

#2076

CALSPAN REPORT NUMBER: 8118-6

VEHICLE-TO-VEHICLE FRONTAL 50% OVERLAP
56.3 kph IMPACT OF A
1991 FORD TAURUS L AND A
1993 FORD TAURUS GL

CALSPAN TEST NUMBER: Y49-6-1400

APRIL 26, 1994

CALSPAN CORPORATION
ADVANCED TECHNOLOGY CENTER
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BUFFALO, NEW YORK 14225



FINAL REPORT

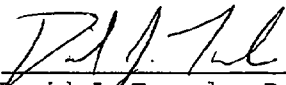
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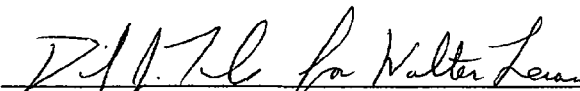
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16. Abstract A 56.3 kph vehicle to vehicle frontal 50% overlap impact test of a 1991 Ford Taurus L 4-door sedan and a 1993 Ford Taurus GL 4-door sedan was performed at the Calspan Advanced Technology Center crash facility in Buffalo, New York on April 26, 1994. The measured impact velocities of both vehicles were 56.3 kph and the ambient temperature at the time of the test was 23.3°C. A 50th percentile male Hybrid III dummy was placed in the driver position in the 1991 Ford Taurus (Vehicle 1) and was restrained with a 3-point manual belt and a supplemental airbag. In the 1993 Ford Taurus (Vehicle 2) a 50th percentile male Hybrid III dummy was placed in right-front passenger position and was restrained with a 3-point manual belt and a supplemental airbag. Both dummies HIC, chest resultant and femur loads injury values were below injury requirements of FMVSS 208 "Occupant Crash Protection."					
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Section 1
PURPOSE AND TEST PROCEDURE

This 60 kph offset 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. DTRS57-90-C-00104. The purpose of this Technical Task Directive (TTD 2) is to obtain responses from vehicles and restrained Hybrid III dummies during car-to-car overlapped frontal crashes.

This test was performed using a 1991 Ford Taurus L 4-door sedan and a 1993 Ford Taurus GL 4-door sedan. The vehicles, each traveling at 56.3 kph were positioned at a 50% overlap of the Vehicle 1 width as measured at its widest point. The vehicles were aligned such that the left front (i.e., driver side) would experience full contact with the oncoming vehicle.

Vehicle number one contained one Hybrid III dummy in the driver seating position. The dummy was restrained using the vehicle's airbag and 3 point belt restraint system.

Vehicle number two contained one Hybrid III dummy in the passenger seating position. The dummy was restrained using the vehicle's airbag and 3 point belt restraint system.

Section 2
SUMMARY OF TEST

A 1991 Ford Taurus L 4-Door Sedan and a 1993 Ford Taurus GL 4-Door Sedan were impacted into each other with each vehicle traveling 56.3 kph. The 1991 Ford Taurus L was offset such that 50% of its maximum width was engaged to the 1993 Ford Taurus. Figure 1 of this report contains a sketch of this test layout. The test was performed at the Calspan Corporation Advanced Technology Center on April 26, 1994. Pre- and post-test photographs of both vehicles and dummies can be found in Appendix A of this report.

The vehicle-to-vehicle test was documented by one real-time camera and 15 high-speed cameras. Film analysis indicated the vehicles struck 0.75" inches from the target point in such a way as to create slightly more overlap. Camera information and other pertinent camera information can be found in Table 9 and Figure 12 of this report.

Vehicle 1, the 1991 Ford Taurus, contained one Hybrid III 50th percentile male anthropomorphic test device (ATD) in the driver seating position. Vehicle 2, the 1993 Ford Taurus, contained one Hybrid III 50th percentile male ATD in the right-front passenger position. The ATD's were restrained using the vehicle's own restraint system after being placed in the vehicle following the dummy placement instructions specified in FMVSS 208 Test Procedure.

The 50th percentile male dummies of both vehicles were instrumented with head and chest triaxial accelerometer packages; chest displacement potentiometers; upper neck force and moment transducers; femur axial force load cells; triaxial pelvic accelerometers; and upper and lower tibia force and moment transducer packages. The driver dummy of the 1991 Ford Taurus also contained the chest compression displacement potentiometer array in addition to a load cell attached to the torso belt to measure shoulder belt tensile forces.

The 107 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 1991 Ford Taurus (Vehicle 1) driver HIC was 529.8 with the head contacting the airbag and the top of his head contacting the roof-rail. The maximum chest acceleration over a three millisecond period was 45.4 g's. The left femur

maximum axial compressive force was 5654.2 newtons and the right femur maximum axial compressive force was 5298.0 newtons.

Structural damage to the 1991 Ford Taurus vehicle consisted of deformation of the left front roof and door. The windshield cracked throughout the entire area. The maximum longitudinal intrusion of the left side toepan was approximately 114 mm.

The 1993 Ford Taurus (Vehicle 2) driver HIC was 76.0 with the head contacting the airbag. The maximum chest acceleration over a three millisecond period was 40.8 g's. The left femur maximum, axial compressive force was 5634.6 newtons and the right femur maximum axial compressive force was 961.3 newtons.

Problems occurred with the following data channels:

- Two of the chest displacement array potentiometers located in the chest of the driver dummy in Vehicle 1, numbers 127 and 128, contained questionable data throughout event.
- The vehicle acceleration from the accelerometer located on the left rear compartment area of Vehicle 1 contained questionable data after 50 milliseconds.
- The pelvic accelerometer of the driver dummy of Vehicle 1 contained questionable data after 60 milliseconds for both the x and y axis. The cable from the accelerometers had pulled out during event.
- The vehicle acceleration from the accelerometer located on the right shock tower (y axis) of Vehicle 1 contained questionable data at approximately 54 milliseconds.

Section 3
VEHICLE AND OCCUPANT INFORMATION

Figure 1

VEHICLE-TO-VEHICLE OVERLAP LAYOUT

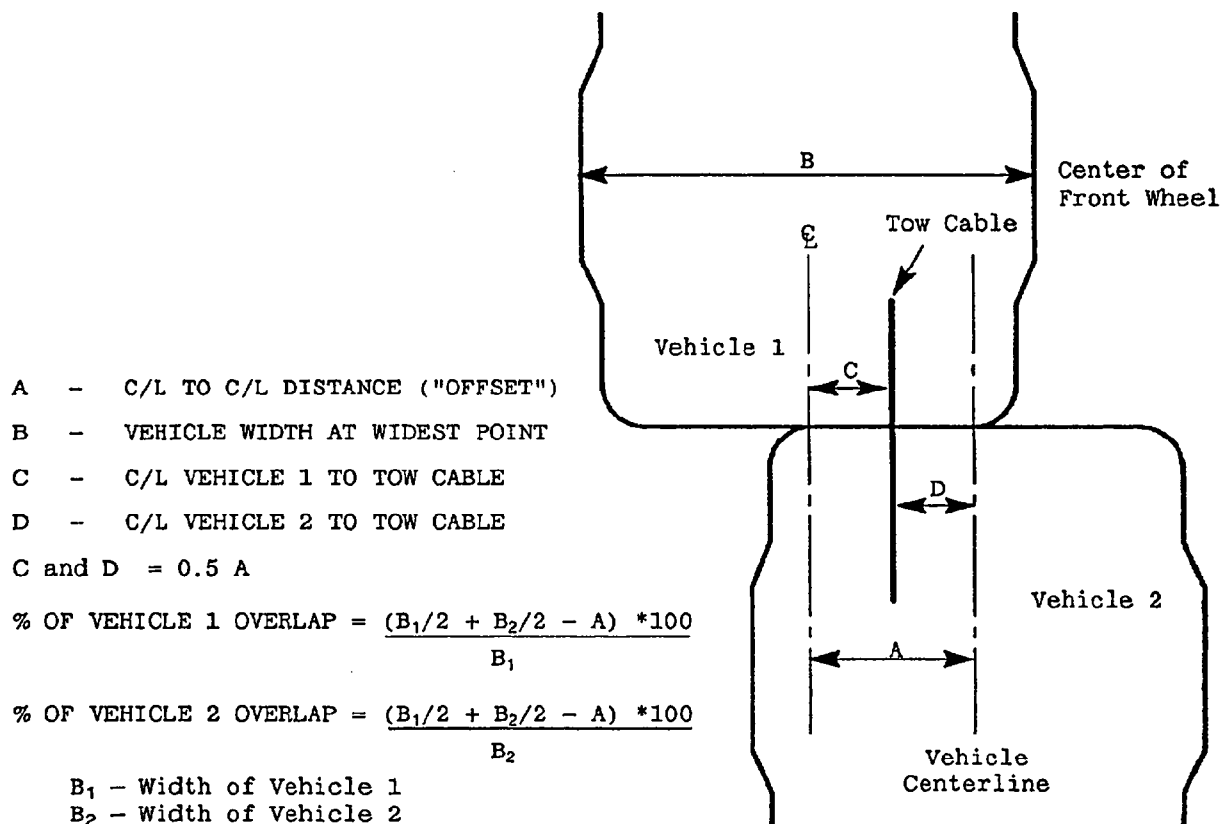


Table 1
VEHICLE-TO-VEHICLE OVERLAP MEASUREMENTS (mm.)

Measurement Code	Vehicle 1	Vehicle 2
A	35.6	35.6
B	70.8	71.2
C	17.8	-
D	-	17.8
% Vehicle Overlap	50	49.7

VEHICLE ONE DATA

Table 1

GENERAL TEST AND VEHICLE 1 PARAMETER DATA

Vehicle Year/Make/Model/Body Style: 1991 Ford Taurus L 4-Door Sedan

NHTSA Test No.: - VIN.: 1FACP50UOMG142554

Body Color: Gray Date of Manufacture: November 1990

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

Transmission: - Speed; - Manual; ✓ Automatic; - Overdrive

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

Type of Occupant Restraint: Driver Airbag - 3 Point Manual Belt

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 241 kpa, Rear 241 kpa

Recommended Tire Size: P205/70R14

Recommended Cold Tire Pressure: Front 241 kpa, Rear 241 kpa

Tires on Vehicle: P205/70R14; Manufacturer: Goodyear

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

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

Type of Front Seat Back: - Fixed; ✓ Adj. With ✓ 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 2115 kgs. GAWR: Front 1167 kgs. Rear 963 kgs.

Table 1

GENERAL TEST AND VEHICLE 1 PARAMETER DATA (cont'd)

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

Right Front = 444.4 kgs. Right Rear = 231.3 kgs.
 Left Front = 444.4 kgs. Left Rear = 235.8 kgs.
 TOTAL FRONT WEIGHT = 888.8 kgs. (55.6% of Total Vehicle Weight)
 TOTAL REAR WEIGHT = 467.1 kgs. (34.4% of Total Vehicle Weight)
 TOTAL DELIVERED WEIGHT = 1355.9 kgs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMY:

Right Front = 440.0 kgs. Right Rear = 308.4 kgs.
 Left Front = 476.2 kgs. Left Rear = 349.2 kgs.
 TOTAL FRONT WEIGHT = 916.2 kgs. (58.2% of Total Vehicle Weight)
 TOTAL REAR WEIGHT = 657.6 kgs. (41.8% of Total Vehicle Weight)
 TOTAL TEST WEIGHT = 1573.8 kgs.
 Weight of Ballast Secured in Vehicle Trunk Area = 68.03 kgs.

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

Delivered Attitude: RF 726; LF 732; RR 658; LR 650
 Test Attitude: RF 709; LF 712; RR 605; LR 595
 Vehicle's Wheel Base = 2685 mm.
 Location of Vehicle's C.G. = 112.2 Centimeters Rearward of Front Wheel Center.

Table 1

GENERAL TEST AND VEHICLE 1 PARAMETER DATA (cont'd)

POST-IMPACT DATA:

Type of Test: Vehicle to Vehicle 50% Overlap Impact Angle: 0°
 Date of Test: April 26, 1994 Time of Test: 17:23
 Ambient Temperature: 23.3 °C at impact area
 Temperature in Occupant Compartment: 21.1 °C
 Windshield Molding Temperature: 21.1 °C
 Required Impact Velocity Range: 56.3 to 59.5 kph
 Impact Velocity: primary = 56.0 kph, secondary = - kph
 Distance From Front Bumper to Barrier Face When
 Entering Speed Trap: 132.1 cm.
 Exiting Speed Trap: 30.5 cm.

VISIBLE DUMMY CONTACT POINTS:

	<u>Driver</u>	<u>Passenger</u>
	<u>Face with airbag. Top of</u>	
Head	<u>head with roof-rail.</u>	<u>N/A</u>
Chest	<u>Airbag</u>	<u>N/A</u>
Abdome	<u>No Contact</u>	<u>N/A</u>
Left Knee	<u>Lower Dash Panel</u>	<u>N/A</u>
Right Knee	<u>Lower Dash Panel</u>	<u>N/A</u>

Comments: Windshield cracked throughout. Left side roof and doors deformed.
 Toe pan on driver-side and center intruded.

	<u>Front</u>		<u>Rear</u>	
	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Door Opening	<u>Closed</u>	<u>Closed</u>	<u>Closed</u>	<u>Closed</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>N/A</u>	<u>N/A</u>	<u>N/A</u>
Seat Shift (mm.)	<u>0.0</u>	<u>N/A</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)	-61.3	10.4	-18.9	62.1	-44.9	-7.4	-14.0	45.35
DUMMY (2)	-	-	-	-	-	-	-	-
DUMMY (3)	-	-	-	-	-	-	-	-
DUMMY (4)	-	-	-	-	-	-	-	-

	MAXIMUM FORCE FEMUR LOAD (NEWTONS)	
	RIGHT FEMUR	LEFT FEMUR
DUMMY (1)	-5298.0	-5654.2
DUMMY (2)	-	-
DUMMY (3)	-	-
DUMMY (4)	-	-

	MAXIMUM FORCE SEAT BELT LOADS (NEWTONS)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP BELT LOAD	LAP STRAP BELT LOAD
DUMMY (1)	3868.3	1026.1	-
DUMMY (2)	-	-	-
DUMMY (3)	-	-	-
DUMMY (4)	-	-	-

	HEAD INJURY CRITERIA (HIC)			
	HIC	t ₁ (SEC)	t ₂ (SEC)	Average Acceleration t ₁ TO t ₂
DUMMY (1)	529.83	67.080	102.000	47.04
DUMMY (2)	-	-	-	-
DUMMY (3)	-	-	-	-
DUMMY (4)	-	-	-	-

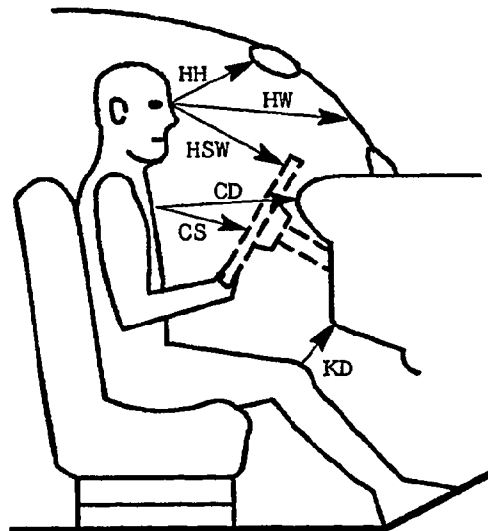
*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

Figure 2

VEHICLE 1 OCCUPANT CLEARANCE DIMENSIONS (mm)

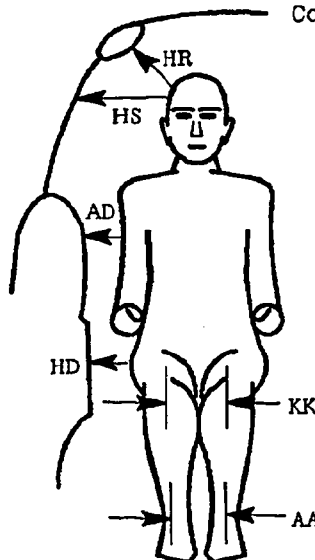
	DRIVER (mm)
HH	311
NW	590
NSW	366
NIP	522
NH	376
CD	515
CS	293
KDL	53
KDR	62
1	619
2	52
SA	20°
PA	23°
ULA	104°
LLA	229°



DISTANCE OF H-POINT FROM TARGET POSITION (mm)	
Longitudinal	2.0 Above
Vertical	8.0 Forward

HH = Head to Windshield Header
 NW = Nose 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 = Head Target to Steering Column Target
 2 = Distance between Steering Column Targets

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

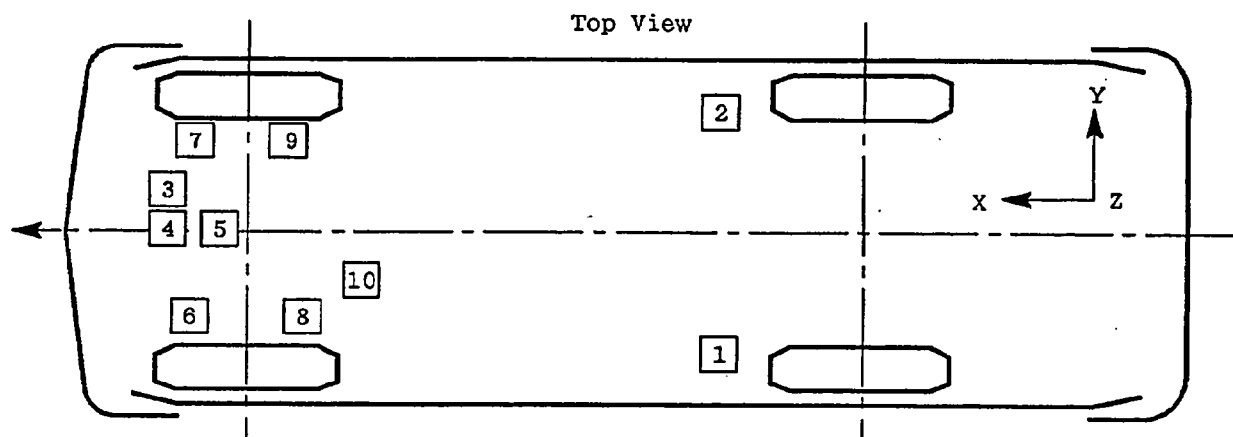


HR = Head to Side Roof
 HS = Head to Side Window
 AD = Arm to Door
 HD = Hip to Door
 KK = Knee to Knee
 AA = Ankle to Ankle
 DT = Dummy Temperature °C

	DRIVER (mm)
HR	170
HS	268
AD	119
HD	125*
KK	233
AA	303
DT	21°C

*Measured to door-pocket.

Figure 3
SUMMARY OF VEHICLE 1 ACCELEROMETER DATA



Vehicle: 1991 Ford Taurus L 4-Door Sedan

LOCATION	DESCRIPTION	ENGR	MAXIMUM		MINIMUM	
1	* V1 L.R. Comp (X)	Gs	338.2	97.1	-305.6	104.8
1	V1 L.R. Comp (Y)	Gs	8.1	70.2	-3.9	129.2
2	V1 R.R. Comp (X)	Gs	2.0	201.0	-29.6	57.8
2	V1 R.R. Comp (Y)	Gs	8.4	60.2	-3.7	151.1
3	V1 Right Engine (X)	Gs	13.0	58.7	-70.5	35.9
4	V1 Left Engine (X)	Gs	25.0	62.4	-83.6	31.1
5	V1 Engine Bottom (X)	Gs	12.4	40.6	-76.9	30.1
5	V1 Engine Bottom (Y)	Gs	60.0	30.5	-21.4	42.7
6	V1 Left Shock Tower (X)	Gs	9.1	90.2	-63.1	40.0
6	V1 Left Shock Tower (Y)	Gs	44.0	45.7	-86.5	53.2
7	V1 Right Shock Tower (X)	Gs	68.6	9.1	-84.7	92.2
7	** V1 Right Shock Tower (Y)	Gs	18.8	26.5	-170.7	54.4
8	V1 L.F Frame Rail (X)	Gs	27.7	30.0	-89.7	38.9
8	V1 L.F Frame Rail (Y)	Gs	63.8	39.1	-27.3	49.1
8	V1 L.F Frame Rail (Z)	Gs	122.6	55.2	-36.7	27.2
9	V1 R.F Frame Rail (X)	Gs	9.5	18.2	-48.8	42.4
9	V1 R.F Frame Rail (Y)	Gs	51.5	37.6	-32.4	32.9
9	V1 R.F Frame Rail (Z)	Gs	56.4	55.3	-21.9	68.9
10	V1 Brake Pedal (X)	Gs	43.6	72.2	-36.7	47.2
10	V1 Brake Pedal (Y)	Gs	74.5	61.3	-53.8	79.4
10	V1 Brake Pedal (Z)	Gs	158.4	50.0	-57.5	39.1
10	V1 Brake Pedal Resultant	Gs	168.5	50.2	.5	-.6

* - Data questionable after 50 msec.

** - Data questionable at 54 msec., accelerometer channel appeared to open.

Values filtered using SAE class 60 filter.

Figure 4

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

Test Description: 60 kph Offset Frontal Vehicle-to-Vehicle Impact
 Test Vehicle: 1991 Ford Taurus L 4-Door Sedan
 Reference Plane: Vehicle plane at rear bumper
 Note: Vehicle 1 and 2 accelerometer locations

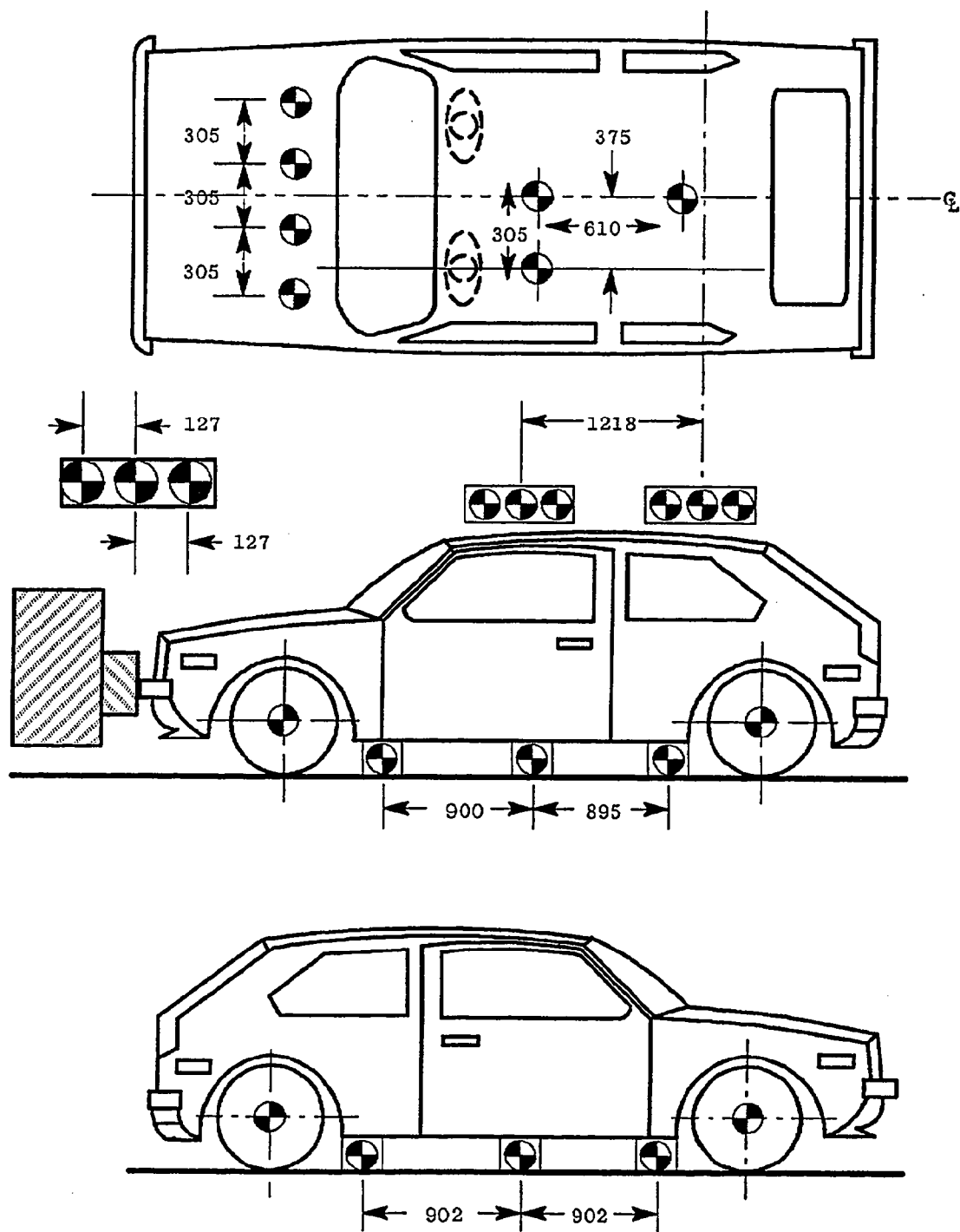
Vehicle No. 1	Pre-Test Axis (mm)			Post-Test Axis (mm)		
Description	X	Y	Z	X	Y	Z
Right Front Frame Rail	3926	440	188	4034	450	246
Left Front Frame Rail	3933	380	153	3899	401	178
Right Engine Top	3977	221	876	3845	310	879
Left Engine Top	3901	76	876	3678	-63	880
Engine Bottom	3588	35	213	3651	-38.1	239
Right Shock Tower	3749	648	922	3742	648	920
Left Shock Tower	3749	648	922	3537	594	1015
Brake Pedal	3317	340	394	3267	332	422
Left Rear Comp.	1895	623	406	1895	623	401
Right Rear Comp.	1895	623	401	1895	623	394
Center Rear Comp.	1832	0.0	478	1832	0.0	445
Lower Steering Col.	3288	376	650	3165	370	653
Upper Steering Col.	N/A*	-	-	-	-	-
Left Driver Toepan	3330	566	381	3279	578	335
Right Driver Toepan	3411	323	338	3325	317	313

NOTE: Vehicle leveled to pre-test height for post-test measurements.
 Carpet removed from floor-pan.

*Airbag remained in place, upper steering column accelerometer was not used on this vehicle.

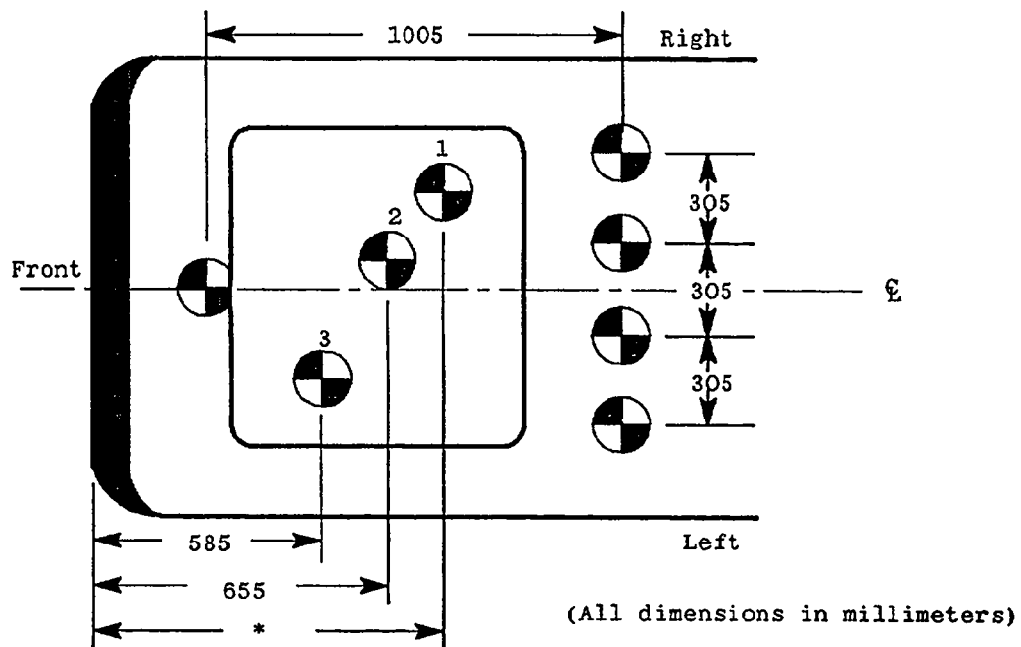
Toepan Measurement Positions						
Loc. No.	Pre-Test Axis (mm)			Post-Test Axis (mm)		
	X	Y	Z	X	Y	Z
1	3306	551	245	3254	553	245
2	3401	569	415	3287	567	424
3	3441	453	322	3328	445	351
4	3351	163	267	3321	168	182
5	3464	183	342	3366	167	352

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

Figure 6

VEHICLE 1 MEASUREMENT POINTS

(All dimensions in millimeters)

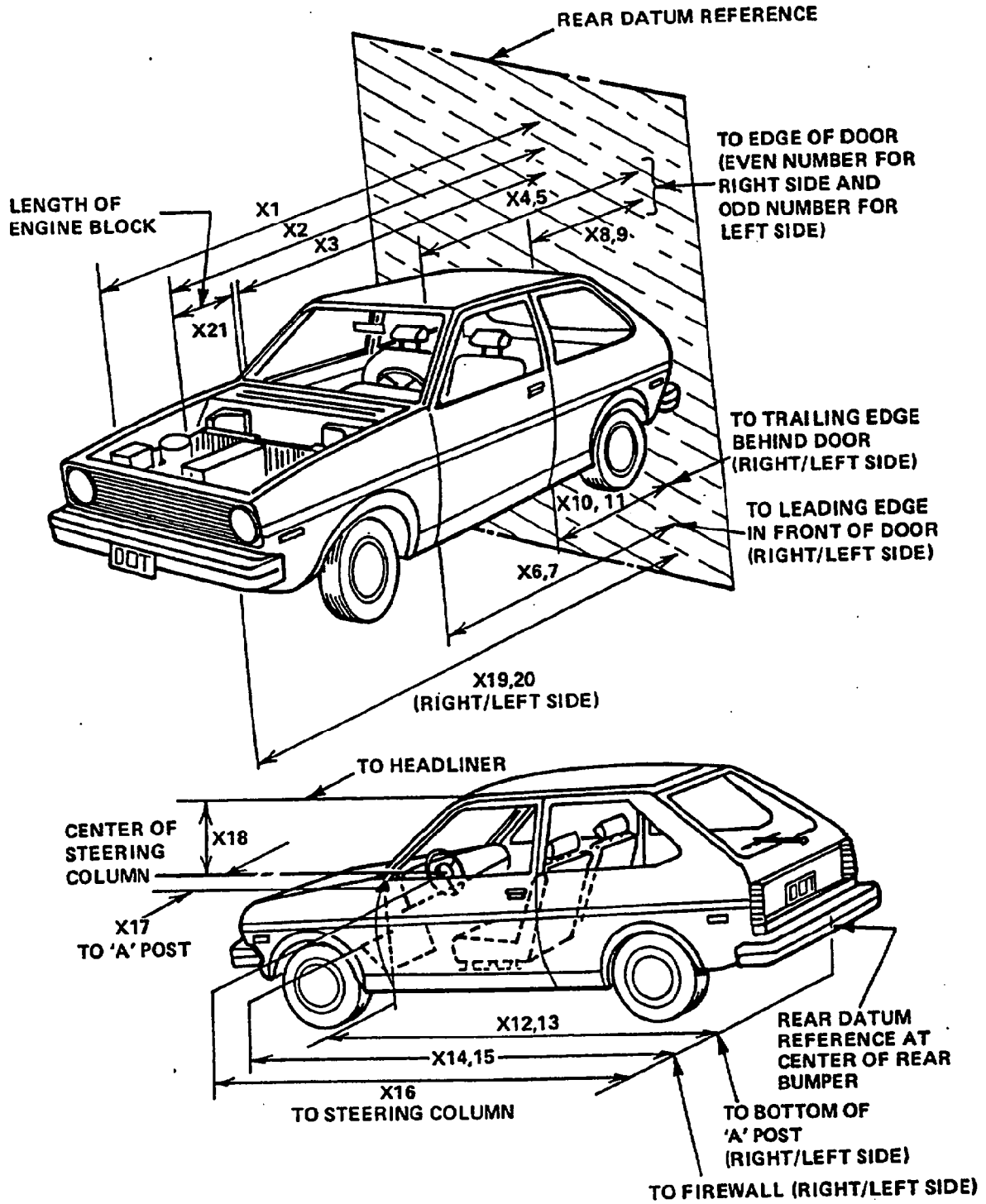


Figure 6

VEHICLE 1 MEASUREMENT POINTS (continued)

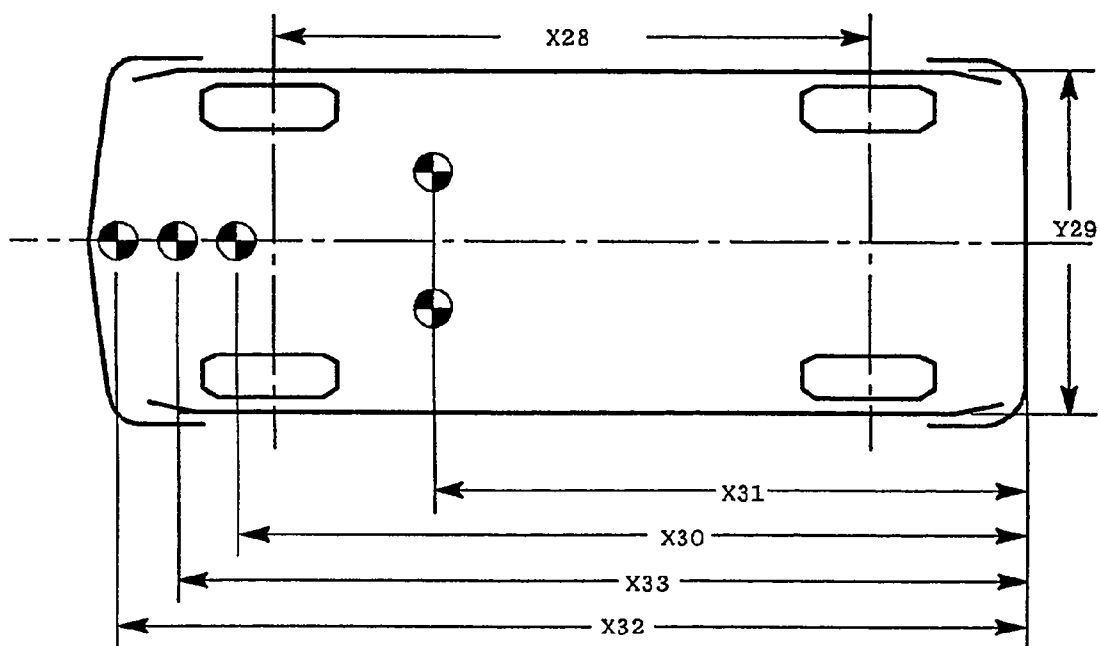
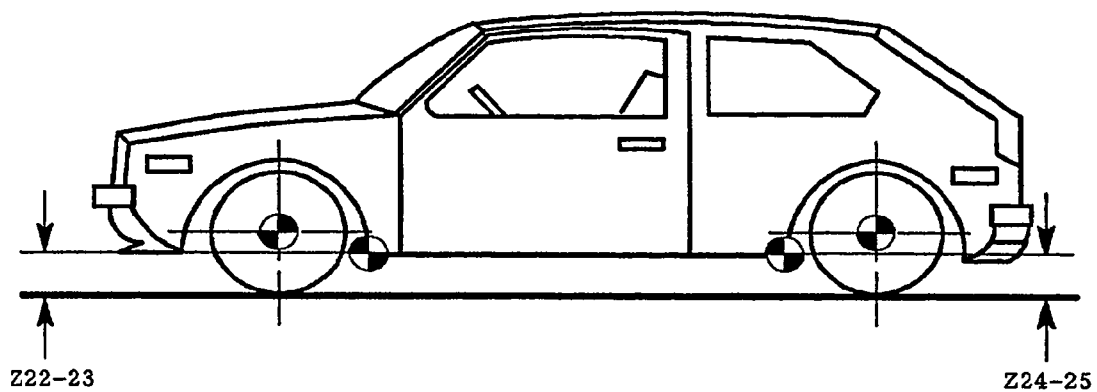


Table 3

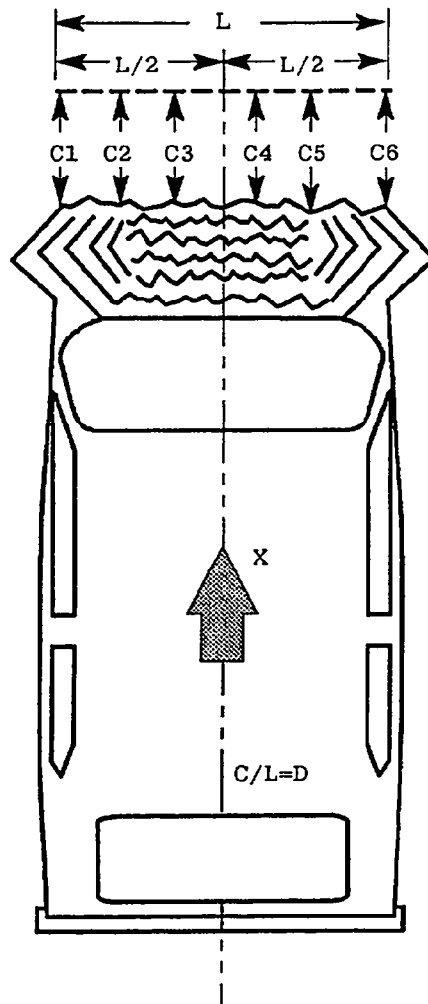
VEHICLE 1 MEASUREMENTS

No.	TYPE OF MEASUREMENT	All Dimensions in millimeters	
		Pre-Test	Post-Test
X1	Total Length of Vehicle at Centerline	4785	4290
X2	Rear Surface of Vehicle to Engine at Centerline	4069	3900
X3	Rear Surface of Vehicle to Firewall	3584	3532
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3316	3315
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3300	3252
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3246	3238
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3242	3187
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2232	2222
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2216	2207
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2211	3205
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2206	2158
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3276	3275
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3274	3209
X14	Rear Surface of Vehicle to Firewall - Right Side	3584	3565
X15	Rear Surface of Vehicle to Firewall - Left Side	3582	3435
X16	Rear Surface of Vehicle to Steering Wheel Center	2794	2730
Y17	Steering Column to "A" Post	403	410

Table 3
VEHICLE 1 MEASUREMENTS (continued)

No.	TYPE OF MEASUREMENT	All Dimensions in millimeters	
		Pre-Test	Post-Test
Z18	Rear of Windshield Header to Steering Wheel Column	412	360
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4689	4710
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4666	3875
X21	Width of Engine Block	615	615
Z22	Right Front Sill to Ground Plane	229	204
Z23	Left Front Sill to Ground Plane	224	198
Z24	Right Rear Sill to Ground Plane	239	219
Z25	Left Rear Sill to Ground Plane	238	182
X26	Firewall to Engine or Transaxle	319	210
Z27	Vertical Dim. from Door Sill to Centerline of Steering Column	535	690
X28	Wheelbase of Vehicle	2685	Right = 2765 Left = 2522
Y29	Width of Vehicle at Maximum Width Point	1770	1820
X30	Rear Surface of Vehicle to Engine Target	3790	3759
X31	Rear Surface of Vehicle to Compartment Target	3301	Right = 3302 Left = 3257
X32	Rear Surface of Vehicle to Bumper Target	4678	4407
X33	Rear Surface of Vehicle to Frame Crossmember	3625	Right = 3670 Left = 3506

Table 3
 VEHICLE 1 MEASUREMENTS (continued)
 (all dimensions in millimeters)



Location	Pre-Test	Post-Test	Change
C1	4671	3866	805
C2	4747	3993	754
C3	4780	4201	579
C4	4780	4412	368
C5	4747	4561	186
C6	4671	4676	-5

Table 4

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: - TEST DATE: April 26, 1994

Vehicle Mfg./Make/Model: 1991 Ford Taurus L 4-Door Sedan

first

contacting _____ -
(driver/passenger) side

FUEL SPILLAGE MEASUREMENT:

1. From impact until vehicle motion ceases
2. For 5 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.

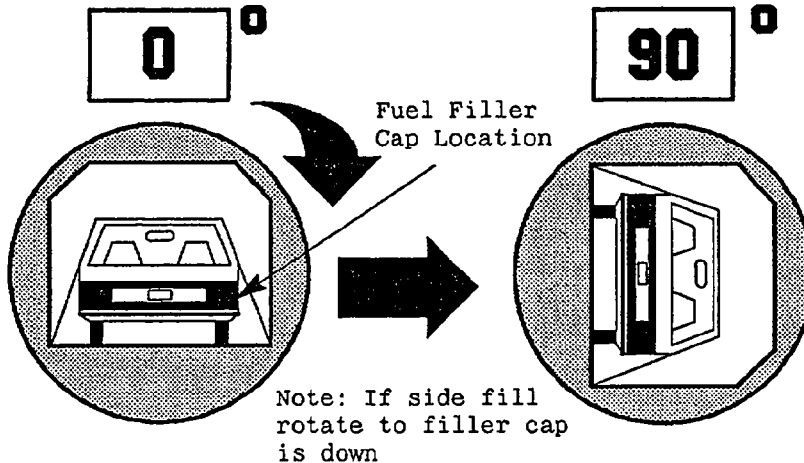
SOLVENT SPILLAGE DETAILS:

None

Table 4
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	_____ 1 _____	minutes	_____ 32 _____	seconds
FMVSS 301 Position Hold Time +	_____ 5 _____	minutes	_____ 00 _____	seconds
TOTAL	_____ 6 _____	minutes	_____ 32 _____	seconds
Next whole minute interval	_____ 7 _____	minutes		

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min FROM onset of rotation	8th 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.

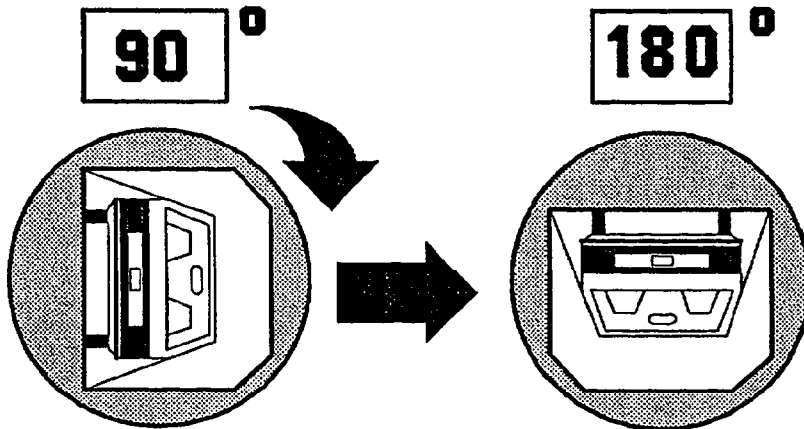
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 4
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	_____ 1 _____ minutes _____ 47 _____ seconds
FMVSS 301 Position Hold Time +	_____ 5 _____ minutes _____ 00 _____ seconds
TOTAL	_____ 6 _____ minutes _____ 47 _____ seconds
Next whole minute interval	_____ 7 _____ minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

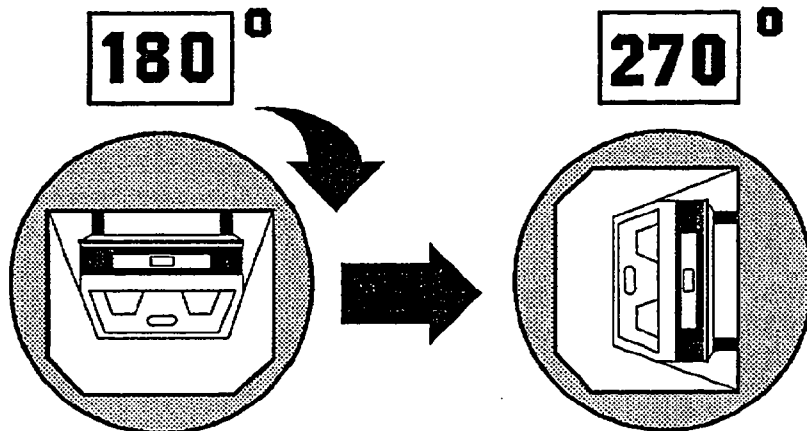
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 4
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time _____ 1 _____ minutes _____ 53 _____ seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + _____ 5 _____ minutes _____ 00 _____ seconds

TOTAL _____ 6 _____ minutes _____ 53 _____ seconds

Next whole minute interval _____ 7 _____ minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

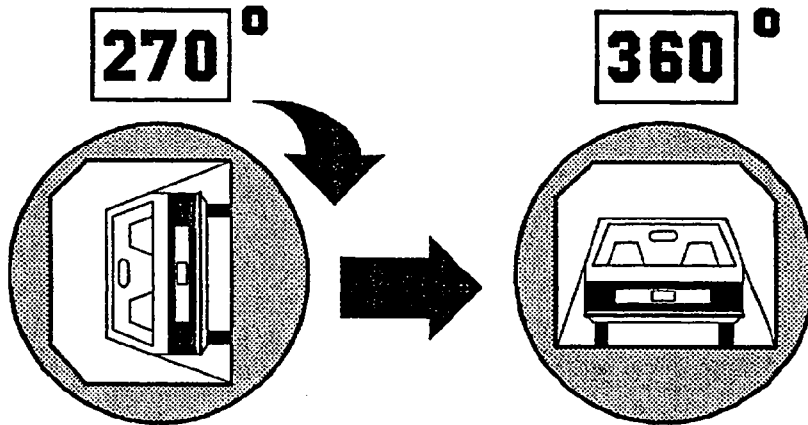
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 4
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time _____ 1 _____ minutes _____ 37 _____ seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + _____ 5 _____ minutes _____ 00 _____ seconds

TOTAL _____ 6 _____ minutes _____ 37 _____ seconds

Next whole minute interval _____ 7 _____ minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

IV. SOLVENT SPILLAGE LOCATION(S):

None

VEHICLE TWO DATA

Table 5

GENERAL TEST AND VEHICLE 2 PARAMETER DATA

Vehicle Year/Make/Model/Body Style: 1993 Ford Taurus GL 4-Door Sedan

NHTSA Test No.: - VIN.: 1FALP52U4PG272368

Body Color: Cranberry Date of Manufacture: May, 1993

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

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

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

Type of Occupant Restraint: Passenger Airbag - 3 Point Manual Belt

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 241.2 kpa, Rear 241.2 kpa

Recommended Tire Size: P205/70R14

Recommended Cold Tire Pressure: Front 241.2 kpa, Rear 241.2 kpa

Tires on Vehicle: P205/70R14; Manufacturer: Firestone

Number of Occupants: 3 Front; 3 Rear; N/A 3rd Seat; 6 TOTAL

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

Type of Front Seat Back: - Fixed; ✓ Adj. With ✓ 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 2128 kgs. GAWR: Front 1154 kgs. Rear 988 kgs.

Table 5

GENERAL TEST AND VEHICLE 2 PARAMETER DATA (cont'd)

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

Right Front = 489.8 kgs. Right Rear = 231.3 kgs.
 Left Front = 453.5 kgs. Left Rear = 231.3 kgs.
 TOTAL FRONT WEIGHT = 943.3 kgs. (67.1% of Total Vehicle Weight)
 TOTAL REAR WEIGHT = 462.6 kgs. (32.9% of Total Vehicle Weight)
 TOTAL DELIVERED WEIGHT = 1405.9 kgs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMY:

Right Front = 448.9 kgs. Right Rear = 353.7 kgs.
 Left Front = 421.8 kgs. Left Rear = 344.7 kgs.
 TOTAL FRONT WEIGHT = 870.7 kgs. (55.5% of Total Vehicle Weight)
 TOTAL REAR WEIGHT = 698.4 kgs. (44.5% of Total Vehicle Weight)
 TOTAL TEST WEIGHT = 1569.1 kgs.
 Weight of Ballast Secured in Vehicle Trunk Area = 68.03 kgs.

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

Delivered Attitude: RF 724; LF 721; RR 699; LR 701
 Test Attitude: RF 736; LF 737; RR 638; LR 650
 Vehicle's Wheel Base = 2690 mm.
 Location of Vehicle's C.G. = 119.7 centimeters rearward of front wheel center.

Table 5

GENERAL TEST AND VEHICLE 2 PARAMETER DATA (cont'd)

POST-IMPACT DATA:

Type of Test: Vehicle to vehicle 50% Overlap Impact Angle: 0°
 Date of Test: April 26, 1994 Time of Test: 17:23
 Ambient Temperature: 23.3 °C at impact area
 Temperature in Occupant Compartment: 21.1°C
 Windshield Molding Temperature: 21.1°C
 Required Impact Velocity Range: 56.3 to 59.5 kph
 Impact Velocity: primary = 56.0 kph, secondary = - kph
 Distance From Front Bumper to Barrier Face When
 Entering Speed Trap: 132.1 cm.
 Exiting Speed Trap: 30.5 cm.

VISIBLE DUMMY CONTACT POINTS:

	<u>Driver</u>	<u>Passenger</u>
Head	<u>N/A</u>	<u>Face with airbag. Rear of head with head-rest</u>
Chest	<u>N/A</u>	<u>Airbag</u>
Abdomen	<u>N/A</u>	<u>Airbag</u>
Left Knee	<u>N/A</u>	<u>Glove box door</u>
Right Knee	<u>N/A</u>	<u>Glove box door</u>

Comments: Windshield cracked throughout. Left side roof severely deformed.
 Left side doors and sill deformed. Driver-side and center of toe-pan deformed.

	<u>Front</u>		<u>Rear</u>	
	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Door Opening	<u>Closed</u>	<u>Closed</u>	<u>Closed</u>	<u>Closed</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>N/A</u>	<u>None</u>	<u>N/A</u>	<u>N/A</u>
Seat Shift (mm.)	<u>N/A</u>	<u>0.0</u>	<u>N/A</u>	<u>N/A</u>

Table 6
VEHICLE 2 DUMMY INJURY CRITERIA VALUES

	MAXIMUM ACCELERATION ("G")							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DUMMY (1)	-	-	-	-	-	-	-	-
DUMMY (2)	-42.5	-18.9	-27.5	43.0	-39.6	-12.0	-10.2	40.757
DUMMY (3)	-	-	-	-	-	-	-	-
DUMMY (4)	-	-	-	-	-	-	-	-

	MAXIMUM FORCE FEMUR LOAD (NEWTONS)	
	RIGHT FEMUR	LEFT FEMUR
DUMMY (1)	-	-
DUMMY (2)	-961.3	-5634.6
DUMMY (3)	-	-
DUMMY (4)	-	-

	MAXIMUM FORCE SEAT BELT LOADS (NEWTONS)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP BELT LOAD	LAP STRAP BELT LOAD
DUMMY (1)	-	-	-
DUMMY (2)	-	-	-
DUMMY (3)	-	-	-
DUMMY (4)	-	-	-

	HEAD INJURY CRITERIA (HIC)			
	HIC	t ₁ (SEC)	t ₂ (SEC)	Average Acceleration t ₁ TO t ₂
DUMMY (1)	-	-	-	-
DUMMY (2)	76.00	46.920	79.560	22.22
DUMMY (3)	-	-	-	-
DUMMY (4)	-	-	-	-

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

Figure 7

VEHICLE 2 OCCUPANT CLEARANCE DIMENSIONS (mm)

	PASSENGER (mm)
HH	297
NW	564
NSW	-
ND	540
NH	-
CD	469
CS	-
KDL	100
KDR	98
1	-
2	2.0
SA	20°
PA	23°
ULA	104
LLA	227

H-POINT FROM TARGET POSITION (mm)	
Vertical	6.0 Forward
Longitudinal	3.0 Above

Angles taken relative to vertical

SA = Seat Back Angle

PA = Pelvic Angle

ULA = Upper Leg Angle

LLA = Lower Leg Angle

HR = Head to Side Roof

HS = Head to Side Window

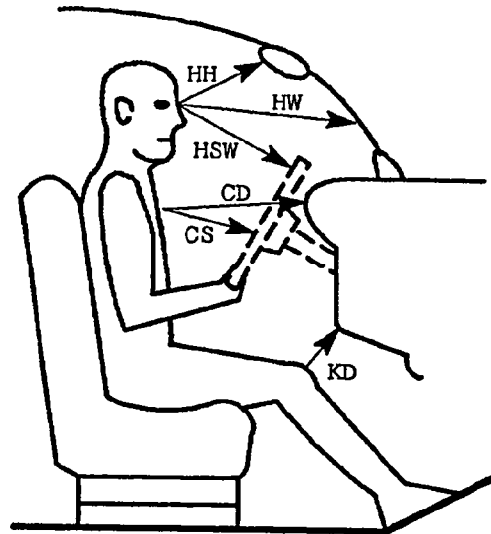
AD = Arm to Door

HD = Hip to Door

KK = Knee to Knee

AA = Ankle to Ankle

DT = Dummy Temperature °F



HH = Head to Windshield Header

NW = Nose to Windshield

NSW = Nose to Steering Wheel

ND = Nose to Dash

NH = Nose to Steering Wheel Hub

CD = Chest to Dash

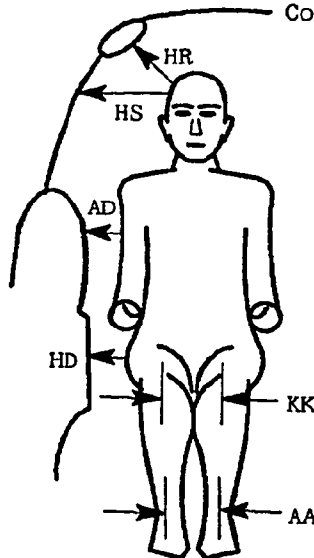
CS = Chest to Steering Wheel Hub

KDL = Knee to Dash Left

KDR = Knee to Dash Right

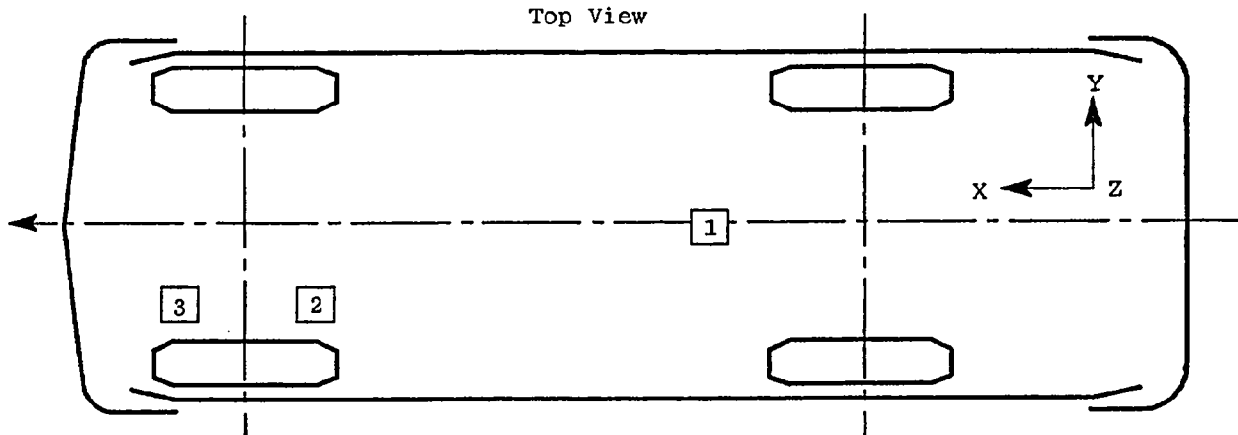
1 = Head Target to Steering Column Target

2 = Distance between Steering Column Targets



	DRIVER (mm)
HR	158
HS	241
AD	116
HD	151
KK	215
AA	241
DT	21°C

Figure 8
SUMMARY OF VEHICLE 2 ACCELEROMETER DATA



Vehicle: 1993 Ford Taurus GL 4-Door Sedan

LOCATION NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM	
			AMP	msec	AMP	msec
1	V2 Center Rear Comp X	Gs	6.3	37.2	-31.8	67.2
1	V2 Center Rear Comp Y	Gs	4.2	191.9	-12.3	57.1
2	V2 Upper Steering Col X	Gs	6.1	94.7	-24.0	64.1
2	V2 Upper Steering Col Y	Gs	60.6	85.9	-44.9	103.2
2	V2 Upper Steering Col Z	Gs	32.3	81.7	-25.3	95.9
3	V2 Lower Steering Col X	Gs	9.7	115.3	-51.9	63.1
3	V2 Lower Steering Col Y	Gs	30.1	38.5	-45.5	53.4
3	V2 Lower Steering Col Z	Gs	17.5	86.3	-43.5	52.6

Figure 9

VEHICLE 2 PRE- AND POST-TEST POSITION OF TEST VEHICLE
ACCELEROMETER MOUNTING LOCATIONS

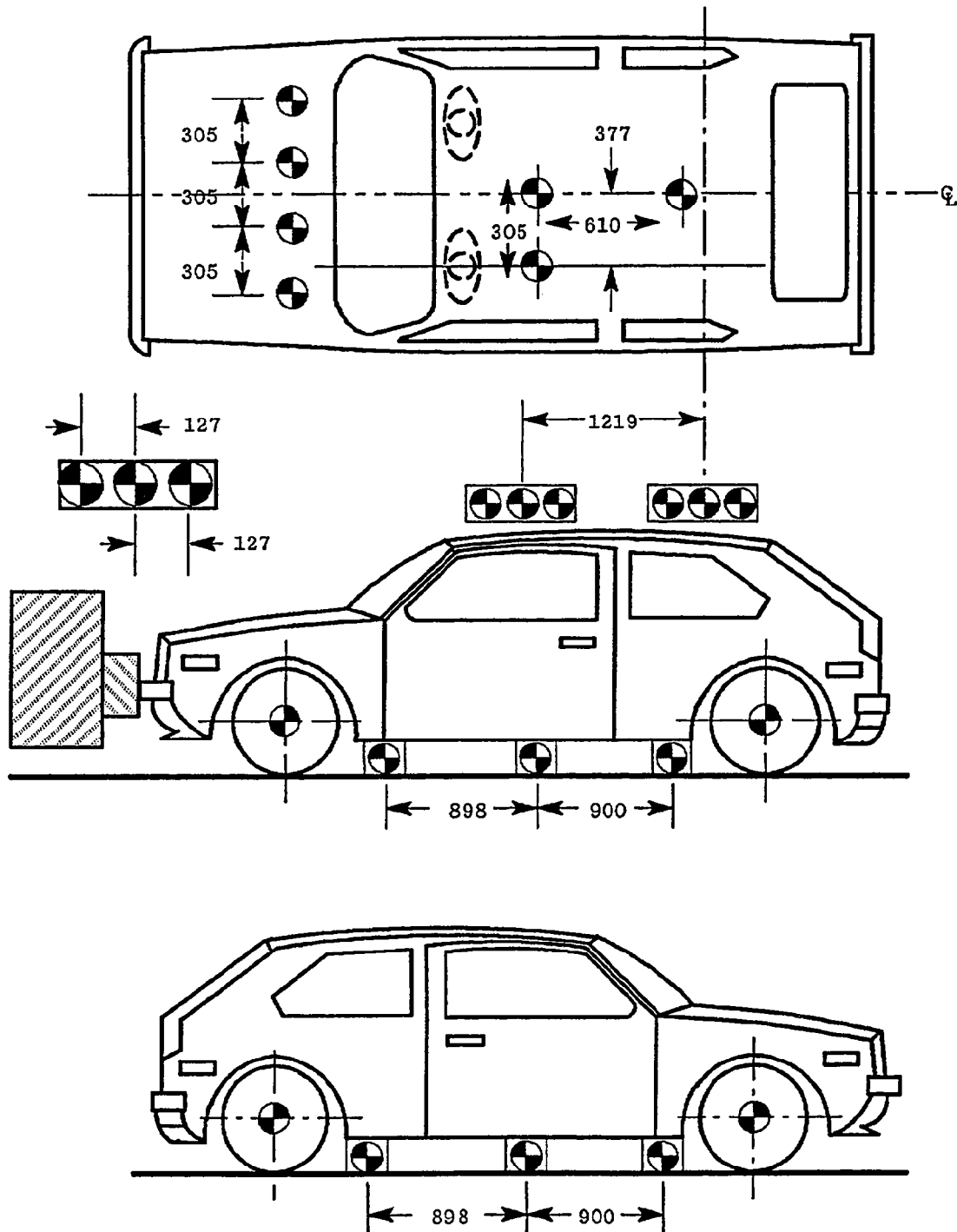
Test Description: 60 kph Offset Frontal Vehicle-to-Vehicle Impact
 Test Vehicle: 1993 Ford Taurus GL 4-Door Sedan
 Reference Plane: Vehicle plane at rear bumper
 Note: Vehicle 1 and 2 accelerometer locations

Vehicle No. 2	Pre-Test Axis (mm)			Post-Test Axis (mm)		
Description	X	Y	Z	X	Y	Z
Right Front Frame Rail	4023	427	250	4052	427	330
Left Front Frame Rail	4023	424	240	3780	391	262
Right Engine Top	4029	210	885	3846	310	920
Left Engine Top	3945	102	896	3667	-33	938
Engine Bottom	3725	0.0	234	3577	0.0	264
Right Shock Tower	3795	643	934	3811	653	939
Left Shock Tower	3795	643	934	3538	632	962
Brake Pedal	3390	340	455	2936	298	415
Left Rear Comp.	1969	623	393	1969	623	373
Right Rear Comp.	1969	623	393	1969	623	393
Center Raer Comp.	1875	0.0	487	1875	0.0	483
Lower Steering Col.	3358	387	654	3206	355	615
Upper Steering Col.	2909	362	890	2733	260	885
Left Driver Toepan	3445	571	374	3235	560	358
Right Driver Toepan	3505	327	352	3271	290	315

NOTE: Vehicle leveled to pre-test height for post-test measurements.
 Carpet removed from floor-pan.

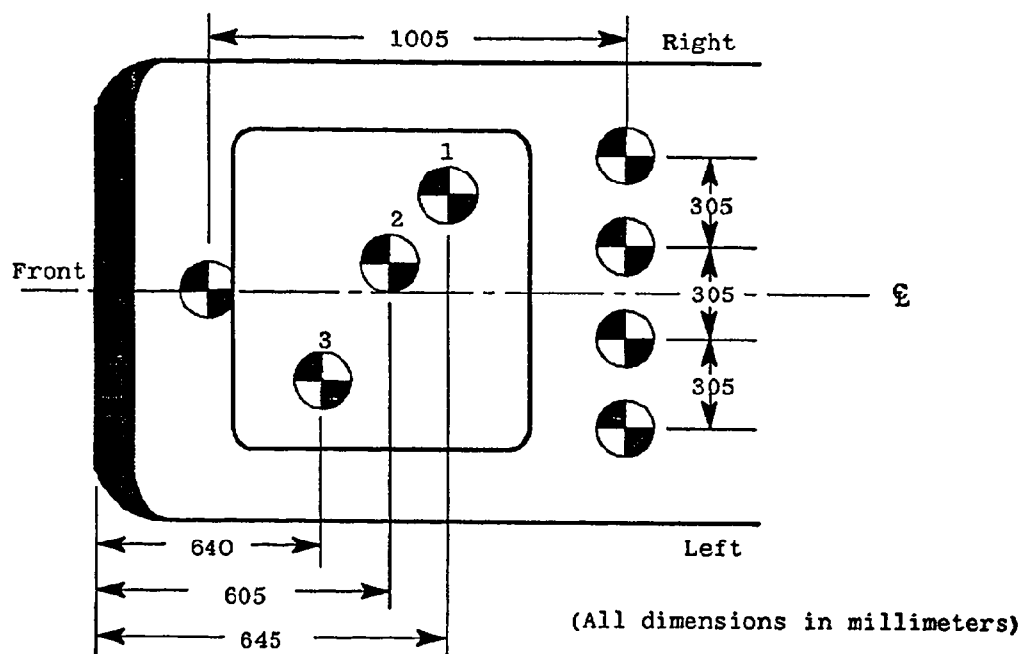
Toepan Measurement Positions						
Loc. No.	Pre-Test Axis (mm)			Post-Test Axis (mm)		
	X	Y	Z	X	Y	Z
1	3373	572	255	3238	565	250
2	3465	568	422	3243	554	400
3	3503	440	322	3268	440	318
4	3393	177	240	3253	163	246
5	3544	182	344	3340	141	324

Figure 10
 VEHICLE 2 TARGET LOCATIONS
 (All dimensions in millimeters)



(Dimensions in millimeters)

Figure 10
 VEHICLE 2 TARGET LOCATIONS (continued)
 (TOP VIEW OF HOOD AND ENGINE COMPARTMENT)



Note: Drawing not to scale.

Target 1: Alternator

Figure 11
 VEHICLE 2 MEASUREMENT POINTS
 (all dimensions in millimeters)

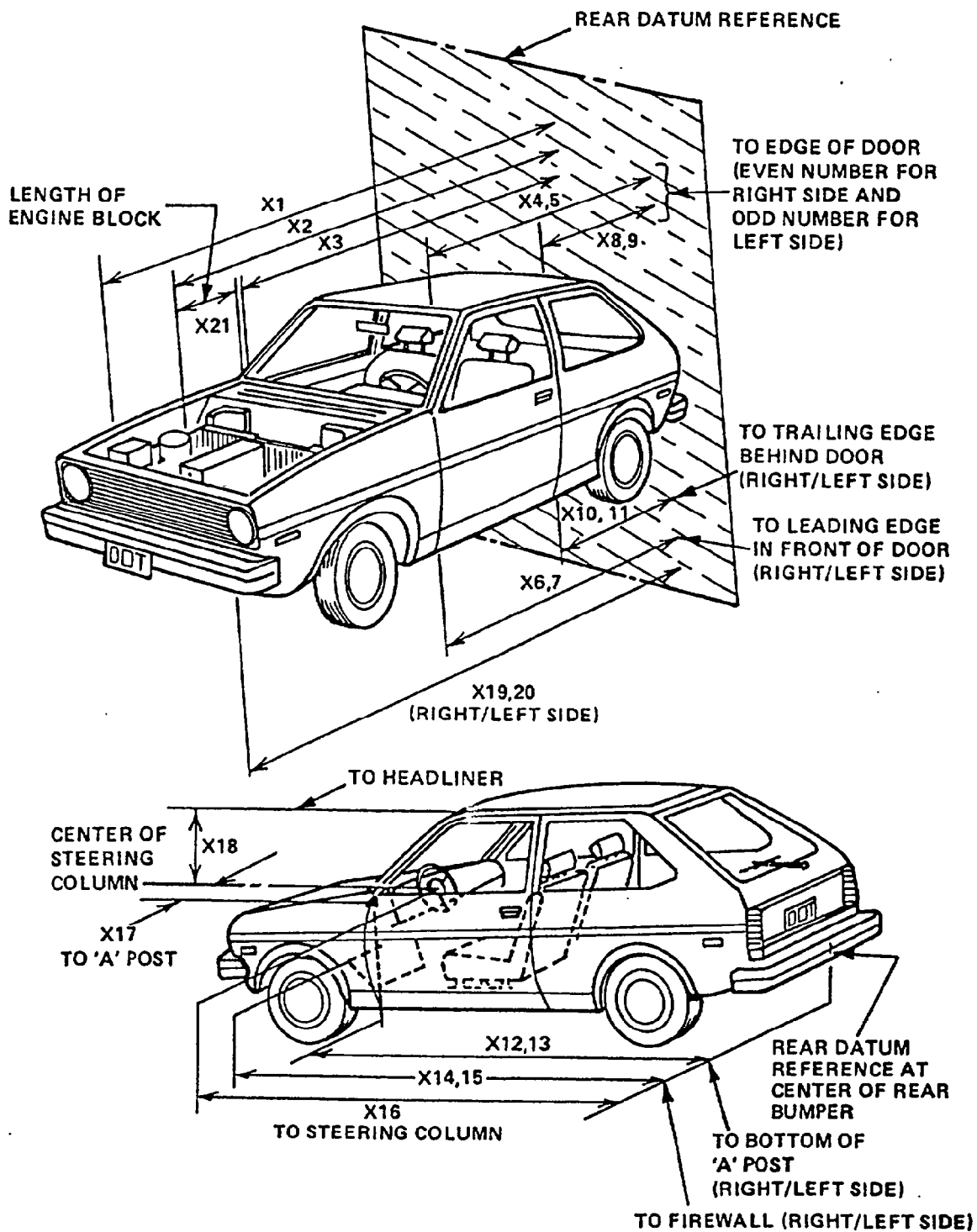


Figure 11
VEHICLE 2 MEASUREMENT POINTS (continued)

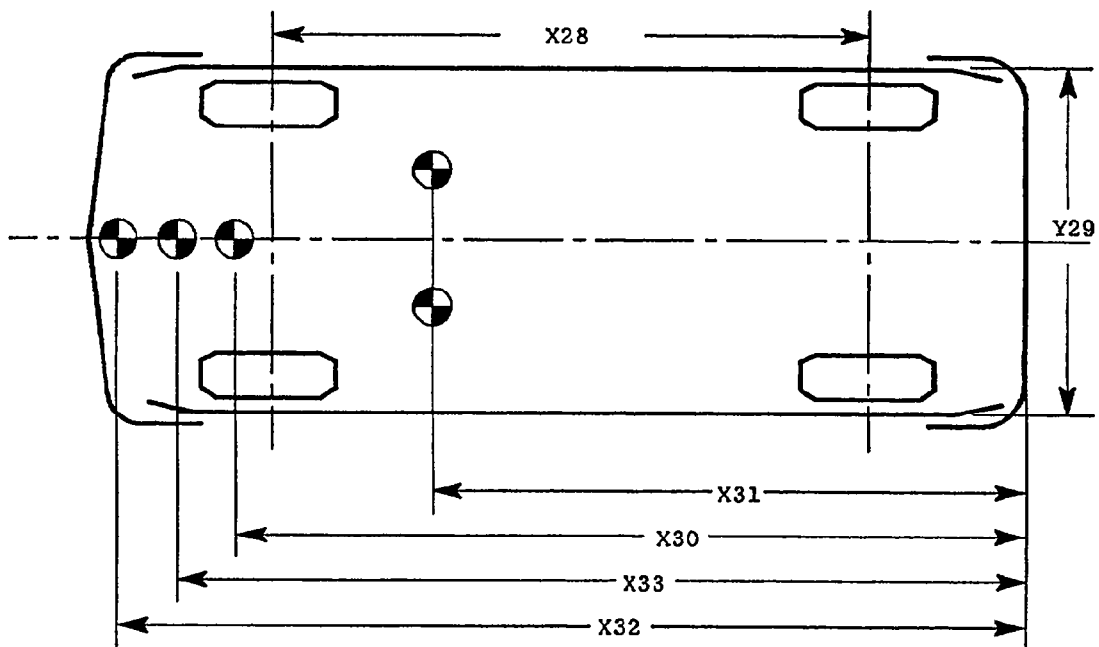
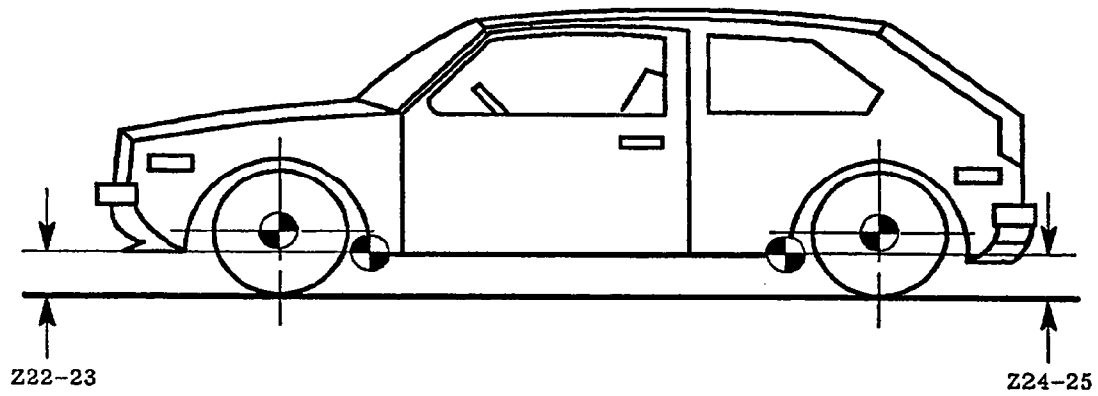


Table 7

VEHICLE 2 MEASUREMENTS

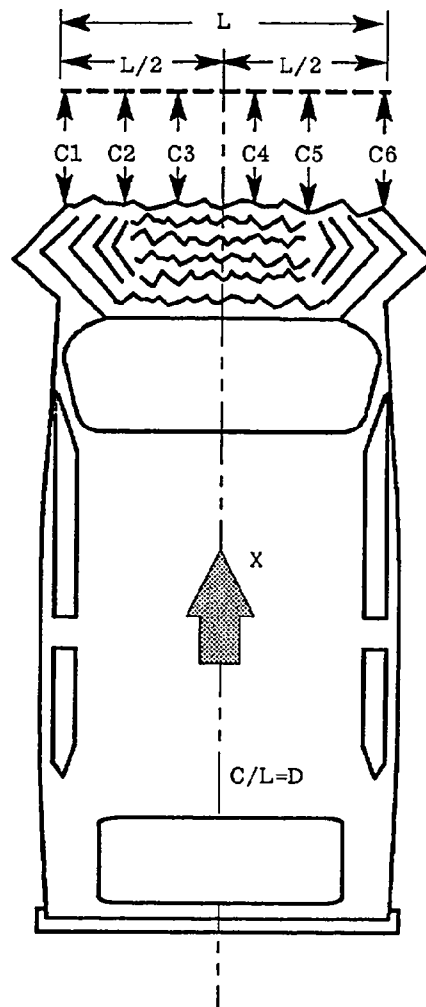
No.	TYPE OF MEASUREMENT	All Dimensions in millimeters	
		Pre-Test	Post-Test
X1	Total Length of Vehicle at Centerline	4880	4270
X2	Rear Surface of Vehicle to Engine at Centerline	4204	3920
X3	Rear Surface of Vehicle to Firewall	3665	3530
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3364	3367
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3364	3242
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3311	3300
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3306	3219
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2289	2283
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2282	2245
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2275	2265
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2269	2280
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3341	3397
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3339	3189
X14	Rear Surface of Vehicle to Firewall - Right Side	3647	3608
X15	Rear Surface of Vehicle to Firewall - Left Side	3628	3430
X16	Rear Surface of Vehicle to Steering Wheel Center	2865	2655
Y17	Steering Column to "A" Post	400	480

Table 7

VEHICLE 2 MEASUREMENTS (continued)

No.	TYPE OF MEASUREMENT	All Dimensions in millimeters	
		Pre-Test	Post-Test
Z18	Rear of Windshield Header to Steering Wheel Center	400	550
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4760	4850
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4745	3835
X21	Width of Engine Block	620	620
Z22	Right Front Sill to Ground Plane	219	227
Z23	Left Front Sill to Ground Plane	217	235
Z24	Right Rear Sill to Ground Plane	218	218
Z25	Left Rear Sill to Ground Plane	216	186
X26	Firewall to Engine or Transaxle	251	150
Z27	Vertical Dim. from Door Sill to Centerline of Steering Column	547	705
X28	Wheelbase of Vehicle	2690	Right = 2810 Left = 2355
Y29	Width of Vehicle at Maximum Width Point	1803	1832
X30	Rear Surface of Vehicle to Engine Target	3860	3645
X31	Rear Surface of Vehicle to Compartment Target	3150	3150
X32	Rear Surface of Vehicle to Bumper Target	4805	4250
X33	Rear Surface of Vehicle to Frame Crossmember	3685	Right = 3683 Left = 3429

Table 7
 VEHICLE 2 MEASUREMENTS (continued)
 (all dimensions in millimeters)



Location	Pre-Test	Post-Test	Change
C1	4761	3823	938
C2	4844	3958	886
C3	4875	3996	879
C4	4875	4405	470
C5	4844	4636	208
C6	4761	4819	-58

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

TEST VEHICLE NHTSA NO.: - TEST DATE: April 26, 1994

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.

contacting _____
(driver/passenger) side

FUEL SPILLAGE MEASUREMENT:

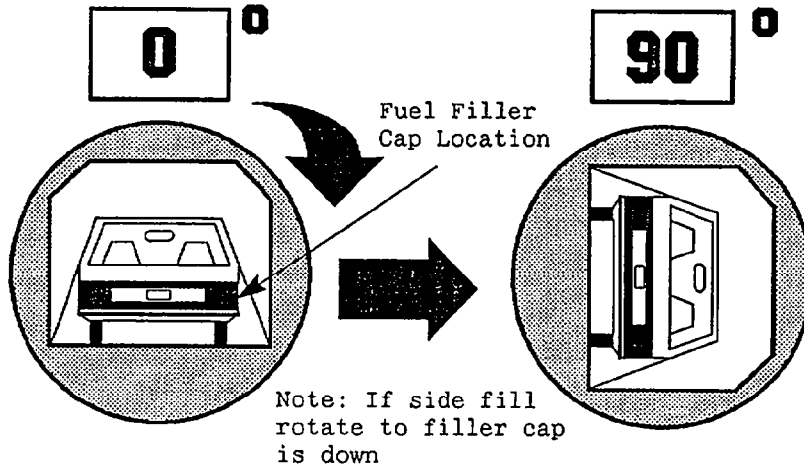
- | ACTUAL | MAX ALLOWED |
|--------|--------------|
| 0 | 1 oz. |
| 0 | 5 oz. |
| 0 | 1 oz./1 min. |

None

Table 8
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time _____ 1 _____ minutes _____ 30 _____ seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + _____ 5 _____ minutes _____ 00 _____ seconds

TOTAL _____ 6 _____ minutes _____ 30 _____ seconds

Next whole minute interval _____ 7 _____ minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

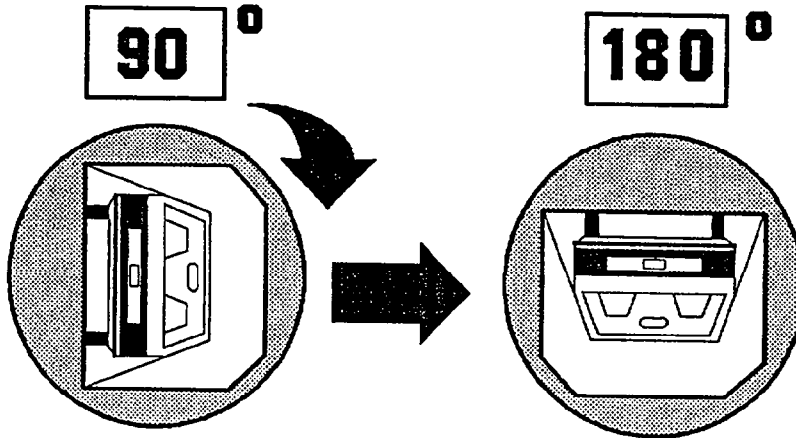
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 8
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

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

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

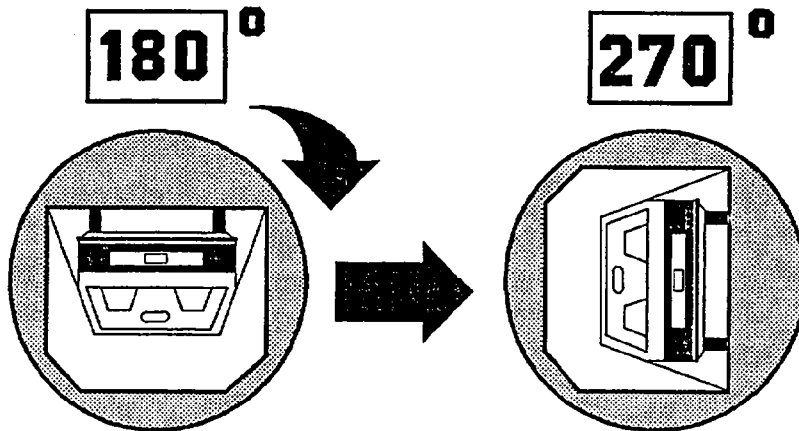
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 8
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time _____ 1 _____ minutes _____ 57 _____ seconds
(Spec. Range = 1 to 3 minutes)

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

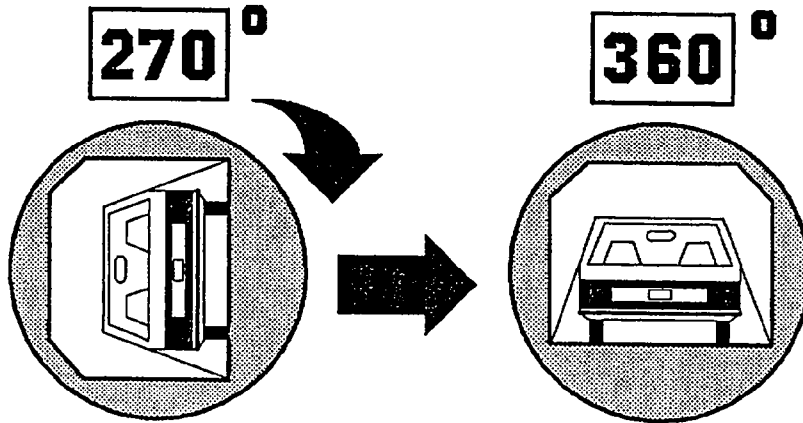
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 8
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.: _____



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time _____ 2 _____ minutes _____ 01 _____ seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + _____ 5 _____ minutes _____ 00 _____ seconds

TOTAL _____ 7 _____ minutes _____ 01 _____ seconds

Next whole minute interval _____ 8 _____ minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

IV. SOLVENT SPILLAGE LOCATION(S):

None

Figure 12
CAMERA POSITIONS FOR VTV OFFSET FRONTAL IMPACT

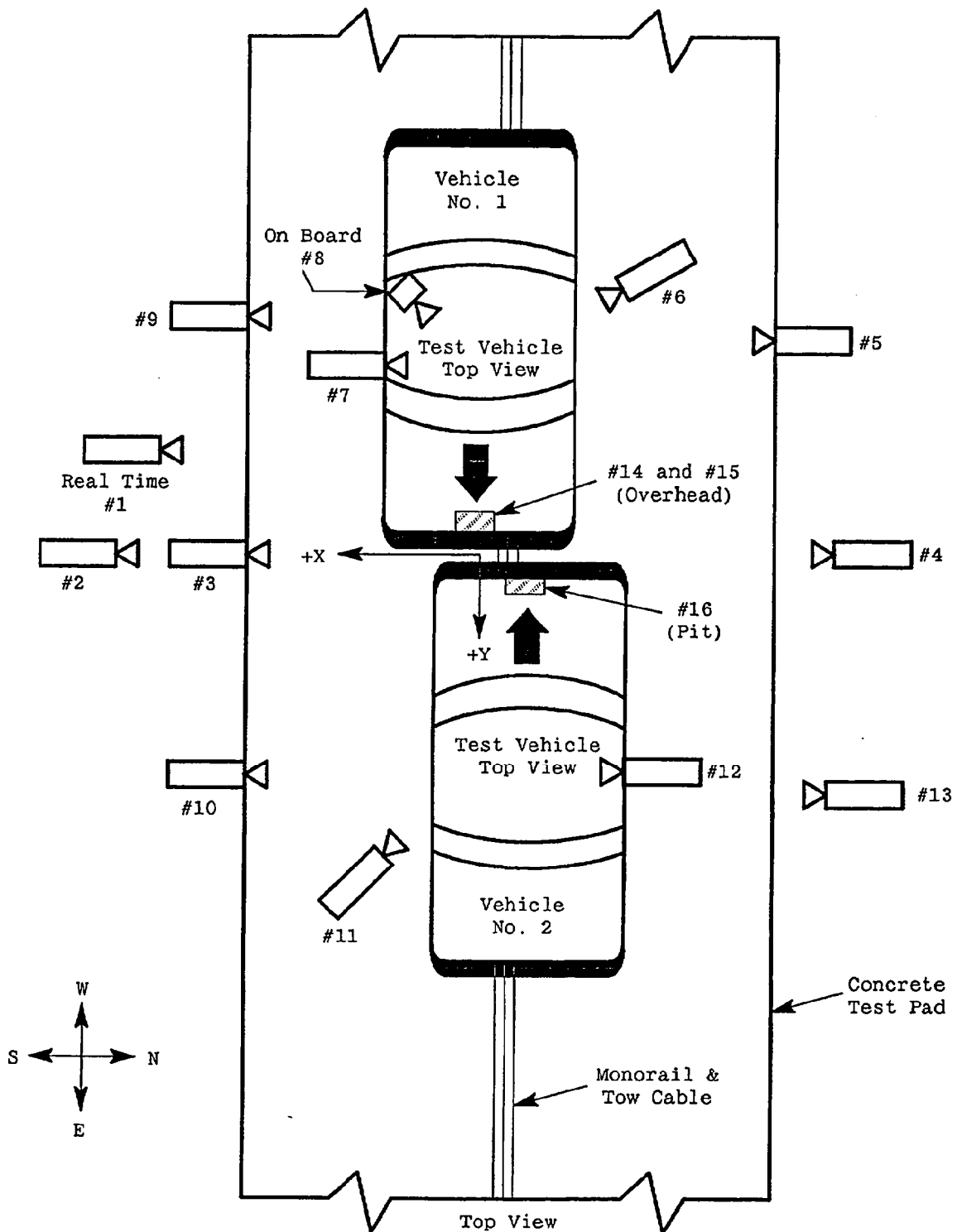


Table 9

HIGH-SPEED CAMERA LOCATIONS

Test No. Y49-6-1400

Vehicle: 1991 Ford Taurus L/1993 Ford Taurus GL 4-Door Sedans

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)*			ANGLE** (deg)	LENS (mm)	SPEED (fps)
		X	Y	Z			
1	Real-Time Camera	-	-	-	-	-	24
2	South Overall Camera	387	0	70	-8°	13	670
3	South Impact Point	324	0	41	-1°	25	680
4	North Impact Point	-333	0	41	-1°	25	690
5	Vehicle 1 Driver Side View	-353	-52	53	-3°	25	770
6	Vehicle 1 Driver and Interior View	-94	-116	76	-23°	13	710
7	Vehicle 1 Onboard Driver View	-	-	-	-	-	-
8	Vehicle 1 Onboard Seat Belt View	N/A	-	-	-	-	-
9	Vehicle 1 Passenger Side View	501	-64	51	-3°	35	810
10	Vehicle 2 Driver Side View	424	53	42	-2°	35	640
11	Vehicle 2 Driver and Interior View	80	128	63	-20°	13	705
12	Vehicle 2 Onboard Driver View	-	-	-	-	13	1075
13	Vehicle 2 Passenger Side View	-380	87	50	-3°	25	715
14	Overhead Overall View	-6	-12	386	-90	13	675
15	Overhead Impact Point View	-6	-18	386	-90	25	610
16	Underbody View	0	0		90	8	655

*X = film plane to monorail centerline
 Y = film plane to impact location
 Z = film plan to ground
 ** = referenced to horizontal plane

Appendix A

PHOTOGRAPHS

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*Photo Unavailable

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OVERALL TEST SETUP

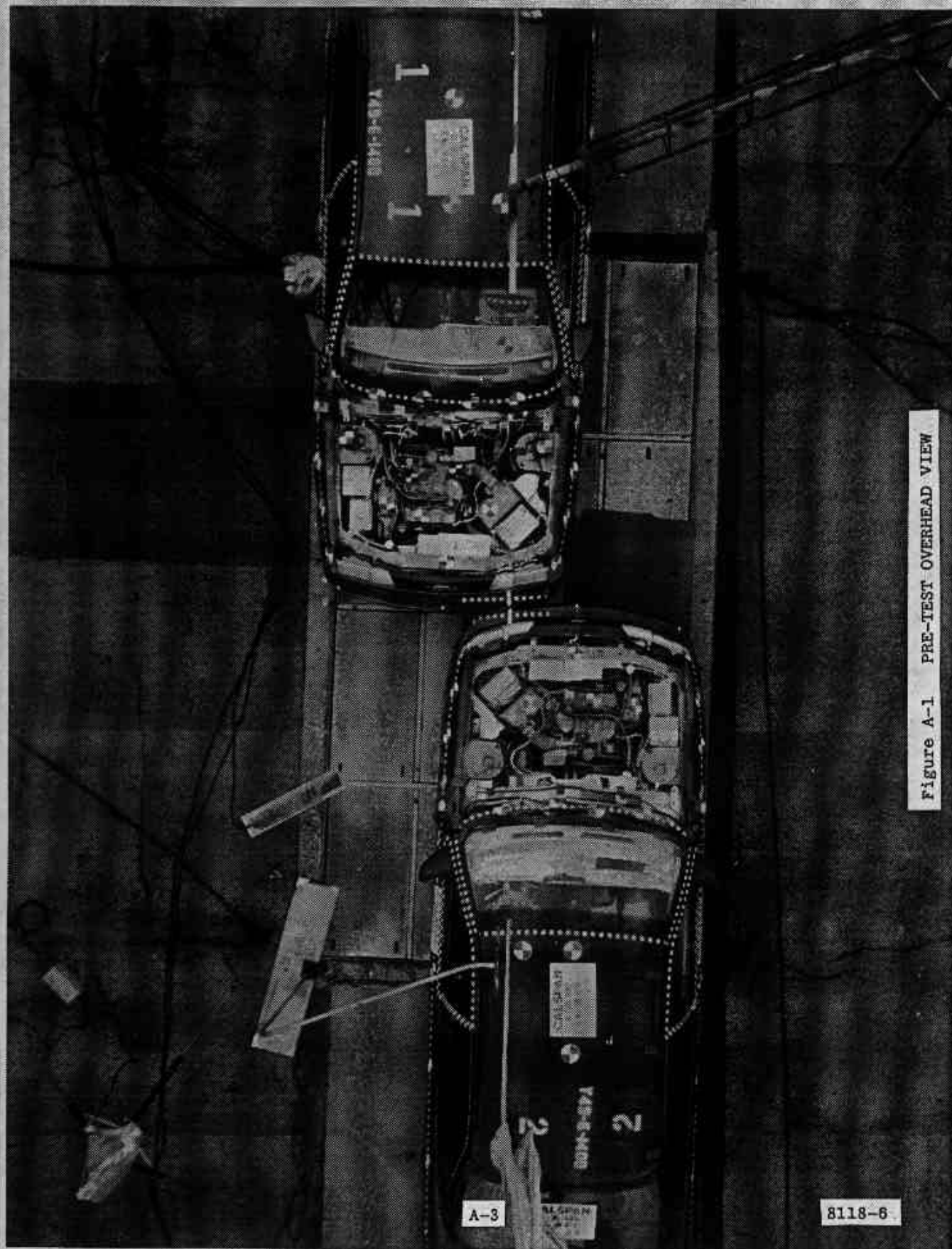


Figure A-1 PRE-TEST OVERHEAD VIEW

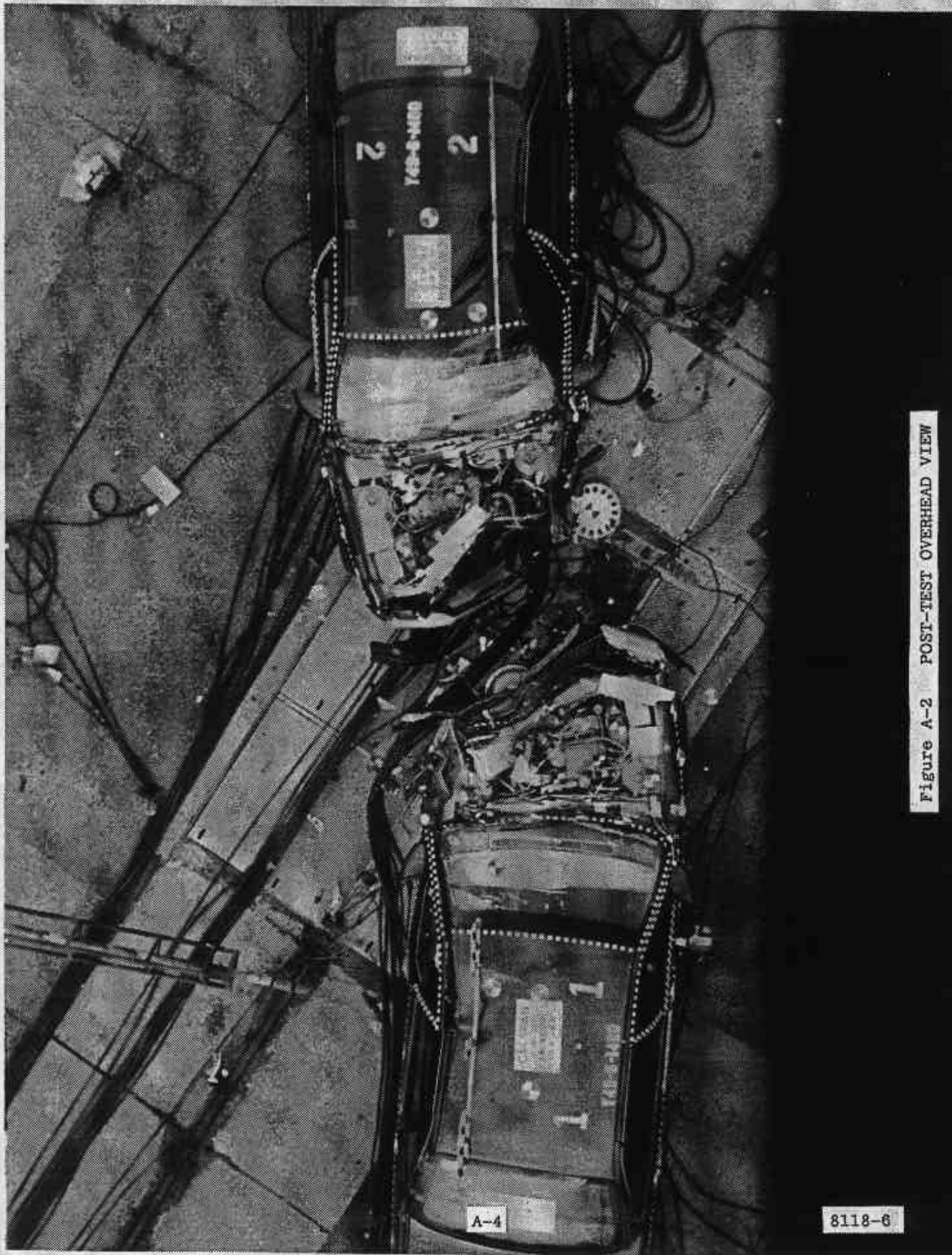


Figure A-2 POST-TEST OVERHEAD VIEW

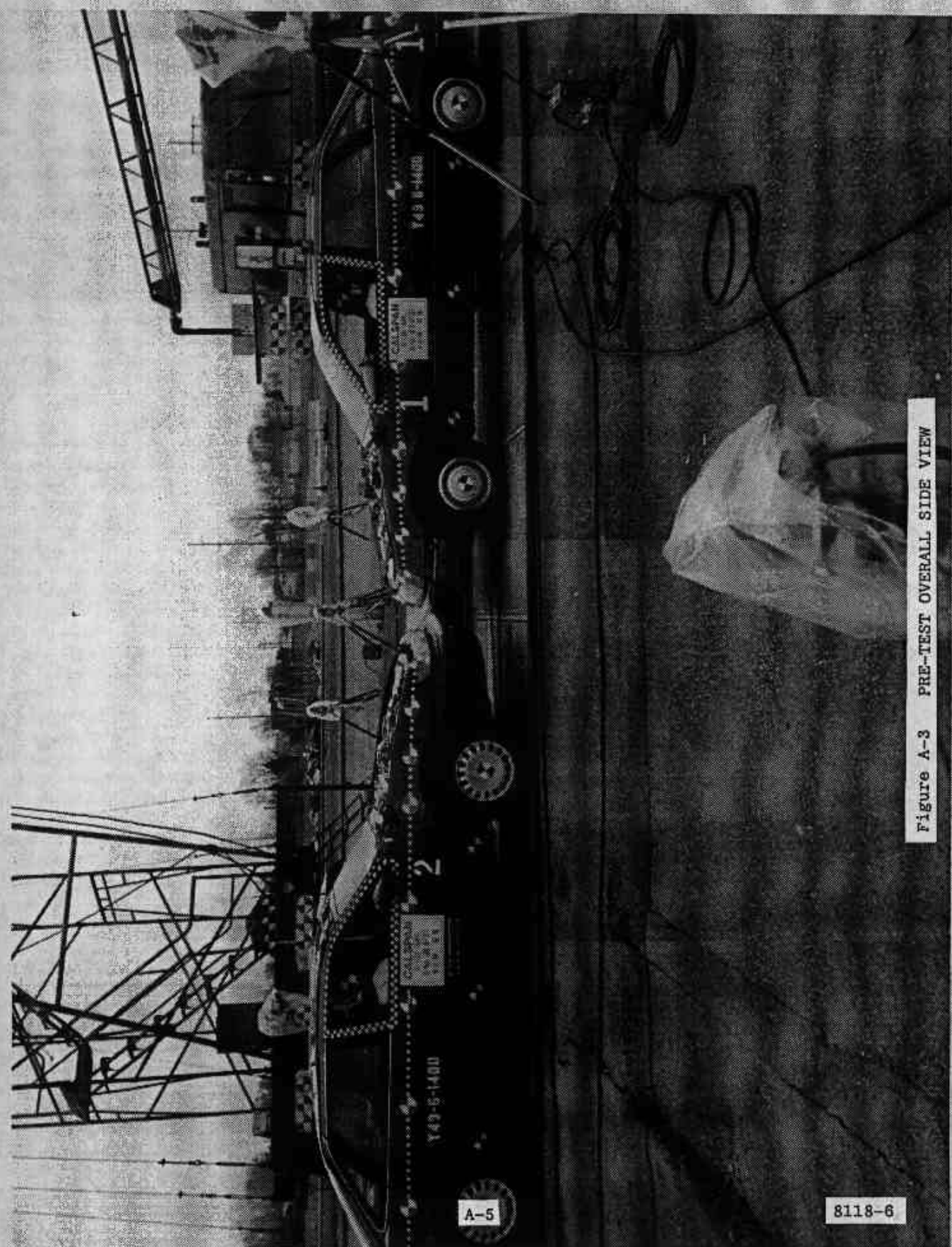


Figure A-3 PRE-TEST OVERALL SIDE VIEW

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Figure A-4 POST-TEST OVERALL SIDE VIEW

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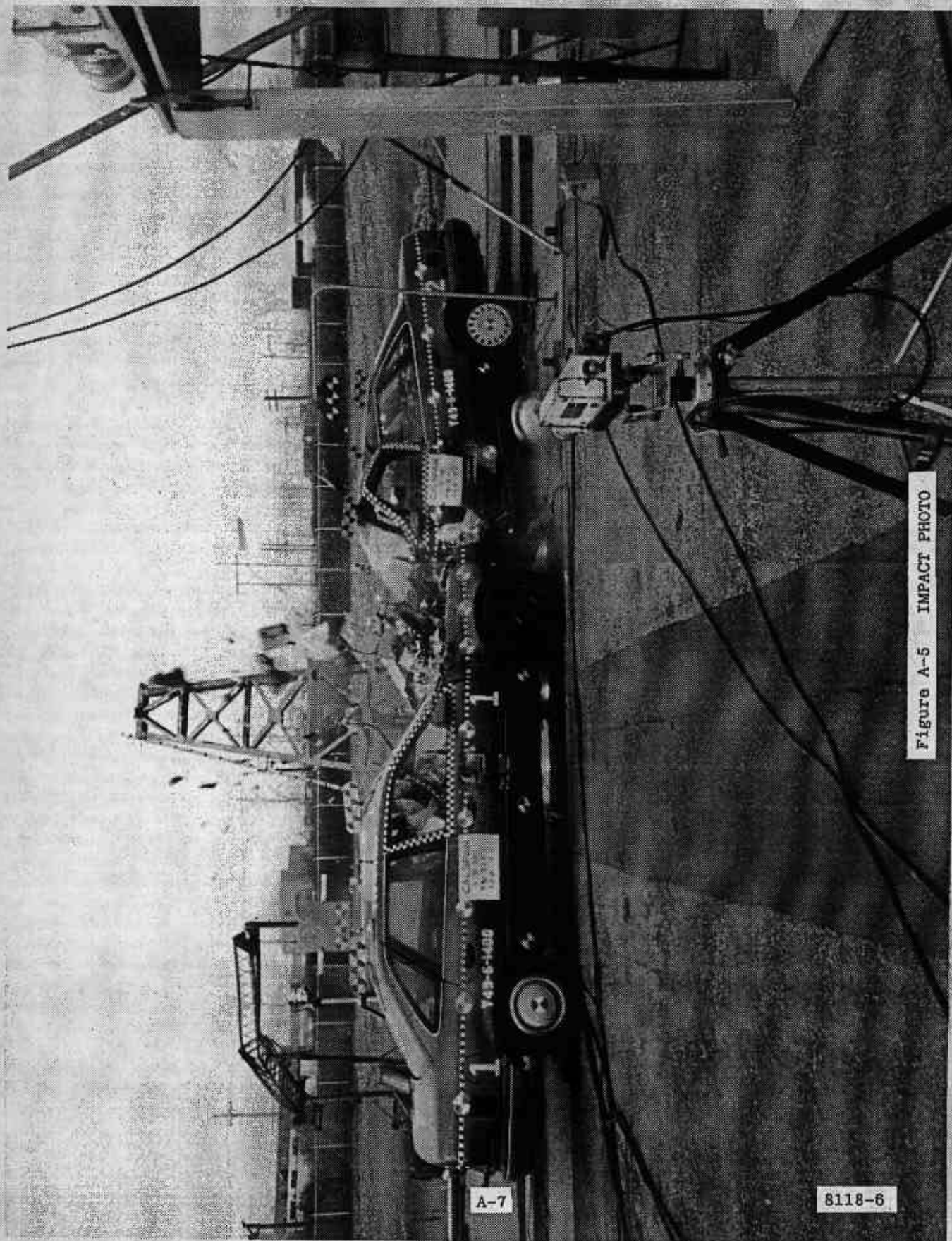


Figure A-5 IMPACT PHOTO

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VEHICLE 1 PHOTOGRAPHS

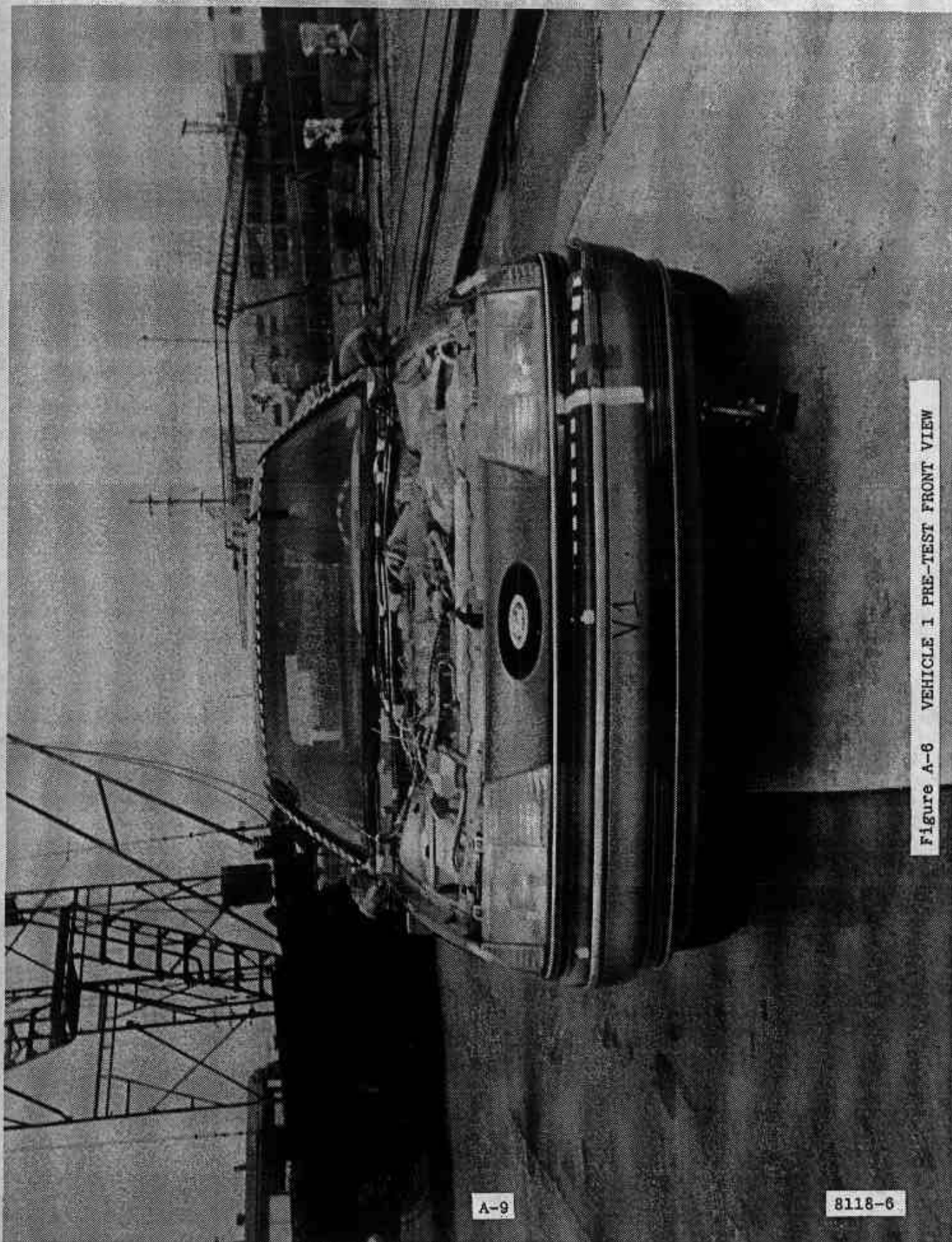


Figure A-6 VEHICLE 1 PRE-TEST FRONT VIEW

A-9

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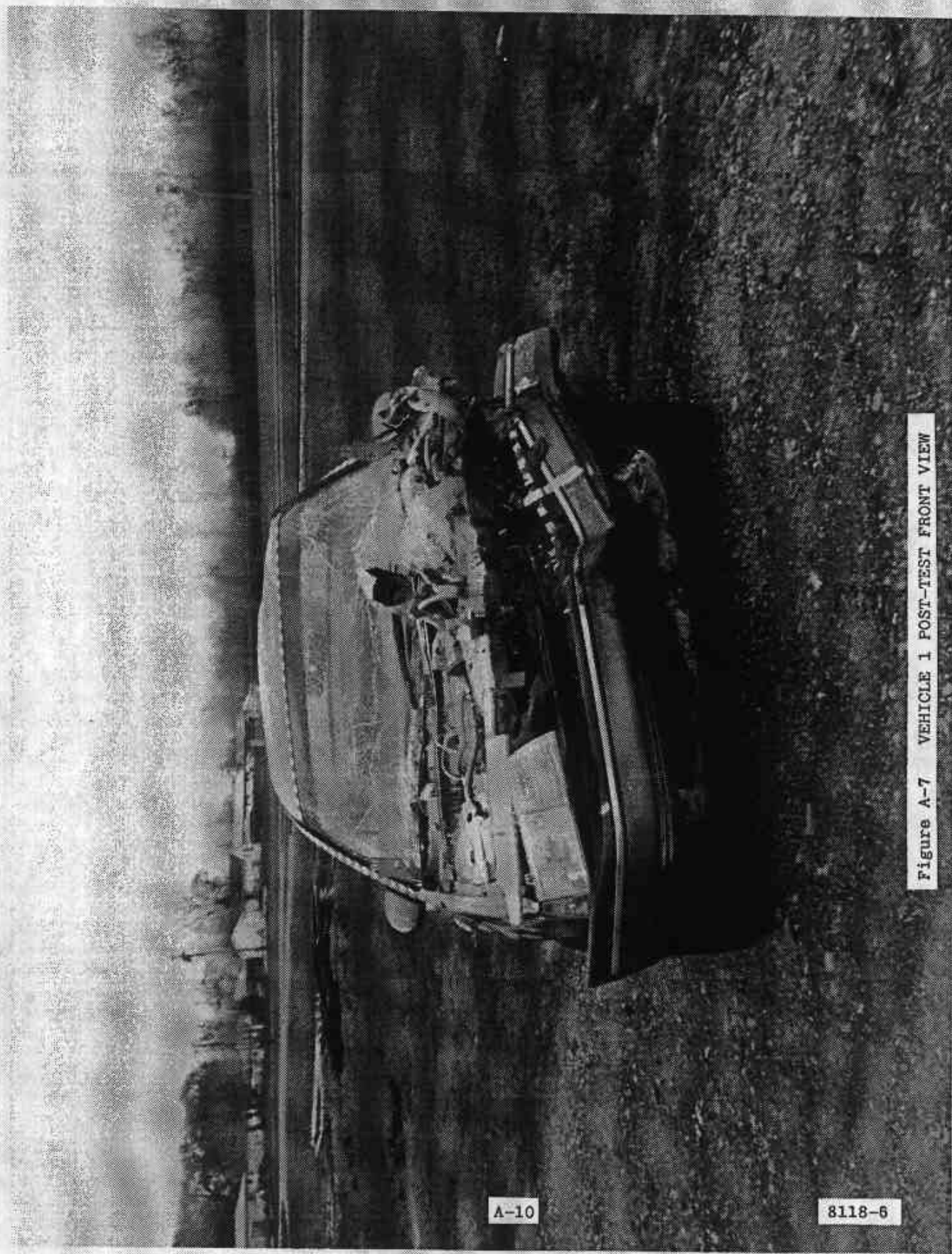


Figure A-7 VEHICLE 1 POST-TEST FRONT VIEW

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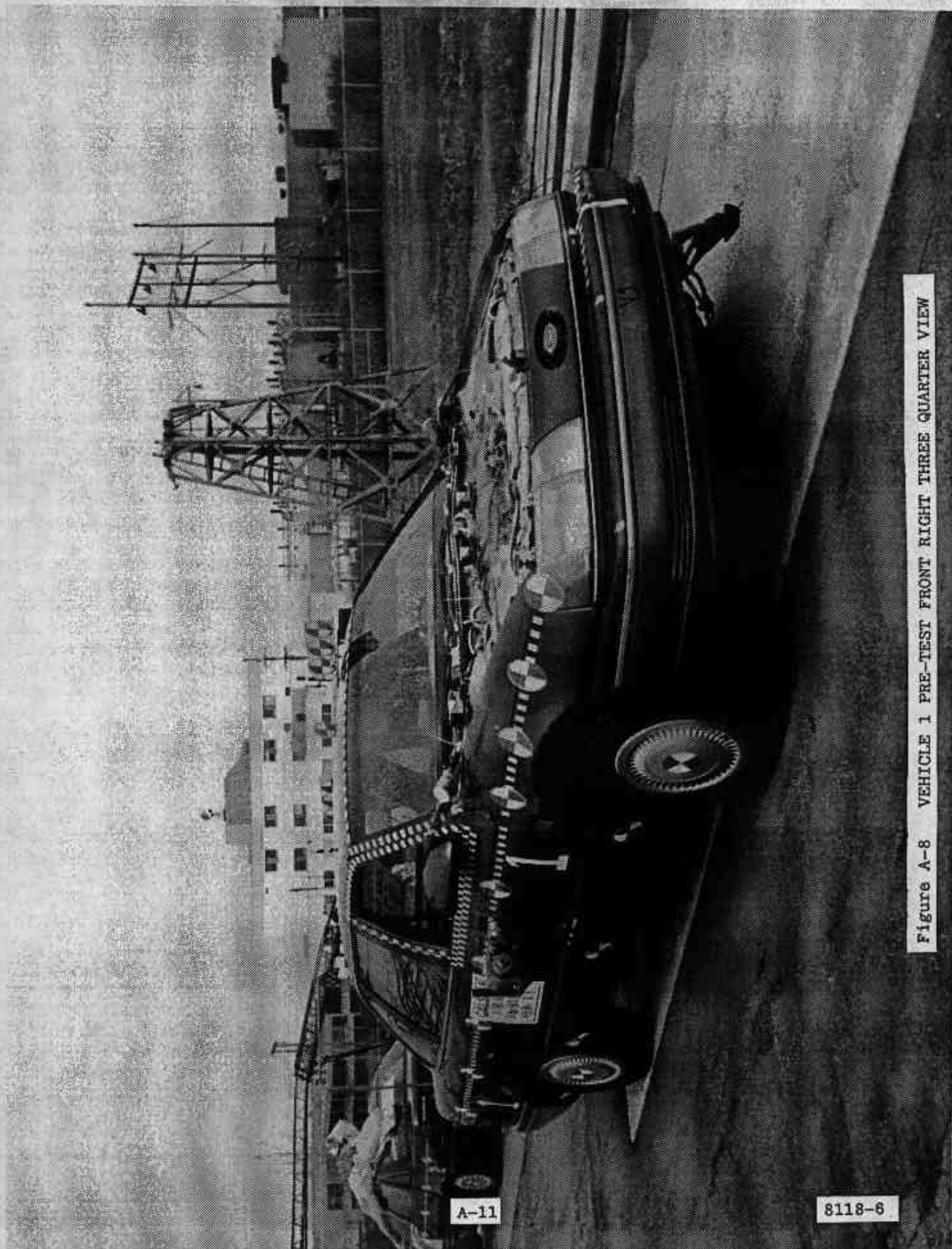


Figure A-8 VEHICLE 1 PRE-TEST FRONT RIGHT THREE QUARTER VIEW

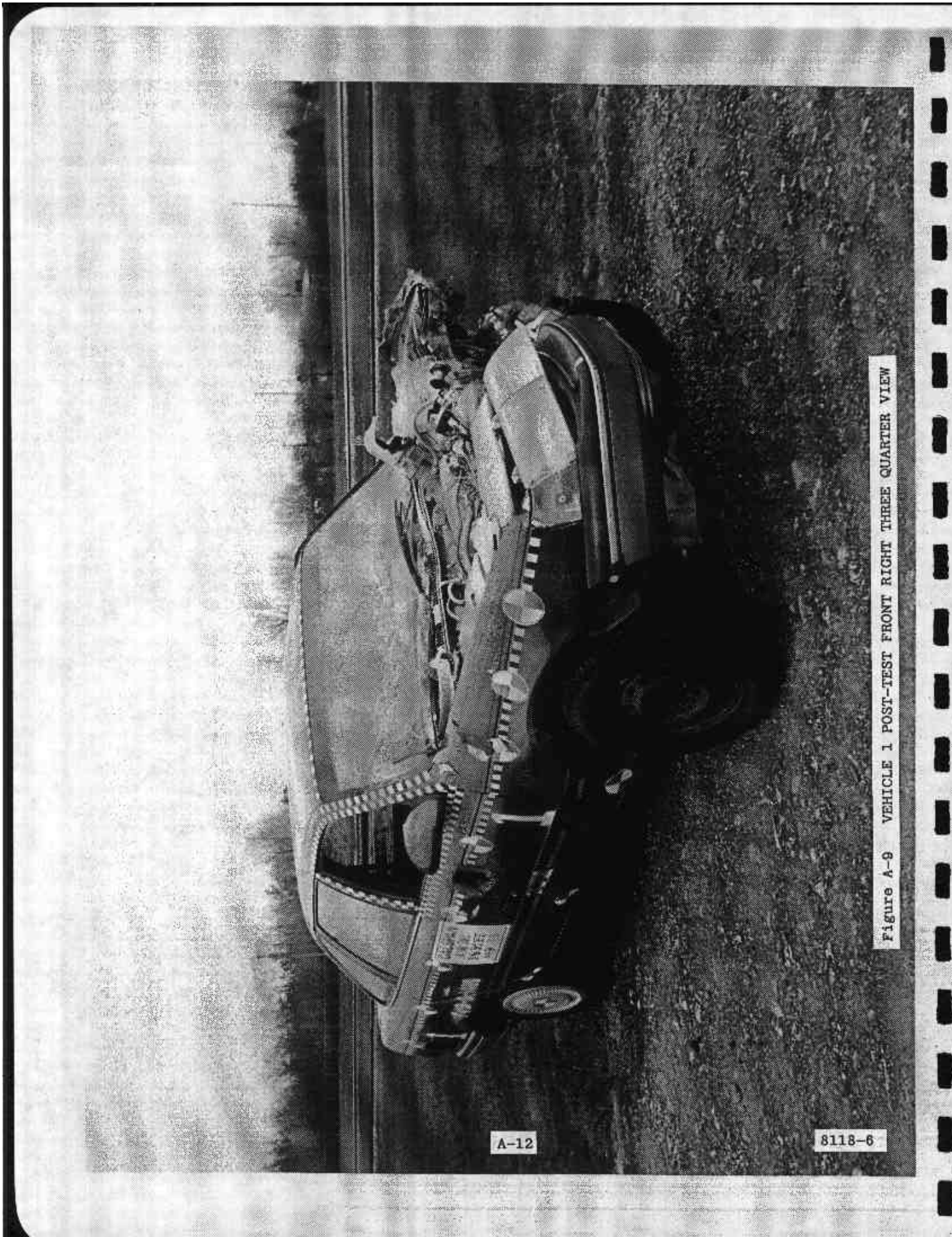


Figure A-9 VEHICLE 1 POST-TEST FRONT RIGHT THREE QUARTER VIEW

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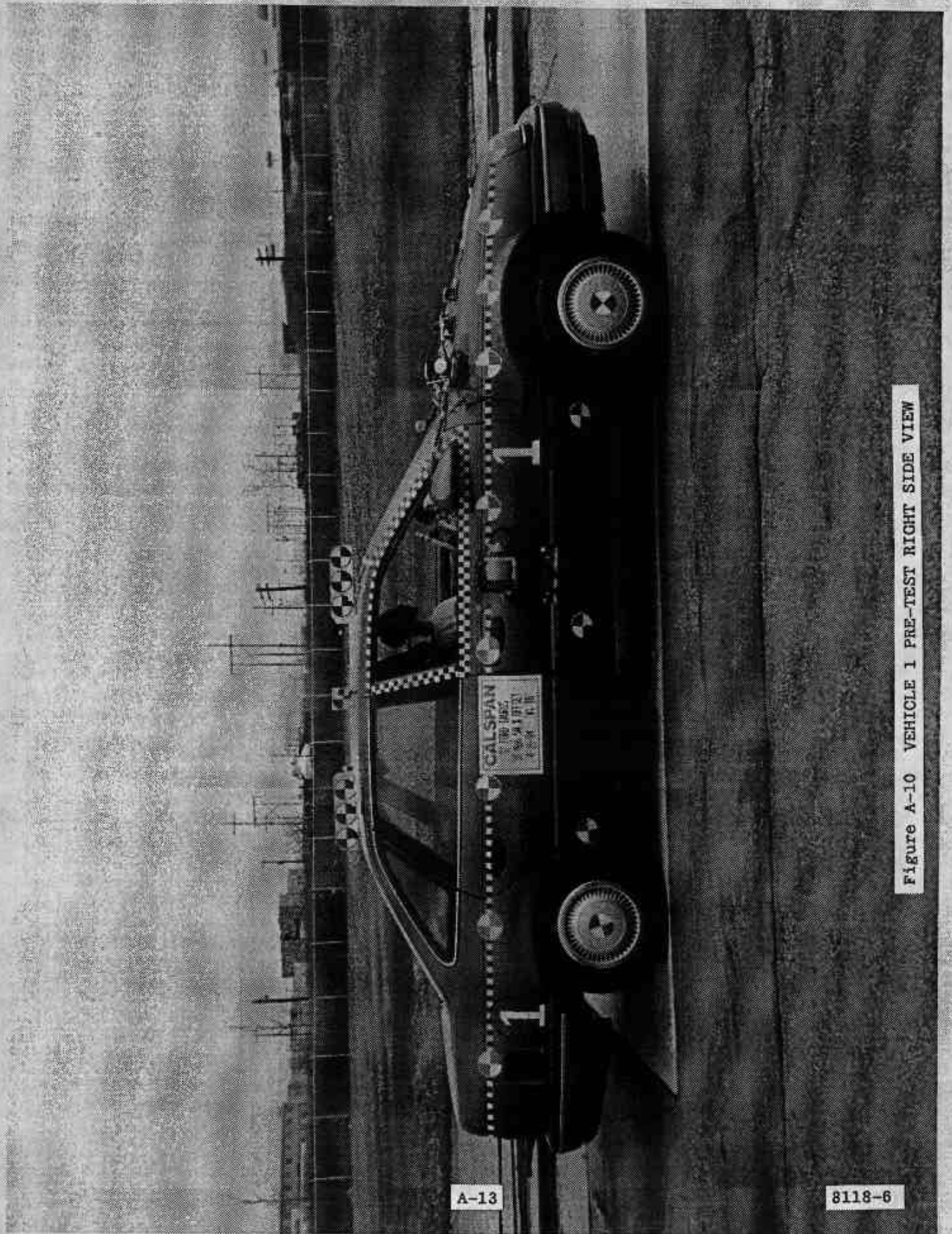


Figure A-10 VEHICLE 1 PRE-TEST RIGHT SIDE VIEW

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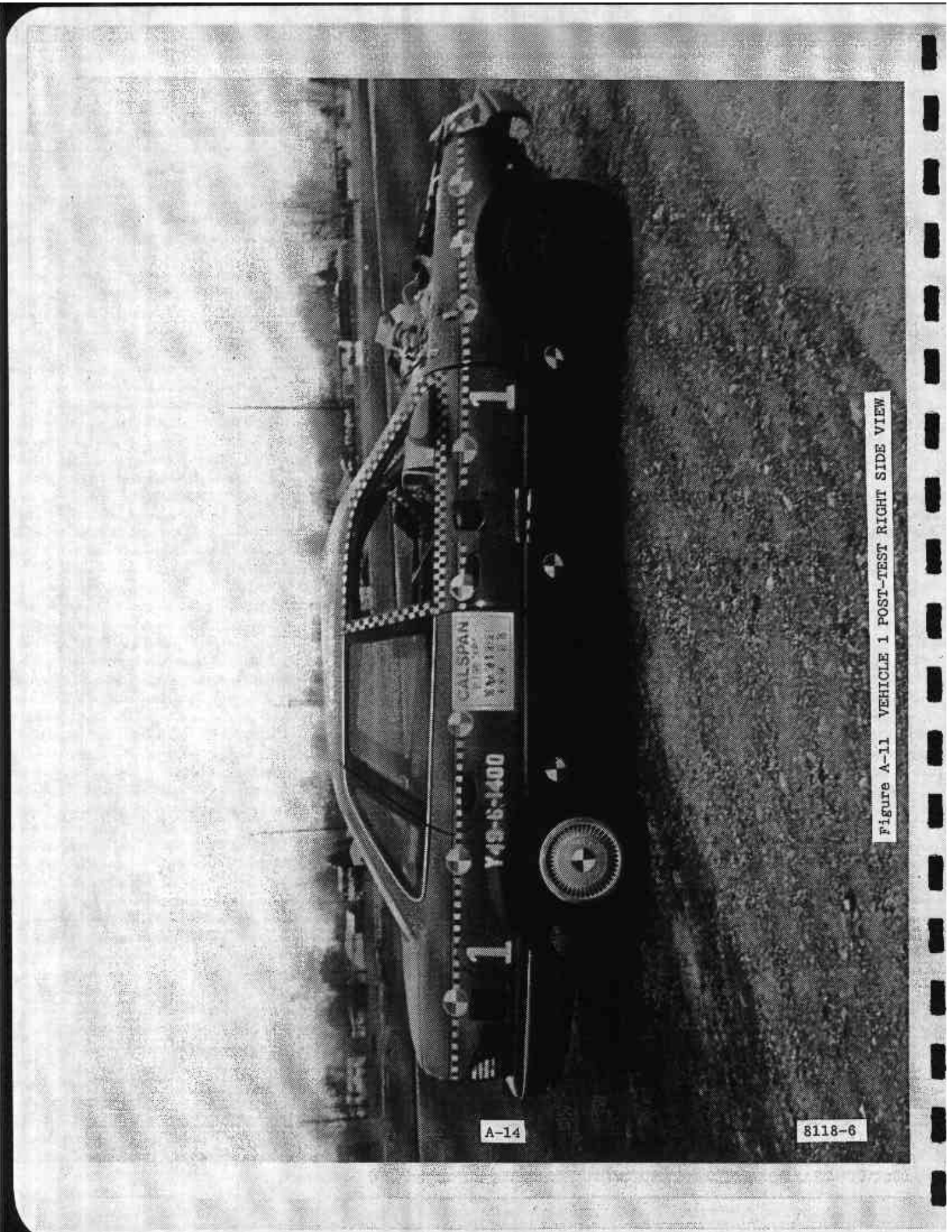


