

REPORT NOS. 208-CAL-89-10
212-CAL-89-10
301-CAL-89-10

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

NISSAN MOTOR COMPANY
1989 NISSAN PULSAR NX SE
2-DOOR HATCHBACK

NHTSA NO. CK5201
CALSPAN TEST NO. 7715-10
JULY 17, 1989

CALSPAN CORPORATION
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FINAL REPORT

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16. Abstract A 30 mph vehicle safety compliance test was conducted on a 1989 Nissan Pulsar NX SE 2-door hatchback. This test was performed at the Calspan Advanced Technology Center in Buffalo, New York on July 17, 1989. The purpose of this test was to determine compliance with the performance requirements of the following Federal Motor Vehicle Safety Standards (FMVSS 213): 1. FMVSS No. 208, "Occupant Crash Protection" 2. FMVSS No. 212, "Windshield Mounting" 3. FMVSS No. 219 (partial), "Windshield Zone Intrusion" 4. FMVSS No. 301, "Fuel System Integrity" The test mode was perpendicular (0°) and the impact velocity was 29.5 mph. The ambient temperature at the impact face was 77°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 side air bag and passenger 3-point manual belt safety restraint systems. 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 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. DTNH22-88-C-01038. The purpose of this test was to determine if the subject vehicle, a 1989 Nissan Pulsar NX SE 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 CK5201

A frontal barrier was impacted by a 1989 Nissan Pulsar NX SE 2-Door Hatchback at a velocity of 29.5 mph. The test was performed at the Calspan Corporation Advanced Technology Center on July 17, 1989. 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 27 channels of data were recorded on three 14-channel FM tape recorders. Appendix B contains the vehicle and dummy response data traces.

The Pos #2 right front passenger right femur experienced intermittent data between 60 and 108 msec. Visual inspection of the glove box door indicates the right femur would not have exceeded the FMVSS 208 femur criteria. Accelerometer #7(x) passed the pre-test checkout however did not record any data.

The driver's HIC was 408. The maximum chest deceleration over 3 milliseconds was 49.6 g's. The maximum force on the driver's left femur was 1363 lbs and 2030 lbs on the right femur.

The right-front passenger's HIC was 304. The maximum chest deceleration over 3 milliseconds was 34.8 g's and the left femur load was 559 lbs.

TABLE 1

CRASH TEST SUMMARY

VEHICLE NHTSA NO.: CK5201 TEST MODE: 30 mph Frontal Barrier

TEST DATE: July 17, 1989 TIME: 12:45 TEMP: 77° F

VEHICLE MAKE/MODEL/BODY STYLE: 1989 Nissan Pulsar NX SE 2-Door Hatchback

VEHICLE TEST WEIGHT: 3180 lbs

VEHICLE/BARRIER IMPACT ANGLE: 0°

IMPACT VELOCITY: 29.5 mph

MAXIMUM STATIC CRUSH: 16.8"

VEHICLE REBOUND: 24.9"

<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 belt restraint system</u>

NUMBER OF DATA CHANNELS: 27

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>air bag, sunvisor</u>	<u>chin with chest</u>
Chest	<u>air bag</u>	<u>-</u>
Knees	<u>dash</u>	<u>glove box</u>

TABLE 2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1989 Nissan Pulsar NX SE 2-Door Hatchback
 NHTSA No. CK5201 ; VIN JNICN34CIKW422852 ; Color: Silver
 Engine Data: 4 cylinders; 110 CID; 1.8 Litres; - cc
 Placement - Longitudinal or In-Line; X Transverse or lateral
 Transmission Data: 4 speeds; - Manual; X Automatic; X Overdrive
 Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel Drive
 Major Options: X A/C; X Pwr Strg. X Pwr. Brakes - Pwr Windows
X Power Door Locks
 Date Received: 7/11/89 ; Odometer Reading - 40 miles
 Selling Dealer: Stohlman Nissan & Saab
 & address 150 S. Pickett St., Alexandria, VA 22304

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Nissan Motor Co. Ltd.
 Data of Manufacture: 2-89
 GVWR: 3351 lbs; GAWR: 1984 lbs FRONT
1786 lbs REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load 29 psi Front
26 psi Rear
 Recommended Tire Size 195/60R1485H Load Range Standard
 Recommended Cold Tire Pressure 29 psi Front 26 psi Rear
 Size of Tires on Test Vehicle 195/60R1485H 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) = 609 lbs.
 No. of Occupants x 150 lbs = 600 lbs.
 Rated Cargo/Luggage Weight (RCLW)= 9 lbs. (Difference)

WEIGHT OF TEST VEHICLE AS RECEIVED AT LABORATORY (with maximum fluids):

Right Front = <u>950</u> lbs	Right Rear = <u>440</u> lbs
Left Front = <u>930</u> lbs	Left Rear = <u>450</u> lbs
TOTAL FRONT = <u>1880</u> lbs	TOTAL REAR = <u>890</u> lbs
% of Total Weight = <u>67.9</u> %	% of Total Weight = <u>32.1</u> %
TOTAL DELIVERED WEIGHT = <u>2770</u> lbs.	

TABLE 2 (continued)

GENERAL TEST & VEHICLE PARAMETER DATA

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight	=	<u>2770</u>	lbs.
Rated Cargo/Luggage Weight (RCLW)	=	<u>9</u>	lbs.
Weight of 2 P.572 Dummies @ 164 ea.	=	<u>328</u>	lbs.
TARGET TEST WEIGHT	=	<u>3107</u>	lbs. (sum)

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

Right Front =	<u>980</u>	lbs.	Right Rear =	<u>620</u>	lbs.
Left Front =	<u>990</u>	lbs.	Left Rear =	<u>590</u>	lbs.
TOTAL FRONT =	<u>1970</u>	lbs.	TOTAL REAR =	<u>1210</u>	lbs.
% of Total Weight =	<u>61.9</u>	%	% of Total Weight =	<u>38.1</u>	%
TOTAL TEST WEIGHT =	<u>3180</u>	lbs.			
Weight of Ballast secured in vehicle's cargo area =	<u>0</u>	lbs.			
Vehicle Components Removed for Weight Reduction	<u>None</u>				

TEST VEHICLE ATTITUDE*: (all dimensions in inches)

AS DELIVERED	RF	<u>24.1</u>	;	LF	<u>24.4</u>	;	RR	<u>25.8</u>	;	LR	<u>26.2</u>
FULLY LOADED	RF	<u>23.9</u>	;	LF	<u>24.0</u>	;	RR	<u>24.2</u>	;	LR	<u>24.4</u>
AS TESTED	RF	<u>24.0</u>	;	LF	<u>24.1</u>	;	RR	<u>24.5</u>	;	LR	<u>24.9</u>
Vehicle's Wheelbase =	<u>95.9</u>		inches								
Location of Vehicle's C.G. =	<u>36.5</u>										

*Vehicle equipped with self-leveling suspension system.

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual =	<u>12.2</u>	gallons		
Usable Capacity Figure Furnished by COTR =	<u>12.2</u>	gallons		
Test Volume Range (92 to 94% of Usable Capacity) =	<u>11.2</u>	to	<u>11.5</u>	gallons
ACTUAL TEST VOLUME =	<u>11.3</u>	gallons (with entire fuel system filled)		

TABLE 3
POST-IMPACT DATA

TYPE OF TEST: Frontal Impact IMPACT ANGLE: 0°

TEST DATE: July 17, 1989 TIME: 12:45 TEMP: 77 °F

VEHICLE NHTSA NO.: CK5201

REQUIRED IMPACT VELOCITY RANGE: 28.9 to 29.9 mph

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

Trap No. 1 = 29.5 mph; Trap No. 2 = 29.5 mph

Distance from vehicle to barrier (1) entering trap = 52 inches

(2) exiting trap = 12 inches

VEHICLE STATIC CRUSH: (for Frontal and Rear Impacts Only)

Vehicle Length: Pre-Test Right = 164.6 "; C/L = 166.5 "; Left = 164.6 "

Post-Test Right = 149.1 "; C/L = 149.7 "; Left = 150.1 "

CRUSH Right = 15.5 "; C/L = 16.8 "; Left = 14.5 "

AVERAGE = 15.6 inches

VEHICLE REBOUND: (from rigid barrier only)

Distance from front of test vehicle to impact point:

Right = 24.8 "; C/L = 24.6 "; Left = 25.3 "

AVERAGE = 24.9 inches

<u>DOOR OPENING:</u>	Left	Right
Front	<u>closed-operable</u>	<u>closed-operable</u>
Rear	<u>N/A</u>	<u>N/A</u>

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

TABLE 3 (continued)

POST-IMPACT DATA

GLAZING DAMAGE: Right side of windshield cracked.

OTHER NOTABLE IMPACT FEATURES: None

Section 3
OCCUPANT AND VEHICLE DATA

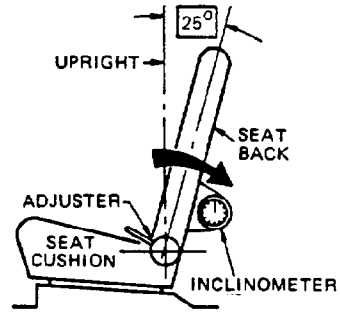
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model year: 1989 Vehicle Model: Nissan Pulsar NX SE Body Style: 2-Door Hatchback

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.



LEFT SIDE VIEW

Seat back angle for driver's seat 25°

Measurement instructions: Place seat back in front-most locked position, then release the lock by reclining lever and pushing the seat back 6th notch rearward.

Seat back angle for passenger's seat 25°

Measurement instructions: Same as driver.

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: Place seat in 11th detent (front 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 12.2 gallons.

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

Additional Instructions: None

Figure 2

PART 572 DUMMY IN-VEHICLE POSITION

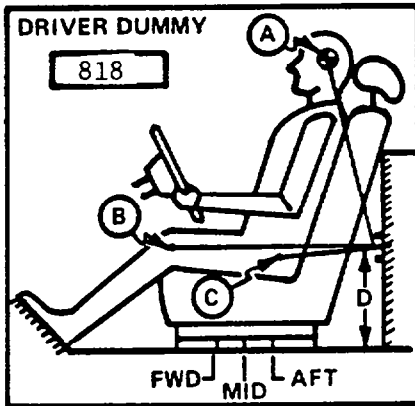
TEST NO.: CK5201

VEHICLE: 1989 Nissan Pulsar NX SE

SEAT TYPE:
 Bench
 Bucket
 Split Bench

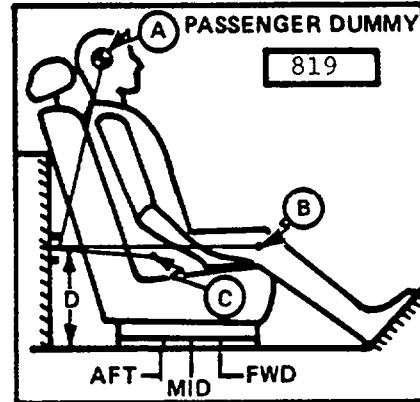
ADJUSTER TYPE:
 Manual
 Power

BUCKET SEAT BACK TYPE:
 Fixed
 Adjustable Reclining



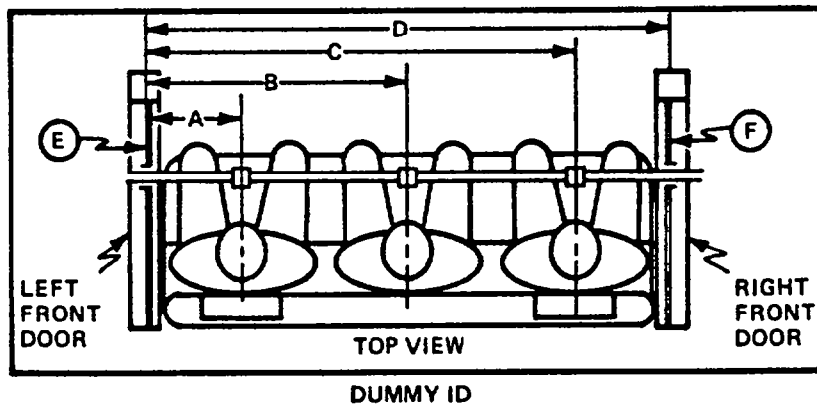
MEASUREMENT LOCATION

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



A = 21.0 in. 21 Degrees
 B = 30.2 in. 97 Degrees
 C = 15.6 in. 115 Degrees
 D = 12.2 in.

A = 21.3 in. 20 Degrees
 B = 30.0 in. 96 Degrees
 C = 15.3 in. 112 Degrees
 D = 12.2 in.



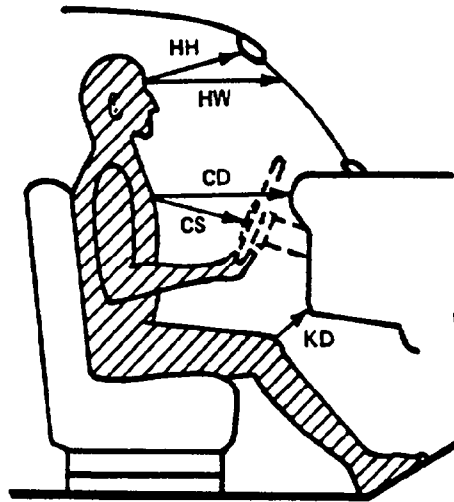
S/N 818 819

A = Left Door to Driver Centerline 12.6 in.
 B = Left Door to Center Passenger Centerline - in.
 C = Left Door to Right Passenger Centerline 38.0 in.
 D = Left Door to Right Door 50.6 in.
 E, F = Window Glass Height (Right and Left Must Be Equal) 10.2 in.

Figure 3

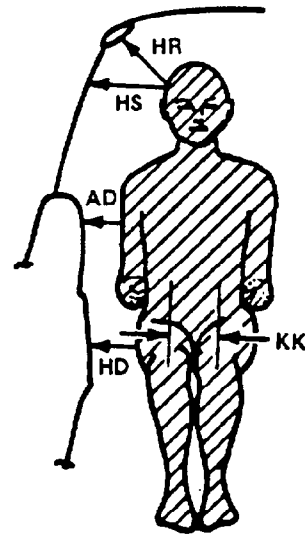
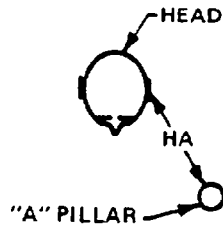
OCCUPANT CLEARANCE DIMENSIONS

	DRIVER	PASSENGER
HH	14.0	14.1
HW	21.1	21.8
CD	23.1	23.9
CS	13.3	-
KDL	6.9	6.9
KDR	7.0	6.8
SA	25°	25°
TA	23°	23°



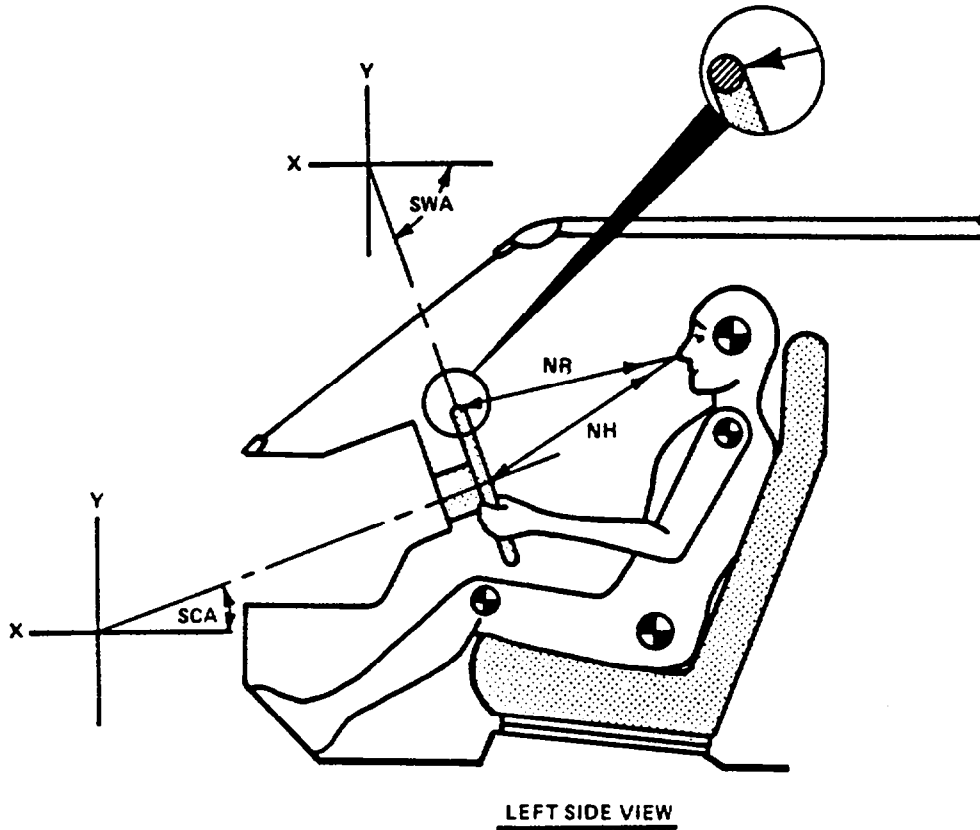
- HH = Head to Windshield Header
- HW = Head to Windshield
- CD = Chest to Dash
- CS = Chest to Steering Wheel
- KD(L/R)= Knee to Dash (Left/Right)
- SA = Seat Back Angle
- TA = Torso Angle

- 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



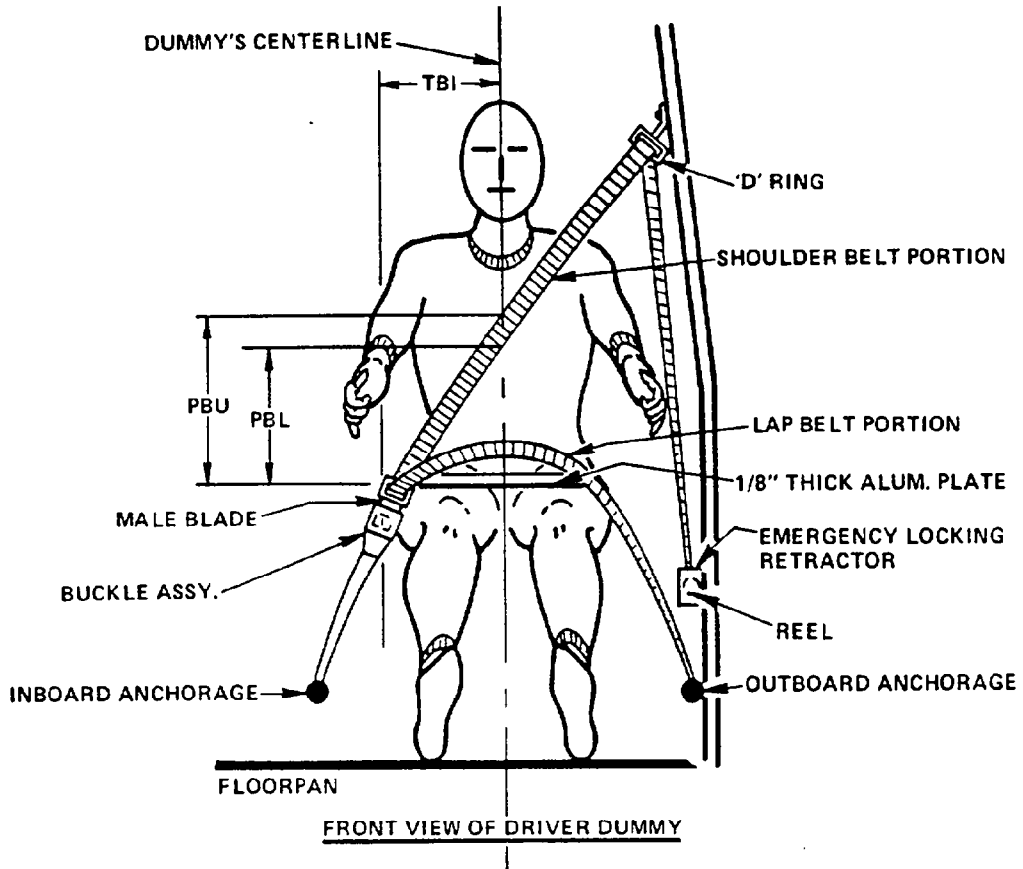
	DRIVER	PASSENGER
HR	5.7	5.6
HS	9.4	9.7
AD	3.6	4.2
HD	7.4	7.1
KK	9.6	7.2
HA	18.9	18.6

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	18.2	Inches
<u>NH</u>	-- Distance from tip of dummy's nose to center of steering column hub	18.6	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	Degrees

Figure 5
SEAT BELT POSITIONING DATA

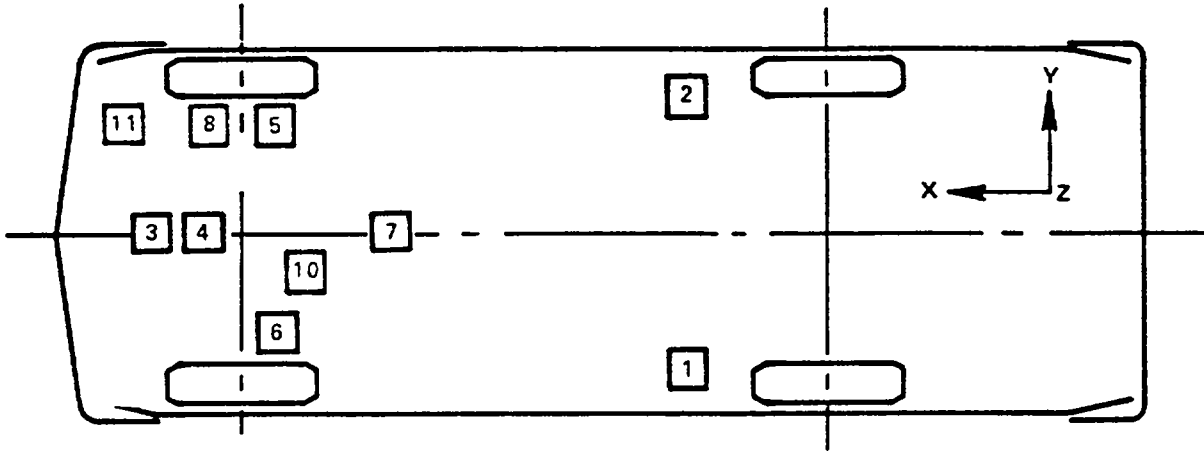


	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
<u>PBU</u> -- Top surface of alum. plate to upper edge	N/A	14.4
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	N/A	11.0
<u>TBI</u> -- distance from Torso centerline to buckle	N/A	7.0

Figure 6

VEHICLE ACCELEROMETER LOCATIONS

TOP VIEW



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		
8	Front Shock Tower	x		
9	Firewall	x		
10	Cradle Frame	x		
11	Radiator Support	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: POST: LONGITUDINAL ACCELERATION	60.0	14.5	15.2	2	167	-34	55
		58.0	14.5	15.0				
2	REAR SEAT X-MEMBER AT RIGHT SIDE PRE: POST: LONGITUDINAL ACCELERATION	60.0	-14.6	15.1	2	140	-37	54
		59.5	-14.3	14.6				
3	TOP OF ENGINE BLOCK PRE: POST: LONGITUDINAL ACCELERATION	135.9	-10.4	28.1	50	37	-98	23
		127.7	-10.3	28.8				
4	BOTTOM OF ENGINE BLOCK PRE: POST: LONGITUDINAL ACCELERATION	132.1	-10.2	6.0	14	45	-74	23
		125.9	-10.3	7.4				
5	BRAKE CALIPER AT RIGHT SIDE PRE: POST: LONGITUDINAL ACCELERATION	127.4	-22.5	17.5	9	60	-75	41
		127.6	-21.4	19.8				
6	BRAKE CALIPER AT LEFT SIDE PRE: POST: LONGITUDINAL ACCELERATION	127.4	22.5	17.8	18	71	-66	41
		127.7	24.0	17.7				

*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

TABLE 4 (cont)
VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION**		NEGATIVE DIRECTION**	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
7	DASH PANEL	102.0	1.4	27.0				
	PRE: POST:	100.9	1.3	22.3				
	LONGITUDINAL ACCELERATION				***		***	
8	FRONT SHOCK TOWER	132.4	-19.2	30.0				
	PRE: POST:	126.3	-17.3	30.3				
	LONGITUDINAL ACCELERATION				17	14	-78	46
9	FIREWALL	122.8	-4.5	30.8				
	PRE: POST:	120.0	-4.3	29.9				
	LONGITUDINAL ACCELERATION				21	61	-69	43
10	CRADLE FRAME	122.4	11.1	5.3				
	PRE: POST:	120.0	11.0	6.6				
	LONGITUDINAL ACCELERATION				5	55	-97	30
11	RADIATOR SUPPORT	150.6	-7.5	26.7				
	PRE: POST:	138.0	-7.2	28.4				
	LONGITUDINAL ACCELERATION				153	17	-169	10

**

POSITIVE

NEGATIVE

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

LONGITUDINAL:
 LATERAL:
 VERTICAL:

FORWARD
 LEFTWARD
 UPWARD

REARWARD
 RIGHTWARD
 DOWNWARD

DISTANCE MEASUREMENTS IN INCHES

***Acc# 7 (x) Passed pre-test checkout however, did not record any data.

Figure 7

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 5

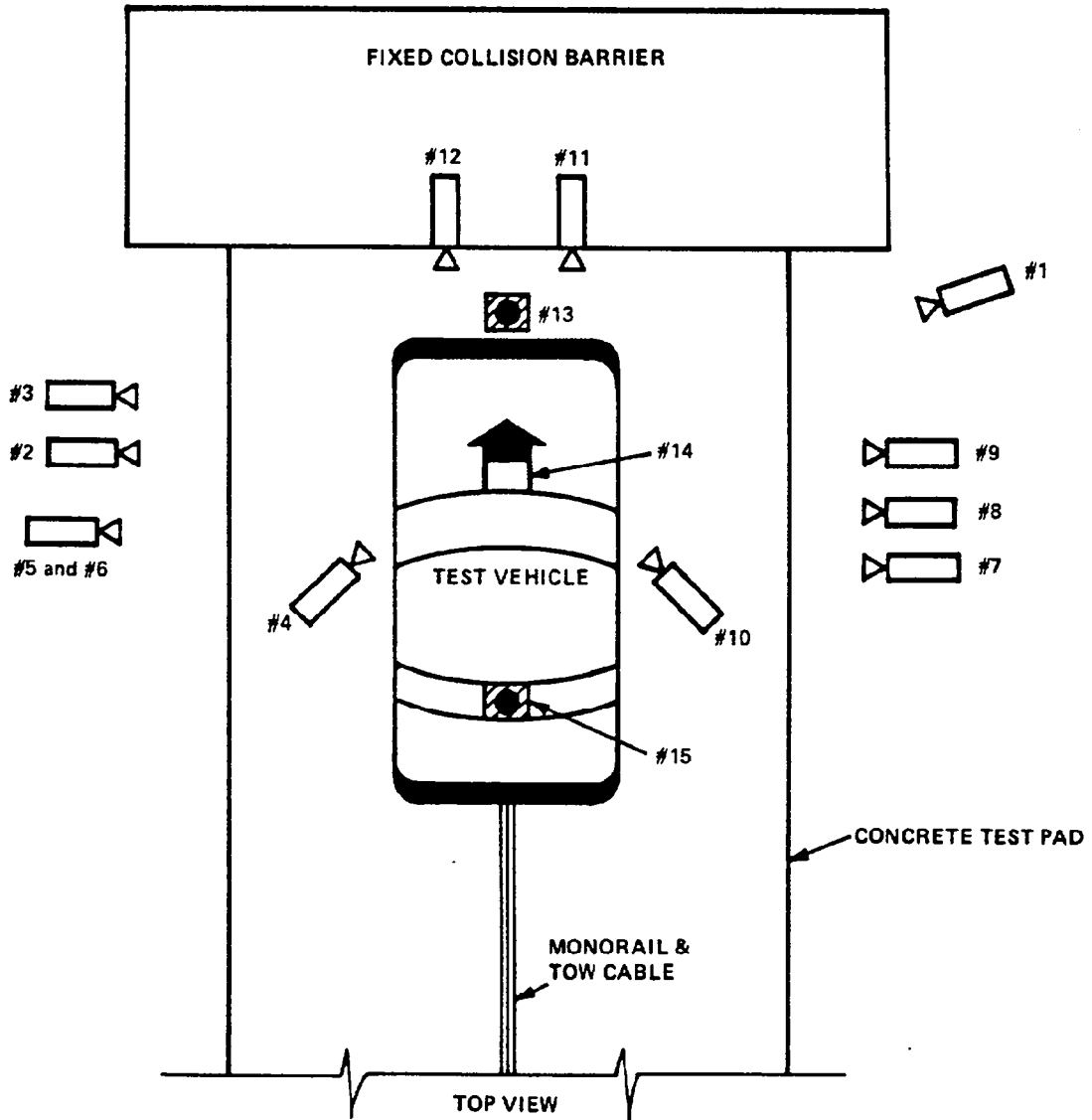


TABLE 5
HIGH-SPEED CAMERA LOCATIONS

Test No. CK5201

Vehicle 1989 Nissan Pulsar NX SE 2-Door Hatchback

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	218	61	41	-4	202.3	***	
3	Left Side View	305	37	41	-3	289.3	***	
4	Driver and Interior View	111	108	67	-18	-	900	
5	Steering Column (bottom)	279	73	46	-5	263.3	540	
6	Steering Column (top)	279	73	71	-12	263.3	550	
7	Overall Right Side	221	76	42	-4	205.3	***	
8	Right Side View	263	52	41	-3	247.3	780	
9	Right Passenger View	303	72	57	-2	287.3	750	
10	Passenger and Interior View	101	117	69	-18	-	645	
11	Passenger Front View	46	13	73	-51	-	585	
12	Driver Front View	56	16	66	-46	-	560	
13	Windshield View	0	0	126	-52	-	570	
14	Pit View of Engine	0	36	-120	90	-	870	
15	Pit View of Fuel Tank	0	120	-120	90	-	770	

* X = Film plane to monorail centerline
 Y = Film plane to impact location
 Z = Film Plane to ground
 ** = Referenced to horizontal plane
 *** = Timing marks not available

