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

NISSAN MOTOR CO., LTD.
1993 NISSAN 240 SX
2-DOOR FASTBACK

NHTSA NUMBER: CP5203

CALSPAN TEST NUMBER: 8056-10

DECEMBER 17, 1992

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FINAL REPORT

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16. Abstract A 30 mph vehicle safety compliance test was conducted on a 1993 Nissan 240 SX 2-Door Fastback. This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on December 17, 1992. 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 29.7 mph. The ambient temperature at the impact face was 40°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 driver and right front passenger automatic torso belt. The manual lap belts were not 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 Advanced Technology Center under Contract No. DTNH22-90-C-01003. The purpose of this test was to determine if the subject vehicle, a 1993 Nissan 240 SX 2-Door Fastback, 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 CP5203

A frontal barrier was impacted by a 1993 Nissan 240 SX Fastback at a velocity of 29.7 mph. The test was performed at the Calspan Corporation Advanced Technology Center on December 17, 1992. 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 572B, 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 triaxial accelerometers, and left/right femur load cells. These ATDs had been certified prior to the test.

The 23 channels of data were recorded on two 14-channel FM tape recorders. Appendix B contains the vehicle and dummy response data traces. The engine bottom X direction accelerometer contains questionable data after 63 msec due to data cable damage. The right front brake caliper accelerometer did not record data and thus data traces are not included in this report.

The driver's HIC was 302. The maximum chest deceleration over 3 milliseconds was 28.1 g's. The maximum force on the driver's left femur was 612 pounds and 995 pounds on the right femur.

The right front passenger's HIC was 424. The maximum chest deceleration over 3 milliseconds was 33.5 g's. Loads of 995 and 728 were recorded on the left and right femurs respectively.

Table 1
CRASH TEST SUMMARY

Vehicle NHTSA No.: CP5203 Test Mode: 30 mph Frontal Barrier

Test Date: December 17, 1992 Time: 13:10 Temperature: 40 °F

Vehicle Make/Model/Body Style: 1993 Nissan 240 SX 2-Door Fastback

Vehicle Test Weight: 3070 lbs.

Vehicle/Barrier Impact Angle: 0 °

Impact Velocity: 29.7 mph

Maximum Static Crush: 18.3 inches

Vehicle Rebound: 11.1 inches

DUMMIES:

	<u>DRIVER</u>	<u>PASSENGER</u>
Type:	<u>Part 572B</u>	<u>Part 572B</u>
Restraint System:	<u>Automatic torso belt</u>	<u>Automatic torso belt</u>

Number of Data Channels: 23

Number of Cameras: 1 Real Time
14 High Speed

DOOR OPENING DATA: Closed-operable - Left Front
Closed-operable - Right Front

Front Seat(s) Data:

	<u>DRIVER</u>	<u>PASSENGER</u>
Seat Track Failure:	<u>0.0</u>	<u>0.0</u>
	inches of shift	
Seat Back Failure:	<u>None</u>	<u>None</u>

VISIBLE DUMMY CONTACT POINTS:

	<u>DRIVER</u>	<u>PASSENGER</u>
Head:	<u>Chin with chest</u>	<u>Chin with chest. Rear, top, right side of head with "B" pillar on rebound</u>
Abdomen:	<u>No contact</u>	<u>No contact</u>
Chest:	<u>No contact</u>	<u>No contact</u>
Knees:	<u>Lower dash</u>	<u>Glove box door</u>

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1993 Nissan 240 SX Fastback
 NHTSA No.: CP5203; VIN: JN1MS36P6PW302145; Color: CA-Red
 Engine Data: 4 cylinders; - CID; 2.4 Liters; - cc
 Placement: ✓ Longitudinal or In-Line; - Transverse or Lateral
 Transmission Data: 5 speeds; ✓ Manual; - Automatic; - Overdrive
 Final Drive: ✓ Rear Wheel Drive; - Front Wheel Drive; - Four Wheel Drive
 Major Options: - A/C; - Pwr.Strg.; ✓ Pwr.Brakes
- Pwr.Windows; - Pwr.Door Locks; - Tilt Wheel
 Date Received: 9-29-92; Odometer Reading 25 miles
 Selling Dealer: Mike Barney's
 & Address 3676 Sheridan Drive, Amherst, NY

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Nissan Motor Company, Ltd.
 Date of Manufacture: 7-92
 GVWR: 3619 lbs.; GAWR: 1848 lbs. FRONT; 2200 lbs. REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load: 29 psi FRONT
29 psi REAR

Recommended Tire Size: 195-60R15 (front); 205-60R15 (rear)

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

Size of Tires on Test Vehicle: 195-60R15F
205-60R15R; Manufacturer: Toyo

Vehicle Capacity Data:

Type of Front Seats: - Bench; ✓ Bucket; - Split Bench
 Number of Occupants: 2 Front; 2 Rear; 4 Total
 Vehicle Capacity Weight (VCW) = 603 lbs.
 No. of Occupants x 150 lbs. = 600 lbs.
 Rated Cargo/Luggage Weight (RCLW) = 3 lbs. (Difference)

*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 = 710 lbs. Right Rear = 660 lbs.
 Left Front = 750 lbs. Left Rear = 630 lbs.
 TOTAL FRONT = 1460 lbs. TOTAL REAR = 1290 lbs.
 % of Total Vehicle Weight = 53.1 % of Total Weight = 46.9 %
 TOTAL DELIVERED WEIGHT = 2750 lbs.

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 2750 lbs.
 Rated Cargo/Luggage Weight (RCLW) = 3 lbs.
 Weight of 2 P.572 Dummies @ 164 ea. = 328 lbs.
 TARGET TEST WEIGHT = 3081 lbs. (sum)

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 0 POUNDS OF CARGO WEIGHT:

Right Front = 740 lbs. Right Rear = 800 lbs.
 Left Front = 750 lbs. Left Rear = 780 lbs.
 TOTAL FRONT = 1490 lbs. TOTAL REAR = 1580 lbs.
 % of Total Weight = 48.5 % % of Total Weight = 51.5 %
 TOTAL TEST WEIGHT = 3070 lbs.

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

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimensions in inches):

AS DELIVERED: RF 28.2 LF 28.3 RR 27.5 LR 27.0
 FULLY LOADED: RF 27.2 LF 27.3 RR 25.2 LR 24.7
 AS TESTED: RF 27.6 LF 27.6 RR 25.5 LR 25.3
 Vehicle's Wheel Base: 97.5 in.

Location of Vehicle's C.G.: 50.2 inches rearward of front wheel center

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 15.7 gallons
 Usable Capacity Figure Furnished by COTR = 15.7 gallons
 Test Volume Range (92 to 94% of Usable Capacity) = 14.4 to 14.8 gallons
 ACTUAL TEST VOLUME = 14.5 gallons (with entire fuel system filled)

Table 3

POST IMPACT DATATYPE OF TEST:Type of Test: Frontal Barrier Impact Angle: 0°Test Date: December 17, 1992 Time: 13:10 Temperature: 40°FVehicle NHTSA No.: CP5203Required Impact Velocity Range: 28.9 to 29.9 mphBARRIER IMPACT VELOCITY: (Speed traps within 5 feet of impact plane.)Trap No. 1 = 29.7 mph; Trap No. 2 = 29.6 mphDistance from vehicle to barrier: (1) entering trap = 52 inches(2) exiting trap = 12 inchesVEHICLE STATIC CRUSH: (For frontal and rear impacts only.)

Vehicle Length:

Pre-Test Right = 175.5; C/L = 178.8; Left = 175.5Post-Test Right = 157.7; C/L = 159.2; Left = 158.0Crush Right = 17.8; C/L = 19.6; Left = 17.5AVERAGE = 18.3 inchesVEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

Right = 11.9; C/L = 11.3; Left = 10.2AVERAGE = 11.1 inchesDOOR OPENING:

Left

Right

Front

Closed-operableClosed-operable

Rear

N/AN/ASEAT MOVEMENT:

Seat Back Failure

Seat Shift

Front

None0.0

Rear

N/AN/A

Table 3

POST IMPACT DATA (cont.)

GLAZING DAMAGE: Windshield cracked throughout

OTHER NOTABLE IMPACT FEATURES: None

Section 3
OCCUPANT AND VEHICLE DATA

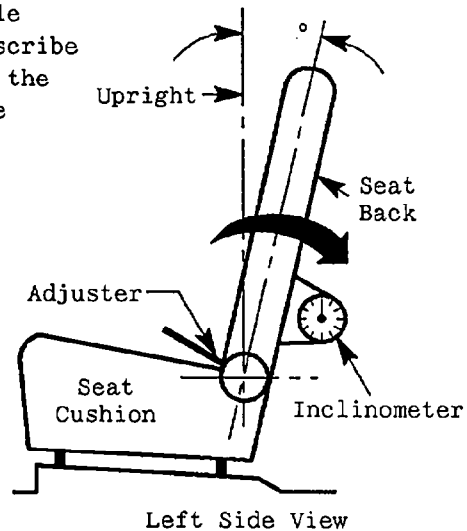
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year: 1993 Vehicle Model: Nissan 240 SX Body Style: 2-Door Fashback

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: See below

Measurement instructions: Seat placed such that the center of head rest stay to a manufacturer's designated point on the instrument panel equals 36.0 inches

Seat back angle for passenger's seat: See below

Measurement instructions: Seat placed such that the center of head rest stay to a manufacturer's designated point on the instrument panel equals 46.2 inches

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: Seat placed in 11th detent from full front (full front is position 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 15.7 gallons

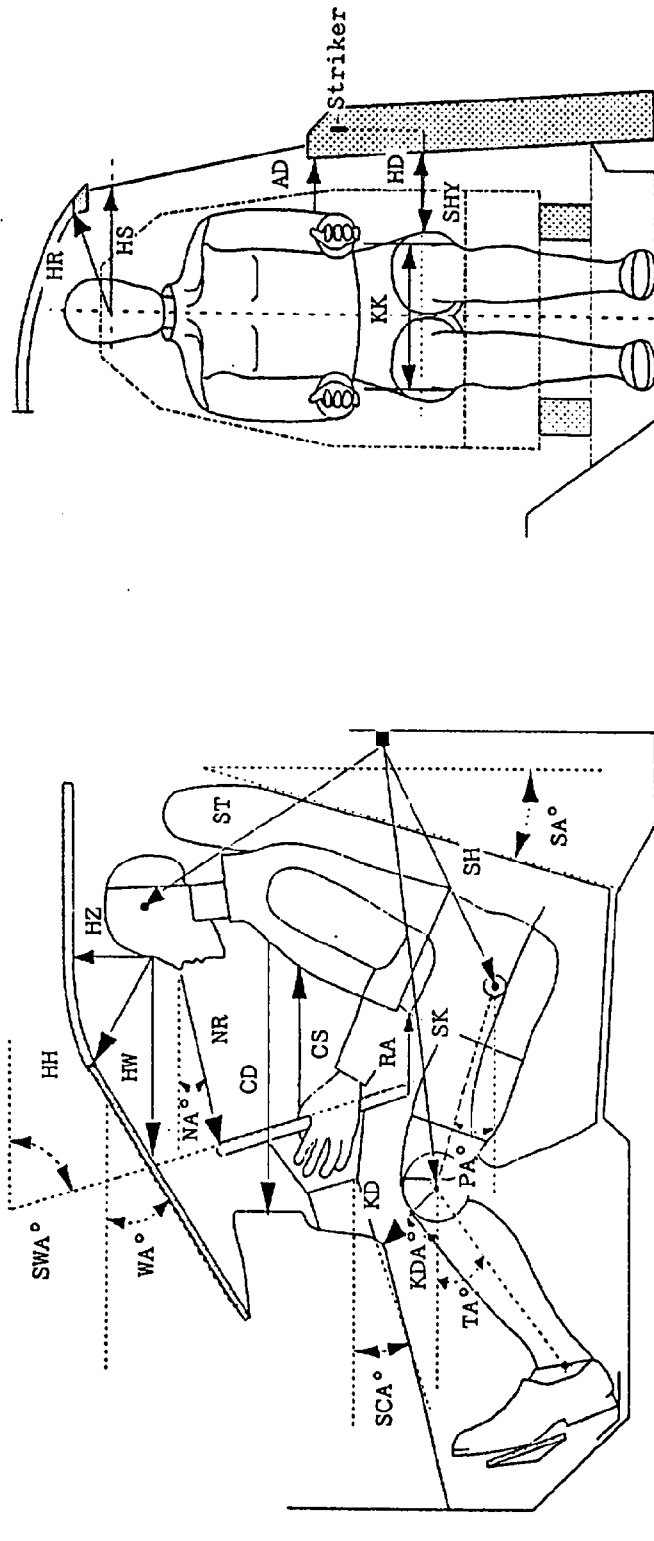
B. "Usable Capacity" of the optional equipment fuel tank is - gallons

4. Steering Column Position: Mid-position as specified by manufacturer

5. Other: -

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION

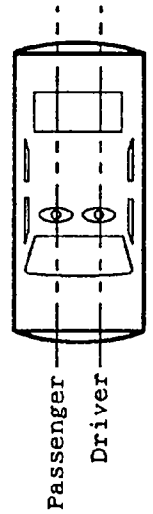


HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
NR - Nose to Rim
CS - Steering Wheel to Chest
CD - Chest to Dash
RA - Rime to Abdomen
KDL/KDR - Knee to Dash
KDA - Knee to Dash Angle
SH - Striker to H-Point

SK - Striker to Knee
ST - Striker to Head
NA - Nose to Rim Angle
TA - Tibial Angle
PA - Pelvic Angle
SA - Seat Back Angle
SCA - Steering Column Angle
SWA - Steering Wheel Angle
WA - Windshield Angle

HR - Head to Side Header
HS - Head to Side Window
AD - Arm to Door
HD - H-Point to Door
SHY - Striker to H-Point (Y Dir.)
KK - Knee to Knee

Vertical Longitudinal Planes



Passenger
Driver

Vertical Transverse Plane

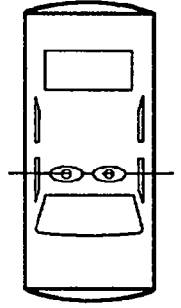


Table 4

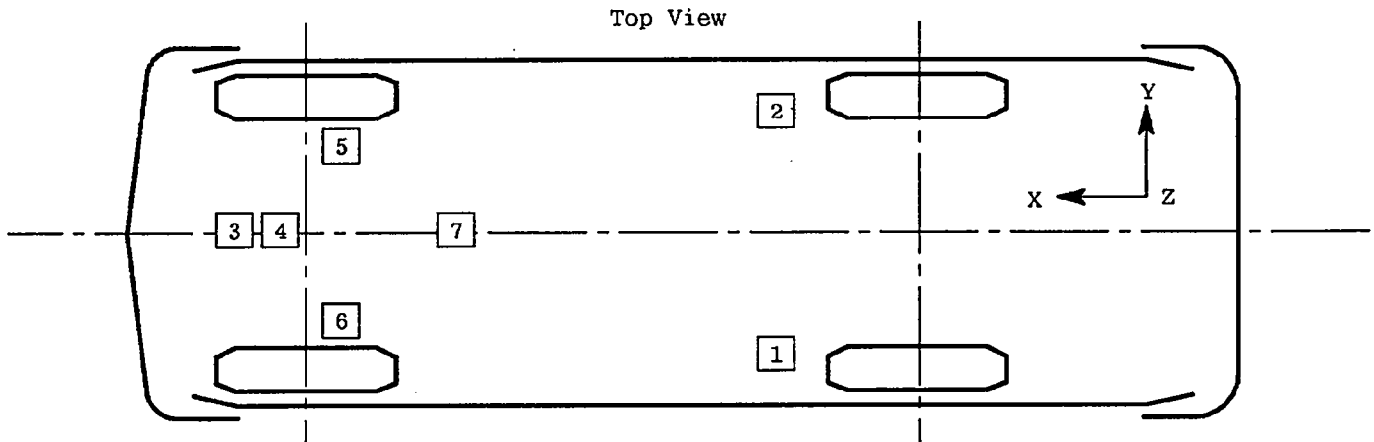
FRONT SEAT OCCUPANT MEASUREMENTS

(all dimensions in inches unless otherwise specified)

	DRIVER (Serial #1020)	PASS (Serial #1021)
WA°	27.5°	—
SWA°	70°	—
SCA°	20°	—
SA°	See Note	See Note
HZ	4.5	5.0
HH	16.7	16.2
HW	20.7	20.8
HR	6.3	6.5
NR	19.6 Angle (NA) 16°	—
CD	25.6	25.1
CS	13.9	—
RA	8.2	—
KDL	8.7 Angle (KDA) 43°	8.1
KDR	7.9°	8.0 Angle (KDA) 31°
PA°	12°	15°
TA°	22°	26°
KK	13.6 left foot on foot rest	11.7
ST	20.4 Angle 12°	20.3 Angle 14°
SK	27.9 Angle 99°	28.6 Angle 97°
SH	13.3 Angle 124°	14.0 Angle 121°
SHY	10.2	9.7
HS	10.1	10.3
HD	4.4 to door pocket	4.3 to door pocket
AD	3.5	3.7

Note: Seat back was set as specified by manufacturer.

Figure 3
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	PRE:	64.8	20.3	13.0				
		POST:	64.8	20.3	12.4				
	LONGITUDINAL ACCELERATION					16	8	-38	68
2	REAR SEAT X-MEMBER AT RIGHT SIDE	PRE:	64.6	-20.3	13.0				
		POST:	64.6	-20.3	12.1				
	LONGITUDINAL ACCELERATION					13	8	-39	68
3	TOP OF ENGINE BLOCK	PRE:	133.8	4.5	31.9				
		POST:	129.2	4.5	32.7				
	LONGITUDINAL ACCELERATION					37	64	-73	51
4	BOTTOM OF ENGINE	PRE:	146.3	4.0	9.5				
		POST:	141.7	4.0	10.6				
	LONGITUDINAL ACCELERATION					44	64	-77	51
5	BRAKE CALIPER AT RIGHT SIDE	PRE:	135.7	-23.5	20.1				
		POST:	131.8	-23.5	20.1				
	LONGITUDINAL ACCELERATION					-	-	-	-
6	BRAKE CALIPER AT LEFT SIDE	PRE:	135.8	23.5	19.0				
		POST:	132.1	23.5	18.9				
	LONGITUDINAL ACCELERATION					10	67	-42	54
7	DASH PANEL	PRE:	104.0	-2.0	28.0				
		POST:	104.0	-2.0	28.3				
	LONGITUDINAL ACCELERATION					4	130	-49	75

** *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
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DISTANCE MEASUREMENTS IN INCHES

Figure 4
CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 5.

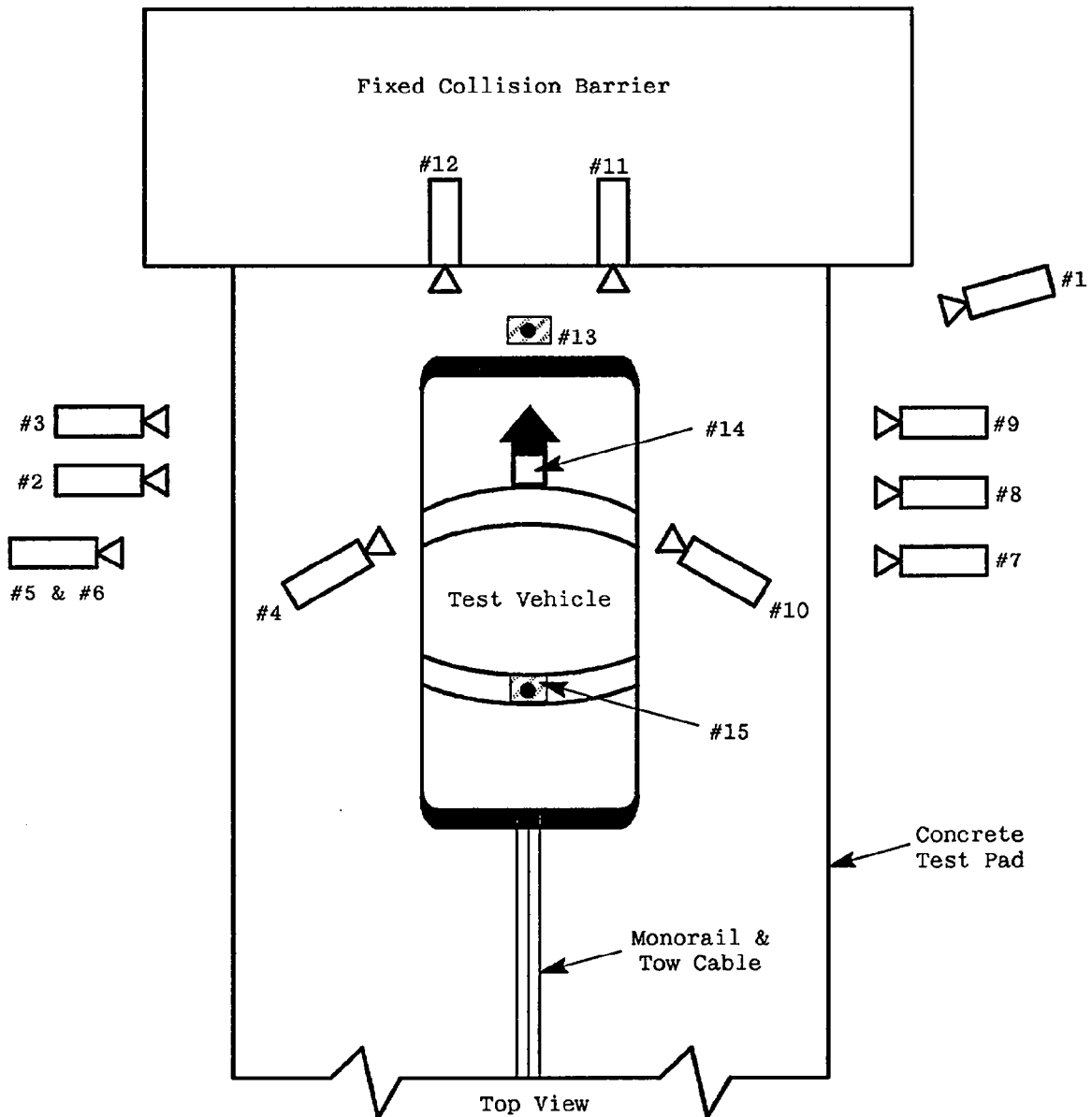


Table 6

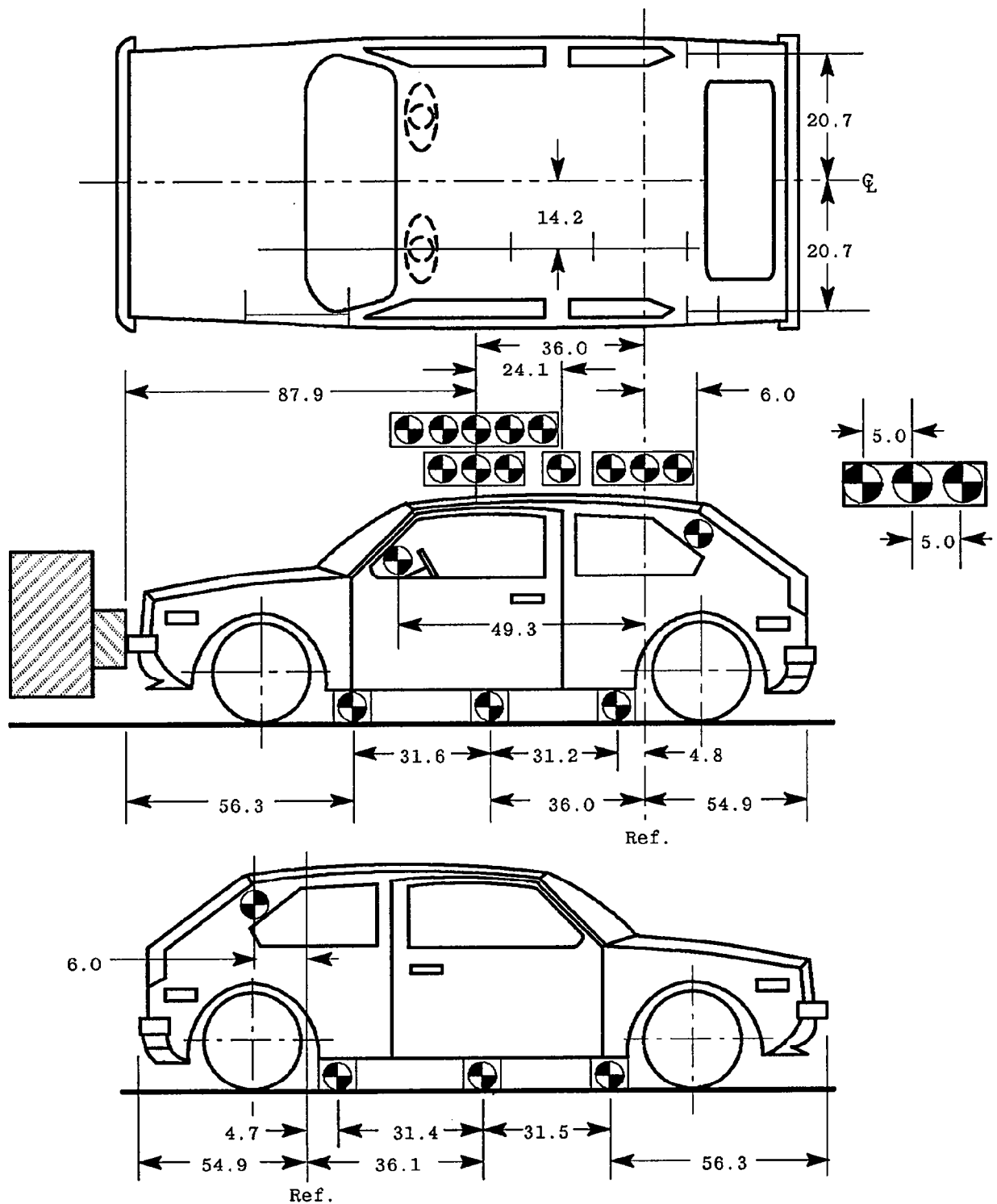
HIGH-SPEED CAMERA LOCATIONS

Test No. CP5203 Vehicle: 1993 Nissan 240 SX 2-Door Fastback

CAMERA NO.	VIEW	CAMERA POSITIONS (in)*			ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	234	72	42	-4	217	13	555
3	Left Side View	326	51	41	-3	309	25	620
4	Driver and Interior View	120	119	65	-16	-	13	575
5	Steering Column (Bottom)	254	80	46	-6	237	25	590
6	Steering Column (Top)	254	80	70	-10	237	25	575
7	Overall Right Side	224	75	42	-5	207	13	560
8	Right Side View	325	51	40	-2	308	25	570
9	Right Passenger View	316	80	56	-5	299	35	535
10	Passenger and Interior View	119	121	64	-15	-	13	570
11	Passenger Front View	22	19	76	-44	-	13	625
12	Driver Front View	22	19	76	-43	-	13	600
13	Windshield View	0	0	125	-60	-	13	600
14	Pit View of Engine	0	24	-90	90	-	13	650
15	Pit View of Fuel Tank	0	130	-90	90	-	13	790

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

Figure 5
VEHICLE TARGET LOCATIONS



(Dimensions in inches)

Figure 6
TEST VEHICLE MEASUREMENTS

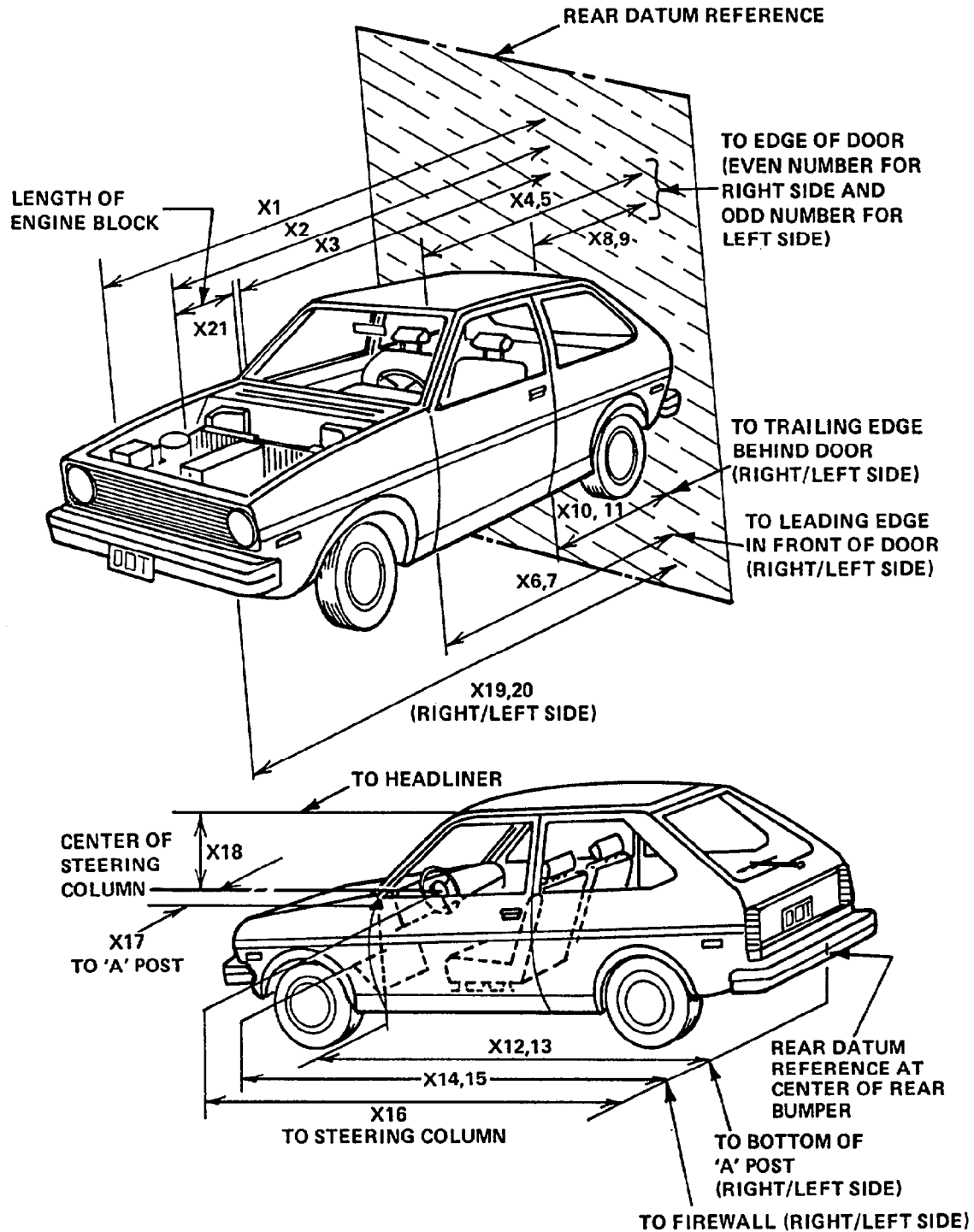


Table 7

VEHICLE MEASUREMENTS

No.		All Dimensions in Inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	178.8	159.2	19.6
X2	Rear Surface of Vehicle to Front of Engine	150.0	145.2	4.8
X3	Rear Surface of Vehicle to Firewall	126.8	124.0	2.8
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	113.8	113.3	0.5
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	115.5	115.0	0.5
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	115.8	115.3	0.5
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	66.5	66.2	0.3
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	67.0	66.4	0.6
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	73.4	73.0	0.4
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	72.8	72.5	0.3
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	115.6	115.1	0.5
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	116.2	115.5	0.7
X14	Rear Surface of Vehicle to Firewall, Right Side	127.0	125.4	1.6
X15	Rear Surface of Vehicle to Firewall, Left Side	127.0	125.9	1.1
X16	Rear Surface of Vehicle to Steering Column	98.0	98.0	0.0
X17	Center of Steering Column to "A" Post	15.6	15.2	0.4
X18	Center of Steering Column to Headliner	16.0	15.3	0.7
X19	Rear Surface of Vehicle to Right Side of Front Bumper	175.5	157.7	17.8
X20	Rear Surface of Vehicle to Left Side of Front Bumper	175.5	158.0	17.5
X21	Length of Engine Block	20.0	20.0	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.: CP5203 Vehicle: 1993 Nissan 240 SX 2-Door Fastback

	MAXIMUM ACCELERATION (g's)								
	HEAD				CHEST				
	X	Y	Z	R	X	Y	Z	R*	Displacement
Dummy (1)	-21	-15	44	45	-27	-15	12	28.1	N/A
Dummy (2)	-34	-14	46	48	-35	-14	-12	33.5	N/A

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Dummy (1)	612	995
Dummy (2)	995	728

	HEAD INJURY CRITERIA**			
	HIC	36 millisecond Maximum		Avg. Acc. (g)
		t ₁ (msec)	t ₂ (msec)	t ₁ TO t ₂
Dummy (1)	301.76	76.440	112.320	37.15
Dummy (2)	423.80	75.120	111.000	42.55

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

Log time duration of reminder light operation = ** sec.

