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212-CAL-90-05
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VEHICLE SAFETY COMPLIANCE TESTING FOR OCCUPANT CRASH PROTECTION,
WINDSHIELD MOUNTING, WINDSHIELD ZONE INTRUSION (PARTIAL)
AND FUEL SYSTEM INTEGRITY

TOYOTA MOTOR COMPANY
1990 TOYOTA CELICA ST
2-DOOR COUPE

NHTSA NUMBER: CL5103

CALSPAN TEST NUMBER: 7804-5

January 31, 1990

CALSPAN CORPORATION
ADVANCED TECHNOLOGY CENTER
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FINAL REPORT

PREPARED FOR:

U. S. Department of Transportation
National Highway Traffic Safety Administration
Office of Vehicle Safety Compliance
400 Seventh Street, S.W.
Room No. 6115 (NEF-31)
Washington, DC 20590

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16. Abstract A 30 mph vehicle safety compliance test was conducted on a 1990 Toyota Celica ST 2-Door Coupe. This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on January 31, 1990. 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 29.6 mph. The ambient temperature at the impact face was 33°F. The subject test vehicle appears to comply with the requirements of FMVSS Nos. 208, 212, 219 (partial) and 301. <u>Type of Restraint System:</u> The test vehicle was equipped with a driver air bag restraint system and passenger 3-point manual belt safety restraint system. The driver side 3-point manual belt was 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 Copies of this report are available from: Technical Reference Division National Highway Traffic Safety Admin. Nassif Building, Room 5108 400 Seventh St., S.W., Washington, DC 20590		
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Section I
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. DTNH22-88-C-01038. The purpose of this test was to determine if the subject, vehicle, a 1990 Toyota Celica ST 2-Door Coupe, 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-208-07.

Section 2

SUMMARY OF TEST NUMBER CL5103

A frontal barrier was impacted by a 1990 Toyota Celica ST 2-Door Coupe at a velocity of 29.6 mph. The test was performed at the Calspan Corporation Advanced Technology Center on January 31, 1990. 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 572, 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 three 14-channel FM tape recorders. Appendix B contains the vehicle and dummy response data traces.

The driver's HIC was 435. The maximum chest deceleration over 3 milliseconds was 54.9 g's. The maximum force on the driver's left femur was 1692 pounds and 1332 pounds on the right femur.

The right front passenger's HIC was 473. The maximum chest deceleration over 3 milliseconds was 38.0 g's and loads were 710 and 949 pounds on the left and right femurs respectively.

Table 1
CRASH TEST SUMMARY

Vehicle NHTSA No.: CL5103 Test Mode: 30 mph Frontal Barrier

Test Date.: January 31, 1990 Time: 12:35 Temperature: 33°F

Vehicle Make/Model/Body Style: 1990 Toyota Celica ST 2-Door Coupe

Vehicle Test Weight: 2940 lbs.

Vehicle/Barrier Impact Angle: 0°

Impact Velocity: 29.6 mph

Maximum Static Crush: 17.5 "

Vehicle Rebound: 35.9"

<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Type:	<u>Part 572</u>	<u>Part 572</u>
Restraint System:	<u>Air Bag</u>	<u>3-Point Manual</u> <u>Seat Belt Restraint</u>

Number of Data Channels: 23

Number of Cameras: 1 Real Time
14 High Speed

DOOR OPENING DATA: operable - Left Front
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>
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<u>VISIBLE DUMMY CONTACT POINTS:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Head:	<u>air bag, sun visor</u>	<u>chin with chest</u>
Abdomen	<u>air bag</u>	<u>no contact</u>
Chest	<u>air bag</u>	<u>no contact</u>
Knees	<u>dash panel</u>	<u>dash panel</u>

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1990 Toyota Celica ST 2-Door Coupe
 NHTSA No. CL5103 ; VIN: JT2AT86F9L0002395 ; Color: Red
 Engine Data: 4 cylinders; - CID; 1.6 Litres; - cc
 Placement - Longitudinal or In-Line; X Transverse or Lateral
 Transmission Data: 5 speeds; X Manual; - Automatic; - Overdrive
 Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel Drive
 Major Options: - A/C; X Pwr. Strg.; X Pwr. Brakes; - Pwr. Windows
- Power Door Locks
 Date Received: 12-13-89 ; Odometer Reading - miles
 Selling Dealer: Culligan Toyota, Inc.
 & Address 2352 Delaware Avenue, Buffalo, NY 14216

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Toyota Motor Corporation
 Date of Manufacture: 09-89
 GVWR: 3455 lbs.; GAWR: 1980 lbs. FRONT; 1785 lbs. REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load: 30 psi FRONT
29 psi REAR
 Recommended Tire Size: 165SR13 Load Range: Std.
 Recommended Cold Tire Pressure: 30 psi FRONT; 29 psi REAR
 Size of Tires on Test Vehicle: 165SR13 ; Manufacturer: Bridgestone
 Vehicle Capacity Data:
 Type of Front Seats: - Bench; X Bucket; - Split Bench
 Number of Occupants: 2 Front; 2 Rear; 4 Total
 Vehicle Capacity Weight (VCW) = 725 lbs.
 No. of Occupants x 150 lbs. = 600 lbs.
 Rated Cargo/Luggage Weight (RCLW) = 125 lbs. (Difference)

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

Right Front = 780 lbs. Right Rear = 430 lbs.
 Left Front = 800 lbs. Left Rear = 470 lbs.
 TOTAL FRONT = 1580 lbs. TOTAL REAR = 900 lbs.
 % of Total Vehicle Weight = 64% % of Total Weight = 36%
 TOTAL DELIVERED WEIGHT = 2480 lbs.

Table 2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 2480 lbs.
 Rated Cargo/Luggage Weight (RCLW) = 125 lbs.
 Weight of 2 P.572 Dummies @ 164 ea. = 328 lbs.
 TARGET TEST WEIGHT = 2933 lbs. (sum)

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

Right Front = 900 lbs. Right Rear = 610 lbs.
 Left Front = 850 lbs. Left Rear = 580 lbs.
 TOTAL FRONT = 1720 lbs. TOTAL REAR = 1190 lbs.
 % of Total Weight = 60 % % of Total Weight = 40 %
 TOTAL TEST WEIGHT = 2940 lbs.
 Weight of Ballast Secured in Vehicle Trunk Area = 0 lbs.
 Vehicle Components Removed for Weight Reduction -

VEHICLE ATTITUDE (all dimensions in inches):

AS DELIVERED: RF 26.3 LF 26.5 RR 26.2 LR 26.1
 FULLY LOADED: RF 24.9 LF 24.8 RR 24.0 LR 23.9
 AS TESTED: RF 25.7 LF 25.6 RR 24.6 LR 24.7
 Vehicle's Wheel Base: 99.7 in.
 Location of Vehicle's C.G.: 40.4 inches from front wheel center

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 15.9 gallons
 Usable Capacity Figure Furnished by COTR = 15.6 gallons
 Test Volume Range (92 to 94% of Usable Capacity) = 14.3 to 14.7 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: January 31, 1990 Time: 12:35 Temperature: 33°F
 Vehicle NHTSA No.: CL5103
 Required Impact Velocity Range: 28.9 to 29.9 mph

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

Trap No. 1 = 29.6 mph; Trap No. 2 = 29.6 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 = 172.9 "; C/L = 175.8 "; Left = 172.6 "
 Post-Test Right = 159.9 "; C/L = 158.3 "; Left = 160.3 "
 ** Crush Right = 13.0 "; C/L = 17.5 "; Left = 12.3 "
 AVERAGE = 14.3 inches

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

Right = 35.8 "; C/L = 35.9 "; Left = 35.9 "
 AVERAGE = 35.9 inches

DOOR OPENING:

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

SEAT MOVEMENT:

	Seat Back Failure	Seat Shift
Front	<u>None</u>	<u>0.0</u>
Rear	<u>-</u>	<u>-</u>

Table 3

POST IMPACT DATA (cont.)

GLAZING DAMAGE: None.

OTHER NOTABLE IMPACT FEATURES: None.

Section 3
OCCUPANT AND VEHICLE DATA

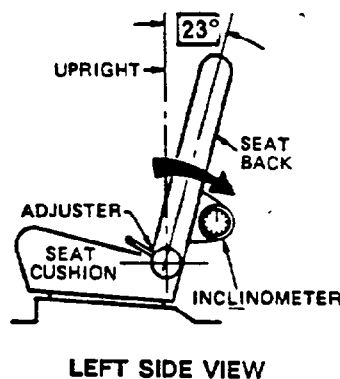
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year: 1990 Vehicle Model: Toyota Celica ST Body Style: 2-Door Coupe

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



Seat back angle for driver's seat 23°

Measurement instructions: Seat back reclined to the second notch rearward from the most upright position.

Seat back angle for passenger's seat 22.5°

Measurement instructions: Seat back reclined to the fifth notch rearward from the most upright position.

2. Seat Fore and Aft Positioning

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, provide information to locate the detent in which the seat track is to be locked.

Positioning of the driver's seat: Seat placed in mid position (9th detent of 17 total detents).

Positioning of the passenger's seat (if applicable): Seat placed at 9th detent of 16 total detents.

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 15.6 gallons

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

Additional Instructions: None.

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION

Test No.: CL5103 Vehicle: 1990 Toyota Celica ST 2-Door Coupe

SEAT TYPE:

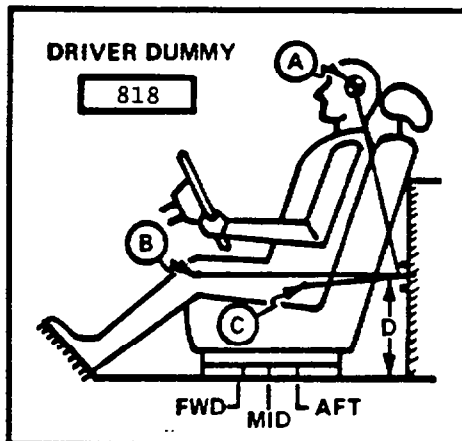
- Bench
X Bucket
- Split Bench

ADJUSTER TYPE:

X Manual
- Power

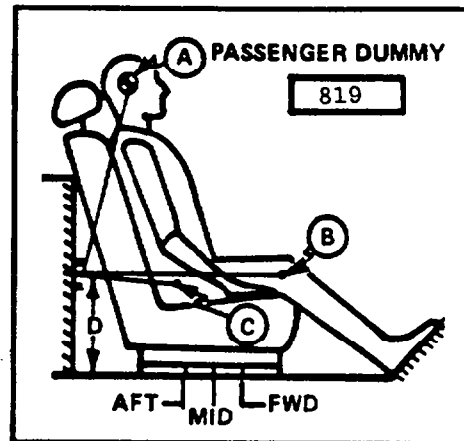
SEAT BACK TYPE:

- Fixed
X Adjustable Reclining



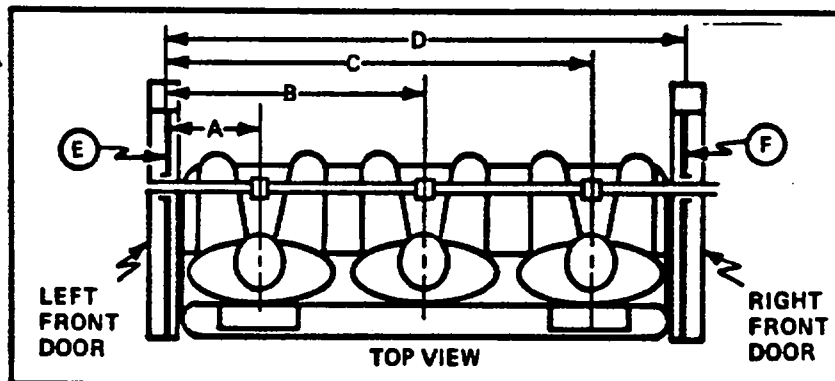
MEASUREMENT LOCATION

- A - Head Target
- B - Knee Joint
- C - Approximate 'H' Point
- D - Sill to Reference Point



A = 18.2 in. 32 Degrees
B = 30.8 in. 102 Degrees
C = 18.6 in. 126 Degrees
D = 15.6 in.

A = 19.0 in. 25 Degrees
B = 32.0 in. 102 Degrees
C = 17.8 in. 125 Degrees
D = 15.6 in.



S/N 818

DUMMY ID

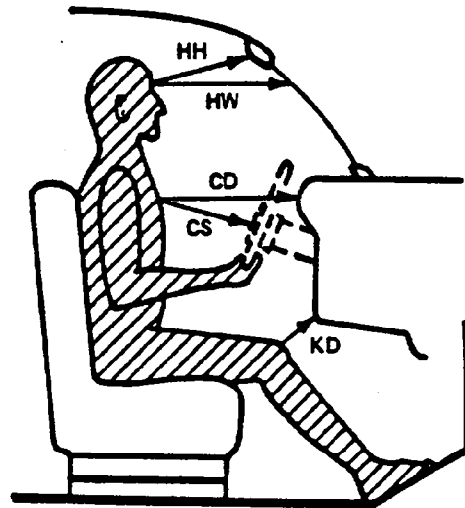
819

A = Left Door to Driver Centerline 11.8 in.
B = Left Door to Center Passenger Centerline - in.
C = Left Door to Right Passenger Centerline 37.9 in.
D = Left Door to Right Door 49.7 in.
E, F = Window Glass Height (Right and Left Must Be Equal) 8.0 in.

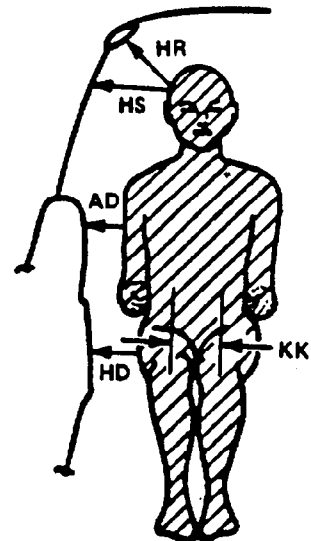
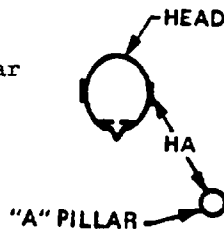
Figure 3

OCCUPANT CLEARANCE DIMENSIONS

	DRIVER	PASSENGER
HH	14.6	14.7
HW	20.3	20.0
CD	22.6	23.5
CS	14.0	—
KDL	6.4	7.5
KDR	6.3	7.3
SA	See Note	See Note
TA	23°	23°



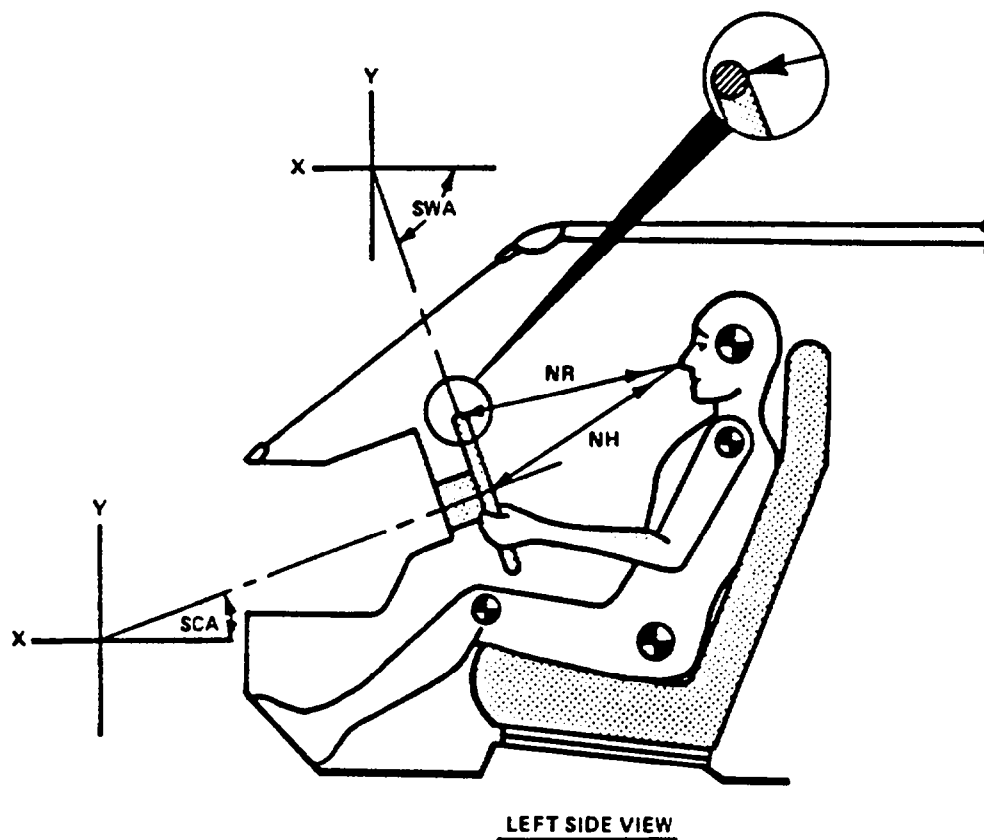
HH = Head to Windshield Header
 HW = Head to Windshield
 CD = Chest to Dash
 CS = Chest to Steering Wheel
 KD(L/R) = Knee to Dash (Left/Right)
 SA = Seat Back Angle
 TA = Torso Angle
 HA = Head Target to "A" Pillar
 HR = Head to Side Roof
 HS = Head to Side Window
 AD = Arm to Door
 HD = Hip to Door
 KK = Knee to Knee



	DRIVER	PASSENGER
HR	4.9	4.9
HS	8.7	8.9
AD	3.3	3.8
HD	7.5	7.7
KK	9.3	7.6
HA	19.5	19.5

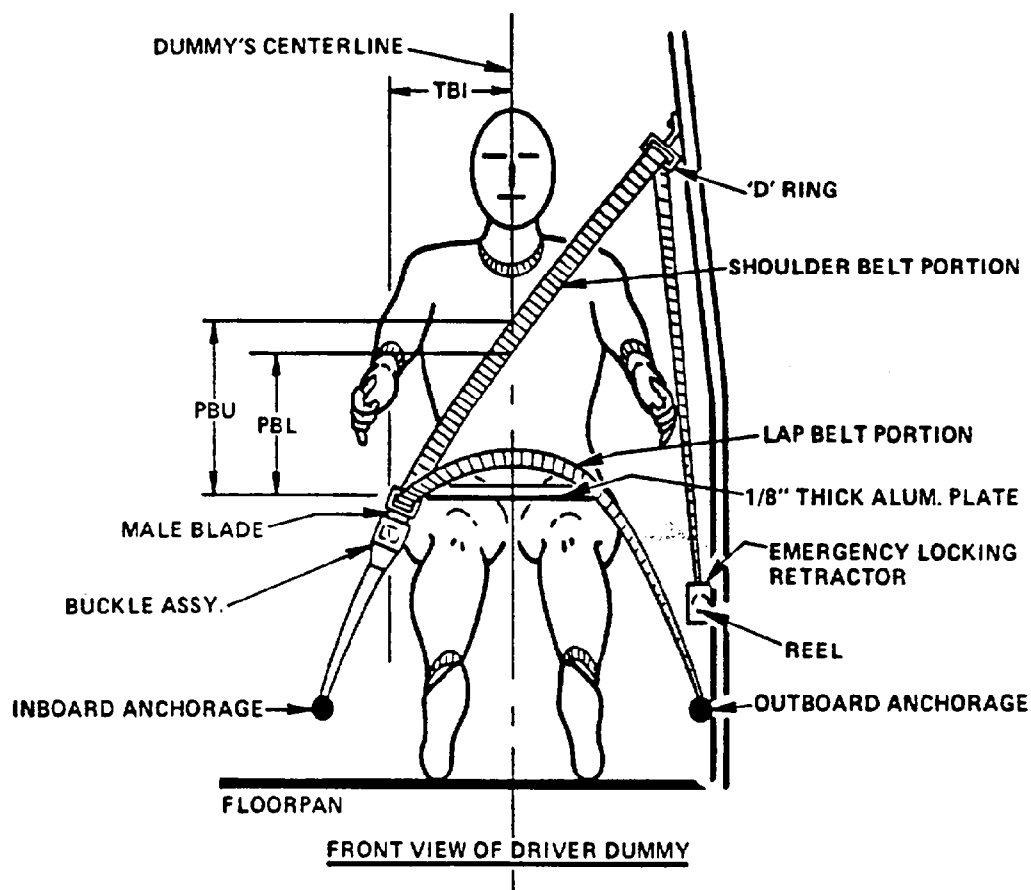
Note: Seat back angle was positioned as specified by manufacturer.

Figure 4
DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSY. REFERENCE DIMENSIONS



		MEASUREMENTS	
<u>NR</u>	-- Distance from tip of dummy's nose to Top Rear surface of steering wheel rim	18.0	Inches
<u>NH</u>	-- Distance from tip of dummy's nose to center of steering column hub	18.7	Inches
<u>SCA</u>	-- Angle of steering column relative to the horizontal X axis	20.0	Degrees
<u>SWA</u>	-- Angle of steering wheel relative to the horizontal X axis	-70.0	Degrees

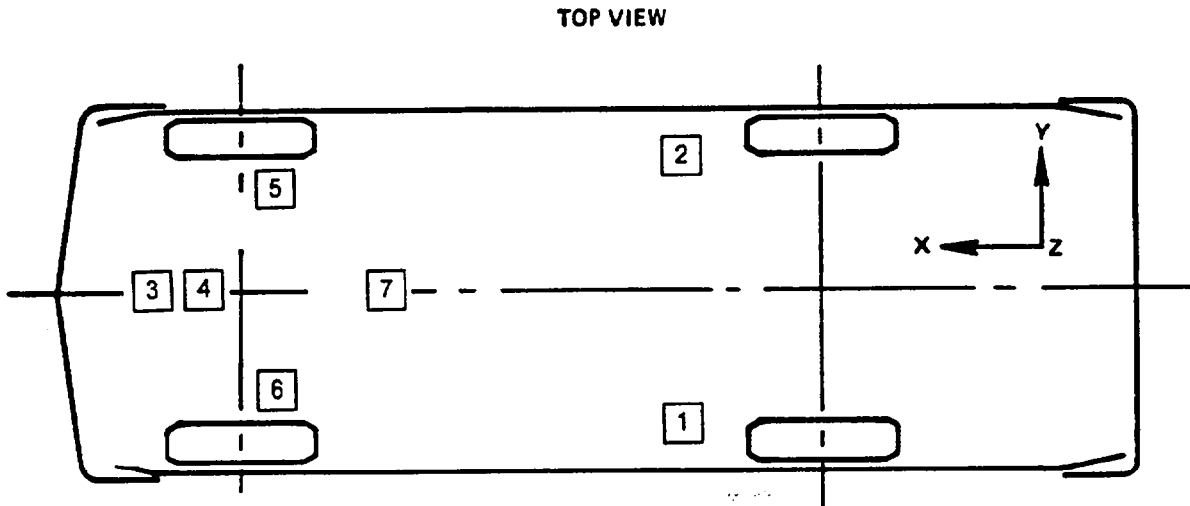
Figure 5
SEAT BELT POSITIONING DATA



	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
<u>PBU</u> -- Top surface of alum. plate to upper edge	*	12.1
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	*	15.2
<u>TBI</u> -- Distance from torso centerline to buckle	*	8.9

*Driver side equipped with airbag, seat belt not used.

Figure 6
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 4

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:	62.5	17.0	14.9				
		POST:	62.5	17.0	15.0				
	LONGITUDINAL ACCELERATION					2	127	-32	48
2	REAR SEAT X-MEMBER AT RIGHT SIDE	PRE:	62.4	-17.0	14.9				
		POST:	62.4	-17.0	15.0				
	LONGITUDINAL ACCELERATION					2	128	-28	65
3	TOP OF ENGINE BLOCK	PRE:	143.5	-5.5	30.6				
		POST:	139.6	-5.2	30.1				
	LONGITUDINAL ACCELERATION					23	58	-74	39
4	BOTTOM OF ENGINE	PRE:	142.8	-15.0	10.3				
		POST:	141.7	-14.7	10.1				
	LONGITUDINAL ACCELERATION					34	57	-75	39
5	BRAKE CALIPER AT RIGHT SIDE	PRE:	134.3	21.5	20.9				
		POST:	133.9	21.2	20.8				
	LONGITUDINAL ACCELERATION					15	20	-71	52
6	BRAKE CALIPER AT LEFT SIDE	PRE:	134.8	23.0	21.3				
		POST:	134.0	23.1	21.3				
	LONGITUDINAL ACCELERATION					5	110	-45	46
7	DASH PANEL	PRE:	105.6	-3.5	24.3				
		POST:	105.3	-3.2	24.0				
	LONGITUDINAL ACCELERATION					19	24	-44	60

*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 7
CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 5.

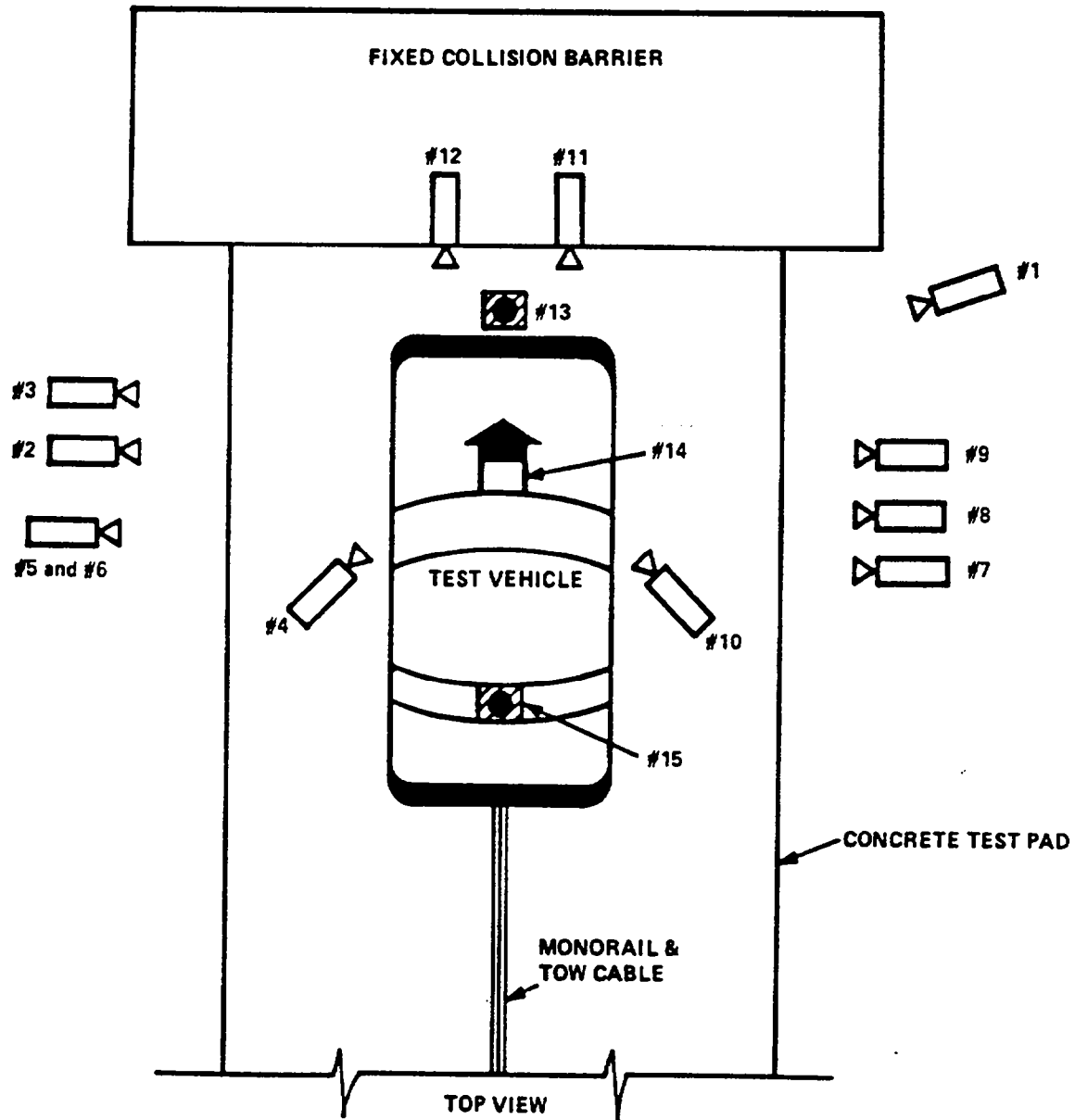
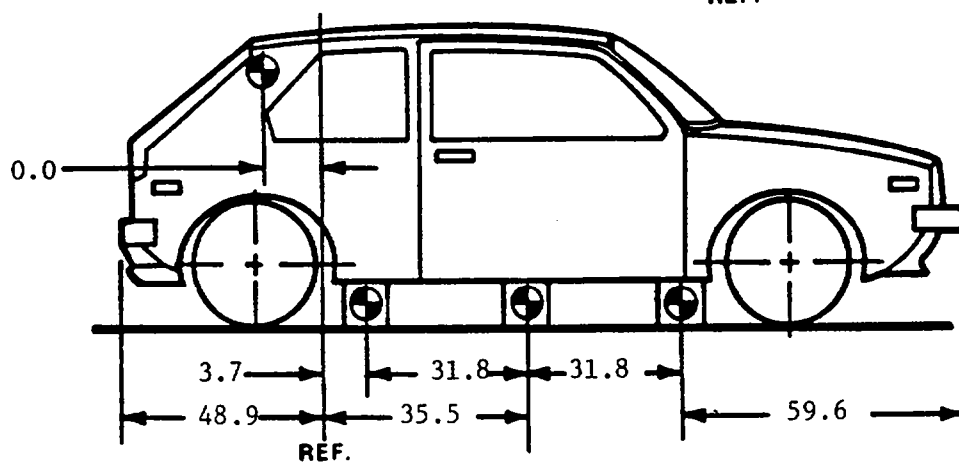


Table 5
HIGH-SPEED CAMERA LOCATIONS

Test No. CL5103		Vehicle: 1990 Toyota Celica ST 2-Door Coupe						
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	224.0	56.0	41.0	-2.0	207.6	13	540
3	Left Side View	315.0	26.0	41.0	-3.0	298.6	25	540
4	Driver and Interior View	107.0	114.0	74.0	-22.0	-	13	750
5	Steering Column (Bottom)	289.0	75.0	45.0	-5.0	272.6	25	570
6	Steering Column (Top)	288.0	75.0	70.0	-9.0	271.6	25	570
7	Overall Right Side	230.0	73.0	41.0	-6.0	213.6	13	810
8	Right Side View	319.0	53.0	42.0	-2.0	302.6	25	700
9	Right Passenger View	307.0	82.0	56.0	-4.0	290.6	35	650
10	Passenger and Interior View	101.0	113.0	74.0	-23.0	-	13	615
11	Passenger Front View	24.0	17.0	77.0	-45.0	-	13	570
12	Driver Front View	24.0	17.0	77.0	-43.0	-	13	540
13	Windshield View	0.0	0.0	130.0	-47.0	-	25	500
14	Pit View of Engine	0.0	36.0	-120.0	90.0	-	13	800
15	Pit View of Fuel Tank	0.0	91.0	-120.0	90.0	-	13	700

*X = film plane to monorail centerline
 Y = film plane to impact location
 Z = film plan to ground
 ** = referenced to horizontal plane
 *** = timing marks not available



7804-5

Figure 9
TEST VEHICLE MEASUREMENTS

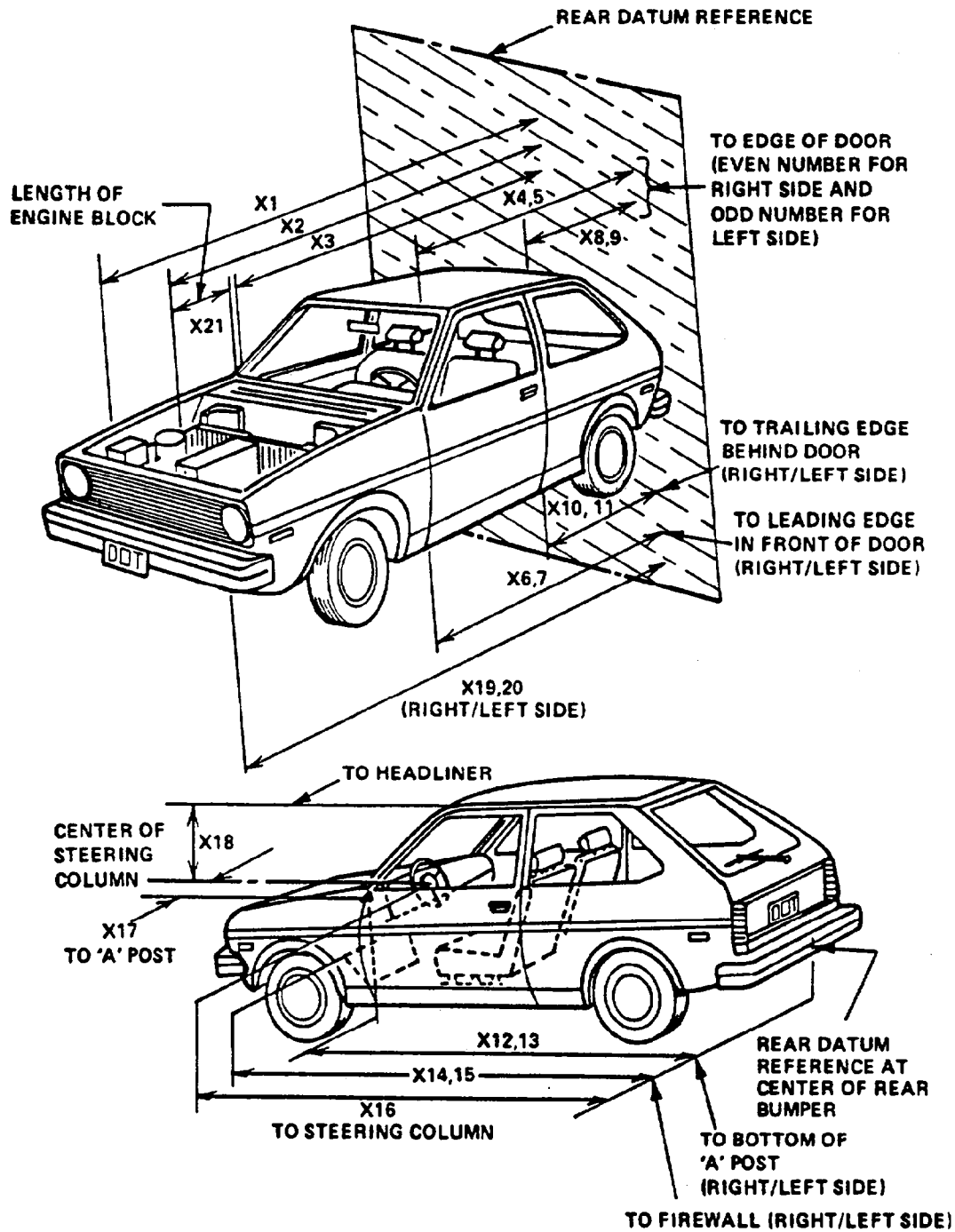


Table 6
VEHICLE MEASUREMENTS

No.		All Dimensions in Inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	175.8	158.3	17.5
X2	Rear Surface of Vehicle to Front of Engine	148.2	146.1	2.1
X3	Rear Surface of Vehicle to Firewall	126.7	126.6	0.1
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	112.3	112.9	-0.6
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	112.7	115.0	-2.3
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	114.9	114.9	0.0
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	114.8	115.1	-0.3
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	69.2	68.9	0.3
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	68.9	69.3	-0.4
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	67.6	67.6	0.0
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	67.5	67.6	-0.1
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	115.3	115.0	0.3
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	115.6	115.4	0.2
X14	Rear Surface of Vehicle to Firewall, Right Side	129.0	124.5	4.5
X15	Rear Surface of Vehicle to Firewall, Left Side	128.7	124.0	4.7
X16	Rear Surface of Vehicle to Steering Column	99.0	99.8	-0.8
X17	Center of Steering Column to "A" Post	16.3	16.4	-0.1
X18	Center of Steering Column to Headliner	15.5	15.7	-0.2
X19	Rear Surface of Vehicle to Right Side of Front Bumper	172.9	159.9	13.0
X20	Rear Surface of Vehicle to Left Side of Front Bumper	172.6	160.3	12.3
X21	Length of Engine Block	14.0	14.0	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 7

DUMMY INJURY CRITERIA VALUESNHTSA No.: CL5103Vehicle: 1990 Toyota Celica ST 2-Door Coupe

	MAXIMUM HEAD ACCELERATION (g's)							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
Dummy (1)	-58	40	17	60	-57	10	-16	54.9
Dummy (2)	-31	13	55	57	-40	22	-17	38.0

	MAXIMUM FORCE - FEMUR LOAD (lbs.)	
	LEFT FEMUR	RIGHT FEMUR
Dummy (1)	1692	1332
Dummy (2)	710	949

	HEAD INJURY CRITERIA**			
	HIC	36 millisecond Maximum		Avg. Acc. (g) t ₁ TO t ₂
		t ₁ (SEC)	t ₂ (SEC)	
Dummy (1)	435	.06367	.09967	43.0
Dummy (2)	473	.07050	.10650	44.4

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

Table 8

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 = 6.4 sec.

Log time duration of reminder light operation = 6.4 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 = 0.0 sec.

(audible warning should not operate)

Log time duration of reminder light operation = 6.4 sec.

Note wording of visual warning:

Fasten Seat Belt -

Fasten Belt -

Symbol 101-80 X

Table 9

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: driver sun visor

1.) The manufacturer's recommended schedule is to service:

after ten years from the data of manufacture noted on the certification label and every two years thereafter, this systems requires periodic maintenance by a "Toyota" dealer or qualified service shop.

2.) See your owner's manual for "SRS airbag" information on system function and maintenance.

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 systems? YES X NO

Table 10

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:

lower left 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 11

FMVSS NO. 208 - COMFORT AND CONVENIENCE TEST SUMMARY

Test Vehicle NHTSA No.: CL5103
 Make/Model: 1990 Toyota Celica 2-Door Coupe
 Date of Comfort/Convenience Check: January 29, 1990
 Technician Performing Check: VMP
 GVWR: 3455 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.

**Manual seat belt was used only on passenger dummy. Driver position equipped with an air bag.

Table 11 (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

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

Table 11 (cont.)

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 for is 0.6 pounds. Contact the COTR if the contact force exceeds 0.7 pounds.

Figure 10

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA SHEET

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

Windshield is bonded in place with .75" rubber trim on upper and side of windshield. Bottom of windshield is covered with plastic trim.

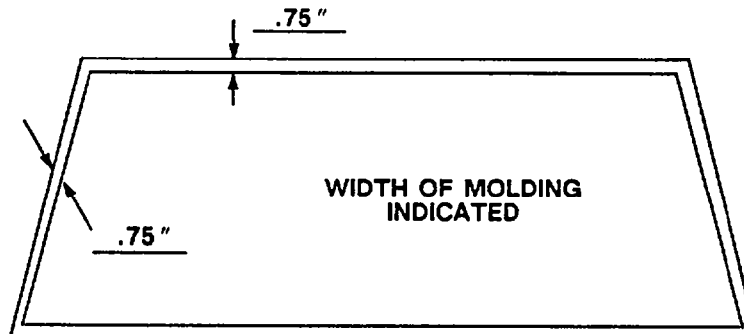
FMVSS 212 REQUIREMENTS:

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	76.3	76.3	100%
LEFT SIDE	76.3	76.3	100%
TOTAL	152.6	152.6	100%

AREA OF RETENTION FAILURE:



FRONT VIEW

FAILURE DETAILS: None.

