

V2441

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

Chrysler Corporation
1996 Jeep Cherokee
MPV

NHTSA NUMBER: CT0303

CALSPAN TEST NUMBER: 8251-3

November 21, 1995

CALSPAN SRL CORPORATION
P.O. BOX 400
BUFFALO, NEW YORK 14225



FINAL REPORT

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National Highway Traffic Safety Administration
ENFORCEMENT
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Prepared By:

David J. Travale
David J. Travale, Project Engineer

Approved By:

David J. Travale
David J. Travale, Program Manager
Transportation Sciences Center

Approval Date:

June 6, 1996

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:

Charles R. Kane

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16. Abstract A 30 mph vehicle safety compliance test was conducted on a 1996 Jeep Cherokee MPV. This test was performed at the Calspan SRL Corporation in Buffalo, New York on November 21, 1995. The purpose of this test was to determine compliance with the performance requirements of the following Federal Motor Vehicle Safety Standards: 1. FMVSS No. 208, "Occupant Crash Protection" 2. FMVSS No. 212, "Windshield Mounting" 3. FMVSS No. 219 (partial), "Windshield Zone Intrusion" 4. FMVSS No. 301, "Fuel System Integrity" The test mode was perpendicular (0°) and the impact velocity was 29.3 mph. The ambient temperature at the impact face was 70 °F. The subject test vehicle appears to comply with the requirements of FMVSS Nos. 208, 212, 219 (partial) and 301. <u>Type of Restraint System:</u> The test vehicle was equipped with a driver air bag and driver and passenger 3-pt manual belts restraint system. The manual seat belts were used for this test.					
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Section 1

PURPOSE AND TEST PROCEDURE

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

Section 2

SUMMARY OF TEST NUMBER CT0303

A frontal barrier was impacted by a 1996 Jeep Cherokee MPV at a velocity of 29.3 mph. The test was performed at the Calspan SRL Corporation on November 21, 1995. Pre- and Post-test photographs of the vehicle and dummies can be found in Appendix A.

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

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the OVSC Laboratory Test Procedure.

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

The 46 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle and dummy response data traces. The engine bottom accelerometer data cable was damaged after 30 milliseconds. The instrument panel accelerometer data cable was damaged after 67 milliseconds. One of two supports restraining a ballast box located in the rear of the vehicle broke free when a mounting bolt sheared. The box moved forward enough to cut the data cables going to the onboard amplifiers. The data was truncated after 100 milliseconds however data after 94 milliseconds is questionable. The FMVSS 208 performance criteria were calculated prior to 94 milliseconds and their times of maximum value are consistent with the times expected by the manufacturer except for the passenger HIC. Based on the Chrysler certification test, there is reason to believe the data needed for the passenger HIC calculation was not collected because it occurred after 94 milliseconds. Therefore no HIC is reported.

The driver's HIC was 385.22. The maximum chest deceleration over 3 milliseconds was 47.388 g's with -1.5 inches of deflection. The maximum force on the driver's left femur was 654.1 pounds and 807.4 pounds on the right femur.

The right front passenger's HIC was not available. The maximum chest deceleration over 3 milliseconds was 47.628 g's with -1.0 inches of deflection. Loads of 1096.0 and 654.1 pounds were recorded on the left and right femurs respectively.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No. :	CT0303	Test Mode :	30 mph Frontal Barrier
Test Date :	November 21, 1995	Time:	14:55 Temperature : 70 °F
Vehicle Make/Model/Body Style :	1996 Jeep Cherokee MPV		
Vehicle Test Weight :	3978	lbs	
Vehicle/Barrier Impact Angle :	0	°	
Impact Velocity :	29.3	mph	
Maximum Static Crush :	17.2	inches	
Vehicle Rebound :	5.0	inches	
<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Type :	Part 572E	Part 572E	
Restraint System :	Air bag, 3-pt manual belt	3-pt manual belt	
Number of Data Channels :	46		
Number of Cameras :	1	Real Time	
	14	High Speed	
<u>DOOR OPENING DATA :</u>	closed-operable	- Left Front	
	closed-operable	- Right Front	
Front Seat(s) Data :	<u>DRIVER</u>	<u>PASSENGER</u>	
Seat Track Failure :	0.0	0.0	
	Inches of shift		
Seat Back Failure :	none	none	
<u>VISIBLE DUMMY CONTACT POINTS :</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Head :	Face with air bag	no contact	
Abdomen :	-	-	
Chest	-	-	
Knees	lower dash	glove box door	

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 1996 Jeep Cherokee MPV

NHTSA No. : CT0303 ; VIN: 1J4FJ67S4TL113609 ; Color : Black

Engine Data: 6 cylinders; - CID; 4.0 Liters; - cc

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

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

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

Major Options : X A/C; X Pwr.Strg.; X Pwr. Brakes
- Pwr. Windows; - Pwr. Door Locks; X Tilt Wheel

Date Received : - ; Odometer Reading - miles

Selling Dealer : Kane-Doyle Jeep Eagle

& Address: Delaware Ave, Kenmore N.Y.

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : Chrysler Corporation

Date of Manufacture 8/95

GVWR : 4850 lbs.; GAWR: 2500 lbs. FRONT; 2700 lbs. REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 30 psi FRONT
30 psi REAR

Recommended Tire Size : P215/75R15

* Recommended Cold Tire Pressure : 30 psi FRONT; 30 psi REAR

Size of Tires on Test Vehicle: P225/75R15 ; Manufacturer: GOODYEAR

Vehicle Capacity Data :

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

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

Vehicle Capacity Weight (VCW) = 1493 lbs.

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

Rated Cargo/Luggage Weight (RCLW) = 743 lbs.

*Tire pressure used for test

Table 2

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

Right Front	=	952	lbs.	Right Rear	=	738	lbs.
Left Front	=	930	lbs.	Left Rear	=	737	lbs.
TOTAL FRONT	=	1,882	lbs.	TOTAL REAR	=	1,475	lbs.
TOTAL DELIVERED WEIGHT = 3,357.0 lbs.							

% of Total Front of Vehicle Weight = 56.1 % of Total Rear Weight = 43.9 %

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight	=	3,357	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	300 max.	lbs.
Weight of 2 p.572 Dummies @ 167 each	=	334	lbs.
TARGET TEST WEIGHT	=	3991	lbs.

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 287 POUNDS OF CARGO WEIGHT:

Right Front	=	1018	lbs.	Right Rear	=	967	lbs.
Left Front	=	1025	lbs.	Left Rear	=	968	lbs.
TOTAL FRONT	=	2,043	lbs.	TOTAL REAR	=	1,935	lbs.
TOTAL TEST WEIGHT = 3,978.0 lbs.							

% of Total Front Weight = 51.4 % % of Total Rear Weight = 48.6 %

Weight of Ballast Secured in Vehicle Trunk Area = 215 lbs.

Vehicle Components Removed for Weight Reduction: NONE

VEHICLE ATTITUDE (all dimension in inches) :

AS DELIVERED :	RF	31.8	LF	32.0	RR	31.3	LR	31.1
FULLY LOADED :	RF	31.3	LF	31.6	RR	27.5	LR	27.7
AS TESTED :	RF	31.3	LF	31.6	RR	29.1	LR	29.1
Vehicle's Wheel Base : 101.0 in.								

Location of Vehicle's C.G. : 49.1 inches rearward of front wheel center.

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual	=	20	gallons
Usable Capacity Figure Furnished by COTR	=	20	gallons
Test Volume Range (92 to 94% of Usable Capacity)	=	18.4	to 18.8 gallons
ACTUAL TEST VOLUME	=	18.6	gallons (with entire fuel system filled)

Table 3

POST IMPACT DATATYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
 Test Date : November 21, 1995 Time: 14:55 Temperature: 70 °F
 Vehicle NHTSA No. : CT0303
 Required Impact Velocity Range : 28.9 to 29.9 mph

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

Trap No. 1 = 29.3 mph; Trap No. 2 = 29.3 mph
 Distance from vehicle to barrier (1) entering trap = 52 inches
 (2) exiting trap = 12 inches

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

Vehicle Length:

Pre-Test Right = 165.2 ; C/L = 165.7 ; Left = 165.0
 Post-Test Right = 148.5 ; C/L = 148.5 ; Left = 148.5
 Crush Right = 16.7 ; C/L = 17.2 ; Left = 16.5
 AVERAGE = 16.8 inches

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

Right = 5.5 ; C/L = 4.4 ; Left = 5.1
 AVERAGE = 5.0 inches

DOOR OPENING :

	Left	Right
Front	closed-operable	closed-operable
Rear	n/a	n/a

SEAT MOVEMENT :

	Seat Back Failure	Seat Shift
Front	none	0.0
Rear	n/a	n/a

Table 3

POST IMPACT DATATYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
 Test Date : October 21, 1995 Time: 14:55 Temperature: 70 °F
 Vehicle NHTSA No. : CT0303
 Required Impact Velocity Range : 28.9 to 29.9 mph

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

Trap No. 1 = 29.3 mph; Trap No. 2 = 29.3 mph
 Distance from vehicle to barrier (1) entering trap = 52 inches
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VEHICLE STATIC CRUSH: (For frontal and rear impacts only.)

Vehicle Length:

Pre-Test Right = 165.2 ; C/L = 165.7 ; Left = 165.0
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 Crush Right = 16.7 ; C/L = 17.2 ; Left = 16.5
 AVERAGE = 16.8 inches

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

Right = 5.5 ; C/L = 4.4 ; Left = 5.1
 AVERAGE = 5.0 inches

DOOR OPENING :

	Left	Right
Front	<u>closed-operable</u>	<u>closed-operable</u>
Rear	<u>n/a</u>	<u>n/a</u>

SEAT MOVEMENT :

	Seat Back Failure	Seat Shift
Front	<u>none</u>	<u>0.0</u>
Rear	<u>n/a</u>	<u>n/a</u>

Table 3

POST IMPACT (cont.)

GLAZING DAMAGE :

none

OTHER NOTABLE IMPACT FEATURES :

Floorpan intruded

Section 3

OCCUPANT AND VEHICLE DATA

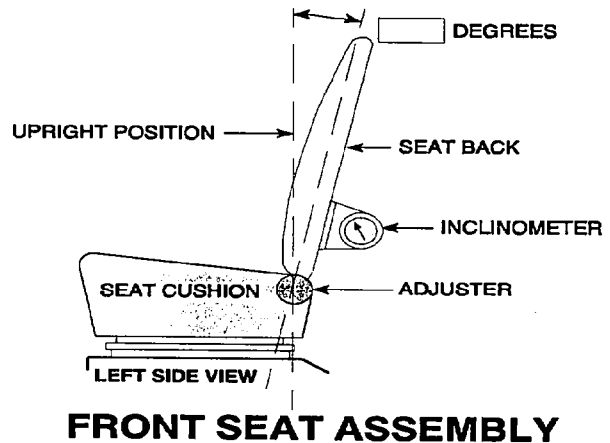
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1996 Vehicle Model: Jeep Cherokee Body Style : MPV

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



Seat back angle for driver's seat : 23.5

Measurement instructions : measure along seatback frame.

Seat back angle for passenger's seat : 23.5

Measurement instructions : same as driver

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : seat set in 11th detent (front position is 1) of 20 total detents.

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

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 20 gallons

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

4. Steering Column Position :

mid-position

5. Other:

none

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

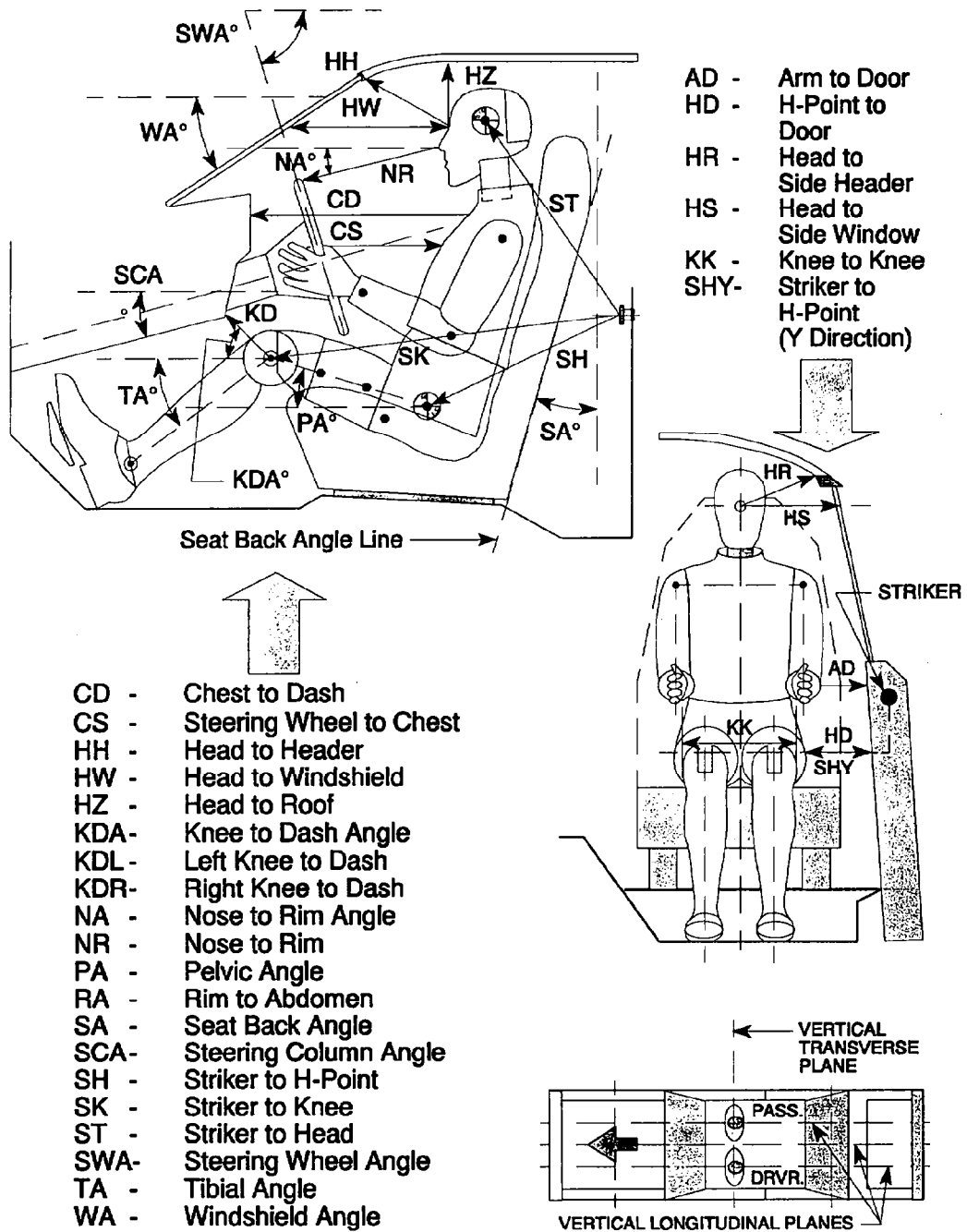


Table 4

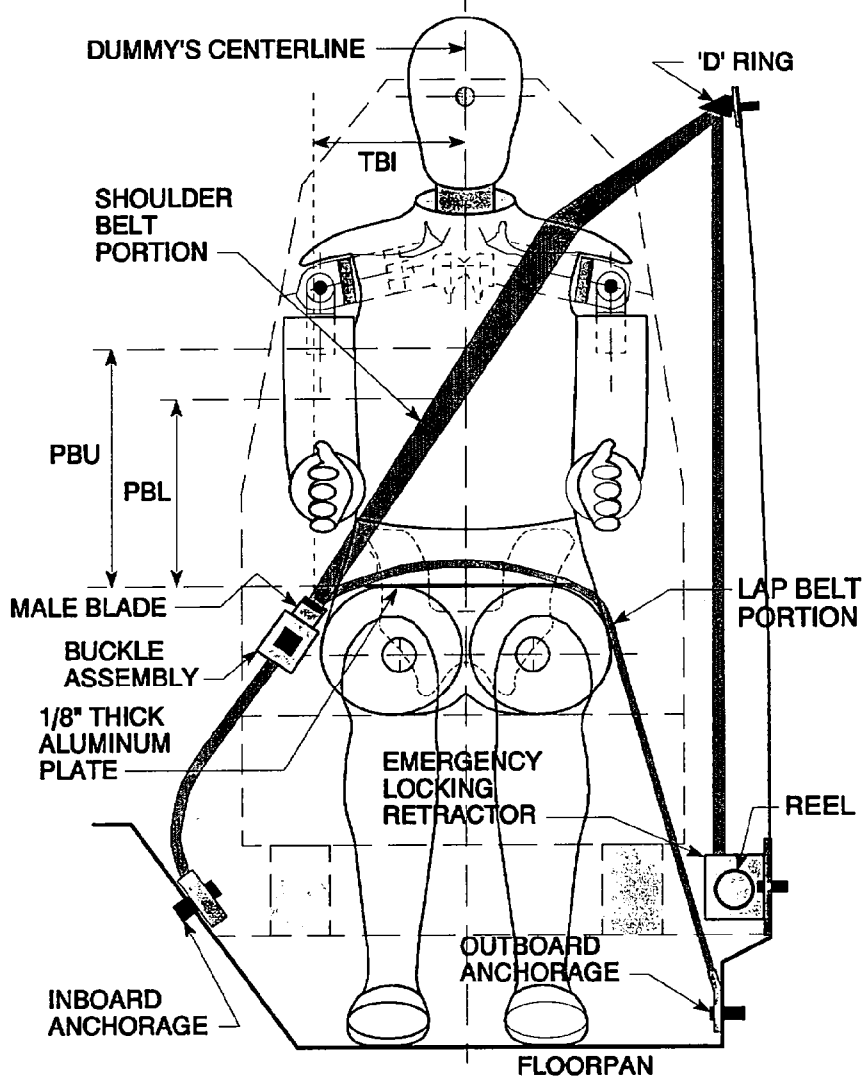
FRONT SEAT OCCUPANT MEASUREMENTS

(All dimensions excluding angles are in inches).

	DRIVER (Serial #341)			PASSENGER (Serial #342)		
WA°	42 deg.			-		
SWA°	66 deg.			-		
SCA°	24 deg.			-		
SA°	23.5 deg.			23.5 deg.		
HZ	6.4			6.6		
HH	14.9			14.8		
HW	19.2			20.2		
HR	9.1			9.1		
NR	13.6	Angle	15 deg.	-		
CD	20.8			22.5		
CS	9.8			-		
RA	5.6			-		
KDL/KDA	6.2	Angle	27 deg.	7.4		
KDR/KDA	6.3			7.4	Angle	24 deg.
PA°	24 deg.			22 deg.		
TA°	43 deg.			38 deg.		
KK	12.9			12.2		
ST	23.1	Angle	28 deg.	22.9	Angle	27 deg.
SK	32.5	Angle	94 deg.	32.7	Angle	94 deg.
SH	17.5	Angle	109 deg.	17.1	Angle	110 deg.
SHY	7.7			8.1		
HS	12.5			11.8		
HD	5.2			4.9		
AD	2.5			2.4		

Figure 3

SEAT BELT POSITIONING DATA

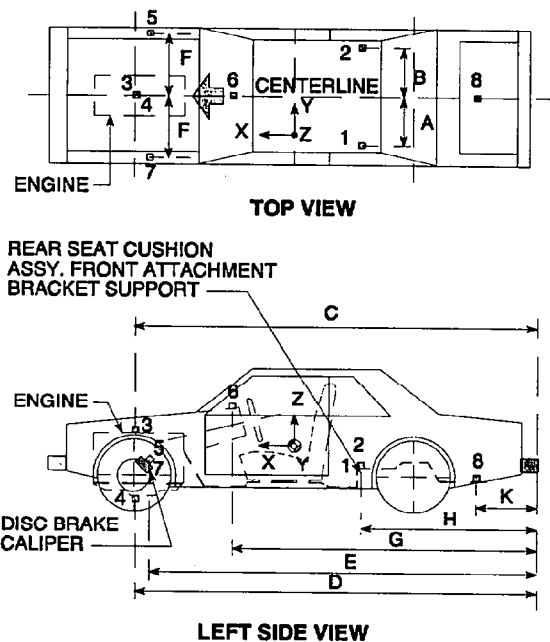


FRONT VIEW OF DUMMY

	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
PBU -- Top surface of alum. plate to upper edge	14.8	14.7
PBL -- Top surface of alum. plate to belt lower edge	11.5	11.5
TBI -- Distance from torso centerline to buckle	11.6	11.8

Figure 4

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



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

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

Table 5

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

DIMENSION	LENGTH (Inches)	
	PRE-TEST VALUES	POST-TEST VALUES
A Left Rear Seat Crossmember Y	17.7	17.7
B Right Rear Seat Crossmember Y	19.2	19.2
C Top of Engine X	142.2	135.8
D Bottom of Engine X	127.5	122.2
E Disc Brake Calipers X	131.5	LEFT 130.0; RIGHT 131.0
F Disc Brake Calipers Y	18.0	180
G Instrument Panel X	106.0	106.0
H Rear Seat Crossmembers X	44.5	44.5
K Trunk X	16.0	16.0

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	.7	-9	-36	34
2	Rear Seat X-Member @ Right Side	.5	-9	-34	34
3	Top of Engine Block	31	33	-98	25
4	Bottom of Engine	62	36	-70	26
5	Disc Brake Caliper @ Right Side	44	54	-74	25
6	Instrument Panel	32	72	-66	18
7	Disc Brake Caliper @ Left Side	28	47	-123	27
8	Trunk	29	51	-15	86

Figure 5

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information shown on Table 6.

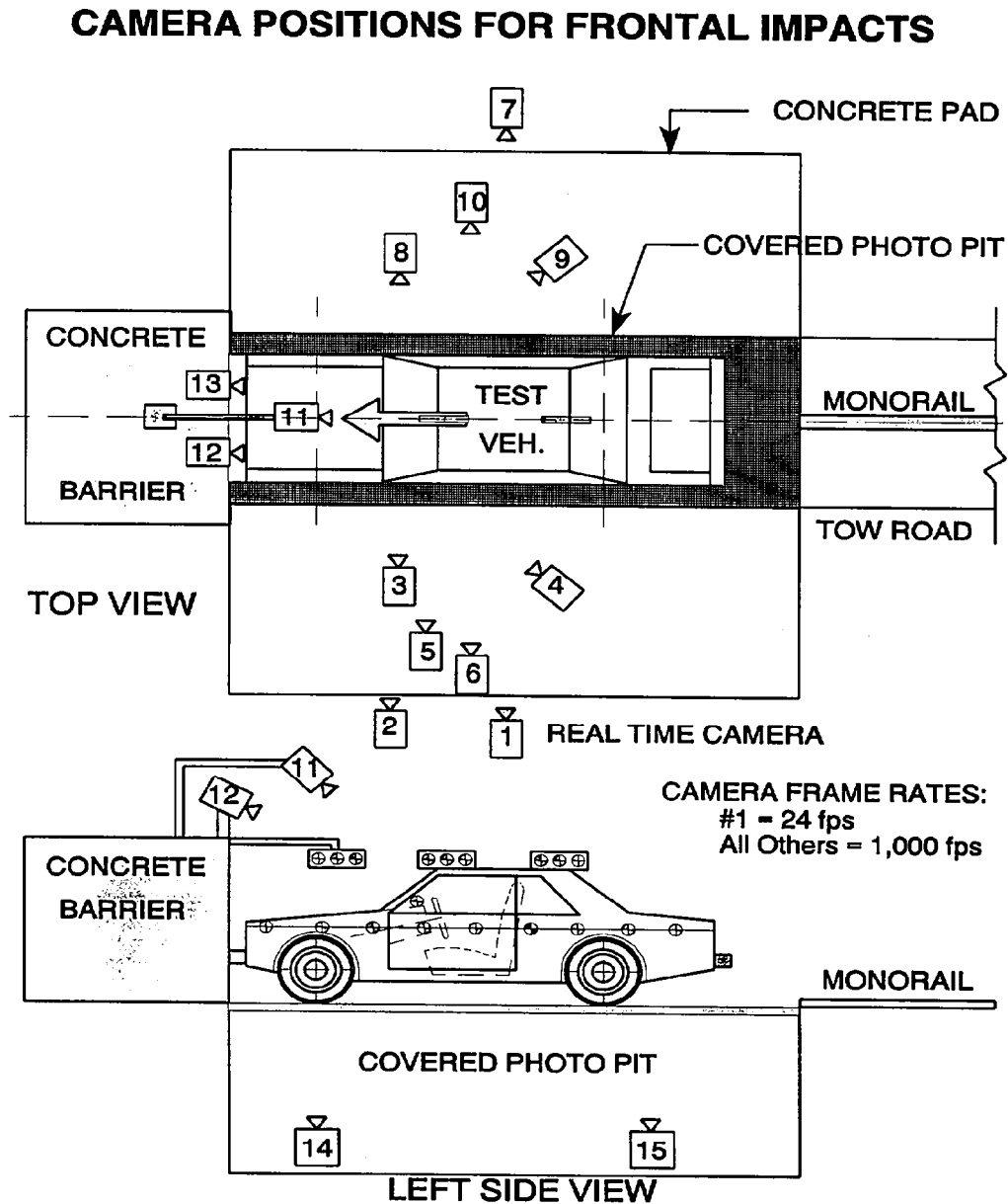


Table 6

HIGH-SPEED CAMERA LOCATIONS

Test No. CT0303 Vehicle: 1996 Jeep Cherokee MPV

Camera No.	VIEW	CAMERA POSITIONS (In.)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET (In.)	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	381	64	41	-1	363.5	25	1015
3	Left Side View	323	35	42	-2	305.5	28	1145
4	Driver and Interior View	135	131	80	-12	-	25	1060
5	Steering Column (Bottom)	327	83	46	-2	309.5	35	975
6	Steering Column (Top)	327	83	70	-6	309.5	35	1060
7	Overall Right Side	359	76	41	-2	341.5	25	940
8	Right Side View	318	57	43	-2	300.5	28	970
9	Passenger and Interior View	289	59	88	-3	-	35	950
10	Right Passenger View	142	128	81	-14	-	25	1005
11	Windshield View	0	5	129	-63	-	13	1110
12	Driver Front View	22	18	77	-40	-	8	1100
13	Passenger Front View	22	18	77	-41	-	8	1010
14	Pit View of Engine	0	36	-86	90	-	13	1110
15	Pit View of Fuel Tank	0	90	-86	90	-	13	950

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

Figure 6

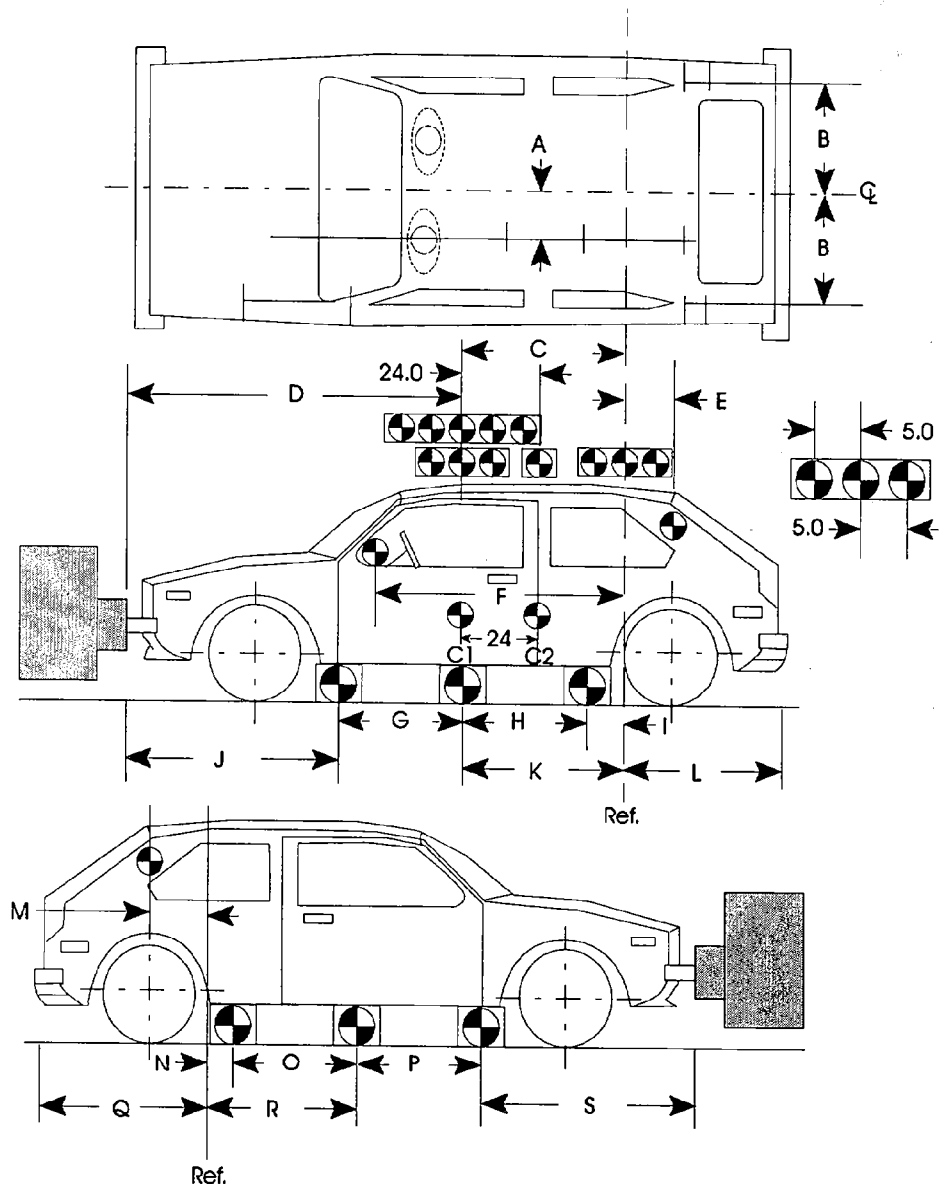
VEHICLE TARGET LOCATIONS
(All dimensions in inches)

Key (Inches)

A =	14.5
B =	26.5

C =	36.0
D =	79.2
E =	0.0
F =	51.5
G =	27.1
H =	27.0
I =	9.2
J =	42.9
K =	36.2
L =	59.5

M =	0.0
N =	8.9
O =	27.2
P =	27.1
Q =	59.4
R =	36.1
S =	43.1



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

Figure 7

TEST VEHICLE MEASUREMENTS

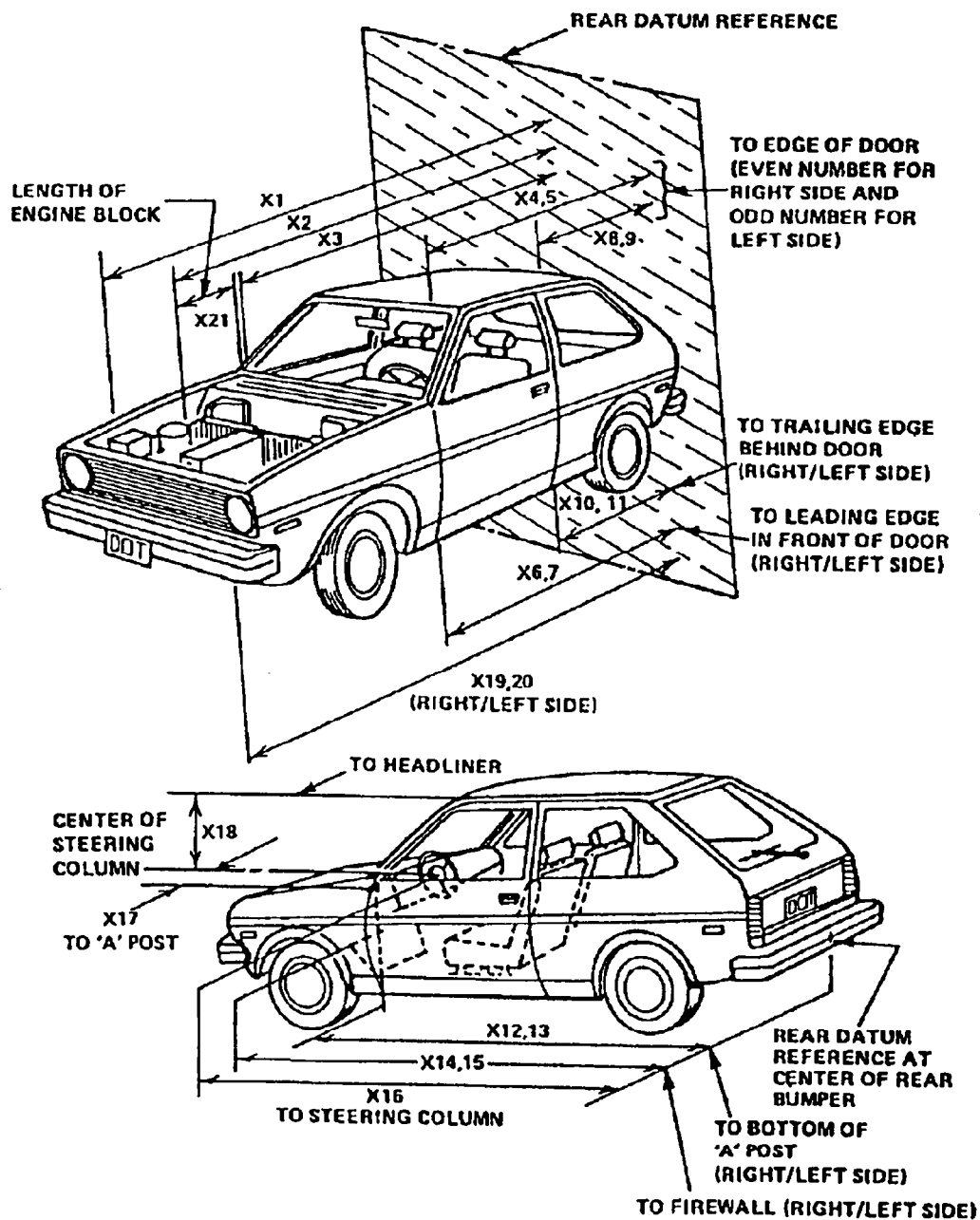


Table 7

VEHICLE MEASUREMENTS

No.		All Dimensions in inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	165.7	148.5	17.2
X2	Rear Surface of Vehicle to Front of Engine	148.9	141.7	7.2
X3	Rear Surface of Vehicle to Firewall	122.7	120.3	2.4
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	113.4	113.0	0.4
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	113.3	113.1	0.2
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	113.1	112.2	0.9
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	112.9	112.0	0.9
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	66.3	66.1	0.2
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	65.9	66.1	-0.2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	66.1	65.2	0.9
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	65.9	65.3	0.6
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	109.4	110.0	-0.6
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	110.4	109.6	0.8
X14	Rear Surface of Vehicle to Firewall, Right Side	123.0	120.0	3.0
X15	Rear Surface of Vehicle to Firewall, Left Side	123.2	121.7	1.5
X16	Rear Surface of Vehicle to Steering Column	96.5	94.5	2.0
X17	Center of Steering Column to "A" Post	14.5	13.0	1.5
X18	Center of Steering Column to Headliner	15.0	16.5	-1.5
X19	Rear Surface of Vehicle to Right Side of Front Bumper	165.5	148.5	17.0
X20	Rear Surface of Vehicle to Left Side of Front Bumper	165.0	148.5	16.5
X21	Length of Engine Block	29.0	29.0	0.0

Section 4

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

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

Table 8

DUMMY INJURY CRITERIA VALUESNHTSA No. : CT0303 Vehicle : 1996 Jeep Cherokee MPV

	MAXIMUM ACCELERATION (g's)								
	HEAD				CHEST				
	X	Y	Z	R	X	Y	Z	R*	Displacement
Dummy (1)	-66.1	-9.5	33.2	66.7	-46.9	-6.3	18.1	47.388	-1.5
Dummy (2)	-29.2	4.4	44.6	48.8	-45.7	-8.0	-21.9	47.628	-1.0

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Dummy (1)	654.1	807.4
Dummy (2)	1096.0	654.1

	HEAD INJURY CRITERIA**			
	HIC	36 millisecond Maximum		Avg. Acc (g)
		t ₁ (msec)	t ₂ (msec)	t ₁ TO t ₂
Dummy (1)	385.22	45.600	81.480	40.96
Dummy (2)	298.51 ¹	42.960	78.840	36.99

1 - The passenger HIC is only reported to show the HIC calculation based on data prior to 94 milliseconds. It is not to be used as the passenger HIC for this vehicle.

* Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

Table 9

FMVSS NO. 208 - SEAT BELT WARNING SYSTEM CHECK

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

Log time duration of audible warning signal = 6 sec.

Log time duration of reminder light operation = 6 sec.

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

Log time duration of audible warning signal
(audible warning should not operate) = 0 sec.

Log time duration of reminder light operation = 0 sec.

Note wording of visual warning :

Fasten Seat Belt -

Fasten Belt -

Symbol 101 X

Table 10

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

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

Describe location :

Label located on back of driver sunvisor.

The label does not directly refer to a maintenance or replacement schedule. The label states, "see owner's manual for further information and explanations." No regular maintenance is required.

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

YES X NO -

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

YES X NO -

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

YES X NO -

Was an owner's manual provided ?

YES X NO -

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

YES X NO -

Table 11

FMVSS NO. 208 - READINESS INDICATOR

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

Is the system totally mechanical ?

YES X NO -

Describe the location of the readiness indicator :

Readiness indicator not required.

Is the readiness indicator clearly visible to the driver ?

YES n/a NO n/a

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

YES n/a NO n/a

Table 12

FMVSS NO. 208 - COMFORT AND CONVENIENCE TEST SUMMARY

Test Vehicle NHTSA No. :	CT0303
Make/Model :	1996 Jeep Cherokee MPV
Date of Comfort/Convenience Check :	11-20-95
Technician Performing Check :	DJT
GVWR :	4850 lbs.

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

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

1. Automatic seat belts YES - NO X

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

2. Manual seat belts* YES X NO -

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

YES - NO X

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

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

STOP

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

Table 12 (cont.)

D1
CONVENIENCE HOOKS

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

YES - NO X

Check the option which applies to this test vehicle:

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

YES n/a NO n/a

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

YES n/a NO n/a

D2
WEBBING TENSION - RELIEVING DEVICE

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

YES - NO X

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

YES n/a NO n/a

(If NO, provide explanation.)

Check the option which applies to this test vehicle:

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

YES n/a NO n/a

(If NO, provide explanation.)

Table 12 (cont.)

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

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

YES	<u>n/a</u>	NO	<u>n/a</u>
-----	------------	----	------------

(If NO, provide explanation.)

D3
BELT CONTACT FORCE

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

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

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

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

Table 12 (cont.)

D4
LATCHPLATE ACCESSIBILITY

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

D5
RETRACTION

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

Table 12 (cont.)

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

D6
ACCESSIBILITY

The requirements for accessibility do not apply to:

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

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

1. Each manual seat belt assembly whose webbing is designed to pass through the seat cushion or between the seat cushion and seat back has one of the following three parts (the seat belt latchplate, the buckle, or the seat belt webbing) on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant).
- | | | | | |
|--|-----|----------|----|----------|
| | YES | <u>X</u> | NO | <u>-</u> |
|--|-----|----------|----|----------|
2. The remaining two seat belt parts are accessible under normal conditions.
- | | | | | |
|--|-----|----------|----|----------|
| | YES | <u>X</u> | NO | <u>-</u> |
|--|-----|----------|----|----------|

Table 12 (cont.)

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

D7
LATCH MECHANISM

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

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

Figure 8

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

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

The windshield is bonded in place with 1.0 inch wide rubber trim along the periphery.

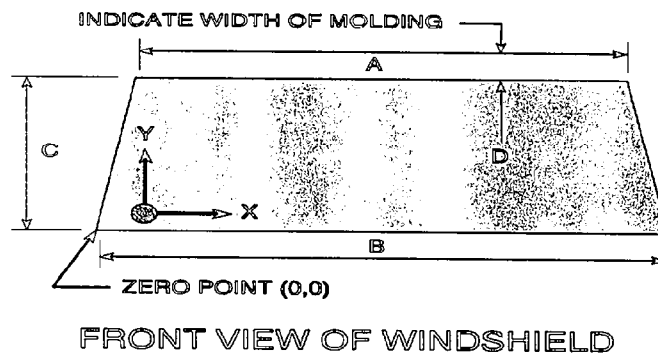
FMVSS 212 REQUIREMENTS :

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

FMVSS 212 TEST DATA :

	WINDSHIELD PERIPHERY		PERCENT RETENTION
	PRE - TEST (in.)	POST - TEST (in.)	
RIGHT SIDE	81.0	81.0	100.0
LEFT SIDE	81.0	81.0	100.0
TOTAL	162.0	162.0	100.0

AREA OF RETENTION FAILURE:



FAILURE DETAILS : none

Figure 9

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

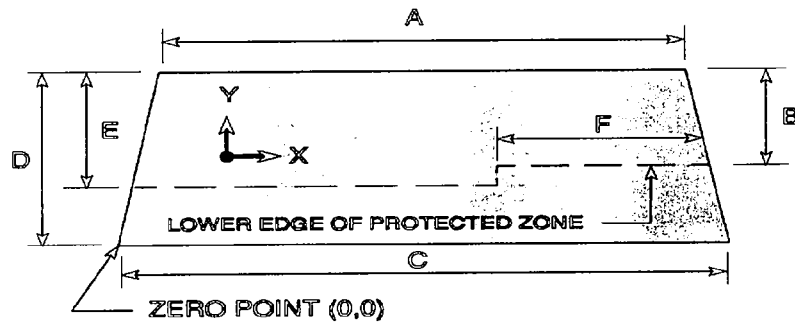
PROTECTED ZONE LOWER EDGE REQUIREMENT :

The lower edge of the protected zone is determined by placing a 6.5" dia. rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. The locus of points is drawn on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 1/2" distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield

FMVSS 219 TEST DATA : (Dimensions in inches.)

KEY (Inches):

A =	52.9
B =	13.0
C =	61.5
D =	23.5
E =	16.8
F =	39.5



FRONT VIEW OF WINDSHIELD

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

(Show location of penetration on above sketch)

none

COORDINATES		
	X	Y
1		
2		
3		
4		

Table 13
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

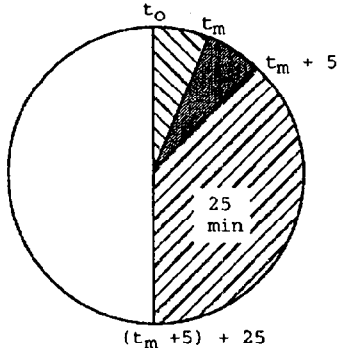
TEST VEHICLE NHTSA NO. : CT0303 TEST DATE : November 21, 1995

Vehicle Mfgr./Make/Model : 1996 Jeep Cherokee MPV

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

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

FUEL SPILLAGE MEASUREMENT:



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

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

SOLVENT SPILLAGE DETAILS :

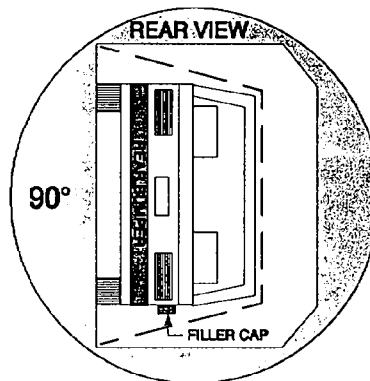
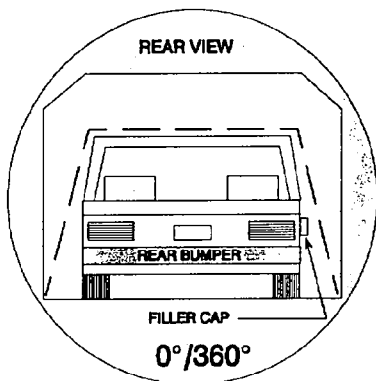
none

Table 14

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE :
0-90 Deg.

Vehicle NHTSA ID No. :
CT0303

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time 2 minutes 10 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 00 seconds

TOTAL 7 minutes 10 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

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

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

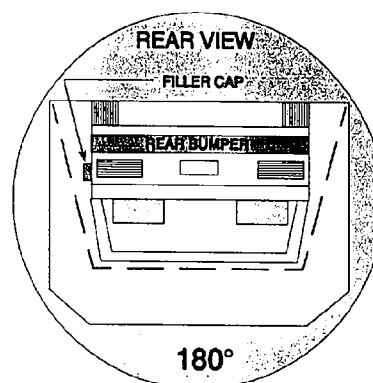
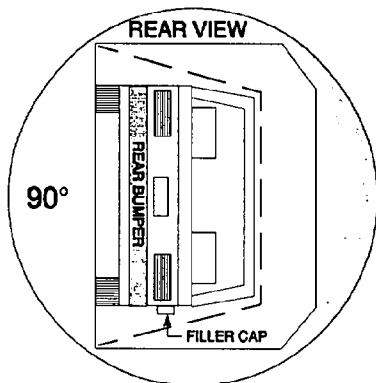
IV. SOLVENT SPILLAGE LOCATION(S) :

none

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

TEST PHASE :
90-180 Deg.