Note wording of visual warning:

Fasten Seat Belt -

Fasten Belt -

Symbol 101-80 X

* Audible alarm sounds for 2 seconds until automatic torso belt moves into place.

**Flashes for 2 seconds until automatic torso belt is in place then remains on for an additional 4 seconds.

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:

Vehicle does not use a crash deployed occupant protection system.

The manufacturers recommended schedule is to replace ____ or repair ____ this system:

- a. by ____ month, ____ year
- b. by ____ miles
- c. or after a time interval of ____ months or ____ years.

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

YES ____ N/A ____ NO ____ N/A ____

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

YES ____ N/A ____ NO ____ N/A ____

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

YES ____ N/A ____ NO ____ N/A ____

Was an owner's manual provided?

YES ____ N/A ____ NO ____ N/A ____

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

YES ____ N/A ____ NO ____ N/A ____

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 N/A NO N/A

Describe the location of the readiness indicator:

Not applicable (N/A)

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.:	<u>CP5203</u>
Make/Model:	<u>1993 Nissan 240 SX</u>
Date of Comfort/Convenience Check:	<u>12/16/92</u>
Technician Performing Check:	<u>D.J.T.</u>
GVWR:	<u>3619 lbs.</u>

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 X NO -

If yes, go to requirements D1, D2 and D3

2. Manual seat belts* YES - NO X

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 (nonengaged).

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 - 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 N/A NO N/A

(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 - NO X
2. Seats are adjusted according to instructions in Appendix B.
- YES X NO -
3. The test dummies are positioned according to dummy position placement instructions in Appendix B and Appendix C.
- YES X NO -
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 X NO -
2. Attach the inboard and outboard reach string. YES X NO -
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 X NO -
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 X NO -

D5

RETRACTION

1. Seats and seat backs are adjusted according to instructions in Appendix B "General Test Conditions" in TP-208-8.
YES X NO -
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 X NO -
3. Outboard armrests which are capable of being stowed on vehicle seats shall be placed in their stowed positions.
YES X NO -
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 X NO -

Table 12 (cont.)

- b. The torso and lap belt webbing of the seat belt system automatically retract when the seat belt latch plate is released.

YES X NO -

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 X NO -

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 N/A NO N/A

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 X NO -

2. The remaining two seat belt parts are accessible under normal conditions.

YES X NO -

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 nonretractable, 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:

Vehicle uses an automatic torso belt

- 1. Whose components are accessible to a seated occupant in both the stowed and operational positions.
YES N/A NO N/A
- 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 N/A NO N/A
- 3. That releases at a single point by a push button action.
YES N/A NO N/A

Figure 7

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

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

Windshield is bonded in place with 0.5 inch rubber and plastic trim covering the top and sides. Lower portion of windshield is covered by a plastic shroud.

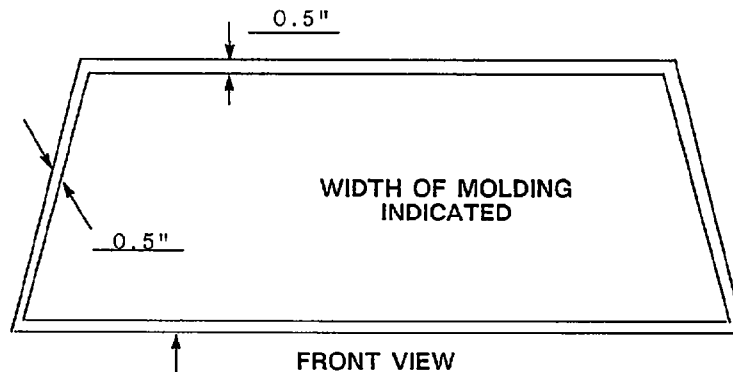
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles 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	78.75	75.25	95.6%
LEFT SIDE	78.75	78.75	100%
TOTAL	157.5	154.0	97.8%

AREA OF RETENTION FAILURE:



Windshield separated from mounting over a 3.5 inch length at the passenger-side lower portion of the windshield.

FAILURE DETAILS:

None

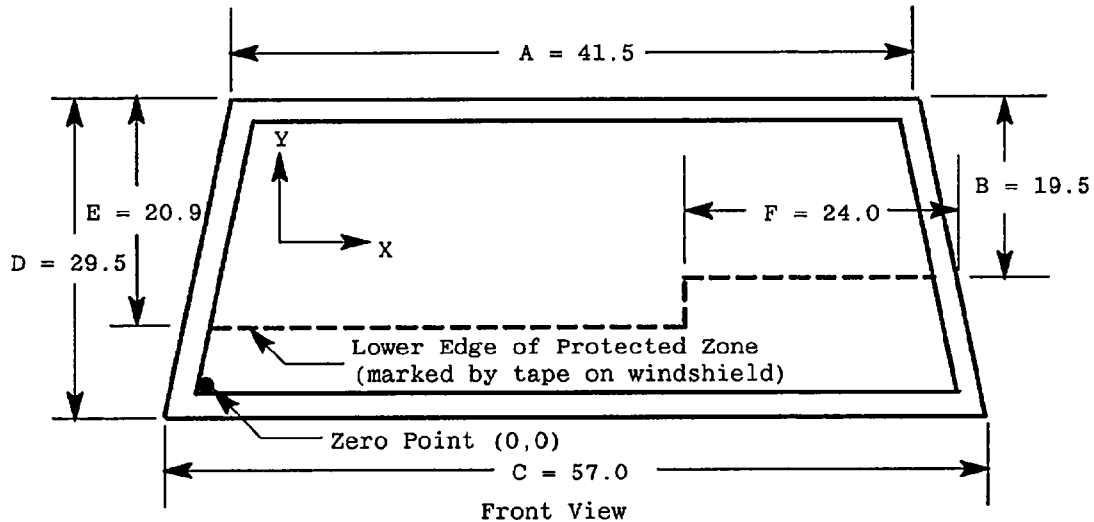
Figure 8

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.:

C	P	5	2	0	3
---	---	---	---	---	---

TEST DATE: December 17, 1992

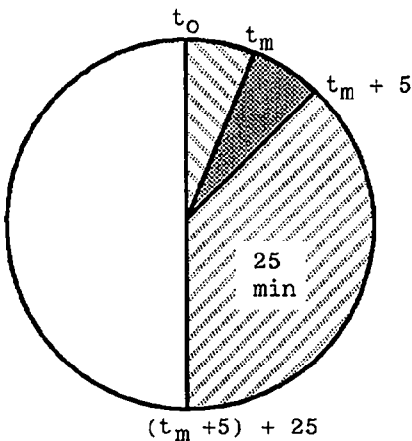
Vehicle Mfgr./Make/Model: 1993 Nissan 240 SX 2-Door Fastback

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:

- ☒ 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 5 minute period after vehicle motion ceases
3. For next 25 minutes

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

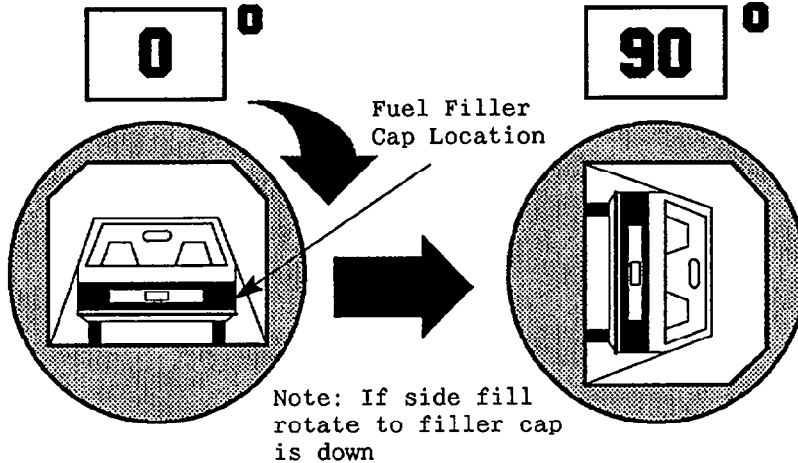
SOLVENT SPILLAGE DETAILS:

None

Table 14
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.:



CP5203

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

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

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

TOTAL _____ 6 _____ minutes _____ 53 _____ seconds

Next whole minute interval _____ 7 _____ minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

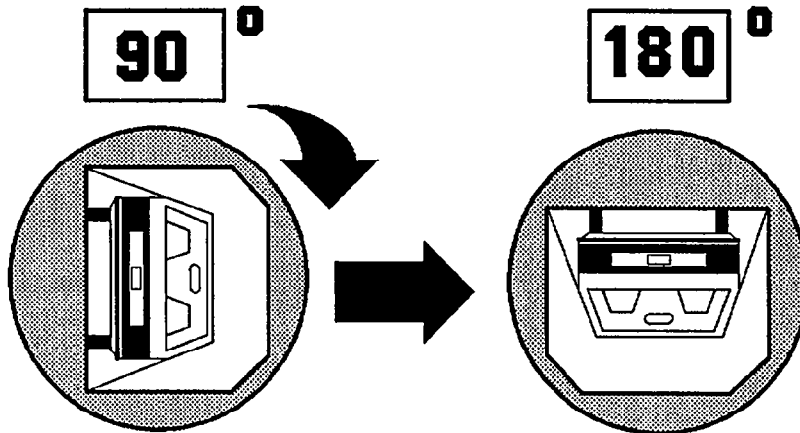
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 13
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.:



CP5203

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time _____ 2 _____ minutes _____ 02 _____ seconds
(Spec. Range = 1 to 3 minutes)

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

TOTAL _____ 7 _____ minutes _____ 02 _____ seconds

Next whole minute interval _____ 8 _____ minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

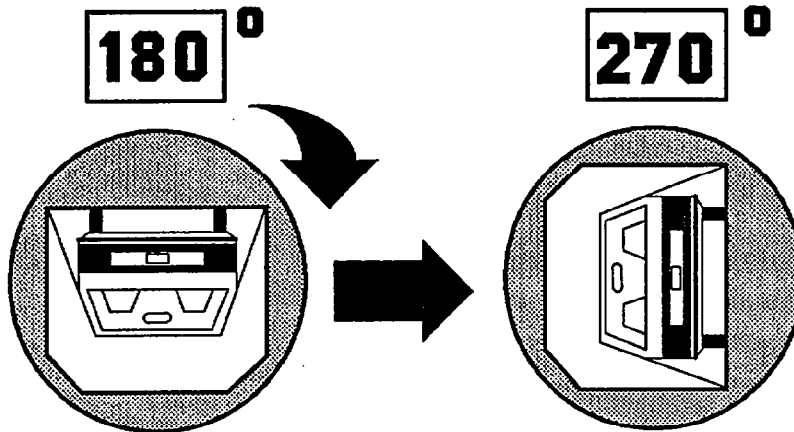
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 13
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.:



CP5203

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	_____ 1 _____ minutes _____ 55 _____ seconds
FMVSS 301 Position Hold Time +	_____ 5 _____ minutes _____ 00 _____ seconds
TOTAL	_____ 6 _____ minutes _____ 55 _____ seconds
Next whole minute interval	_____ 7 _____ minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

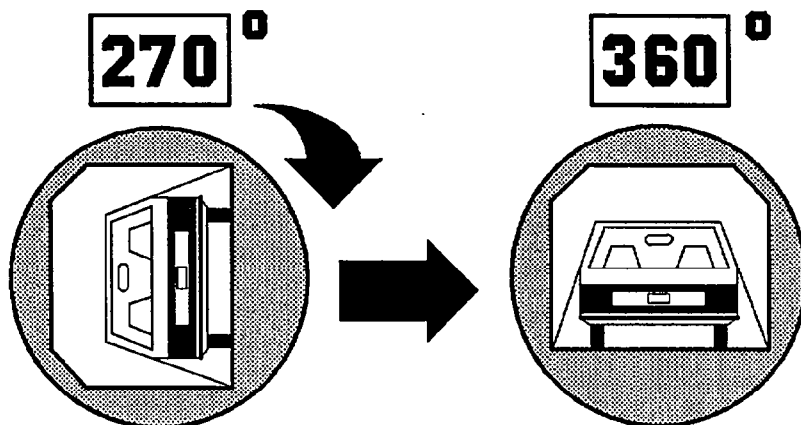
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 13
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.:



CP5203

I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	2 minutes 01 seconds
FMVSS 301 Position Hold Time +	5 minutes 00 seconds
TOTAL	7 minutes 01 seconds
Next whole minute interval	8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

IV. SOLVENT SPILLAGE LOCATION(S):

None

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: December 17, 1992 Vehicle NHTSA No.: CP5203
Vehicle Manufacturer: Nissan Motor Company
Model Year: 1993 VIN: JN1MS36P6PW302145
Model: Nissan 240 SX Body Style: 2-Door Fastback Build Date: 7/92
Dummy Stabilized Temperature at Time of Test: 70 °F (Spec. = 66-78°F)
Impact Velocity: 29.7 mph Time of Test: 13:10
Type of Automatic Restraint System: Automatic torso belts

Failure Details:

The vehicle as tested appears to comply with the requirements of
FMVSS Nos. 202, 212, 219 (partial), and 301.

Appendix A

PHOTOGRAPHS

LIST OF PHOTOGRAPHS

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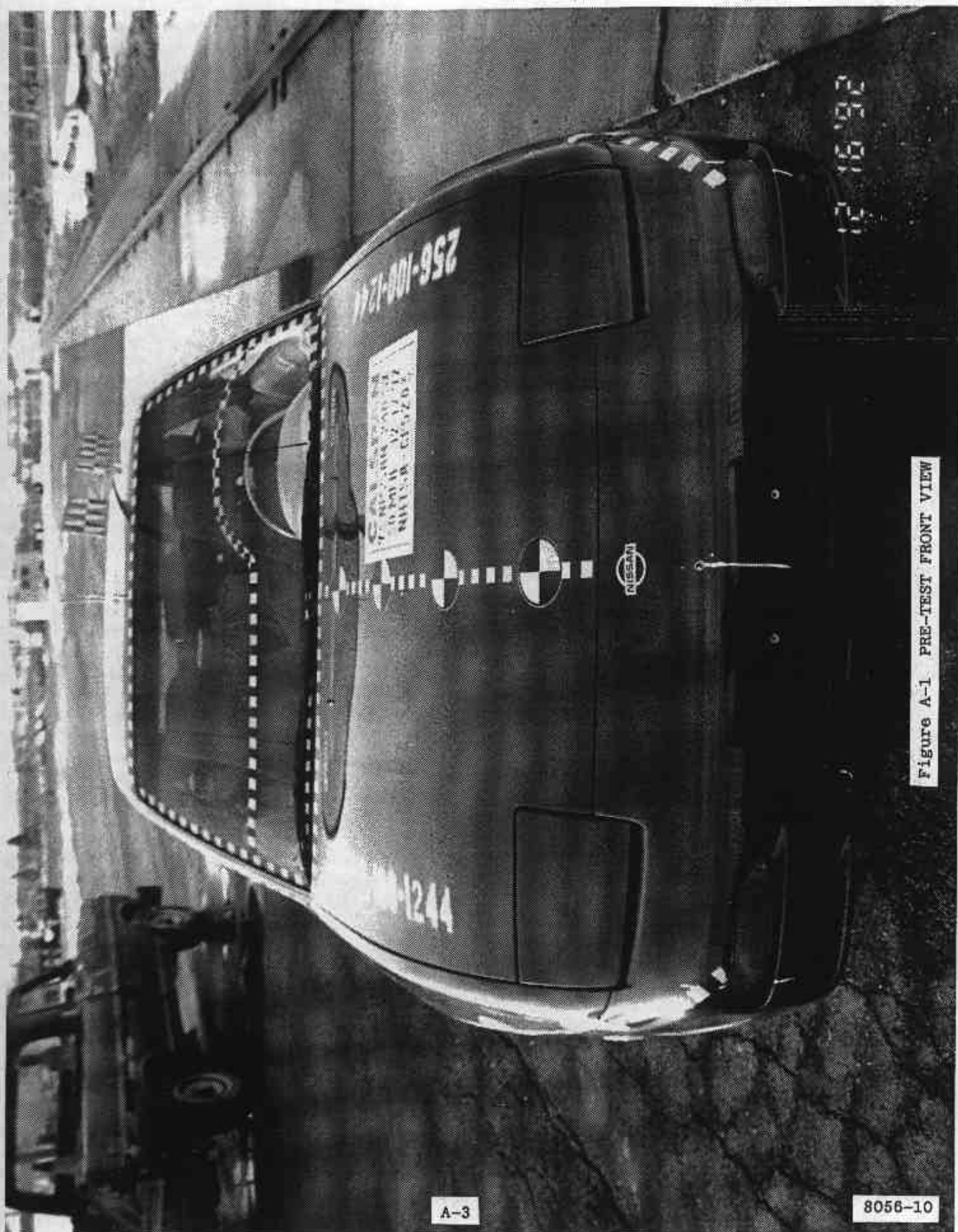


