

V1985

REPORT NUMBER: 208-CAL-94-2
212-CAL-94-2
301-CAL-94-2

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

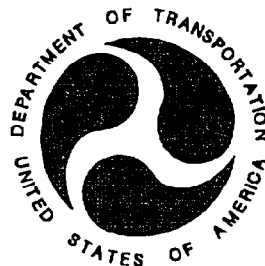
**DIAMOND STAR MOTORS CORPORATION
1994 MITSUBISHI GALANT
4 - Door Sedan**

NHTSA NUMBER: CR5600

CALSPAN TEST NUMBER: 8145-2

October 7, 1993

**CALSPAN CORPORATION
ADVANCED TECHNOLOGY CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225**



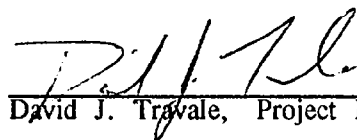
FINAL REPORT

PREPARED FOR:

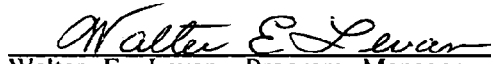
**U. S. Department of Transportation
National Highway Traffic Safety Administration
ENFORCEMENT
Office of Vehicle Safety Compliance
400 Seventh Street, S. W.
Room No. 6115 (NEF-30)
Washington, DC 20590**

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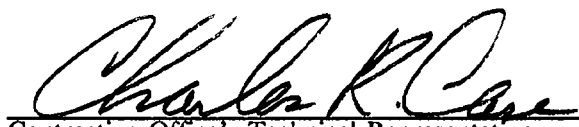
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Contracting Office's Technical Representative
(COTR), NHTSA, Office of Vehicle Safety Compliance

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16. Abstract A 30 mph vehicle safety compliance test was conducted on a 1994 Mitsubishi Galant 4-door sedan. This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on October 7, 1993. 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 29.5 mph. The ambient temperature at the impact face was 71 °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 and right front passenger air bag. The manual 3-point seat belts were not used for this test.					
17. Key Words 30 mph Vehicle Safety Compliance Testing FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Mounting" FMVSS 219, "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity" Frontal Impact			18. Distribution Statement <u>Copies of this report are available from:</u> Technical Reference Division National Highway Traffic Safety Admin. Nassif Building, Room 5108 (NAD-52) 400 Seventh , S.W., Washington, D.C. 20590		
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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 Advanced Technology Center under Contract No. DTNH22-90-D-02121. The purpose of this test was to determine if the subject vehicle, a 1994 Mitsubishi Galant 4 -Door Sedan, 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-208-08, dated September 8, 1989.

Section 2

SUMMARY OF TEST NUMBER CR5600

A frontal barrier was impacted by a 1994 Mitsubishi Galant 4 -Door Sedan at a velocity of 29.5 mph. The test was performed at the Calspan Corporation Advanced Technology Center on October 7, 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 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 and left/right femur load cells. These ATDs had been certified prior to the test.

The 25 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle and dummy response data traces.

The driver's HIC was 146.2. The maximum chest deceleration over 3 milliseconds was 50.9 g's with -1.8 inches of deflection. The maximum force on the driver's left femur was -1449.0 pounds and -1326.1 pounds on the right femur.

The right front passenger's HIC was 120.4. The maximum chest deceleration over 3 milliseconds was 31.4 g's with -1.0 inches of deflection. Loads of -1457.0 and -1353.5 pounds were recorded on the left and right femur respectively.

Table 1

CRASH TEST SUMMARY

Vehicle NHTSA No. :	<u>CR5600</u>	Test Mode :	<u>30 mph Frontal Barrier</u>
Test Date :	<u>October 7, 1993</u>	Time:	<u>10:47</u> Temperature : <u>71</u> °F
Vehicle Make/Model/Body Style : <u>1994 Mitsubishi Galant 4 -Door Sedan</u>			
Vehicle Test Weight :	<u>3180</u>	lbs	
Vehicle/Barrier Impact Angle :	<u>0</u>	°	
Impact Velocity :	<u>29.5</u>	mph	
Maximum Static Crush :	<u>18.1</u>	inches	
Vehicle Rebound :	<u>21.0</u>	inches	
<u>DUMMIES:</u>			
	<u>DRIVER</u>	<u>PASSENGER</u>	
Type :	<u>Part 572 E</u>	<u>Part 572 E</u>	
Restraint System :	<u>Airbag</u>	<u>Airbag</u>	
Number of Data Channels :	<u>25</u>		
Number of Cameras :	<u>1</u>	Real Time	
	<u>14</u>	High Speed	
<u>DOOR OPENING DATA :</u>			
	<u>Closed-operable</u>	- Left Front	
	<u>Closed-operable</u>	- Right Front	
<u>Front Seat(s) Data :</u>			
	<u>DRIVER</u>	<u>PASSENGER</u>	
Seat Track Failure :	<u>None</u>	<u>None</u>	
		Inches of shift	
Seat Back Failure :	<u>None</u>	<u>None</u>	
<u>VISIBLE DUMMY CONTACT POINTS :</u>			
	<u>DRIVER</u>	<u>PASSENGER</u>	
Head :	<u>Face & head w/ airbag, back of head w/ head rest</u>	<u>Face & head w/ airbag, back of head - head rest</u>	
Abdomen :	<u>Airbag</u>	<u>Air bag</u>	
Chest	<u>Air bag</u>	<u>Airbag</u>	
Knees	<u>Knee Bolster</u>	<u>Glove box door</u>	

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/model/Body Style :		1994 Mitsubishi Galant 4 -Door Sedan			
NHTSA No. :	CR5600	VIN:	4A3AJ46G6REO17671	Color :	Maroon
Engine Data:	4 cylinders;	-	CID;	2.4	Liters; - cc
Placement :	-	Longitudinal or In-Line;	-	Transverse of Lateral	
Transmission Data :	5 speeds;	-	Manual;	-	Automatic; X Overdrive
Final Drive :	-	Rear Wheel Drive;	X	Front Wheel Drive;	- Four Wheel Drive
Major Options :	-	A/C;	-	Pwr.Strg.;	X Pwr. Brakes
	-	Pwr. Windows;	-	Pwr. Door Locks;	X Tilt Wheel
Date Received :	8/30/93	;	Odometer Reading	39	miles
Selling Dealer :	SOUTHTOWNS MITSUBISHI				
& Address:	5140 Camp Rd. Hamburg, N. Y. 14075				

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : DIAMOND STAR MOTORS CORPORATION
 Date of Manufacture July 1993
 GVWR : 3925 lbs.; GAWR: 2140 lbs. FRONT; 1785 lbs. REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : $\frac{32}{29}$ psi FRONT
psi REAR

Recommended Tire Size : P185/70R14 87H

* Recommended Cold Tire Pressure : 32 psi FRONT; 29 psi REAR

Size of Tires on Test Vehicle: P185/70R14 87H ; **Manufacturer:** Bridgestone

Vehicle Capacity Data :

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

Number of Occupants:	2	Front;	3	Rear;	5	Total
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Vehicle Capacity Weight (VCW) = 827 lbs.

$$\text{No. of Occupants} \times 150 \text{ lbs.} = \underline{\underline{750.0 \text{ lbs.}}}$$

Rated Cargo/Luggage Weight (RCLW) = 77.0

*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	=	850	lbs.	Right Rear	=	540	lbs.
Left Front	=	820	lbs.	Left Rear	=	570	lbs.
TOTAL FRONT	=	1,670	lbs.	TOTAL REAR	=	1,110	lbs.

TOTAL DELIVERED WEIGHT = 2,780.0 lbs.

% of Total Front of Vehicle Weight = 60 % of Total Rear Weight = 39.9 %

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight	=	2,780.0	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	77.0	lbs.
Weight of 2 p.572 Dummies @ 167 each	=	334	lbs.
TARGET TEST WEIGHT	=	3,191.0	lbs.

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 66 POUNDS OF CARGO WEIGHT:

Right Front	=	920	lbs.	Right Rear	=	670	lbs.
Left Front	=	890	lbs.	Left Rear	=	700	lbs.
TOTAL FRONT	=	1,810	lbs.	TOTAL REAR	=	1,370	lbs.

TOTAL TEST WEIGHT = 3,180 lbs.

% of Total Front Weight = 56.9 % % of Total Rear Weight = 43.1 %

Weight of Ballast Secured in Vehicle Trunk Area = 0 lbs.

Vehicle Components Removed for Weight Reduction: ----

VEHICLE ATTITUDE (all dimension in inches) :

AS DELIVERED :	RF	27.7	LF	27.7	RR	27.3	LR	27.3
FULLY LOADED :	RF	26.5	LF	26.5	RR	25.1	LR	25.0
AS TESTED :	RF	27.0	LF	27.0	RR	26.0	LR	25.8

Vehicle's Wheel Base : 103.8 in.

Location of Vehicle's C.G. : 44.7 inches rearward of front wheel center.

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual = 16.9 gallons

Usable Capacity Figure Furnished by COTR = 16.6 gallons

Test Volume Range (92 to 94% of Usable Capacity) = 15.3 to 15.6 gallons

ACTUAL TEST VOLUME= 15.4 gallons (with entire fuel system filled)

Table 3

POST IMPACT DATATYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
 Test Date : October 7, 1993 Time: 10:47 Temperature: 71 °F
 Vehicle NHTSA No. : CR5600
 Required Impact Velocity Range : 28.9 to 29.9 mph

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

Trap No. 1 = 29.5 mph; Trap No. 2 = 29.5 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 = 181.5 ; C/L = 187.1 ; Left = 182.0
 Post-Test Right = 166.7 ; C/L = 169.0 ; Left = 170.2
 Crush Right = 14.8 ; C/L = 18.1 ; Left = 11.8
 AVERAGE = 14.9 inches

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

Right = 24.0 ; C/L = 21.0 ; Left = 22.0
 AVERAGE = 22.3 inches

DOOR OPENING :

	Left	Right
Front	<u>Closed - operable</u>	<u>Closed - operable</u>
Rear	<u>Closed - operable</u>	<u>Closed - operable</u>

SEAT MOVEMENT :

	Seat Back Failure	Seat Shift
Front	<u>None</u>	<u>None</u>
Rear	<u>N/A</u>	<u>N/A</u>

Table 3

POST IMPACT (cont.)

GLAZING DAMAGE :

Windshield sustained minor stress fractures but remained intact.

OTHER NOTABLE IMPACT FEATURES :

None.

Section 3

OCCUPANT AND VEHICLE DATA

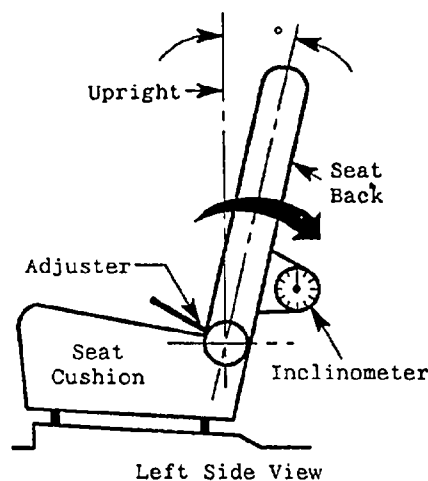
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1994 Vehicle Model: Mitsubishi Galant Body Style : 4 -Door Sedan

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 : 14th detent

Measurement instructions : Seat back set at 14th detent from forward most position (zero).

Seat back angle for passenger's seat : 14th detent

Measurement instructions : Seat back set at 14th detent from forward most position (zero).

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : Seat set at 11th detent rearward of front most position (zero).

The seat track contains a total of 23 detents for fore/aft travel.

Positioning of the passenger's seat (if applicable) : Seat set at 11th detent rearward of front most position (zero). The seat track contains a total of 23 detents for fore/aft travel.

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 16.6 gallons

B. "Usable Capacity" of the optional equipment fuel tank is N/A gallons

4. Steering Column Position :

Column in mid position.

5. Other:

None

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION

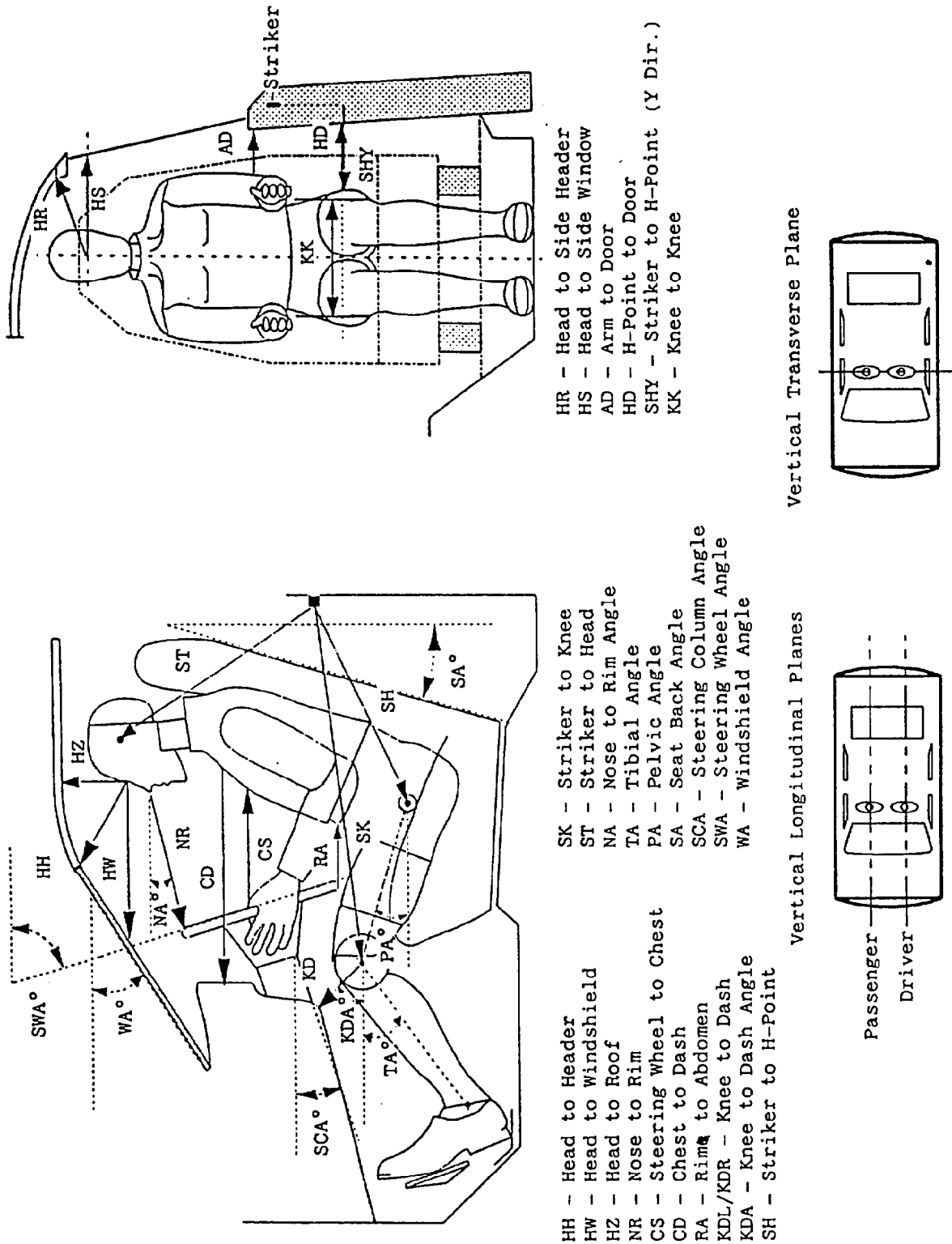
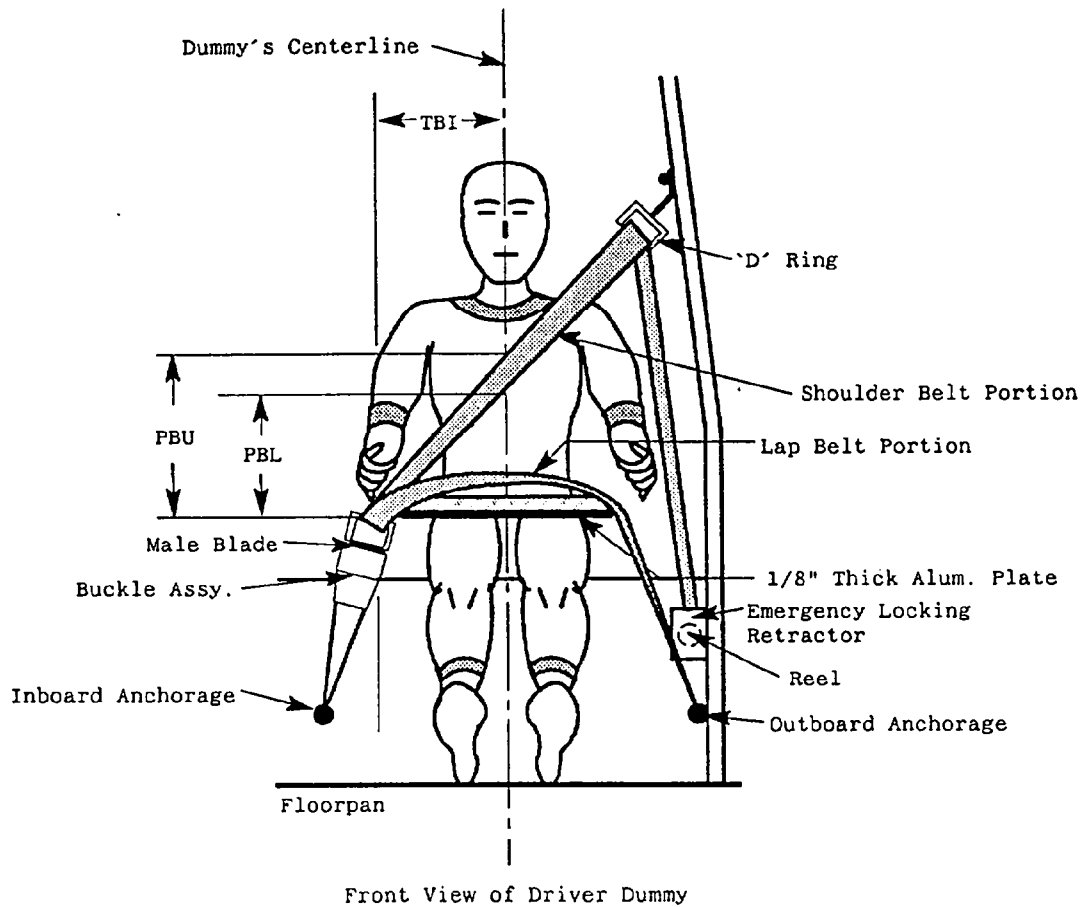


Table 4

FRONT SEAT OCCUPANT MEASUREMENTS
(dimensions in inches)

	DRIVER (Serial #341)	PASS. (Serial #342)
WA°	28	-
SWA°	69	-
SCA°	21	-
SA°	24	24
HZ	7.3	7.0
HH	12.8	12.9
HW	23.6	23.8
HR	9.2	8.5
NR	15.7 Angle 13 deg.	-
CD	22.3	22.4
CS	13.2	-
RA	8.6	-
KDL	8.0 Angle (KDA) 26 deg.	7.6
KDR	8.0	7.5 Angle (KDA) 30 deg.
PA°	24 deg.	23 deg.
TA°	34 deg.	34 deg.
KK	10.7	10.6
ST	18.6 Angle 12 deg.	19.4 Angle 11 deg.
SK	22.4 Angle 102 deg.	23.0 Angle 99 deg.
SH	8.7 Angle 134 deg.	8.7 Angle 133 deg.
SHY	9.7	9.3
HS	12.9	12.1
HD	7.6	7.4
AD	4.3	4.0

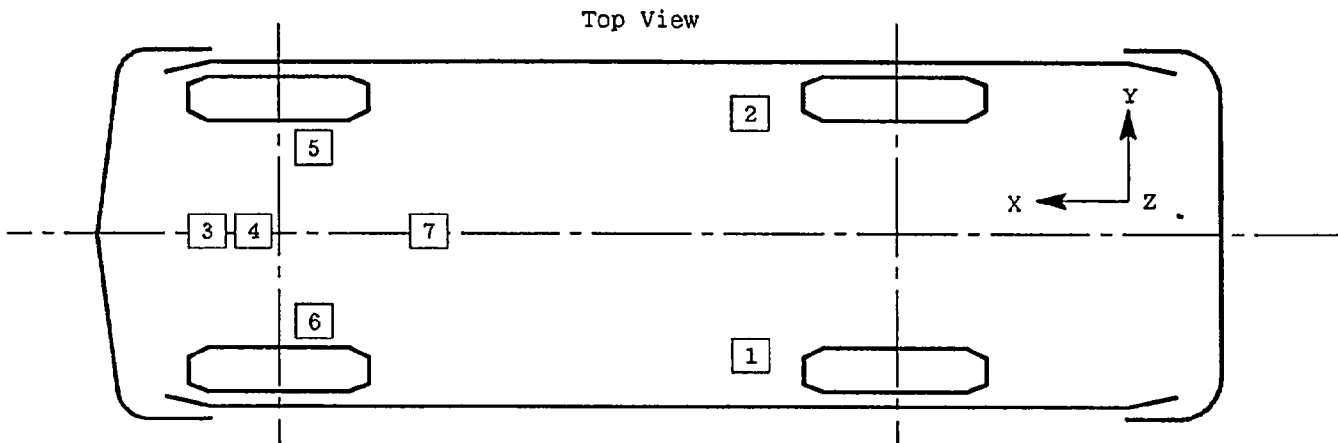
Figure 3
SEAT BELT POSITIONING DATA



	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
<u>PBU</u> -- Top surface of alum. plate to upper edge	N/A	N/A
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	N/A	N/A
<u>TBI</u> -- Distance from torso centerline to buckle	N/A	N/A

Vehicle equipped with driver and right front passenger airbags. The manual 3-point seat belts were not used for this test.

Figure 4
VEHICLE ACCELEROMETER LOCATIONS



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	Left Disc Brake Caliper	X		
7	Instrument Panel	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

NO.	LOCATION		X*	Y*	Z*	POSITIVE DIRECTION**		NEGATIVE DIRECTION**	
						MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	REAR SEAT X-MEMBER AT LEFT SIDE LONGITUDINAL ACCELERATION	PRE:	72.0	24.0	14.8				
		POST:	72.0	24.0	14.5				
						1.4	177.7	-26.6	57.4
2	REAR SEAT X-MEMBER AT RIGHT SIDE LONGITUDINAL ACCELERATION	PRE:	72.0	-24.0	14.8				
		POST:	72.0	24.0	14.5				
						1.7	116.6	-27.8	50.4
3	TOP OF ENGINE BLOCK LONGITUDINAL ACCELERATION	PRE:	158.8	-5.0	32.0				
		POST:	140.7	-5.0	30.2				
						20.3	51.2	-90.9	35.6
4	BOTTOM OF ENGINE LONGITUDINAL ACCELERATION	PRE:	155.3	-2.3	10.3				
		POST:	137.2	-2.3	8.5				
						4.6	59.4	-51.2	34.6
5	BRAKE CALIPER AT RIGHT SIDE LONGITUDINAL ACCELERATION	PRE:	147.8	-21.15	17.0				
		POST:	147.7	-21.15	17.0				
						14.6	85.2	-40.0	54.8
6	BRAKE CALIPER AT LEFT SIDE LONGITUDINAL ACCELERATION	PRE:	147.8	21.15	17.0				
		POST:	147.7	21.15	17.0				
						16.0	109.7	-73.8	54.5
7	DASH PANEL LONGITUDINAL ACCELERATION	PRE:	115.2	-3.3	31.5				
		POST:	115.0	-3.3	31.4				
						15.8	40.7	-62.4	25.3

**

*X + Forward from rear bumper
Y + Left from vehicle centerline
Z + Up from ground

LONGITUDINAL:
LATERAL:
VERTICAL:

POSITIVE
FORWARD
LEFTWARD
UPWARD

NEGATIVE
REARWARD
RIGHTWARD
DOWNWARD

DISTANCE MEASUREMENTS IN INCHES

Figure 5

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information shown on Table 5.

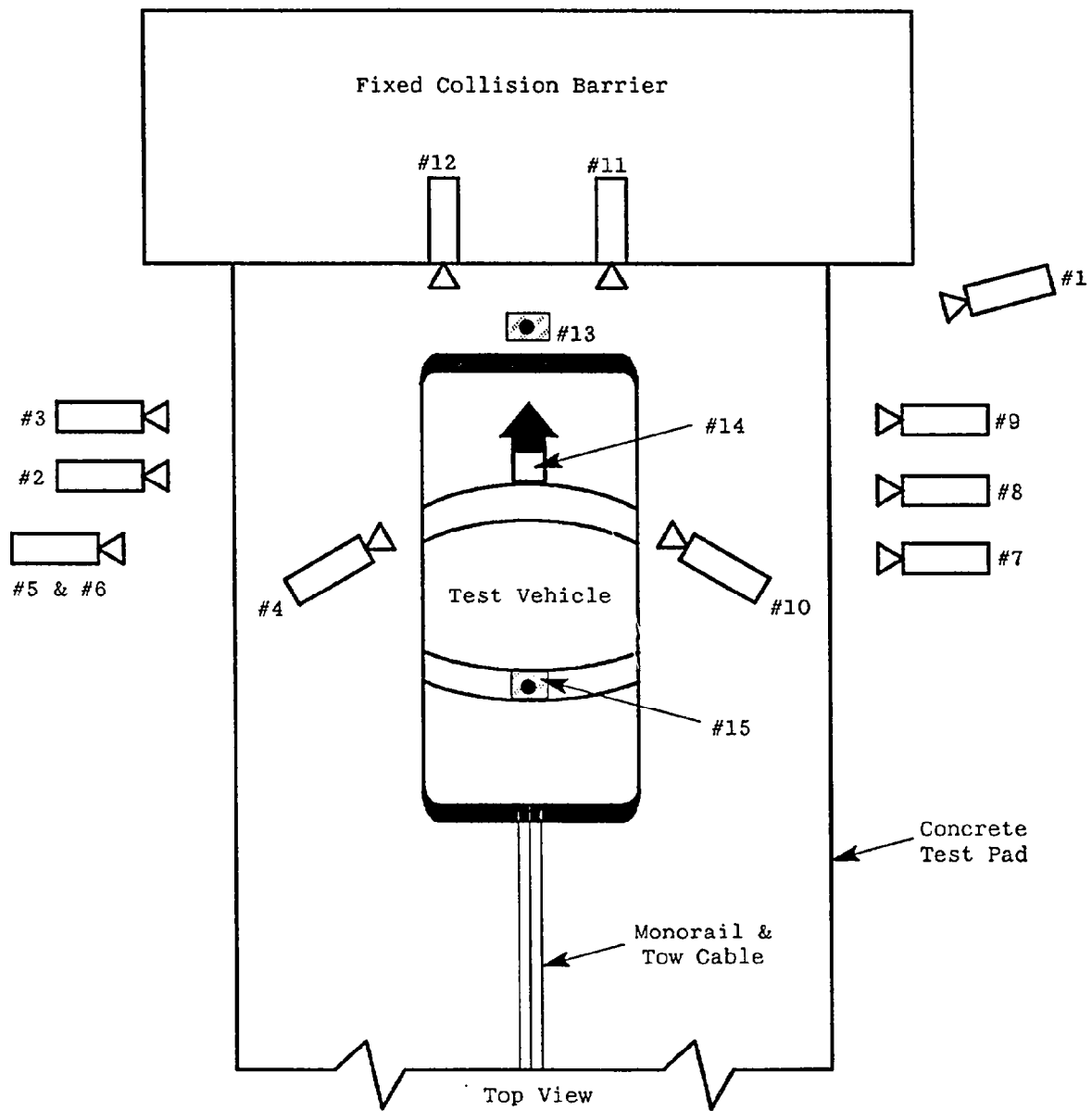


Table 6

HIGH-SPEED CAMERA LOCATIONS

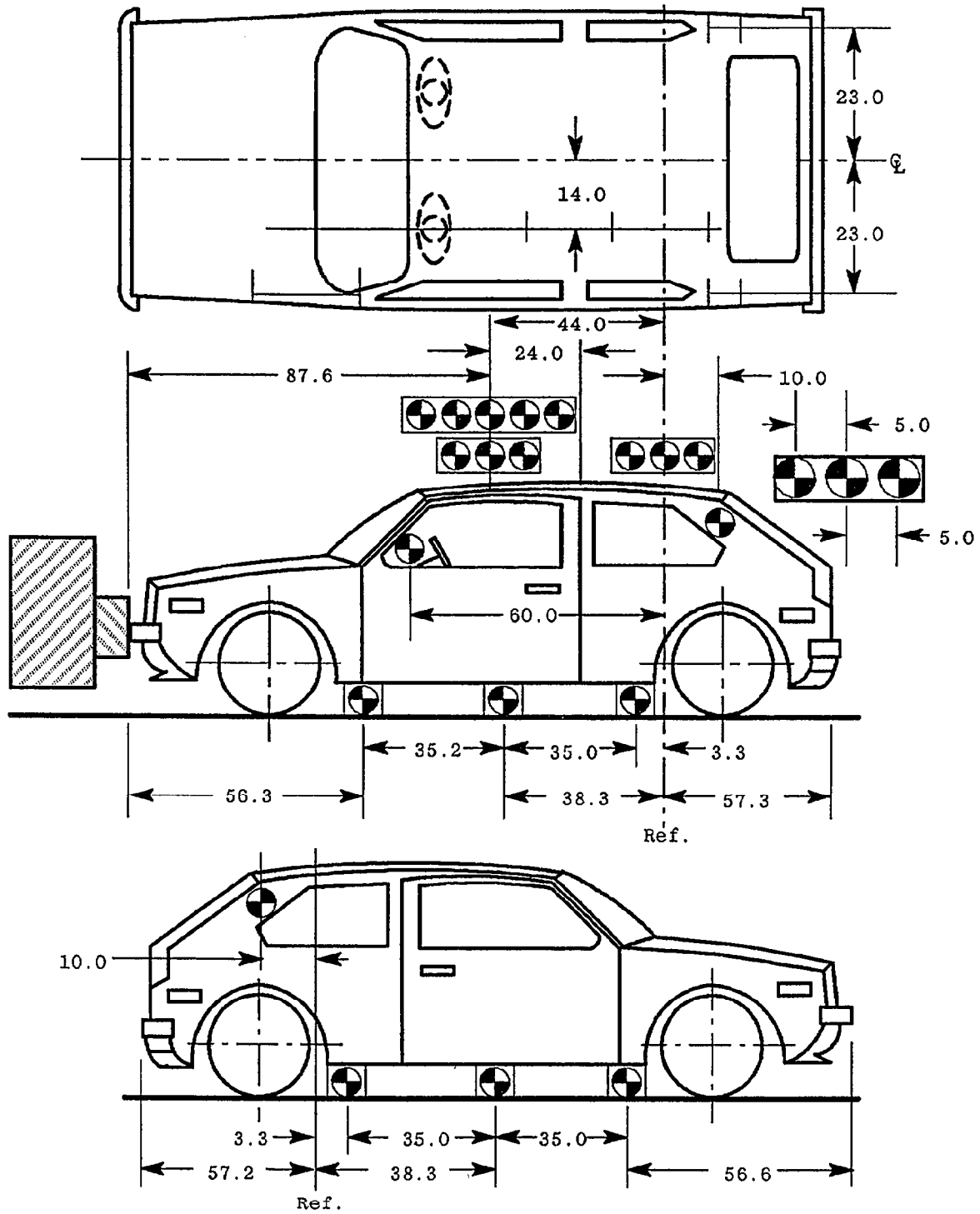
Test No. 8145-2 Vehicle: 1994 MITSUBISHI GALANT 4 - Door Sedan

Camera No.	VIEW	CAMERA POSITION (In.)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	247	76	42	-1	230	13	1030
3	Left Side View	309	42	41	-3	292	25	1015
4	Driver and Interior View	114	105	68	-18	-	13	955
5	Steering Column (Bottom)	269	64	46	-4	252	25	1080
6	Steering Column (Top)	269	64	70	-9	252	25	1015
7	Overall Right Side	253	81	41	-2	236	13	1030
8	Right Side View	310	65	41	-2	293	25	1070
9	Right Passenger View	304	83	57	-4	287	35	740
10	Passenger and Interior View	112	108	68	-17	-	13	910
11	Passenger Front View	23	20	76	-43	-	13	1005
12	Driver Front View	22	19	76	-43	-	13	1010
13	Windshield View	0	0	127	-57	-	13	1100
14	Pit View of Engine	0	30	86	90	-	13	730
15	Pit View of Fuel Tank	0	100	86	90	-	13	750

*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



(Dimensions in inches)

Figure 7

TEST VEHICLE MEASUREMENTS

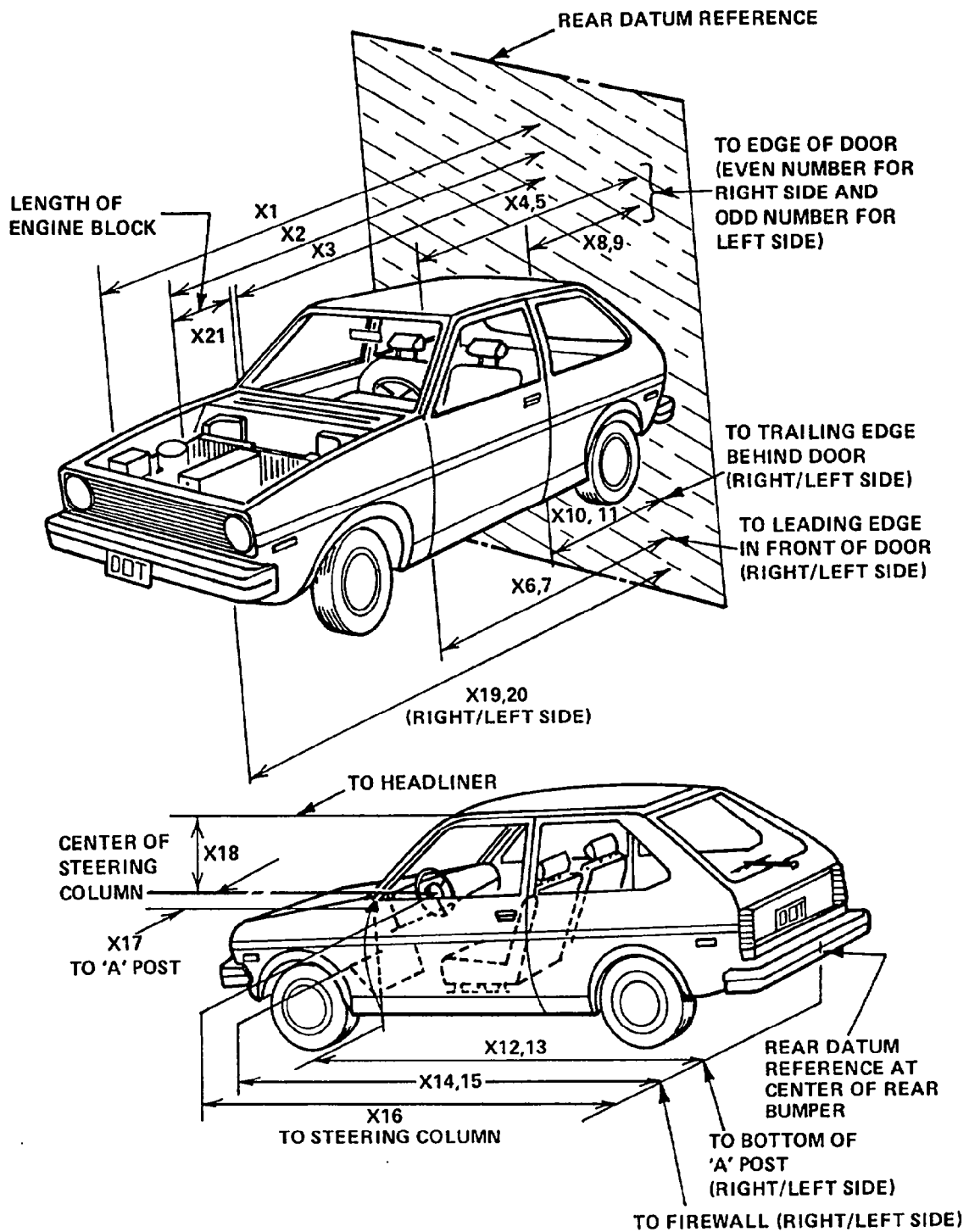


Table 7

VEHICLE MEASUREMENTS

No.		All Dimensions in inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	187.1	169.0	18.1
X2	Rear Surface of Vehicle to Front of Engine	162.2	158.7	3.5
X3	Rear Surface of Vehicle to Firewall	139.0	139.2	-0.2
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	123.5	126.9	-3.4
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	123.5	123.6	-0.1
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	127.3	123.6	3.7
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	127.2	126.6	0.6
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	86.8	86.8	0.0
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	86.5	86.8	-0.3
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	86.6	86.5	0.1
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	86.8	86.6	0.2
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	127.6	126.9	0.7
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	127.9	127.1	0.8
X14	Rear Surface of Vehicle to Firewall, Right Side	138.0	137.8	0.2
X15	Rear Surface of Vehicle to Firewall, Left Side	138.0	138.1	-0.1
X16	Rear Surface of Vehicle to Steering Column	109.0	111.3	-2.3
X17	Center of Steering Column to "A" Post	16.9	16.5	0.4
X18	Center of Steering Column to Headliner	17.8	17.4	0.4
X19	Rear Surface of Vehicle to Right Side of Front Bumper	181.5	166.7	14.8
X20	Rear Surface of Vehicle to Left Side of Front Bumper	182.0	170.2	11.8
X21	Length of Engine Block	17.5	17.5	0.0

Section 4

SUMMARY OF RESULTS OF FMVSS NOS. 208, 212, 219 AND 301-75

- "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. 301-75

Table 8

DUMMY INJURY CRITERIA VALUESNHTSA No. : CR5600 Vehicle : 1994 Mitsubishi Galant 4 -Door Sedan

	MAXIMUM ACCELERATION (g's)								
	HEAD				CHEST				
	X	Y	Z	R	X	Y	Z	R*	Displacement
Dummy (1)	-31.3	-12.6	25.4	37.4	-50.5	6.6	18.7	50.9	-1.8
Dummy (2)	-41.1	-10.8	21.5	41.2	-30.7	-6.7	12.6	31.4	-1.0

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Dummy (1)	-1449.0	-1326.1
Dummy (2)	-1457.0	-1353.5

	HEAD INJURY CRITERIA **			
	HIC	36 millisecond Maximum		Avg. Acc (g)
		t ₁ (msec)	t ₂ (msec)	t ₁ TO t ₂
Dummy (1)	146.16	65.280	101.160	27.80
Dummy (2)	120.40	50.880	86.760	25.72

* 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 = 0 sec.
(audible warning should not operate)

Log time duration of reminder light operation = 6 sec.

Note wording of visual warning :

Fasten Seat Belt -

Fasten Belt -

Symbol 101 - 80 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 outside panel of driver and passenger sunvisors.

The manufacturers recommended schedule is to inspect the system ten years after date of manufacture as shown on the certification label.

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 - NO X

Describe the location of the readiness indicator :

Readiness indicator located at top right of instrument cluster.

Is the readiness indicator clearly visible to the driver ? YES X NO -

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

YES X NO -

Table 12

FMVSS NO. 208 - COMFORT AND CONVENIENCE TEST SUMMARY

Test Vehicle NHTSA No. :	CR5600
Make/Model :	1994 Mitsubishi Galant 4 -Door Sedan
Date of Comfort/Convenience Check :	October 5, 1993
Technician Performing Check :	D. J. T.
GVWR :	3925 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 N/A NO N/A
 - b. The latch plate is released from the buckle. YES N/A NO N/A
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 0.3 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-208-8. | 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>N/A</u> | NO | <u>N/A</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 X NO -
 - b. The seat is moved to any position to which it is designed to be adjusted.
YES X NO -
 - c. The seat back, if foldable, is folded forward as far as possible and then moved backward into positions.
YES X NO -
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 X NO -

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 X NO -
- 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 X NO -
- 3. That releases at a single point by a push button action.
YES X NO -

Figure 8

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

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

Windshield is bonded in place with 0.6 inch rubber trim covering the top and sides. Lower portion of windshield is covered by a plastic shroud.