Vehicle NHTSA ID No. :
CT0303



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>50</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>6</u>	minutes	<u>50</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	n/a
---	---	---	-----

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

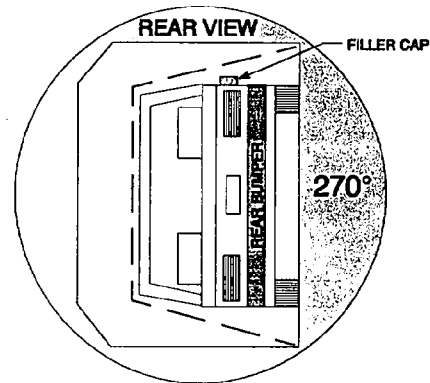
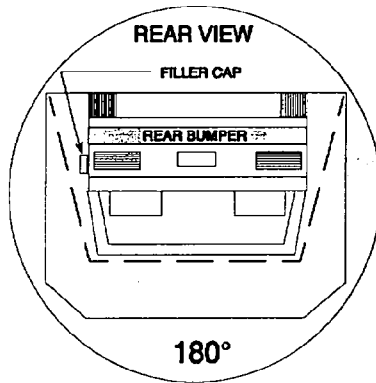
IV. SOLVENT SPILLAGE LOCATION(S) :

none

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

TEST PHASE :
180-270 Deg.

Vehicle NHTSA ID No. :
CT0303



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

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

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0	0	0	n/a
---	---	---	-----

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

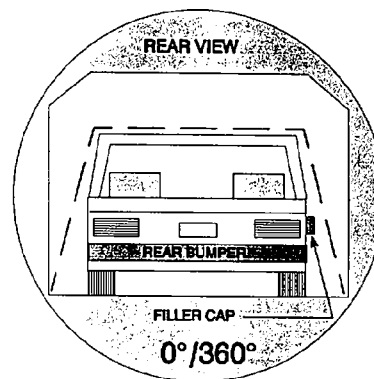
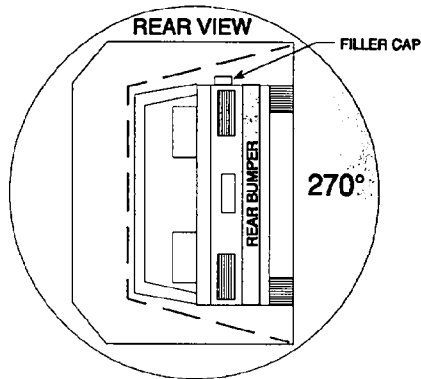
IV. SOLVENT SPILLAGE LOCATION(S) :

none

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

TEST PHASE :
270-360 Deg.

Vehicle NHTSA ID No. :
CT0303



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time 2 minutes 13 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 00 seconds

TOTAL 7 minutes 13 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

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

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

IV. SOLVENT SPILLAGE LOCATION(S) :

none

Table 15

POST TEST AIR BAG DATANHTSA No. : CT0303 Test Date: November 21, 1995 Technician: DJTVehicle Model Year/Make/Model: 1996 Jeep Cherokee

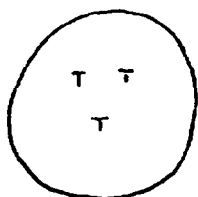
- A. No. of vent holes: 0 -Driver n/a -Passenger
- B. Size of vent holes: (In.²) - -Driver n/a -Passenger
- C. Total vent area: (In.²) - -Driver n/a -Passenger
- D. Deflated air bag length and width dimensions or, if round, diameter. (In inches)

Driver: - -Length; - -Width; 22.0 -DiameterPassenger: n/a -Height; n/a -Width; n/a -Depth

- E. Is the air bag tethered?

Driver: X -Yes; - -No; If yes, record length of tether- 3ea. - 11.0 in.Passenger: n/a -Yes; n/a -No; If yes, record length of tether- n/a

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

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

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

Driver: Air bag: BREED - NO NUMBERGenerator: BREED 97300000 IAF213A0374Passenger: Air bag: no air bagGenerator:

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

Table 16

ACCIDENT INVESTIGATION DIVISION DATA

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1996 Jeep Cherokee MPV

VEHICLE NHTSA NO. : CT0303 VIN NO. : 1J4FJ67S4TL113609

WHEELBASE: 101.0 in. BUILD DATE: 8/95 TEST DATE: November 21, 1995

VEH SIZE CATEGORY: MPV TEST WEIGHT: 3978 lbs.

FRONT OVERHANG: 28.0 in. OVERALL WIDTH: 66.8 in.

COLLISION DEFORMATION (CDC) CODE: 12FDEW2

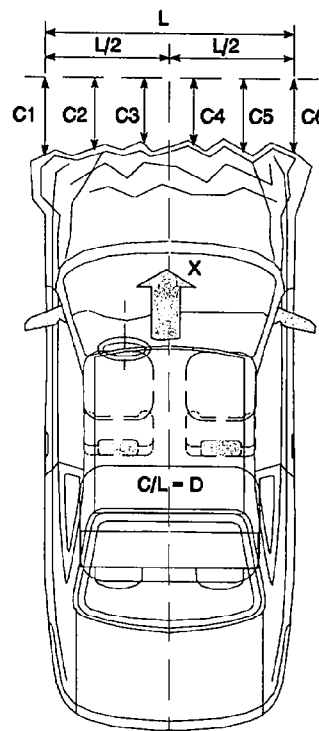
IMPACT MODE: 30 mph zero degree frontal barrier.

CRUSH DEPTH DIMENSIONS: (Inches)

C1 =	<u>12.5</u>	C4 =	<u>16.9</u>
C2 =	<u>16.2</u>	C5 =	<u>16.6</u>
C3 =	<u>16.8</u>	C6 =	<u>10.3</u>

MIDPOINT OF DAMAGE: D =
(Vehicle Longitudinal Centerline) 31.0

LENGTH OF DAMAGE
REGION: L = 62.0



Remarks: none

Table 17
TEST VEHICLE NONCOMPLIANCE NOTICE

NHTSA Contract Lab : Calspan SRL Corporation

Lab Project Manager & Telephone No. : David J. Travale (716) 632 - 7500

Date of Test : November 21, 1995 Vehicle NHTSA No. : CT0303

Vehicle Manufacturer : Chrysler Corporation

Model Year : 1996 VIN : 1J4FJ67S4TL113609

Model : Cherokee Body Style: MPV Build Date : 8/95

Dummy Stabilized Temperature at Time of Test : 70 °F (Spec. = 69 - 72 °F)

Impact Velocity : 29.3 mph; Time of Test : 14:55

Type of Automatic Restraint System :

Driver : Air bag and manual 3-pt belt

Passenger : 3-pt manual belt

Failure Details :

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

Appendix A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

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A-2	POST- TEST FRONT VIEW	A-4
A-3	PRE-TEST LEFT SIDE VIEW	A-5
A-4	POST -TEST LEFT SIDE VIEW	A-6
A-5	PRE-TEST RIGHT SIDE VIEW	A-7
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A-9	PRE-TEST DRIVER SIDE VIEW	A-11
A-10	POST-TEST DRIVER SIDE VIEW	A-12
A-11	PRE-TEST PASSENGER SIDE VIEW	A-13
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A-13	PRE-TEST DRIVER KNEE BOLSTER	A-15
A-14	POST-TEST DRIVER KNEE BOLSTER	A-16
A-15	PRE-TEST PASSENGER KNEE BOLSTER	A-17
A-16	POST-TEST PASSENGER KNEE BOLSTER	A-18
A-17	PRE-TEST UNDERBODY STEERING SHAFT	A-19
A-18	POST-TEST UNDERBODY STEERING SHAFT	A-20
A-19	PRE-TEST STEERING COLUMN/FIREWALL INSIDE VIEW	A-21
A-20	POST-TEST STEERING COLUMN/FIREWALL INSIDE VIEW	A-22
A-21	CERTIFICATION PLACARD	A-23
A-22	VEHICLE IMPACT	A-24
A-23	POST-TEST DRIVER AIRBAG VIEW	A-25
A-24	BALLAST BOX	A-26



Figure A-1 PRE-TEST FRONT VIEW
A-3



Figure A-2 POST-TEST FRONT VIEW

A-4

8251-3

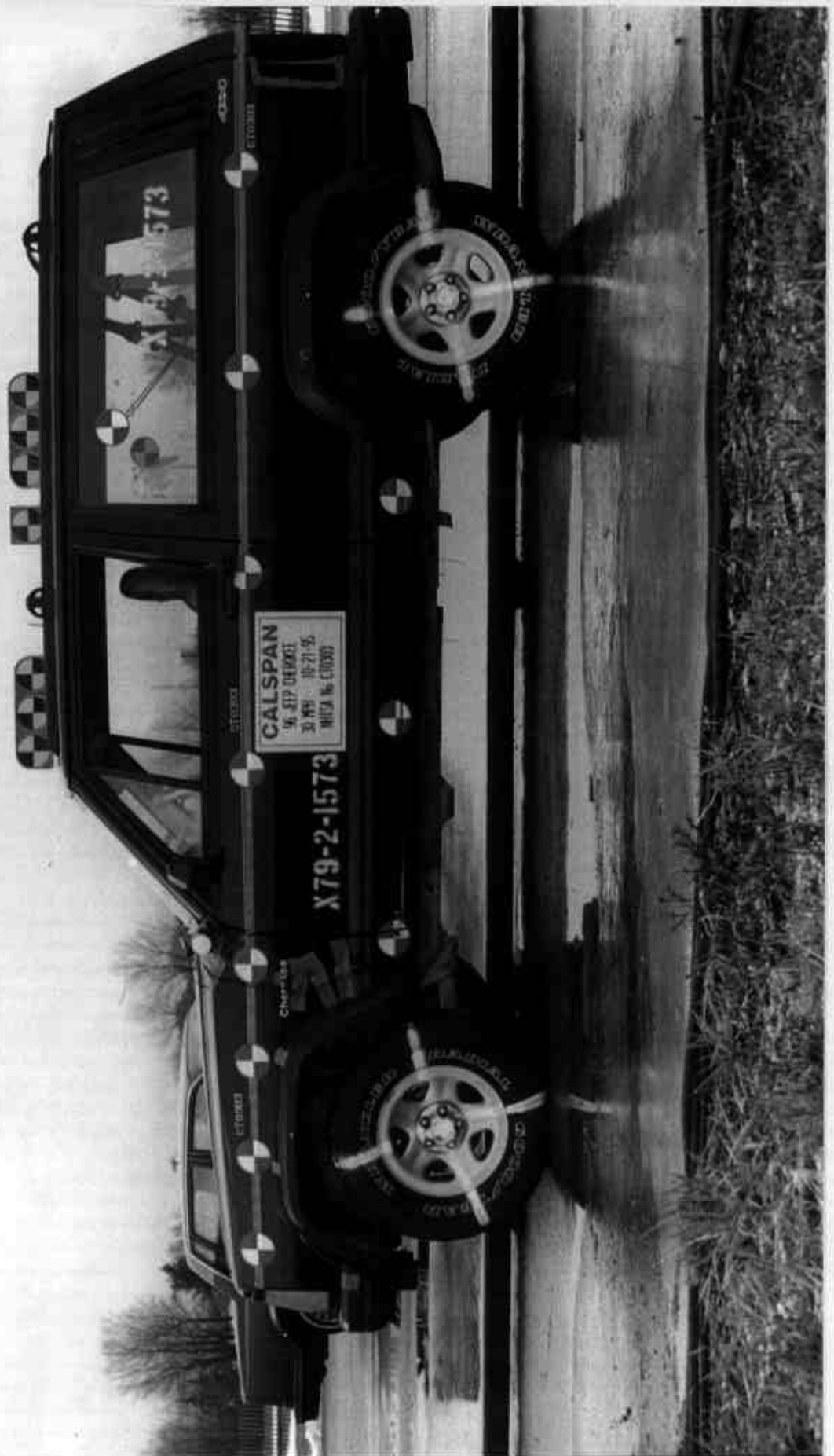


Figure A-3 PRE-TEST LEFT SIDE VIEW
A-5



Figure A-4 POST-TEST LEFT SIDE VIEW



Figure A-5 PRE-TEST RIGHT SIDE VIEW

A-7

8251-3



Figure A-6 POST-TEST RIGHT SIDE VIEW

A-8

8251-3



Figure A-7 PRE-TEST FRONT UNDERBODY VIEW
A-9

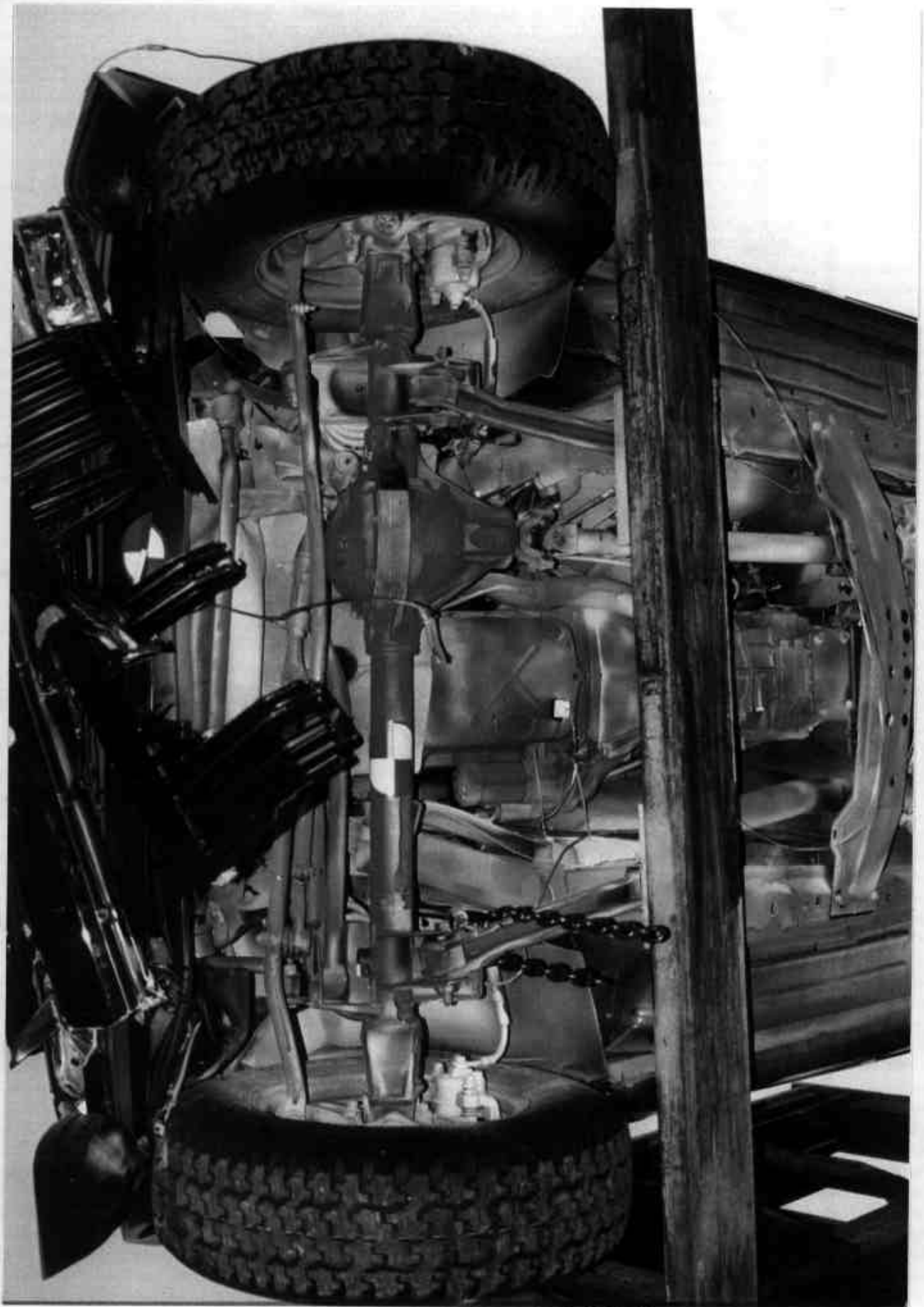


Figure A-8 POST-TEST FRONT UNDERBODY VIEW
A-10



Figure A-9 PRE-TEST DRIVER SIDE VIEW

A-11

8251-3



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



Figure A-11 PRE-TEST PASSENGER SIDE VIEW
A-13



Figure A-12 POST-TEST PASSENGER SIDE VIEW
A-14



Figure A-13 PRE-TEST DRIVER KNEE BOLSTER
A-15



Figure A-14 POST-TEST DRIVER KNEE BOLSTER
A-16



Figure A-15 PRE-TEST PASSENGER KNEE BOLSTER
A-17



Figure A-16 POST-TEST PASSENGER KNEE BOLSTER
A-18

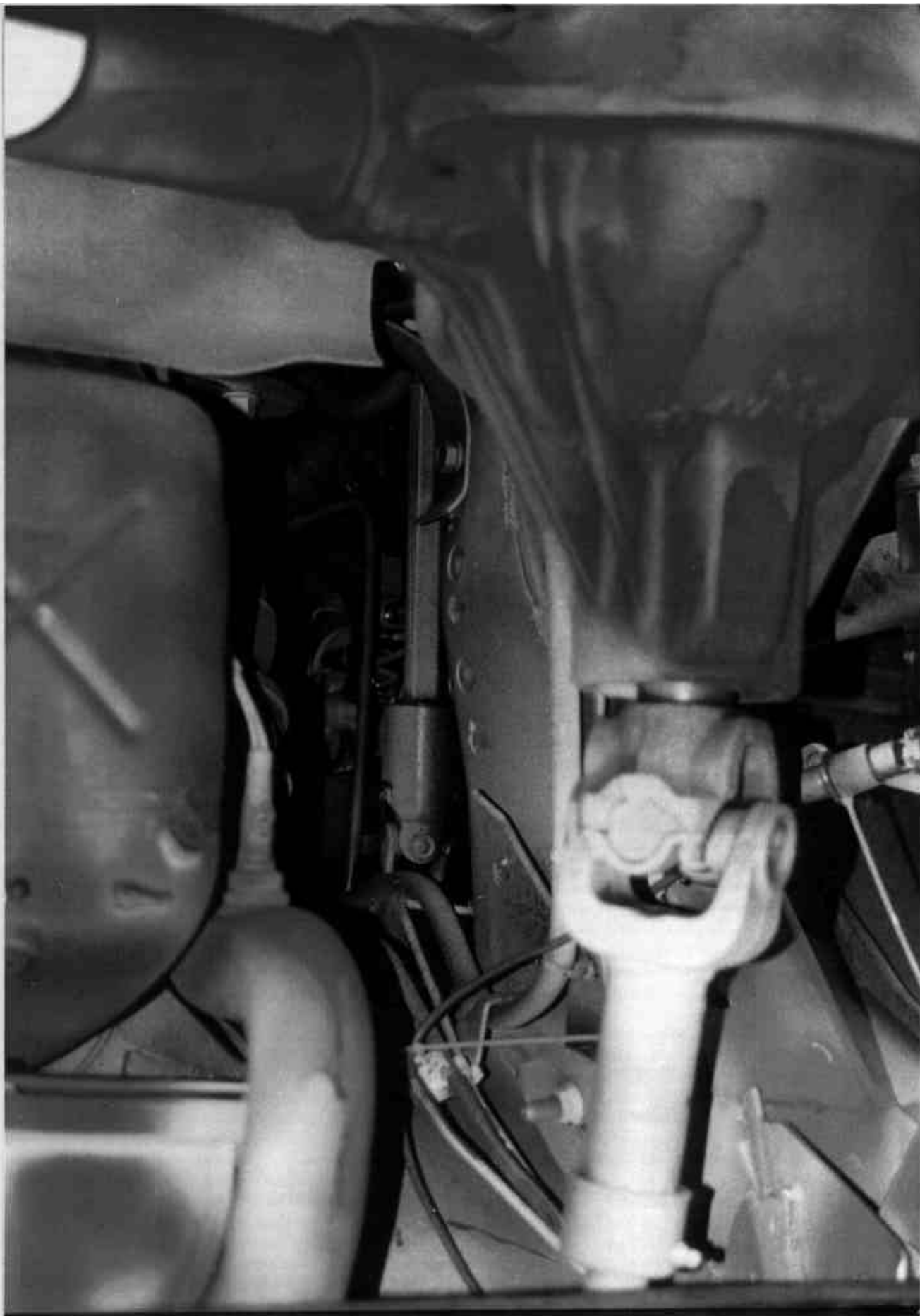


Figure A-17 PRE-TEST UNDERBODY STEERING SHAFT
A-19



Figure A-18 POST-TEST UNDERBODY STEERING SHAFT
A-20

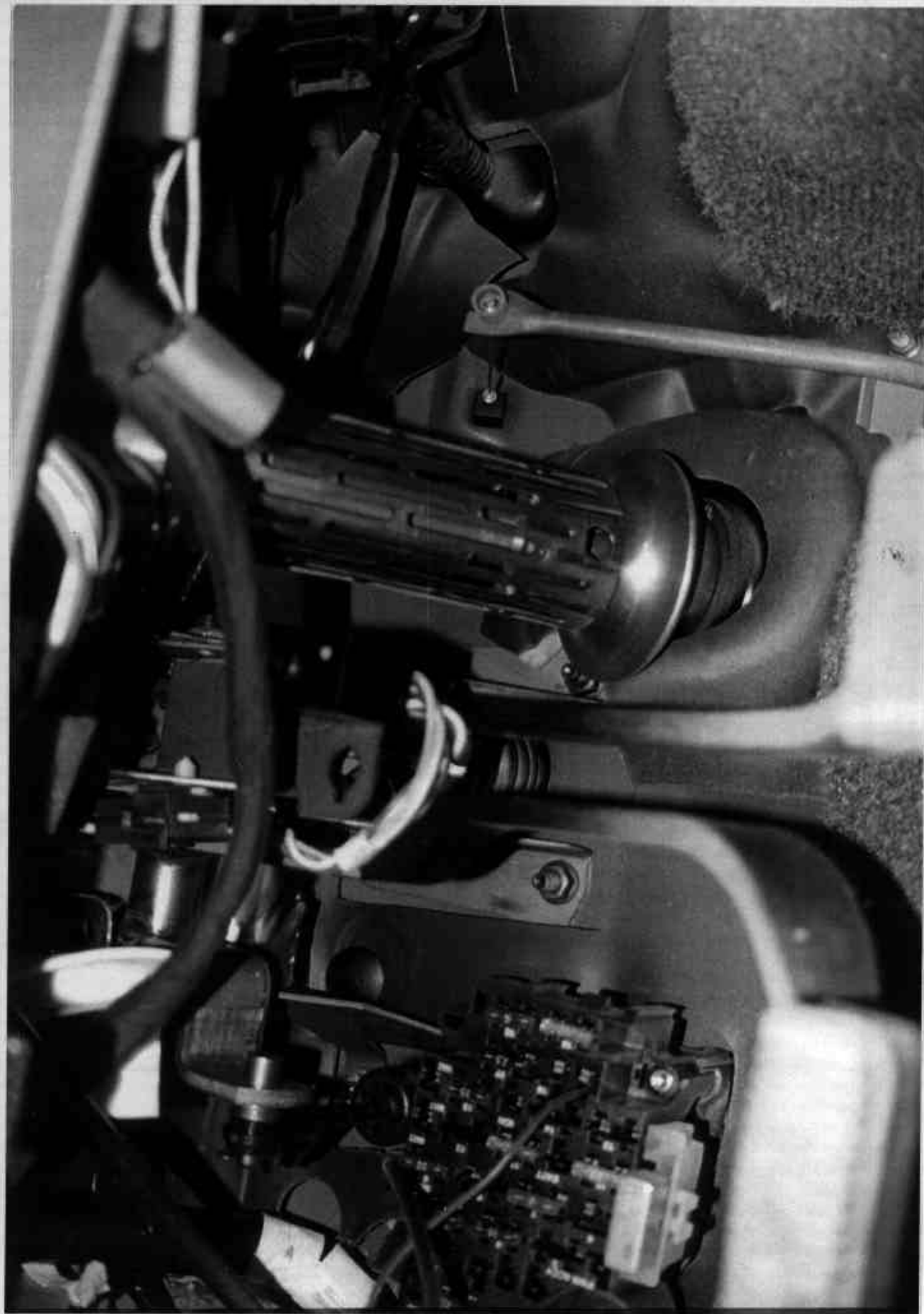


Figure A-19 PRE-TEST STEERING COLUMN/FIREWALL INSIDE VIEW
A-21

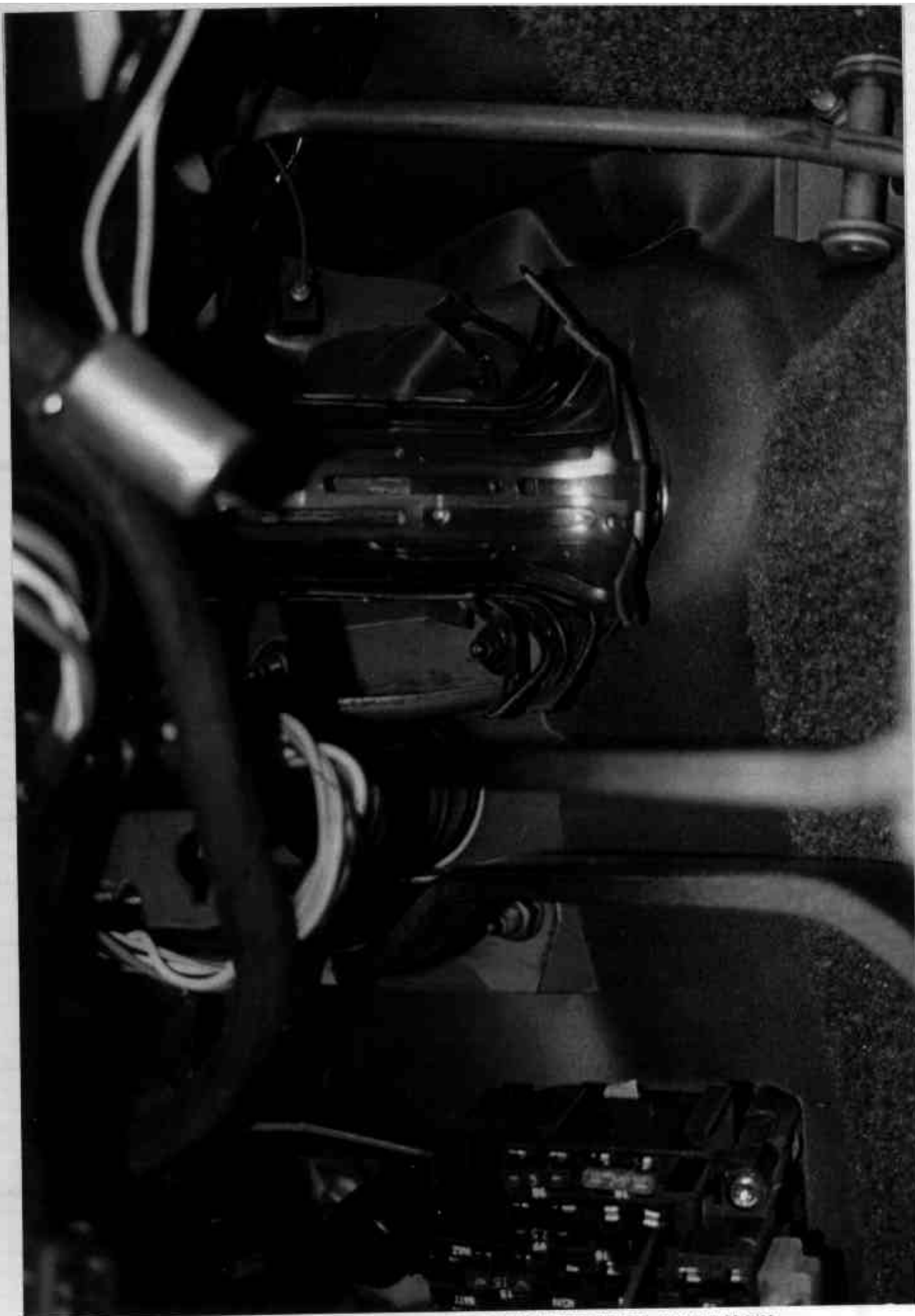


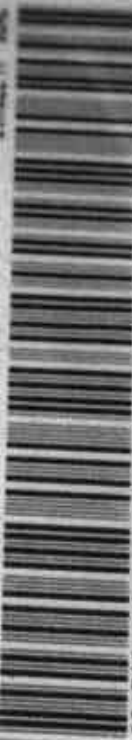
Figure A-20 POST-TEST STEERING COLUMN/FIREWALL INSIDE VIEW
A-22

8251-3

MFD BY		CHRYSLER		DATE OF MFR		GWR		04850 LB		2200 KG	
CORPORATION				8-95							
GWR FRONT		1134 KG		WITH TIRES		P215/75R15		RIMS AT		15 X 7.0	
2500 LB										PSI COLD	
GWR REAR		1225 KG		WITH TIRES		P215/75R15		RIMS AT		15 X 7.0	
2700 LB										PSI COLD	
										PSI	

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

VIN: 1J4FJ67S4TL113609 TYPE: MPV SINGLE X RAIL



MDH: 081508 345 PAINT:PHB VEHICLE MADE IN U.S.A. TWIN:J554 000400000

Figure A-21 CERTIFICATION PLACARD

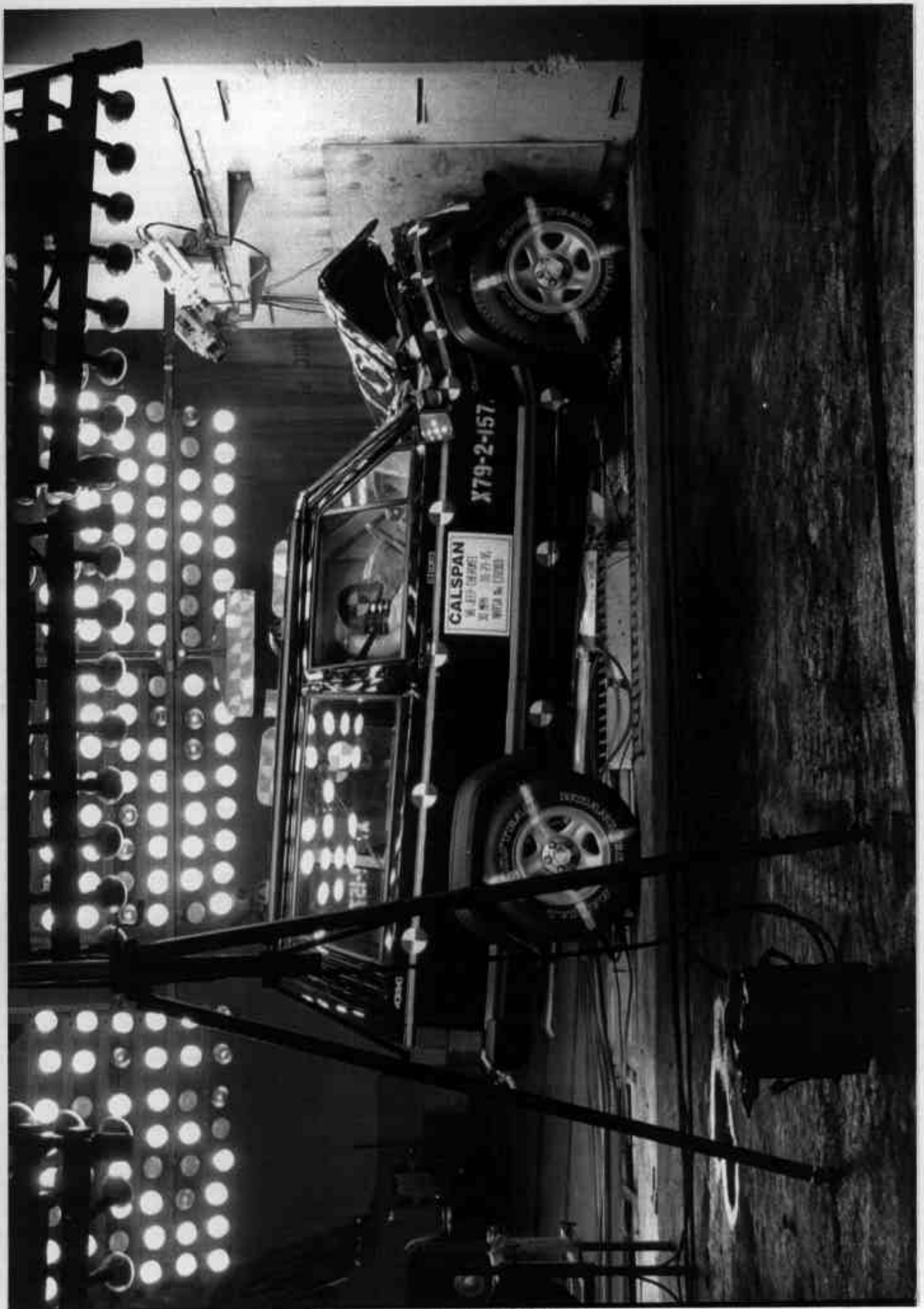


Figure A-22 VEHICLE IMPACT
A-24



Figure A-23 POST-TEST DRIVER AIRBAG VIEW
A-25



Figure A-24 BALLAST BOX
A-26

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

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

TEST NO. CT0303

VEHICLE

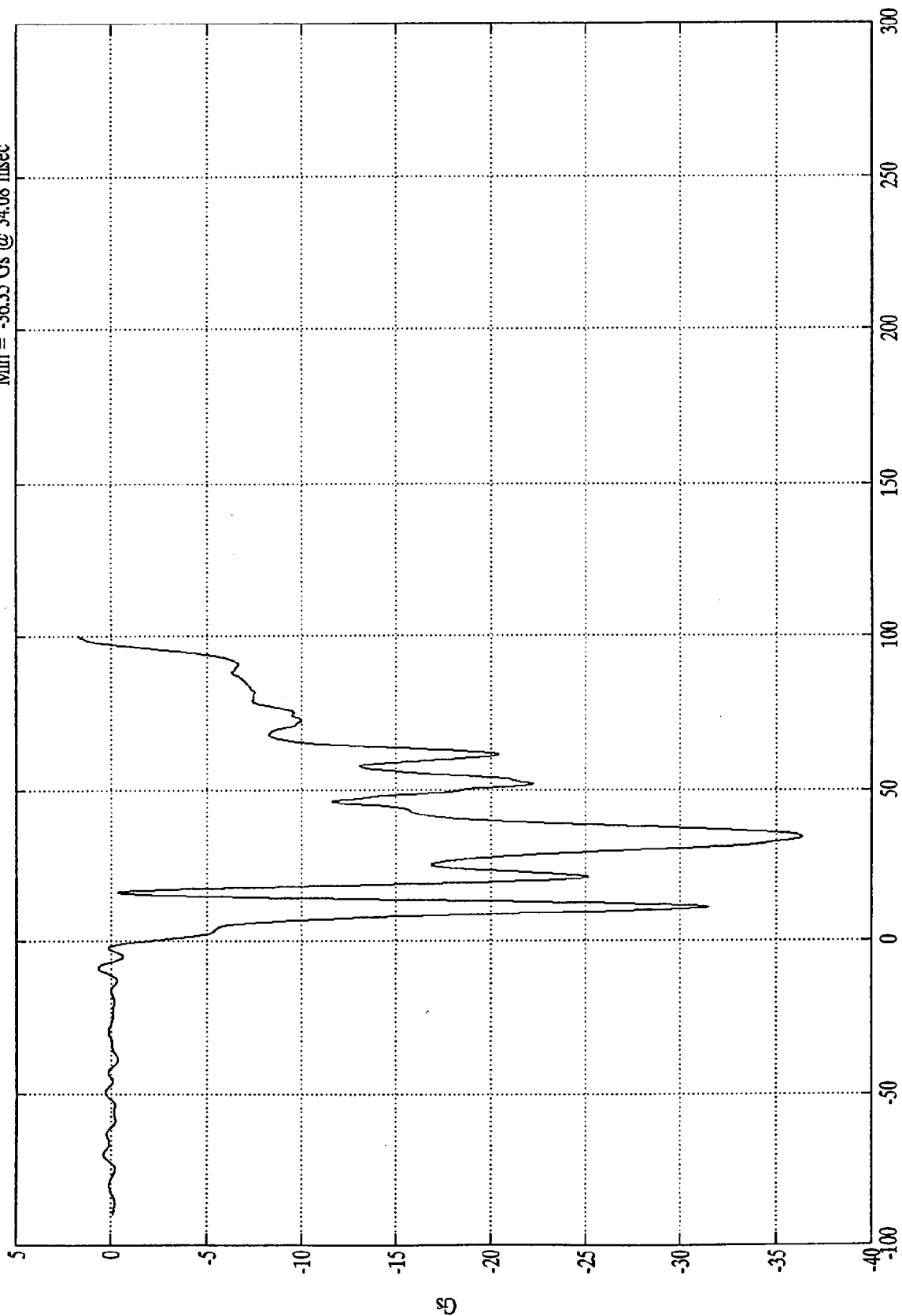
SAE FILTER CHANNEL CLASS

60

FMYSS 208 - 1996 Jeep Cherokee

Max = 0.7113 Gs @ -8.88 msec
Min = -36.35 Gs @ 34.08 msec

L. Rear Crossmember X



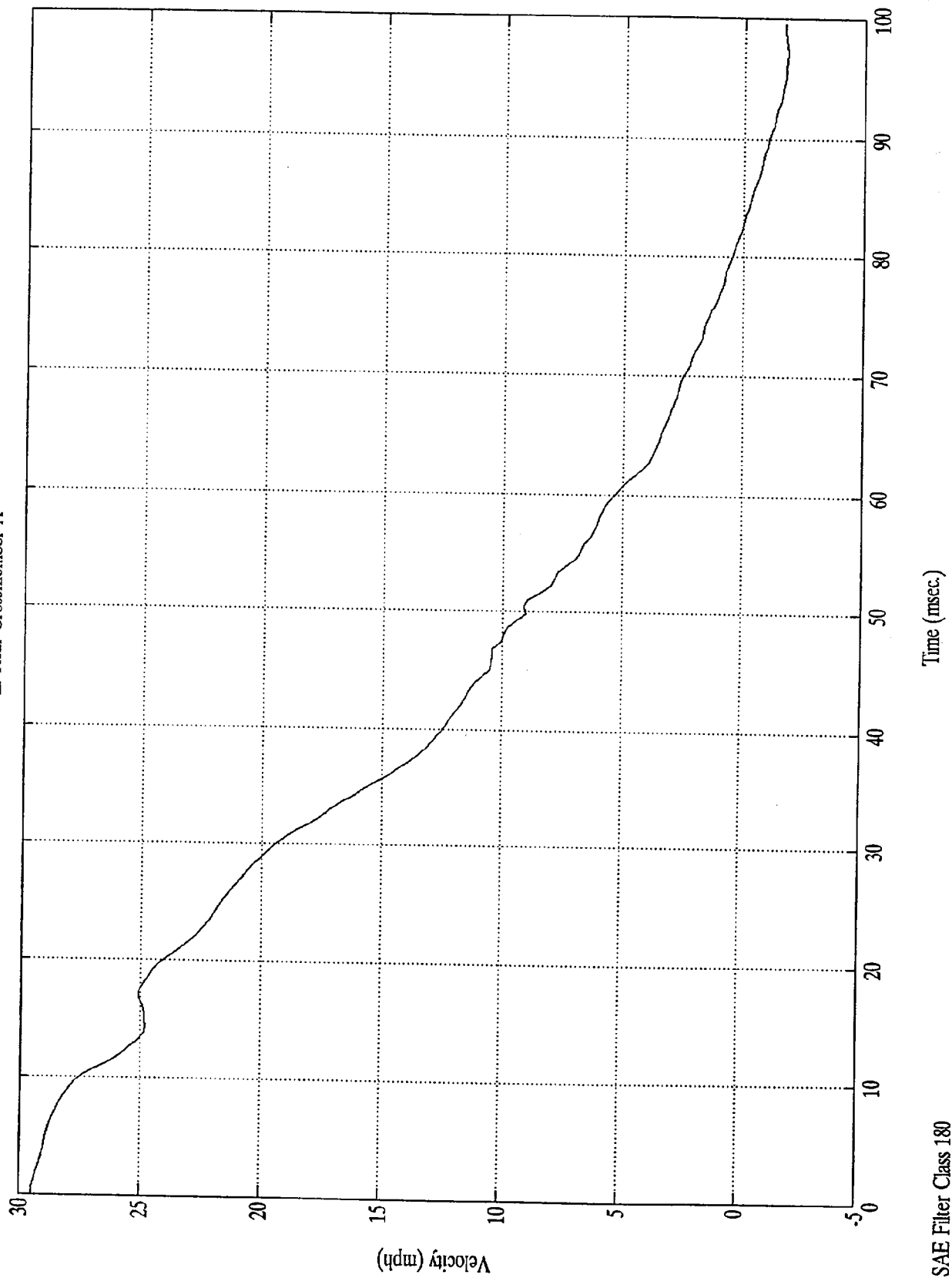
Time (msec)