Figure A-1 PRE-TEST FRONT VIEW

A-3

8056-10

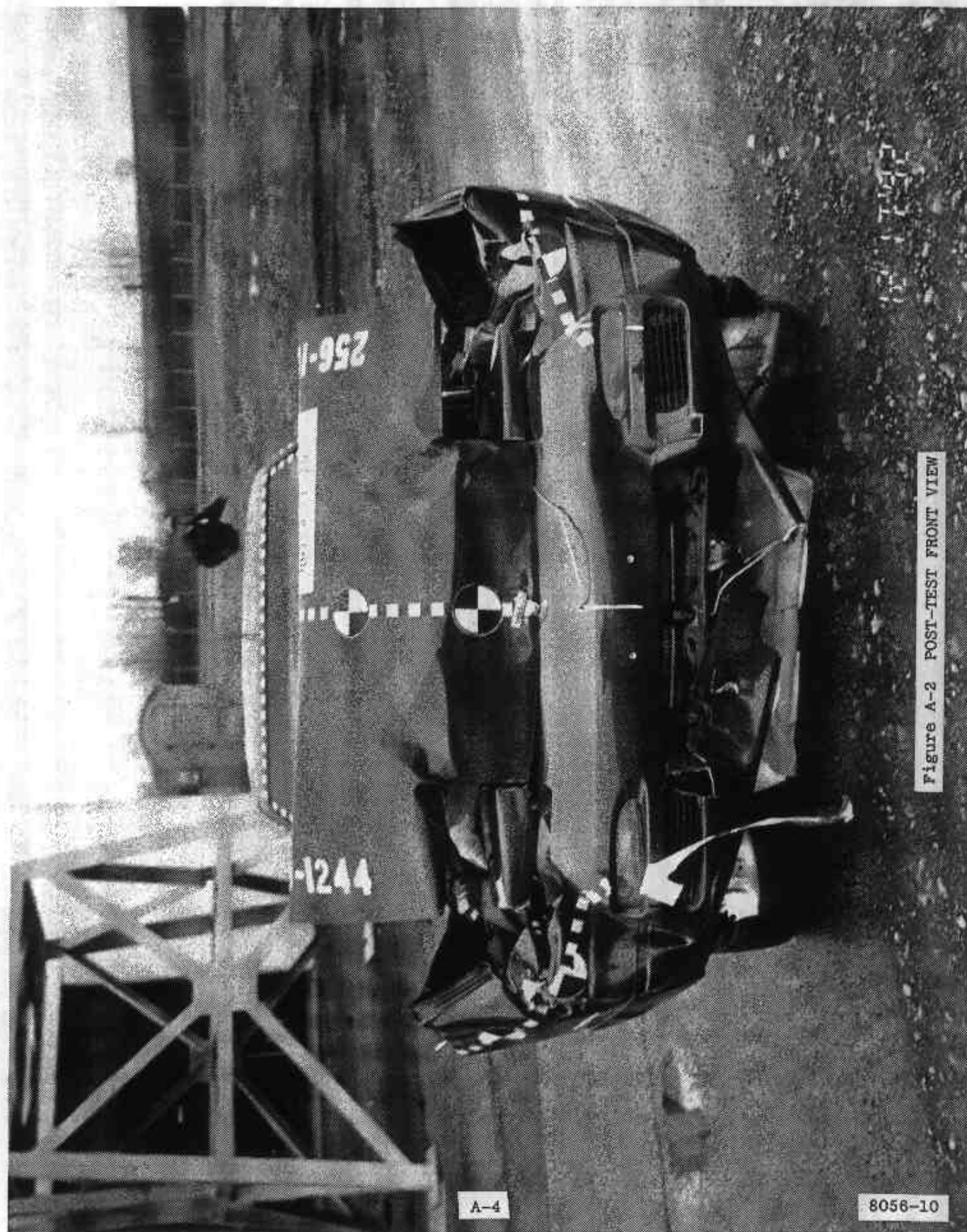


Figure A-2 POST-TEST FRONT VIEW

A-4

8056-10



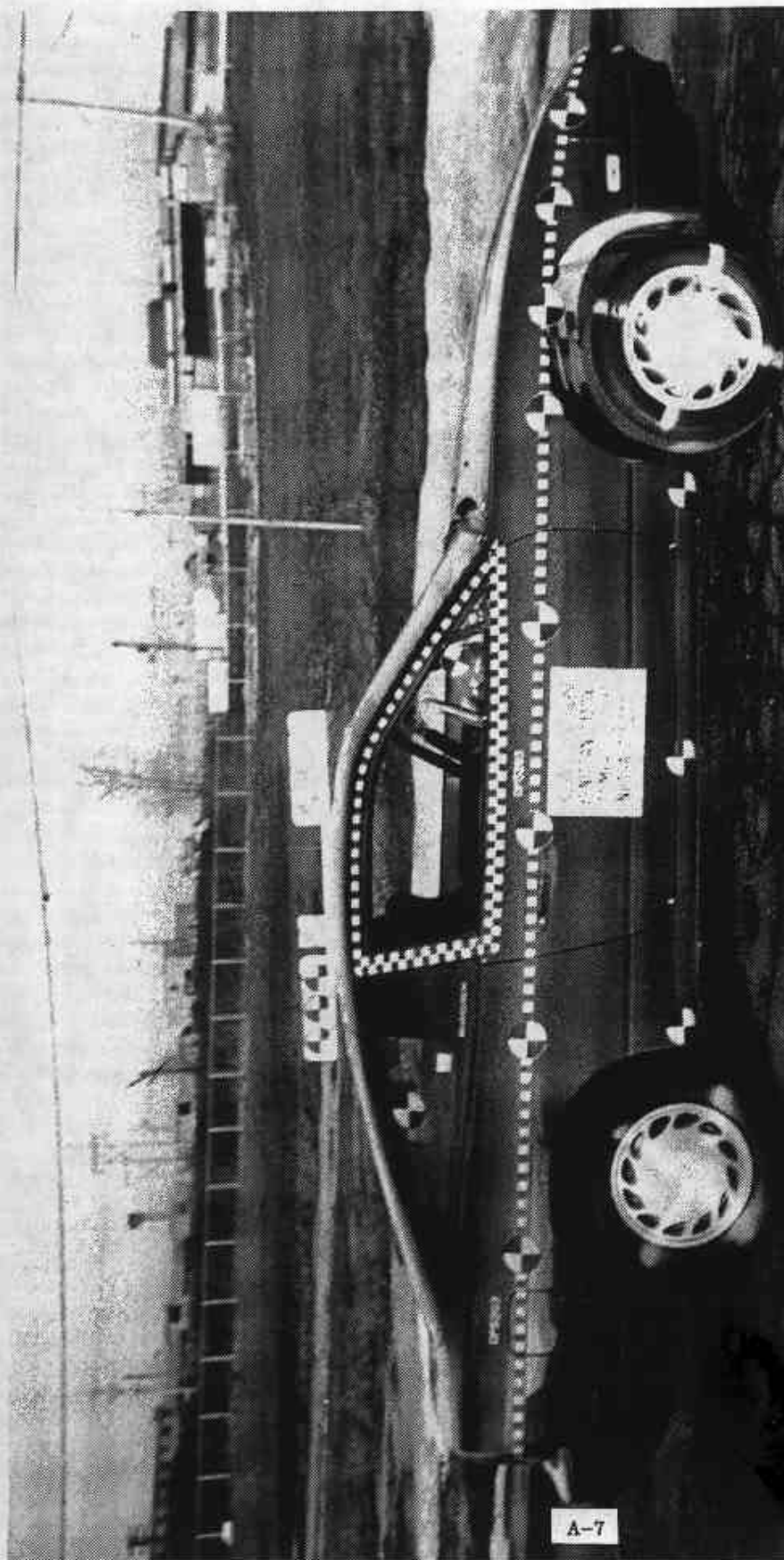
Figure A-3 PRE-TEST LEFT SIDE VIEW

A-5

8056-10



Figure A-4 POST-TEST LEFT SIDE VIEW

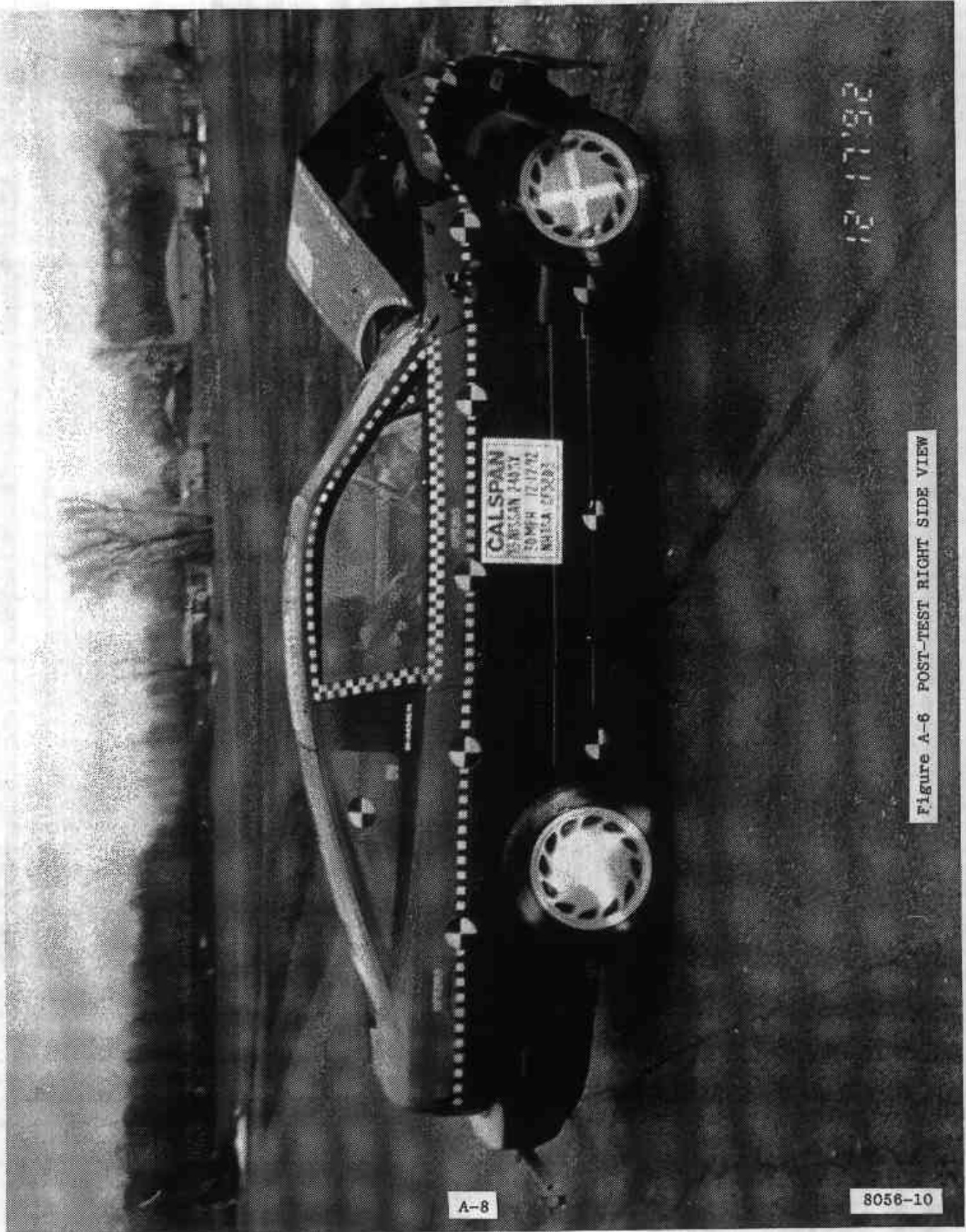


12 16 '92

Figure A-5 PRE-TEST RIGHT SIDE VIEW

A-7

8056-10



A-8

8056-10

Figure A-6 POST-TEST RIGHT SIDE VIEW



12 16 92

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

A-9

8056-10

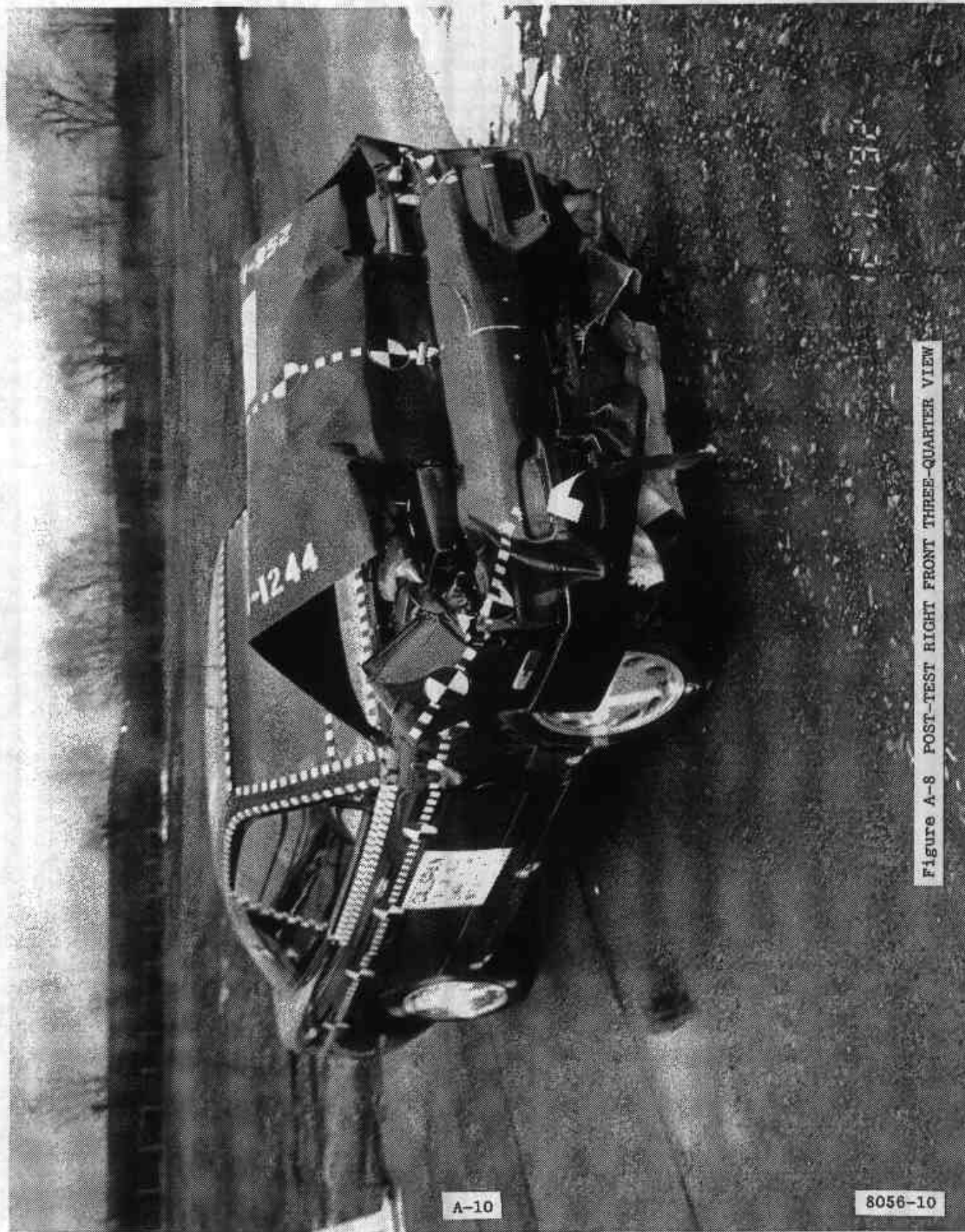


Figure A-8 POST-TEST RIGHT FRONT THREE-QUARTER VIEW

A-10

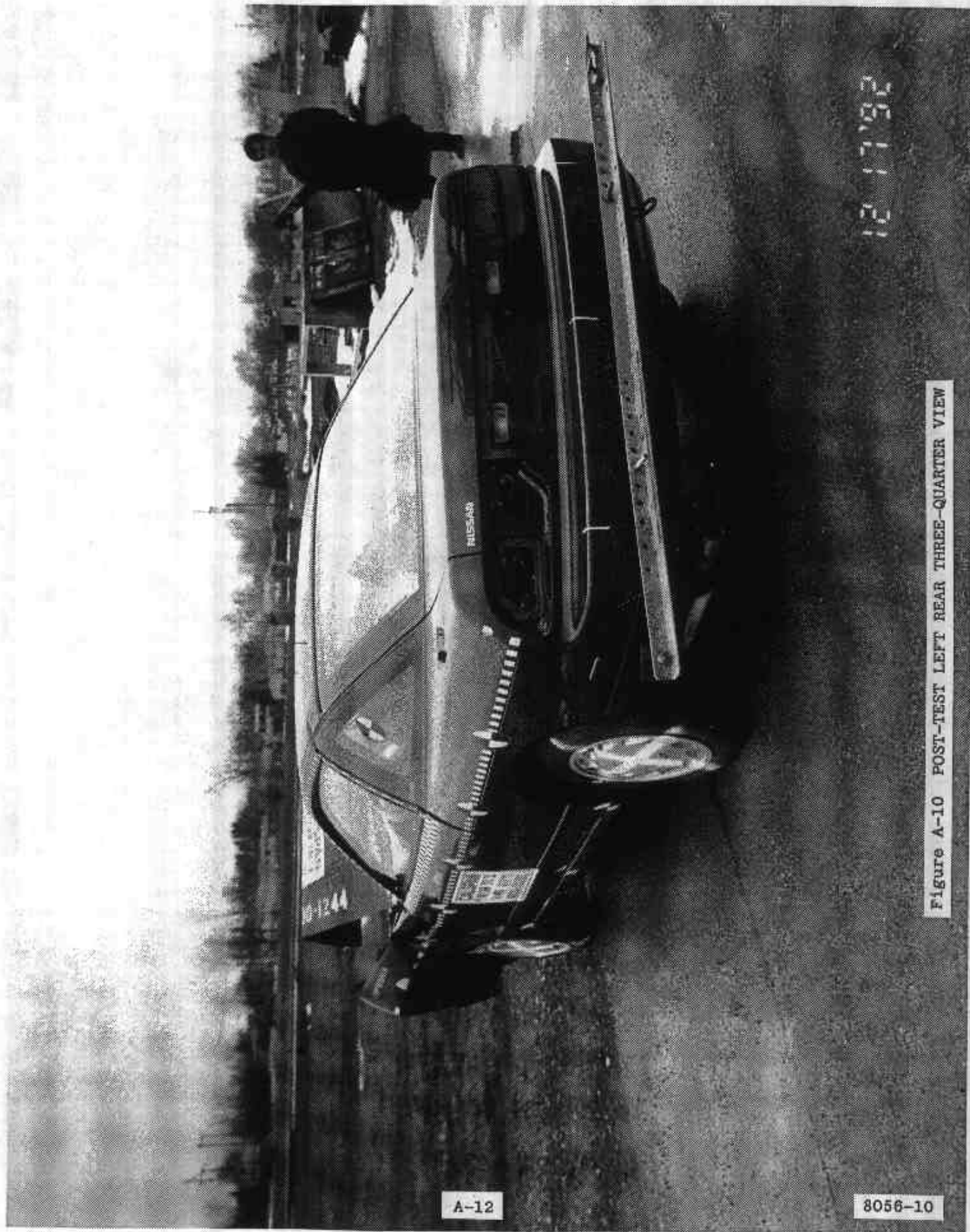
8056-10



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

A-11

8056-10



A-12

8056-10

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

12 17'92

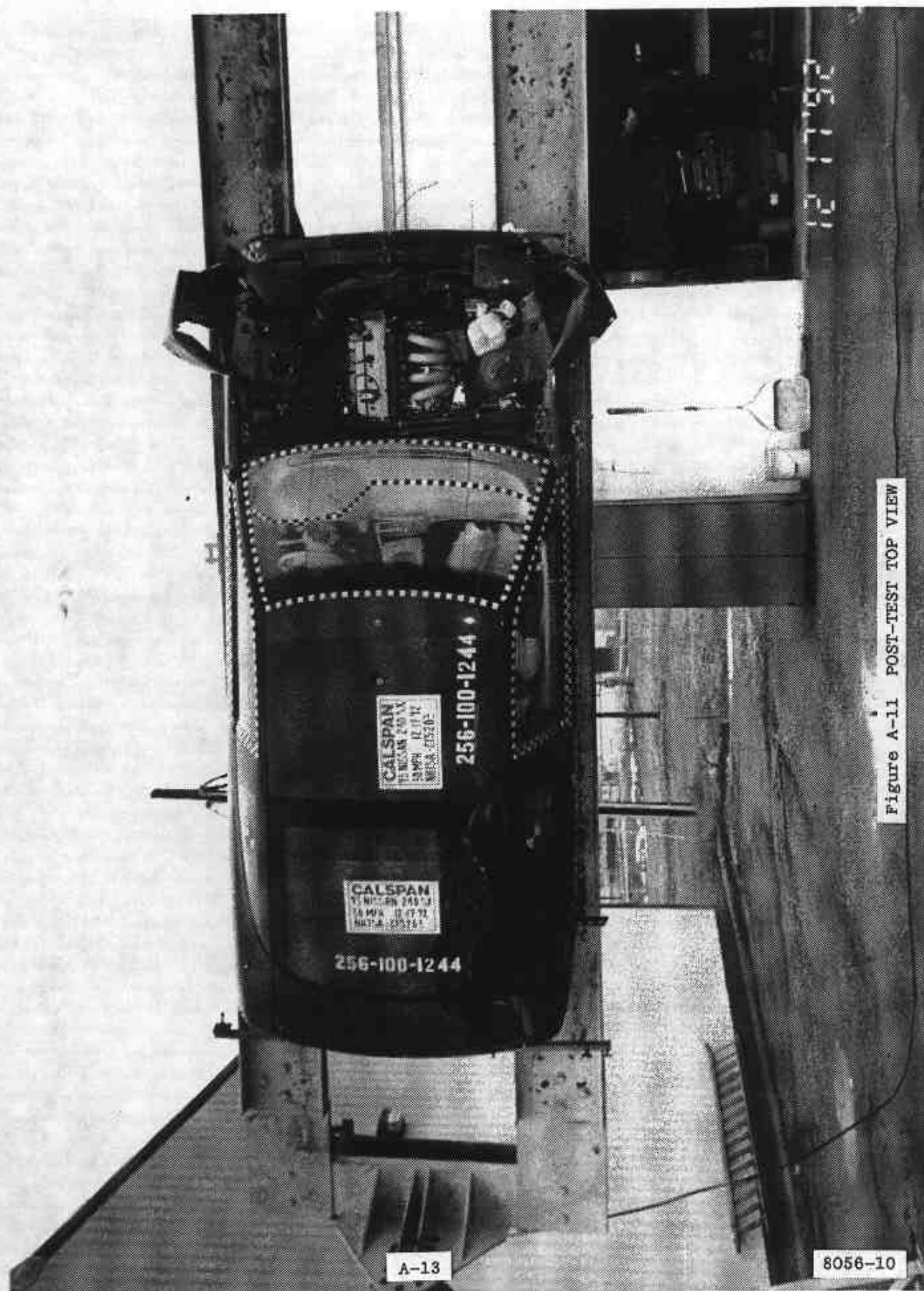
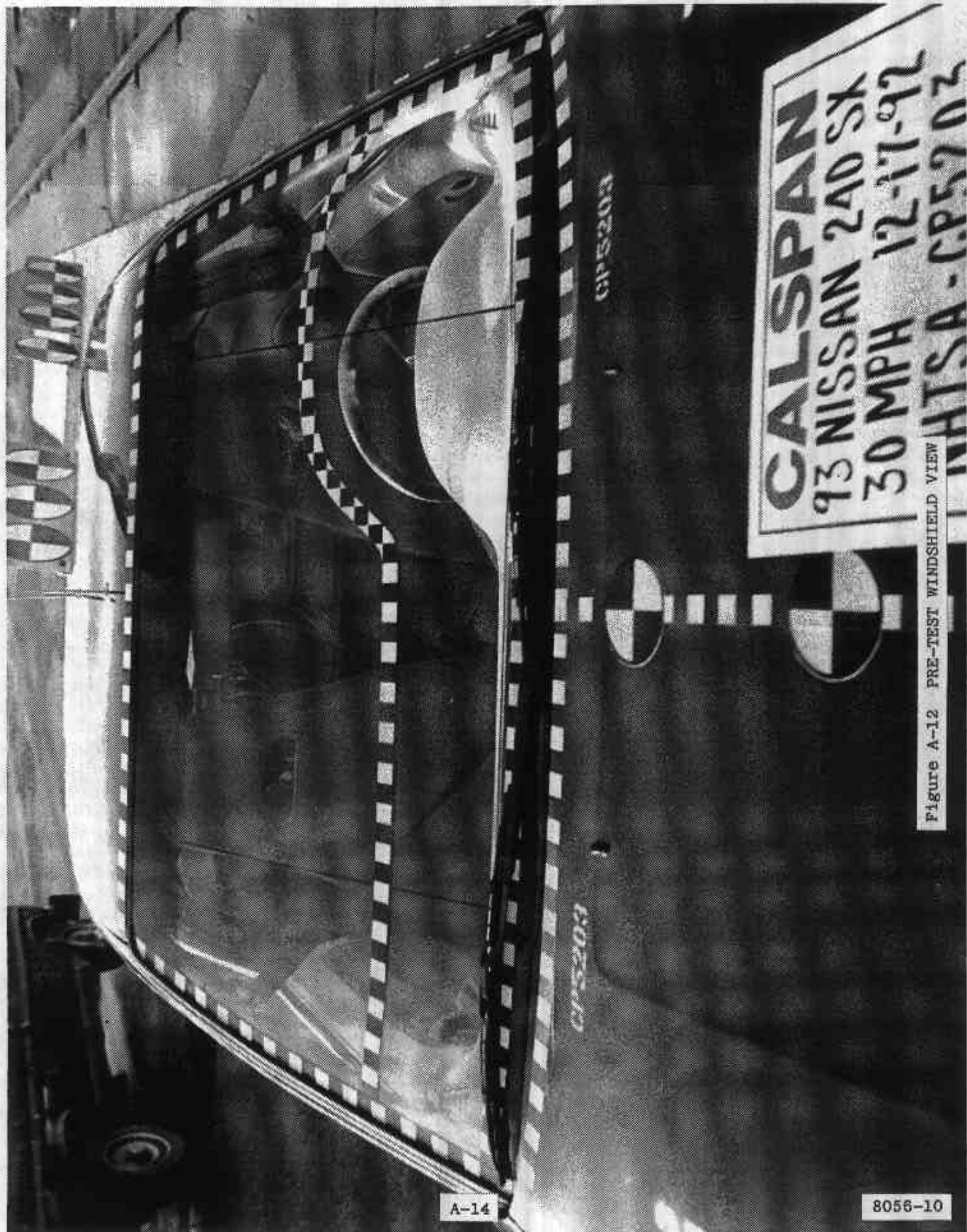


Figure A-11 POST-TEST TOP VIEW



A-14

8056-10

Figure A-12 PRE-TEST WINDSHIELD VIEW



A-15

8056-10

Figure A-13 POST-TEST WINDSHIELD VIEW

12 17'92

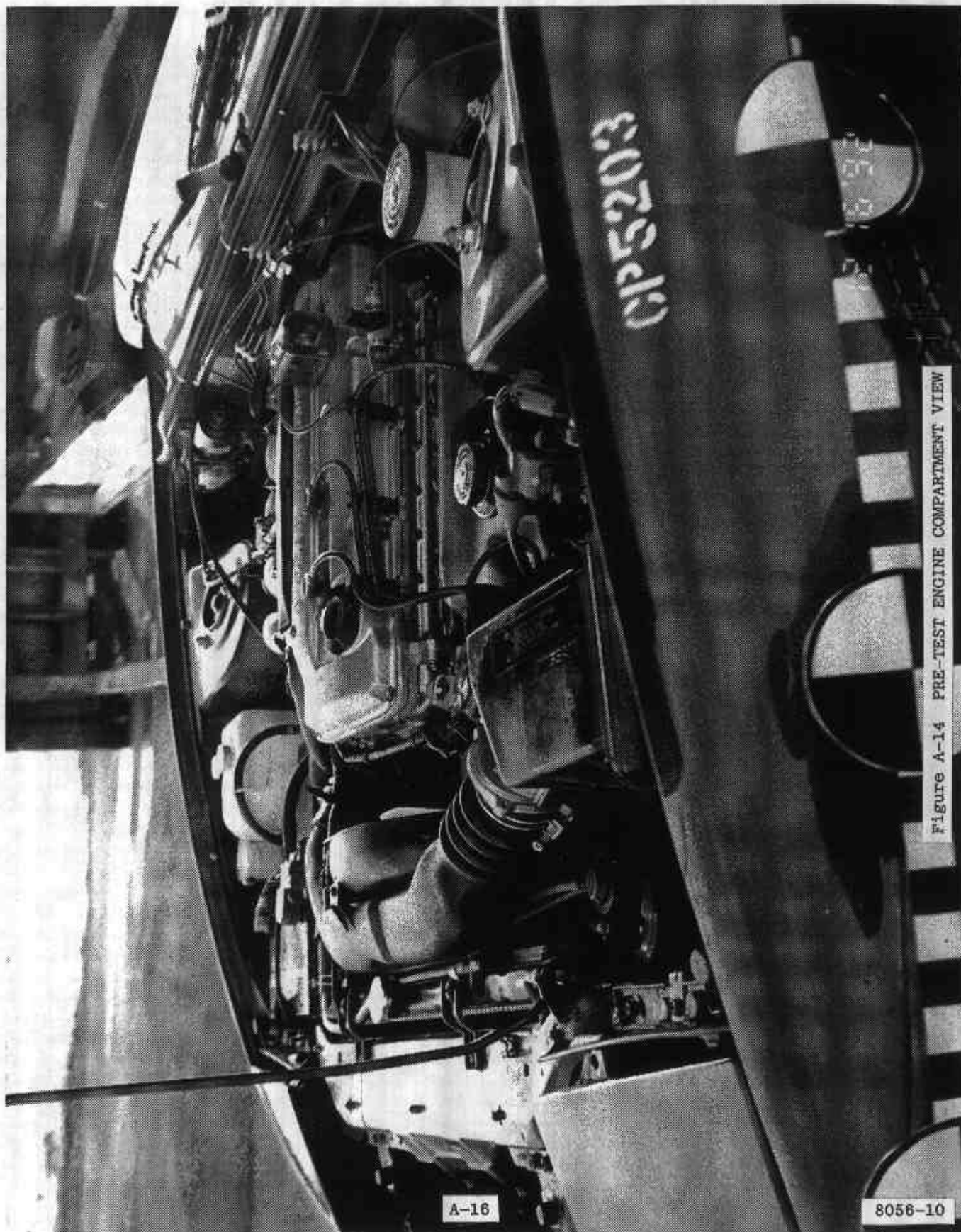


Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

A-16

8056-10



Figure A-15 POST-TEST ENGINE COMPARTMENT VIEW

A-17

8056-10

CP 5203



Figure A-18 PRE-TEST FUEL FILLER CAP PHOTO

A-18

8056-10



Figure A-17 POST-TEST FUEL FILLER CAP PHOTO

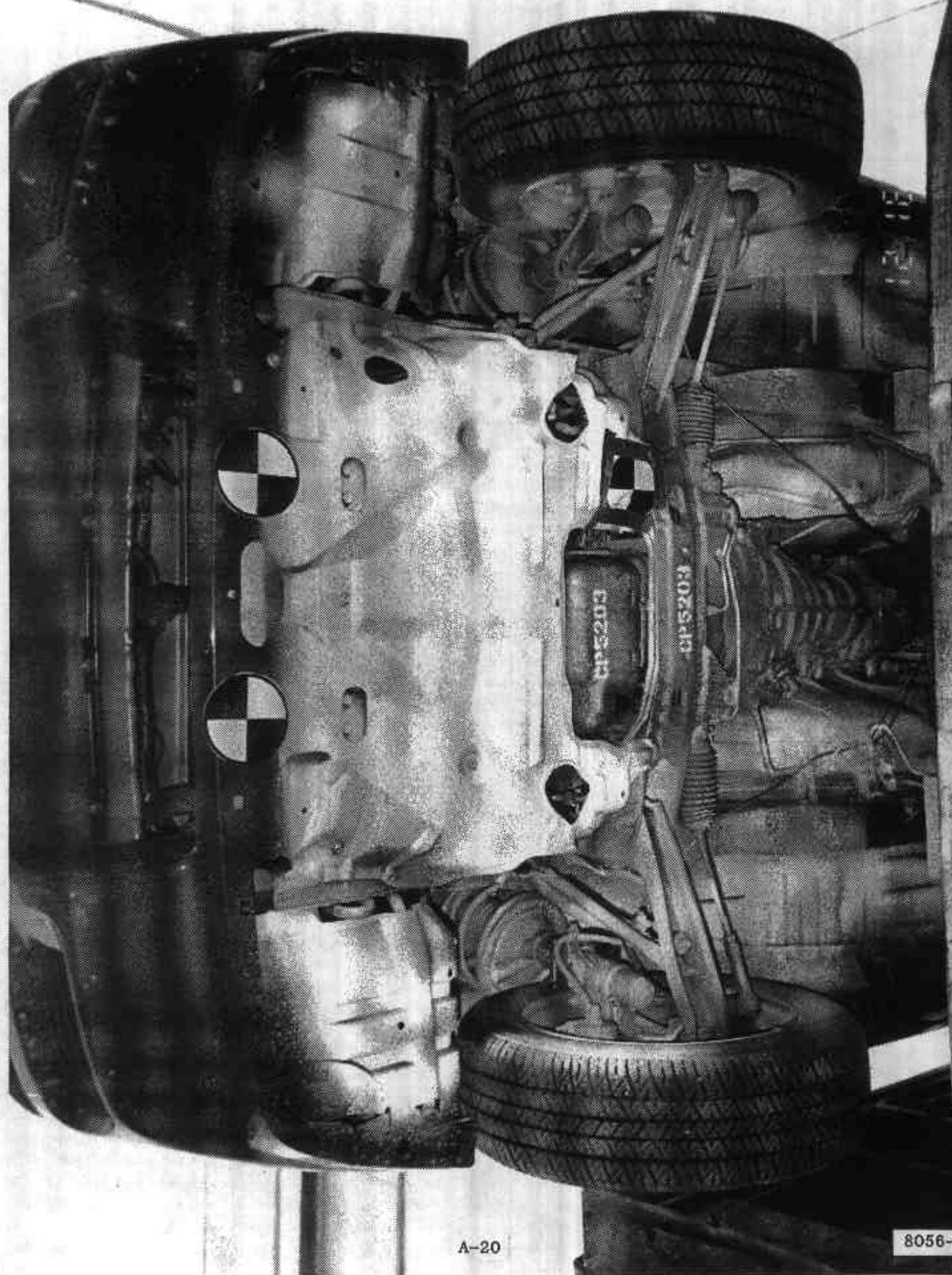
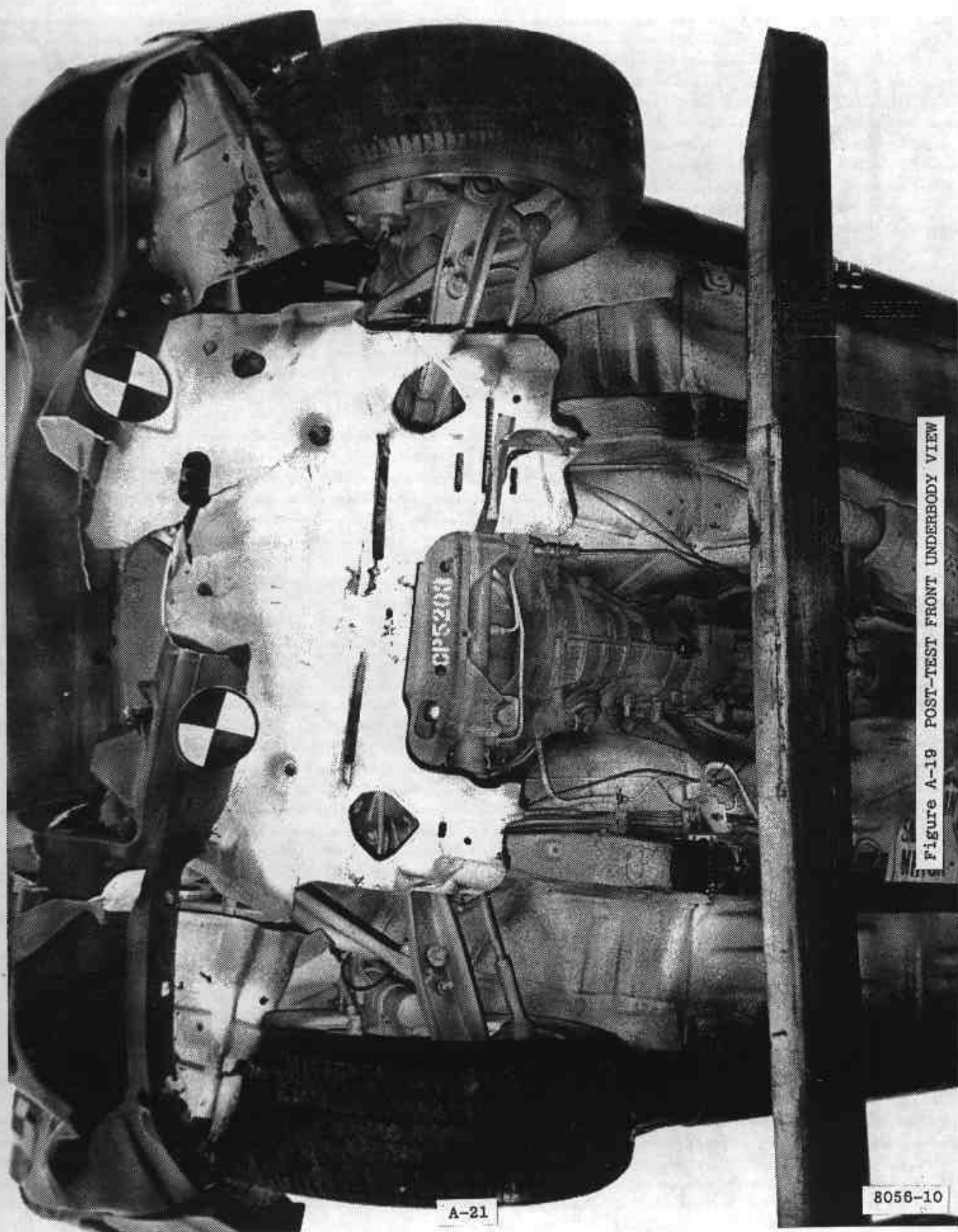