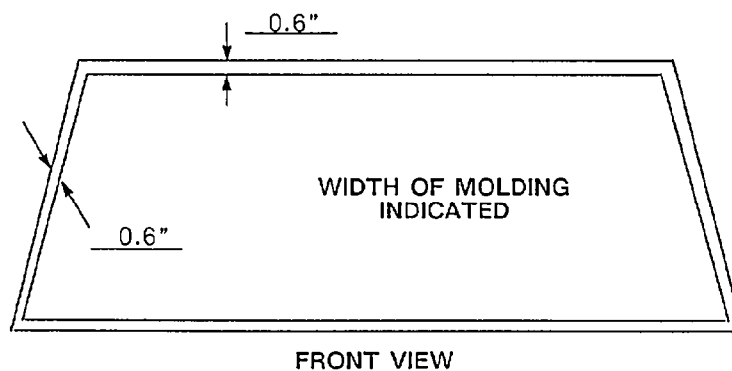
FMVSS 212 REQUIREMENTS :

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	85.65	85.65	100.0
LEFT SIDE	85.65	85.65	100.0
TOTAL	171.3	171.3	100.0

AREA OF RETENTION FAILURE:



FAILURE DETAILS :

None

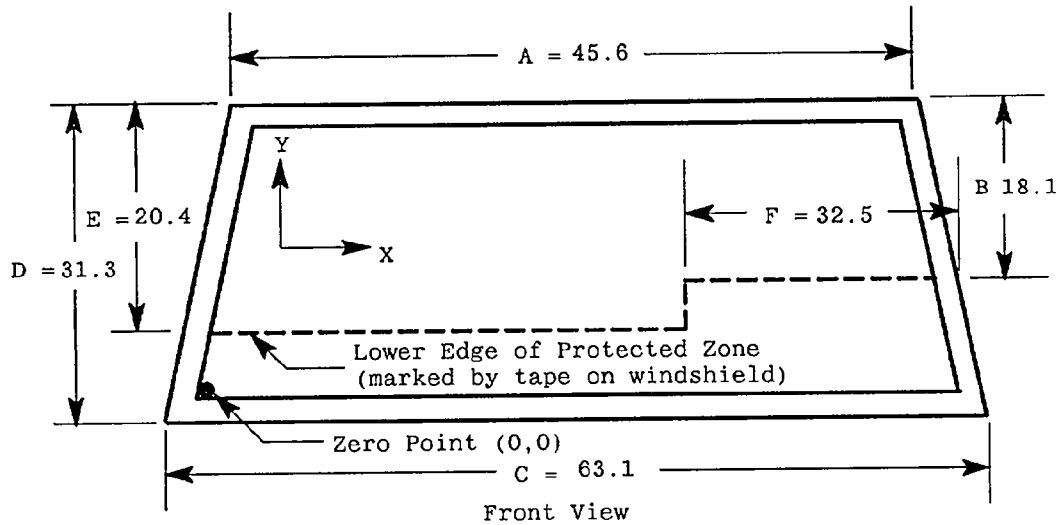
Figure 9

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.)



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. : CR5600 TEST DATE : October 7, 1993

Vehicle Mfgr./Make/Model : 1994 Mitsubishi Galant 4 -Door Sedan

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

TEST VEHICLE IMPACT TYPE : X Frontal (30 mph)
- Oblique (30 mph) with 0 ° barrier face first
 contacting _____
 (driver/passenger) side
- Rear Moving Barrier (30 mph)
- Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:

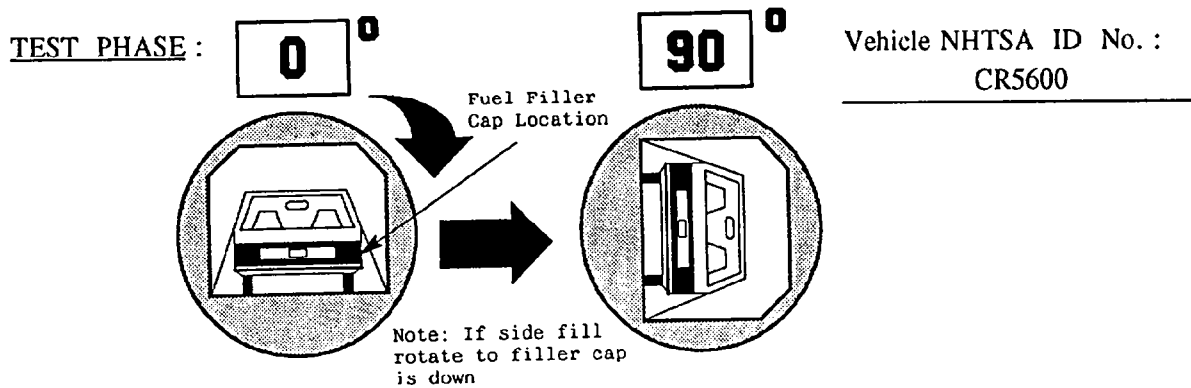
1. From impact until vehicle motion ceases
2. For five minute period after vehicle motion ceases
3. For next 25 minutes

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 SHEETI. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>2</u>	minutes	<u>03</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>00</u>	seconds
TOTAL	<u>7</u>	minutes	<u>03</u>	seconds
Next whole minute interval	<u>8</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 :

<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
----------	----------	----------	----------

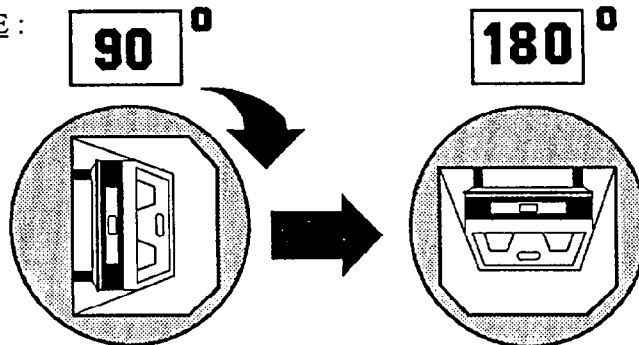
Note: Record spillage for whole minute
intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

None

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

TEST PHASE :



Vehicle NHTSA ID No. :
CR5600

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	58	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	58	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
---	---	---	-----

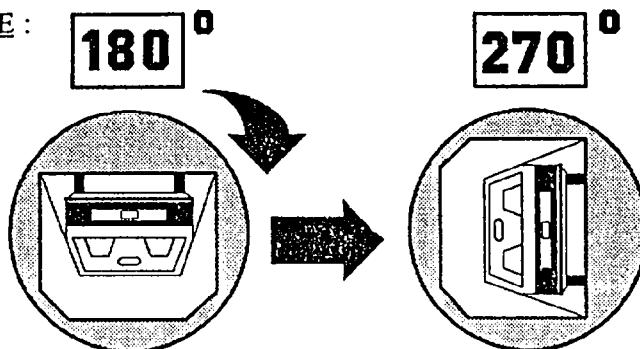
Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

None

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

TEST PHASE :



Vehicle NHTSA ID No. :
CR5600

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	46	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	46	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
---	---	---	-----

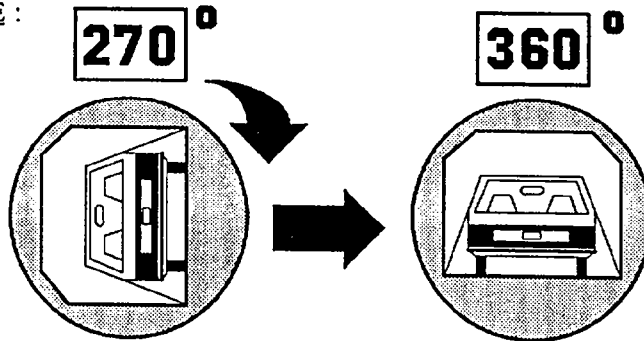
Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

None

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

TEST PHASE :



Vehicle NHTSA ID No. :
CR5600

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

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

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

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

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

IV. SOLVENT SPILLAGE LOCATION(S) :

None

Table 15
TEST VEHICLE NONCOMPLIANCE NOTICE

NHTSA Contract Lab : Calspan Advanced Technology Center
Lab Project Manager & Telephone No. : Walter E. Levan (716) 632 - 7500
Date of Test : October 7, 1993 Vehicle NHTSA No. : CR5600
Vehicle Manufacturer : DIAMOND STAR MOTORS CORPORATION
Model Year : 1994 VIN : 4A3AJ46G6RE017671
Model : GALANT Body Style: 4 -Door Sedan Build Date : July 1993
Dummy Stabilized Temperature at Time of Test : 70 °F (Spec. = 69 - 72 °F)
Impact Velocity : 29.5 mph; Time of Test : 10:47
Type of Automatic Restraint System :
Driver : Airbag
Passenger : Airbag

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-34	VEHICLE IMPACT	A-36
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A-36	POST-TEST PASSENGER AIRBAG VIEW	A-38

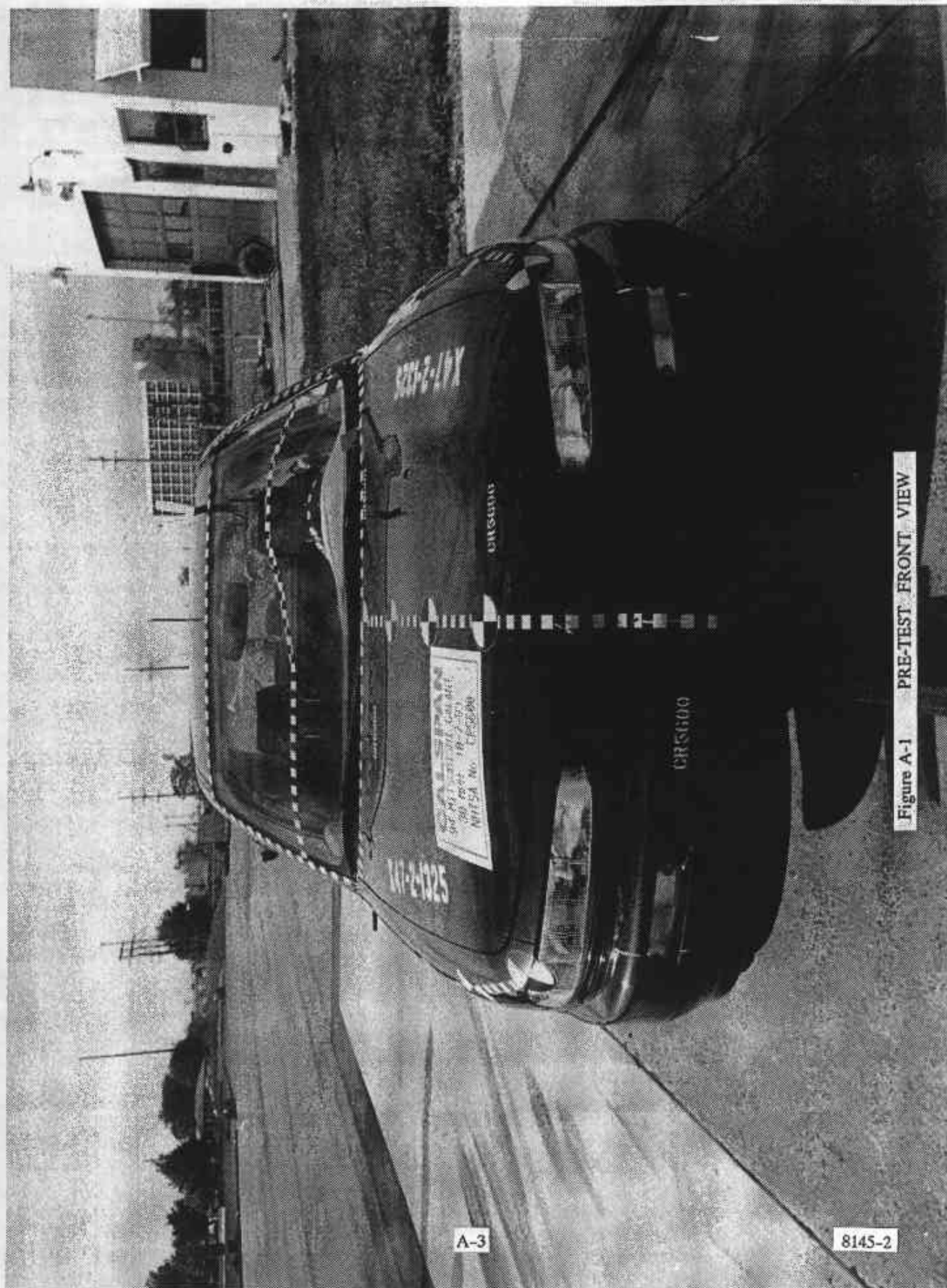


Figure A-1 PRE-TEST FRONT VIEW

A-3

8145-2

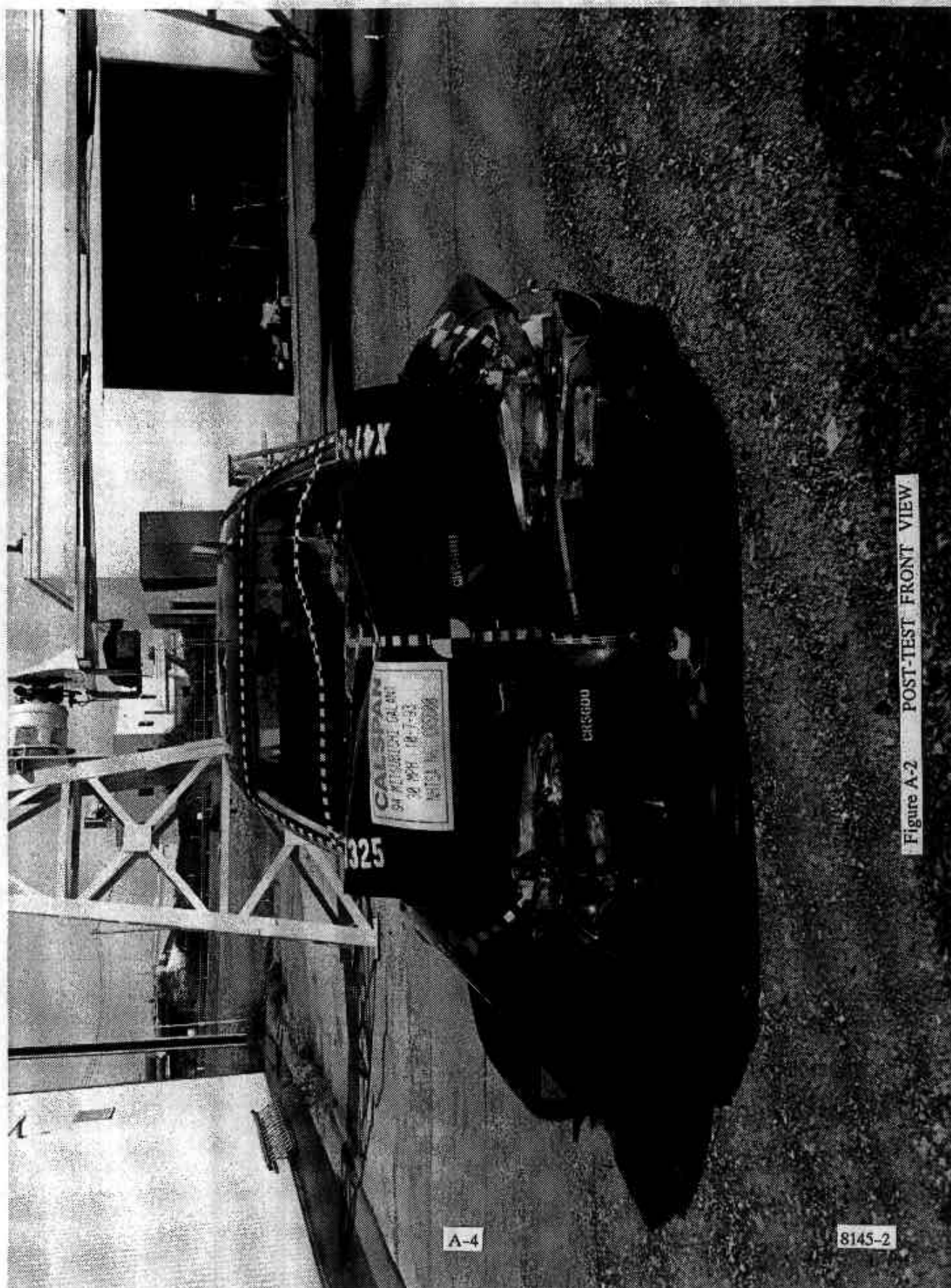


Figure A-2 POST-TEST FRONT VIEW

A-4

8145-2

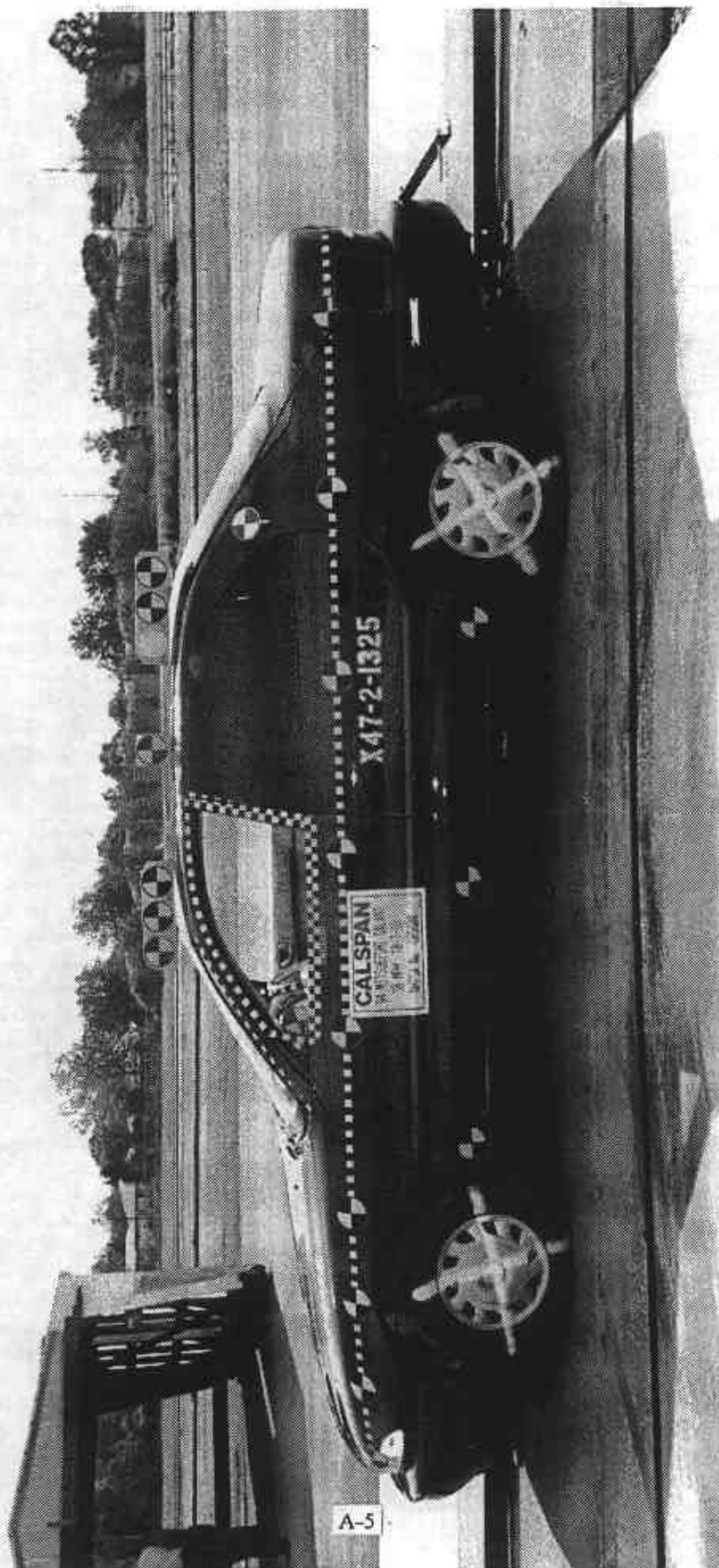


Figure A-3 PRE-TEST LEFT SIDE VIEW

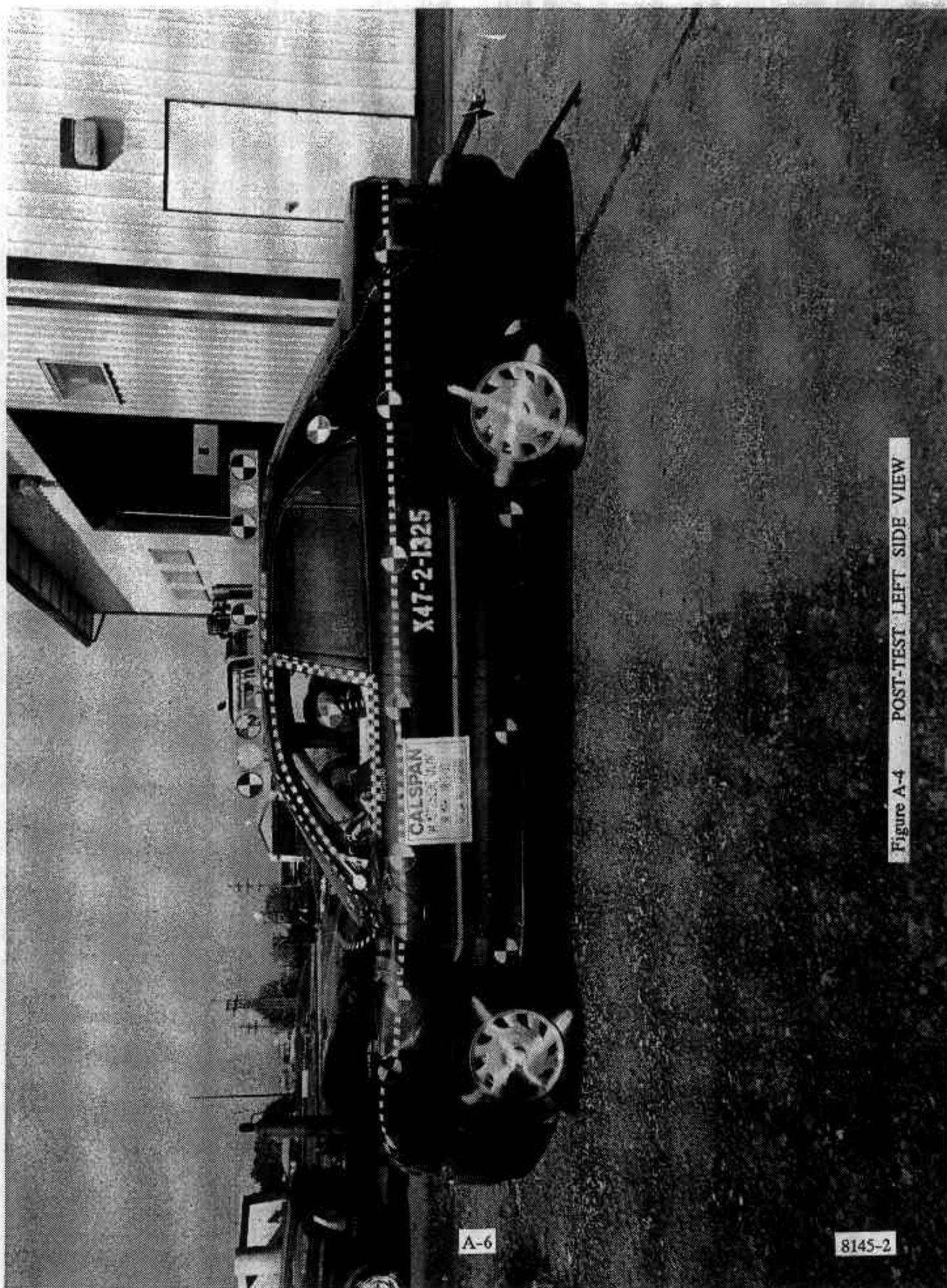


Figure A-4 POST-TEST LEFT SIDE VIEW

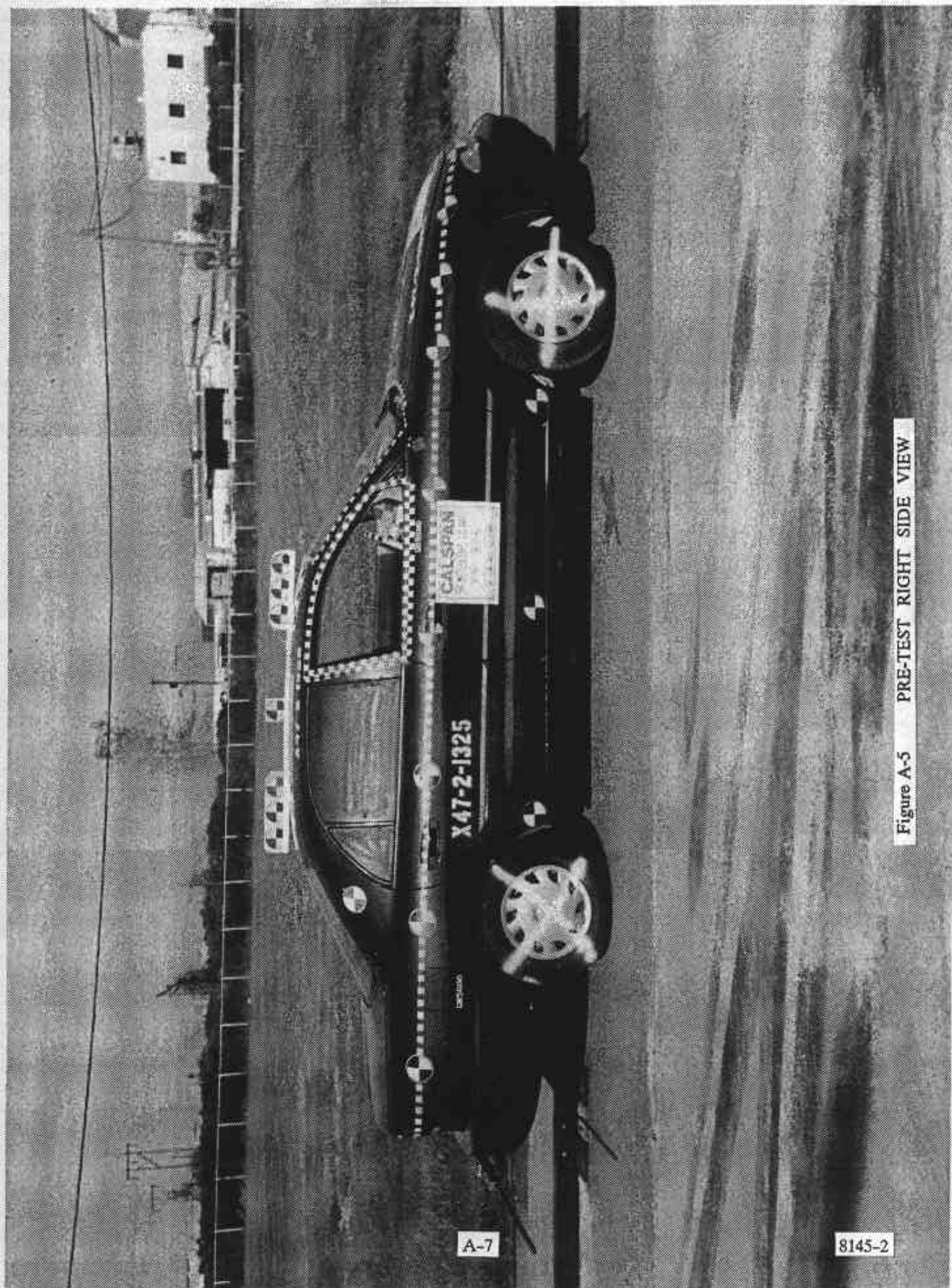


Figure A-5 PRE-TEST RIGHT SIDE VIEW

A-7

8145-2



Figure A-6 POST-TEST RIGHT SIDE VIEW

A-8

8145-2



Figure A-7 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

A-9

8145-2

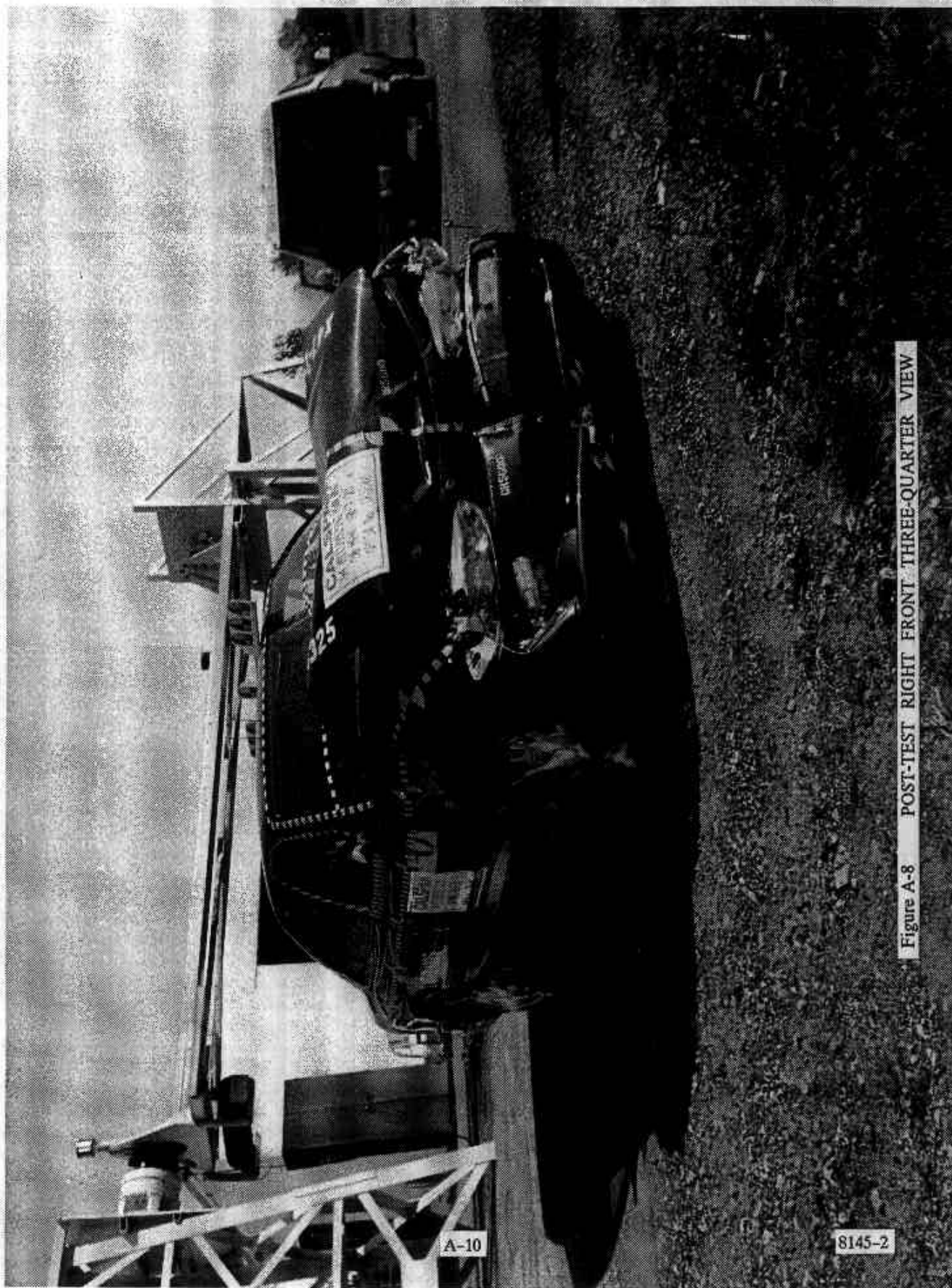


Figure A-8 POST-TEST RIGHT FRONT THREE-QUARTER VIEW

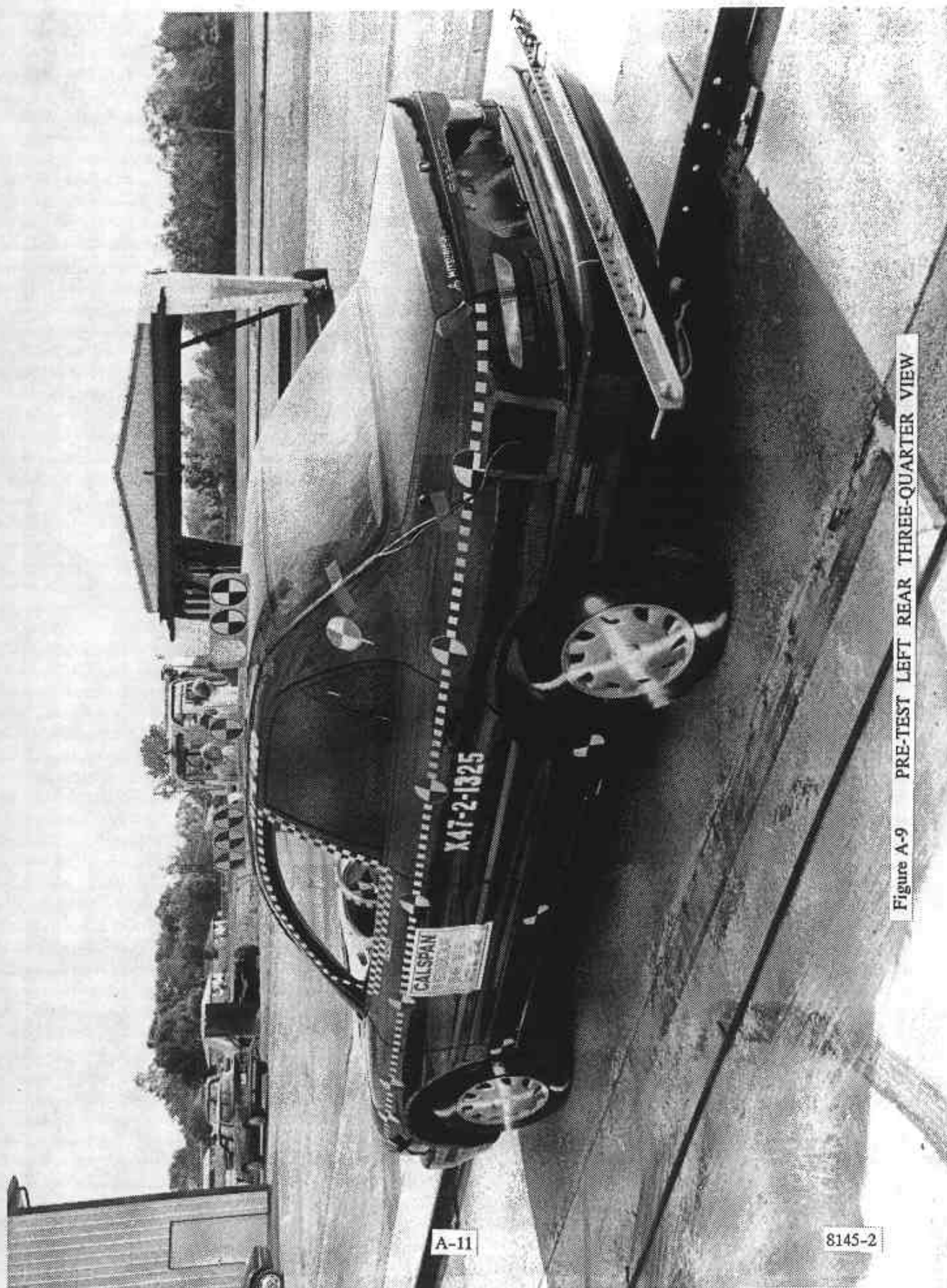


Figure A-9 PRE-TEST LEFT REAR THREE-QUARTER VIEW

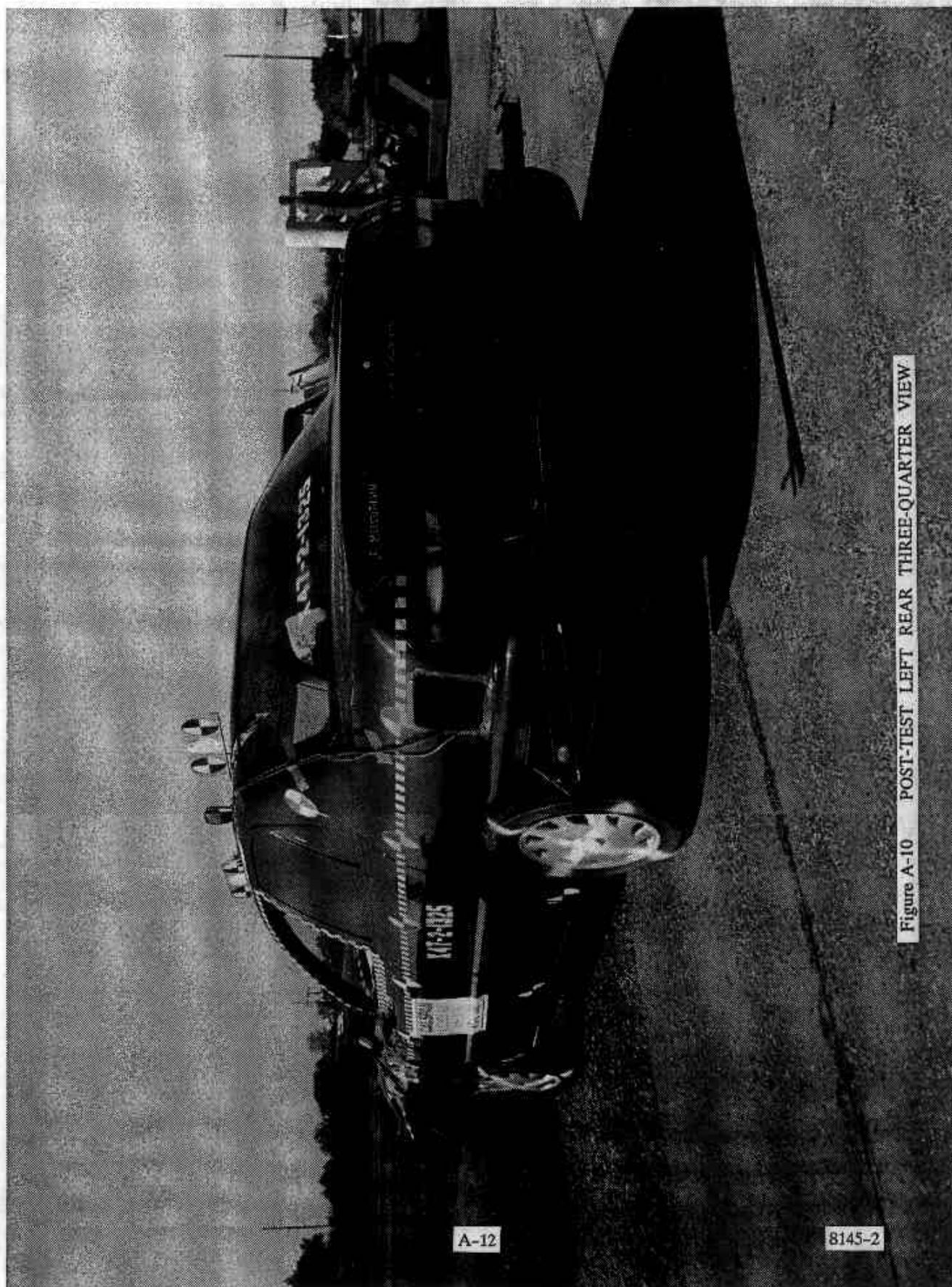
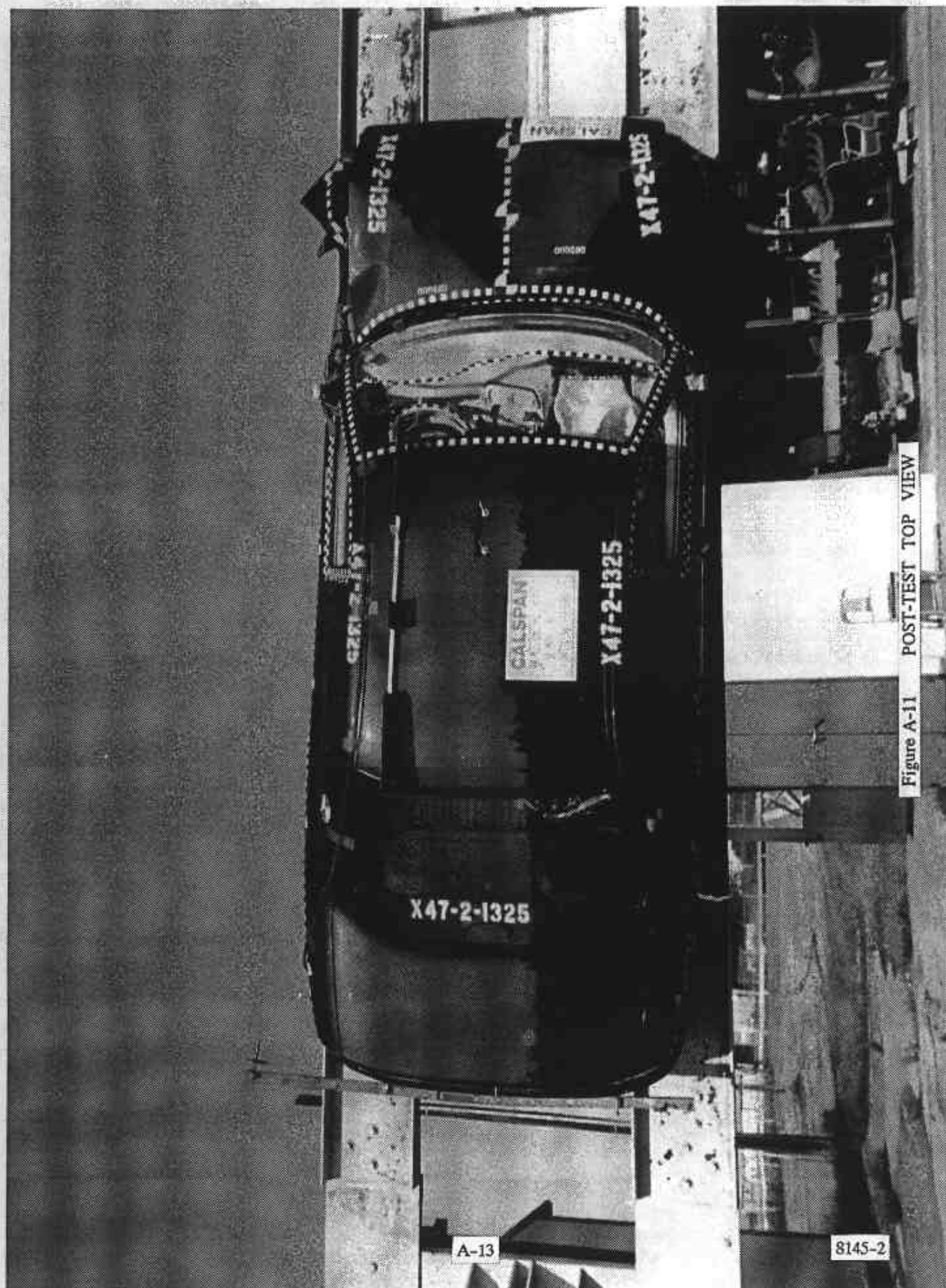