Data has been truncated at 100ms

SAE Filter Class 60

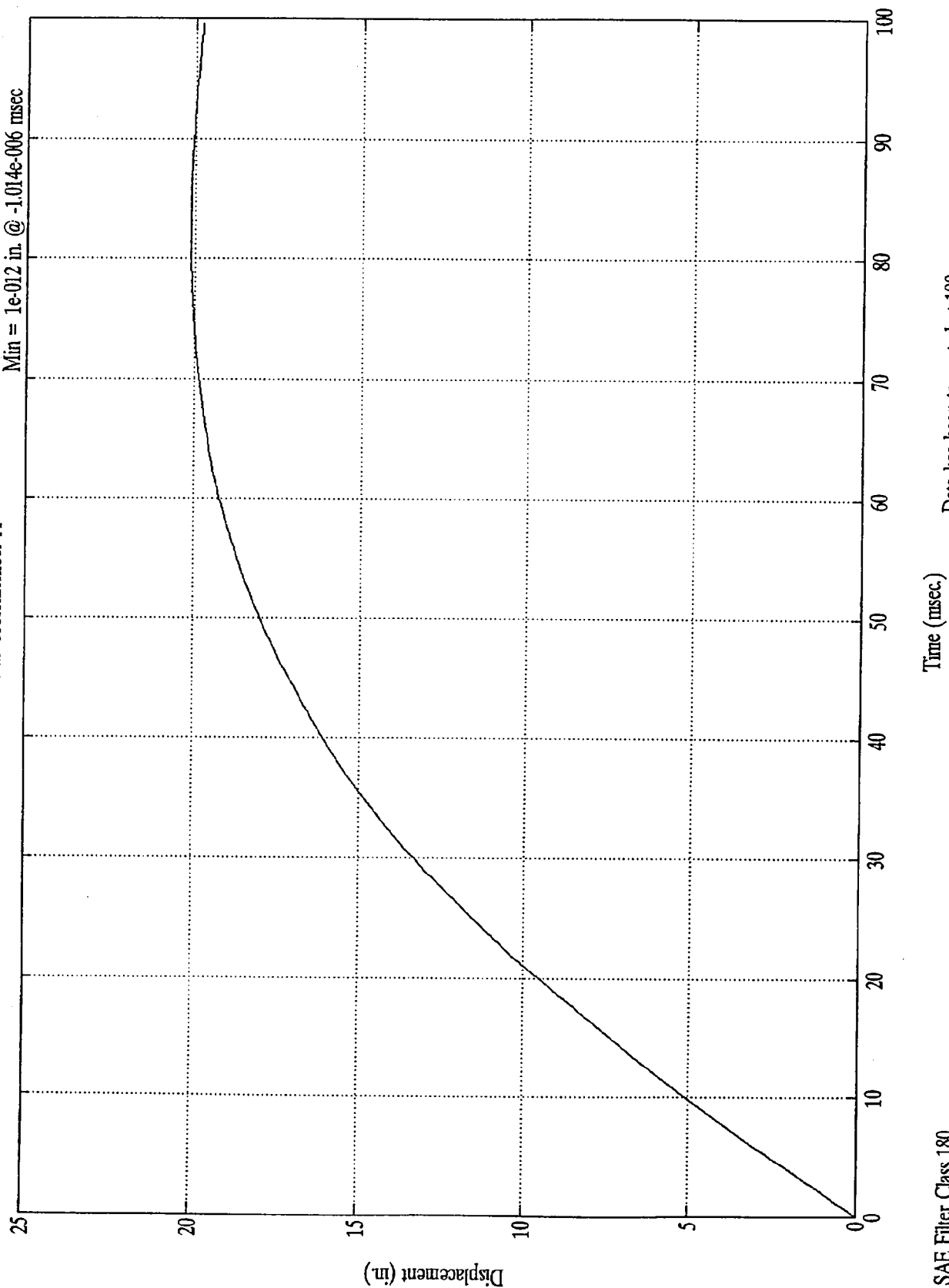
89

L Rear Crossmember X



L. Rear Crossmember X

Max = 20.12 in. @ 81.6 msec
Min = 1e-012 in. @ -1.014e-006 msec



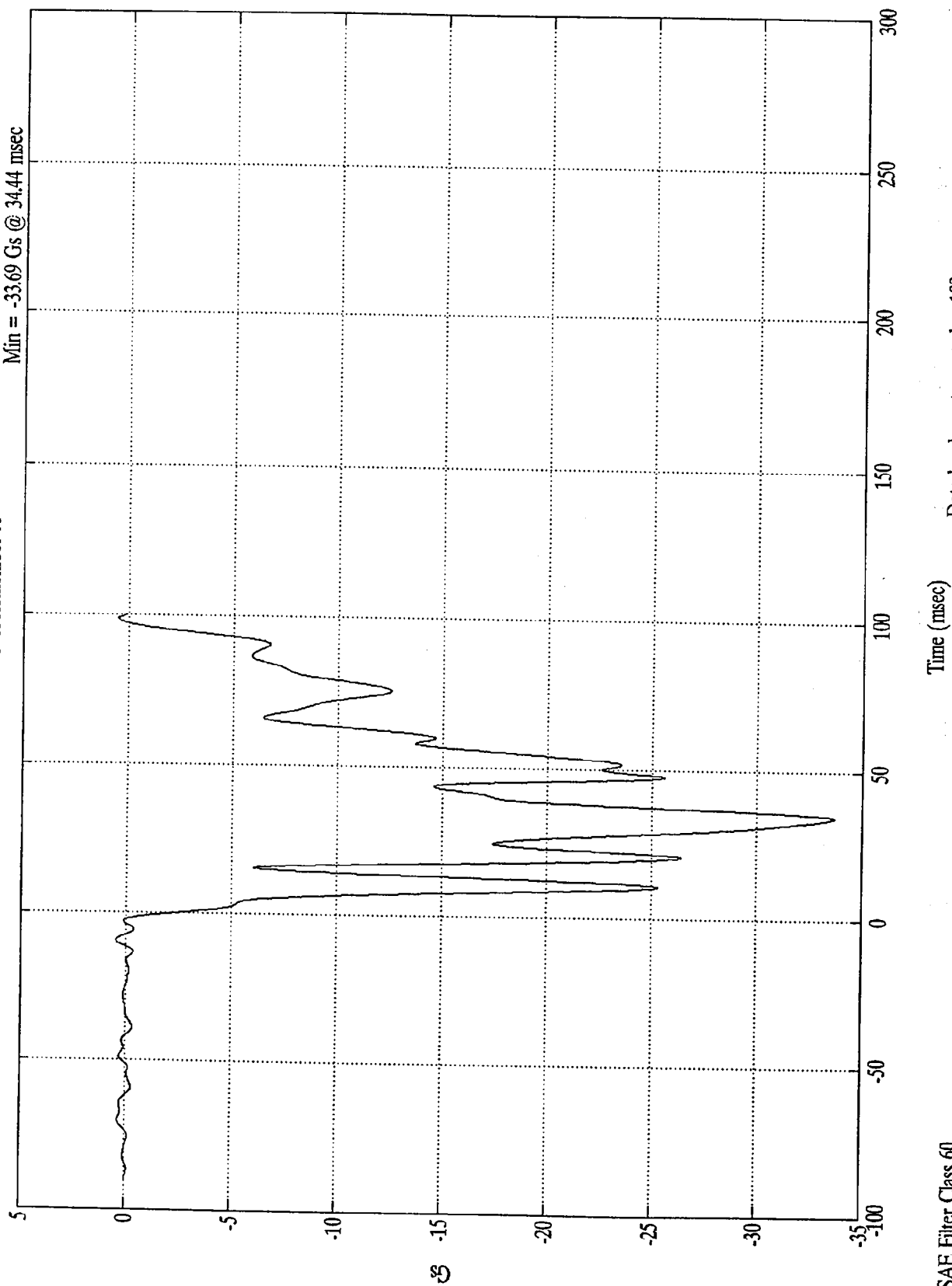
Data has been truncated at 100ms

SAE Filter Class 180

FMVSS 208 - 1996 Jeep Cherokee

R. Rear Crossmember X

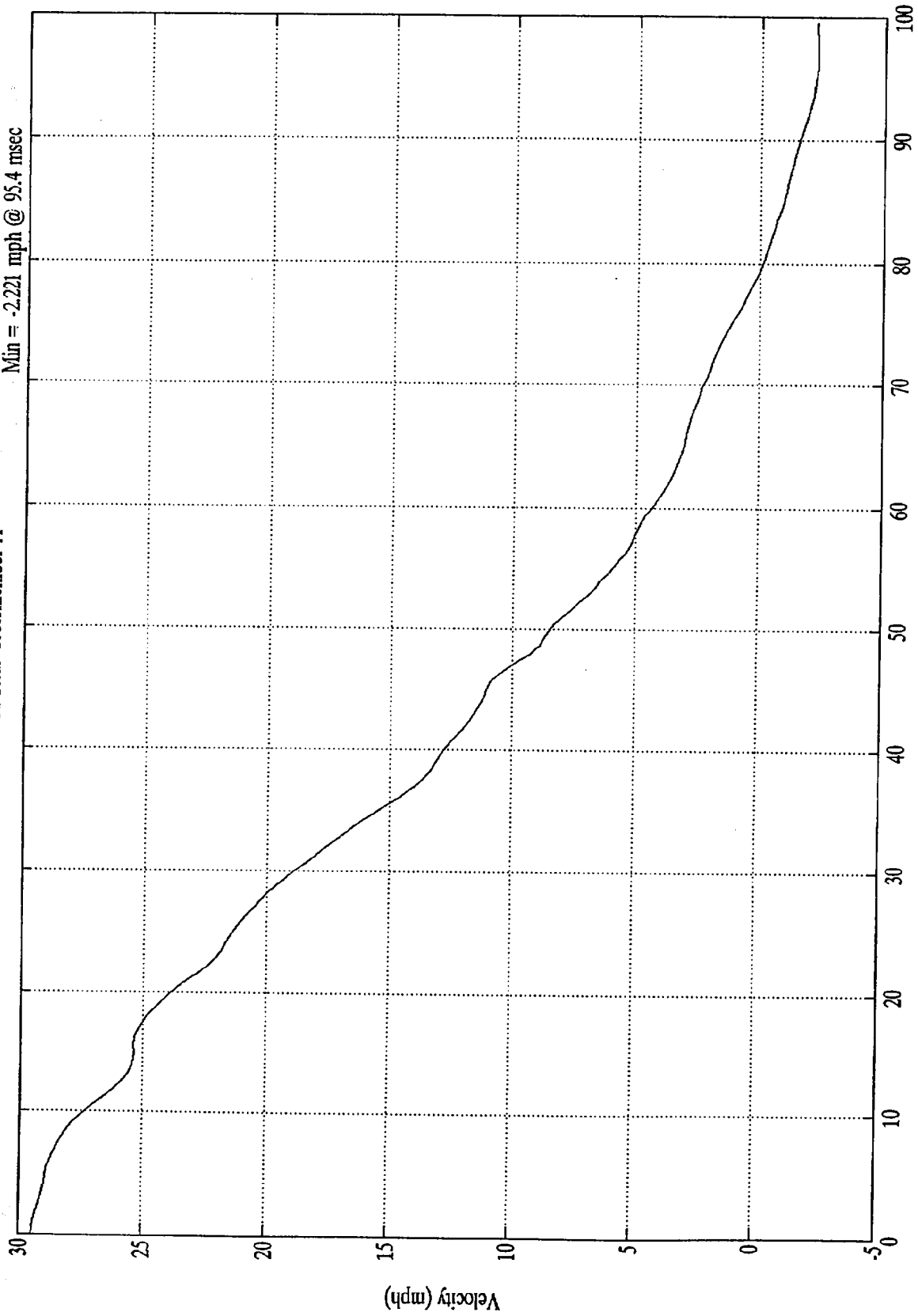
Max = 0.4774 Gs @ -924 msec
Min = -33.69 Gs @ 34.44 msec



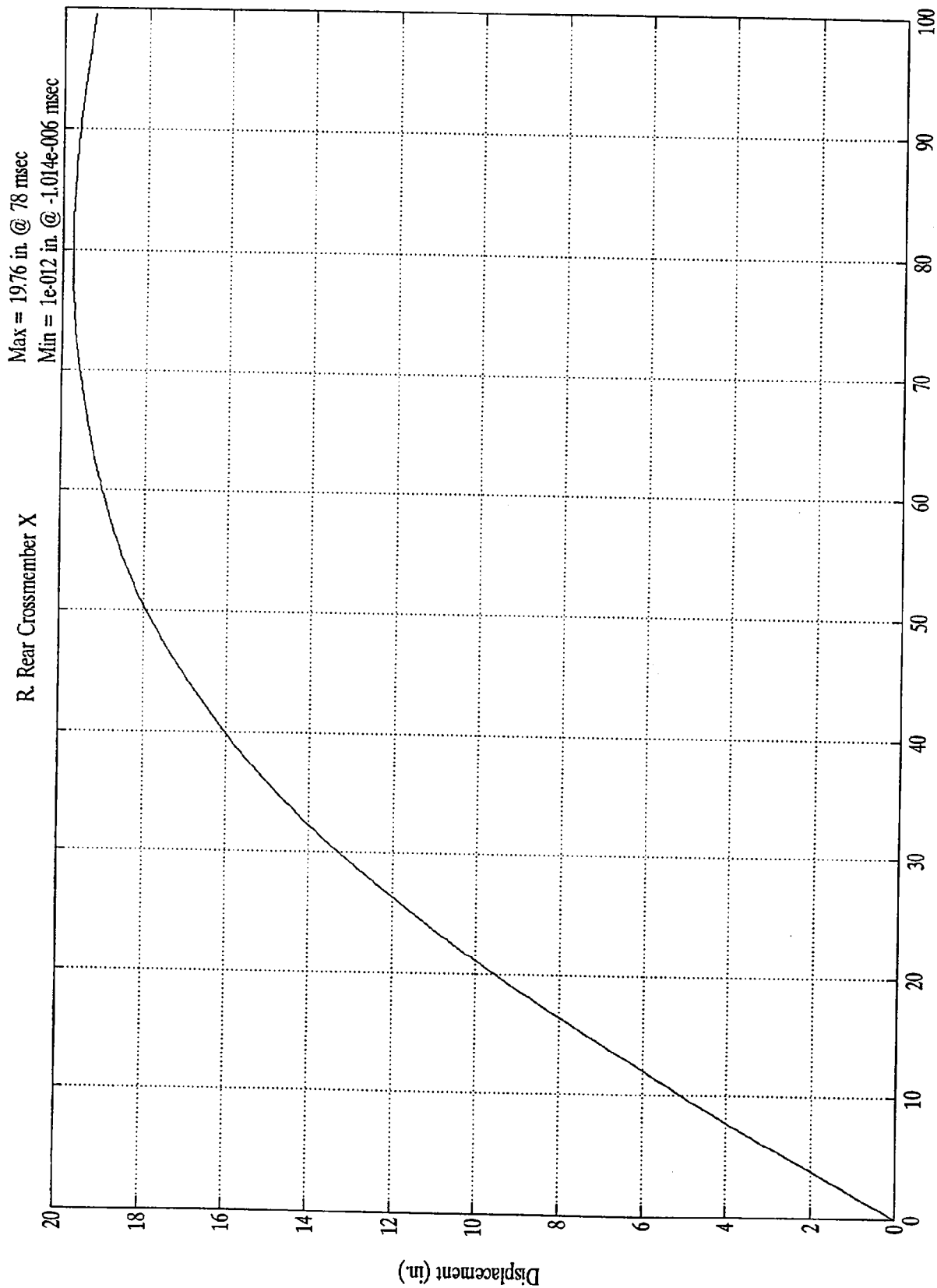
SAE Filter Class 60

Data has been truncated at 100ms

R. Rear Crossmember X
Max = 29.5 mph @ -1.014e-006 msec
Min = -2.221 mph @ 95.4 msec



SAE Filter Class 180
Time (msec.)
Data has been truncated at 100ms

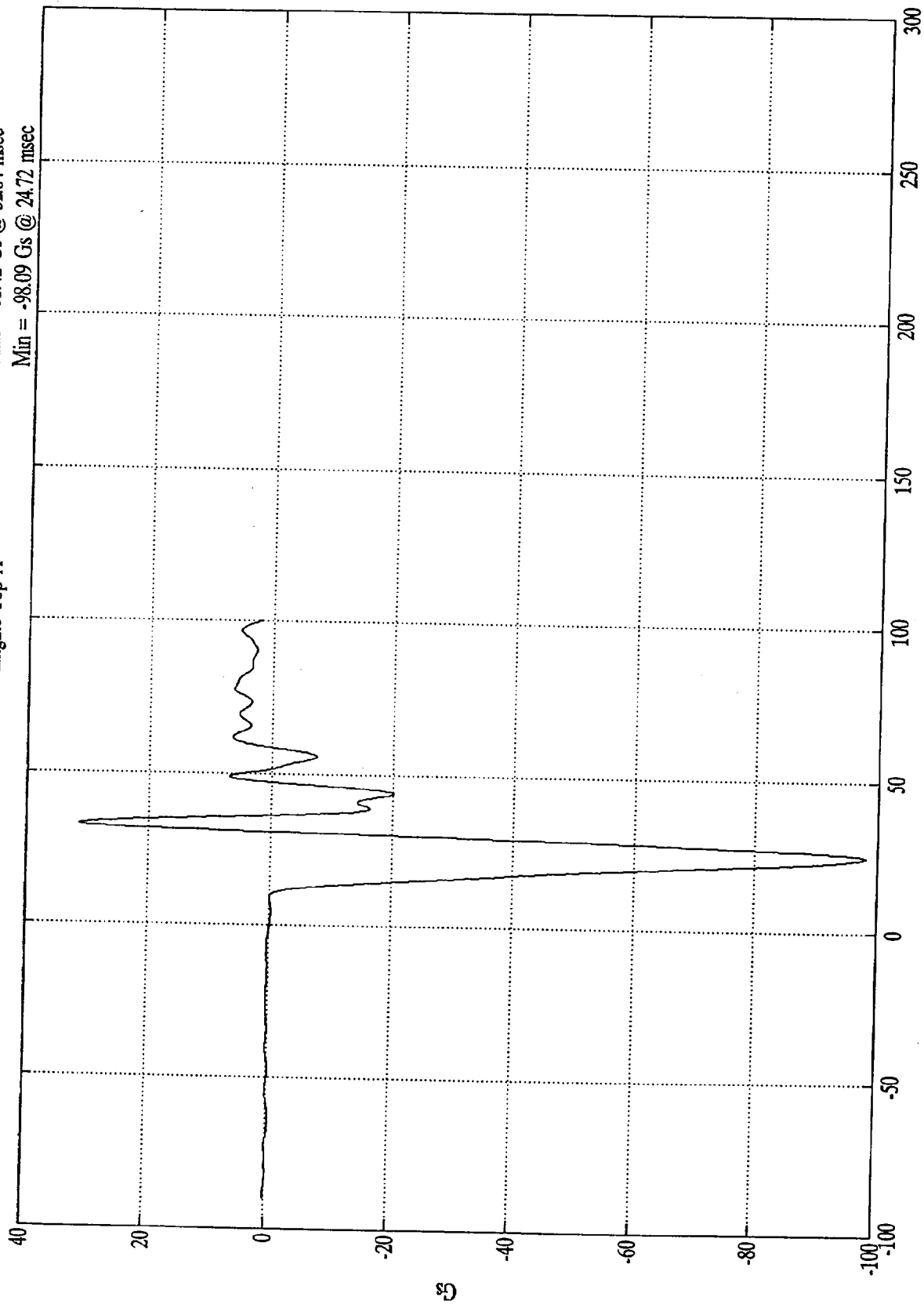


SAE Filter Class 180

Data has been truncated at 100ms

Engine Top X

Max = 31.42 Gs @ 32.64 msec
Min = -98.09 Gs @ 24.72 msec



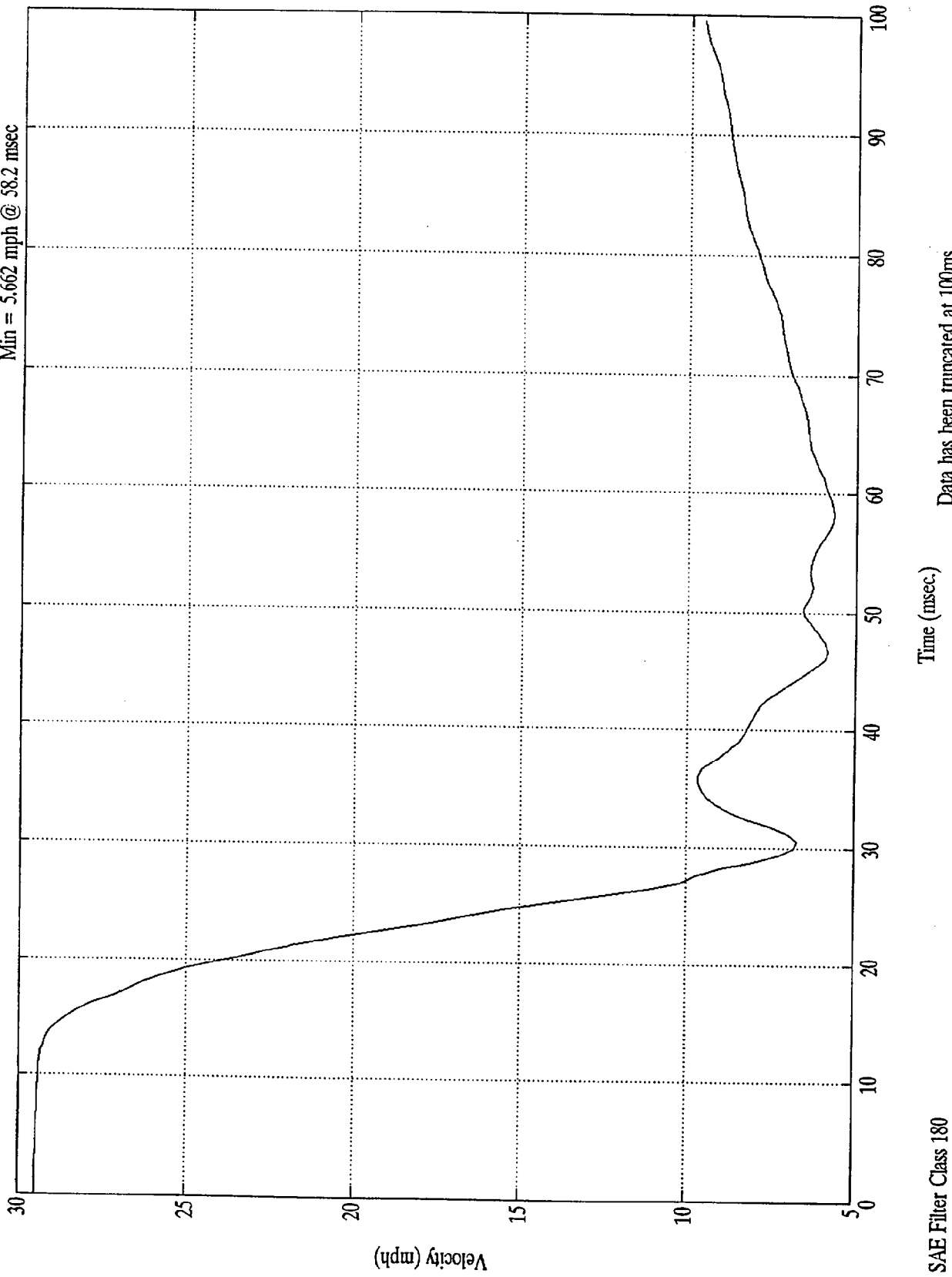
SAE Filter Class 60

Time (msec)

Data has been truncated at 100ms

Engine Top X

Max = 29.5 mph @ -1.014e-006 msec
Min = 5.662 mph @ 58.2 msec



SAE Filter Class 180

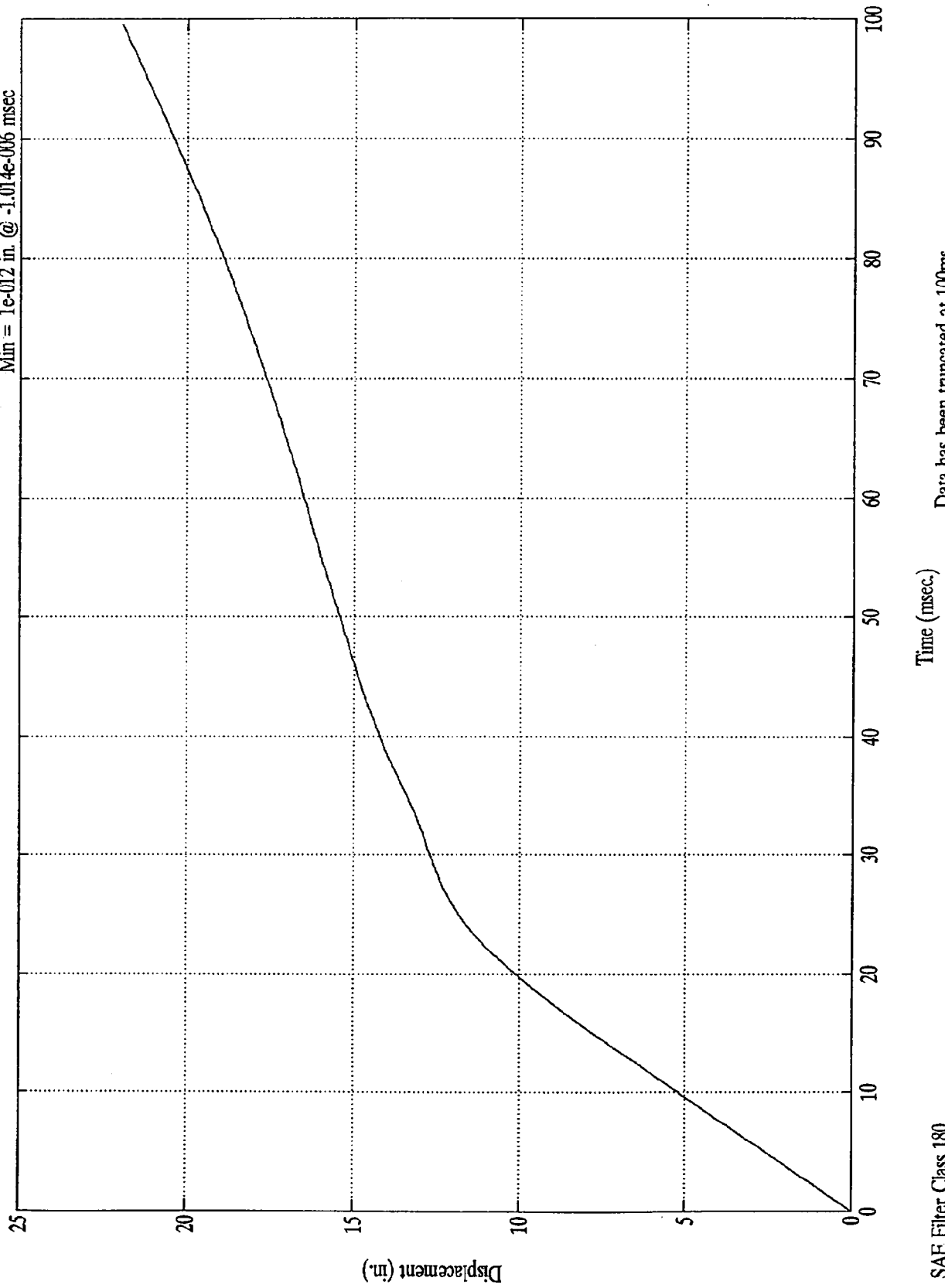
Time (msec.)

Data has been truncated at 100ms

Engine Top X

Max = 21.25 in. @ 95.4 msec

Min = 1e-012 in. @ -1.014e-006 msec

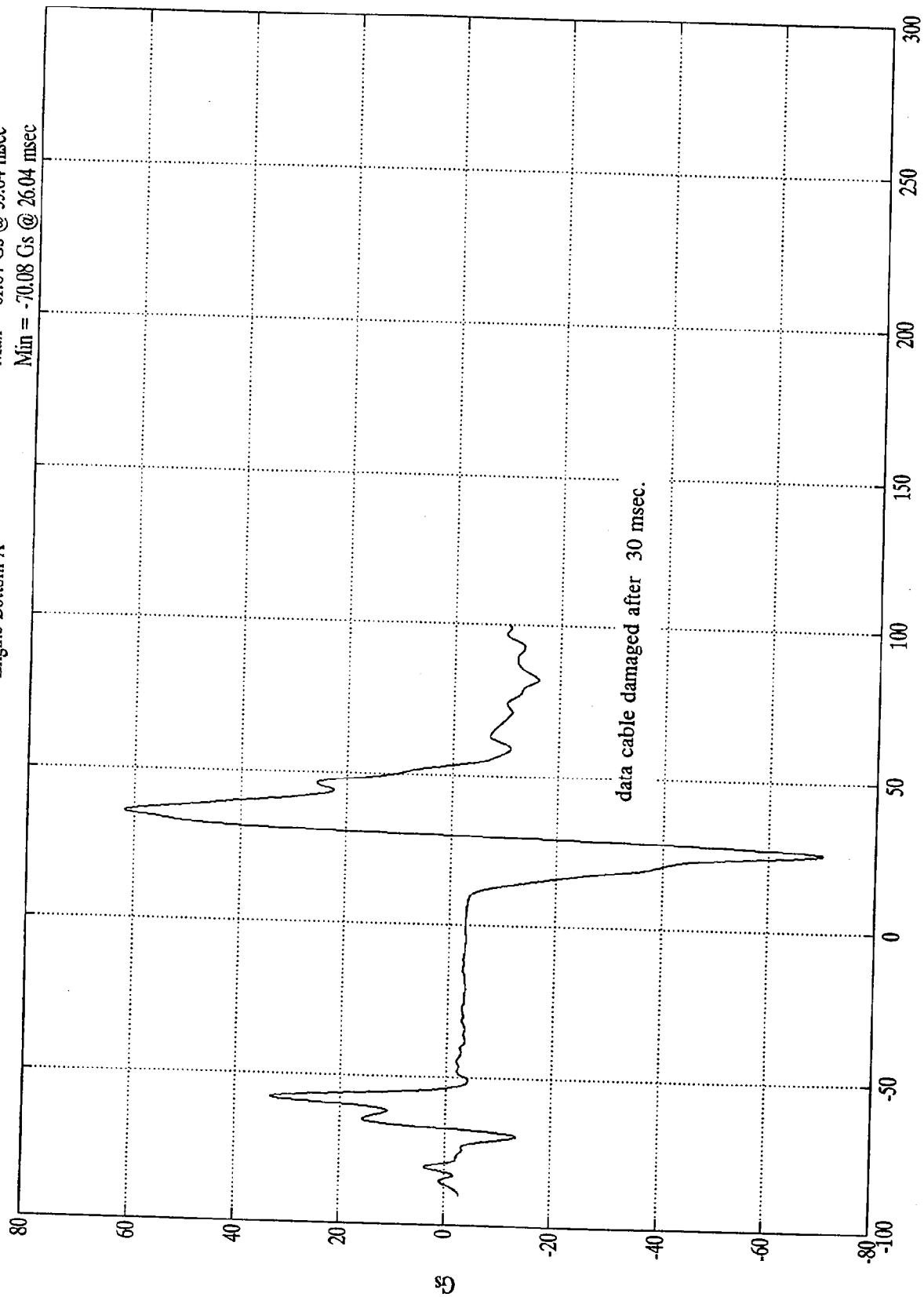


Data has been truncated at 100ms

SAE Filter Class 180

Engine Bottom X

Max = 61.84 Gs @ 35.64 msec
Min = -70.08 Gs @ 26.04 msec



data cable damaged after 30 msec.

Time (msec)

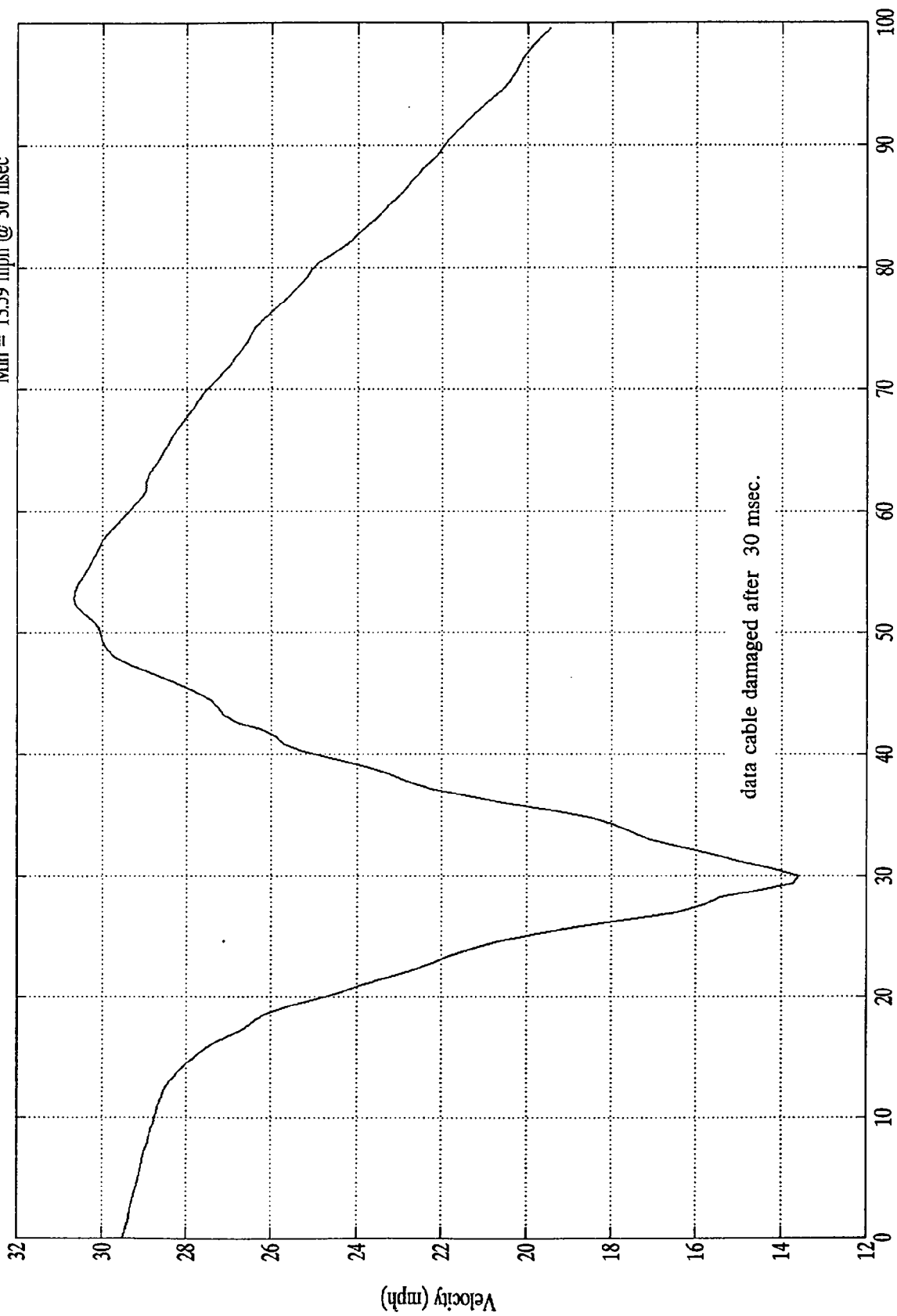
Data has been truncated at 100ms

SAE Filter Class 60

FMVSS 208 - 1996 Jeep Cherokee

Engine Bottom X

Max = 30.66 mph @ 52.8 msec
Min = 13.59 mph @ 30 msec



data cable damaged after 30 msec.

Time (msec.)
Data has been truncated at 100ms

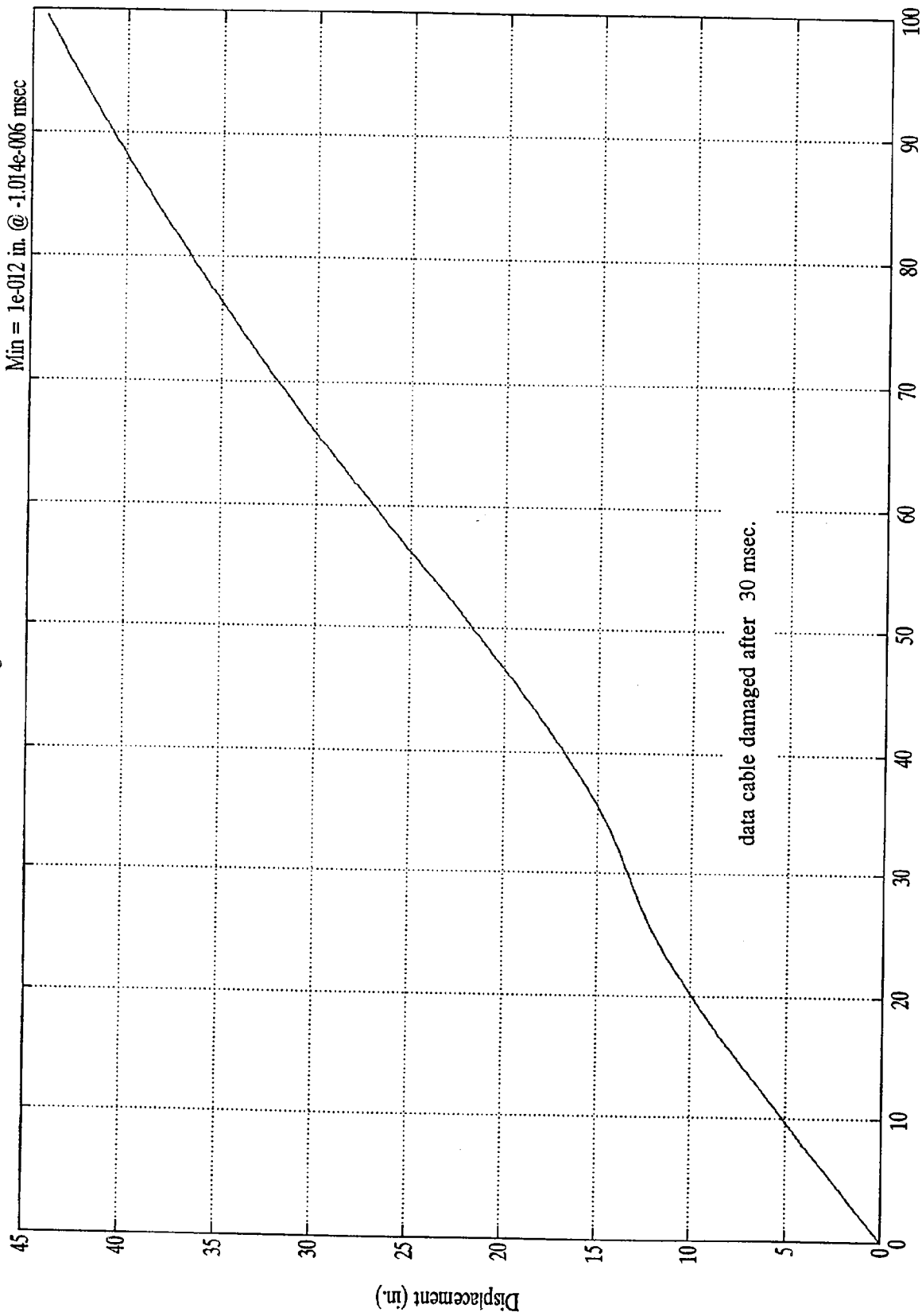
SAE Filter Class 180

8251-3

Engine Bottom X

Max = 42.76 in. @ 95.4 msec

Min = 1e-012 in. @ -1.014e-006 msec



Time (msec.)

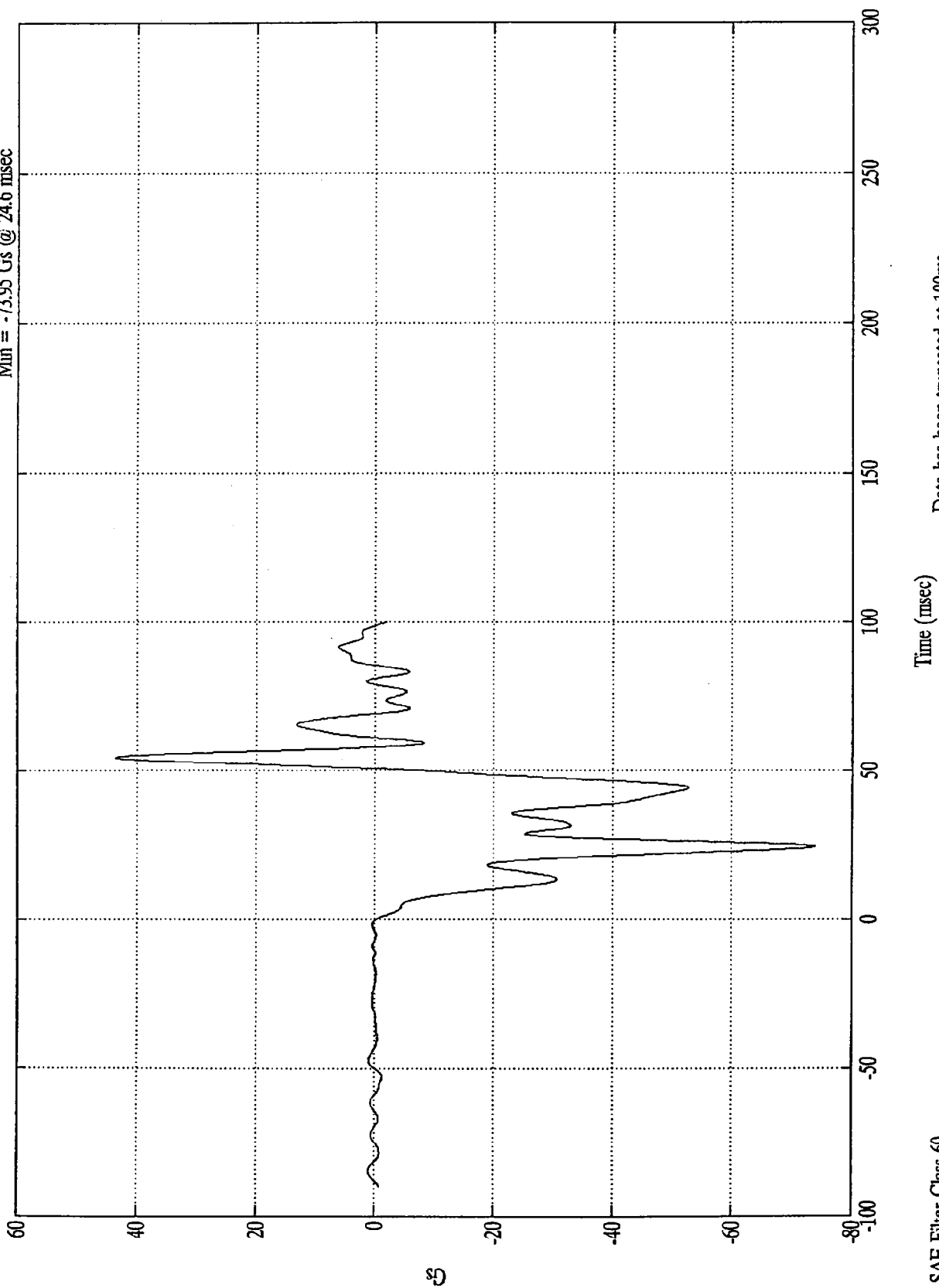
SAE Filter Class 180

Data has been truncated at 100ms

FMVSS 208 - 1996 Jeep Cherokee

R. Brake Caliper X

Max = 43.62 Gs @ 54.24 msec
Min = -73.95 Gs @ 24.6 msec



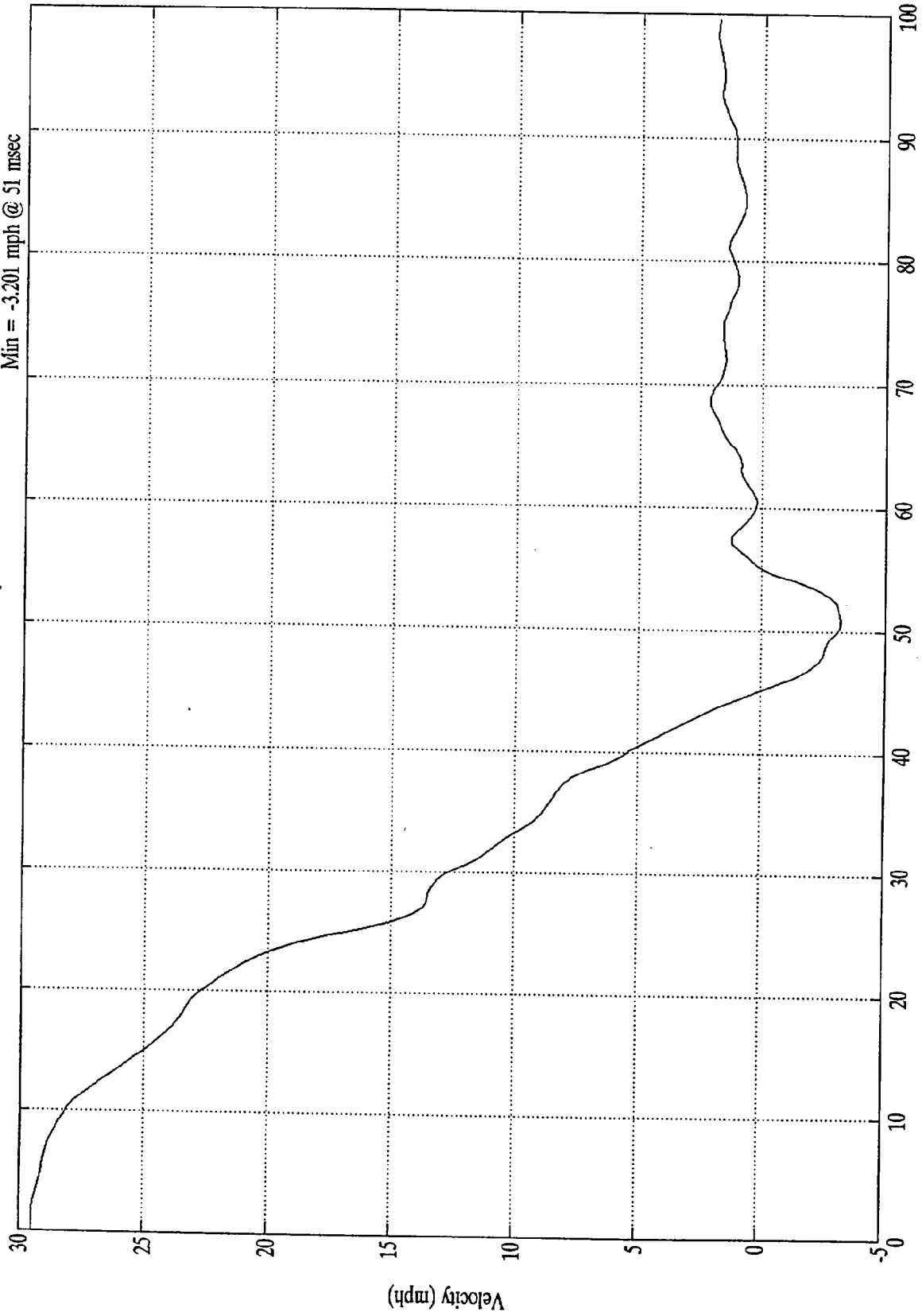
Data has been truncated at 100ms

SAE Filter Class 60

FMVSS 208 - 1996 Jeep Cherokee

R. Brake Caliper X

Max = 29.52 mph @ 1.2 msec
Min = -3.201 mph @ 51 msec



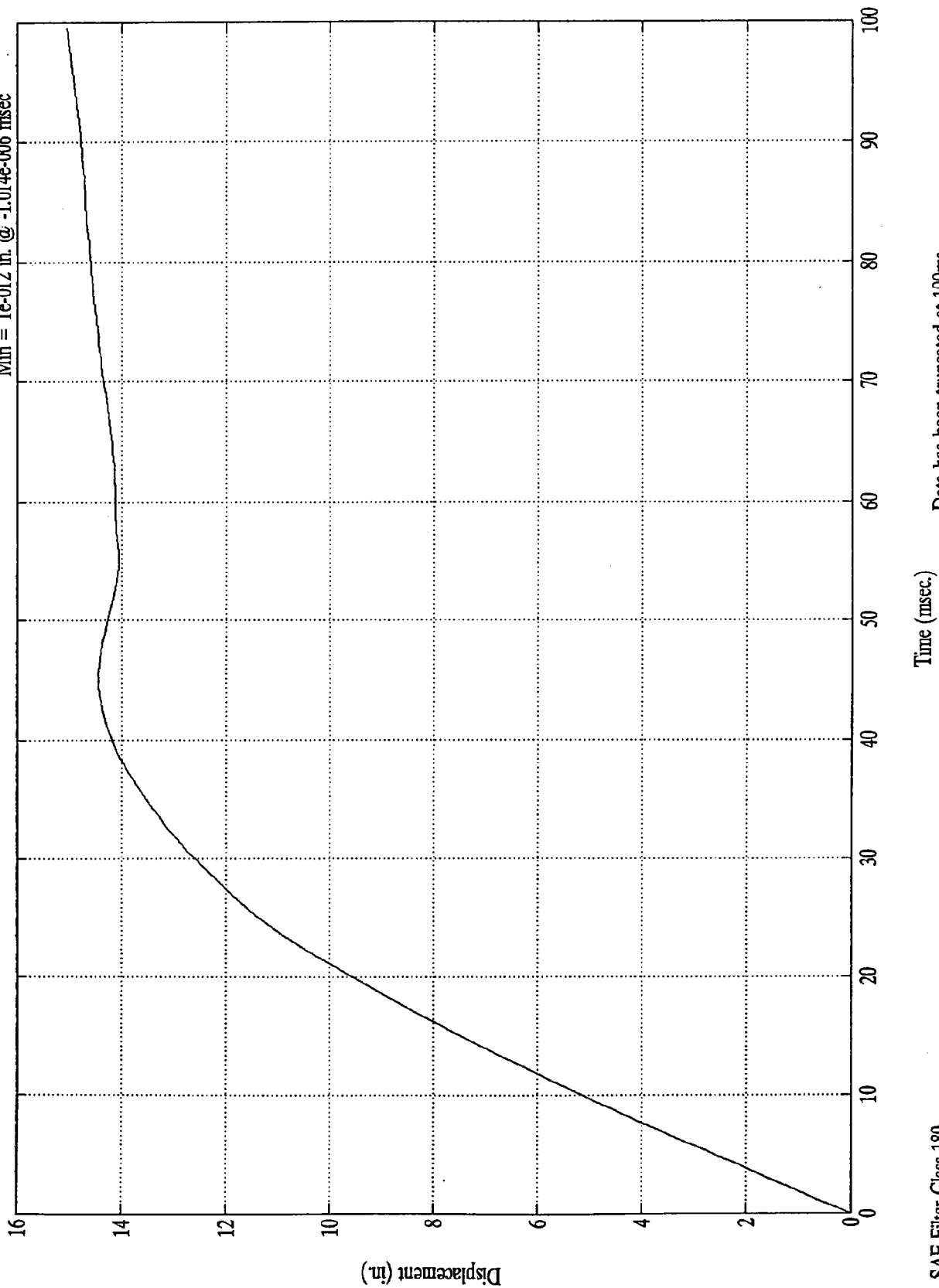
Time (msec.)
Data has been truncated at 100ms