Figure A-18 PRE-TEST FRONT UNDERBODY VIEW

A-20

8056-10



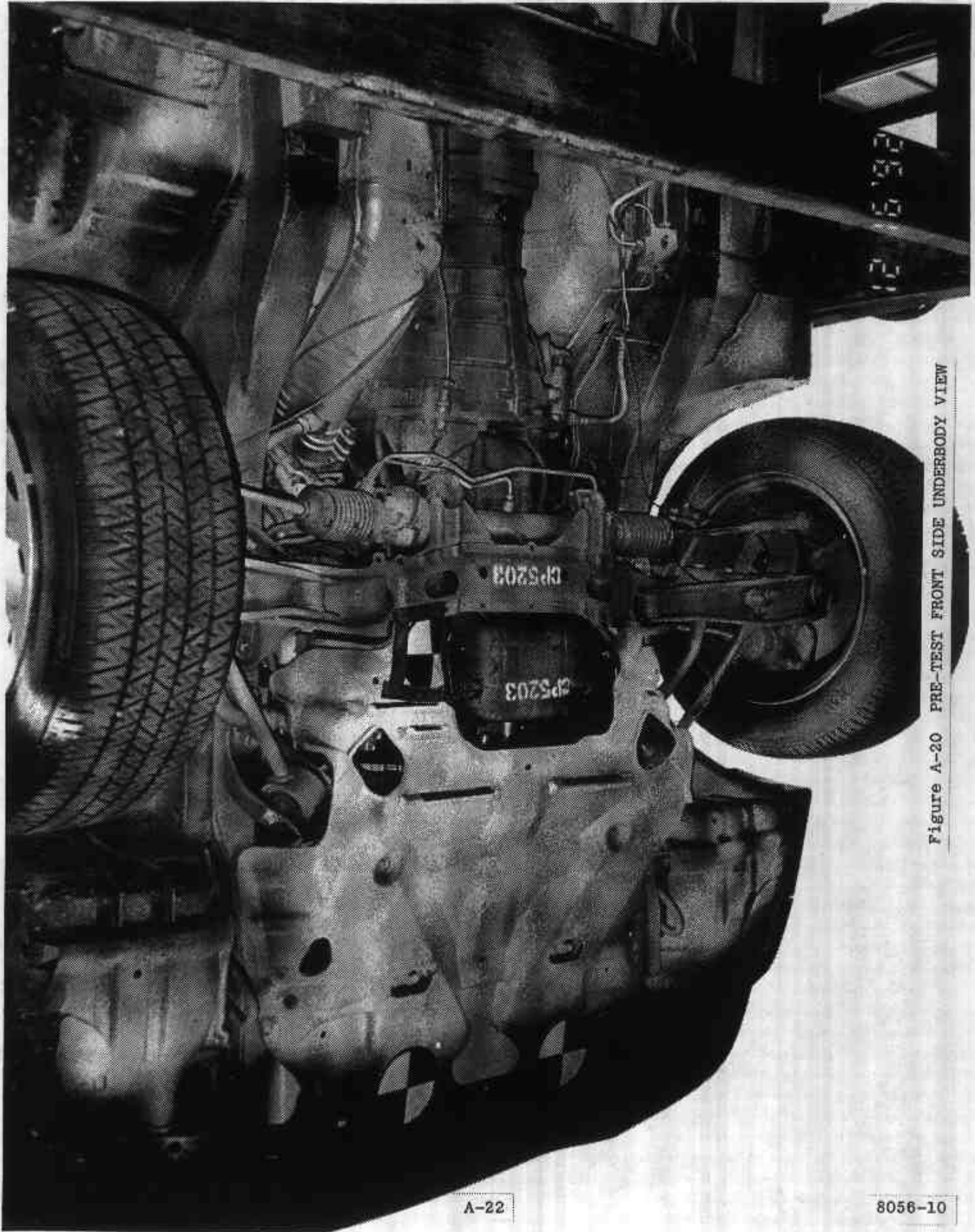


Figure A-20 PRE-TEST FRONT SIDE UNDERBODY VIEW

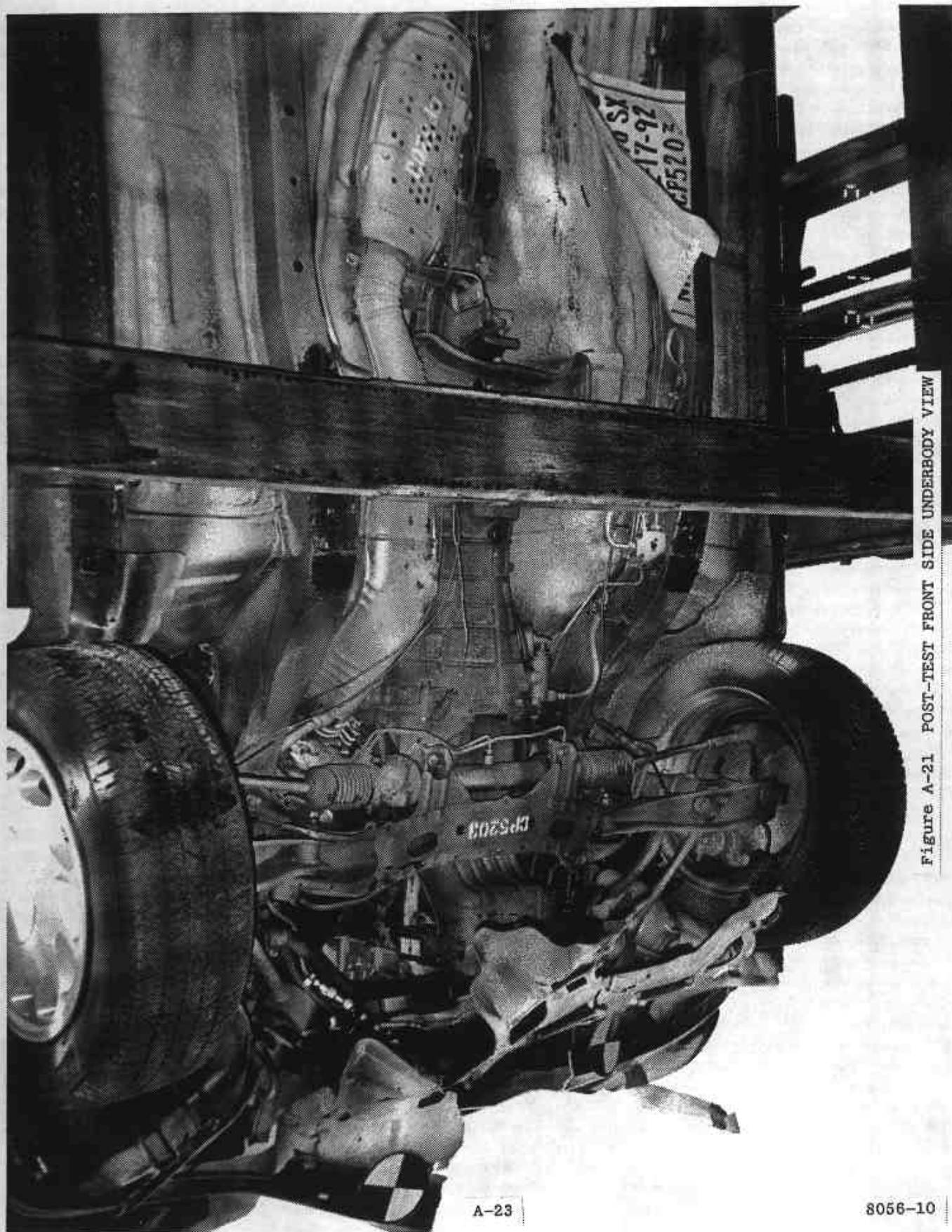
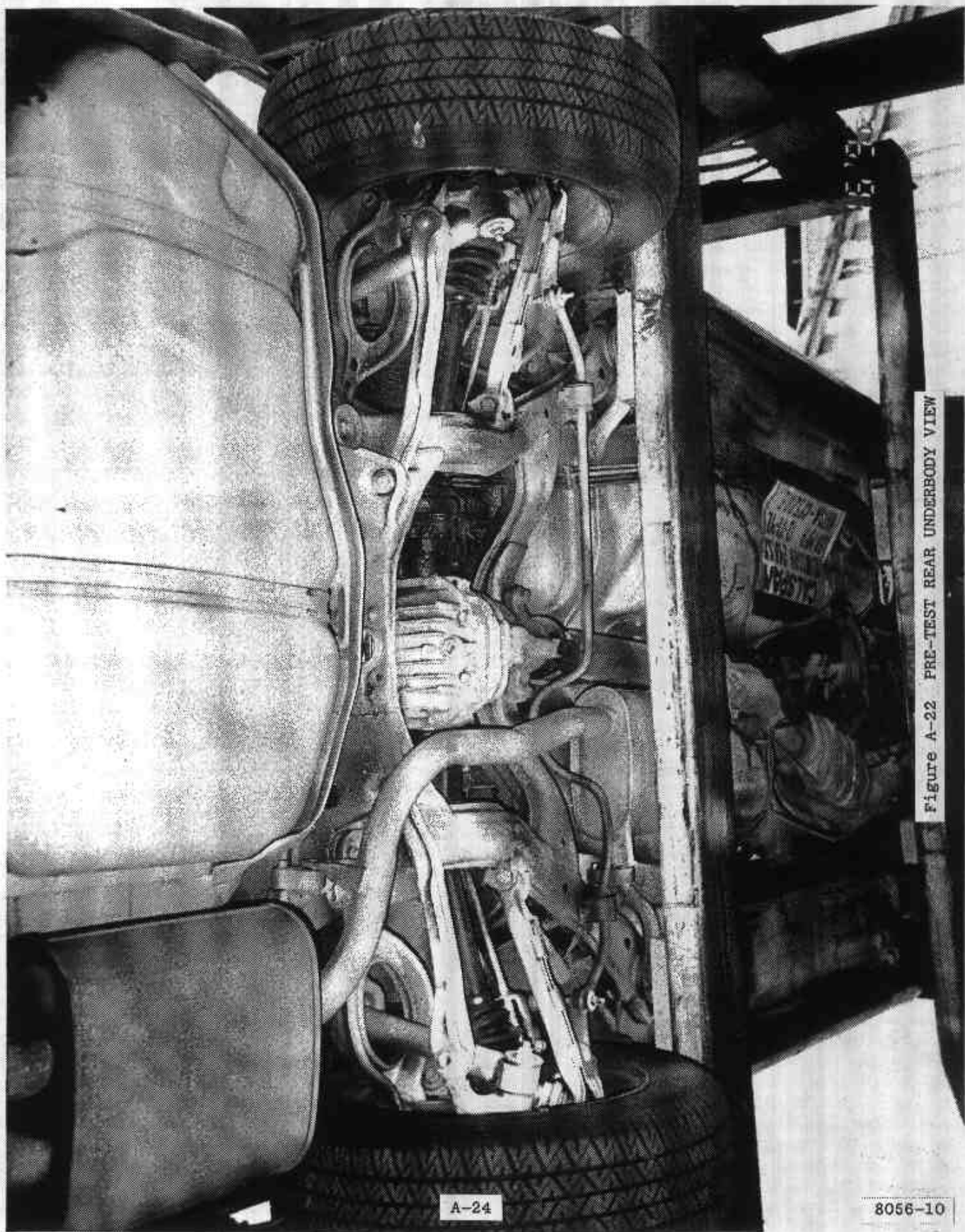


Figure A-21 POST-TEST FRONT SIDE UNDERBODY VIEW

A-23

8056-10



A-24

Figure A-22 PRE-TEST REAR UNDERBODY VIEW

8056-10

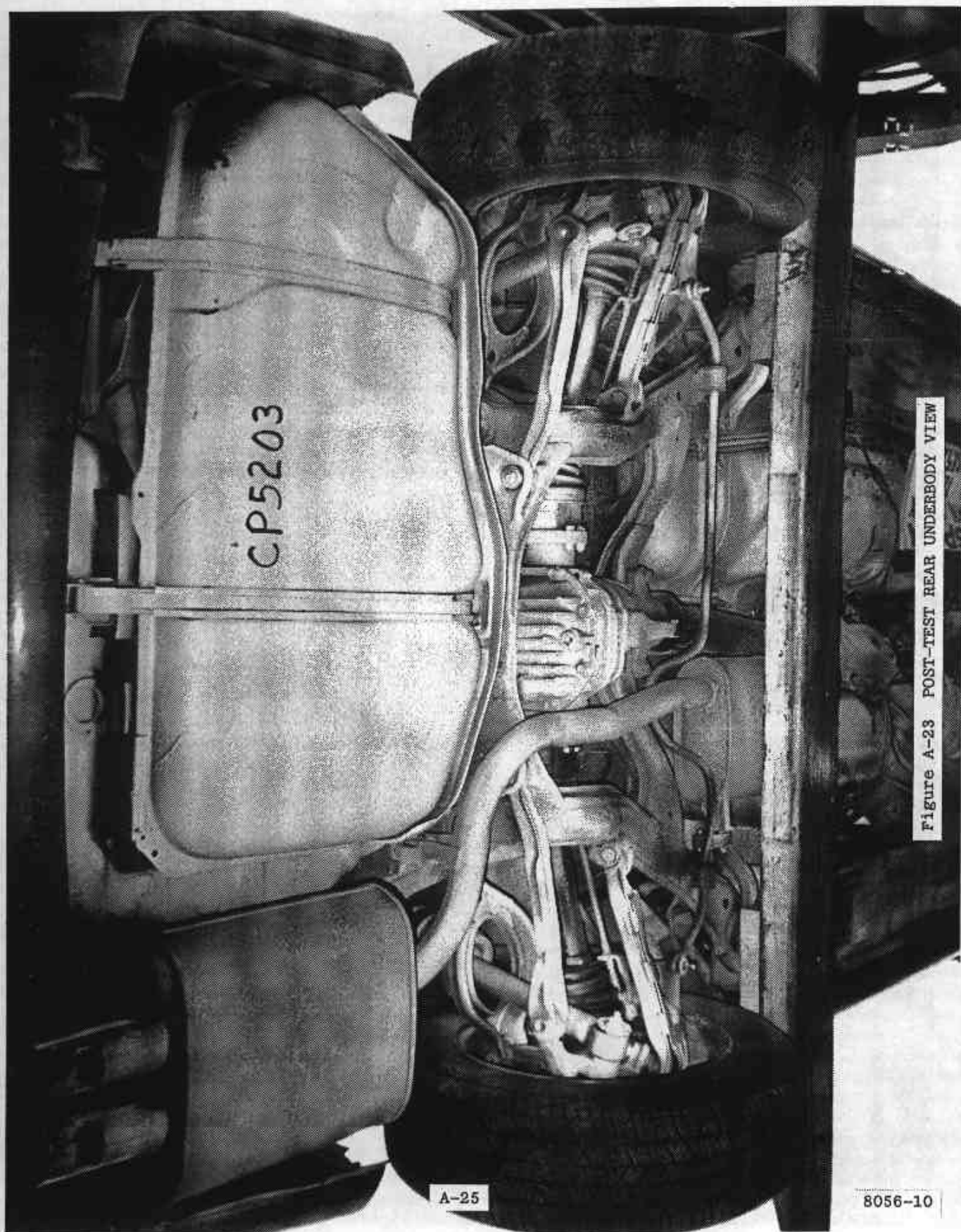


Figure A-23 POST-TEST REAR UNDERBODY VIEW

A-25

8056-10



A-26

8056-10

Figure A-24 CERTIFICATION LABEL

VEHICLE CAPACITY WEIGHT POIDS LITRE DU VEHICULE	802 LB 374 KG	SEATING CAPACITY NOMBRE DE PLACES	FRONT SEAT ARRIERE	2 2	TOTAL TOTAL
RECOMMENDED COLD TIRE INFLATION PRESSURE PRESSION DE GONFLAGE RECOMMANDEE DES PNEUS FROIDS					
TIRE SIZE DIMENSIONS	185/80R13 89H 185/80R13 89H	FRONT AVANT	PSI (KPa)	REAR ARRIERE	
SPARE TIRE ROUE DE SECOURS	1125/70 015	29 (200)	60 (420)	29 (200)	60 (420)
DO NOT USE IN EXCESS OF 50 MPH, 80 km/h. SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION. UTILISATION A UNE VITESSE MAX 50 MPH, 80 km/h. POUR LES DETAILS SE REFERER AU MANUEL DU CONDUCTEUR.					

Figure A-25 TIRE PLACARD



Figure A-26 PRE-TEST DRIVER DUMMY POSITION

A-28

8058-10



Figure A-27 POST-TEST DRIVER DUMMY POSITION

A-29

8056-10



Figure A-28 PRE-TEST PASSENGER DUMMY POSITION

A-30

8056-10



Figure A-29 POST-TEST PASSENGER DUMMY POSITION



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

A-32

8056-10



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

A-33

8056-10



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

A-34

8056-10

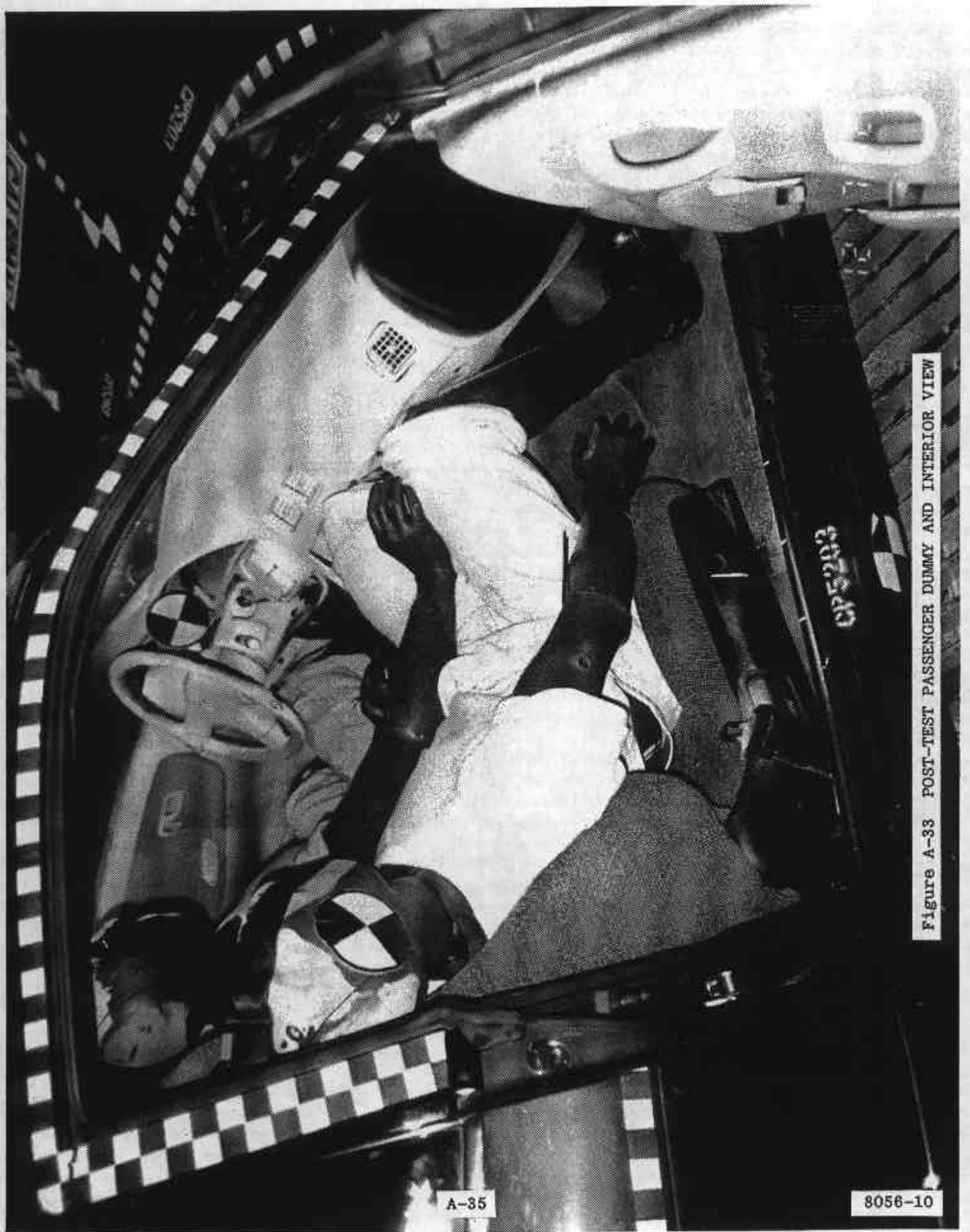
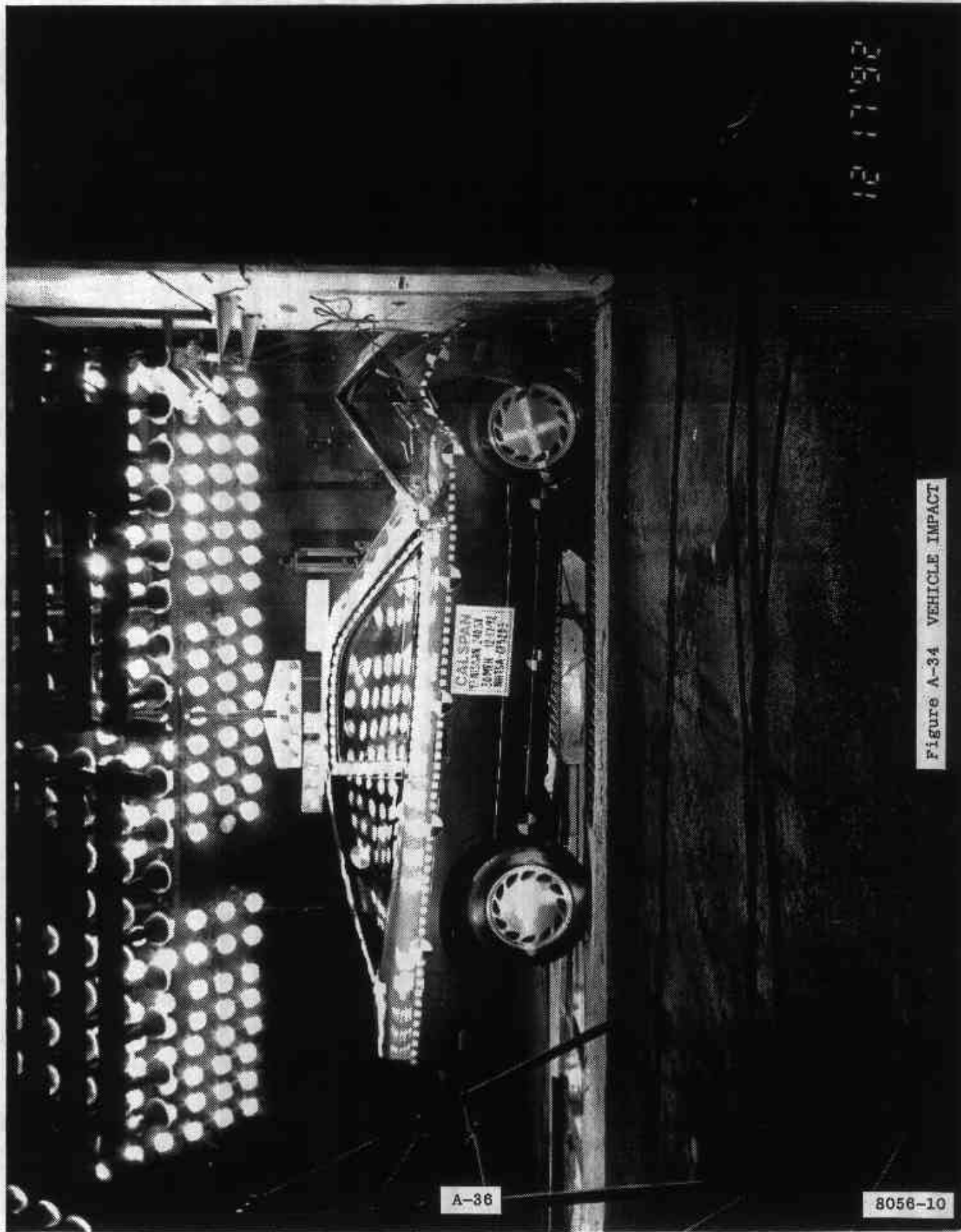