Figure A-11 VEHICLE 1 POST-TEST RIGHT SIDE VIEW

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Figure A-12 VEHICLE 1 PRE-TEST REAR RIGHT THREE QUARTER VIEW

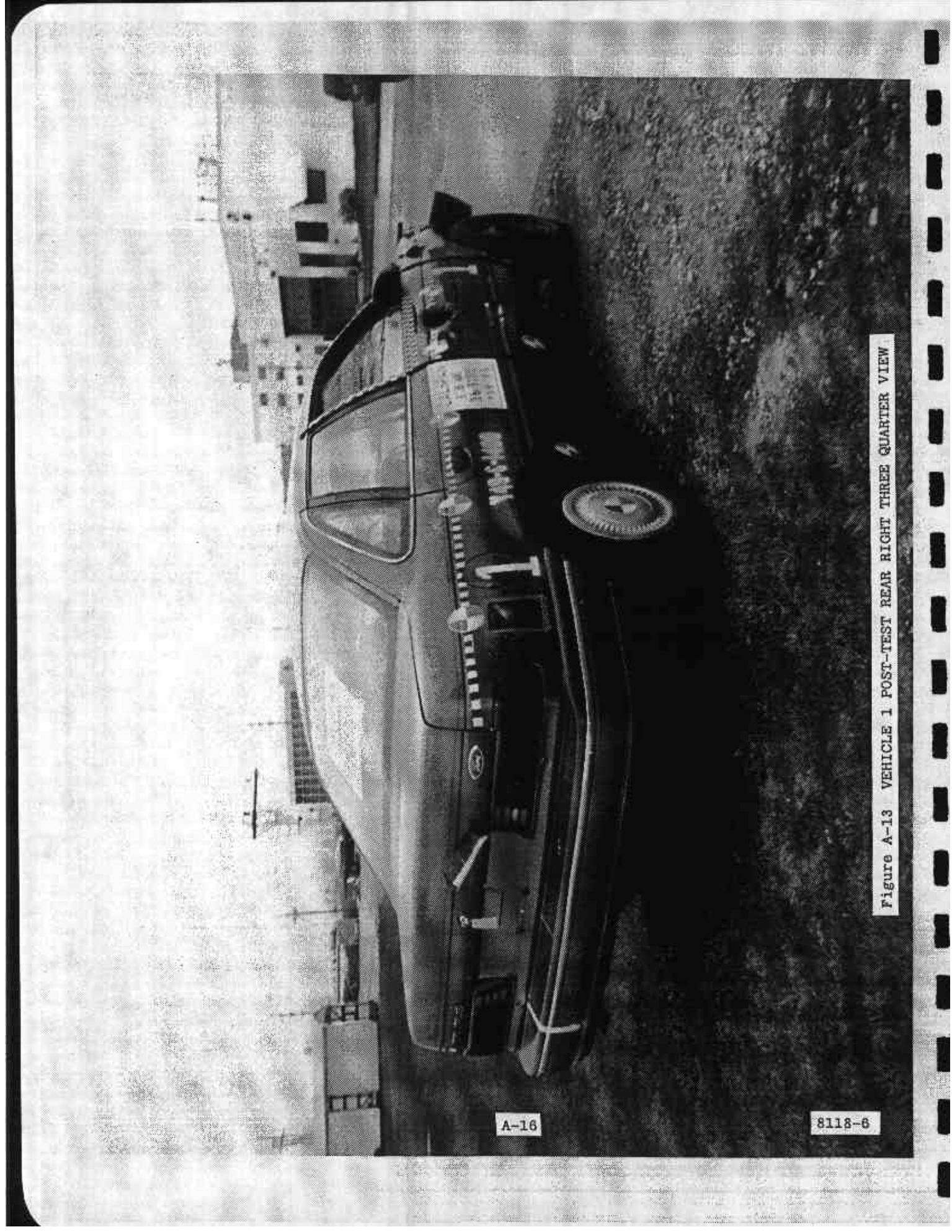


Figure A-13 VEHICLE 1 POST-TEST REAR RIGHT THREE QUARTER VIEW

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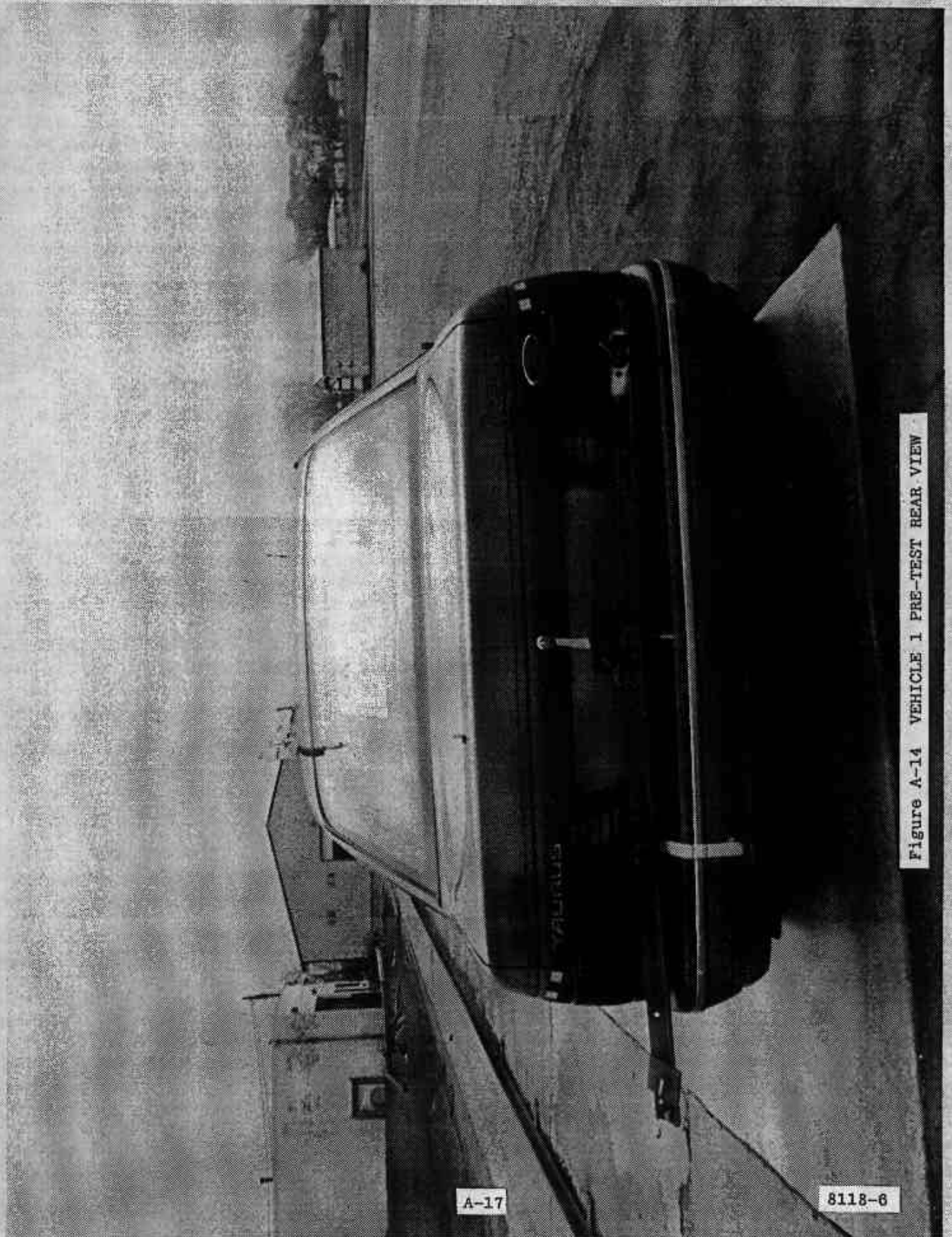


Figure A-14 VEHICLE 1 PRE-TEST REAR VIEW

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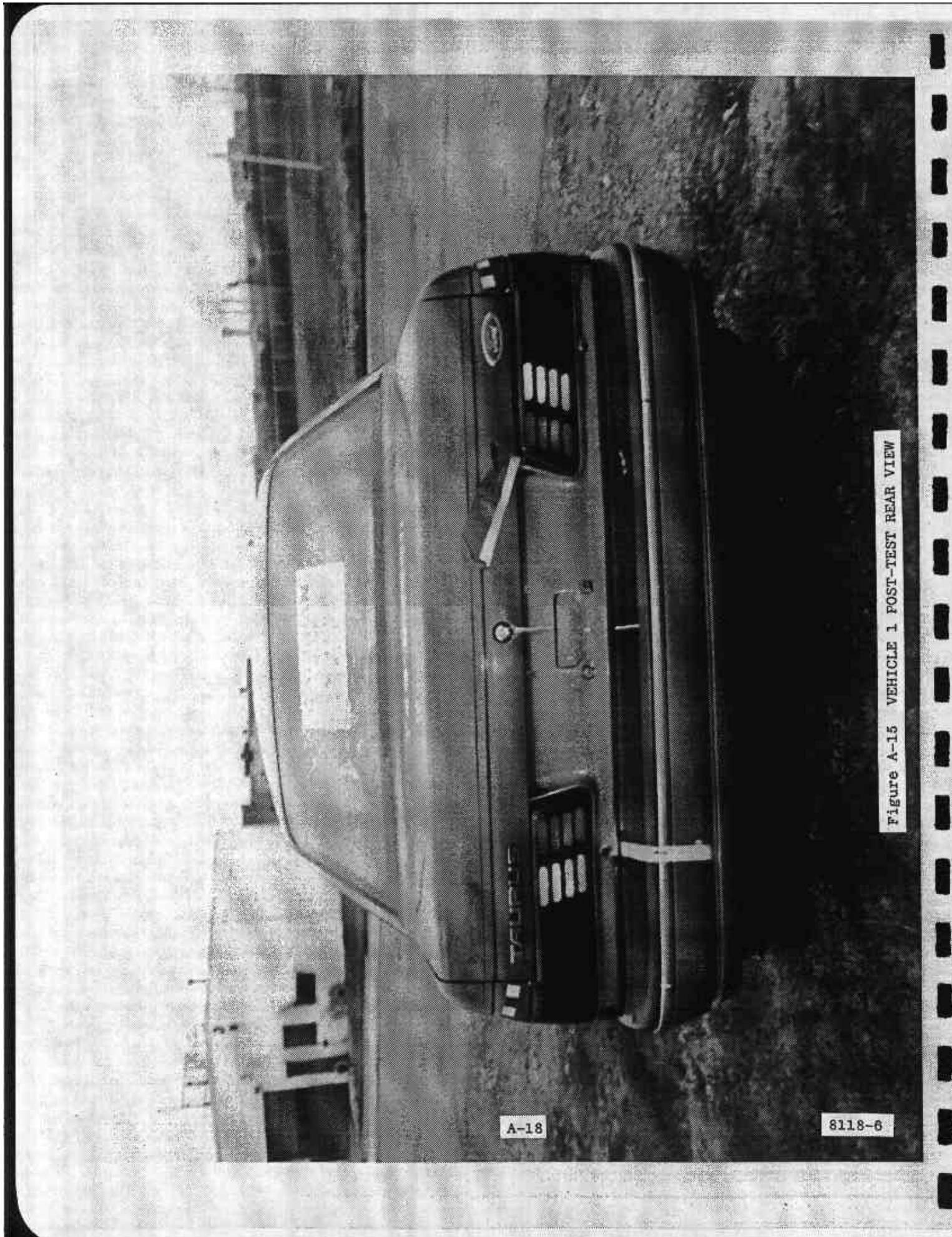


Figure A-15 VEHICLE 1 POST-TEST REAR VIEW

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Figure A-16 VEHICLE 1 PRE-TEST REAR LEFT THREE QUARTER VIEW

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Figure A-17 VEHICLE 1 POST-TEST REAR LEFT THREE QUARTER VIEW

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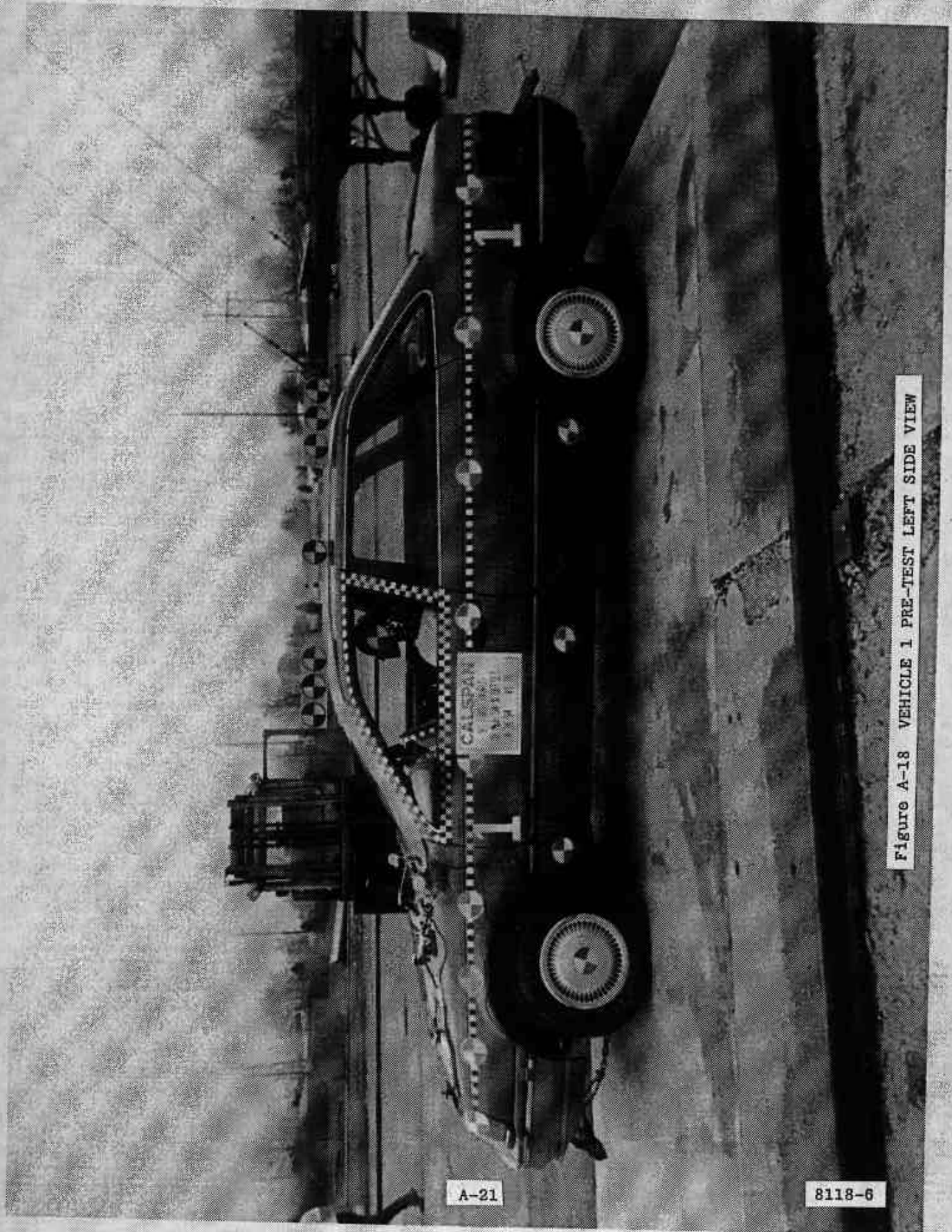


Figure A-18 VEHICLE 1 PRE-TEST LEFT SIDE VIEW

A-21

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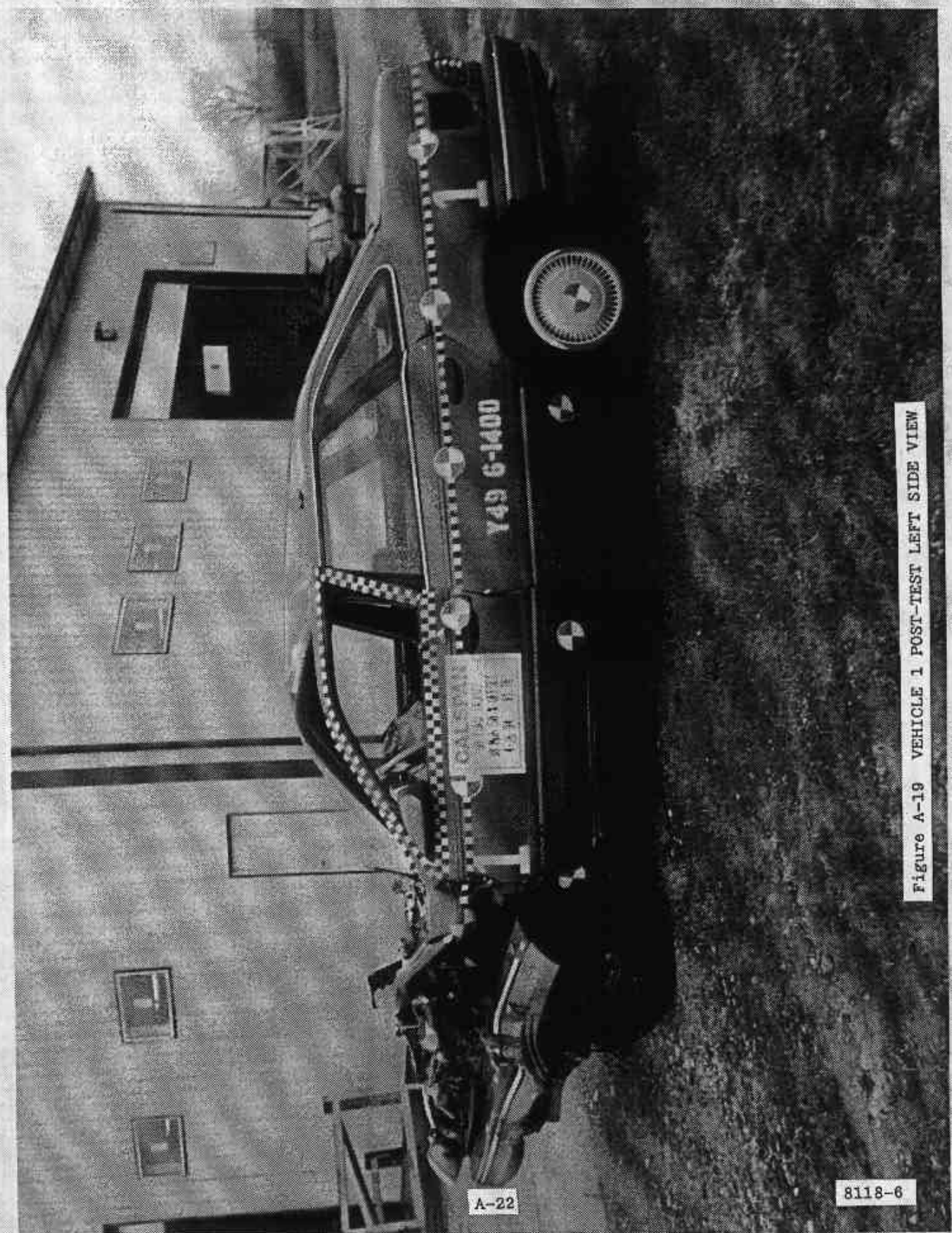


Figure A-19 VEHICLE 1 POST-TEST LEFT SIDE VIEW

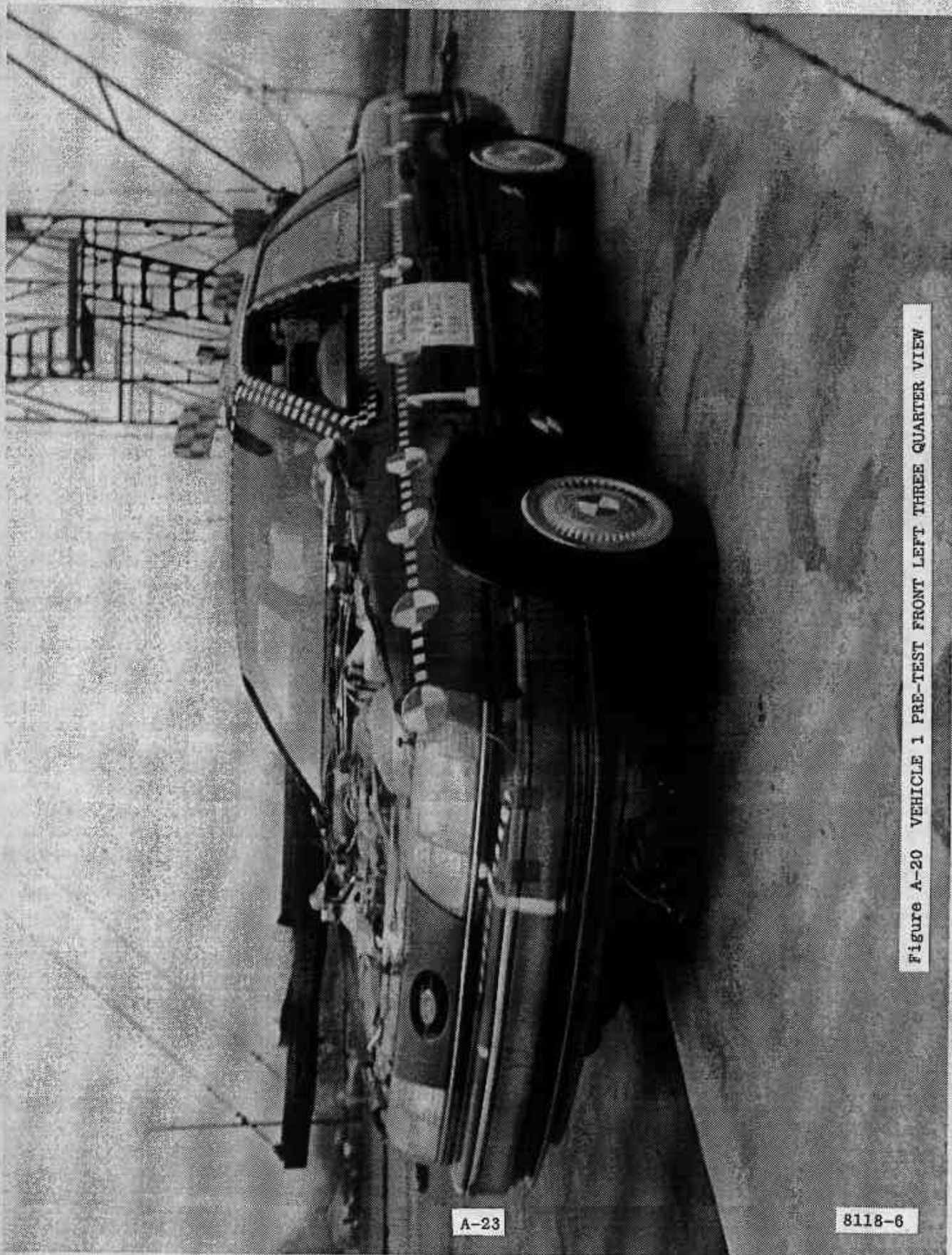


Figure A-20 VEHICLE 1 PRE-TEST FRONT LEFT THREE QUARTER VIEW

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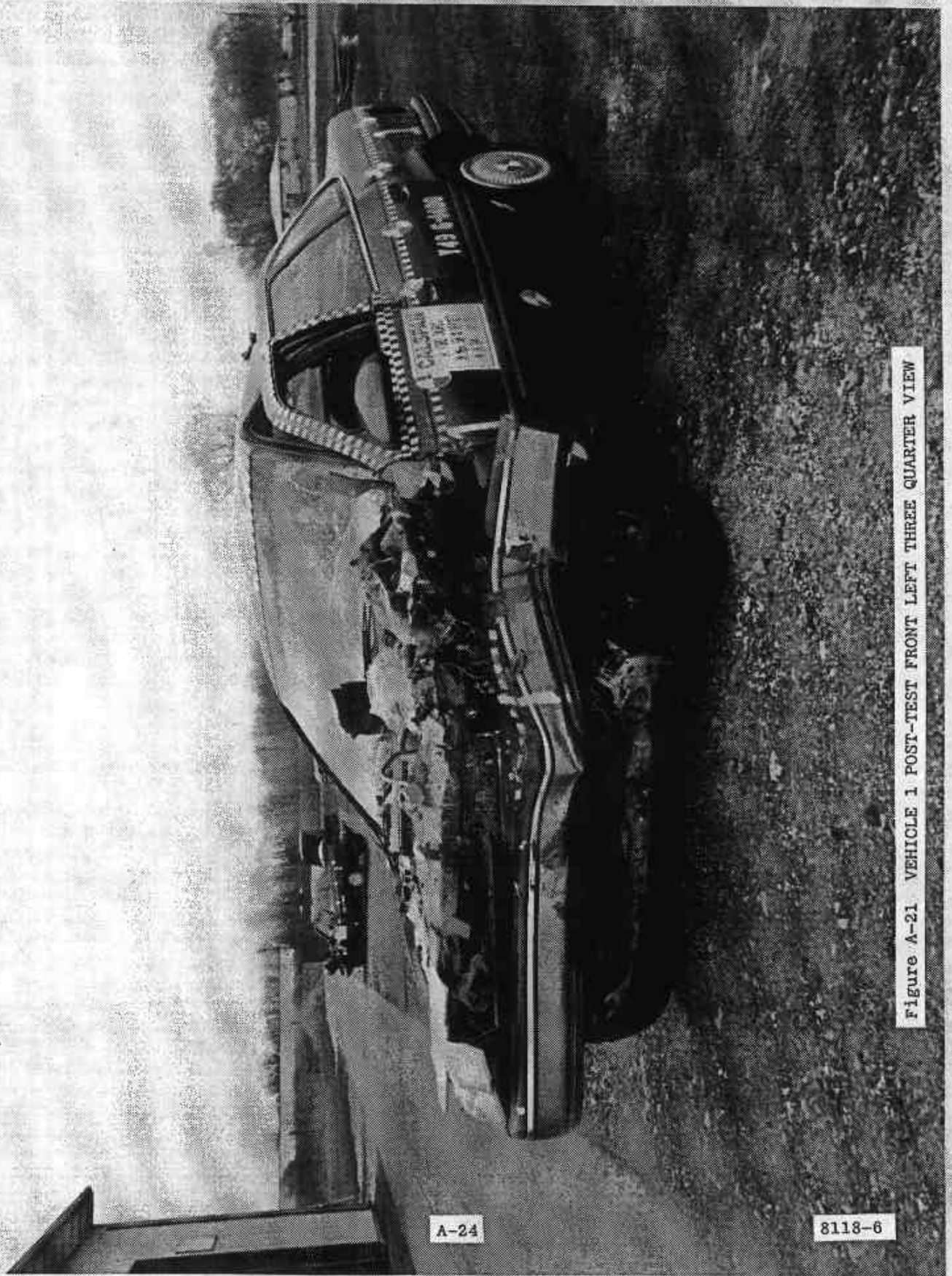


Figure A-21 VEHICLE 1 POST-TEST FRONT LEFT THREE QUARTER VIEW

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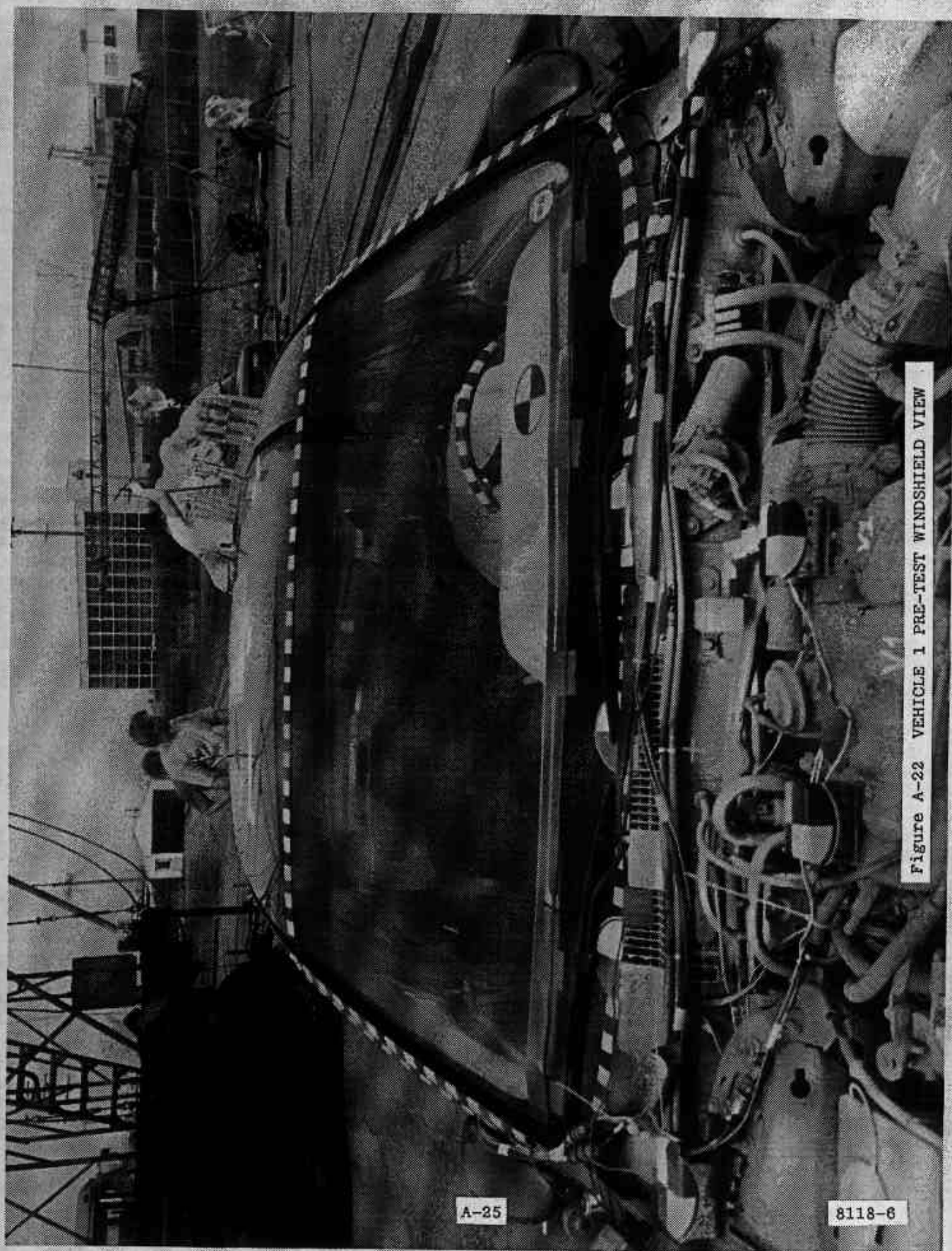


Figure A-22 VEHICLE 1 PRE-TEST WINDSHIELD VIEW

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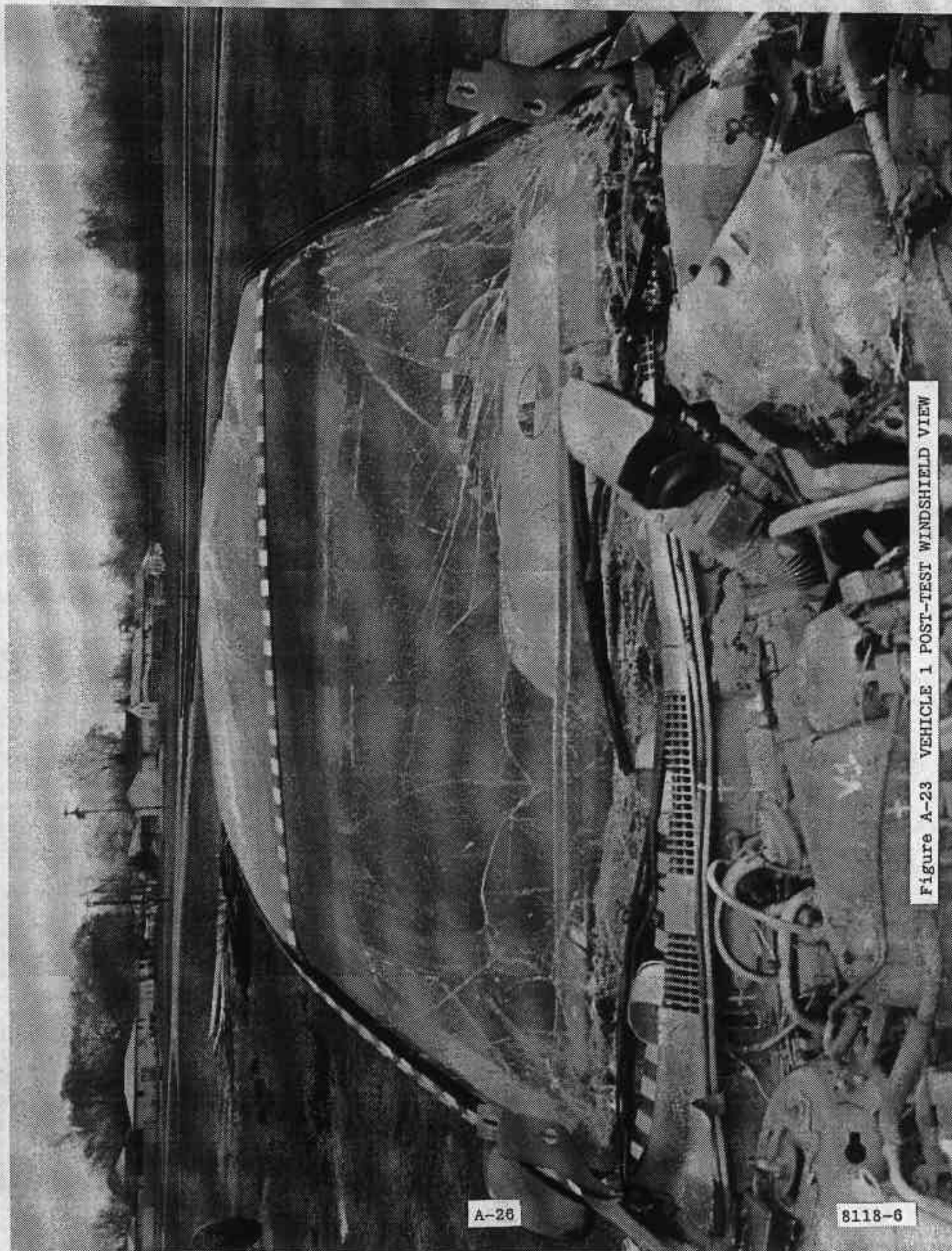


Figure A-23 VEHICLE 1 POST-TEST WINDSHIELD VIEW

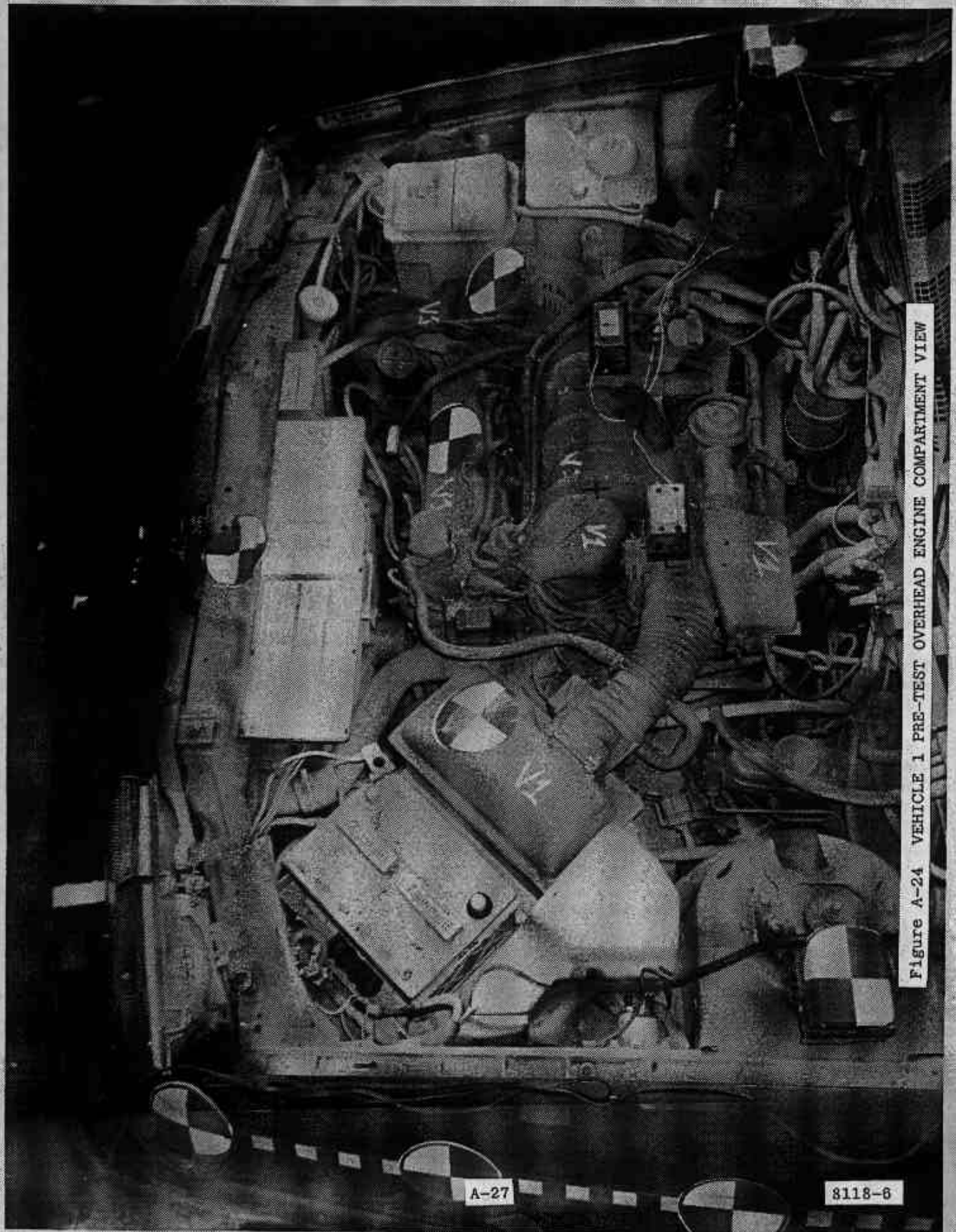


Figure A-24 VEHICLE 1 PRE-TEST OVERHEAD ENGINE COMPARTMENT VIEW

PHOTO NOT AVAILABLE

Figure A-25 VEHICLE 1 POST-TEST OVERHEAD ENGINE COMPARTMENT VIEW

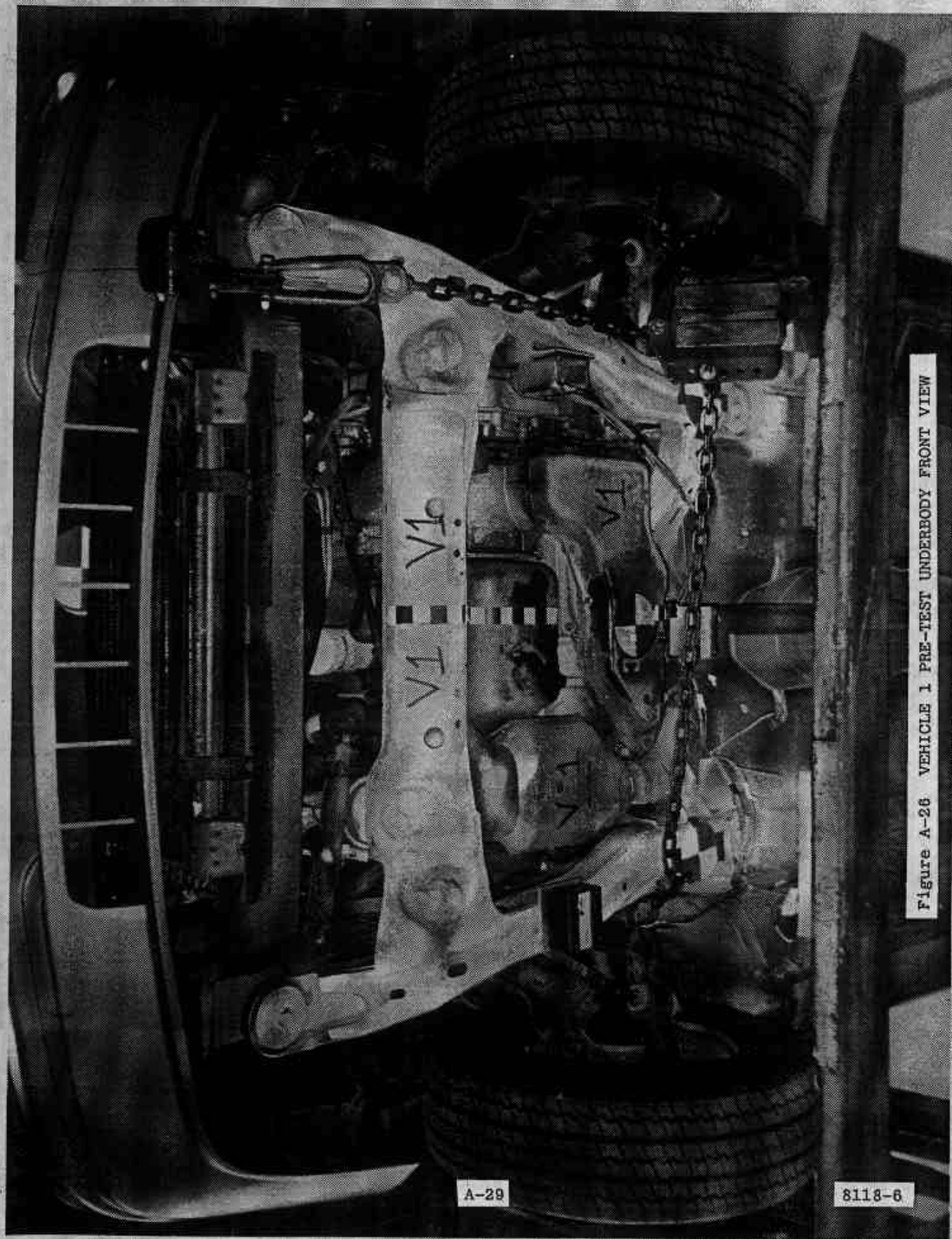


Figure A-26 VEHICLE 1 PRE-TEST UNDERBODY FRONT VIEW

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Figure A-27 VEHICLE 1 POST-TEST UNDERBODY FRONT VIEW

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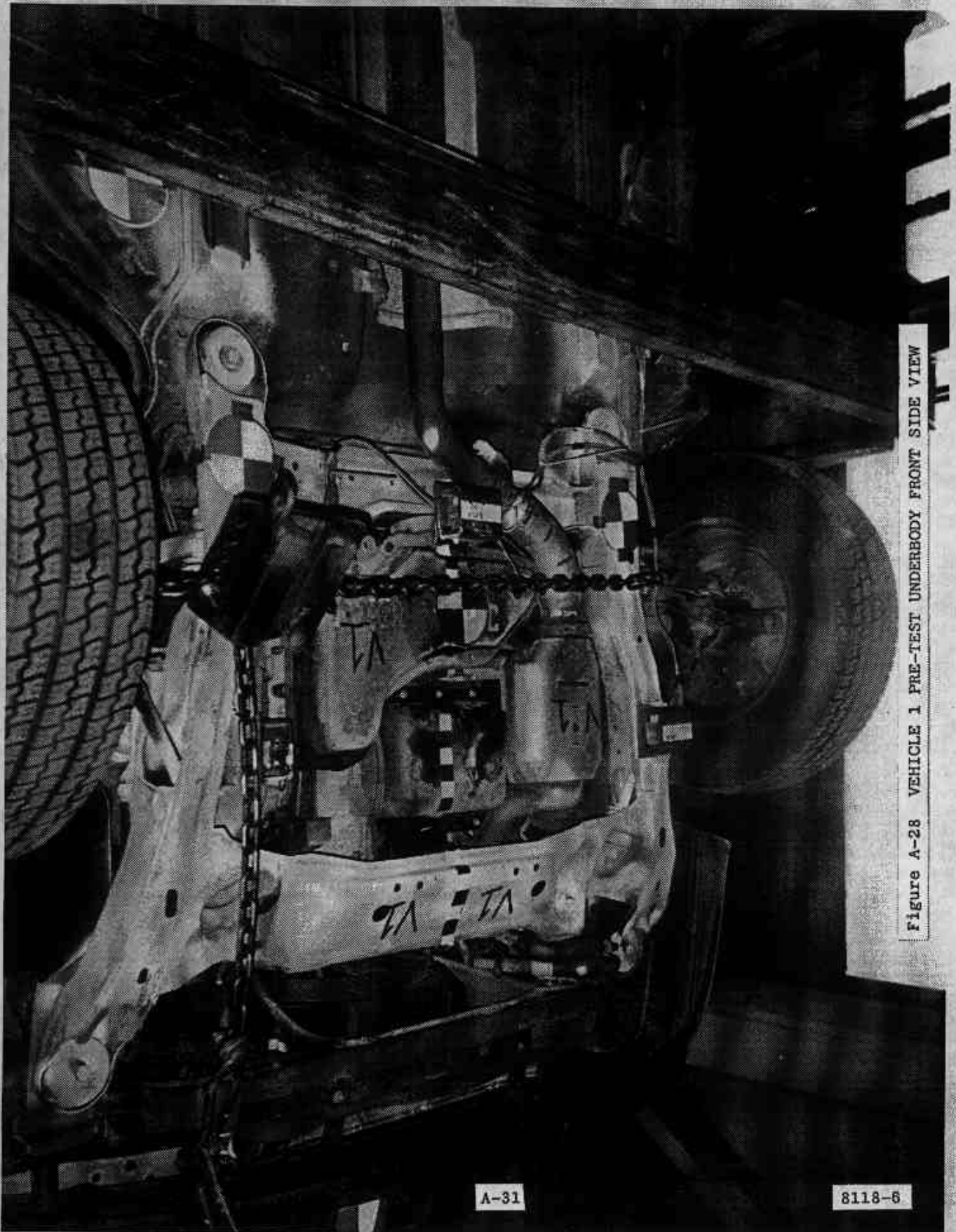


Figure A-28 VEHICLE 1 PRE-TEST UNDERBODY FRONT SIDE VIEW

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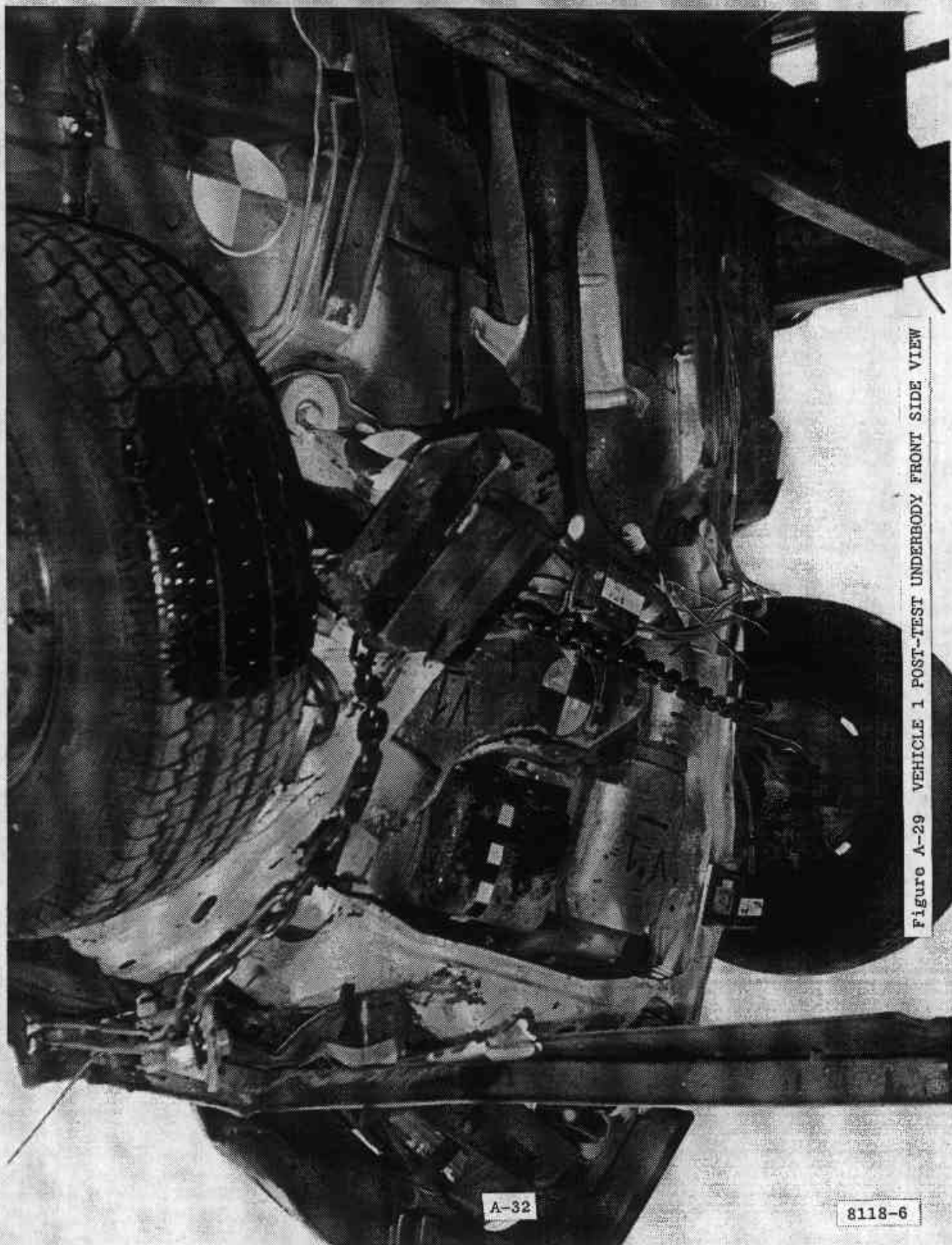


Figure A-29 VEHICLE 1 POST-TEST UNDERBODY FRONT SIDE VIEW

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Figure A-30 VEHICLE 1 PRE-TEST UNDERBODY REAR VIEW

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Figure A-31 VEHICLE 1 POST-TEST UNDERBODY REAR VIEW

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Figure A-32 VEHICLE 1 PRE-TEST DRIVER POSITION VIEW

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Figure A-33 VEHICLE 1 POST-TEST DRIVER POSITION VIEW

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Figure A-34 VEHICLE 1 PRE-TEST DRIVER AND OCCUPANT COMPARTMENT VIEW



Figure A-35 VEHICLE 1 POST-TEST DRIVER AND OCCUPANT COMPARTMENT VIEW

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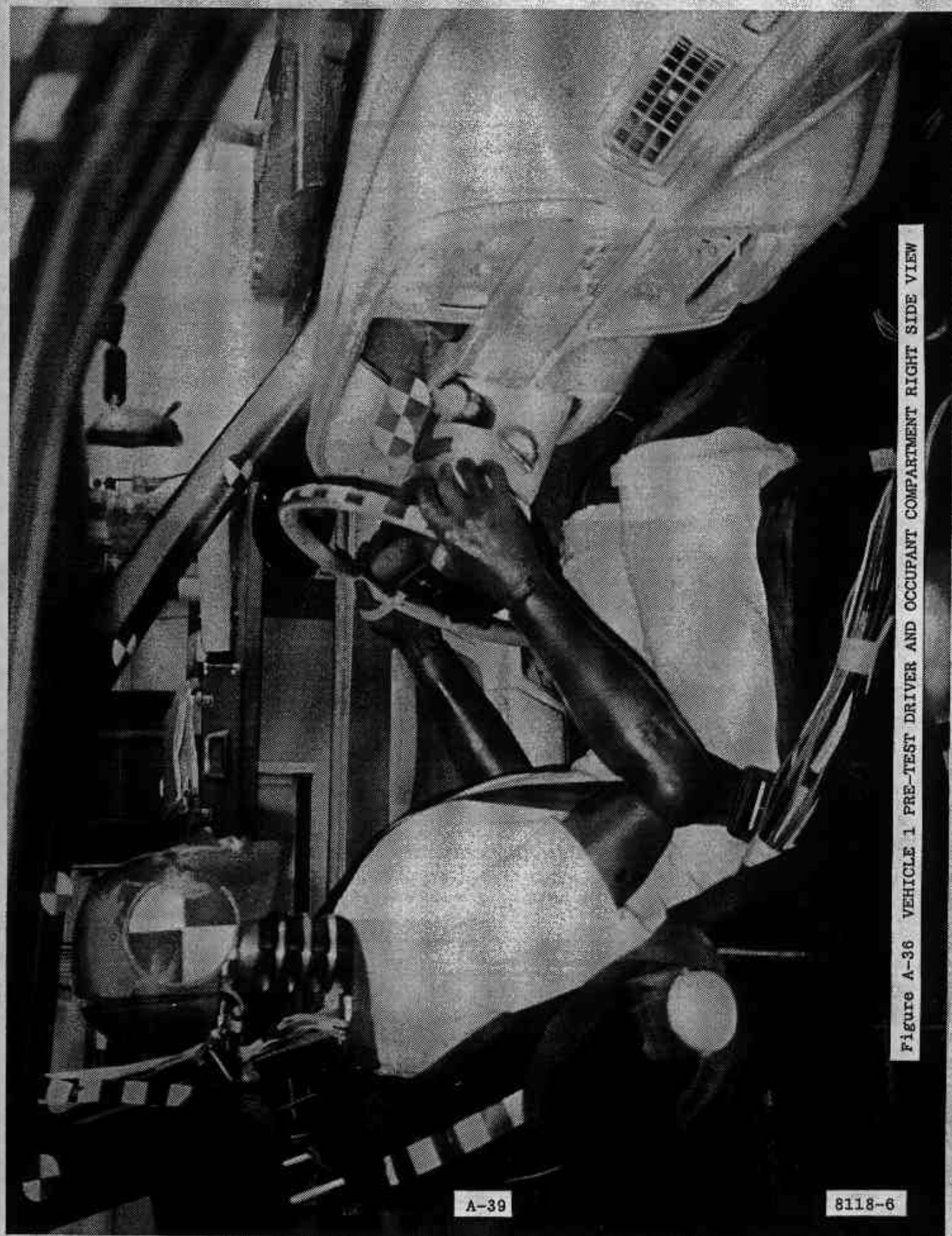


Figure A-36 VEHICLE 1 PRE-TEST DRIVER AND OCCUPANT COMPARTMENT RIGHT SIDE VIEW

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Figure A-37 VEHICLE 1 POST-TEST DRIVER AND OCCUPANT COMPARTMENT RIGHT SIDE VIEW

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Figure A-38 VEHICLE 1 POST-TEST DRIVER AIRBAG VIEW

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VEHICLE 2 PHOTOGRAPHS

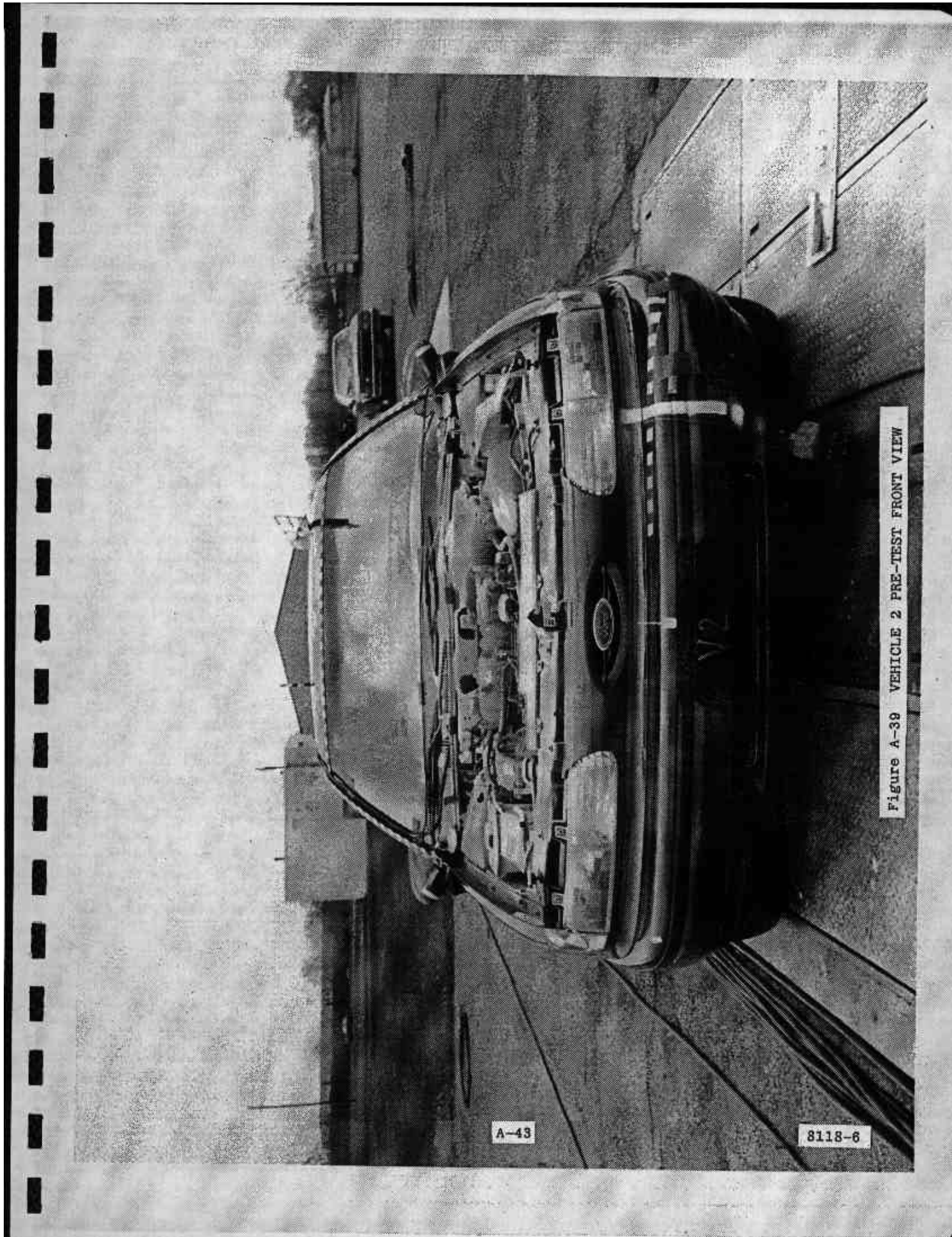


Figure A-39 VEHICLE 2 PRE-TEST FRONT VIEW

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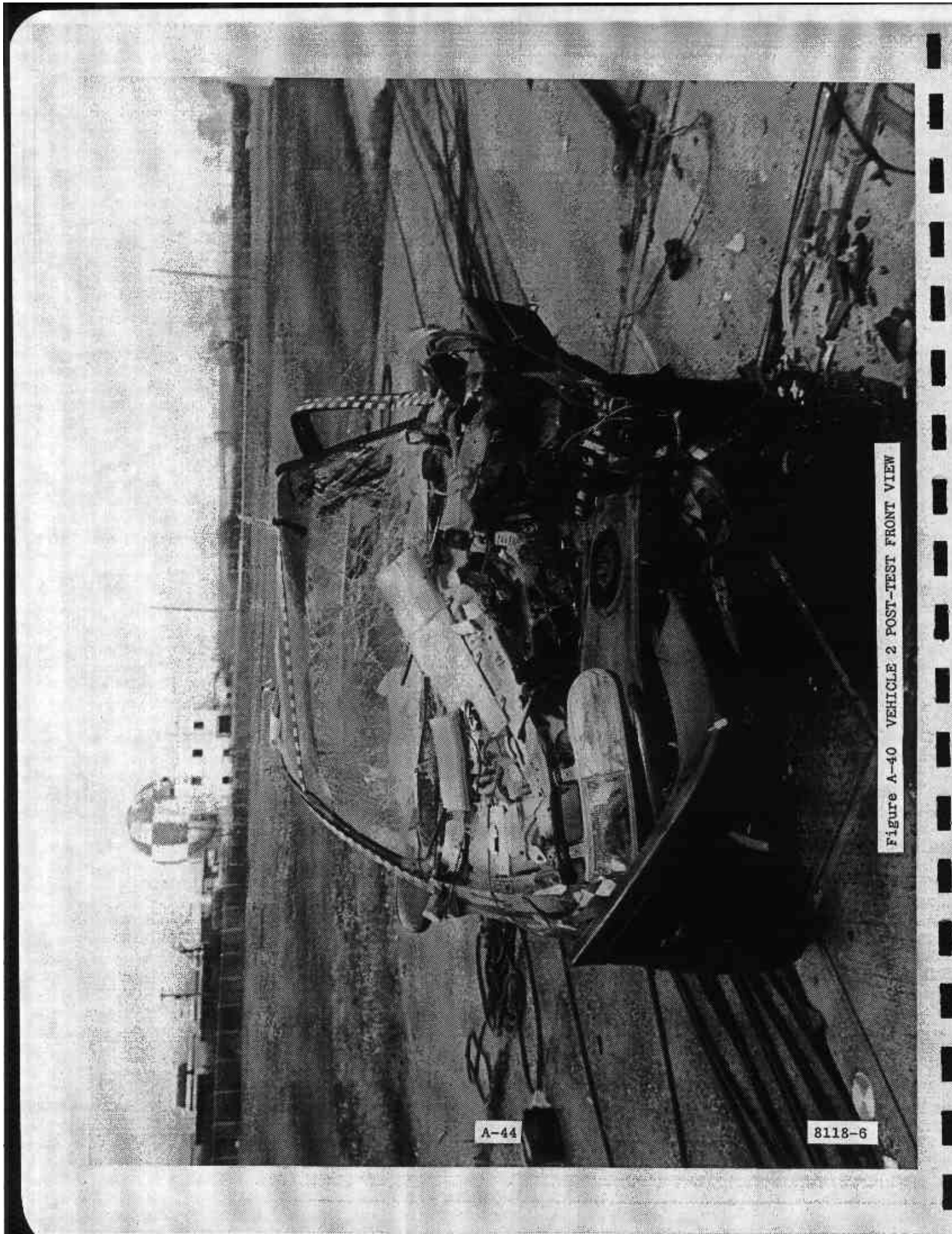


Figure A-40 VEHICLE 2 POST-TEST FRONT VIEW

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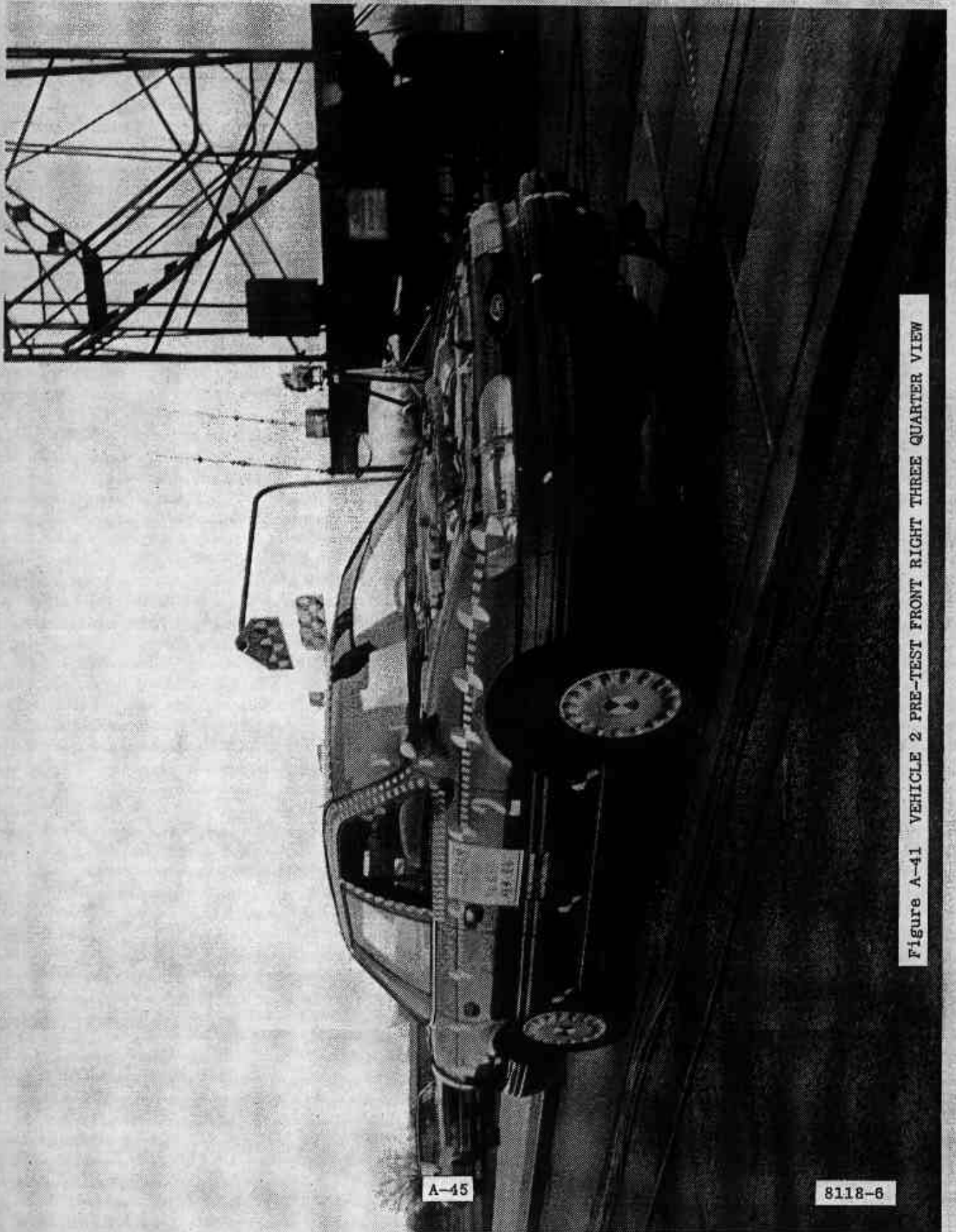


Figure A-41 VEHICLE 2 PRE-TEST FRONT RIGHT THREE QUARTER VIEW



Figure A-42 VEHICLE 2 POST-TEST FRONT RIGHT THREE QUARTER VIEW

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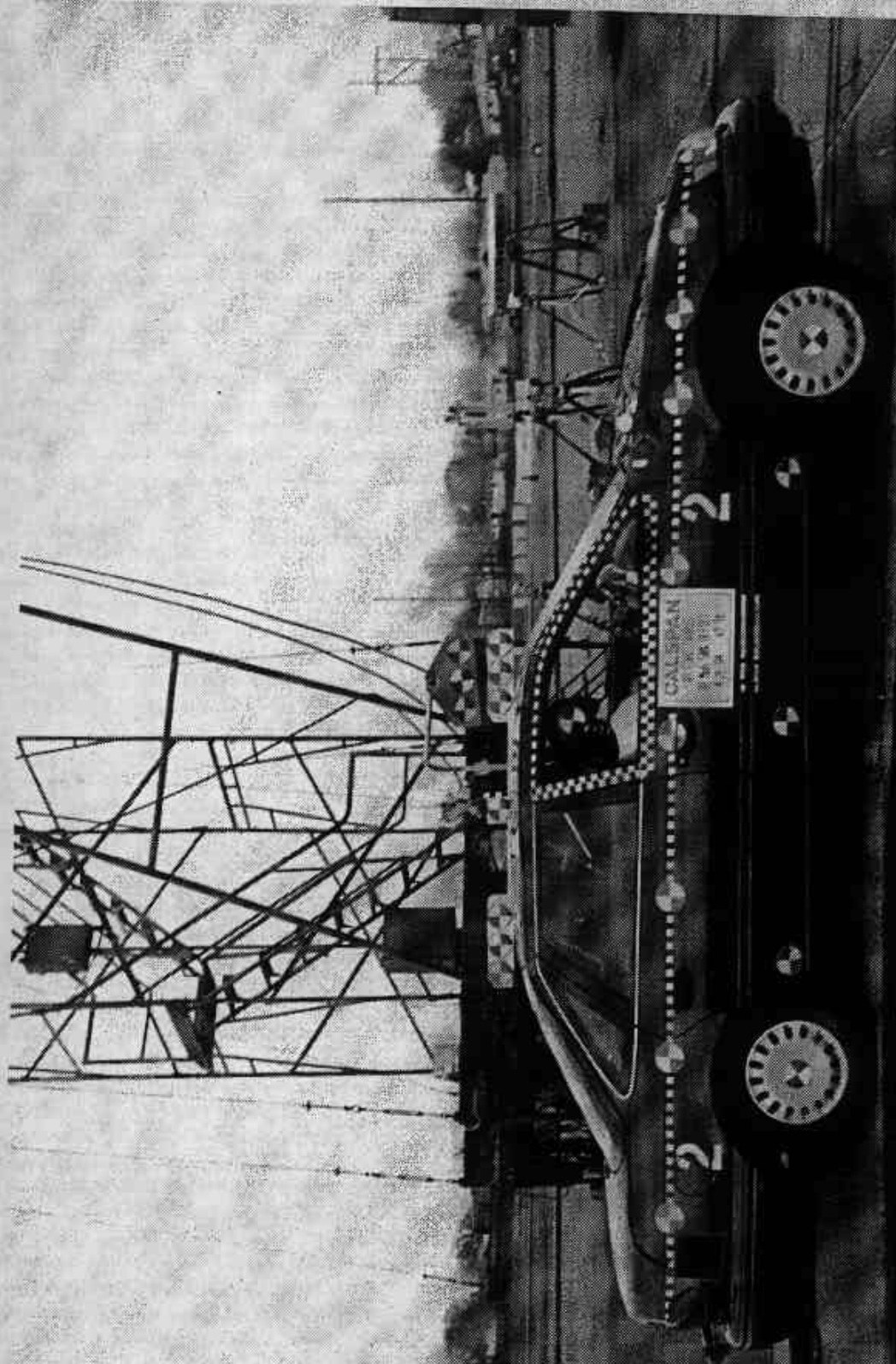


Figure A-43 VEHICLE 2 PRE-TEST RIGHT SIDE VIEW

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Figure A-44 VEHICLE 2 POST-TEST RIGHT SIDE VIEW

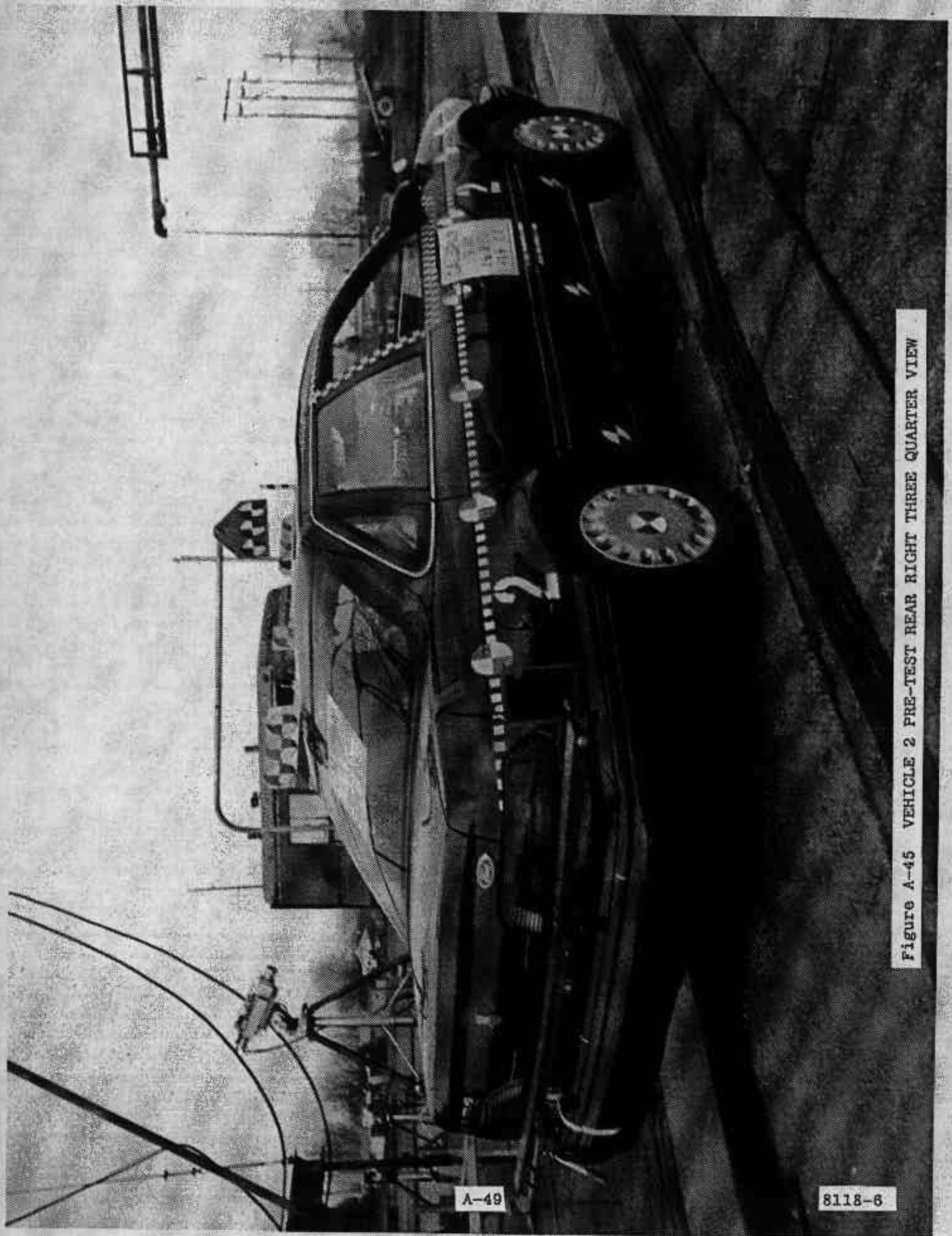


Figure A-45 VEHICLE 2 PRE-TEST REAR RIGHT THREE QUARTER VIEW

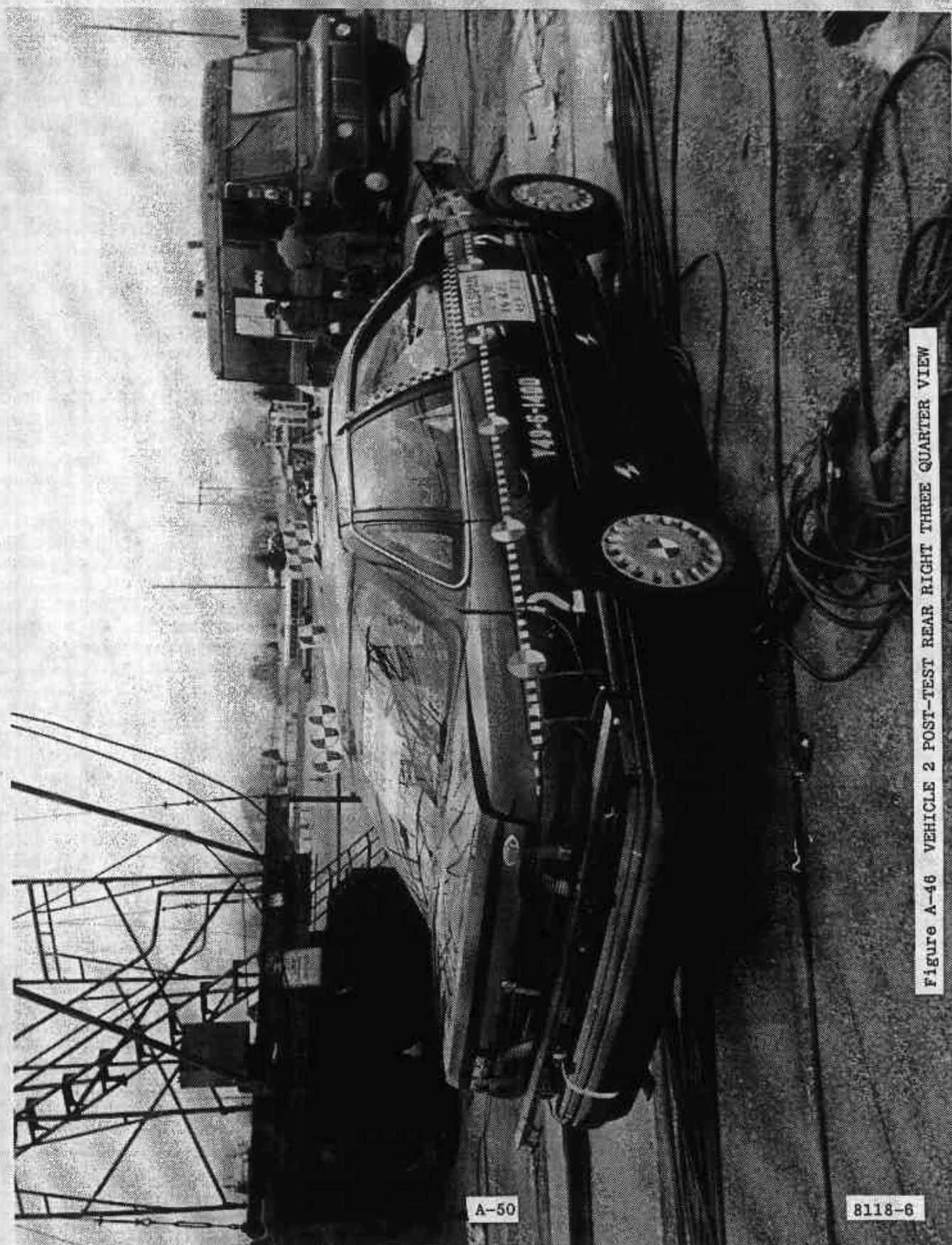


Figure A-46 VEHICLE 2 POST-TEST REAR RIGHT THREE QUARTER VIEW

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Figure A-47 VEHICLE 2 PRE-TEST REAR VIEW

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Figure A-48 VEHICLE 2 POST-TEST REAR VIEW

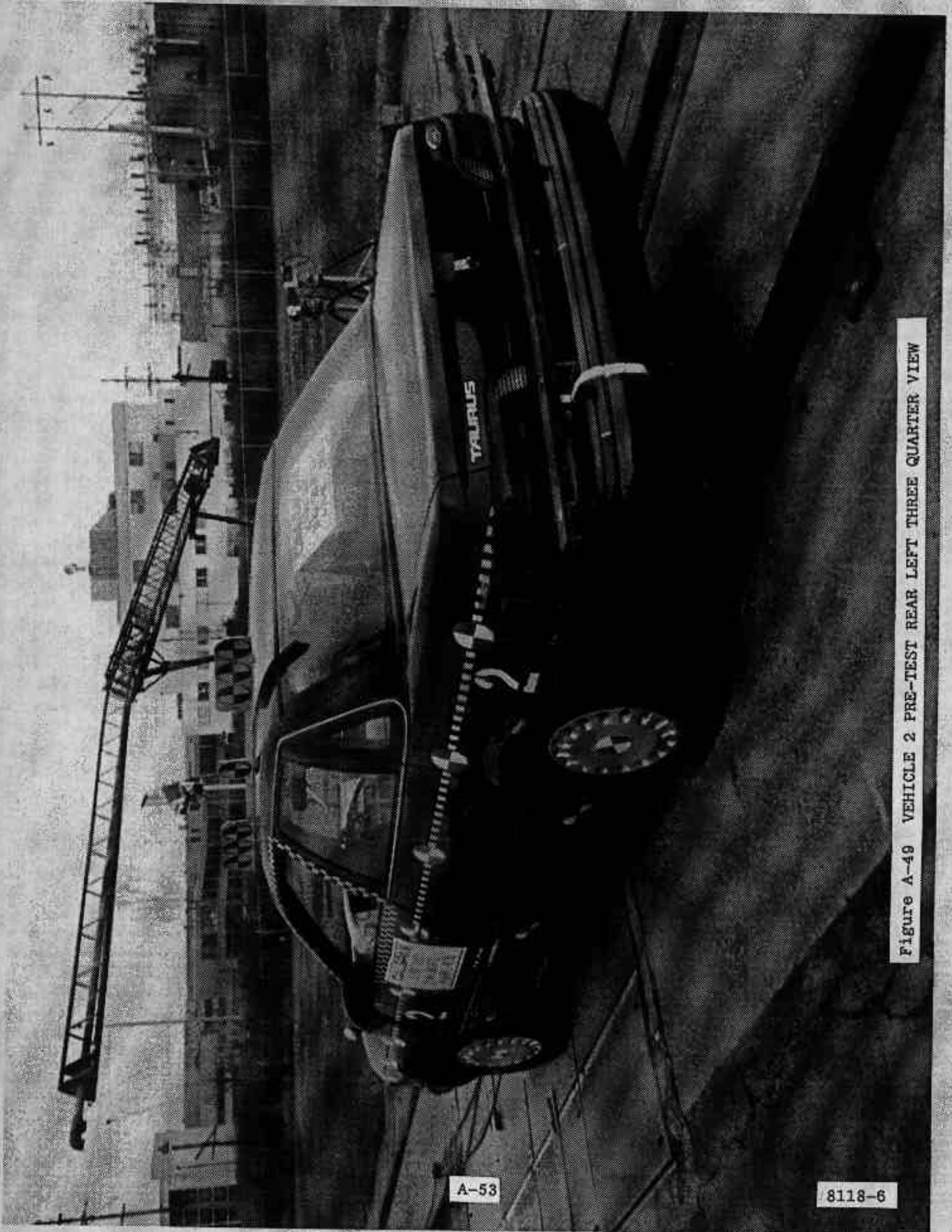


Figure A-49 VEHICLE 2 PRE-TEST REAR LEFT THREE QUARTER VIEW

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Figure A-50 VEHICLE 2 POST-TEST REAR LEFT THREE QUARTER VIEW

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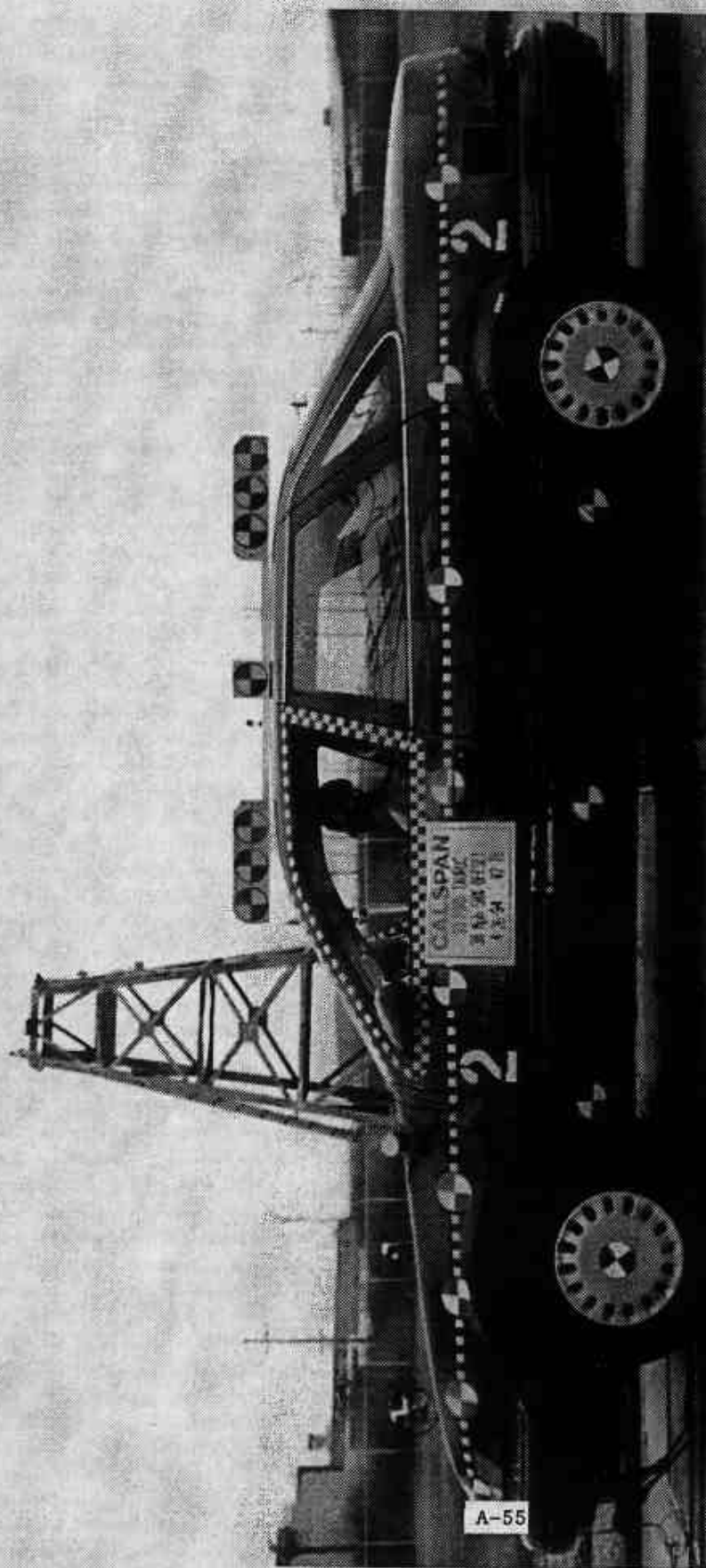


Figure A-51 VEHICLE 2 PRE-TEST LEFT SIDE VIEW

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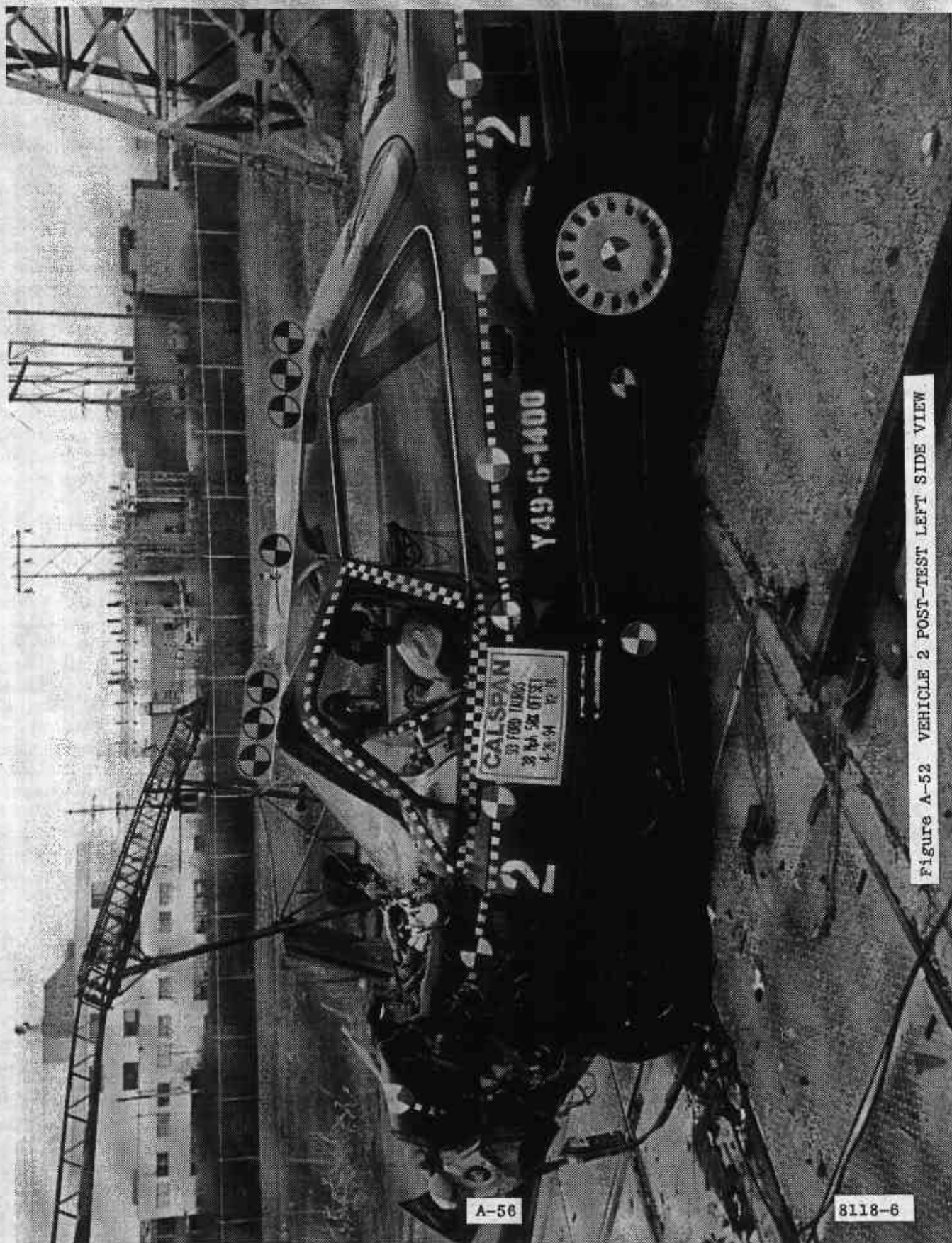


Figure A-52 VEHICLE 2 POST-TEST LEFT SIDE VIEW

A-56

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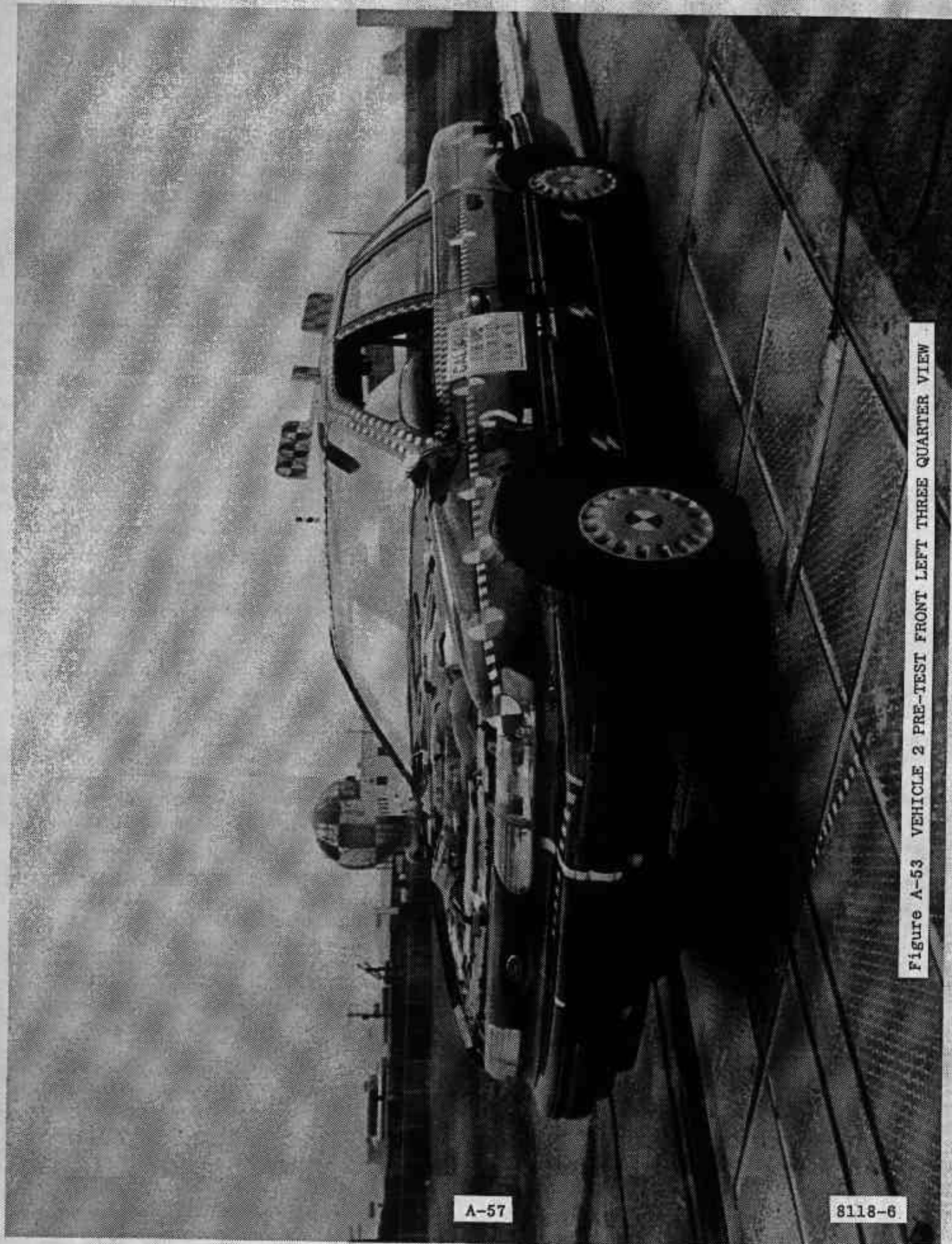