Figure A-10 POST-TEST LEFT REAR THREE-QUARTER VIEW



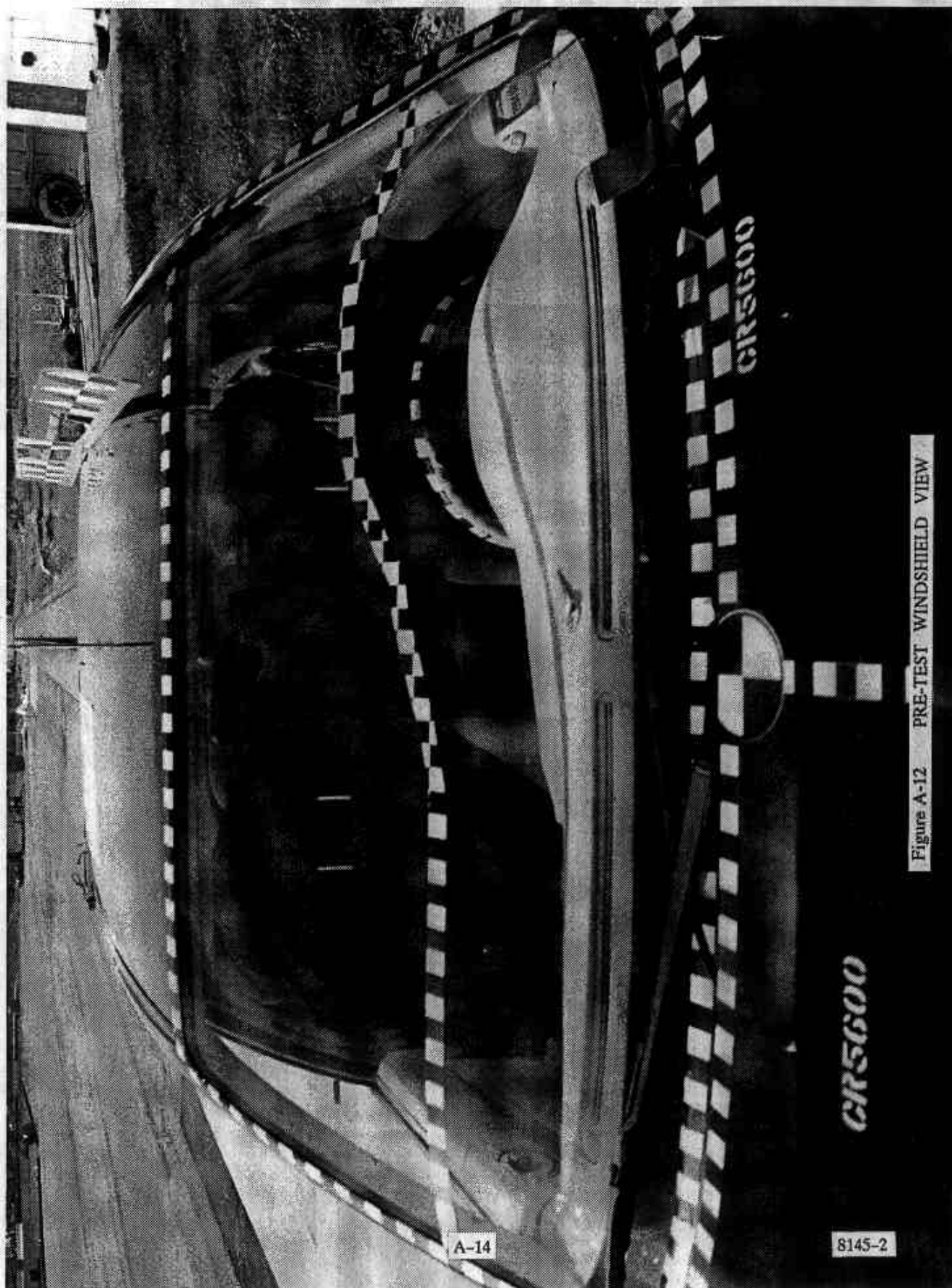


Figure A-12 PRE-TEST WINDSHIELD VIEW

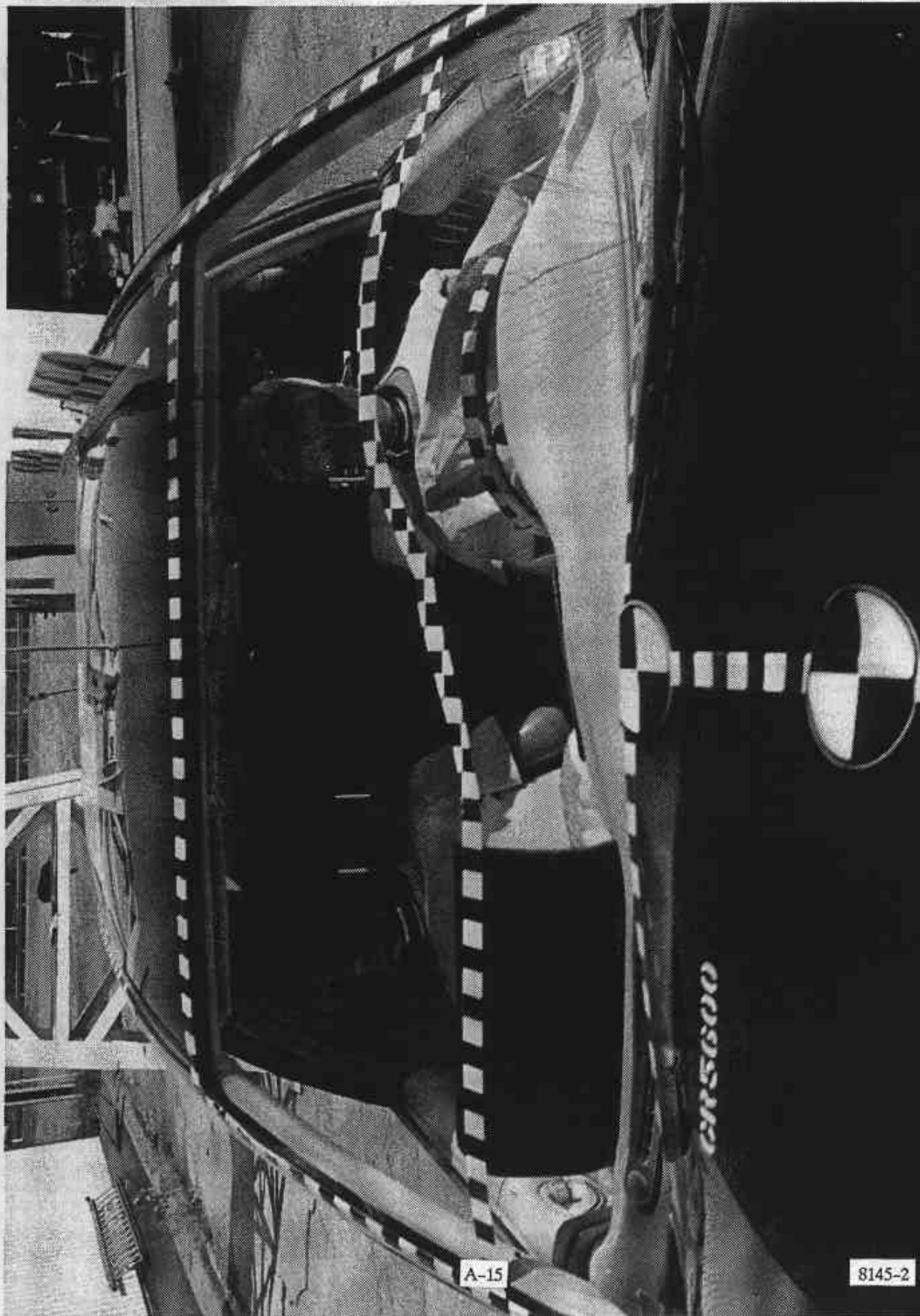
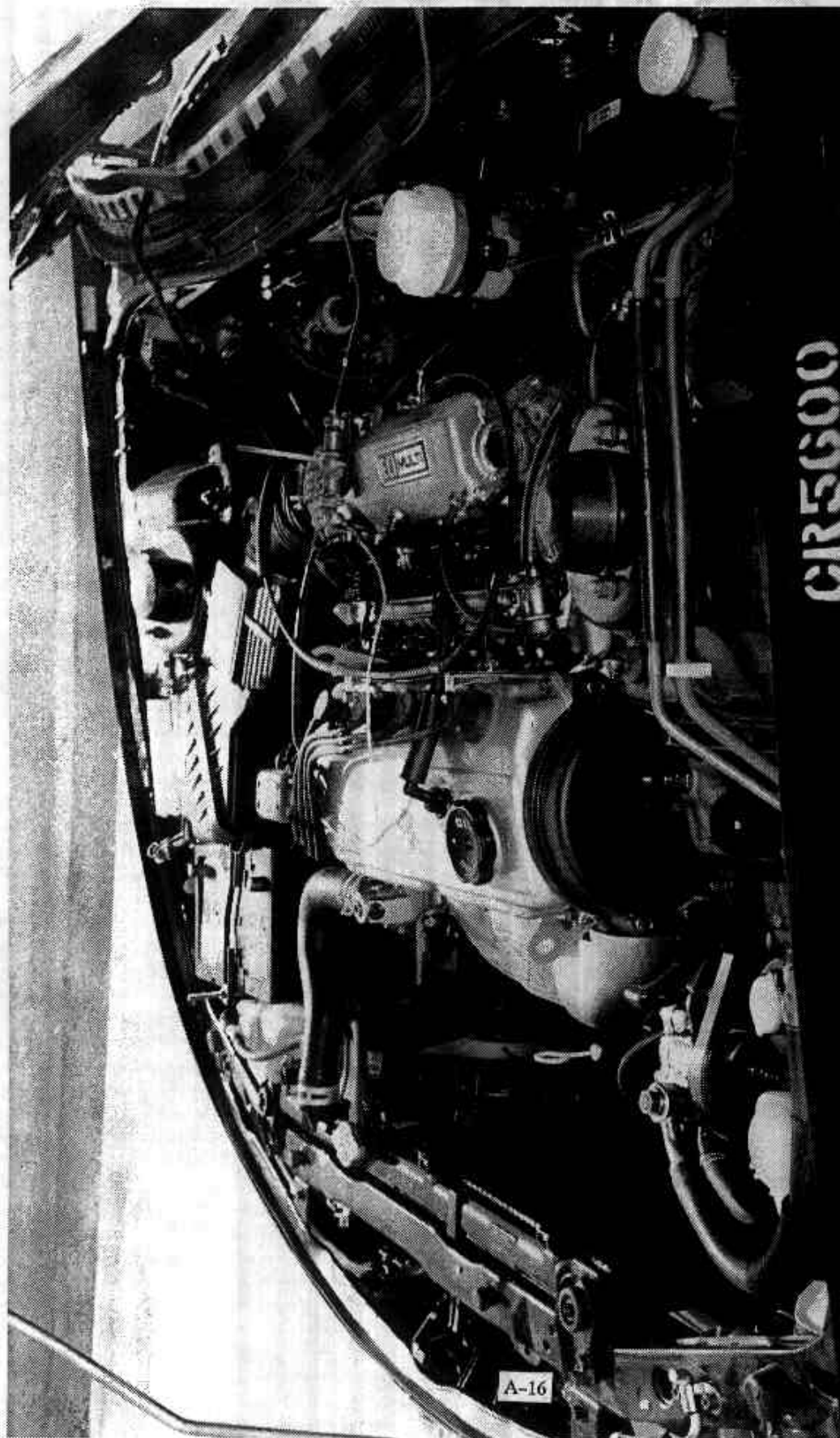


Figure A-13 POST-TEST WINDSHIELD VIEW

A-15

8145-2



CR5600

Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

A-16

8145-2

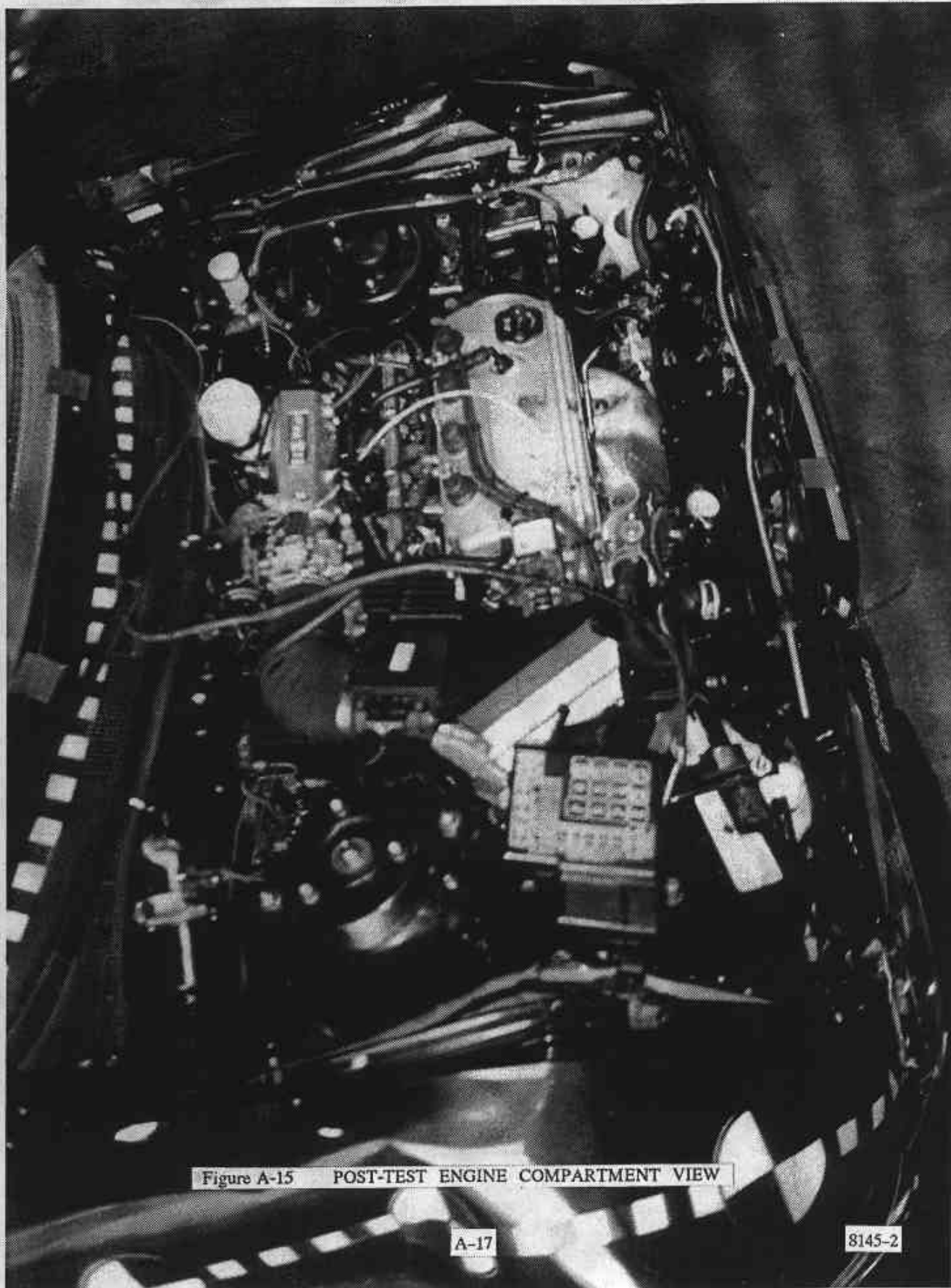


Figure A-15 POST-TEST ENGINE COMPARTMENT VIEW

A-17

8145-2



Figure A-16 PRE-TEST FUEL FILLER CAP PHOTO

A-18

8145-2

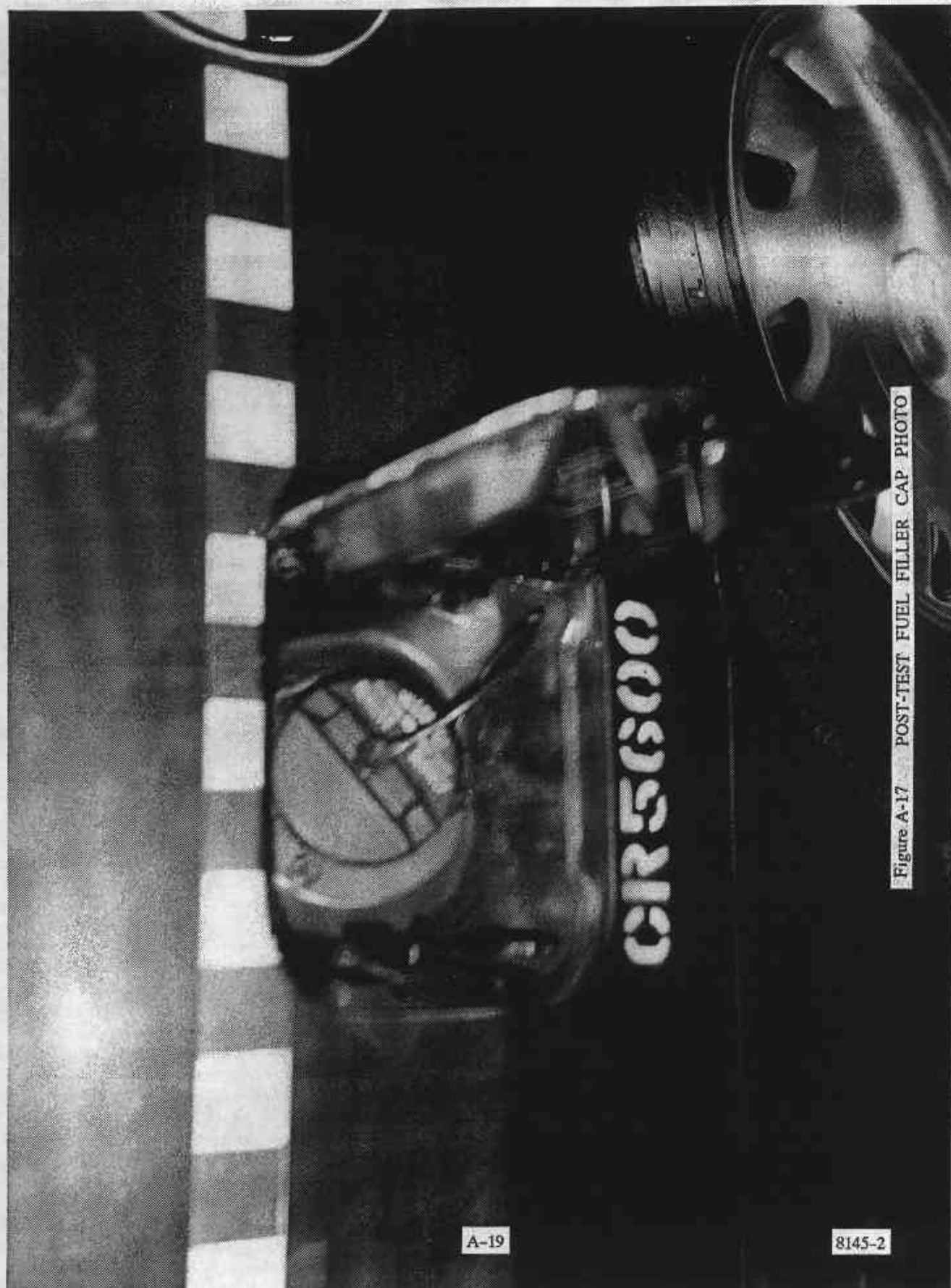


Figure A-17 POST-TEST FUEL FILLER CAP PHOTO

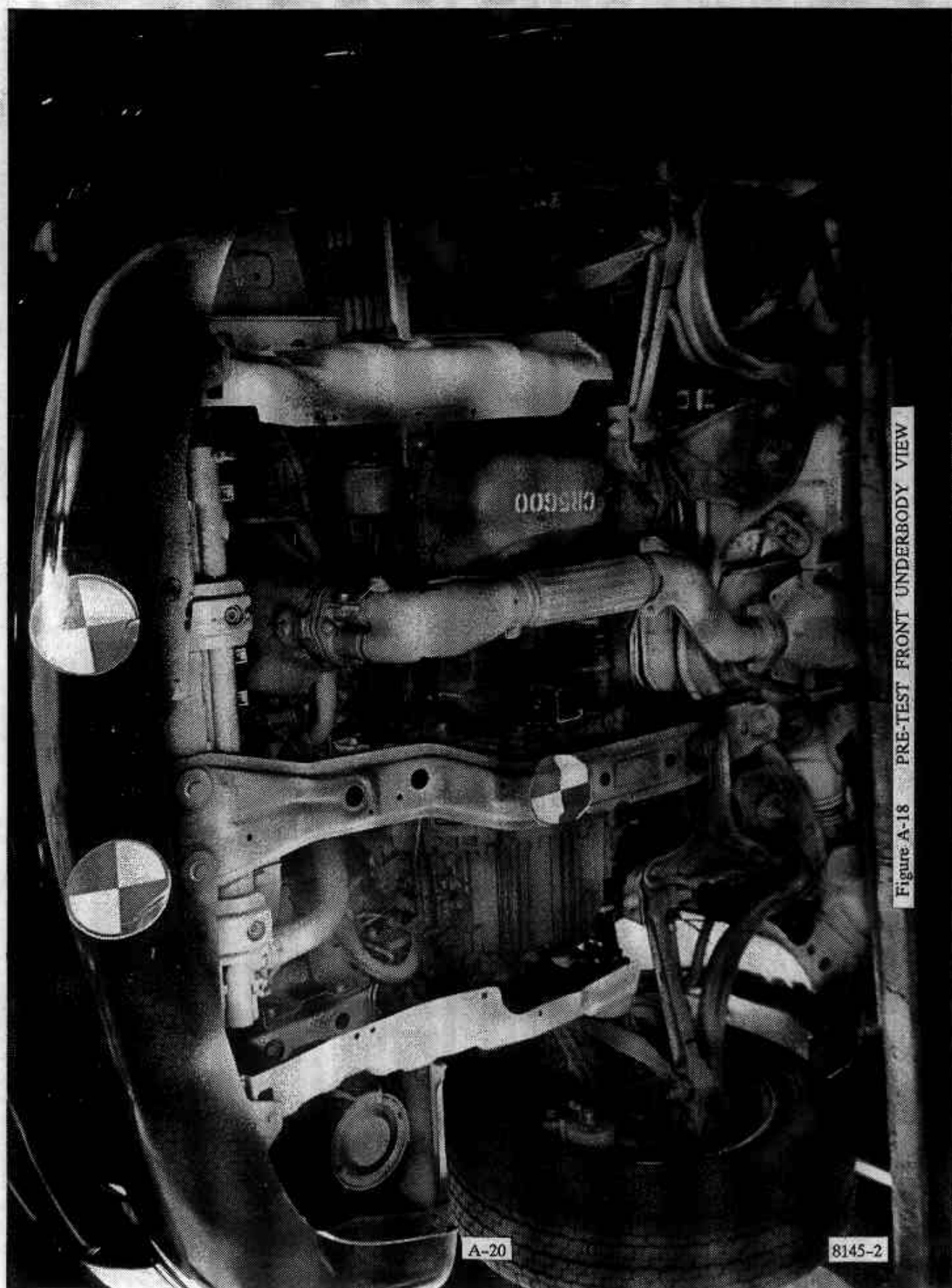


Figure A-18 PRE-TEST FRONT UNDERBODY VIEW



Figure A-19 POST-TEST FRONT UNDERBODY VIEW

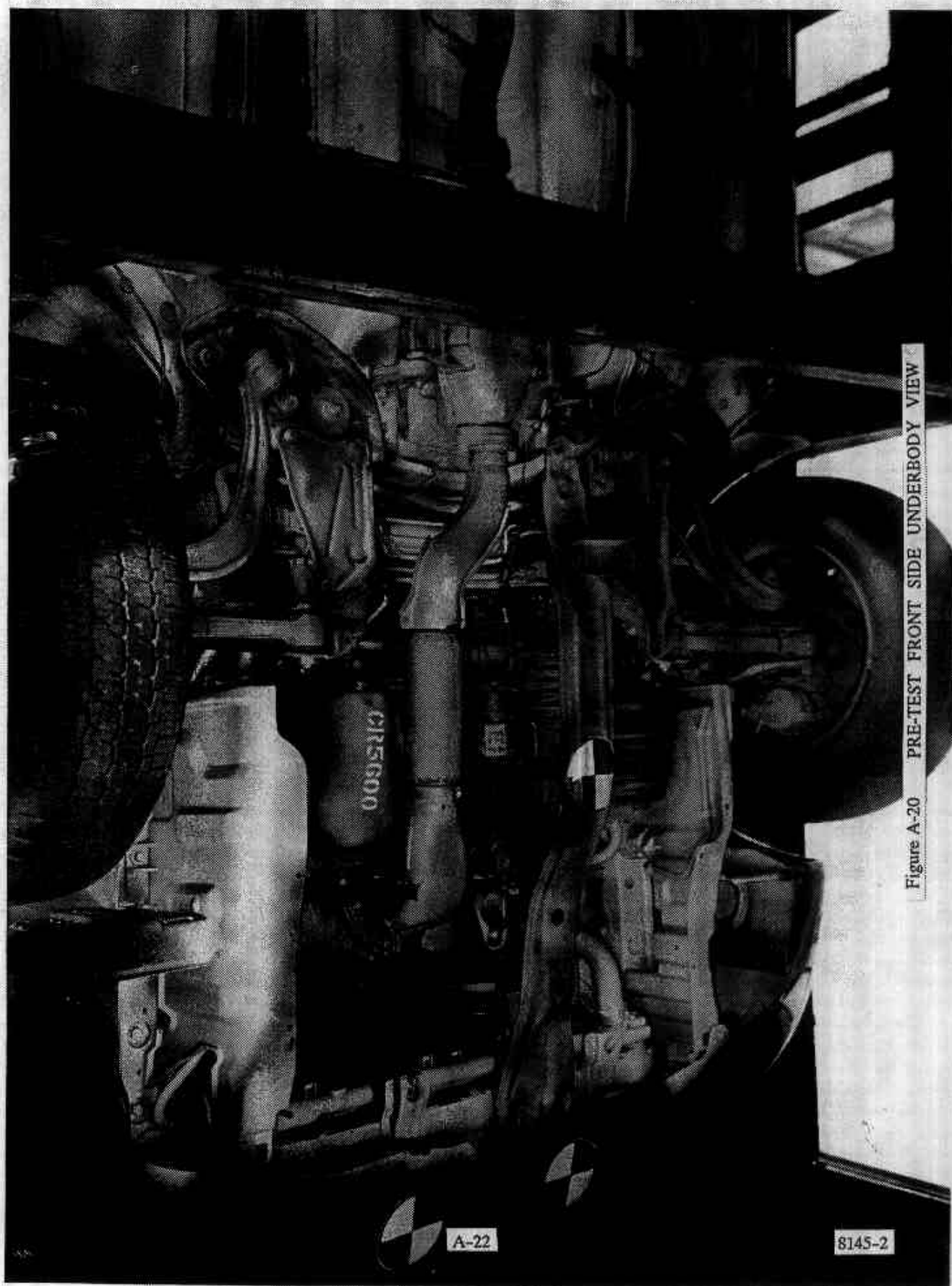


Figure A-20 PRE-TEST FRONT SIDE UNDERBODY VIEW

A-22

8145-2

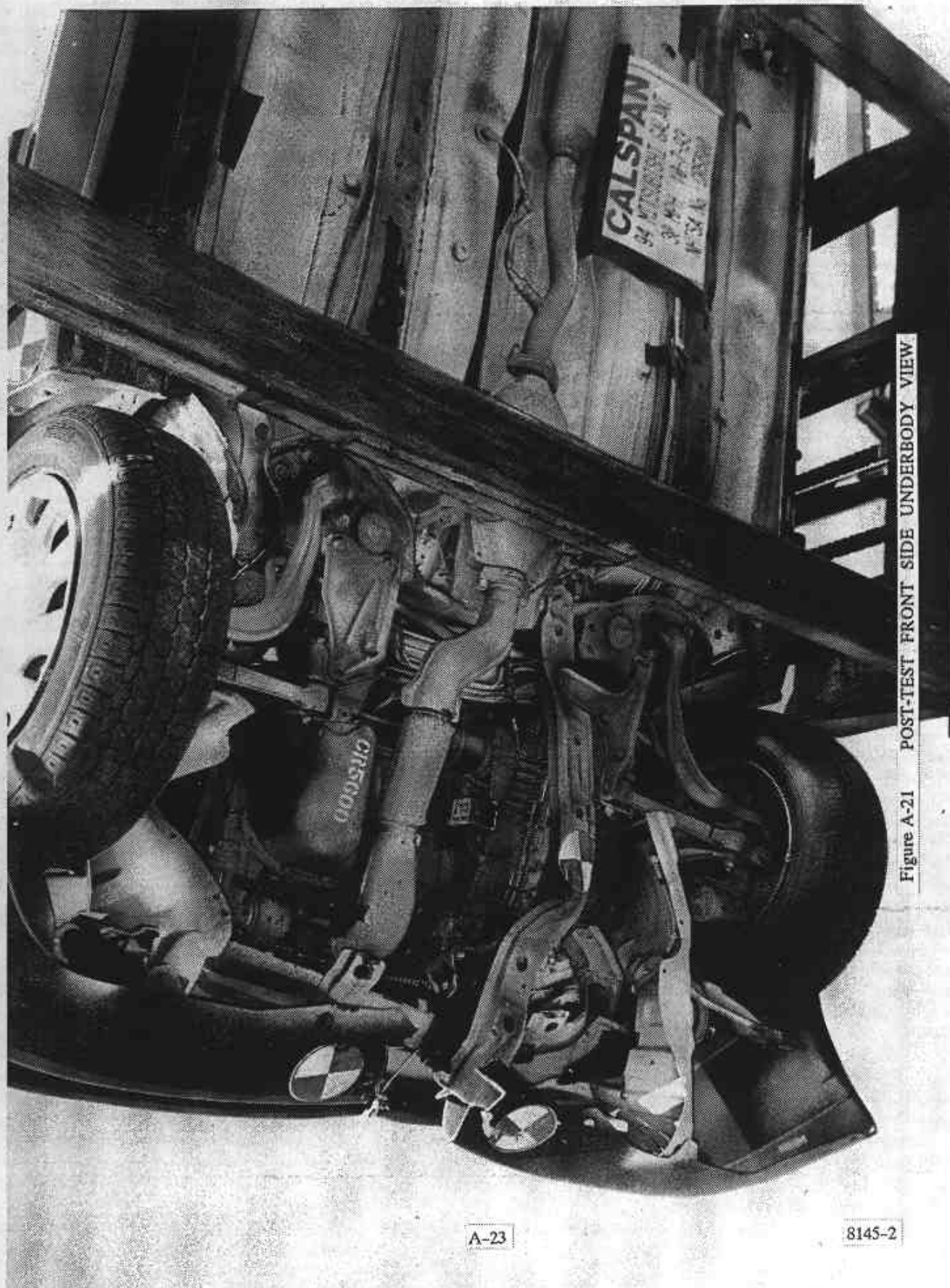


Figure A-21 POST-TEST FRONT SIDE UNDERBODY VIEW

A-23

8145-2

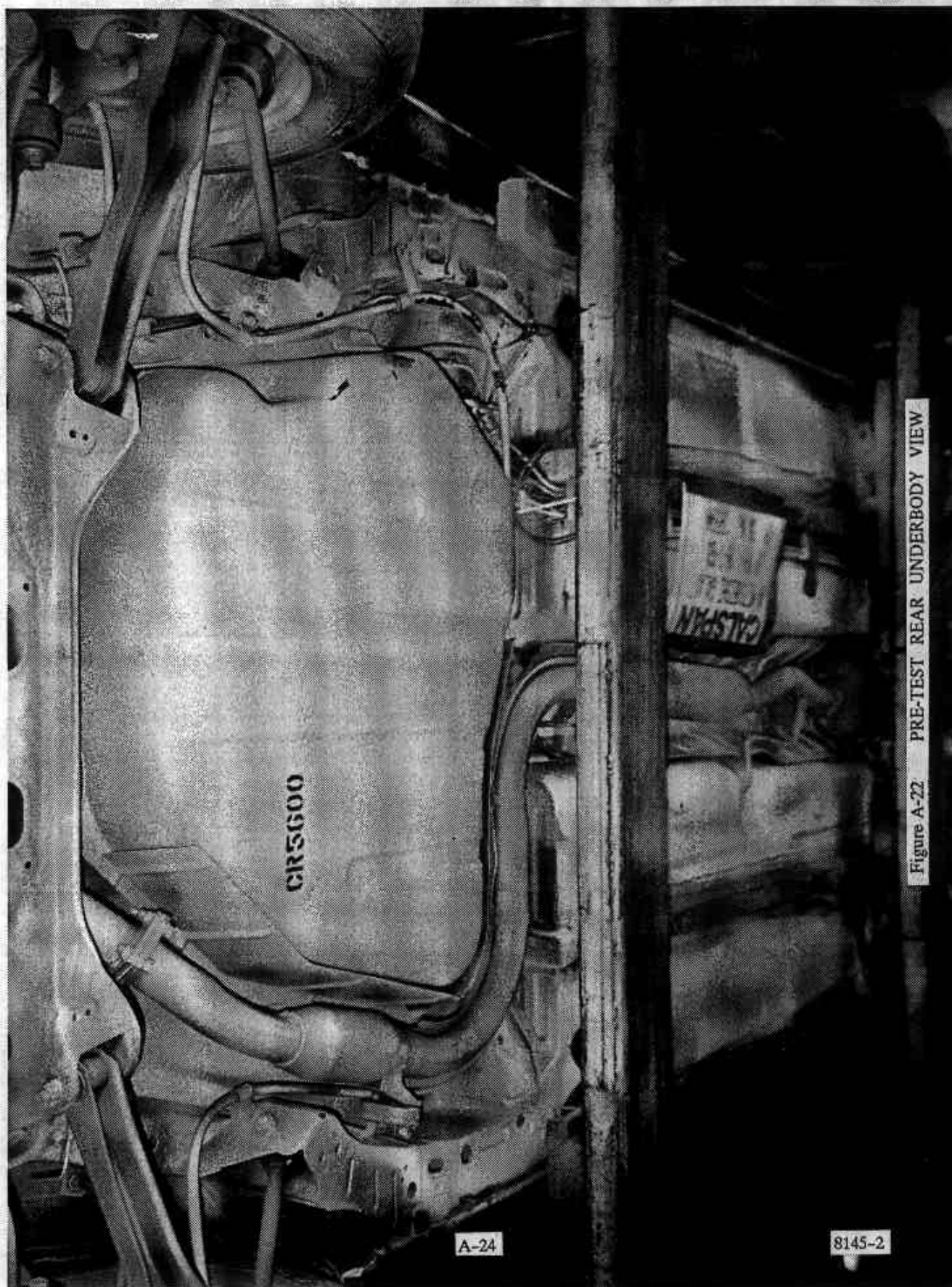


Figure A-22 PRE-TEST REAR UNDERBODY VIEW

A-24

8145-2

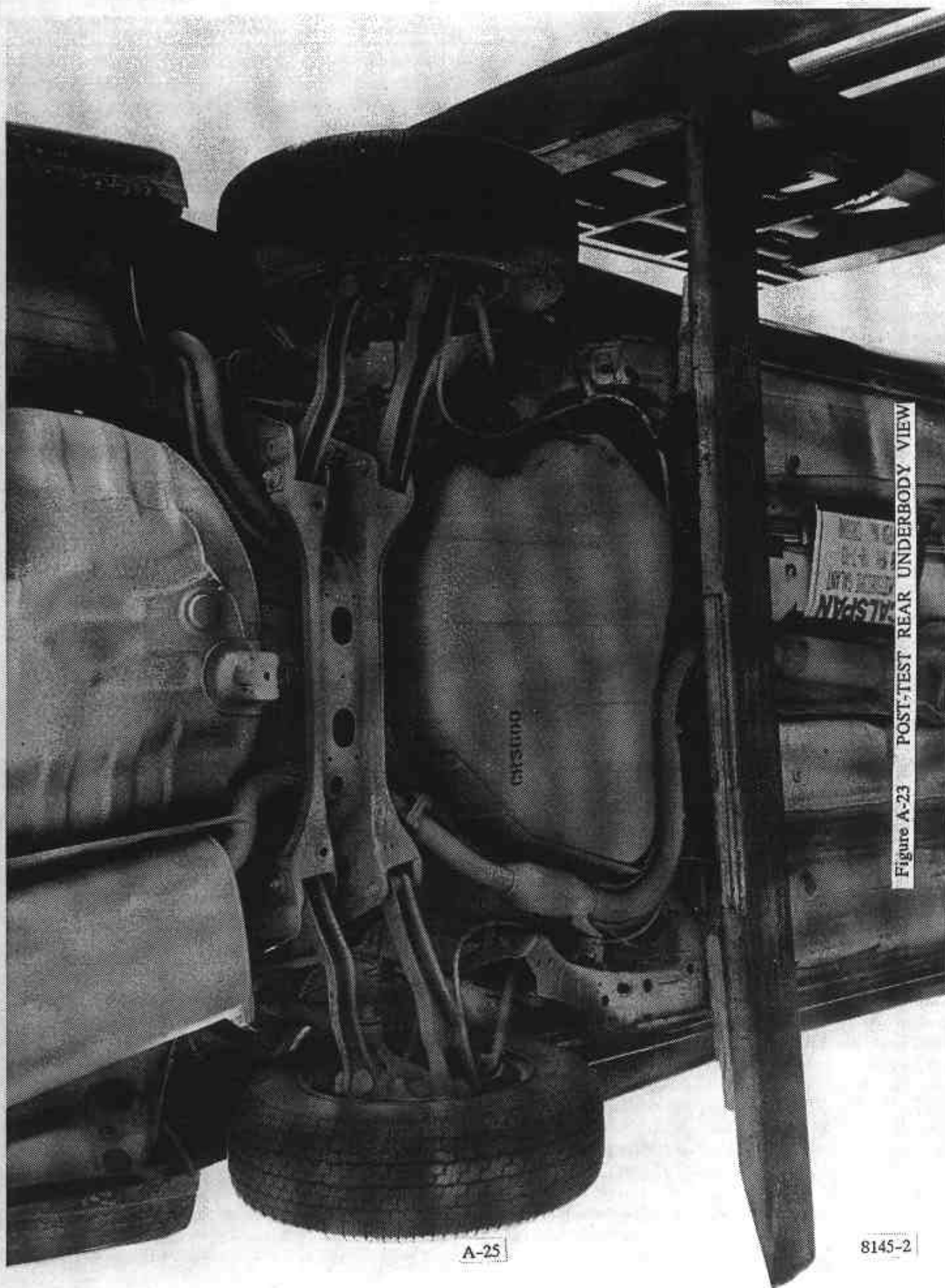


Figure A-23 POST-TEST REAR UNDERBODY VIEW

A-25

8145-2

MADE IN U.S.A. DATE JUL. 1993

MANUFACTURED BY DIAMOND-STAR MOTORS CORP.

