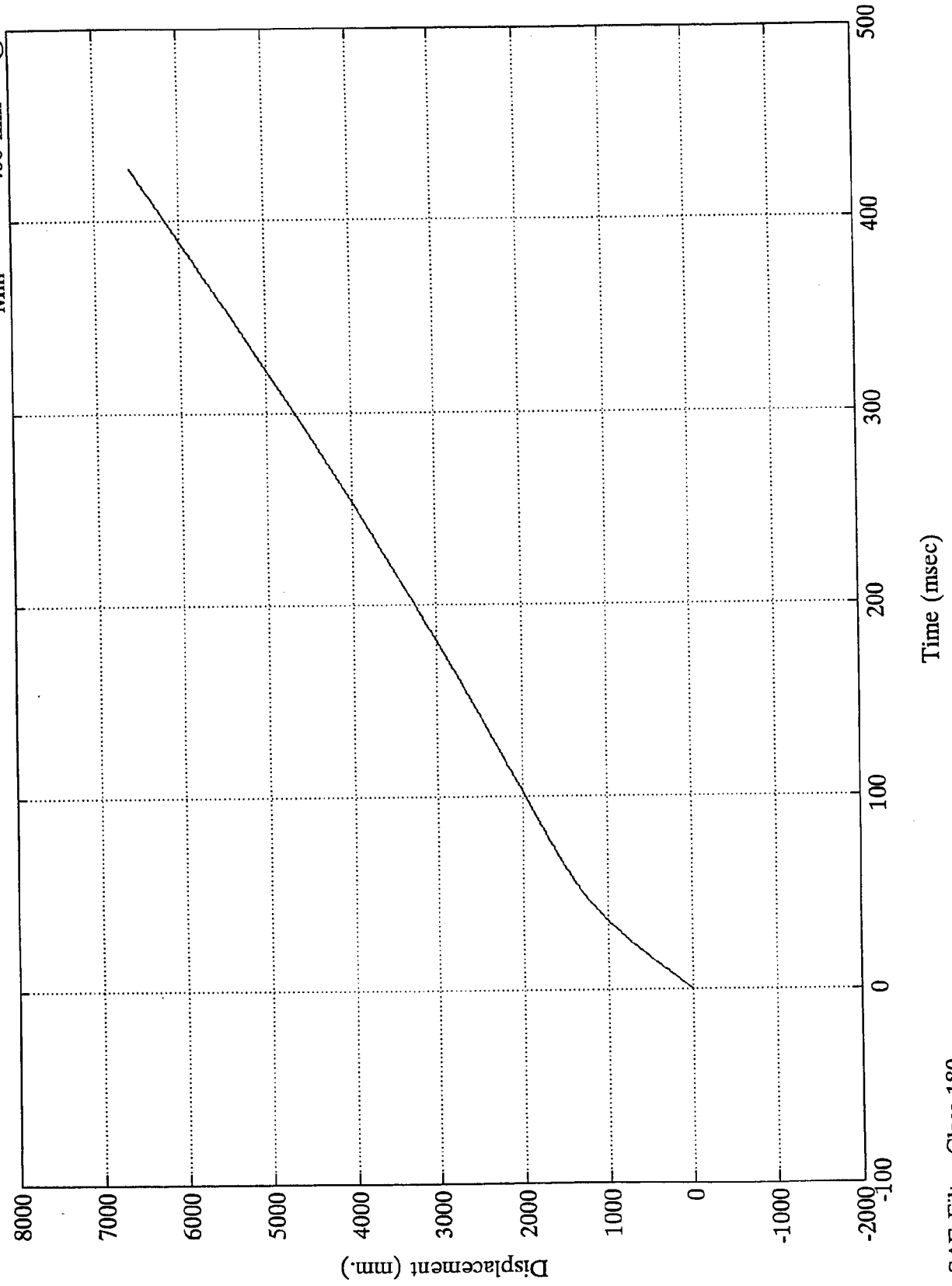
8304-2

B-100

VTV TEST #2

Acc 1 MDB Left Rail X

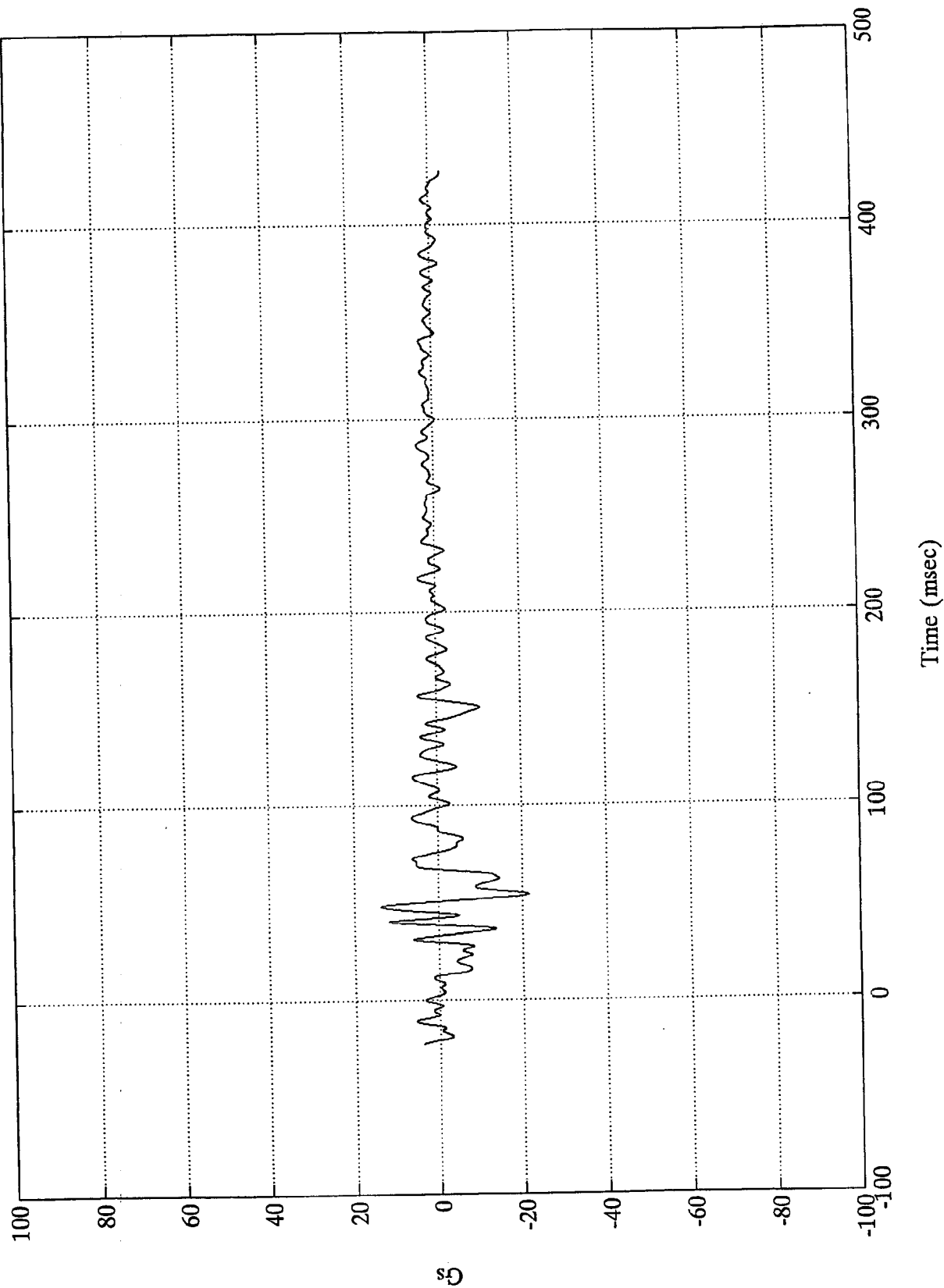
Max = 6586.58 mm @ 427.32 msec
Min = .00 mm @ -22.44 msec



VTV TEST #2

Max = 13.57 Gs @ 48.24 msec
Min = -21.68 Gs @ 54.11 msec

Acc 1 MDB Left Rail Y



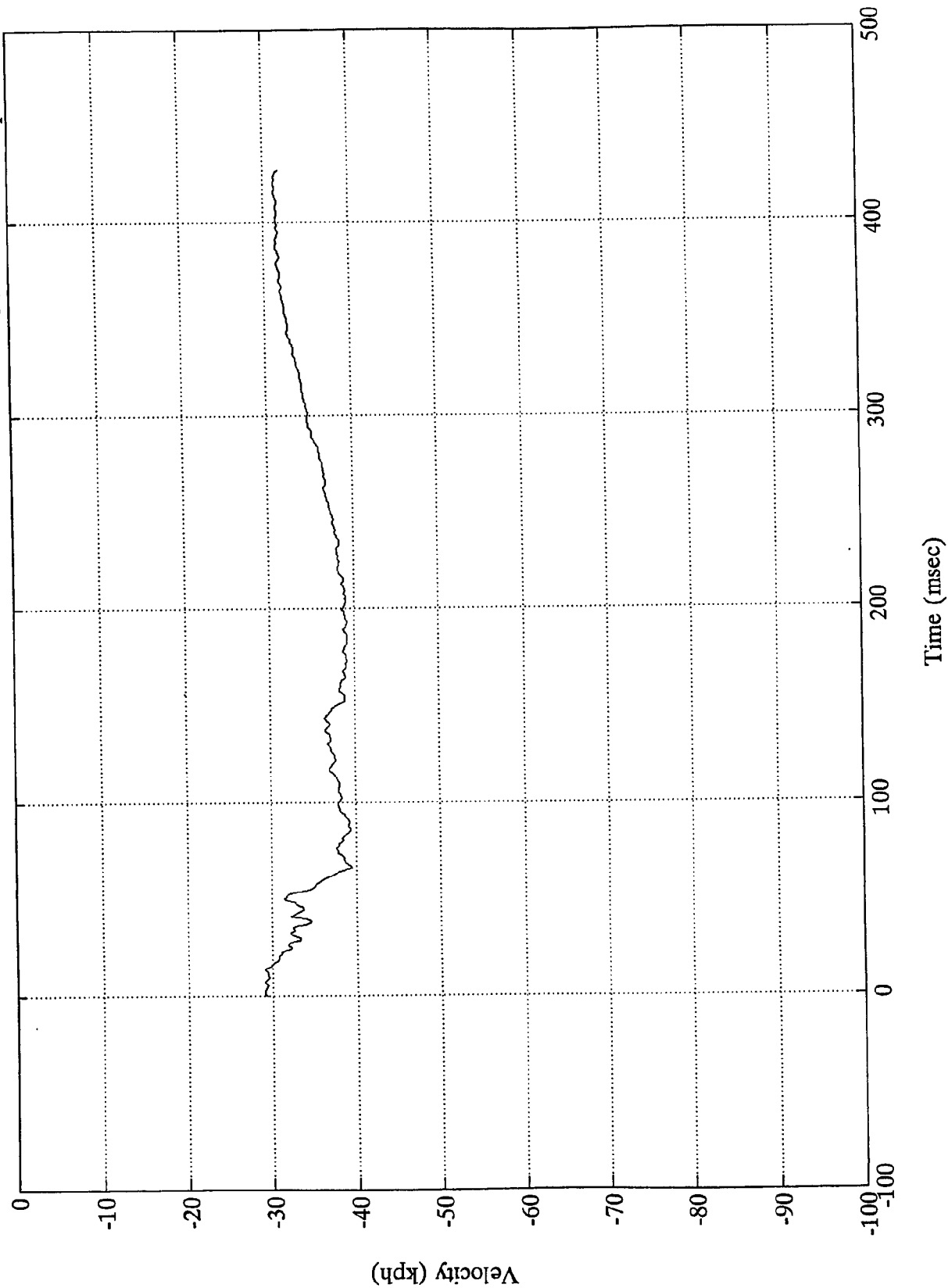
SAE Filter Class 60

8304-2

VTV TEST #2

Max = .00 kph @ -22.44 msec
Min = -39.50 kph @ 67.07 msec

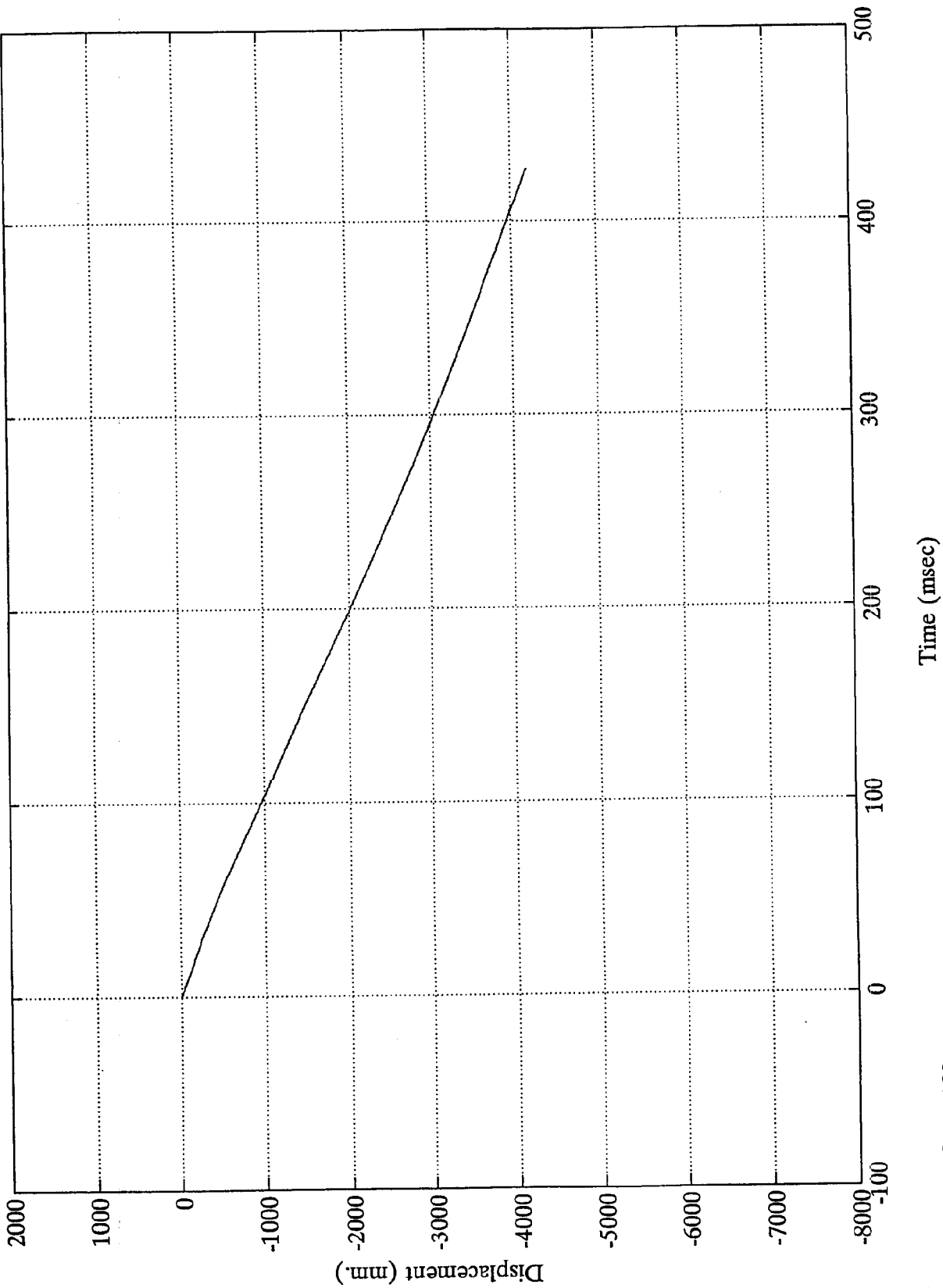
Acc 1 MDB Left Rail Y



VTV TEST #2

Acc 1 MDB Left Rail Y

Max = .00 mm @ -0.00 msec
Min = -4193.52 mm @ 427.32 msec

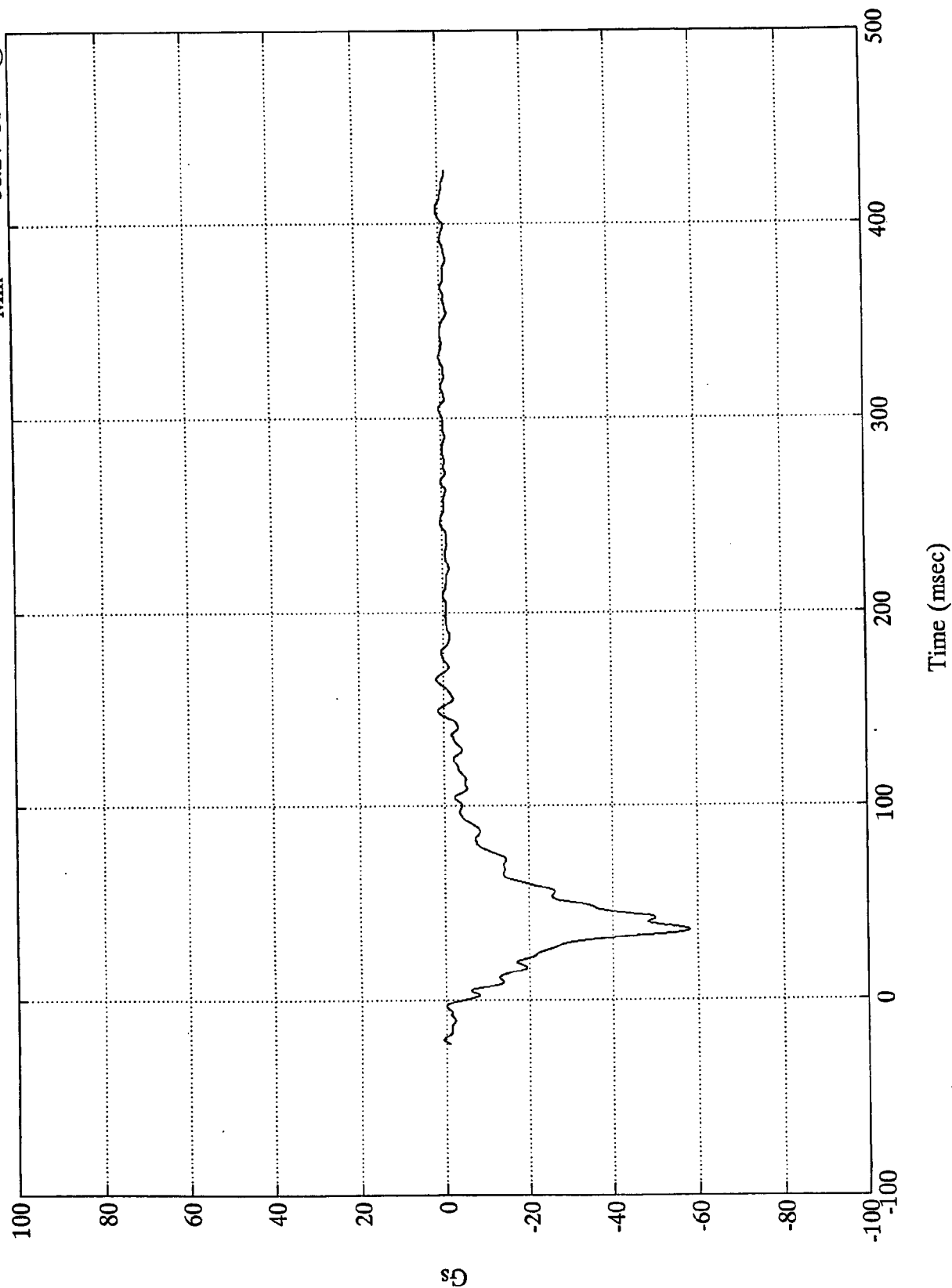


SAE Filter Class 180

VTV TEST #2

Acc 2 MDB Right Rail X

Max = 1.73 Gs @ 165.60 msec
Min = -58.24 Gs @ 36.36 msec



Gs

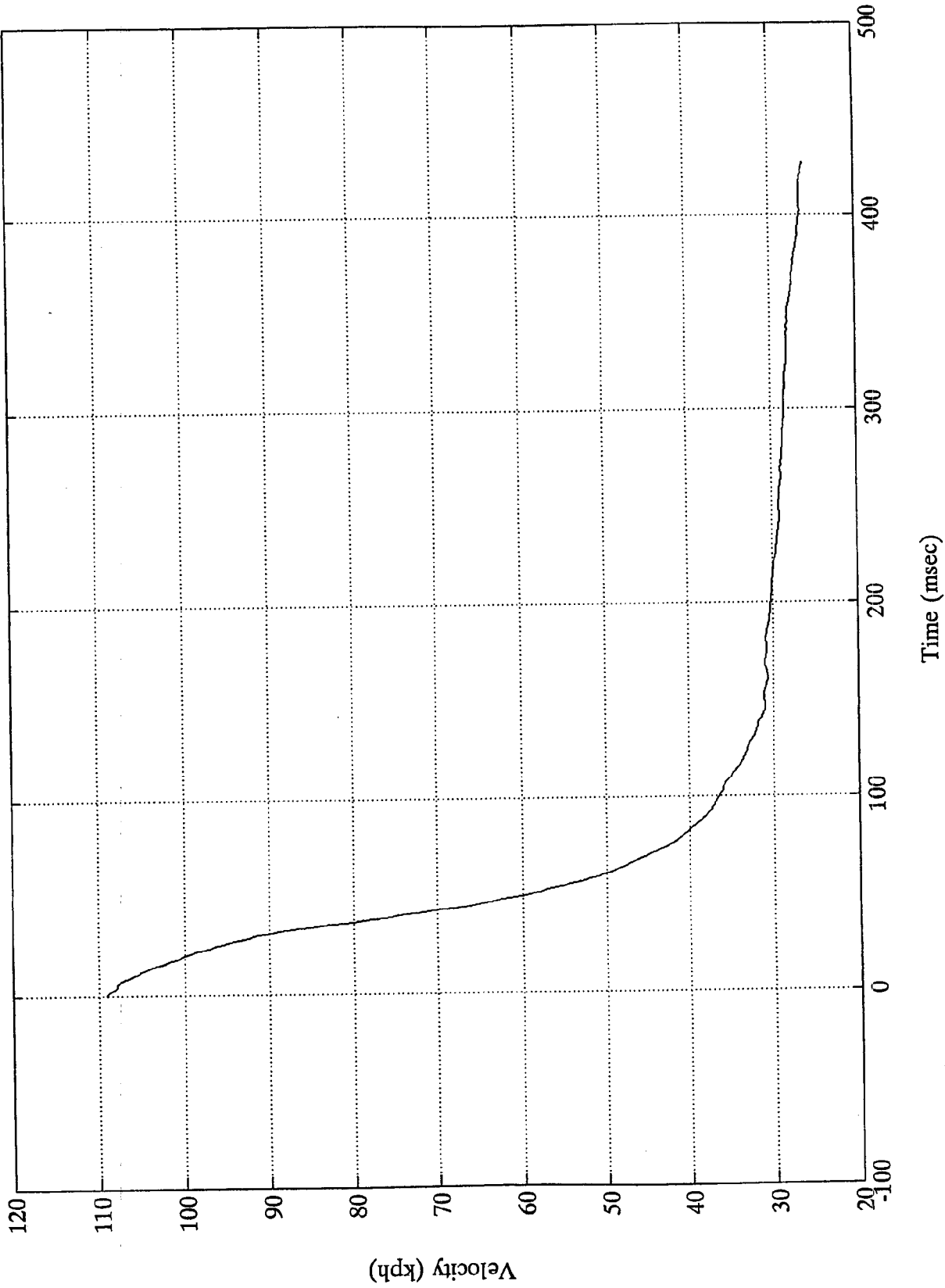
Time (msec)

SAE Filter Class 60

VTV TEST #2

Acc 2 MDB Right Rail X

Max = 109.14 kph @ -0.00 msec
Min = .00 kph @ -22.44 msec



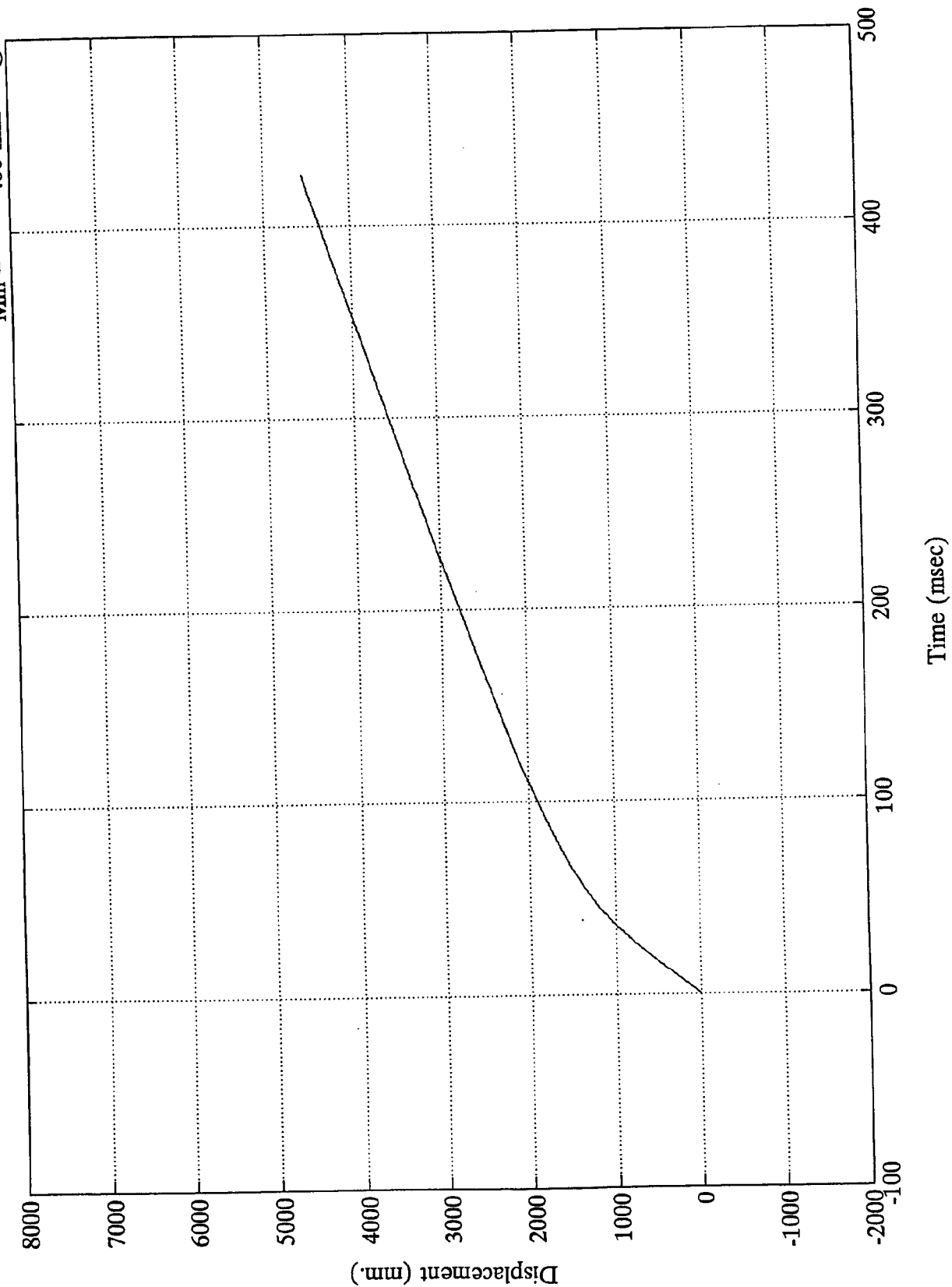
SAE Filter Class 180

8304-2

VTV TEST #2

Acc 2 MDB Right Rail X

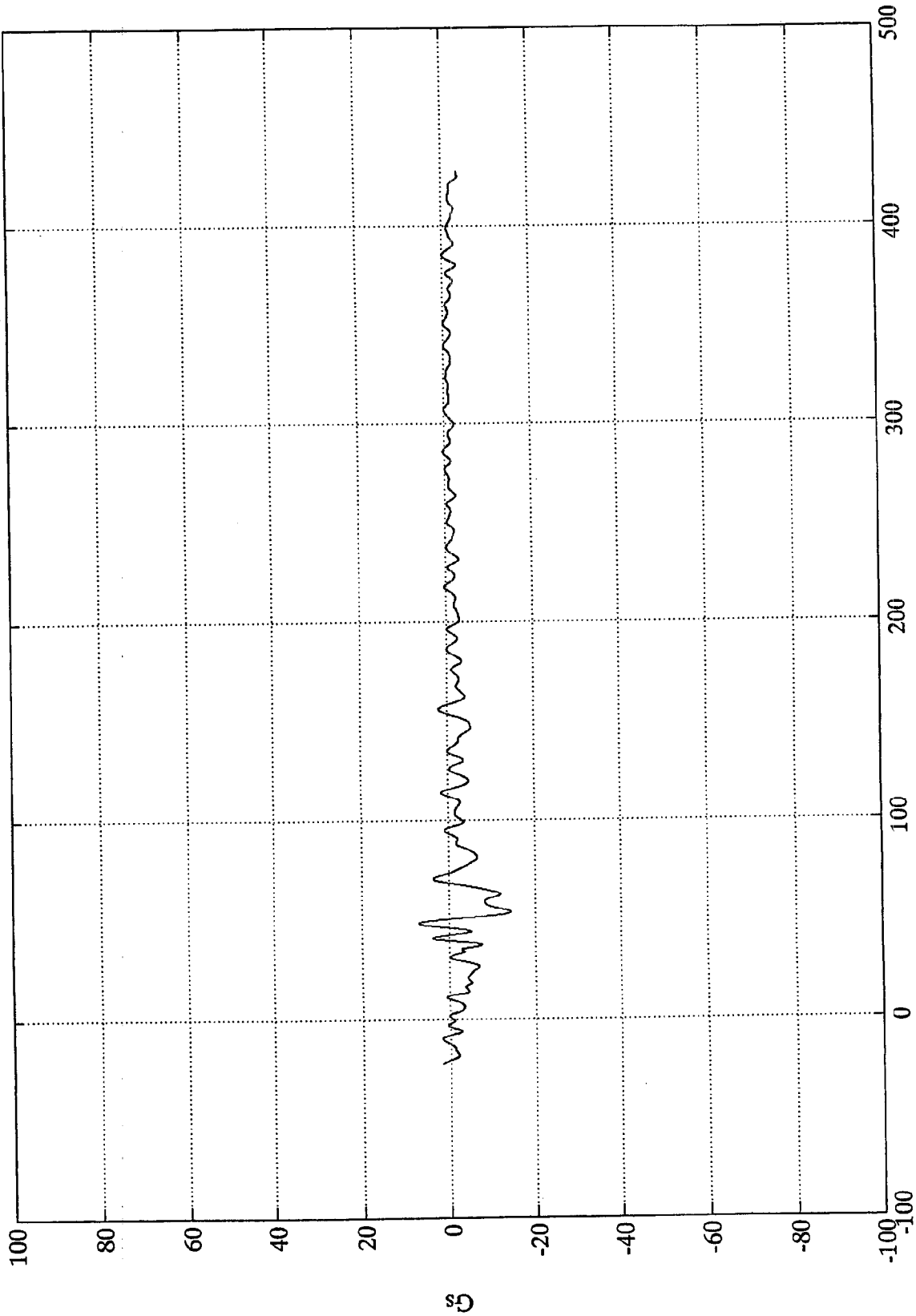
Max = 4558.53 mm @ 427.32 msec
Min = .00 mm @ -22.44 msec



VTV TEST #2

Acc 2 MDB Right Rail Y

Max =	7.01 Gs	@	48.36 msec
Min =	-14.39 Gs	@	53.88 msec



Time (msec)

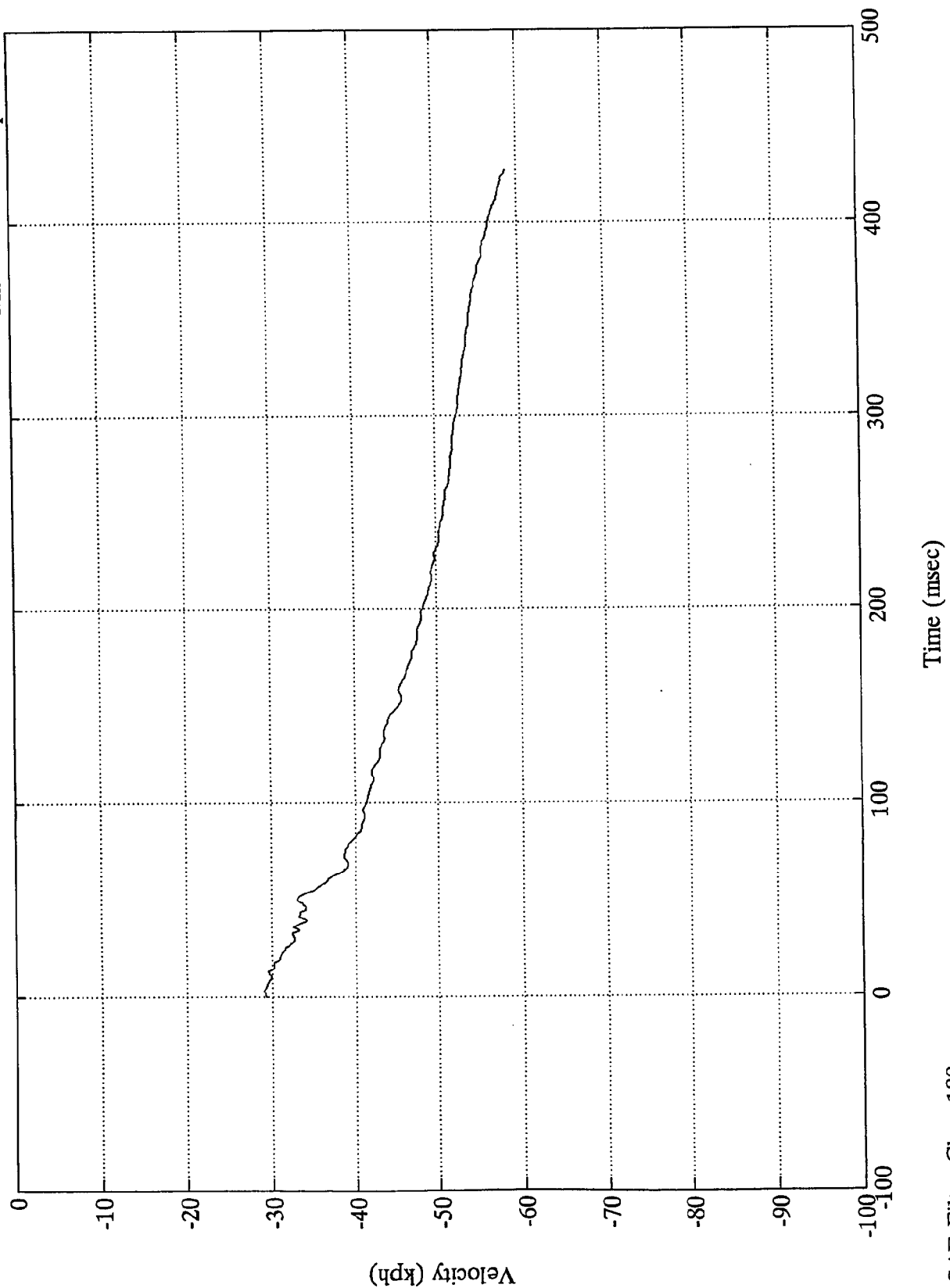
SAE Filter Class 60

50

VTV TEST #2

Acc 2 MDB Right Rail Y

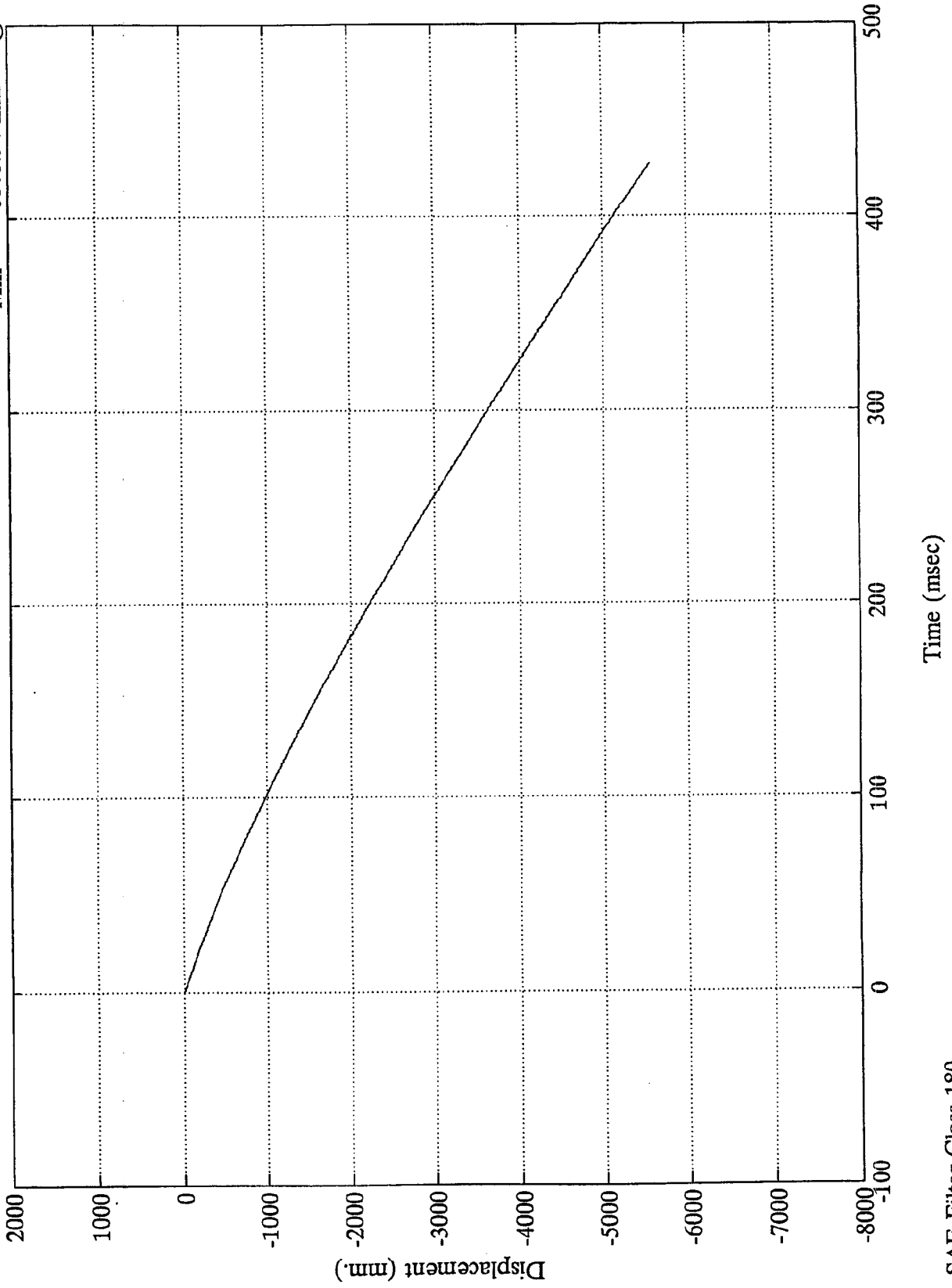
Max = .00 kph @ -22.44 msec
Min = -58.75 kph @ 427.32 msec