Figure A-33 POST-TEST PASSENGER DUMMY AND INTERIOR VIEW

A-35

8056-10



12 17 92

Figure A-34 VEHICLE IMPACT

A-36

8056-10

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

TEST NO. CP5203

VEHICLE DATA

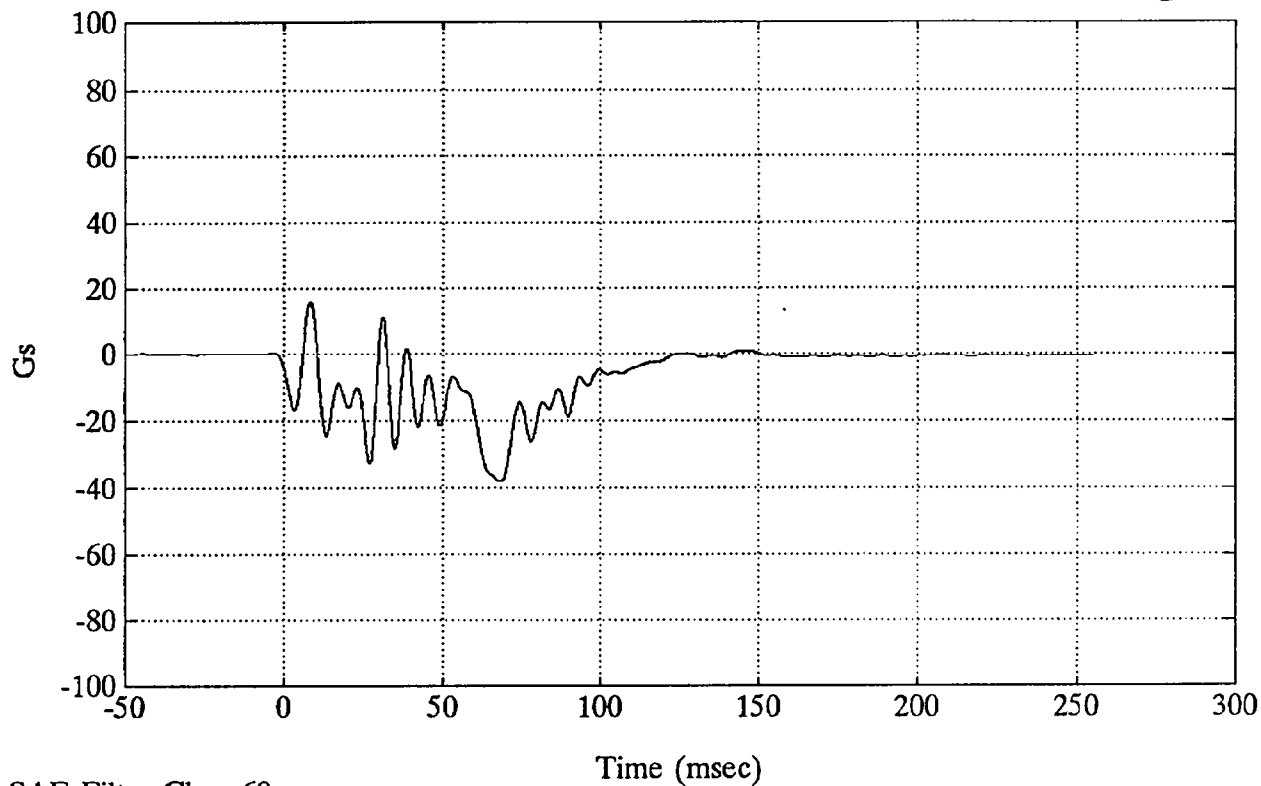
SAE FILTER CHANNEL CLASS

60

FMVSS 208 - 1993 NISSAN 240 SX

L. Rear X-member X (#1)

Max = 15.95 Gs @ 8.40 msec
Min = -37.96 Gs @ 68.28 msec

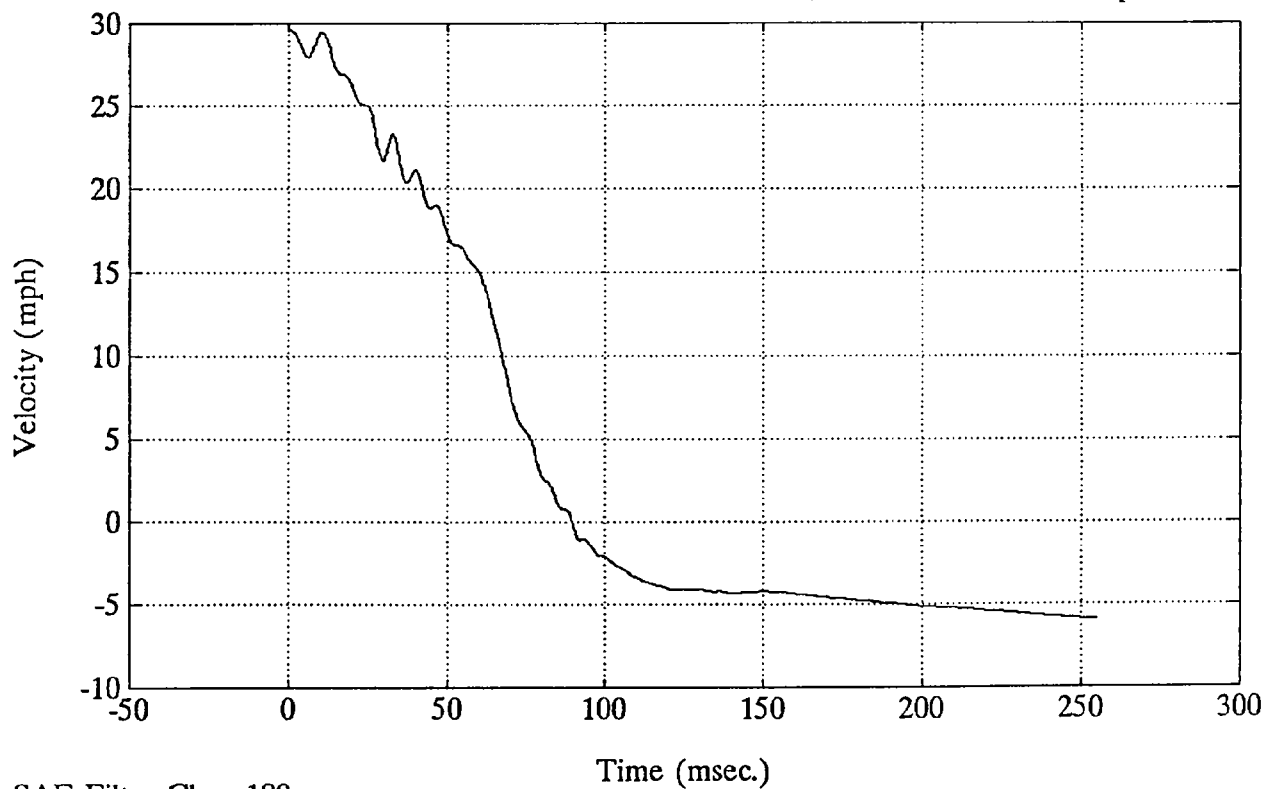


SAE Filter Class 60

FMVSS 208 - 1993 NISSAN 240 SX

L. Rear X-member X (#1)

Max = 29.70 mph @ -0.00 msec
Min = -5.91 mph @ 254.88 msec

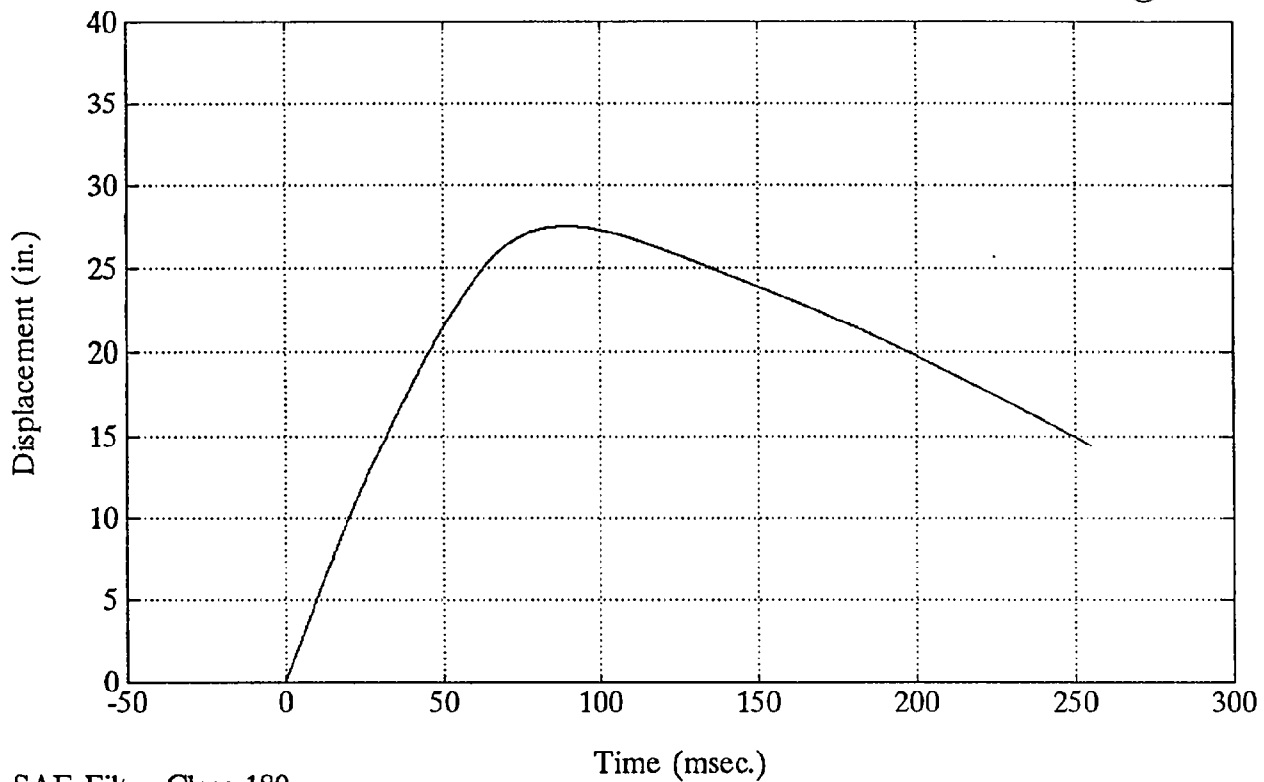


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

L. Rear X-member X (#1)

Max = 27.53 in. @ 90.24 msec
Min = 0.00 in. @ -0.00 msec

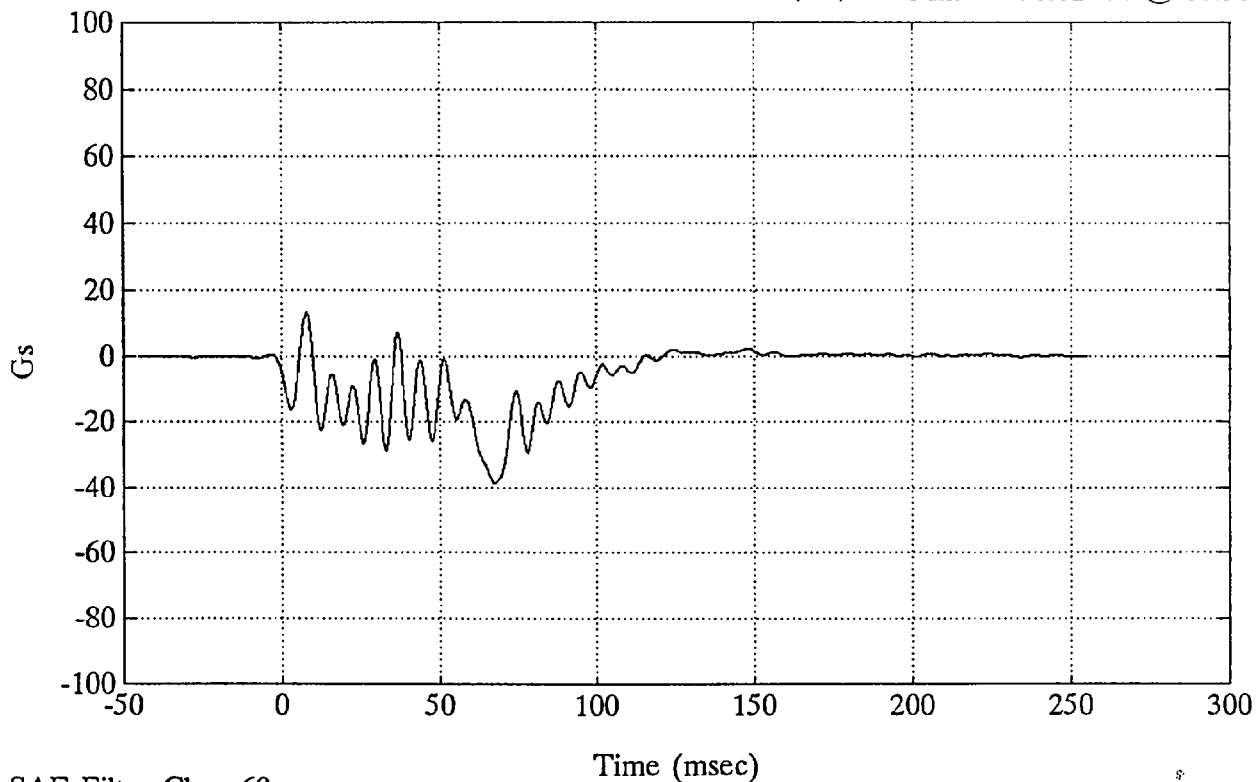


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

R. Rear X-member X (#2)

Max = 13.15 Gs @ 7.92 msec
Min = -38.62 Gs @ 67.56 msec

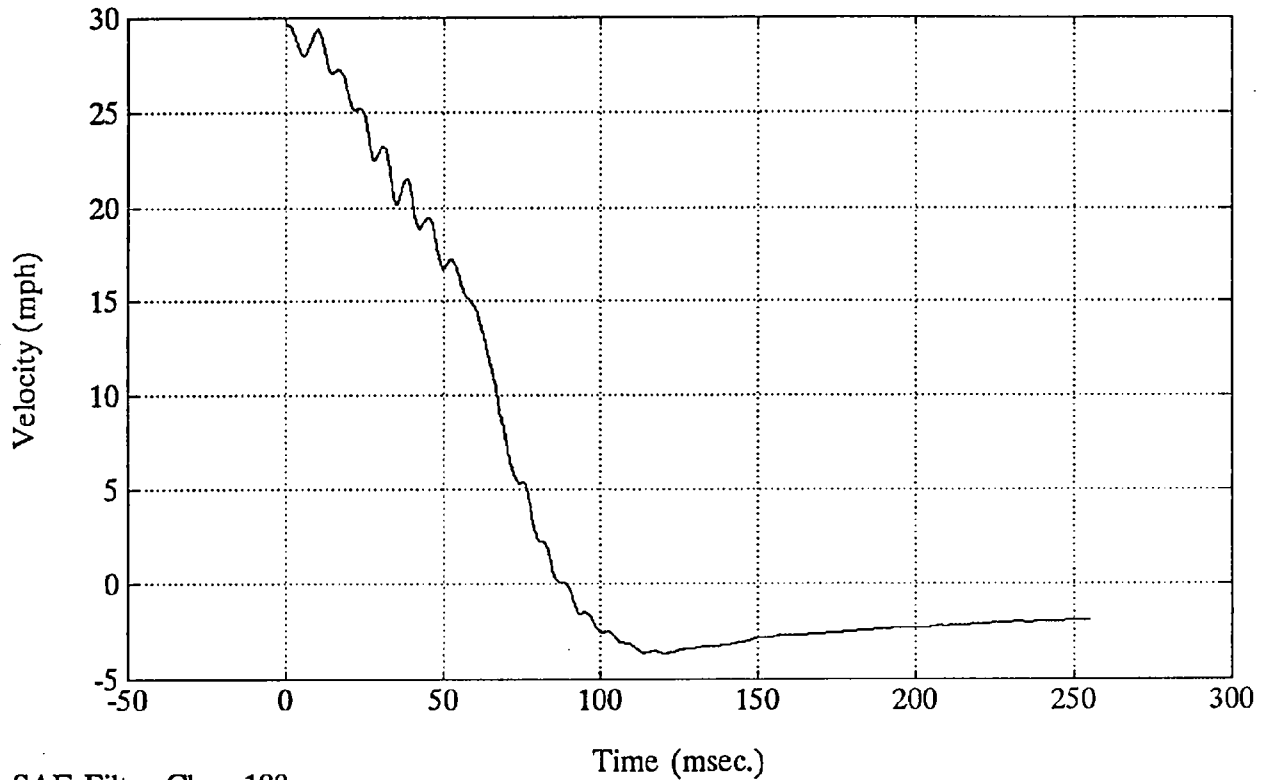


SAE Filter Class 60

FMVSS 208 - 1993 NISSAN 240 SX

R. Rear X-member X (#2)

Max = 29.70 mph @ -0.00 msec
Min = -3.65 mph @ 120.48 msec

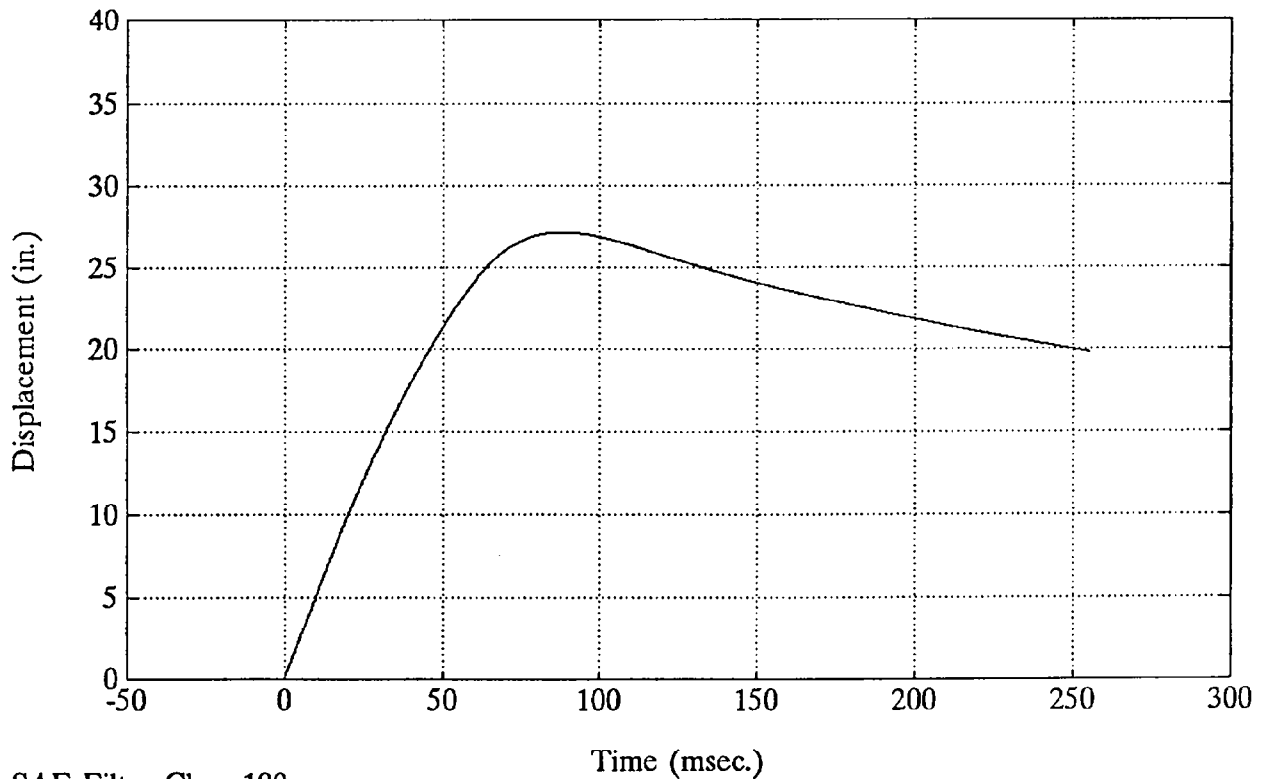


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

R. Rear X-member X (#2)

Max = 27.18 in. @ 90.72 msec
Min = 0.00 in. @ -0.00 msec

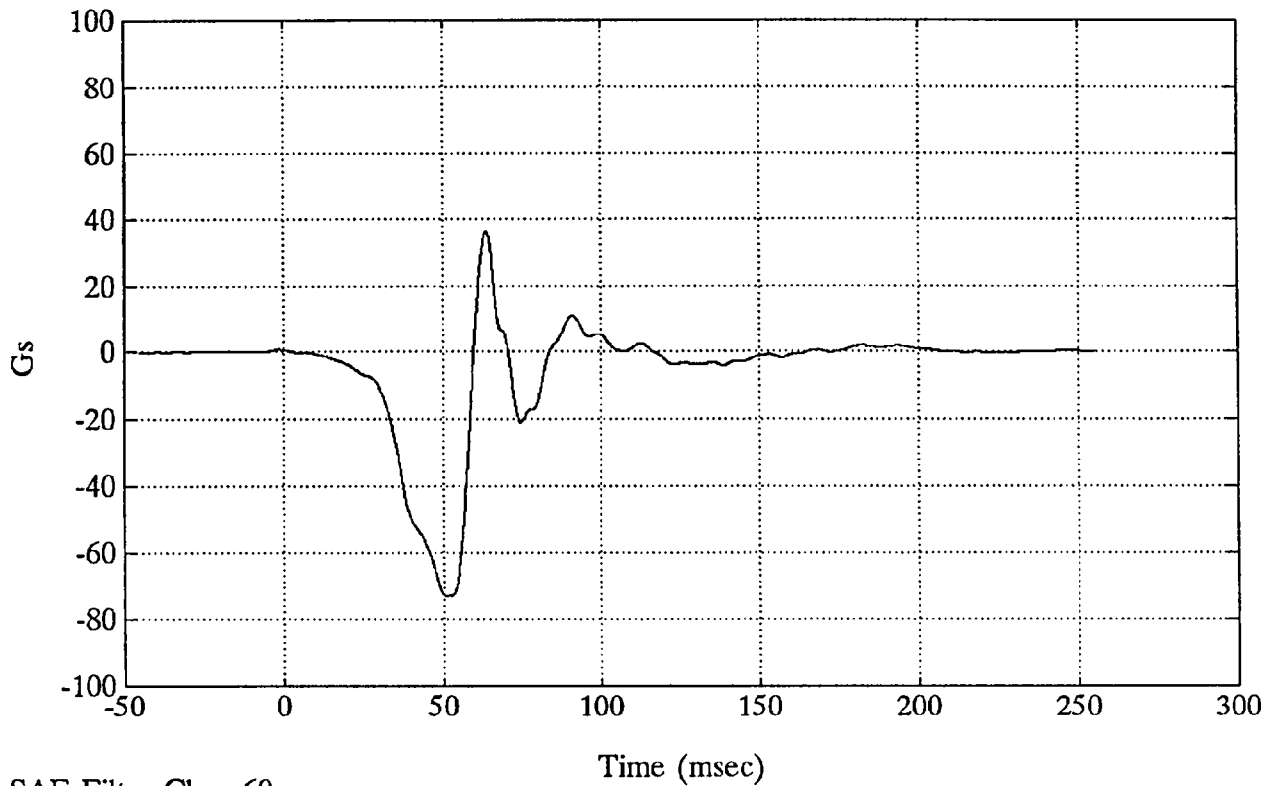


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Engine Top X (#3)

Max = 36.60 Gs @ 63.72 msec
Min = -73.07 Gs @ 51.00 msec

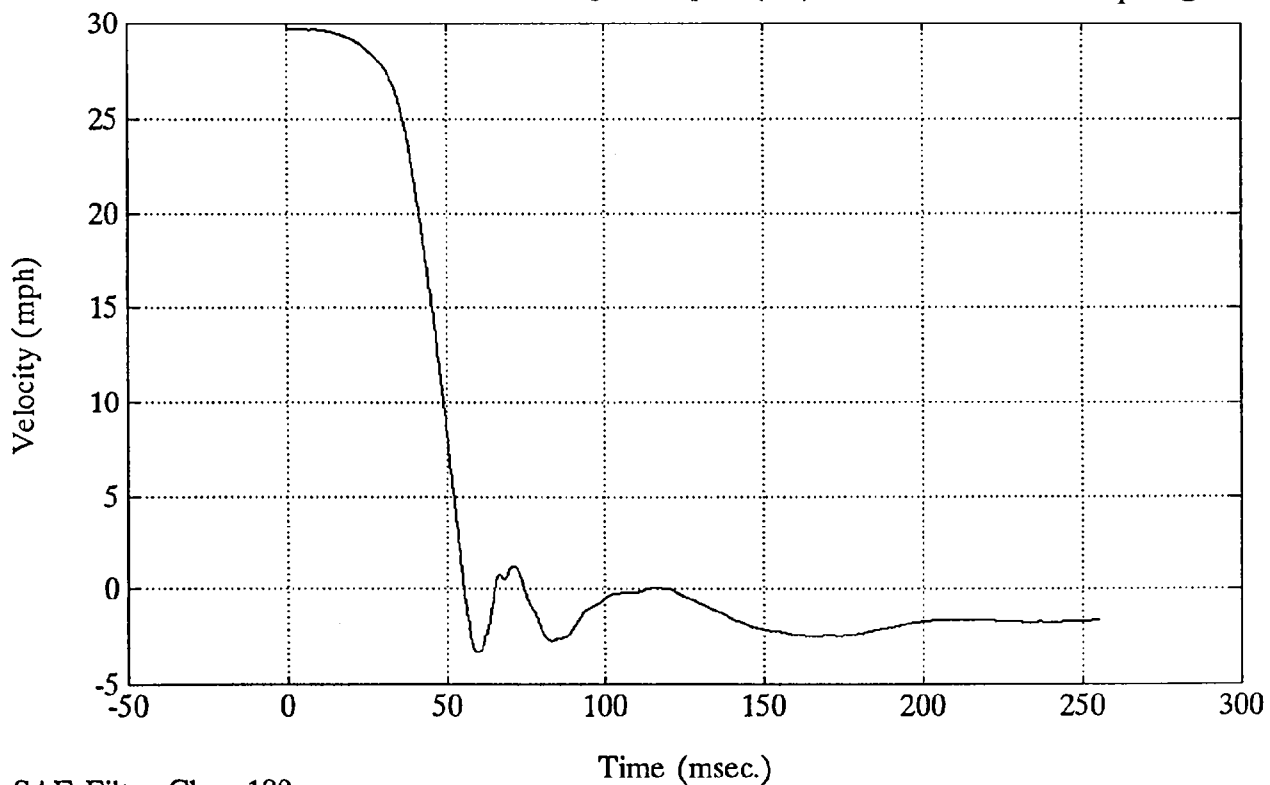


SAE Filter Class 60

FMVSS 208 - 1993 NISSAN 240 SX

Engine Top X (#3)

Max = 29.72 mph @ 3.84 msec
Min = -3.30 mph @ 59.76 msec

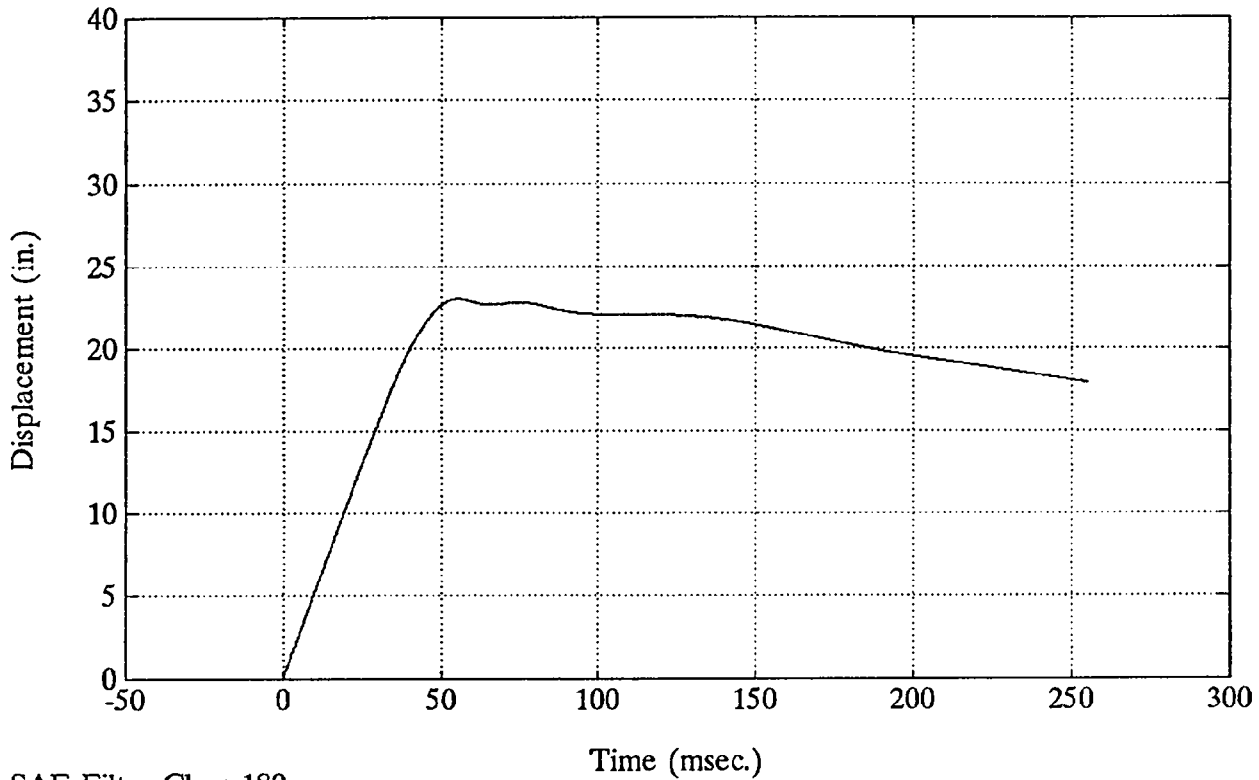


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Engine Top X (#3)

Max = 23.07 in. @ 56.16 msec
Min = 0.00 in. @ -0.00 msec

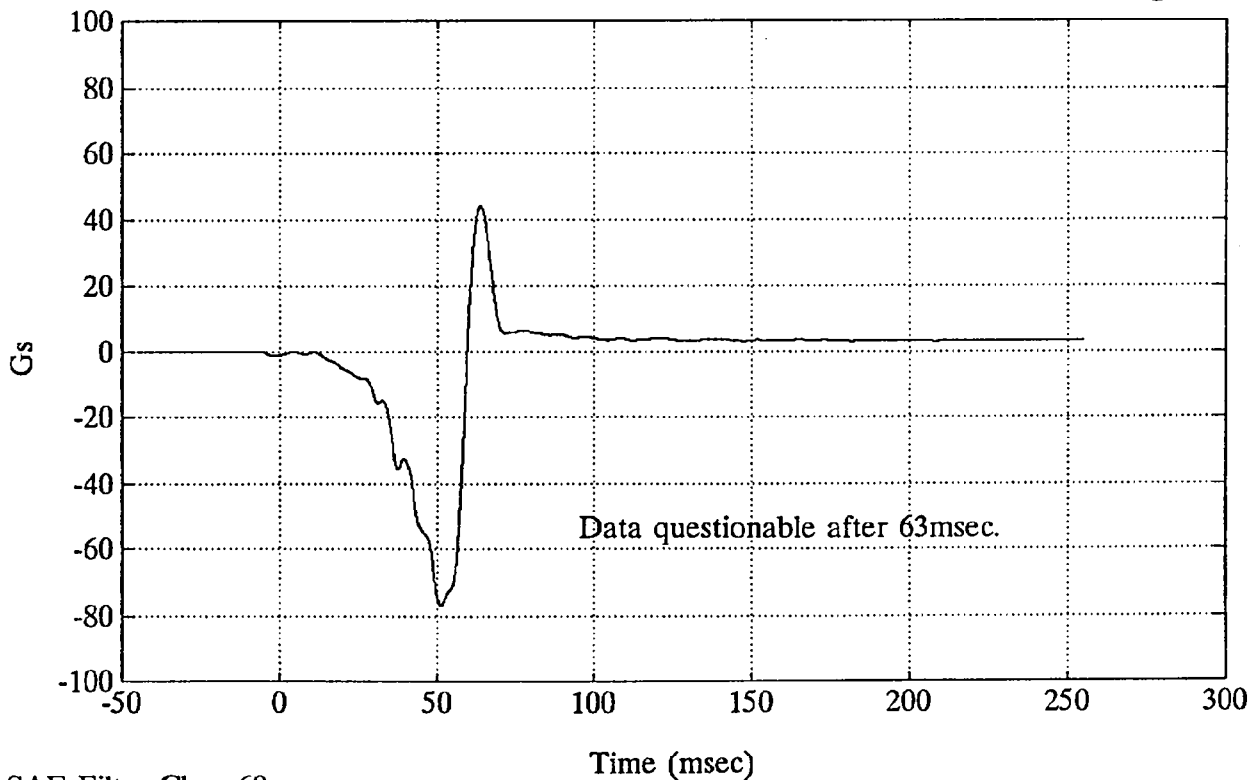


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Engine Bottom X (#4)

Max = 44.27 Gs @ 63.60 msec
Min = -76.94 Gs @ 51.24 msec

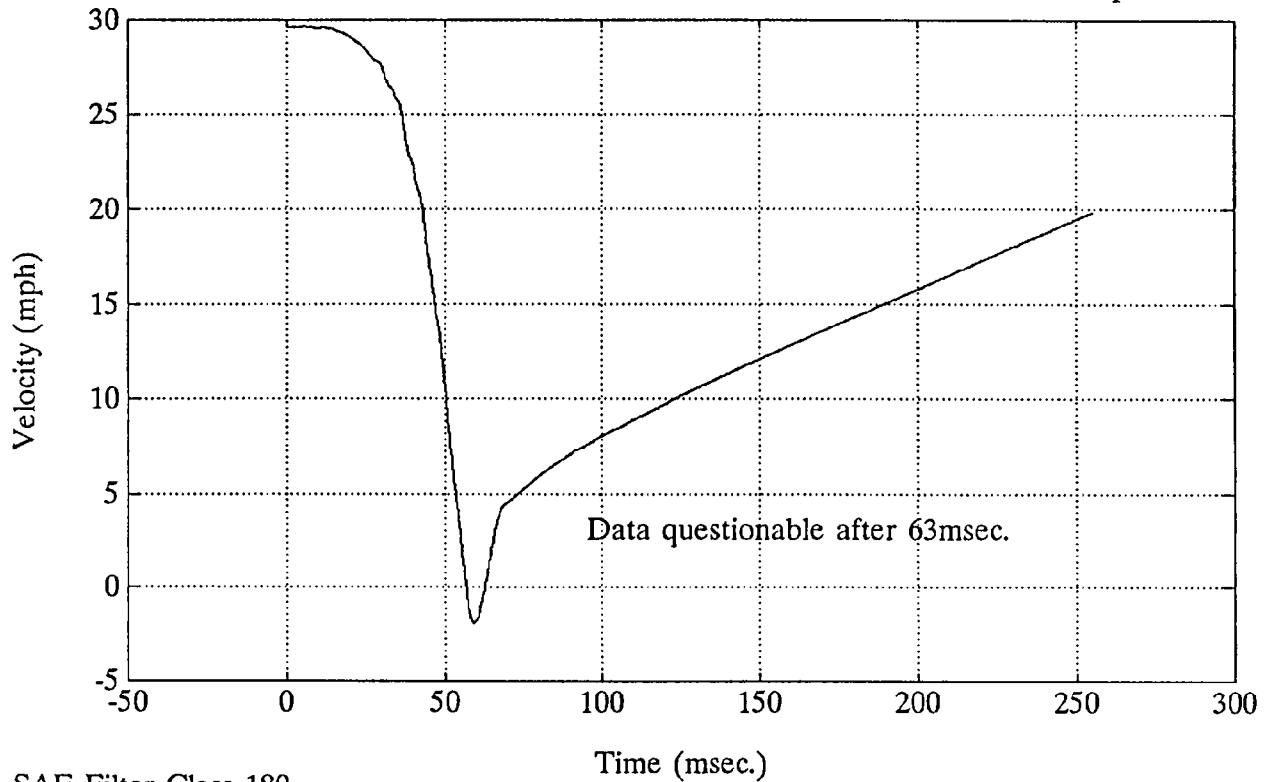


SAE Filter Class 60

FMVSS 208 - 1993 NISSAN 240 SX

Engine Bottom X (#4)

Max = 29.70 mph @ -0.00 msec
Min = -1.93 mph @ 59.28 msec

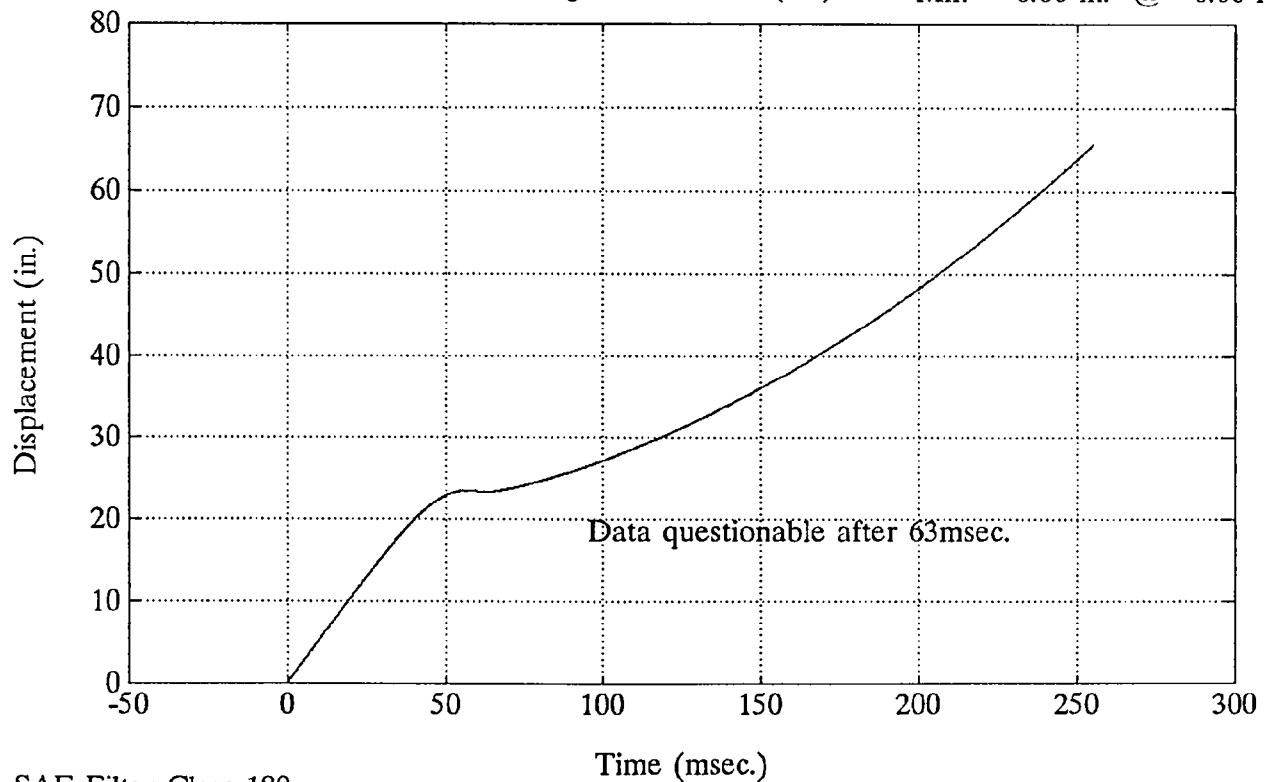


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Engine Bottom X (#4)