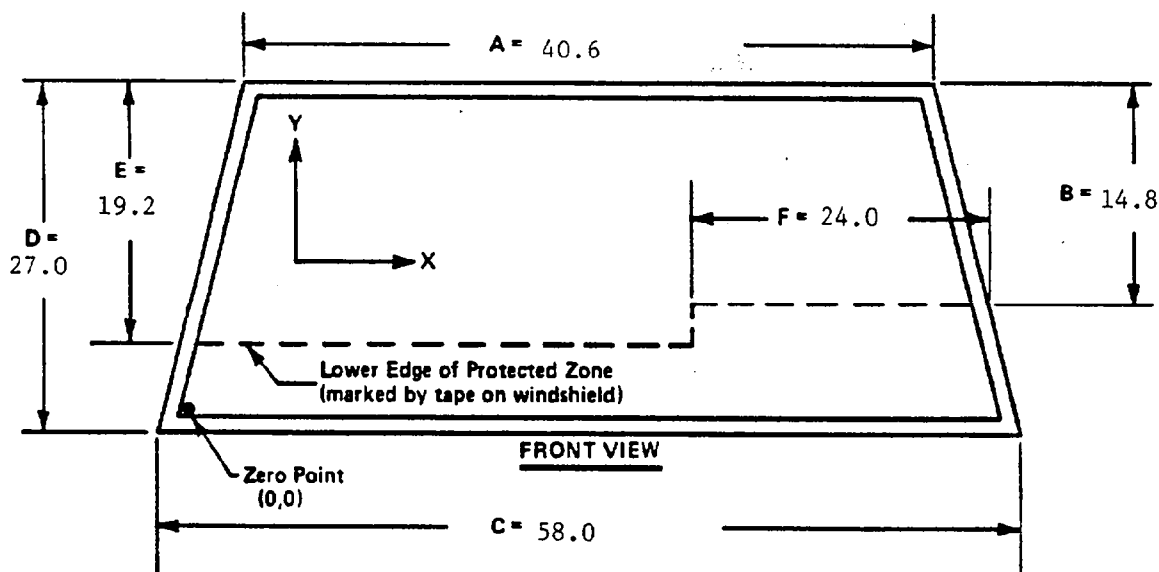
Figure 11

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:



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

(Show location of penetration on above sketch)

None

	COORDINATES	
	X	Y
1.		
2.		
3.		
4.		

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

TEST VEHICLE NHTSA NO.: CL5103 TEST DATE: January 31, 1990

Vehicle Mfgr./Make/Model: 1990 Toyota Celica ST 2-Door Coupe

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

TEST VEHICLE IMPACT TYPE:

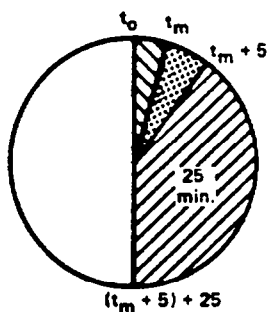
 X Frontal (30 mph)

 Oblique (30 mph) with ° barrier face first
contacting _____
(driver/passenger) side

 Rear Moving Barrier (30 mph)

 Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:



1. From impact until vehicle motion ceases
2. For 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 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

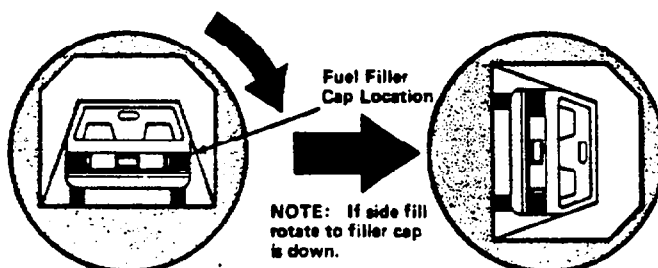
TEST PHASE:

Vehicle NHTSA ID No.:

0°

90°

CL5103



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 03 minutes 00 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 05 minutes 00 seconds

TOTAL

08 minutes 00 seconds

Next whole minute interval

08 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

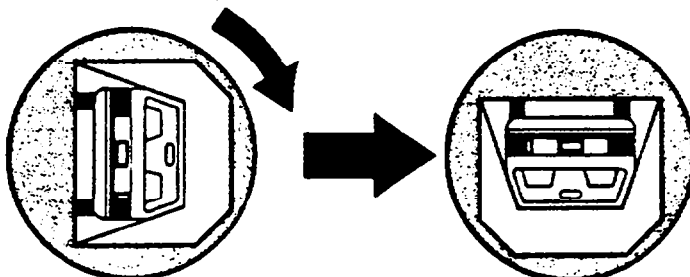
Table 13

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

TEST PHASE:

90⁰**180**⁰

Vehicle NHTSA ID No.:

CL5103I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 03 minutes 00 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 08 minutes 00 seconds

TOTAL

08 minutes 00 seconds

Next whole minute interval

08 minutesII. 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.)

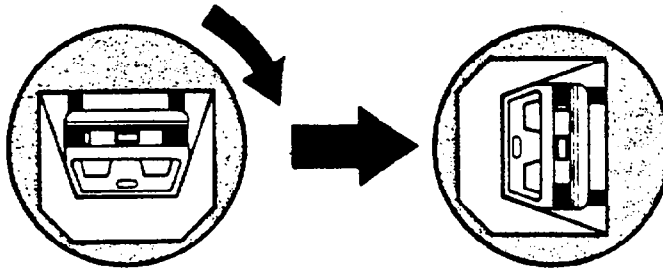
TEST PHASE:

180°

270°

Vehicle NHTSA ID No.:

CL5103



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes) 03 minutes 00 seconds

FMVSS 301 Position Hold Time + 05 minutes 00 seconds

TOTAL

08 minutes 00 seconds

Next whole minute interval

08 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.

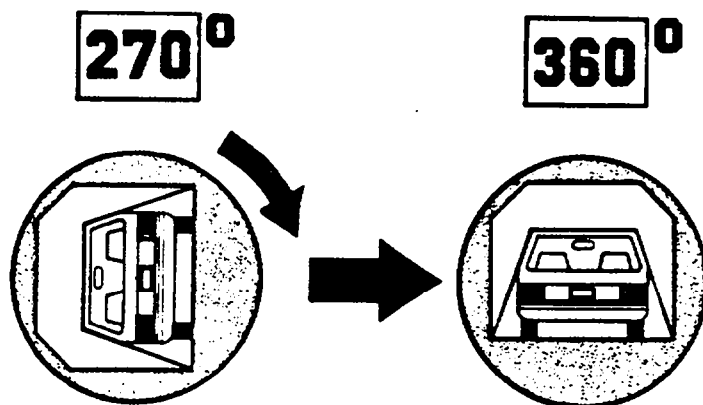
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)TEST PHASE:

Vehicle NHTSA ID No.:

CL5103I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 03 minutes 00 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 05 minutes 00 seconds

TOTAL

08 minutes 00 seconds

Next whole minute interval

08 minutesII. 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 14

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: January 31, 1990 Vehicle NHTSA No.: CL5103

Vehicle Manufacturer: Toyota Motor Company

Model Year: 1990 VIN: JT2AT86F9L0002395

Body Style: 2-Door Coupe Build Date: September 1989

Dummy Stabilized Temperature at Time of Test: 70 °F (Spec. = 66-78°F)

Impact Velocity: 29.6 mph Time of Test: 12:35

Type of Automatic Restraint System: Driver air bag restraint; passenger -
3-point manual seat belt restraint.

Failure Details:

Vehicle appears to comply with the requirements of FMVSS Nos. 208, 212, 219
(partial) and 301.

Appendix A

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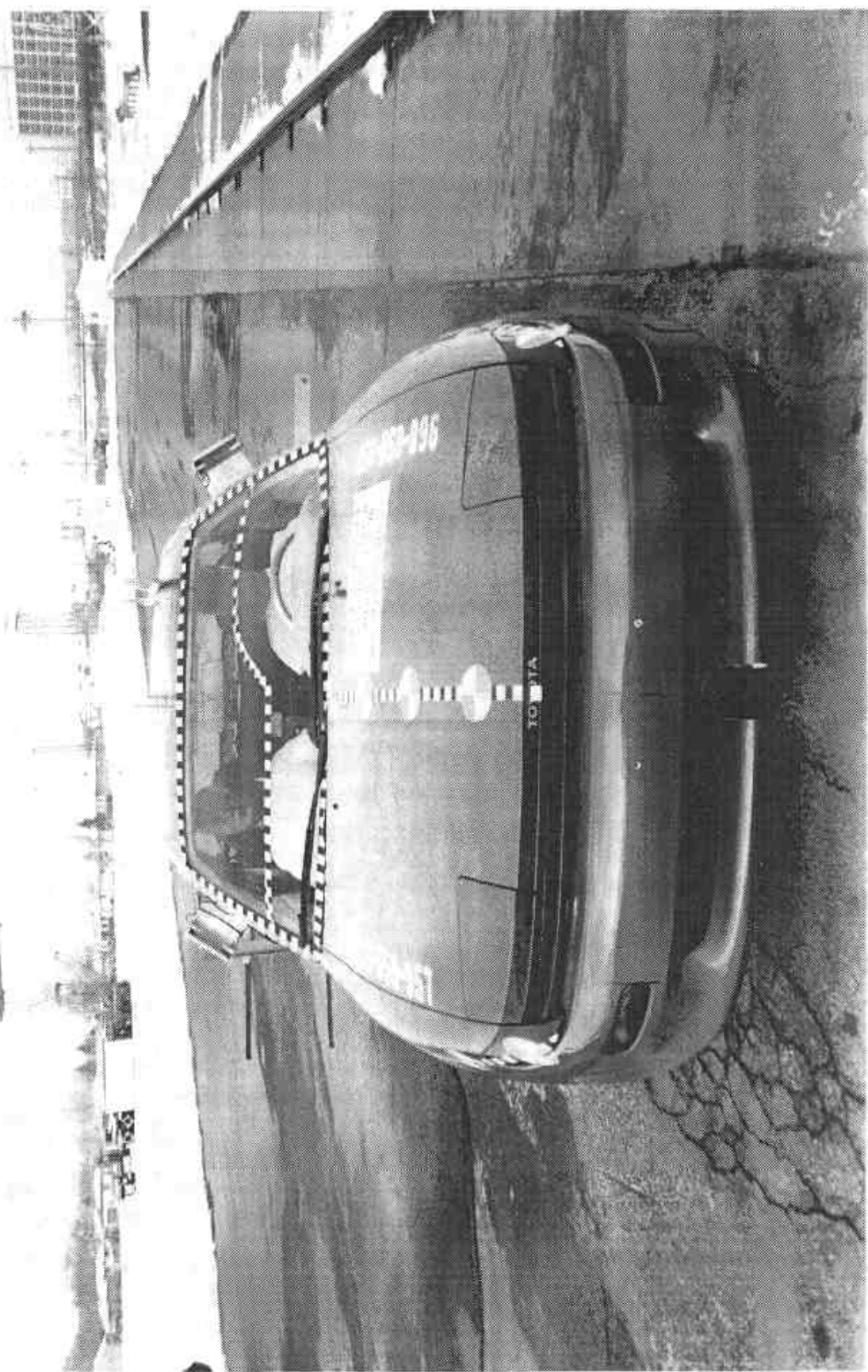


Figure A-1 PRE-TEST FRONT VIEW

A-3

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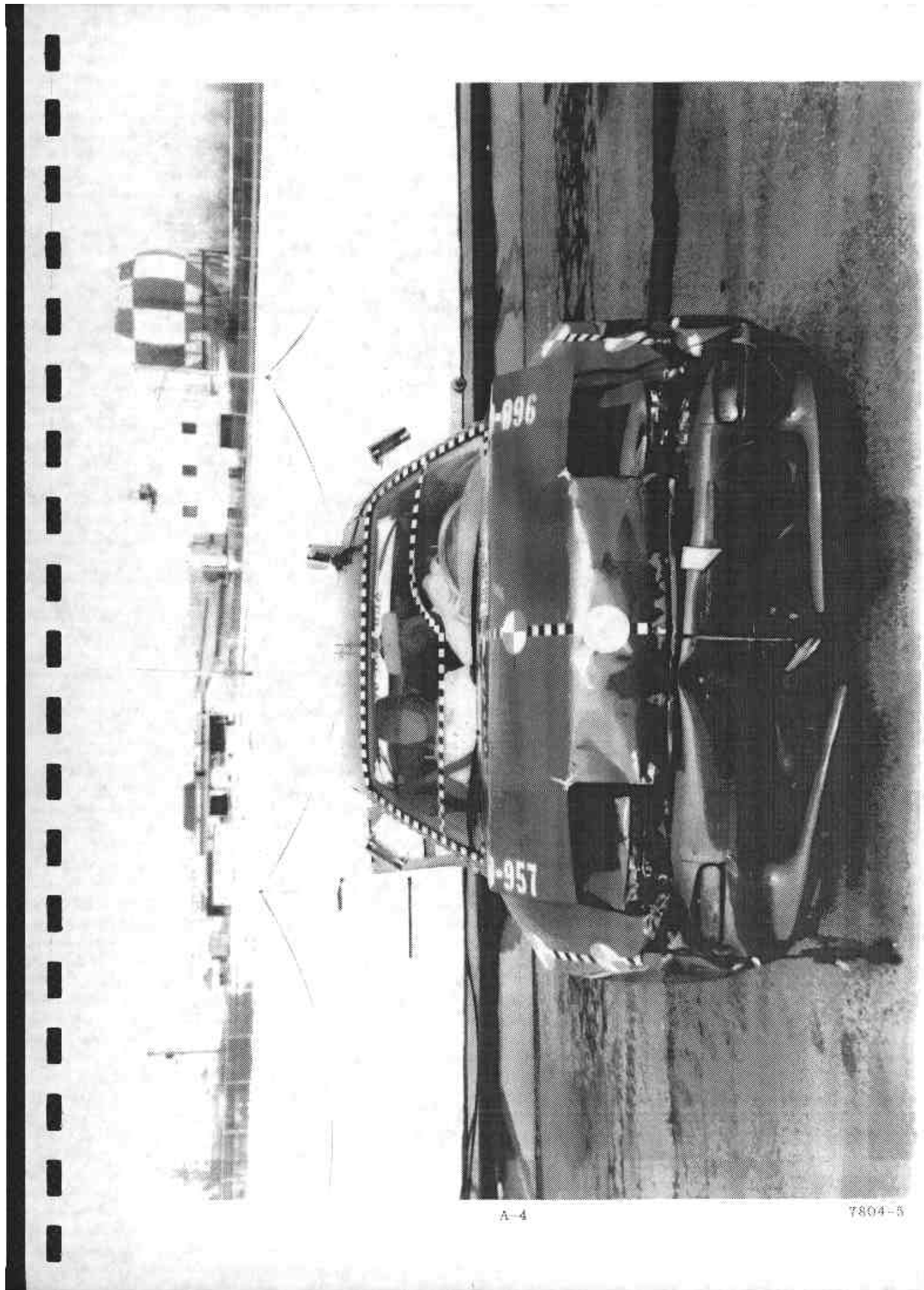