Figure 8

VEHICLE TARGET LOCATIONS

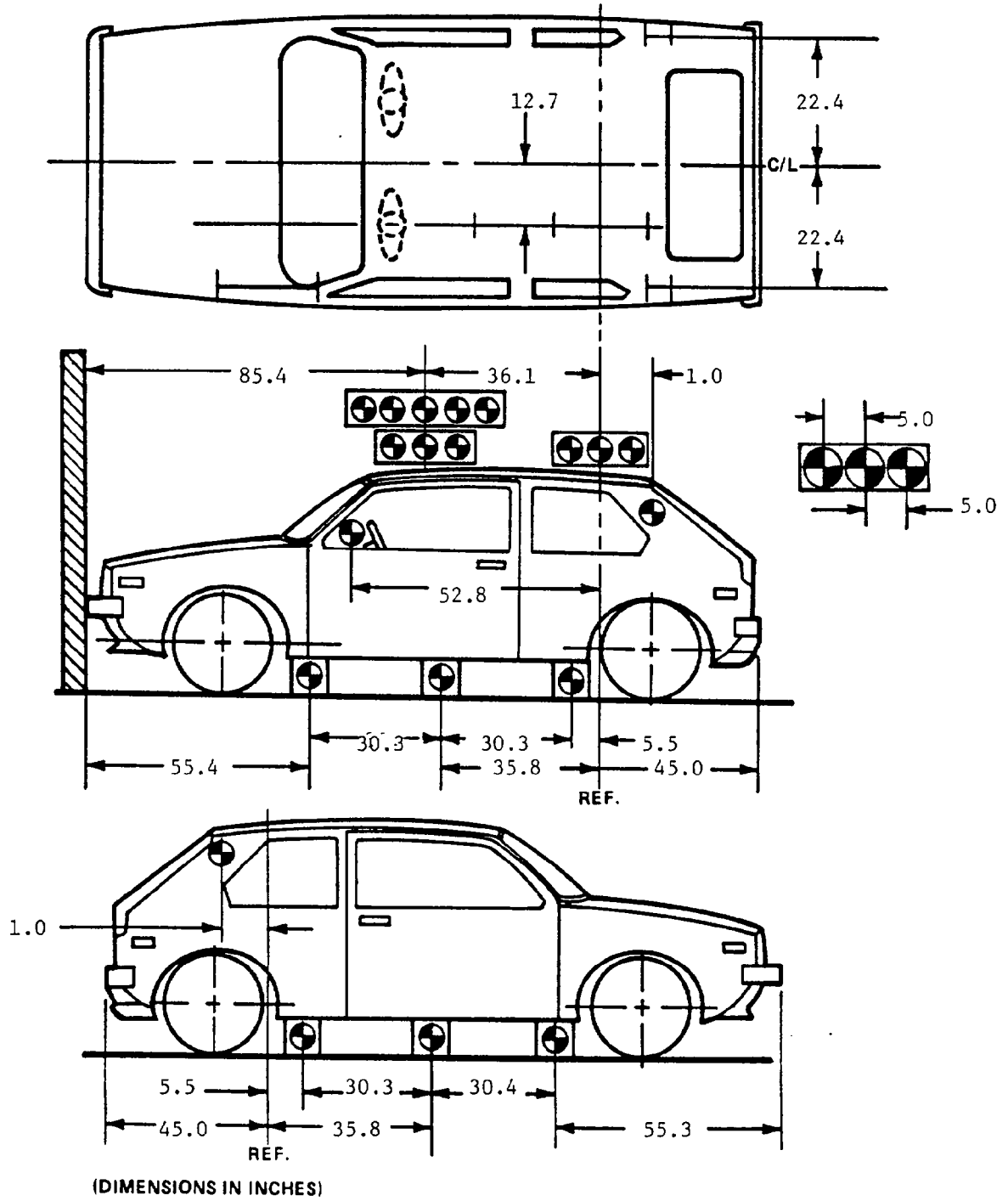


Figure 9

TEST VEHICLE MEASUREMENTS

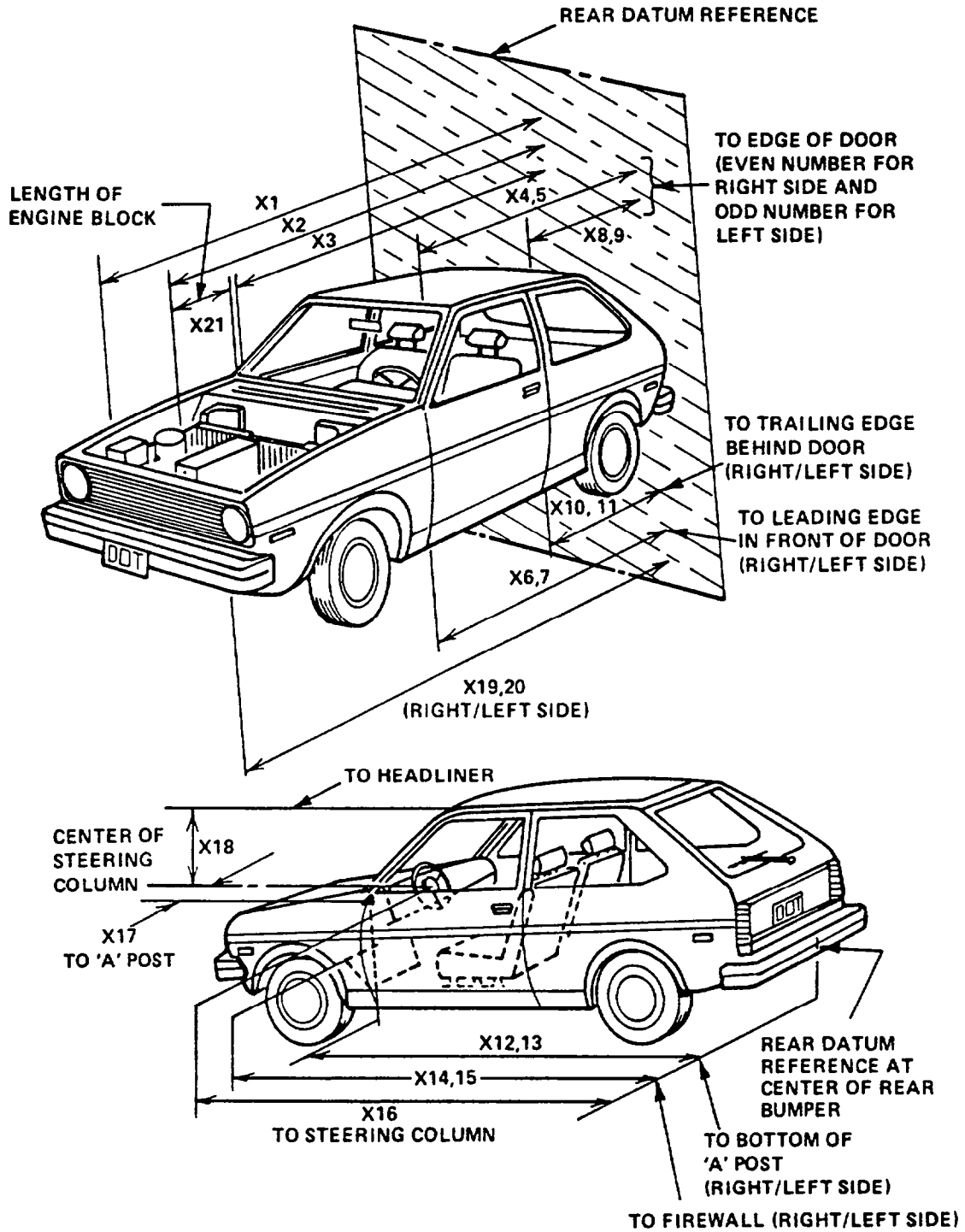


TABLE 6
VEHICLE MEASUREMENTS

No.		All Dimensions in Inches		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	166.5	149.7	16.8
X2	Rear Surface of Vehicle to Front of Engine	143.2	136.7	6.5
X3	Rear Surface of Vehicle to Firewall	121.5	119.8	1.7
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	111.7	110.3	1.4
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	110.8	110.6	0.2
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	109.5	109.2	0.3
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	109.3	109.2	0.1
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	60.4	60.0	0.4
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	60.5	60.3	0.2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	64.3	63.8	0.5
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	64.2	63.7	0.5
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	109.8	109.4	0.4
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	109.3	109.2	0.1
X14	Rear Surface of Vehicle to Firewall, Right Side	120.4	119.6	0.8
X15	Rear Surface of Vehicle to Firewall, Left Side	120.9	119.9	1.0
X16	Rear Surface of Vehicle to Steering Column	92.0	92.3	-0.3
X17	Center of Steering Column to "A" Post	17.2	16.4	0.8
X18	Center of Steering Column to Headliner	15.8	15.5	0.3
X19	Rear Surface of Vehicle to Right Side of Front Bumper	164.6	149.1	15.5
X20	Rear Surface of Vehicle to Left Side of Front Bumper	164.6	150.1	14.5
X21	Length of Engine Block	16.5	16.5	0.0

Section 4

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

- o "Occupant Crash Protection," FMVSS No. 208 Data
- o "Windshield Mounting," FMVSS No. 212 Data
- o "Windshield Zone Intrusion," FMVSS No. 219 (Partial) Data
- o "Fuel System Integrity," FMVSS No. 301-75

TABLE 7
DUMMY INJURY CRITERIA VALUES

	MAXIMUM ACCELERATION ("G")							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DUMMY (1)	-51	13	35	62	-50	11	-17	49.6
DUMMY (2)	-26	12	49	49	-38	19	-31	34.8

	MAXIMUM FORCE - FEMUR LOAD (LBS)	
	Left Femur	Right Femur
DUMMY (1)	1363	2030
DUMMY (2)	559	***

*** = Accelerometer experienced intermittent data beyond 60 msec.

	HEAD INJURY CRITERIA **			
	HIC	36 millisecond Maximum		AVE. ACC. (g) t ₁ TO t ₂
		t ₁ (SEC)	t ₂ (SEC)	
DUMMY (1)	408	0.05910	0.08895	45.1
DUMMY (2)	304	0.05812	0.09412	37.2

*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 = 6.5 sec.

Log time duration of reminder light operation = 6.5 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 = 6.5 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 manufactures maintenance or replacement schedule for crash-deployed occupant protection system.

Describe location: sunvisor

The manufacturers recommended schedule is to inspect this system:

- a. by - month, - year
- b. by - miles
- c. after a time interval of 10 years after date of manufacture.

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

YES X NO

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

YES X NO

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

YES X NO

Was an owner's manual provided?

YES X NO

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

YES X NO

TABLE 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:

Center of instrument panel

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.:	<u>CK5201</u>
Make/Model:	<u>1989 Nissan Pulsar NX SE</u> <u>2-Door Hatchback</u>
Date of Comfort/Convenience Check:	<u>7/14/89</u>
Technician Performing Check:	<u>DJT</u>
GVWR:	<u>3351 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 _____ NO X

If yes, go to requirements D1, D2 and D3

2. Manual seat belts* YES X** NO _____

a. The seatbelts, 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.

** - Seat belts not used for driver.

TABLE 11 (continued)

FMVSS NO. 208 - COMFORT AND CONVENIENCE TEST SUMMARY

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 should belt ("comfort clips" or "window shade" devices).

YES _____ NO X

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.

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 0.5 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.:

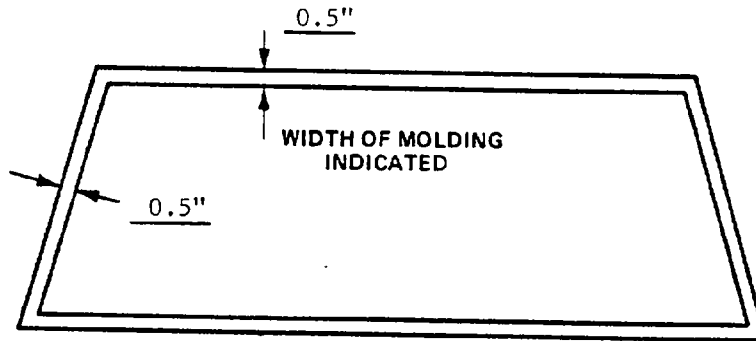
Windshield bonded in place with 0.5 inch rubber trim covering top and side edges. Bottom of windshield is covered by a plastic shroud.

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		
	PRE-TEST (in.)	POST-TEST (in.)	PERCENT RETENTION
RIGHT SIDE	79.55	79.55	100
LEFT SIDE	79.55	79.55	100
TOTAL	159.1	159.1	100

AREA OF RETENTION FAILURE:



FRONT VIEW

FAILURE DETAILS:

None.

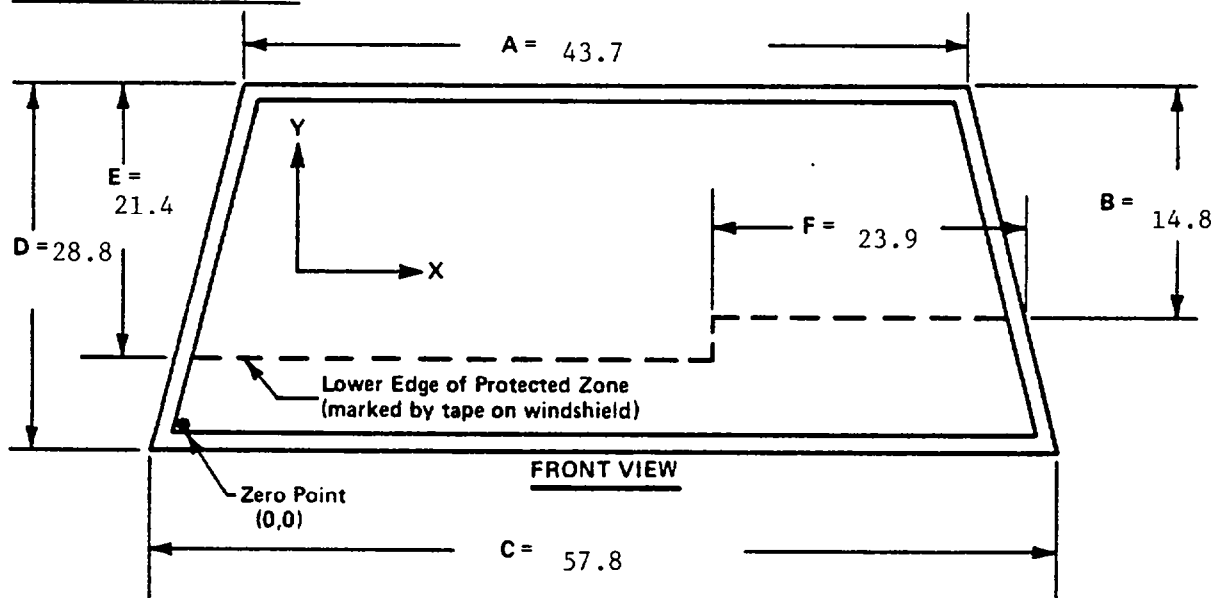
Figure 11

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.		

TABLE 12

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.:

C	K	5	2	0	1
---	---	---	---	---	---

 TEST DATE: July 17, 1989

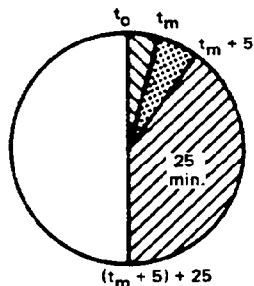
Vehicle Mfr/Make/Model: 1989 Nissan Pulsar NX SE 2-Door Hatchback

Test vehicle fuel tank filled to 92% to 94% of manufacturer's "useable" 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 _____ side (driver/passenger)
- 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

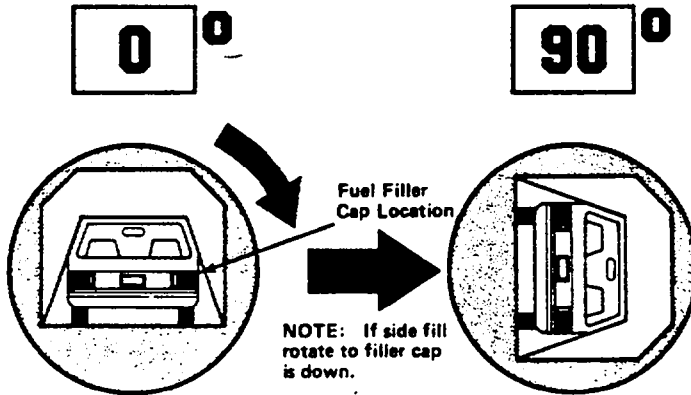
SOLVENT SPILLAGE DETAILS

None.

TABLE 13
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
 CK5201

TEST PHASE:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>03</u> minutes <u>00</u> seconds
FMVSS 301 Position Hold Time +	<u>05</u> minutes <u>00</u> seconds
TOTAL	<u>08</u> minutes <u>00</u> seconds
Next whole minute interval	<u>08</u> 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.

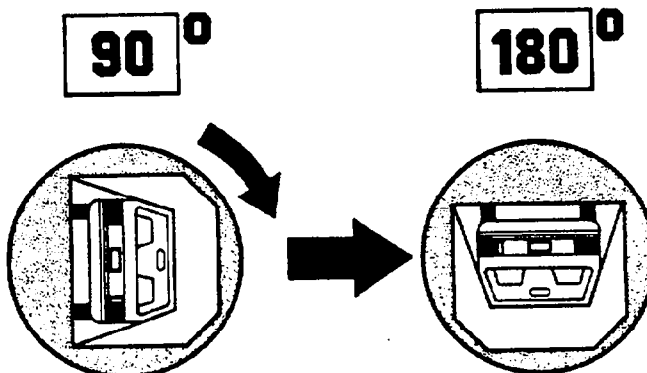
IV. SOLVENT SPILLAGE LOCATION(S):

None.

TABLE 13 (continued)
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
 CK5201

TEST PHASE:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>02</u> minutes <u>55</u> seconds
FMVSS 301 Position Hold Time +	<u>05</u> minutes <u>00</u> seconds
TOTAL	<u>07</u> minutes <u>55</u> seconds
Next whole minute interval	<u>08</u> 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.

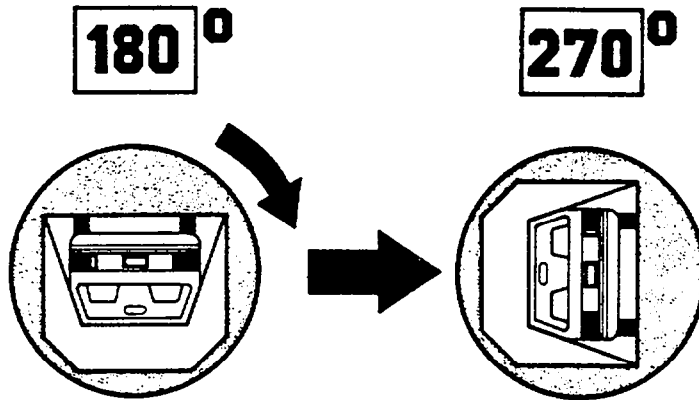
IV. SOLVENT SPILLAGE LOCATION(S):

None.

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
CK5201

TEST PHASE:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>03</u> minutes <u>00</u> seconds
FMVSS 301 Position Hold Time +	<u>05</u> minutes <u>00</u> seconds
TOTAL	<hr/> <u>08</u> minutes <u>00</u> seconds
Next whole minute interval	<u>08</u> 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.

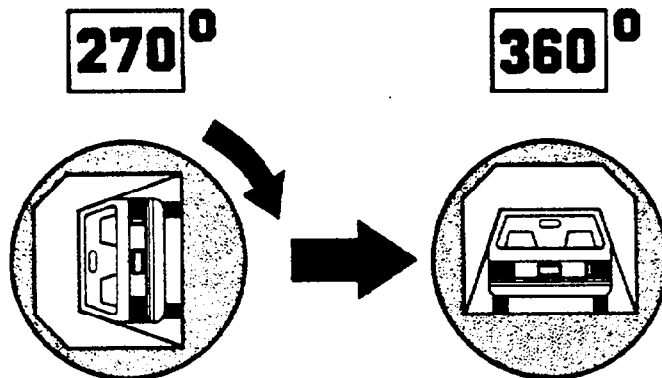
IV. SOLVENT SPILLAGE LOCATION(S):

None.

TABLE 13 (continued)
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Veh. NHTSA ID No.:
CK5201

TEST PHASE:



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 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: July 17, 1989 VEH. NHTSA No. CK5201

VEHICLE MANUFACTURER: Nissan Motor Co. Ltd.

Model Year 1989 VIN: JN1CN34C1KW422852

Body Style: 2-Door Hatchback Build Date: February 1989

DUMMY STABILIZED TEMPERATURE AT TIME OF TEST: 70 °F (Spec. = 66-78°F)

IMPACT VELOCITY: mph TIME OF TEST:

TYPE OF AUTOMATIC RESTRAINT SYSTEM: Driver side air bag, passenger side
3-point manual seat belt