Max = 65.59 in. @ 254.88 msec
Min = 0.00 in. @ -0.00 msec

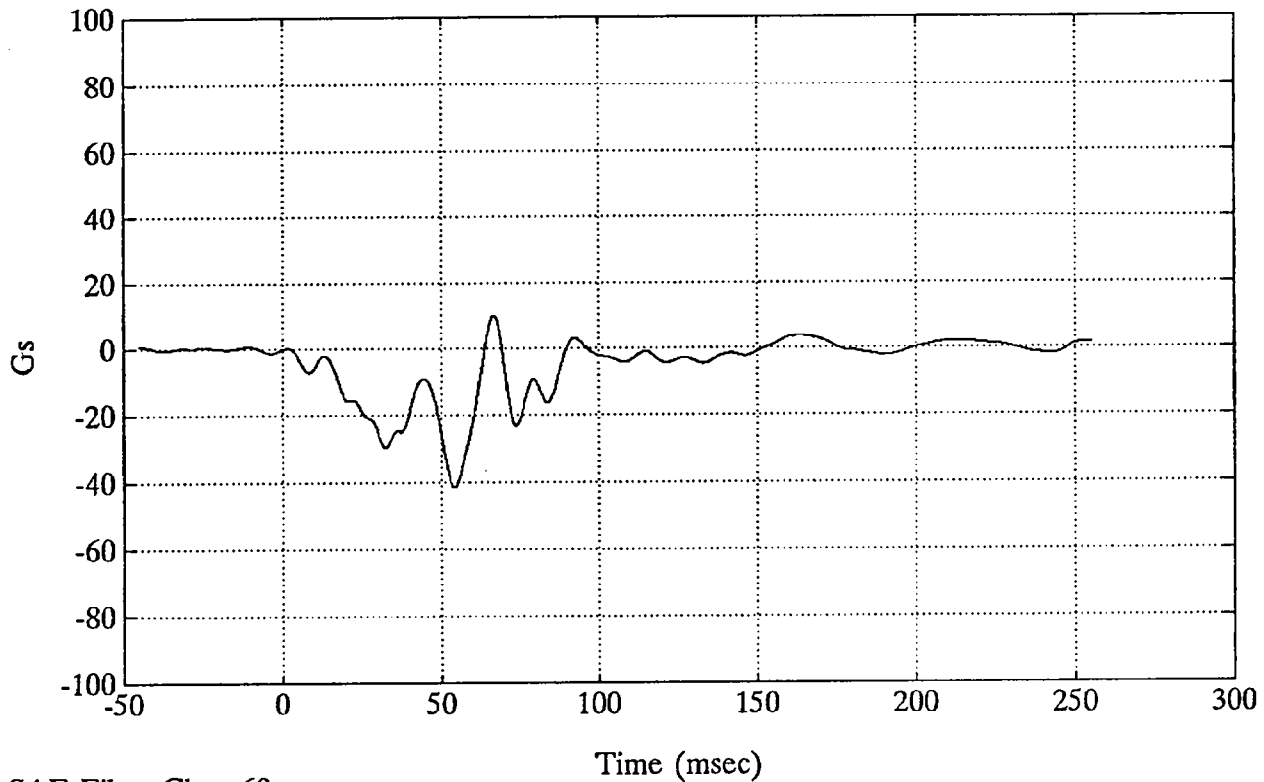


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

L. Brake Caliper X (#6)

Max = 10.16 Gs @ 66.72 msec
Min = -41.54 Gs @ 54.24 msec

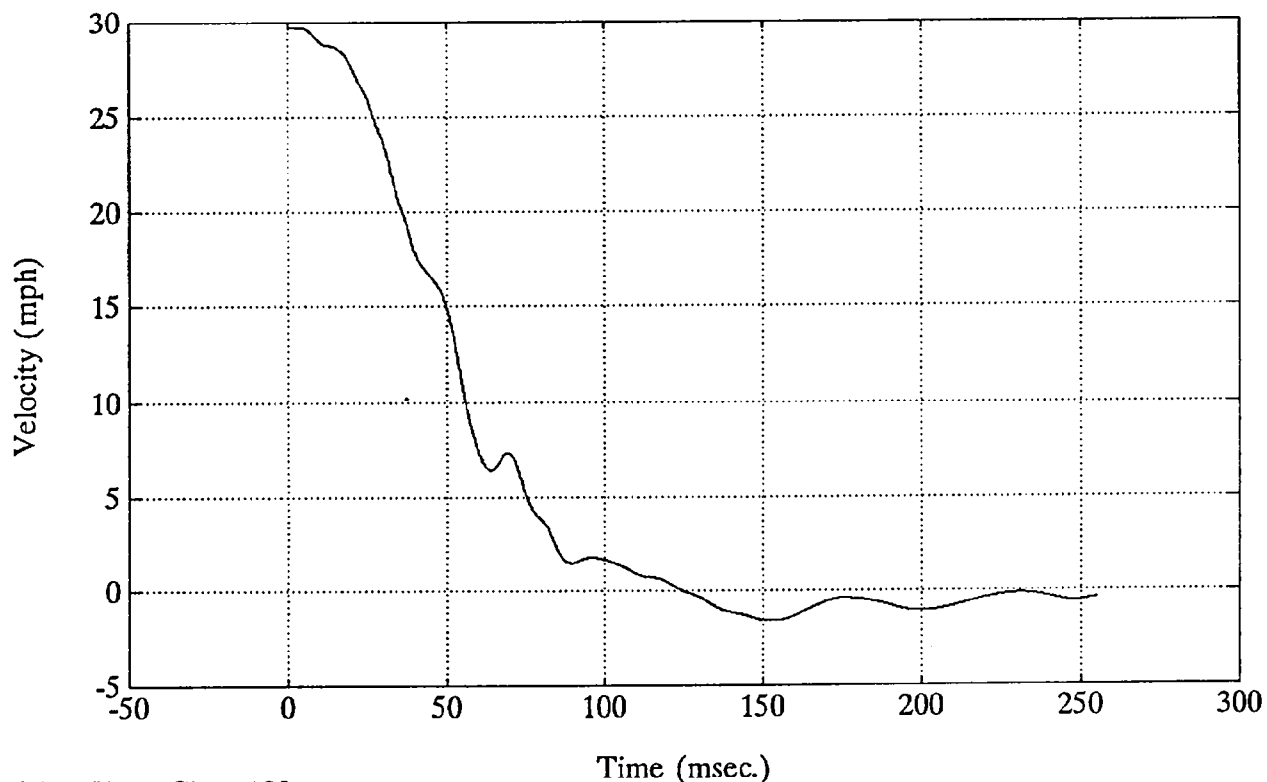


SAE Filter Class 60

FMVSS 208 - 1993 NISSAN 240 SX

L. Brake Caliper X (#6)

Max = 29.72 mph @ 3.60 msec
Min = -1.56 mph @ 152.40 msec

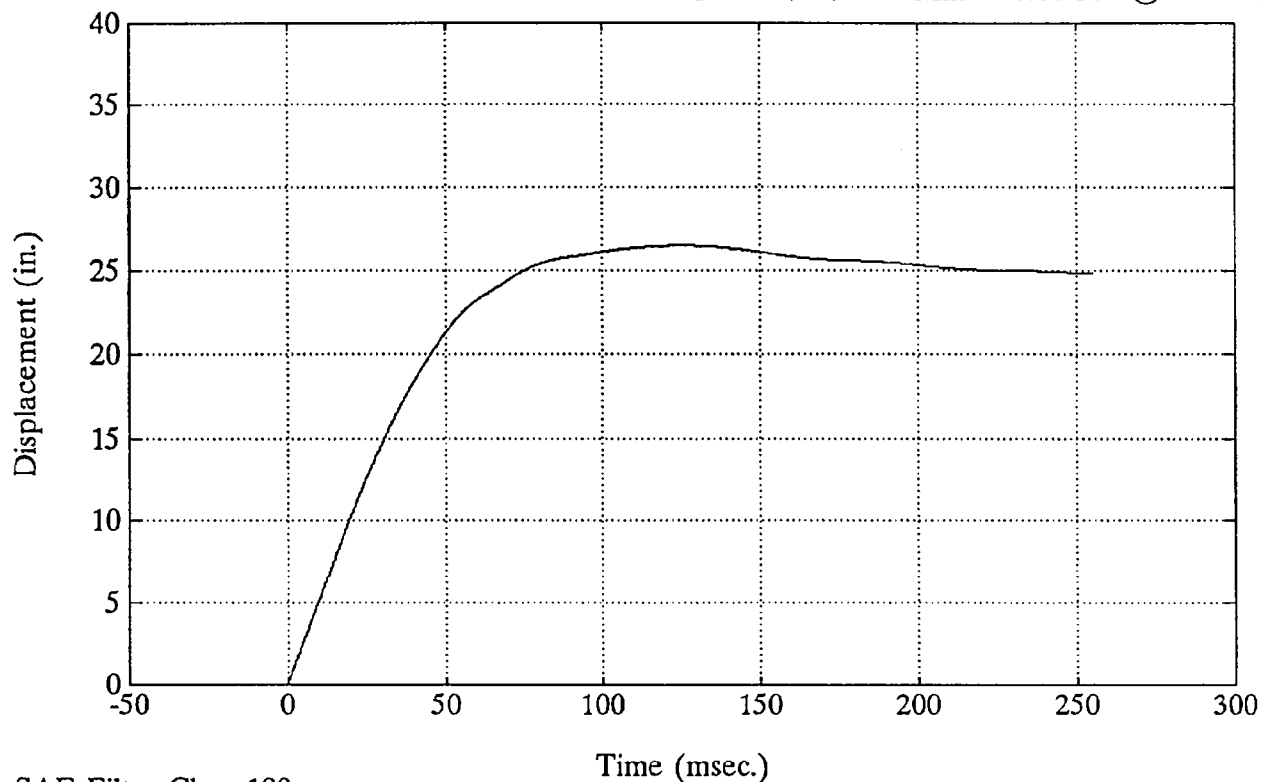


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

L. Brake Caliper X (#6)

Max = 26.47 in. @ 126.00 msec
Min = 0.00 in. @ -0.00 msec

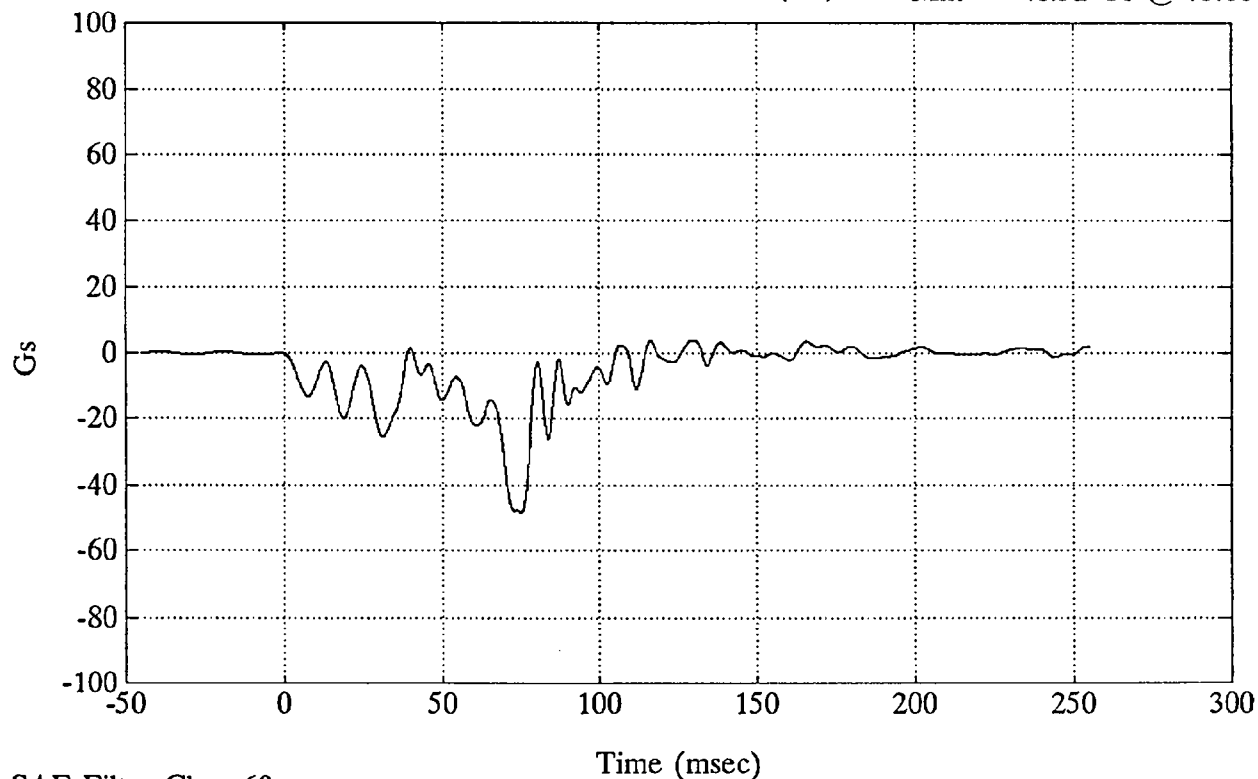


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Instrument Panel X (#7)

Max = 3.83 Gs @ 129.48 msec
Min = -48.52 Gs @ 75.00 msec

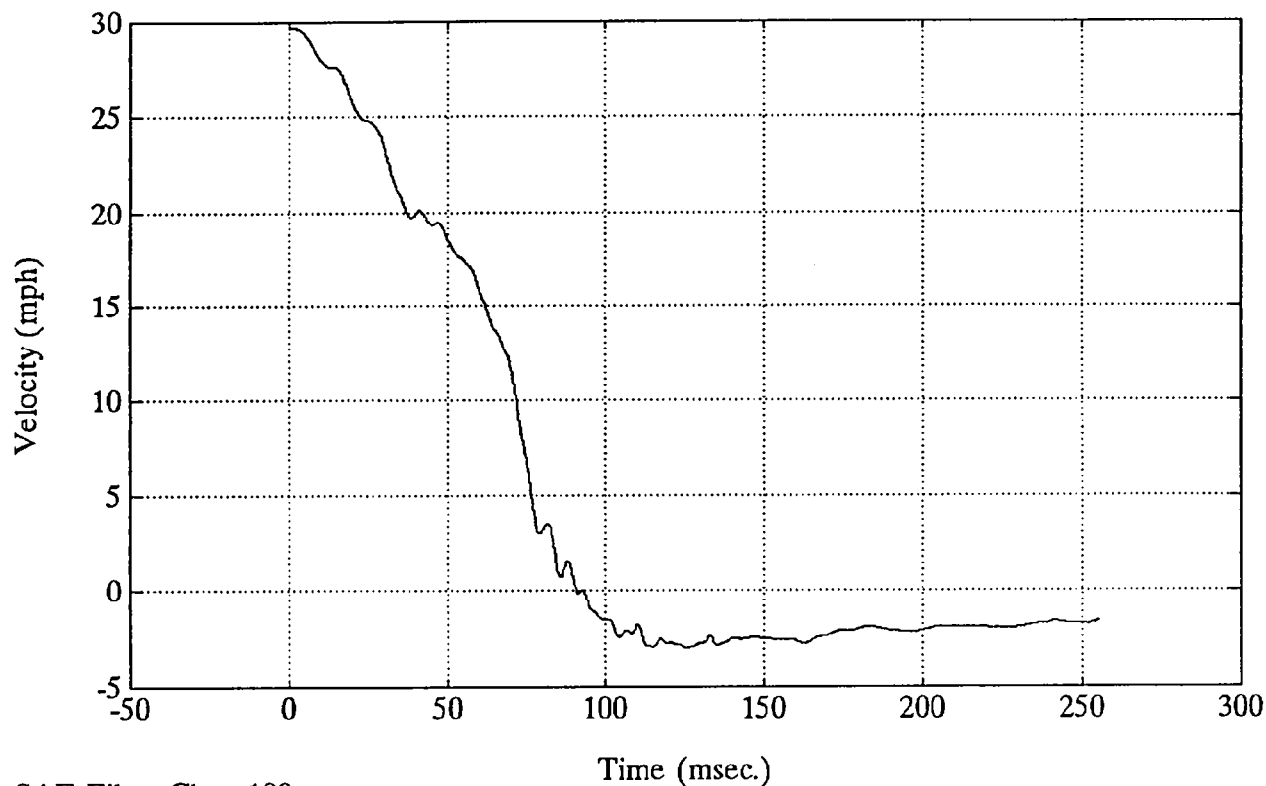


SAE Filter Class 60

FMVSS 208 - 1993 NISSAN 240 SX

Instrument Panel X (#7)

Max = 29.70 mph @ 1.20 msec
Min = -3.04 mph @ 125.28 msec

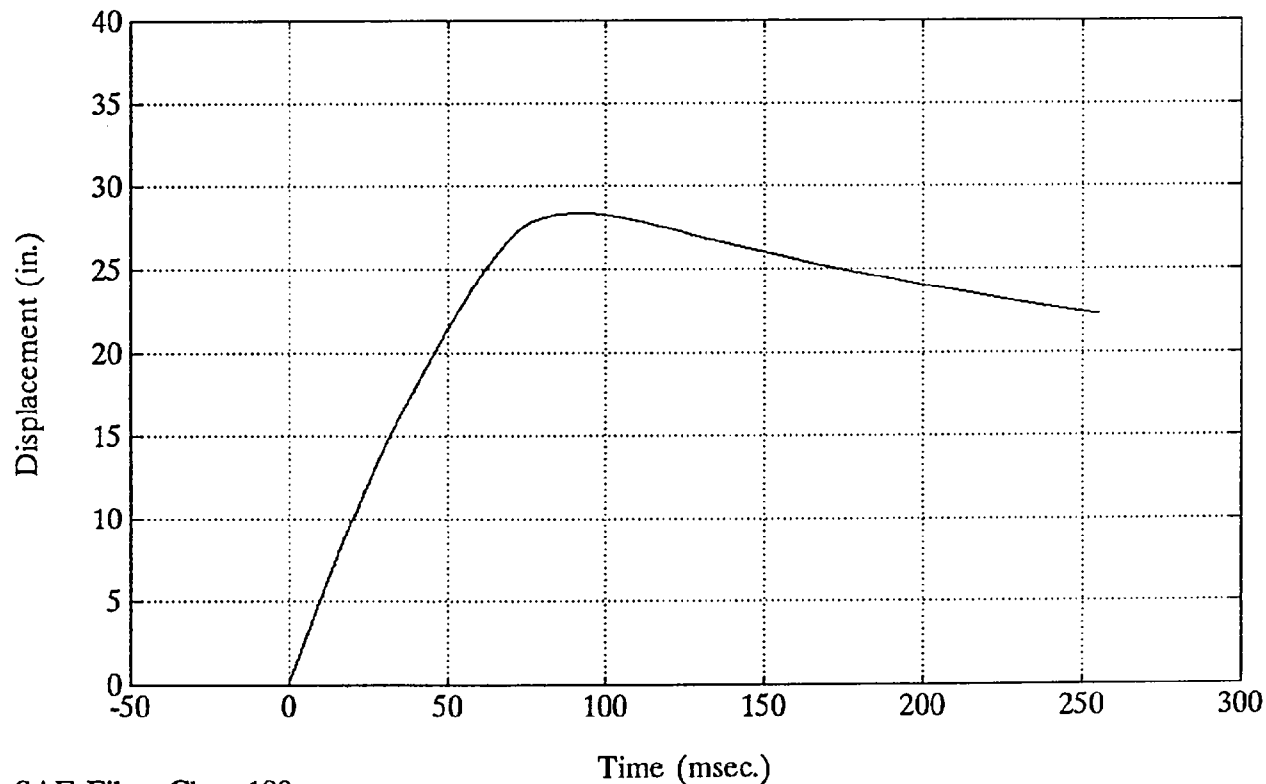


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Instrument Panel X (#7)

Max = 28.41 in. @ 94.08 msec
Min = 0.00 in. @ -0.00 msec



SAE Filter Class 180

TEST NO. CP5203

DUMMY DATA	SAE FILTER CHANNEL CLASS
Head Accelerations	1000
Chest Accelerations	180
Femur Forces	600

FACILITY: TRACK
RUN #: 1244
SERIES #: 1

TEST DATE: 17 Dec 1992
TEST TIME: 12:54:50
BOARD: a

TITLE: NHTSA "208" TEST #10 - 1993 NISSAN 240 SX

CHANNEL NUMBER	DESCRIPTION	ENGR UNIT	MAXIMUM		MINIMUM		FILTER CLASS
			AMP	msec	AMP	msec	
1	Pos. 1 Head X	Gs	4.8	185.4	-20.8	122.4	1000.0
2	Pos. 1 Head Y	Gs	2.4	242.3	-14.8	111.1	1000.0
3	Pos. 1 Head Z	Gs	43.7	83.5	-2.5	26.9	1000.0
4	Pos. 1 Left Femur	lbs	18.2	10.6	-611.9	84.5	600.0
5	Pos. 1 Chest X	Gs	3.4	139.6	-26.6	78.2	180.0
6	Pos. 1 Chest Y	Gs	.5	21.4	-14.6	90.2	180.0
7	Pos. 1 Chest Z	Gs	12.1	78.7	-9.8	103.3	180.0
8	Pos. 1 Right Femur	lbs	93.0	142.3	-994.8	76.2	600.0
9	Pos. 2 Head X	Gs	31.6	197.9	-33.7	108.8	1000.0
10	Pos. 2 Head Y	Gs	12.4	199.9	-14.0	193.9	1000.0
11	Pos. 2 Head Z	Gs	46.4	82.1	-25.9	199.9	1000.0
12	Pos. 2 Left Femur	lbs	20.9	33.6	-994.6	66.2	600.0
13	Pos. 2 Chest X	Gs	9.5	208.4	-35.3	85.4	180.0
14	Pos. 2 Chest Y	Gs	8.8	71.8	-13.9	90.1	180.0
15	Pos. 2 Chest Z	Gs	8.0	195.6	-11.6	136.3	180.0
16	Pos. 2 Right Femur	lbs	46.7	58.1	-728.4	69.7	600.0
17	Pos. 1 Head Resultant	Gs	44.8	83.5	.0	-10.1	1000.0
18	Pos. 1 Chest Resultant	Gs	30.0	78.6	.0	-6.8	180.0
19	Pos. 2 Head Resultant	Gs	48.2	88.8	.1	-3.5	1000.0
20	Pos. 2 Chest Resultant	Gs	36.2	89.9	.1	-9.8	180.0

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

hic: 301.76
t1 = 76.440 msec
t2 = 112.320 msec
Average G's Over Hic Duration = 37.15

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

hic: 423.80
t1 = 75.120 msec
t2 = 111.000 msec
Average G's Over Hic Duration = 42.55

CLIP SUMMARY: Pos. 1 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 28.119 G's
Tstart = 88.5600 ms
Tend = 91.6800 ms
CSI = 154.543

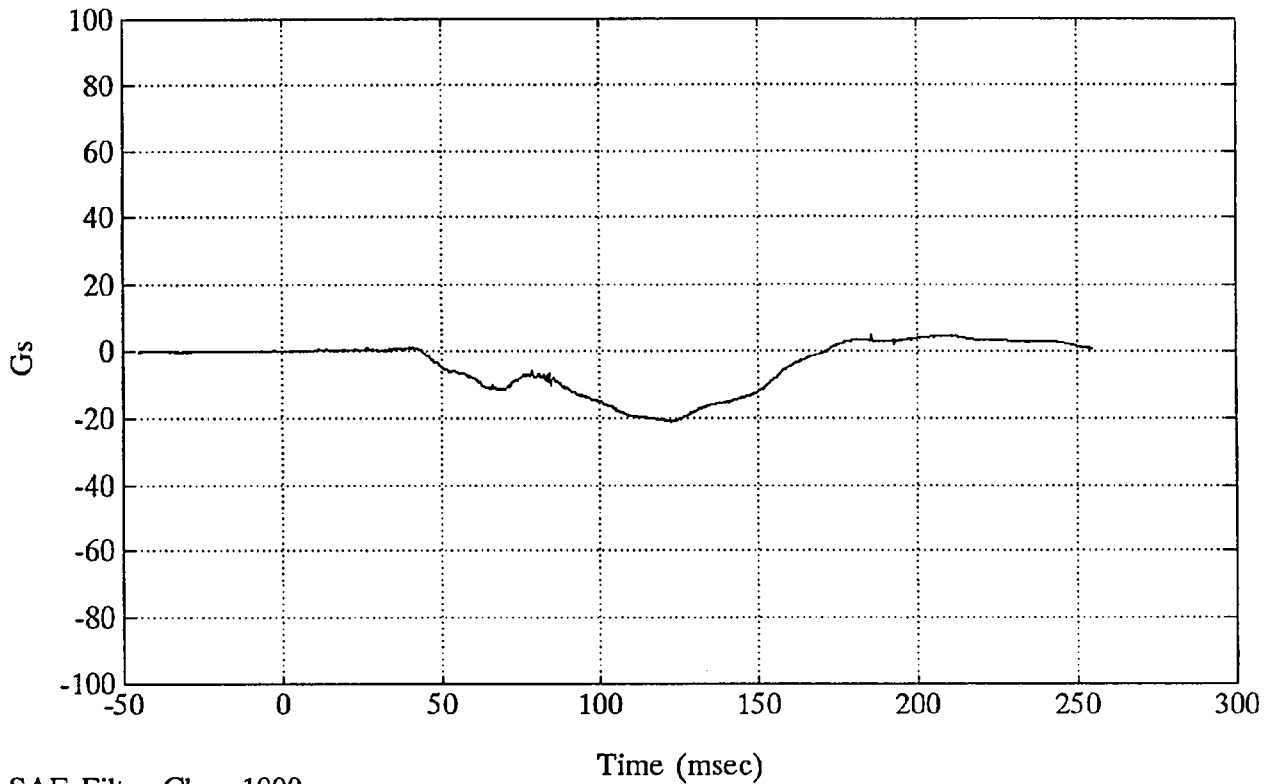
CLIP SUMMARY: Pos. 2 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 33.545 G's
Tstart = 84.7200 ms
Tend = 87.8400 ms
CSI = 271.678

