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CALSPAN REPORT NUMBER: 7942-12

FRONTAL BARRIER IMPACT TEST
FORD MOTOR COMPANY
1993 FORD TAURUS
4-DOOR GL

CALSPAN TEST NUMBER: Y43-11-1268

MARCH 30, 1993

CALSPAN CORPORATION
ADVANCED TECHNOLOGY CENTER
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For:
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Research and Special Programs Administration
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16. Abstract A frontal load cell barrier test of a 1993 Ford Taurus 4-Door GL was performed at Calspan Advanced Technology Center crash test facility in Buffalo, New York on March 30, 1993. The impact velocity was 29.4 MPH and the temperature at the barrier face was 64°F. The test vehicle was a 1993 Ford Taurus 4-Door GL. A 5th percentile Hybrid III Anthropomorphic Test Device (ATD) was placed in the driver's position and a 95th percentile ATD was placed in the passenger's position. Both ATD's were restrained with an airbag.					
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Section 1

PURPOSE AND TEST PROCEDURE

This 30 mph frontal barrier 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 is to obtain vehicle crashworthiness and occupant restraint system performance data for a frontal barrier impact.

The 30 mph frontal barrier impact test was conducted in accordance with the Office of Market Incentive (OMI) Laboratory Indicate Test Procedure.

Section 2

SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 36 load cells was impacted by a 1993 Ford Taurus 4-Door GL at a velocity of 29.4 mph. The test was performed at the Calspan Corporation Advanced Technology Center on March 30, 1993. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

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

Two Hybrid III, anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure. The driver position ATD was a 5th percentile ATD and the right-front passenger ATD was a 95th percentile ATD. Both ATDs were fully instrumented and were restrained with the driver and passenger airbags.

The 98 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Vehicle Accelerometer #6-Right Caliper experienced a cut wire at approximately 50 msec.

The driver's head struck the airbag; the HIC was 155.6. The maximum chest deceleration over 3 milliseconds was 43.5 g's and femur loads were -713.2 pounds on the left and -1007.8 pounds on the right.

The right front passenger's HIC was 1009.2 and maximum chest deceleration over 3 milliseconds was 44.6 g's. Femur loads were -2107.0 on the left and -1561.6 pounds of the right.

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA

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

VIN.: 1FALP52U4PG216351

Body Color: Cranberry Date of Manufacture: _____

Engine: 6 Cylinders; - C.I.D.; 3 Liters; - CC

X Gas; - Diesel; - Turbocharged

- Longitudinal; X Transverse

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

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

Odometer Reading: 29

X A/C; X P/S; X P/B; - P/wdo;

X Tilt Wheel X P/seats; X Cruise Control

Type of Occupant Restraint: Dual Airbags

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 35 psi, Rear 35 psi

Recommended Tire Size: P205/70R14

Recommended Cold Tire Pressure: Front 35 psi, Rear 35 psi

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

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

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

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

Vehicle Capacity Weight (VCW) = 1100 lbs. (A)

No. of Occupants x 150 lbs. = 900 lbs. (B)

Rated Cargo and Luggage

Weight (RCLW) A-B = 200 lbs.

GVWR 4695 lbs. GAWR: Front 2501 lbs. Rear 2225 lbs.

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

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

Right Front = 1010 lbs. Right Rear = 530 lbs.
Left Front = 1050 lbs. Left Rear = 590 lbs.
TOTAL FRONT WEIGHT = 2060 lbs. (65% of Total Vehicle Weight)
TOTAL REAR WEIGHT = 1120 lbs. (35% of Total Vehicle Weight)
TOTAL DELIVERED WEIGHT = 3180 lbs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES:

Right Front = 1000 lbs. Right Rear = 760 lbs.
Left Front = 1070 lbs. Left Rear = 680 lbs.
TOTAL FRONT WEIGHT = 2070 lbs. (59% of Total Vehicle Weight)
TOTAL REAR WEIGHT = 1440 lbs. (41% of Total Vehicle Weight)
TOTAL TEST WEIGHT = 3510 lbs.
Weight of ballast secured in vehicle trunk area = 0 lbs.

VEHICLE ATTITUDE (all dimensions in inches):

Delivered Attitude: RF 28.2 LF 28.2 RR 27.5 LR 27.5
Test Attitude: RF 28.0 LF 28.1 RR 25.2 LR 25.6
Wheel Base: 106.0 in.; C.G. = 43.5 in. rearward of front wheel C/L
Remarks: 14.9 gallons of stoddard solution was placed in the fuel tank.

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

POST-IMPACT DATA:

Type of Test: Frontal Impact Impact Angle: 0°
 Date of Test: March 30, 1993 Time of Test: 13:45
 Ambient Temperature: 64 °F at impact area
 Temperature in Occupant Compartment: 71 °F
 Windshield Molding Temperature: 70 °F
 Required Impact Velocity Range: 28.9 to 29.9 mph
 Impact Velocity: primary = 29.4 mph, secondary = 29.4 mph
 Distance From Front Bumper to Barrier Face When
 Entering Speed Trap: 52 inches
 Exiting Speed Trap: 12 inches

VEHICLE REBOUND AND CRUSH:

Vehicle Length: Pre-test = R 187.2 in. C_L 192.4 in. L 187.0 in.
 Post-test = R 175.0 in. C_L 179.0 in. L 176.5 in.
 Crush = R 12.2 in. C_L 13.4 in. L 10.5 in.
 Distance from front of test vehicle to point of impact:
 Right 12.7 in. Center 10.3 in. Left 13.1 in.

VISIBLE DUMMY CONTACT POINTS:

	<u>Driver</u>	<u>Passenger</u>
Head	<u>Airbag</u>	<u>Airbag and Sunvisor</u>
Chest	<u>Airbag</u>	<u>Airbag</u>
Abdomen	<u>No Contact</u>	<u>No Contact</u>
Left Knee	<u>Dashpanel</u>	<u>Glove Box Door</u>
Right Knee	<u>Dashpanel</u>	<u>Glove Box Door</u>

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

	<u>Front</u>		<u>Rear</u>	
	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Door Opening	<u>Operable</u>	<u>Operable</u>	<u>Operable</u>	<u>Operable</u>
	<u>Front</u>		<u>Rear</u>	
<u>Seat Movement</u>	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Seat Back Failure	<u>None</u>	<u>None</u>	<u>-</u>	<u>-</u>
Seat Shift (in.)	<u>0.0</u>	<u>0.0</u>	<u>-</u>	<u>-</u>
<u>Glazing Damage</u>				
Backlight/Windshield	<u>Windshield sustained stress fractures but remained intact</u>			
Other Notable Impact Effects:	<u>None</u>			

Section 3
OCCUPANT AND VEHICLE INFORMATION

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

Table 2

DUMMY INJURY CRITERIA VALUESTest No.: 1268 Vehicle: 1993 Ford Taurus 4-Door GL

	MAXIMUM HEAD ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	71.5	16.7	25.6	74.6
Position #2 - Passenger	-137.5	11.7	47.4	139.8

	MAXIMUM CHEST ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	-44.3	-4.1	9.4	43.5
Position #2 - Passenger	-49.2	18.3	30.9	44.6

The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Position #1 - Driver	-713.2	-1007.8
Position #2 - Passenger	-2107.0	-1561.6

	HEAD INJURY CRITERIA (HIC)			
	HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ TO t ₂
Position #1 - Driver	155.6	39.24	75.12	28.5
Position #2 - Passenger	1009.2	63.84	71.76	110.18

HIC is as defined in FMVSS 208. The maximum time interval from t₁ to t₂ is 36 milliseconds.

Table 3
HYBRID III NECK AND CHEST DATA SHEET

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

Test No.: Y43-11-1268 Test Date: March 30, 1993

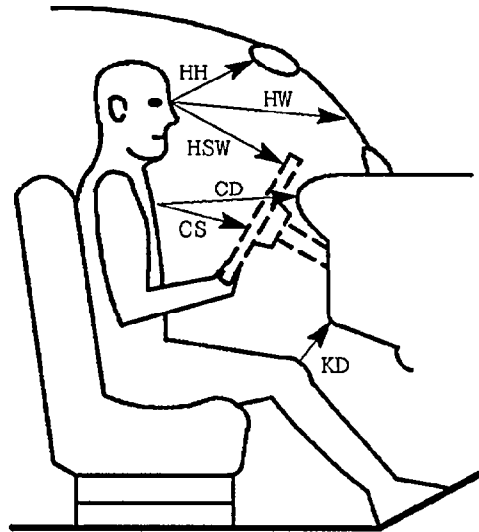
MAXIMUM VALUES	DRIVER DUMMY ID # <u>145</u>	PASSENGER DUMMY ID # <u>70</u>
Neck Load X	-101.2 lbs	-568.0 lbs
Neck Load Y	N/A	-344.0 lbs
Neck Load Z	322.5 lbs	-1142.1 lbs
Neck Moment X	N/A	20.7 ft-lbs
Neck Moment Y	-32.1 ft-lbs	96.2 ft-lbs
Neck Moment Z	N/A	6.4 ft-lbs
Chest Deflection X (in.)	-.96 in.	-42.0 in
Time of Max. Occurance	71.9 msec	49.8 msec

NOTE: All values listed must be occurring during primary impact event.

Figure 1

OCCUPANT CLEARANCE DIMENSIONS
(Dimensions are in inches unless otherwise noted)

	5% TH POSITION 1	95% TH POSITION 2
HH	11.4	16.4
NW	24.4	25.8
NSW	11.3	-
NIP	22.1	26.6
NH	10.7	-
CD	18.0	23.2
CS	8.8	-
KDL	1.8	6.3
KDR	2.0	6.1
1	21.9	-
2	-	-
SA	See Note	See Note
PA	22°	23°
ULA	100°	98°
LLA	218°	232°



- HH = Head to Windshield Header
- NW = Nose to Windshield
- NSW = Nose to Steering Wheel Rim
- 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

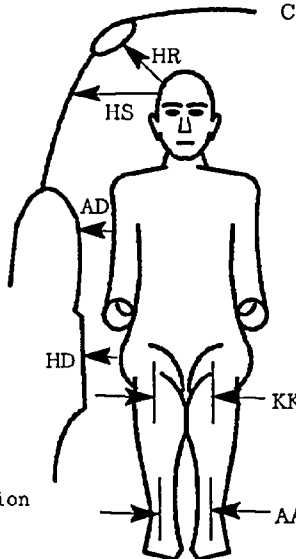
Angles taken relative to vertical

- 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 °F

Note: Seat was positioned according to manufacturer specifications

Driver seat is in full forward location
Passenger seat is in full rearward location



	Pos.1	Pos.2
HR	9.3	4.7
HS	12.3	8.3
AD	6.1	3.3
HD*	6.7	5.5
KK	8.9	7.9
AA	10.9	7.3
DT	70°F	70°F

*To door pocket

Figure 2
CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 4

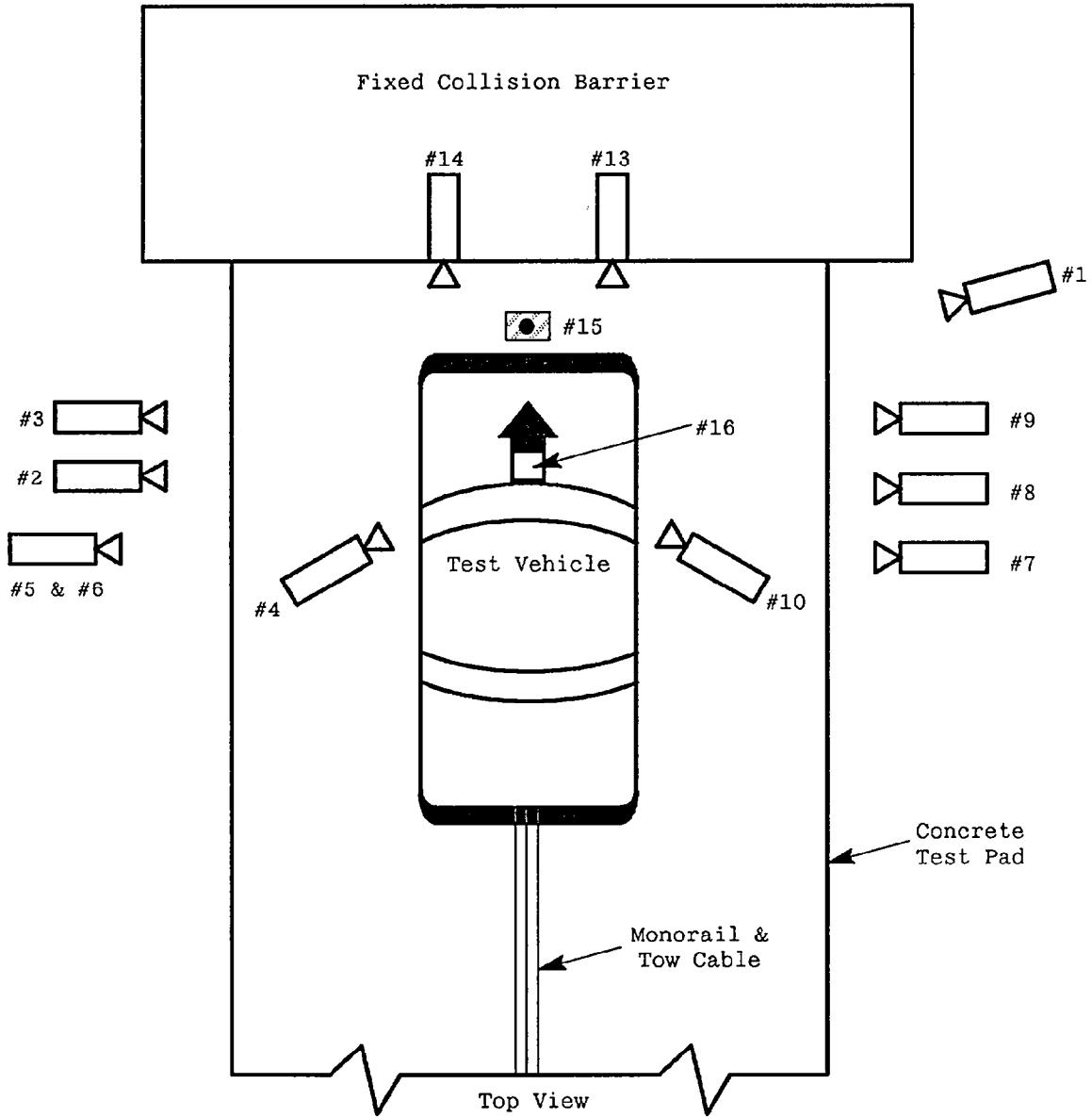


Table 4

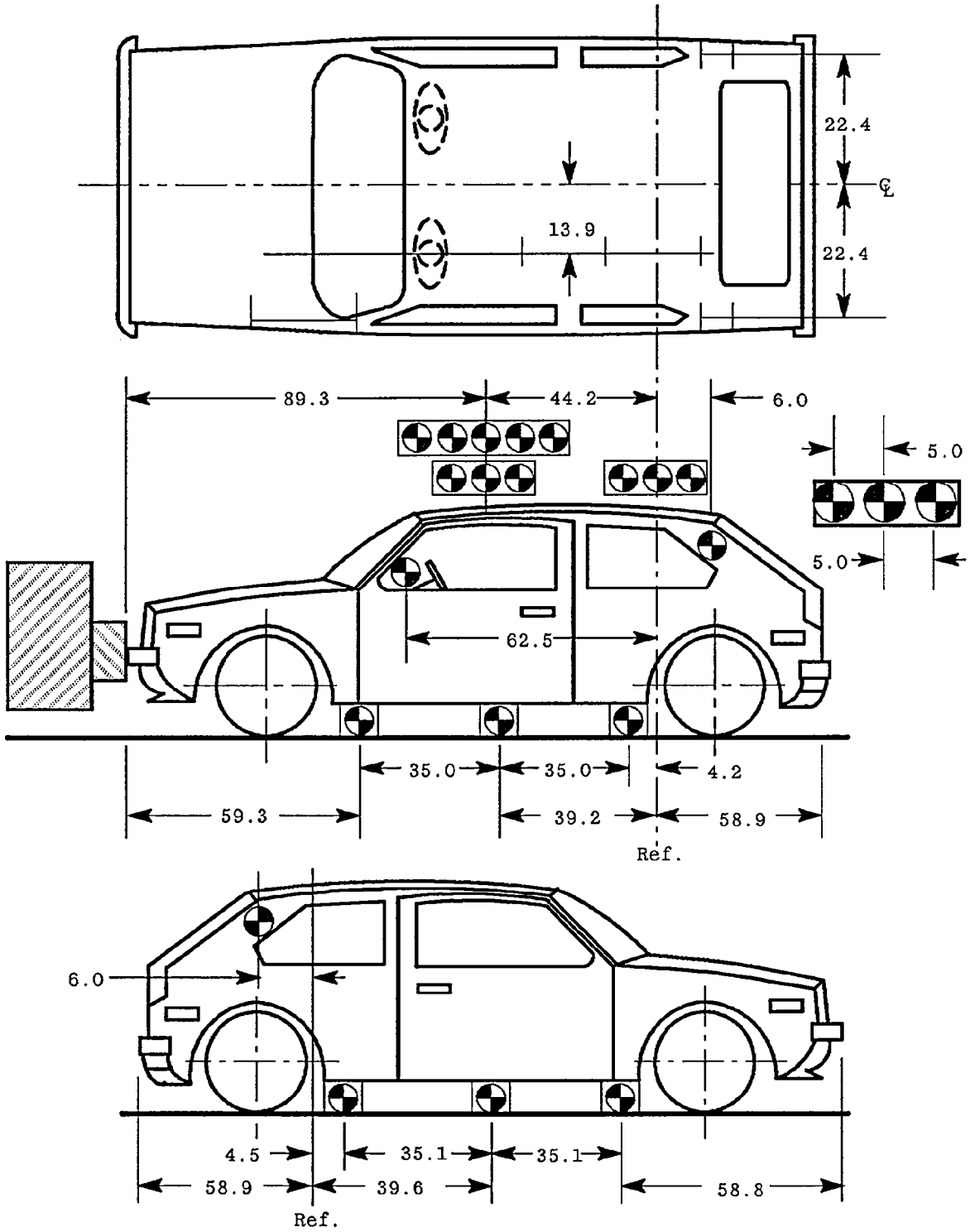
HIGH-SPEED CAMERA LOCATIONS

Vehicle: 1993 Ford Taurus 4-Door GL

CAMERA NO.	VIEW	CAMERA POSITIONS (in)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	24	
2	Overall Left Side	245	64	42	-3	228	550	
3	Left Side View	312	39	41	-3	295	620	
4	Driver and Interior View	114	104	67	-17	97	580	
5	Steering Column (Bottom)	267	75	46	-4	250	760	
6	Steering Column (Top)	267	75	70	-10	250	770	
7	Overall Right Side	247	67	42	-4	230	530	
8	Right Side View	315	74	41	-1	298	580	
9	Right Passenger View	304	52	57	-4	287	590	
10	Passenger and Interior View	112	105	65	-16	95	580	
11	Passenger Front View	22	0	76	-36	-	640	
12	Driver Front View	22	0	76	-34	-	600	
13	Overhead	0	22	120	-90	-	600	
14	Pit View of Engine	0	22	-120	90	-	600	
15	Fuel Tank View	0	108	-120	90	-	880	

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

Figure 3
VEHICLE TARGET LOCATIONS

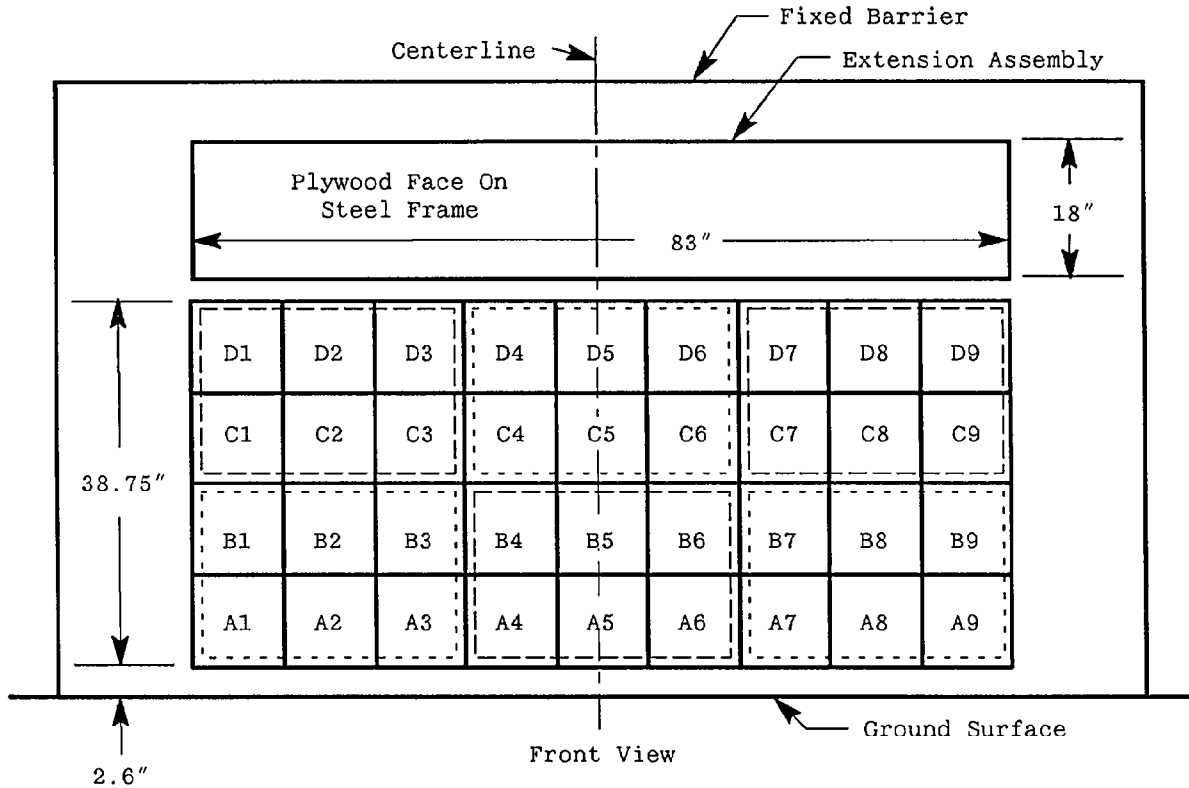


(Dimensions in inches)

Figure 4

LOAD CELL LOCATIONS ON FIXED BARRIER

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



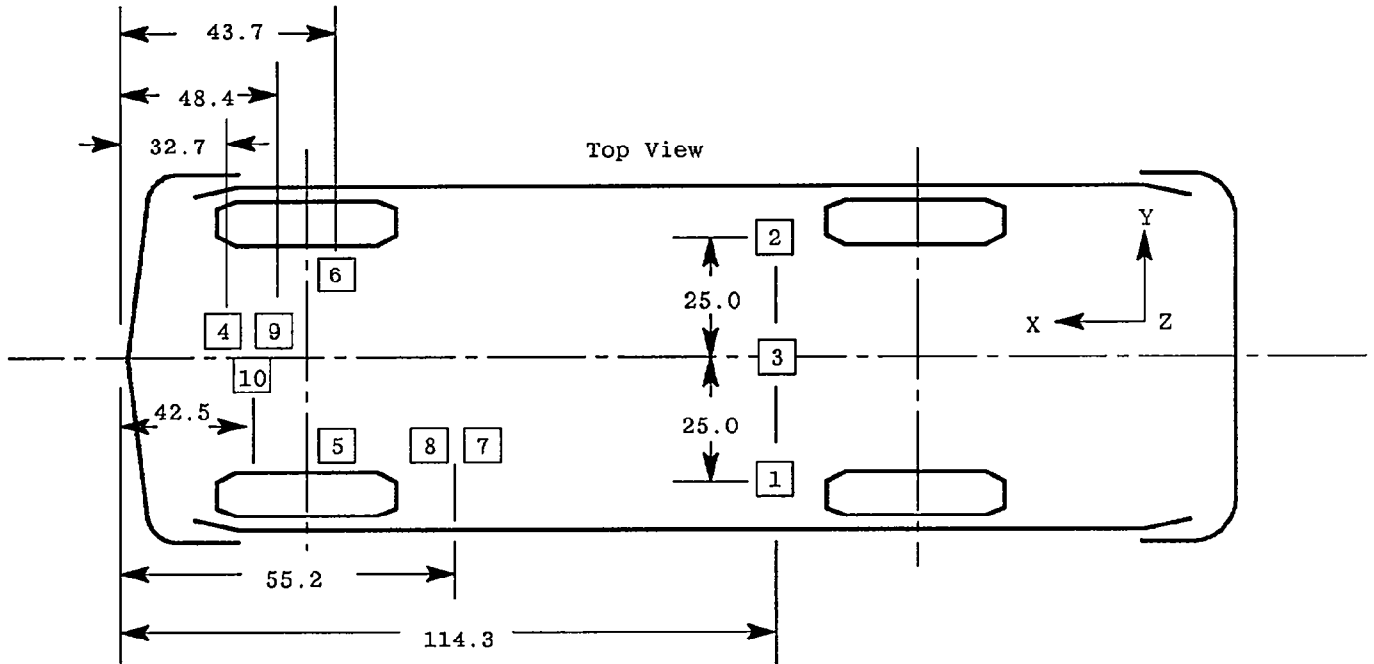
6 GROUPS OF 6 LOAD CELLS EACH

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

The following data is presented in Appendix B:

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

Figure 5
VEHICLE ACCELEROMETER LOCATIONS



ACCELEROMETER NUMBER*	ACCELEROMETER LOCATION	DIRECTION		
		X	Y	Z
1	Left Rear Seat Crossmember	✓		
2	Right Rear Seat Crossmember	✓		
3	Center Rear Seat Crossmember	✓	✓	✓
4	Engine Top	✓		
5	Left Brake Caliber	✓		
6	Right Brake Caliber	✓		
7	Brake Pedal	✓		✓
8	Toe Pan	✓		
9	Front Crossmember	✓		
10	Engine Bottom	✓		

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

Figure 6

TEST VEHICLE MEASUREMENTS POINTS

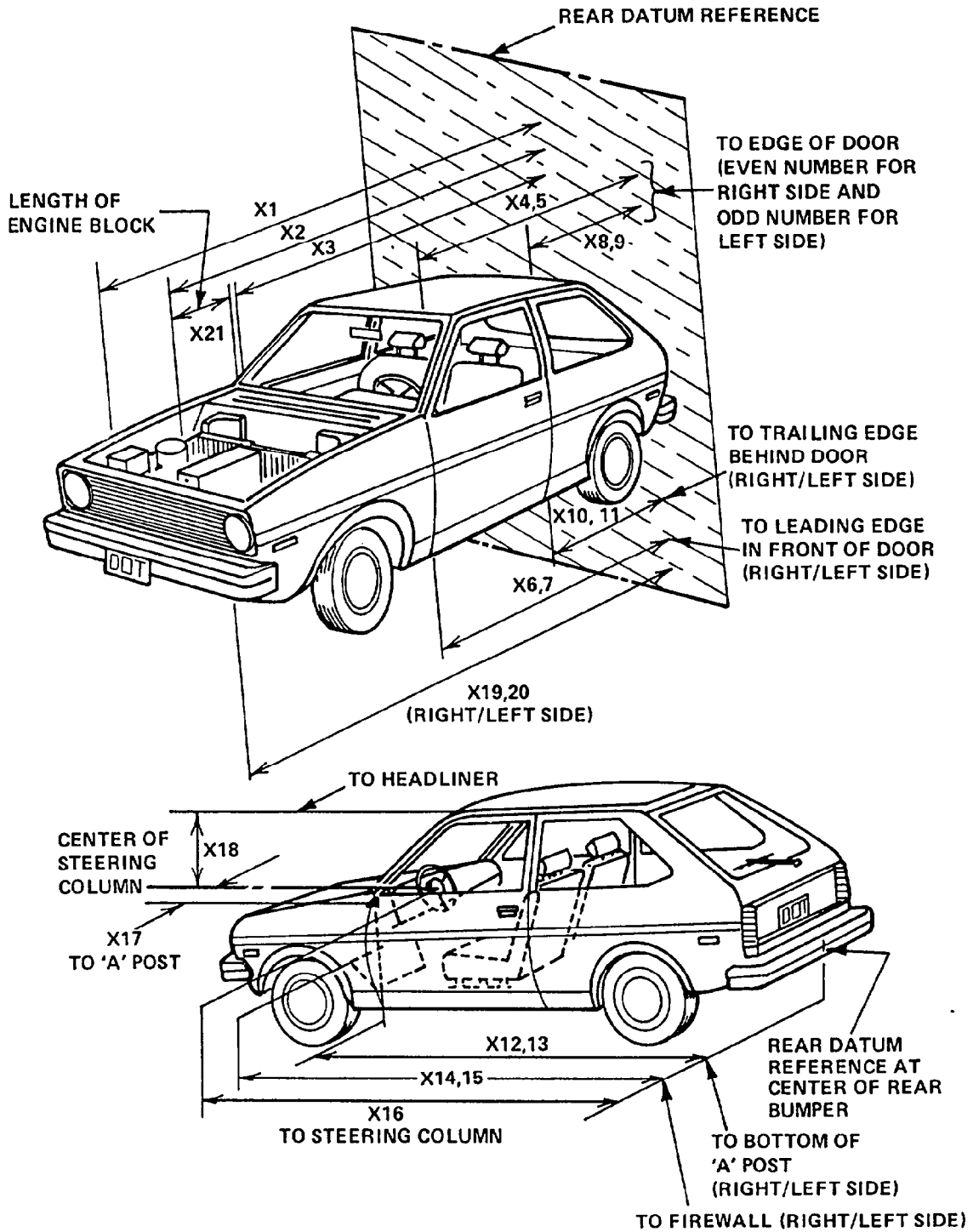


Figure 6

TEST VEHICLE MEASUREMENTS POINTS (continued)

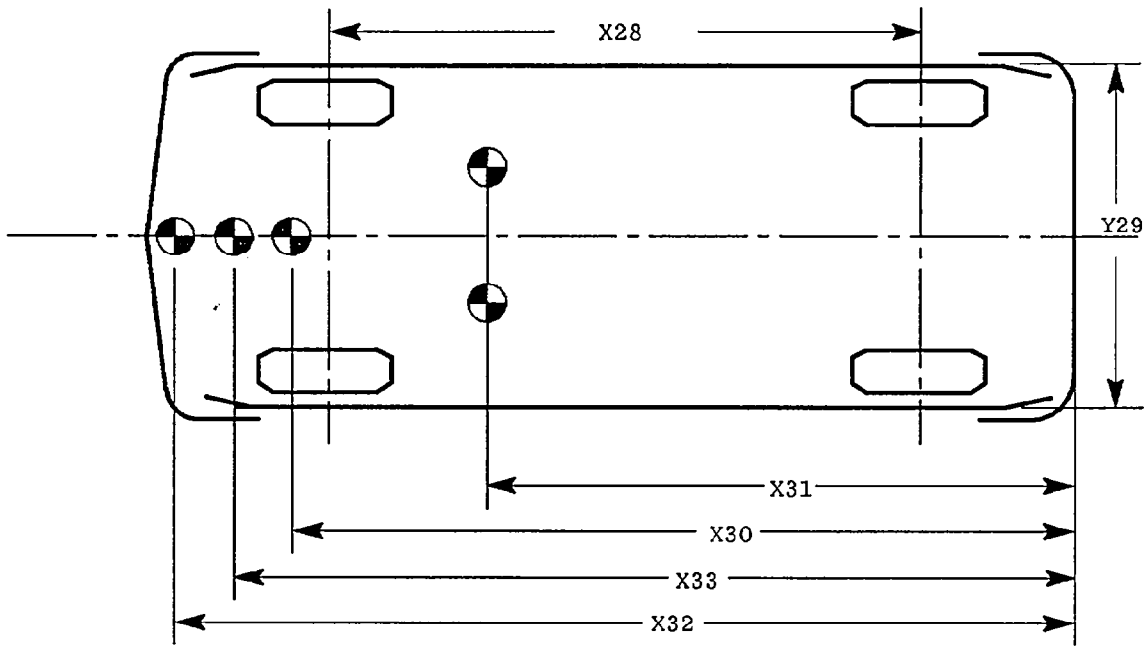
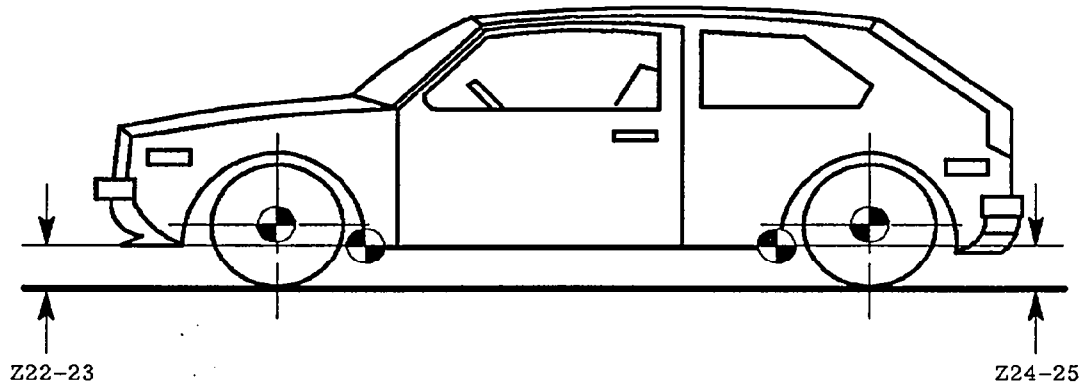


Table 5

VEHICLE MEASUREMENTS

No.	Type of Measurement	All Dimensions in Inches	
		Pre-Test	Post-Test
X1	Total Length of Vehicle at Centerline	192.4	179.0
X2	Rear Surface of Vehicle to Engine at Centerline	170.0	164.7
X3	Rear Surface of Vehicle to Firewall	145.1	144.0
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	132.8	132.0
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	132.5	132.0
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	130.0	129.8
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	130.0	129.6
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	89.9	89.9
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	89.9	89.8
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	89.1	88.8
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	89.0	88.8
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	129.3	129.0
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	129.6	129.5
X14	Rear Surface of Vehicle to Firewall - Right Side	144.0	142.5
X15	Rear Surface of Vehicle to Firewall - Left Side	143.2	142.0
X16	Rear Surface of Vehicle to Steering Wheel Center	112.8	114.2
X17	Steering Column to "A" Post	16.6	17.0
Z18	Rear of Windshield Header to Steering Wheel Column	15.3	15.6
X19	Rear Surface of Vehicle to Right Side of Front Bumper	187.2	175.0
X20	Rear Surface of Vehicle to Left Side of Front Bumper	187.0	176.5
X21	Width of Engine Block	15.0	15.0
Z22	Right Front Sill to Ground Plane	9.0	8.0
Z23	Left Front Sill to Ground Plane	9.0	8.0
Z24	Right Rear Sill to Ground Plane	9.3	8.8

Appendix A

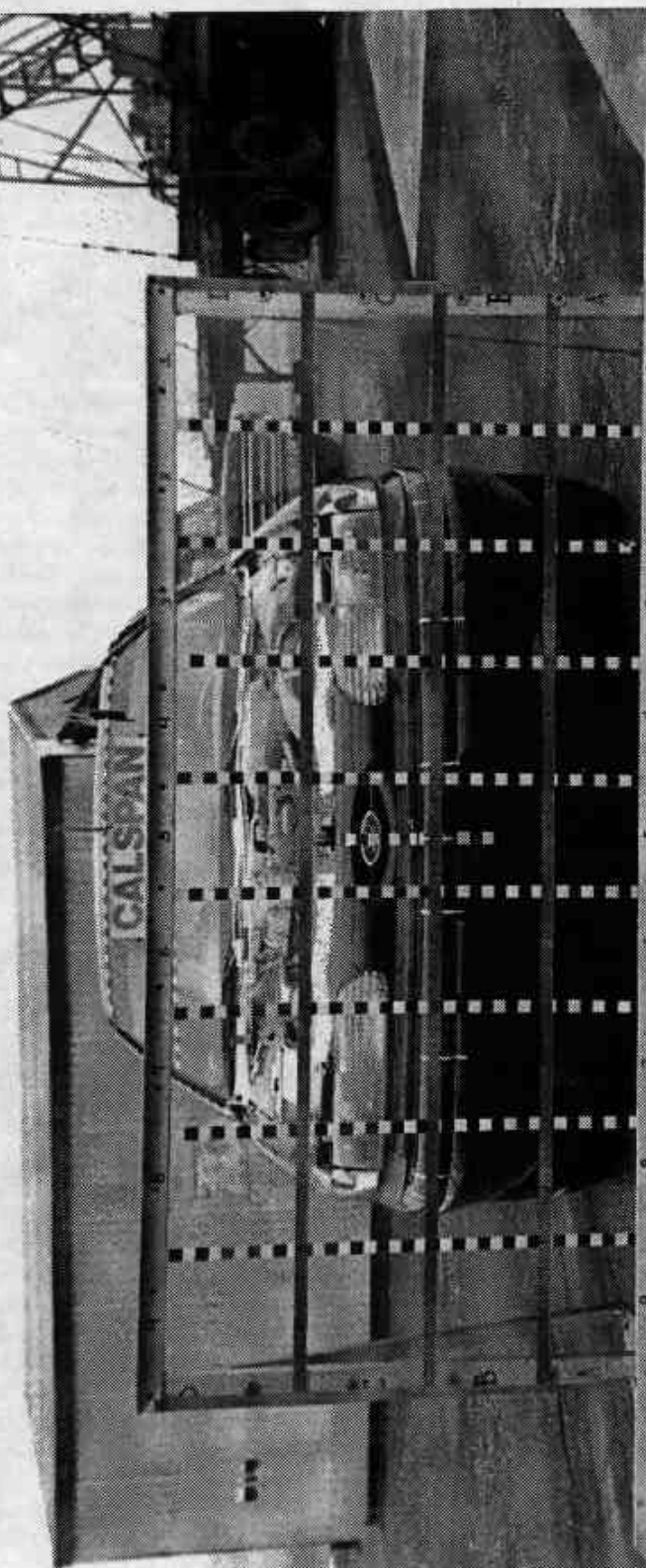
PHOTOGRAPHS

PHOTOGRAPHS

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Figure A-1 LOAD CELL LOCATIONS

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Figure A-2 PRE-TEST FRONT VIEW

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Figure A-3 POST-TEST FRONT VIEW

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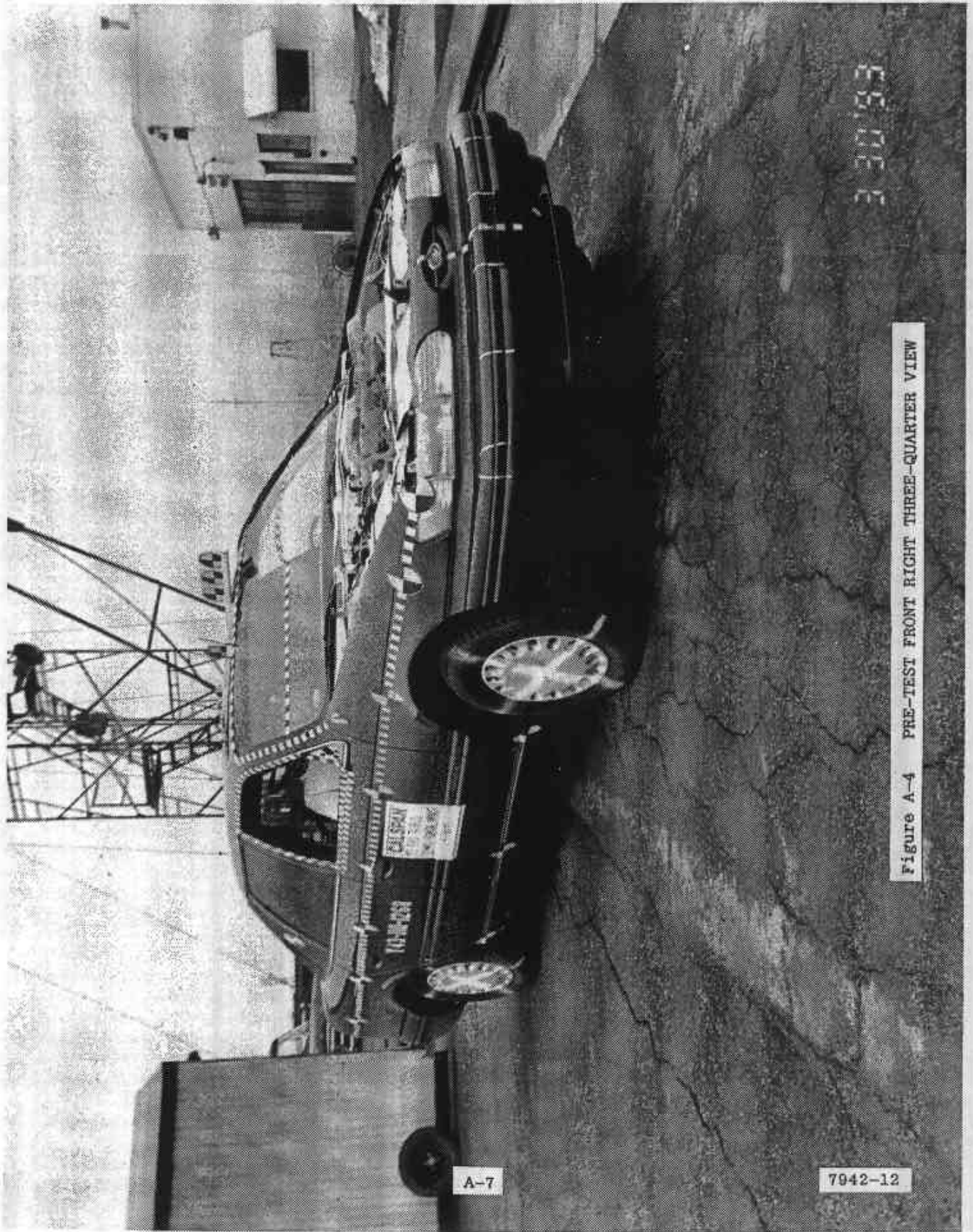


Figure A-4 PRE-TEST FRONT RIGHT THREE-QUARTER VIEW

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7942-12

3 30 53

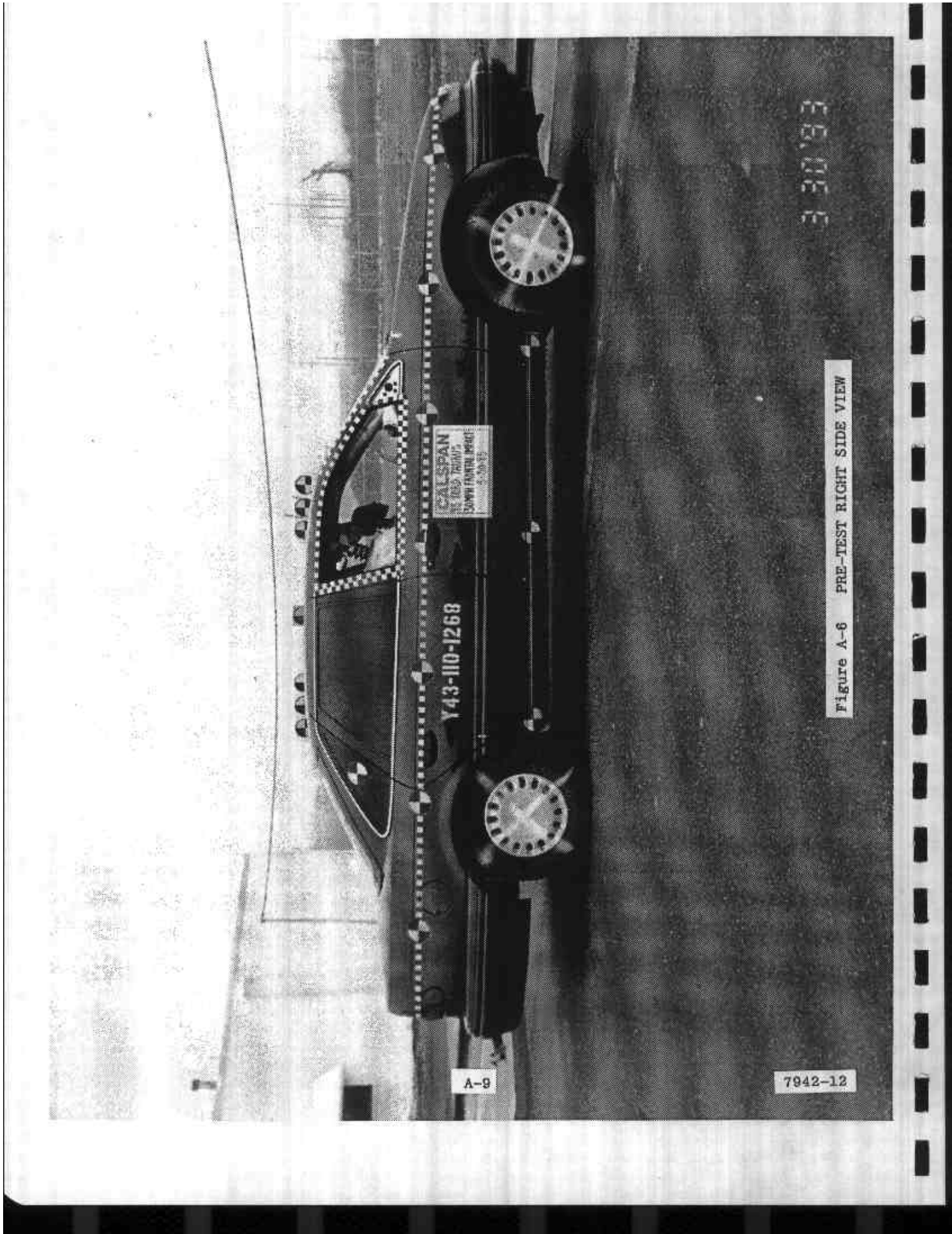


3 30 93

Figure A-5 POST-TEST FRONT RIGHT THREE-QUARTER VIEW

A-8

7942-12



3 30 '93

Figure A-6 PRE-TEST RIGHT SIDE VIEW

A-9

7942-12



EXHIBIT

Figure A-7 POST-TEST RIGHT SIDE VIEW

A-10

7942-12



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

A-11

7942-12

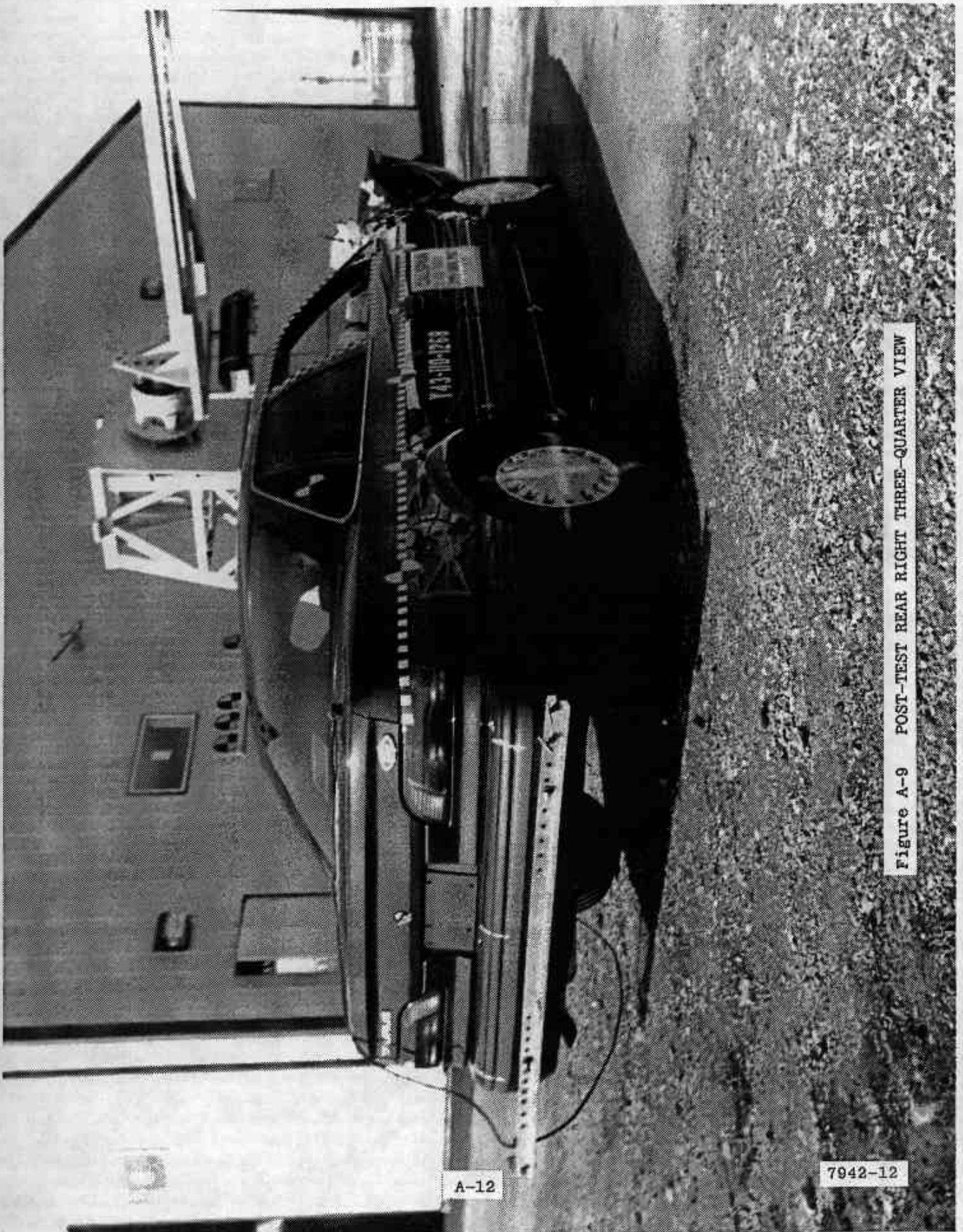
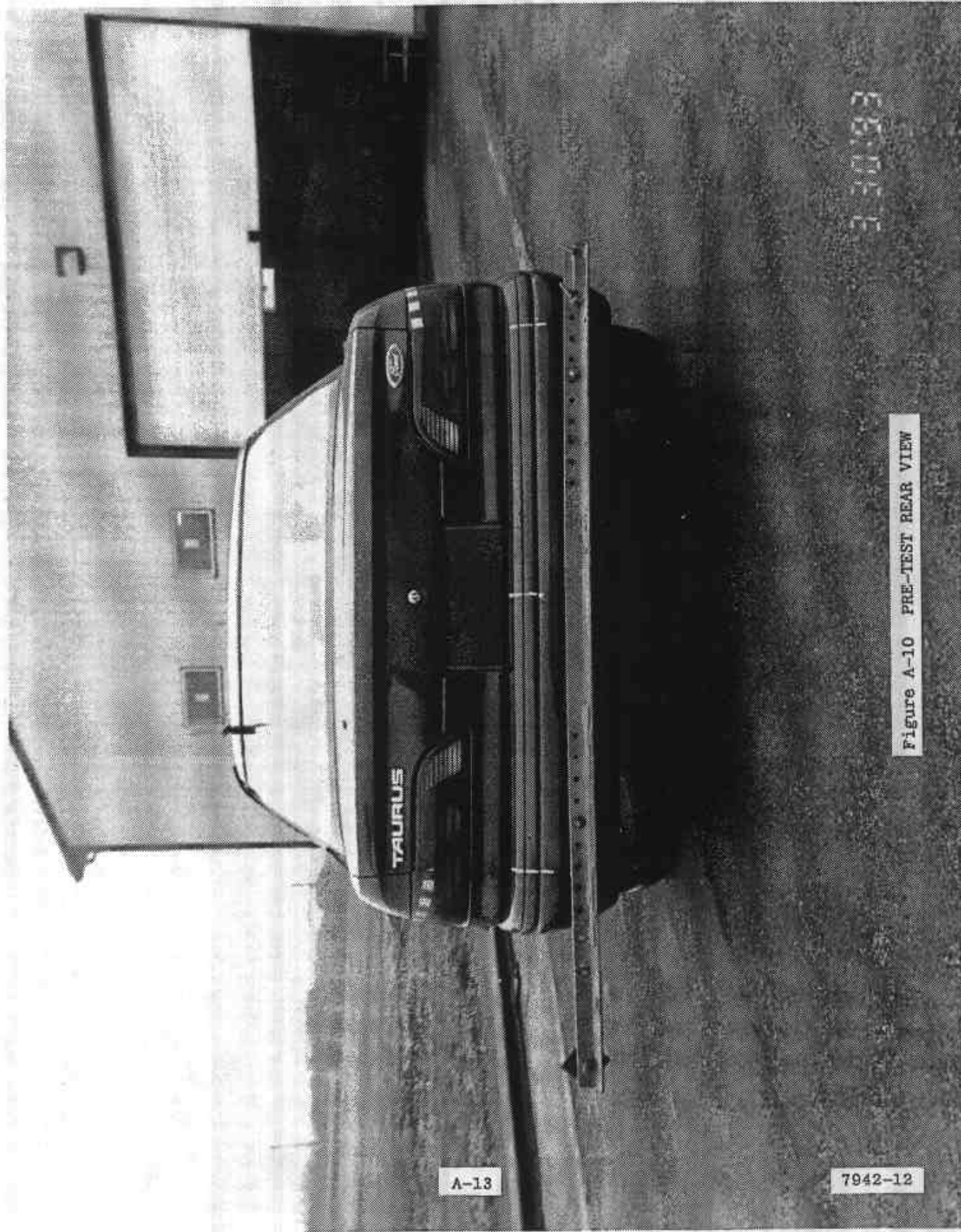


Figure A-9 POST-TEST REAR RIGHT THREE-QUARTER VIEW

A-12

7942-12



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Figure A-10 PRE-TEST REAR VIEW

A-13

7942-12

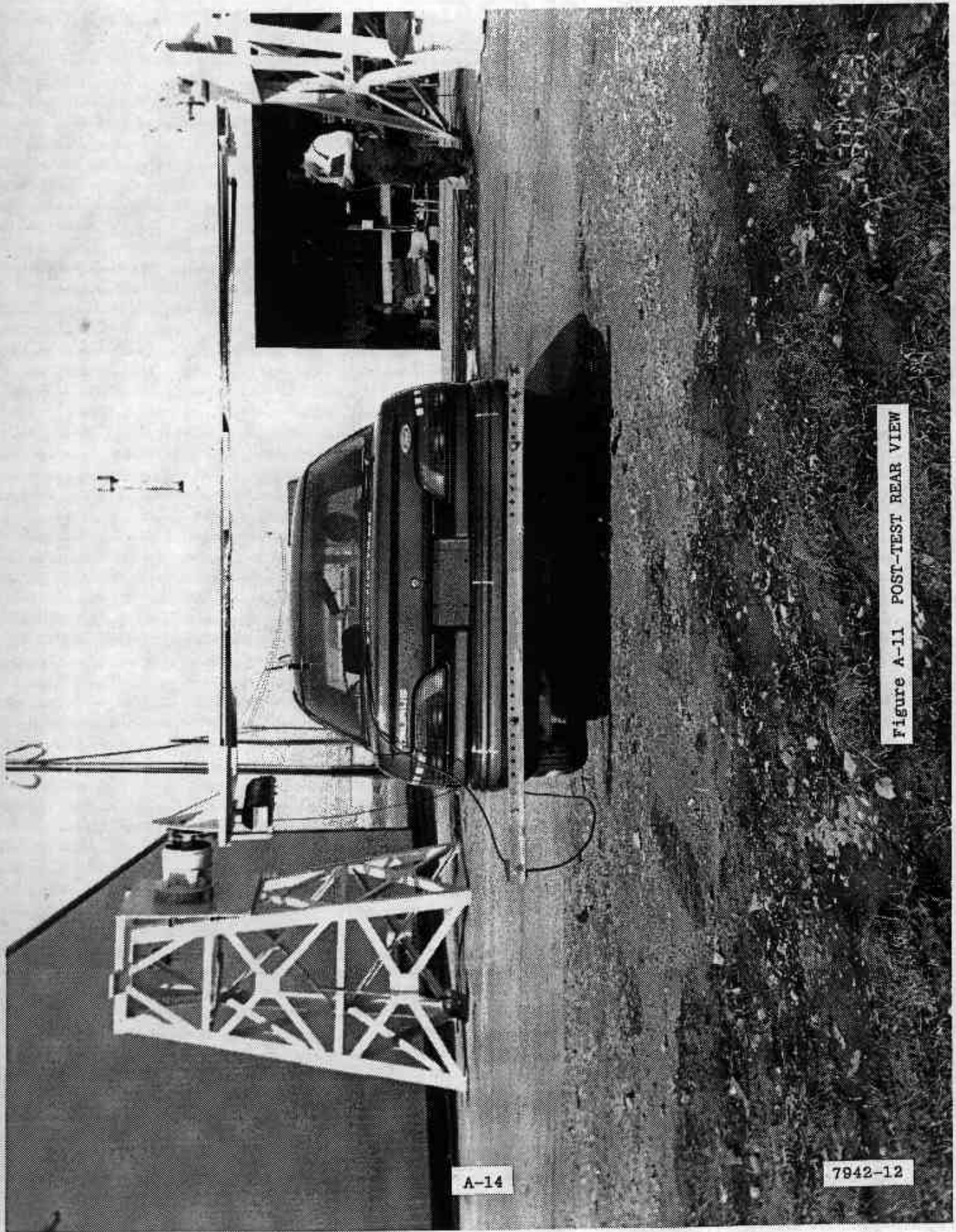


Figure A-11 POST-TEST REAR VIEW

A-14

7942-12



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

A-15

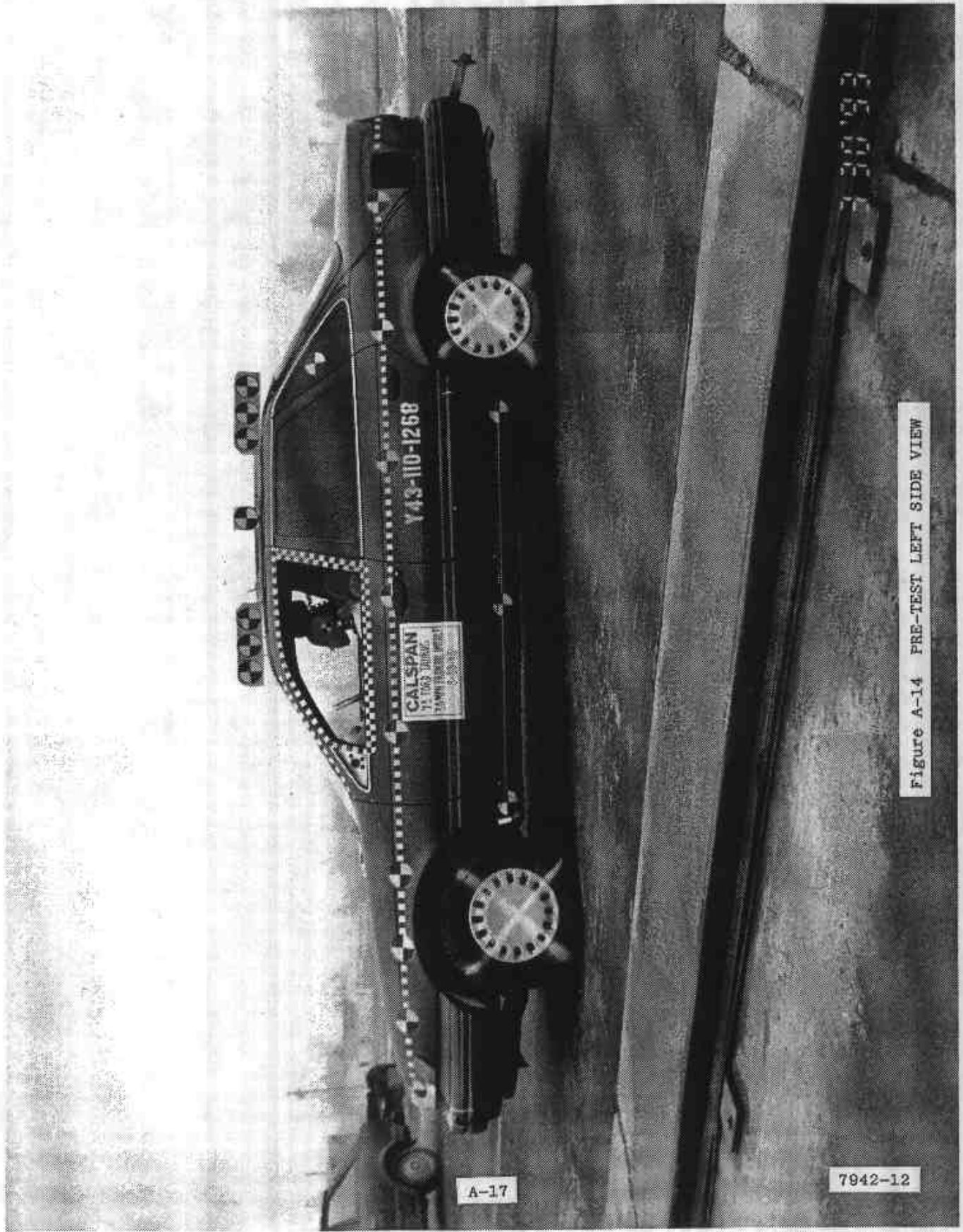
7942-12



Figure A-13 POST-TEST FRONT LEFT THREE-QUARTER VIEW

A-16

7942-12



A-17

7942-12

Figure A-14 PRE-TEST LEFT SIDE VIEW

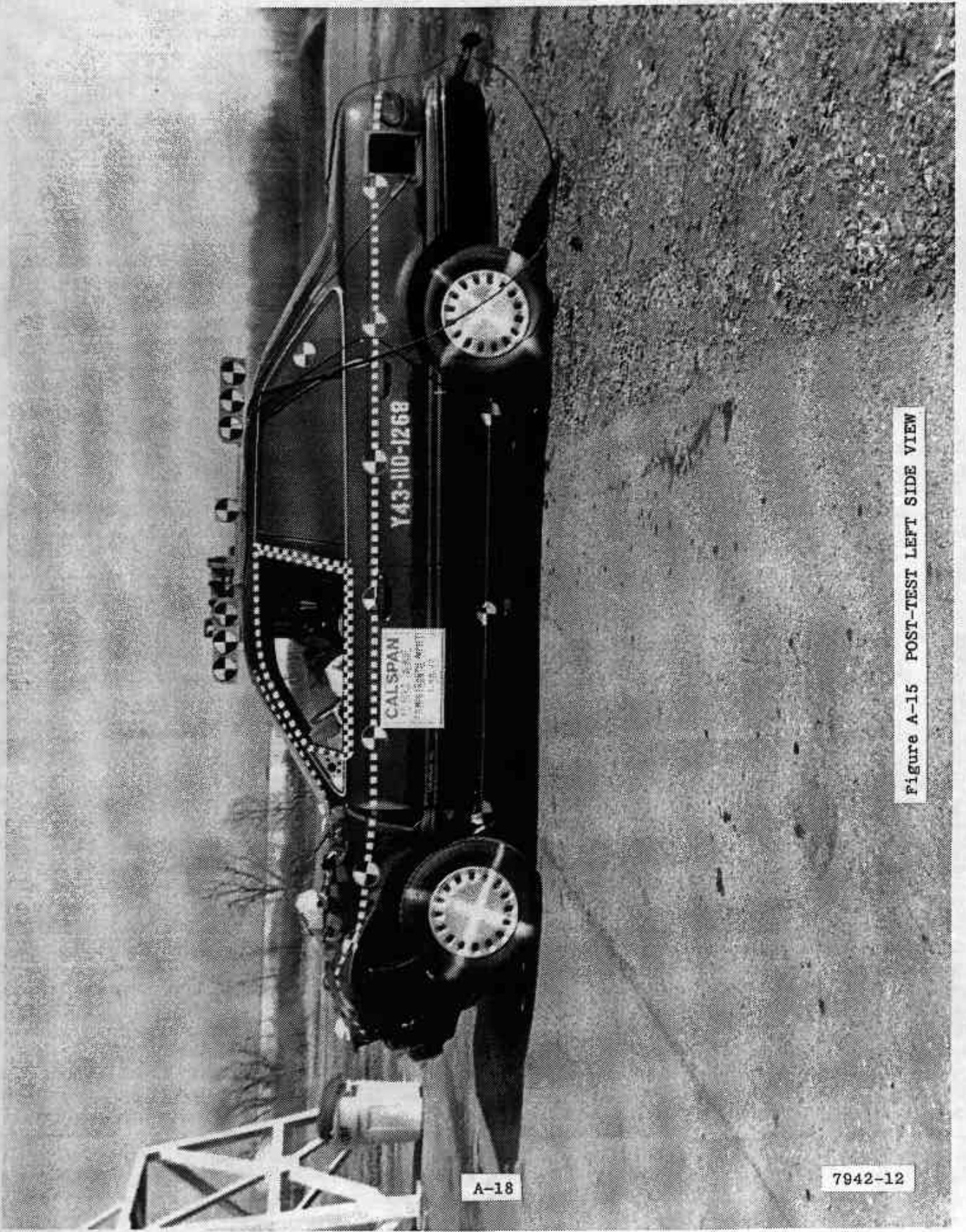


Figure A-15 POST-TEST LEFT SIDE VIEW

A-18

7942-12



A-19

7942-12

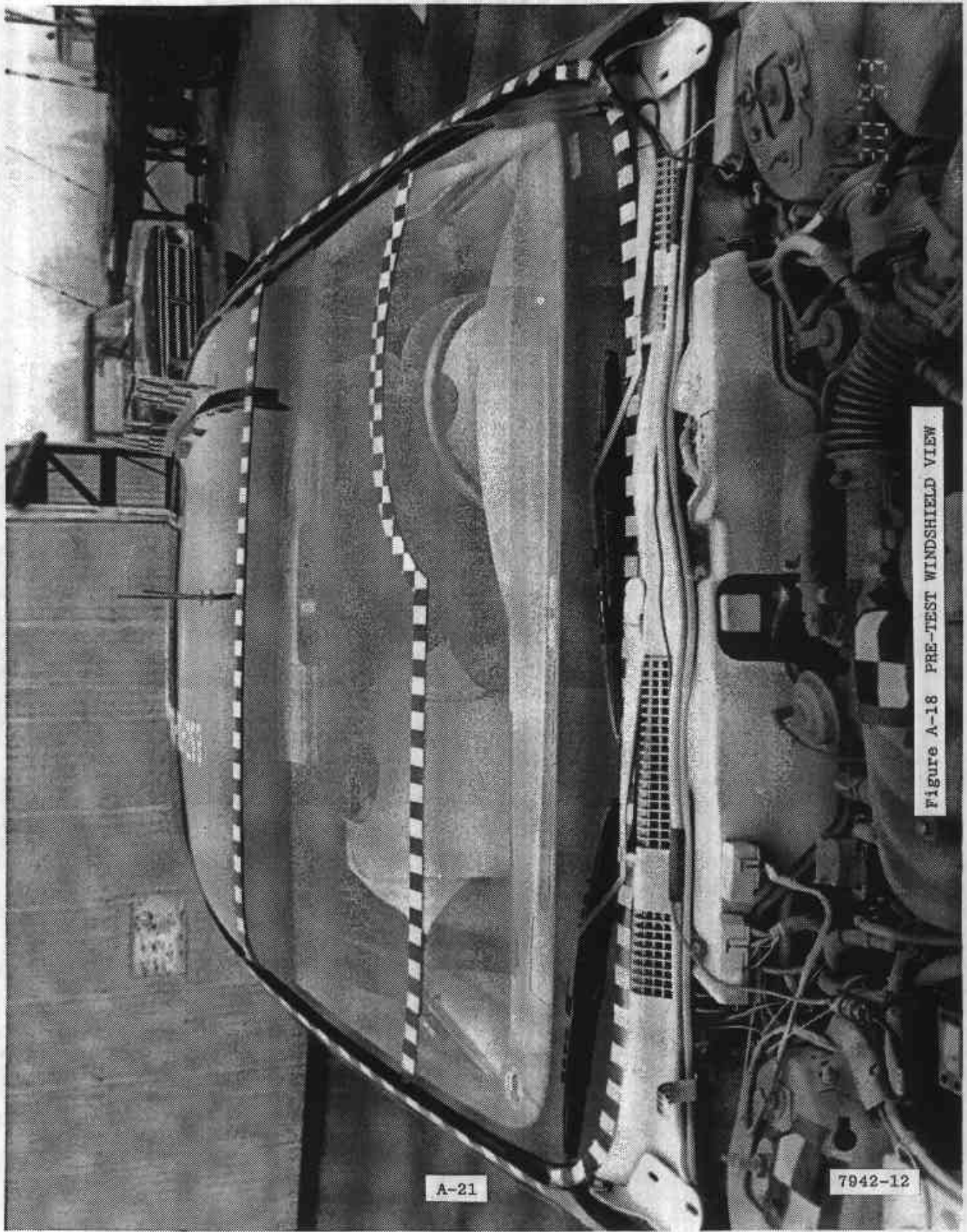
Figure A-16 PRE-TEST FRONT LEFT THREE-QUARTER VIEW