SAE Filter Class 180

R. Brake Caliper X

Max = 14.93 in. @ 95.4 msec

Min = 1e-012 in. @ -1.014e-006 msec

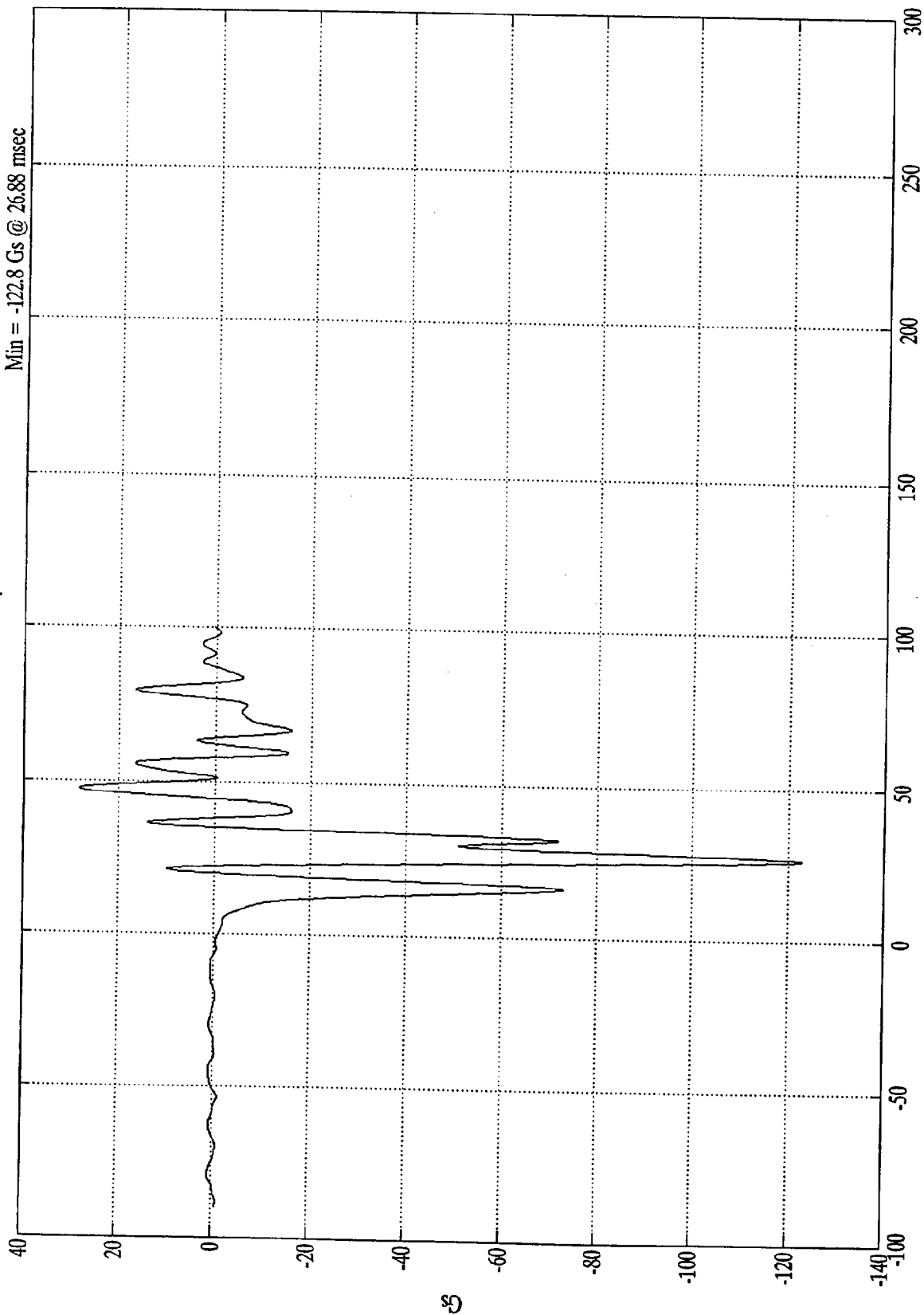


SAE Filter Class 180

Data has been truncated at 100ms

L Brake Caliper X

Max = 28.31 Gs @ 47.4 msec
Min = -122.8 Gs @ 26.88 msec

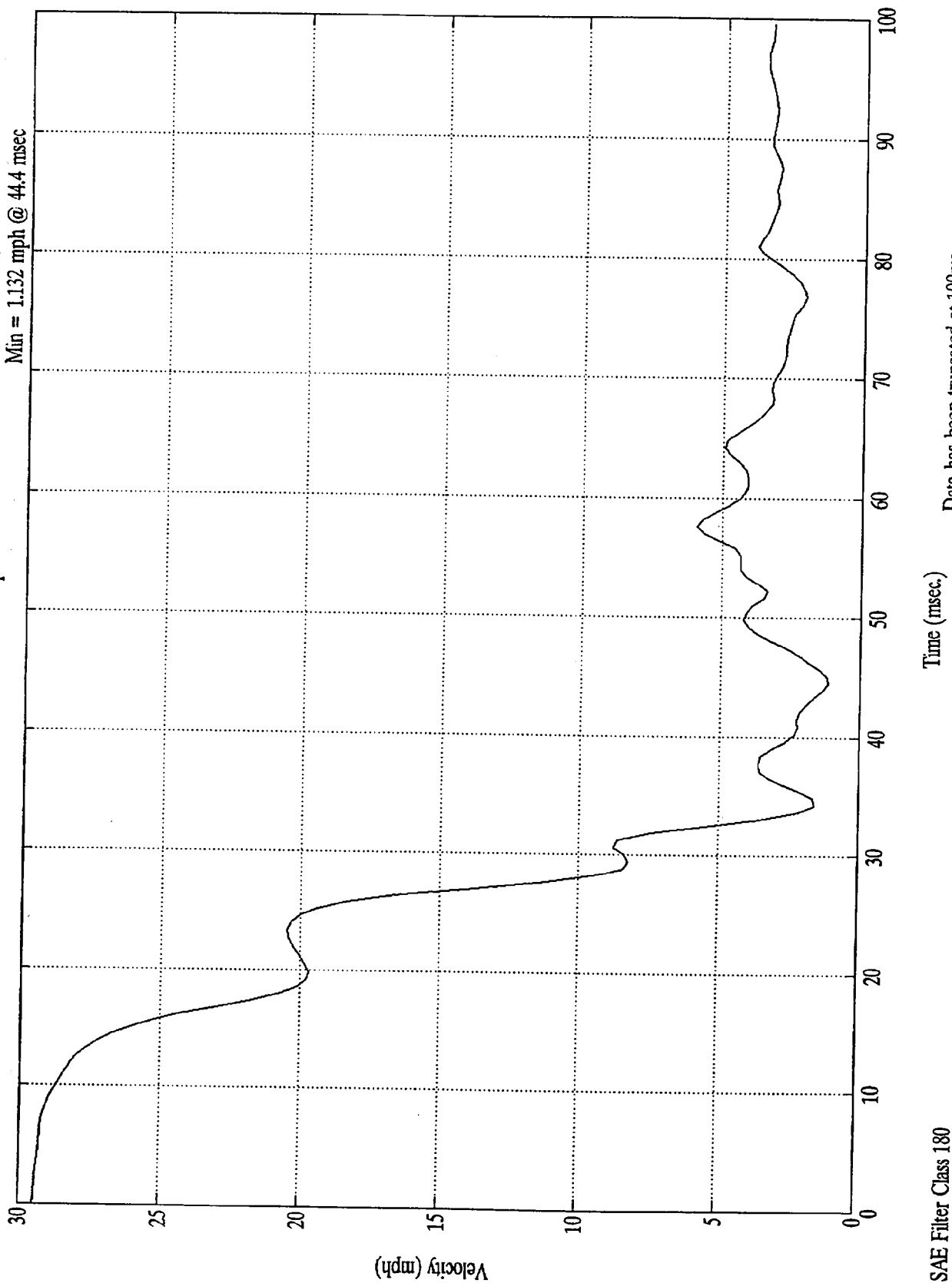


SAE Filter Class 60

Data has been truncated at 100ms

L. Brake Caliper X

Max = 29.5 mph @ -1.014e-006 msec
Min = 1.132 mph @ 44.4 msec

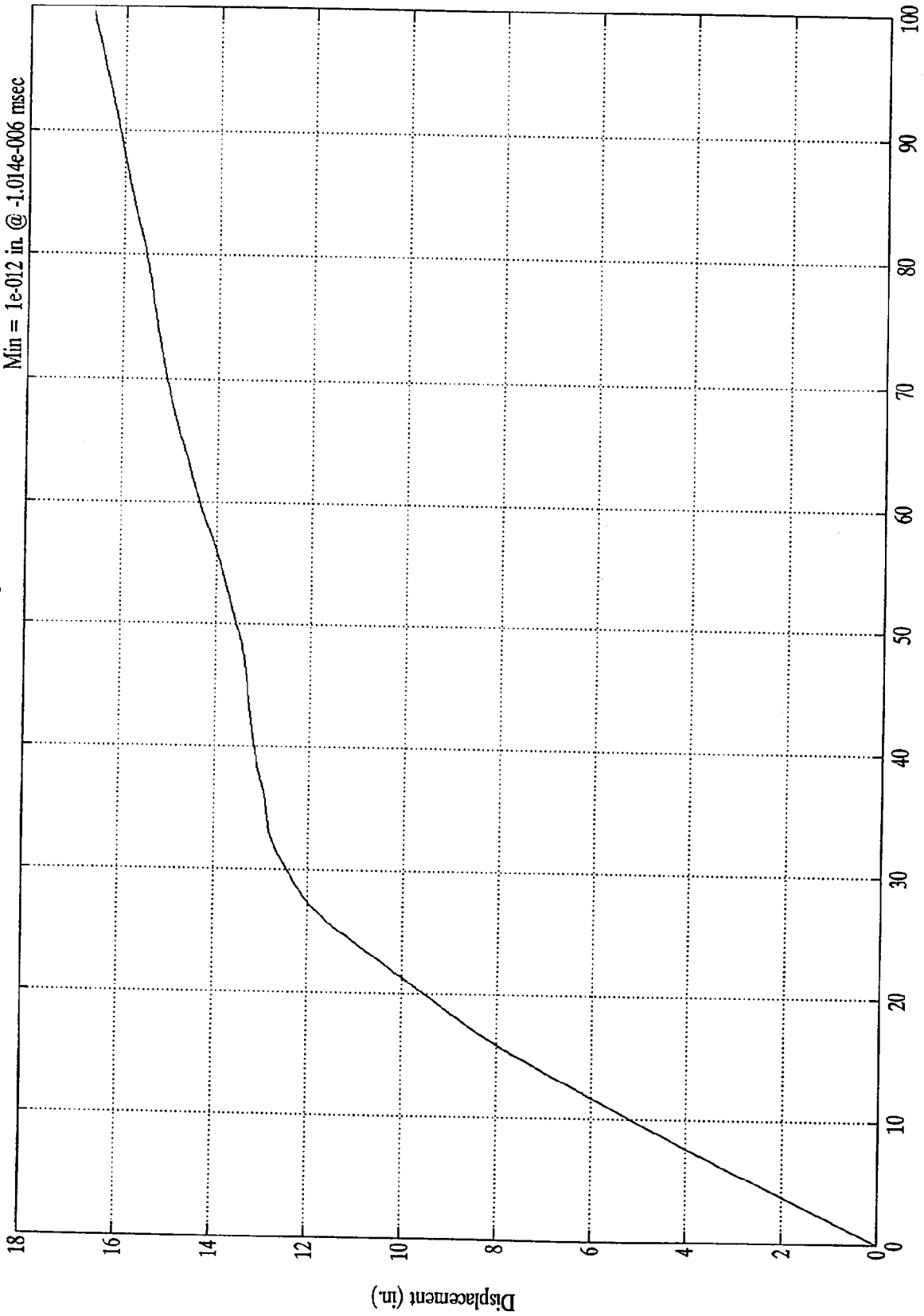


Data has been truncated at 100ms

SAE Filter Class 180

L. Brake Caliper X

Max = 16.43 in. @ 95.4 msec
Min = 1e-012 in. @ -1.014e-006 msec

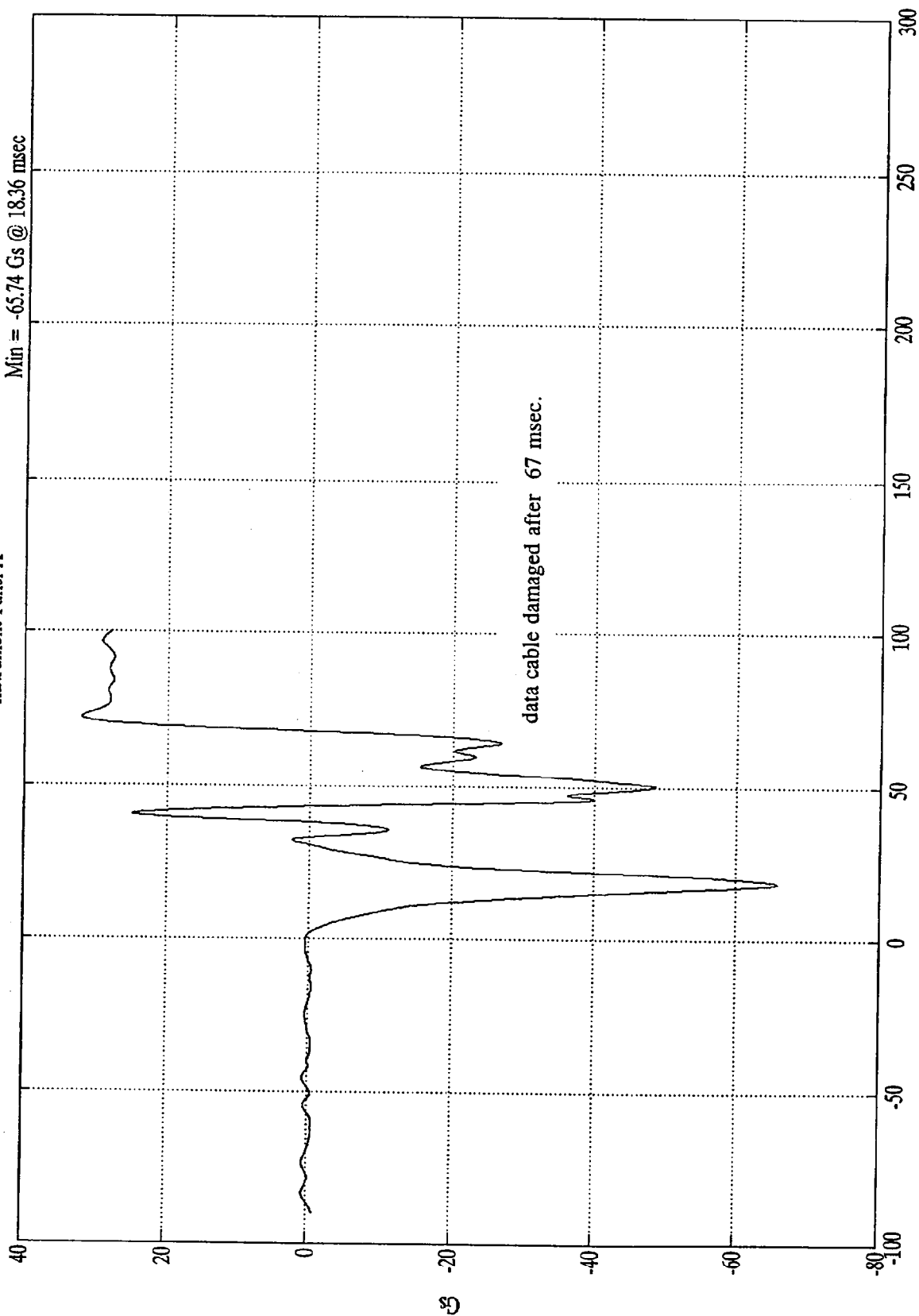


SAE Filter Class 180

Time (msec.)

Data has been truncated at 100ms

Instrument Panel X
Max = 32.04 Gs @ 72.12 msec
Min = -65.74 Gs @ 18.36 msec



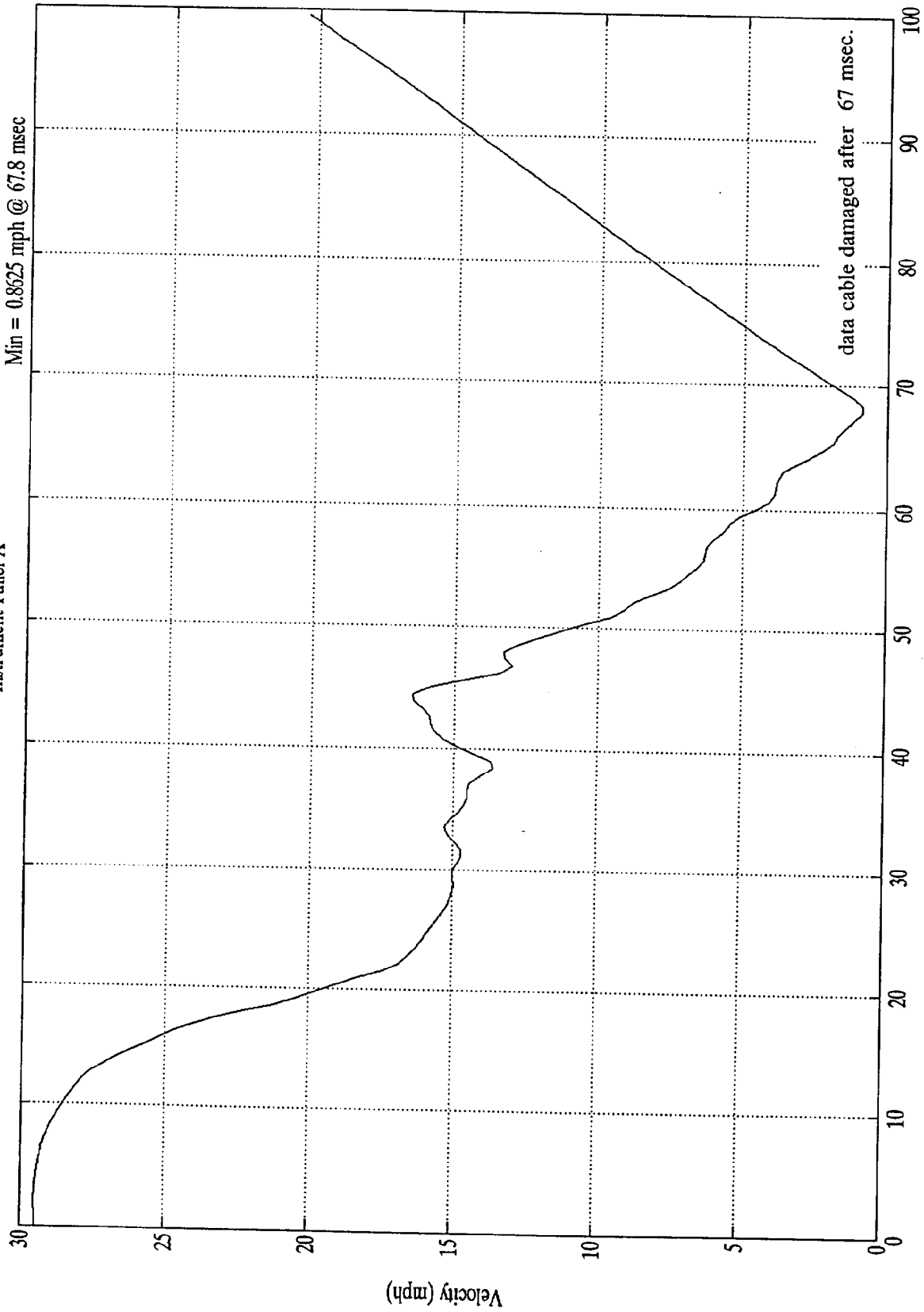
Time (msec)

Data has been truncated at 100ms

SAE Filter Class 60

Instrument Panel X

Max = 29.52 mph @ 1.8 msec
Min = 0.8625 mph @ 67.8 msec

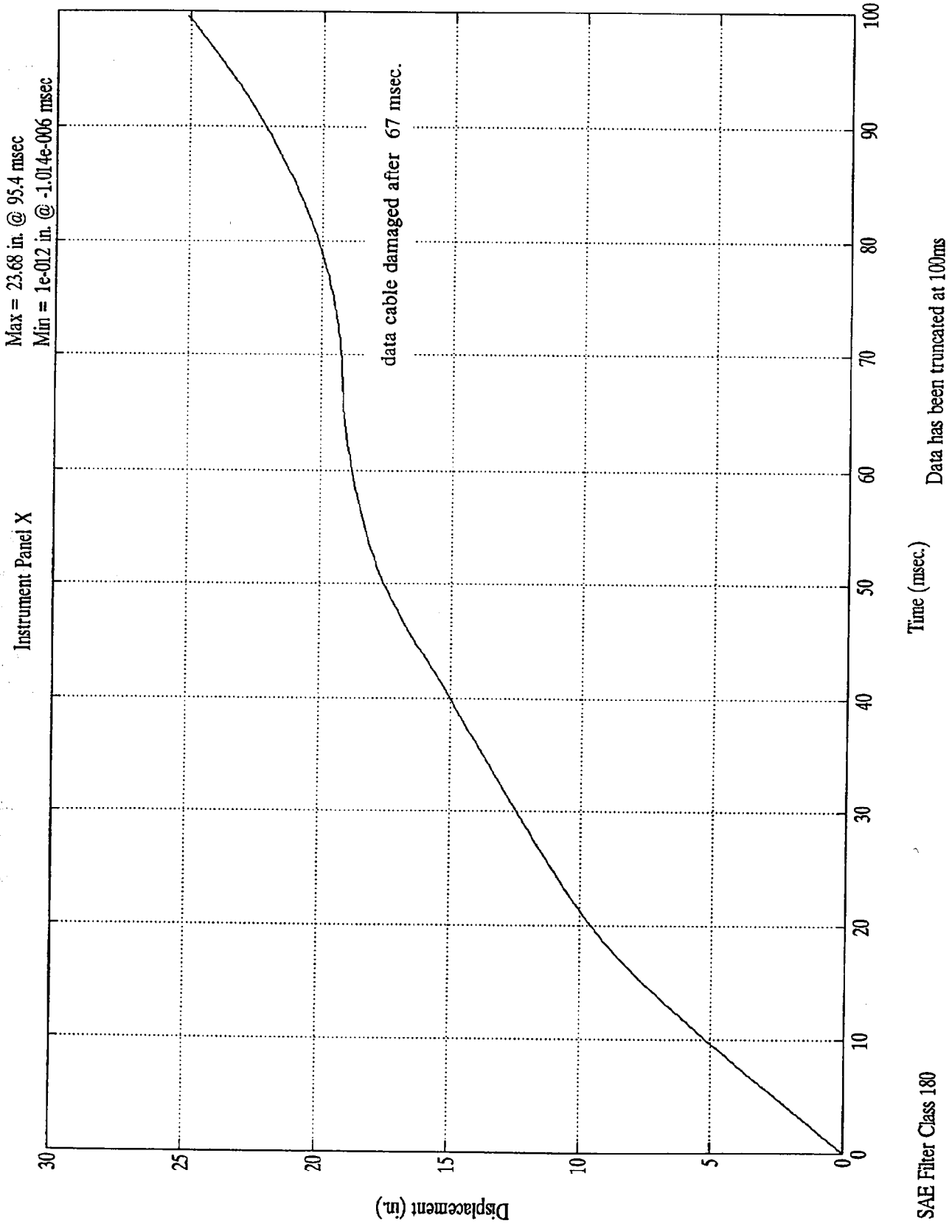


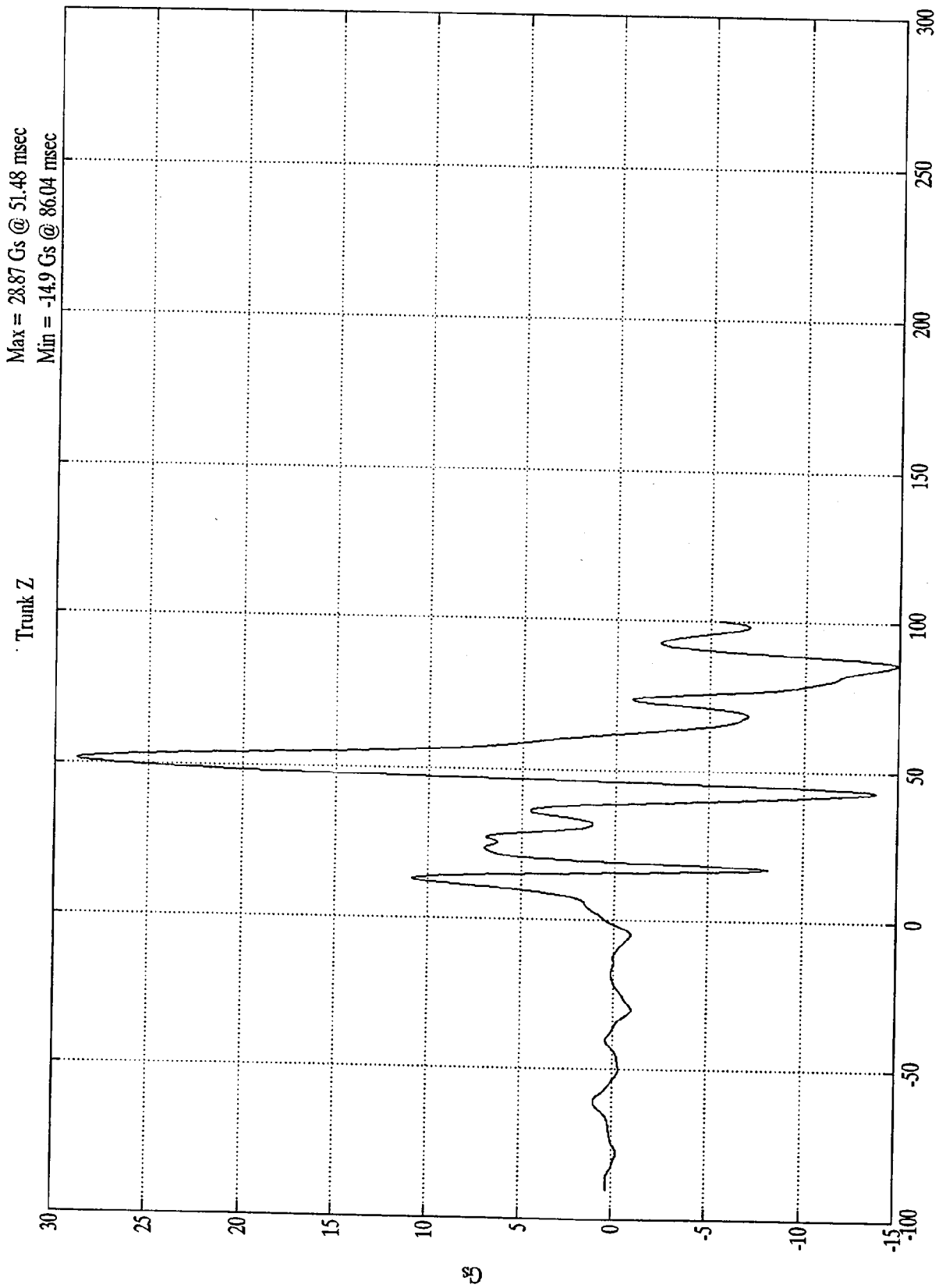
data cable damaged after 67 msec.

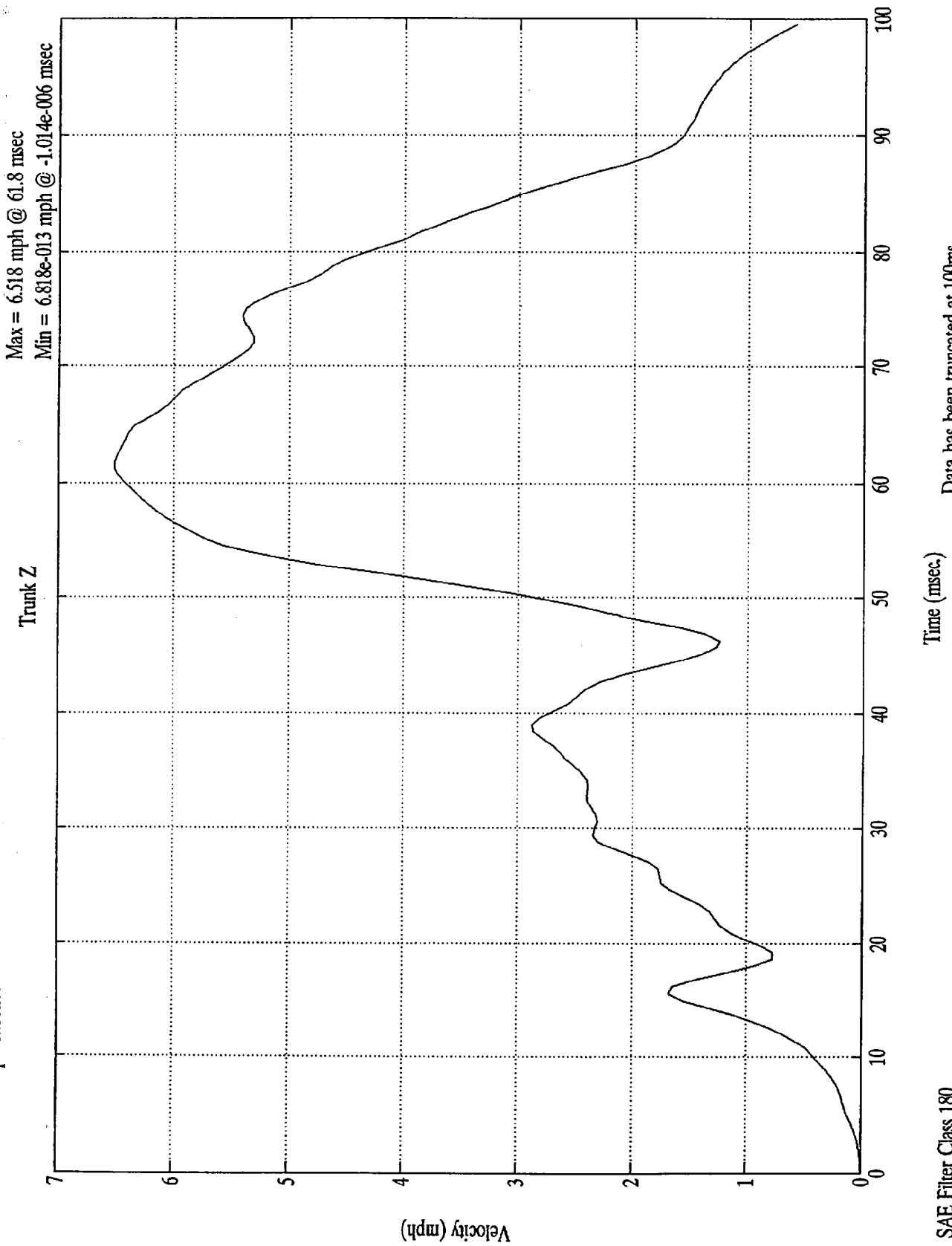
Time (msec.)

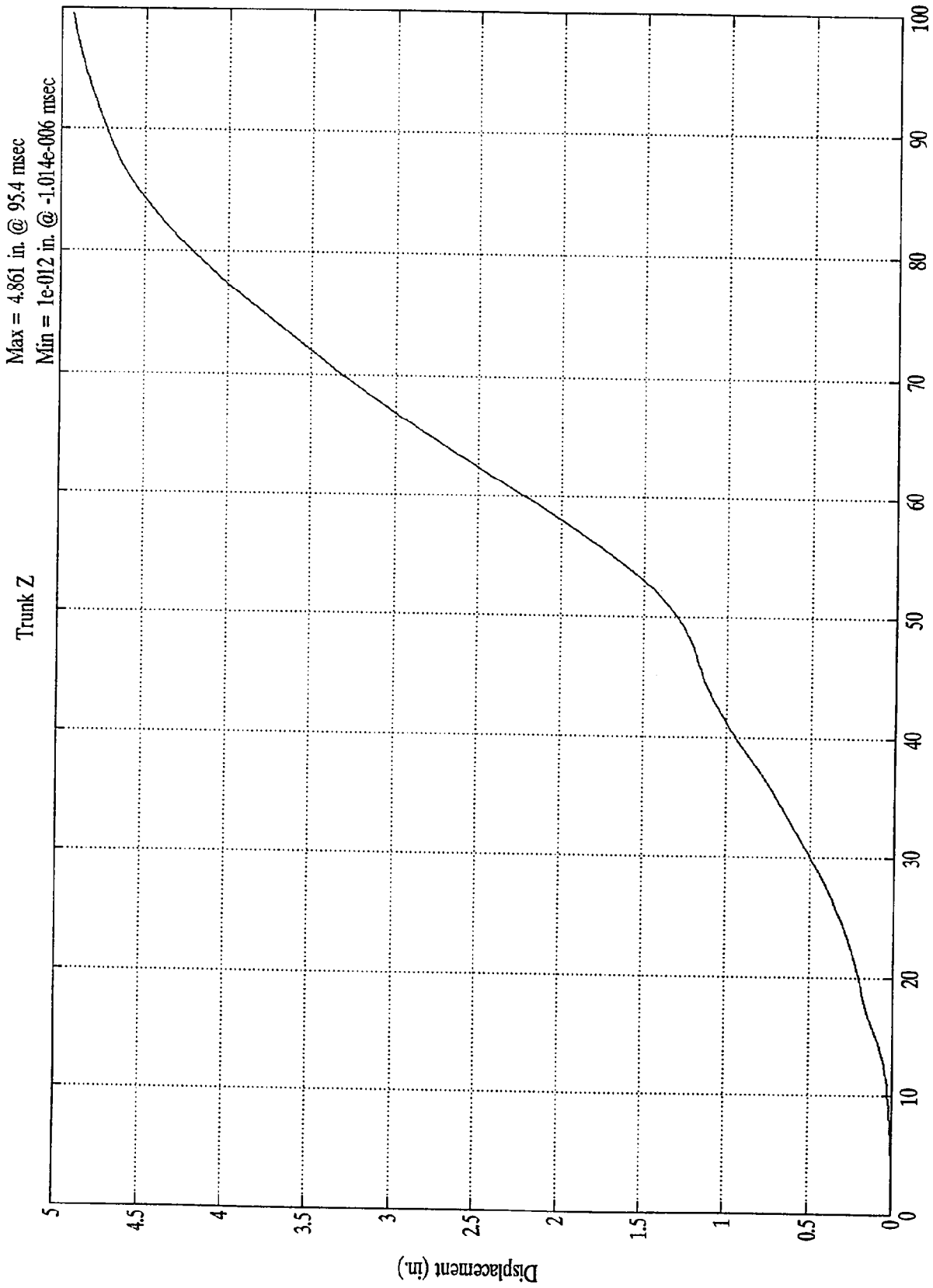
SAE Filter Class 180

Data has been truncated at 100ms









SAE Filter Class 180

Data has been truncated at 100ms

TEST NO. CT0303

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

FACILITY: TRACK
RUN #: 1573
SERIES: 1

TEST DATE: 21 Nov 1995
TEST TIME: 14:37:42
BOARD: a SOURCE: maxpg.m V1.0

TITLE: 208 Test #1 - 1996 Jeep Cherokee

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Head X	Gs	3.9	98.2	-66.1	58.9	1000.0
2	Pos. 1 Head Y	Gs	4.7	45.7	-9.5	98.4	1000.0
3	Pos. 1 Head Z	Gs	33.2	48.0	-18.3	96.8	1000.0
4	Pos. 1 Left Femur	lbs	103.6	33.8	-654.1	49.9	600.0
5	Pos. 1 Chest X	Gs	242.1	94.7	-140.8	98.8	180.0
6	Pos. 1 Chest Y	Gs	2.6	98.8	-6.3	69.8	180.0
7	Pos. 1 Chest Z	Gs	18.1	44.5	-54.8	99.8	180.0
8	Pos. 1 Right Femur	lbs	189.4	96.4	-807.4	41.6	600.0
9	Pos. 2 Head X	Gs	0.2	-68.4	-35.0	98.4	1000.0
10	Pos. 2 Head Y	Gs	8.8	98.0	-3.3	57.6	1000.0
11	Pos. 2 Head Z	Gs	44.6	63.0	-0.6	-9.5	1000.0
12	Pos. 2 Left Femur	lbs	222.3	99.7	-1096.0	40.7	600.0
13	Pos. 2 Chest X	Gs	0.1	6.5	-45.7	51.8	180.0
14	Pos. 2 Chest Y	Gs	4.9	42.4	-8.0	73.1	180.0
15	Pos. 2 Chest Z	Gs	20.0	39.4	-21.9	94.4	180.0
16	Pos. 2 Right Femur	lbs	83.7	32.5	-654.1	42.8	600.0
17	Pos. 1 Head Resultant	Gs	66.7	58.9	0.0	-79.1	1000.0
18	Pos. 1 Chest Resultant	Gs	242.3	94.7	0.0	-75.1	180.0
19	Pos. 2 Head Resultant	Gs	48.8	63.0	0.1	-77.3	1000.0
20	Pos. 2 Chest Resultant	Gs	48.5	51.8	0.0	-74.0	180.0

36 ms Fixed Duration HIC SUMMARY: Pos. 1 Head Resultant
hic: 385.22
t1 = 45.600 msec
t2 = 81.480 msec
Average G's Over Hic Duration = 40.96

36 ms Fixed Duration HIC SUMMARY: Pos. 2 Head Resultant
hic: 298.51
t1 = 42.960 msec
t2 = 78.840 msec
Average G's Over Hic Duration = 36.99

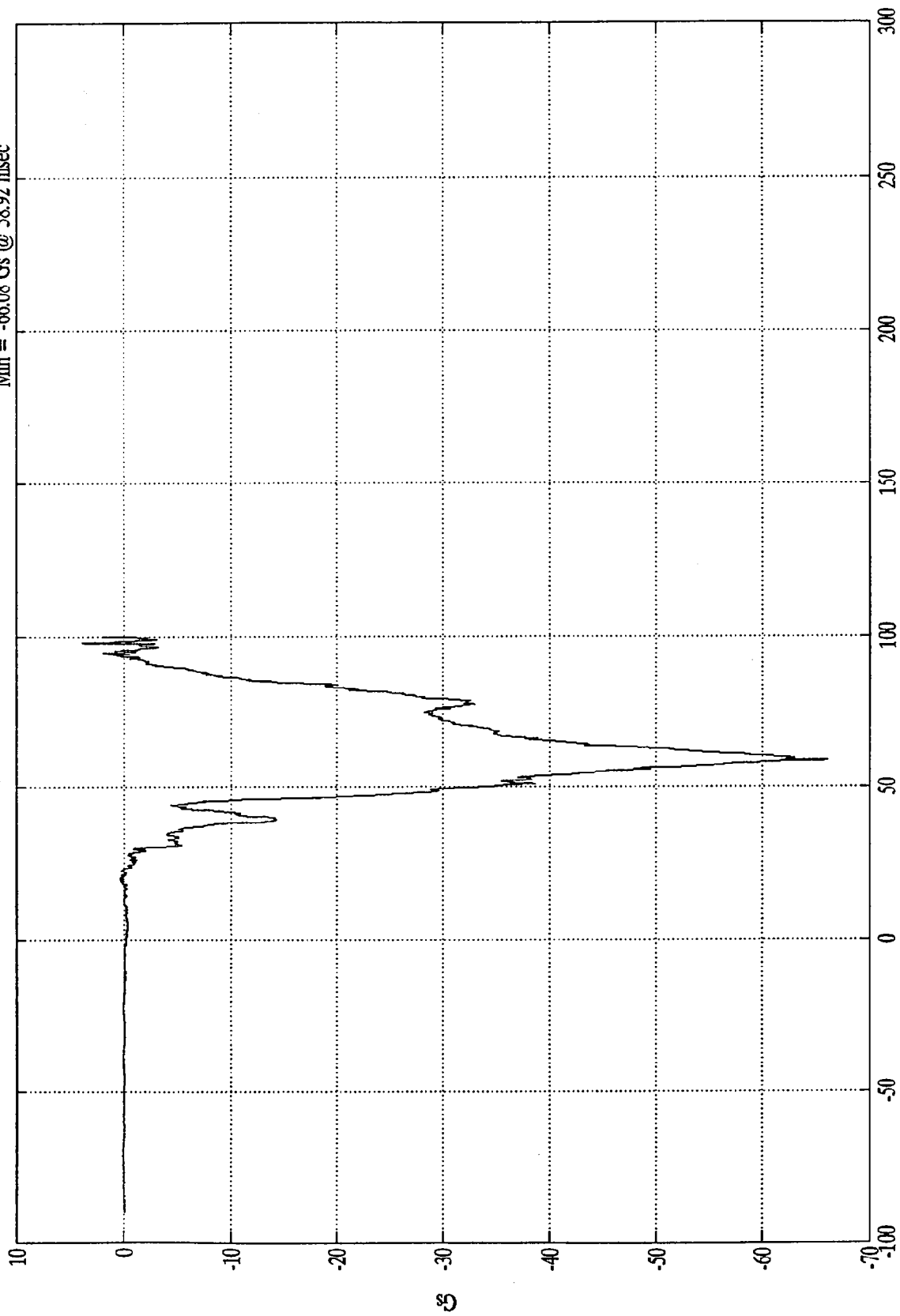
CLIP SUMMARY: Pos. 1 Chest Resultant- Data truncated at 90ms
Peak Resultant (3 ms CLIPPED DURATION) = 47.388 G's
Tstart = 51.7200 ms
Tend = 54.8400 ms
CSI = 374.273

CLIP SUMMARY: Pos. 2 Chest Resultant
Peak Resultant (3 ms CLIPPED DURATION) = 47.628 G's
Tstart = 49.9200 ms
Tend = 53.0400 ms
CSI = 390.091