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Head X

Max = 4.75 Gs @ 185.40 msec
Min = -20.78 Gs @ 122.40 msec

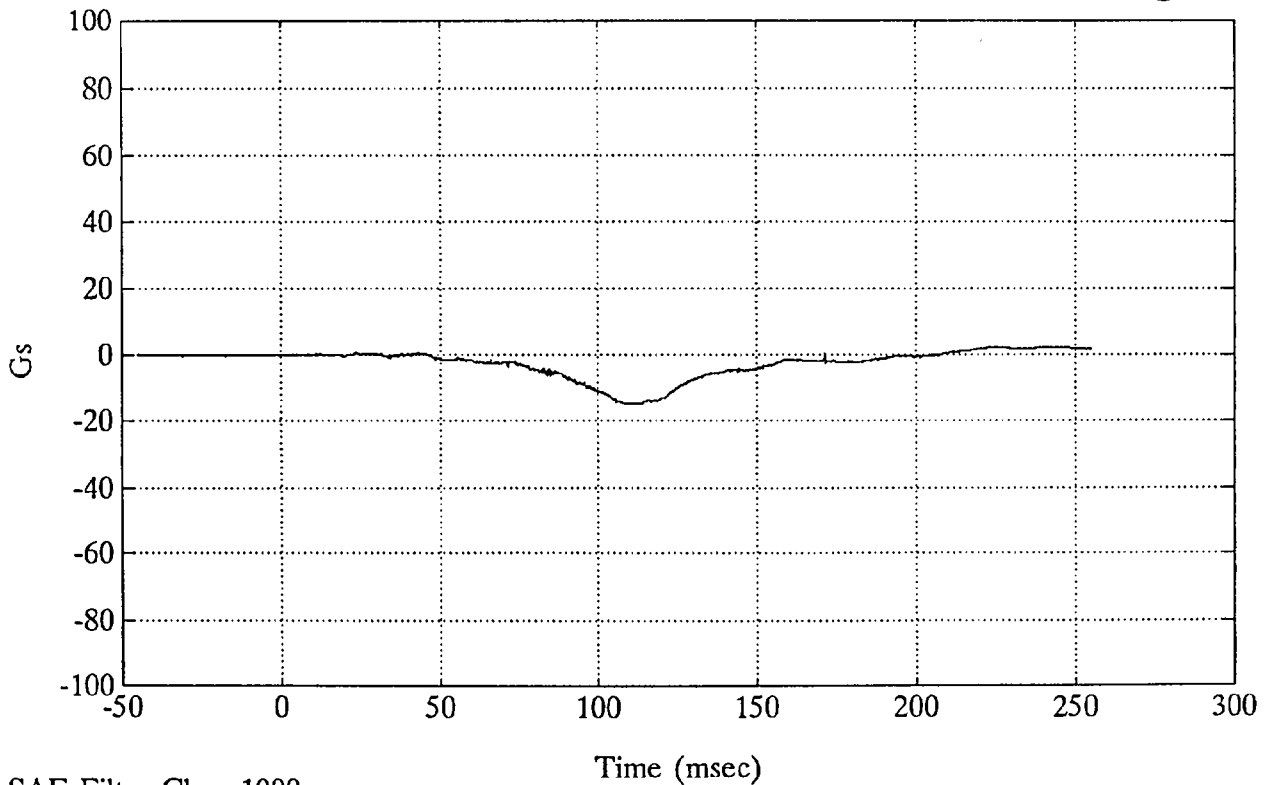


SAE Filter Class 1000

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Head Y

Max = 2.42 Gs @ 242.28 msec
Min = -14.79 Gs @ 111.12 msec

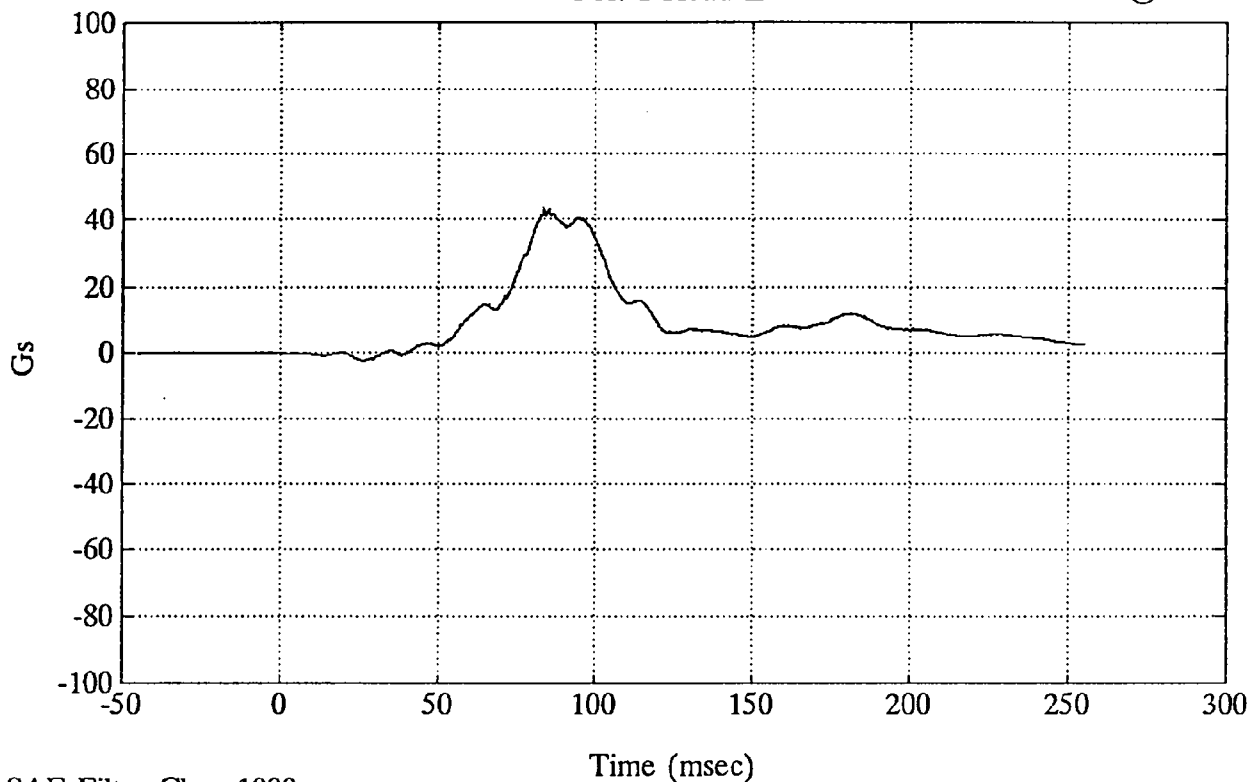


SAE Filter Class 1000

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Head Z

Max = 43.71 Gs @ 83.52 msec
Min = -2.50 Gs @ 26.88 msec

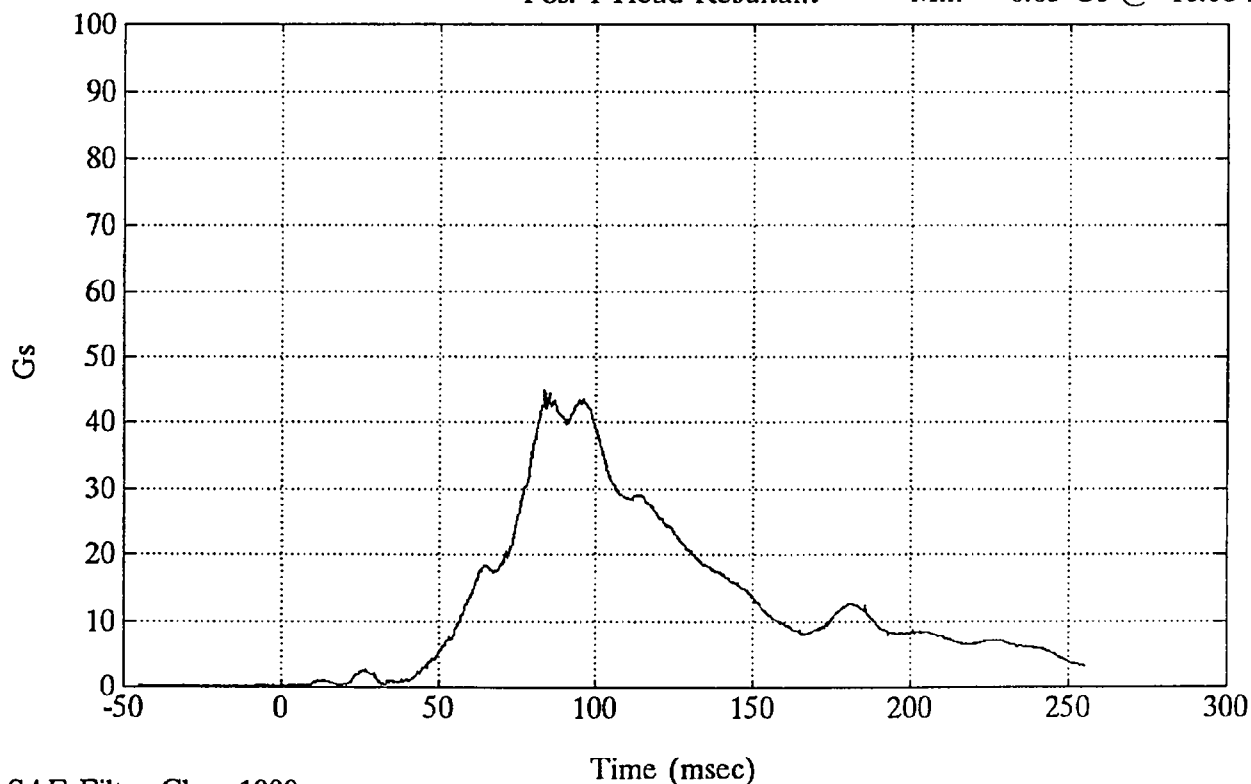


SAE Filter Class 1000

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Head Resultant

Max = 44.81 Gs @ 83.52 msec
Min = 0.03 Gs @ -10.08 msec

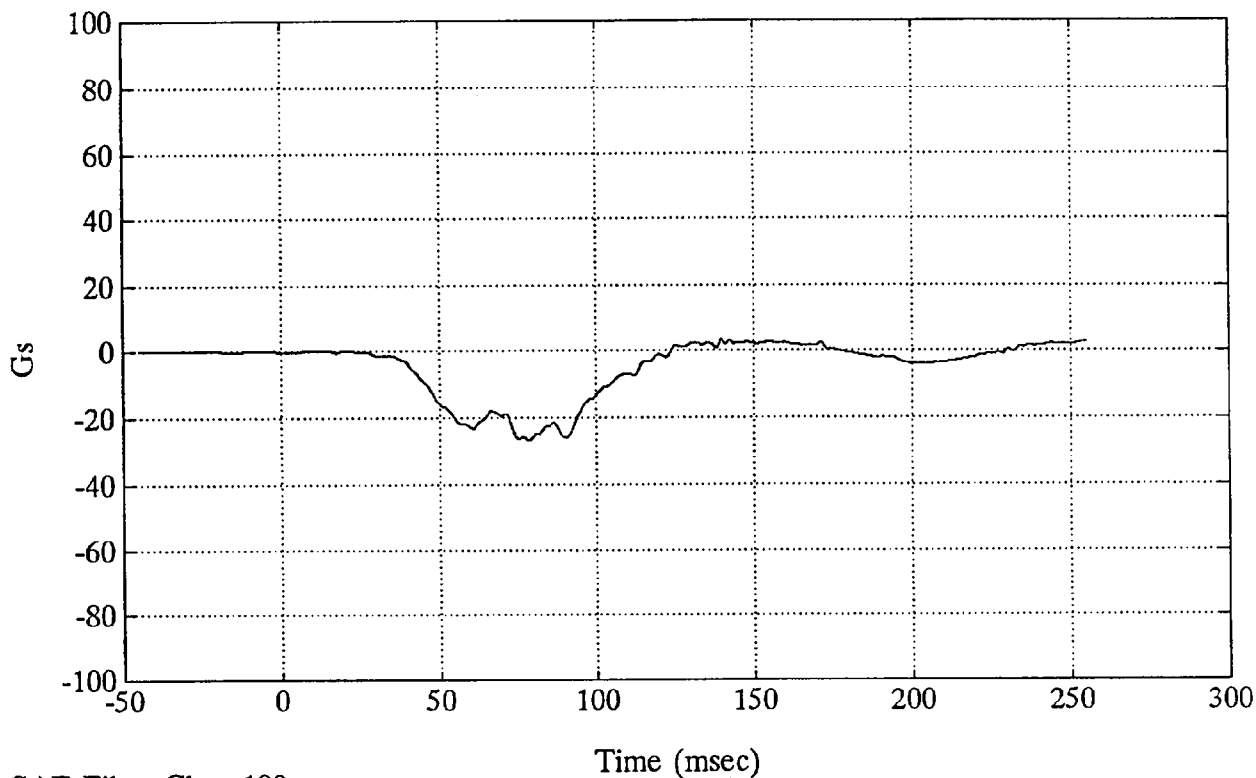


SAE Filter Class 1000

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Chest X

Max = 3.44 Gs @ 139.56 msec
Min = -26.58 Gs @ 78.24 msec

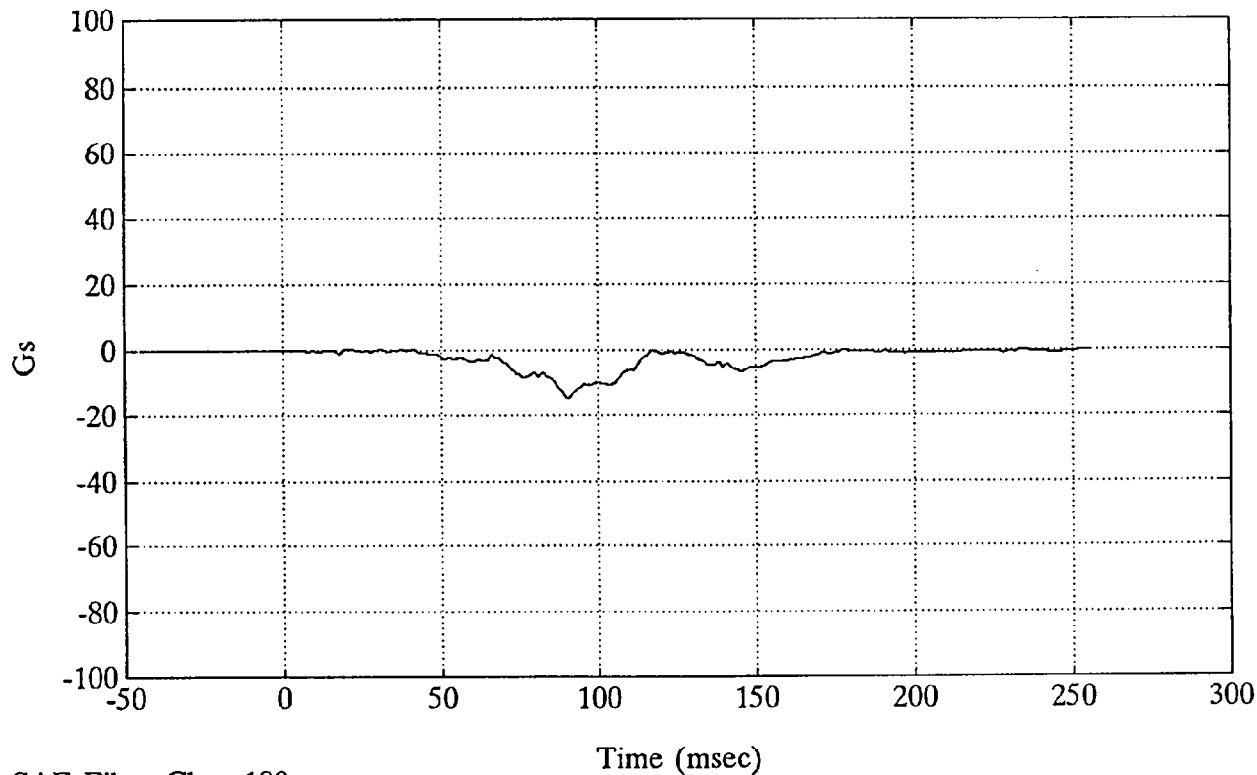


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Chest Y

Max = 0.49 Gs @ 21.36 msec
Min = -14.64 Gs @ 90.24 msec

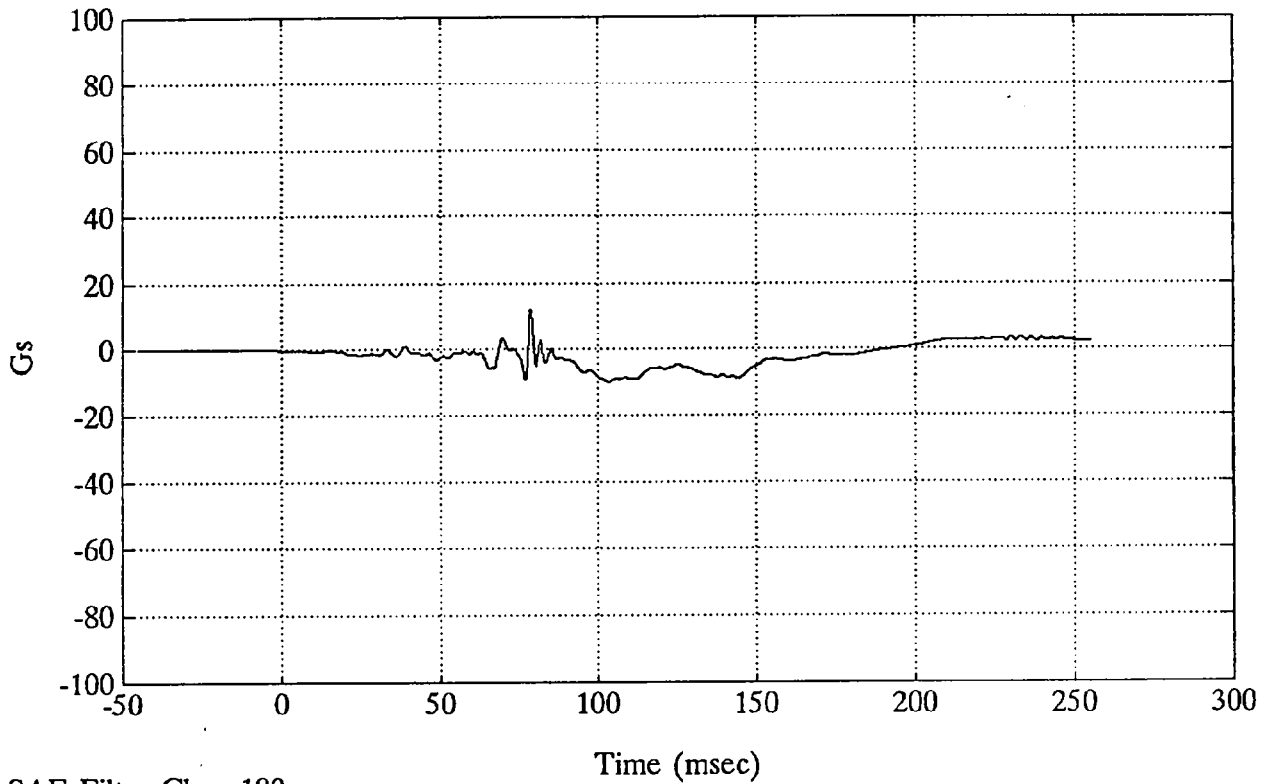


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Chest Z

Max = 12.08 Gs @ 78.72 msec
Min = -9.78 Gs @ 103.32 msec

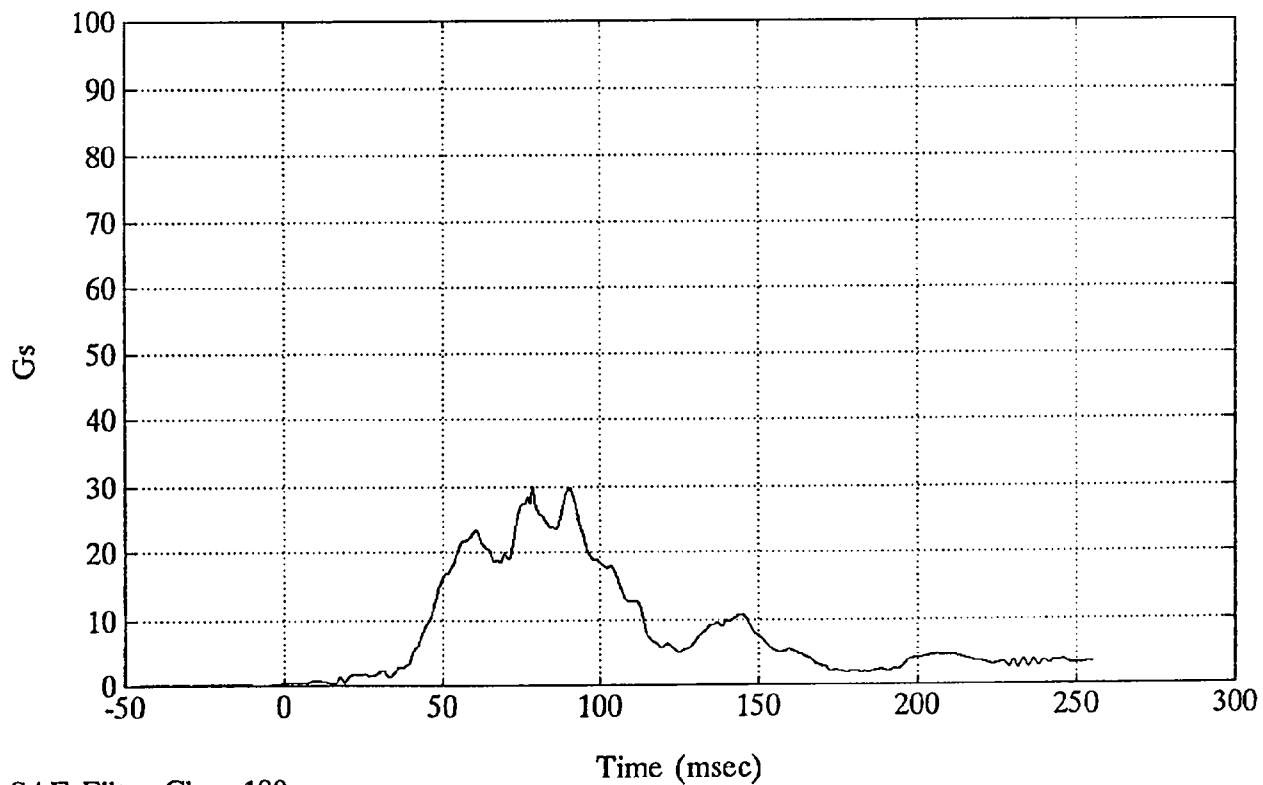


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Chest Resultant

Max = 29.96 Gs @ 78.60 msec
Min = 0.04 Gs @ -6.84 msec

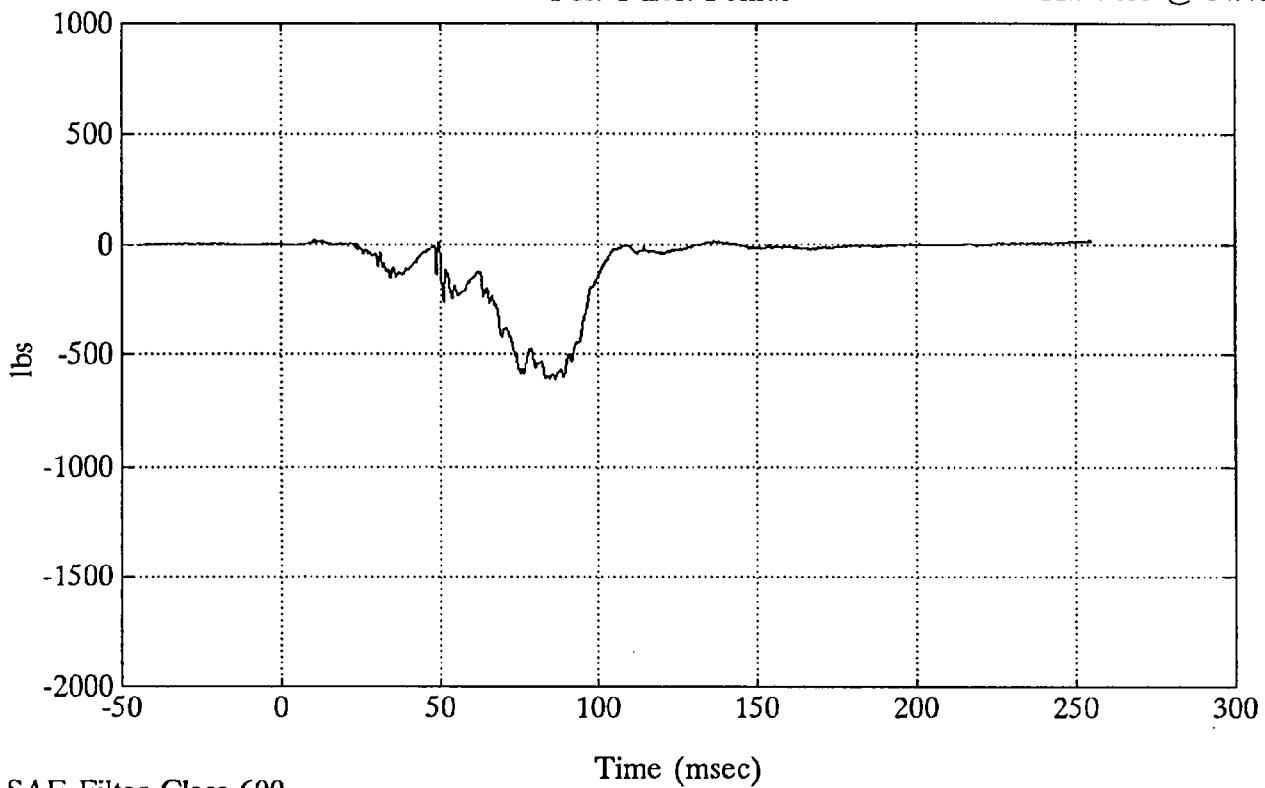


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Left Femur

Max = 18.19 lbs @ 10.56 msec
Min = -611.94 lbs @ 84.48 msec

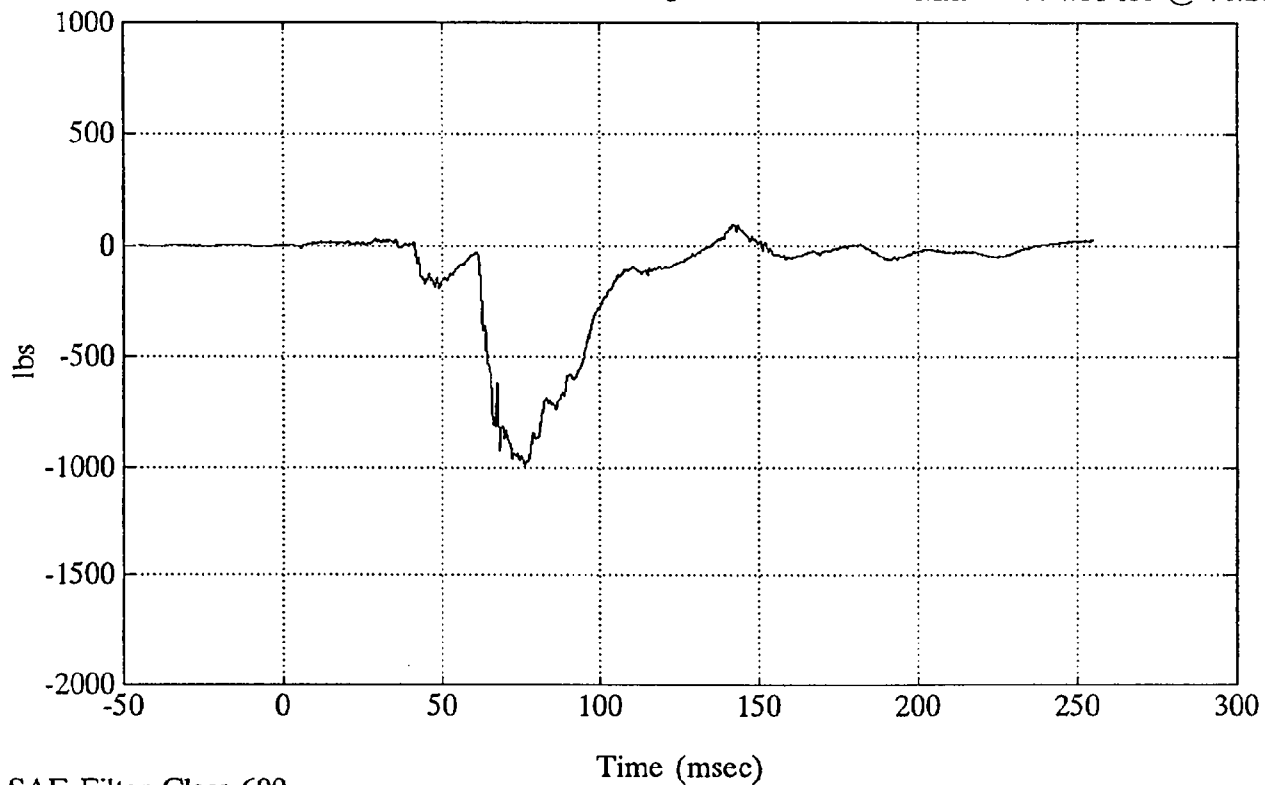


SAE Filter Class 600

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 1 Right Femur

Max = 93.04 lbs @ 142.32 msec
Min = -994.81 lbs @ 76.20 msec

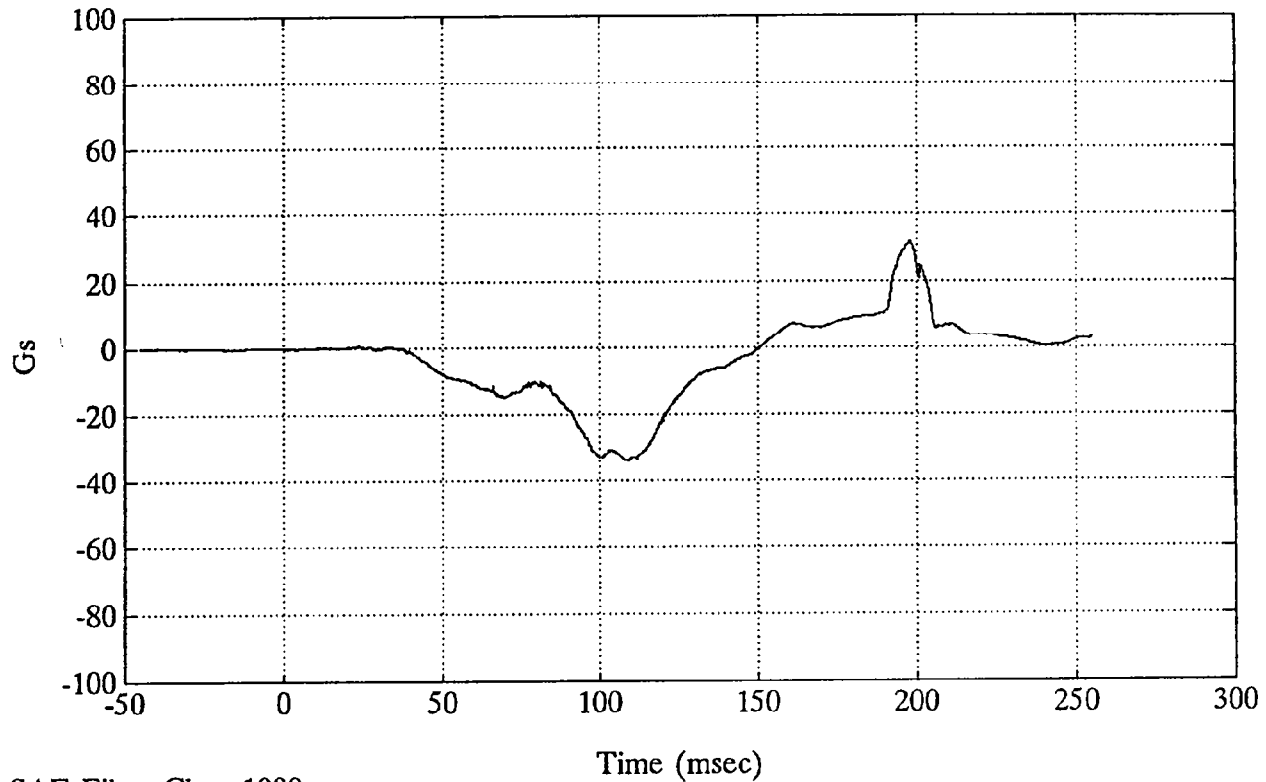


SAE Filter Class 600

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Head X

Max = 31.64 Gs @ 197.88 msec
Min = -33.70 Gs @ 108.84 msec

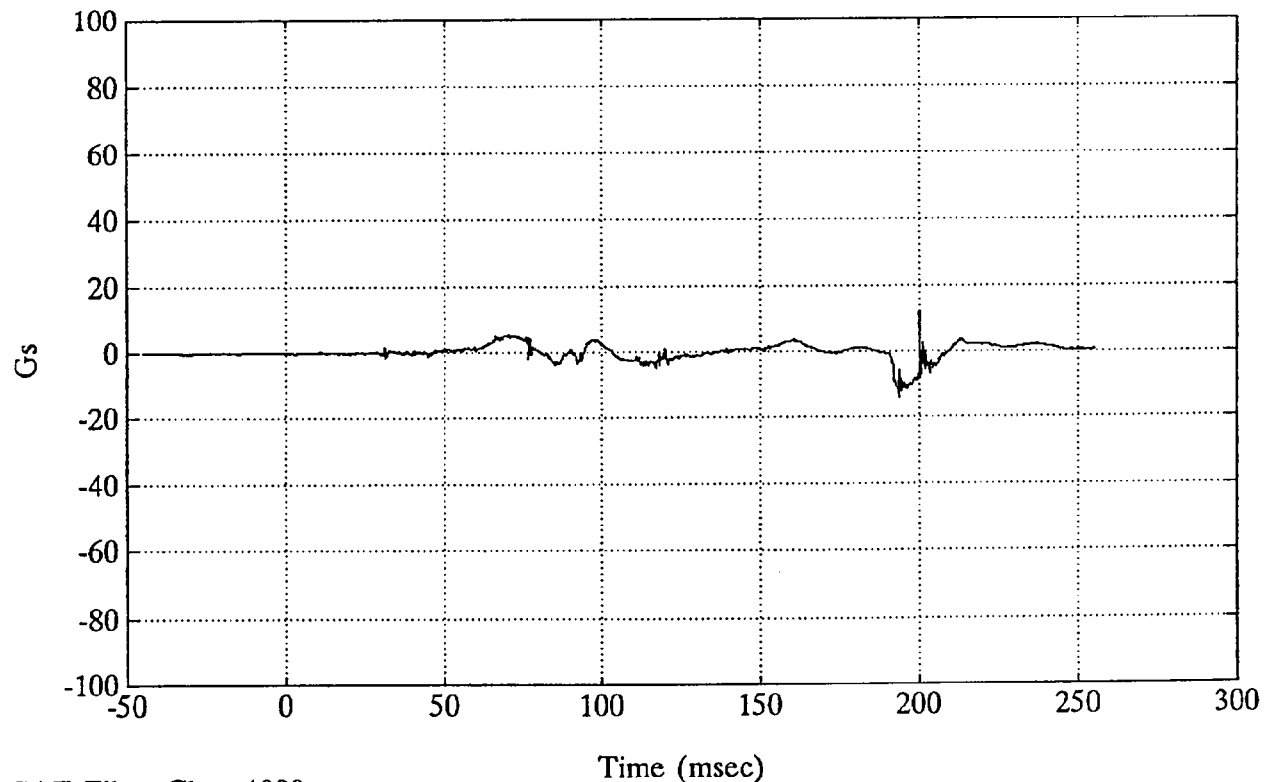


SAE Filter Class 1000

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Head Y

Max = 12.35 Gs @ 199.92 msec
Min = -13.96 Gs @ 193.92 msec

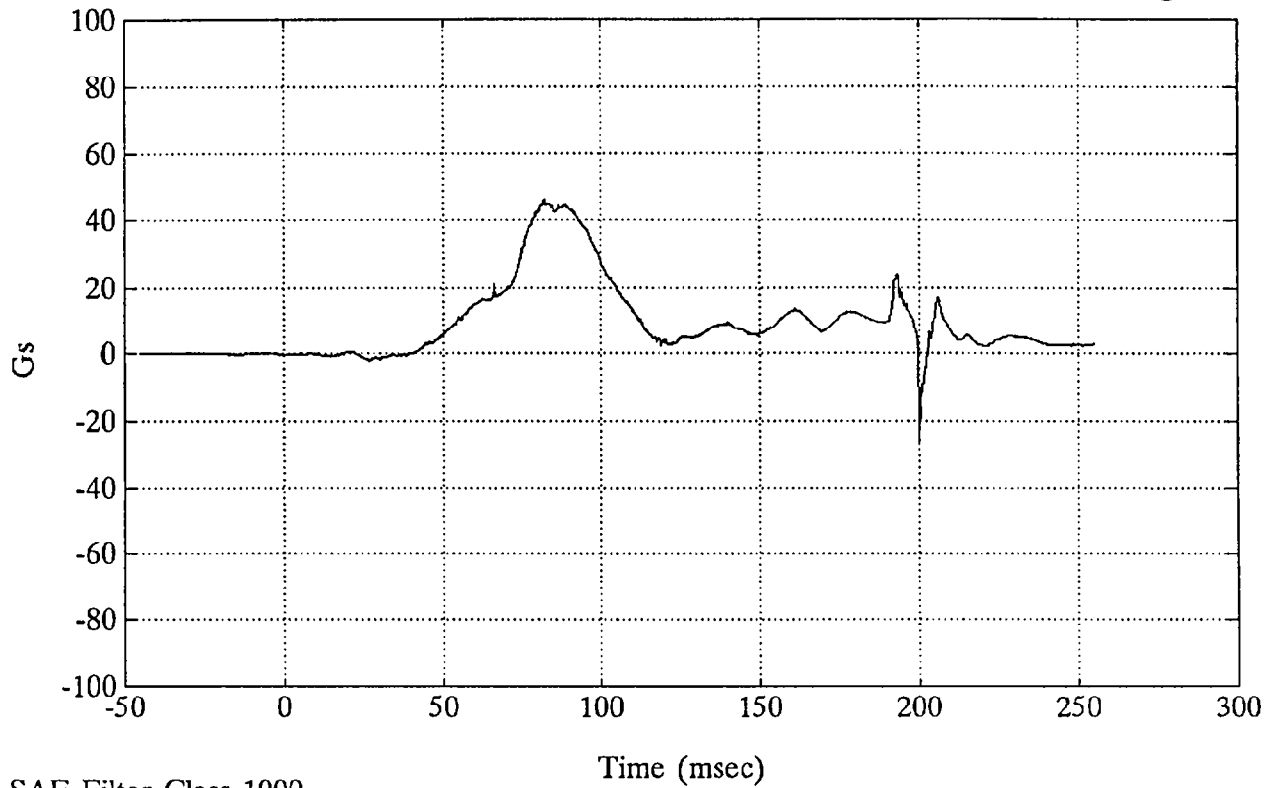


SAE Filter Class 1000

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Head Z

Max = 46.45 Gs @ 82.08 msec
Min = -25.87 Gs @ 199.92 msec

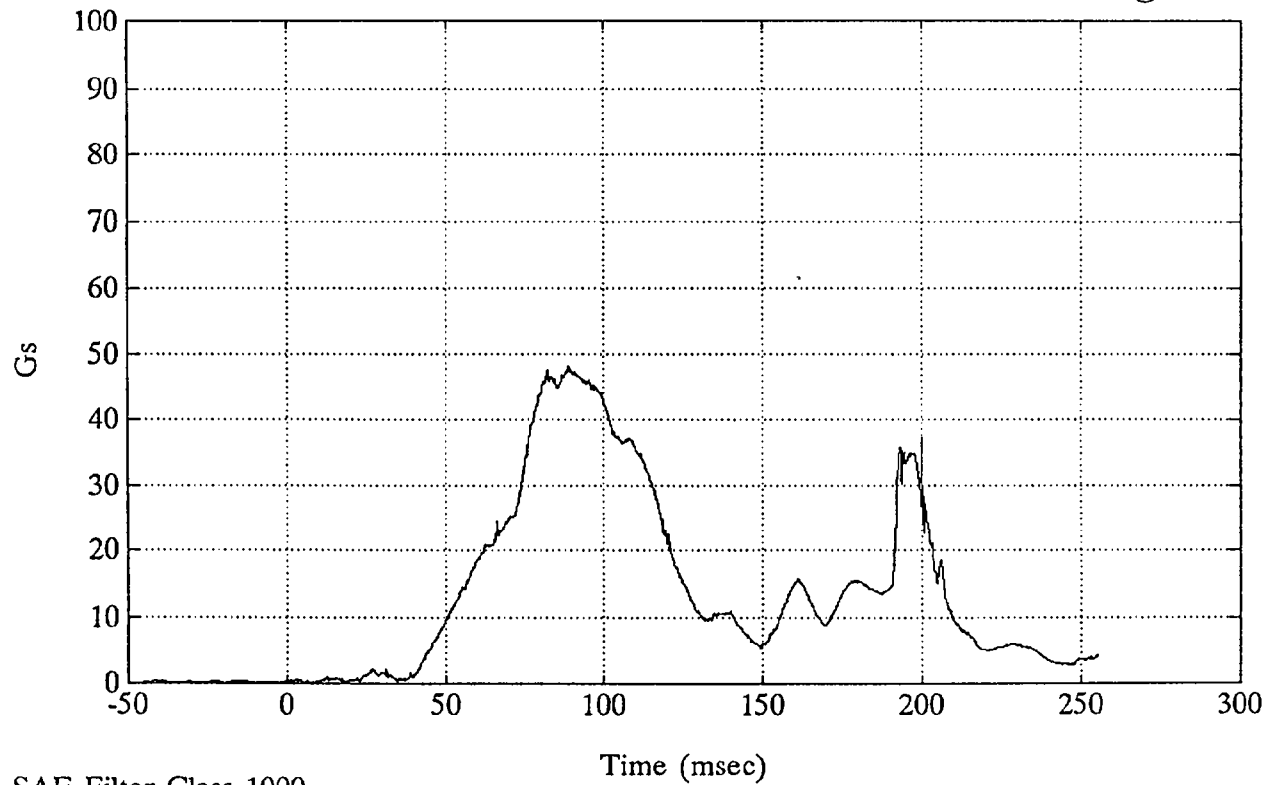


SAE Filter Class 1000

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Head Resultant

Max = 48.20 Gs @ 88.80 msec
Min = 0.05 Gs @ -3.48 msec

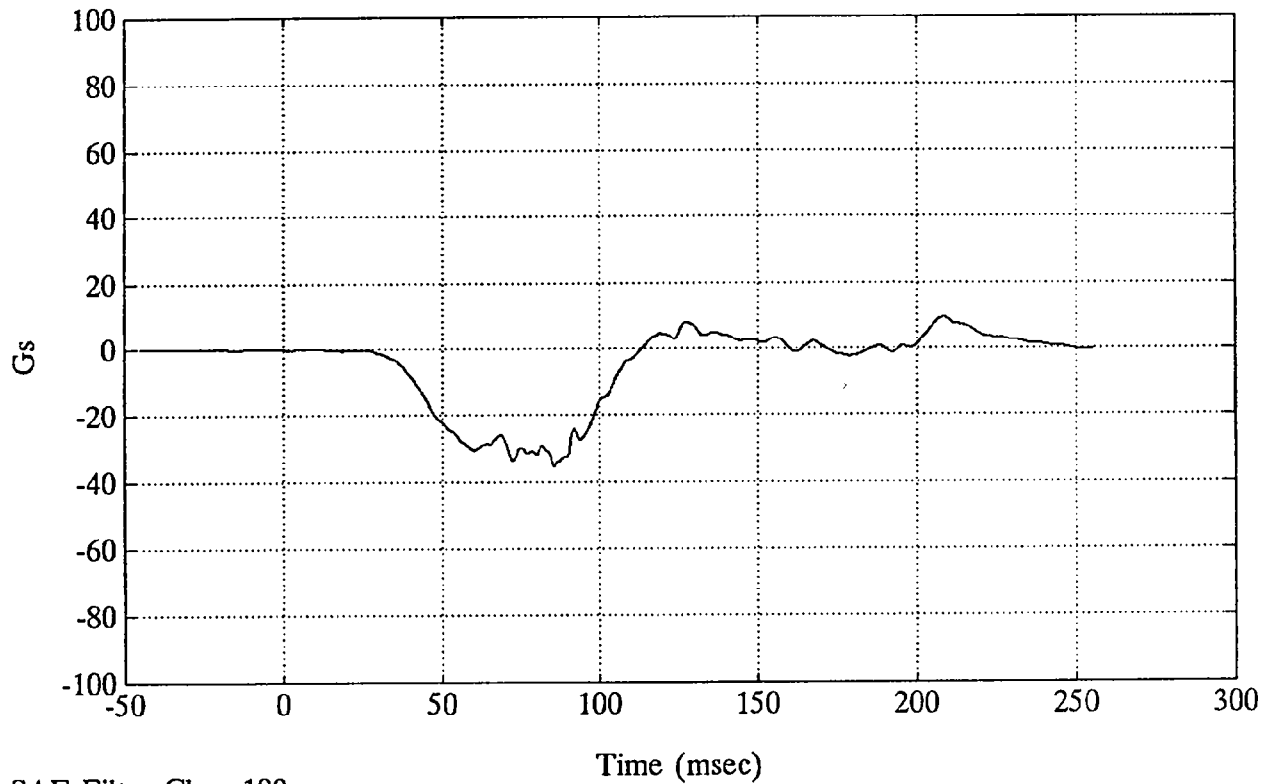


SAE Filter Class 1000

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Chest X

Max = 9.51 Gs @ 208.44 msec
Min = -35.27 Gs @ 85.44 msec

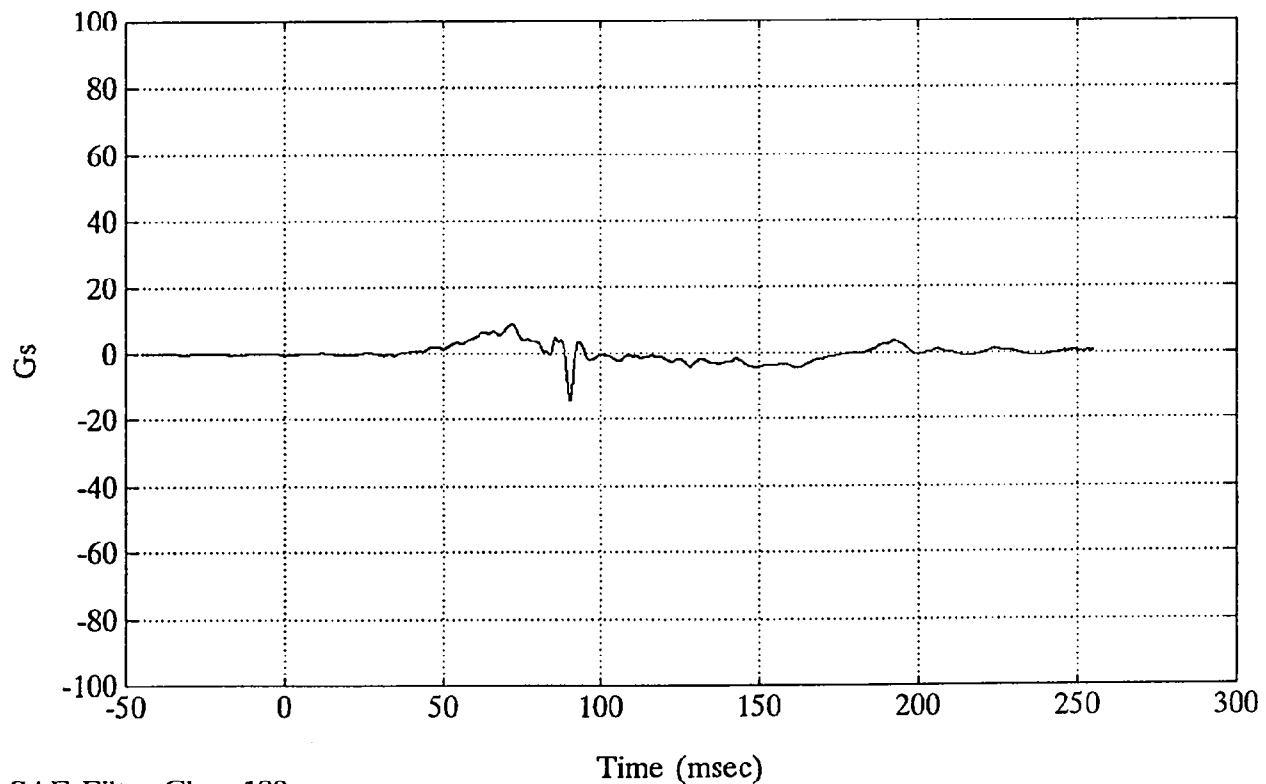


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Chest Y

Max = 8.79 Gs @ 71.76 msec
Min = -13.89 Gs @ 90.12 msec

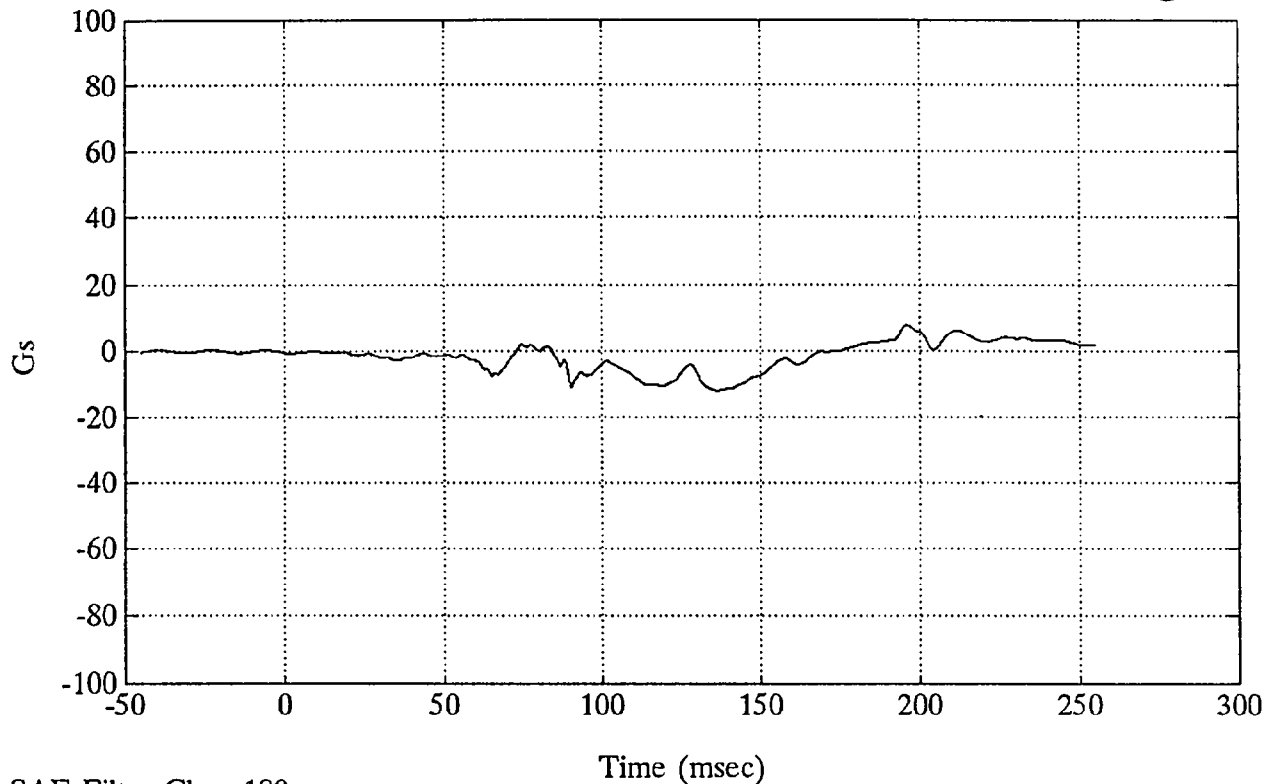


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Chest Z

Max = 7.96 Gs @ 195.60 msec
Min = -11.63 Gs @ 136.32 msec

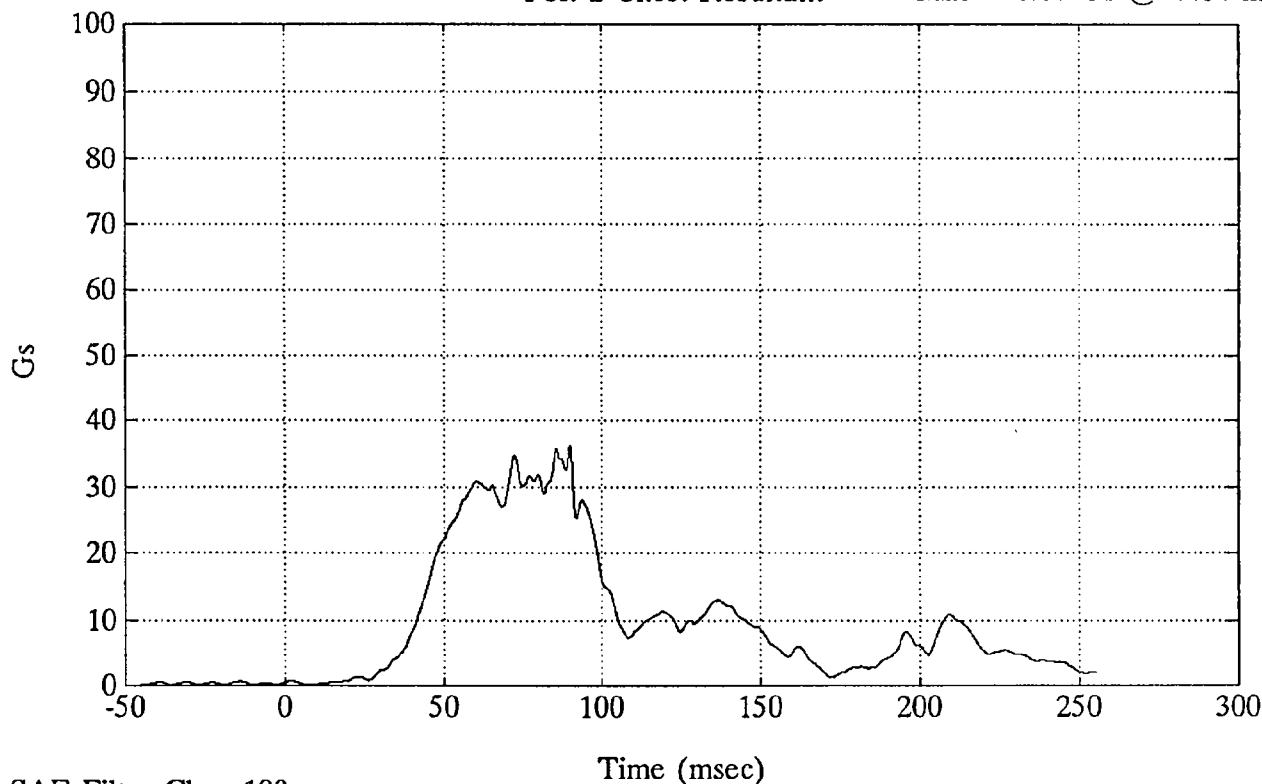


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Chest Resultant

Max = 36.18 Gs @ 89.88 msec
Min = 0.07 Gs @ -9.84 msec

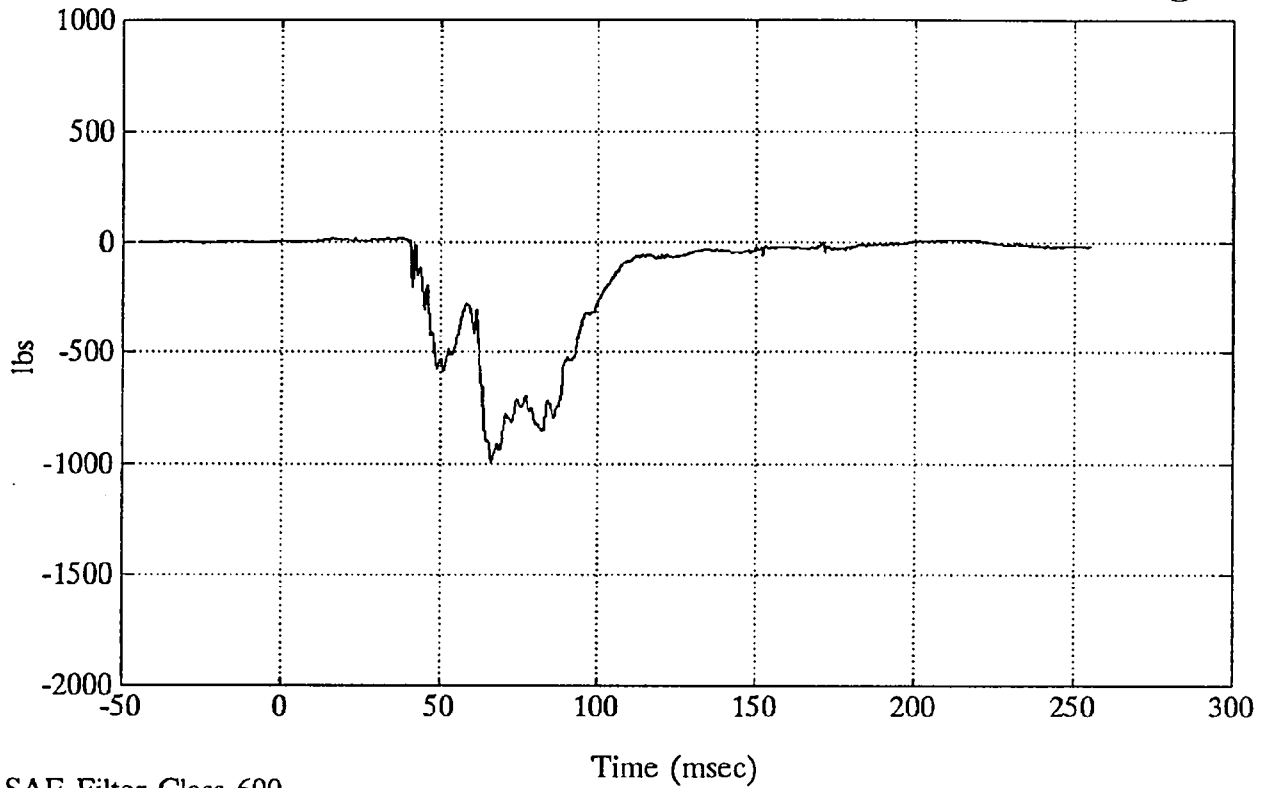


SAE Filter Class 180

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Left Femur

Max = 20.89 lbs @ 33.60 msec
Min = -994.64 lbs @ 66.24 msec

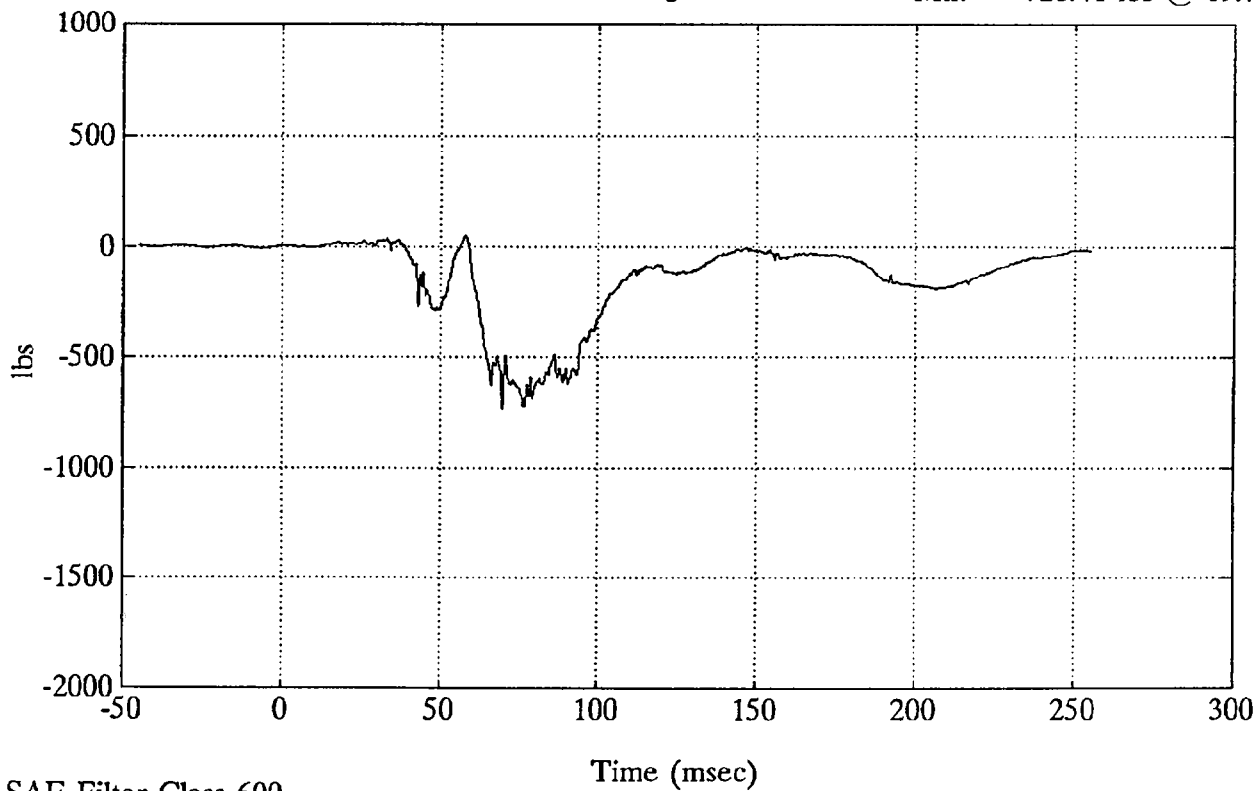


SAE Filter Class 600

FMVSS 208 - 1993 NISSAN 240 SX

Pos. 2 Right Femur

Max = 46.71 lbs @ 58.08 msec
Min = -728.41 lbs @ 69.72 msec



SAE Filter Class 600

Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

SEAT BELTS

PRECAUTIONS ON SEAT BELT USAGE

Your chances of being injured in an accident and/or the severity of injury may be greatly reduced if you are wearing your seat belt and it is properly adjusted. NISSAN strongly encourages you and all of your passengers to buckle up every time you drive.

Some states, provinces or territories require that seat belts be worn at all times when a vehicle is being driven.

WARNING:

- The belt should be adjusted to a snug fit. Slack in the lap-shoulder belt will reduce the effectiveness of the entire restraint system.
- Never wear the belt inside out or twisted.
- Do not allow more than one person to use the same belt.
- All seat belt assemblies including retractors and attaching hardware should be inspected after any collision by your NISSAN dealer. NISSAN recommends 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. Seat belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.

Be sure to observe the following cautions when using seat belts. Failure to do so could increase the chance and/or severity of injury in an accident.

- Always pass the shoulder belt over your shoulder and across your chest. Never run the belt under your arm. Serious injury can occur if seat belt is not worn properly.
- Position the lap belt as low as possible AROUND THE HIPS, NOT THE WAIST.

Infant or small child

Nissan recommends that infants or small children be seated in a child restraint system. You should choose a child restraint system which fits your vehicle and always follow the manufacturer's instructions for installation and use.

Children

Children who are too large for child re-

straint systems should be seated and restrained by the seat belts which are provided.

NISSAN recommends that children sit in the rear seat if available. According to accident statistics, children are safer when properly restrained in the rear seat than in the front seat.

If the child's seating position has a shoulder belt that fits close to the face or neck, the use of a booster seat (commercially available) may help overcome this. The booster seat should raise the child so that the shoulder belt is properly positioned across the top, middle portion of the shoulder and the lap belt is low on the hips. The booster seat should fit the vehicle seat and have a label certifying that it complies with Federal Motor Vehicle Safety Standards or Canadian Motor Vehicle Safety Standards. Once the child has grown so the shoulder belt is no longer on or near the face and neck, use the shoulder belt without the booster seat.

Never let a child stand or kneel on any seat and do not allow a child in the cargo areas while the vehicle is moving.

Pregnant women

Nissan recommends that pregnant women use seat belts. Contact your doctor for specific recommendations. The lap belt should be worn snug and positioned as low as possible around the hips, not the waist.