Figure A-53 VEHICLE 2 PRE-TEST FRONT LEFT THREE QUARTER VIEW

A-57

8118-6

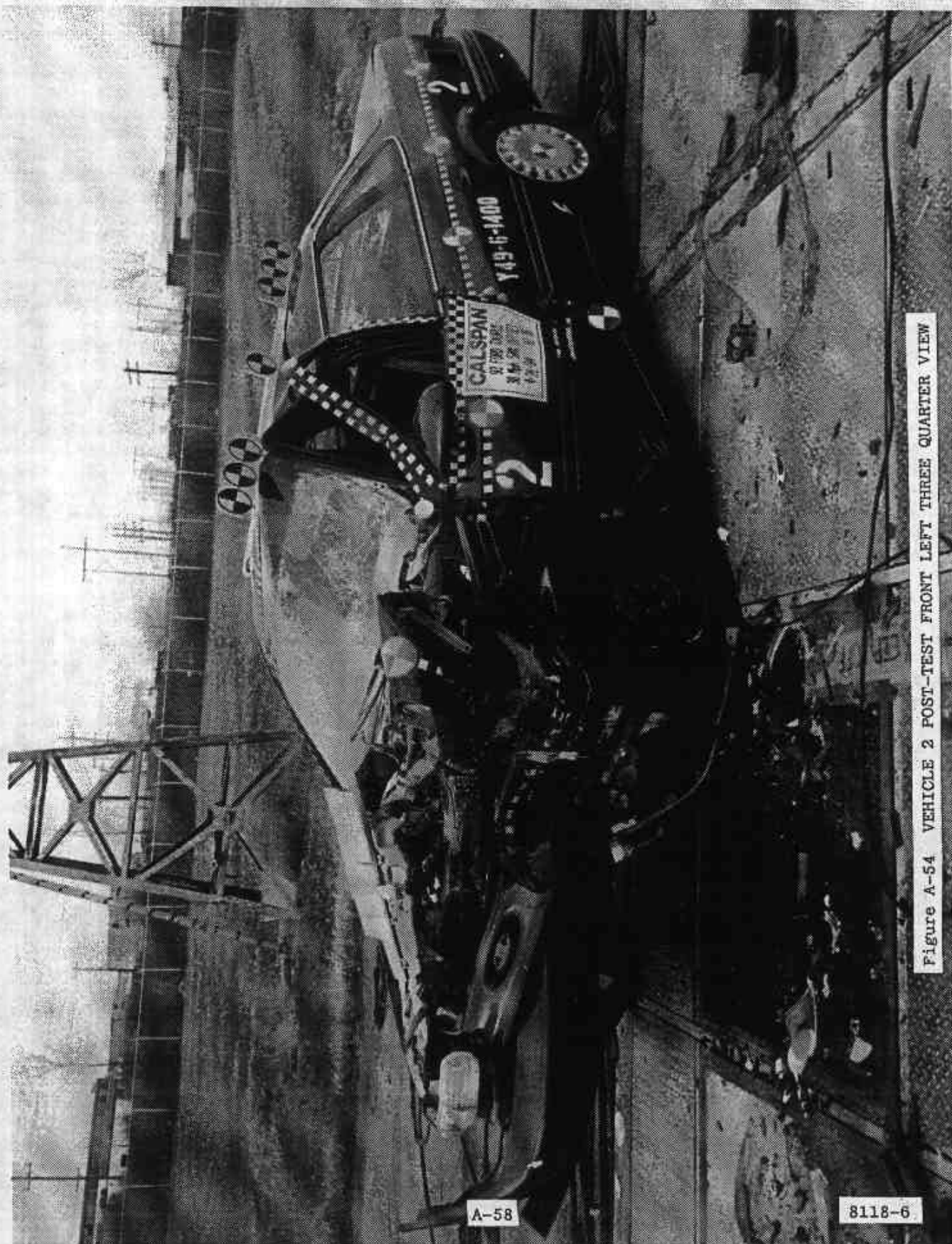


Figure A-54 VEHICLE 2 POST-TEST FRONT LEFT THREE QUARTER VIEW

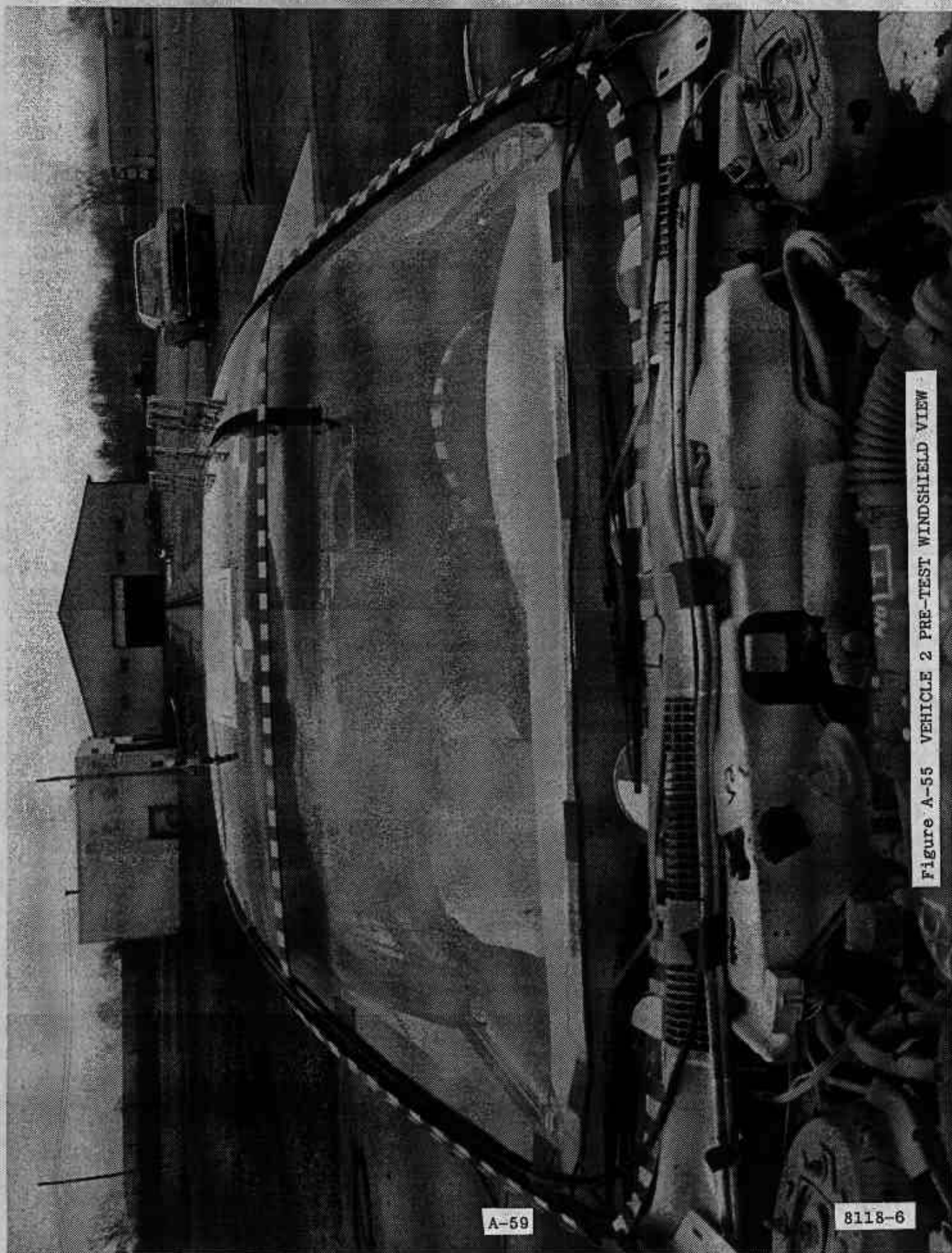


Figure A-55 VEHICLE 2 PRE-TEST WINDSHIELD VIEW

A-59

8118-6



Figure A-56 VEHICLE 2 POST-TEST WINDSHIELD VIEW

A-80

8118-6

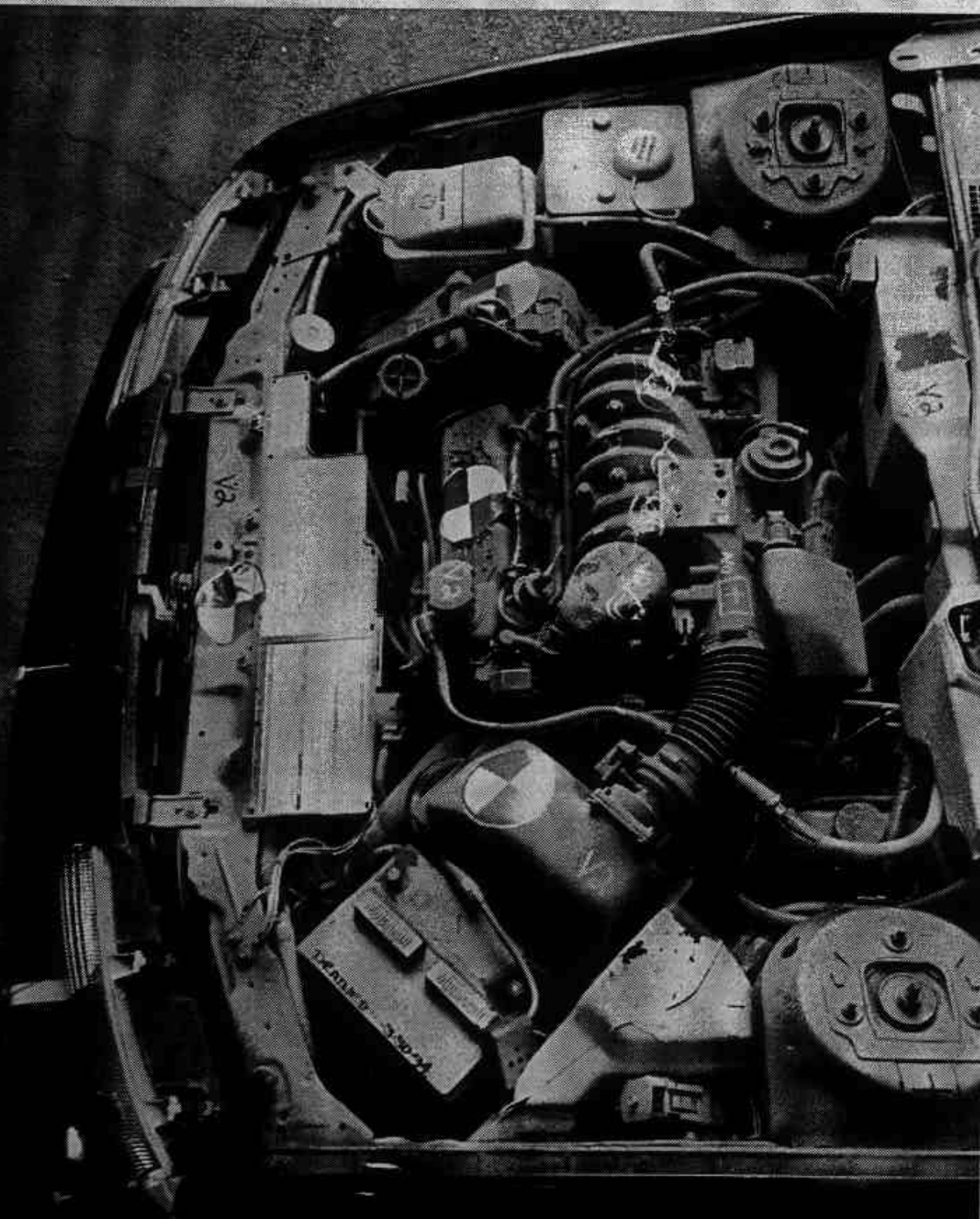


Figure A-57 VEHICLE 2 PRE-TEST OVERHEAD ENGINE COMPARTMENT VIEW

A-61

8118-6



Figure A-58 VEHICLE 2 POST-TEST OVERHEAD ENGINE COMPARTMENT VIEW

A-62

8118-6

Figure A-59 VEHICLE 2 PRE-TEST UNDERBODY FRONT VIEW

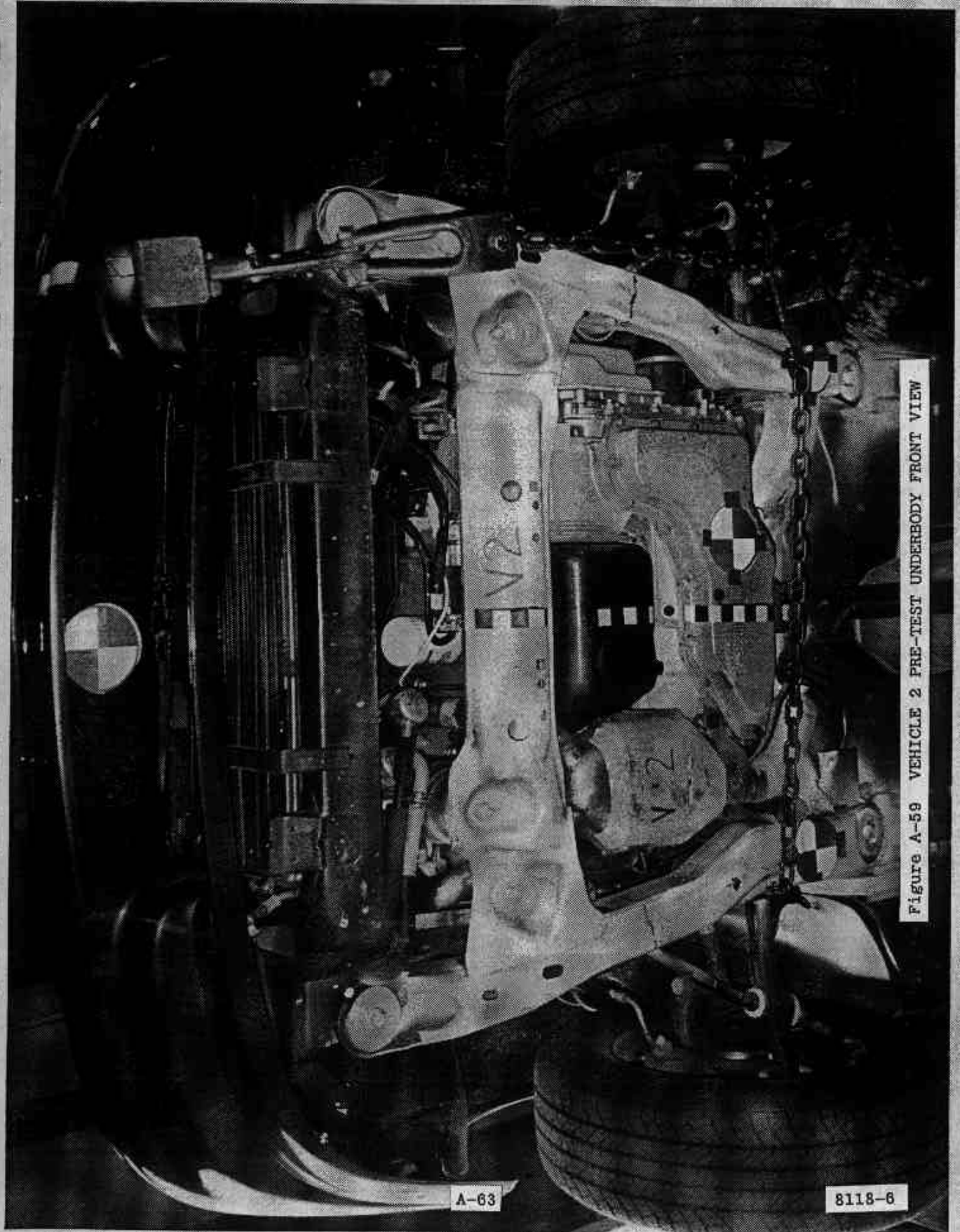




Figure A-60 VEHICLE 2 POST-TEST UNDERBODY FRONT VIEW

A-64

8118-6

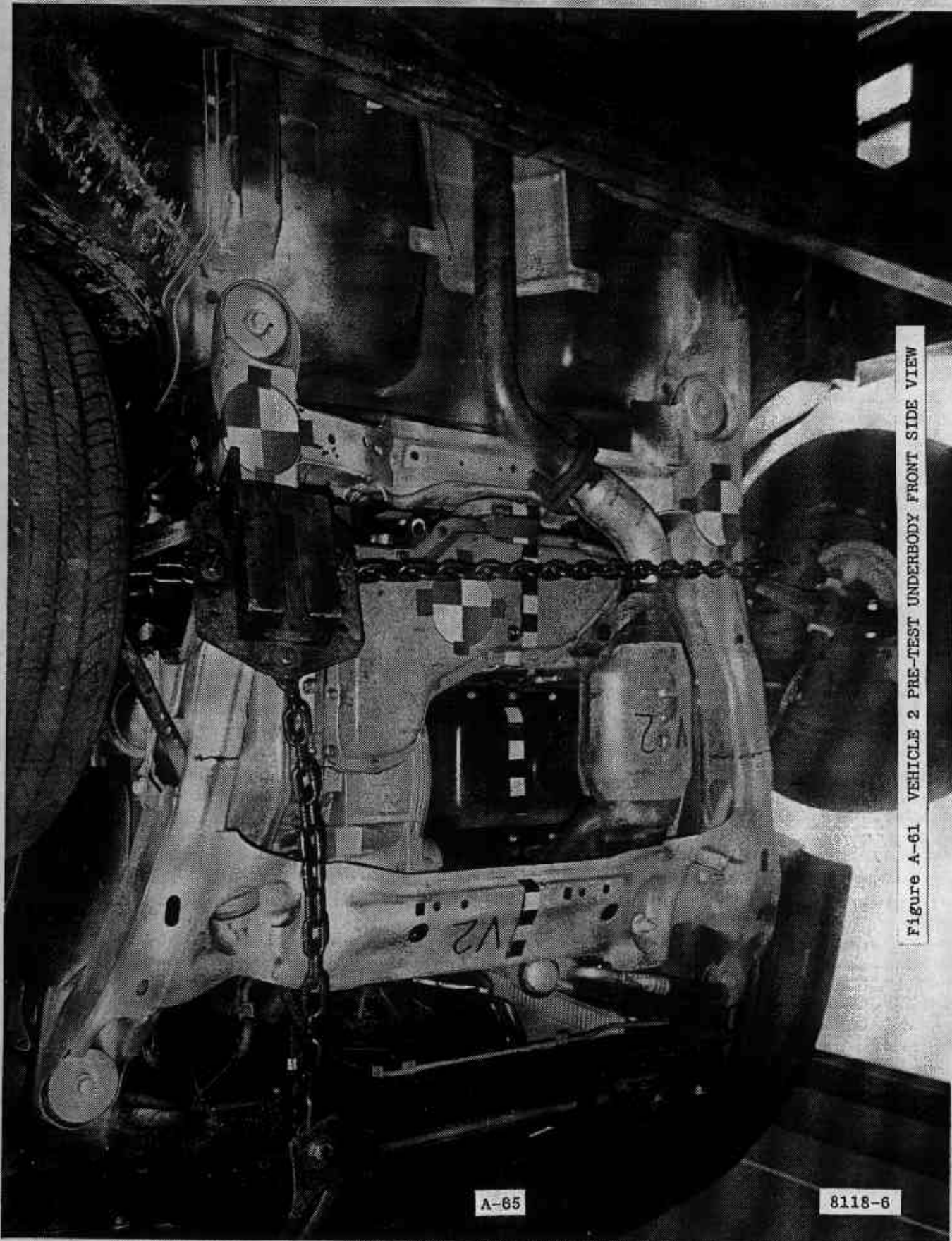


Figure A-61 VEHICLE 2 PRE-TEST UNDERBODY FRONT SIDE VIEW

A-65

8118-6

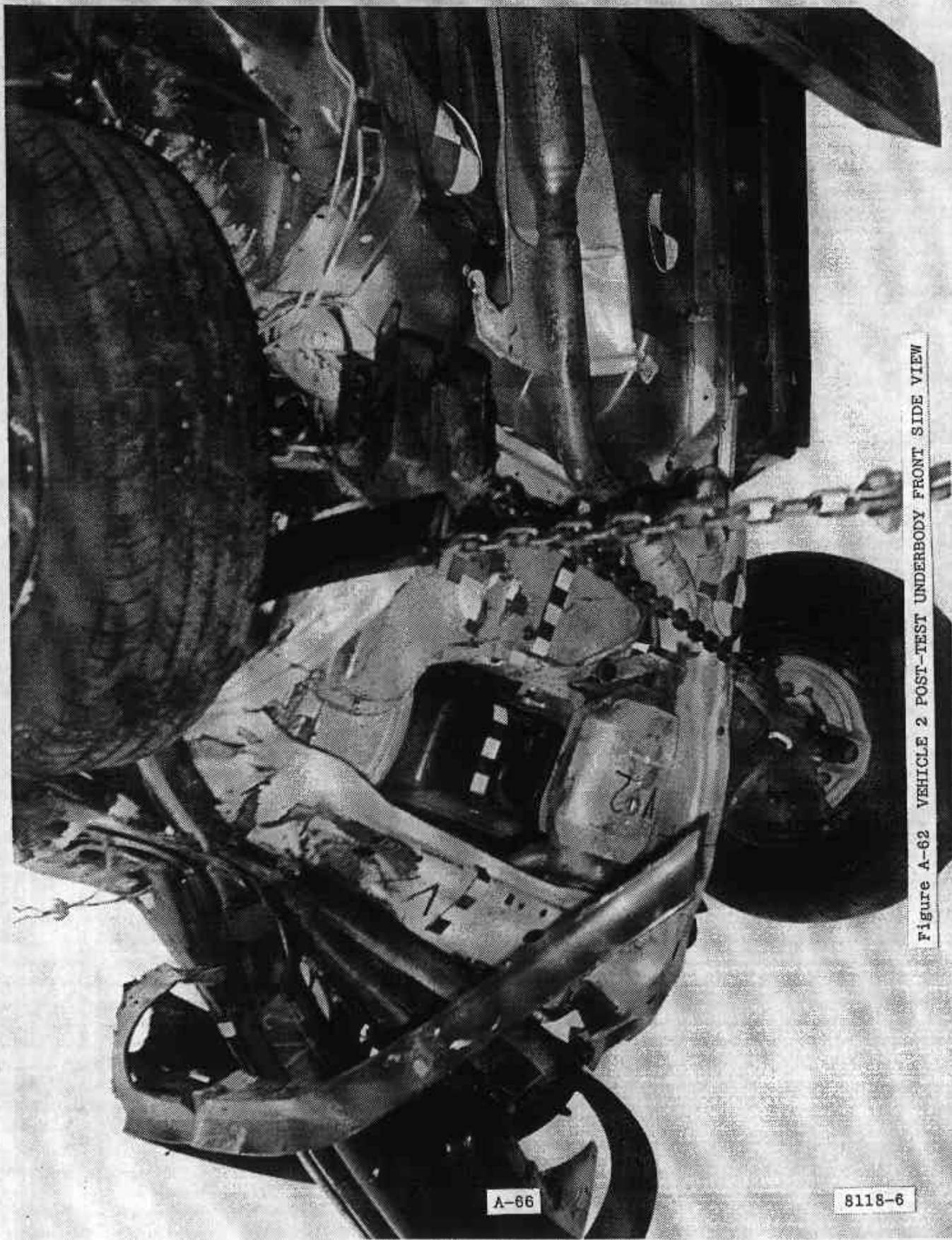


Figure A-62 VEHICLE 2 POST-TEST UNDERBODY FRONT SIDE VIEW

A-66

8118-6

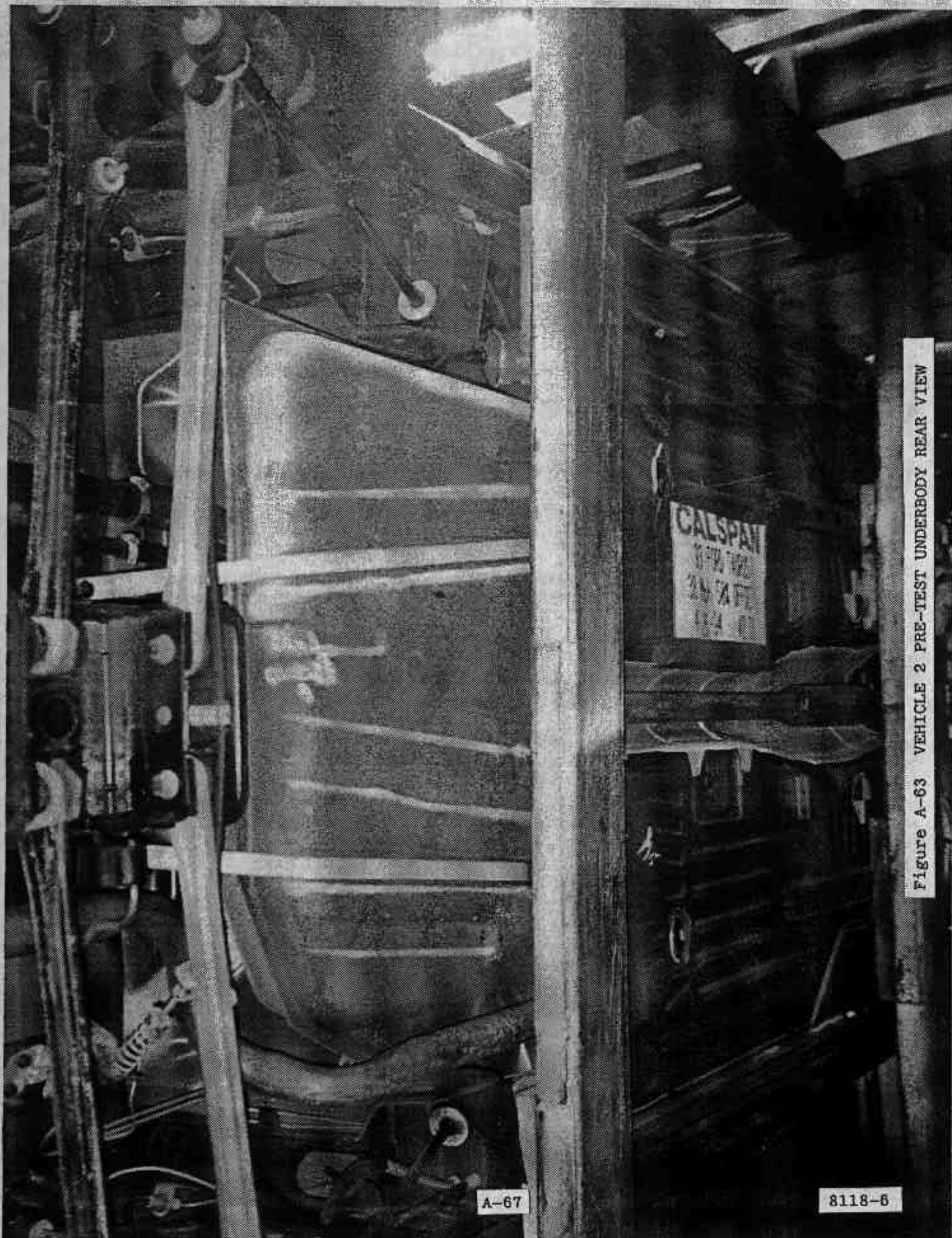


Figure A-63 VEHICLE 2 PRE-TEST UNDERBODY REAR VIEW

A-67

8118-6

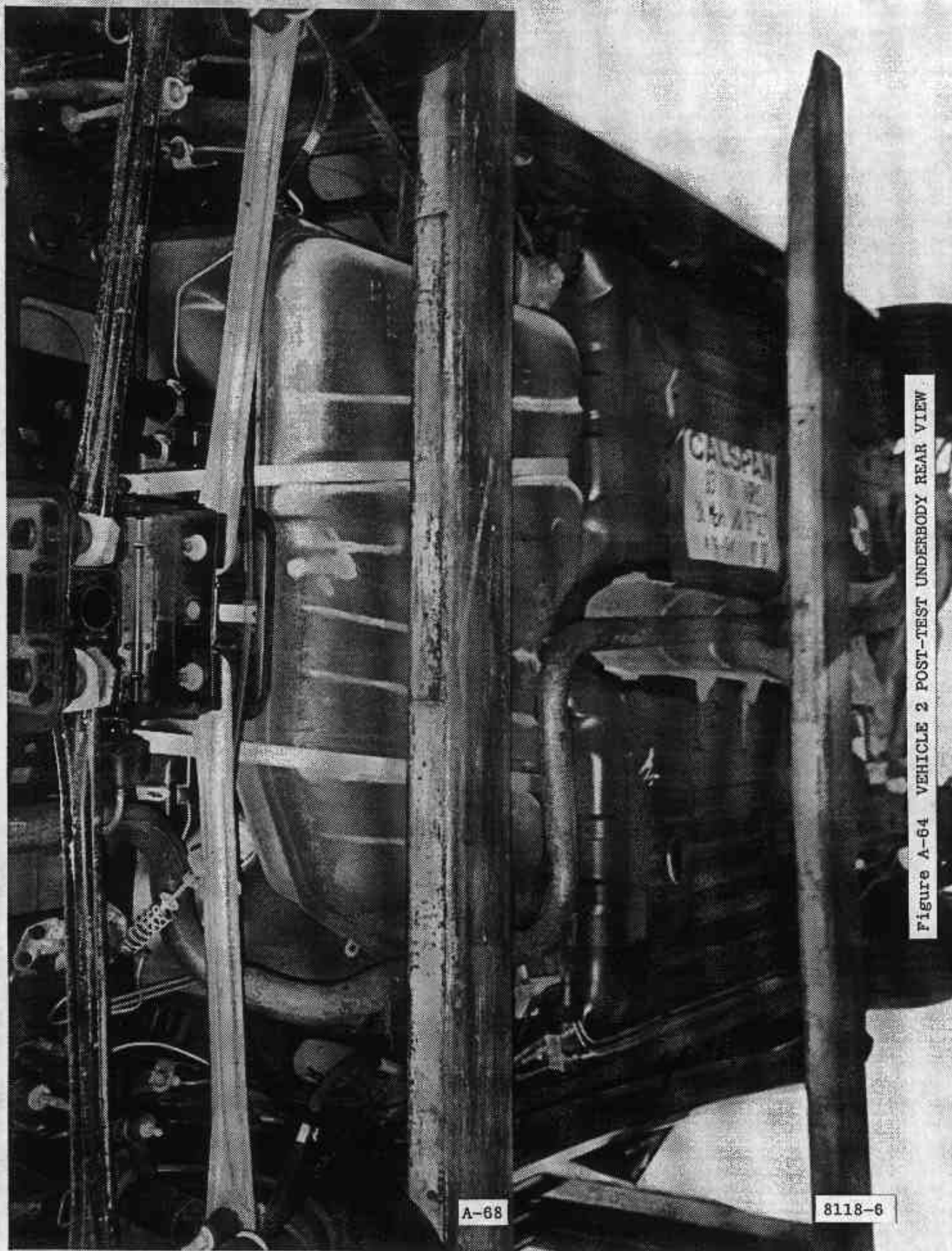


Figure A-64 VEHICLE 2 POST-TEST UNDERBODY REAR VIEW

A-68

8118-6

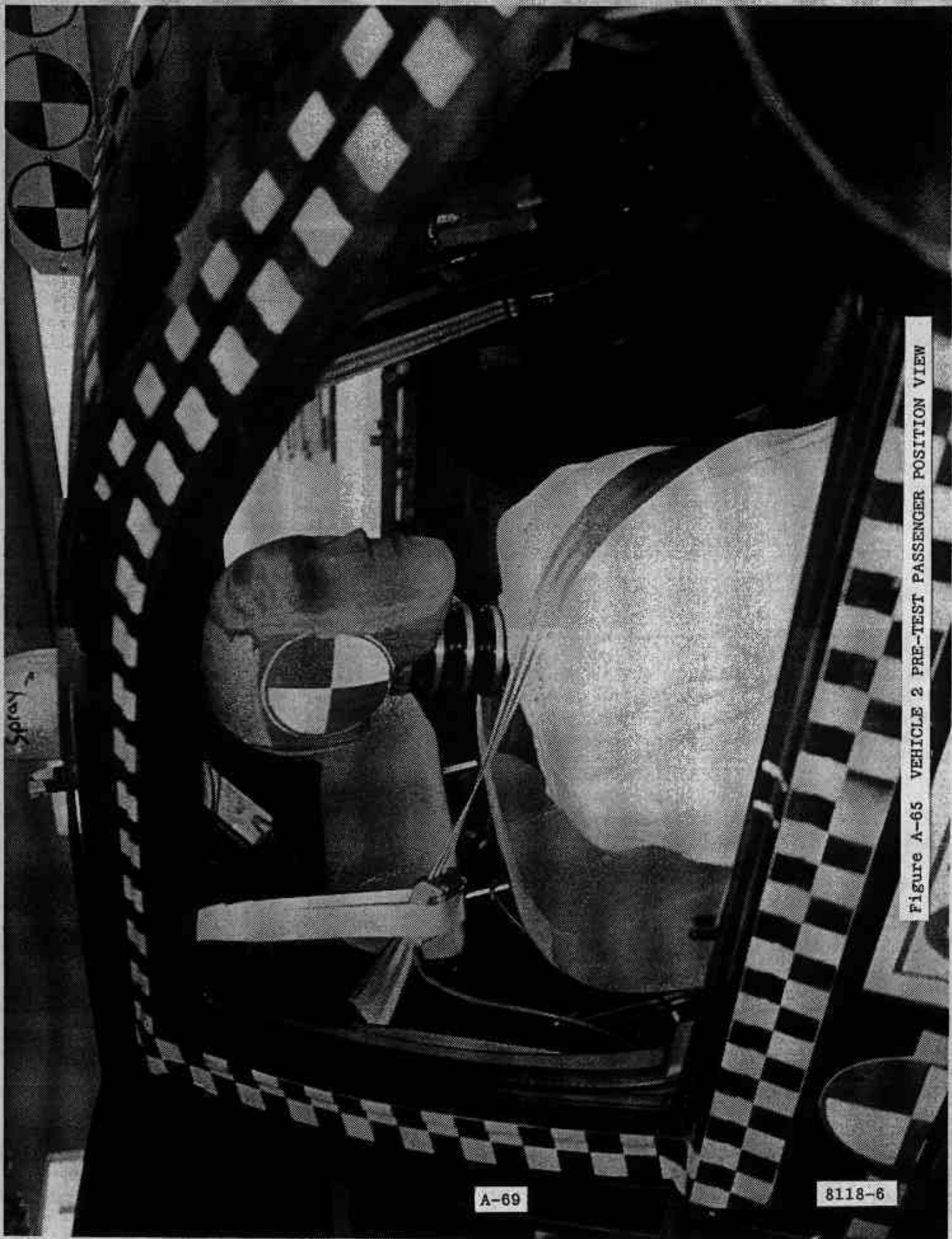


Figure A-65 VEHICLE 2 PRE-TEST PASSENGER POSITION VIEW

A-69

8118-6

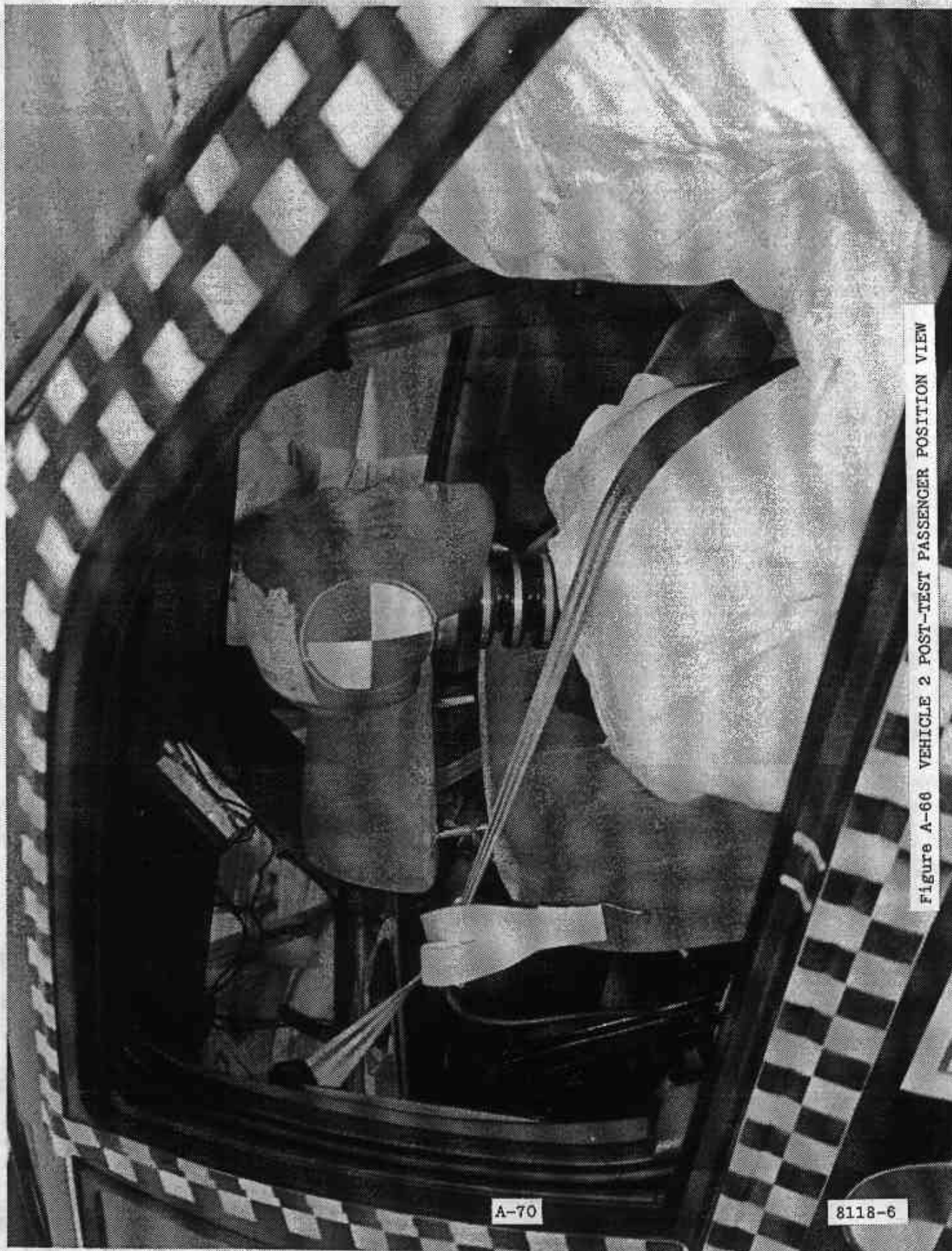


Figure A-66 VEHICLE 2 POST-TEST PASSENGER POSITION VIEW

A-70

8118-6



Figure A-67 VEHICLE 2 PRE-TEST PASSENGER AND OCCUPANT COMPARTMENT VIEW

A-71

8118-6

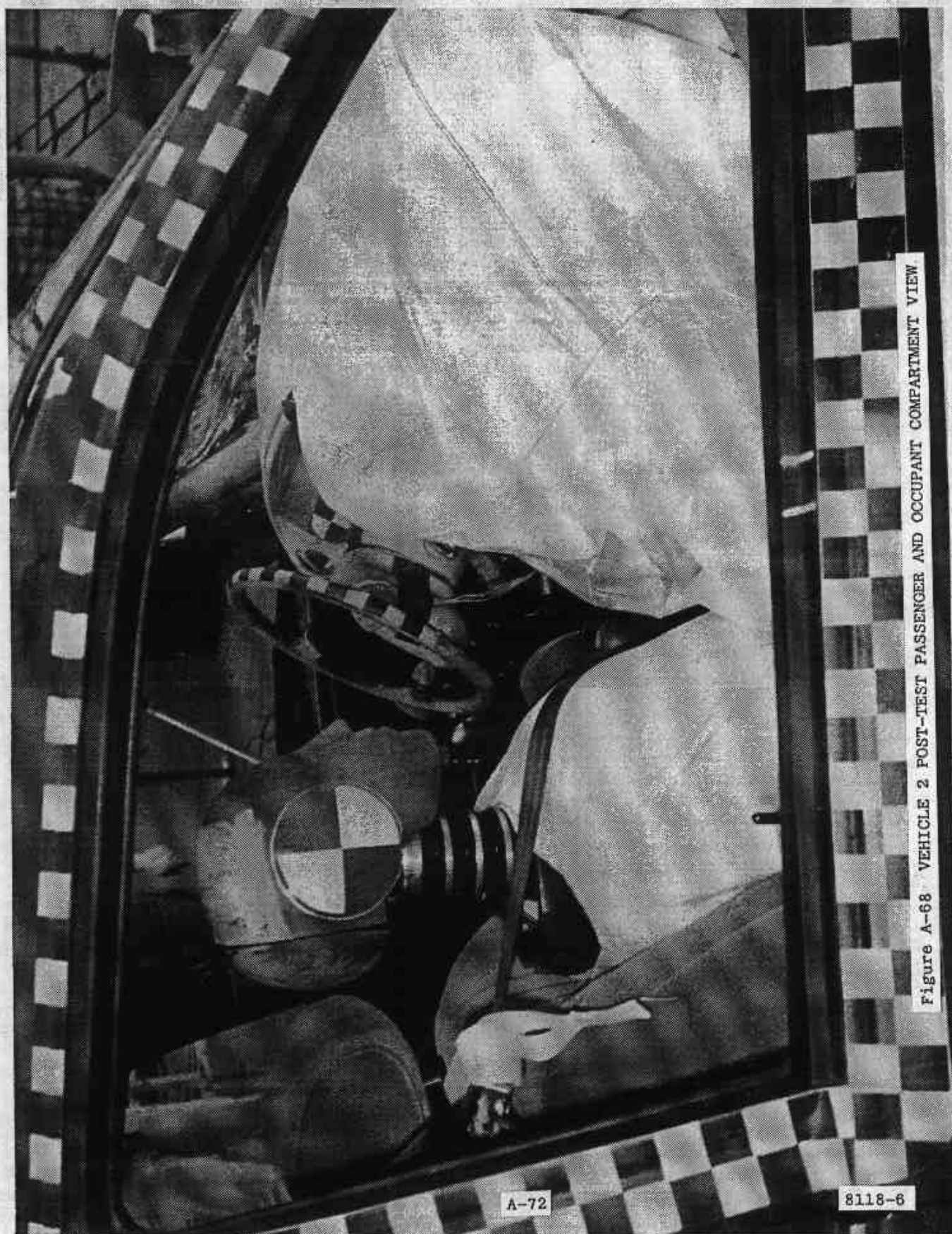


Figure A-68 VEHICLE 2 POST-TEST PASSENGER AND OCCUPANT COMPARTMENT VIEW

A-72

8118-6

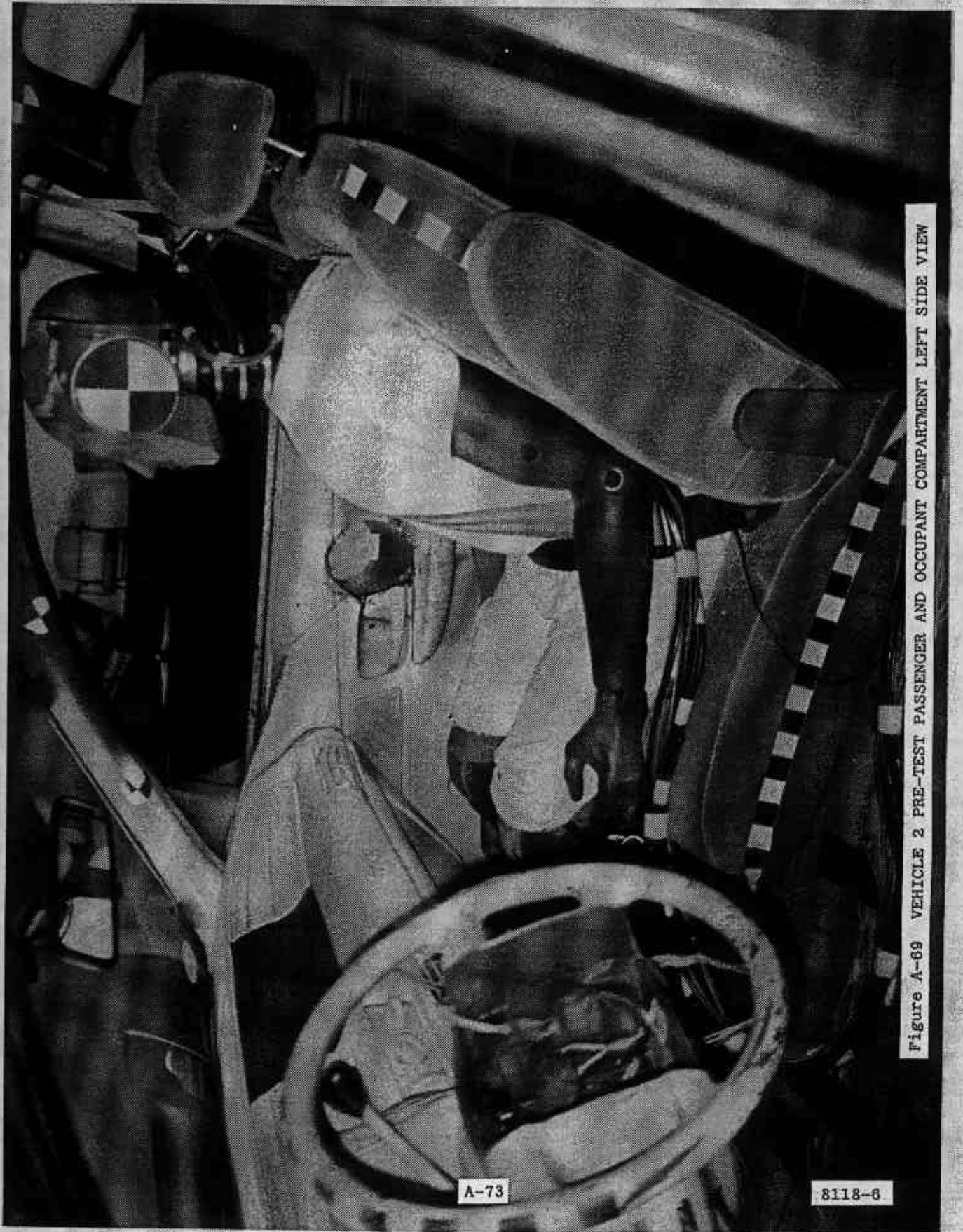


Figure A-89 VEHICLE 2 PRE-TEST PASSENGER AND OCCUPANT COMPARTMENT LEFT SIDE VIEW

A-73

8118-8

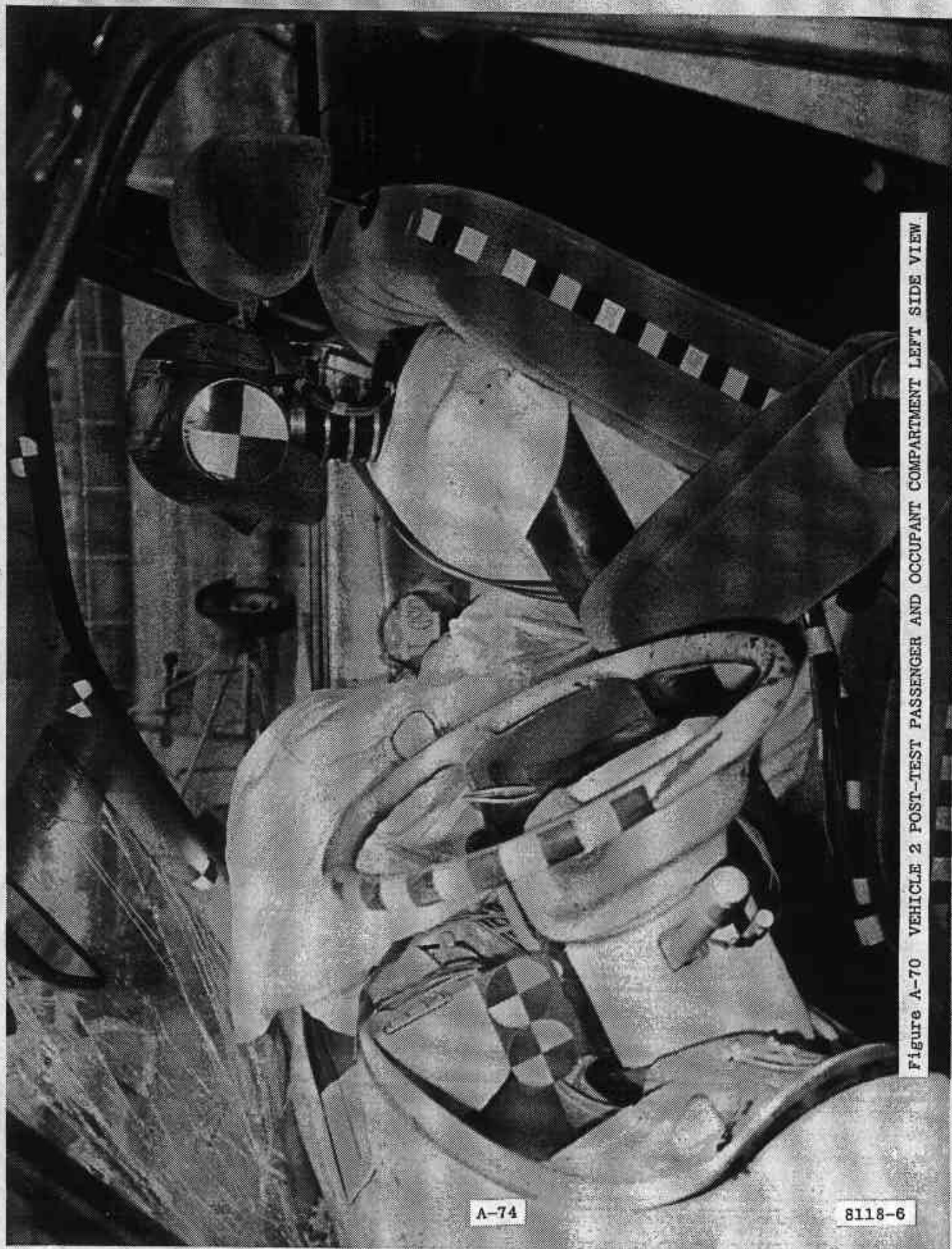


Figure A-70 VEHICLE 2 POST-TEST PASSENGER AND OCCUPANT COMPARTMENT LEFT SIDE VIEW

A-74

8118-6

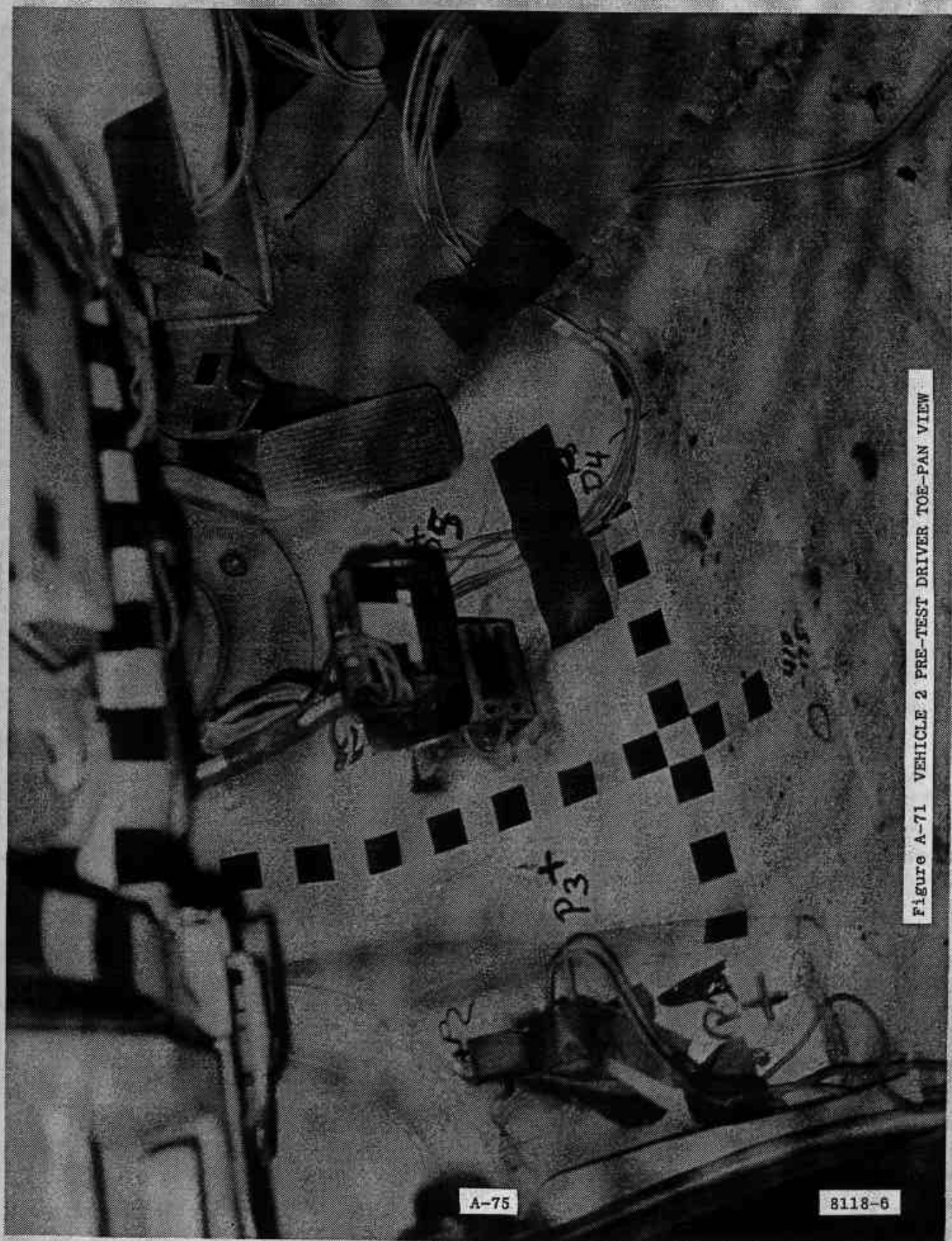


Figure A-71 VEHICLE 2 PRE-TEST DRIVER TOE-PAN VIEW

A-75

8118-6



Figure A-72 VEHICLE 2 POST-TEST DRIVER TOE-PAN VIEW

A-76

8118-6



Figure A-73 VEHICLE 2 PASSENGER AIRBAG VIEW

A-77

8118-8

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

Key: V1 - Vehicle 1
V2 - Vehicle 2

TEST NO. Y49-6-1400

VEHICLE DATA

SAE FILTER CHANNEL CLASS

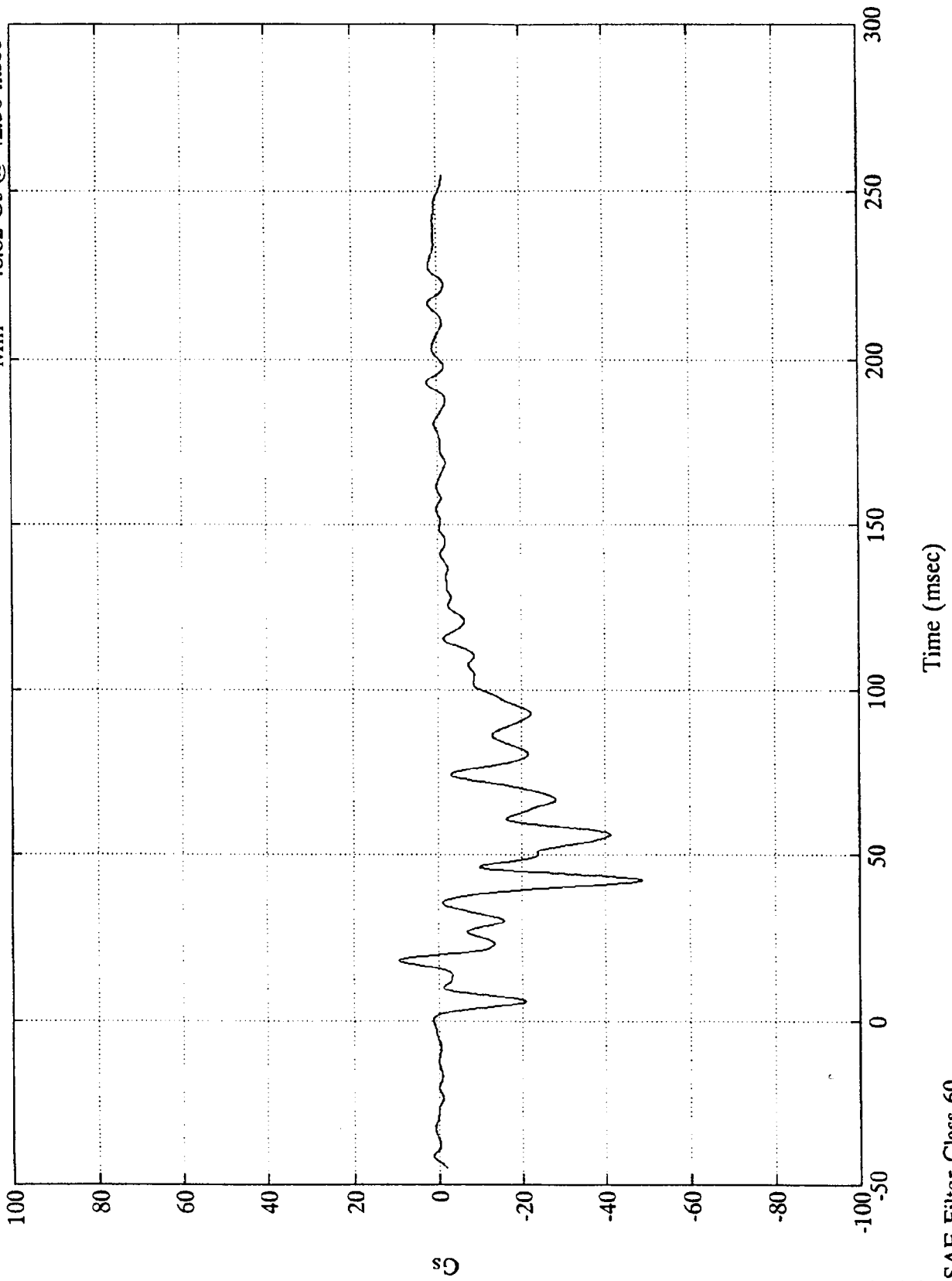
60

VEHICLE ONE DATA

VTV TEST #6

V1 R.F Frame Rail (X)

Max = 9.47 Gs @ 18.24 msec
Min = -48.82 Gs @ 42.36 msec



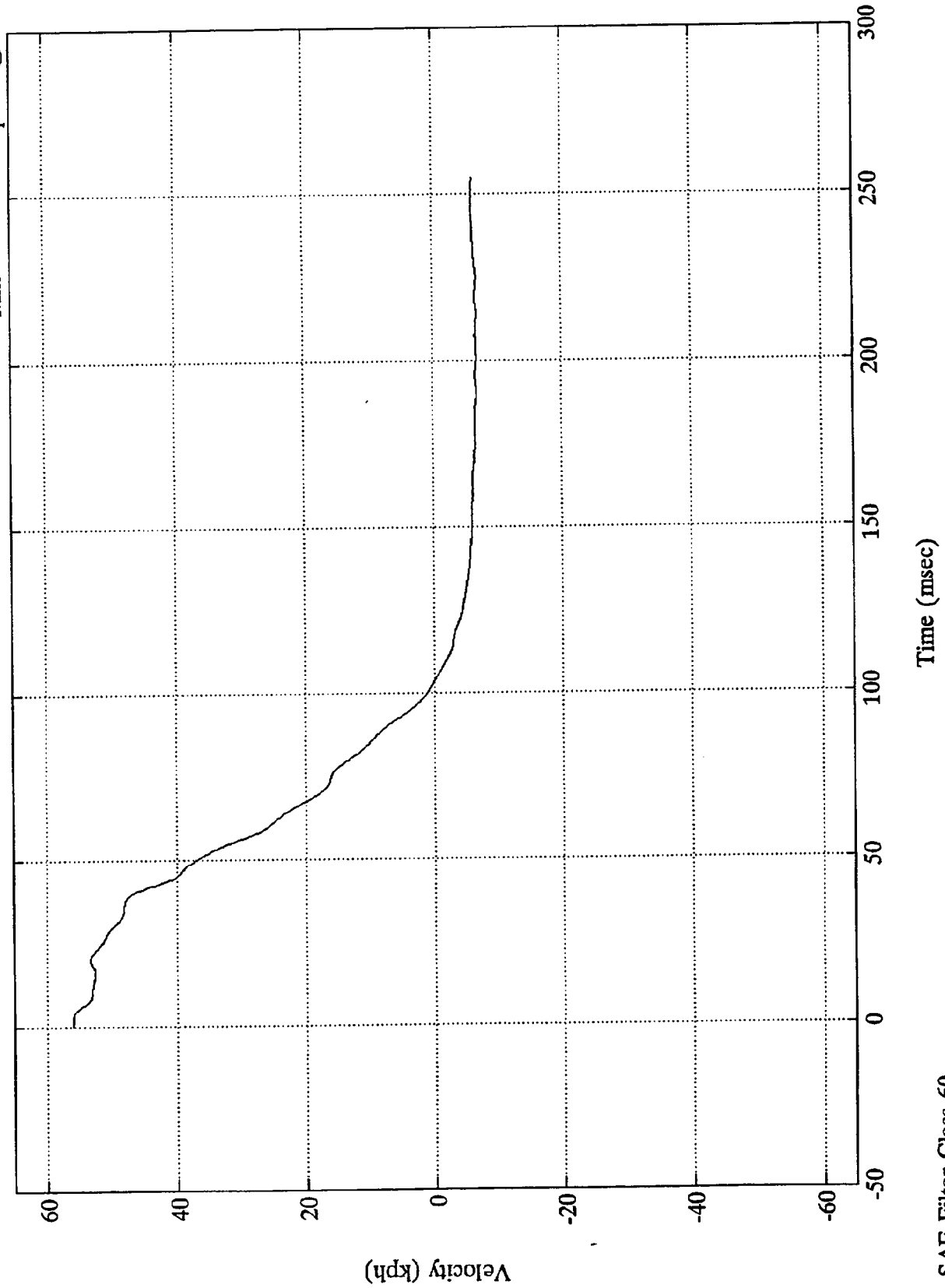
8118-6

SAE Filter Class 60

VTV TEST #6

V1 R.F Frame Rail (X)

Max = 56.07 kph @ 1.91 msec
Min = -6.82 kph @ 190.56 msec



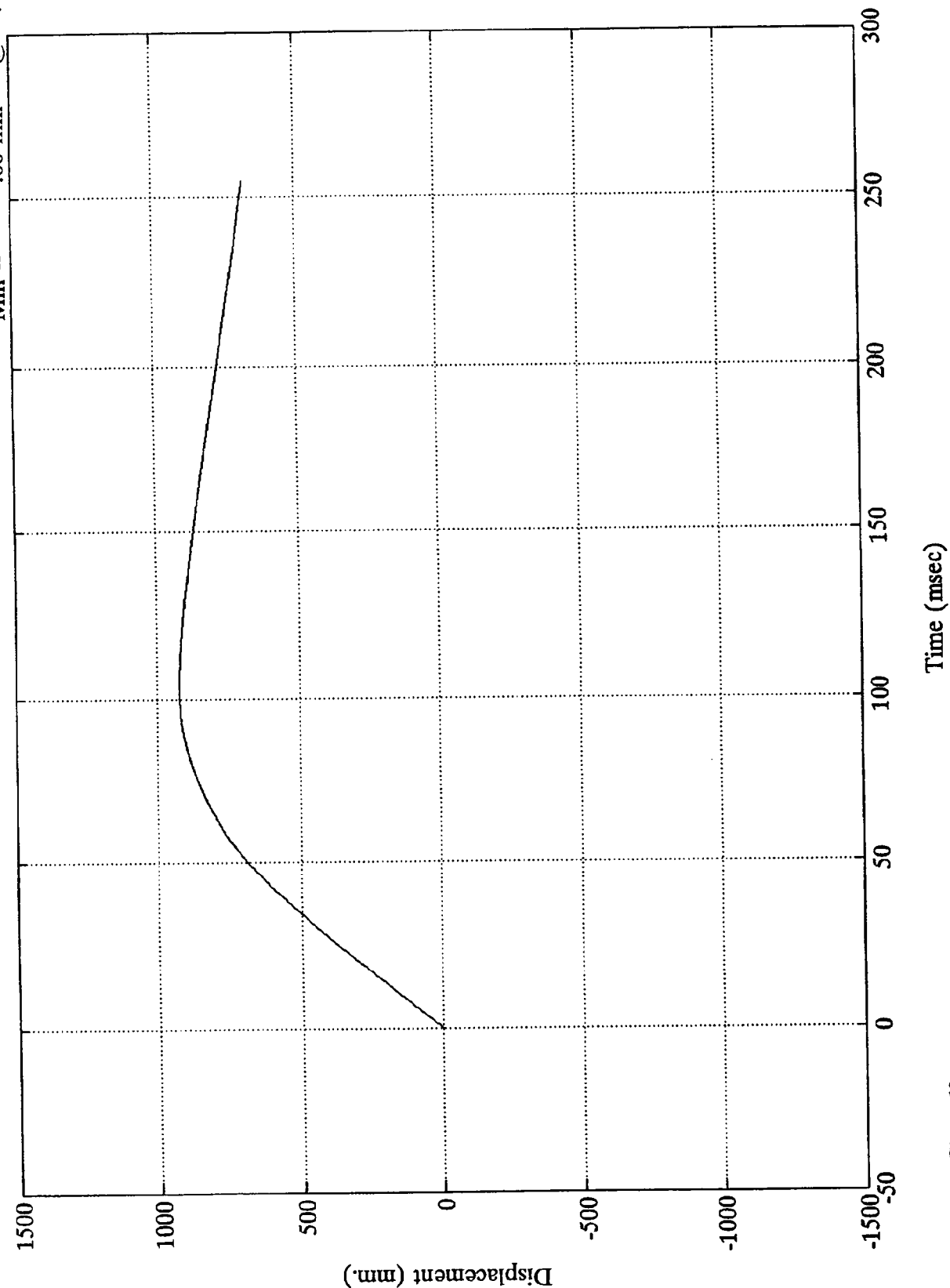
SAE Filter Class 60

8118-6

VTV TEST #6

V1 R.F Frame Rail (X)

Max = 922.82 mm @ 103.56 msec
Min = .00 mm @ -44.88 msec



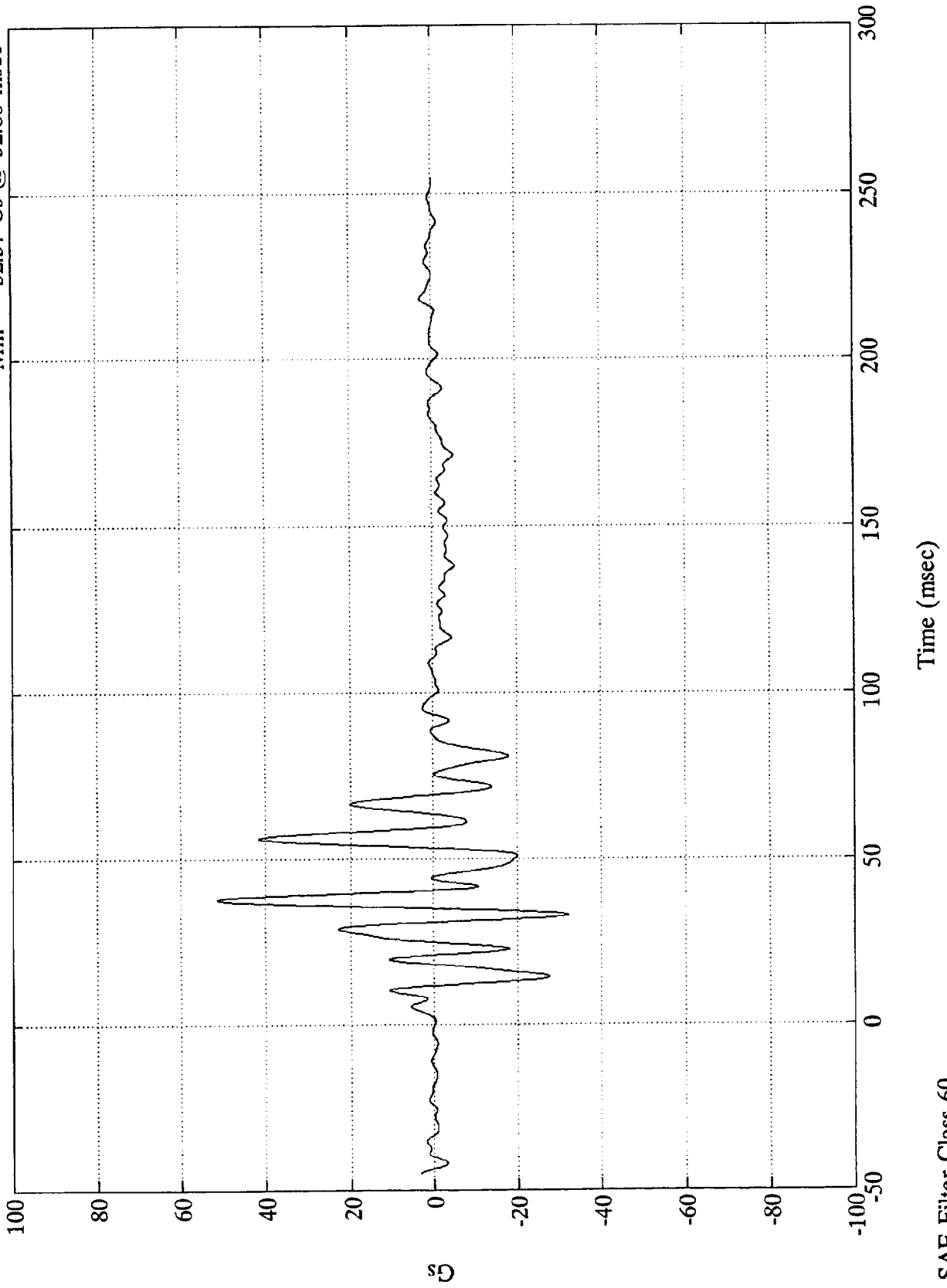
SAE Filter Class 60

9-8118

VTV TEST #6

V1 R.F. Frame Rail (Y)

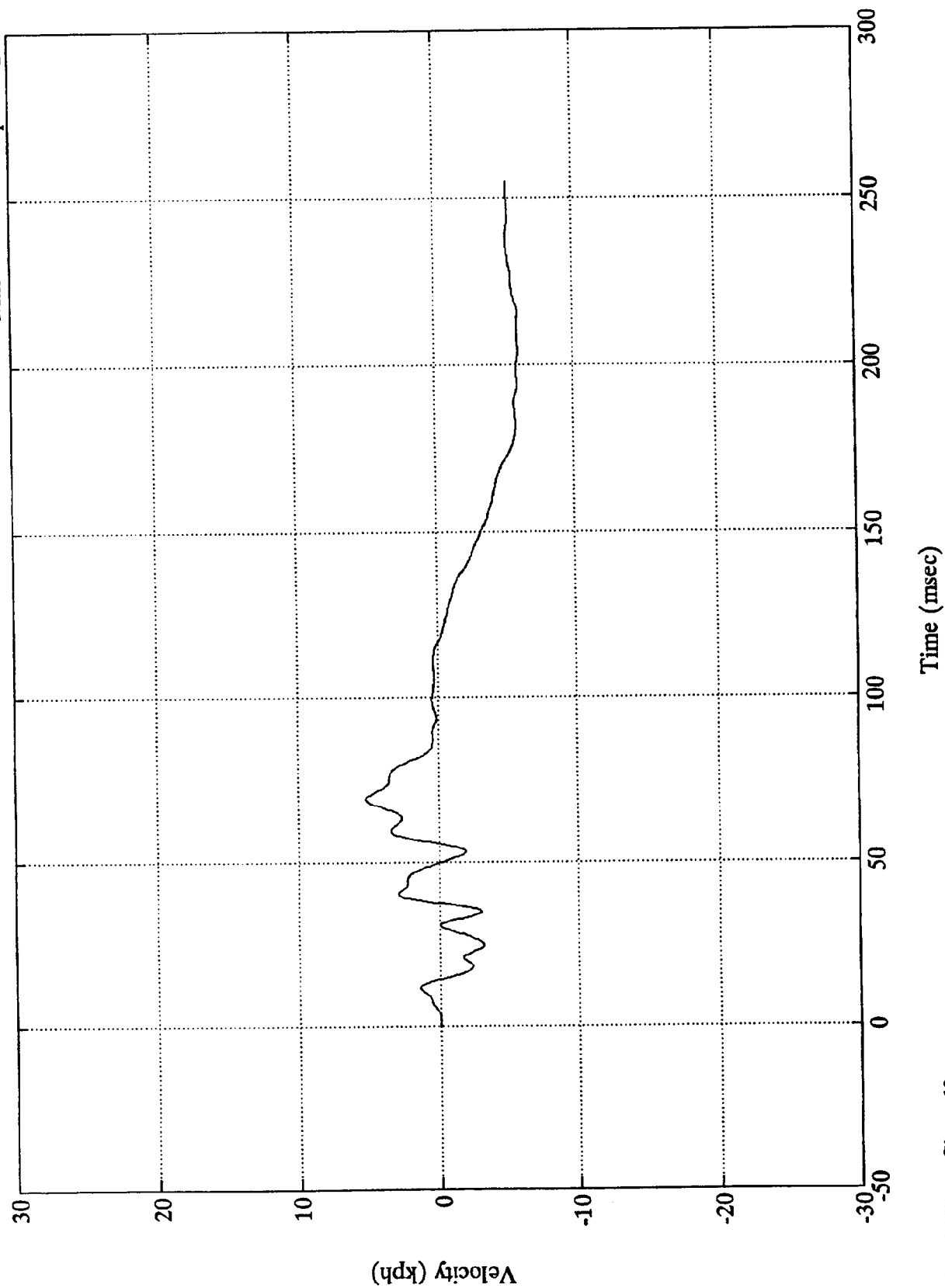
Max = 51.45 Gs @ 37.56 msec
Min = -32.37 Gs @ 32.88 msec



8118-6

VTV TEST #6

V1 R.F Frame Rail (Y)
Max = 5.24 kph @ 69.24 msec
Min = -6.03 kph @ 203.51 msec



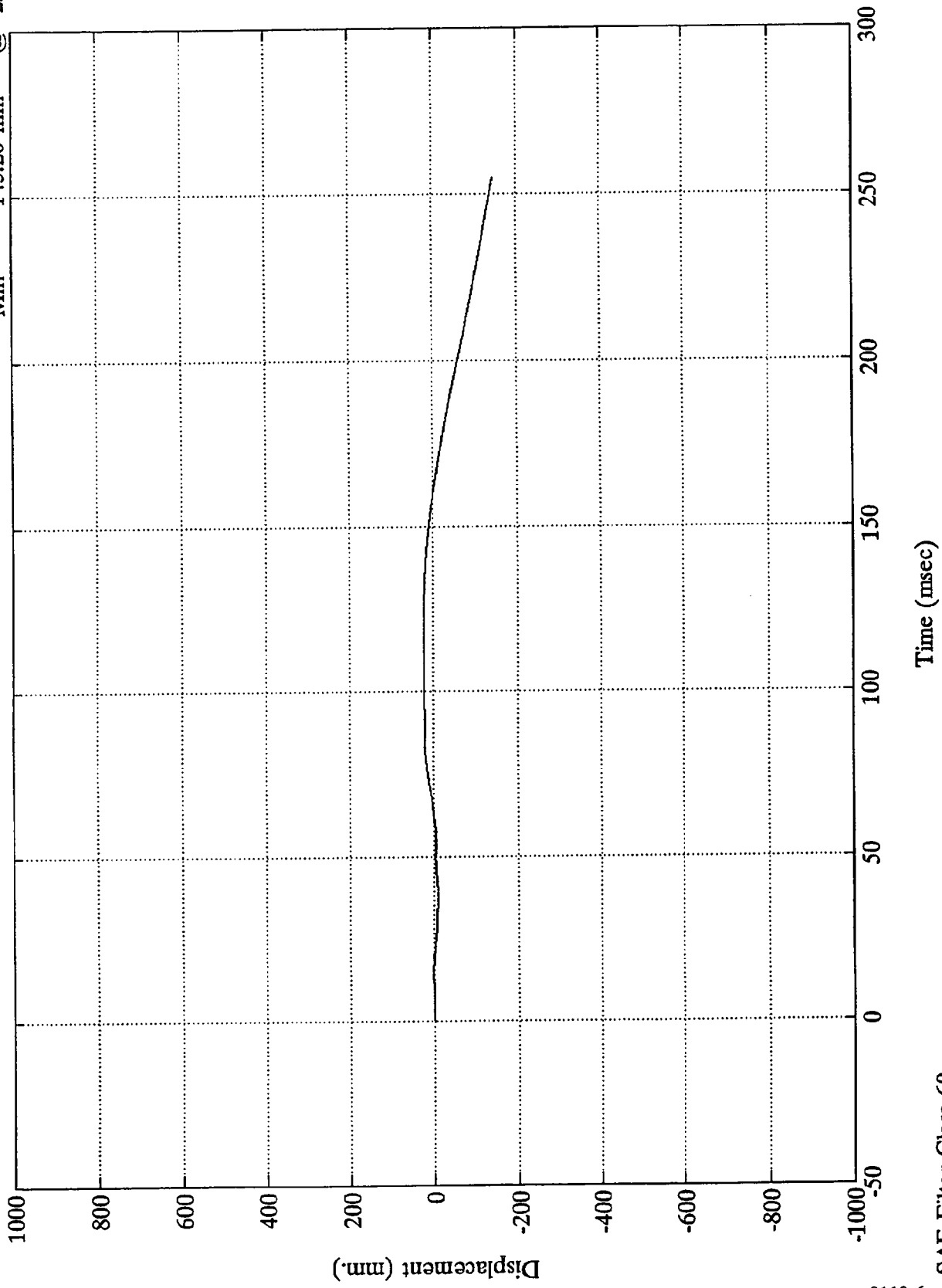
SAE Filter Class 60

8118-6

VTV TEST #6

V1 R.F Frame Rail (Y)

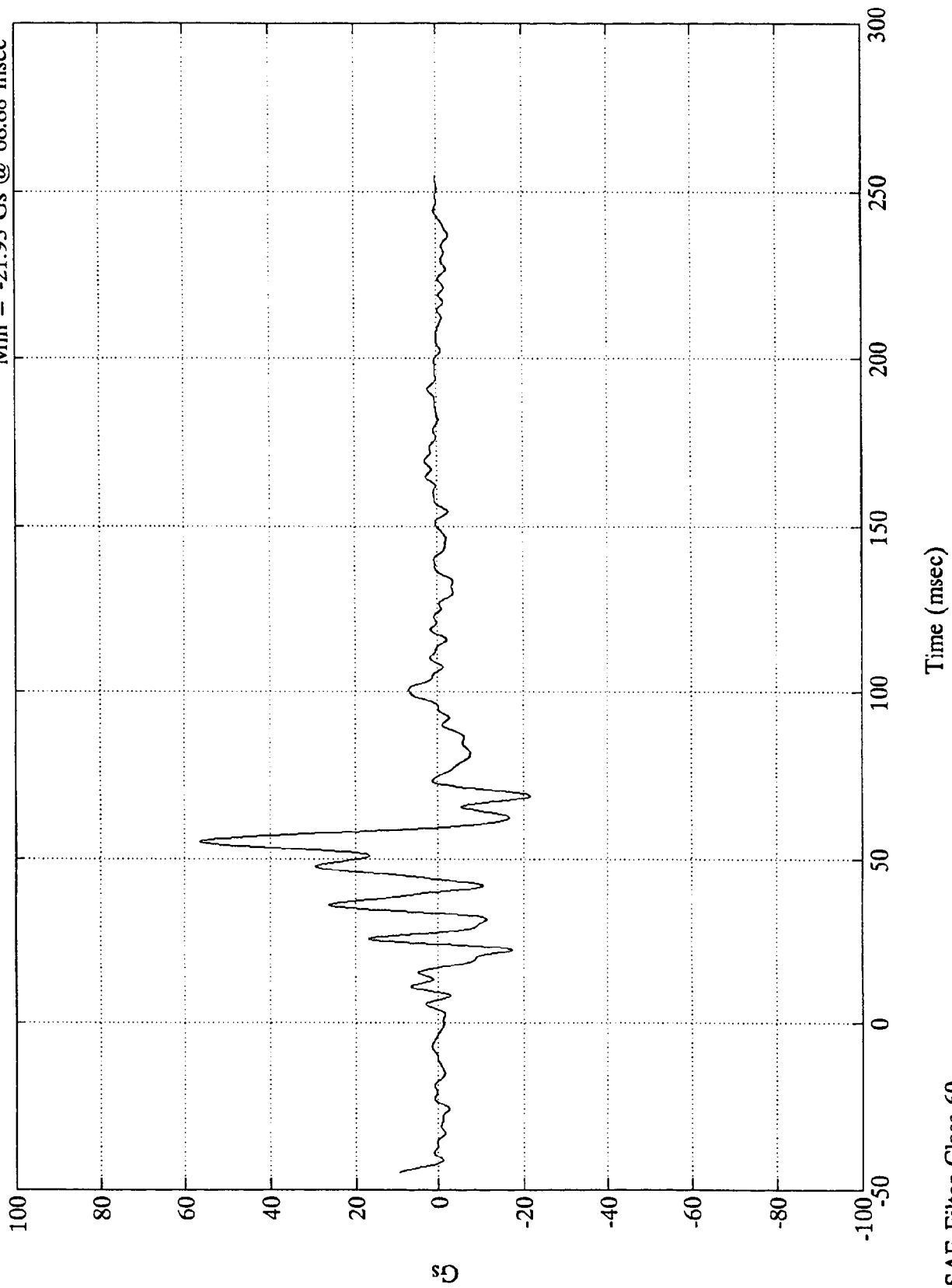
Max =	23.46 mm	@	116.52 msec
Min =	-145.20 mm	@	254.88 msec



8118-6

VTV TEST #6

V1 R.F Frame Rail (Z)
Max = 56.39 Gs @ 55.32 msec
Min = -21.93 Gs @ 68.88 msec

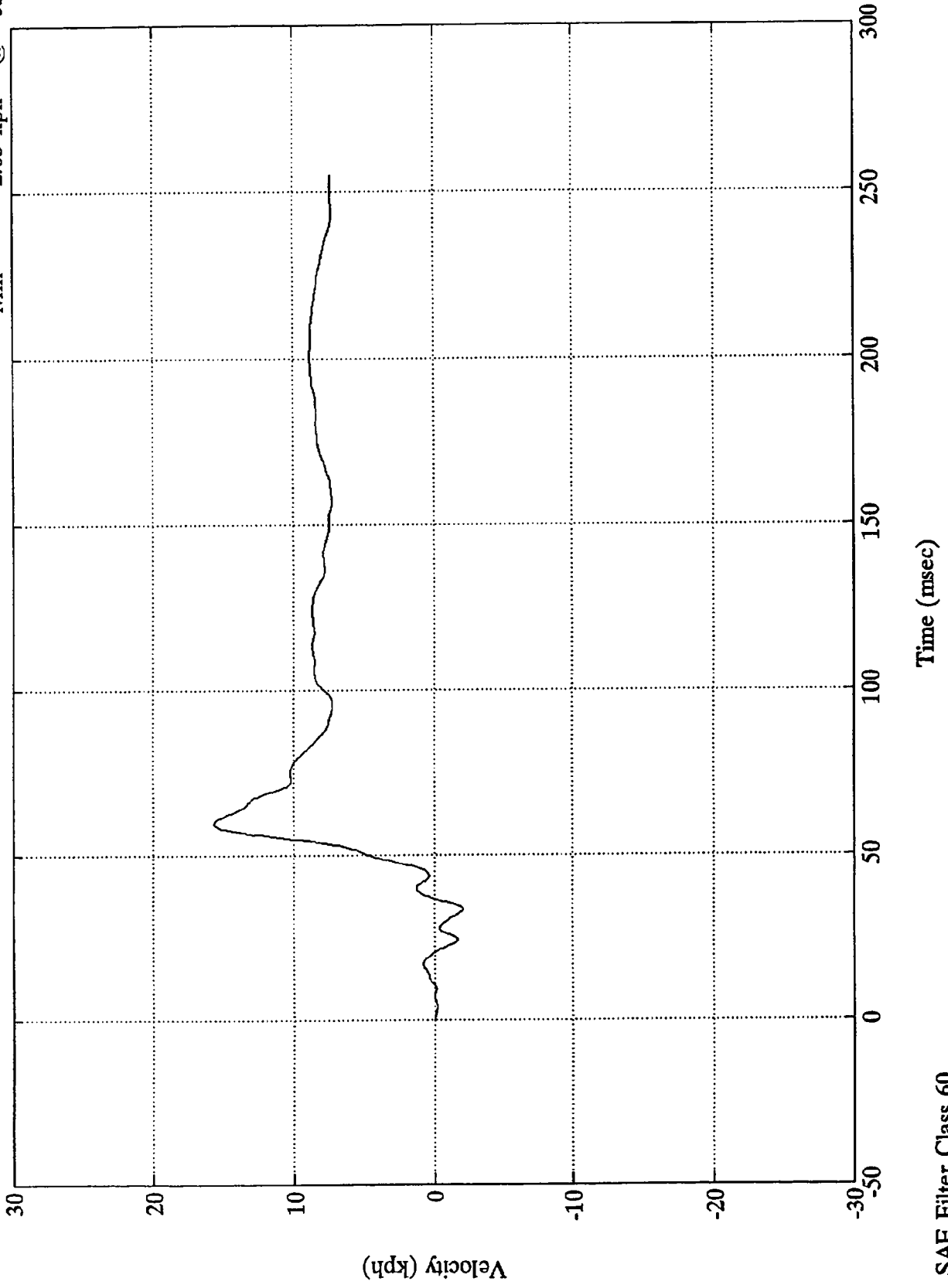


8118-6

VTV TEST #6

V1 R.F Frame Rail (Z)

Max = 15.72 kph @ 59.64 msec
Min = -2.05 kph @ 33.47 msec

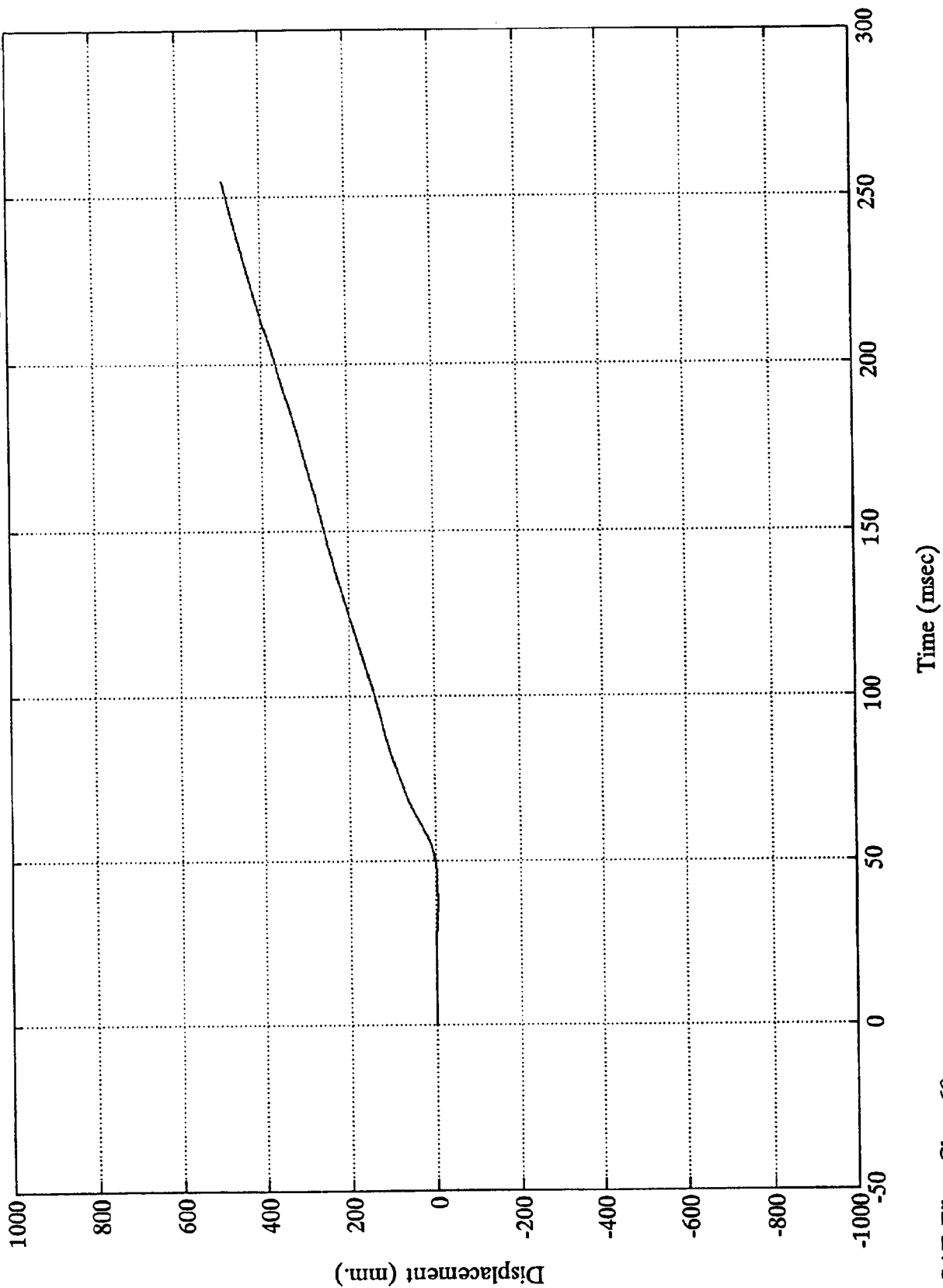


8118-6

VTV TEST #6

V1 R.F Frame Rail (Z)

Max = 491.78 mm @ 254.88 msec
Min = -3.77 mm @ 36.72 msec



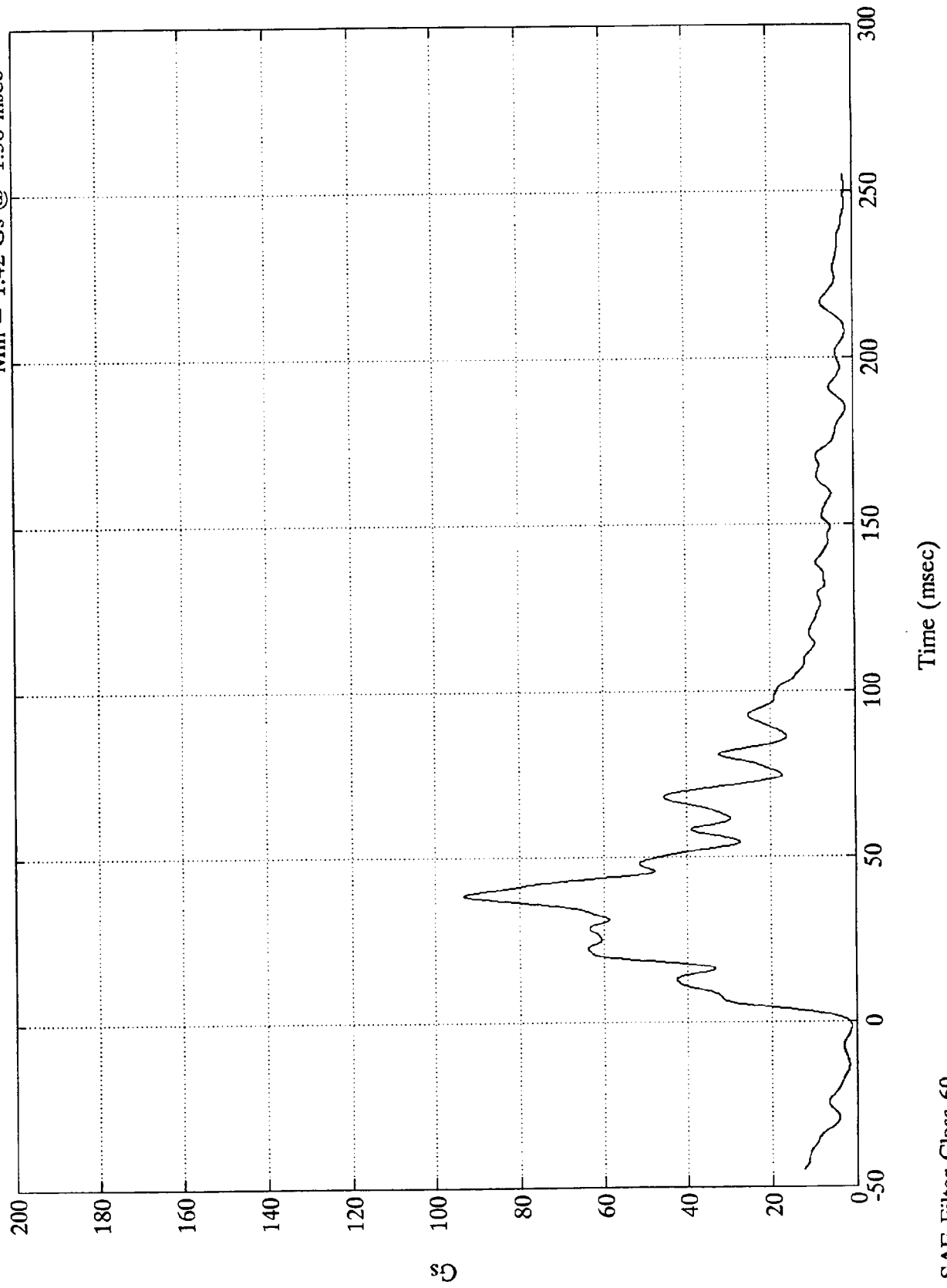
SAE Filter Class 60

8118-6

VTV TEST #6

Max = 93.36 Gs @ 38.40 msec
Min = 1.42 Gs @ -1.56 msec

V1 R.F Frame Rail Res.



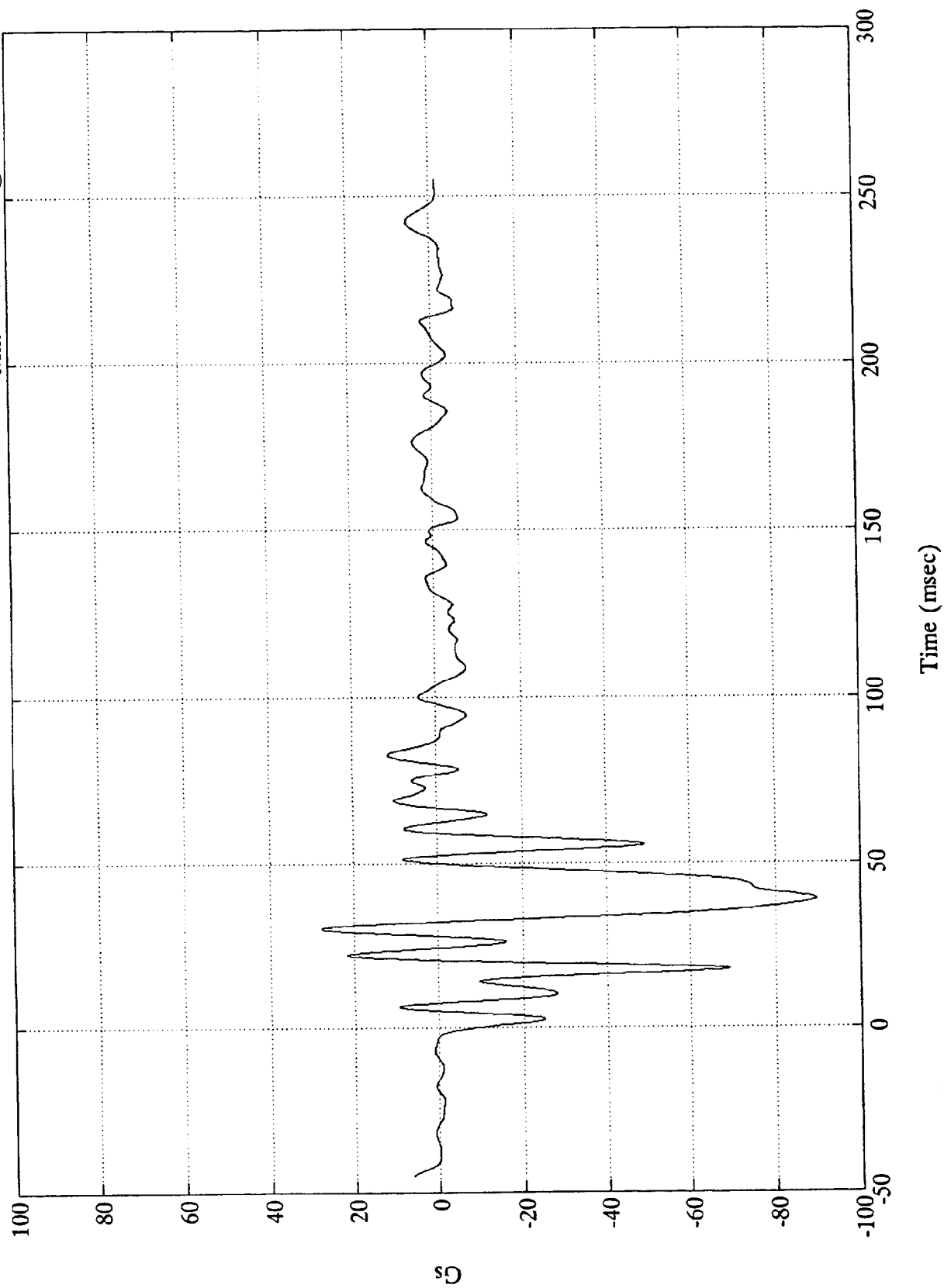
SAE Filter Class 60

8118-6

VTV TEST #6

V1 L.F Frame Rail (X)

Max = 27.68 Gs @ 30.00 msec
Min = -89.71 Gs @ 38.88 msec

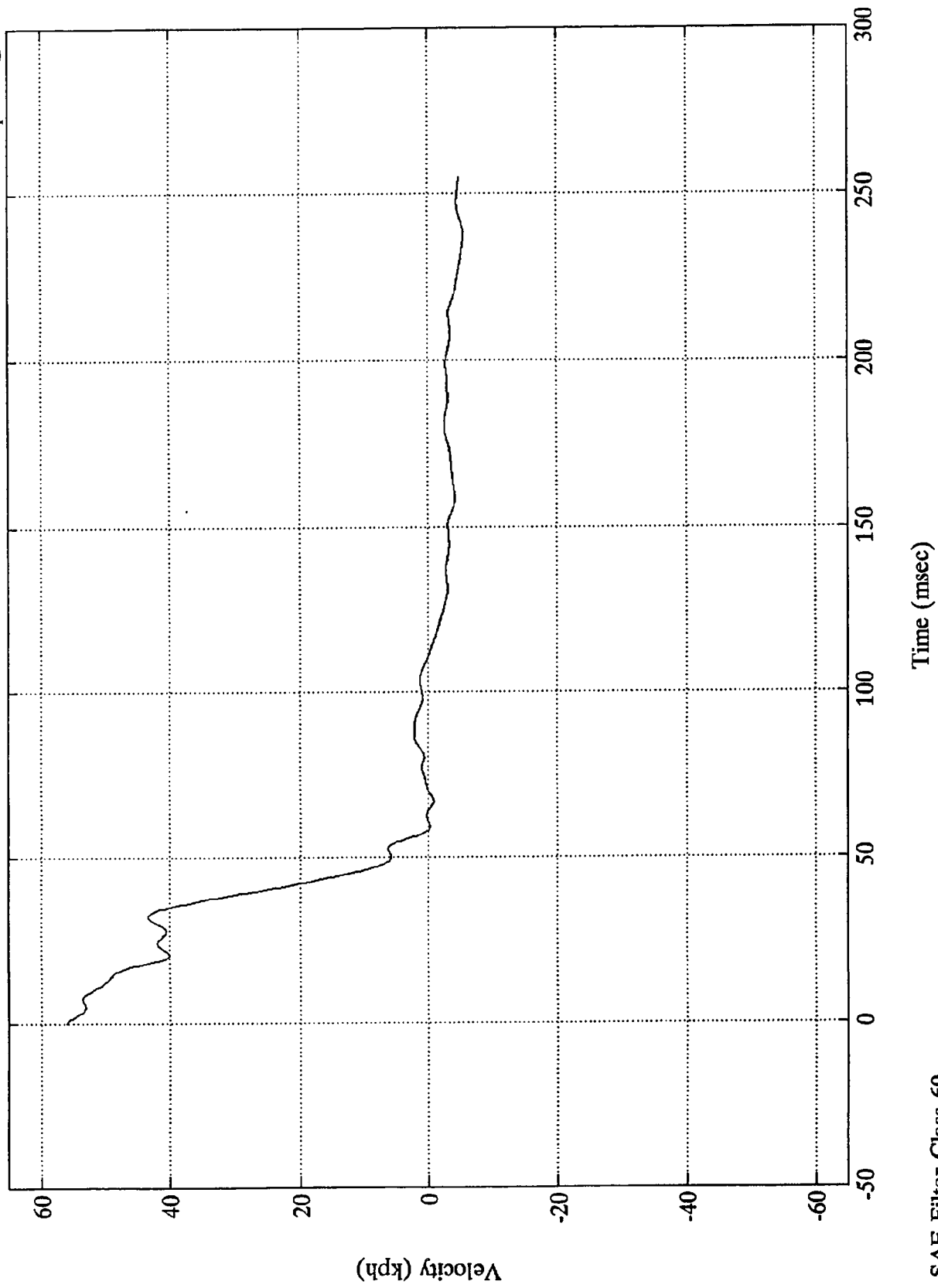


SAE Filter Class 60

8118-6

VTV TEST #6

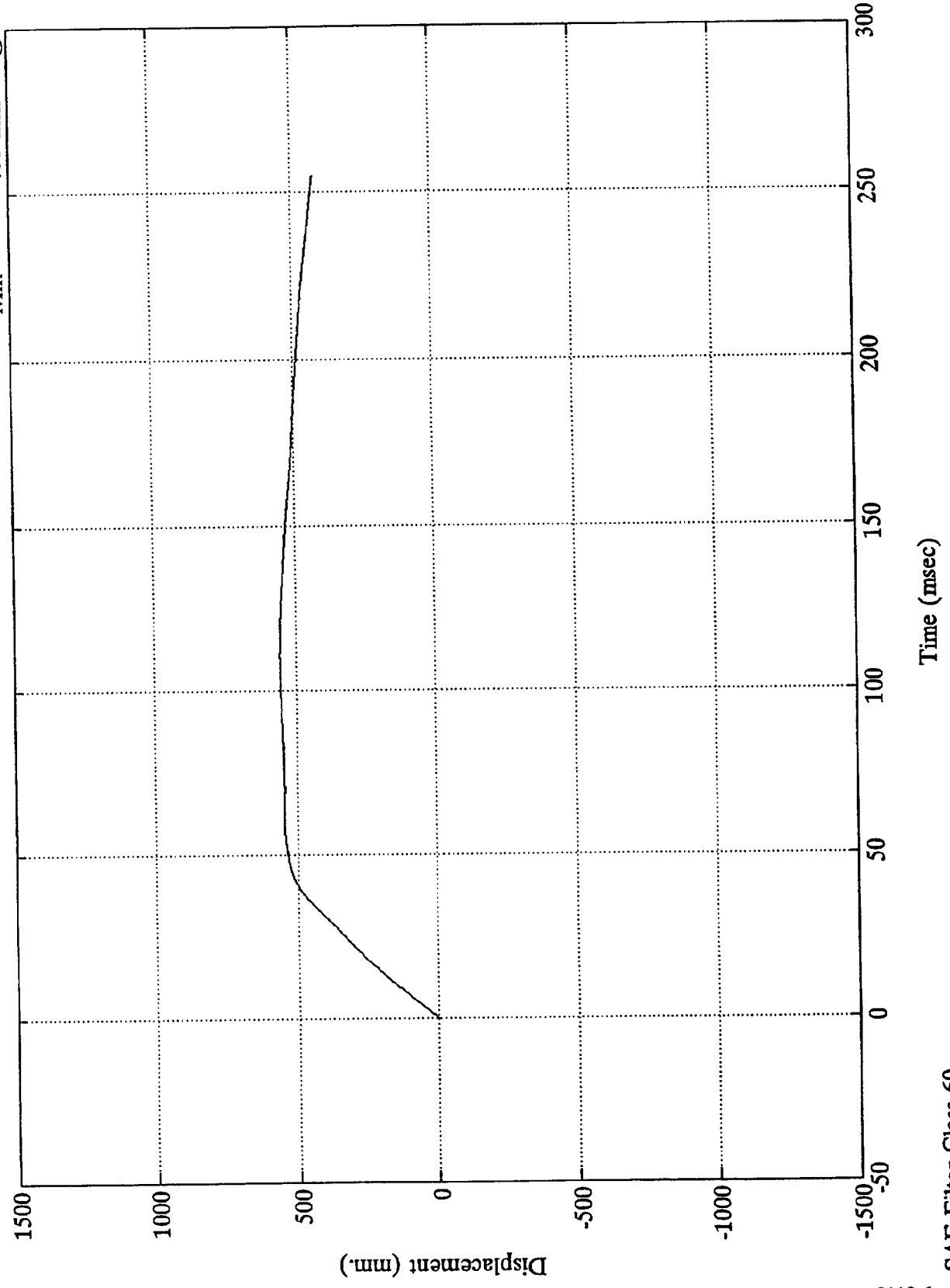
V1 L.F Frame Rail (X) Max = 56.00 kph @ -0.00 msec
Min = -5.67 kph @ 237.72 msec



VTV TEST #6

V1 LF Frame Rail (X)

Max = 559.17 mm @ 110.64 msec
Min = .00 mm @ -44.88 msec

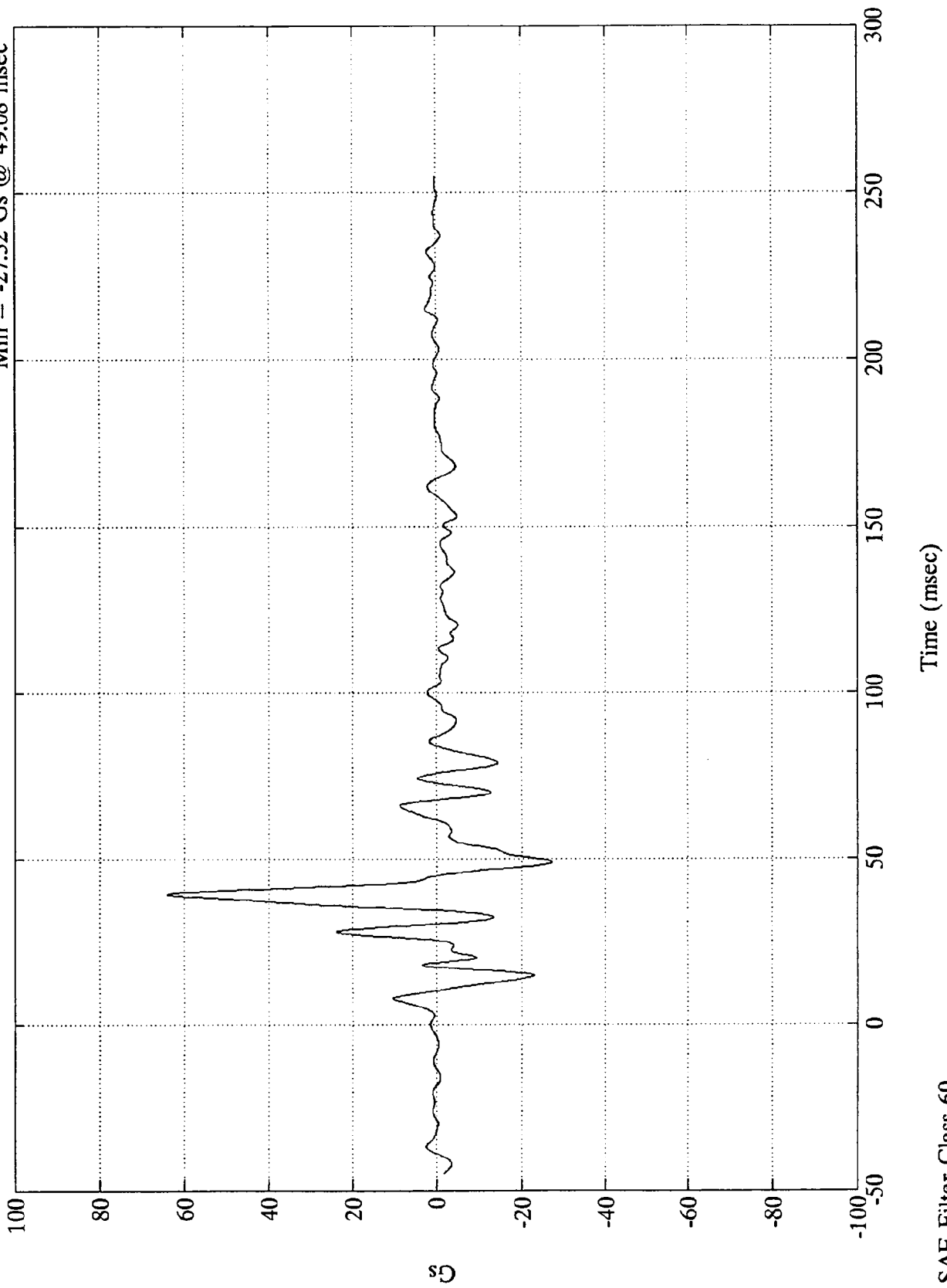


SAE Filter Class 60

8118-6

VTV TEST #6

V1 LF Frame Rail (Y)
Max = 63.83 Gs @ 39.12 msec
Min = -27.32 Gs @ 49.08 msec

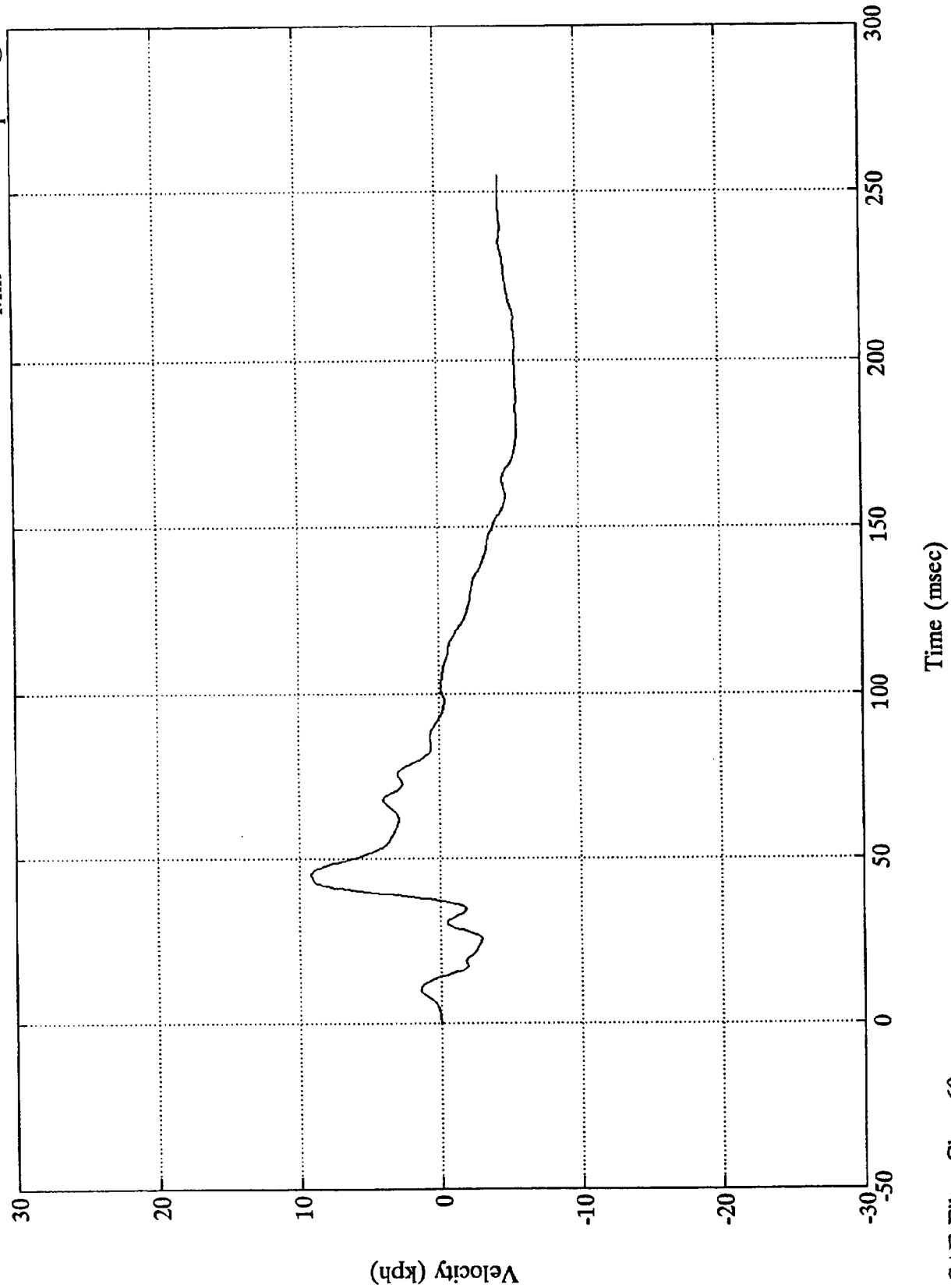


8118-6

VTV TEST #6

V1 LF Frame Rail (Y)

Max = 9.20 kph @ 44.87 msec
Min = -5.59 kph @ 189.72 msec



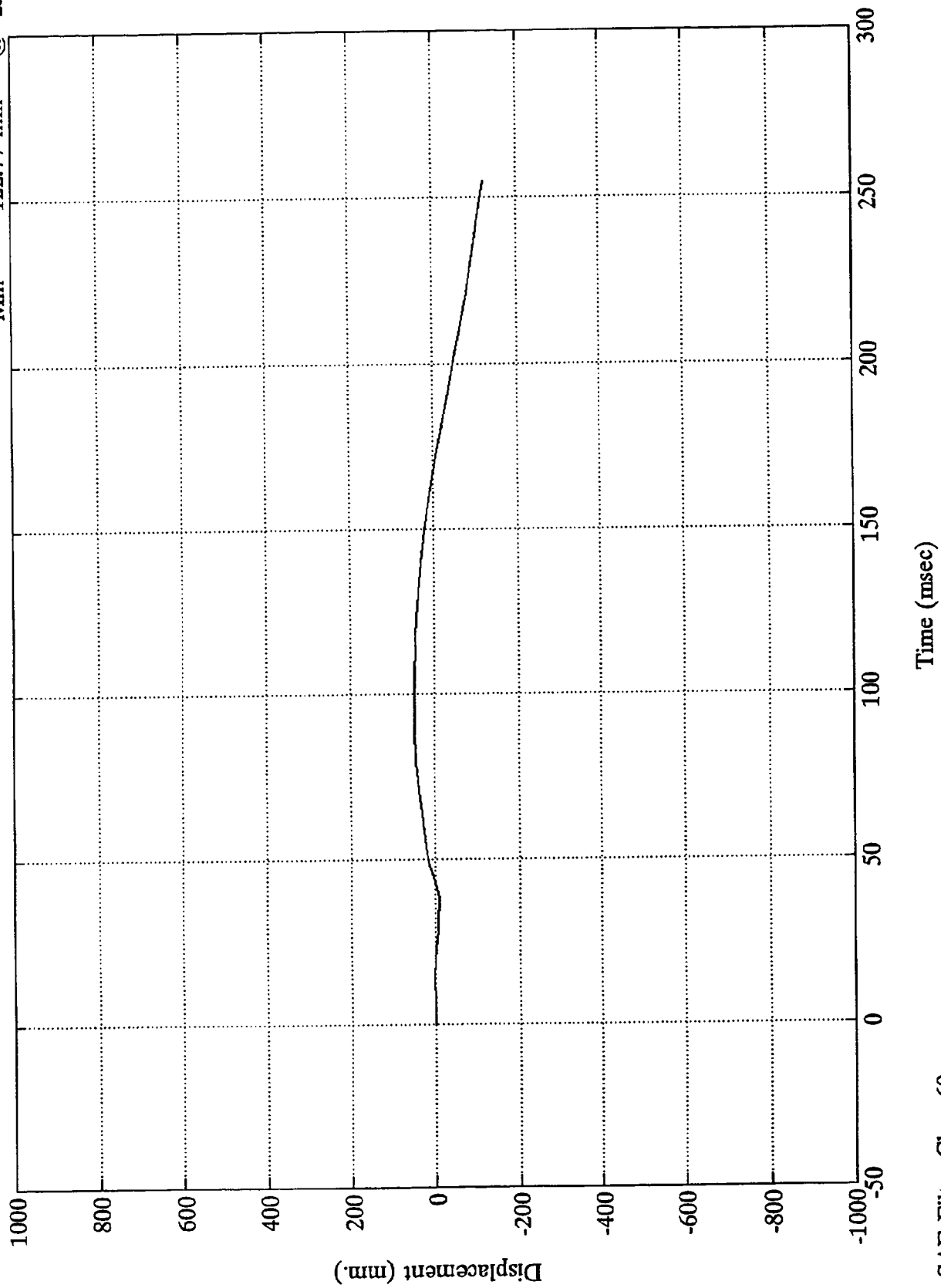
SAE Filter Class 60

8118-6

VTV TEST #6

V1 L.F Frame Rail (Y)

Max = 47.17 mm @ 92.52 msec
Min = -122.77 mm @ 254.88 msec



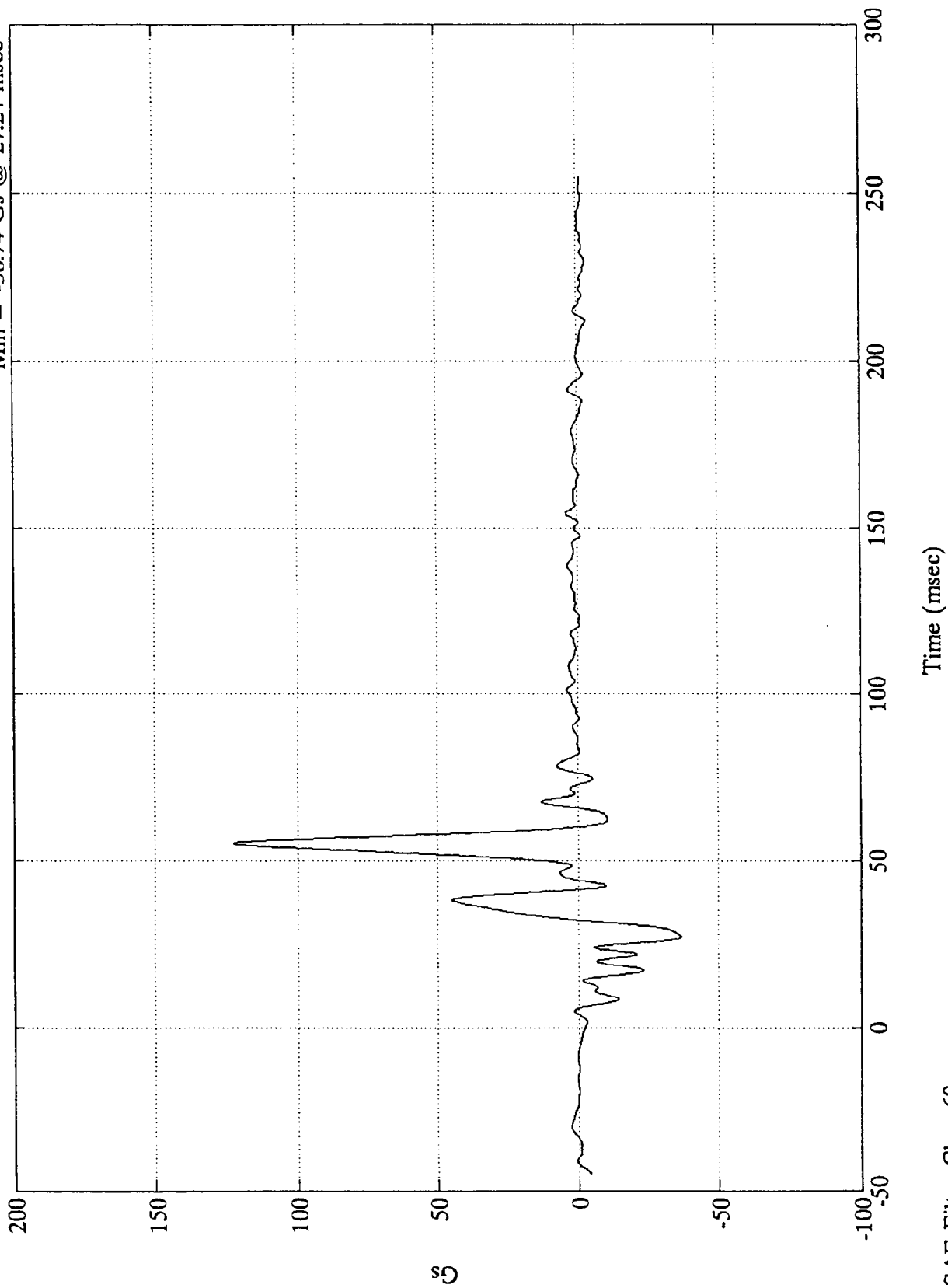
SAE Filter Class 60

8118-6

VTV TEST #6

Max = 122.64 Gs @ 55.20 msec
Min = -36.74 Gs @ 27.24 msec

V1 LF Frame Rail (Z)

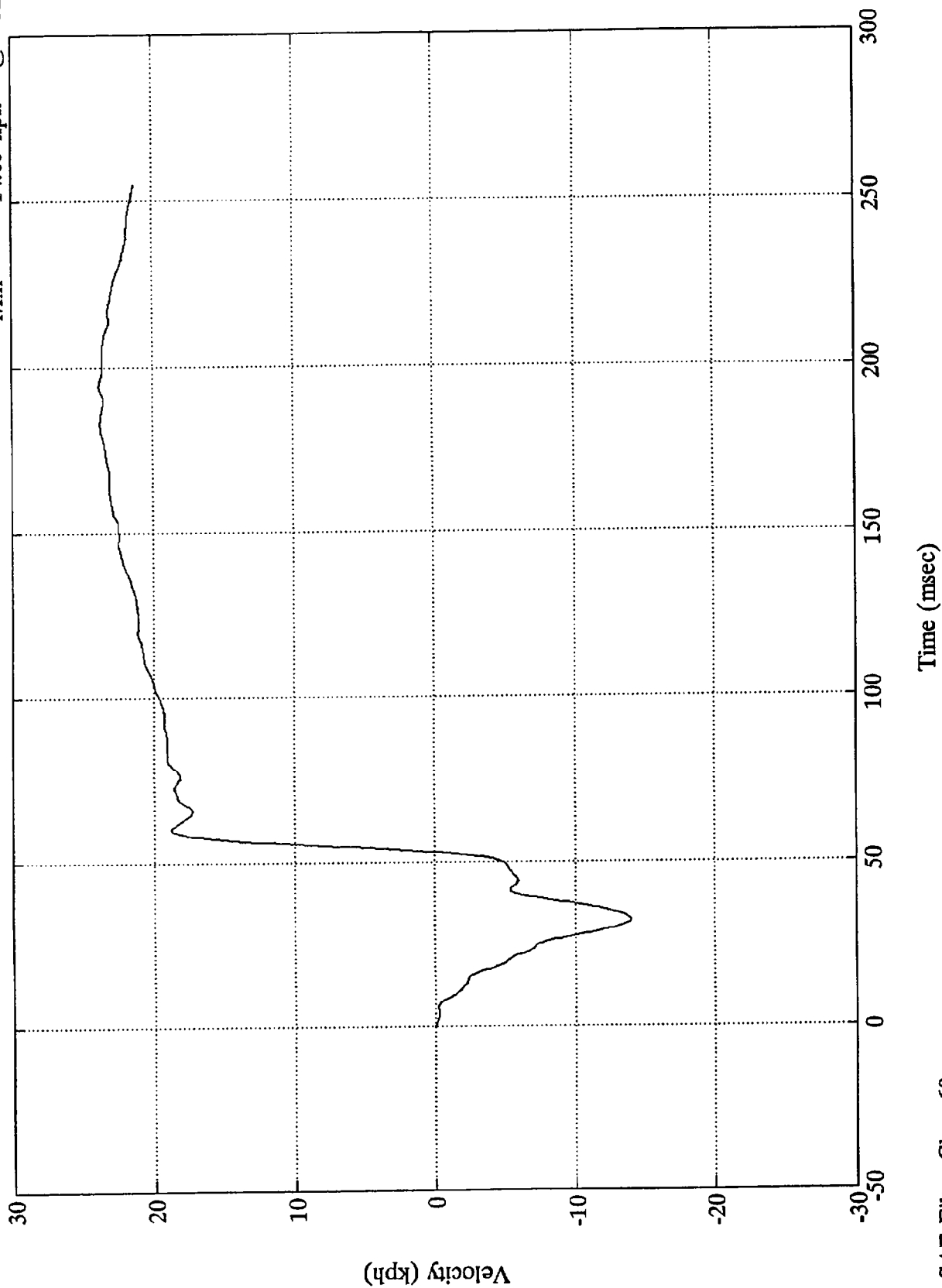


SAE Filter Class 60

8118-6

VTV TEST #6

V1 L.F Frame Rail (Z)
Max = 23.81 kph @ 194.15 msec
Min = -14.05 kph @ 32.03 msec



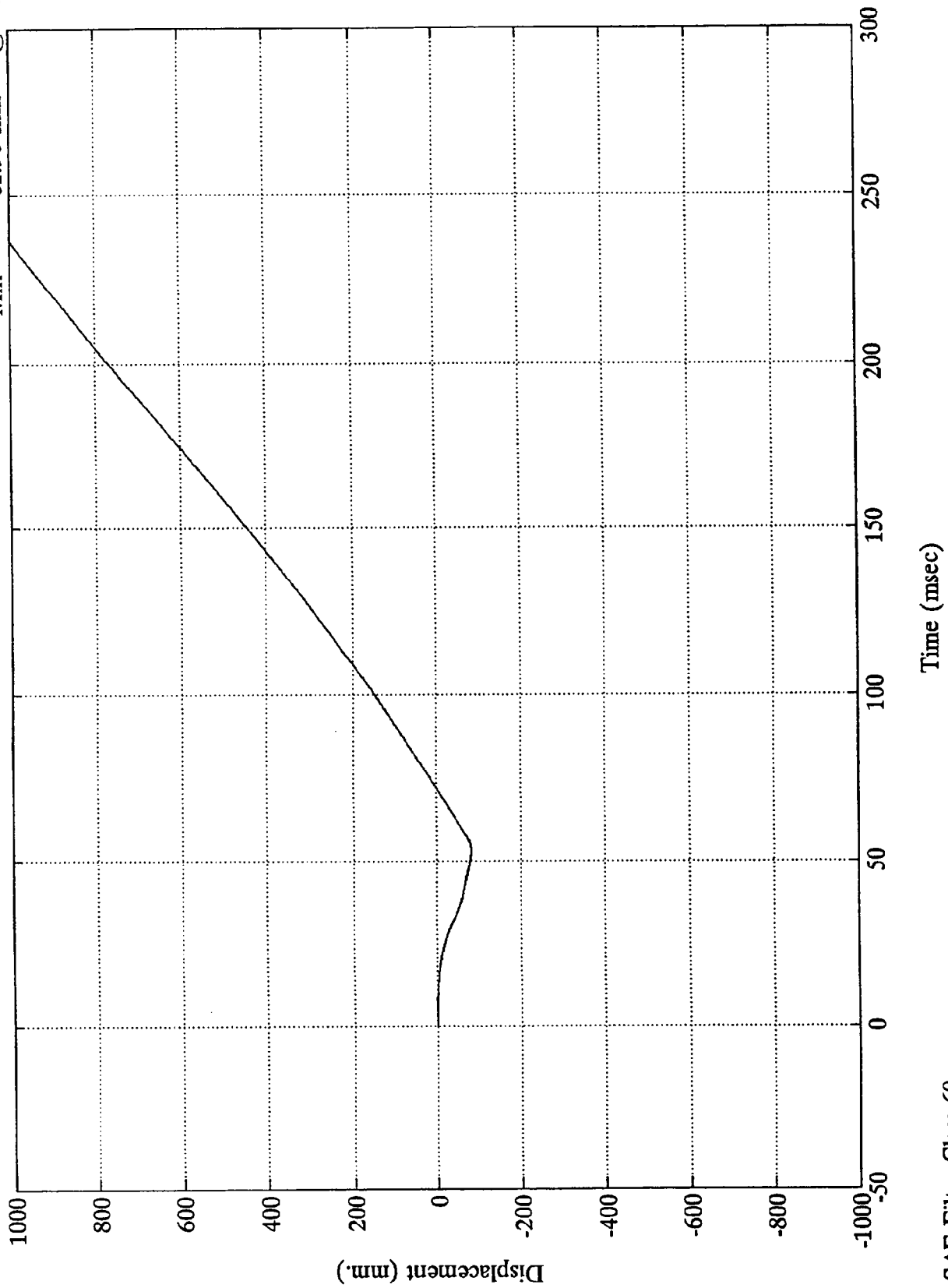
SAE Filter Class 60

8118-6

VTV TEST #6

V1 L.F. Frame Rail (Z)

Max = 1110.33 mm @ 254.88 msec
Min = -81.90 mm @ 53.16 msec



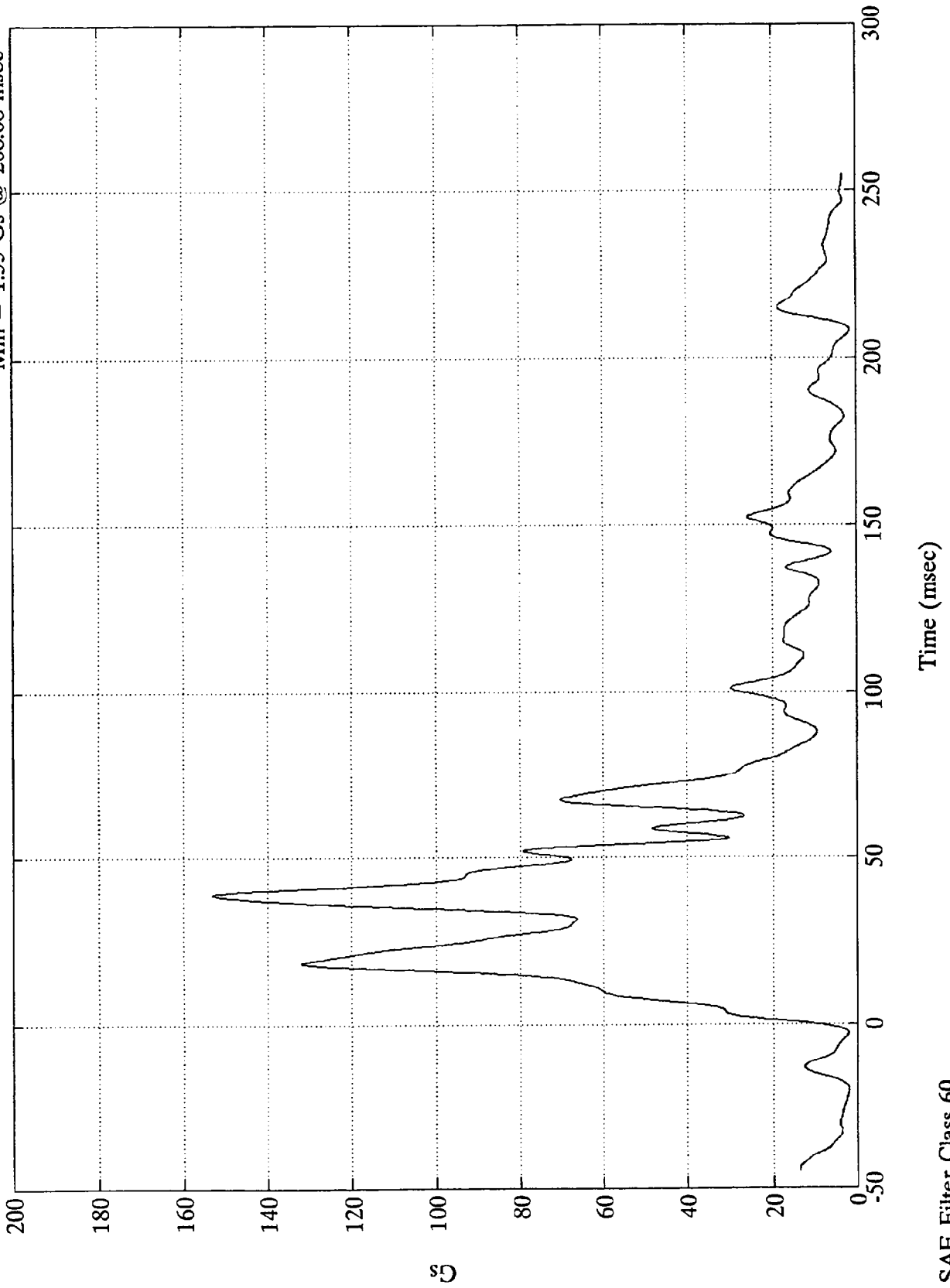
SAE Filter Class 60

8118-6

VTV TEST #6

Max = 153.21 Gs @ 38.52 msec
Min = 1.55 Gs @ 208.08 msec

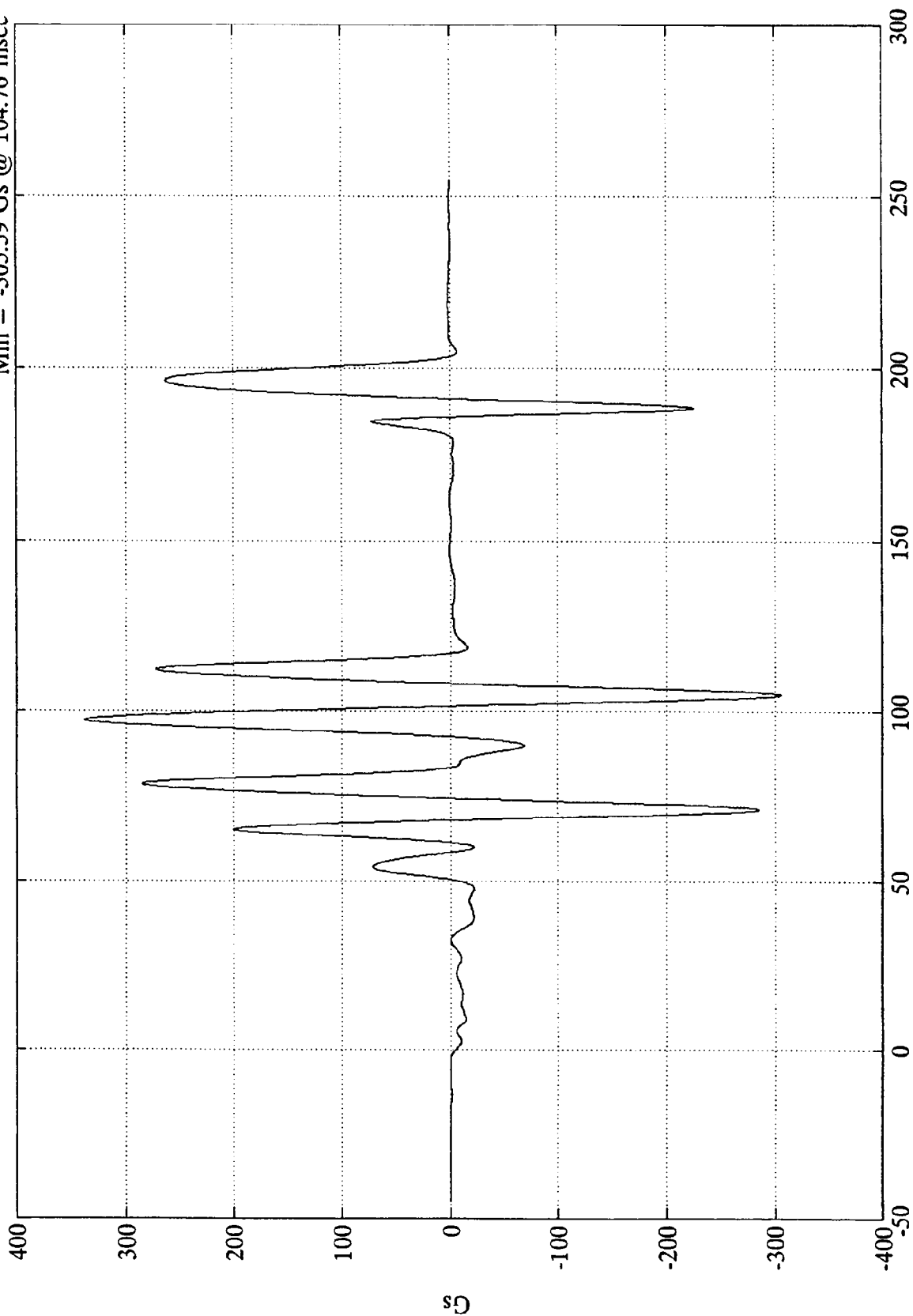
V1 L.F. Frame Rail Res.



8118-6

VTV TEST #6

V1 L.R. Compartment (X)
Max = 338.22 Gs @ 97.08 msec
Min = -305.59 Gs @ 104.76 msec



Data Questionable

Time (msec)

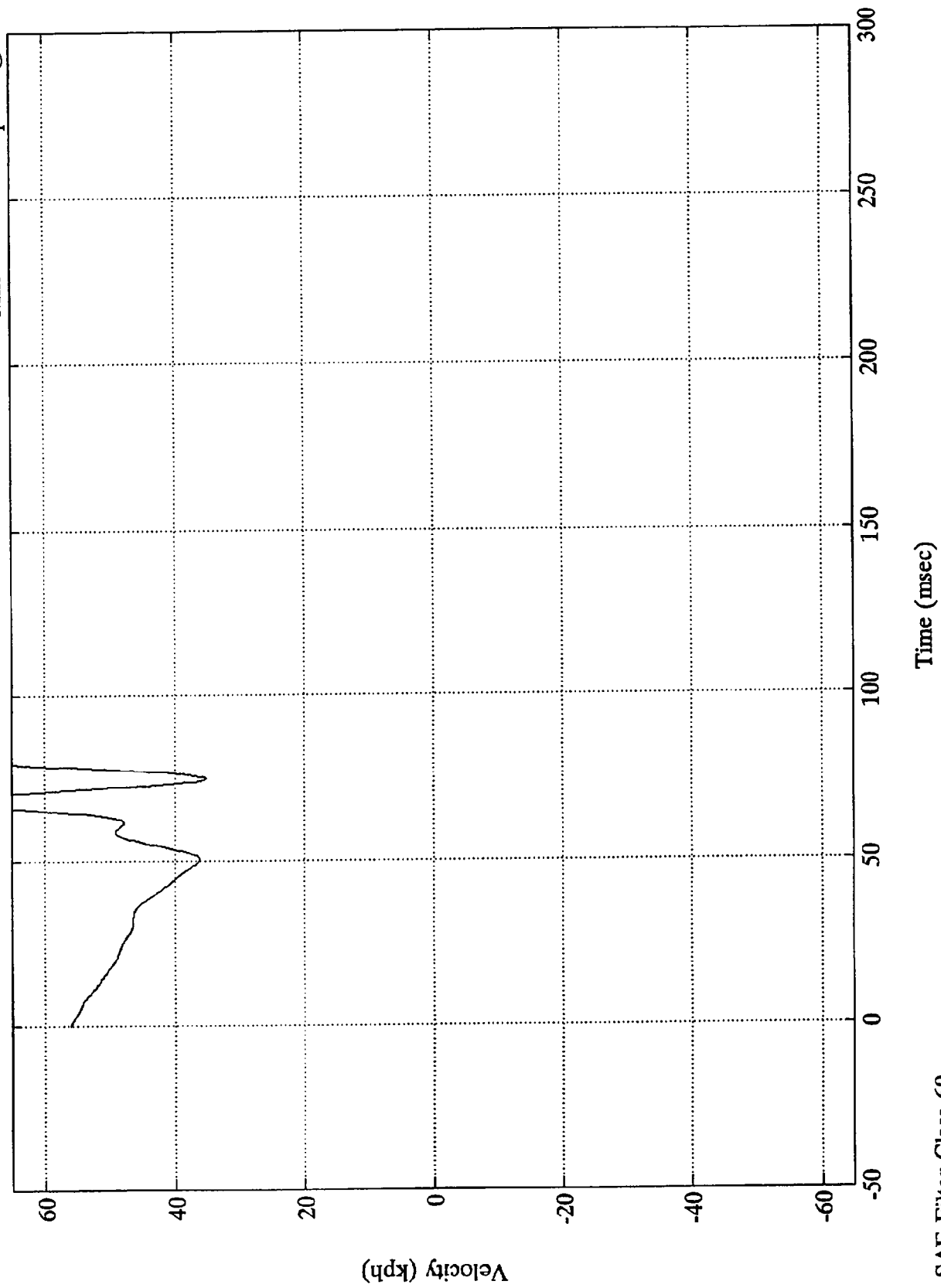
SAE Filter Class 60

8118-6

VTV TEST #6

V1 L.R. Comp (X)

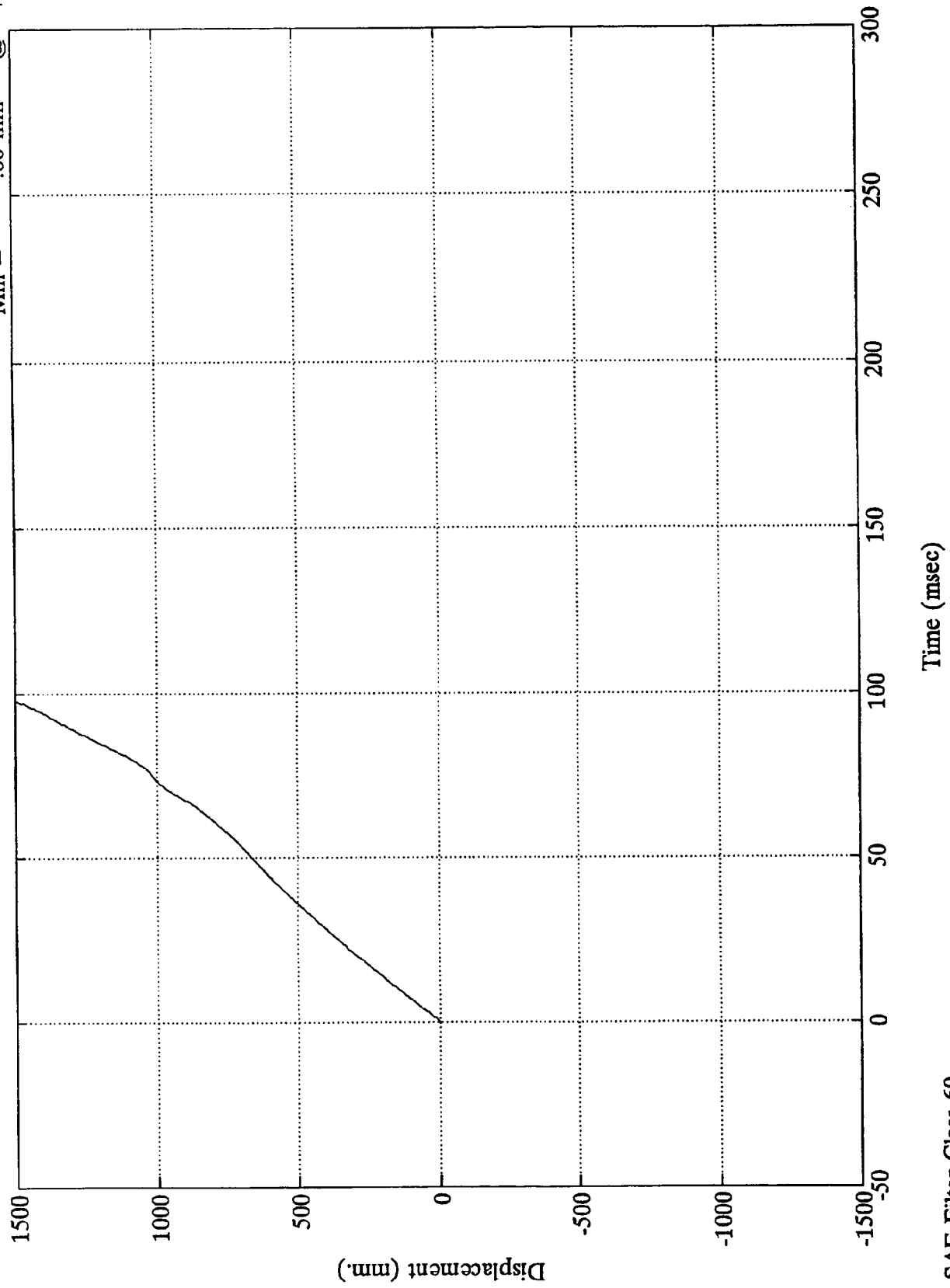
Max = 190.43 kph @ 254.88 msec
Min = .00 kph @ -44.88 msec



VTV TEST #6

Max = 8301.62 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec

V1 L.R. Comp (X)

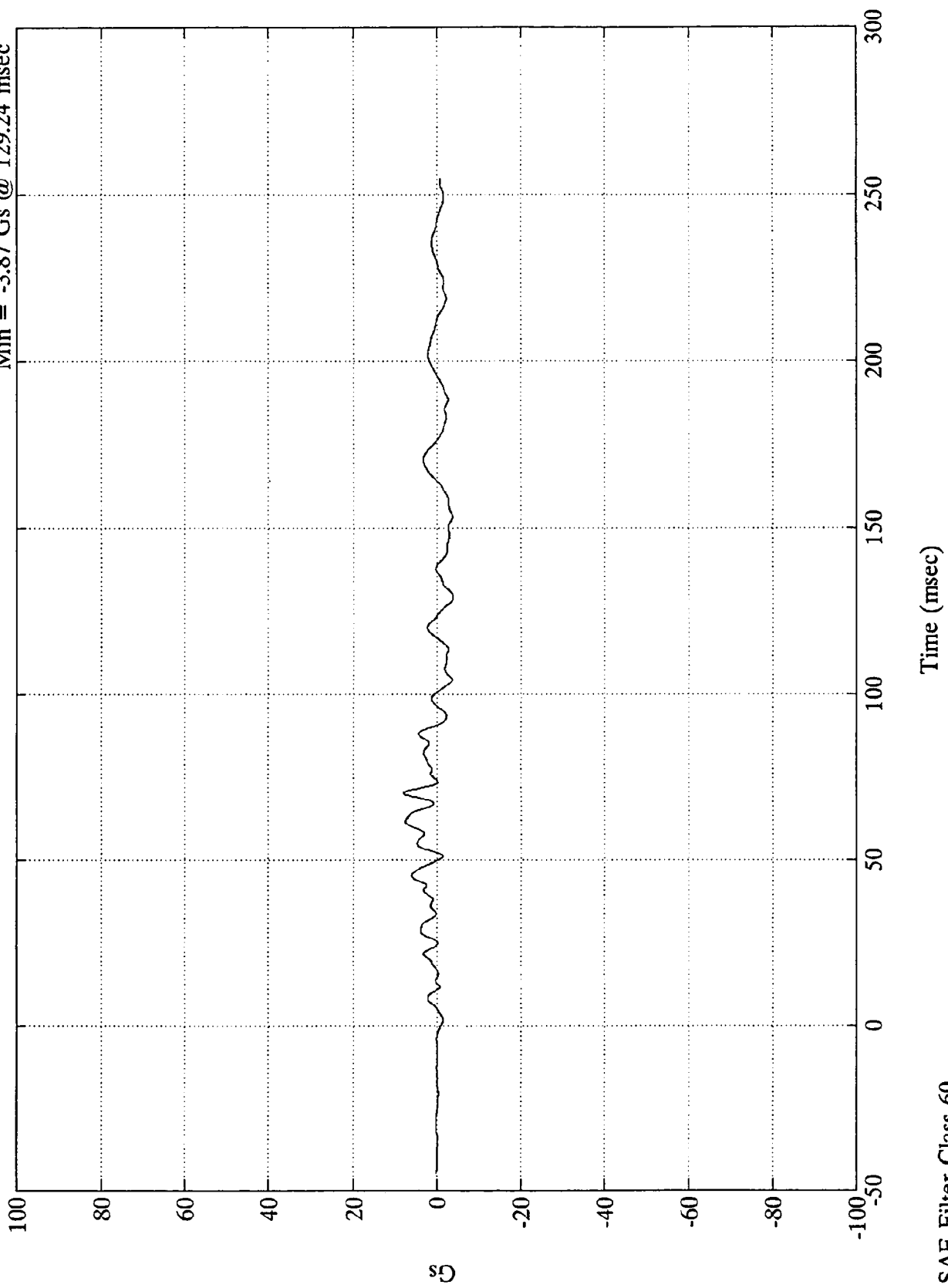


SAE Filter Class 60

8118-6

VTV TEST #6

V1 LR. Compartment (Y)
Max = 8.05 Gs @ 70.20 msec
Min = -3.87 Gs @ 129.24 msec



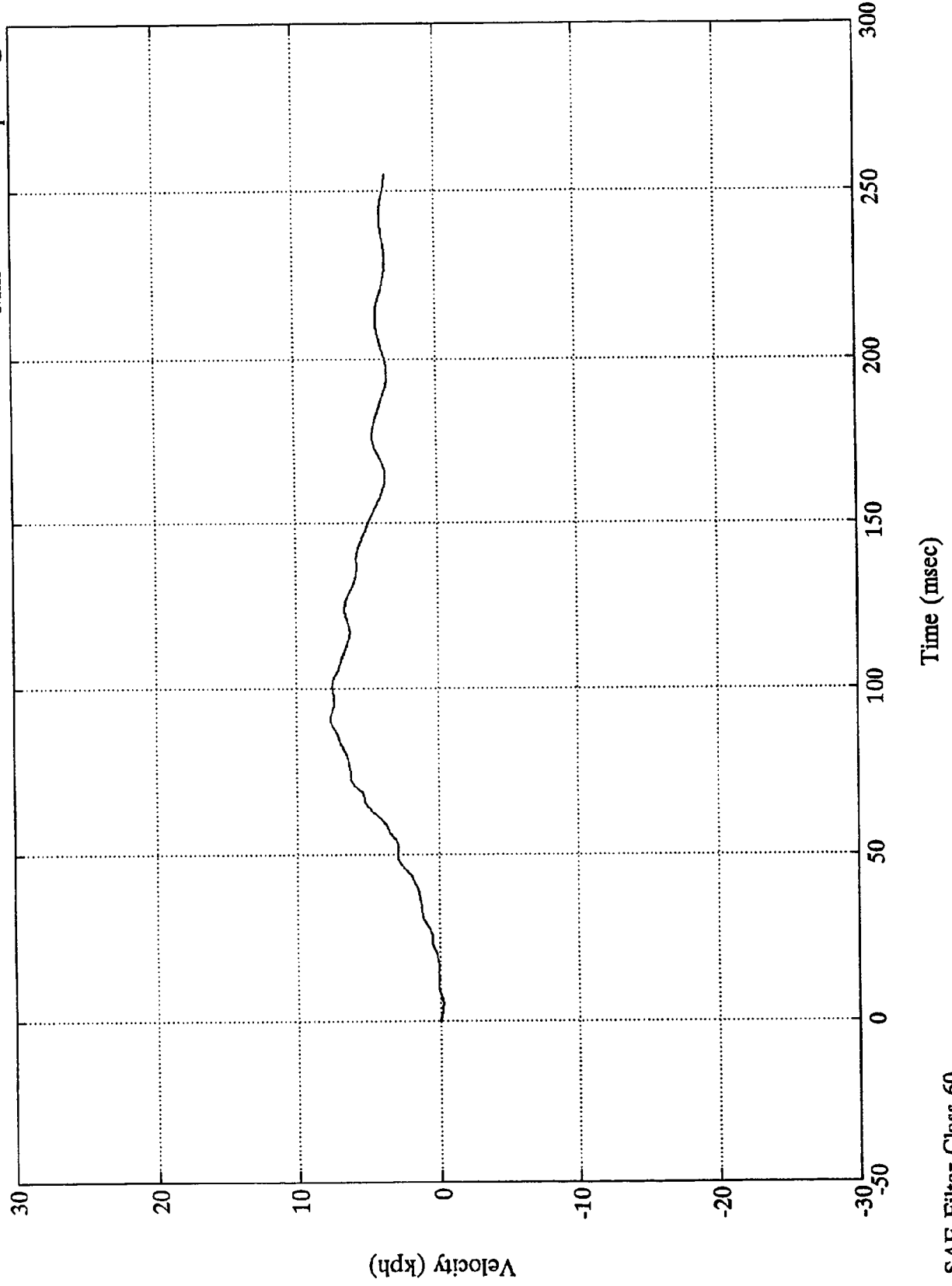
SAE Filter Class 60

8118-6

VTV TEST #6

V1 L.R. Comp (Y)

Max = 7.59 kph @ 90.84 msec
Min = -.16 kph @ 5.03 msec



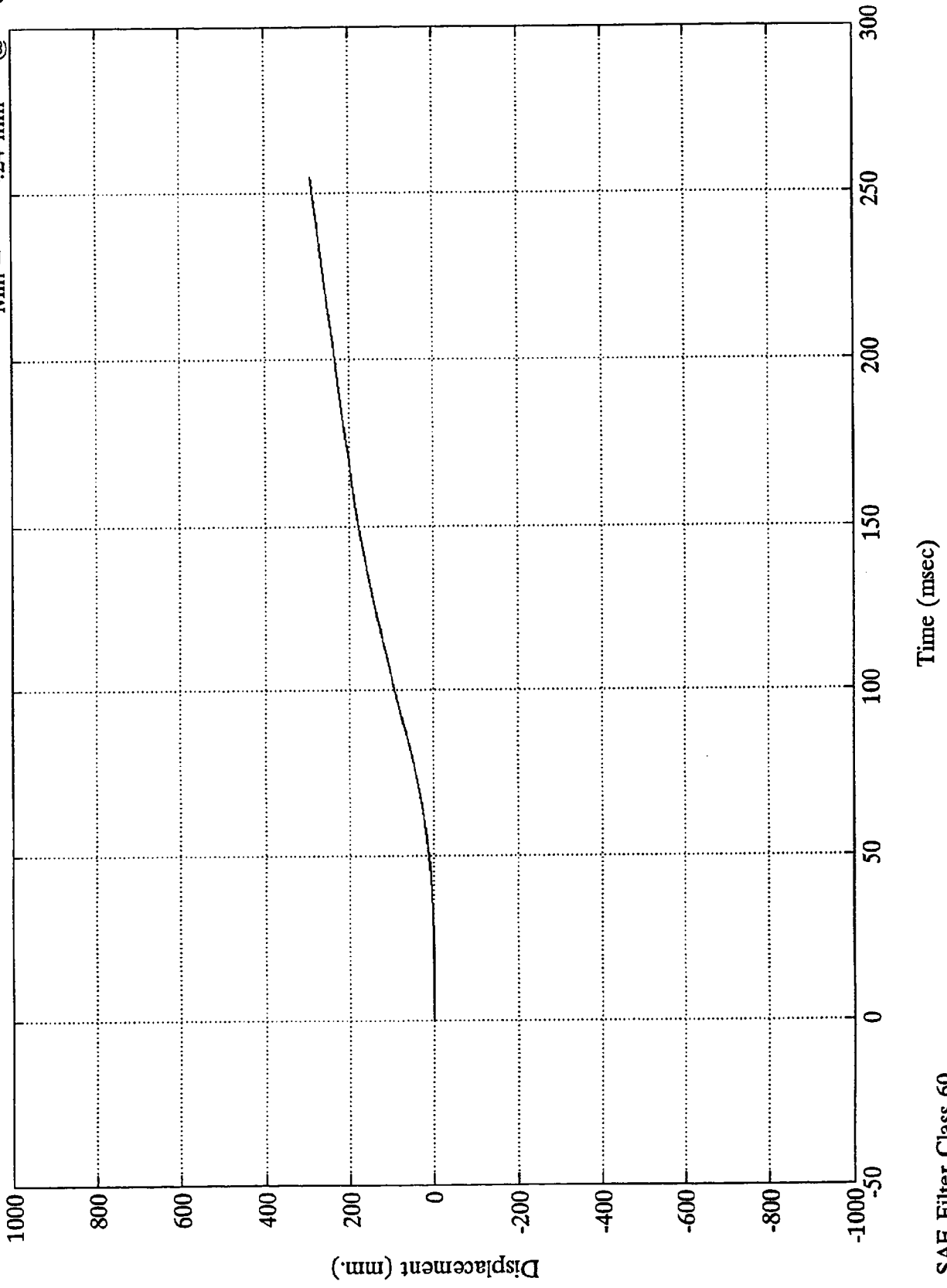
SAE Filter Class 60

8118-6

VTV TEST #6

V1 L.R. Comp (Y)