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

A-20

7942-12



A-21

7942-12

Figure A-18 PRE-TEST WINDSHIELD VIEW

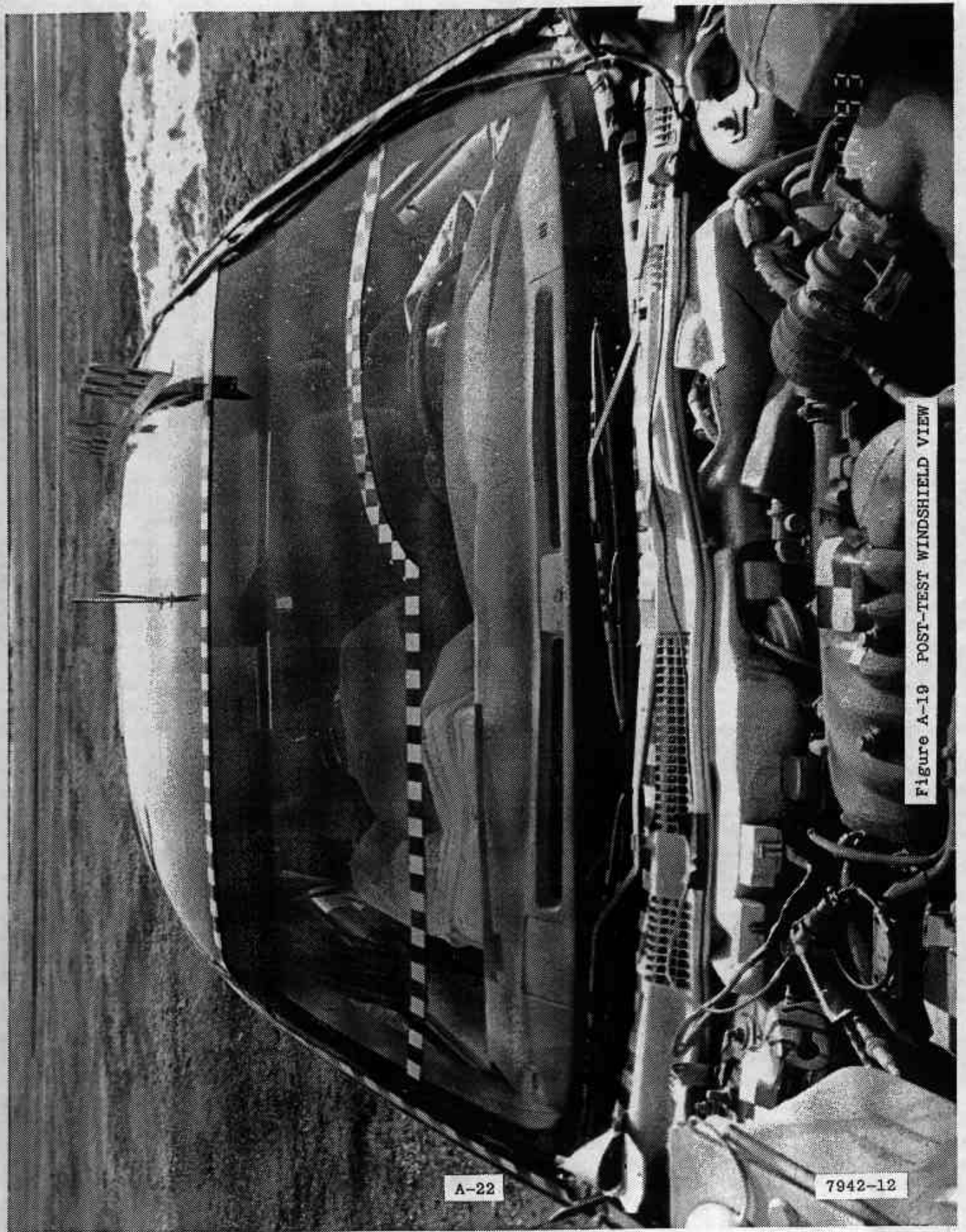


Figure A-19 POST-TEST WINDSHIELD VIEW

A-22

7942-12

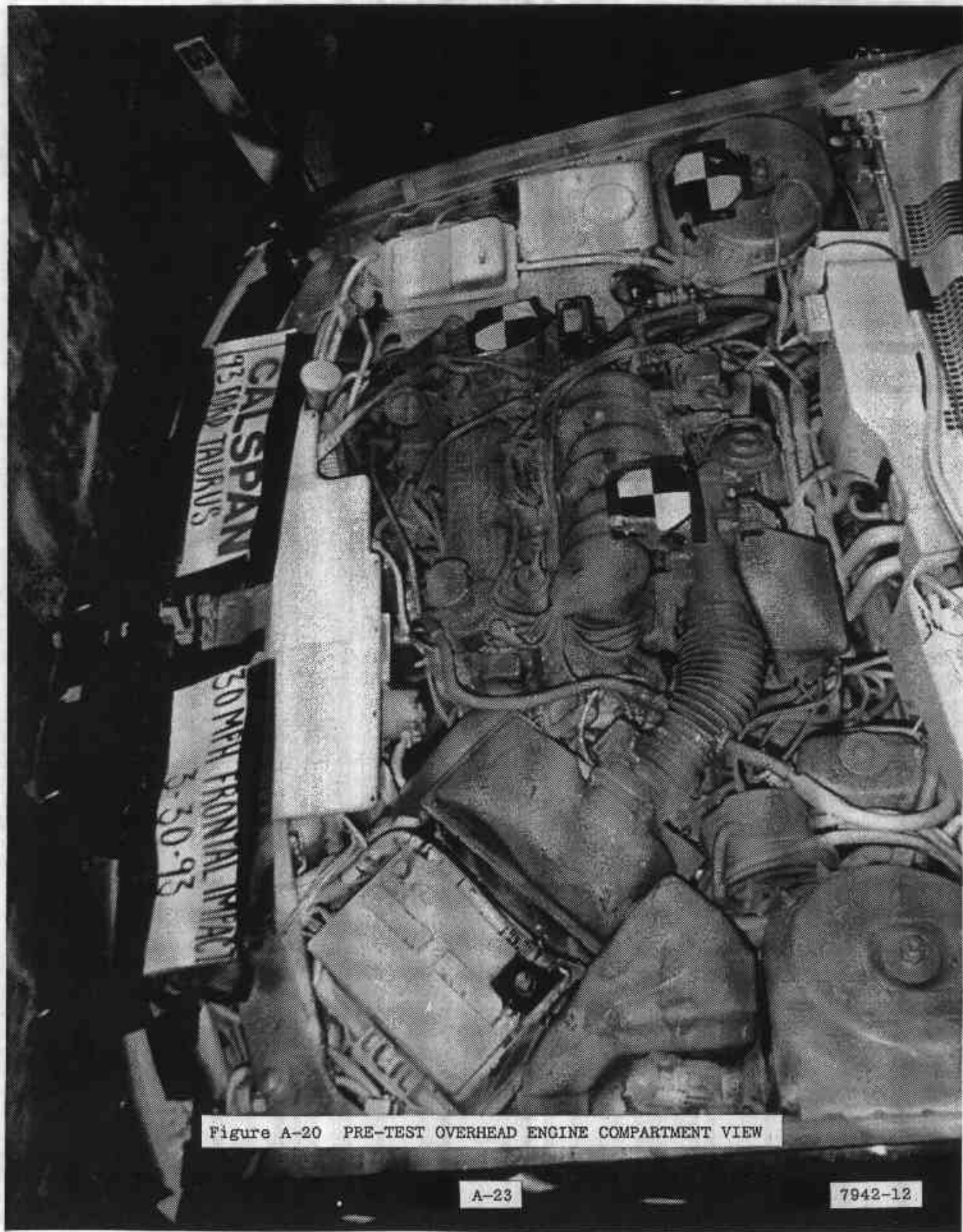


Figure A-20 PRE-TEST OVERHEAD ENGINE COMPARTMENT VIEW

A-23

7942-12

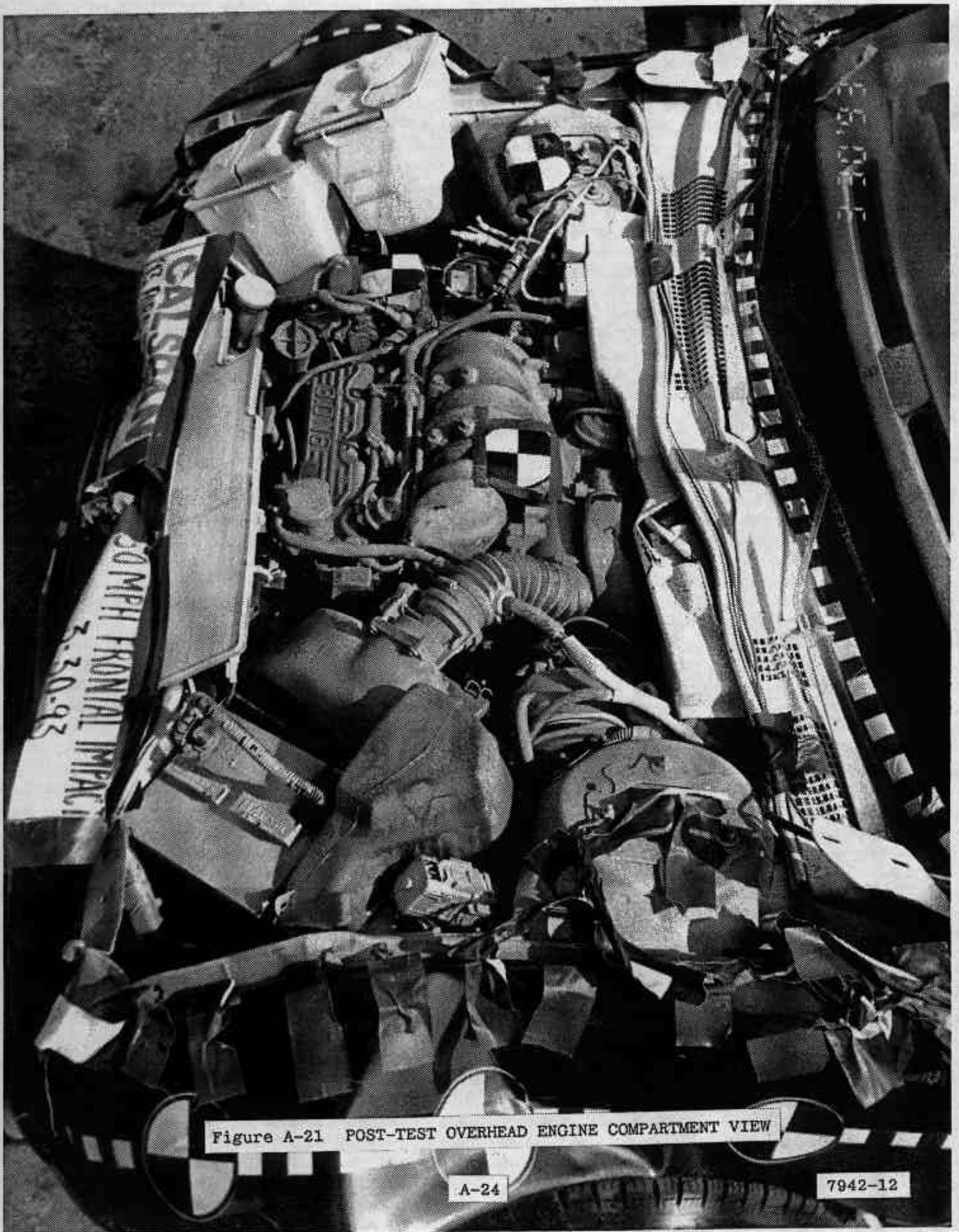


Figure A-21 POST-TEST OVERHEAD ENGINE COMPARTMENT VIEW

A-24

7942-12

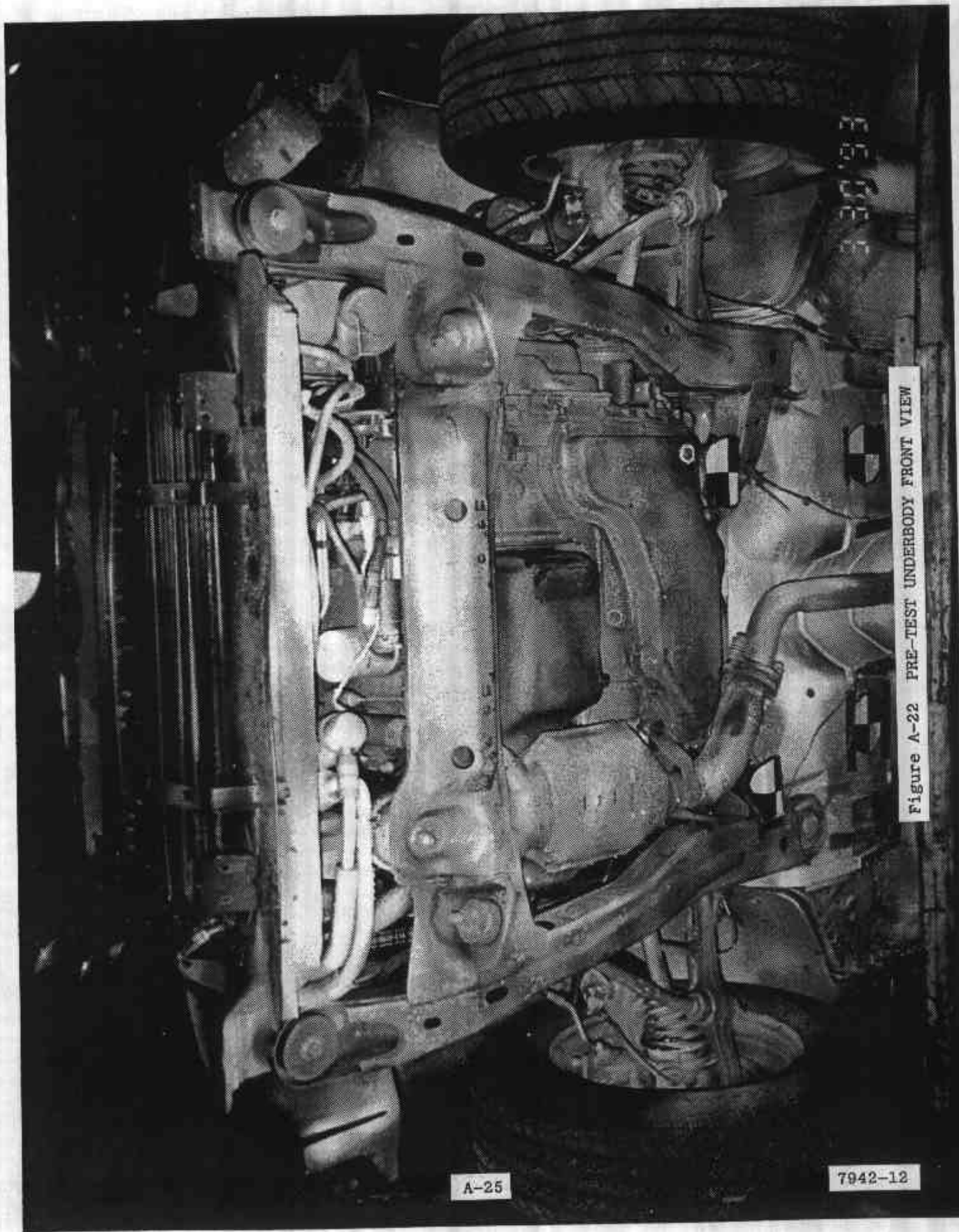


Figure A-22 PRE-TEST UNDERBODY FRONT VIEW

A-25

7942-12

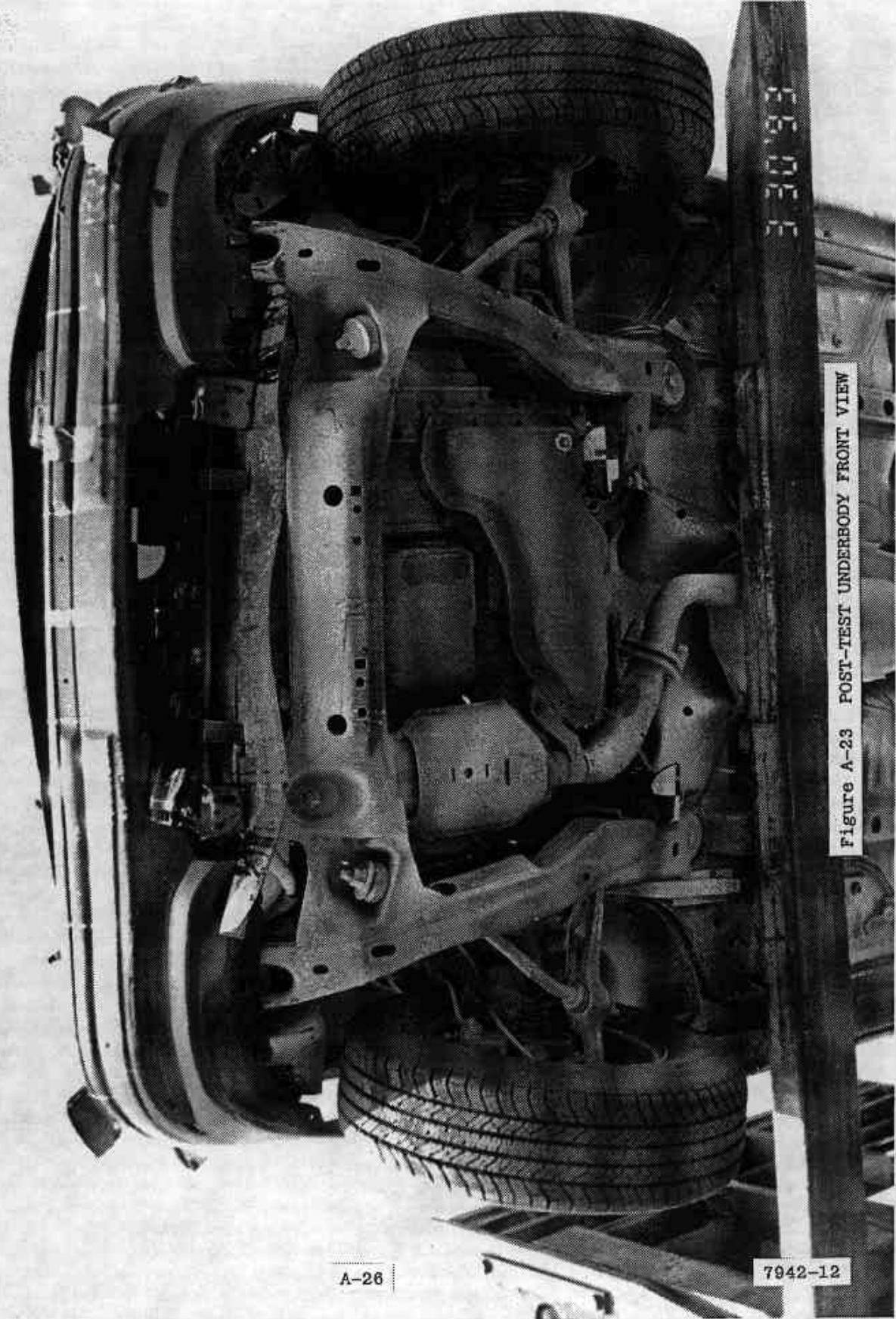
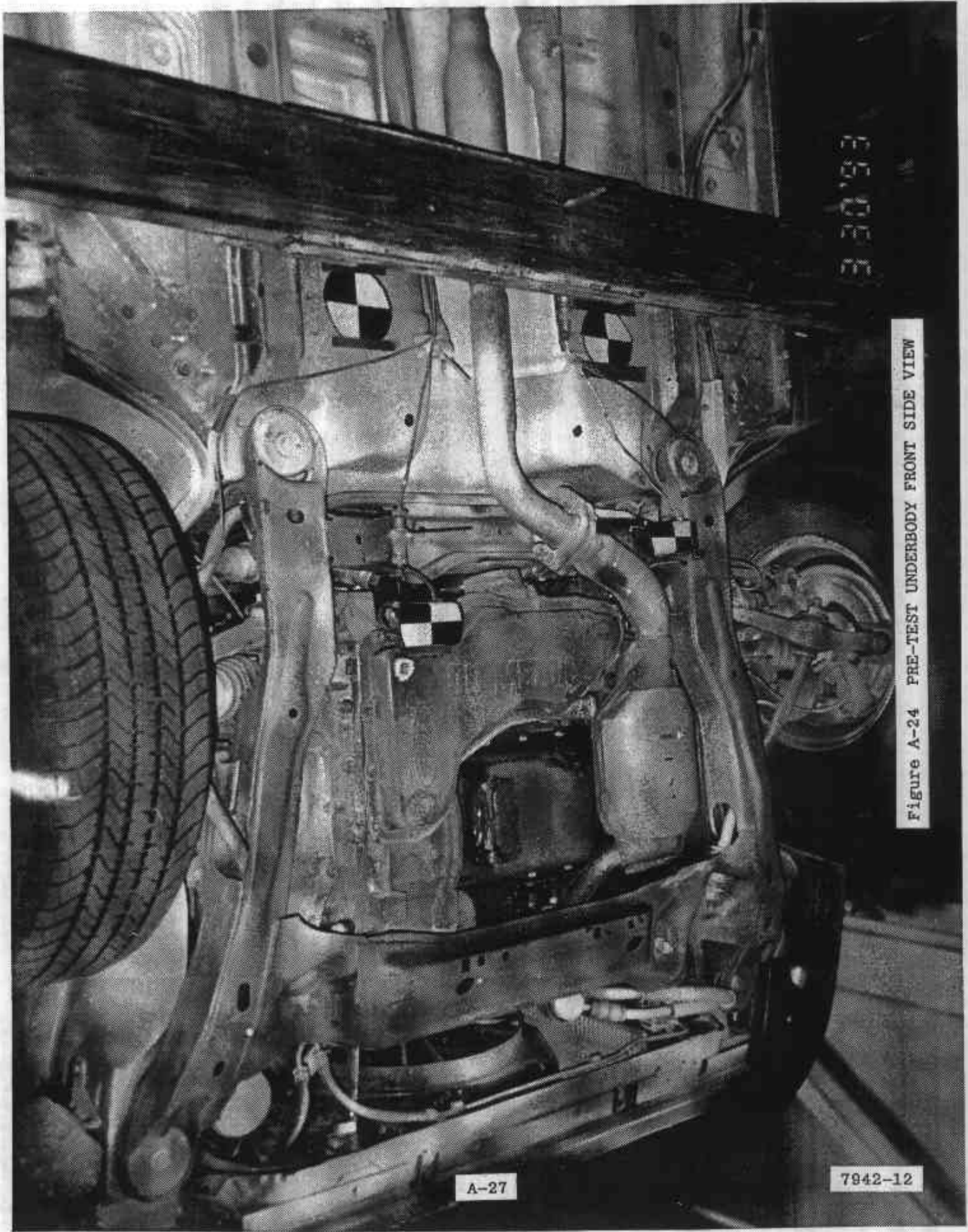


Figure A-23 POST-TEST UNDERBODY FRONT VIEW

A-26

7942-12

33033



9 30 '93

Figure A-24 PRE-TEST UNDERBODY FRONT SIDE VIEW

A-27

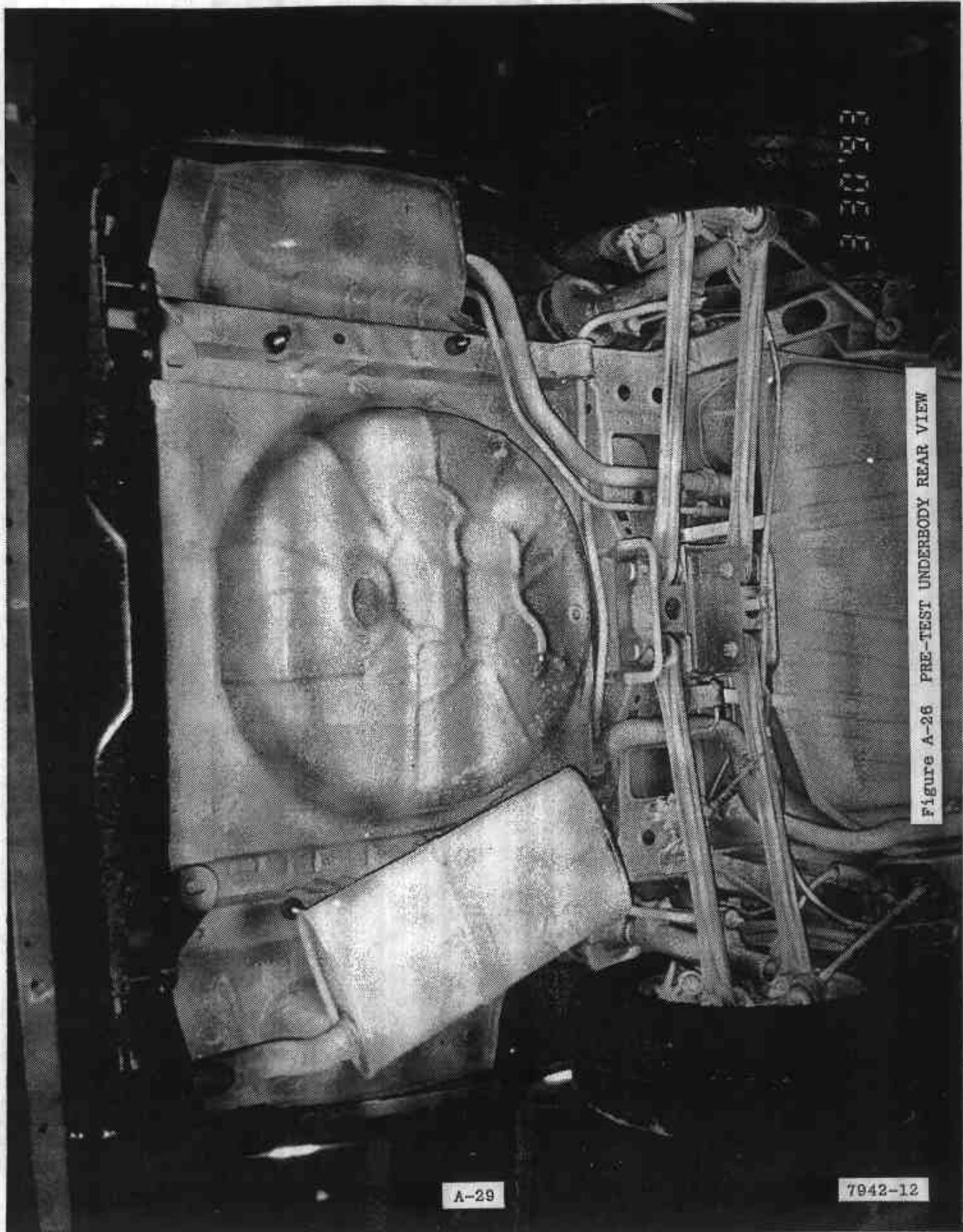
7942-12



Figure A-25 POST-TEST UNDERBODY FRONT SIDE VIEW

A-28

7942-12



A-29

7942-12

Figure A-26 PRE-TEST UNDERBODY REAR VIEW

E6.02E

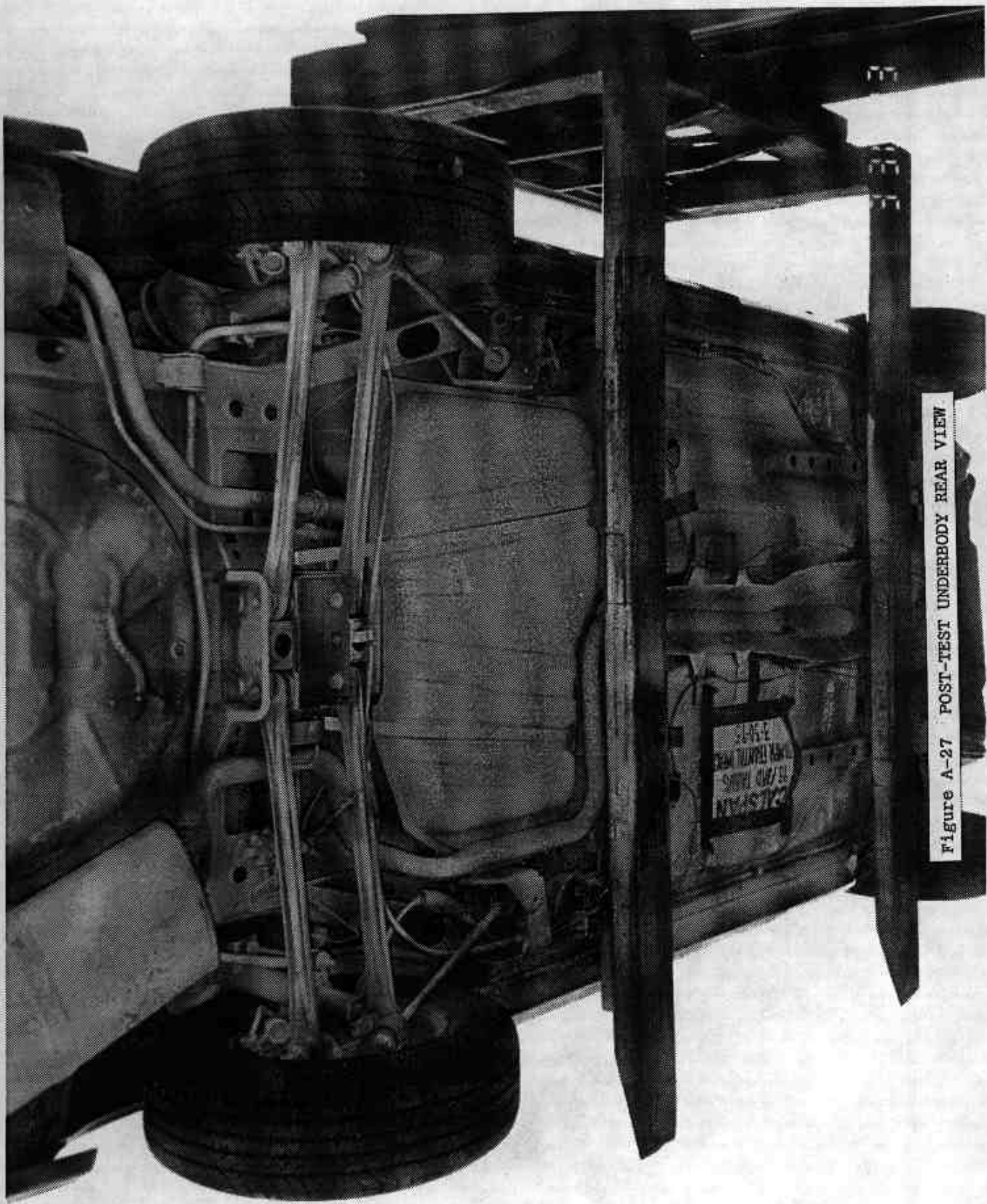


Figure A-27 POST-TEST UNDERBODY REAR VIEW

A-30

7942-12

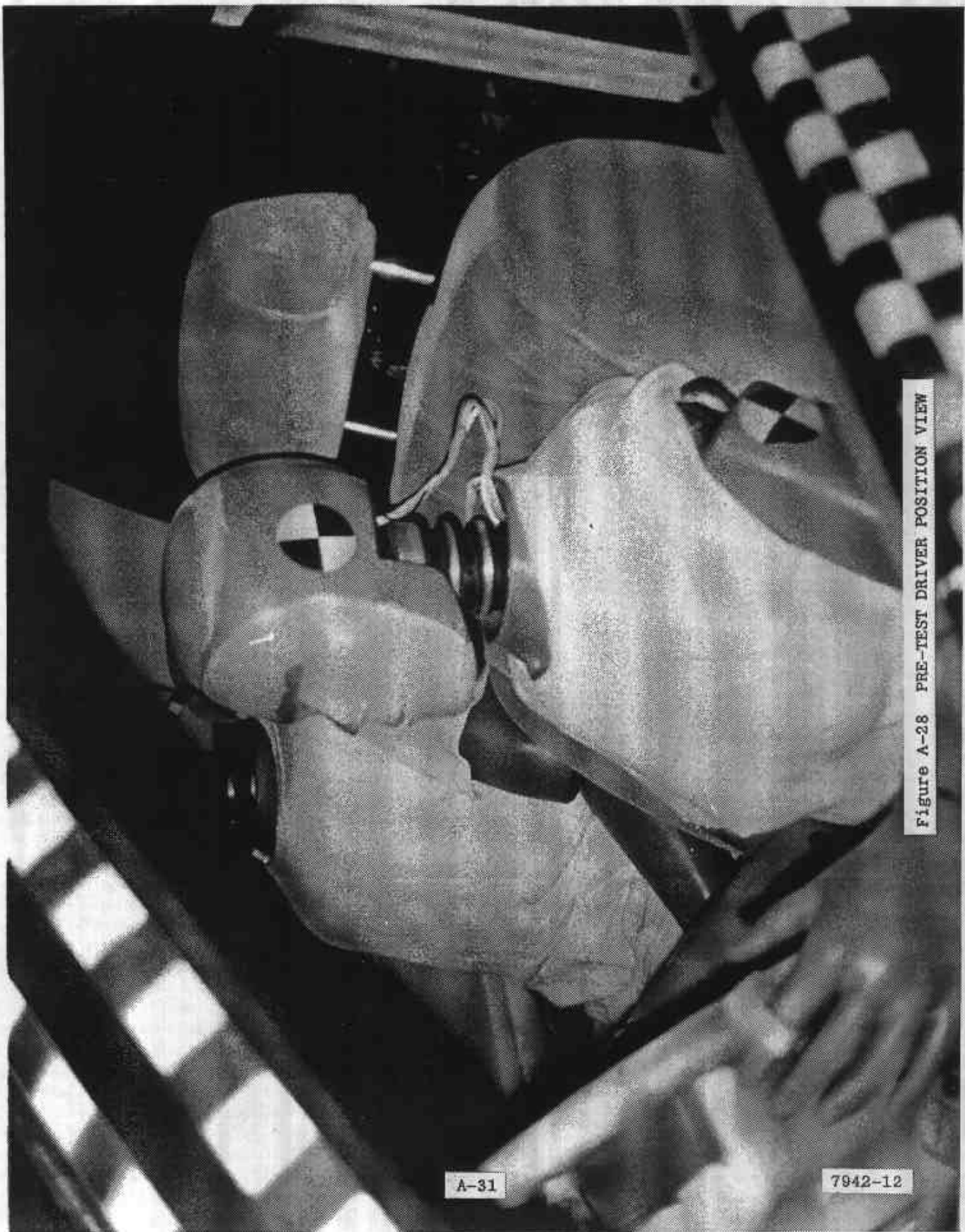


Figure A-28 PRE-TEST DRIVER POSITION VIEW

A-31

7942-12



Figure A-29 POST-TEST DRIVER POSITION VIEW

A-32

7942-12

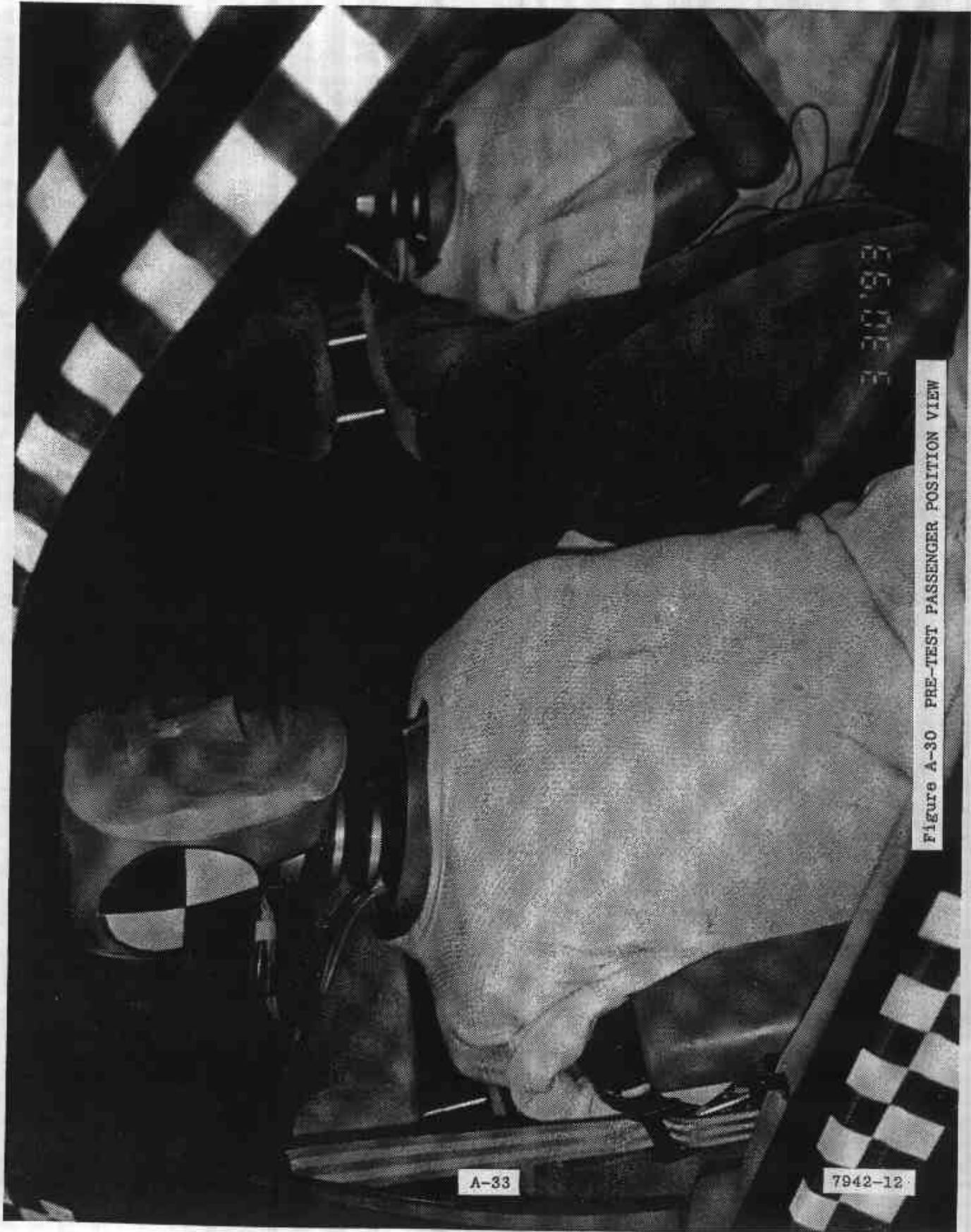


Figure A-30 PRE-TEST PASSENGER POSITION VIEW

A-33

7942-12



Figure A-31 POST-TEST PASSENGER POSITION VIEW

A-34

7942-12



Figure A-32 PRE-TEST DRIVER AND OCCUPANT COMPARTMENT VIEW

A-35

7942-12

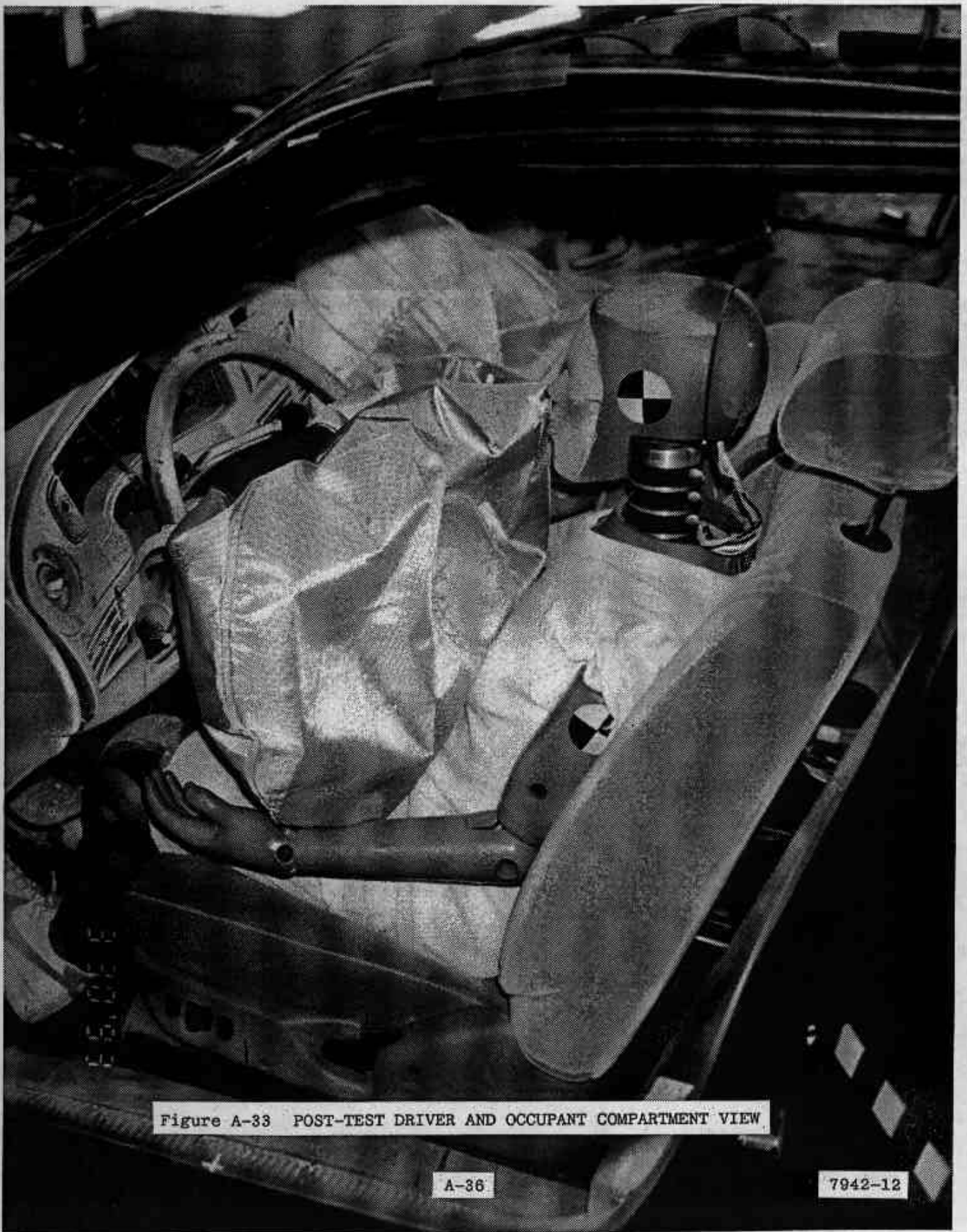


Figure A-33 POST-TEST DRIVER AND OCCUPANT COMPARTMENT VIEW

A-36

7942-12



Figure A-34 PRE-TEST PASSENGER AND OCCUPANT COMPARTMENT VIEW

A-37

7942-12



Figure A-35 POST-TEST PASSENGER AND OCCUPANT COMPARTMENT VIEW

A-38

7942-12

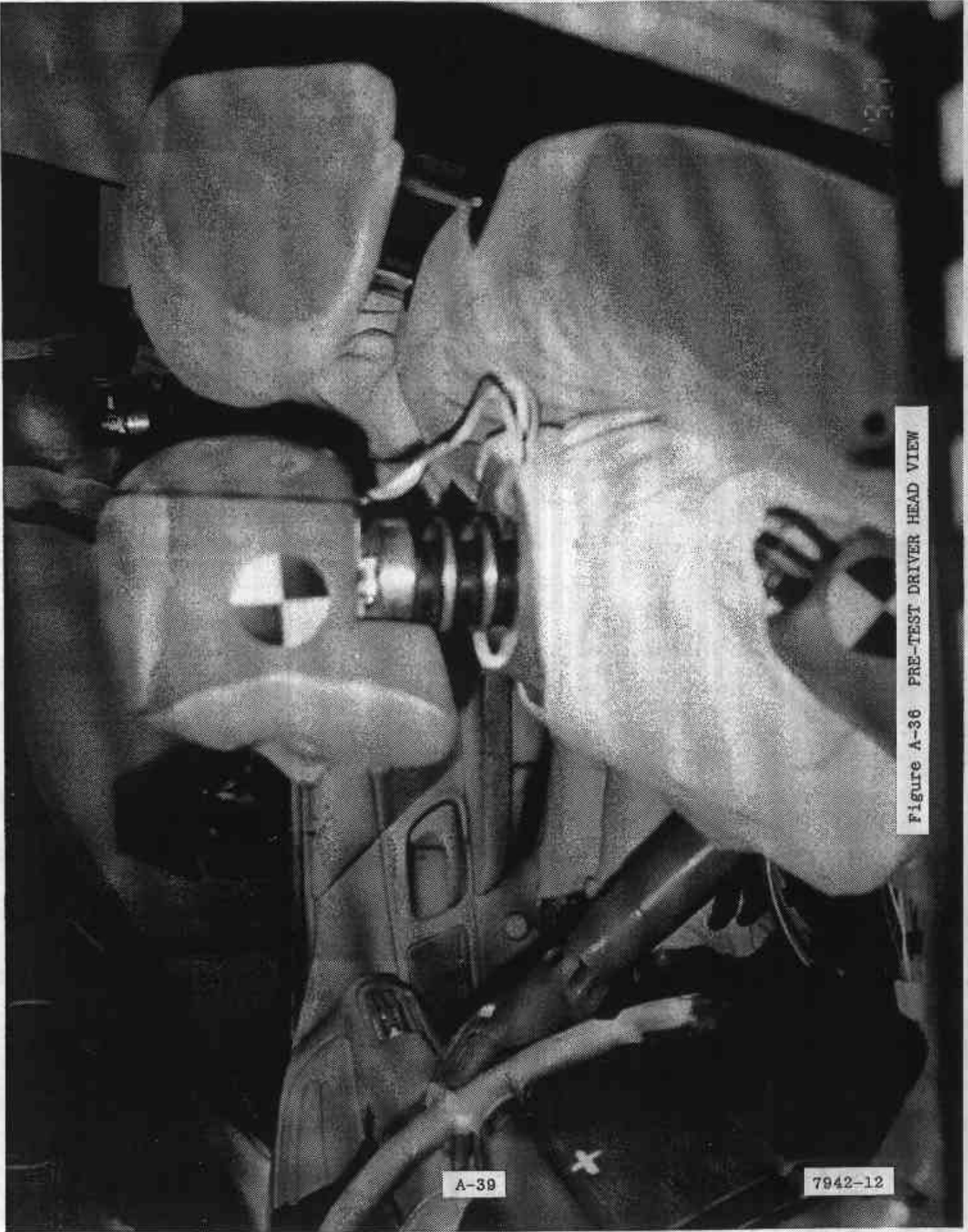


Figure A-36 PRE-TEST DRIVER HEAD VIEW

A-39

7942-12



Figure A-37 POST-TEST DRIVER HEAD VIEW

A-40

7942-12



Figure A-38 PRE-TEST PASSENGER HEAD VIEW

A-41

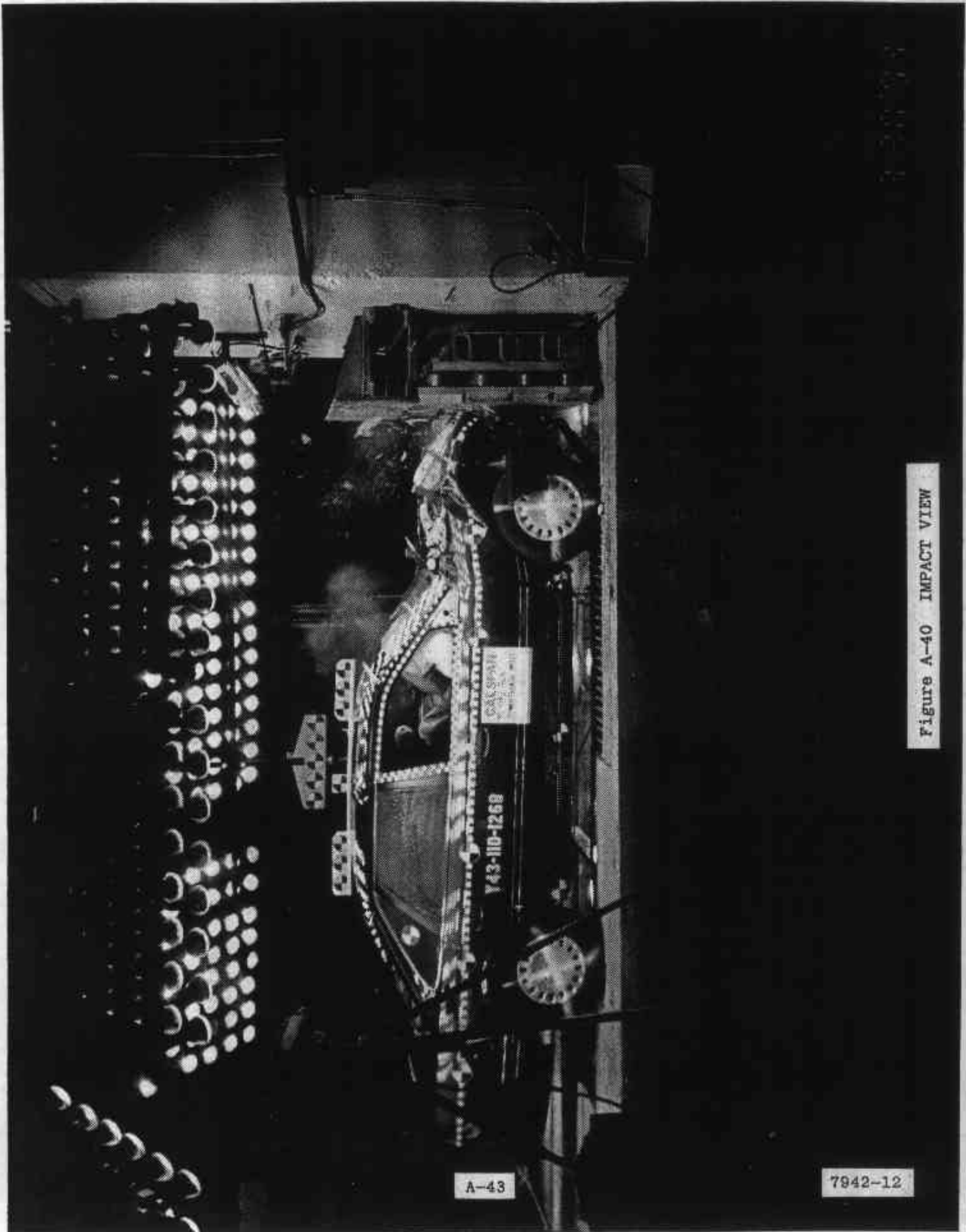
7942-12



Figure A-39 POST-TEST PASSENGER HEAD VIEW

A-42

7942-12



A-43

7942-12

Figure A-40 IMPACT VIEW



CALSPAN
17150 TULSA
TULSA, OKLAHOMA

Y43-110-1268

Y43-110-1268

Figure A-41 ROLLOVER VIEW

A-44

7942-12

Appendix B

VEHICLE, LOAD CELL BARRIER AND DUMMY RESPONSE DATA

TEST NO. Y43-11-1268

VEHICLE DATA

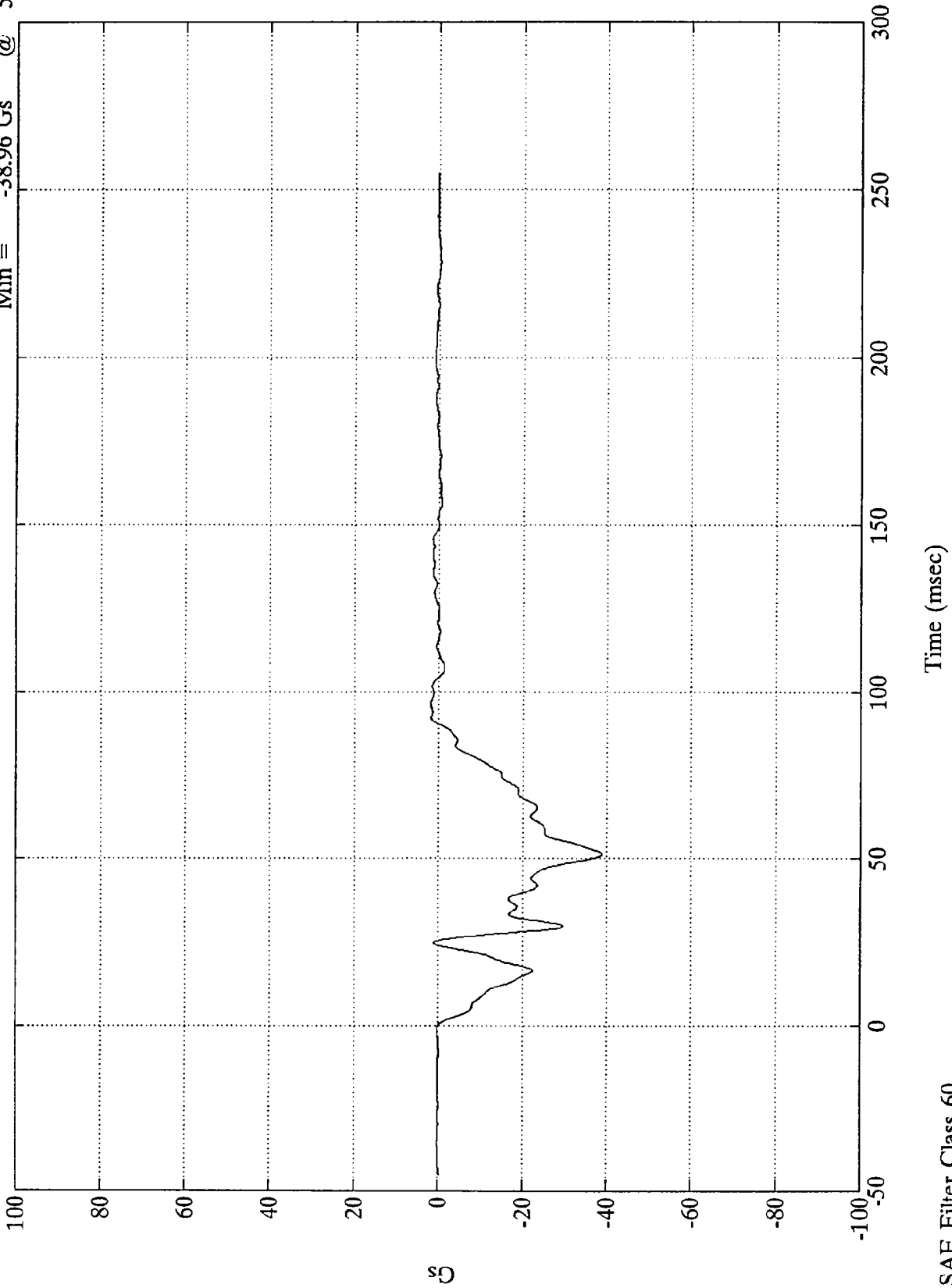
FILTER CHANNEL CLASS

60

VTV TEST 11

Lt Rear Seat X Mem. (X)

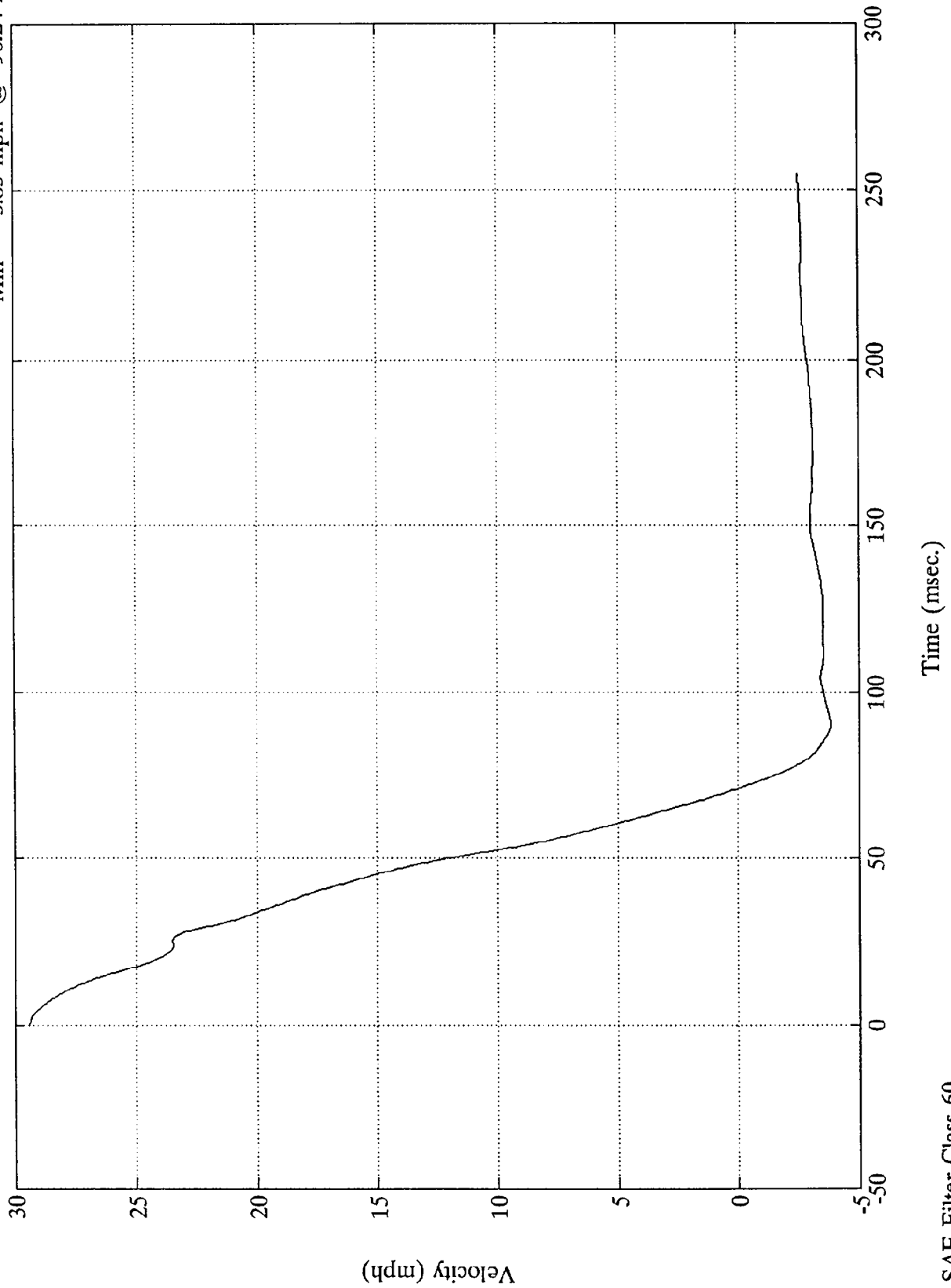
Max = 1.79 Gs @ 96.12 msec
Min = -38.96 Gs @ 51.24 msec



VTV TEST 11

Lt Rear Seat X Mem. (X)

Max = 29.40 mph @ 0.48 msec
Min = -3.83 mph @ 90.24 msec

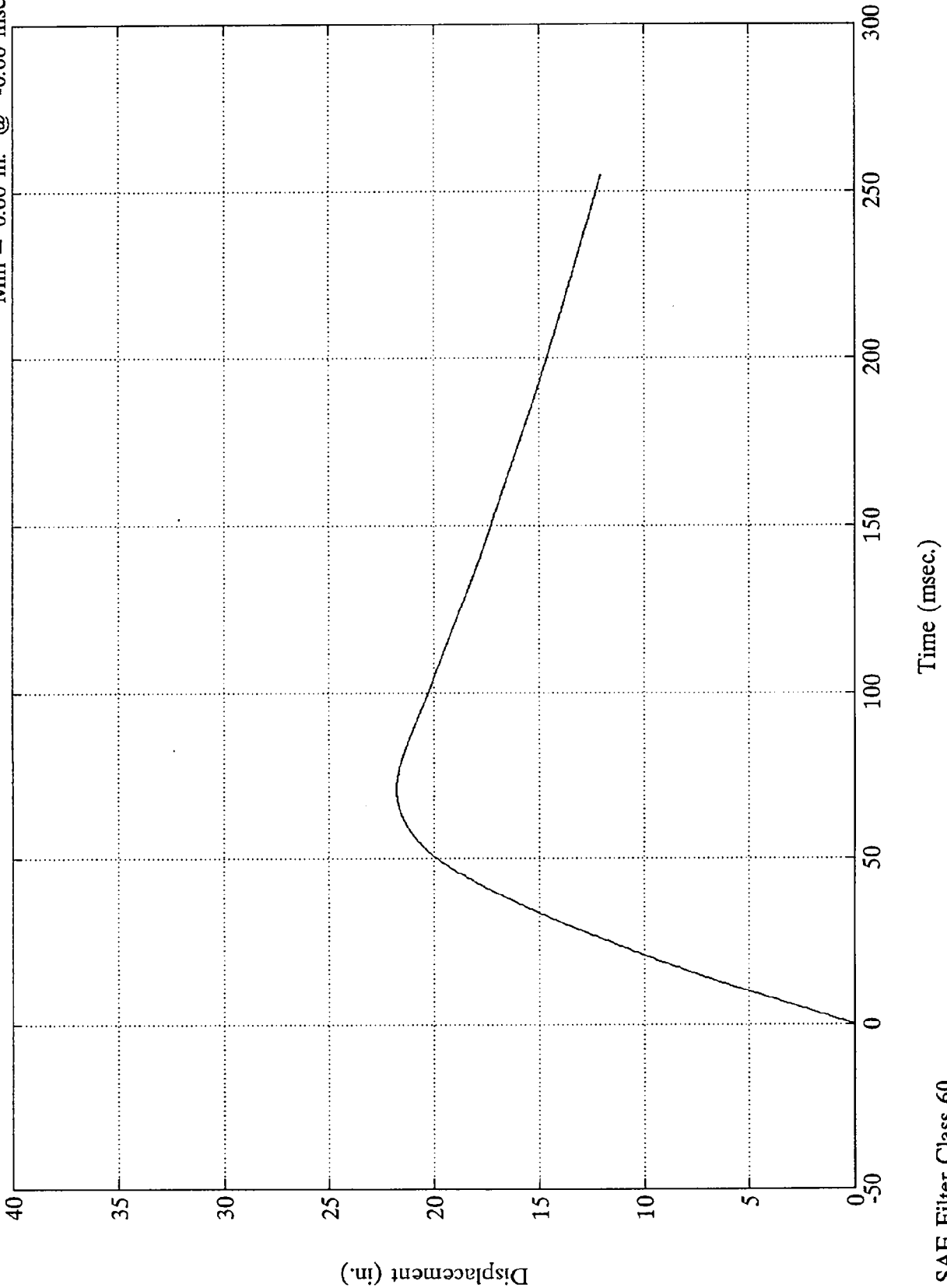


SAE Filter Class 60

VTV TEST 11

Lt Rear Seat X Mem. (X)

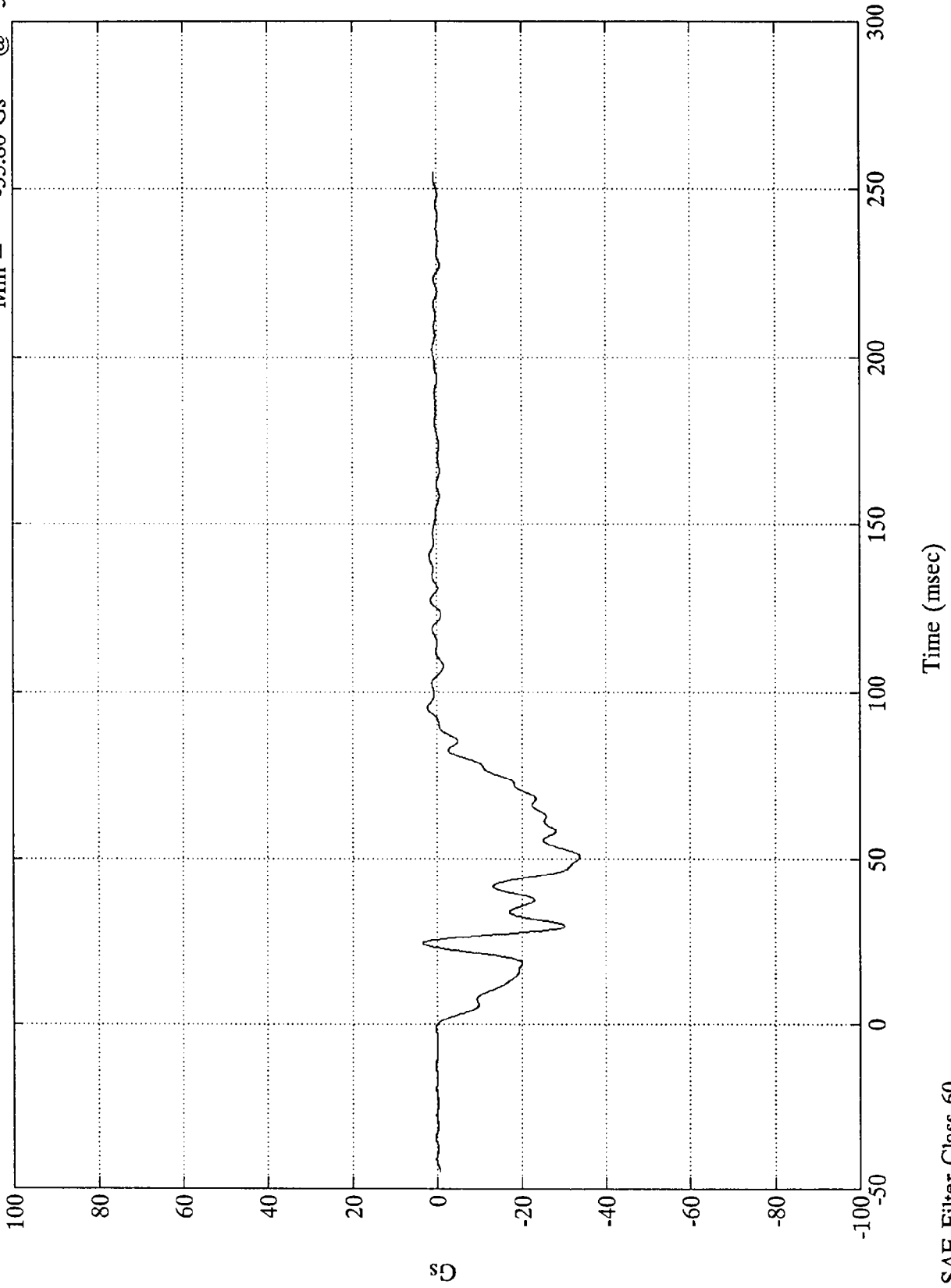
Max = 21.79 in. @ 72.00 msec
Min = 0.00 in. @ -0.00 msec



VTV TEST 11

Rt Rear Seat X Mem. (X)

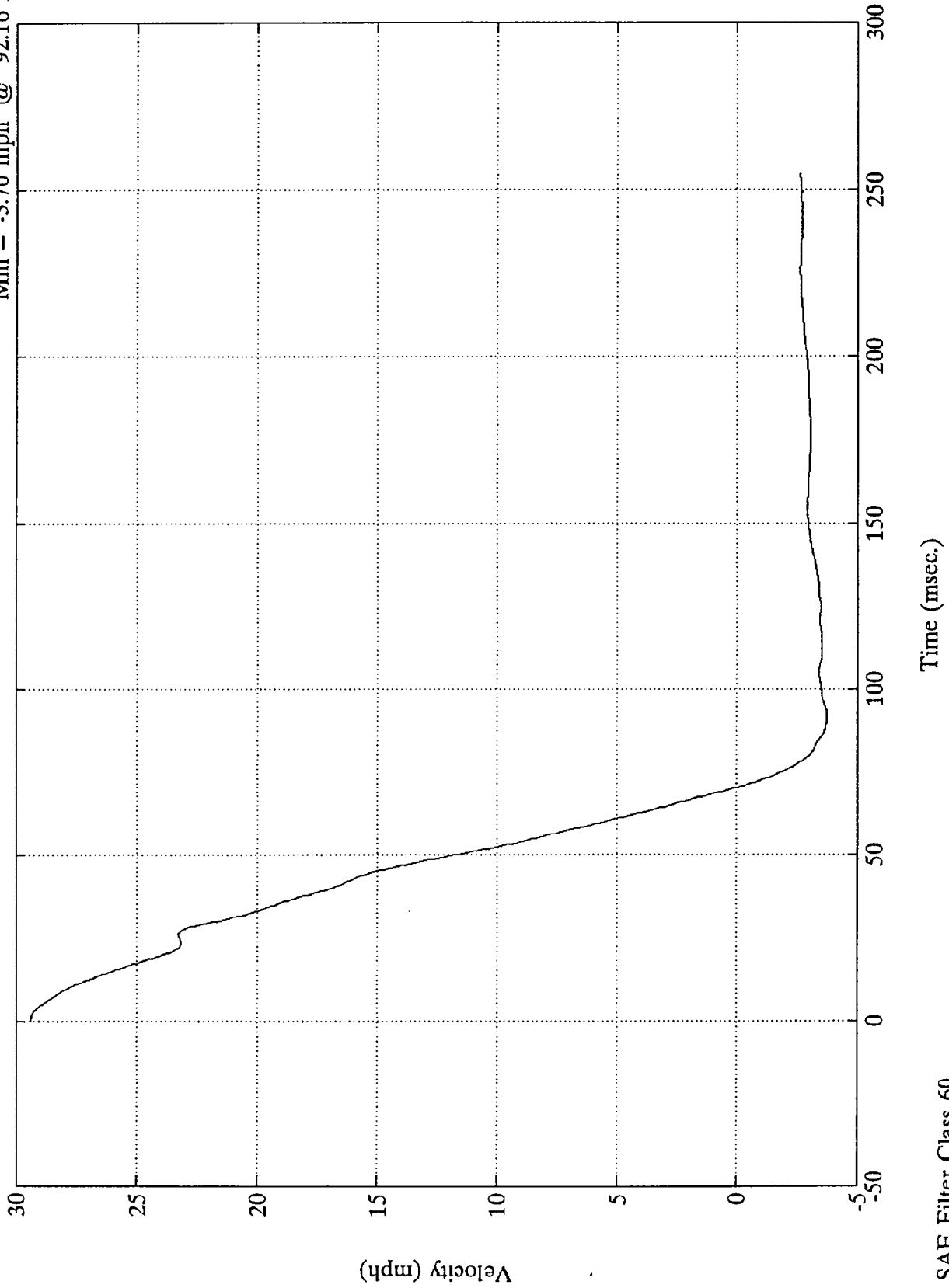
Max = 3.49 Gs @ 24.71 msec
Min = -33.80 Gs @ 50.64 msec



VTV TEST 11

Rt Rear Seat X Mem. (X)

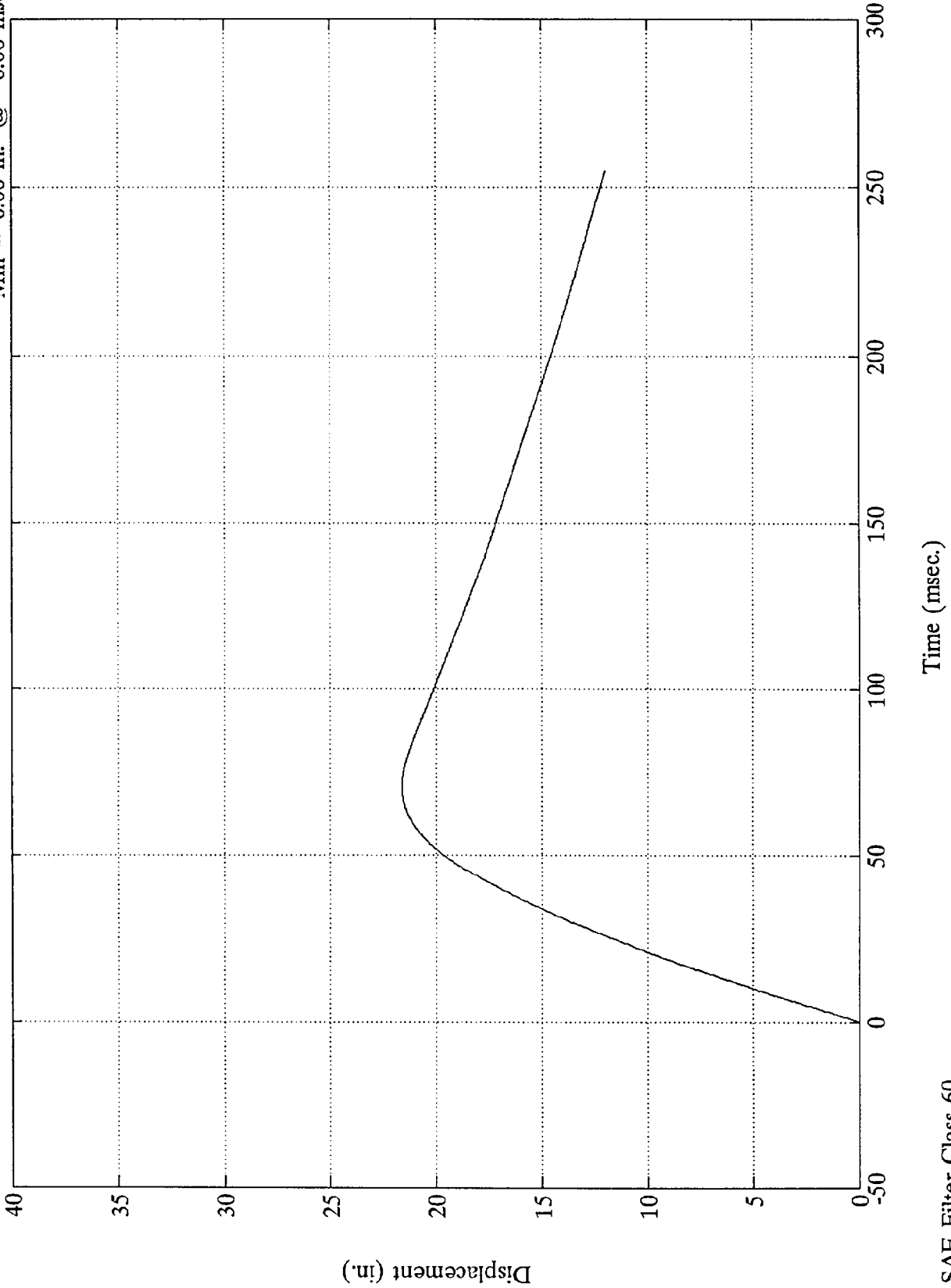
Max = 29.40 mph @ 0.48 msec
Min = -3.70 mph @ 92.16 msec



VTV TEST 11

Rt Rear Seat X Mem. (X)

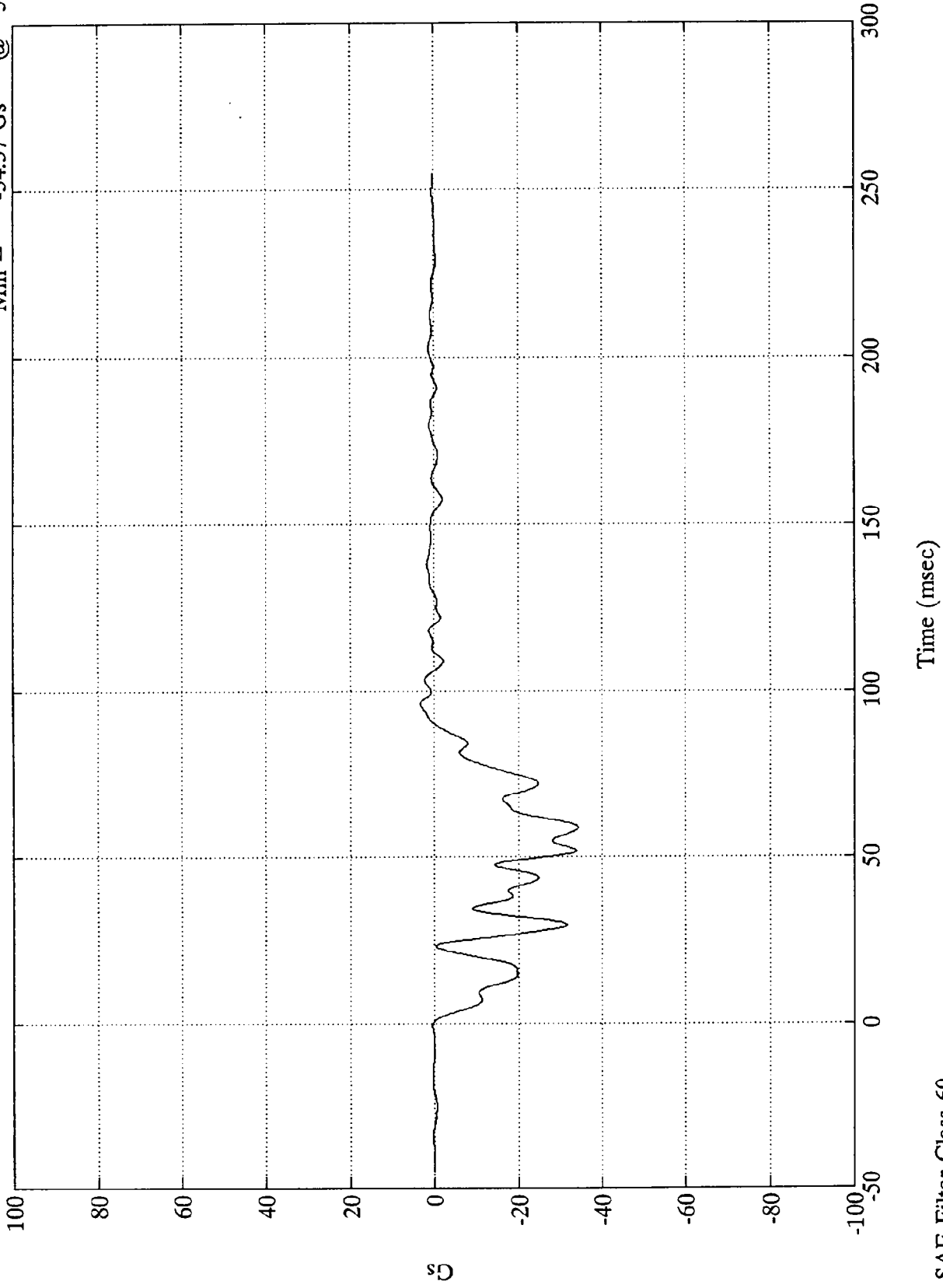
Max = 21.63 in. @ 71.04 msec
Min = 0.00 in. @ -0.00 msec



VTV TEST 11

Rear Seat C/L X Mem. (X)

Max = 3.31 Gs @ 95.88 msec
Min = -34.37 Gs @ 58.68 msec



B-9

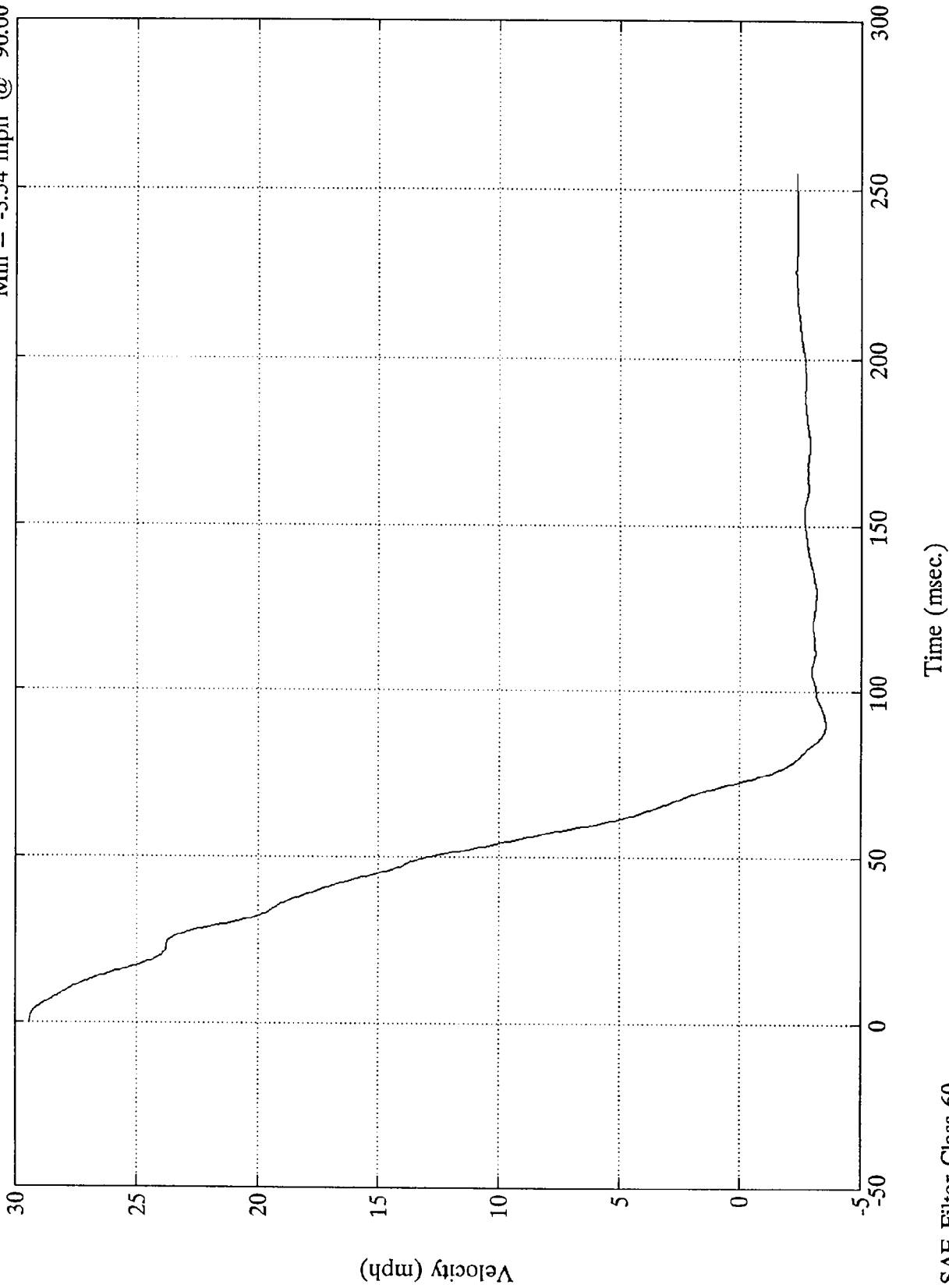
7942-12

SAE Filter Class 60

VTV TEST 11

Rear Seat C/L X Mem. (X)

Max = 29.40 mph @ 1.20 msec
Min = -3.54 mph @ 90.00 msec

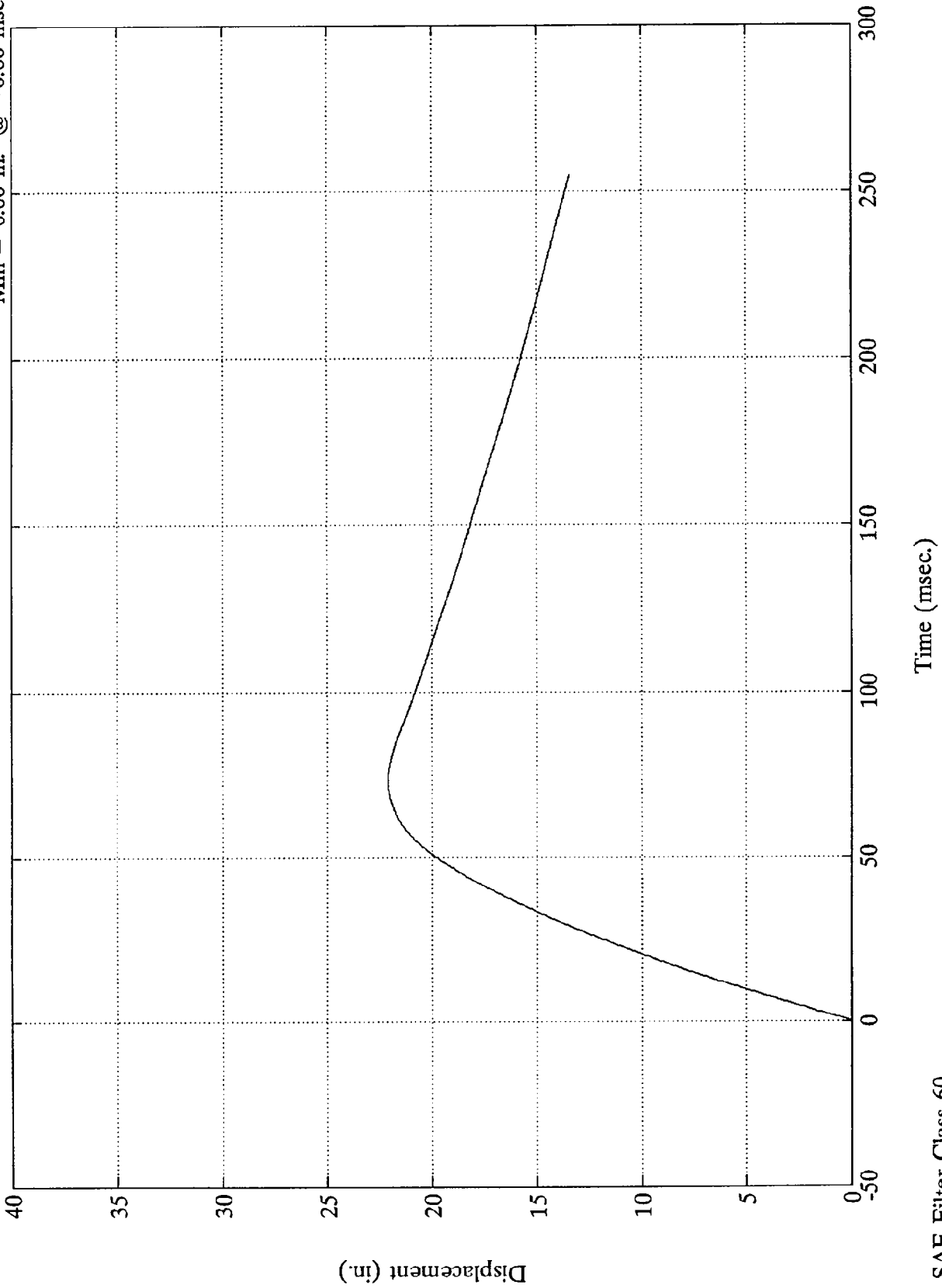


SAE Filter Class 60

VTV TEST 11

Rear Seat C/L X Mem. (X)