Injured persons

Nissan recommends that injured persons use seat belts, depending on the injury. Check with your doctor for specific recommendations.

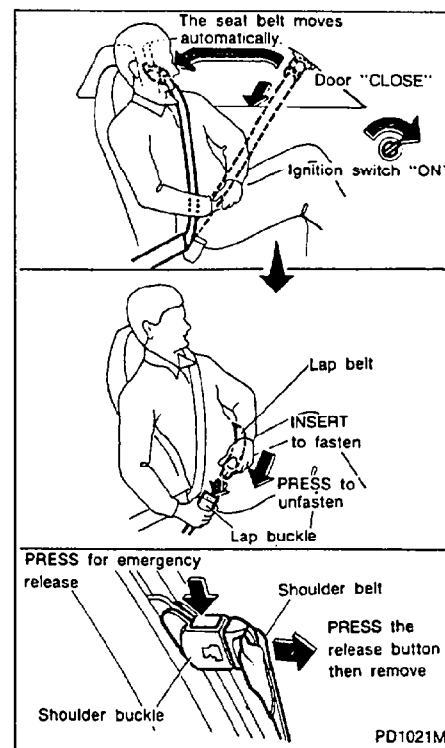
AUTOMATIC SEAT BELT SYSTEM (For U.S.A.)

The Automatic Seat Belt system consists of an automatic shoulder belt and a manual lap belt for the driver and front passenger seat positions. The shoulder belts automatically adjust to the body and seating positions where the door is closed and the ignition key is turned "ON".

WARNING:

- For most effective protection, always fasten the manual lap belt in addition to the automatic shoulder belt.
- To properly operate the automatic seat belt system, the shoulder belt tongue should always remain inserted in the shoulder belt buckle, located in the rail of the door opening.

NISSAN recommends that children be seated in the rear seats. See Precautions on Seat Belt Usage earlier in this Section.



Fastening the belts

1. Open the door and make sure that the shoulder buckle is in the forward position. Then get into the vehicle and close the door.

If the ignition switch is in the "ON" position, the shoulder buckle will move to the rear position when closing the door.

2. Adjust the seat.

The seatback should not be in a reclining position any more than needed for comfort. Seat belts are most effective when the passenger sits well back and straight up in the seat.

3. Turn the ignition switch on. The shoulder buckle will move to the rear position and will fit across your chest. Pull the shoulder belt toward the retractor to take up extra slack.

- Do not touch the door guide rail while the shoulder buckle is moving.
- Do not wear the shoulder belt across the neck or under your outer arm. The shoulder belt should be positioned midway over the shoulder for the most effective protection.

4. Slowly pull the lap belt out of the retractor and insert the tongue into the lap buckle until it snaps. Position the lap belt low on the hips and pull the belt toward the retractor to take up extra slack.

- Do not wear the lap belt across the shoulder belt.
- The retractors are designed to lock during a sudden stop or on impact. A slow pulling motion will permit the belt to move, and allow you some freedom of movement in the seat.

Unfastening the belts

1. To unfasten the lap belt, press the button on the lap buckle. The seat belt will automatically retract.

2. Open the door. The shoulder belt buckle will move to the front position and the shoulder belt will move away from your chest.

- Do not touch the door guide rail while the shoulder buckle is moving.
- Do not unfasten the shoulder belt tongue from the buckle except in emergency. See "Operation in Emergency" later in this Section.

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reaches the rear position.

When the ignition switch is turned on with the door closed;

the chime will sound and the warning light will flicker until the shoulder buckle reaches the rear position. The warning light will come on for several seconds after the shoulder buckle reaches the rear position.

If the shoulder belt tongue is disconnected from the buckle;

when the ignition switch is turned on and the shoulder buckle reaches the rear position, the warning light will come on for about 100 seconds and the chime will sound for about 6 seconds until the shoulder belt is connected to the shoulder buckle. Insert the shoulder belt tongue into the shoulder buckle before driving.

If the driver side lap belt is not fastened;

when the ignition switch is turned on and the shoulder buckle reaches the rear position, the warning light will come on for about 6 seconds and the chime will sound for about 6 seconds until the lap belt is fastened. Fasten the lap belt before driving.

System malfunction

If, when the ignition switch is turned "ON", the seat belt warning light flickers and the chime sounds faster than usual for about 6 seconds, it may indicate a malfunction in the system. Have the system checked by your NISSAN dealer.

Operation in an accident

Emergency release

If you need to release the shoulder belt from the shoulder belt buckle in an emergency, press the buckle marked with "PRESS EMERGENCY". Use this feature only when the shoulder belt keeps you from leaving the vehicle in an accident.

For normal use, the shoulder belt should always be connected to the buckle.

How the automatic shoulder belt works

While the ignition switch is on;

the shoulder buckle will move to the forward position when the door is opened, and it will move to the rear position when the door is closed.

While the ignition switch is off;

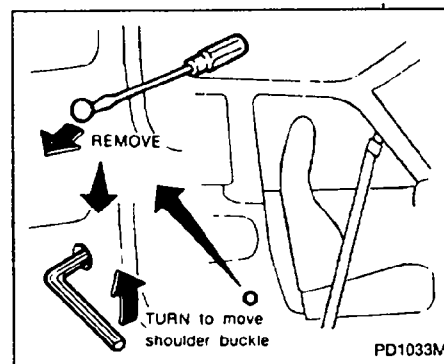
the shoulder buckle will remain or move to the front position when the door is opened, and it will remain in the front position when the door is closed until the ignition switch is turned "ON".

If the shoulder buckle operates abnormally, have the system checked by your NISSAN dealer.

Seat belt warning light "  " and warning chime

When the ignition switch is turned on with the door open (the shoulder buckle is at the front position);

the chime will sound for about 6 seconds, and the warning light will flicker continuously. The warning light will go off when the door is closed and the shoulder buckle



AUTOMATIC SEAT BELT MANUAL OPERATION

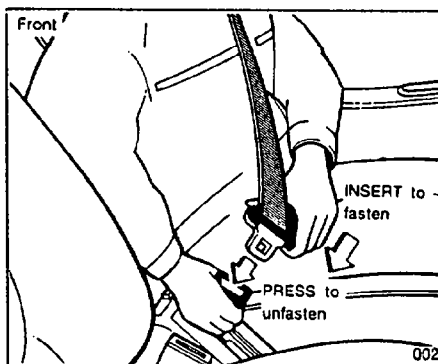
If either shoulder belt buckle does not operate

1. Slide the seat forward as far as possible.
2. Remove the blind cap in the lower portion of the center pillar with a screwdriver. The shaft end of the motor will be visible.

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C-3

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3. Using the wrench supplied in the tool bag, turn the shaft of the motor counter-clockwise to move the shoulder buckle to the rear position.

Have the automatic seat belt system checked and repaired by your NISSAN dealer.

3-POINT TYPE SEAT BELT WITH RETRACTOR

Every person who drives or rides in this vehicle should wear a seat belt at all times.

Fastening the belts

1. Adjust the seat.

The seatback should not be reclined any more than needed for comfort. Seat belts are most effective when the passenger sits well back and straight up in the seat. If the seat is reclined, the risk of sliding under the lap belt and being injured is increased.

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2. Slowly pull the seat belt out of the retractor and insert the tongue into the buckle until it snaps.