Max = 290.52 mm @ 254.88 msec
Min = -24 mm @ 8.39 msec



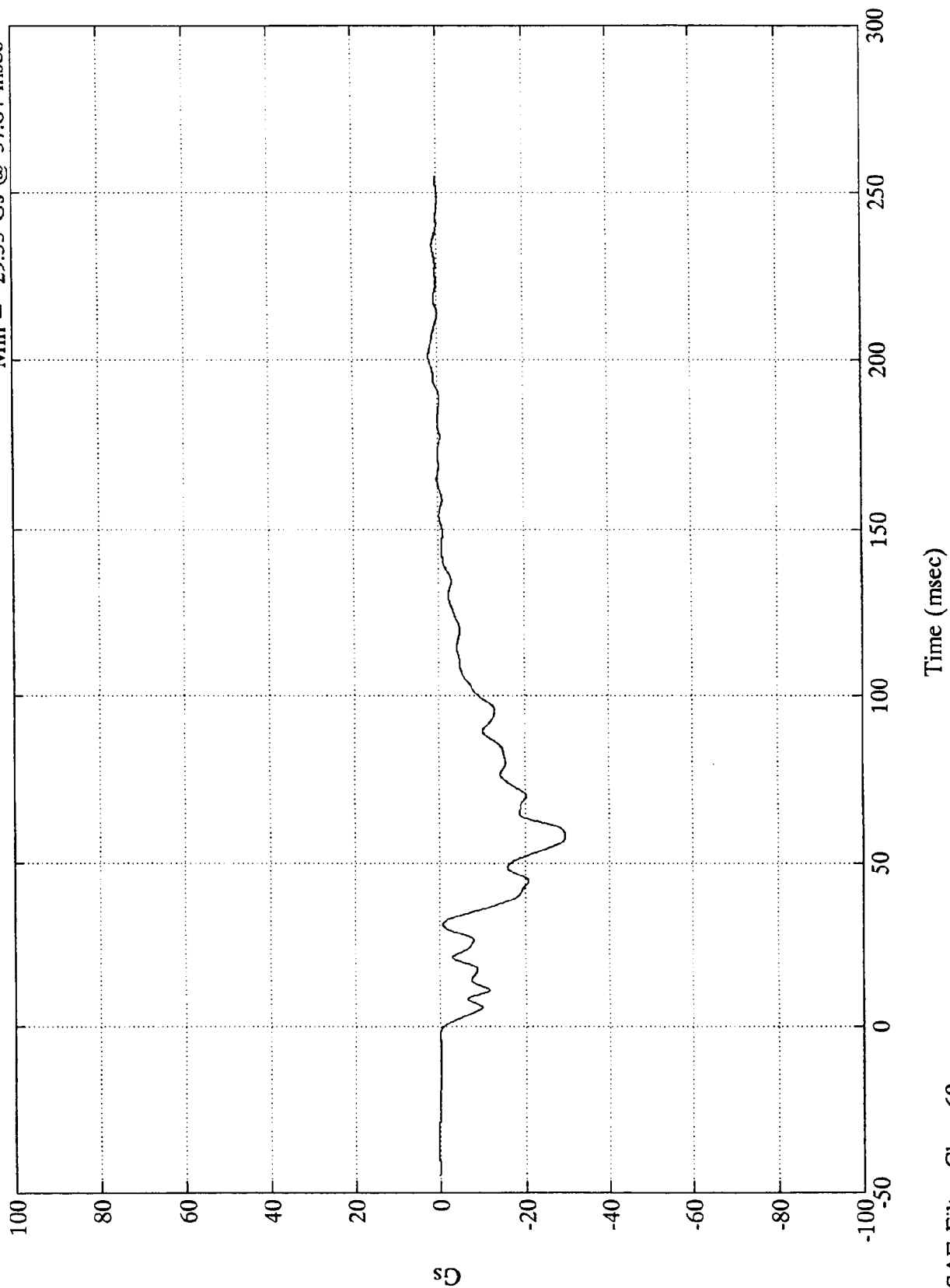
9-118-6

SAE Filter Class 60

VTV TEST #6

V1 R.R. Compartment (X)

Max = 1.99 Gs @ 201.00 msec
Min = -29.55 Gs @ 57.84 msec

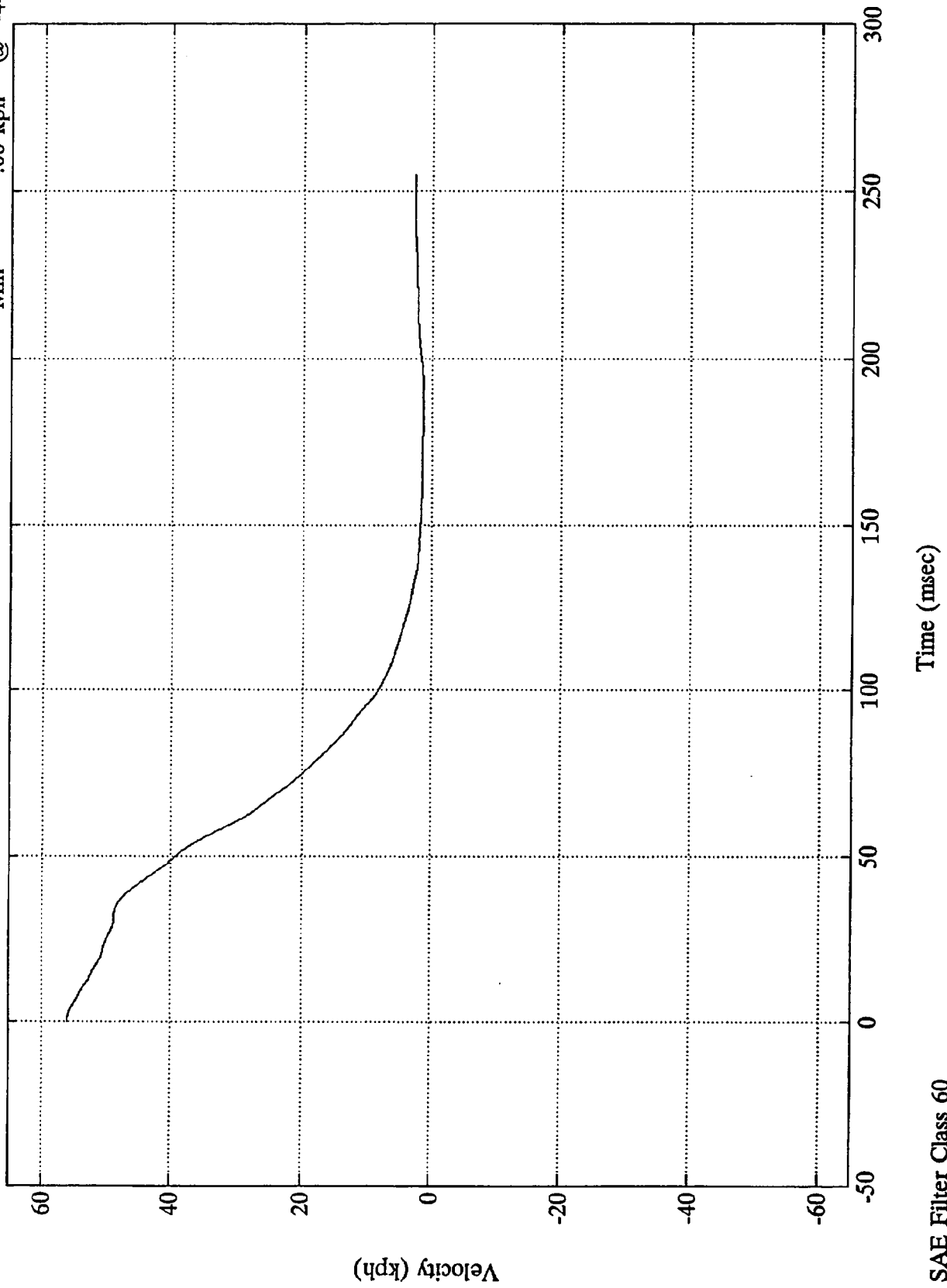


SAE Filter Class 60

8118-6

VTV TEST #6

V1 R.R. Comp (X) Max = 56.00 kph @ -0.00 msec
Min = .00 kph @ -44.88 msec



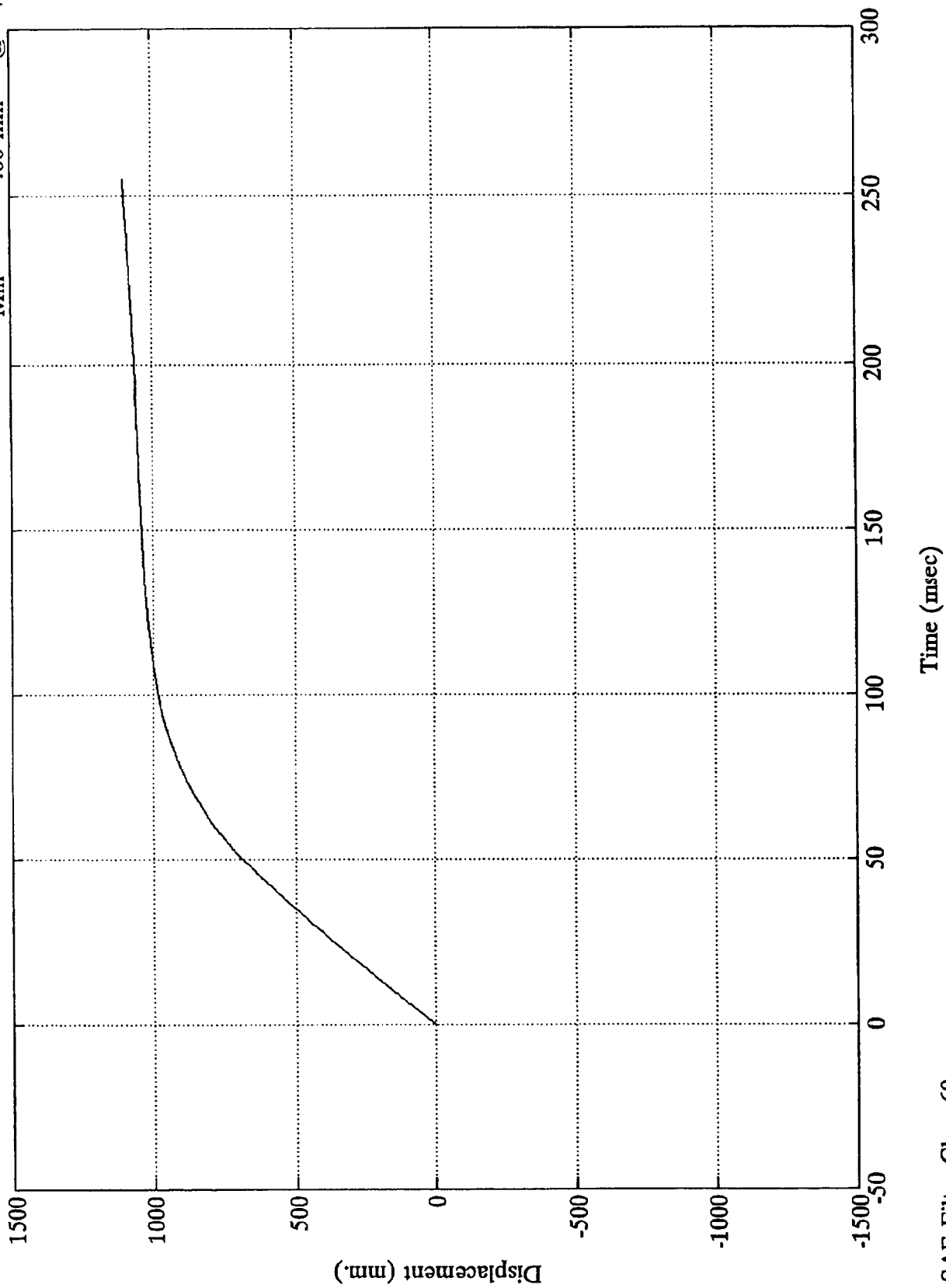
SAE Filter Class 60

8118-6

VTV TEST #6

V1 R.R. Comp (X)

Max = 1098.68 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec



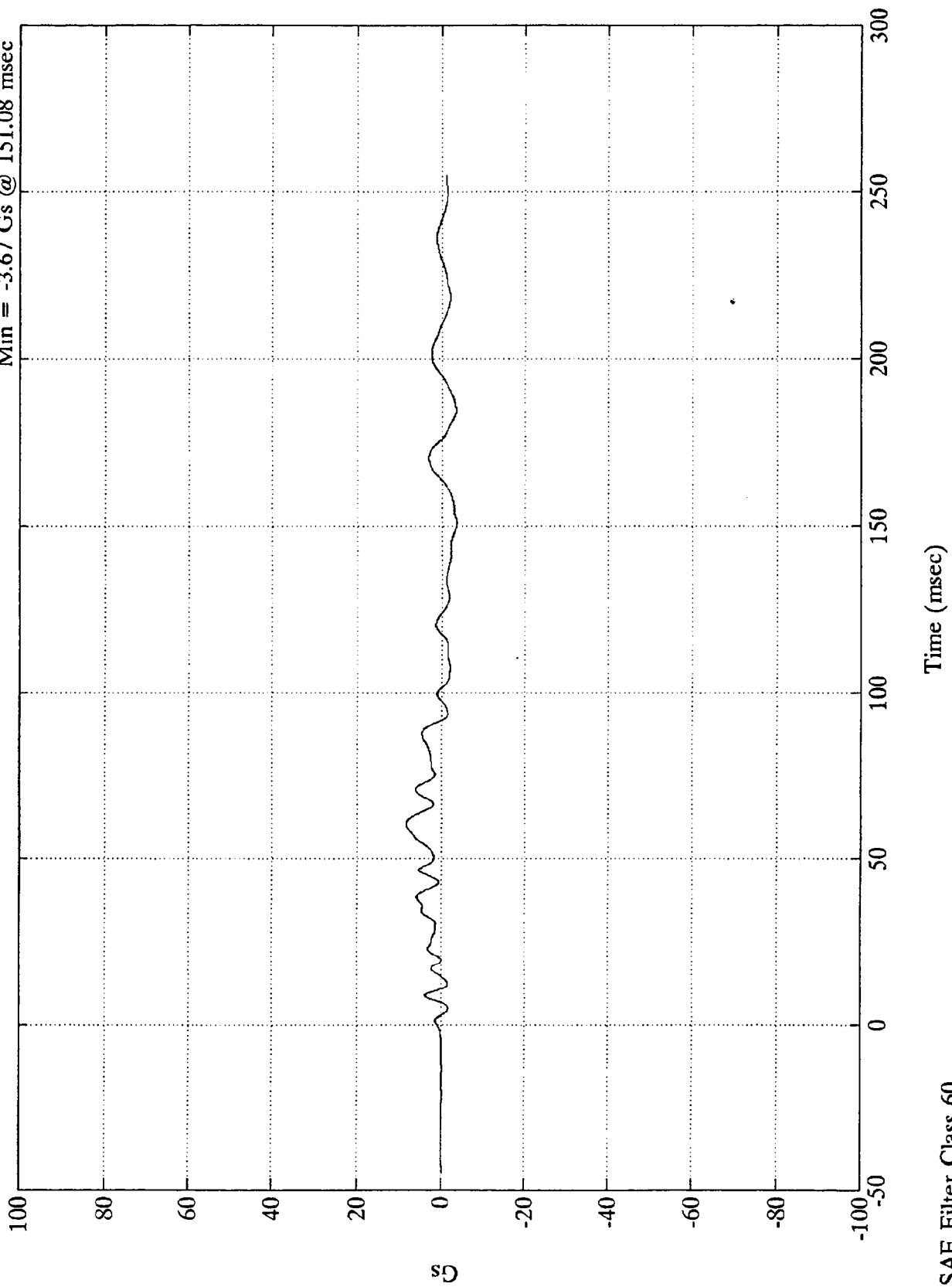
SAE Filter Class 60

8118-6

VTV TEST #6

V1 R.R. Compartment (Y)

Max = 8.38 Gs @ 60.24 msec
Min = -3.67 Gs @ 151.08 msec

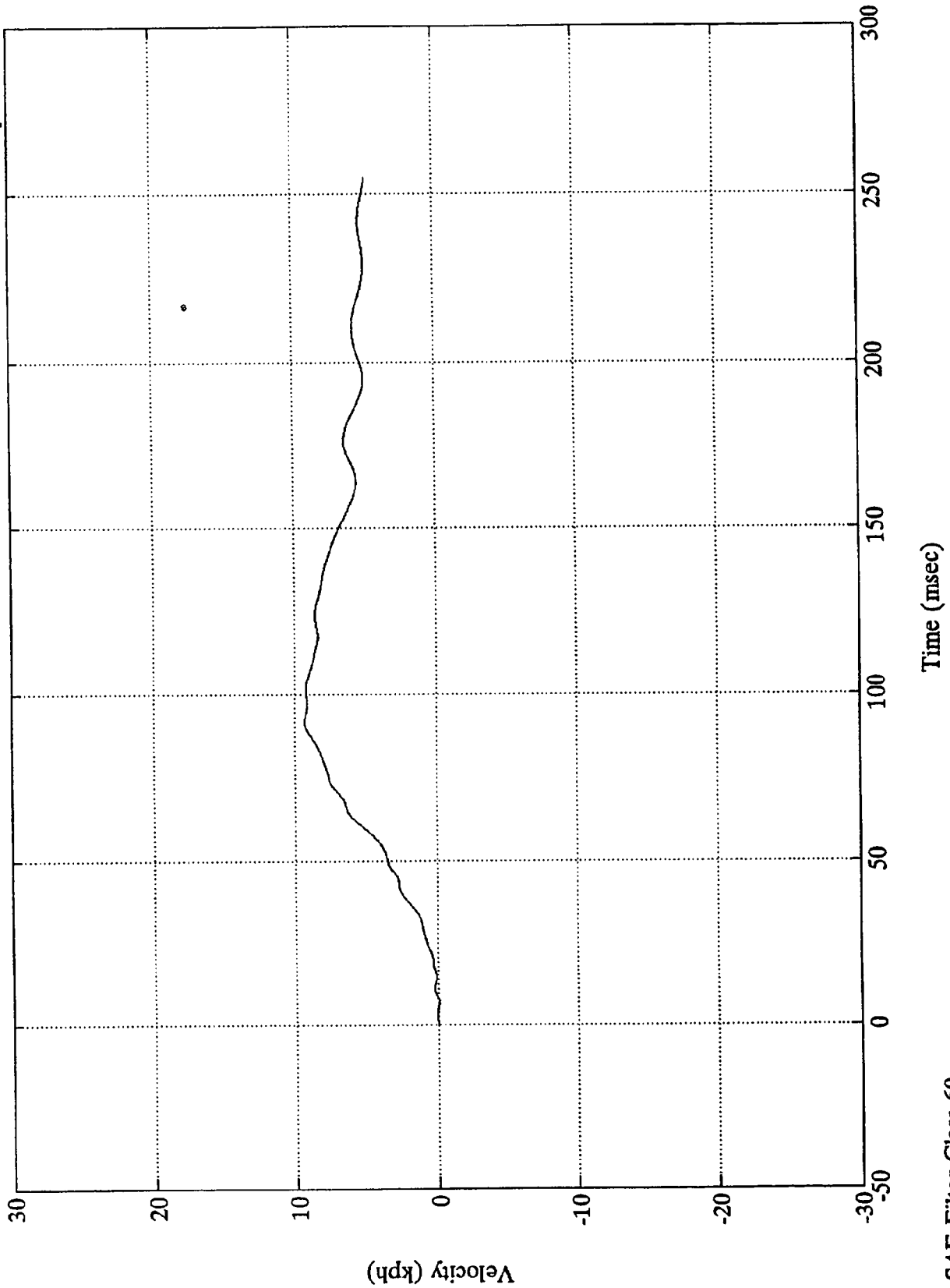


8118-6

VTV TEST #6

V1 R.R. Comp (Y)

Max = 9.34 kph @ 91.68 msec
Min = -.05 kph @ 6.71 msec



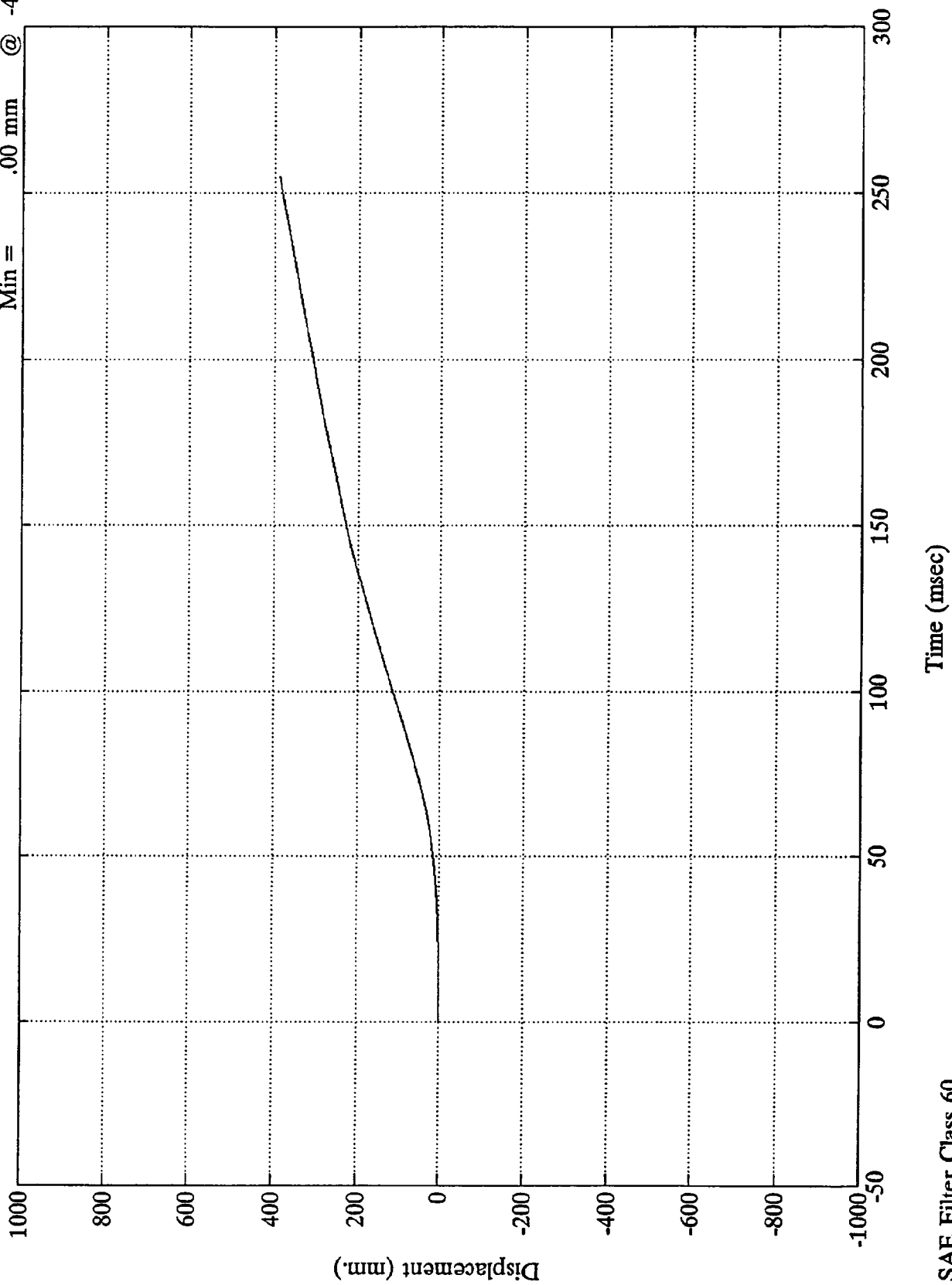
SAE Filter Class 60

8118-6

VTV TEST #6

V1 R.R. Comp (Y)

Max = 388.80 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec



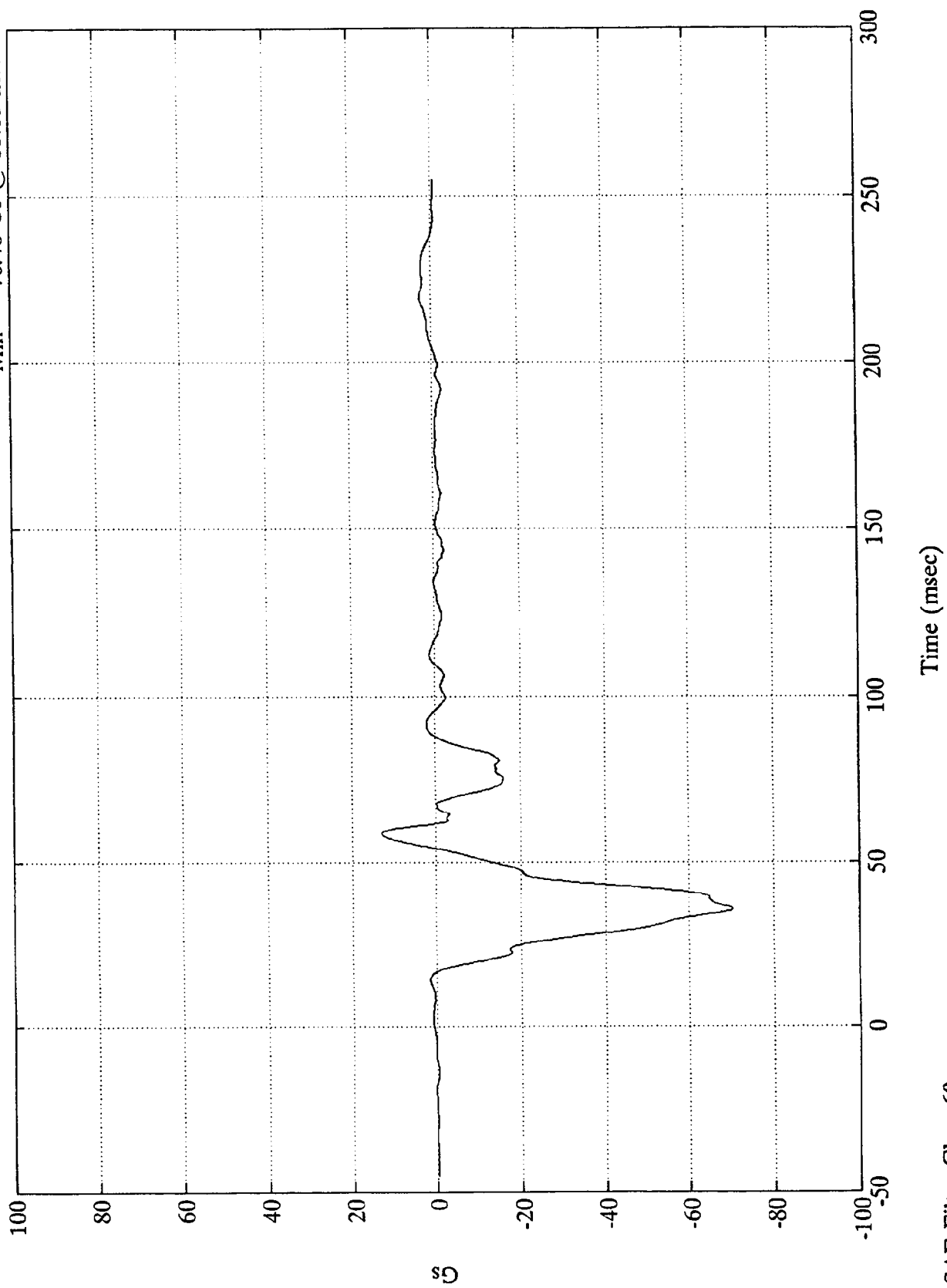
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Right Engine (X)

Max = 13.00 Gs @ 58.68 msec
Min = -70.48 Gs @ 35.88 msec



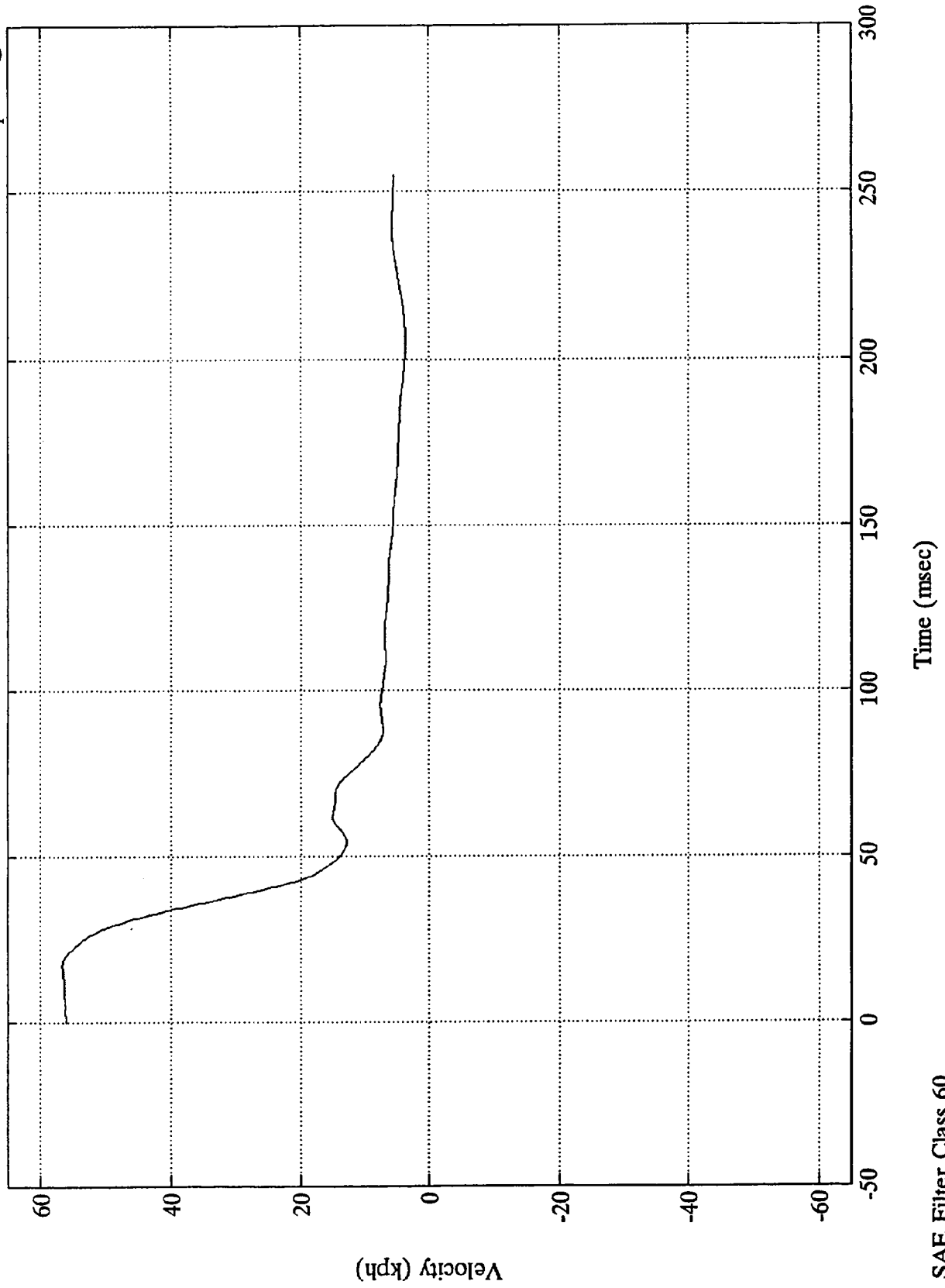
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Right Engine (X)

Max = 56.52 kph @ 17.03 msec
Min = .00 kph @ -44.88 msec

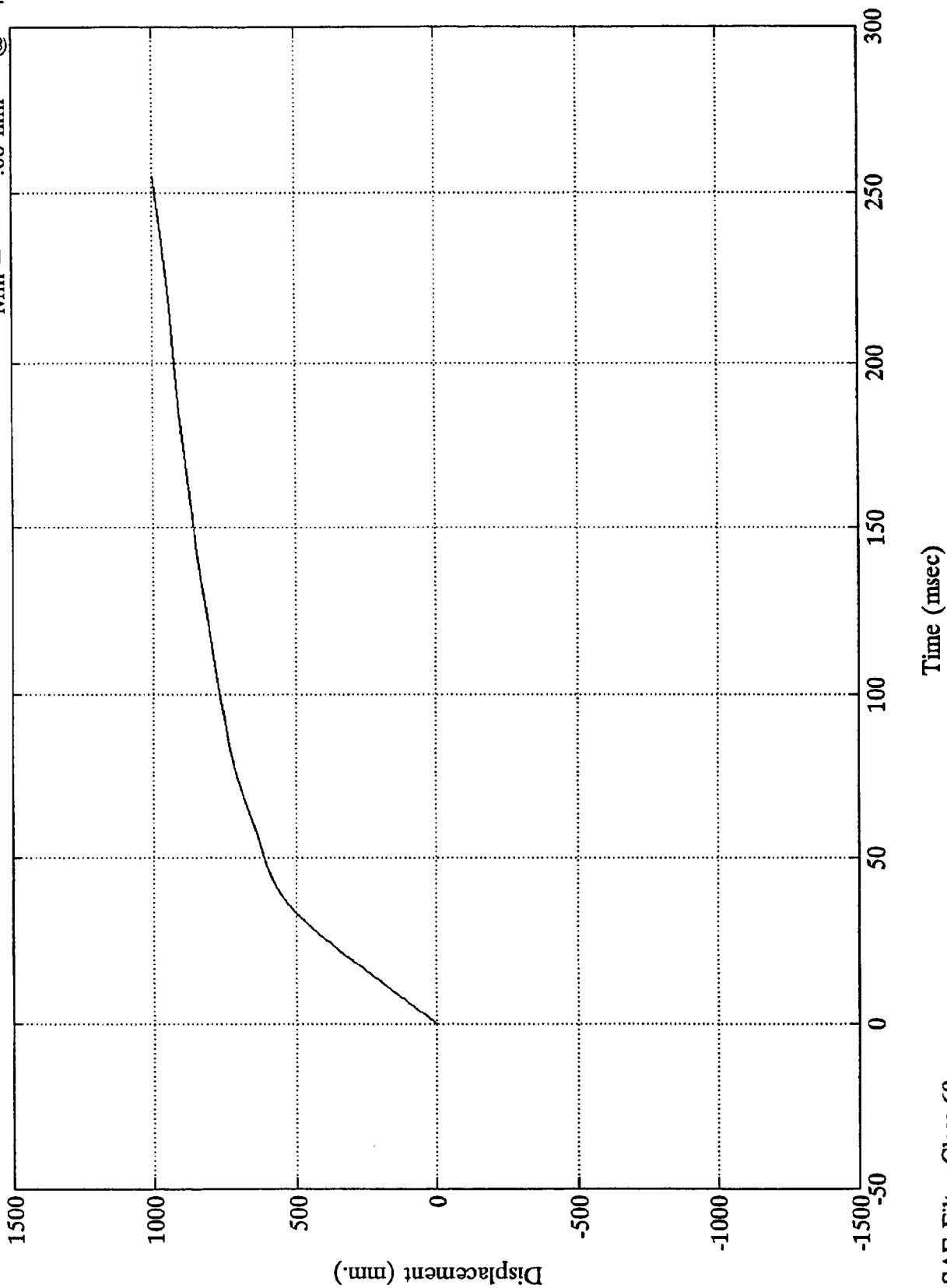


8118-6

VTV TEST #6

V1 Right Engine (X)

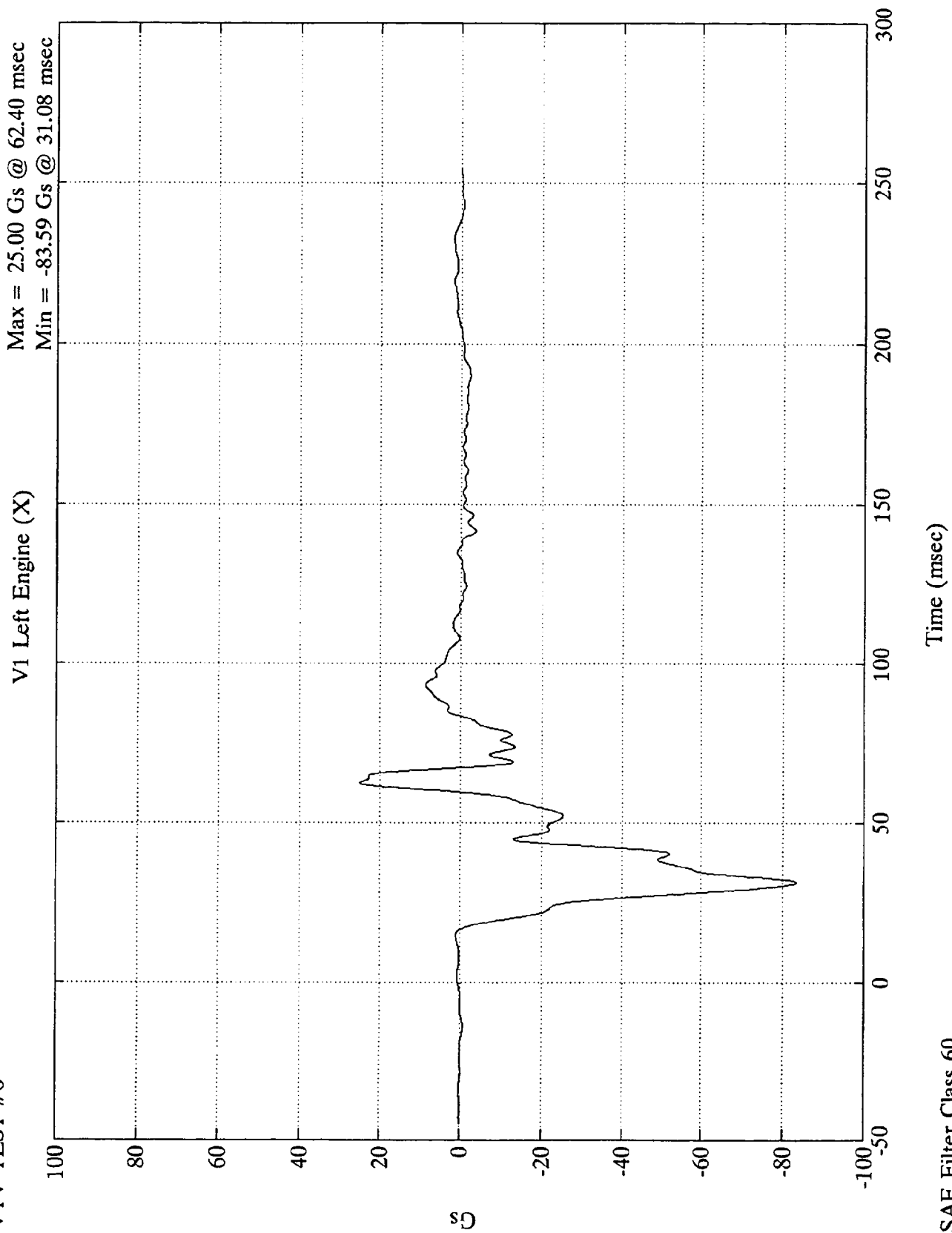
Max = 996.58 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec



SAE Filter Class 60

8118-6

VTV TEST #6

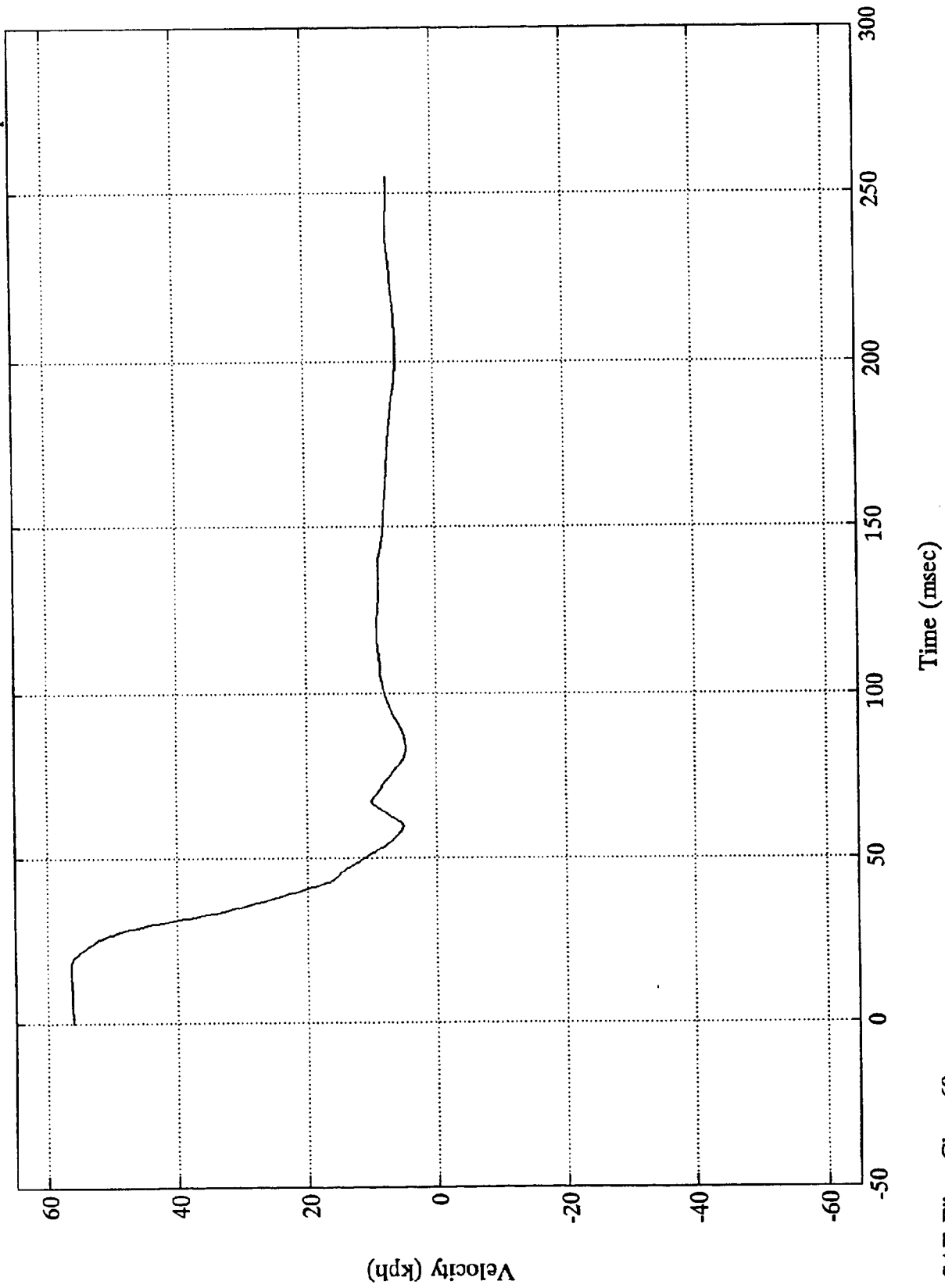


8118-6

VTV TEST #6

V1 Left Engine (X)

Max = 56.33 kph @ 16.31 msec
Min = .00 kph @ -44.88 msec



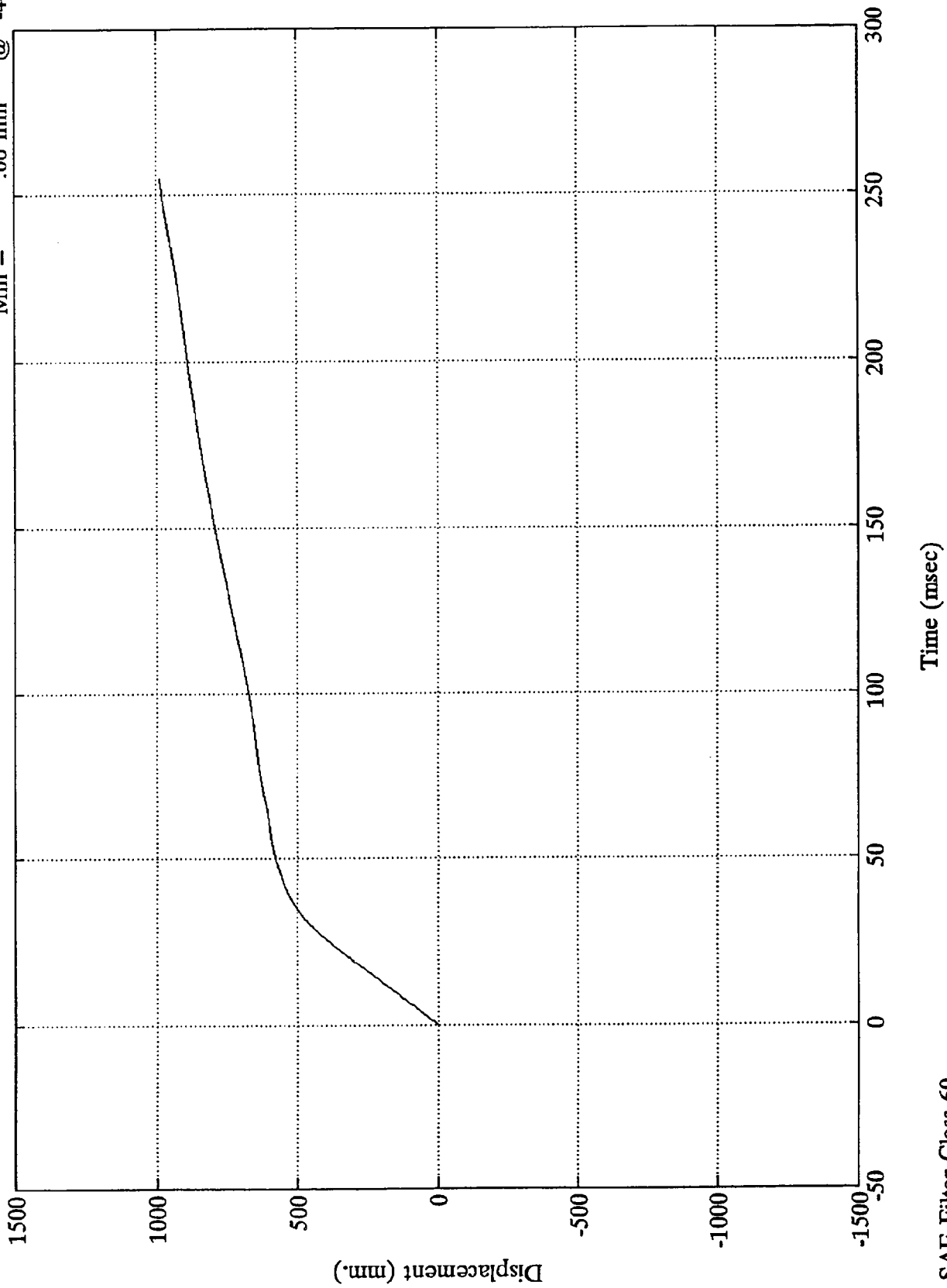
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Left Engine (X)

Max = 987.90 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec

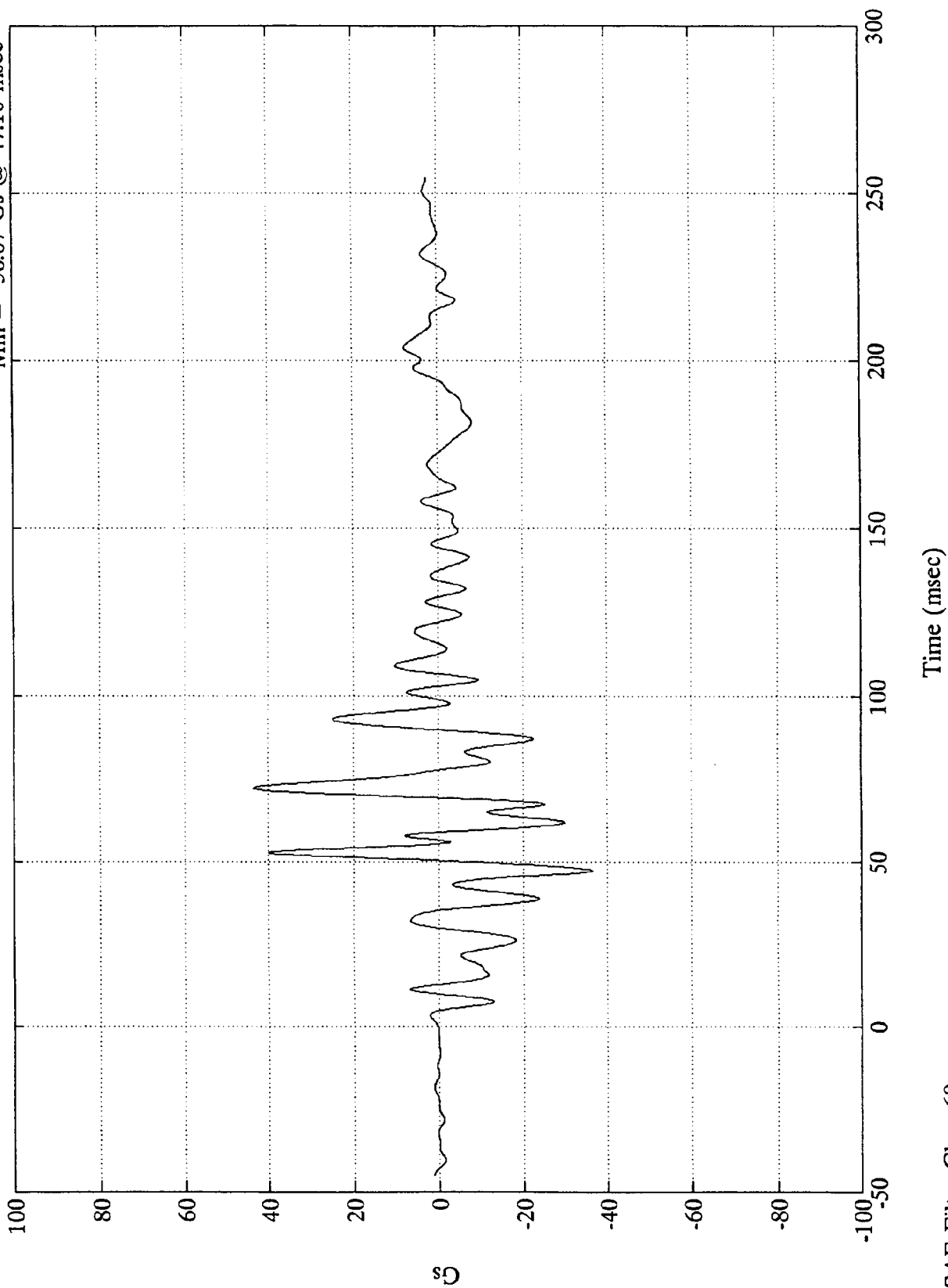


8118-6

SAE Filter Class 60

VTV TEST #6

V1 Brake Pedal (X)
Max = 43.56 Gs @ 72.24 msec
Min = -36.67 Gs @ 47.16 msec



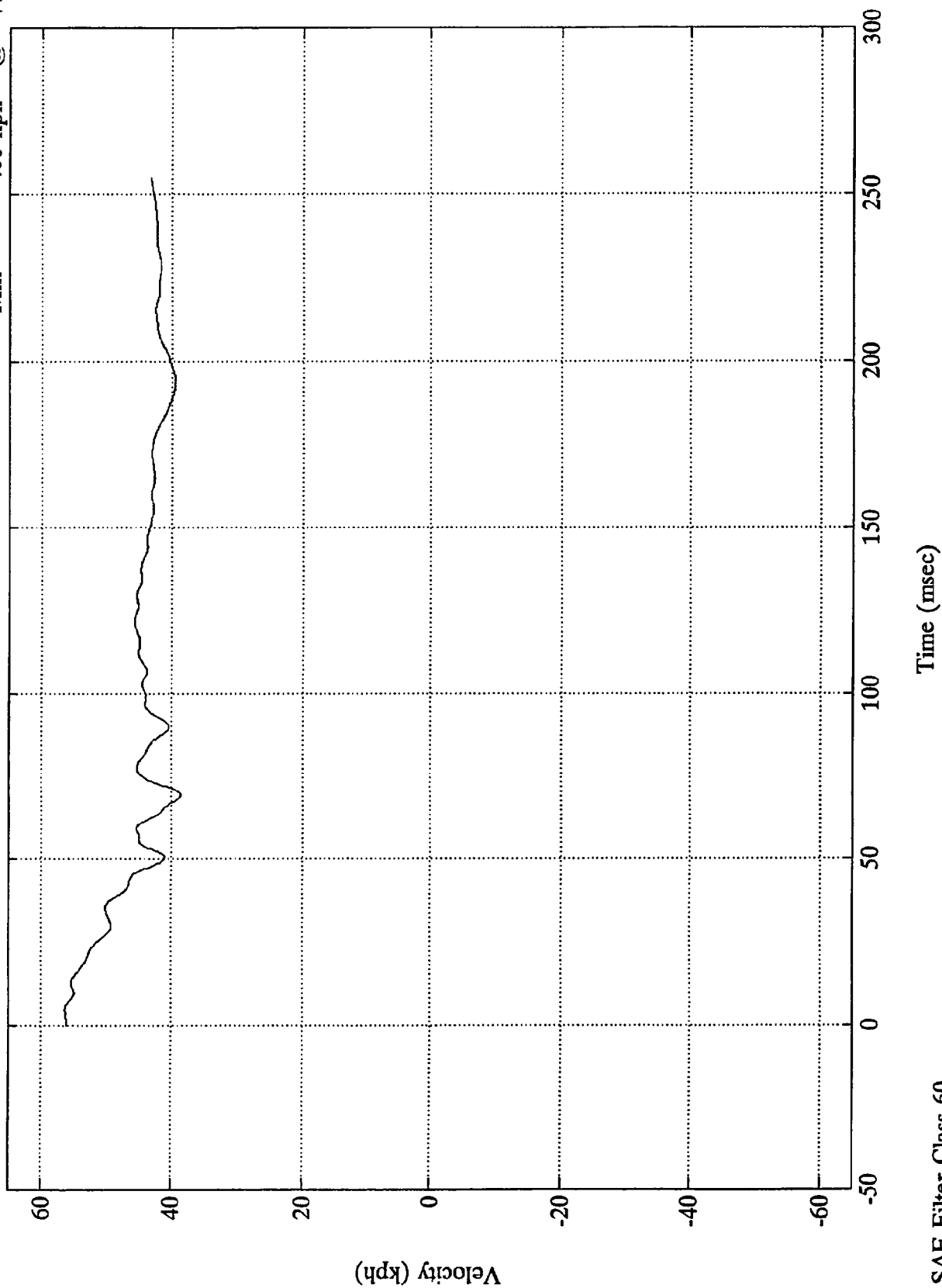
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Brake Pedal (X)

Max = 56.23 kph @ 4.55 msec
Min = .00 kph @ -44.88 msec

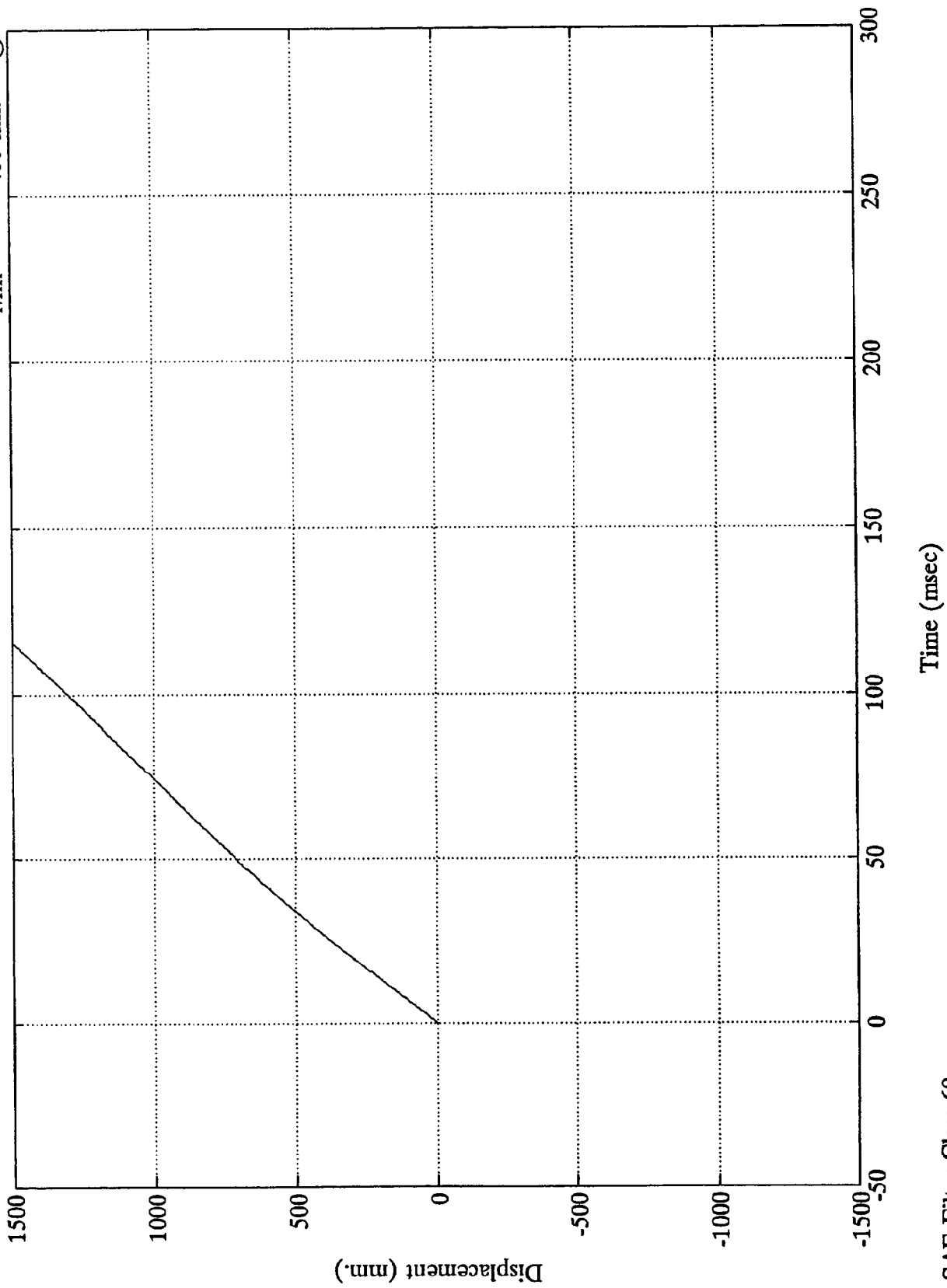


8118-6

VTV TEST #6

Max = 3147.50 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec

V1 Brake Pedal (X)

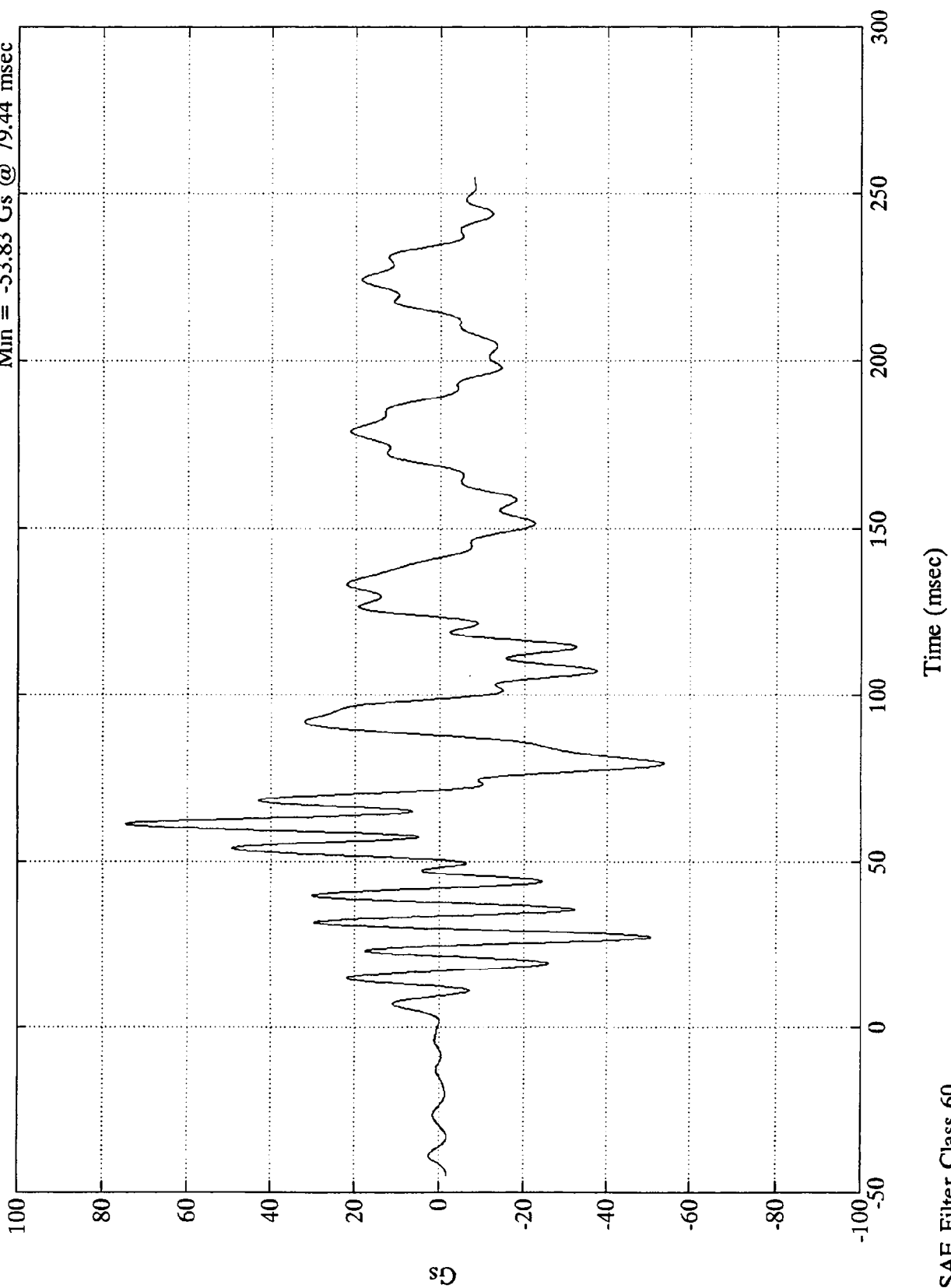


SAE Filter Class 60

8118-6

VTV TEST #6

V1 Brake Pedal (Y)
Max = 74.51 Gs @ 61.32 msec
Min = -53.83 Gs @ 79.44 msec

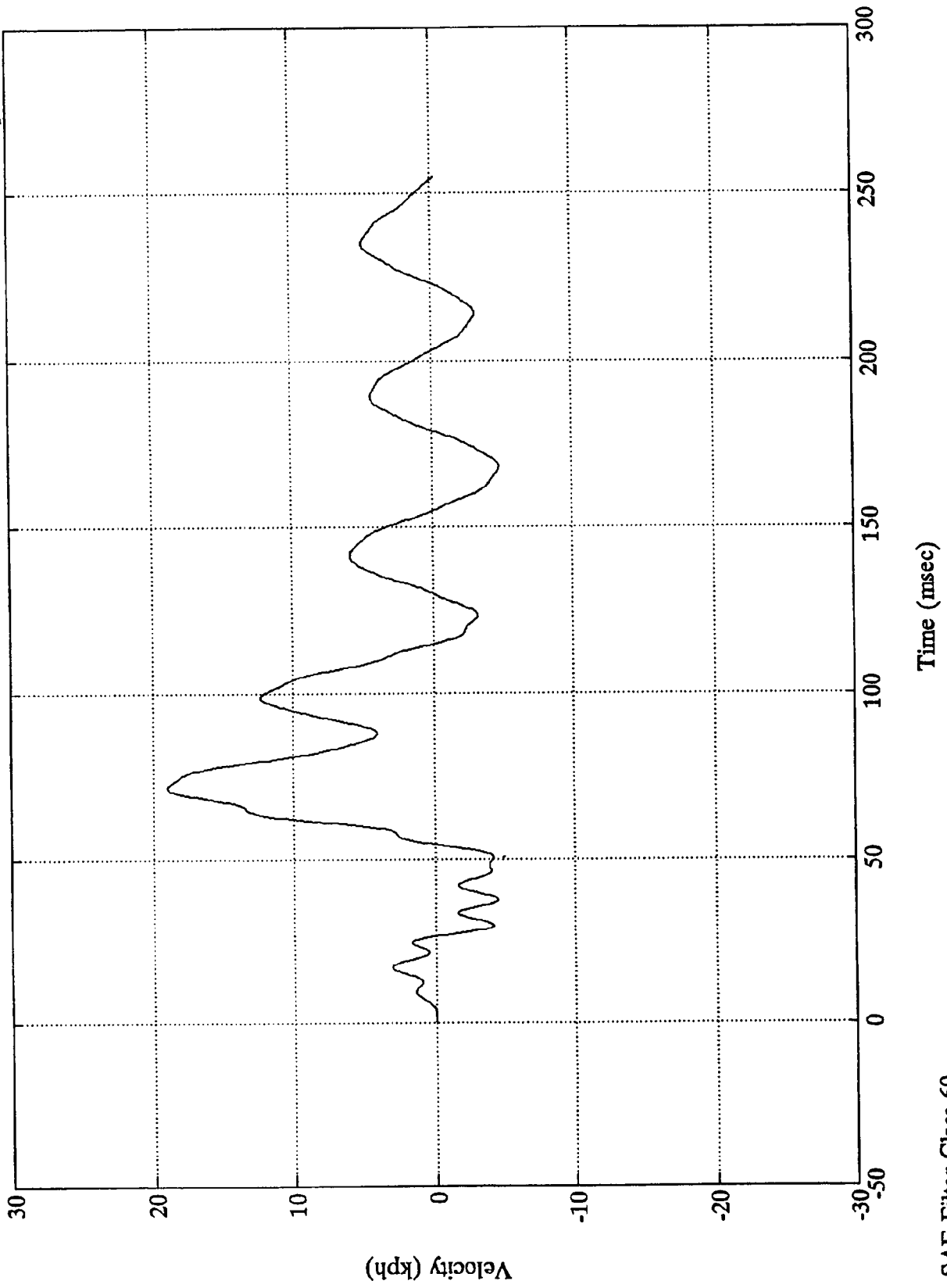


SAE Filter Class 60

8118-6

VTV TEST #6

V1 Brake Pedal (Y) Max = 18.99 kph @ 71.40 msec
Min = -4.79 kph @ 168.24 msec



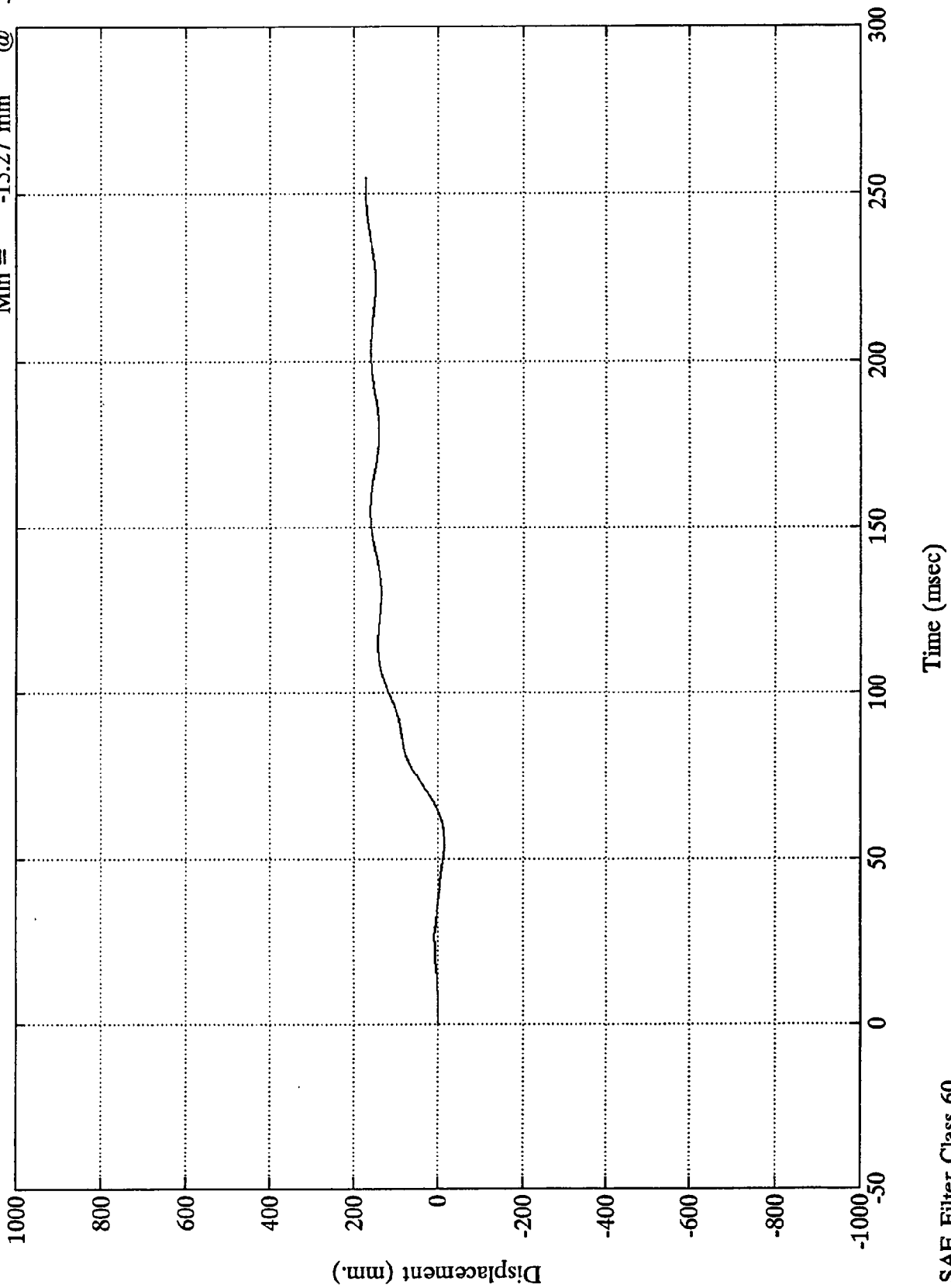
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Brake Pedal (Y)

Max = 171.32 mm @ 253.92 msec
Min = -15.27 mm @ 54.48 msec



SAE Filter Class 60

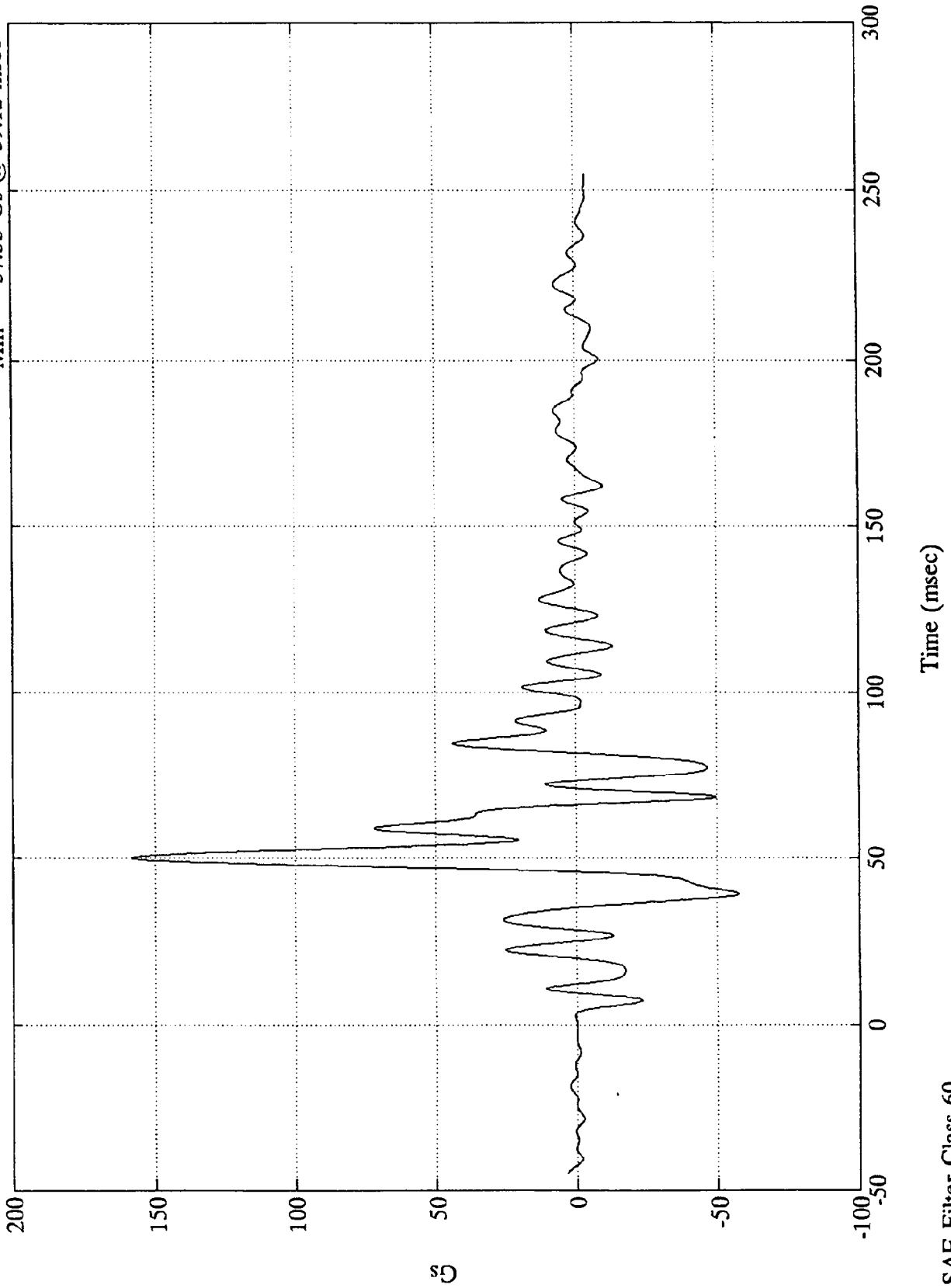
8118-6

VTV TEST #6

V1 Brake Pedal (Z)

Max = 158.43 Gs @ 50.04 msec

Min = -57.53 Gs @ 39.12 msec



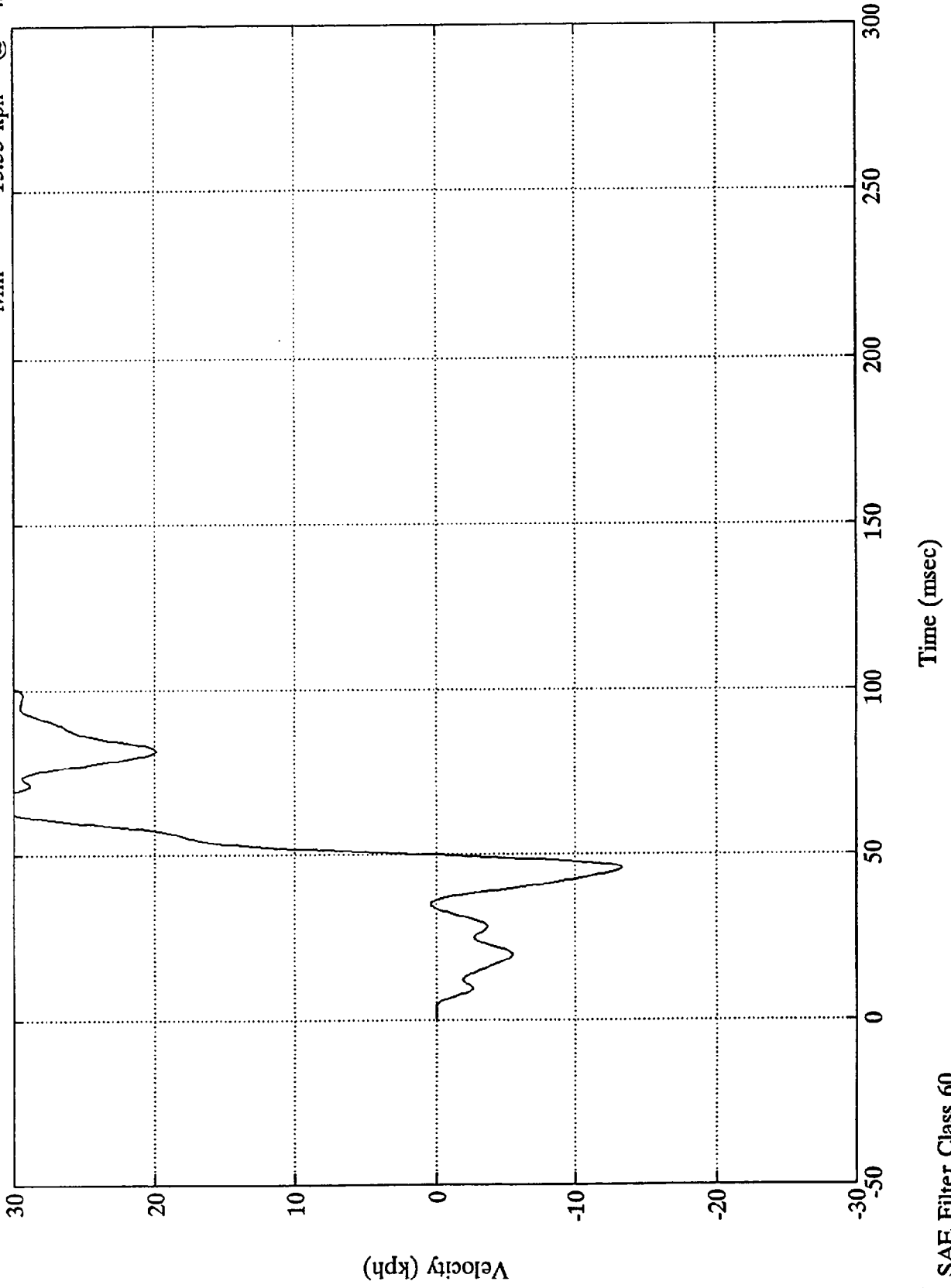
8118-6

SAE Filter Class 60

VTV TEST #6

V1 Brake Pedal (Z)

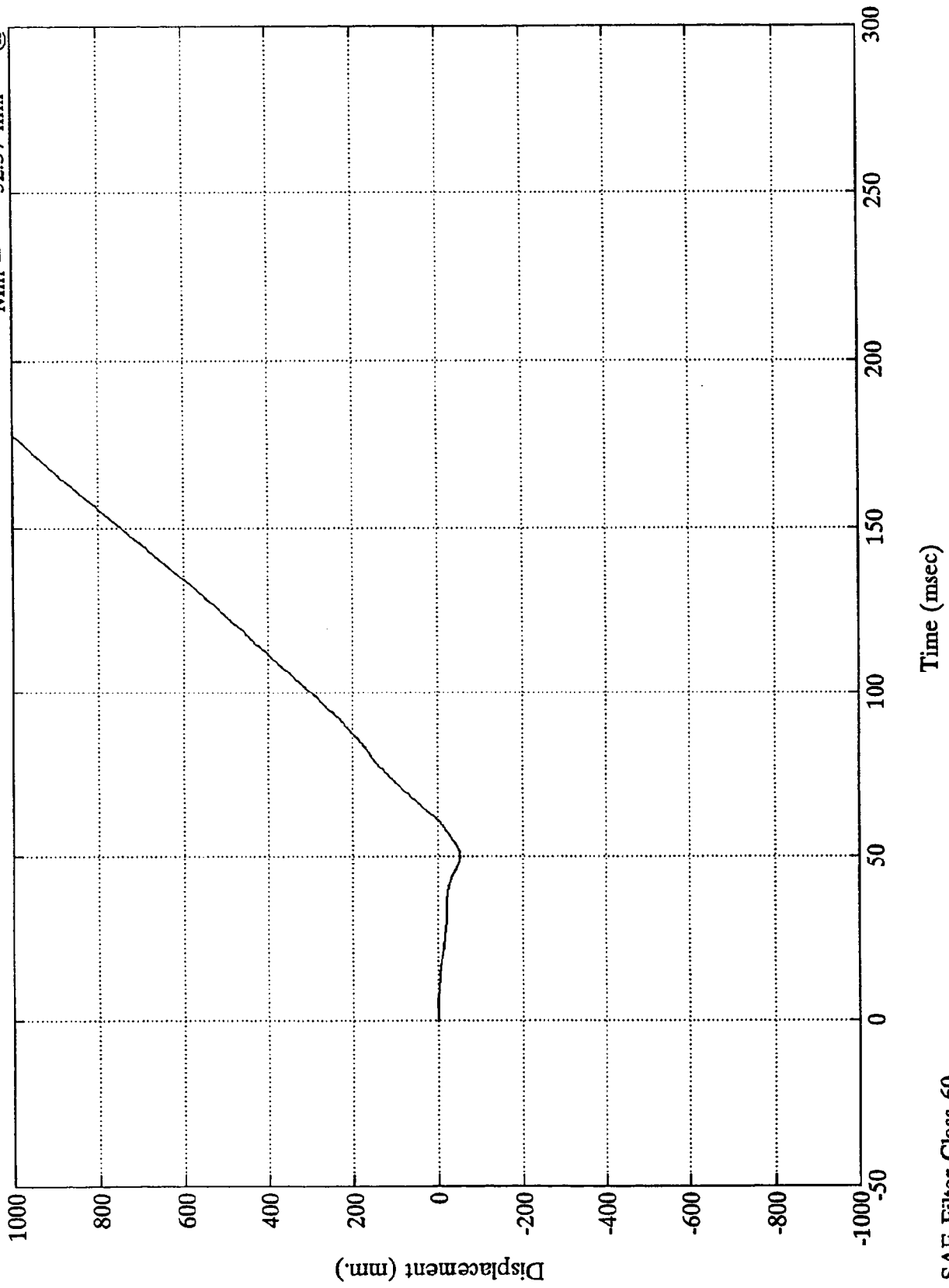
Max = 35.17 kph @ 192.00 msec
Min = -13.33 kph @ 45.71 msec



8118-6

VTV TEST #6

V1 Brake Pedal (Z)
Max = 1711.83 mm @ 254.88 msec
Min = -52.37 mm @ 49.92 msec

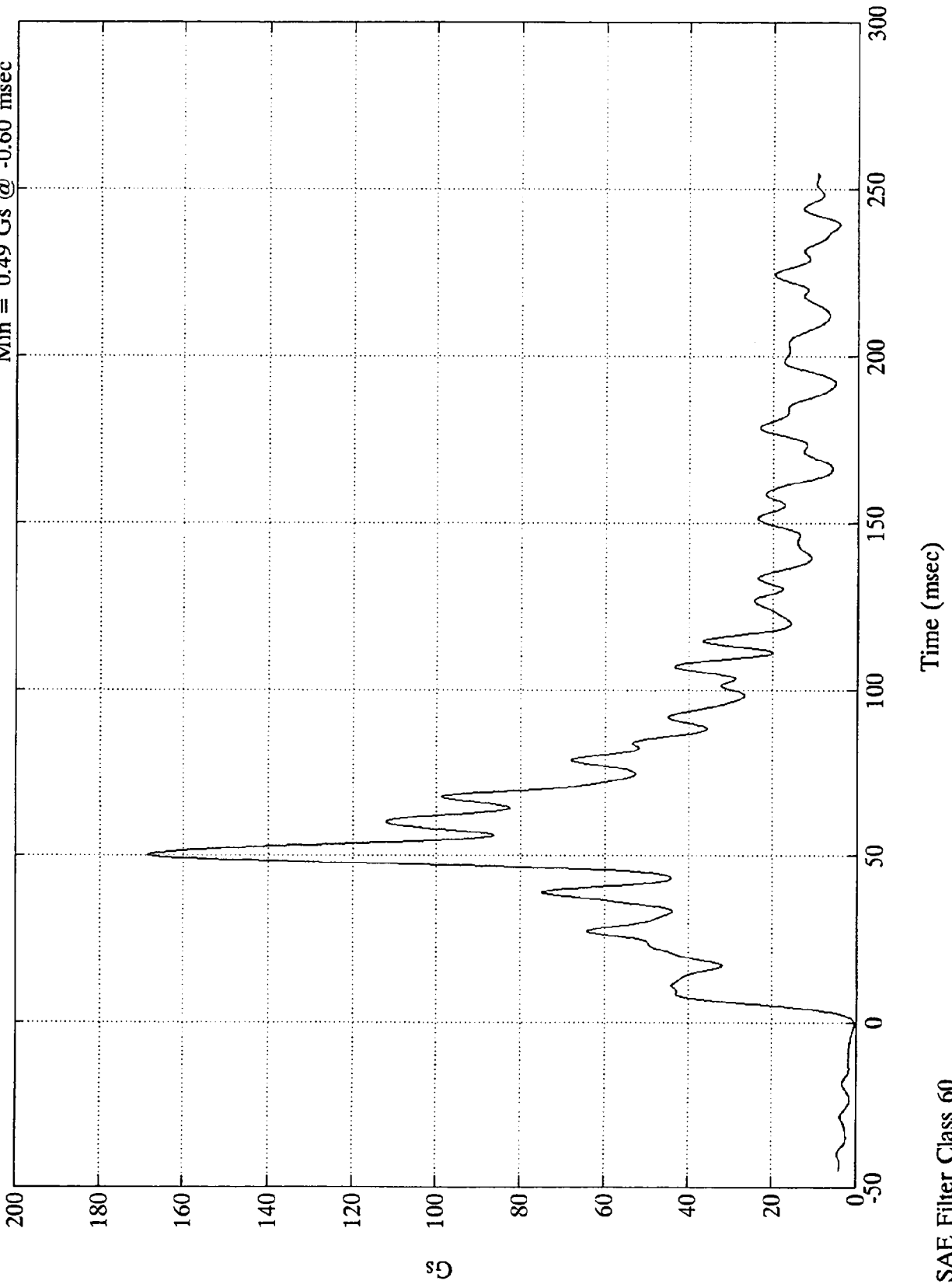


8118-6

VTV TEST #6

Max = 168.48 Gs @ 50.16 msec
Min = 0.49 Gs @ -0.60 msec

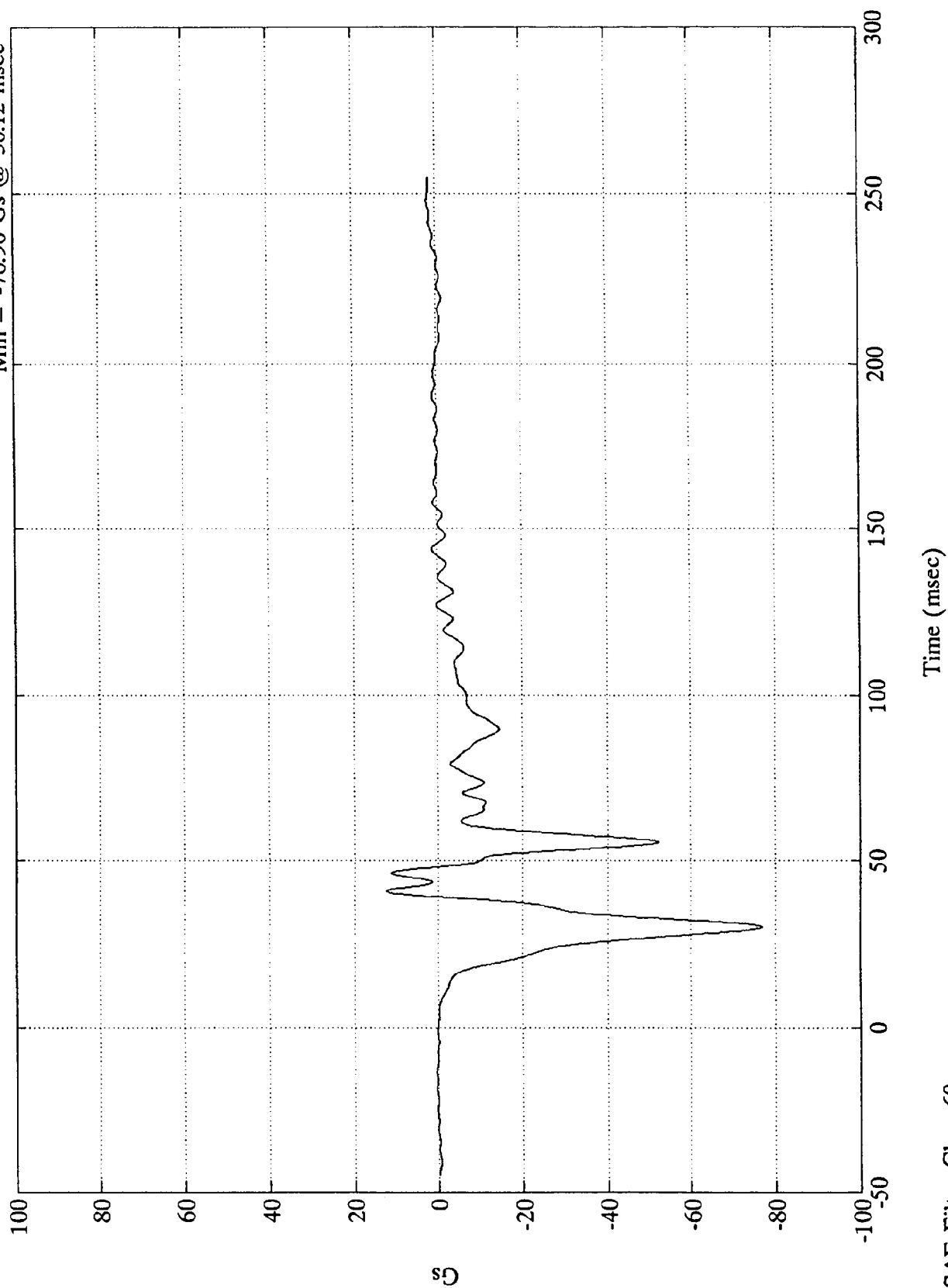
V1 Brake Pedal Resultant



VTV TEST #6

V1 Engine Bottom (X)

Max = 12.41 Gs @ 40.56 msec
Min = -76.90 Gs @ 30.12 msec



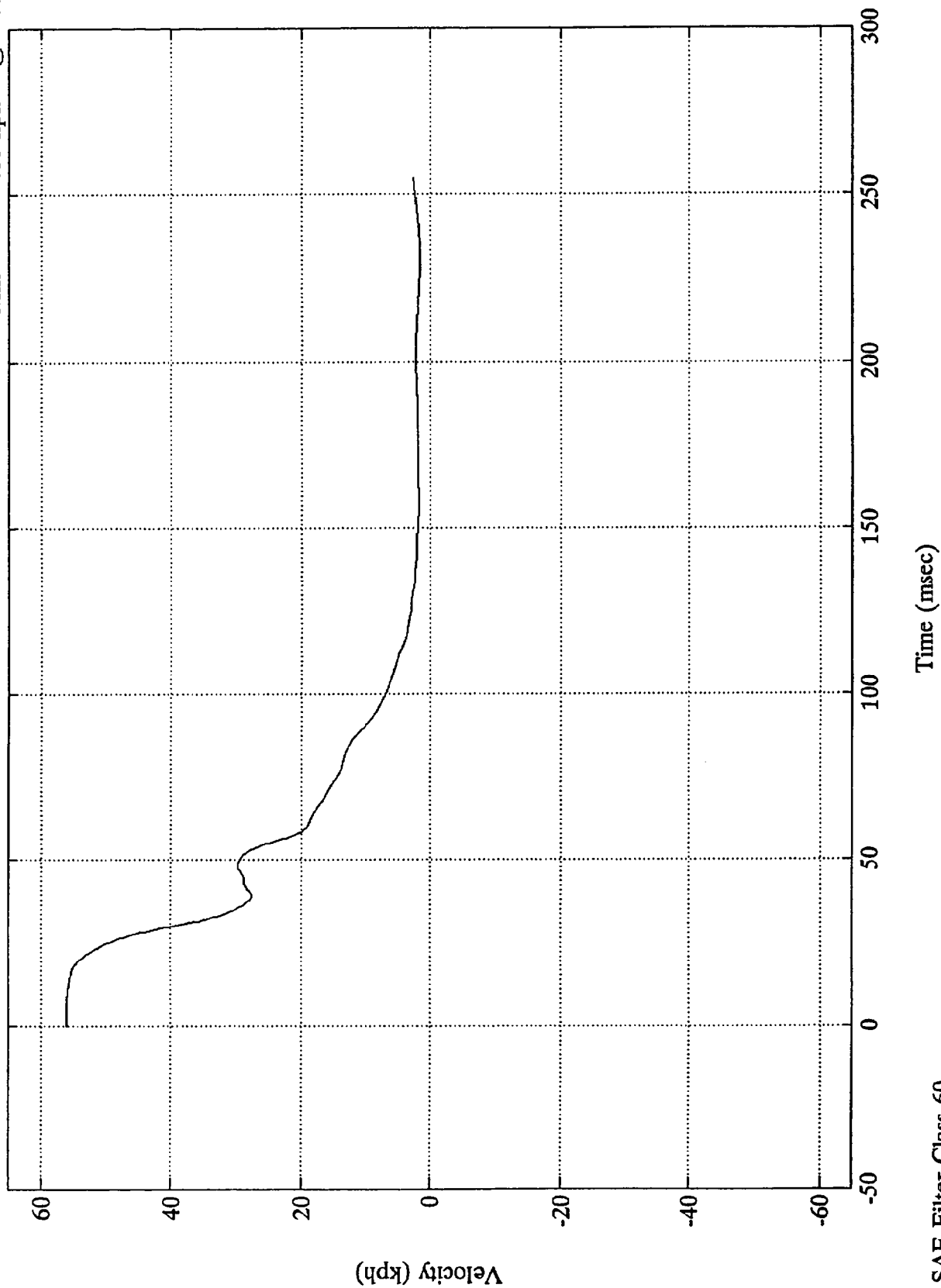
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Engine Bottom (X)

Max = 56.01 kph @ 1.07 msec
Min = .00 kph @ -44.88 msec



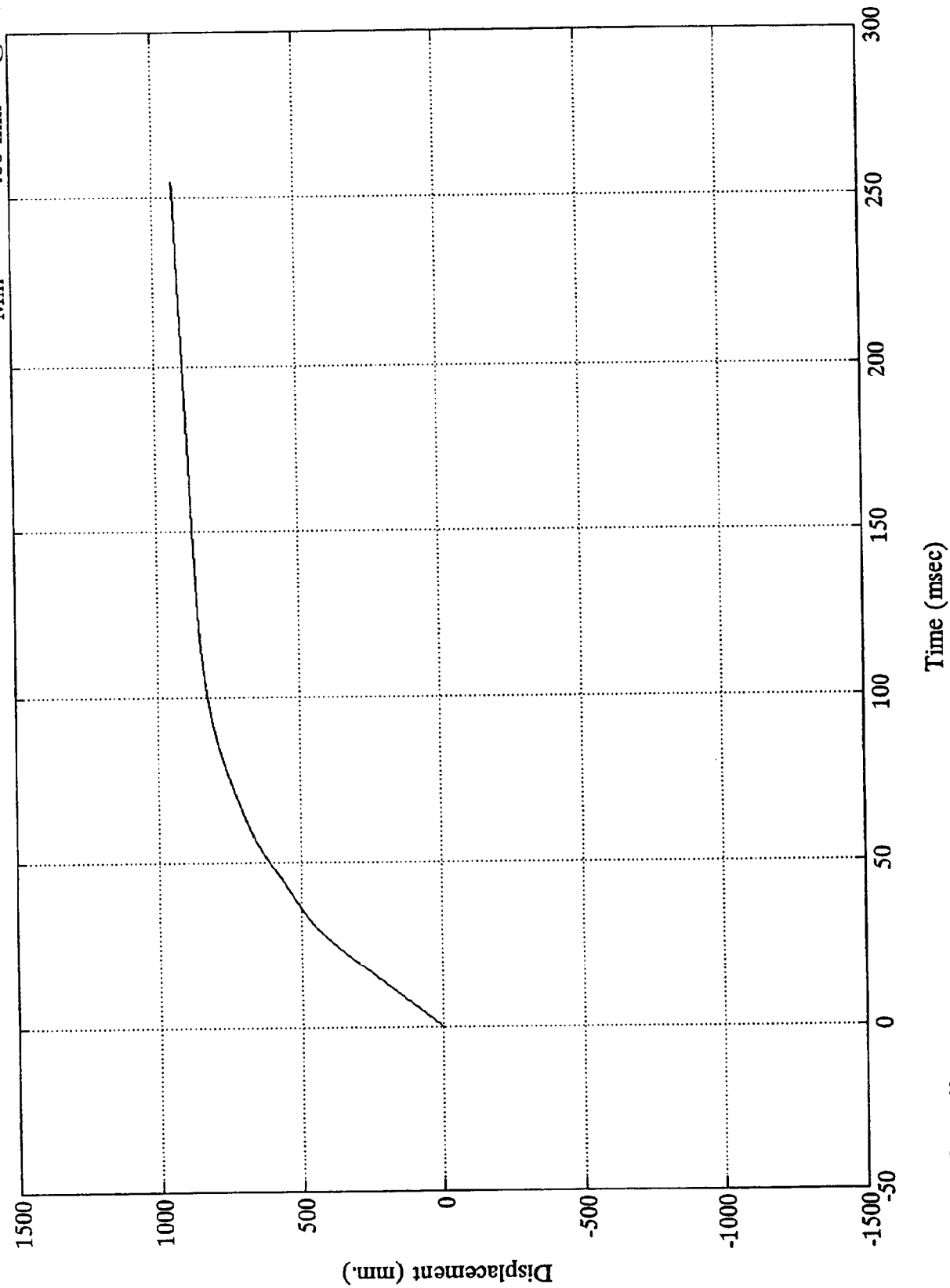
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Engine Bottom (X)

Max = 932.41 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec



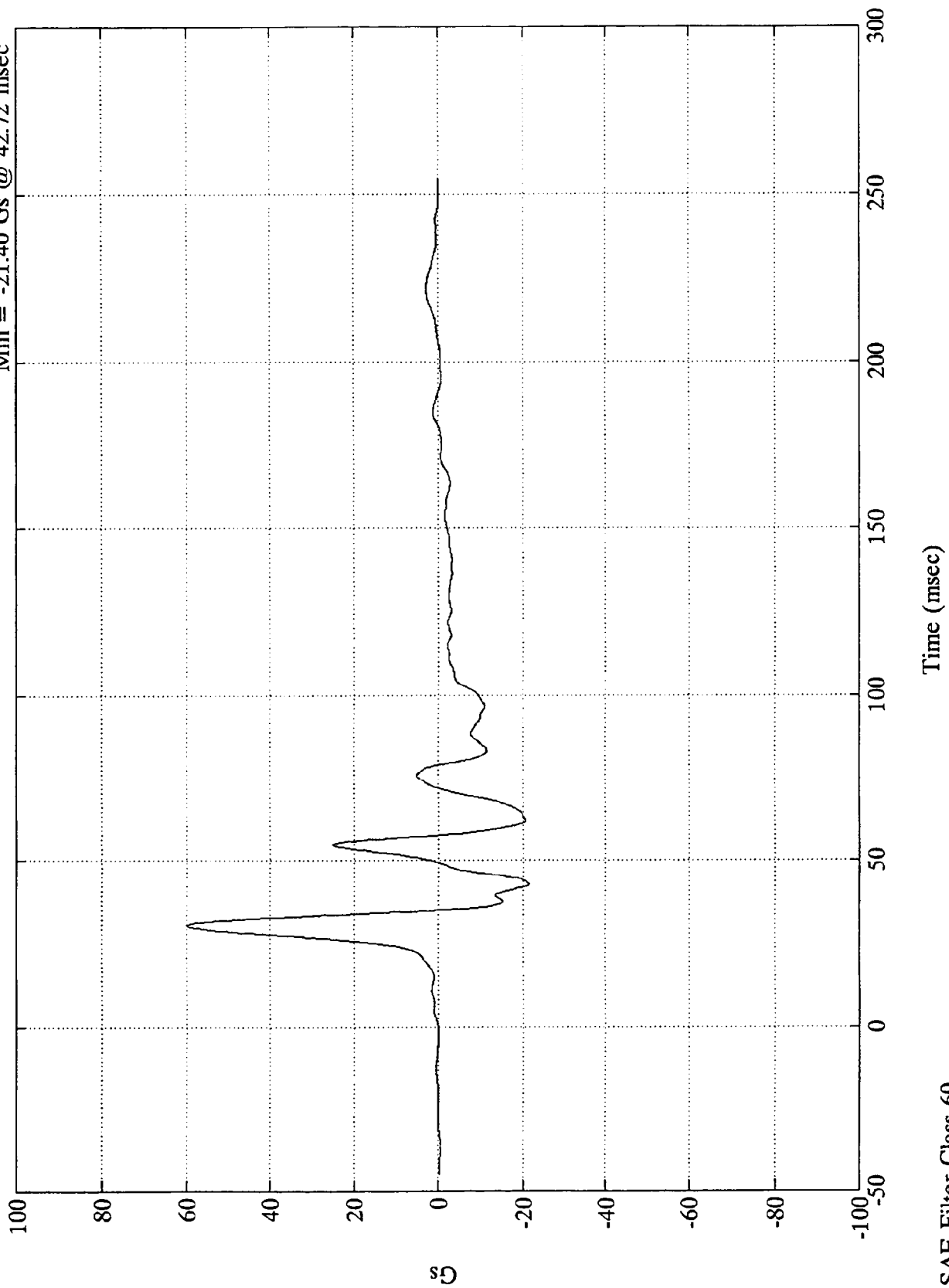
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Engine Bottom (Y)

Max = 60.04 Gs @ 30.48 msec
Min = -21.40 Gs @ 42.72 msec



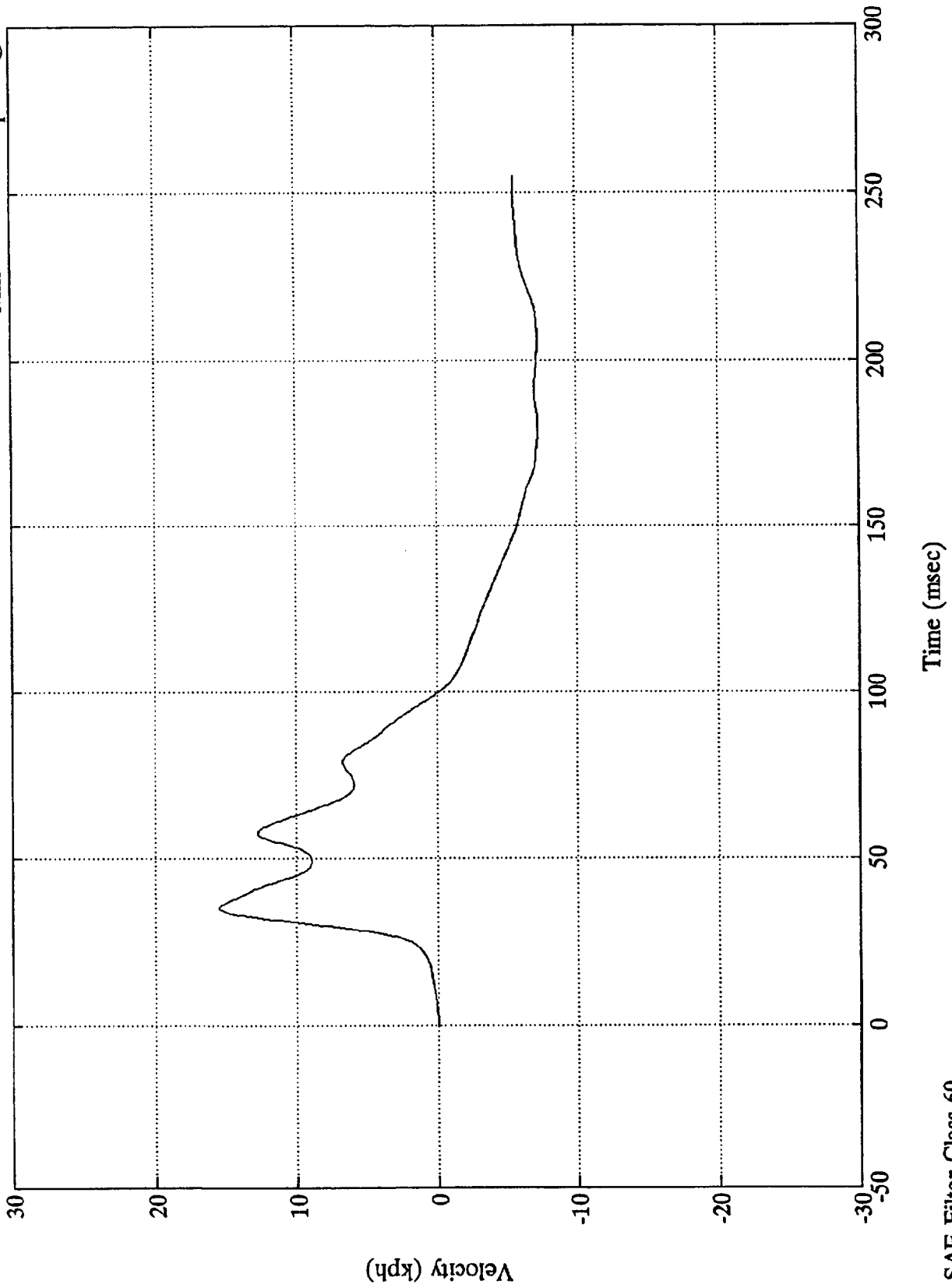
8118-6

SAE Filter Class 60

VTV TEST #6

V1 Engine Bottom (Y)

Max =	15.48 kph	@	34.91 msec
Min =	-7.27 kph	@	180.60 msec



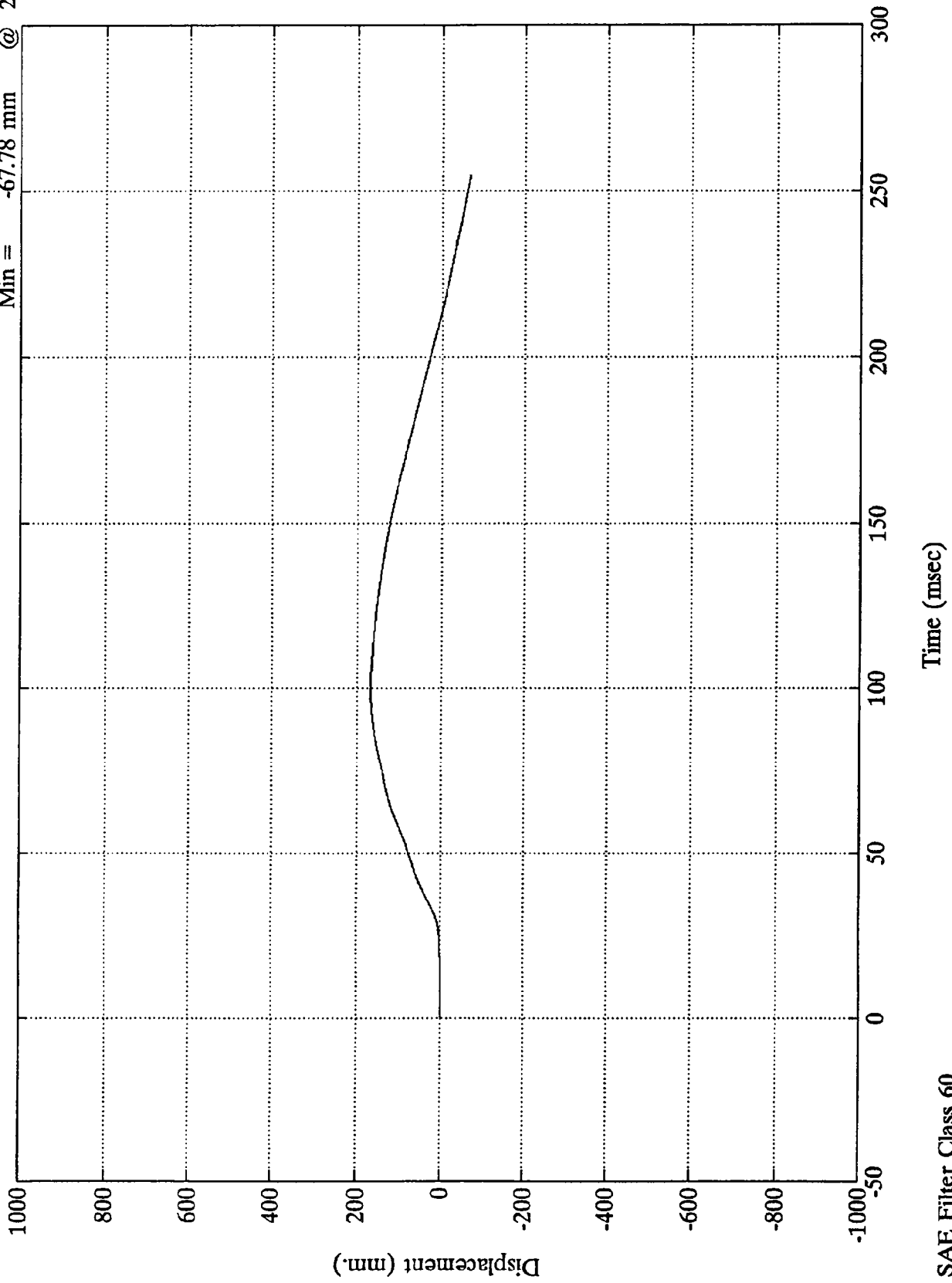
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Engine Bottom (Y)

Max = 167.90 mm @ 99.72 msec
Min = -67.78 mm @ 254.88 msec



SAE Filter Class 60

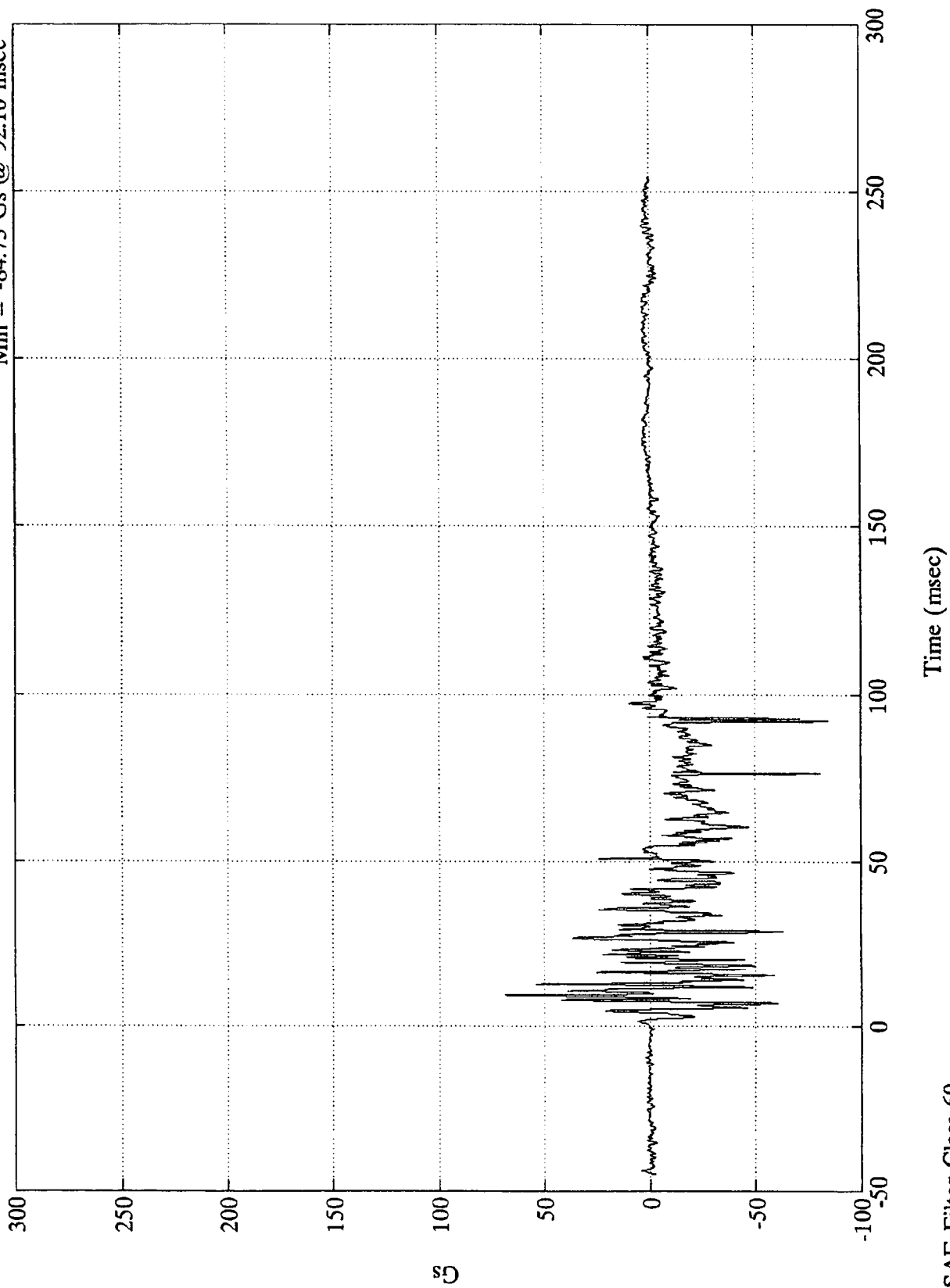
8118-6

VTV TEST #6

V1 Right Shock Tower (X)

Max = 68.55 Gs @ 9.12 msec

Min = -84.73 Gs @ 92.16 msec



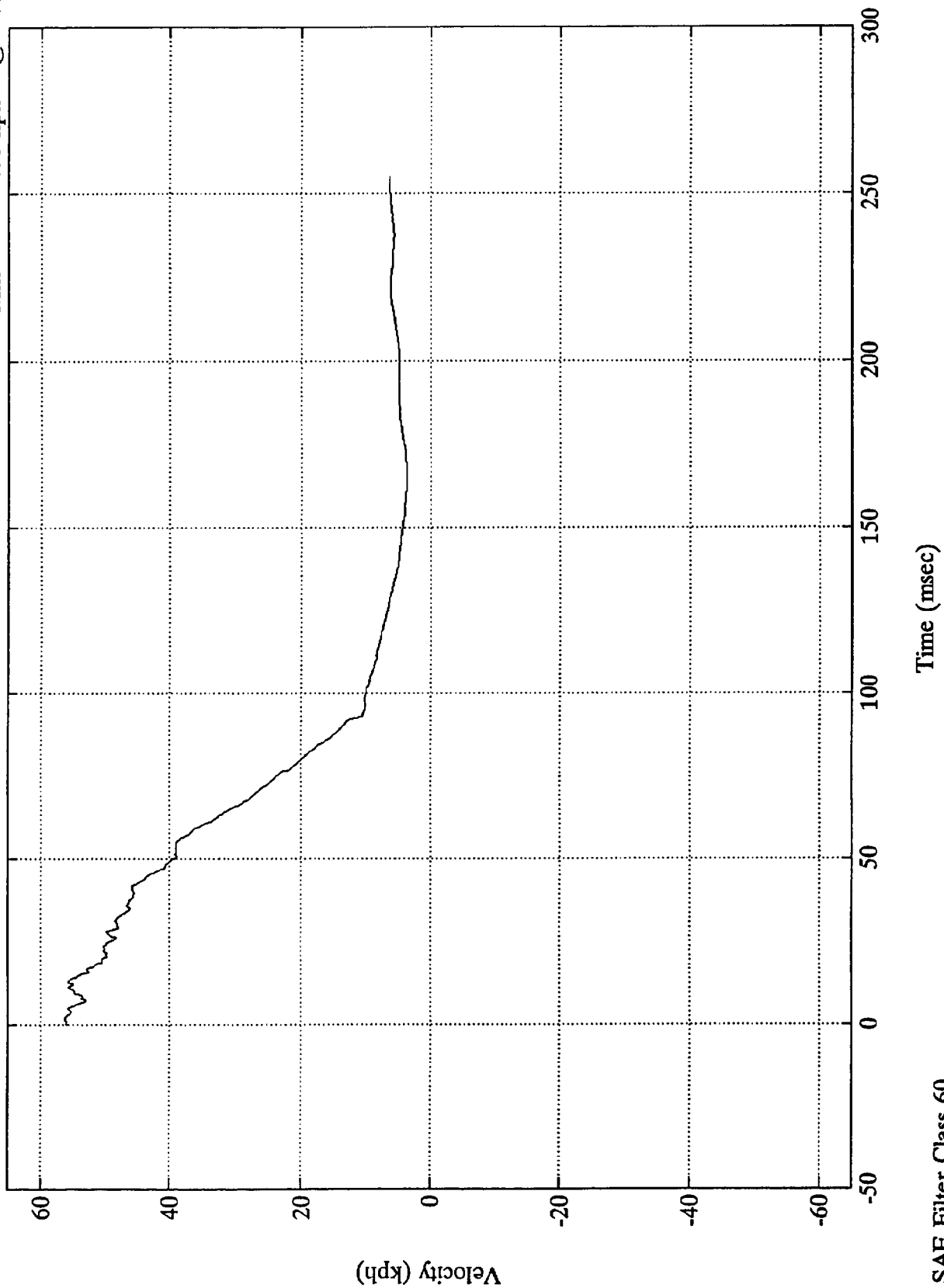
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Right Shock Tower (X)

Max = 56.21 kph @ 1.79 msec
Min = .00 kph @ -44.88 msec



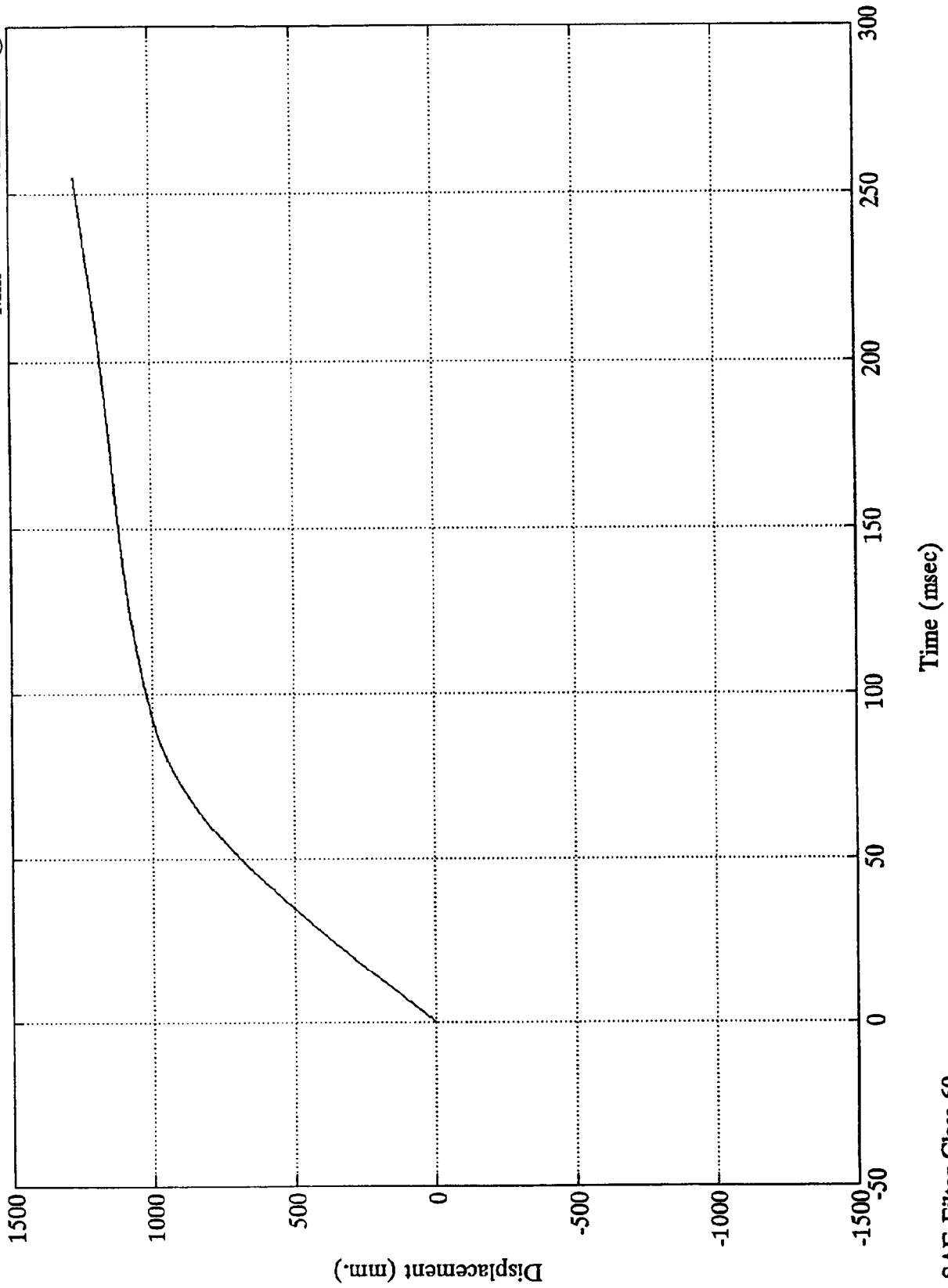
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Right Shock Tower (X)

Max = 1268.69 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec



SAE Filter Class 60

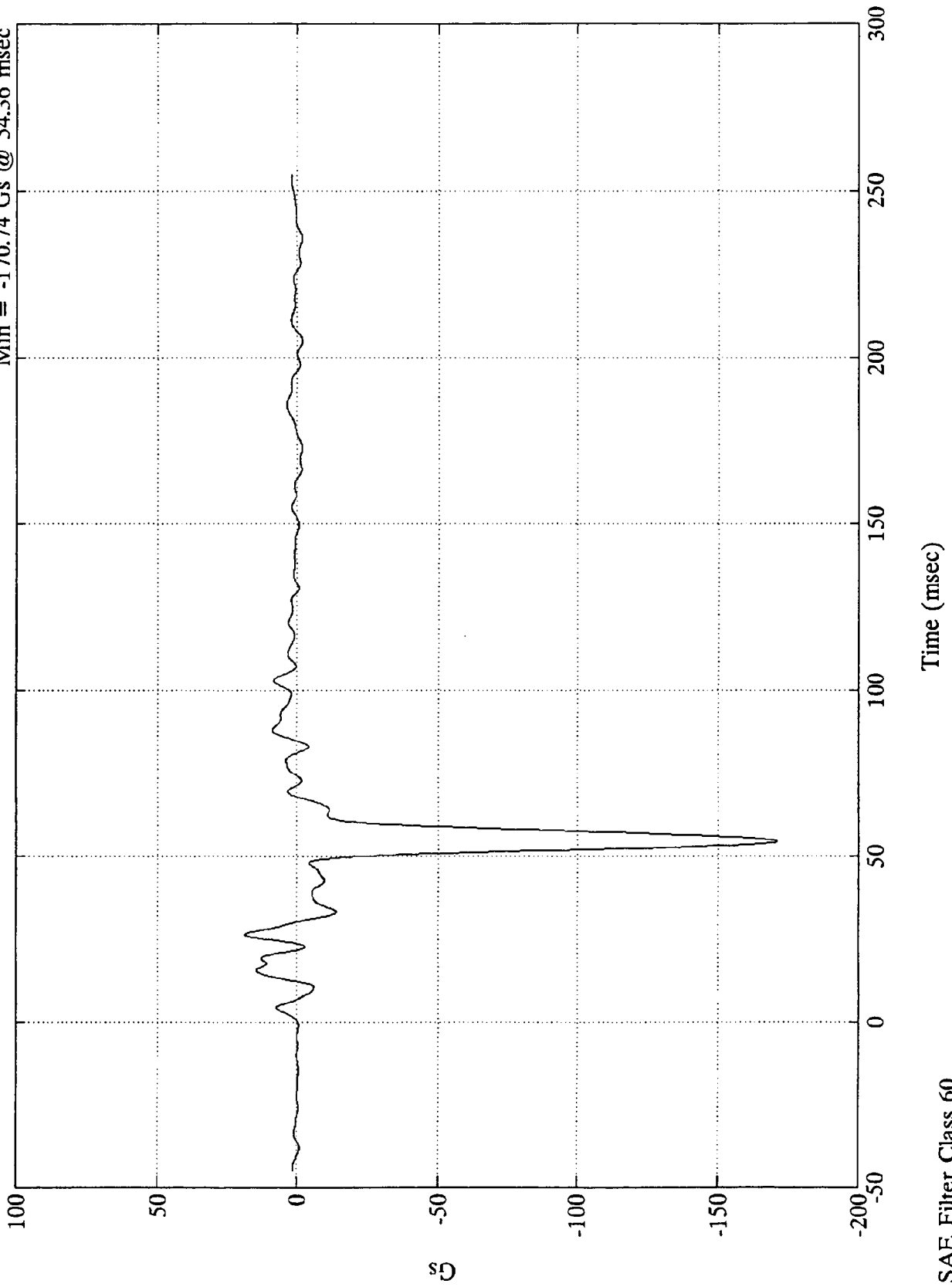
9-8118

VTV TEST #6

V1 Right Shock Tower (Y)