Max = 22.12 in. @ 73.68 msec
Min = 0.00 in. @ -0.00 msec



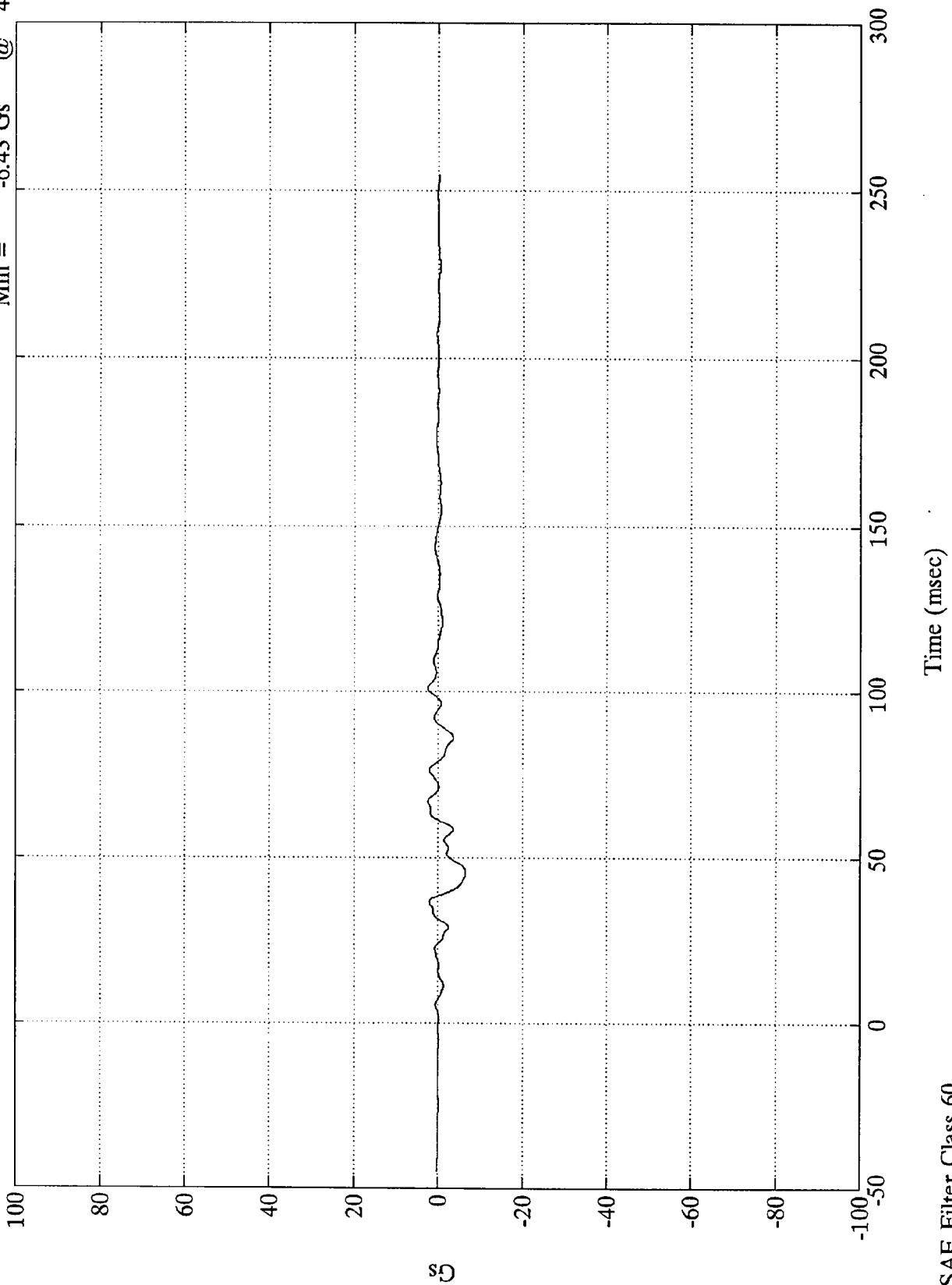
11-B

7942-12

SAE Filter Class 60

VTV TEST 11

Rear Seat C/L X Mem. (Y)
Max = 2.59 Gs @ 100.91 msec
Min = -6.43 Gs @ 45.96 msec



B-12

7942-12

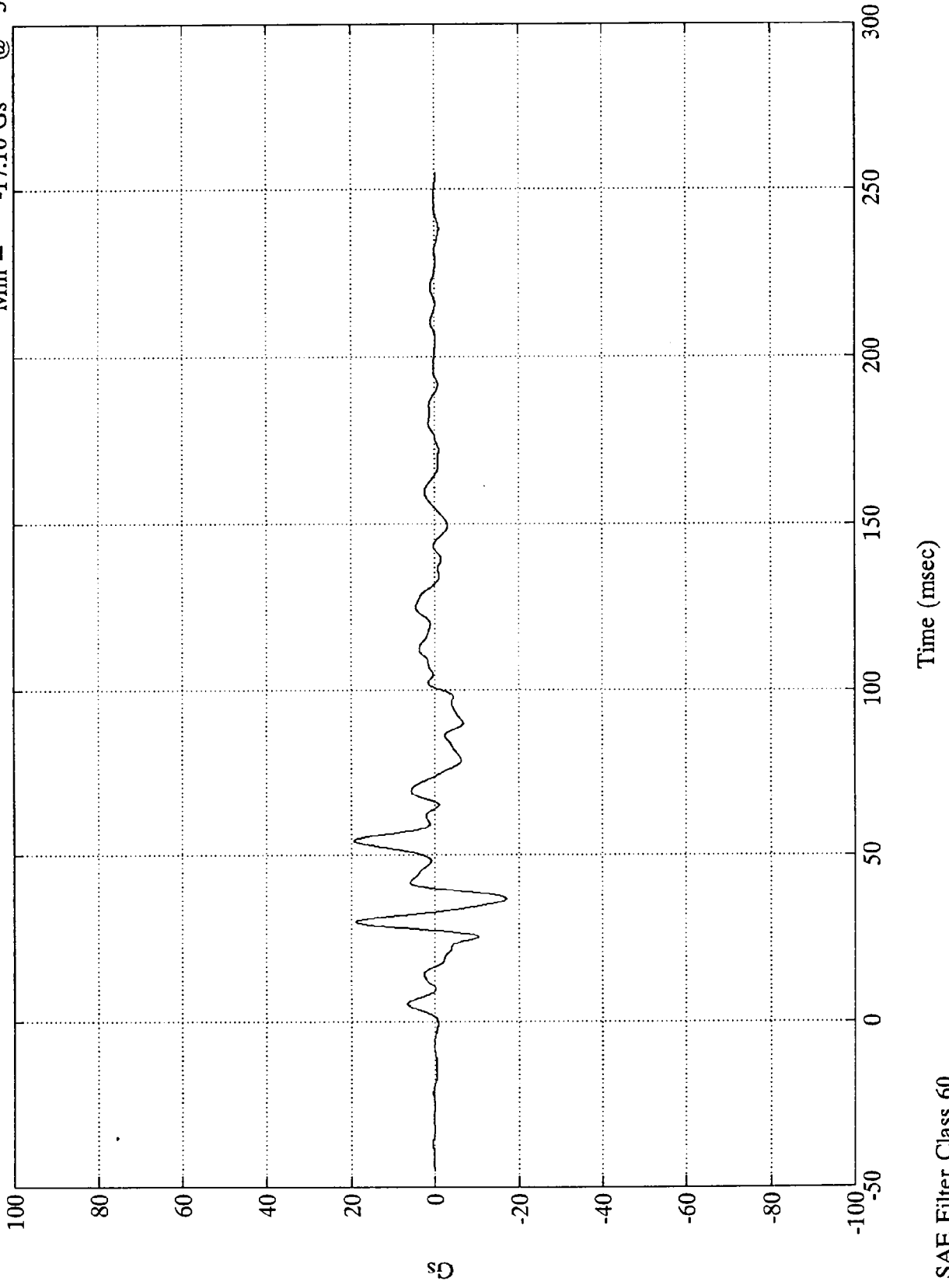
SAE Filter Class 60

Time (msec)

VTV TEST 11

Rear Seat C/L X Mem. (Z)

Max = 19.25 Gs @ 54.23 msec
Min = -17.10 Gs @ 36.84 msec



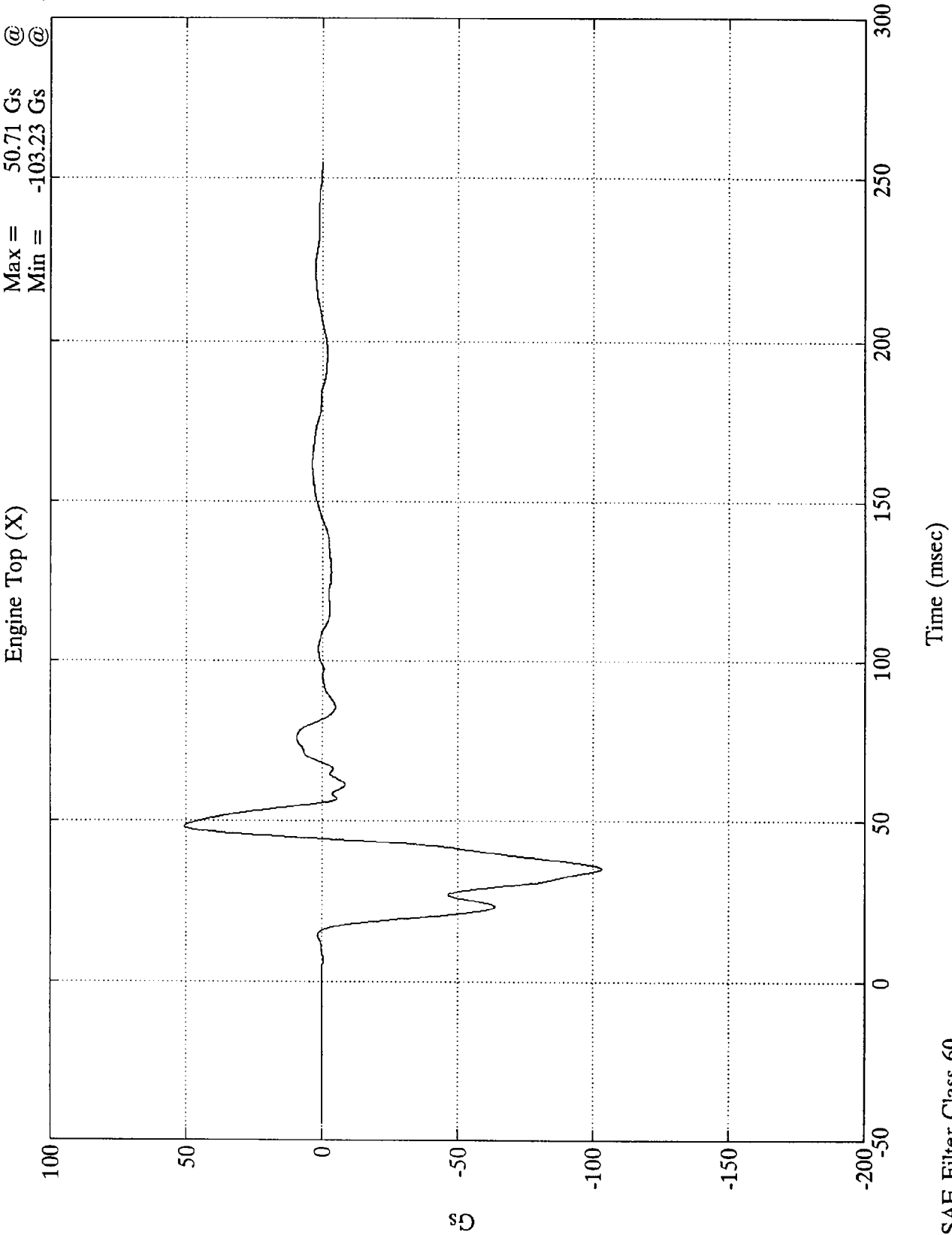
B-13

7942-12

SAE Filter Class 60

VTV TEST 11

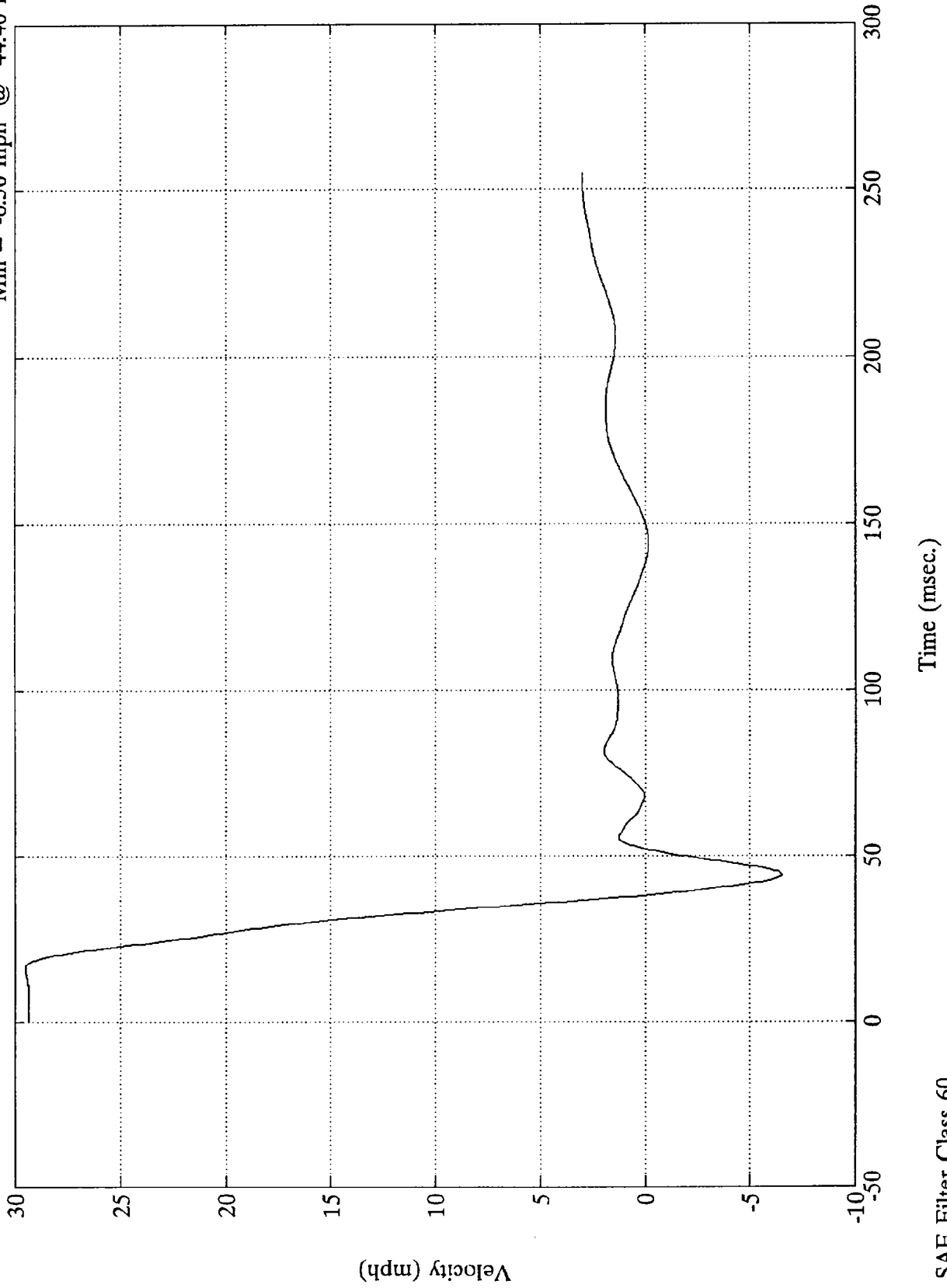
Max = 50.71 Gs @ 48.24 msec
Min = -103.23 Gs @ 34.91 msec



VTV TEST 11

Engine Top (X)

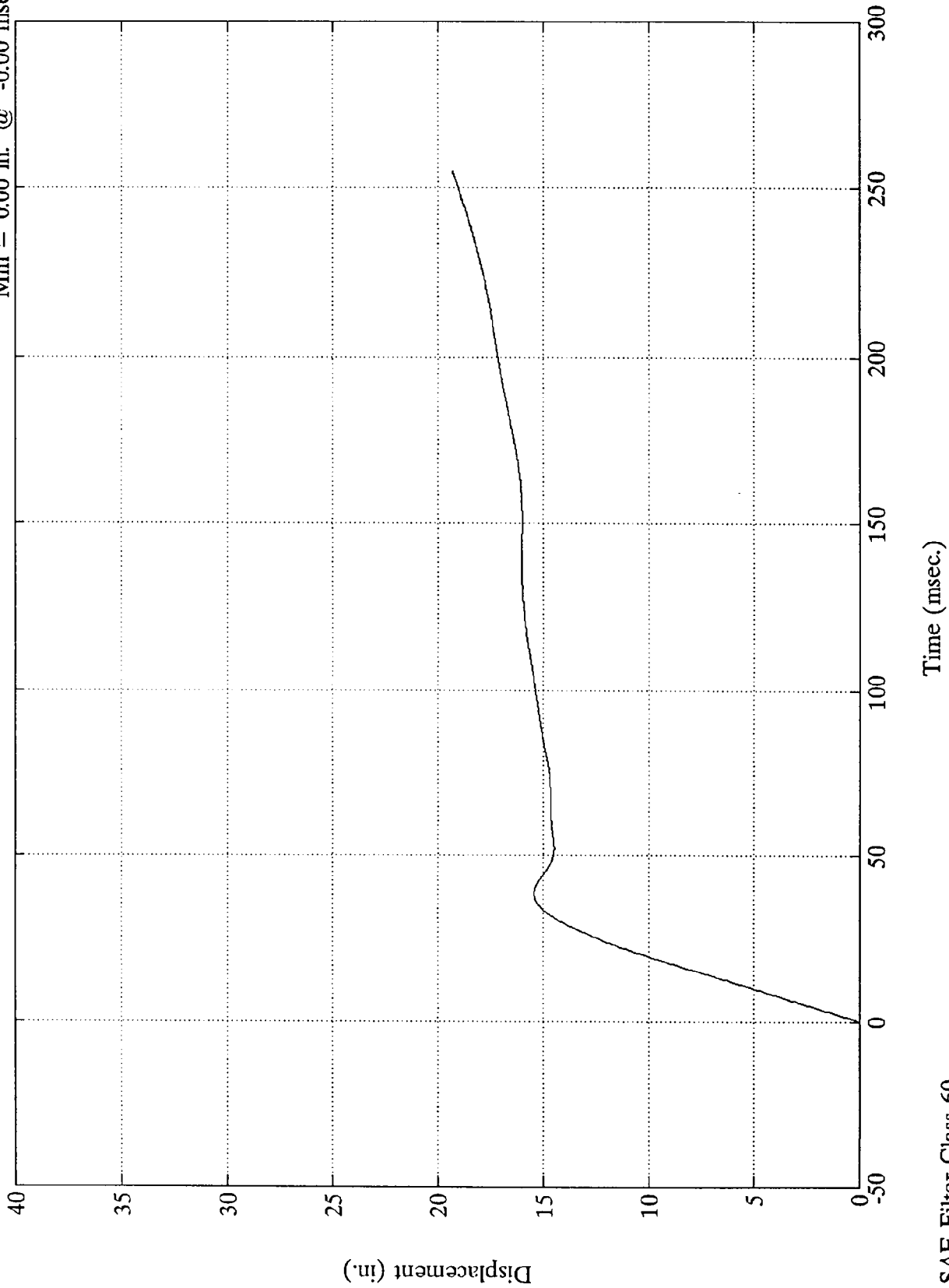
Max = 29.53 mph @ 16.32 msec
Min = -6.50 mph @ 44.40 msec



VTV TEST 11

Max = 19.31 in. @ 254.88 msec
Min = 0.00 in. @ -0.00 msec

Engine Top (X)

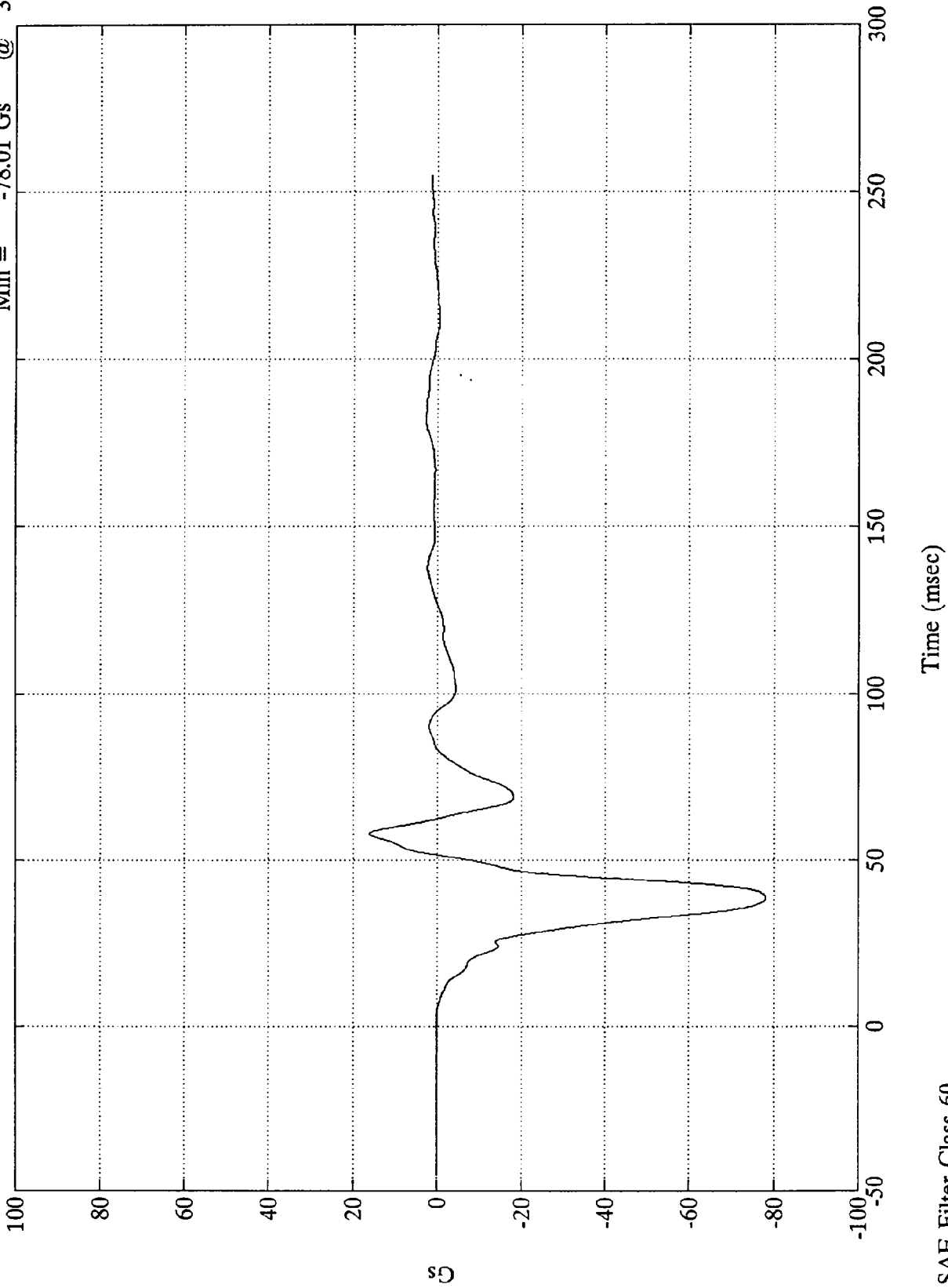


SAE Filter Class 60

VTV TEST 11

Engine Bottom (X)

Max = 16.14 Gs @ 57.84 msec
Min = -78.01 Gs @ 38.27 msec



B-17

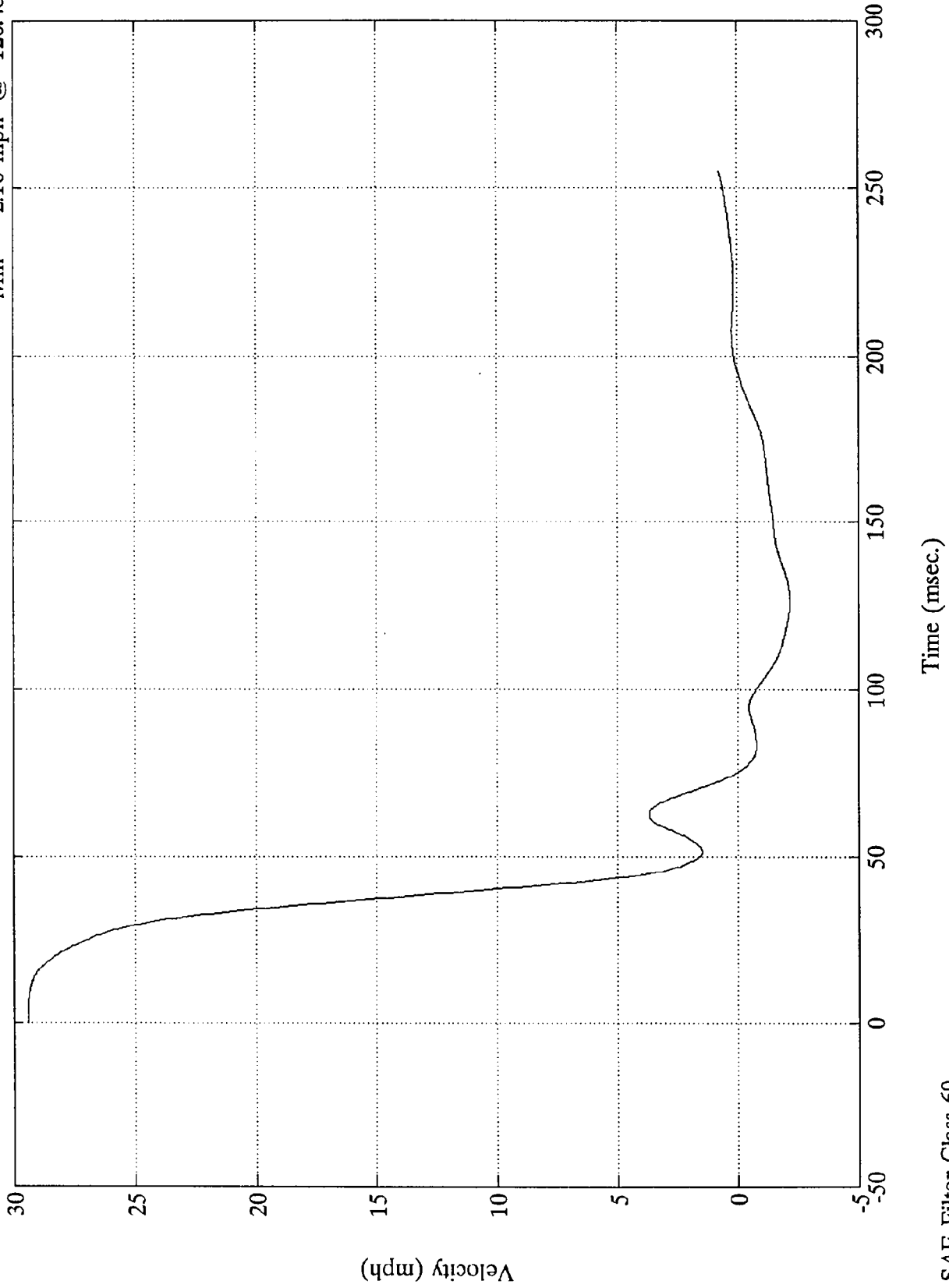
7942-12

SAE Filter Class 60

VTV TEST 11

Engine Bottom (X)

Max = 29.41 mph @ 5.04 msec
Min = -2.16 mph @ 126.48 msec

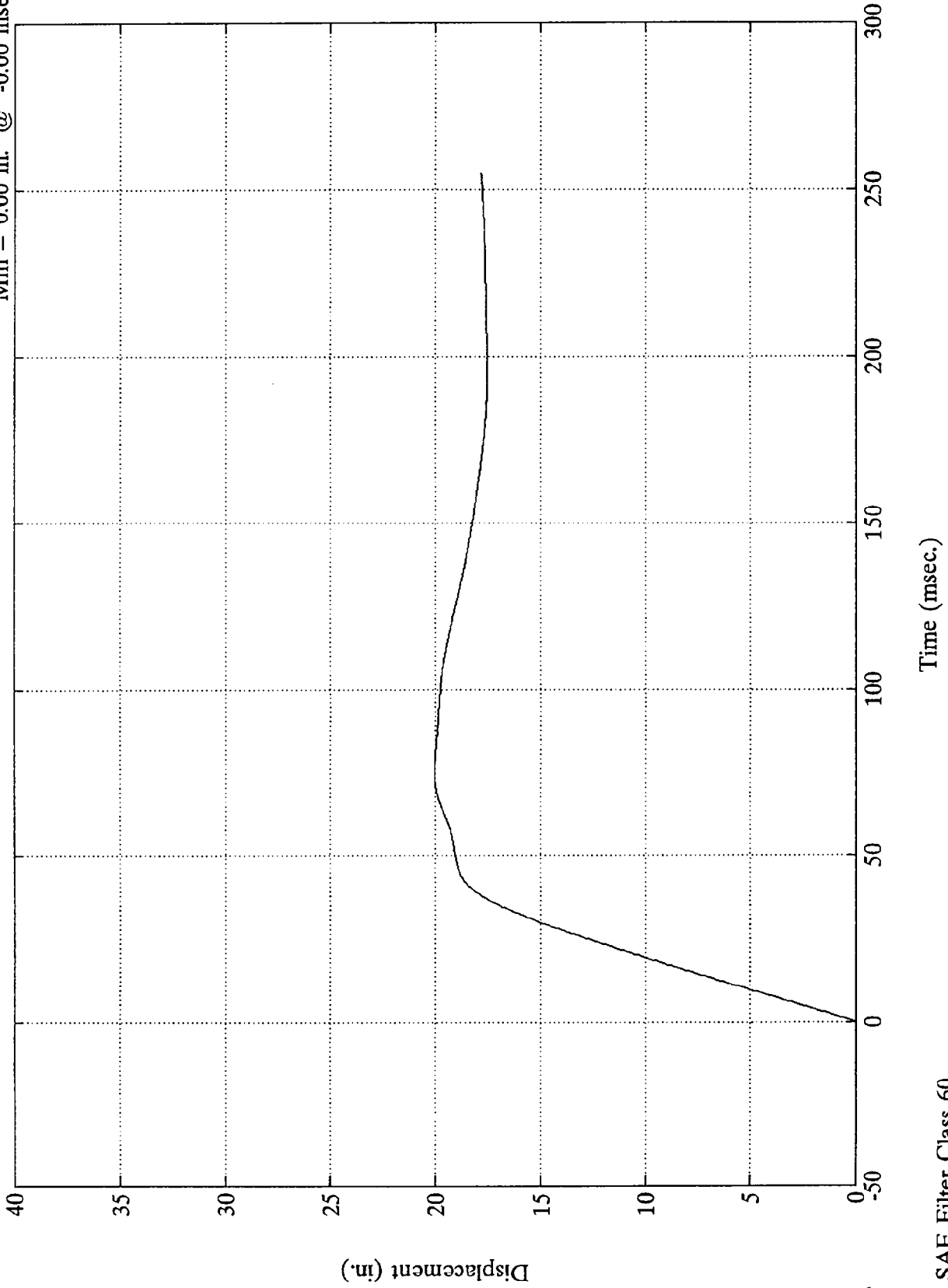


SAE Filter Class 60

VTV TEST 11

Engine Bottom (X)

Max = 20.04 in. @ 77.28 msec
Min = 0.00 in. @ -0.00 msec



-19-B

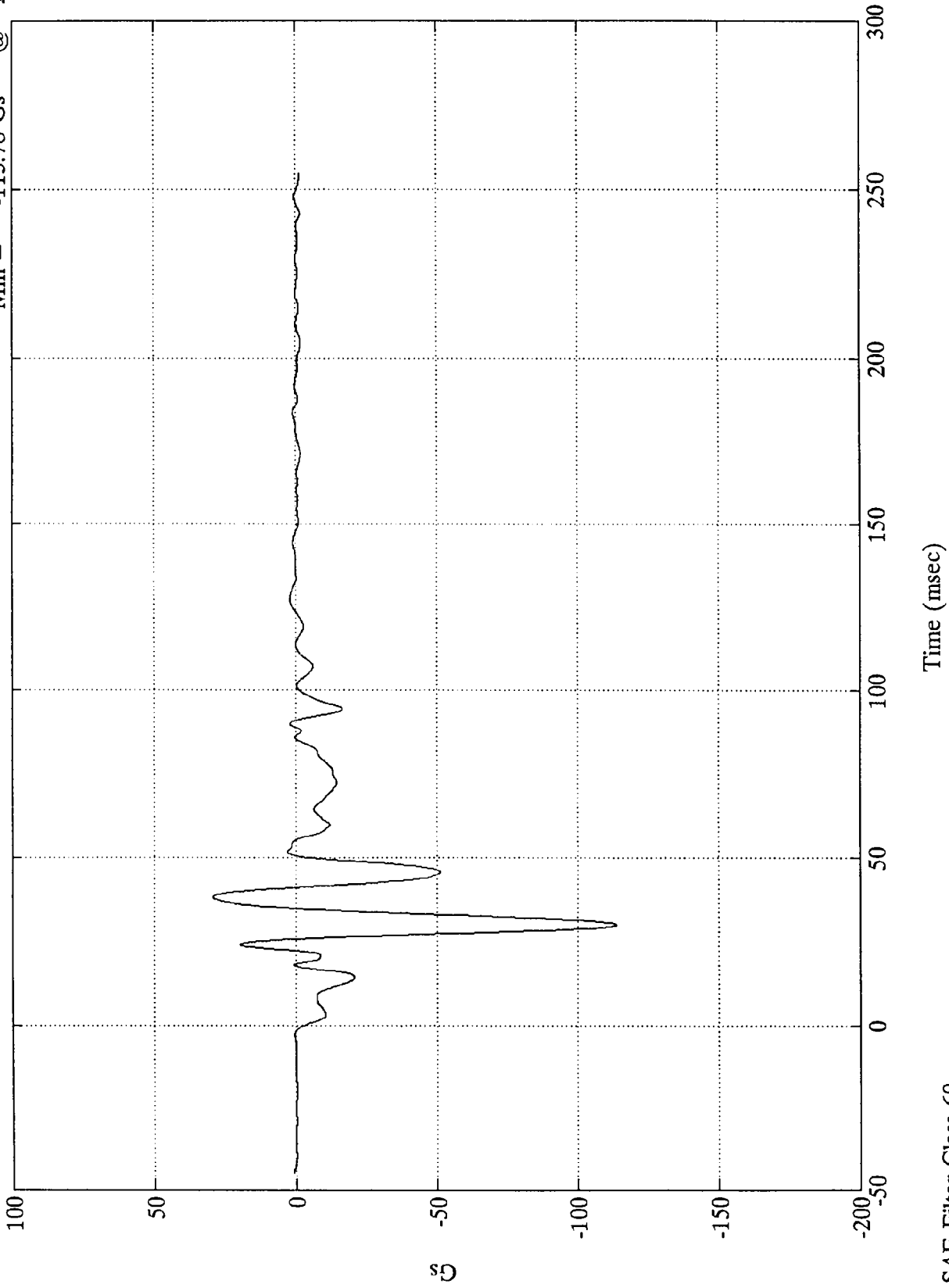
7942-12

SAE Filter Class 60

VTV TEST 11

Front X Mem. (X)

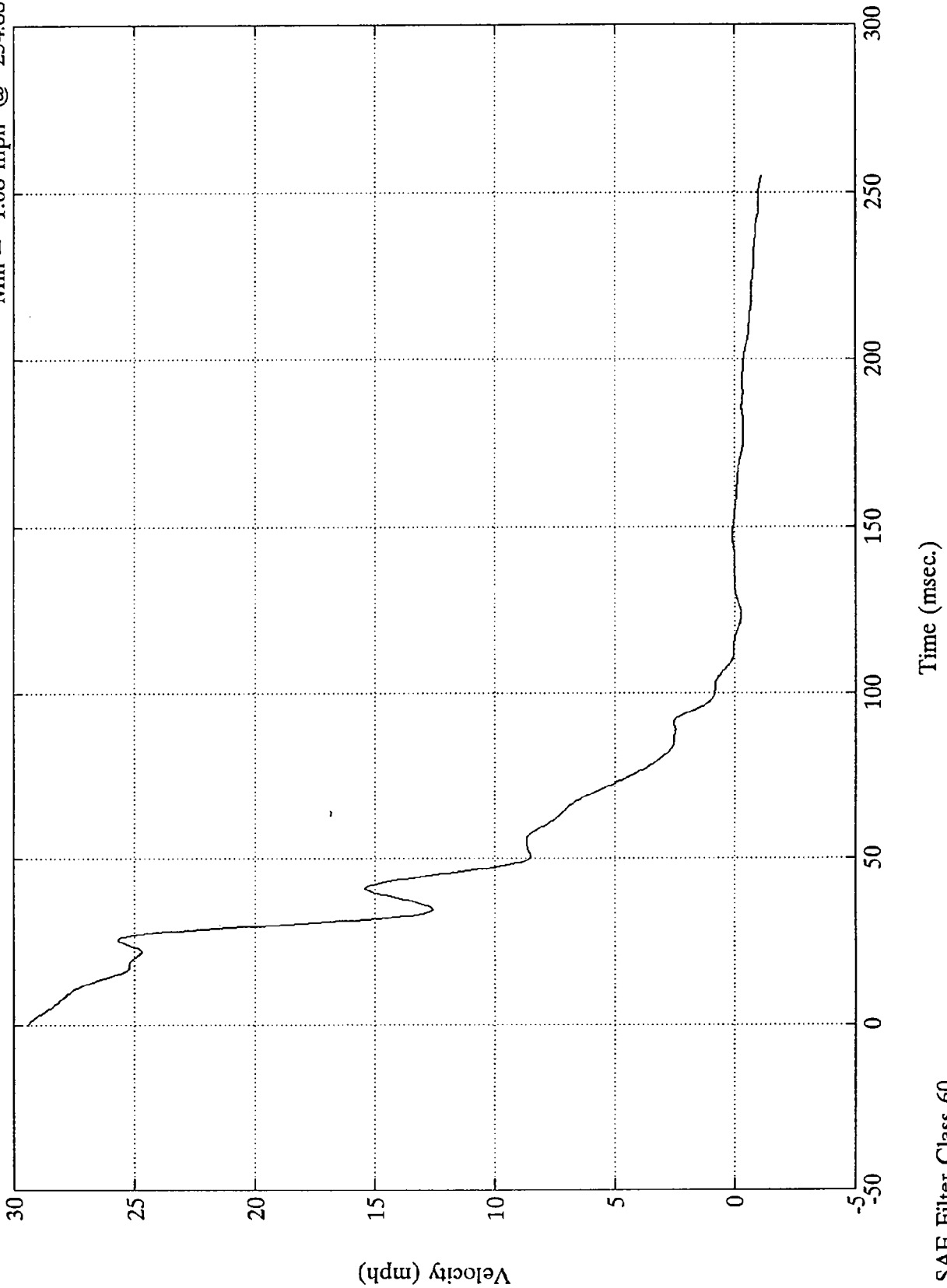
Max = 29.40 Gs @ 38.15 msec
Min = -113.78 Gs @ 29.88 msec



VTV TEST 11

Front X Mem. (X)

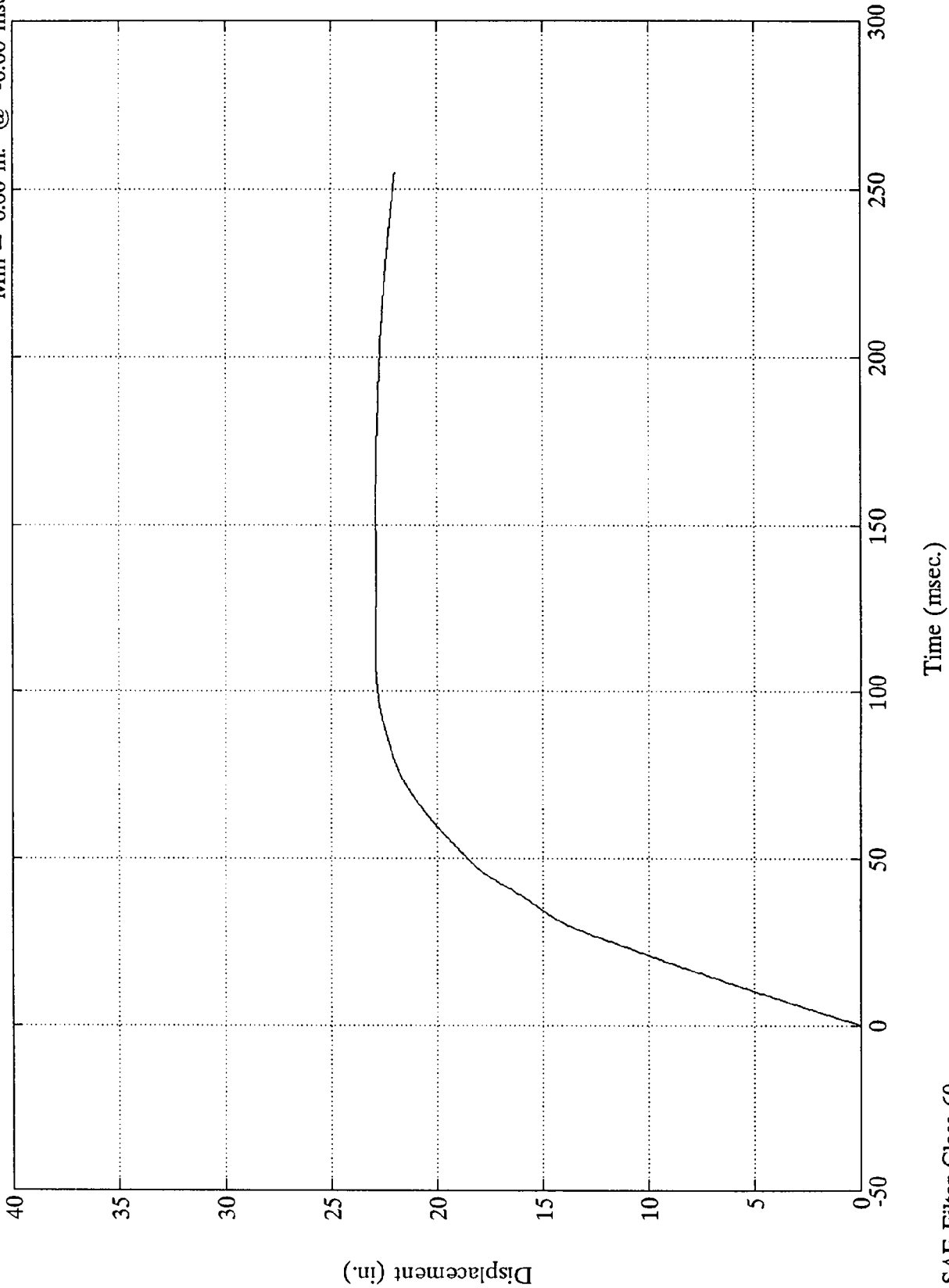
Max = 29.40 mph @ -0.00 msec
Min = -1.08 mph @ 254.88 msec



VTV TEST 11

Front X Mem. (X)

Max = 22.92 in. @ 120.72 msec
Min = 0.00 in. @ -0.00 msec



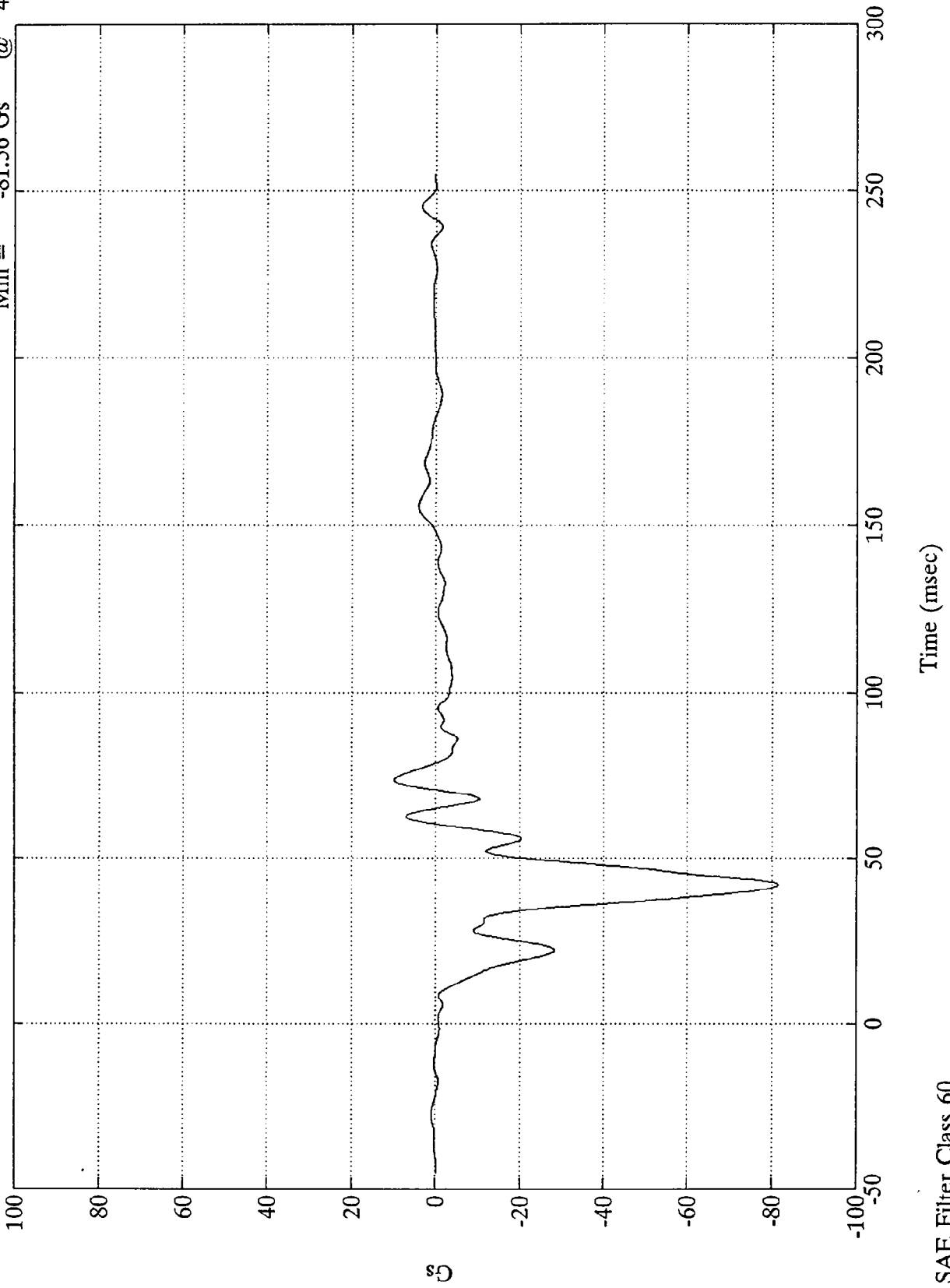
7942-12

SAE Filter Class 60

VTV TEST 11

Left Caliper (X)

Max = 9.84 Gs @ 73.20 msec
Min = -81.56 Gs @ 42.11 msec



B-23

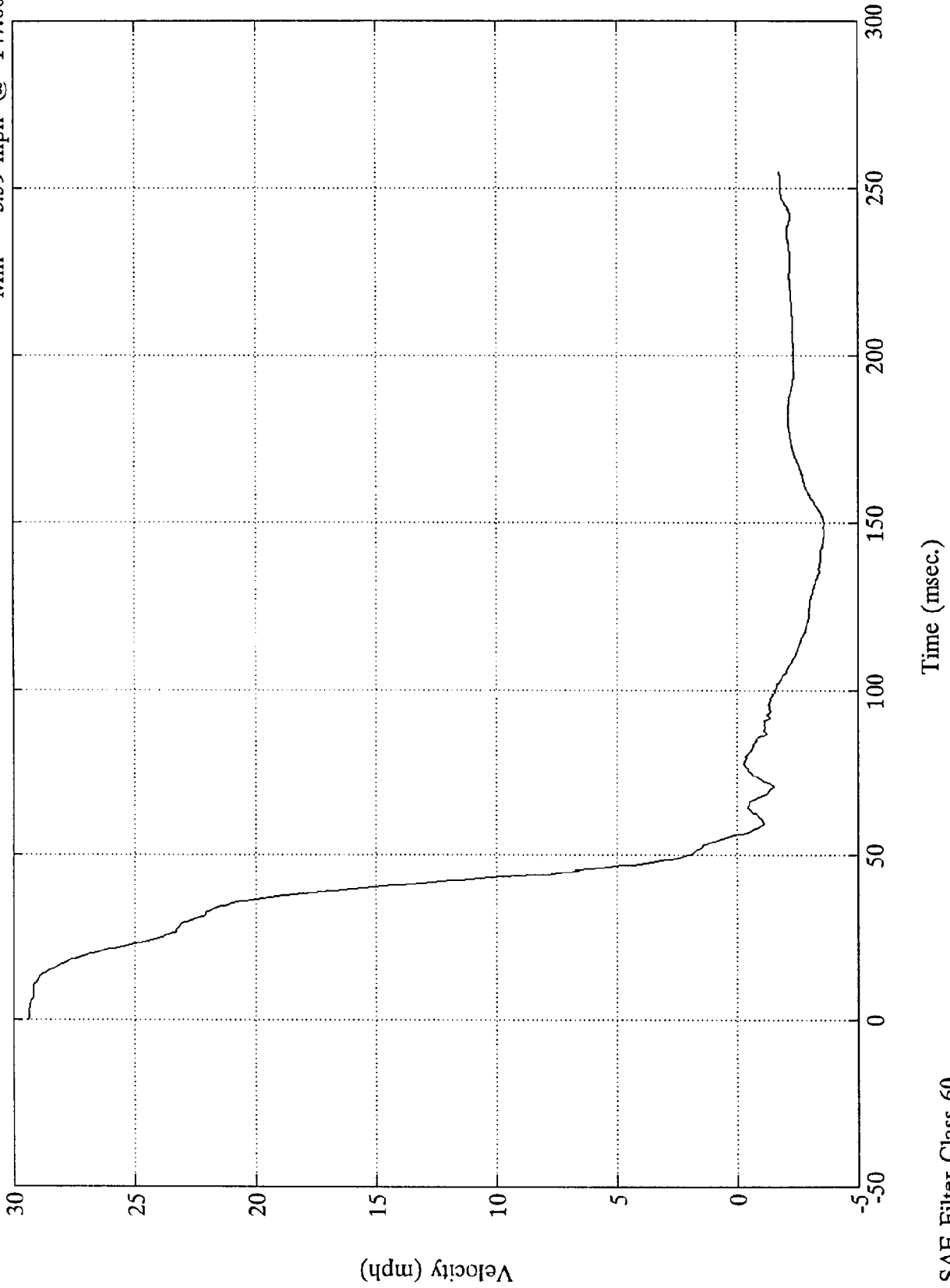
7942-12

SAE Filter Class 60

VTV TEST 11

Left Caliper (X)

Max = 29.40 mph @ -0.00 msec
Min = -3.59 mph @ 147.60 msec



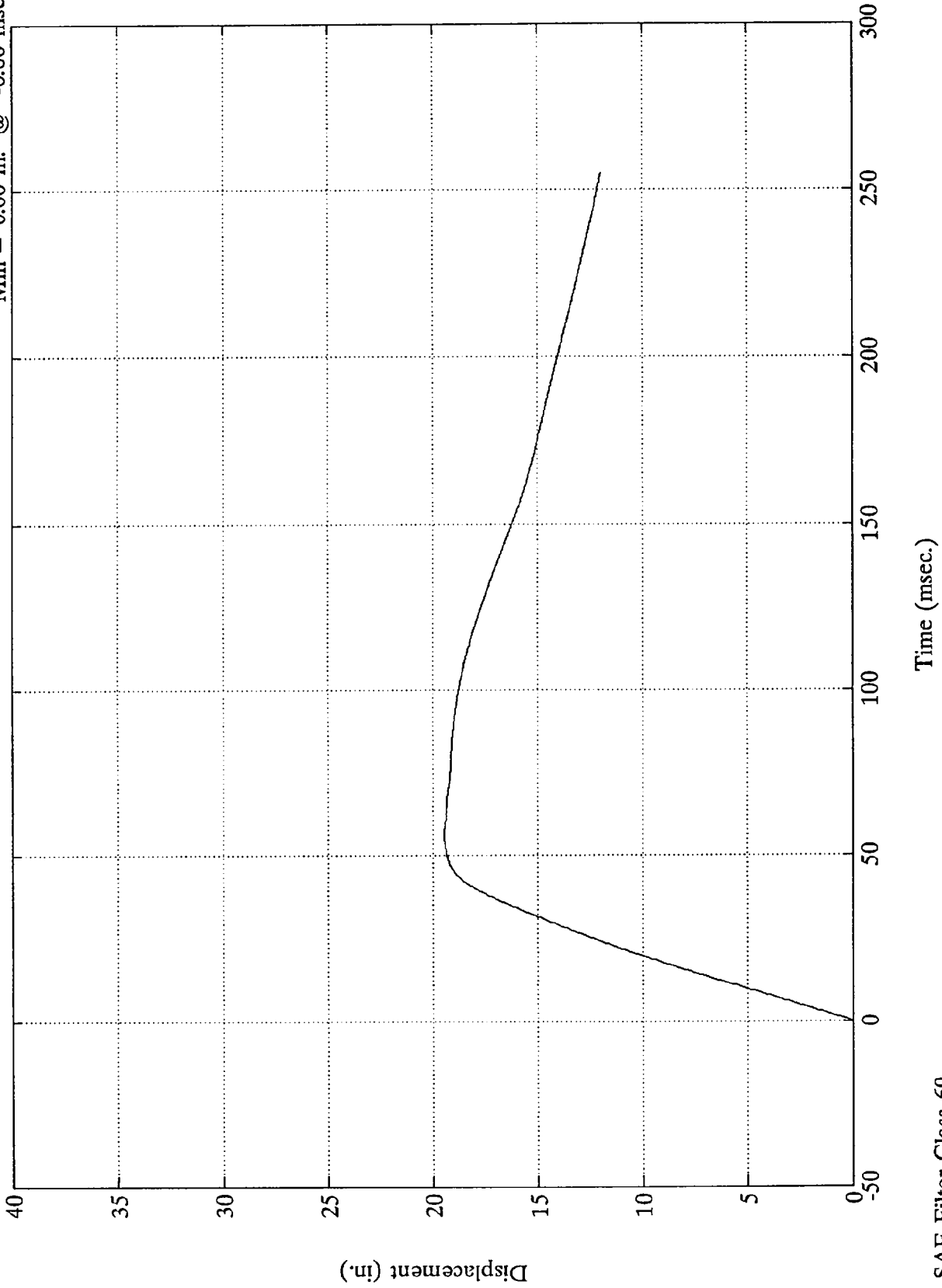
SAE Filter Class 60

7942-12

VTV TEST 11

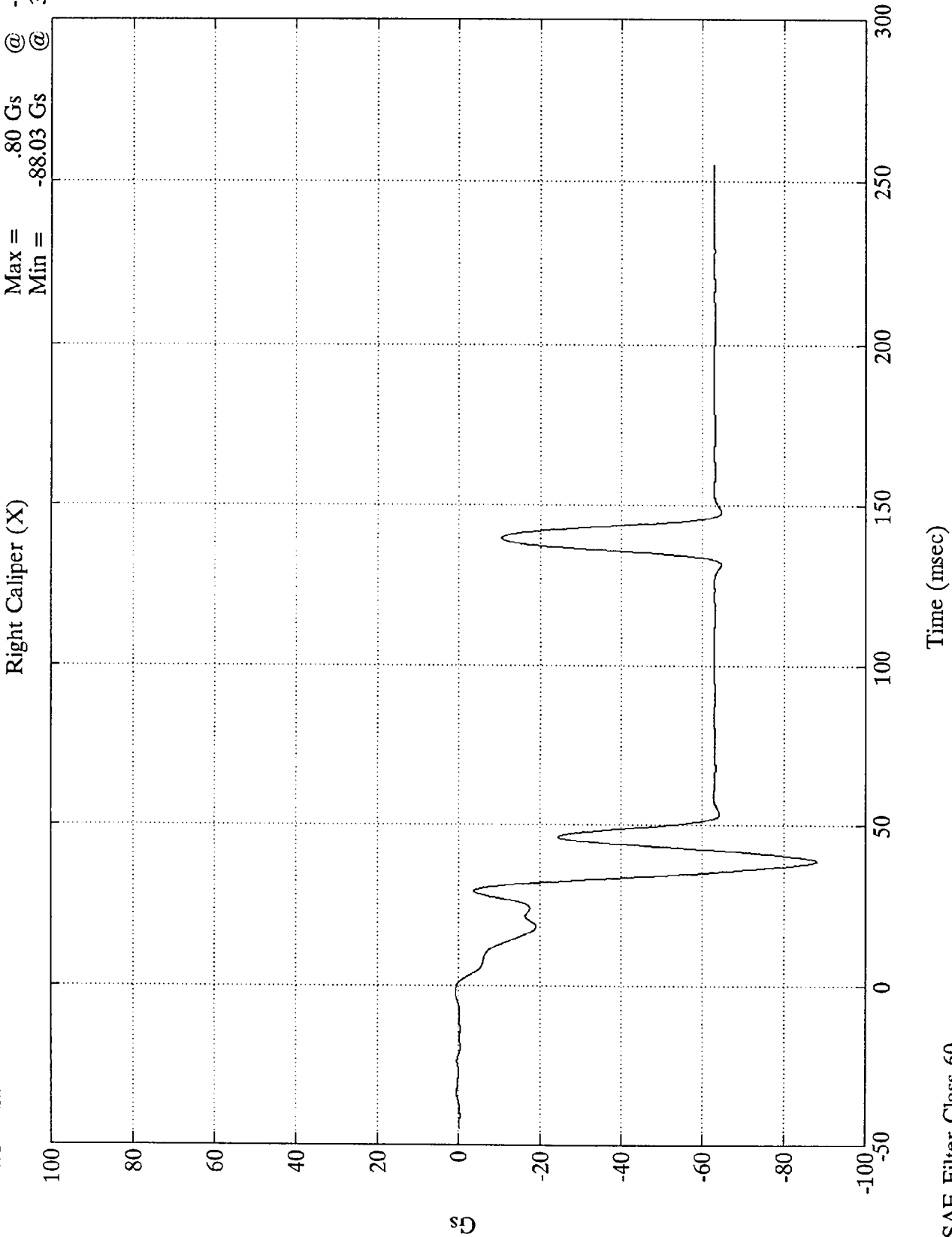
Left Caliper (X)

Max = 19.46 in. @ 57.36 msec
Min = 0.00 in. @ -0.00 msec



VTV TEST 11

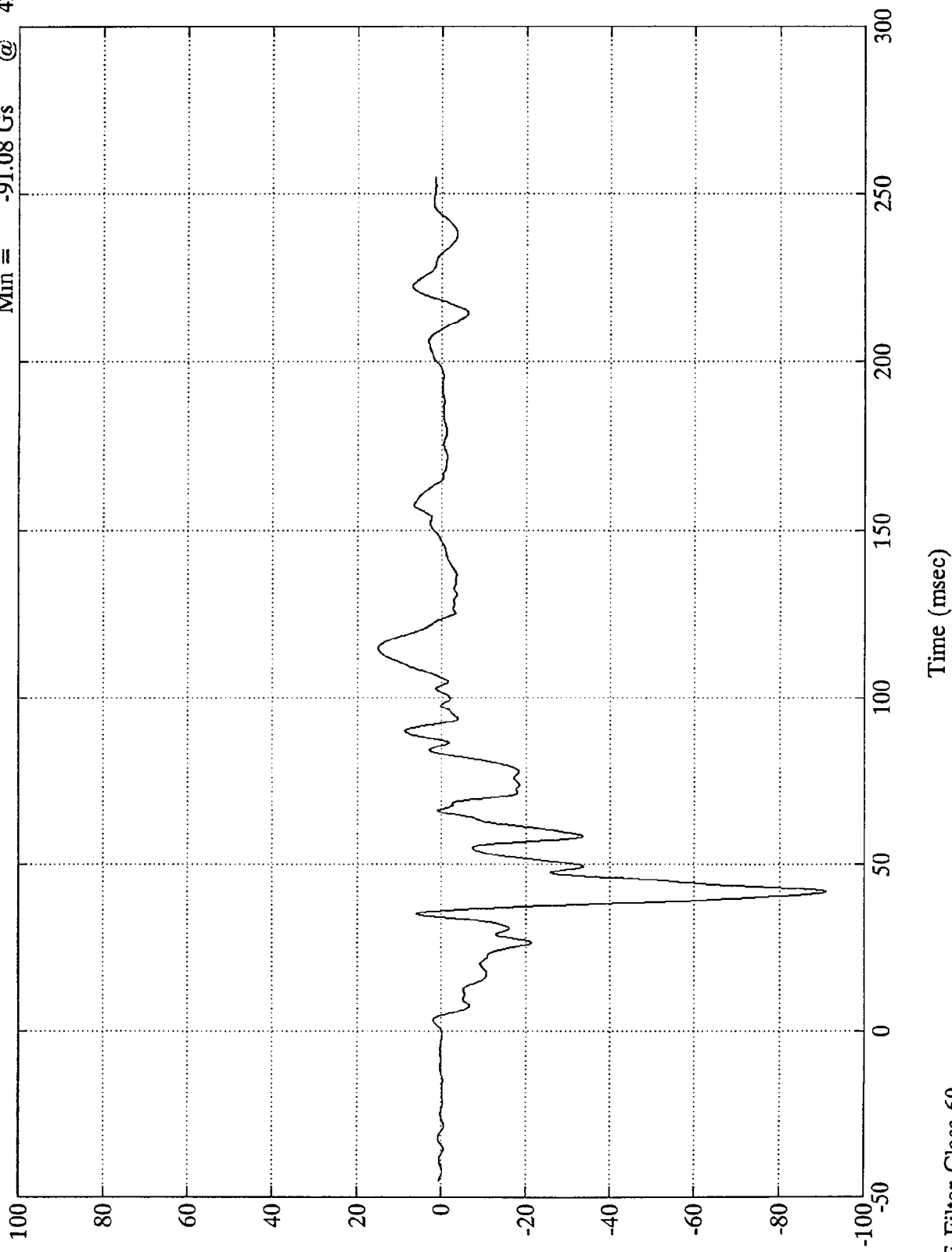
Max = .80 Gs @ -2.16 msec
Min = -88.03 Gs @ 38.52 msec



VTV TEST 11

Max = 15.11 Gs @ 114.72 msec
Min = -91.08 Gs @ 42.00 msec

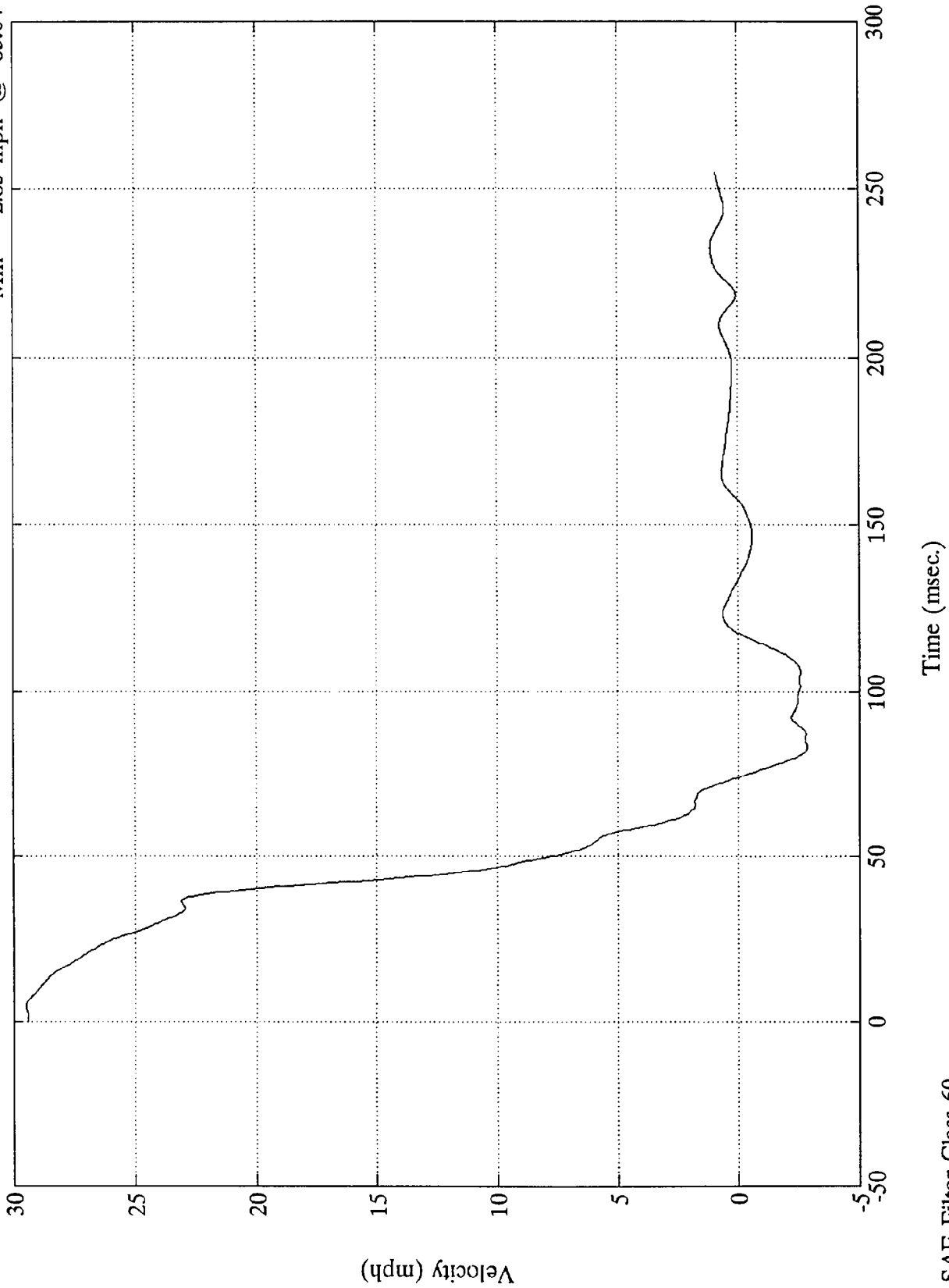
Brake Pedal (X)



VTV TEST 11

Brake Pedal (X)

Max = 29.51 mph @ 4.80 msec
Min = -2.85 mph @ 83.04 msec

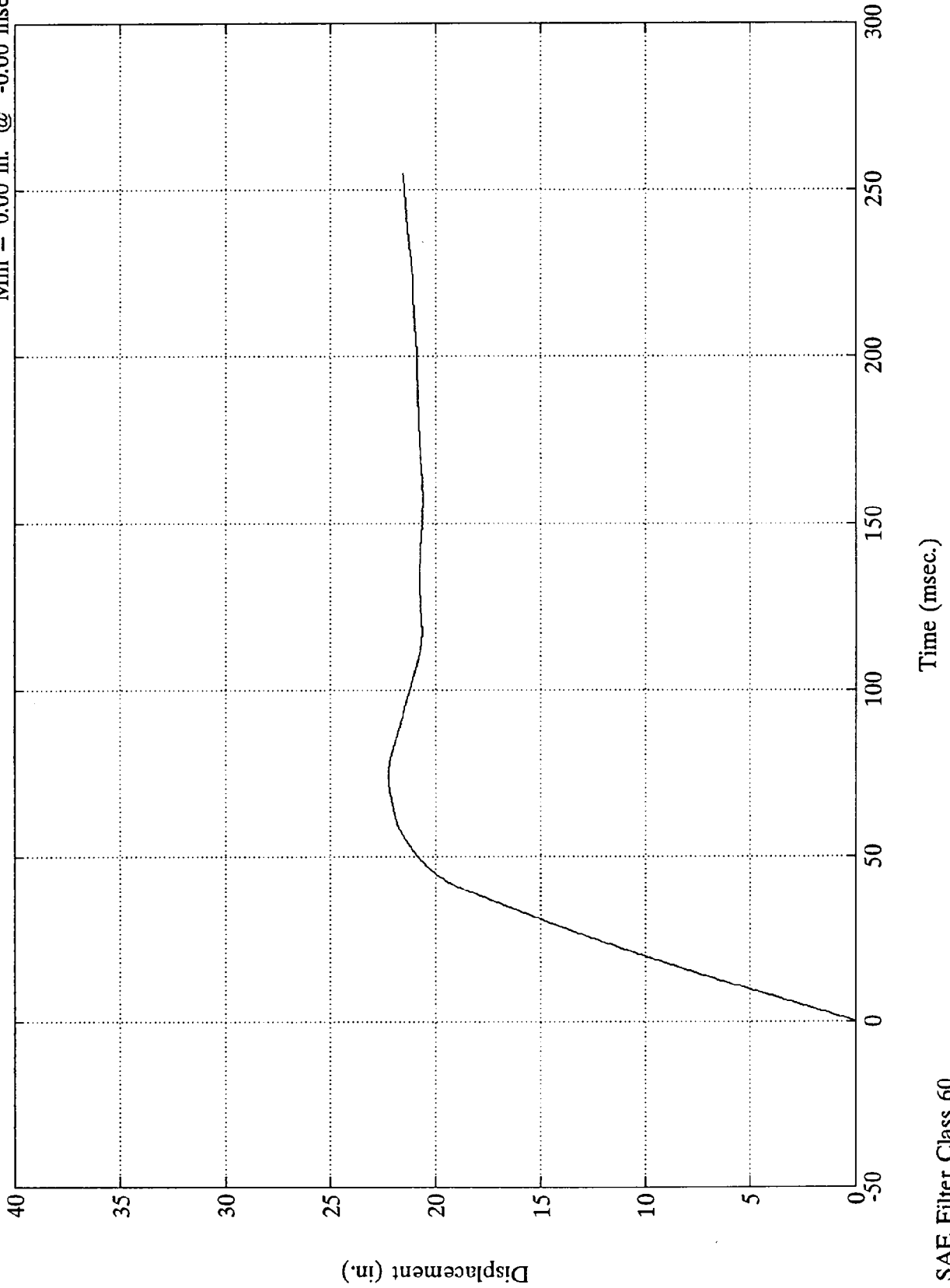


SAE Filter Class 60

VTV TEST 11

Max = 22.26 in. @ 74.64 msec
Min = 0.00 in. @ -0.00 msec

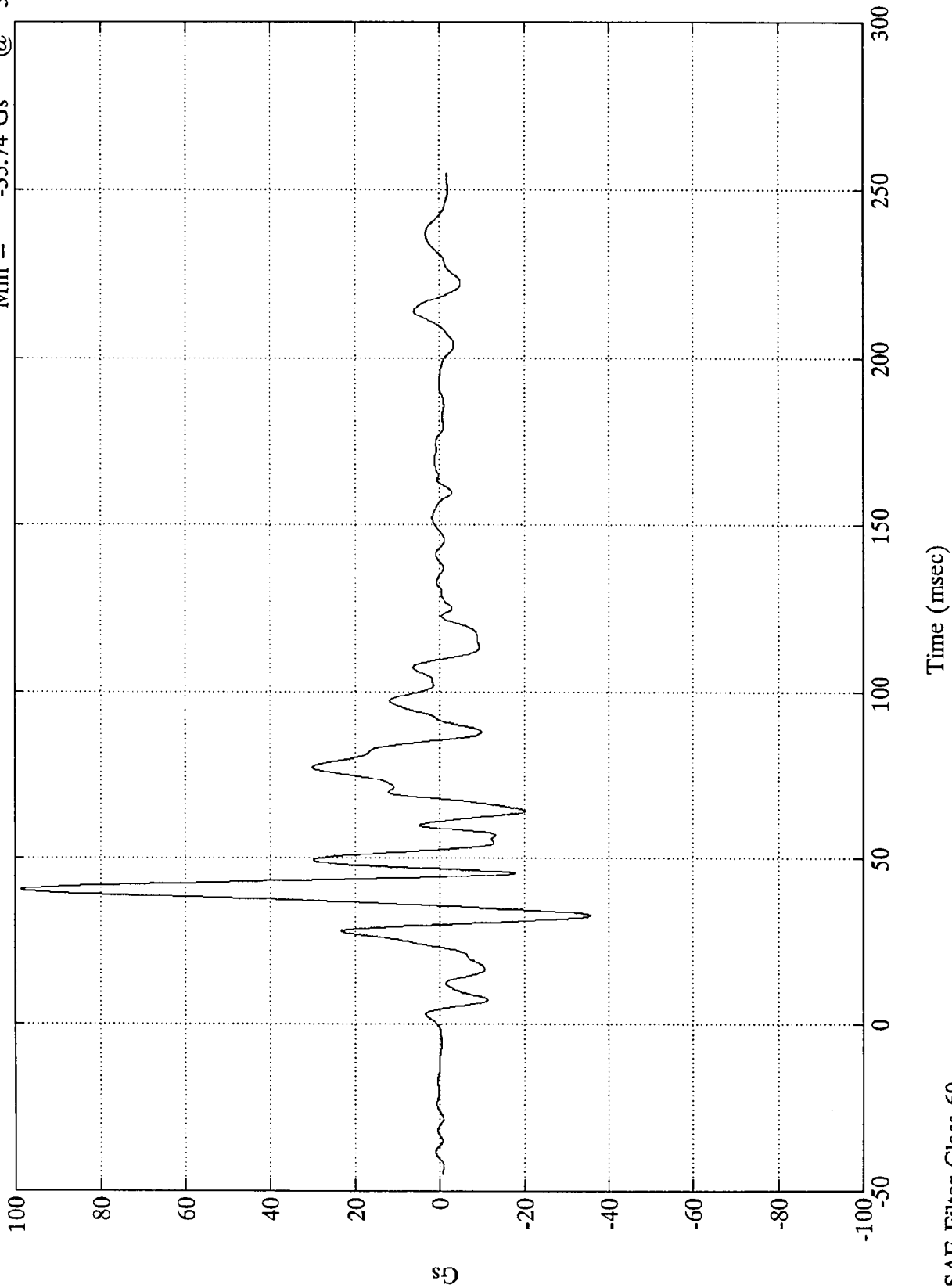
Brake Pedal (X)



VTV TEST 11

Max = 98.69 Gs @ 40.19 msec
Min = -35.74 Gs @ 32.63 msec

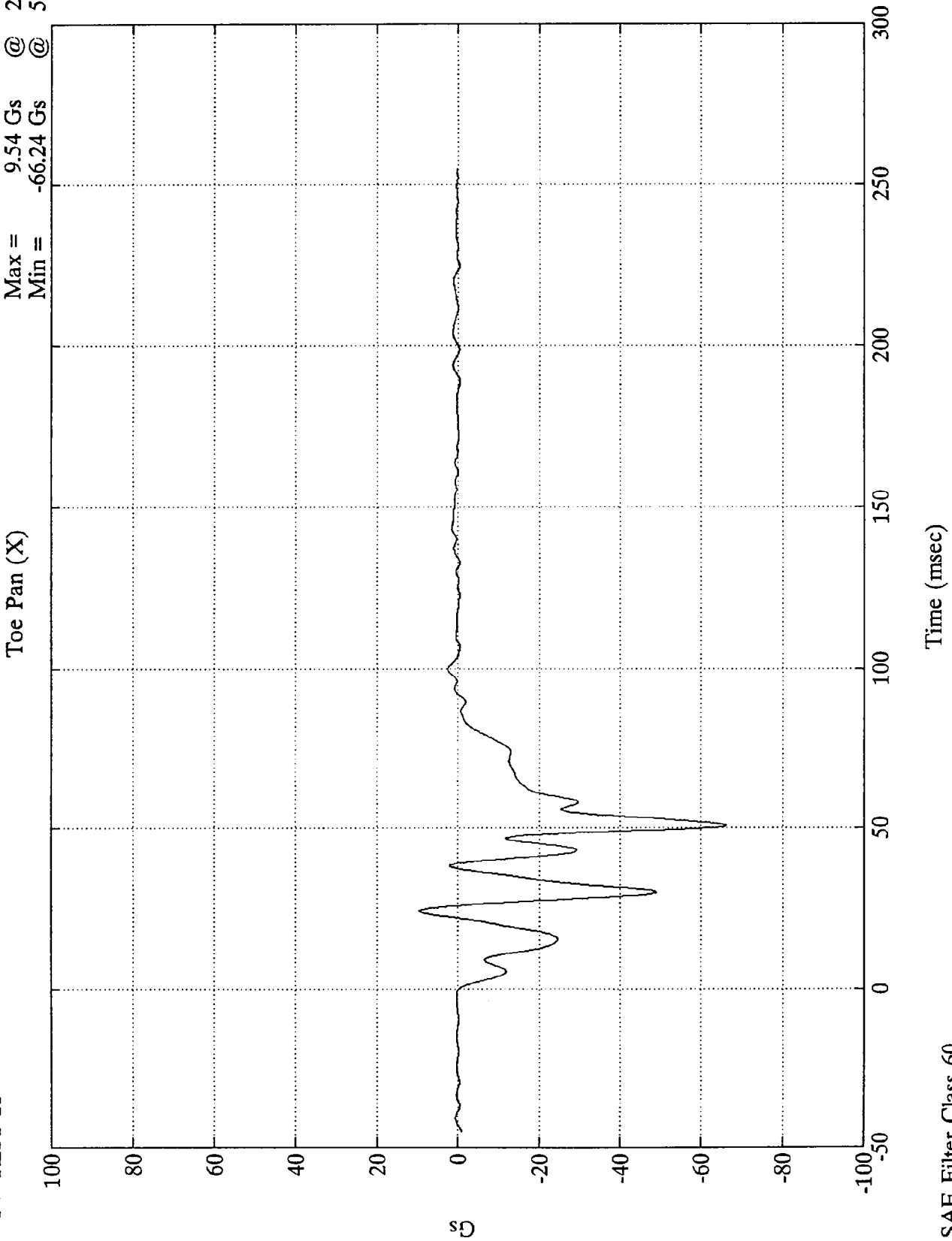
Brake Pedal (Z)



Time (msec)

VTV TEST 11

Max = 9.54 Gs @ 24.11 msec
Min = -66.24 Gs @ 50.64 msec



B-31

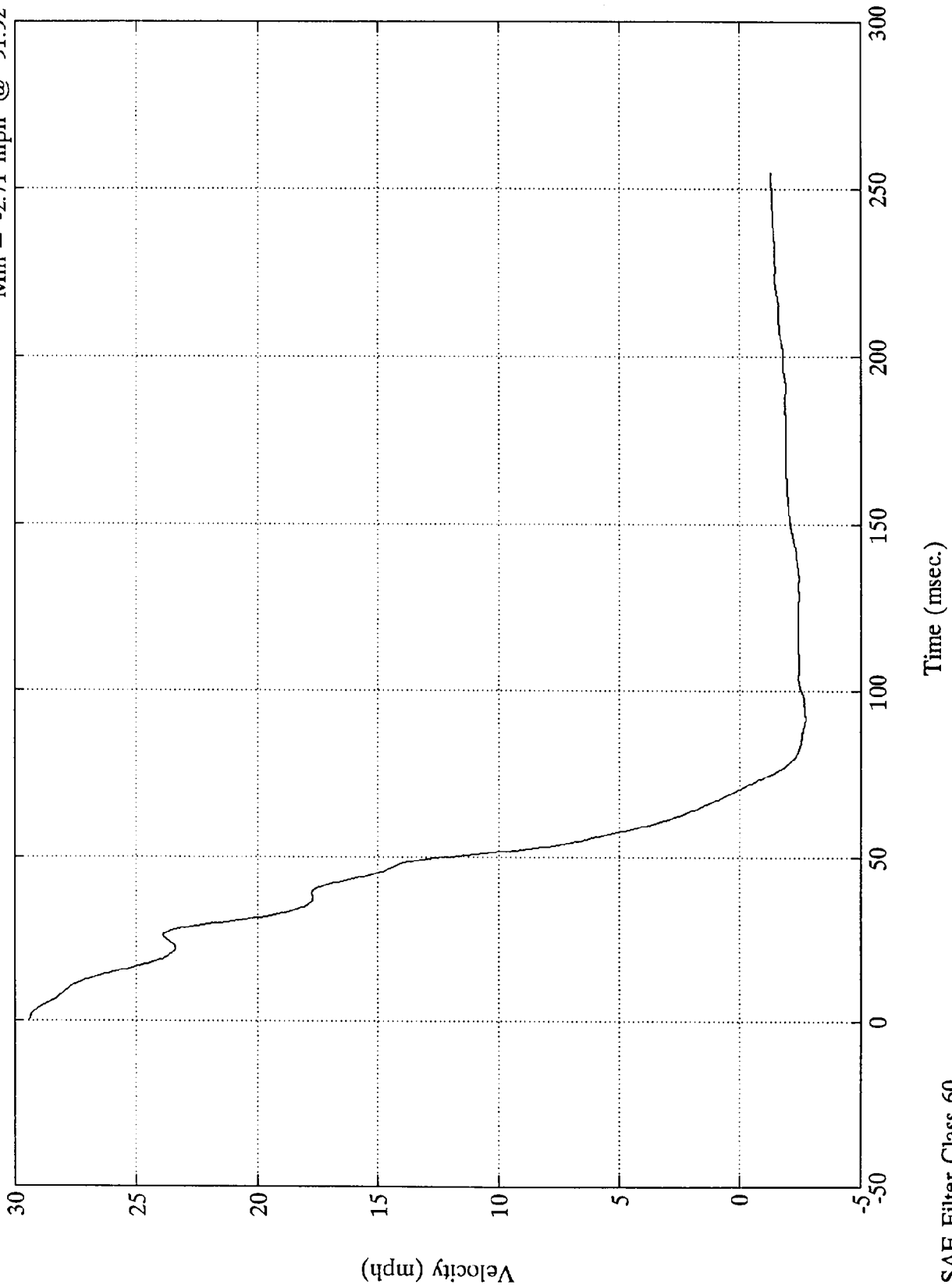
7942-12

SAE Filter Class 60

VTV TEST 11

Toe Pan (X)

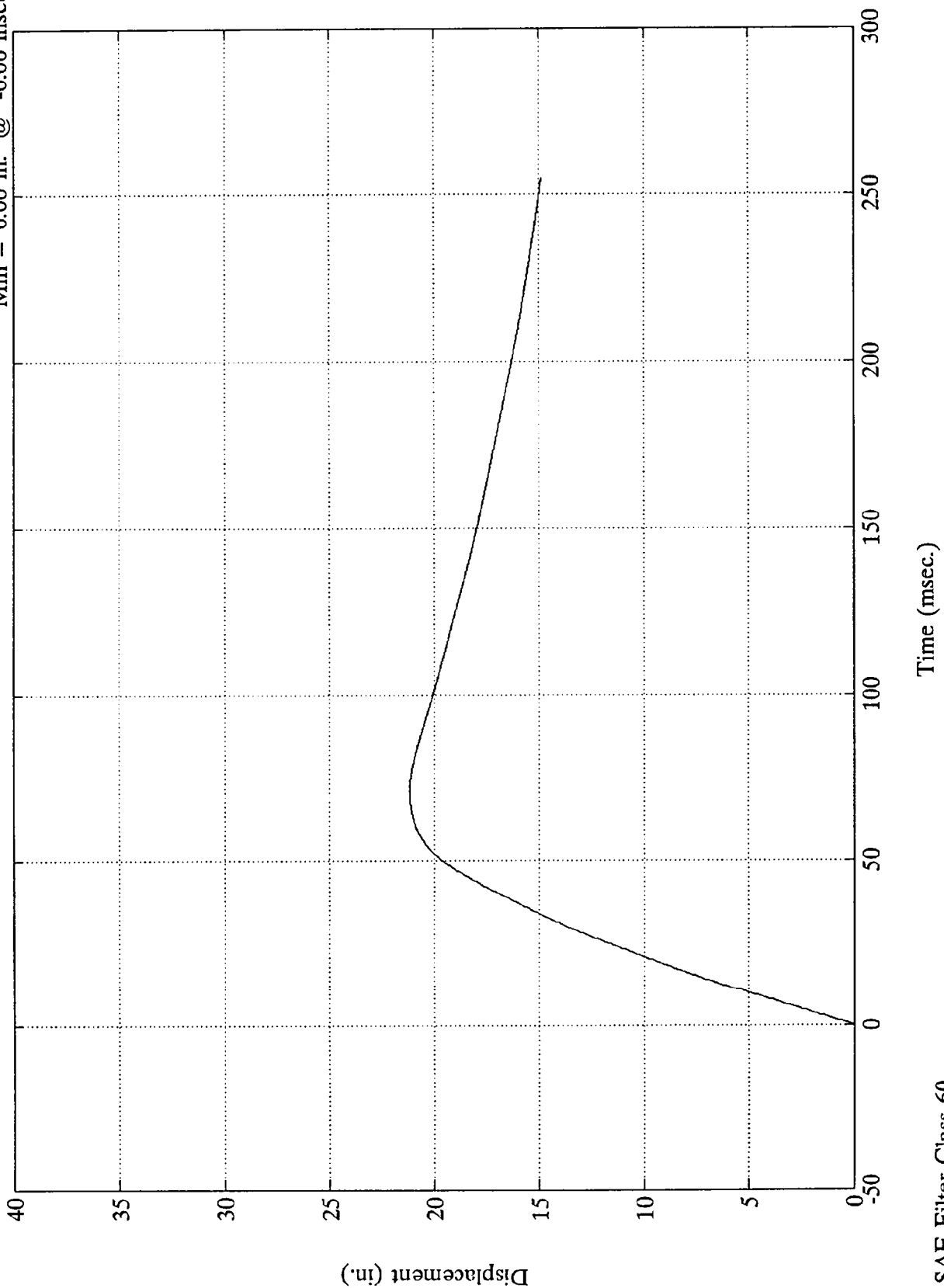
Max = 29.40 mph @ 0.24 msec
Min = -2.71 mph @ 91.92 msec



VTV TEST 11

Max = 21.18 in. @ 72.24 msec
Min = 0.00 in. @ -0.00 msec

Toe Pan (X)



Displacement (in.)