VTV TEST #2

Acc 2 MDB Right Rail Y

Max = .00 mm @ -0.00 msec
Min = -5575.94 mm @ 427.32 msec



SAE Filter Class 180

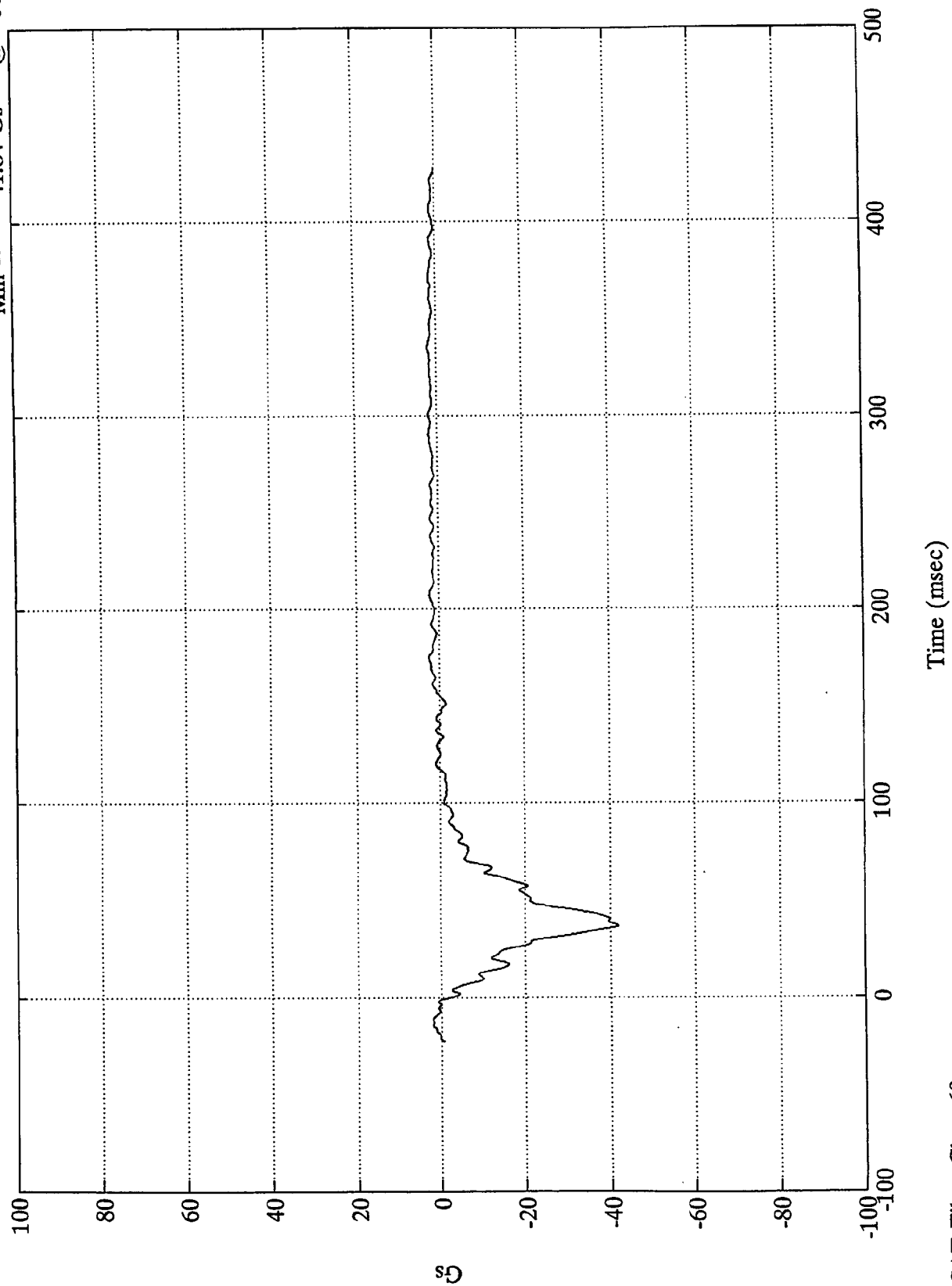
8304-2

B-110

VTV TEST #2

Acc 3 MDB C.G. X

Max = 2.58 Gs @ 175.08 msec
Min = -41.84 Gs @ 36.96 msec

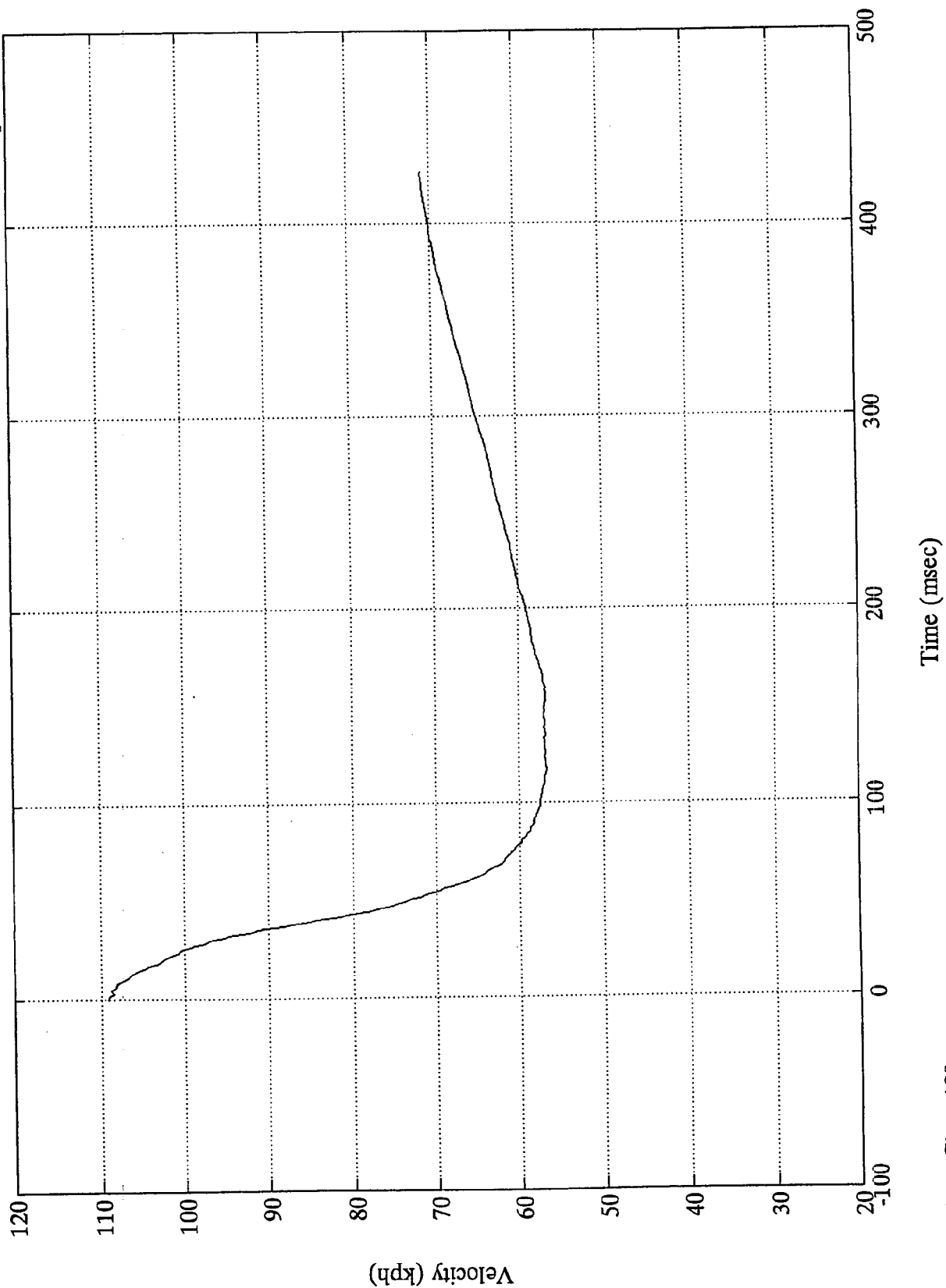


SAE Filter Class 60

VTV TEST #2

Acc 3 MDB C.G. X

Max = 109.14 kph @ -0.00 msec
Min = .00 kph @ -22.44 msec



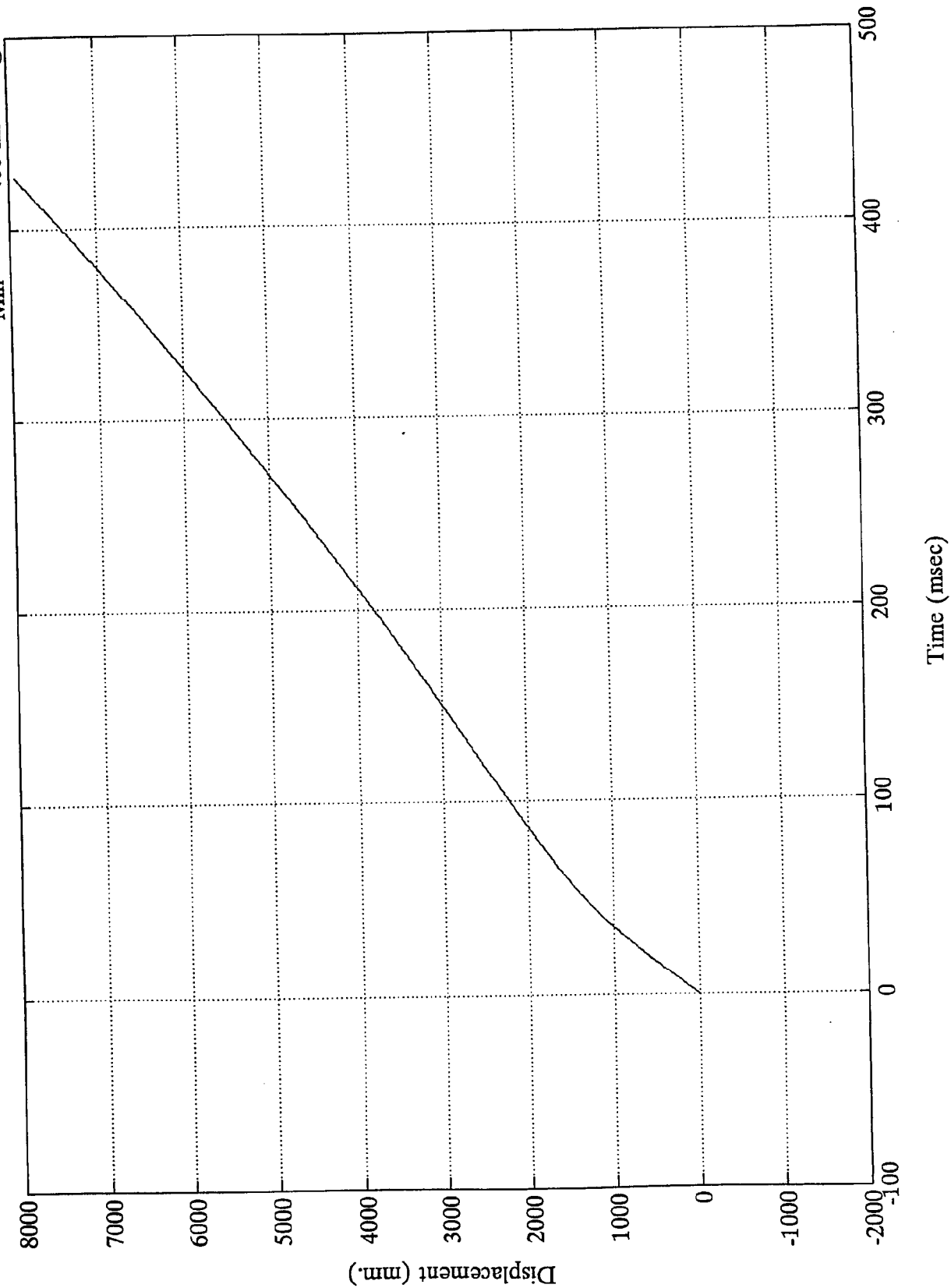
SAE Filter Class 180

8304-2

VTV TEST #2

Max = 7937.76 mm @ 427.32 msec
Min = .00 mm @ -22.44 msec

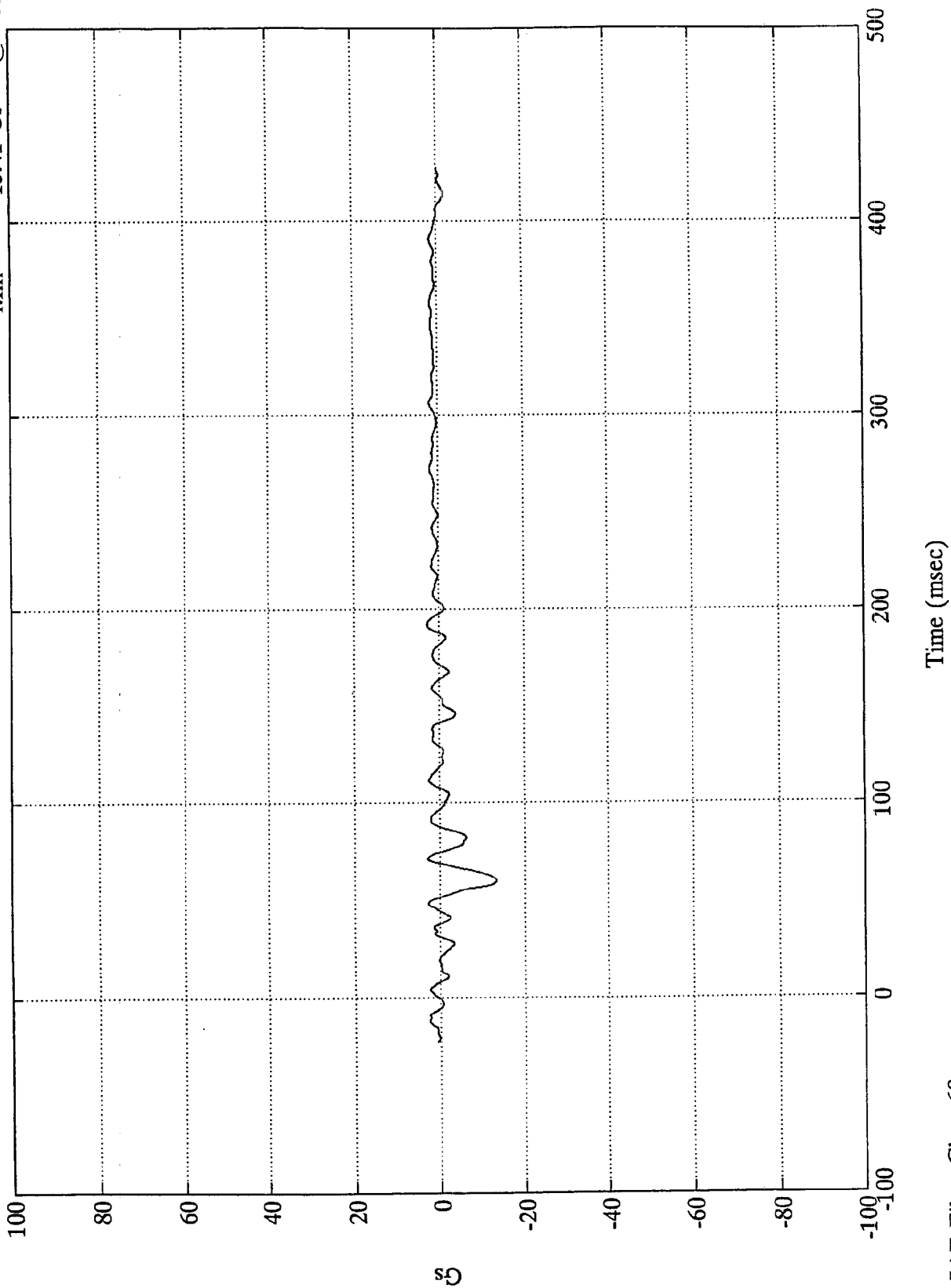
Acc 3 MDB C.G. X



SAE Filter Class 180

VTV TEST #2

Acc 3 MDB C.G. Y Max = 2.84 Gs @ 71.52 msec
Min = -13.41 Gs @ 59.88 msec



SAE Filter Class 60

50

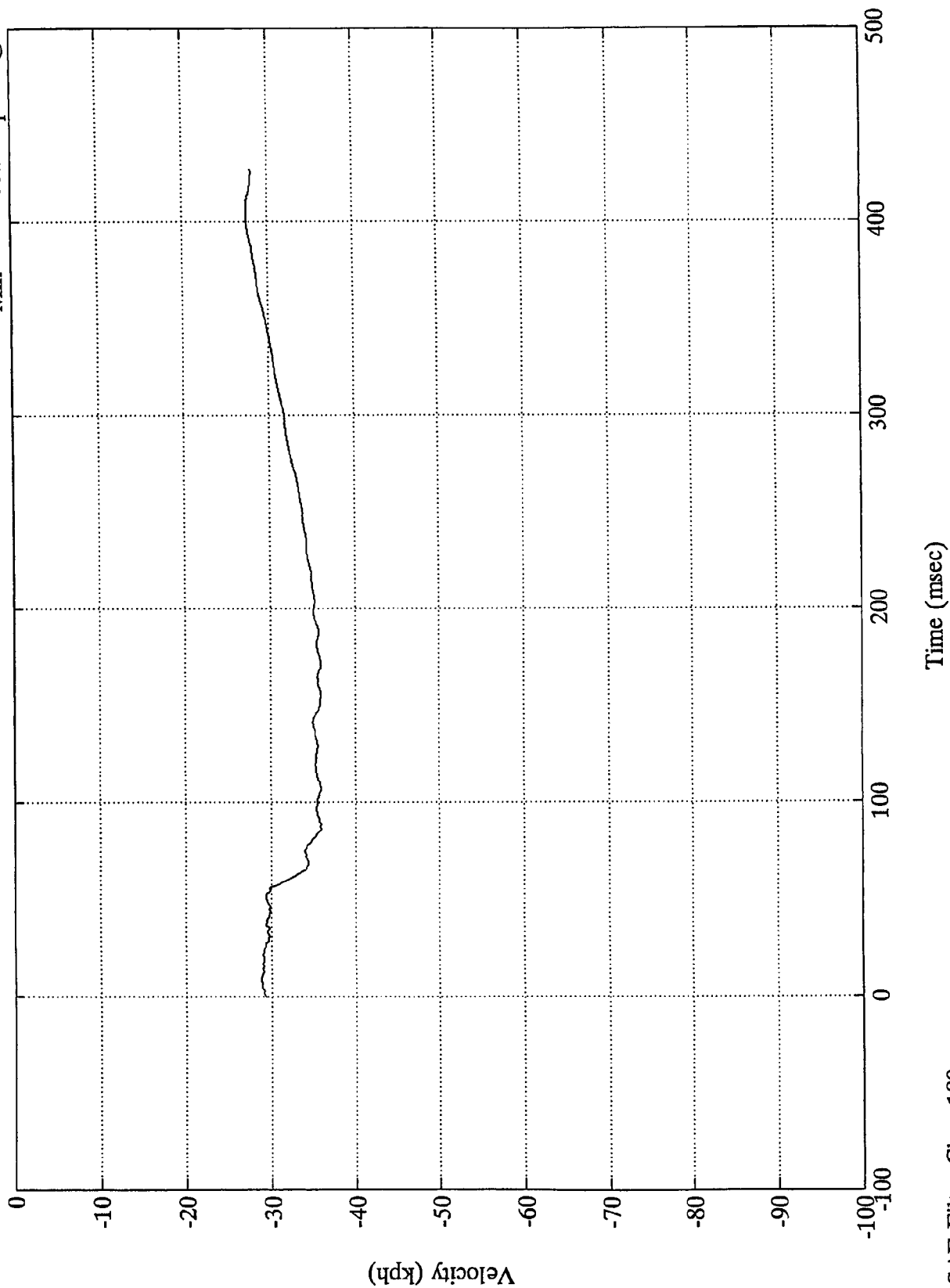
B-114

8304-2

VTV TEST #2

Max = .00 kph @ -22.44 msec
Min = -35.94 kph @ 107.52 msec

Acc 3 MDB C.G. Y

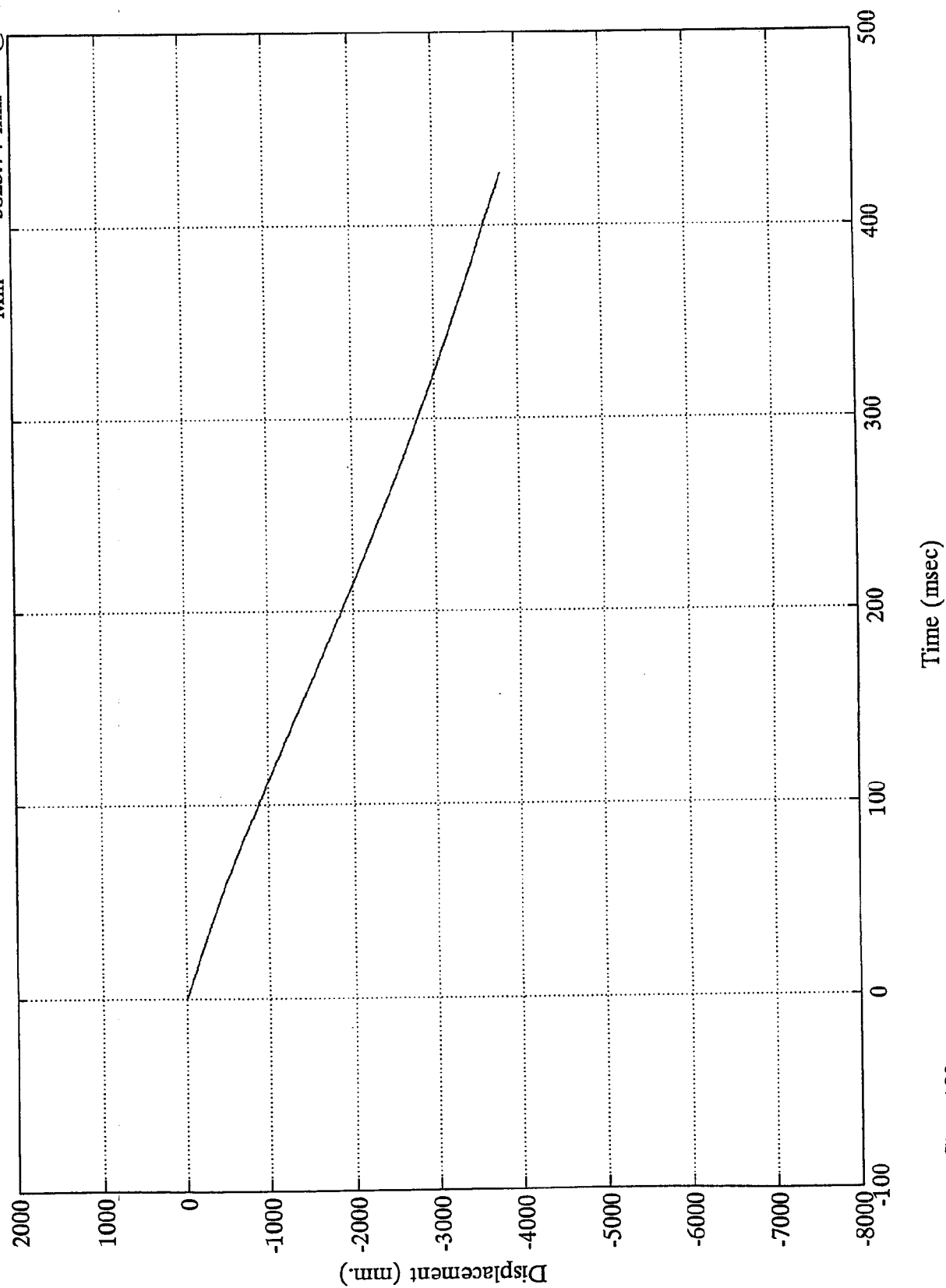


SAE Filter Class 180

VTV TEST #2

Acc 3 MDB C.G. Y

Max = .00 mm @ -0.00 msec
Min = -3823.74 mm @ 427.32 msec

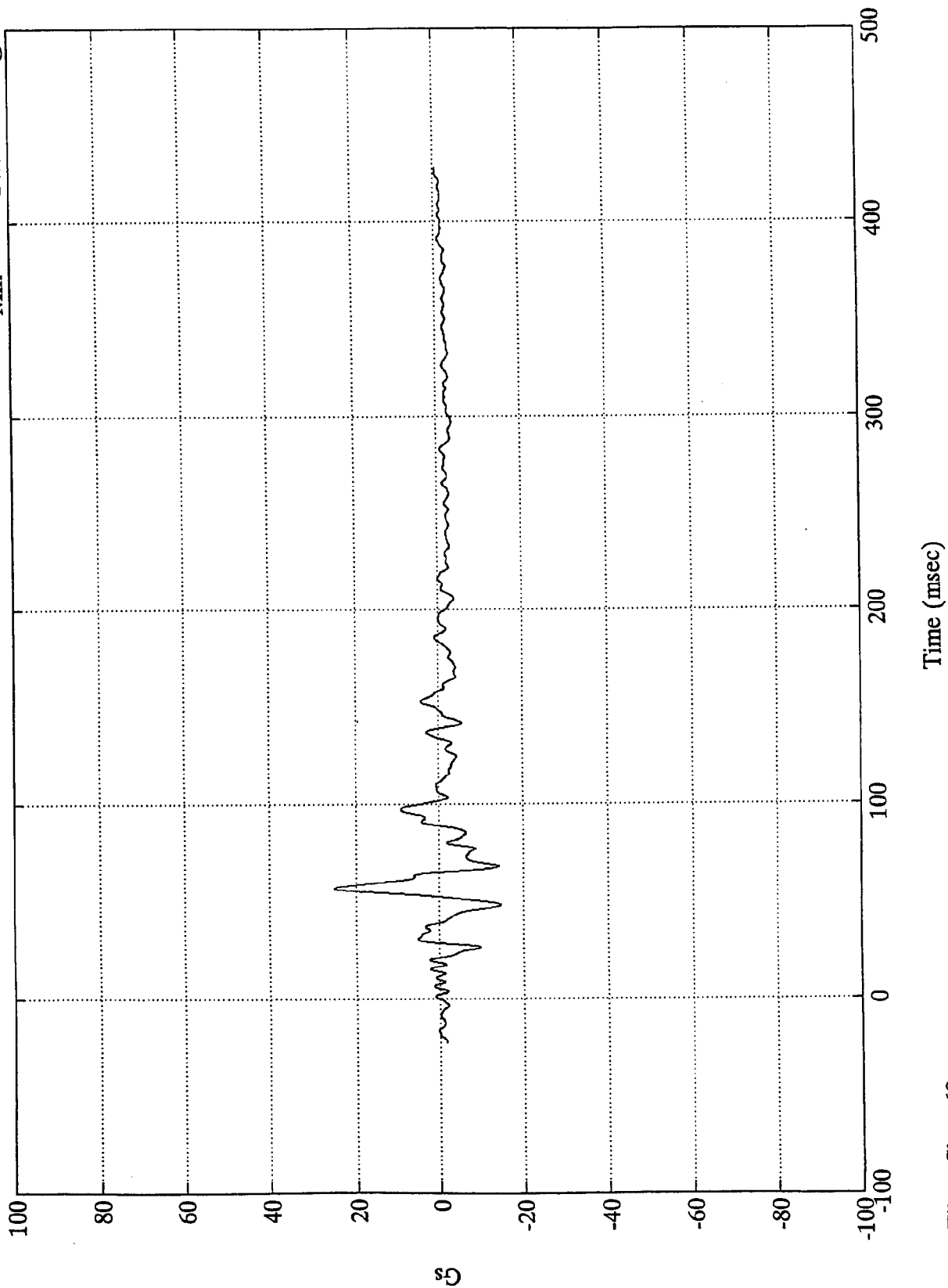


SAE Filter Class 180

VTV TEST #2

Acc 3 MDB C.G. Z

Max = 25.17 Gs @ 57.24 msec
Min = -14.66 Gs @ 48.84 msec



8D

B-117

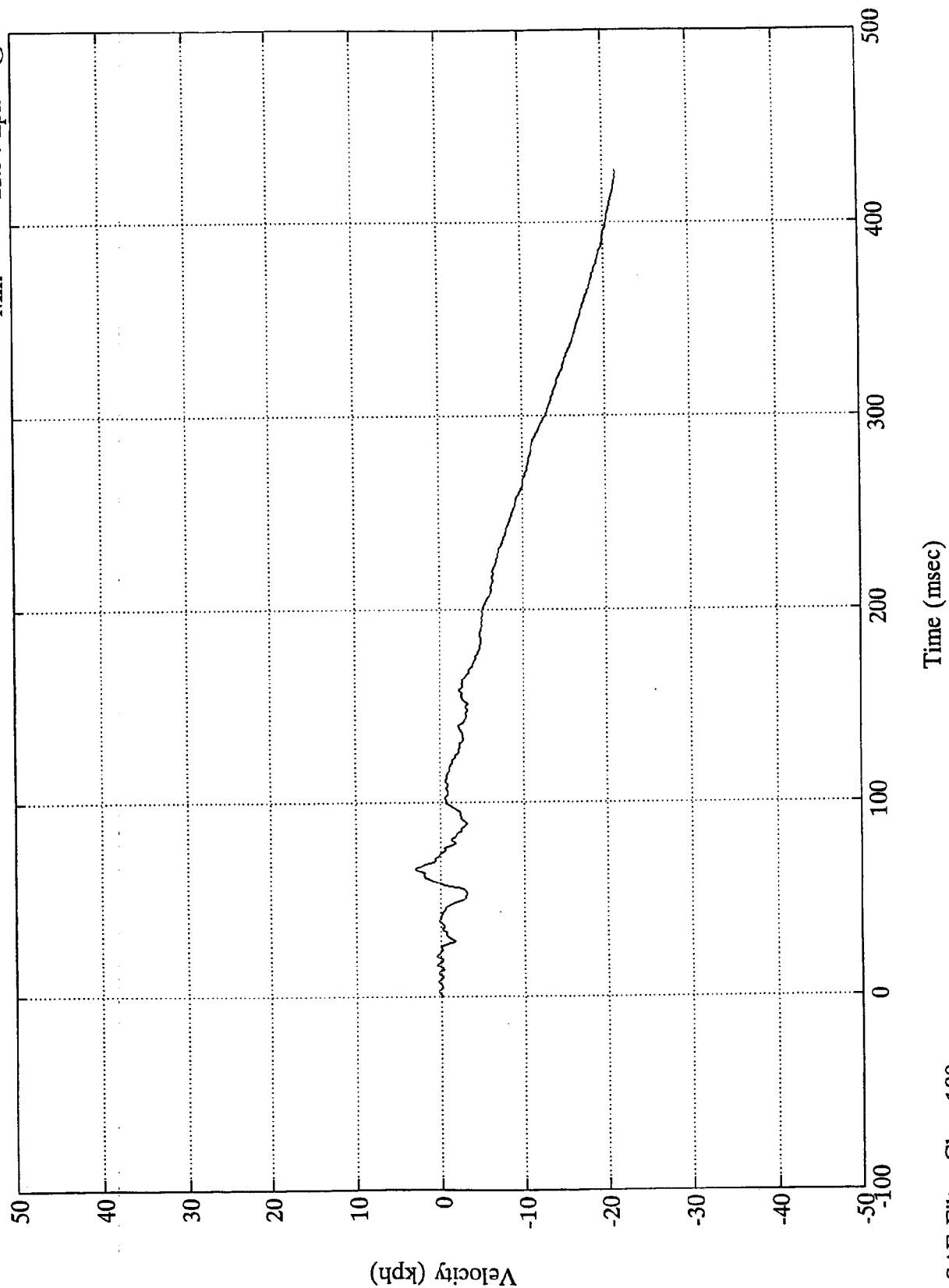
SAE Filter Class 60

8304-2

VTV TEST #2

Max = 2.99 kph @ 65.99 msec
Min = -21.54 kph @ 425.88 msec

Acc 3 MDB C.G. Z



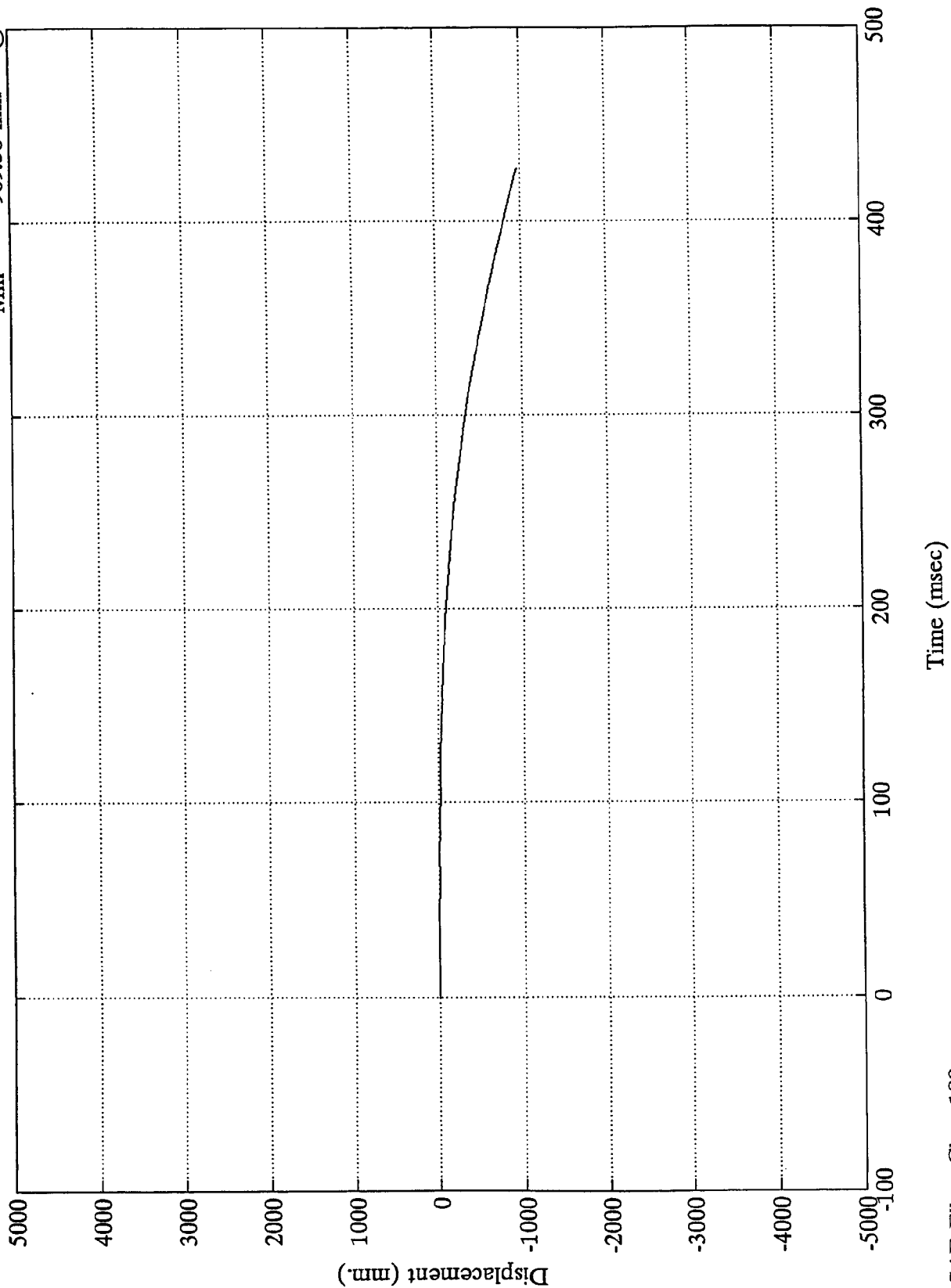
SAE Filter Class 180

8304-2

B-118

VTV TEST #2

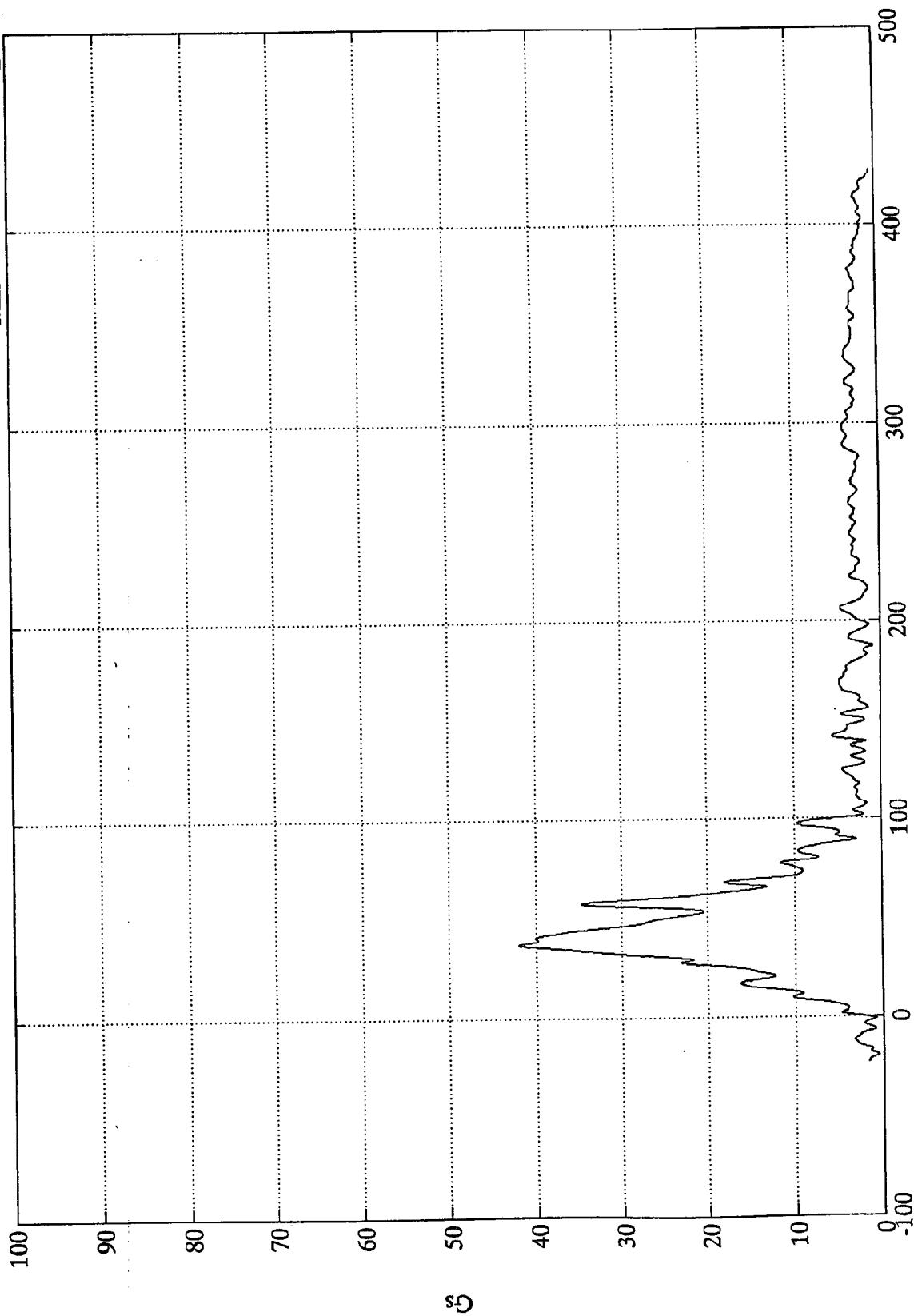
Acc 3 MDB C.G. Z Max = .75 mm @ 23.16 msec
Min = -969.38 mm @ 427.32 msec



VTV TEST #2

Max = 41.96 Gs @ 36.96 msec
Min = .55 Gs @ -19.20 msec

MDB C.G. Res



Time (msec)

SAE Filter Class 60

50

B-120

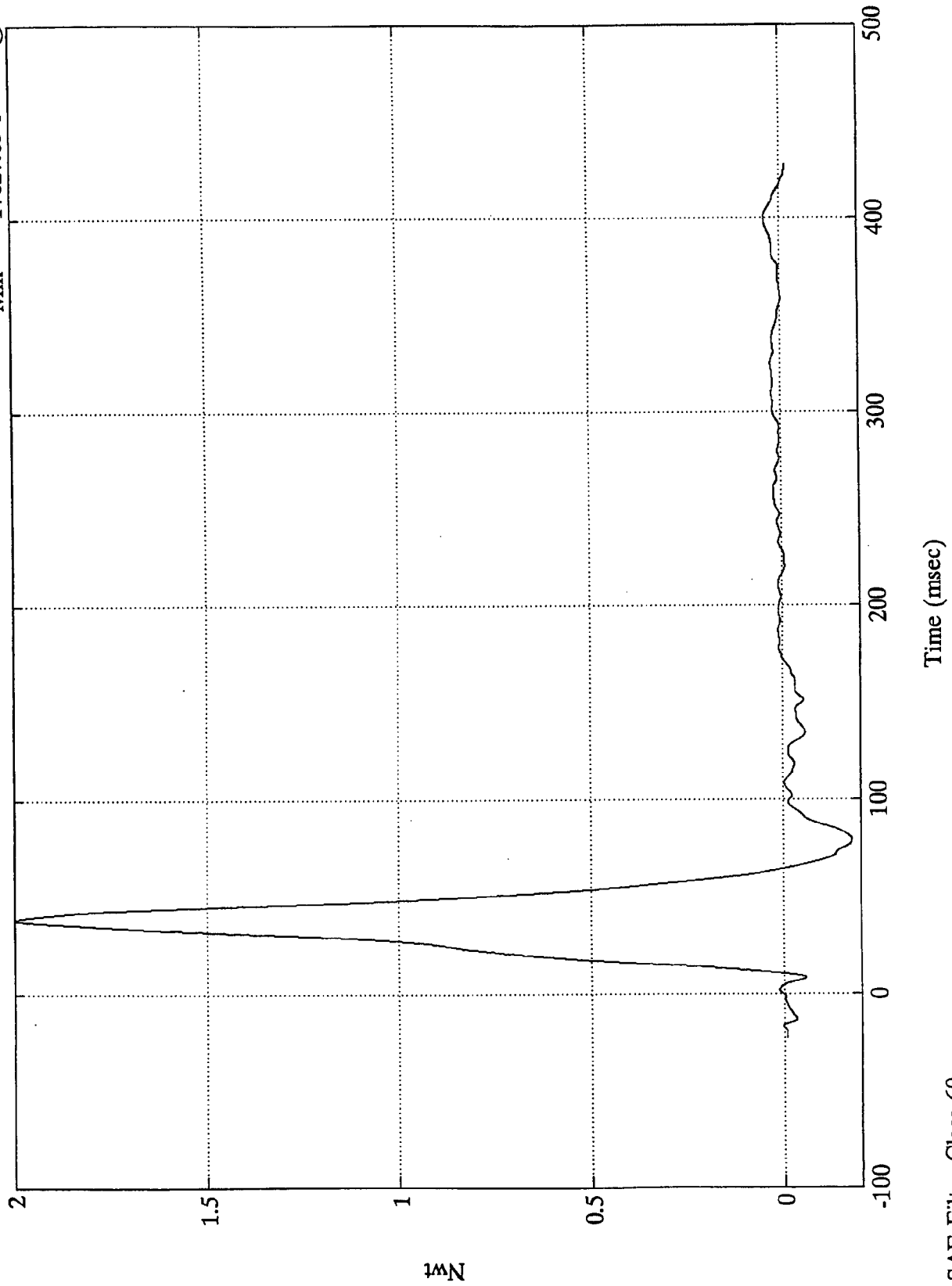
8304-2

VTV TEST #2

$\times 10^5$

MDB Load Cell TL

Max = 199958.48 Nwt @ 39.00 msec
Min = -17627.63 Nwt @ 79.31 msec



Nwt

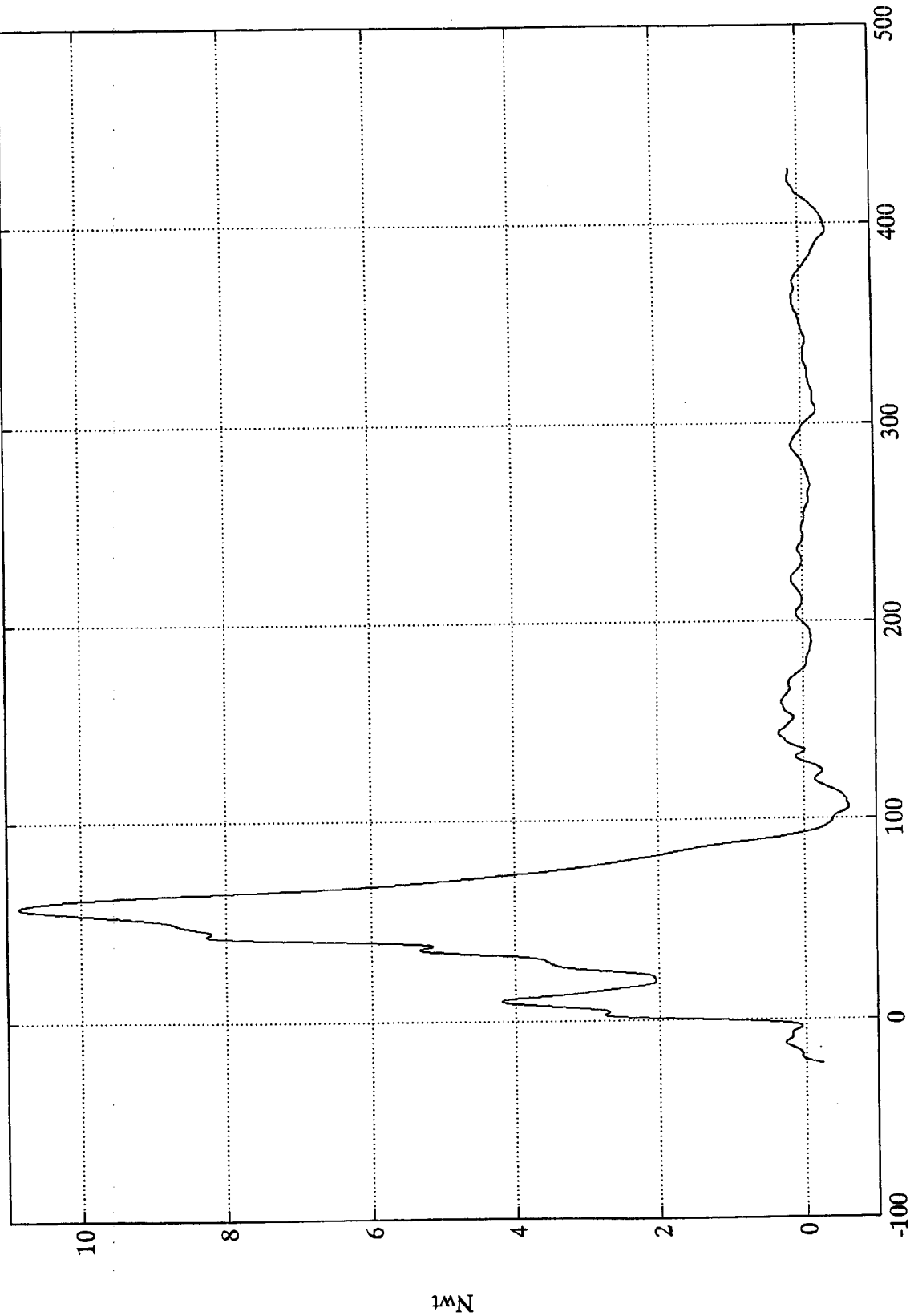
Time (msec)

SAE Filter Class 60

VTV TEST #2
x10⁴

Max = 108525.47 Nwt @ 57.84 msec
Min = -6292.27 Nwt @ 105.72 msec

MDB Load Cell BL



Time (msec)

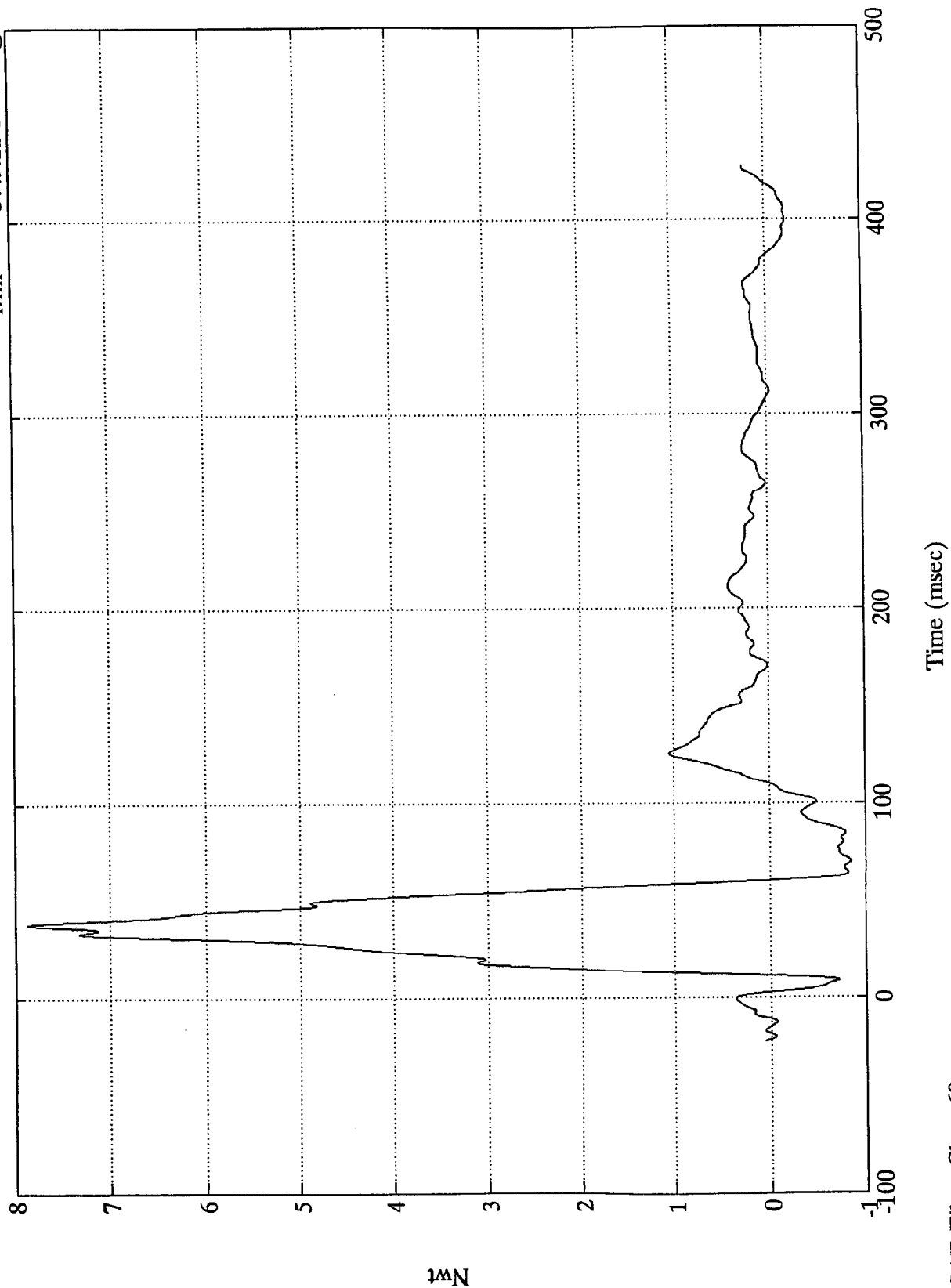
SAE Filter Class 60

Nwt

VTV TEST #2
x10⁴

MDB Load Cell TR

Max = 78714.28 Nwt @ 38.40 msec
Min = -8449.11 Nwt @ 70.44 msec



Nwt

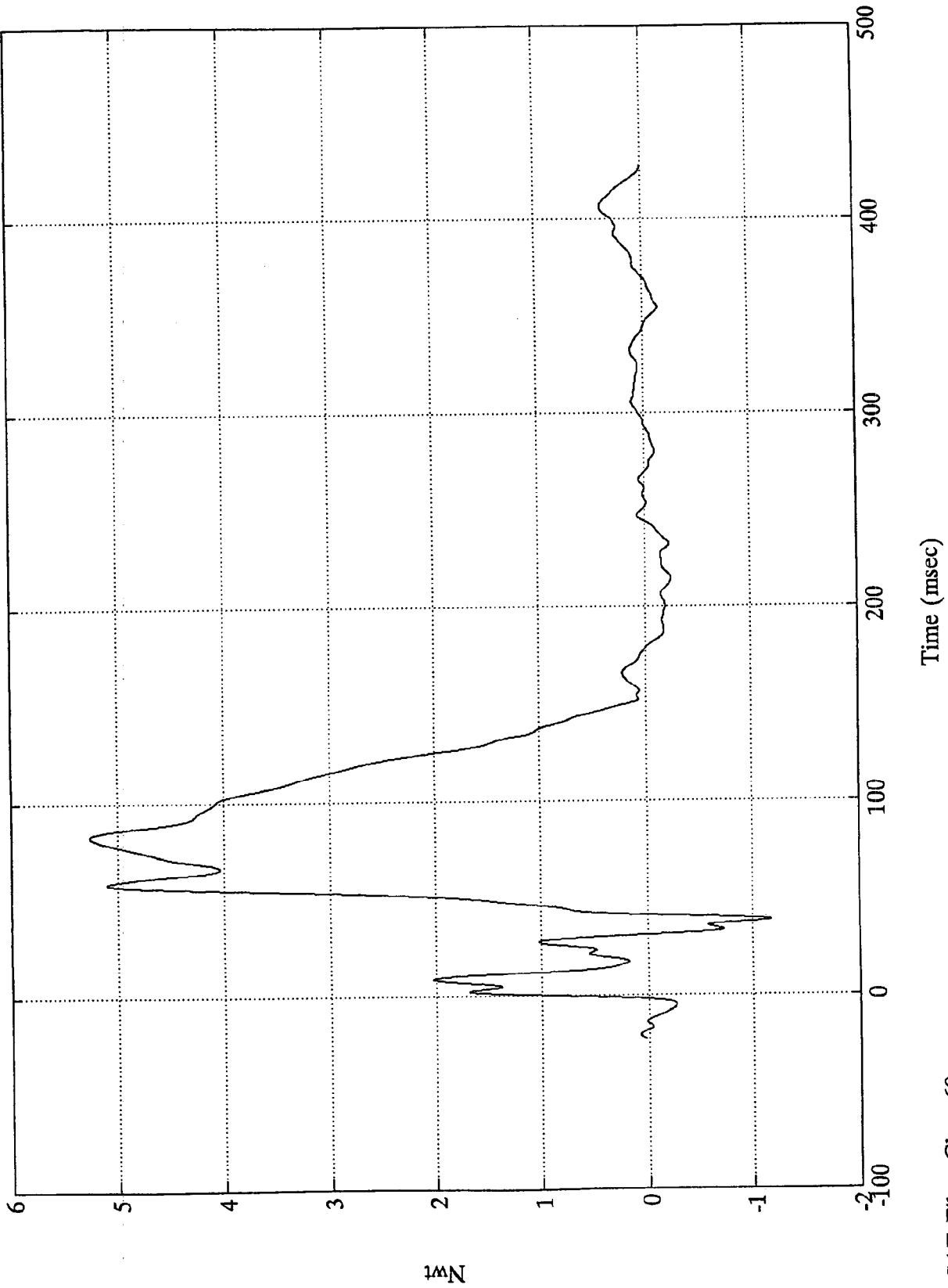
SAE Filter Class 60

VTV TEST #2

$\times 10^4$

Max = 52636.28 Nwt @ 83.04 msec
Min = -11768.51 Nwt @ 38.52 msec

MDB Load Cell BR



SAE Filter Class 60

Nwt

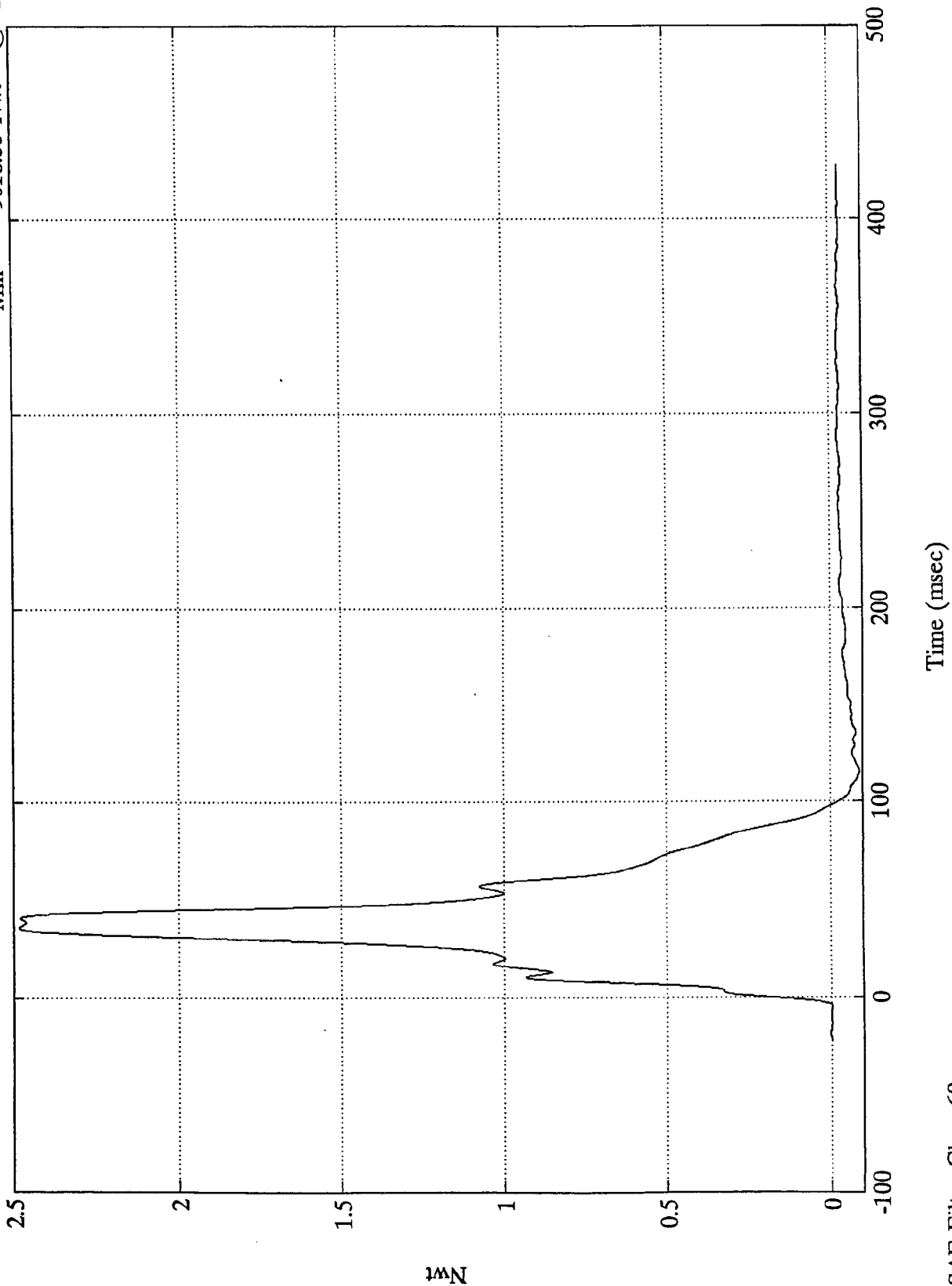
B-124

8304-2

VTV TEST #2
x10⁵

MDB Load Cell CL

Max = 248285.00 Nwt @ 36.00 msec
Min = -9018.35 Nwt @ 115.80 msec



Nwt

B-125

SAE Filter Class 60

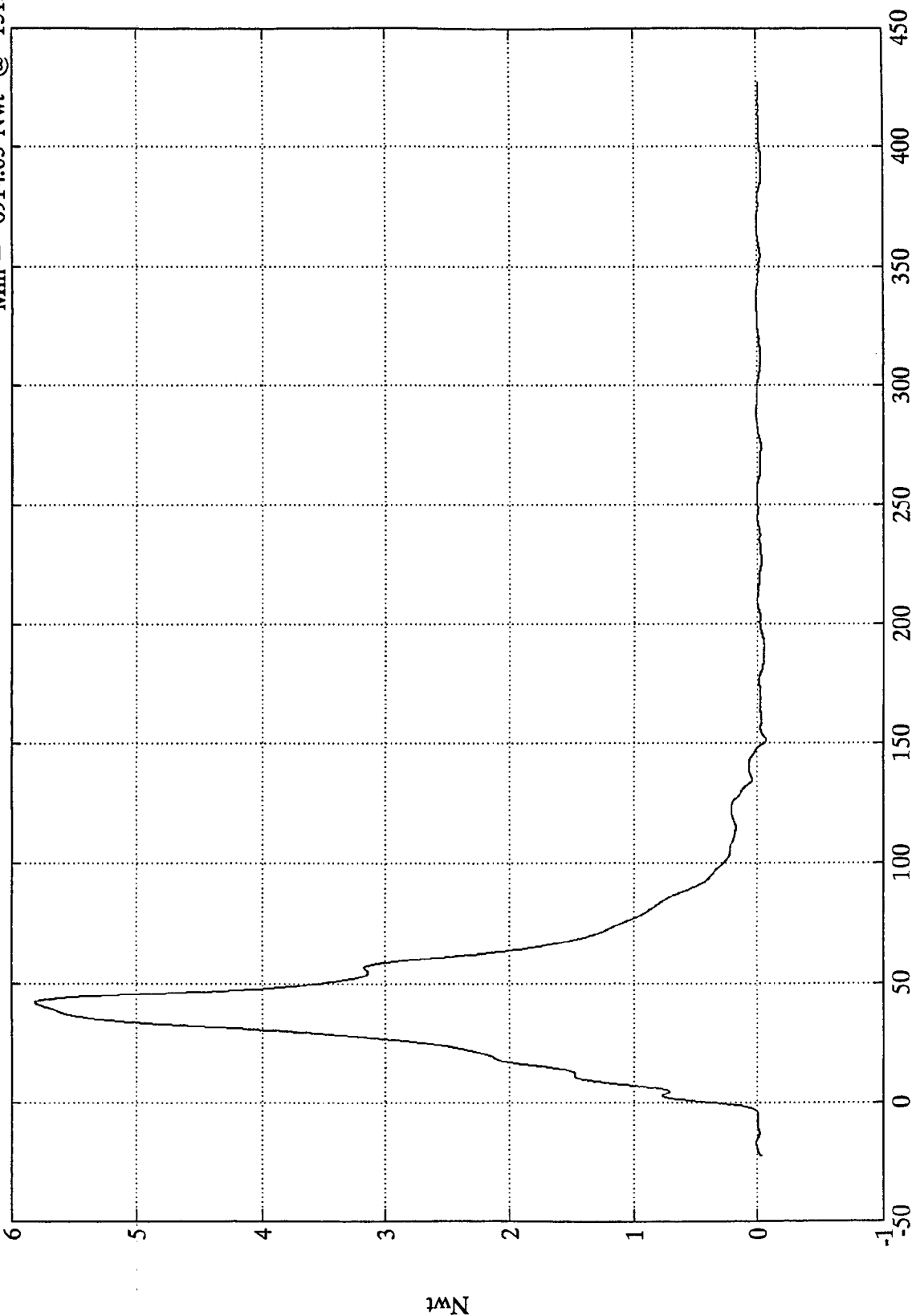
8304-2

VTV TEST #2

$\times 10^5$

MDB Load Cell Sum

Max = 581572.50 Nwt @ 41.76 msec
Min = -6914.03 Nwt @ 151.20 msec



Load Cells (TR,BR,CL,TL,BL)

Time (msec)

SAE Filter Class 60

Nwt

TEST NO. Y57-2-1548

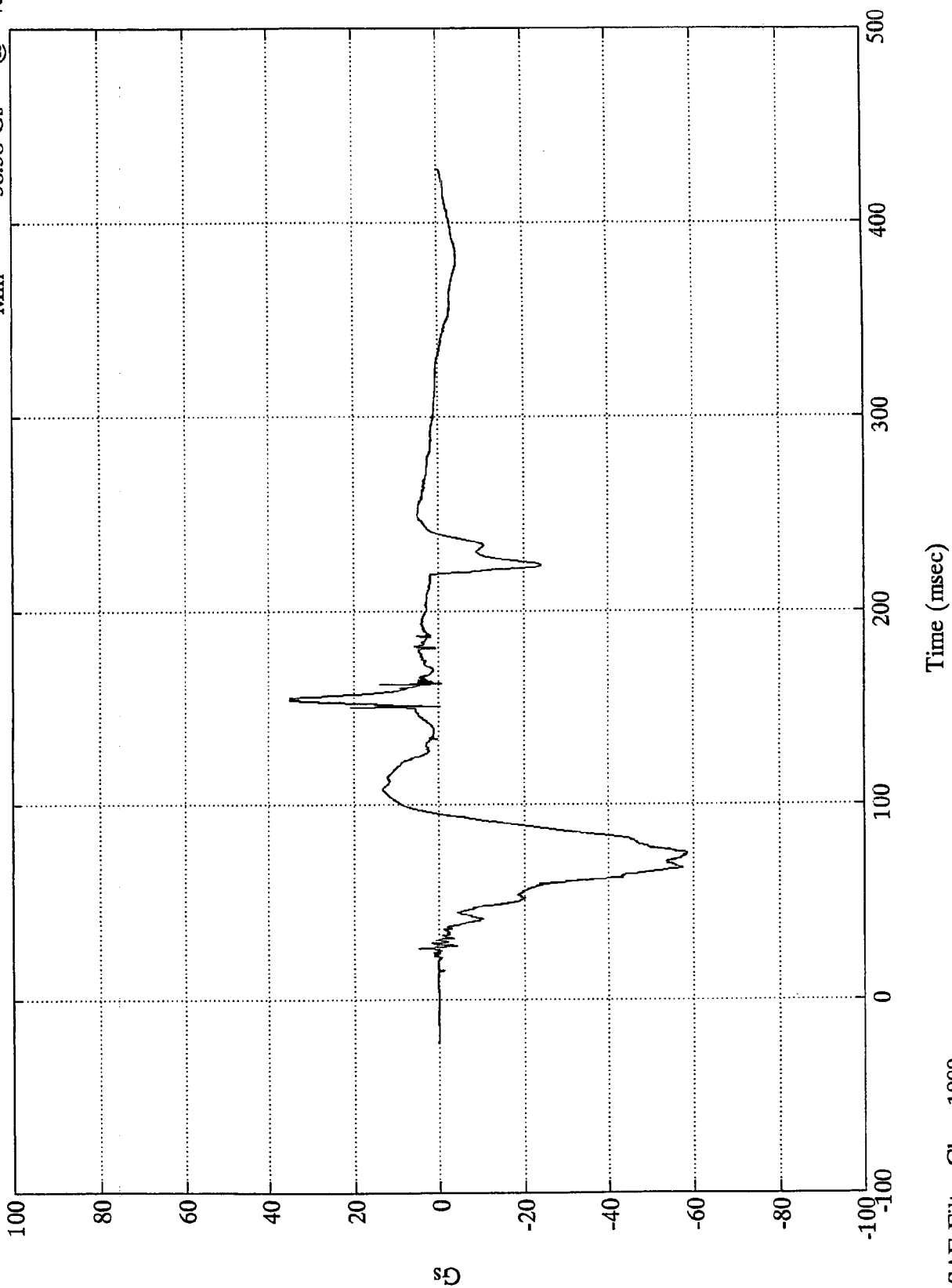
VEHICLE 1 - DUMMY DATA

CHANNEL	SAE FILTER CHANNEL CLASS
Head Accelerations	1000
Chest Accelerations	180
Femur Forces	600
Knee Shear	180
Torso Belt	60
Chest Displacement	180
Neck Forces	1000
Neck Moments	600
Tibia Forces, Moments	600

VTV TEST #2

P1 Head X

Max = 35.12 Gs @ 154.80 msec
Min = -58.38 Gs @ 75.47 msec

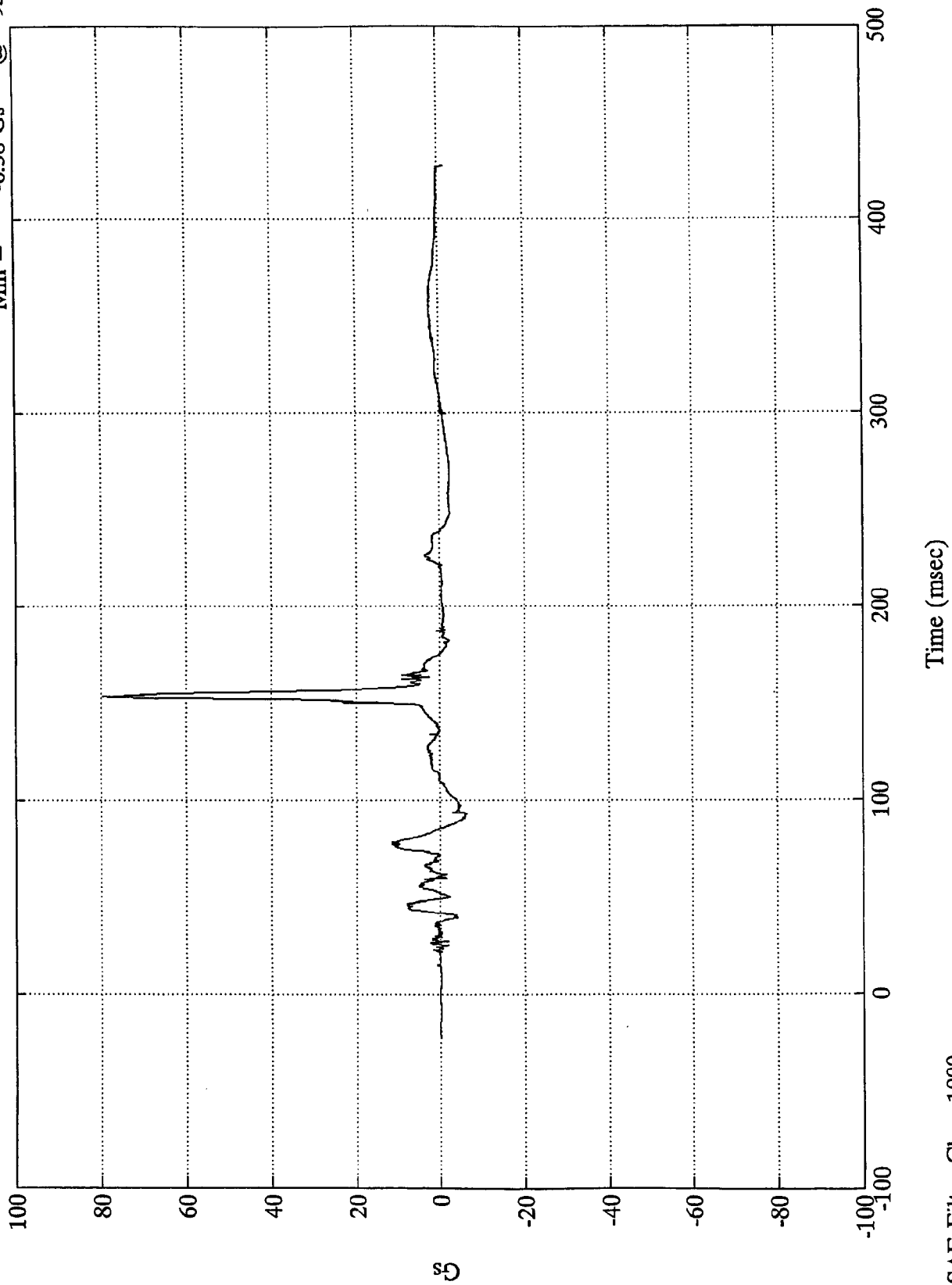


SAE Filter Class 1000

VTV TEST #2

P1 Head Y

Max = 79.51 Gs @ 153.36 msec
Min = -6.38 Gs @ 93.36 msec

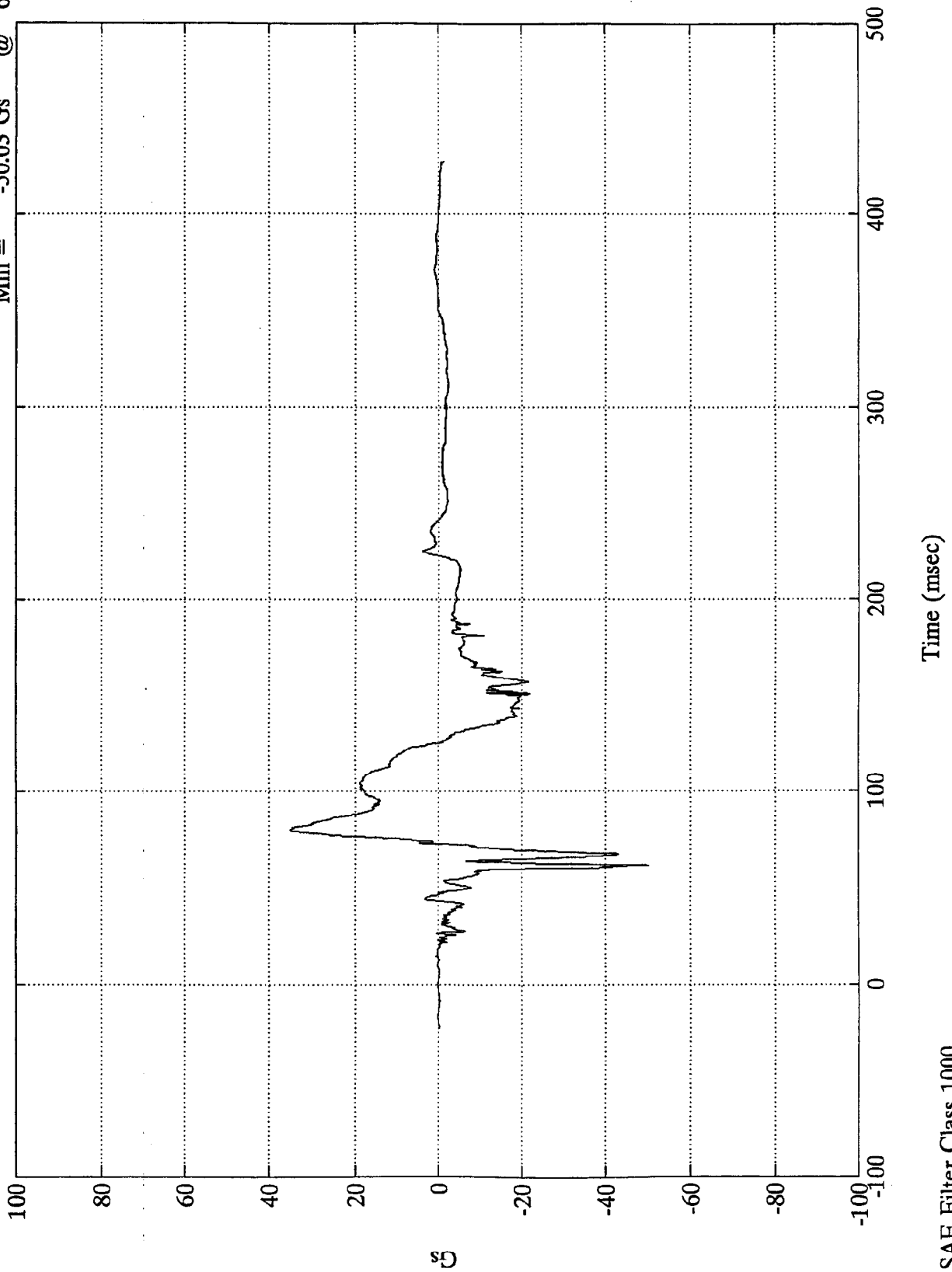


SAE Filter Class 1000

VTV TEST #2

Max = 35.16 Gs @ 80.15 msec
Min = -50.03 Gs @ 61.92 msec

P1 Head Z

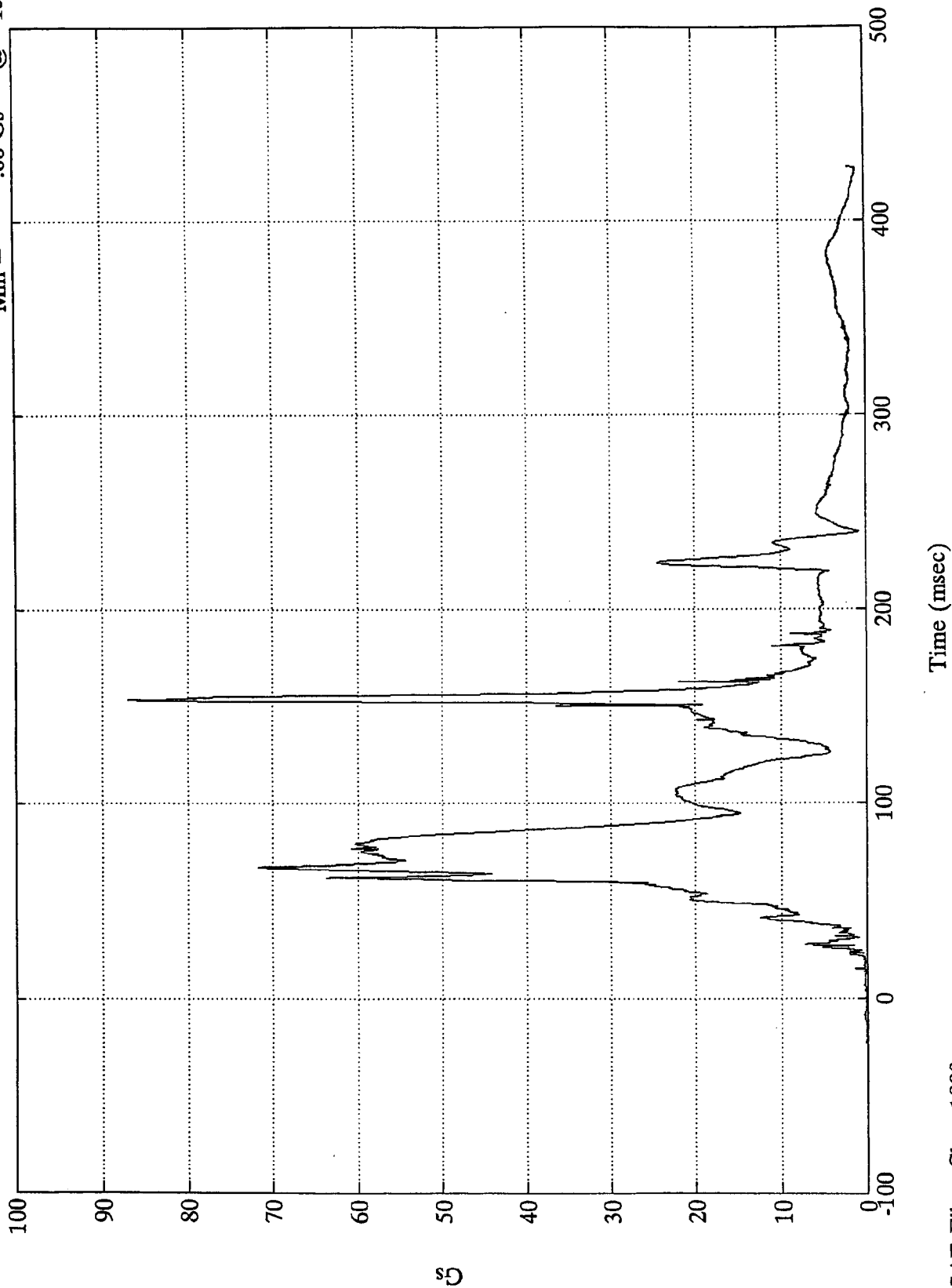


Gs

VTV TEST #2

P1 Head Resultant

Max = 86.89 Gs @ 153.36 msec
Min = .06 Gs @ 15.00 msec

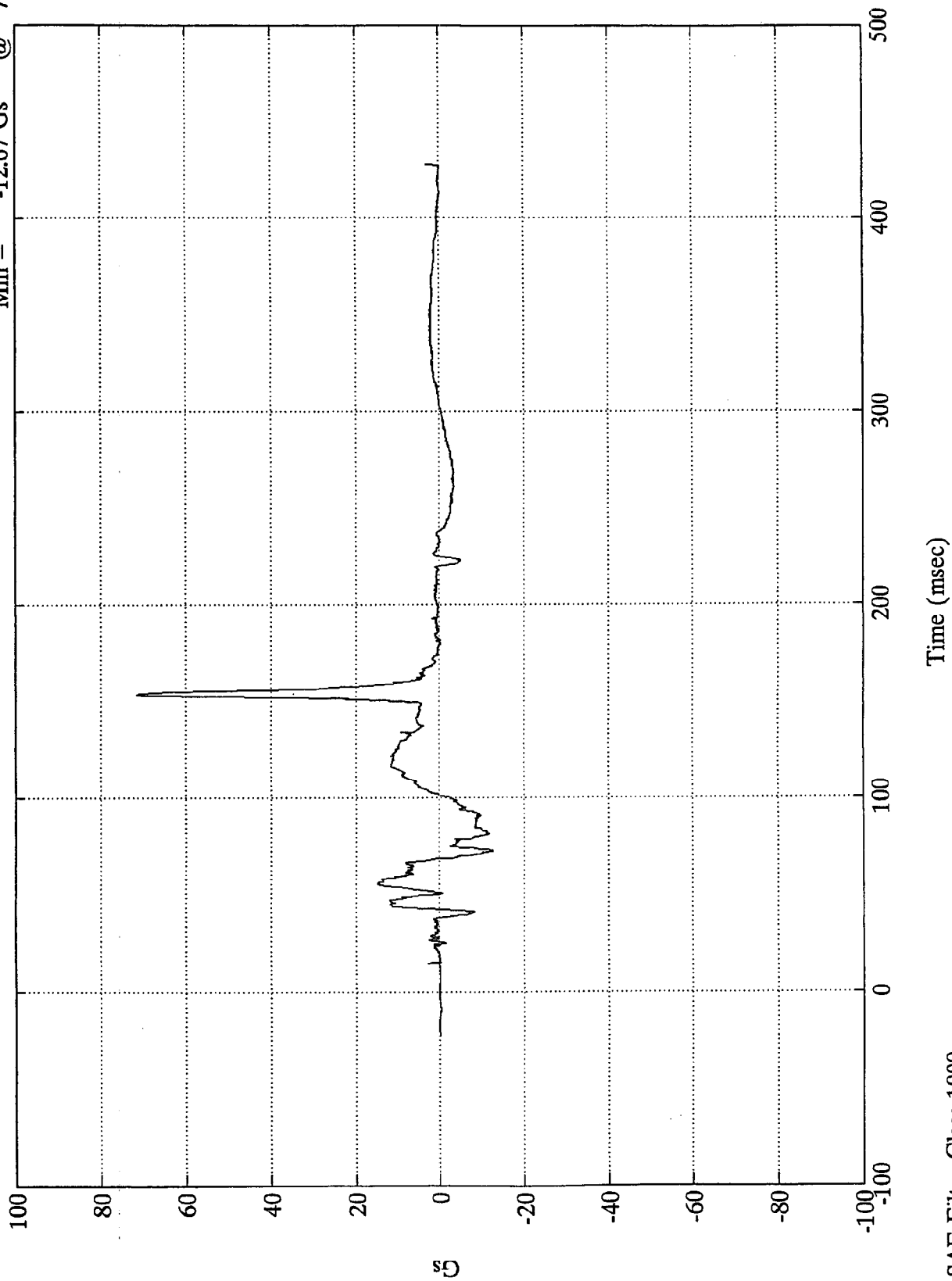


SAE Filter Class 1000

VTV TEST #2

Max = 71.31 Gs @ 153.72 msec
Min = -12.67 Gs @ 72.72 msec

P1 HD9X (Y)