Max = 18.78 Gs @ 26.52 msec

Min = -170.74 Gs @ 54.36 msec



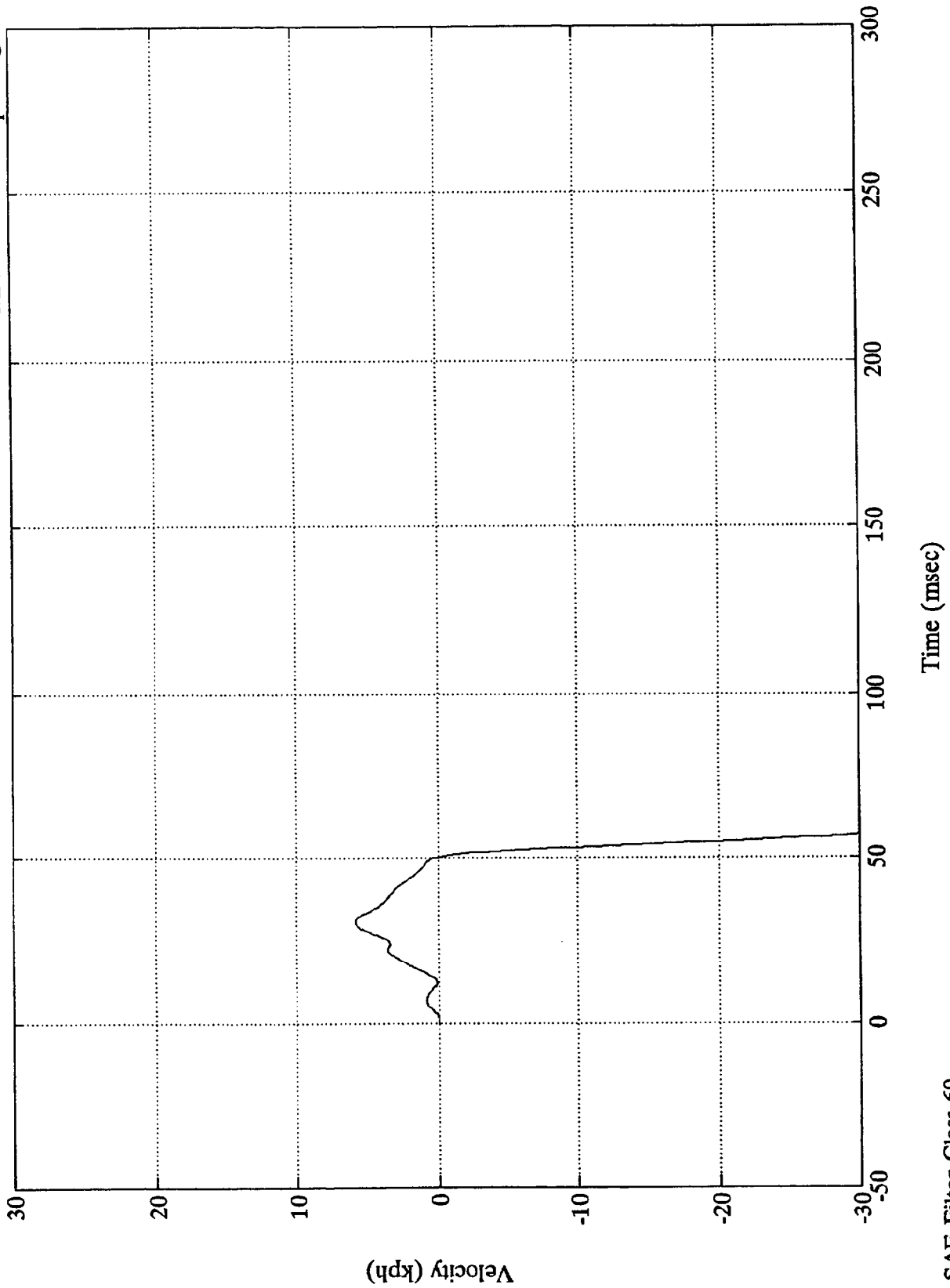
SAE Filter Class 60

8118-6

VTV TEST #6

Max = 5.79 kph @ 30.48 msec
Min = -39.36 kph @ 67.68 msec

V1 Right Shock Tower (Y)



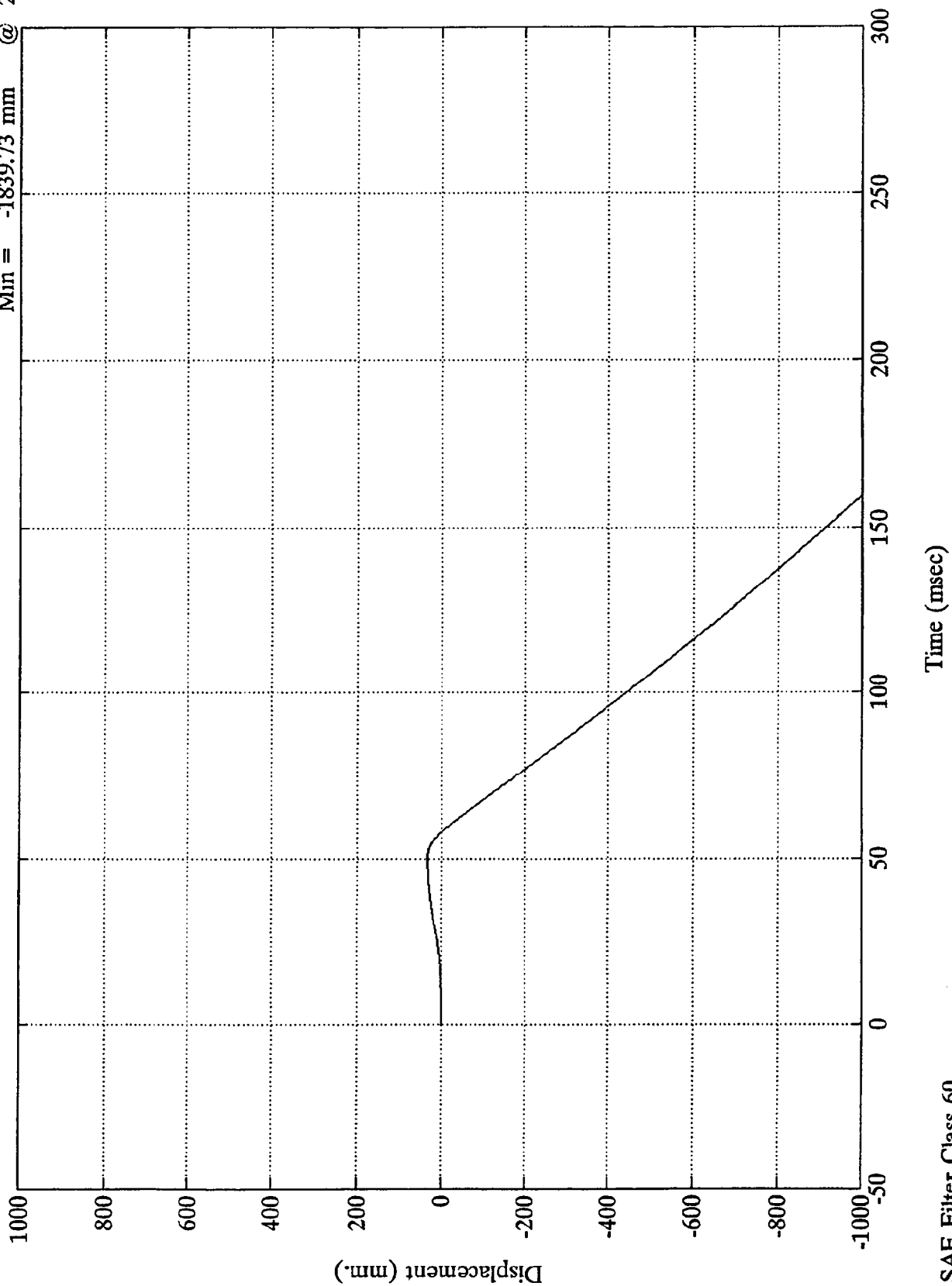
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Right Shock Tower (Y)

Max = 33.36 mm @ 50.28 msec
Min = -1839.73 mm @ 254.88 msec

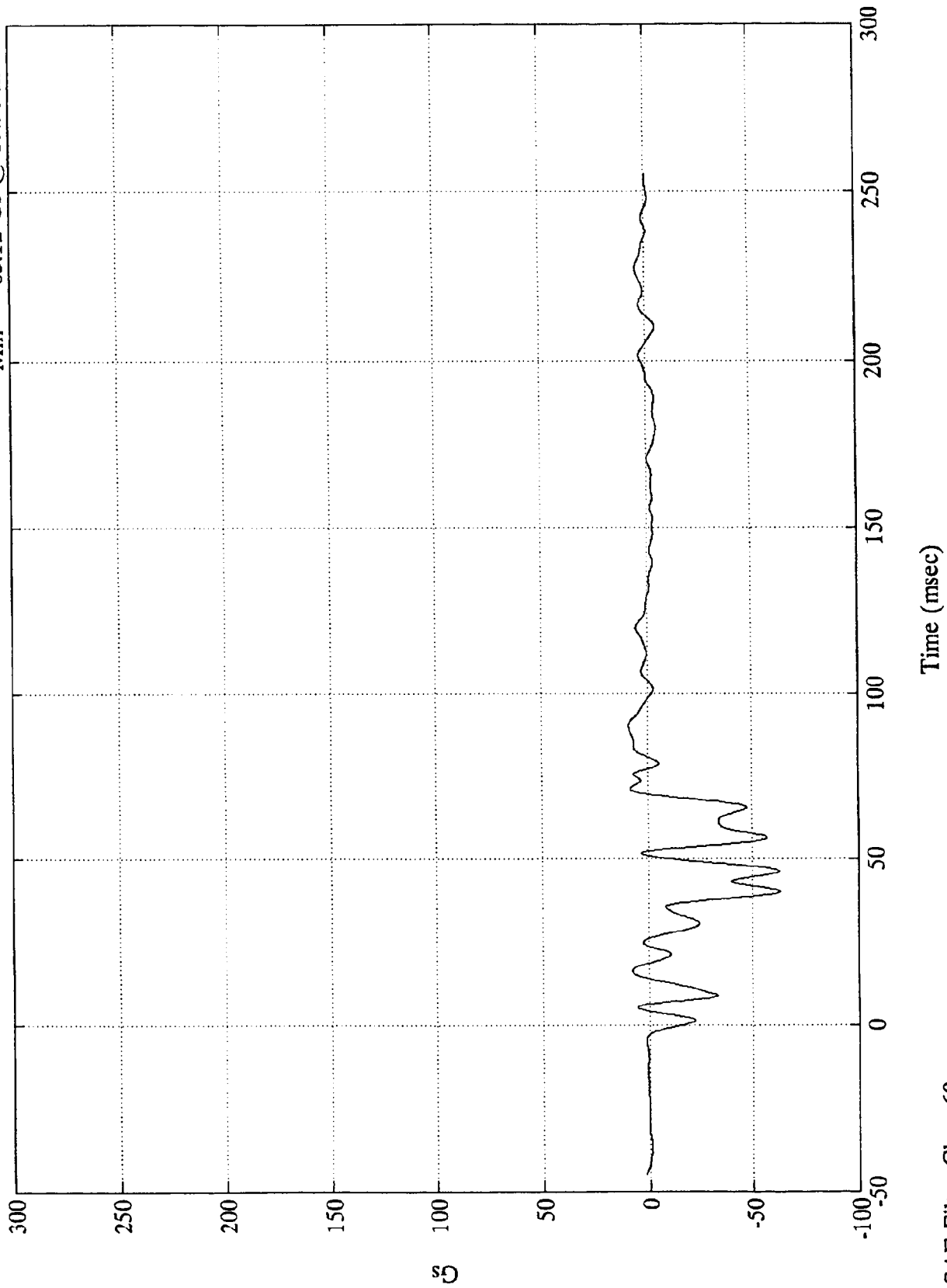


SAE Filter Class 60

8118-6

VTV TEST #6

V1 Left Shock Tower (X)
Max = 9.07 Gs @ 90.24 msec
Min = -63.12 Gs @ 39.96 msec



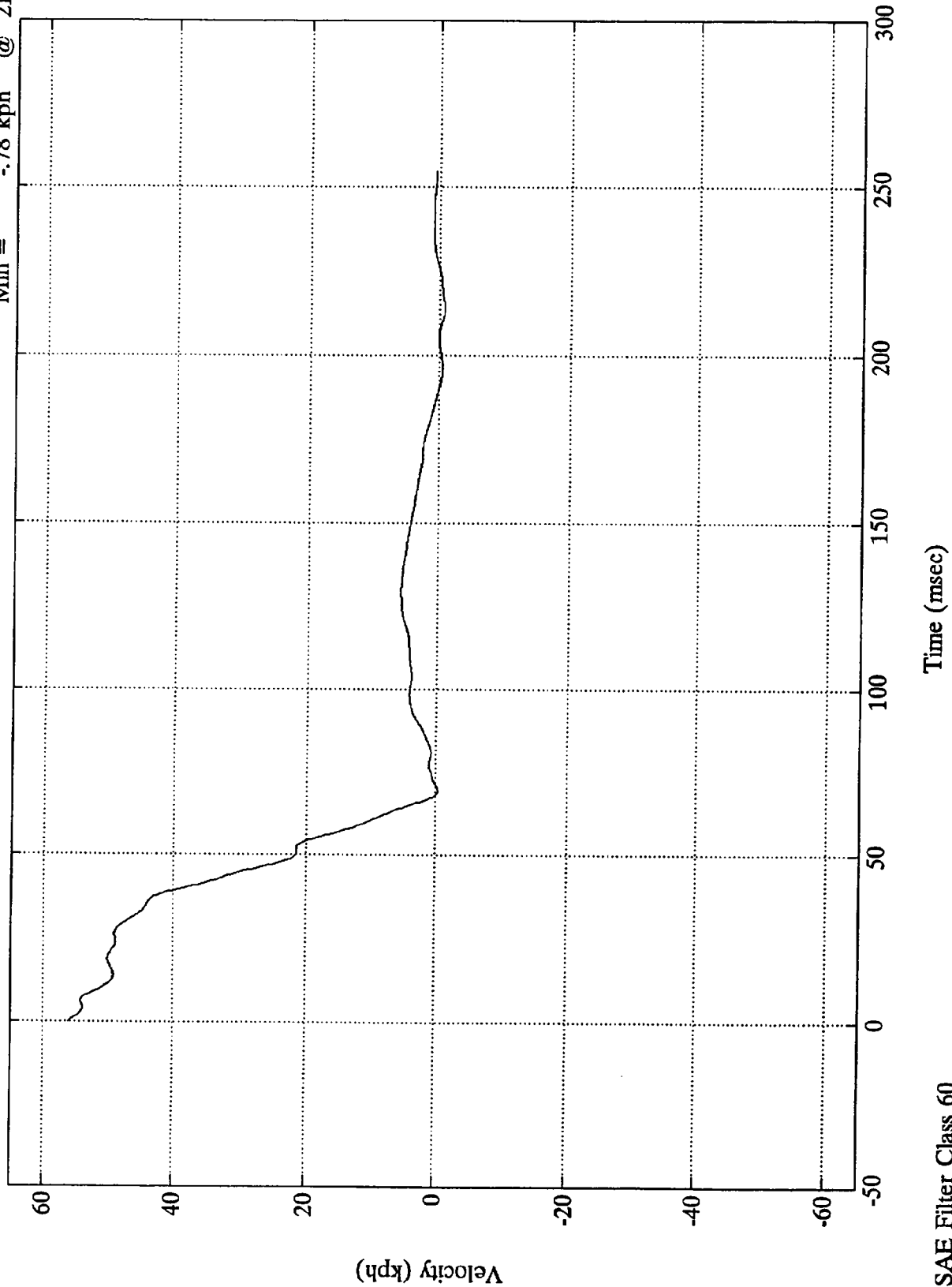
8118-6

SAE Filter Class 60

VTV TEST #6

V1 Left Shock Tower (X)

Max = 56.00 kph @ -0.00 msec
Min = -.78 kph @ 213.60 msec



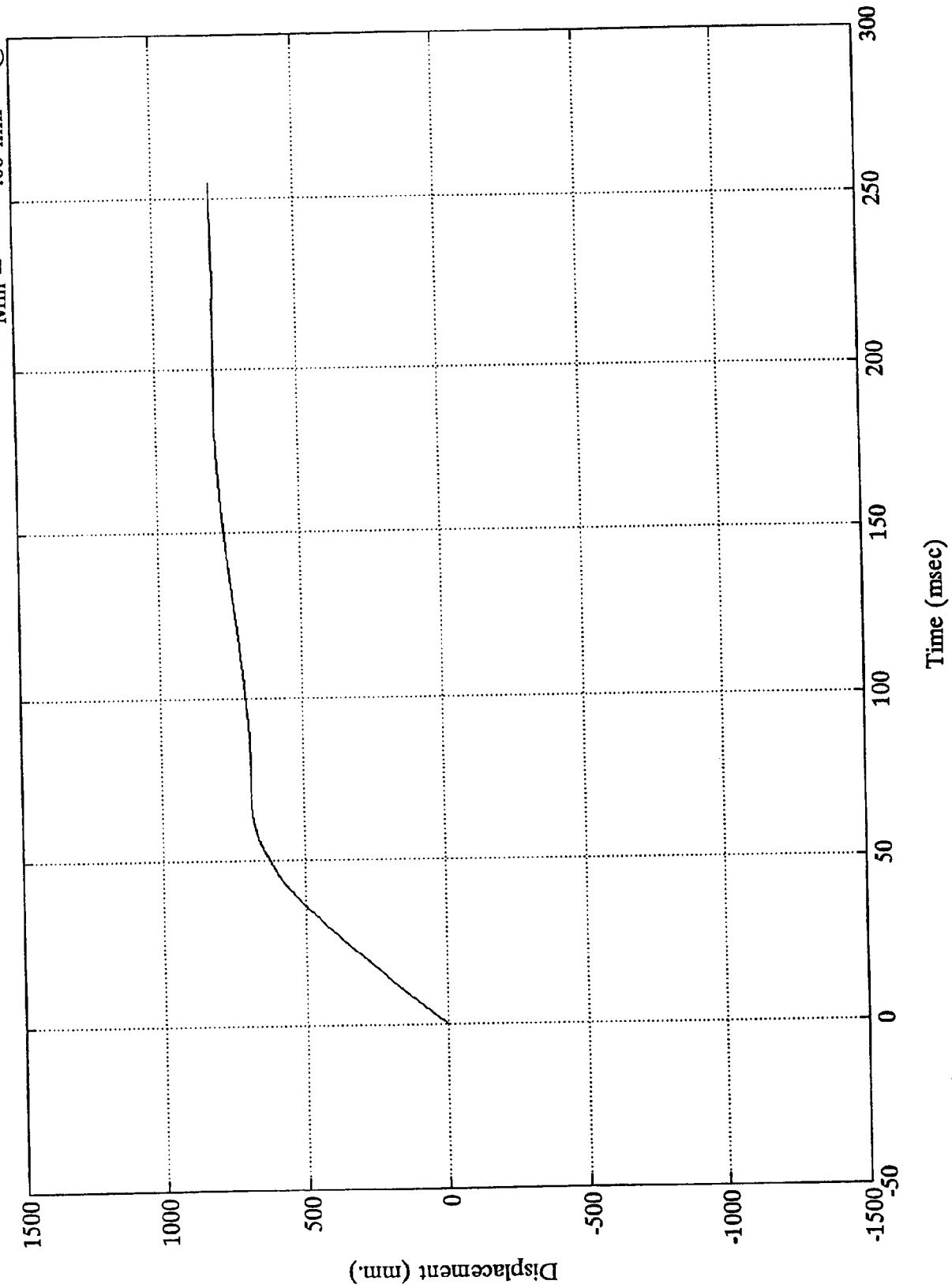
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Left Shock Tower (X)

Max = 799.73 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec



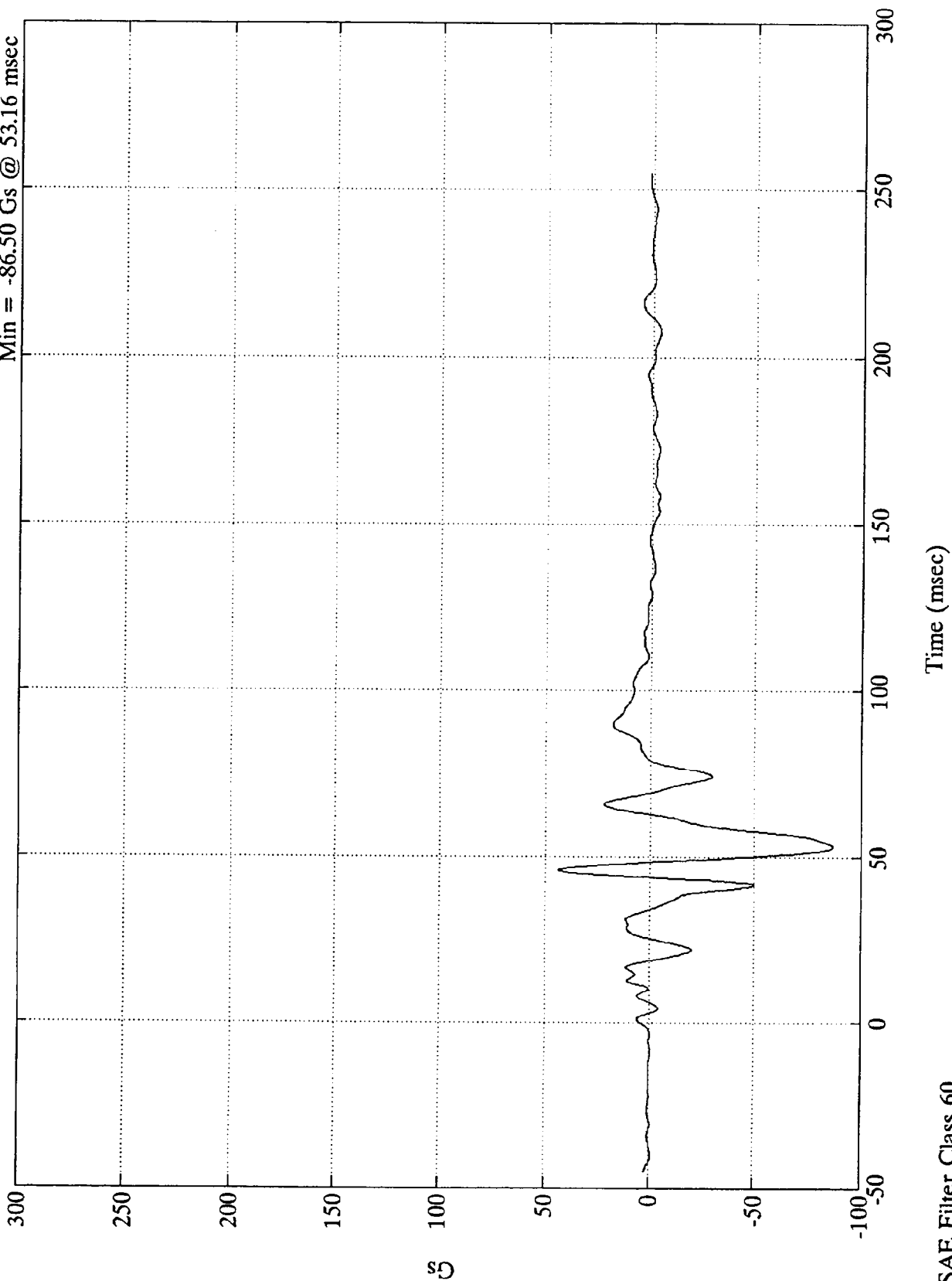
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Left Shock Tower (Y)

Max = 43.98 Gs @ 45.72 msec
Min = -86.50 Gs @ 53.16 msec



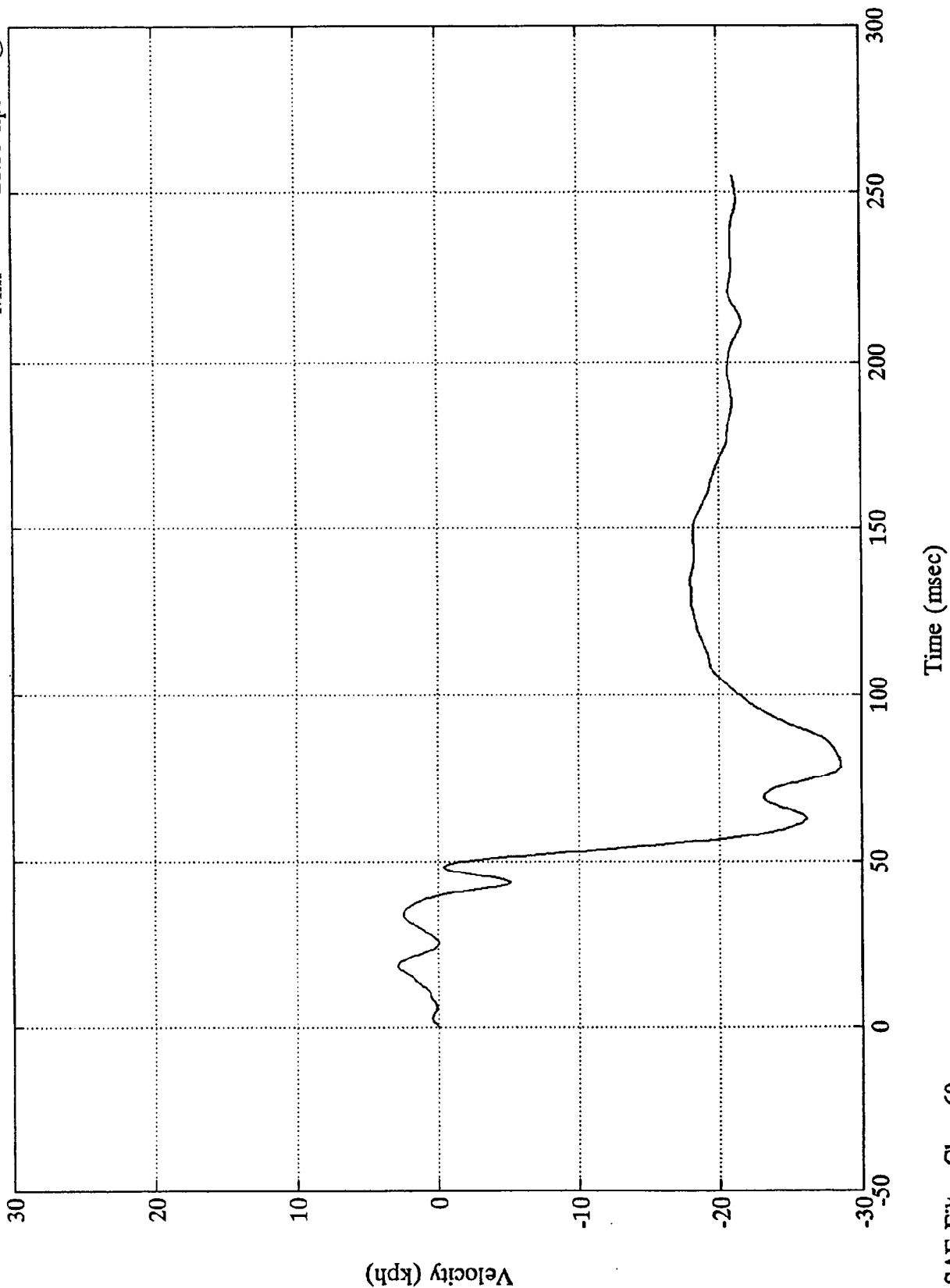
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Left Shock Tower (Y)

Max = 2.84 kph @ 18.60 msec
Min = -28.55 kph @ 78.96 msec



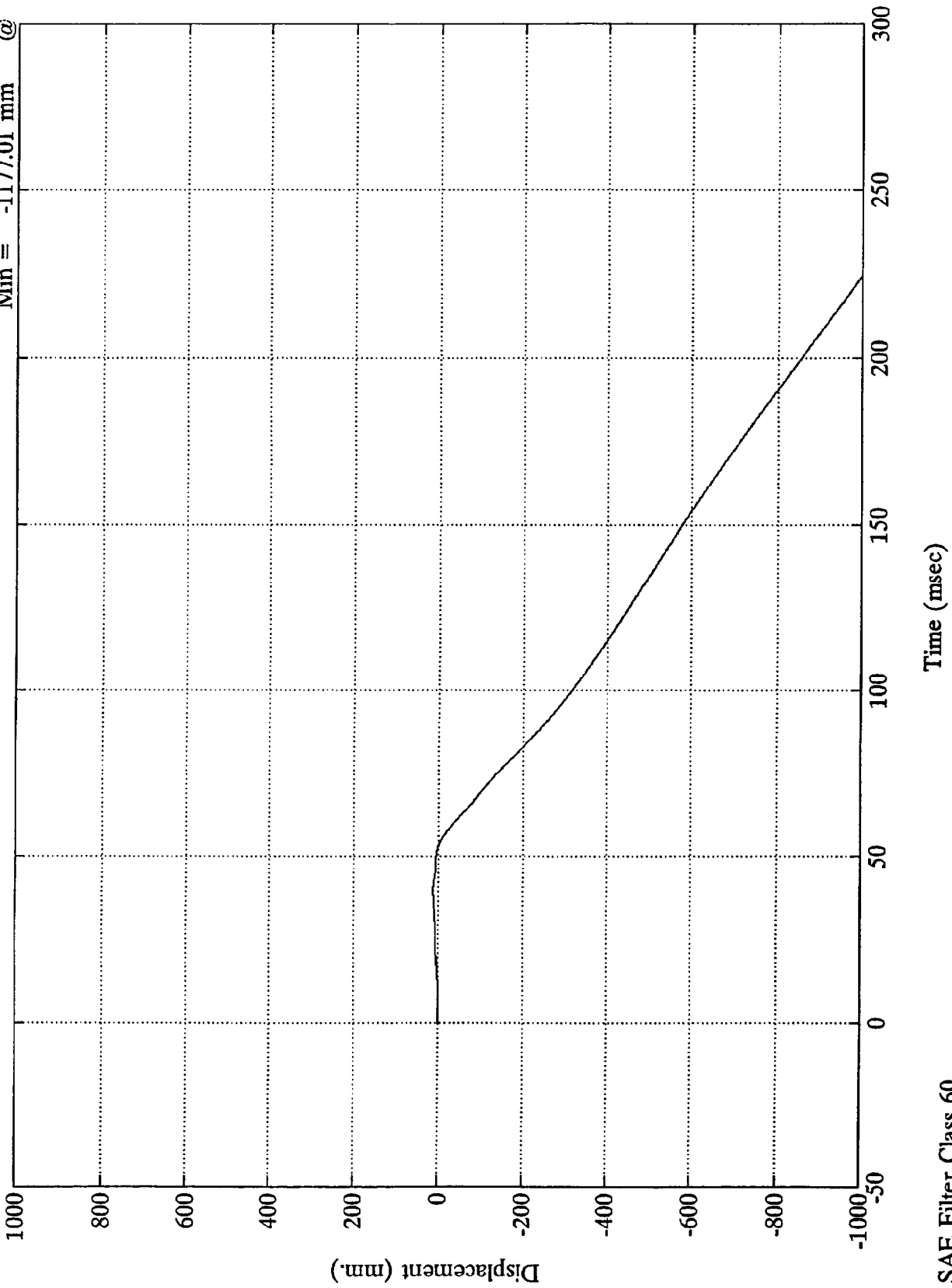
SAE Filter Class 60

8118-6

VTV TEST #6

V1 Left Shock Tower (Y)

Max = 12.84 mm @ 39.71 msec
Min = -1177.01 mm @ 254.88 msec



SAE Filter Class 60

8118-6

TEST NO. Y49-6-1400

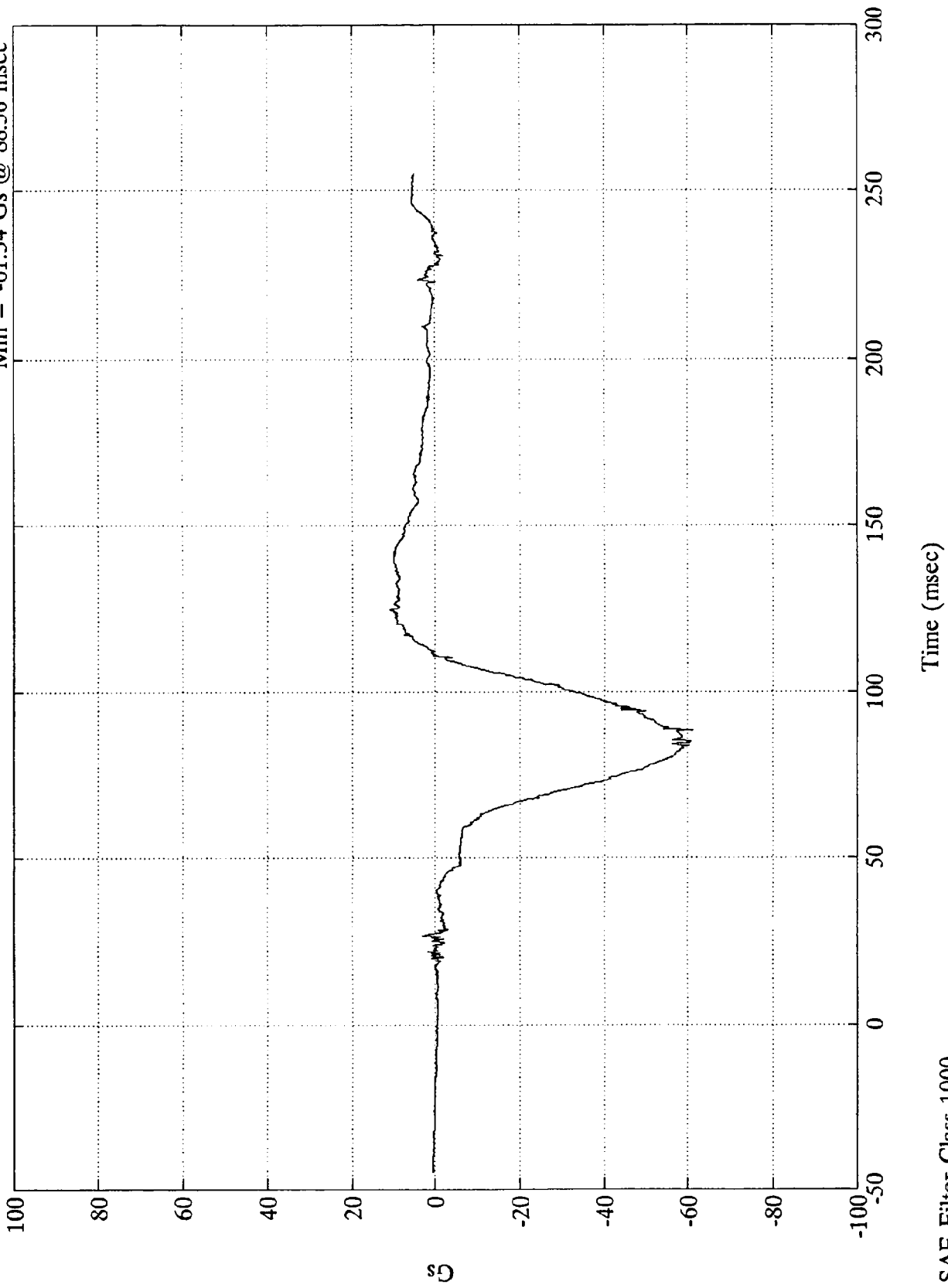
DUMMY DATA

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

VTV TEST #6

Max = 11.00 Gs @ 124.80 msec
Min = -61.34 Gs @ 88.56 msec

V1-P1 Head X

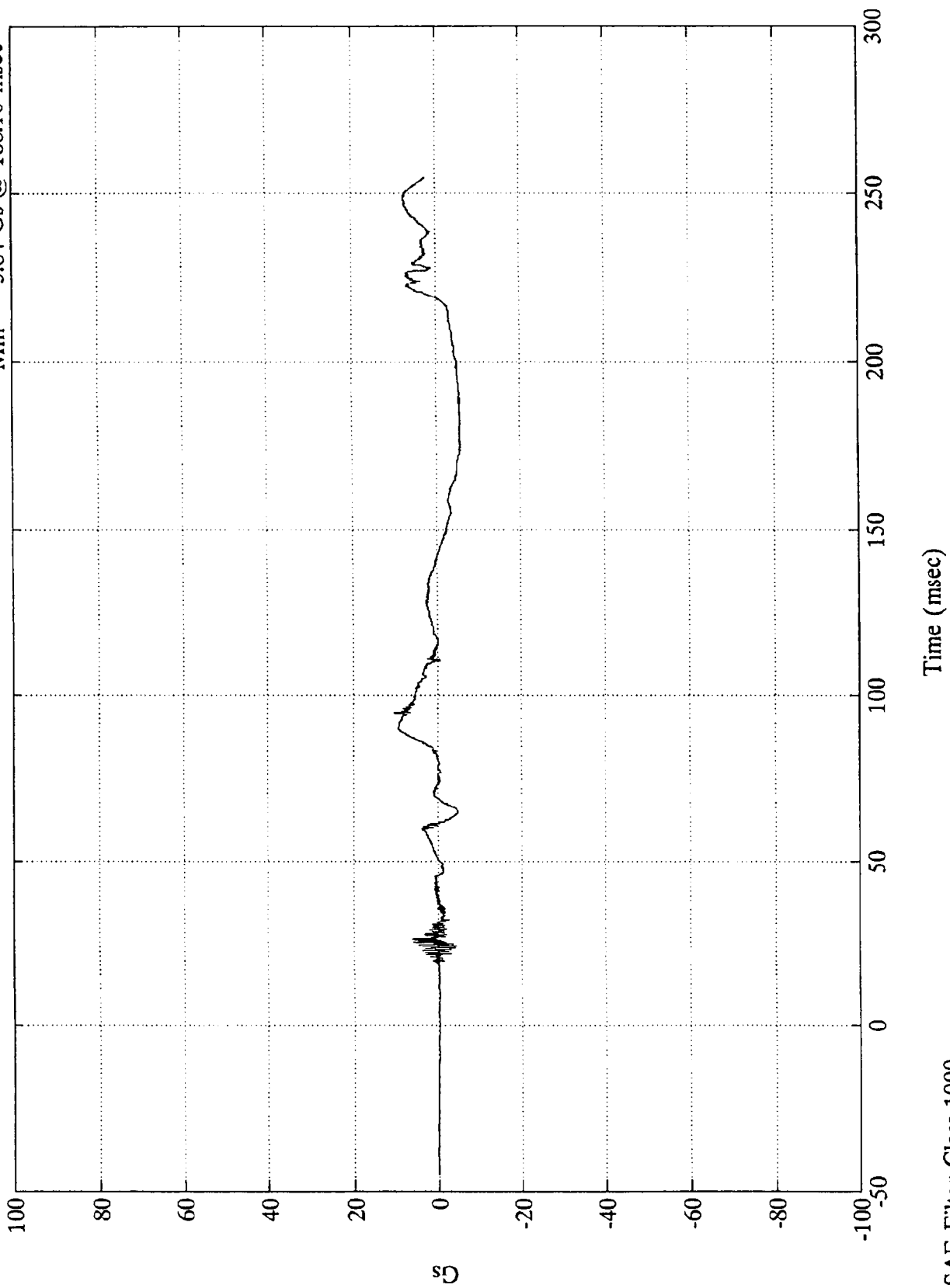


8118-6

VTV TEST #6

Max = 10.40 Gs @ 94.68 msec
Min = -5.84 Gs @ 188.16 msec

V1-P1 Head Y



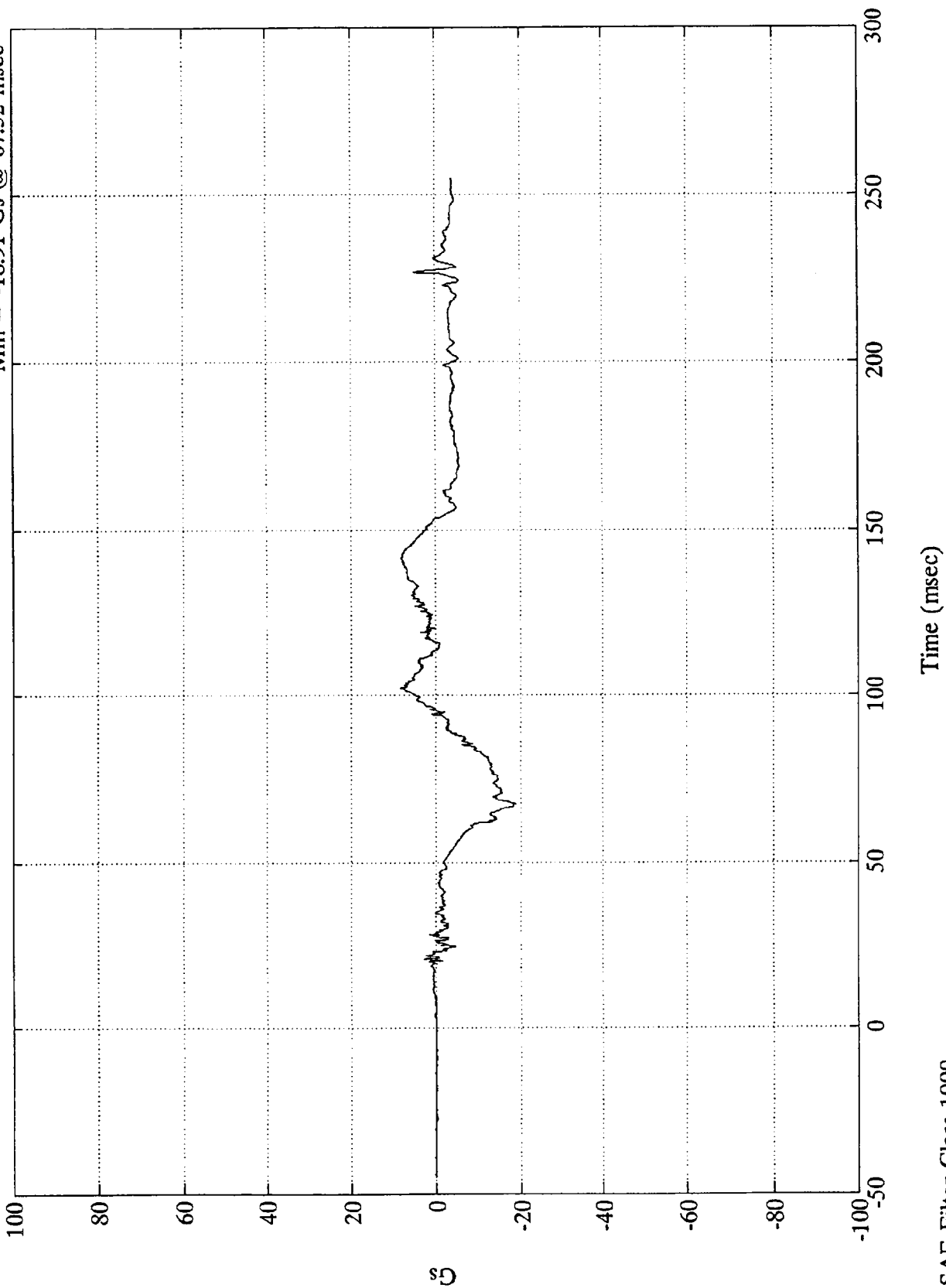
8118-6

SAE Filter Class 1000

VTV TEST #6

Max = 8.38 Gs @ 102.00 msec
Min = -18.91 Gs @ 67.32 msec

V1-P1 Head Z



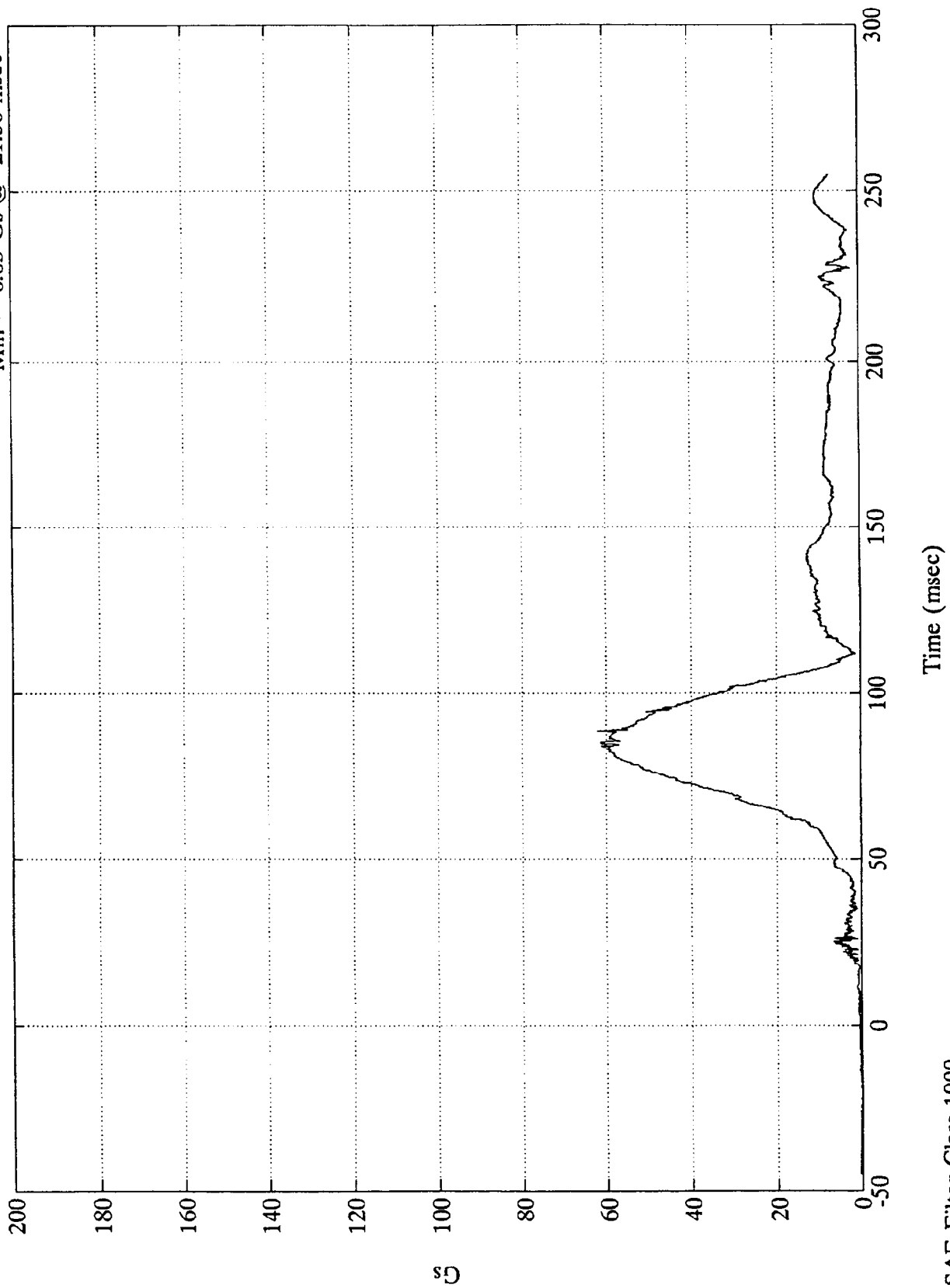
SAE Filter Class 1000

8118-6

VTV TEST #6

Max = 62.10 Gs @ 88.56 msec
Min = 0.03 Gs @ -21.36 msec

Head Resultant



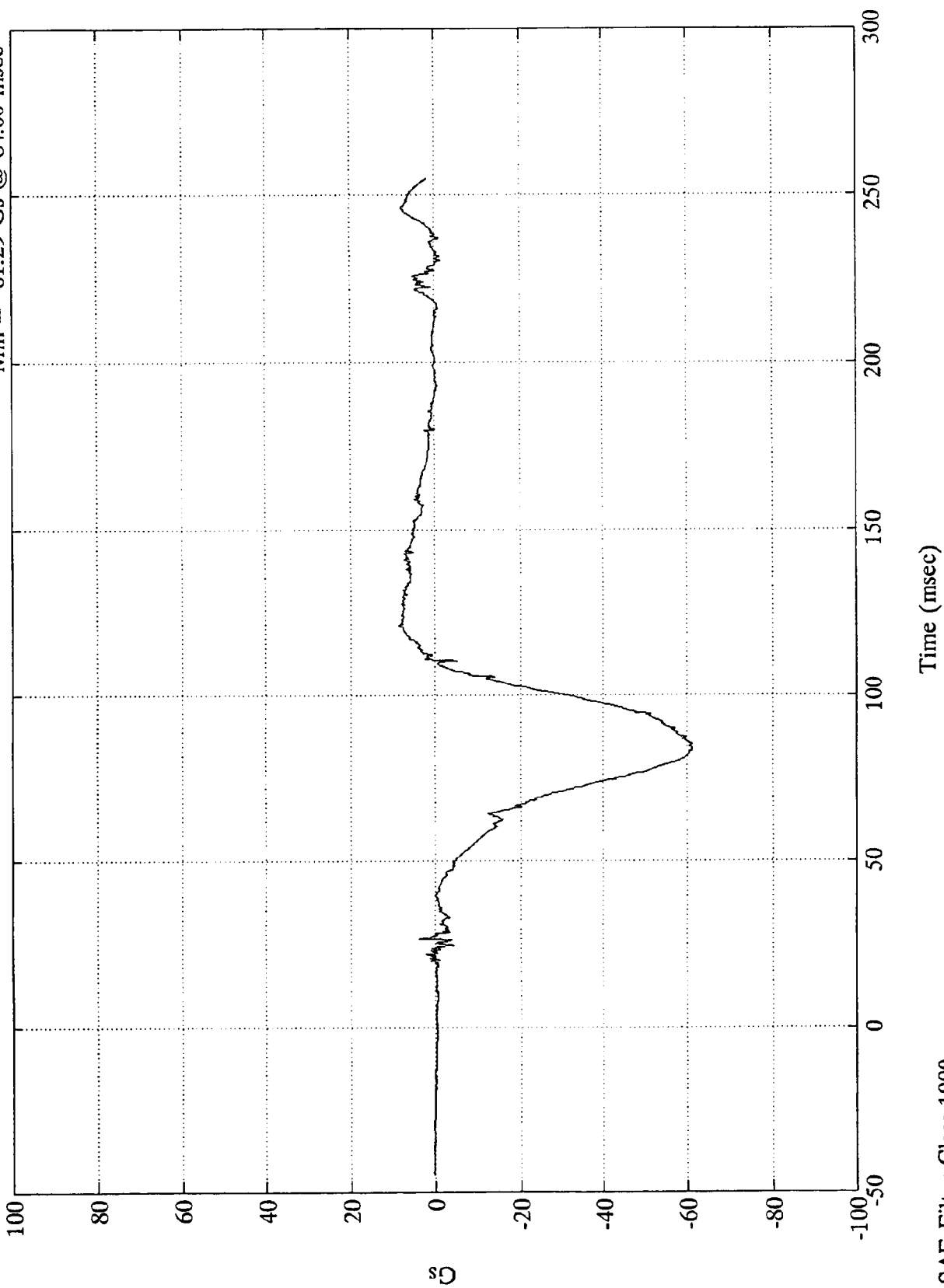
SAE Filter Class 1000

8118-6

VTV TEST #6

Max = 8.61 Gs @ 121.08 msec
Min = -61.29 Gs @ 84.00 msec

V1-P1 HD9Y (X)



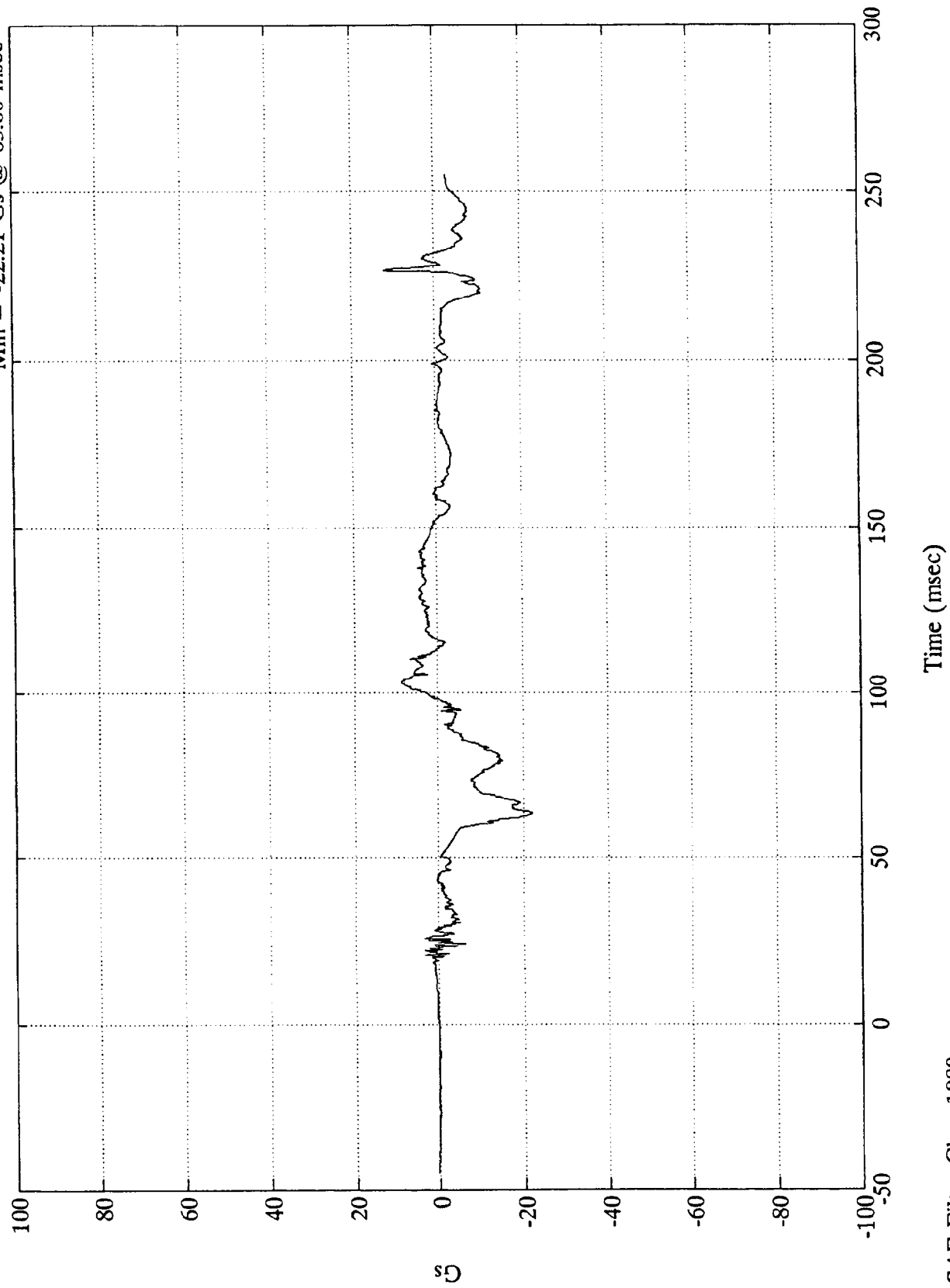
SAE Filter Class 1000

8118-6

VTV TEST #6

Max = 12.09 Gs @ 226.80 msec
Min = -22.21 Gs @ 63.60 msec

V1-P1 HD9Y (Z)



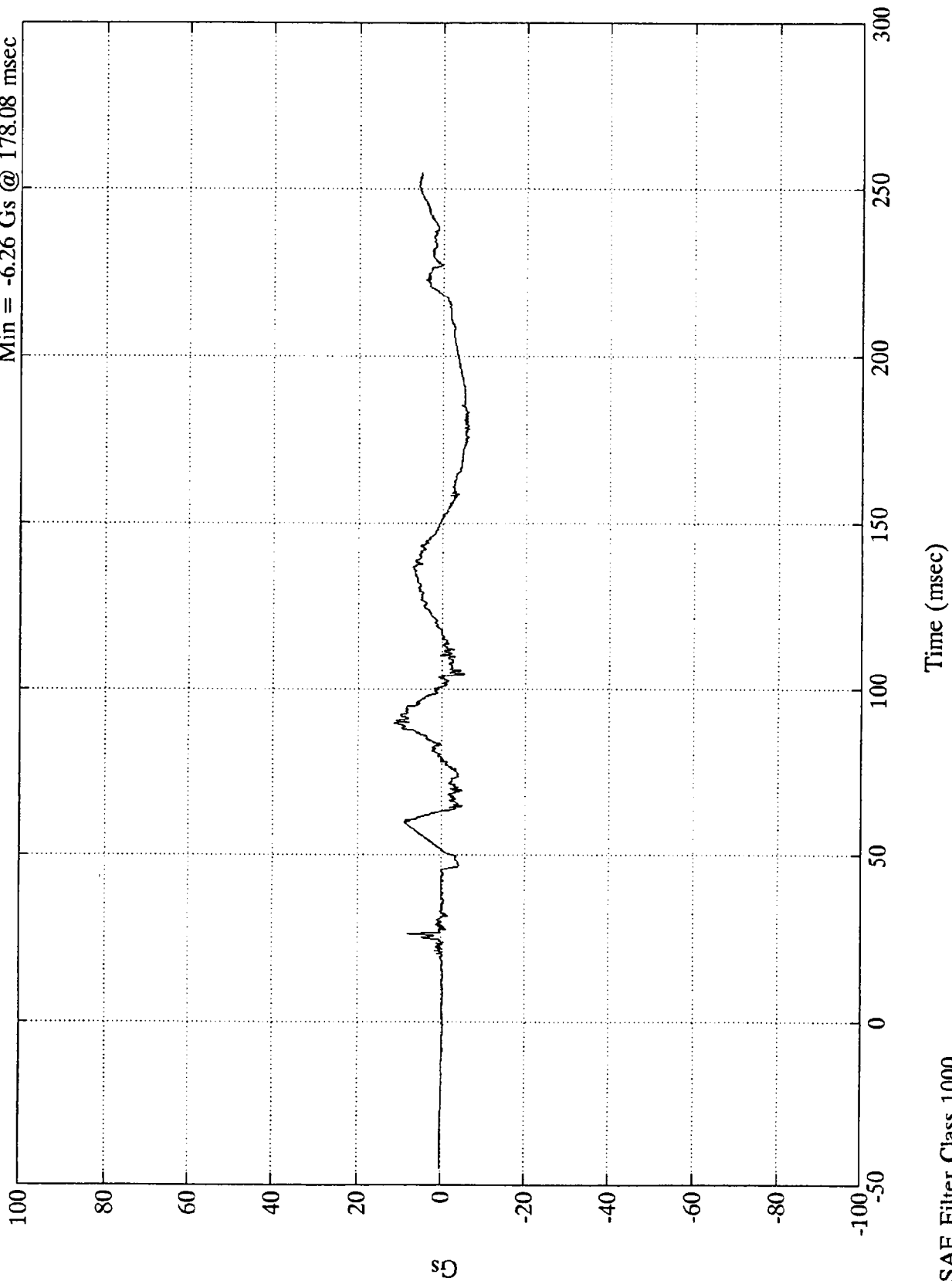
SAE Filter Class 1000

8118-6

VTV TEST #6

Max = 11.51 Gs @ 89.76 msec
Min = -6.26 Gs @ 178.08 msec

V1-P1 HD9X (Y)

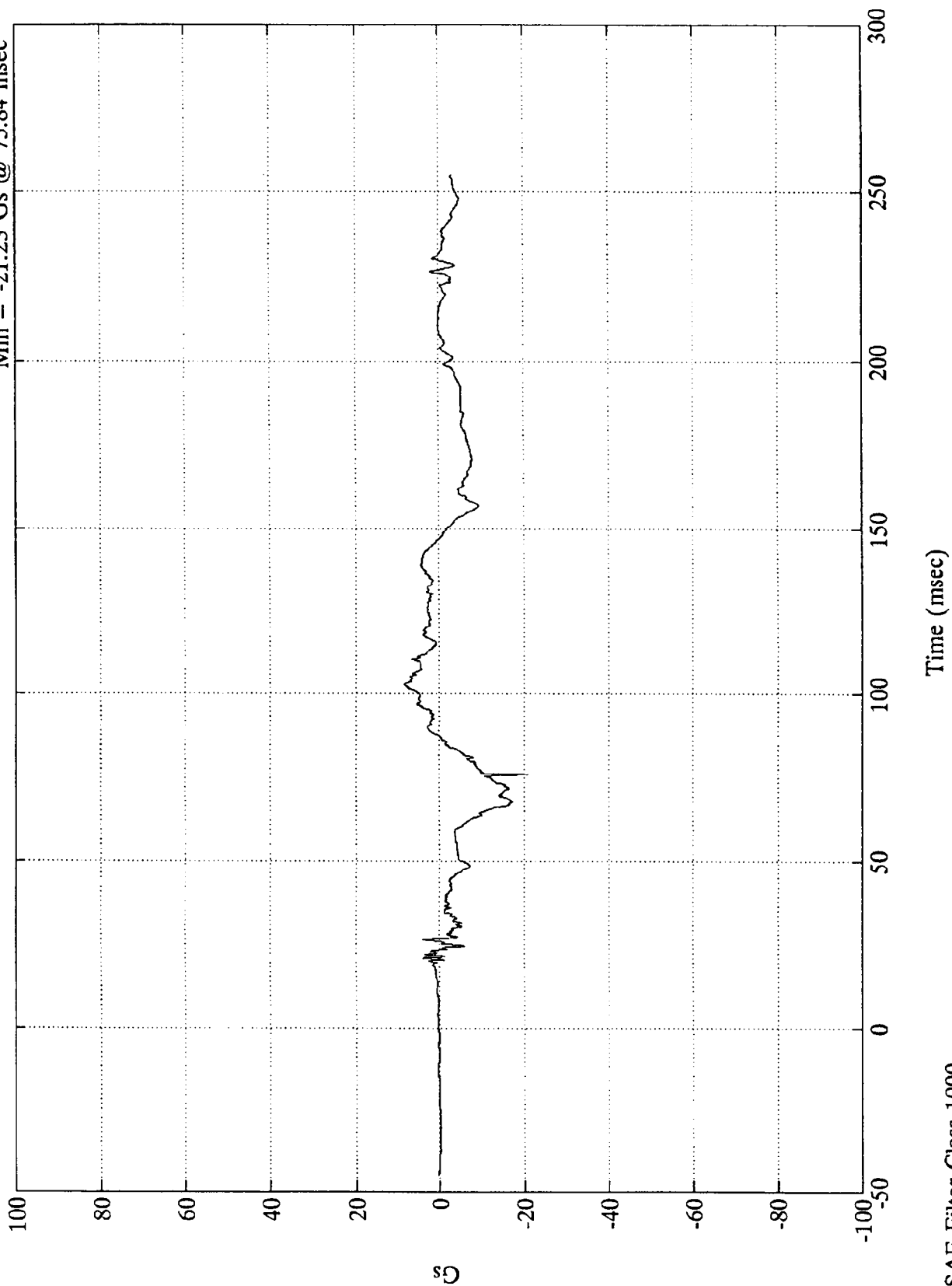


8118-6

VTV TEST #6

Max = 8.25 Gs @ 102.48 msec
Min = -21.23 Gs @ 75.84 msec

V1-P1 HD9X (Z)



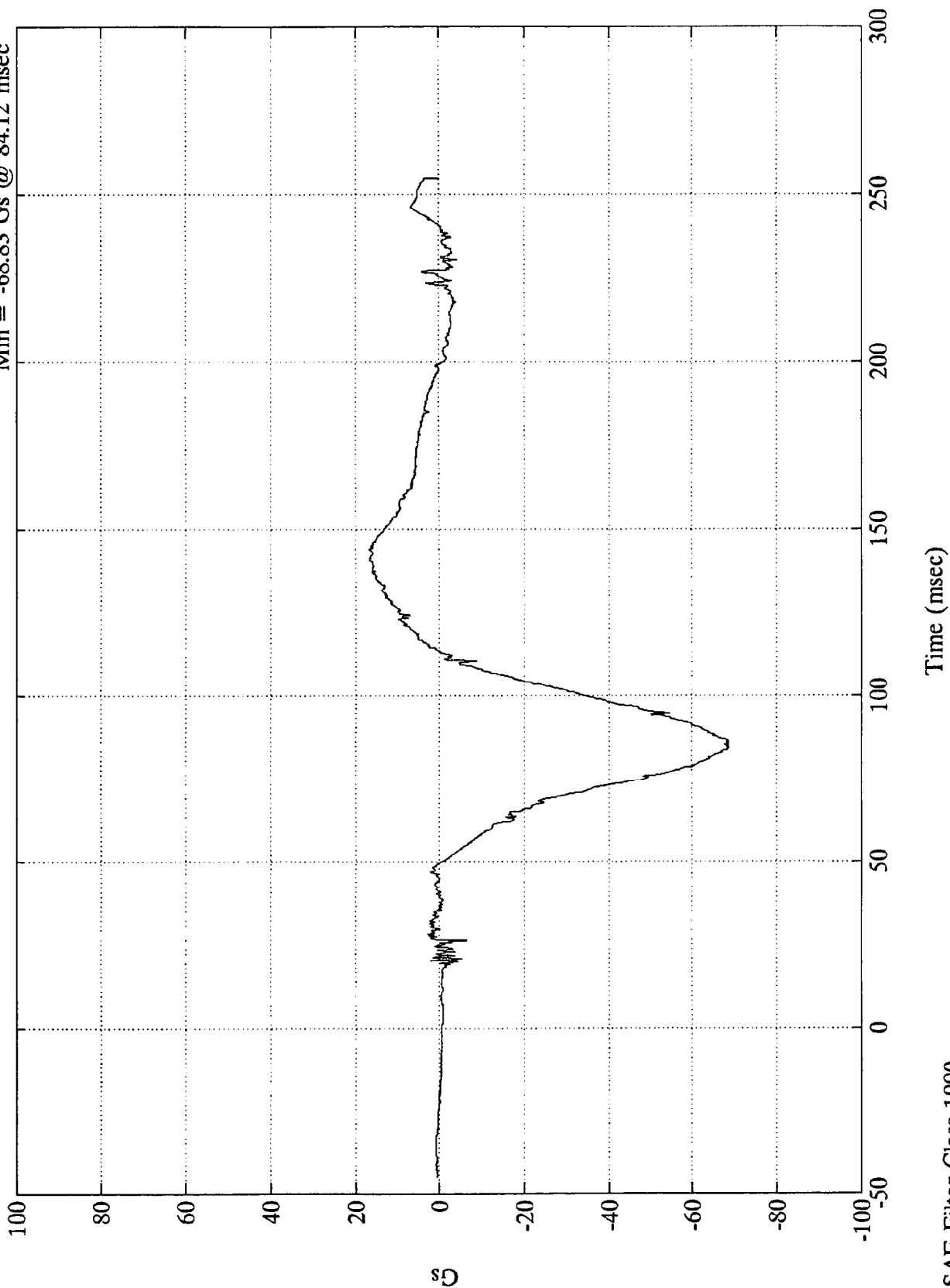
SAE Filter Class 1000

8118-6

VTV TEST #6

V1-P1 HD9Z (X)

Max = 16.71 Gs @ 144.12 msec
Min = -68.83 Gs @ 84.12 msec

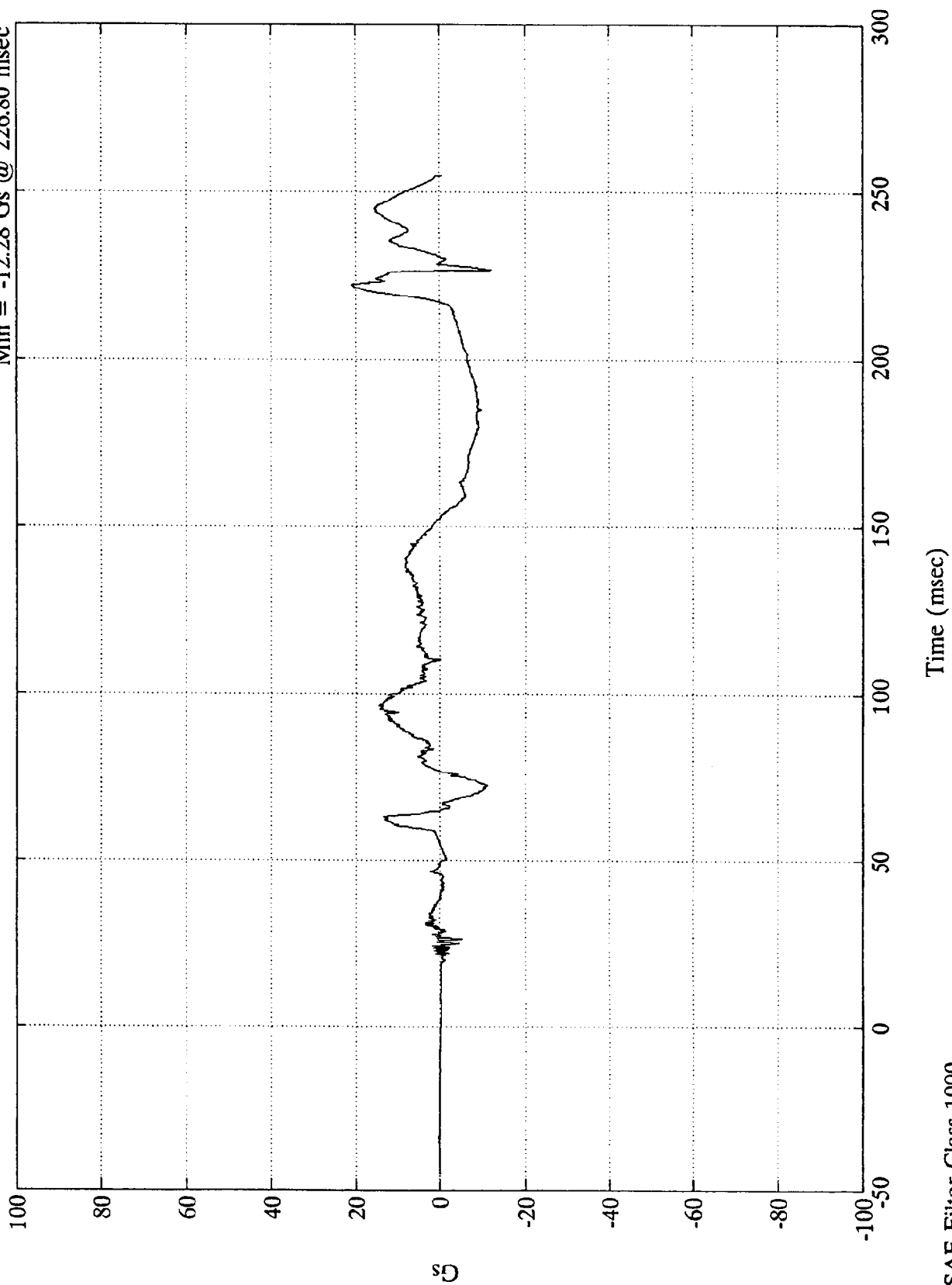


8118-6

VTV TEST #6

Max = 20.99 Gs @ 222.12 msec
Min = -12.28 Gs @ 226.80 msec

V1-P1 HD9Z (Y)

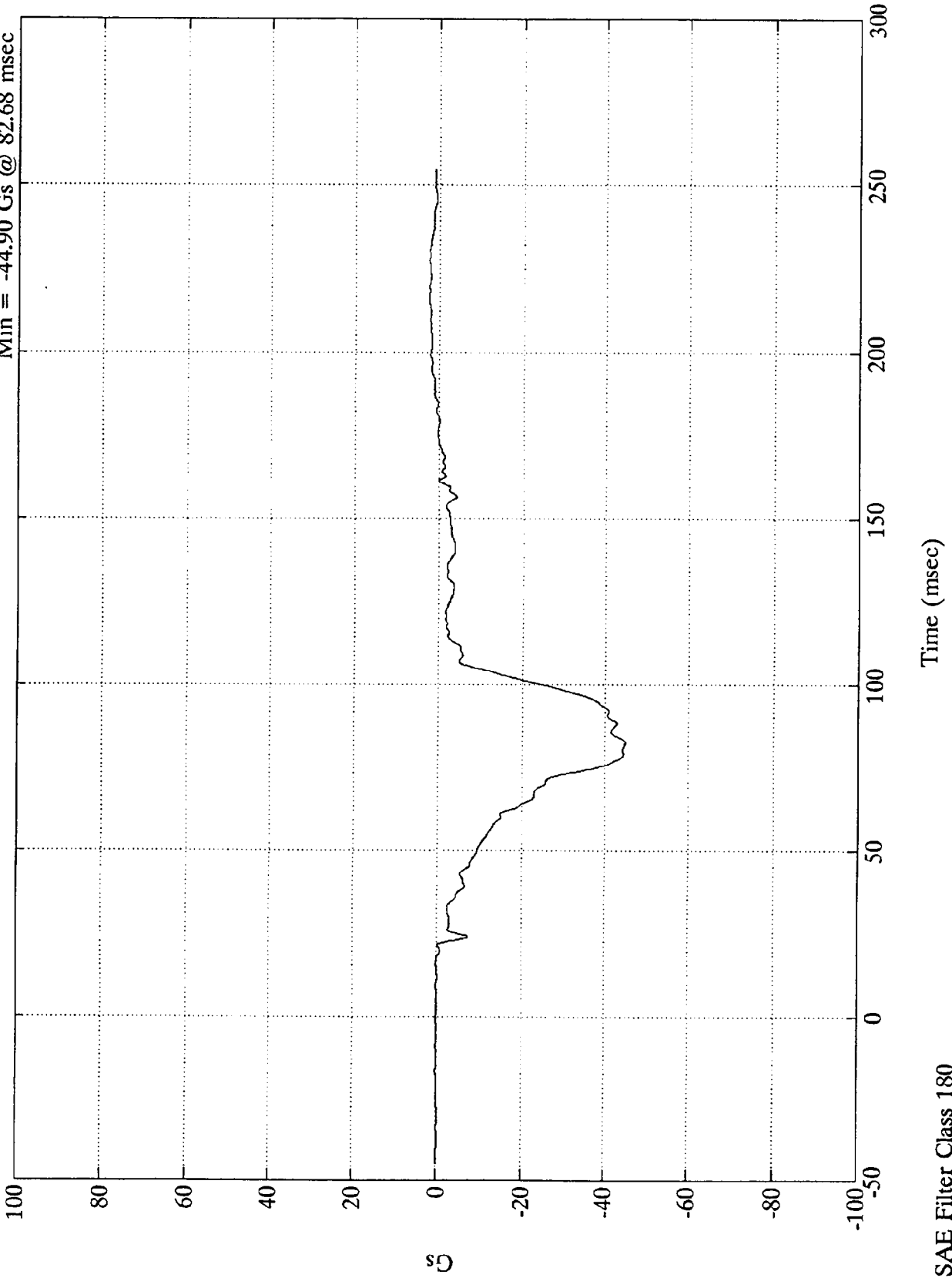


8118-6

VTV TEST #6

Max = 2.56 Gs @ 215.88 msec
Min = -44.90 Gs @ 82.68 msec

V1-P1 Chest X

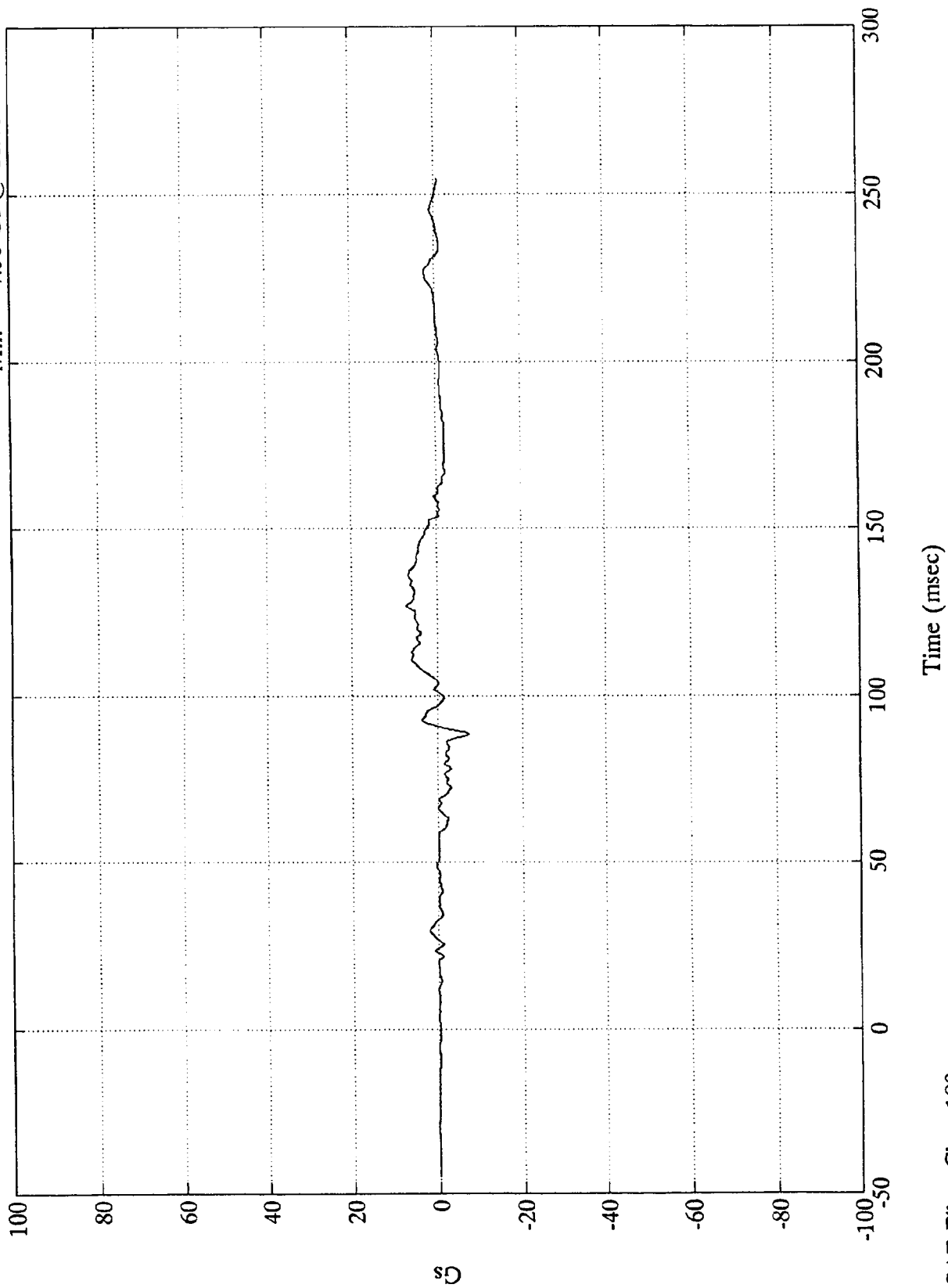


8118-6

VTV TEST #6

Max = 7.15 Gs @ 126.72 msec
Min = -7.36 Gs @ 88.68 msec

V1-P1 Chest Y



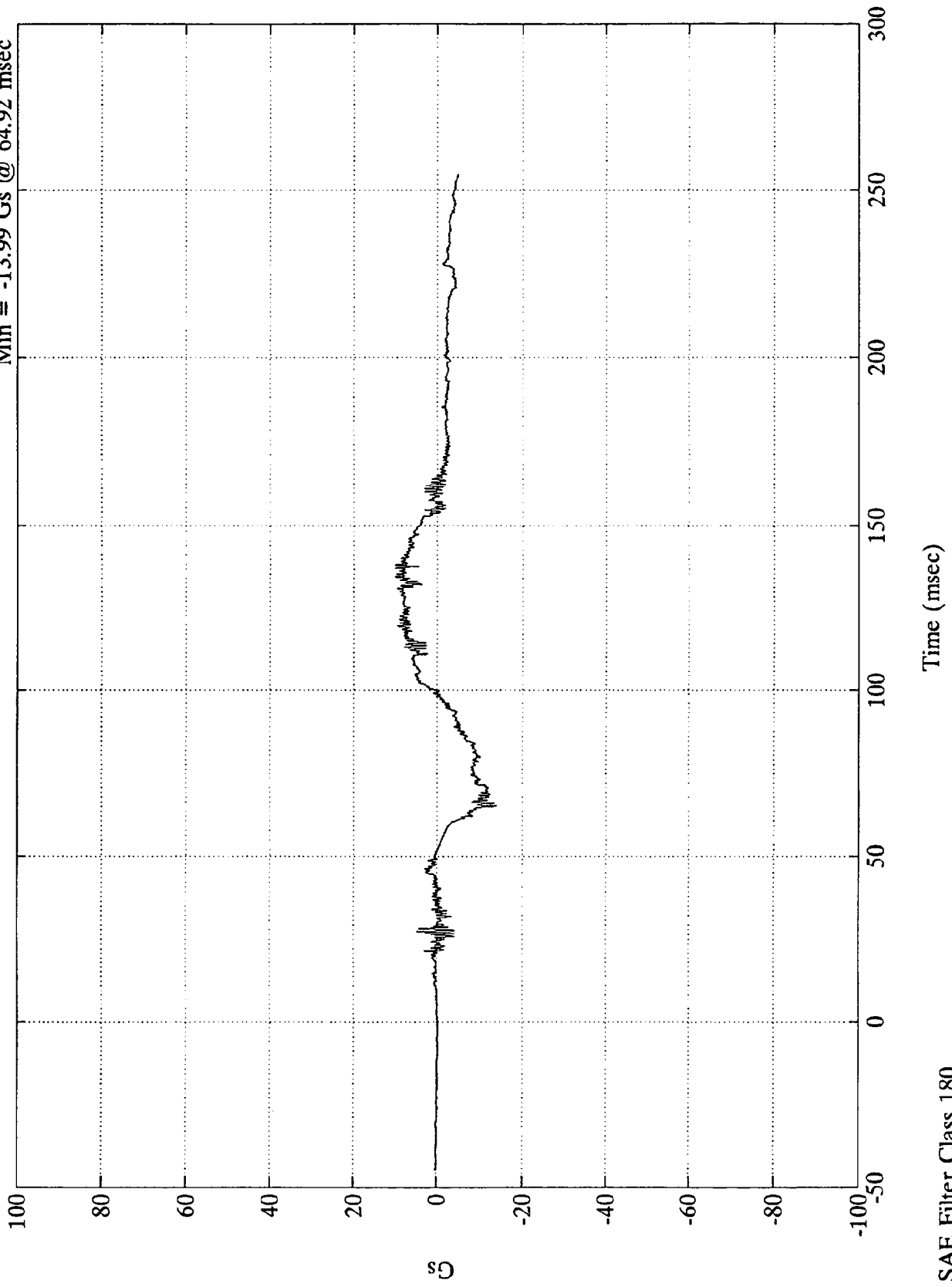
SAE Filter Class 180

8118-6

VTV TEST #6

Max = 10.20 Gs @ 138.24 msec
Min = -13.99 Gs @ 64.92 msec

V1-P1 Chest Z



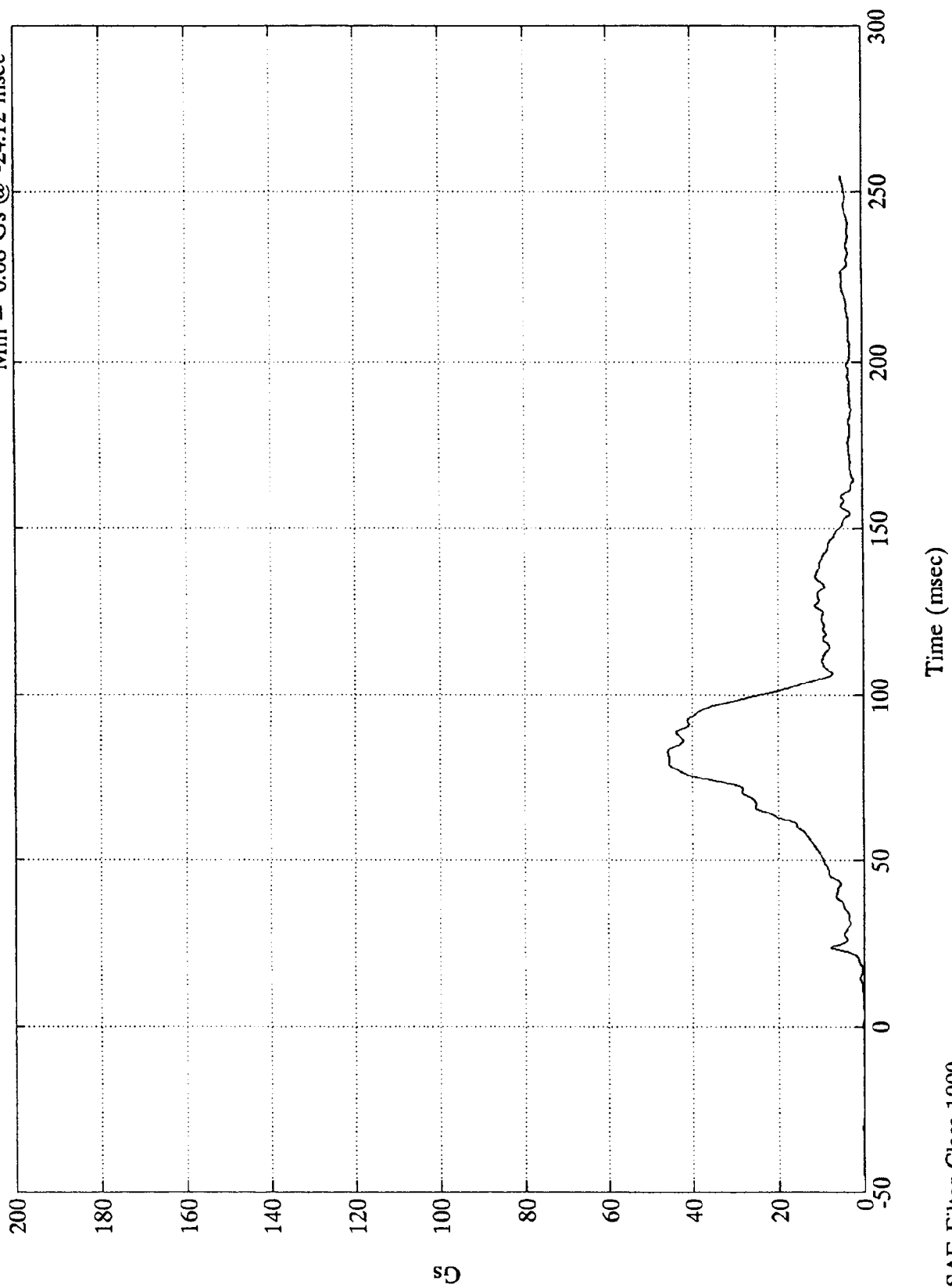
8118-6

SAE Filter Class 180

VTV TEST #6

Max = 45.78 Gs @ 82.56 msec
Min = 0.08 Gs @ -24.12 msec

Chest Resultant



SAE Filter Class 1000

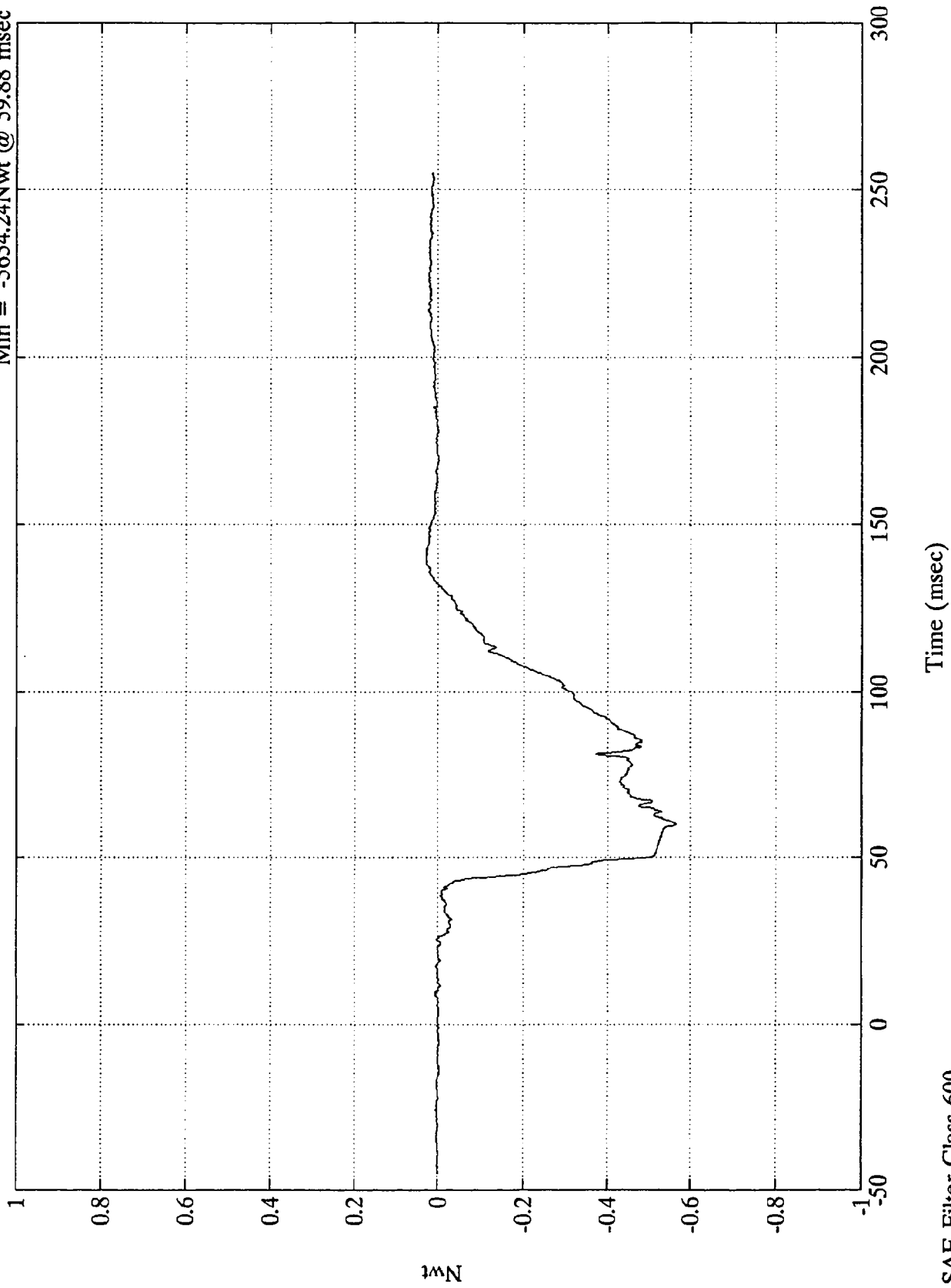
8118-6

VTV TEST #6

$\times 10^4$

V1-P1 Left Femur

Max = 303.71Nwt @ 139.56 msec
Min = -5654.24Nwt @ 59.88 msec



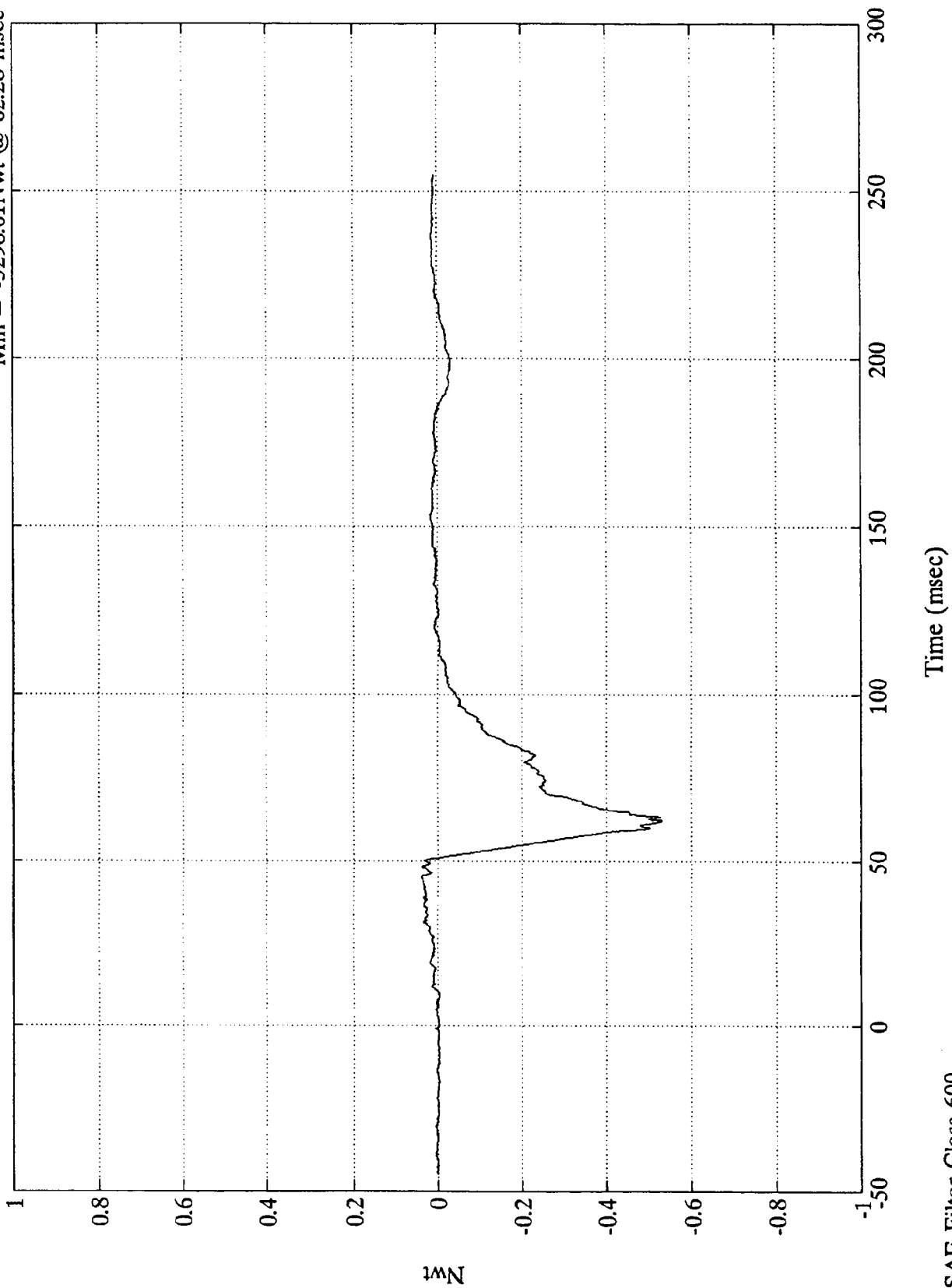
SAE Filter Class 600

8118-6

VTV TEST #6
x10⁴

V1-P1 Right Femur

Max = 387.23Nwt @ 48.24 msec
Min = -5298.01Nwt @ 62.28 msec



SAE Filter Class 600

8118-6

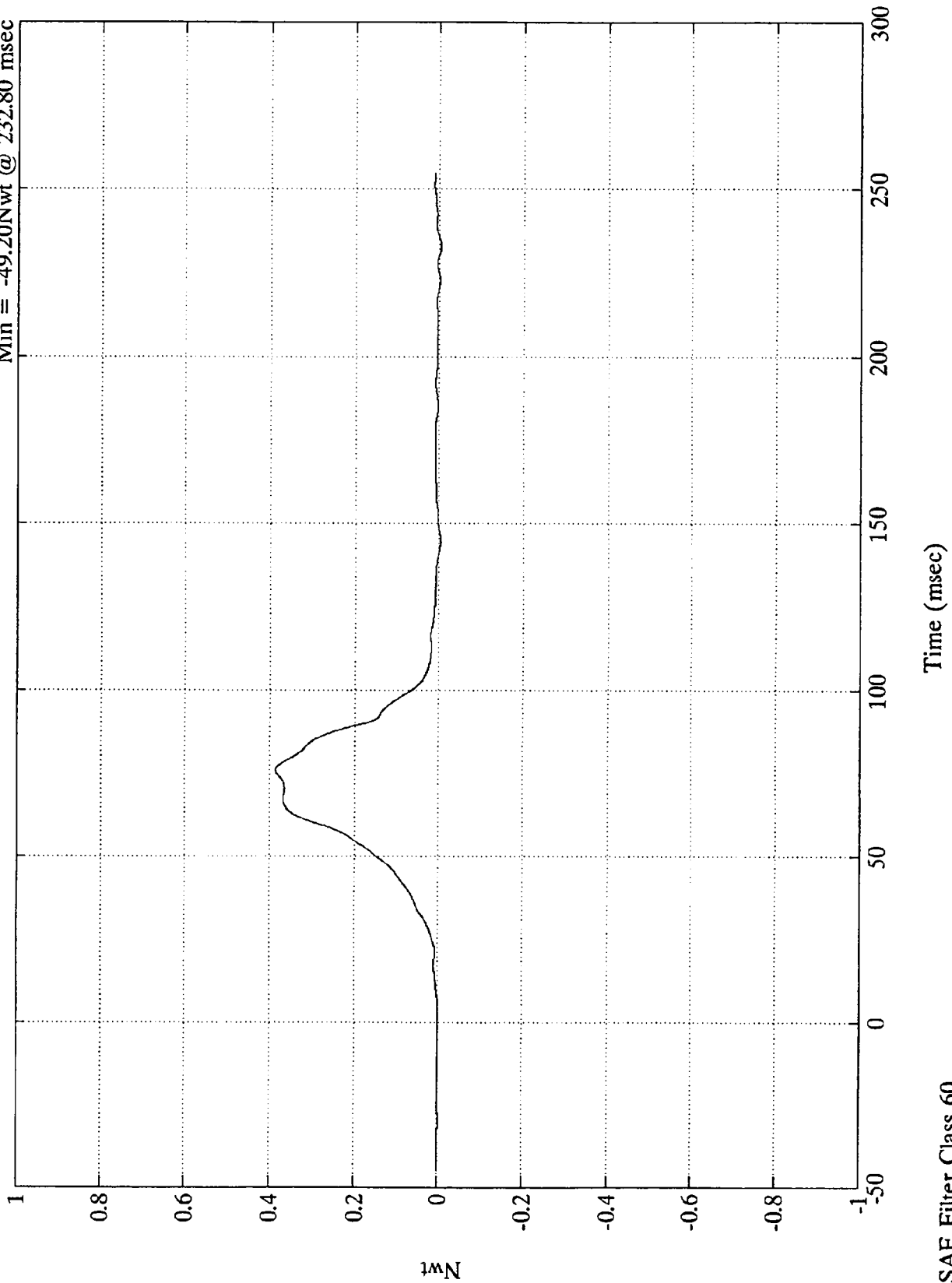
VTV TEST #6

$\times 10^4$

V1-P1 Torso Belt Load

Max = 3868.30Nwt @ 75.96 msec

Min = -49.20Nwt @ 232.80 msec



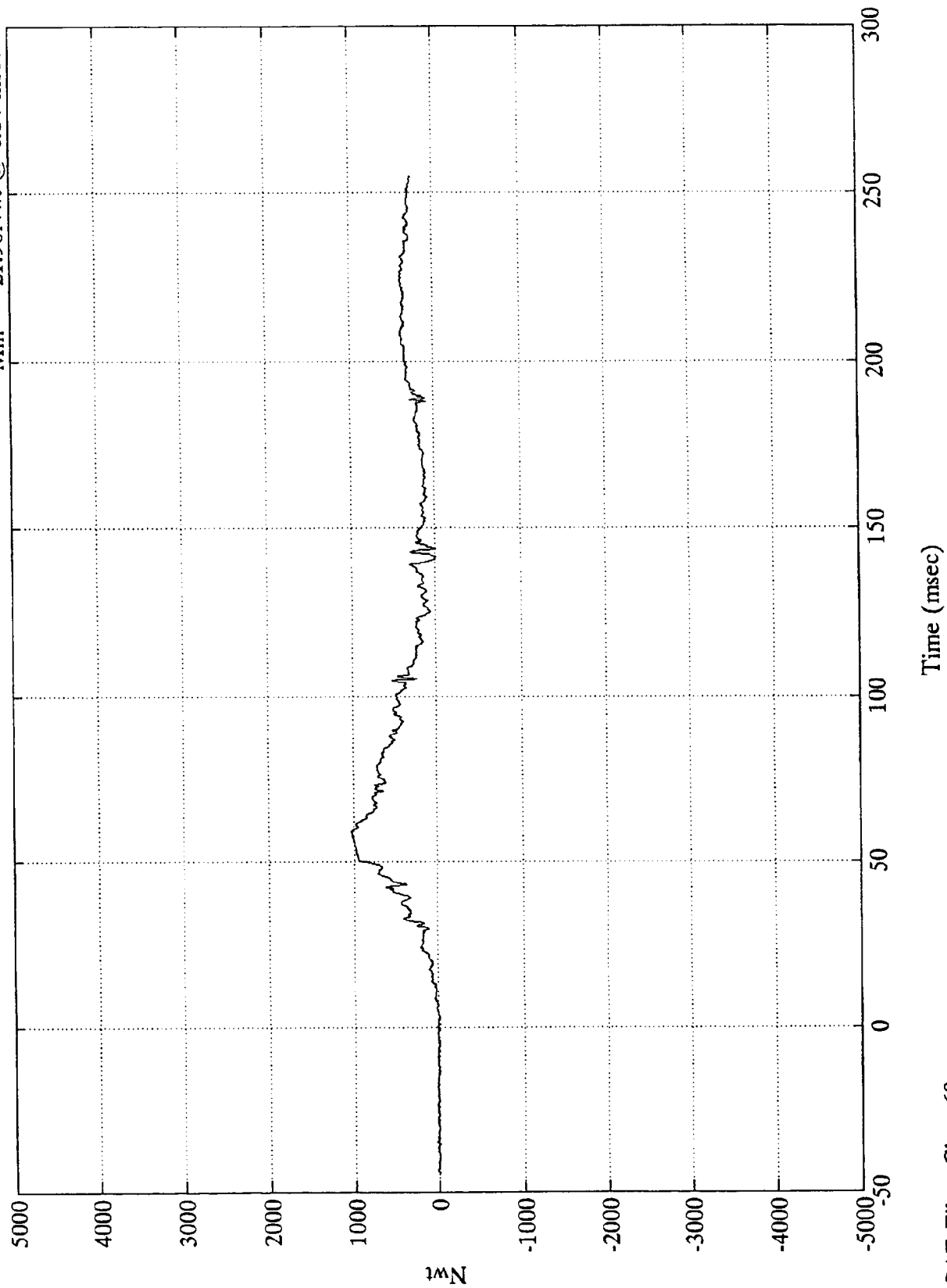
SAE Filter Class 60

8118-6

VTV TEST #6

V1-P1 Lap Belt Load

Max = 1026.14Nwt @ 58.92 msec
Min = -21.96Nwt @ 0.84 msec



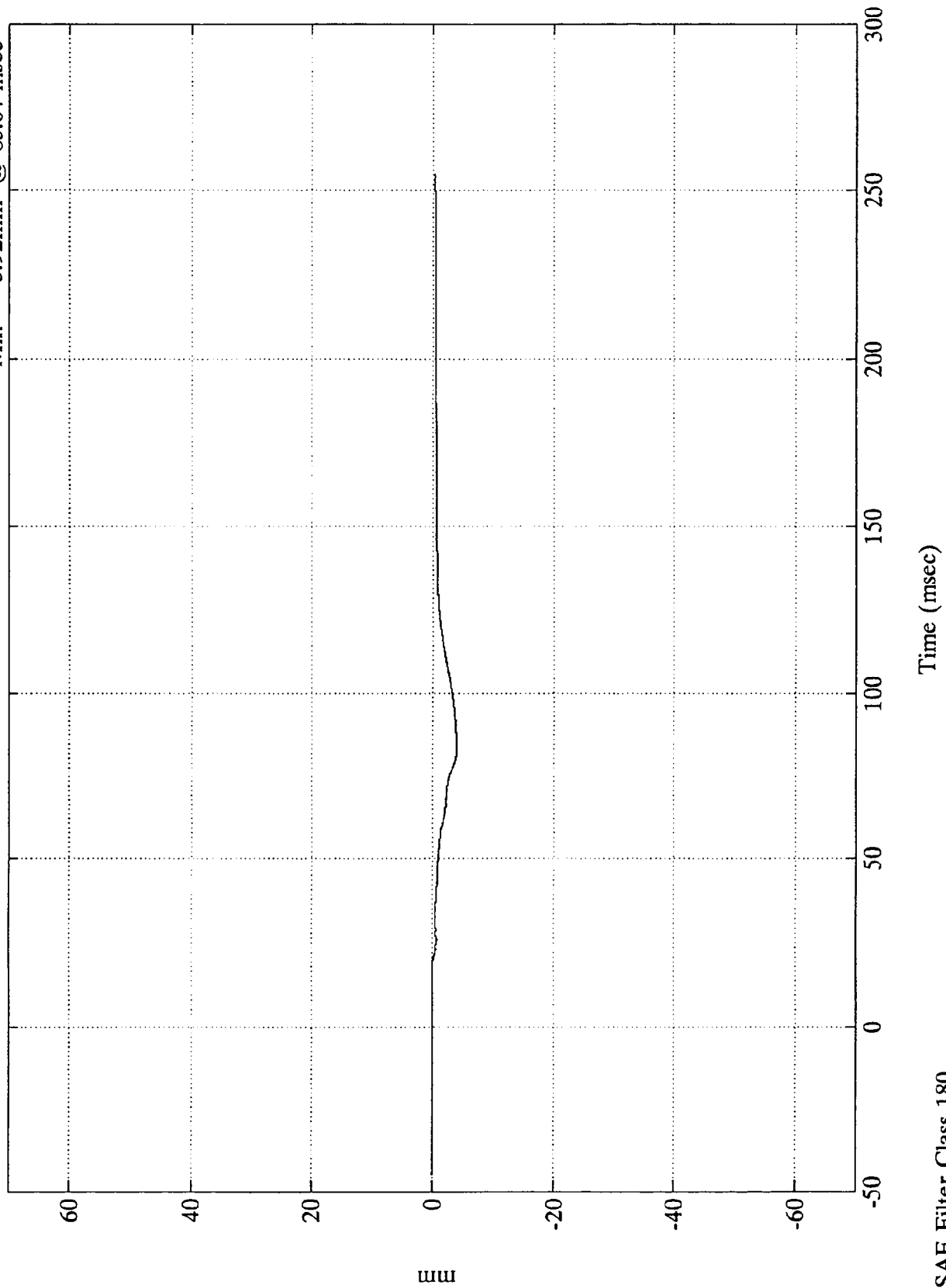
SAE Filter Class 60

8118-6

VTV TEST #6

V1-P1 Chest Disp.