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

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

4 A 3 A J 4 6 6 R E D 1 7 6 7 1



MDH 072923

VEHICLE TYPE: PASSENGER CAR MU900223

Figure A-24 CERTIFICATION LABEL

TIRE INFLATION PRESSURE (COLD)	
STANDARD INFLATION PRESSURE FOR ALL LOAD	
1ST SEAT	2 PASS.
2ND SEAT	3 PASS.
TOTAL	5 PASS.
LUGGAGE	35kg (77 LBS)
TOTAL WEIGHT	375kg (827 LBS)
TIRE SIZE	P185/70R14 87H P195/60R15 87H
FRONT	REAR
220kPa (32psi)	200kPa (29psi)
TIRE SIZE T125/70D15 TEMPORARY USE ONLY	
420kPa	(60psi)
PART NO. MR103896	

Figure A-25 TIRE PLACARD





Figure A-27 POST-TEST DRIVER DUMMY POSITION

A-29

8145-2

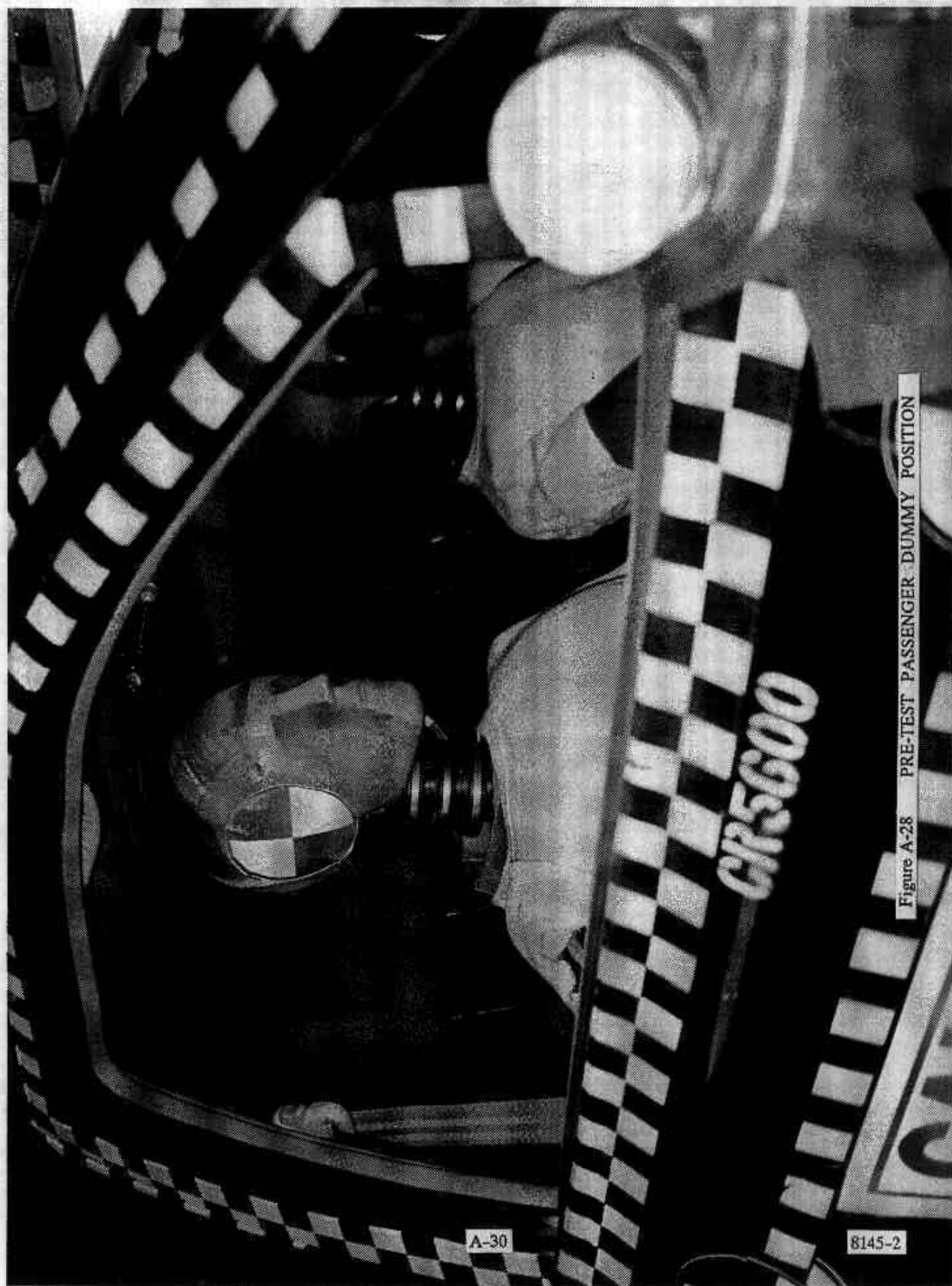


Figure A-28 PRE-TEST PASSENGER DUMMY POSITION

A-30

8145-2



Figure A-29 POST-TEST PASSENGER DUMMY POSITION

A-31

8145-2

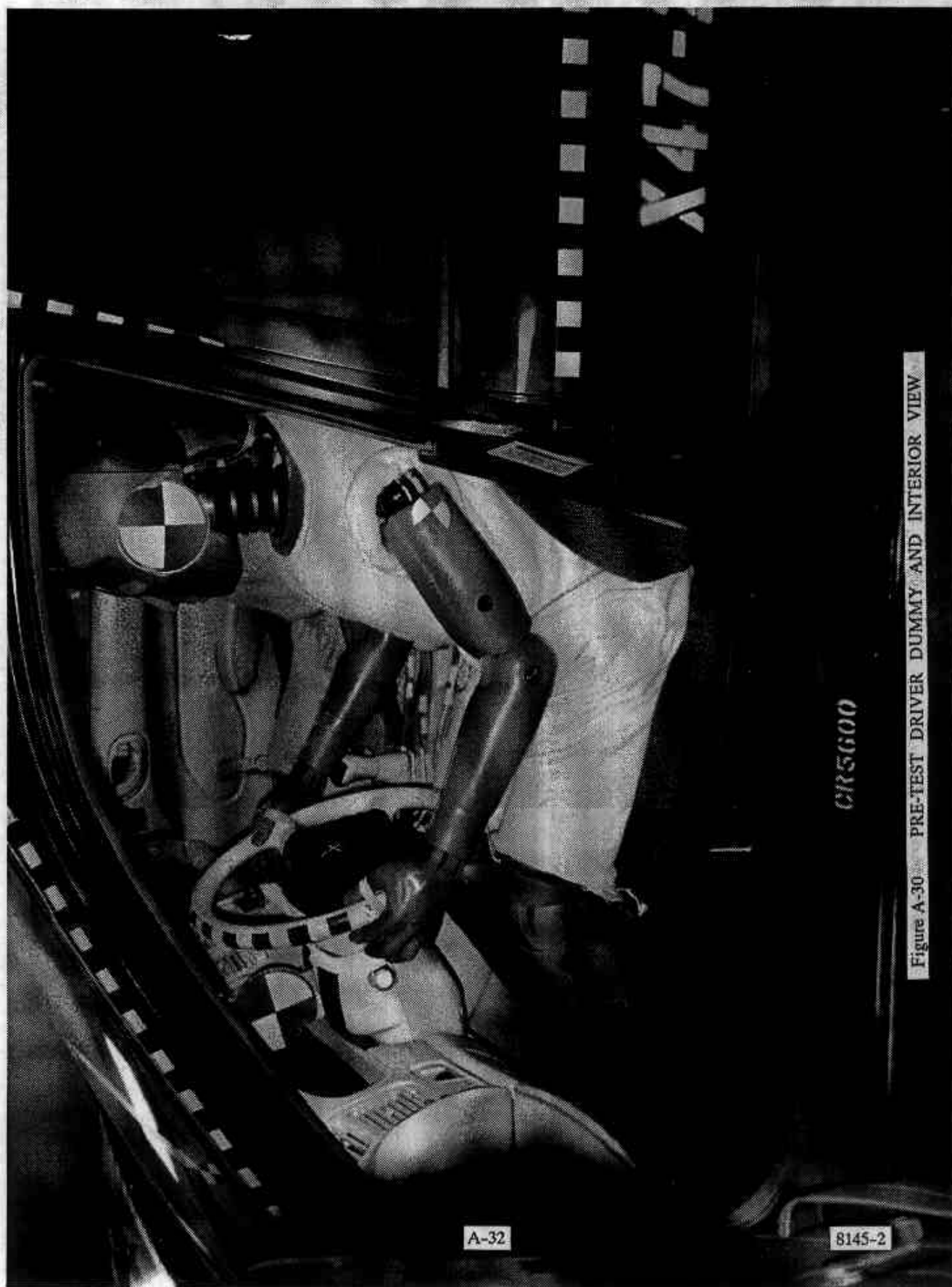


Figure A-30 PRE-TEST DRIVER DUMMY AND INTERIOR VIEW



Figure A-31 POST-TEST DRIVER DUMMY AND INTERIOR VIEW

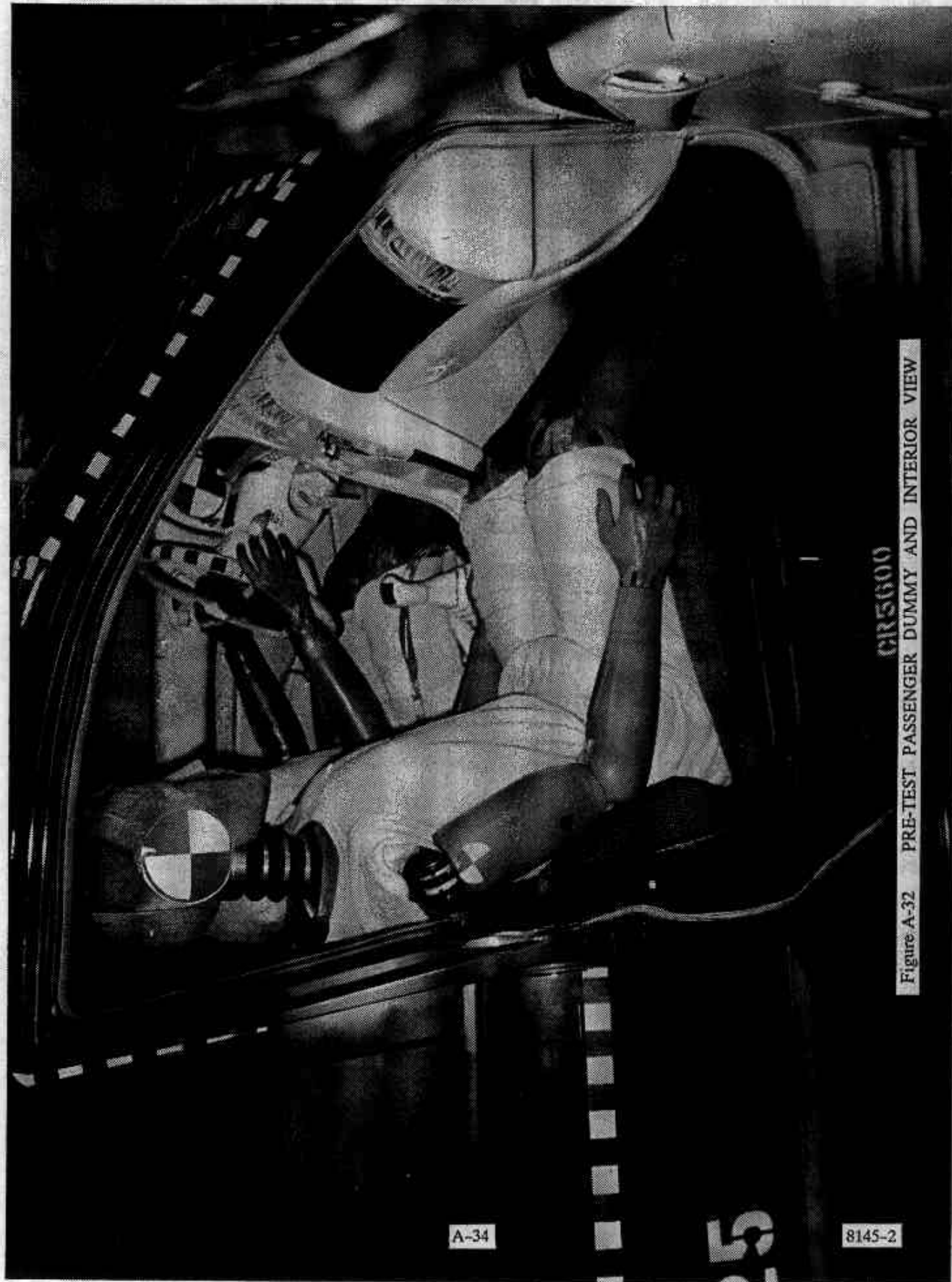


Figure A-32 PRE-TEST PASSENGER DUMMY AND INTERIOR VIEW

A-34

8145-2



Figure A-33 POST-TEST PASSENGER DUMMY AND INTERIOR VIEW

A-35

8145-2

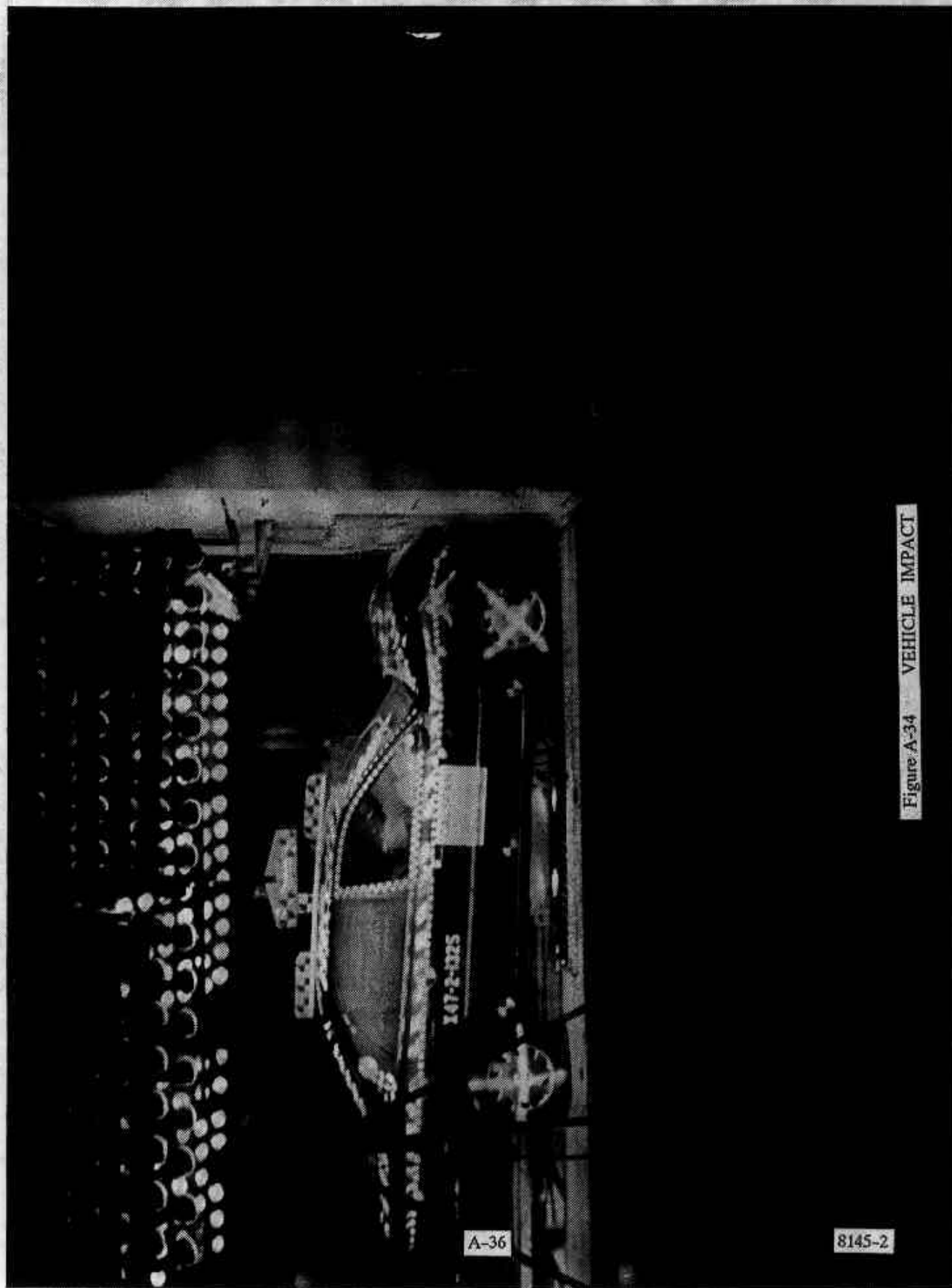


Figure A-34 VEHICLE IMPACT

A-36

8145-2



Figure A-35 POST-TEST DRIVER AIRBAG VIEW

A-37

8145-2



Figure A-36 POST-TEST PASSENGER AIRBAG VIEW

A-38

8145-2

Appendix B
VEHICLE AND DUMMY RESPONSE DATA

TEST NO. CR5600

VEHICLE

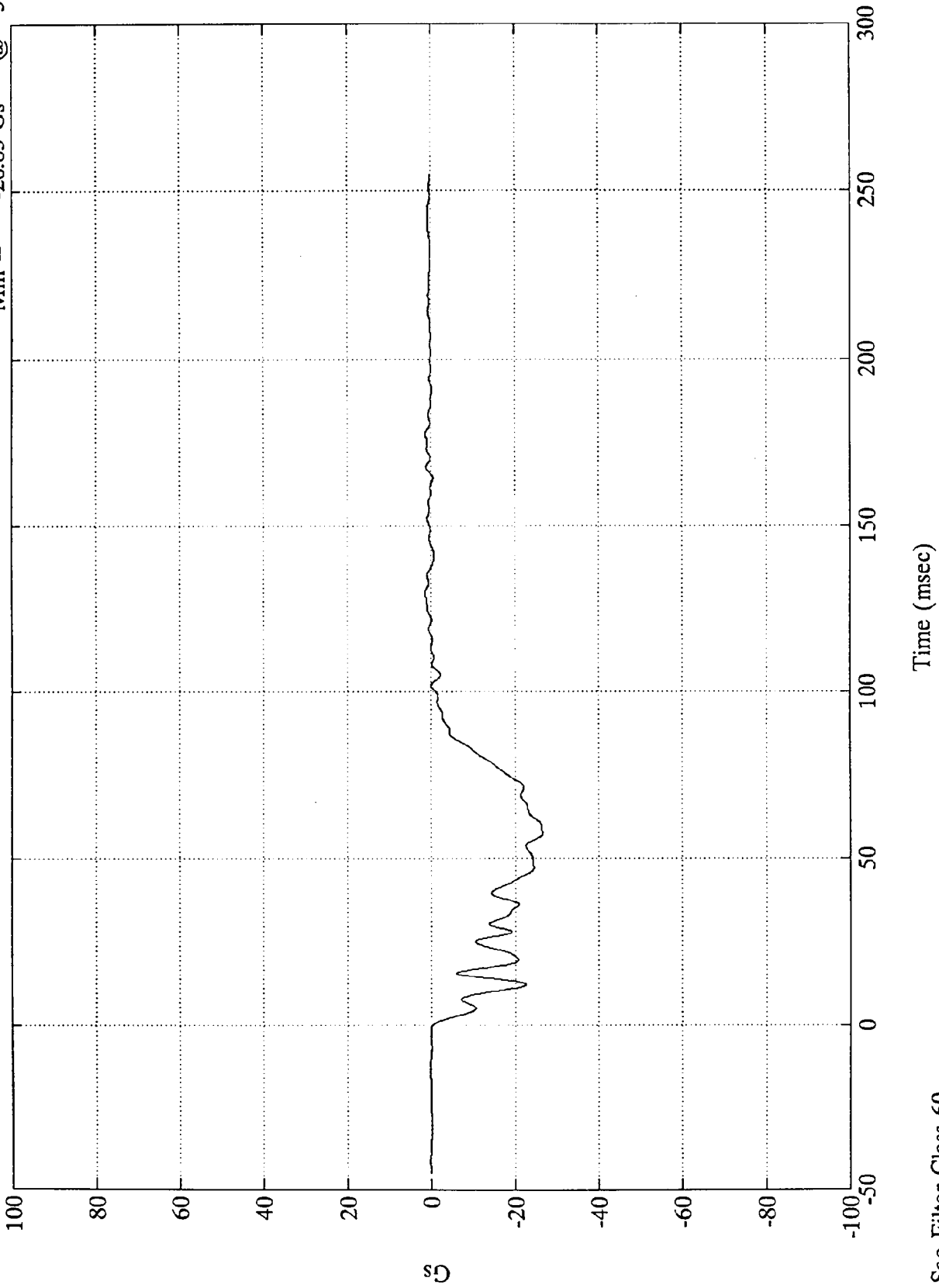
SAE FILTER CHANNEL CLASS

60

NHTSA "208" TEST #2 - Mitsubishi Galant

L. Rear X-member X (#1)

Max = 1.40 Gs @ 177.72 msec
Min = -26.63 Gs @ 57.36 msec



B-3

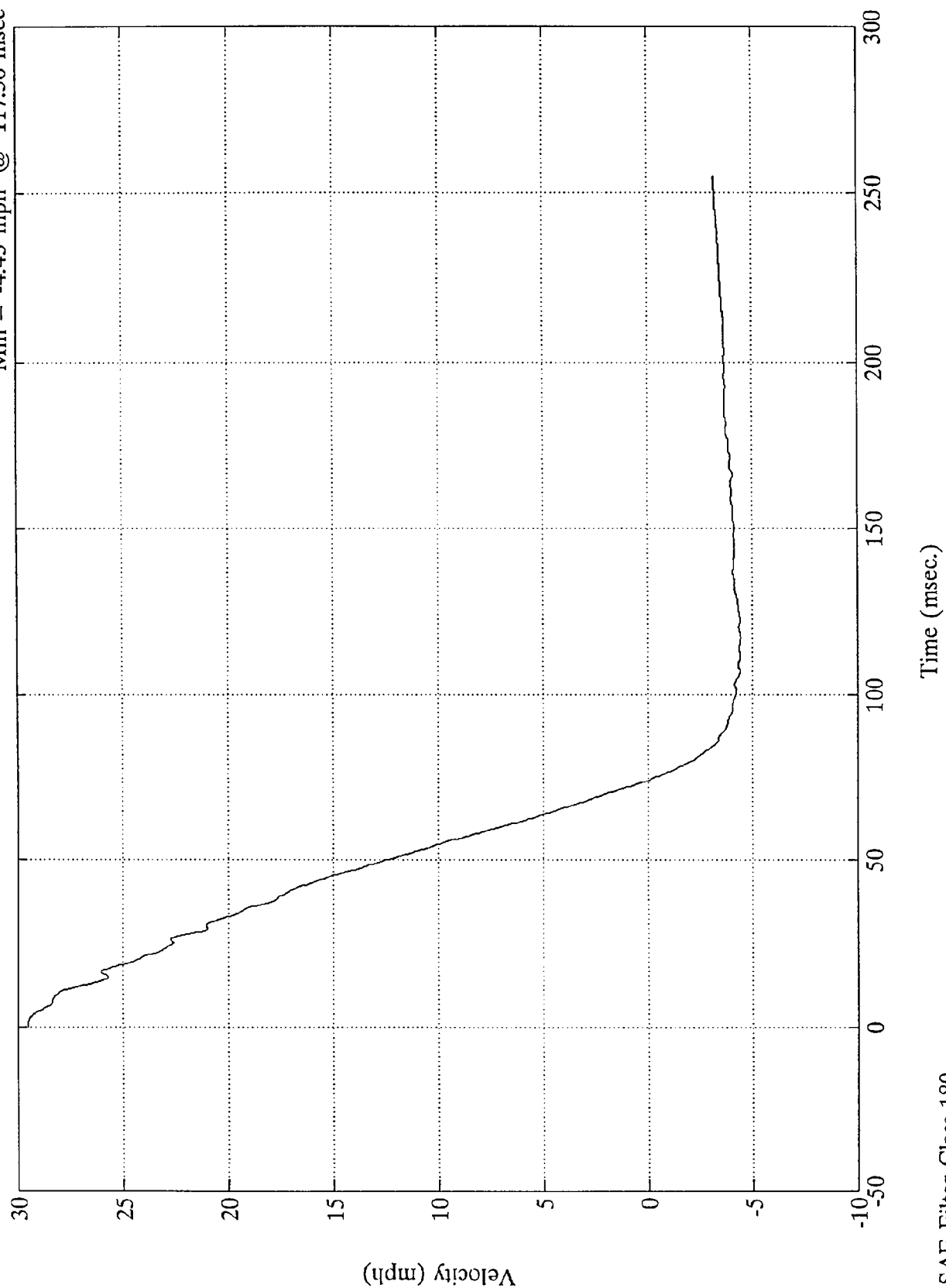
8145-2

Sae Filter Class 60

FMVSS 208 - 1994 Mitsubishi Galant

L. Rear X-member X (#1)

Max = 29.50 mph @ 1.20 msec
Min = -4.43 mph @ 117.36 msec

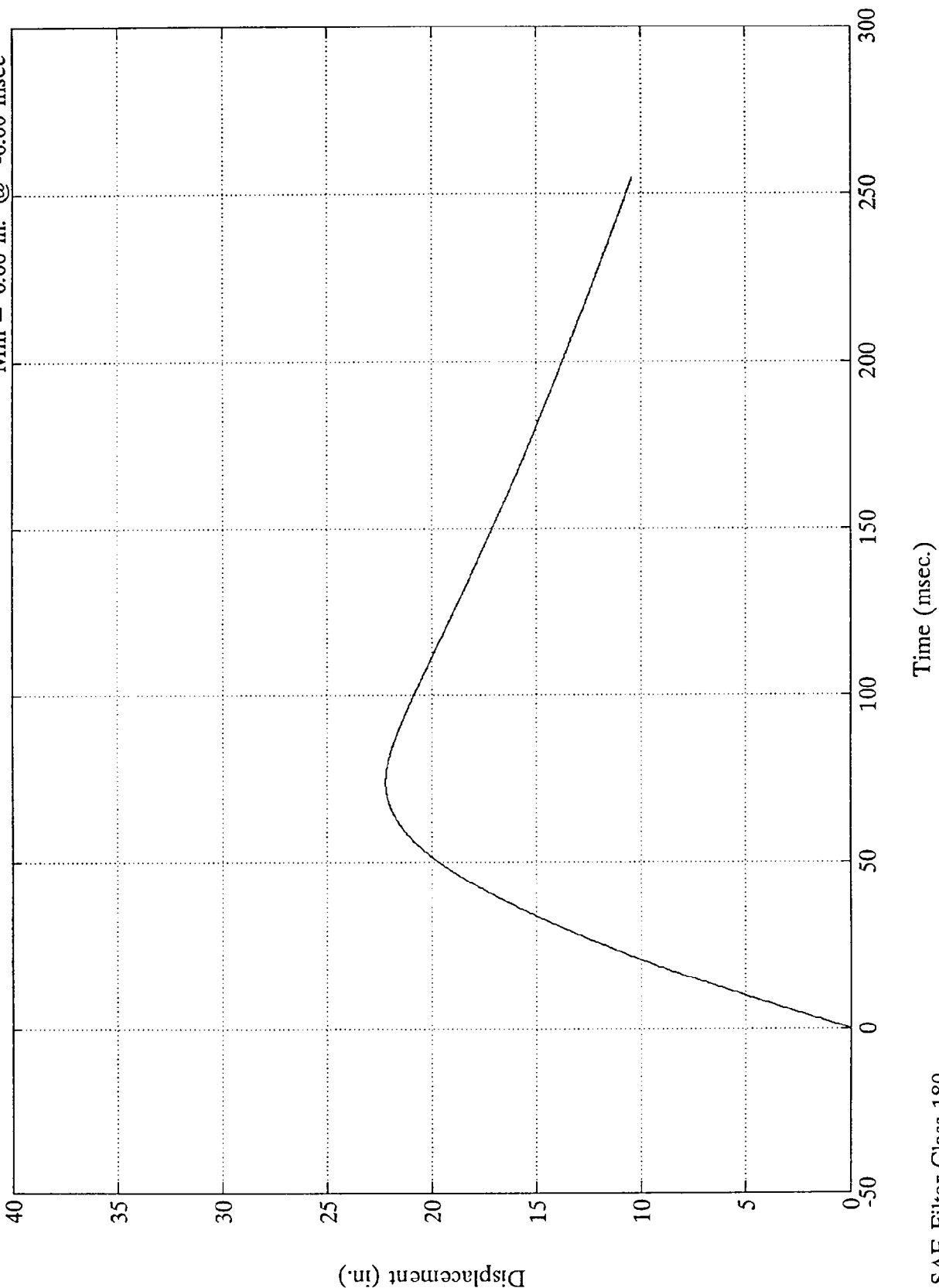


SAE Filter Class 180

FMVSS 208 - 1994 Mitsubishi Galant

L. Rear X-member X (#1)

Max = 22.23 in. @ 75.12 msec
Min = 0.00 in. @ -0.00 msec



B-5

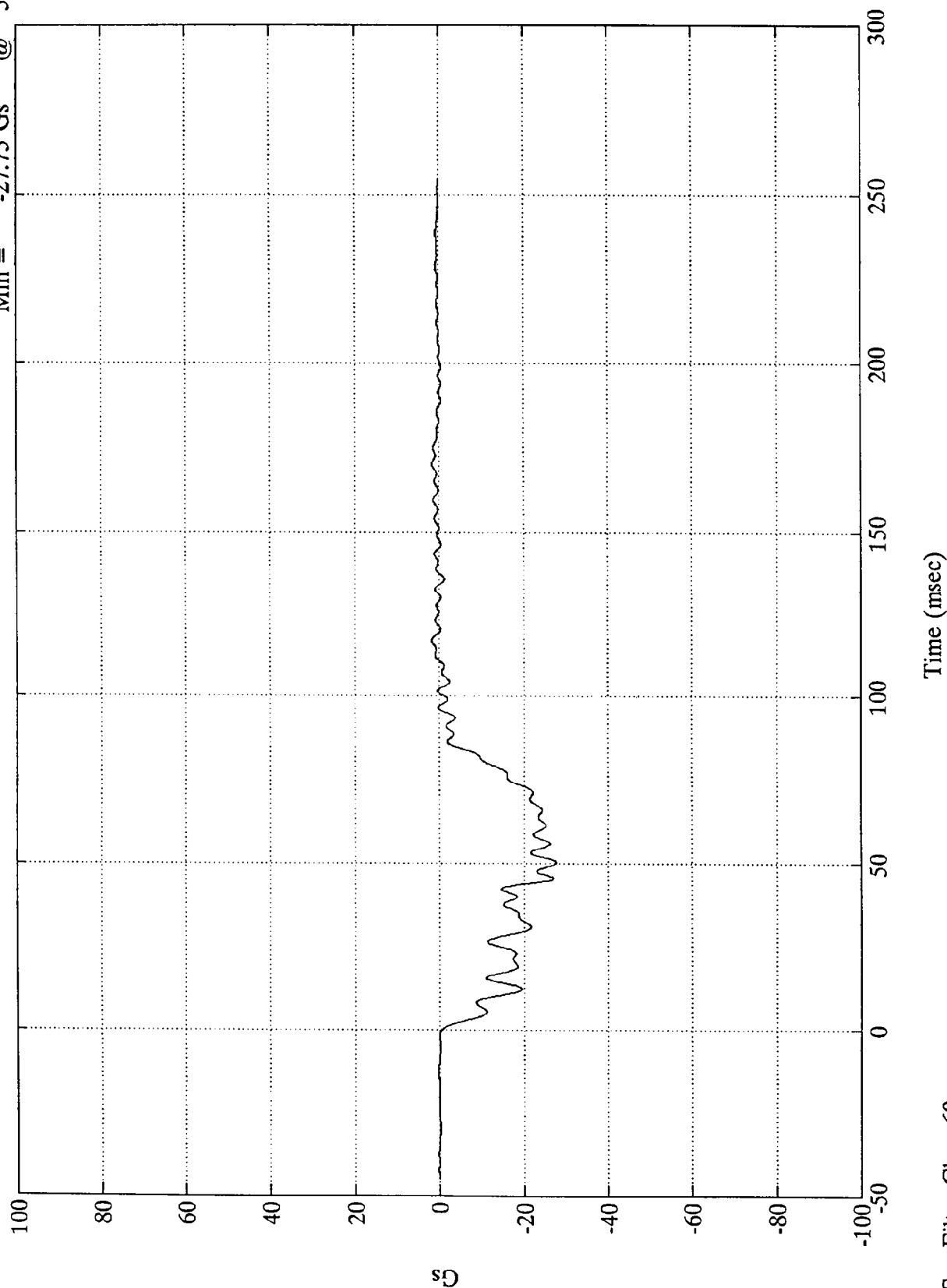
8145-2

SAE Filter Class 180

NHTSA "208" TEST #2 - Mitsubishi Galant

R. Rear X-member X (#2)

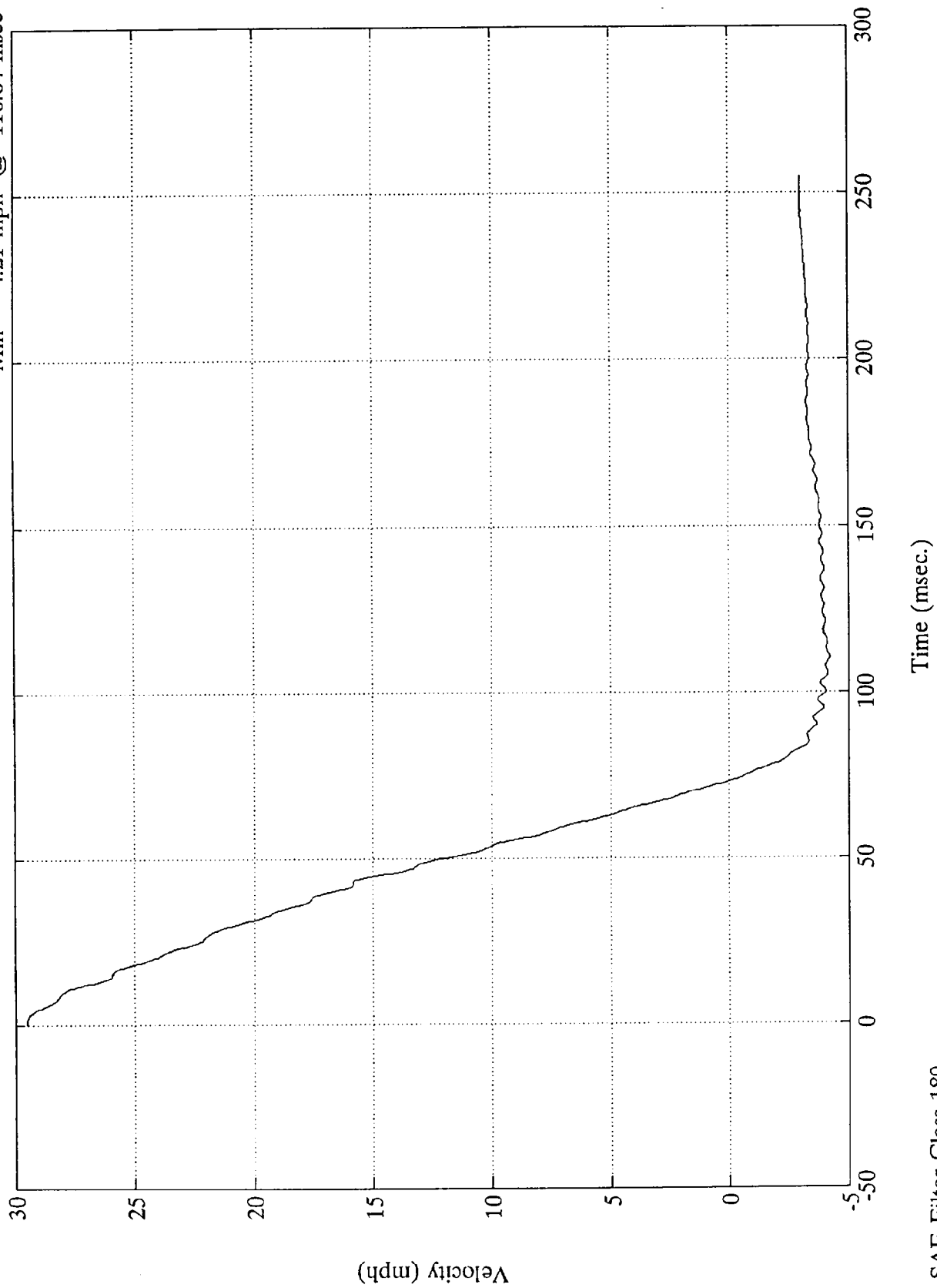
Max = 1.74 Gs @ 116.63 msec
Min = -27.75 Gs @ 50.40 msec



FMVSS 208 - 1994 Mitsubishi Galant

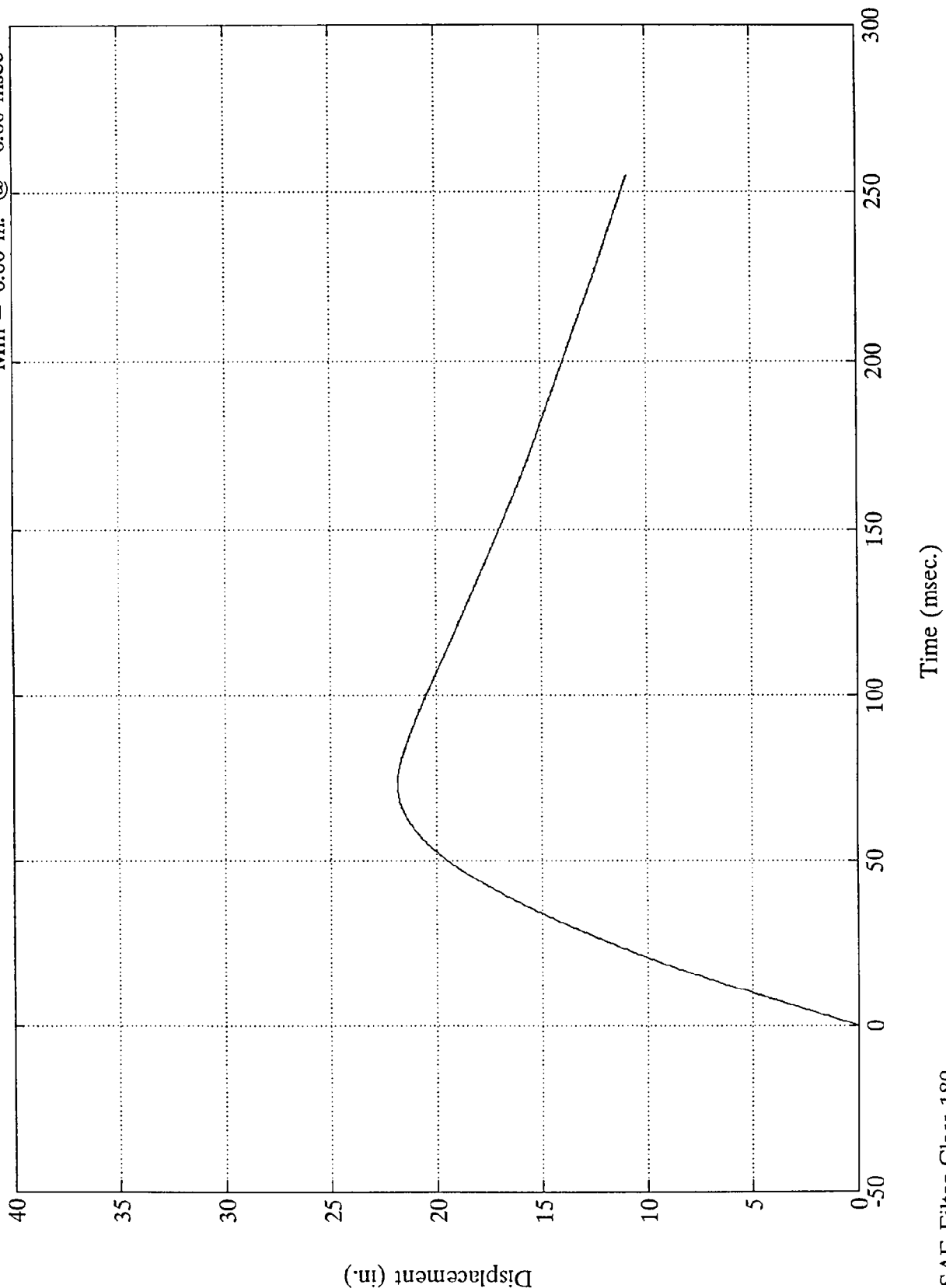
R. Rear X-member X (#2)