Time (msec.)

TEST NO. Y43-11-1268

LOAD CELL BARRIER DATA

FILTER CHANNEL CLASS

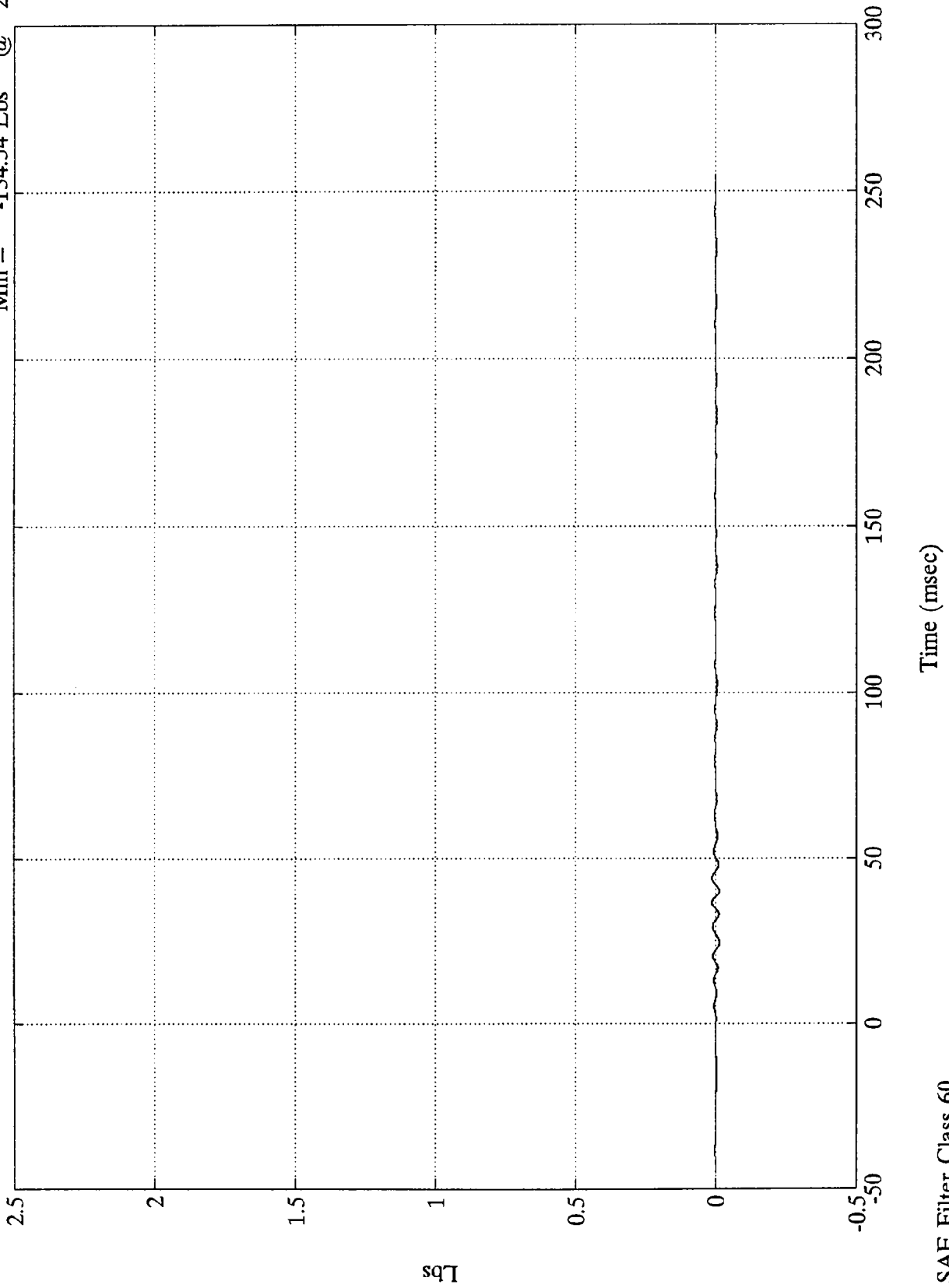
60

VTV TEST 11

$\times 10^4$

Barrier Load Cell A1

Max = 138.71 Lbs @ 36.47 msec
Min = -134.54 Lbs @ 24.59 msec



lbs

B-35

7942-12

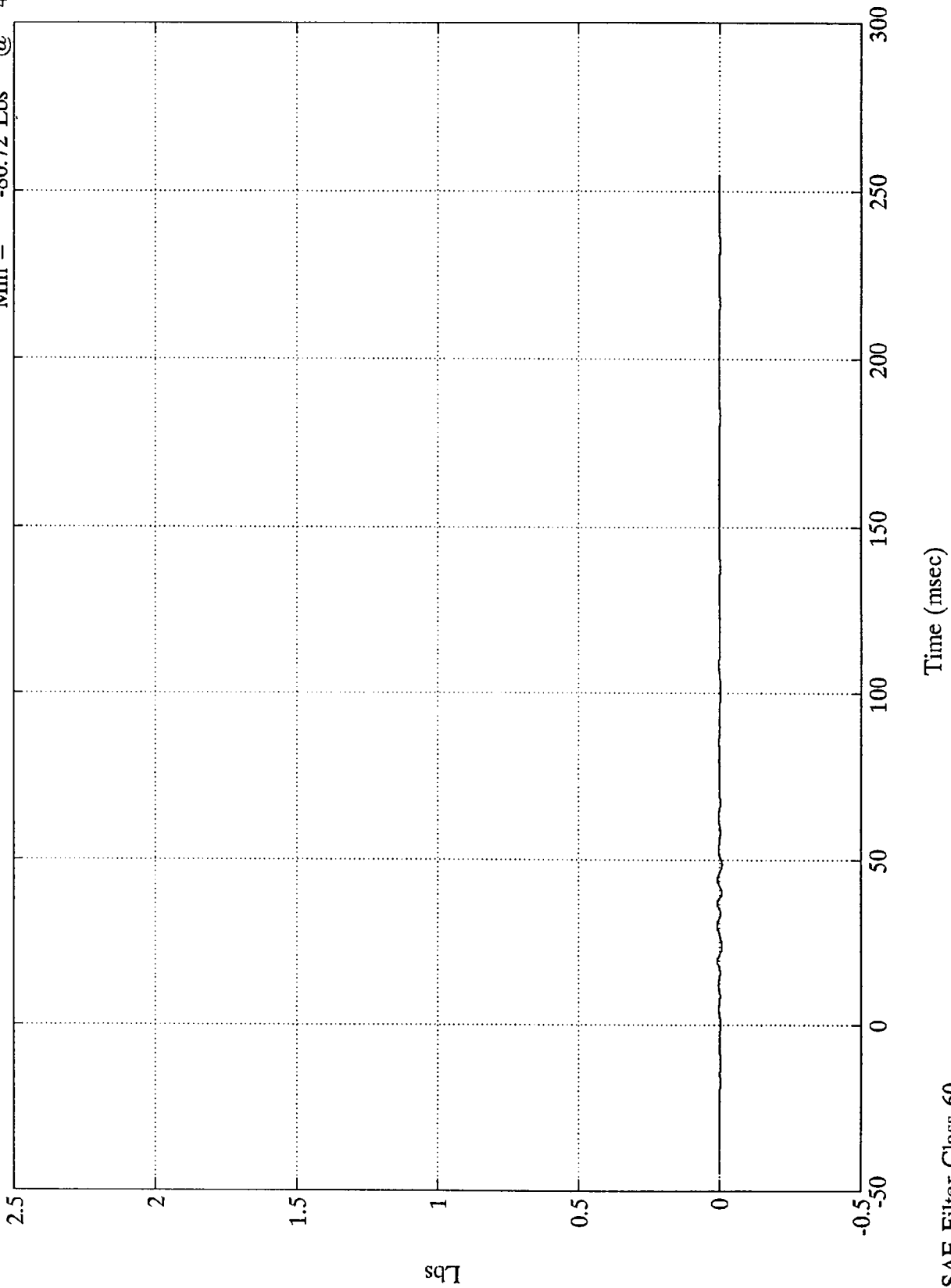
SAE Filter Class 60

VTV TEST 11

$\times 10^4$

Barrier Load Cell A2

Max = 79.31 Lbs @ 30.12 msec
Min = -80.72 Lbs @ 48.72 msec



Lbs

Time (msec)

SAE Filter Class 60

7942-12

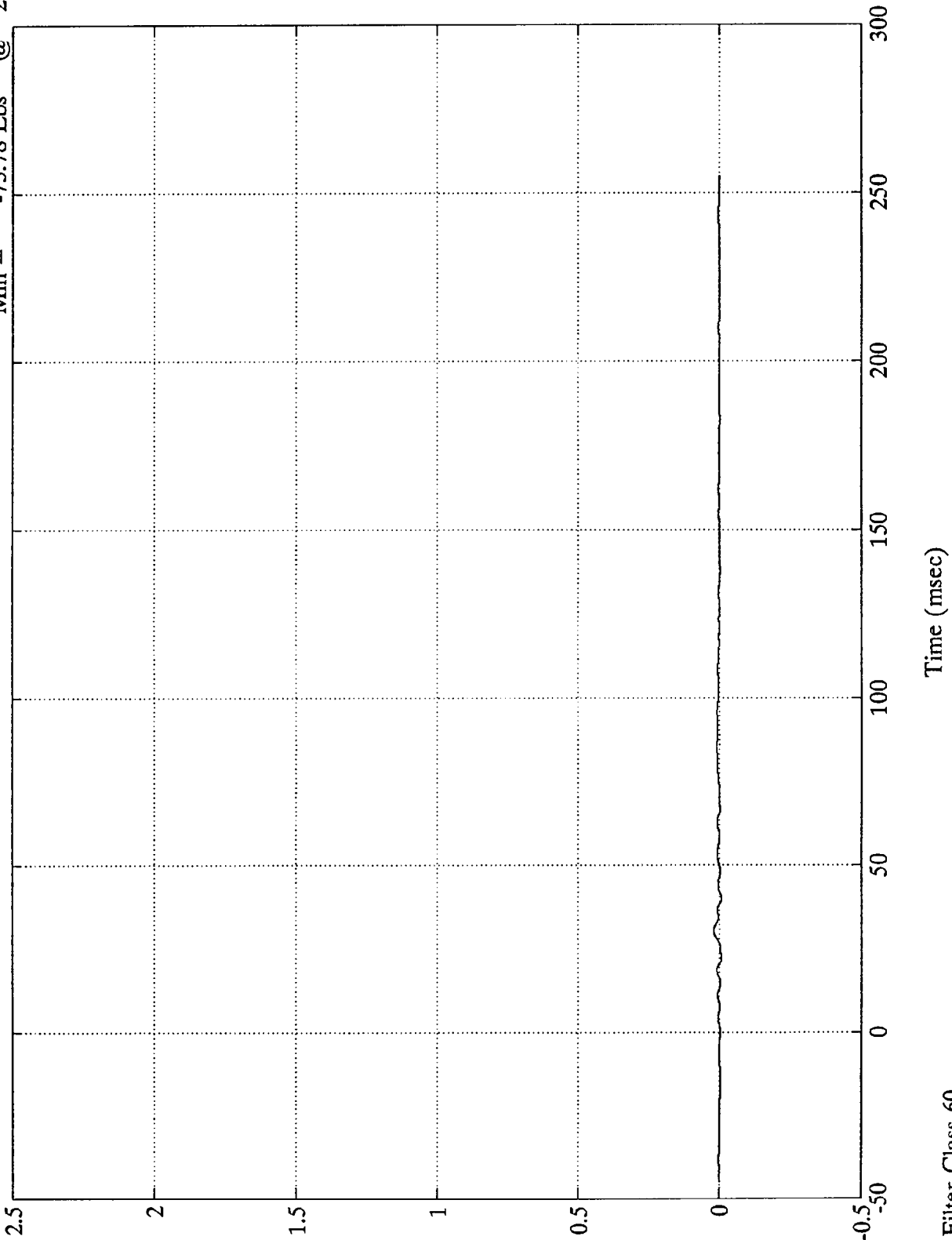
93-B

VTV TEST 11

$\times 10^4$

Barrier Load Cell A3

Max = 212.26 Lbs @ 30.23 msec
Min = -73.78 Lbs @ 22.31 msec



Lbs

B-37

7942-12

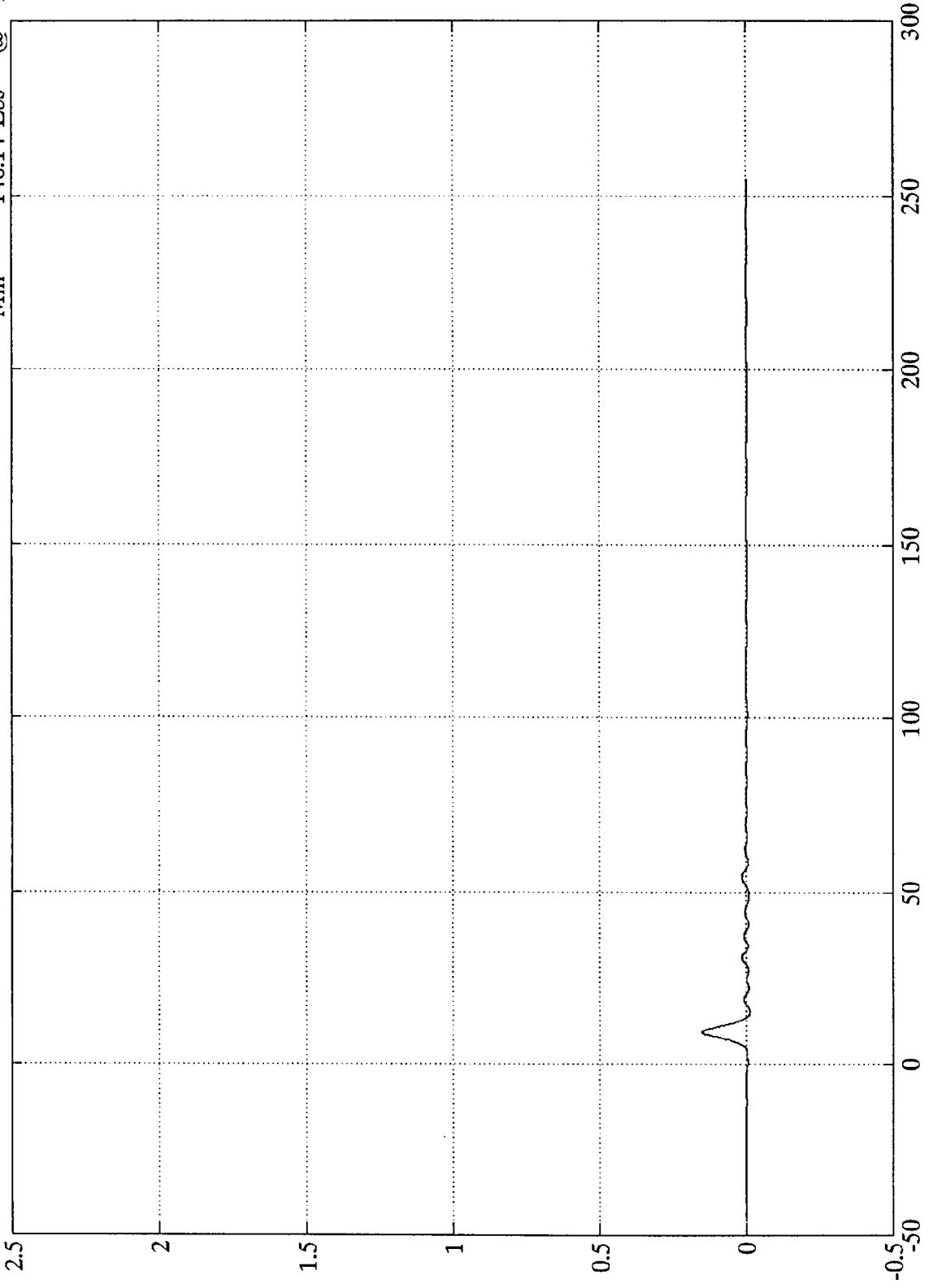
SAE Filter Class 60

Time (msec)

VTV TEST 11
x10⁴

Barrier Load Cell A4

Max = 1501.33 Lbs @ 9.11 msec
Min = -146.14 Lbs @ 14.75 msec



B-38

7942-12

SAE Filter Class 60

Time (msec)

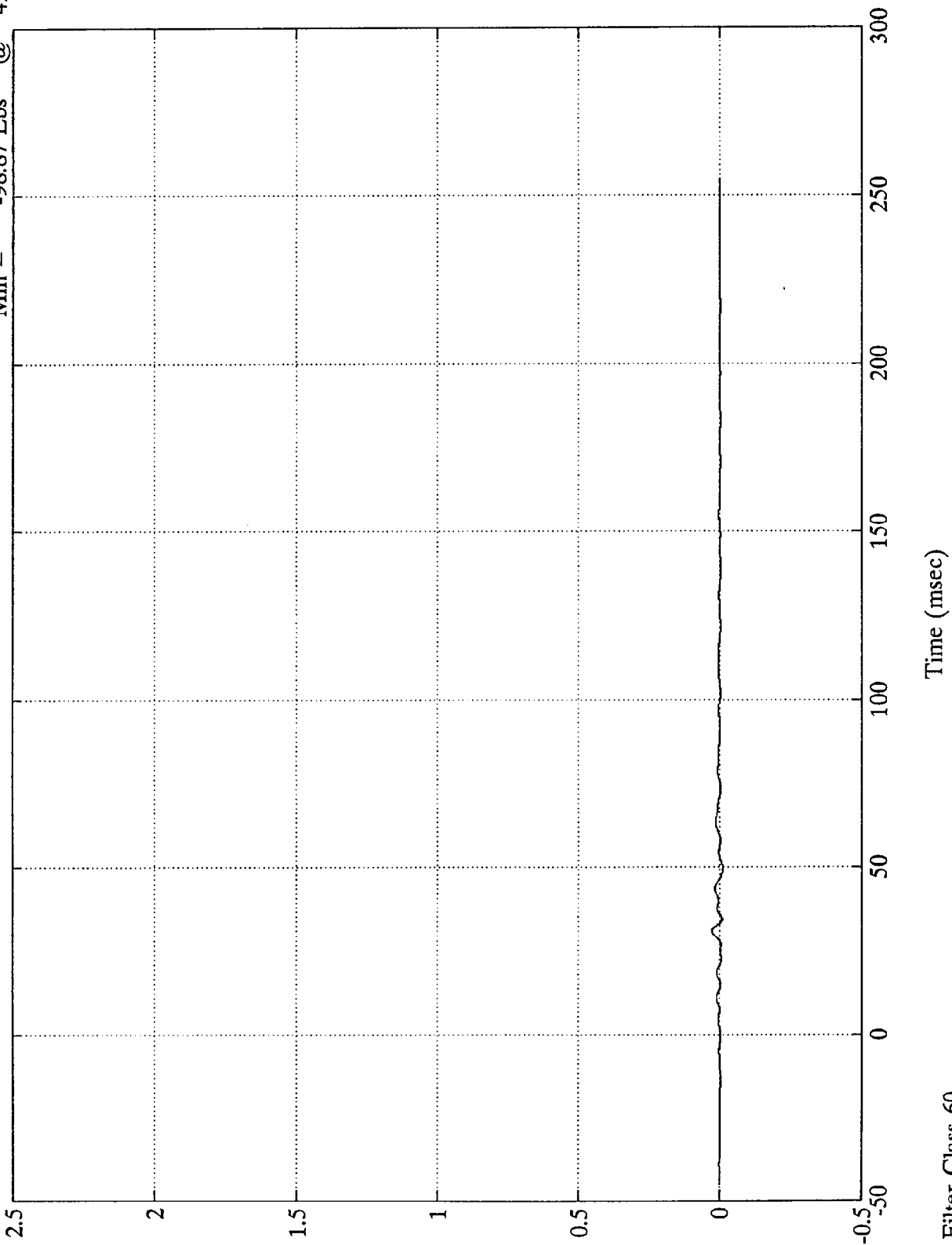


VTV TEST 11

$\times 10^4$

Barrier Load Cell A5

Max = 280.92 Lbs @ 30.71 msec
Min = -98.87 Lbs @ 49.43 msec



Lbs

7942-12

SAE Filter Class 60

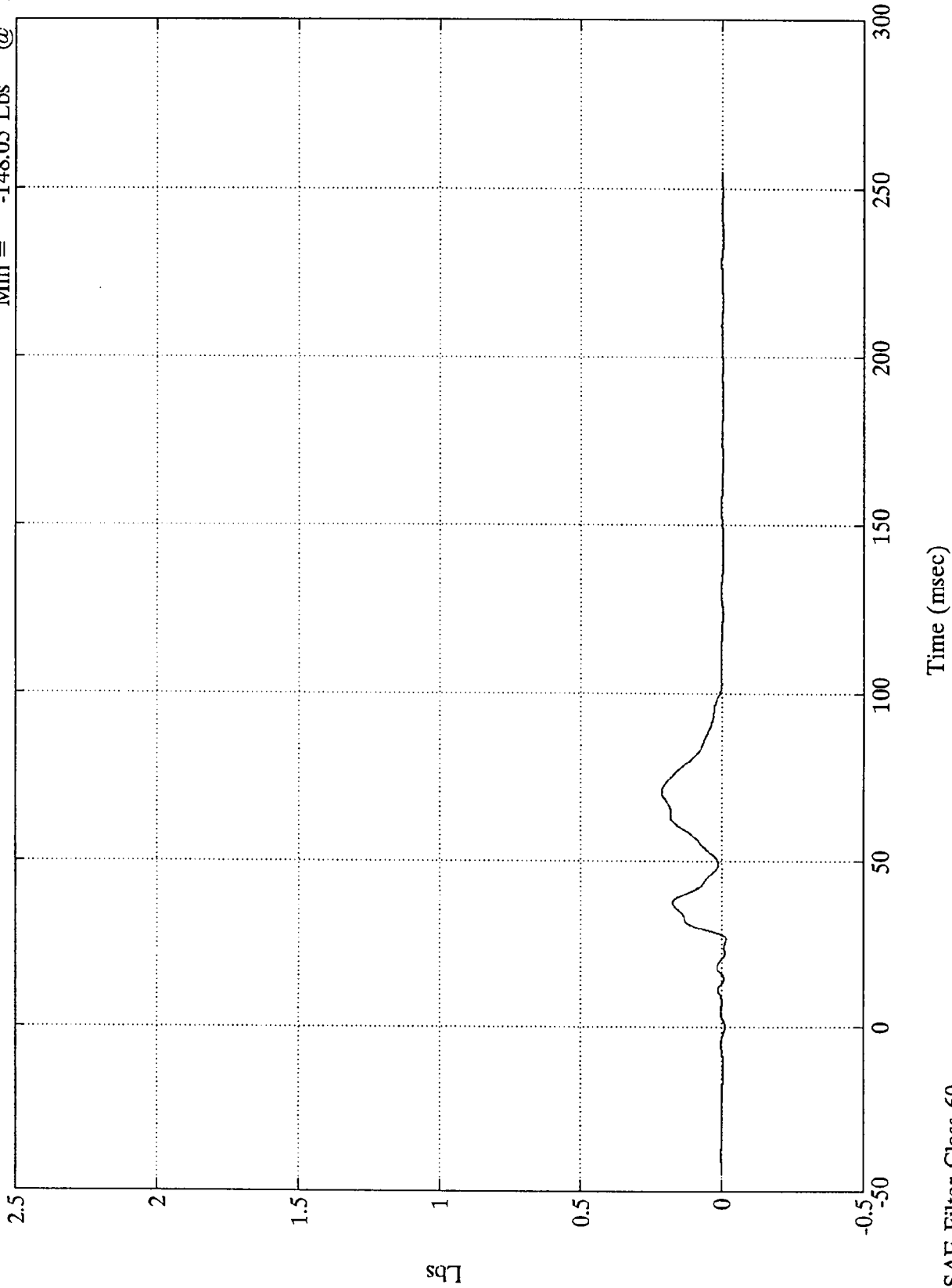
Time (msec)

VTV TEST 11

$\times 10^4$

Max = 2126.03 Lbs @ 70.68 msec
Min = -148.05 Lbs @ 26.51 msec

Barrier Load Cell A6



B-40

7942-12

SAE Filter Class 60

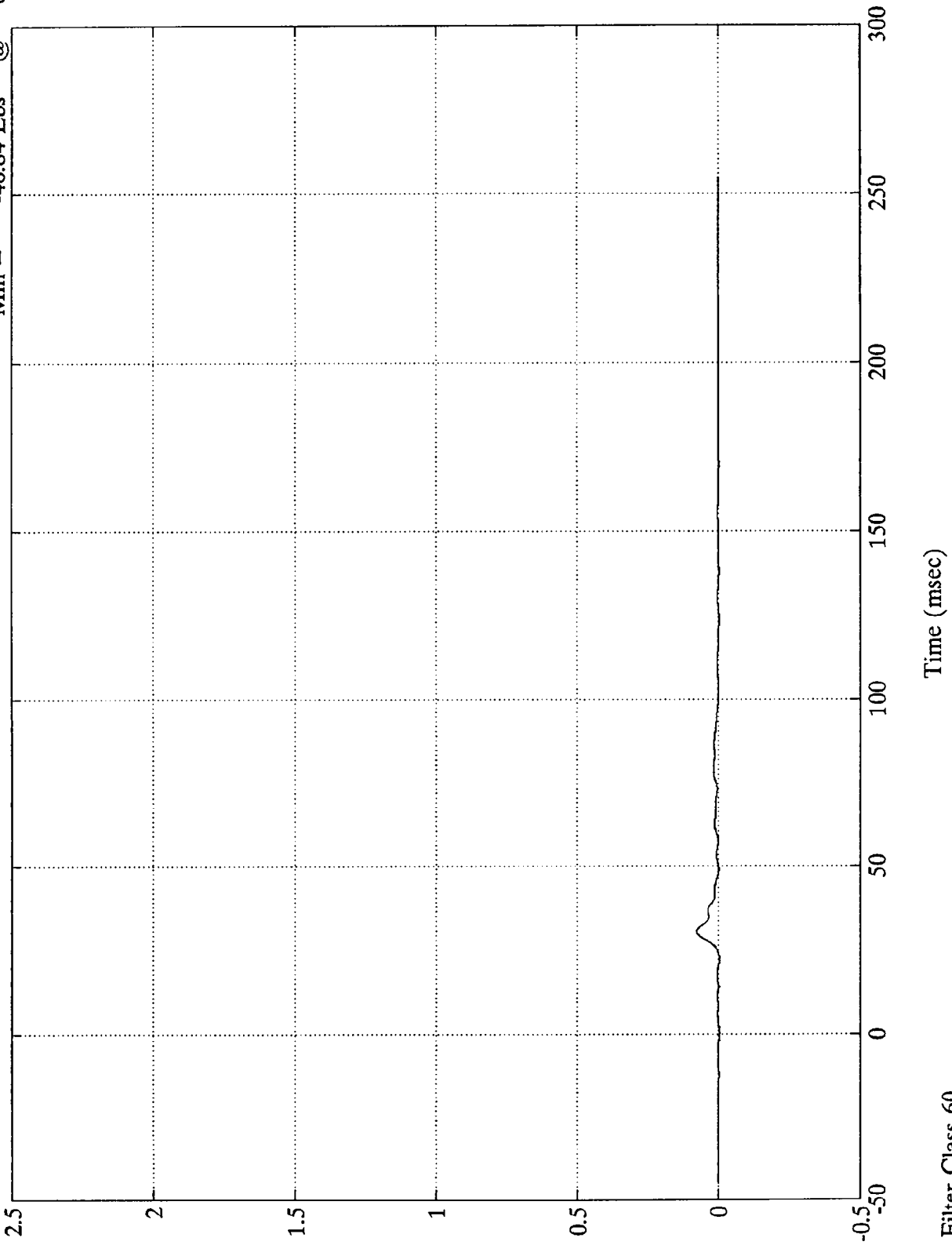


VTV TEST 11

$\times 10^4$

Barrier Load Cell A7

Max = 779.80 Lbs @ 30.36 msec
Min = -46.84 Lbs @ 0.11 msec



Lbs

1-B-41

7942-12

SAE Filter Class 60

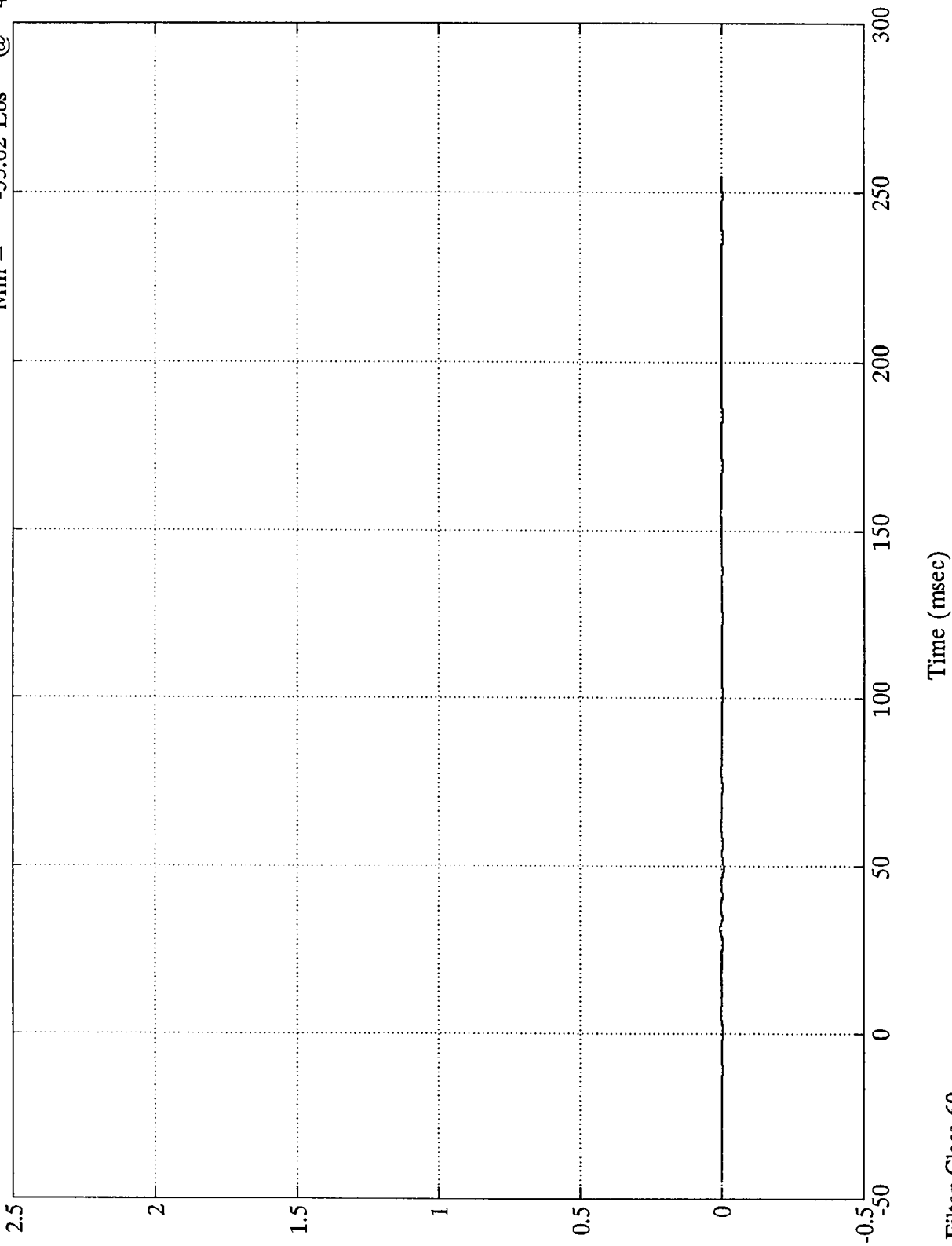
Time (msec)

VTV TEST 11

$\times 10^4$

Barrier Load Cell A8

Max = 65.41 Lbs @ 31.07 msec
Min = -55.62 Lbs @ 49.31 msec



Lbs

B-42

7942-12

SAE Filter Class 60

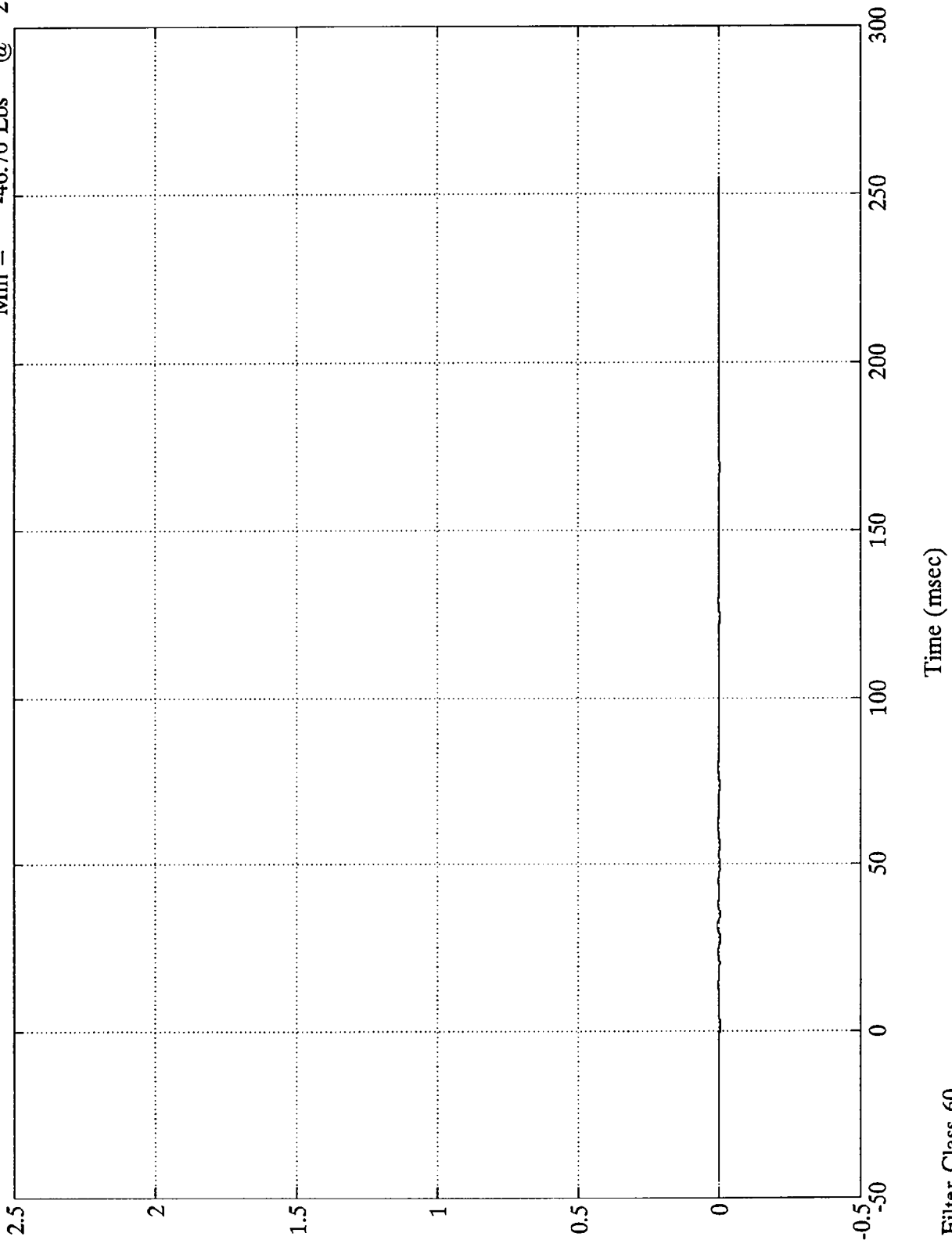
Time (msec)

VTV TEST 11

$\times 10^4$

Barrier Load Cell A9

Max = 78.42 Lbs @ 31.44 msec
Min = -46.70 Lbs @ 27.72 msec



Lbs

B-43

7942-12

SAE Filter Class 60

Time (msec)

VTV TEST 11

$\times 10^4$

Barrier Load Cell B1

Max =

71.12 Lbs

@

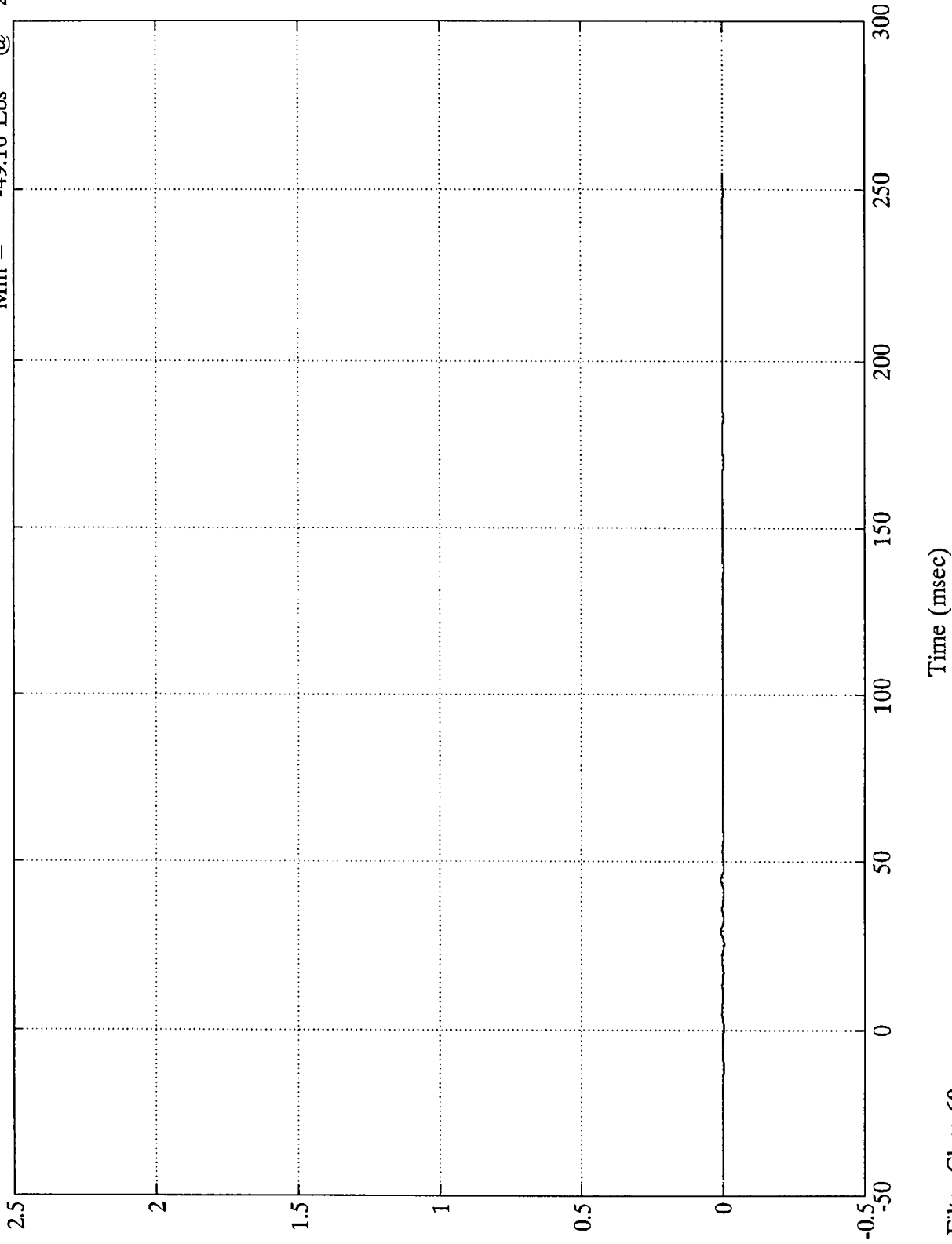
29.15 msec

Min =

-49.16 Lbs

@

25.55 msec



B-44

7942-12

SAE Filter Class 60

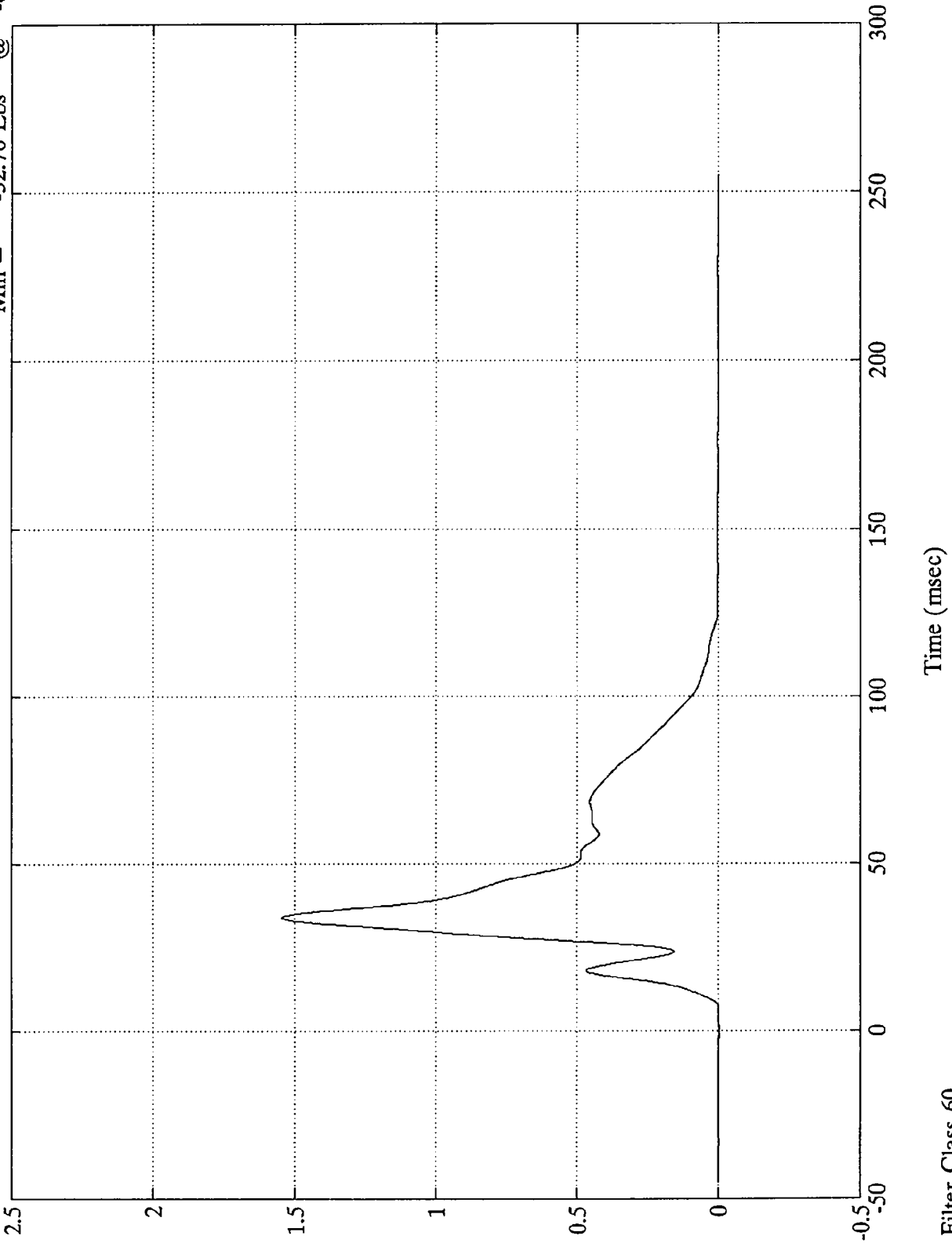


VTV TEST 11

$\times 10^4$

Barrier Load Cell B2

Max = 15467.70 Lbs @ 33.84 msec
Min = -32.70 Lbs @ -0.12 msec



Lbs
B-45

7942-12

SAE Filter Class 60

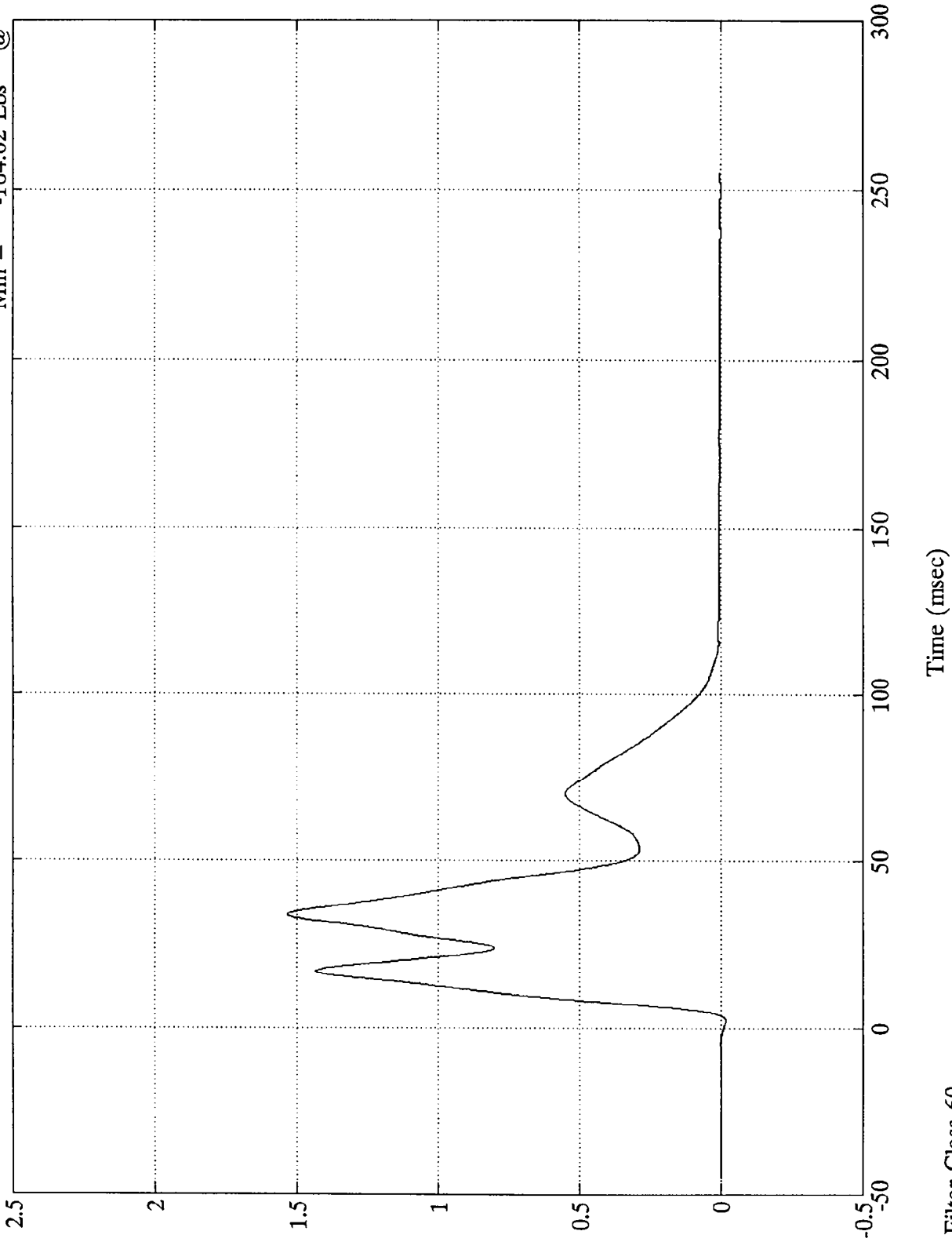
Time (msec)

VTV TEST 11

$\times 10^4$

Barrier Load Cell B3

Max = 15343.63 Lbs @ 33.72 msec
Min = -164.02 Lbs @ 2.15 msec



Lbs

B-46

7942-12

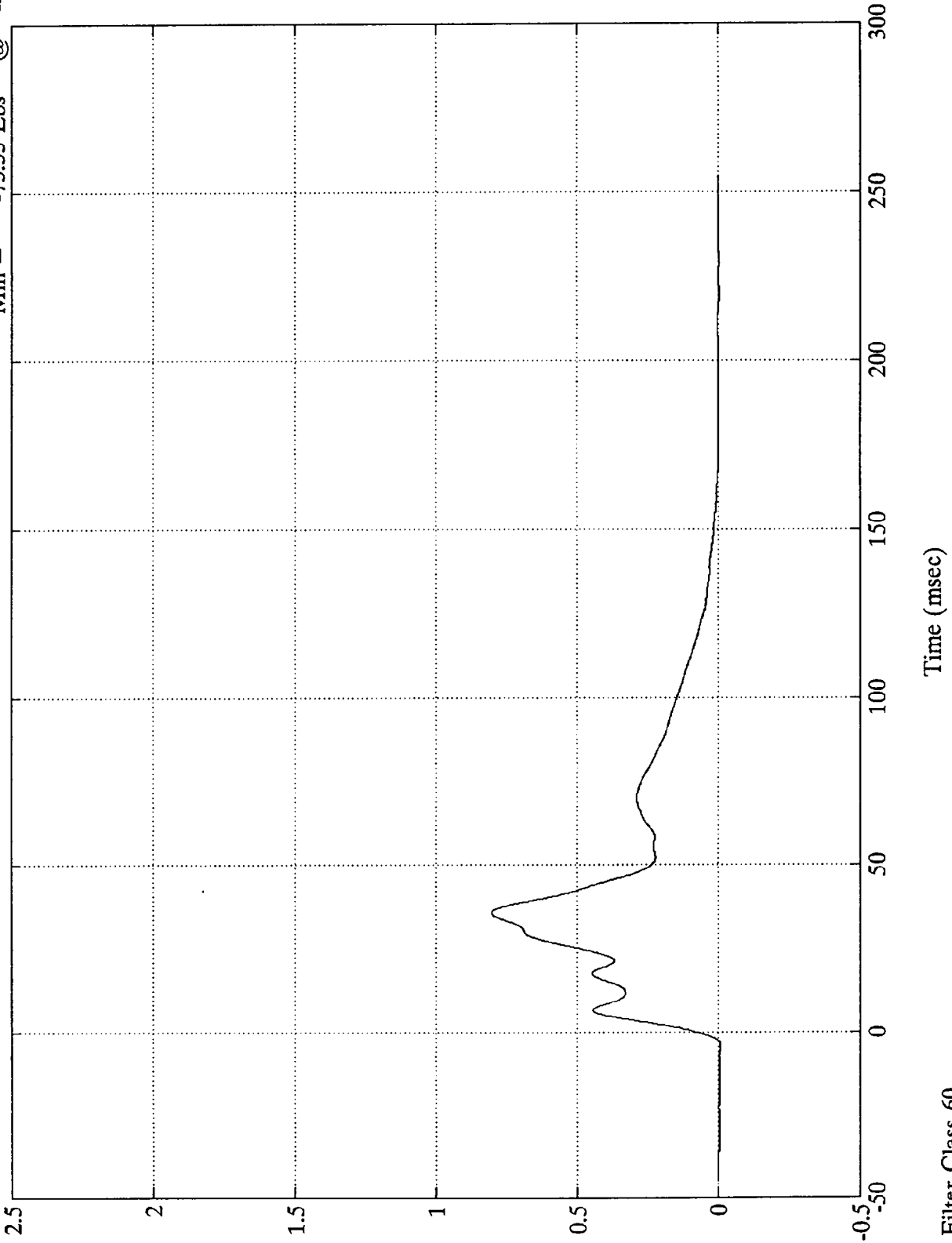
SAE Filter Class 60

Time (msec)

VTV TEST 11
x10⁴

Barrier Load Cell B4

Max = 8037.95 Lbs @ 35.51 msec
Min = -73.55 Lbs @ -4.44 msec



Lbs
-47

7942-12

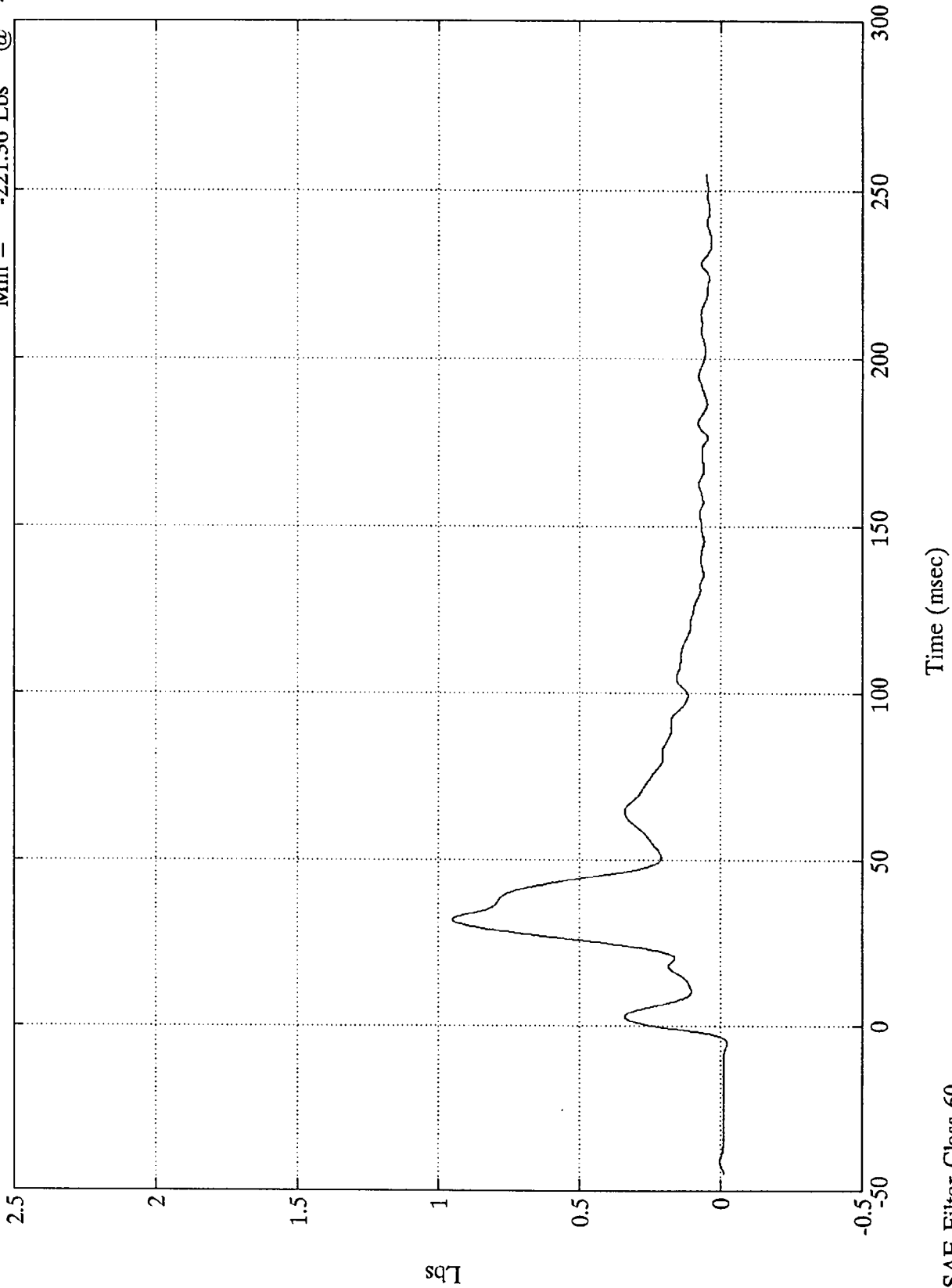
SAE Filter Class 60

VTV TEST 11

$\times 10^4$

Barrier Load Cell B5

Max = 9517.28 Lbs @ 31.67 msec
Min = -221.36 Lbs @ -5.28 msec



8-48
Lbs

7942-12

SAE Filter Class 60

Time (msec)

VTV TEST 11

$\times 10^4$

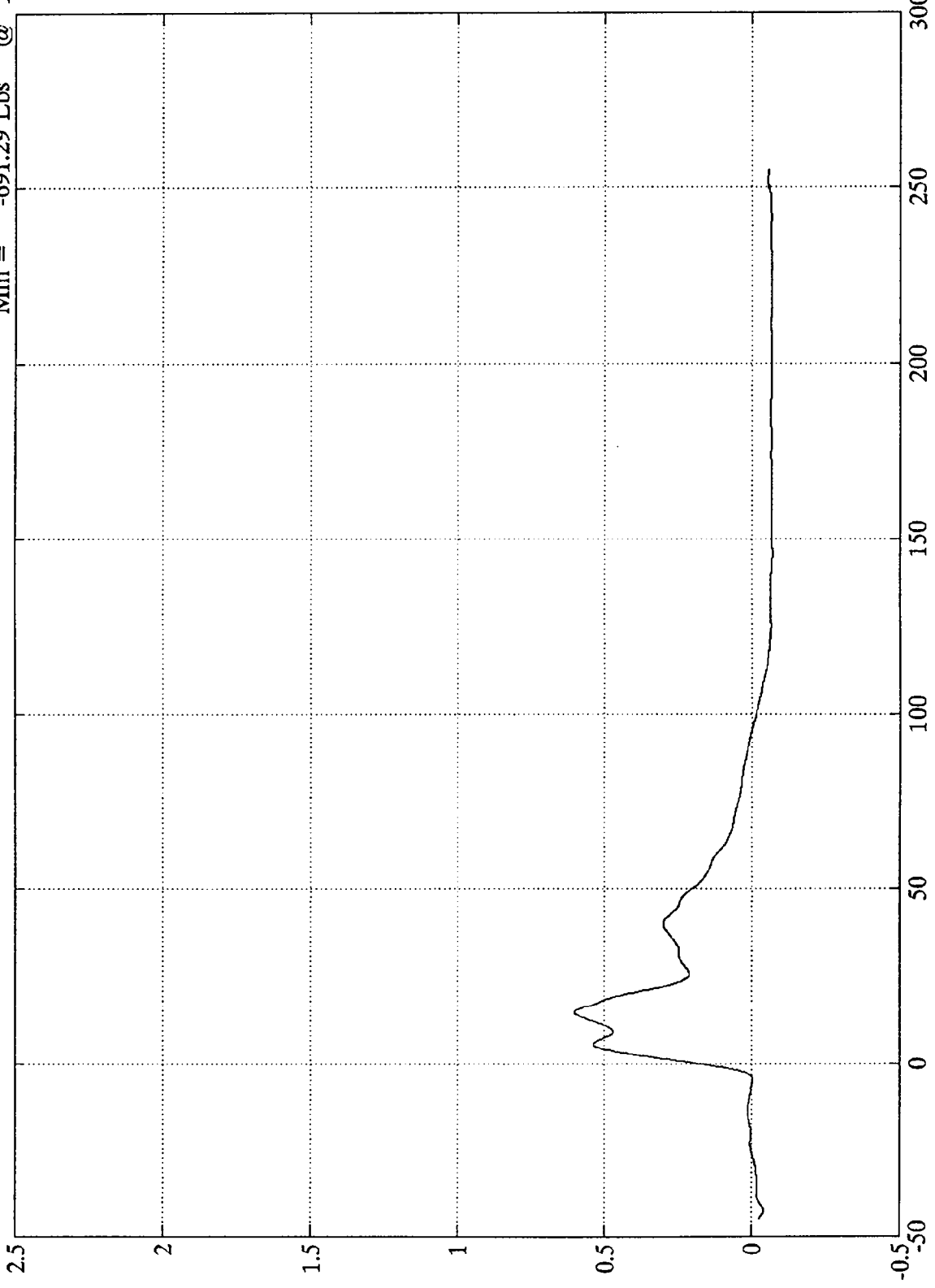
Barrier Load Cell B6

Max = 6014.65 Lbs

@ 14.75 msec

Min = -691.29 Lbs

@ 145.80 msec



B-49

7942-12

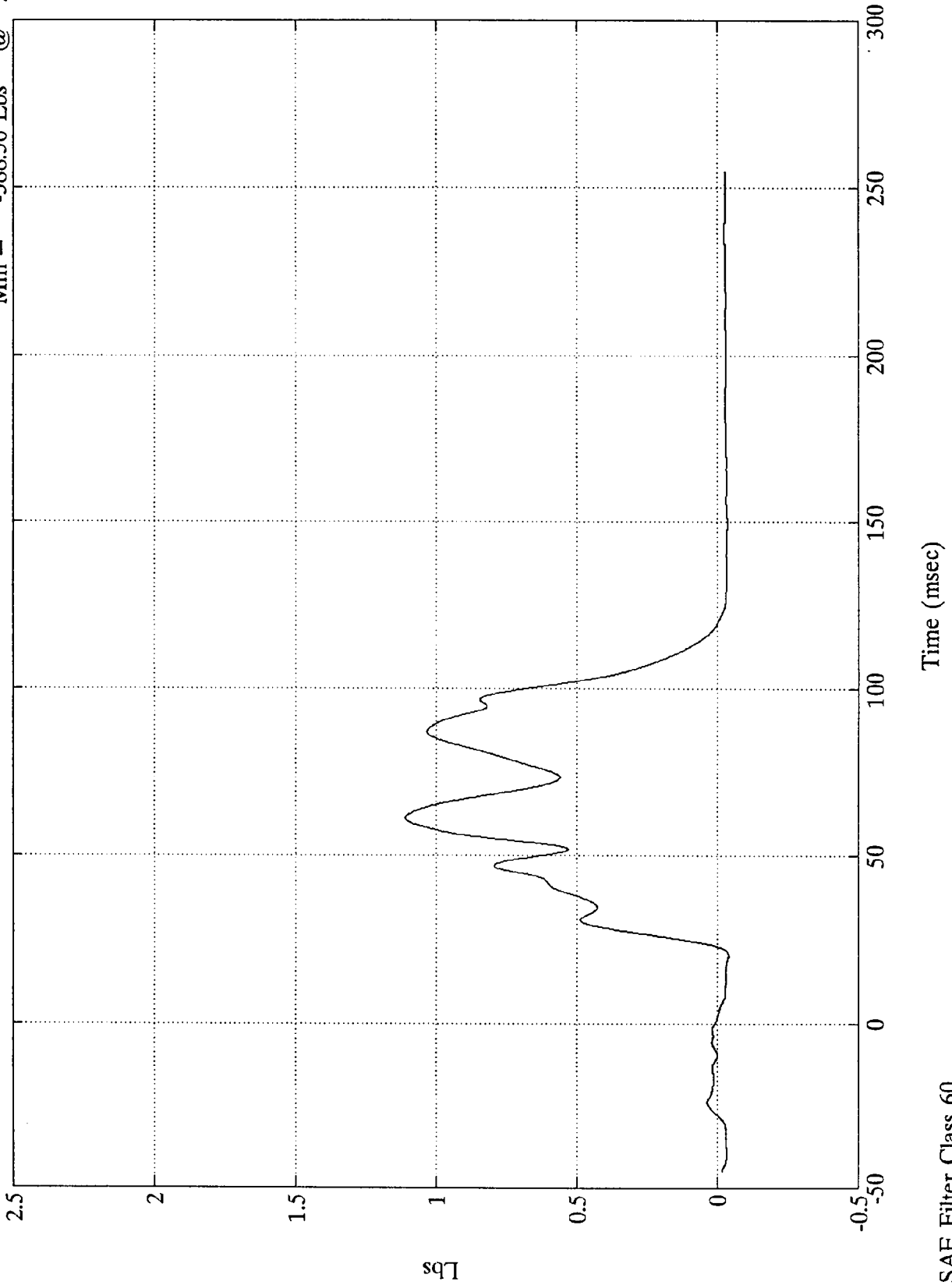
SAE Filter Class 60

Time (msec)

VTV TEST 11
x10⁴

Max = 11096.36 Lbs @ 61.20 msec
Min = -388.50 Lbs @ 20.28 msec

Barrier Load Cell B7



B-50

7942-12

SAE Filter Class 60

Time (msec)

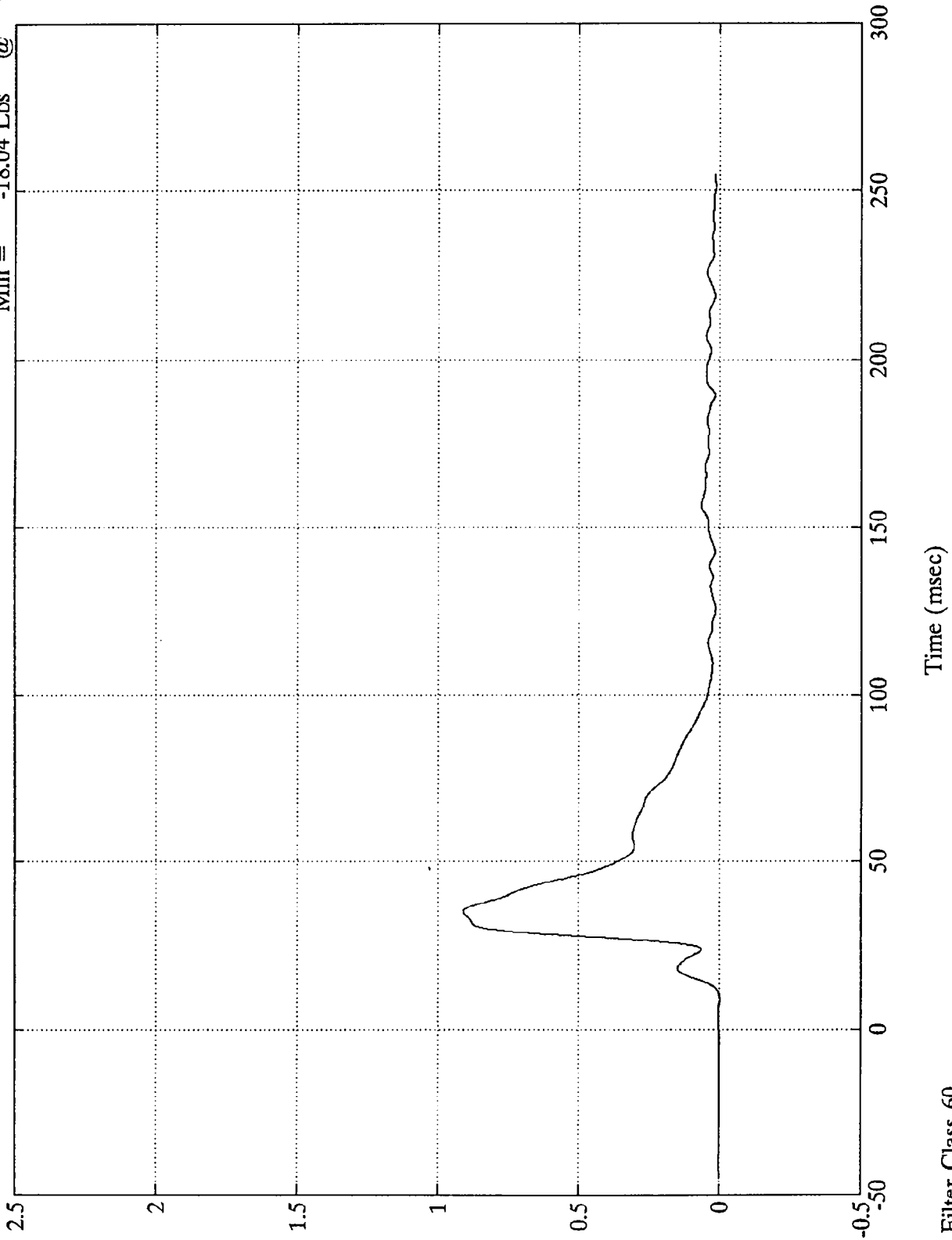


VTV TEST 11

$\times 10^4$

Barrier Load Cell B8

Max = 9110.87 Lbs @ 34.91 msec
Min = -18.04 Lbs @ 9.11 msec



B-51
lbs

7942-12

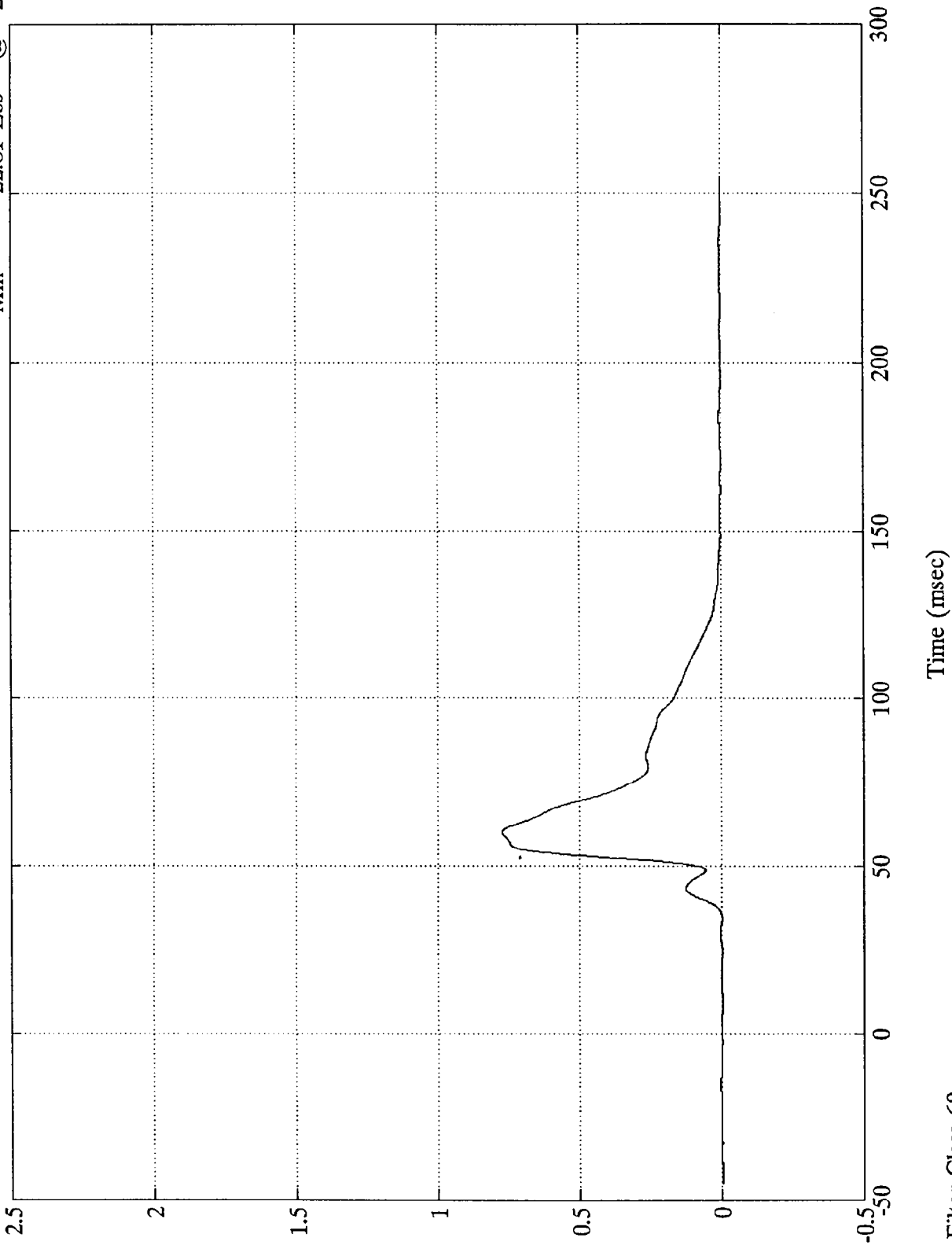
SAE Filter Class 60

VTV TEST 11

$\times 10^4$

Barrier Load Cell B9

Max = 7735.42 Lbs @ 59.88 msec
Min = -22.81 Lbs @ 24.59 msec



B-52

7942-12

SAE Filter Class 60



VTV TEST 11

$\times 10^4$

Barrier Load Cell C1

Max = 743.46 Lbs

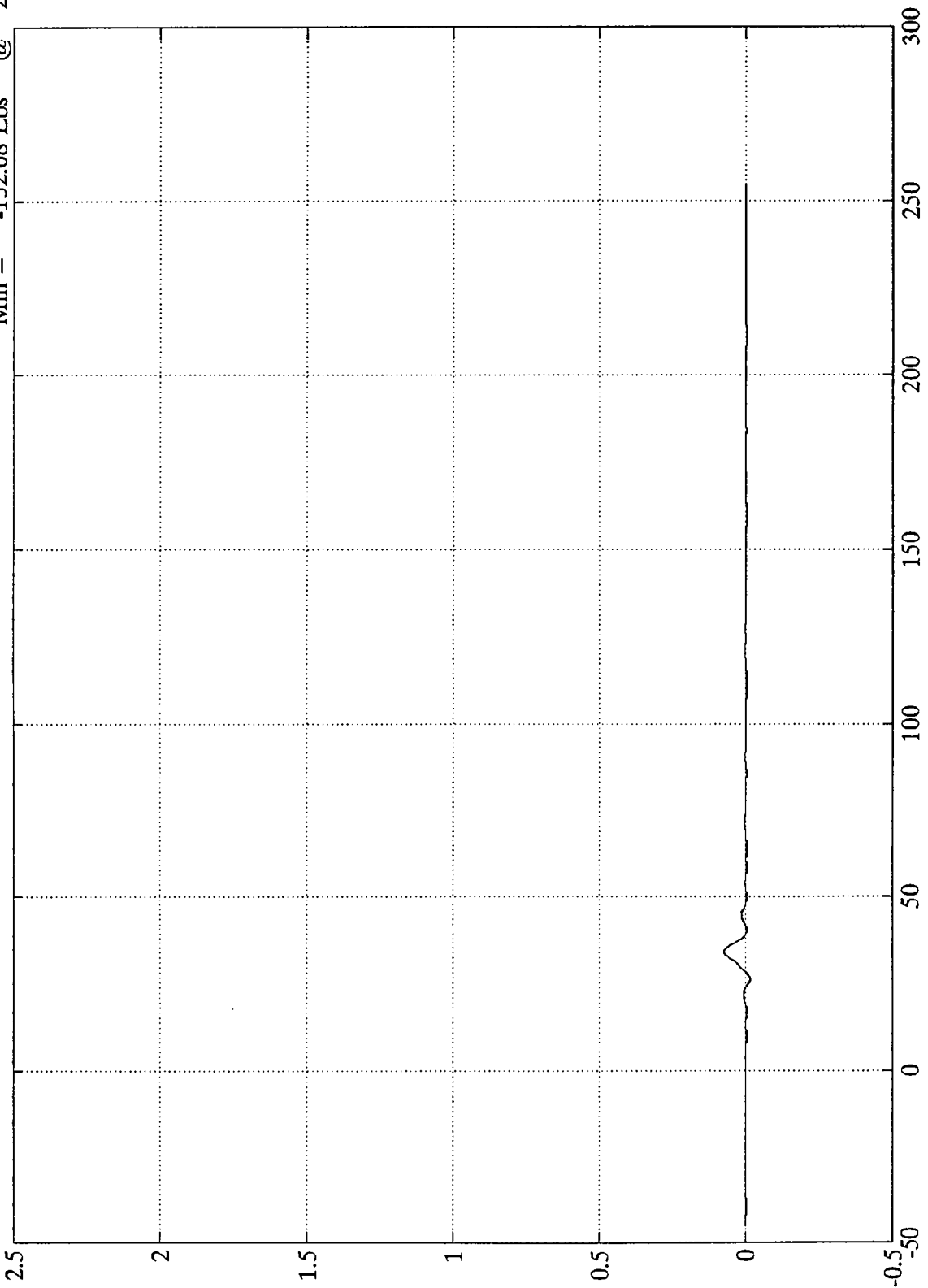
@

33.84 msec

Min = -152.08 Lbs

@

26.03 msec



B-53

7942-12

Time (msec)