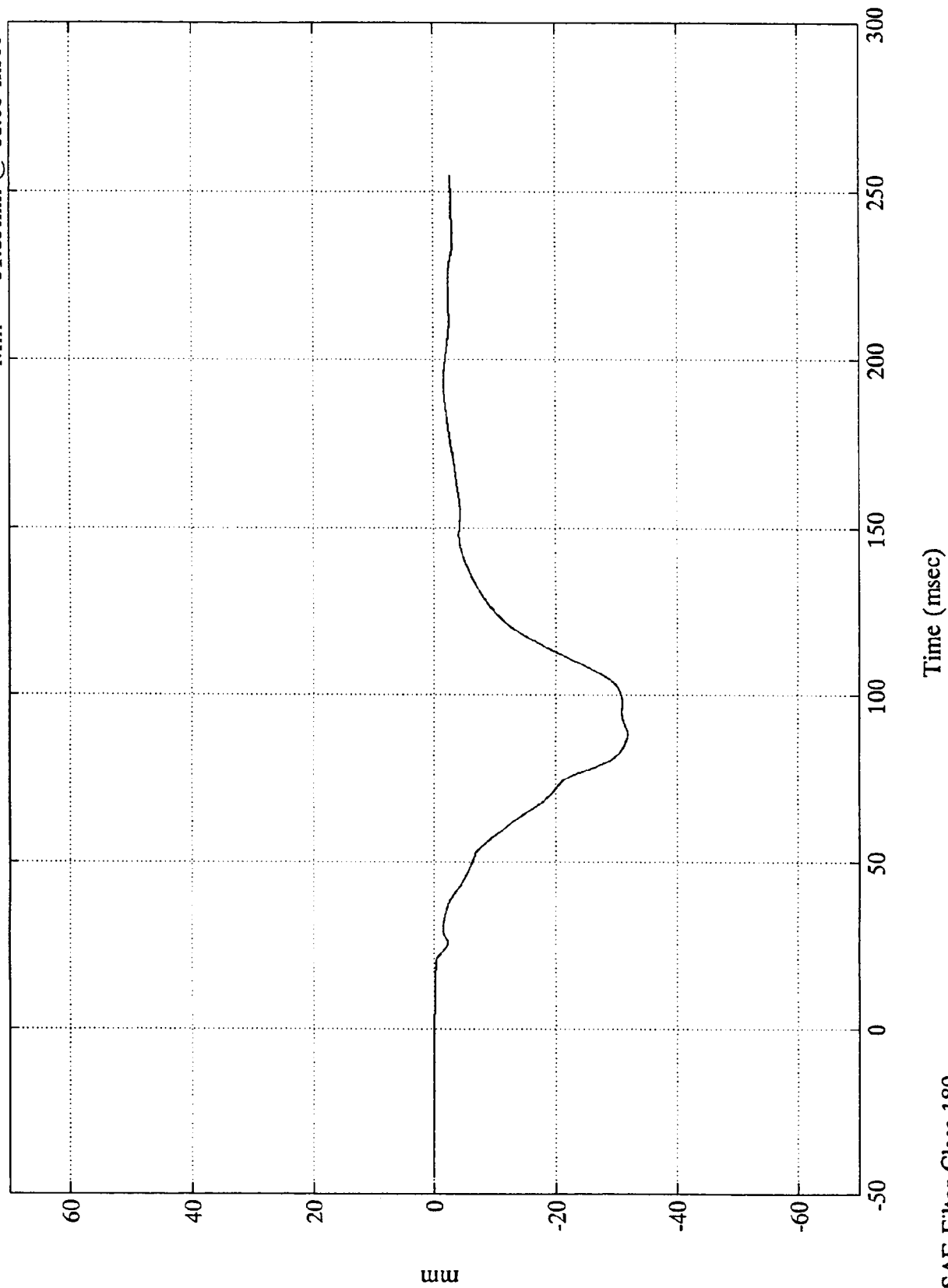
Max = 0.02mm @ -22.68 msec
Min = -3.92mm @ 83.64 msec



8118-6

VTV TEST #6

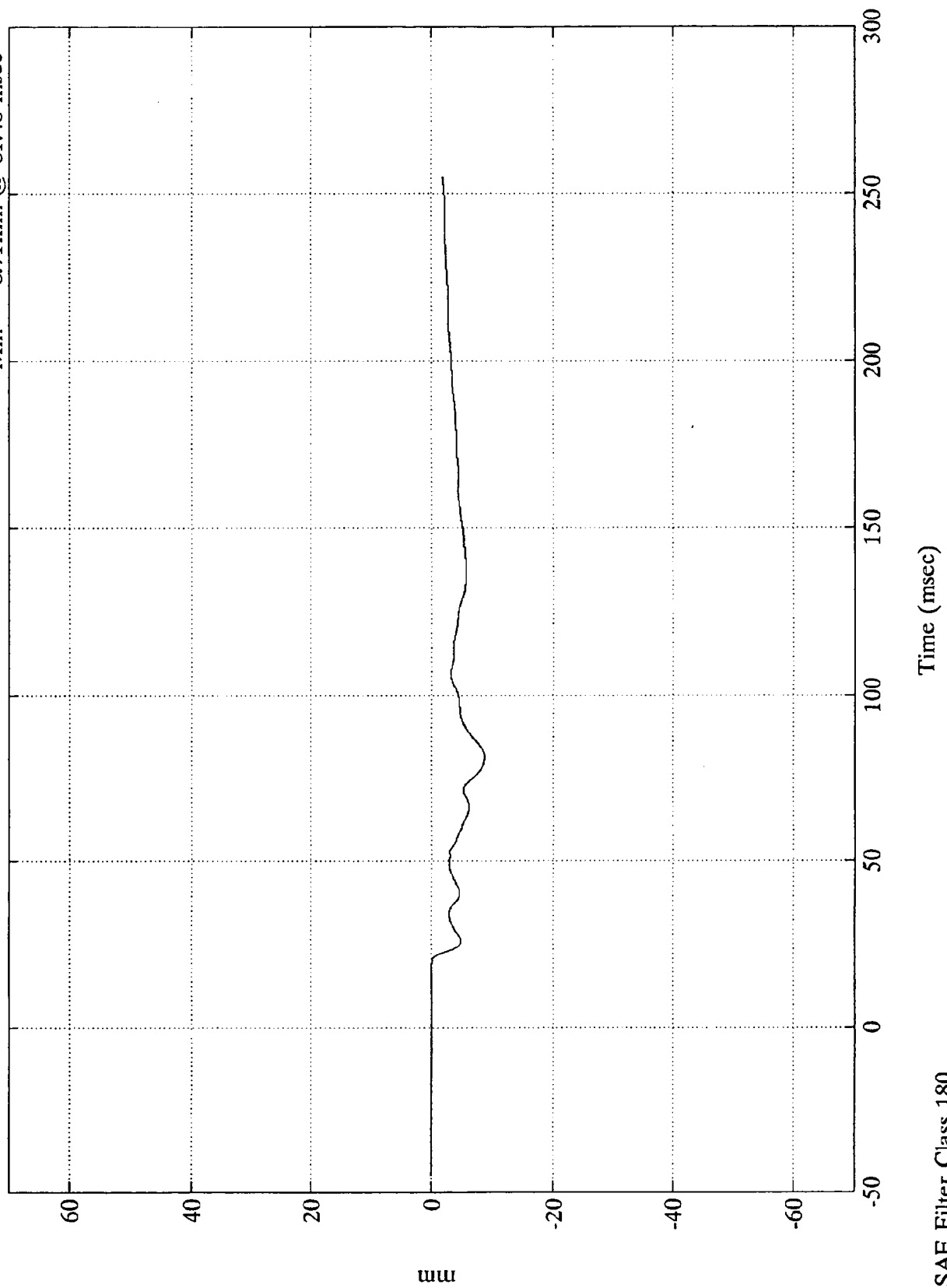
Chest Displacement #125
Max = 0.02mm @ -24.84 msec
Min = -31.85mm @ 88.08 msec



VTV TEST #6

Chest Displacement #126

Max = 0.05mm @ 5.76 msec
Min = -8.71mm @ 81.48 msec

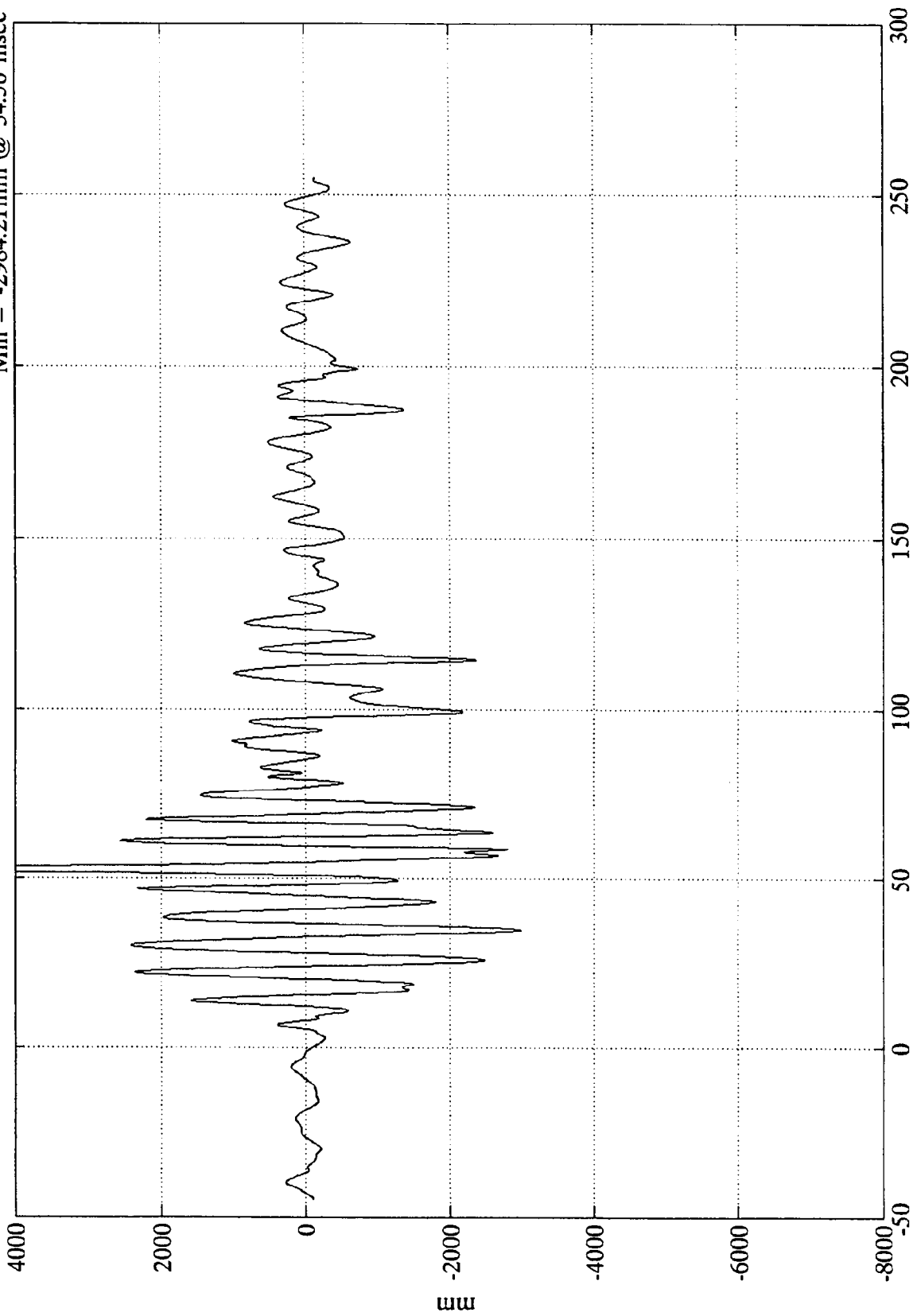


SAE Filter Class 180

8118-6

VTV TEST #6

Chest Displacement #127
Max = 7632.82mm @ 52.68 msec
Min = -2984.21mm @ 34.56 msec



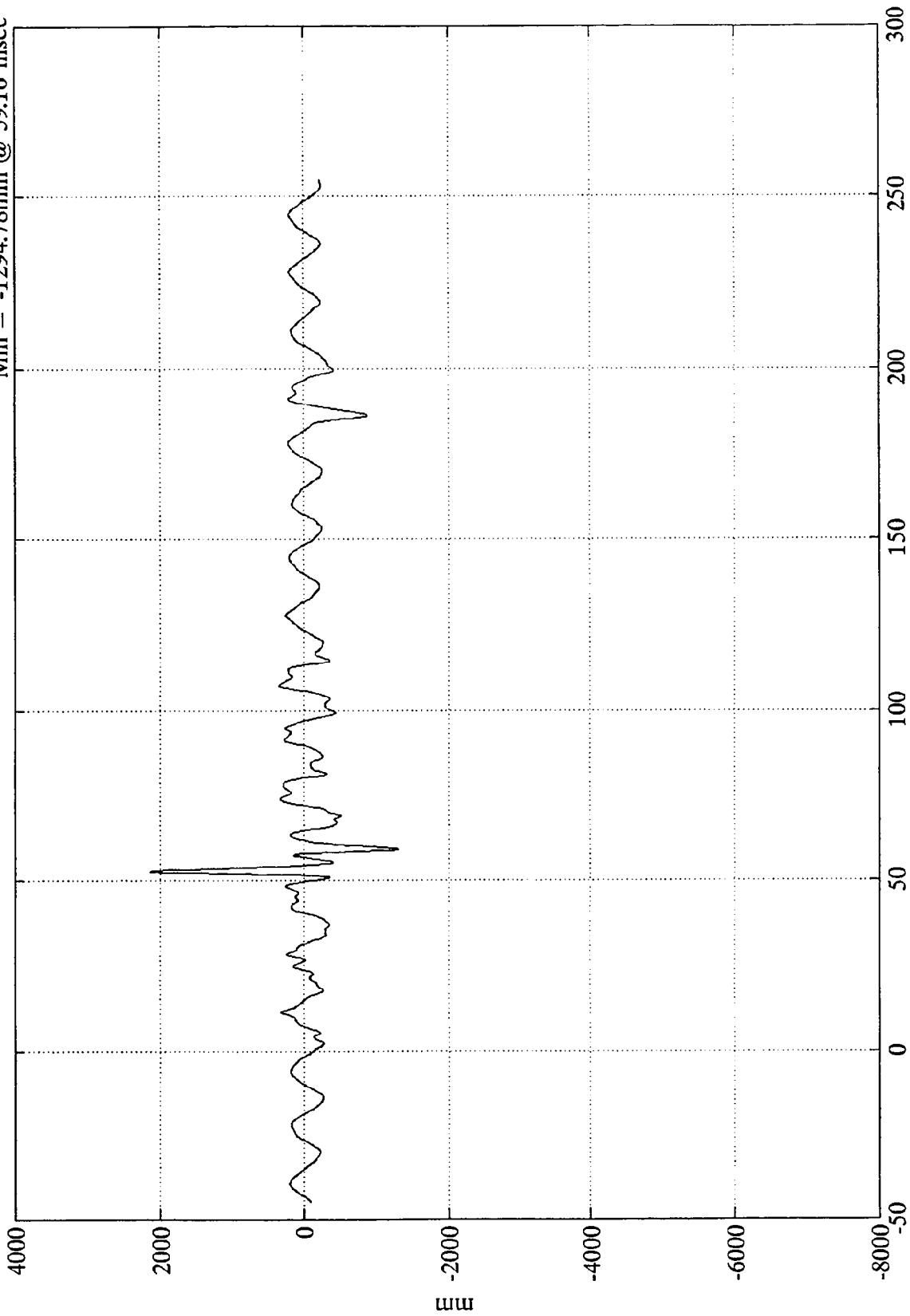
Time (msec) Data questionable

SAE Filter Class 180

8118-6

VTV TEST #6

Chest Displacement #128
Max = 2148.51mm @ 52.68 msec
Min = -1294.78mm @ 59.16 msec



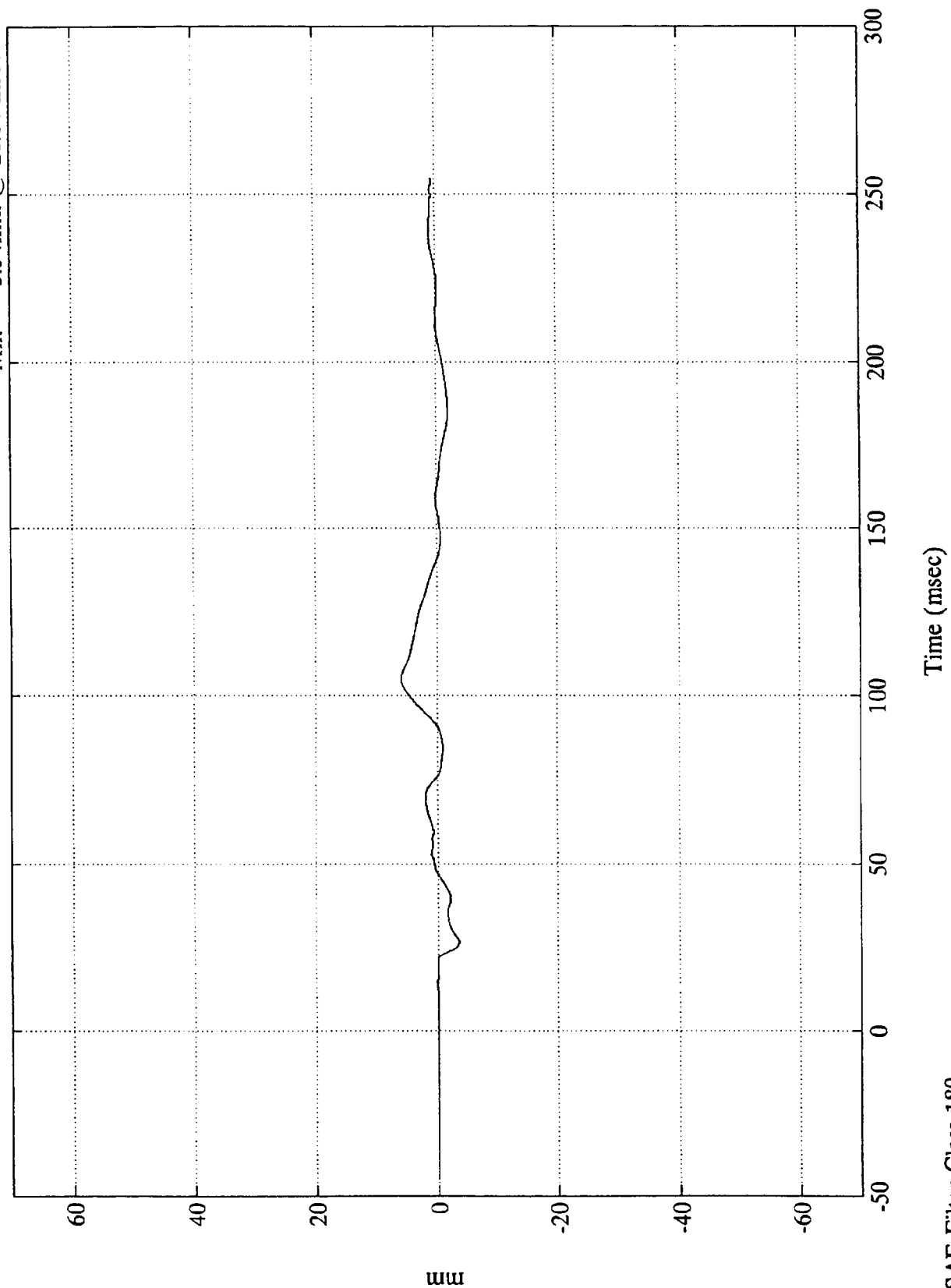
Time (msec) Data questionable

SAE Filter Class 180

8118-6

VTV TEST #6

Chest Displacement #129
Max = 5.99mm @ 105.00 msec
Min = -3.54mm @ 26.04 msec



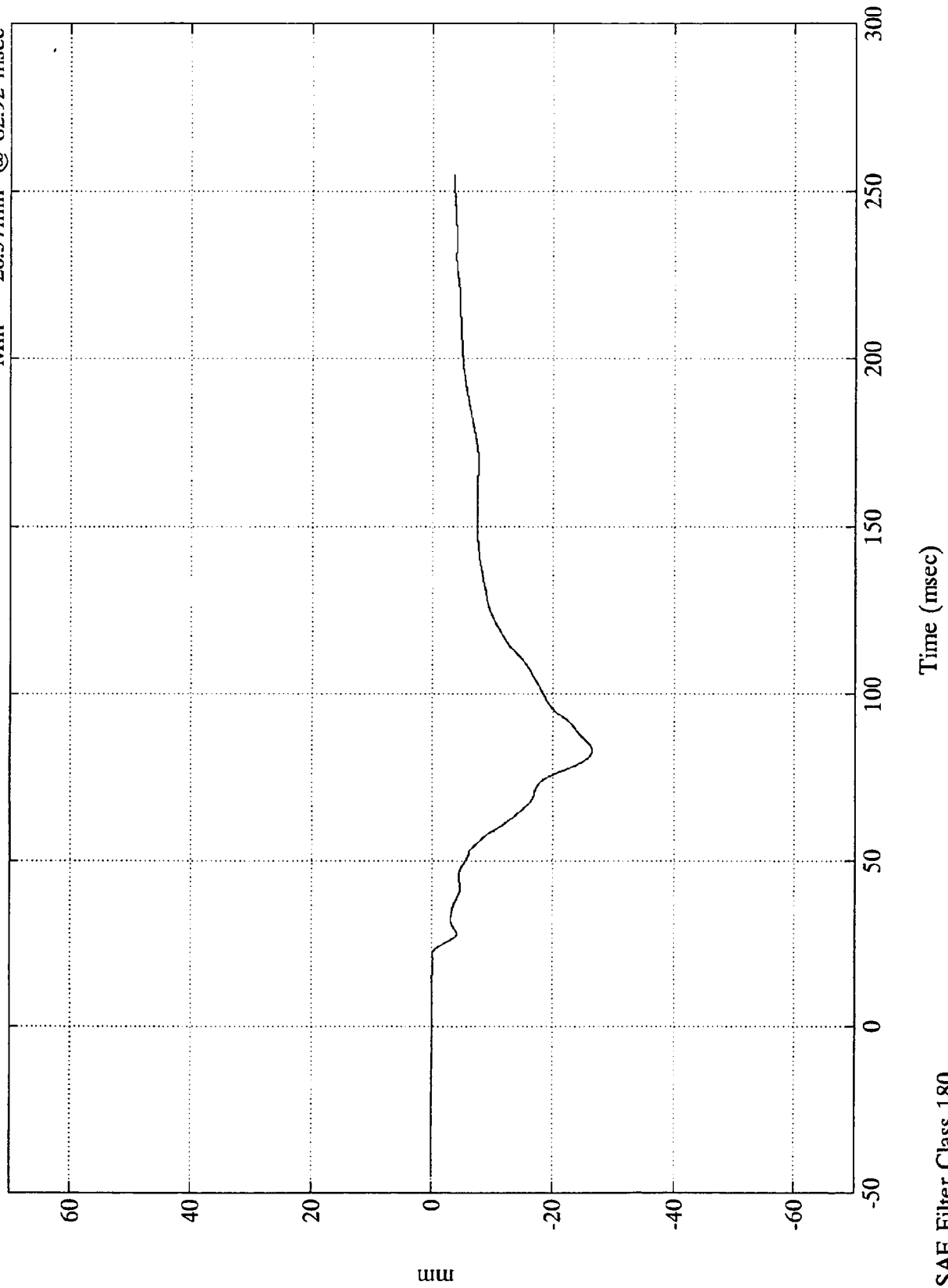
SAE Filter Class 180

8118-6

VTV TEST #6

Chest Displacement #130

Max = 0.05mm @ 1.92 msec
Min = -26.57mm @ 82.92 msec

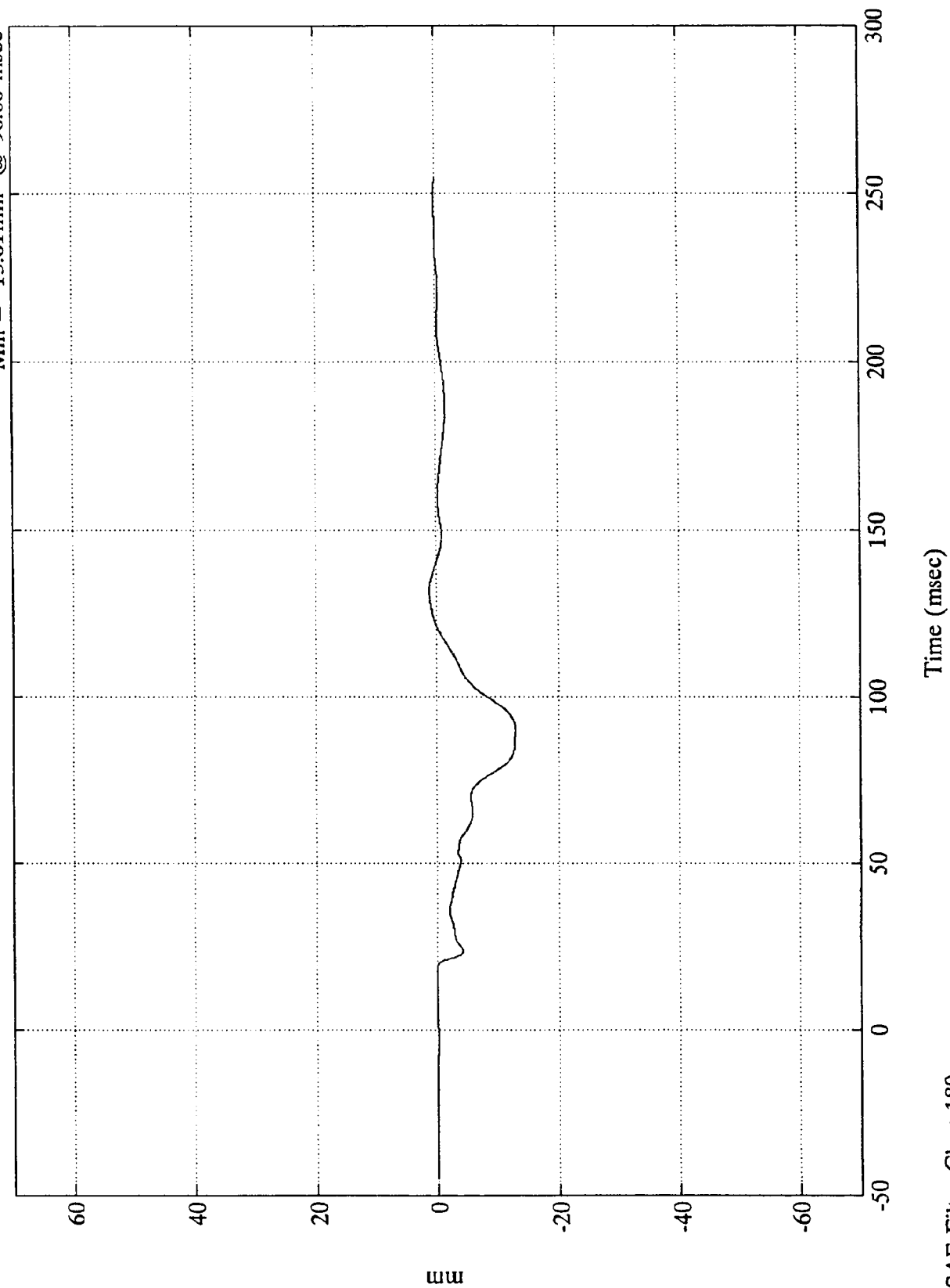


8118-6

SAE Filter Class 180

VTV TEST #6

Chest Displacement #131
Max = 1.22mm @ 131.76 msec
Min = -13.01mm @ 90.00 msec



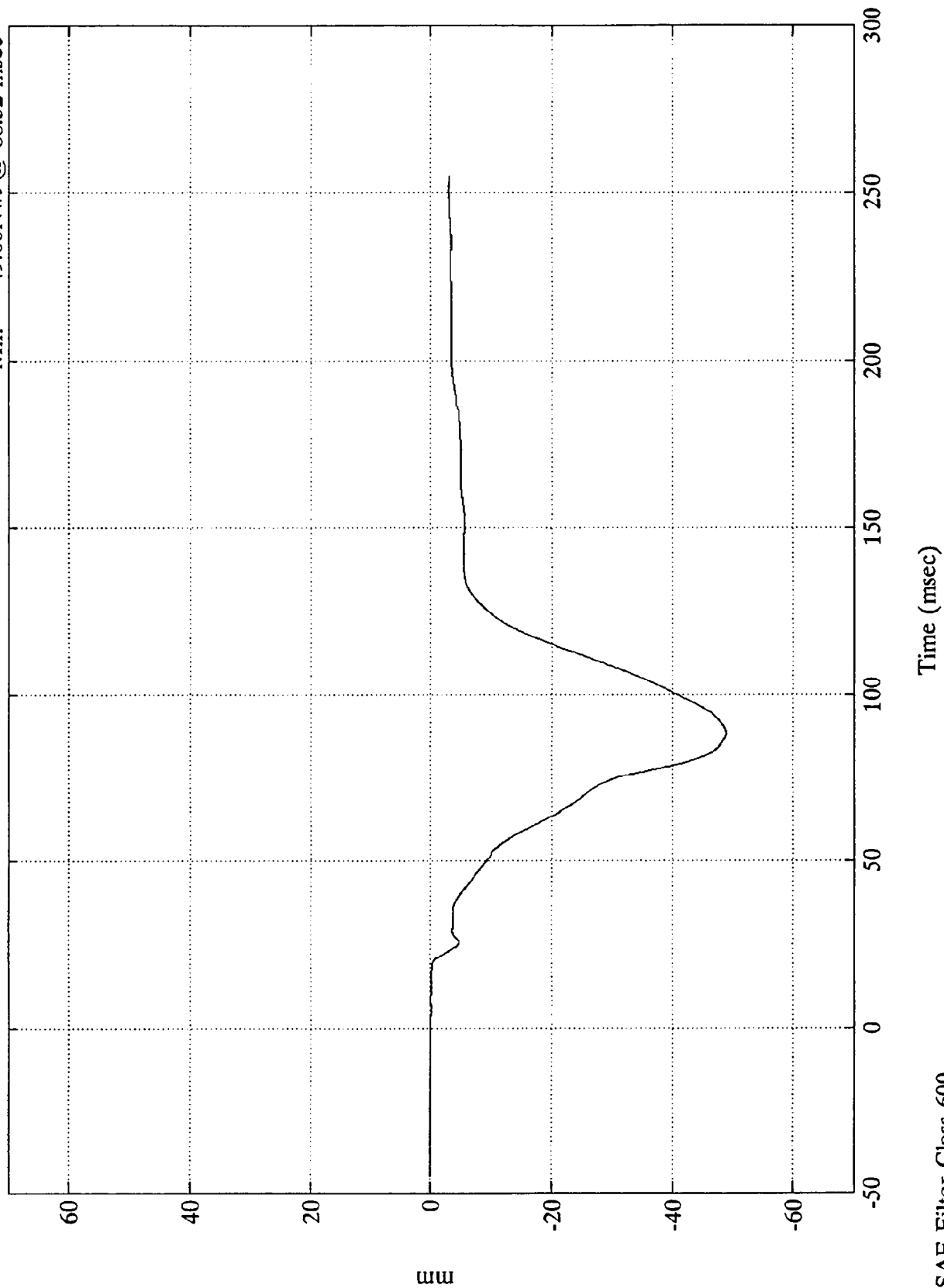
SAE Filter Class 180

8118-6

VTV TEST #6

Chest Displacement #132

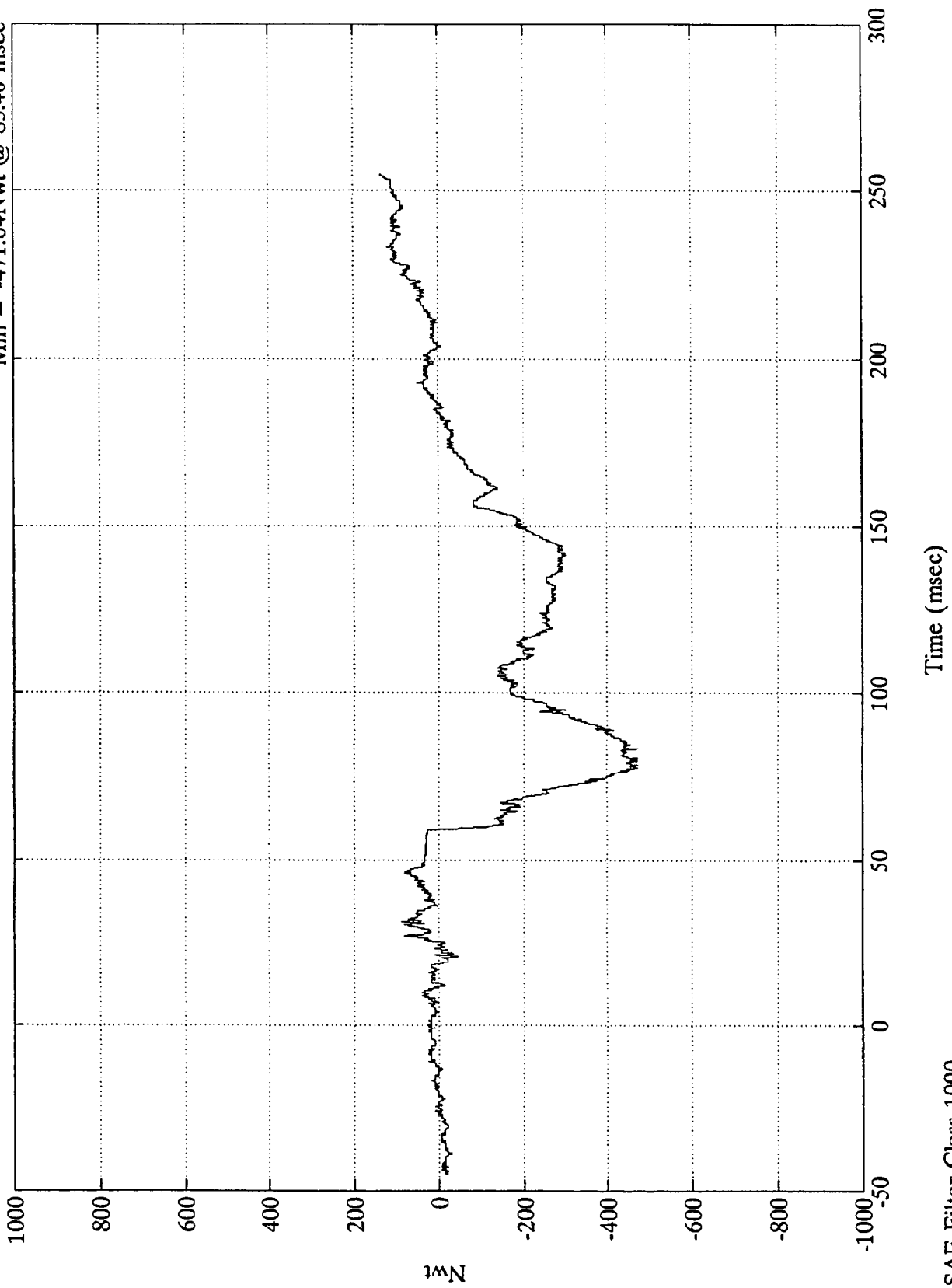
Max = 0.03Nwt @ -44.16 msec
Min = -49.00Nwt @ 88.32 msec



8118-6

VTV TEST #6

V1-P1 Upper Neck Fx
Max = 134.24Nwt @ 254.88 msec
Min = -471.04Nwt @ 83.40 msec

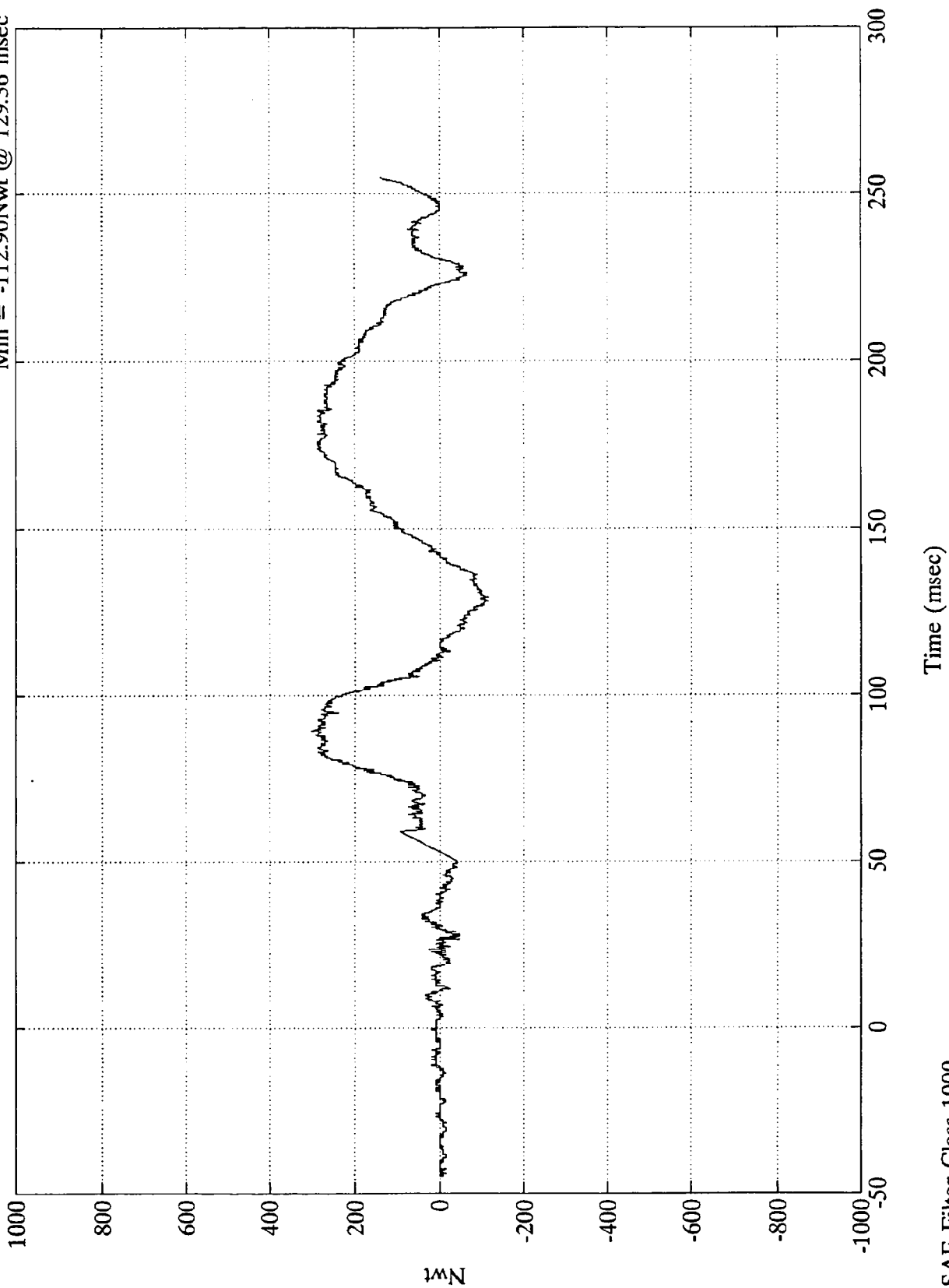


SAE Filter Class 1000

VTV TEST #6

V1-P1 Upper Neck Fy

Max = 302.02Nwt @ 89.16 msec
Min = -112.90Nwt @ 129.36 msec

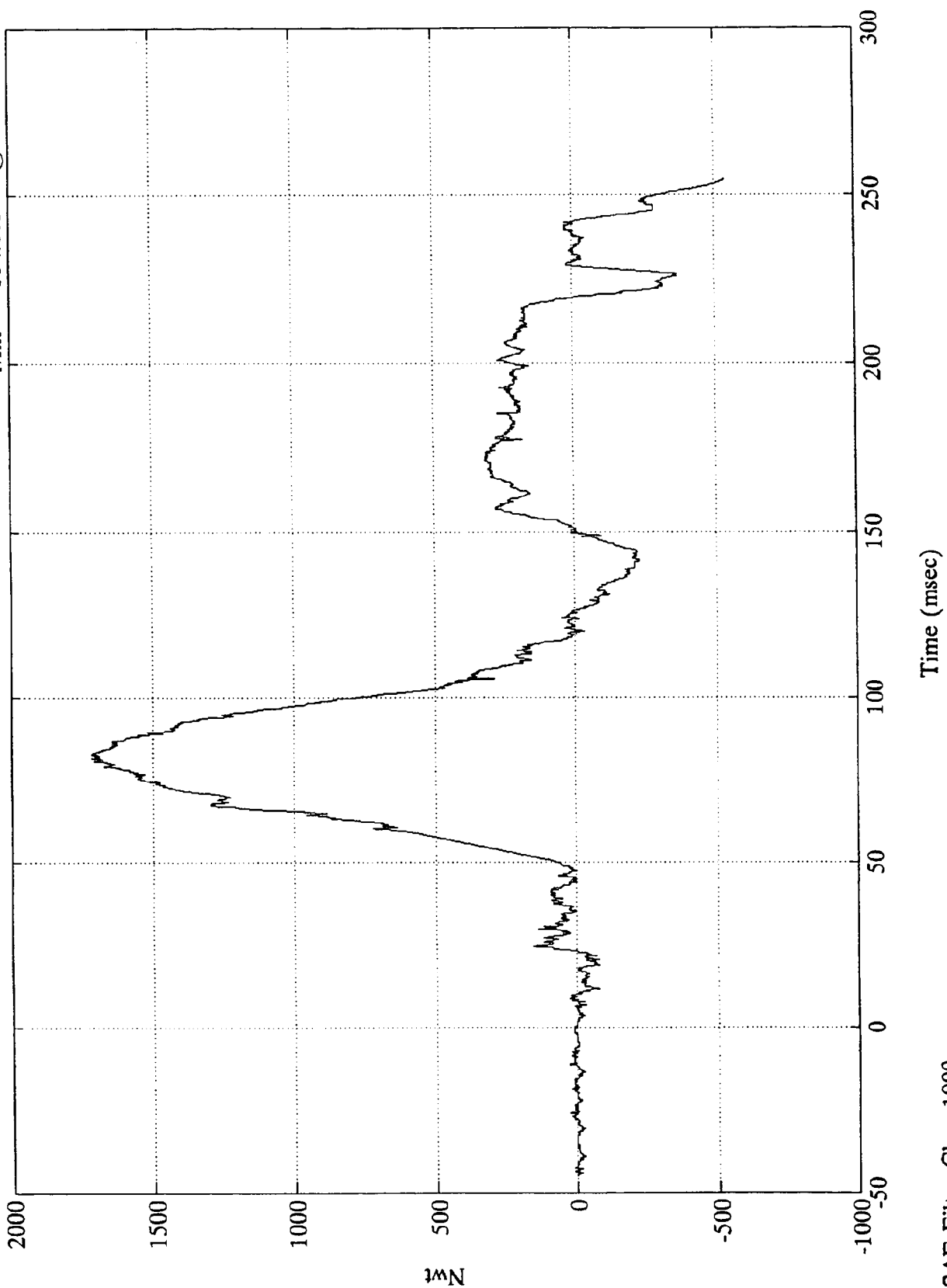


SAE Filter Class 1000

8118-6

VTV TEST #6

V1-P1 Upper Neck Fz
Max = 1718.90Nwt @ 82.92 msec
Min = -534.60Nwt @ 254.88 msec

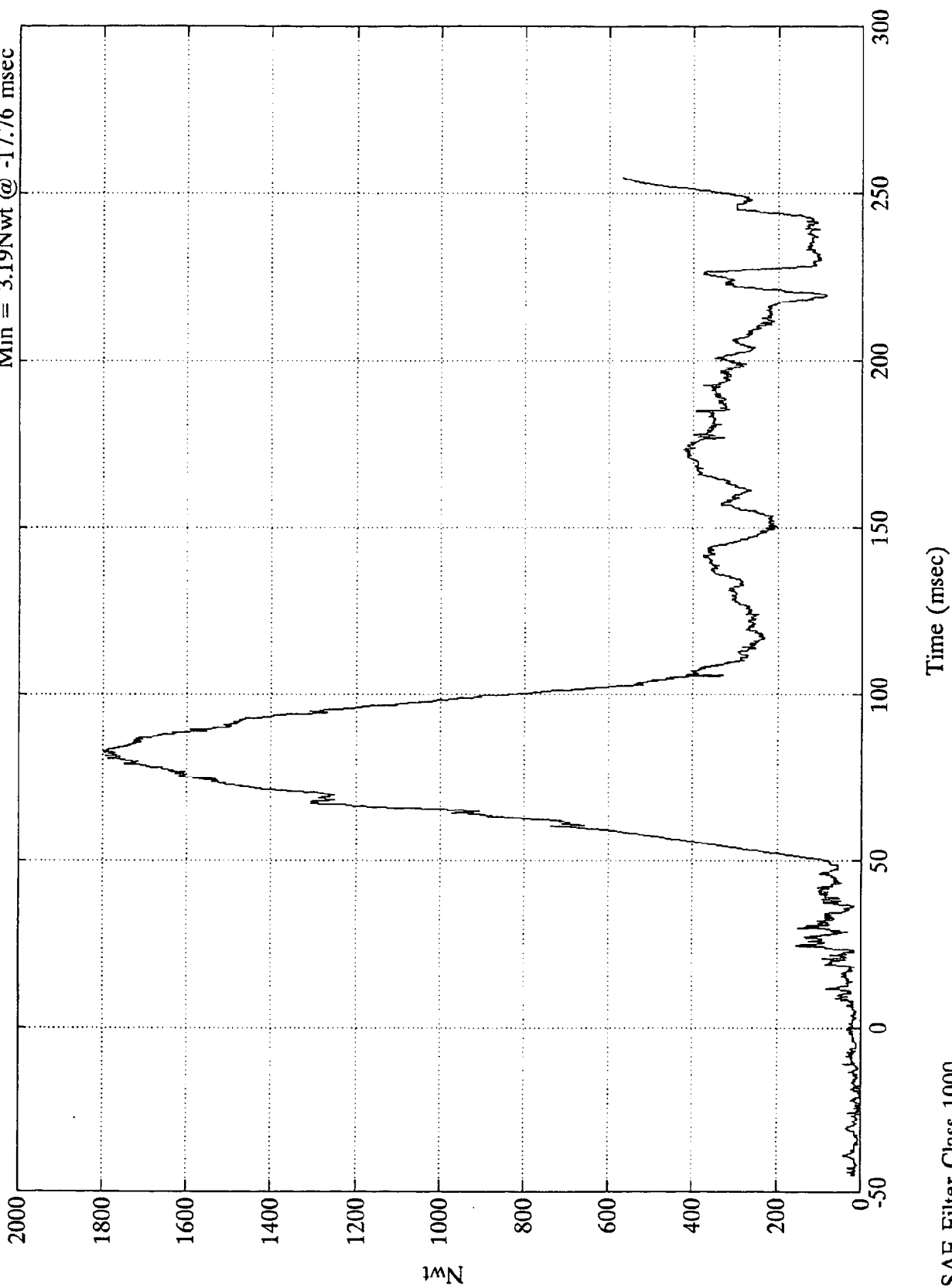


8118-6

SAE Filter Class 1000

VTV TEST #6

Upper Neck Force Res.
Max = 1795.90Nwt @ 82.92 msec
Min = 3.19Nwt @ -17.76 msec

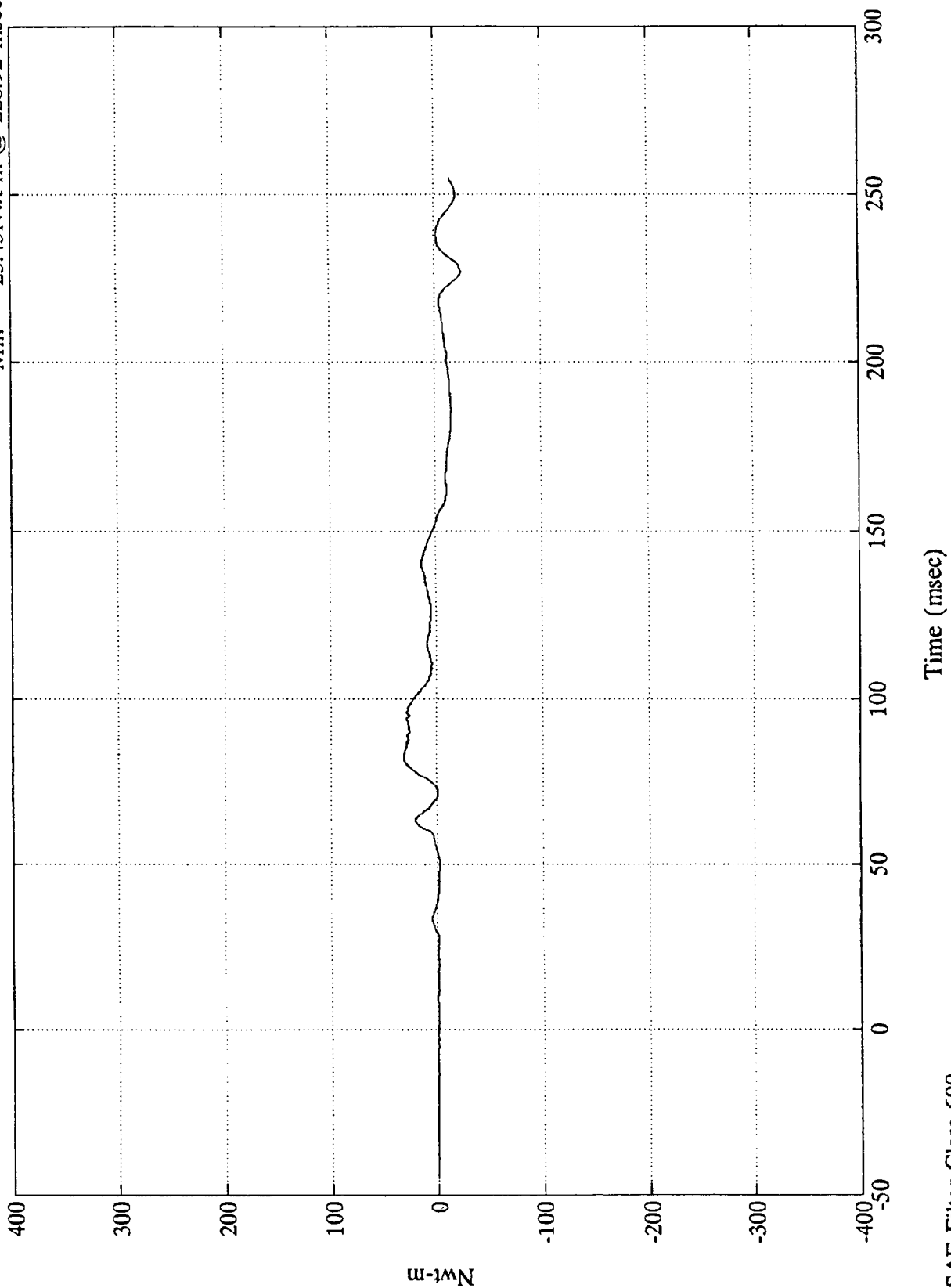


SAE Filter Class 1000

8118-6

VTV TEST #6

V1-P1 Upper Neck Mx
Max = 31.44Nwt-m @ 82.44 msec
Min = -25.45Nwt-m @ 226.92 msec



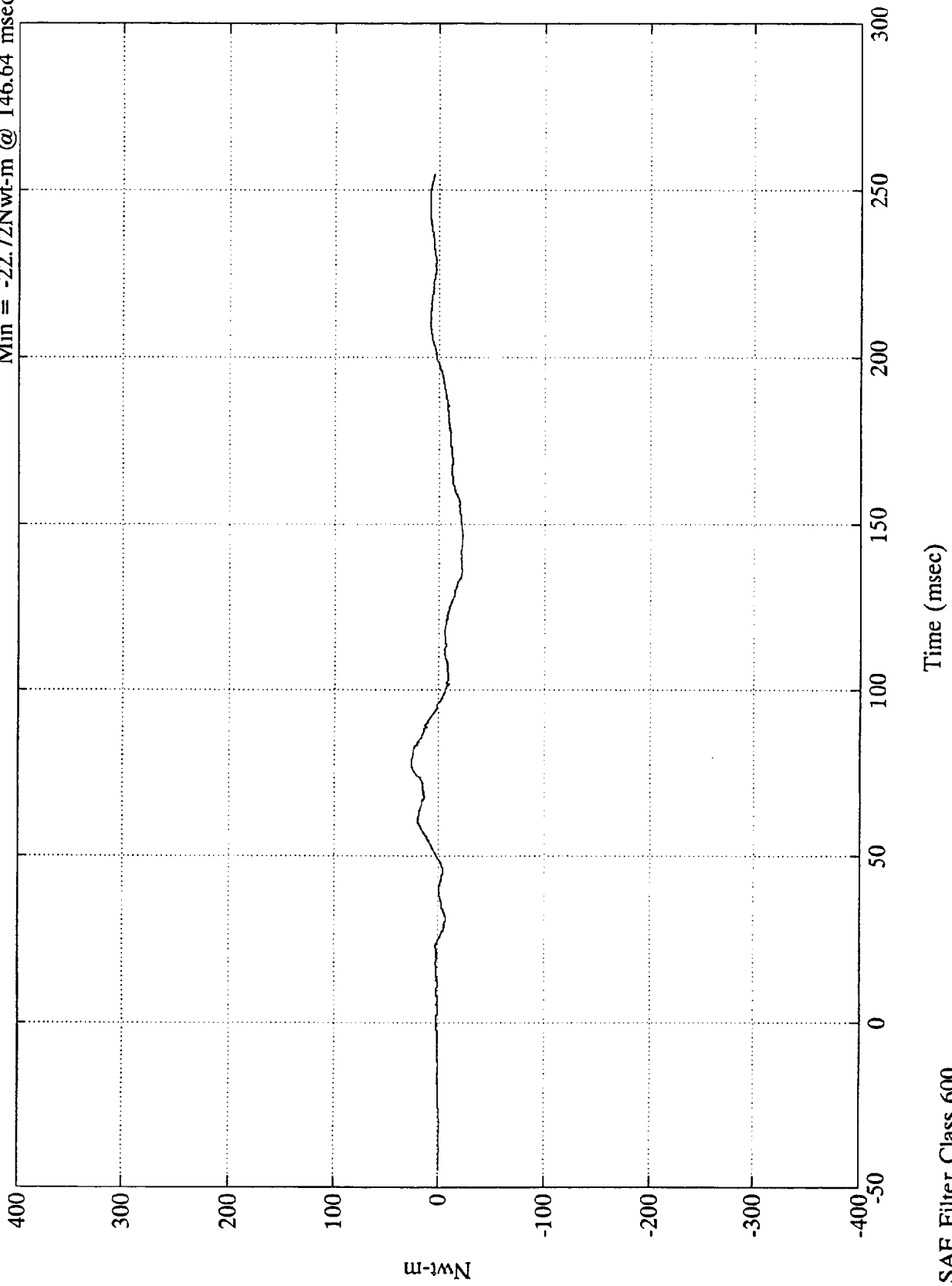
SAE Filter Class 600

8118-6

VTV TEST #6

V1-P1 Upper Neck My

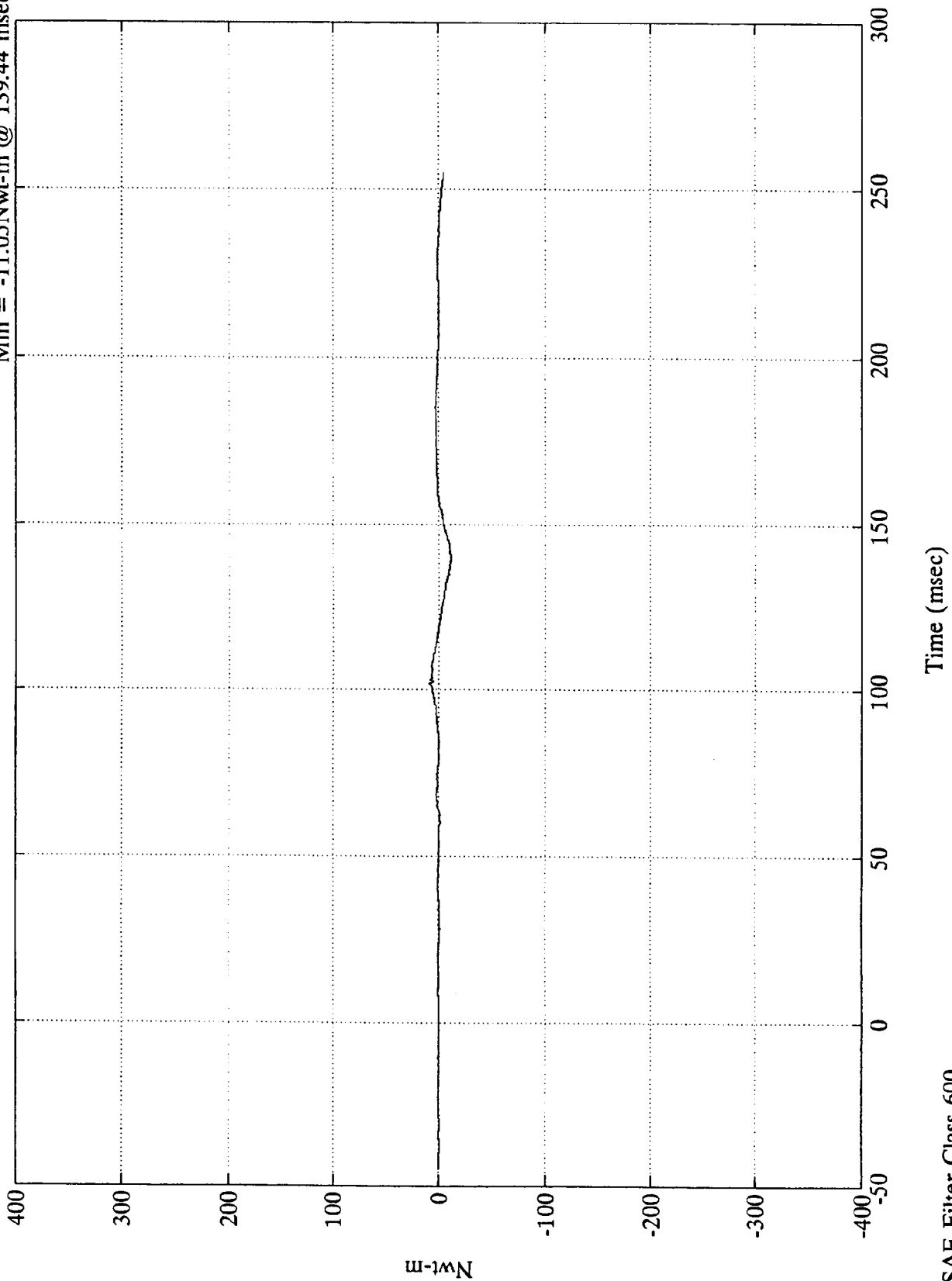
Max = 26.47Nwt-m @ 77.40 msec
Min = -22.72Nwt-m @ 146.64 msec



8118-6

VTV TEST #6

V1-P1 Upper Neck Mz
Max = 9.62Nwt-m @ 101.64 msec
Min = -11.05Nwt-m @ 139.44 msec



SAE Filter Class 600

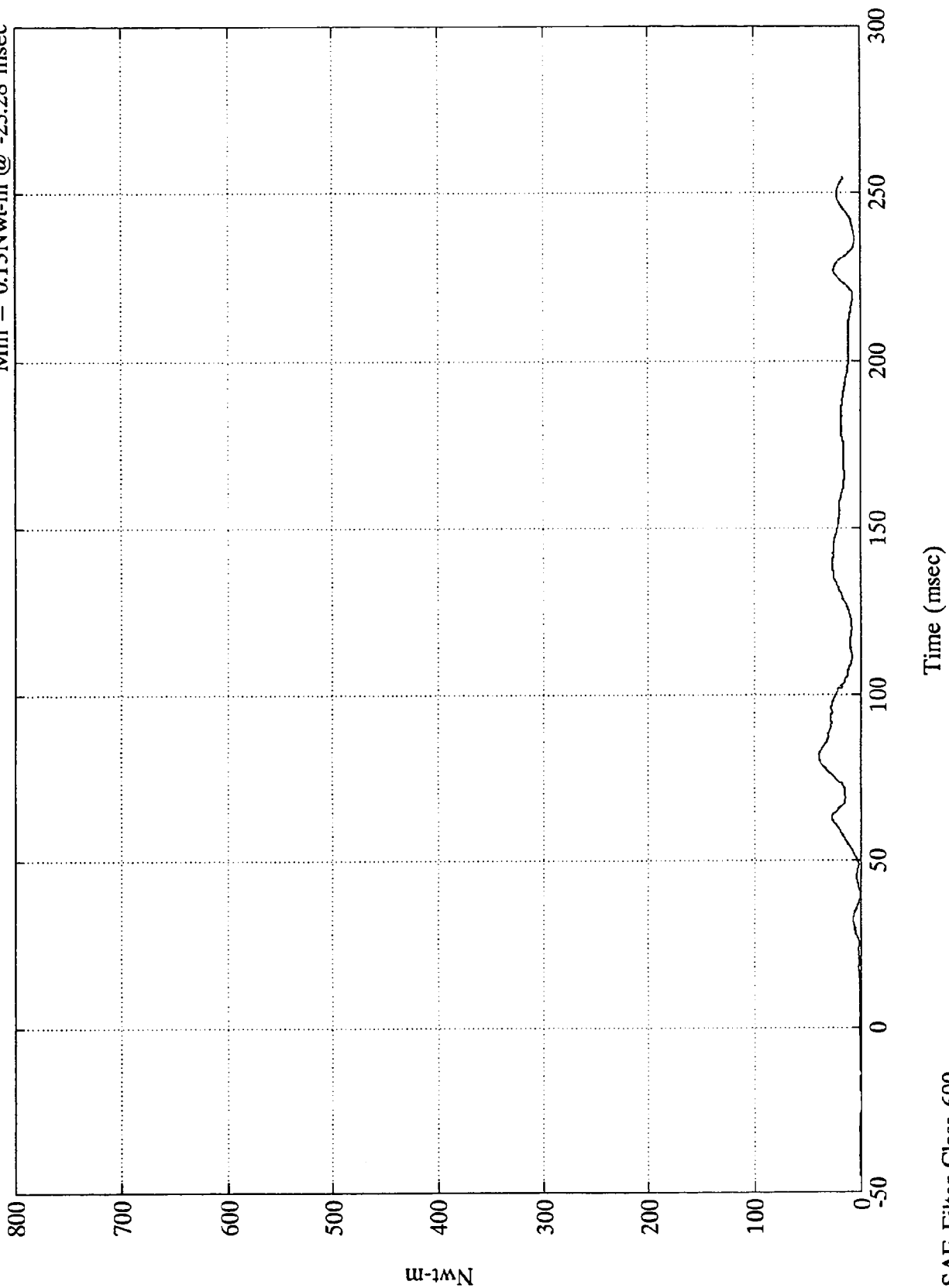
8118-6

VTV TEST #6

Upper Neck Moment Res.

Max = 39.62Nwt-m @ 81.36 msec

Min = 0.13Nwt-m @ -23.28 msec

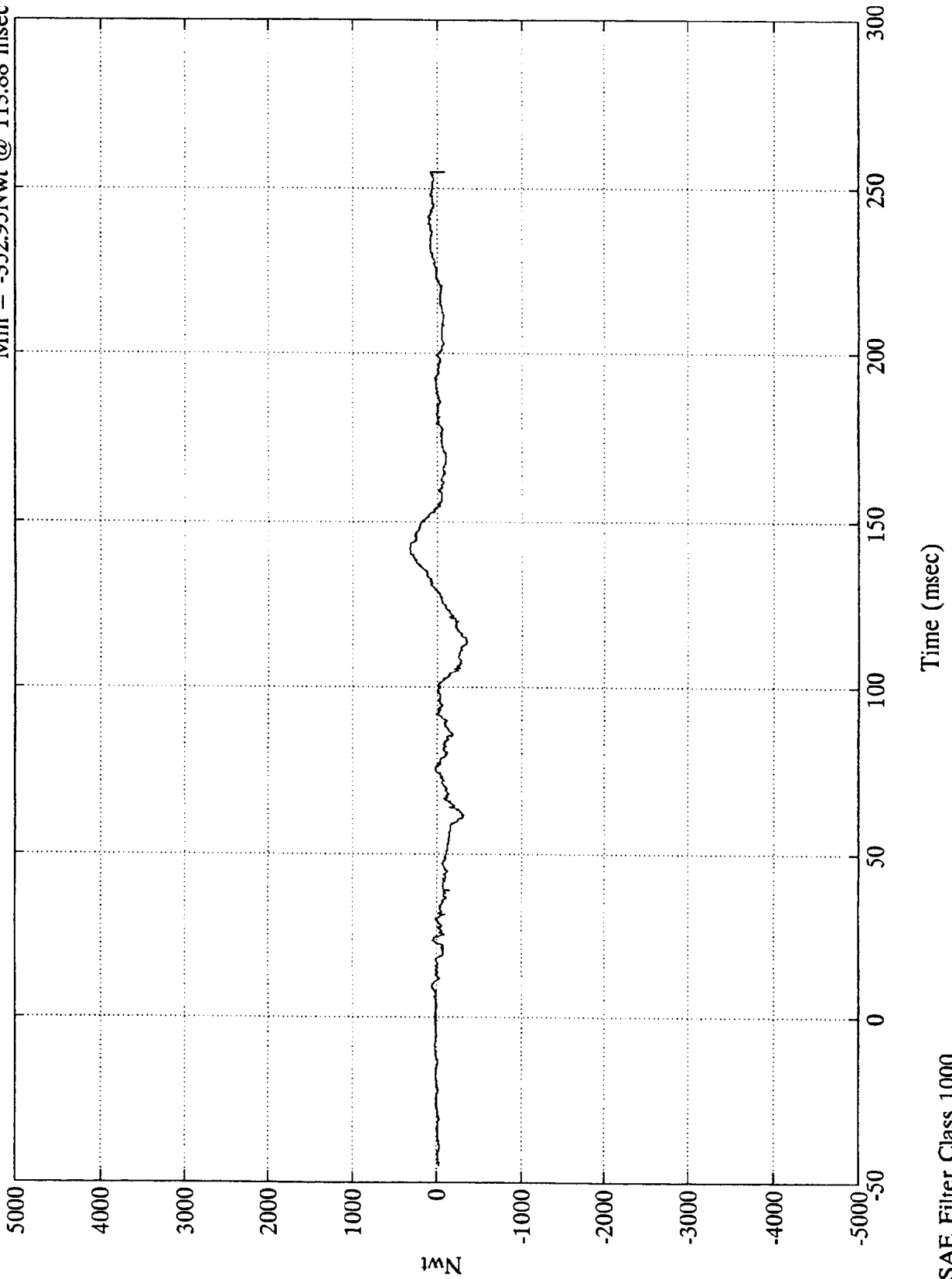


8118-6

SAE Filter Class 600

VTV TEST #6

V1-P1 Lower Neck Fx
Max = 326.54Nwt @ 142.20 msec
Min = -352.95Nwt @ 113.88 msec



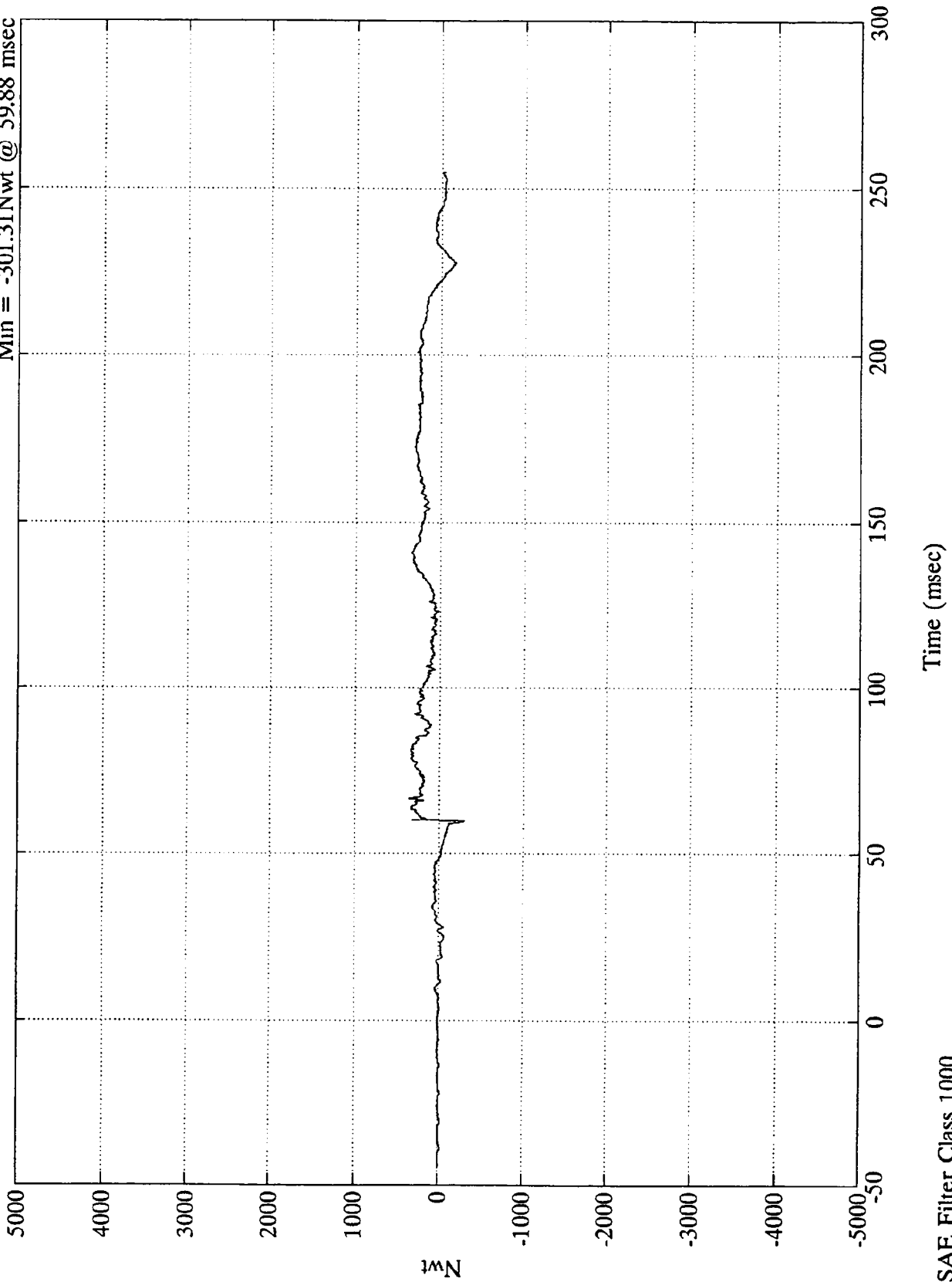
SAE Filter Class 1000

8118-6

VTV TEST #6

V1-P1 Lower Neck Fy

Max = 364.07Nwt @ 66.72 msec
Min = -301.31Nwt @ 59.88 msec

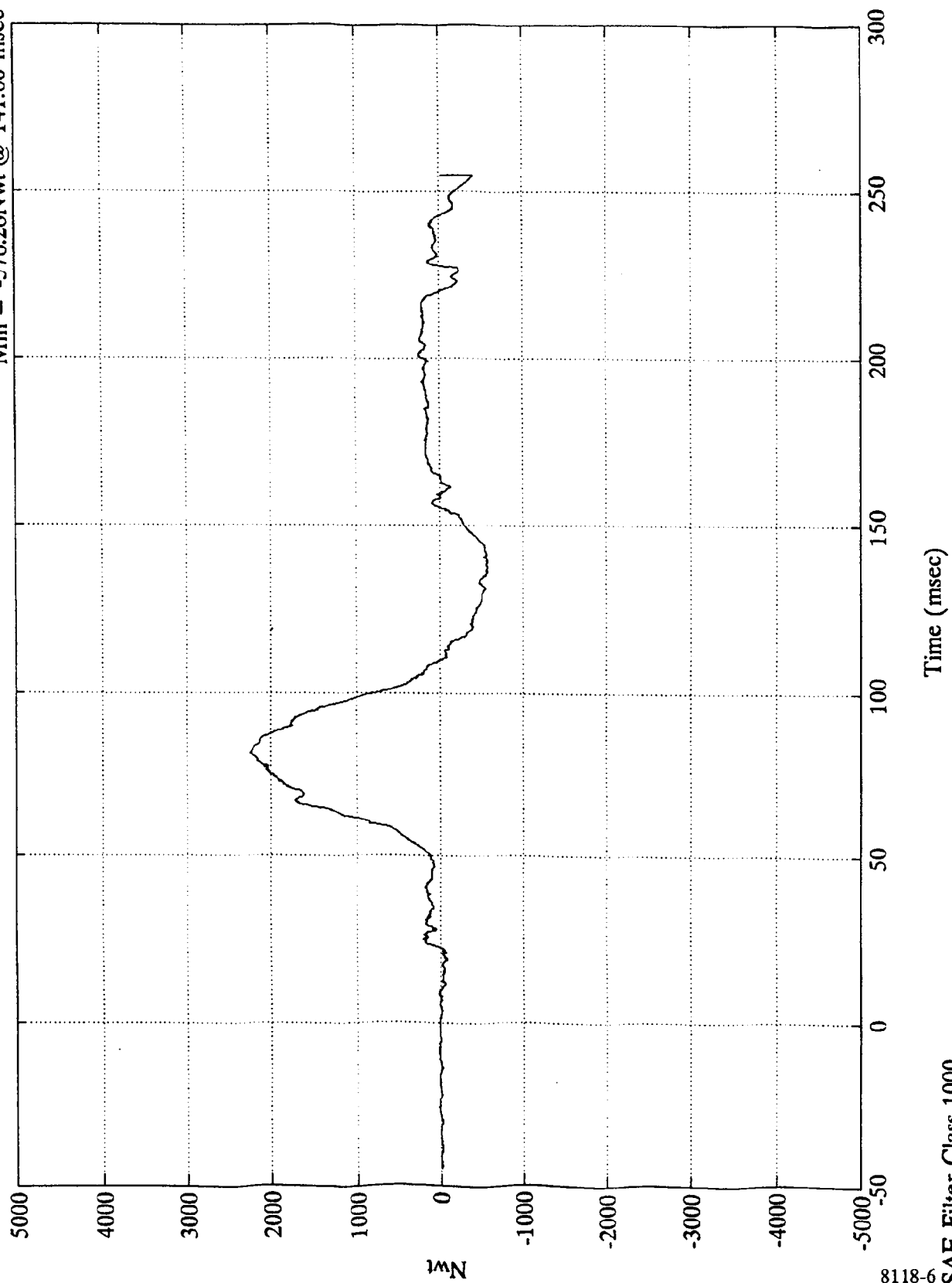


SAE Filter Class 1000

8118-6

VTV TEST #6

V1-P1 Lower Neck Fz
Max = 2262.50Nwt @ 81.36 msec
Min = -576.28Nwt @ 141.60 msec

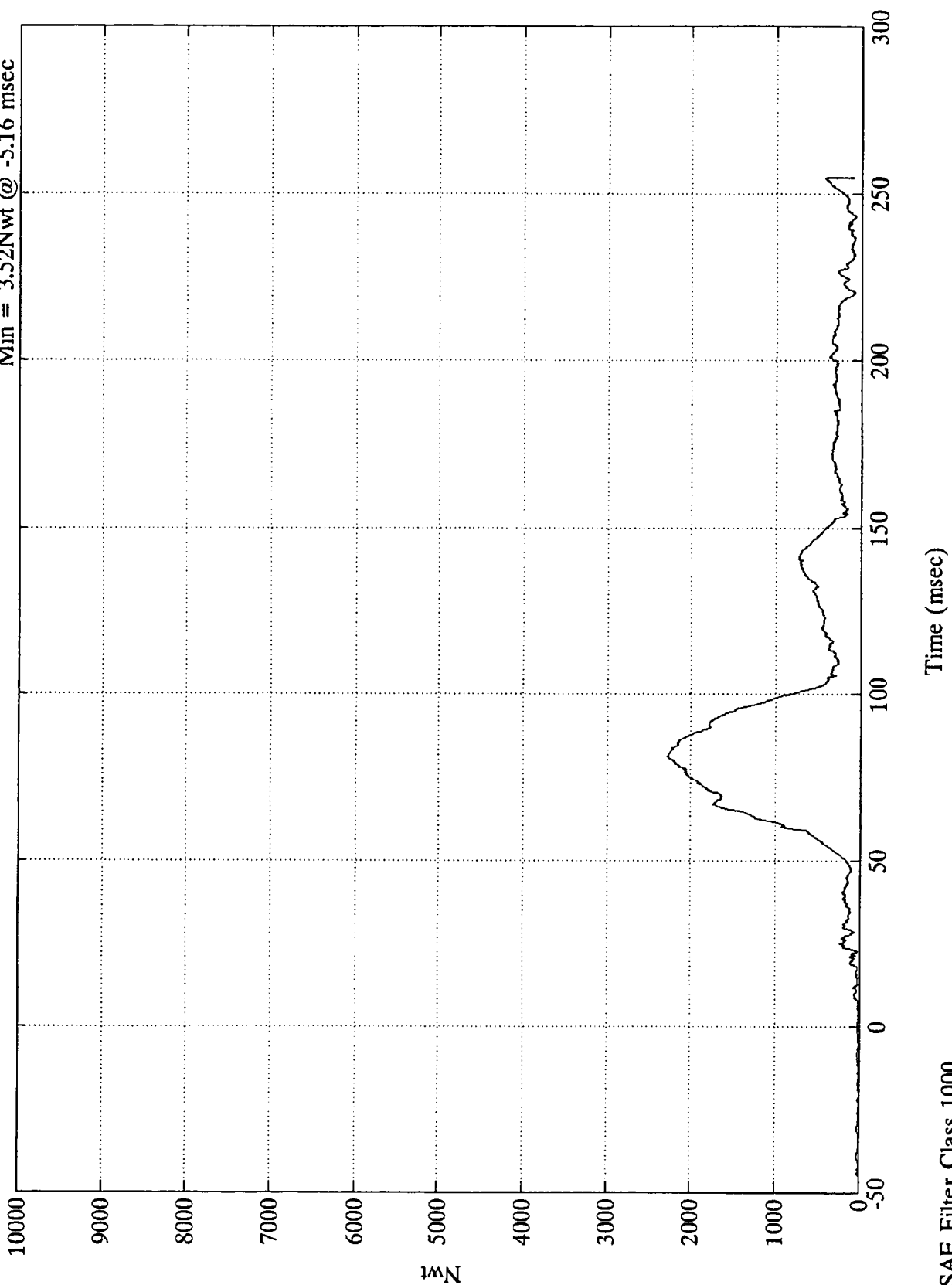


8118-6 SAE Filter Class 1000

VTV TEST #6

Max = 2288.00Nwt @ 81.36 msec
Min = 3.52Nwt @ -5.16 msec

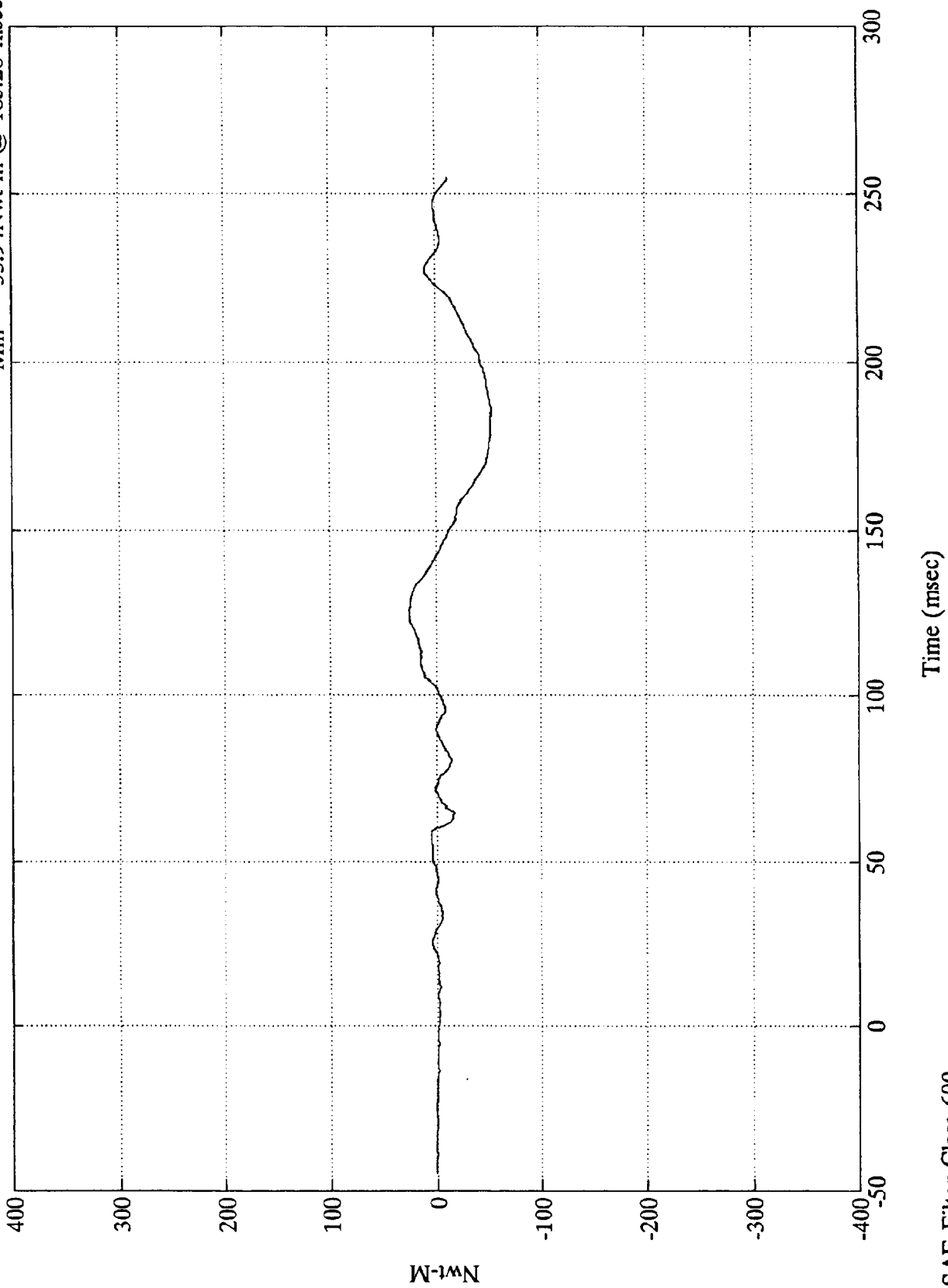
V1-P1 Lower Neck F(res)



VTV TEST #6

Max = 26.23Nwt-m @ 125.88 msec
Min = -53.94Nwt-m @ 185.28 msec

V1-P1 Lower Neck Mx

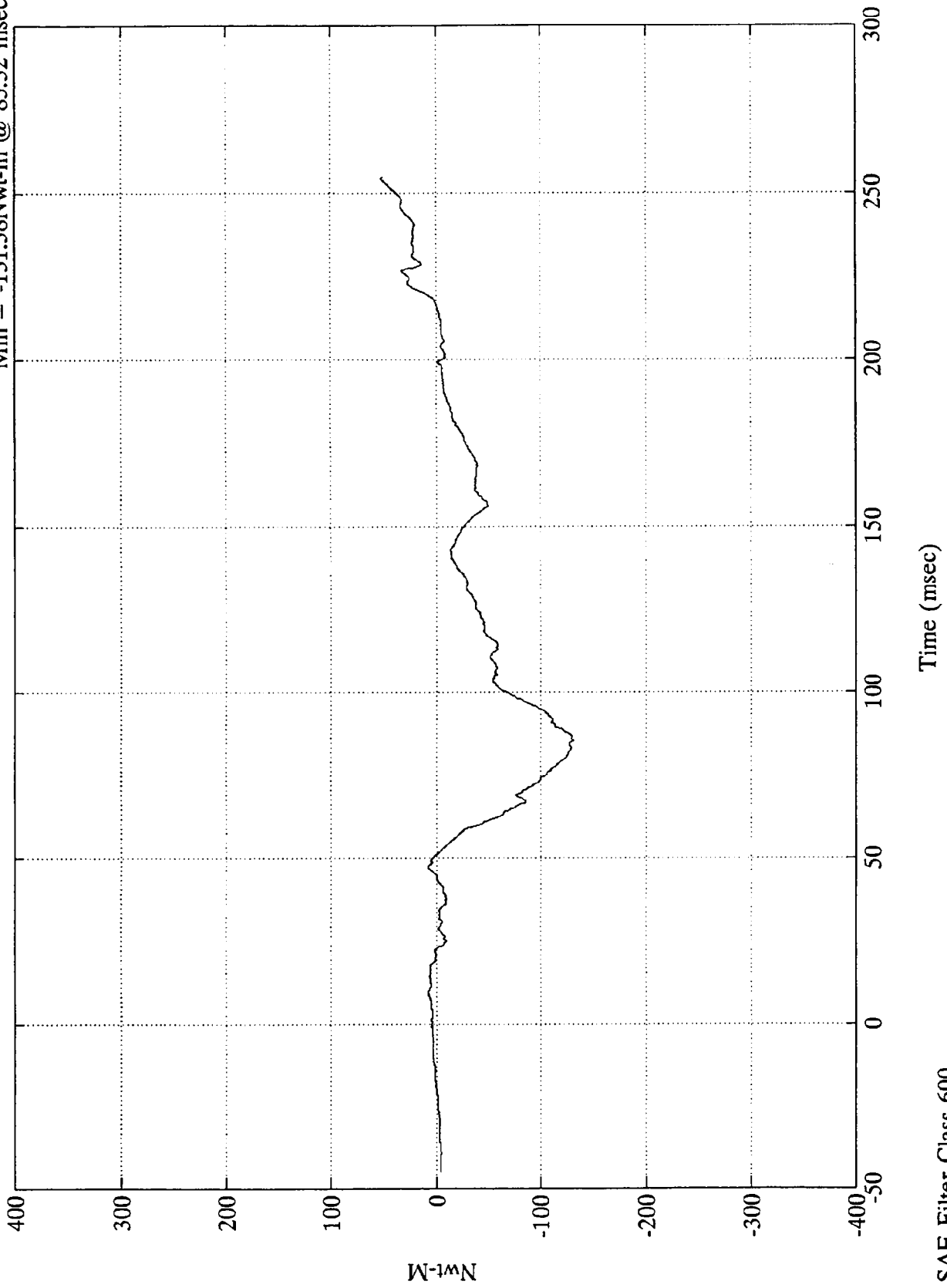


SAE Filter Class 600

8118-6

VTV TEST #6

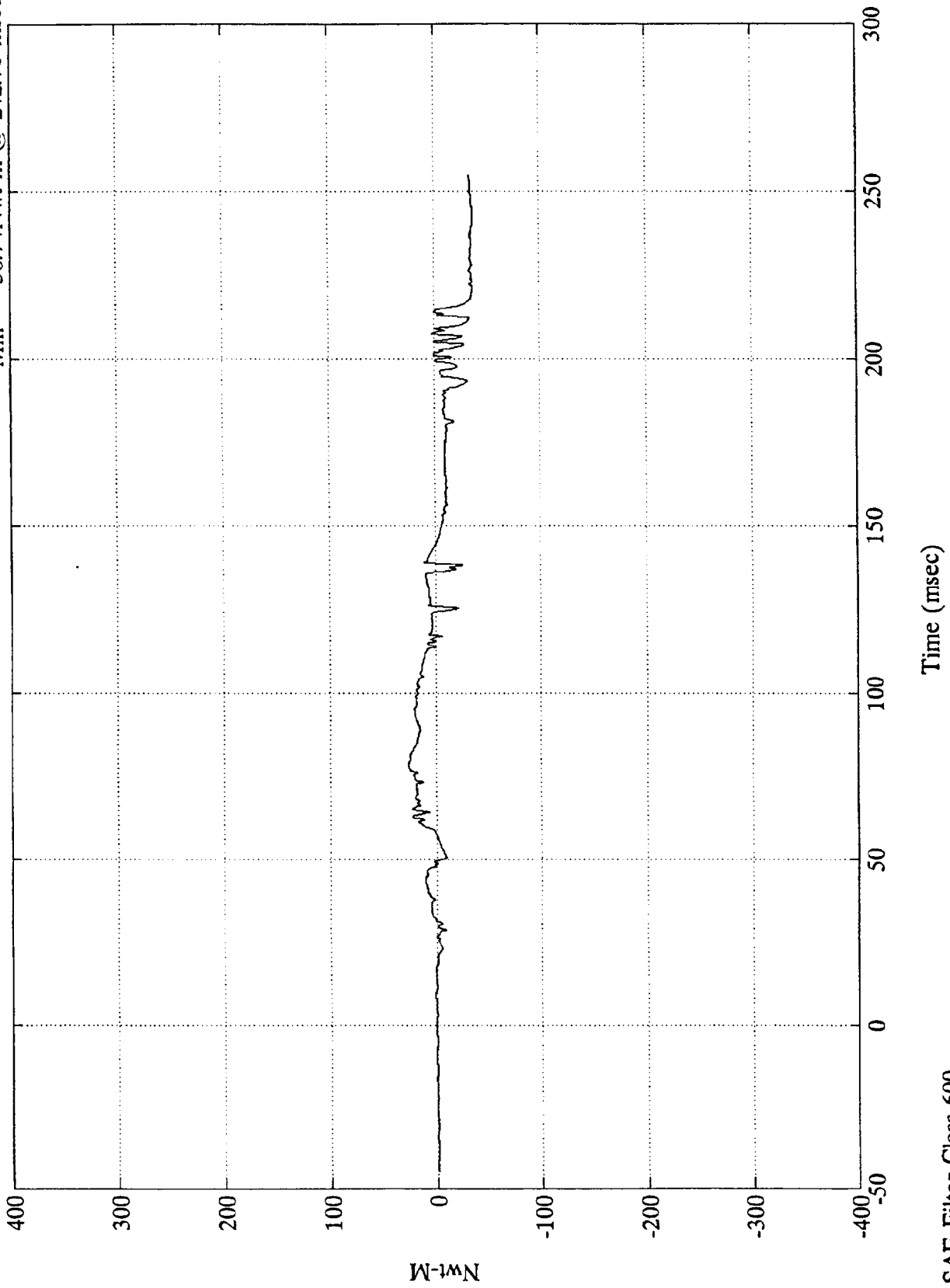
V1-P1 Lower Neck My
Max = 52.99Nwt-m @ 254.40 msec
Min = -131.38Nwt-m @ 85.32 msec



8118-6

VTV TEST #6

V1-P1 Lower Neck Mz
Max = 27.19Nwt-m @ 78.48 msec
Min = -36.74Nwt-m @ 242.76 msec



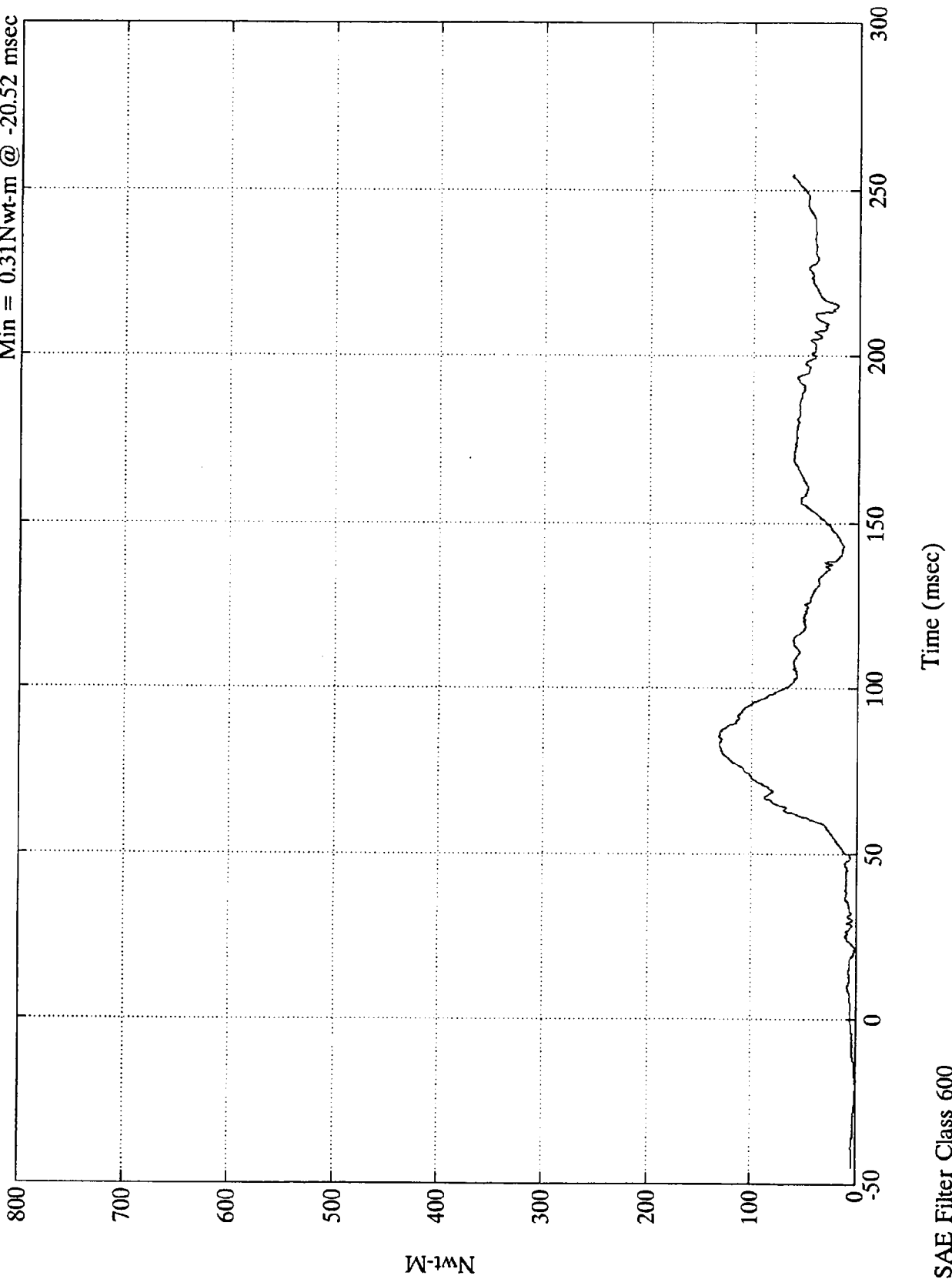
8118-6

SAE Filter Class 600

VTV TEST #6

V1-P1 Lower Neck M(res)

Max = 132.79Nwt-m @ 85.32 msec
Min = 0.31Nwt-m @ -20.52 msec

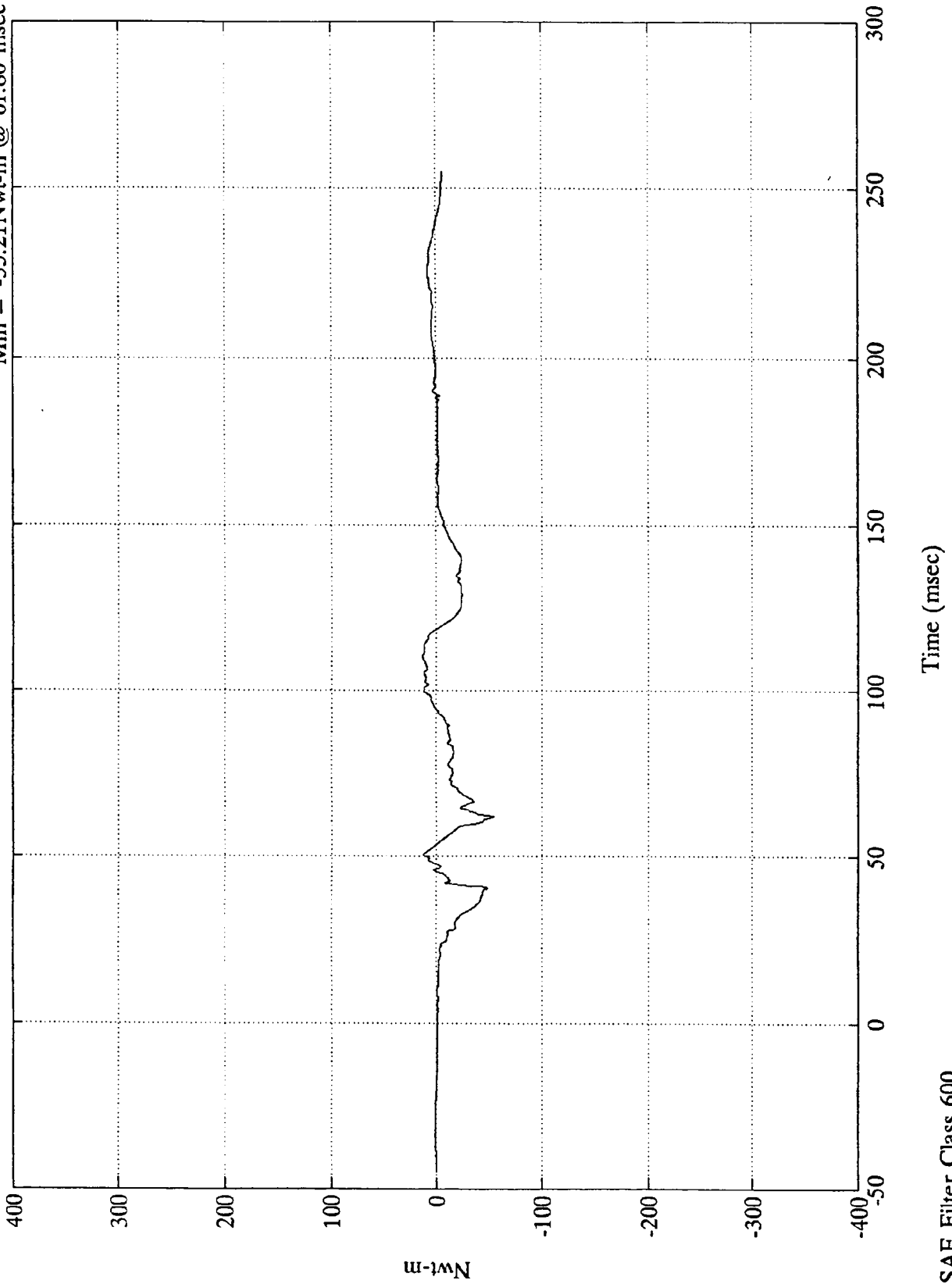


SAE Filter Class 600

8118-6

VTV TEST #6

V1-P1 Lt Upper Tibia Mx
Max = 13.36Nwt-m @ 109.92 msec
Min = -55.21Nwt-m @ 61.80 msec



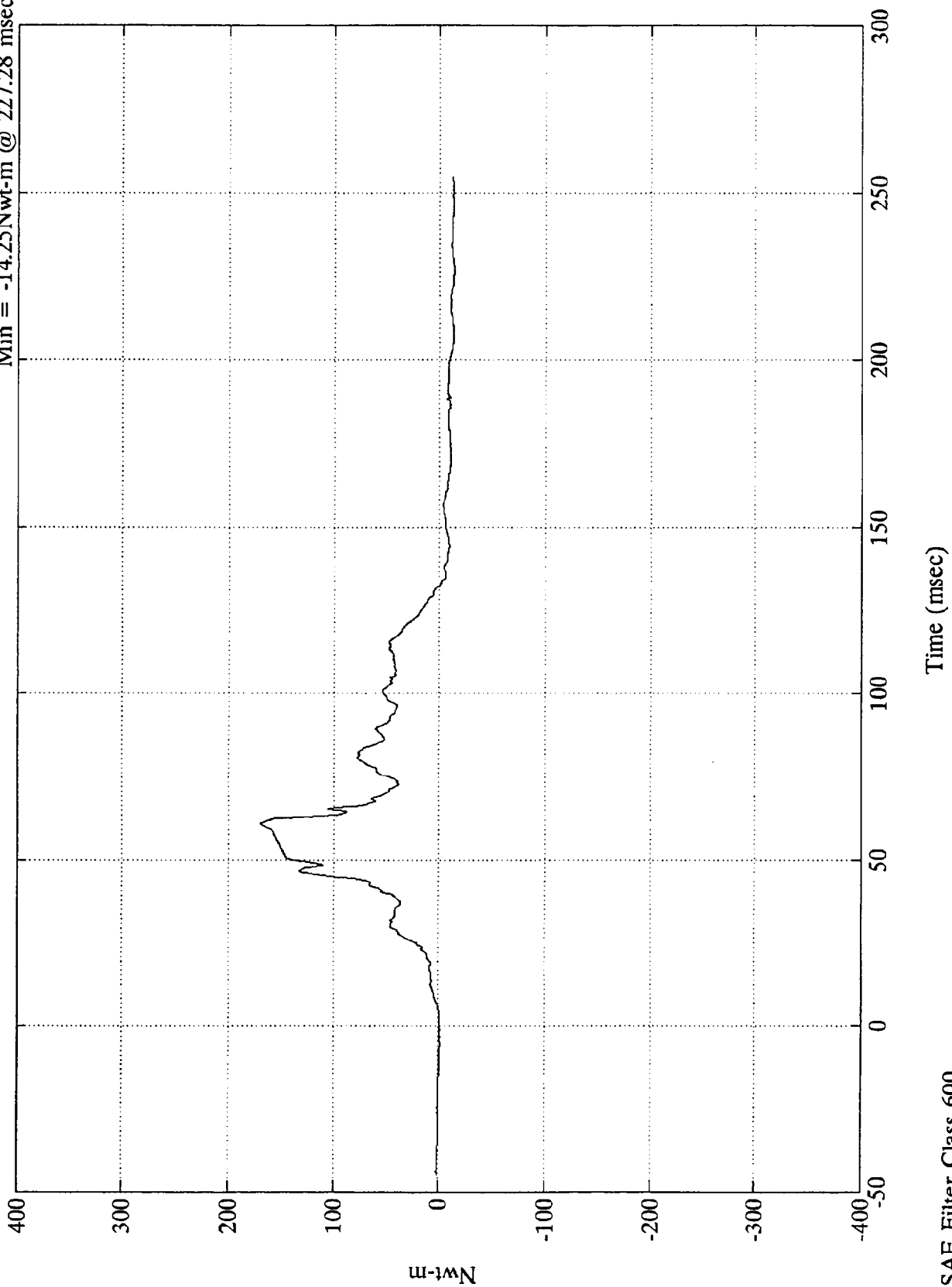
SAE Filter Class 600

8118-6

VTV TEST #6

V1-P1 Lt Upper Tibia My

Max = 170.14Nwt-m @ 60.96 msec
Min = -14.25Nwt-m @ 227.28 msec



SAE Filter Class 600

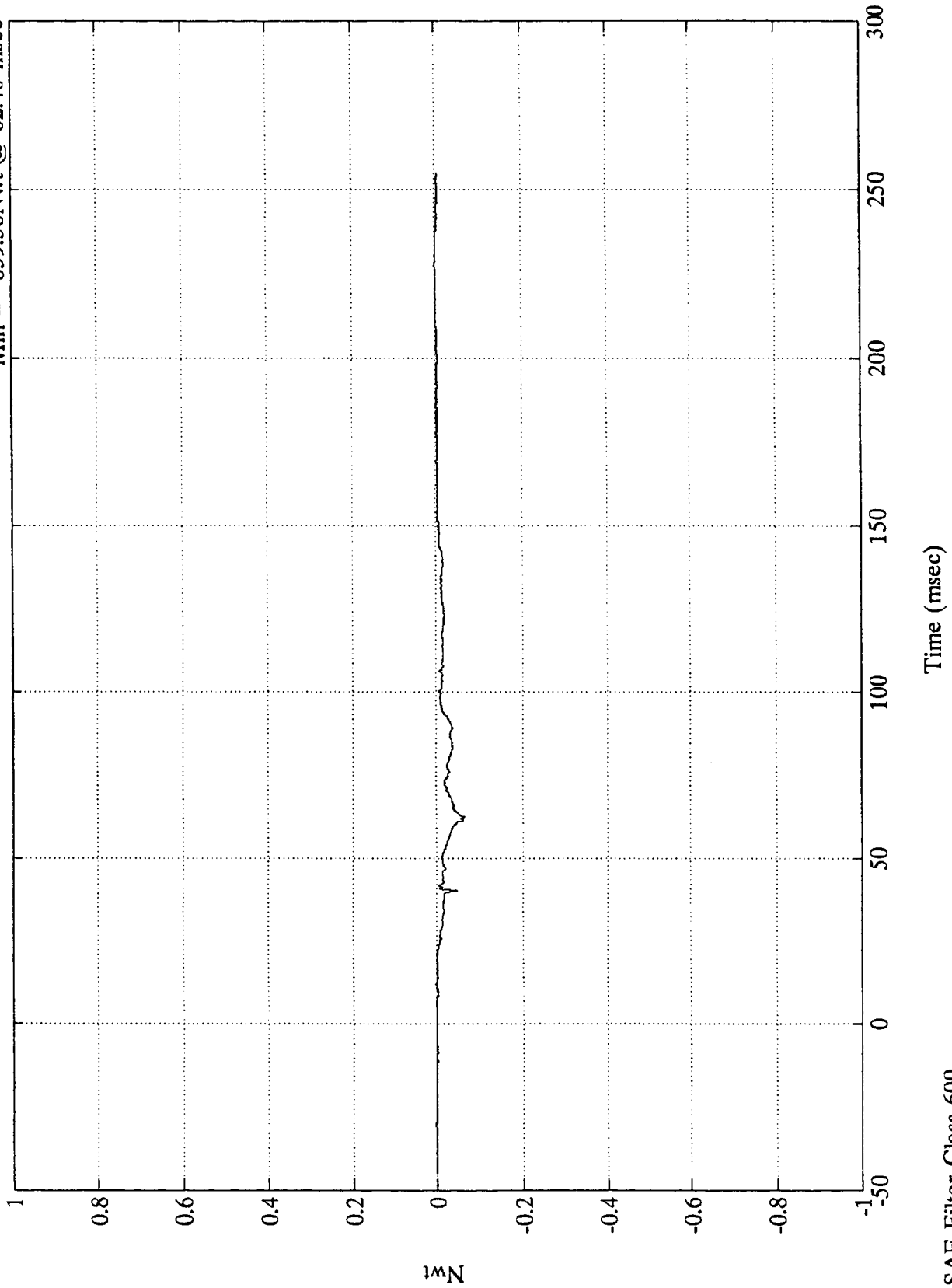
8118-6

VTV TEST #6

$\times 10^4$

Max = 19.76Nwt @ 11.64 msec
Min = -639.56Nwt @ 62.40 msec

V1-P1 Lt Lower Tibia Fx



SAE Filter Class 600

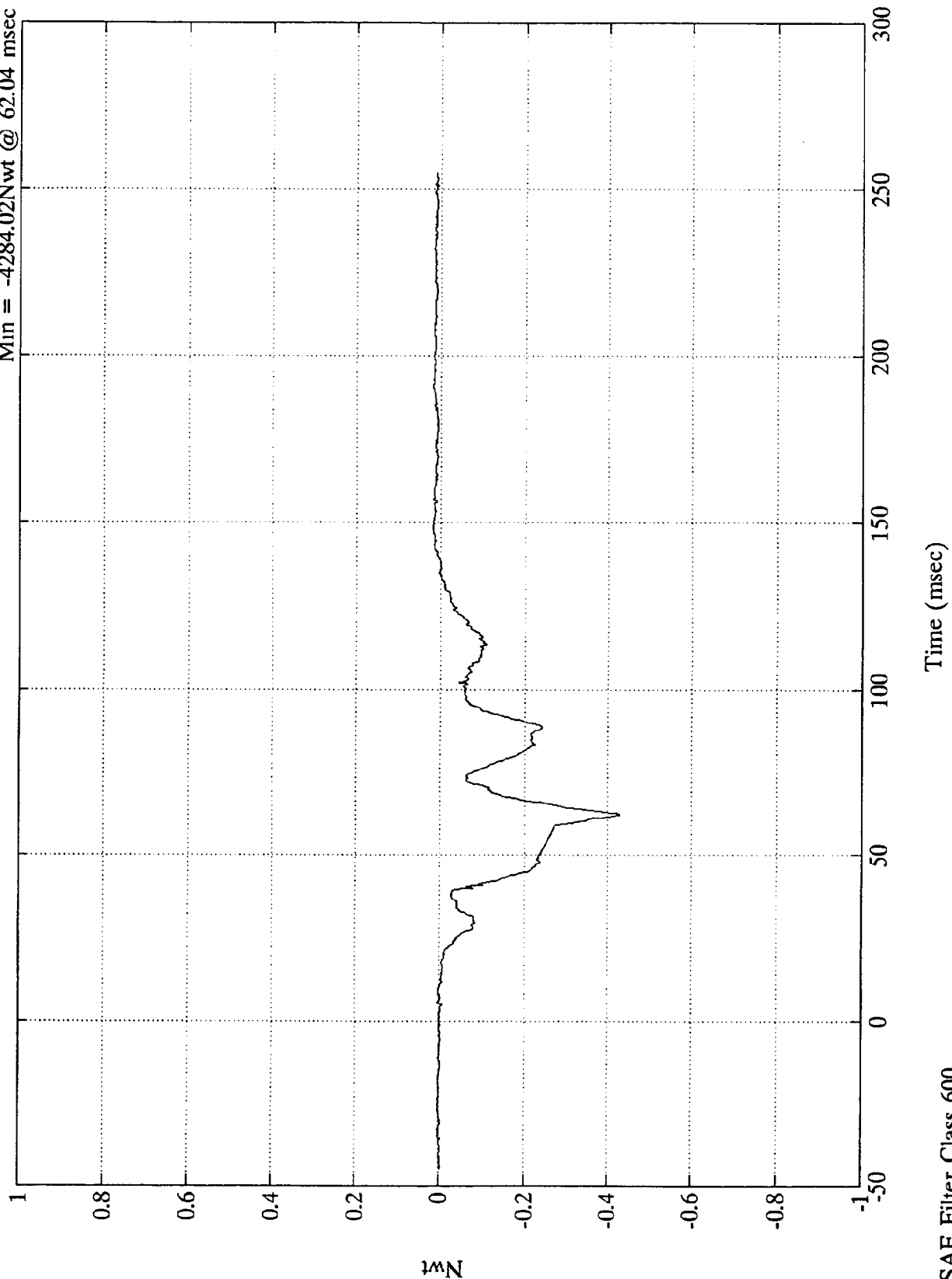
8118-6

VTV TEST #6

Max = 192.00Nwt @ 148.20 msec
Min = -4284.02Nwt @ 62.04 msec

V1-P1 Lt Lower Tibia Fz

$\times 10^4$

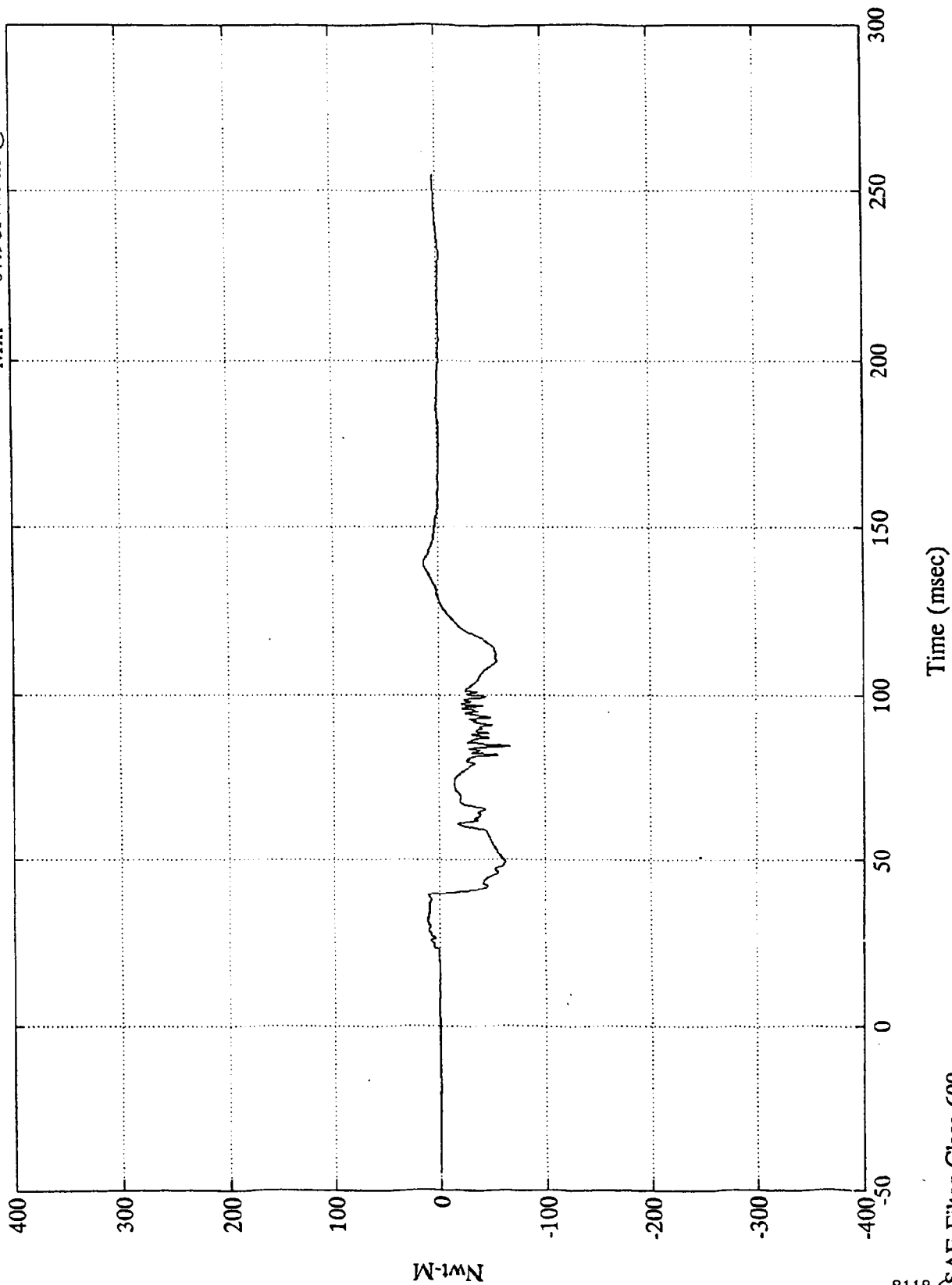


8118-6

VTV TEST #6

Max = 13.88Nwt-m @ 139.68 msec
Min = -67.98Nwt-m @ 84.60 msec

V1-P1 Lt Lower Tibia Mx



8118-6

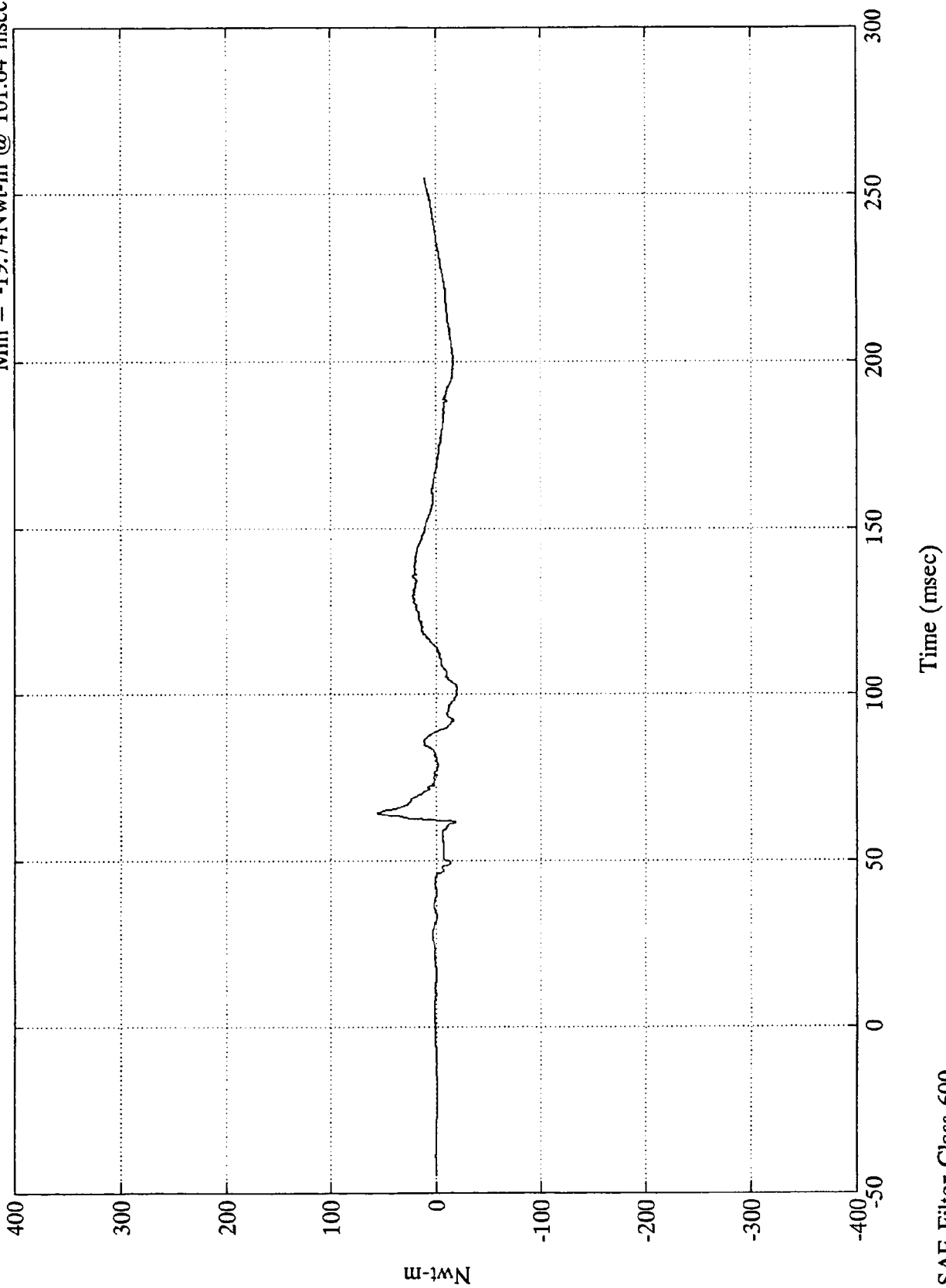
SAE Filter Class 600

VTV TEST #6

V1-P1 Rt Upper Tibia Mx

Max = 56.15Nwt-m @ 64.08 msec

Min = -19.74Nwt-m @ 101.64 msec



SAE Filter Class 600

8118-6

VTV TEST #6

Max = 27.80Nwt-m @ 100.08 msec
Min = -203.45Nwt-m @ 60.12 msec

V1-P1 Rt Upper Tibia My



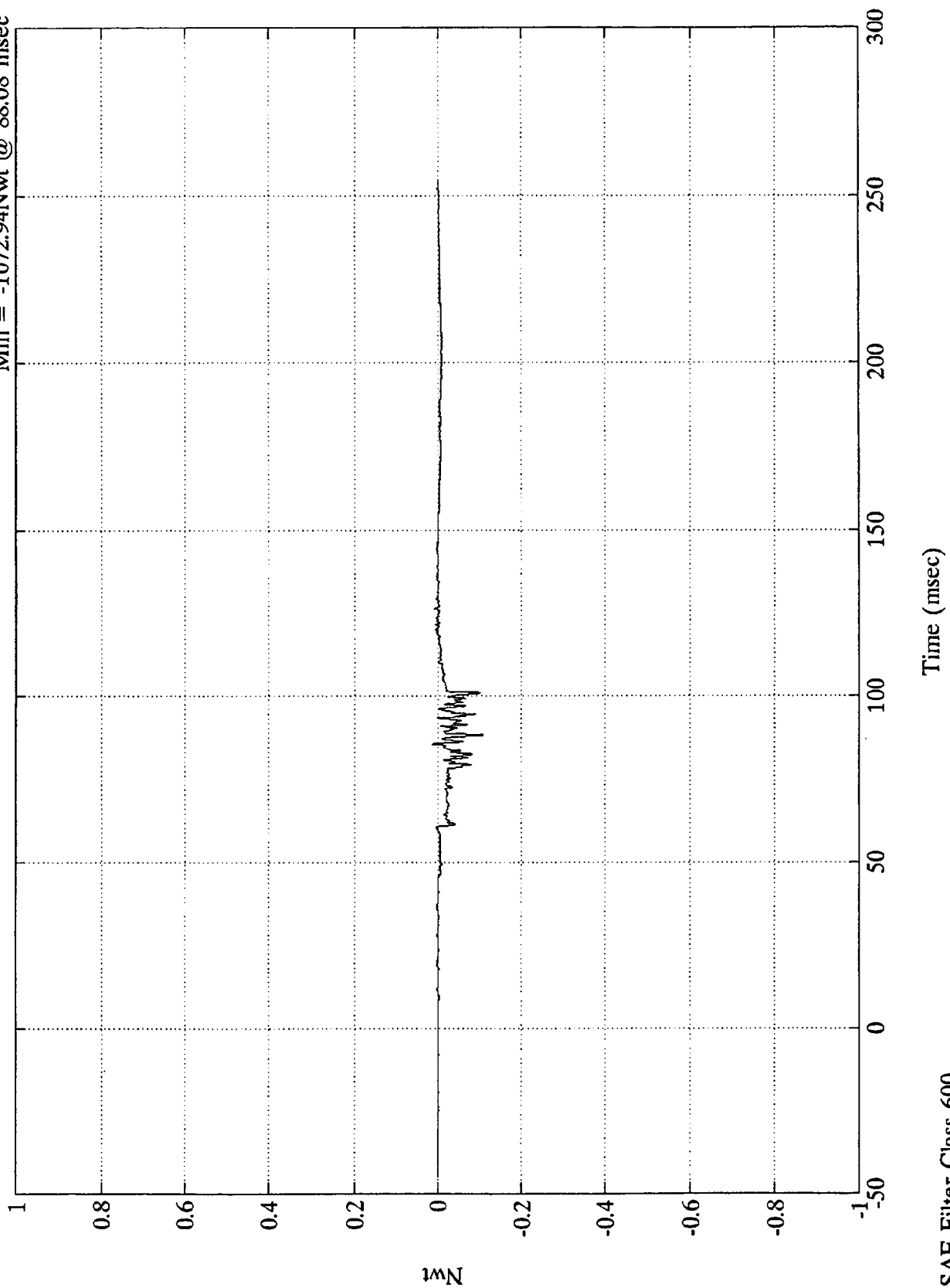
SAE Filter Class 600

8118-6

VTV TEST #6
x10⁴

V1-P1 Rt Lower Tibia Fy

Max = 132.11Nwt @ 85.56 msec
Min = -1072.94Nwt @ 88.08 msec



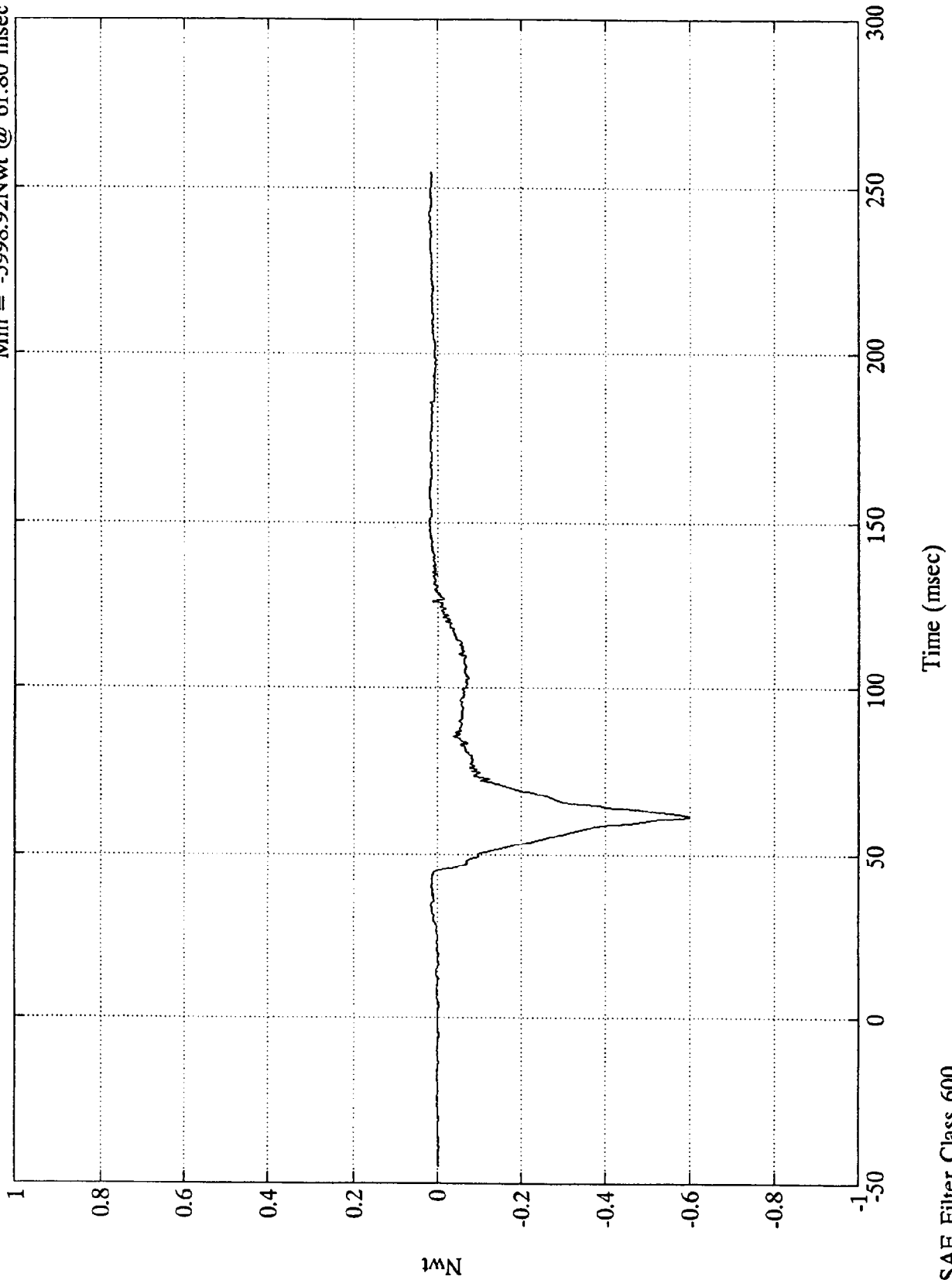
SAE Filter Class 600

8118-6

VTV TEST #6

$\times 10^4$

V1-P1 Rt Lower Tibia Fz
Max = 209.14Nwt @ 149.40 msec
Min = -5998.92Nwt @ 61.80 msec



SAE Filter Class 600

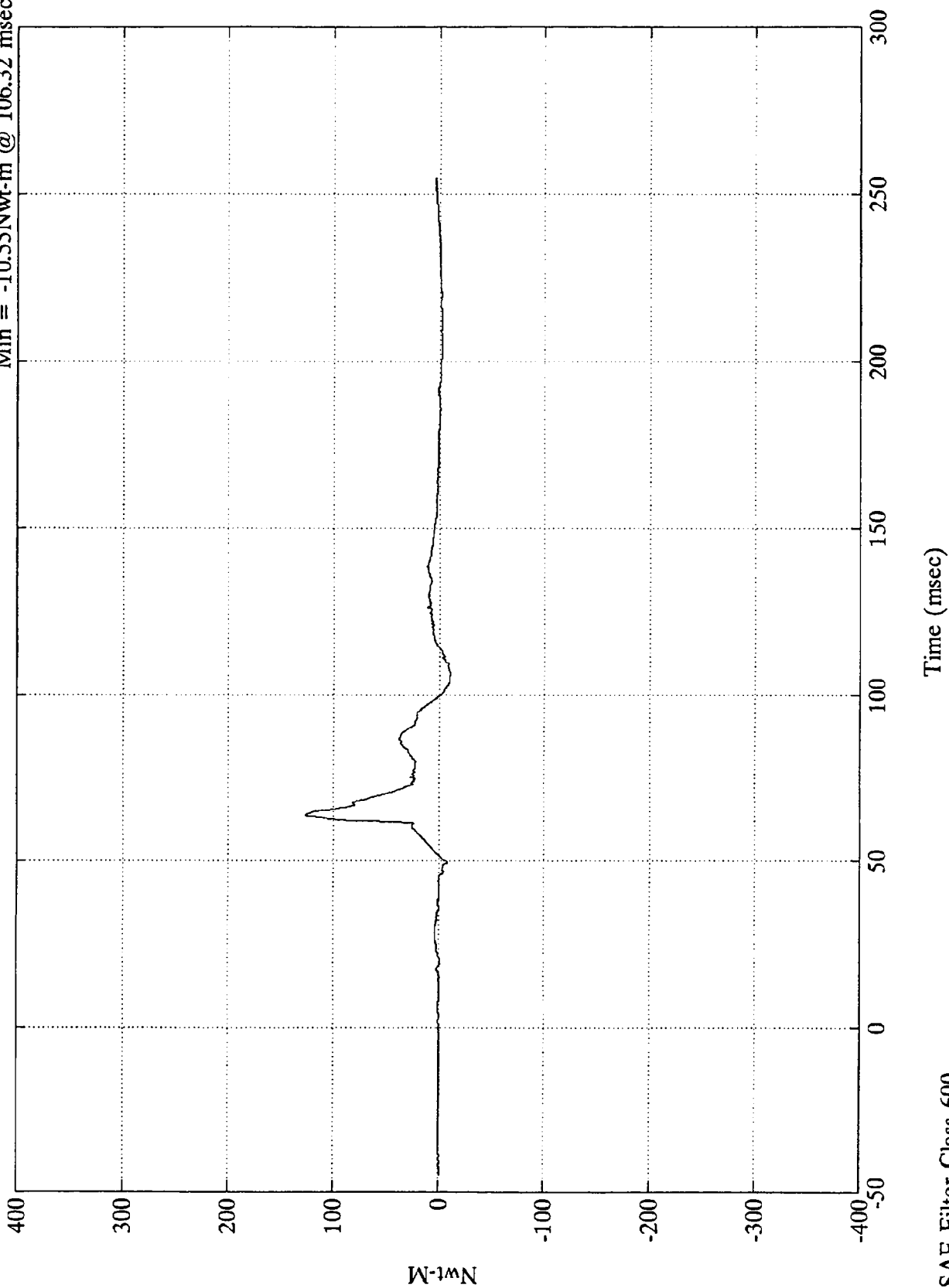
Time (msec)

Nwt

VTV TEST #6

Max = 126.60Nwt-m @ 63.60 msec
Min = -10.55Nwt-m @ 106.32 msec

V1-P1 Rt Lower Tibia Mx



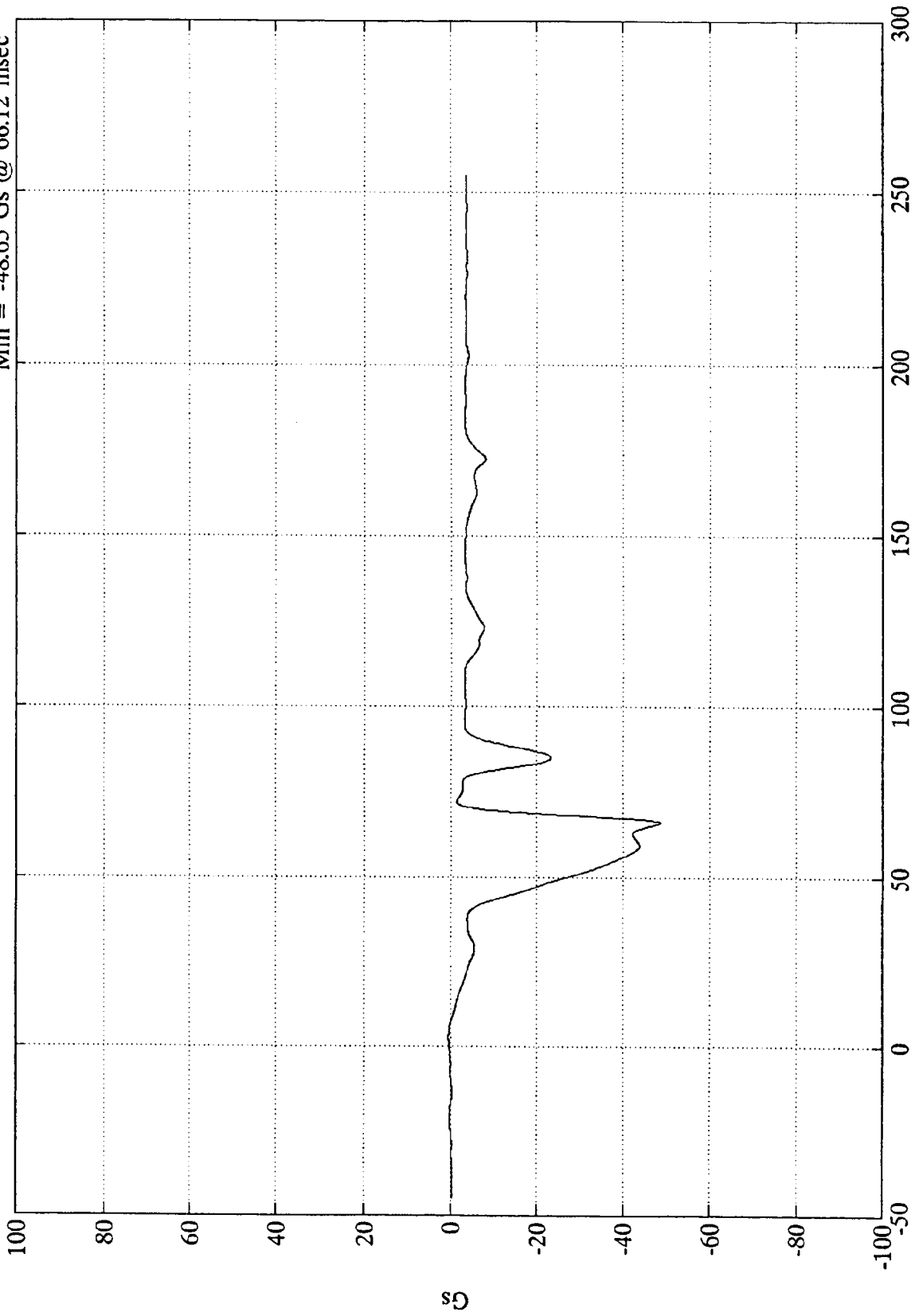
SAE Filter Class 600

8118-6

VTV TEST #6

Max = 0.60 Gs @ 2.52 msec
Min = -48.65 Gs @ 66.12 msec

V1-P1 Pelvic X



Time (msec)

DATA WIRE DAMAGED DURING TEST

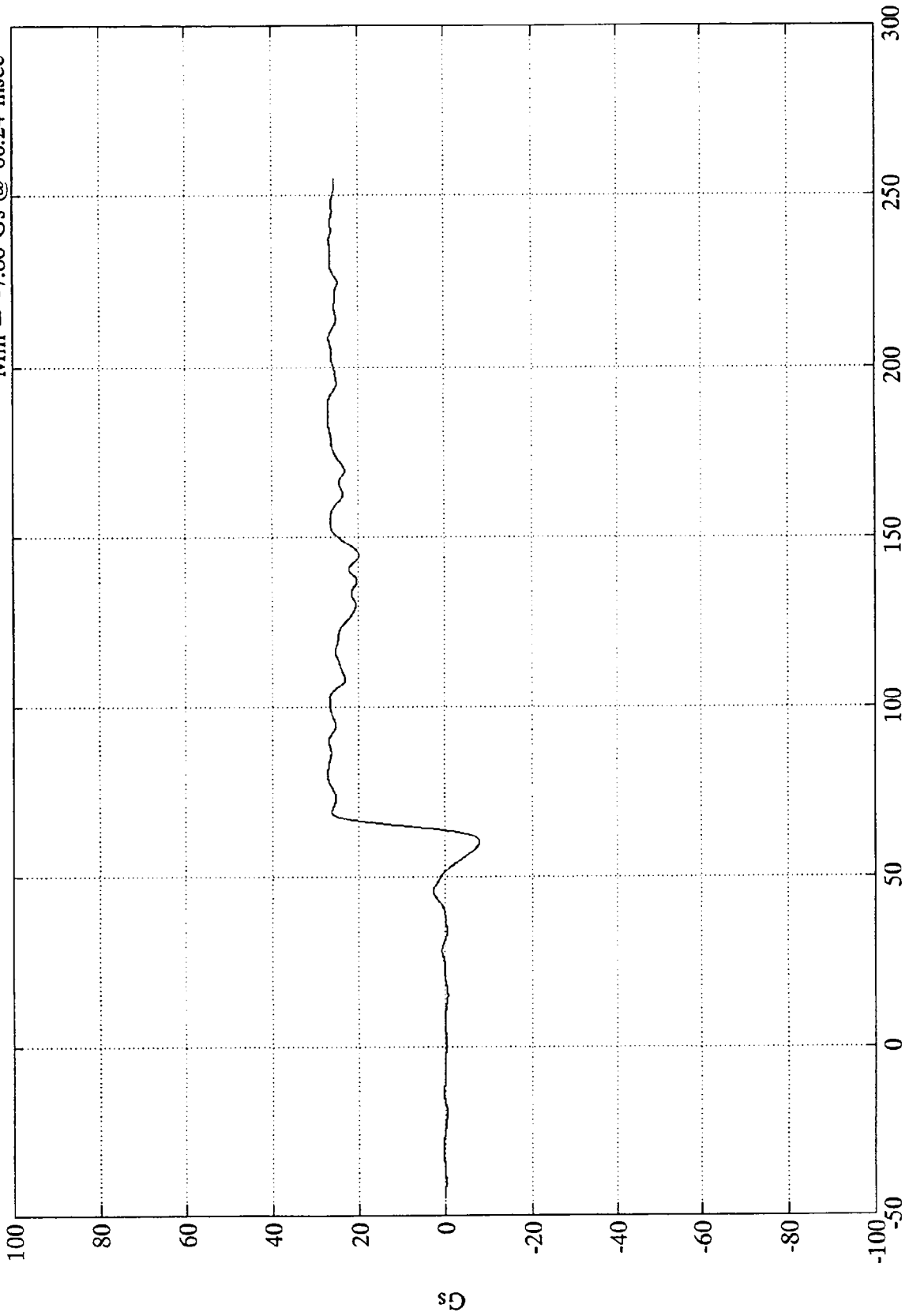
SAE Filter Class 1000

8118-6

VTV TEST #6

Max = 27.09 Gs @ 79.92 msec
Min = -7.86 Gs @ 60.24 msec

V1-P1 Pelvic Y



Time (msec)