Max = 29.50 mph @ -0.00 msec
Min = -4.21 mph @ 110.64 msec



R. Rear X-member X (#2)

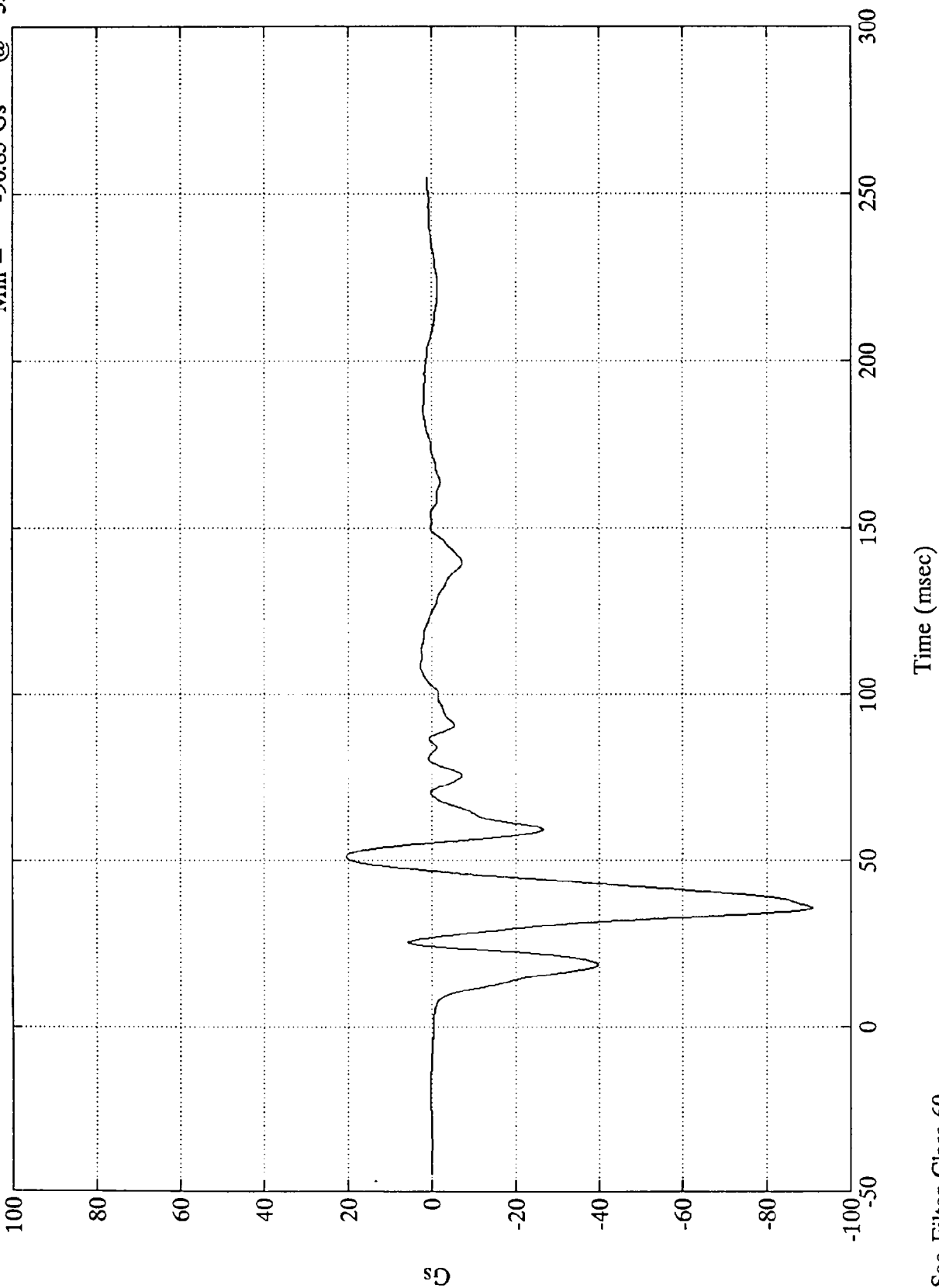
Max = 21.85 in. @ 74.40 msec
Min = 0.00 in. @ -0.00 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

Engine Top X (#3)

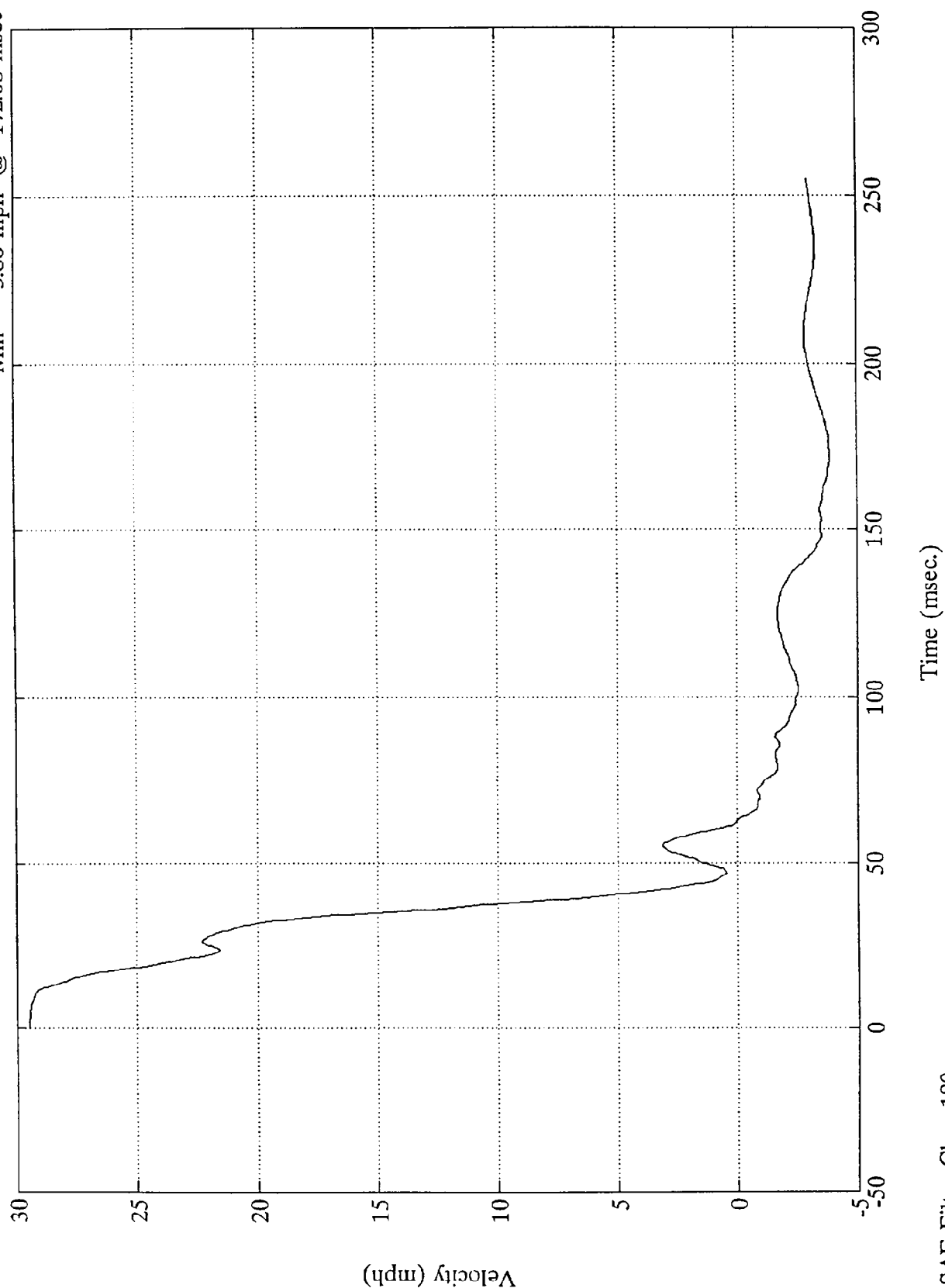
Max = 20.31 Gs @ 51.24 msec
Min = -90.85 Gs @ 35.63 msec



FMVSS 208 - 1994 Mitsubishi Galant

Engine Top X (#3)

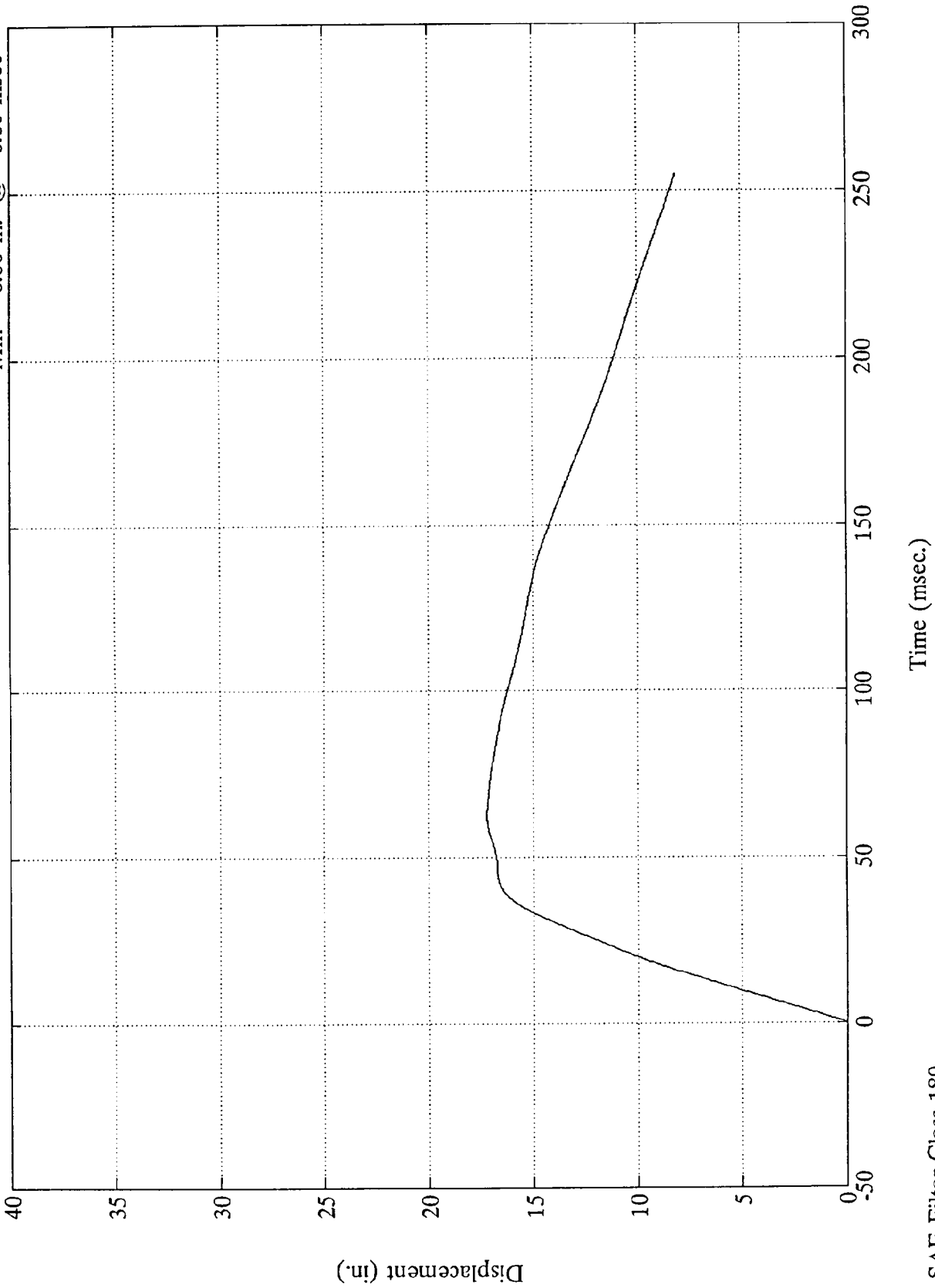
Max = 29.50 mph @ -0.00 msec
Min = -3.86 mph @ 172.08 msec



SAE Filter Class 180

Engine Top X (#3)

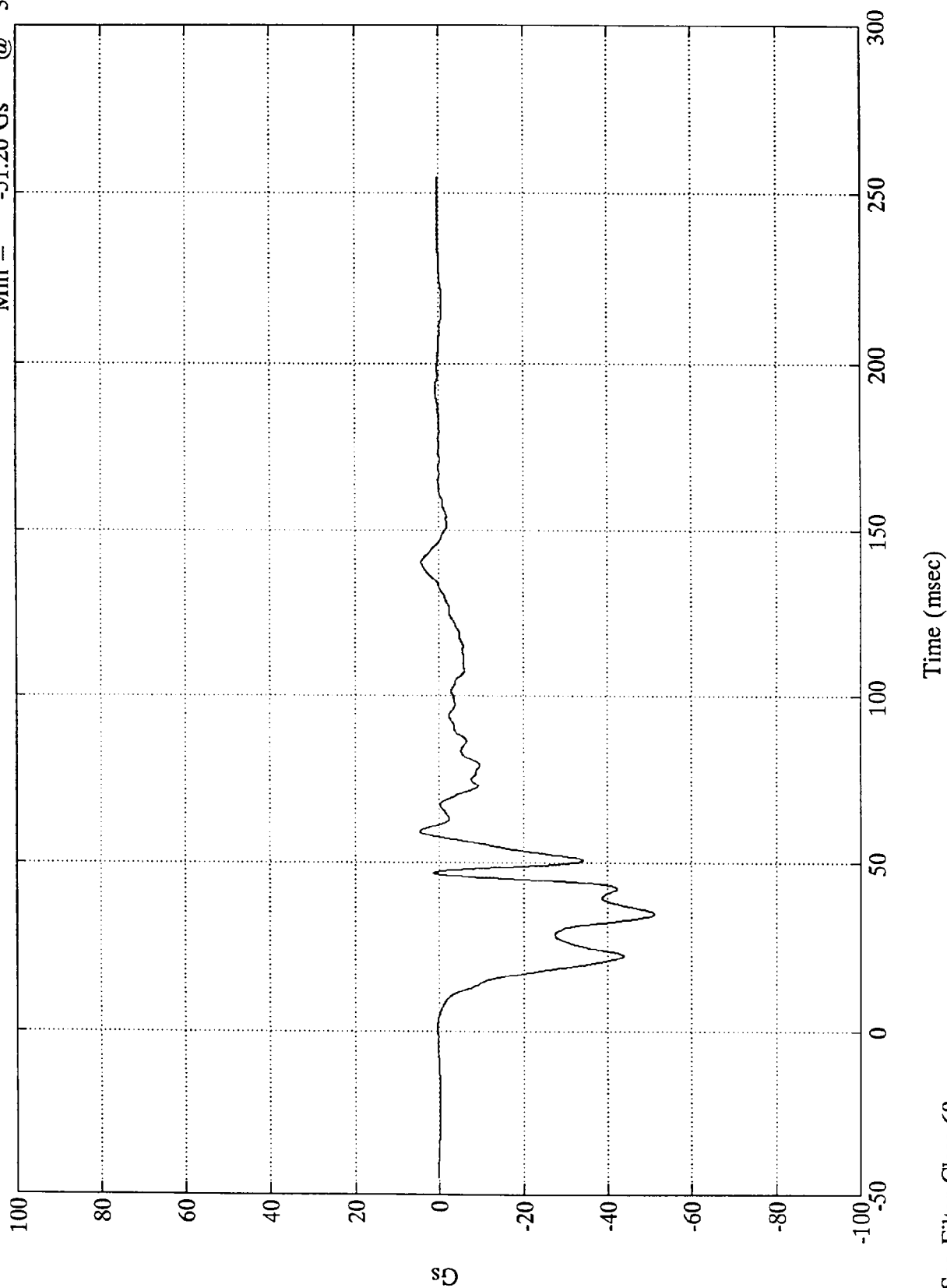
Max = 17.21 in. @ 64.32 msec
Min = 0.00 in. @ -0.00 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 4.58 Gs @ 59.40 msec
 Min = -51.20 Gs @ 34.55 msec

Engine Bottom X (#4)

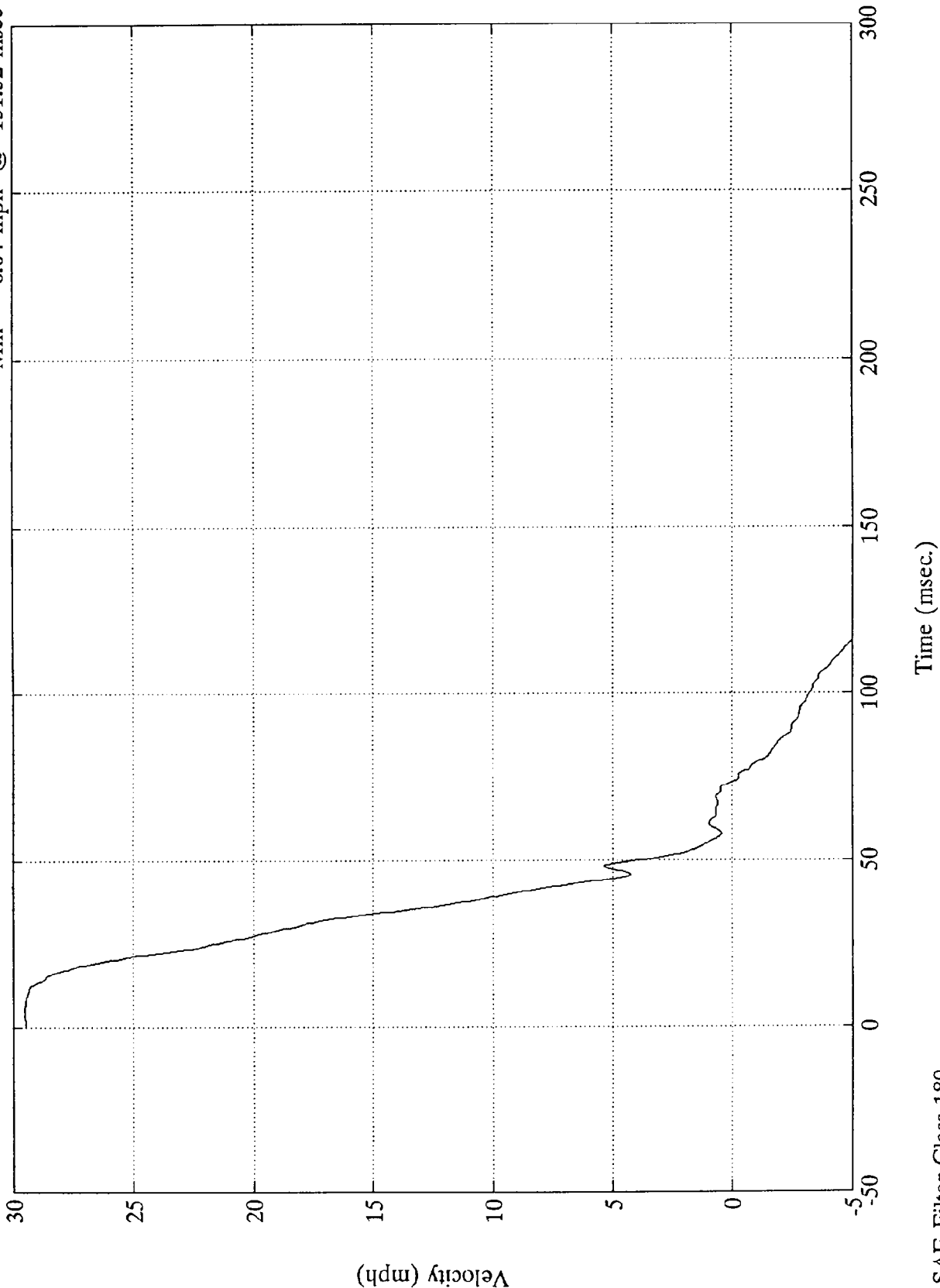


Sae Filter Class 60

FMVSS 208 - 1994 Mitsubishi Galant

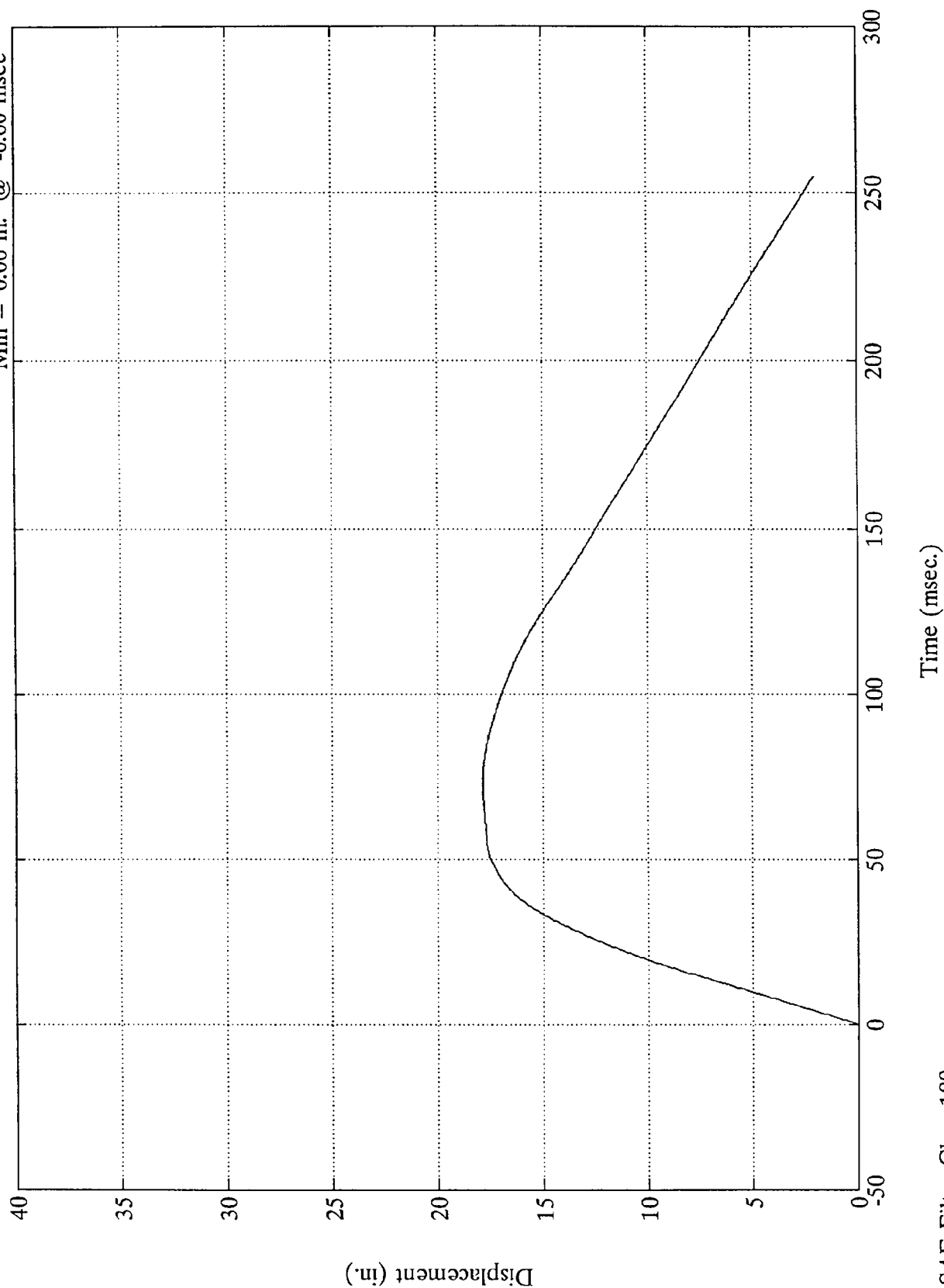
Engine Bottom X (#4)

Max = 29.54 mph @ 4.32 msec
Min = -6.04 mph @ 131.52 msec



Engine Bottom X (#4)

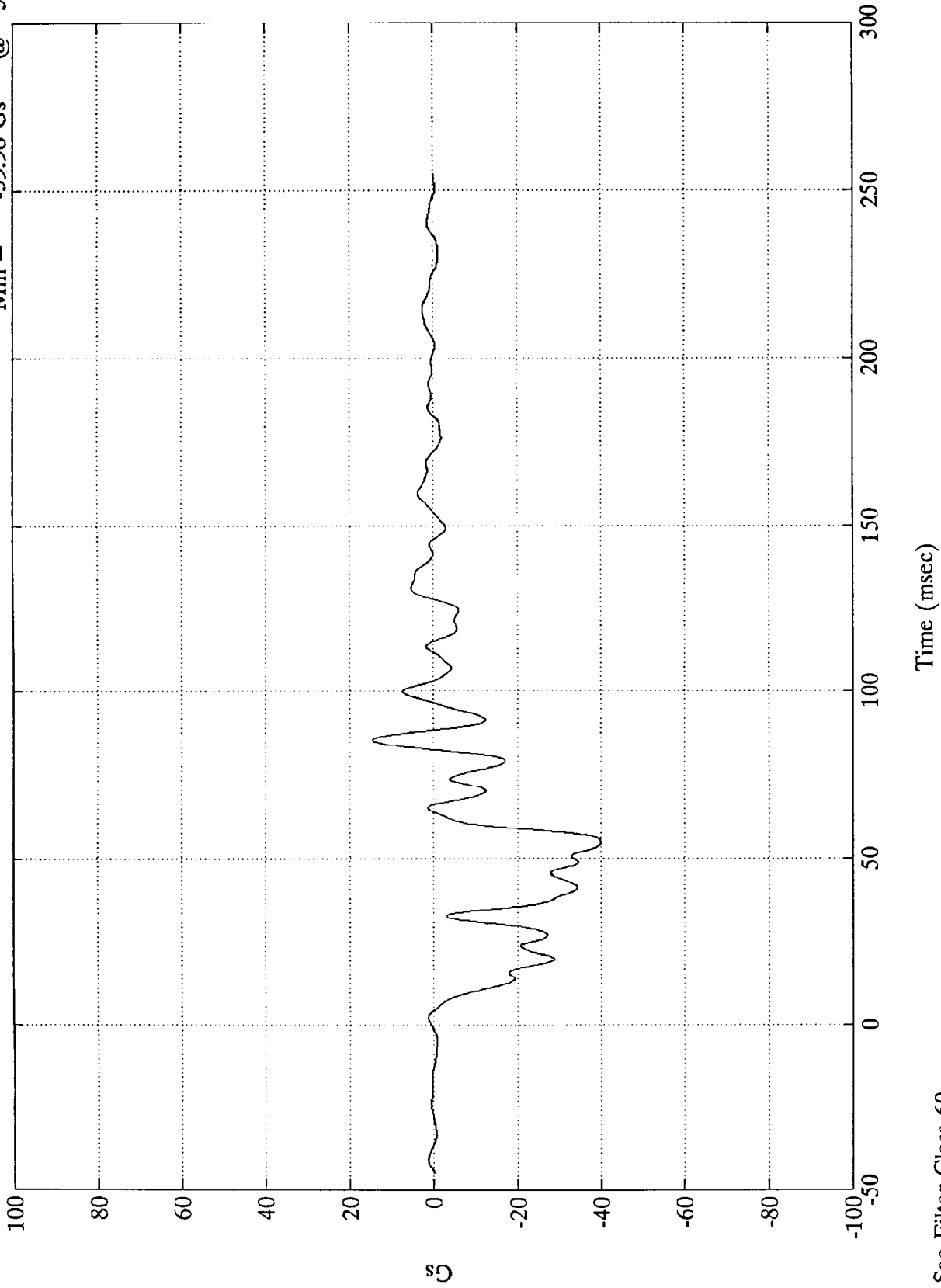
Max = 17.88 in. @ 74.16 msec
Min = 0.00 in. @ -0.00 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

R. Brake Caliper X (#5)

Max = 14.60 Gs @ 85.20 msec
Min = -39.98 Gs @ 54.84 msec



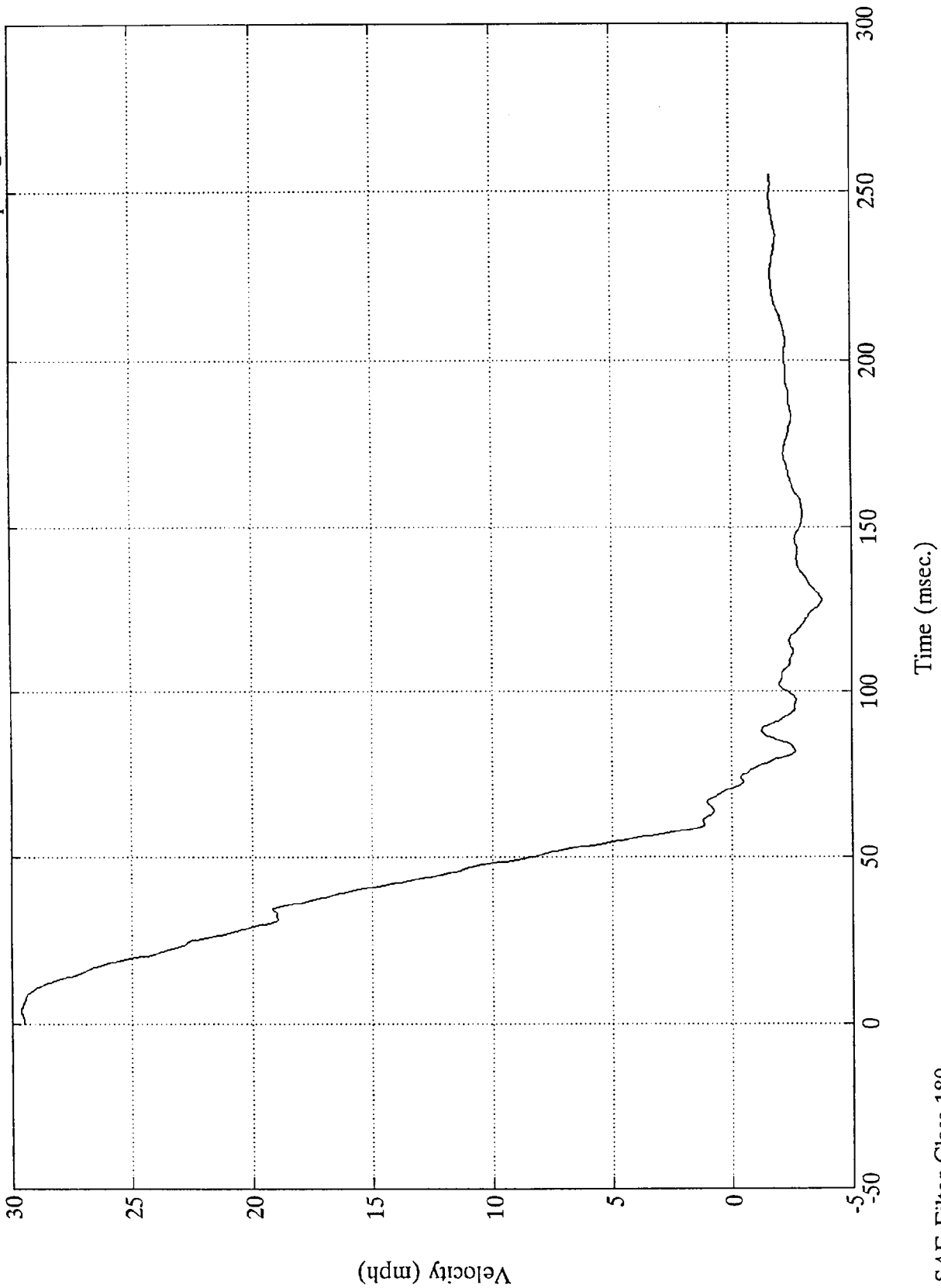
8145-2
B-15

Sae Filter Class 60

FMVSS 208 - 1994 Mitsubishi Galant

R. Brake Caliper X (#5)

Max = 29.62 mph @ 4.08 msec
Min = -3.73 mph @ 127.68 msec

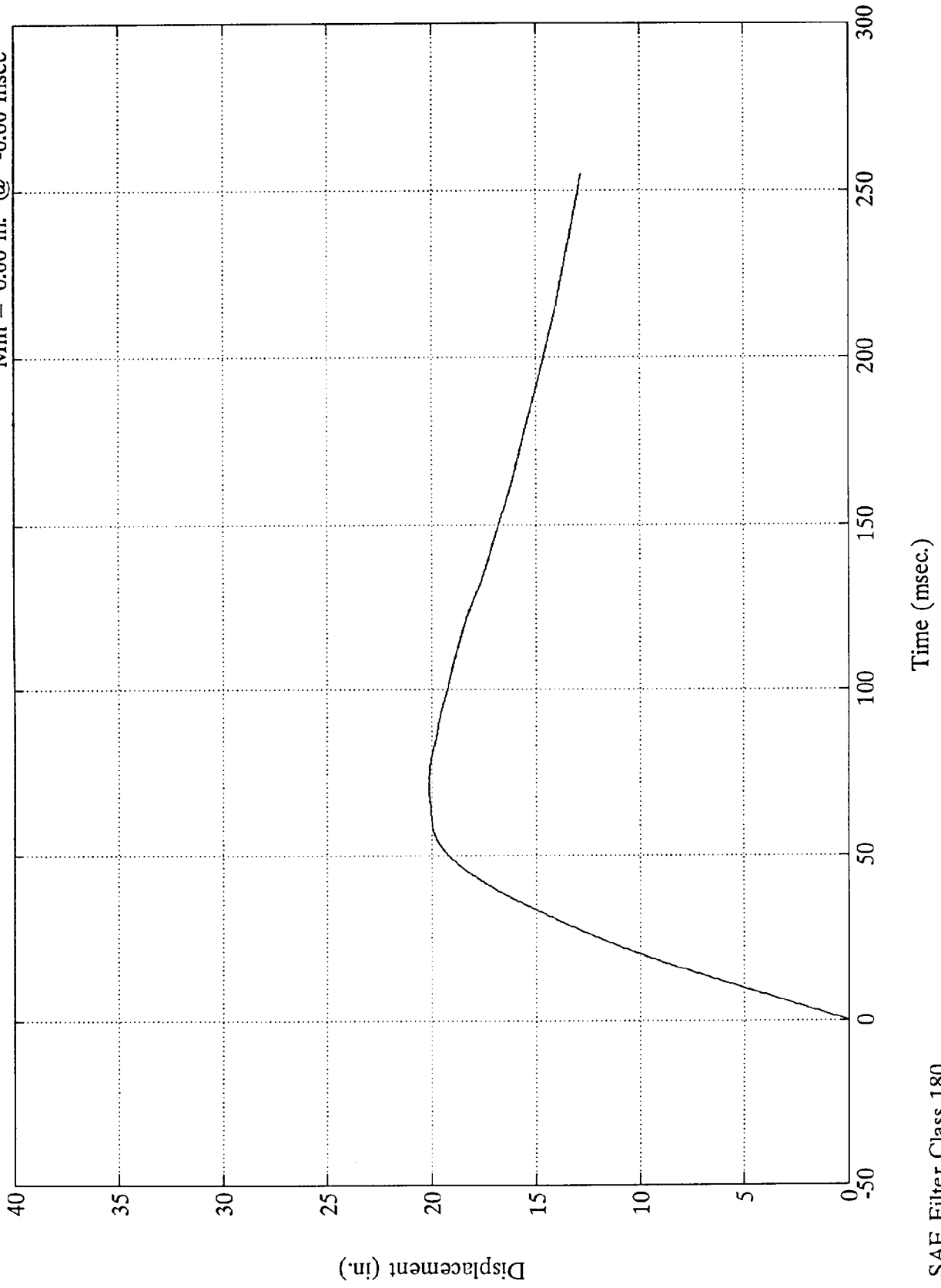


SAE Filter Class 180

FMVSS 208 - 1994 Mitsubishi Galant

R. Brake Caliper X (#5)

Max = 20.14 in. @ 71.52 msec
Min = 0.00 in. @ -0.00 msec



B-17

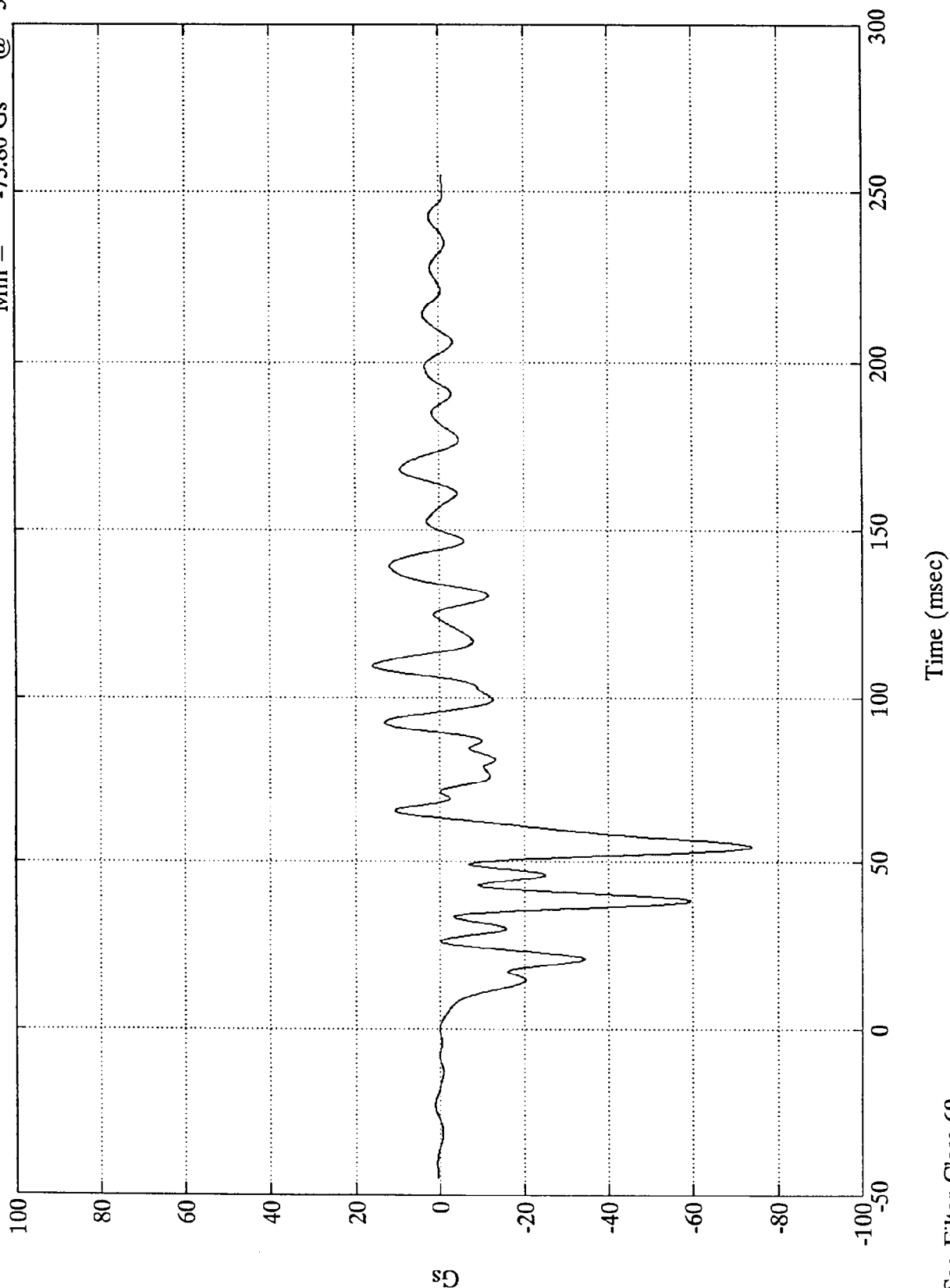
8145-2

SAE Filter Class 180

NHTSA "208" TEST #2 - Mitsubishi Galant

L Brake Caliper X (#6)