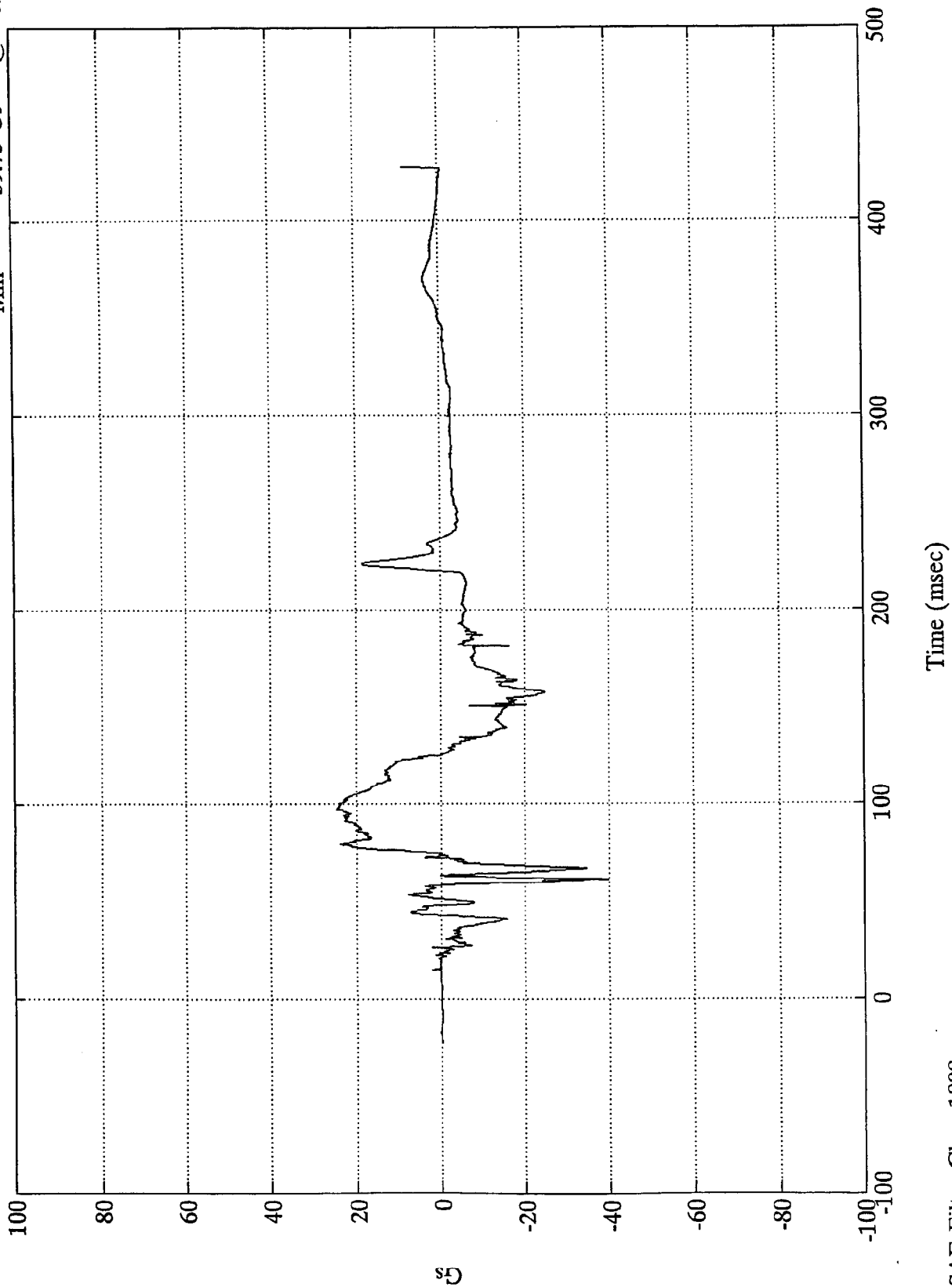


SAE Filter Class 1000

VTV TEST #2

P1 HD9X (Z)

Max = 24.72 Gs @ 97.56 msec
Min = -39.73 Gs @ 61.80 msec

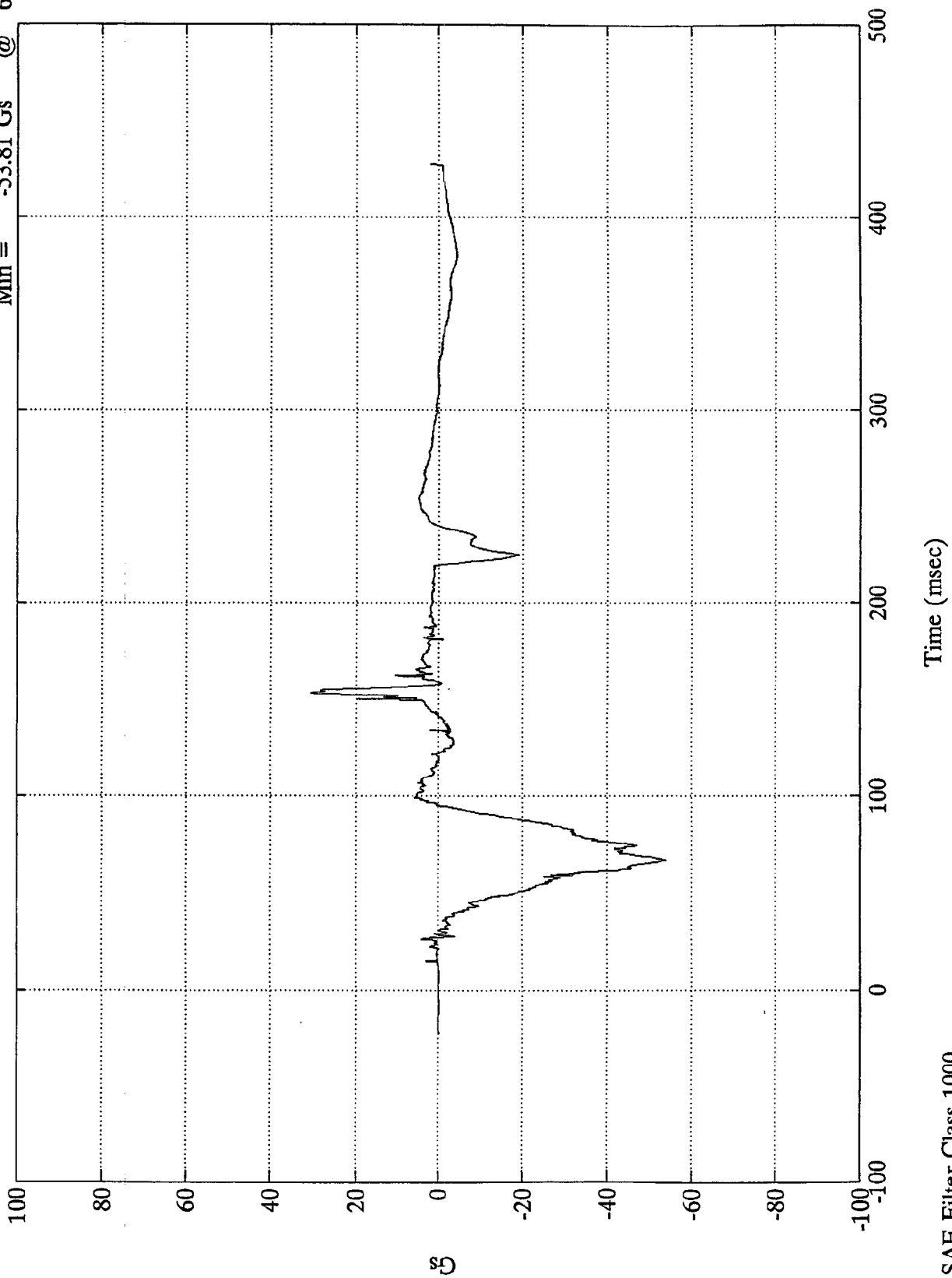


SAE Filter Class 1000

VTV TEST #2

P1 HD9Y (X)

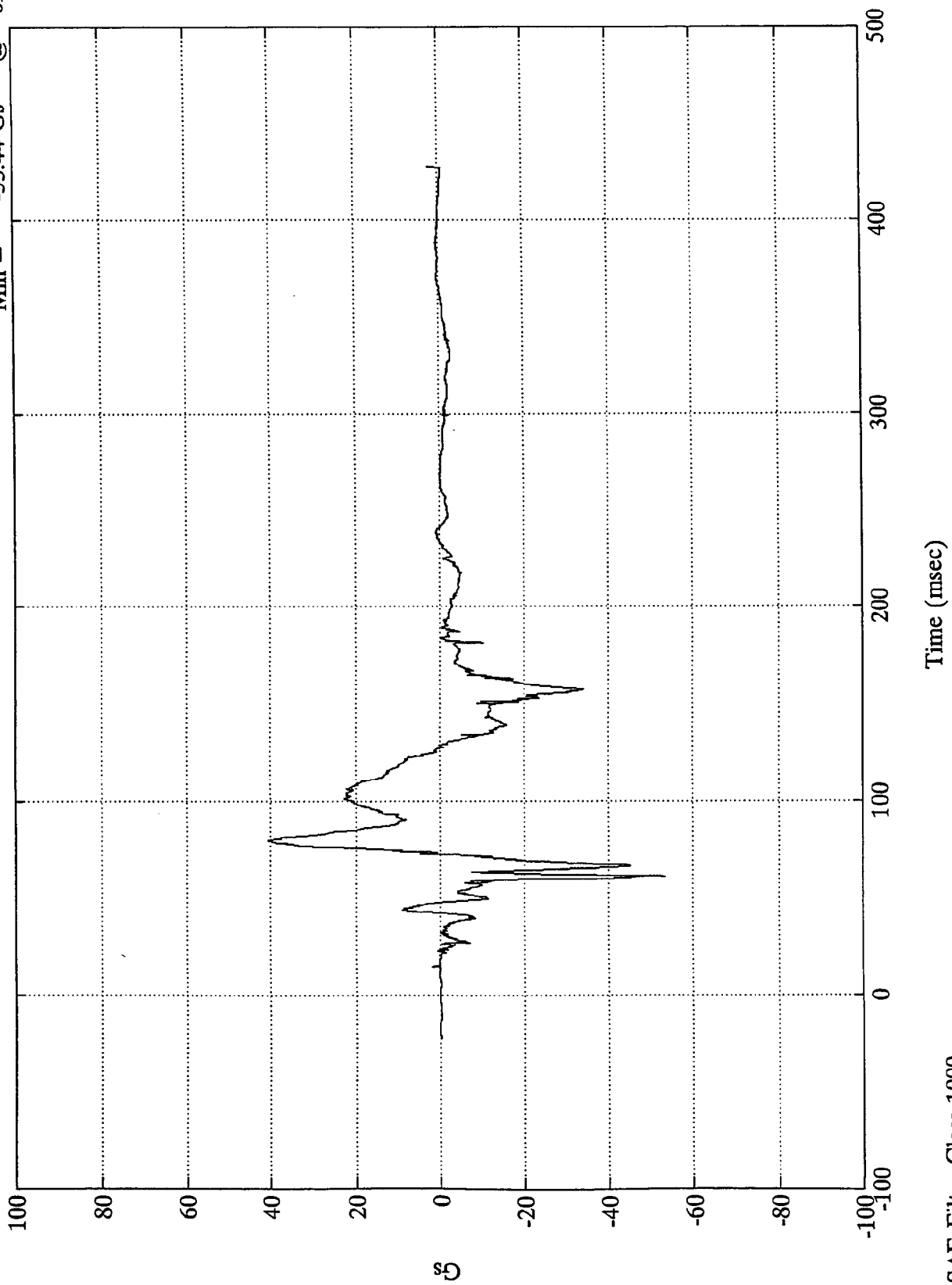
Max = 30.68 Gs @ 153.12 msec
Min = -53.81 Gs @ 67.32 msec



VTV TEST #2

P1 HD9Y (Z)

Max = 40.62 Gs @ 80.28 msec
Min = -53.44 Gs @ 61.92 msec

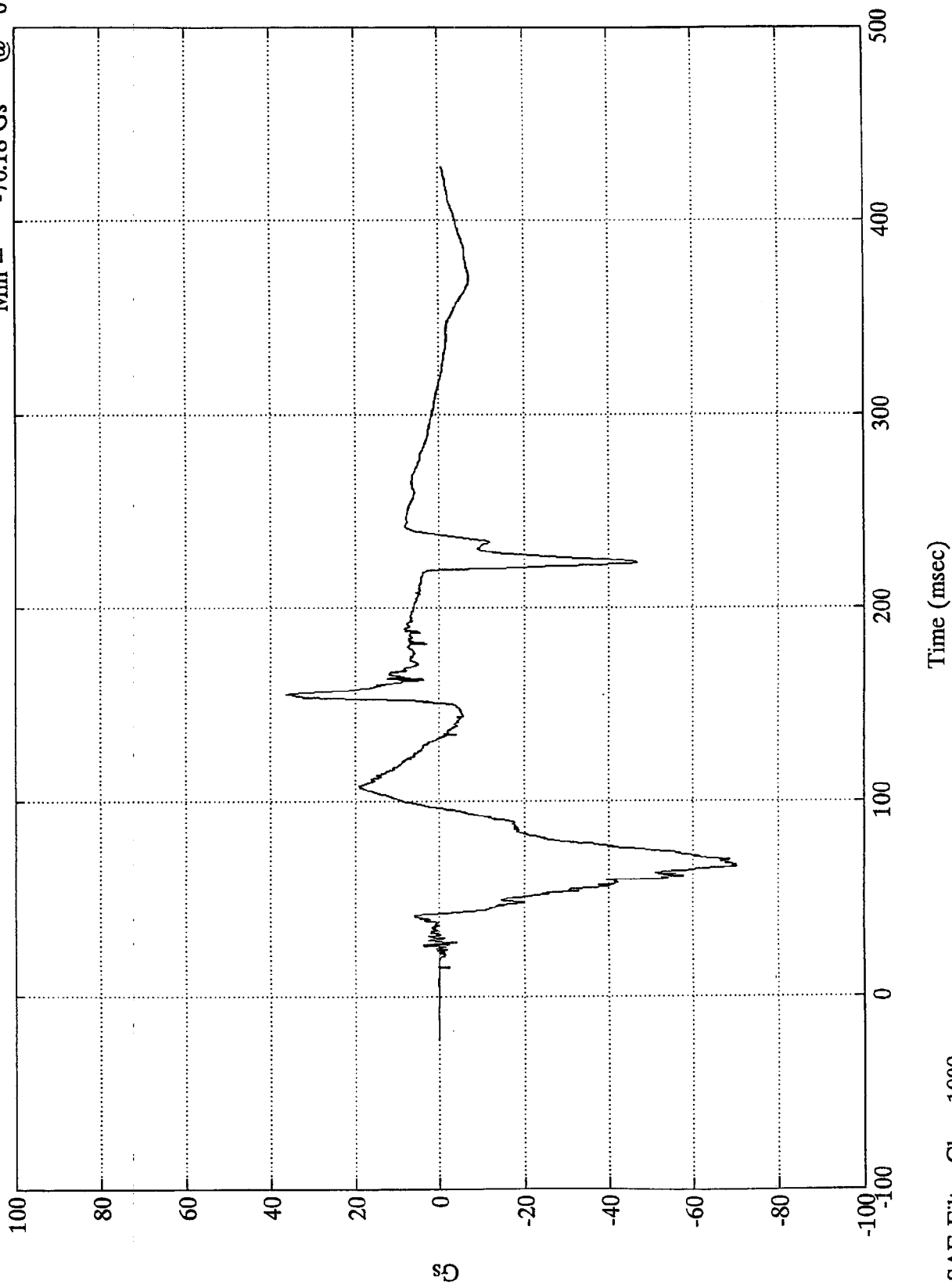


SAE Filter Class 1000

VTV TEST #2

P1 HD9Z (X)

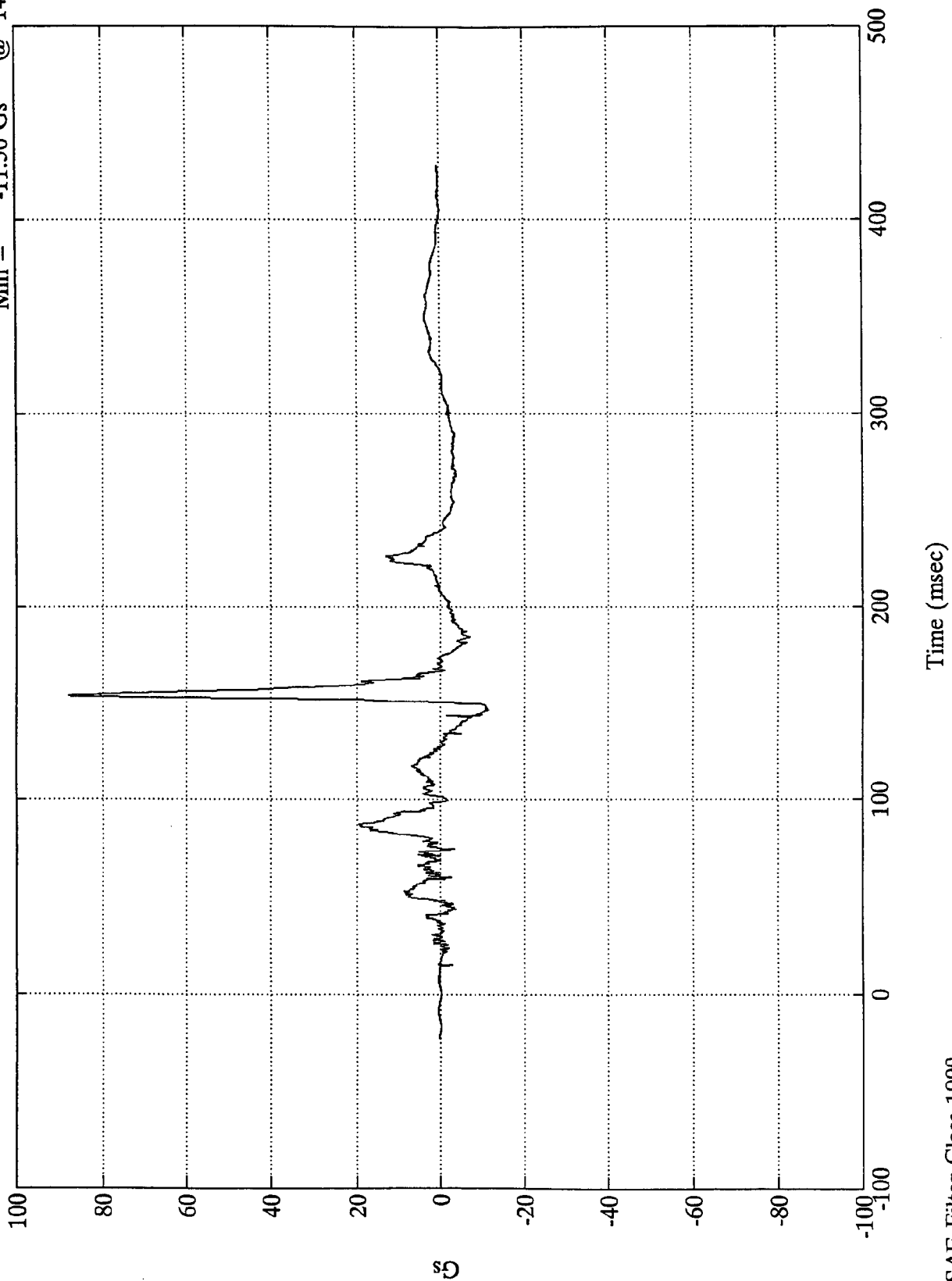
Max = 36.22 Gs @ 154.55 msec
Min = -70.18 Gs @ 67.32 msec



VTV TEST #2

Max = 87.89 Gs @ 153.72 msec
Min = -11.50 Gs @ 146.27 msec

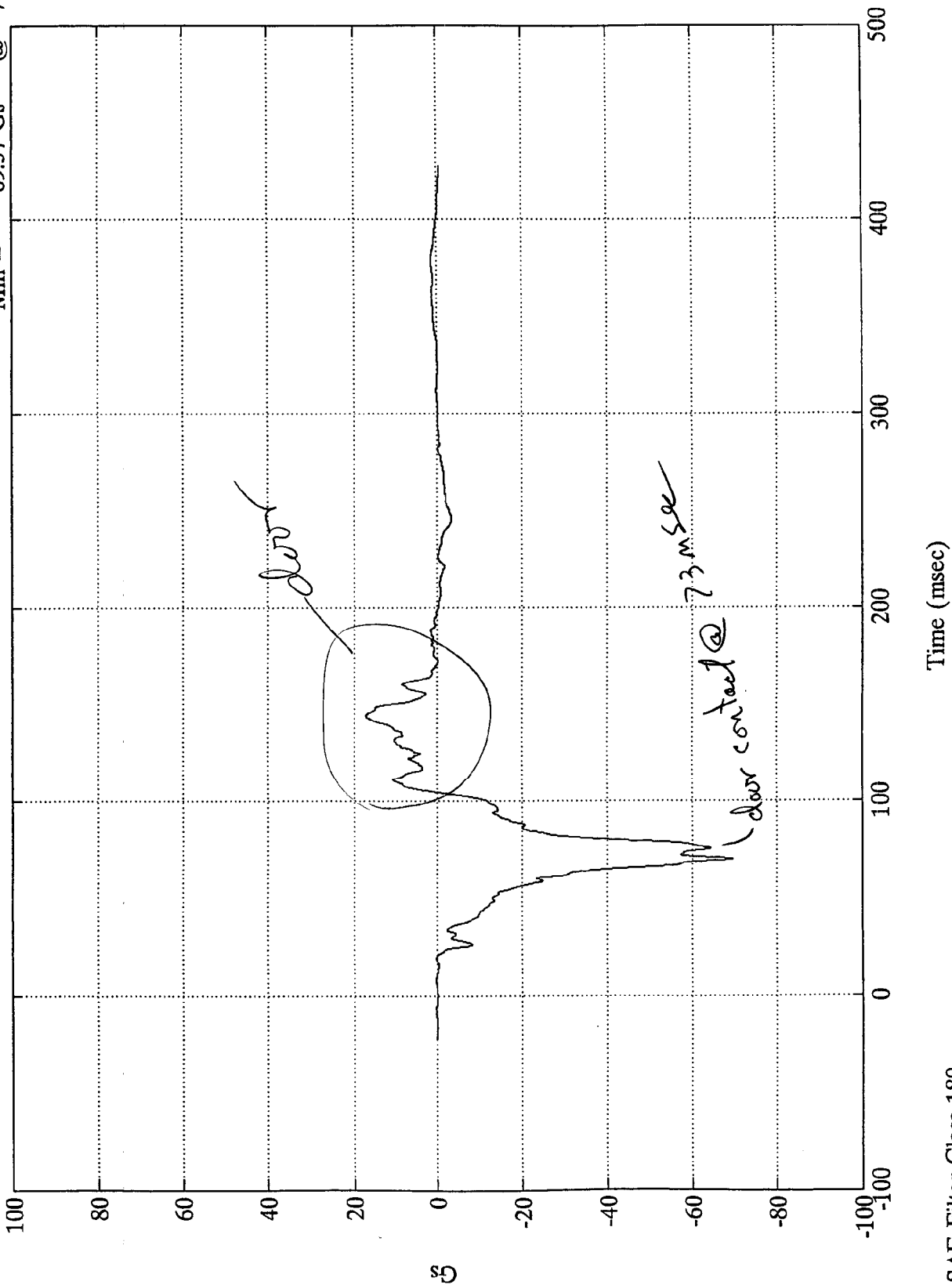
P1 HD9Z (Y)



SAE Filter Class 1000

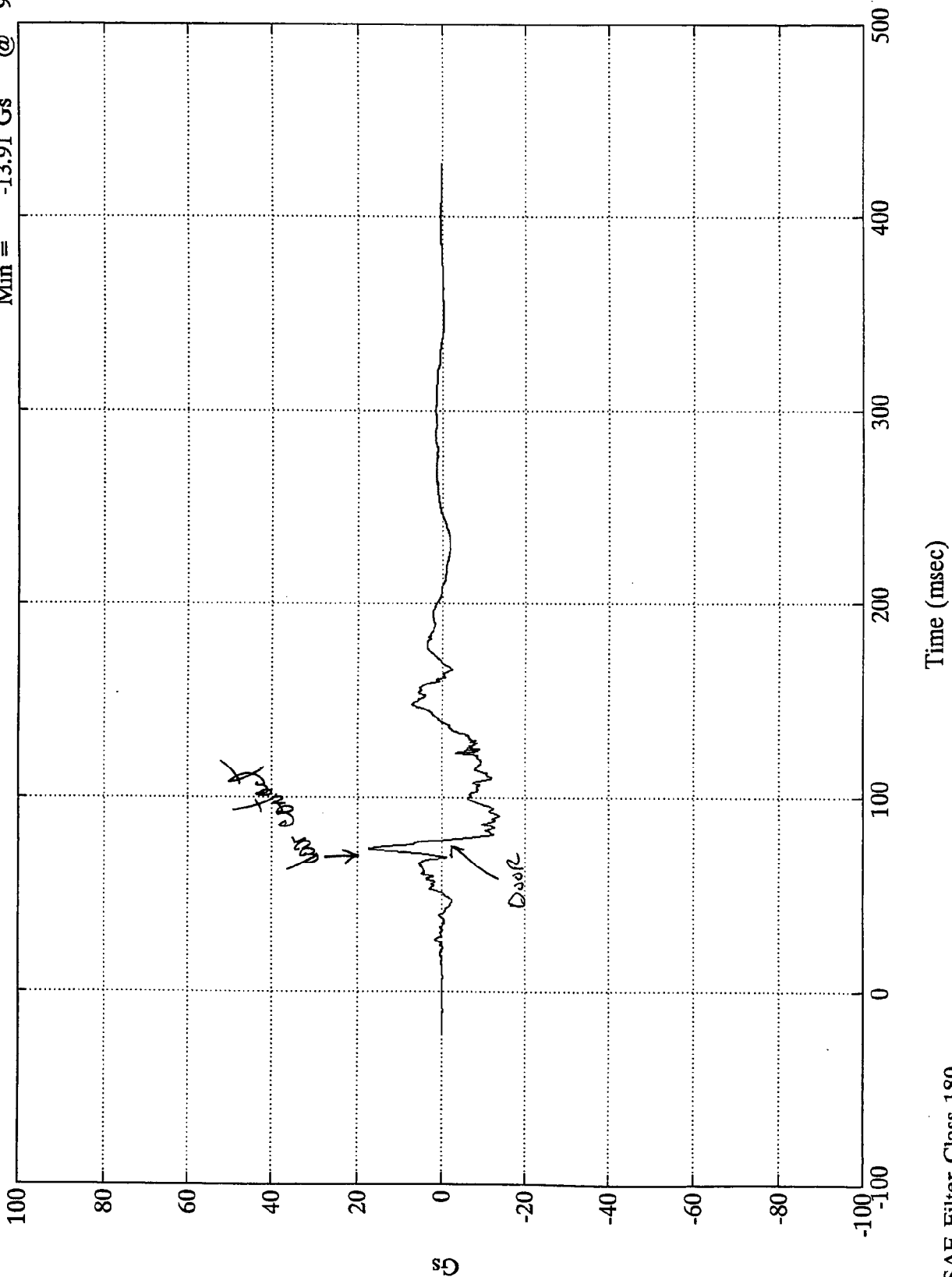
VTV TEST #2

P1 Chest X
 Max = 17.14 Gs @ 144.12 msec
 Min = -69.57 Gs @ 70.20 msec



VTV TEST #2

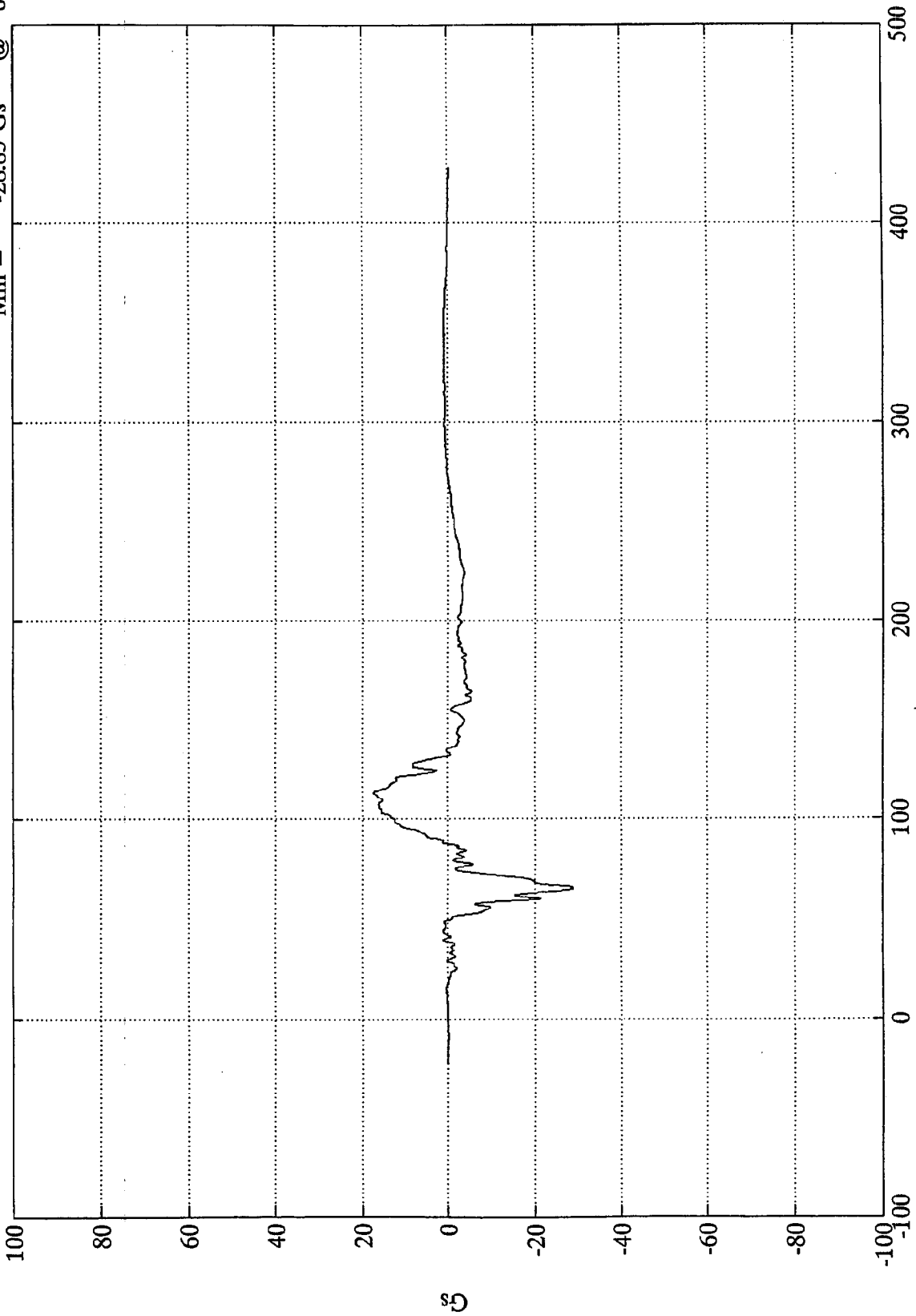
P1 Chest Y
Max = 17.39 Gs @ 74.27 msec
Min = -13.91 Gs @ 90.84 msec



VTV TEST #2

Max = 17.38 Gs @ 113.16 msec
Min = -28.85 Gs @ 65.63 msec

P1 Chest Z



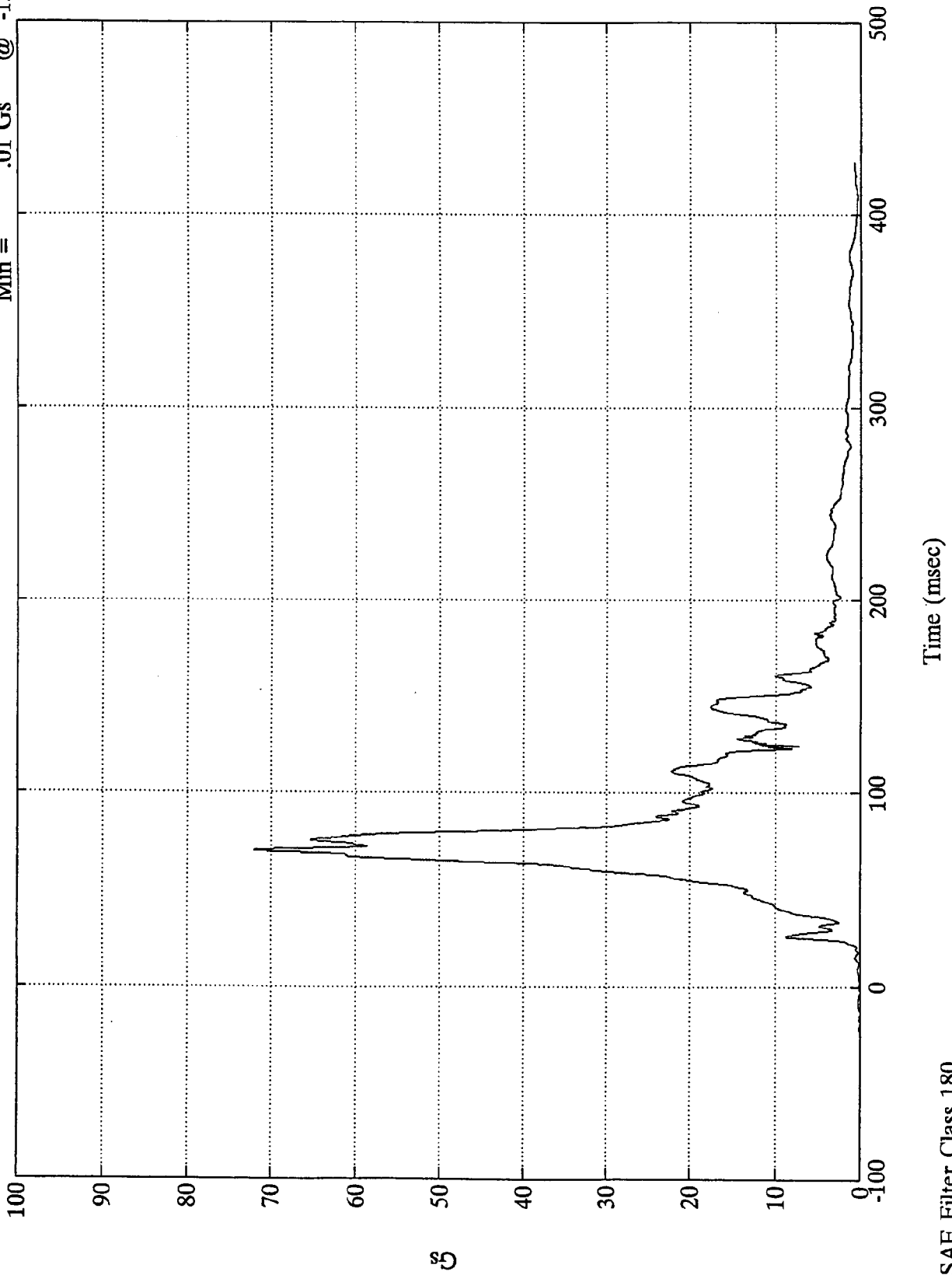
Time (msec)

SAE Filter Class 180

VTV TEST #2

P1 Chest Resultant

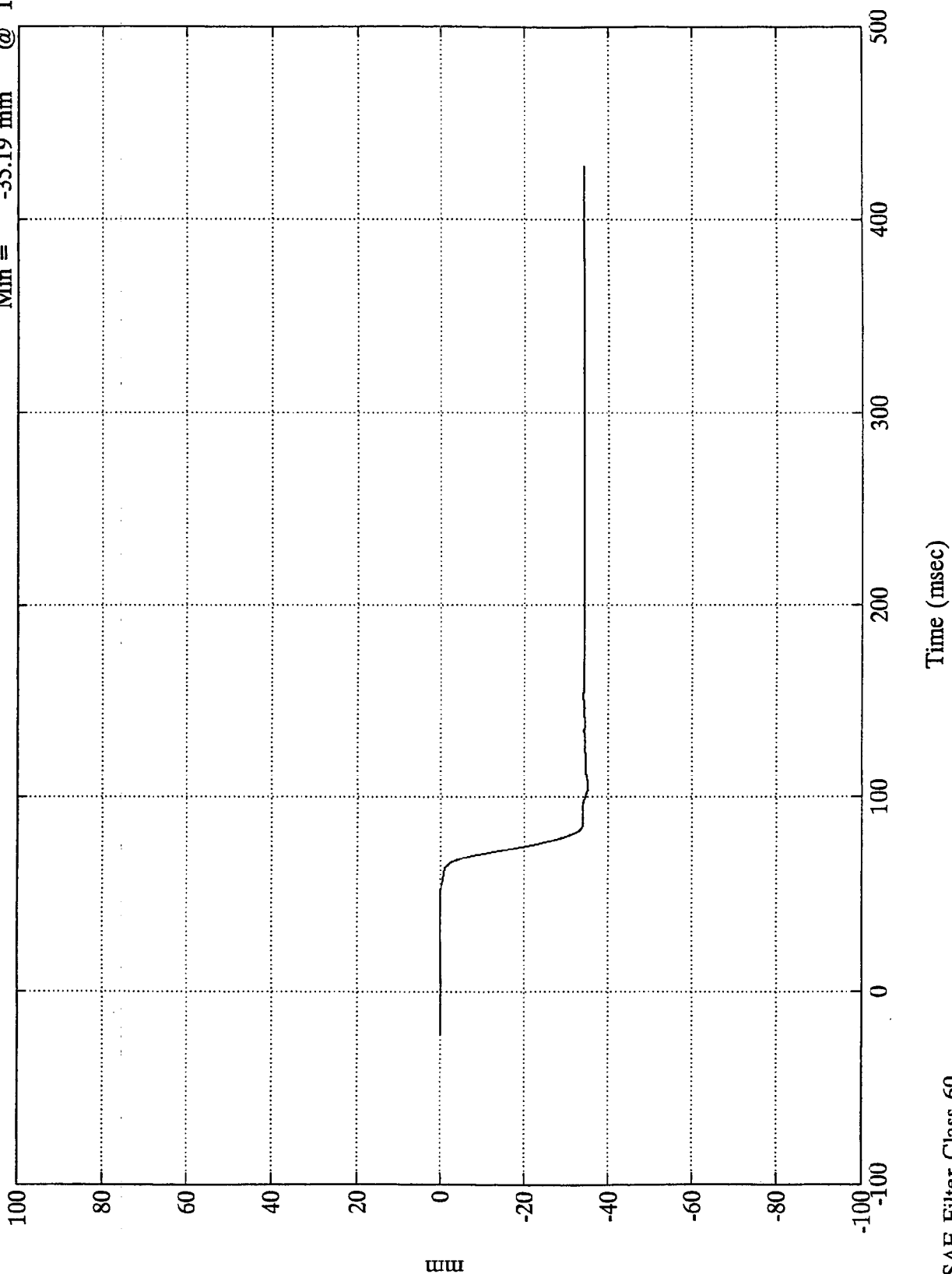
Max = 72.05 Gs @ 70.20 msec
Min = .01 Gs @ -13.92 msec



SAE Filter Class 180

VTV TEST #2

P1 Chest Disp. Max = .08 mm @ 43.31 msec
Min = -35.19 mm @ 105.84 msec

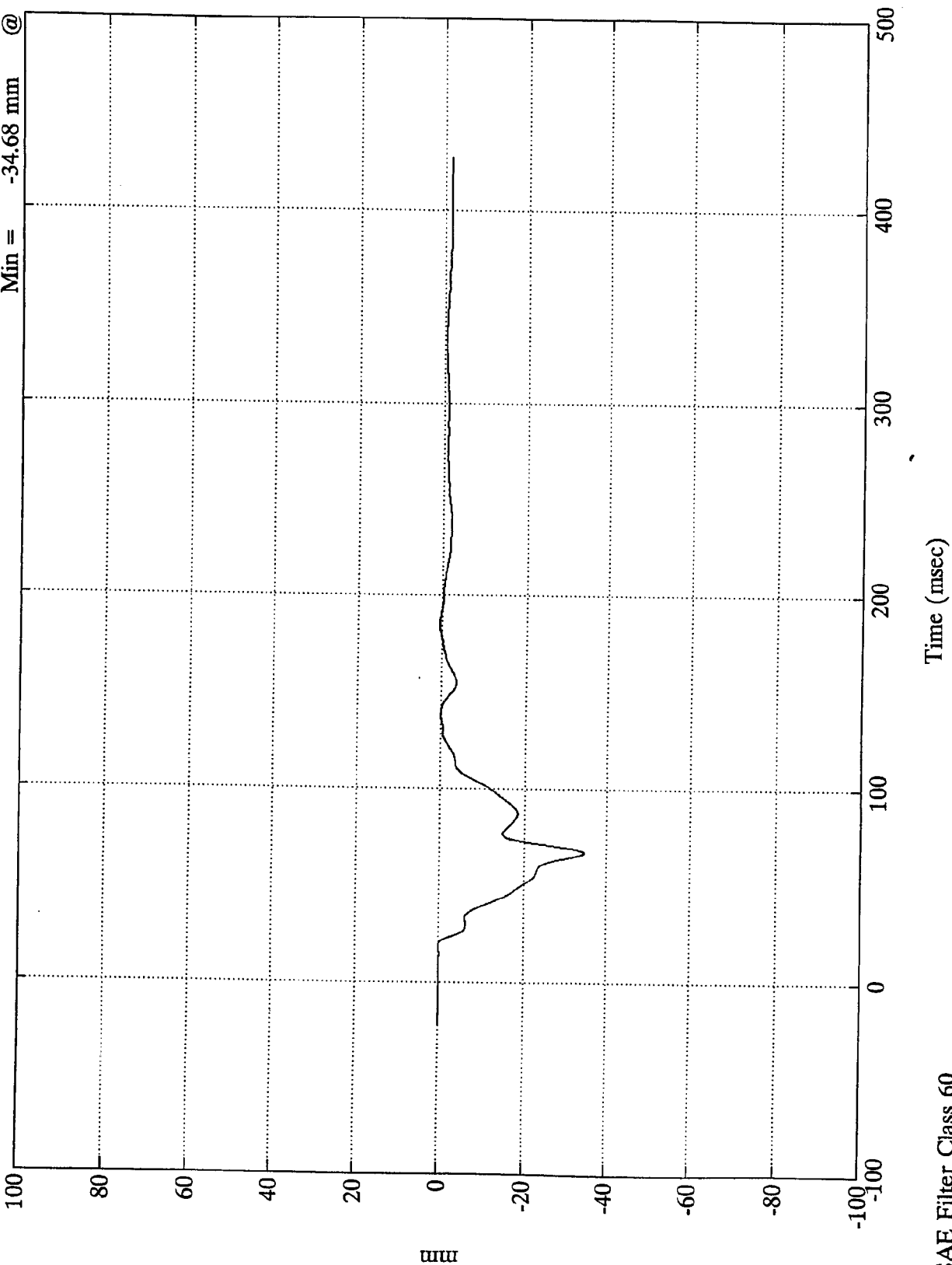


SAE Filter Class 60

VTV TEST #2

Chest Displacement #125

Max = .44 mm @ 185.04 msec
Min = -34.68 mm @ 67.68 msec

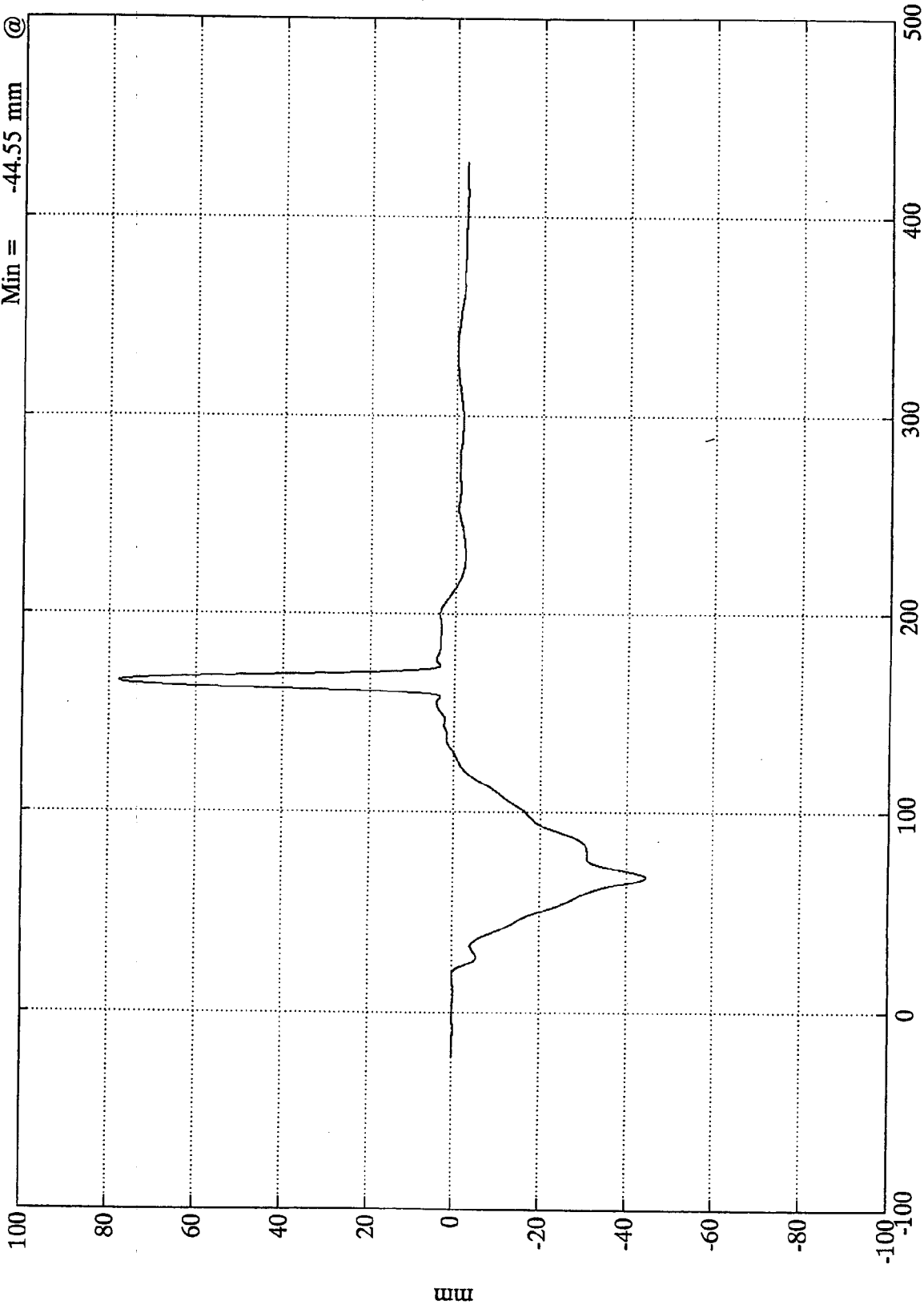


mm

VTV TEST #2

Chest Displacement #126

Max = 77.59 mm @ 165.83 msec
 Min = -44.55 mm @ 67.91 msec



SAE Filter Class 60

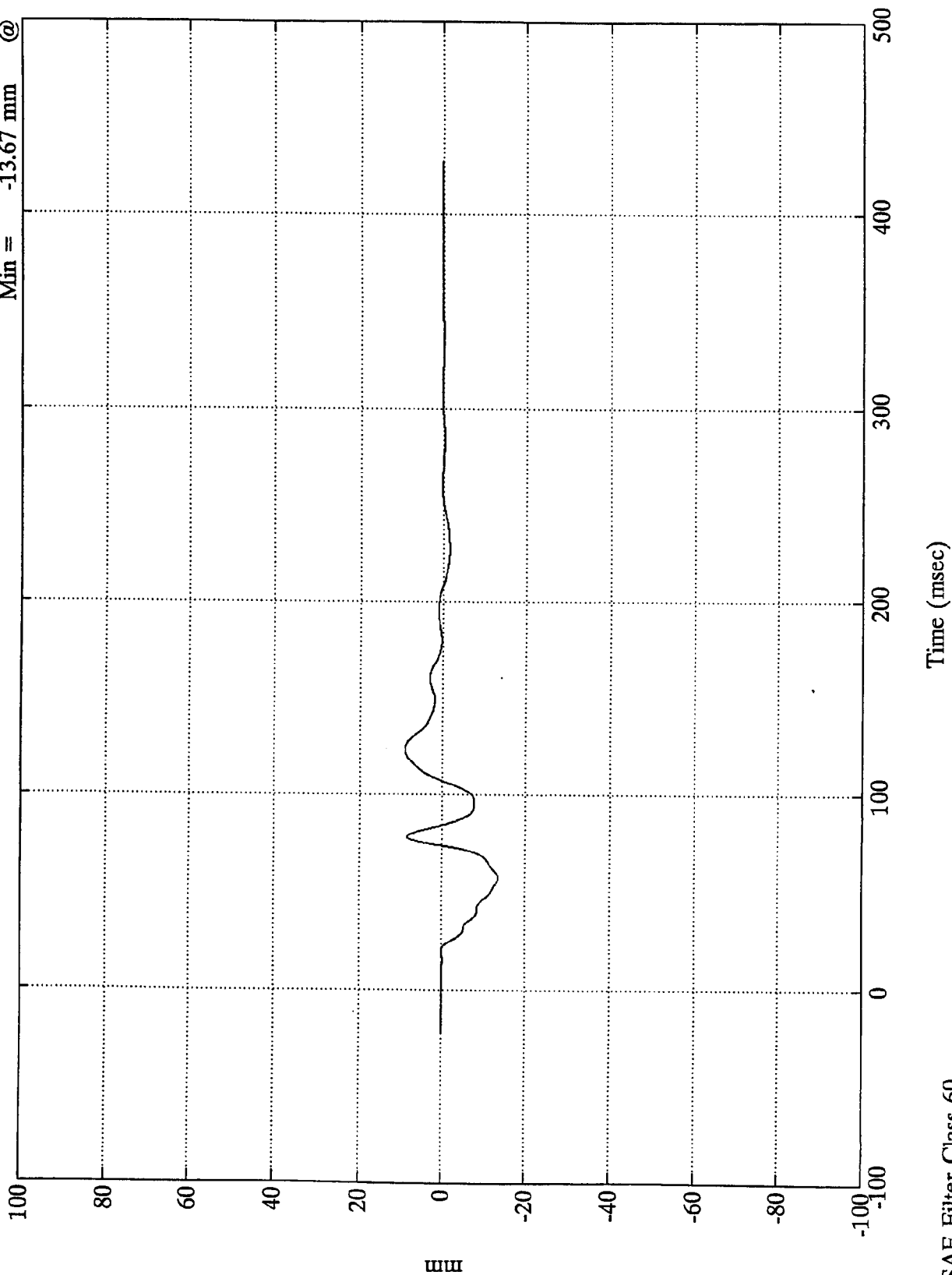
Time (msec)

The potentiometer opened from approximately 160 msec to 170 msec, the data in this region is questionable.

VTV TEST #2

Chest Displacement #127

Max = 9.05 mm @ 123.36 msec
Min = -13.67 mm @ 57.47 msec



mm

B-145

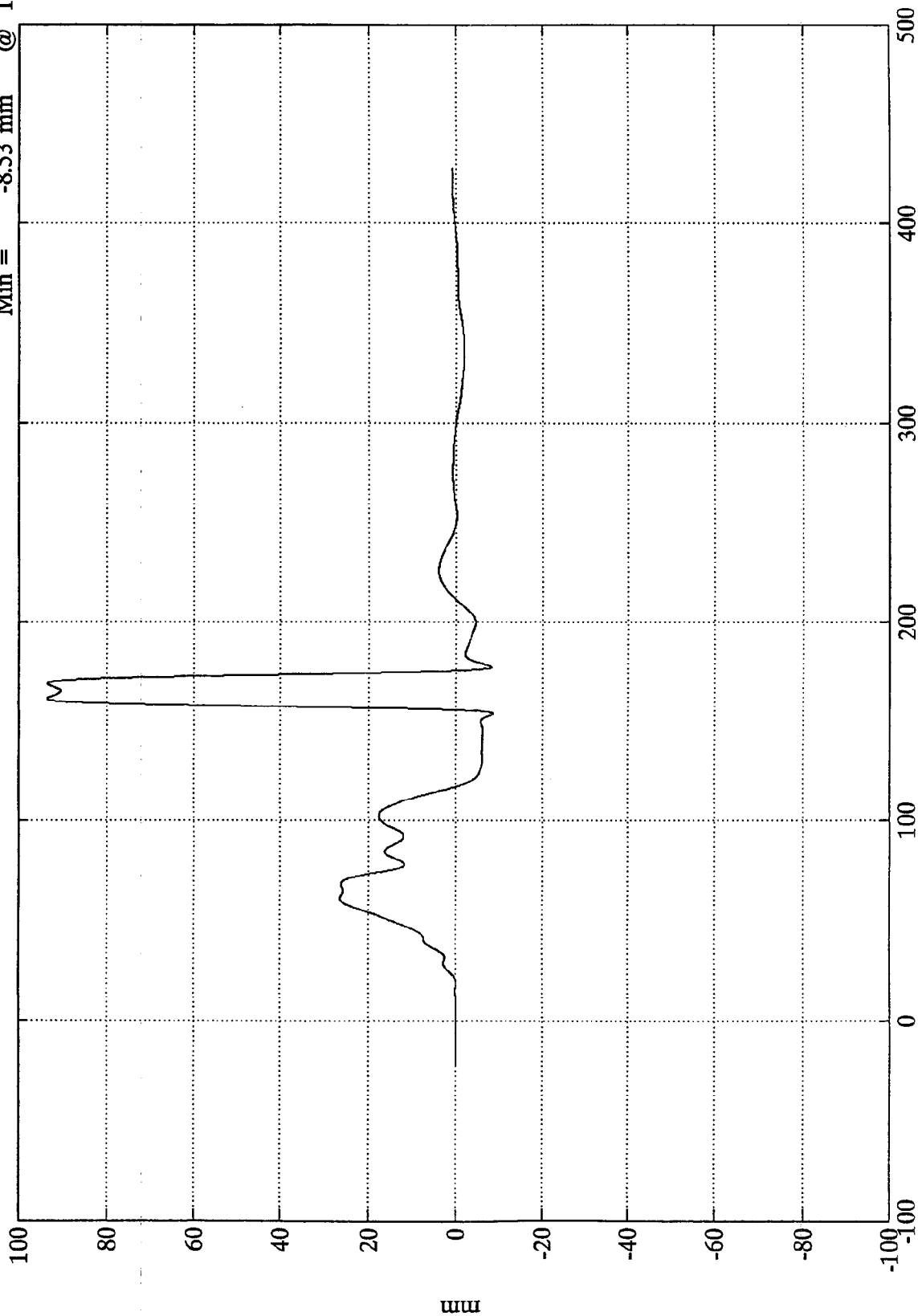
8304-2

SAE Filter Class 60

VTV TEST #2

Chest Displacement #128

Max = 93.40 mm @ 161.63 msec
Min = -8.53 mm @ 153.48 msec



SAE Filter Class 60

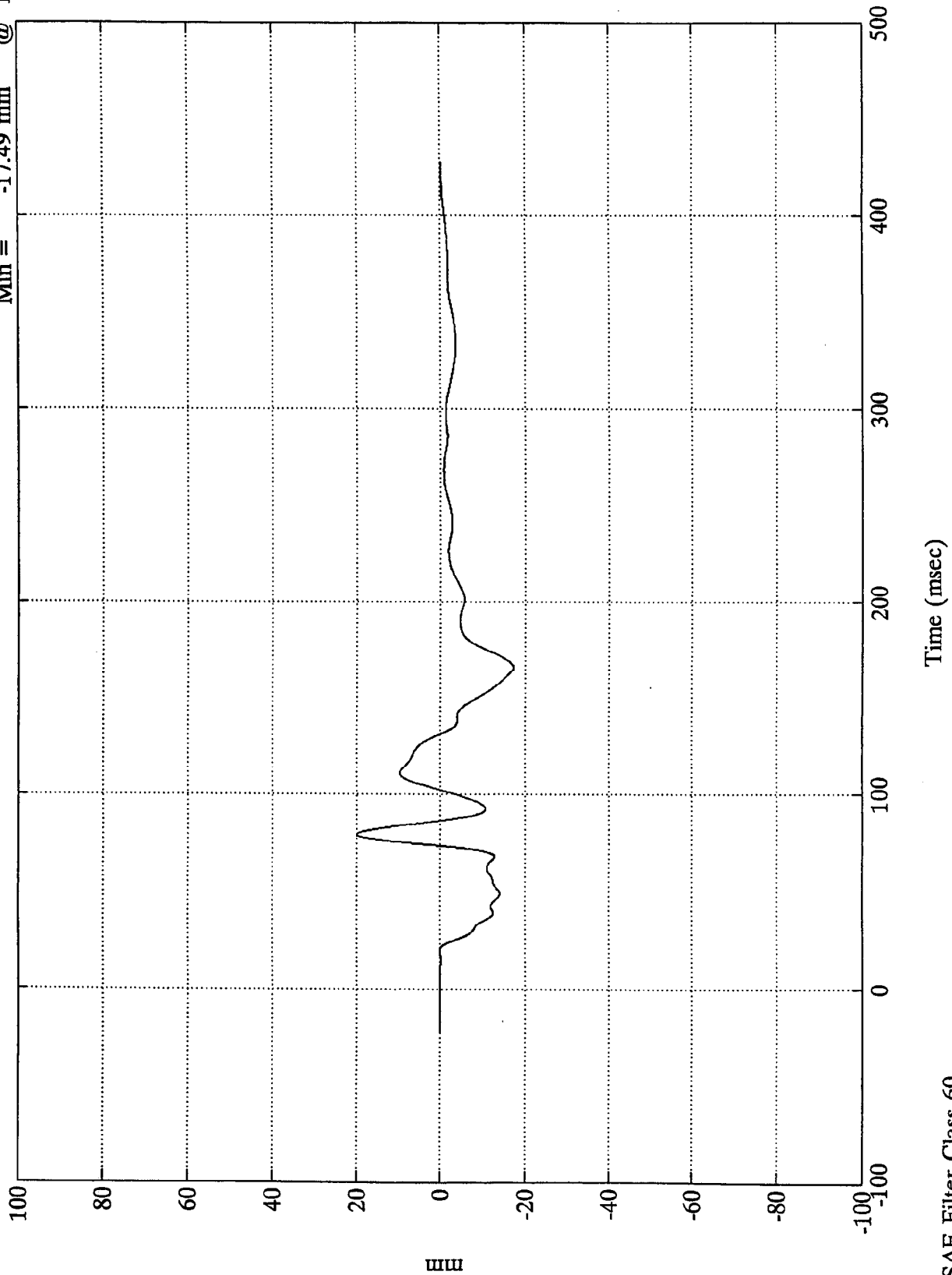
Time (msec)

The potentiometer opened from approximately 157 msec to 174 msec, the data in this region is questionable.