DATA WIRE DAMAGED DURING TEST

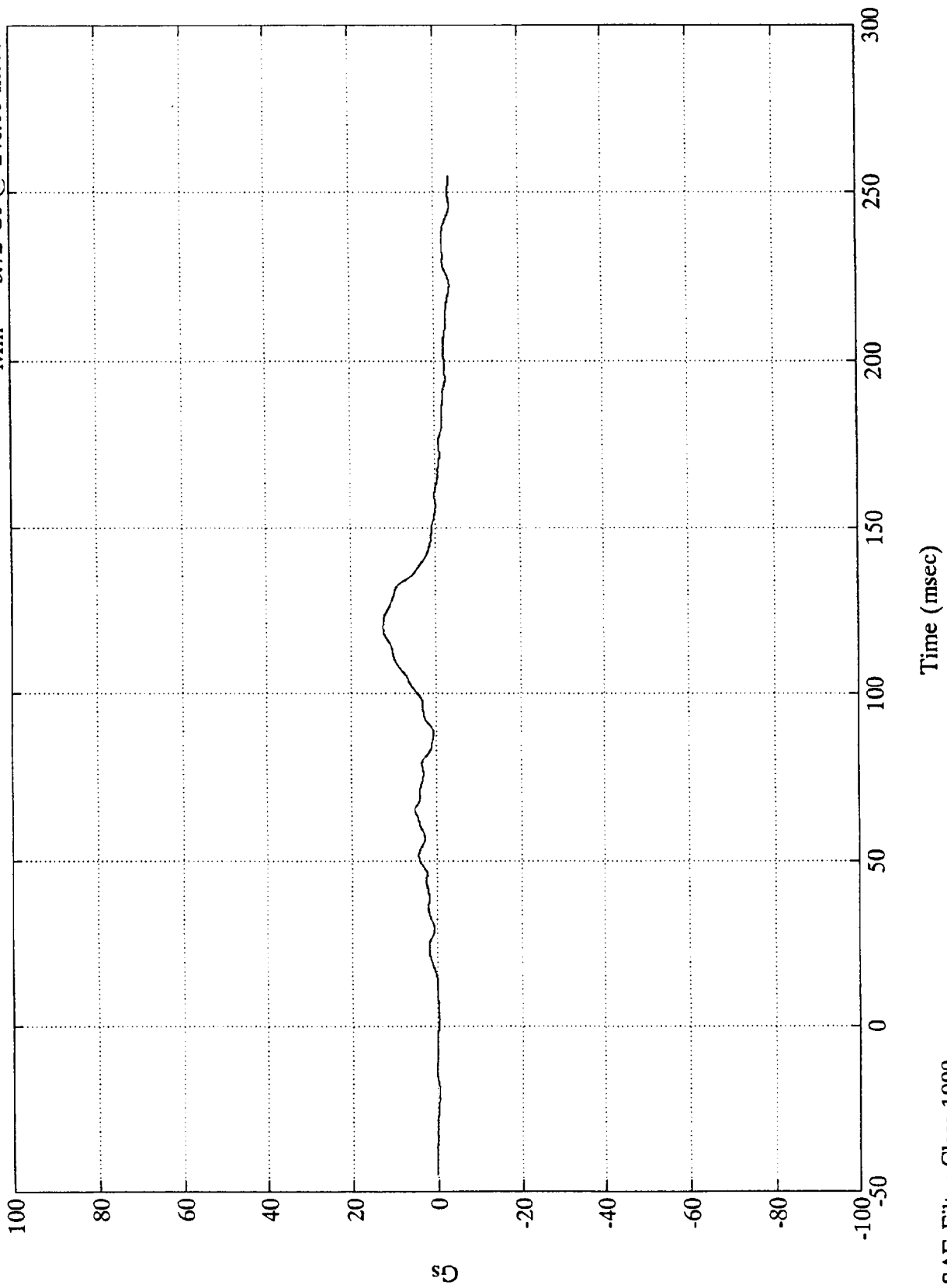
SAE Filter Class 1000

8118-6

VTV TEST #6

Max = 12.46 Gs @ 120.12 msec
Min = -3.72 Gs @ 246.00 msec

V1-P1 Pelvic Z



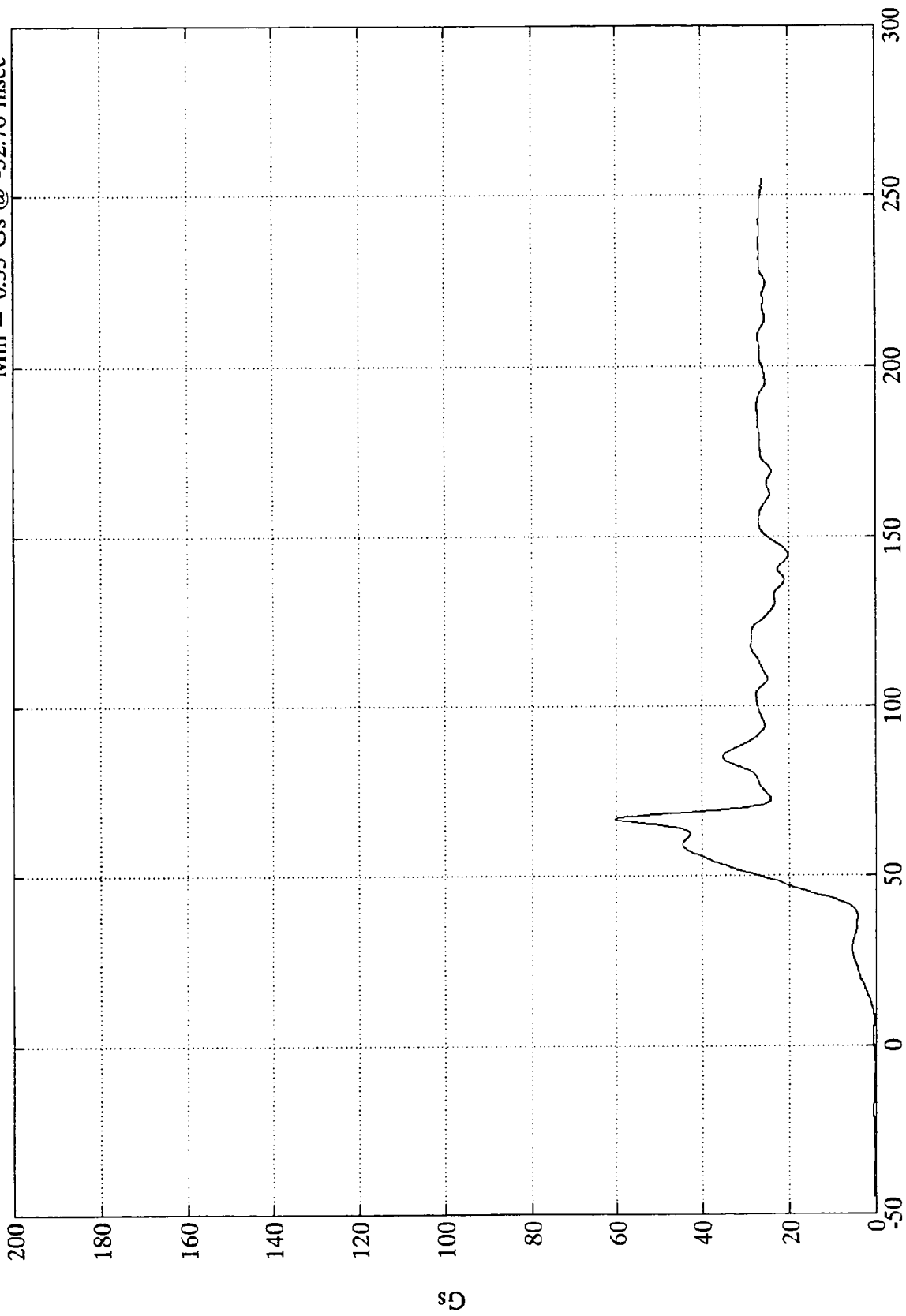
8118-6

SAE Filter Class 1000

VTV TEST #6

Max = 60.39 Gs @ 66.60 msec
Min = 0.33 Gs @ -32.76 msec

V1-P1 Pelvic Resultant



Time (msec)

DATA WIRE DAMAGED DURING TEST

SAE Filter Class 1000

8118-6

VEHICLE TWO DATA

TEST NO. Y49-6-1400

VEHICLE DATA

SAE FILTER CHANNEL CLASS

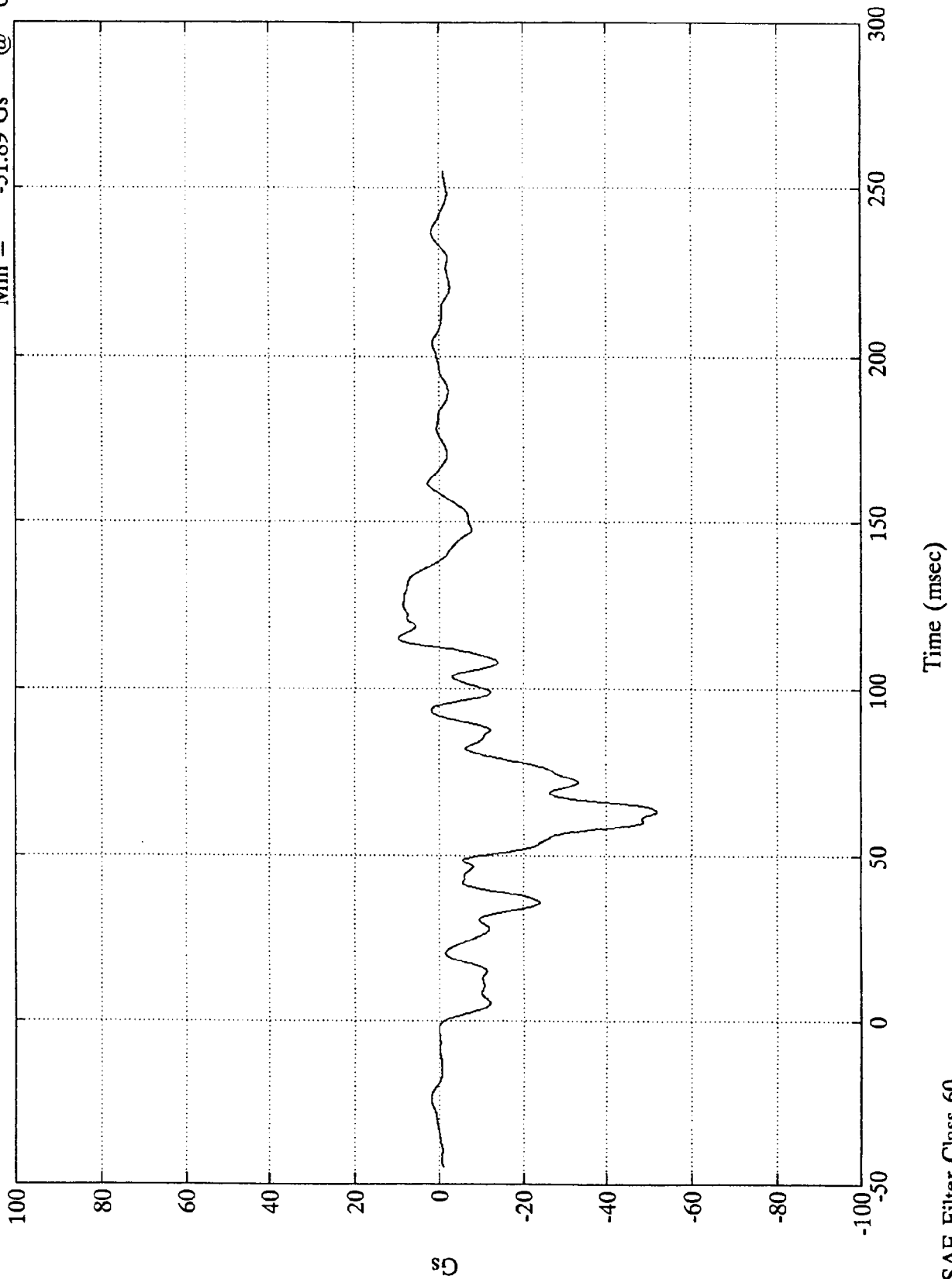
60

8118-6

VTV TEST #6

V2 Lower Steering Col X

Max = 9.72 Gs @ 115.32 msec
Min = -51.89 Gs @ 63.11 msec



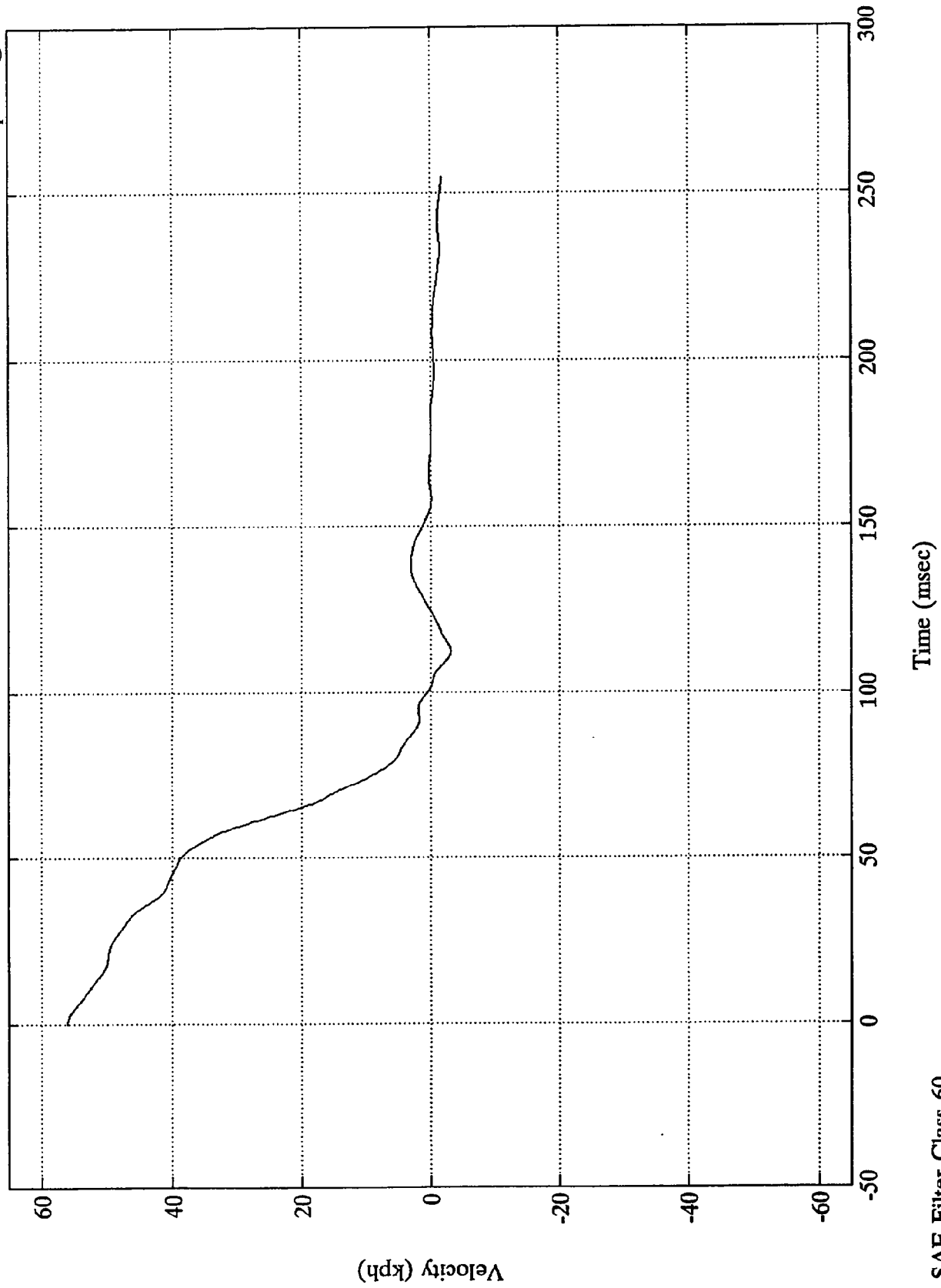
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Lower Steering Col X

Max = 56.00 kph @ -0.00 msec
Min = -3.02 kph @ 112.44 msec

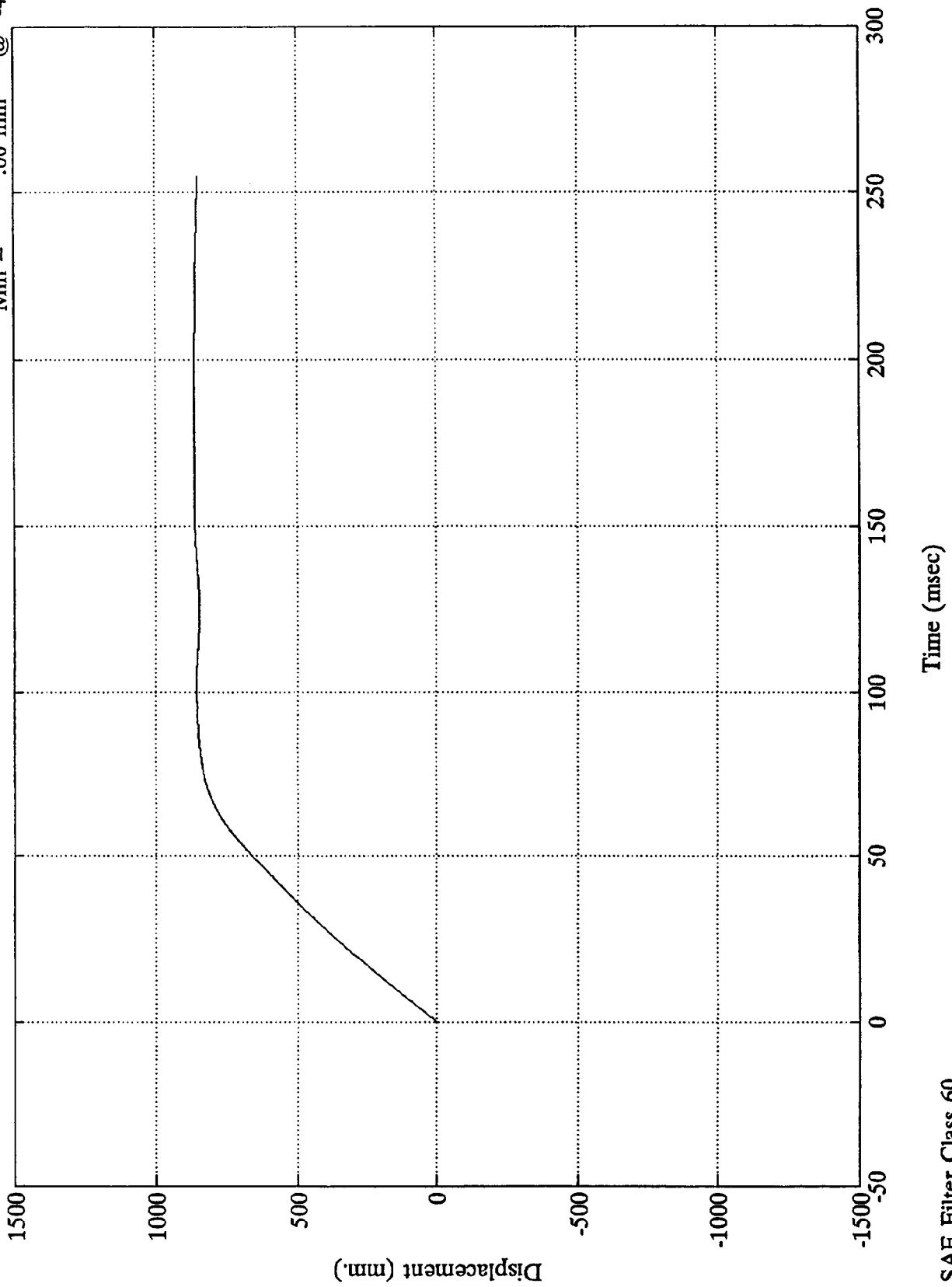


8118-6

VTV TEST #6

V2 Lower Steering Col X

Max = 866.71 mm @ 185.76 msec
Min = .00 mm @ -44.88 msec



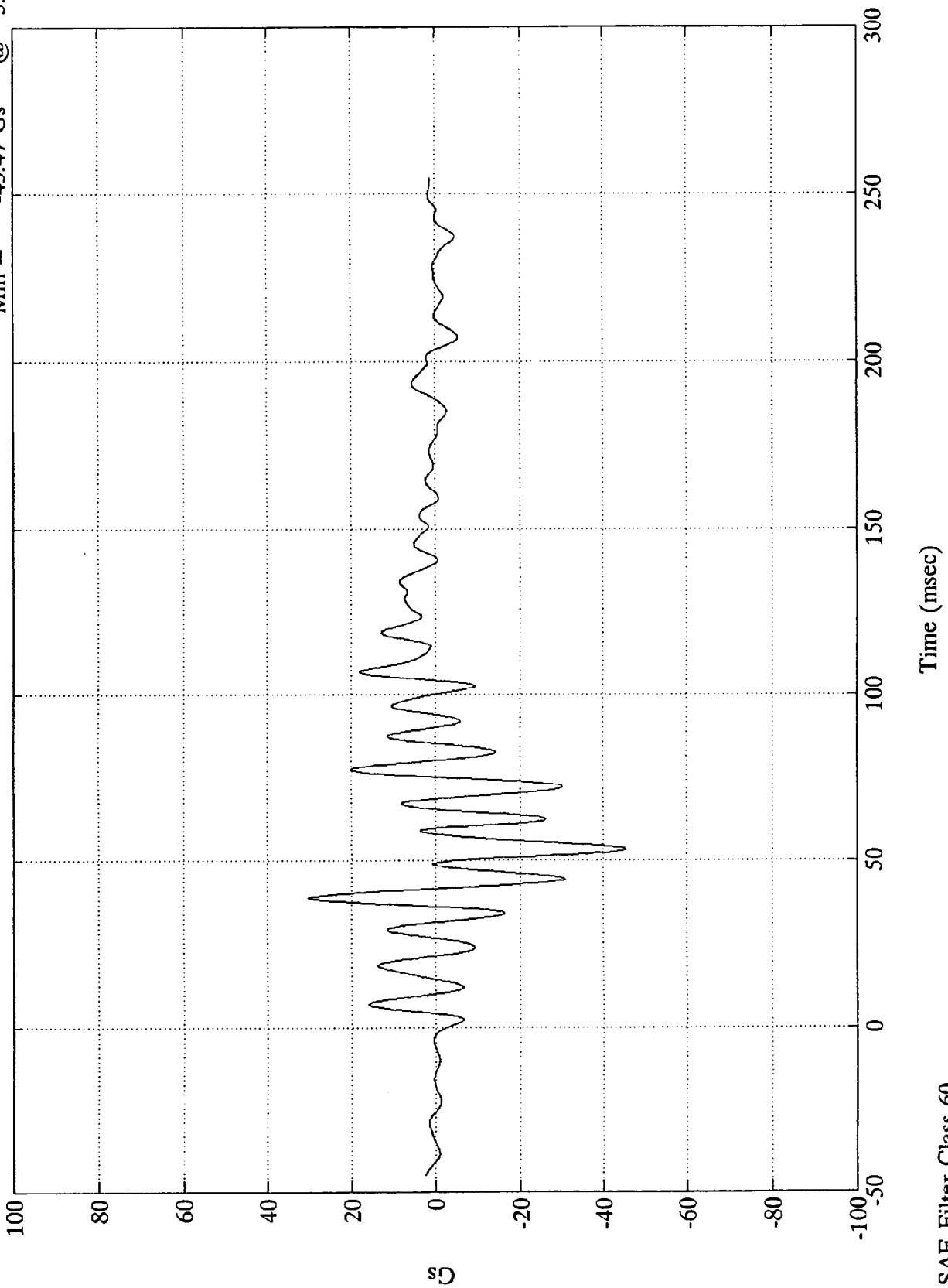
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Lower Steering Col Y

Max = 30.14 Gs @ 38.52 msec
Min = -45.47 Gs @ 53.40 msec



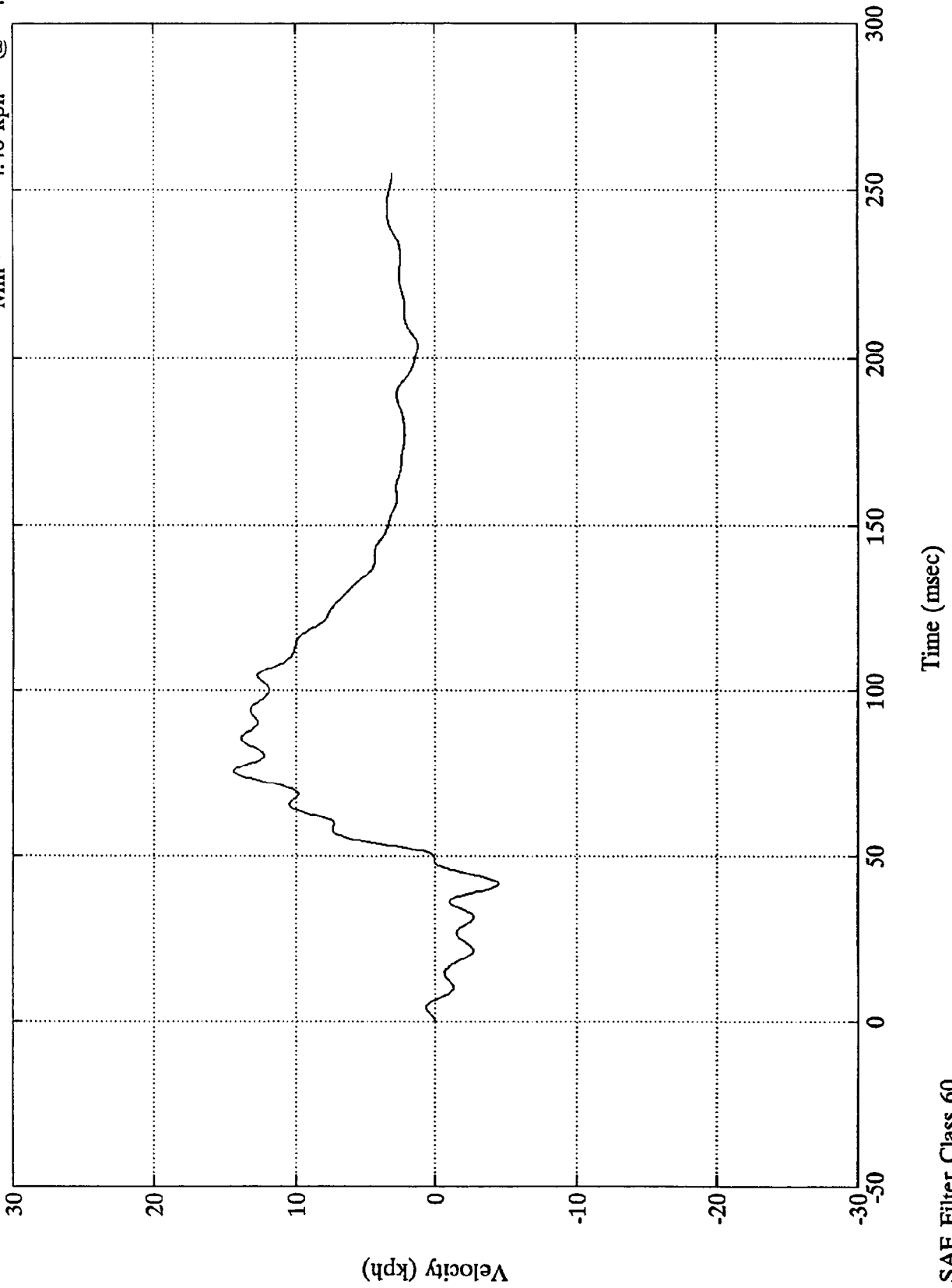
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Lower Steering Col Y

Max = 14.45 kph @ 75.60 msec
Min = -4.46 kph @ 41.28 msec



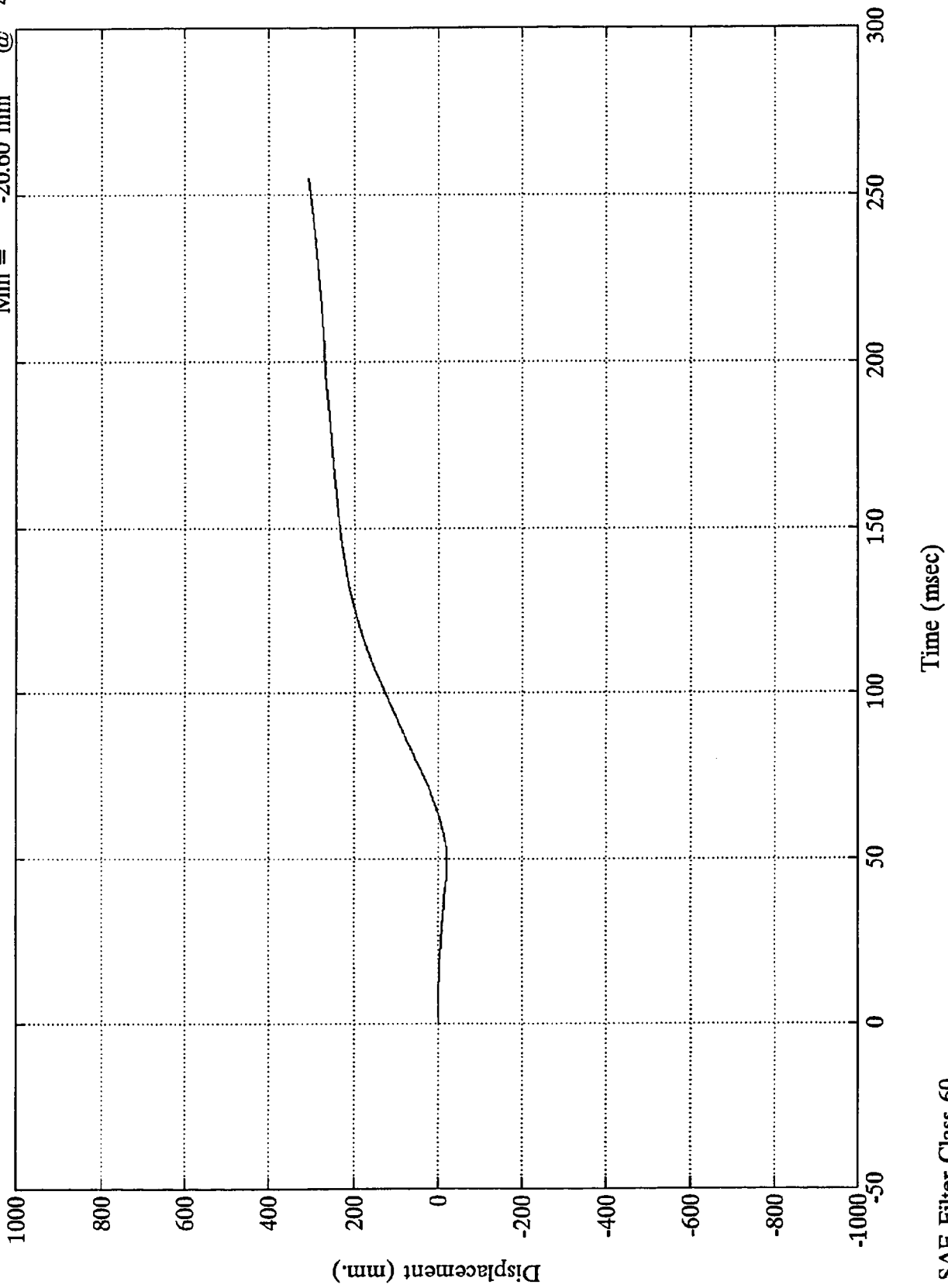
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Lower Steering Col Y

Max = 306.52 mm @ 254.88 msec
Min = -20.60 mm @ 47.76 msec



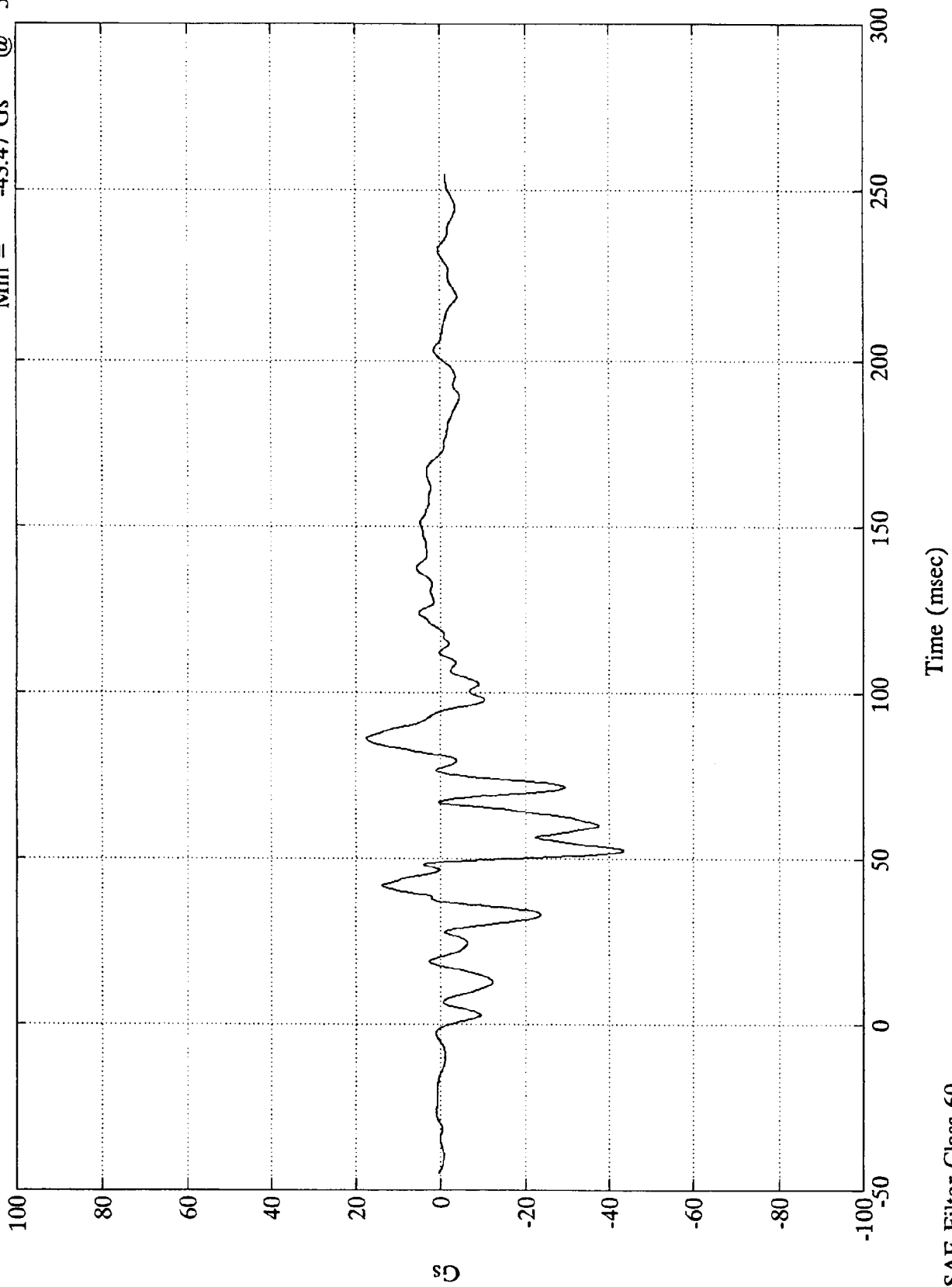
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Lower Steering Col Z

Max = 17.46 Gs @ 86.28 msec
Min = -43.47 Gs @ 52.56 msec

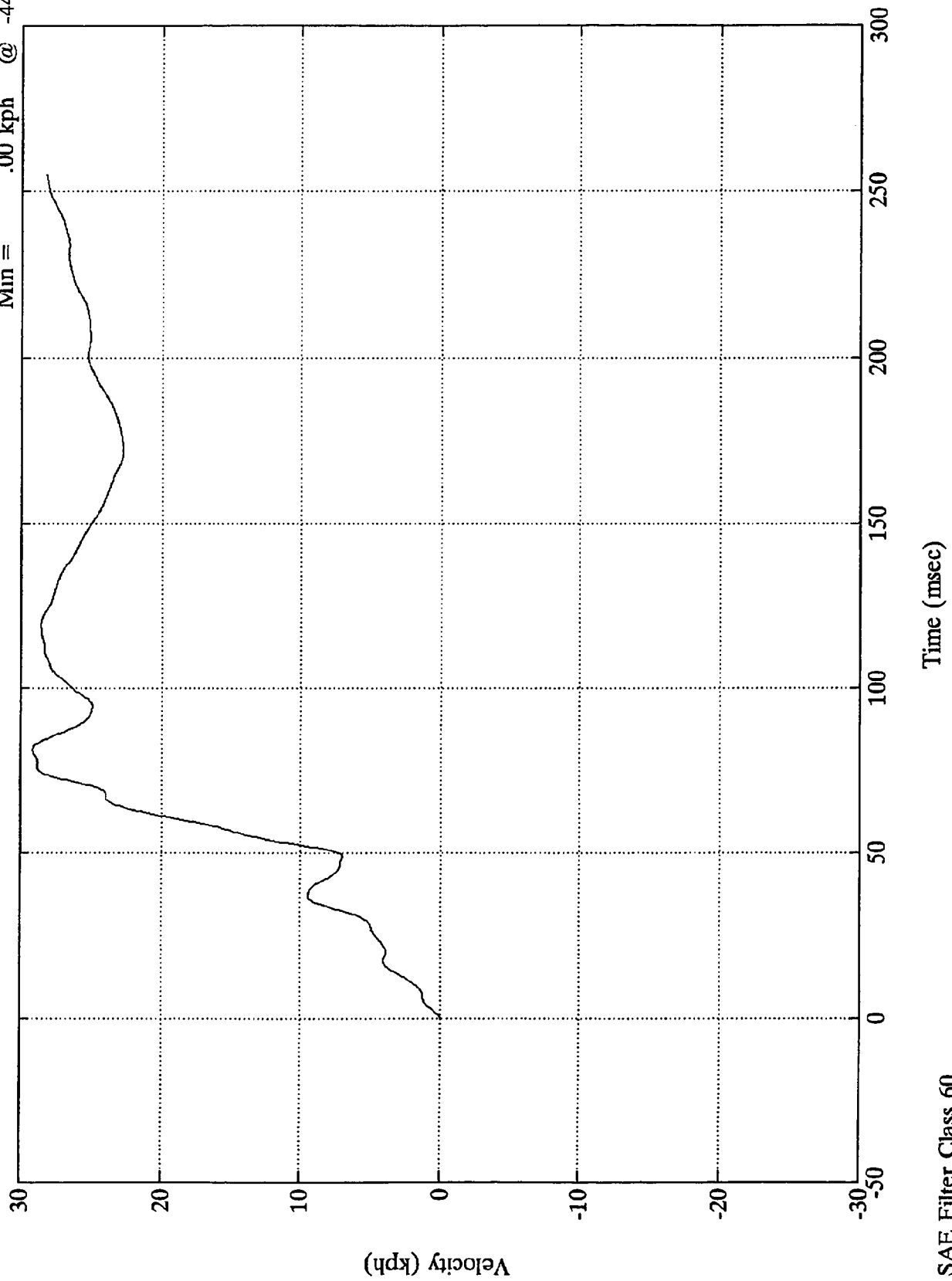


SAE Filter Class 60

VTV TEST #6

Max = 29.11 kph @ 81.36 msec
Min = .00 kph @ -44.88 msec

V2 Lower Steering Col Z



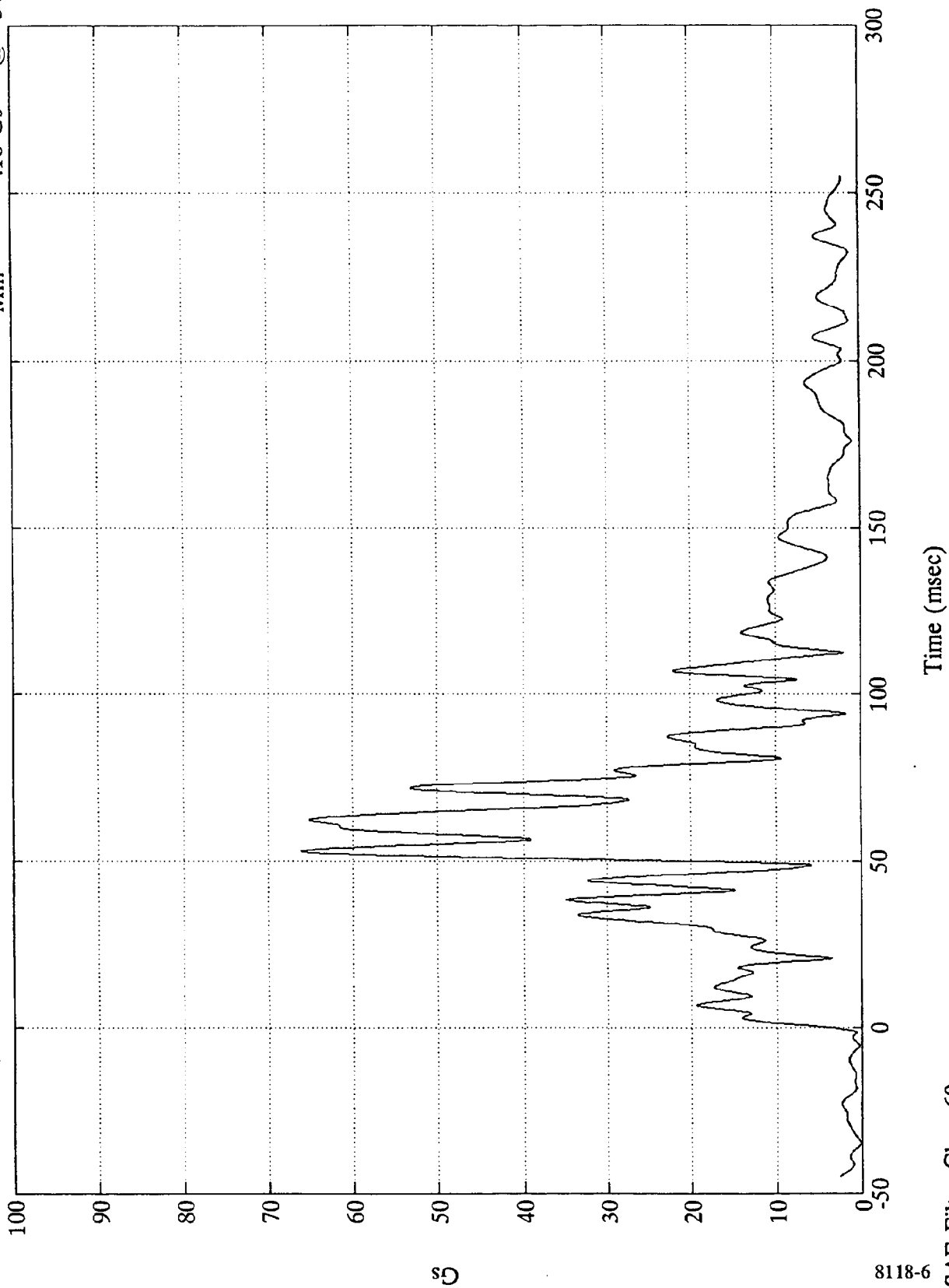
SAE Filter Class 60

8118-6

VTV TEST #6

Max = 66.09 Gs @ 53.04 msec
Min = .16 Gs @ -34.68 msec

V2 Lower Steering Res.

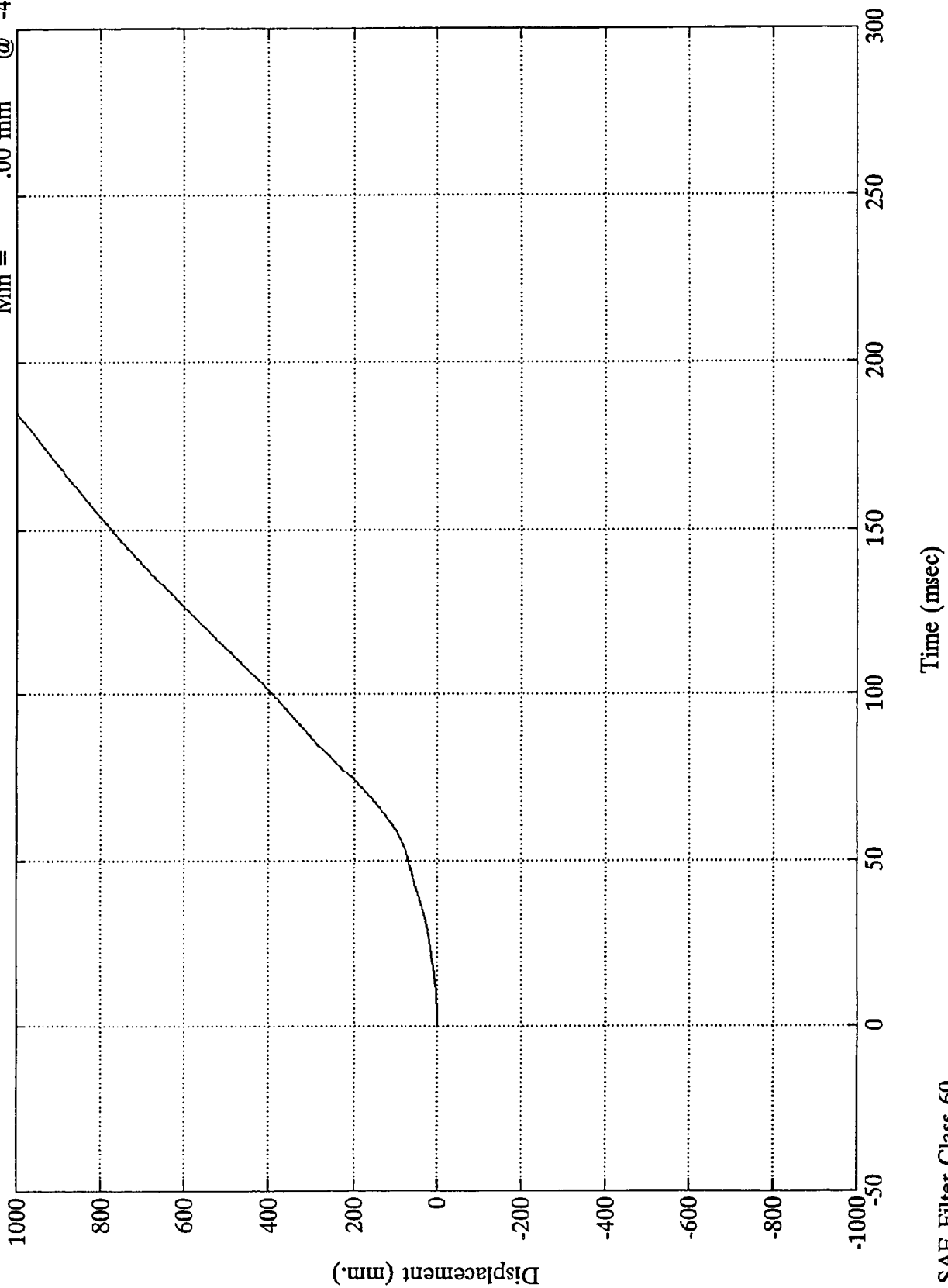


8118-6

VTV TEST #6

V2 Lower Steering Col Z

Max = 1505.78 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec



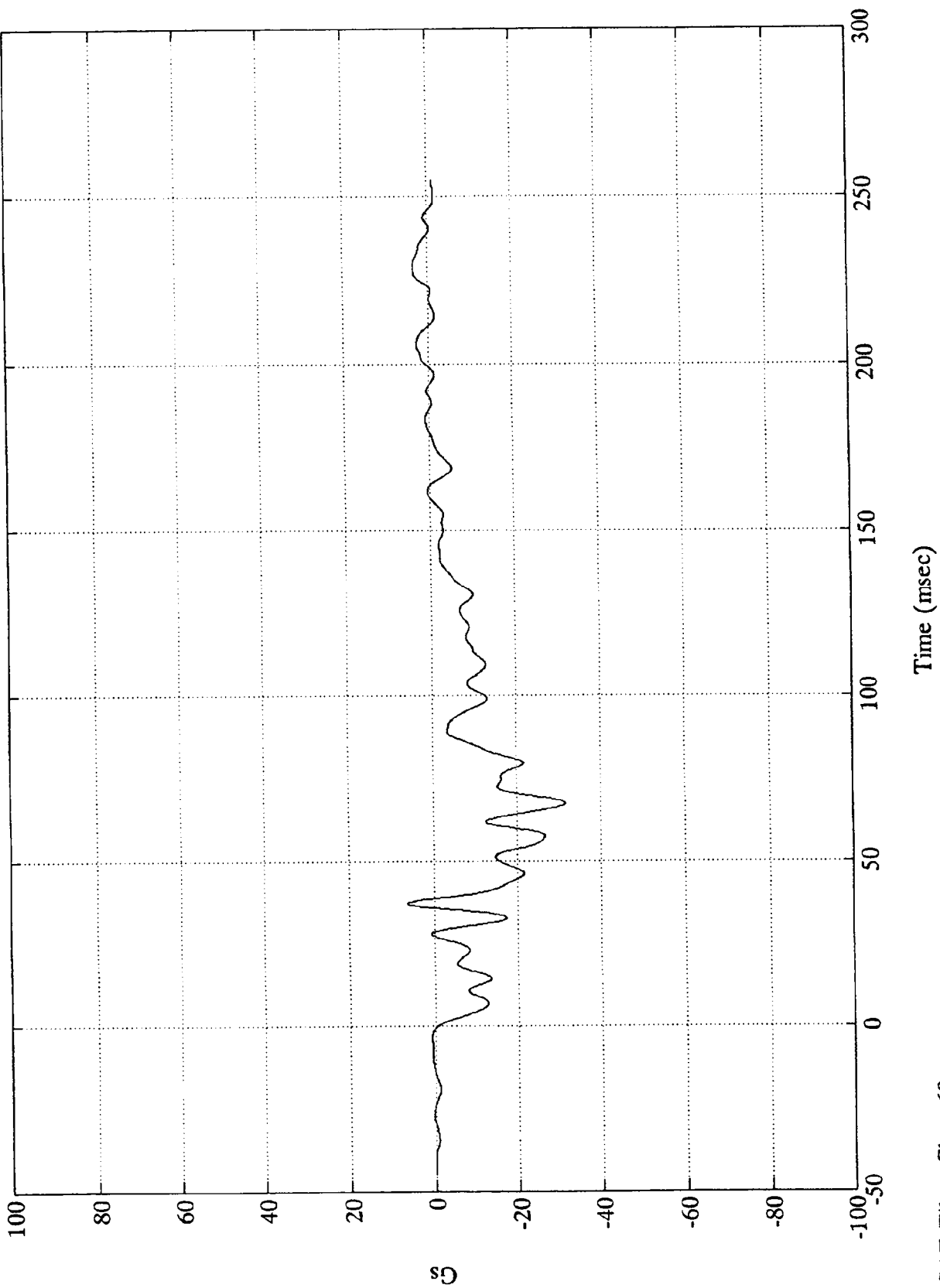
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Center Rear Comp X

Max = 6.34 Gs @ 37.20 msec
Min = -31.79 Gs @ 67.19 msec



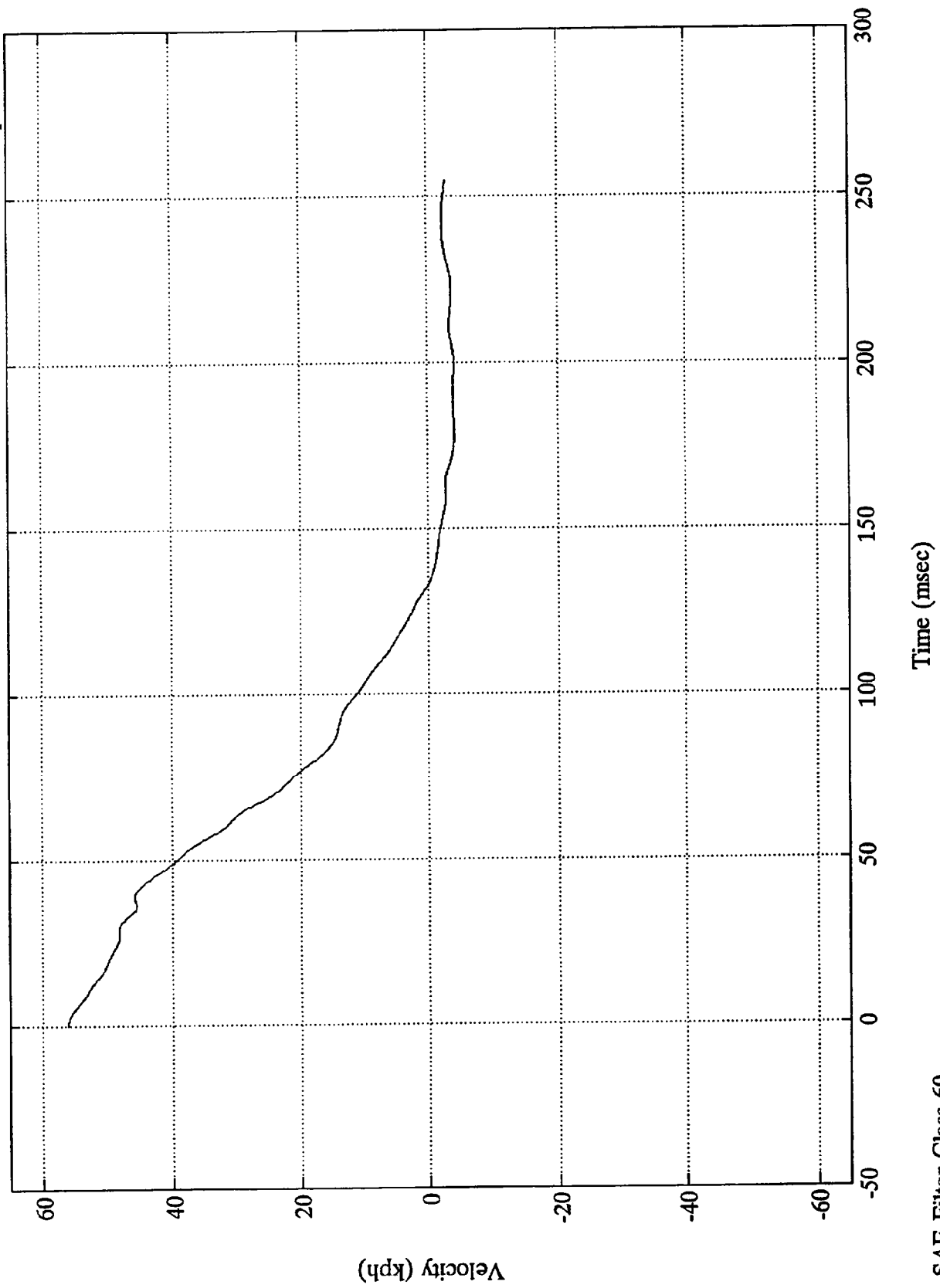
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Center Rear Comp X

Max = 56.00 kph @ -0.00 msec
Min = -4.09 kph @ 199.20 msec

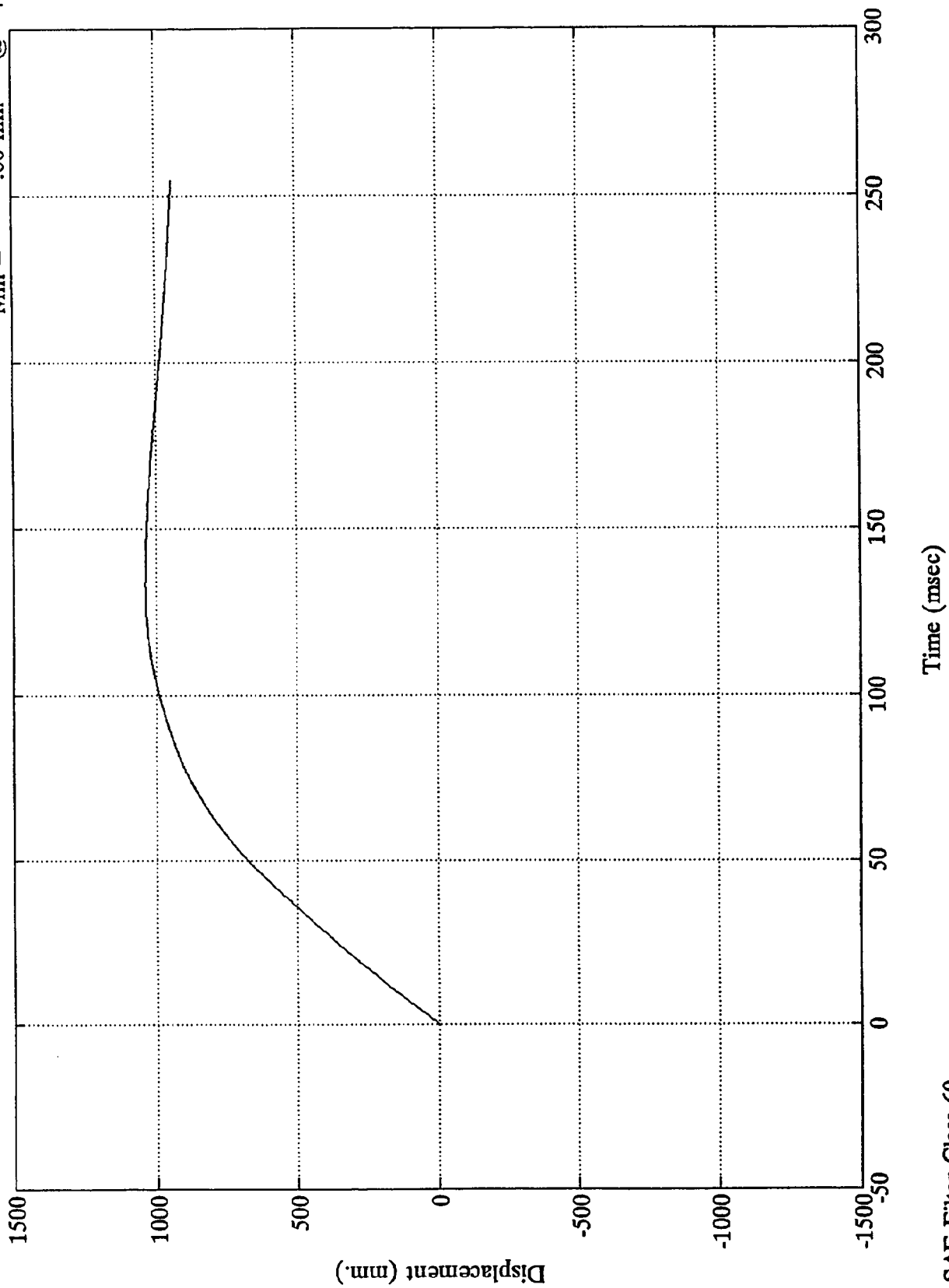


SAE Filter Class 60

VTV TEST #6

V2 Center Rear Comp X

Max = 1039.52 mm @ 133.32 msec
Min = .00 mm @ -44.88 msec



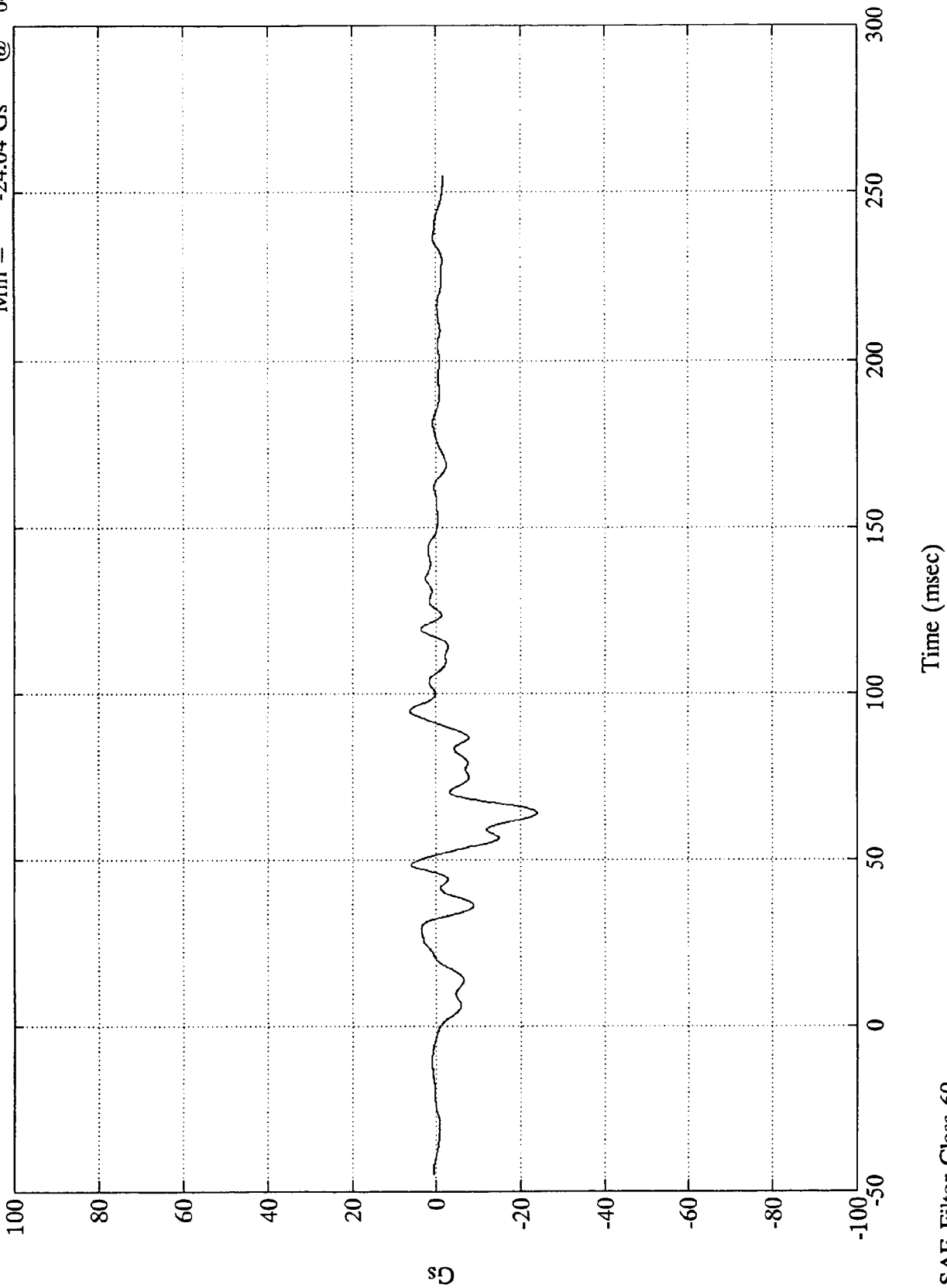
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Upper Steering Col X

Max =	6.10 Gs	@	94.68 msec
Min =	-24.04 Gs	@	64.08 msec



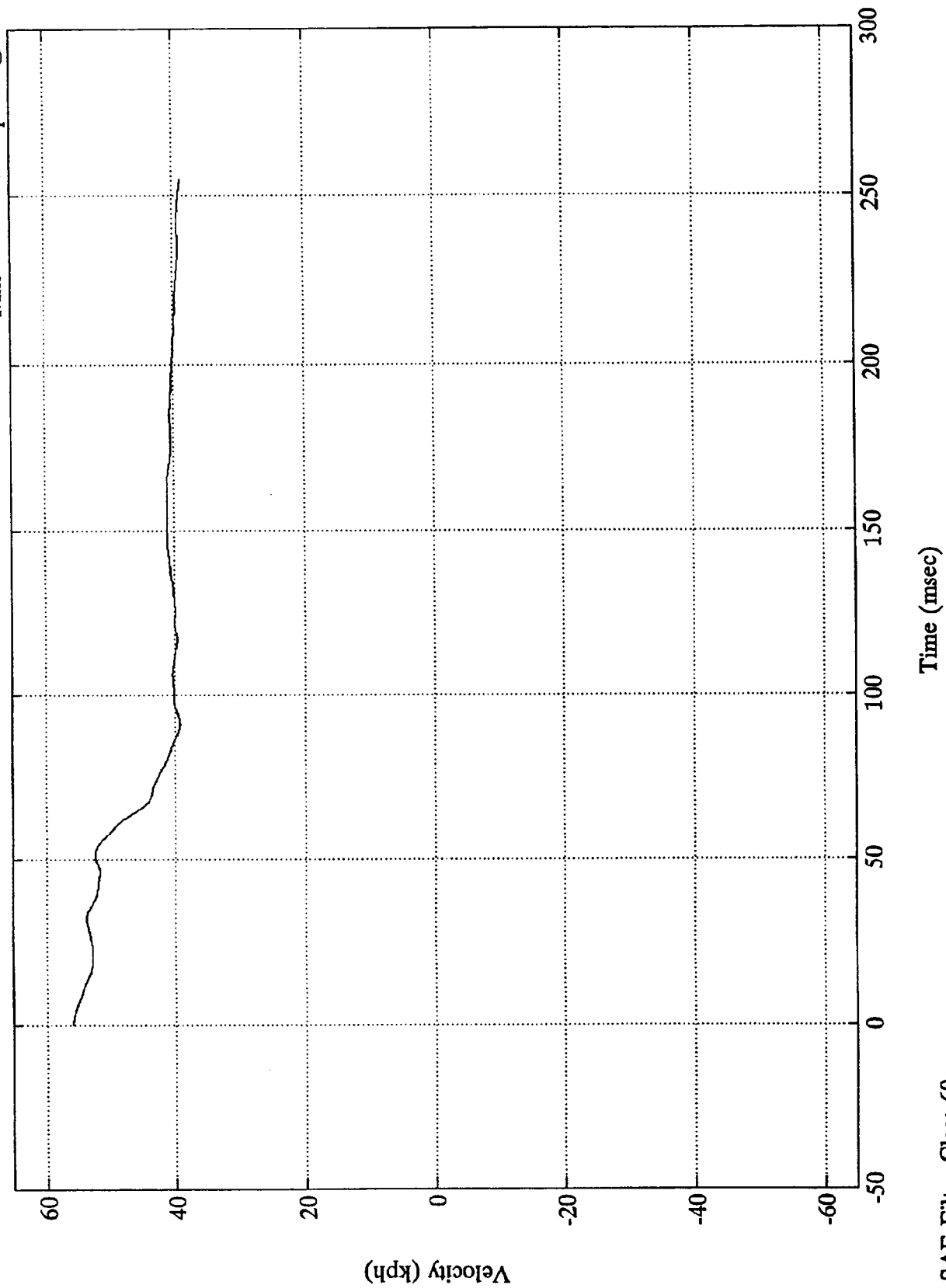
SAE Filter Class 60

8118-6

VTV TEST #6

Max = 56.00 kph @ -0.00 msec
Min = .00 kph @ -44.88 msec

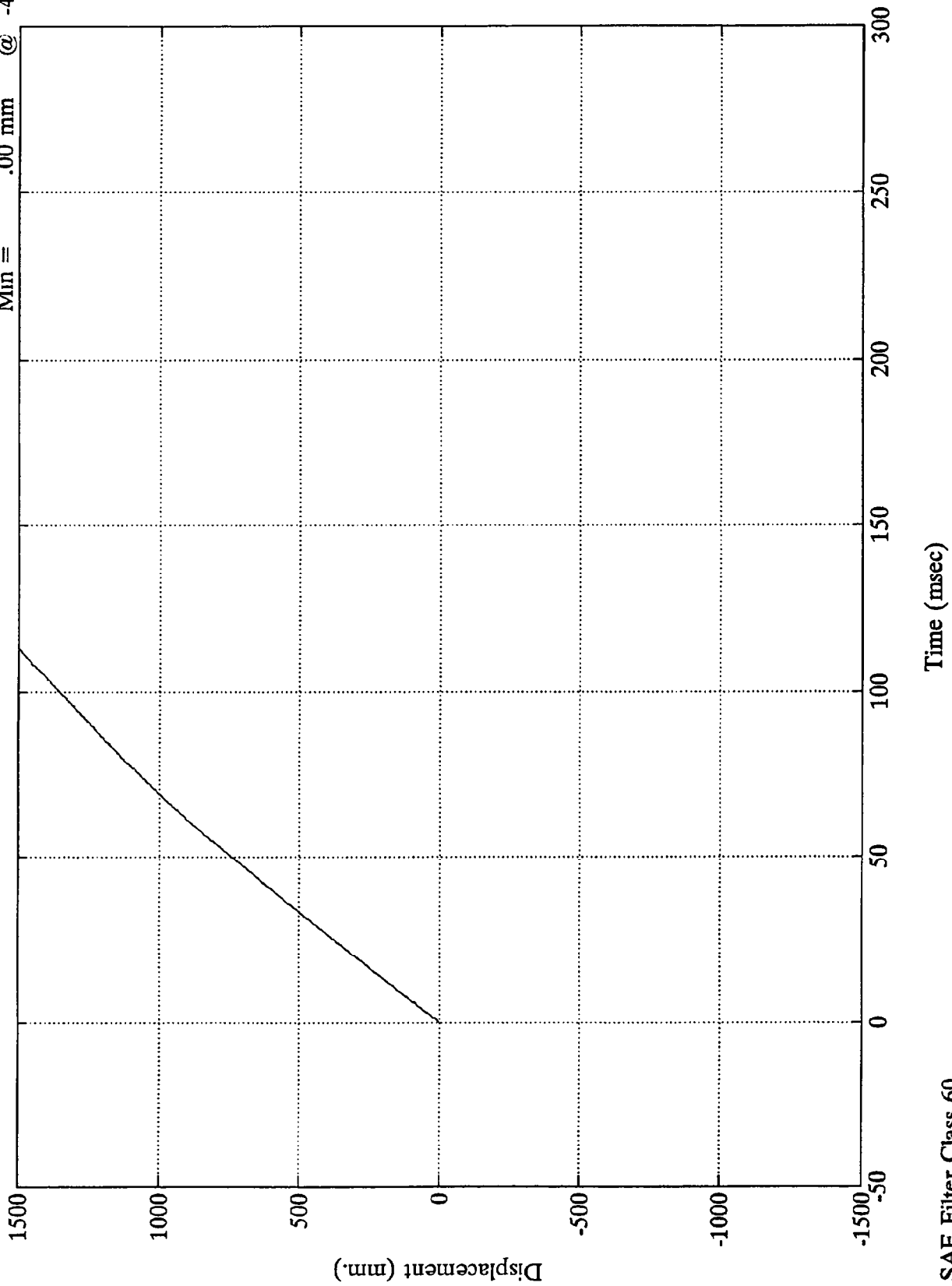
V2 Upper Steering Col X



VTV TEST #6

V2 Upper Steering Col X

Max = 3079.81 mm @ 254.88 msec
Min = .00 mm @ -44.88 msec

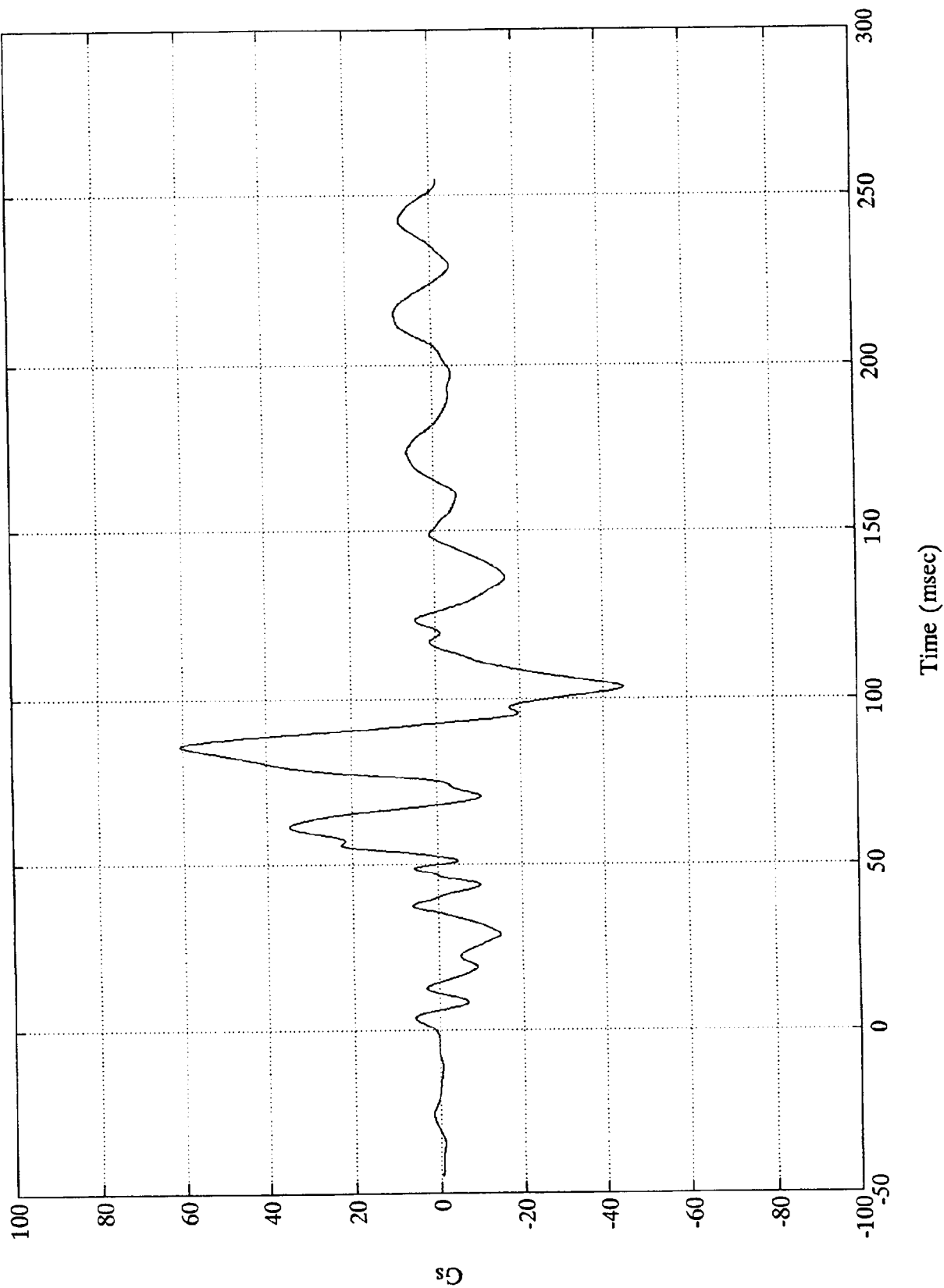


SAE Filter Class 60

8118-6

VTV TEST #6

V2 Upper Steering Col Y Max = 60.62 Gs @ 85.91 msec
Min = -44.87 Gs @ 103.20 msec

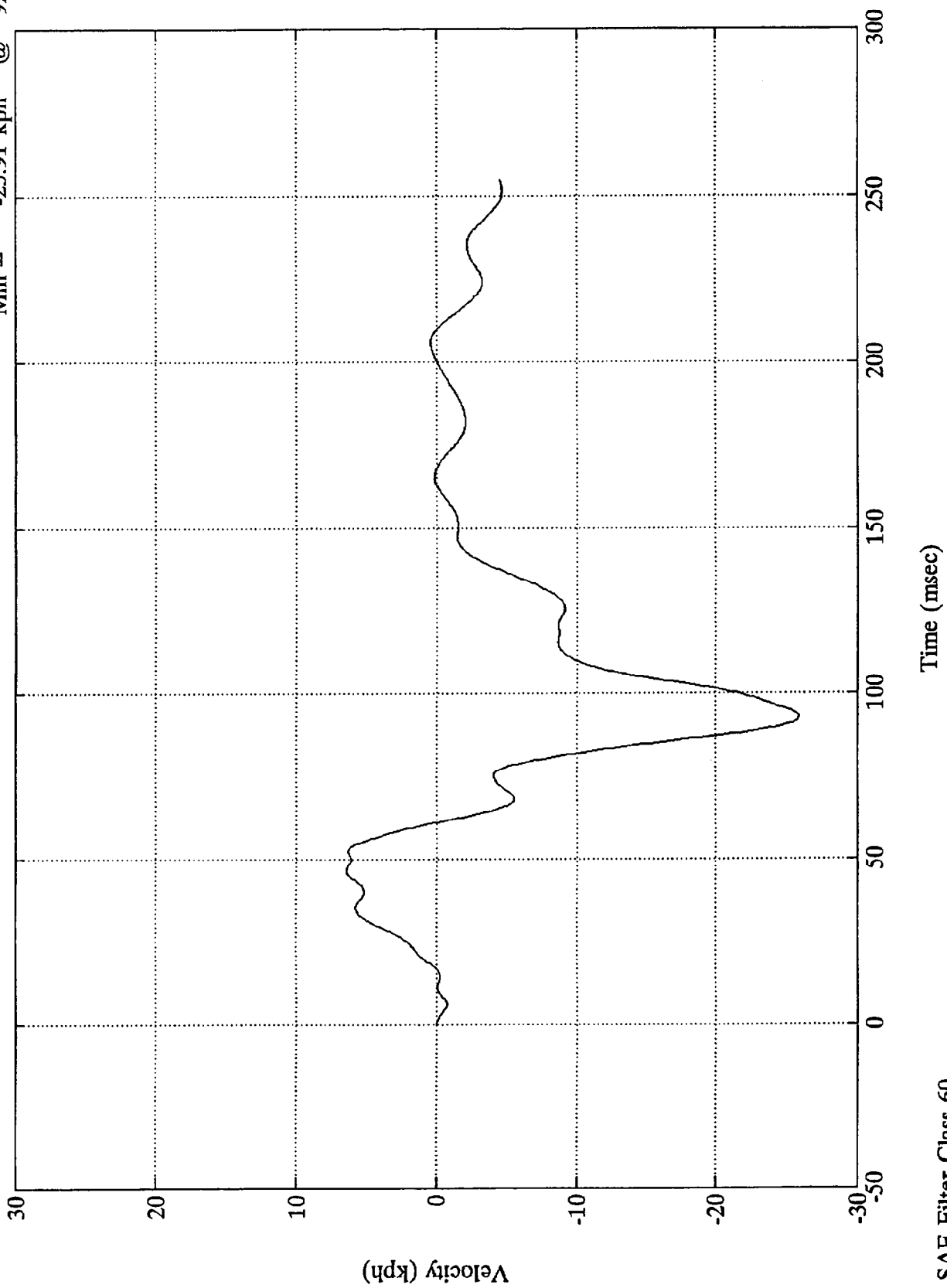


SAE Filter Class 60

8118-6

VTV TEST #6

V2 Upper Steering Col Y
Max = 6.40 kph @ 46.56 msec
Min = -25.91 kph @ 92.76 msec

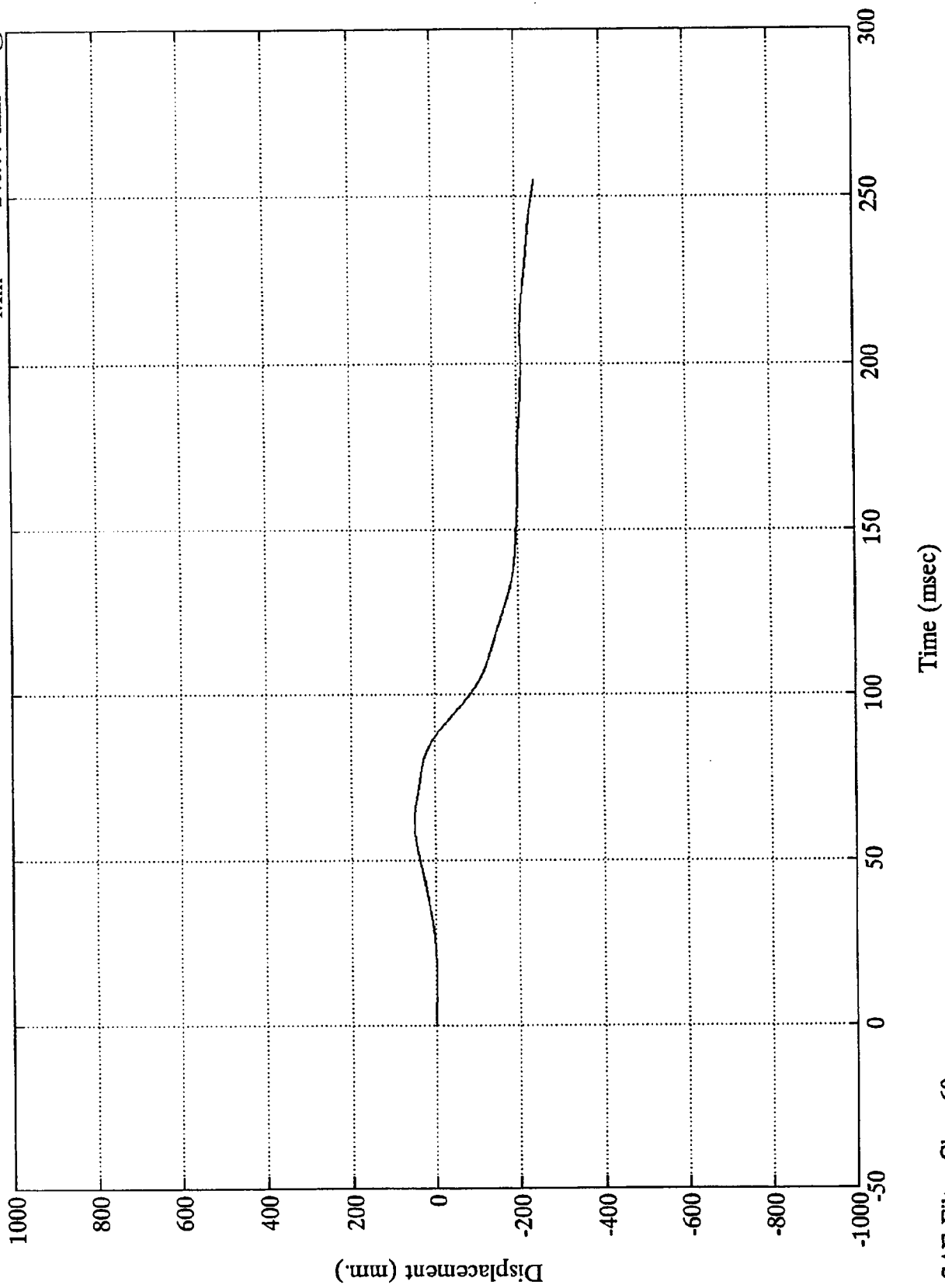


SAE Filter Class 60

8118-6

VTV TEST #6

V2 Upper Steering Col Y
Max = 50.51 mm @ 61.08 msec
Min = -246.77 mm @ 254.88 msec



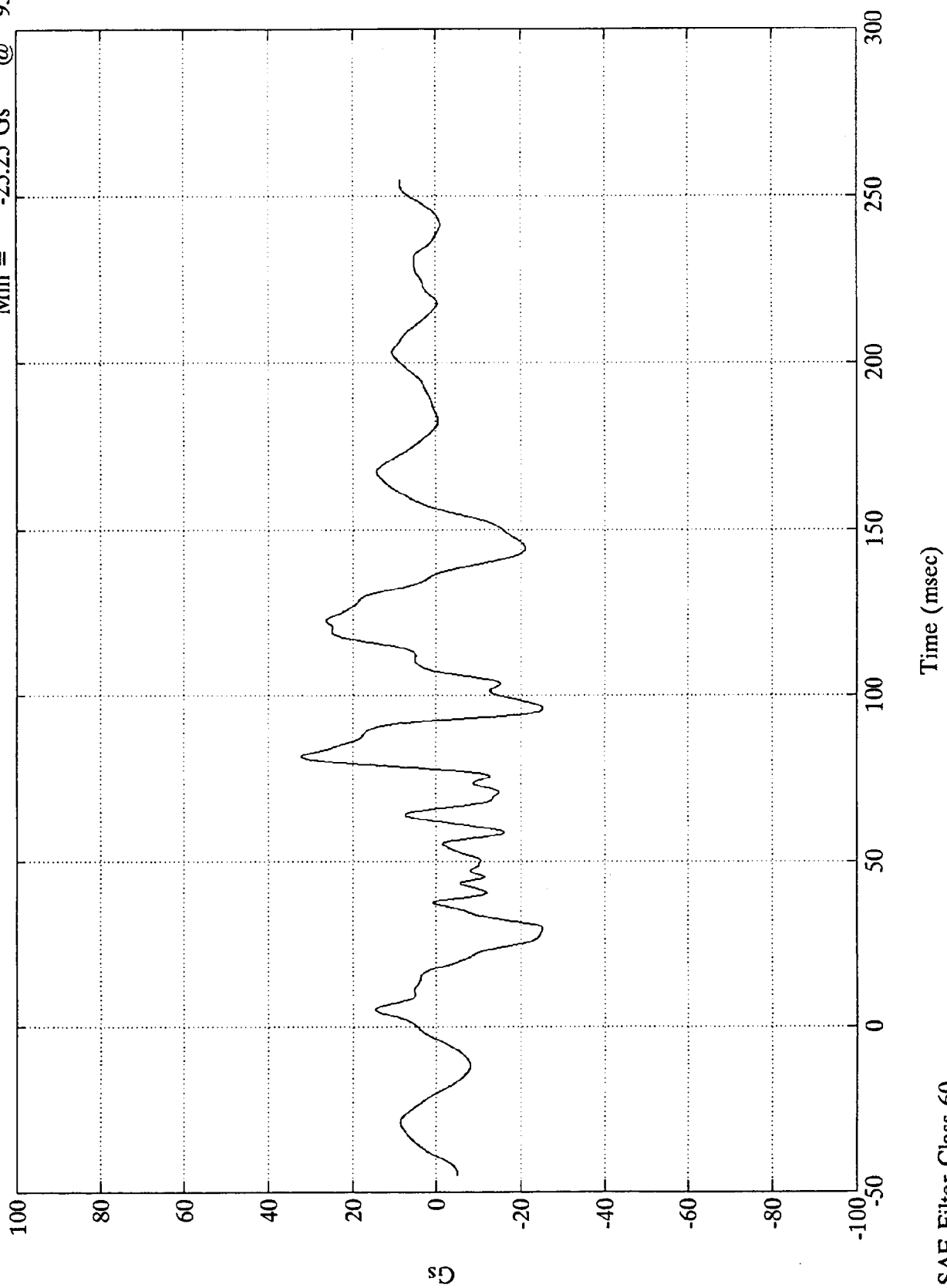
SAE Filter Class 60

8118-6

VTV TEST #6

Max = 32.25 Gs @ 81.72 msec
Min = -25.25 Gs @ 95.88 msec

V2 Upper Steering Col Z

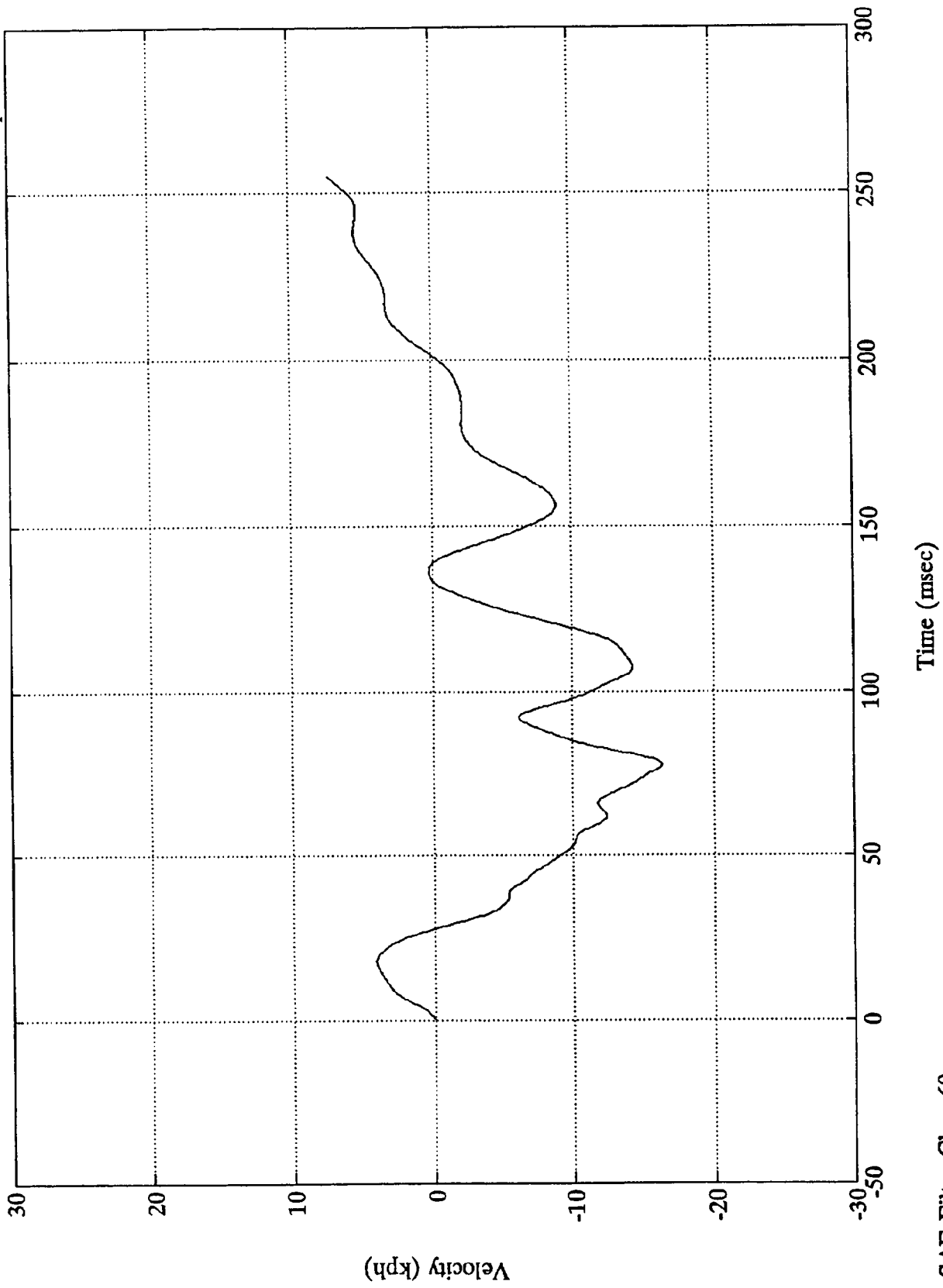


8118-6

VTV TEST #6

Max = 7.22 kph @ 254.88 msec
Min = -16.34 kph @ 77.76 msec

V2 Upper Steering Col Z

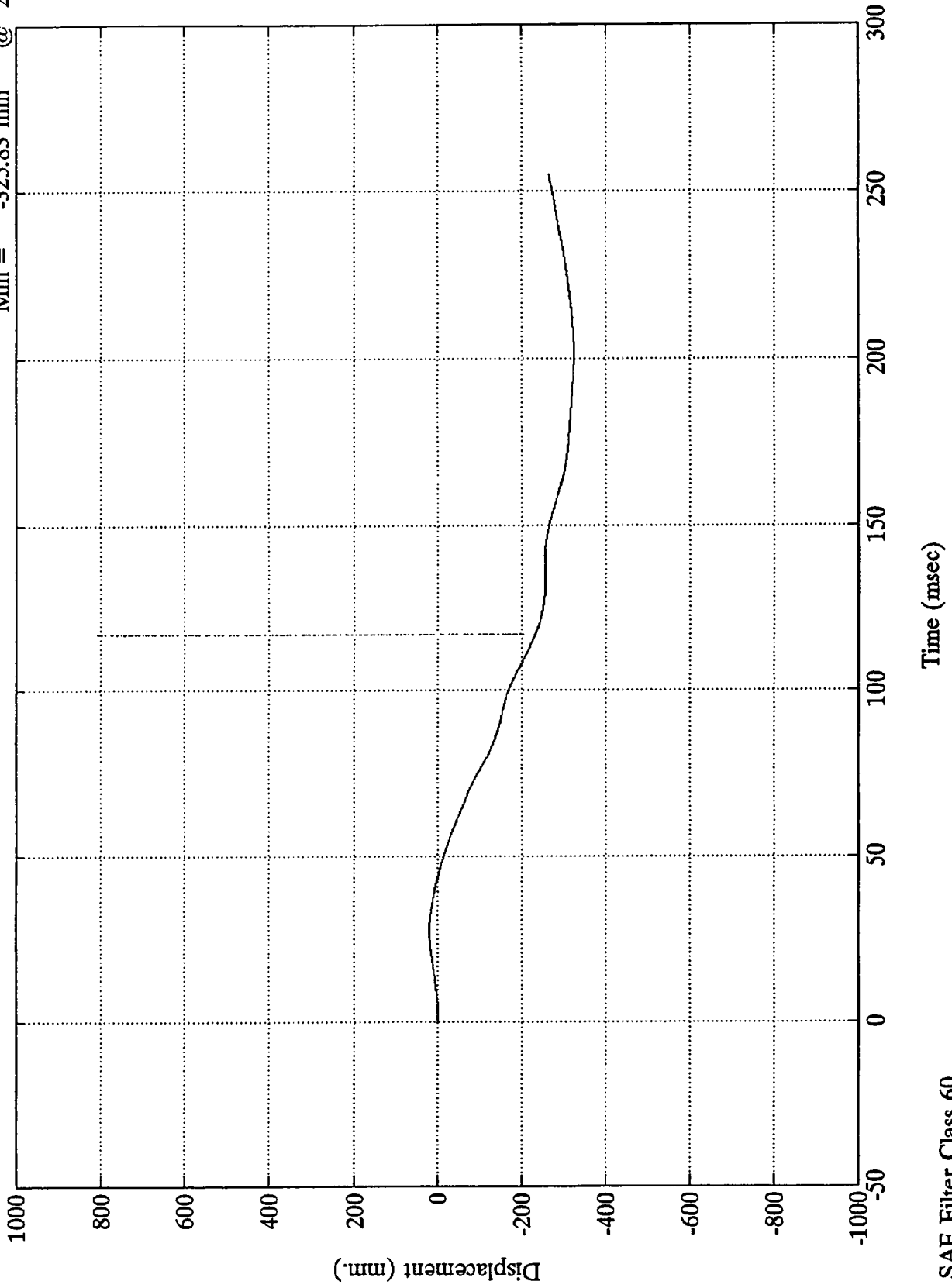


SAE Filter Class 60

VTV TEST #6

V2 Upper Steering Col Z

Max = 20.24 mm @ 27.35 msec
Min = -325.83 mm @ 201.48 msec



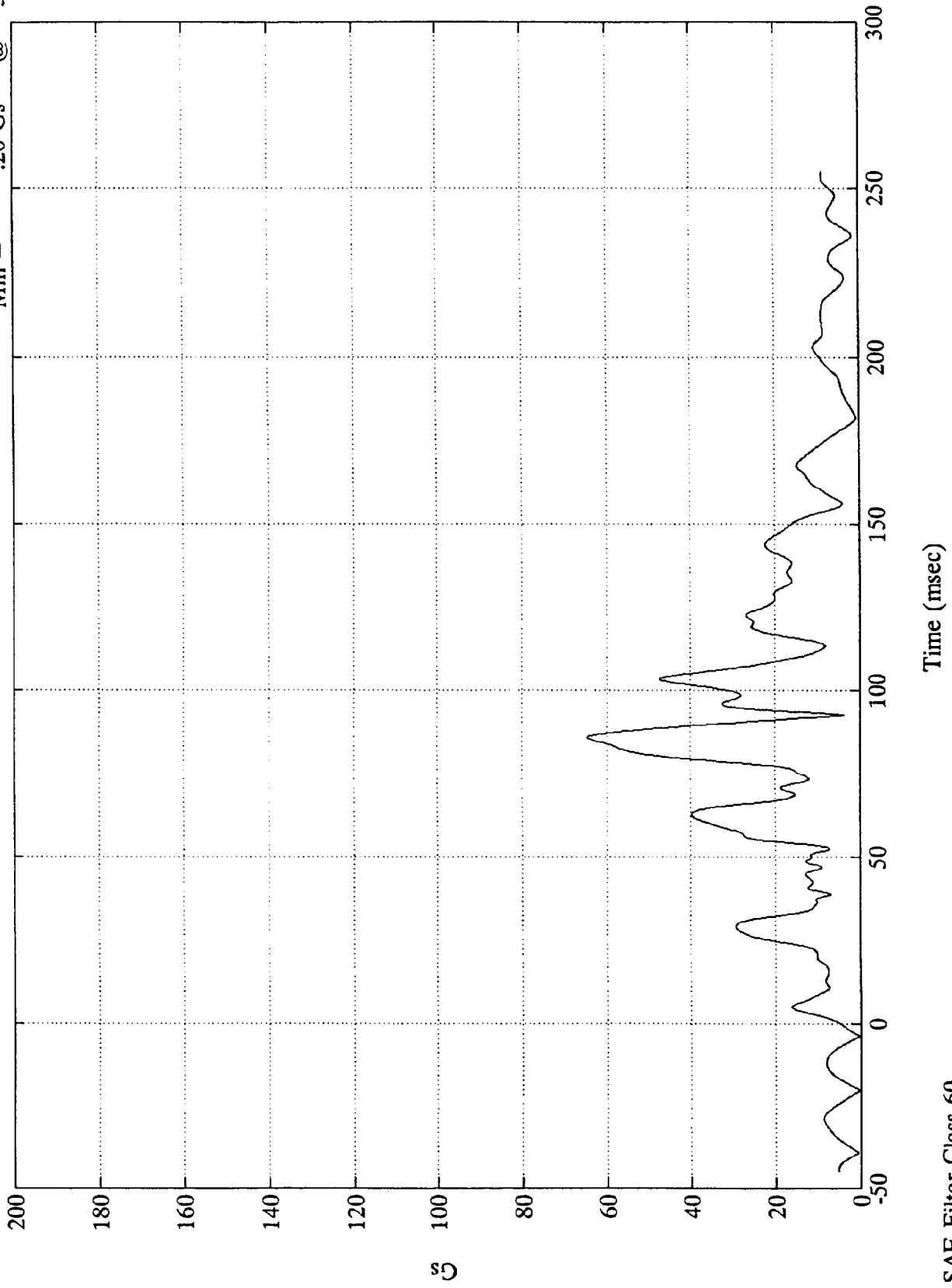
SAE Filter Class 60

8118-6

VTV TEST #6

Max = 64.58 Gs @ 85.80 msec
 Min = .20 Gs @ -3.84 msec

V2 Upper Steering Res.



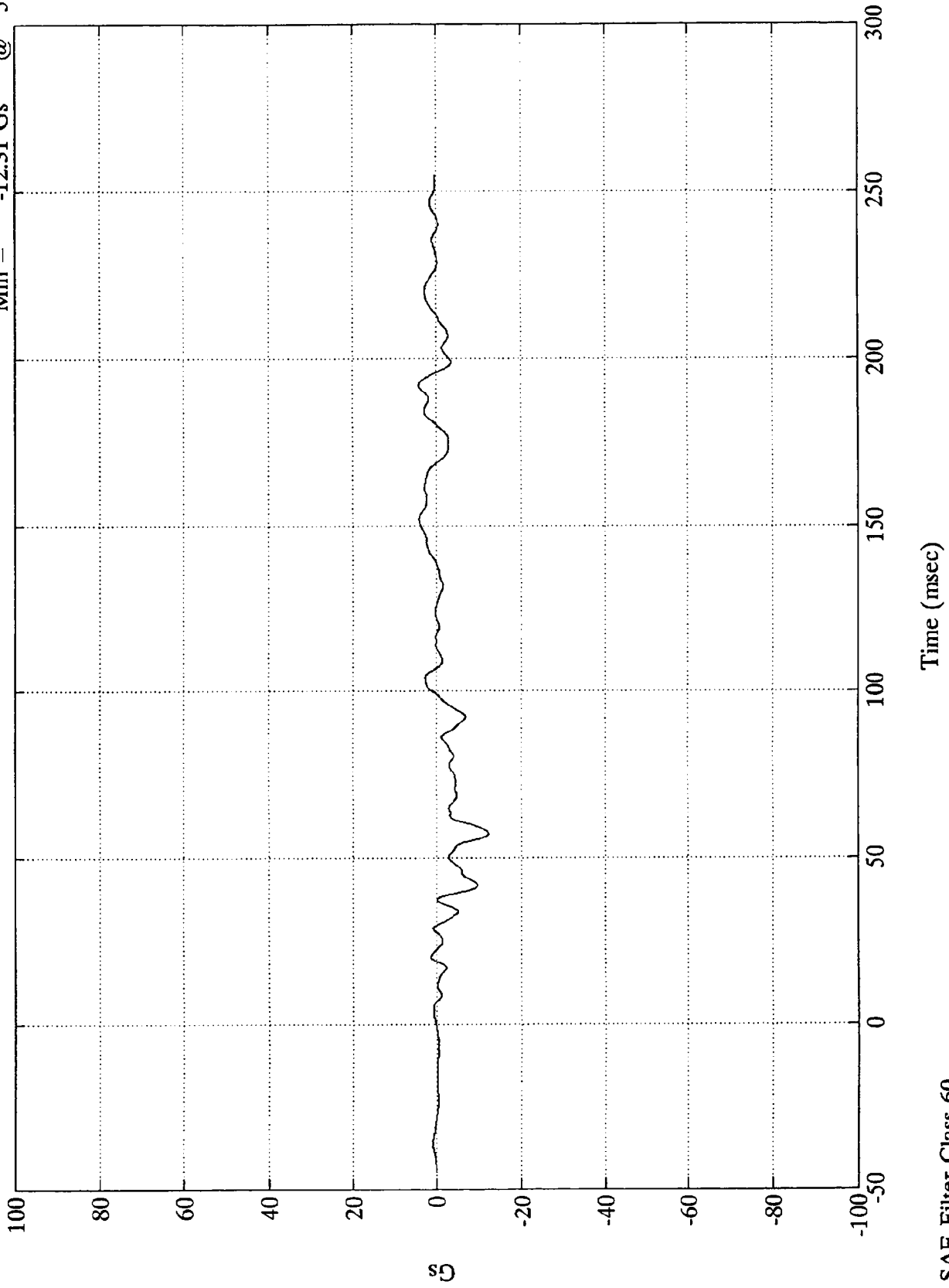
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Center Rear Comp Y

Max = 4.23 Gs @ 191.88 msec
Min = -12.31 Gs @ 57.11 msec



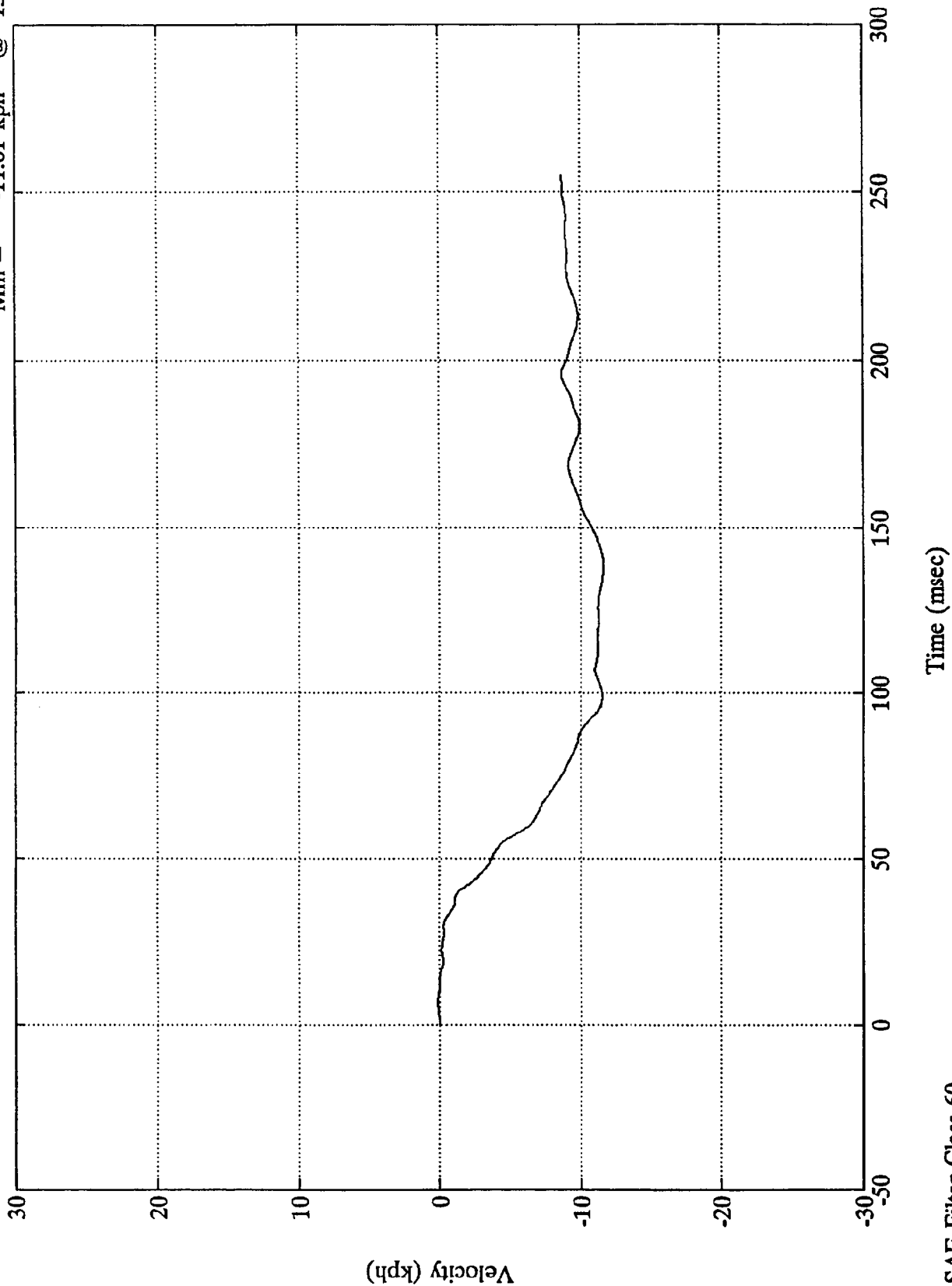
SAE Filter Class 60

8118-6

VTV TEST #6

Max = .14 kph @ 6.71 msec
Min = -11.61 kph @ 138.72 msec

V2 Center Rear Comp Y



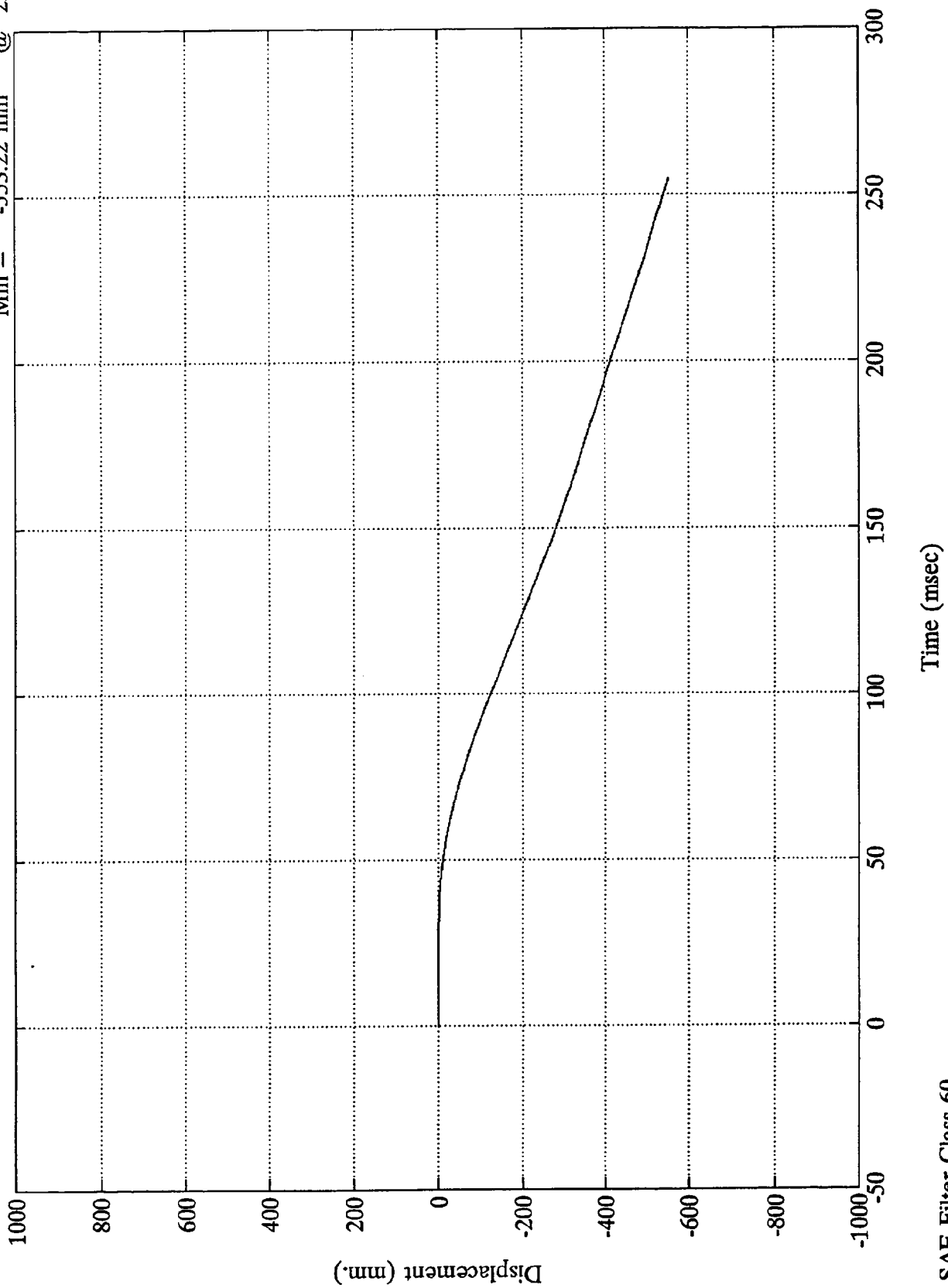
SAE Filter Class 60

8118-6

VTV TEST #6

V2 Center Rear Comp Y

Max = .23 mm @ 13.43 msec
Min = -553.22 mm @ 254.88 msec



8118-6

TEST NO. Y49-6-1400

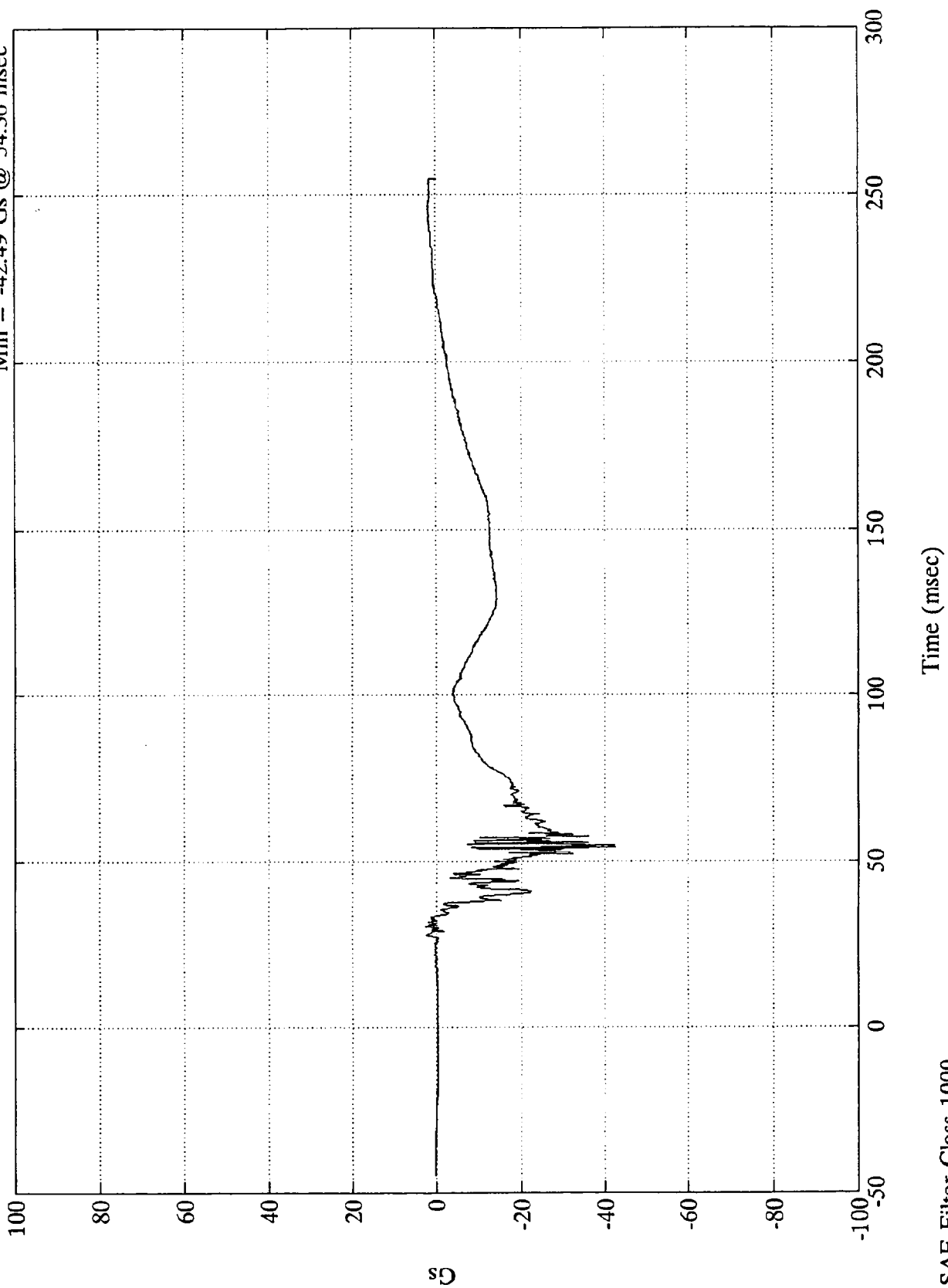
DUMMY DATA

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

VTV TEST #6

Max = 2.40 Gs @ 30.24 msec
Min = -42.49 Gs @ 54.36 msec

V2-P2 Head X



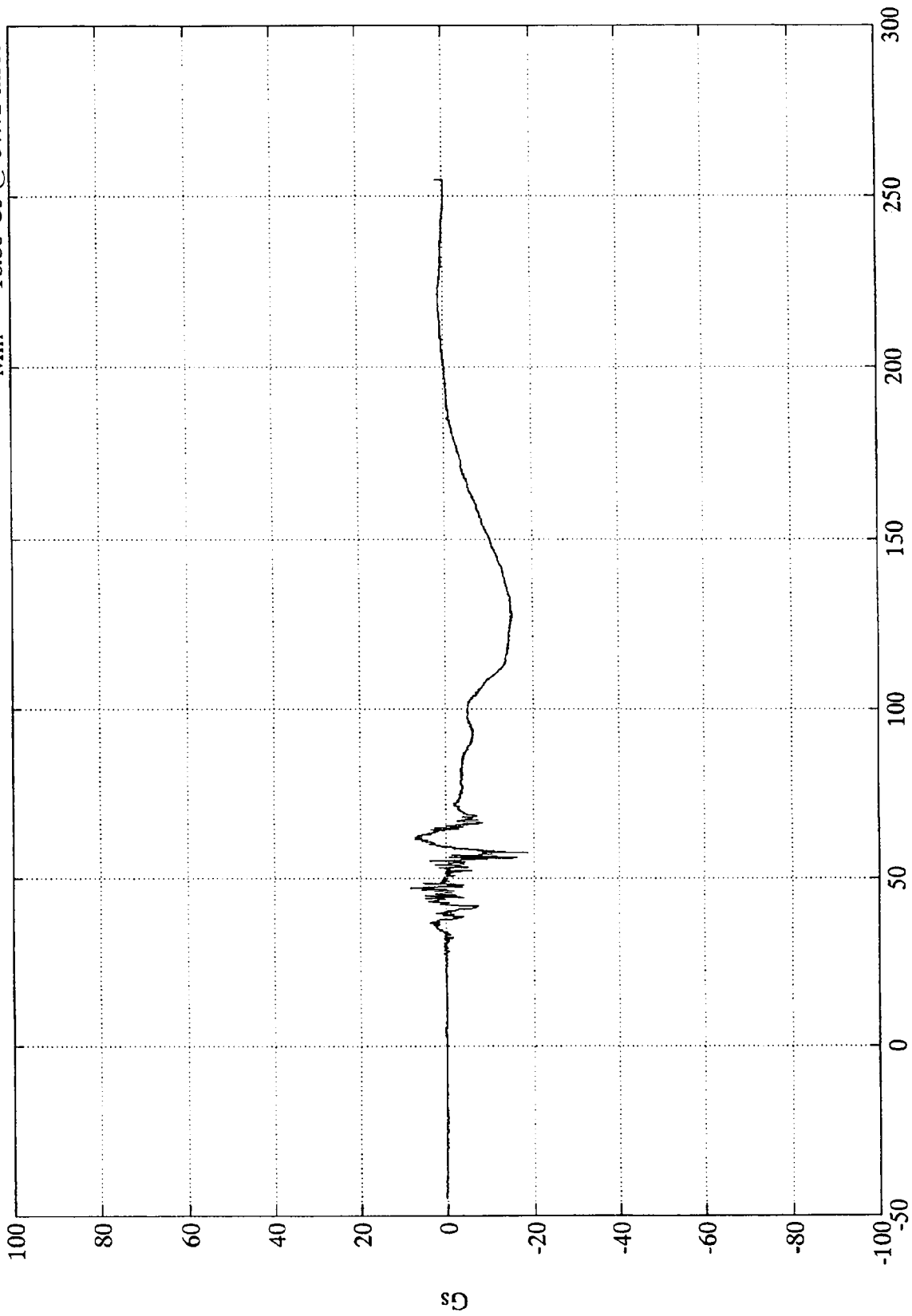
SAE Filter Class 1000

8118-6

VTV TEST #6

Max = 8.31 Gs @ 47.28 msec
Min = -18.86 Gs @ 57.72 msec

V2-P2 Head Y

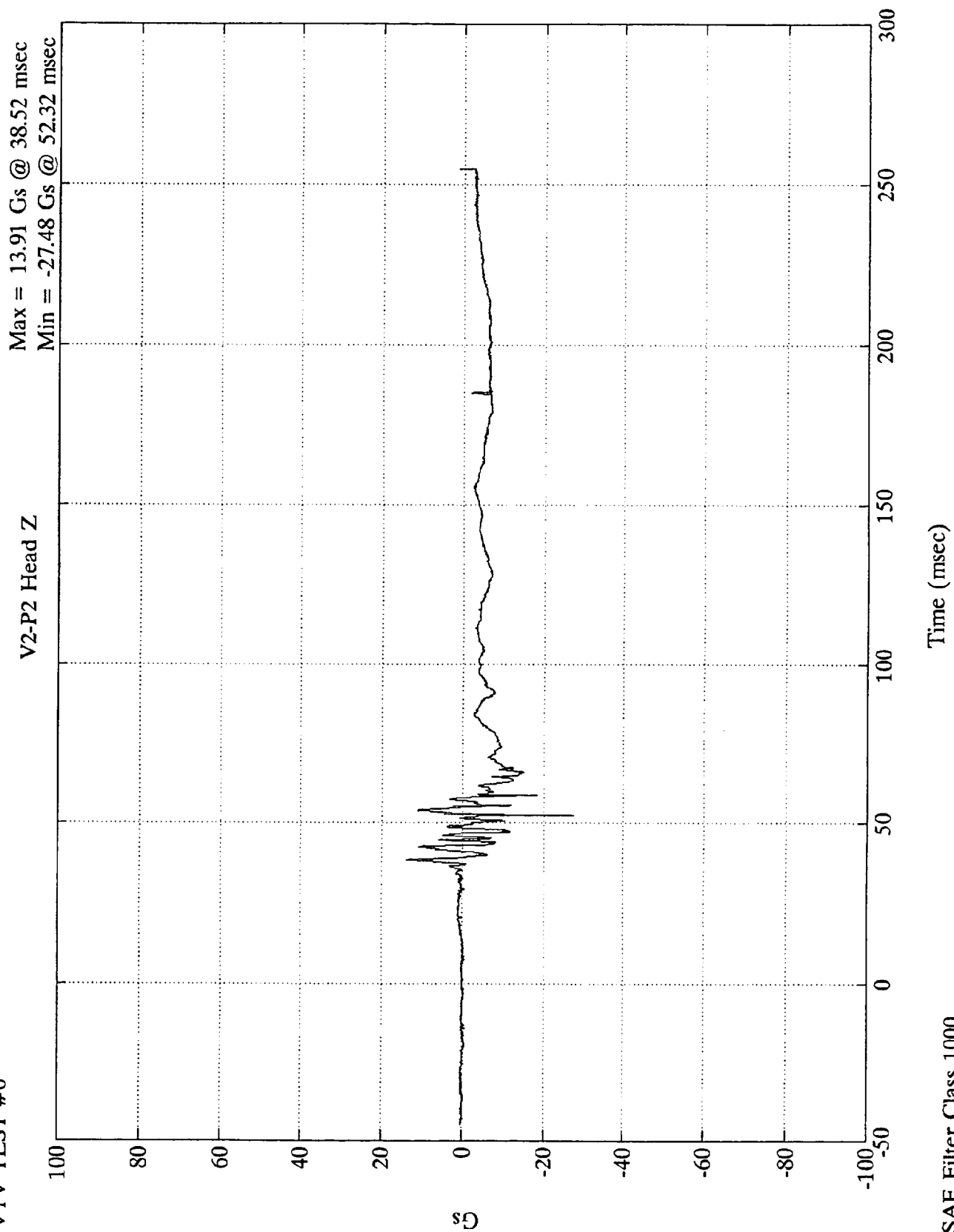


Time (msec)

SAE Filter Class 1000

8118-6

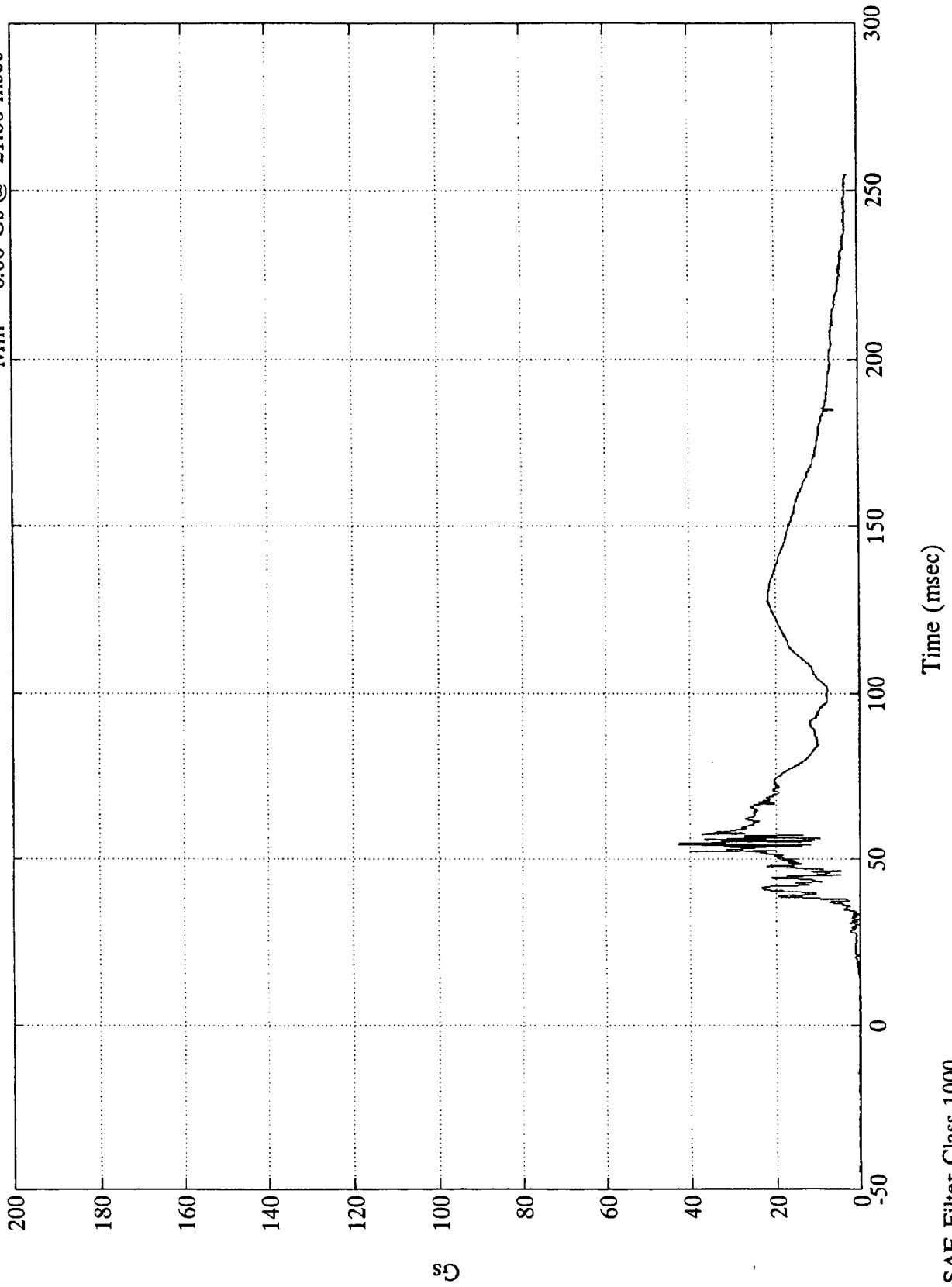
VTV TEST #6



VTV TEST #6

Max = 42.97 Gs @ 54.36 msec
Min = 0.06 Gs @ -21.60 msec

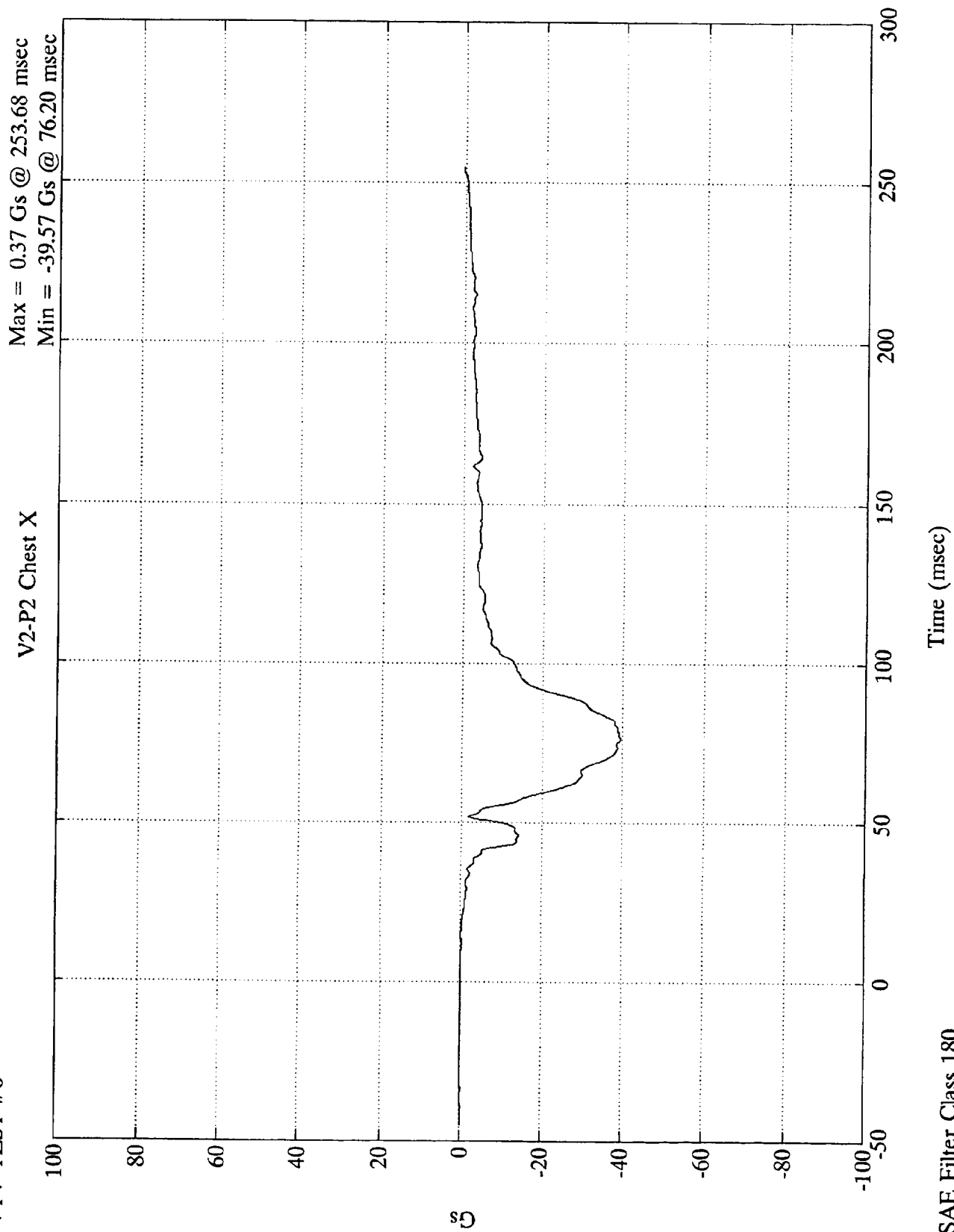
V2-P2 Head Resultant



SAE Filter Class 1000

8118-6

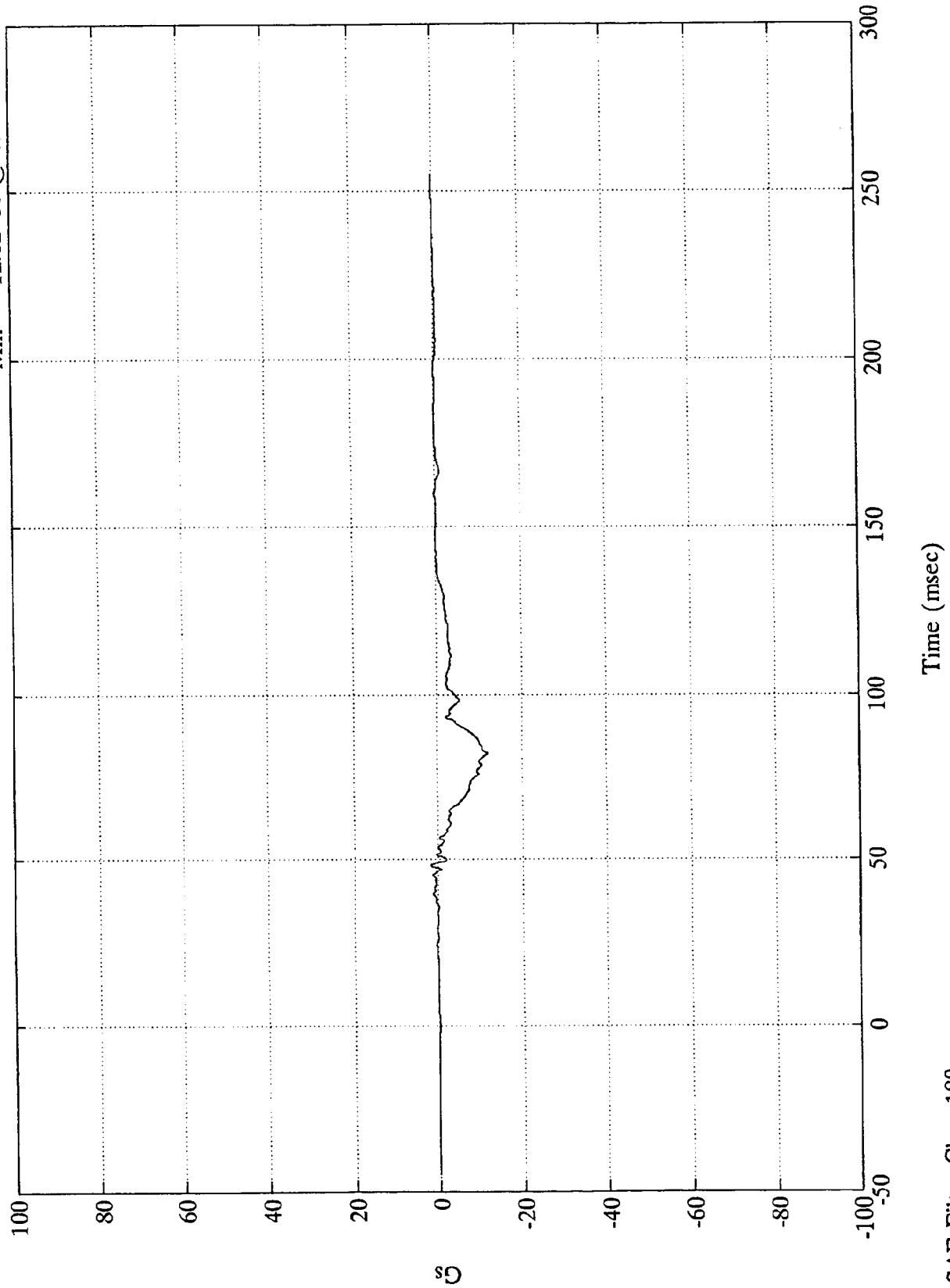
VTV TEST #6



VTV TEST #6

Max = 1.72 Gs @ 48.24 msec
Min = -12.02 Gs @ 82.20 msec

V2-P2 Chest Y



Time (msec)