Figure A-2 POST TEST FRONT VIEW

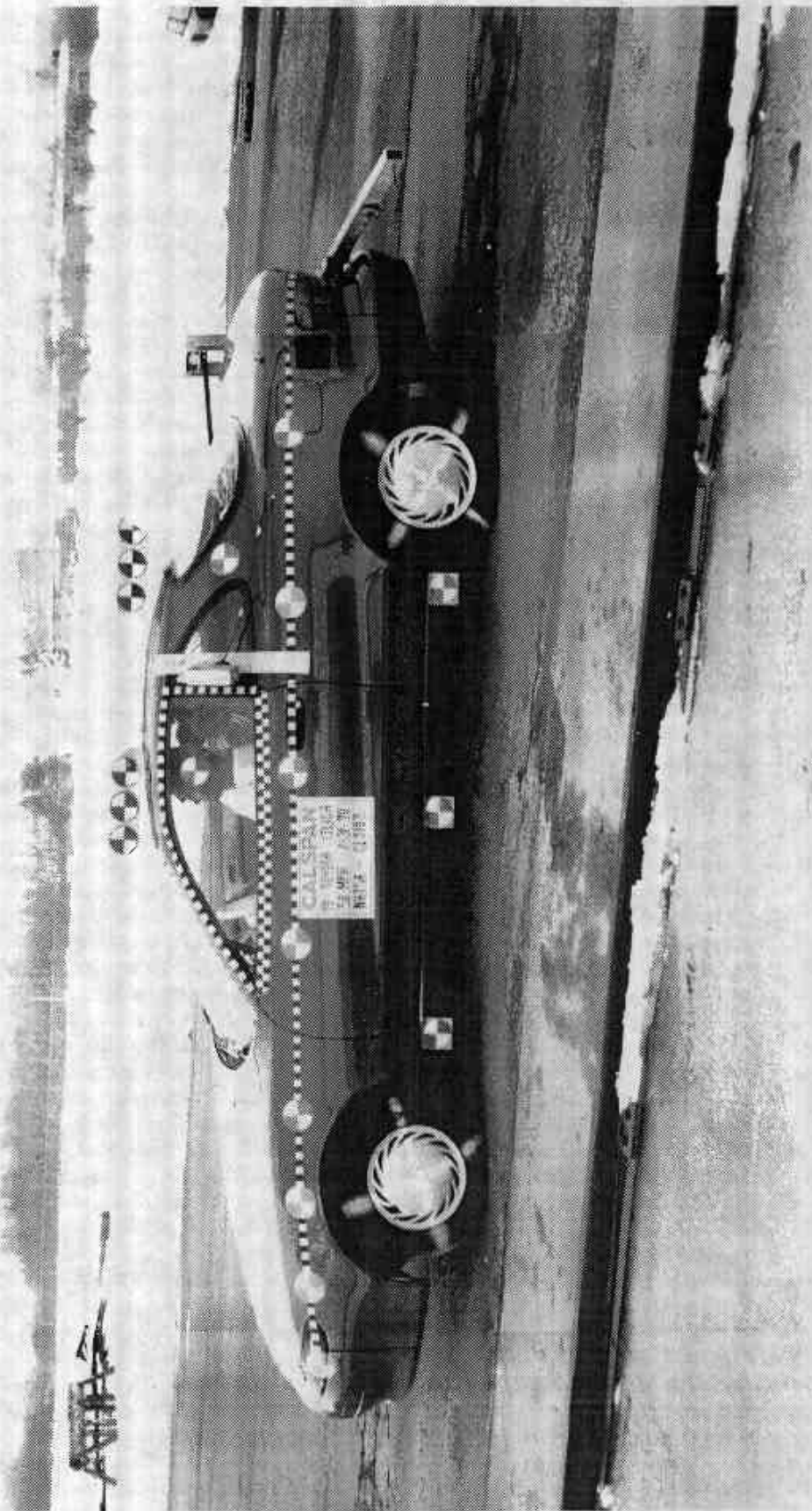


Figure A-3. PRE-TEST LEFT SIDE VIEW

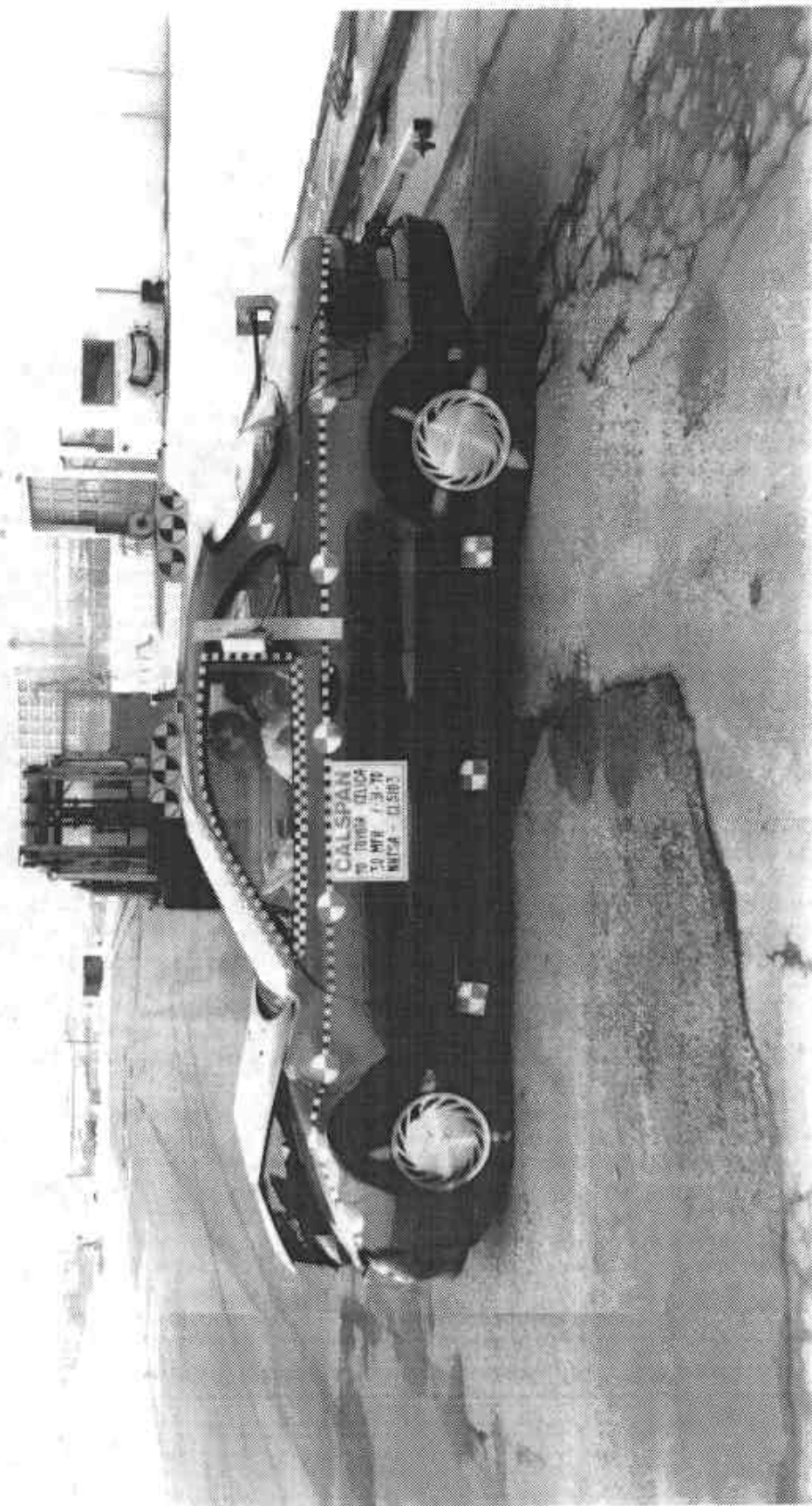


Figure. A-4 POST TEST LEFT SIDE VIEW

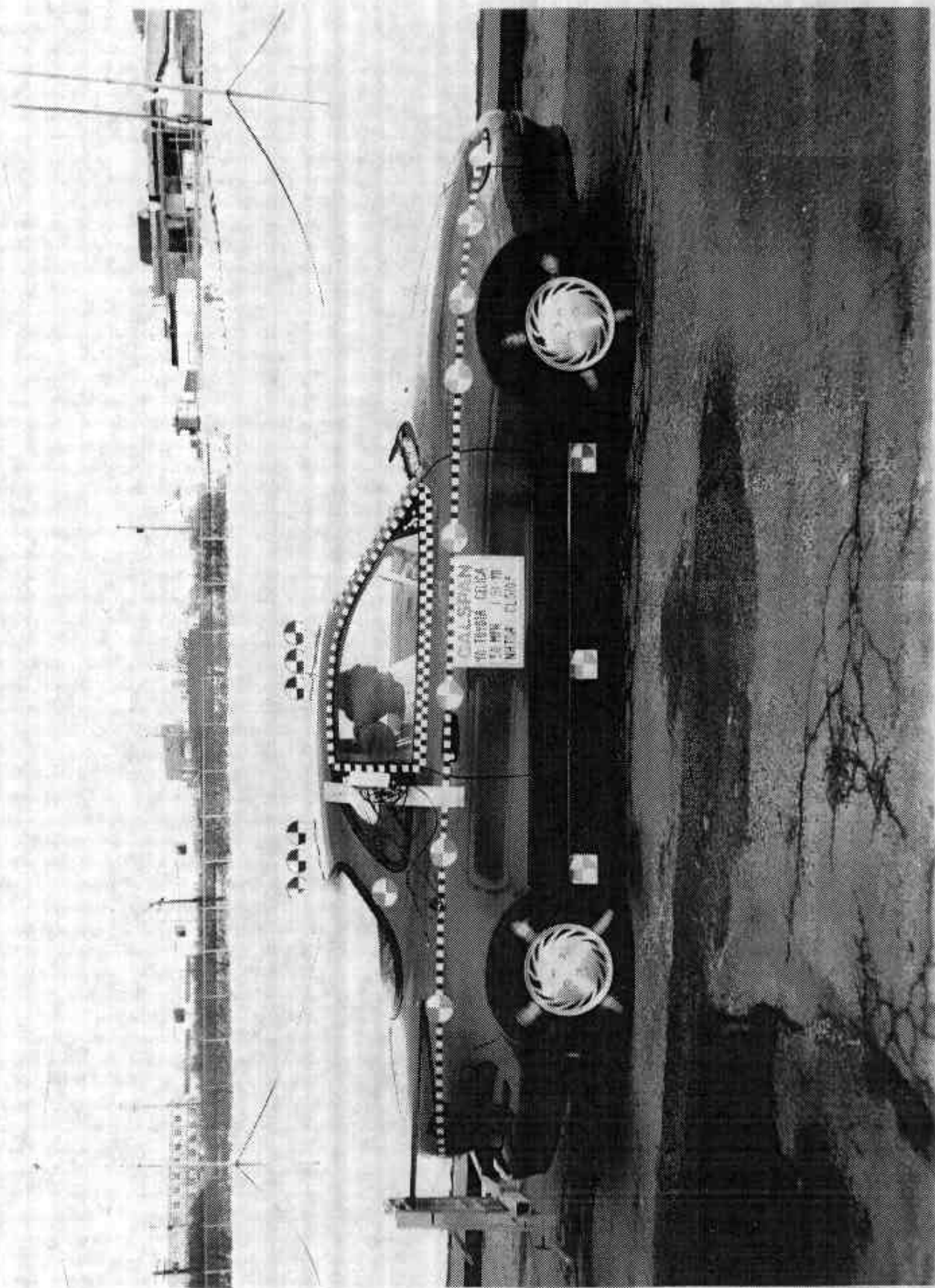


Figure A-5 PRE-TEST RIGHT SIDE VIEW

A-7

7804-5

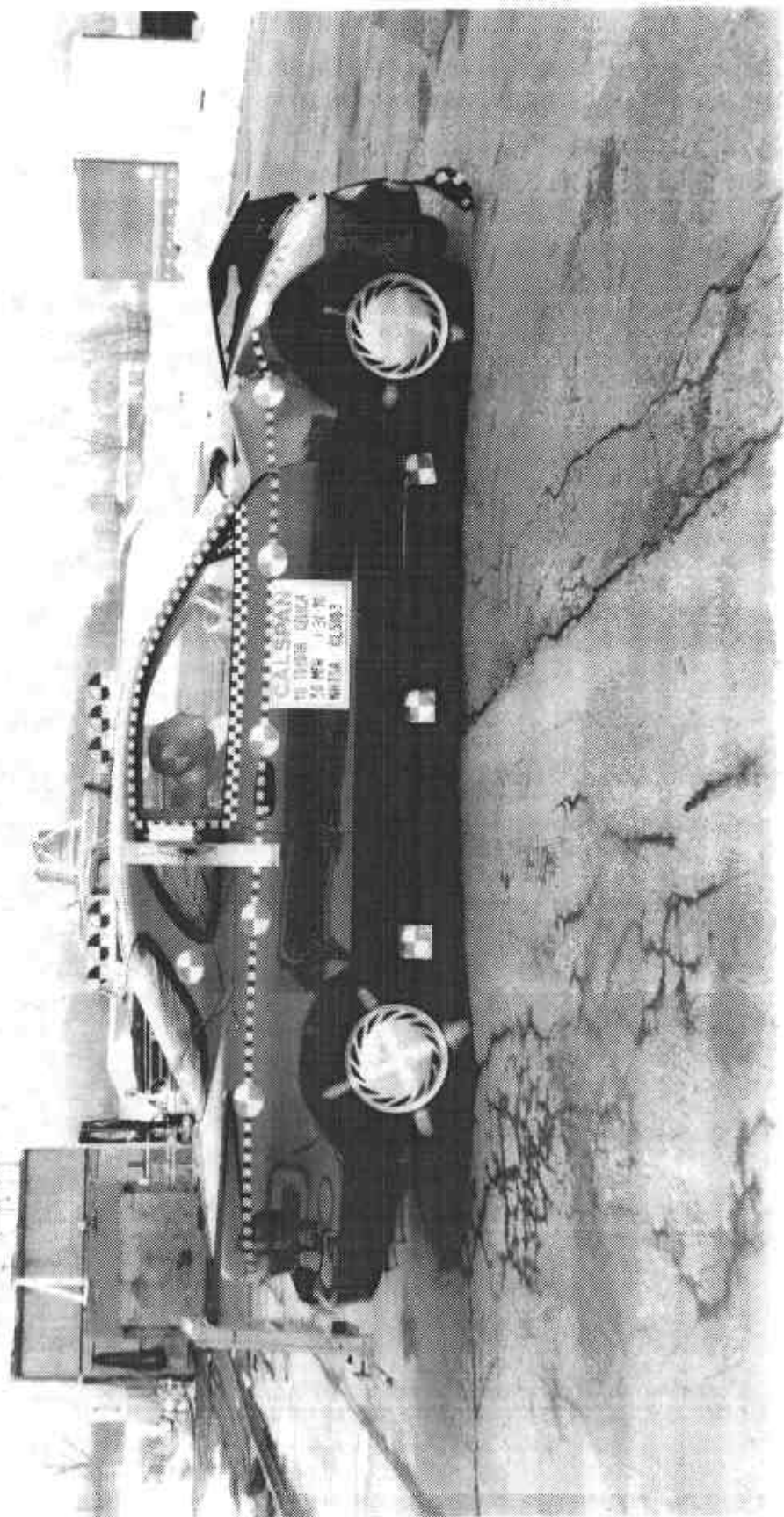


Figure A-6 POST-TEST RIGHT SIDE VIEW

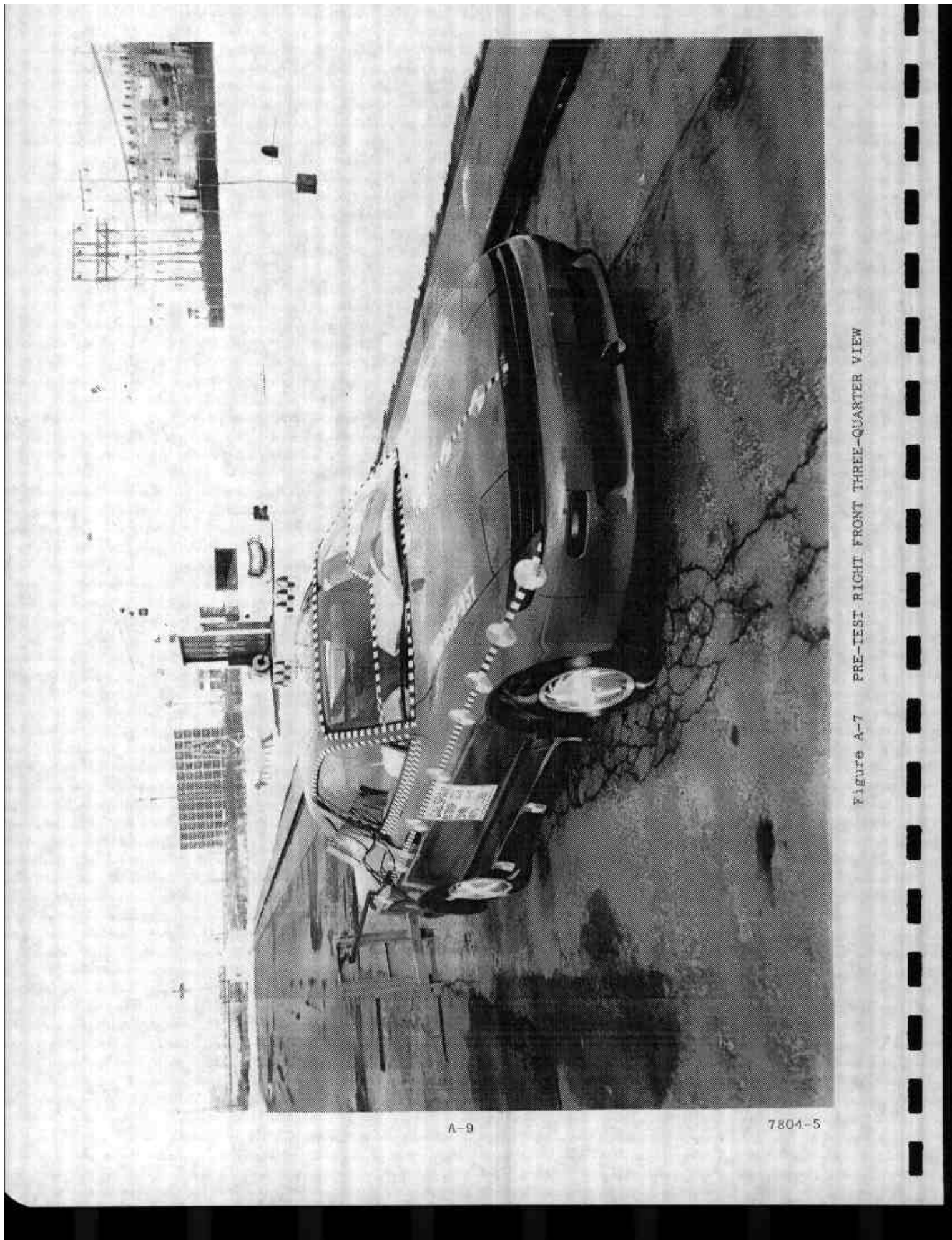


FIGURE A-7 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW



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

A-10

7804-5



Figure A-4 PRE-TEST LEFT REAR THREE-QUARTER VIEW

A-11

7804-5

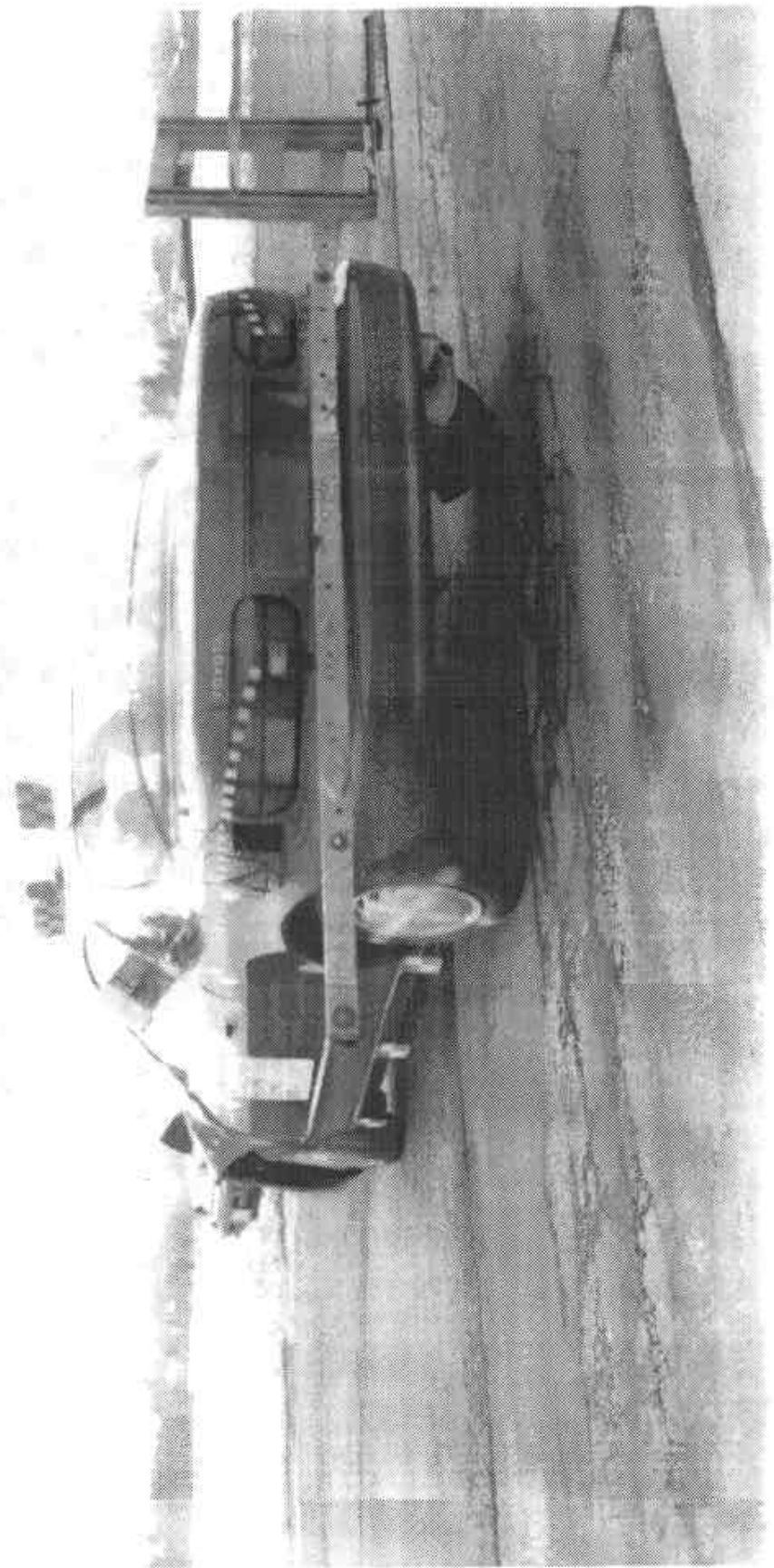


Figure A-10 POST-TEST LEFT REAR THREE-QUARTER VIEW

A-12

7804-5

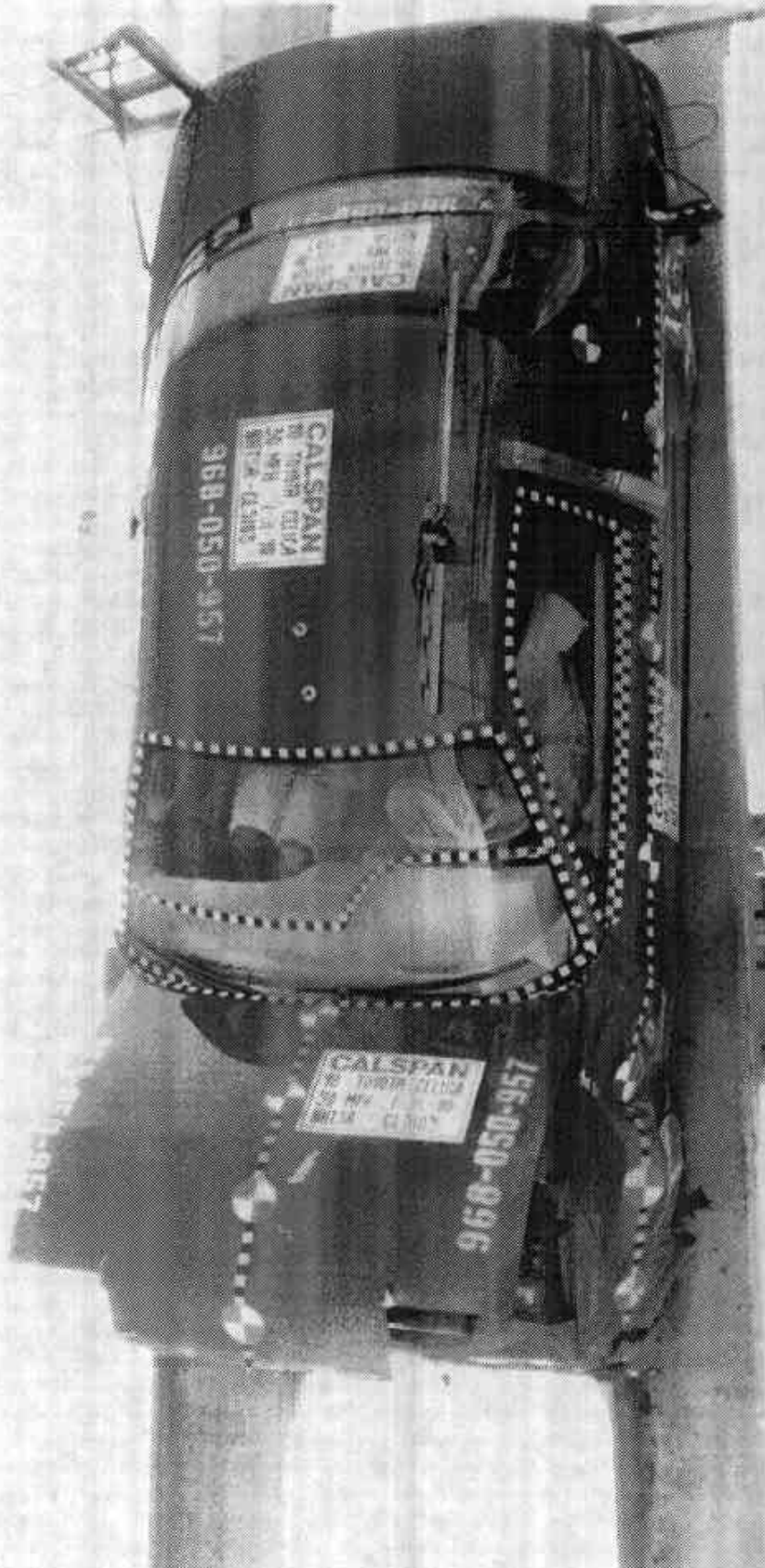


Figure A-11 POST TEST TOP VIEW

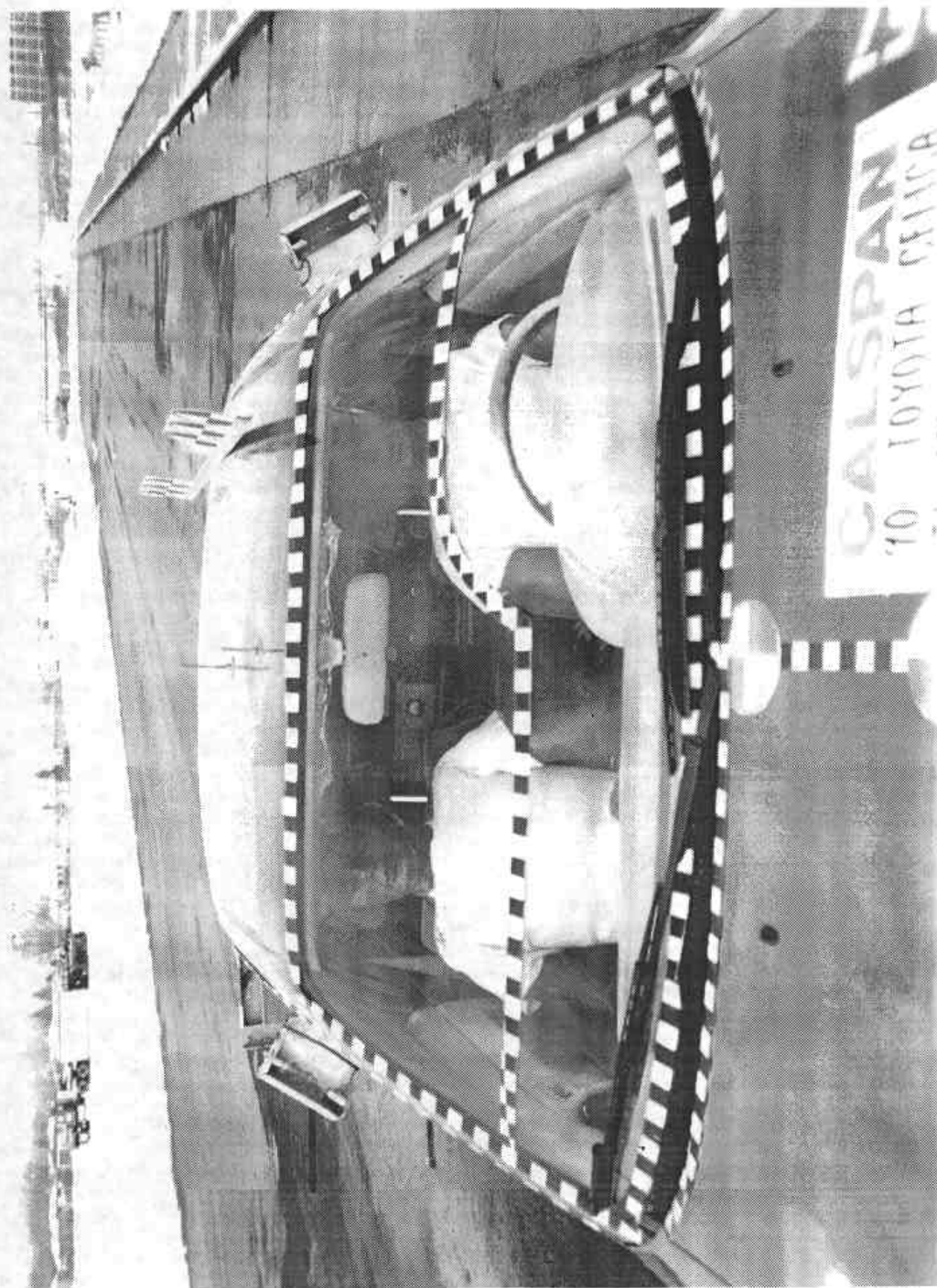


Figure A-12 PRE-TEST WINDSHIELD VIEW

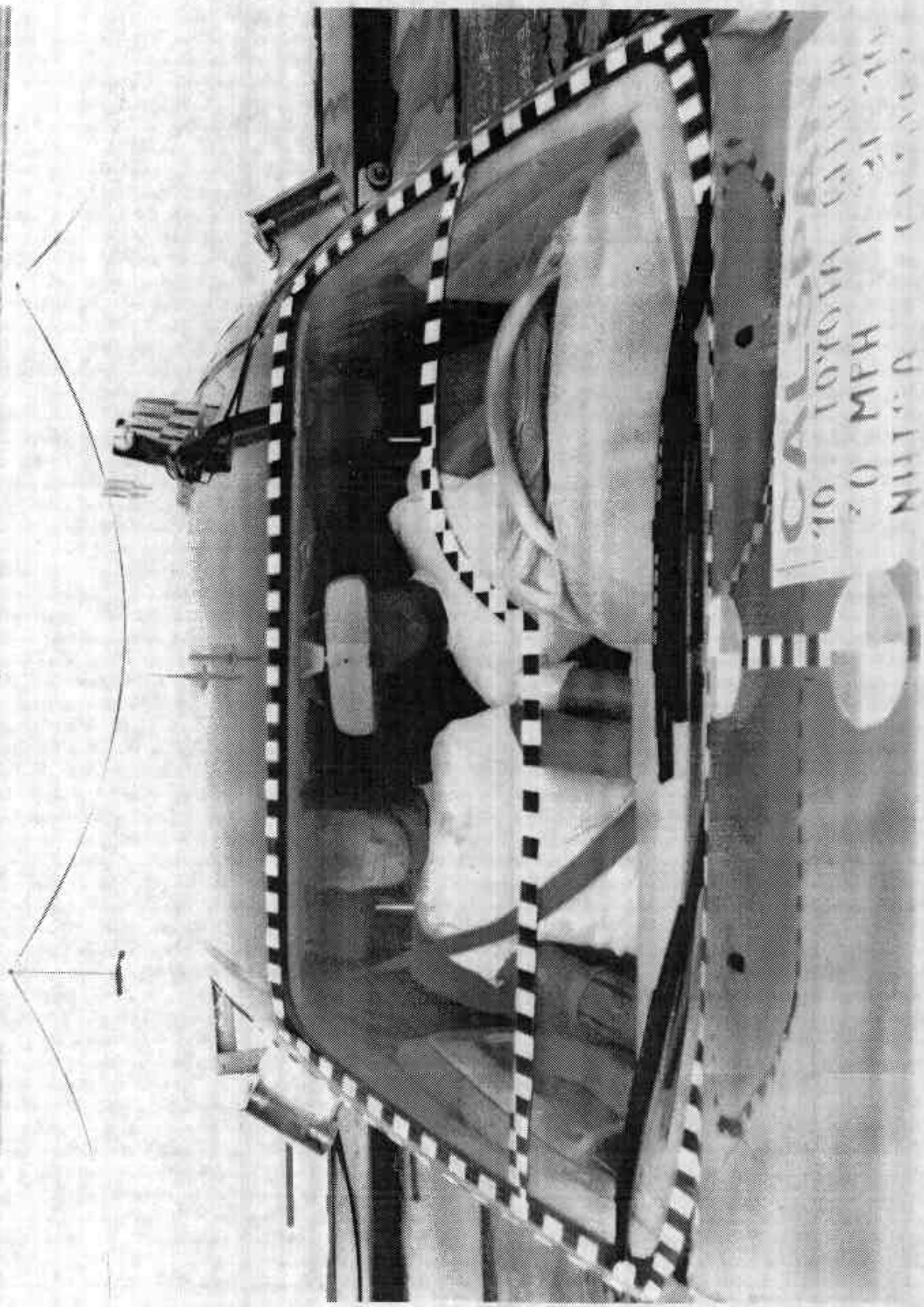


Figure A-13 POST-TEST WINDSHIELD VIEW

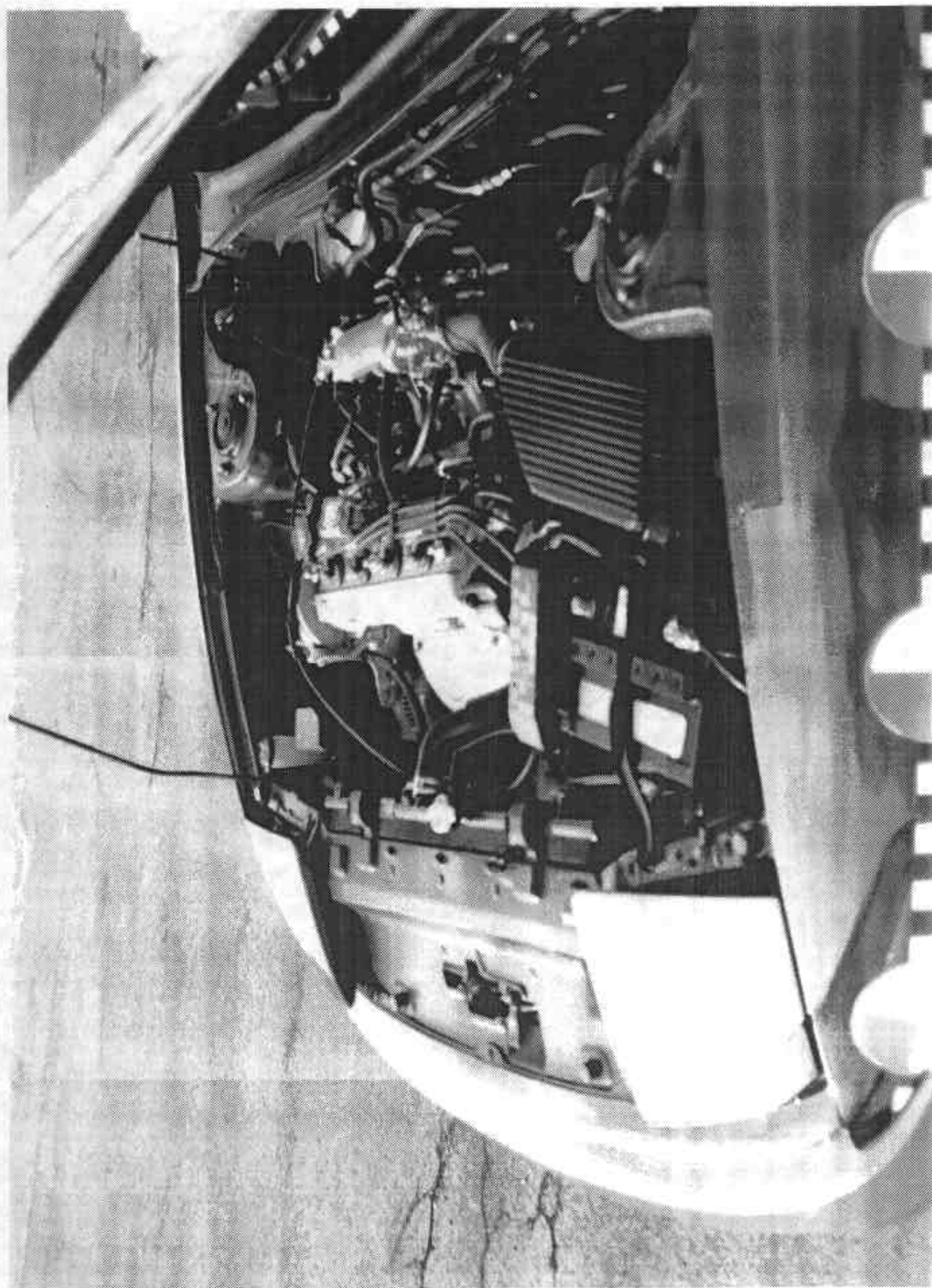


Figure A-14 PRE-TEST ENGINE COMPARTMENT SIDE VIEW

A-16

7804-5

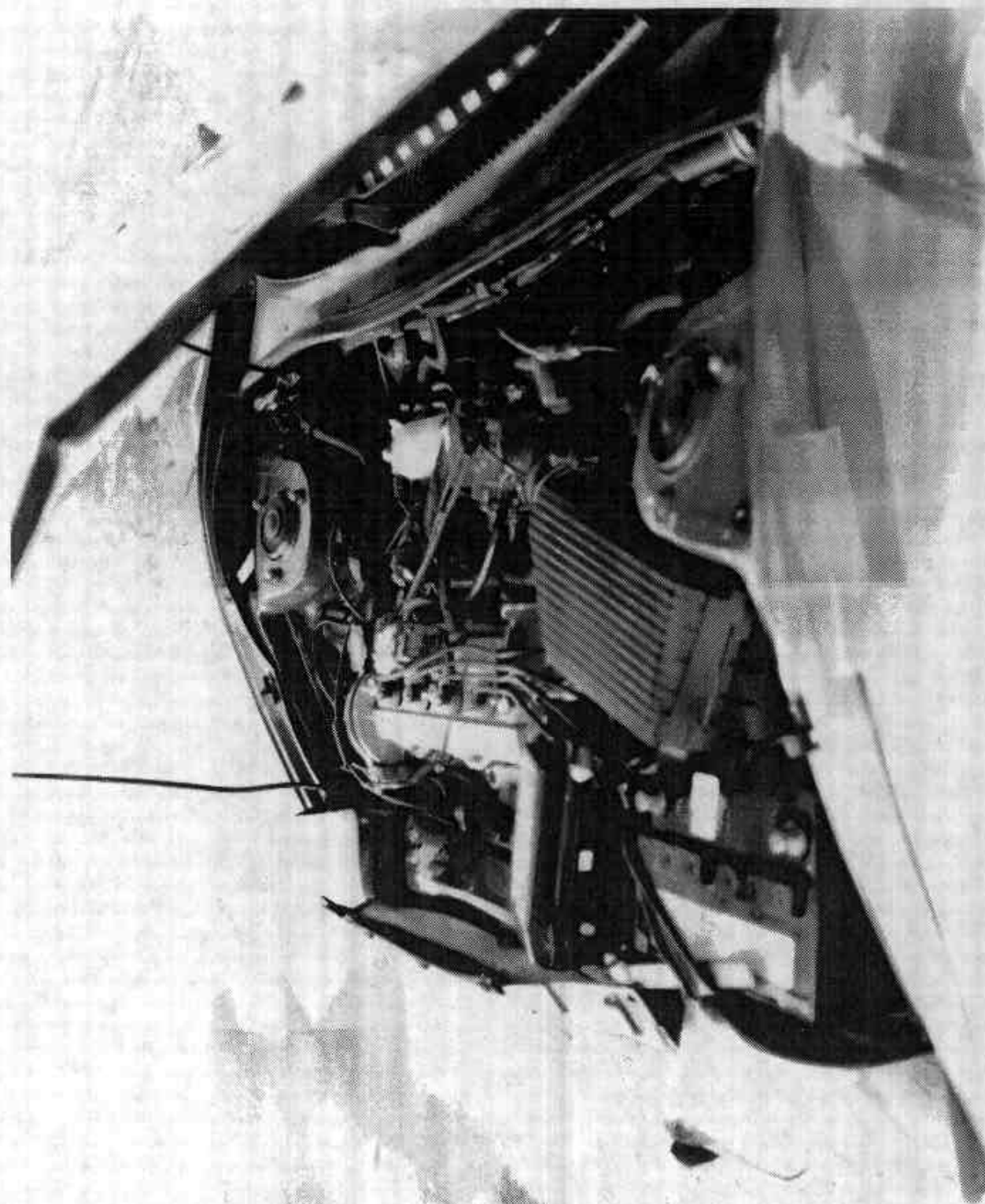


Figure A-15 POST-TEST ENGINE COMPARTMENT FRONT VIEW

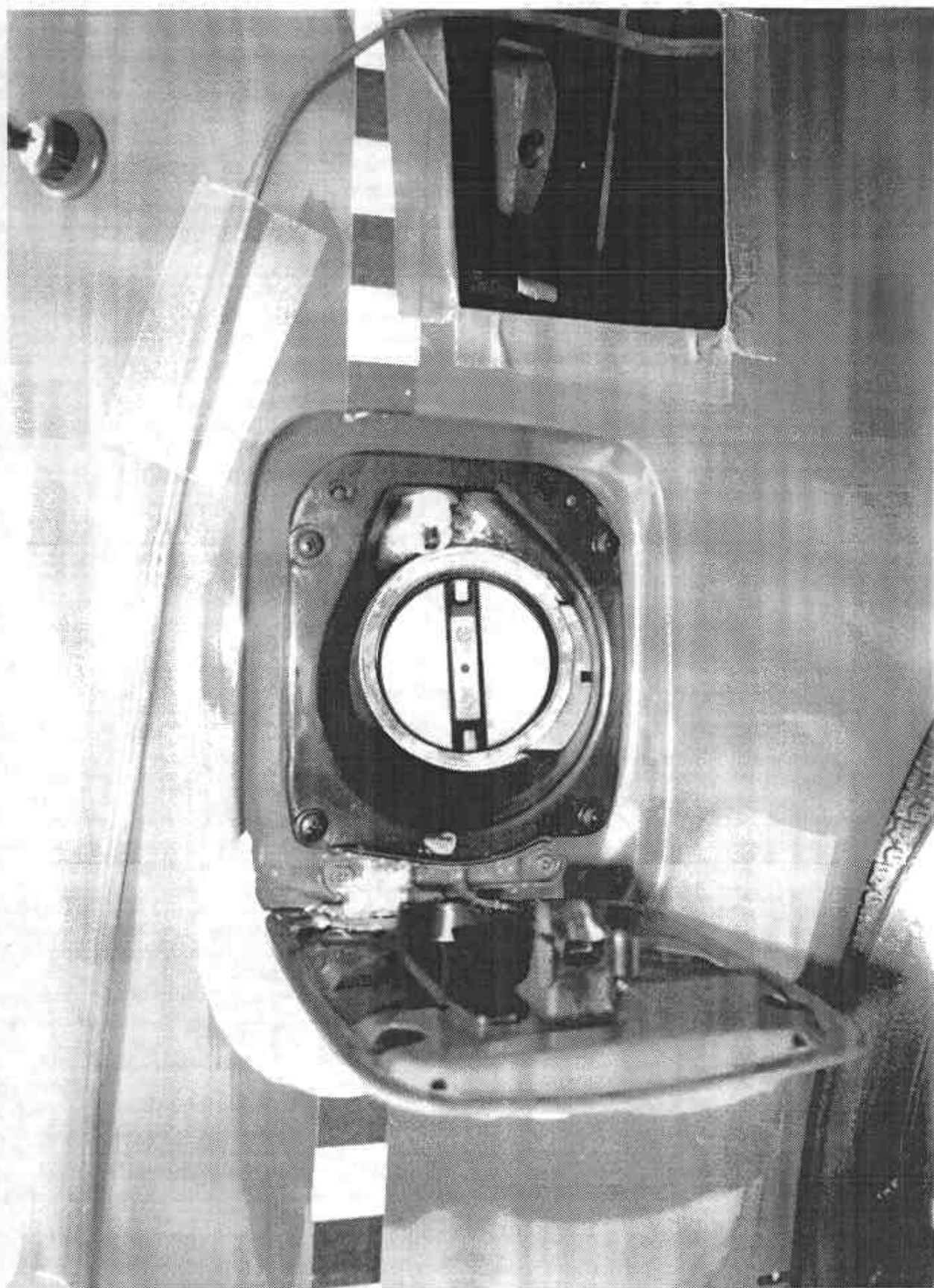


Figure A-16 PRE-TEST FUEL FILLER CAP VIEW

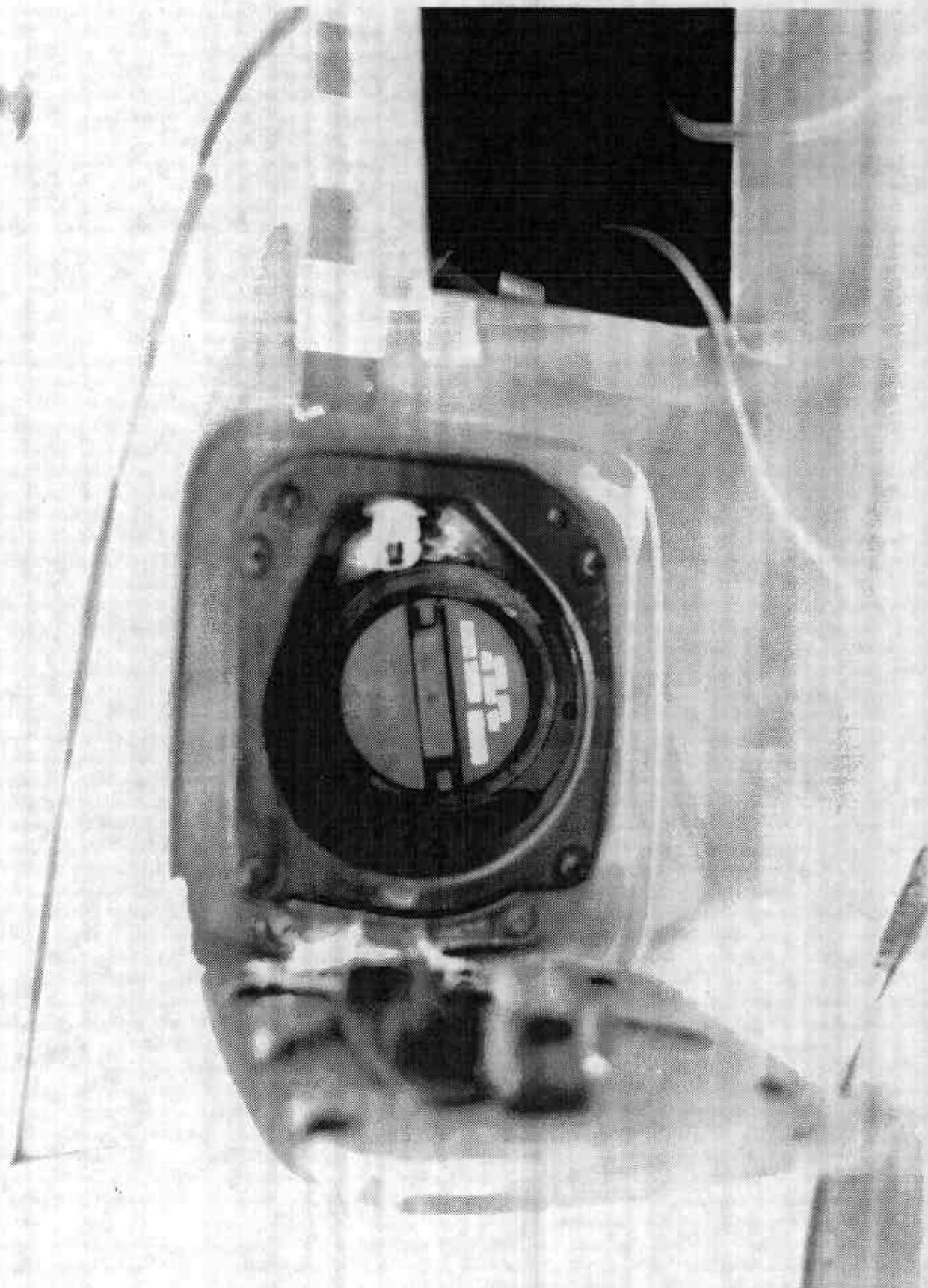


Figure A-17 POST-TEST FUEL FILLER CAP VIEW

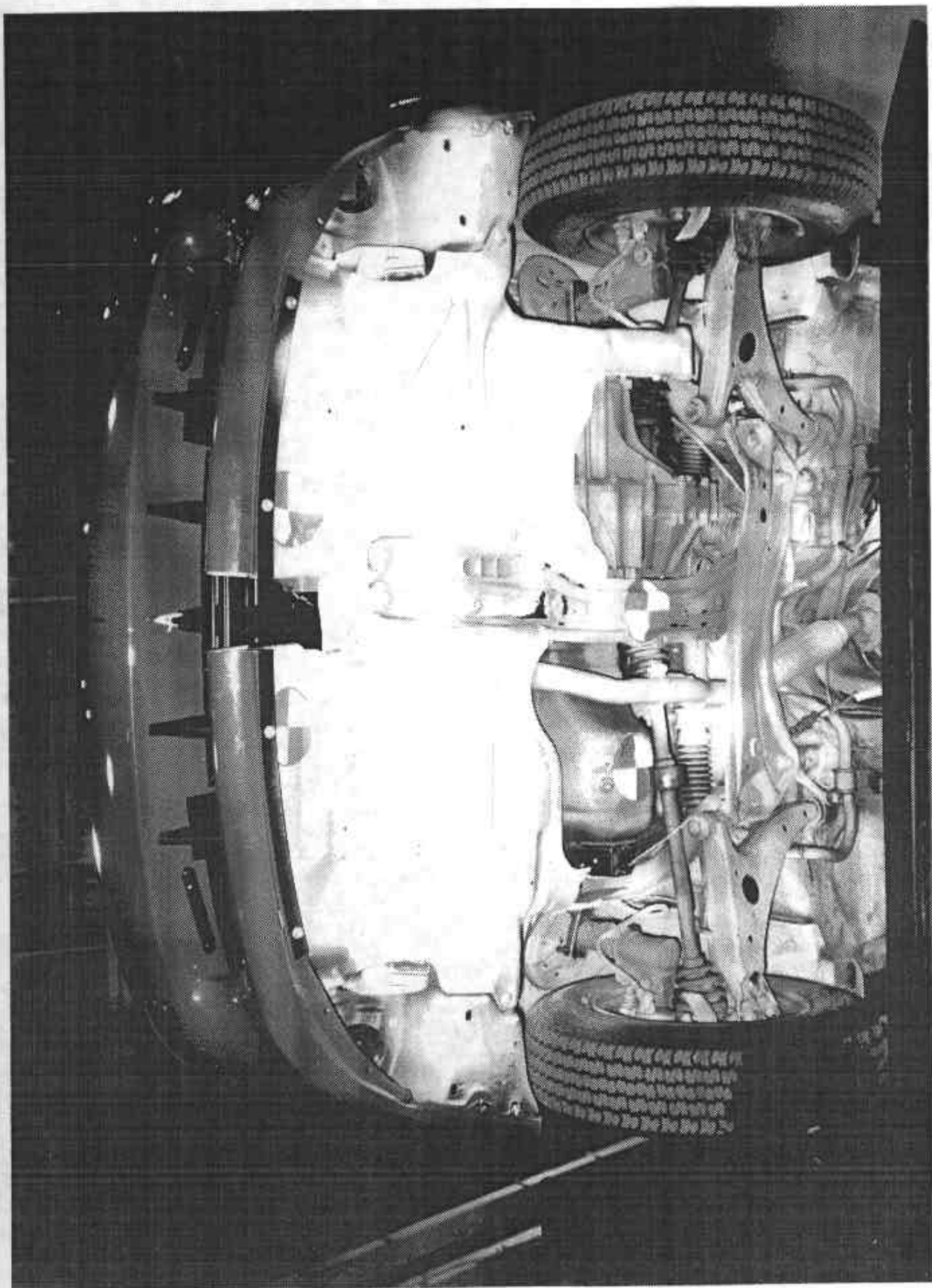


FIGURE A-18 PRE-TEST FRONT UNDERBODY VIEW

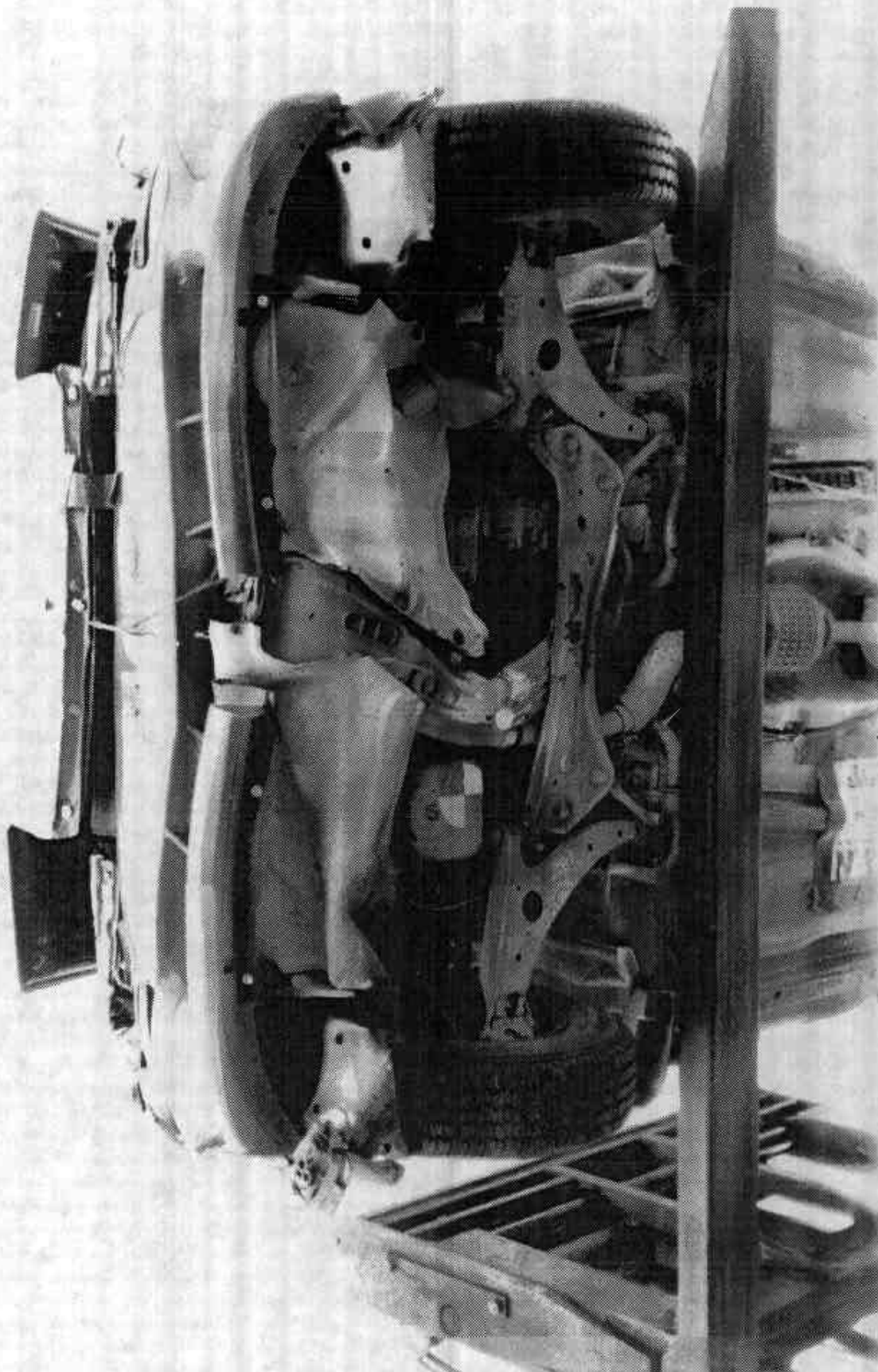


Figure A-19 POST-TEST FRONT UNDERBODY VIEW

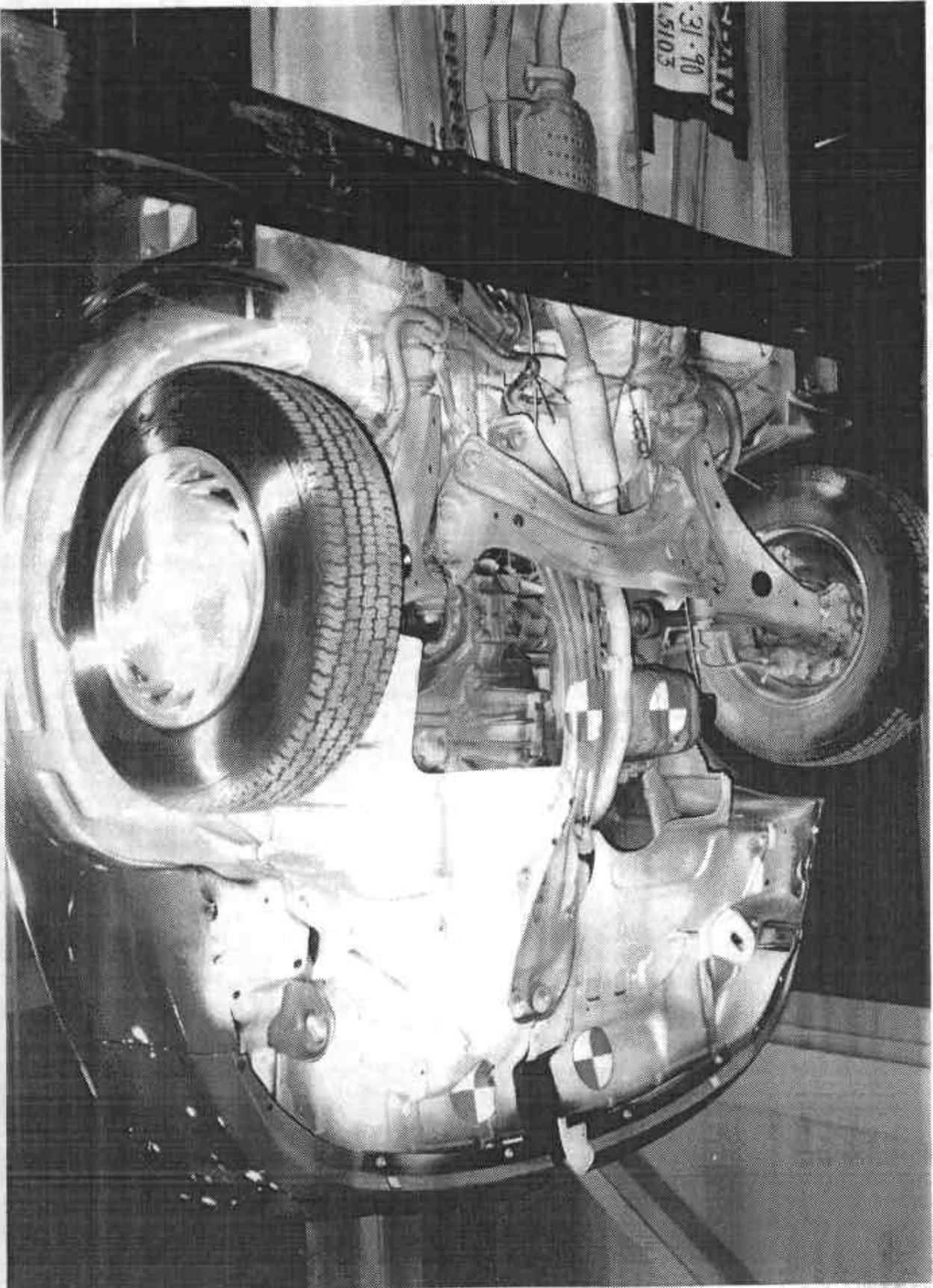


FIGURE A-20 PRE-TEST FRONT SIDE UNDERBODY VIEW

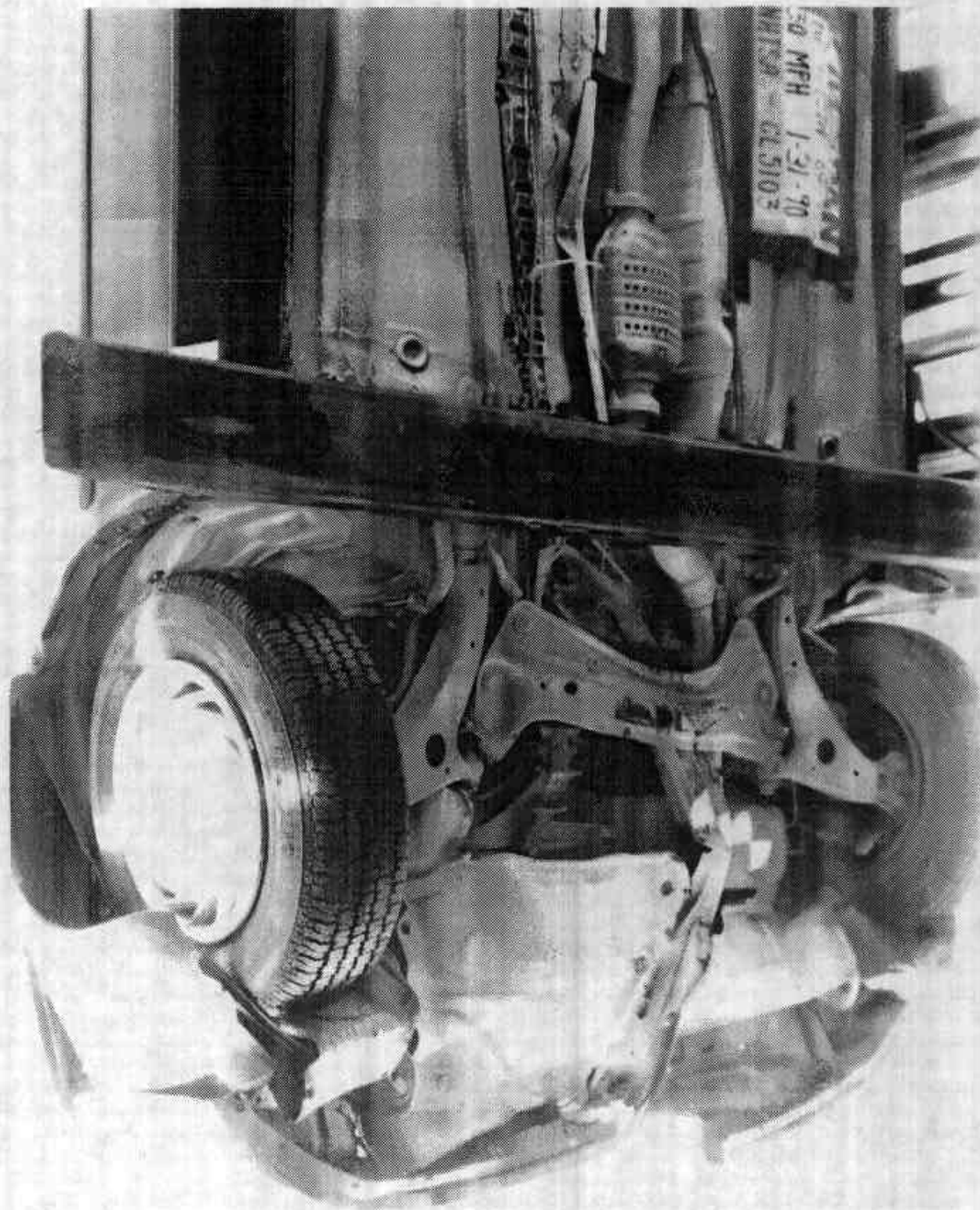


Figure A-21 POST-TEST FRONT SIDE UNDERBODY VIEW



Figure A-22 PRE-TEST REAR UNDERBODY VIEW