VTV TEST #2

Chest Displacement #129

Max = 20.04 mm @ 79.44 msec
Min = -17.49 mm @ 165.95 msec



mm

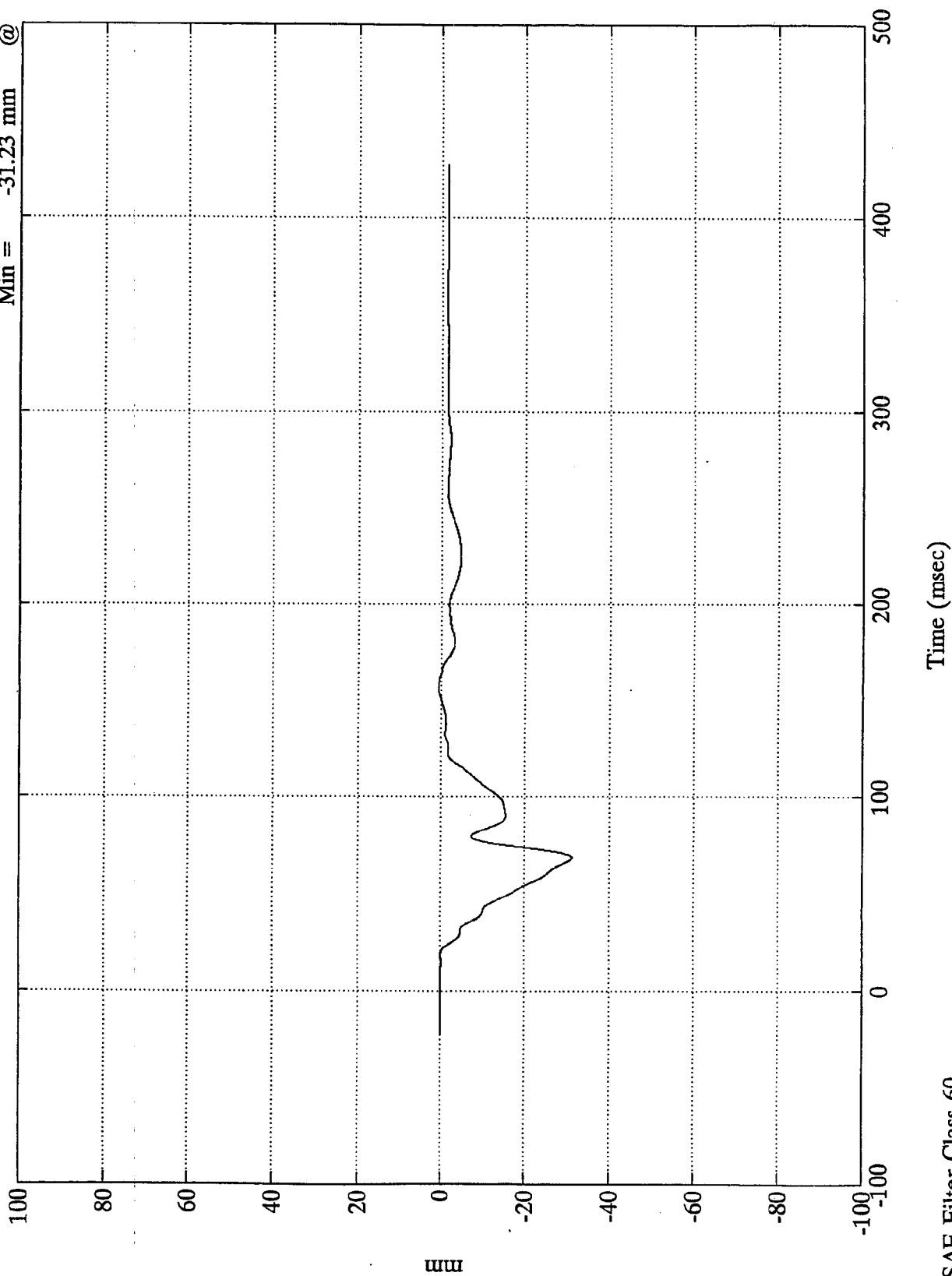
Time (msec)

SAE Filter Class 60

VTV TEST #2

Chest Displacement #130

Max = .77 mm @ 156.11 msec
Min = -31.23 mm @ 68.87 msec

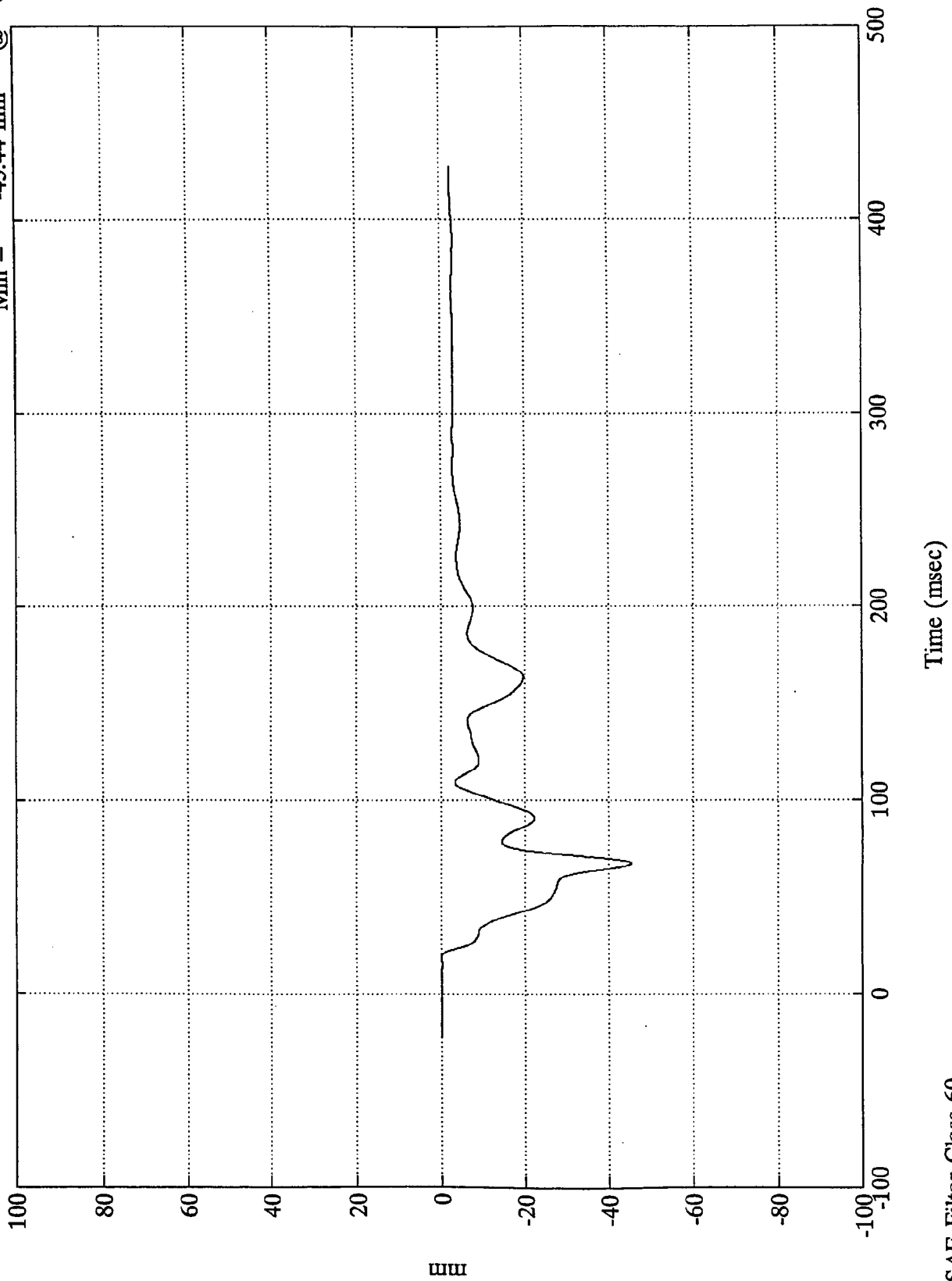


SAE Filter Class 60

VTV TEST #2

Chest Displacement #131

Max = .11 mm @ 19.44 msec
Min = -45.44 mm @ 68.16 msec



mm

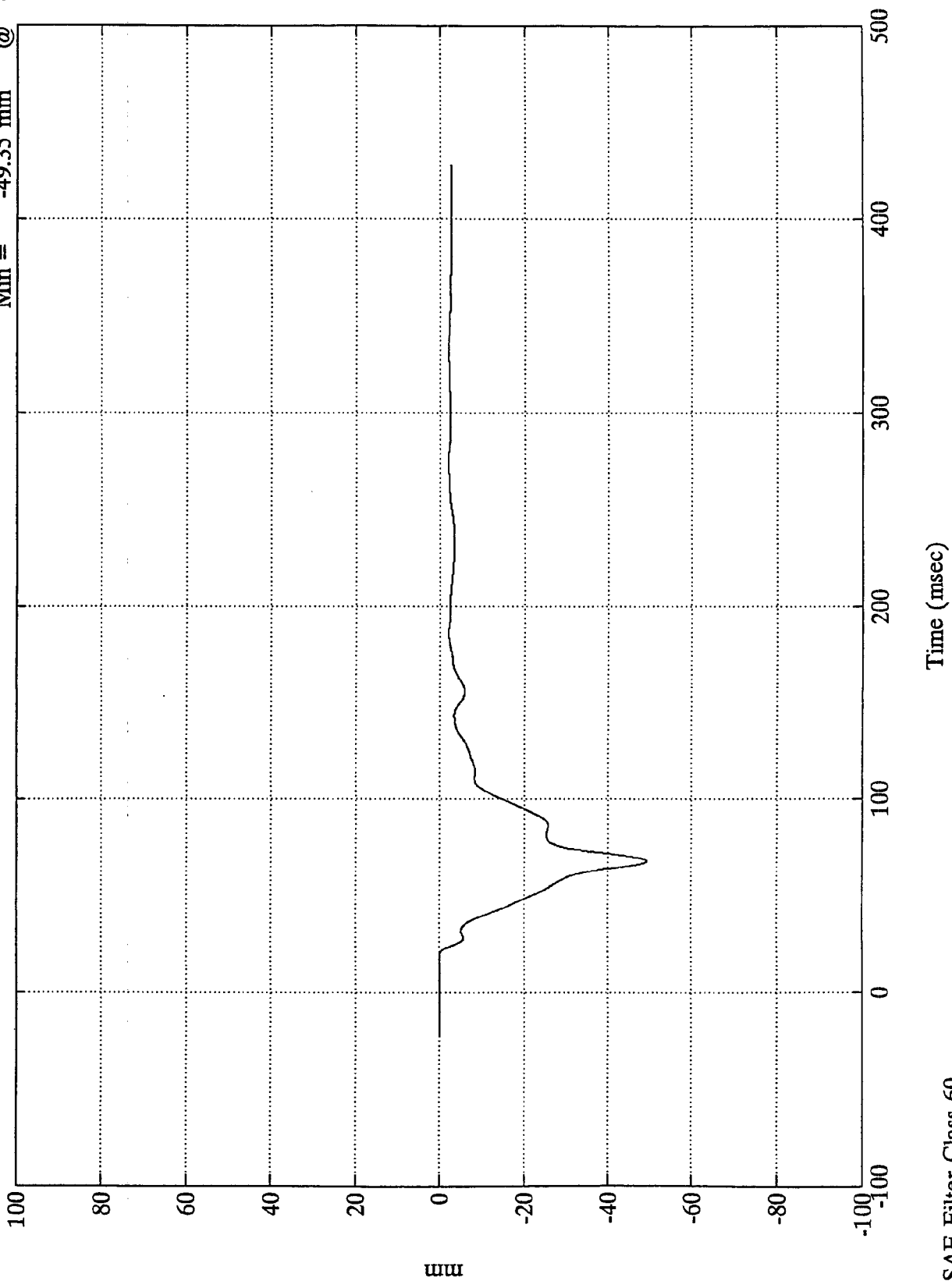
Time (msec)

SAE Filter Class 60

VTV TEST #2

Chest Displacement #132

Max = .06 mm @ 19.31 msec
Min = -49.35 mm @ 68.16 msec



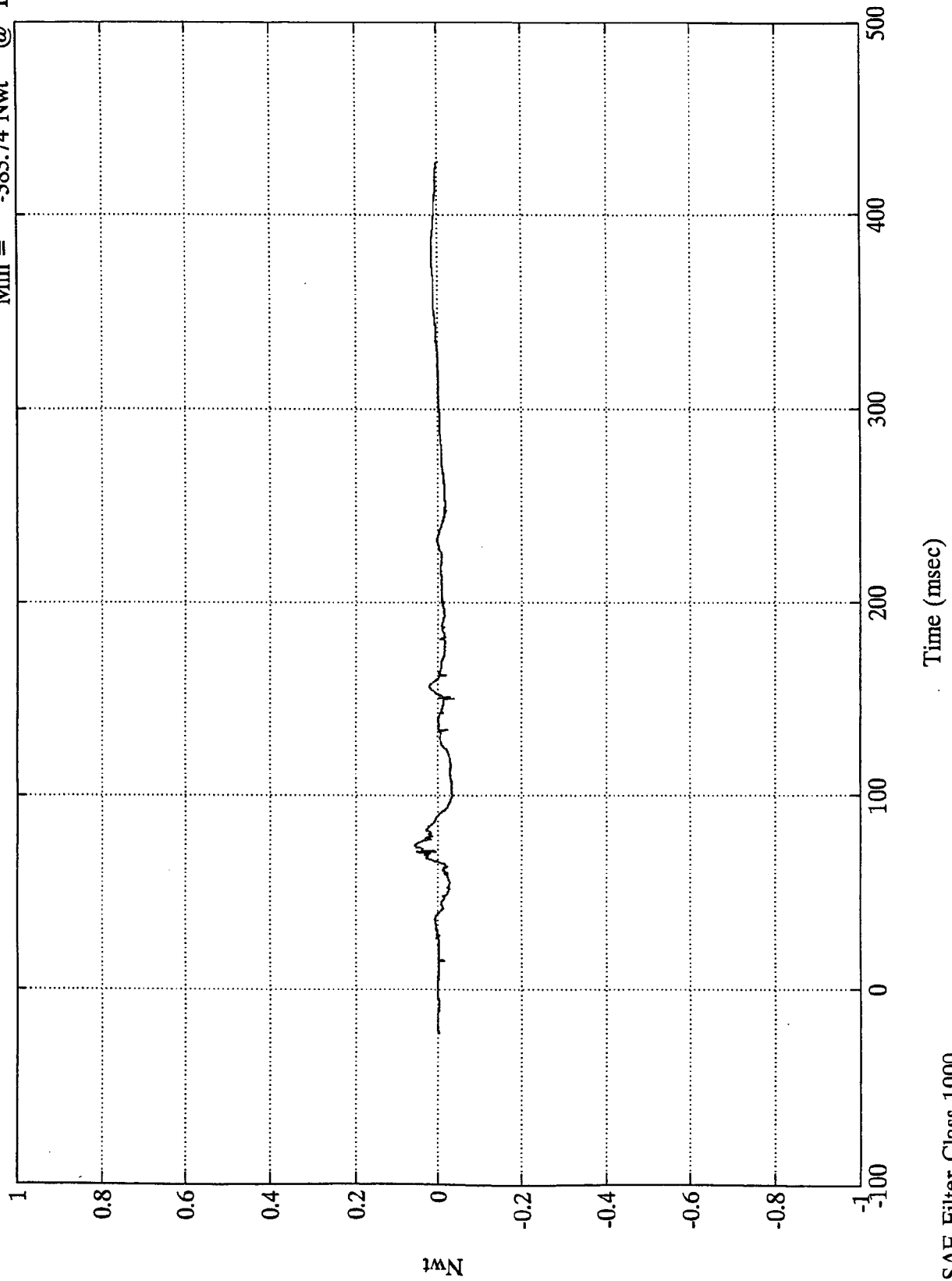
SAE Filter Class 60

VTV TEST #2

$\times 10^4$

P1 Upper Neck Fx

Max = 585.20 Nwt @ 74.16 msec
Min = -383.74 Nwt @ 150.24 msec

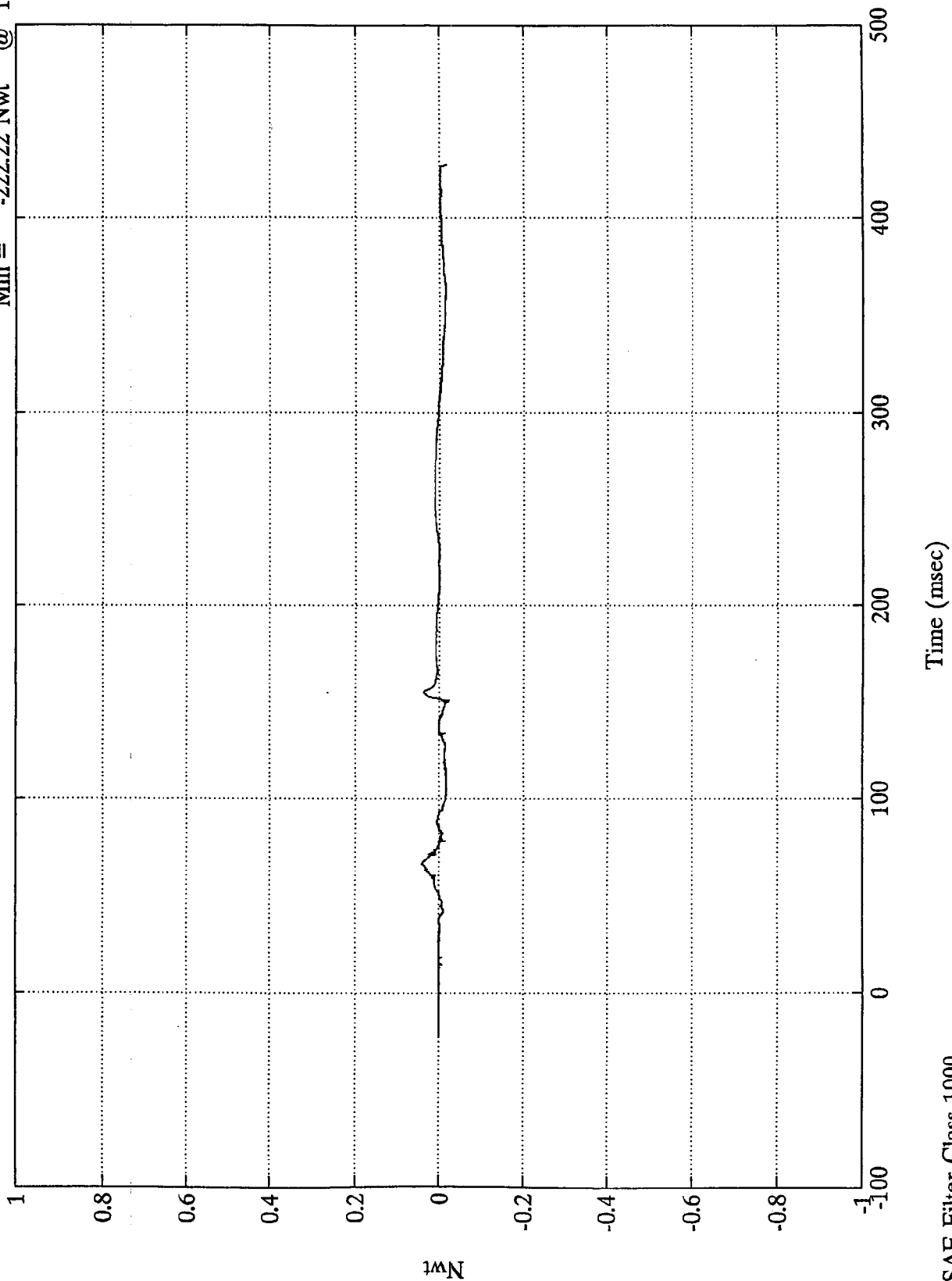


VTV TEST #2

$\times 10^4$

P1 Upper Neck Fy

Max = 417.00 Nwt @ 66.60 msec
Min = -222.22 Nwt @ 151.08 msec

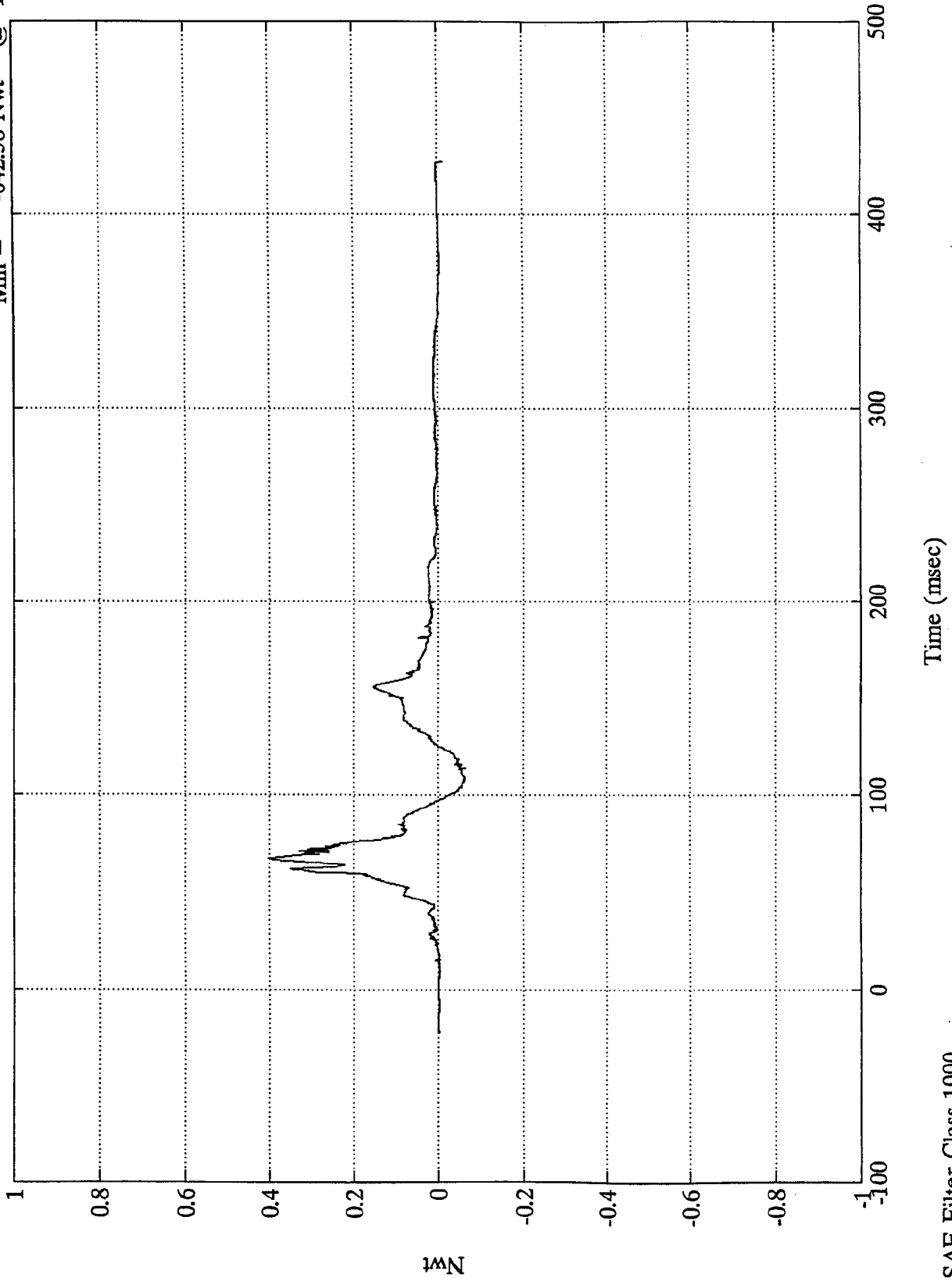


VTV TEST #2

$\times 10^4$

P1 Upper Neck Fz

Max = 4036.65 Nwt @ 67.91 msec
Min = -642.58 Nwt @ 113.63 msec



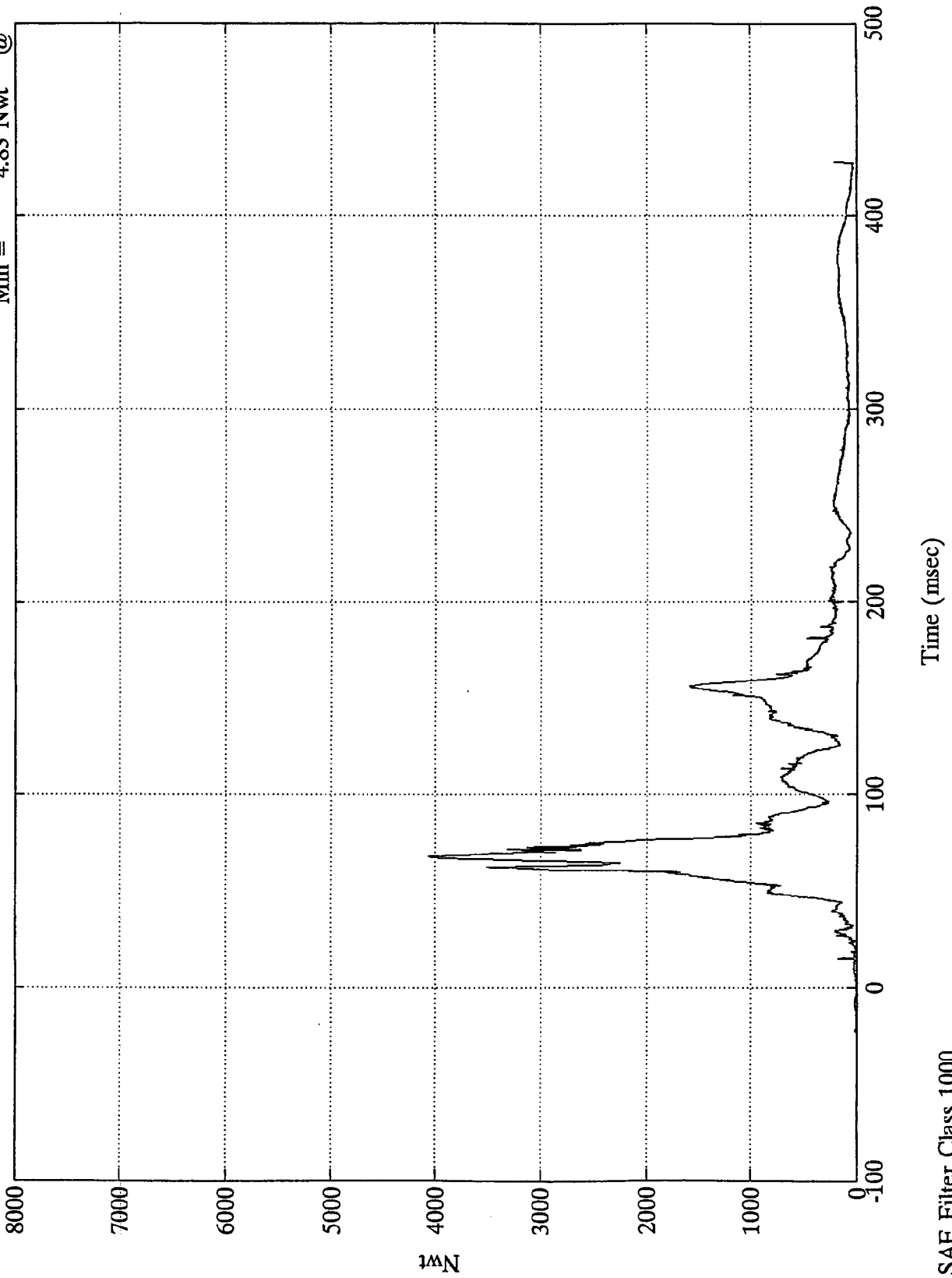
Nwt

Time (msec)

SAE Filter Class 1000

VTV TEST #2

P1 Upper Neck Force Res
Max = 4061.94 Nwt @ 67.91 msec
Min = 4.83 Nwt @ 4.43 msec

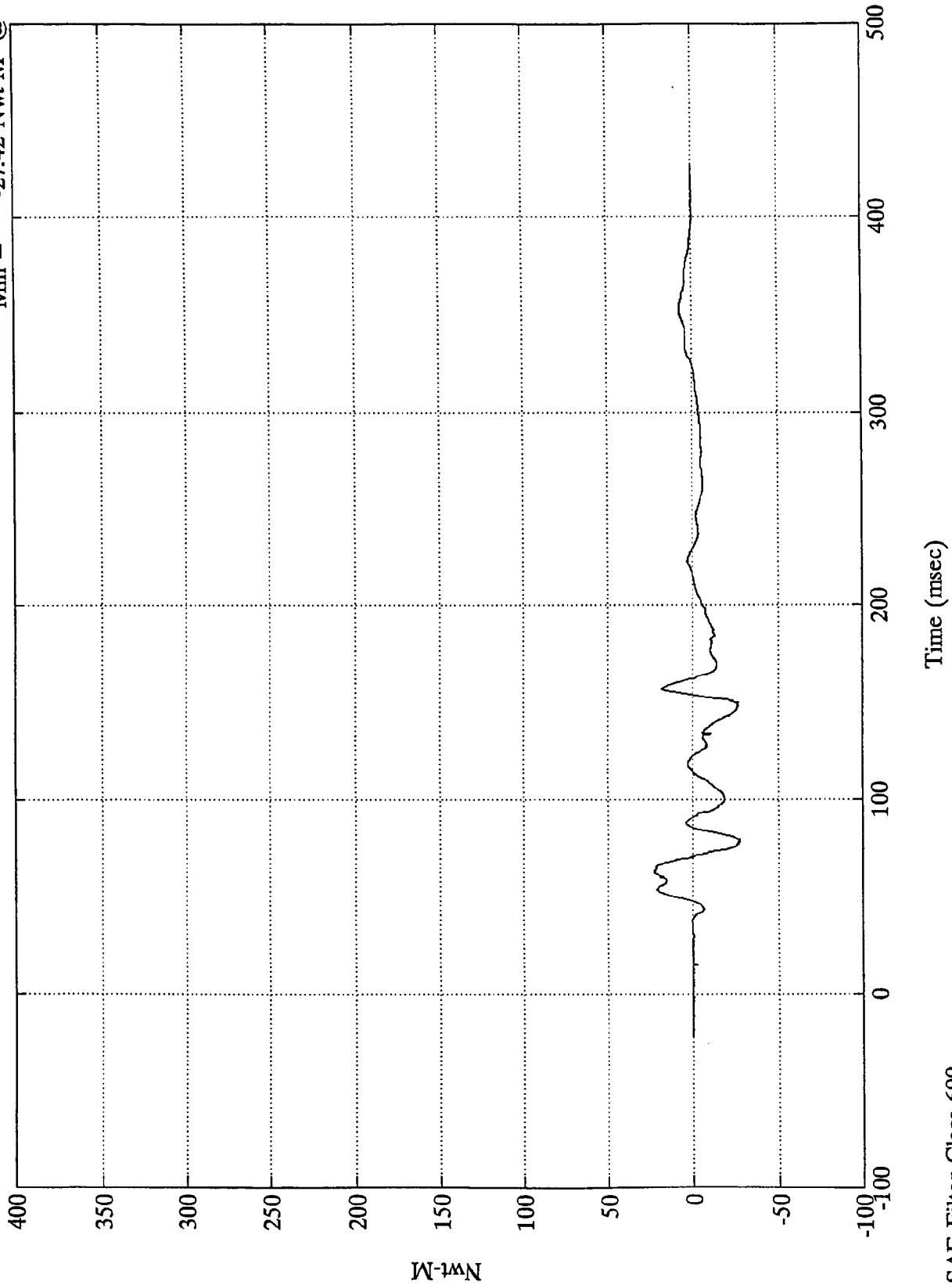


SAE Filter Class 1000

VTV TEST #2

P1 Upper Neck Mx

Max = 22.29 Nwt-M @ 63.84 msec
Min = -27.42 Nwt-M @ 78.95 msec



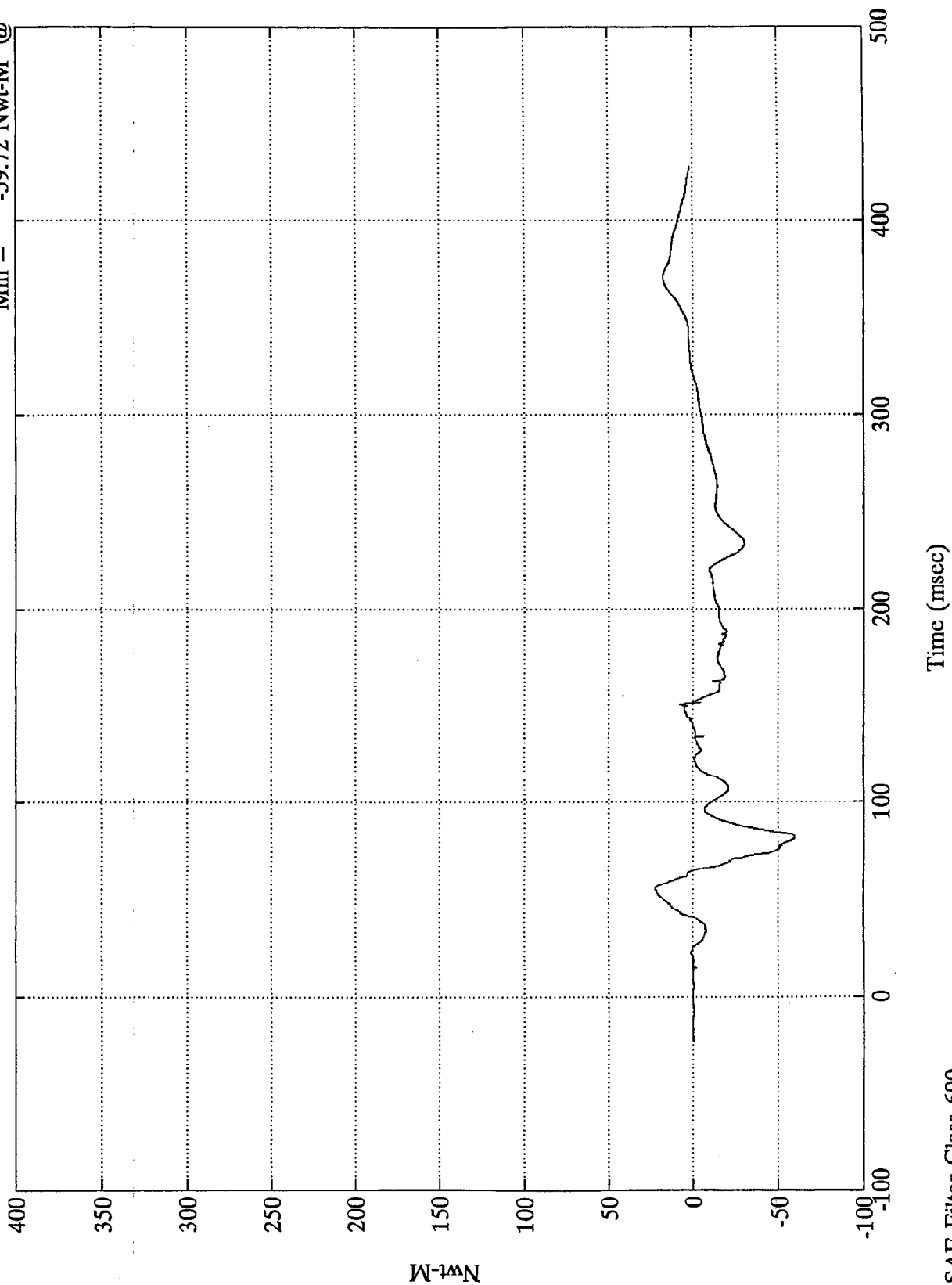
SAE Filter Class 600

Nwt-M

VTV TEST #2

P1 Upper Neck My

Max = 22.48 Nwt-M @ 55.32 msec
Min = -59.72 Nwt-M @ 82.44 msec

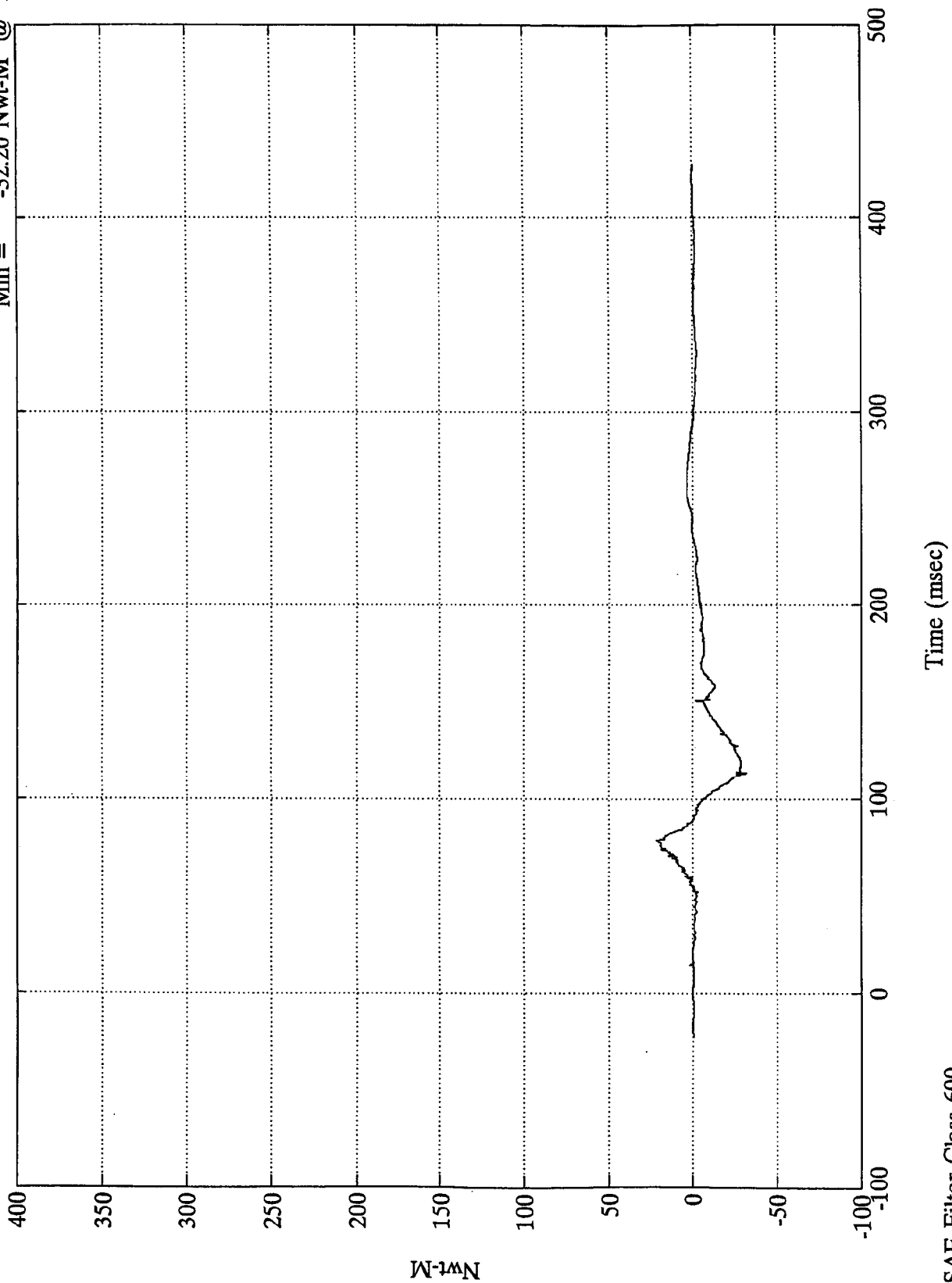


SAE Filter Class 600

VTV TEST #2

P1 Upper Neck Mz

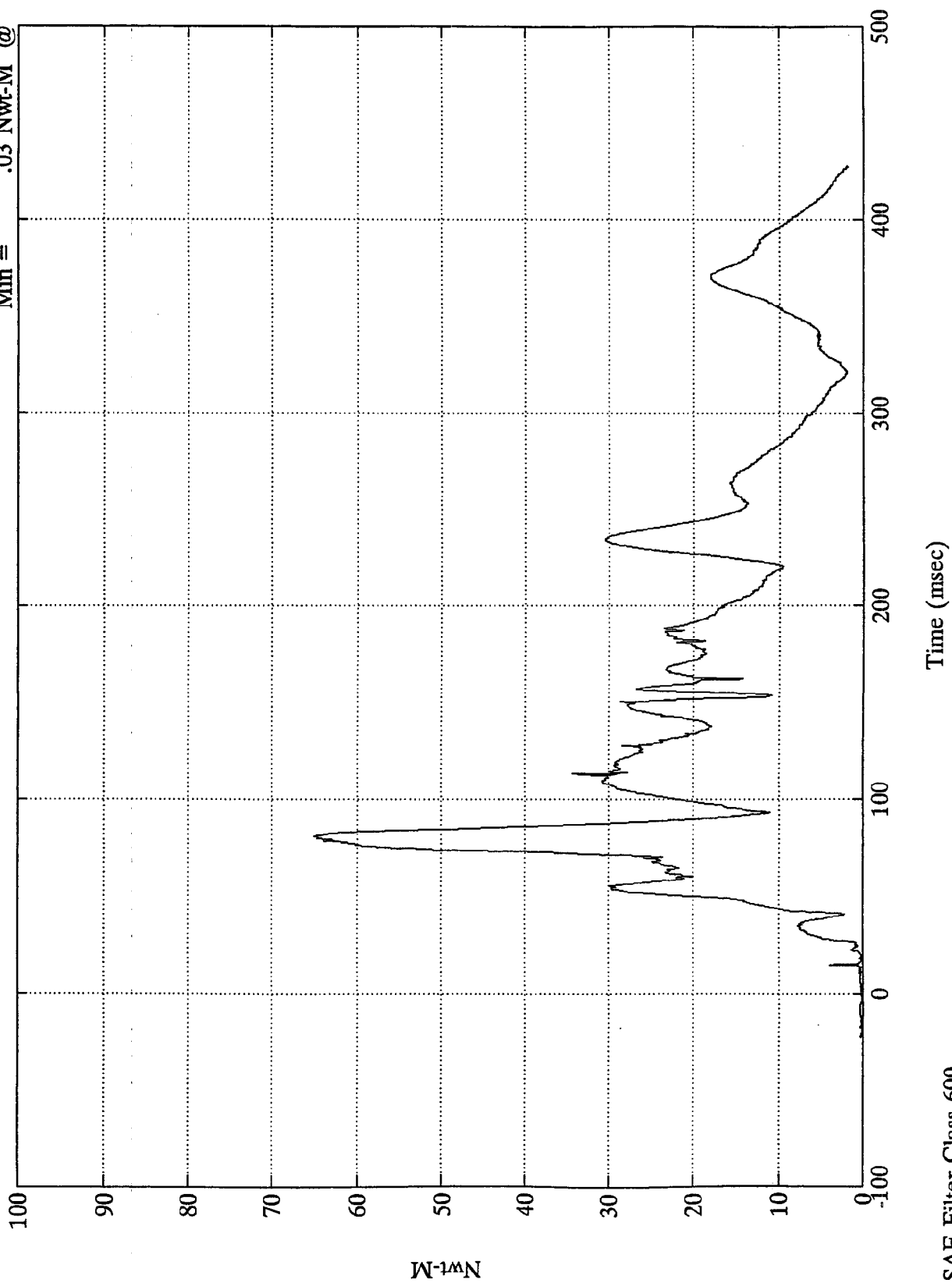
Max = 22.00 Nwt-M @ 78.72 msec
Min = -32.20 Nwt-M @ 113.52 msec



VTV TEST #2

P1 Upper Neck Moment Res

Max = 65.08 Nwt-M @ 81.24 msec
Min = .03 Nwt-M @ -3.00 msec



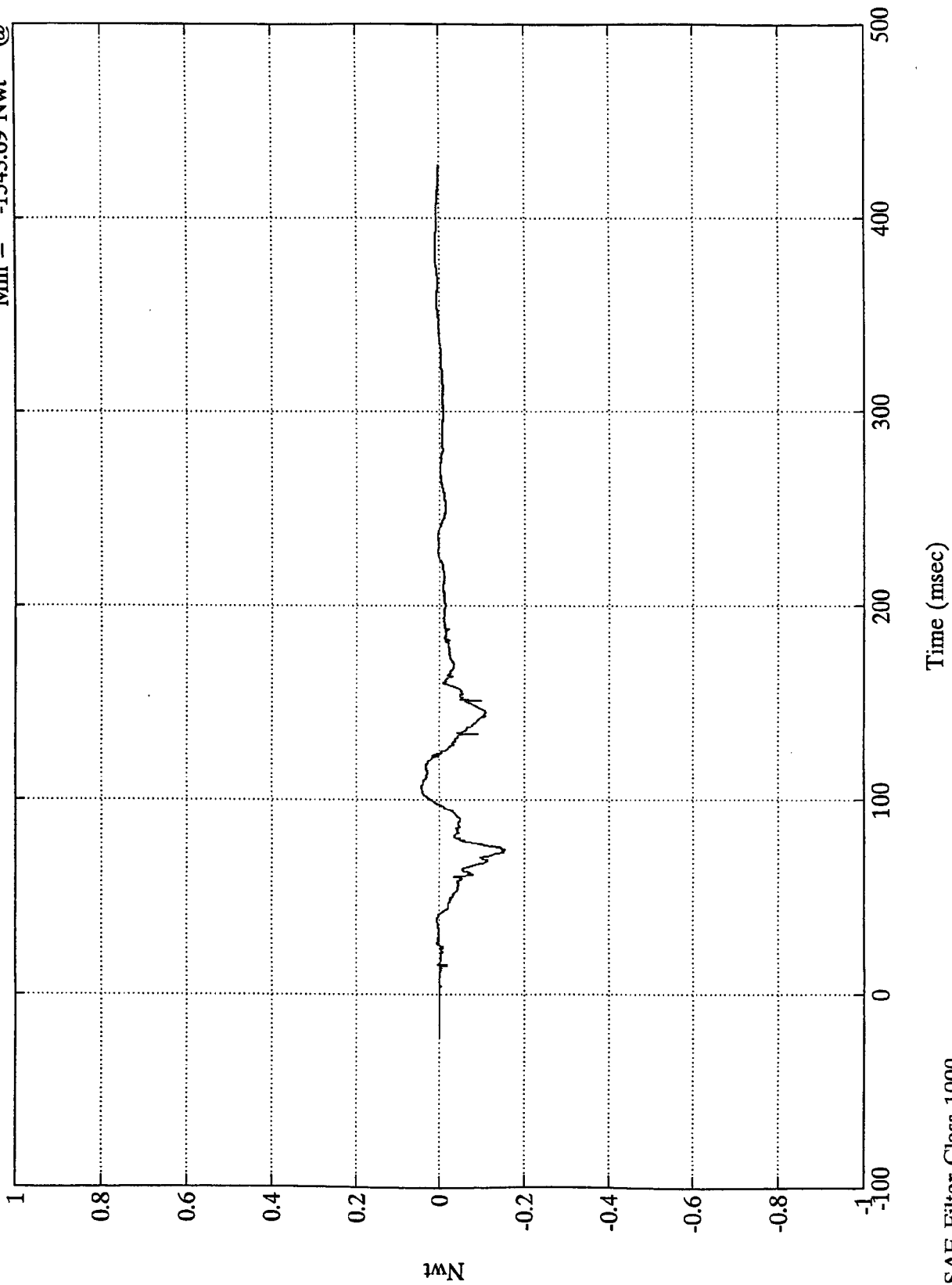
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P1 Lower Neck Fx

Max = 442.00 Nwt @ 107.04 msec
Min = -1543.69 Nwt @ 74.63 msec

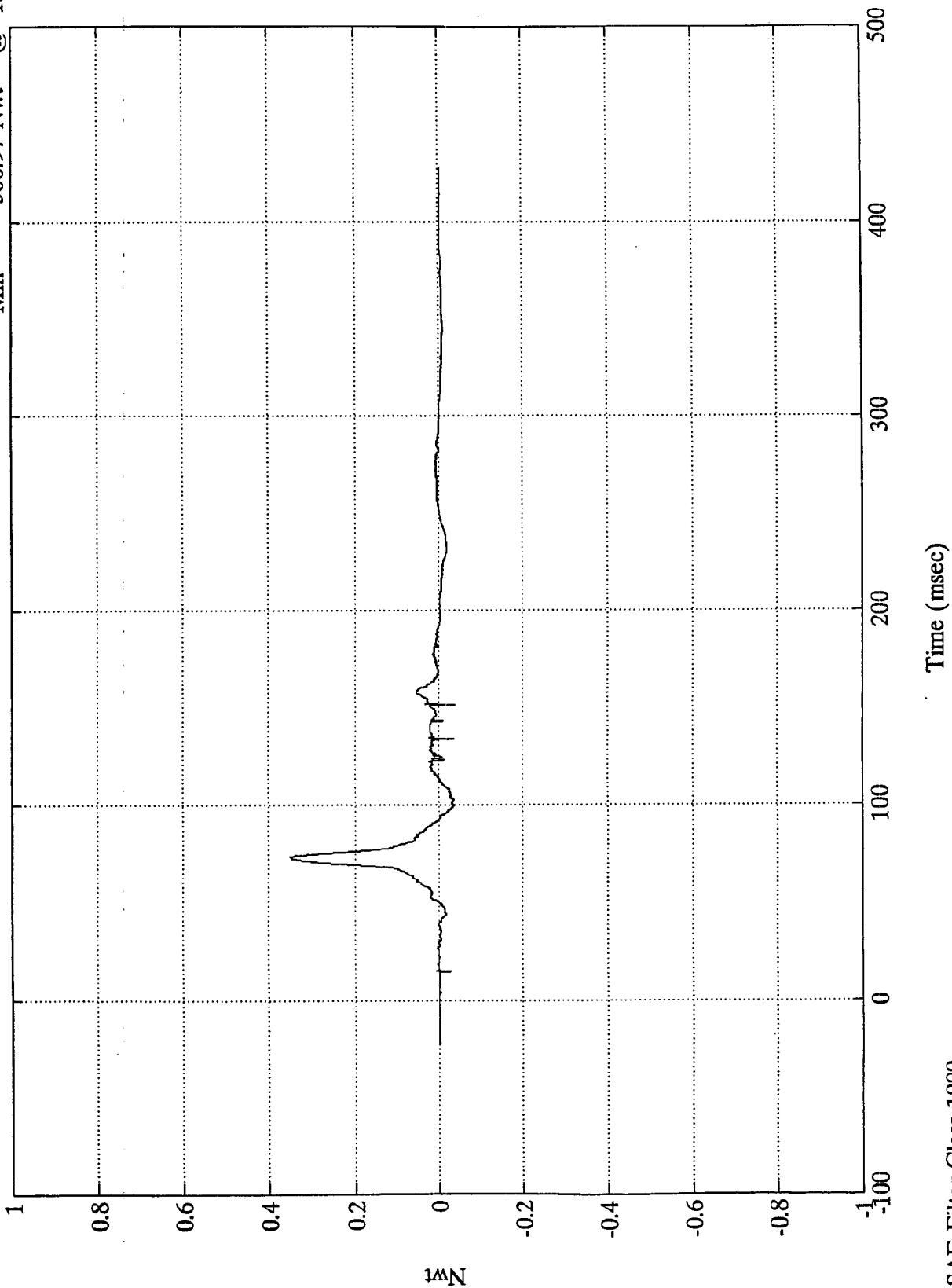


SAE Filter Class 1000

VTV TEST #2

$\times 10^4$

P1 Lower Neck Fy
Max = 3524.05 Nwt @ 73.55 msec
Min = -366.97 Nwt @ 151.20 msec



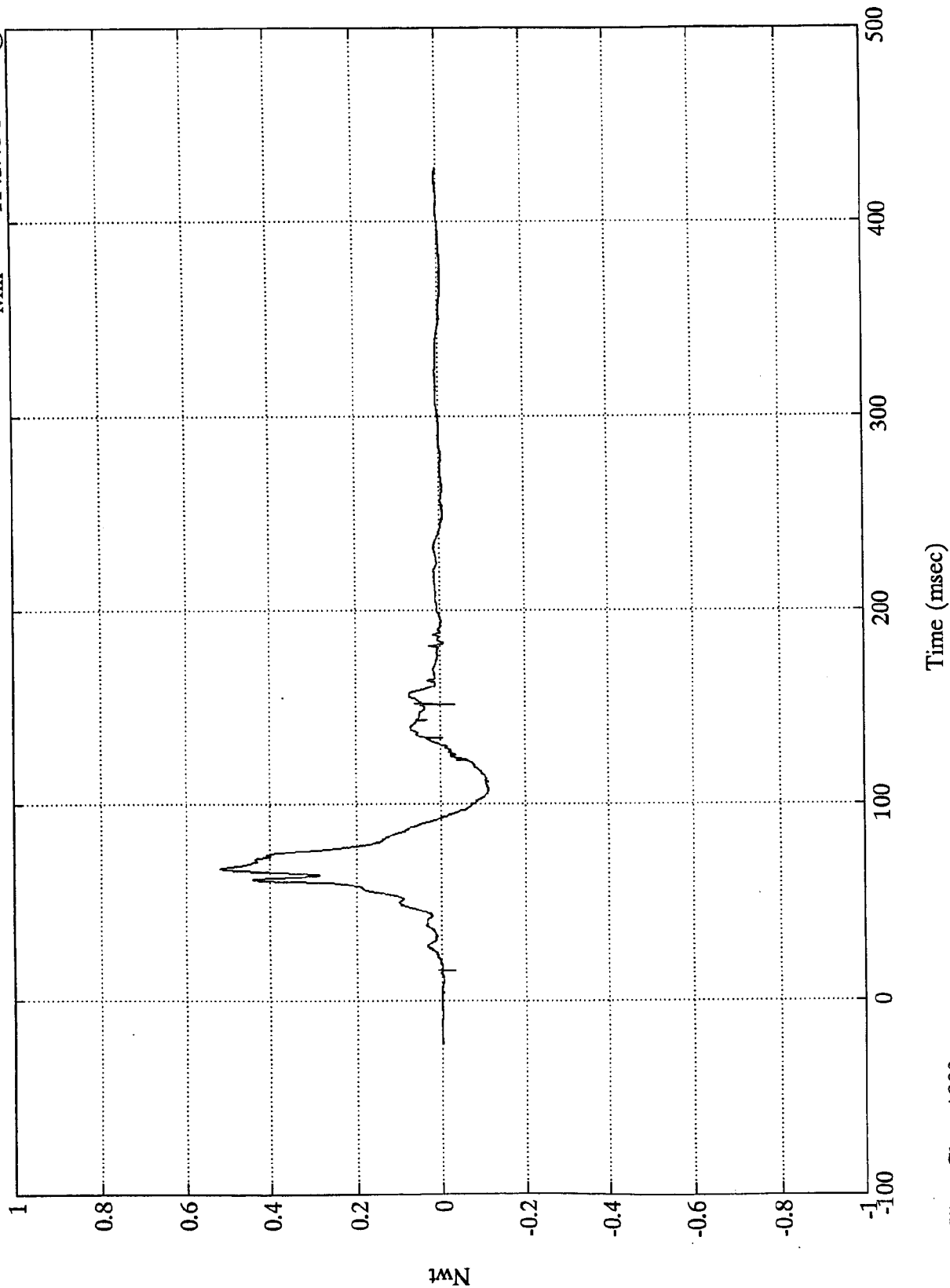
SAE Filter Class 1000

VTV TEST #2

$\times 10^4$

P1 Lower Neck Fz

Max = 5189.71 Nwt @ 67.80 msec
Min = -1141.48 Nwt @ 107.64 msec

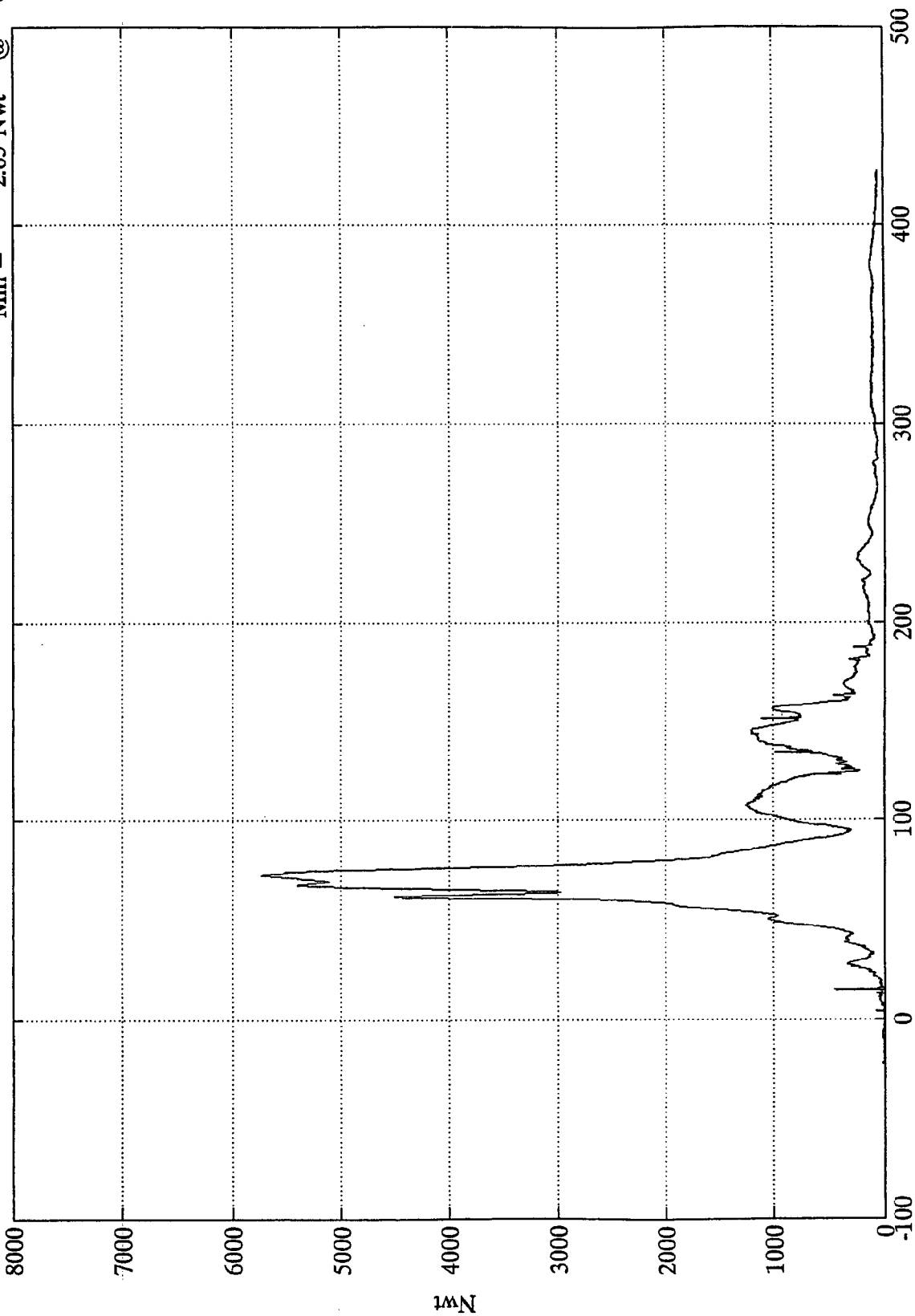


SAE Filter Class 1000

VTV TEST #2

Max = 5737.42 Nwt @ 72.59 msec
Min = 2.05 Nwt @ 6.47 msec

P1 Lwr. Neck Force Res.