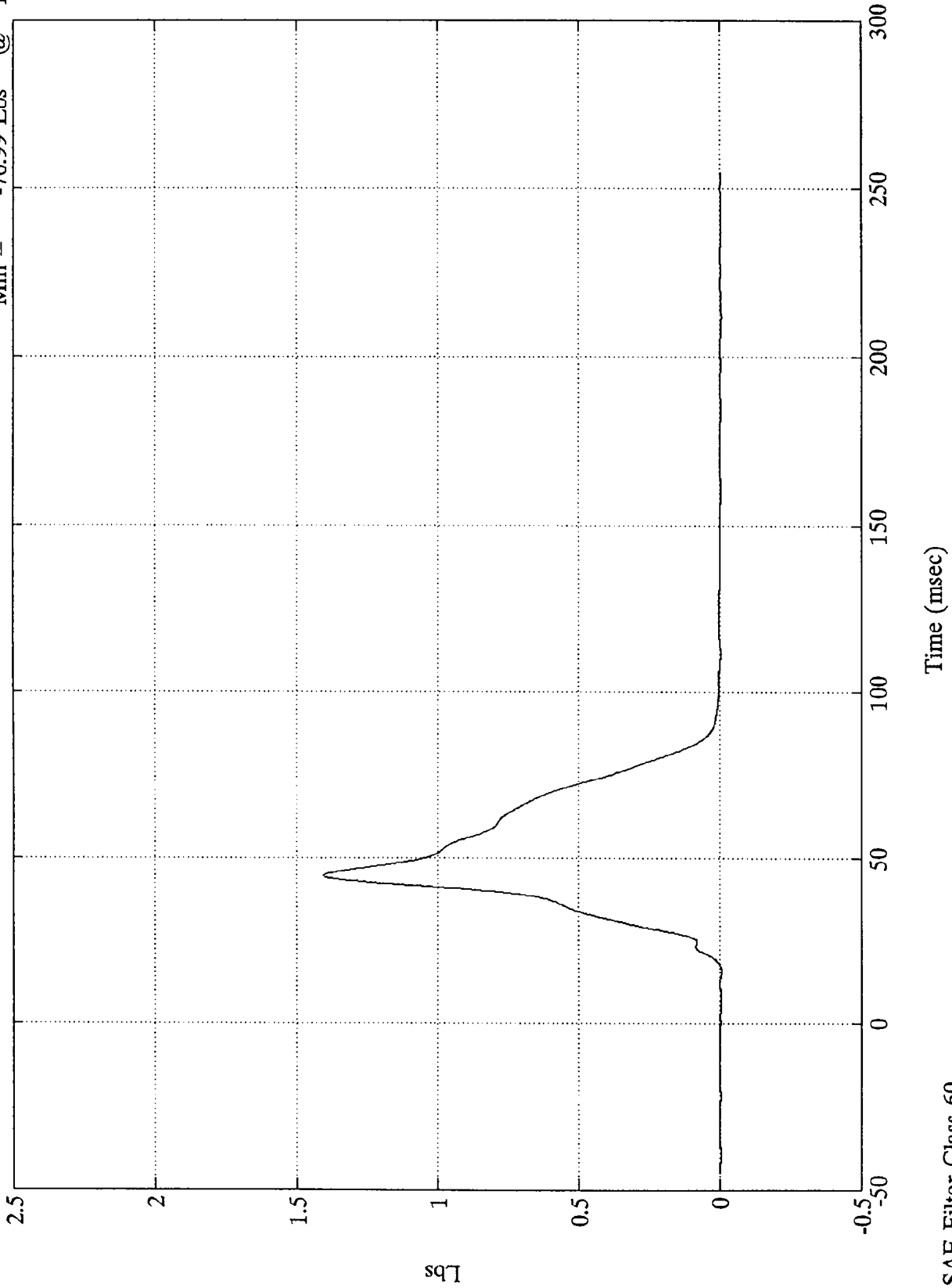
SAE Filter Class 60

VTV TEST 11

$\times 10^4$

Barrier Load Cell C2

Max = 14057.04 Lbs @ 44.63 msec
Min = -70.99 Lbs @ 15.71 msec



sq7
B-54

7942-12

SAE Filter Class 60

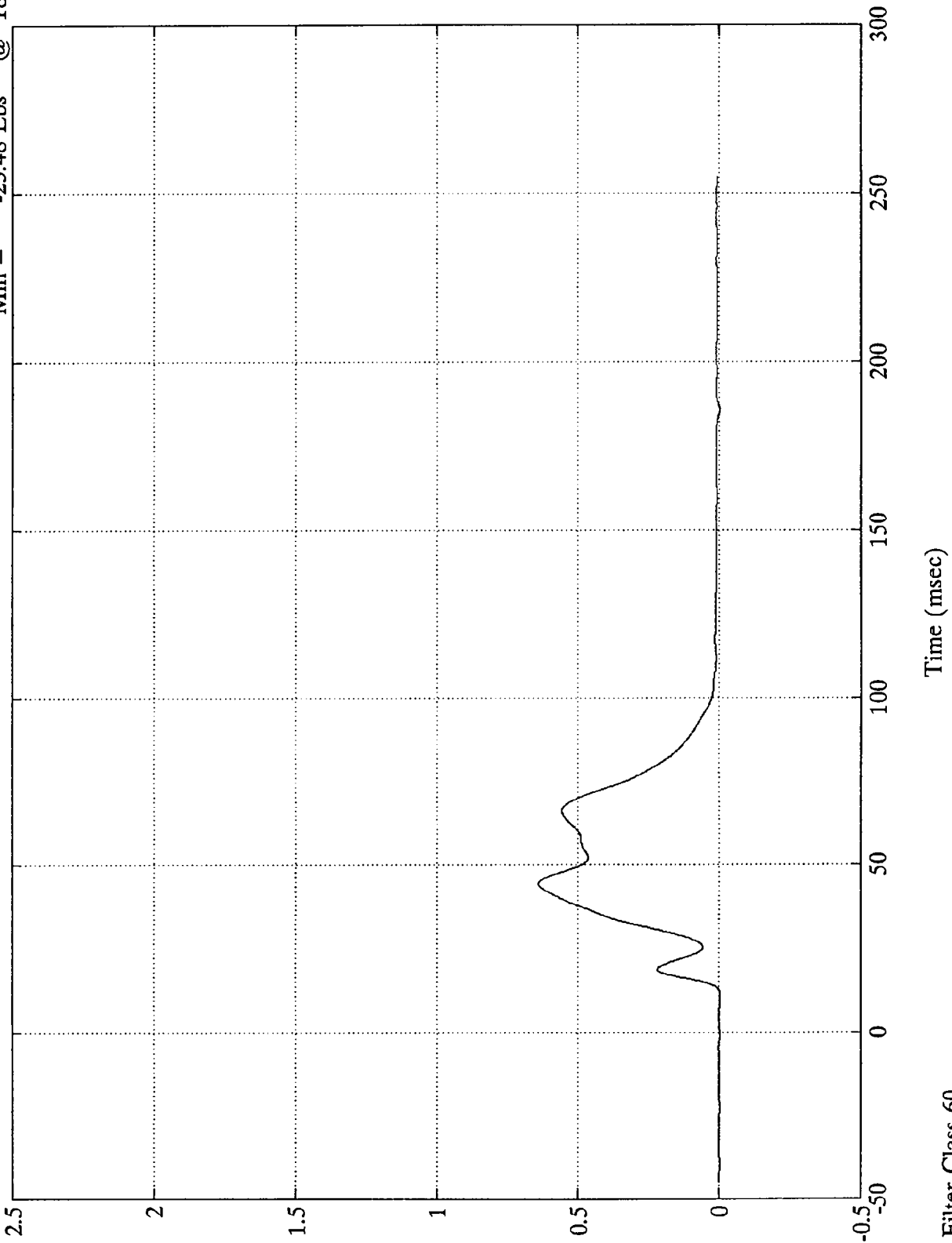


VTV TEST 11

$\times 10^4$

Barrier Load Cell C3

Max = 6405.88 Lbs @ 44.27 msec
Min = -23.48 Lbs @ 185.88 msec



Lbs
B-55

7942-12

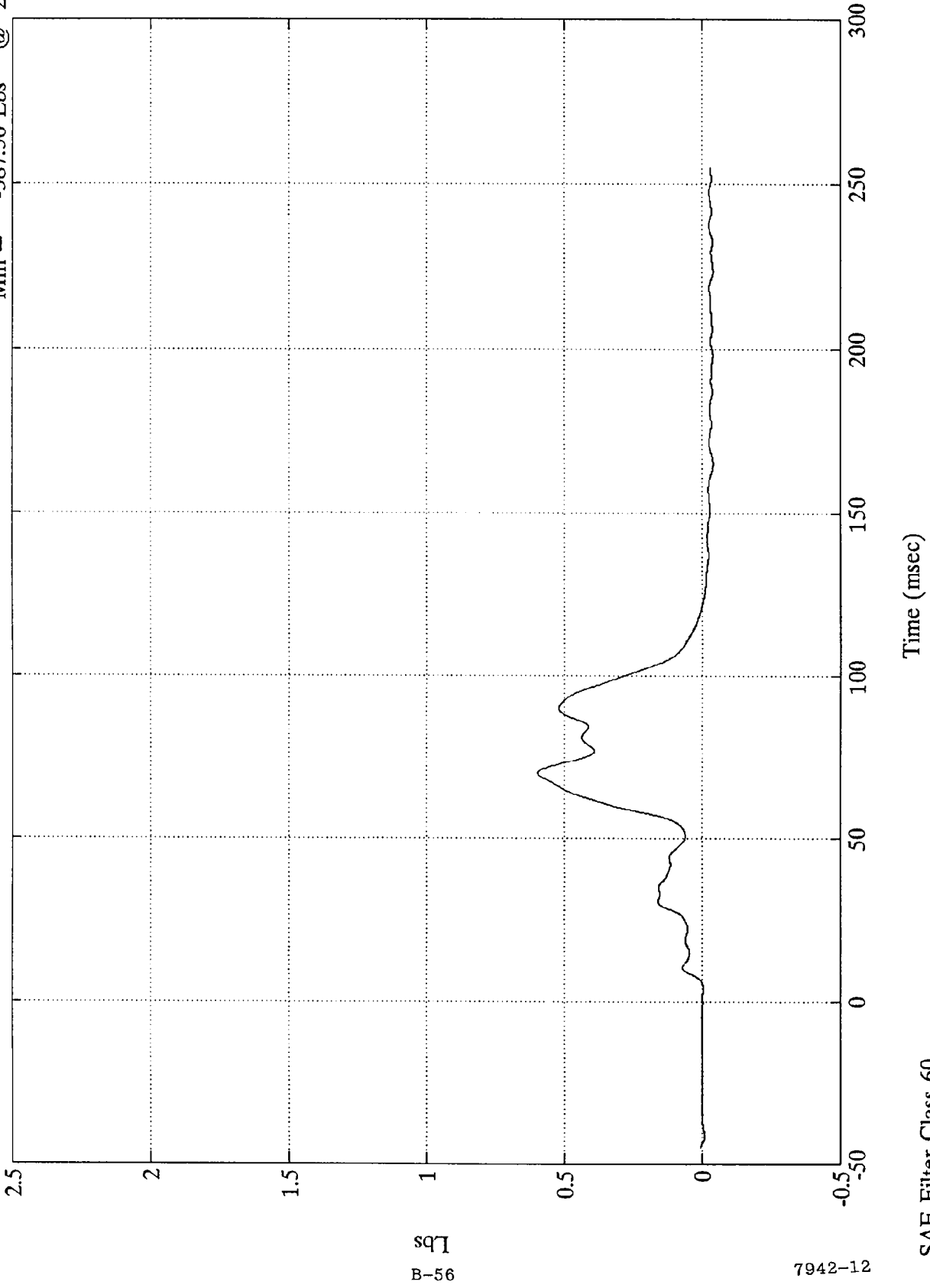
SAE Filter Class 60

VTV TEST 11

$\times 10^4$

Barrier Load Cell C4

Max = 5971.12 Lbs @ 69.72 msec
Min = -387.56 Lbs @ 223.68 msec



58-B

7942-12

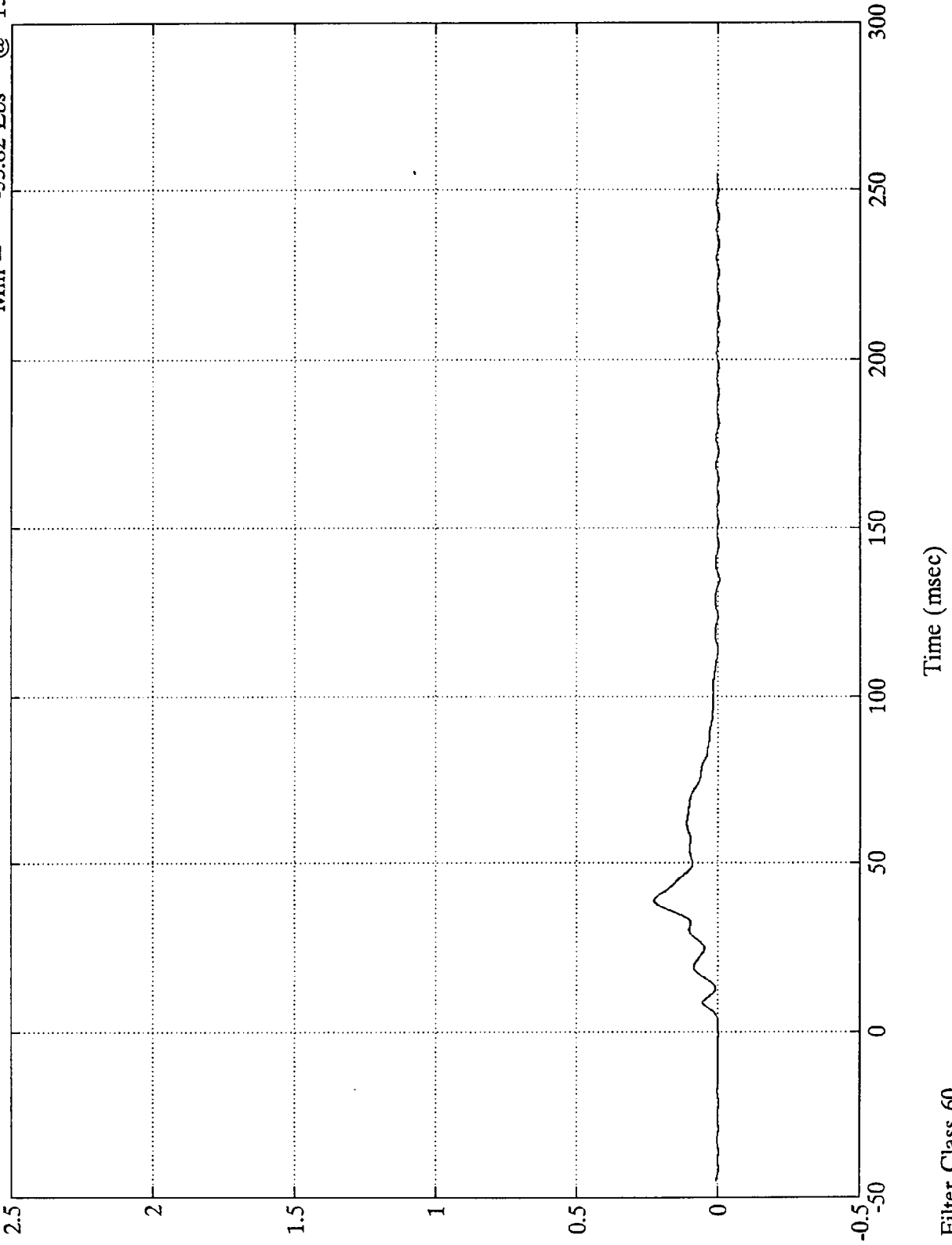
SAE Filter Class 60



VTV TEST 11
x10⁴

Barrier Load Cell C5

Max = 2254.51 Lbs @ 38.88 msec
Min = -53.82 Lbs @ 134.88 msec



B-57
Lbs

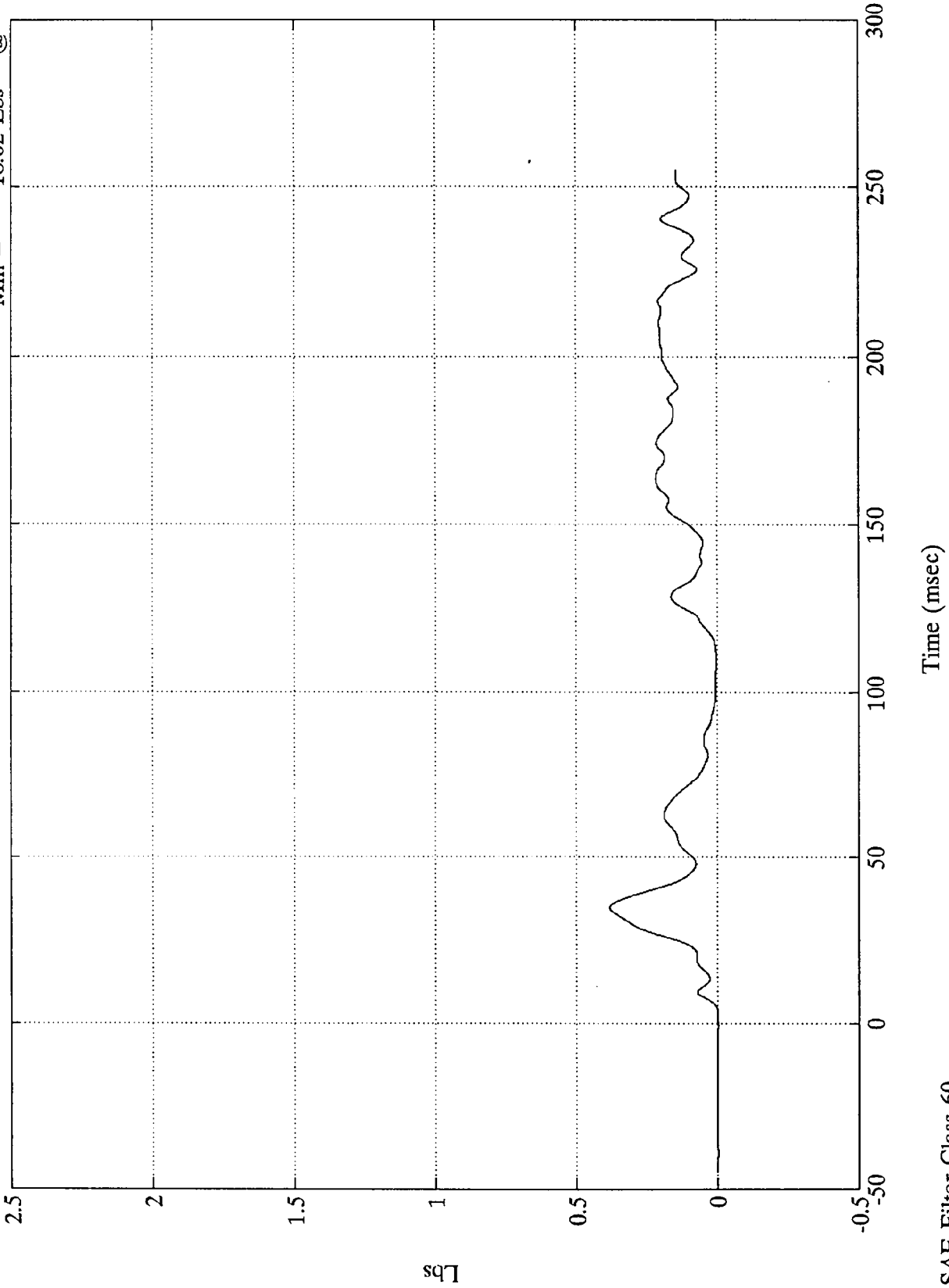
7942-12

SAE Filter Class 60

VTV TEST 11
x10⁴

Barrier Load Cell C6

Max = 3814.32 Lbs @ 34.68 msec
Min = -18.02 Lbs @ -0.60 msec



B-58

7942-12

SAE Filter Class 60

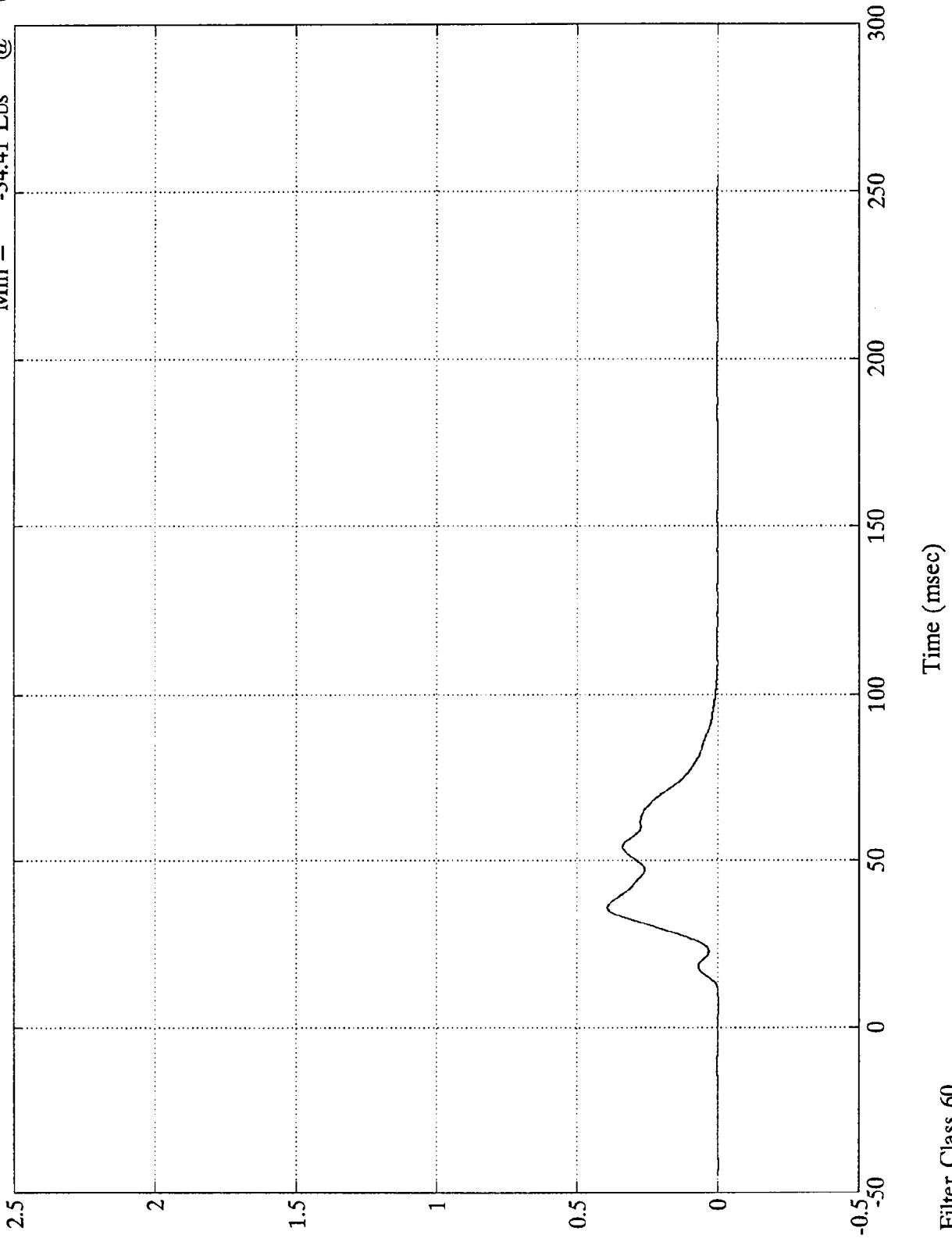


VTV TEST 11

$\times 10^4$

Barrier Load Cell C7

Max = 3921.59 Lbs @ 35.88 msec
Min = -34.41 Lbs @ 6.95 msec



Lbs
B-59

7942-12

SAE Filter Class 60

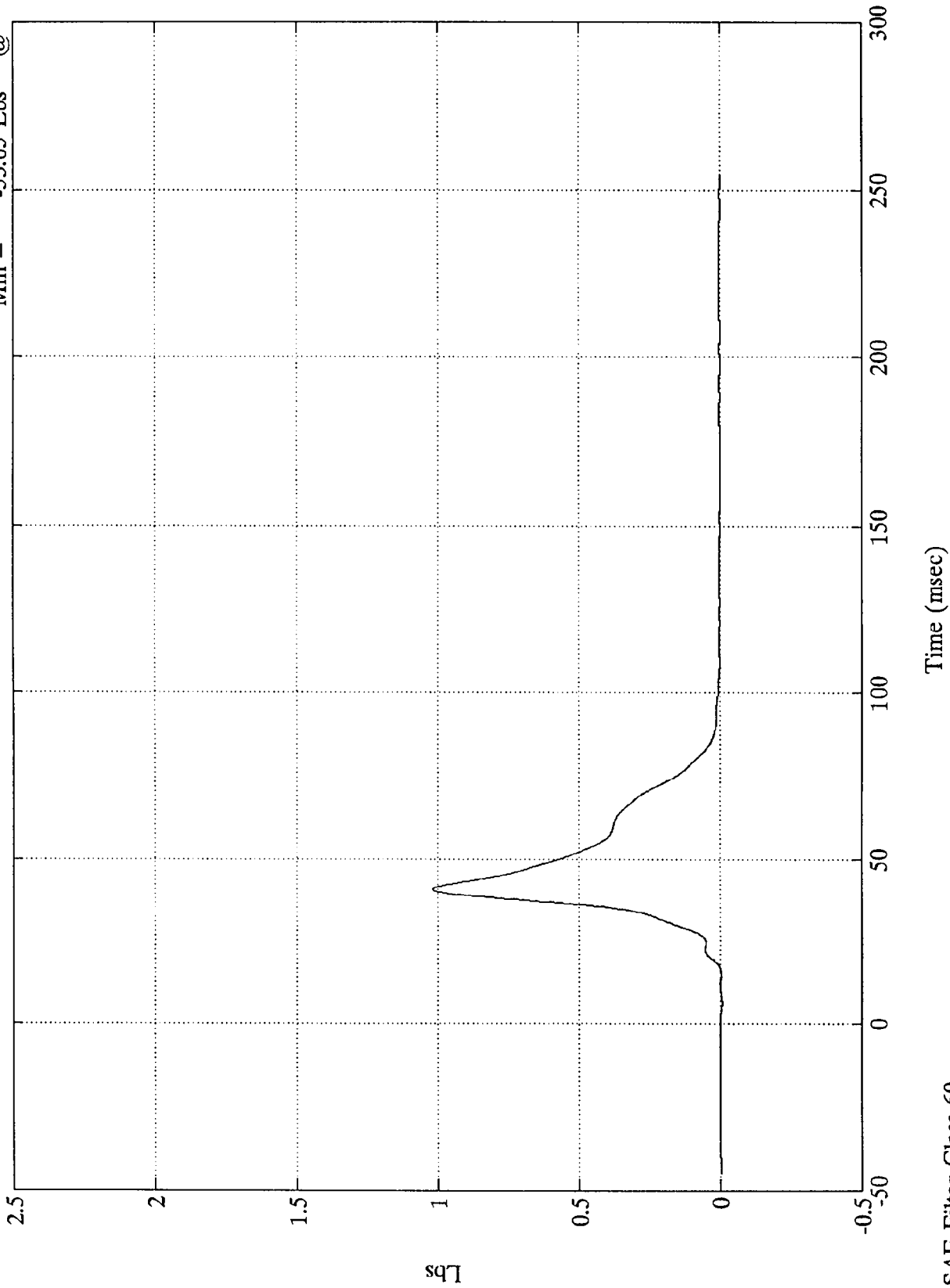
Time (msec)

VTV TEST 11

$\times 10^4$

Barrier Load Cell C8

Max = 10190.06 Lbs @ 40.56 msec
Min = -53.05 Lbs @ 5.87 msec



98-B

7942-12

SAE Filter Class 60

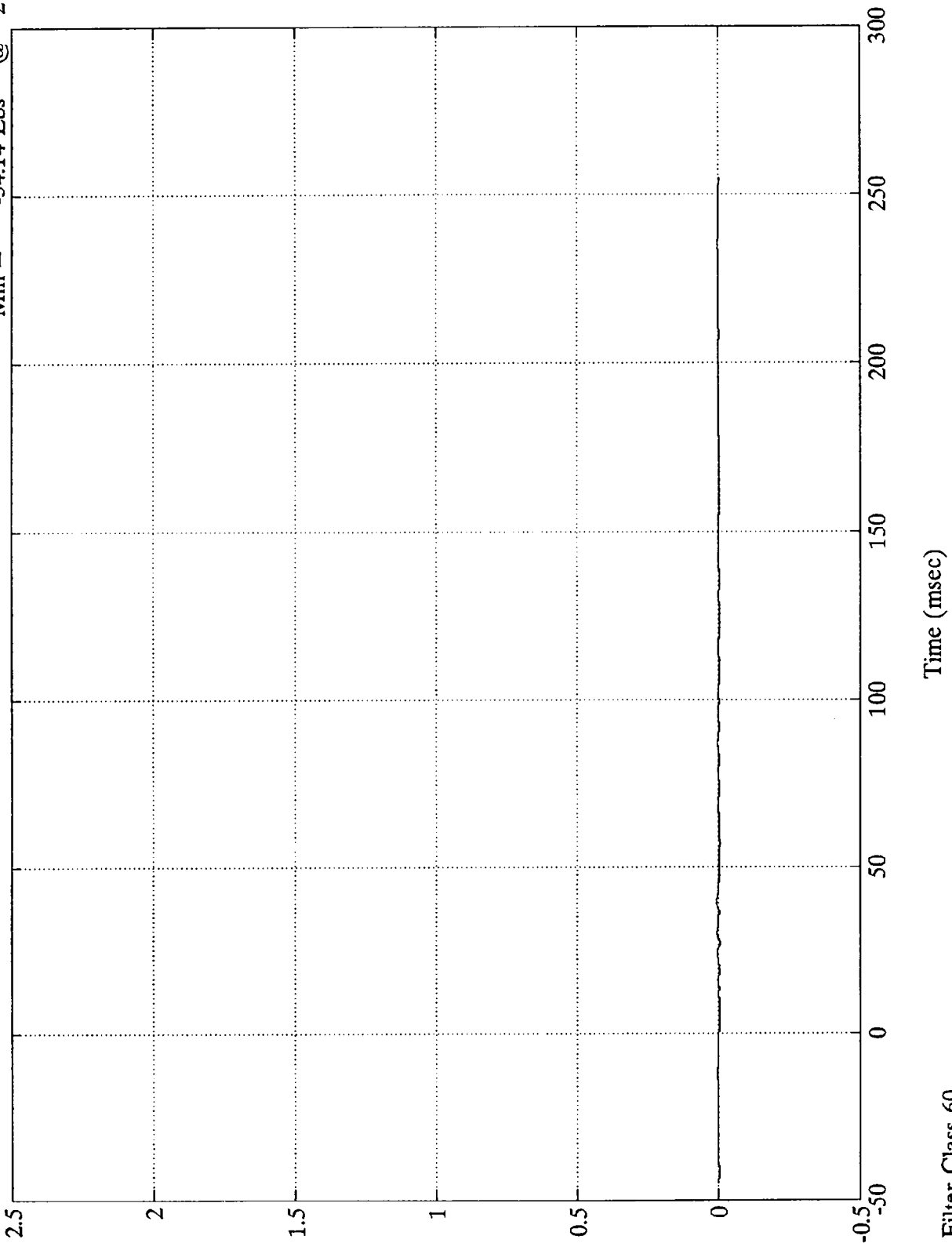


VTV TEST 11

$\times 10^4$

Barrier Load Cell C9

Max = 78.83 Lbs @ 39.71 msec
Min = -54.14 Lbs @ 27.11 msec



19-8
B-61

7942-12

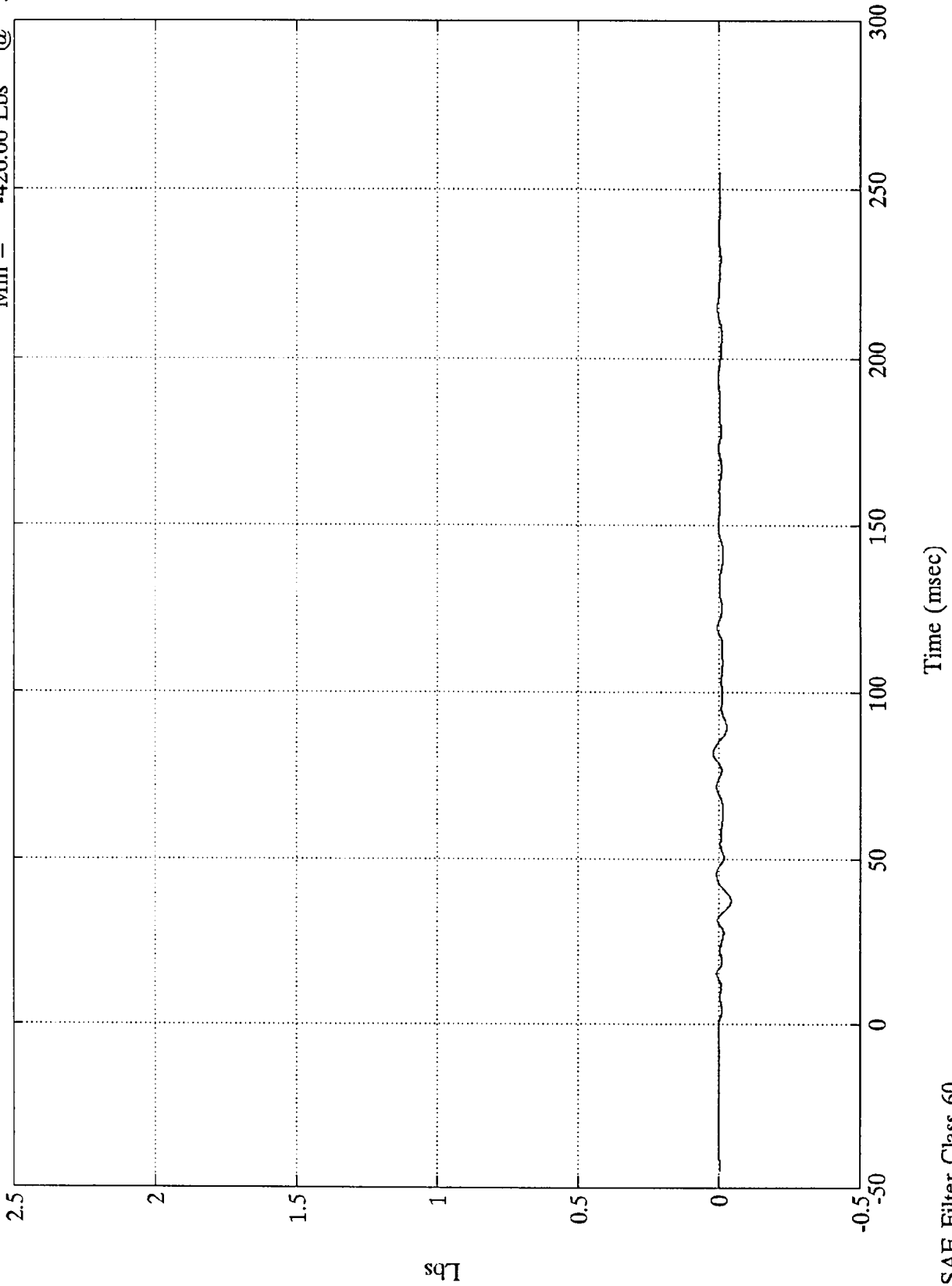
SAE Filter Class 60

Time (msec)

VTV TEST 11
x10⁴

Max = 213.73 Lbs @ 81.72 msec
Min = -426.06 Lbs @ 37.20 msec

Barrier Load Cell D1



B-62

7942-12

SAE Filter Class 60



VTV TEST 11

$\times 10^4$

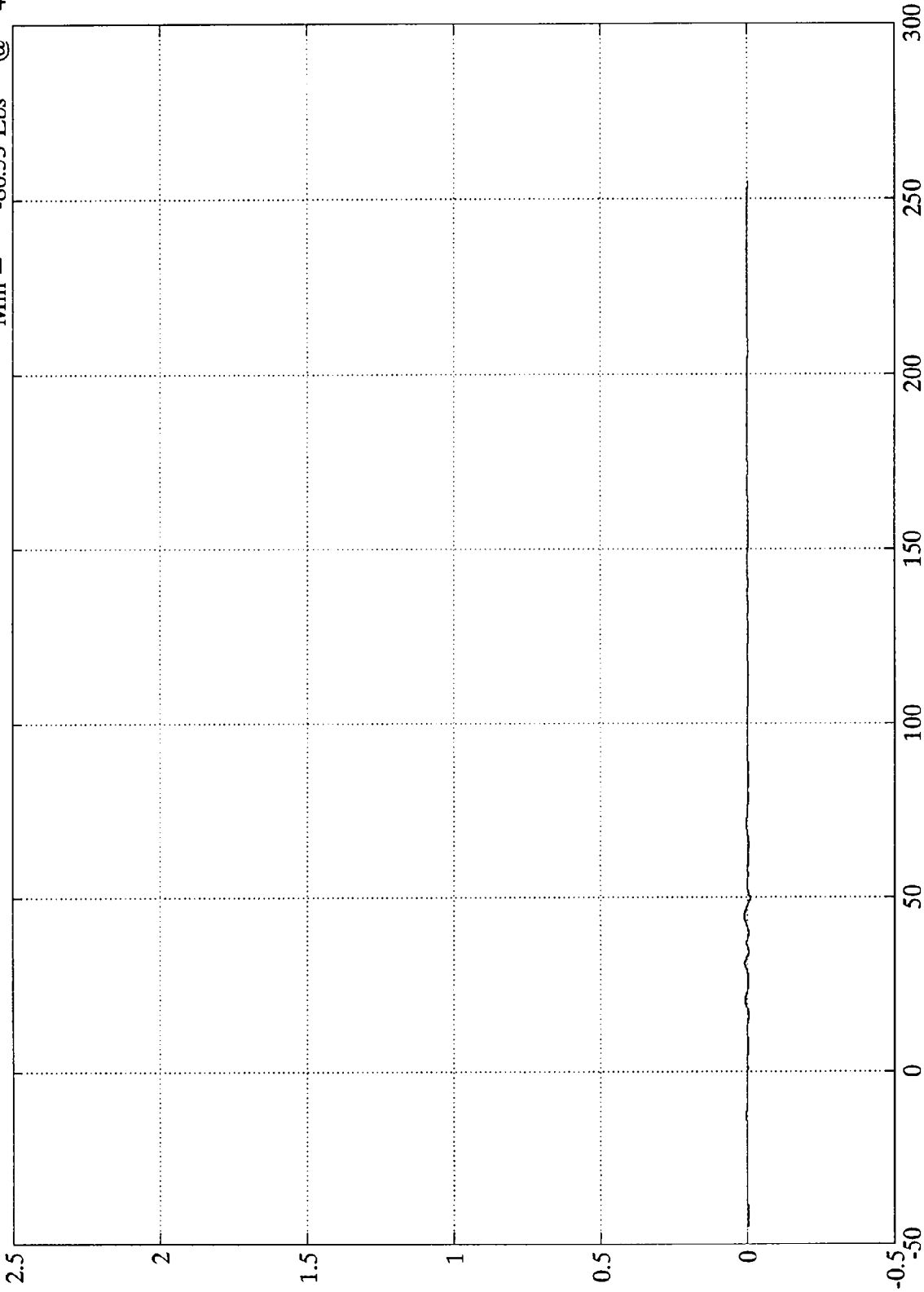
Barrier Load Cell D2

Max = 101.90 Lbs

@ 44.63 msec

Min = -86.53 Lbs

@ 49.79 msec



B-63
Lbs

7942-12

Time (msec)

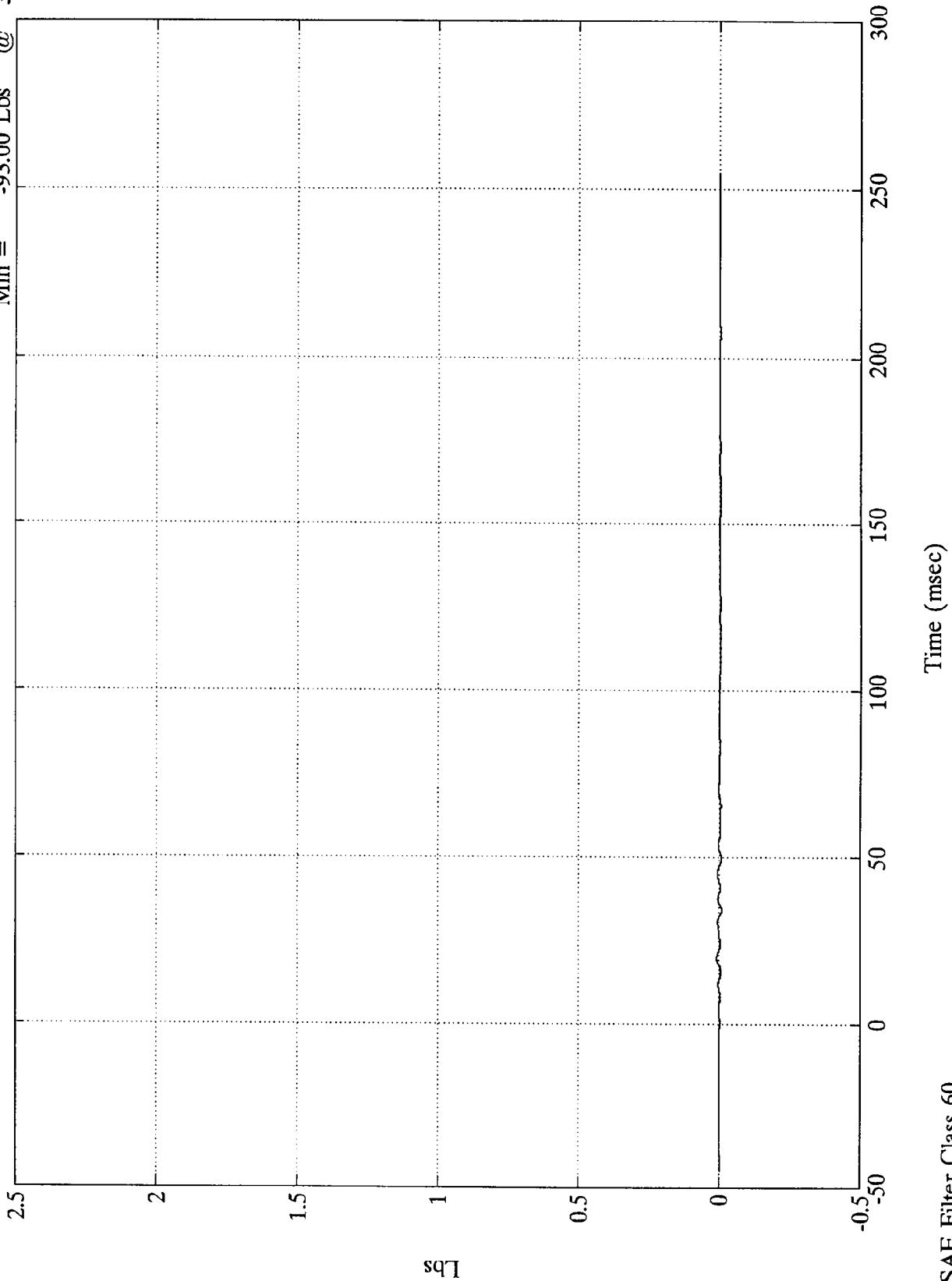
SAE Filter Class 60

VTV TEST 11

x10⁴

Barrier Load Cell D3

Max = 93.76 Lbs @ 19.91 msec
Min = -93.00 Lbs @ 34.31 msec



Lbs
B-64

7942-12

SAE Filter Class 60

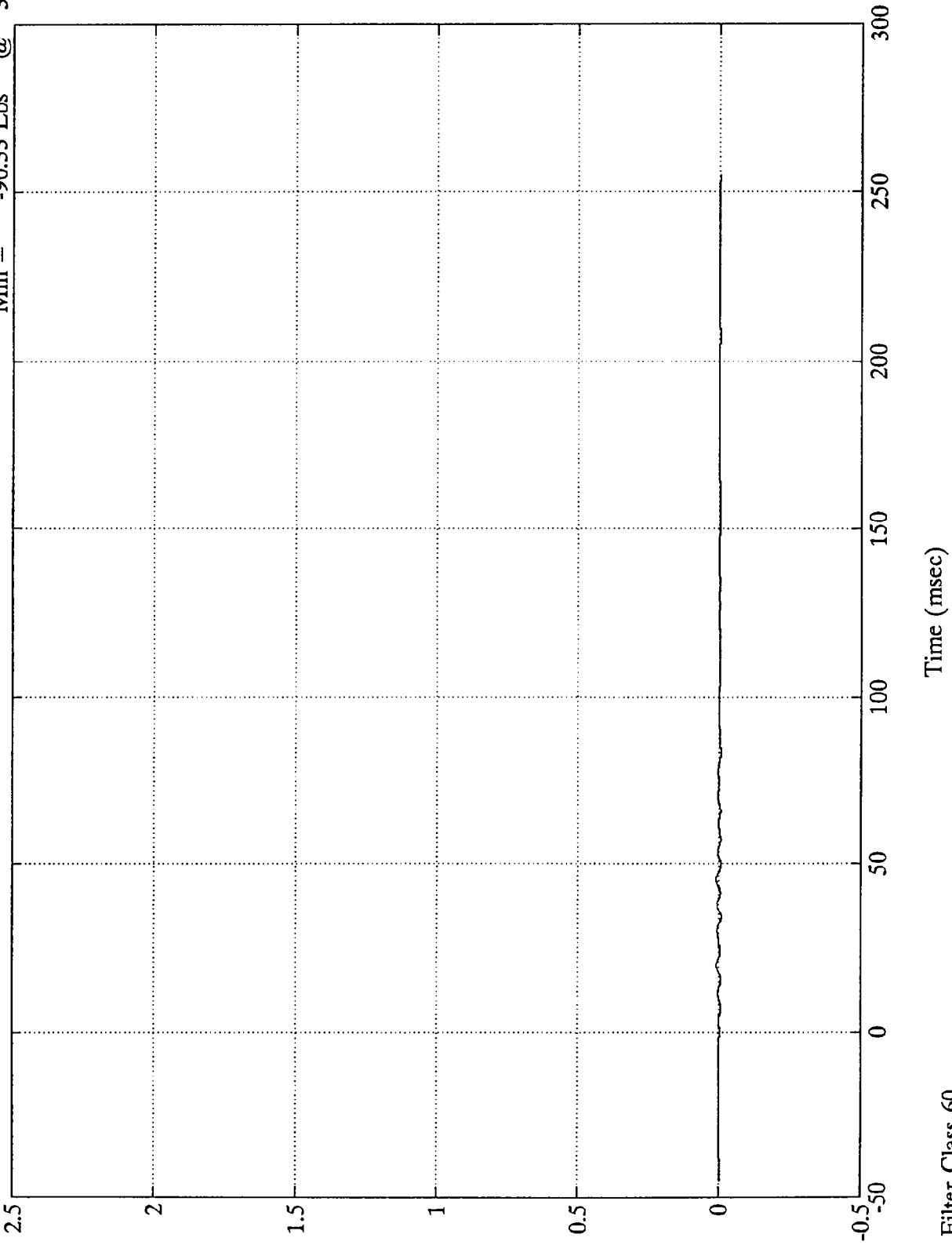
Time (msec)

VTV TEST 11

$\times 10^4$

Barrier Load Cell D4

Max = 98.98 Lbs @ 45.36 msec
Min = -90.33 Lbs @ 34.07 msec



B-65

7942-12

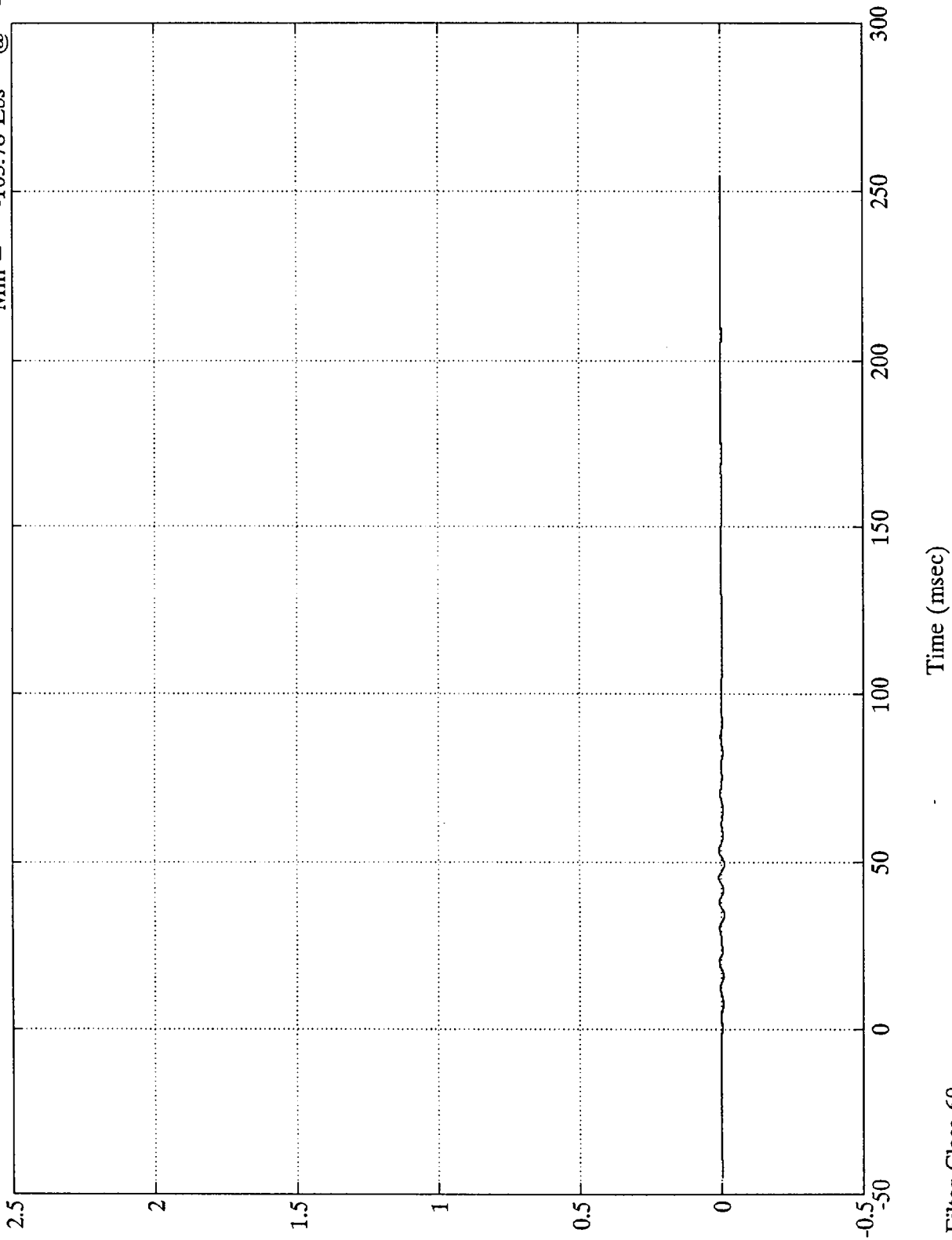
SAE Filter Class 60

VTV TEST 11

$\times 10^4$

Barrier Load Cell D5

Max = 93.10 Lbs @ 45.36 msec
Min = -103.78 Lbs @ 49.31 msec



Lbs

B-66

7942-12

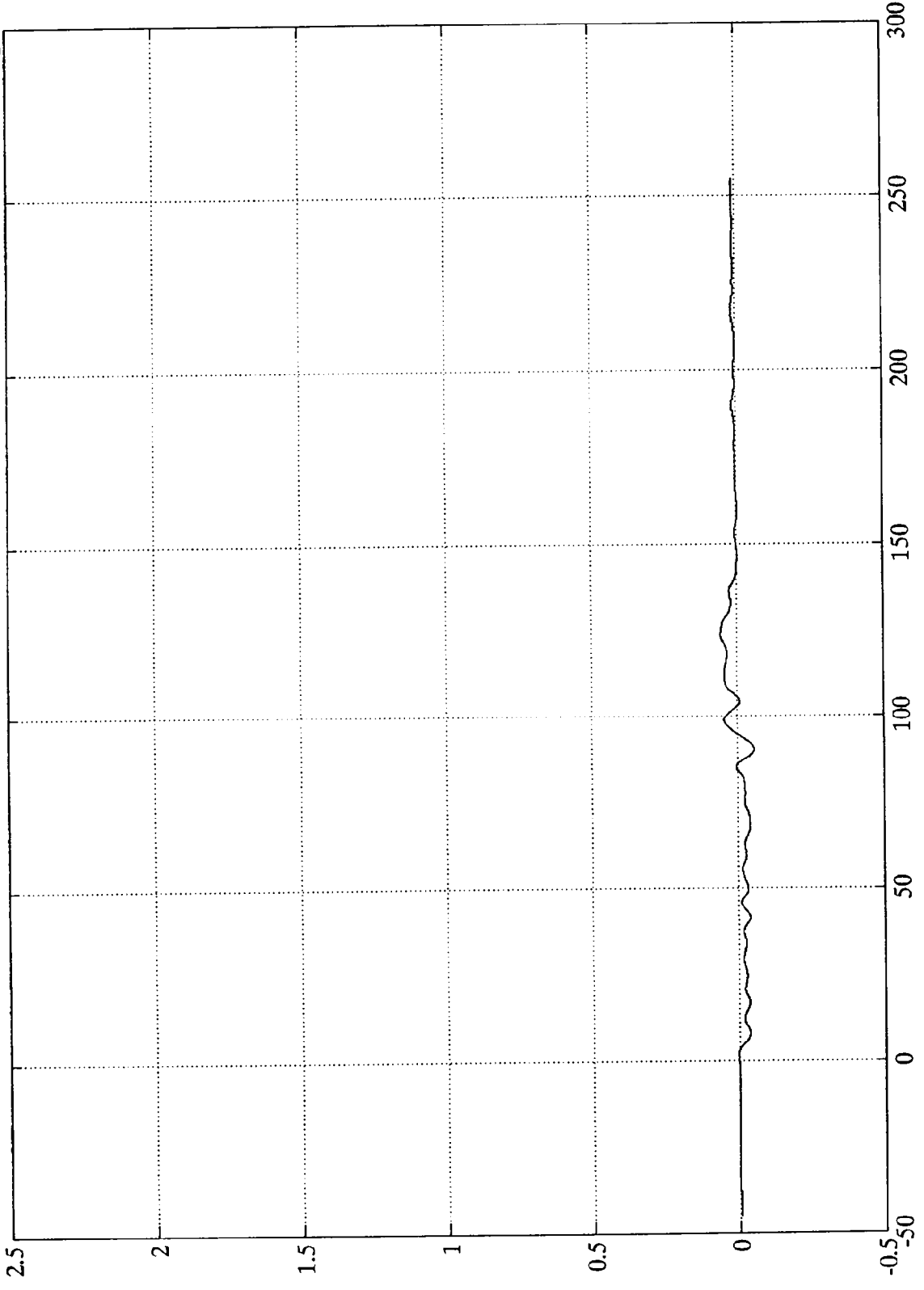
SAE Filter Class 60

Time (msec)

VTV TEST 11
x10⁴

Barrier Load Cell D6

Max = 560.06 Lbs @ 123.72 msec
Min = -566.10 Lbs @ 89.76 msec



lbs
B-67

Time (msec)

7942-12

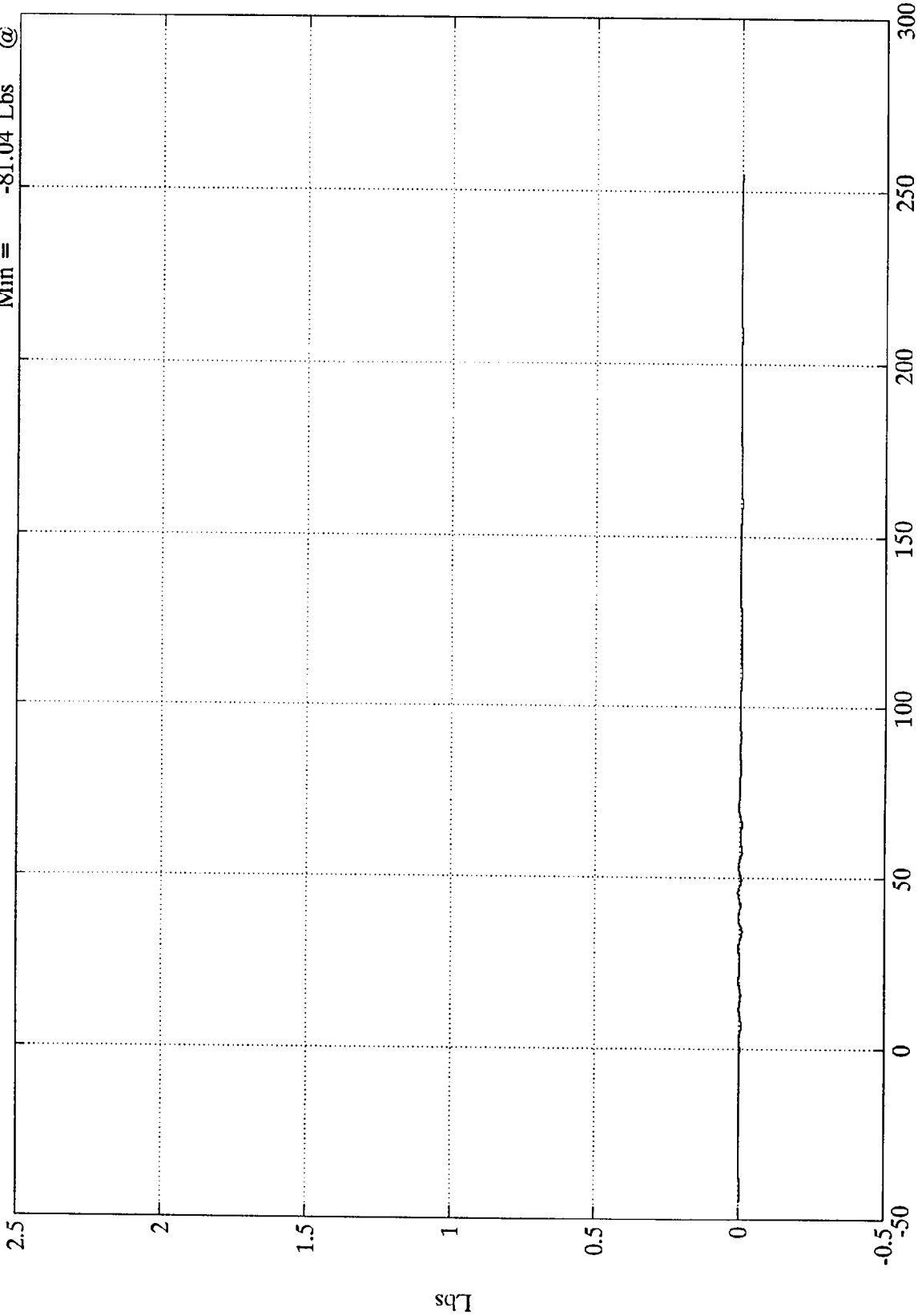
SAE Filter Class 60

VTV TEST 11

$\times 10^4$

Barrier Load Cell D7

Max = 56.11 Lbs @ 45.48 msec
Min = -81.04 Lbs @ 34.20 msec



89-B

7942-12

SAE Filter Class 60

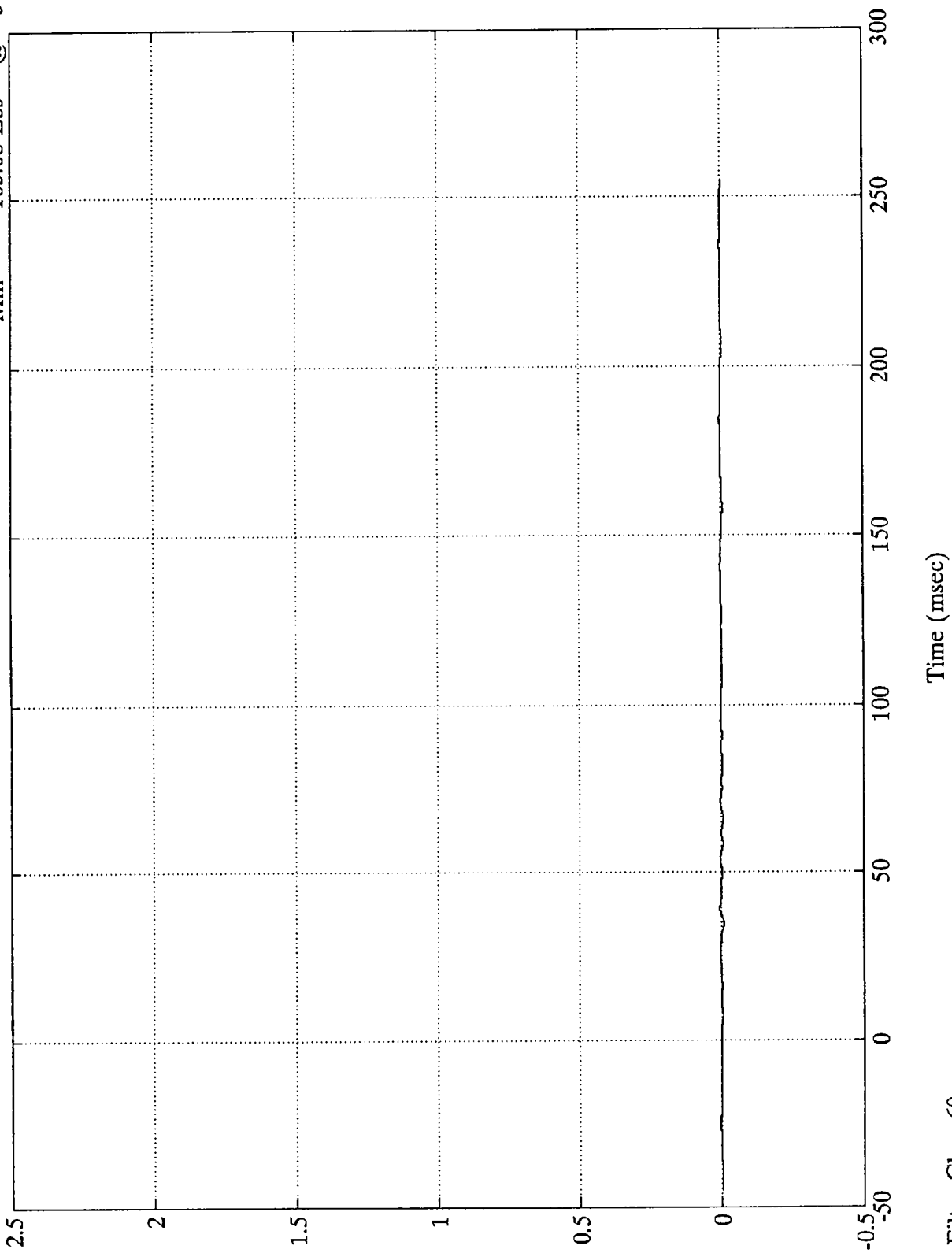
Time (msec)

VTV TEST 11
x10⁴

Barrier Load Cell D8

Max = 59.40 Lbs @
Min = -105.08 Lbs @

39.11 msec
34.43 msec



B-69
Lbs

7942-12

SAE Filter Class 60

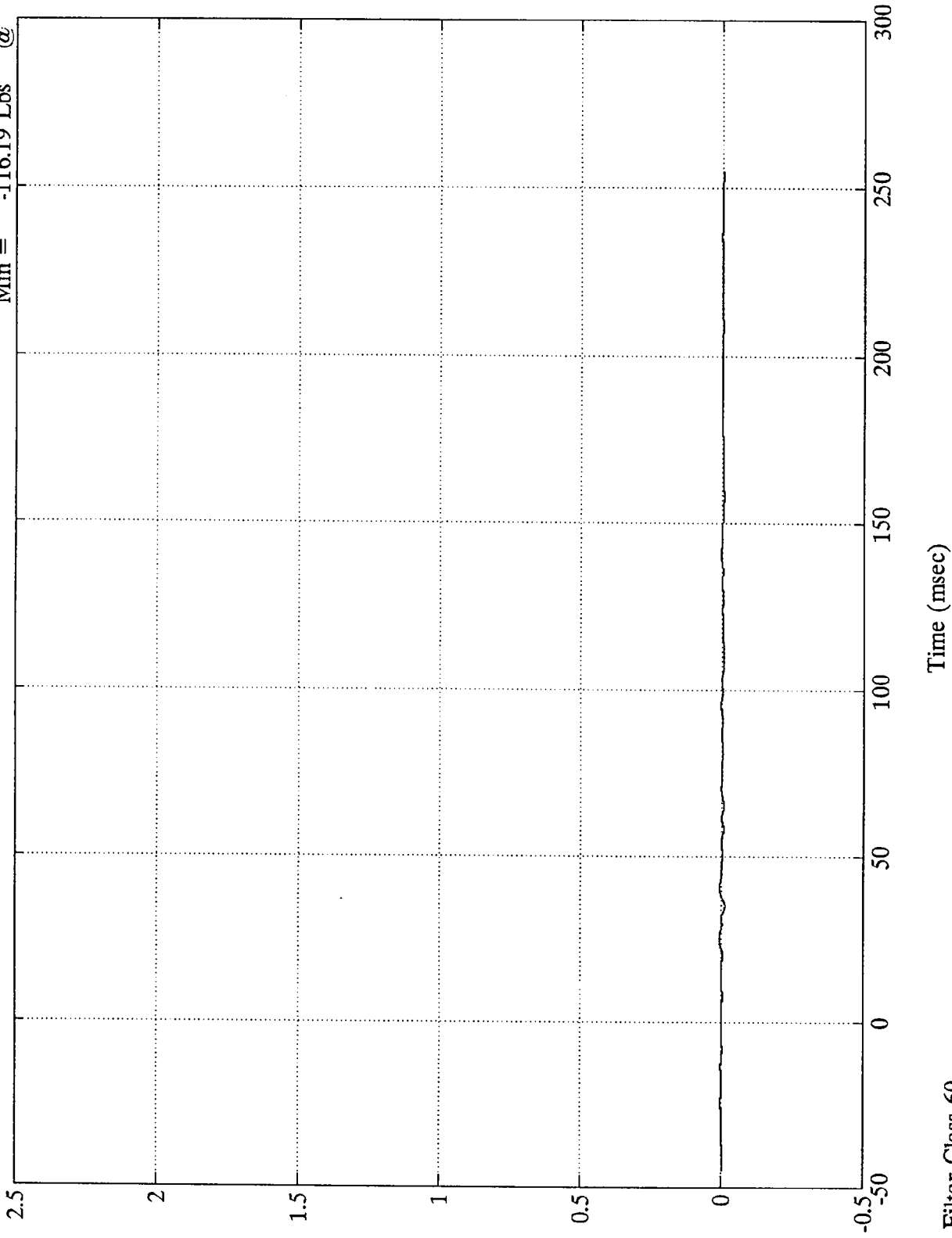
Time (msec)

VTV TEST 11

$\times 10^4$

Barrier Load Cell D9

Max = 72.93 Lbs @ 25.44 msec
Min = -116.19 Lbs @ 34.79 msec



B-70
Lbs

7942-12

SAE Filter Class 60

Time (msec)

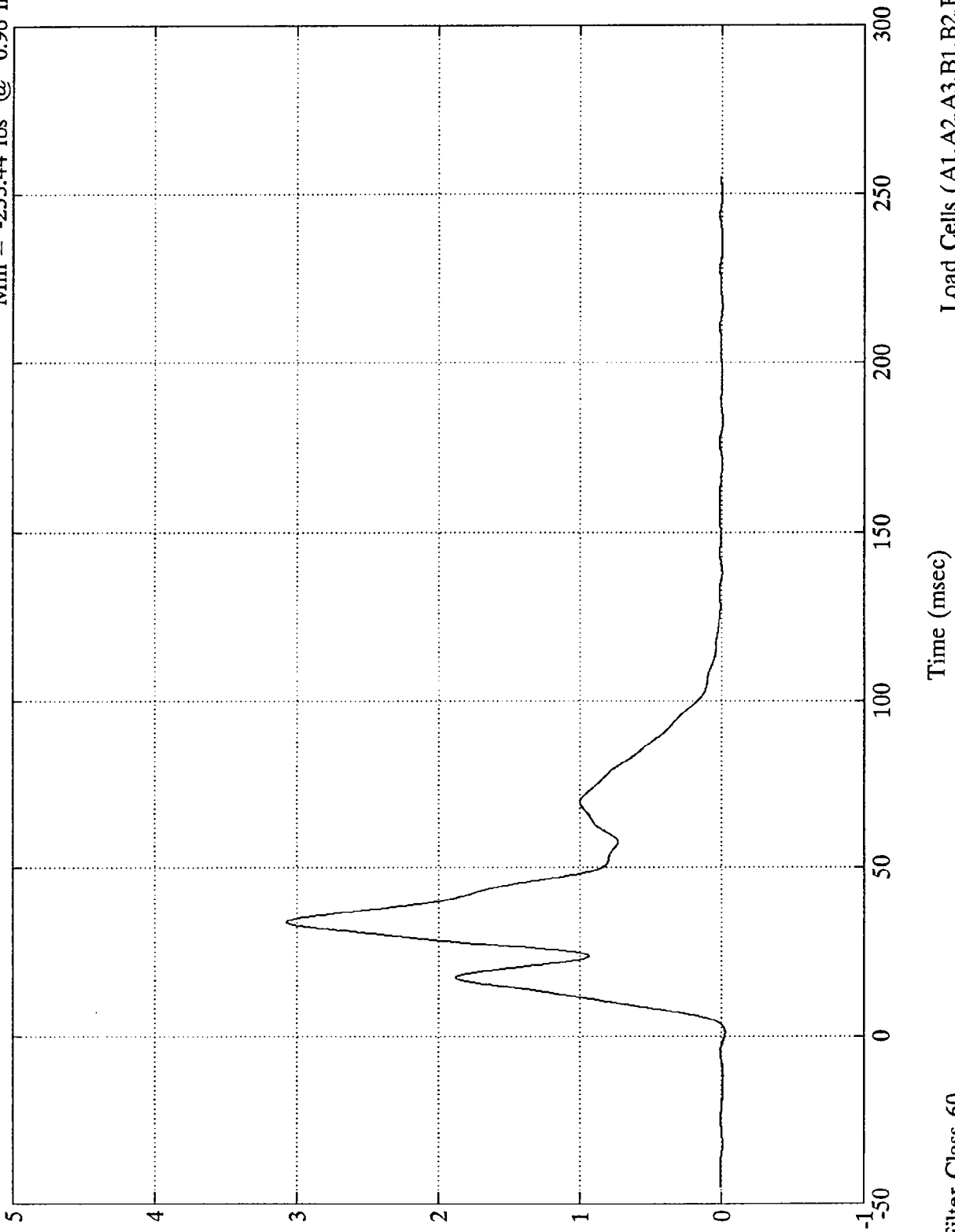
VTV TEST 11

$\times 10^4$

Group 1 Load Cell Sum

Max = 30729.60 lbs @ 33.84 msec

Min = -233.44 lbs @ 0.96 msec



SAE Filter Class 60

Time (msec)