FMVSS 208 - 1996 Jeep Cherokee

Pos. 1 Head X

Max = 1.964 Gs @ 94.68 msec
Min = -66.08 Gs @ 58.92 msec



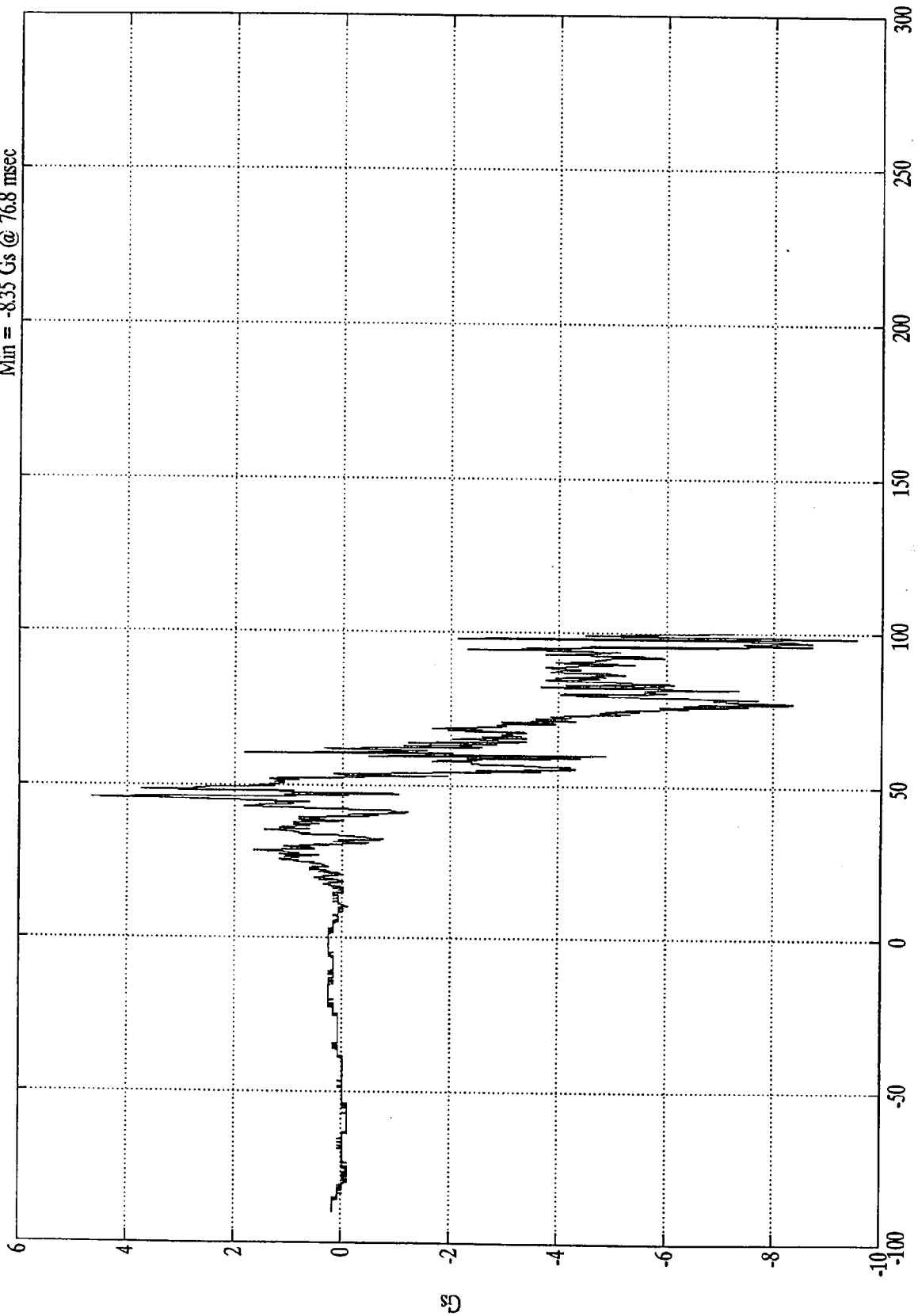
Time (msec)

SAE Filter Class 1000

8251-3

Pos. 1 Head Y

Max = 4.652 Gs @ 45.72 msec
Min = -8.35 Gs @ 76.8 msec



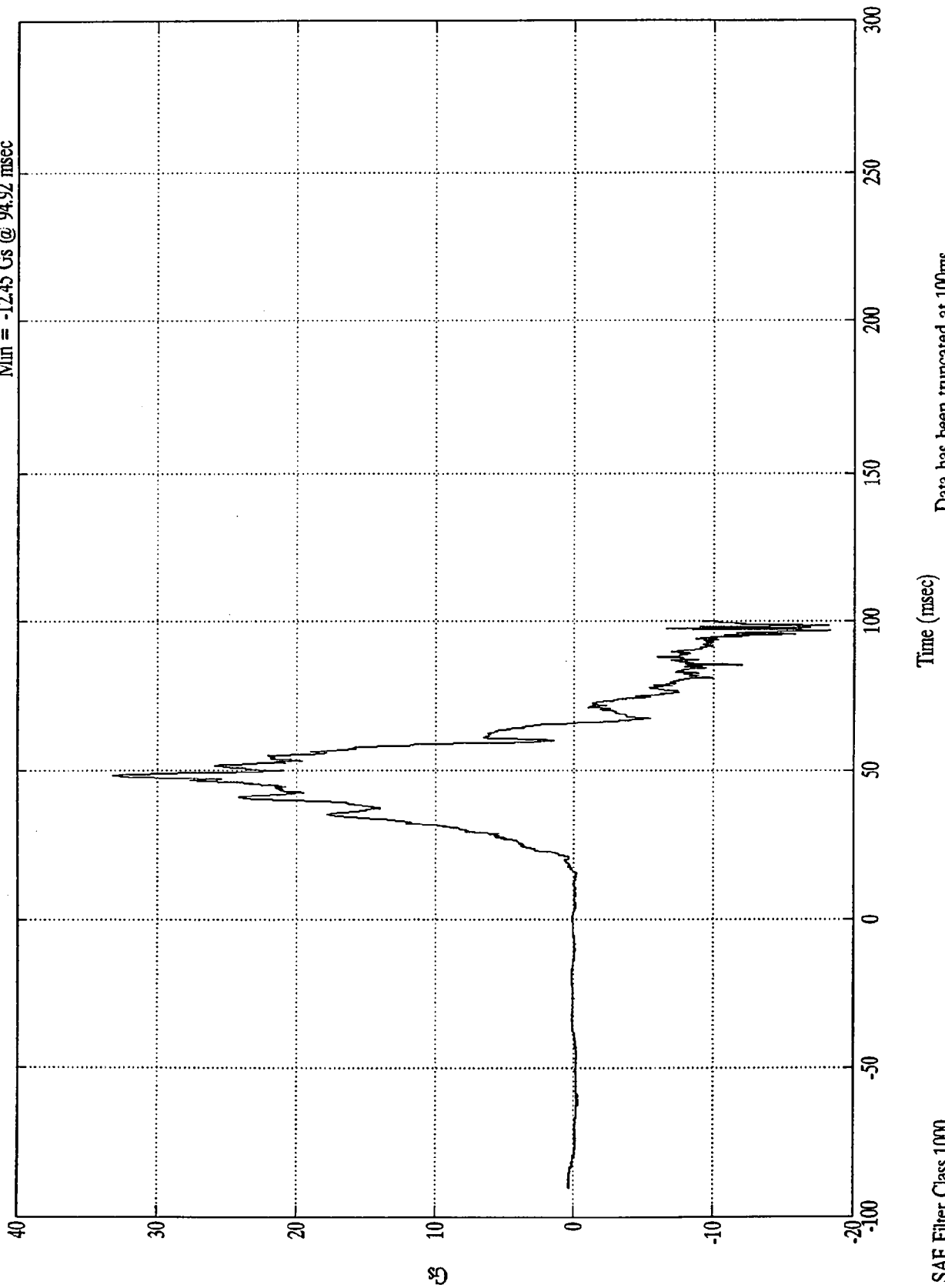
Time (msec)

Data has been truncated at 100ms

SAE Filter Class 1000

Pos. 1 Head Z

Max = 33.23 Gs @ 48 msec
Min = -12.45 Gs @ 94.92 msec

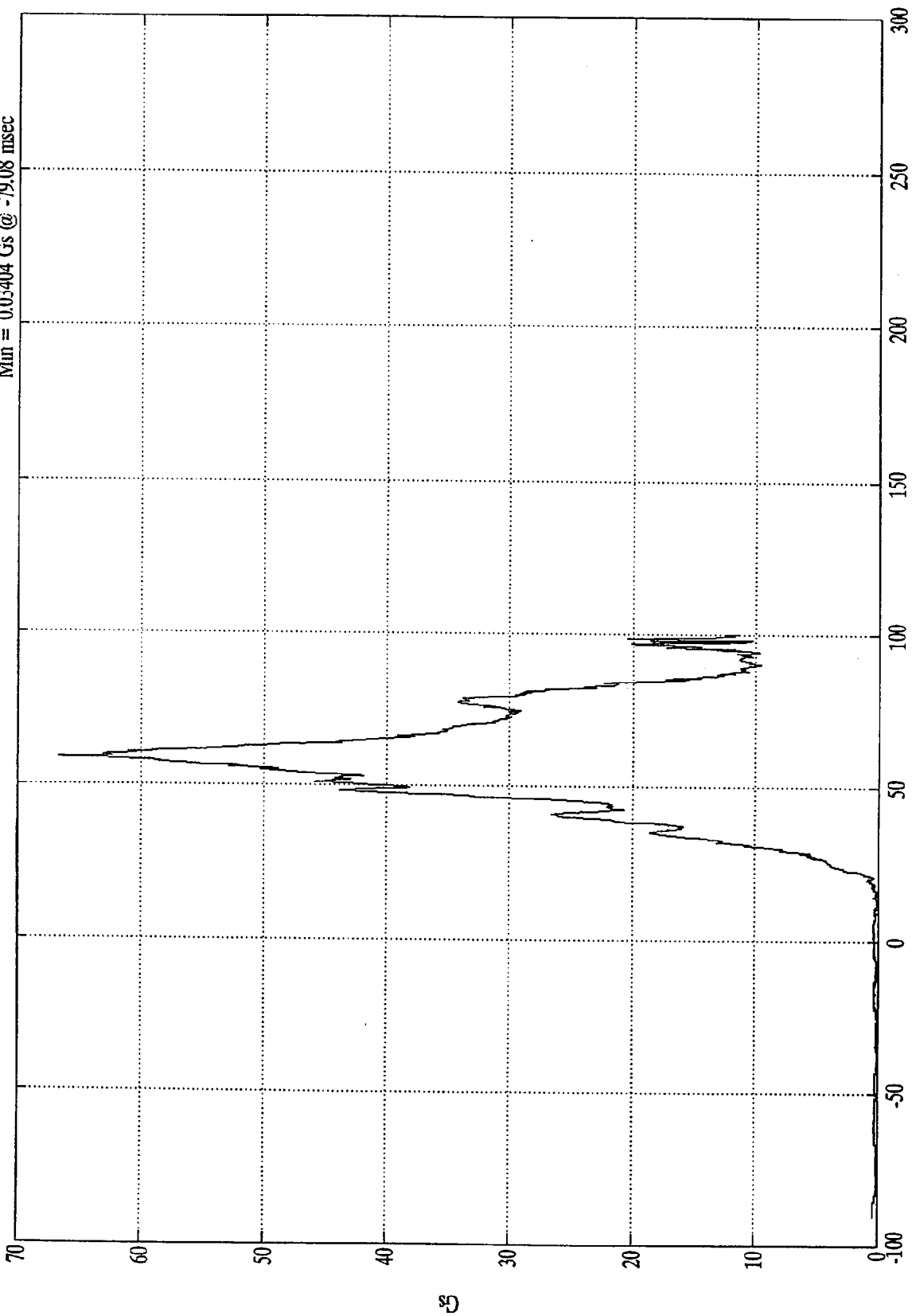


Data has been truncated at 100ms

SAE Filter Class 1000

Max = 66.72 Gs @ 58.92 msec
Min = 0.03404 Gs @ -79.08 msec

Pos. 1 Head Resultant

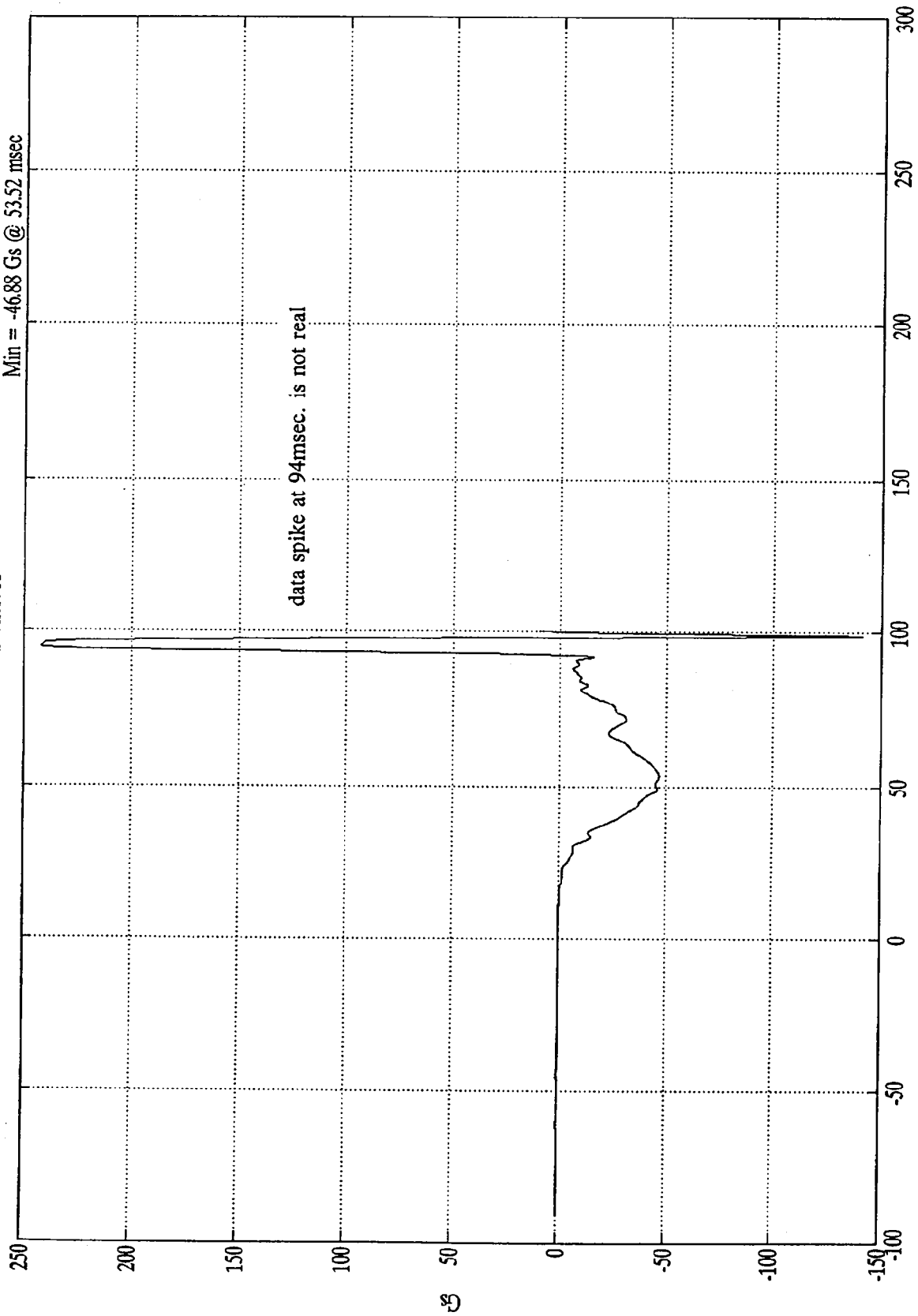


Data has been truncated at 100ms

SAE Filter Class 1000

Pos. 1 Chest X

Max = 242.1 Gs @ 94.68 msec
Min = -46.88 Gs @ 53.52 msec



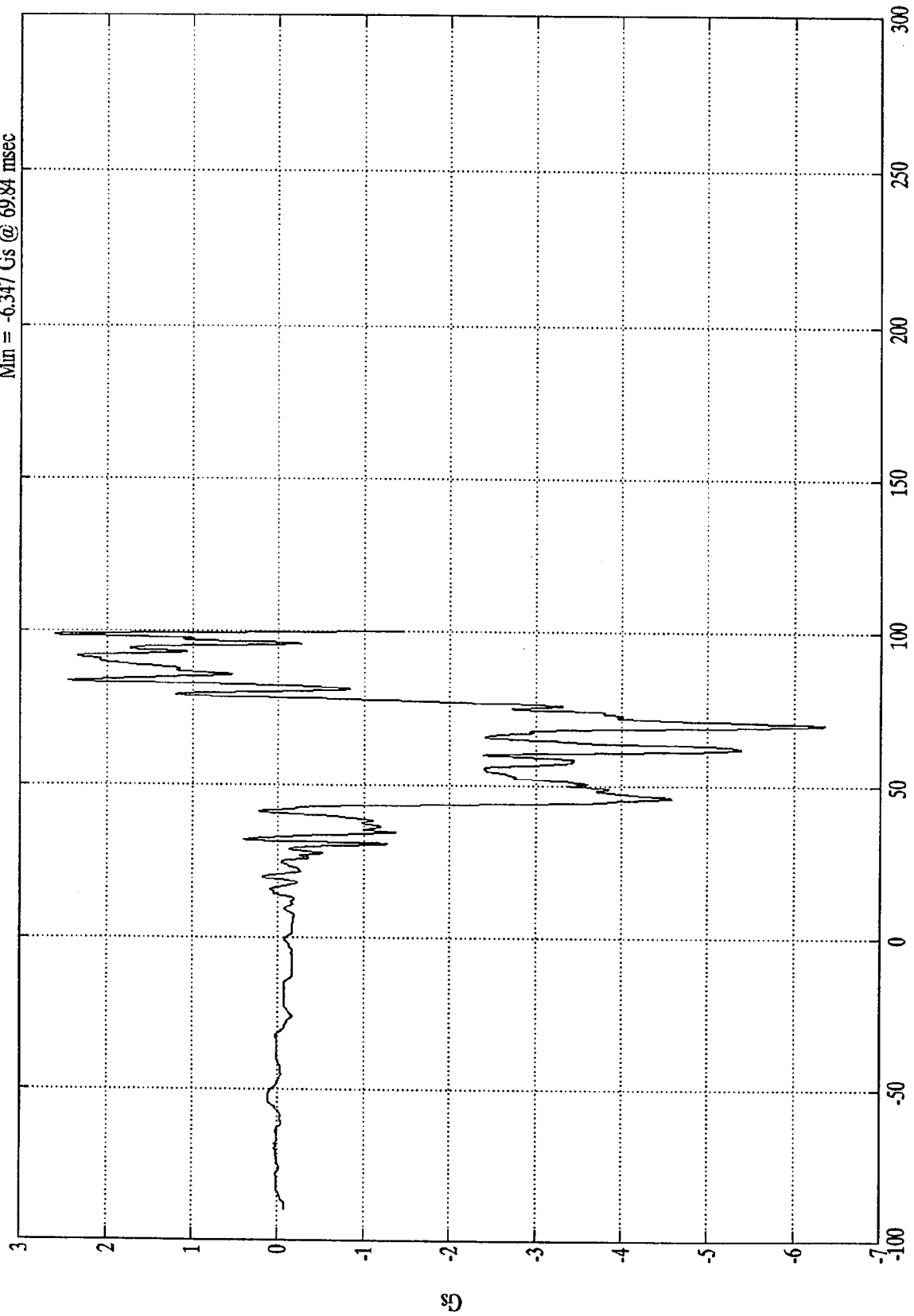
Time (msec)

SAE Filter Class 180

Data has been truncated at 100ms

Pos. 1 Chest Y

Max = 2.453 Gs @ 83.76 msec
Min = -6.347 Gs @ 69.84 msec



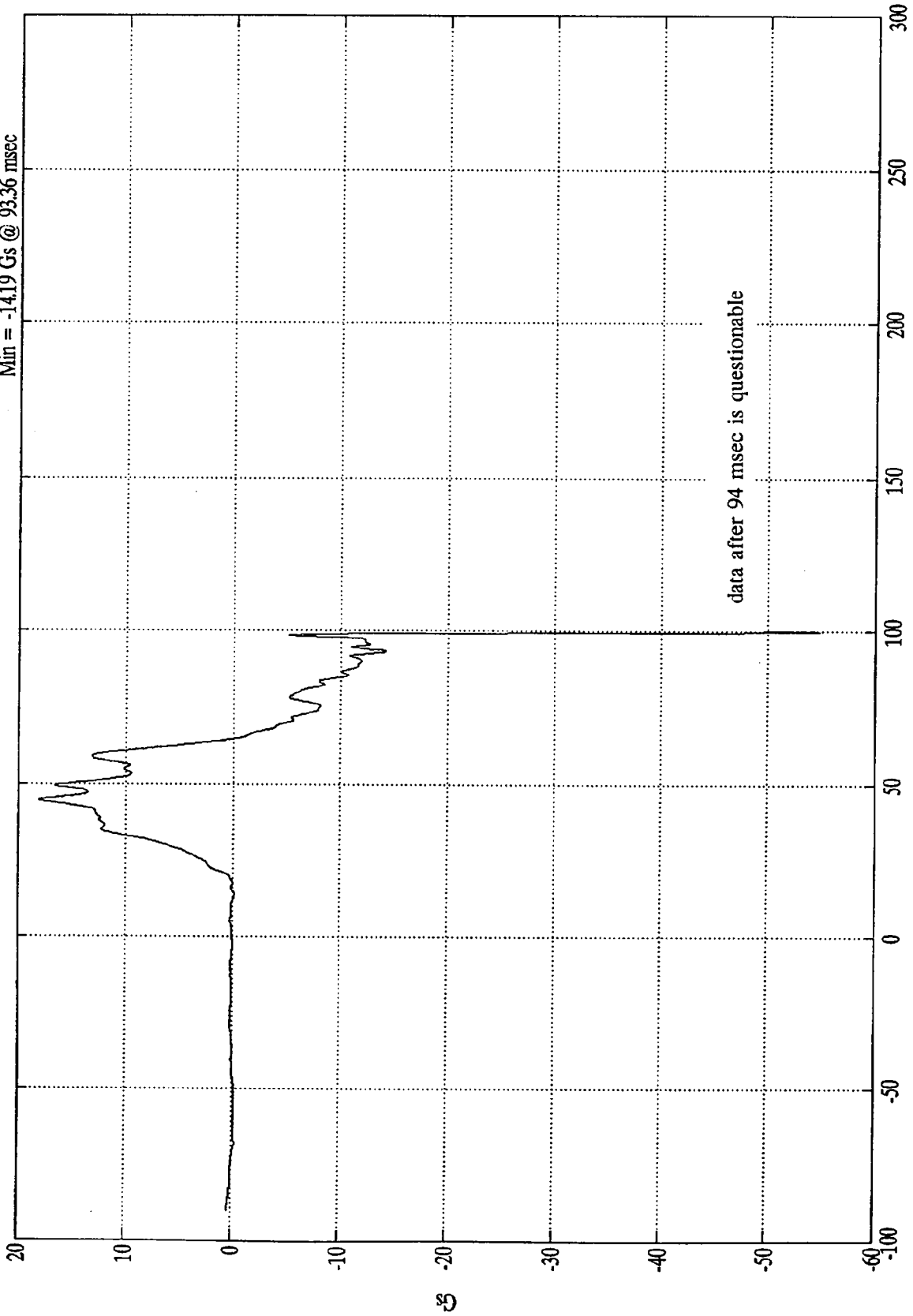
Time (msec)

SAE Filter Class 180

Data has been truncated at 100ms

Pos. 1 Chest Z

Max = 18.07 Gs @ 44.52 msec
Min = -14.19 Gs @ 93.36 msec

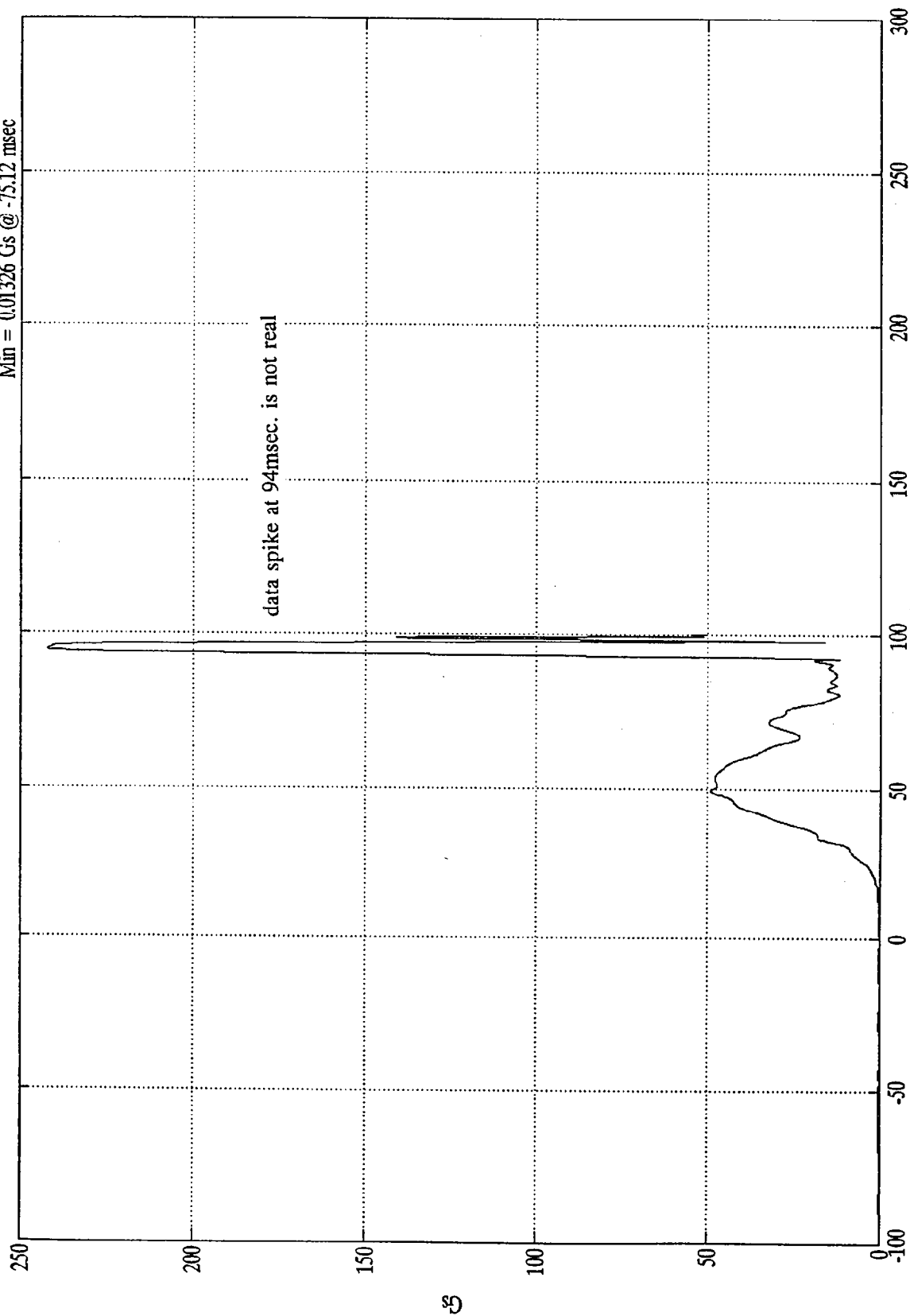


Data has been truncated at 100ms

SAE Filter Class 180

Max = 242.3 Gs @ 94.68 msec
Min = 0.01326 Gs @ -75.12 msec

Pos. 1 Chest Resultant

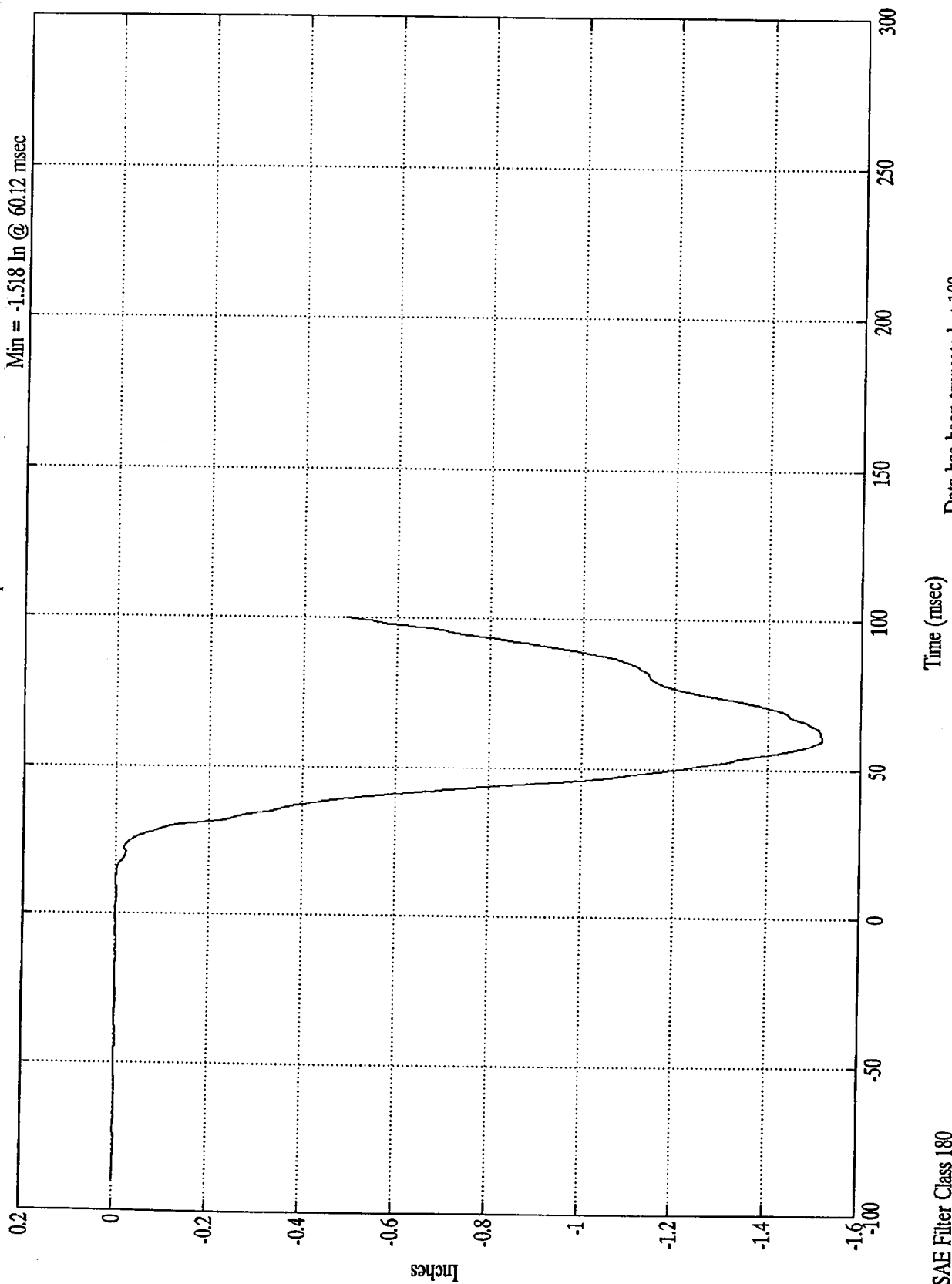


Data has been truncated at 100ms

SAE Filter Class 180

Pos. 1 Chest displacement

Max = 0.001378 In @ -21.72 msec
Min = -1.518 In @ 60.12 msec

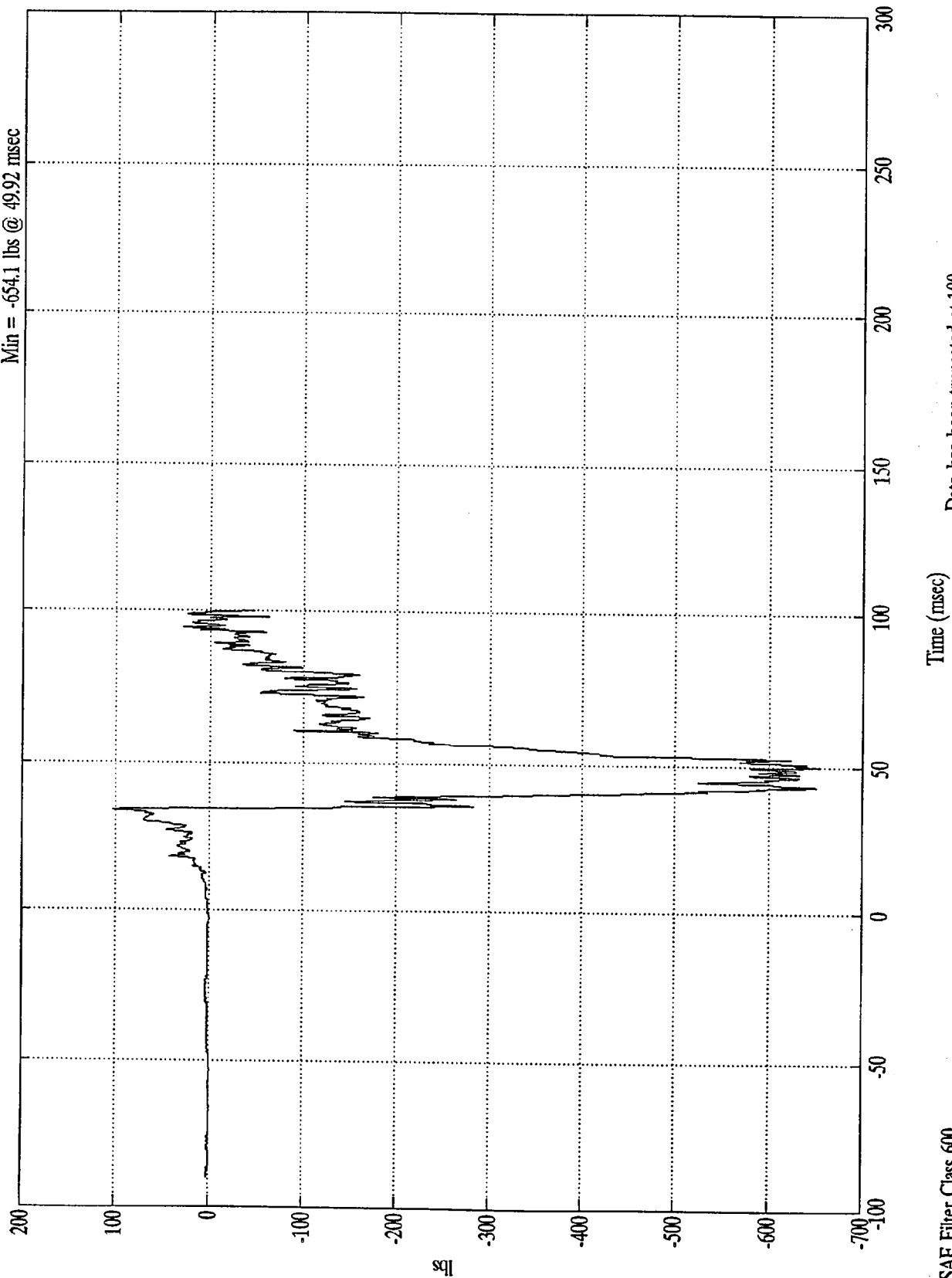


Data has been truncated at 100ms

SAE Filter Class 180

Max = 103.6 lbs @ 33.84 msec
Min = -654.1 lbs @ 49.92 msec

Pos. 1 Left Femur



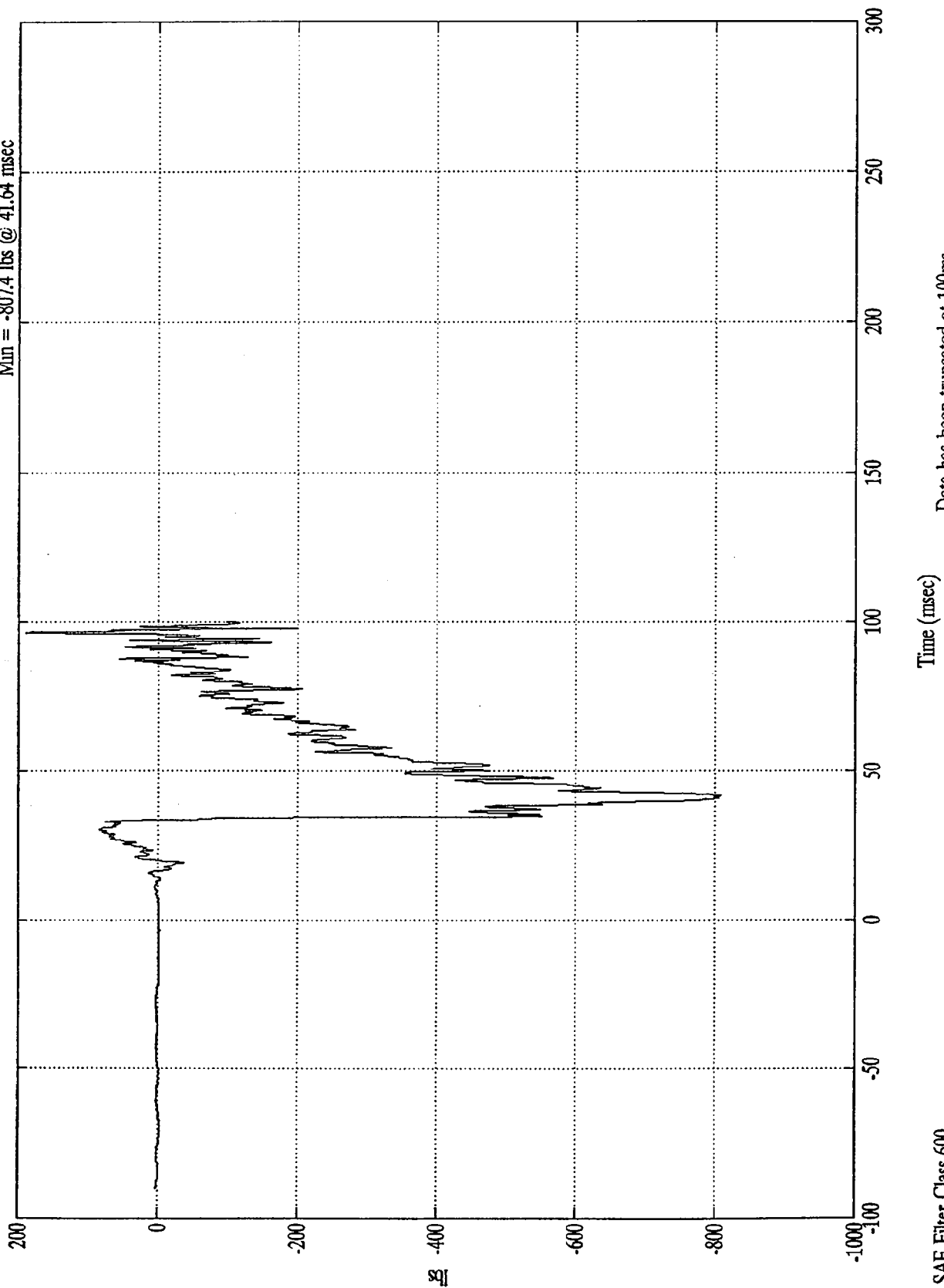
Data has been truncated at 100ms

SAE Filter Class 600

FMVSS 208 - 1996 Jeep Cherokee

Pos. 1 Right Femur

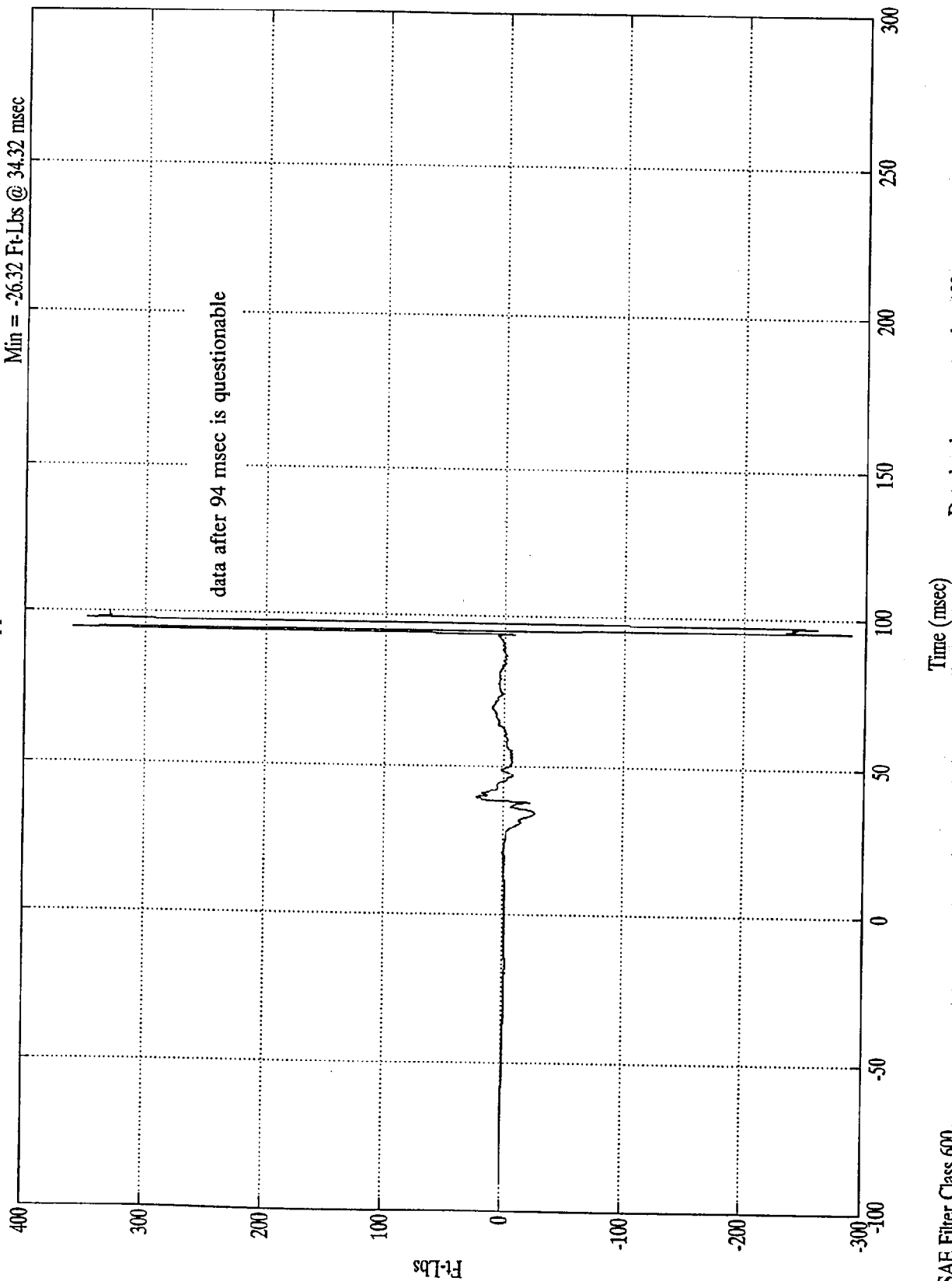
Max = 84.31 lbs @ 30.36 msec
Min = -807.4 lbs @ 41.64 msec