Time (msec)

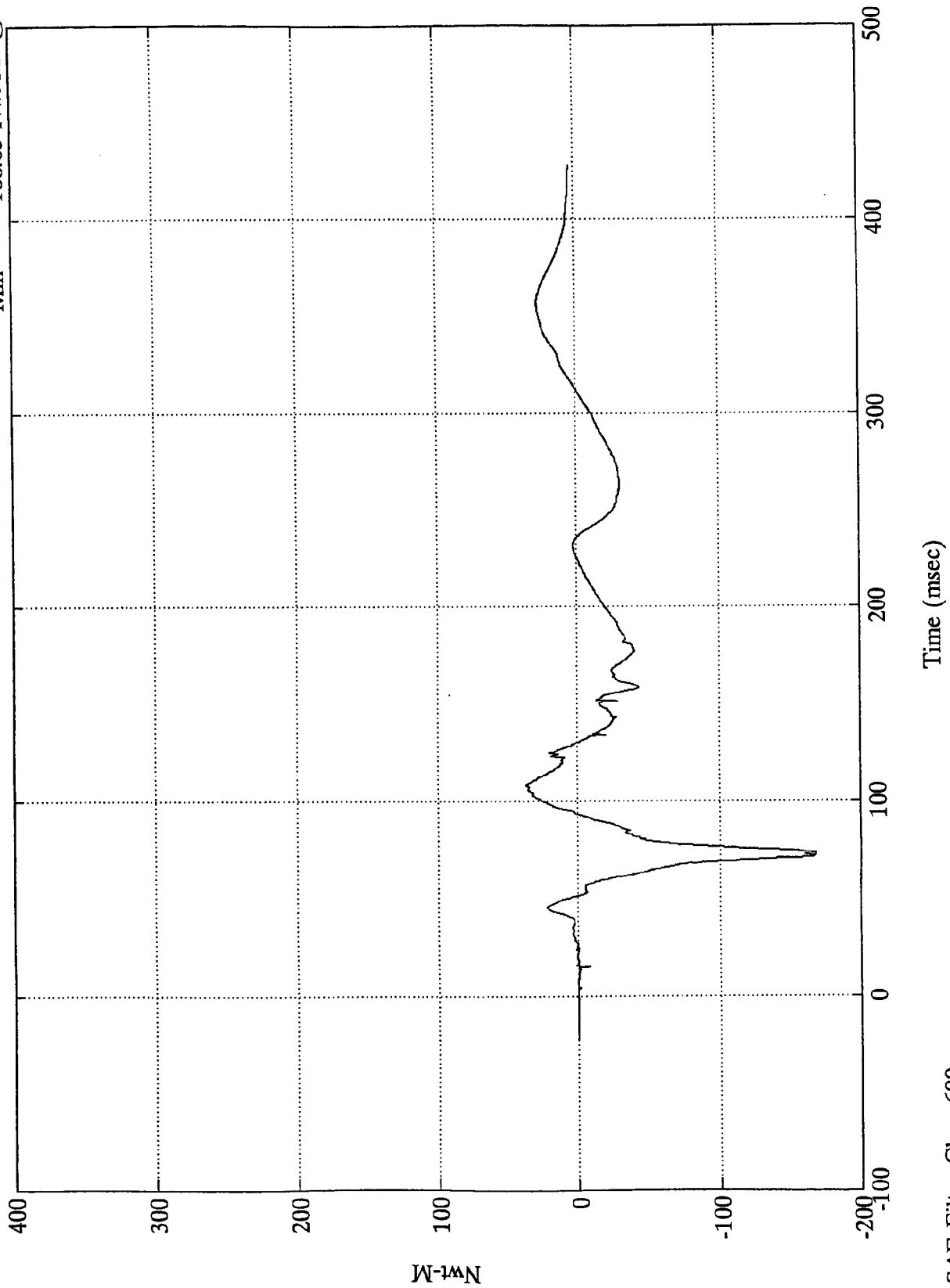
SAE Filter Class 1000

Nwt

VTV TEST #2

P1 Lower Neck Mx

Max = 36.13 Nwt-M @ 108.23 msec
Min = -168.65 Nwt-M @ 73.55 msec

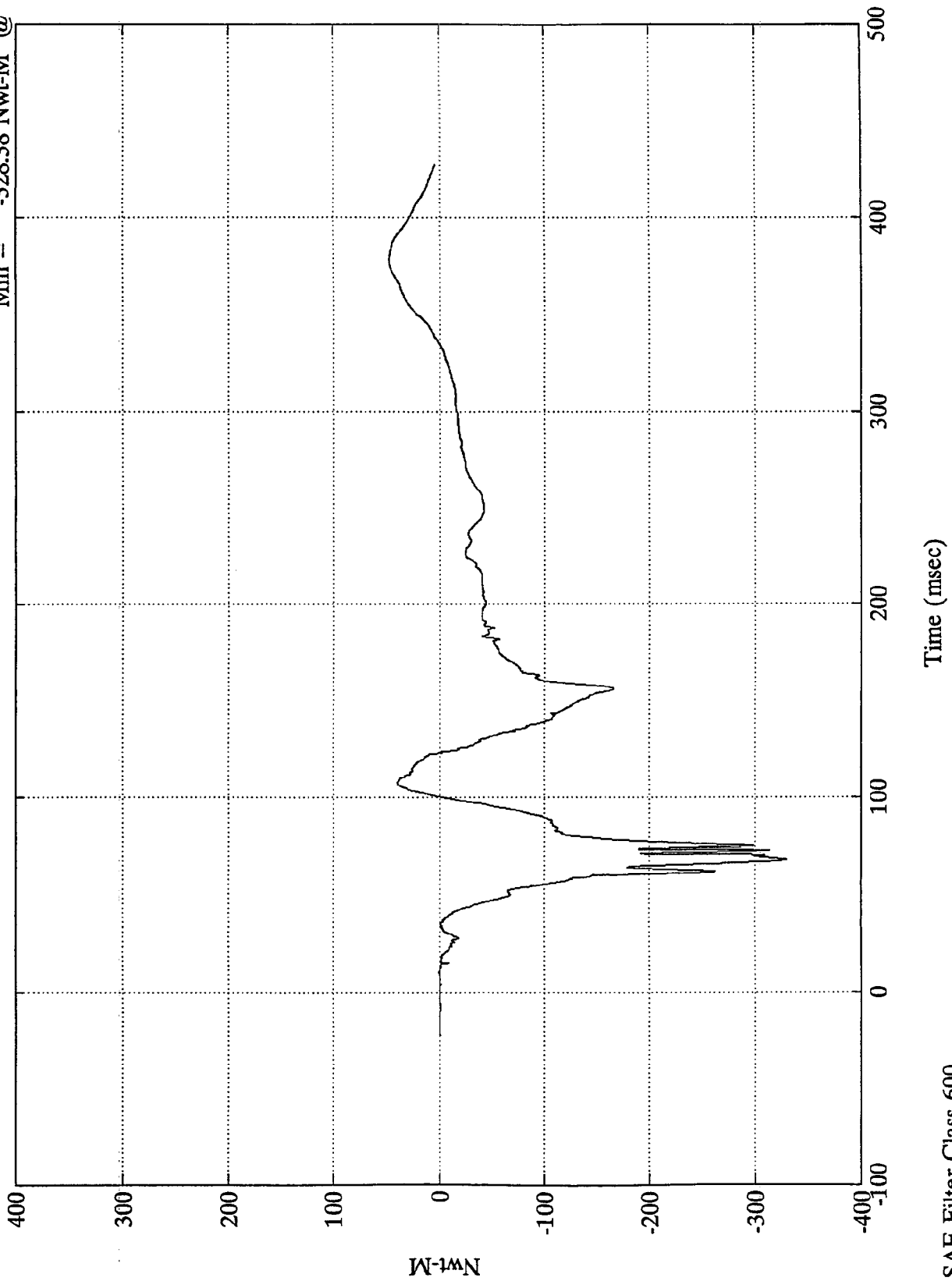


SAE Filter Class 600

VTV TEST #2

P1 Lower Neck My

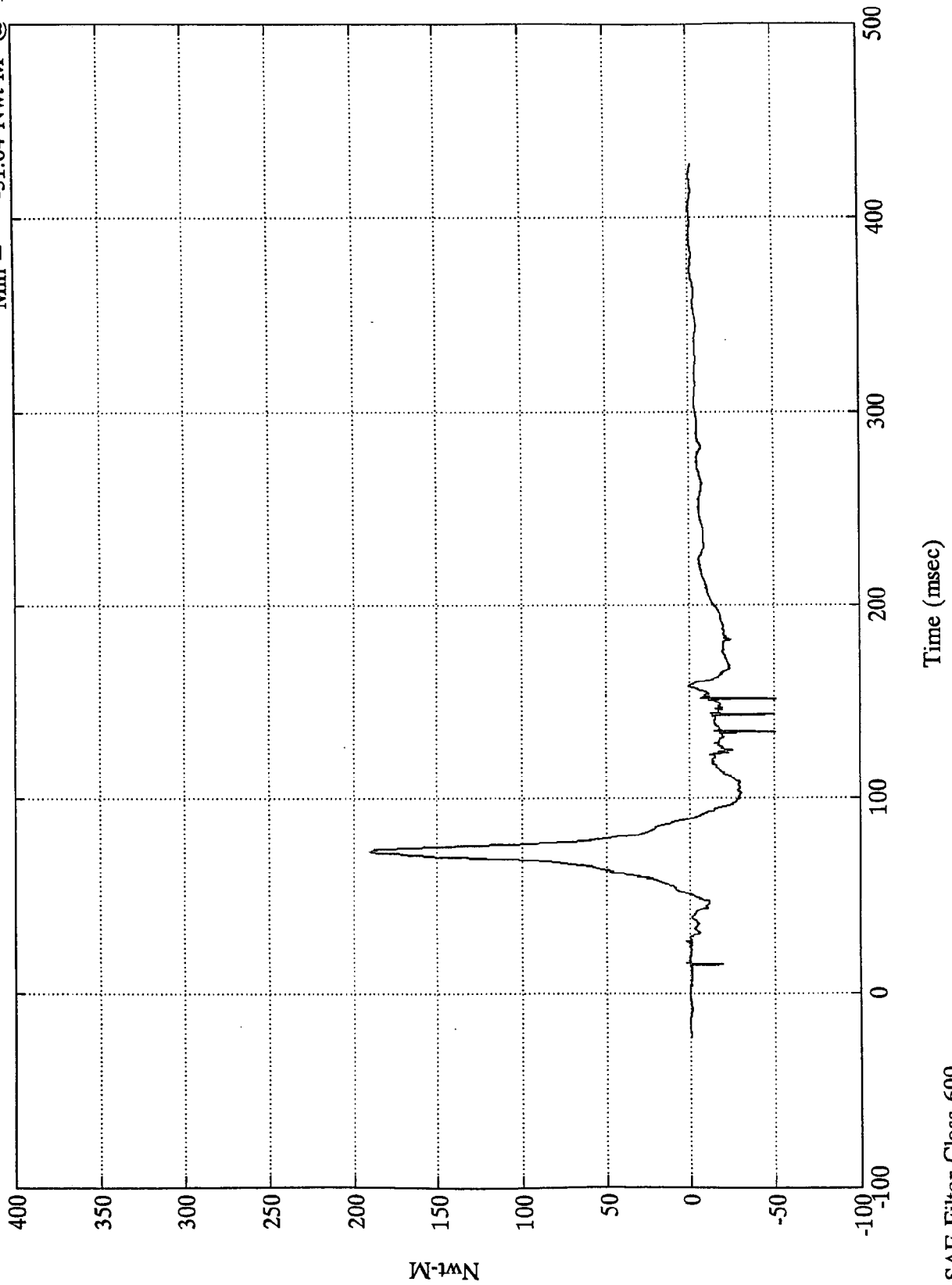
Max = 47.88 Nwt-M @ 378.00 msec
Min = -328.38 Nwt-M @ 68.28 msec



VTV TEST #2

P1 Lower Neck Mz

Max = 190.89 Nwt-M @ 73.08 msec
Min = -51.04 Nwt-M @ 151.32 msec

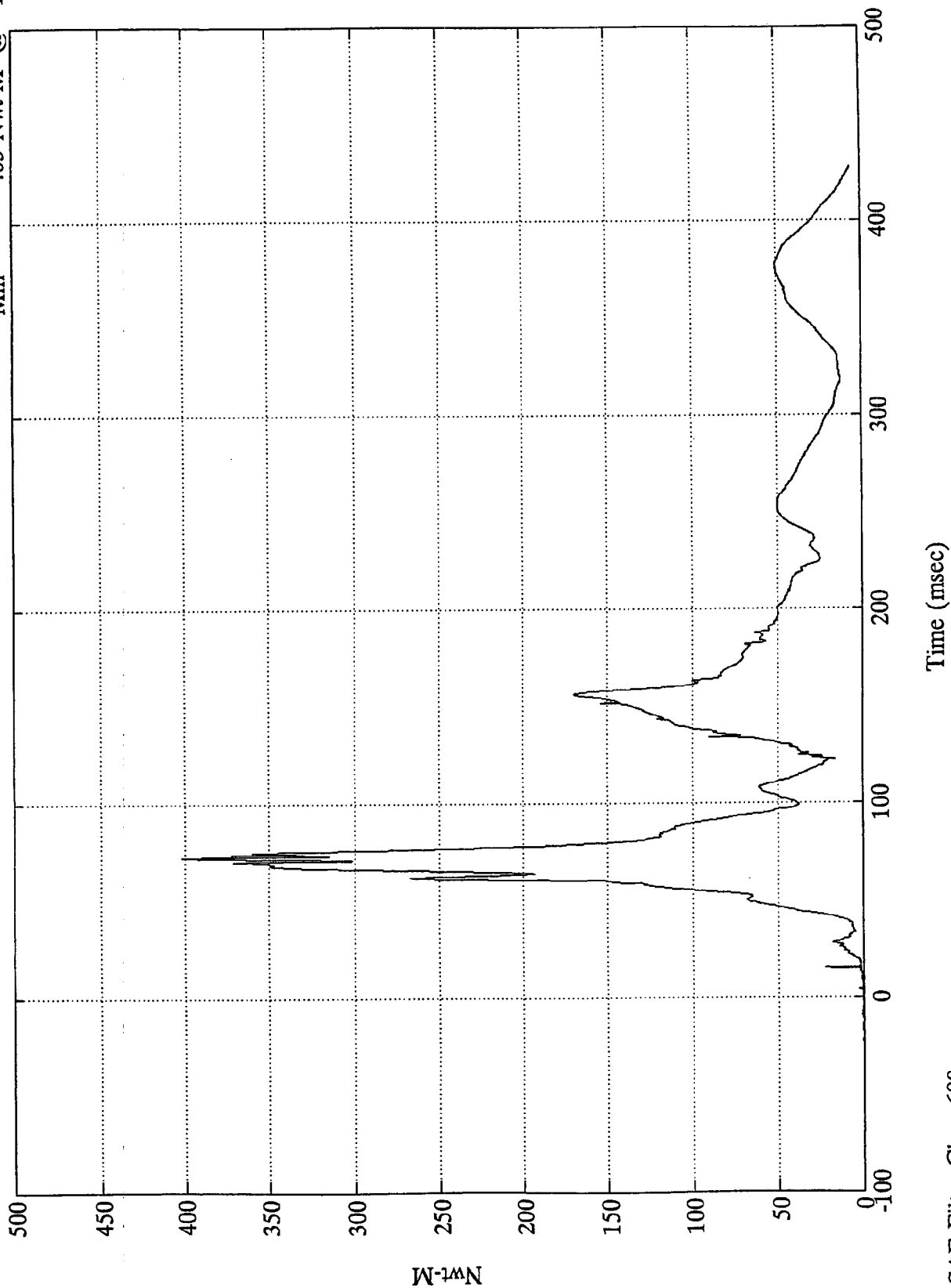


SAE Filter Class 600

VTV TEST #2

P1 Lwr. Neck Moment Res.

Max = 401.60 Nwt-M @ 73.08 msec
Min = .03 Nwt-M @ -12.60 msec



SAE Filter Class 600

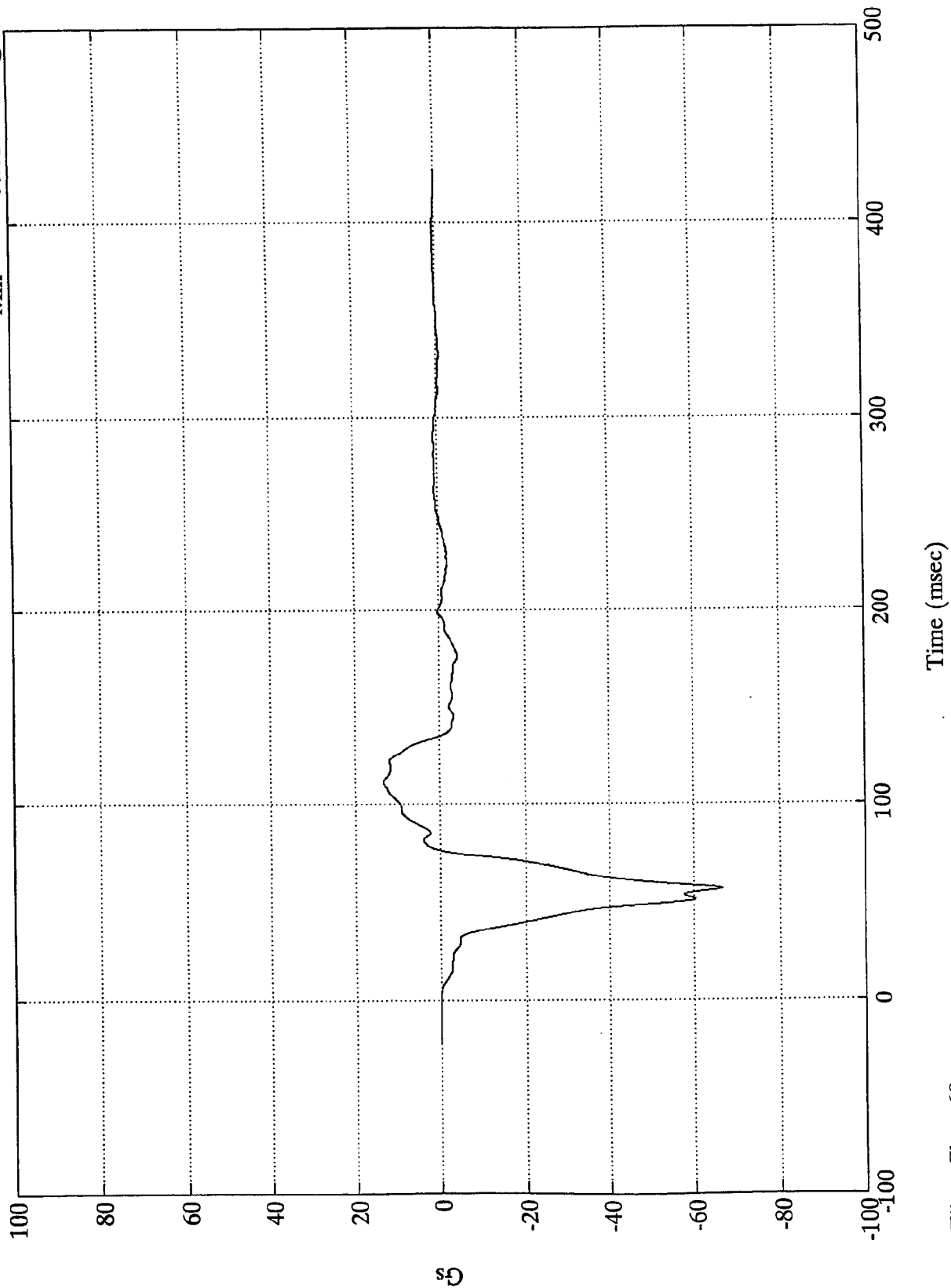
Nwt-M

Time (msec)

VTV TEST #2

P1 Pelvic X

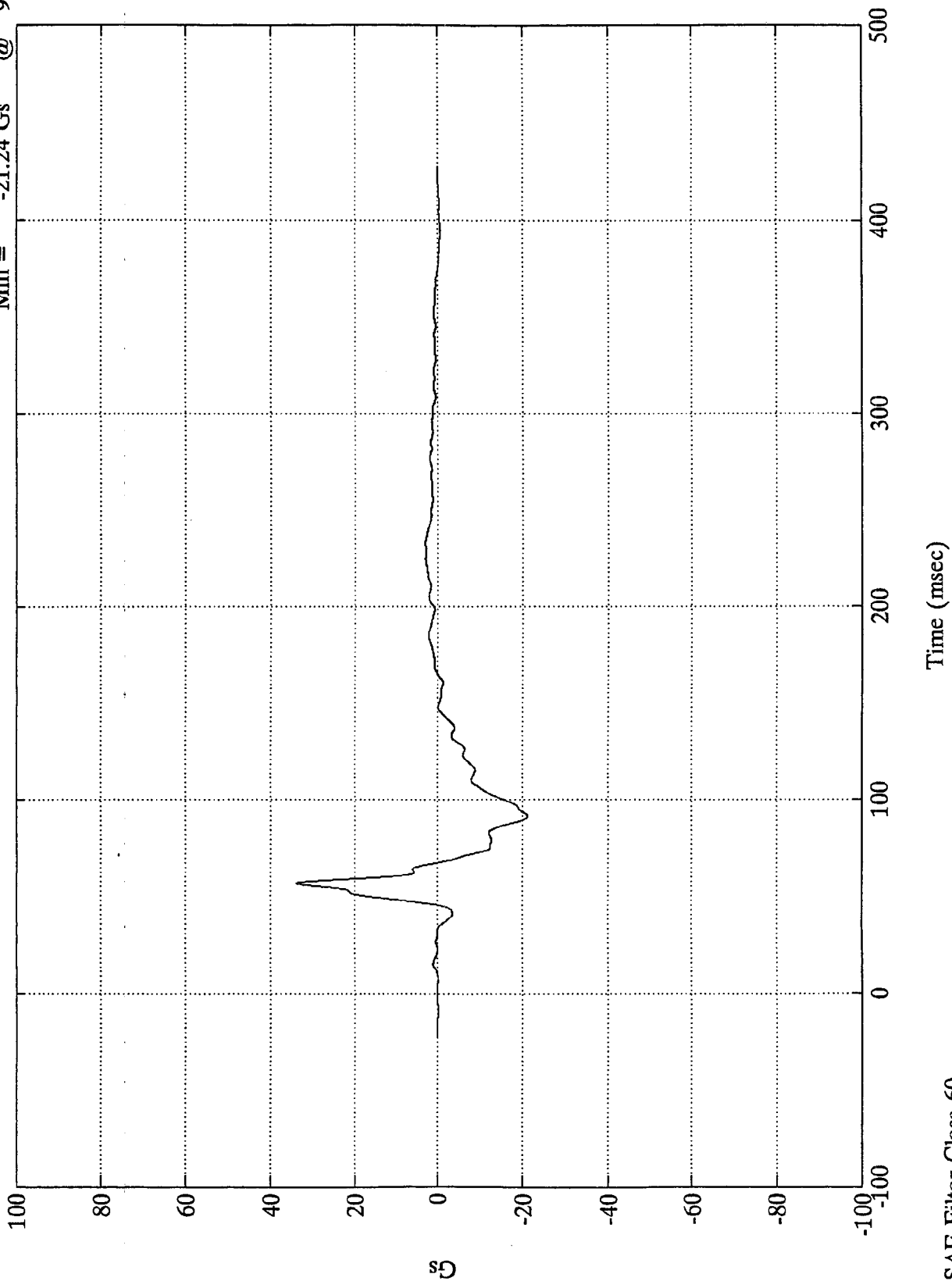
Max = 13.27 Gs @ 111.24 msec
Min = -66.61 Gs @ 56.88 msec



VTV TEST #2

Max = 34.09 Gs @ 56.88 msec
Min = -21.24 Gs @ 91.44 msec

P1 Pelvic Y

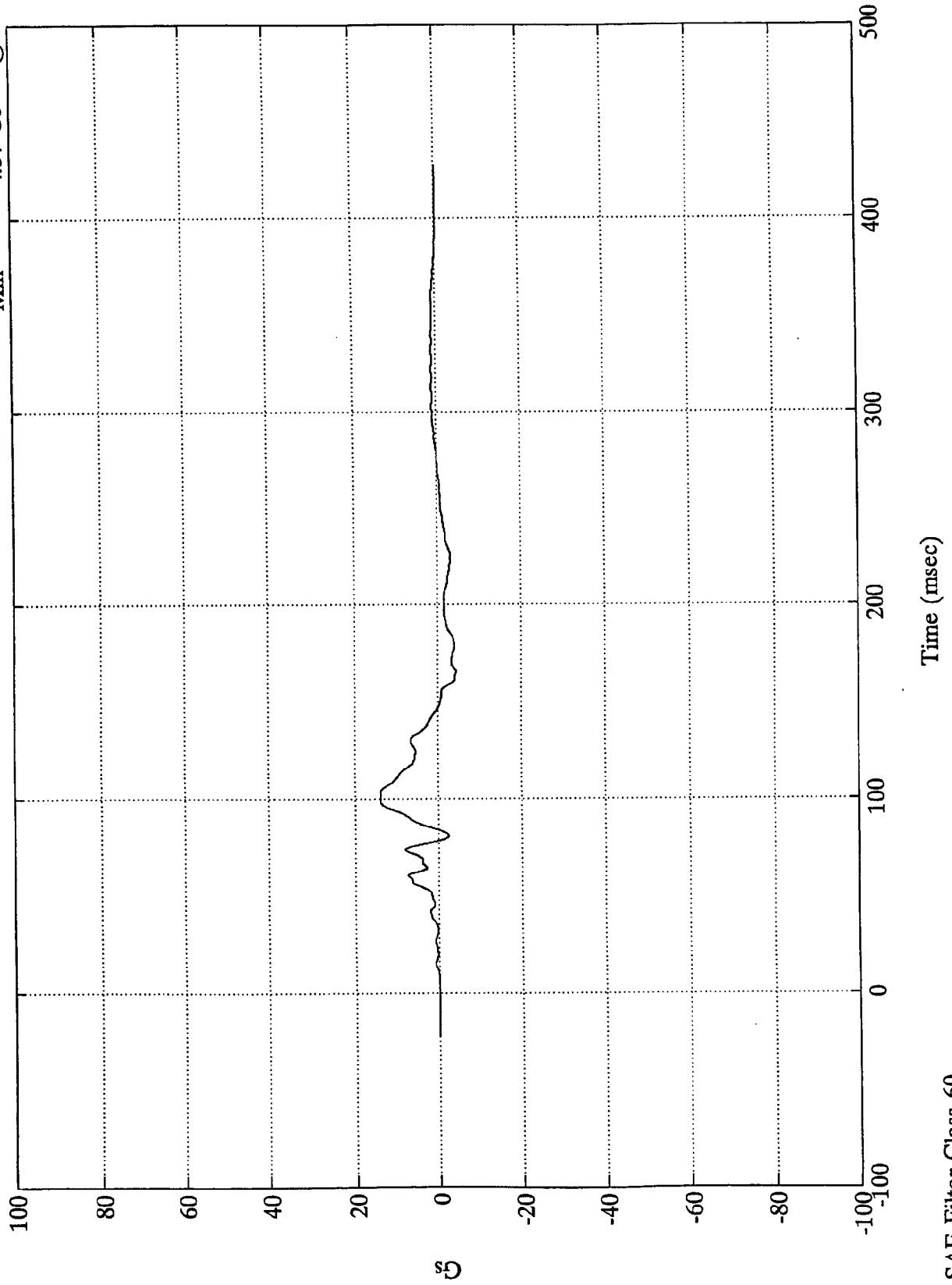


SAE Filter Class 60

VTV TEST #2

Max = 13.99 Gs @ 102.96 msec
Min = -4.37 Gs @ 165.95 msec

P1 Pelvic Z

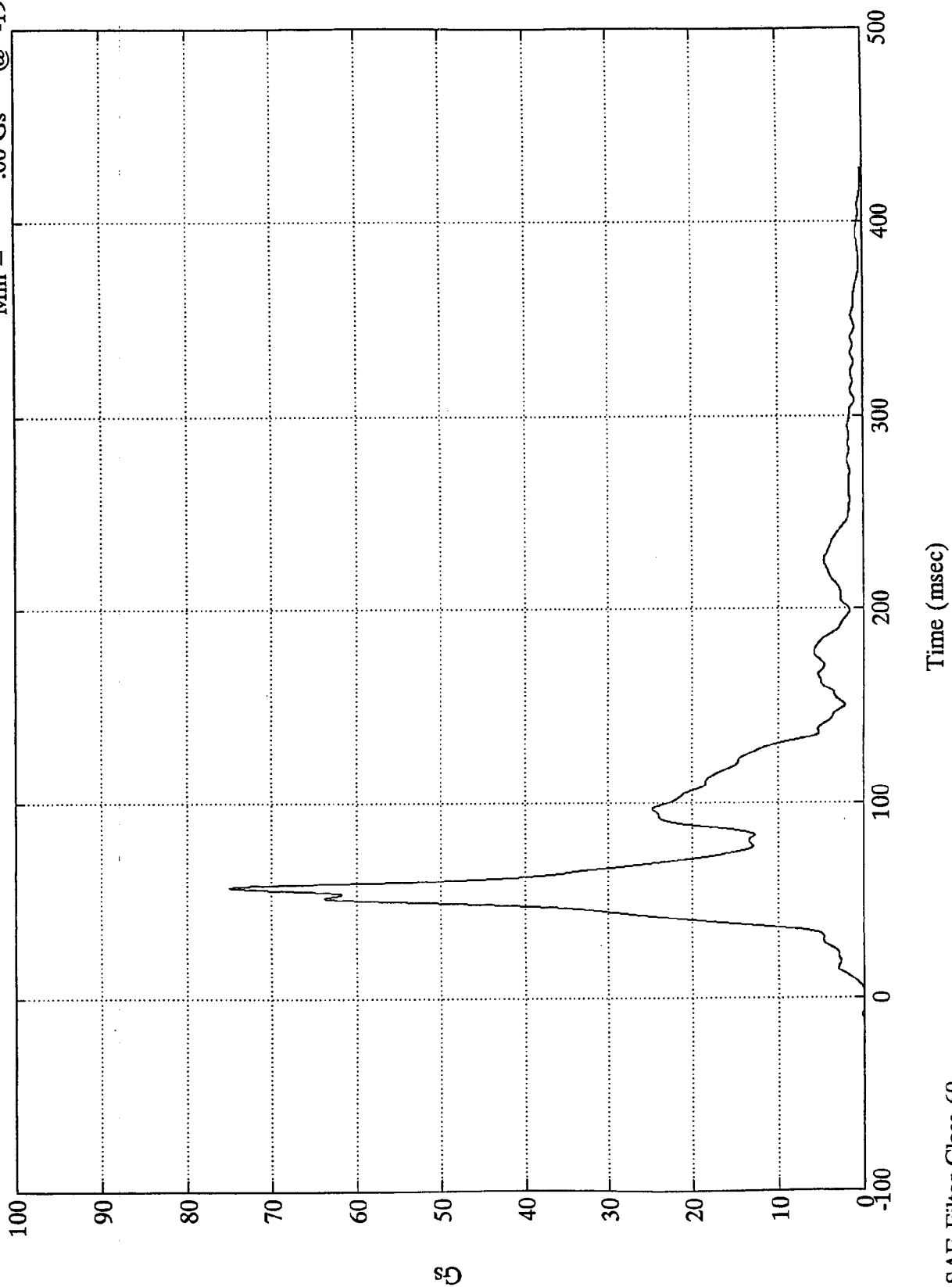


SAE Filter Class 60

VTV TEST #2

P1 Pelvic Res.

Max = 75.08 Gs @ 56.88 msec
Min = .00 Gs @ -19.56 msec



SAE Filter Class 60

8

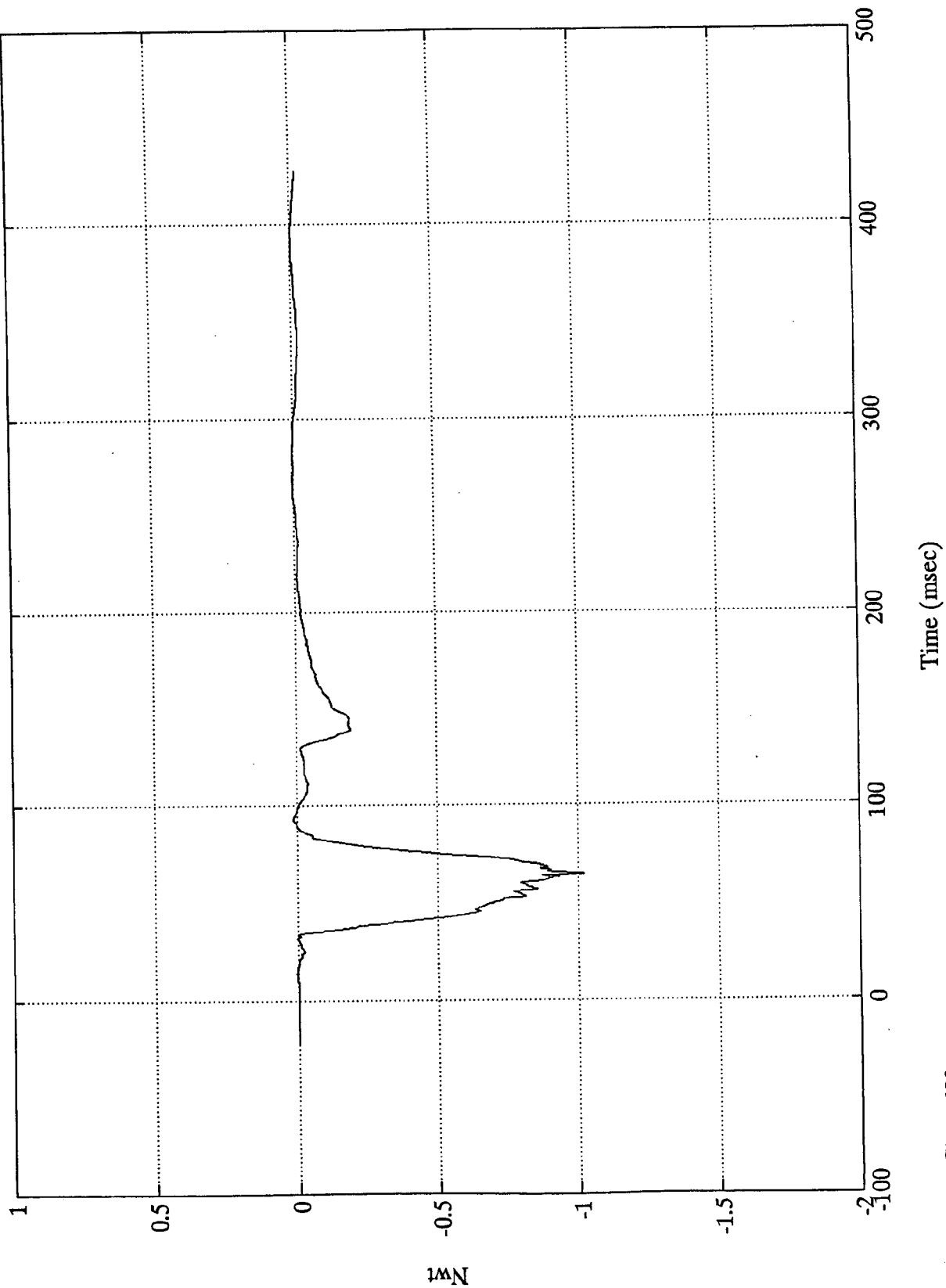
B-170

8304-2

VTV TEST #2
x10⁴

P1 Left Femur

Max = 160.12 Nwt @ 92.52 msec
Min = -10193.44 Nwt @ 64.91 msec



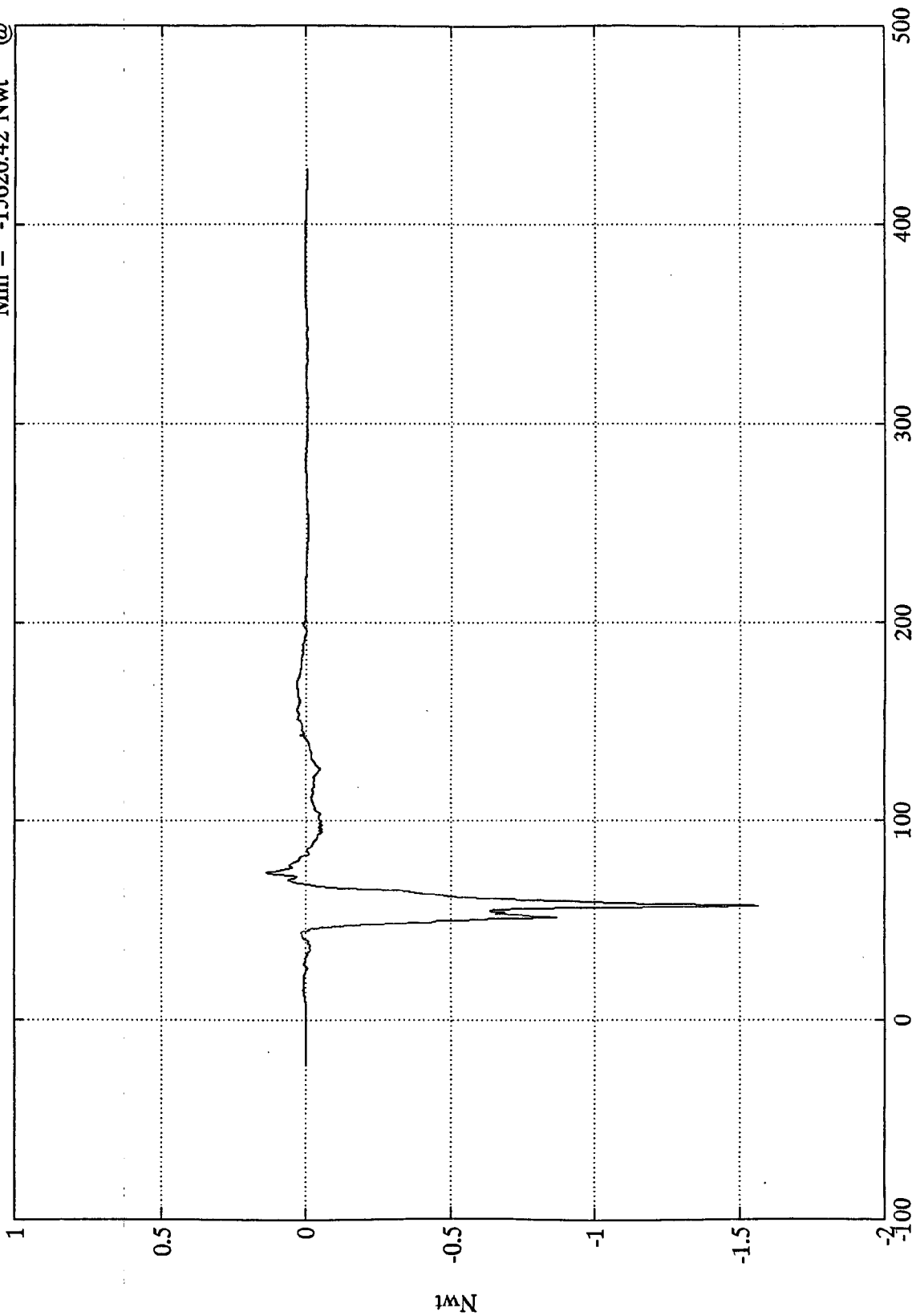
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P1 Right Femur

Max = 1370.17 Nwt @ 74.04 msec
Min = -15620.42 Nwt @ 57.00 msec



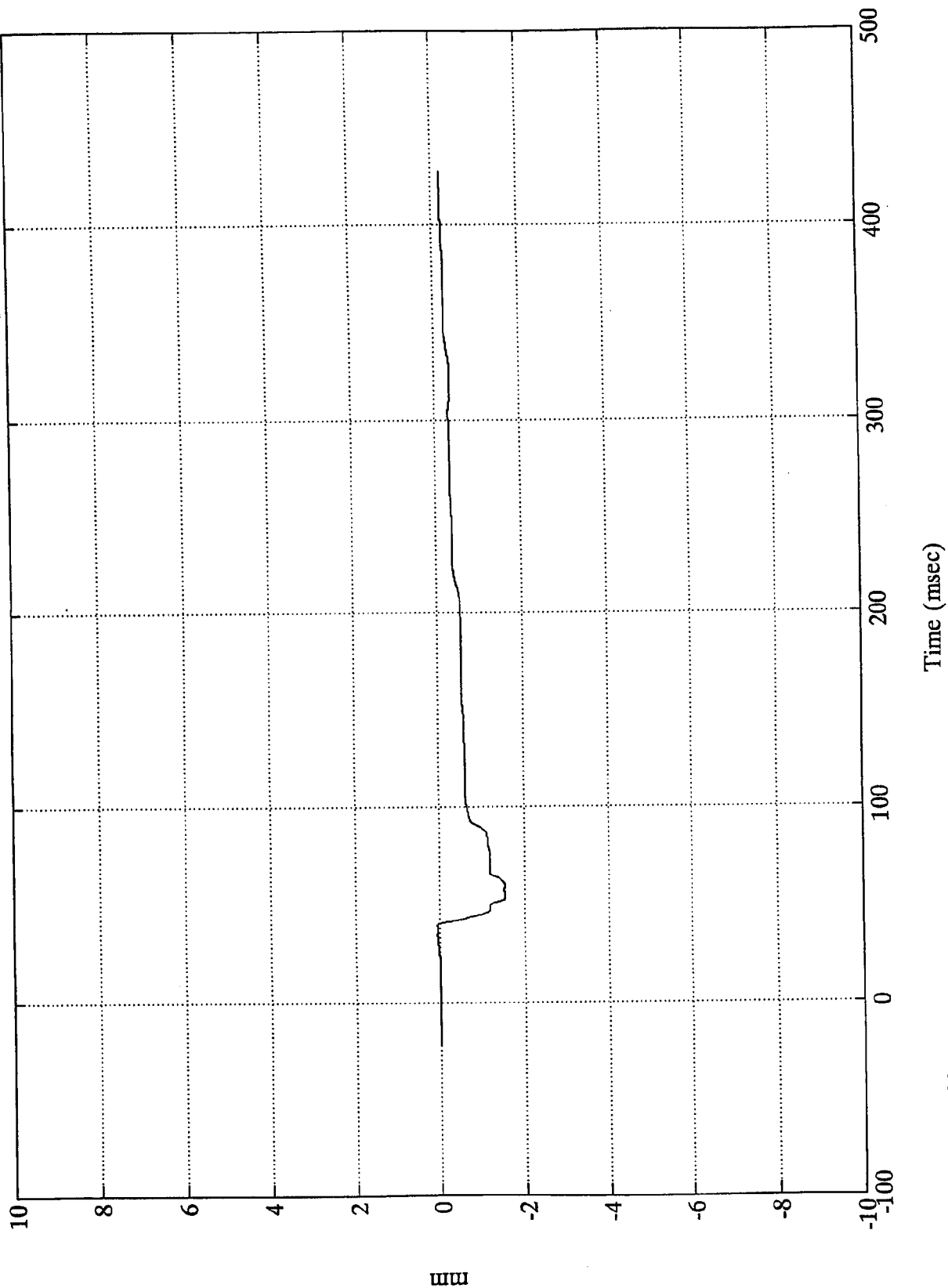
Time (msec)

SAE Filter Class 600

VTV TEST #2

P1 Left Knee Shear

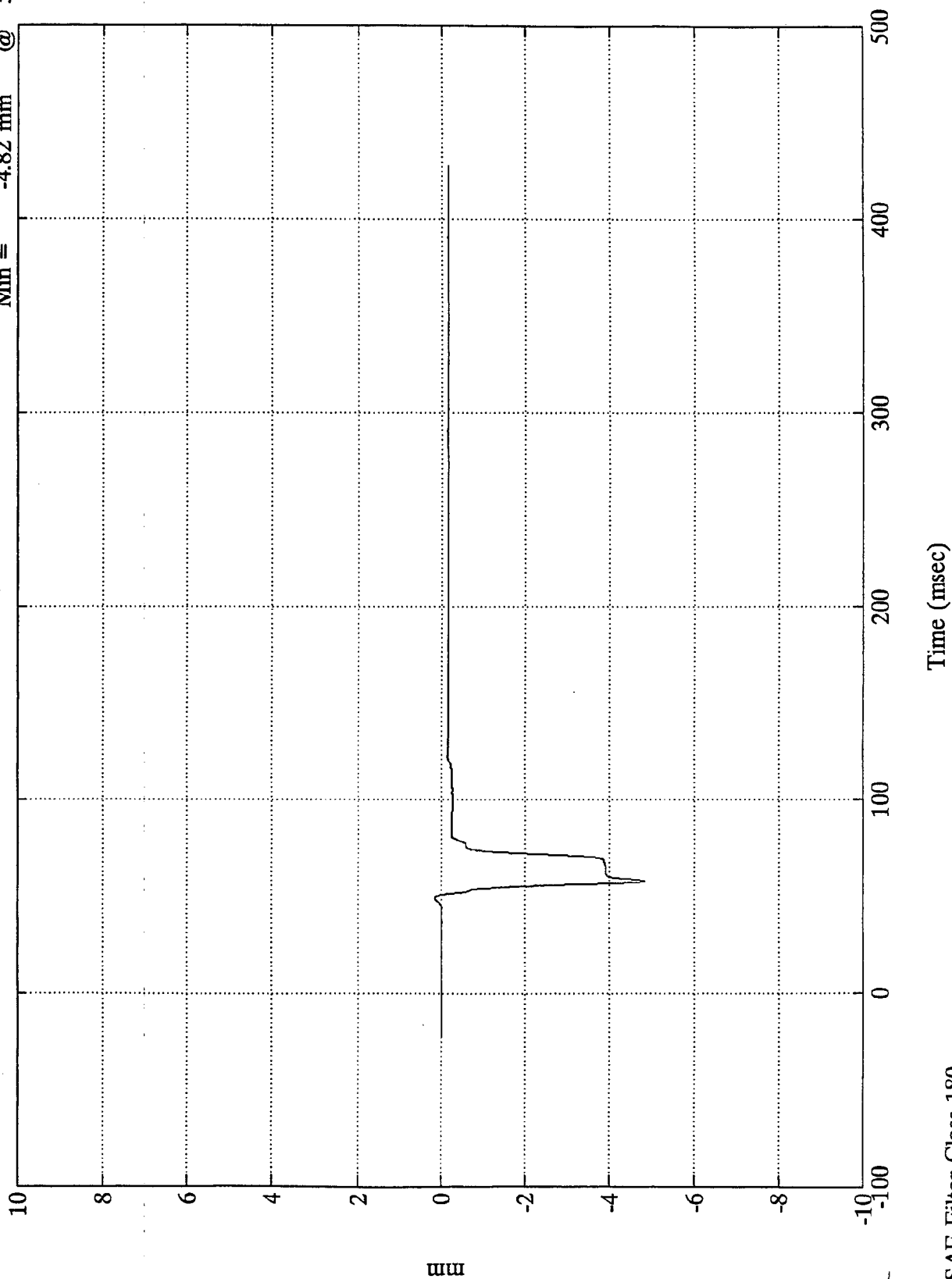
Max = .05 mm @ 39.95 msec
Min = -1.53 mm @ 53.52 msec