Max = 15.99 Gs @ 109.68 msec
 Min = -73.80 Gs @ 54.47 msec

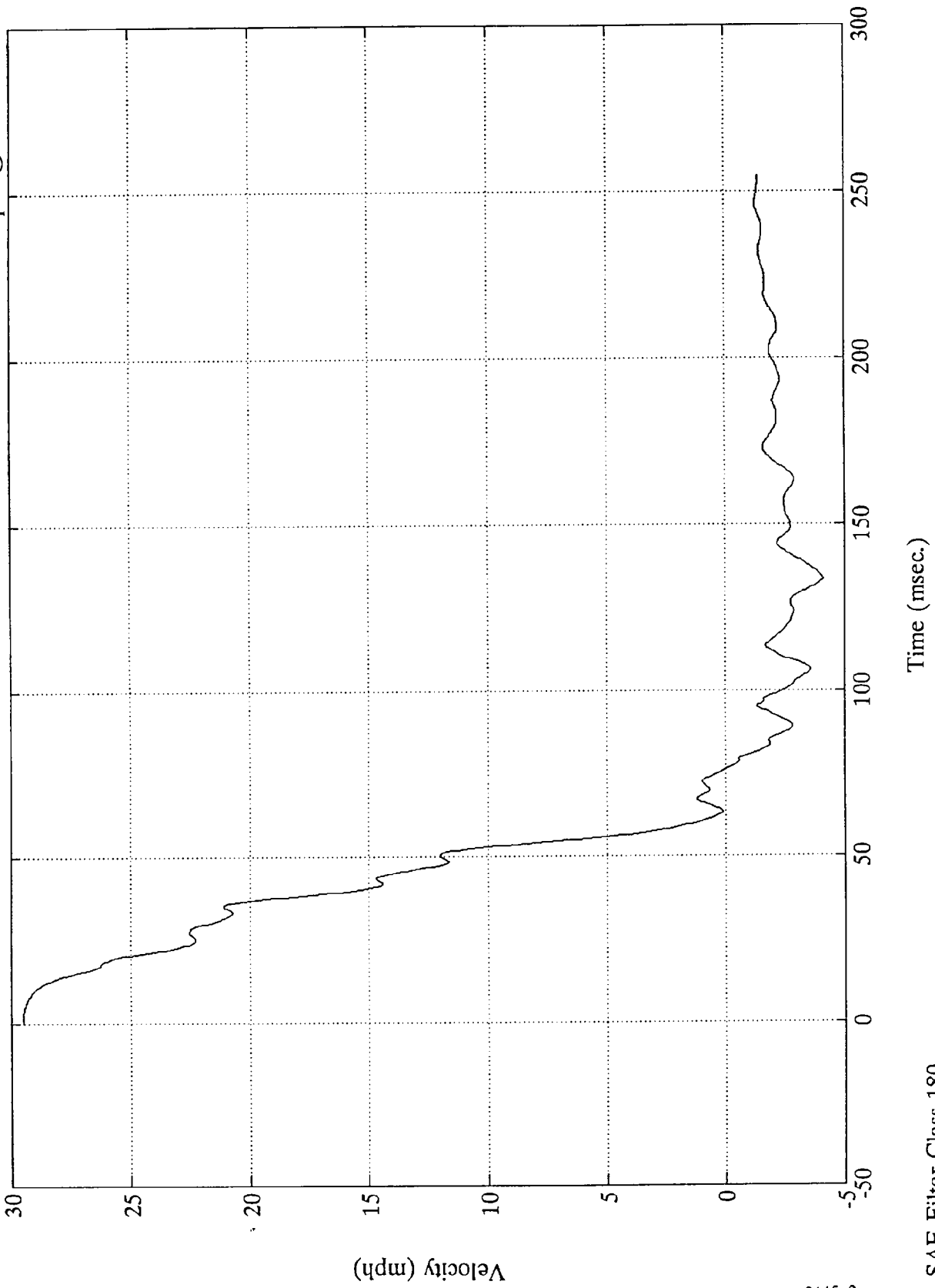


Sae Filter Class 60

FMVSS 208 - 1994 Mitsubishi Galant

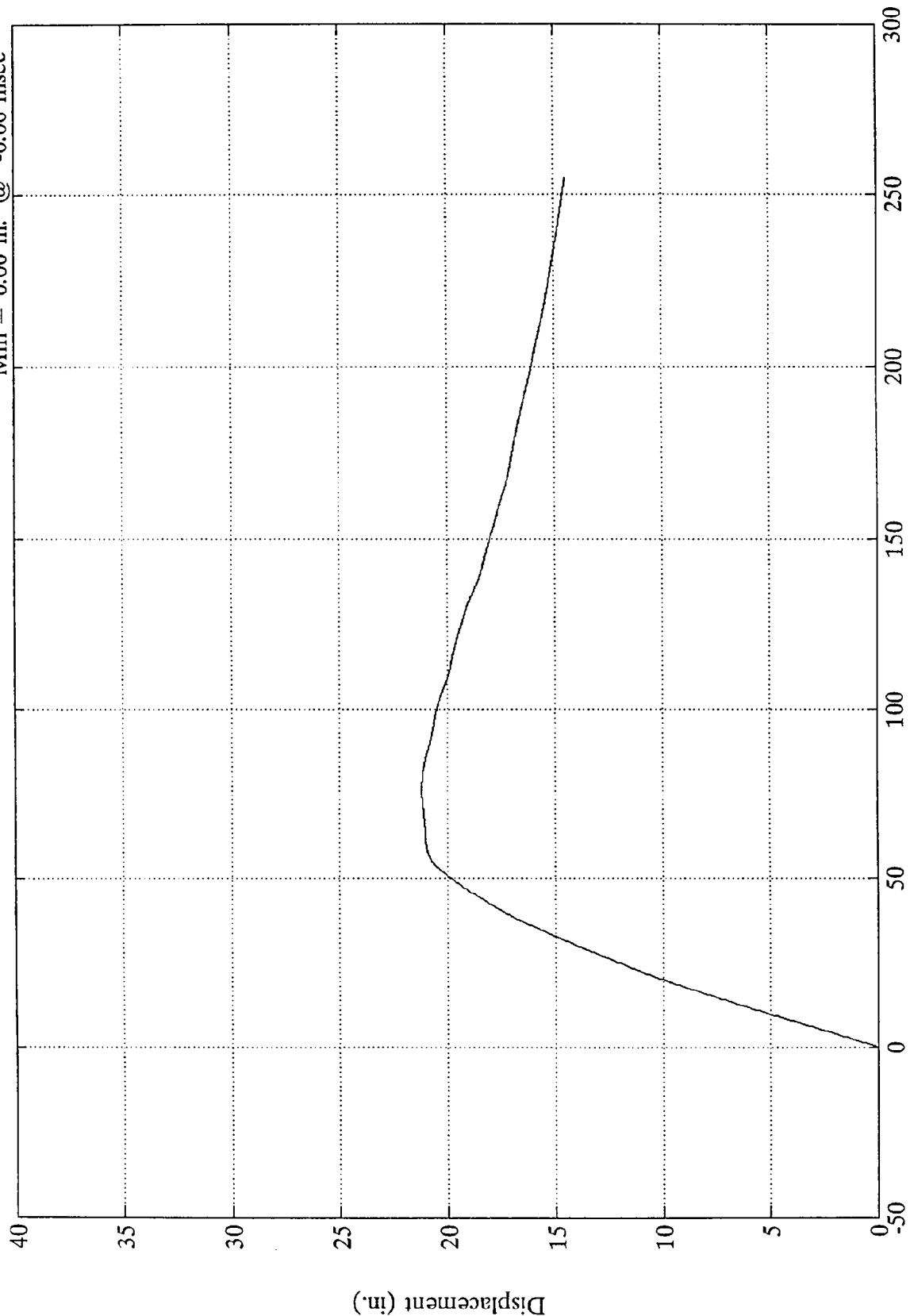
L. Brake Caliper X (#6)

Max = 29.50 mph @ 2.16 msec
Min = -4.08 mph @ 133.92 msec



L. Brake Caliper X (#6)

Max = 21.21 in. @ 77.52 msec
Min = 0.00 in. @ -0.00 msec



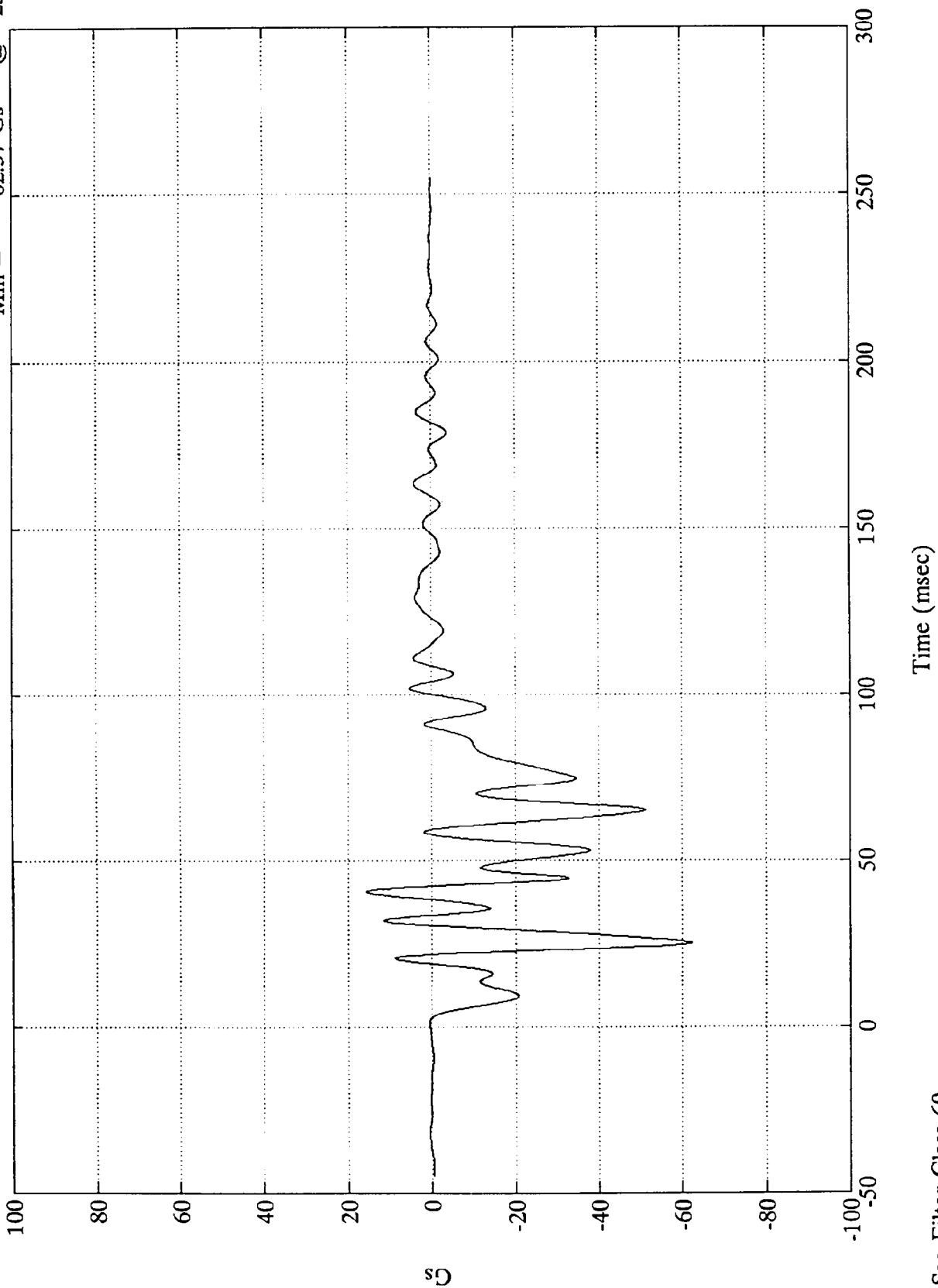
Time (msec.)

SAE Filter Class 180

NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 15.77 Gs @ 40.68 msec
Min = -62.37 Gs @ 25.31 msec

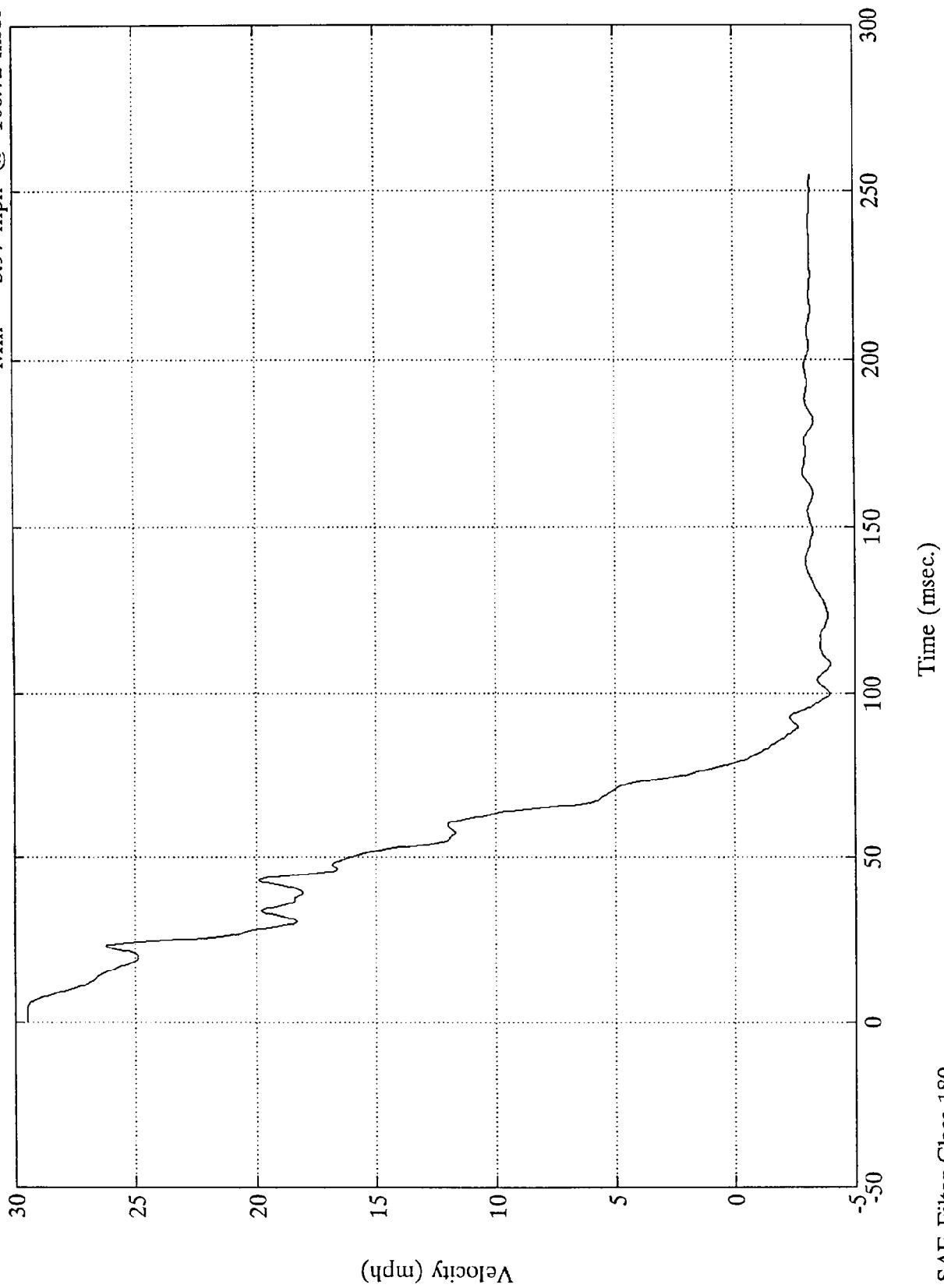
Instrument Panel X (#7)



FMVSS 208 - 1994 Mitsubishi Galant

Instrument Panel X (#7)

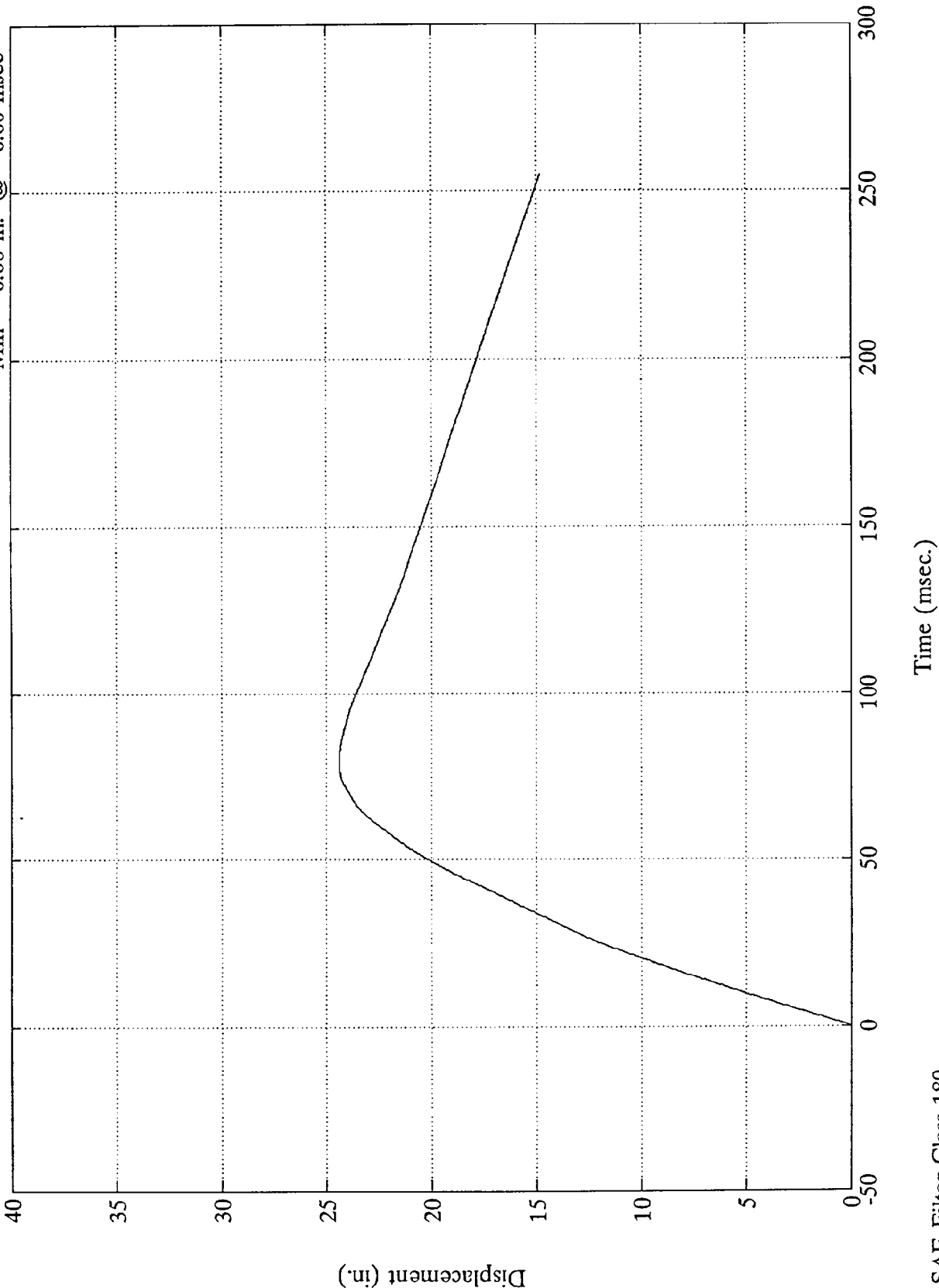
Max = 29.50 mph @ 3.60 msec
Min = -3.97 mph @ 108.72 msec



SAE Filter Class 180

Instrument Panel X (#7)

Max = 24.41 in. @ 79.68 msec
Min = 0.00 in. @ -0.00 msec



TEST NO. CR5600

DUMMY	SAE FILTER CHANNEL CLASS
Head Accelerations	1000
Chest Accelerations	100
Femur Forces	600

FACILITY: TRACK
RUN #: 1325
SERIES #: 1

TEST DATE: 07 Oct 1993
TEST TIME: 10:47:07
BOARD: A

TITLE: NHTSA "208" TEST #2 - Mitsubishi Galant

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM AMP	MAXIMUM msec	MINIMUM AMP	MINIMUM msec	FILTER CLASS
1	Pos. 1 Head X	Gs	3.9	243.7	-31.3	80.9	1000.0
2	Pos. 1 Head Y	Gs	4.6	24.6	-12.6	96.7	1000.0
3	Pos. 1 Head Z	Gs	25.4	87.2	-6.5	59.2	1000.0
4	Pos. 1 Left Femur	lbs	84.9	25.0	-1449.0	79.3	600.0
5	Pos. 1 Chest X	Gs	3.5	146.2	-50.5	88.4	180.0
6	Pos. 1 Chest Y	Gs	6.6	88.2	-1.6	48.7	180.0
7	Pos. 1 Chest Z	Gs	18.7	85.9	-8.3	57.2	180.0
8	Pos. 1 Right Femur	lbs	55.7	132.4	-1326.1	79.6	600.0
9	Pos. 2 Head X	Gs	8.9	121.0	-41.1	169.8	1000.0
10	Pos. 2 Head Y	Gs	7.7	35.4	-10.8	34.3	1000.0
11	Pos. 2 Head Z	Gs	21.5	153.2	-9.2	121.3	1000.0
12	Pos. 2 Left Femur	lbs	54.1	25.2	-1457.0	66.4	600.0
13	Pos. 2 Chest X	Gs	3.6	158.0	-30.7	58.2	180.0
14	Pos. 2 Chest Y	Gs	4.5	46.4	-6.7	92.9	180.0
15	Pos. 2 Chest Z	Gs	12.6	87.1	-9.5	56.8	180.0
16	Pos. 2 Right Femur	lbs	264.1	24.6	-1353.5	67.6	600.0
17	Pos. 1 Head Resultant	Gs	37.4	87.0	.1	2.5	1000.0
18	Pos. 1 Chest Resultant	Gs	52.4	88.4	.0	-30.2	180.0
19	Pos. 2 Head Resultant	Gs	41.2	169.7	.1	-21.0	1000.0
20	Pos. 2 Chest Resultant	Gs	32.3	58.4	.0	-30.5	180.0

36 ms Fixed Duration HIC SUMMARY: Pos. 1 Head Resultant

hic: 146.16
t1 = 65.280 msec
t2 = 101.160 msec
Average G's Over Hic Duration = 27.80

36 ms Fixed Duration HIC SUMMARY: Pos. 2 Head Resultant

hic: 120.40
t1 = 50.880 msec
t2 = 86.760 msec
Average G's Over Hic Duration = 25.72

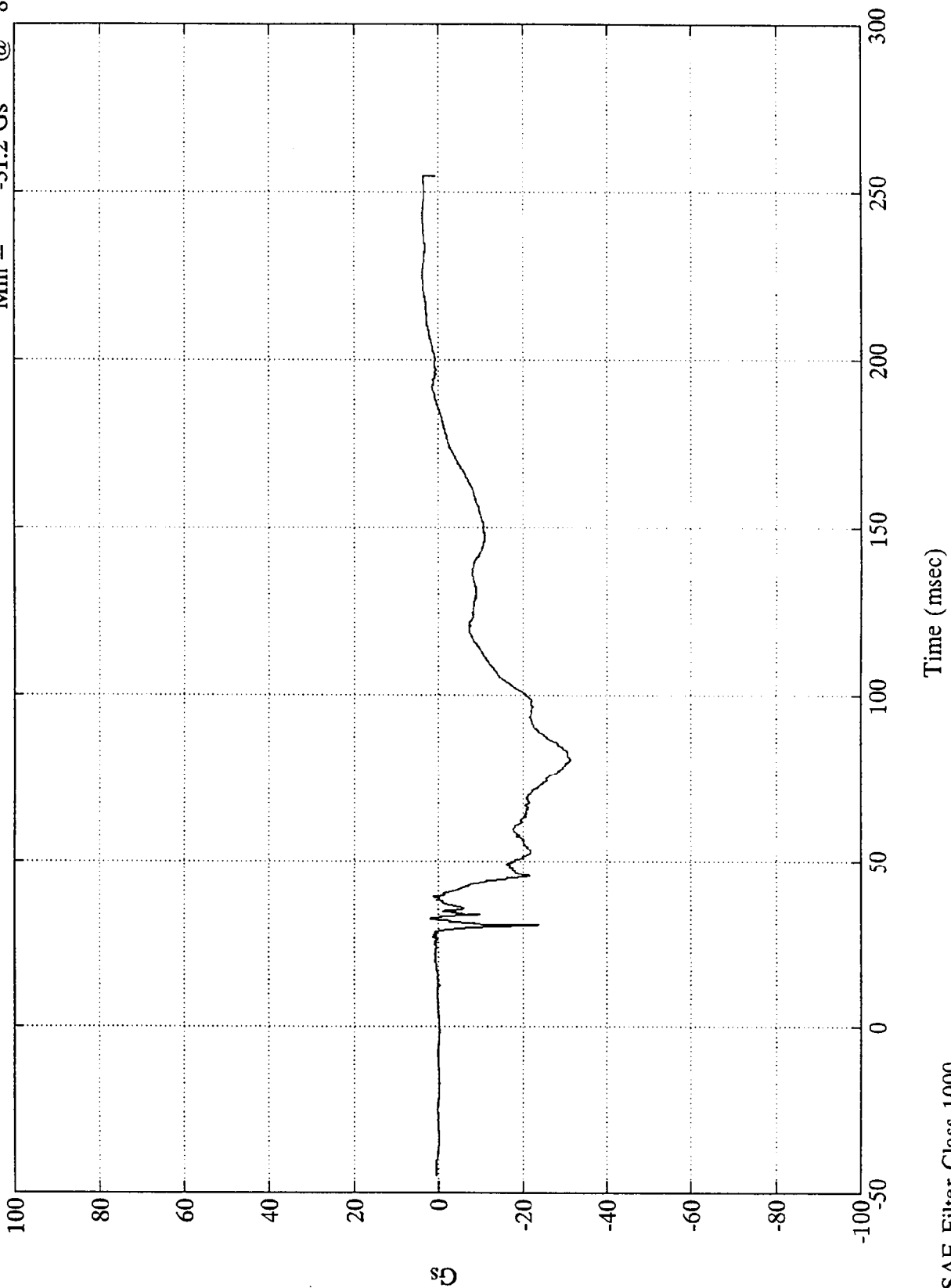
CLIP SUMMARY: Pos. 1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 50.872 G's
Tstart = 87.0000 ms
Tend = 90.1200 ms
CSI = 390.140

CLIP SUMMARY: Pos. 2 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 31.376 G's
Tstart = 57.0000 ms
Tend = 60.1200 ms
CSI = 139.153

NHTSA "208" TEST #2 - Mitsubishi Galant Pos. 1 Head X Max = 3.8 Gs @ 243.72 msec
 Min = -31.2 Gs @ 80.88 msec

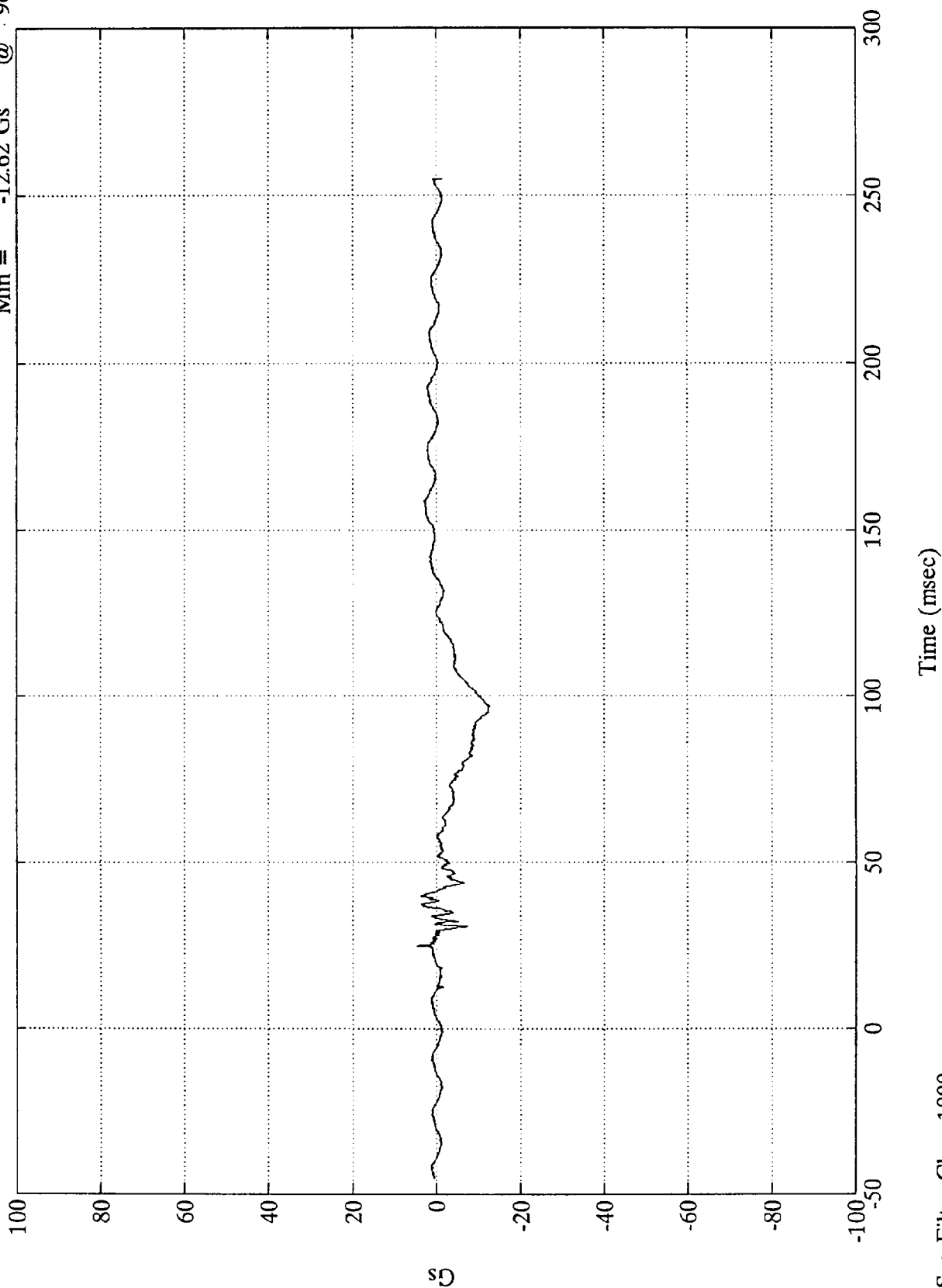


SAE Filter Class 1000

NHTSA "208" TEST #2 - Mitsubishi Galant

Pos. 1 Head Y

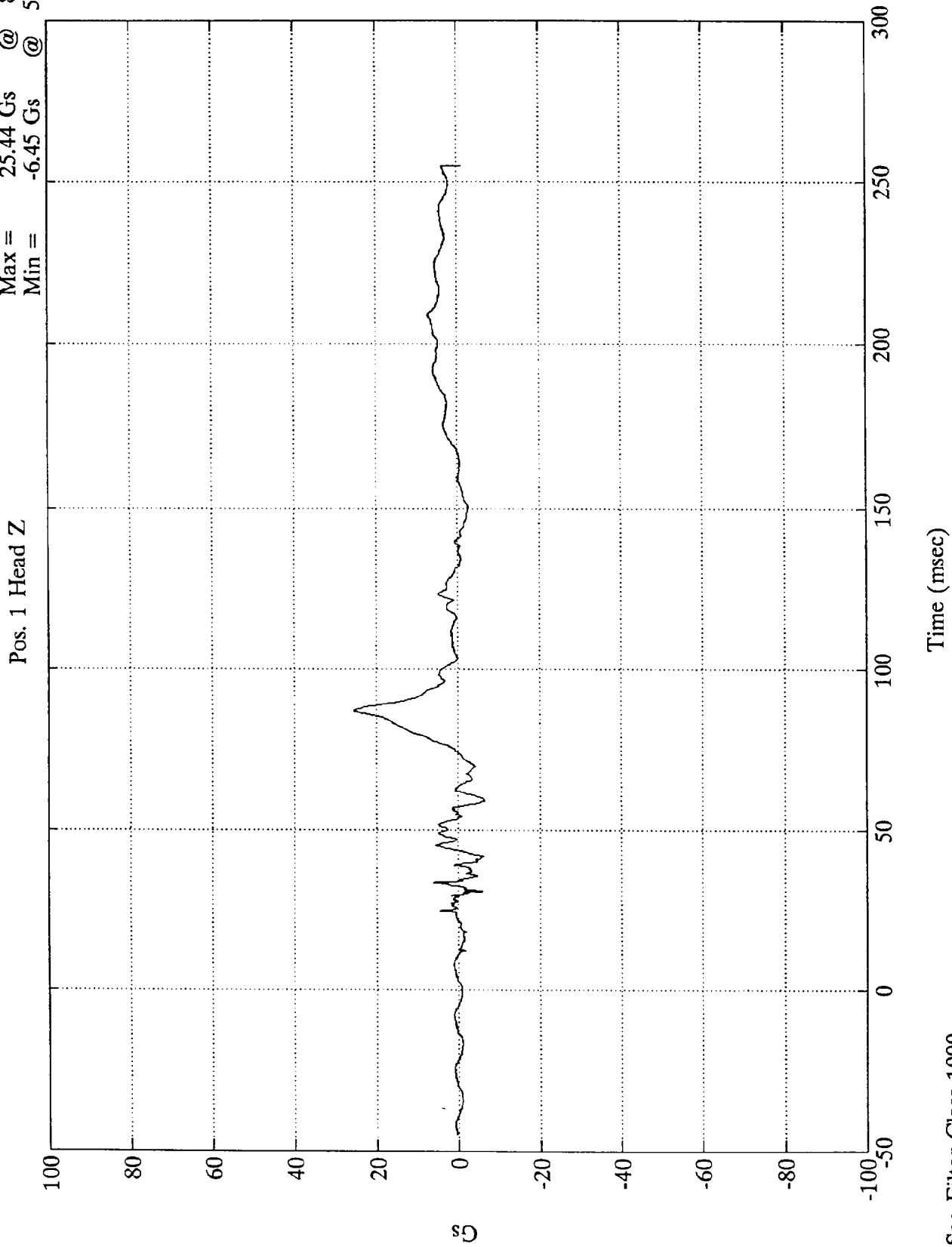
Max = 4.63 Gs @ 24.59 msec
Min = -12.62 Gs @ 96.72 msec



Sae Filter Class 1000

NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 25.44 Gs @ 87.24 msec
Min = -6.45 Gs @ 59.15 msec



sg
B-28

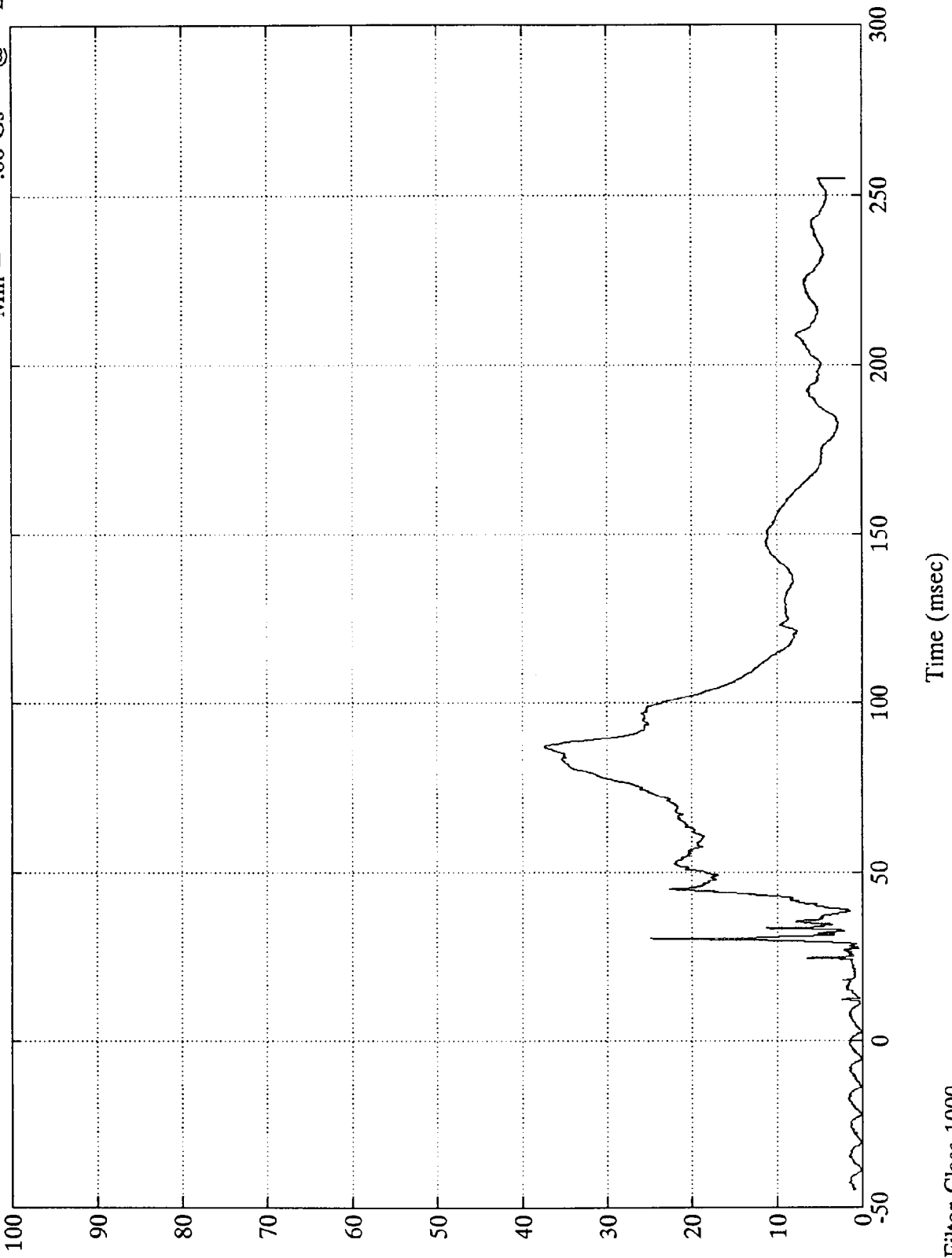
8145-2

Sae Filter Class 1000

NHTSA "208" TEST #2 - Mitsubishi Galant

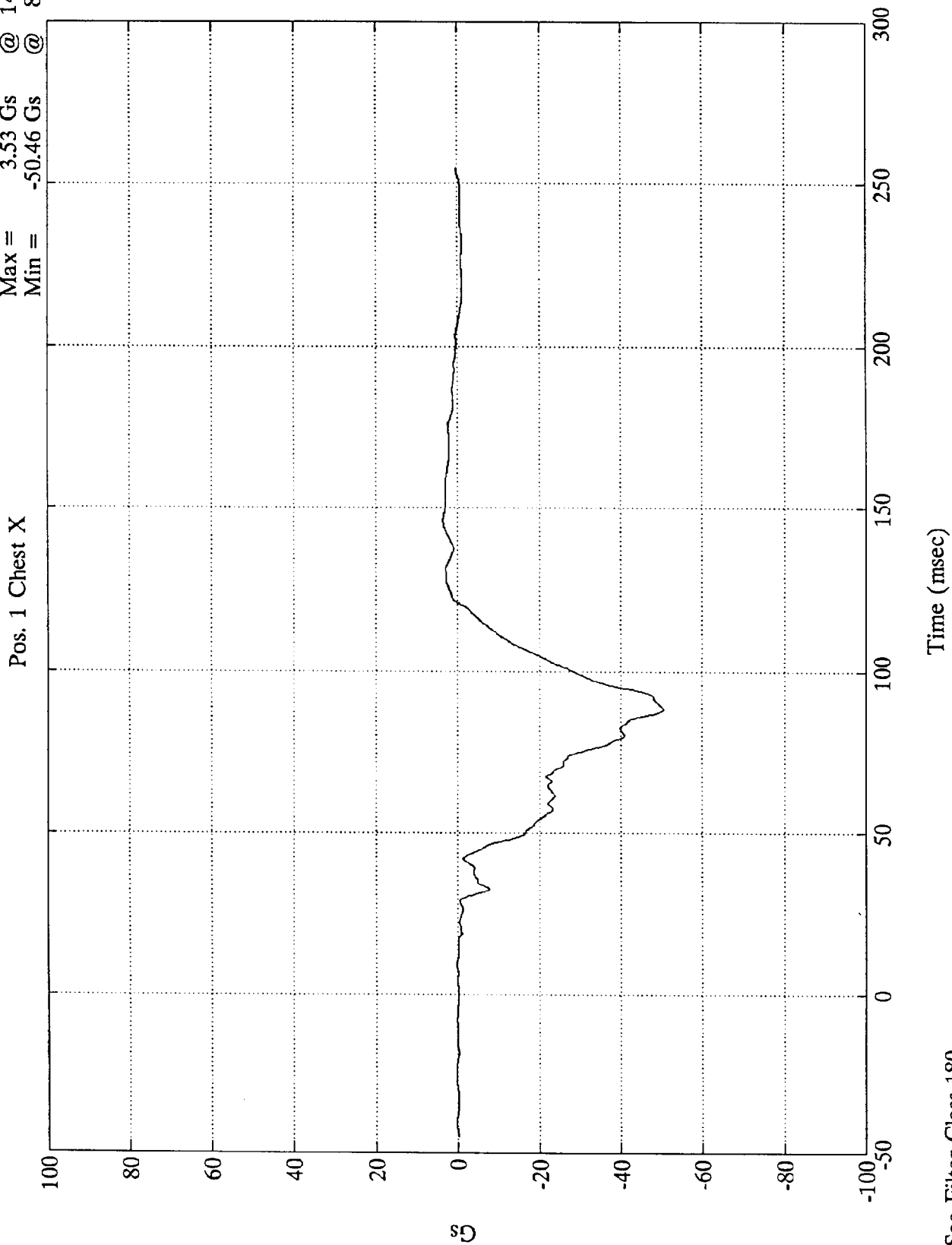
Pos. 1 Head Resultant

Max = 37.41 Gs @ 87.00 msec
Min = .06 Gs @ 2.51 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 3.53 Gs @ 146.16 msec
Min = -50.46 Gs @ 88.44 msec