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

Appendix A
PHOTOGRAPHS

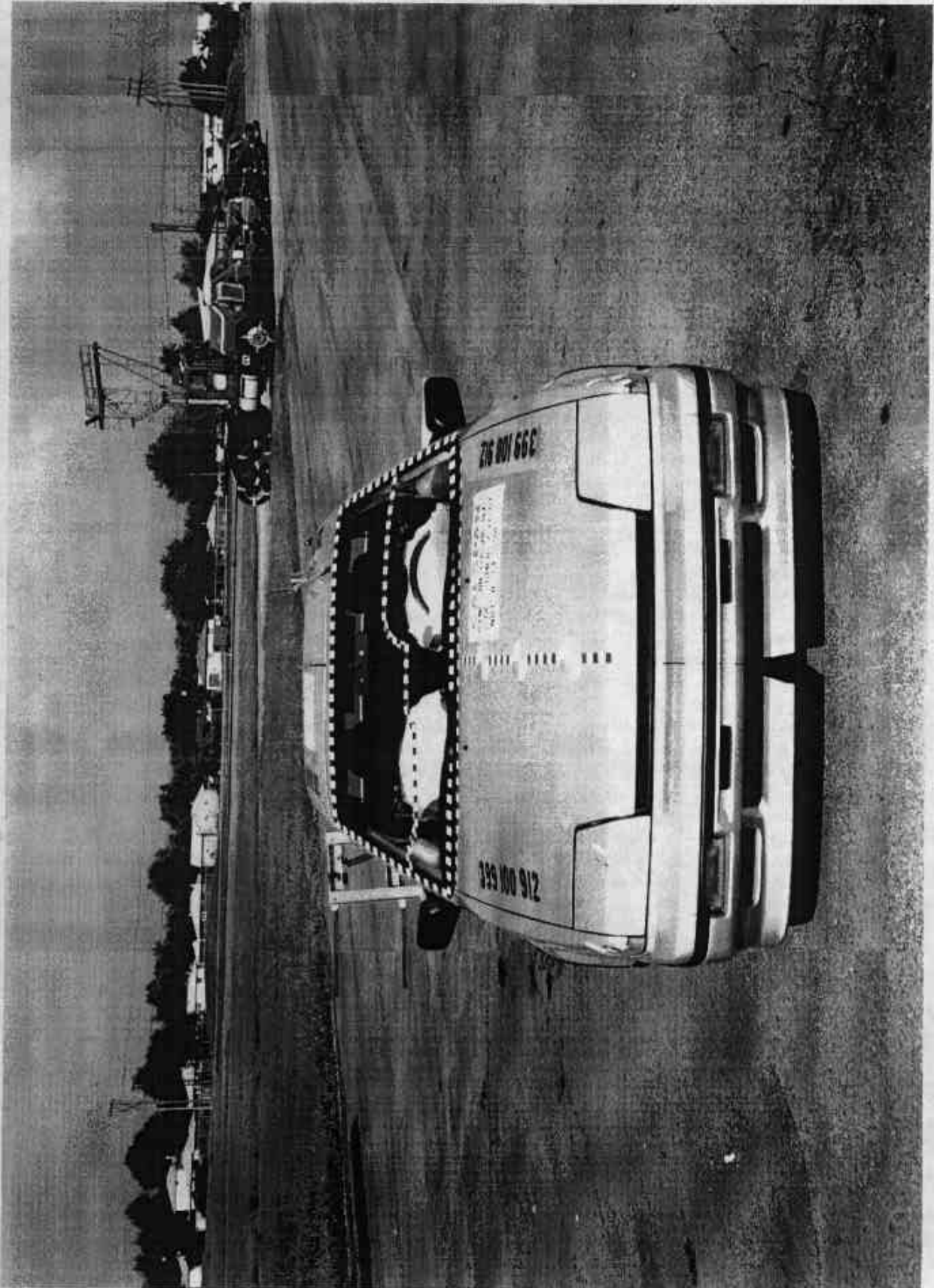


Figure A-1 PRE-TEST FRONT VIEW

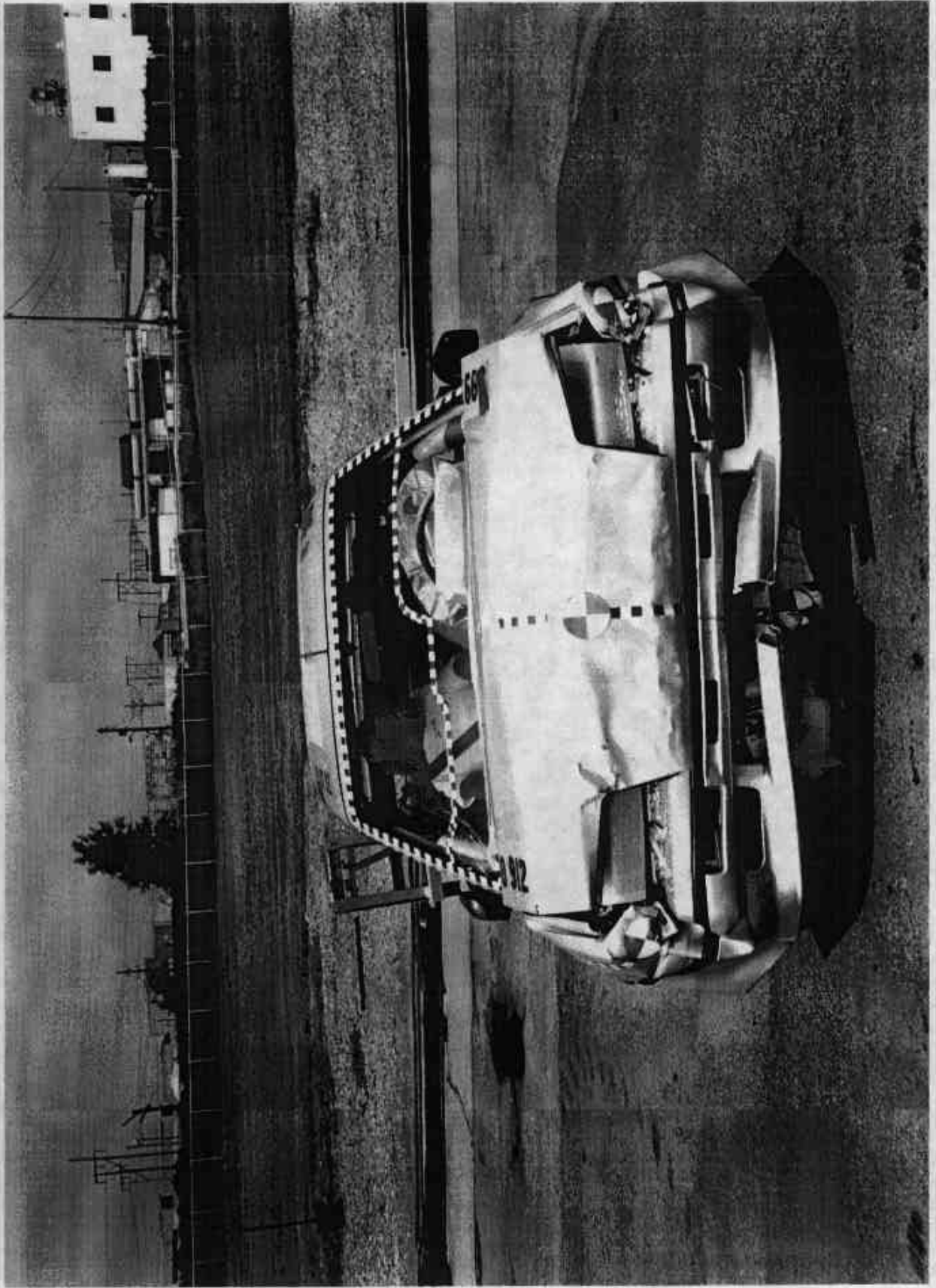


Figure A-2 POST-TEST FRONT VIEW

A-3

7715-10

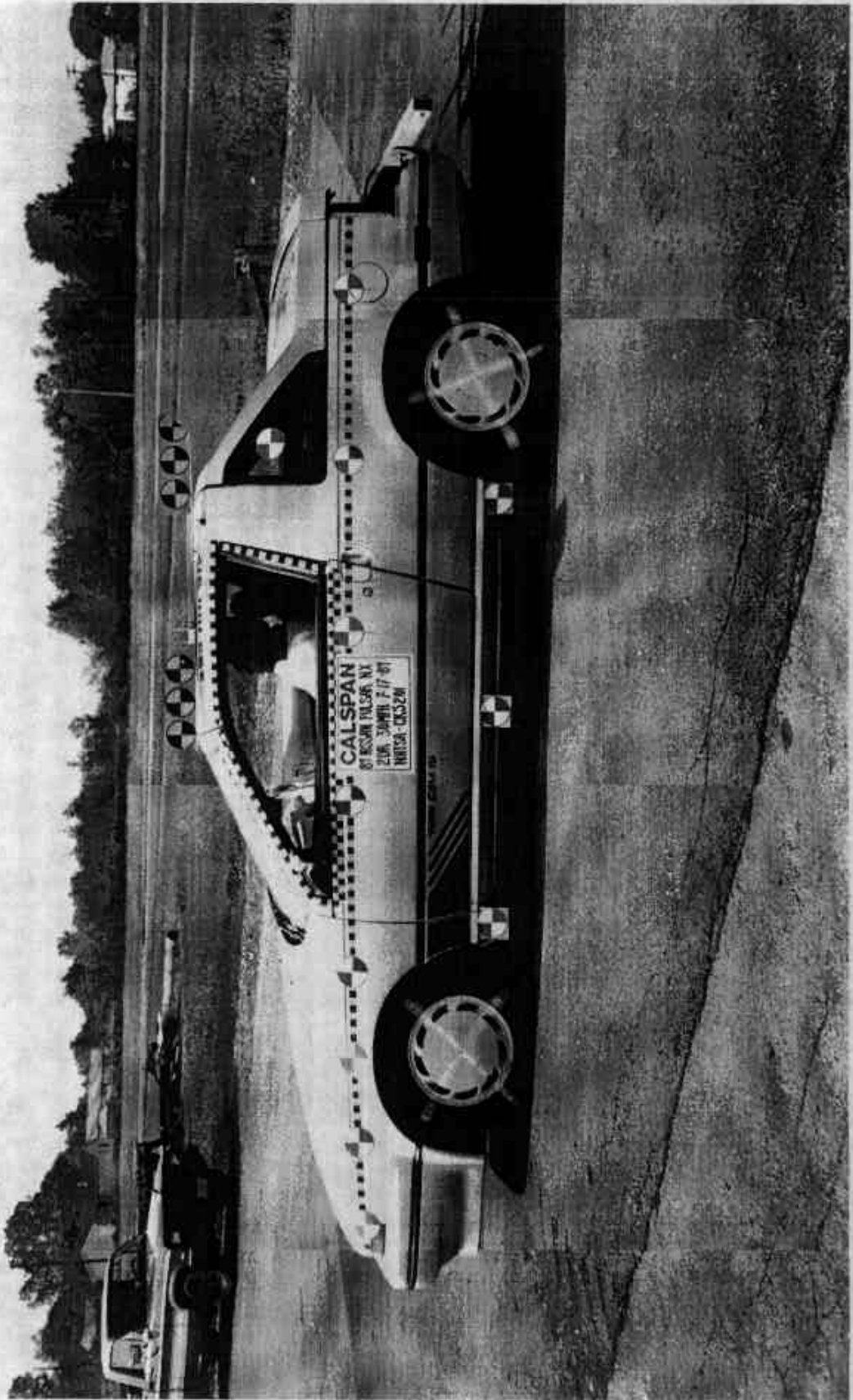


Figure A-3 PRE-TEST LEFT SIDE VIEW

A-4

7715-10

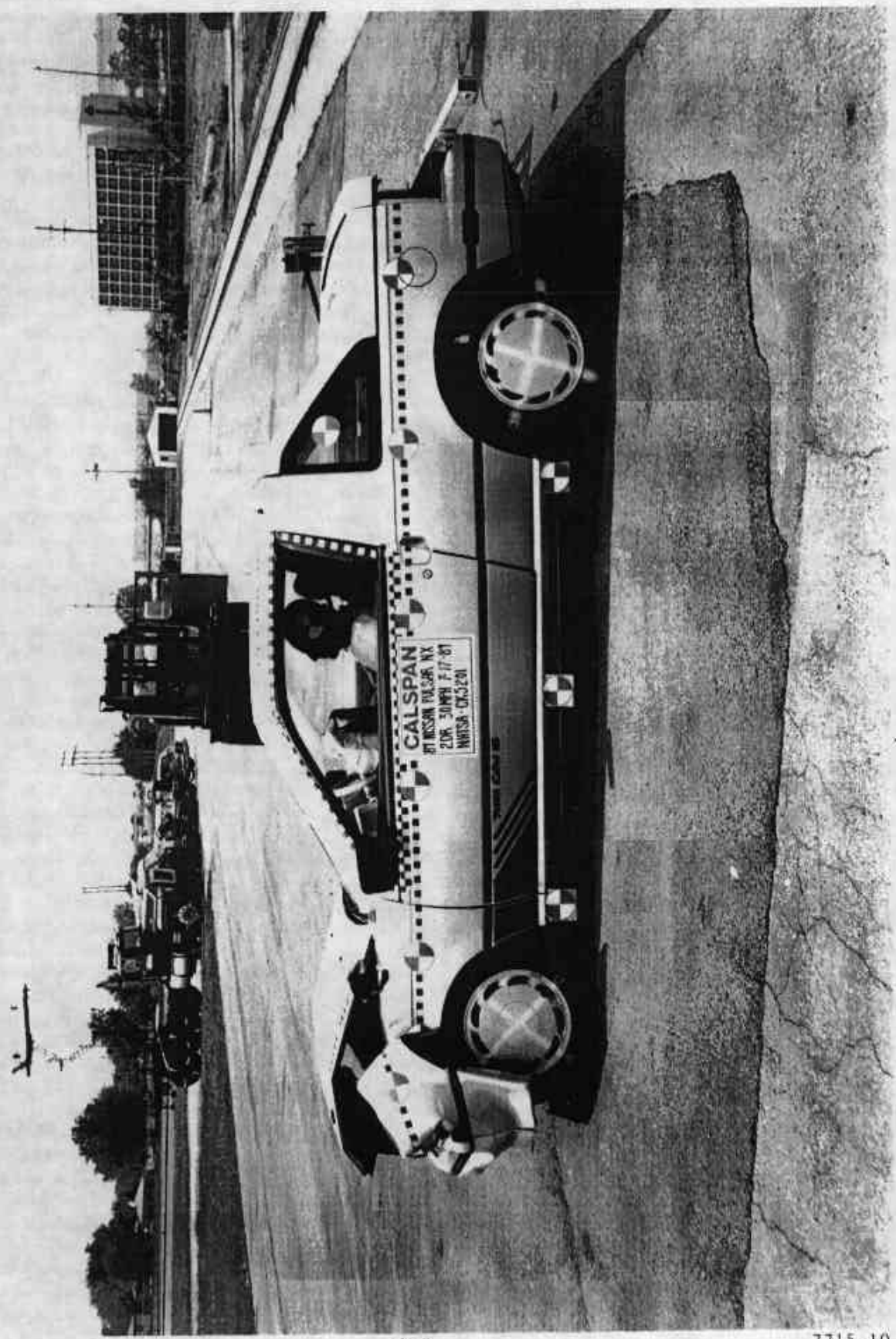


Figure A-4 POST-TEST LEFT SIDE VIEW

A-5

7715-10

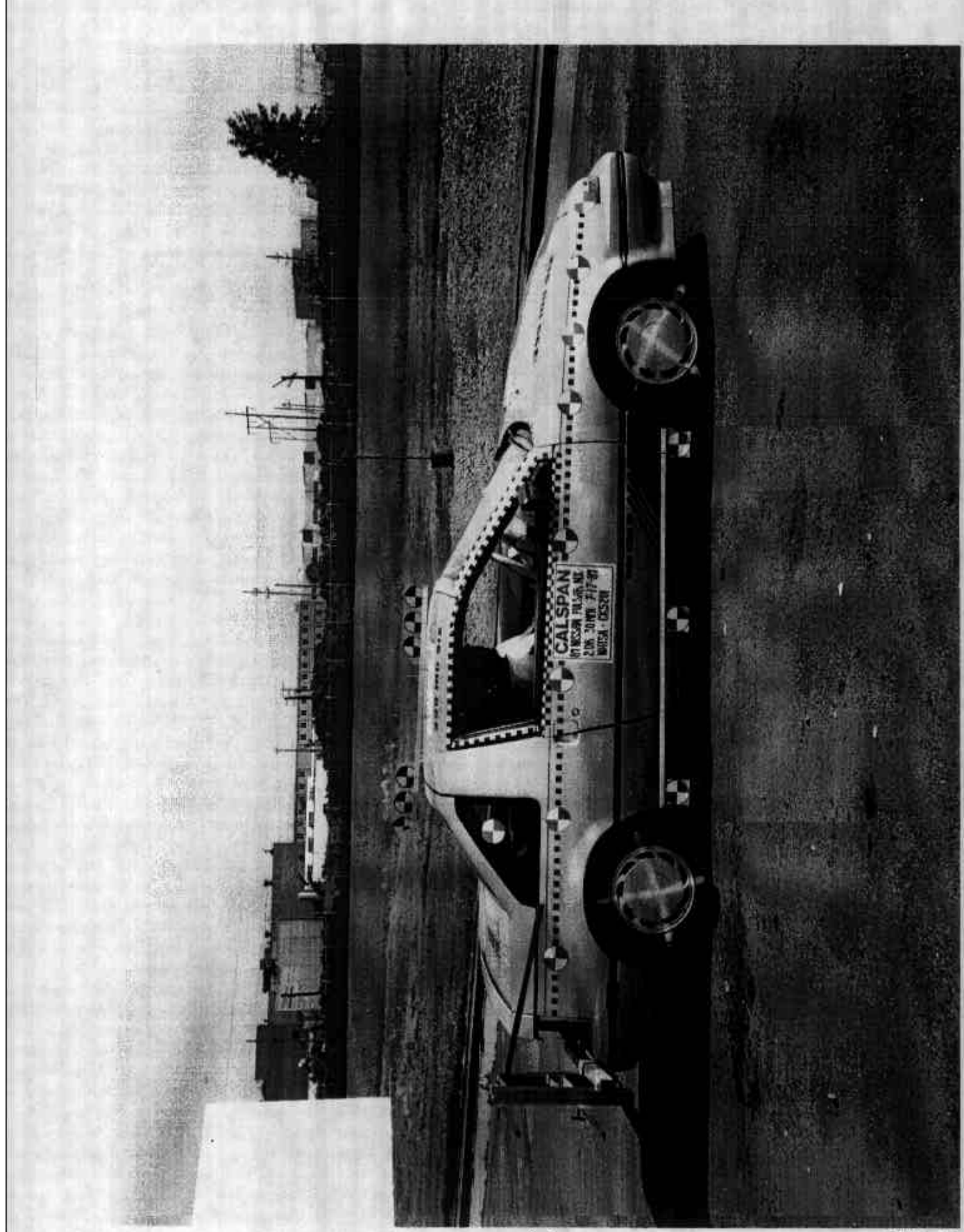


Figure A-5 PRE-TEST RIGHT SIDE VIEW

A-6

7715-10

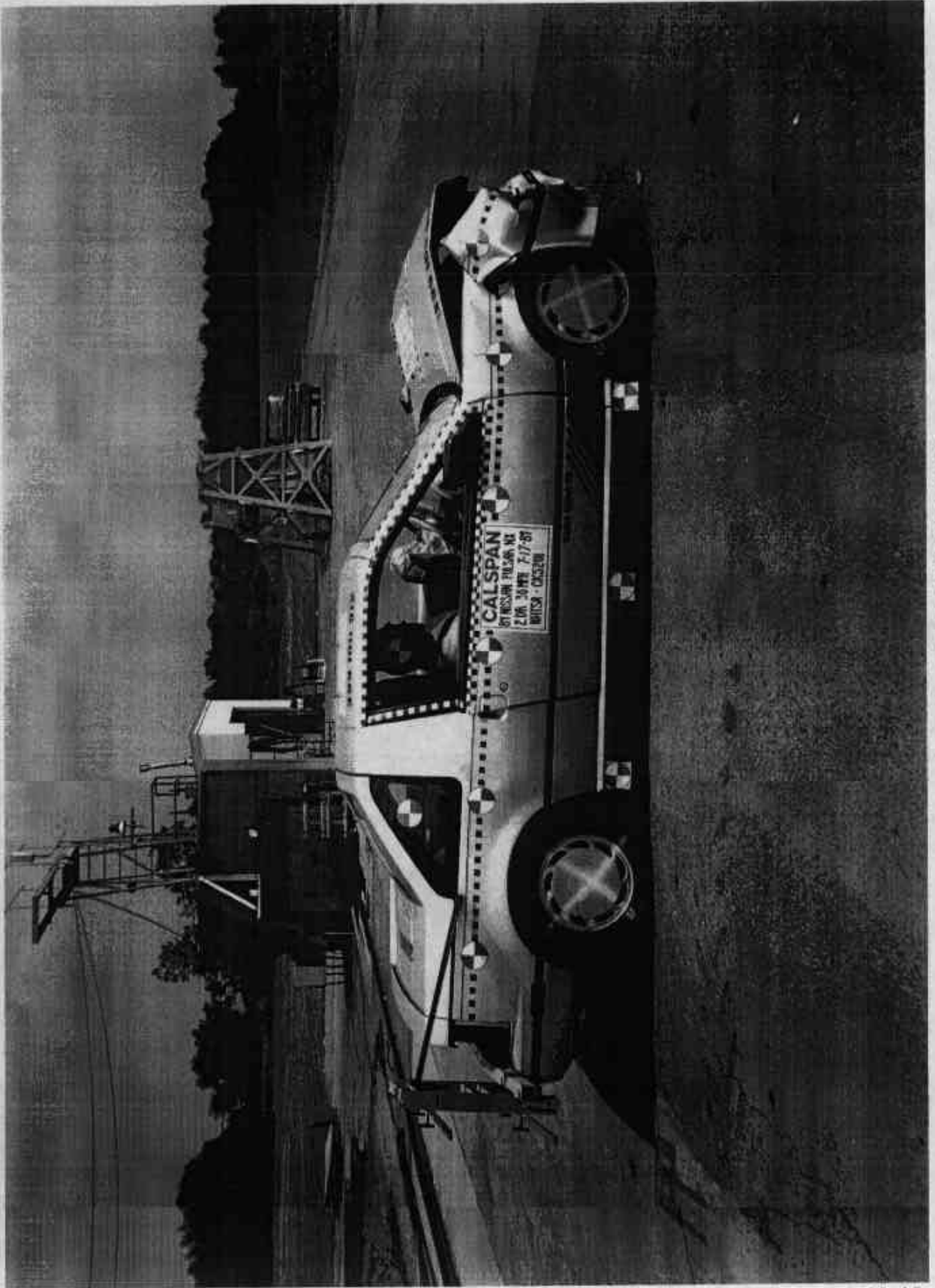


Figure A-6 POST-TEST RIGHT SIDE VIEW

A-7

7715-10



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

A-8

7715-10



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

A-9

7715-10



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

A-10

7715-10

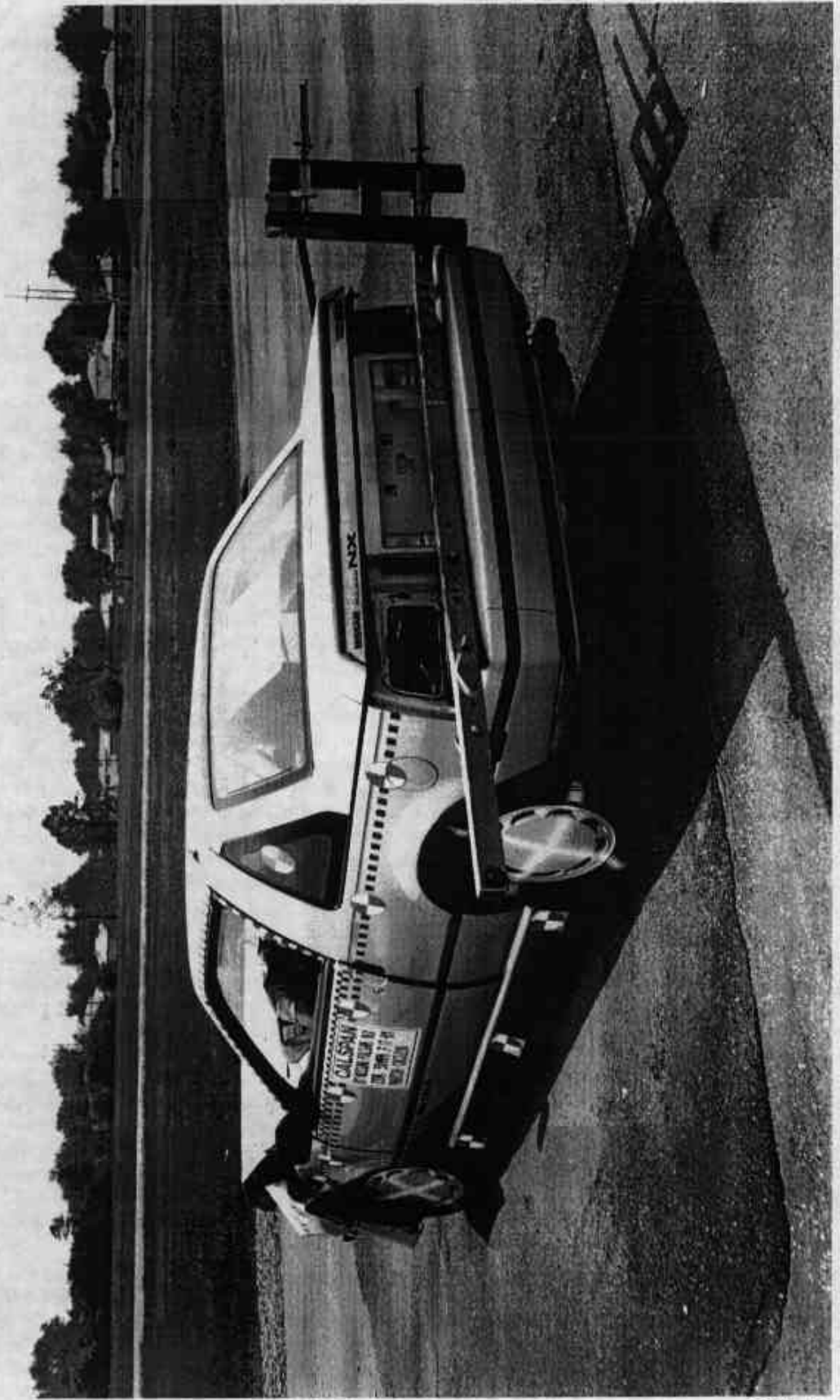


Figure A-10 POST-TEST LEFT REAR THREE-QUARTER VIEW

A-11

7715-10



A-12

7715-10

Figure A-11 POST-TEST TOP VIEW

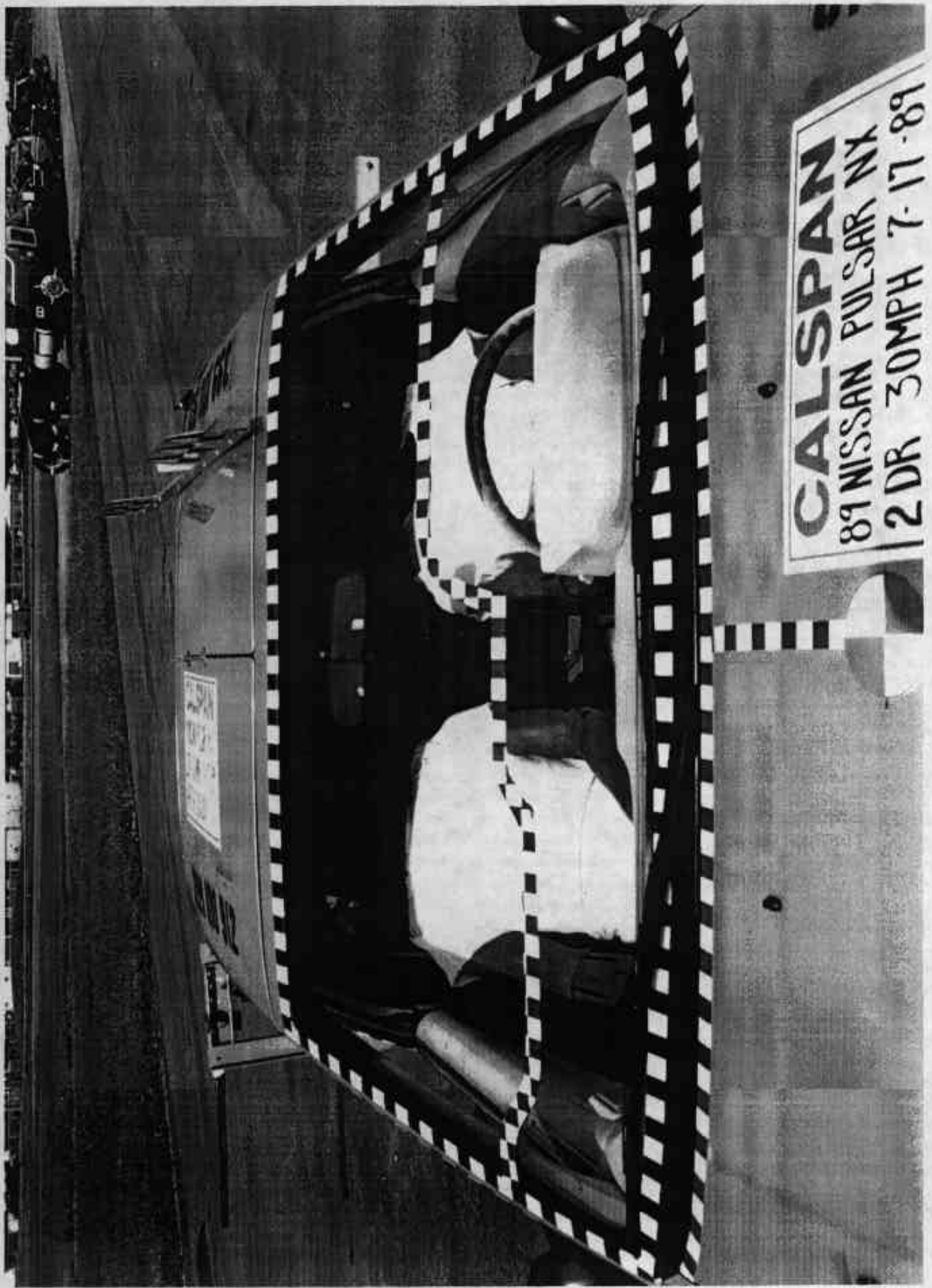


Figure A-12 PRE-TEST WINDSHIELD VIEW

A-13

7715-10

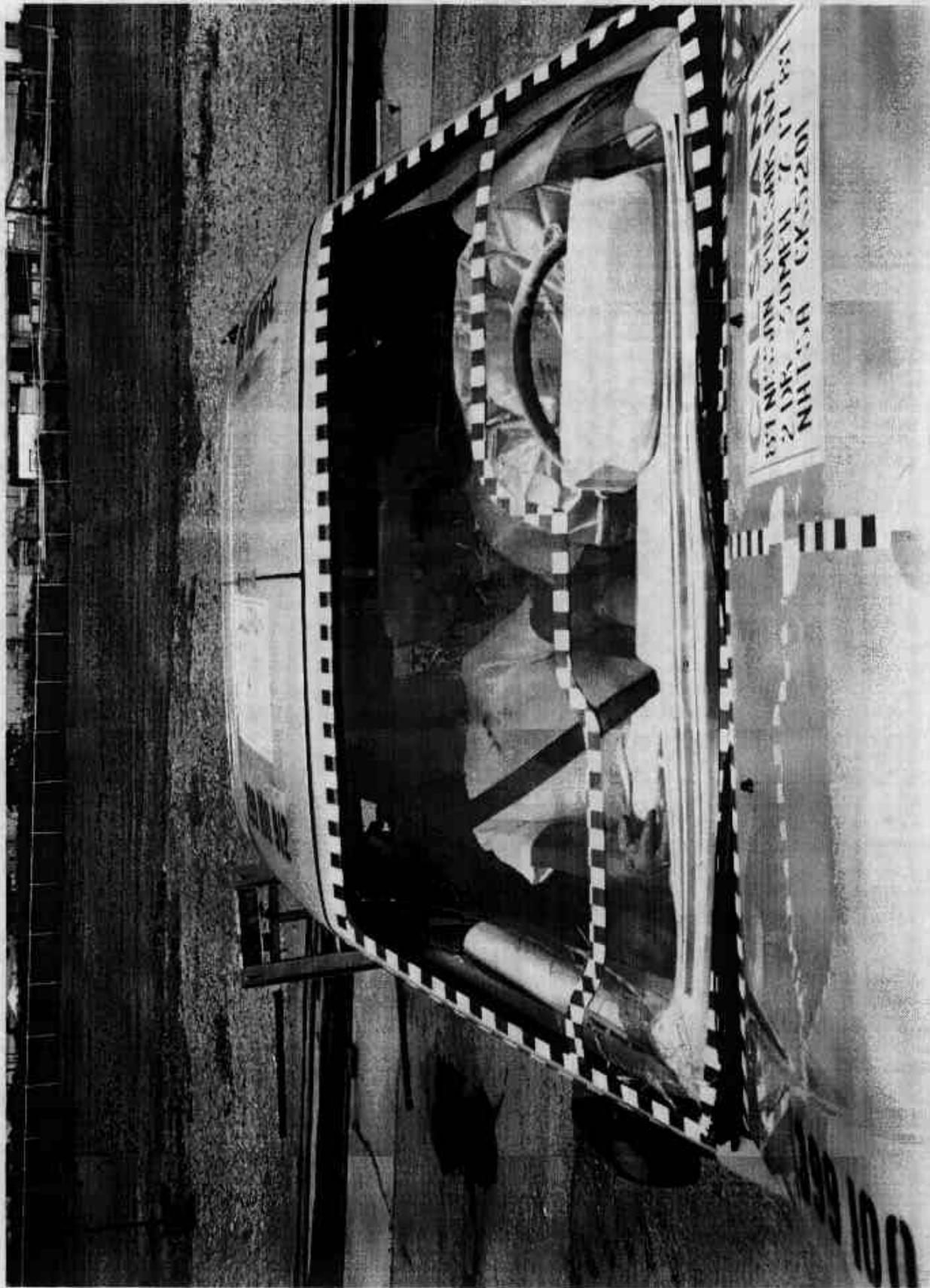


Figure A-13 POST-TEST WINDSHIELD VIEW

A-14

7715-10

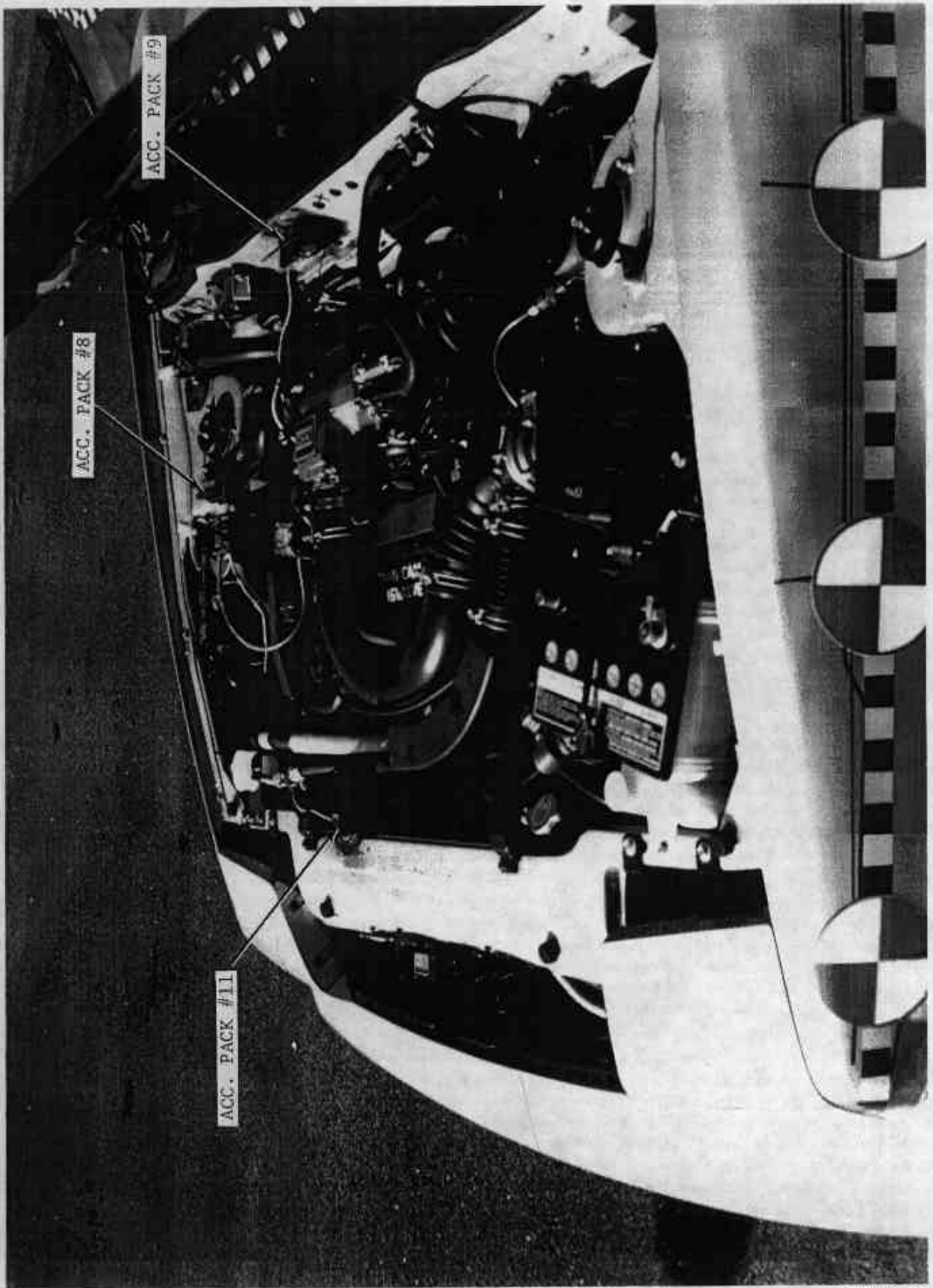
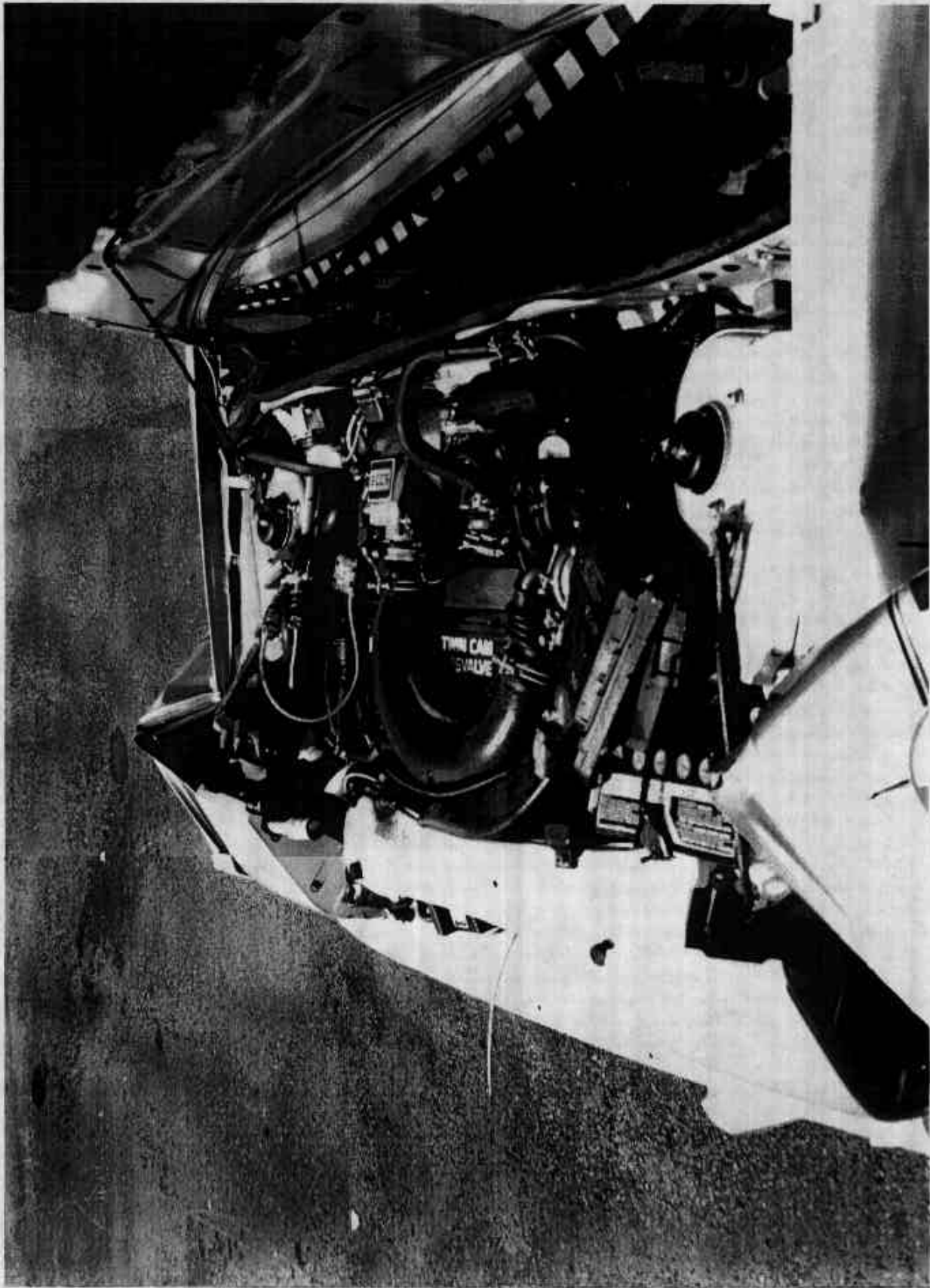


Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW



A-16

7715-10

Figure A-15 POST-TEST ENGINE COMPARTMENT VIEW

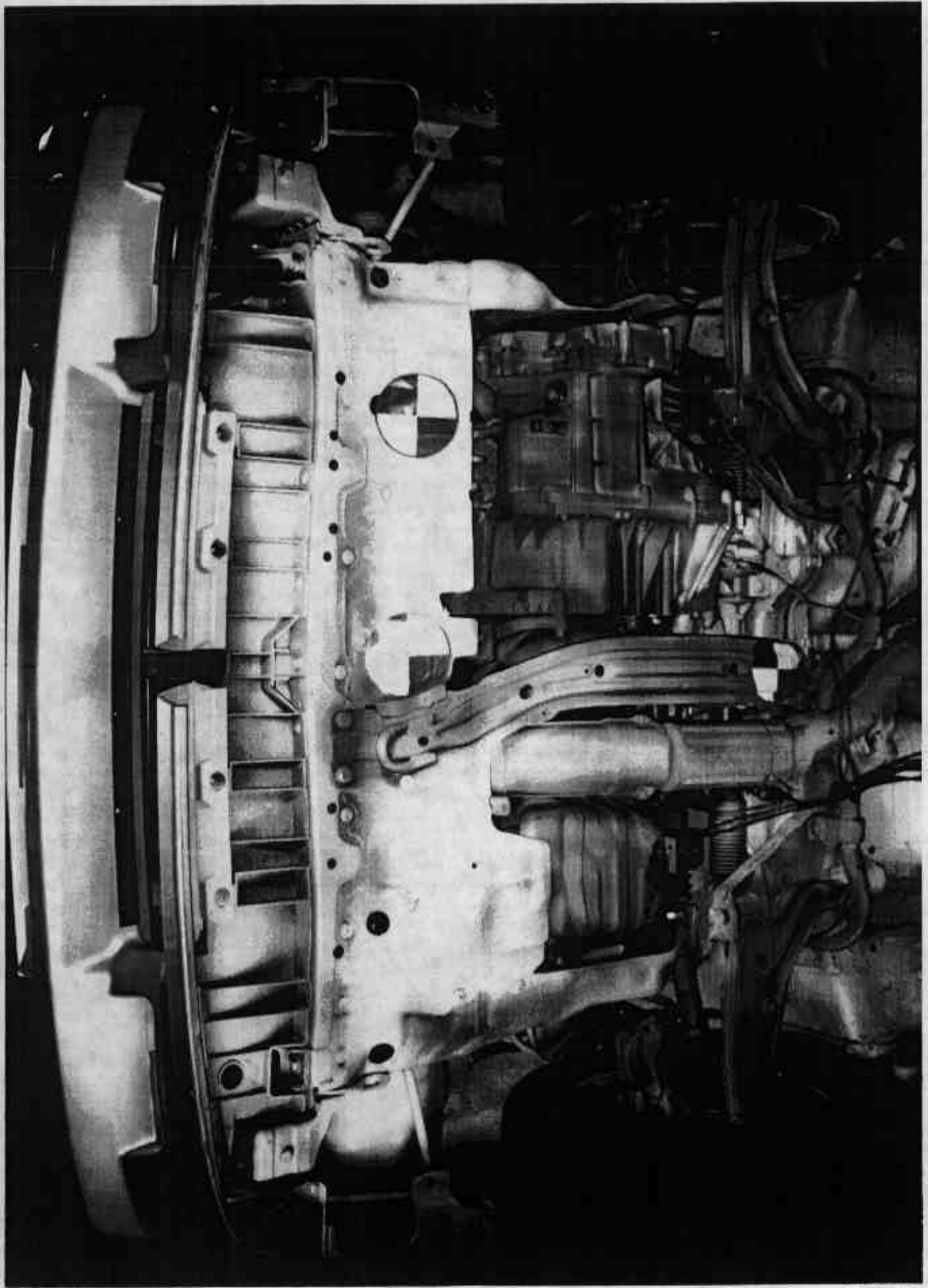


Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

A-17

7715-10

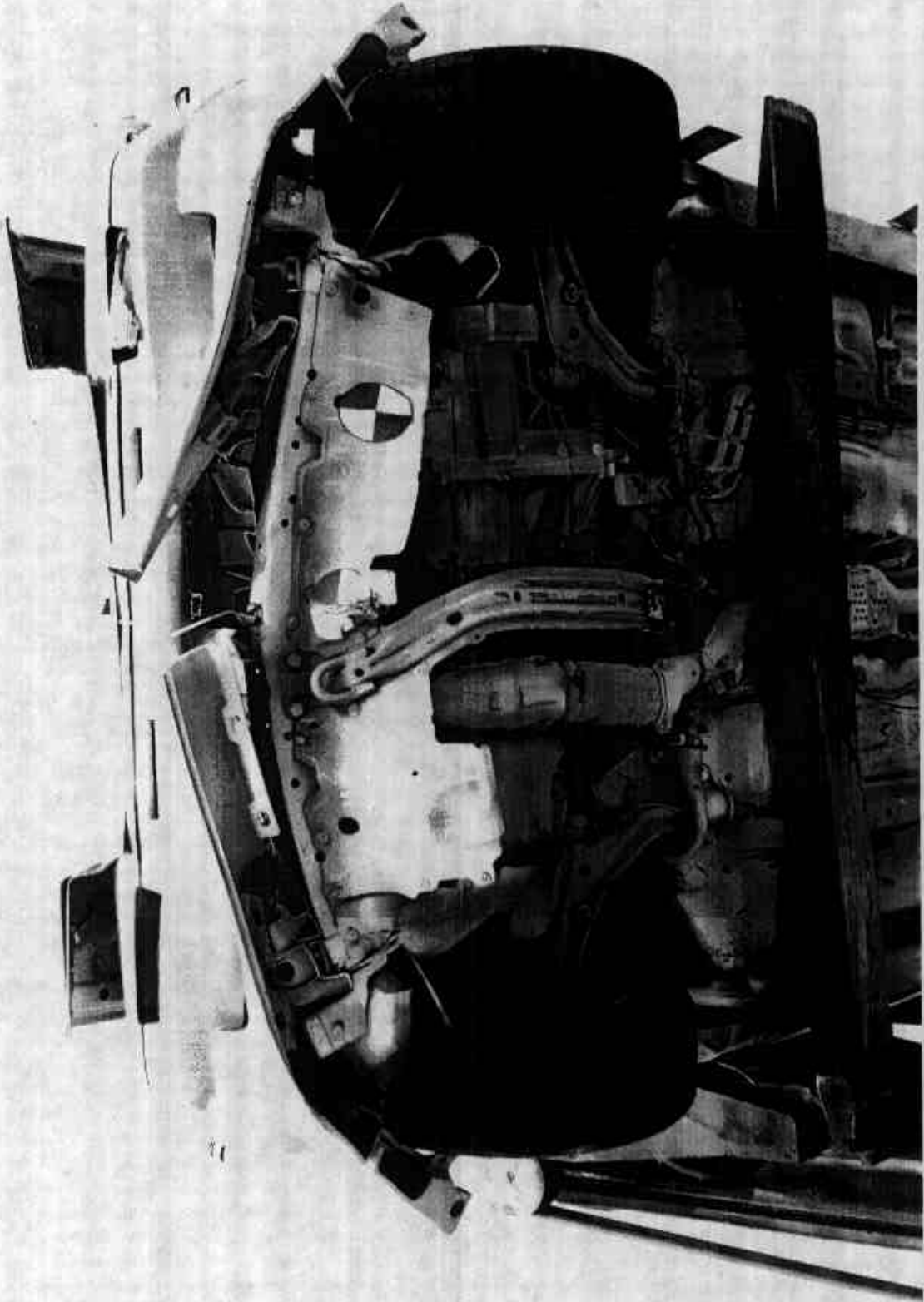


Figure A-17 POST-TEST FRONT UNDERBODY VIEW

A-18

7715-10

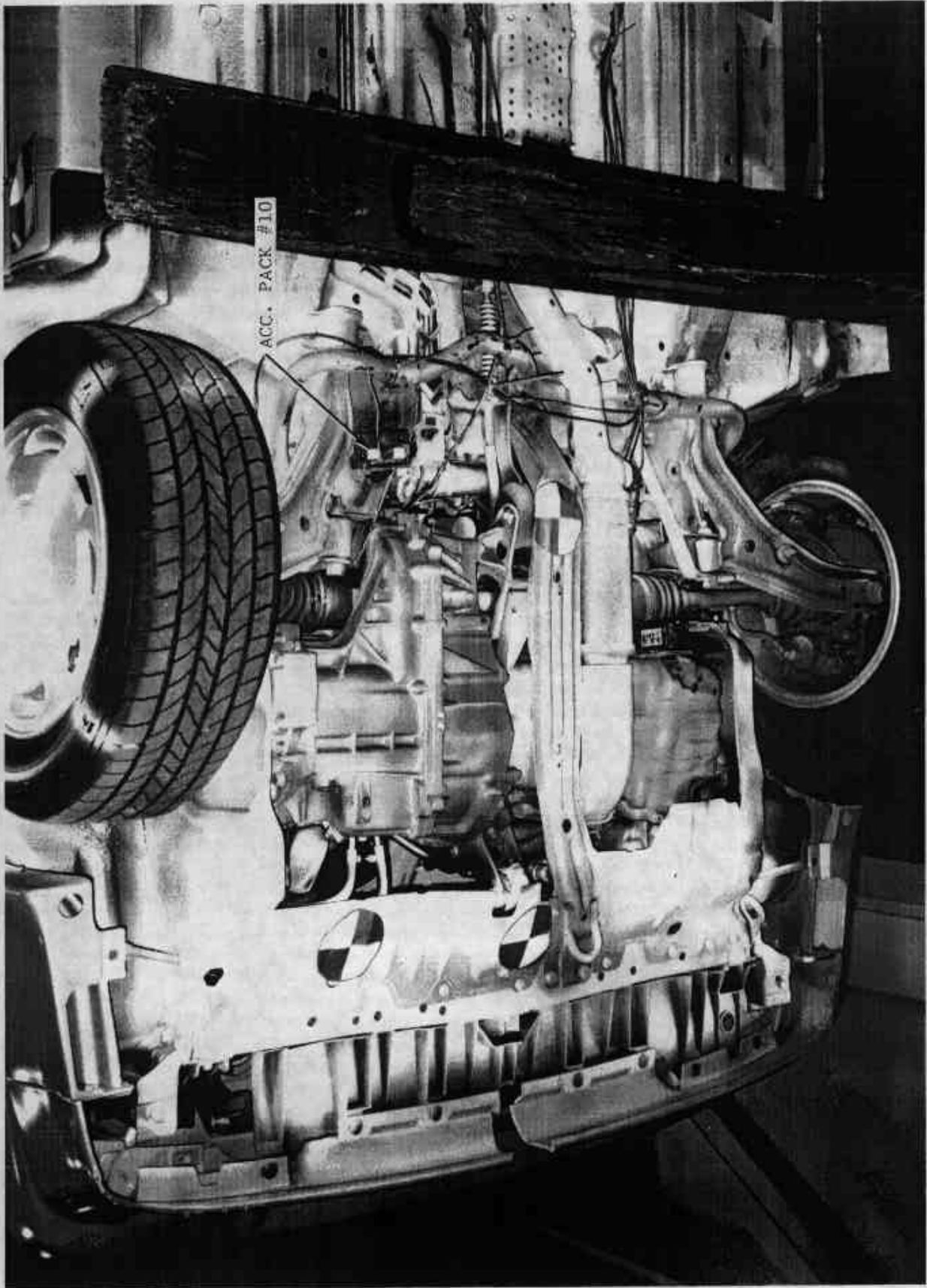


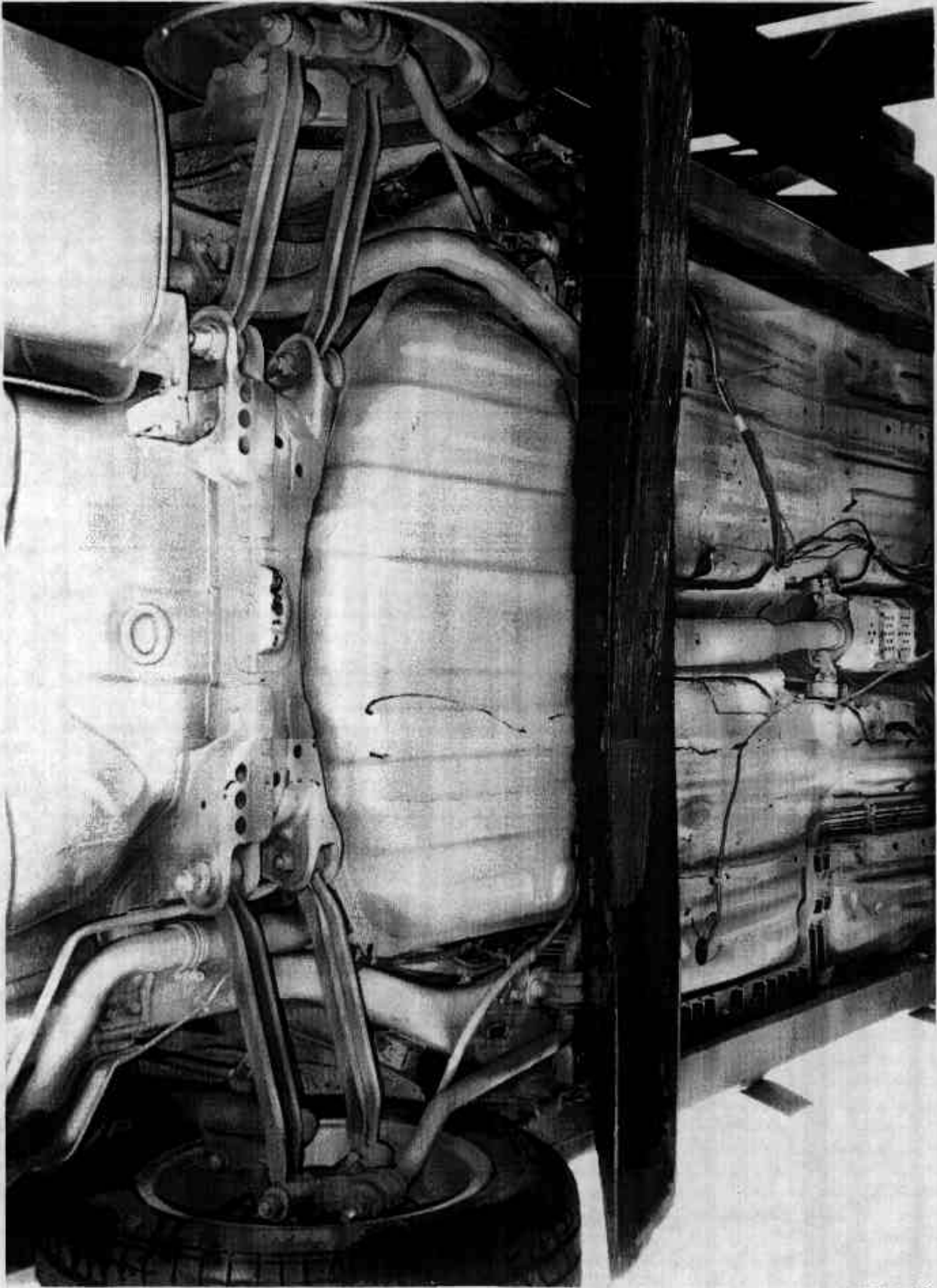
Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW



Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW



Figure A-20 PRE-TEST REAR UNDERBODY VIEW



A-22

7715-10

Figure A-21 POST-TEST REAR UNDERBODY VIEW



Figure A-22 CERTIFICATION LABEL

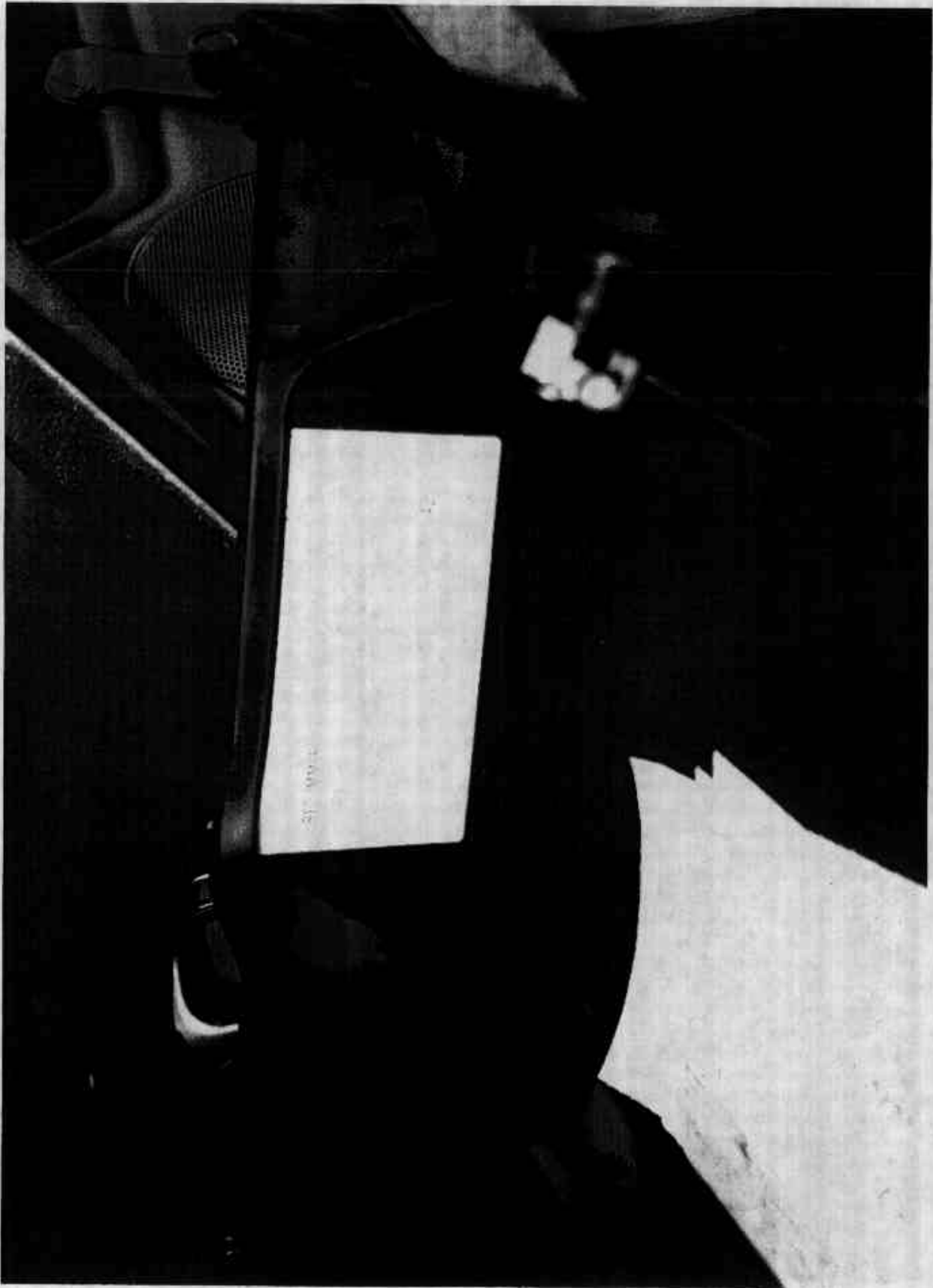


Figure A-23 TIRE PLACARD



Figure A-24 PRE-TEST DRIVER DUMMY POSITION



Figure A-25 POST-TEST DRIVER DUMMY POSITION

A-26

7715-10



Figure A-26 PRE-TEST PASSENGER DUMMY POSITION

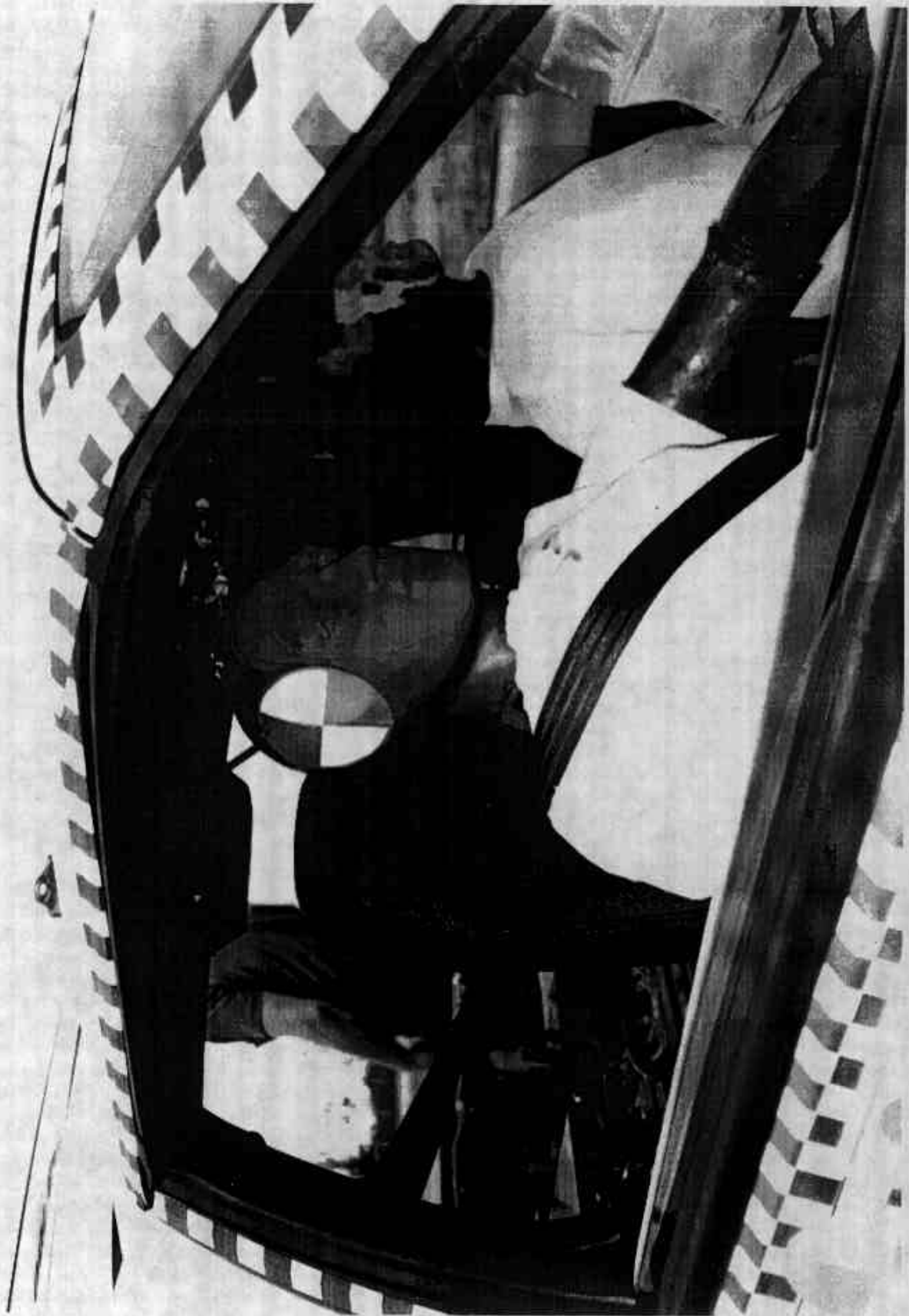


Figure A-27 POST-TEST PASSENGER DUMMY POSITION

1001

A-28

7715-10

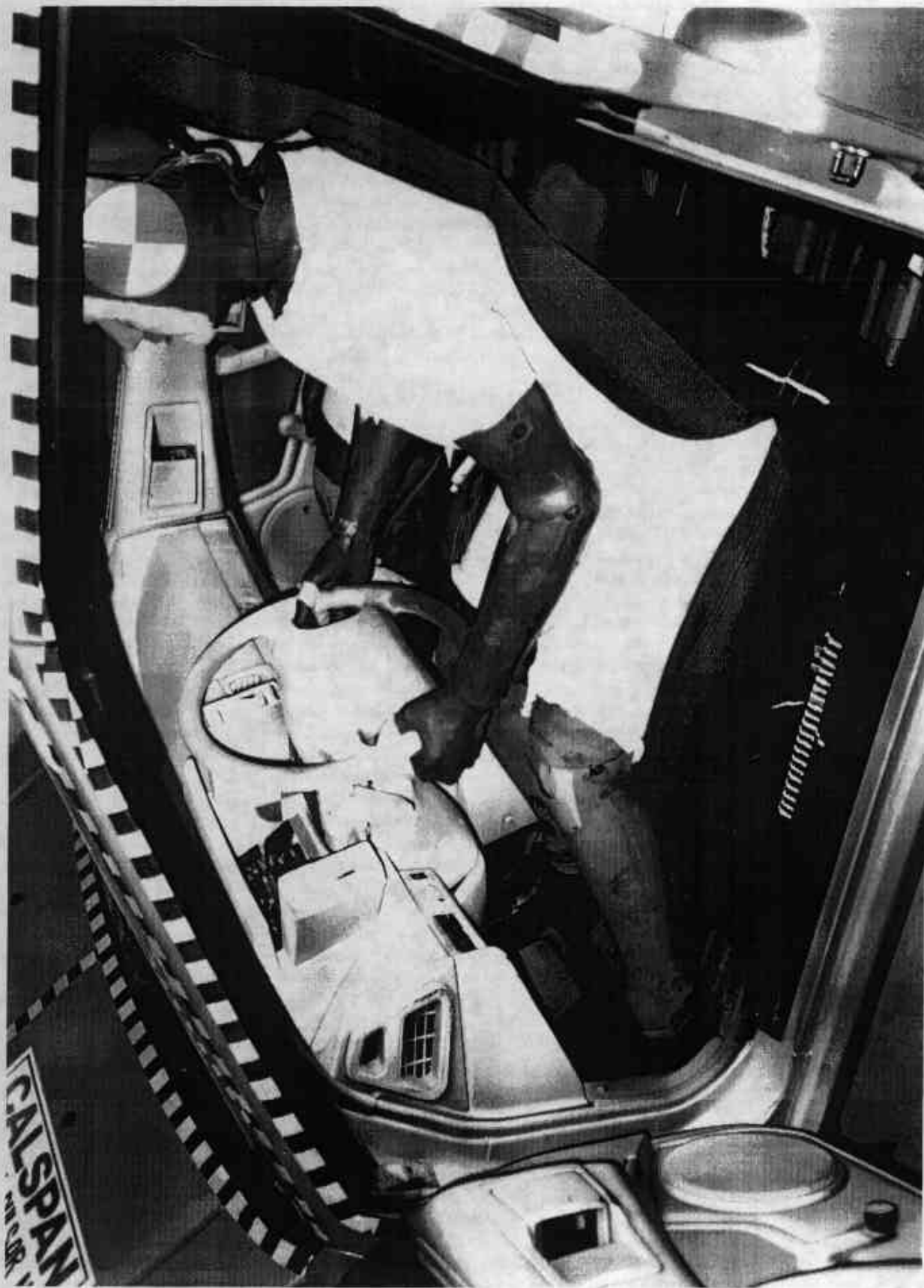


Figure A-28 PRE-TEST DRIVER DUMMY AND INTERIOR VIEW

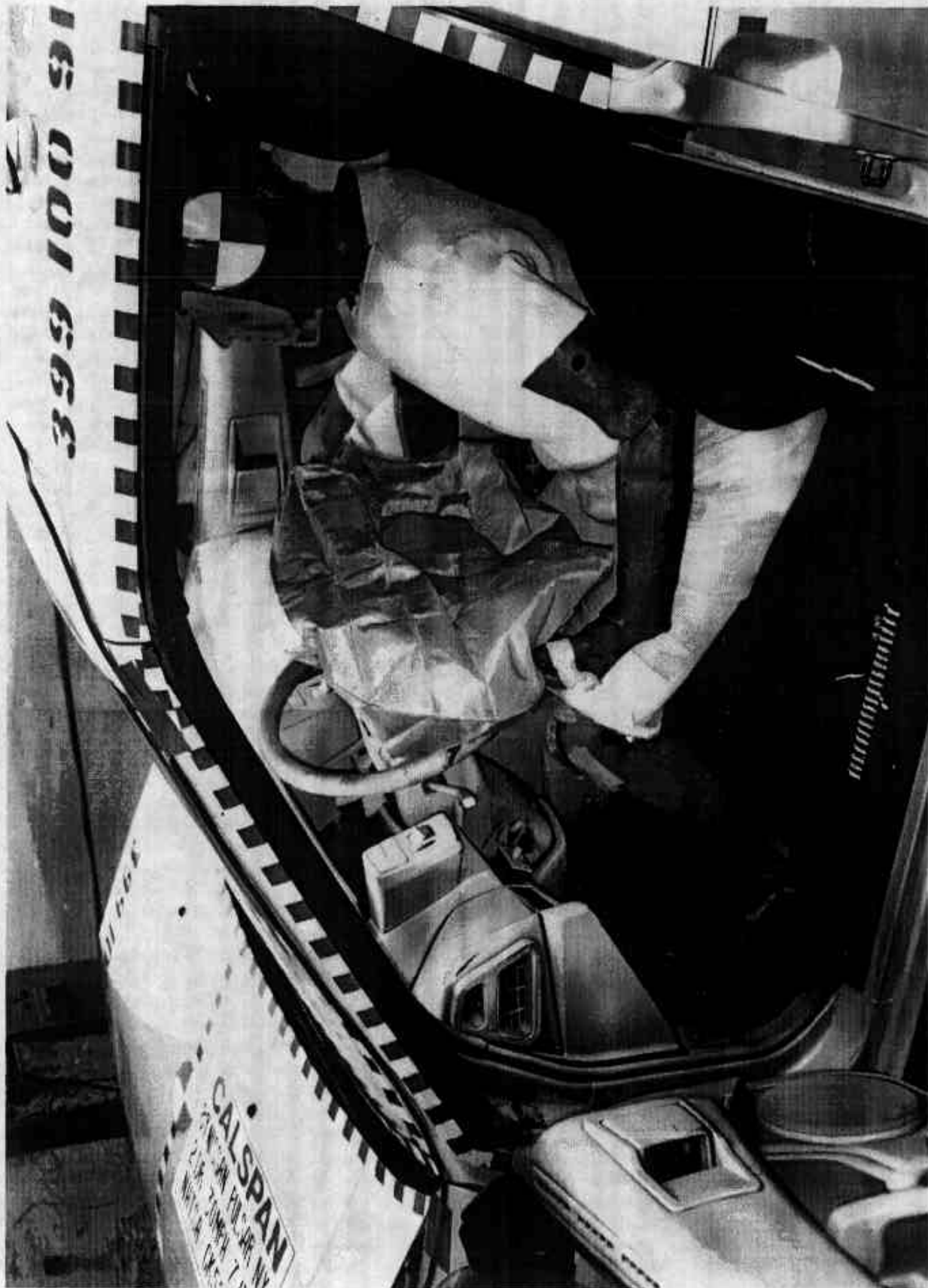


Figure A-29 POST-TEST DRIVER DUMMY AND INTERIOR VIEW

A-30

7715-10



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

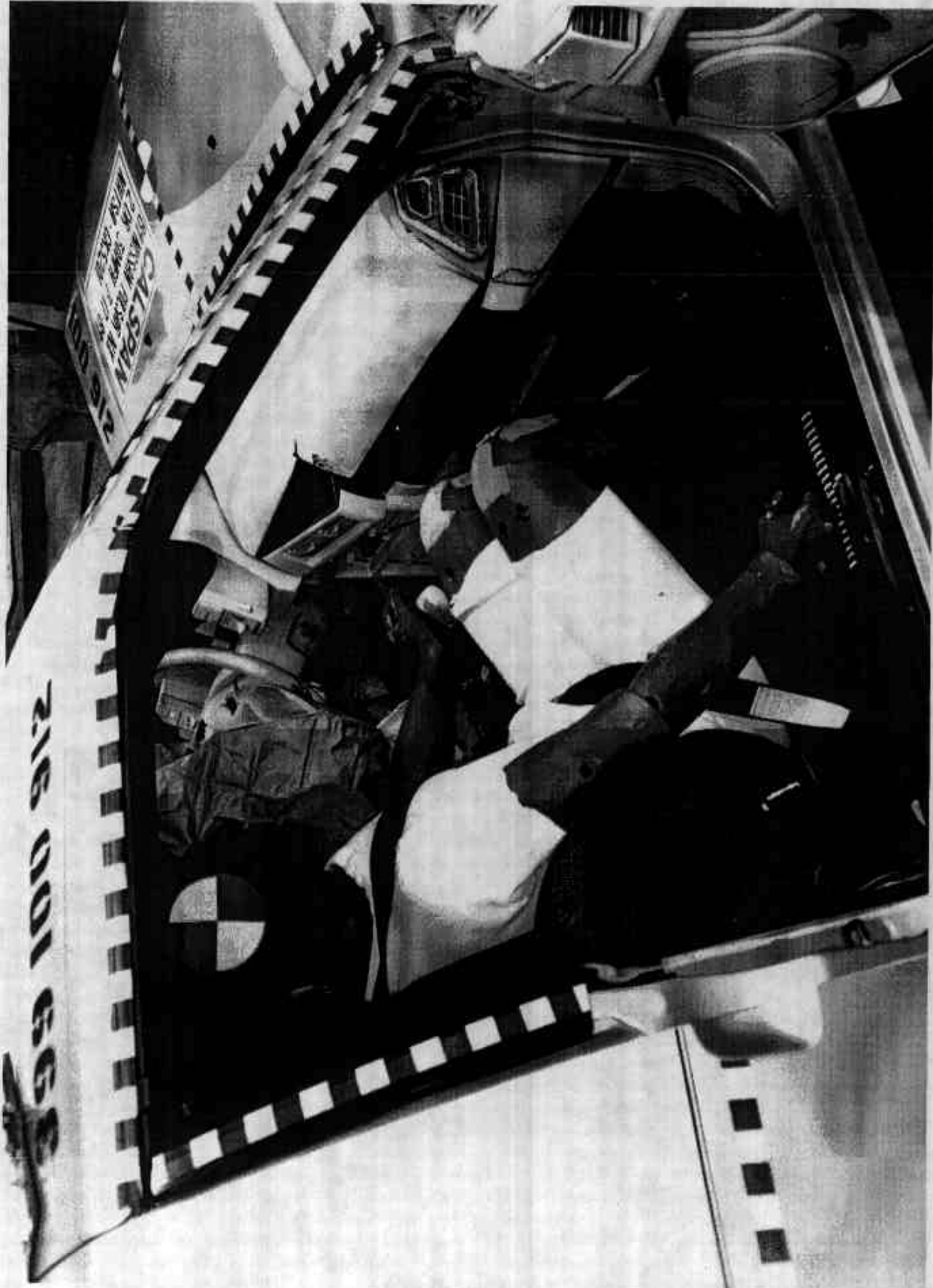


Figure A-31 POST-TEST PASSENGER DUMMY AND INTERIOR VIEW

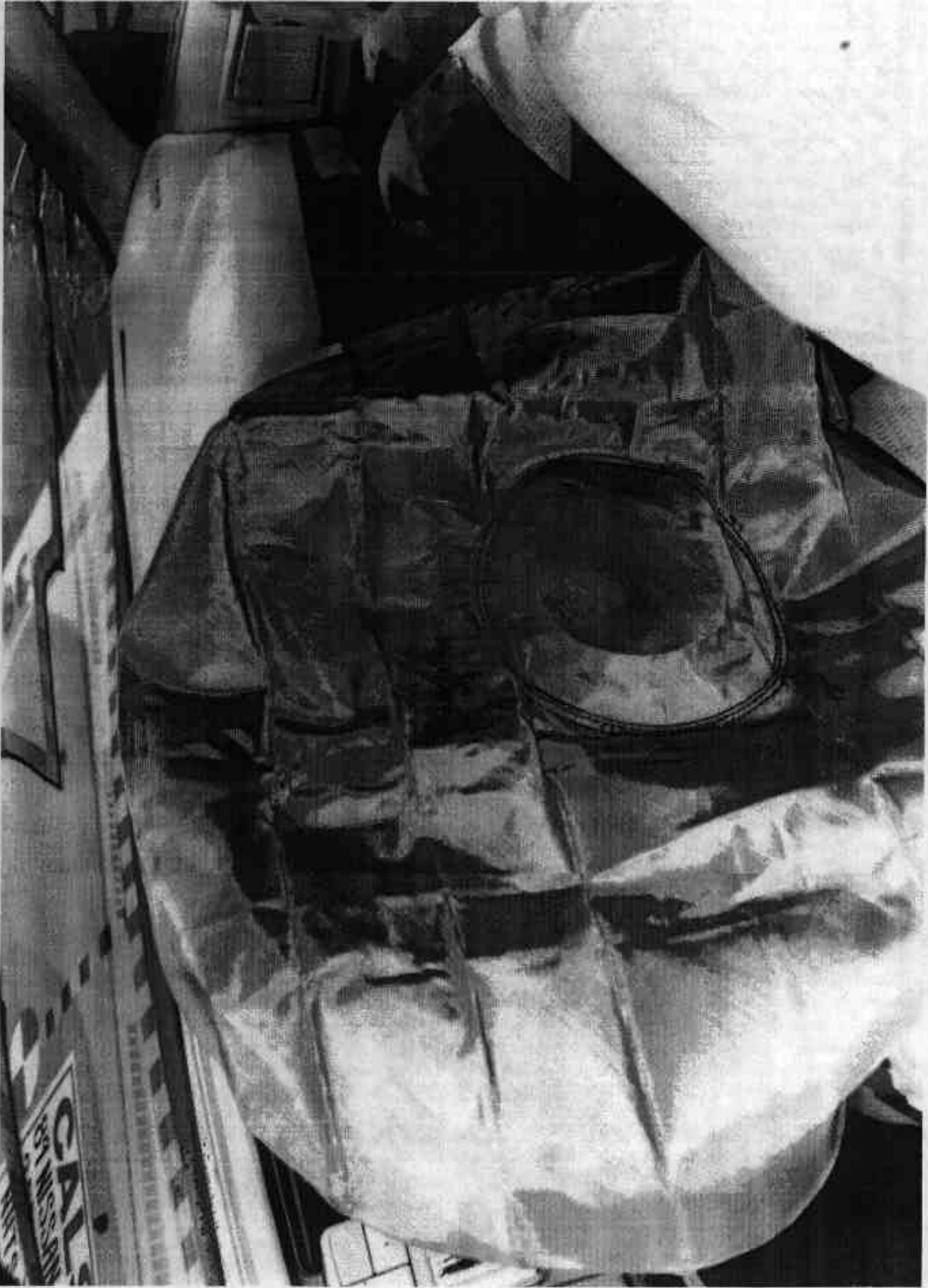


Figure A-32 POST-TEST DRIVER AIRBAG VIEW

A-33

7715-10

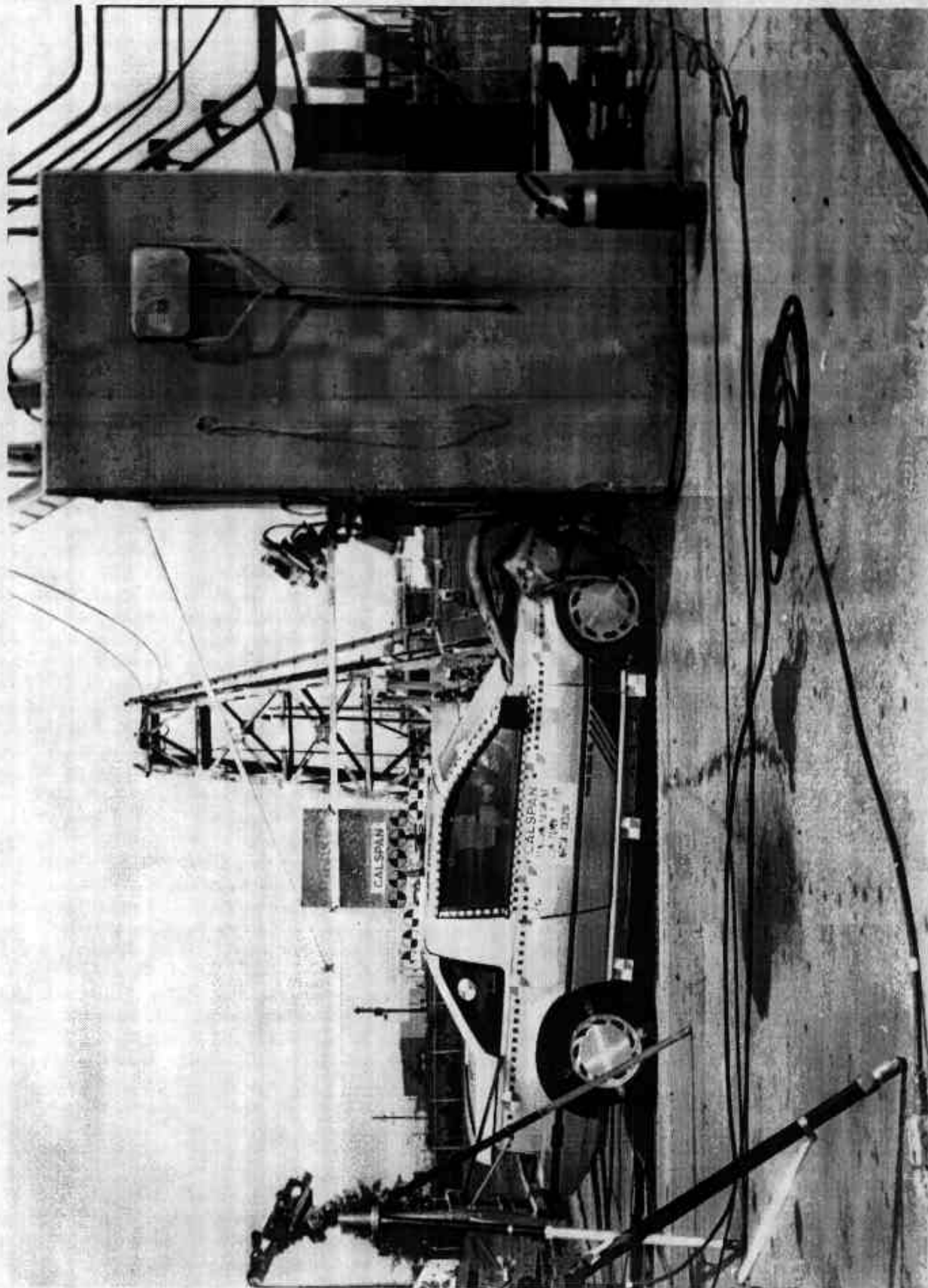


Figure A-33 VEHICLE IMPACT

A-34

7715-10

Appendix B
VEHICLE AND DUMMY RESPONSE DATA

TEST NO. CK5201

VEHICLE DATA

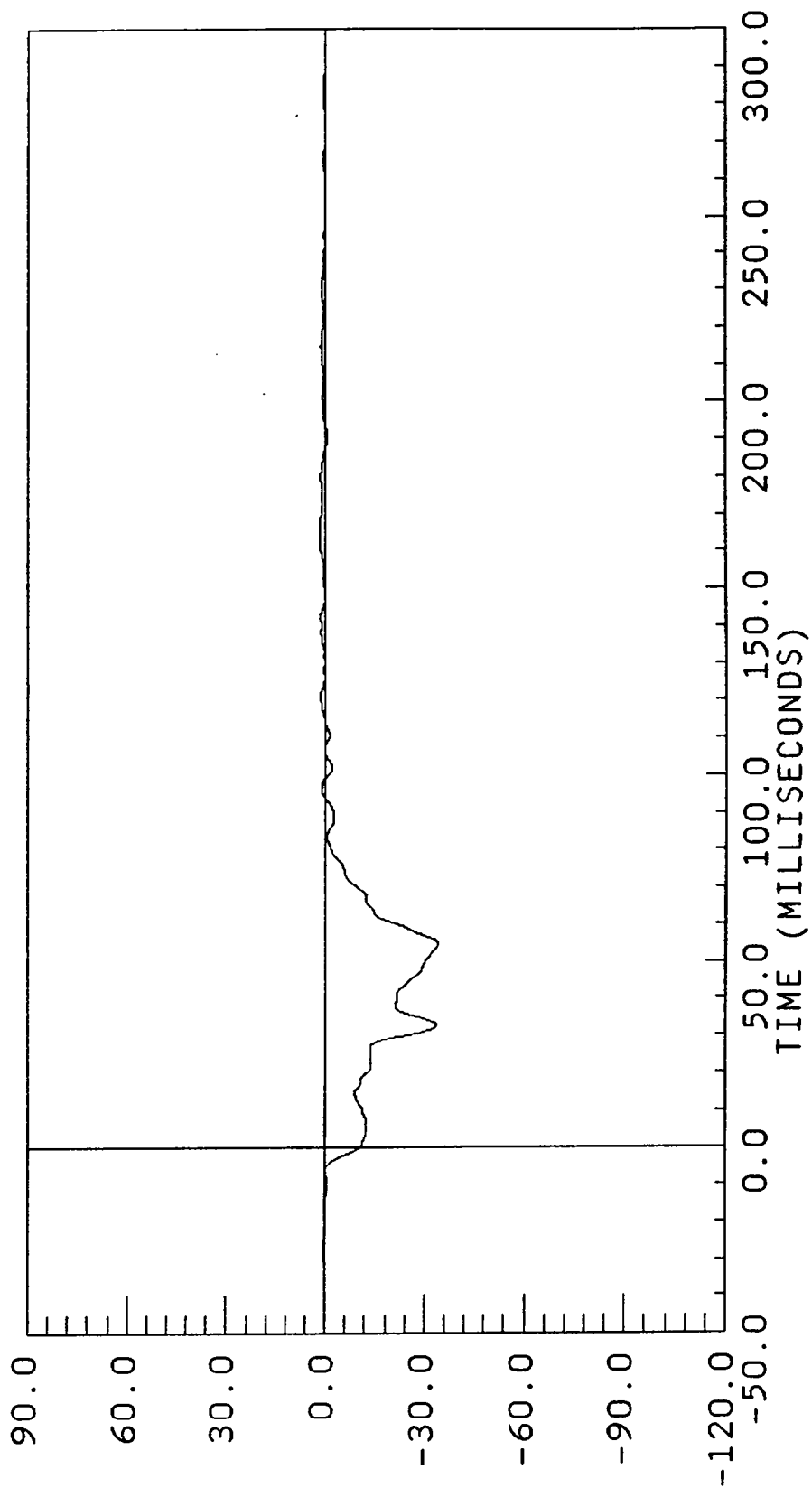
FILTER CHANNEL CLASS

60

29.50 mph

ACC PACK #1(X)
FILTERED
FILTER CUTOFF: 100HZ

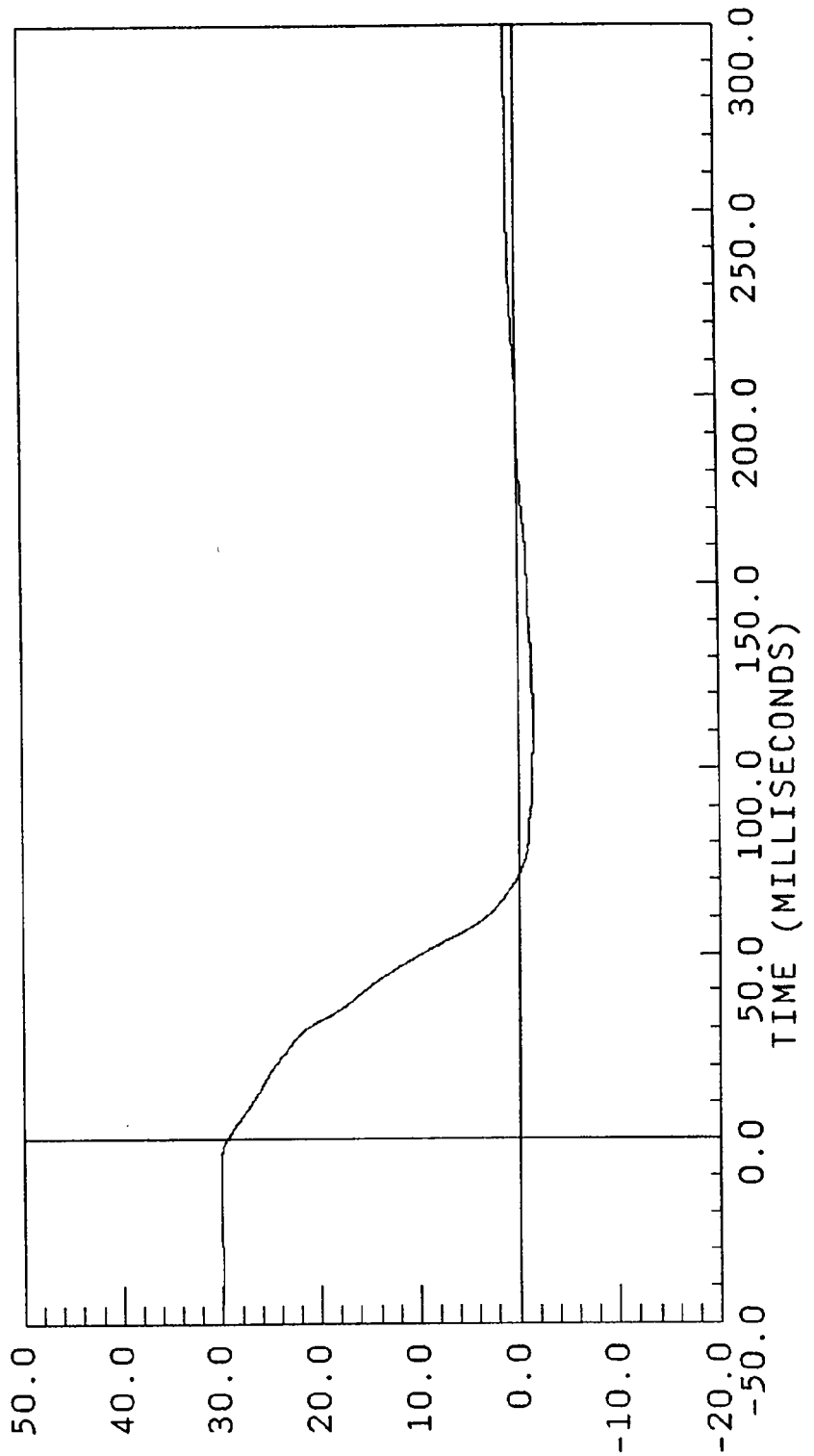
XL AXIS
YMIN = -34.04665 at 54.67500
YMAX = 1.779977 at 166.8000



V912-17.DAT

29.50 mph

ACC PACK #1(X)
COMPUTED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -1.579412 at 114.0000
YMAX = 29.95744 at -14.85000



VELOCITY * MILES / HOUR

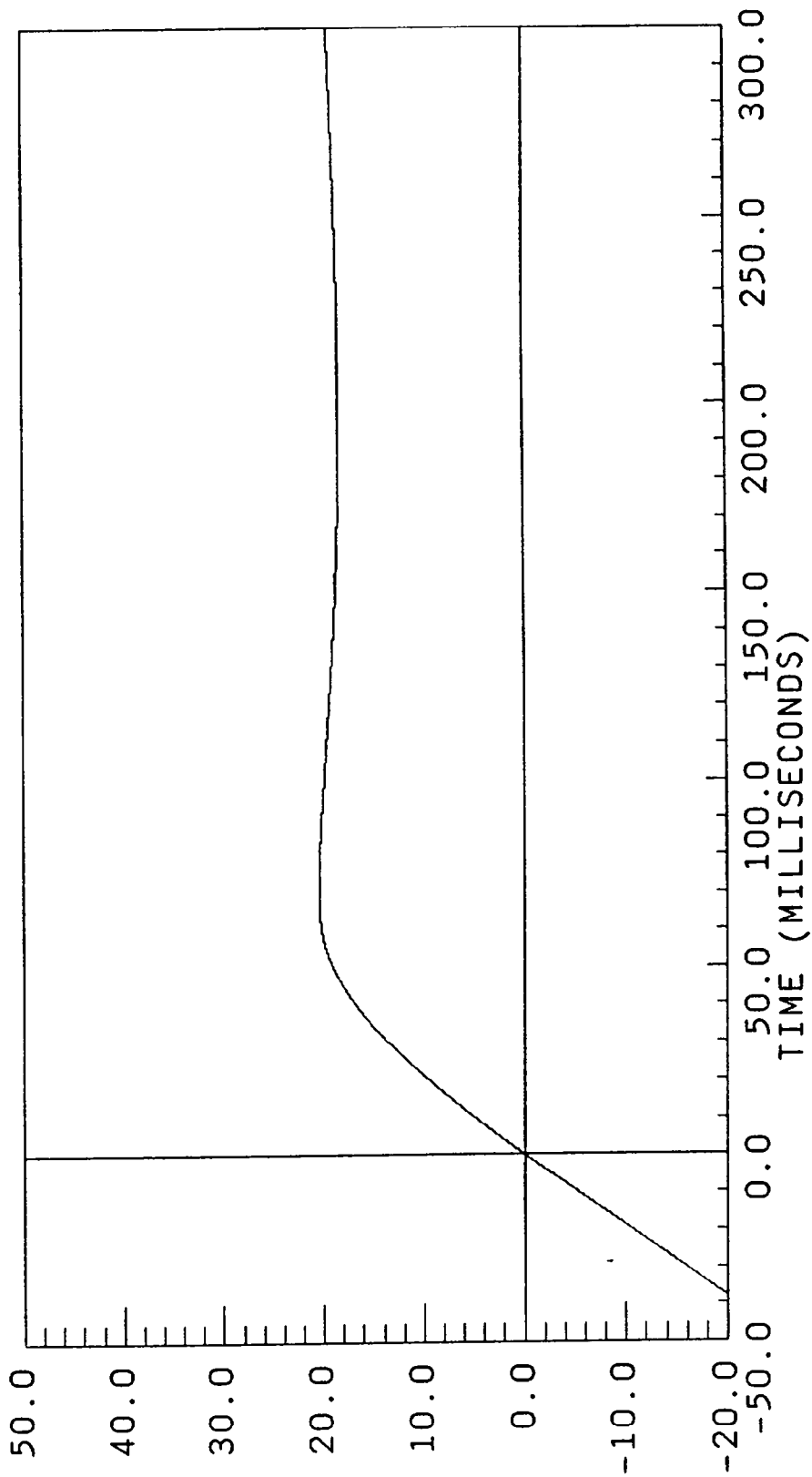
B-4

7715-10

29.50 mph

ACC PACK #1(X)
COMPUTED
FILTER CUTOFF: 100HZ

XL AXIS
YMIN = -23.72016 at 114.0000
YMAX = 20.43410 at 70.87500



DISPLACEMENT * INCHES

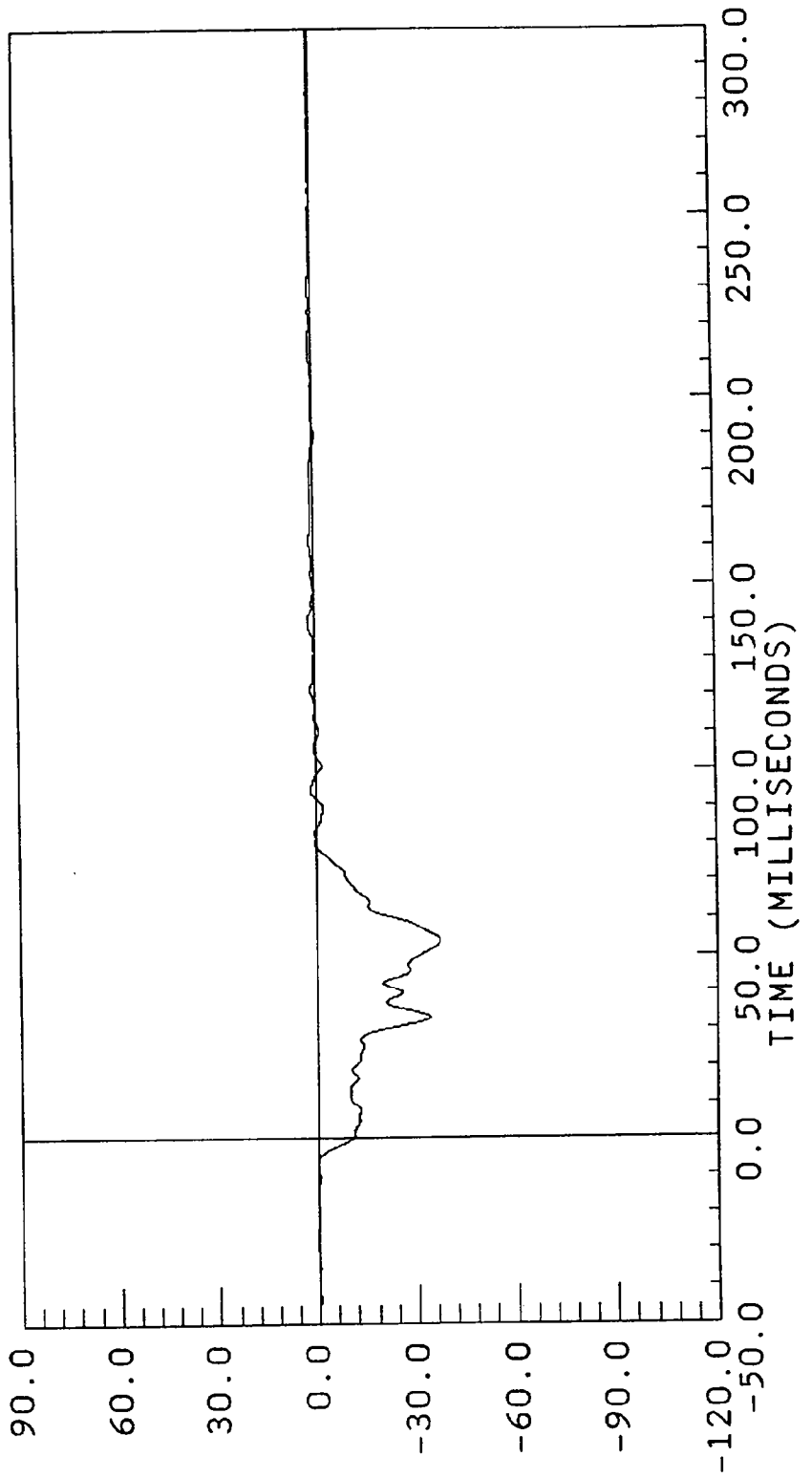
BW912-18.DAT

29.50 mph

```

ACC PACK #2(X)          XL AXIS
FILTERED                YMIN = -36.93193 at 53.92500
FILTER CUTOFF: 100HZ    YMAX = 2.206599 at 140.3250

```



ACCELERATION

* G, S *

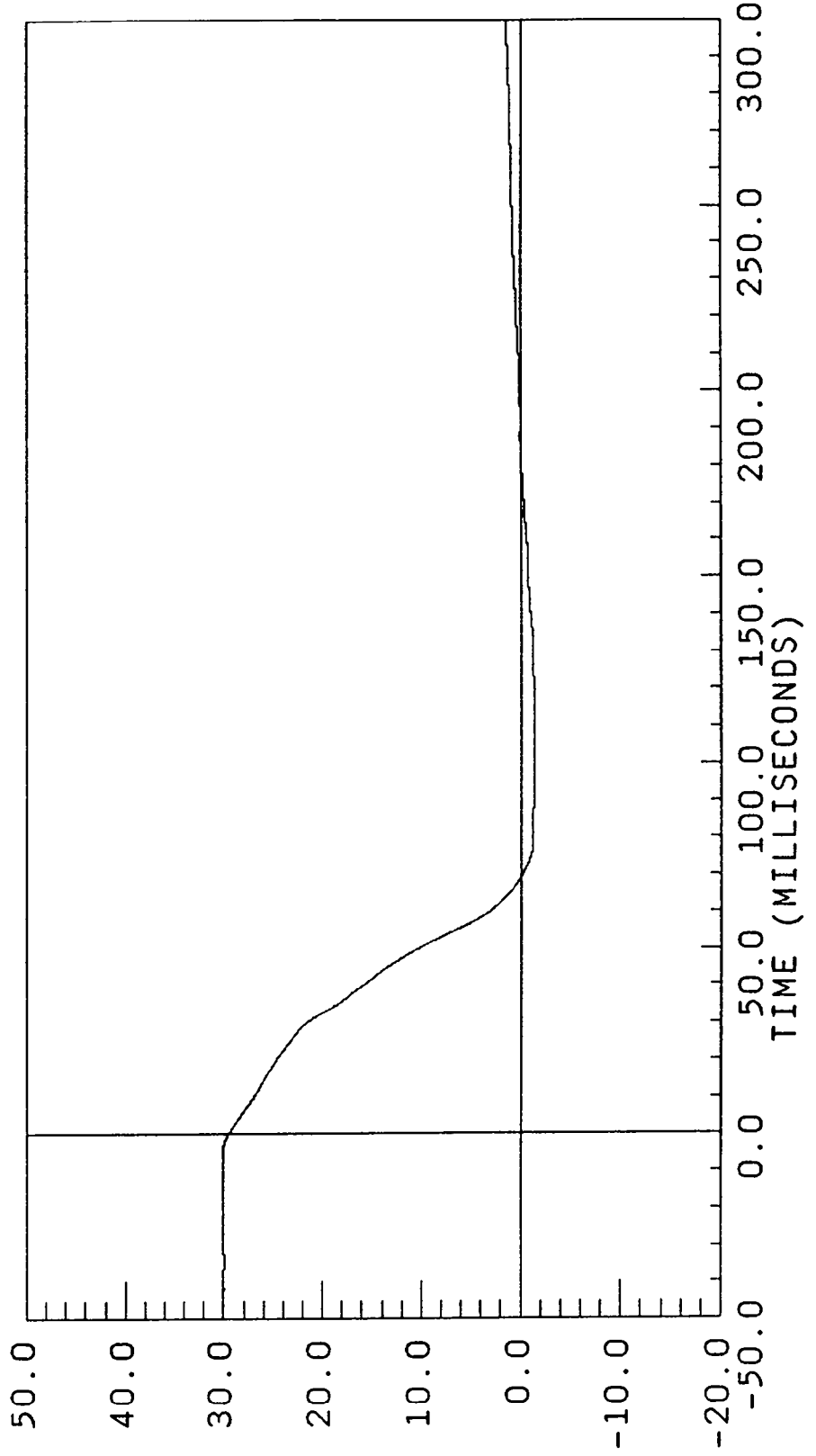
B-6

7715-10

29.50 mph

ACC PACK #2(X)
COMPUTED
FILTER CUTOFF: 100HZ

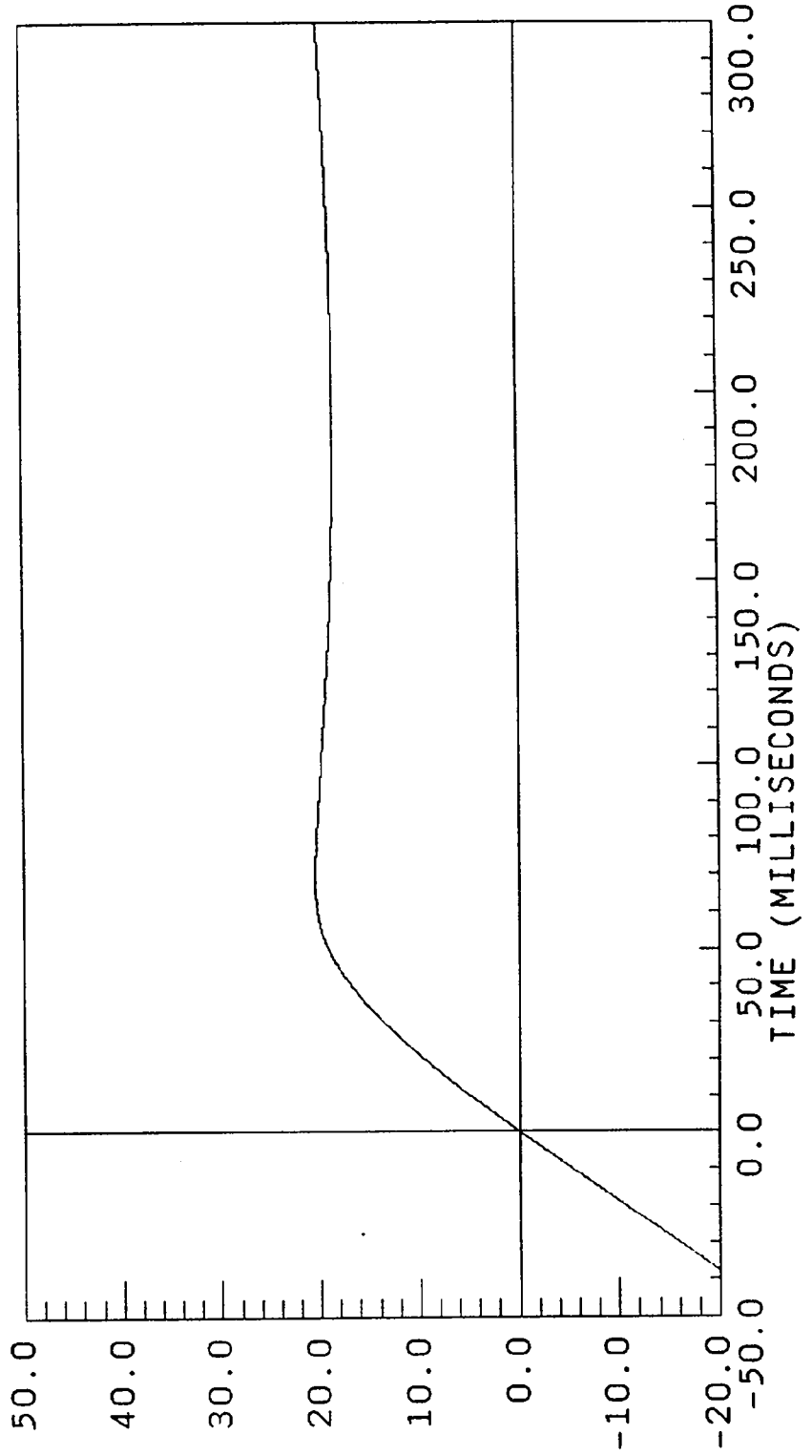
XL AXIS
YMIN = -1.468174 at 92.25000
YMAX = 30.01000 at -13.12500



D912-18.DAT

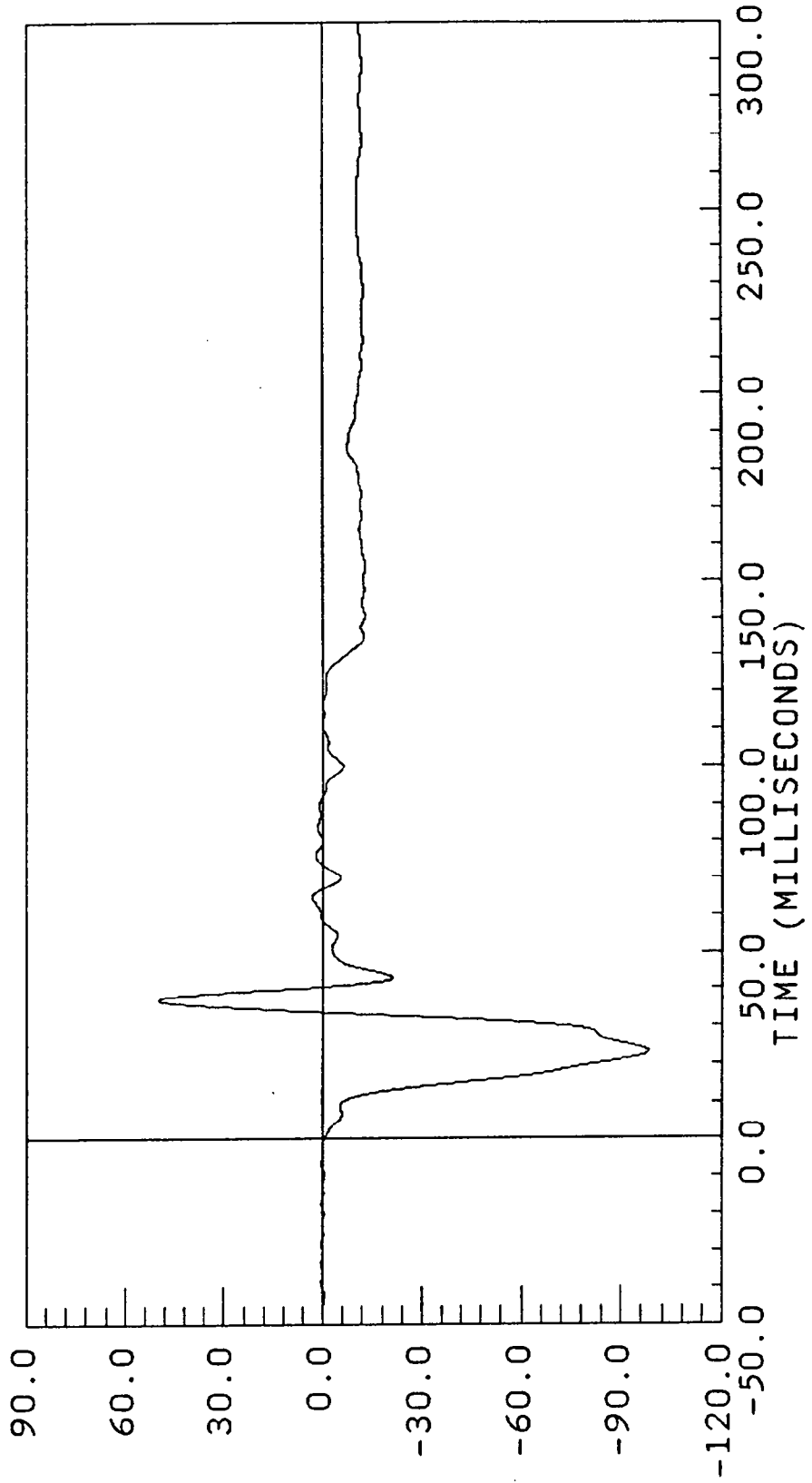
29.50 mph

ACC PACK #2(X)
COMPUTED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -23.73704 at 92.25000
YMAX = 20.50501 at 69.00000