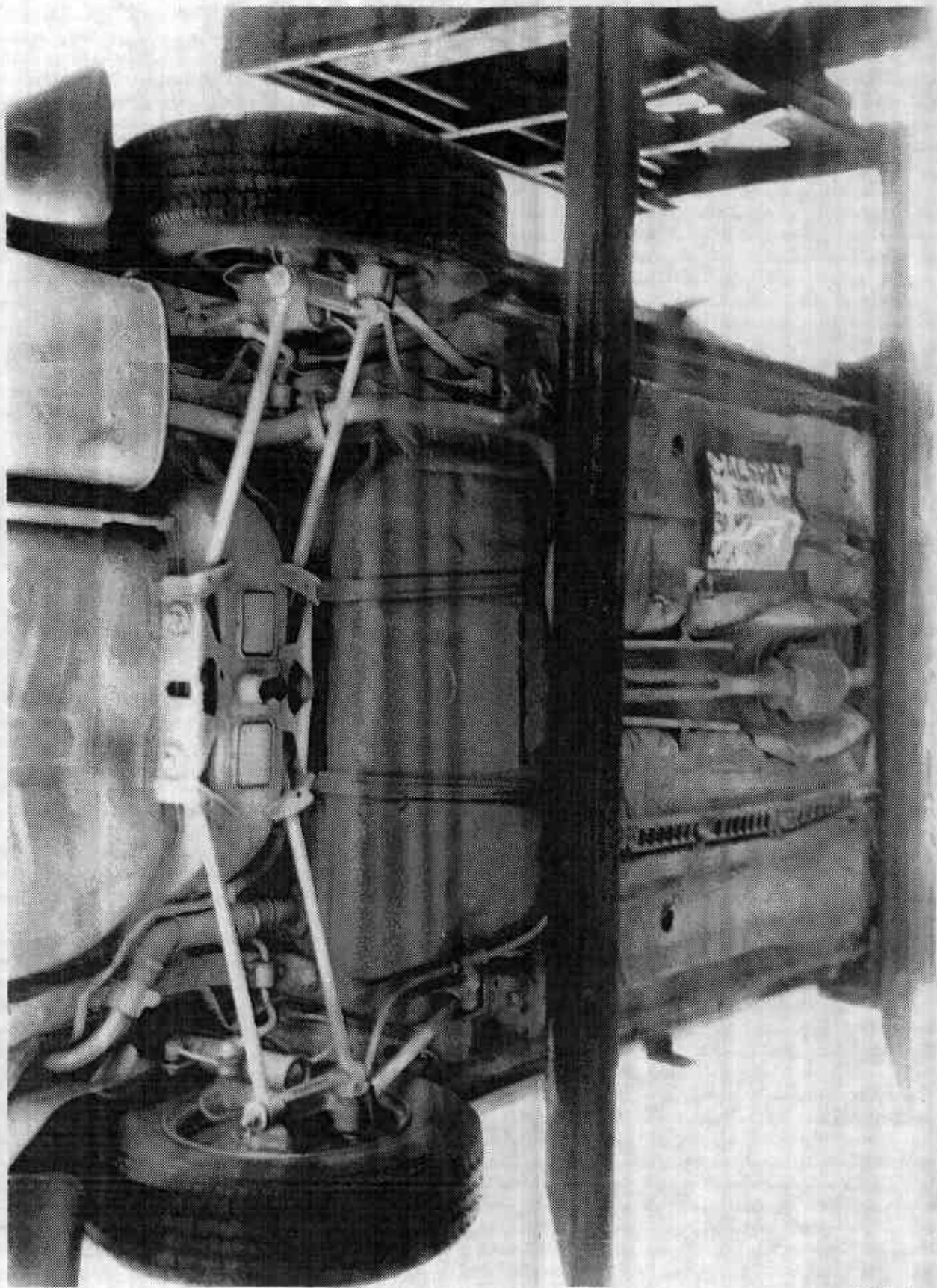


FIGURE A-23 POST-TEST REAR UNDERBODY VIEW



Figure A-24 CERTIFICATION LABEL

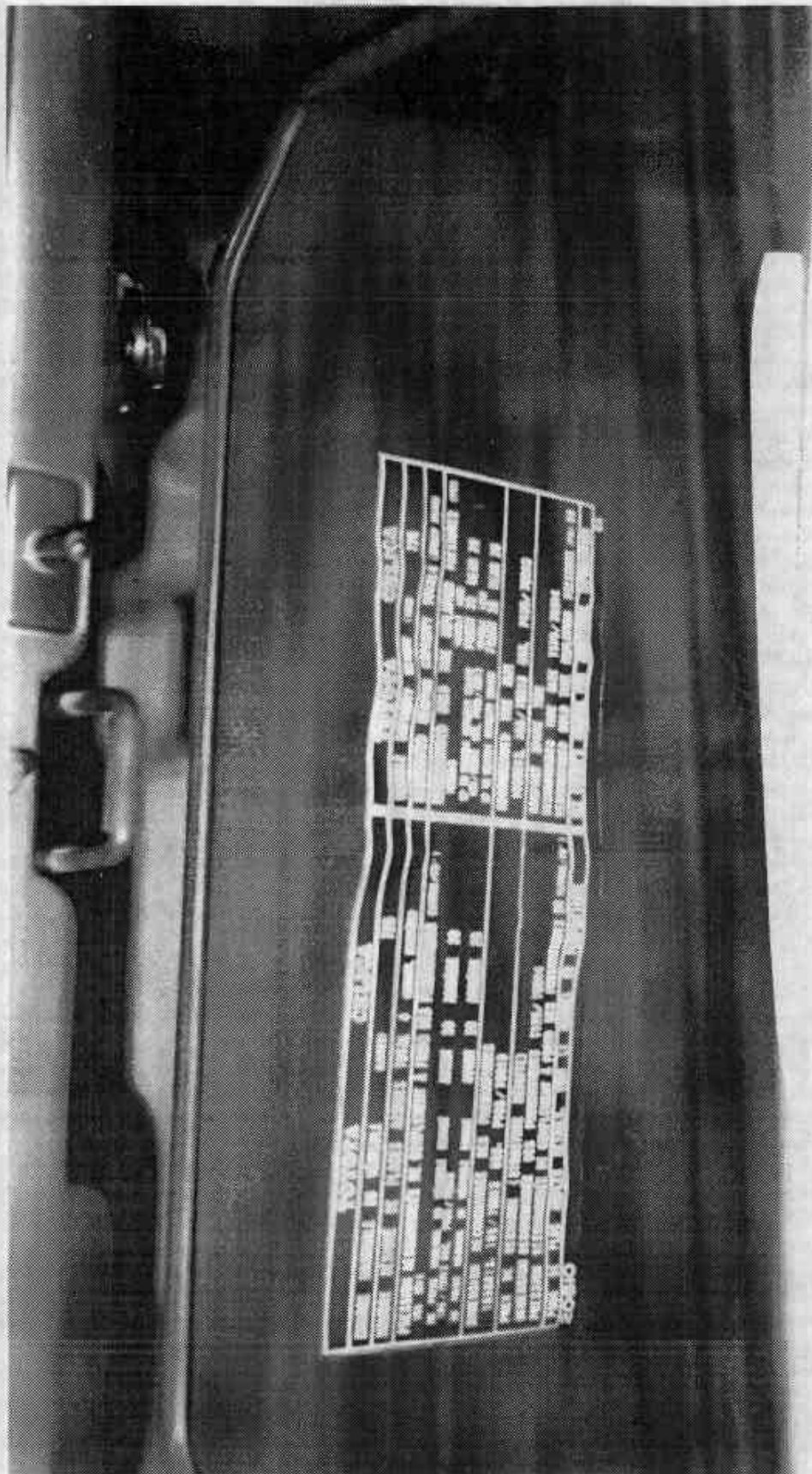


Figure A-23 TIRE PLACARD



FIGURE A-26 PRE-TEST DRIVER DUMMY POSITION

FIGURE A-27 POST-TEST DRIVER DUMMY POSITION

A-29

7804-3



FIGURE A-28 PRE-TEST PASSENGER DUMMY POSITION

A-30

7804-5



Figure A-29 POST-TEST PASSENGER DUMMY POSITION

A-81

7804-5

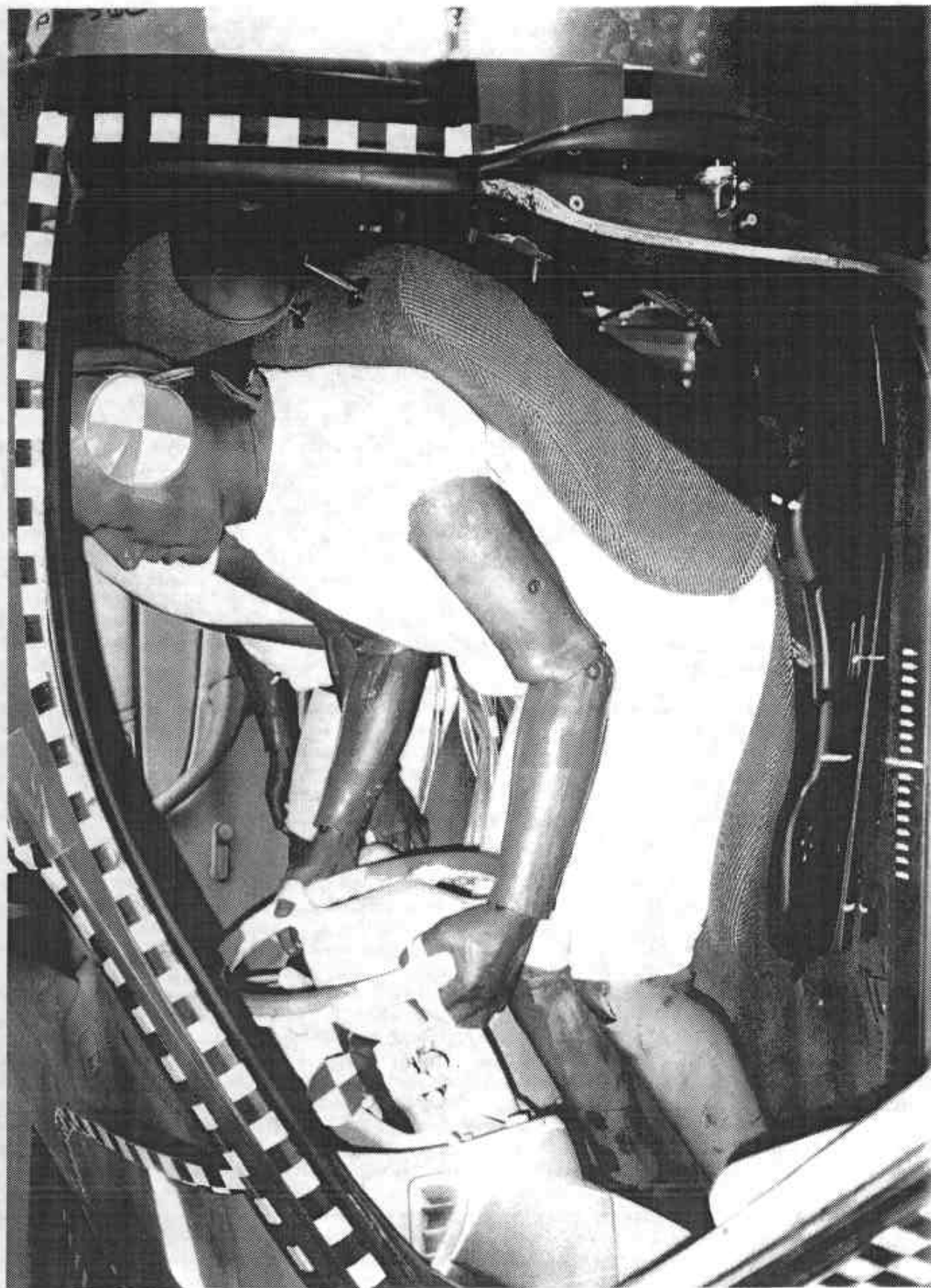


Figure A-30 PRE-TEST DRIVER DUMMY AND INTERIOR VIEW

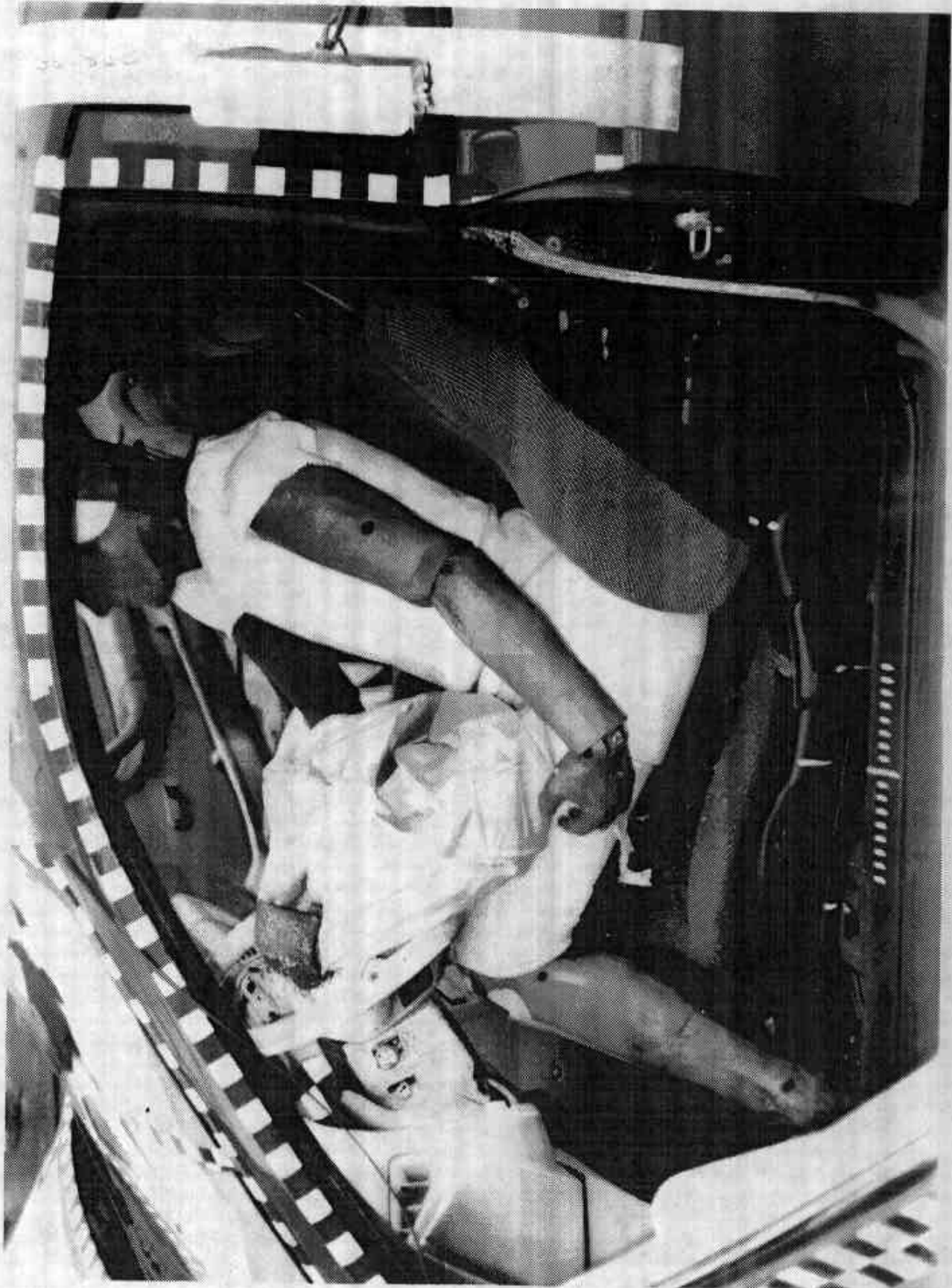


Figure A-31 POST-TEST DRIVER DUMMY AND INTERIOR VIEW



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



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

A-35

7804-5



FIGURE A-34 POST-TEST DRIVER AIRBAG VIEW

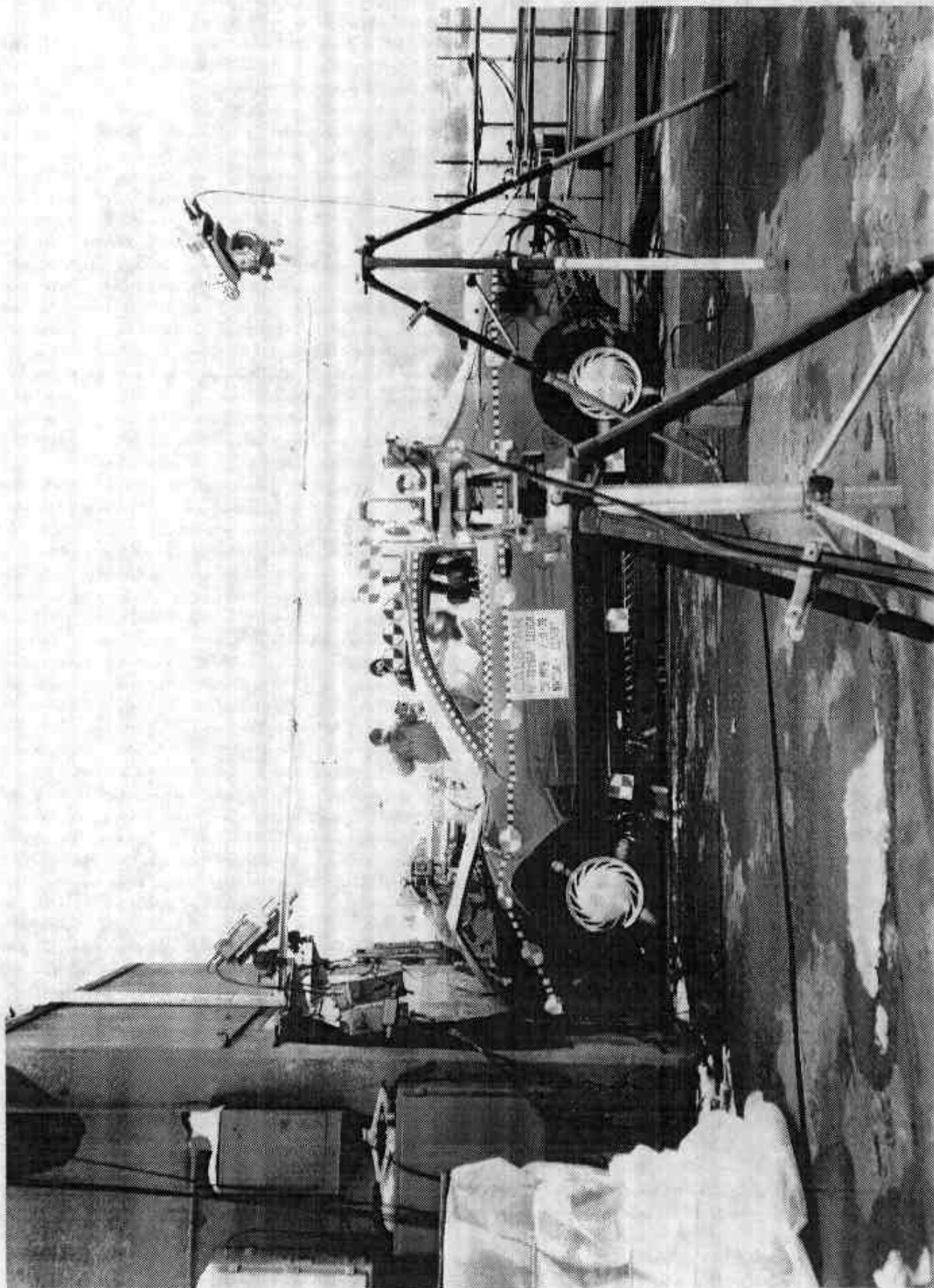


FIGURE A-35 VEHICLE IMPACT

A-37

7804-5

Appendix B

VEHICLE AND DUMMY RESPONSE DATA

TEST NO. CL5103

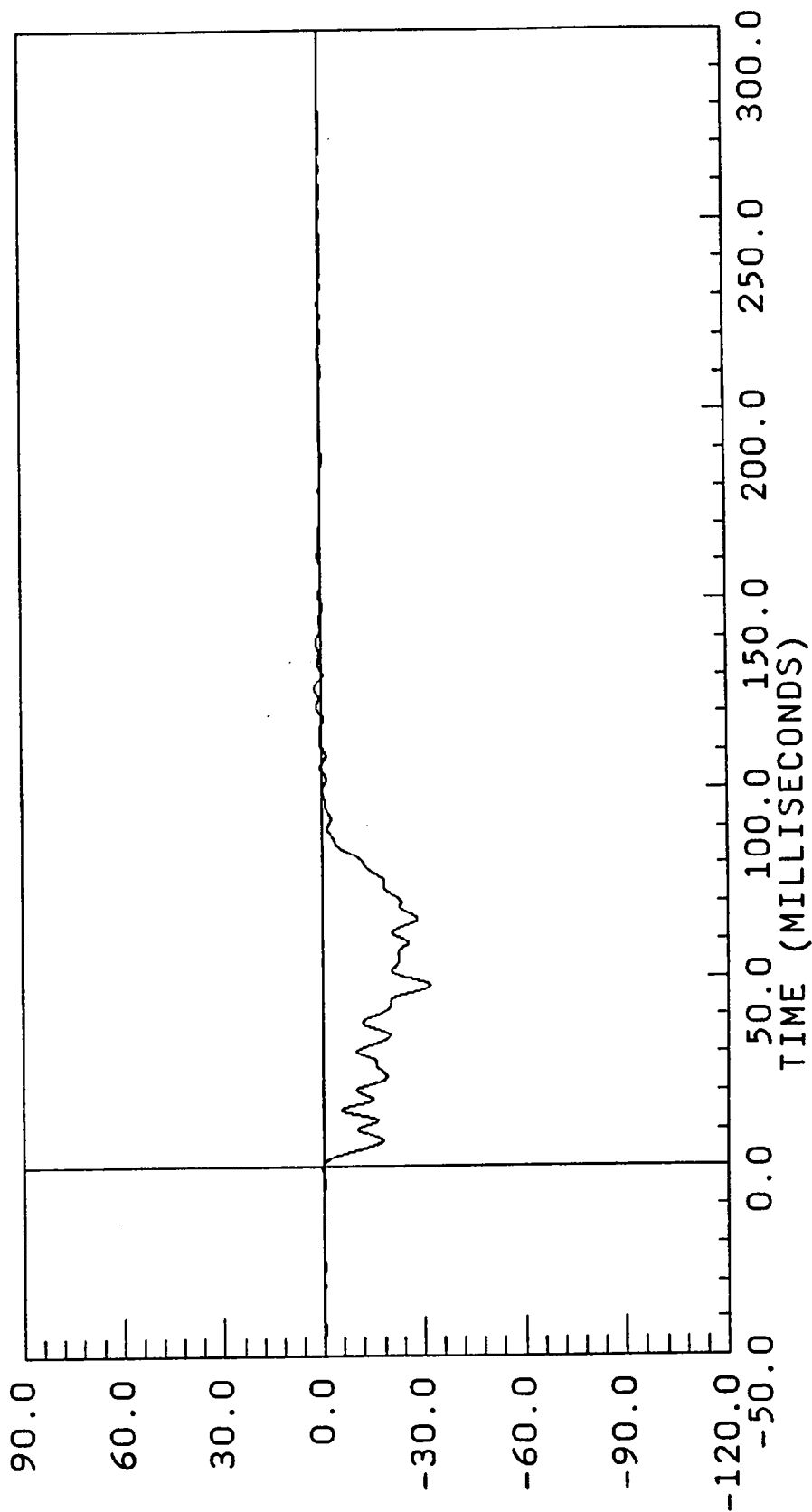
VEHICLE DATA

FILTER CHANNEL CLASS

60

29.60 mph

ACC PACK #1(X) XL AXIS
 FILTERED YMIN = -31.85563 at 47.77500
 FILTER CUTOFF: 100Hz YMAX = 2.258734 at 126.8250

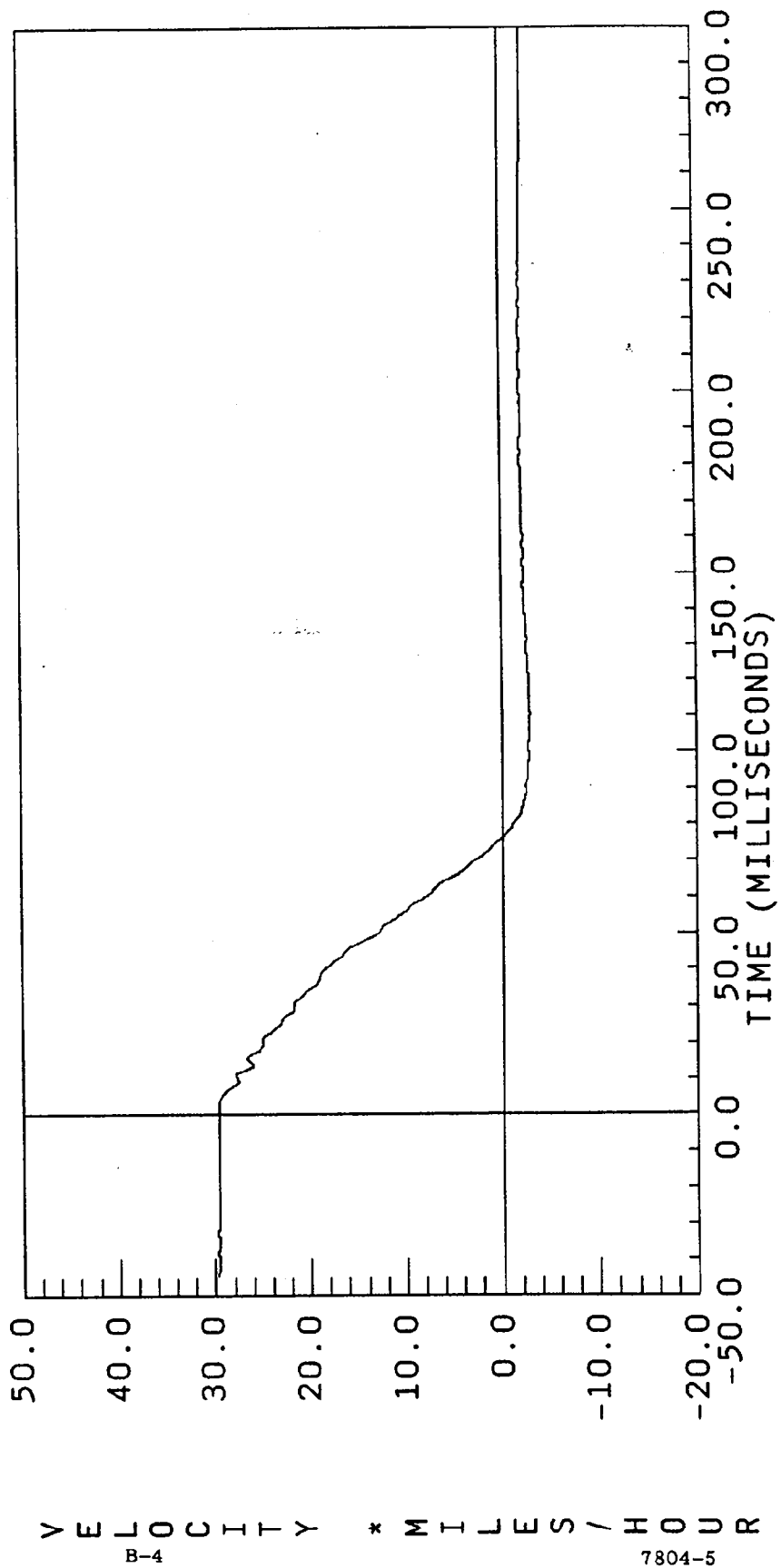


V957-17.DAT

29.60 mph

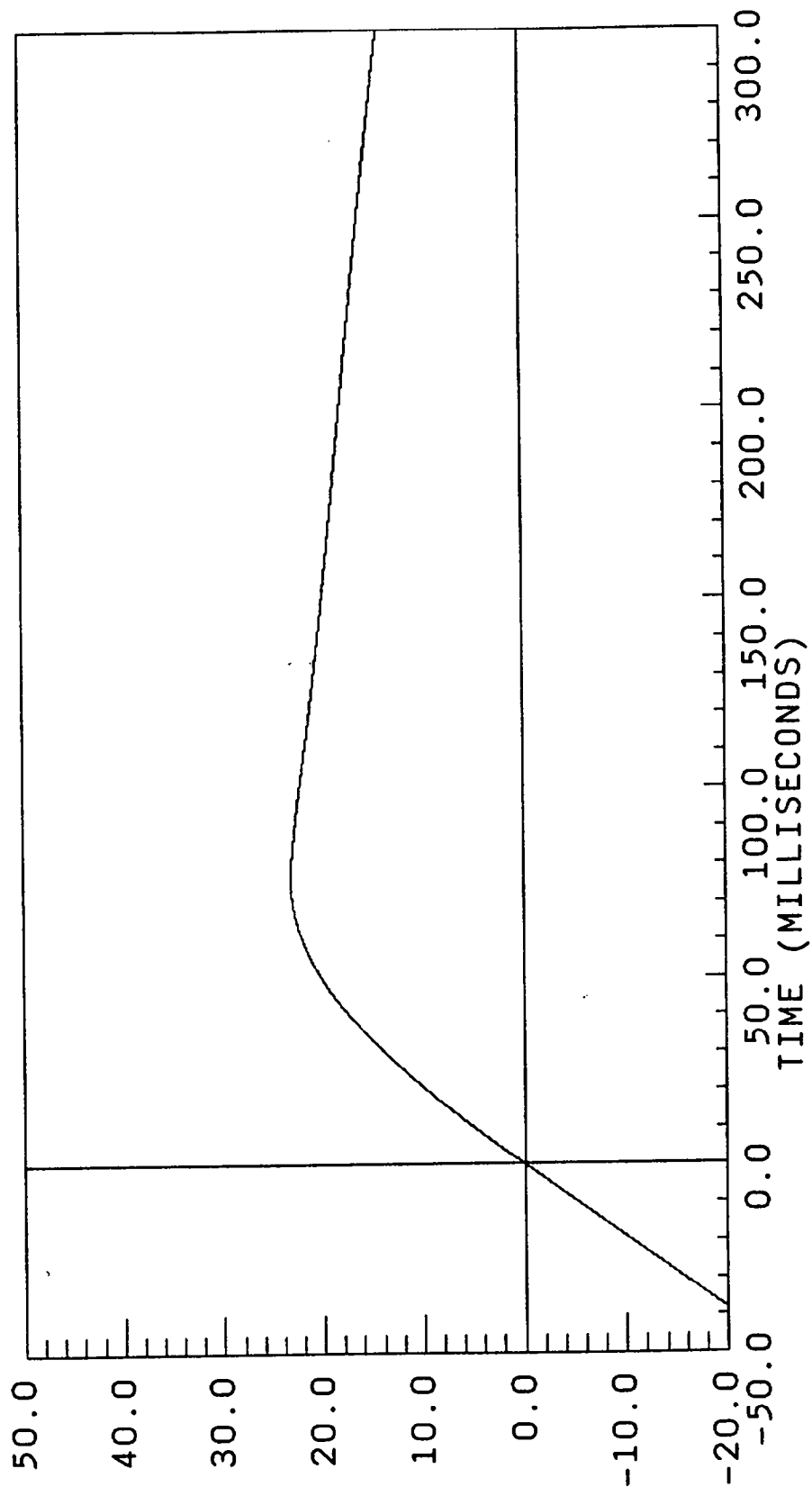
ACC PACK #1(X)
COMPUTED
FILTER CUTOFF: 0Hz

XL AXIS
YMIN = -2.959278 at 110.5500
YMAX = 29.67919 at -44.55000



29.60 mph

ACC PACK #1(X)
COMPUTED
FILTER CUTOFF: OHZ
XL AXIS
YMIN = -23.43315 at 110.5500
YMAX = 23.16131 at 76.12500

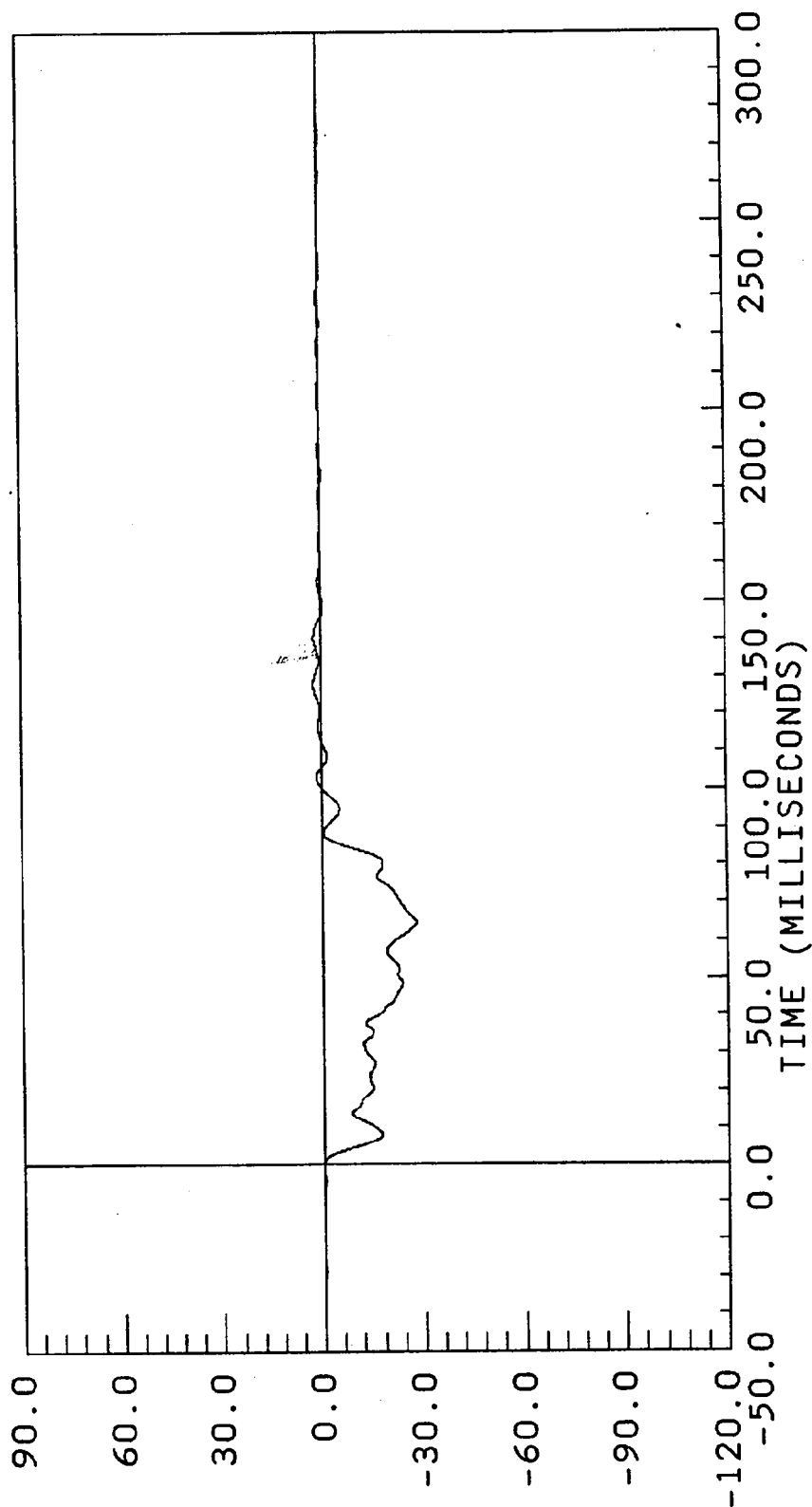


DISPLACEMENT * INCHES

BW957-18.DAT

29.60 mph

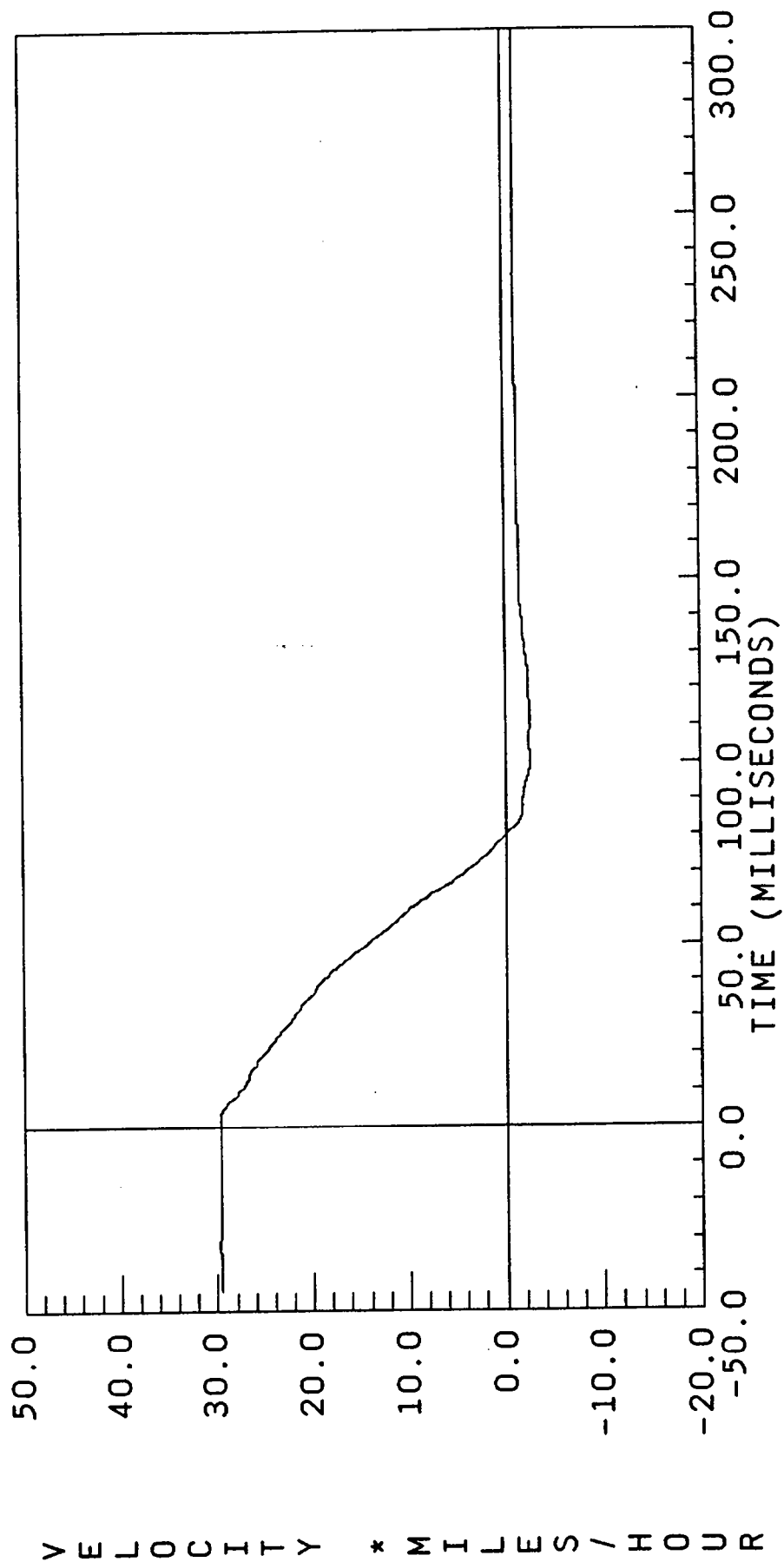
ACC PACK #2(X)
FILTERED
FILTER CUTOFF: 100Hz
XL AXIS
YMIN = -27.92951 at 64.72501
YMAX = 2.348885 at 127.8750