VTV TEST #2

P1 Right Knee Shear

Max = .15 mm @ 48.95 msec
Min = -4.82 mm @ 57.60 msec



mm

B-174

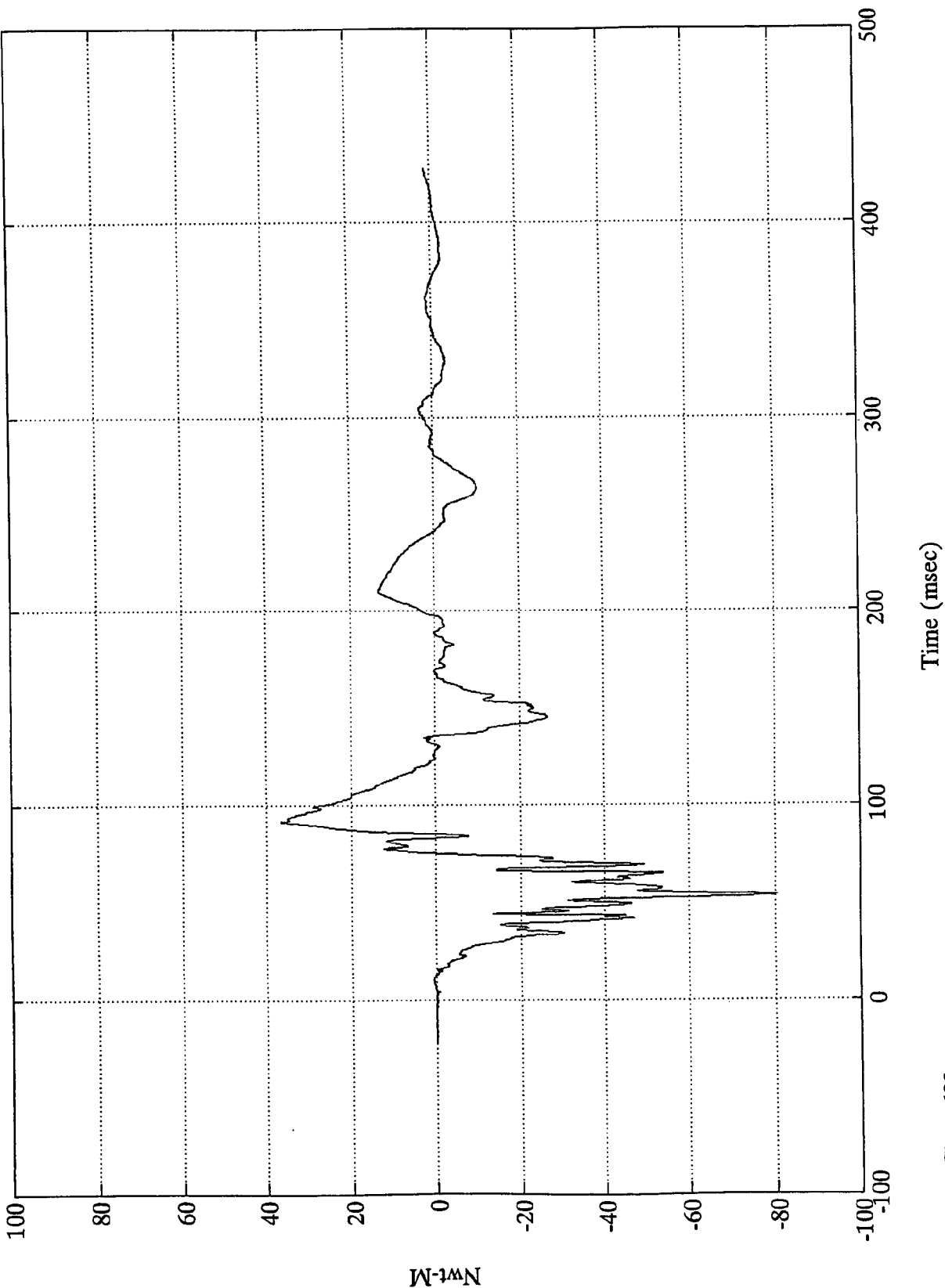
8304-2

SAE Filter Class 180

VTV TEST #2

P1 Lt Upper Tibia Mx

Max = 36.58 Nwt-M @ 91.56 msec
Min = -80.50 Nwt-M @ 53.88 msec

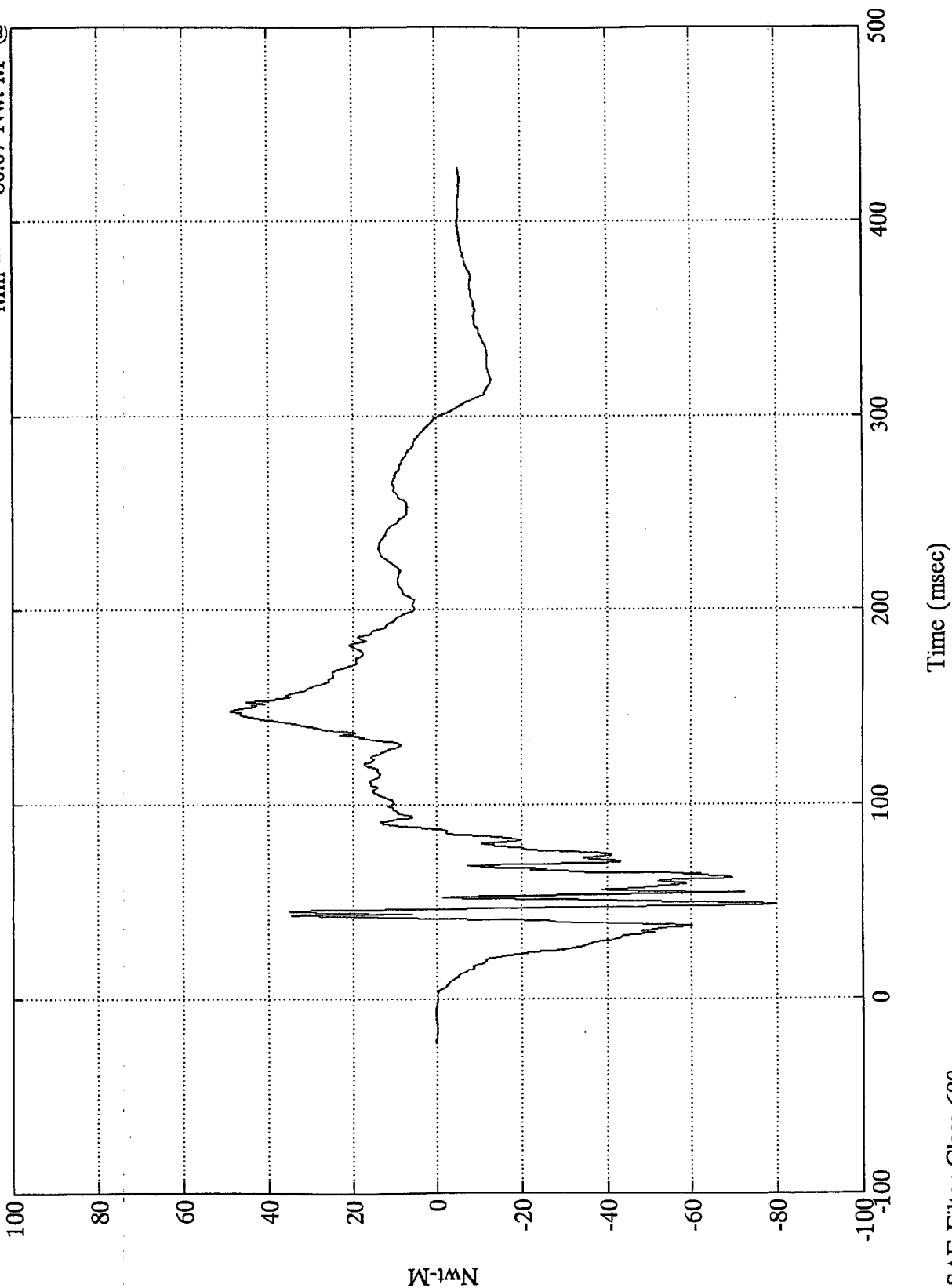


SAE Filter Class 600

VTV TEST #2

P1 Lt Upper Tibia My

Max = 49.06 Nwt-M @ 148.08 msec
 Min = -80.07 Nwt-M @ 48.59 msec

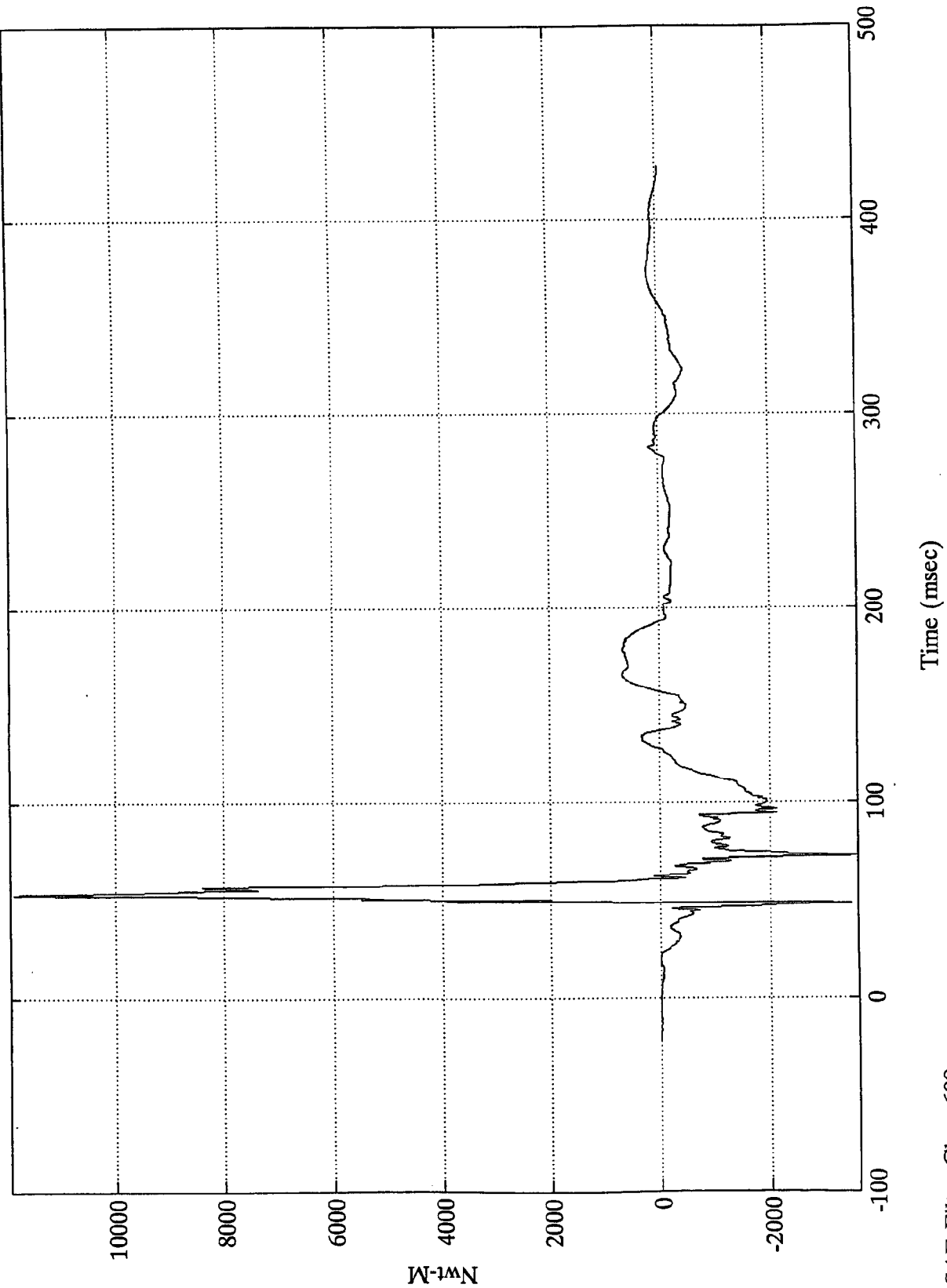


SAE Filter Class 600

VTV TEST #2

P1 Rt Upper Tibia Mx

Max = 11837.92 Nwt-M @ 53.63 msec
Min = -3557.11 Nwt-M @ 72.84 msec

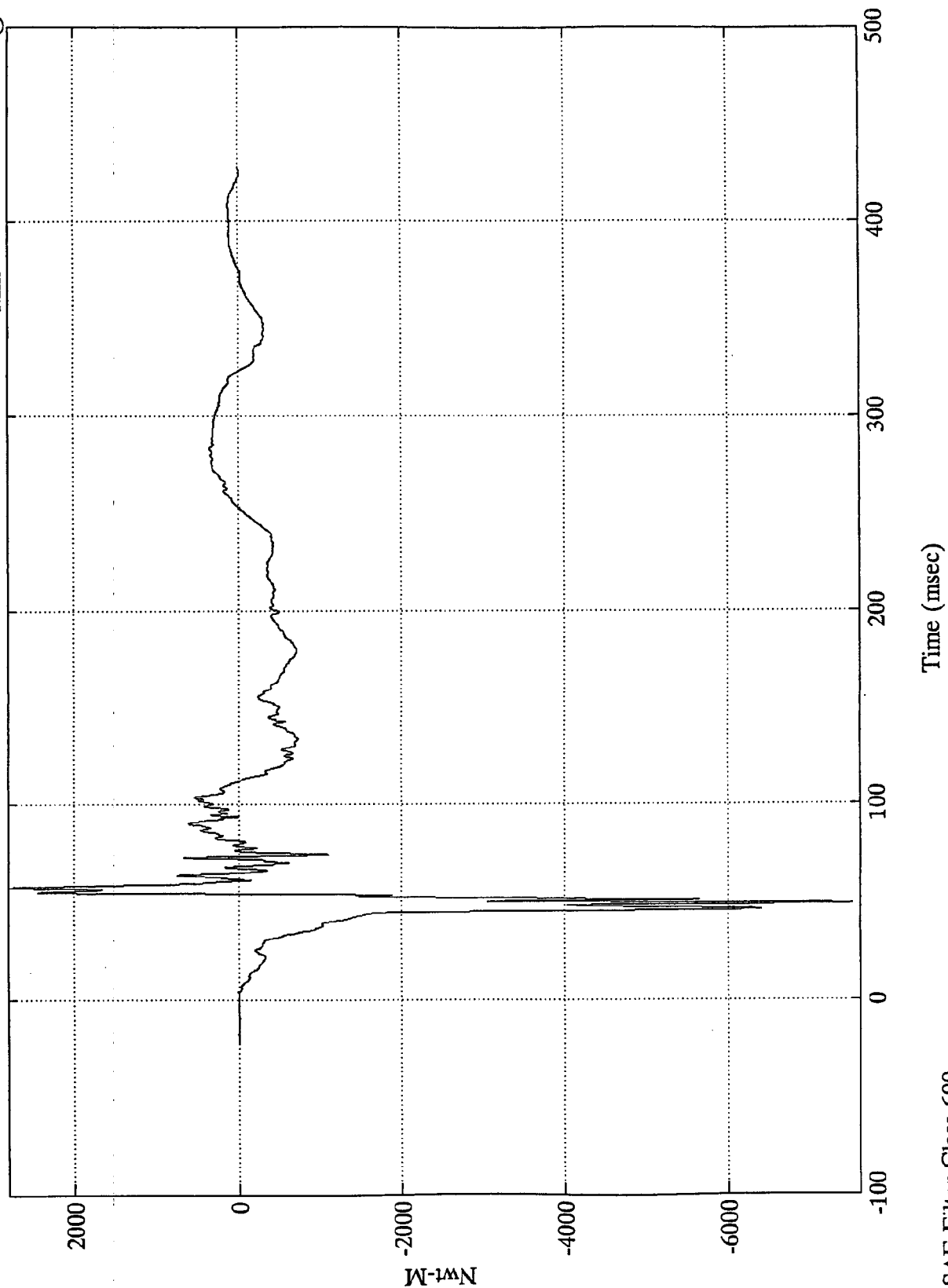


SAE Filter Class 600

VTV TEST #2

P1 Rt Upper Tibia My

Max = 2783.19 Nwt-M @ 57.60 msec
Min = -7508.17 Nwt-M @ 49.20 msec



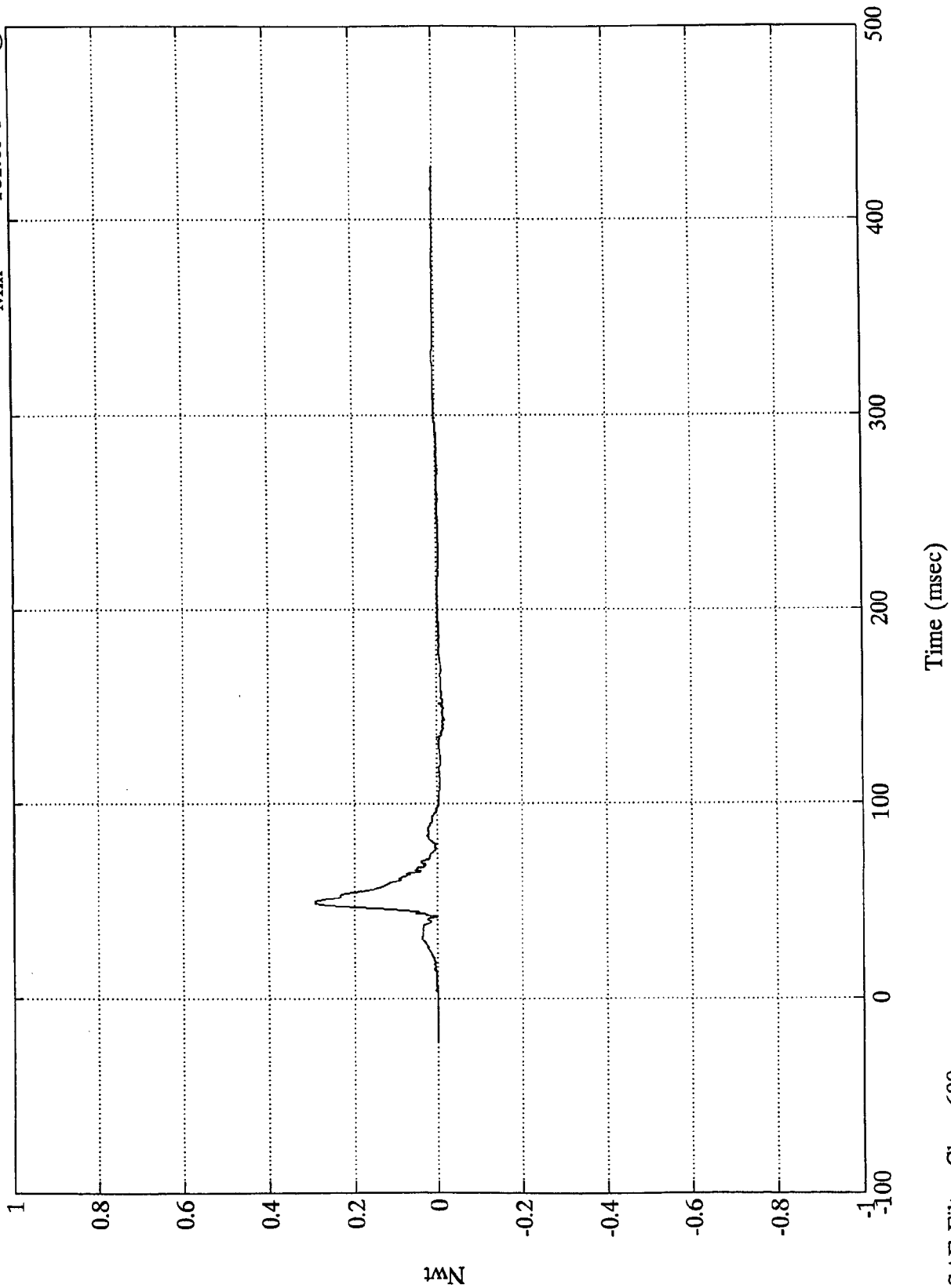
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P1 Lt Lower Tibia Fy

Max = 2933.59 Nwt @ 50.04 msec
Min = -181.63 Nwt @ 143.16 msec



Nwt

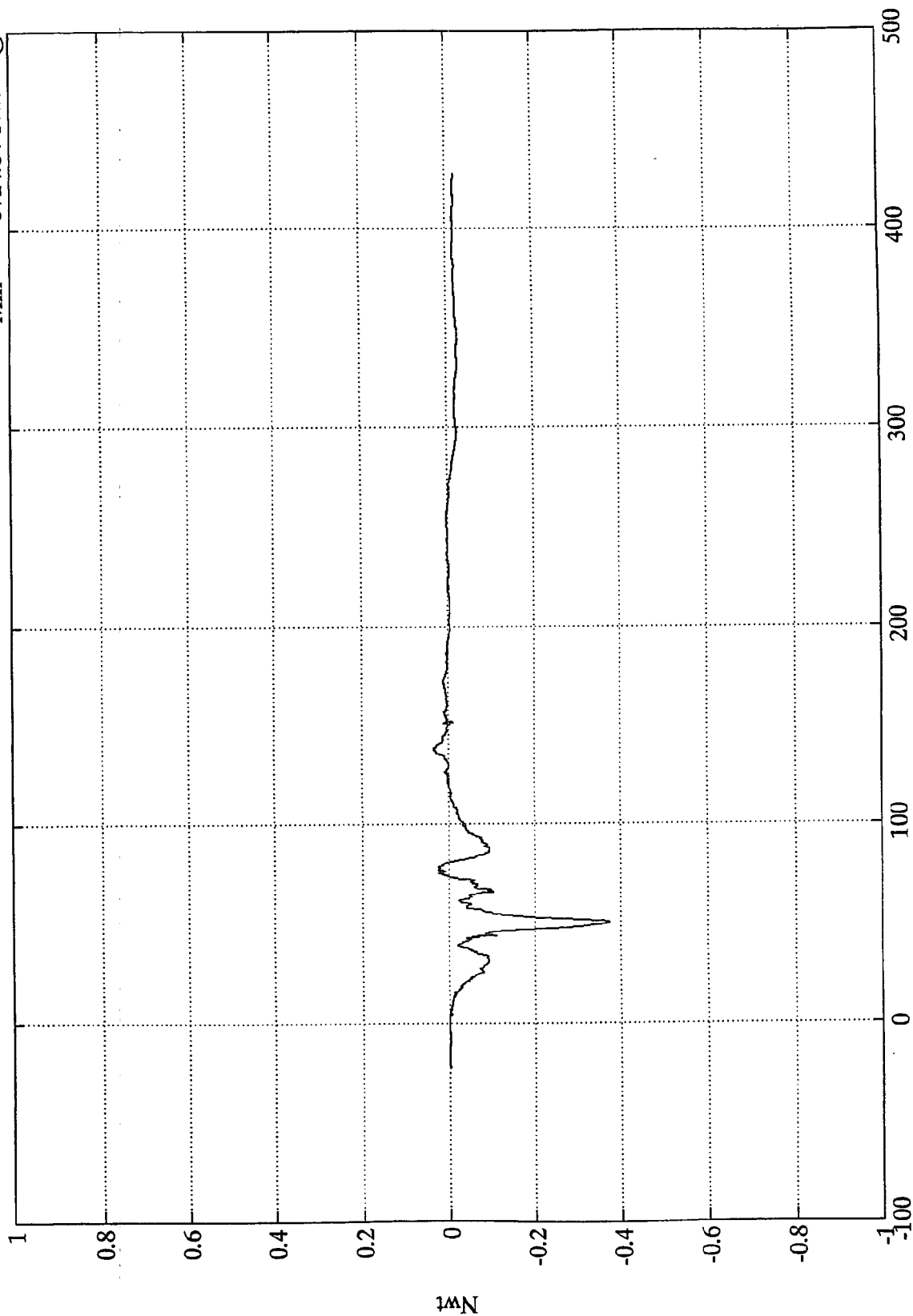
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P1 Lt Lower Tibia Fz

Max = 332.27 Nwt @ 137.63 msec
Min = -3724.84 Nwt @ 50.40 msec



Time (msec)

SAE Filter Class 600

Nwt

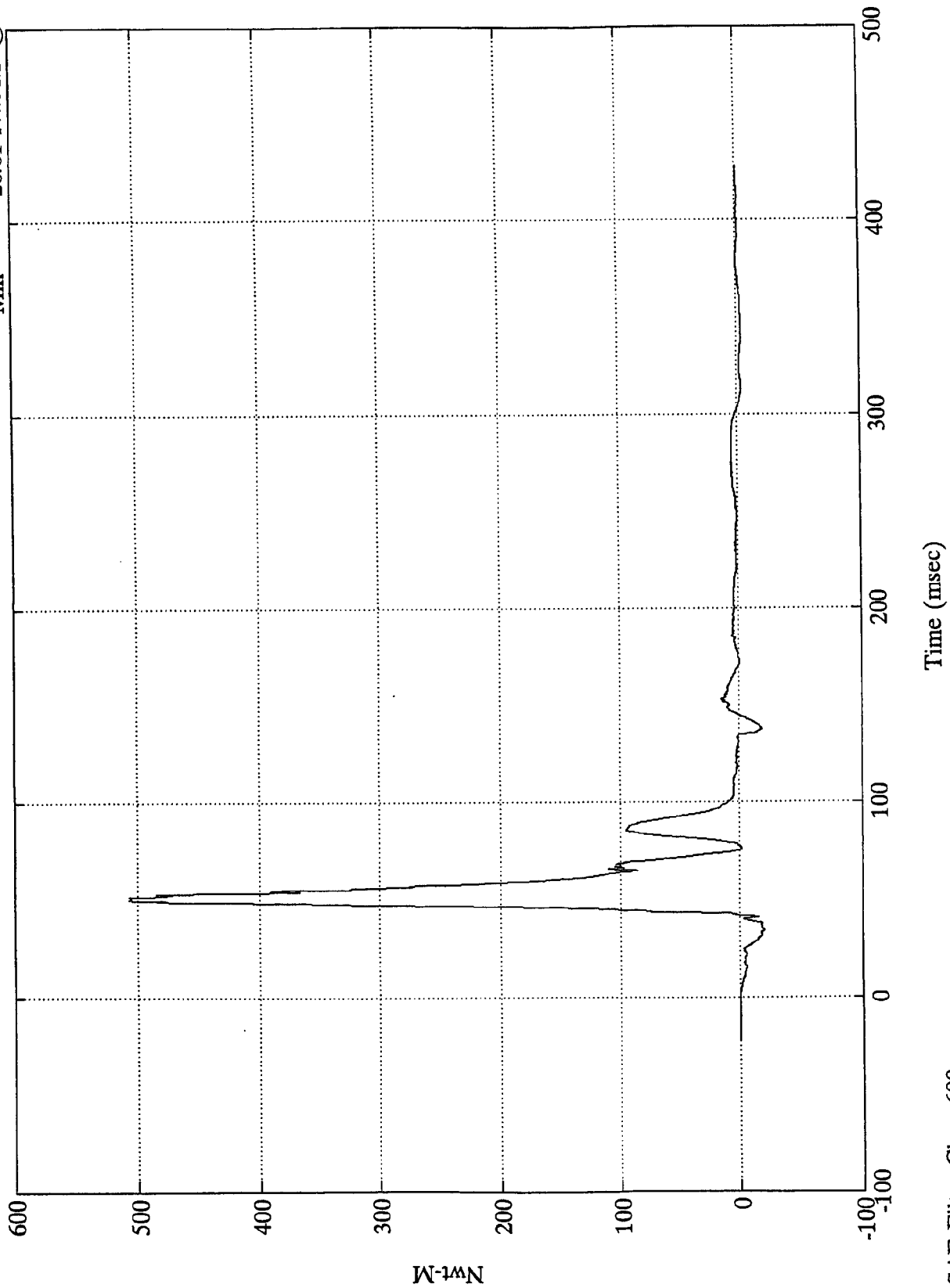
B-180

8304-2

VTV TEST #2

Max = 506.66 Nwt-M @ 51.84 msec
Min = -20.01 Nwt-M @ 34.68 msec

P1 Lt Lower Tibia Mx



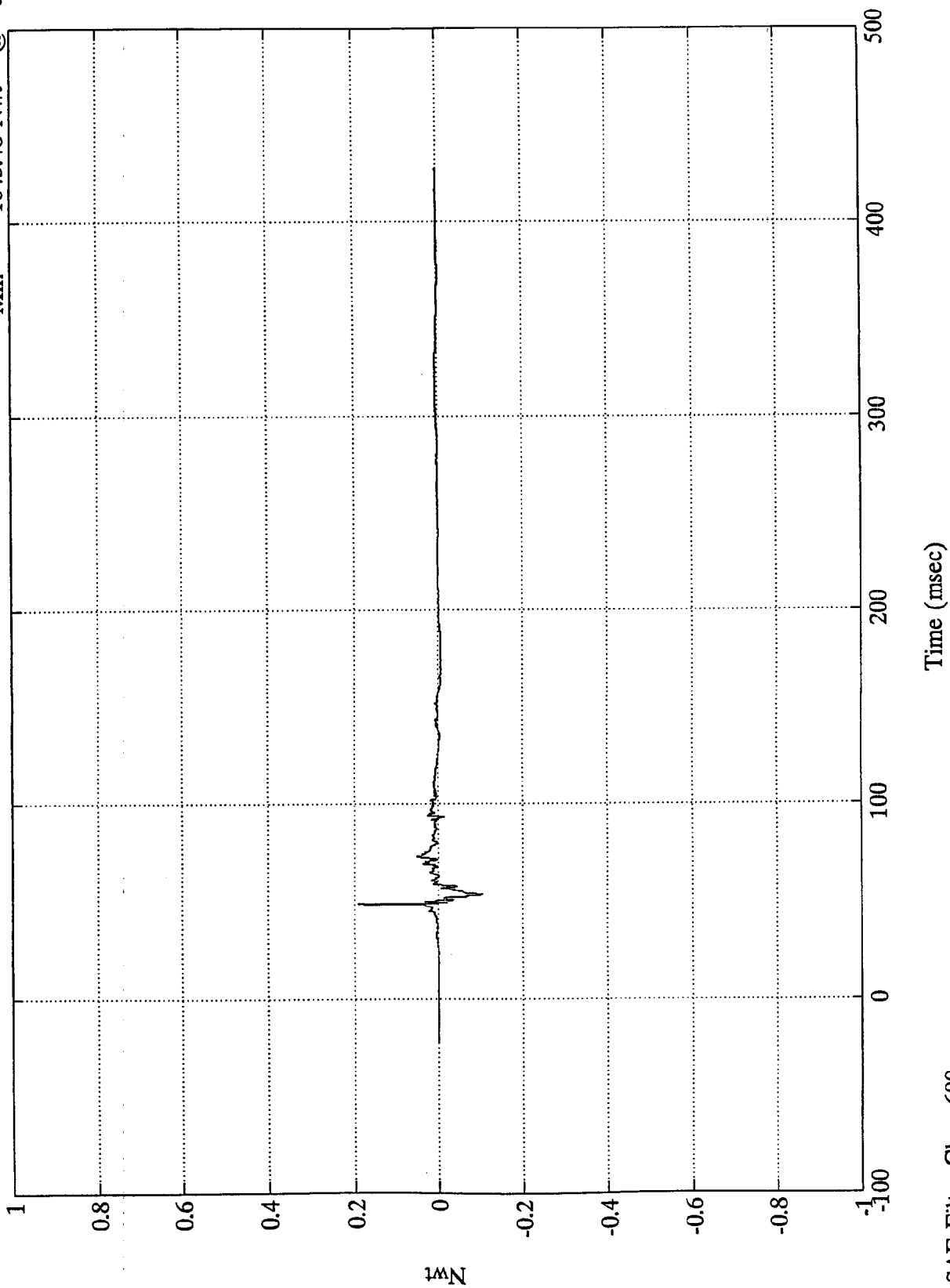
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P1 Rt Lower Tibia Fy

Max = 1909.92 Nwt @ 48.47 msec
Min = -1043.48 Nwt @ 53.40 msec



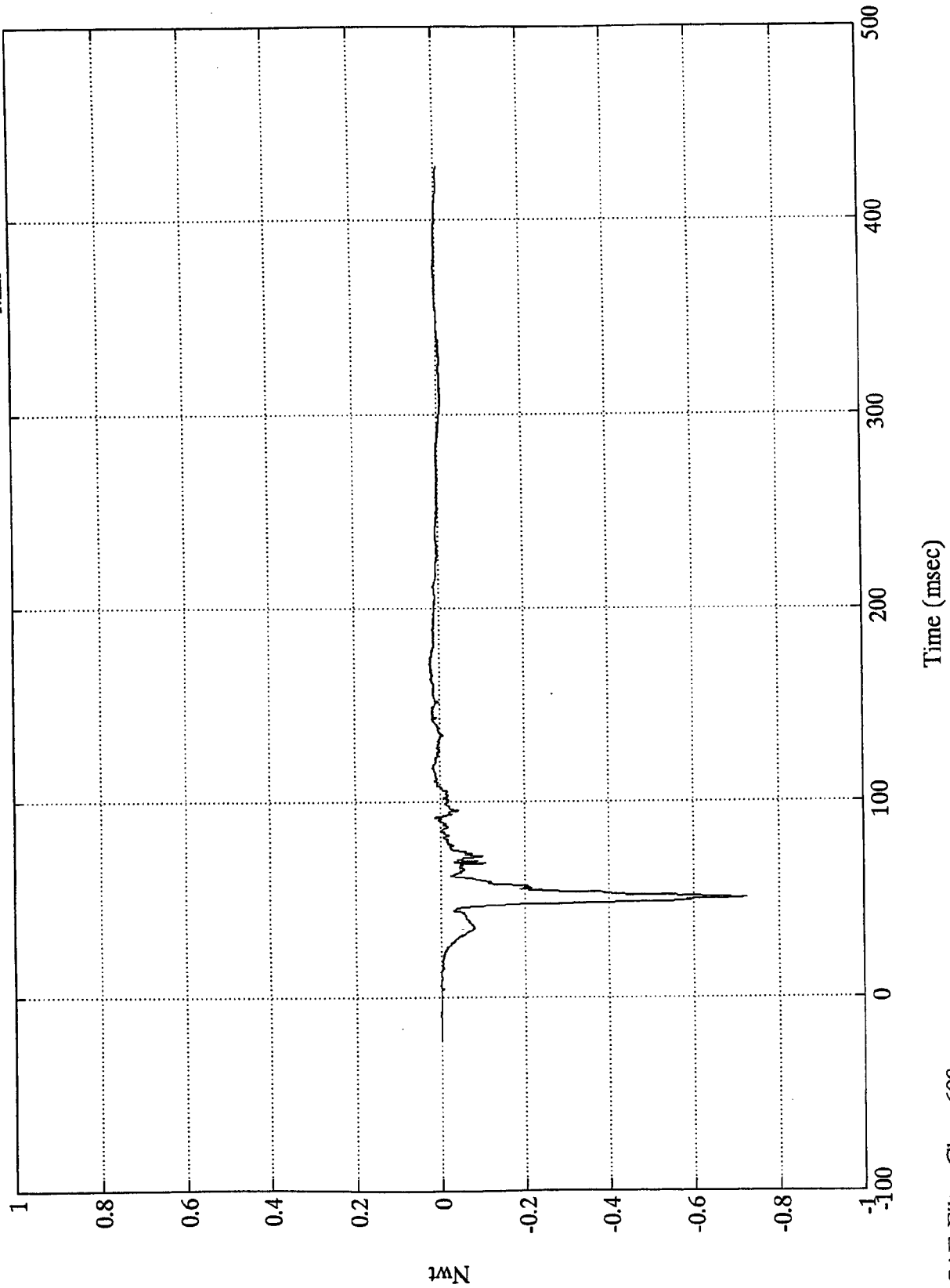
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P1 Rt Lower Tibia Fz

Max = 219.74 Nwt @ 171.36 msec
Min = -7243.57 Nwt @ 51.00 msec



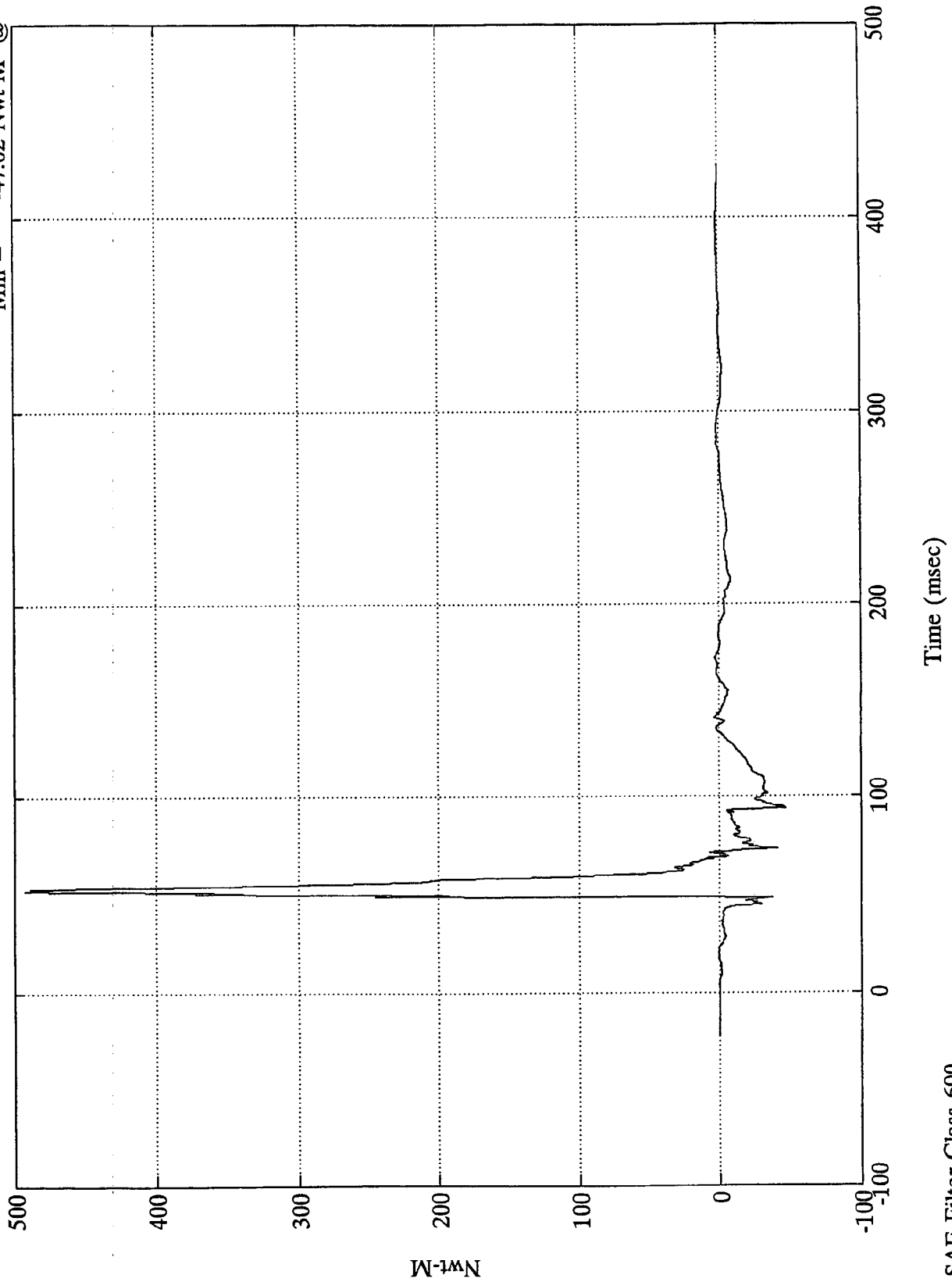
SAE Filter Class 600

Nwt

VTV TEST #2

P1 Rt Lower Tibia Mx

Max = 492.94 Nwt-M @ 52.44 msec
Min = -47.02 Nwt-M @ 93.95 msec



Nwt-M

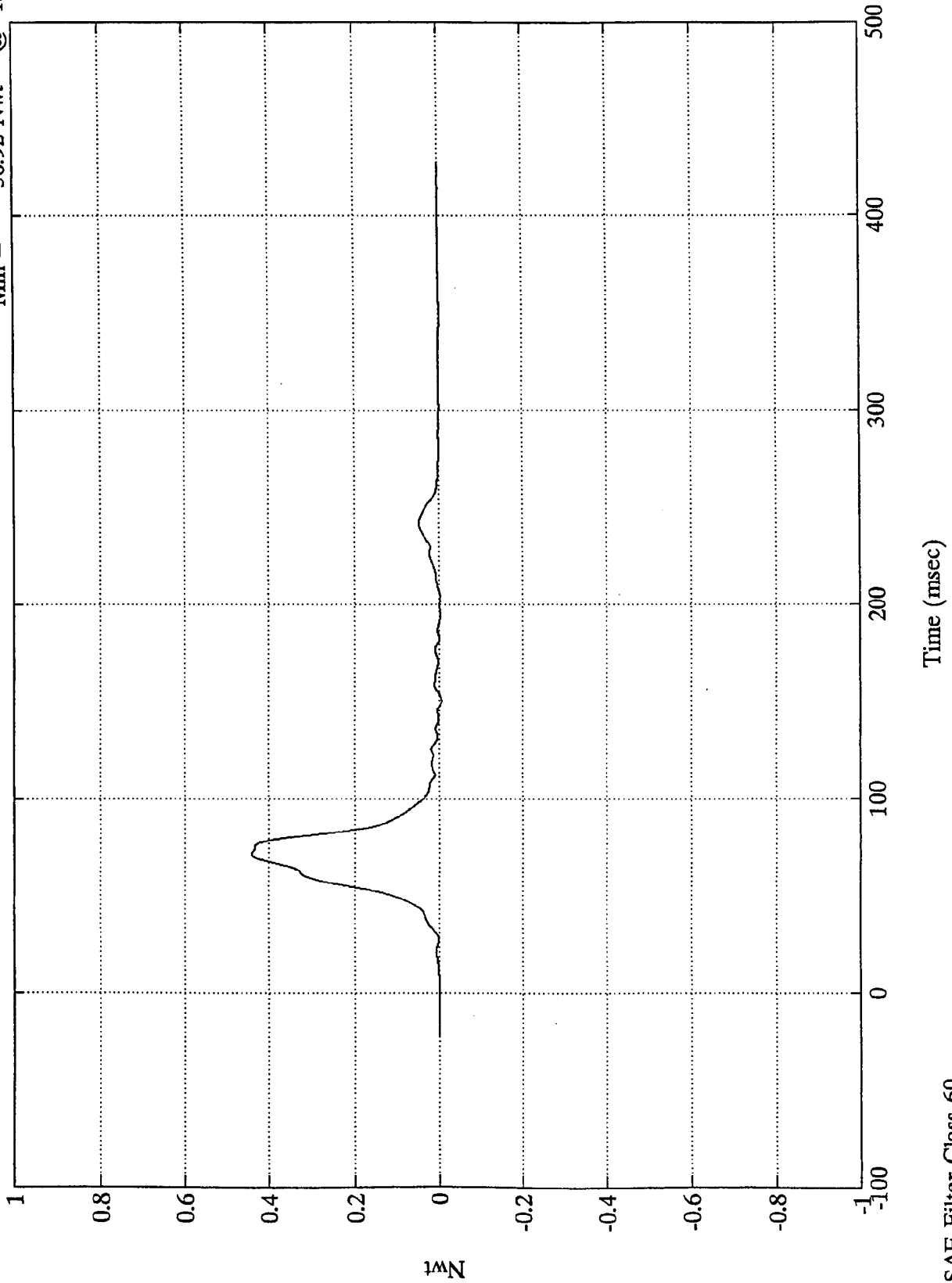
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P1 Lap Belt Load

Max = 4407.07 Nwt @ 71.76 msec
Min = -56.92 Nwt @ 150.12 msec



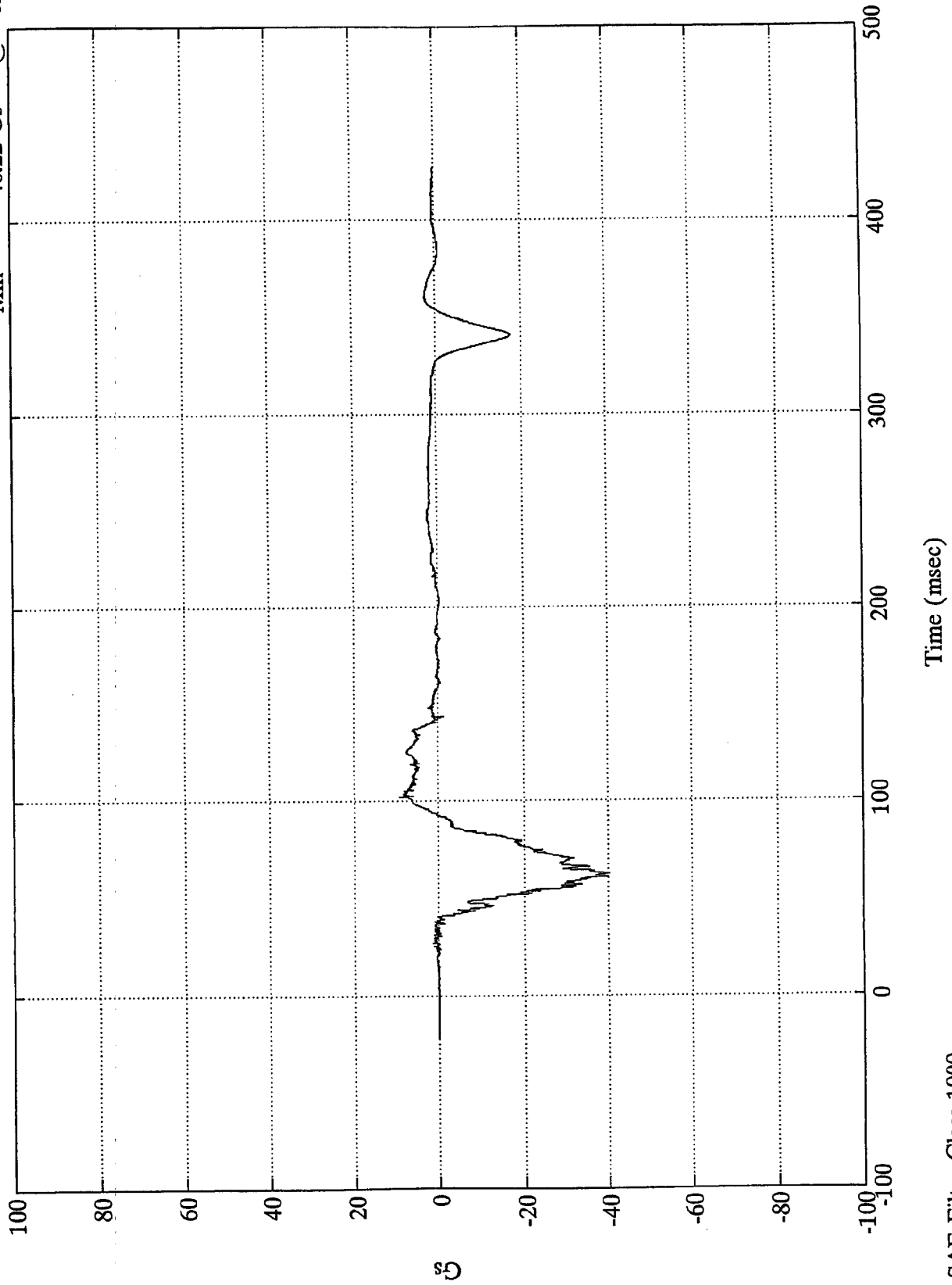
Nwt

SAE Filter Class 60

VTV TEST #2

Max = 9.30 Gs @ 102.24 msec
Min = -40.22 Gs @ 62.64 msec

P2 Head X

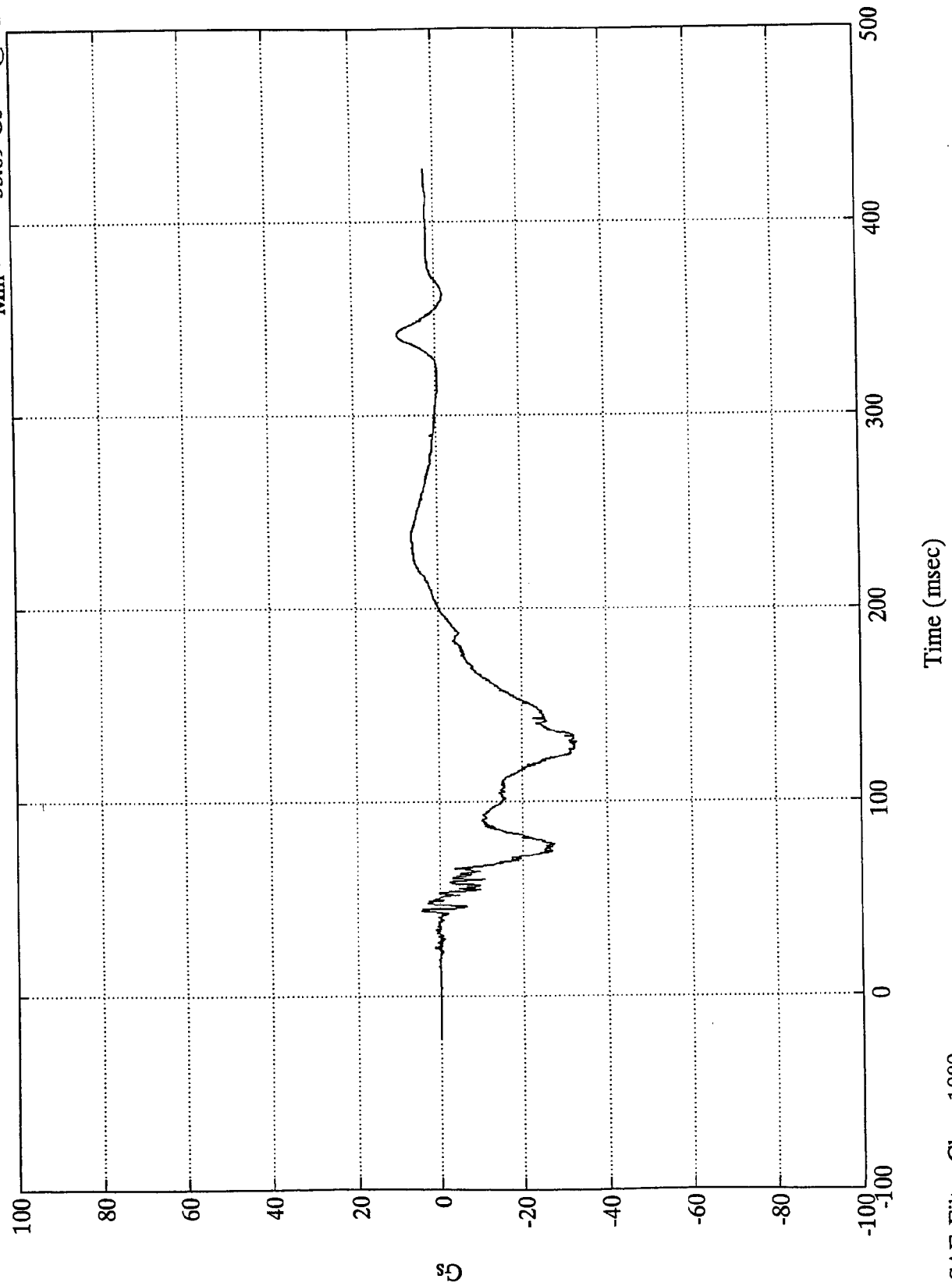


SAE Filter Class 1000

VTV TEST #2

P2 Head Y

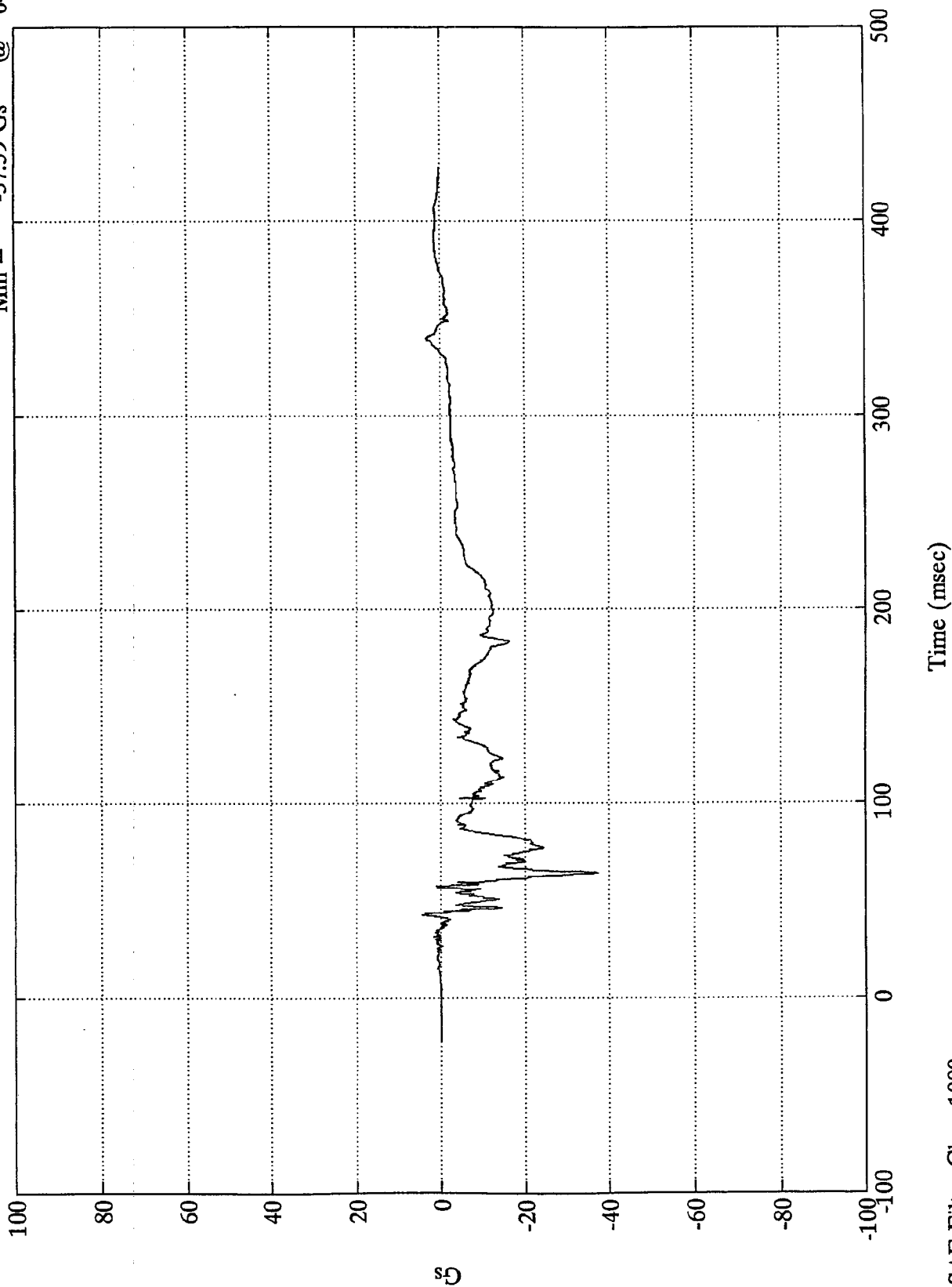
Max = 9.23 Gs @ 341.04 msec
Min = -33.09 Gs @ 131.04 msec