DISPLACEMENT * INCHES
B-8 7715-10

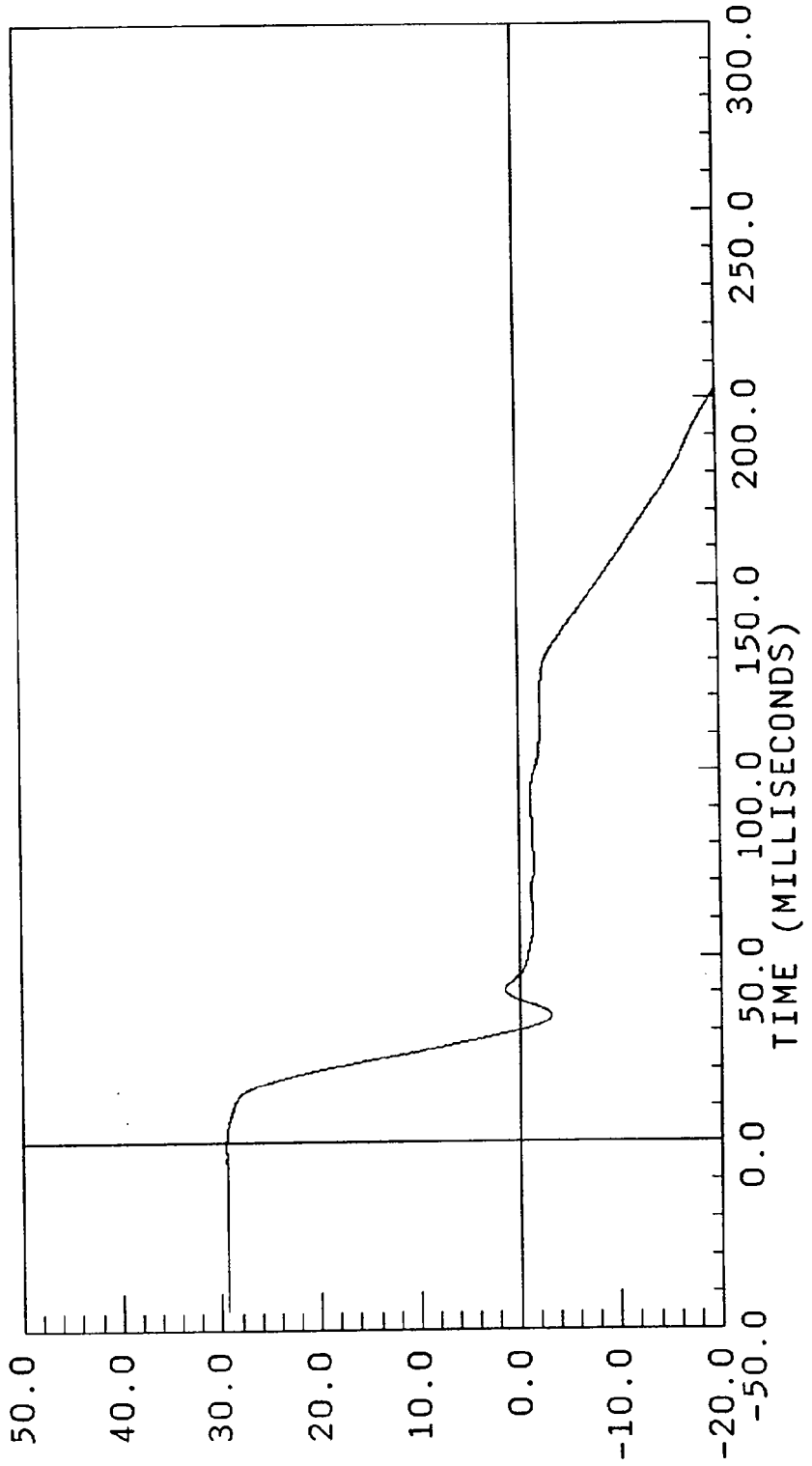
ACC PACK #3(X) XL AXIS
FILTERED YMIN = -98.17940 at 23.02500
FILTER CUTOFF: 100HZ YMAX = 49.93803 at 37.12500



V912-19.DAT

29.50 mph

ACC PACK #3(X)
COMPUTED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -44.16143 at 300.0000
YMAX = 29.44818 at -0.600000



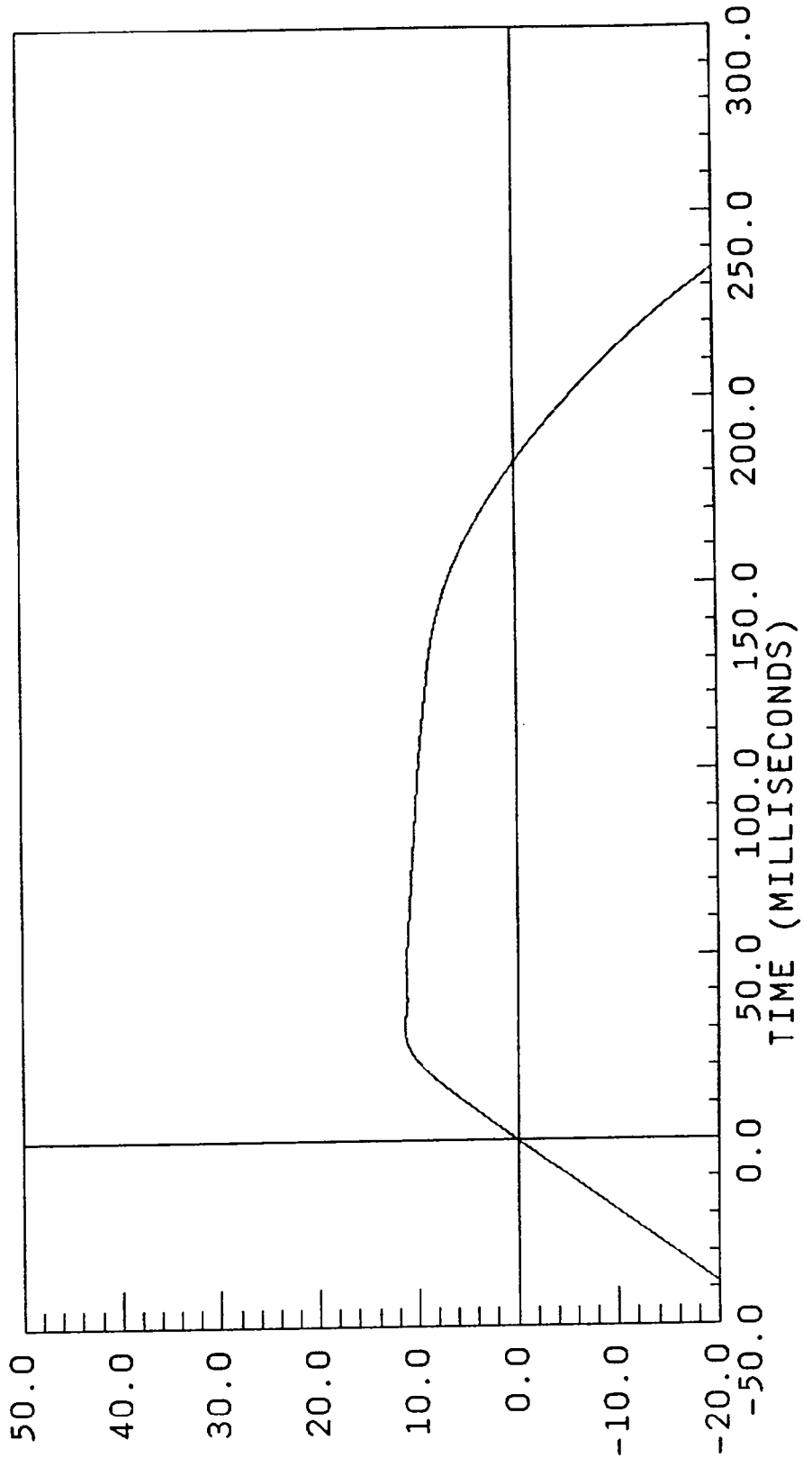
VELOCITY * MILES / HOUR

B-10

7715-10

29.50 mph

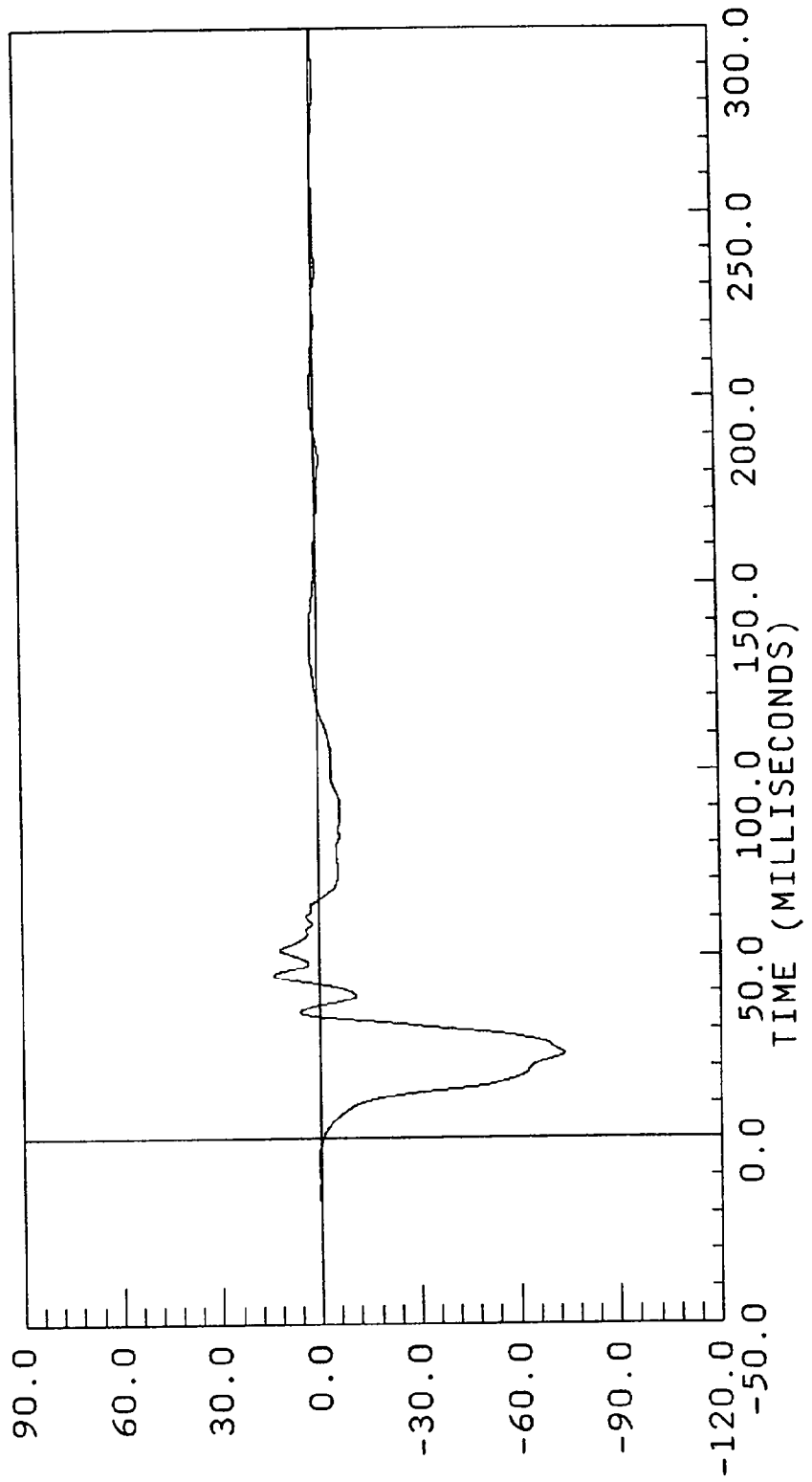
ACC PACK #3(X)
COMPUTED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -61.59860 at 300.0000
YMAX = 11.33233 at 30.07500



BW912-20.DAT

29.50 mph

ACC PACK #4(X)
FILTERED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -73.58660 at 23.17500
YMAX = 13.95572 at 44.85000

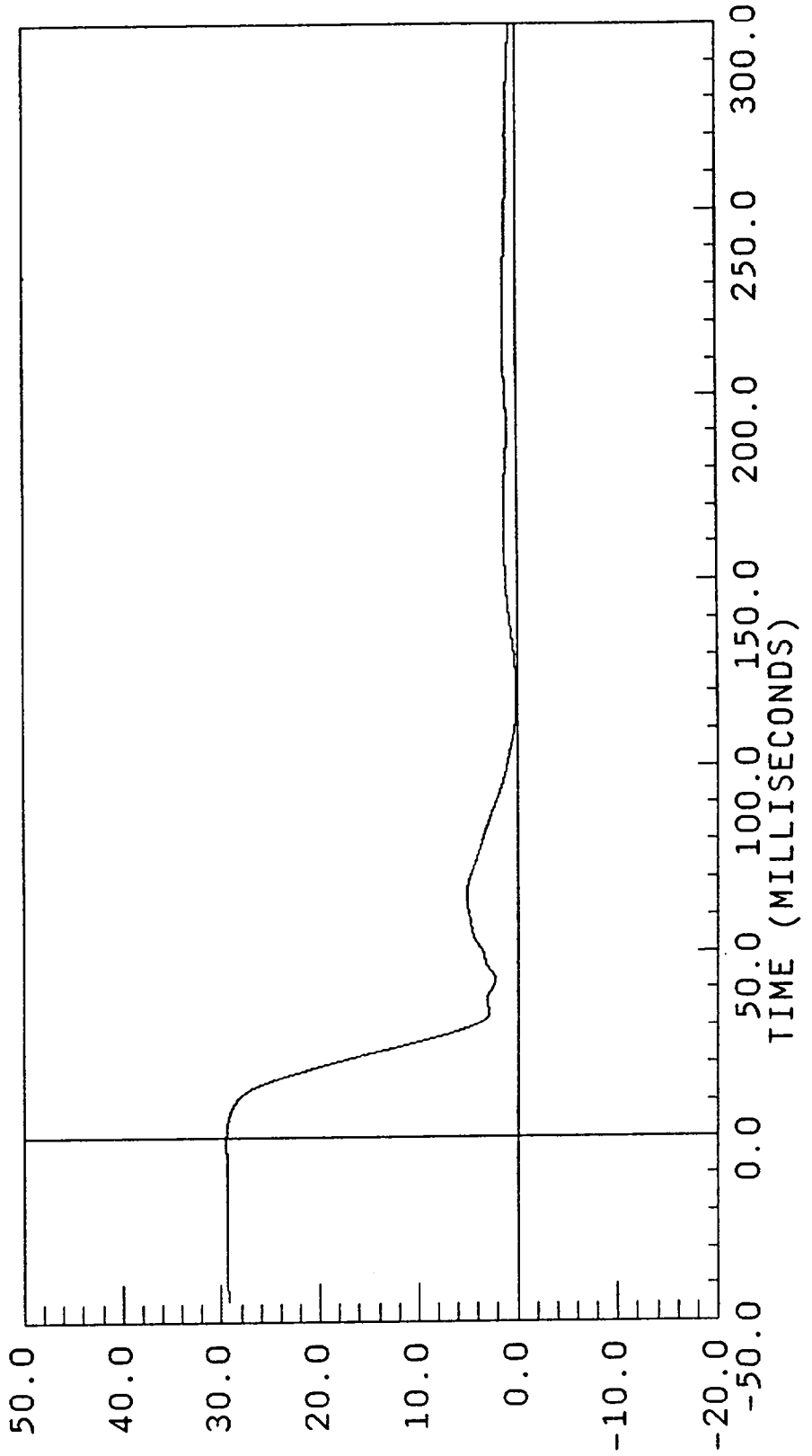


ACCELERATION * G S *
B-12 7715-10

29.50 mph

ACC PACK #4(X)
COMPUTED
FILTER CUTOFF: 100HZ

XL AXIS
YMIN = 0.0218809 at 117.3750
YMAX = 29.32819 at -1.725000

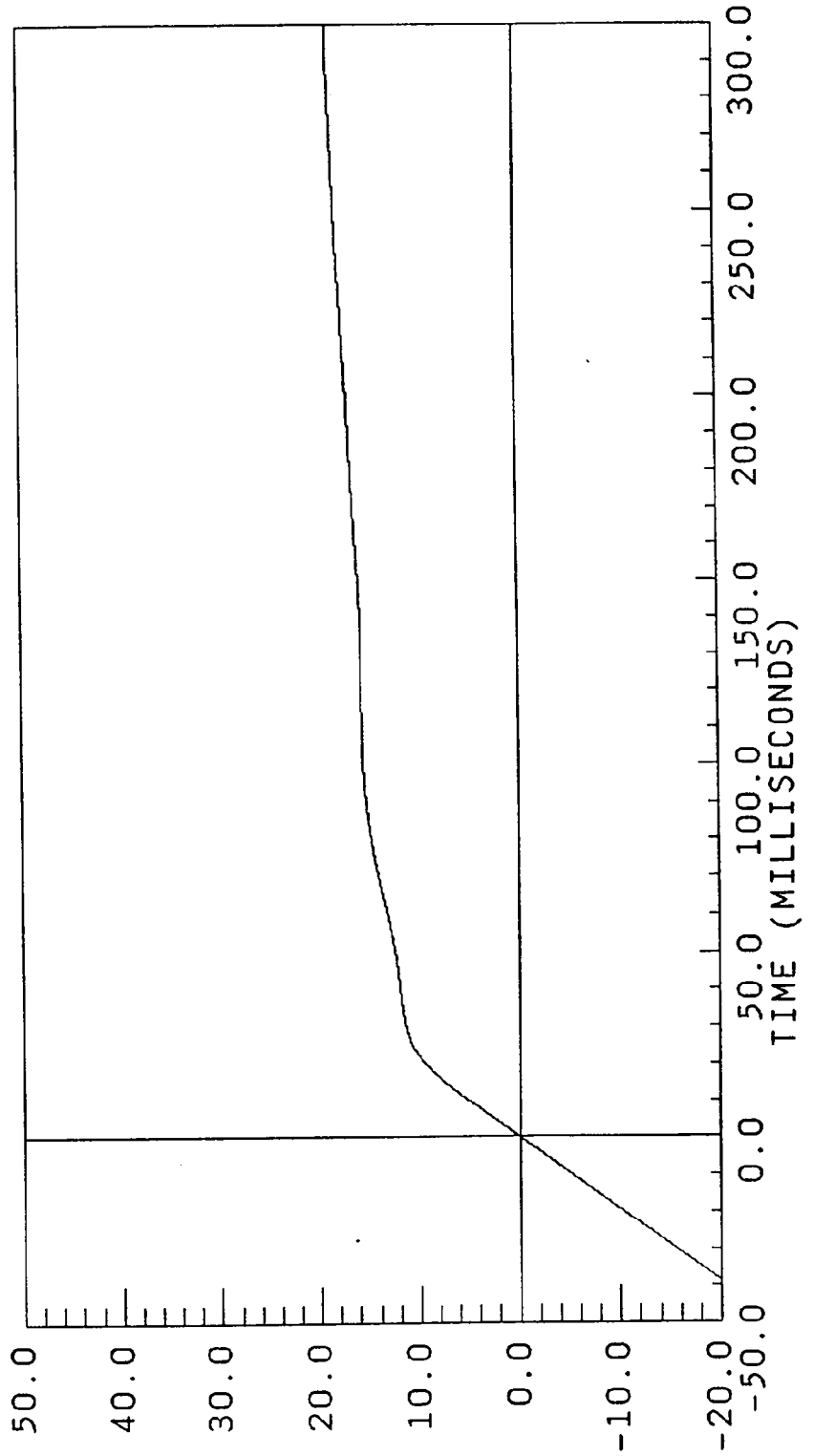


V E L O C I T Y * M I L E S / H O U R
B-13 7715-10

D912-20.DAT

29.50 mph

ACC PACK #4(X)
COMPUTED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -23.23233 at 117.3750
YMAX = 18.79024 at 300.0000

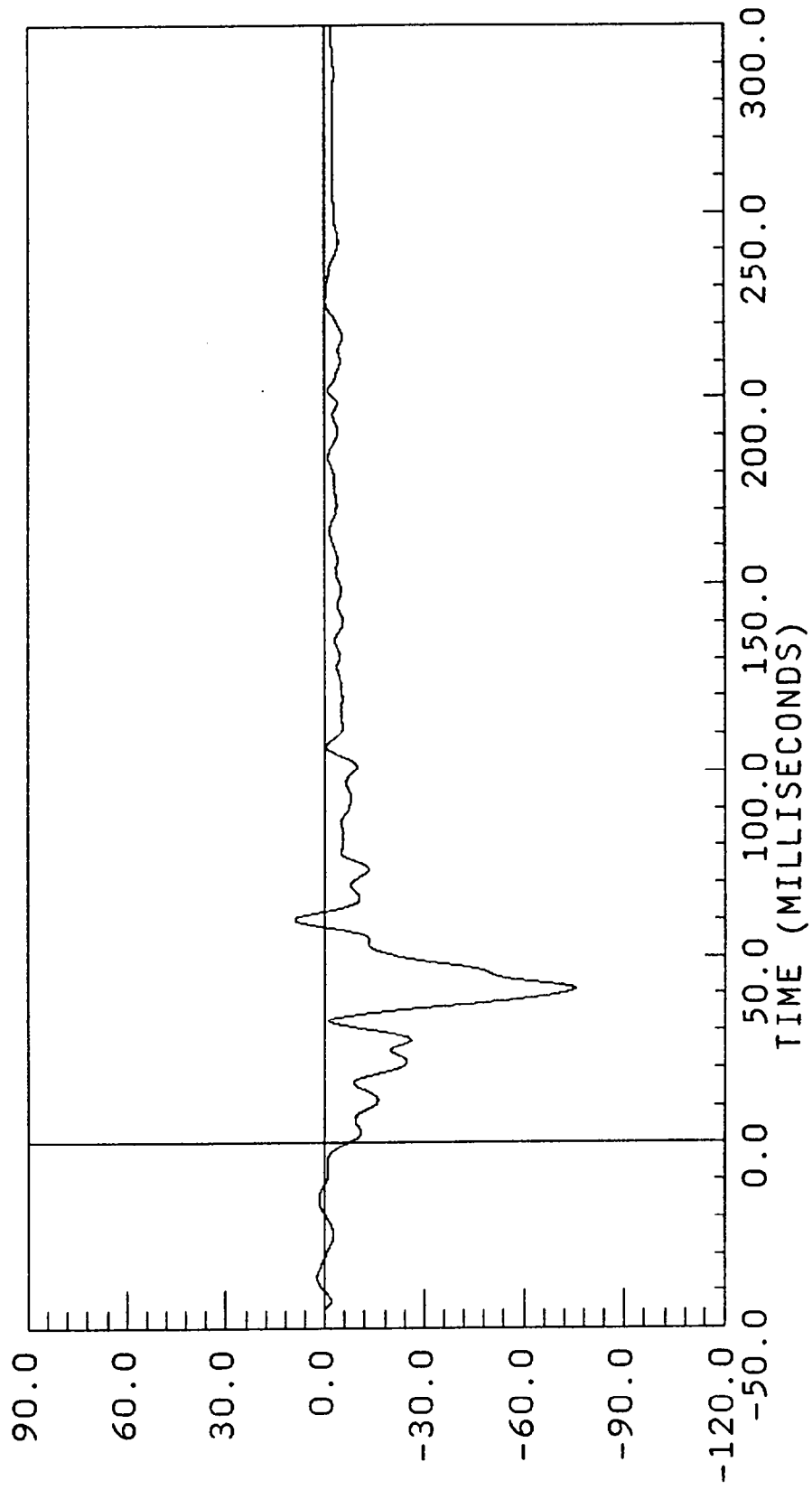


DISPLACEMENT * INCHES

29.50 mph

ACC PACK #5(X)
FILTERED
FILTER CUTOFF: 100HZ

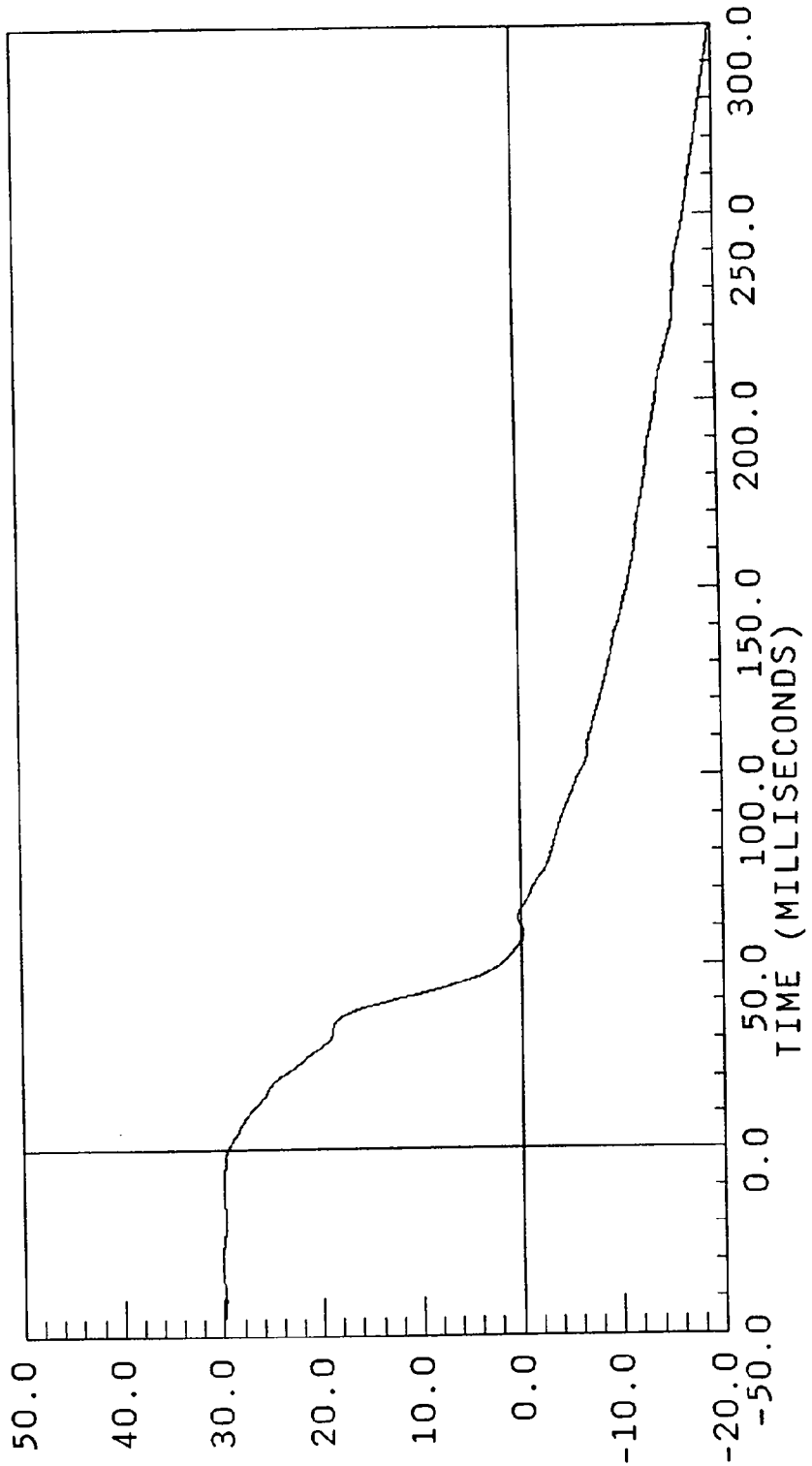
XL AXIS
YMIN = -75.41848 at 41.25000
YMAX = 9.066501 at 60.07500



V912-21.DAT

29.50 mph

ACC PACK #5(X)
COMPUTED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -19.81636 at 300.0000
YMAX = 29.93741 at -30.82500