V957-18.DAT

29.60 mph

ACC PACK #2(X) XL AXIS
COMPUTED YMIN = -2.541299 at 111.9750
FILTER CUTOFF: 0Hz YMAX = 29.63552 at -31.05000



D957-18.DAT

29.60 mph

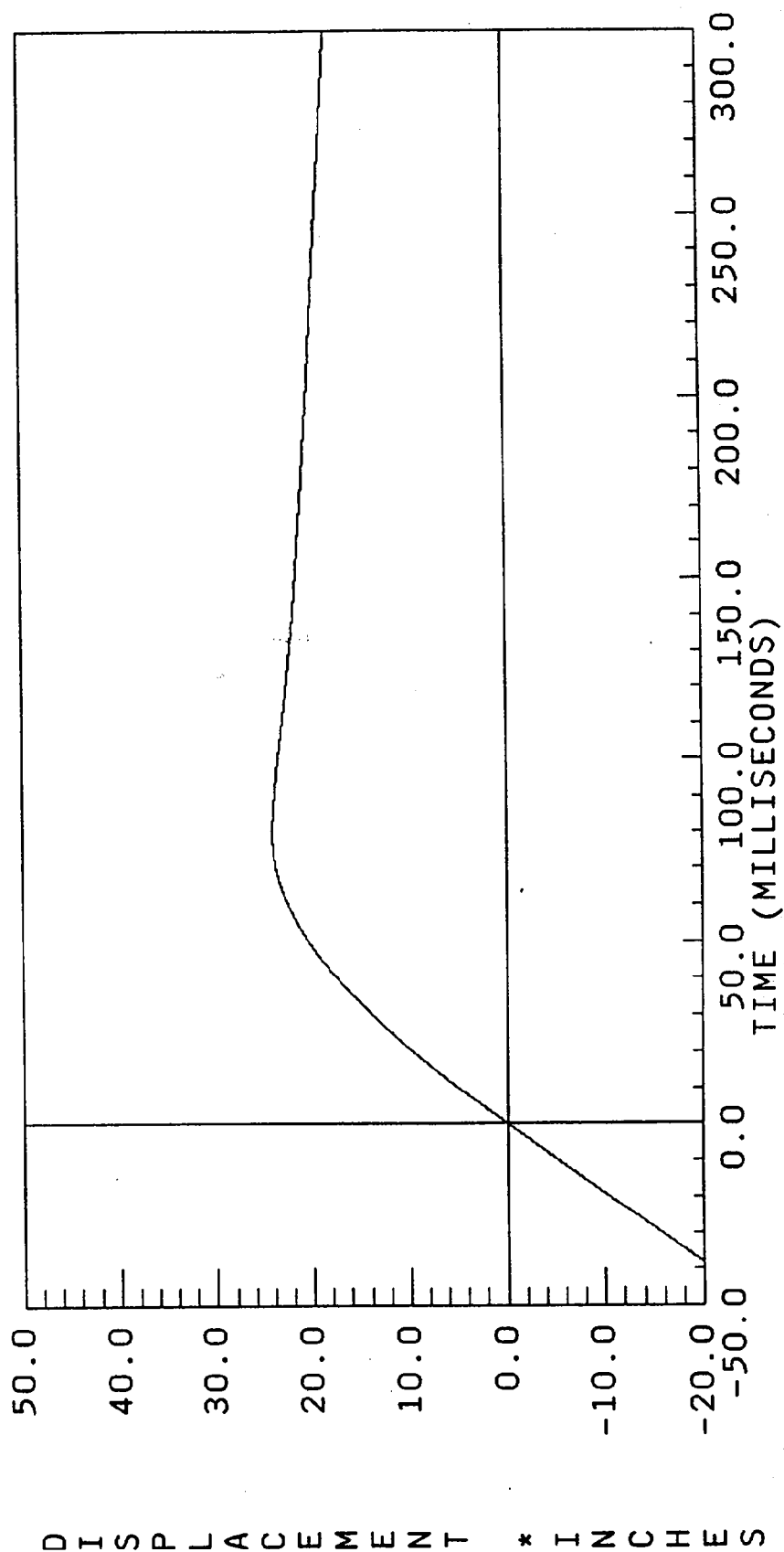
ACC PACK #2(X)
COMPUTED
FILTER CUTOFF:

0HZ

XL AXIS

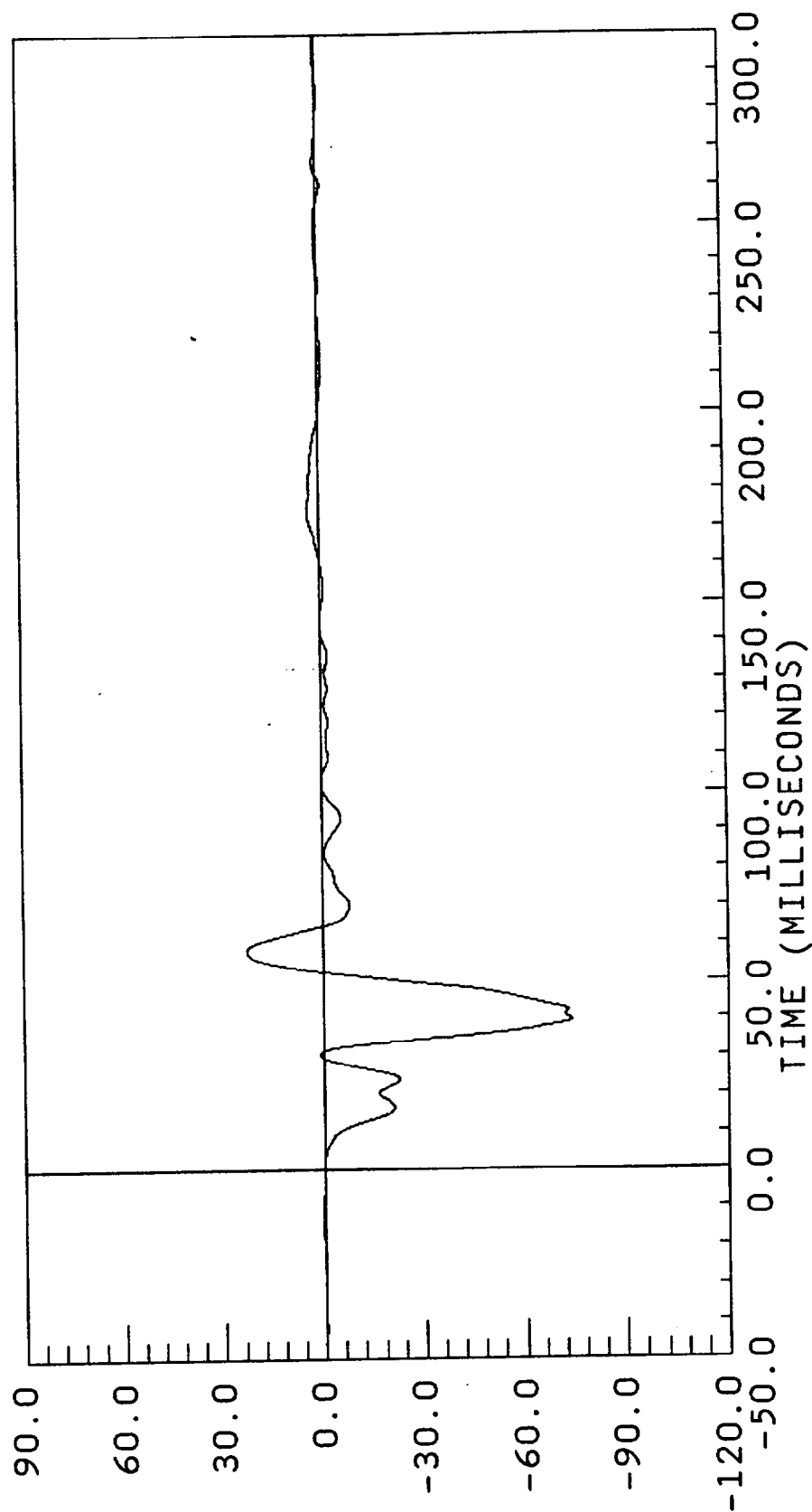
YMIN = -23.43283 at 111.9750

YMAX = 24.09563 at 79.95000



29.60 mph

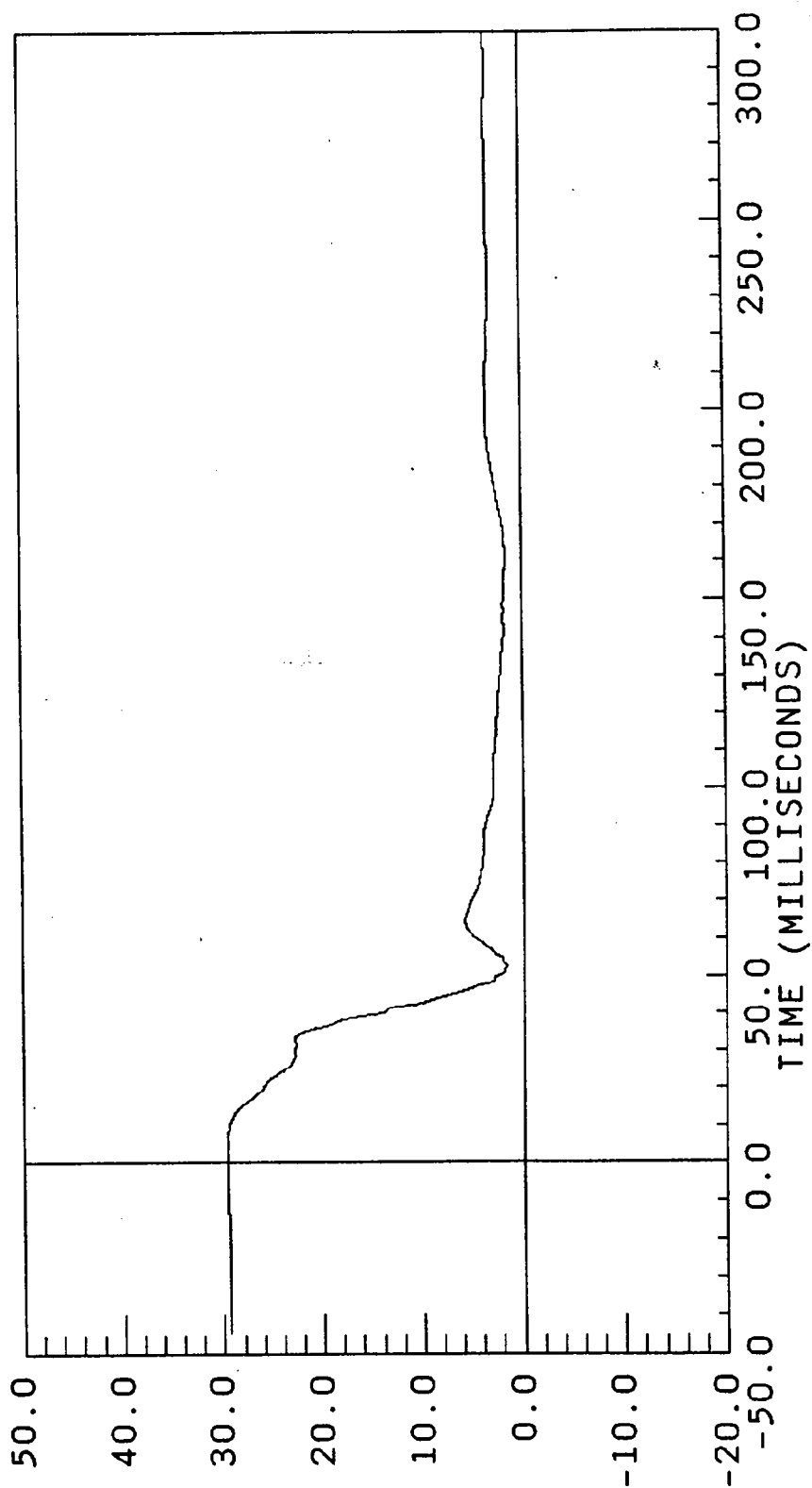
ACC PACK #3(X) XL AXIS
 FILTERED YMIN = -73.90453 at 39.52500
 FILTER CUTOFF: 100Hz YMAX = 23.02473 at 57.90000



V957-19.DAT

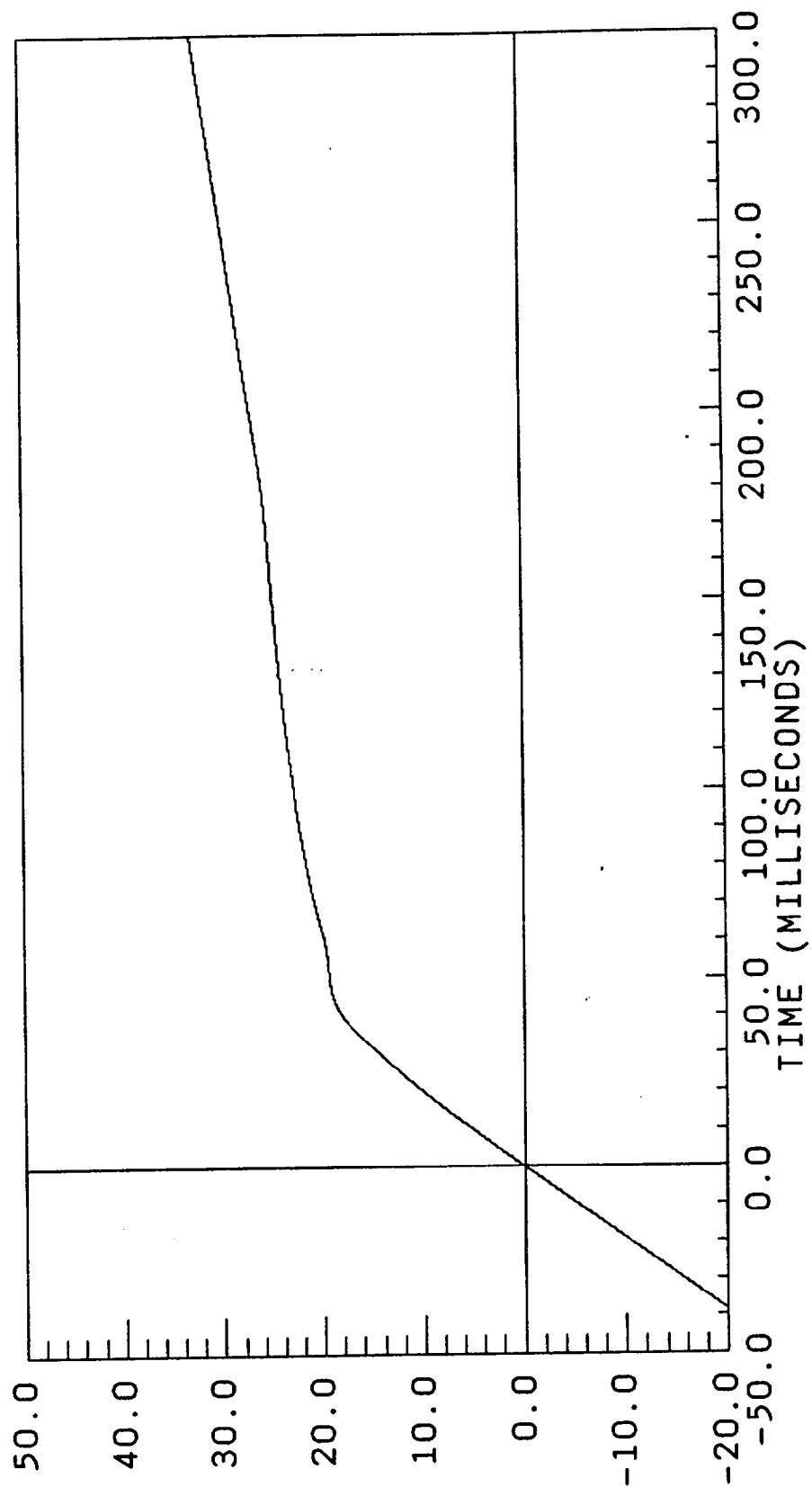
29.60 mph

ACC PACK #3(X) XL AXIS
COMPUTED YMIN = 1.616713 at 52.72500
FILTER CUTOFF: 0HZ YMAX = 29.61589 at 4.425000



29.60 mph

ACC PACK #3(X) XL AXIS
 COMPUTED YMIN = -23.30794 at 52.72500
 FILTER CUTOFF: 0Hz YMAX = 32.70772 at 300.0000

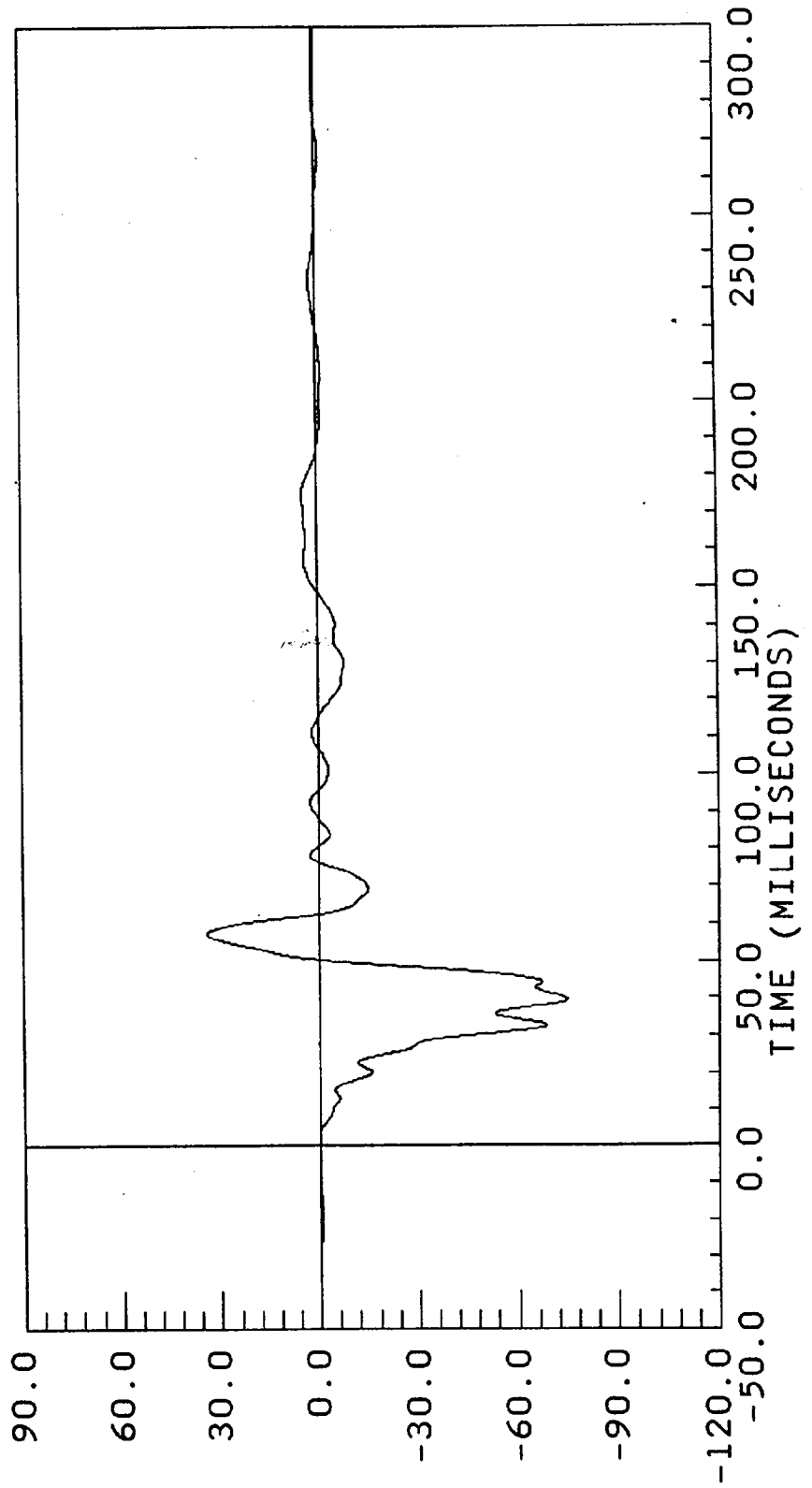


DISPLACEMENT * INCHES

BW957-20.DAT

29.60 mph

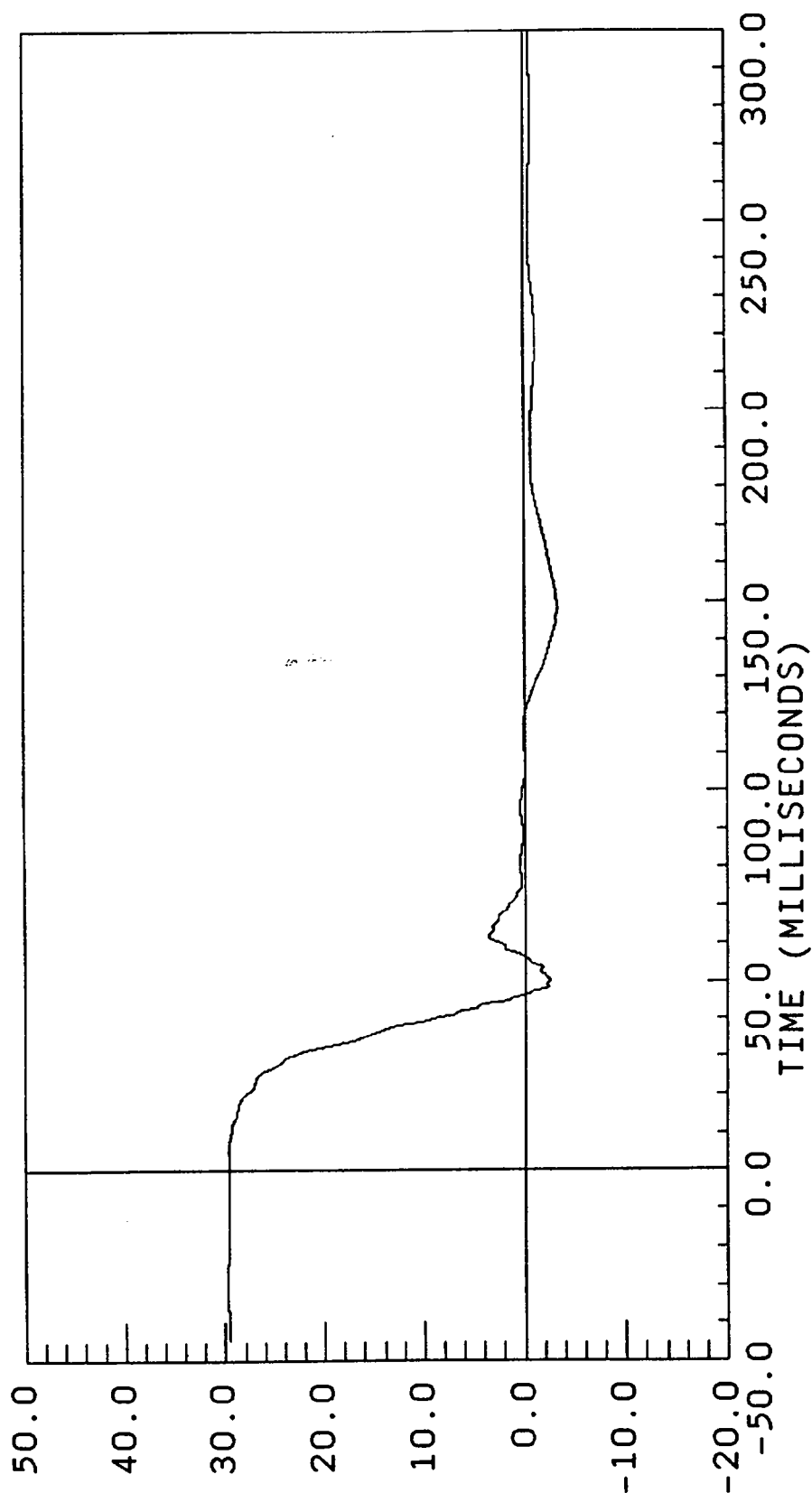
ACC PACK #4(X)
FILTERED
FILTER CUTOFF: 100Hz
XL AXIS
YMIN = -74.79160 at 39.52500
YMAX = 34.33933 at 57.30000



V957-20.DAT

29.60 mph

ACC PACK #4(X) XL AXIS
COMPUTED YMIN = -3.327719 at 149.6250
FILTER CUTOFF: 0Hz YMAX = 29.61756 at -28.72500

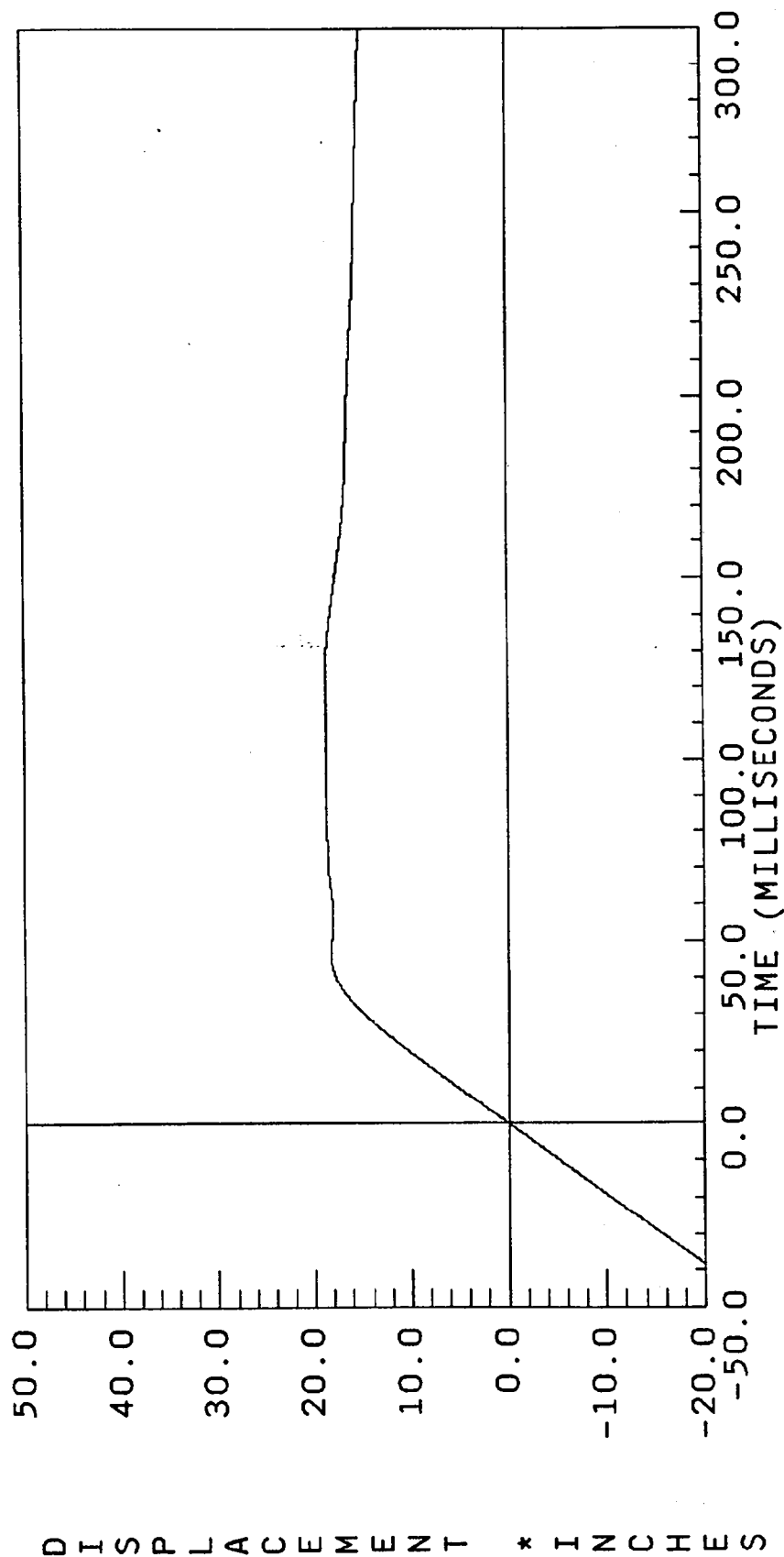


VELOCITY * MILES / HOUR

D957-20.DAT

29.60 mph

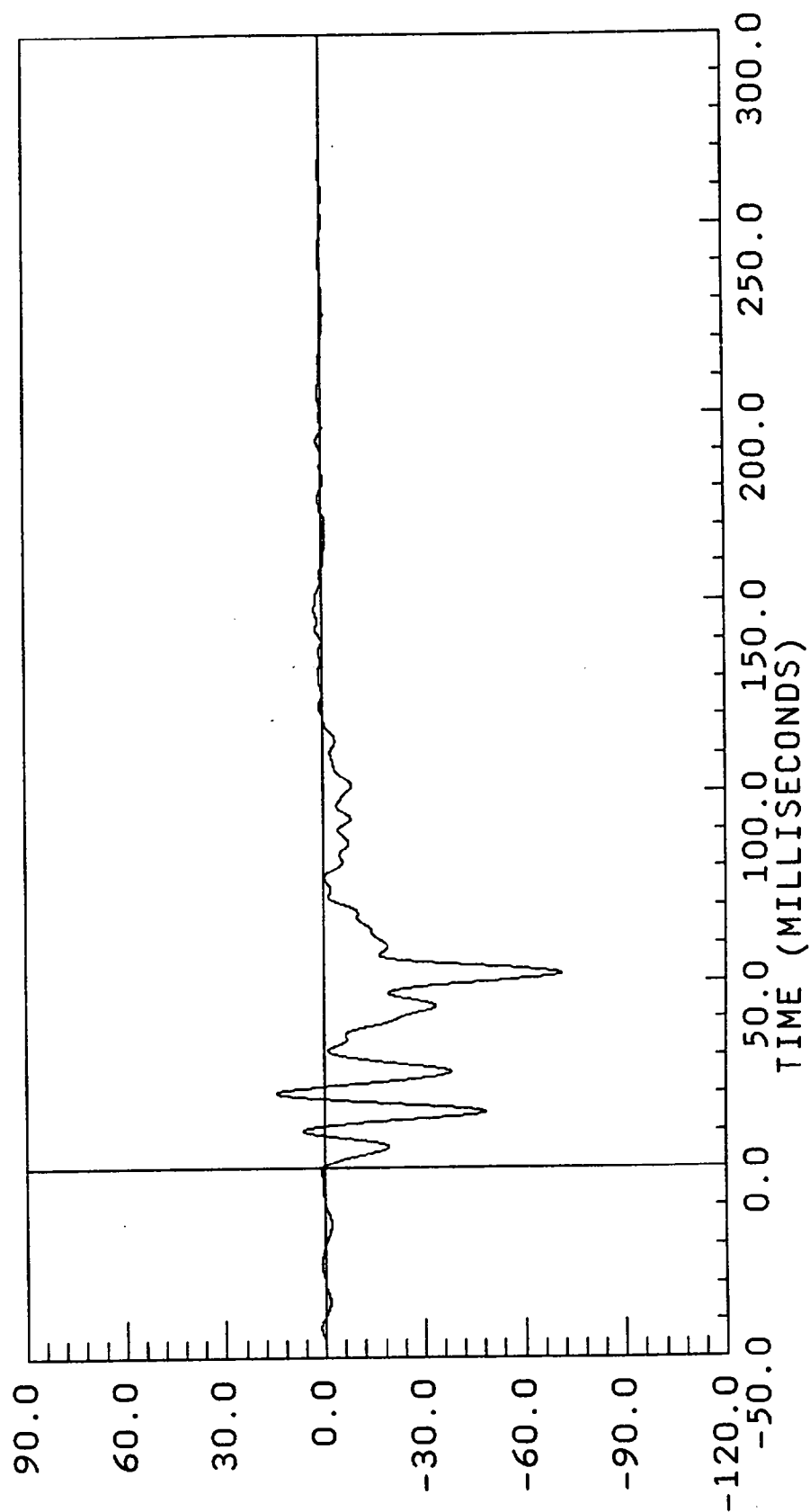
ACC PACK #4(X) XL AXIS
COMPUTED YMIN = -23.42943 at 149.6250
FILTER CUTOFF: 0Hz YMAX = 18.75470 at 119.6250



BW957-21.DAT

29.60 mph

ACC PACK #5(X) XL AXIS
FILTERED YMIN = -71.24413 at 51.82500
FILTER CUTOFF: 100Hz YMAX = 14.55764 at 20.10000

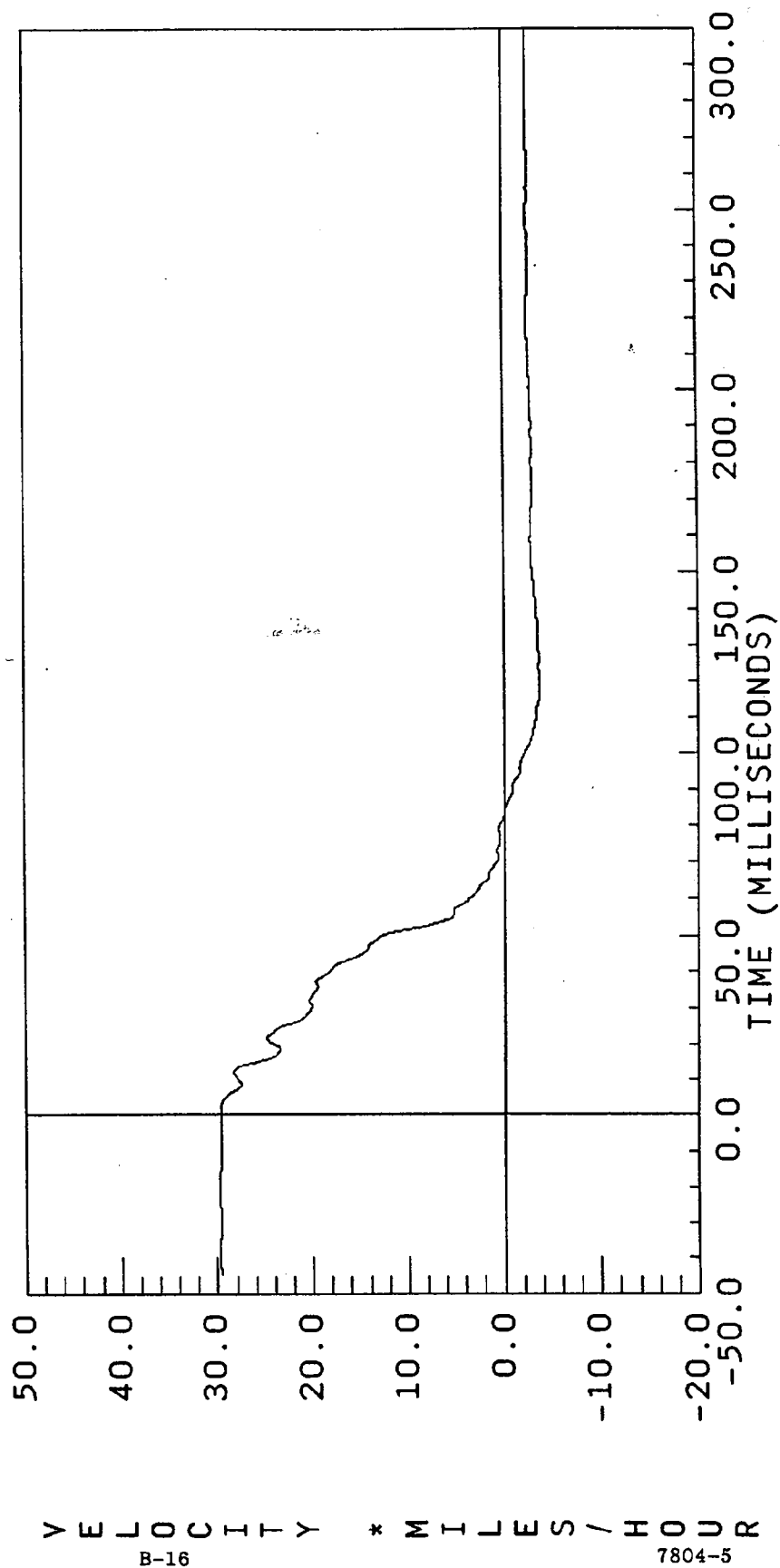


ACCELERATION * G * S *
B-15 7804-5

V957-21.DAT

29.60 mph

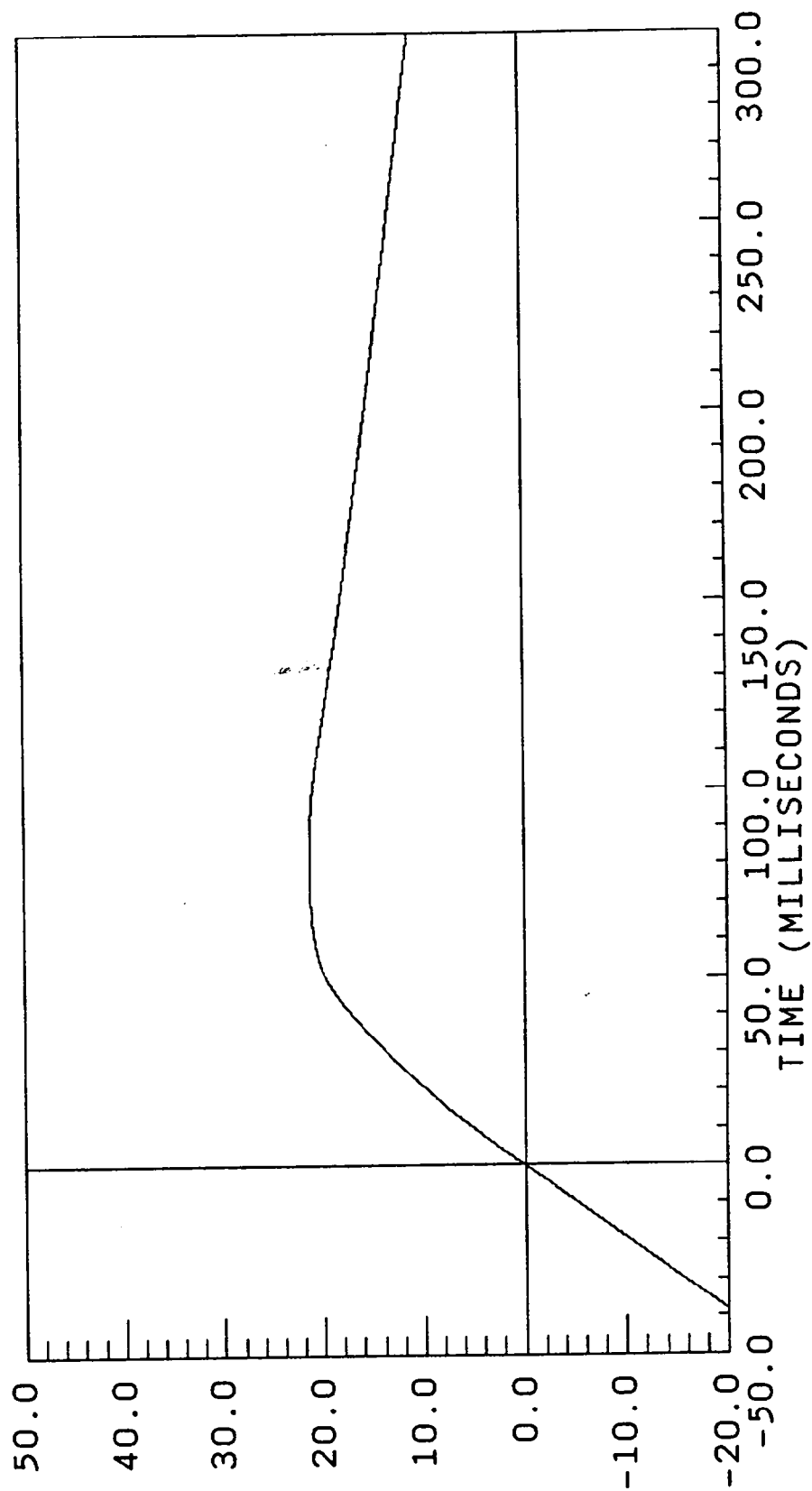
ACC PACK #5(X)
COMPUTED
FILTER CUTOFF: OHZ
XL AXIS
YMIN = -3.751955 at 120.9750
YMAX = 29.63145 at -40.12500