SAE Filter Class 600

Pl Lt Upper Tibia Mx

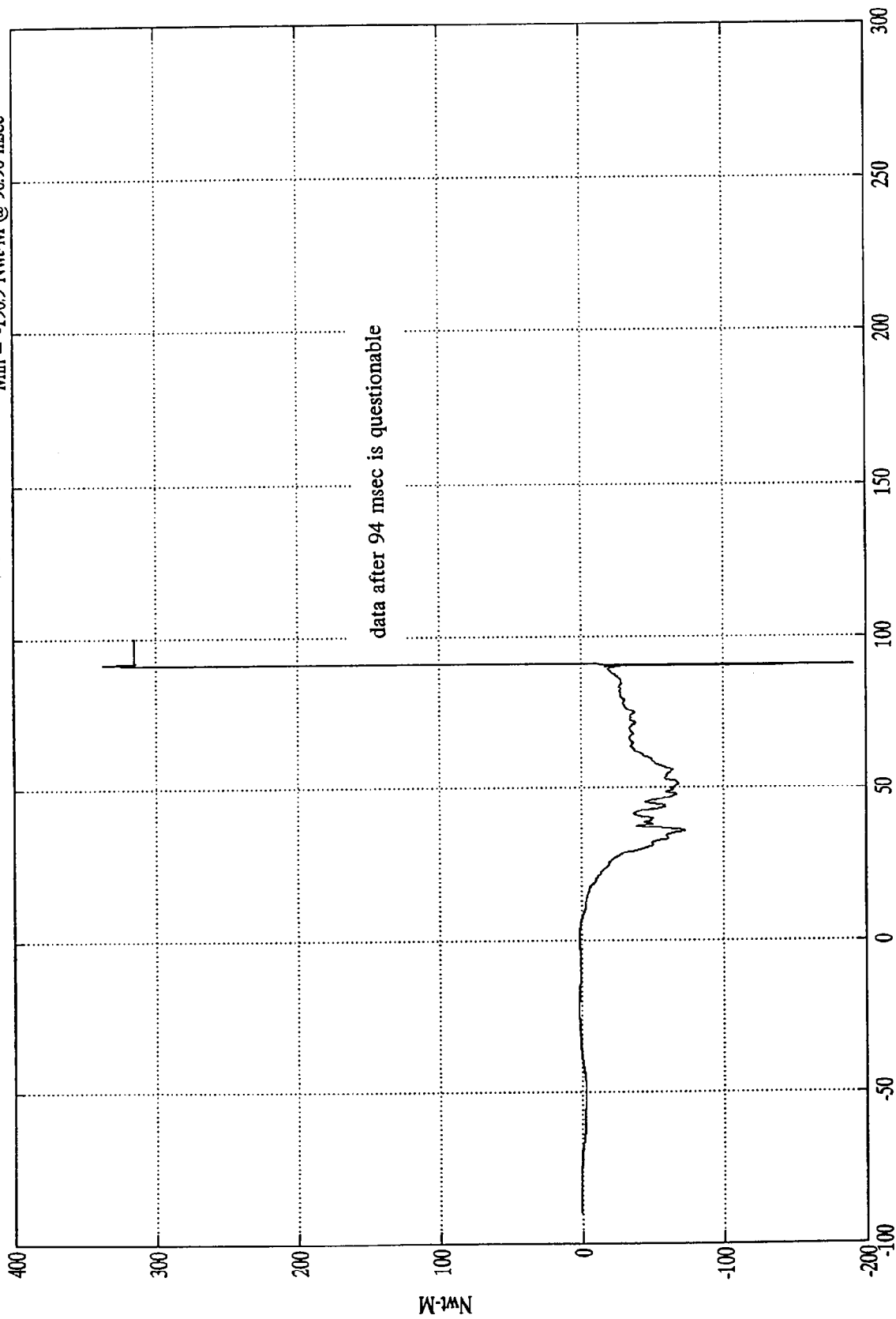
Max = 360.1 Ft-Lbs @ 94.8 msec
Min = -26.32 Ft-Lbs @ 34.32 msec



208 Test - 1996 Jeep Cherokee

P1 Lt Upper Tibia My

Max = 337.5 Nwt-M @ 91.56 msec
Min = -190.9 Nwt-M @ 90.96 msec

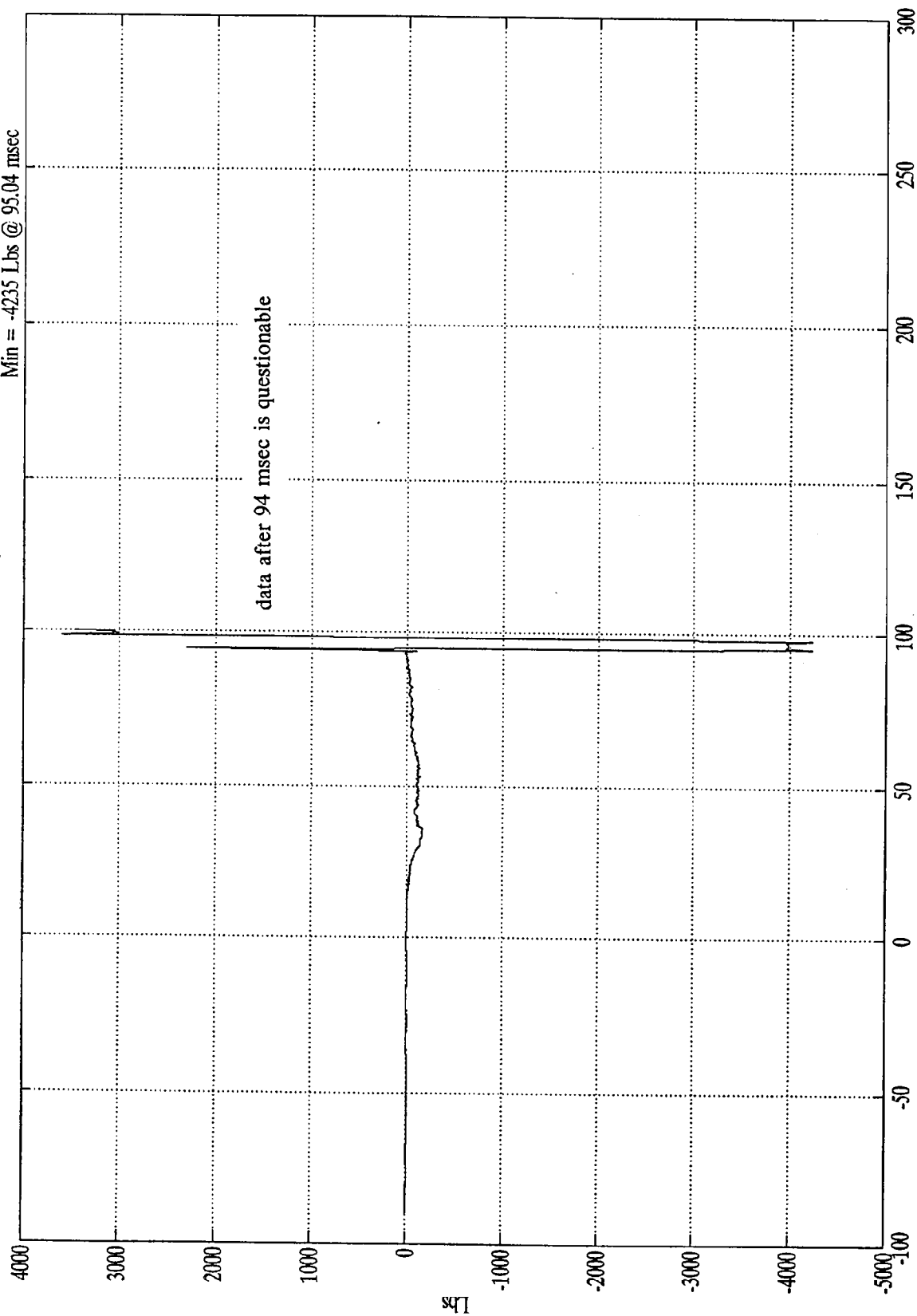


Data has been truncated at 100ms

SAE Filter Class 600

P1 Lt Lower Tibia Fy

Max = 2302 Lbs @ 94.44 msec
Min = -4235 Lbs @ 95.04 msec



data after 94 msec is questionable

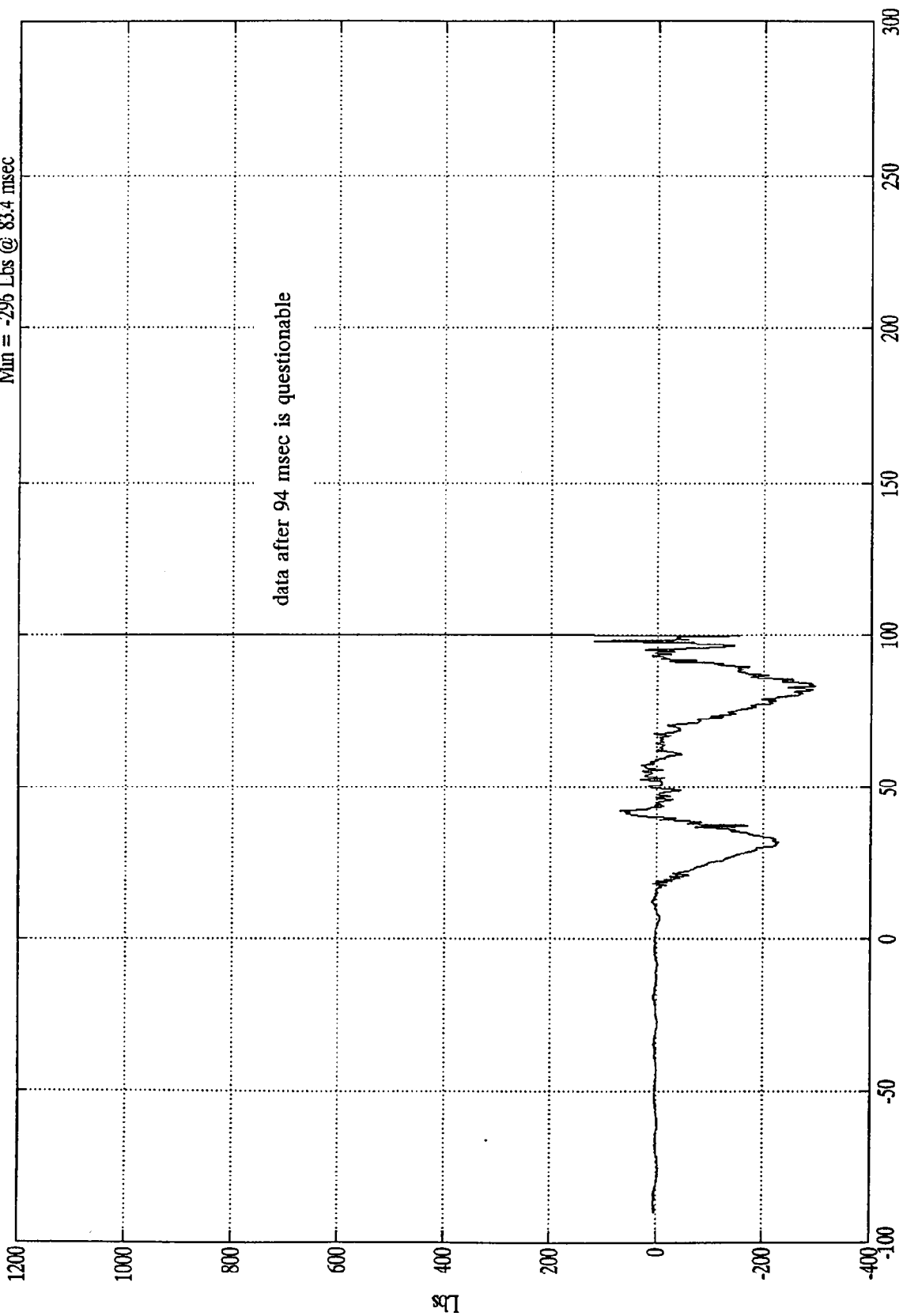
Time (msec)

Data has been truncated at 100ms

SAE Filter Class 600

P1 Lt Lower Tibia Fz

Max = 69.73 Lbs @ 42.12 msec
Min = -295 Lbs @ 83.4 msec



data after 94 msec is questionable

Time (msec)

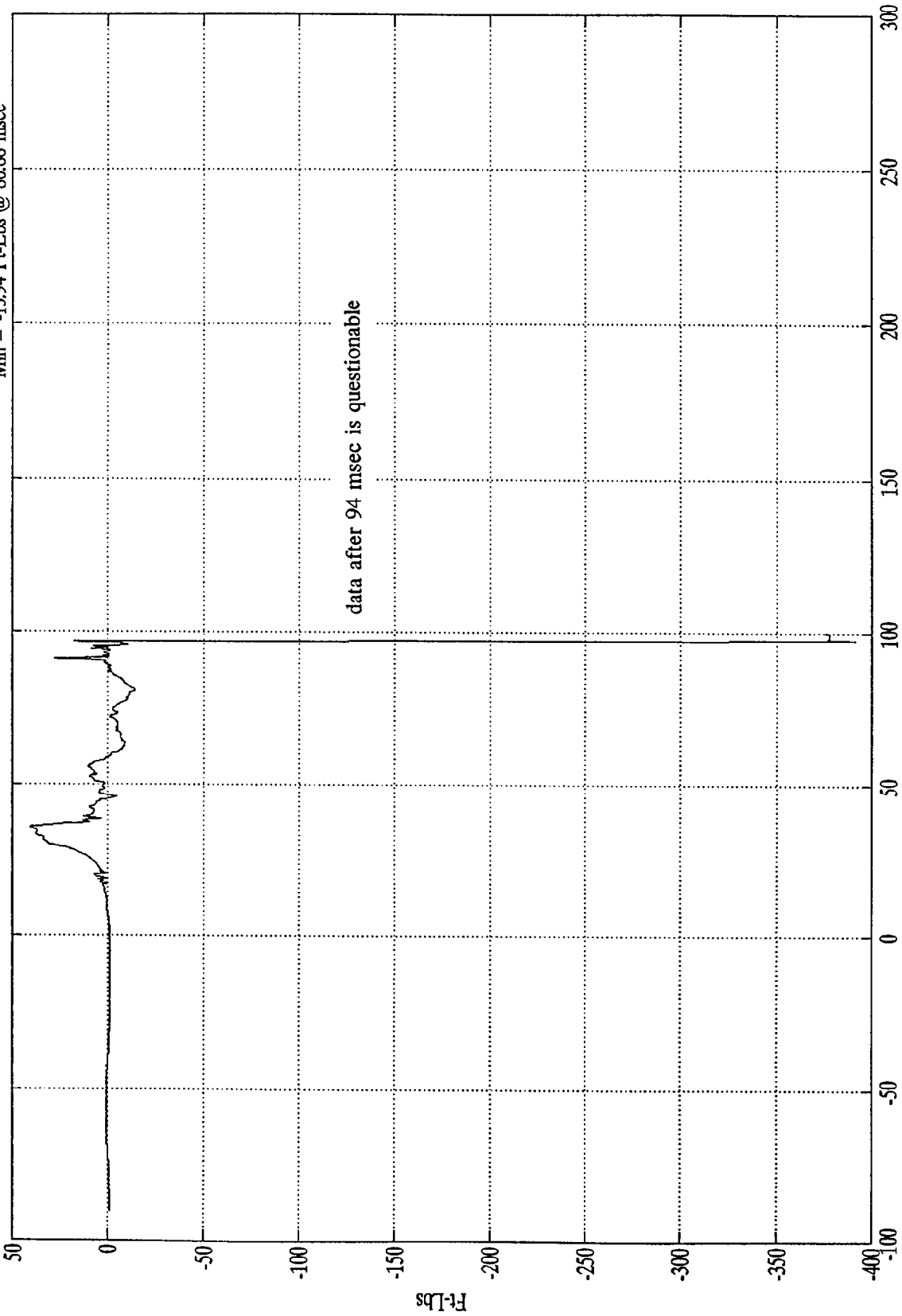
Data has been truncated at 100ms

SAE Filter Class 600

208 Test - 1996 Jeep Cherokee

Max = 40.63 Ft-Lbs @ 35.88 msec
Min = -13.94 Ft-Lbs @ 80.88 msec

P1 Lt Lower Tibia Mx



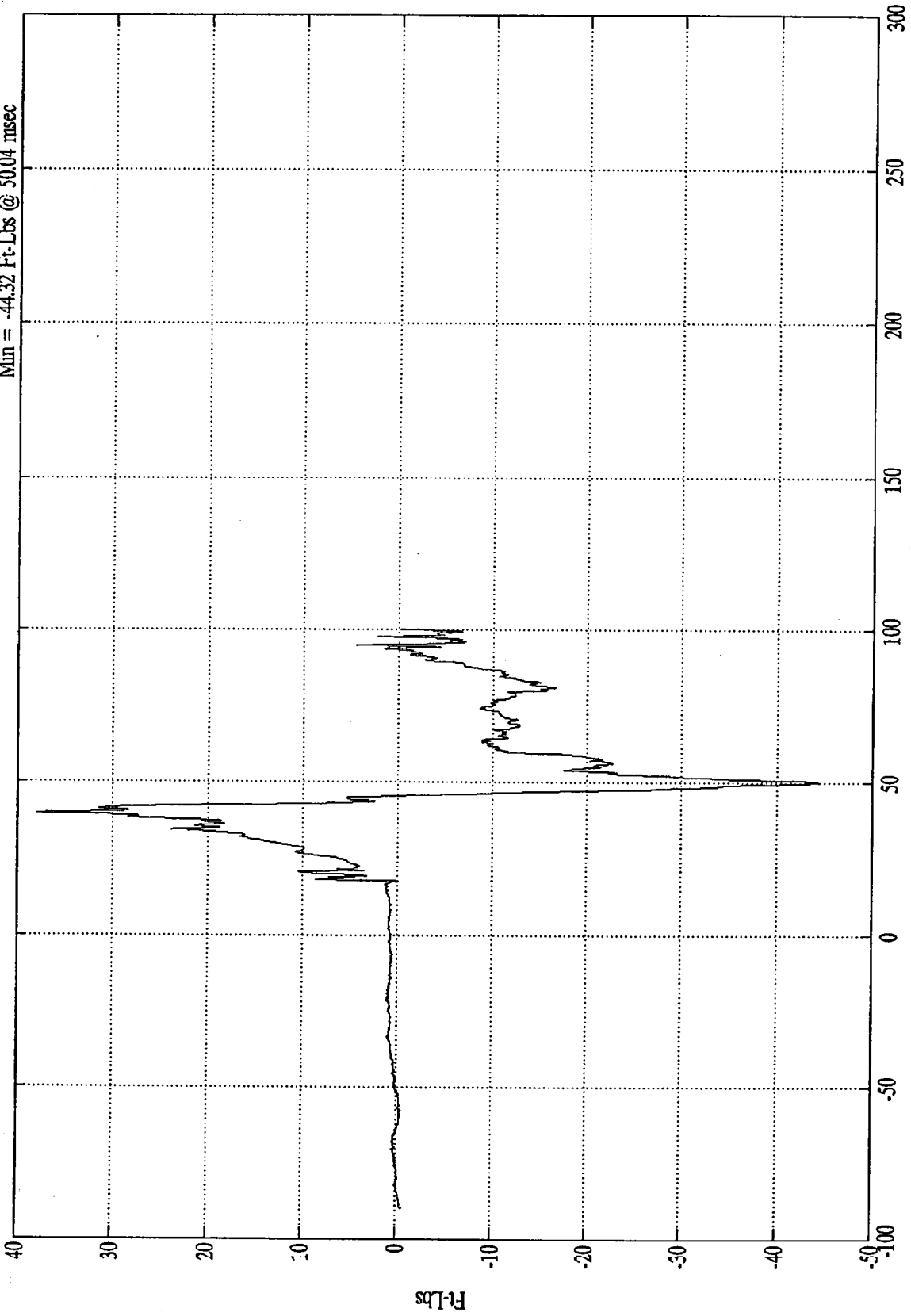
data after 94 msec is questionable

Data has been truncated at 100ms

SAE Filter Class 600

P1 Rt Upper Tibia Mx

Max = 38.04 Ft-Lbs @ 39.48 msec
Min = -44.32 Ft-Lbs @ 50.04 msec

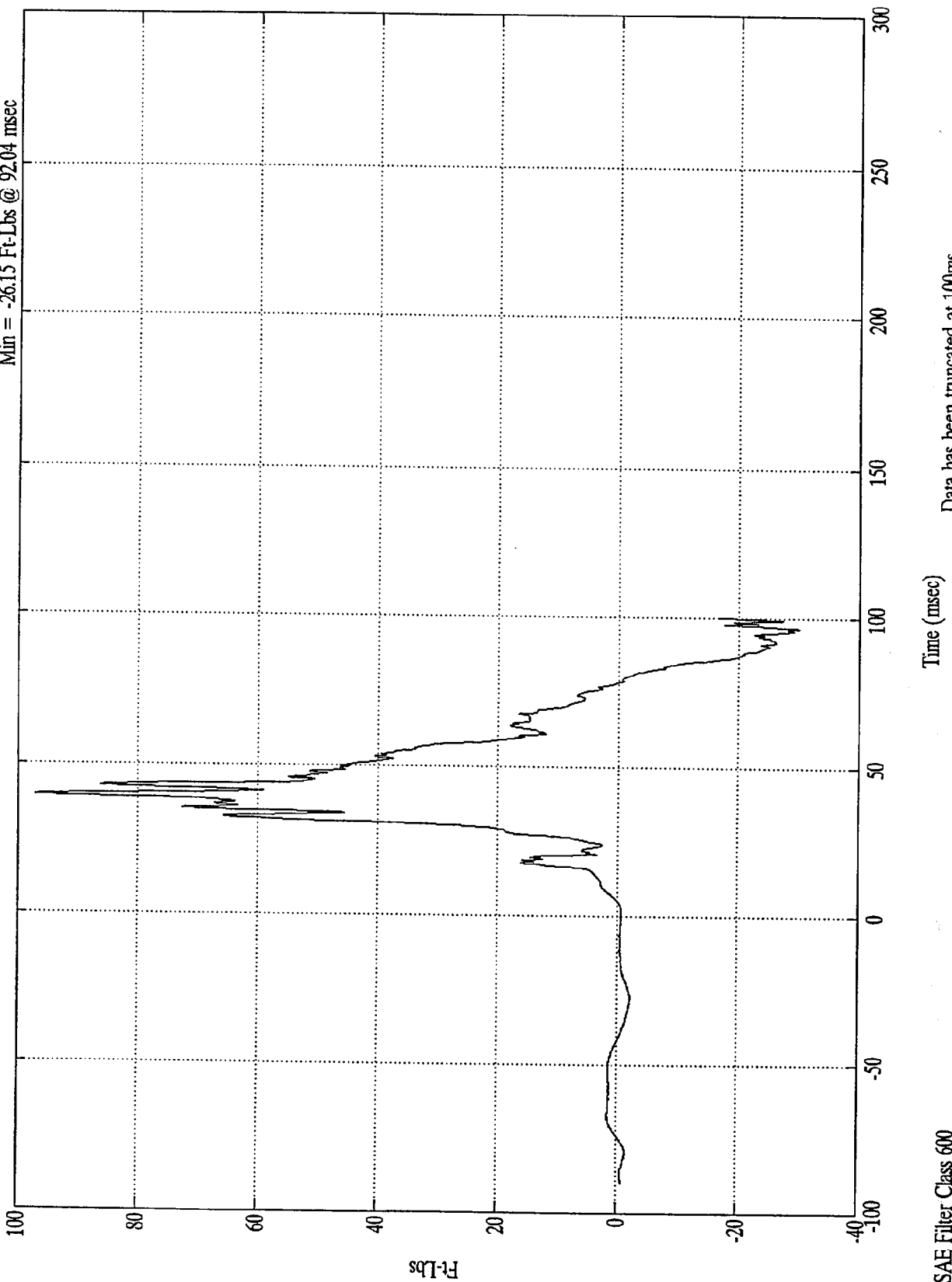


Data has been truncated at 100ms

SAE Filter Class 600

P1 Rt Upper Tibia My

Max = 97.15 Ft-Lbs @ 39.36 msec
Min = -26.15 Ft-Lbs @ 92.04 msec



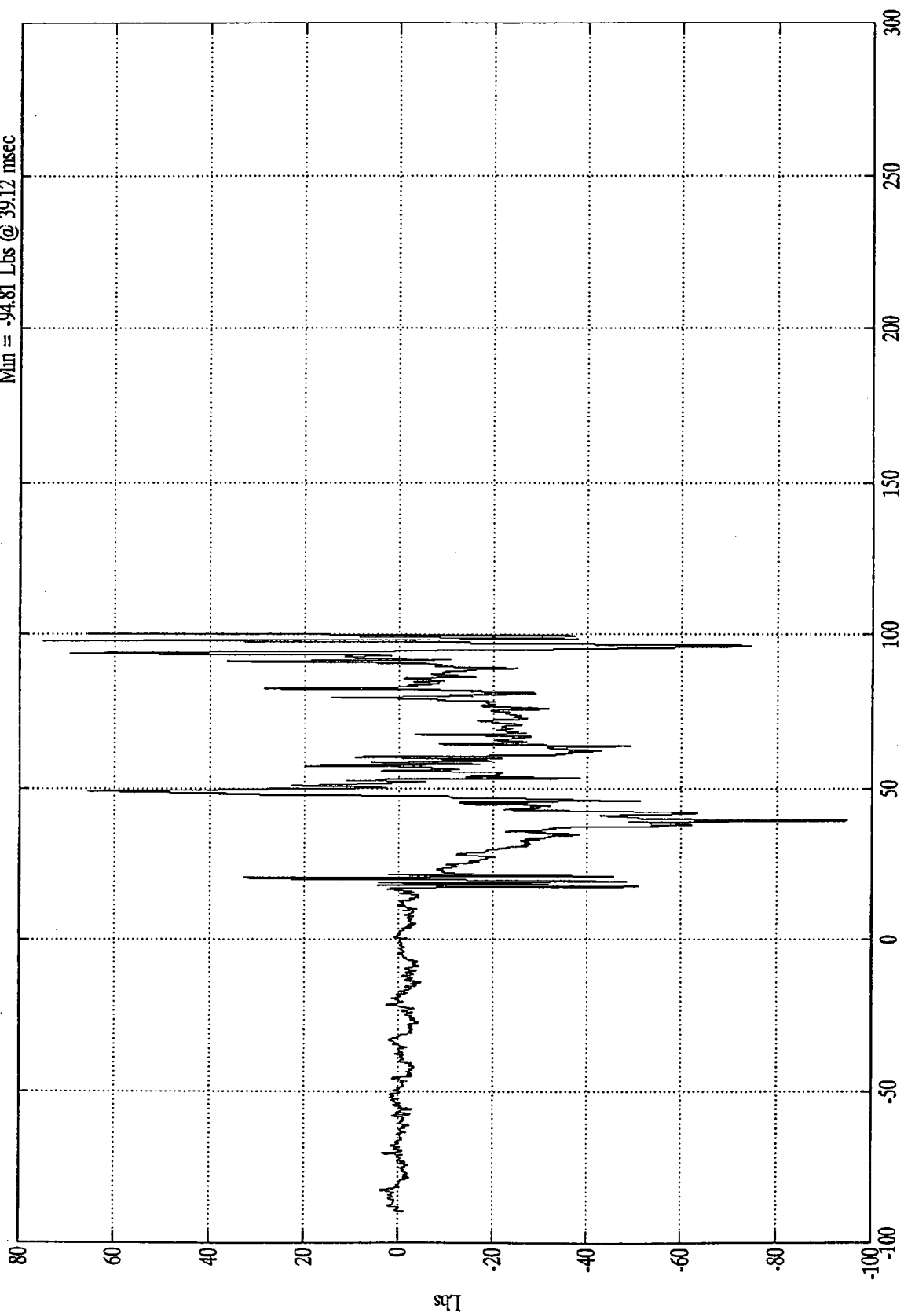
SAE Filter Class 600

Time (msec)

Data has been truncated at 100ms

Pt Rt Lower Tibia Fy

Max = 69.64 Lbs @ 93.84 msec
Min = -94.81 Lbs @ 39.12 msec



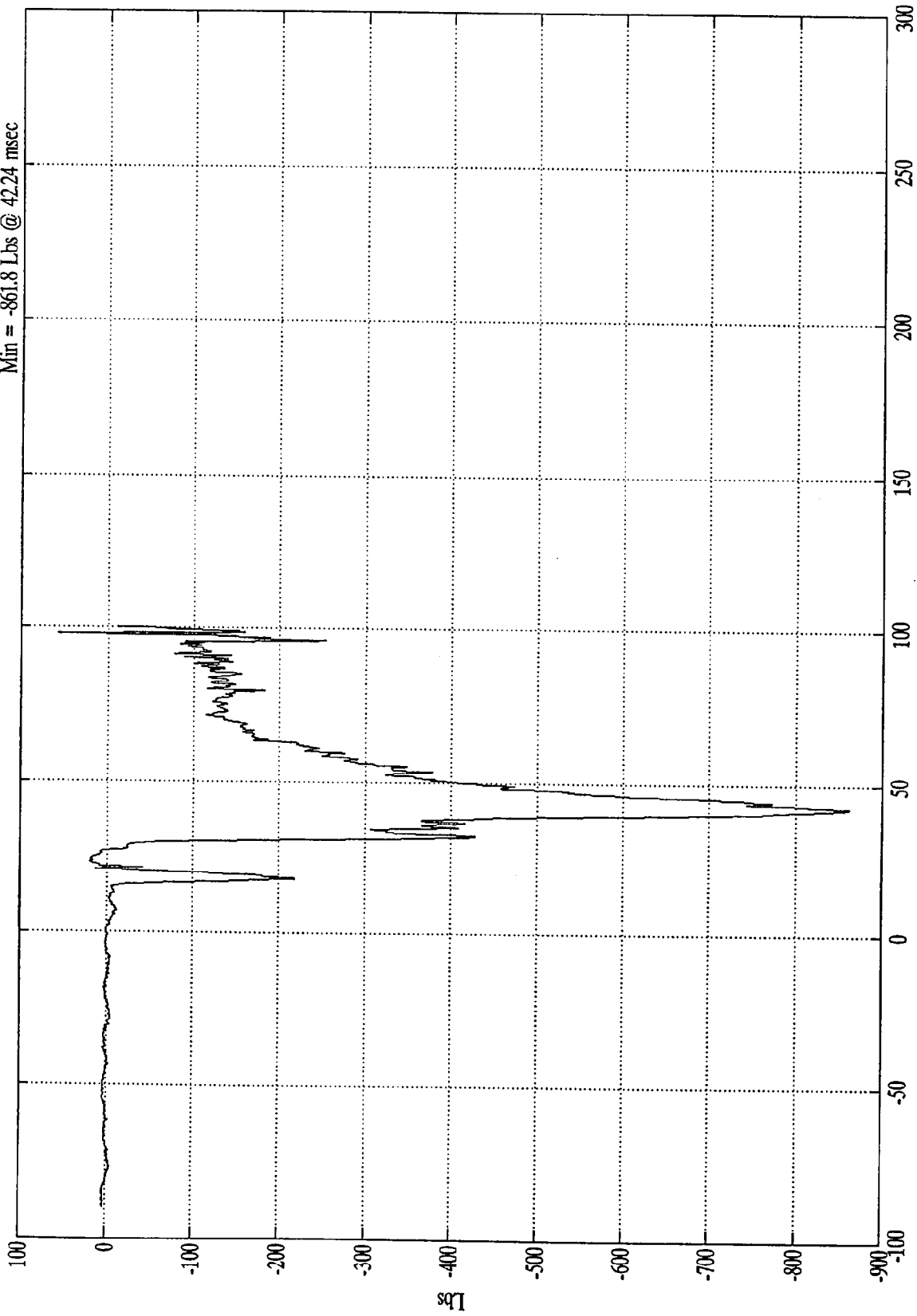
Data has been truncated at 100ms

SAE Filter Class 600

208 Test - 1996 Jeep Cherokee

P1 Rt Lower Tibia Fz

Max = 19.31 Lbs @ 23.16 msec
Min = -861.8 Lbs @ 42.24 msec



Time (msec)

SAE Filter Class 600

8251-3

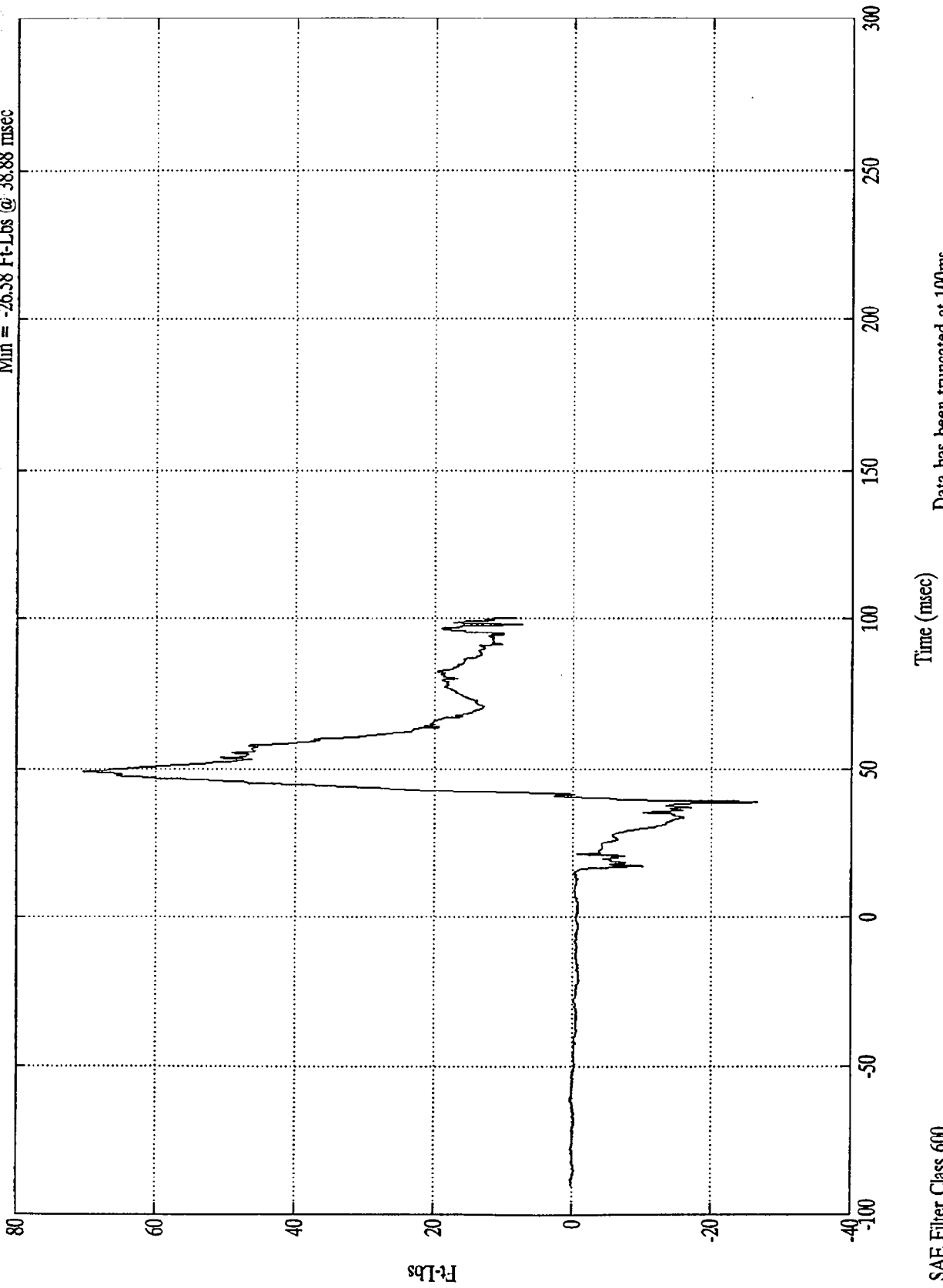
B-48

Data has been truncated at 100ms

208 Test - 1996 Jeep Cherokee

Max = 70.43 Ft-Lbs @ 49.08 msec
Min = -26.58 Ft-Lbs @ 38.88 msec

P1 Rt Lower Tibia Mx

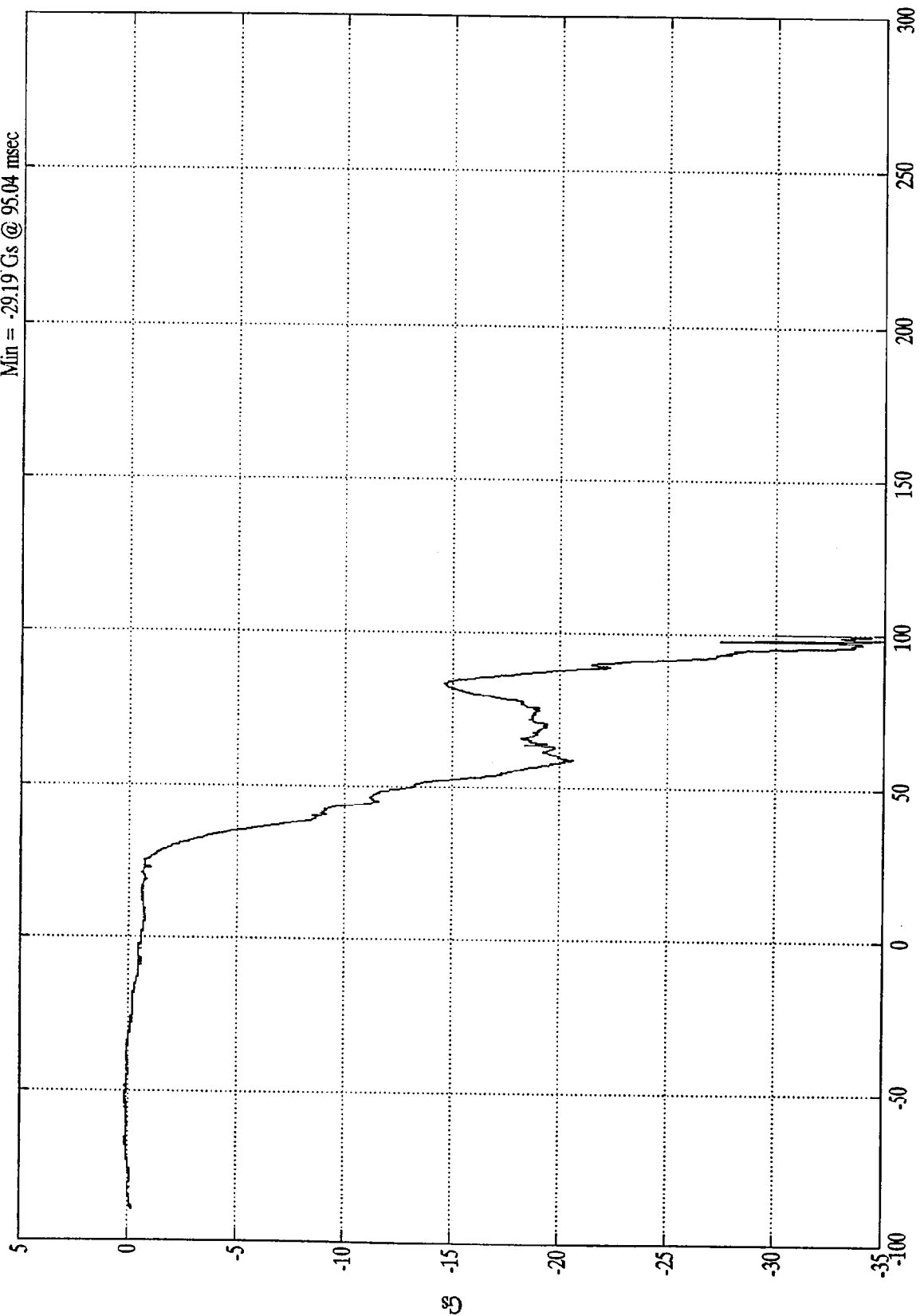


Data has been truncated at 100ms

SAE Filter Class 600

Pos. 2 Head X

Max = 0.1762 Gs @ -68.4 msec
Min = -29.19 Gs @ 95.04 msec

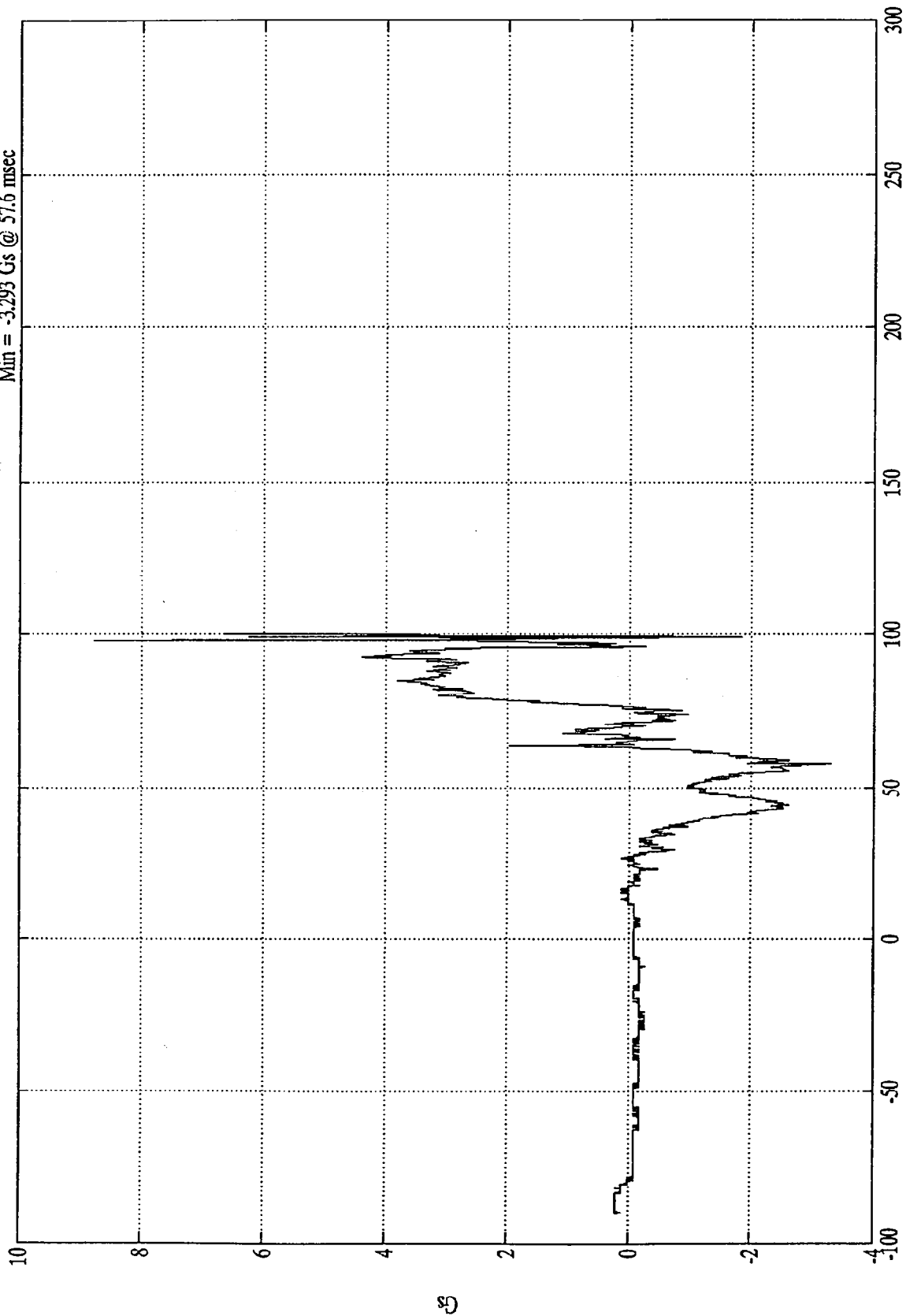


Data has been truncated at 100ms

SAE Filter Class 1000

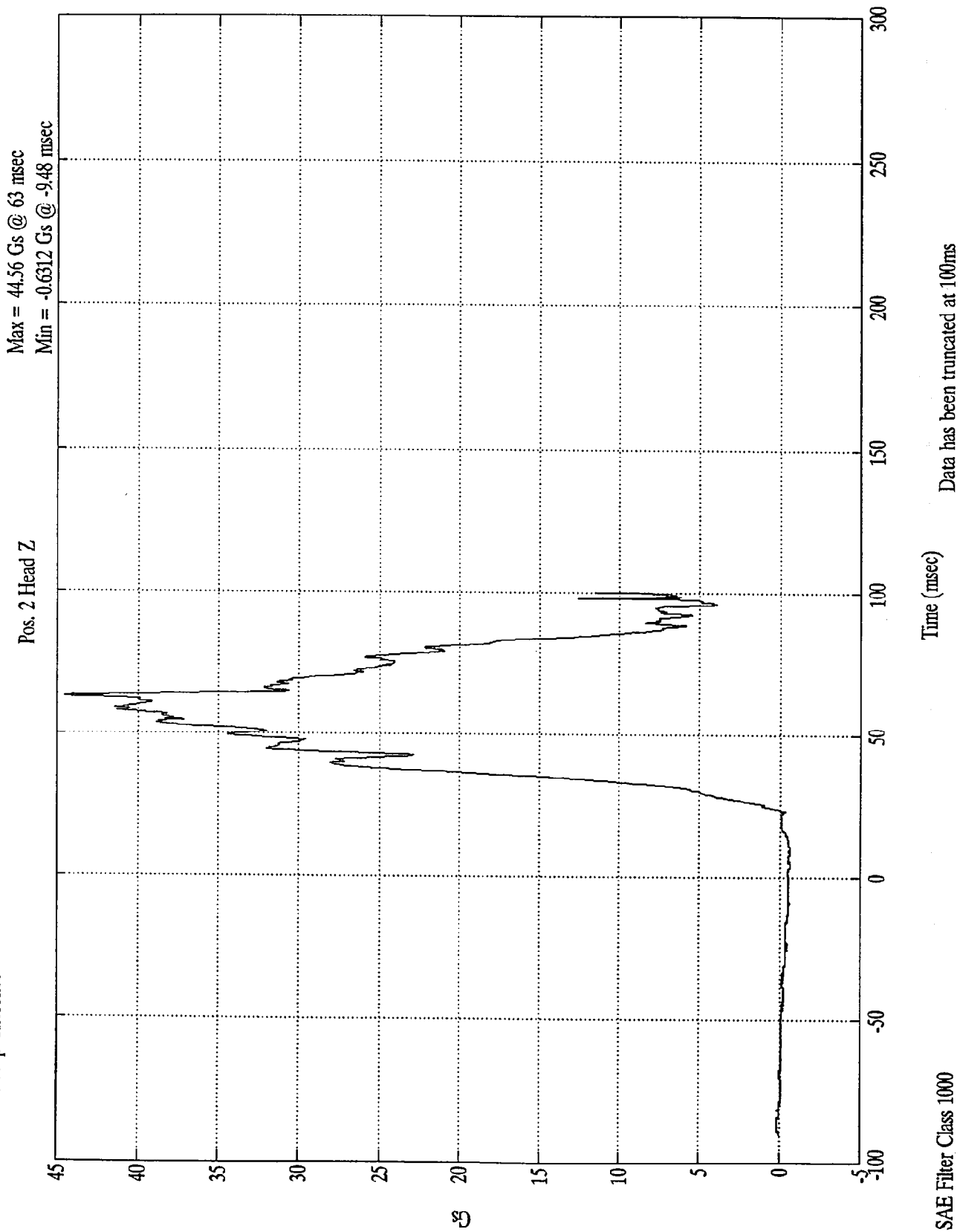
Max = 4.394 Gs @ 92.52 msec
Min = -3.293 Gs @ 57.6 msec