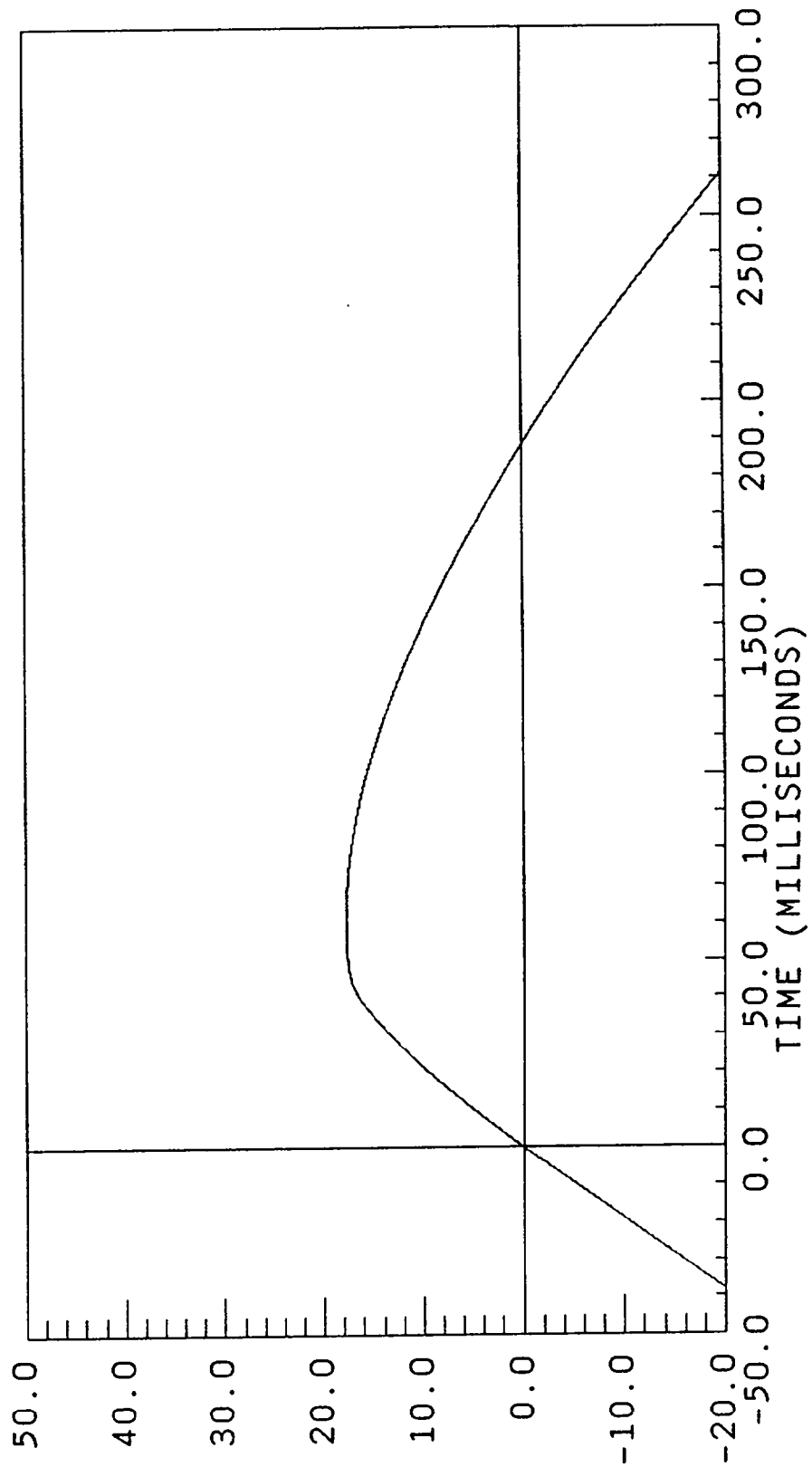


VELOCITY * MILES / HOUR
B-16 7715-10

29.50 mph

ACC PACK #5(X)
COMPUTED
FILTER CUTOFF: 100HZ

XL AXIS
YMIN = -32.89386 at 300.0000
YMAX = 17.70294 at 55.87500

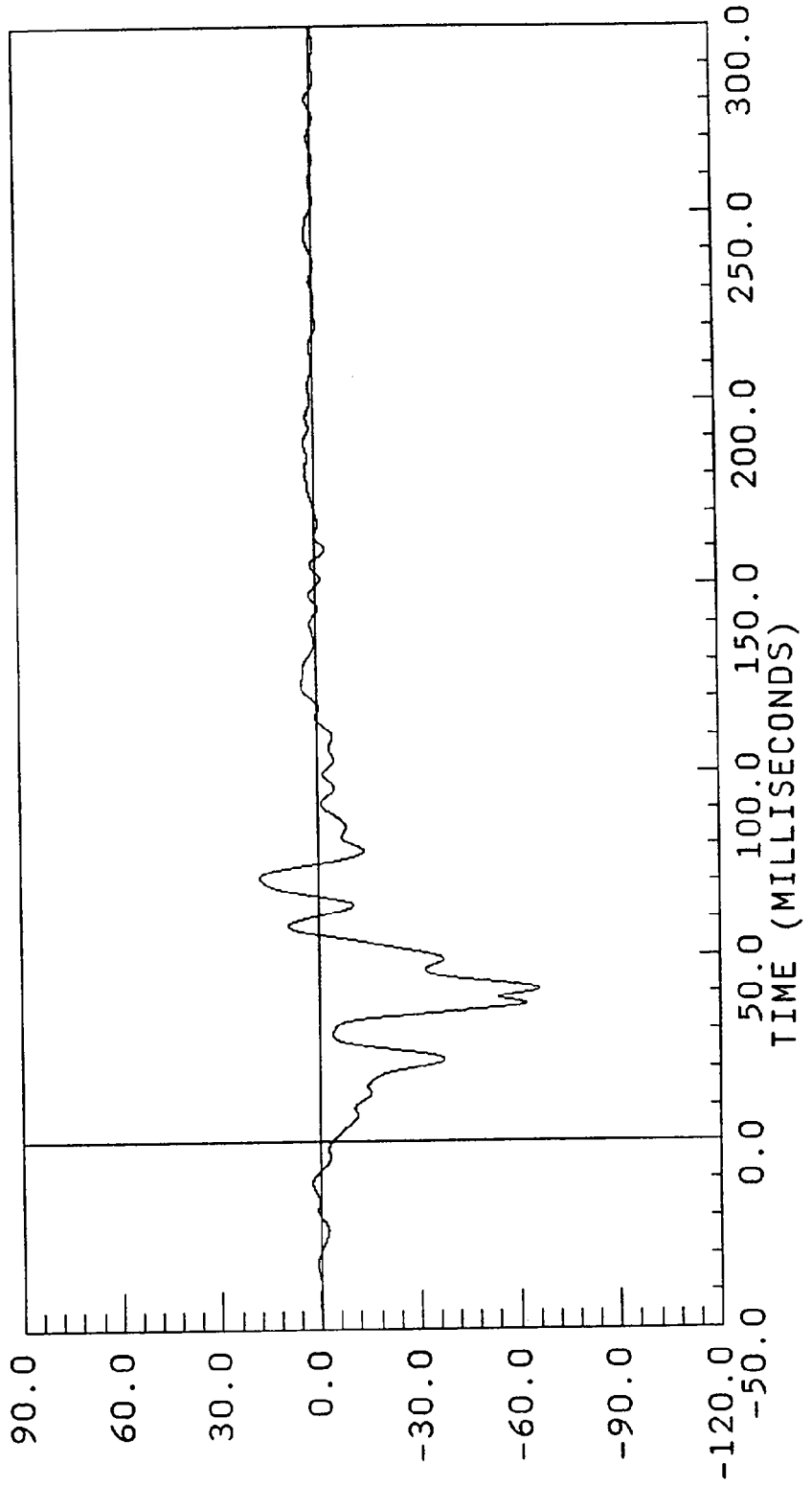


DISPLACEMENT * INCHES
B-17 7715-10

BW912-22.DAT

29.50 mph

ACC PACK #6(X) XL AXIS
FILTERED YMIN = -66.14664 at 40.95000
FILTER CUTOFF: 100HZ YMAX = 17.84007 at 71.02500

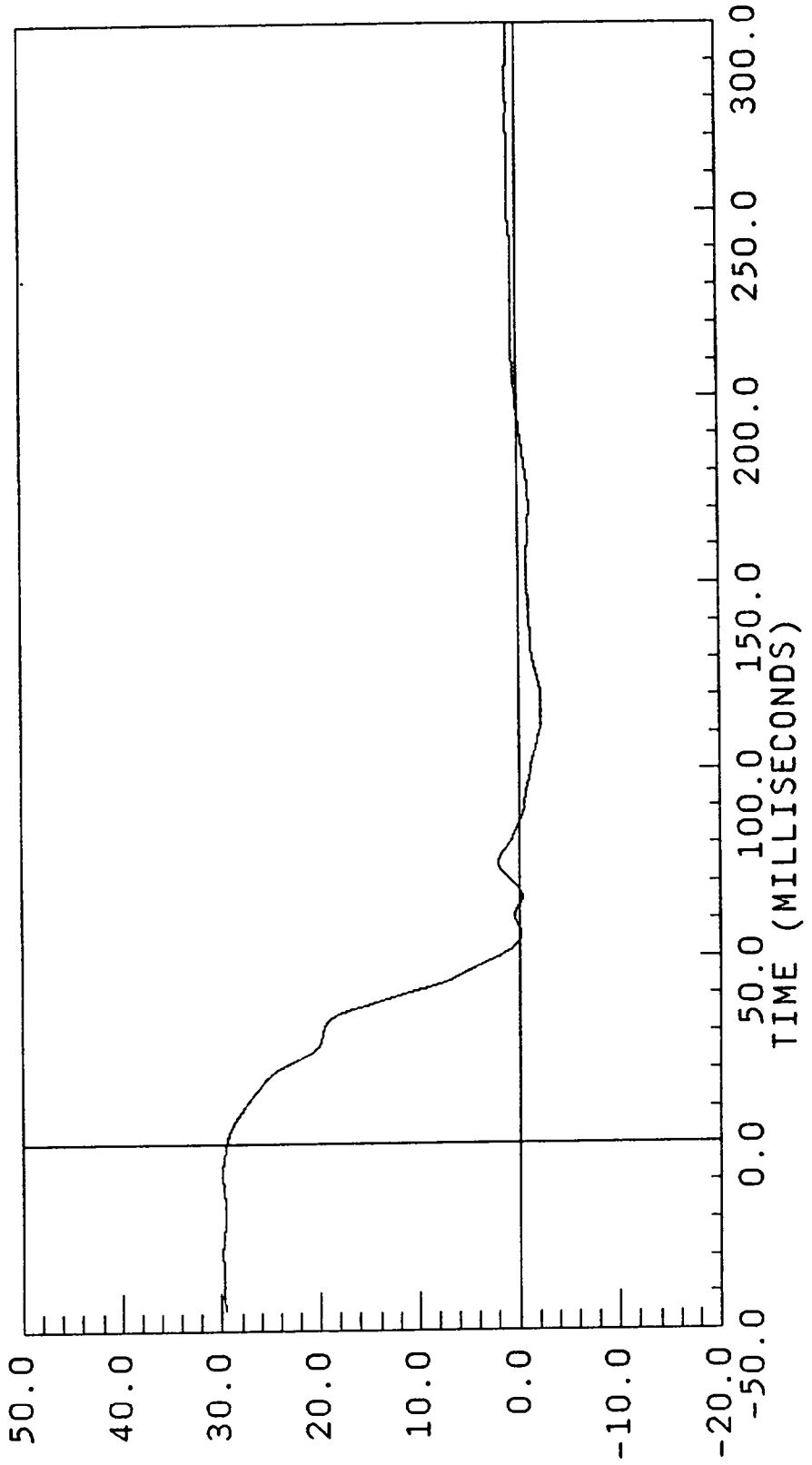


ACCELERATION * G, S *
B-18 7715-10

29.50 mph

ACC PACK #6(X)
COMPUTED
FILTER CUTOFF: 100HZ

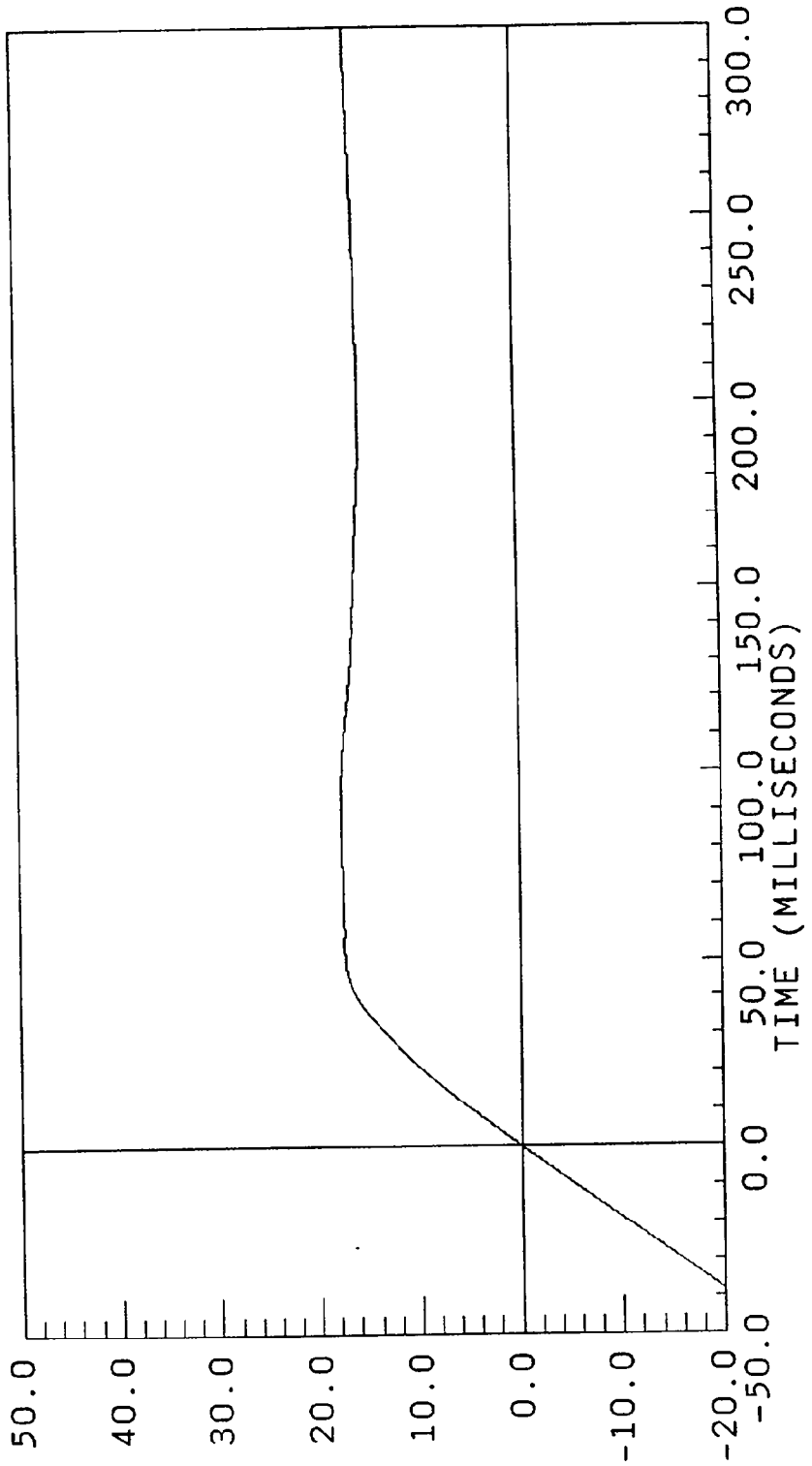
XL AXIS
YMIN = -2.282003 at 114.0000
YMAX = 29.62434 at -7.875000



D912-22.DAT

29.50 mph

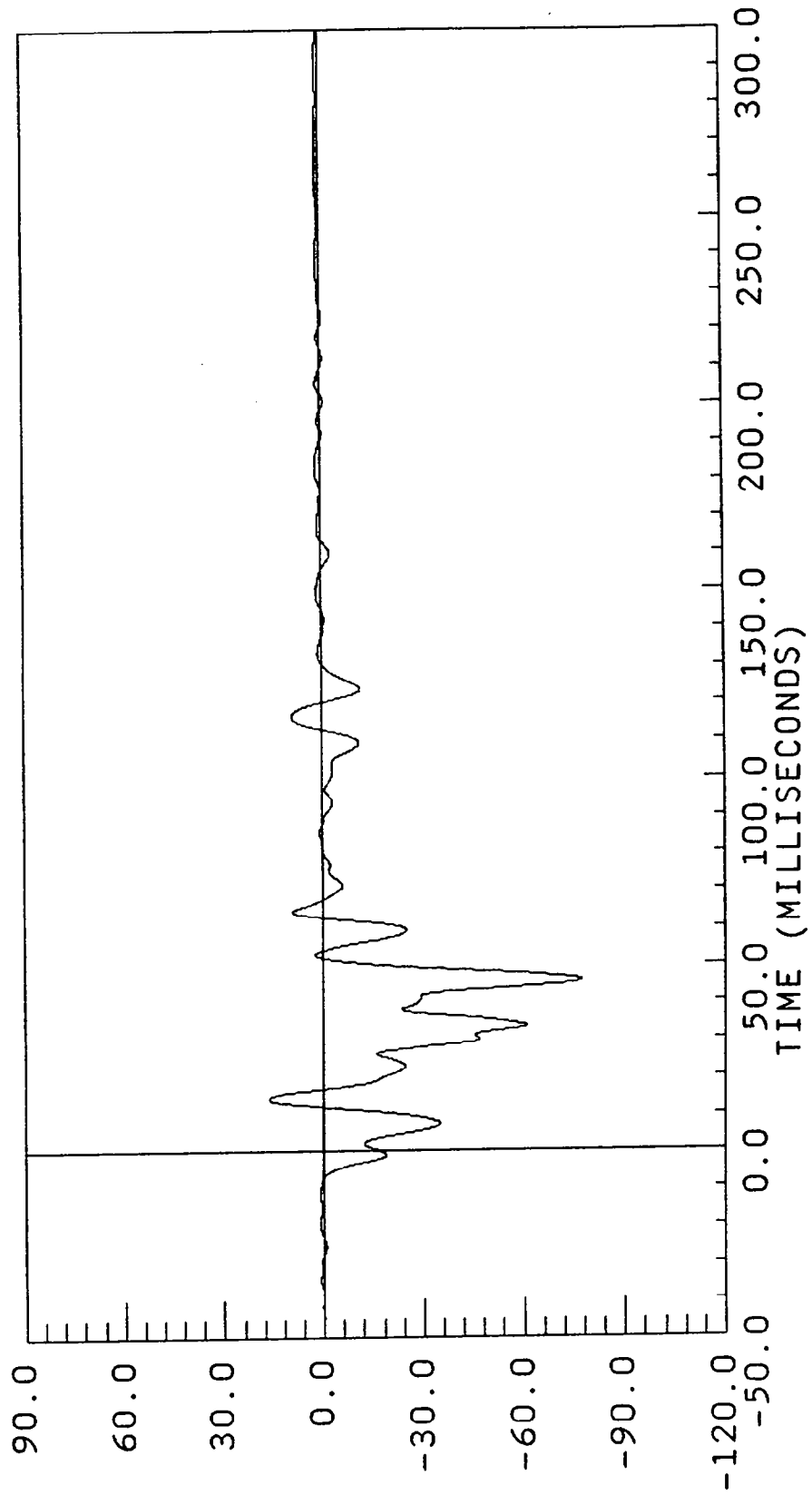
ACC PACK #6(X)
COMPUTED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -23.49910 at 114.0000
YMAX = 17.79963 at 85.20000



D I S P L A C E M E N T * I N C H E S

29.50 mph

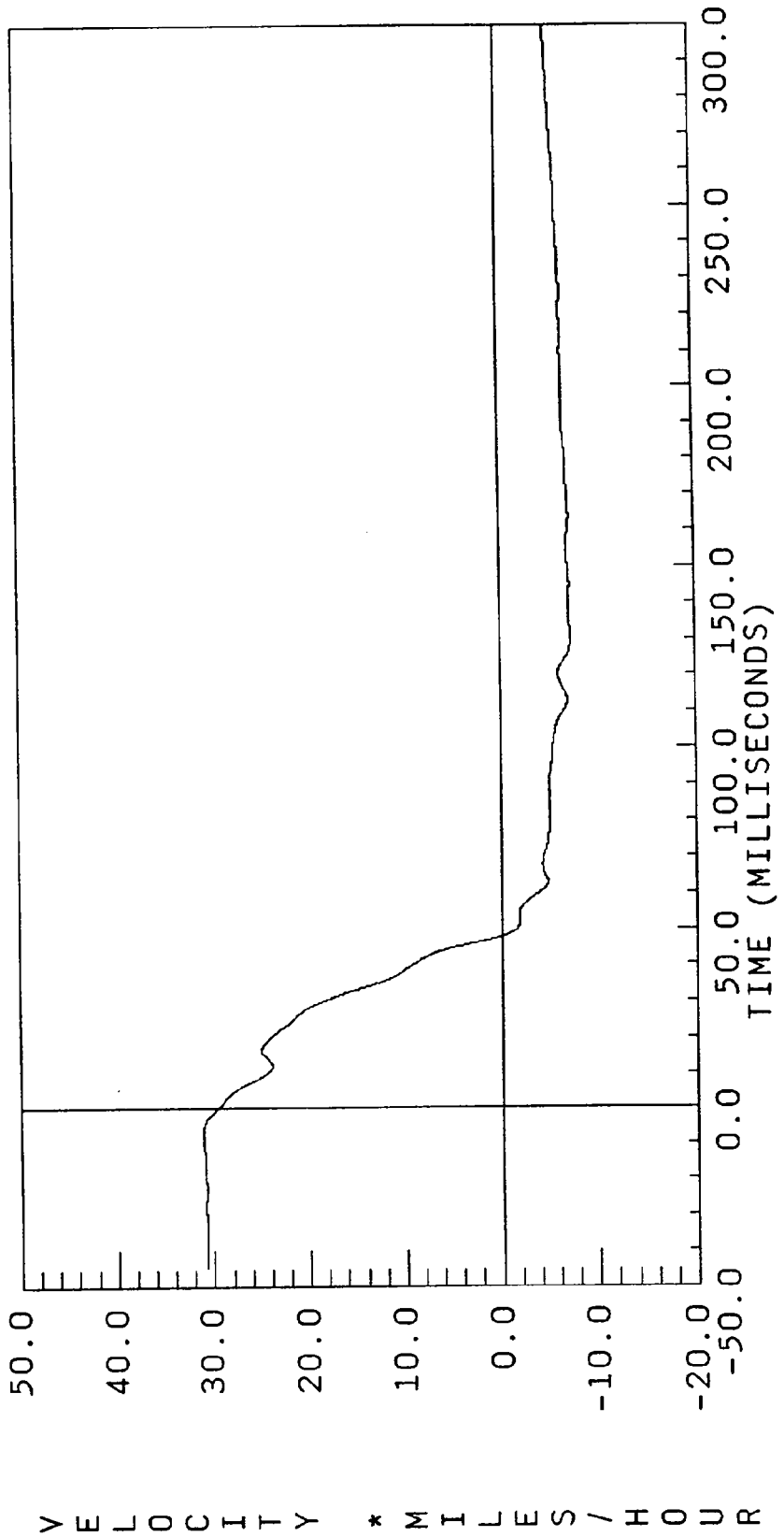
ACC PACK #8(X)
FILTERED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -77.51019 at 45.60000
YMAX = 16.52578 at 14.10000



V912-23.DAT

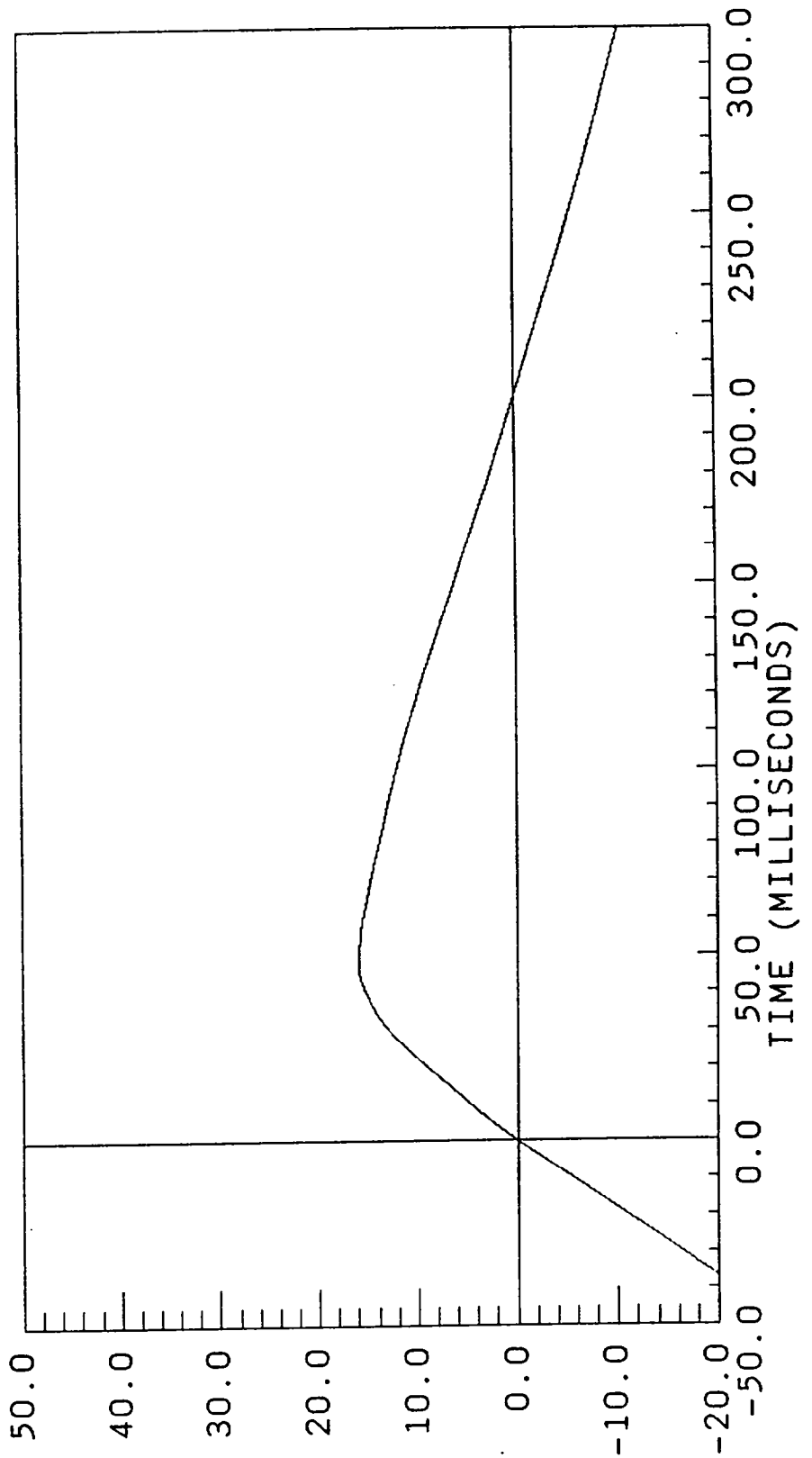
29.50 mph

ACC PACK #8(X) XL AXIS
COMPUTED YMIN = -7.297338 at 130.2000
FILTER CUTOFF: 100HZ YMAX = 30.68976 at -7.350000



ACC PACK #8(X)
COMPUTED
FILTER CUTOFF: 100HZ

XL AXIS
YMIN = -24.34092 at 130.2000
YMAX = 15.95823 at 47.77500

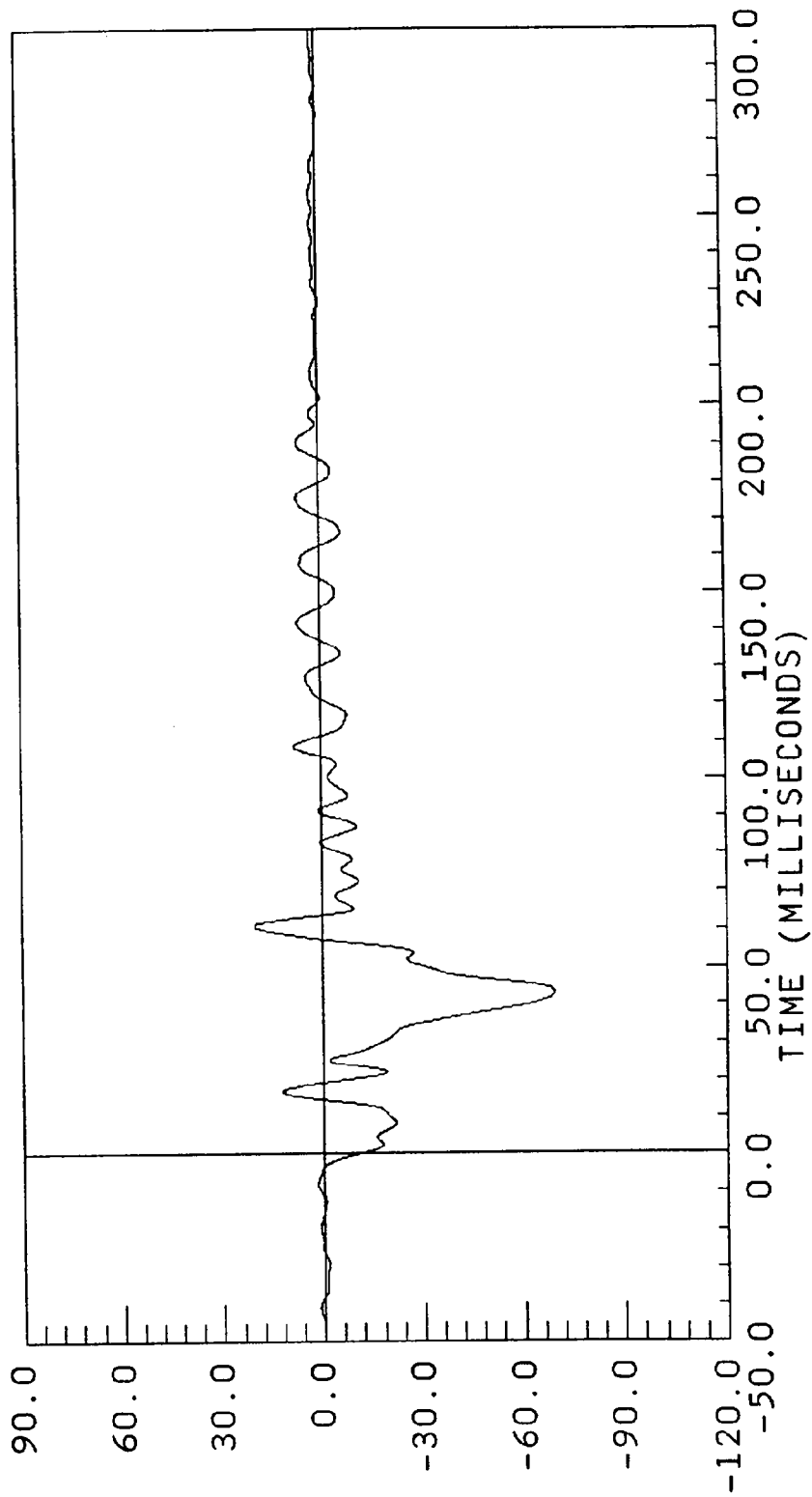


DISPLACEMENT * INCHES

BW912-24.DAT

29.50 mph

ACC PACK #9(X) XL AXIS
FILTERED YMIN = -69.32294 at 42.97500
FILTER CUTOFF: 100HZ YMAX = 20.56643 at 60.90000



ACCELERATION * G * S *

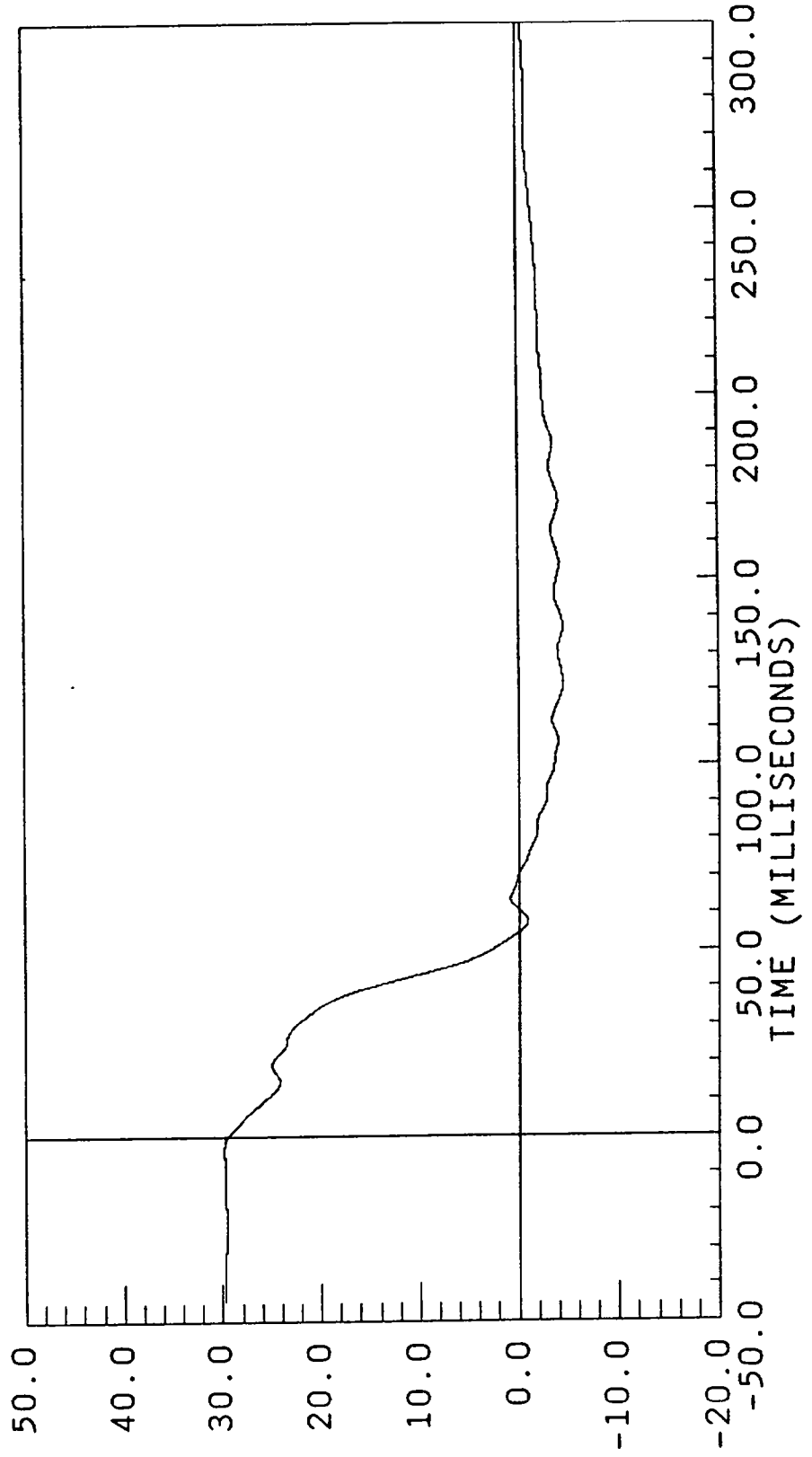
B-24

7715-10

29.50 mph

ACC PACK #9(X)
COMPUTED
FILTER CUTOFF: 100HZ

XL AXIS
YMIN = -4.533103 at 121.5750
YMAX = 29.67530 at -3.675000

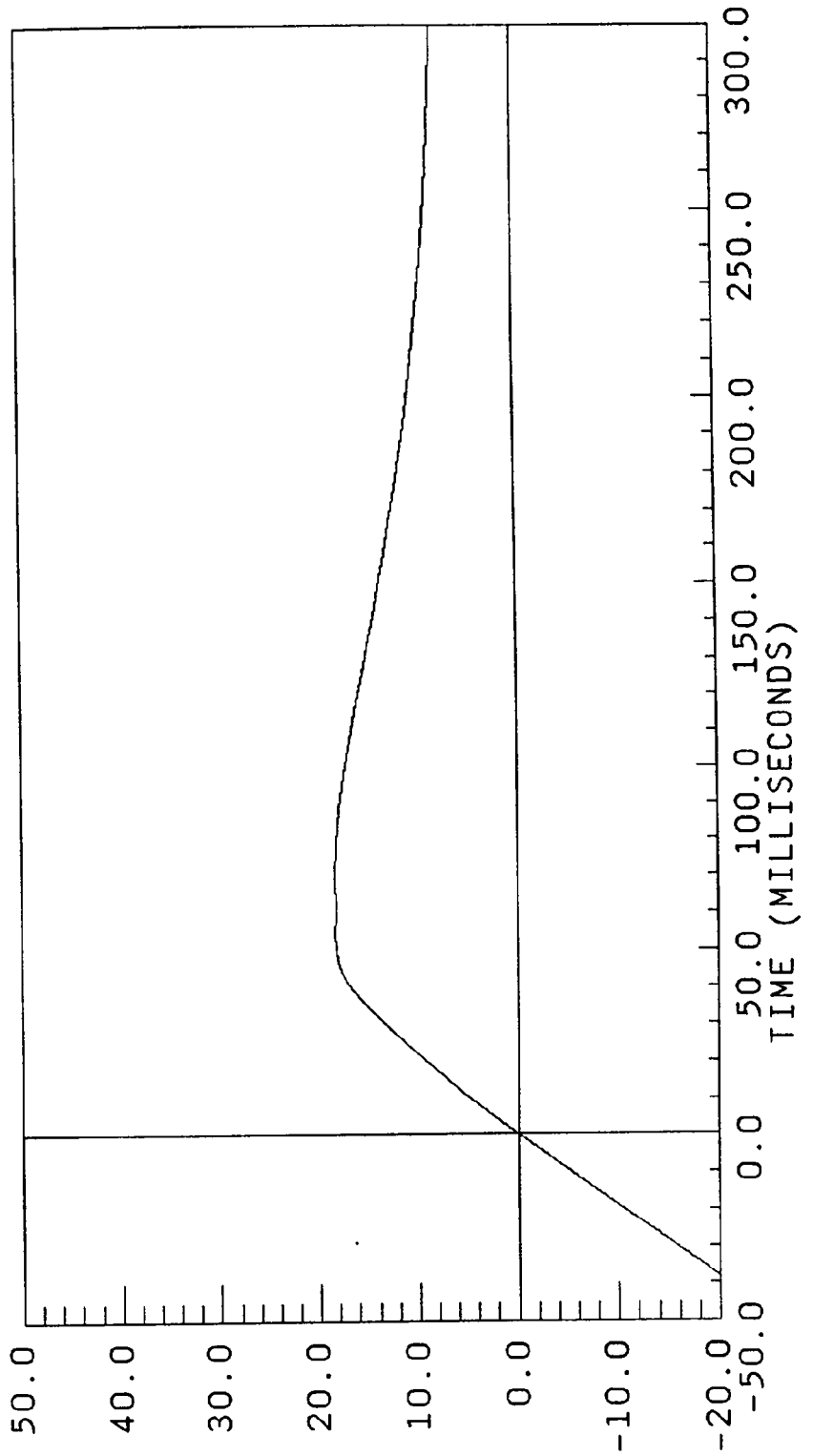


VELOCITY * MILES / HOUR

D912-24.DAT

29.50 mph

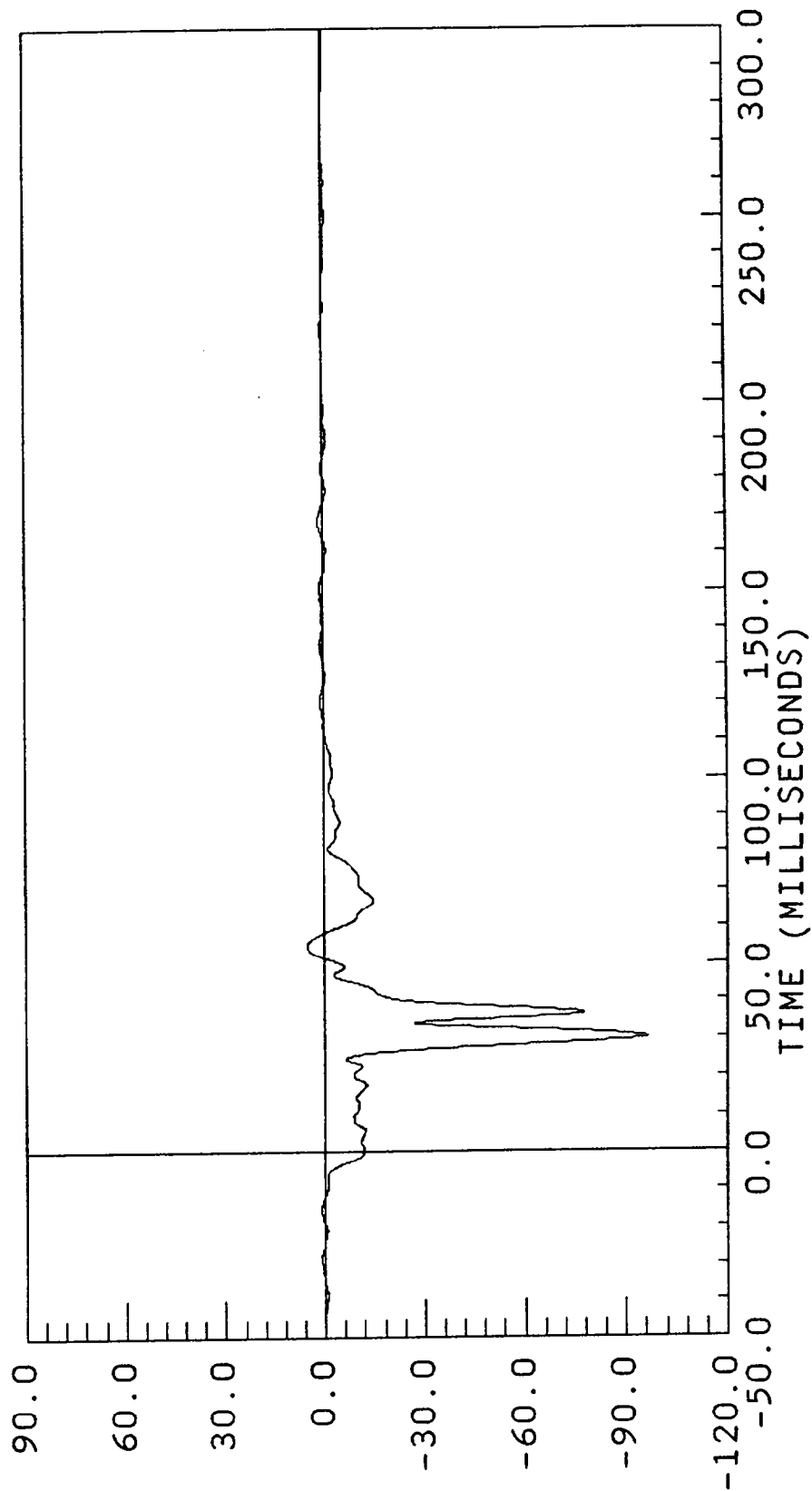
ACC PACK #9(X) XL AXIS
COMPUTED YMIN = -23.48052 at 121.5750
FILTER CUTOFF: 100HZ YMAX = 18.32133 at 70.27500