D957-21.DAT

29.60 mph

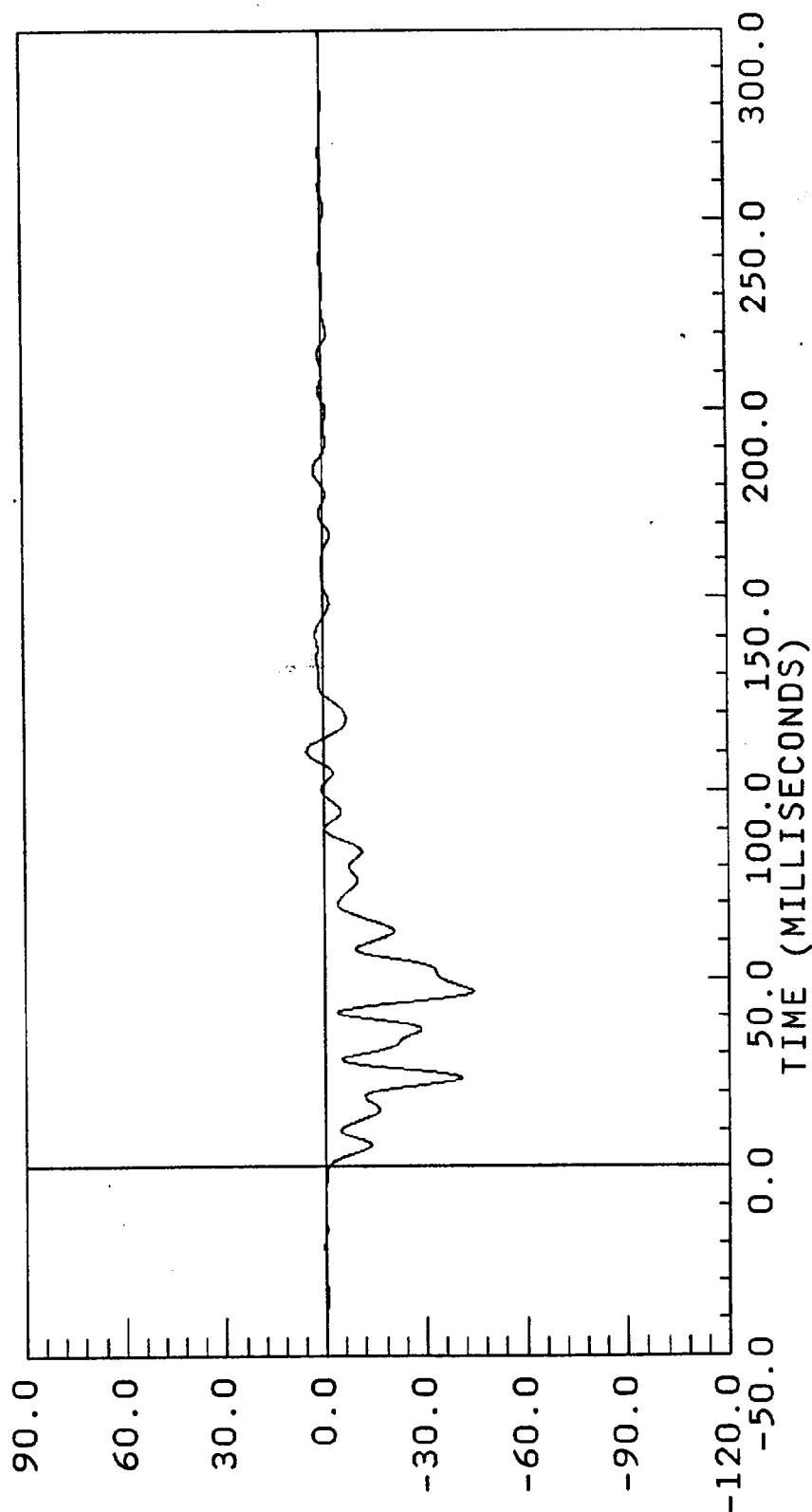
ACC PACK #5(X) XL AXIS
COMPUTED YMIN = -23.43835 at 120.9750
FILTER CUTOFF: 0Hz YMAX = 21.37211 at 82.42500



BW957-22.DAT

29.60 mph

ACC PACK #6(X)
FILTERED
FILTER CUTOFF: 100Hz
XL AXIS
YMIN = -44.53033 at 46.50000
YMAX = 5.287898 at 110.4000



ACCELERATION * G, S *

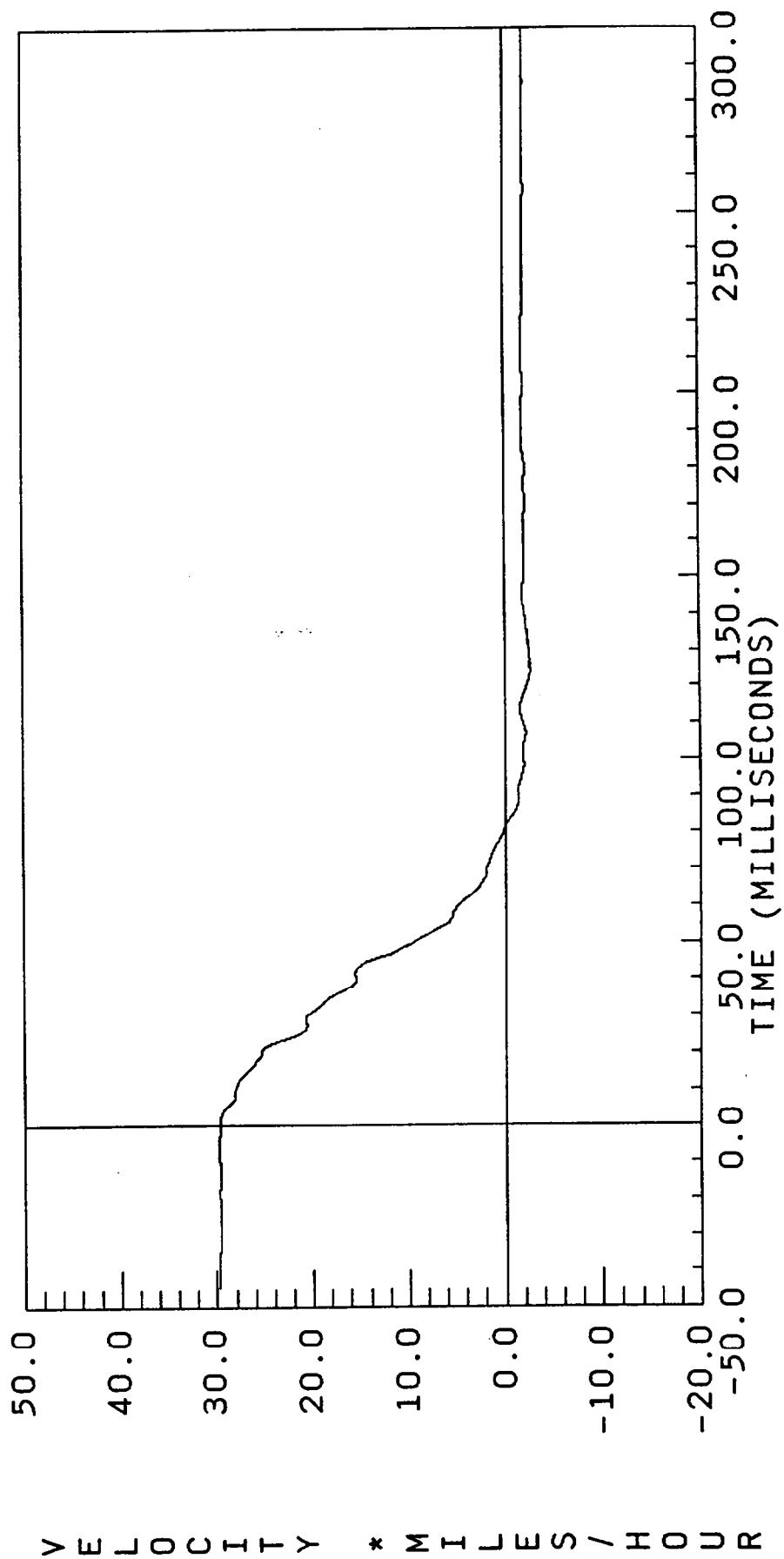
B-18

7804-5

V957-22.DAT

29.60 mph

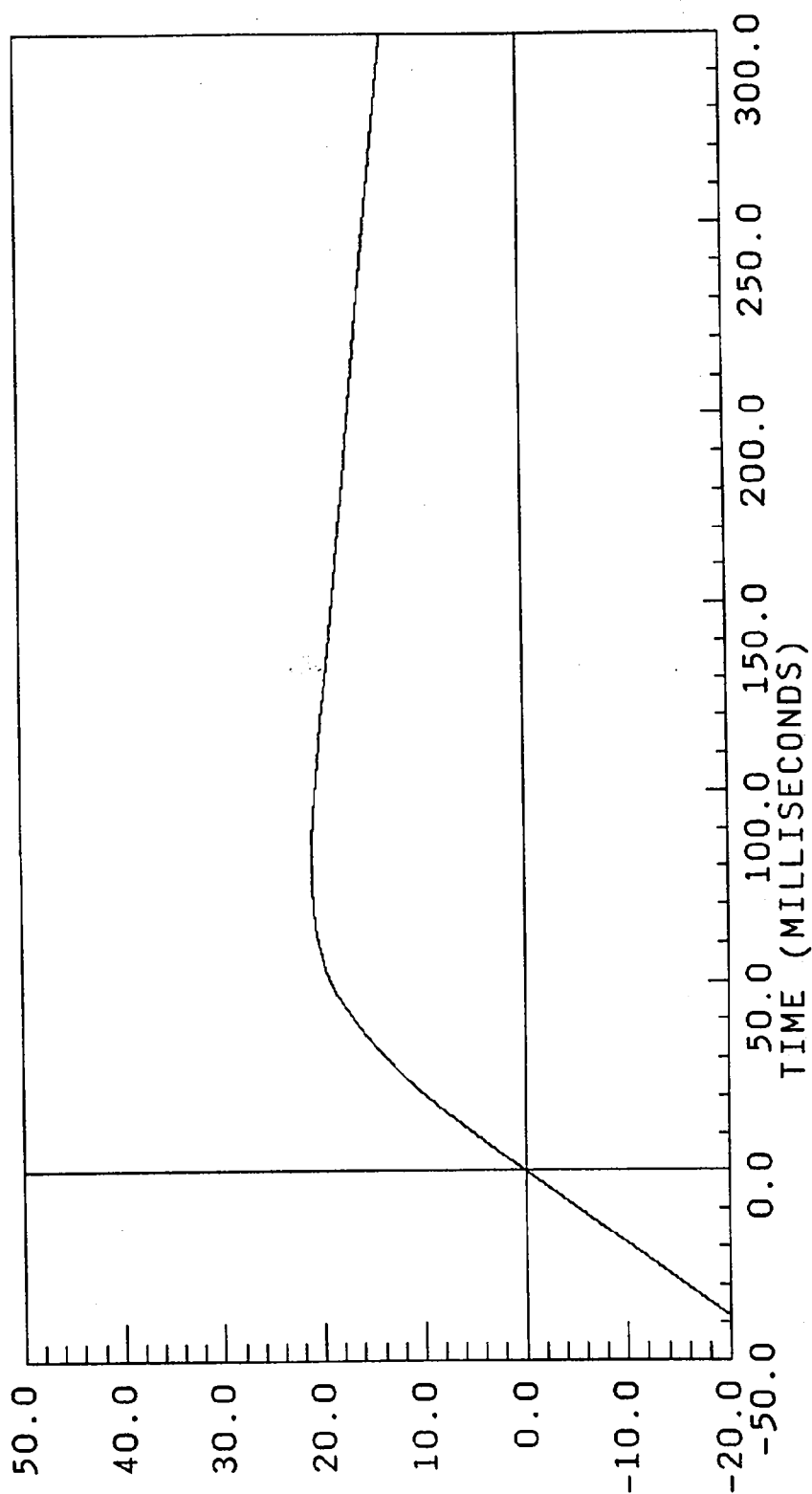
ACC PACK #6(X)
COMPUTED
FILTER CUTOFF: OHZ
XL AXIS
YMIN = -2.744934 at 124.1250
YMAX = 29.66242 at -41.92500



D957-22.DAT

29.60 mph

ACC PACK #6(X) XL AXIS
COMPUTED YMIN = -23.44610 at 124.1250
FILTER CUTOFF: 0Hz YMAX = 21.06590 at 81.00000

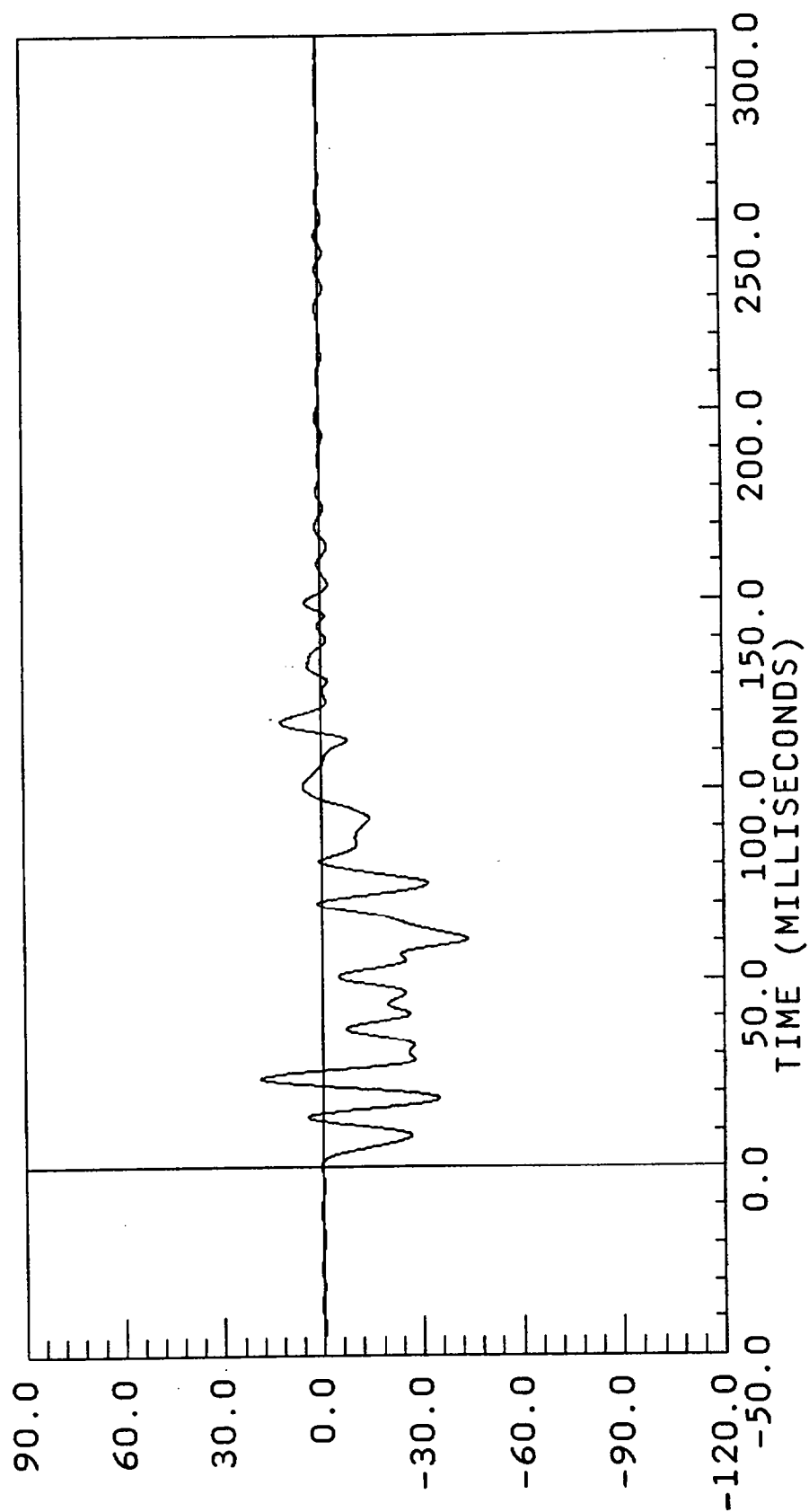


DISPLACEMENT * INCHES

BW957-23.DAT

29.60 mph

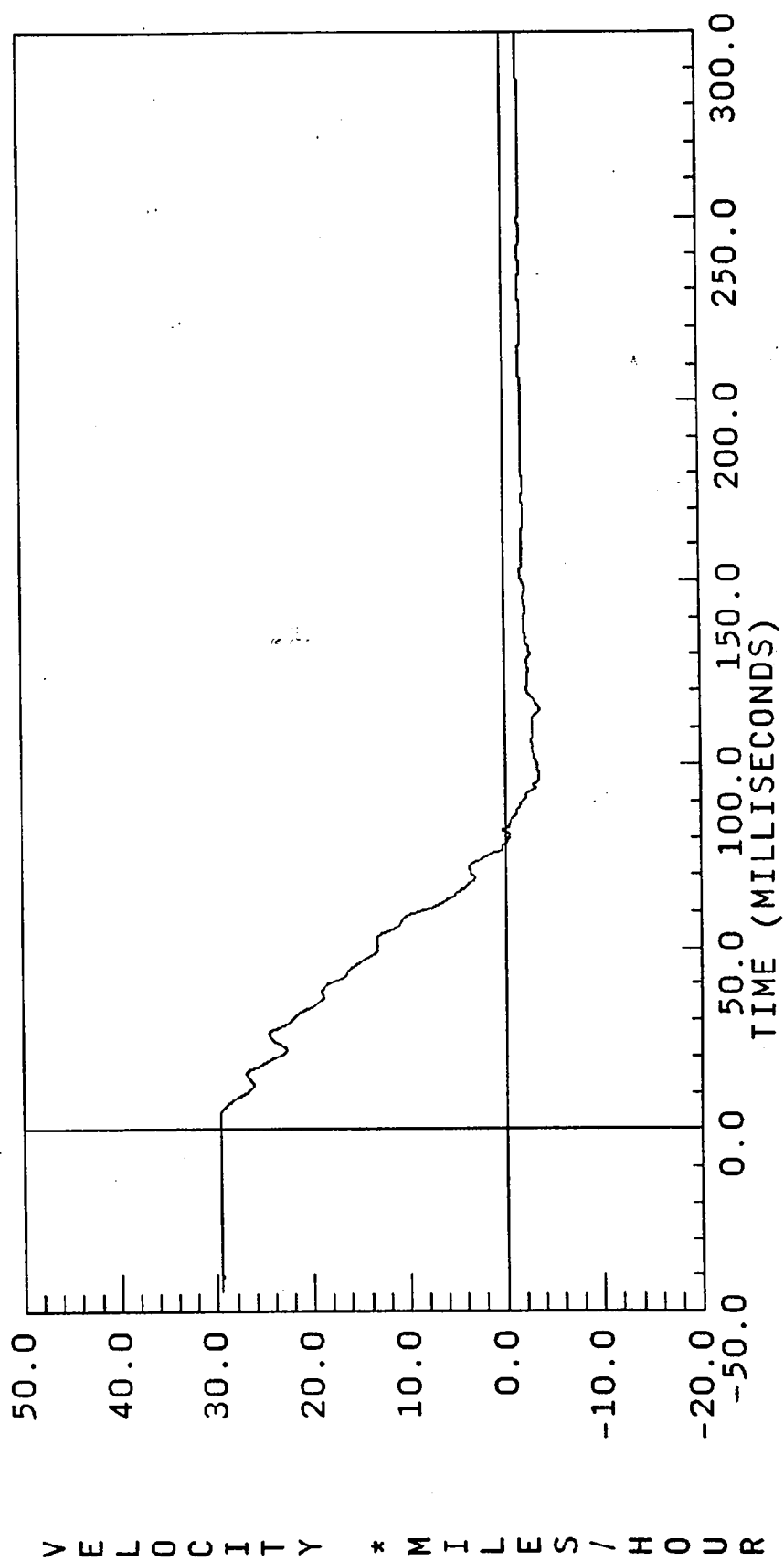
ACC PACK #7(X) XL AXIS
FILTERED YMIN = -43.85235 at 60.52500
FILTER CUTOFF: 100Hz YMAX = 18.71237 at 23.70000



V957-23.DAT

29.60 mph

ACC PACK #7(X) XL AXIS
COMPUTED YMIN = -3.639586 at 115.0500
FILTER CUTOFF: 0Hz YMAX = 29.55131 at -8.325001



D957-23.DAT

29.60 mph

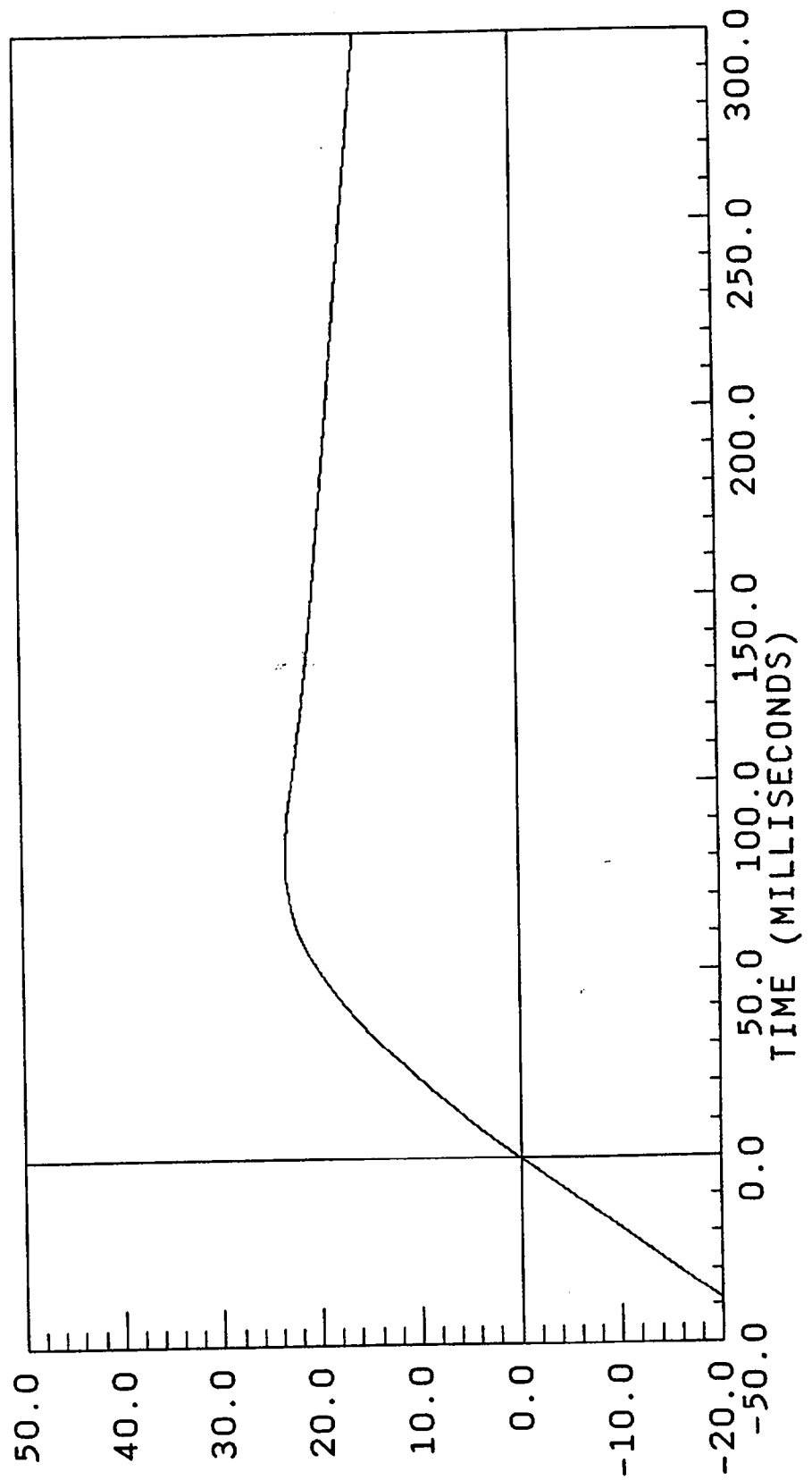
ACC PACK #7(X)
COMPUTED
FILTER CUTOFF:

0Hz

XL AXIS

YMIN = -23.39114 at 115.0500

YMAX = 23.31641 at 78.52500



DISPLACEMENT * INCHES

TEST NO. CL5103

DUMMY DATA

CHANNEL	FILTER CLASS
Head Accelerations	1000
Chest Accelerations	180
Femur Forces	600

HEAD INJURY CRITERION
HEAD SEVERITY INDEX
35MS. MAXIMUM DURATION

NHTSA CRASH TEST - PROC. 208

FUN= 957

POS#1 HEAD R

HIC= 435.4 FROM T1= .06367 TO T2= .09967
AVERAGE ACCELERATION BETWEEN T1 AND T2= 43.0G'S
EVENT TIME= 300.0 MSEC
SEVERITY INDEX= 545.6

UDS\$957-1.DAT

29.60 mph

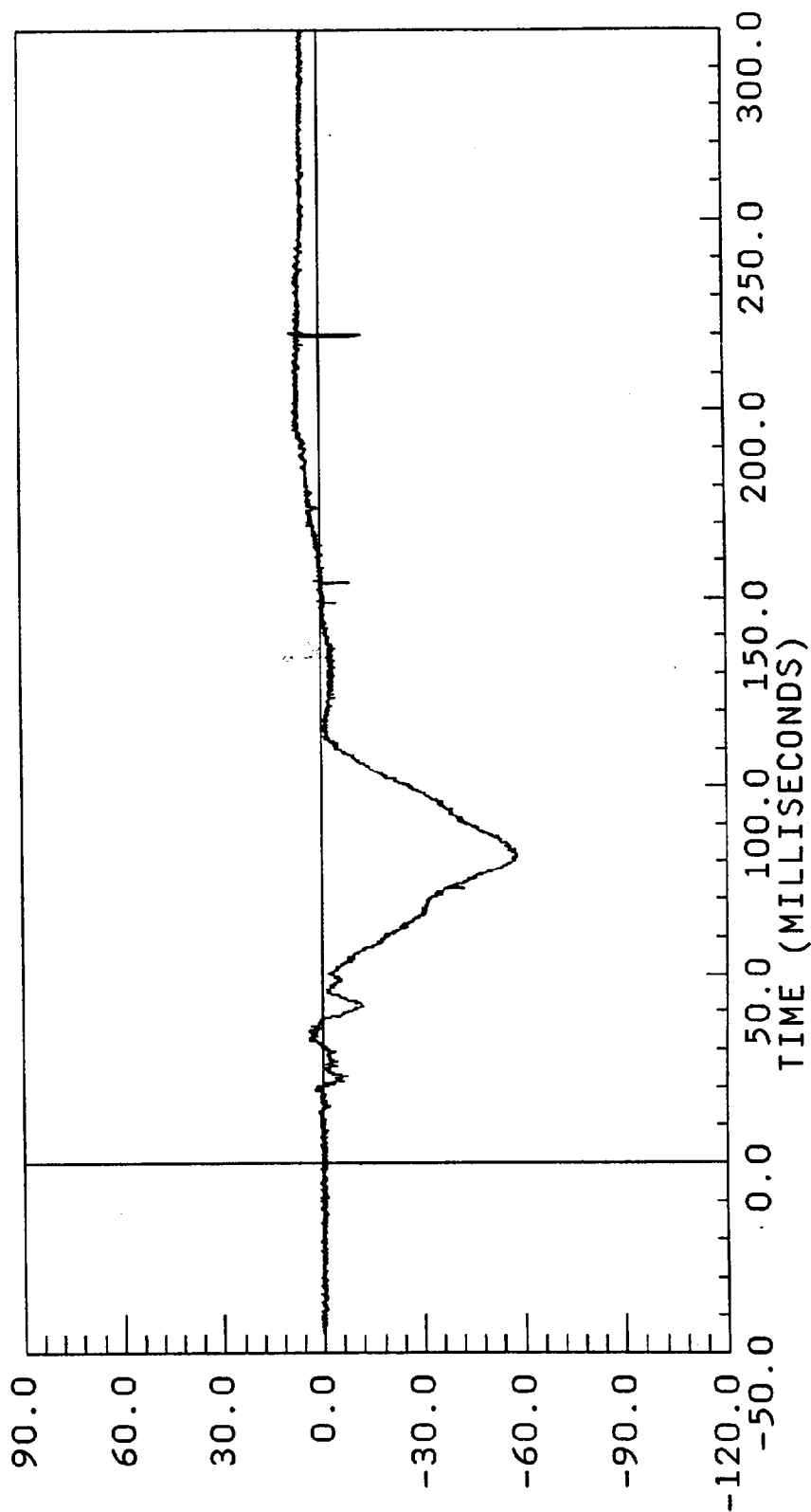
POS#1 HEAD X

XL AXIS

YMIN = -58.04200 at 81.00000

YMAX = 8.760300 at 220.2000

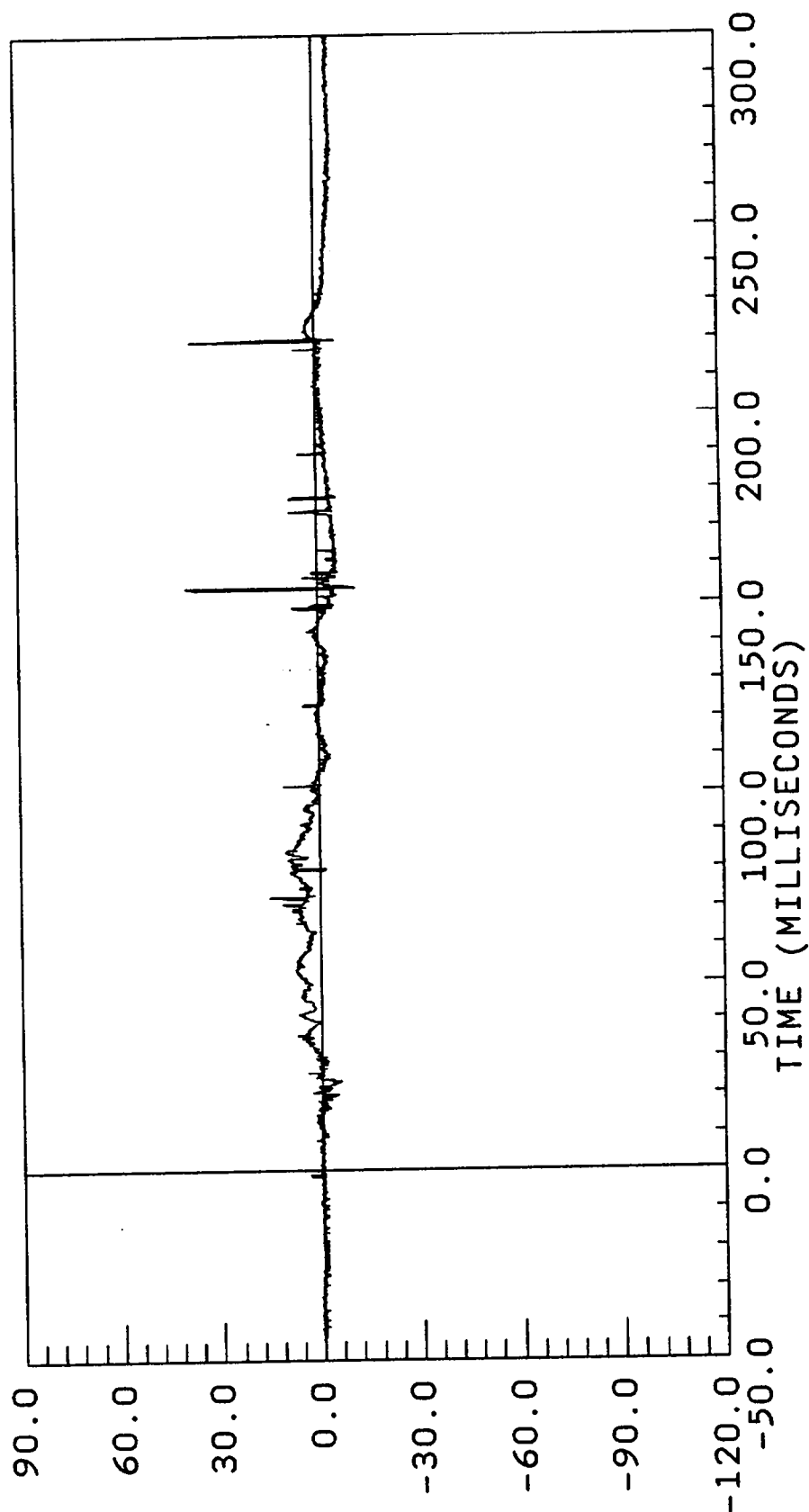
FILTER CUTOFF: 0Hz



UDS\$957-2.DAT

0.00 mph

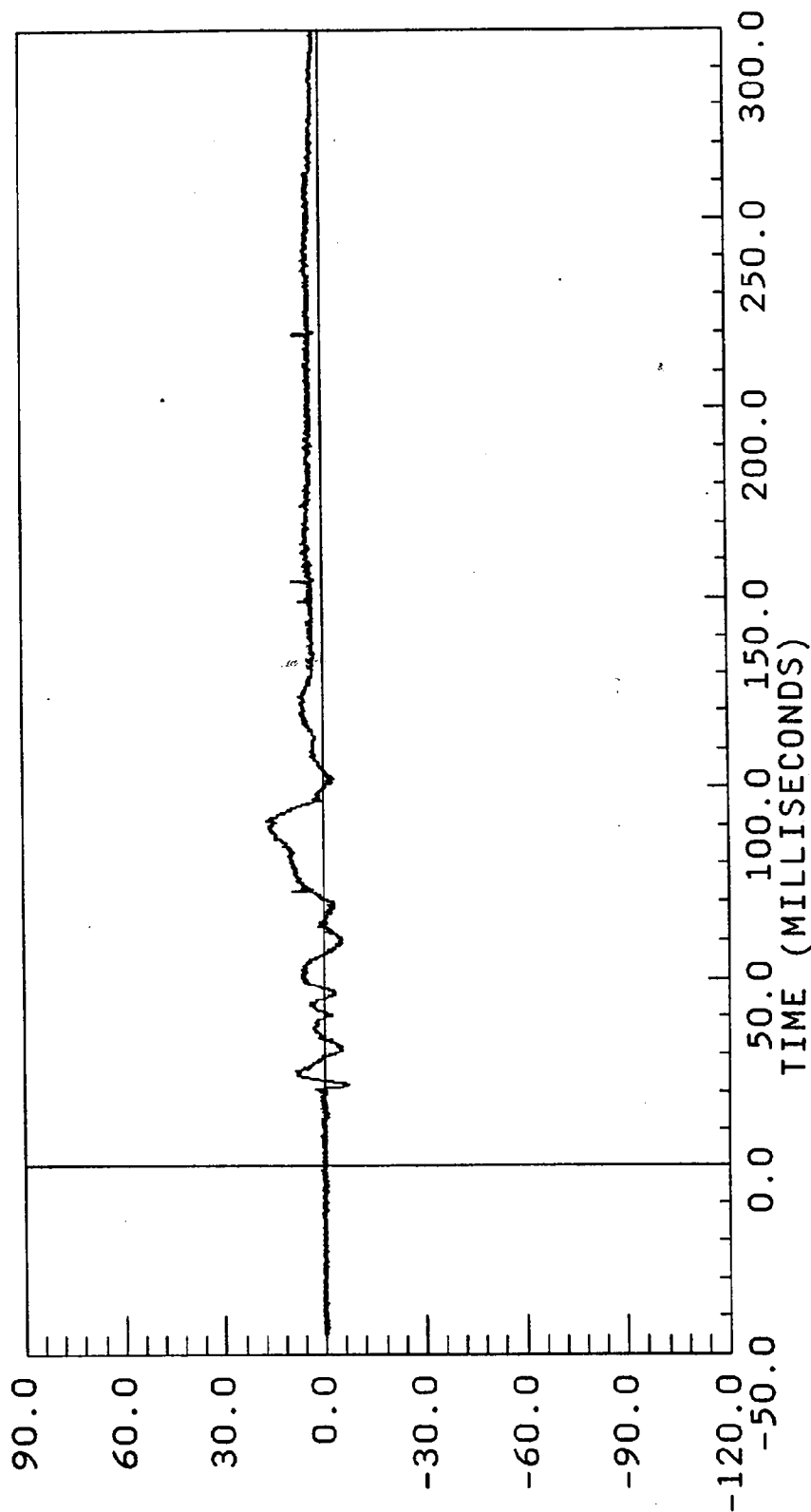
POS#1 HEAD Y
YL AXIS
YMIN = -11.33300 at 154.5750
YMAX = 39.80800 at 154.2750
FILTER CUTOFF: 0HZ