Pos. 2 Head Y



SAE Filter Class 1000

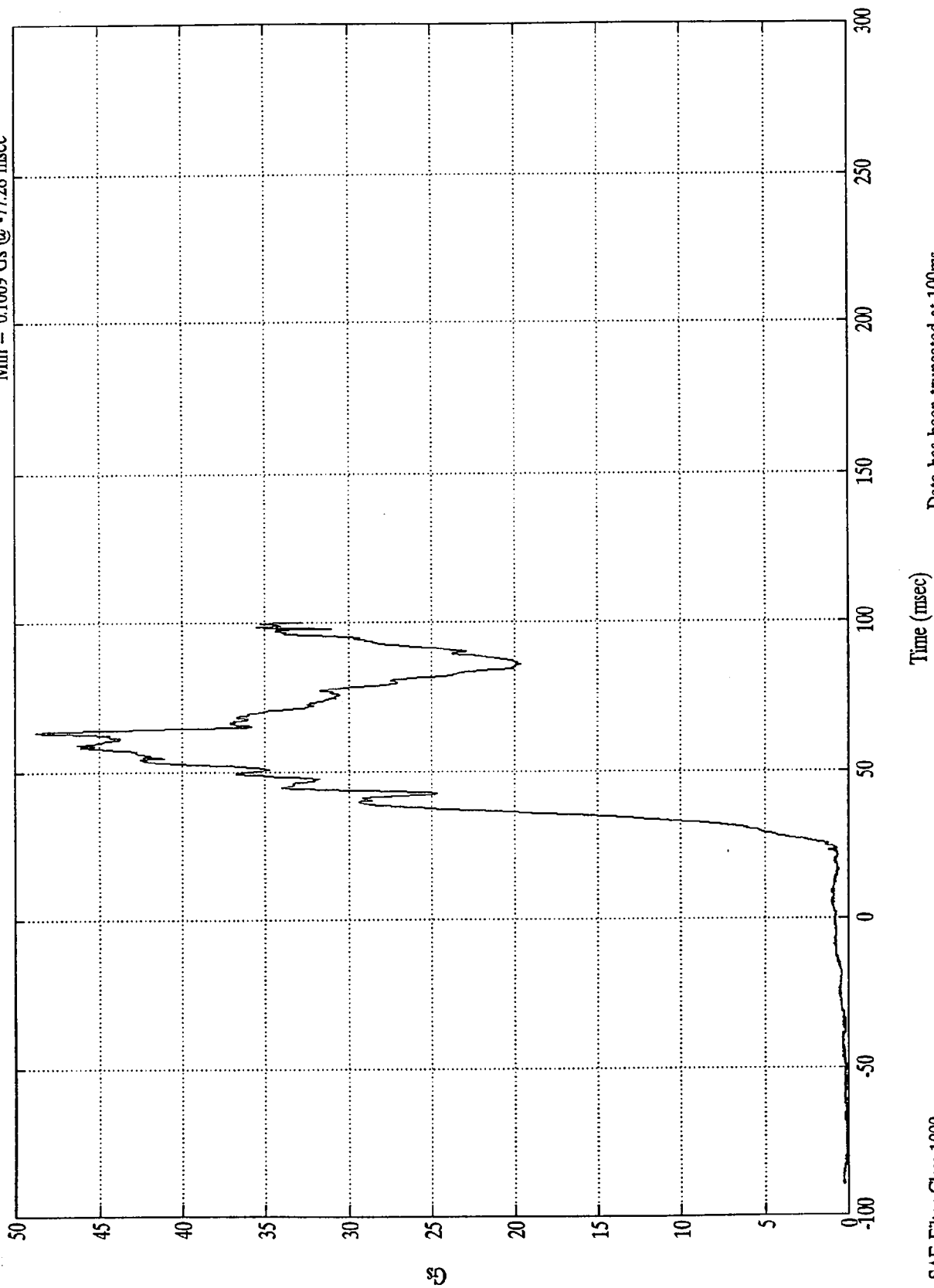
Data has been truncated at 100ms



FMVSS 208 - 1996 Jeep Cherokee

Pos. 2 Head Resultant

Max = 48.77 Gs @ 63 msec
Min = 0.1009 Gs @ -77.28 msec



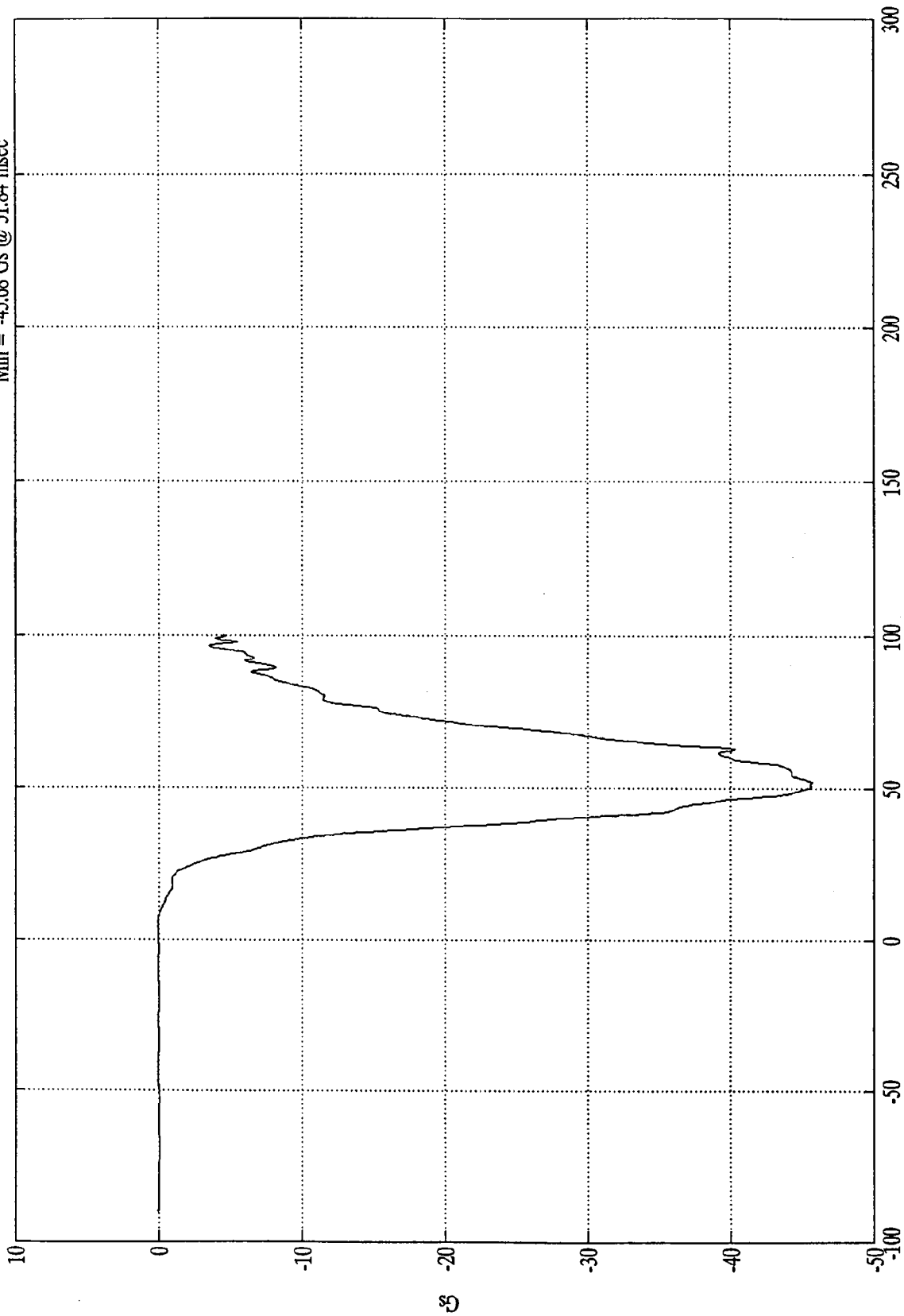
Data has been truncated at 1000ms

SAE Filter Class 1000

FMVSS 208 - 1996 Jeep Cherokee

Pos. 2 Chest X

Max = 0.1068 Gs @ 6.48 msec
Min = -45.68 Gs @ 51.84 msec



Time (msec)

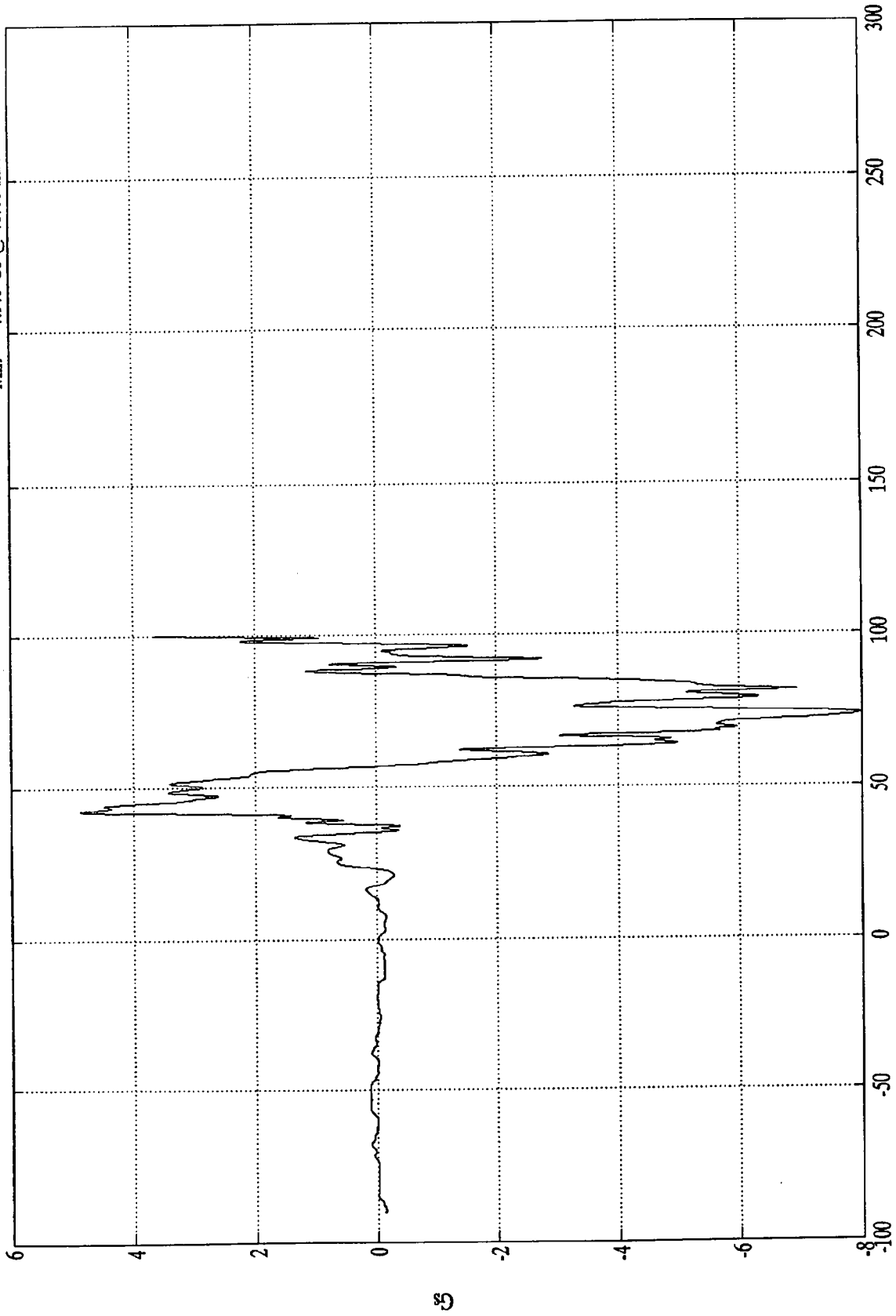
SAE Filter Class 180

Data has been truncated at 100ms

FMVSS 208 - 1996 Jeep Cherokee

Pos. 2 Chest Y

Max = 4.878 Gs @ 42.36 msec
Min = -7.973 Gs @ 73.08 msec



Data has been truncated at 100ms

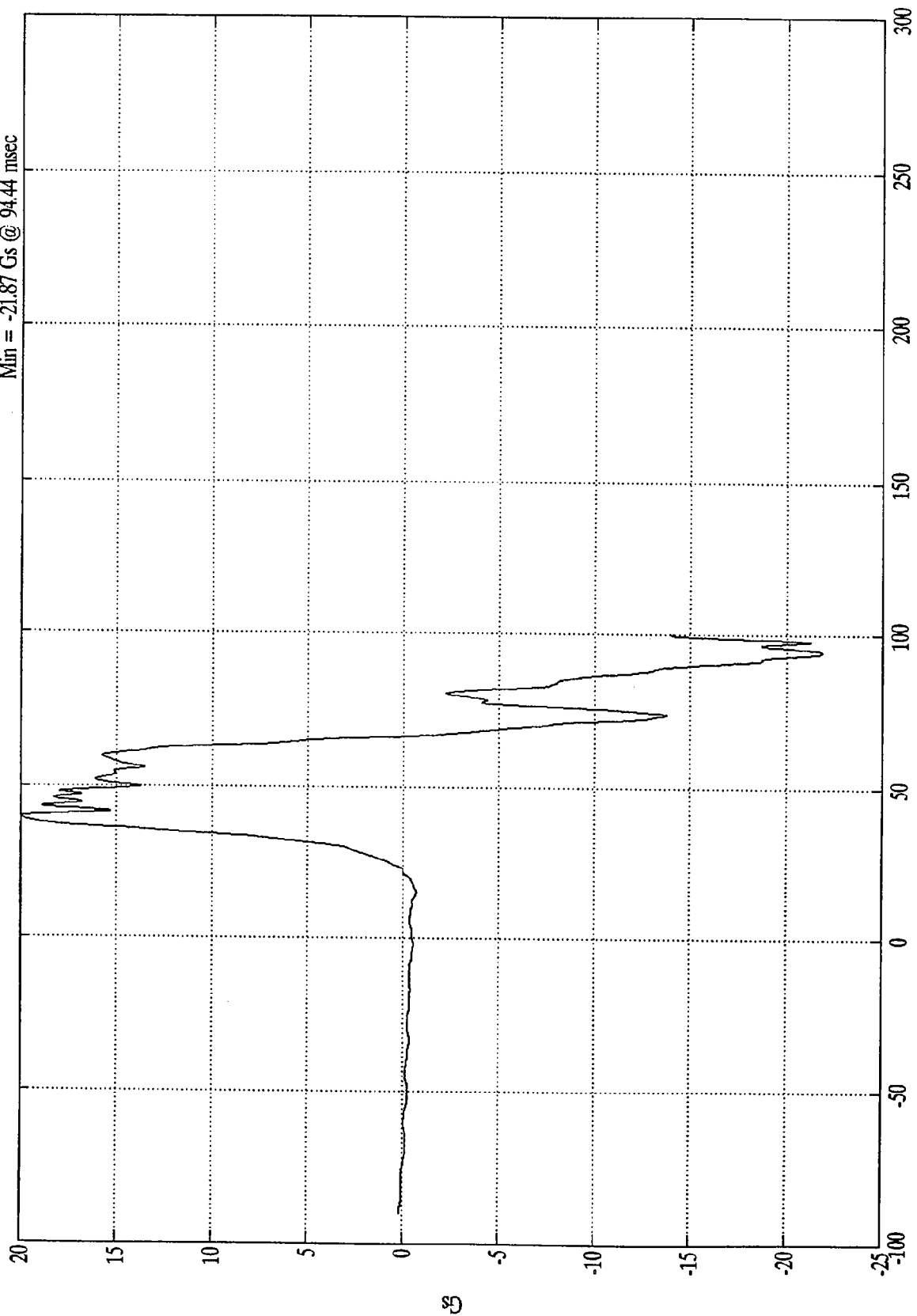
SAE Filter Class 180

B-55

8251-3

Pos. 2 Chest Z

Max = 19.98 Gs @ 39.36 msec
Min = -21.87 Gs @ 94.44 msec



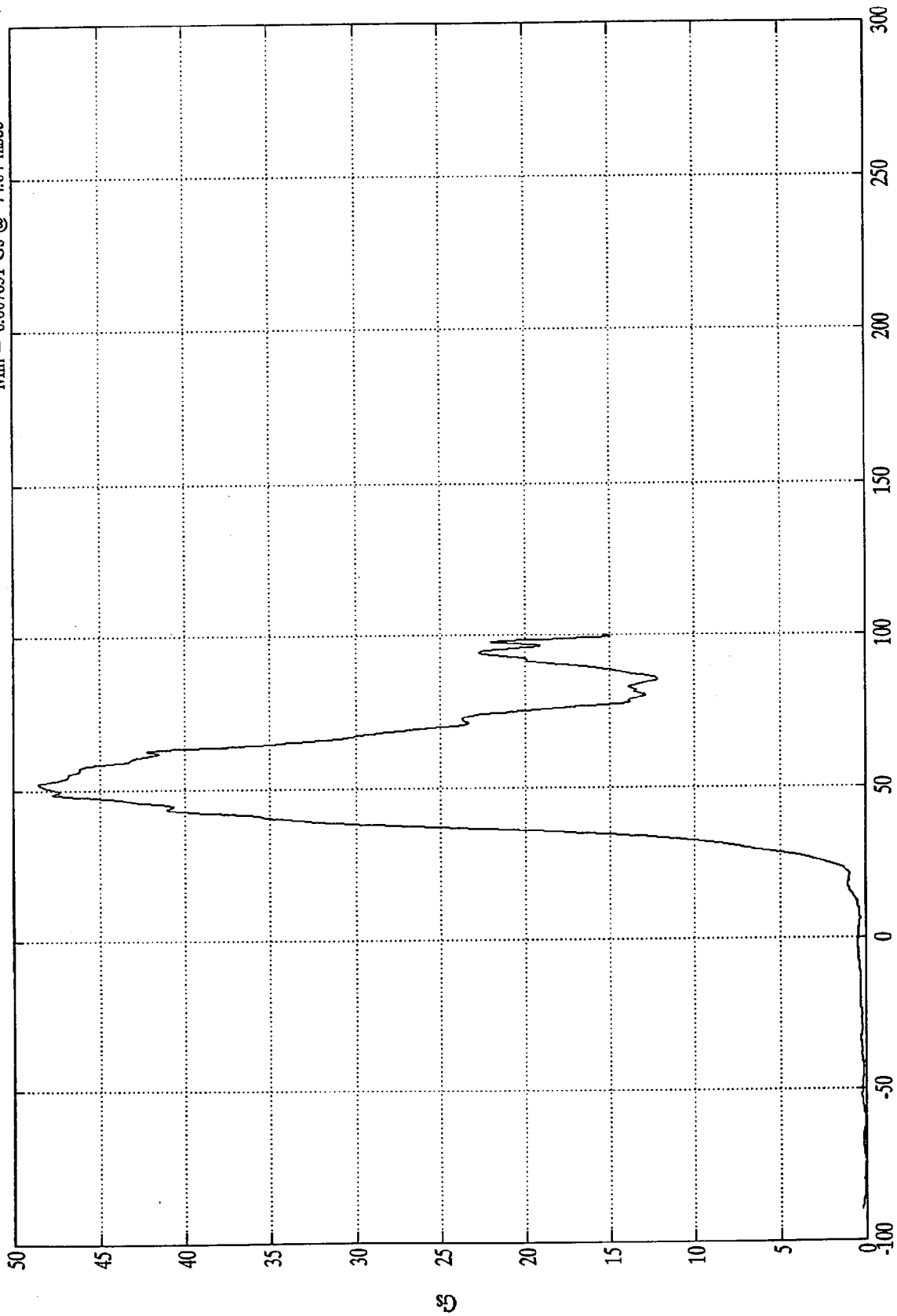
Data has been truncated at 100ms

SAE Filter Class 180

FMVSS 208 - 1996 Jeep Cherokee

Pos. 2 Chest Resultant

Max = 48.54 Gs @ 51.84 msec
Min = 0.007651 Gs @ -74.04 msec



SAE Filter Class 180

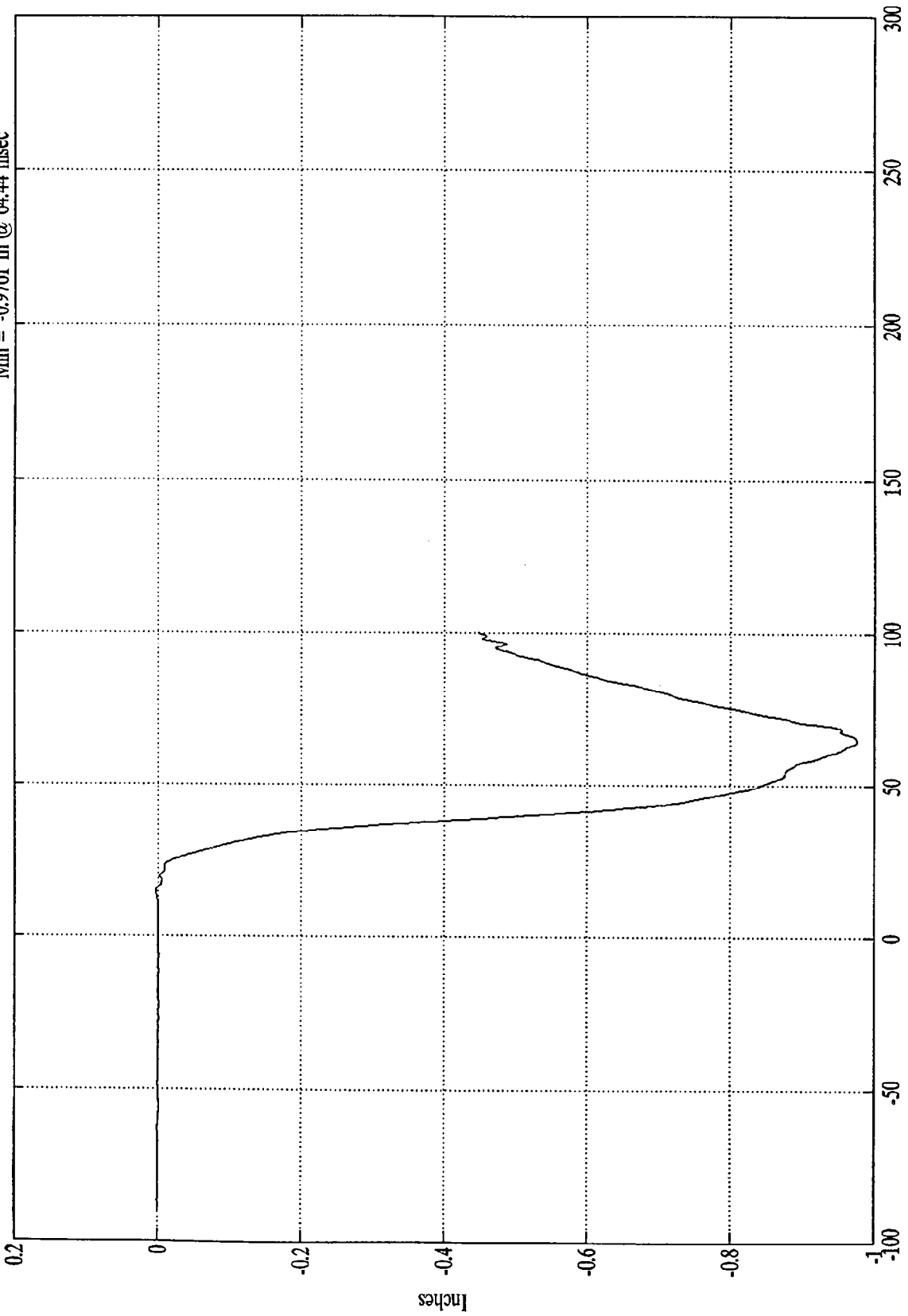
Time (msec)

Data has been truncated at 100ms

208 Test - 1996 Jeep Cherokee

Pos. 2 Chest displacement

Max = 0.003144 In @ 14.88 msec
Min = -0.9761 In @ 64.44 msec



Time (msec)

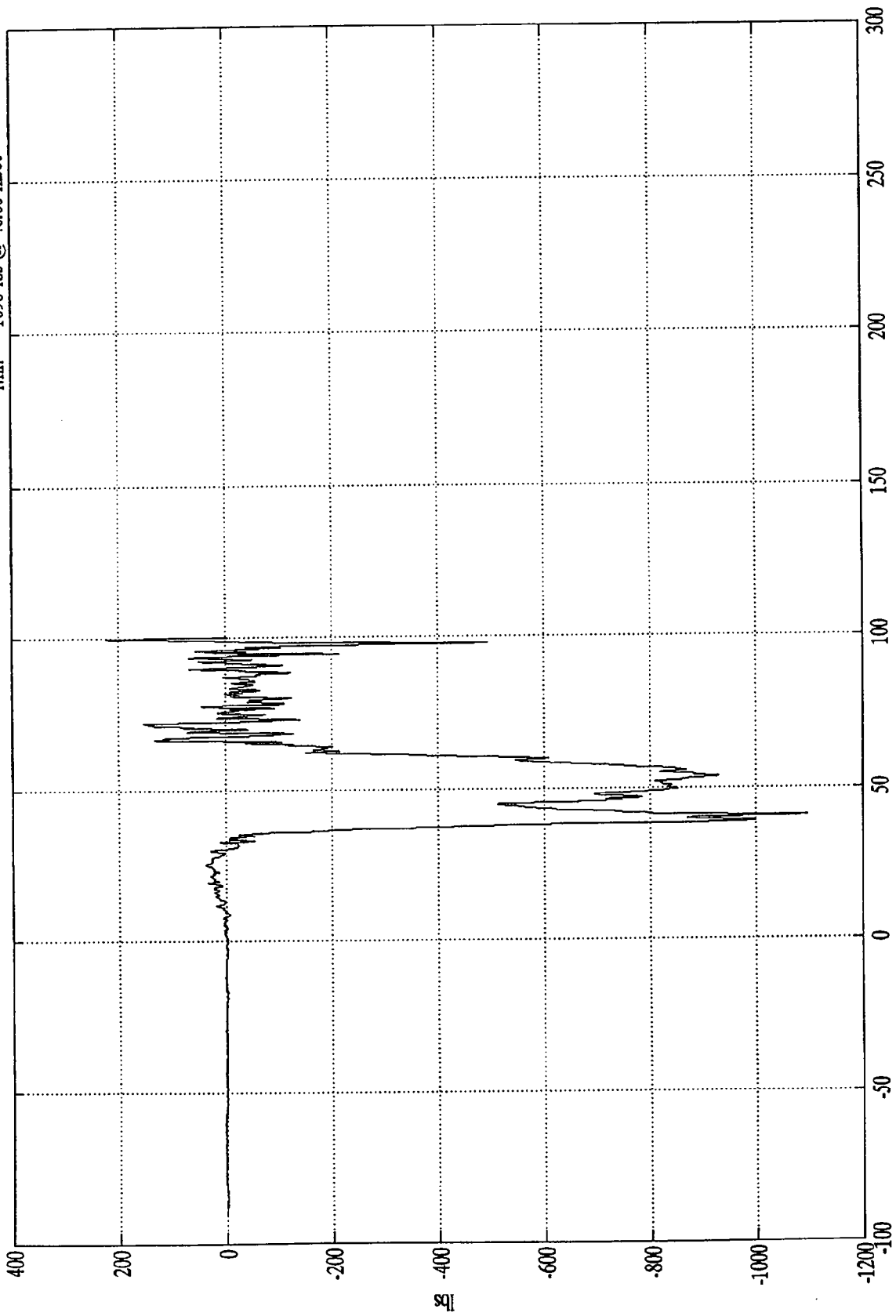
SAE Filter Class 180

Data has been truncated at 100ms

FMVSS 208 - 1996 Jeep Cherokee

Pos. 2 Left Femur

Max = 152.8 lbs @ 71.4 msec
Min = -1096 lbs @ 40.68 msec



Time (msec)

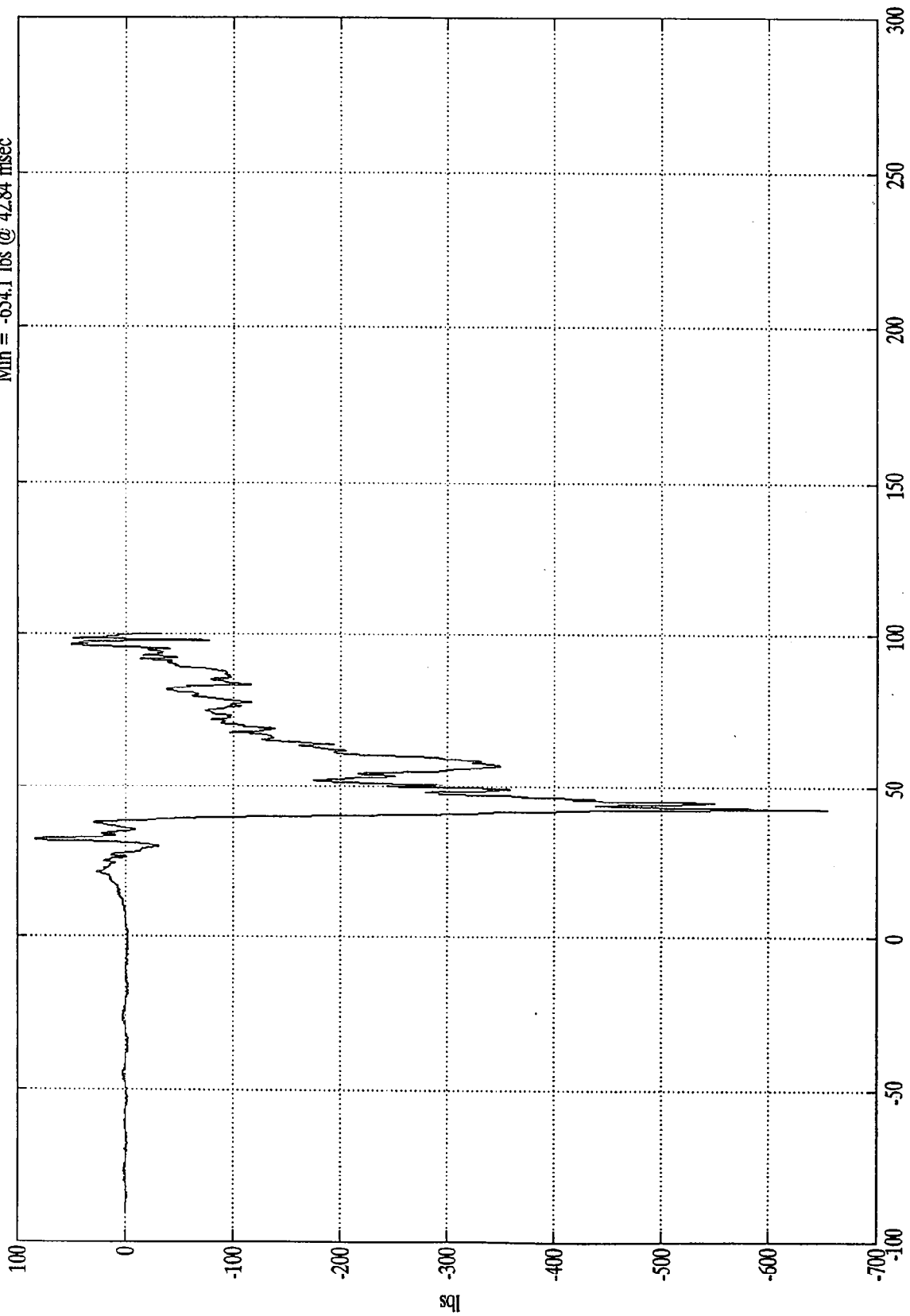
Data has been truncated at 100ms

SAE Filter Class 600

FMVSS 208 - 1996 Jeep Cherokee

Max = 83.72 lbs @ 32.52 msec
Min = -654.1 lbs @ 42.84 msec

Pos. 2 Right Femur



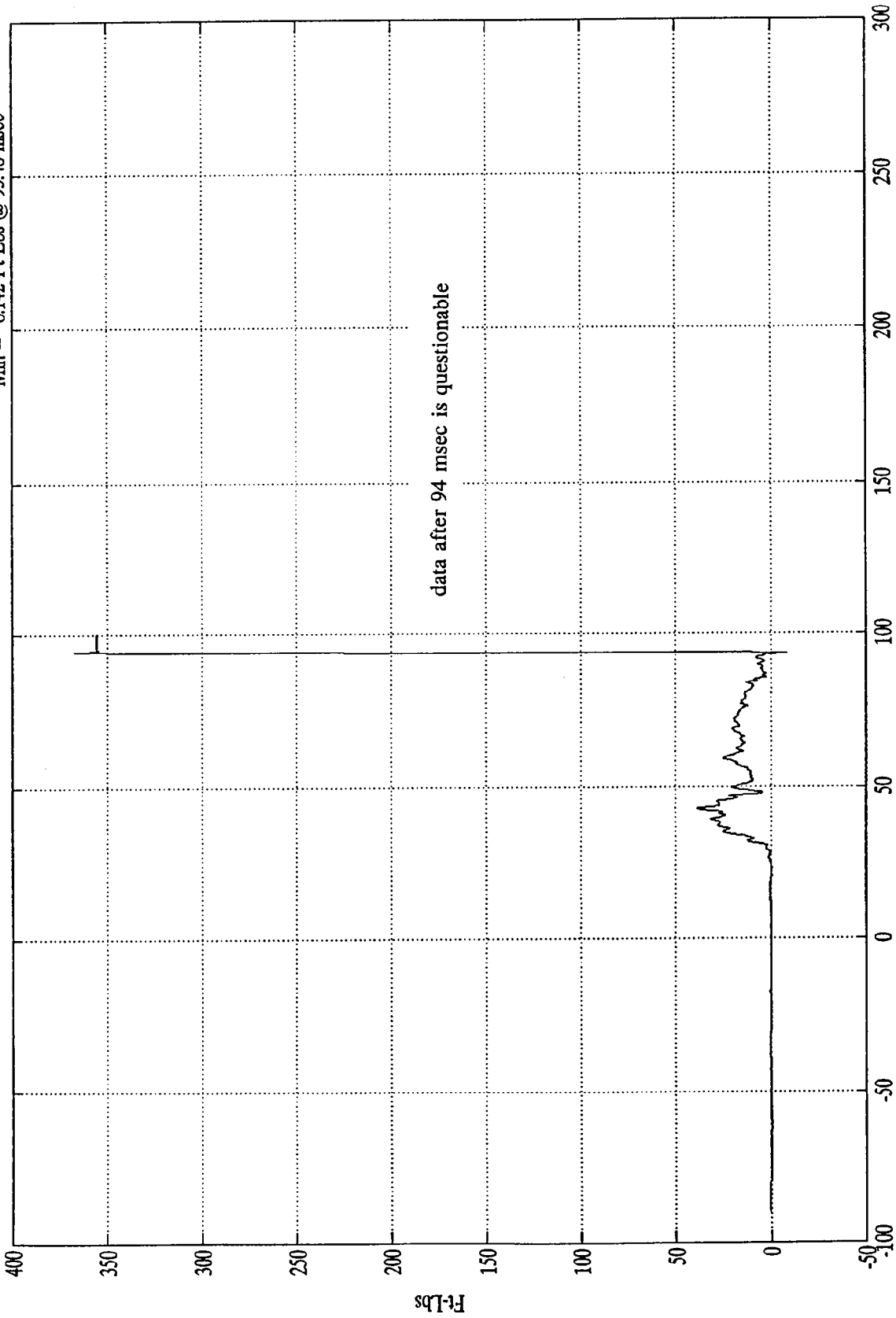
Data has been truncated at 100ms

SAE Filter Class 600

208 Test - 1996 Jeep Cherokee

Pos. 2 Lt Upper Tibia Mx

Max = 367.2 Ft-Lbs @ 94.44 msec
Min = -8.142 Ft-Lbs @ 93.48 msec



Ft-Lbs

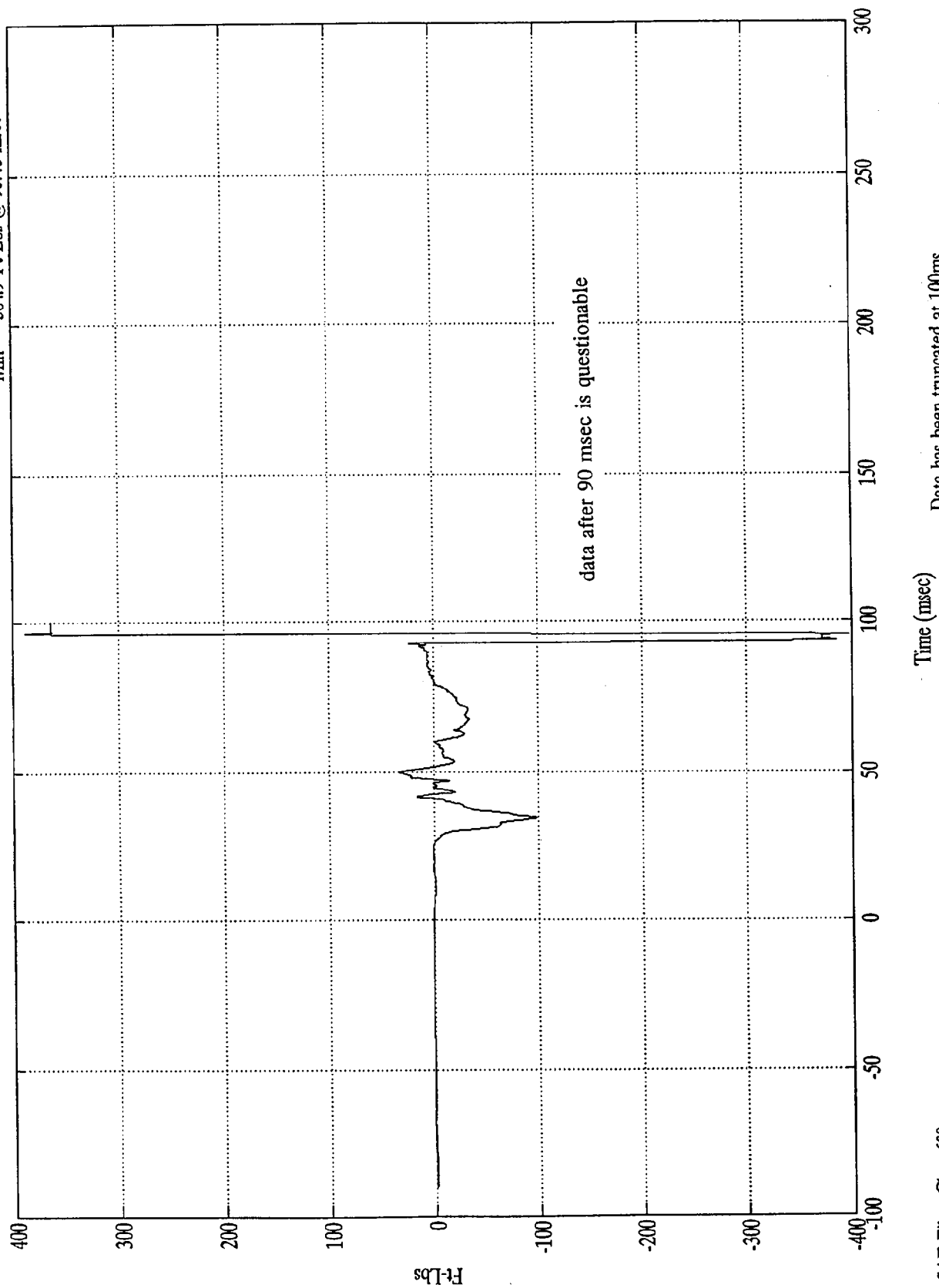
Time (msec)