Load Cells (A1,A2,A3,B1,B2,B3)

sql

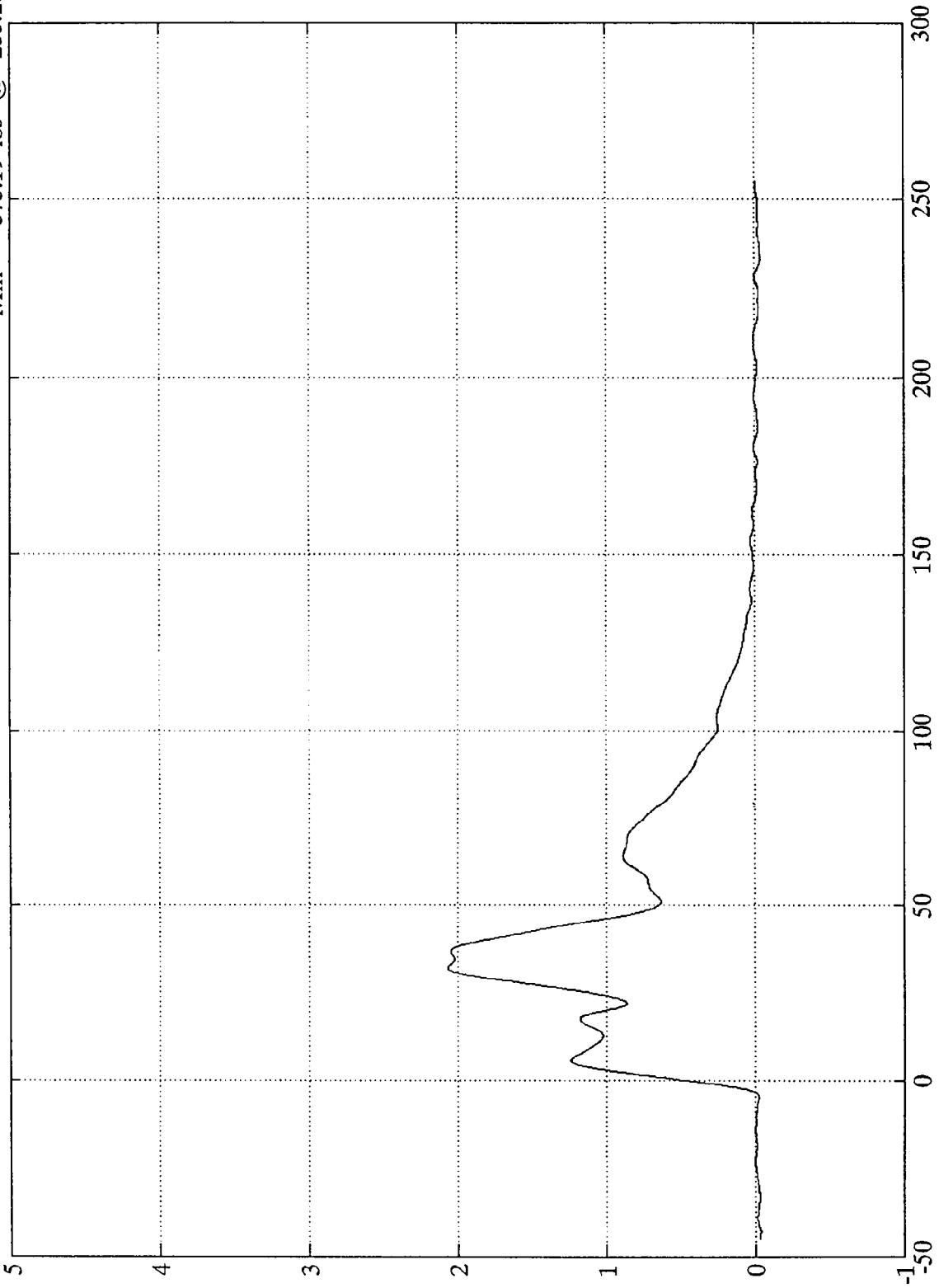
B-71

7942-12

VTV TEST 11
x10⁴

Group 2 Load Cell Sum

Max = 20711.90 lbs @ 31.80 msec
Min = -373.19 lbs @ 233.28 msec



sql
B-72

7942-12

SAE Filter Class 60

Time (msec)

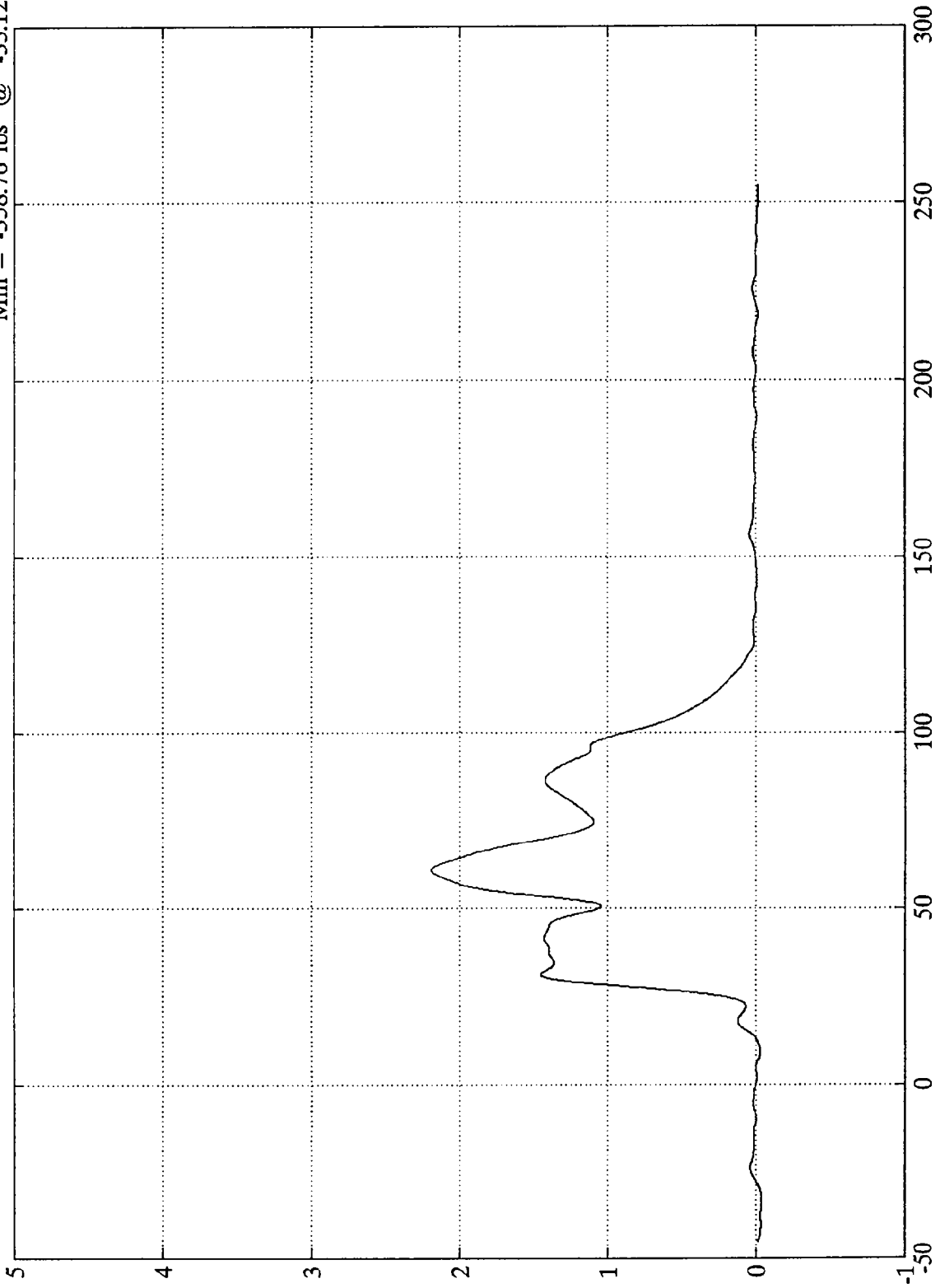
Load Cells (A4,A5,A6,B4,B5,B6)

VTV TEST 11

$\times 10^4$

Group 3 Load Cell Sum

Max = 21927.00 lbs @ 60.72 msec
Min = -358.76 lbs @ -33.12 msec



lbs
B-73

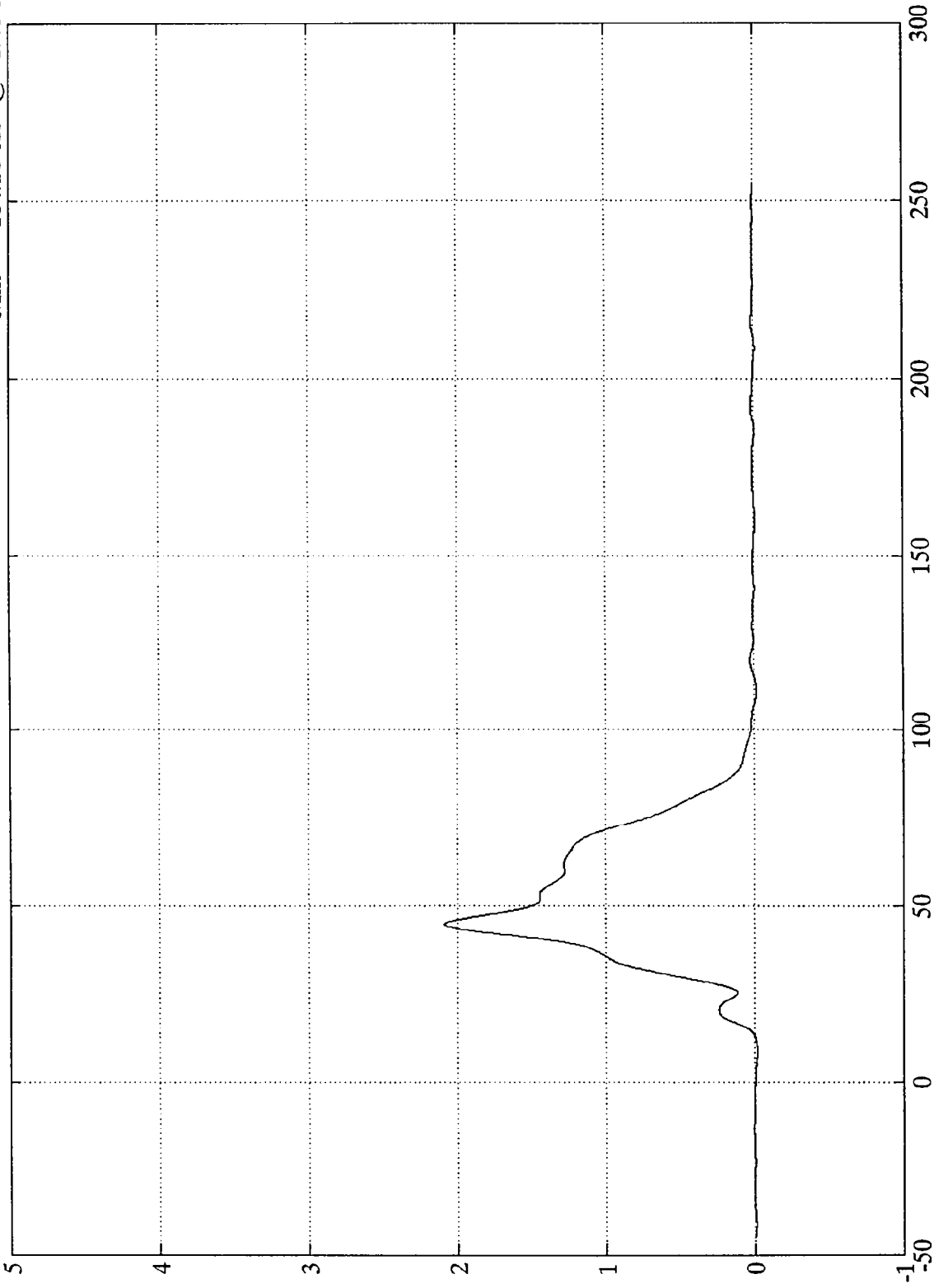
7942-12

SAE Filter Class 60
Load Cells (A7,A8,A9,B7,B8,B9)
Time (msec)

VTV TEST 11
x10⁴

Group 4 Load Cell Sum

Max = 20872.00 lbs @ 44.64 msec
Min = -184.10 lbs @ 8.40 msec



Load Cells (C1,C2,C3,D1,D2,D3)

Time (msec)

SAE Filter Class 60

sq|

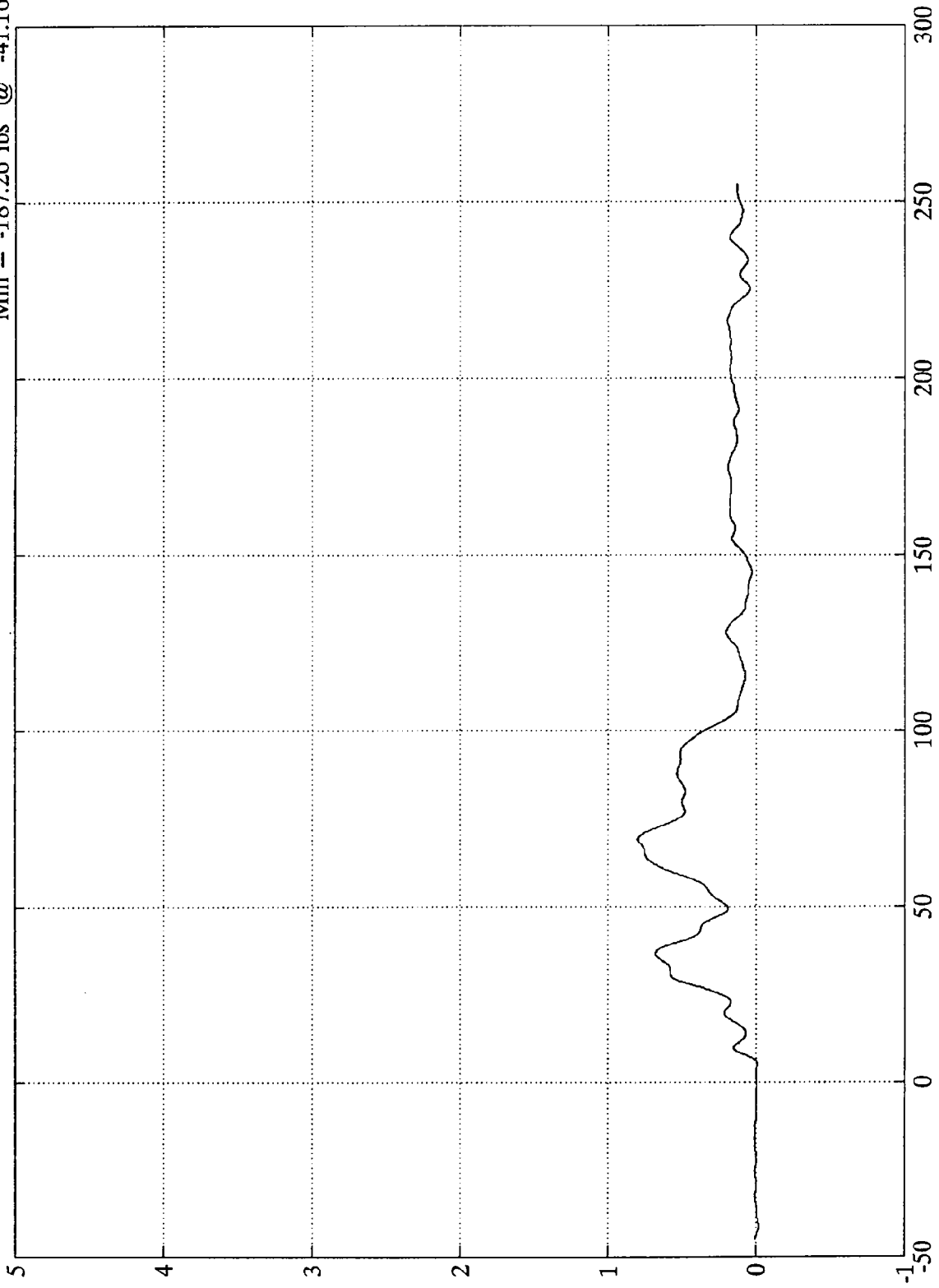
B-74

7942-12

VTV TEST 11
x10⁴

Group 5 Load Cell Sum

Max = 7964.01 lbs @ 69.24 msec
Min = -187.26 lbs @ -41.16 msec



sqi
B-75

7942-12

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

Time (msec)

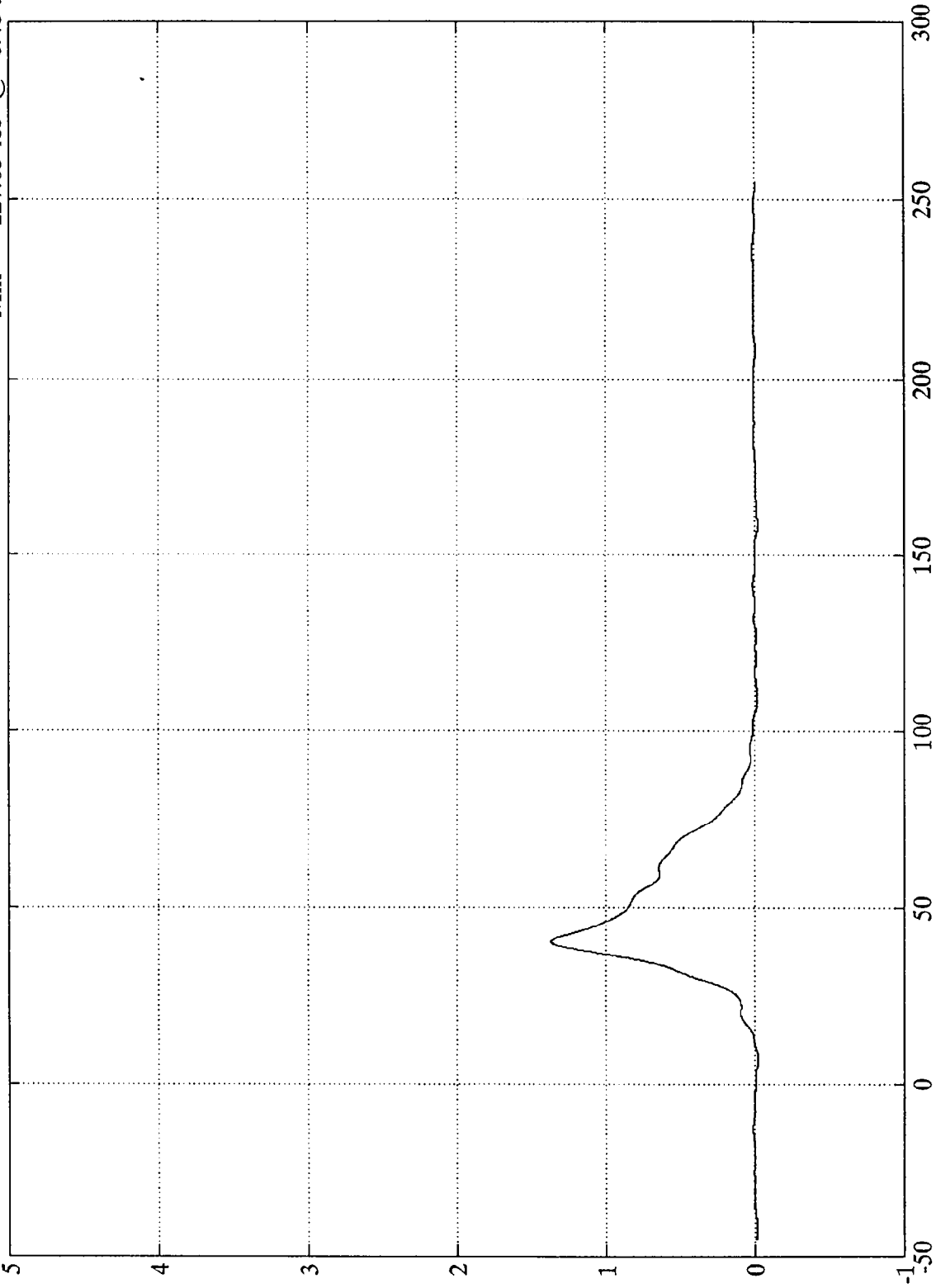
SAE Filter Class 60

VTV TEST 11

$\times 10^4$

Group 6 Load Cell Sum

Max = 13685.60 lbs @ 40.20 msec
Min = -227.63 lbs @ 6.48 msec



Load Cells (C7,C8,C9,D7,D8,D9)

Time (msec)

SAE Filter Class 60

sq|

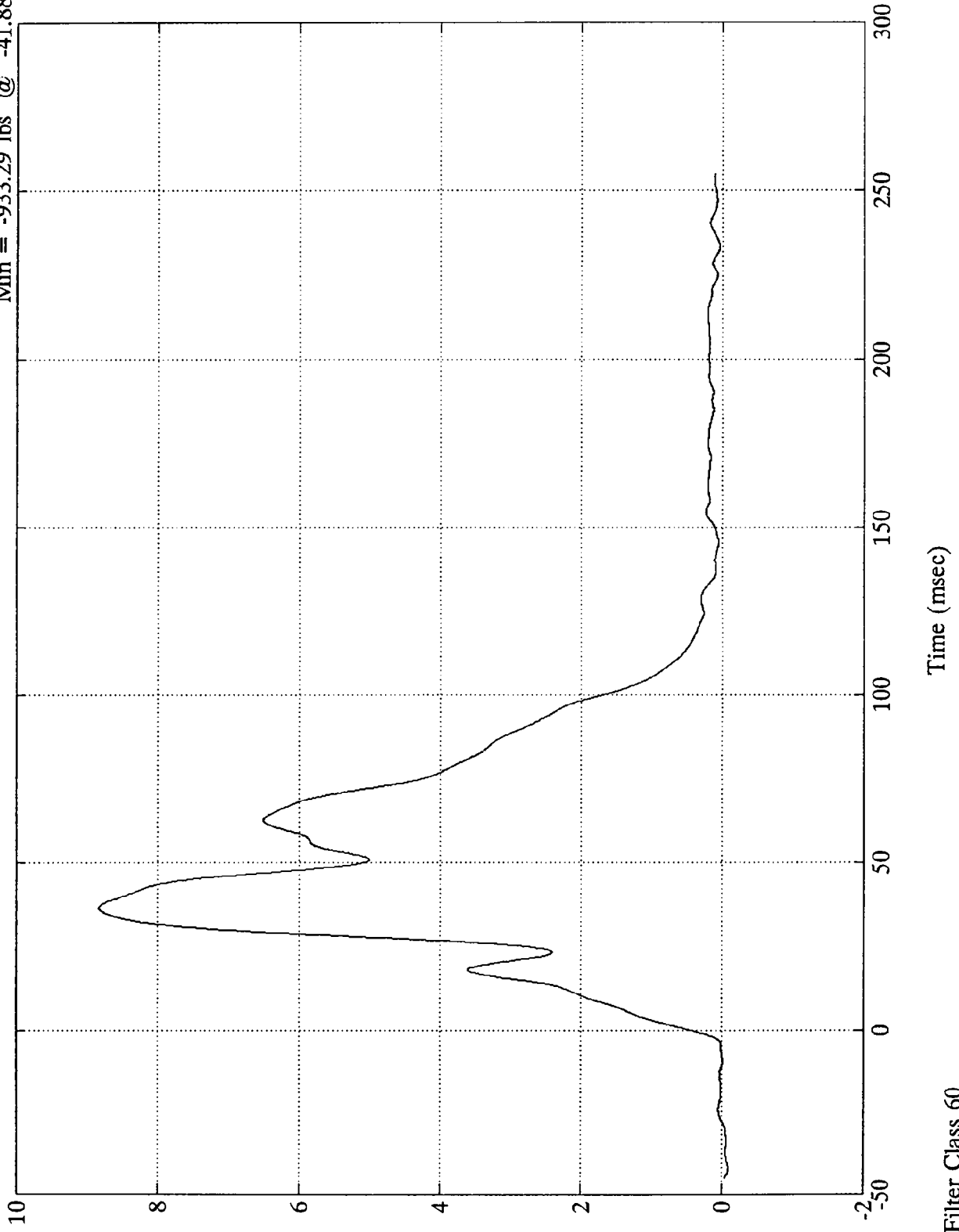
B-76

7942-12

VTV TEST 11
x10⁴

Total Load Cell Sum

Max = 88319.20 lbs @ 36.24 msec
Min = -933.29 lbs @ -41.88 msec



lbs
B-77

7942-12

SAE Filter Class 60

TEST NO. Y43-11-1268

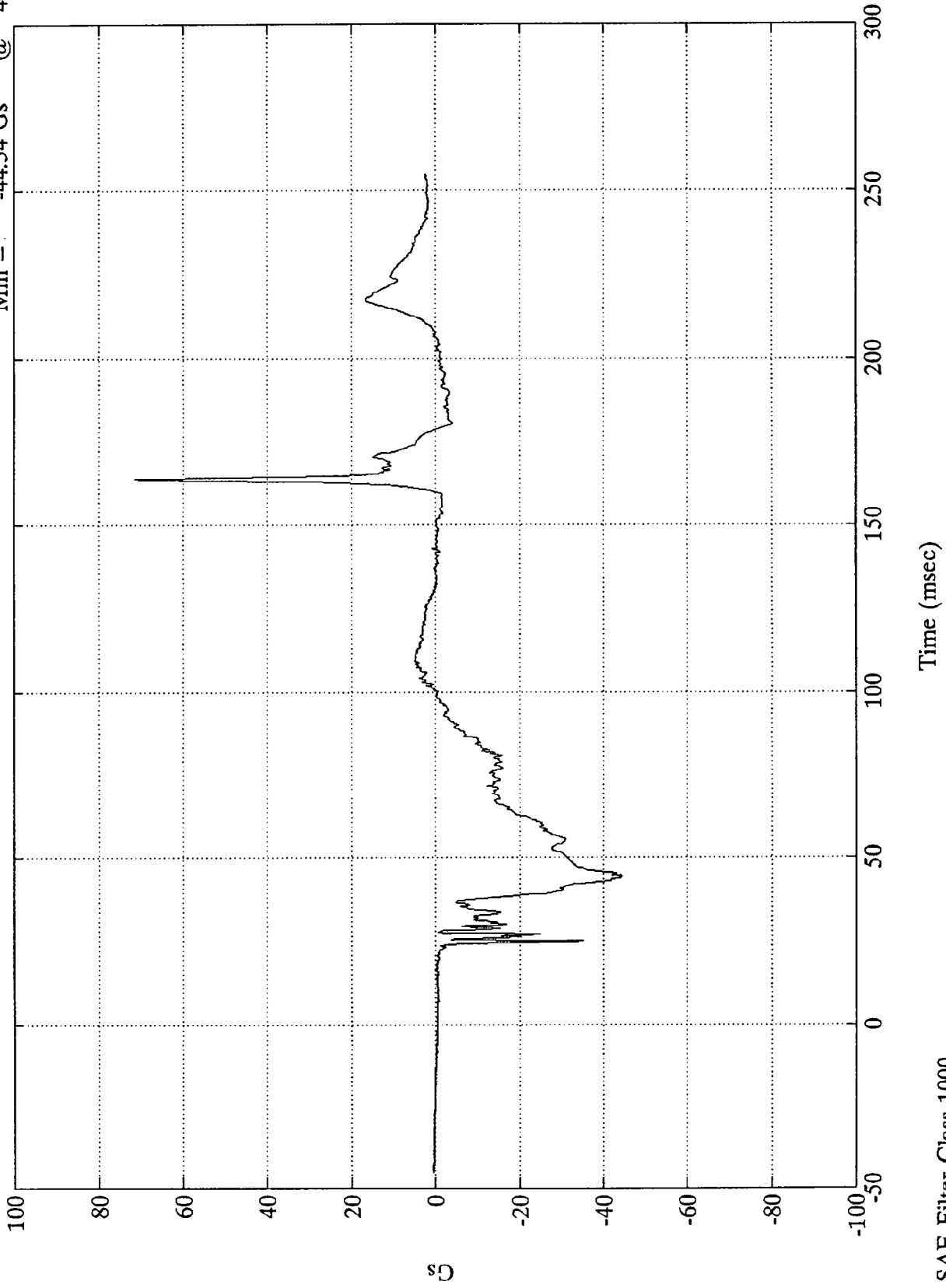
DUMMY DATA

CLASS	FILTER CHANNEL
Head Accelerations	1000
Chest Accelerations	180
Chest Displacements	60
Femur Forces	600
Neck Forces	1000
Neck Moments	600

VTV TEST 11

Pos. #1 Head X

Max = 71.50 Gs @ 163.80 msec
Min = -44.54 Gs @ 44.27 msec



B-79

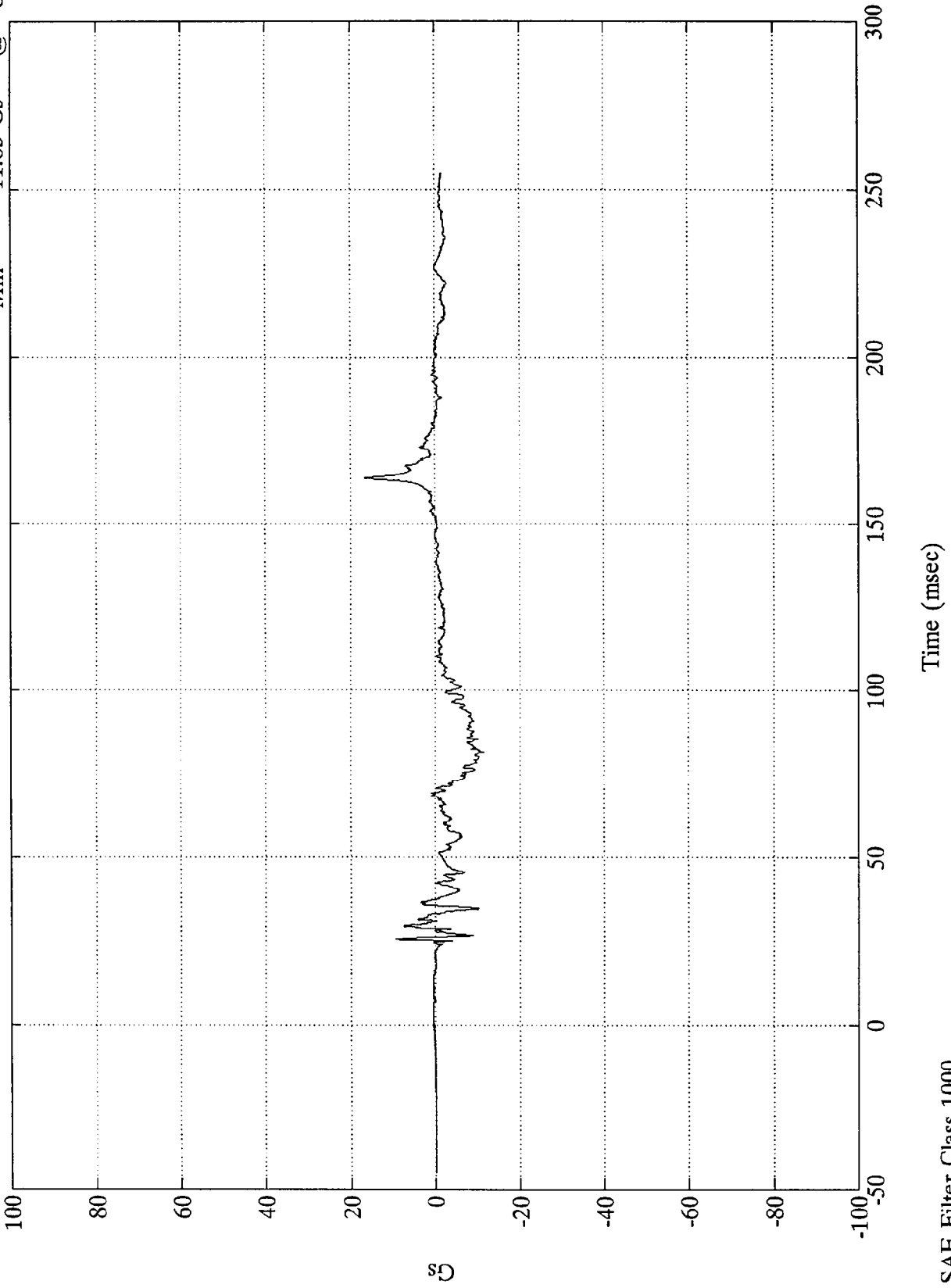
7942-12

SAE Filter Class 1000

VTV TEST 11

Pos. #1 Head Y

Max = 16.67 Gs @ 164.16 msec
Min = -11.63 Gs @ 81.48 msec



B-80

7942-12

SAE Filter Class 1000

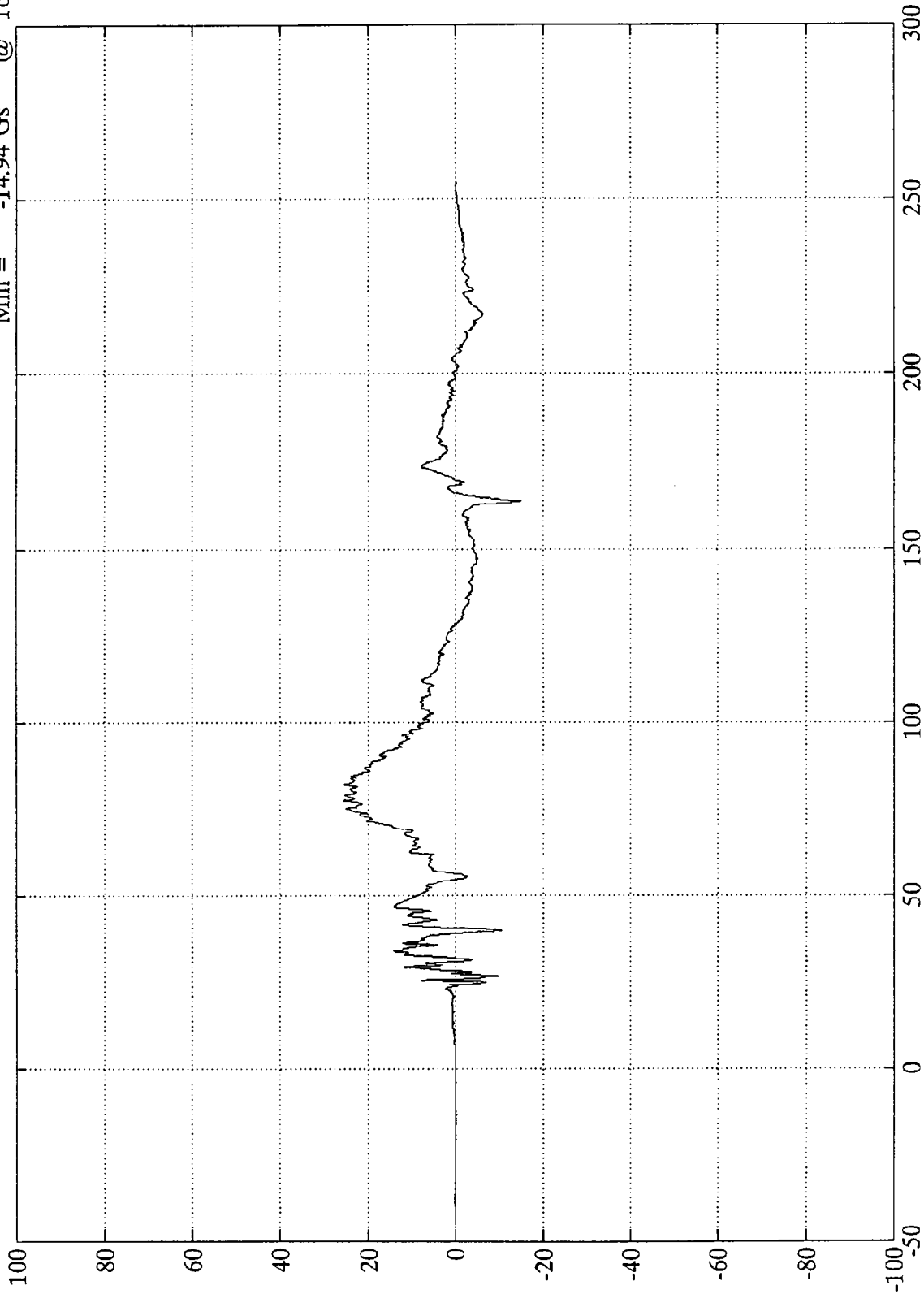
Time (msec)



VTV TEST 11

Max = 25.56 Gs @ 77.27 msec
Min = -14.94 Gs @ 163.80 msec

Pos. #1 Head Z



Time (msec)

B-81

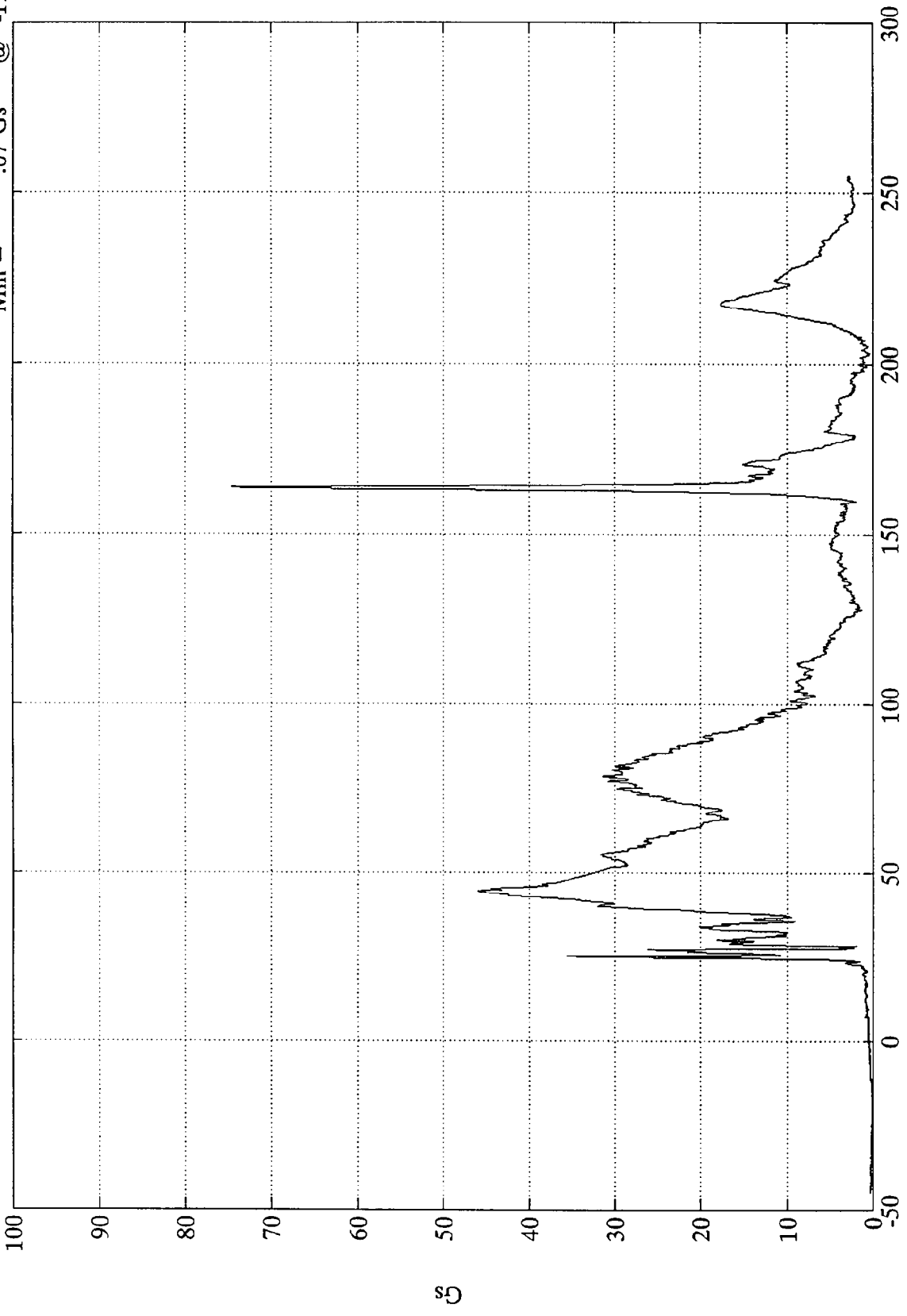
7942-12

SAE Filter Class 1000

VTV TEST 11

Max = 74.58 Gs @ 163.80 msec
Min = .07 Gs @ -19.08 msec

Pos. #1 Head Resultant



Time (msec)

SAE Filter Class 1000

SD

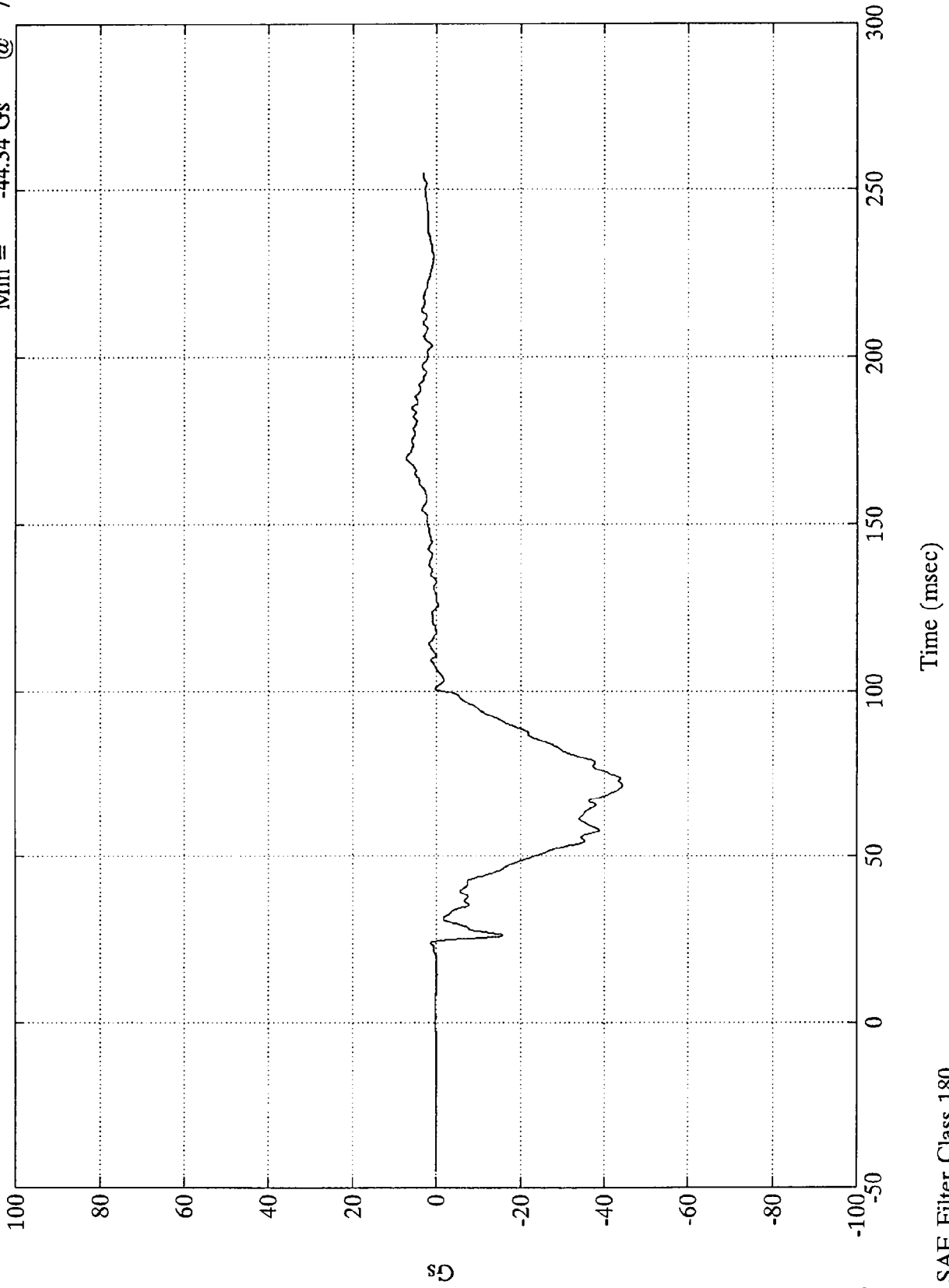
B-82

7942-12

VTV TEST 11

Pos. #1 Chest X

Max = 7.17 Gs @ 169.91 msec
Min = -44.34 Gs @ 71.16 msec



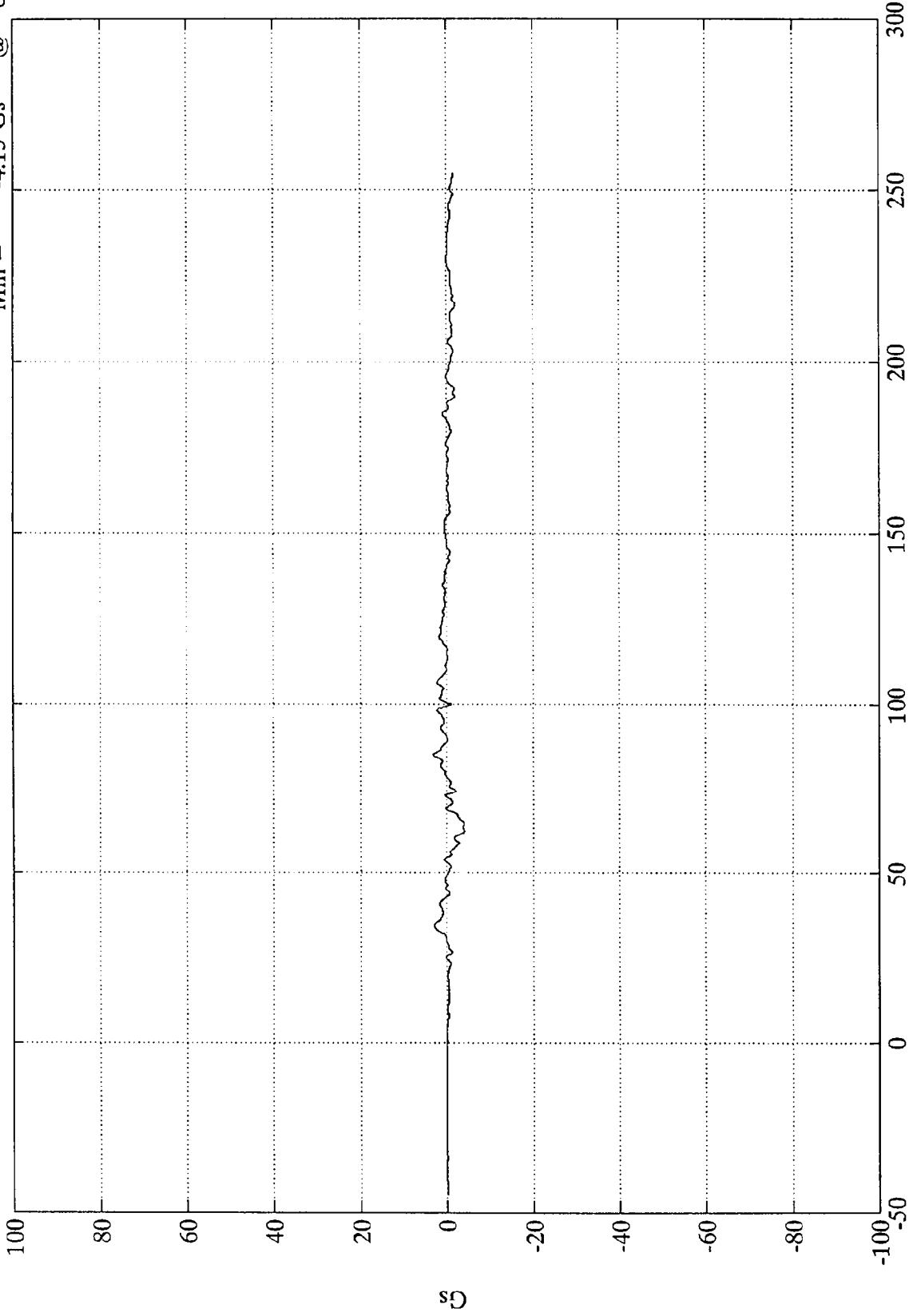
B-83

7942-12

SAE Filter Class 180

VTV TEST 11

Pos. #1 Chest Y
Max = 3.12 Gs @ 85.20 msec
Min = -4.13 Gs @ 62.40 msec



B-84

7942-12

SAE Filter Class 180

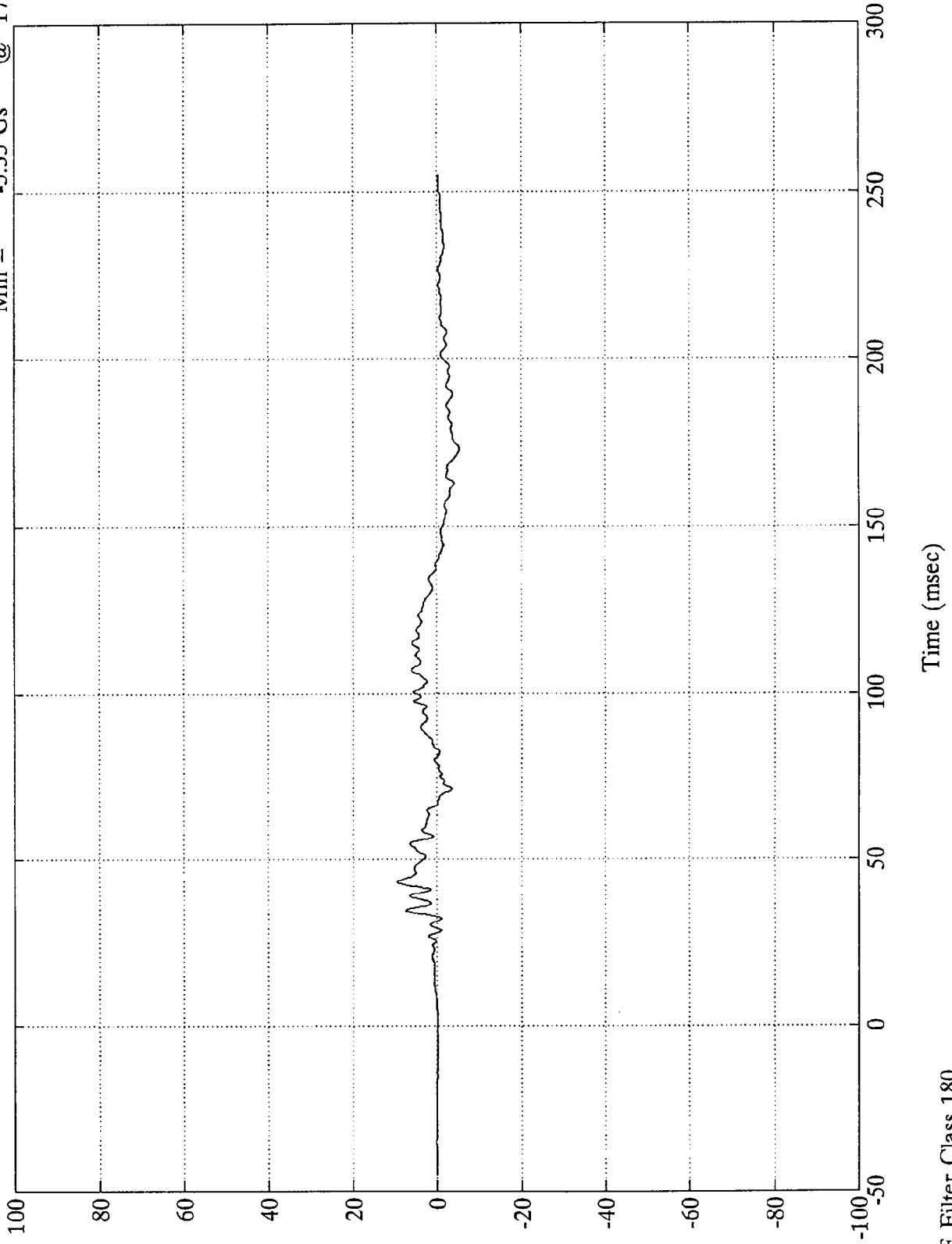
Time (msec)



VTV TEST 11

Pos. #1 Chest Z

Max = 9.37 Gs @ 43.31 msec
Min = -5.35 Gs @ 173.04 msec



B-85

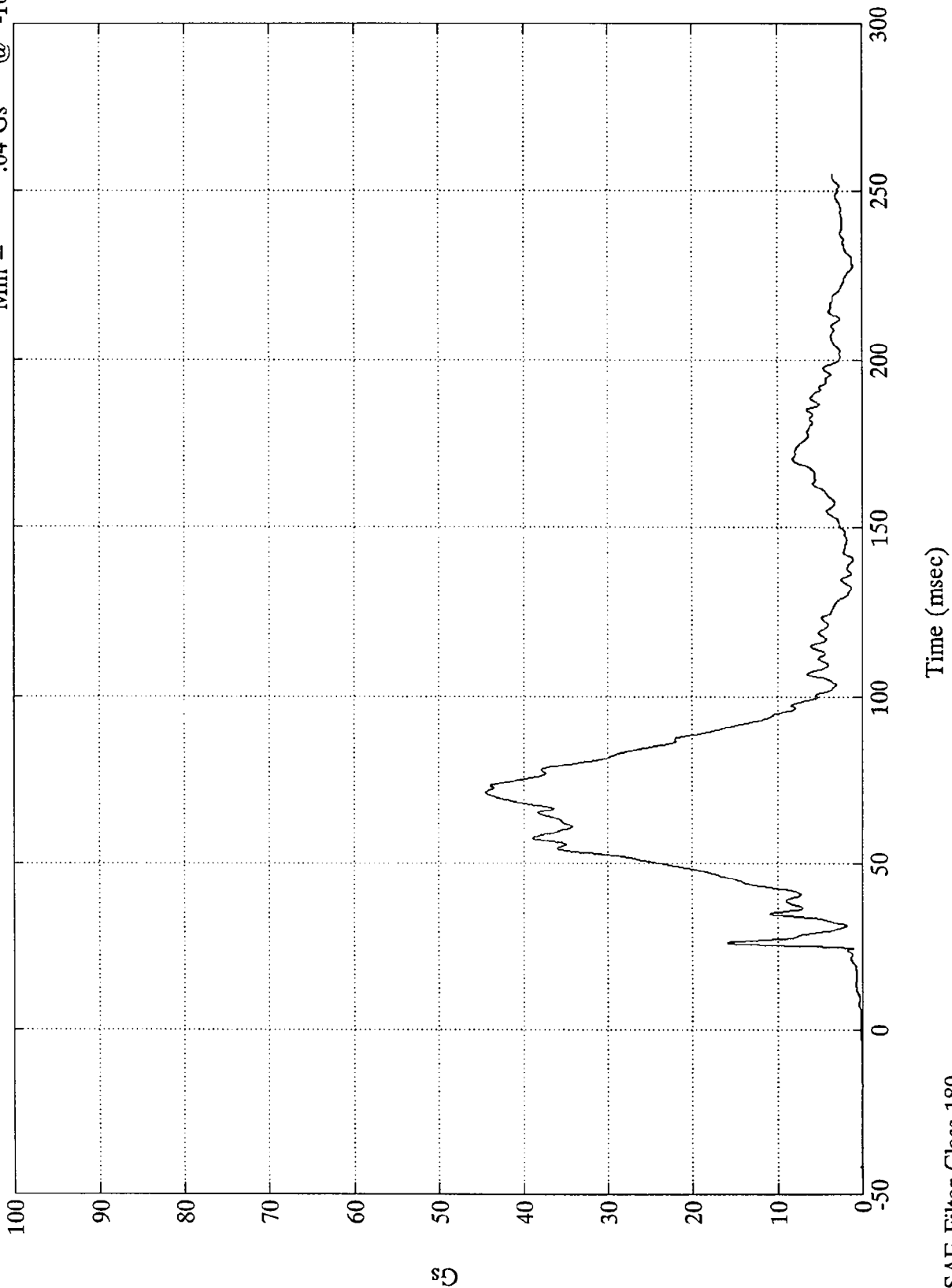
7942-12

SAE Filter Class 180

VTV TEST 11

Max = 44.49 Gs @ 71.16 msec
Min = .04 Gs @ -16.80 msec

Pos. #1 Chest Resultant



Gs
B-86

7942-12

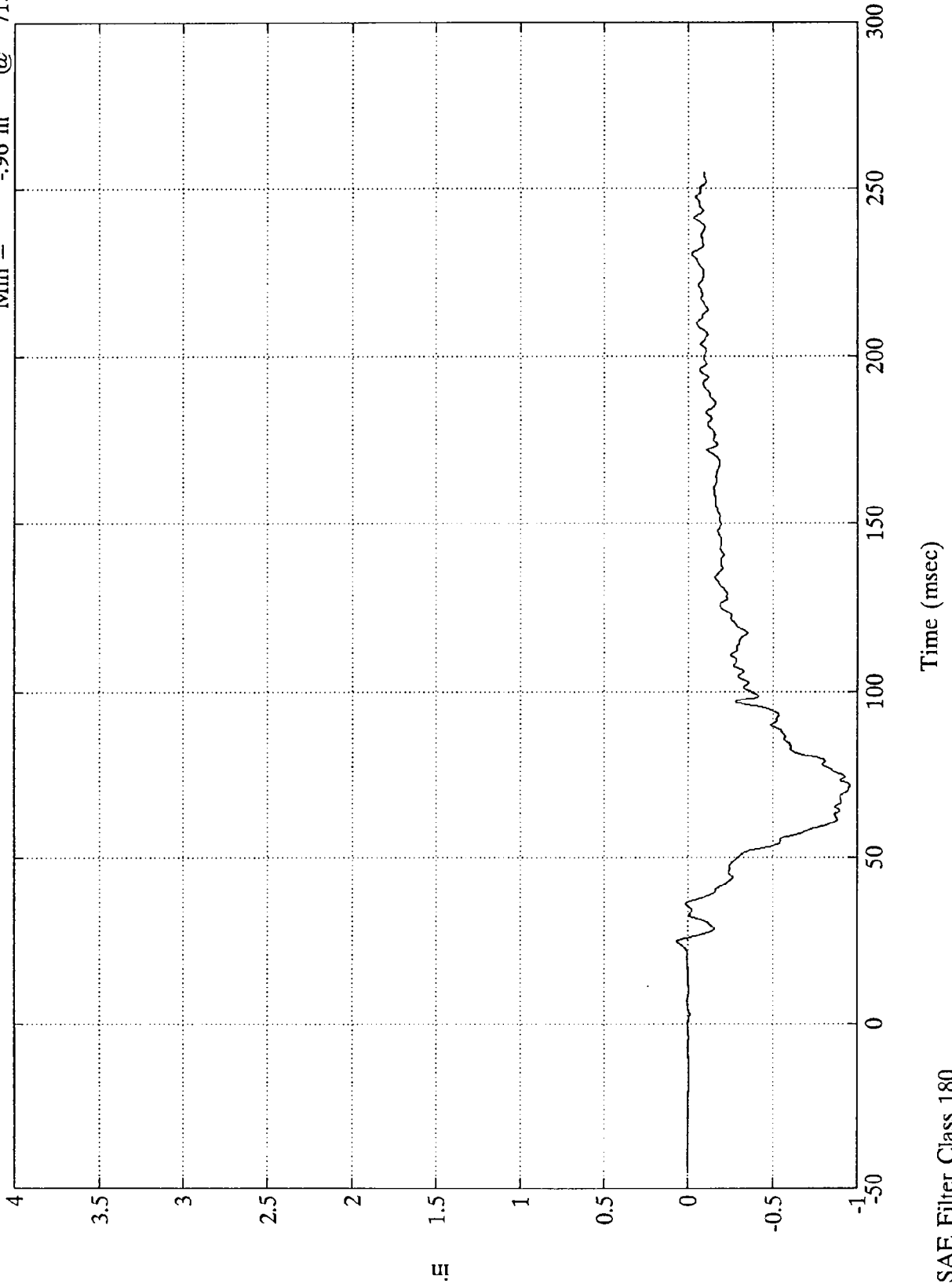
SAE Filter Class 180

Time (msec)

VTV TEST 11

Pos. #1 Chest Disp.

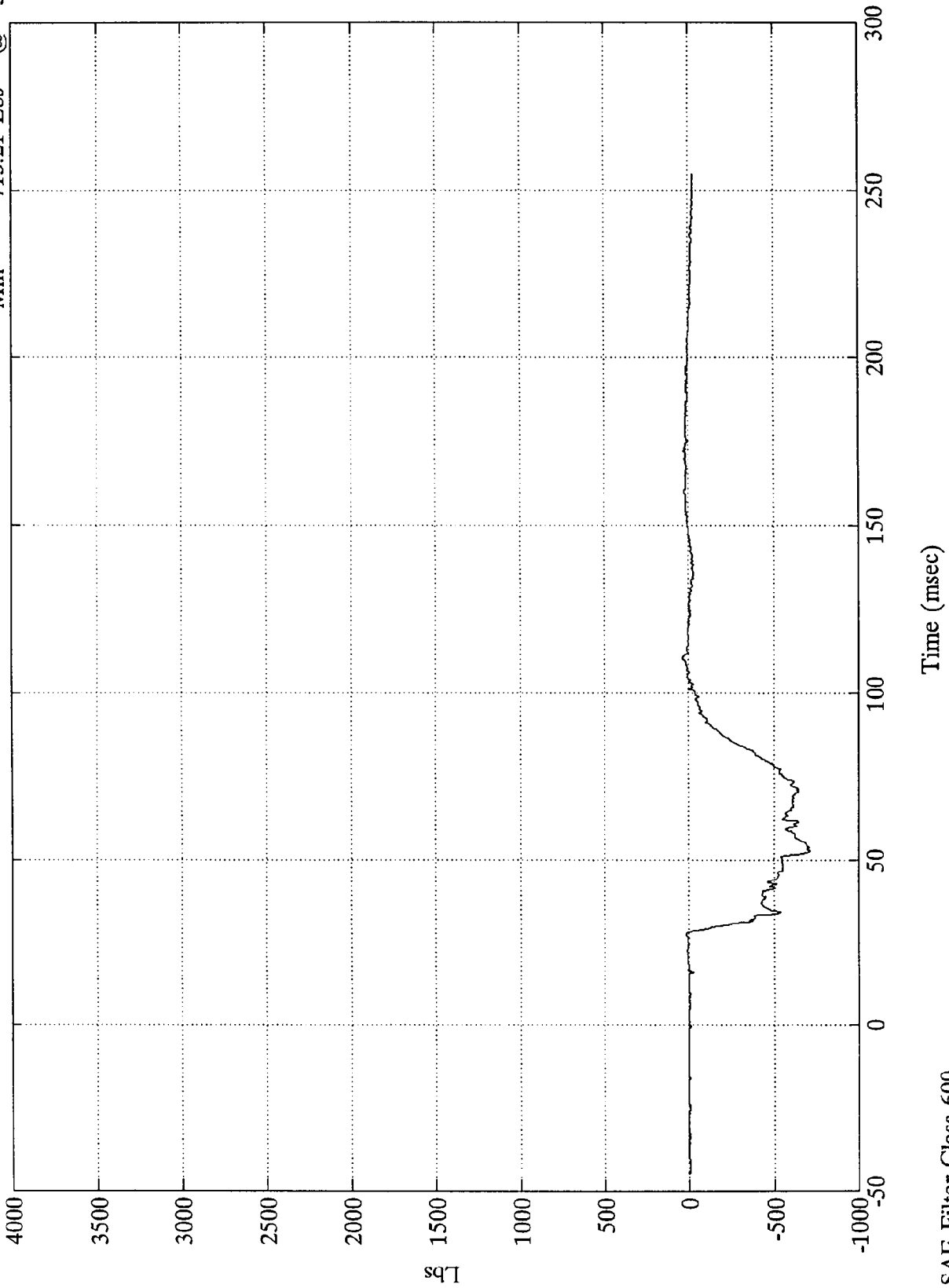
Max = .07 in @ 24.71 msec
Min = -.96 in @ 71.87 msec



VTV TEST 11

Max = 39.10 Lbs @ 110.40 msec
Min = -713.21 Lbs @ 52.92 msec

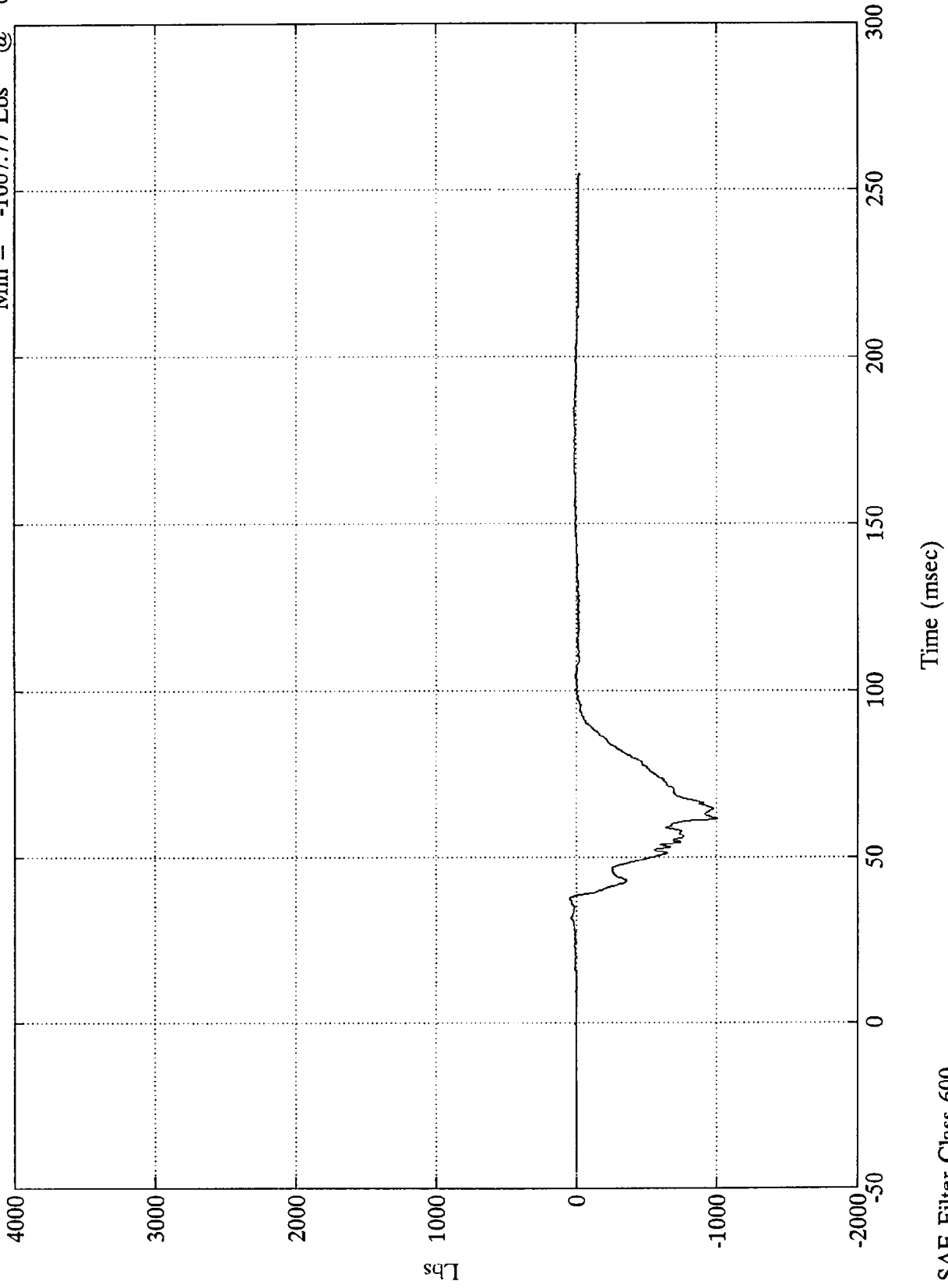
Pos. #1 Left Femur



VTV TEST 11

Pos. #1 Right Femur

Max = 50.26 Lbs @ 37.31 msec
Min = -1007.77 Lbs @ 61.68 msec



89-B

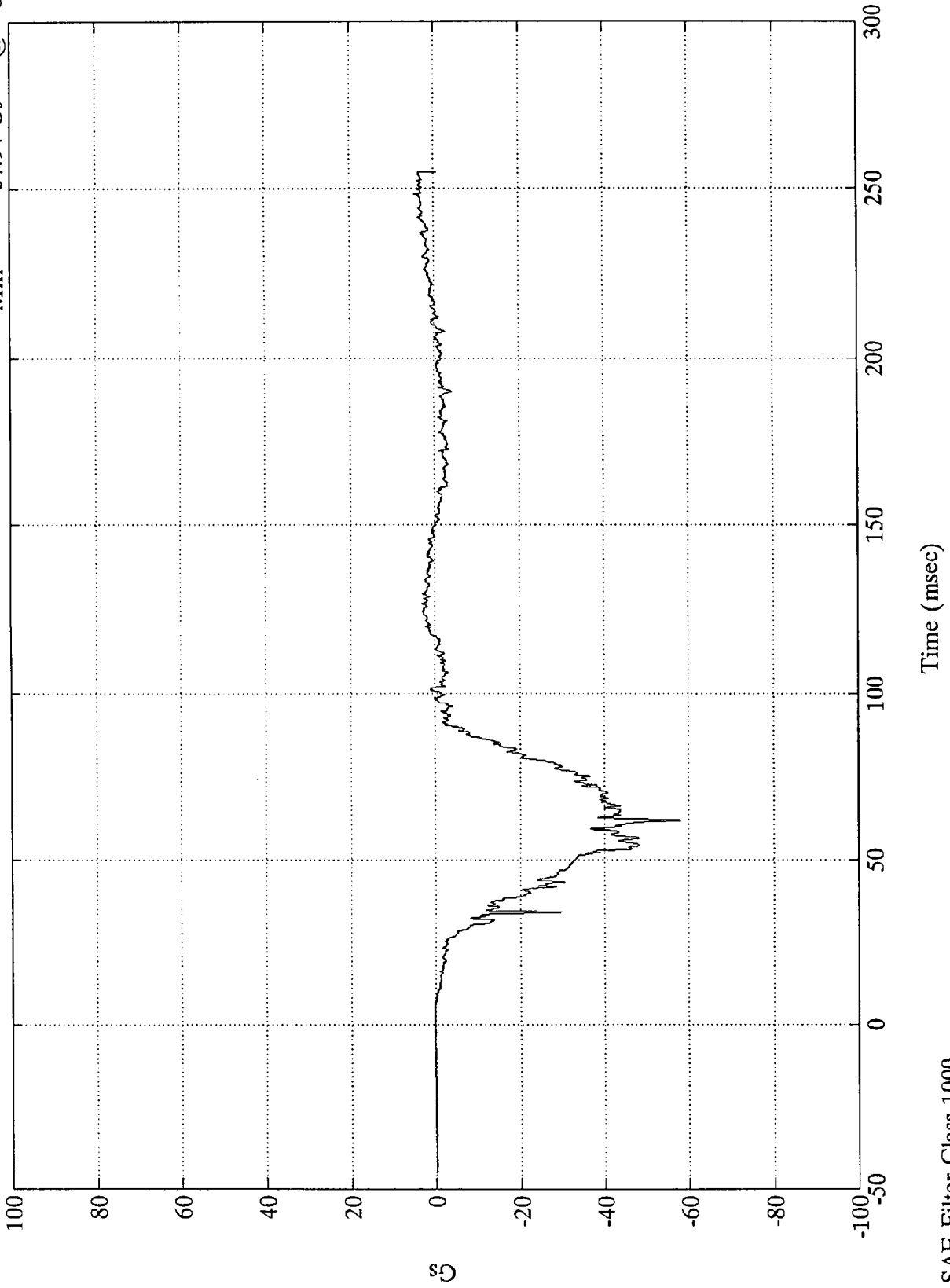
12-7942

SAE Filter Class 600

VTV TEST 11

Max = 4.80 Gs @ 248.40 msec
Min = -57.94 Gs @ 61.68 msec

Pos. #1 Pelvic X



B-90

7942-12

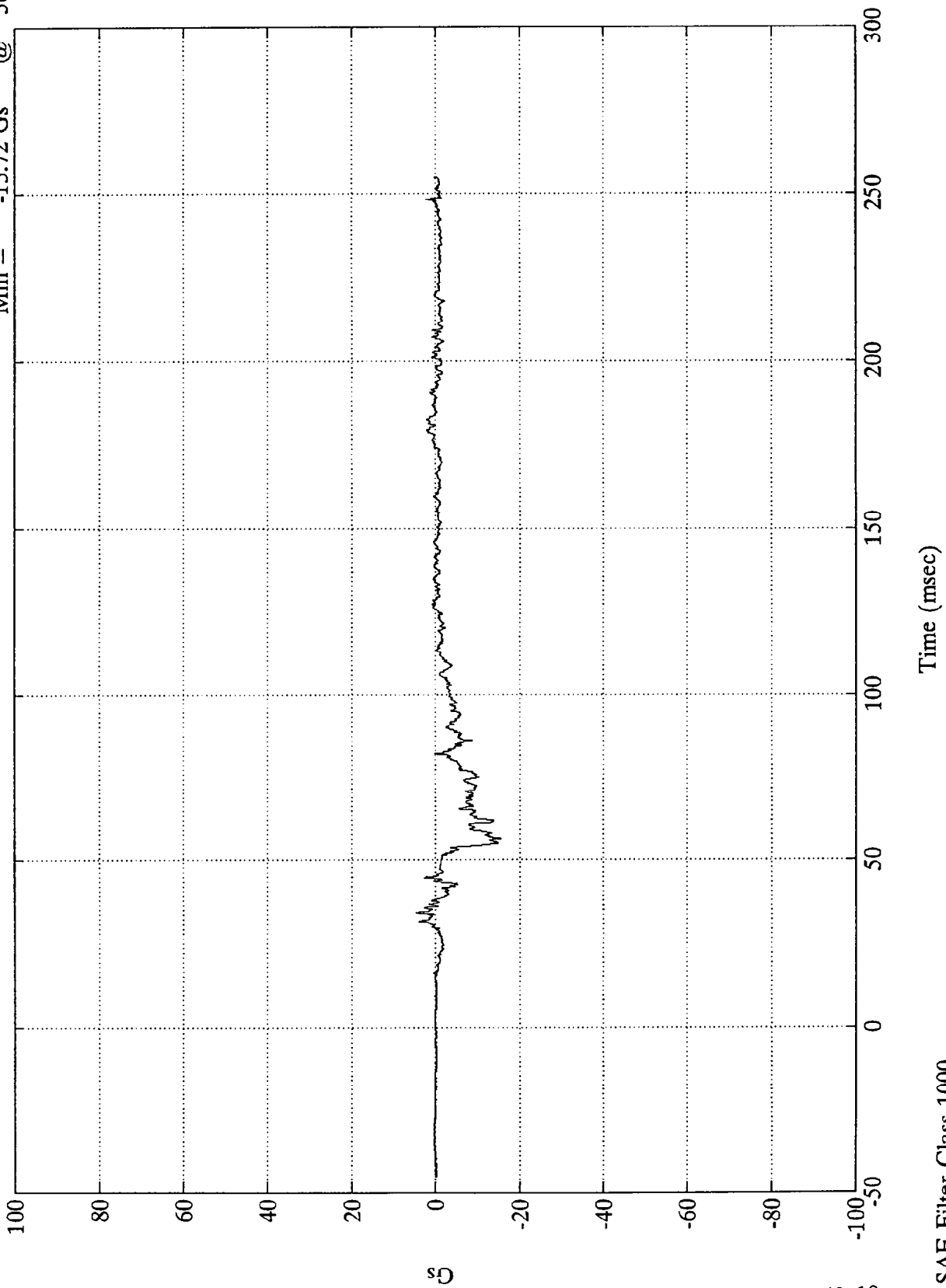
SAE Filter Class 1000

Time (msec)