B-30

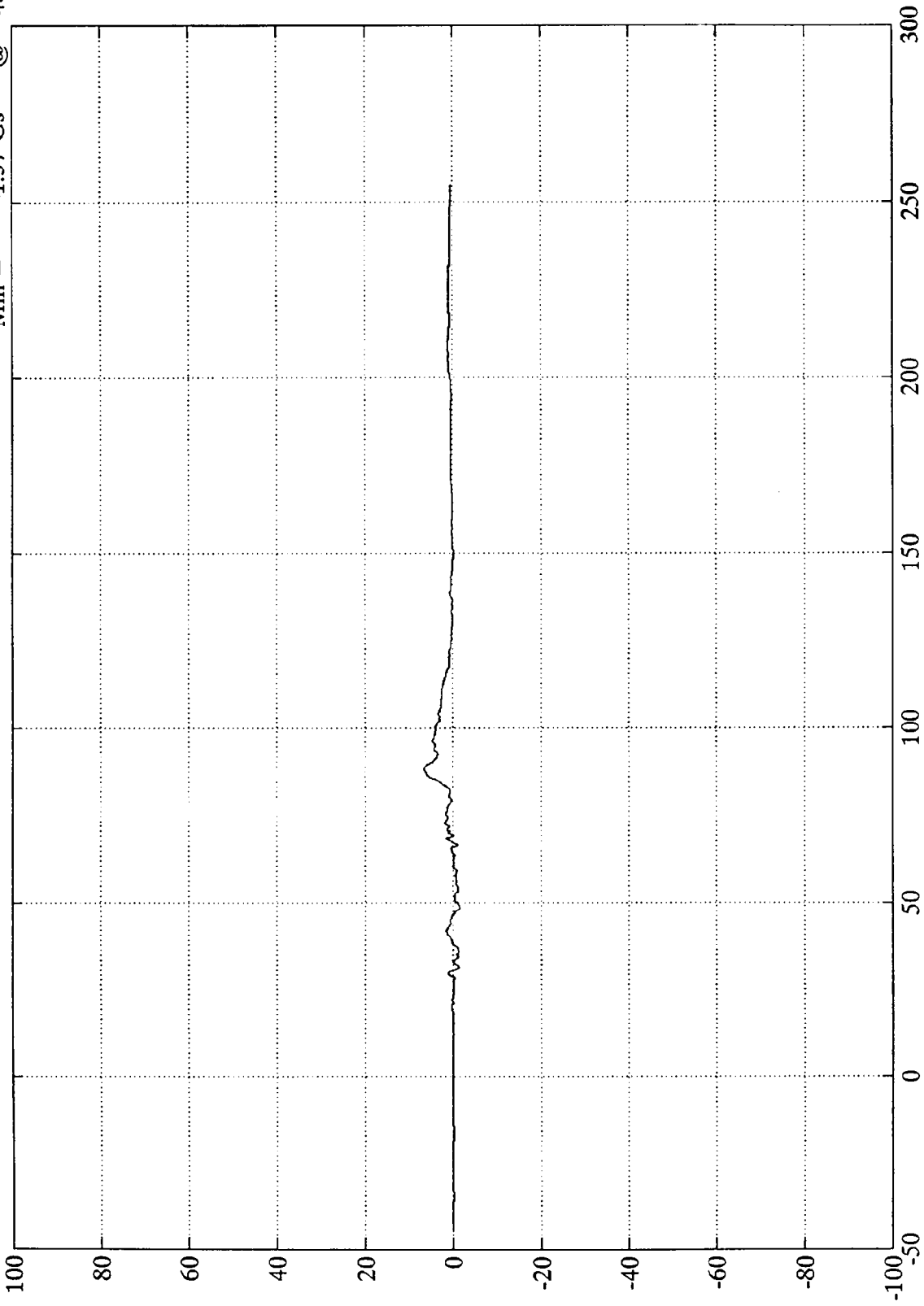
8145-2

Sae Filter Class 180

NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 6.62 Gs @ 88.20 msec
Min = -1.57 Gs @ 48.72 msec

Pos. 1 Chest Y



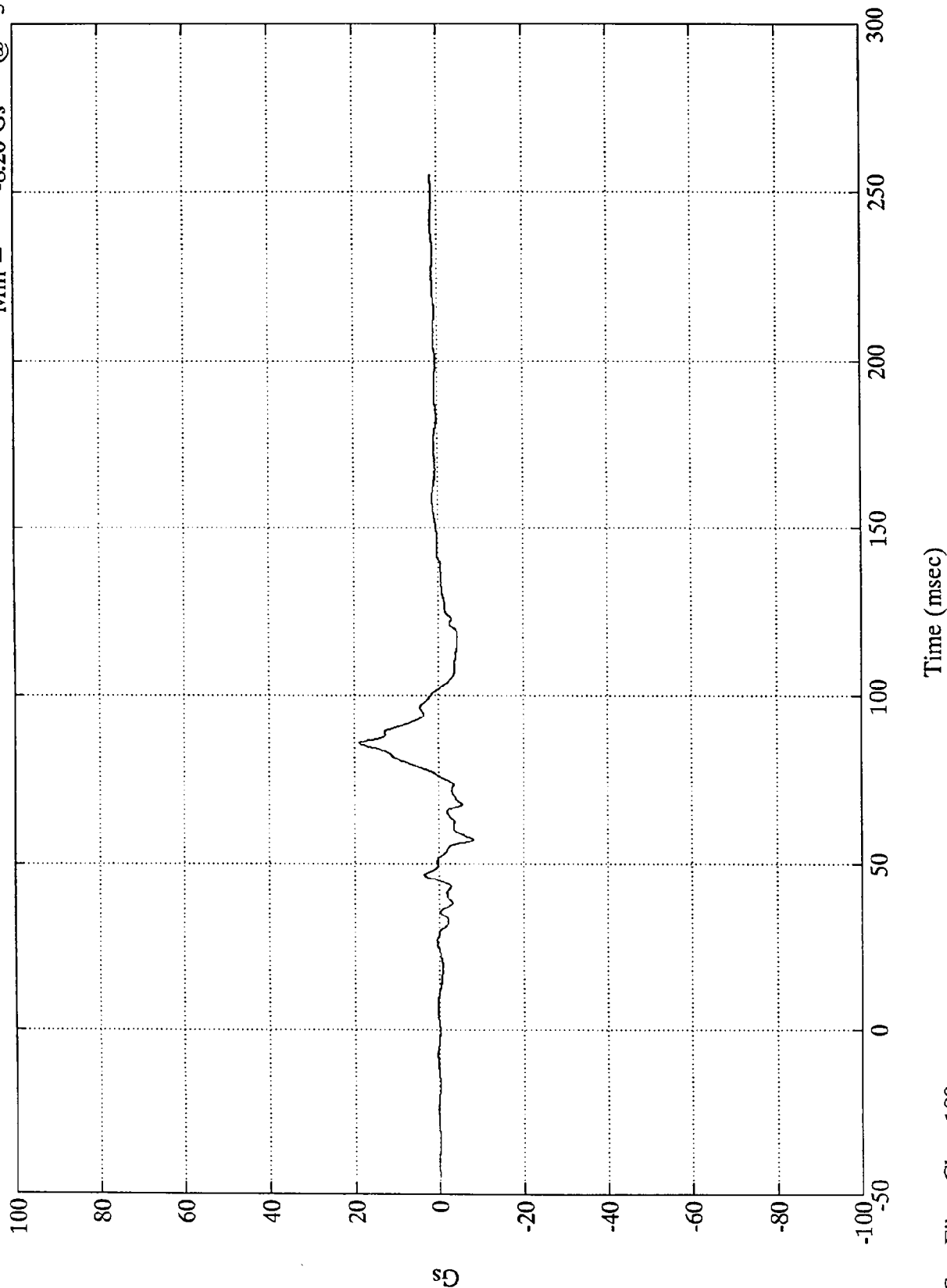
Time (msec)

Sae Filter Class 180

NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 18.72 Gs @ 85.91 msec
Min = -8.26 Gs @ 57.24 msec

Pos. 1 Chest Z

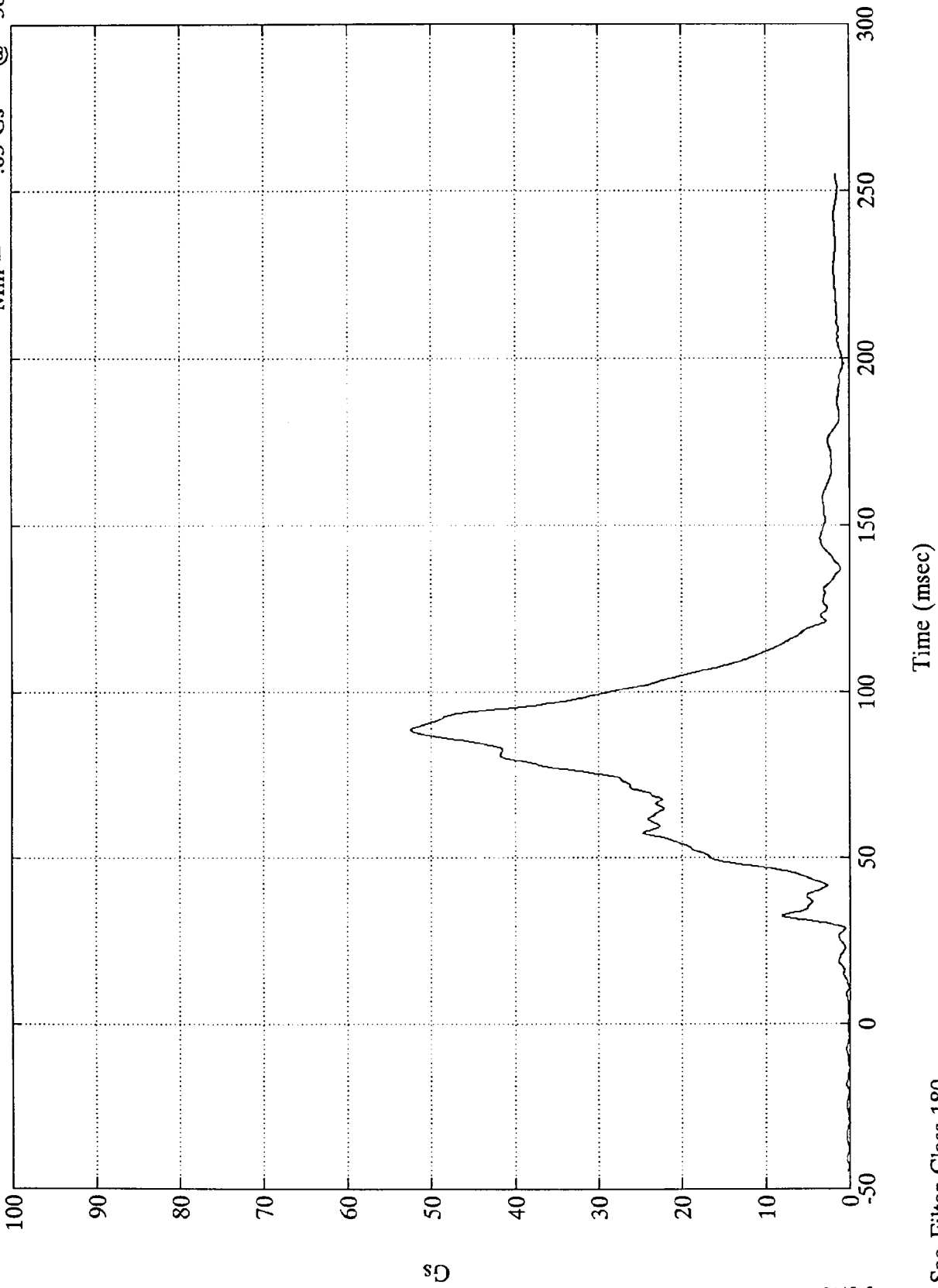


Sae Filter Class 180

NHTSA "208" TEST #2 - Mitsubishi Galant

Pos. 1 Chest Resultant

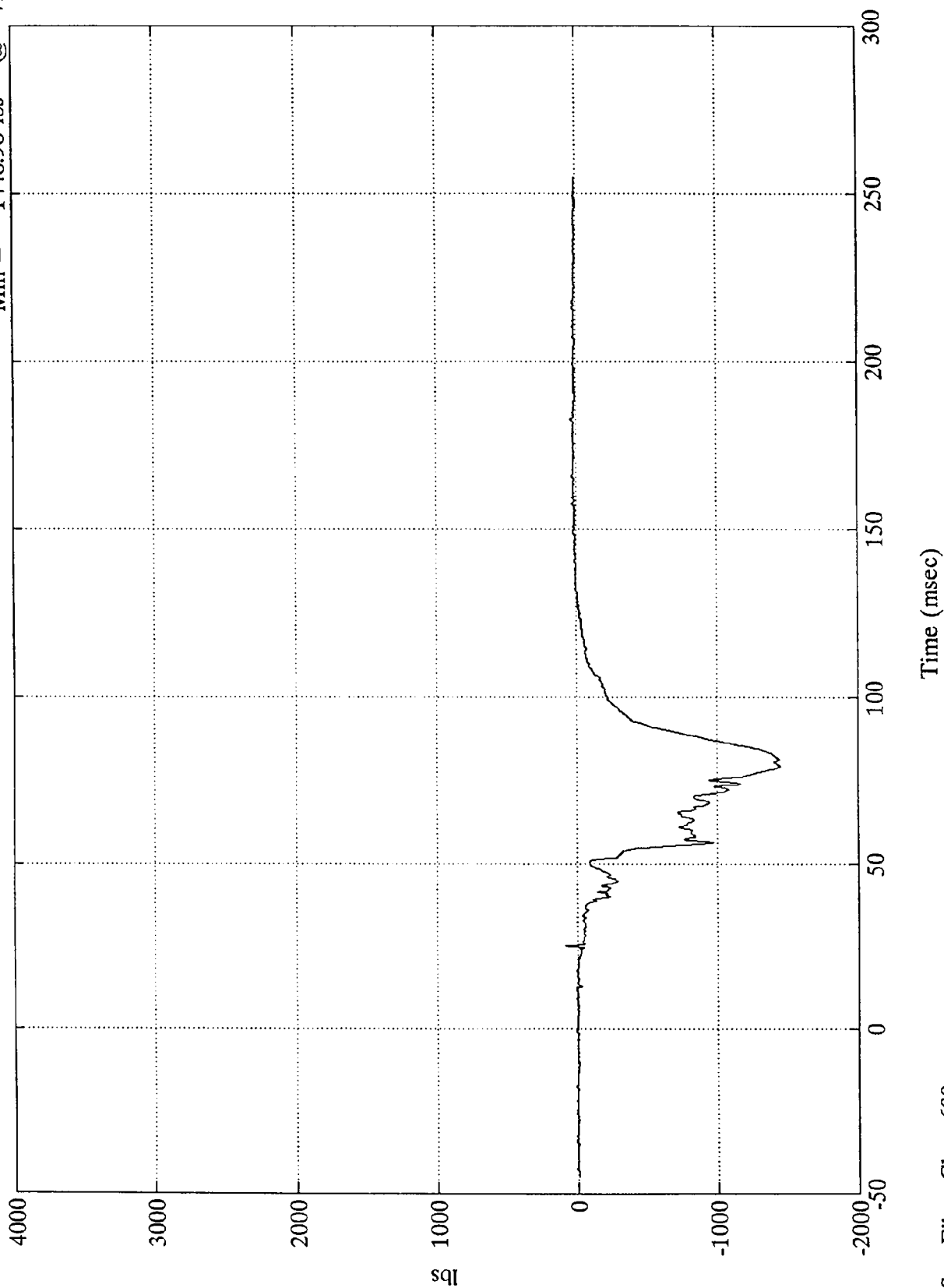
Max = 52.43 Gs @ 88.44 msec
Min = .03 Gs @ -30.24 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

Pos. 1 Left Femur

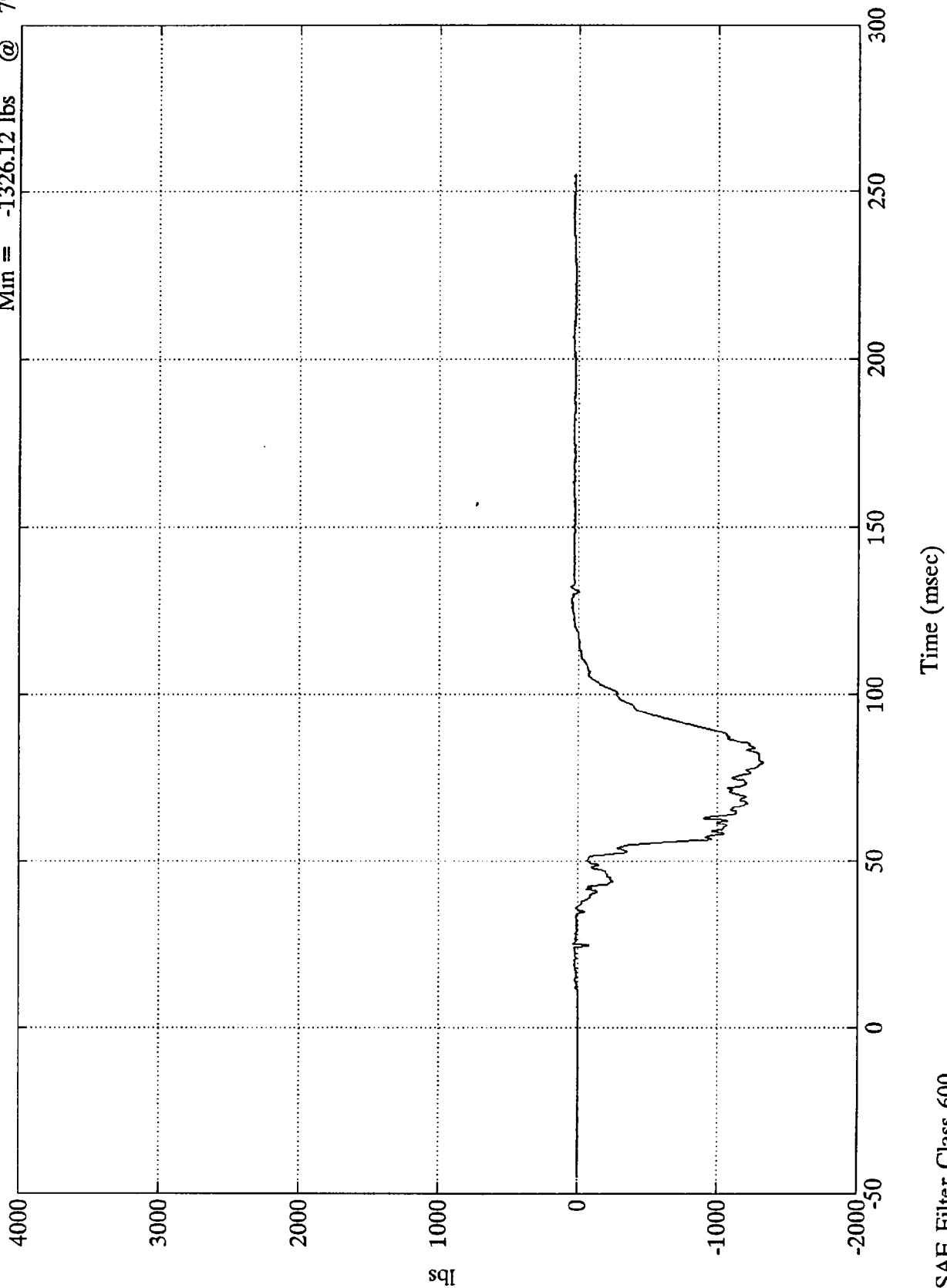
Max = 84.92 lbs @ 24.96 msec
Min = -1448.98 lbs @ 79.31 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

Pos. 1 Right Femur

Max = 55.66 lbs @ 132.36 msec
Min = -1326.12 lbs @ 79.56 msec

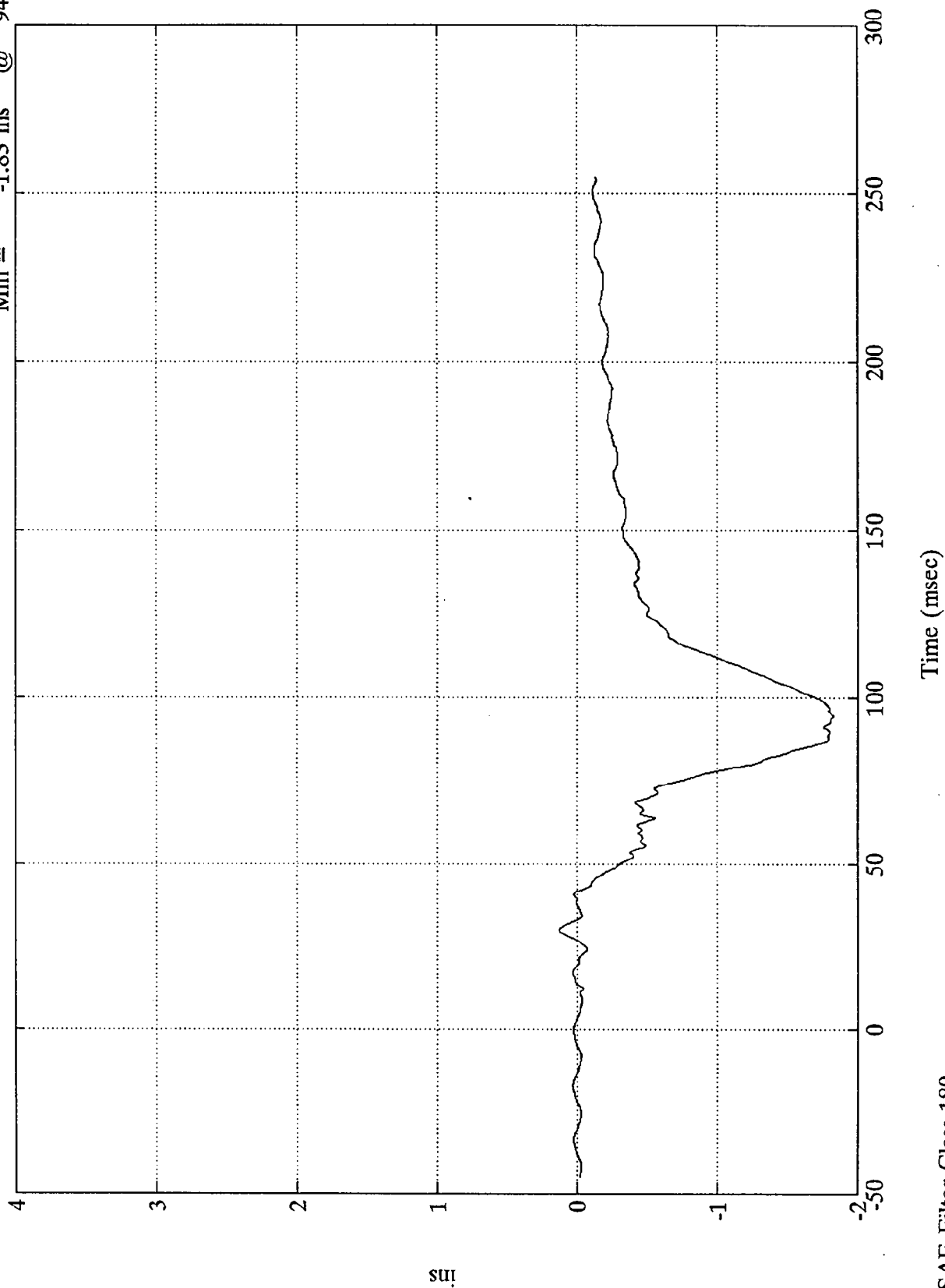


SAE Filter Class 600

NHTSA "208" TEST #2 - Mitsubishi Galant

Max = .13 ins @ 29.88 msec
 Min = -1.83 ins @ 94.44 msec

Pos. 1 Chest Displacement

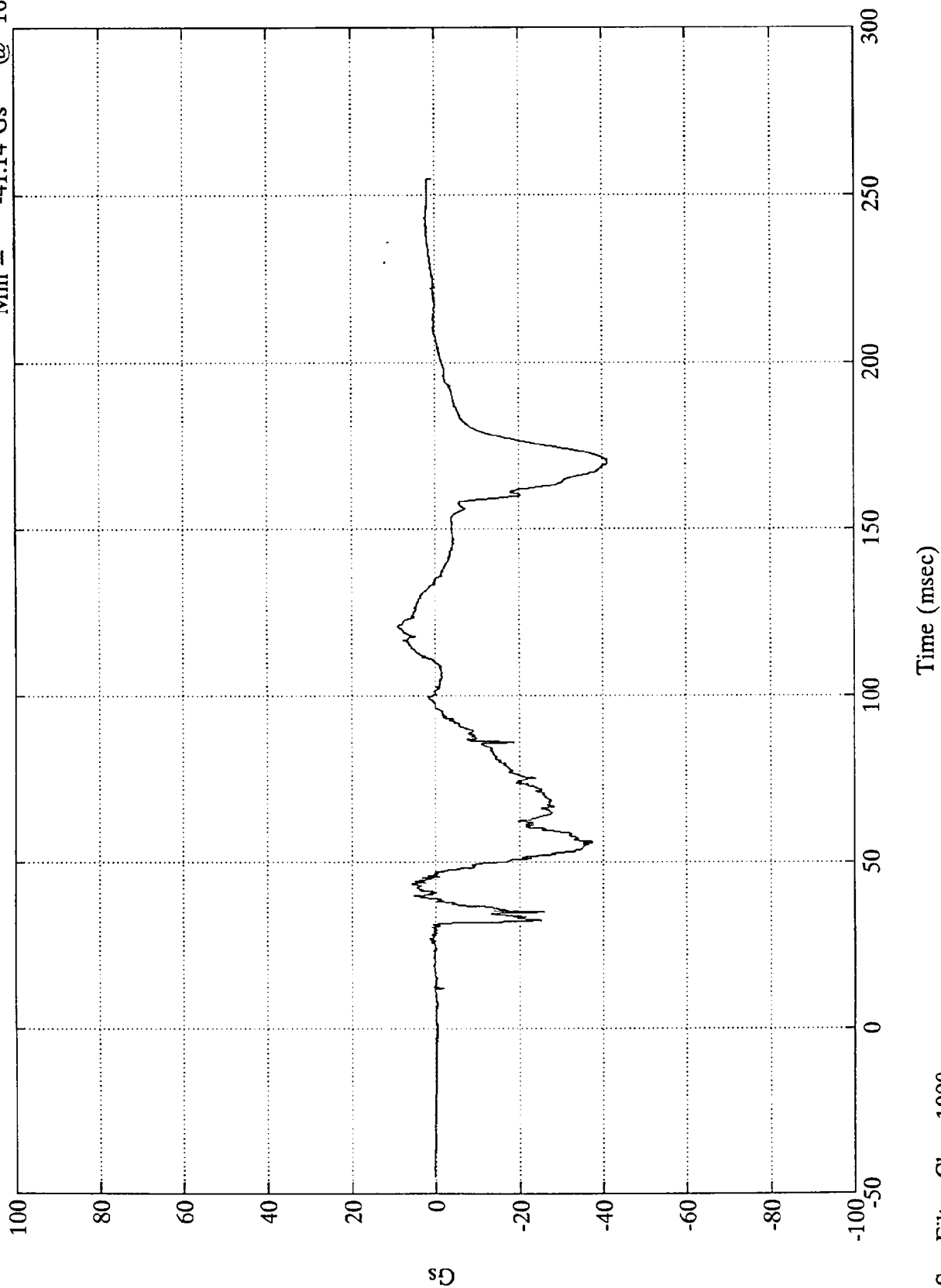


SAE Filter Class 180

NHTSA "208" TEST #2 - Mitsubishi Galant

Pos. 2 Head X

Max = 8.91 Gs @ 120.96 msec
Min = -41.14 Gs @ 169.80 msec



B-37

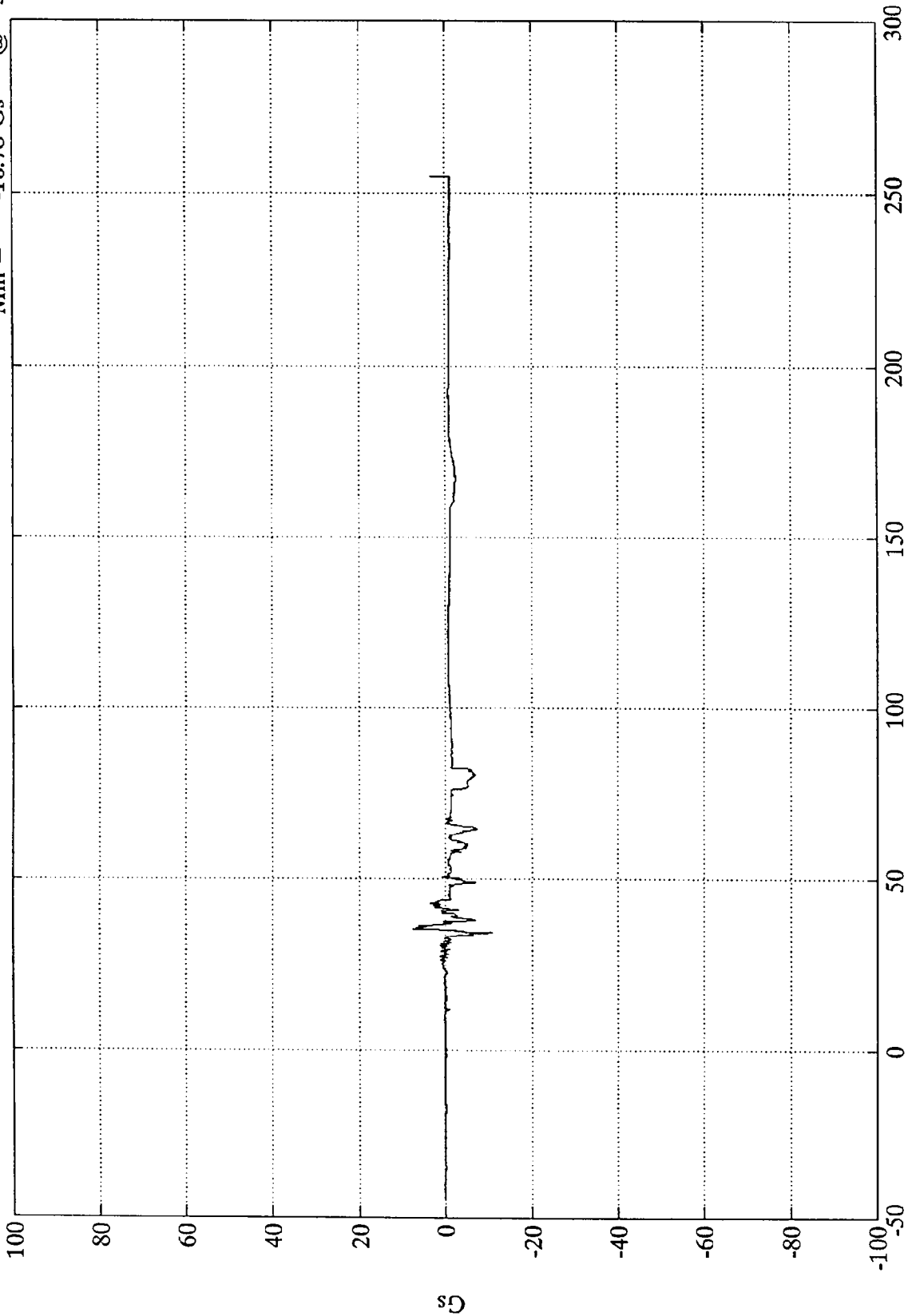
8145-2

Sae Filter Class 1000

NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 7.70 Gs @ 35.39 msec
Min = -10.78 Gs @ 34.31 msec

Pos. 2 Head Y



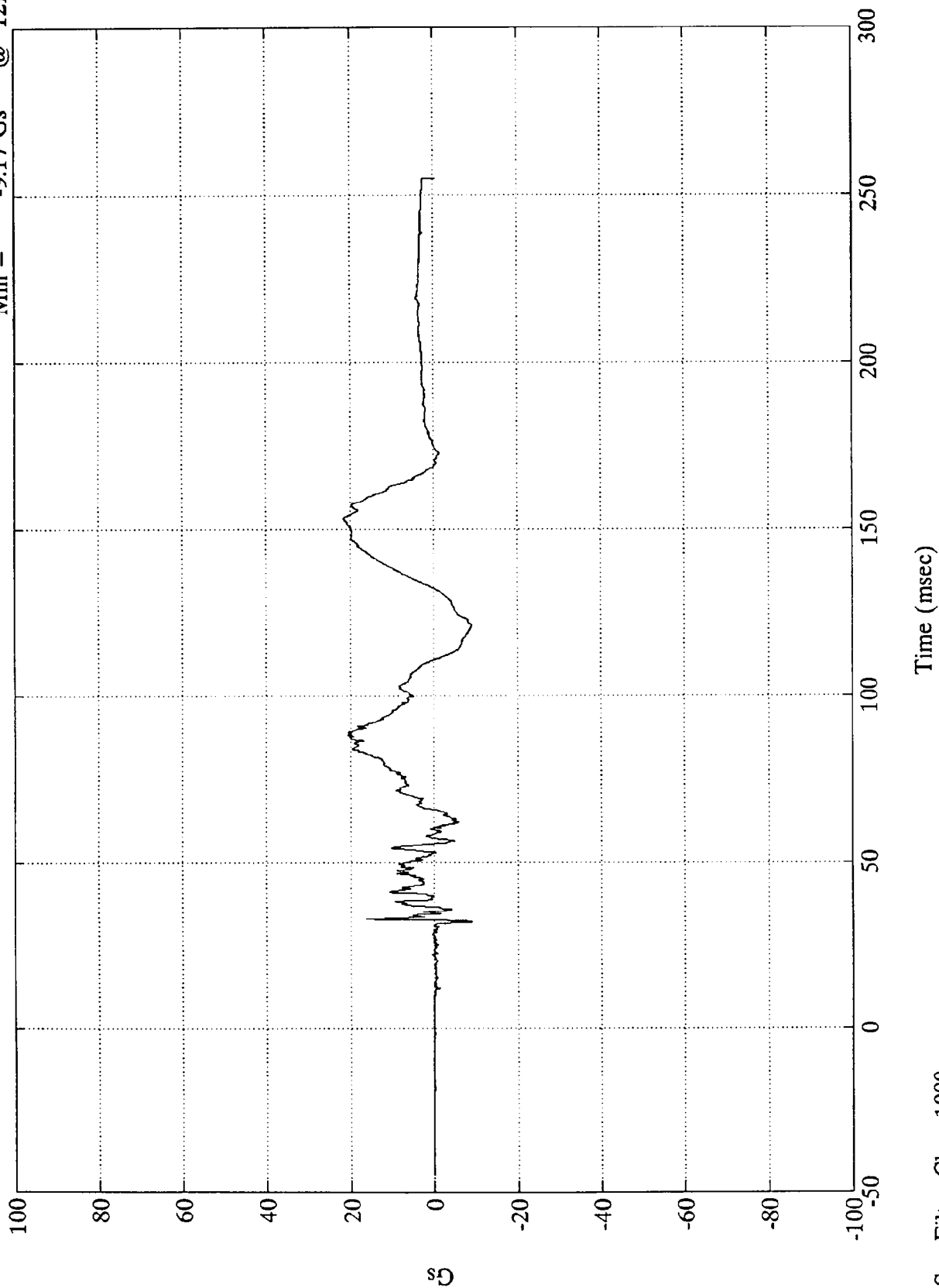
Time (msec)

Sae Filter Class 1000

NHTSA "208" TEST #2 - Mitsubishi Galant

Pos. 2 Head Z

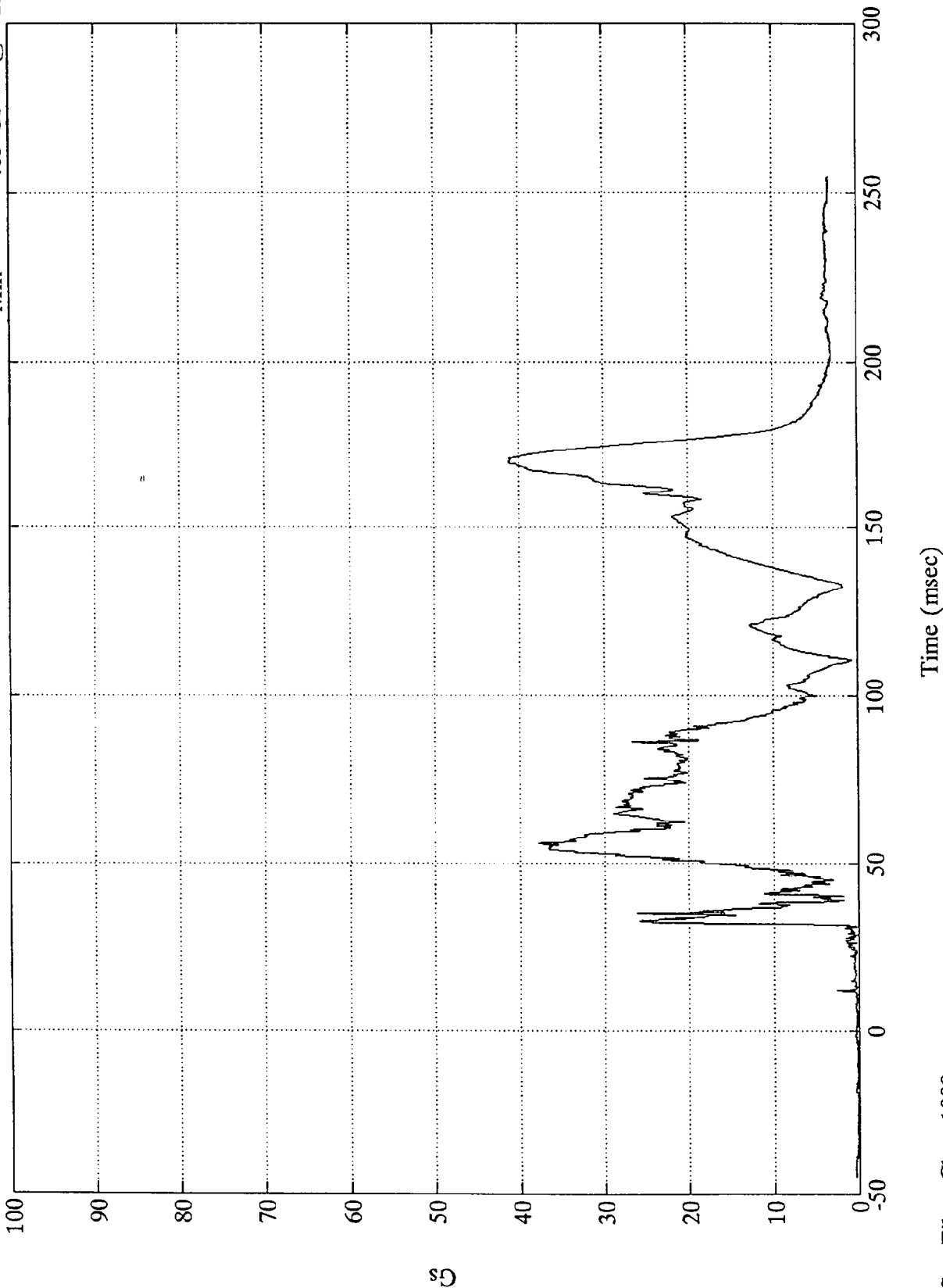
Max = 21.50 Gs @ 153.24 msec
Min = -9.17 Gs @ 121.31 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 41.21 Gs @ 169.67 msec
 Min = .05 Gs @ -21.00 msec