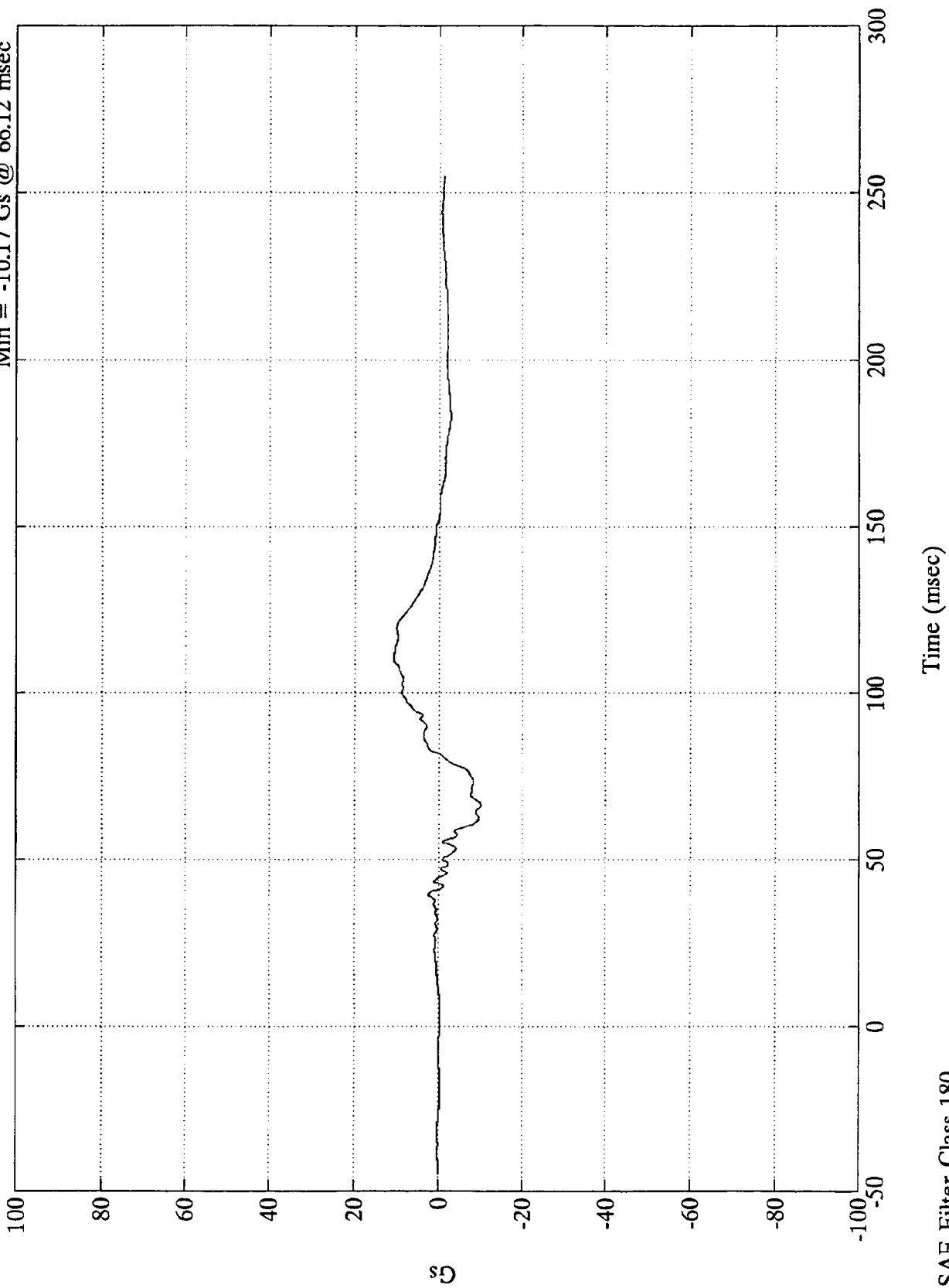
SAE Filter Class 180

8118-6

VTV TEST #6

Max = 10.85 Gs @ 110.76 msec
Min = -10.17 Gs @ 66.12 msec

V2-P2 Chest Z



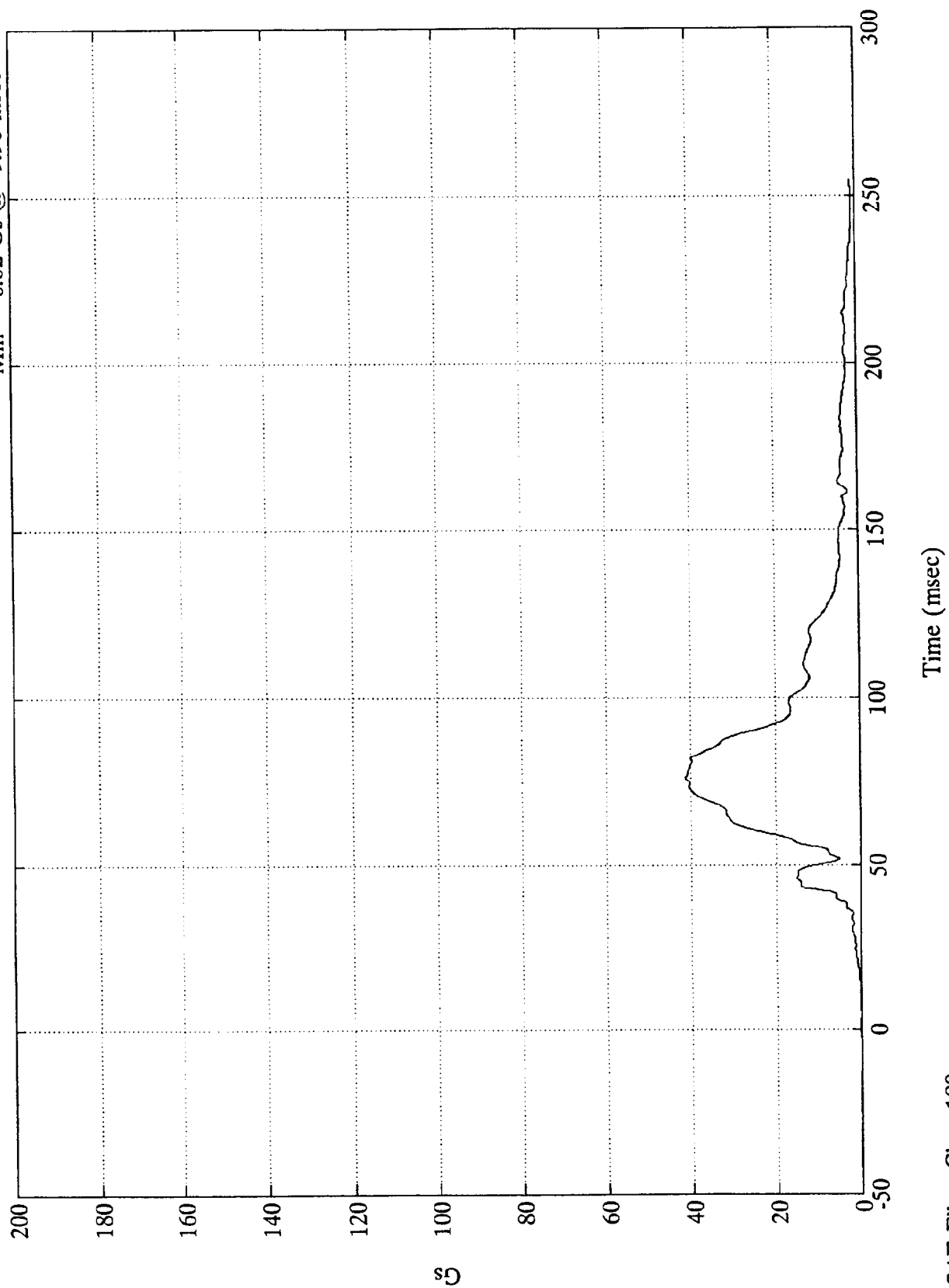
SAE Filter Class 180

8118-6

VTV TEST #6

Max = 41.36 Gs @ 76.08 msec
Min = 0.02 Gs @ -9.96 msec

V2-P2 Chest Resultant



SAE Filter Class 180

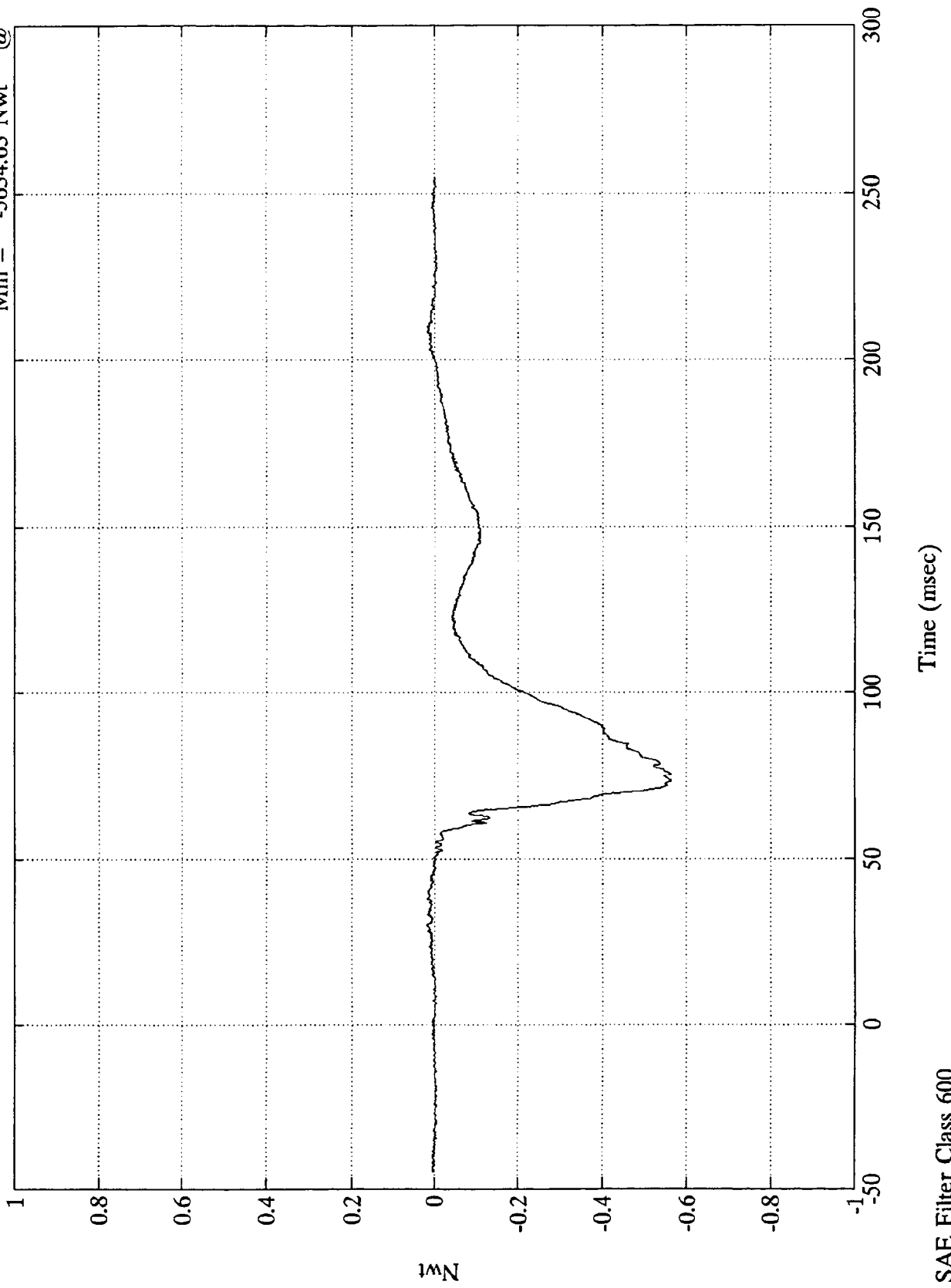
8118-6

VTV TEST #6

$\times 10^4$

V2-P2 Left Femur

Max = 177.15 Nwt @ 29.88 msec
Min = -5634.63 Nwt @ 73.55 msec



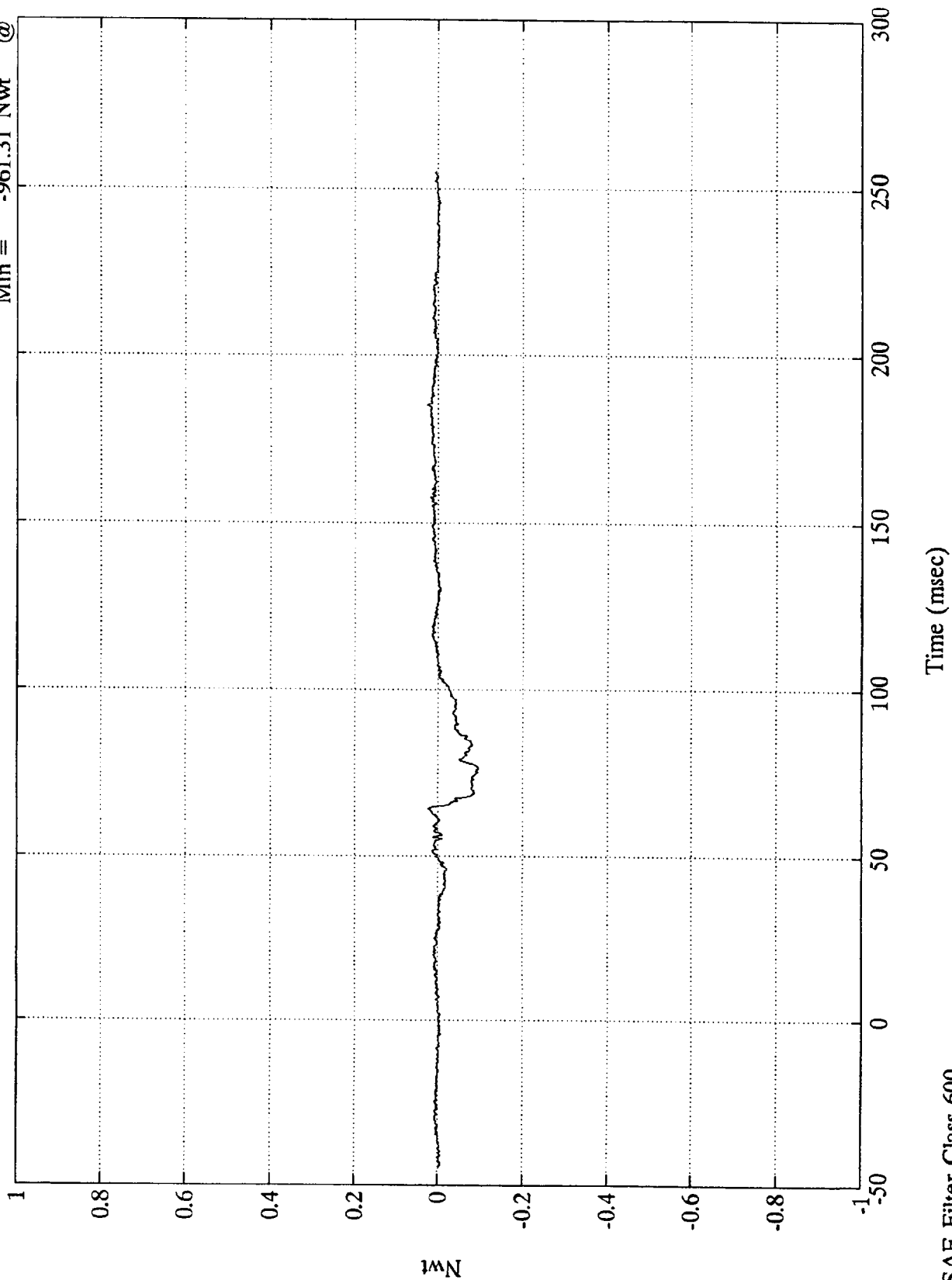
SAE Filter Class 600

VTV TEST #6

$\times 10^4$

V2-P2 Right Femur

Max = 261.92 Nwt @ 184.91 msec
Min = -961.31 Nwt @ 76.44 msec



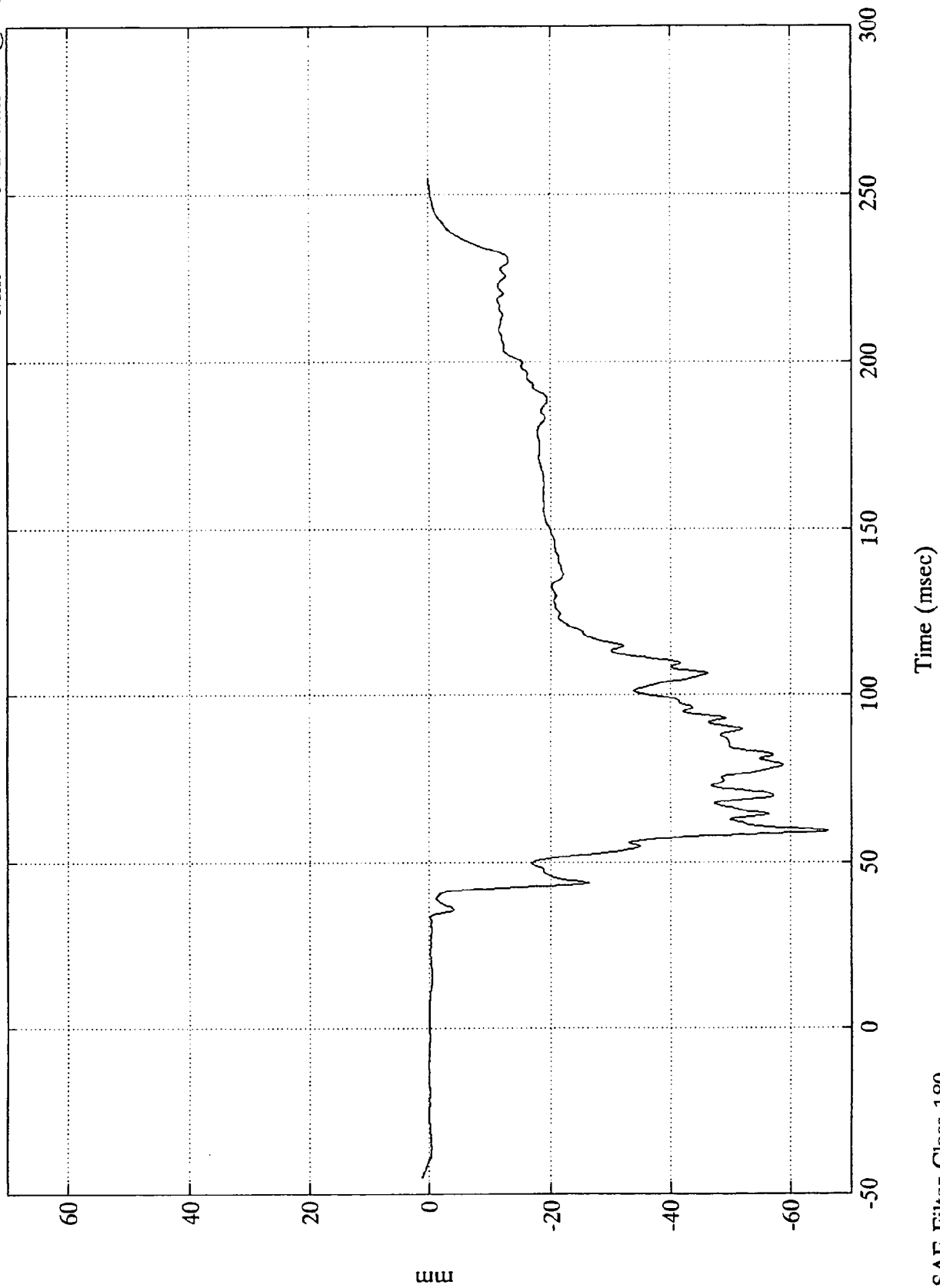
SAE Filter Class 600

8118-6

VTV TEST #6

V2-P2 Chest Displacement

Max = 1.09 mm @ -44.88 msec
Min = -66.13 mm @ 59.40 msec



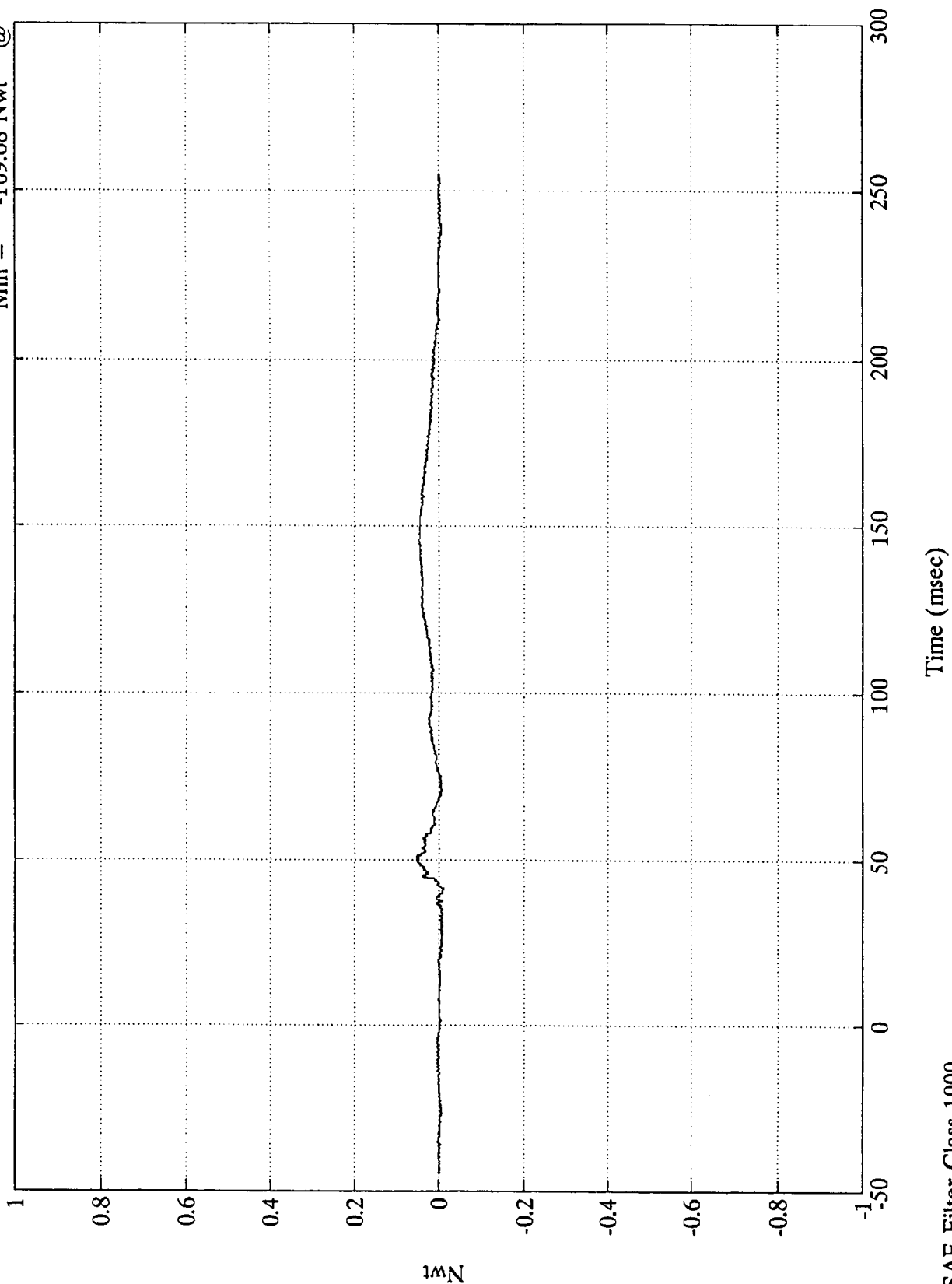
8118-6

VTV TEST #6

$\times 10^4$

V2-P2 Upper Neck Fx

Max = 545.18 Nwt @ 51.24 msec
Min = -109.68 Nwt @ 41.28 msec



SAE Filter Class 1000

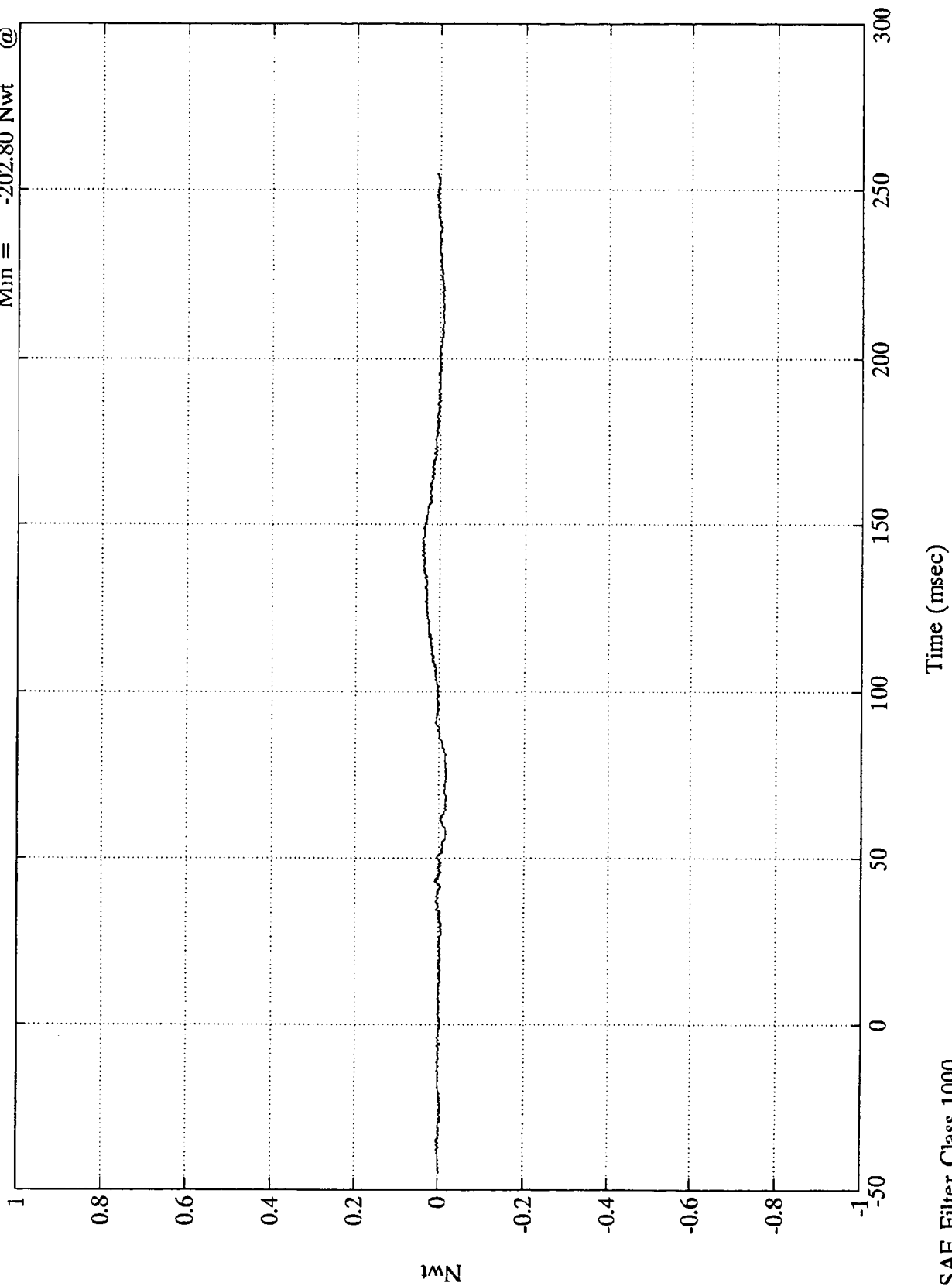
8118-6

VTV TEST #6

V2-P2 Upper Neck Fy

Max = 410.98 Nwt @ 145.80 msec
Min = -202.80 Nwt @ 74.88 msec

$\times 10^4$



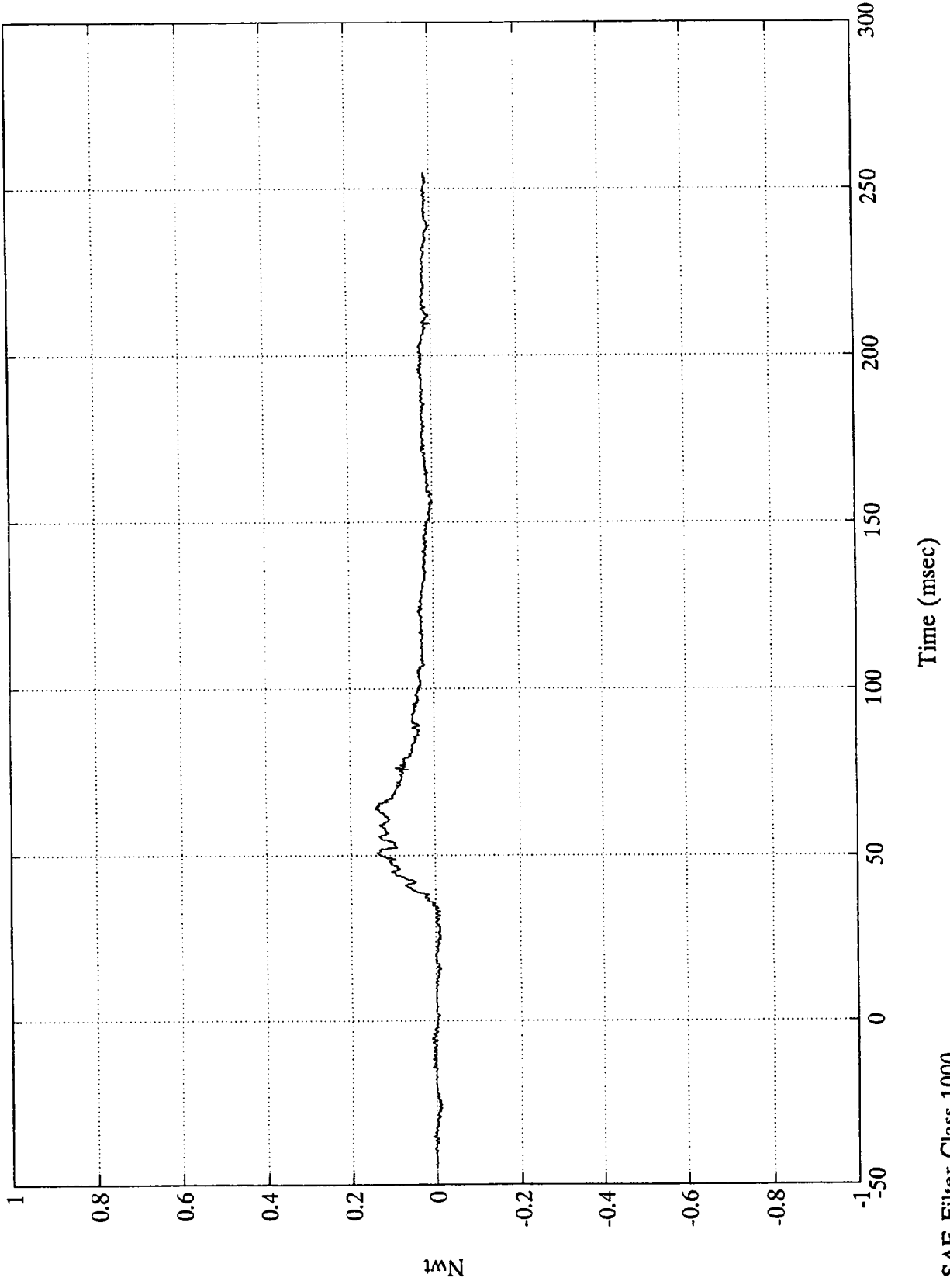
SAE Filter Class 1000

8118-6

VTV TEST #6
x10⁴

V2-P2 Upper Neck Fz

Max = 1409.42 Nwt @ 64.31 msec
Min = -120.19 Nwt @ 31.44 msec

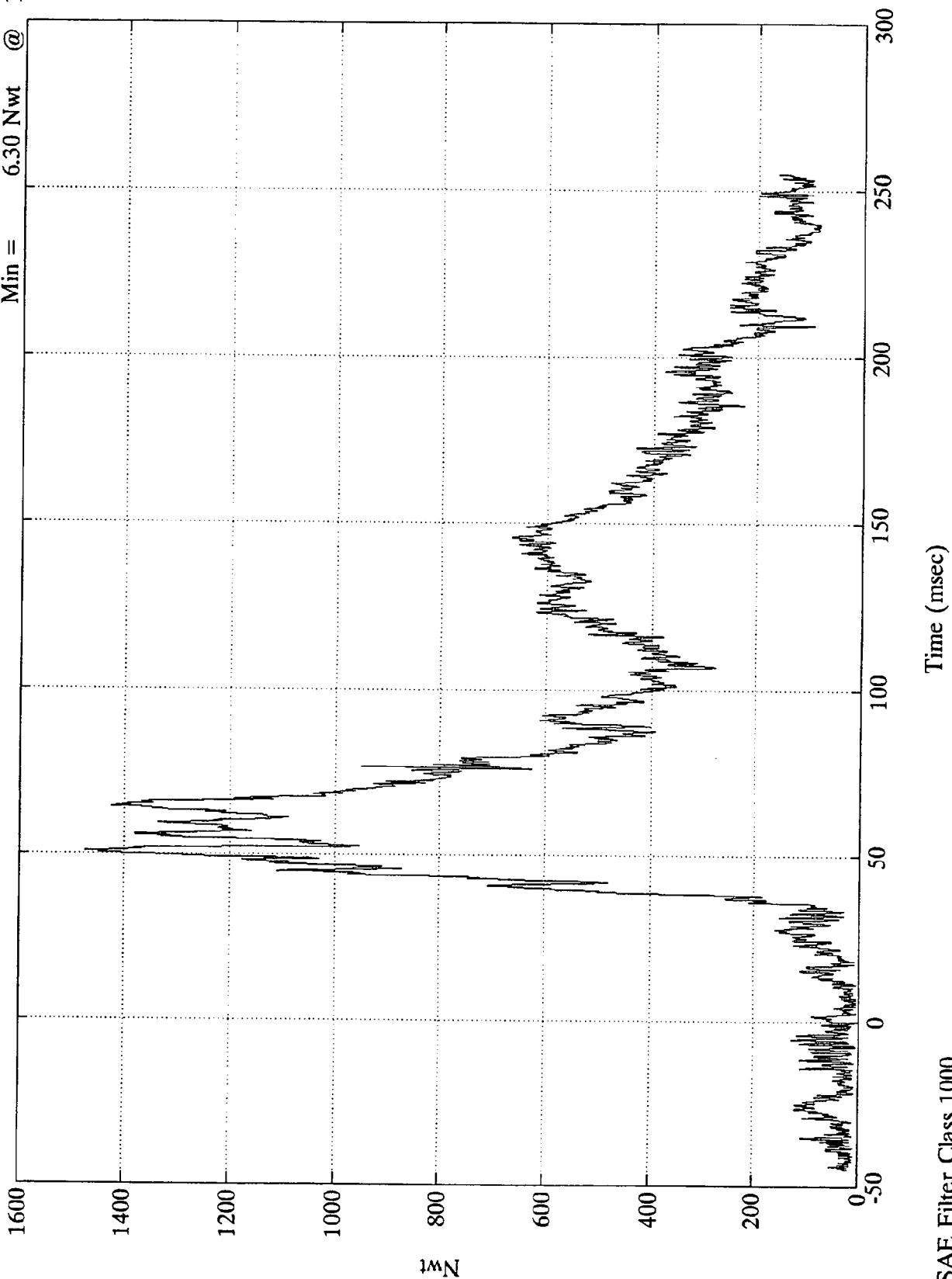


SAE Filter Class 1000

VTV TEST #6

V2-P2 U. Neck Force Res

Max = 1474.21 Nwt @ 50.88 msec
Min = 6.30 Nwt @ 11.15 msec



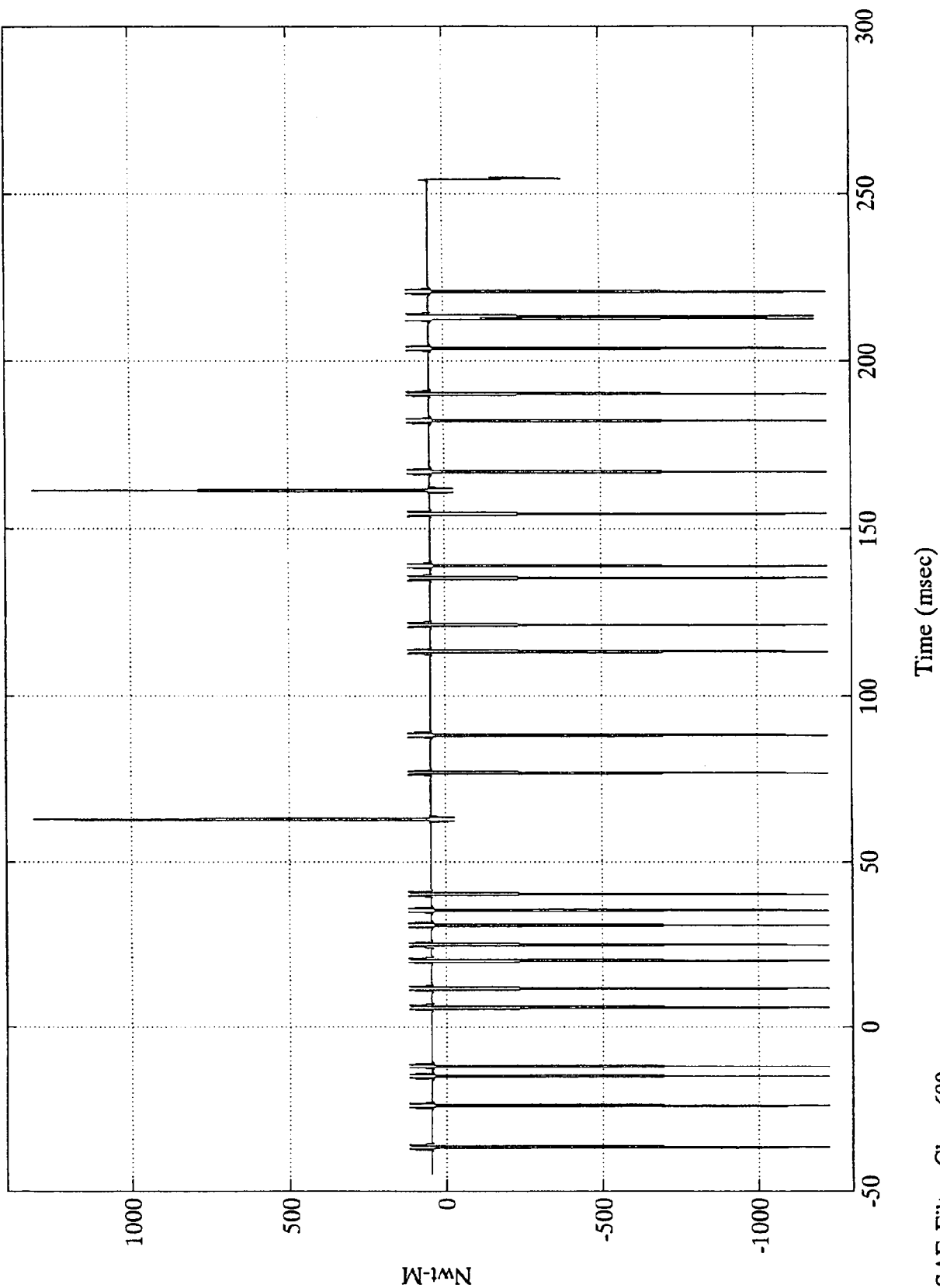
SAE Filter Class 1000

8118-6

VTV TEST #6

V2-P2 Upper Neck Mx

Max = 1312.09 Nwt-M @ 161.63 msec
Min = -1225.38 Nwt-M @ 220.55 msec



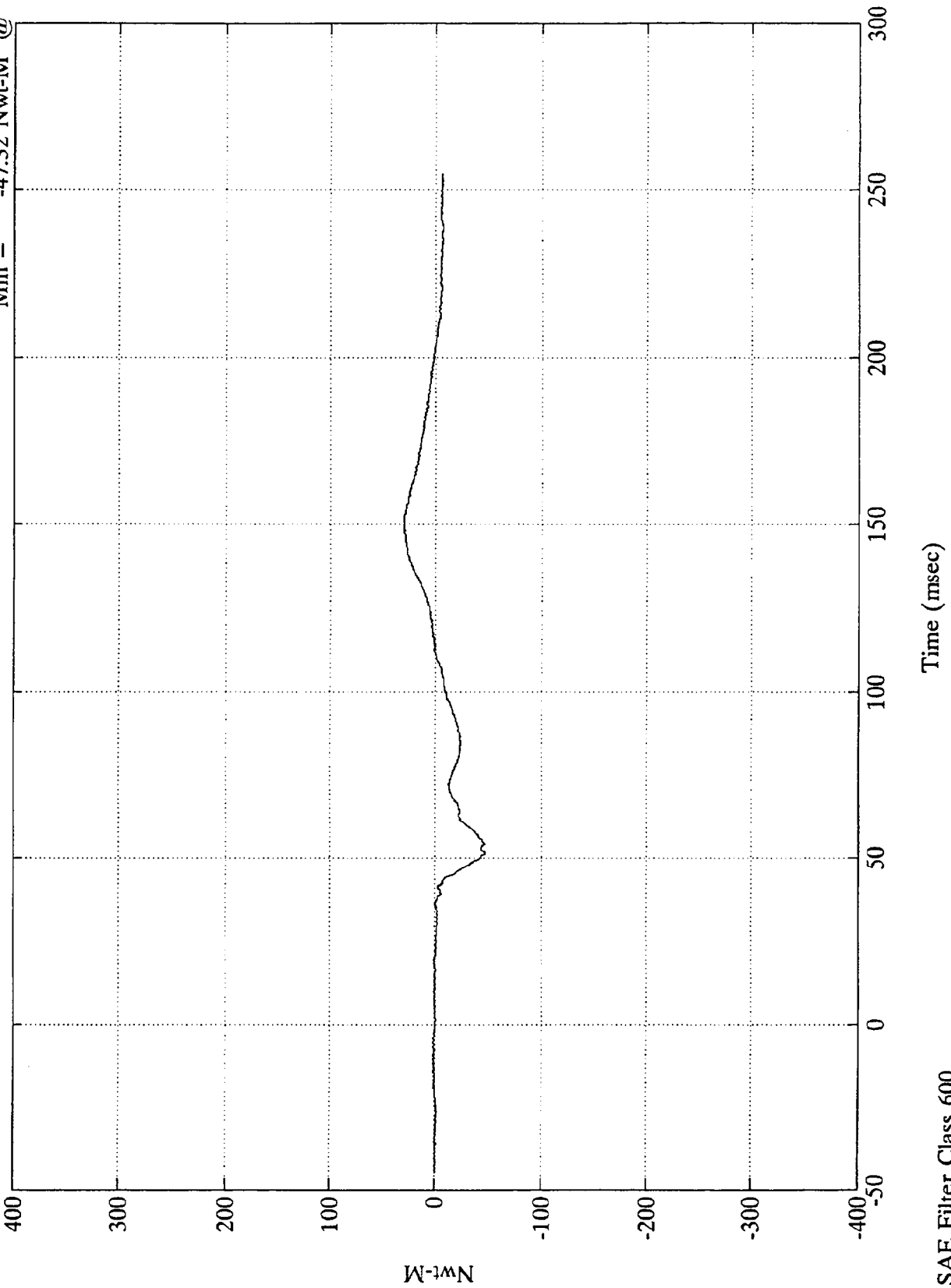
SAE Filter Class 600

8118-6

VTV TEST #6

V2-P2 Upper Neck My

Max = 30.05 Nwt-M @ 148.80 msec
Min = -47.32 Nwt-M @ 51.36 msec



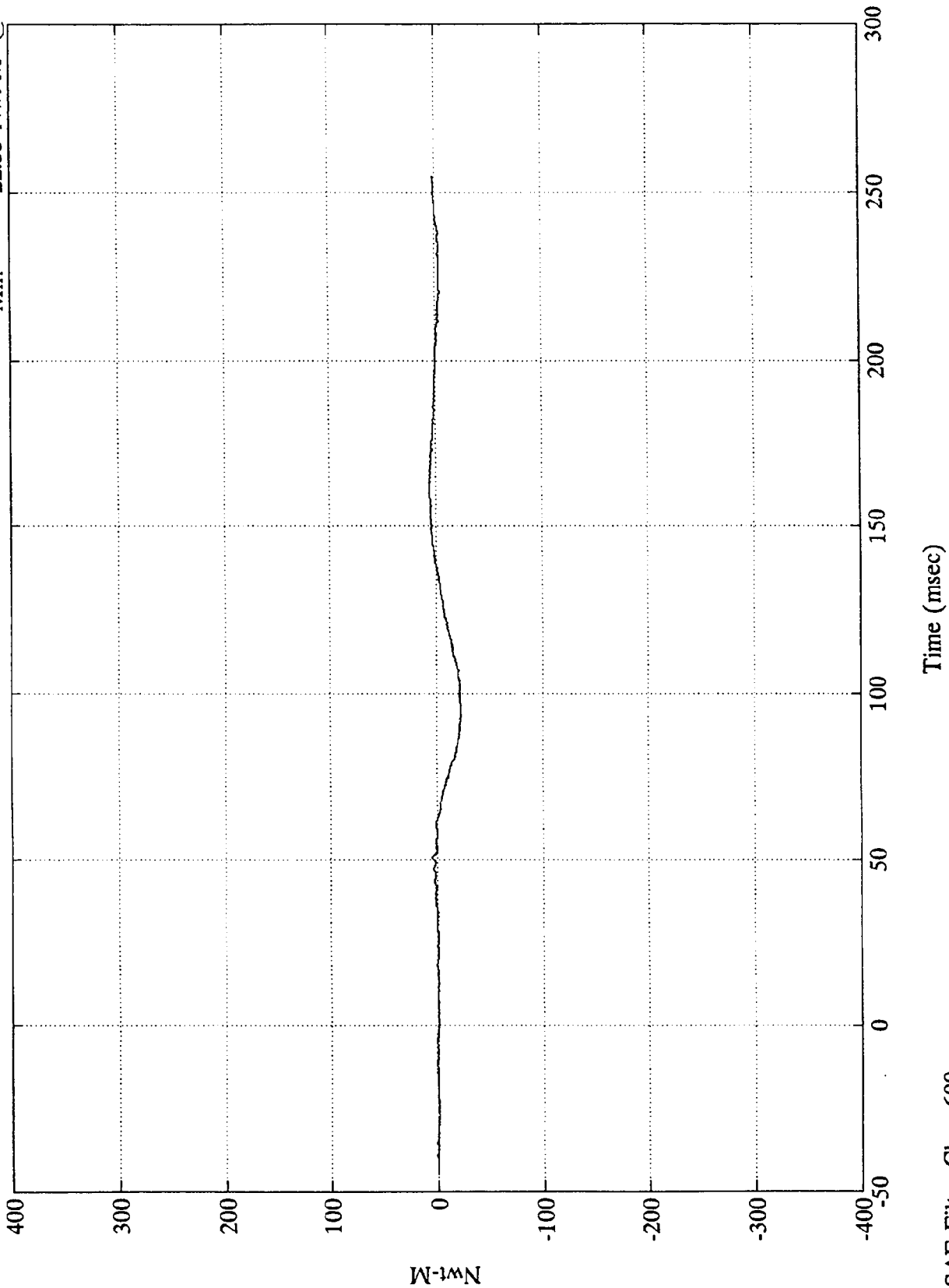
SAE Filter Class 600

8118-6

VTV TEST #6

V2-P2 Upper Neck Mz

Max = 6.75 Nwt-M @ 162.00 msec
Min = -22.55 Nwt-M @ 94.08 msec

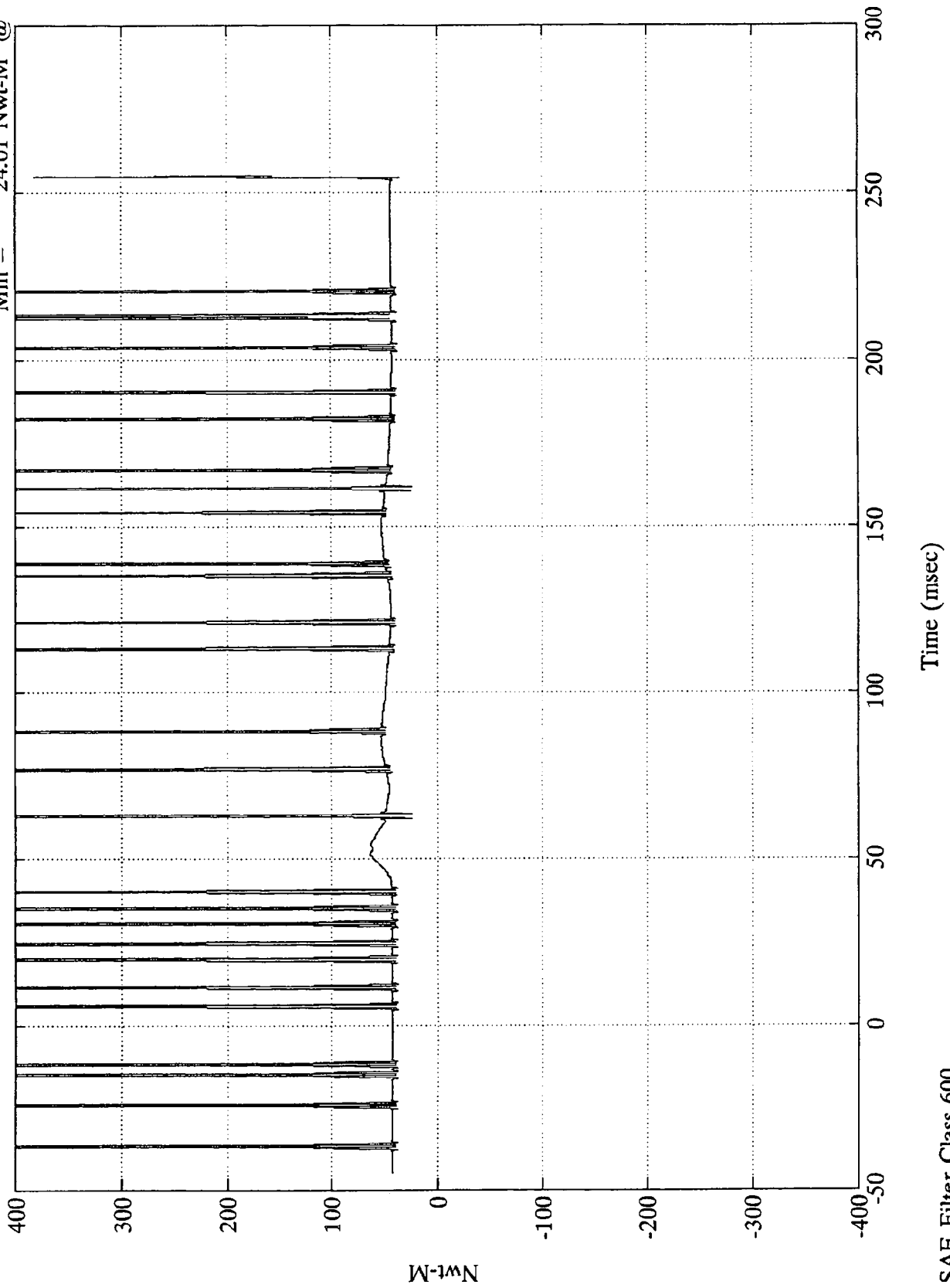


8118-6

VTV TEST #6

V2-P2 U. Neck Moment Res

Max = 1312.31 Nwt-M @ 161.63 msec
Min = 24.01 Nwt-M @ 63.48 msec



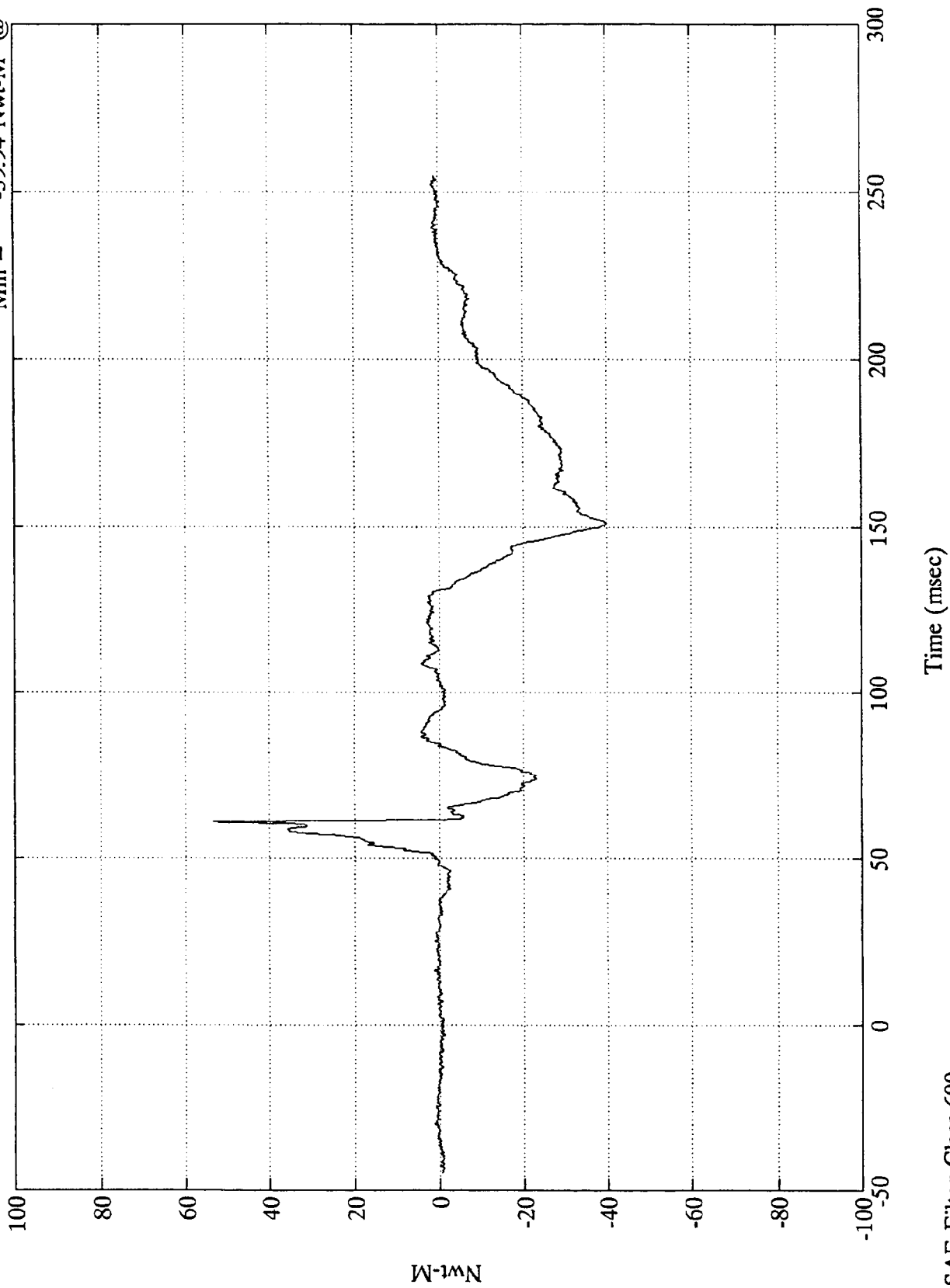
SAE Filter Class 600

8118-6

VTV TEST #6

V2-P2 Lt Upper Tibia Mx

Max = 53.48 Nwt-M @ 60.96 msec
Min = -39.94 Nwt-M @ 151.20 msec



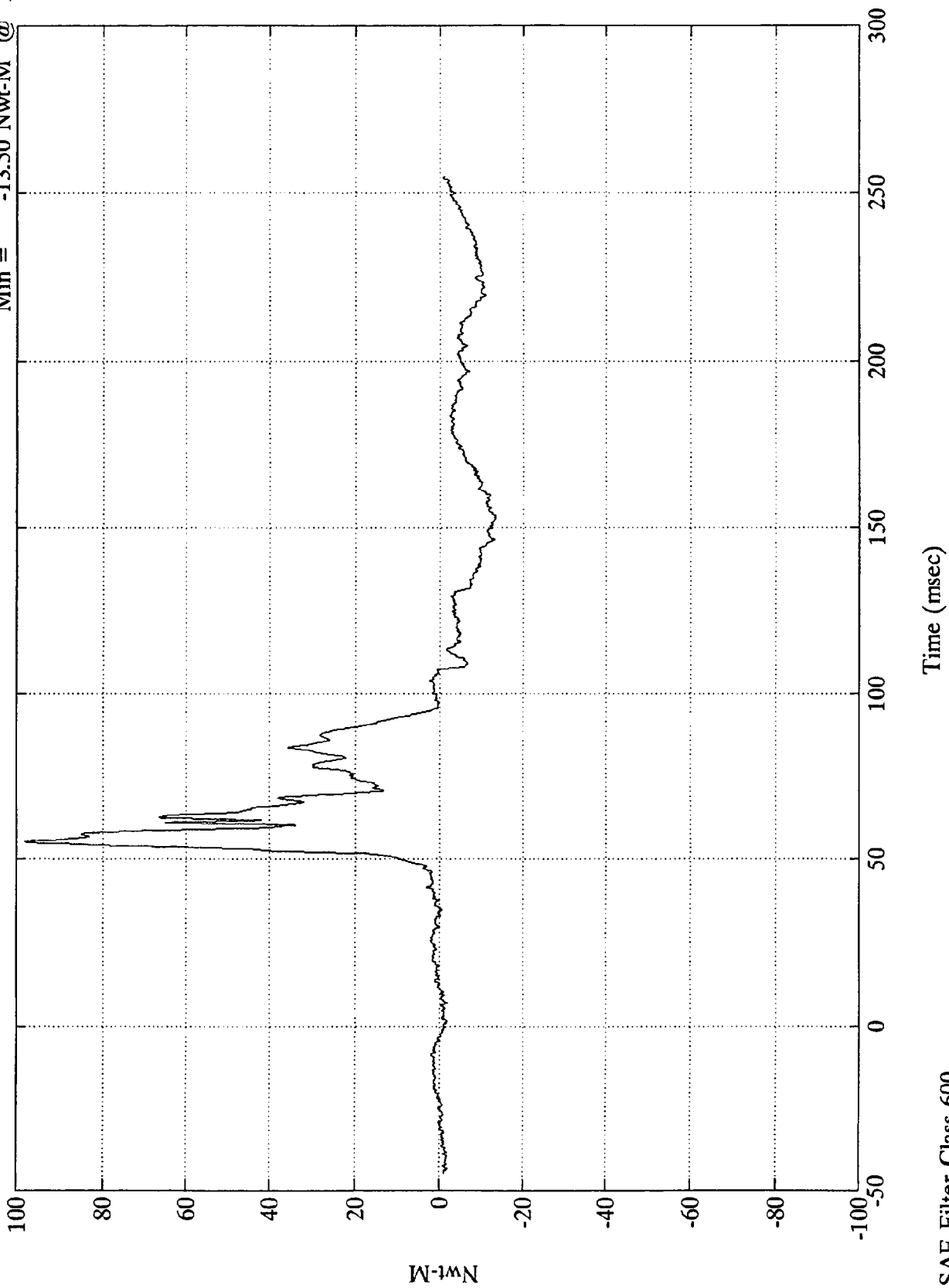
SAE Filter Class 600

8118-6

VTV TEST #6

V2-P2 Lt Upper Tibia My

Max = 98.19 Nwt-M @ 55.32 msec
Min = -13.50 Nwt-M @ 153.48 msec

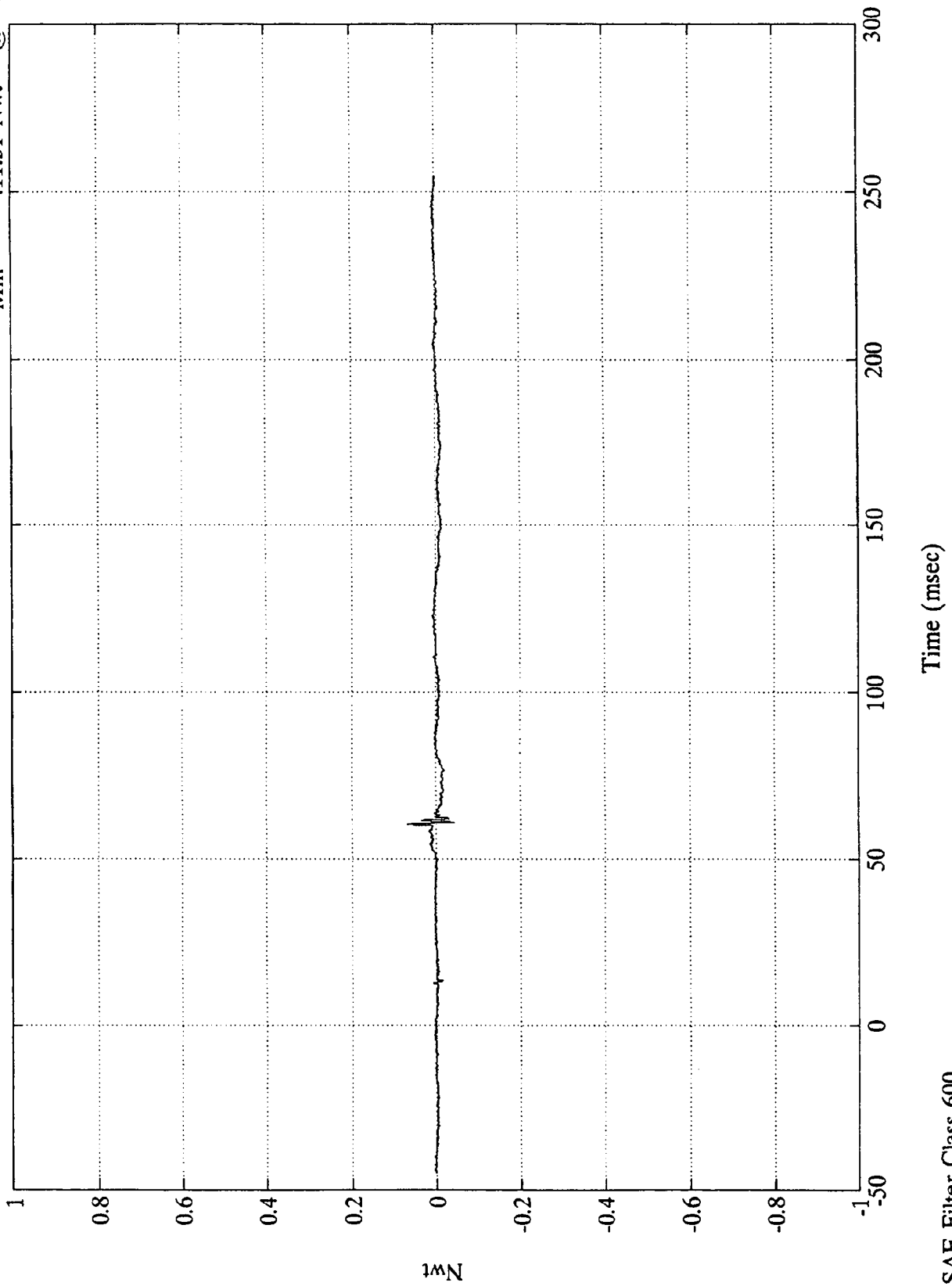


SAE Filter Class 600

VTV TEST #6
x10⁴

V2-P2 Lt Lower Tibia Fy

Max = 703.04 Nwt @ 60.60 msec
Min = -411.31 Nwt @ 61.20 msec



SAE Filter Class 600

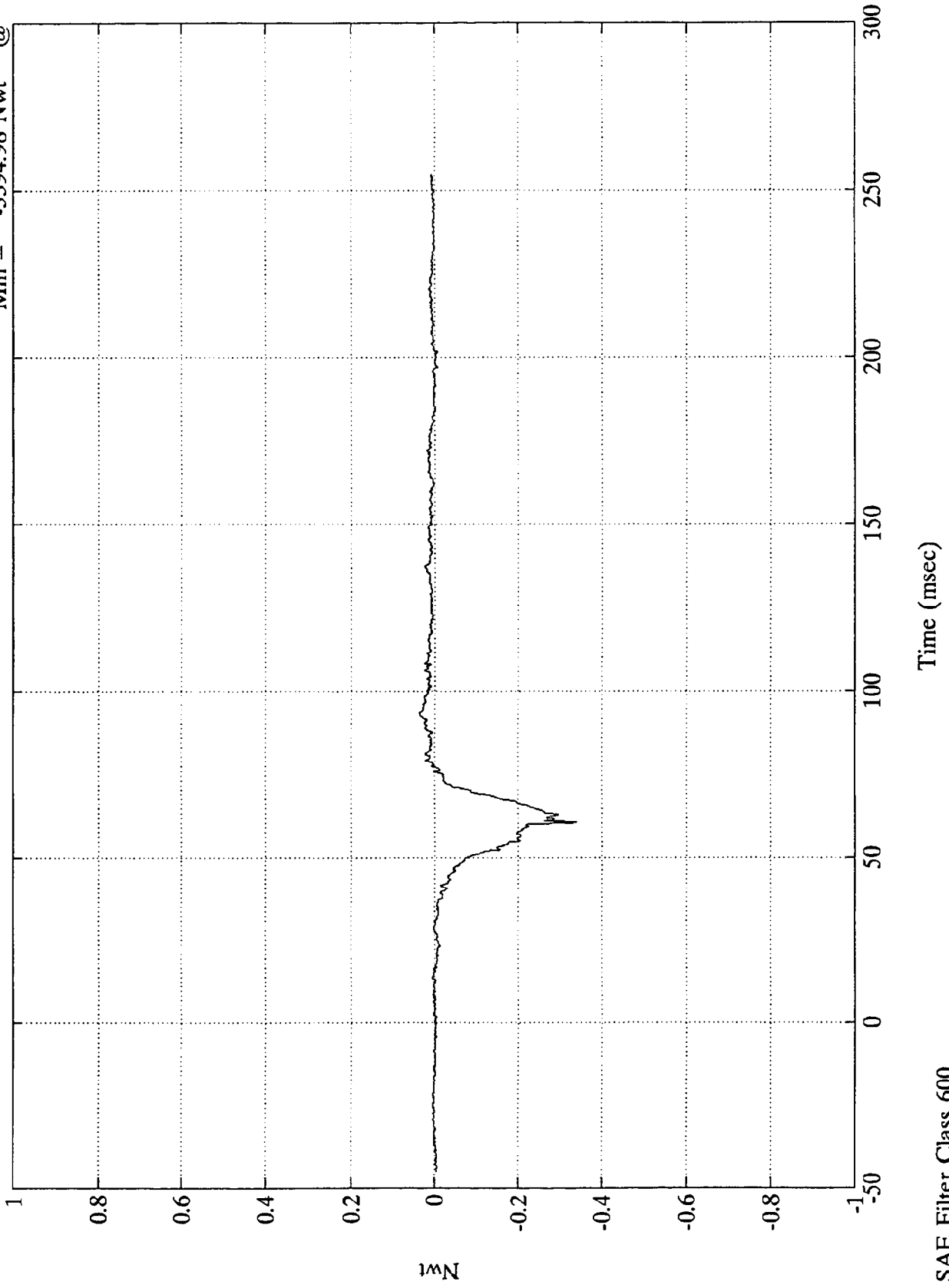
8118-6

VTV TEST #6

$\times 10^4$

V2-P2 Lt Lower Tibia Fz

Max = 354.64 Nwt @ 92.88 msec
Min = -3394.98 Nwt @ 60.72 msec



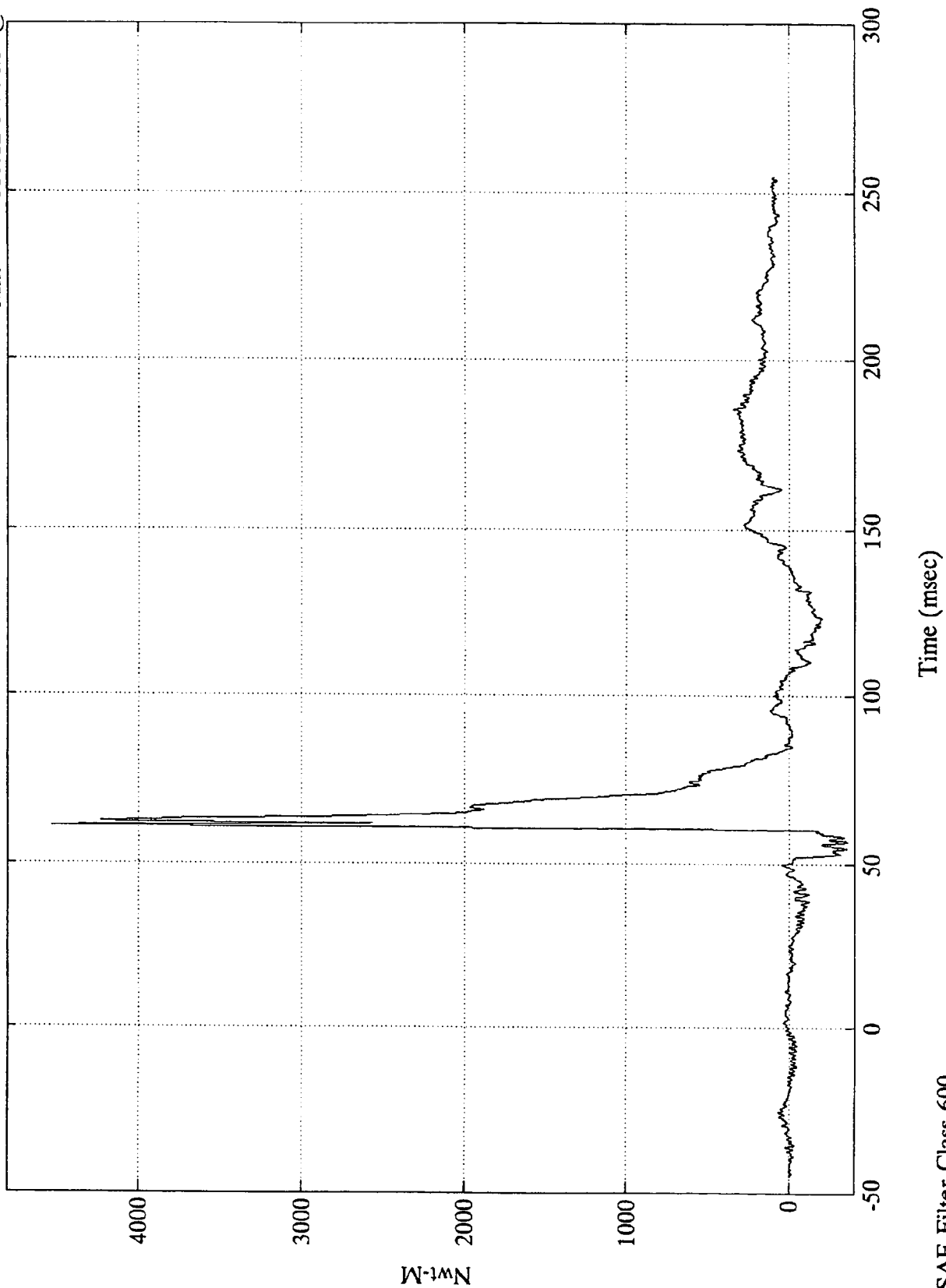
SAE Filter Class 600

8118-6

VTV TEST #6

V2-P2 Lt Lower Tibia Mx

Max = 4532.20 Nwt-M @ 61.20 msec
Min = -355.82 Nwt-M @ 56.88 msec



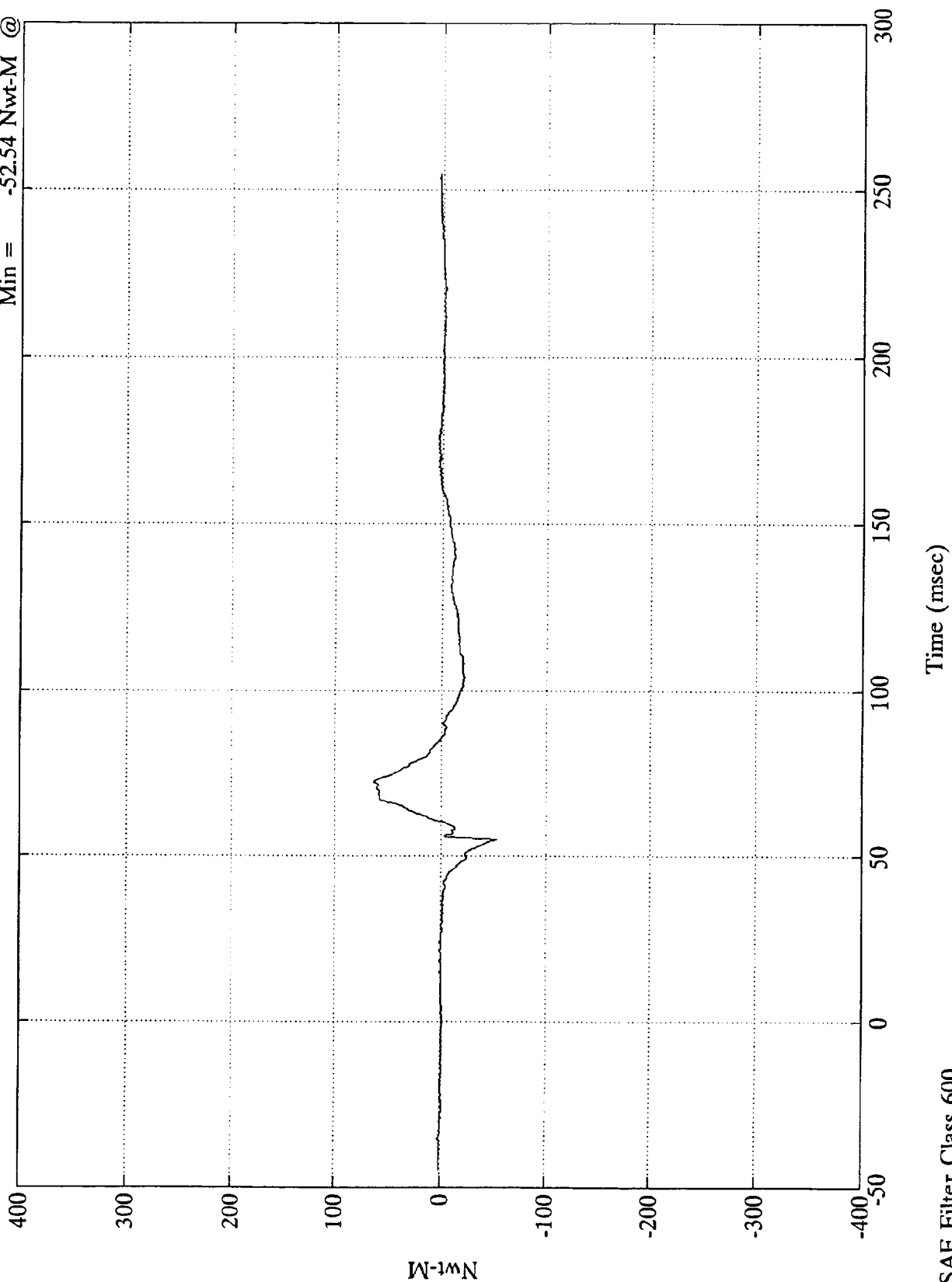
SAE Filter Class 600

8118-6

VTV TEST #6

V2-P2 Rt Upper Tibia Mx

Max = 63.70 Nwt-M @ 72.00 msec
Min = -52.54 Nwt-M @ 54.84 msec



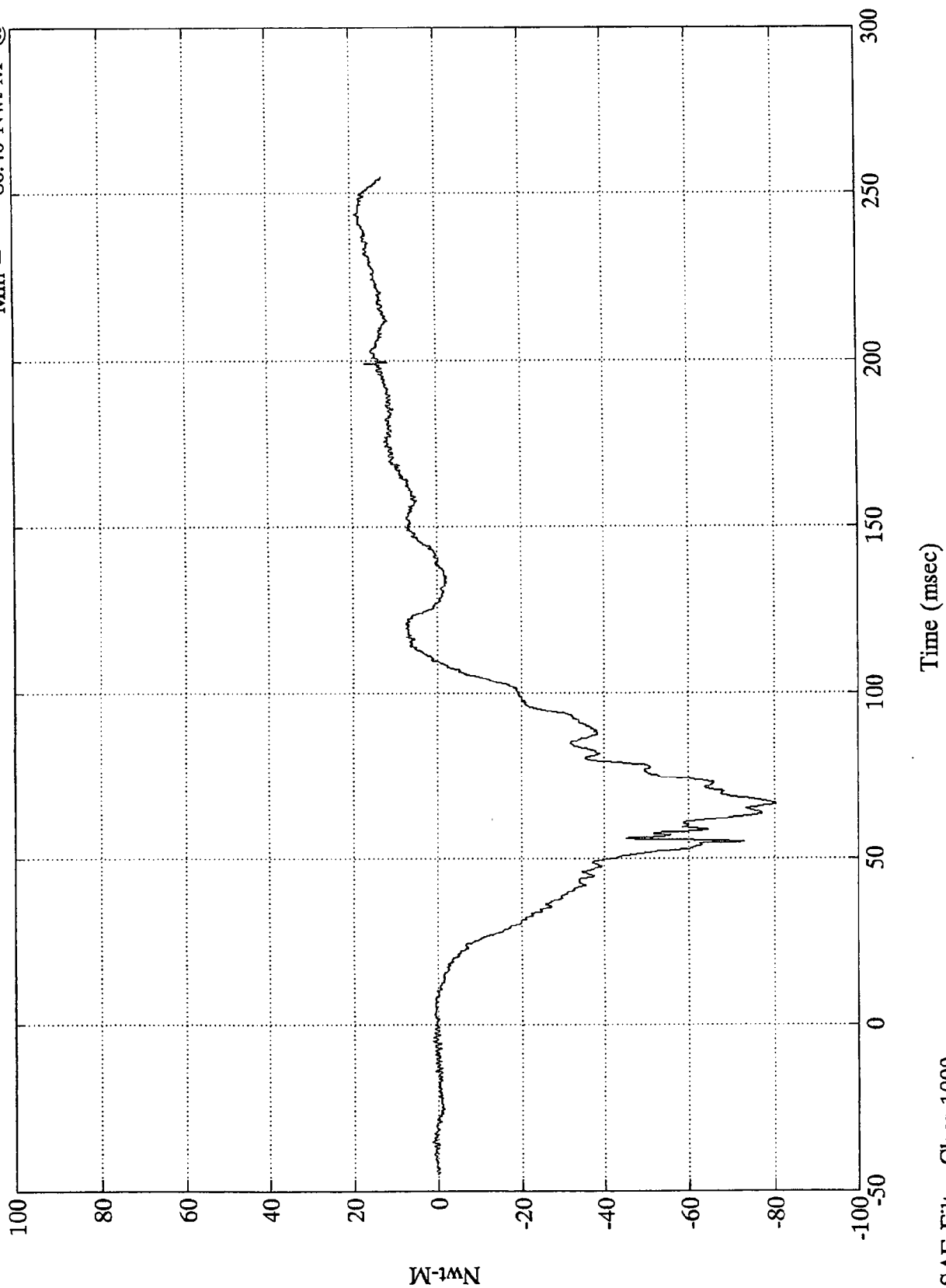
SAE Filter Class 600

8118-6

VTV TEST #6

V2-P2 Rt Upper Tibia My

Max = 18.73 Nwt-M @ 243.48 msec
Min = -80.46 Nwt-M @ 66.36 msec



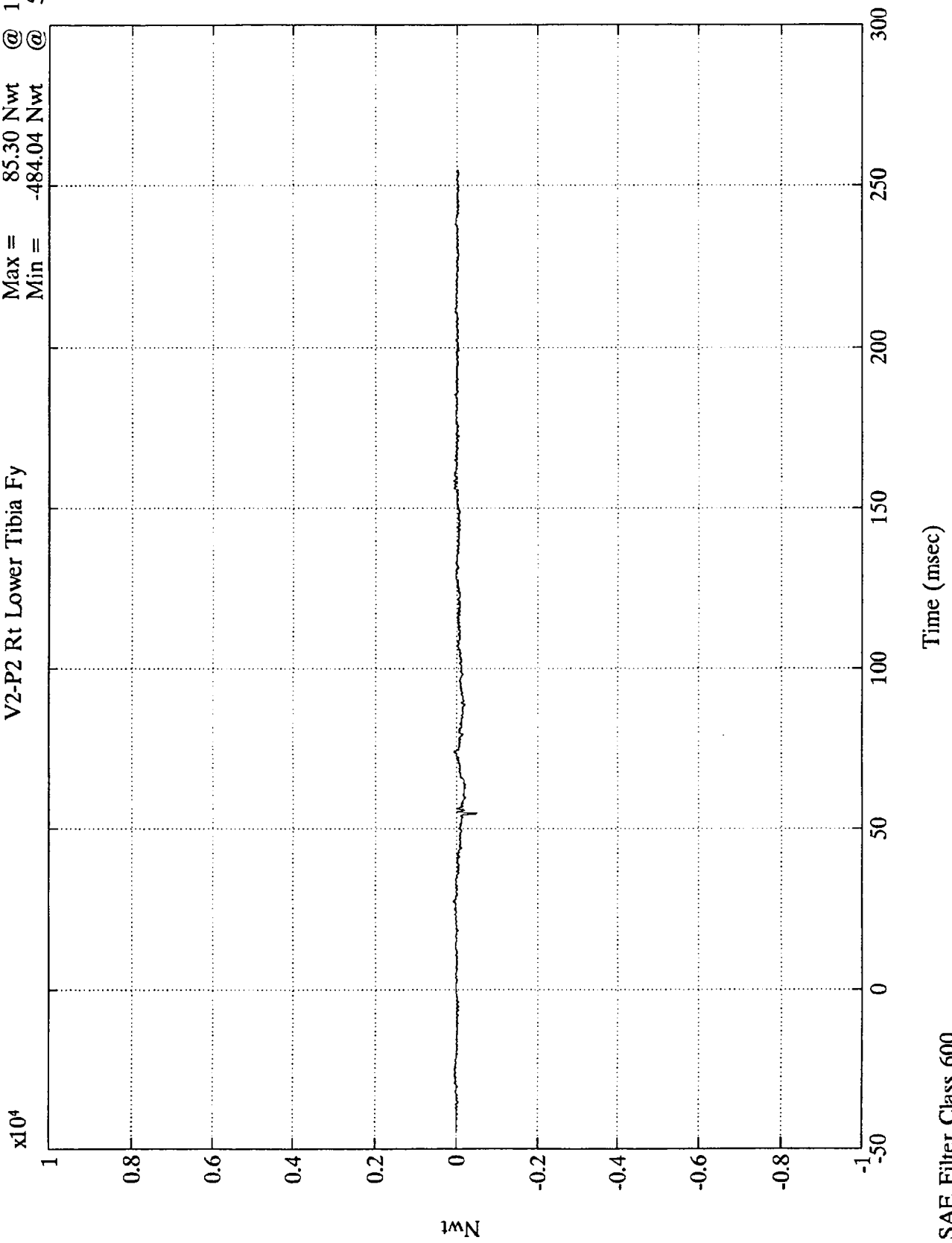
SAE Filter Class 1000

8118-6

VTV TEST #6

V2-P2 Rt Lower Tibia Fy

Max = 85.30 Nwt @ 158.52 msec
Min = -484.04 Nwt @ 54.72 msec

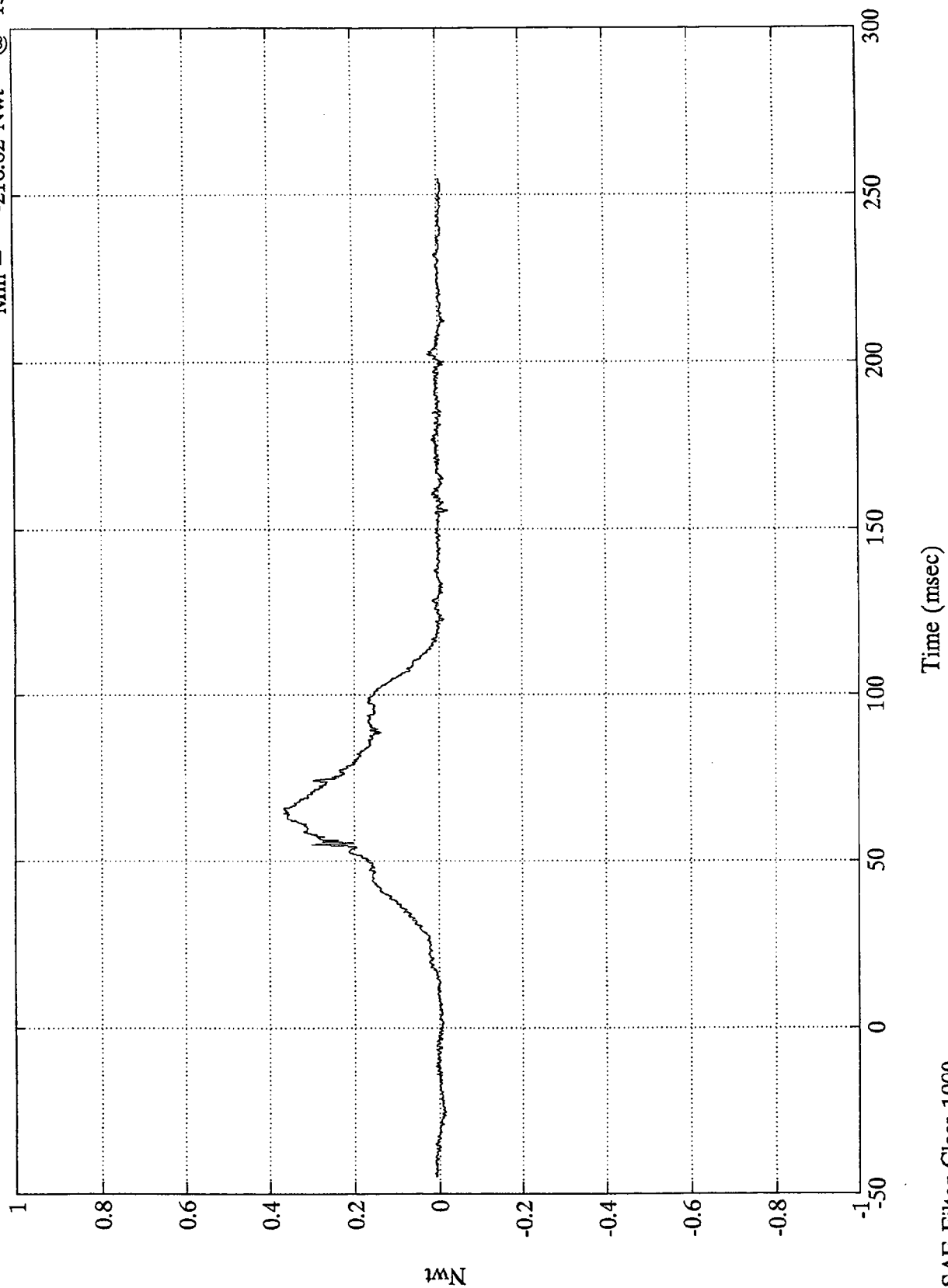


SAE Filter Class 600

VTV TEST #6
x10⁴

V2-P2 Rt Lower Tibia Fz

Max = 3677.10 Nwt @ 65.63 msec
Min = -216.62 Nwt @ 155.63 msec



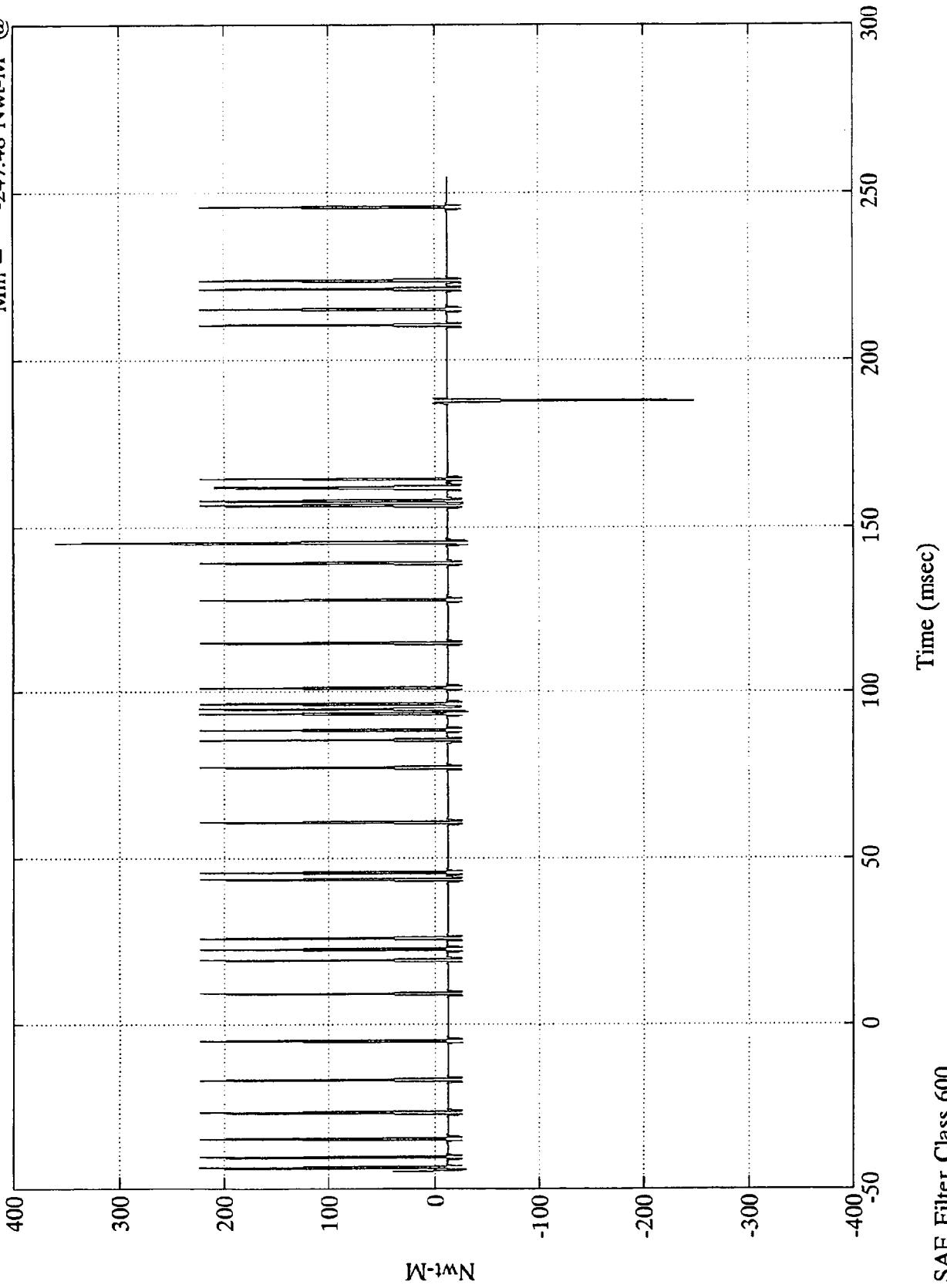
SAE Filter Class 1000

8118-6

VTV TEST #6

V2-P2 Rt Lower Tibia Mx

Max = 361.16 Nwt-M @ 145.31 msec
Min = -247.48 Nwt-M @ 187.56 msec



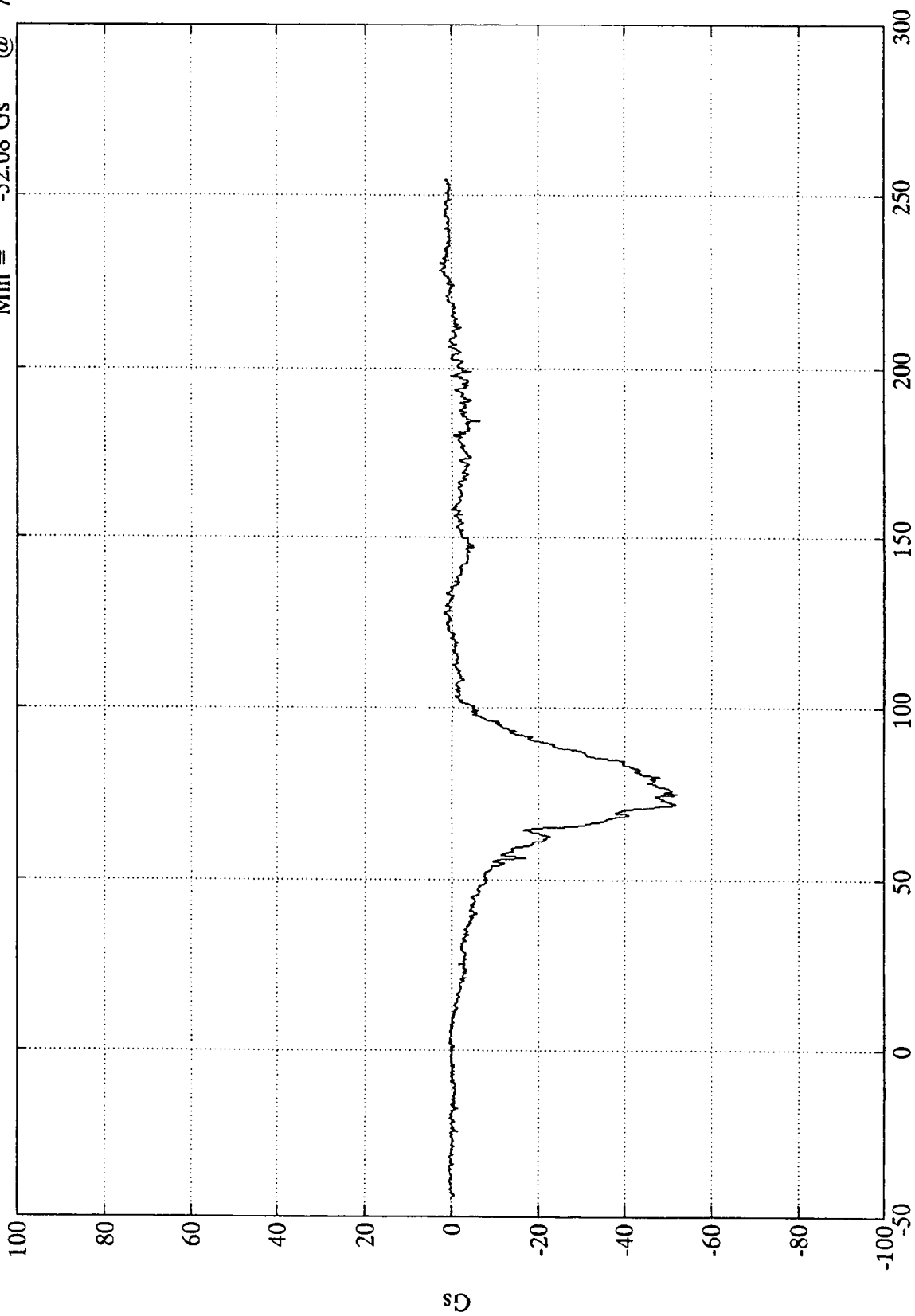
SAE Filter Class 600

8118-6

VTV TEST #6

Max = 2.85 Gs @ 228.24 msec
Min = -52.08 Gs @ 74.88 msec

V2-P2 Pelvic X



Time (msec)

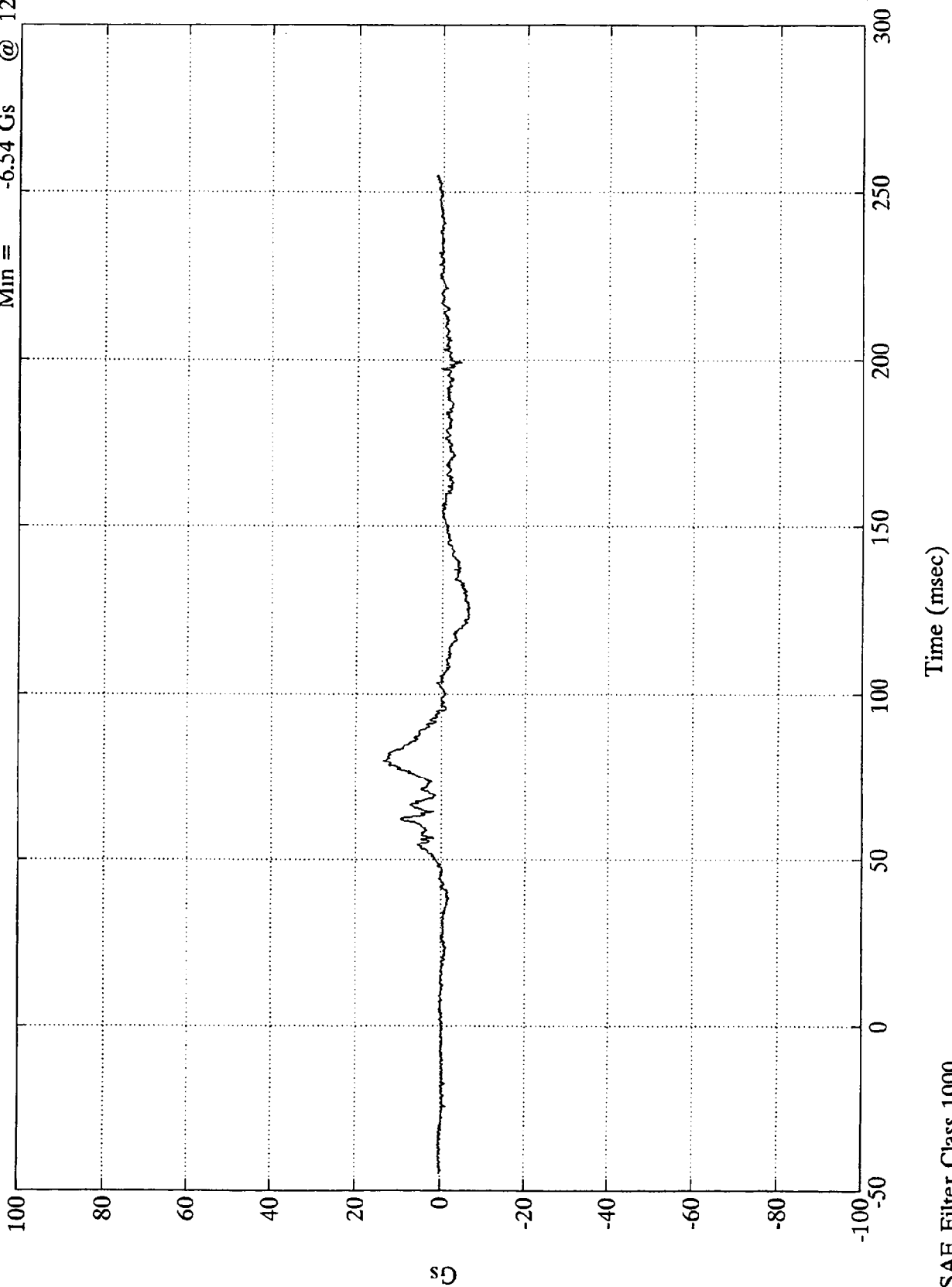
SAE Filter Class 1000

8118-6

VTV TEST #6

Max = 13.63 Gs @ 79.80 msec
Min = -6.54 Gs @ 126.71 msec

V2-P2 Pelvic Y

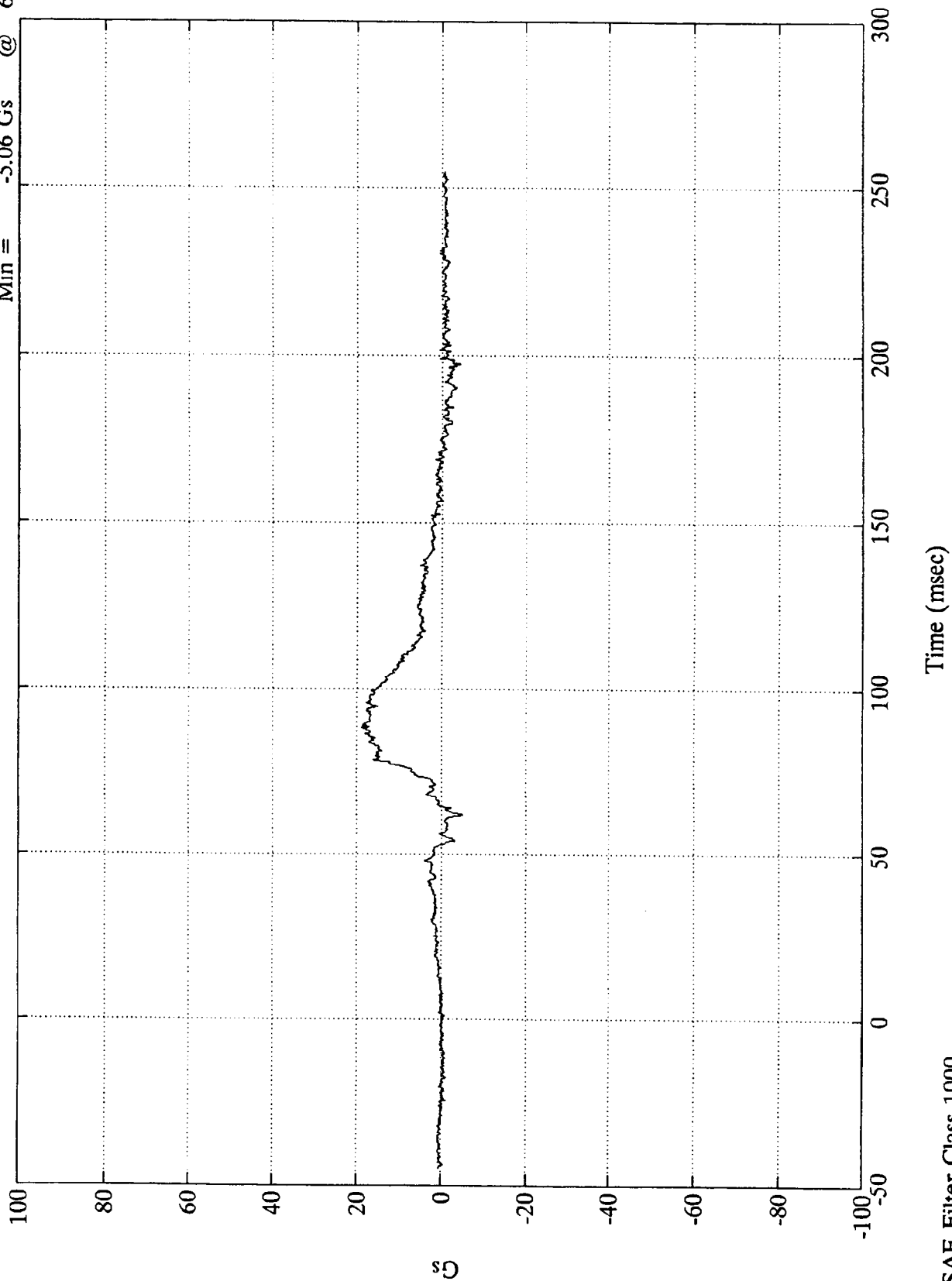


SAE Filter Class 1000

VTV TEST #6

Max = 19.00 Gs @ 88.44 msec
Min = -5.06 Gs @ 62.04 msec

V2-P2 Pelvic Z



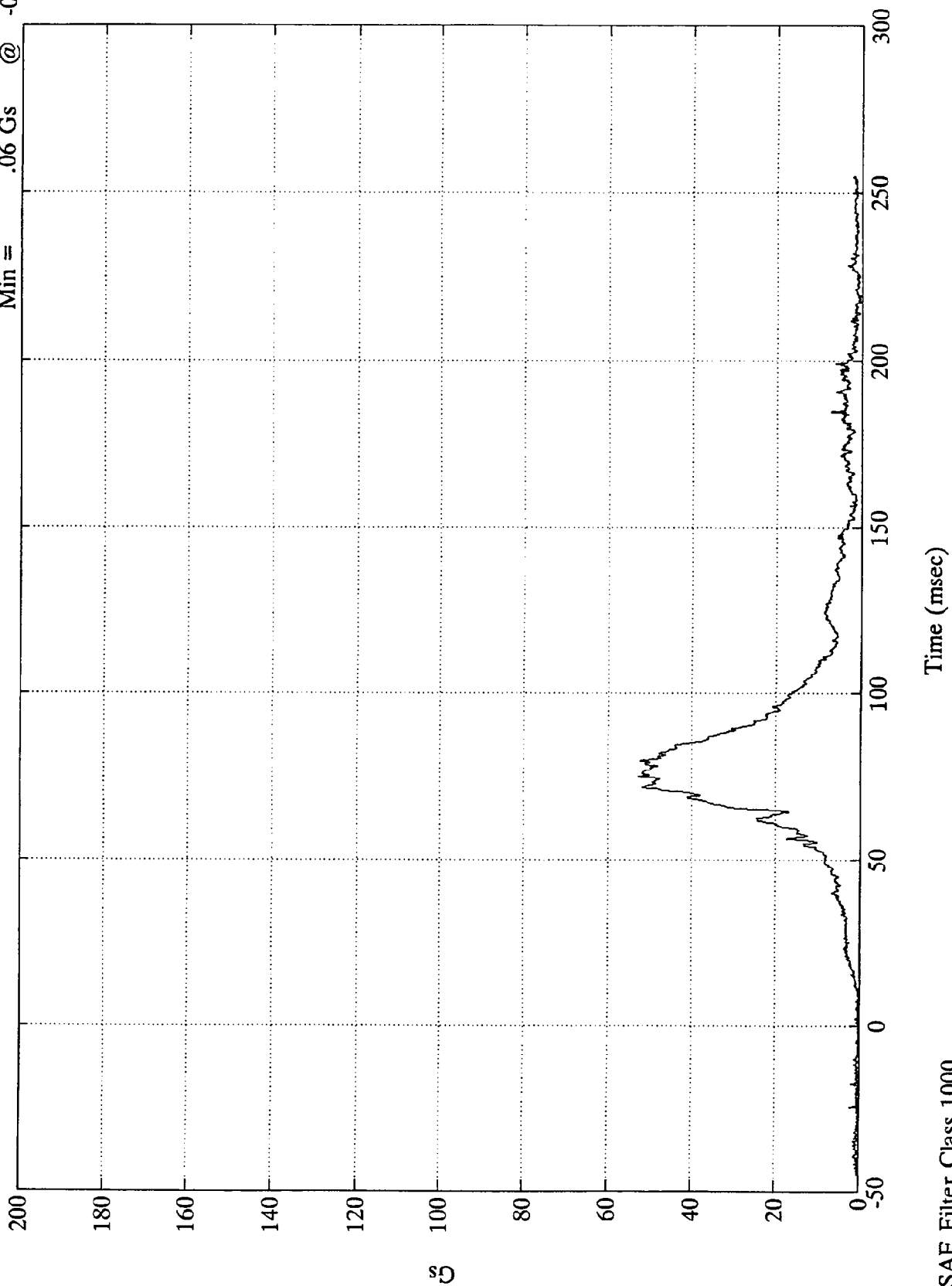
SAE Filter Class 1000

8118-6

VTV TEST #6

Max = 52.77 Gs @ 74.88 msec
Min = .06 Gs @ -0.84 msec

V2-P2 Pelvic Resultant



SAE Filter Class 1000

8118-6

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.

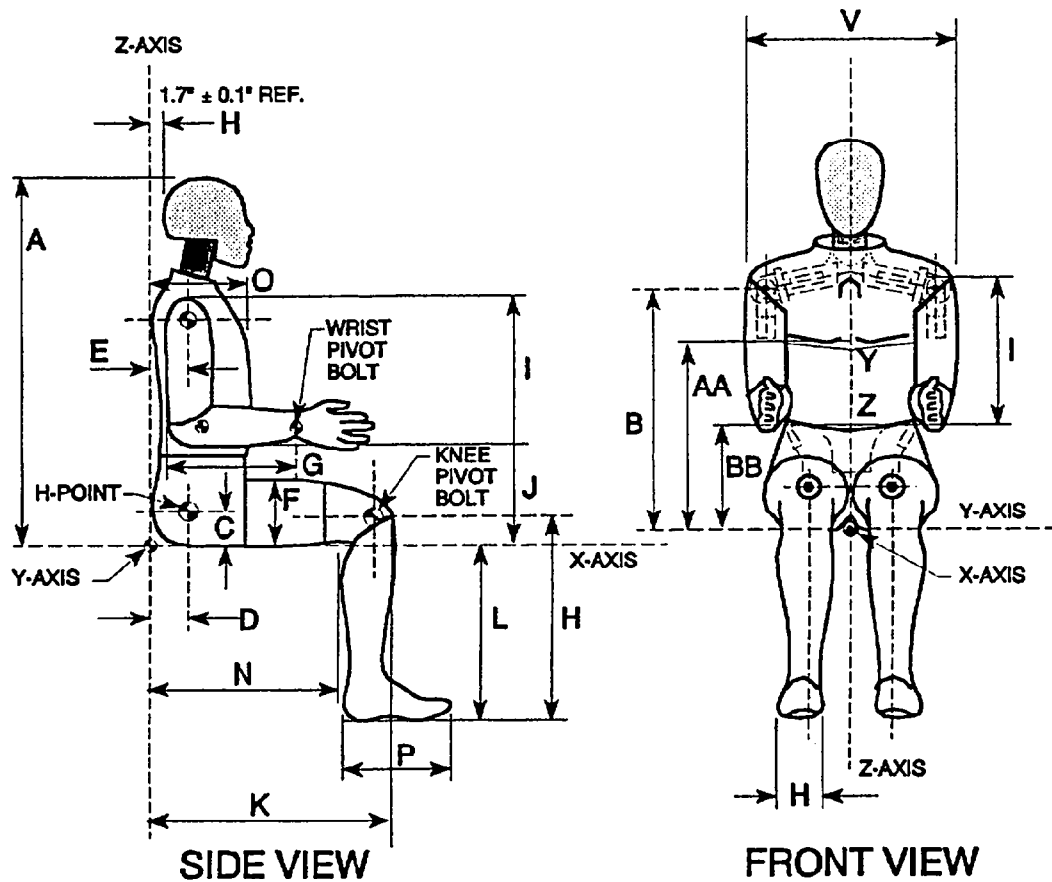
The tests were conducted at the Dummy Certification Test Facility of Calspan Corporation, Advanced Technology Center. A summary of the test results, and Part 572 specifications are included in this Appendix.

Dummy serial numbers and certification dates are:

<u>Serial No.</u>	<u>Completion Date</u>
150	3/22/94
245	3/22/94

Figure 13

EXTERNAL DIMENSIONS SETUP 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.: 150

HYBRID III EXTERNAL DIMENSIONS

S/N 150 HUMANOID

DUMMY SERIAL NO. 150

DATE: 3/22/94

TEMPERATURE		21 DEG. C
RELATIVE HUMIDITY		34 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)	429-434 mm	431 mm
LOCATION FOR WAIST CIRCUMFERENCE (BB)	226-231 mm	228 mm
CHEST CIRCUMFERENCE (Y)	970-1001 mm	998 mm
WAIST CIRCUMFERENCE (Z)	815-866 mm	863 mm
CHEST DEPTH (O)	213-229 mm	213 mm
H-POINT HEIGHT (C)	84-89 mm	88 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	881 mm
THIGH CLEARANCE (F)	140-155 mm	142 mm
BUTTOCK KNEE LENGTH (K)	580-605 mm	591 mm
BUTTOCK POPLITAL LENGTH (N)	452-477 mm	470 mm
POPLITEAL LENGTH (L)	430-455 mm	452 mm
KNEE PIVOT HEIGHT (M)	485-501 mm	500 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	94 mm
SHOULDER BREADTH (V)	422-437 mm	429 mm
SHOULDER PIVOT HEIGHT (B)	505-521 mm	513 mm
ELBOW REST HEIGHT (J)	190-211 mm	208 mm
SHOULDER-ELBOW LENGTH (I)	330-345 mm	337 mm
BACK OF ELBOW TO WRIST PIVOT (G)	290-305 mm	292 mm

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: IVAN MINKIEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT

HEAD DROP TEST

HYBRID III

DATE : 3/3/94

CALSPAN SEQUENTIAL NUMBER 3

HY3 SN: 150 HEAD DROP CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	29 %
PEAK RESULTANT ACCELERATION	225 - 275 G'S	239.5 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	4.9 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 : 3/22/94

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 3

HY3 SN:150 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	33 %
IMPACT VELOCITY		21.4 - 22.3 KPH	22.16 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	17.6 G'S
	20 MS	14.00 - 19.00 G'S	16.79 G'S
	30 MS	11.00 - 16.00 G'S	15.51 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	15.51 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	43.75 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	88.19 DEG.
	TIME	72 - 82 MS	76.25 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-69.74 N-M
	TIME	65 - 79 MS	71.63 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	152.88 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	131.25 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT

NECK FLEXION TEST

HYBRID III

DATE : 3/22/94

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 3

HY3 SN:150 CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	33 %
IMPACT VELOCITY		24.8 - 25.7 KPH	25.3 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	23.98 G'S
	20 MS	17.60 - 22.60 G'S	22.24 G'S
	30 MS	12.50 - 18.50 G'S	18.43 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	18.43 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	40.38 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	73.87 DEG.
	TIME	57 - 64 MS	59.5 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	104.7 N-M
	TIME	47 - 58 MS	54.38 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	117.25 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	97.13 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
THORAX IMPACT TEST
HYBRID III

DATE : 3/1/94

CALSPAN SEQUENTIAL NUMBER 3

HY3 SN 150 H.S. THORAX CAL

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	26 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	23.7 KPH
MAXIMUM DEFLECTION	64 - 73 mm	64.3 mm
MAXIMUM RESISTIVE FORCE	5160 - 5894 NEWTONS	5831 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	72.1 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 3/3/94

KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 3

HY3 SN: 150 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	29 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5240 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
KNEE IMPACT TEST
HYBRID III

DATE : 3/3/94

KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 3

HY3 SN: 1500KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	29 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5088 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY I.D. NUMBER: 150

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	A39J	4/94	10/94
ENDEVCO	AC2R5	4/94	10/94
ENDEVCO	A27F	4/94	10/94
ENDEVCO	A12C	4/94	10/94
ENDEVCO	A60C	4/94	10/94
ENDEVCO	A84G	4/94	10/94
GSE	951	11/93	5/94
GSE	952	11/93	5/94

B. CALIBRATION LABORATORY INSTRUMENTS

1. PENDULUM ACC.

2. TEST PROBE ACCELEROMETER

3. LUMBAR FLEXION TEST PUSH FORCE GAUGE

4. ABDOMINAL COMPRESS. TEST FORCE GAUGE

5. ABDOMINAL COMPRESS. TEST FORCE GAUGE

MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
CEC	A160	1/94	7/94
CEC	A161	1/94	7/94
TRANS- DUCER INC	20051	11/93	5/94
BLH	72952	11/93	5/94
CIC	567-11	11/93	5/94

VEHICLE 2, POSITION 2 - PASSENGER DUMMY

Manufacturer: Humanoid

Serial No.: 245

HYBRID III EXTERNAL DIMENSIONS

S/N 245 HUMANOID

DUMMY SERIAL NO. 245

DATE: 3/22/94

TEMPERATURE		20.5 DEG. C
RELATIVE HUMIDITY		35 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)	429-434 mm	431 mm
LOCATION FOR WAIST CIRCUMFERENCE (BB)	226-231 mm	228 mm
CHEST CIRCUMFERENCE (Y)	970-1001 mm	998 mm
WAIST CIRCUMFERENCE (Z)	815-866 mm	863 mm
CHEST DEPTH (O)	213-229 mm	213 mm
H-POINT HEIGHT (C)	84-89 mm	89 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	889 mm
THIGH CLEARANCE (F)	140-155 mm	152 mm
BUTTOCK KNEE LENGTH (K)	580-605 mm	596 mm
BUTTOCK POPLITAL LENGTH (N)	452-477 mm	464 mm
POPLITEAL LENGTH (L)	430-455 mm	447 mm
KNEE PIVOT HEIGHT (M)	485-501 mm	487 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	426 mm
SHOULDER PIVOT HEIGHT (B)	505-521 mm	518 mm
ELBOW REST HEIGHT (J)	190-211 mm	205 mm
SHOULDER-ELBOW LENGTH (I)	330-345 mm	335 mm
BACK OF ELBOW TO WRIST PIVOT (G)	290-305 mm	294 mm

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT

HEAD DROP TEST

HYBRID III

DATE : 9/23/93

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN: 245 HEAD DROP CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	54 %
PEAK RESULTANT ACCELERATION	225 - 275 G'S	237.3 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	3.1 G'S
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

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NECK FLEXION TEST

HYBRID III

DATE : 3/22/94

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN:245 CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	34 %
IMPACT VELOCITY		24.8 - 25.7 KPH	25.3 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	24.87 G'S
	20 MS	17.60 - 22.60 G'S	21.57 G'S
	30 MS	12.50 - 18.50 G'S	18.29 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	18.29 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	41.25 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	67.61 DEG.
	TIME	57 - 64 MS	58.13 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	100.9 N-M
	TIME	47 - 58 MS	54 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	115.88 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	98.63 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
NECK EXTENSION TEST
HYBRID III

DATE : 3/22/94

6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN:245 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	33 %
IMPACT VELOCITY		21.4 - 22.3 KPH	22 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	17.91 G'S
	20 MS	14.00 - 19.00 G'S	18.12 G'S
	30 MS	11.00 - 16.00 G'S	15.98 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	15.98 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	44.75 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	89.81 DEG.
	TIME	72 - 82 MS	73 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-77.56 N-M
	TIME	65 - 79 MS	68.75 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	147 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	124.5 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT
THORAX IMPACT TEST
HYBRID III

DATE : 9/22/93

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN 245 H.S. THORAX CAL

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	54 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	23.7 KPH
MAXIMUM DEFLECTION	64 - 73 mm	64.26 mm
MAXIMUM RESISTIVE FORCE	5160 - 5894 NEWTONS	5404 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	77.7 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 10/25/93

KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN: 245 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	4879 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION
TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 10/25/93

KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 2

HY3 SN: 245 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4715 - 5782 N	5191 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	ADMB8	4/94	10/93
ENDEVCO	ADL44	4/94	10/93
ENDEVCO	AC2J3	4/94	10/93
ENDEVCO	ADMB6	4/94	10/94
ENDEVCO	AC209	4/94	10/94
ENDEVCO	ADL98	4/94	10/94
GSE	954	11/93	5/94
GSE	955	11/93	5/94

B. CALIBRATION LABORATORY INSTRUMENTS

1. PENDULUM ACC.

2. TEST PROBE ACCELEROMETER

3. LUMBAR FLEXION TEST PUSH FORCE GAUGE

4. ABDOMINAL COMPRESS. TEST FORCE GAUGE

5. ABDOMINAL COMPRESS. TEST FORCE GAUGE

MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
CEC	A160	1/94	7/94
CEC	A161	1/94	7/94
TRANS- DUCER INC	20051	11/93	5/94
BLH	72952	11/93	5/94
CIC	567-11	11/93	5/94