VTV TEST 11

Pos. #1 Pelvic Y

Max = 4.77 Gs @ 34.20 msec
Min = -15.72 Gs @ 56.40 msec



B-91

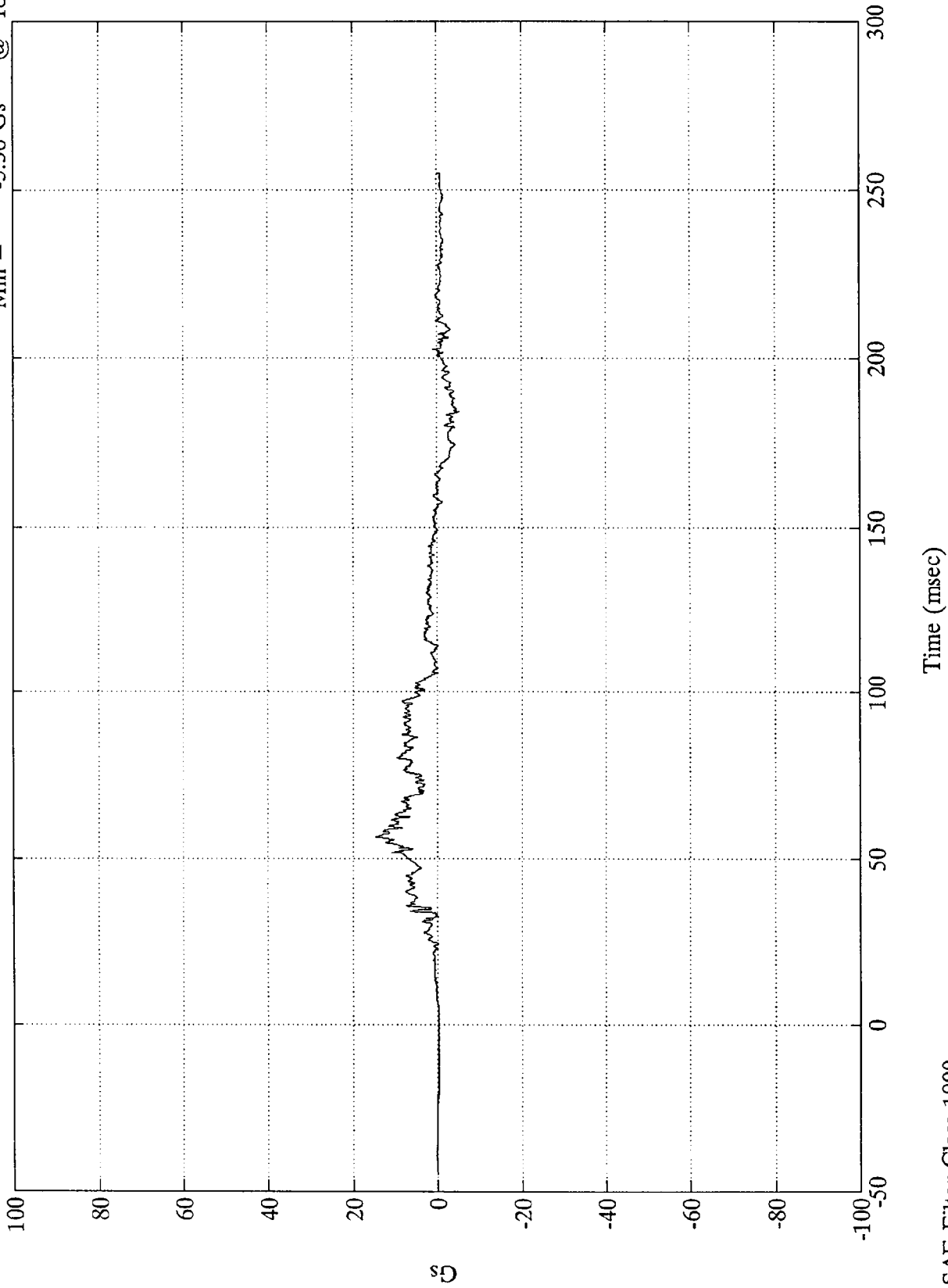
7942-12

SAE Filter Class 1000

VTV TEST 11

Pos. #1 Pelvic Z

Max = 14.66 Gs @ 56.40 msec
Min = -5.36 Gs @ 183.96 msec



SAE Filter Class 1000

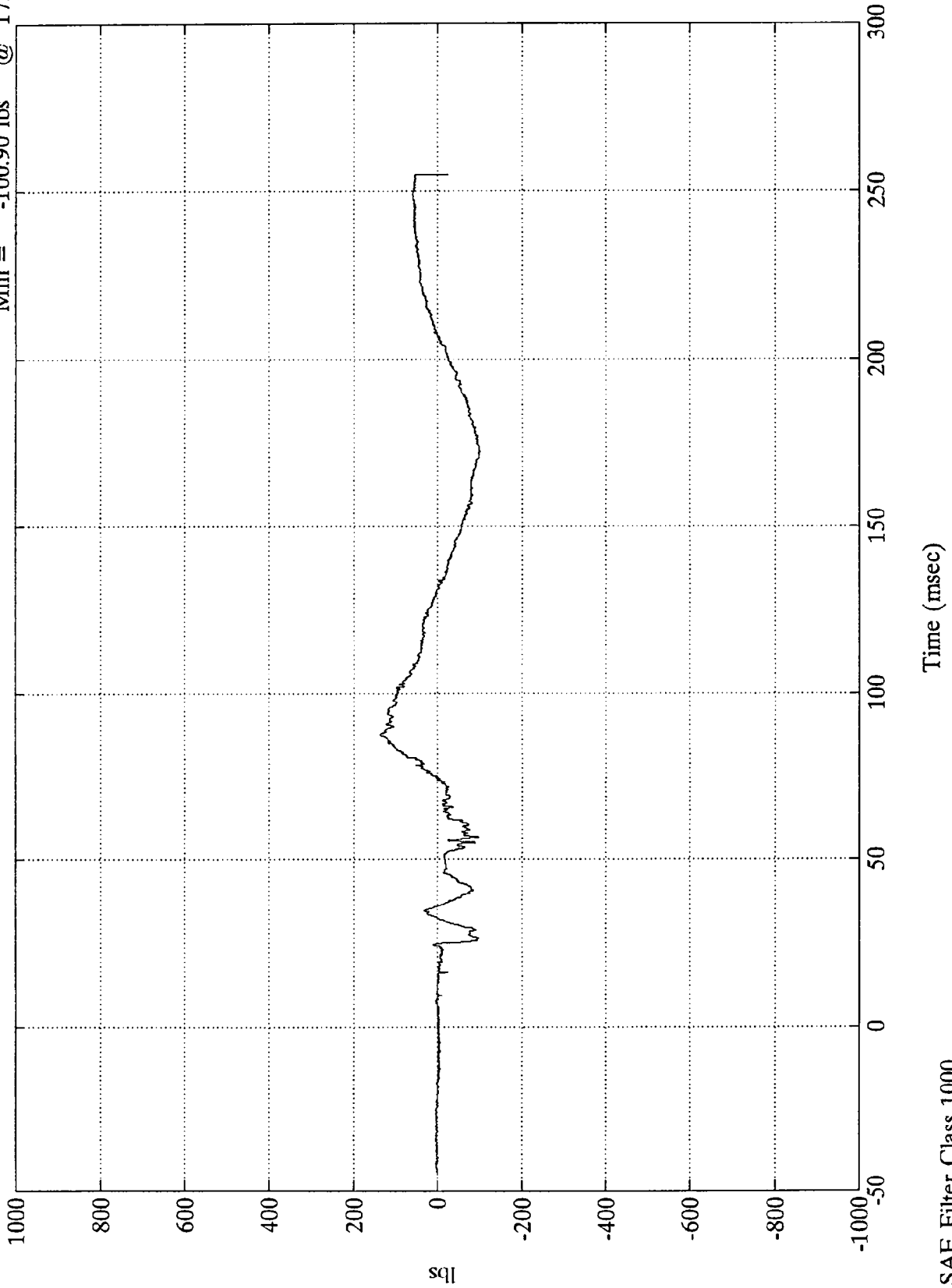
B-92

7942-12

VTV TEST 11

Max = 136.40 lbs @ 87.48 msec
Min = -100.90 lbs @ 172.68 msec

Pos. #1 Thorax Fx



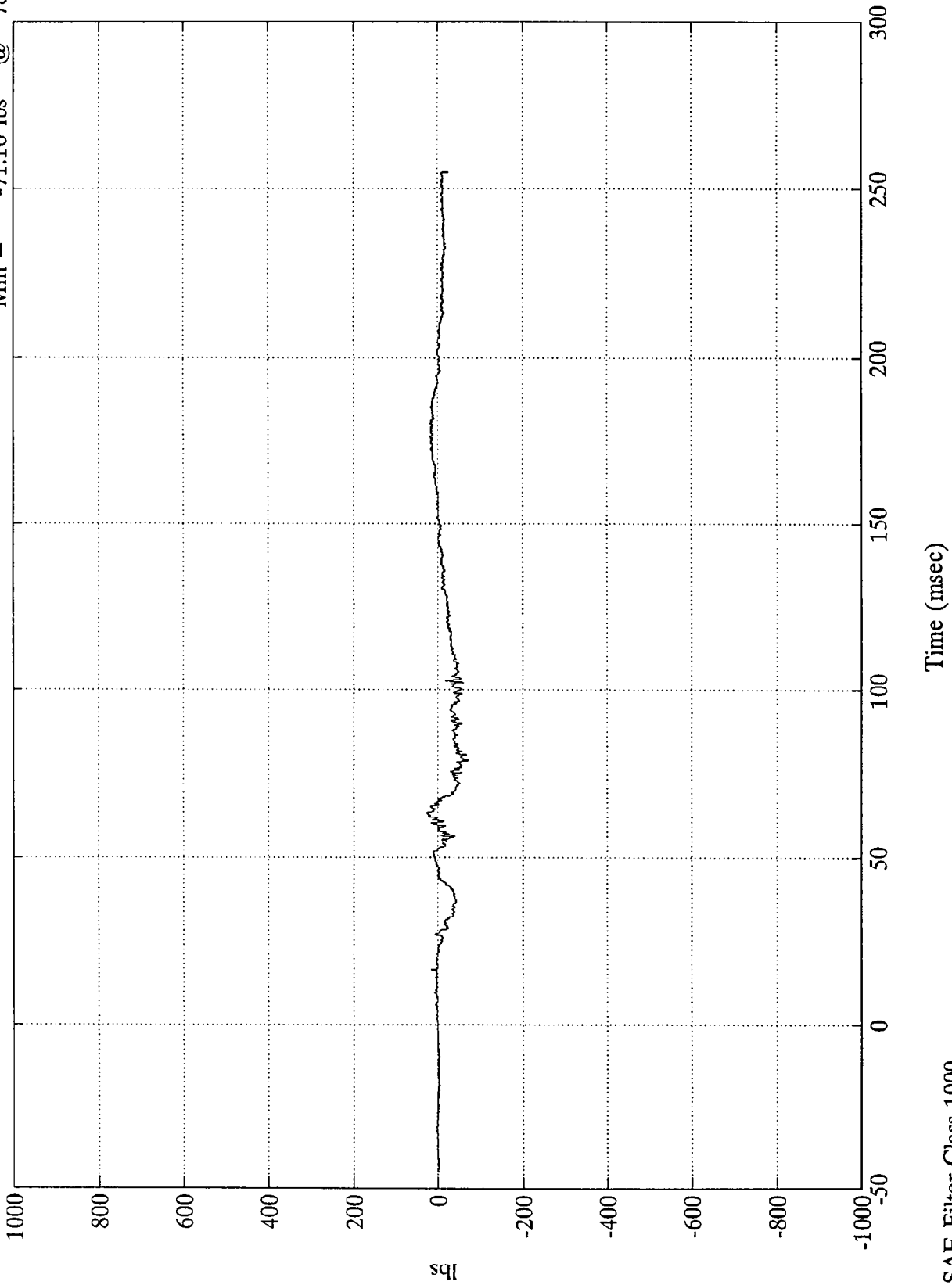
B-93

7942-12

SAE Filter Class 1000

VTV TEST 11

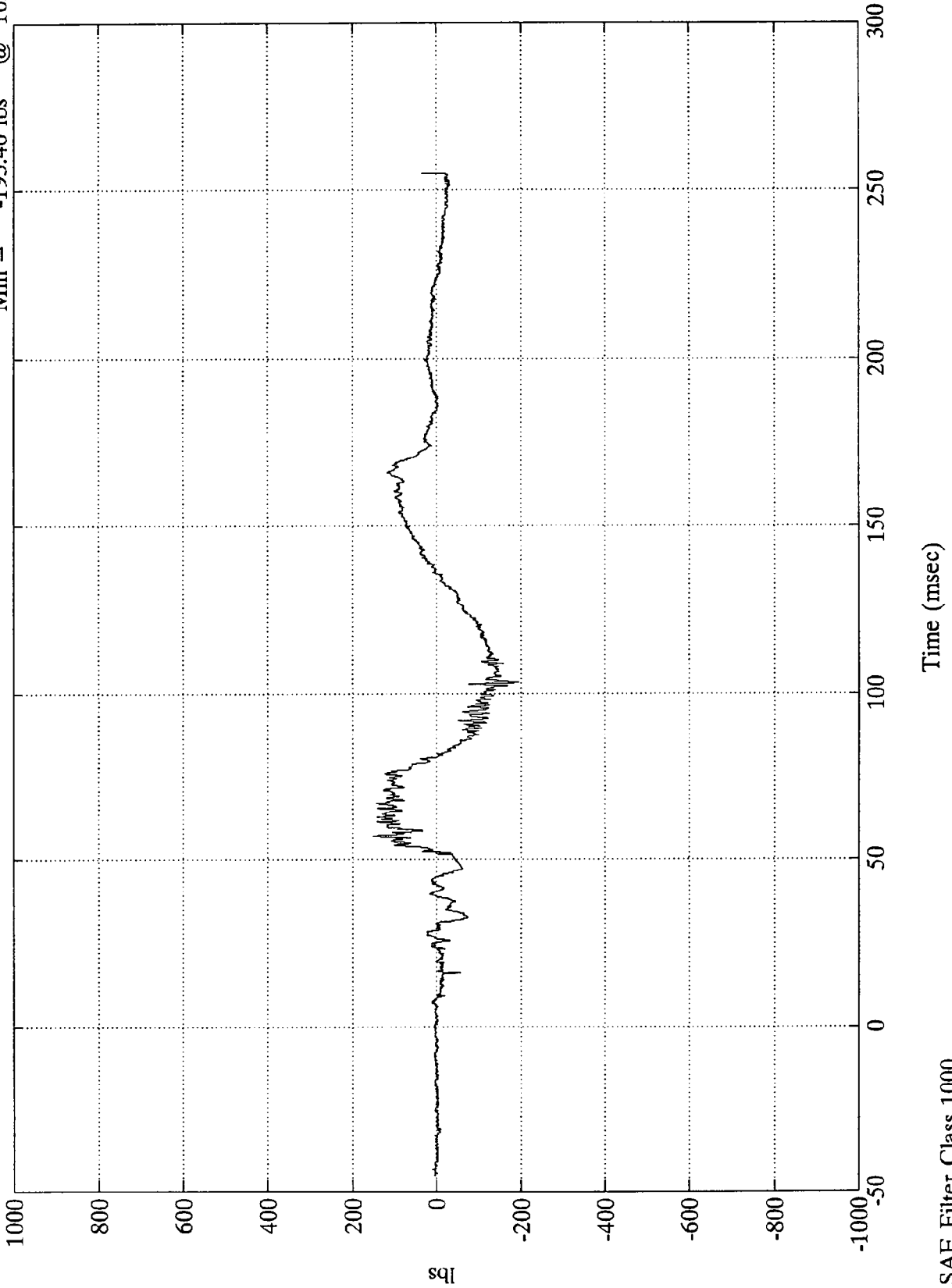
Pos. #1 Thorax Fy
Max = 26.36 lbs @ 63.11 msec
Min = -71.16 lbs @ 78.84 msec



VTV TEST 11

Max = 151.04 lbs @ 56.88 msec
Min = -193.46 lbs @ 103.20 msec

Pos. #1 Thorax Fz



B-95

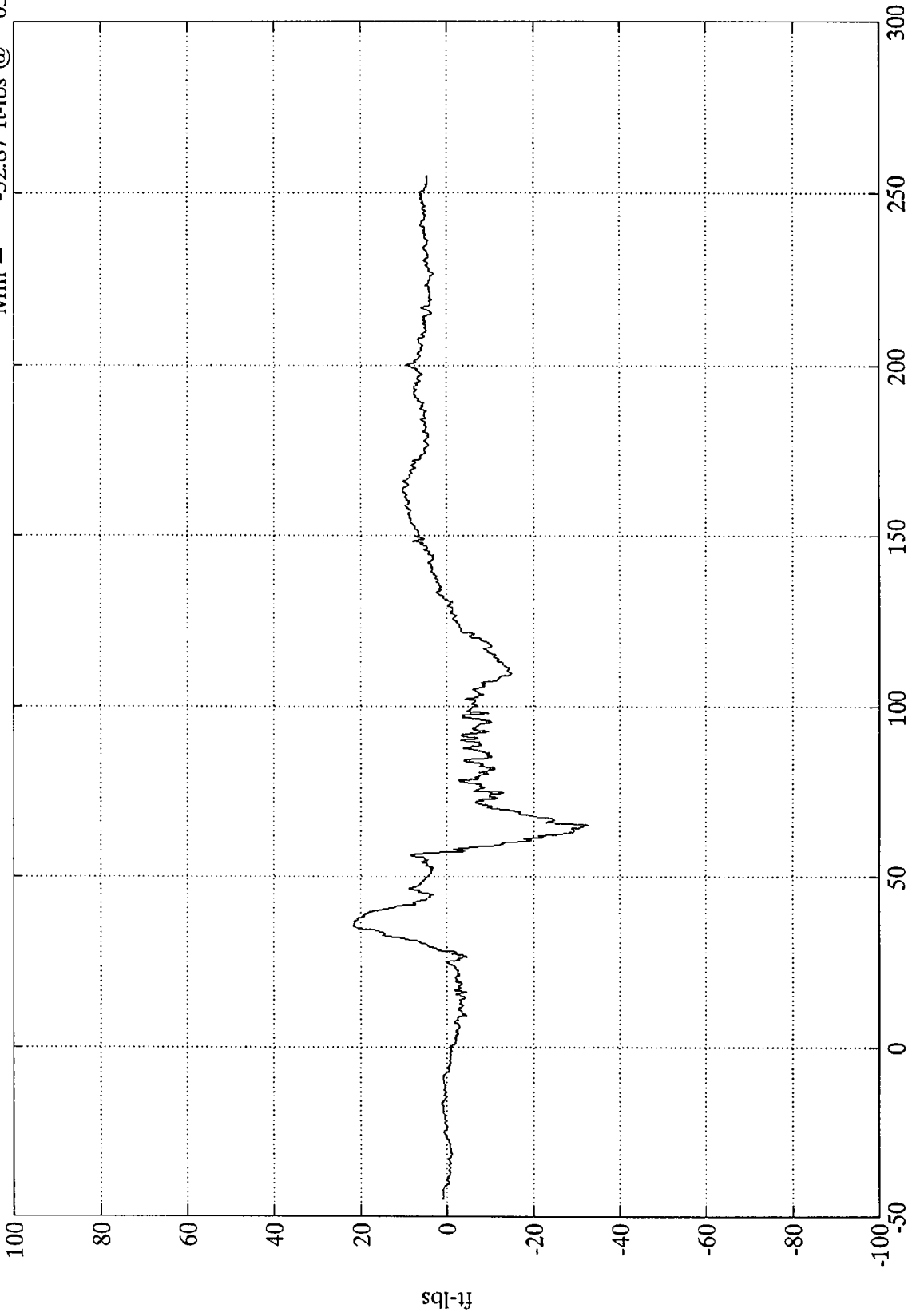
7942-12

SAE Filter Class 1000

VTV TEST 11

Max = 21.64 ft-lbs @ 35.63 msec
Min = -32.87 ft-lbs @ 65.15 msec

Pos. #1 Thorax Mx



Time (msec)

SAE Filter Class 600

ft-lbs

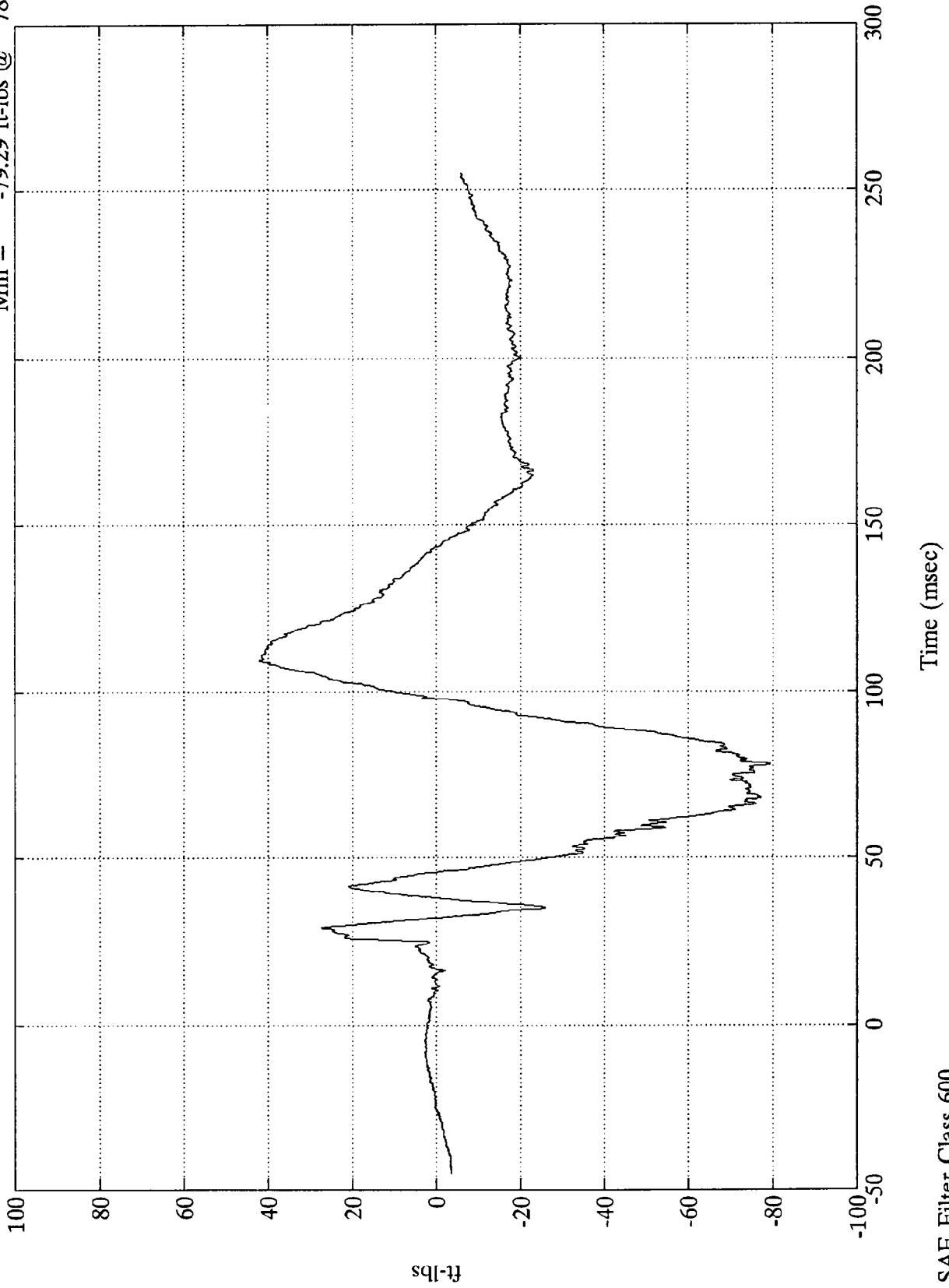
B-96

7942-12

VTV TEST 11

Pos. #1 Thorax My

Max = 42.15 ft-lbs @ 109.31 msec
Min = -79.29 ft-lbs @ 78.00 msec



B-97

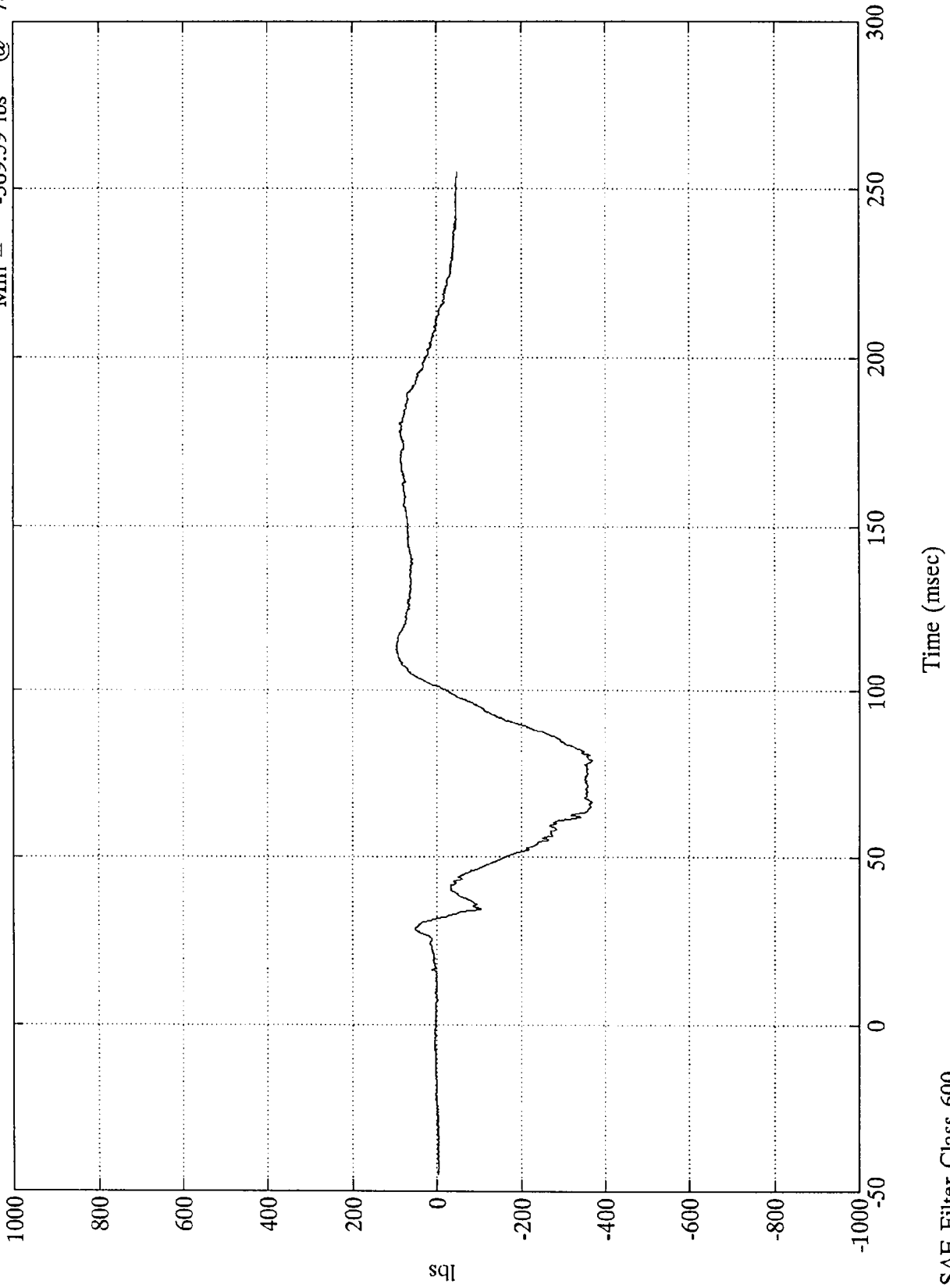
7942-12

SAE Filter Class 600

VTV TEST 11

Max = 96.02 lbs @ 112.32 msec
Min = -369.59 lbs @ 78.95 msec

Pos. #1 Lumbar Fx



B-98
sqi

7942-12

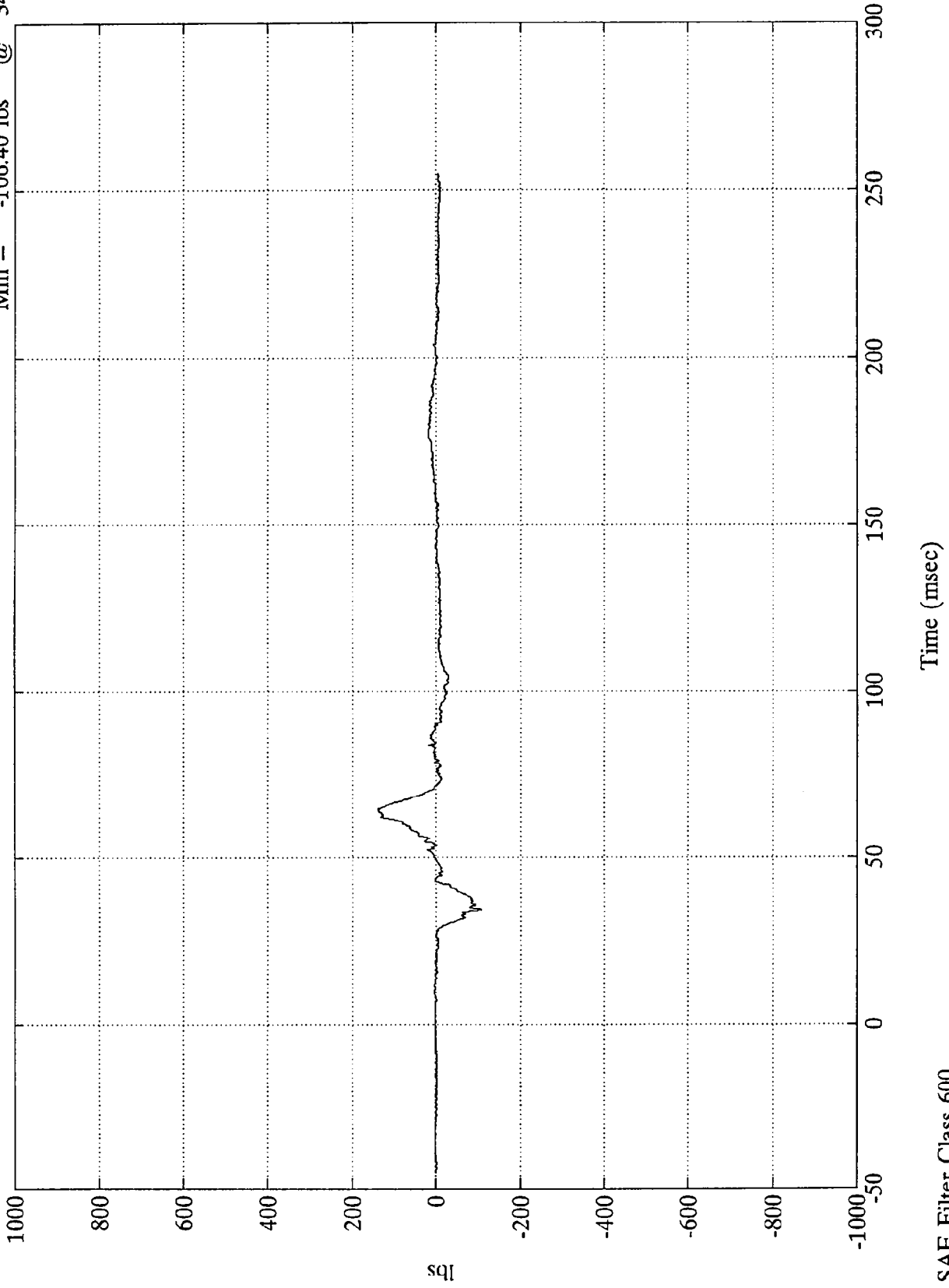
SAE Filter Class 600



VTV TEST 11

Pos. #1 Lumbar Fy

Max = 138.64 lbs @ 64.31 msec
Min = -106.40 lbs @ 34.20 msec



B-99

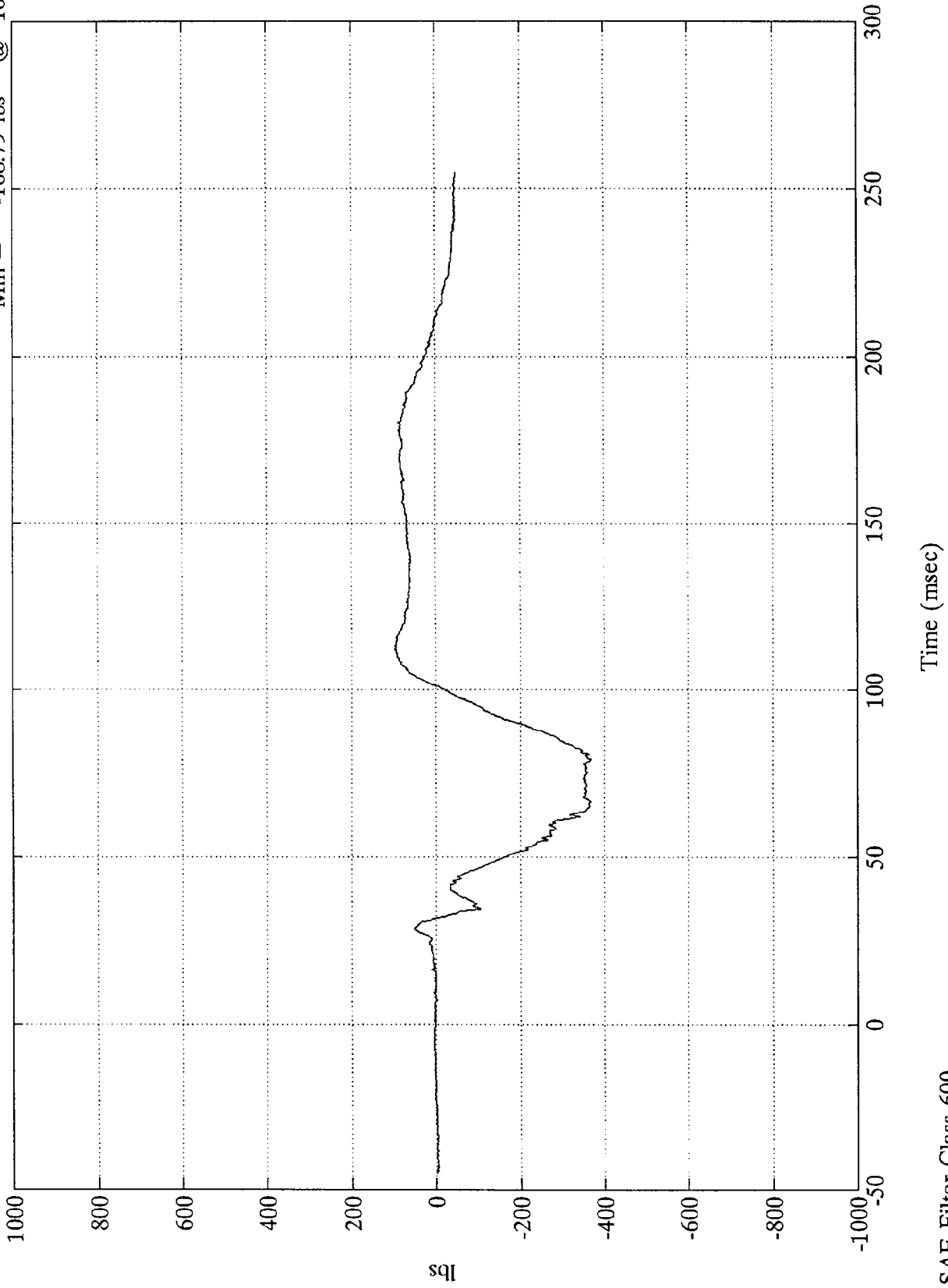
7942-12

SAE Filter Class 600

VTV TEST 11

Max = 295.98 lbs @ 103.31 msec
Min = -168.79 lbs @ 166.08 msec

Pos. #1 Lumbar Fz



sqi
B-100

7942-12

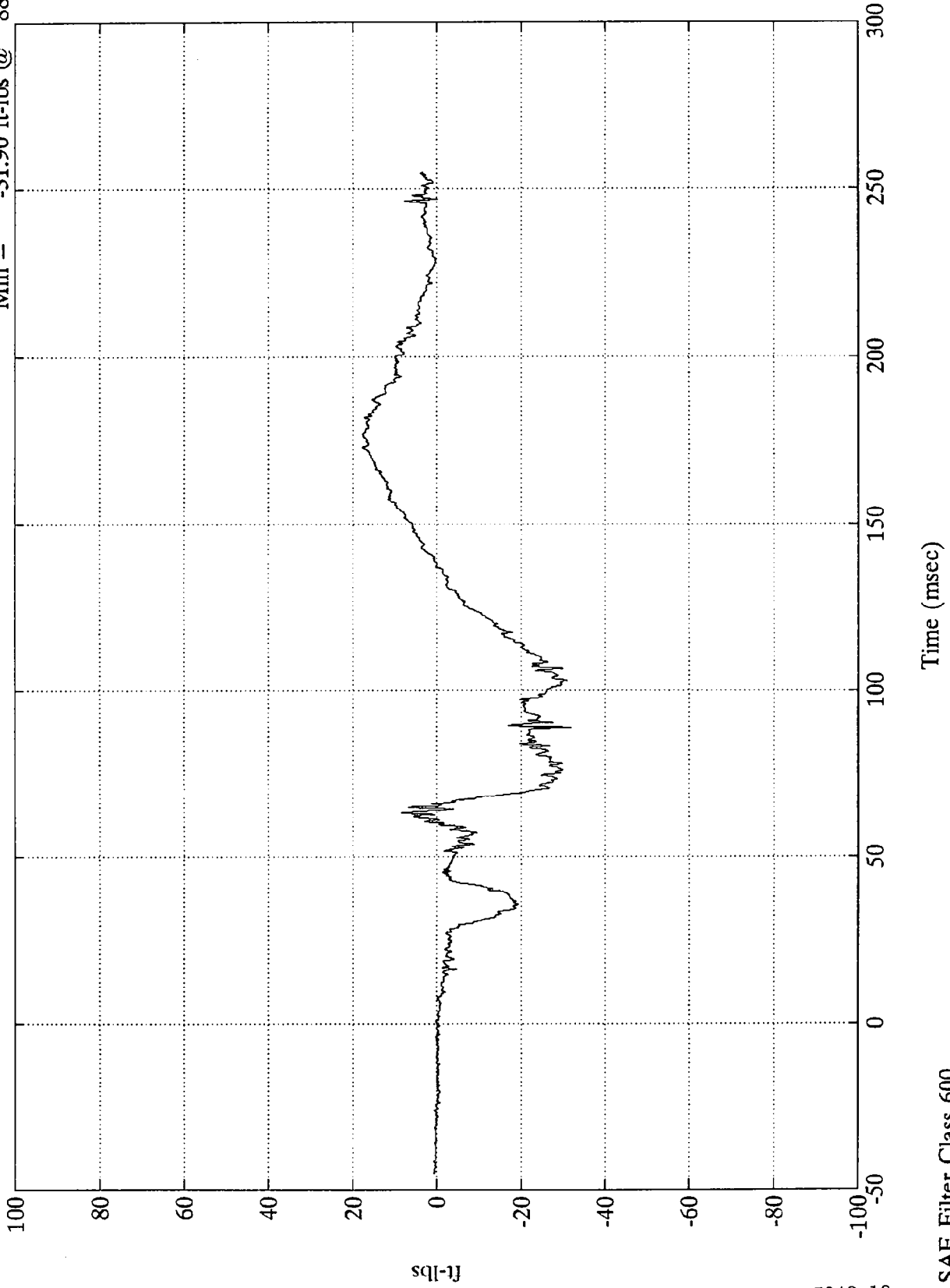
SAE Filter Class 600



VTV TEST 11

Pos. #1 Lumbar Mx

Max = 17.61 ft-lbs @ 173.04 msec
Min = -31.90 ft-lbs @ 88.68 msec



B-101

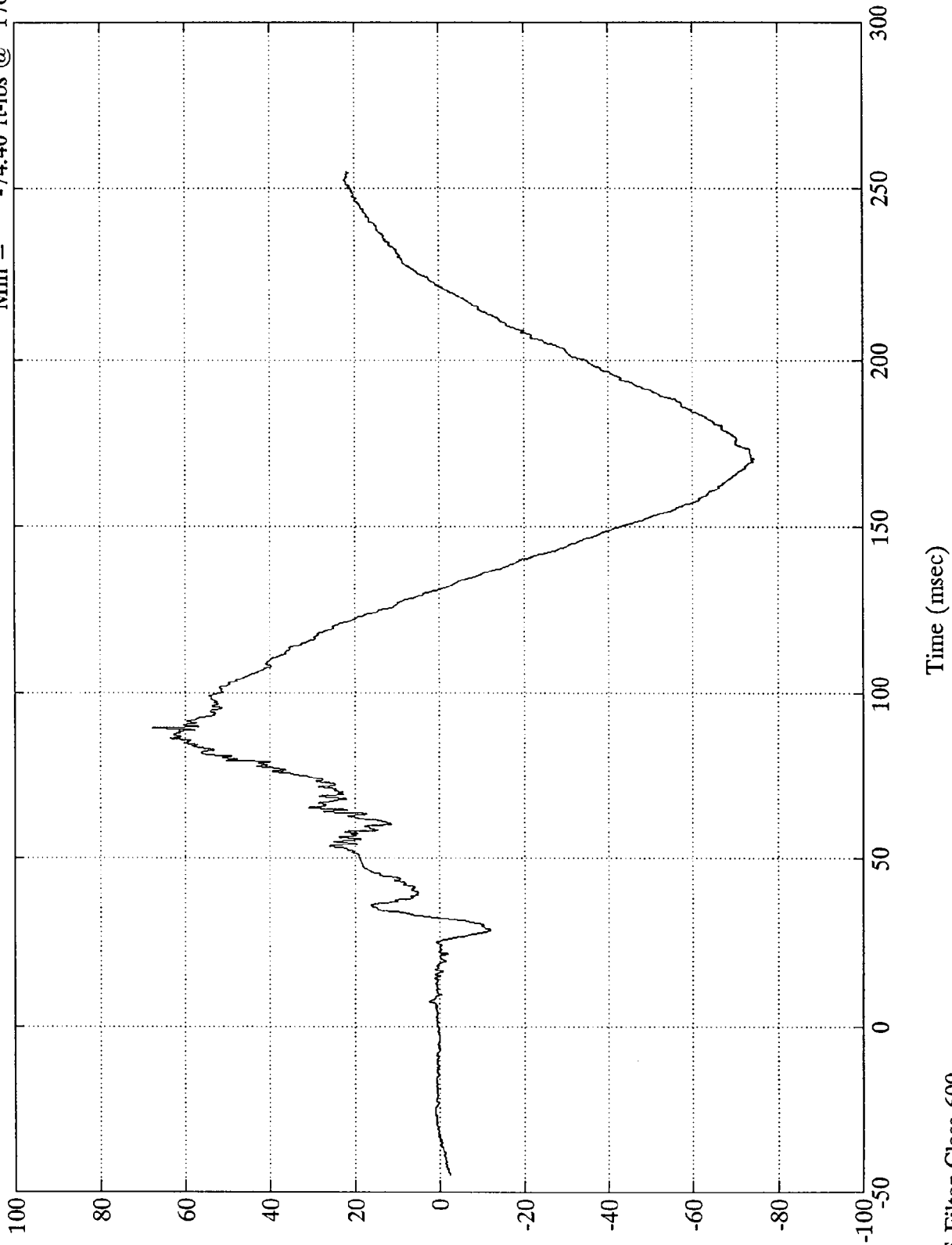
7942-12

SAE Filter Class 600

VTV TEST 11

Pos. #1 Lumbar My

Max = 67.87 ft-lbs @ 89.16 msec
Min = -74.40 ft-lbs @ 170.28 msec



sq[-l]b
B-102

7942-12

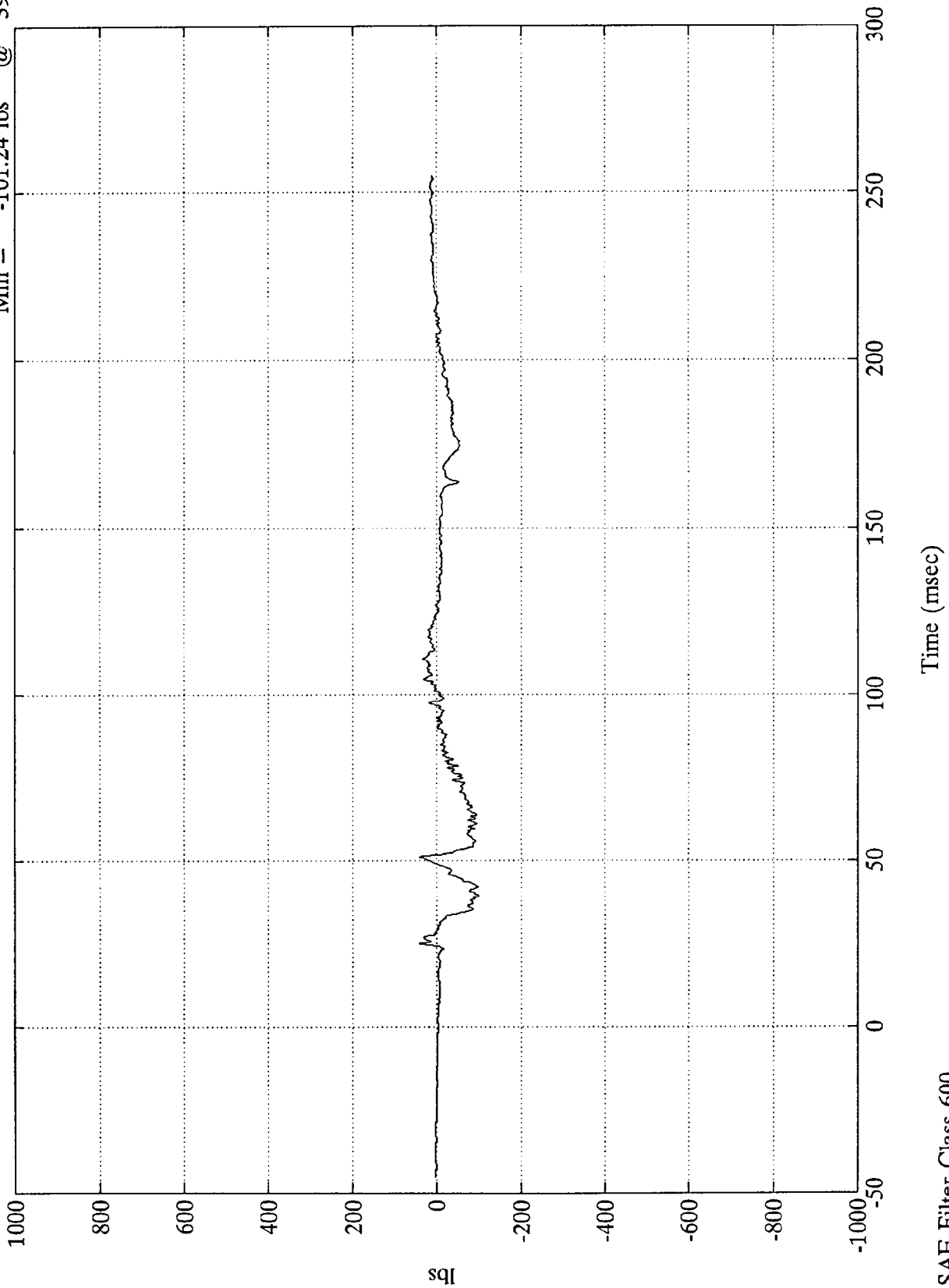
SAE Filter Class 600



VTV TEST 11

Pos. #1 Upper Neck Fx

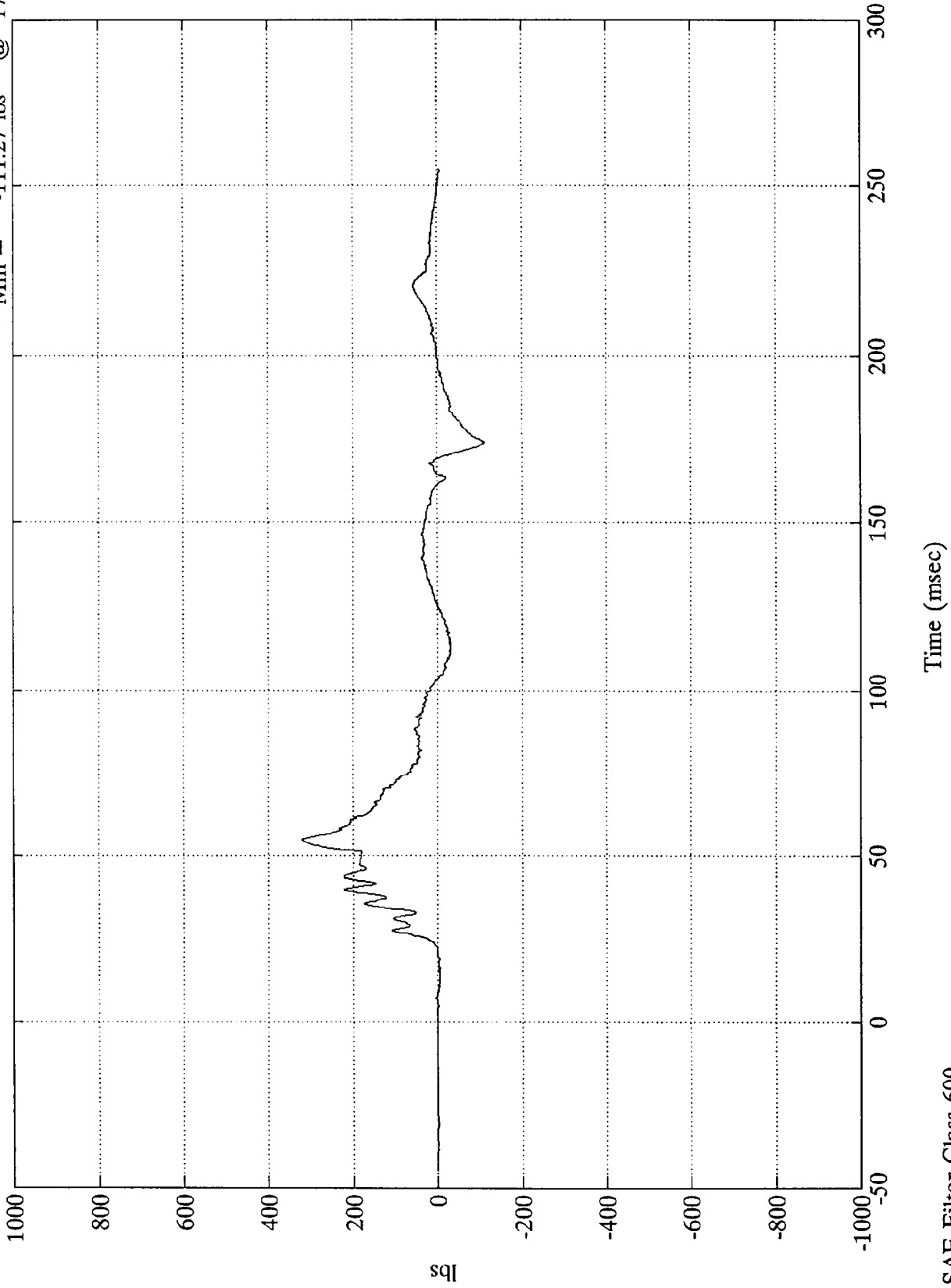
Max = 40.49 lbs @ 24.96 msec
Min = -101.24 lbs @ 39.47 msec



VTV TEST 11

Pos. #1 Upper Neck Fz

Max = 322.47 lbs @ 54.84 msec
Min = -111.27 lbs @ 173.88 msec



B-104

7942-12

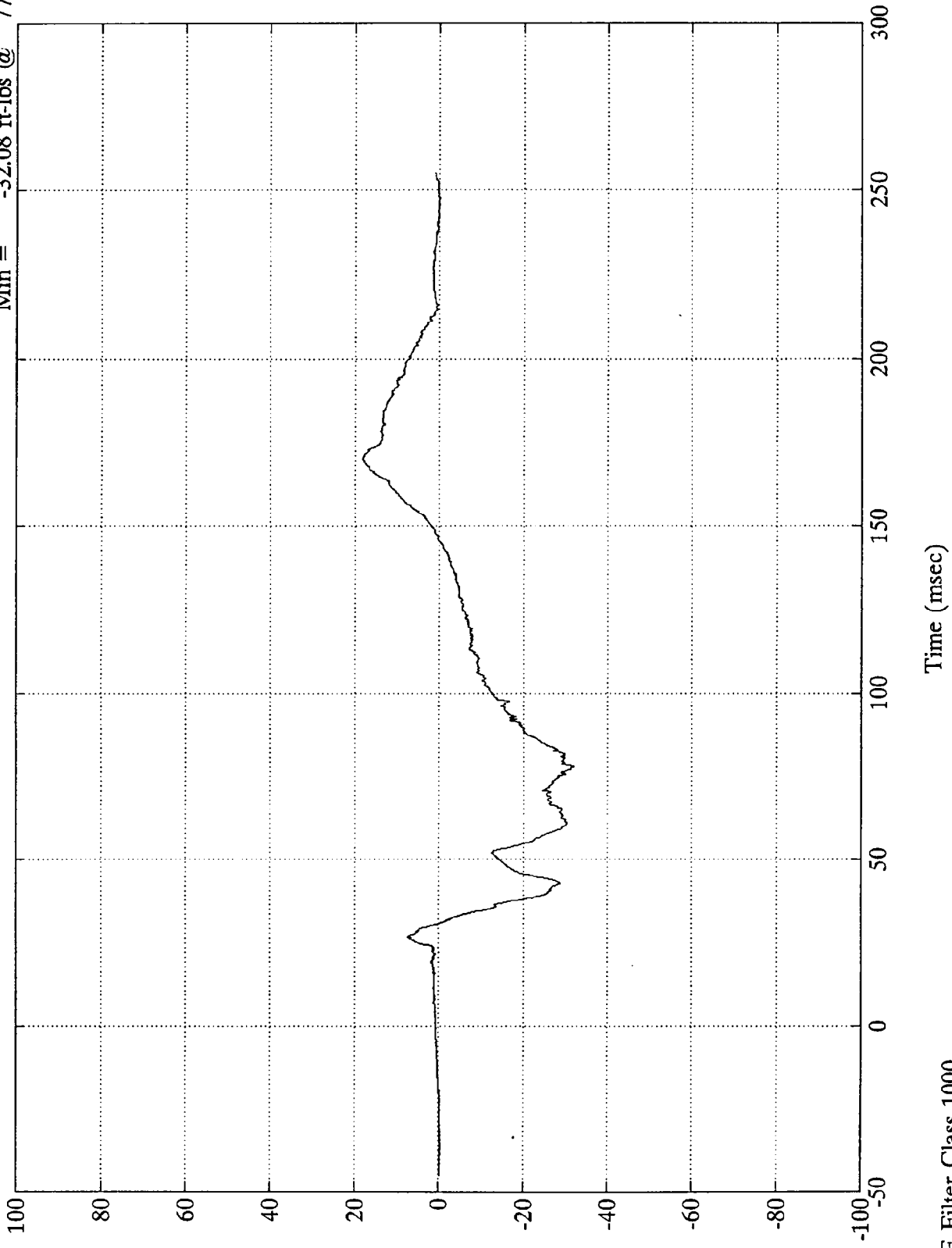
SAE Filter Class 600



VTV TEST 11

Pos. #1 Upper Neck My

Max = 18.17 ft-lbs @ 170.16 msec
Min = -32.08 ft-lbs @ 77.76 msec



sqi-1j
B-105

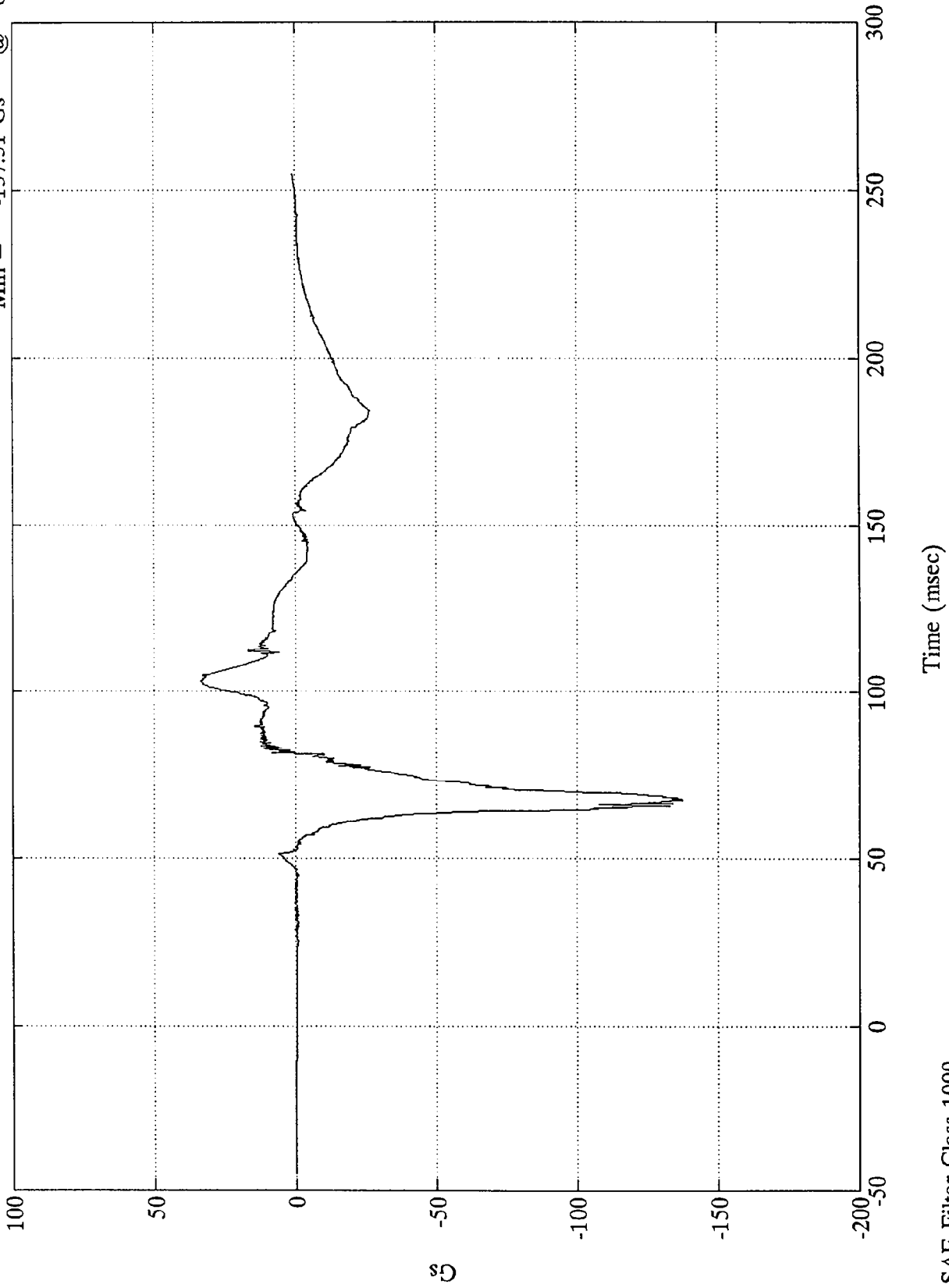
7942-12

SAE Filter Class 1000

VTV TEST 11

Max = 33.67 Gs @ 103.20 msec
Min = -137.51 Gs @ 67.44 msec

Pos. #2 Head X



B-106

7942-12

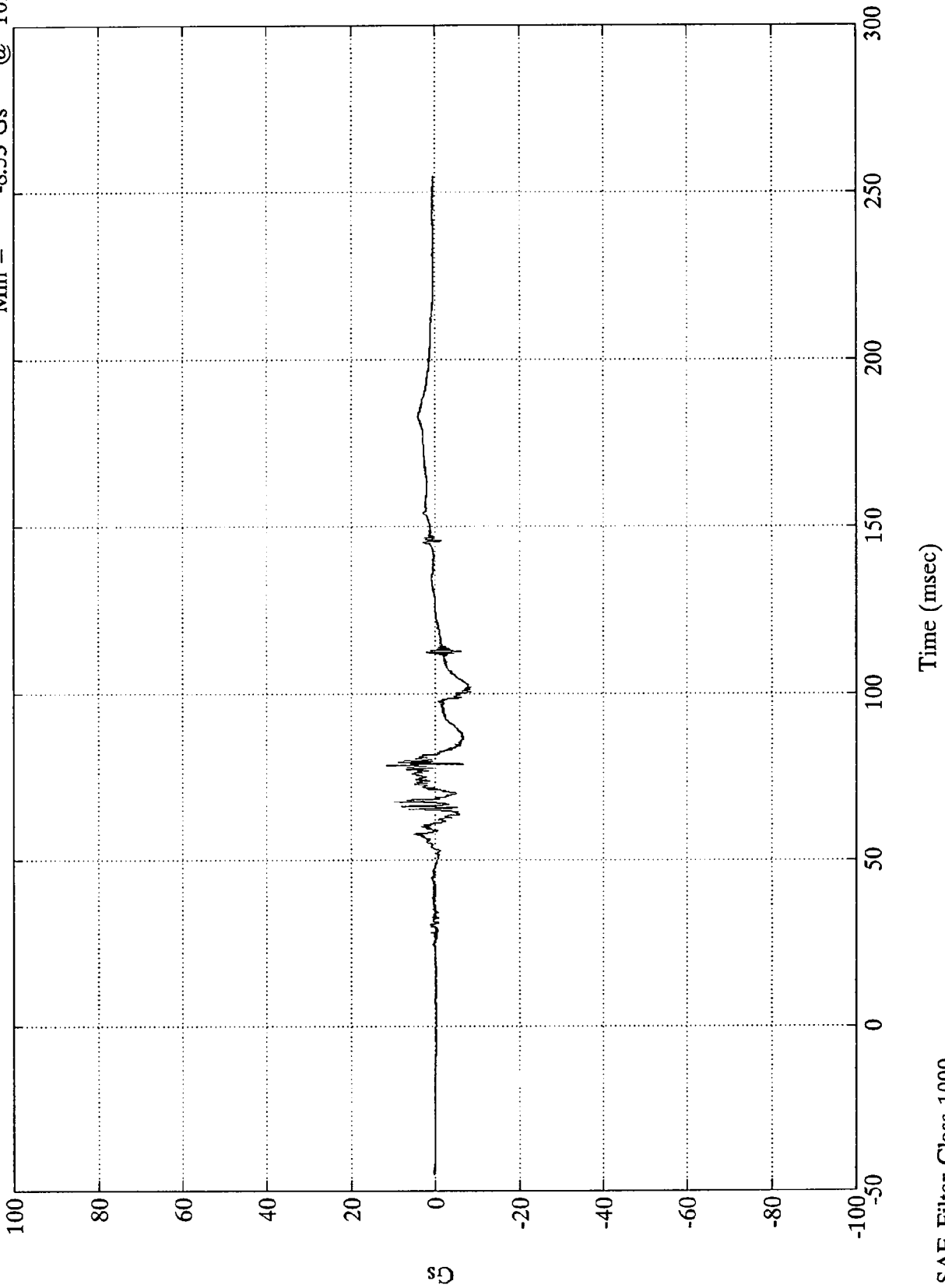
SAE Filter Class 1000

Time (msec)

VTV TEST 11

Pos. #2 Head Y

Max = 11.72 Gs @ 78.36 msec
Min = -8.53 Gs @ 101.76 msec



B-107

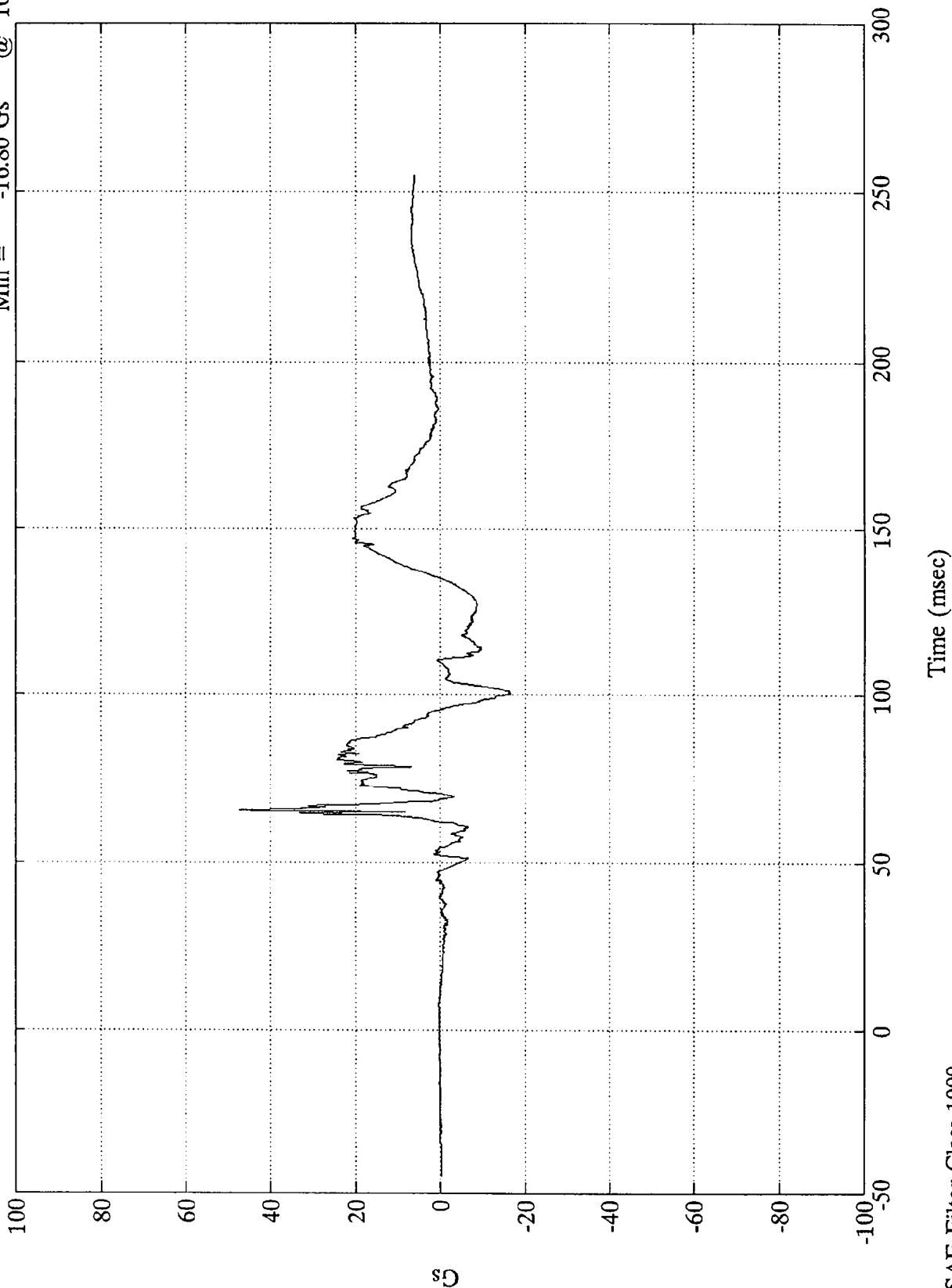
7942-12

SAE Filter Class 1000

VTV TEST 11

Max = 47.43 Gs @ 65.52 msec
Min = -16.80 Gs @ 100.20 msec

Pos. #2 Head Z



B-108

7942-12

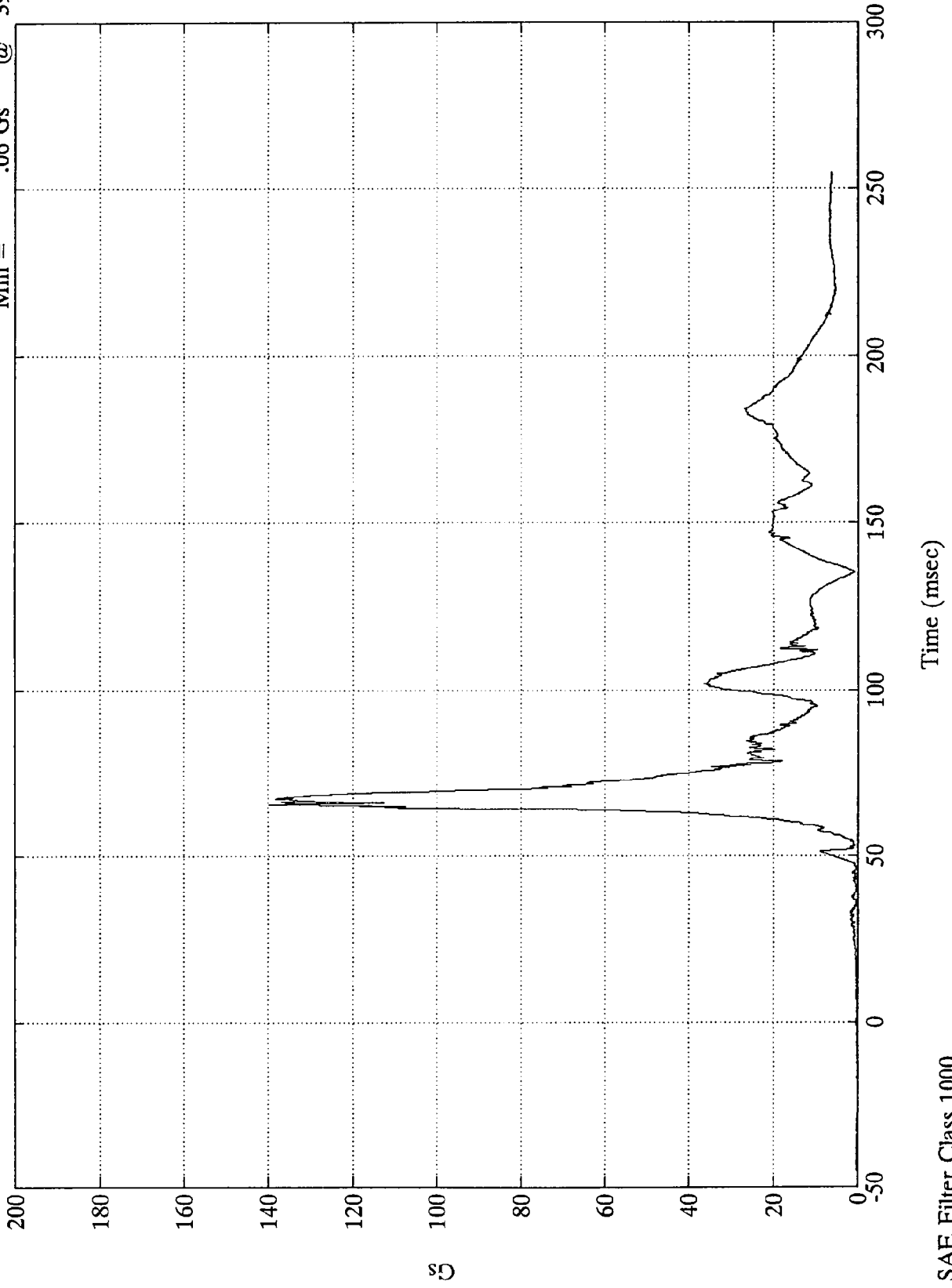
SAE Filter Class 1000



VTV TEST 11

Pos. #2 Head Resultant

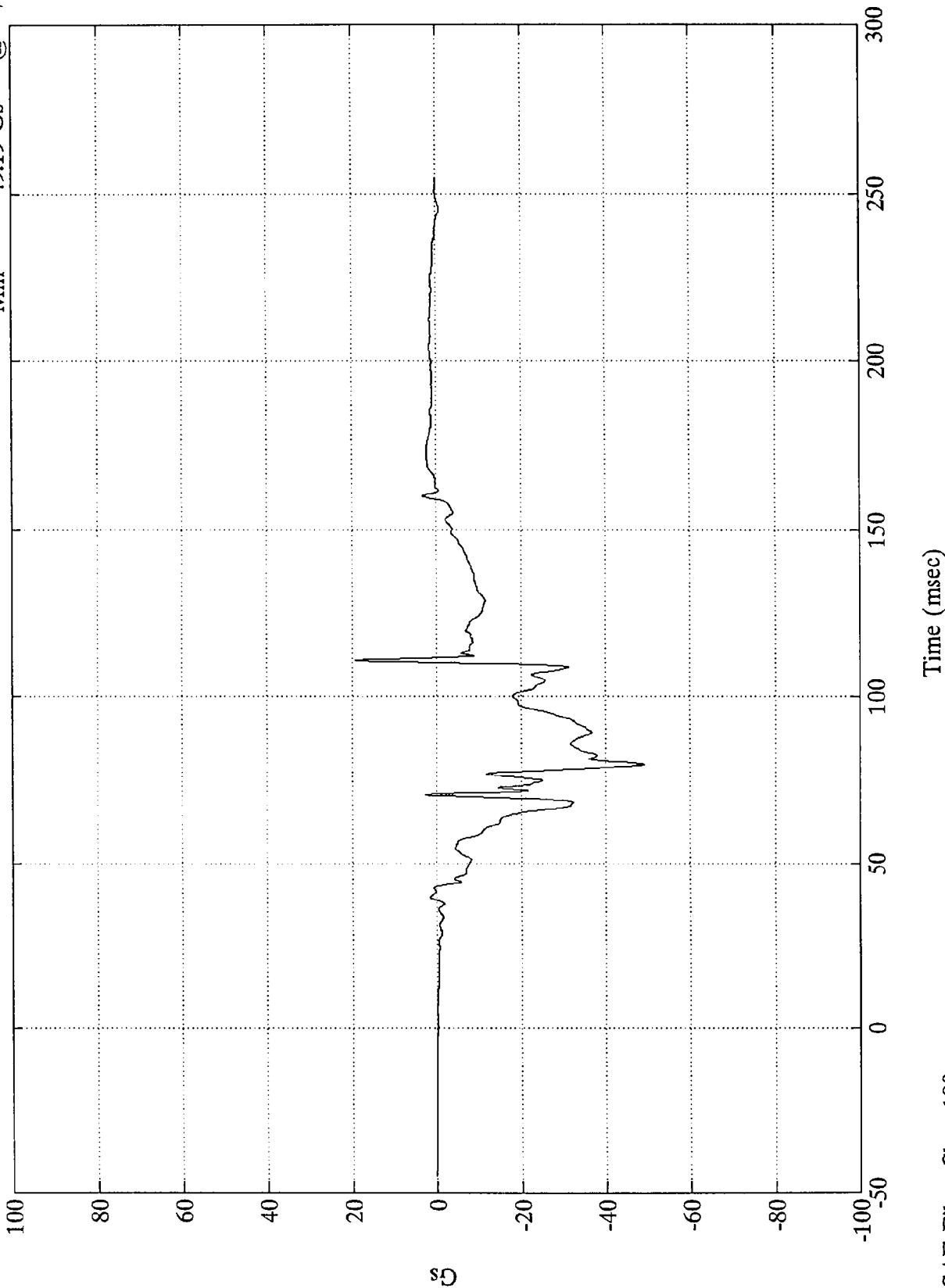
Max = 139.77 Gs @ 65.63 msec
Min = .06 Gs @ 39.59 msec



VTV TEST 11

Max = 19.26 Gs @ 110.88 msec
Min = -49.19 Gs @ 79.80 msec

Pos. #2 Chest X



B-110

7942-12

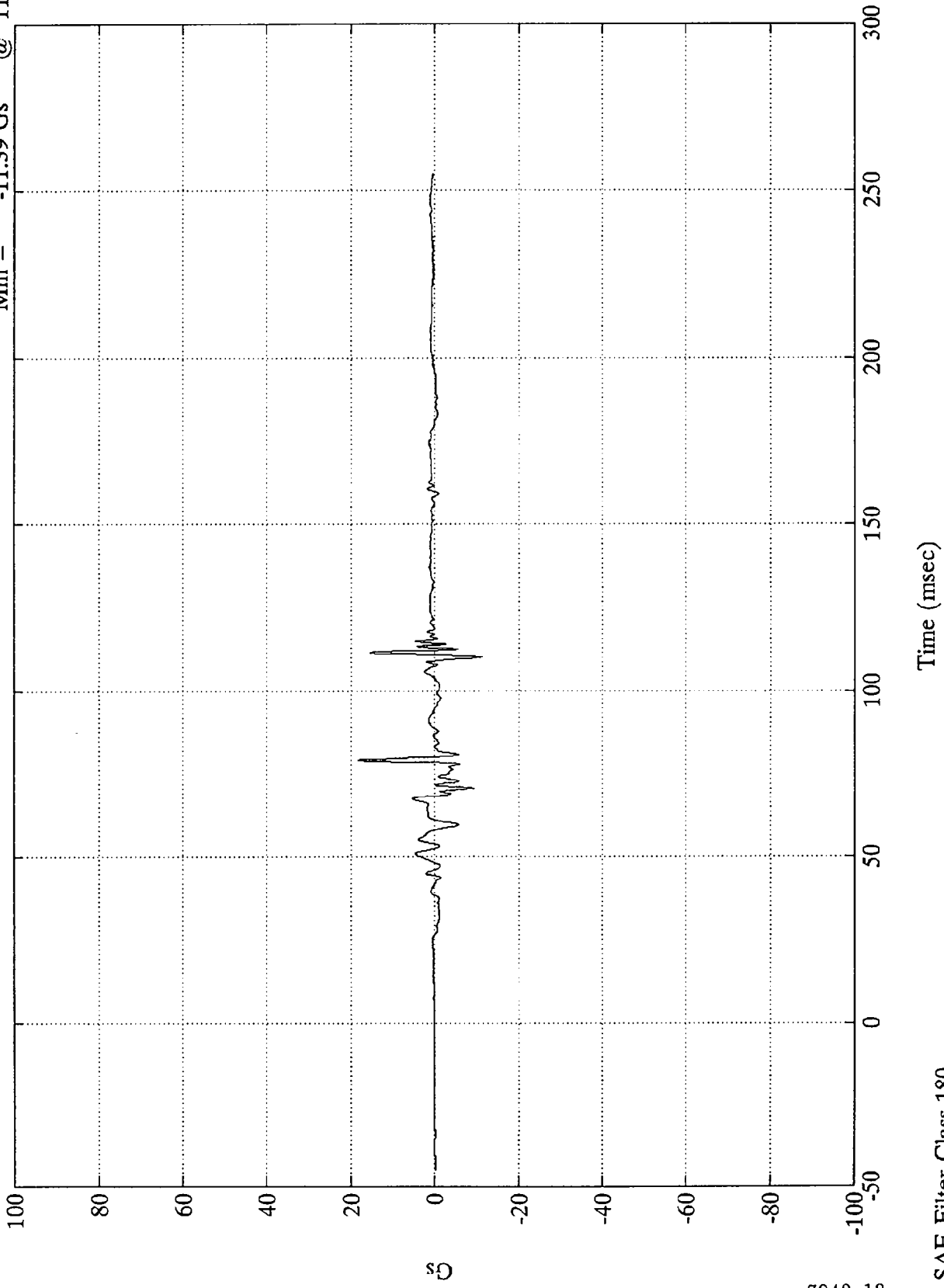
SAE Filter Class 180



VTV TEST 11

Pos. #2 Chest Y

Max = 18.31 Gs @ 78.95 msec
Min = -11.39 Gs @ 110.40 msec



B-111

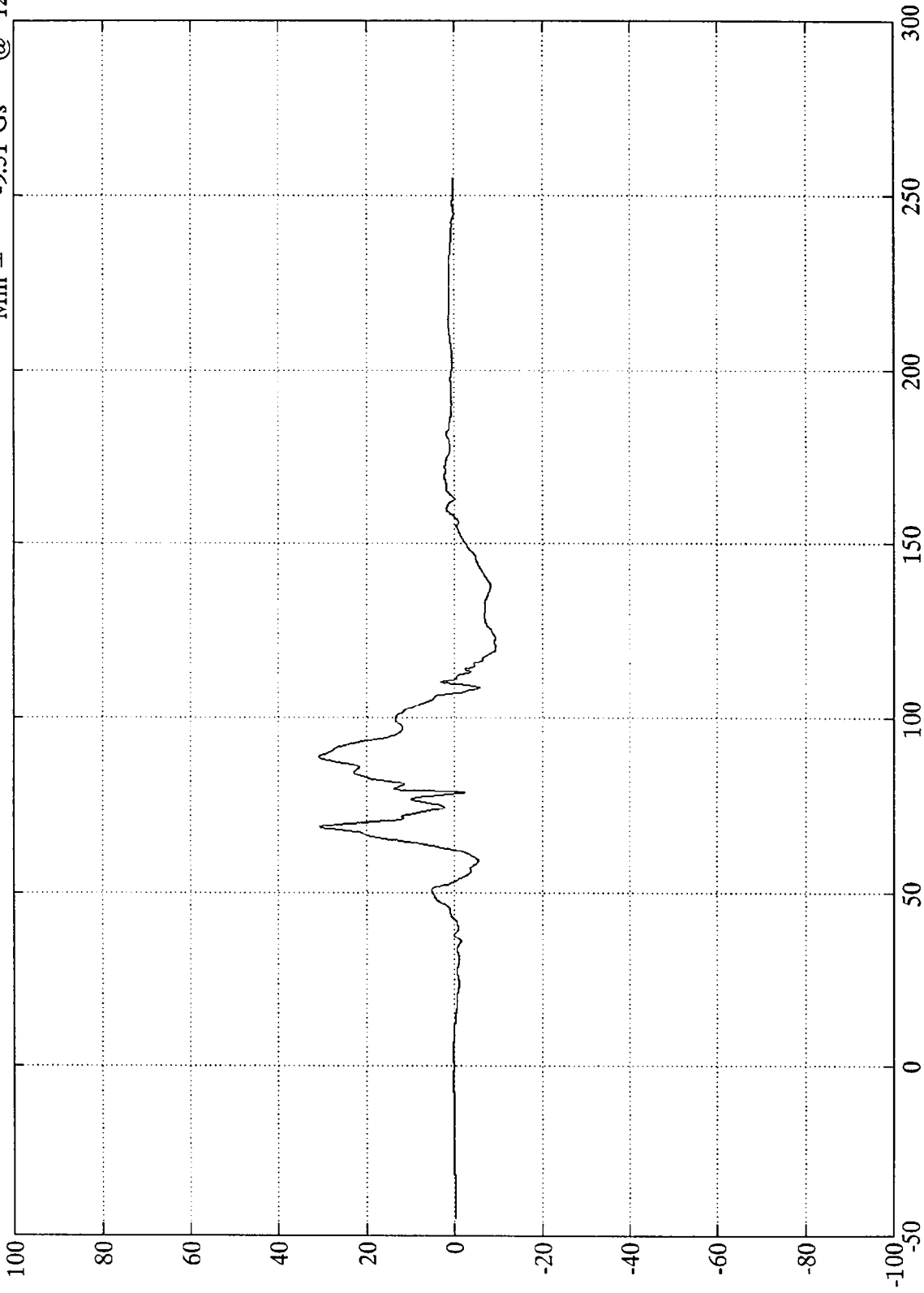
7942-12

SAE Filter Class 180

VTV TEST 11

Max = 30.92 Gs @ 88.68 msec
Min = -9.51 Gs @ 120.72 msec

Pos. #2 Chest Z



B-112

7942-12

SAE Filter Class 180

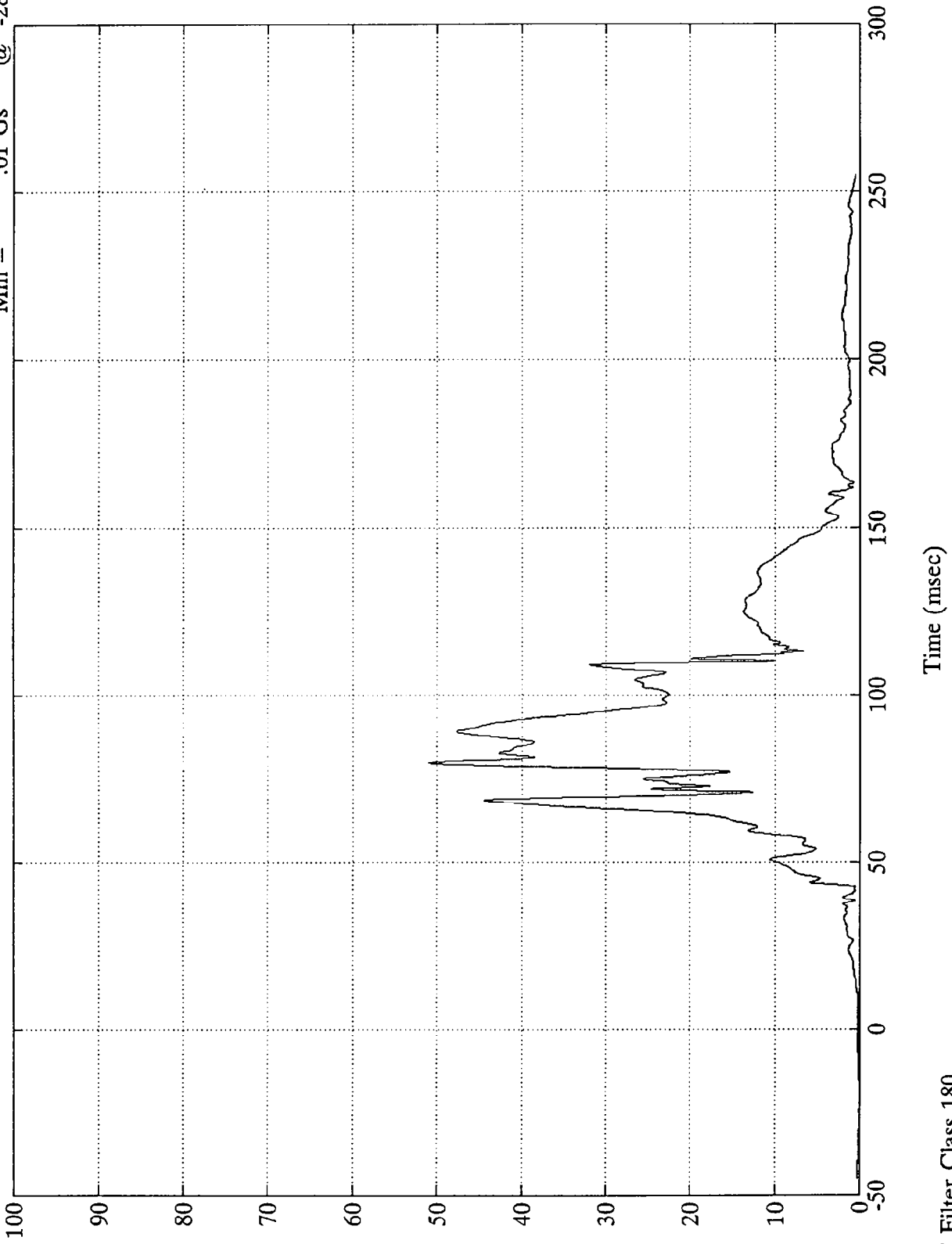
Time (msec)



VTV TEST 11

Pos. #2 Chest Resultant

Max = 51.03 Gs @ 79.80 msec
Min = .01 Gs @ -28.44 msec



B-113

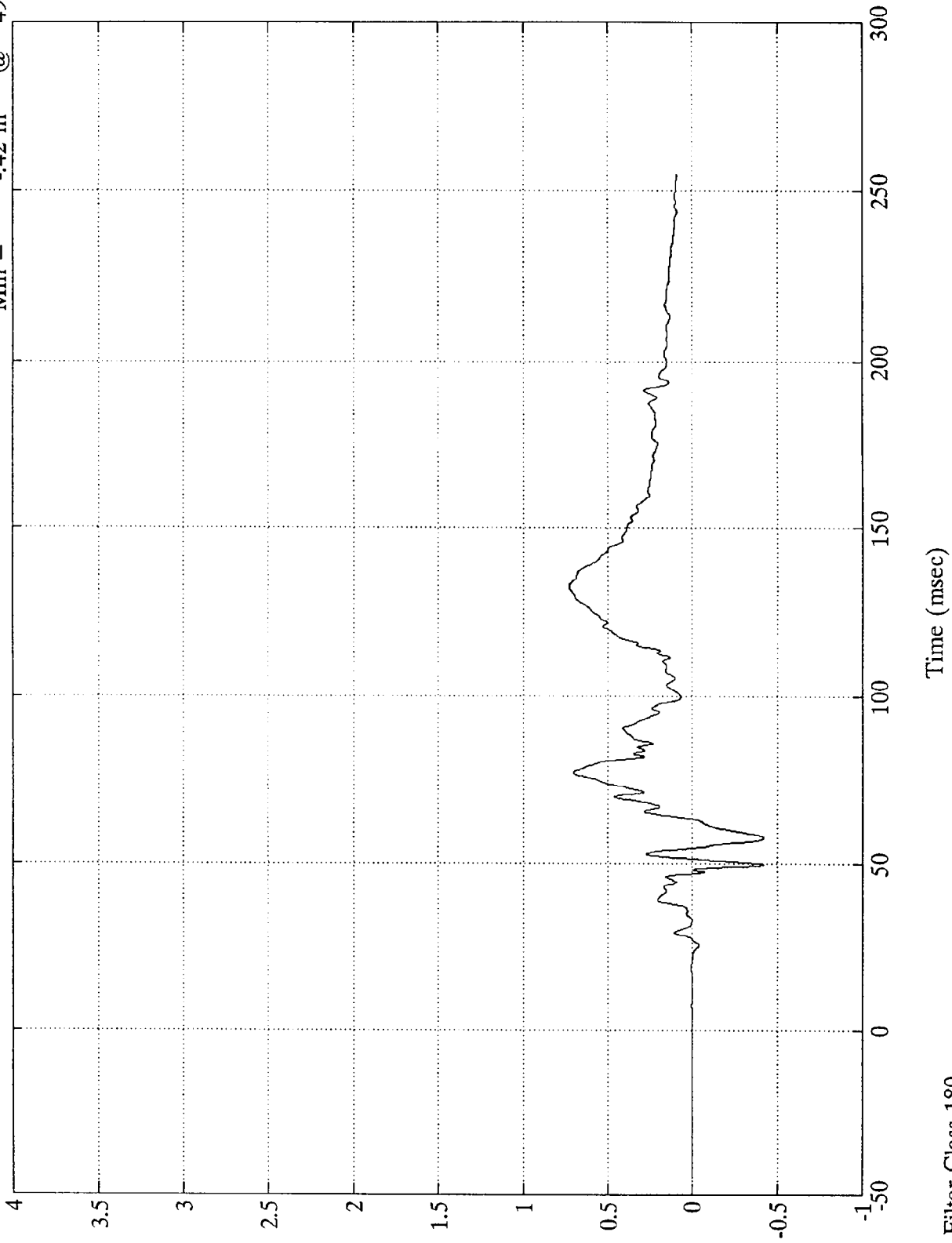
7942-12

SAE Filter Class 180

VTV TEST 11

Pos. #2 Chest Disp.