VTV TEST #2

Max = 4.54 Gs @ 42.72 msec
Min = -37.59 Gs @ 64.44 msec

P2 Head Z

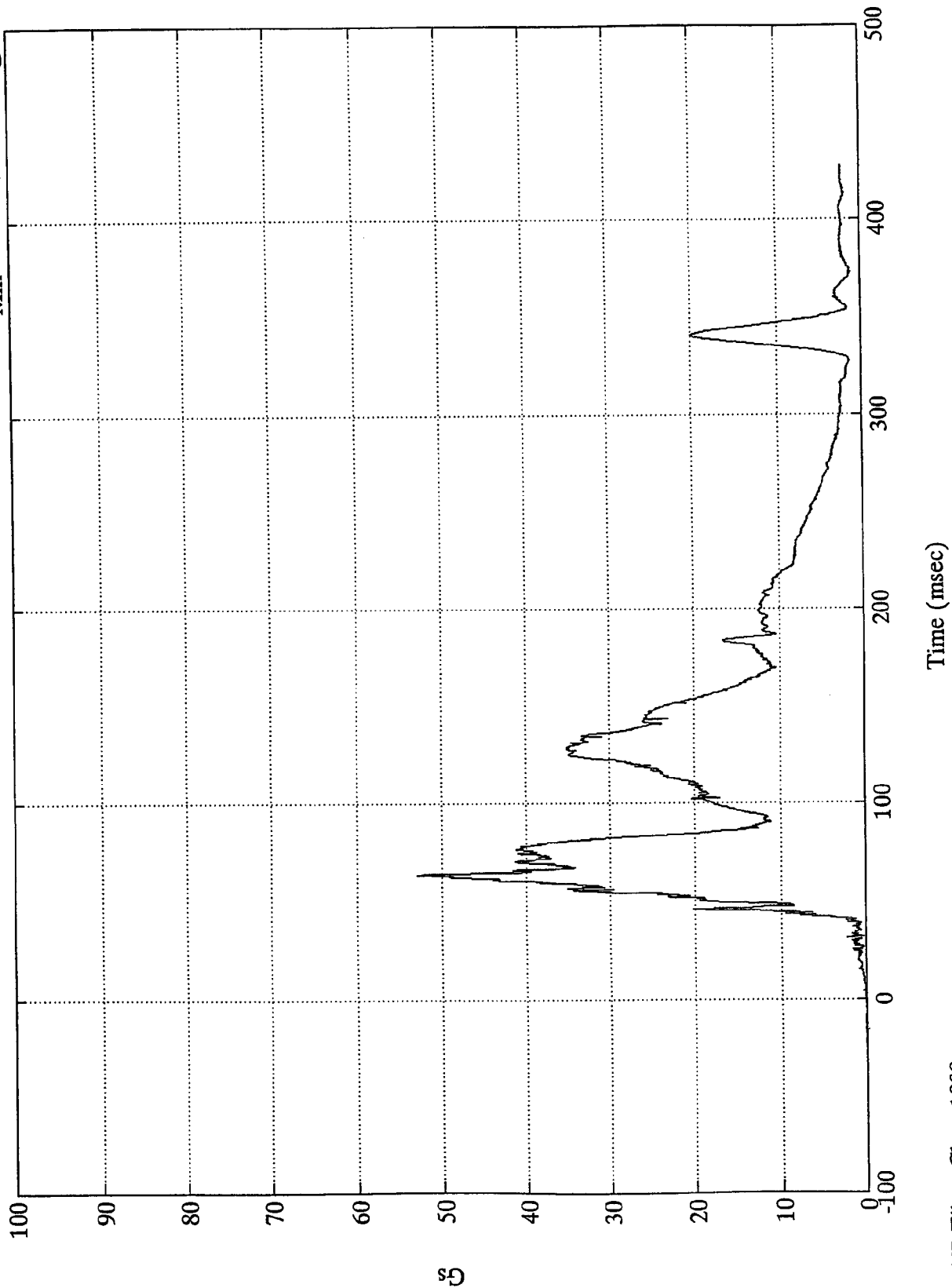


SAE Filter Class 1000

VTV TEST #2

Max = 52.94 Gs @ 64.31 msec
Min = .03 Gs @ 6.11 msec

P2 Head Resultant

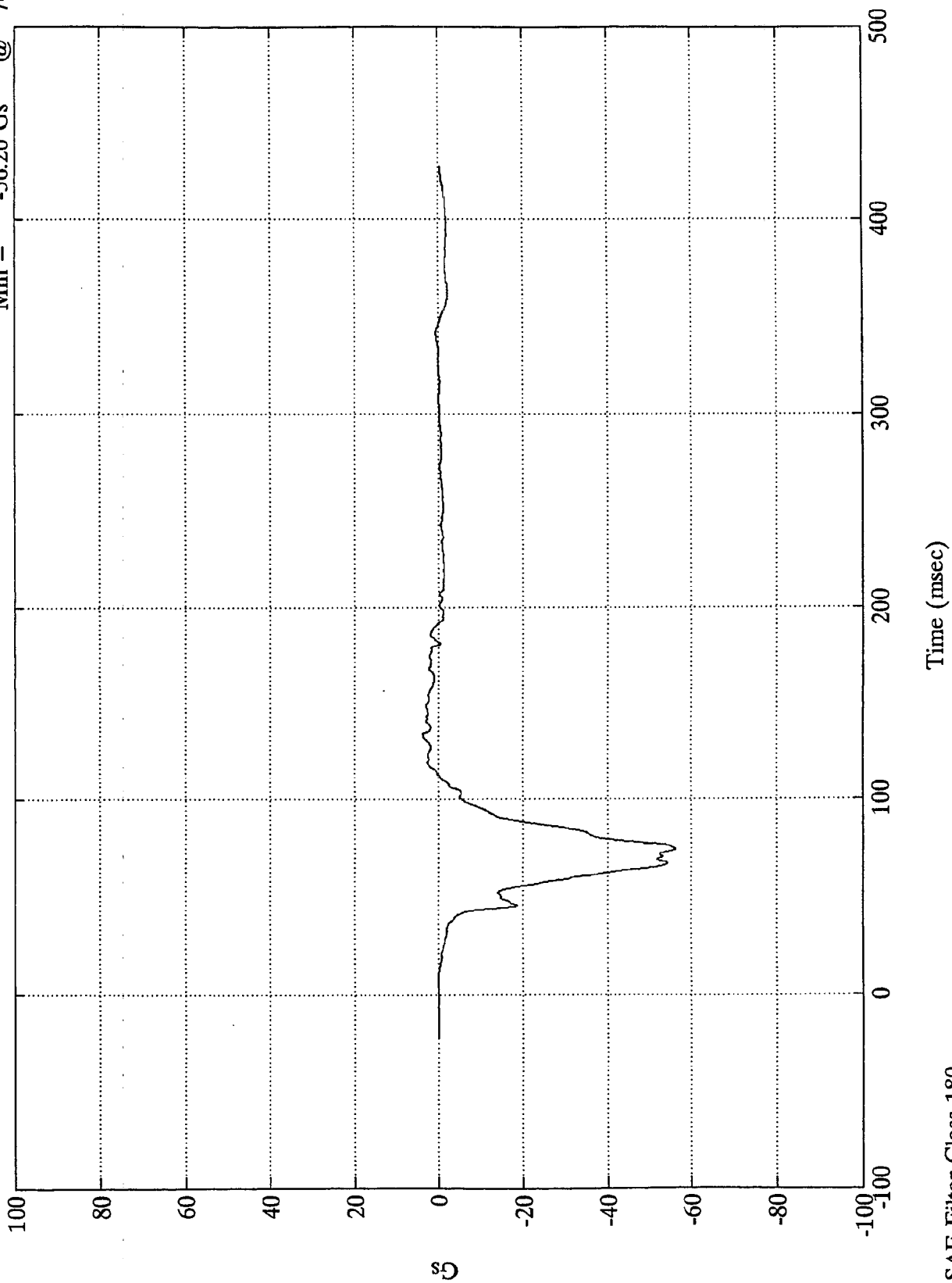


SAE Filter Class 1000

VTV TEST #2

P2 Chest X

Max = 3.75 Gs @ 134.03 msec
Min = -56.20 Gs @ 74.51 msec

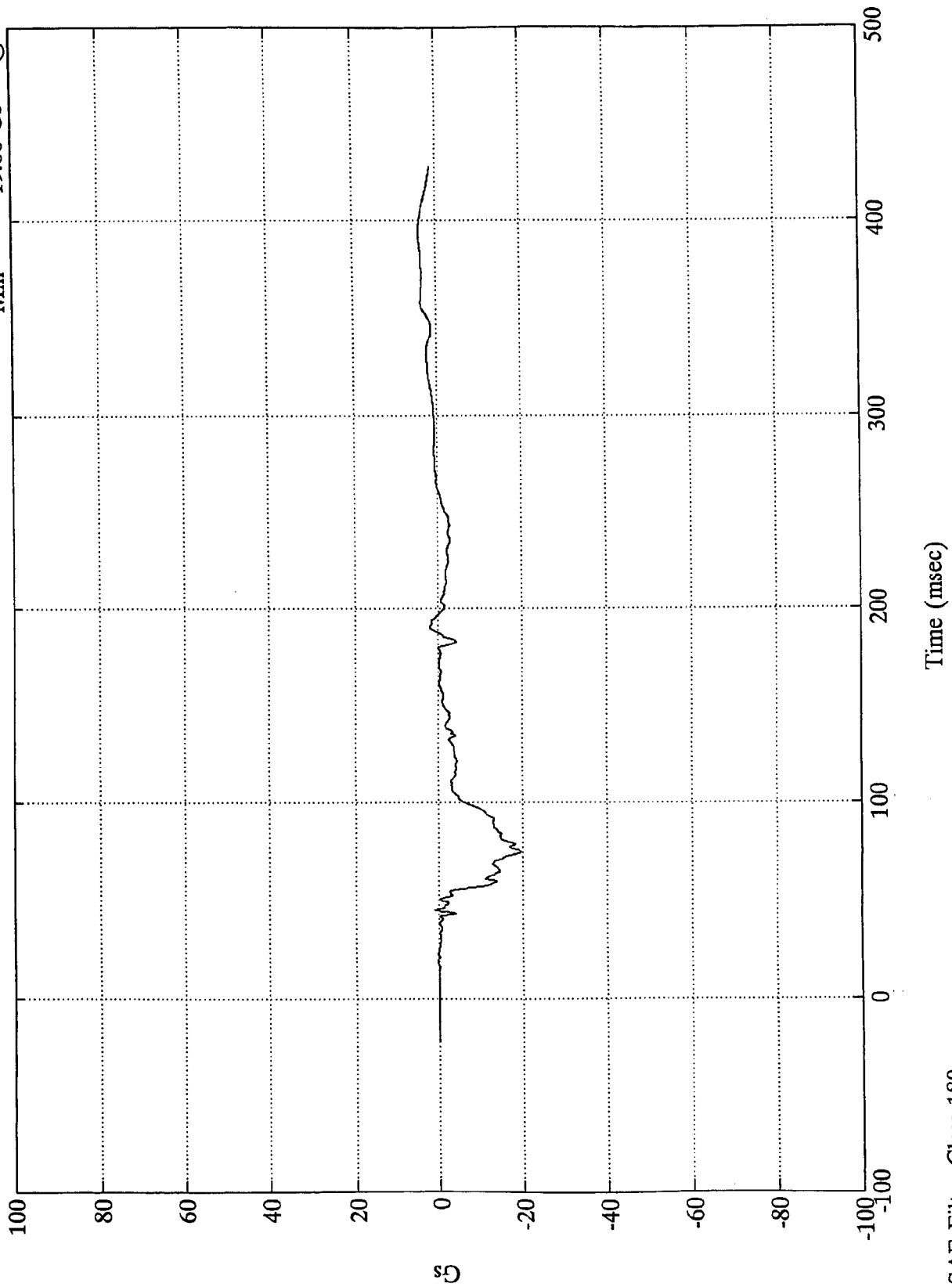


SAE Filter Class 180

VTV TEST #2

Max = 4.07 Gs @ 391.08 msec
Min = -19.66 Gs @ 75.00 msec

P2 Chest Y

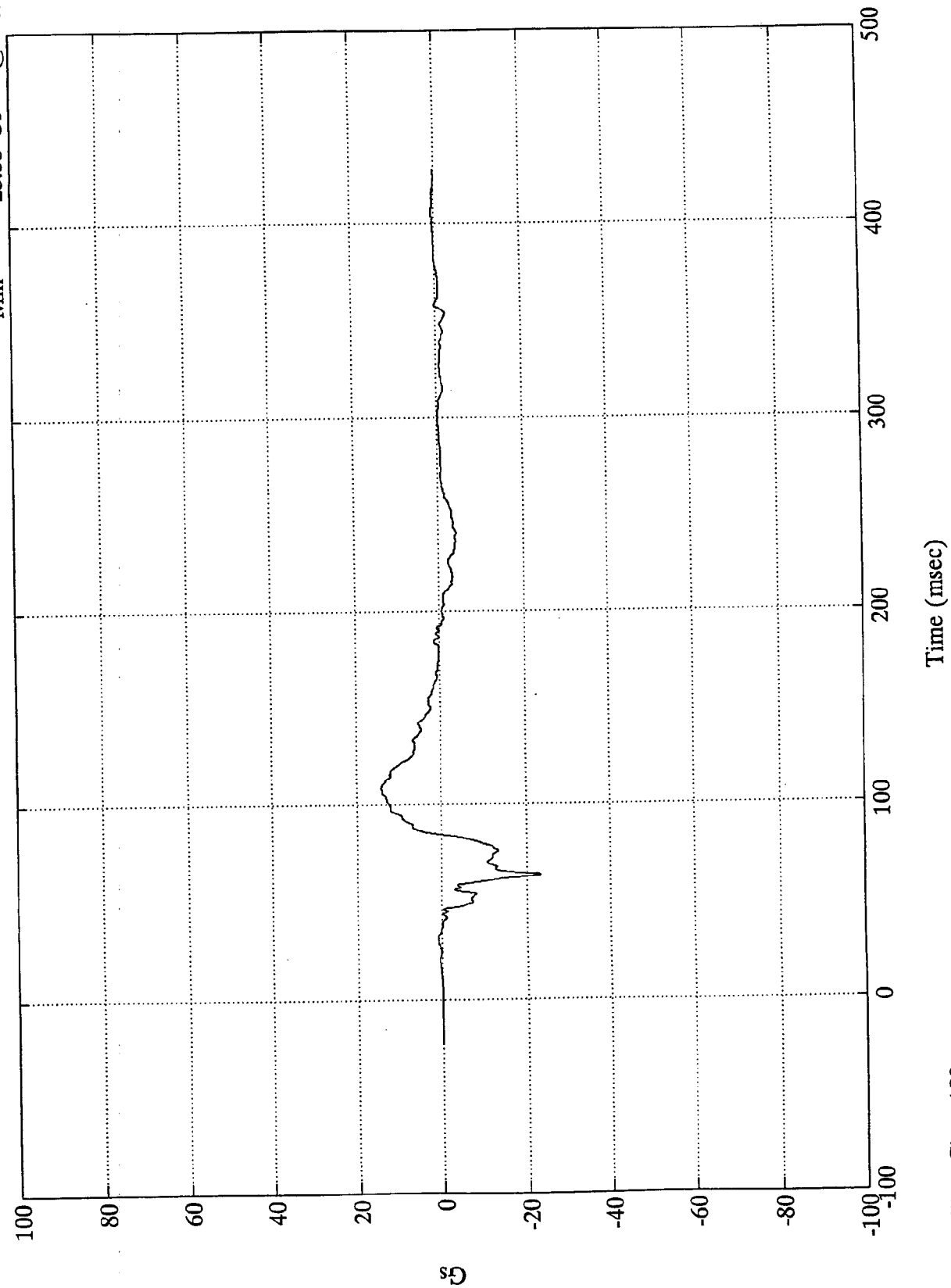


SAE Filter Class 180

VTV TEST #2

Max = 14.21 Gs @ 108.36 msec
Min = -23.53 Gs @ 63.60 msec

P2 Chest Z

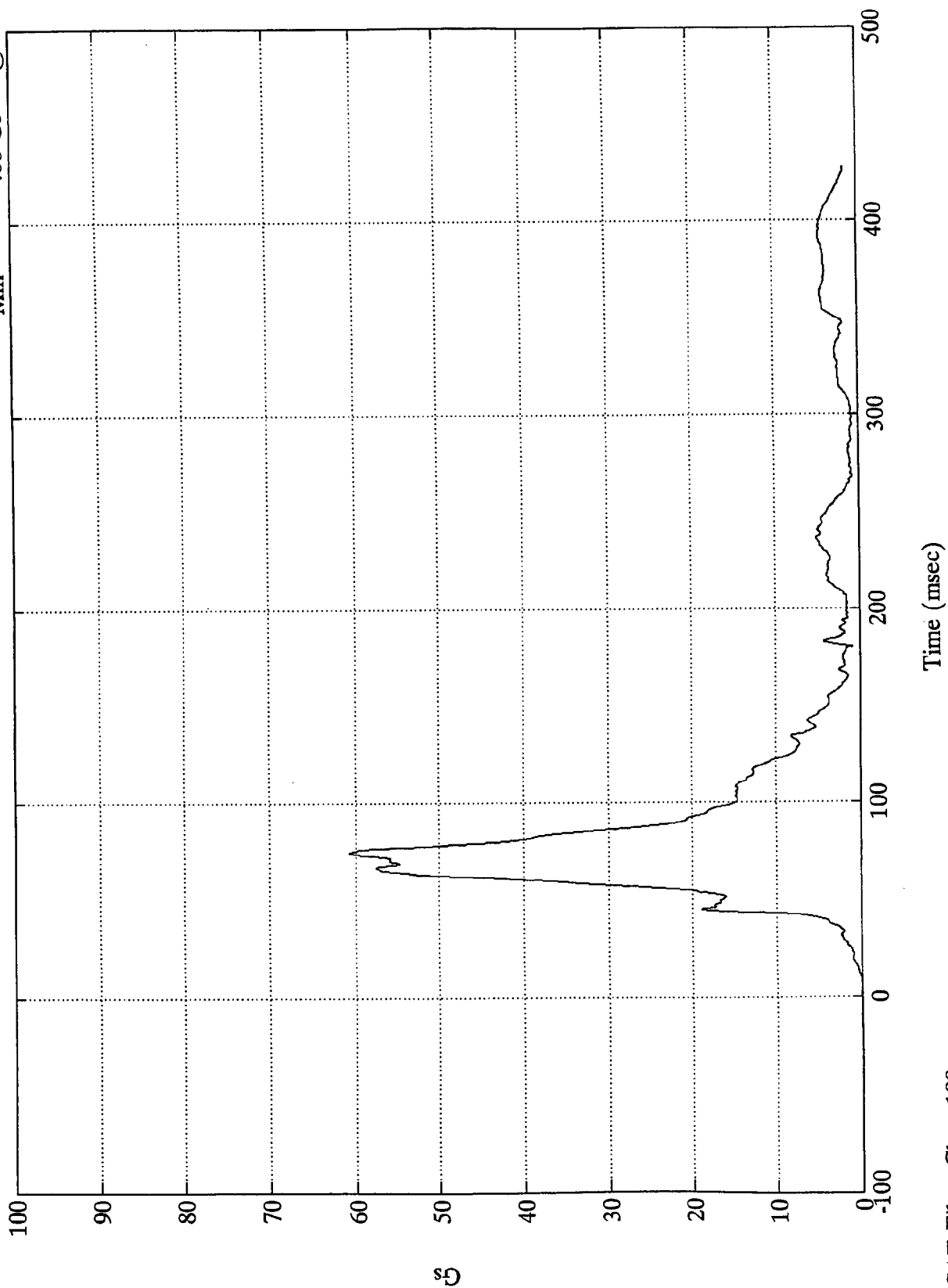


SAE Filter Class 180

VTV TEST #2

Max = 60.71 Gs @ 74.76 msec
Min = .00 Gs @ -0.72 msec

P2 Chest Resultant

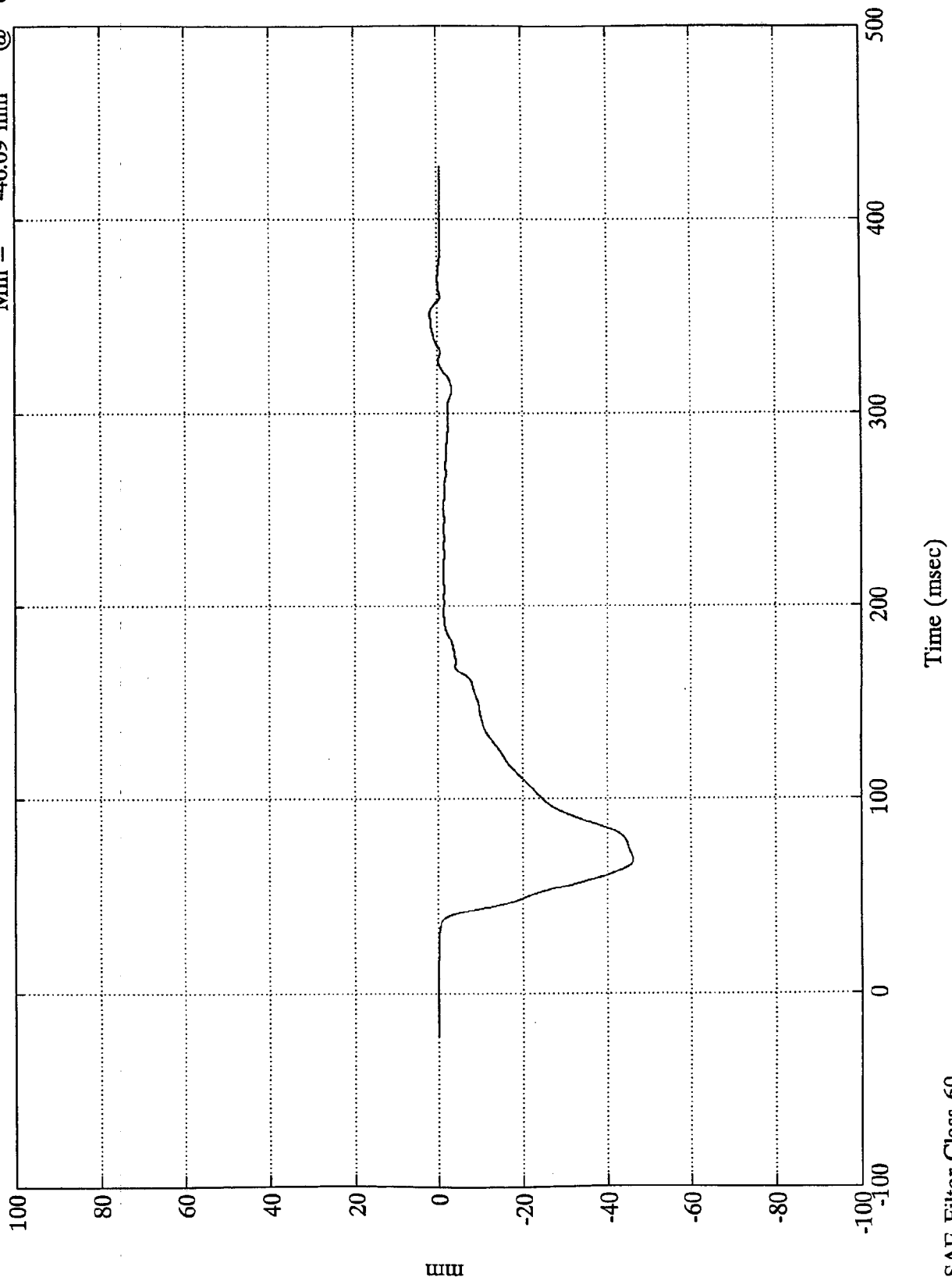


SAE Filter Class 180

VTV TEST #2

P2 Chest Disp.

Max = 1.77 mm @ 350.88 msec
Min = -46.09 mm @ 68.63 msec



SAE Filter Class 60

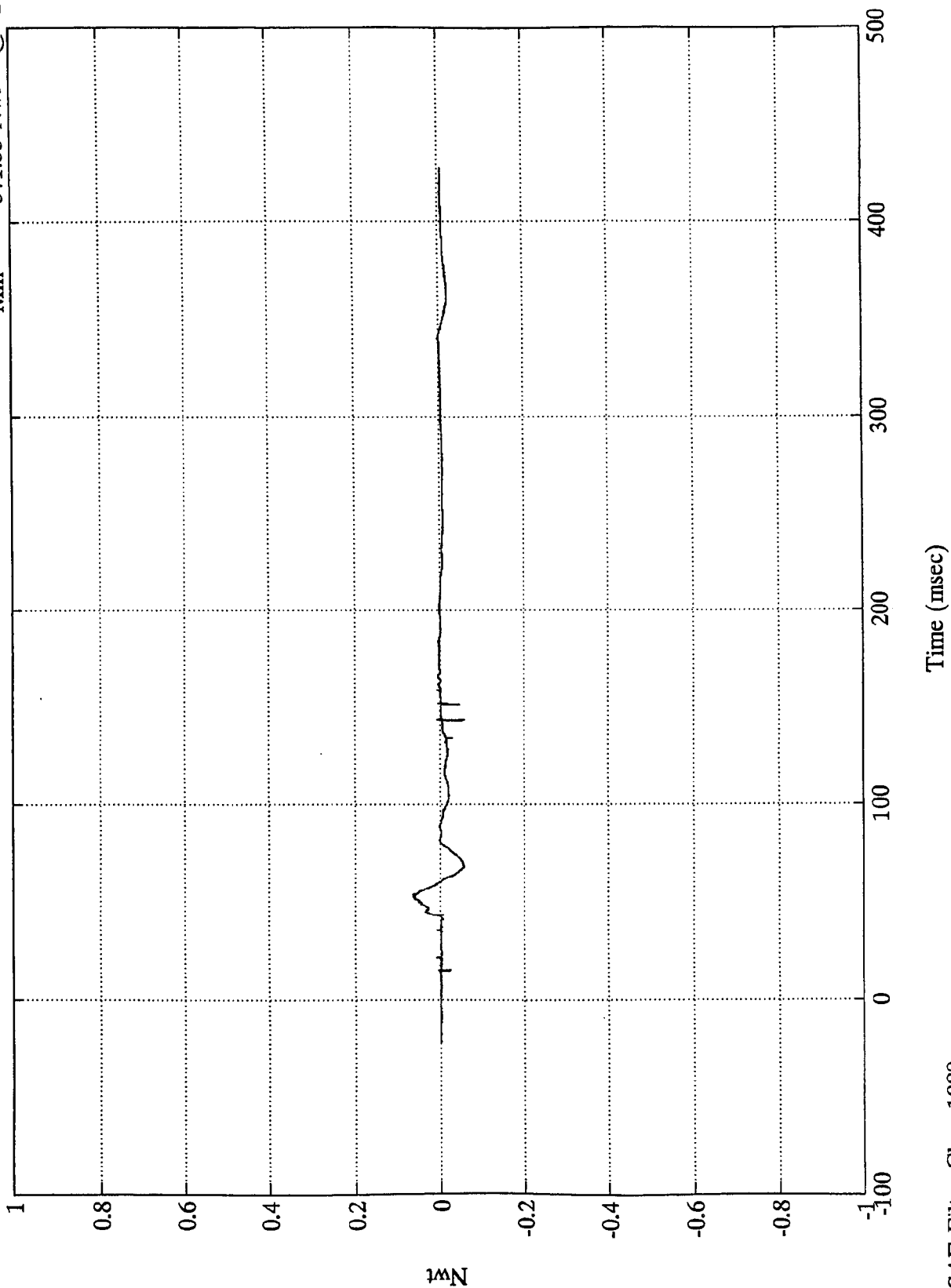
mm

Time (msec)

VTV TEST #2
x10⁴

P2 Upper Neck Fx

Max = 645.46 Nwt @ 54.00 msec
Min = -571.53 Nwt @ 143.16 msec



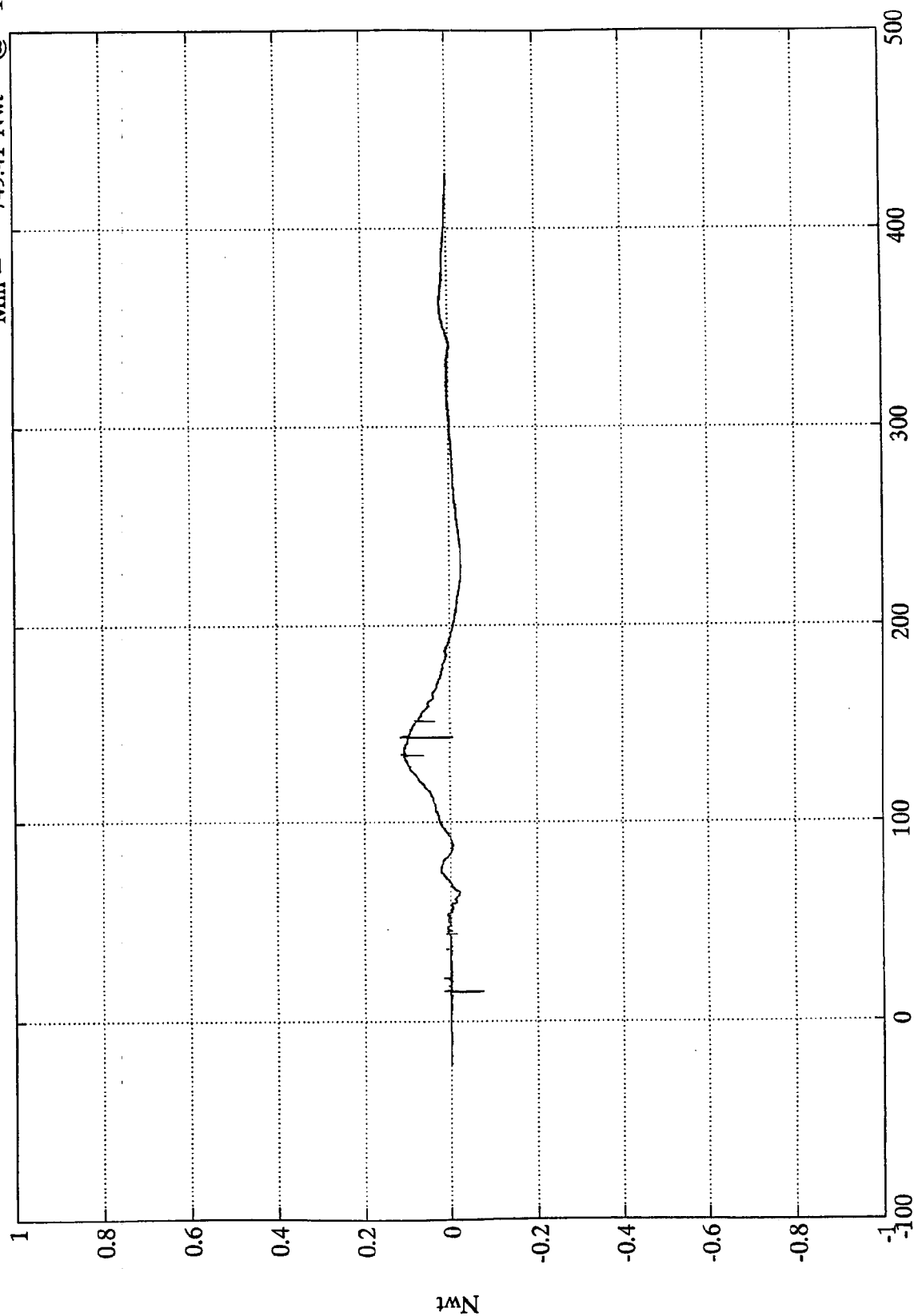
SAE Filter Class 1000

VTV TEST #2

$\times 10^4$

P2 Upper Neck Fy

Max = 1150.20 Nwt @ 143.52 msec
Min = -749.41 Nwt @ 15.47 msec



Time (msec)

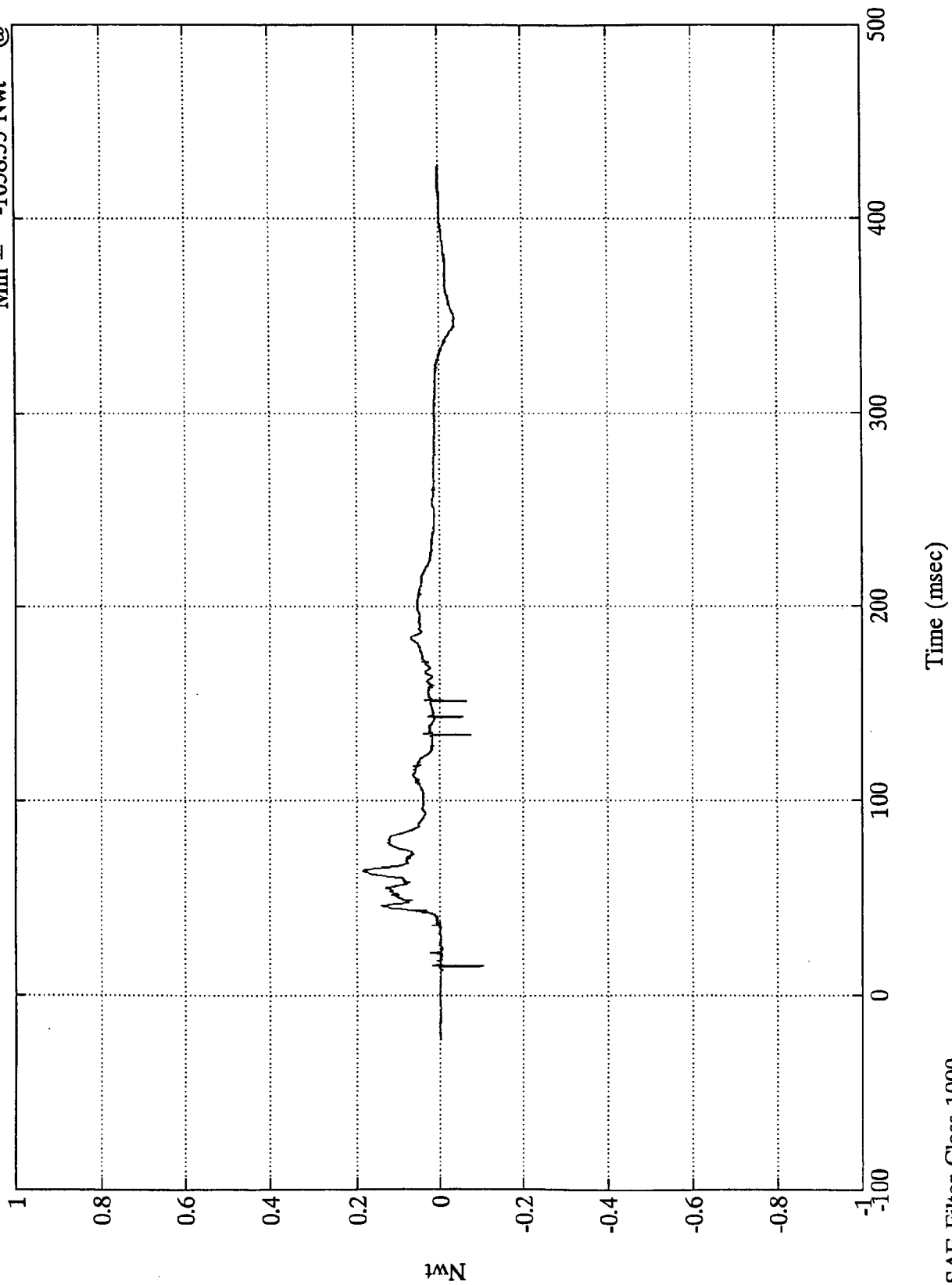
SAE Filter Class 1000

VTV TEST #2

$\times 10^4$

P2 Upper Neck Fz

Max = 1853.22 Nwt @ 64.44 msec
Min = -1058.55 Nwt @ 15.47 msec

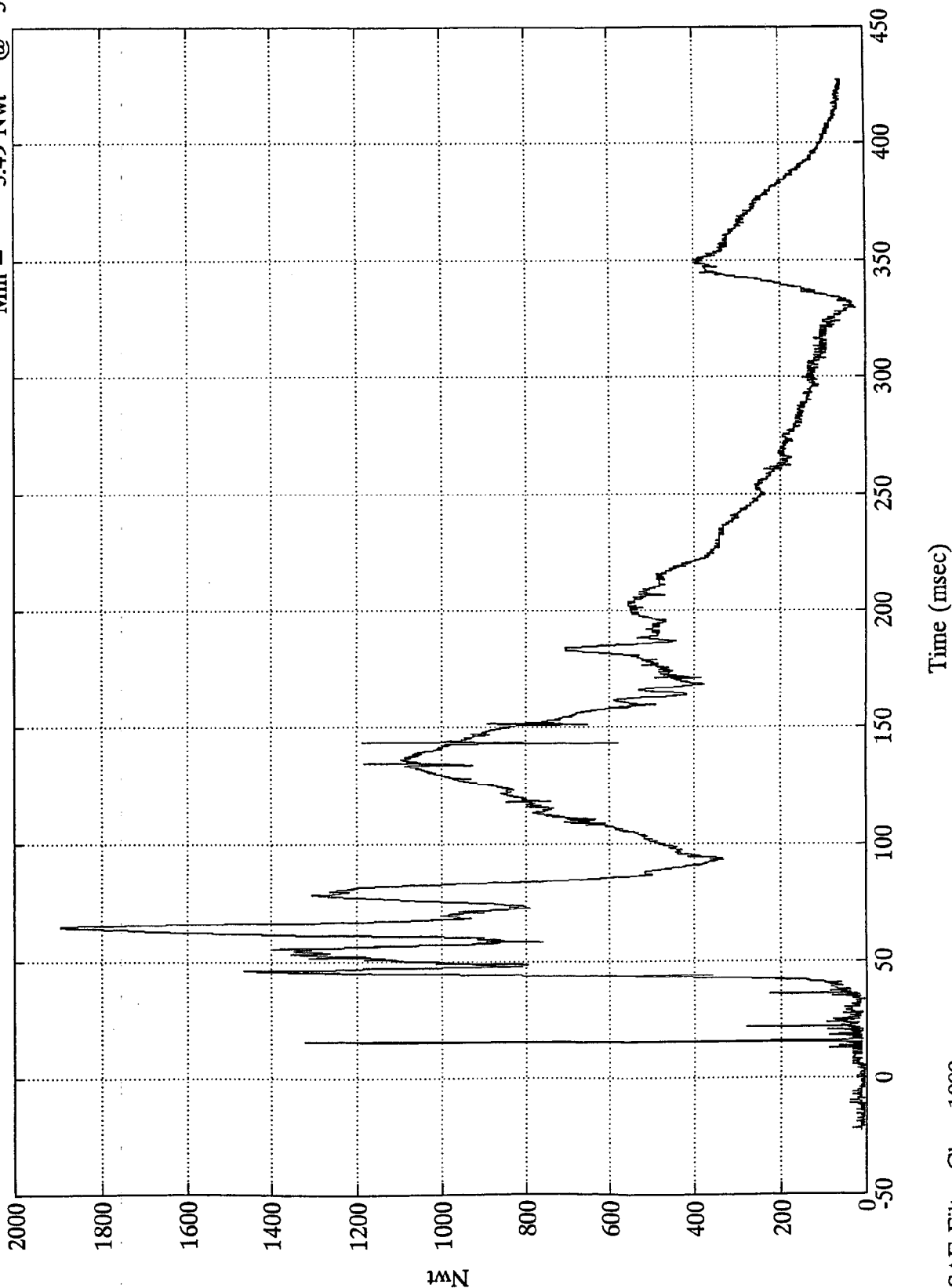


SAE Filter Class 1000

VTV TEST #2

Max = 1893.04 Nwt @ 64.44 msec
 Min = 5.49 Nwt @ 33.59 msec

P2 Upper Neck Force Res

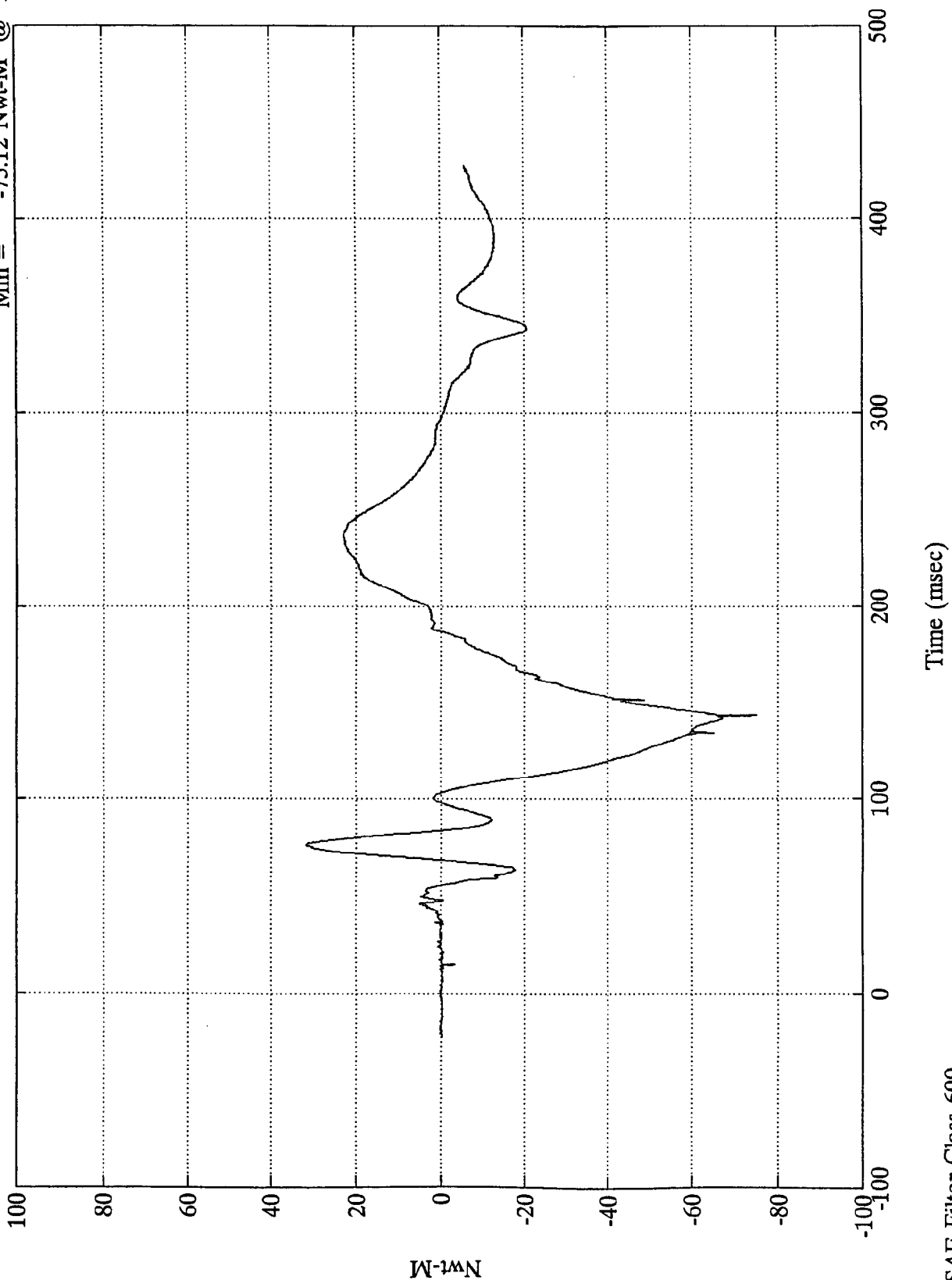


SAE Filter Class 1000

VTV TEST #2

P2 Upper Neck Mx

Max = 31.75 Nwt-M @ 76.20 msec
Min = -75.12 Nwt-M @ 143.16 msec

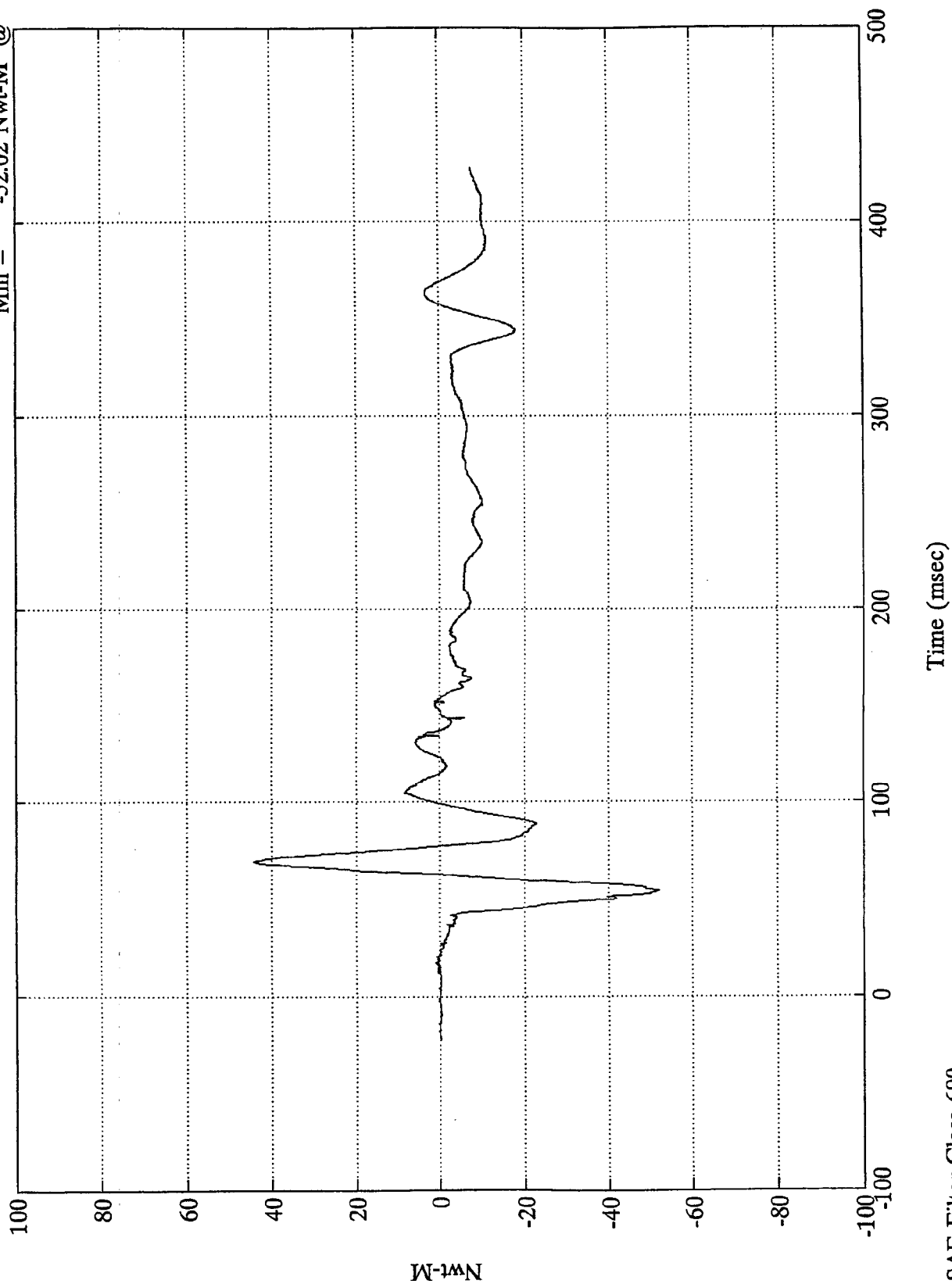


SAE Filter Class 600

VTV TEST #2

P2 Upper Neck My

Max = 44.28 Nwt-M @ 69.59 msec
Min = -52.02 Nwt-M @ 54.36 msec

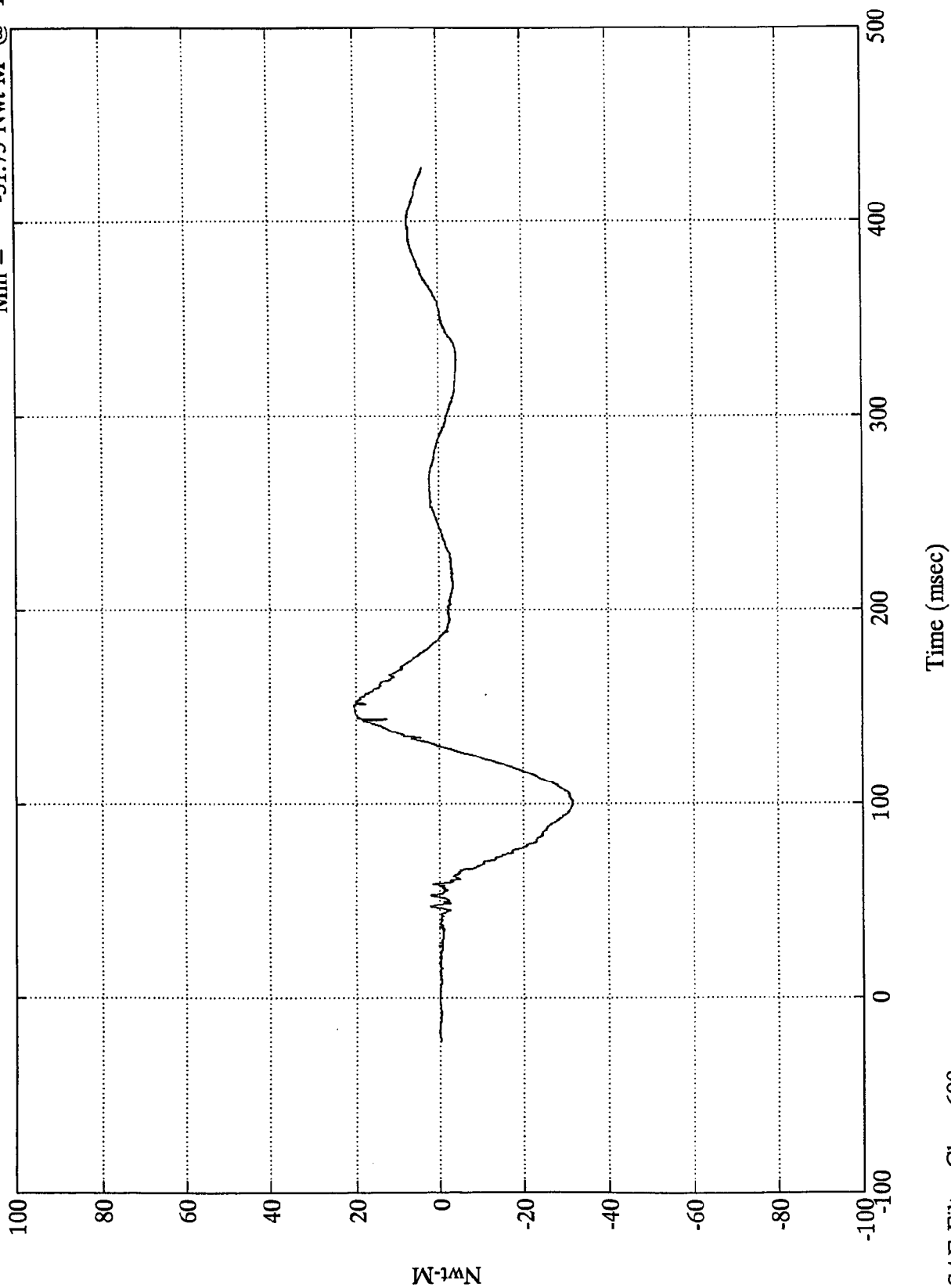


SAE Filter Class 600

VTV TEST #2

P2 Upper Neck Mz

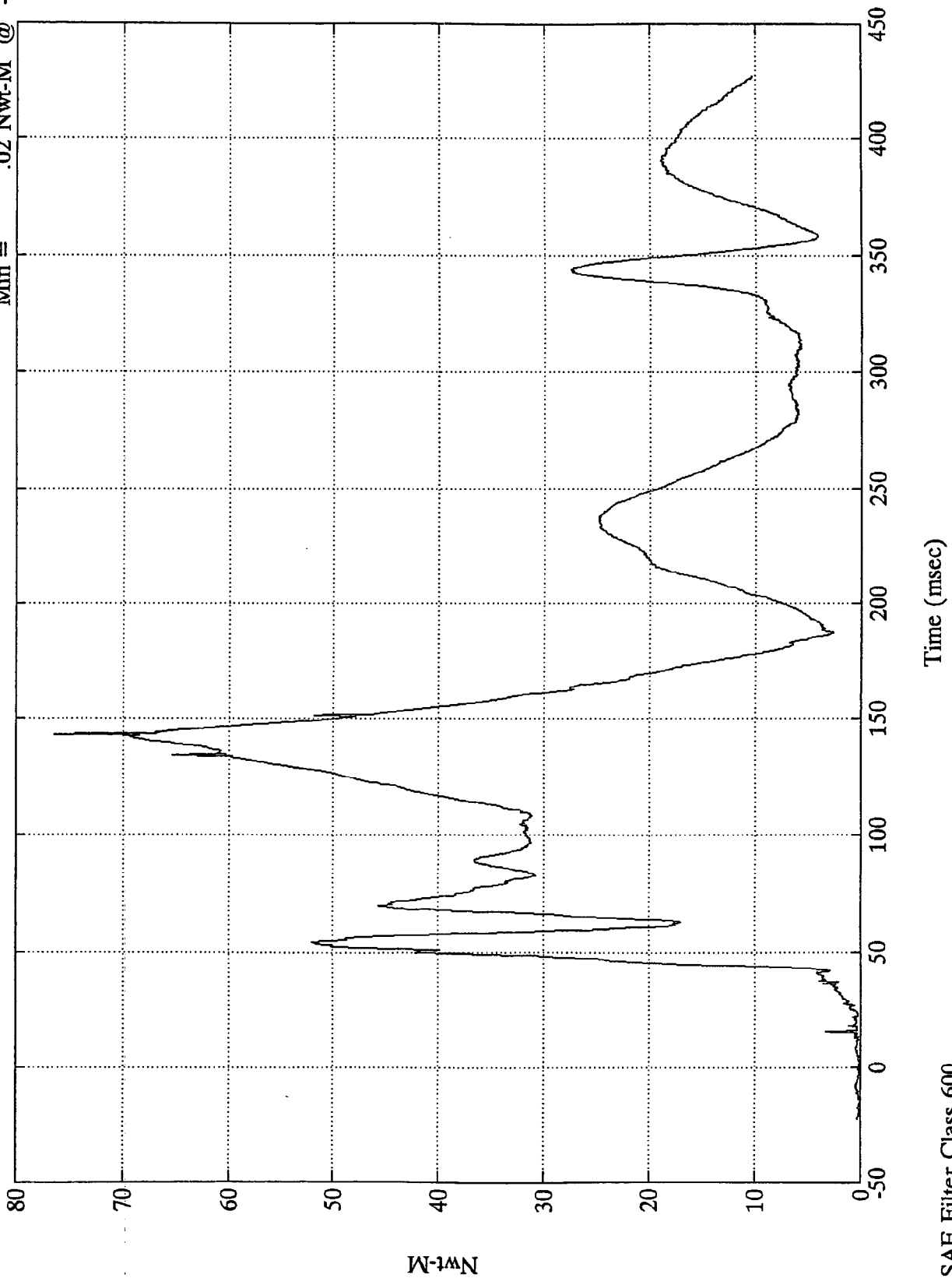
Max = 20.60 Nwt-M @ 149.88 msec
Min = -31.73 Nwt-M @ 100.08 msec



VTV TEST #2

P2 Upper Neck Moment Res

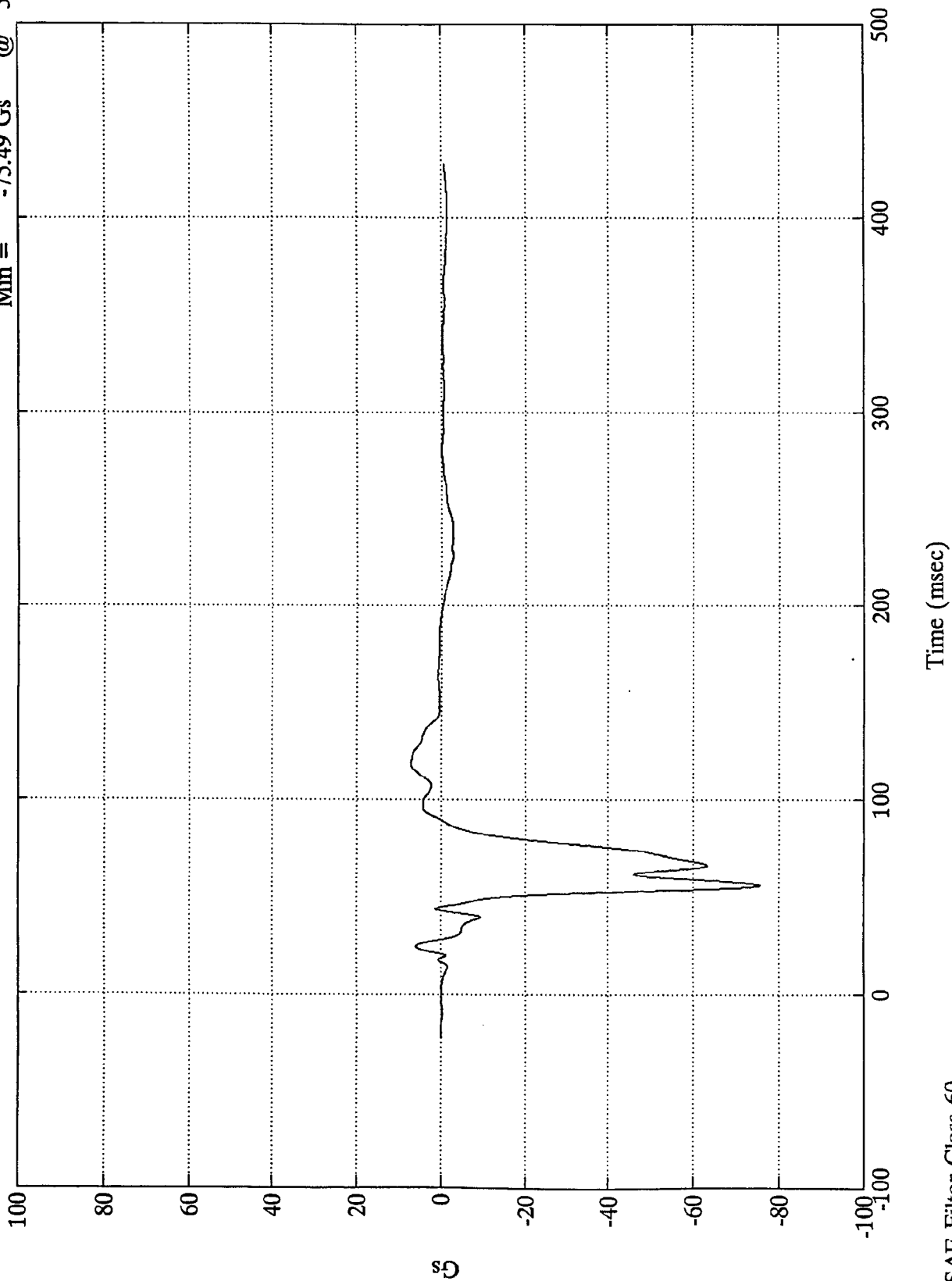
Max = 76.41 Nwt-M @ 143.16 msec
Min = .02 Nwt-M @ -14.76 msec



VTV TEST #2

P2 Pelvic X

Max = 7.27 Gs @ 118.55 msec
Min = -75.49 Gs @ 56.40 msec

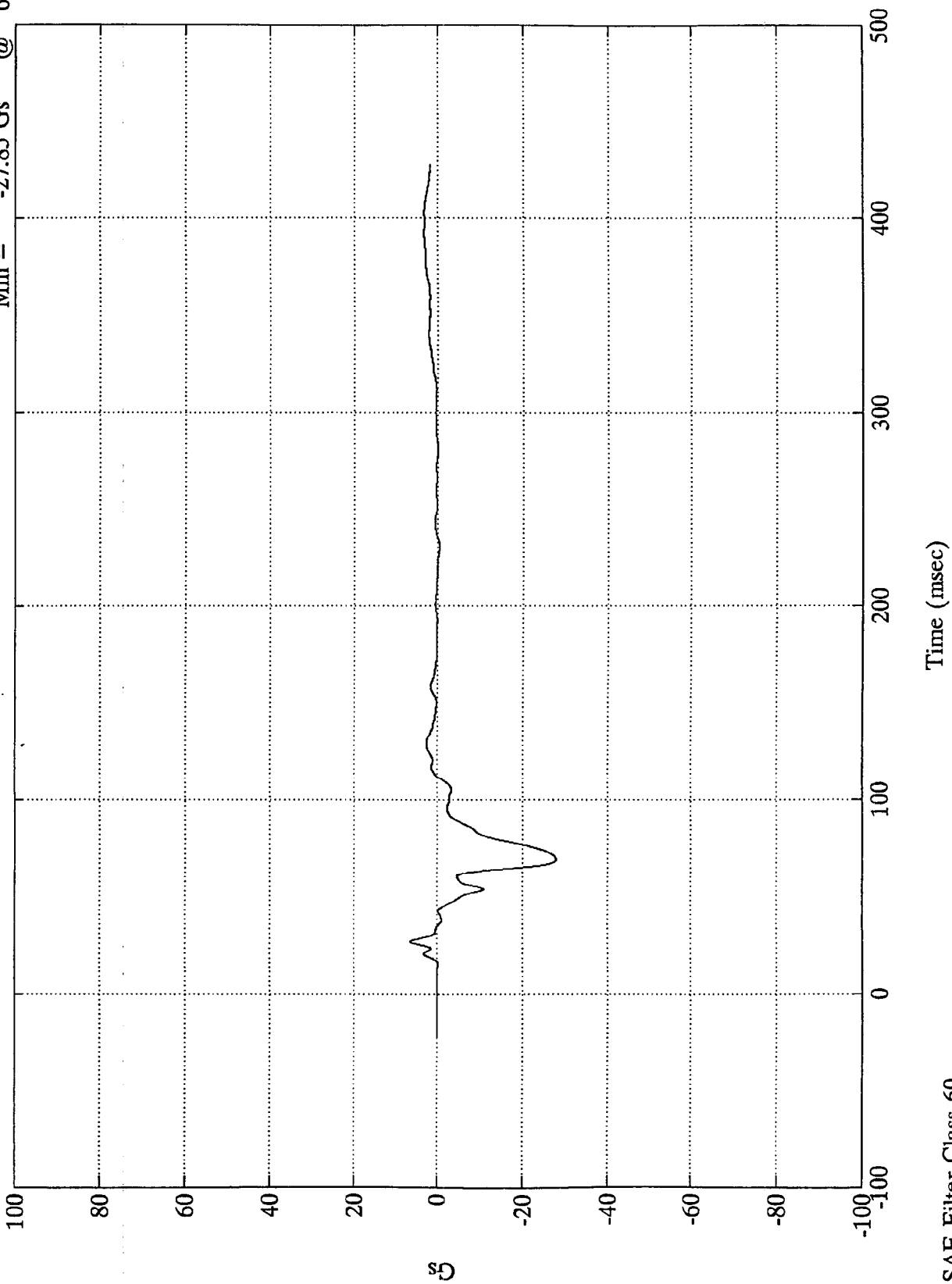


SAE Filter Class 60

VTV TEST #2

Max = 6.42 Gs @ 27.11 msec
Min = -27.85 Gs @ 69.48 msec

P2 Pelvic Y

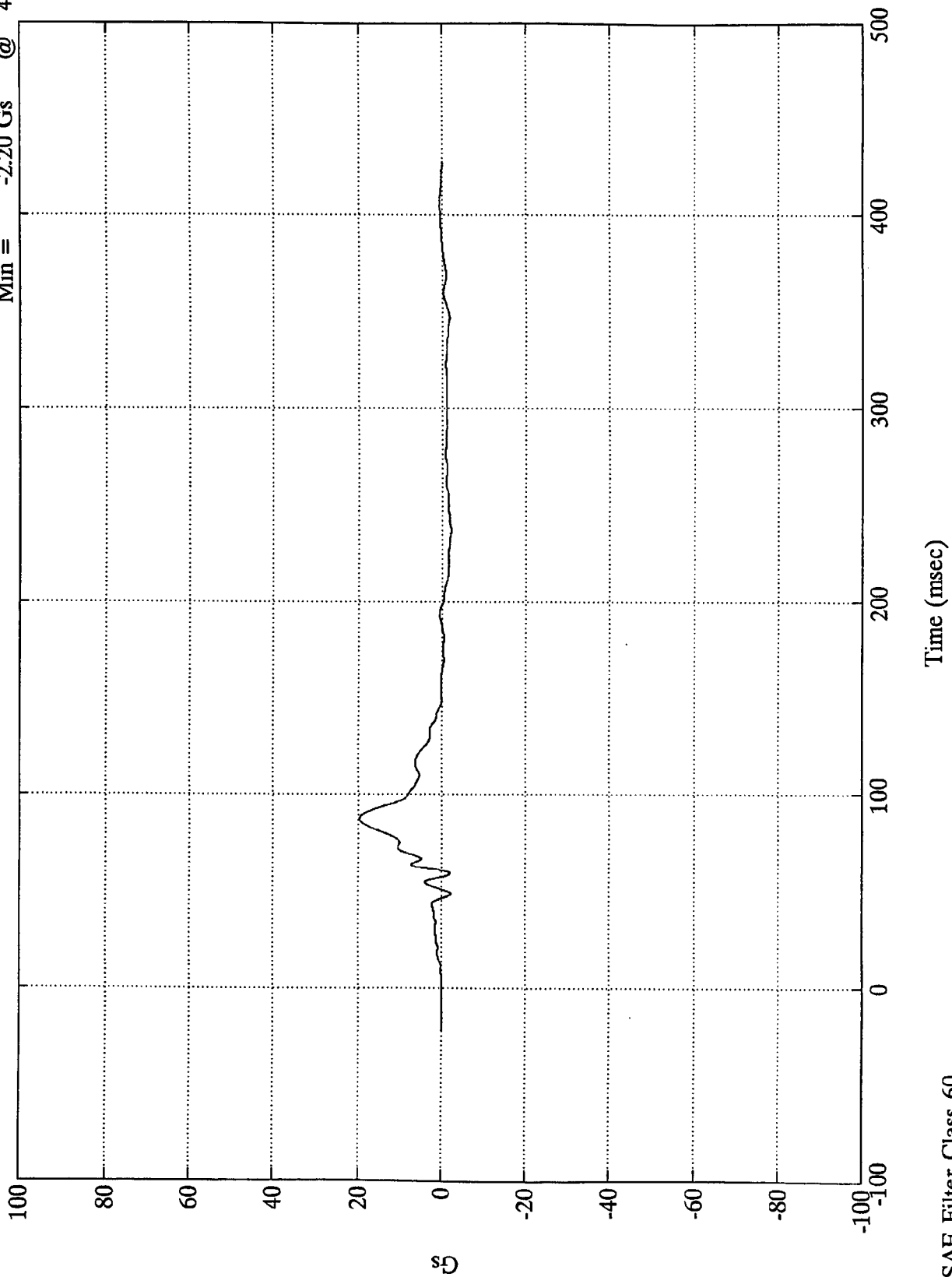


SAE Filter Class 60

VTV TEST #2

P2 Pelvic Z

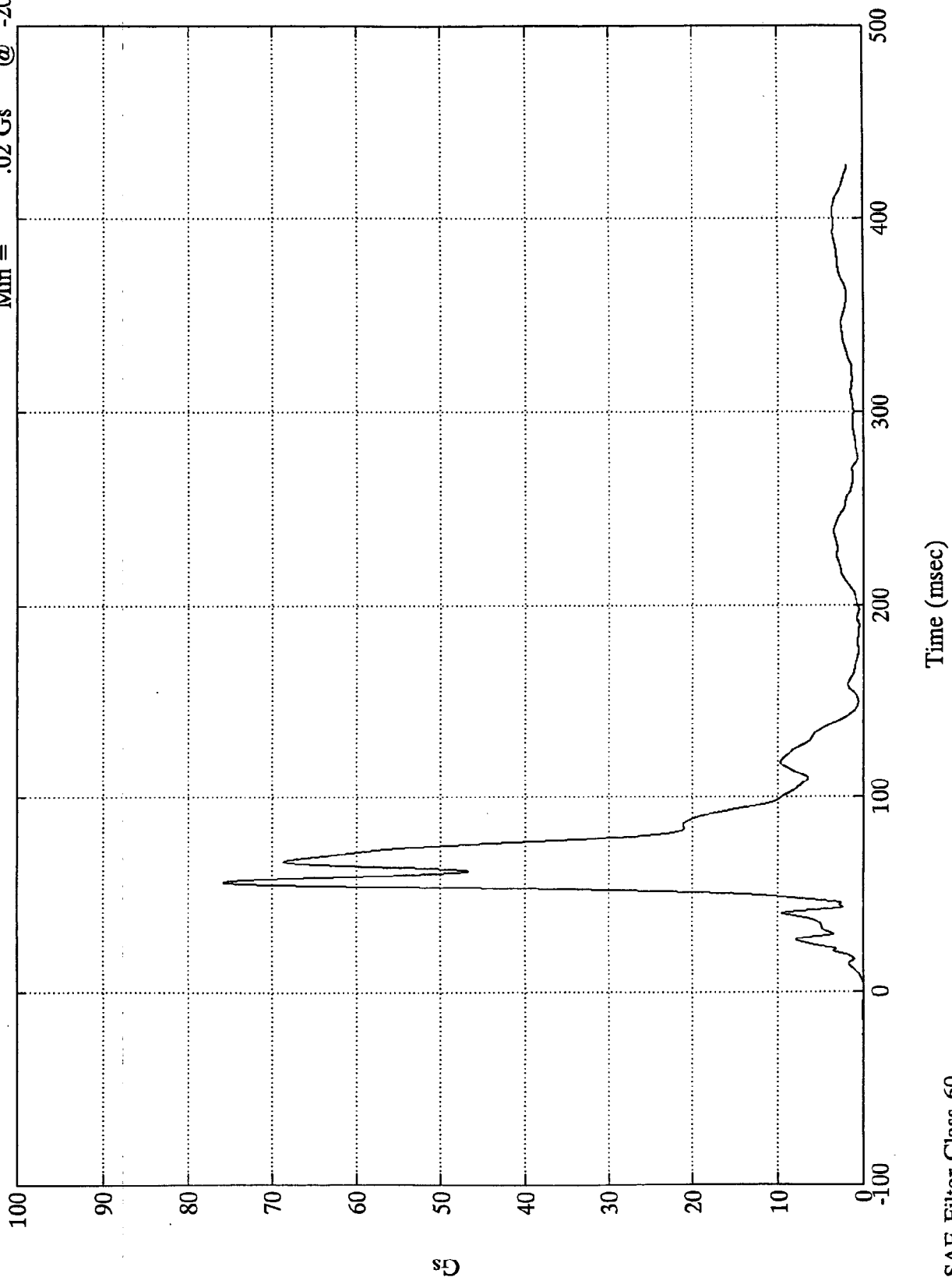
Max = 19.65 Gs @ 87.48 msec
Min = -2.20 Gs @ 49.31 msec