SAE Filter Class 600

208 Test - 1996 Jeep Cherokee

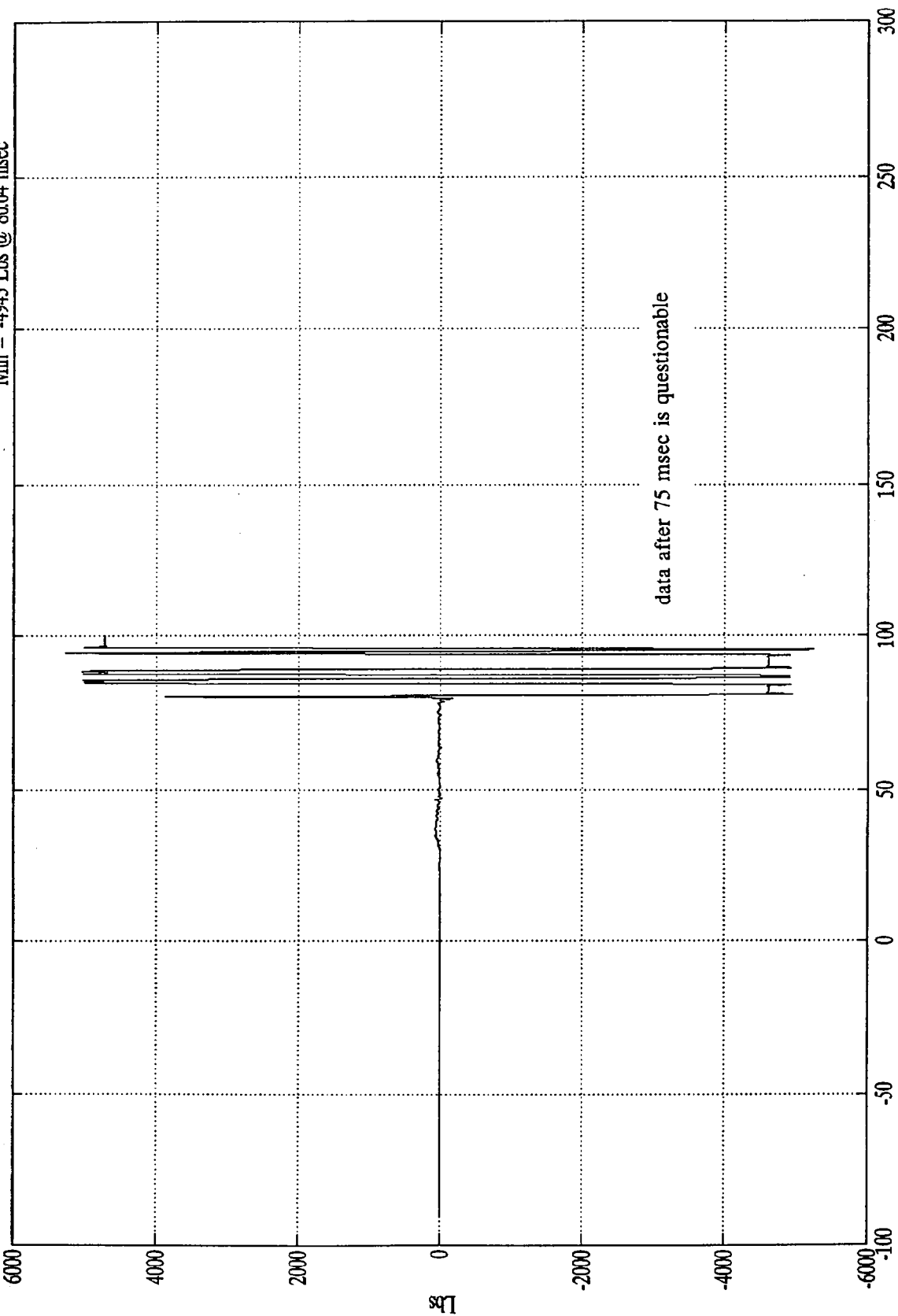
Pos. 2 Lt Upper Tibia My

Max = 32.79 Ft-Lbs @ 49.8 msec
Min = -384.9 Ft-Lbs @ 93.48 msec



Pos. 2 Lt Lower Tibia Fy

Max = 5276 Lbs @ 94.44 msec
Min = -4943 Lbs @ 80.64 msec



data after 75 msec is questionable

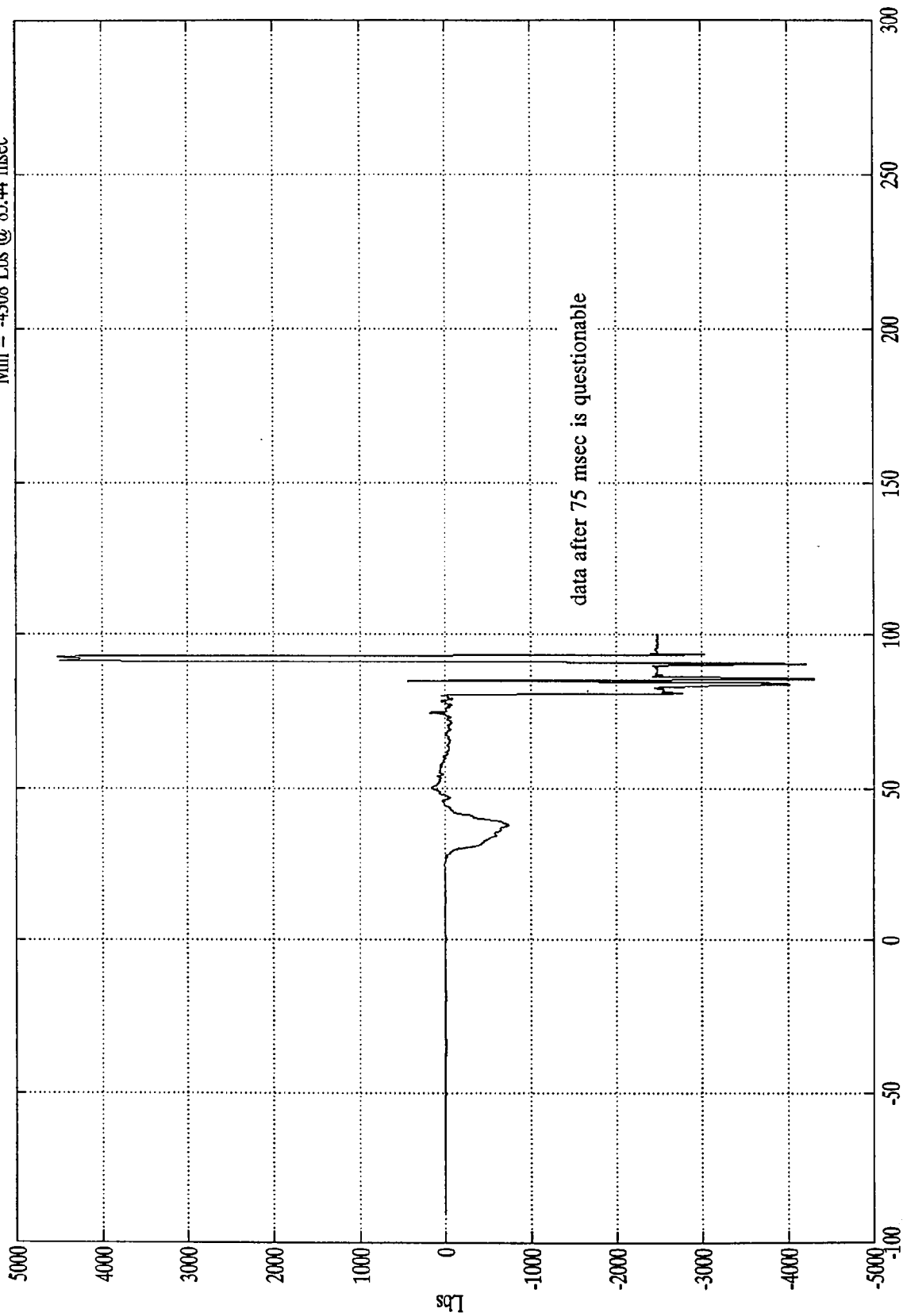
Data has been truncated at 100ms

SAE Filter Class 600

208 Test - 19% Jeep Cherokee

Pos. 2 Lt Lower Tibia Fz

Max = 4520 Lbs @ 92.64 msec
Min = -4308 Lbs @ 85.44 msec



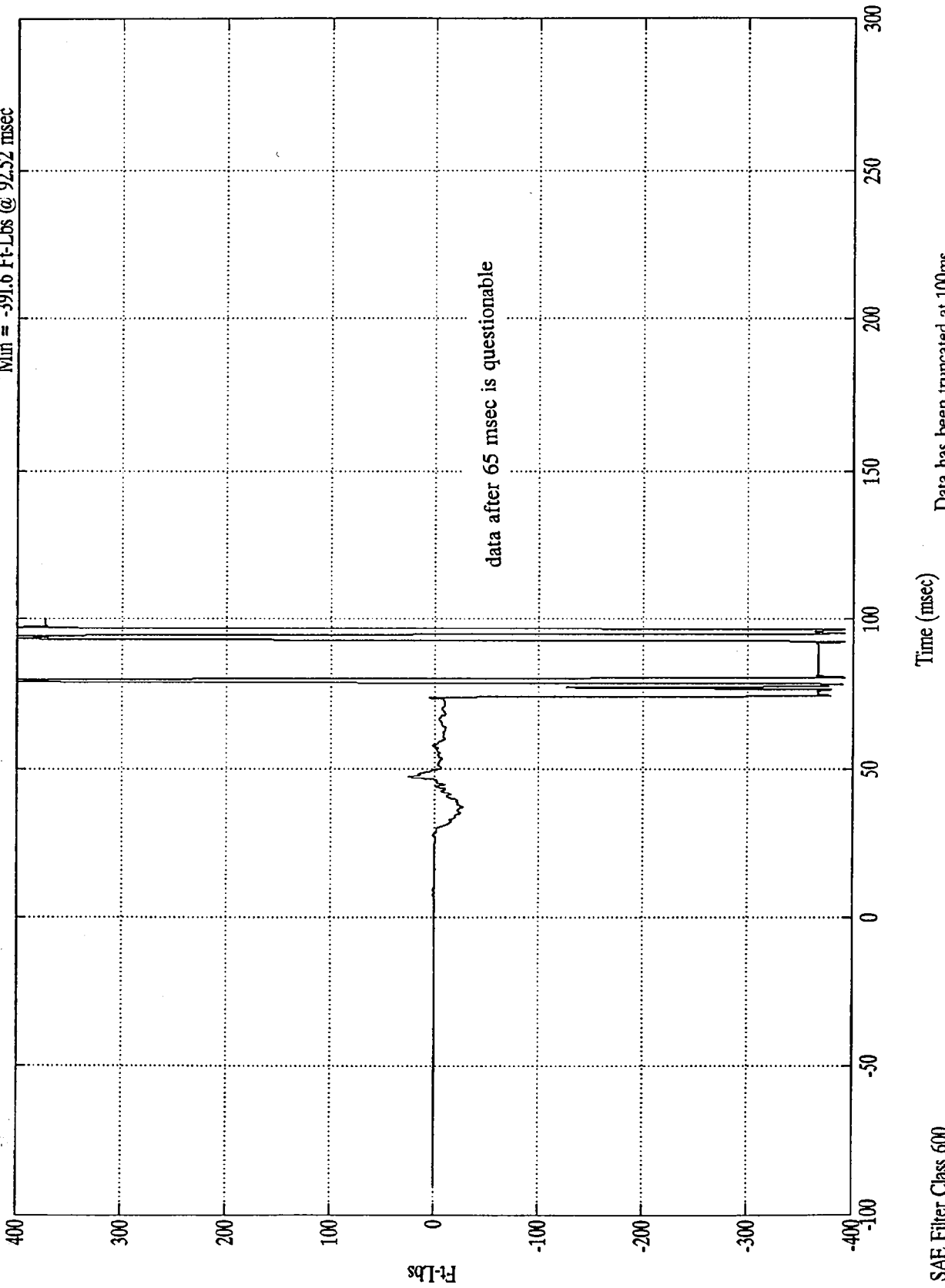
Data has been truncated at 100ms

Time (msec)

SAE Filter Class 600

Max = 399.1 Ft-Lbs @ 79.92 msec
Min = -391.6 Ft-Lbs @ 92.52 msec

Pos. 2 Lt Lower Tibia Mx

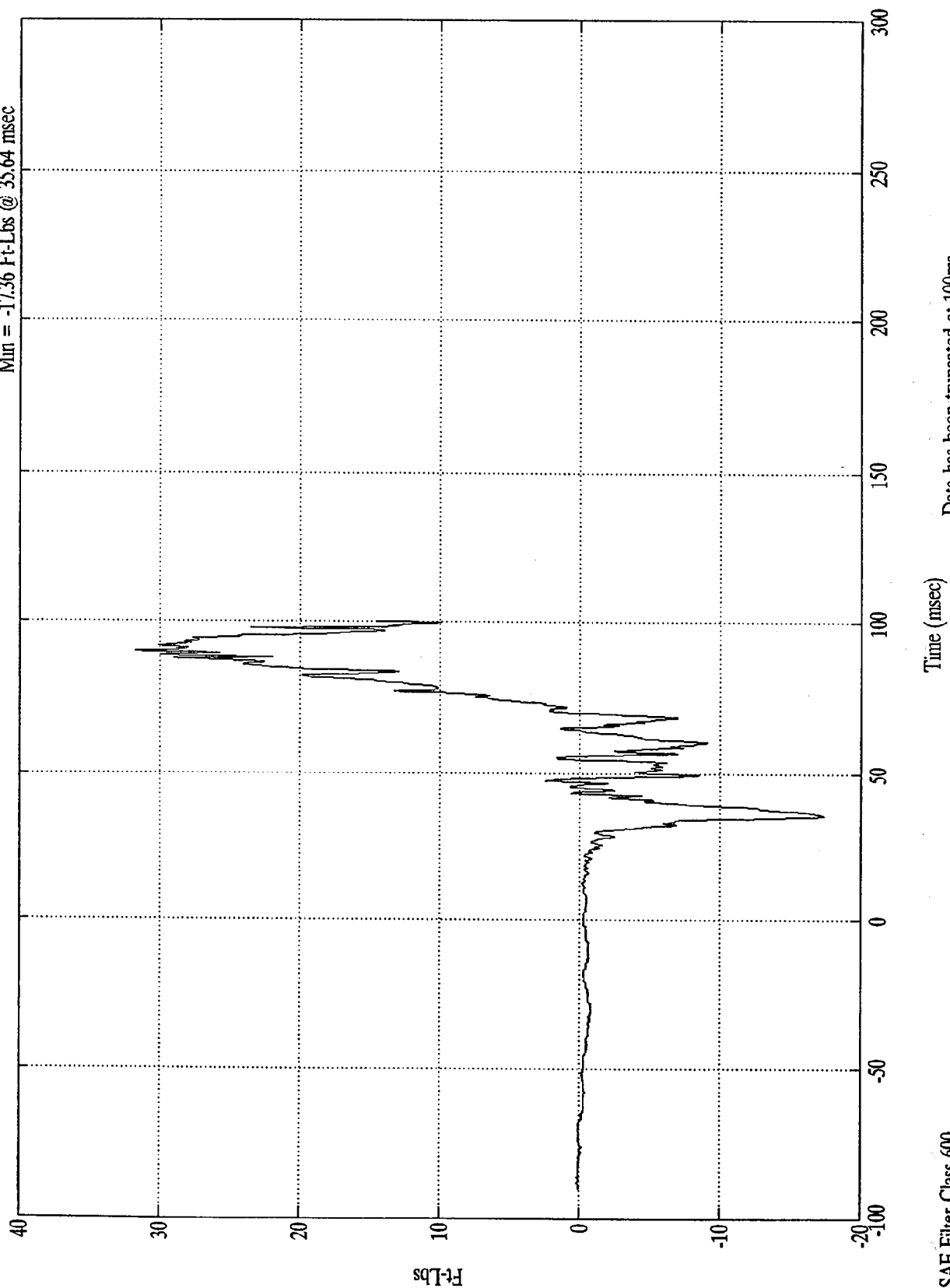


Data has been truncated at 100ms

208 Test - 1996 Jeep Cherokee

Pos. 2 Rt Upper Tibia Mx

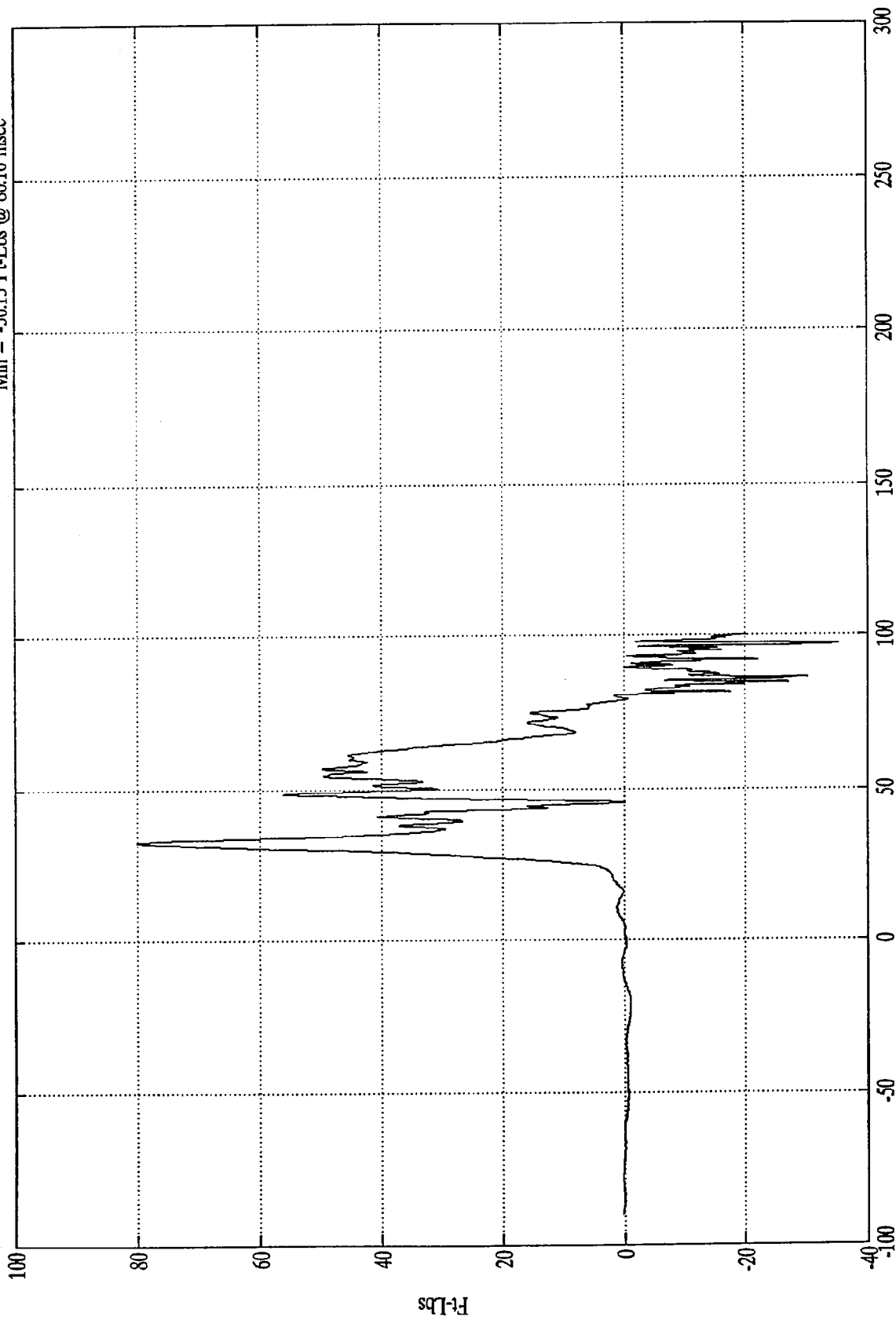
Max = 31.76 Ft-Lbs @ 90 msec
Min = -17.36 Ft-Lbs @ 35.64 msec



208 Test - 1996 Jeep Cherokee

Pos. 2 Rt Upper Tibia My

Max = 80.09 Ft-Lbs @ 32.76 msec
Min = -30.13 Ft-Lbs @ 86.16 msec

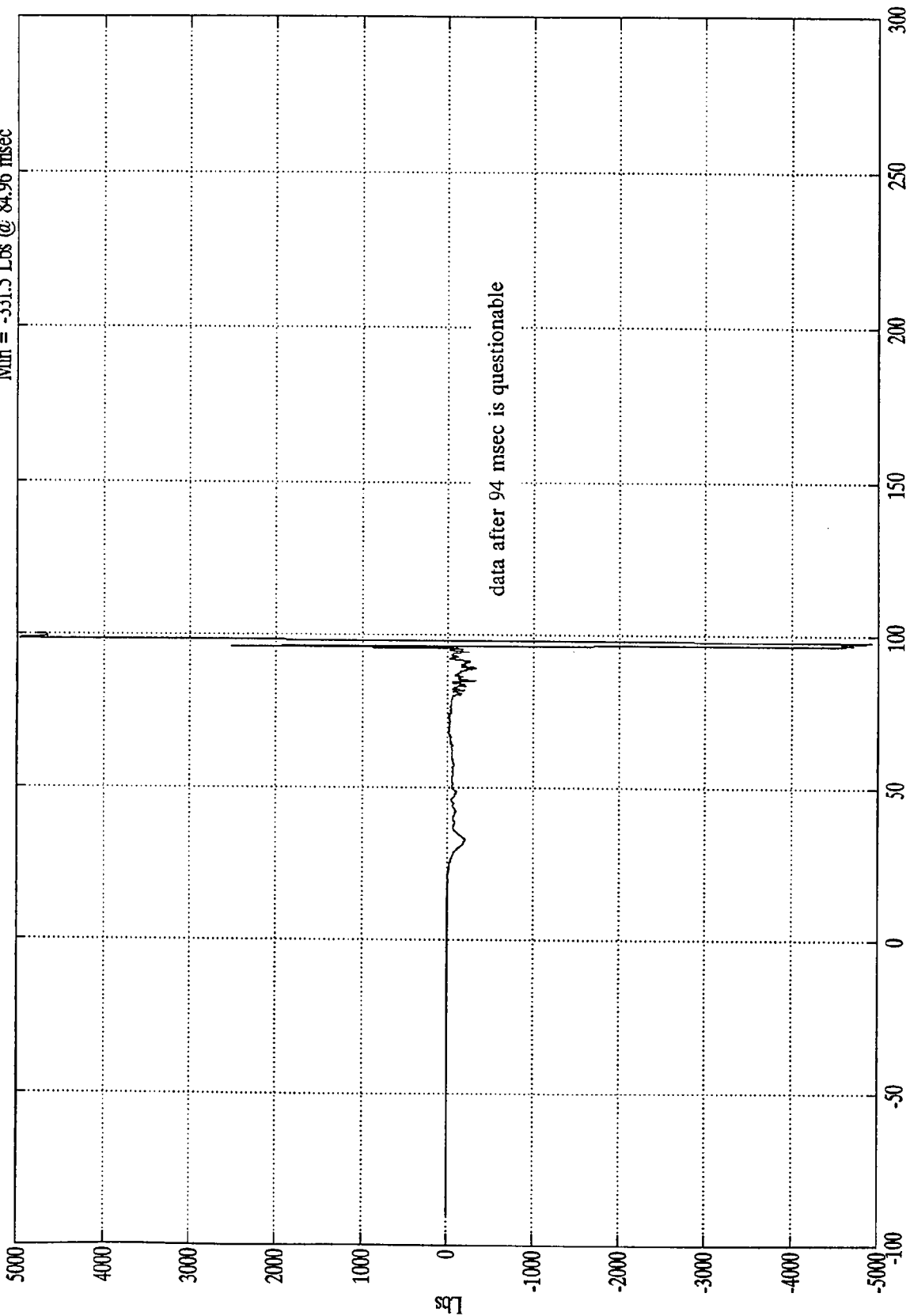


Data has been truncated at 100ms

SAE Filter Class 600

Pos. 2 Rt Lower Tibia Fy

Max = 3.761 Lbs @ -26.64 msec
Min = -331.5 Lbs @ 84.96 msec



Time (msec)

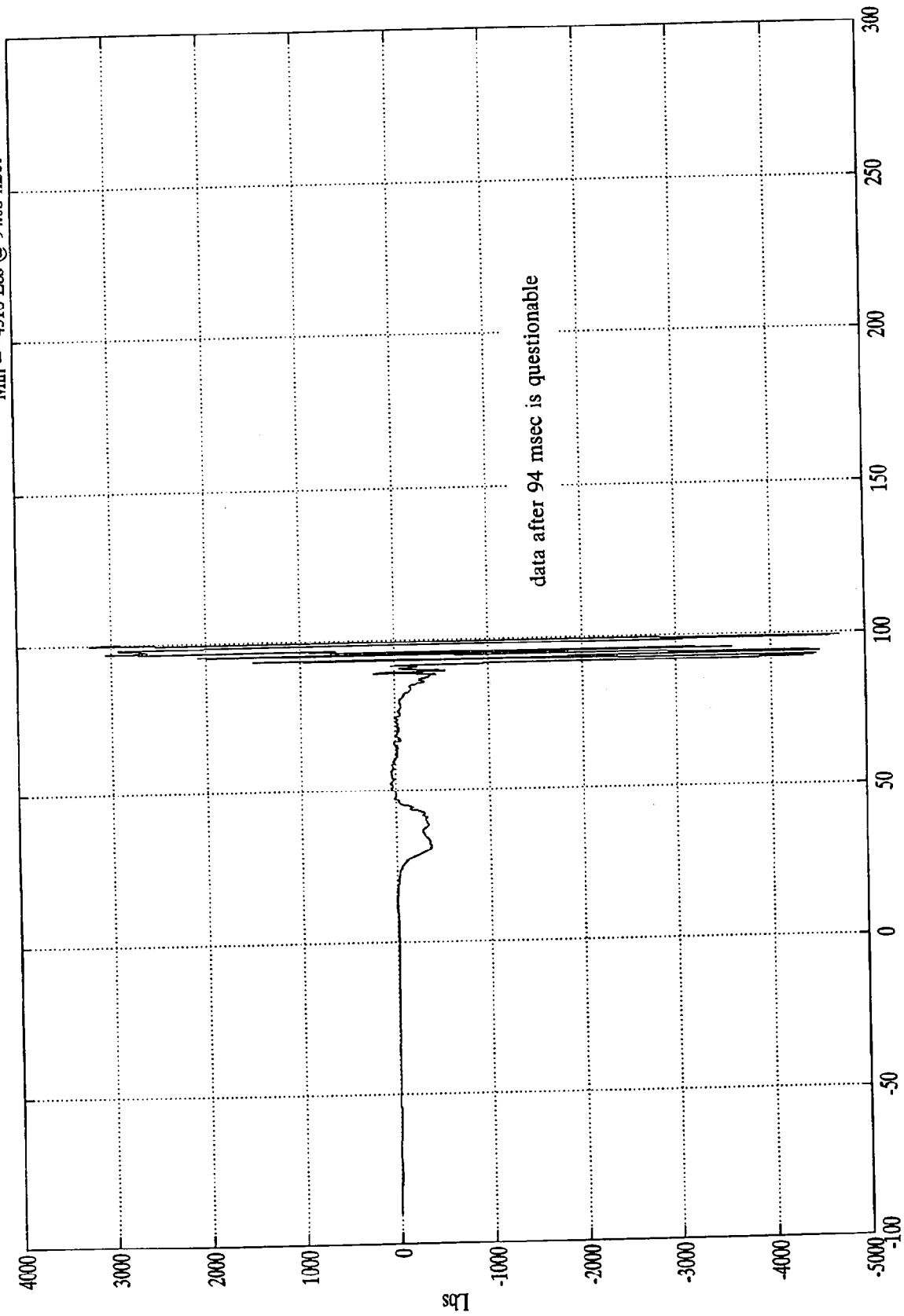
SAE Filter Class 600

Data has been truncated at 100ms

208 Test - 1996 Jeep Cherokee

Pos. 2 Rt Lower Tibia Fz

Max = 1499 Lbs @ 93.36 msec
Min = -4513 Lbs @ 94.08 msec



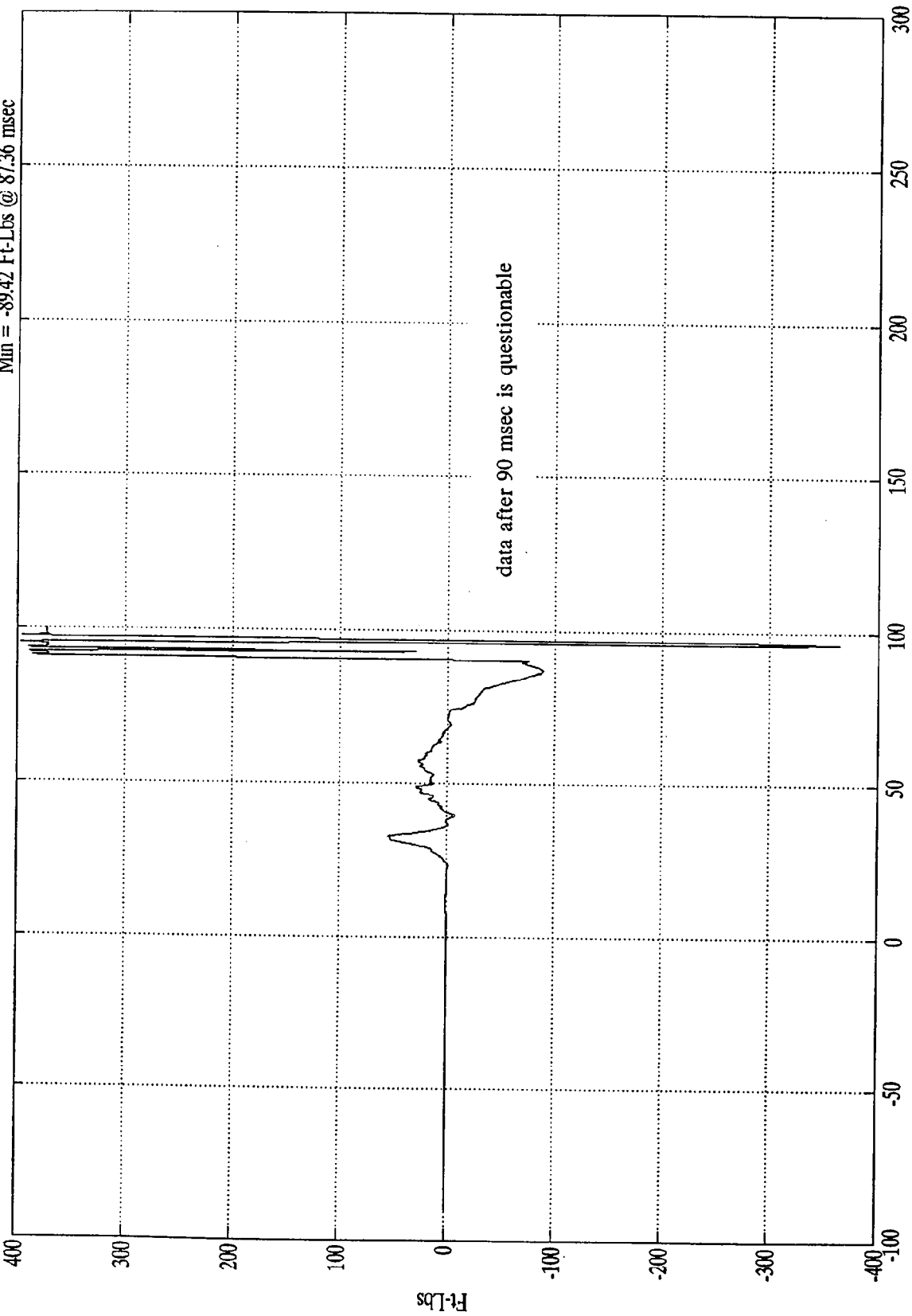
data after 94 msec is questionable

Data has been truncated at 100ms

SAE Filter Class 600

Max = 389.6 Ft-Lbs @ 93.72 msec
Min = -89.42 Ft-Lbs @ 87.36 msec

Pos. 2 Rt Lower Tibia Mx



Time (msec)

Data has been truncated at 100ms

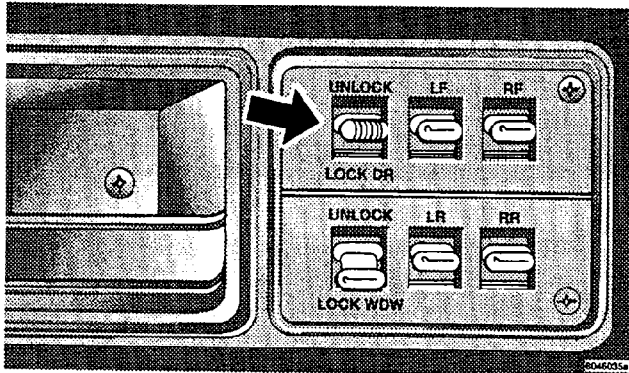
SAE Filter Class 600

Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

Power Door Locks

Push down to lock, up to unlock. The driver's panel operates all doors, including the liftgate.

**OCCUPANT RESTRAINTS**

One of the most important safety features in your vehicle is the restraint system. This system includes the front and

rear seat belts. Your seat belts can also be used to hold infant and child restraint systems if you will be carrying children too small for adult-size belts.

Please pay careful attention to the information in this section. It tells you how to use your restraint system properly to keep you and your passengers as safe as possible.

WARNING!

In a collision you and your passengers can suffer much greater injuries if you are not properly buckled up. You can strike parts of the inside of the vehicle or other passengers, or you can be thrown out of the vehicle. Always be sure you and others in your vehicle are buckled up properly.

Buckle up even though you are an excellent driver. Even on short trips. Someone else on the road may be a poor driver and cause a collision which involves you. And this can happen far from home or on your own street.

Research has shown that seat belts save lives. And they can reduce the seriousness of injuries in a collision. Some of the worst injuries happen when people are thrown from the vehicle. Seat belts provide protection against that, and they reduce the risk of injury caused by striking the inside of the vehicle. Everyone in a motor vehicle needs to be buckled up all the time.

Seat Belt Warning Light

A warning chime or buzzer and an indicator light will alert you to buckle the seat belts.

Unibelts

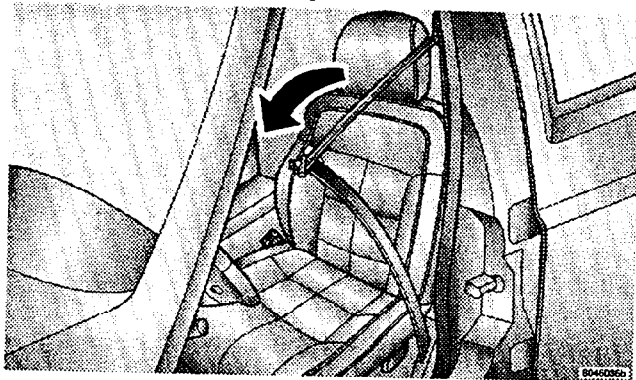
The outboard front and rear seats of your vehicle have combination lap/shoulder belts, or unbelt. The retractor is designed to lock during very sudden stops or impacts. This feature allows the shoulder part of the belt to move freely with you under normal conditions. But in a collision, the belt will lock and reduce the risk of your striking the inside of the vehicle or being thrown out.

Unibelt Operating Instructions

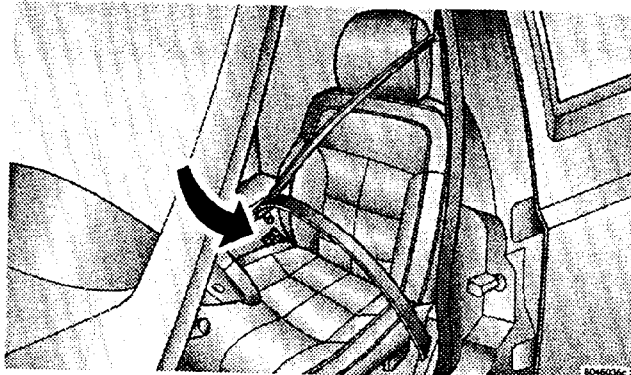
1. Enter the vehicle and close the door. Sit back and adjust the seat.

14 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

2. The latch plate of the belt is above the back of your seat. Grasp the latch plate and pull out the belt. Slide the latch plate up the webbing as far as necessary to make the belt go around your lap.



3. When the belt is long enough to fit, insert the latch plate into the buckle until you hear a "click".



THINGS TO KNOW BEFORE STARTING YOUR VEHICLE 15

WARNING!

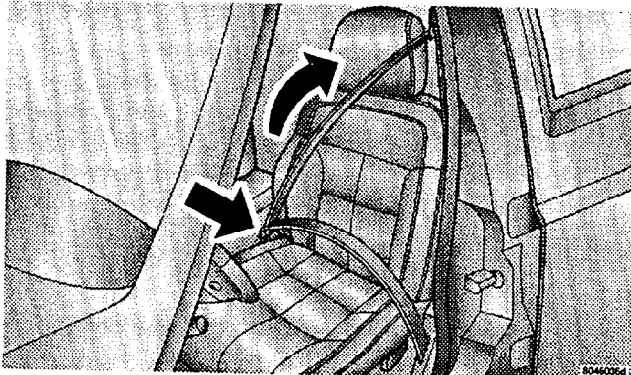
A belt buckled into the wrong buckle will not protect you properly. The lap portion could ride too high on your body, possibly causing internal injuries. Always buckle your belt into the buckle nearest you.

WARNING!

- A belt that is too loose will not protect you as well. In a sudden stop you could move too far forward, increasing the possibility of injury. Wear your seat belt snugly.
- A shoulder belt worn under your arm is very dangerous. Your body could fall into the inside surfaces of the vehicle in a crash, increasing head and neck injury. And a belt worn under the arm can cause internal injuries. Ribs aren't as strong as shoulder bones. Wear the belt over your shoulder so that your strongest bones will take the force in a collision.

2

4. Position the lap belt across your thighs, below your abdomen. If you need the lap portion tighter, pull up a bit on the shoulder part. A snug belt reduces the risk of sliding under the belt in a collision.

**WARNING!**

A lap belt worn too high can increase the risk of internal injury in a collision. The belt forces won't be at the strong hip and pelvic bones, but across your abdomen. Always wear the lap part of your seat belt as low as possible, and keep it snug.

5. Position the shoulder belt on your chest so that it is comfortable and not resting on your neck. The retractor will withdraw any slack in the belt.

WARNING!

A twisted belt can't do its job as well. In a collision it could even cut into you. Be sure your belt is straight. If you can't straighten a belt in your vehicle, take it to your dealer and have it fixed.

6. To release the belt, push the button on the buckle. The belt will automatically retract to its stowed position.

If necessary, slide the latch plate down the webbing to allow the belt to retract fully.

WARNING!

A frayed or torn belt could rip apart in a collision and leave you with no protection. Inspect your belts periodically, checking for cuts, frays, and loose parts. Damaged parts must be replaced immediately. Do not disassemble or modify the system. Seat belt assemblies must be replaced immediately after an accident if they have been damaged (bent retractor, torn webbing, etc.).

Rear Center Lap Belt

The rear center seating position has a lap belt only.

To fasten a lap belt, slip the latch plate into the buckle.

To lengthen the lap belt, tilt the latch plate and pull. To shorten the belt, pull the loose end of the webbing.

Wear the lap belt snug against the hips. Sit back and erect in the seat, then adjust the belt as tightly as is comfortable.

WARNING!

- A lap belt worn too loose or too high is dangerous. A belt worn too loose can allow you to slip down and under the belt in a collision. A belt that is too high will apply crash forces to the abdomen, not to the stronger hip bones. In either case, the risk of internal injuries is greater. Wear a lap belt low and snug.
- Belting two people into one seat belt can lead to greater injury. People belted together can crash into one another in an accident, hurting one another badly. Never use a belt for more than one person, no matter what their size.

Seat Belts And Pregnant Women

We recommend that pregnant women use seat belts throughout their pregnancies. Keeping the mother safe is the best way to keep the baby safe.

Pregnant women should wear the lap part of the belt across the thighs and as snug against the hips as possible. Keep the belt low so that it does not come across the abdomen. That way the strong bones of the hips will take the force if there is a collision.

Seat Belt Extender

If a seat belt is too short, even when fully extended, your dealer can provide you with a seat belt extender. This extender should be used only if the existing belt is not long enough. When it is not required, remove the extender and stow it.

WARNING!

Using a seat belt extender when not needed can increase the risk of injury in a collision. Only use when the lap belt is not long enough when it is worn low and snug, and in the recommended seating positions. Remove and stow when not needed.

Child Restraint

When we say that everyone in your vehicle needs to be buckled up all the time, we mean babies and children, too.

Every state in the United States and all Canadian provinces require small children to ride in proper restraint systems. This is the law, and you can be prosecuted for ignoring it.

WARNING!

In a collision, an unrestrained child, even a tiny baby, can become a missile inside the vehicle. The force required to hold even an infant on your lap could become so great that you could not hold the child, no matter how strong you are. The child and others could be badly injured. Any child riding in your vehicle should be in a proper restraint for the child's size.

Infants And Small Children

There are different sizes and types of restraints for children from newborn size to the bigger child almost large enough for an adult safety belt. Use the restraint that is correct for your child.

Two different child restraint systems are generally available.

20 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

- The infant carrier for babies weighing up to 20 lbs. (9 kg.)
- The child seat for small children over 20 lbs.

In addition, some manufacturers make systems that can be used first as an infant carrier, and then converted to a child seat as the child grows.

Here are some tips on getting the most out of your child restraint:

- Before buying any restraint system, make sure that it has a label certifying that it meets Motor Vehicle Safety Standard 213. We also recommend that before you buy a child restraint, you try it in the vehicle in the seats where you will use it.
- The restraint must be appropriate for your child's weight and height. Check the label on the restraint for this, too.

- If possible, install the restraint in the rear seat. According to accident statistics, children are safer when properly restrained in the rear seats rather than in the front.
- Carefully follow the instructions that come with the restraint. If you install the restraint improperly, it may not work when you need it.

WARNING!

Improper installation can lead to failure of an infant or child restraint. It could come loose in a collision. The child could be badly injured or killed. Follow the manufacturer's directions exactly when installing an infant or child restraint.

- Infant and child restraints are secured in vehicle seats by the lap belt or the lap part of the lap/shoulder belt.

THINGS TO KNOW BEFORE STARTING YOUR VEHICLE 21

In the rear seat, you may have trouble tightening the belt on the child restraint because the buckle or latch plate interferes with the belt path opening on the restraint. Disconnect the latch plate from the buckle and twist the short buckle-end belt several turns to shorten it. Reassemble the latch plate to the buckle with the release button facing out.

In the front seat, move the seat forward to reposition the buckle against the side of the child restraint.

In the center rear seat, if the belt still can't be tightened or if pulling and pushing on the restraint loosens the belt, you may need to do something more. Disconnect the latch plate from the buckle, turn it over, and reconnect it to the buckle. If you still can't make the child restraint secure, try a different seating position.

- Buckle the child into the restraint exactly as the seat manufacturer's directions tell you. The cinching latch plate will keep the belt tight.

- When your infant carrier or child restraint is not in use, secure it with the seat belt or remove it from the vehicle. Don't leave it loose in the vehicle. In a sudden stop or collision it could strike occupants and injure them.
- Some child seat manufacturers recommend the use of a top anchorage (tether) strap in addition to the lap belt. Your vehicle has tether strap anchorages behind the rear seating positions for use with these child seats.

WARNING!

An incorrectly anchored tether strap could lead to seat failure and injury to the child. In a collision, the seat could come loose and allow the child to crash into the inside of the vehicle or other passengers, or even be thrown from the vehicle. Use only the specified anchor positions to secure a child restraint requiring top tether strap(s). Follow the instructions below. See your dealer for help if necessary.

Children Too Large For Child Seats

Children who are too large for child seats and who can sit upright by themselves should use the available lap/shoulder belts for best protection.

- Make sure that the child is seated upright in the seat.
- The lap belt should be fastened low on the hips and as snug as possible.

- Check belt fit periodically. A child's squirming or slouching can move the belt out of position.

If the shoulder belt contacts the face or neck, move the child closer to the middle of the vehicle. If this doesn't solve the problem, move the child to a rear seat lap belt.

Booster seats that may help overcome this problem are also available for use with lap/shoulder belts. Before buying a booster seat, make sure it has a label certifying that it meets applicable Motor Vehicle Safety Standards. Make sure it is satisfactory for use in this vehicle.

Driver Supplemental Restraint System — Airbag

The vehicle has an airbag for the driver as a supplement to the seat belt restraint system. The airbag is mounted in the steering wheel. Its job is to inflate in higher speed frontal impacts. It works with the instrument panel knee bolster and the seat belt to provide improved protection for the driver.

WARNING!

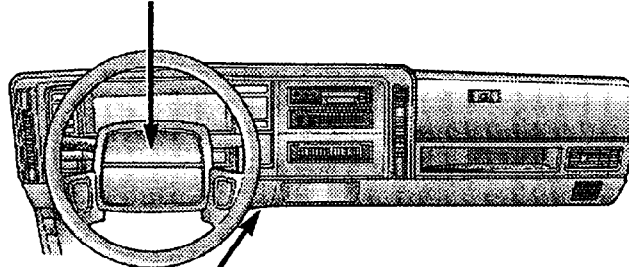
Relying on the airbag alone could lead to more severe injuries in a collision. The airbag works with your seat belt to restrain you properly. In some collisions the airbag won't deploy at all. Wear your seat belt even though you have an airbag.

The seat belt is designed to protect you in many types of collisions. The airbag deploys only on frontal collisions. It will not deploy in collisions at slow speeds. Even in collisions where the airbag does work, you need the seat belt to keep you in the right position for the airbag to protect you properly.

The airbag system consists of the following:

- Airbag Module
 - Crash Sensor

- Inflator Assembly
- Airbag Cushions
- Trim Cover
- Unique Steering Wheel and Column
- Knee Impact Bolster

DRIVER AIRBAG**KNEE BOLSTER**

80460364

How The Airbag System Works

The Crash Sensor/Inflator assembly is located in the steering wheel at the back of the airbag module. The crash sensor provides verification of the direction and severity of the impact. When the crash sensor detects an impact requiring the airbag, it activates the inflator. A large quantity of non-toxic nitrogen gas is generated to inflate the airbag. The steering wheel hub trim cover separates and folds out of the way as the bag inflates to full size. The bag fully inflates in about 50 milliseconds. This is about half of the time it takes to blink your eyes. It then quickly deflates by venting the nitrogen gas through the back panel of the airbag towards the instrument panel. In this way the bag does not interfere with your control of the vehicle.

If A Deployment Occurs

The airbag system is designed to deploy at a precisely calibrated vehicle deceleration force and is not linked to

vehicle road speed. The ignition does not have to be on for the airbag to deploy.

NOTE: A frontal collision that is not severe enough to need airbag protection will not activate the system. This does not mean something is wrong with the airbag system.

If you do have a collision which deploys the airbag, any or all of the following may occur:

- The nylon airbag material may sometimes cause abrasions and/or skin reddening to the driver as the airbag deploys and unfolds itself from the steering wheel.

The abrasions are similar to friction rope burns or those you might get sliding along a carpet or gymnasium floor. They are not caused by contact with chemicals. They are not permanent and normally heal

quickly. However, if you haven't healed significantly within a few days, or if you have any blistering, see your doctor immediately.

- As the airbag deflates you may see some smoke-like particles. The particles are a normal by-product of the process that generates the non-toxic nitrogen gas used for airbag inflation. These airborne particles may irritate the skin, eyes, nose, or throat. If you have skin or eye irritation, rinse the area with cool water. For nose or throat irritation, move to fresh air. If the irritation continues, see your doctor.

If these particles settle on your clothing, follow the garment manufacturer's instructions for cleaning.

- Your vehicle may be driveable after the airbag deploys. If so, you can tuck the deployed airbag inside the opening in the steering wheel hub trim cover to make driving somewhat easier.

WARNING!

The airbag inflator becomes hot during deployment. To prevent injury, wait at least 15 minutes before tucking a deployed airbag back inside the opening in the steering wheel hub trim cover.

WARNING!

A deployed airbag can't protect you in another collision. Have the airbag replaced by an authorized dealer as soon as possible.

WARNING!

Being too close to the steering wheel or instrument panel during airbag deployment could cause serious injury. Airbags need room to inflate. Sit back, comfortably extending your arms to reach the steering wheel or instrument panel.

Maintaining Your Airbag System

WARNING!

- Modifications to any part of the airbag system could cause it to fail when you need it. You could be injured because the airbag is not there to protect you. Do not modify the components, including adding any kind of badges or stickers to the steering wheel hub cover. Do not modify the front bumper or vehicle body structure.
- You need proper knee impact protection in a collision. Do not mount or locate any aftermarket equipment on or behind the knee bolster.
- It is dangerous to repair any part of the airbag system yourself. Don't try to repair any part of the airbag system. Be sure to tell anyone who works on your vehicle that it has an airbag.