Pos. 2 Head Resultant



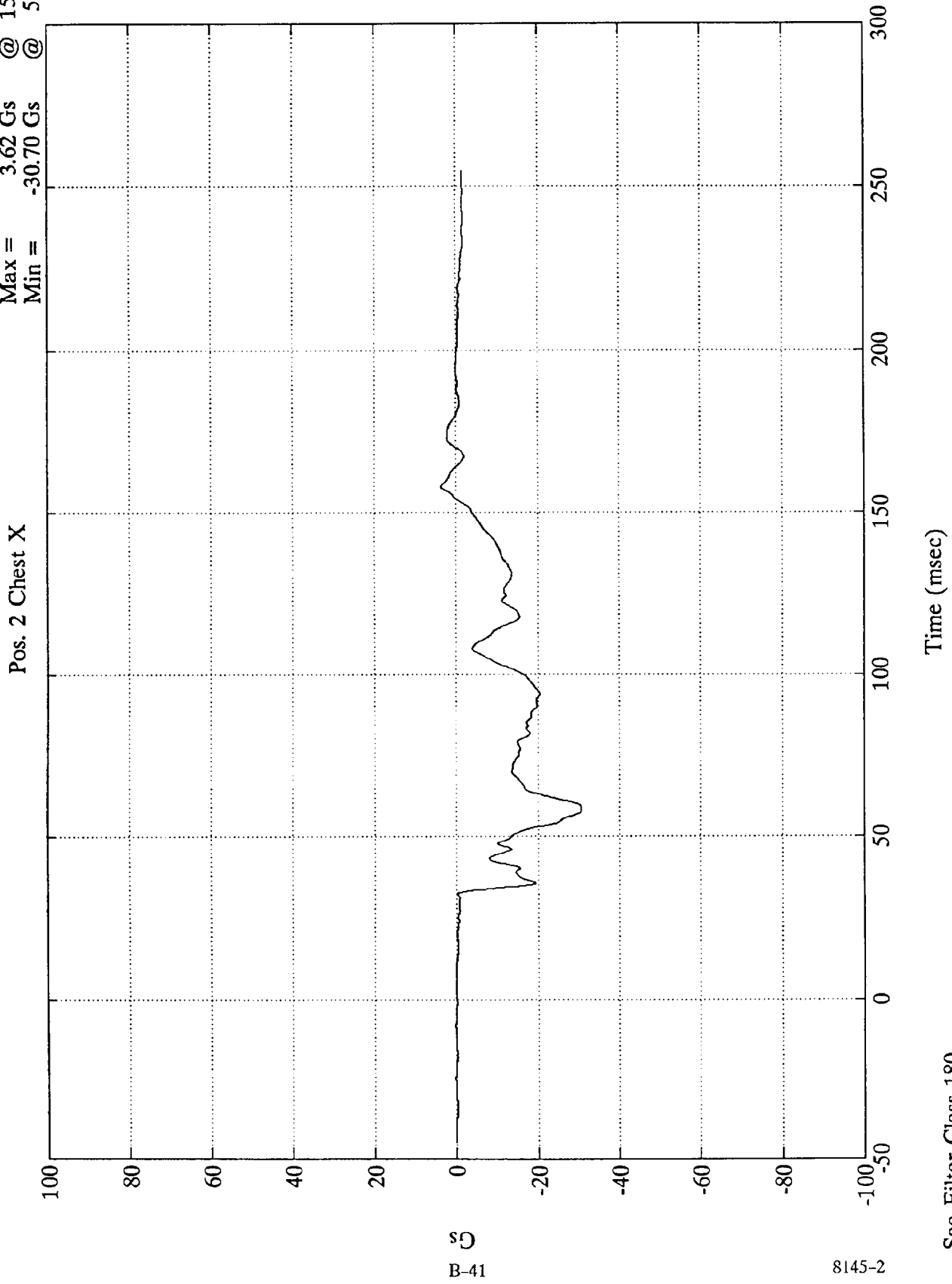
B-40

8145-2

Sae Filter Class 1000

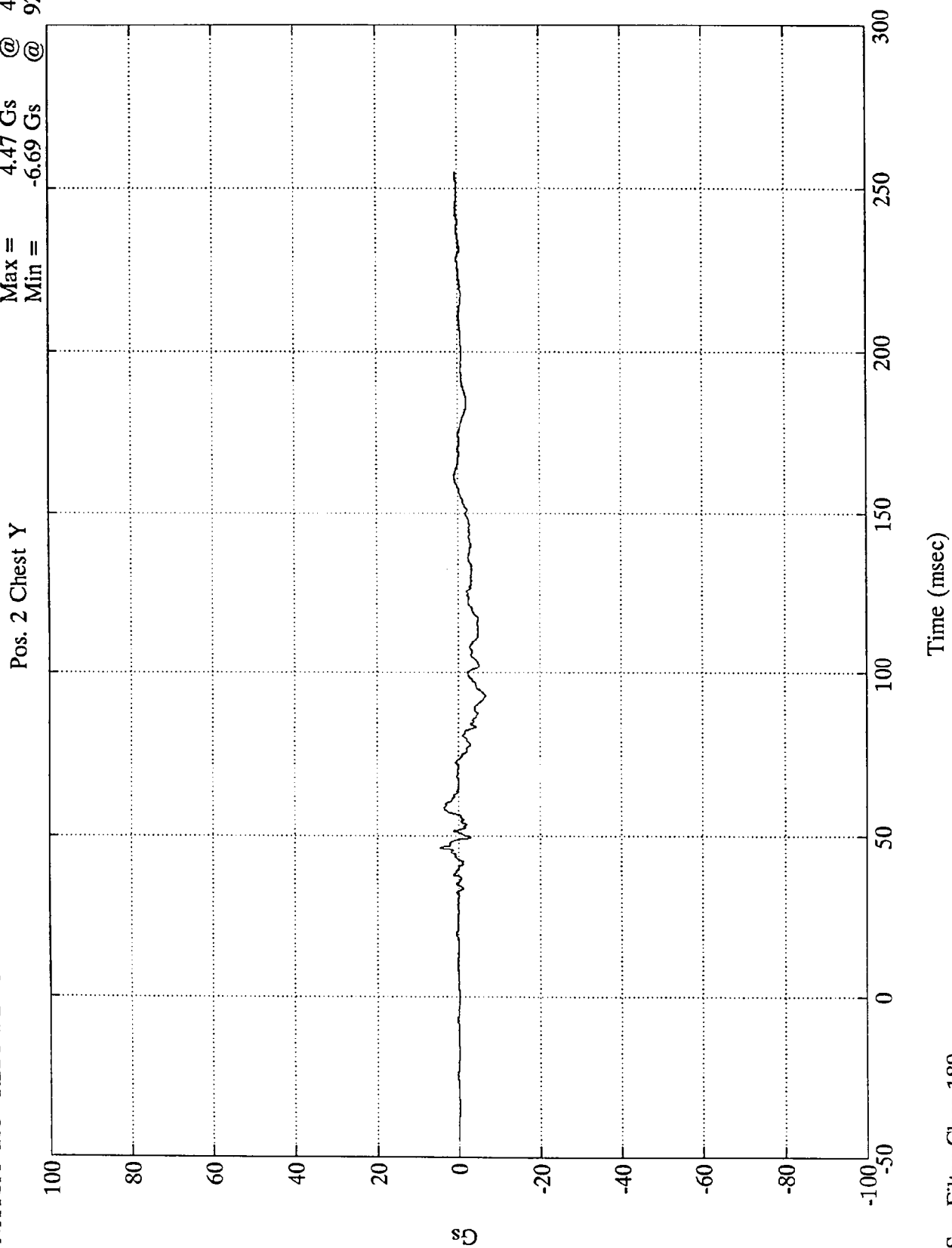
NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 3.62 Gs @ 158.04 msec
Min = -30.70 Gs @ 58.20 msec



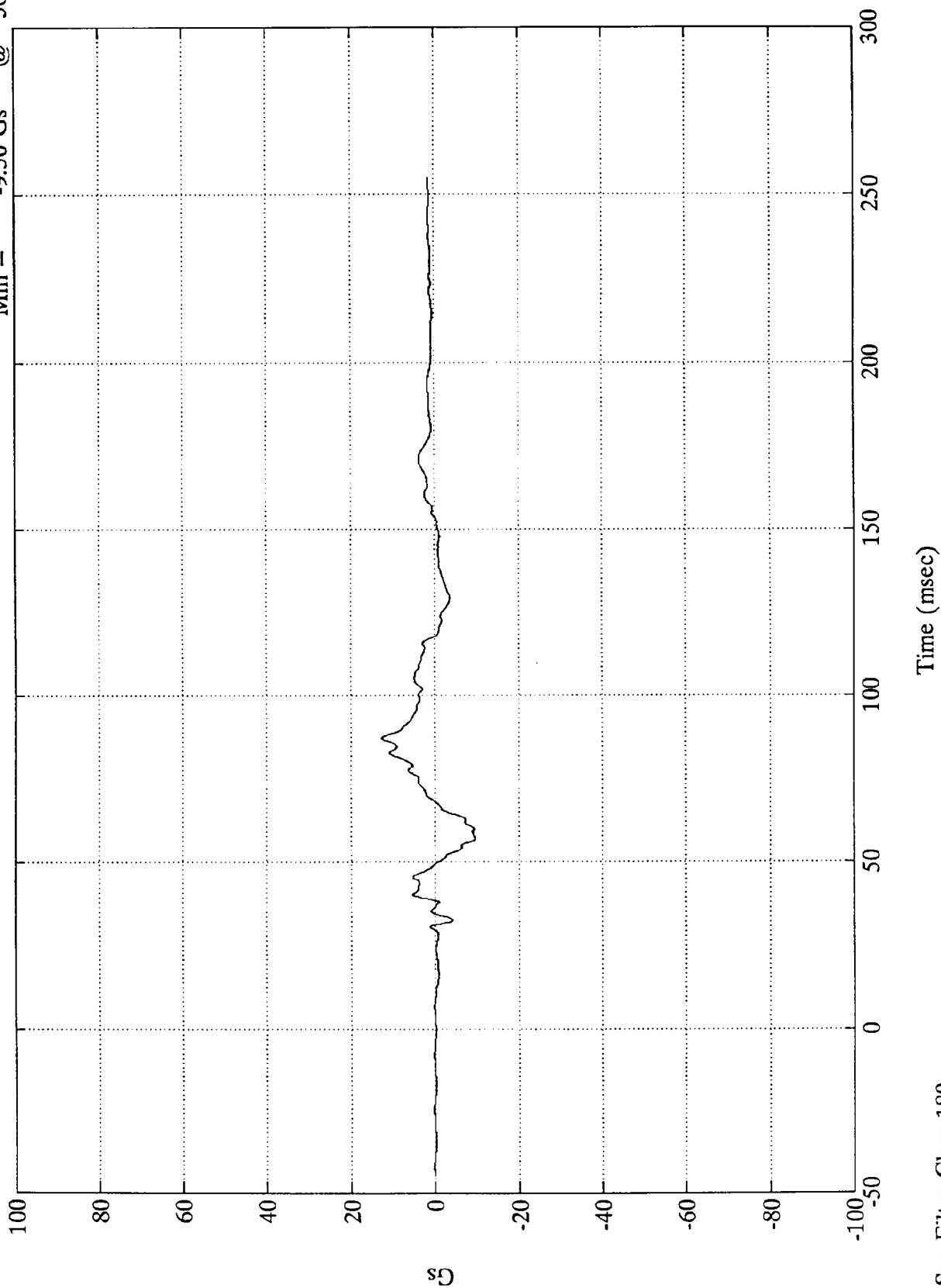
NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 4.47 Gs @ 46.44 msec
Min = -6.69 Gs @ 92.88 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

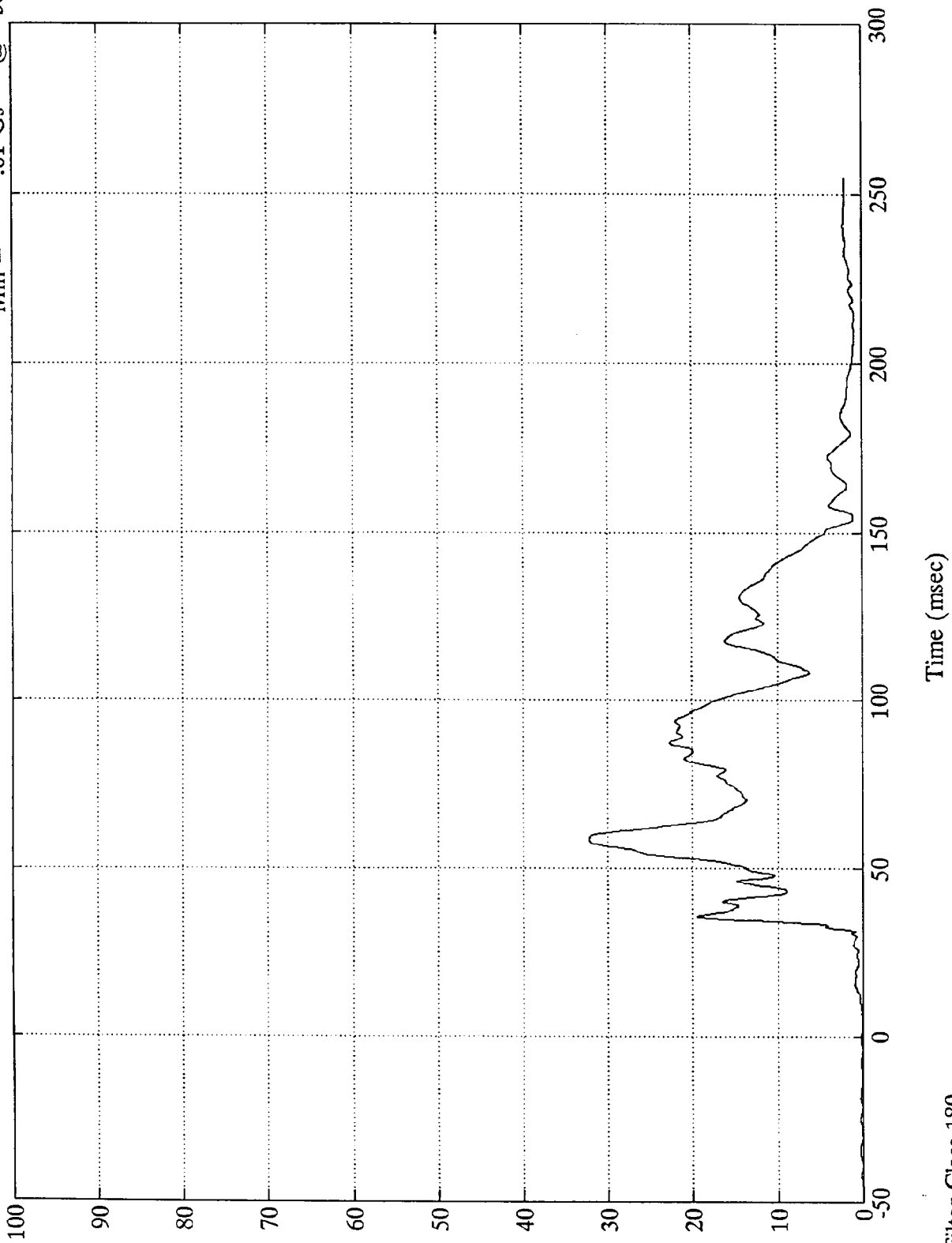
Pos. 2 Chest Z
Max = 12.58 Gs @ 87.12 msec
Min = -9.50 Gs @ 56.76 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

Max = 32.26 Gs @ 58.43 msec
 Min = .01 Gs @ -30.48 msec

Pos. 2 Chest Resultant



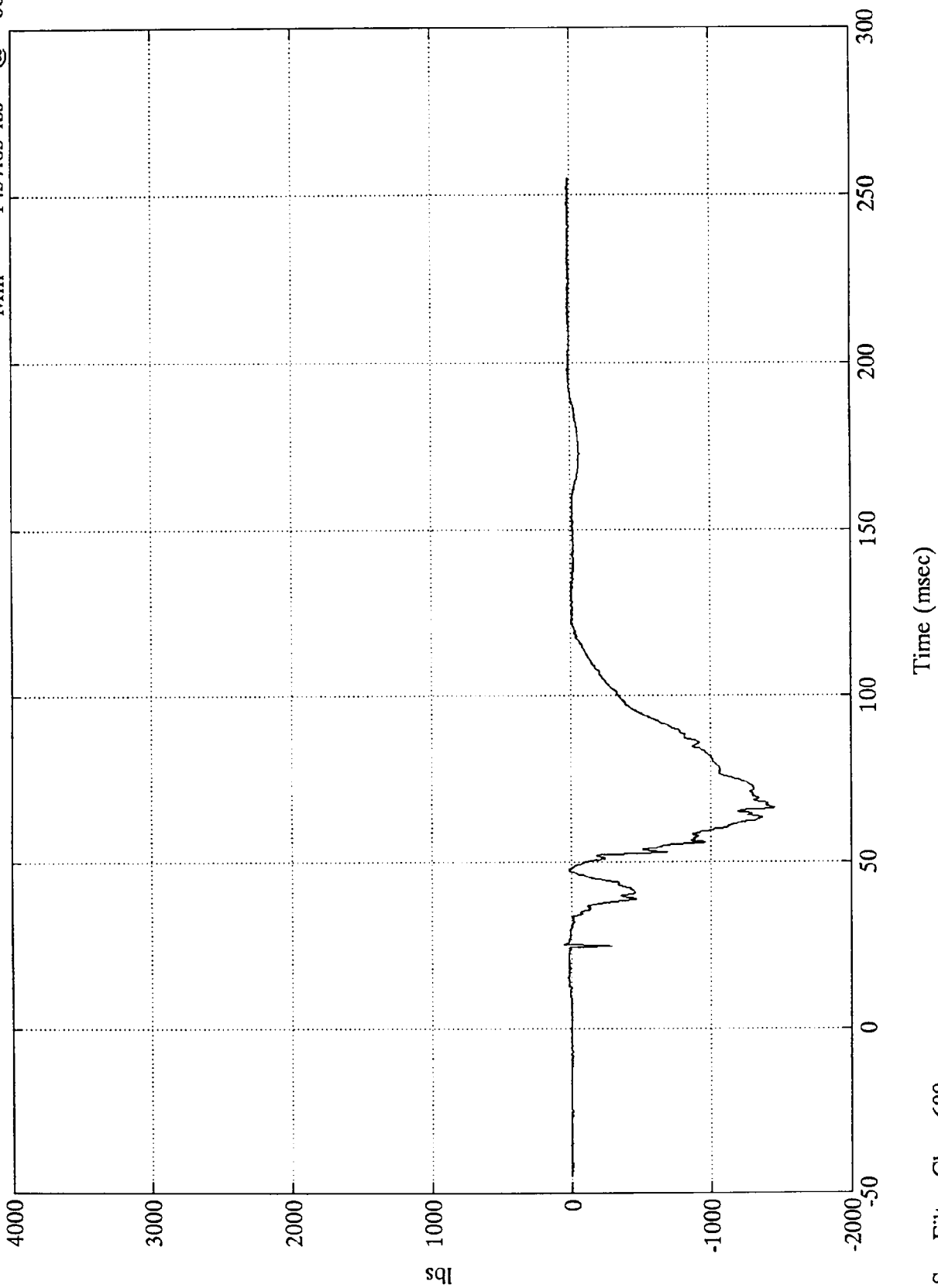
B-44

8145-2

Sae Filter Class 180

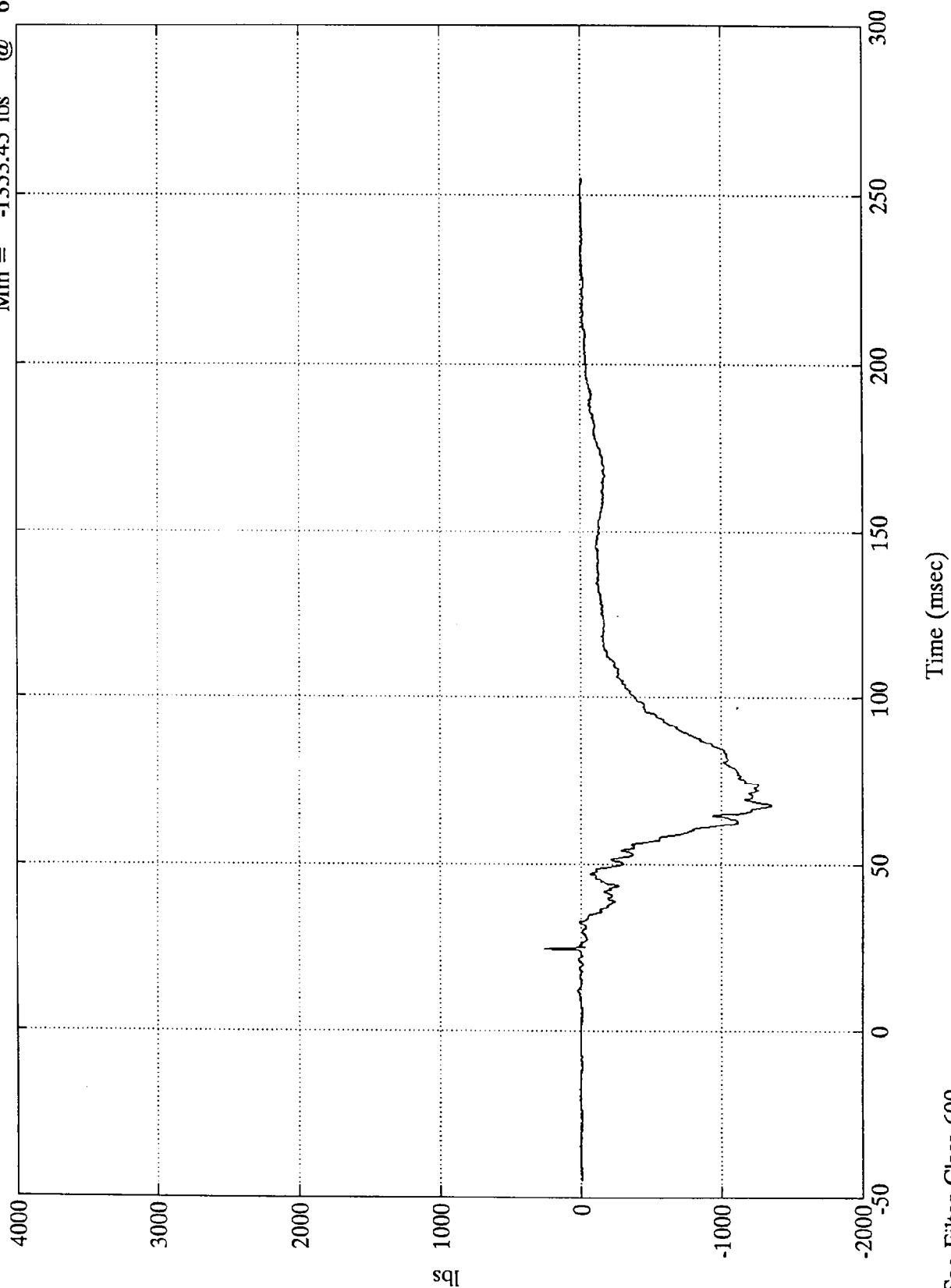
NHTSA "208" TEST #2 - Mitsubishi Galant

Pos. 2 Left Femur
Max = 54.08 lbs @ 25.20 msec
Min = -1457.03 lbs @ 66.36 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

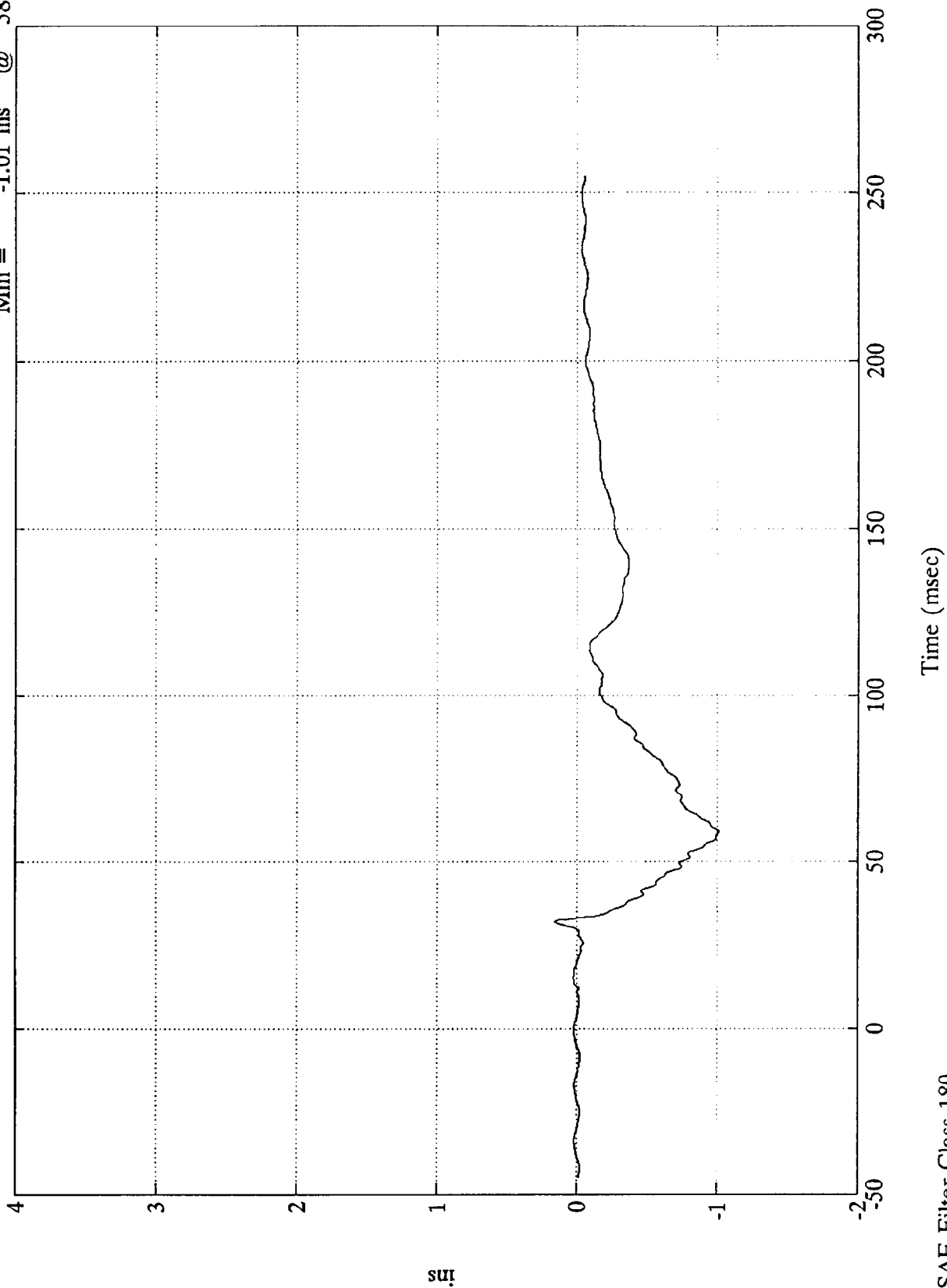
Pos. 2 Right Femur
Max = 264.12 lbs @ 24.59 msec
Min = -1353.45 lbs @ 67.56 msec



NHTSA "208" TEST #2 - Mitsubishi Galant

Max = .16 ins @ 32.15 msec
Min = -1.01 ins @ 58.91 msec

Pos. 2 Chest Displacement



SAE Filter Class 180

Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

Seat and seatbelt

Seat belts

ND06A-AF

Seat belts are installed in your car for the protection of the driver and passengers. Always use the seat belts. In the event of an accident, injury to the driver and passengers may be reduced if seat belts are properly used.

NOTE

Legislation in your state may require seat belt usage, but even if not required, they should always be used. The following pages contain the recommended procedure for fastening, adjusting, and wearing of the belts for comfort and safety.

WARNING!

- (1) Never use one seat belt for more than one occupant.
- (2) Never wear the shoulder belt under the arm or otherwise out of position.
Always wear both the seat and shoulder belt and in the proper position.
- (3) Do not make any modifications that could change the effectiveness of the seat belts.
- (4) Never attempt to repair or replace the seat belt assemblies on your own.
All repairs and replacements should be made by an authorized dealer.

Seat unbelt restraint system

ND06B-R

Front seats and both sides of the rear seat are equipped with a UNIBELT system which uses a single belt and an emergency locking retractor.

This system is designed to provide comfort and safety by permitting full extension and automatic retraction of the belts during normal car operation. A sensing device inside the belt retractor is designed to lock the retractor in the event of an abrupt change in car motion.

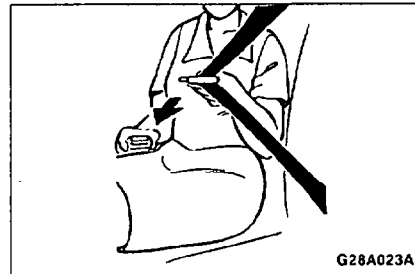
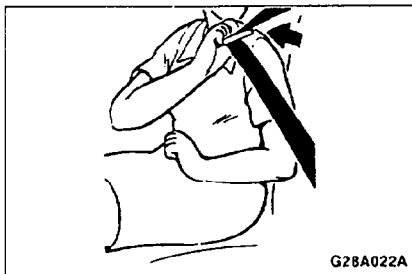
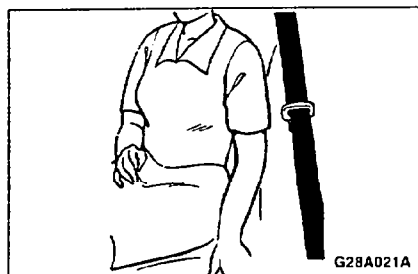
NOTE

For instruction on how to install a child restraint system to the rear seat, see "Installing a child restraint system to a UNIBELT" on page 27.

WARNING!

Driving with the head restraints removed is dangerous. Always have them mounted when operating the car. Failure to having them properly mounted may increase the chance and severity of injury in the event of a collision.

Seat and seatbelt



Unibelt instructions

ND06D-AE

1. Get in the car and sit in the normal correct posture.

WARNING!

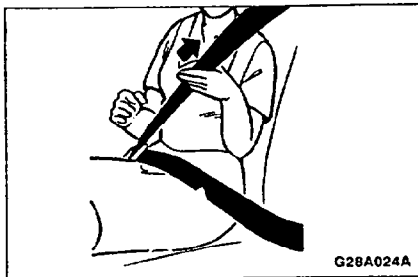
To minimize risk of personal injury in event of a collision or sudden stop, both the driver and passenger seatbacks should always be in a nearly upright position while the car is in motion. The protection provided by the seat belts may be reduced significantly when the seatback is reclined.

There is greater risk that the passenger will slide under the belt resulting in serious injury, when the seatback is reclined.

2. Grasp the movable latch plate and slide it up the webbing as far as necessary so that it will be easy to pull across your body. After a couple of tries, this will become an automatic one-handed operation.

3. Pull the webbing, and move the movable latch plate toward the buckle. This system will not lock up if you stop or hesitate, so relax and continue to "buckle-up". Push the latch plate into the buckle until a "click" is heard.

Seat and seatbelt

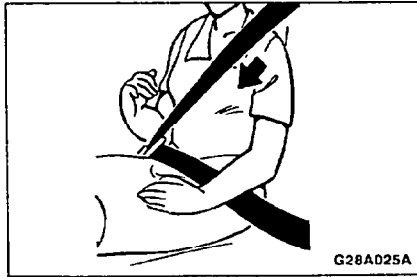


4. Pull up on the shoulder belt to ensure that there is no slack in the seat belt. The seat belt will not tighten during use; therefore, you can set it once for safe, comfortable snugness.

WARNING!

Be sure the seat belt portion is fitted snugly and as low as possible around the hips, not around the waist.

Failure to do so may increase the chance or severity of injury in the event of a collision.



5. Check the belt slackness. The belt will retain the small amount of slack necessary for comfort when you return to your normal seating position. If the belt is still too tight, pull out 6" or 8" of webbing, let it return to your chest, and repeat the above motion.

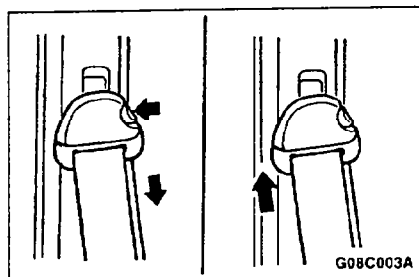


6. The shoulder belt will allow unrestricted movement under normal conditions. The belt will lock in the event of an abrupt change in car motion. To release the belt, push the button on the buckle. To return the belt to its stowed position, pull the shoulder belt down slightly and release immediately.

WARNING!

Be sure to lock all doors before driving. Locking the doors and properly using the seat belts provided will minimize the risk of injury or ejection in an accident.

Seat and seatbelt



Adjustable seat belt anchor (front seats)

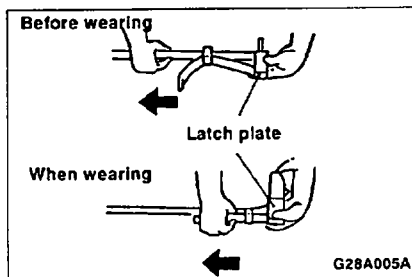
ND06E-C

The seat belt anchor height can be adjusted.

Move the seat belt anchor down with the lock knob depressed. To move the anchor up, slide it without depressing the lock knob.

WARNING!

When adjusting the seat belt anchor set it at a position that is sufficiently high so that the belt will make full contact with your shoulder but will not touch your neck.



Rear seat lap belt

ND06C-CD

Center belt

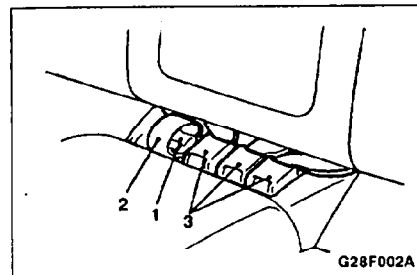
The center belt should be adjusted by holding the belt and latch plate at right angles to each other, and then pulling the belt as illustrated above to a snug fit around the occupant.

NEVER USE THE SAME LAP BELT ON MORE THAN ONE PERSON AT A TIME.

NOTE

The buckle and plate of the center lap belt are marked with "CENTER". Be sure to check the marking before wearing the center lap belt.

The outboard restraint system buckle and center restraint system tongue are not compatible and will not engage with one another.



Rear seat belt pocket (if so equipped)

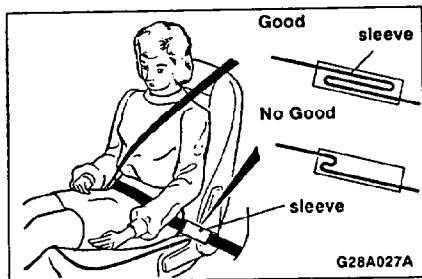
ND06I-EA

When the seat belt is not in use, place it in the storage pocket.

For compact storage of the plate side seat belt, coil it around the latch plate.

- 1- Latch plate
- 2- Belt
- 3- Buckle

Seat and seatbelt



The lap belt portions of the front seat belts has on it a sleeve inside which the seat belt webbing is folded back over itself in a loop. This allows it to absorb the energy of a shock by pulling loose, and releasing slack. In the event that the loop inside the sleeve has come loose, replace the seat belt.

WARNING!

All seat belt assemblies including retractors and attaching hardware should be inspected by an authorized dealer after any collision. We recommend that all seat belt assemblies in use during a collision be replaced unless the collision was minor and the belts show no damage and continue to operate properly.

Supplemental Restraint System (SRS)

ND10A-B

This car is equipped with a Supplemental Restraint System (SRS) which includes driver and front passenger air bags.

The SRS is designed to supplement the seat belts to provide those occupants with protection against head and chest injuries in certain moderate to severe frontal collisions.

The SRS is NOT a substitute for the seat belts; seat belt should ALWAYS be worn.

WARNING!

IT IS VERY IMPORTANT TO ALWAYS WEAR YOUR SEAT BELT, EVEN WITH AN AIR BAG:

- (1) Seat belts help keep the driver and front passenger properly positioned when the air bag inflates.
- (2) Seat belts reduce the risk of injury in rollovers, side or rear impact collisions, and in lower-speed frontal collisions, because the air bag is not designed to inflate in those situations.
- (3) Seat belts reduce the risk of being thrown from your vehicle in a collision.

WARNING!

IT IS VERY IMPORTANT TO BE PROPERLY SEATED, EVEN WITH AN AIR BAG:

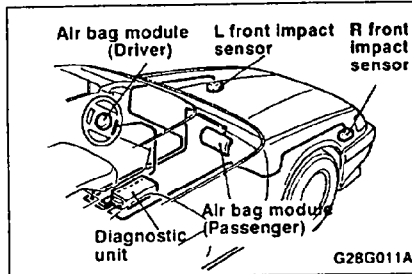
- (1) Air bags inflate very fast, and with great force.
If you are not properly seated, the air bag may not protect you properly, and could cause injury when deployed.
- (2) Before driving, adjust the driver's seat as far back as possible while still maintaining complete control of the car.
- (3) Before driving, adjust the passenger seat as far back as possible.
- (4) With your seat belt properly fastened, sit in an upright position, with your back against the seat back.
- (5) Do not lean with your head or chest close to the steering wheel or instrument panel.

Seat and seatbelt

(6) Infants and small children should be properly seated in a child restraint system. See the "Child Restraints" section of this owner's manual.

● **REAR-FACING CHILD RESTRAINTS** must NOT be used in the front seat of this car, because the force of an inflating passenger air bag could push that restraint into the seat back, causing serious injury. Rear-facing child restraints should only be used in the rear seat.

● **FRONT-FACING CHILD RESTRAINTS** should be used in the rear seat whenever possible; if used in the front seat, adjust the seat as far back as possible.

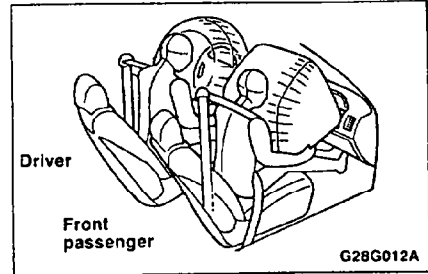


How the Supplemental Restraint System works

ND108-C

The SRS includes the following components:

- Impact sensors
- Diagnostic unit
- SRS warning light
- Air bag modules
- Interconnecting wiring



Air bag system

The driver's air bag is located under the padded cover in the middle of the steering wheel. The front passenger air bag is contained in the instrument panel above the glove compartment.

The air bags are designed to inflate only in severe frontal collision.

The air bags are not designed to inflate in certain lower-speed frontal collisions, in rollovers, or in side or rear impact collisions.

When the impact sensors detect an impact of sufficient frontal force, their switches close a circuit which ignites materials in the inflator to generate nitrogen gas and inflate the air bags.

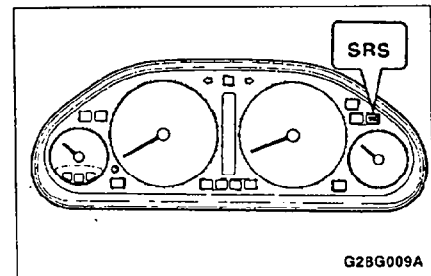
The air bags deflate very rapidly after deployment, so there is little danger of obscured vision.

Seat and seatbelt

The air bag deployment produces a sudden, fairly loud noise, and releases some smoke and powder, but these conditions are not injurious, and do not indicate a fire in the car. Mild discomfort may result from the deployment of the air bag due to the sudden inflation of the device. The driver air bag and the front passenger air bag are designed to inflate at the same time. Air bags may not inflate in certain frontal collisions, even though the car may be severely damaged. Such non-inflation does not mean that something is wrong with the SRS system, but rather that the collision forces were not severe enough to activate it.

WARNING!

- (1) Do not attach anything to the steering wheel padded cover, such as trim material, badges, etc.. It might injure the driver if the air bag inflates.
- (2) Do not set anything on, or attach anything to the instrument panel above the glove compartment. It might injure the passenger if the air bag inflates.
- (3) Do not attach accessories to or put them in front of the windshield.
These objects could restrict air bag inflation or be huried against an occupant and cause serious injury.
- (4) Following the air bag inflation, several air bag system components will be hot. Do not touch them after inflation.
- (5) The SRS system is designed to work only once. After the air bags deploy, they will not work again.
They must promptly be replaced, and the entire SRS system inspected, by an authorized dealer.



SRS warning light

There is a supplemental restraint system ("SRS") warning light on the instrument panel. The system checks itself and the light tells you if there is a problem. When the ignition key is turned to the "ON" or "START" position, the warning light should illuminate for about 7 seconds and then should go out. This means the system is ready.

Seat and seatbelt

WARNING!

If any of following conditions occur, the SRS is not working properly, and you should immediately have it inspected by an authorized dealer:

- The SRS warning light does not illuminate when you start the car.
- The SRS warning light does not go off after about 7 seconds.
- The SRS warning light illuminates while driving.

SRS servicing

ND10C-C

The entire SRS system must be inspected by an authorized dealer 10 years after the car manufacture date shown on the certification label located on the center pillar on the driver's side.

WARNING!

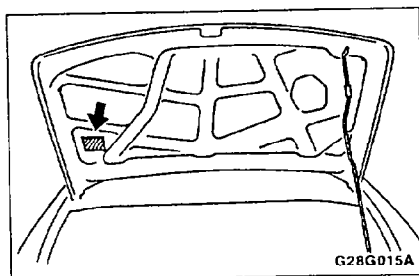
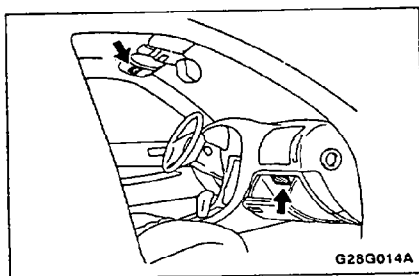
- (1) Any maintenance performed on or near the components of the SRS must be performed only by an authorized dealer. Do not permit anyone else to do service, inspection, maintenance or repair on any SRS components or wiring, similarly, no part of the SRS system should ever be handled or disposed of by anyone except an authorized dealer. Improper work on the SRS components or wiring could result in inadvertent deployment of the air bags, or could render the SRS system inoperative; either situation could result in serious injury.
- (2) Do not modify your steering wheel or any other SRS components. For example, replacement of the steering wheel, or modifications to the front bumper or body structure can adversely affect SRS performance and lead to possible injury.

- (3) If your car has received any front-end damage, you should have the SRS system inspected by an authorized dealer to ensure it is in proper working order.

NOTE

- (1) When you transfer ownership of the car to some other person, we urge you to alert the new owner that it is equipped with the SRS system and refer that owner to the applicable section in this owner's manual.
- (2) If you junk or scrap the car, we urge you to first take the car to an authorized dealer so that the SRS system can be rendered safe.

Seat and seatbelt



Service and information label

Service and information labels are attached as shown in the illustration.