VTV TEST #2

Max = 75.88 Gs @ 56.28 msec
Min = .02 Gs @ -20.04 msec

P2 Pelvic Res



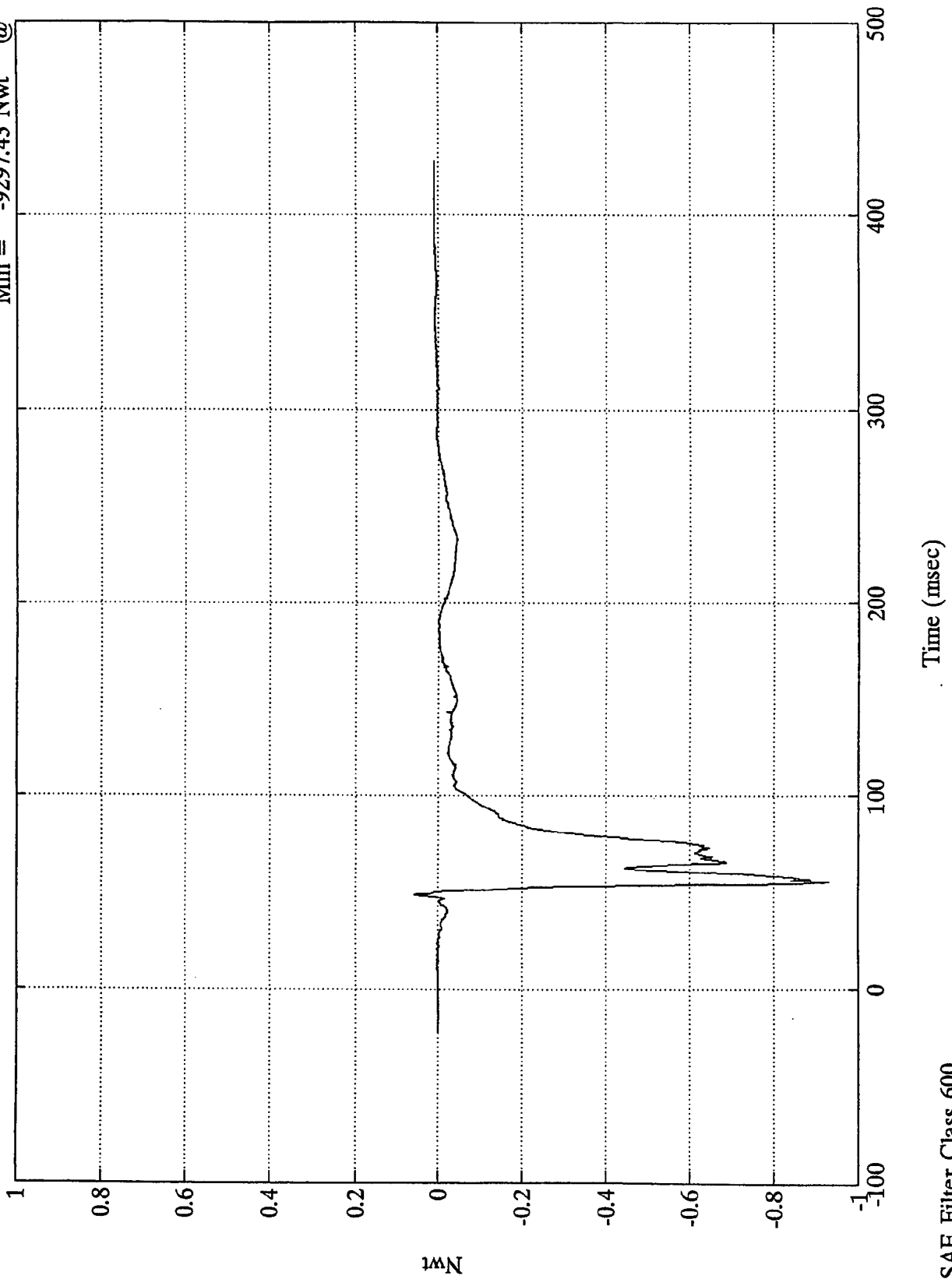
SAE Filter Class 60

VTV TEST #2

$\times 10^4$

P2 Left Femur

Max = 578.03 Nwt @ 49.31 msec
Min = -9297.43 Nwt @ 55.92 msec

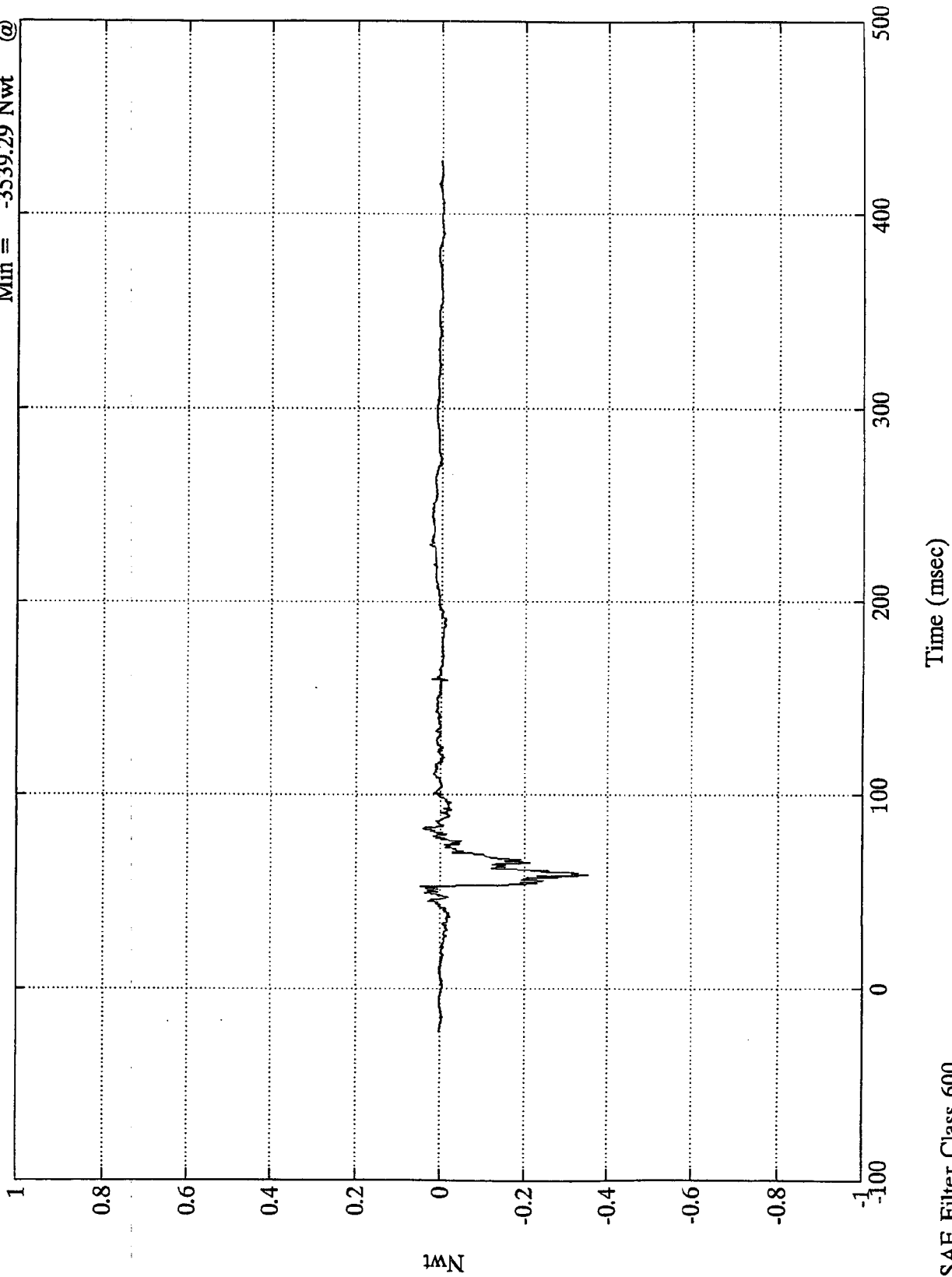


SAE Filter Class 600

VTV TEST #2
x10⁴

P2 Right Femur

Max = 483.64 Nwt @ 52.44 msec
Min = -3539.29 Nwt @ 58.31 msec

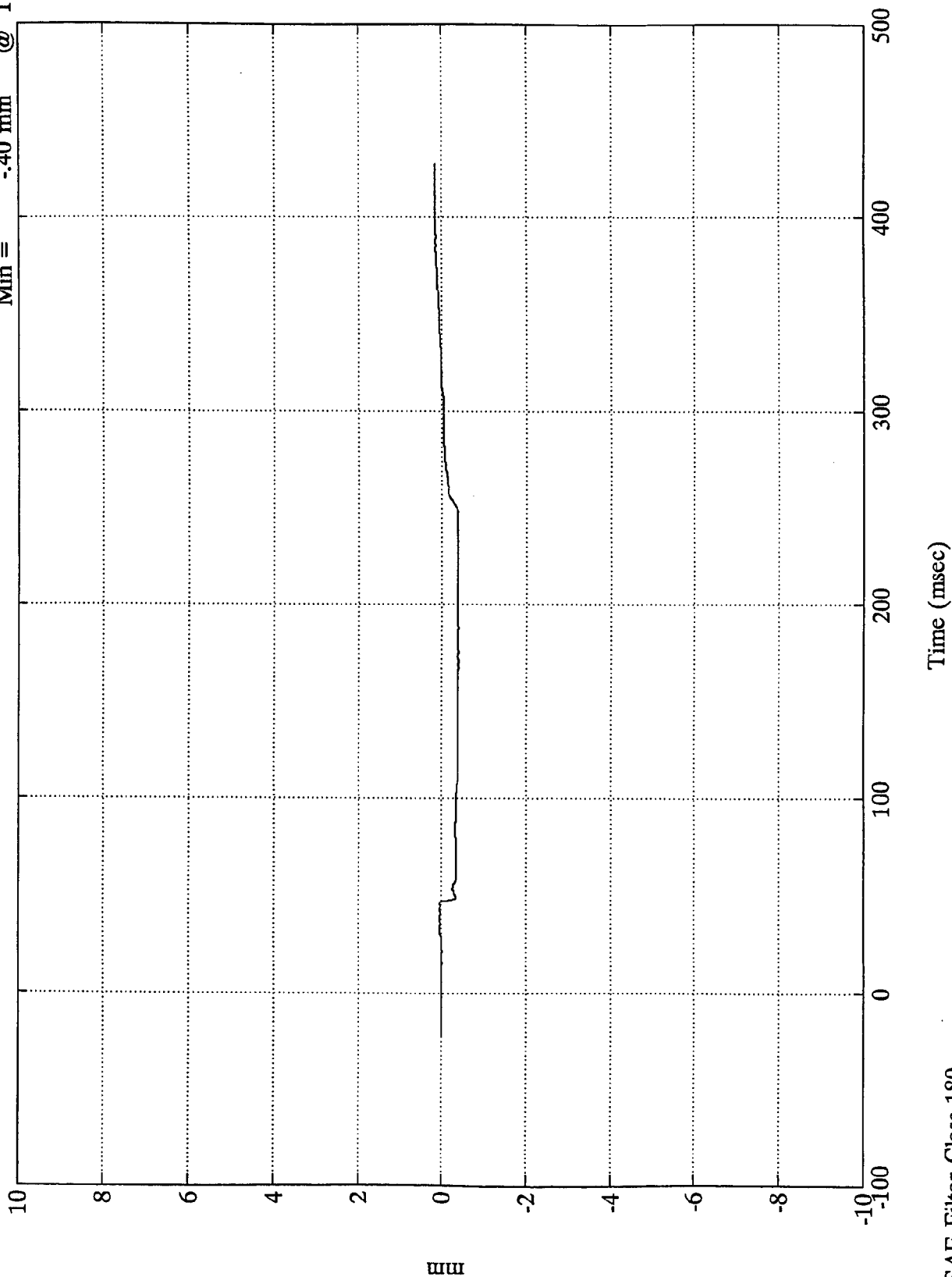


SAE Filter Class 600

VTV TEST #2

Max = .15 mm @ 424.55 msec
Min = -.40 mm @ 170.88 msec

P2 Left Knee Shear



mm

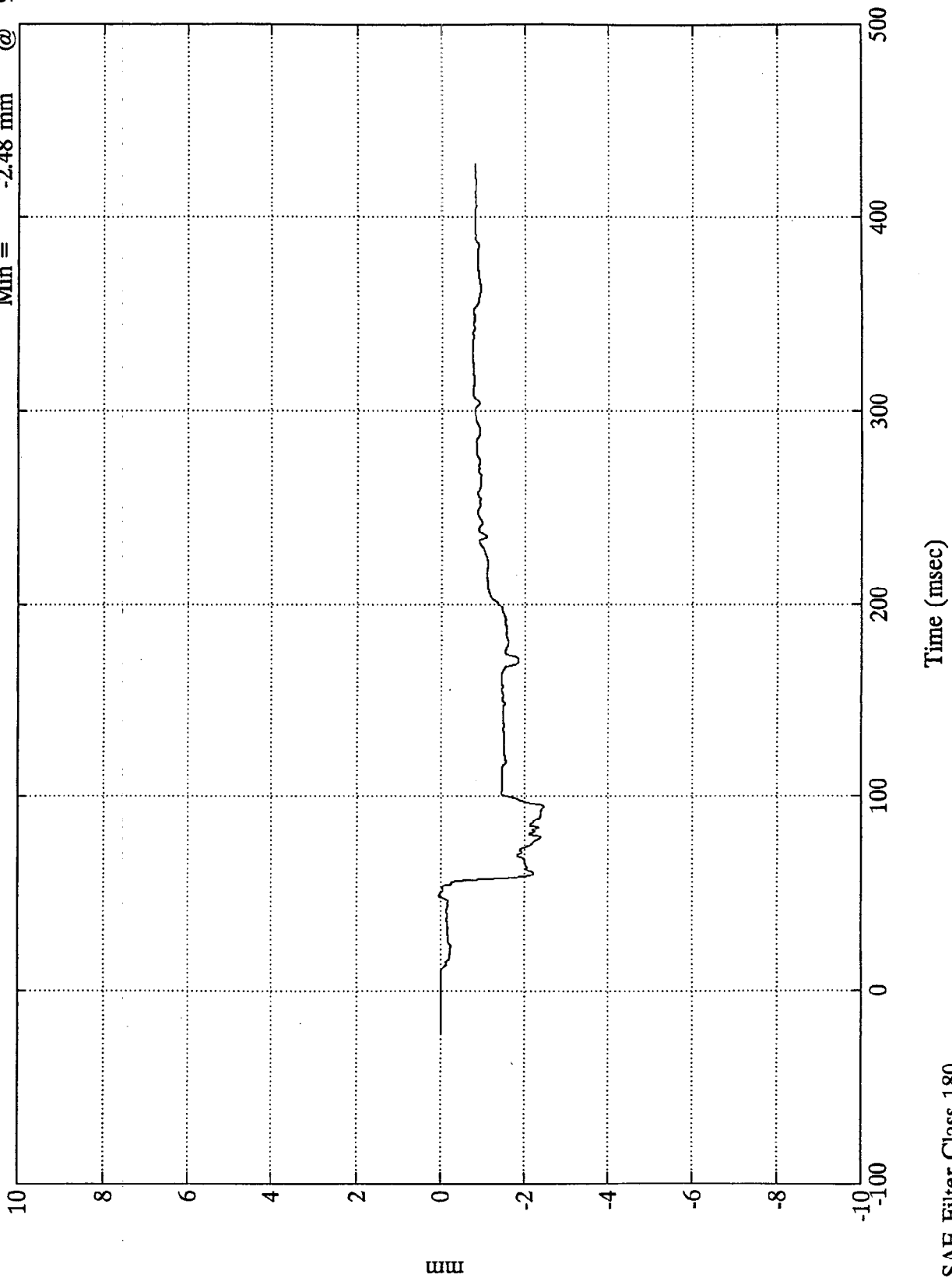
Time (msec)

SAE Filter Class 180

VTV TEST #2

P2 Right Knee Shear

Max =	.05 mm	@	48.36 msec
Min =	-2.48 mm	@	94.80 msec



mm

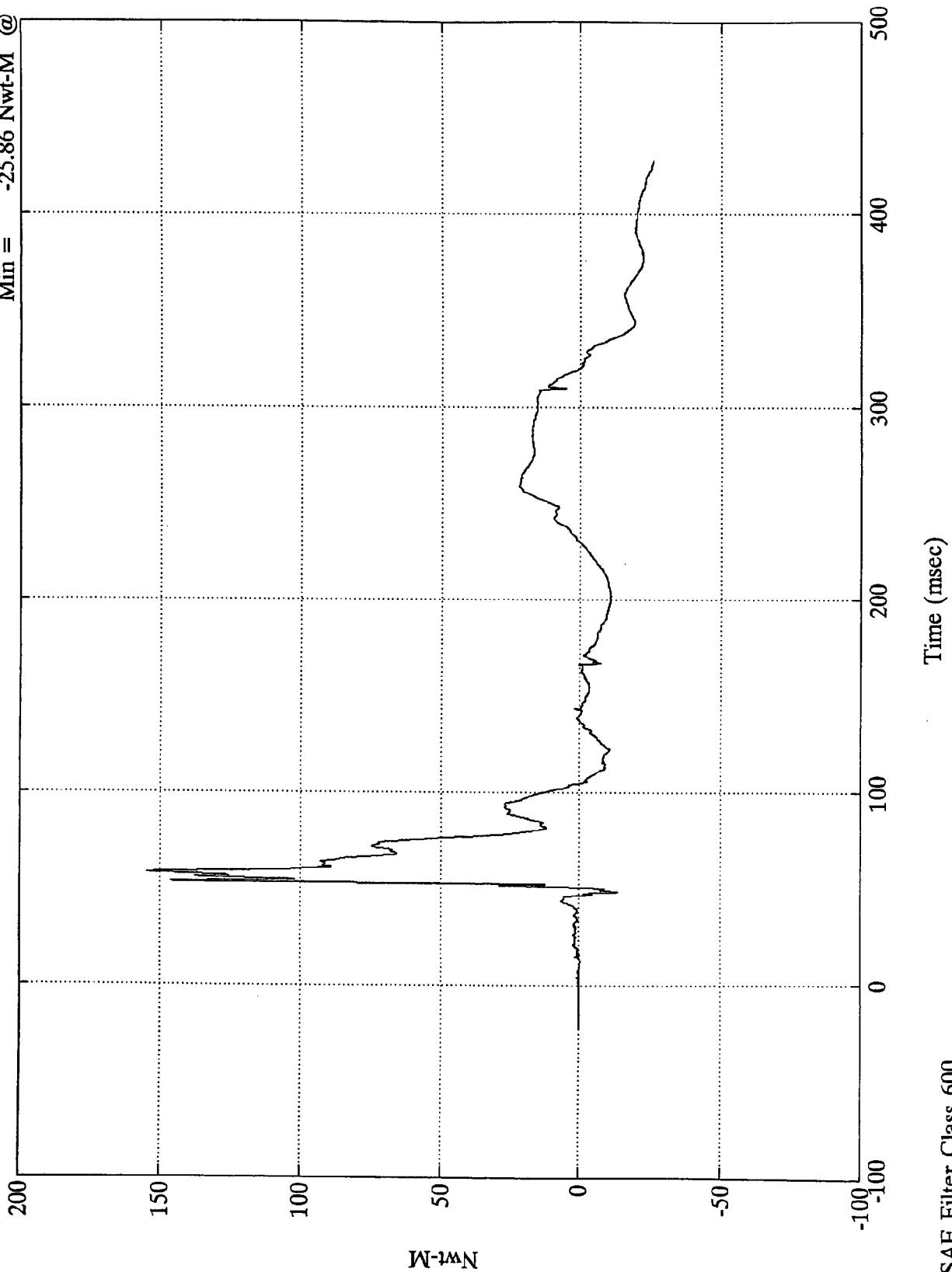
Time (msec)

SAE Filter Class 180

VTV TEST #2

P2 Lt Upper Tibia Mx

Max = 154.63 Nwt-M @ 58.79 msec
Min = -25.86 Nwt-M @ 426.96 msec



SAE Filter Class 600

Nwt-M

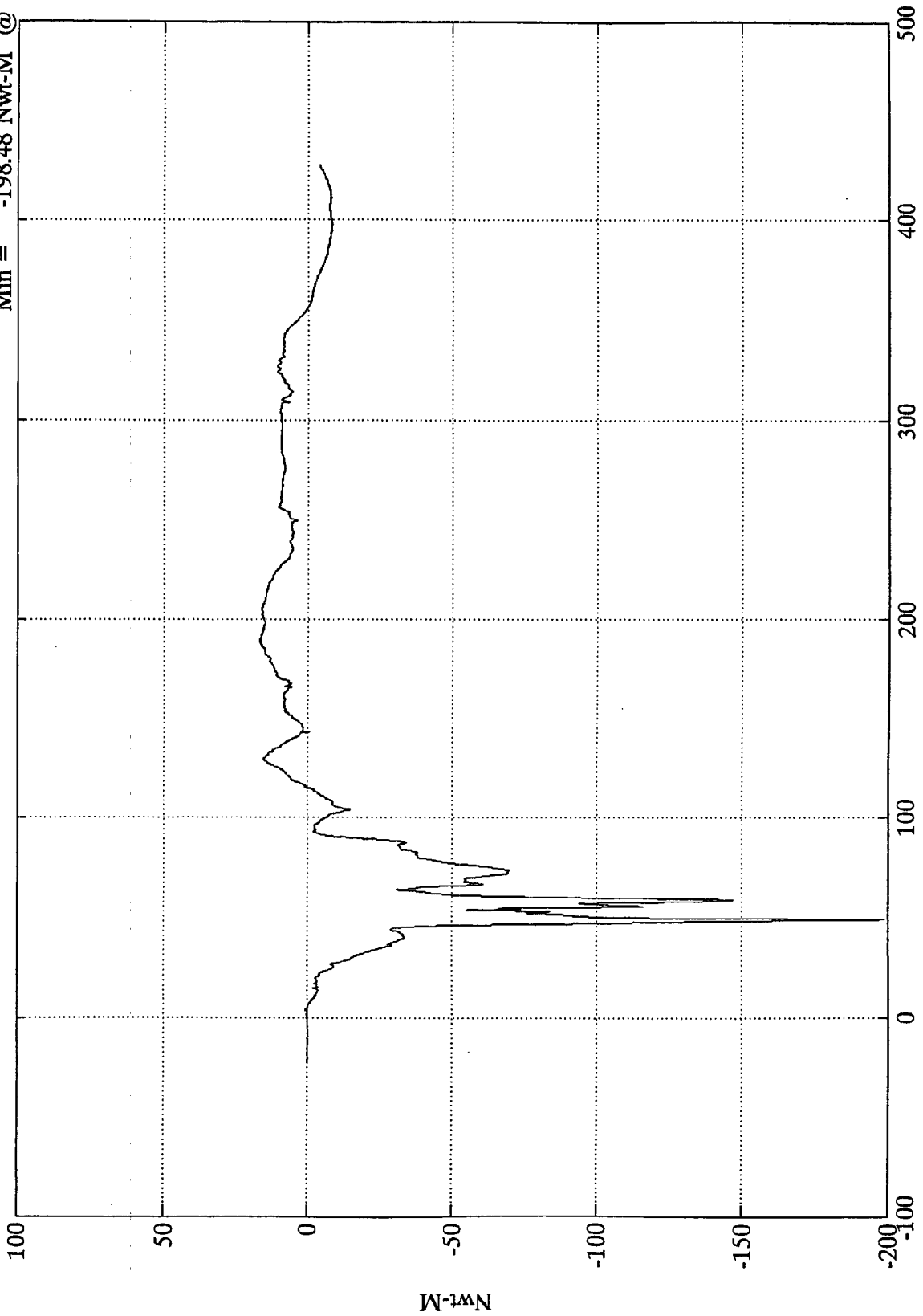
B-211

8304-2

VTV TEST #2

P2 Lt Upper Tibia My

Max = 16.71 Nwt-M @ 190.44 msec
Min = -198.48 Nwt-M @ 48.95 msec



Time (msec)

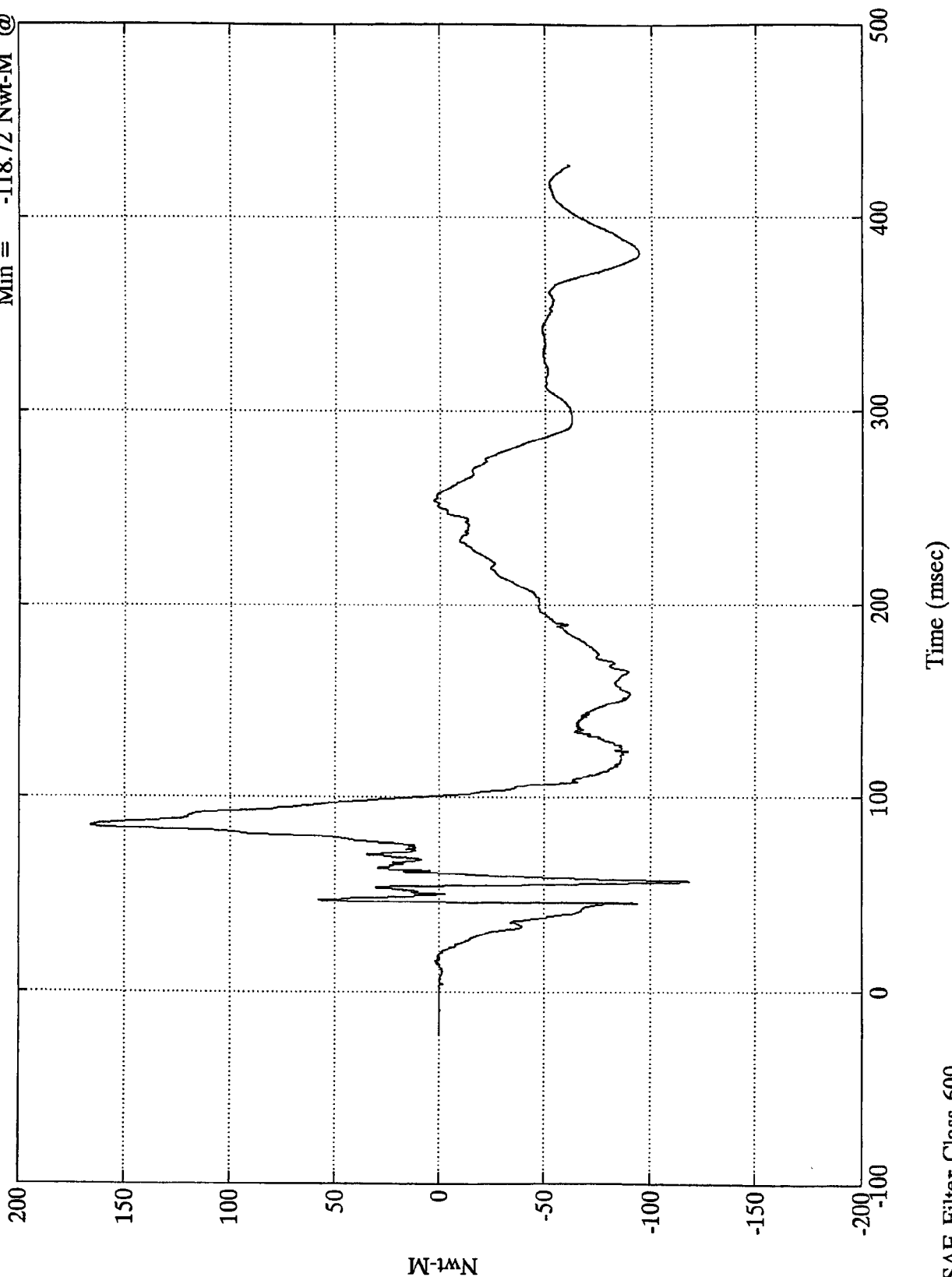
SAE Filter Class 600

Nwt-M

VTV TEST #2

P2 Rt Upper Tibia Mx

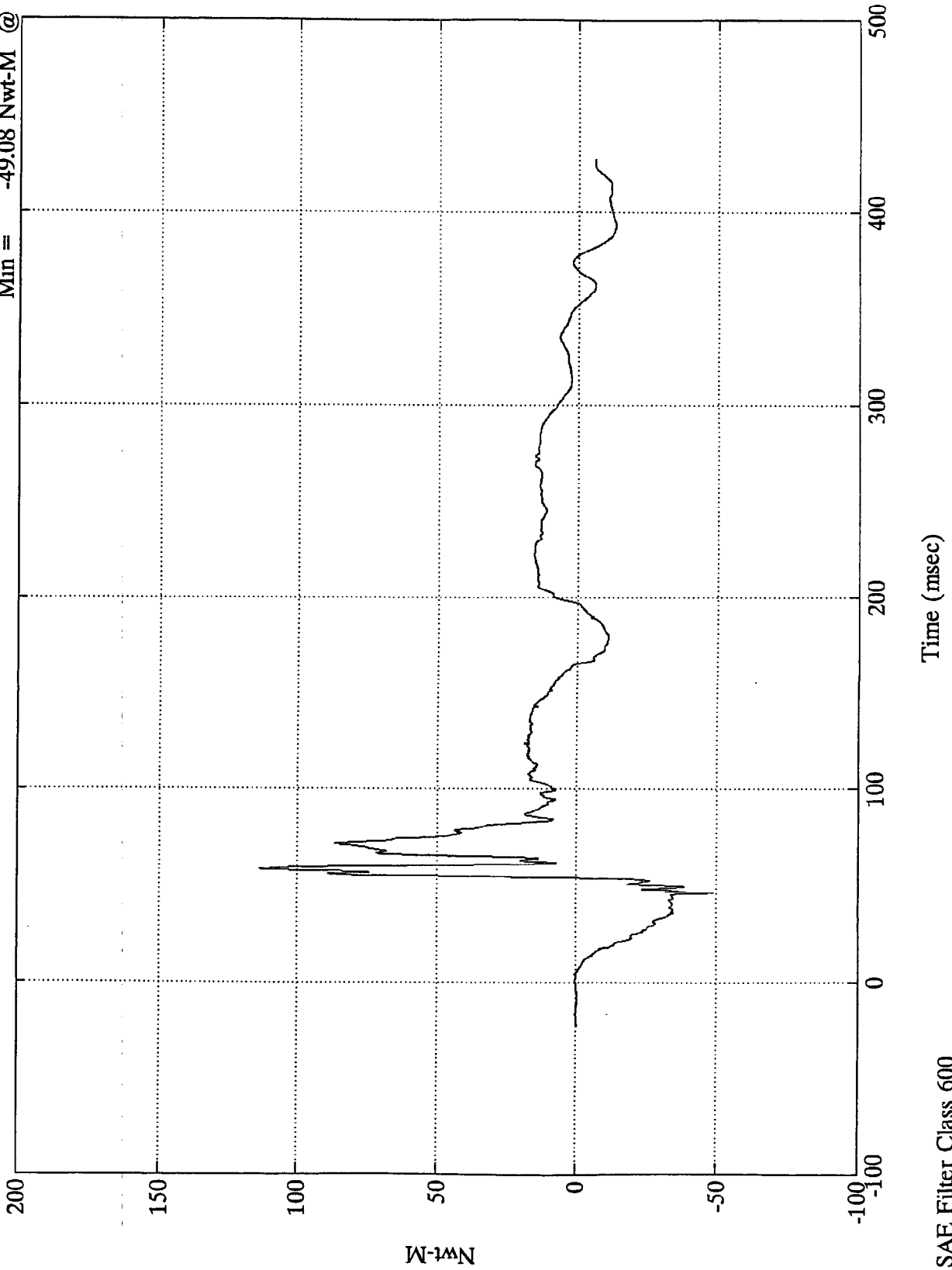
Max = 166.16 Nwt-M @ 85.44 msec
Min = -118.72 Nwt-M @ 57.00 msec



VTV TEST #2

P2 Rt Upper Tibia My

Max = 113.64 Nwt-M @ 58.20 msec
Min = -49.08 Nwt-M @ 46.20 msec



SAE Filter Class 600

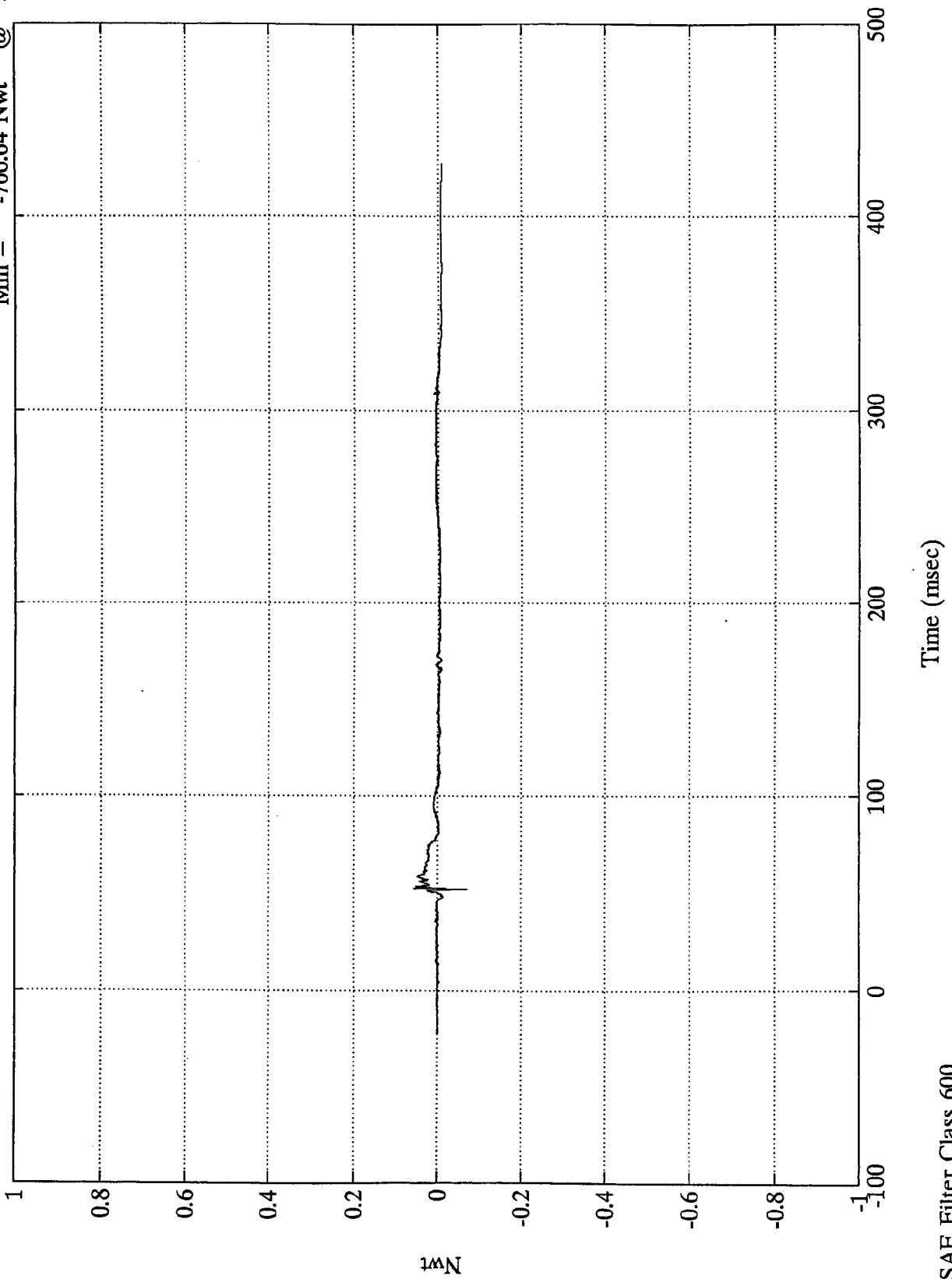
W-1wN

VTV TEST #2

$\times 10^4$

P2 Lt Lower Tibia Fy

Max = 561.93 Nwt @ 53.04 msec
Min = -706.64 Nwt @ 52.44 msec



Nwt

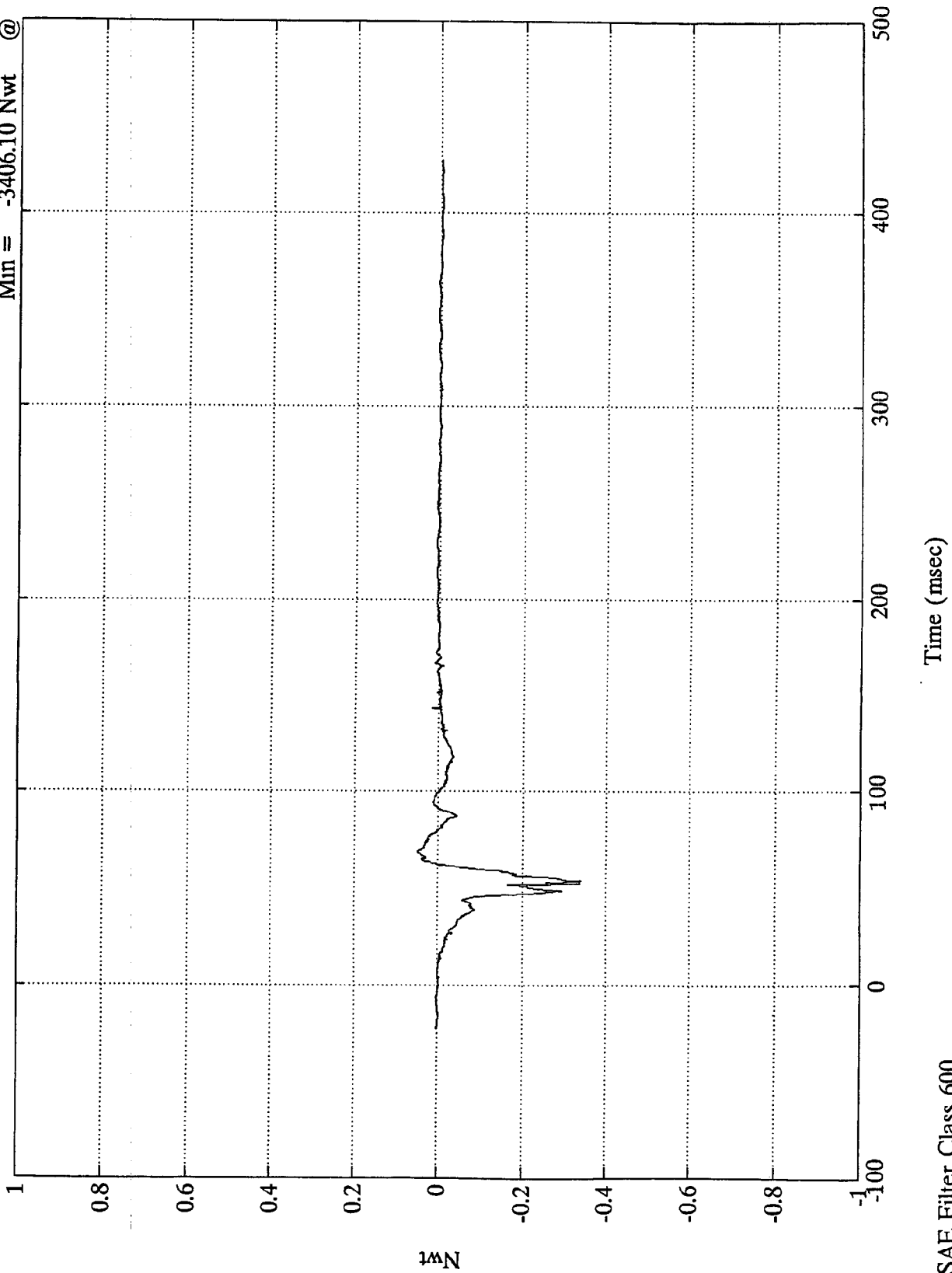
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P2 Lt Lower Tibia Fz

Max = 492.64 Nwt @ 69.36 msec
Min = -3406.10 Nwt @ 53.75 msec

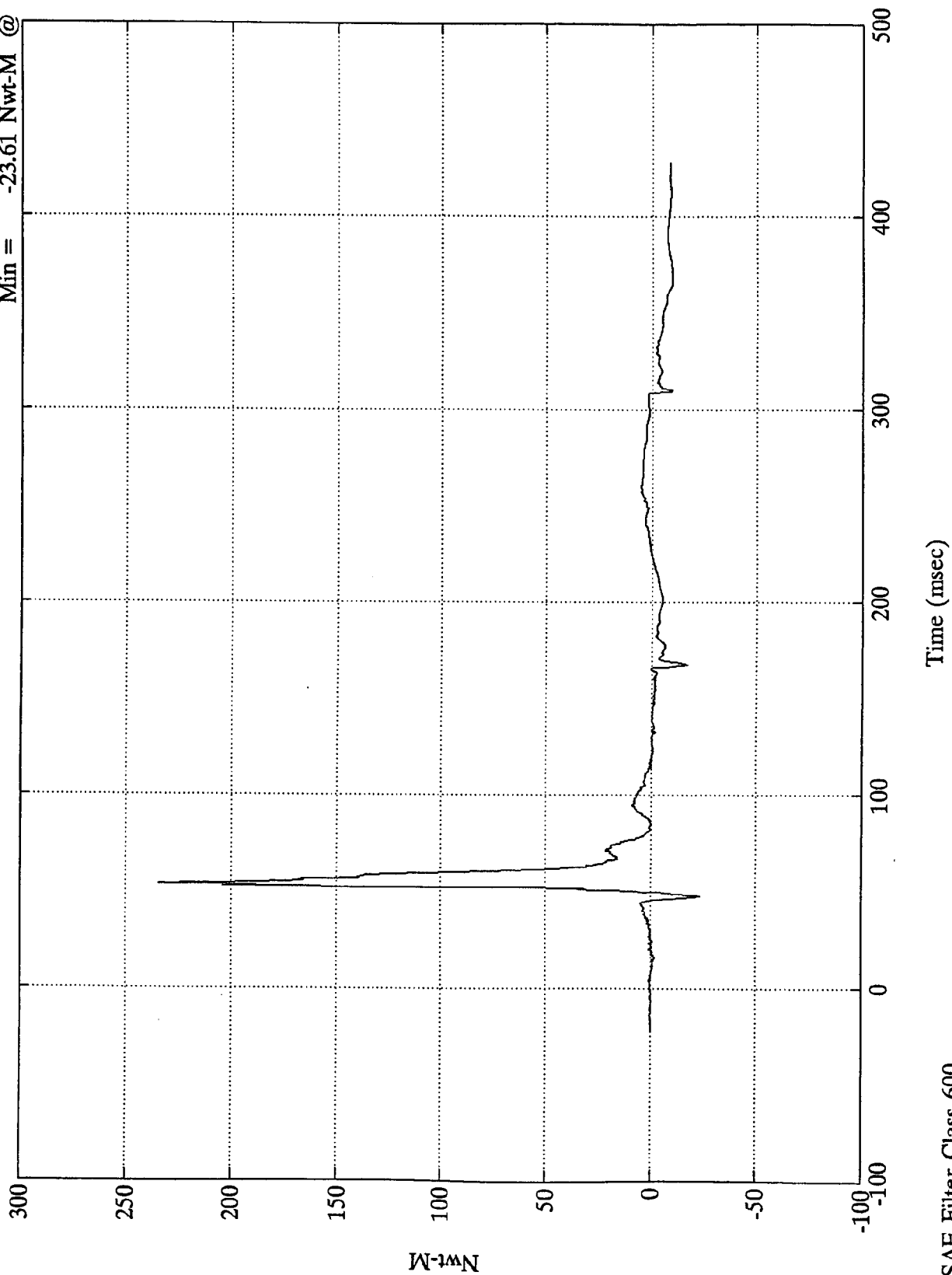


SAE Filter Class 600

VTV TEST #2

P2 Lt Lower Tibia Mx

Max = 234.23 Nwt-M @ 54.11 msec
Min = -23.61 Nwt-M @ 48.24 msec



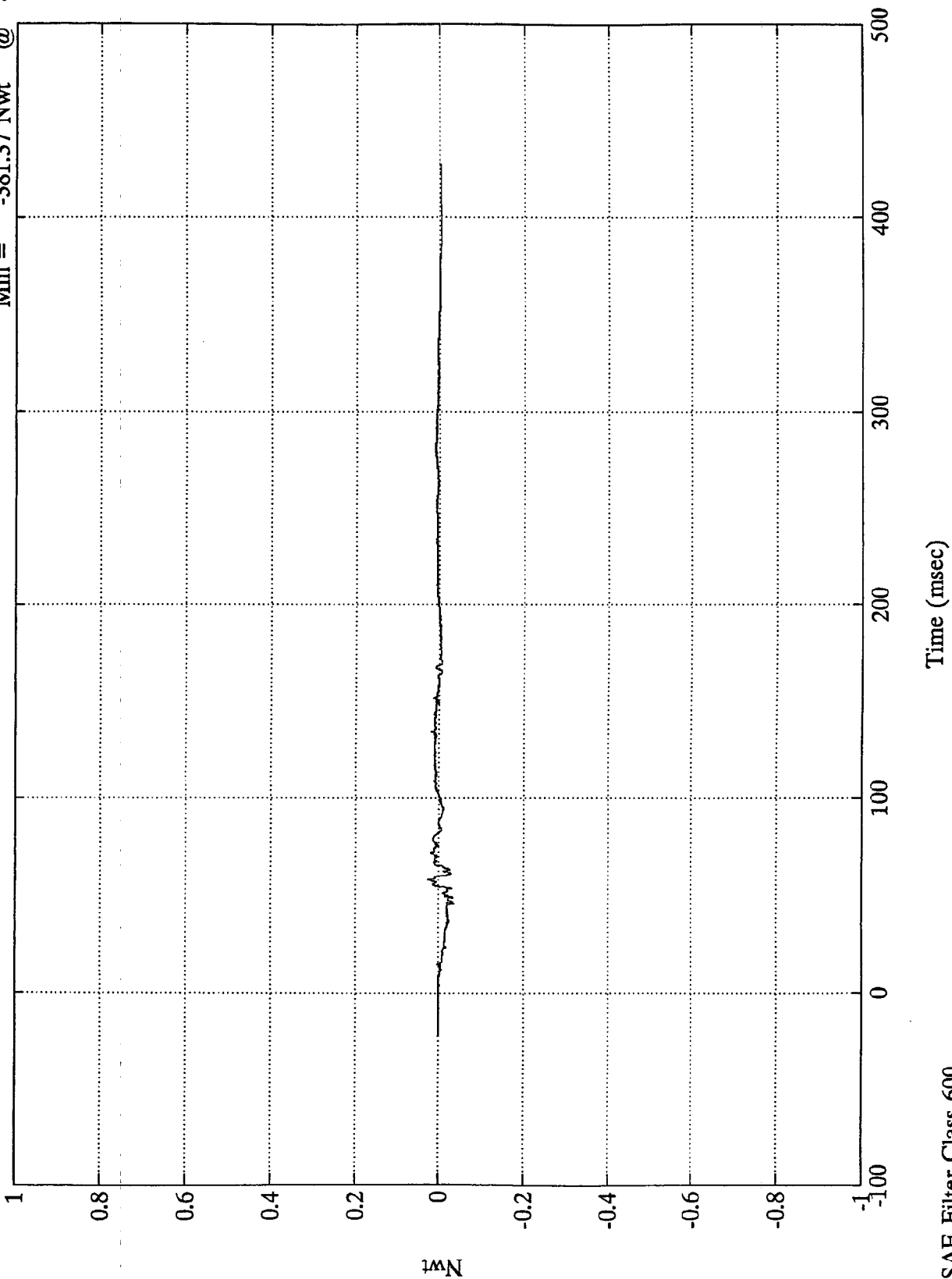
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P2 Rt Lower Tibia Fy

Max = 251.09 Nwt @ 58.08 msec
Min = -381.37 Nwt @ 45.84 msec



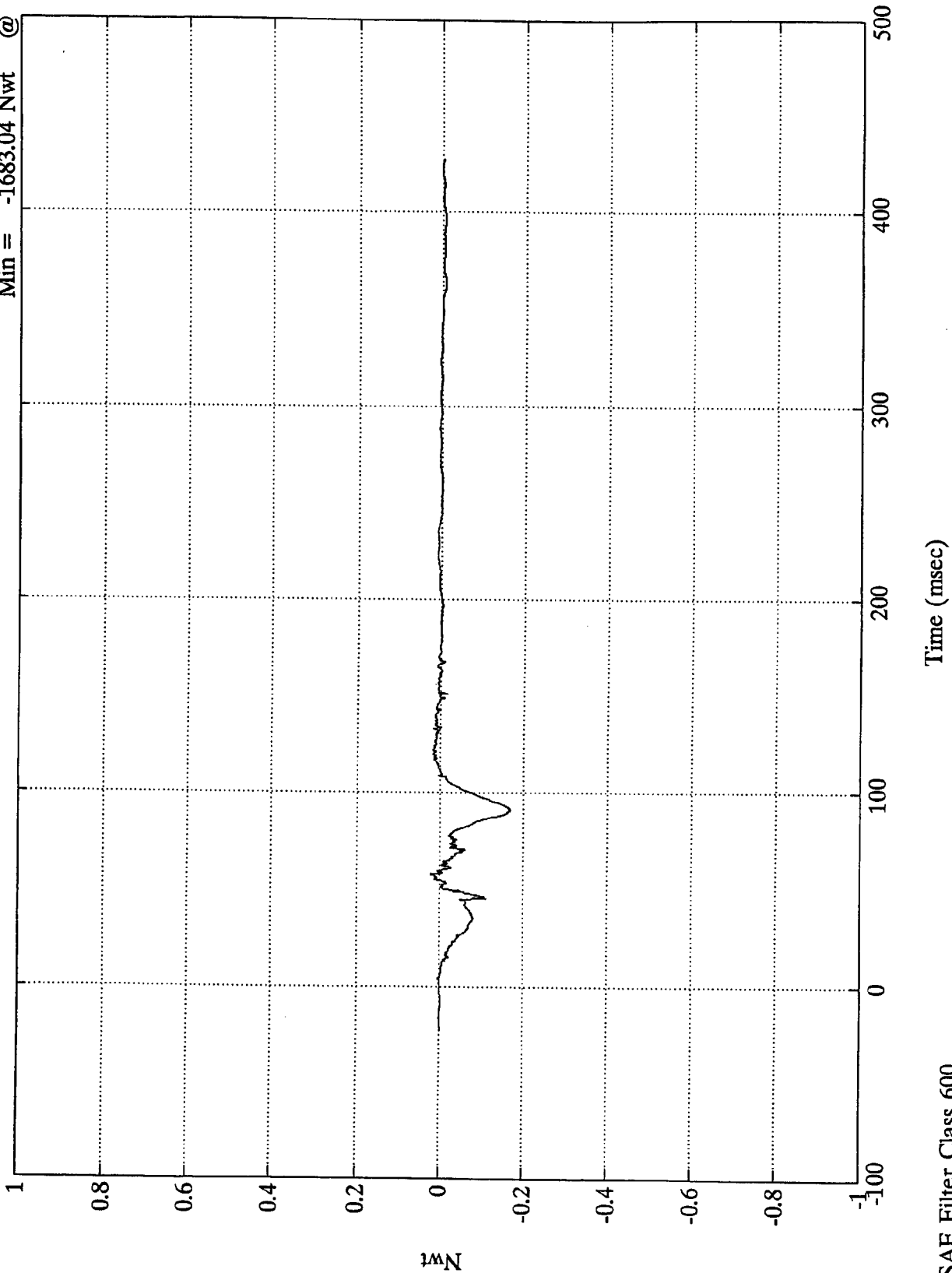
SAE Filter Class 600

VTV TEST #2

$\times 10^4$

P2 Rt Lower Tibia Fz

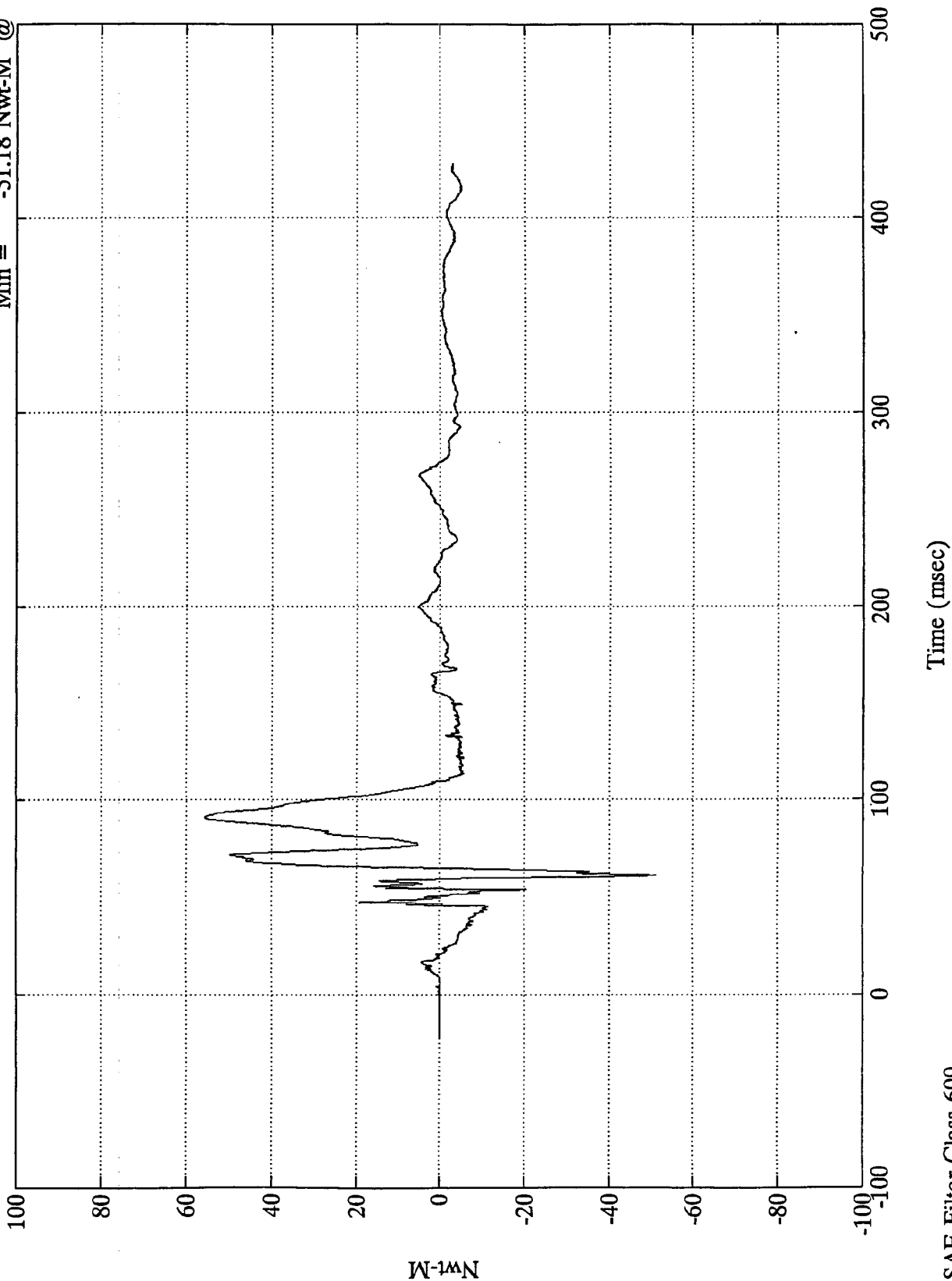
Max = 226.84 Nwt @ 58.08 msec
Min = -1683.04 Nwt @ 90.60 msec



VTV TEST #2

P2 Rt Lower Tibia Mx

Max = 55.81 Nwt-M @ 91.08 msec
Min = -51.18 Nwt-M @ 61.32 msec



Nwt-M

Time (msec)

SAE Filter Class 600

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.

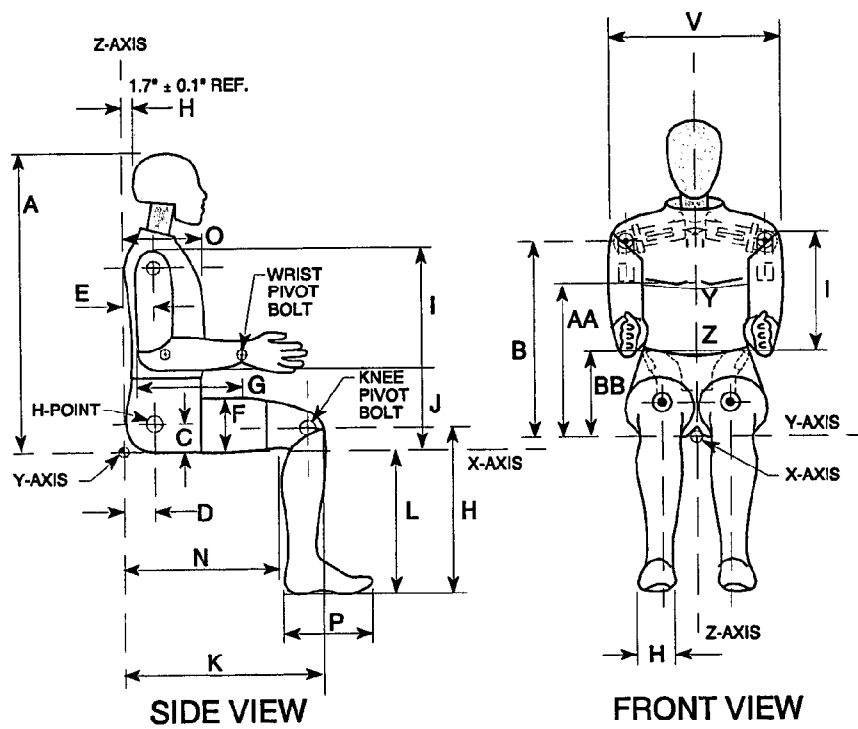
Dummy serial numbers and certification dates are:

<u>Serial No.</u>	<u>Completion Date</u>
061	8-21-95
245	6-15-95

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

Manufacturer: Humanoid

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 MINKIEWICZ

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 : 8/21/95

CALSPAN SEQUENTIAL NUMBER 2

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%	48 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	24.1 KPH
MAXIMUM DEFLECTION	64 - 73 mm	68 mm
MAXIMUM RESISTIVE FORCE	5160 - 5894 NEWTONS	5741 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	74.1 %

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: 061 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21.6 DEG. C
RELATIVE HUMIDITY	10% - 70%	41 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	4742 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: 061 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	21.6 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	4790 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	6/95	12/95
ENDEVCO	AF5F7	6/95	12/95
ENDEVCO	AF5E1	6/95	12/95
ENDEVCO	A84J	6/95	12/95
ENDEVCO	A57G	6/95	12/95
ENDEVCO	AE8W7	6/95	12/95
GSE	231	6/95	12/95
GSE	232	6/95	12/95

B. CALIBRATION LABORATORY INSTRUMENTS

1. PENDULUM ACC.

2. TEST PROBE ACCELEROMETER

MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
CEC	A160	6/95	12/95
CEC	A161	6/95	12/95

VEHICLE 1, POSITION 2 - FRONT PASSENGER DUMMY

Manufacturer: Humanoid

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 : 2/21/95

CALSPAN SEQUENTIAL NUMBER 1

HY3 SN: 245 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	230.7 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	8 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 : 2/23/95

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	AL6C4	6/95	12/95
ENDEVCO	AL553	6/95	12/95
ENDEVCO	AL5M5	6/95	12/95
ENDEVCO	AL511	6/95	12/95
ENDEVCO	AH5N0	6/95	12/95
ENDEVCO	AH5M8	6/95	12/95
GSE	255	6/95	12/95
GSE	420	6/95	12/95

B. CALIBRATION LABORATORY
INSTRUMENTS

1. PENDULUM ACC.

2. TEST PROBE
ACCELEROMETER

MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
CEC	A160	6/95	12/95
CEC	A161	6/95	12/95