UDS\$957-3.DAT

0.00 mph

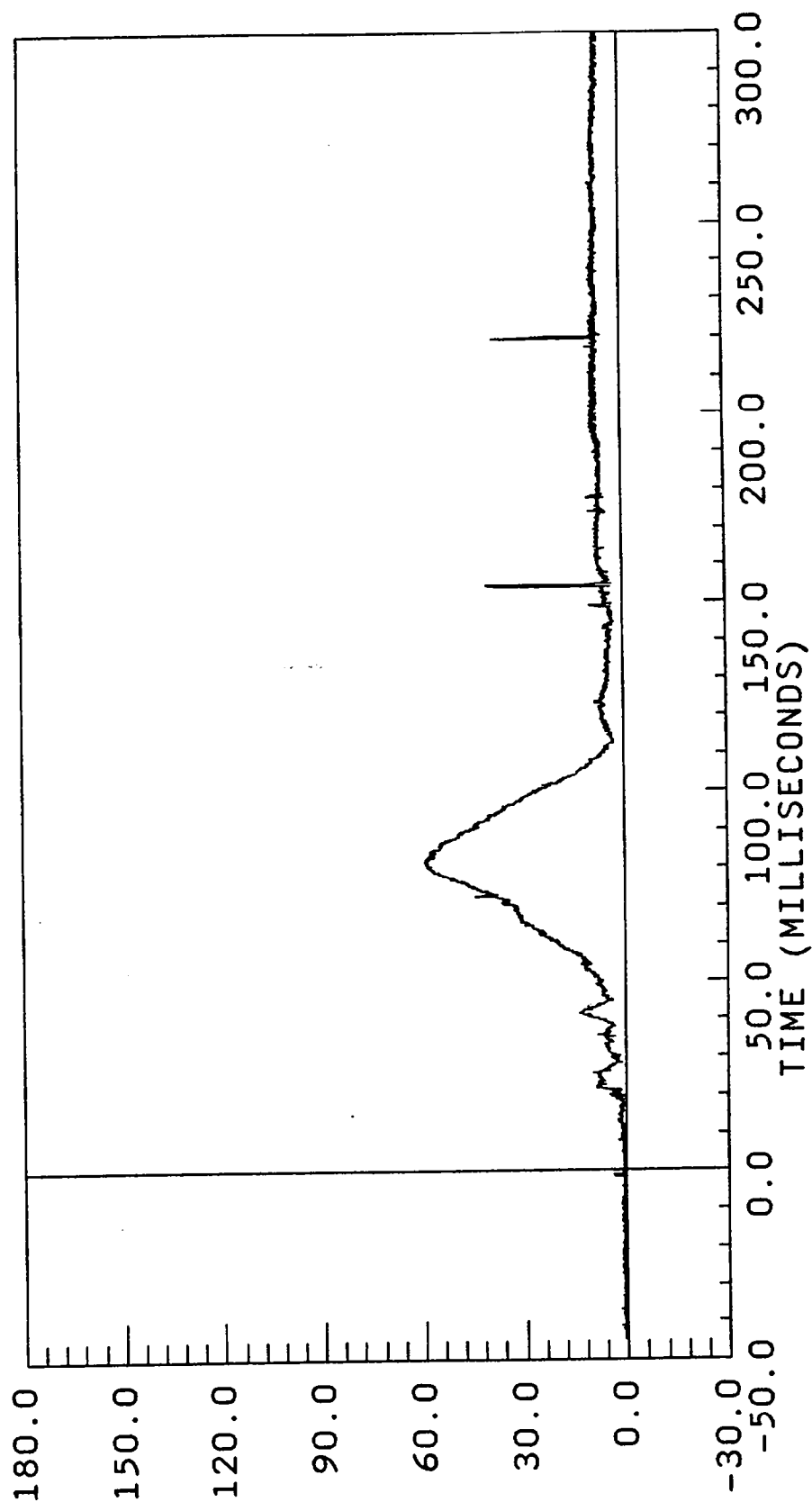
POS#1 HEAD Z
ZL AXIS
YMIN = -7.105500 at 21.97500
YMAX = 17.28300 at 91.27500
FILTER CUTOFF: 0HZ



ACCELERATION * G, S *

0.00 mph

POS#1 HEAD
NONSTANDARD
FILTER CUTOFF: OHZ
RS AXIS
YMIN = 0.833483 at -26.32500
YMAX = 59.54212 at 81.75000

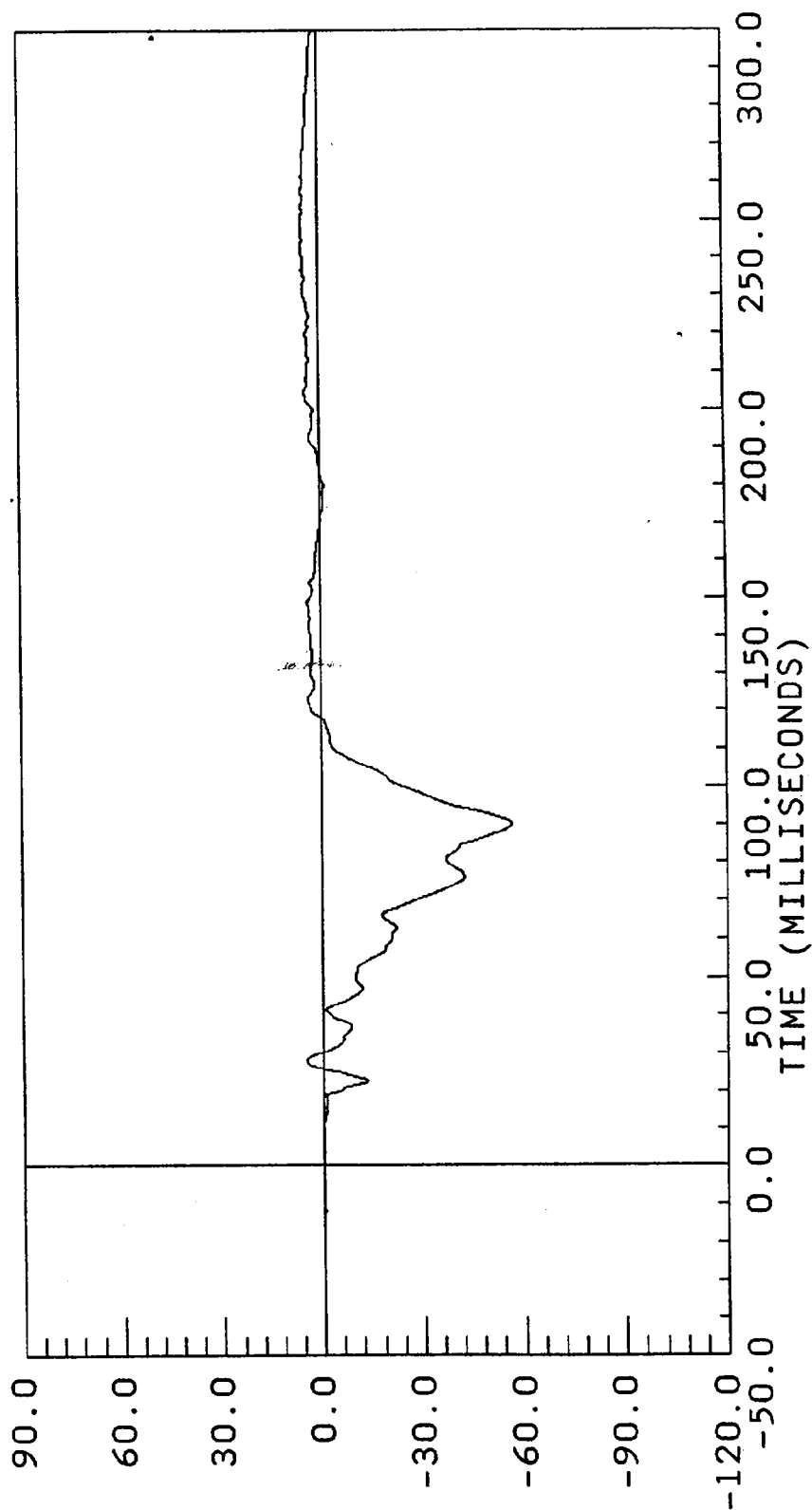


ACCELERATION * G, S *

BW957-4.DAT

29.60 mph

POS#1 CHEST X
FILTERED
FILTER CUTOFF: 300Hz
XL AXIS
YMIN = -56.56983 at 90.22501
YMAX = 5.125825 at 241.5750

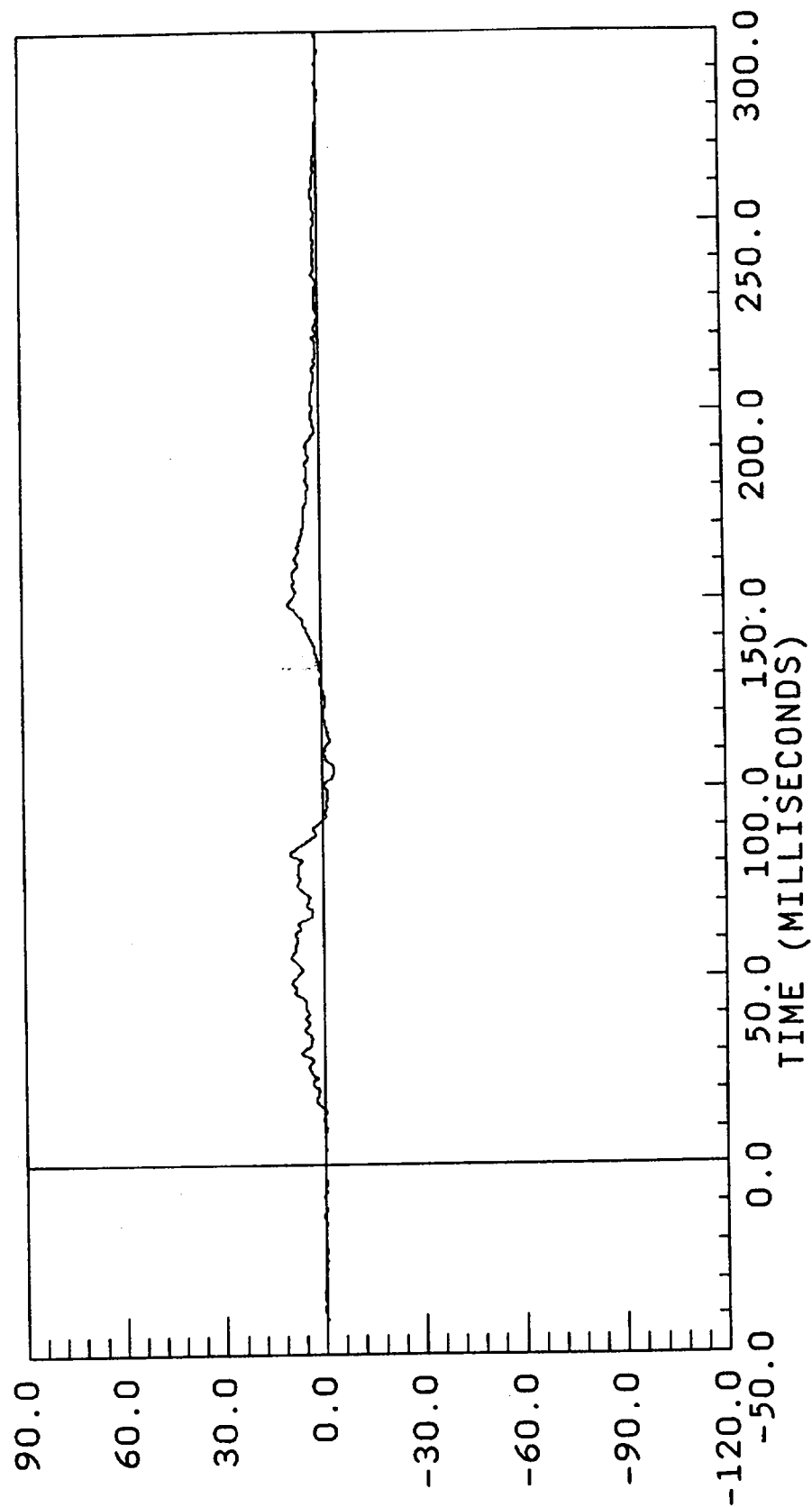


ACCELERATION * G * S *
B-30 7804-5

BW957-5.DAT

0.00 mph

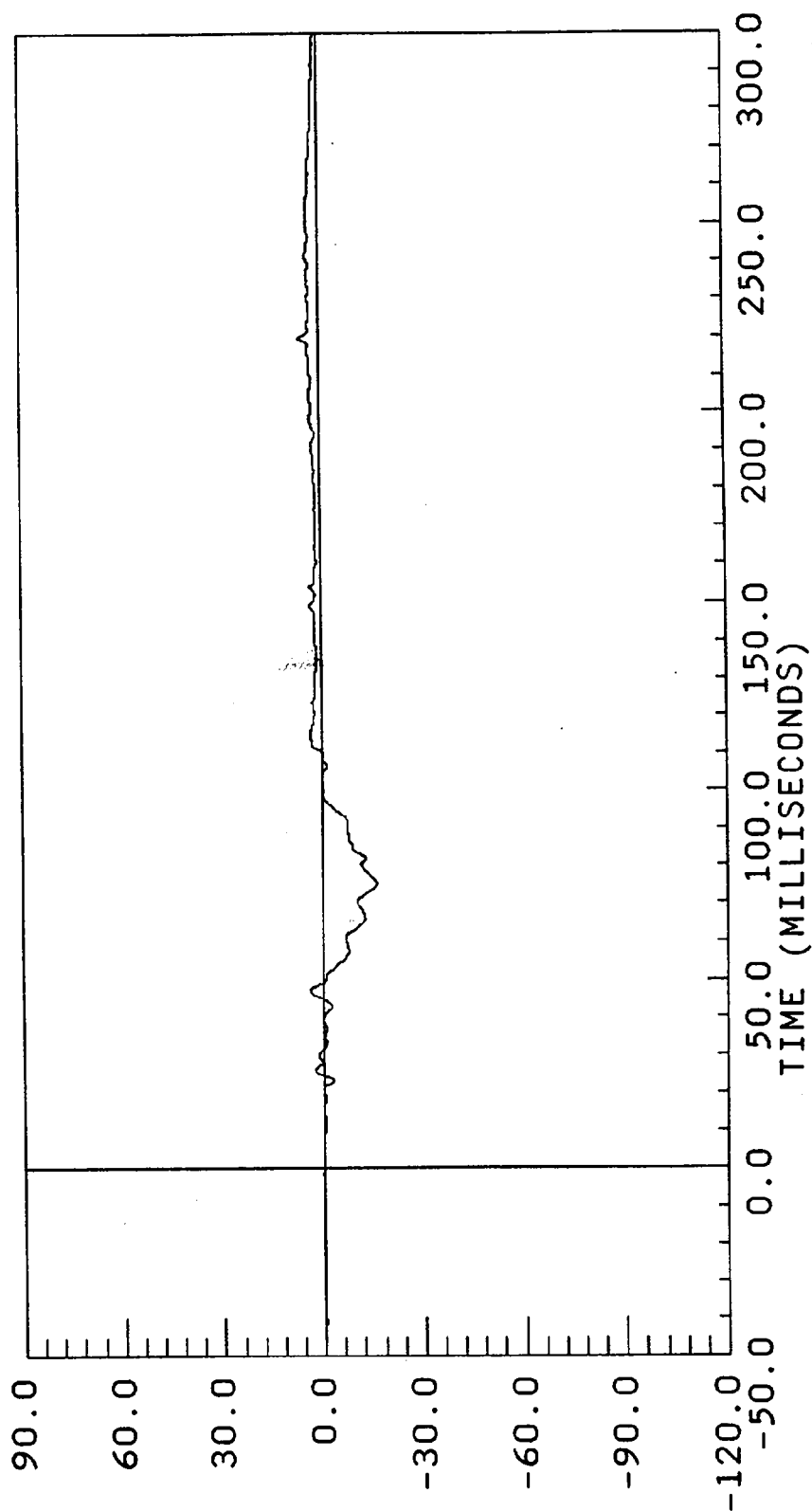
POS#1 CHEST Y
FILTERED
FILTER CUTOFF: 300HZ
YL AXIS
YMIN = -3.610897 at 104.9250
YMAX = 10.08806 at 82.95000



BW957-6.DAT

0.00 mph

POS#1 CHEST Z
FILTERED
FILTER CUTOFF: 300HZ
ZL AXIS
YMIN = -16.01998 at 74.85001
YMAX = 6.260517 at 219.6750

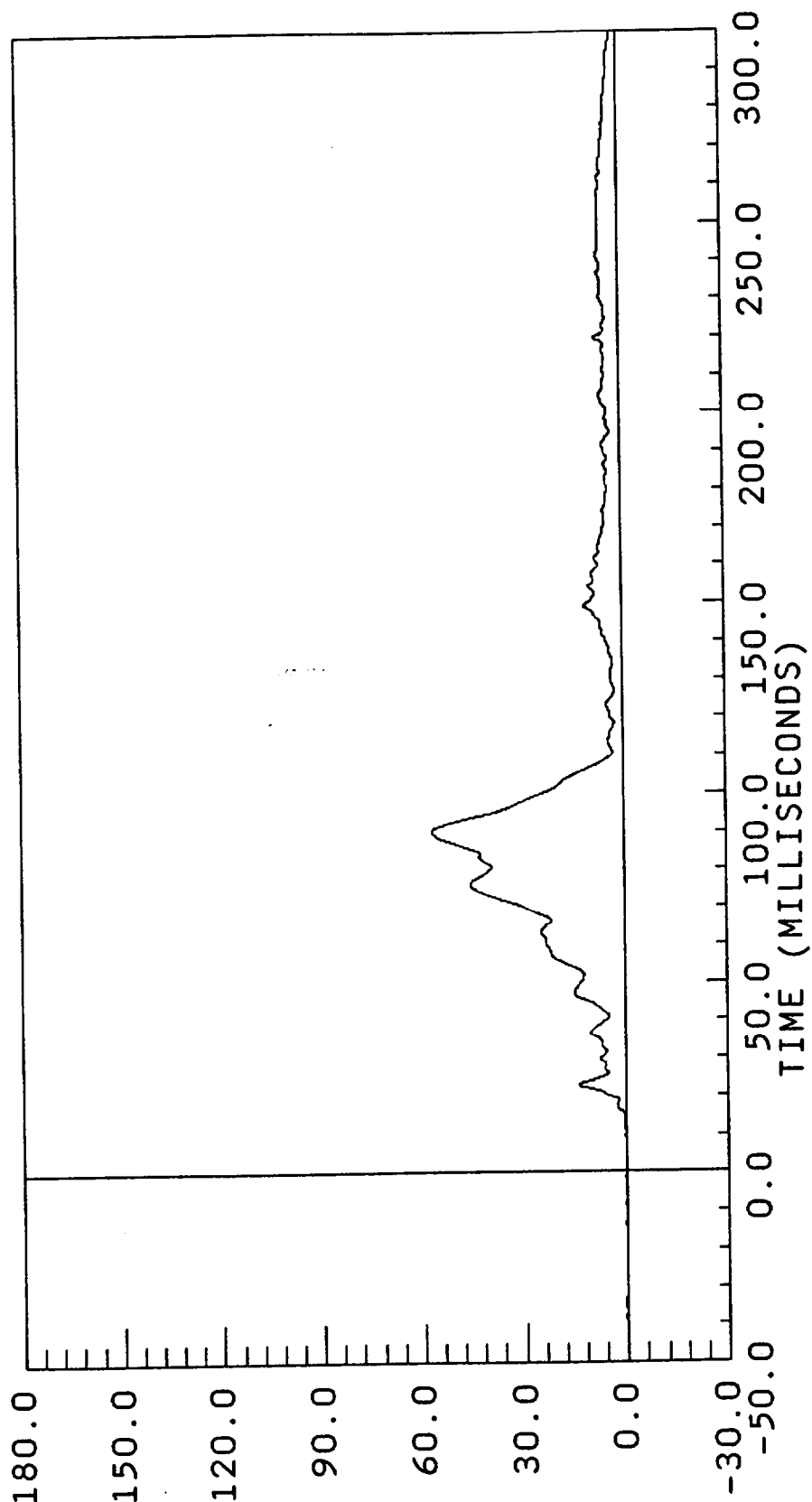


ACCELERATION * G, S *

CHST957-1.DAT

0.00 mph

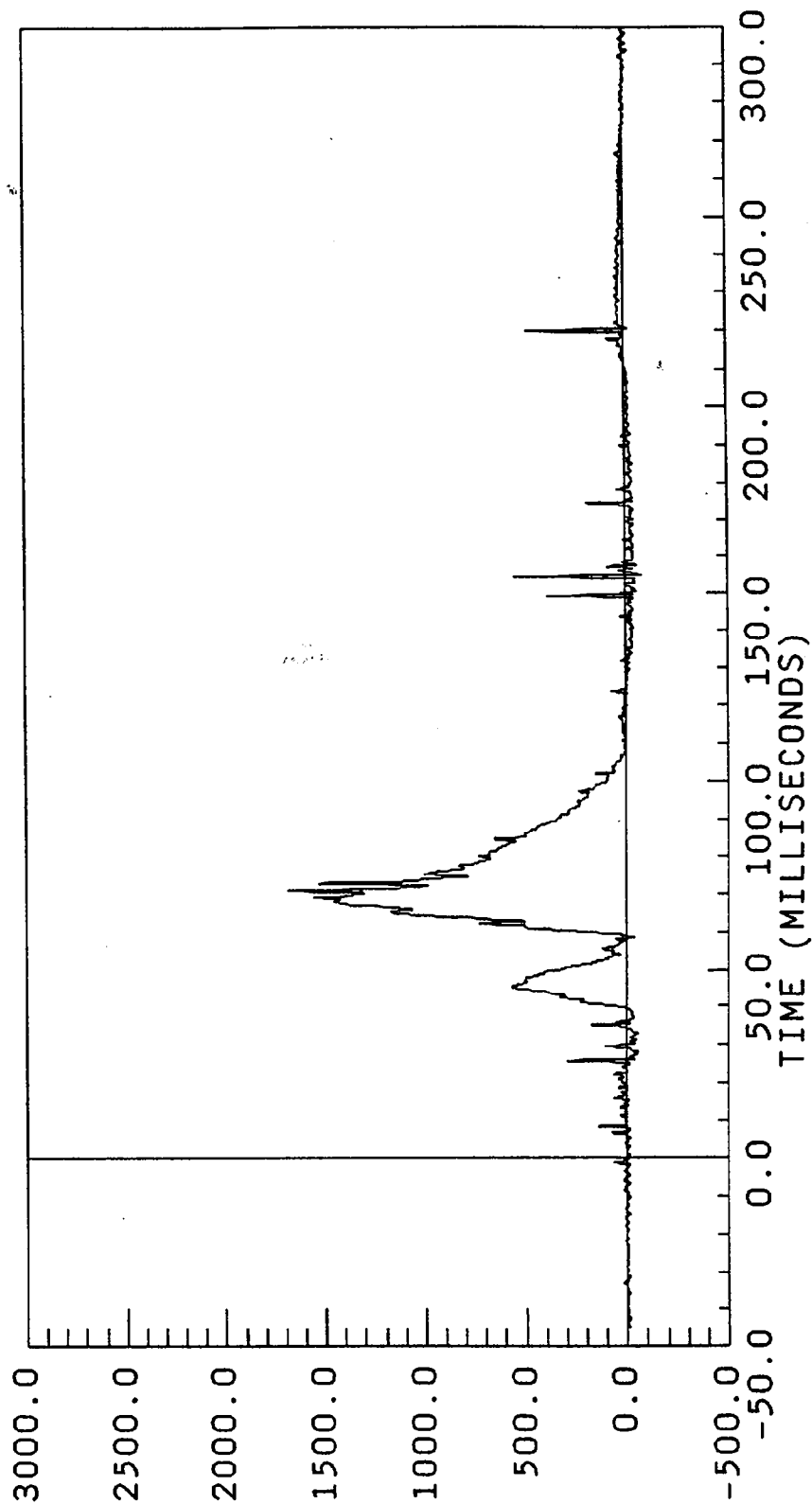
POS#1 CHEST
COMPUTED
FILTER CUTOFF: 300Hz
RS AXIS
YMIN = 0.0130432 at 74.85001
YMAX = 57.10422 at 90.15000



BW957-7.DAT

0.00 mph

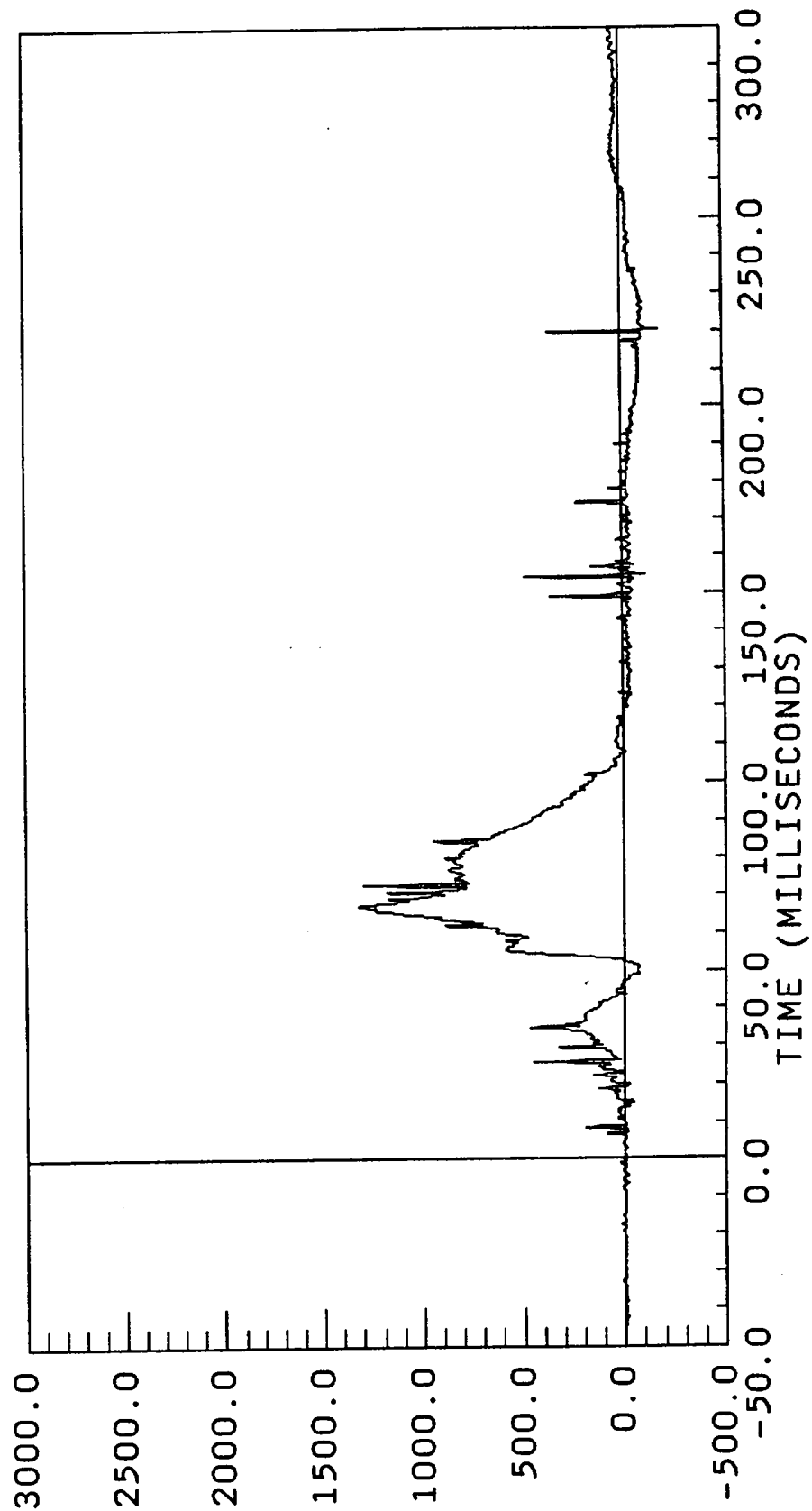
POS#1 LEFT FEMUR
FILTERED
FILTER CUTOFF: 1000HZ
NA AXIS
YMIN = -79.99060 at 155.0250
YMAX = 1691.660 at 70.87500



BW957-8.DAT

0.00 mph

POS#1 RIGHT FEMUR
FILTERED
FILTER CUTOFF: 1000Hz
NA AXIS
YMIN = -183.1917 at 220.3500
YMAX = 1332.236 at 67.05000



HEAD INJURY CRITERION
HEAD SEVERITY INDEX
36MS. MAXIMUM DURATION

NHTSA CRASH TEST - PROC. 203

RUN= 957

POS#2 HEAD R

HIC= 472.5 FROM T1= .07050 TO T2= .10650
AVERAGE ACCELERATION BETWEEN T1 AND T2= 44.4G'S
EVENT TIME= 300.0 MSEC
SEVERITY INDEX= 736.4

UDS\$957-11.DA

29.60 mph

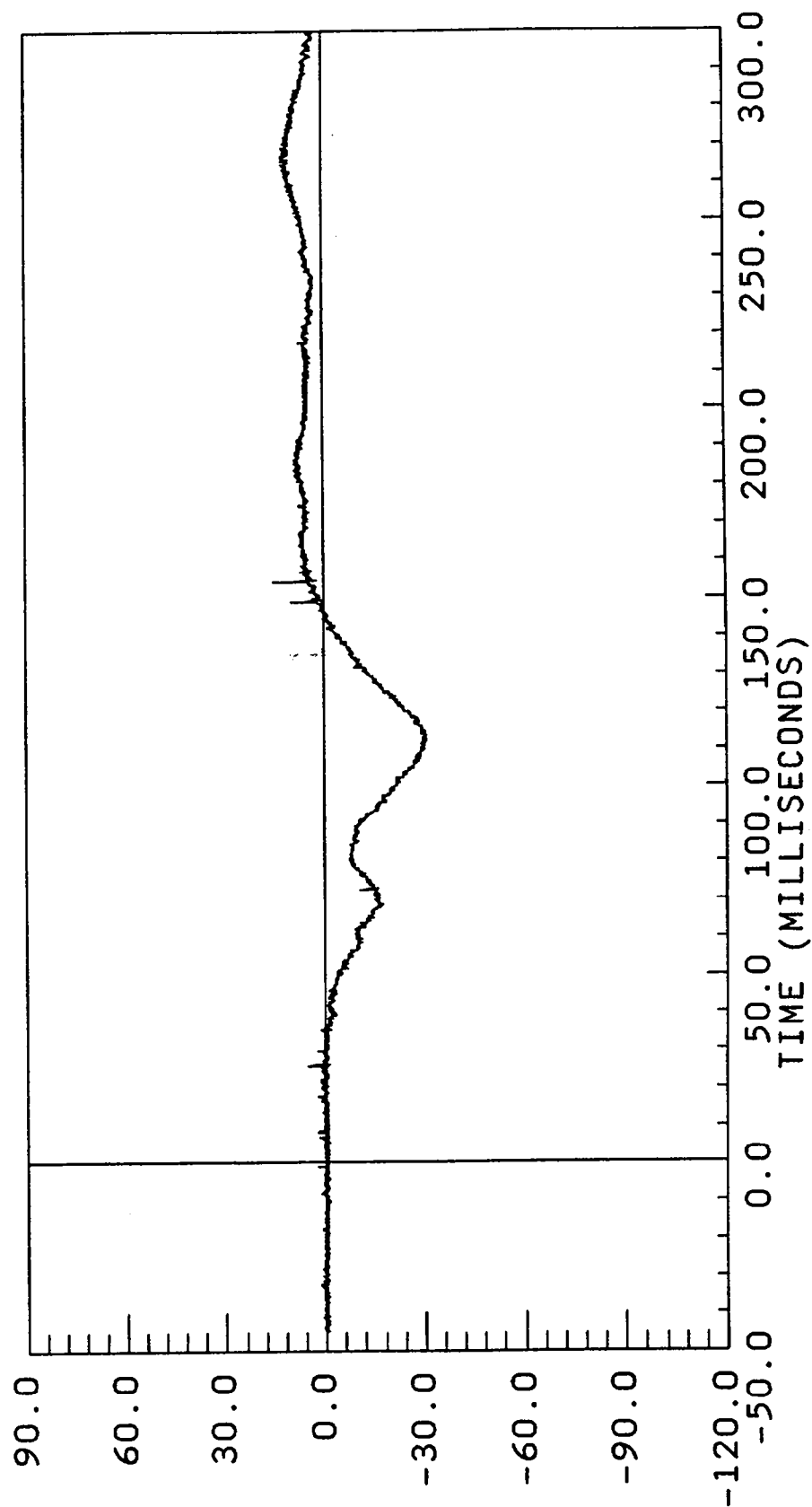
POS#2 HEAD X

XL AXIS

YMIN = -31.14500 at 112.0500

FILTER CUTOFF: 0Hz

YMAX = 15.47100 at 154.5000



ACCELERATION * G, S *

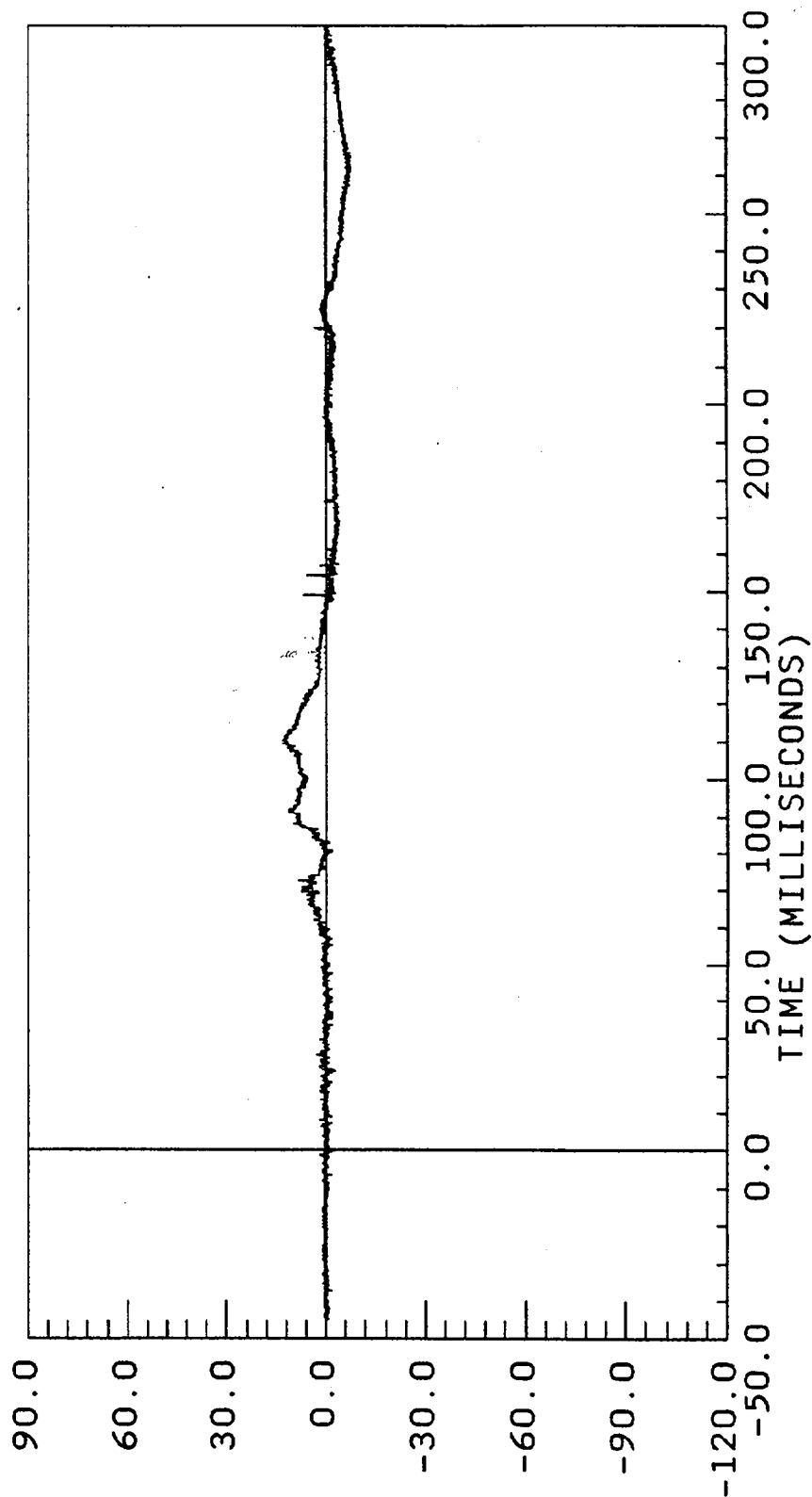
B-37

7804-5

UDS\$957-12.DA

0.00 mph

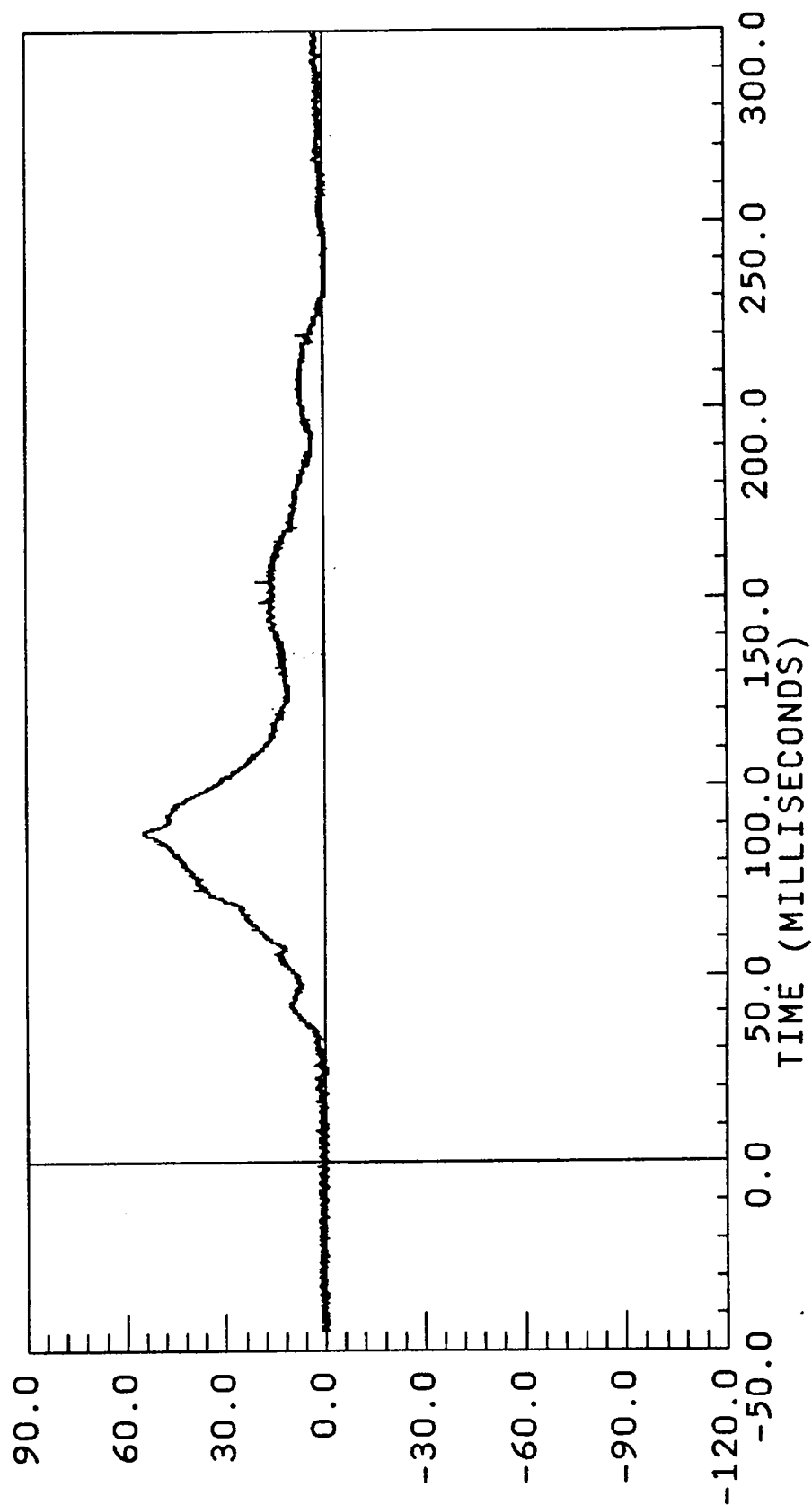
POS#2 HEAD Y
YL AXIS
YMIN = -7.294600 at 257.4000
YMAX = 13.22100 at 109.5750
FILTER CUTOFF: 0Hz