Max = .73 in @ 132.60 msec
Min = -.42 in @ 49.79 msec



B-114

7942-12

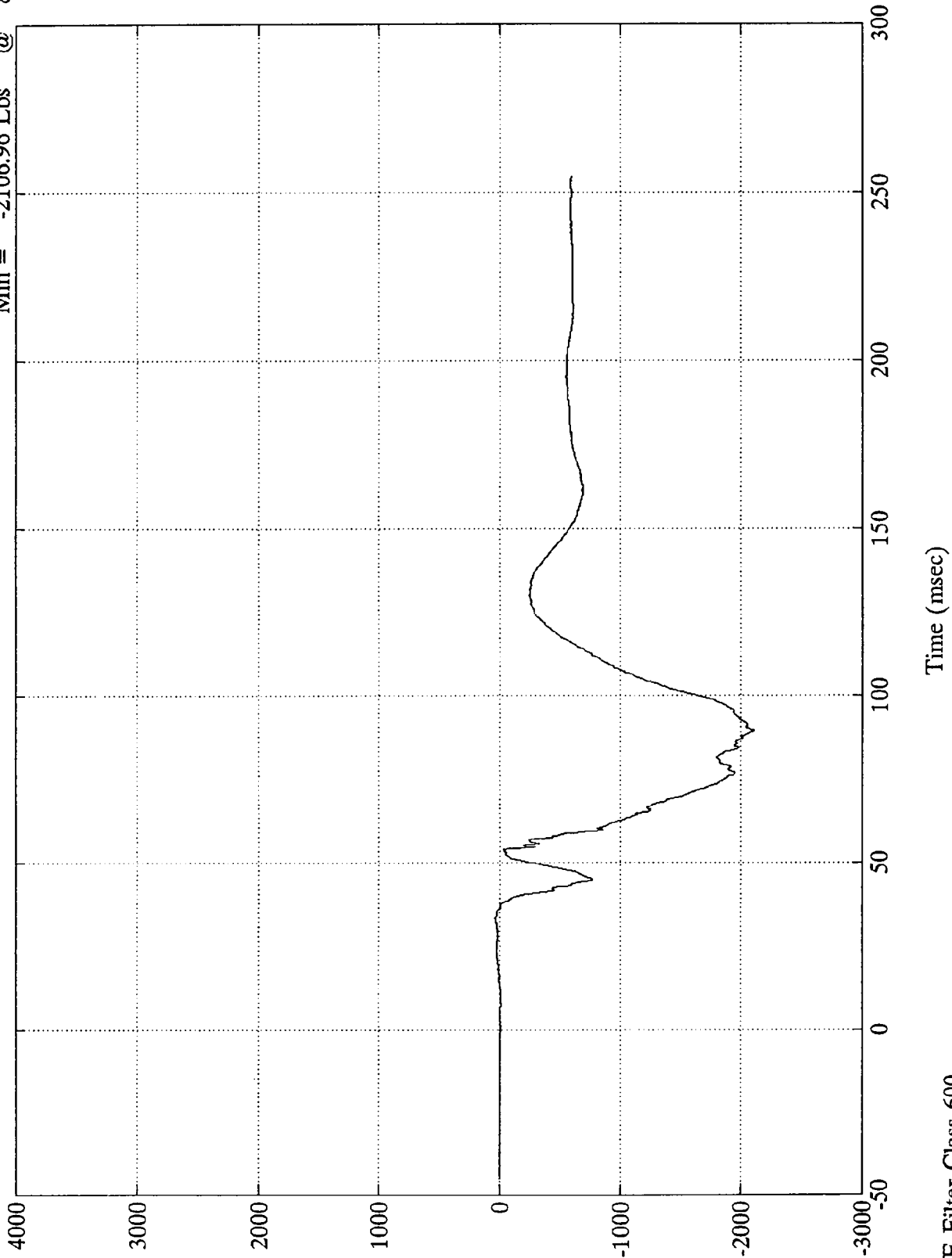
SAE Filter Class 180



VTV TEST 11

Pos. #2 Left Femur

Max = 35.25 Lbs @ 33.24 msec
Min = -2106.96 Lbs @ 89.16 msec



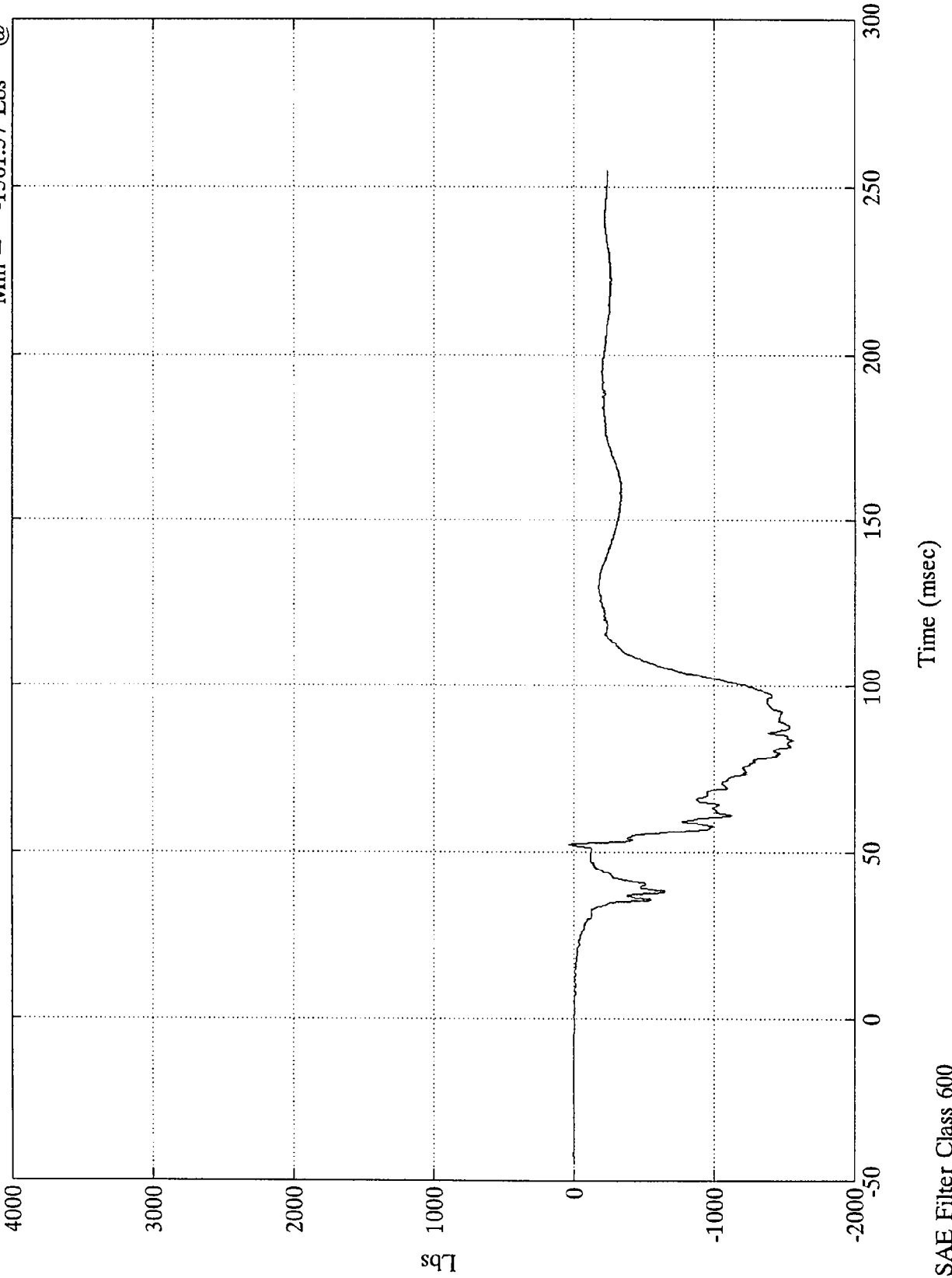
B-115

7942-12

SAE Filter Class 600

VTV TEST 11

Pos. #2 Right Femur
Max = 36.32 Lbs @ 52.31 msec
Min = -1561.57 Lbs @ 83.76 msec

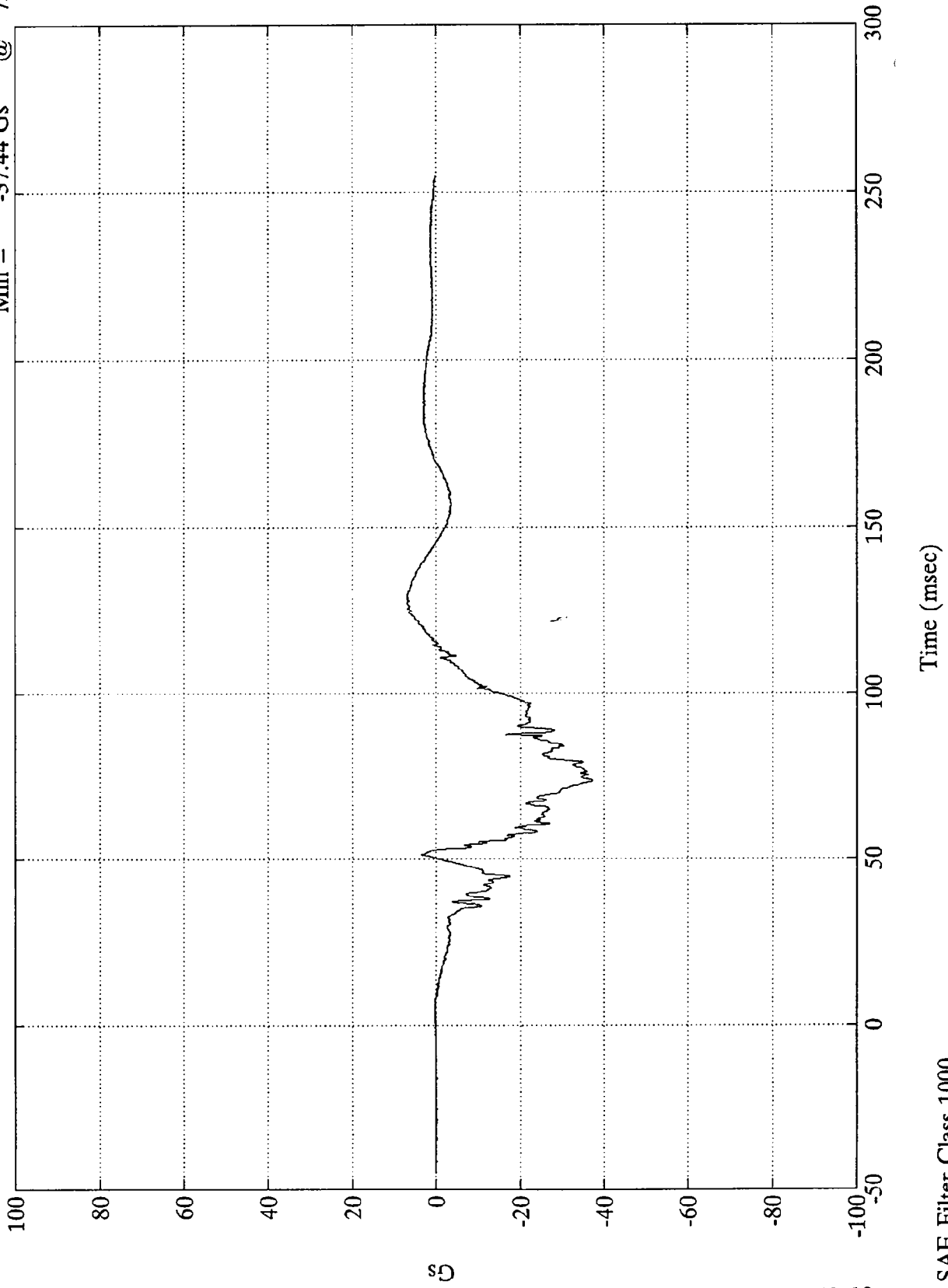


VTV TEST 11

Pos. #2 Pelvic X

Max = 7.06 Gs
Min = -37.44 Gs

@ 129.48 msec
@ 73.55 msec



B-117

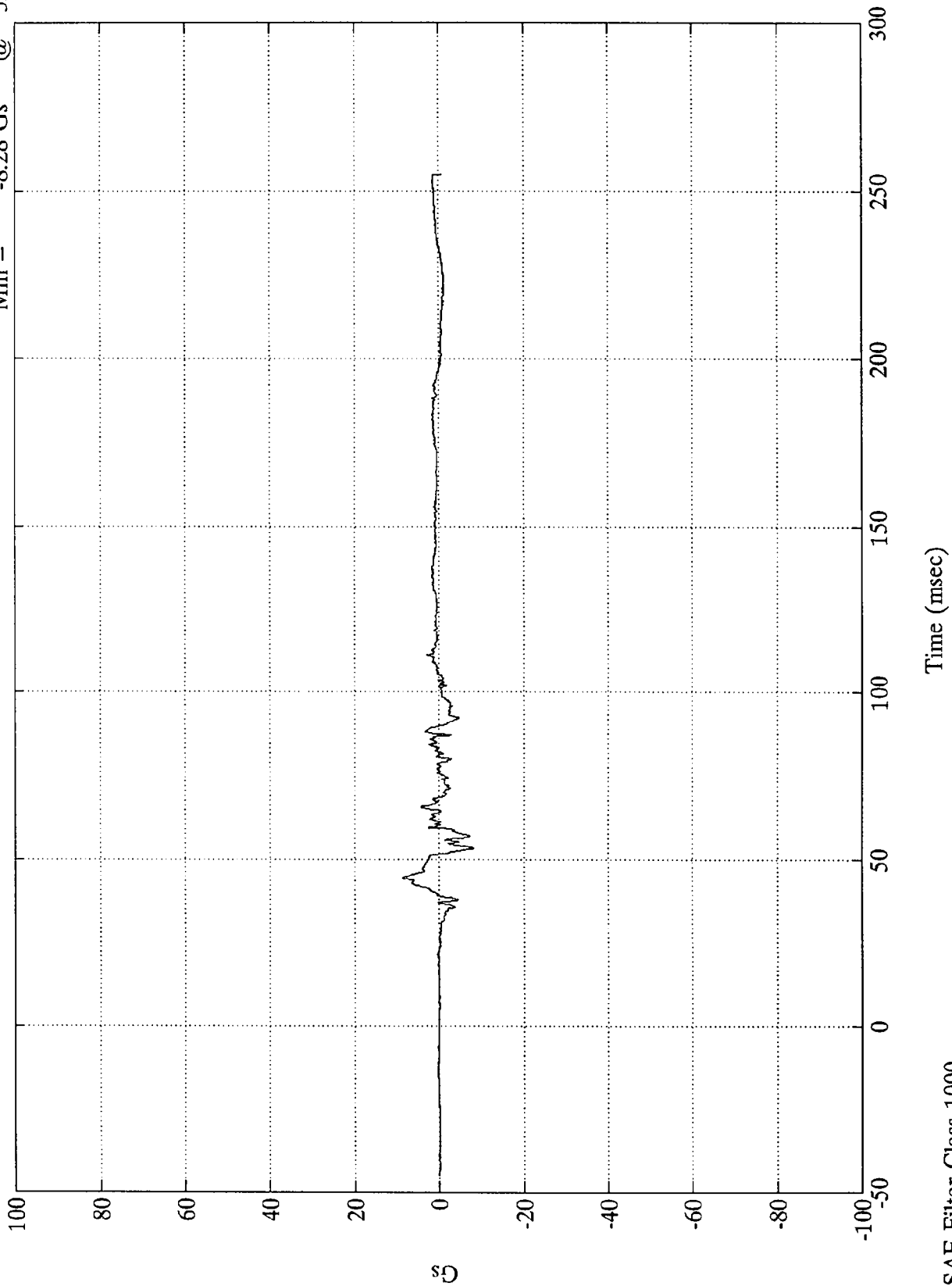
7942-12

SAE Filter Class 1000

VTV TEST 11

Max = 8.75 Gs @ 44.27 msec
Min = -8.28 Gs @ 53.40 msec

Pos. #2 Pelvic Y



B-118

7942-12

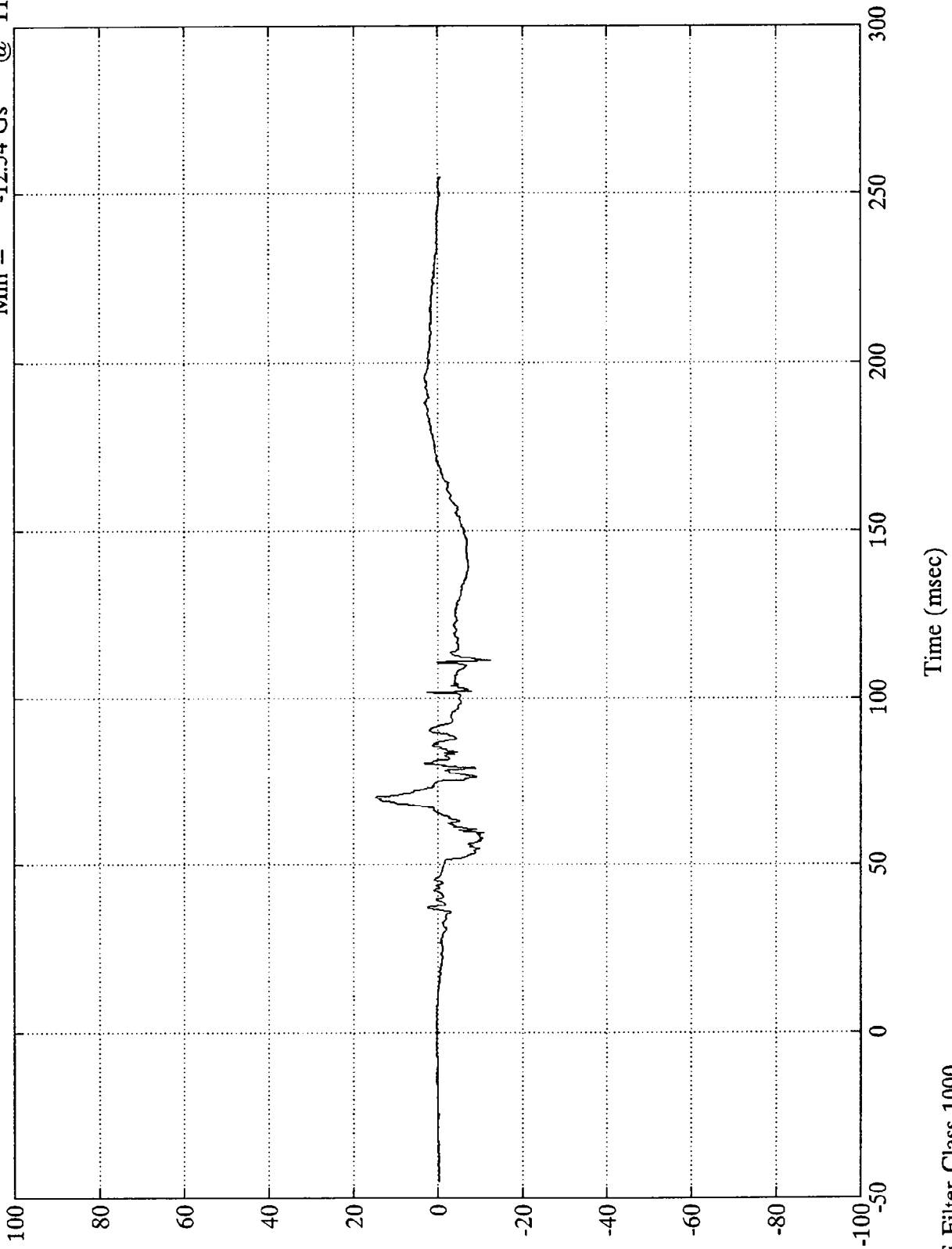
SAE Filter Class 1000

Time (msec)

VTV TEST 11

Max = 14.78 Gs @ 70.20 msec
Min = -12.54 Gs @ 111.23 msec

Pos. #2 Pelvic Z



B-119

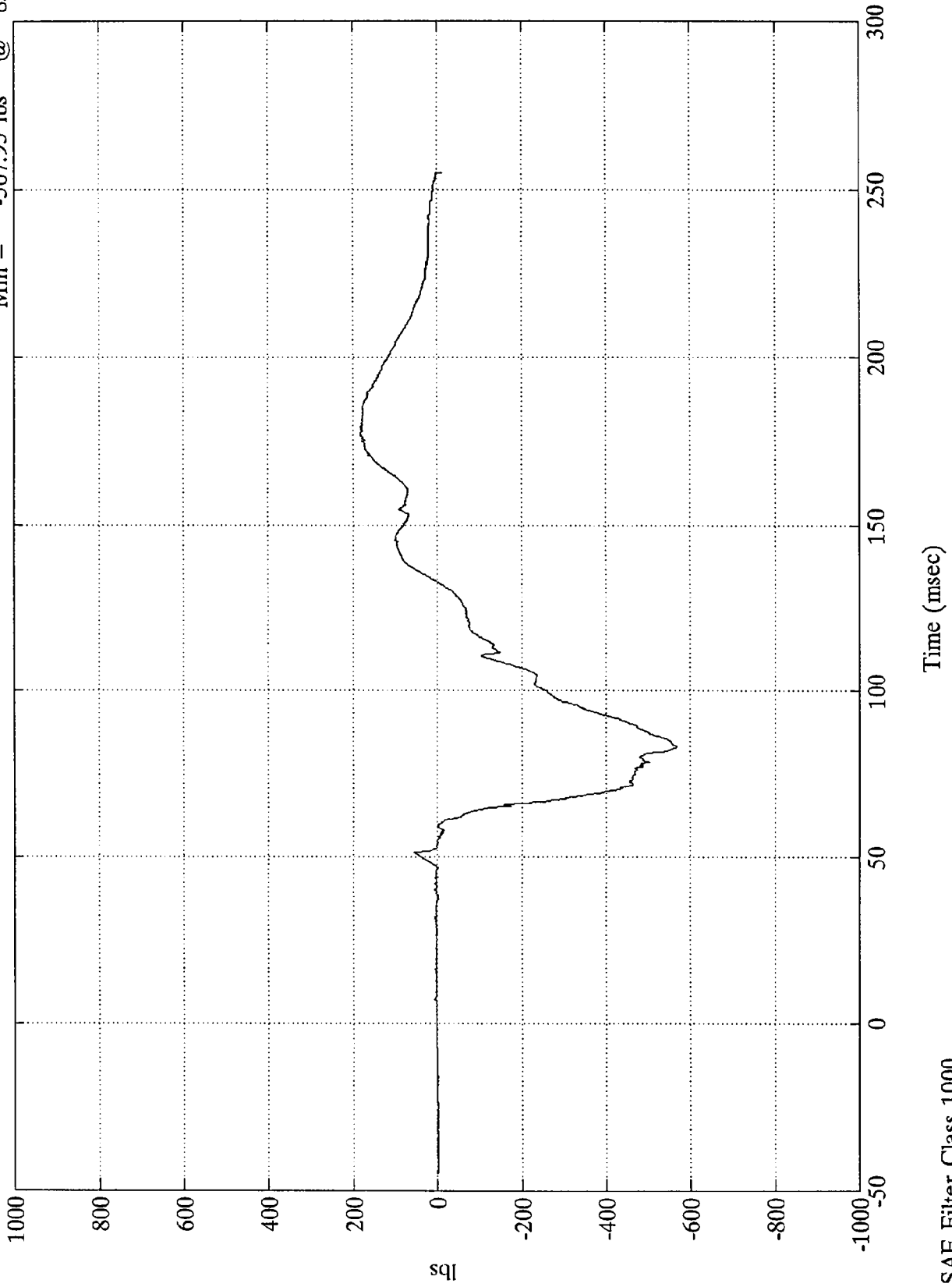
7942-12

SAE Filter Class 1000

VTV TEST 11

Pos. #2 Upper Neck Fx

Max = 181.02 lbs @ 179.16 msec
Min = -567.95 lbs @ 83.04 msec



B-120

7942-12

SAE Filter Class 1000



VTV TEST 11

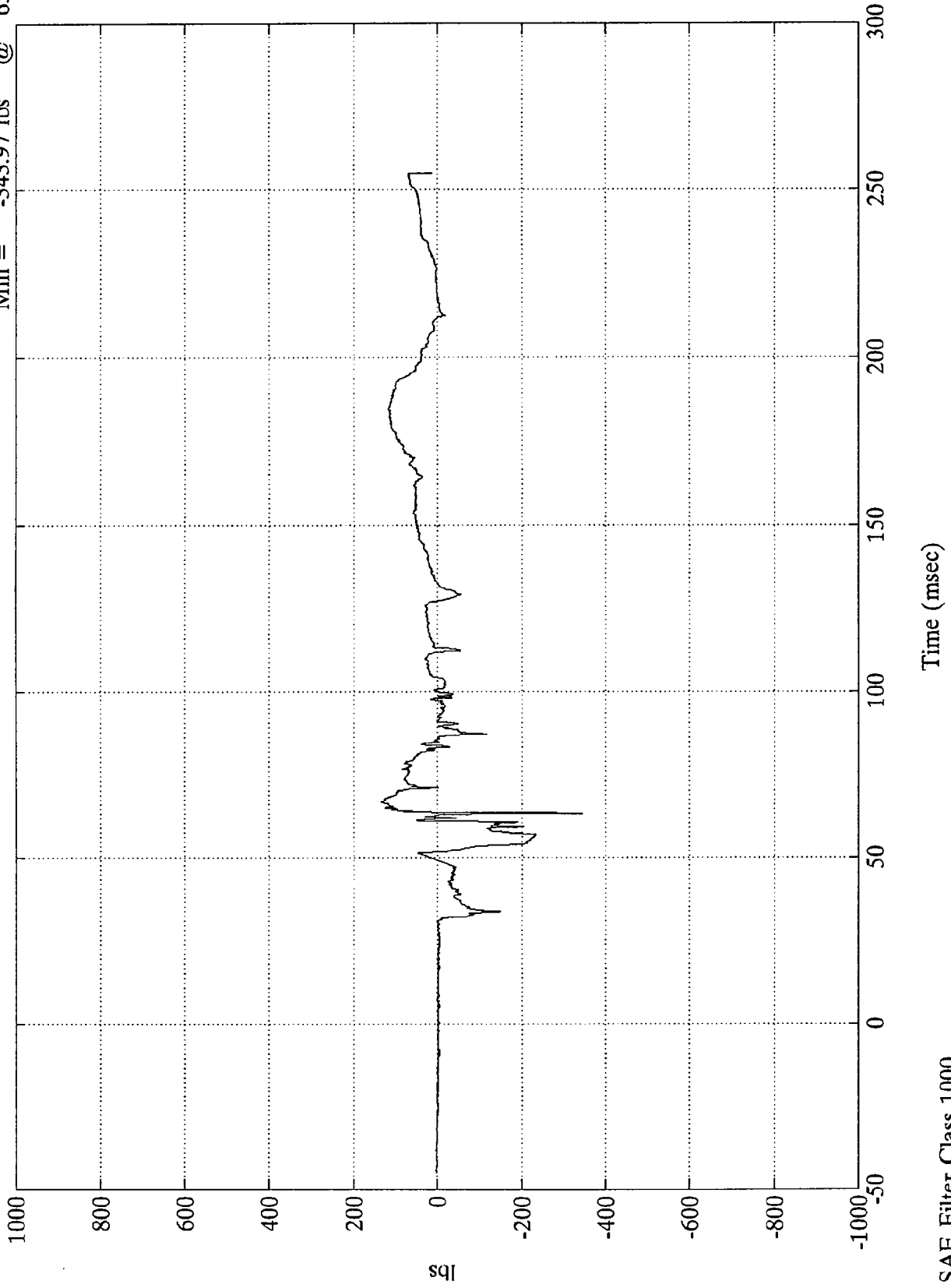
Pos. #2 Upper Neck Fy

Max = 134.01 lbs

@ 66.84 msec

Min = -343.97 lbs

@ 63.48 msec



B-121

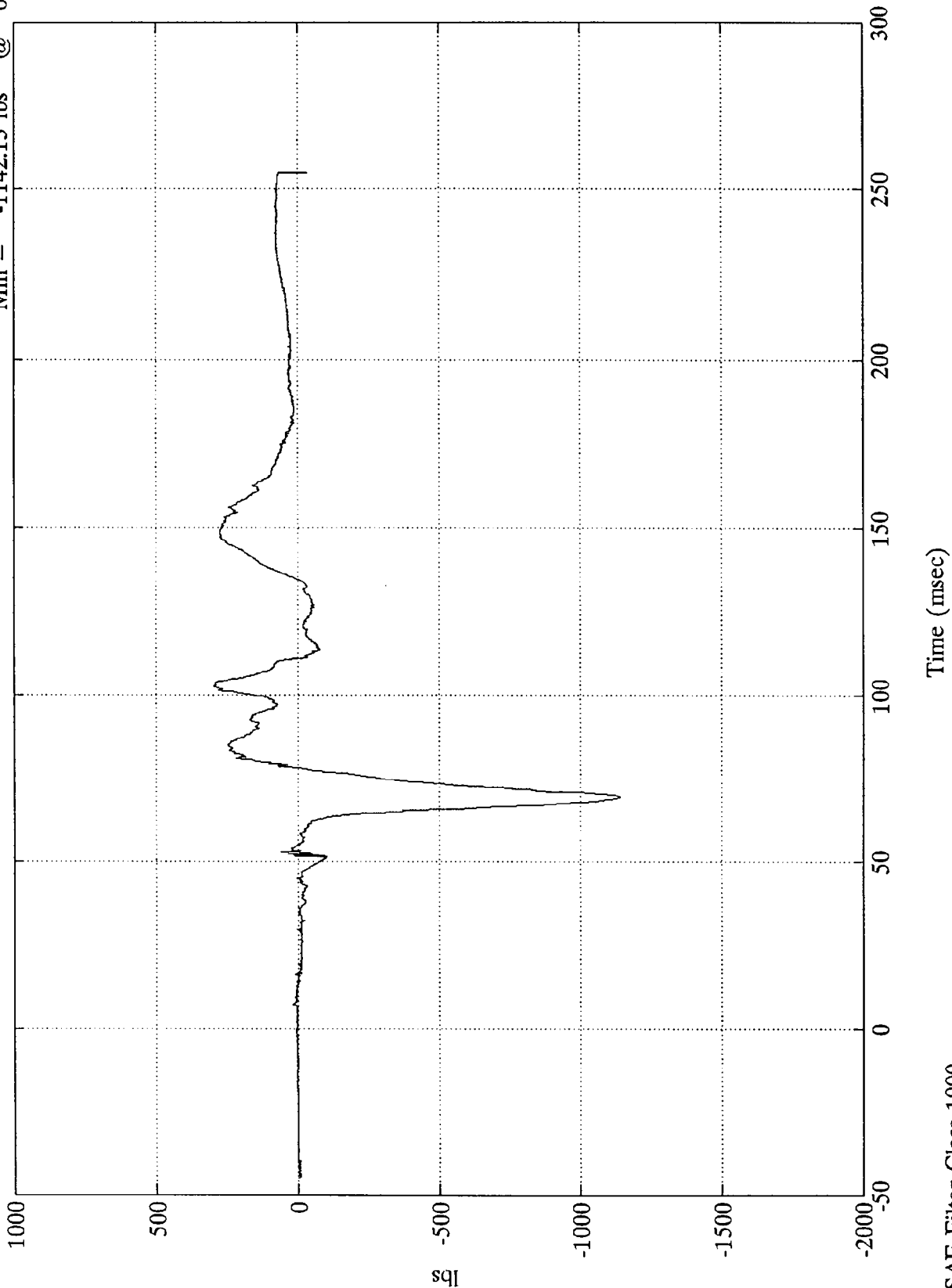
7942-12

SAE Filter Class 1000

VTV TEST 11

Pos. #2 Upper Neck Fz

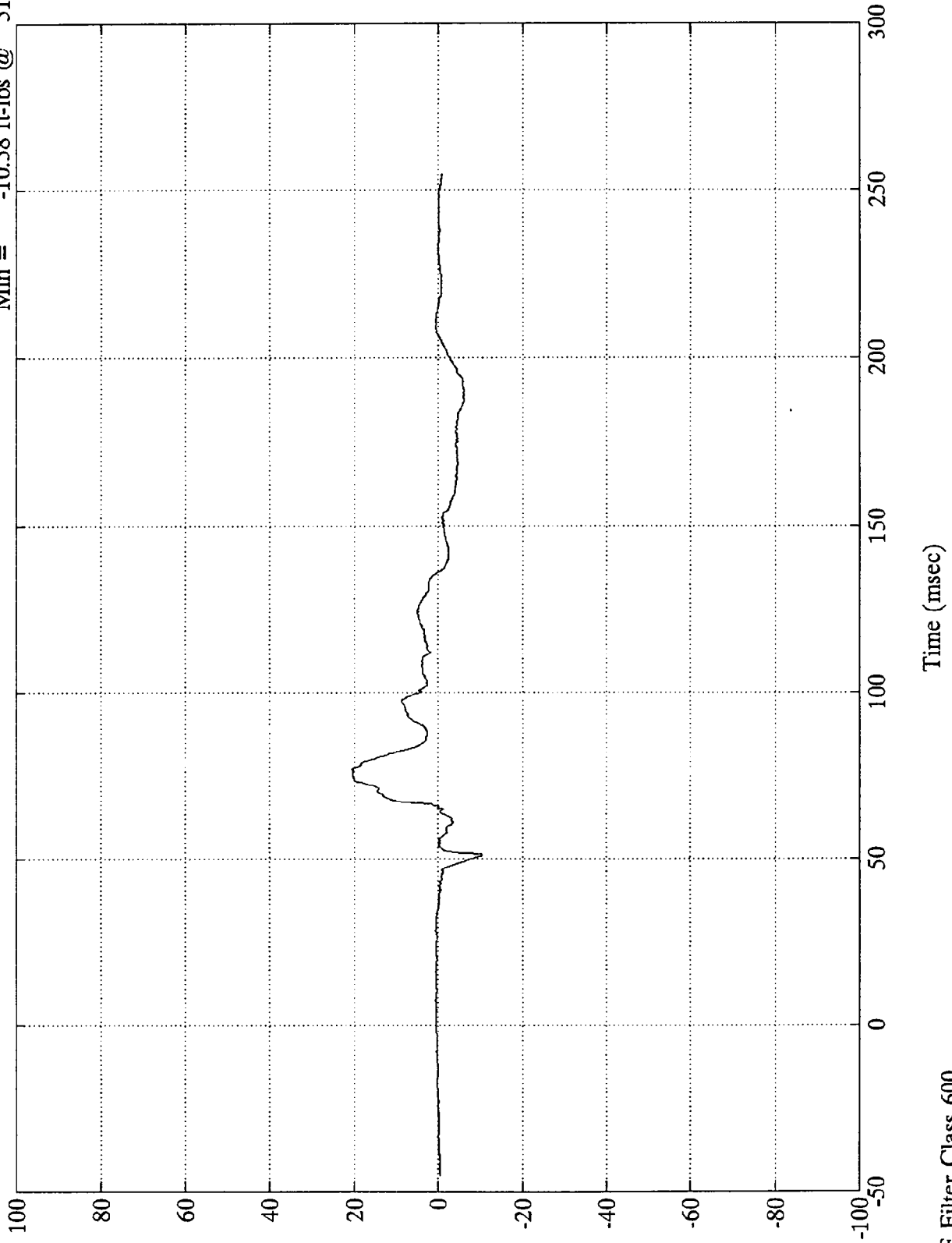
Max = 296.56 lbs @ 102.59 msec
Min = -1142.13 lbs @ 68.87 msec



VTV TEST 11

Pos. #2 Upper Neck Mx

Max = 20.72 ft-lbs @ 76.92 msec
Min = -10.58 ft-lbs @ 51.24 msec



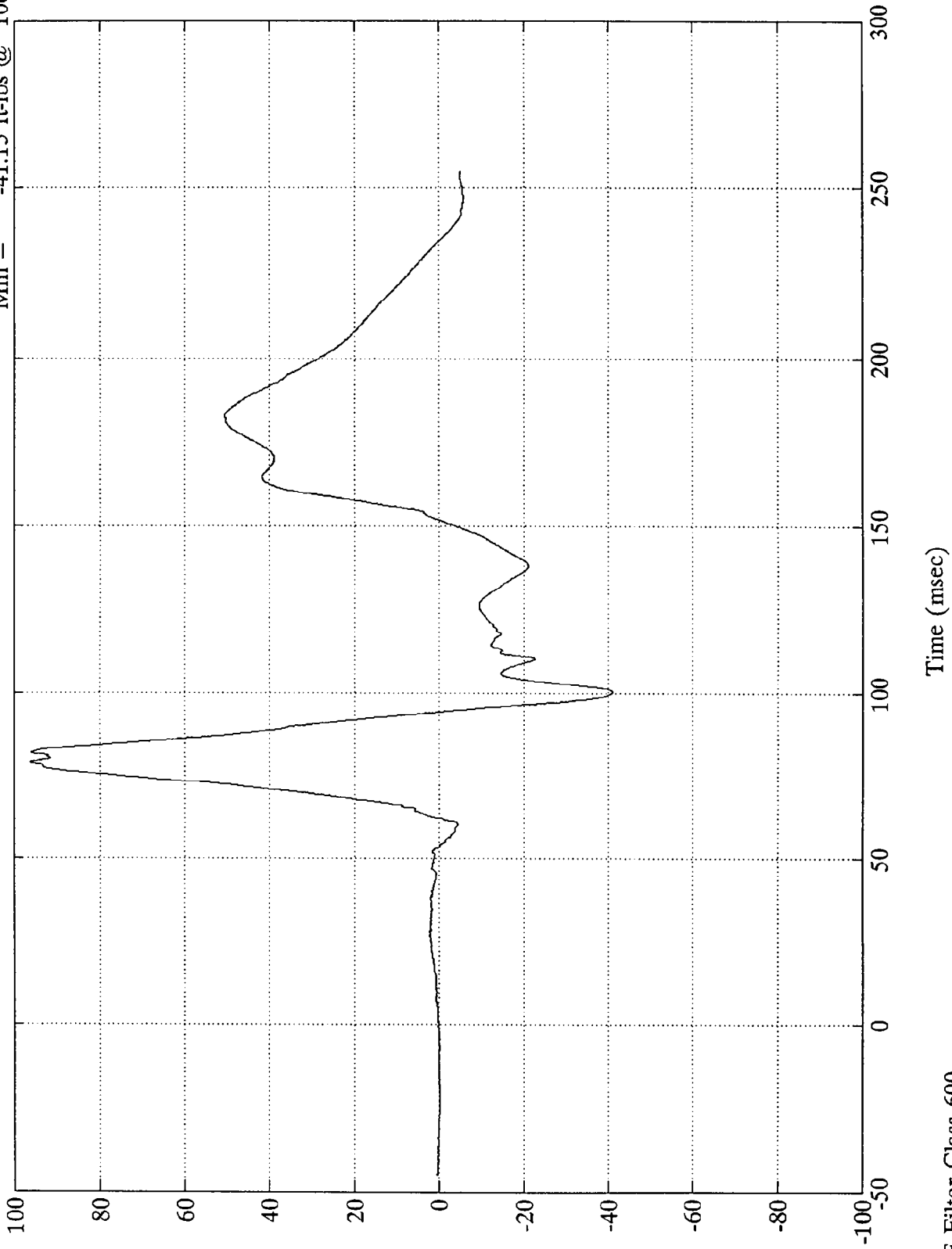
sq|-1|
B-123

7942-12

SAE Filter Class 600

VTV TEST 11

Pos. #2 Upper Neck My
Max = 96.20 ft-lbs @ 78.84 msec
Min = -41.15 ft-lbs @ 100.44 msec



sq[-1]

B-124

7942-12

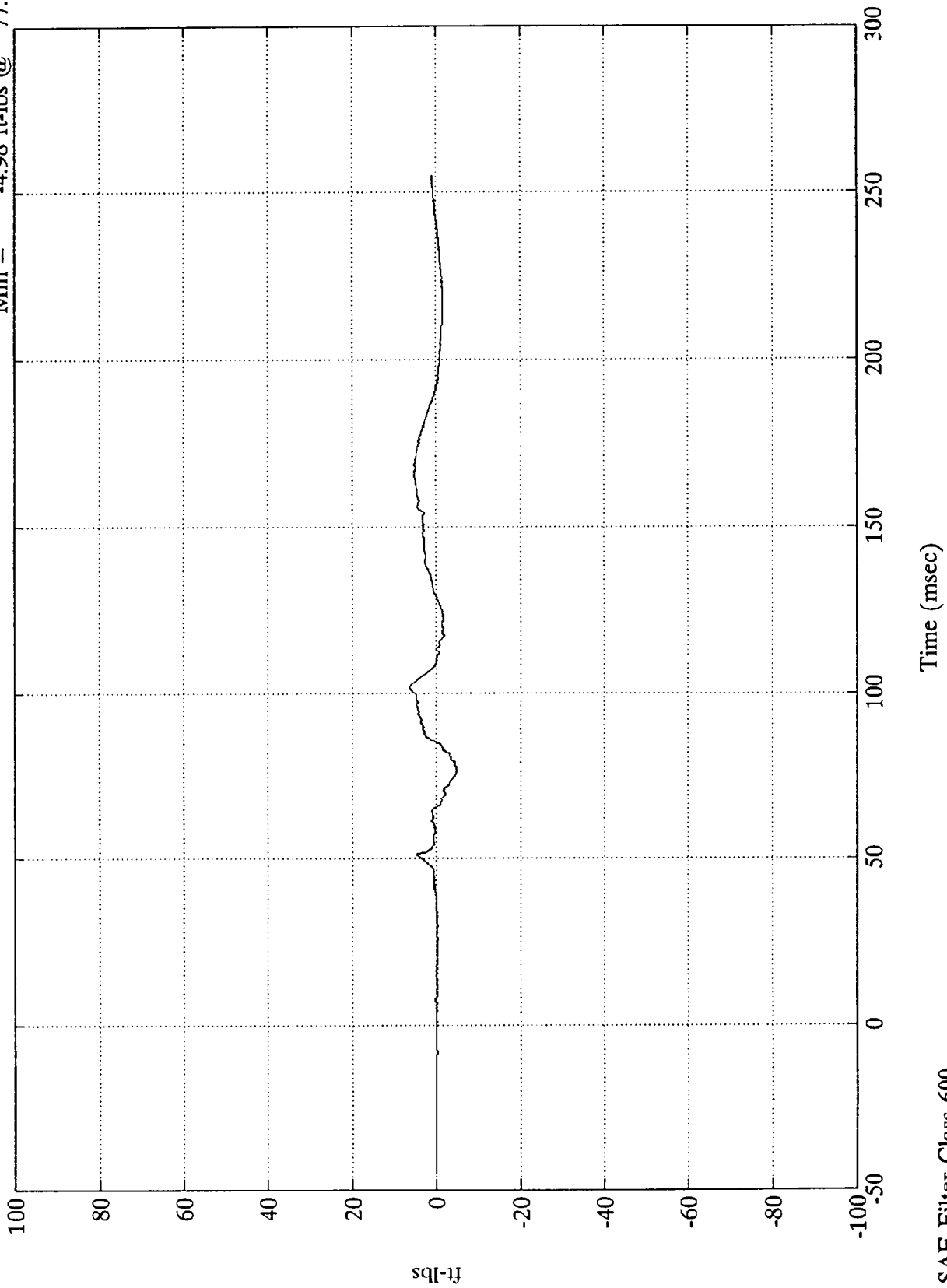
SAE Filter Class 600



VTV TEST 11

Pos. #2 Upper Neck Mz

Max = 6.35 ft-lbs @ 101.76 msec
Min = -4.98 ft-lbs @ 77.51 msec



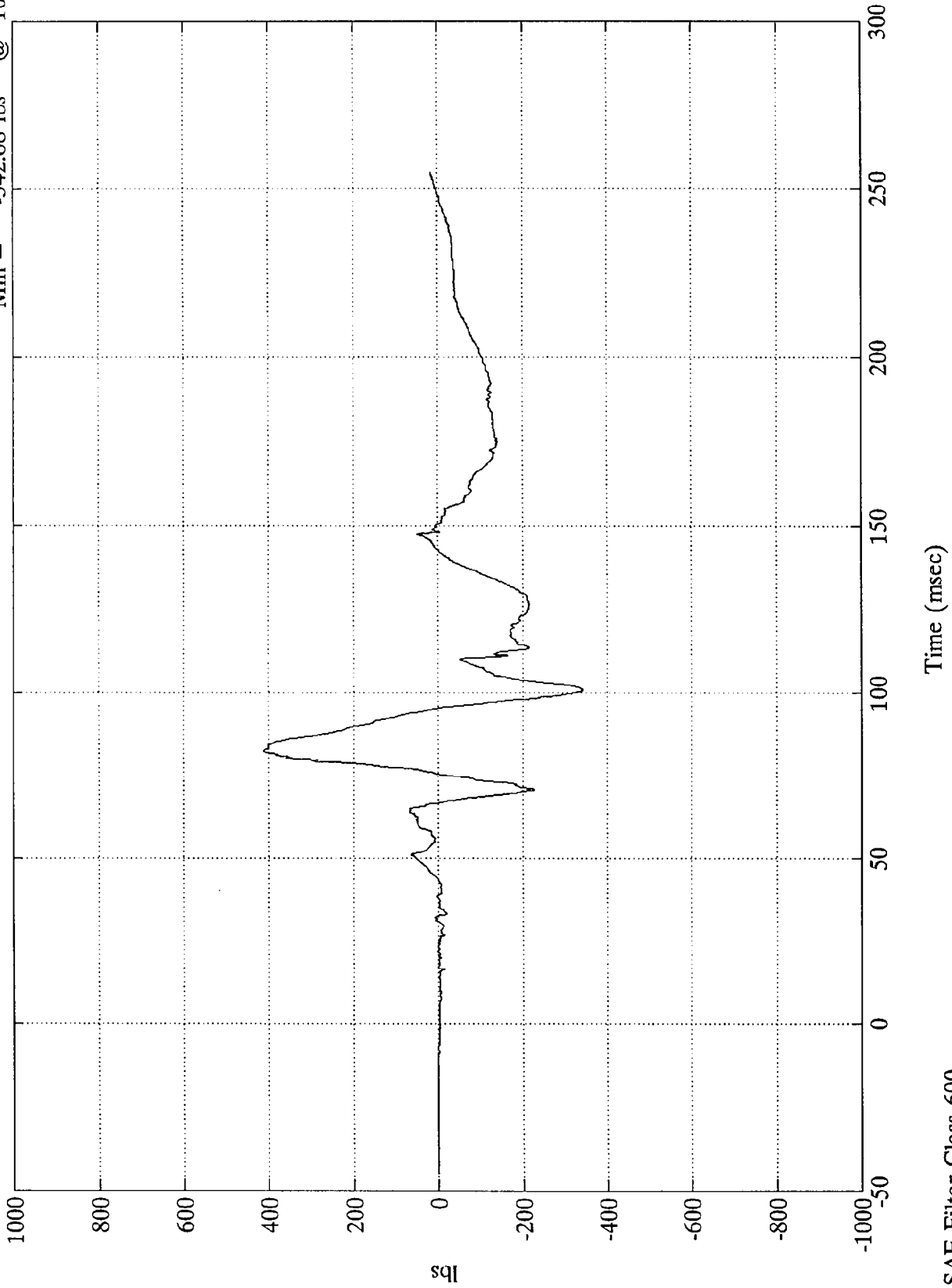
B-125

7942-12

SAE Filter Class 600

VTV TEST 11

Pos. #2 Lower Neck Fx
Max = 412.23 lbs @ 82.32 msec
Min = -342.68 lbs @ 100.68 msec



B-126

7942-12

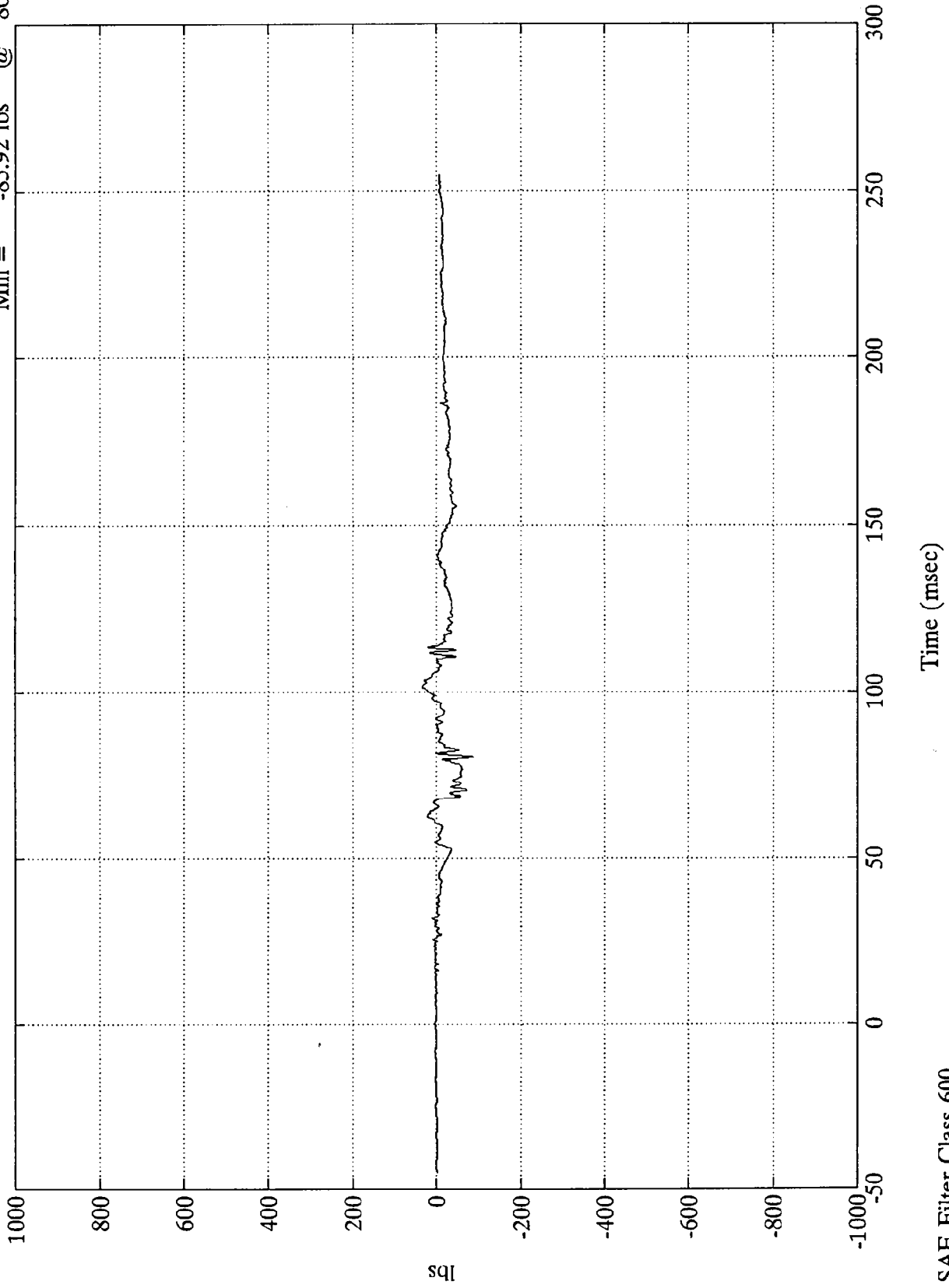
SAE Filter Class 600



VTV TEST 11

Pos. #2 Lower Neck Fy

Max = 34.65 lbs @ 101.28 msec
Min = -85.92 lbs @ 80.40 msec



B-127

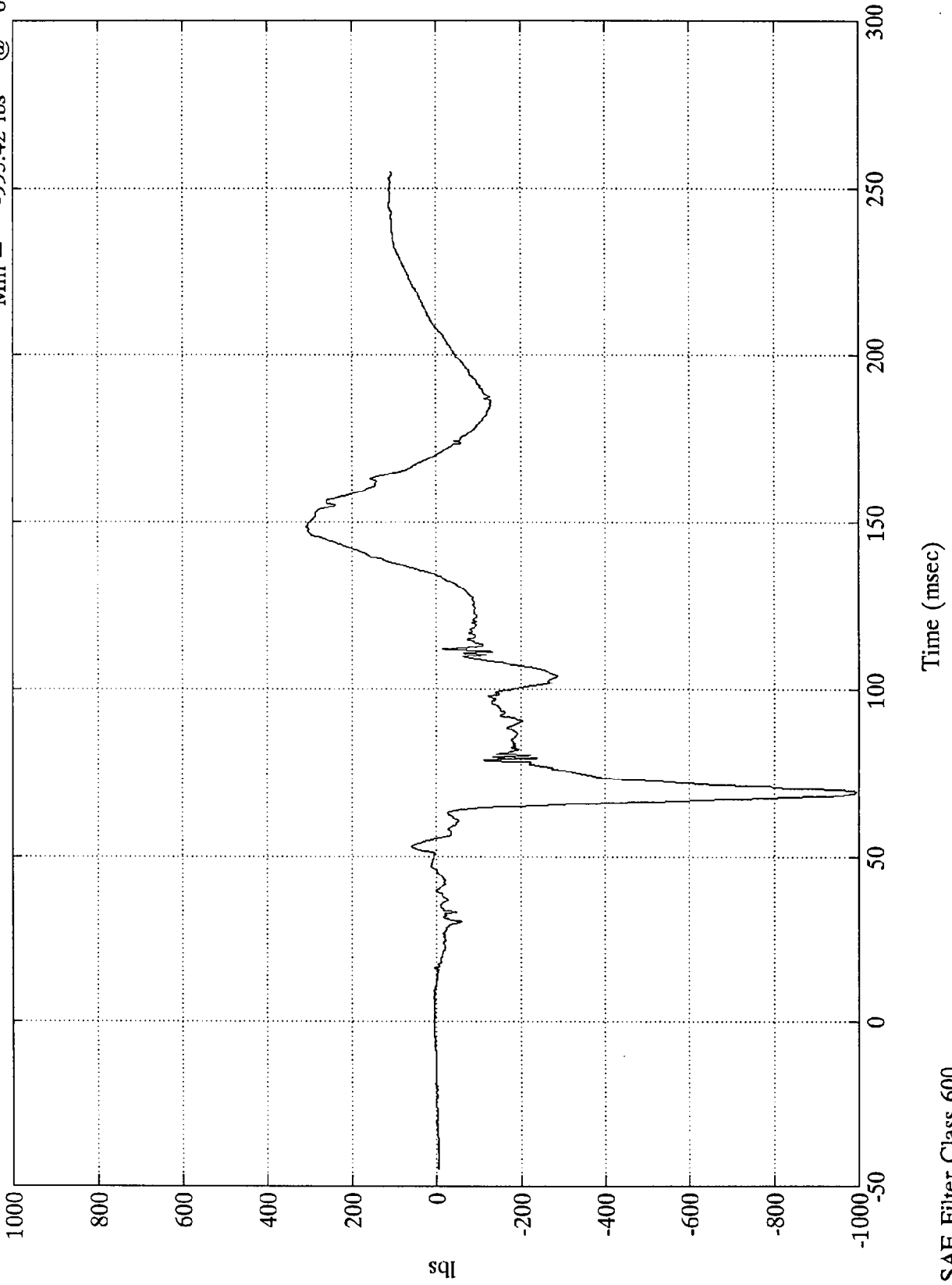
7942-12

SAE Filter Class 600

VTV TEST 11

Pos. #2 Lower Neck Fz

Max = 308.03 lbs @ 148.68 msec
Min = -995.42 lbs @ 69.59 msec



B-128

7942-12

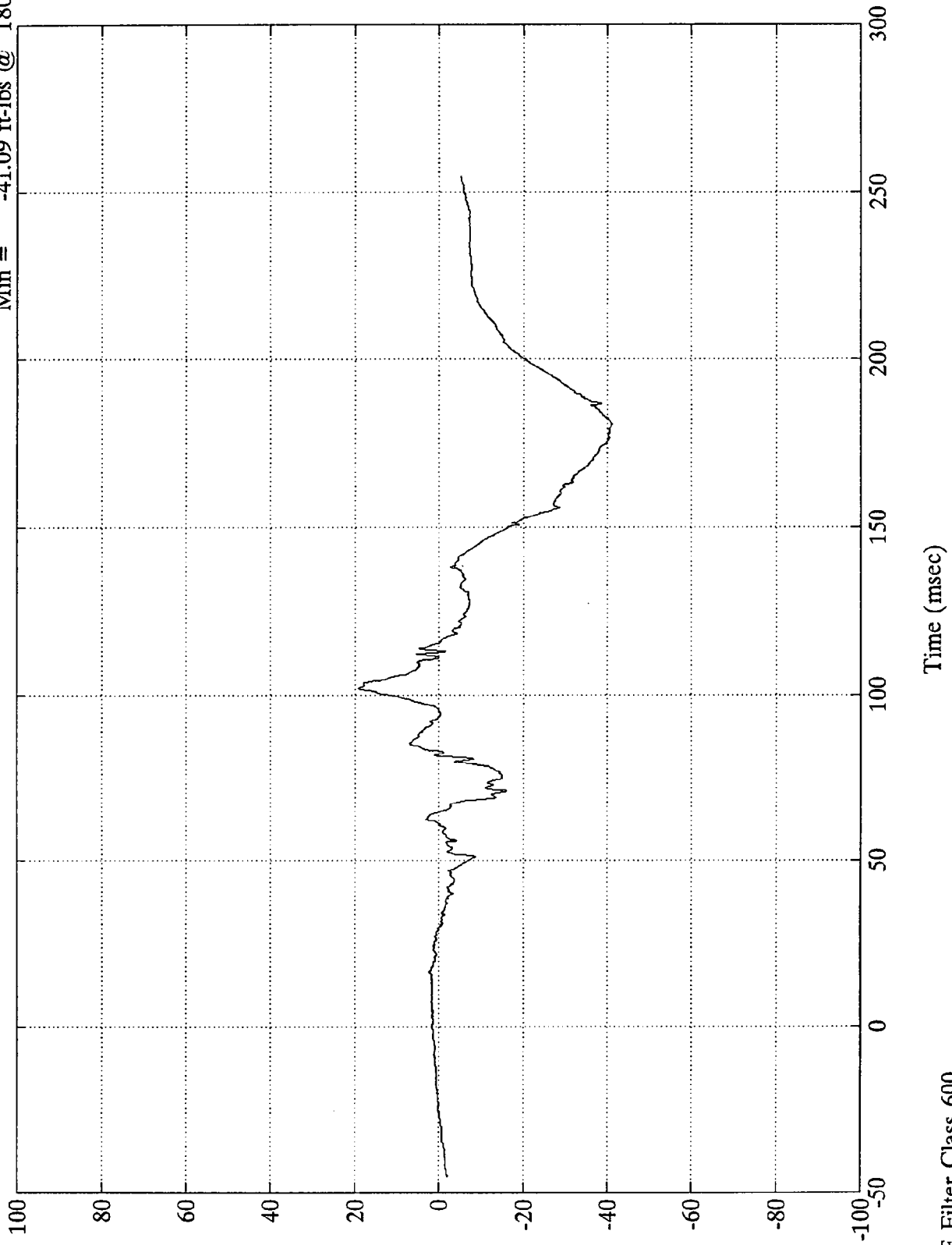
SAE Filter Class 600



VTV TEST 11

Pos. #2 Lower Neck Mx

Max = 19.18 ft-lbs @ 101.87 msec
Min = -41.09 ft-lbs @ 180.72 msec



sq[1-1]

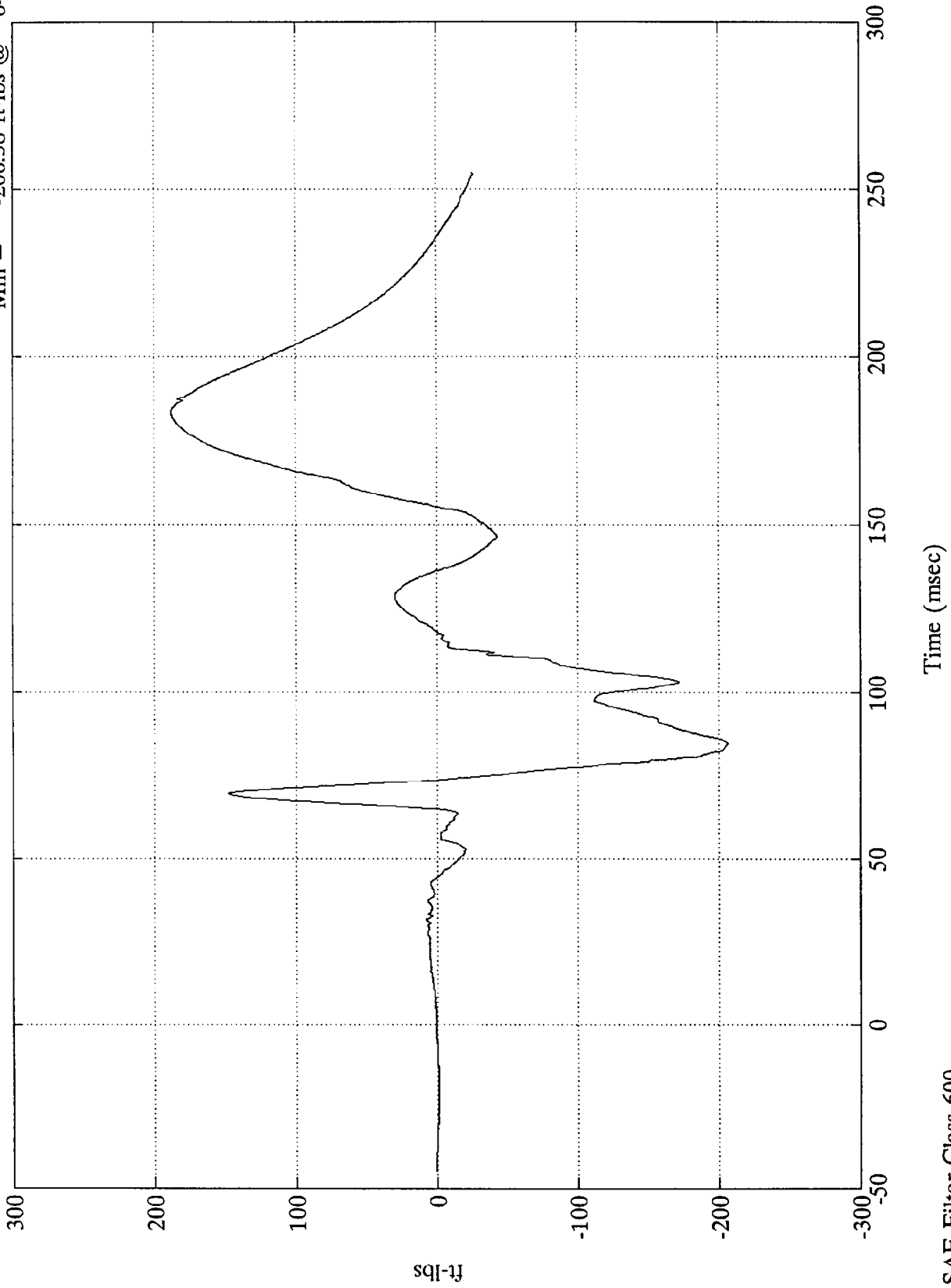
B-129

7942-12

SAE Filter Class 600

VTV TEST 11

Pos. #2 Lower Neck My
Max = 188.00 ft-lbs @ 182.52 msec
Min = -206.38 ft-lbs @ 84.59 msec



sqi-lj
B-130

7942-12

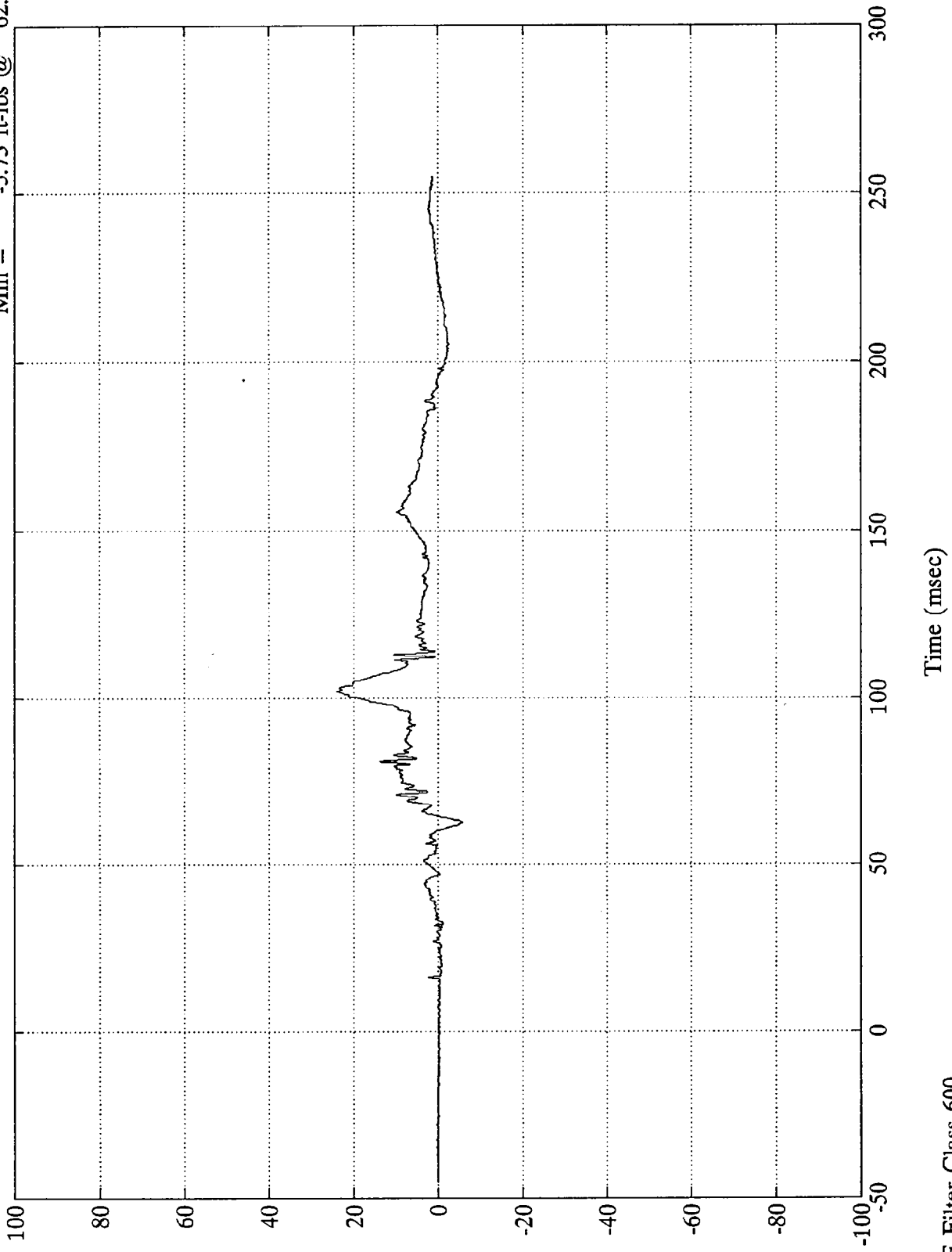
SAE Filter Class 600



VTV TEST 11

Pos. #2 Lower Neck Mz

Max = 23.86 ft-lbs @ 101.87 msec
Min = -5.73 ft-lbs @ 62.76 msec



sq[1]

B-131

7942-12

SAE Filter Class 600