UDS\$957-13.DA

0.00 mph

POS#2 HEAD Z ZL AXIS
YMIN = -1.581600 at 243.1500
YMAX = 54.77300 at 87.15000
FILTER CUTOFF: 0Hz



ACCELERATION * G, S *

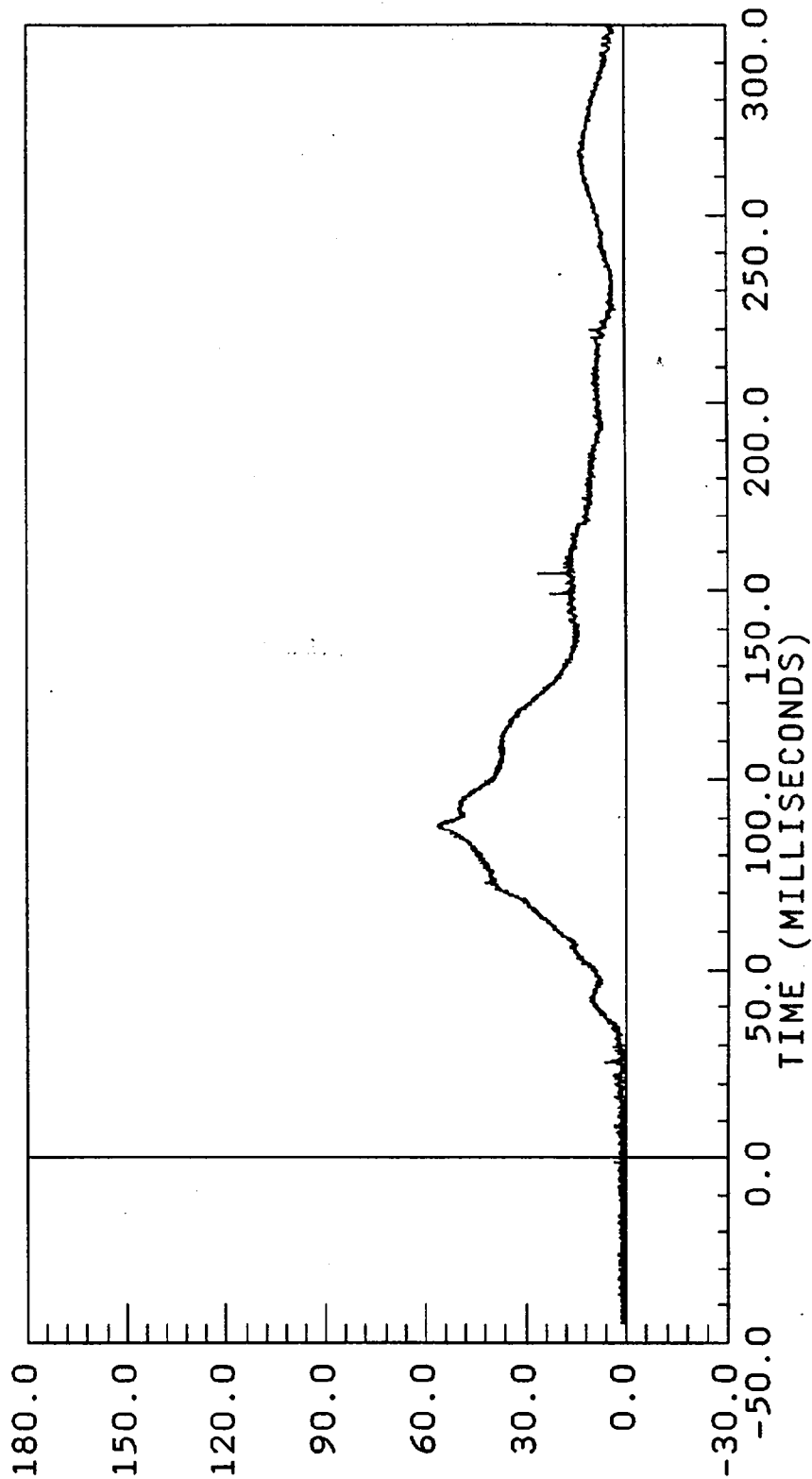
B-39

7804-5

HRES957-2.DAT

0.00 mph

POS#2 HEAD RS AXIS
NONSTANDARD YMIN = 1.170450 at -43.57500
FILTER CUTOFF: 0HZ YMAX = 56.55940 at 87.97501

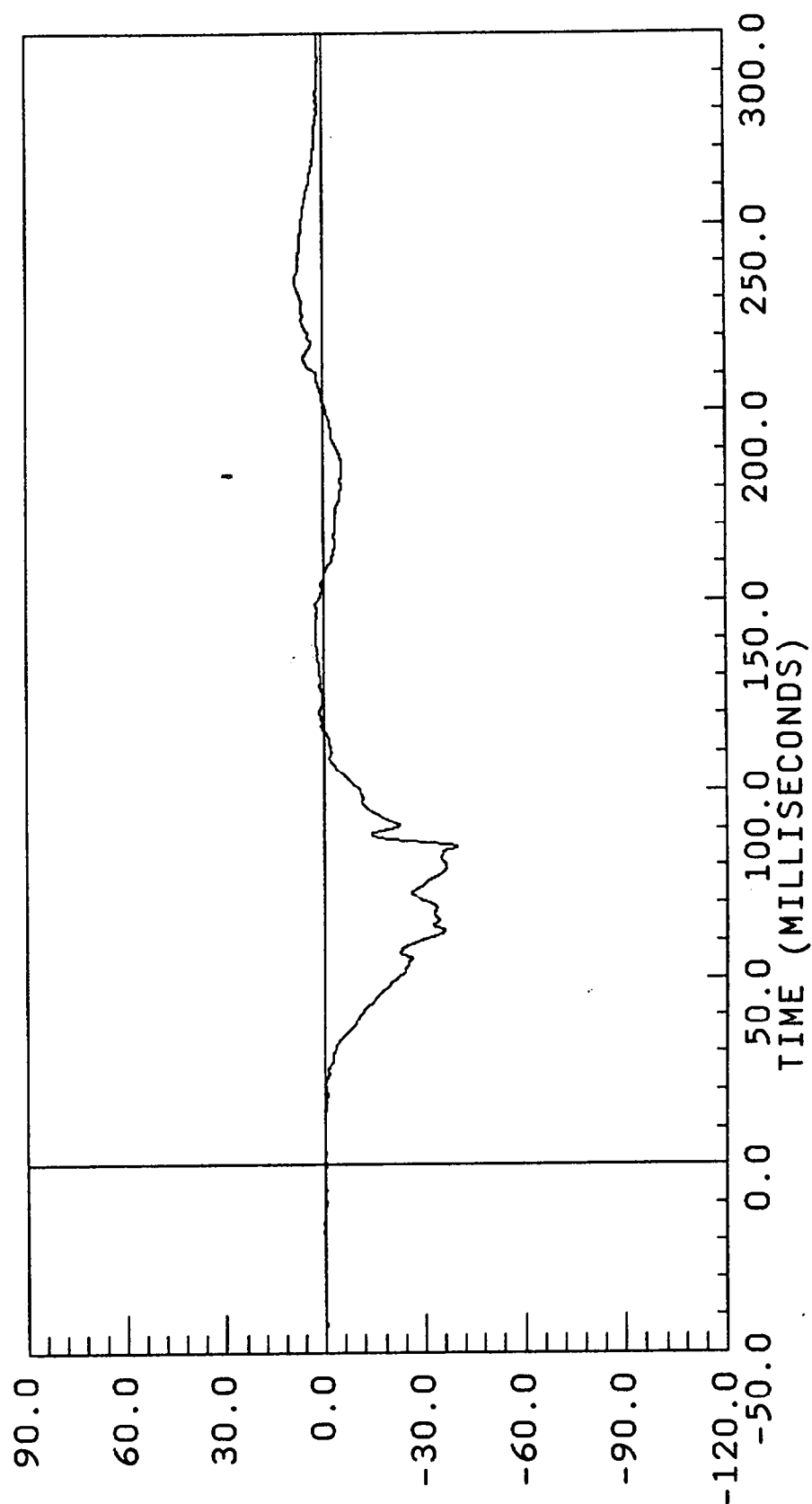


ACCELERATION * G *
B-40 7804-5

BW957-14.DAT

29.60 mph

POS#2 CHEST X
FILTERED
FILTER CUTOFF: 300HZ
XL AXIS
YMIN = -40.18837 at 85.27500
YMAX = 8.582502 at 234.3750

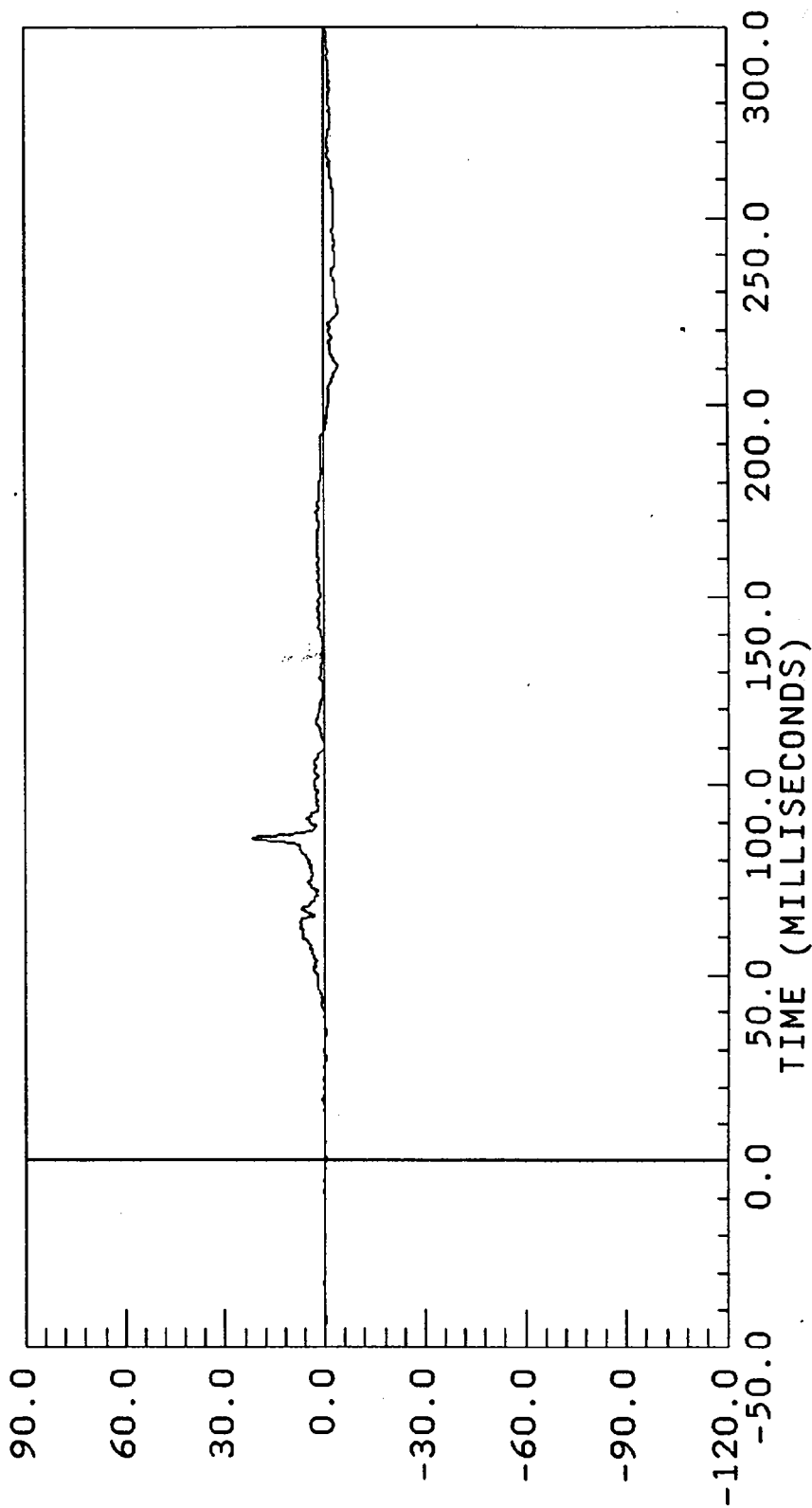


ACCELERATION * G, S *
B-41 7804-5

BW957-15.DAT

0.00 mph

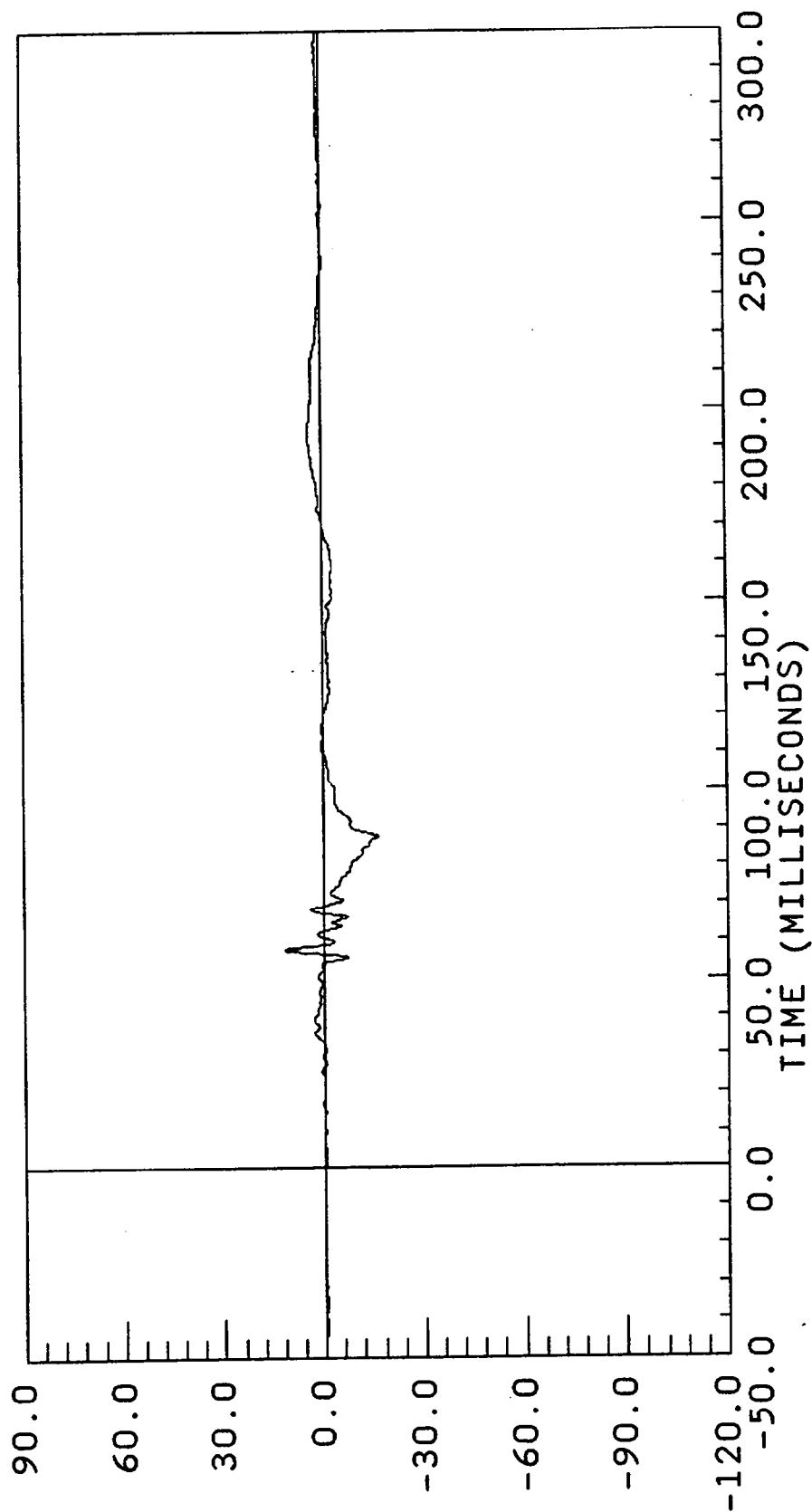
POS#2 CHEST Y
FILTERED
FILTER CUTOFF: 300HZ
YL AXIS
YMIN = -4.534115 at 225.1500
YMAX = 22.00653 at 85.80000



BW957-16.DAT

0.00 mph

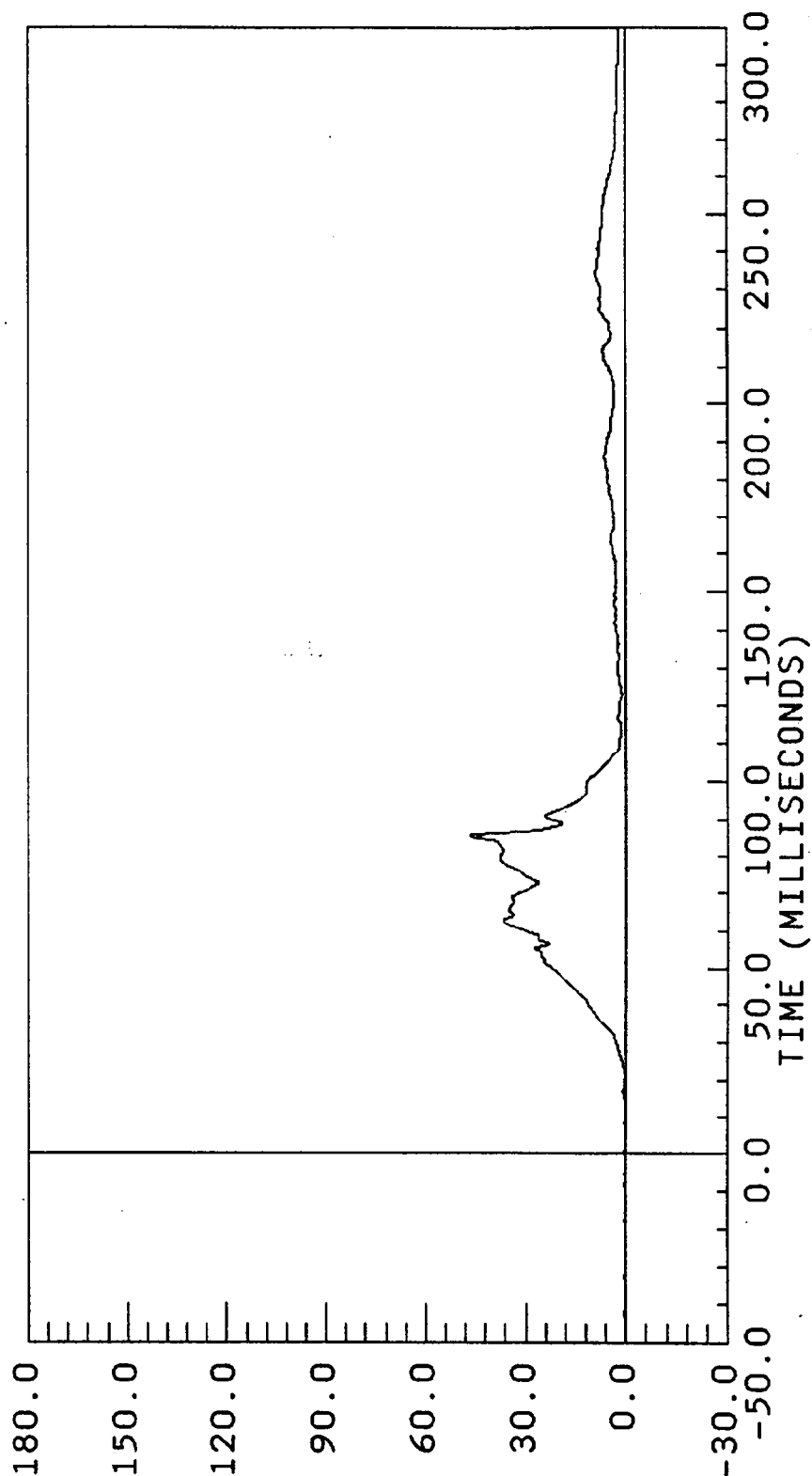
POS#2 CHEST Z
FILTERED
FILTER CUTOFF: 300HZ
ZL AXIS
YMIN = -16.51494 at 87.75000
YMAX = 11.77391 at 57.67500



CHST957-2.DAT

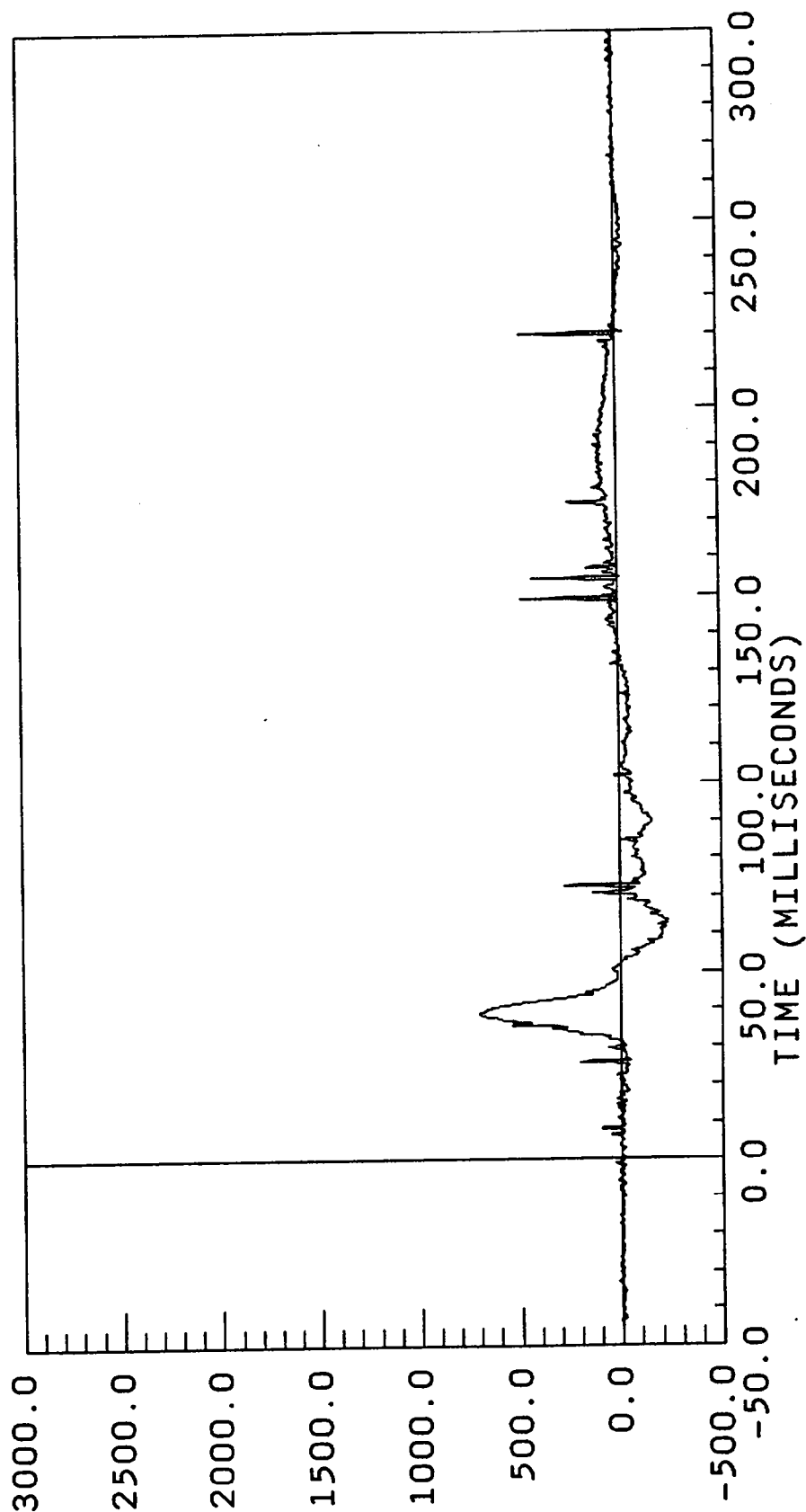
0.00 mph

POS#2 CHEST
COMPUTED
FILTER CUTOFF: 300HZ
RS AXIS
YMIN = 0.0207885 at 87.75000
YMAX = 46.68215 at 85.50000



0.00 mph

POS#2 LEFT FEMUR
 FILTERED
 FILTER CUTOFF: 1000HZ
 NA AXIS
 YMIN = -236.3871 at 63.30000
 YMAX = 710.0386 at 38.92500

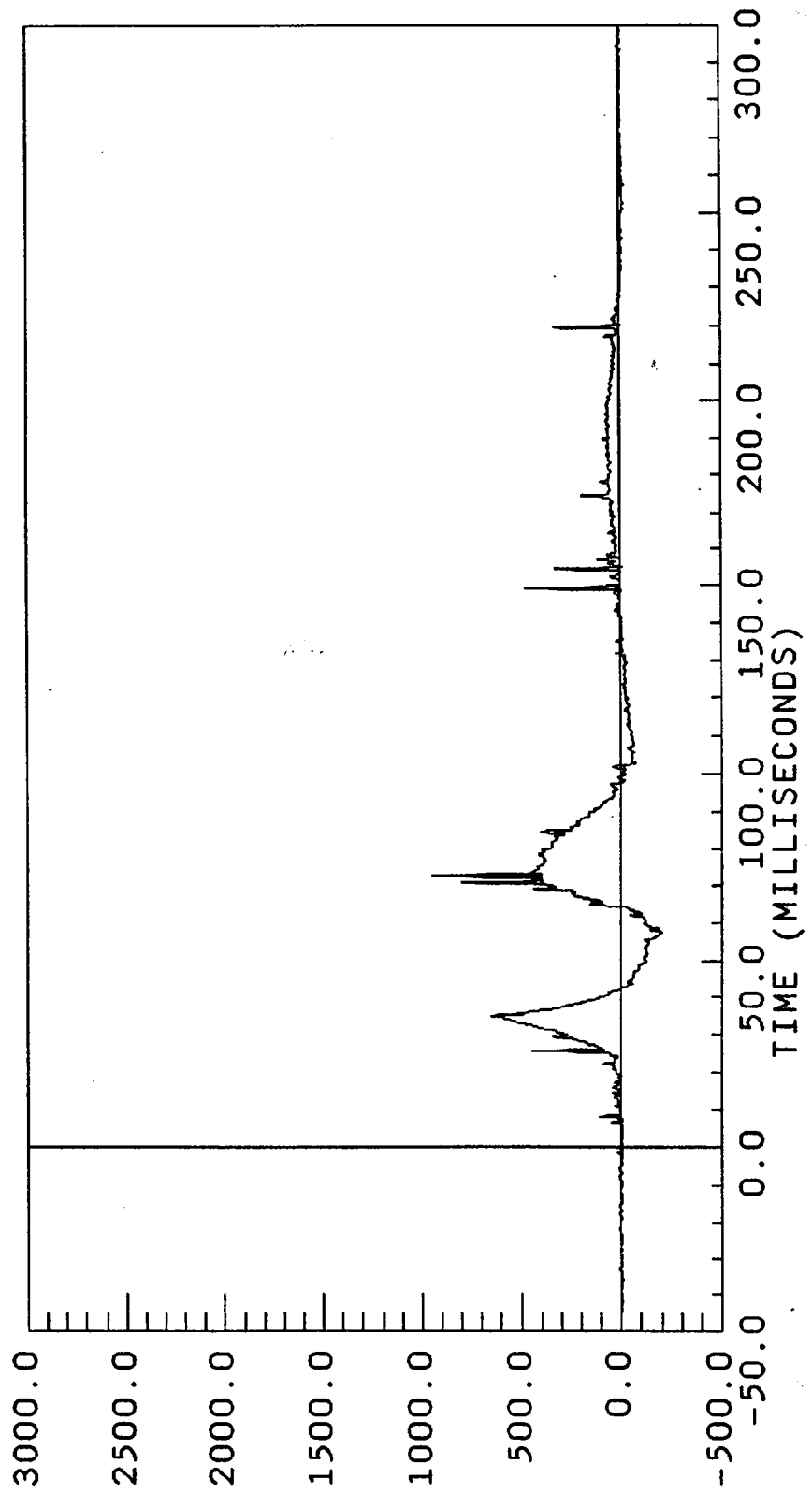


FORCE * LBS *

BW957-10.DAT

0.00 mph

POS#2 RIGHT FEMUR
FILTERED
FILTER CUTOFF: 1000Hz
NA AXIS
YMIN = -201.4032 at 57.37500
YMAX = 949.0178 at 72.67500



F O R C E * L B S *

Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

Pulling the top of the headrest as far as it can go will return it to the upright position.

CAUTION:

- **Adjust the top of the headrest so that it is closest to the top of your ears.**
- **After adjusting the headrest, make sure it is locked in position.**
- **Do not drive with the headrests removed.**

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—Seat belt precautions

Baby or small child. Use a child restraint system which fits your vehicle. See "Child restraint" for details.

Pregnant woman. Toyota recommends the use of a seat belt. Ask your doctor for specific recommendations. The lap belt should be worn securely and as low as possible over the hips and not on the waist.

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CAUTION: ::::::::::::::::::::::::::::::::::

Persons should ride in their seats properly wearing their seat belts whenever the vehicle is moving. Otherwise, they are much more likely to suffer serious bodily injury in the event of sudden braking or a collision. When using the seat belts, observe the following:

- Use the belt for only one person at a time. Do not use a single belt for two or more people—even children.
- After inserting the tab, make sure that the connection is secure and the belt is not twisted.
- Avoid reclining the seatbacks too much. The seat belts provide maximum protection when the seatbacks are in the upright position. (See the seat adjustment instructions.)
- Be careful not to damage the belt webbing or hardware, and take care that they do not get caught or pinched in the seat or doors.

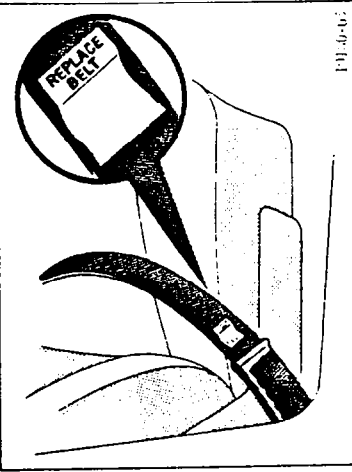
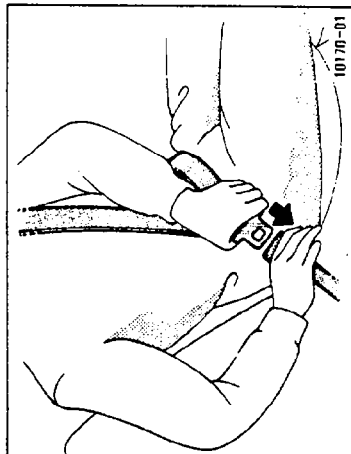


FIGURE 6

- Replace the belt if the warning label under the sleeve can be seen. The warning label, "REPLACE BELT", will appear if the belt receives a severe impact or other force.



—Front and rear seat belts

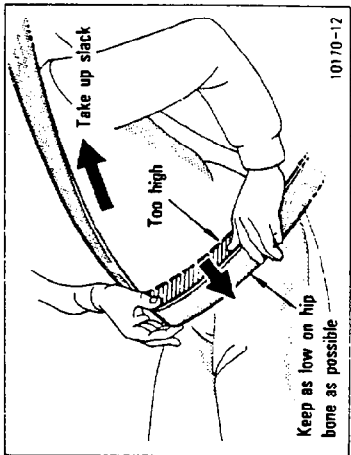


Adjust the seat as needed and sit up straight and well back in the seat. To fasten your belt, pull it out of the retractor and insert the tab into the buckle.

You will hear a click when the tab locks into the buckle.

The seat belt length automatically adjusts to your size and the seat position.

The retractor will lock the belt during a sudden stop or on impact. At other times you can move around freely.



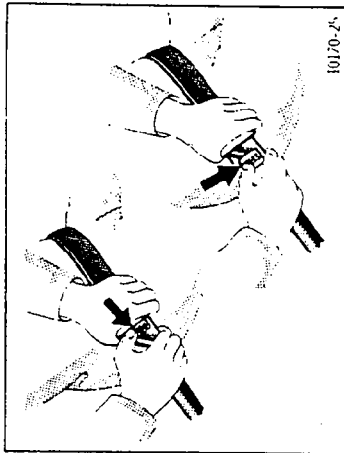
Adjust the position of the lap and shoulder belts.

Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit by pulling the shoulder portion upward through the latch plate.

CAUTION:

- High-positioned lap belts and loose-fitting shoulder belts both could increase the chance of injury due to sliding under the lap belt during an accident.

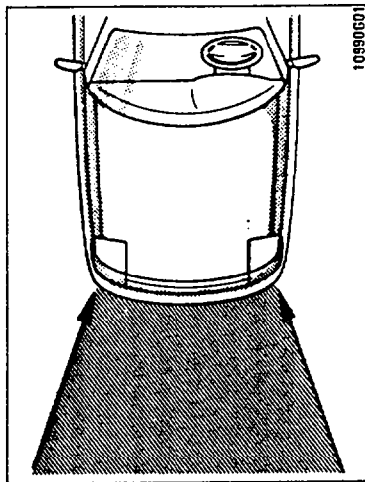
- For your safety, do not place the shoulder belt under your arm.



To release the belt, press the buckle-release button and allow the belt to retract.

If the belt does not smoothly retract, pull it out and check for kinks or twists. Then make sure that it remains untwisted as it retracts.

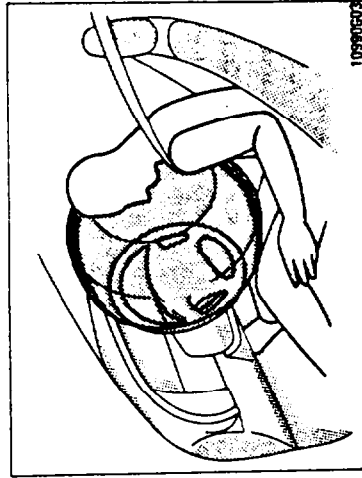
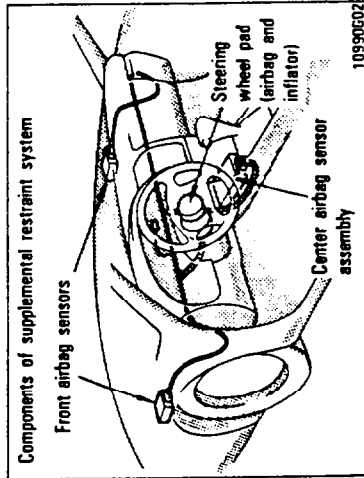
SRS airbag (U.S.A.)



The SRS (Supplemental Restraint System) airbag is designed to be activated in response to a severe frontal impact within the shaded area as shown in the illustration, and to provide the driver with further protection in addition to the protection provided by the driver's seat belt.

The SRS airbag system is not designed to protect the driver from an impact from the side or rear, or if the vehicle overturns. For instructions and precautions concerning the seat belt system, see "Seat belt".

CAUTION: The SRS airbag system is designed only as a supplement to the driver's seat belt system. To obtain maximum protection in an accident, the driver and all passengers in the vehicle should always wear his/her seat belts when driving.



In the event of severe frontal impact, the front and center airbag sensors or the center airbag sensor alone detect the shock, the center airbag sensor assembly triggers the inflator, and the inflator fills the bag to restrain the driver's forward motion.

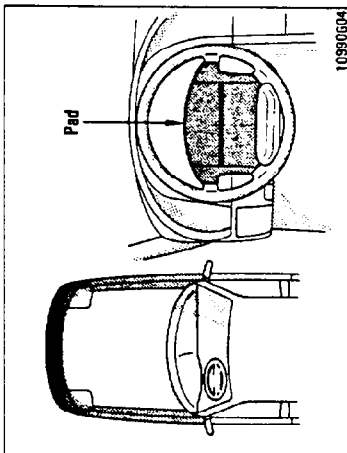
When the SRS airbag inflates, an operating noise will be heard and a small amount of smoke-like gas will be released. This gas is harmless and does not indicate that a fire is occurring.

CAUTION:

Do not modify or remove any component or wiring, such as the steering wheel, column cover, center airbag sensor assembly or front airbag sensors. Doing any of these may cause sudden SRS airbag inflation or disable the system, which could result in personal injury.

NOTICE:

Do not perform any of the following changes without prior approval from Toyota dealers. Repairs or service of this kind can interfere with proper operation of the SRS airbag system in some cases.



- The front part of the vehicle (shown in the illustration) was involved in an accident which was not of the extent to cause the SRS airbag to inflate.
- The pad section of the steering wheel is scratched, cracked, or otherwise damaged.

NOTICE:

Do not disconnect the battery cables before contacting your Toyota dealer.

- Installation of electronic items such as a mobile two-way radio, cassette tape player or Compact Disc player.
- Repairs made on or near the front fenders, front console, steering column or steering wheel.

In the following cases, contact your Toyota dealer as soon as possible:

- The SRS airbag system malfunctions. This SRS airbag system has a warning light to indicate operating problems. See "Warning lights and buzzers" in Chapter 1-5.
- The SRS airbag has been inflated.

Warning lights and buzzers

If the light or buzzer comes on...	Do this.
(a)  BRAKE	If parking brake is off, stop and check.
(b)  (Light and buzzer)	Fasten seat belts.
(c) 	Stop and check.
(d) 	Stop and check.
(e)  CHECK	Take vehicle to Toyota dealer.
(f) 	Fill up tank.

(a) Brake System Warning Light

This light has the following functions:

Parking brake reminder

If this light is on, make sure the parking brake is fully released. The light should go off.

Low brake fluid level warning

If this light comes on and stays on while you are driving, slow down and pull off the road. Then stop the vehicle carefully. There may be a problem somewhere in the brake system. Check the fluid level of the see-through reservoir.

To make sure that the parking brake has not caused the warning light to come on, check to see that the parking brake is fully released.

If the brake fluid level is low...

At a safe place, test your brakes by starting and stopping.

- If you judge that the brakes still work adequately, drive cautiously to your nearest dealer or shop for repairs.
- If the brakes are not working, have the vehicle towed in for repairs. (For towing information, see Part 4.)

If the light or buzzer comes on...	Do this.
(g) ABS	Take vehicle to Toyota dealer.
(h) 	Close all doors and back hatch.
(i) AIR BAG	Take vehicle to Toyota dealer.
(j) Light reminder buzzer	Turn off lights.
(k) Key reminder buzzer	Remove key.

(i) SRS Airbag Warning Light (U.S.A.)

The warning light system monitors the front airbag sensors, center airbag sensor assembly, inflator, warning light, interconnecting wiring and power sources.

If the light comes on while driving, this indicates a malfunction somewhere in the parts monitored by the warning light system. Contact your Toyota dealer as soon as possible to service the vehicle.

(j) Light Reminder Buzzer

This buzzer will sound when the driver's door is opened if the ignition switch is turned to the "LOCK" position with the headlight switch on. Removing the key will not stop the buzzer as long as the headlight switch is on.

(k) Key Reminder Buzzer

This buzzer reminds you to remove the key when you open the driver's door with the ignition key in the "ACC" or "LOCK" position.

CHECKING WARNING LIGHTS (except the low fuel level warning light)

1. Apply the parking brake.
2. Open one of the side doors.
The open door warning light should come on.
3. Close the side door.
The open door warning light should go off.
4. Turn the ignition key to "ACC".
The SRS airbag warning light should come on. It goes off after 6 seconds.
5. Turn the ignition key to "ON", but do not start the engine.
All the warning lights except the open door warning light, SRS airbag warning light and low fuel level warning light should come on. The anti-lock brake system warning light goes off after 3 seconds.

If any warning light or buzzer does not function as described above, either the bulb is burned out or the circuit is in need of repair. Have it checked as soon as possible.