D I S P L A C E M E N T * I N C H E S

29.50 mph

ACC PACK #10(X)
 FILTERED
 FILTER CUTOFF: 100HZ
 XL AXIS
 YMIN = -96.88366 at 30.00000
 YMAX = 5.134621 at 54.60000

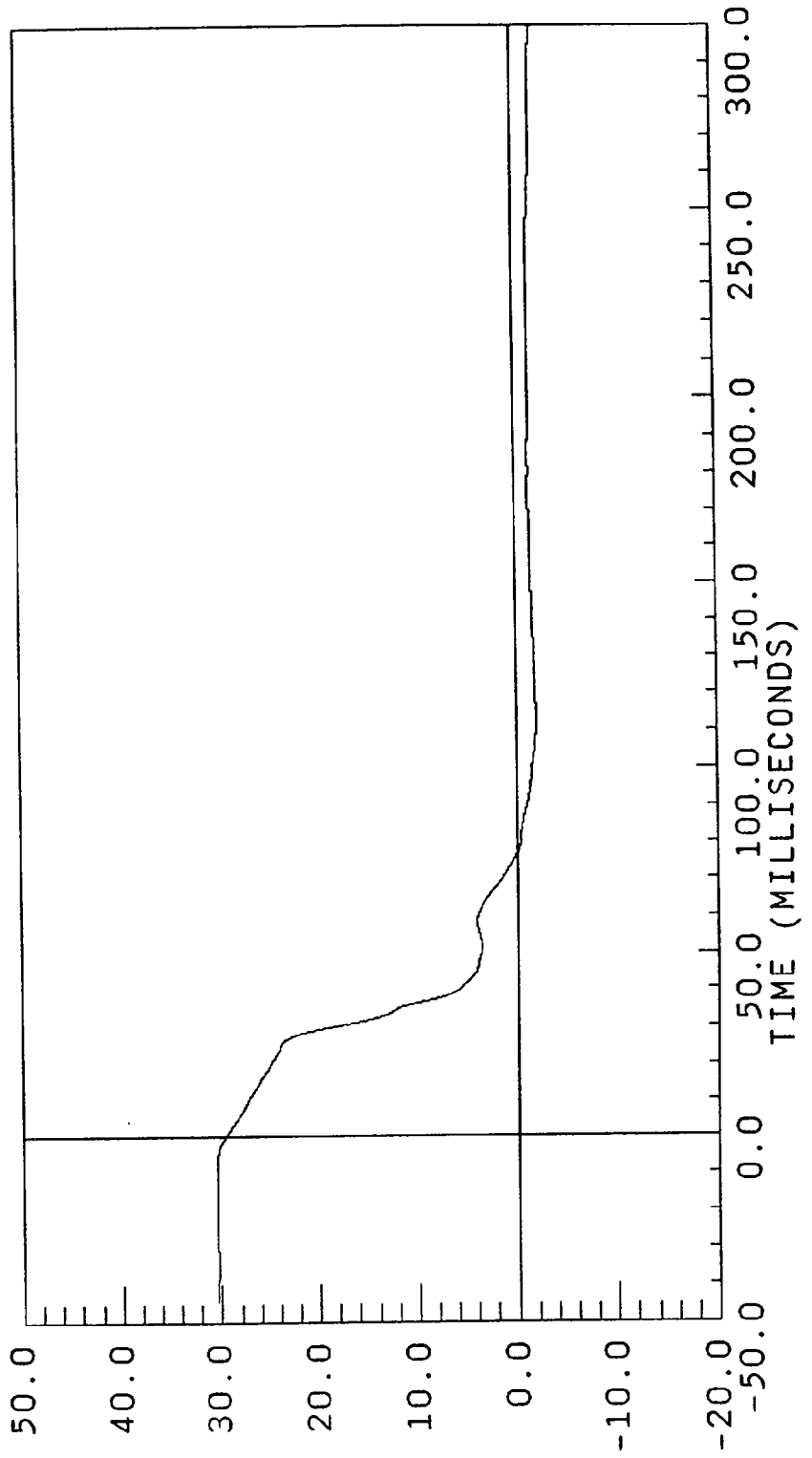


V912-25.DAT

29.50 mph

ACC PACK #10(X)
COMPUTED
FILTER CUTOFF: 100HZ

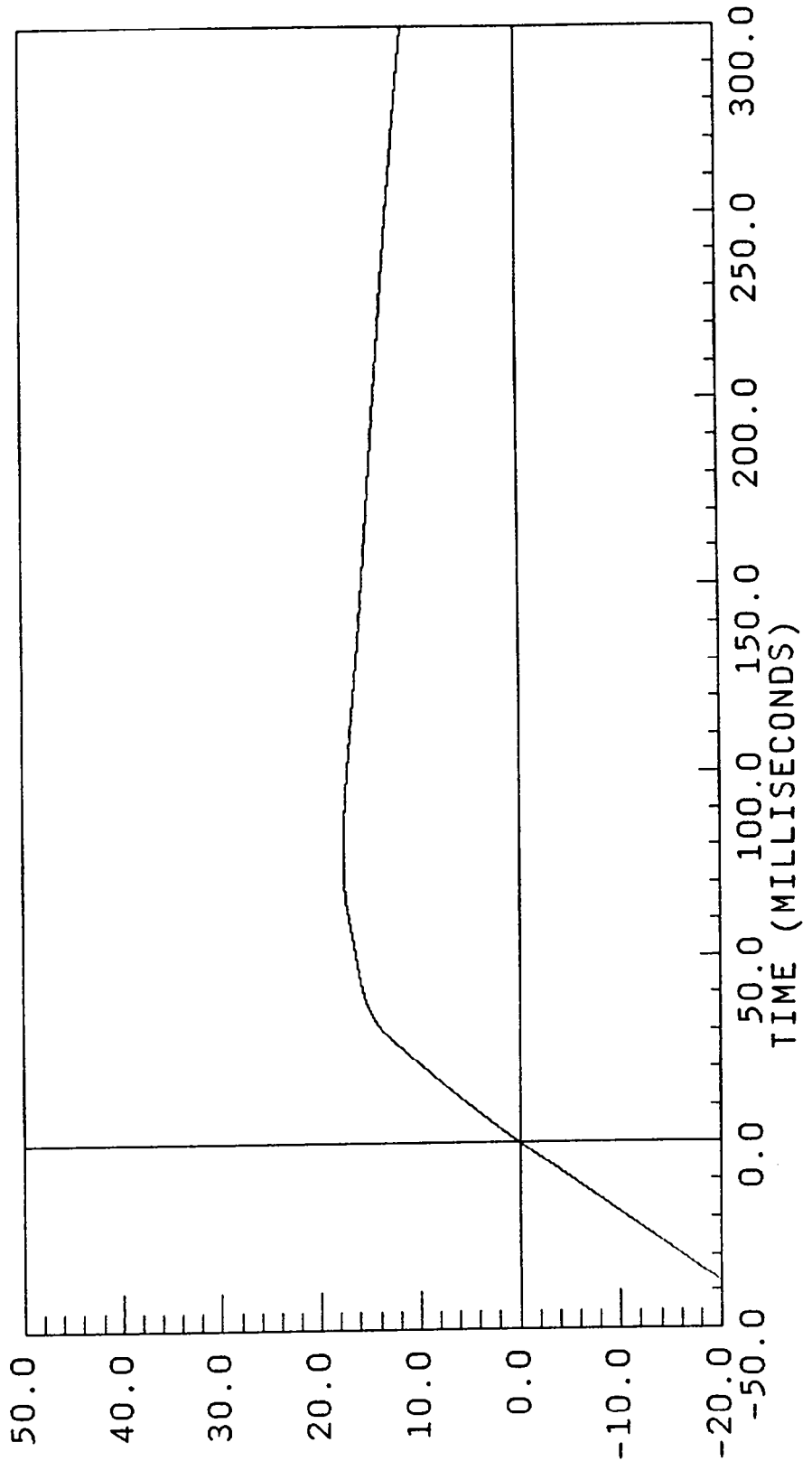
XL AXIS
YMIN = -2.034598 at 300.0000
YMAX = 30.36312 at -12.15000



VELOCITY * MILES / HOUR

29.50 mph

ACC PACK #10(X) XL AXIS
 COMPUTED YMIN = -23.98567 at 300.0000
 FILTER CUTOFF: 100HZ YMAX = 17.60273 at 76.50000

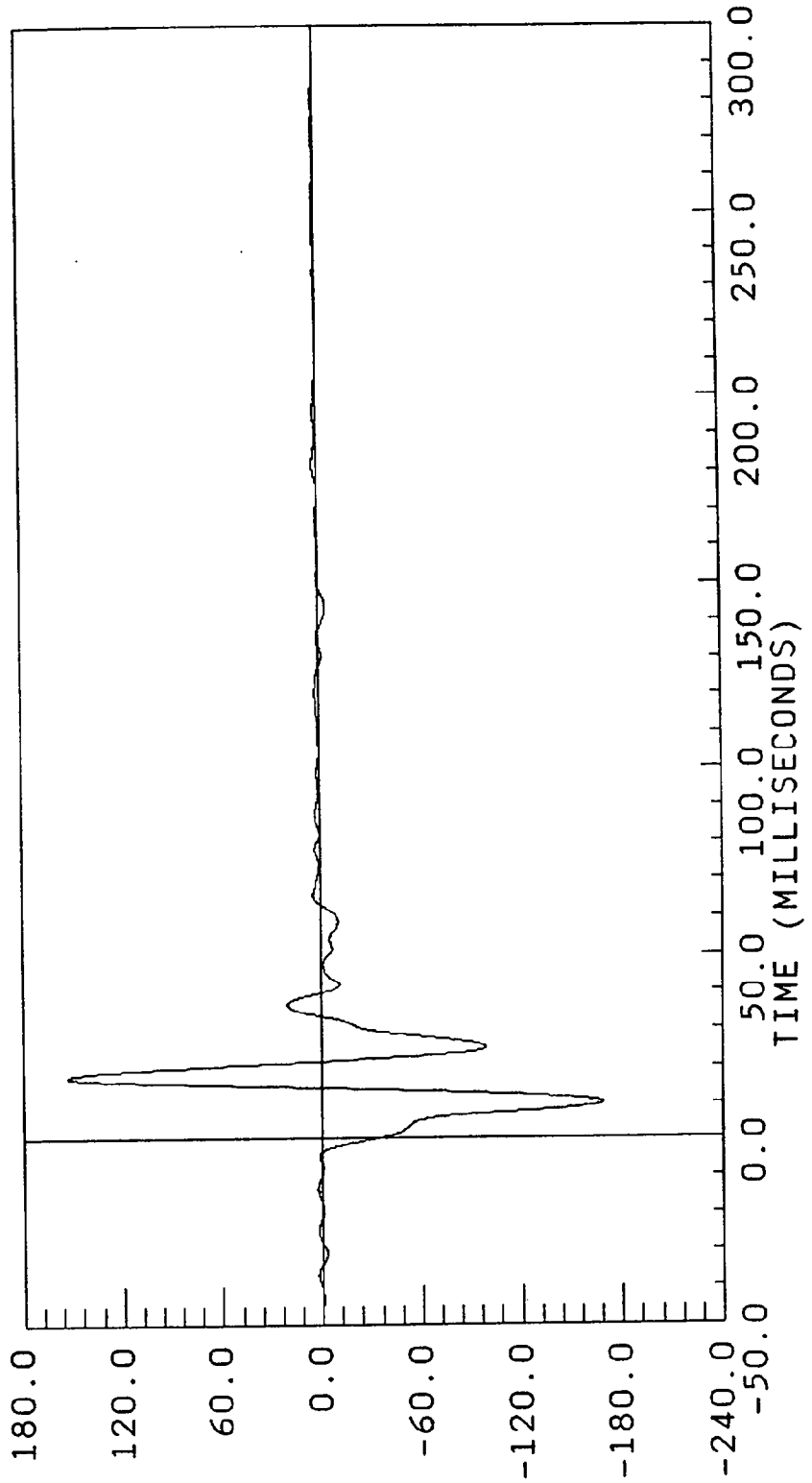


DISPLACEMENT * INCHES

BW912-26.DAT

29.50 mph

ACC PACK #11(X) XL AXIS
FILTERED YMIN = -168.8272 at 9.900001
FILTER CUTOFF: 100HZ YMAX = 153.3081 at 17.17500

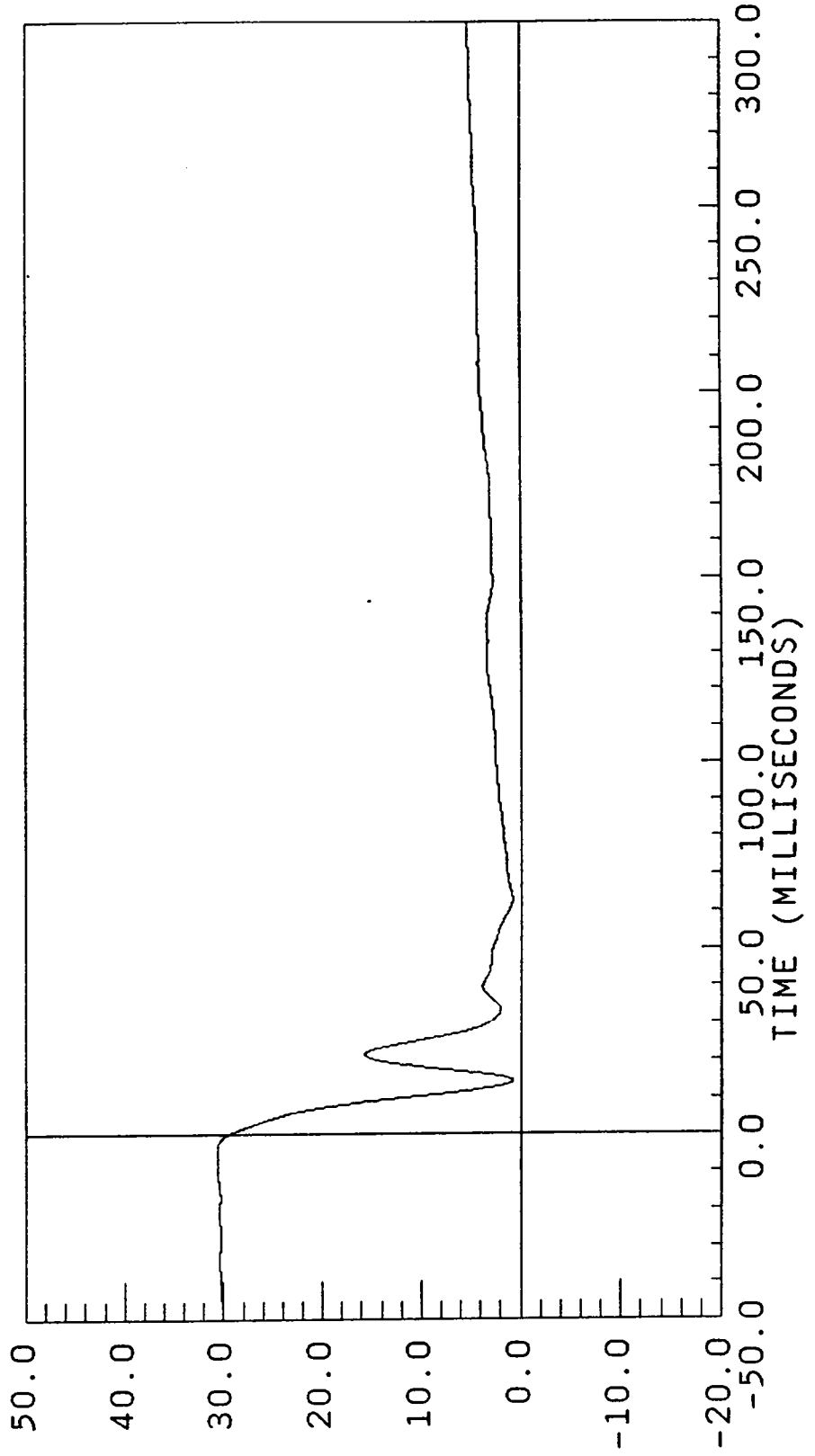


ACCELERATION * G, S *
B-30 7715-10

29.50 mph

ACC PACK #11(X)
COMPUTED
FILTER CUTOFF: 100HZ

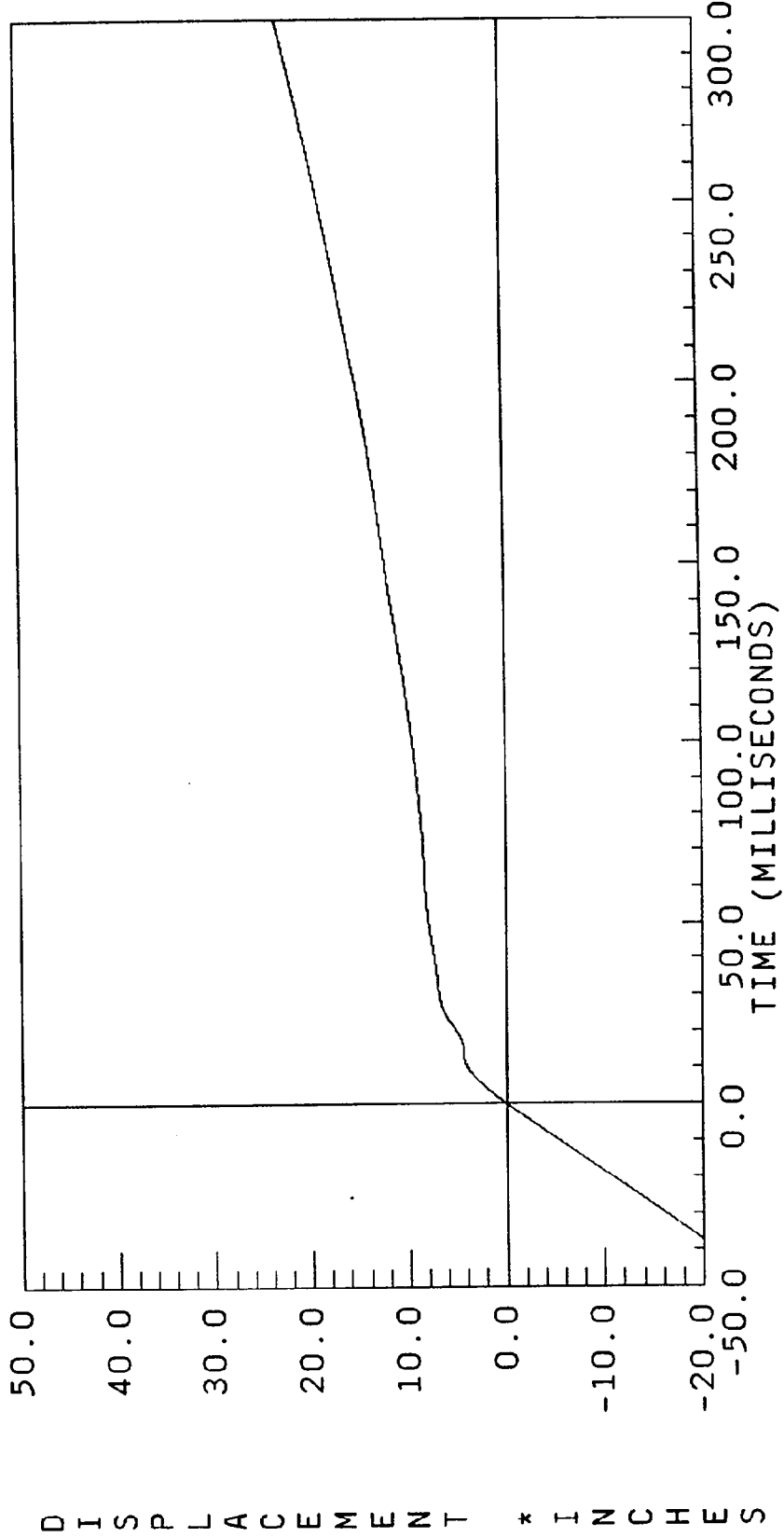
XL AXIS
YMIN = 0.766733 at 14.17500
YMAX = 30.22761 at -3.675000



D912-26.DAT

29.50 mph

ACC PACK #11(X)
COMPUTED
FILTER CUTOFF: 100HZ
XL AXIS
YMIN = -23.99383 at 14.17500
YMAX = 22.97572 at 300.0000



TEST NO. CK5201

DUMMY DATA

	FILTER CHANNEL CLASS
HEAD ACCELERATIONS	1000
CHEST ACCELERATIONS	180
FEMUR FORCES	600

HEAD INJURY CRITERION
HEAD SEVERITY INDEX
36MS. MAXIMUM DURATION

HHTSA CRASH TEST - PROC. 200

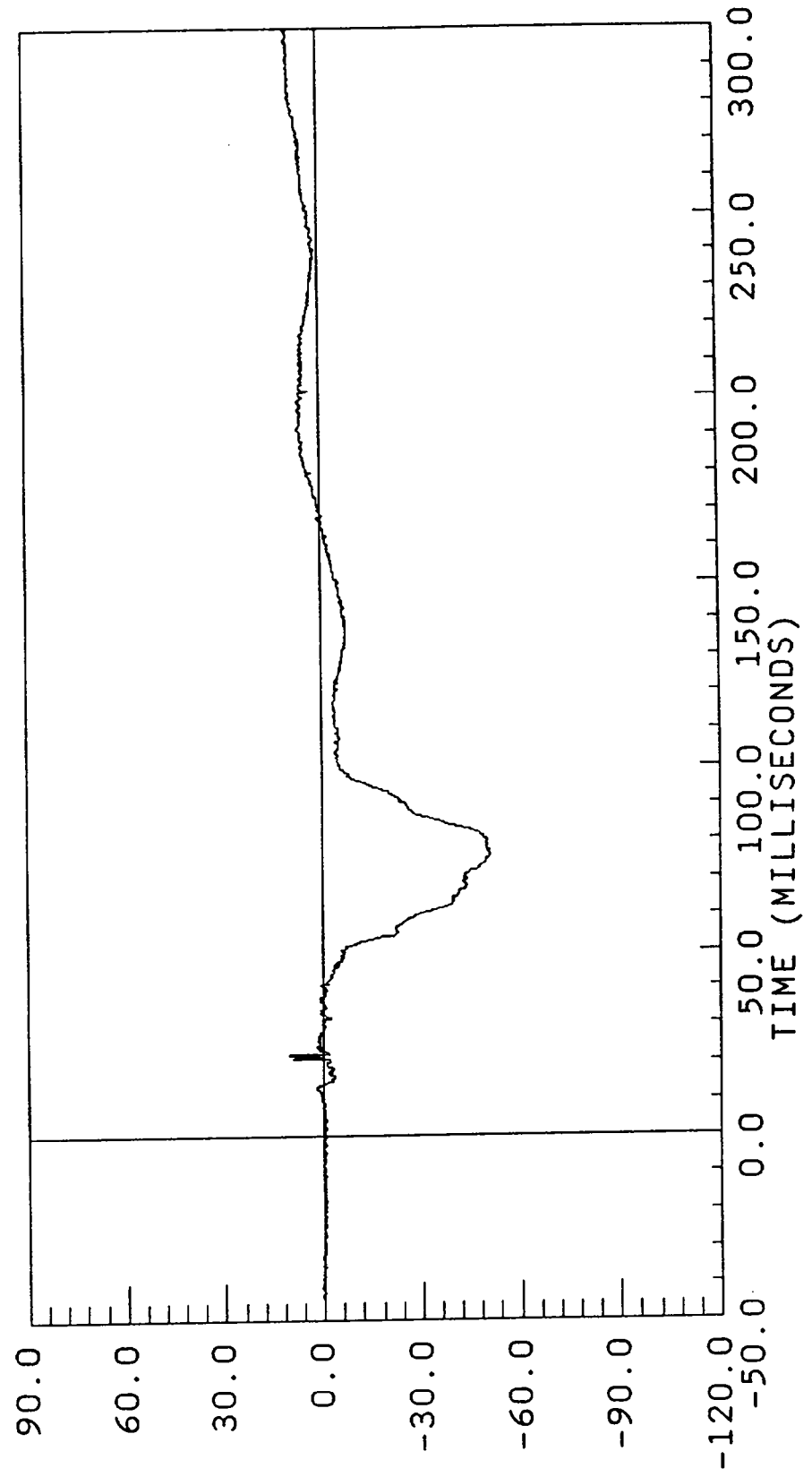
FUN= 912

FOS#1 HEAD R

HIC= 408.2 FROM T1= .05910 TO T2= .08895
AVERAGE ACCELERATION BETWEEN T1 AND T2= 45.1G'S
EVENT TIME= 300.0 MSEC
SEVERITY INDEX= 497.9

0.00 mph

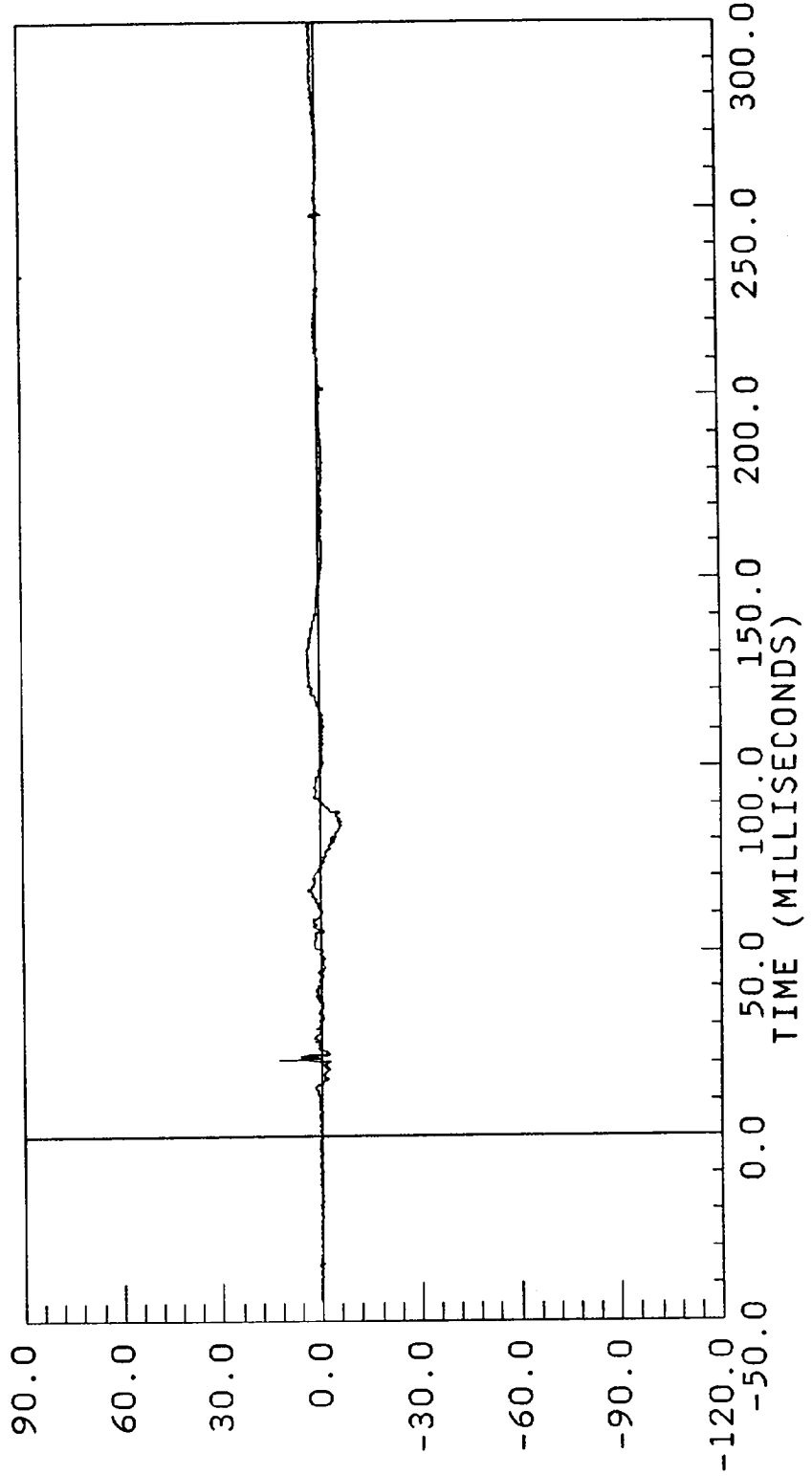
POS#1 HEAD X
XL AXIS
YMIN = -51.04800 at 75.60001
YMAX = 10.34500 at 21.82500
FILTER CUTOFF: OHZ



UDS\$912-2.DAT

0.00 mph

POS#1 HEAD Y
YL AXIS
YMIN = -6.193800 at 84.00000
YMAX = 12.76200 at 20.85000
FILTER CUTOFF: OHZ



0.00 mph

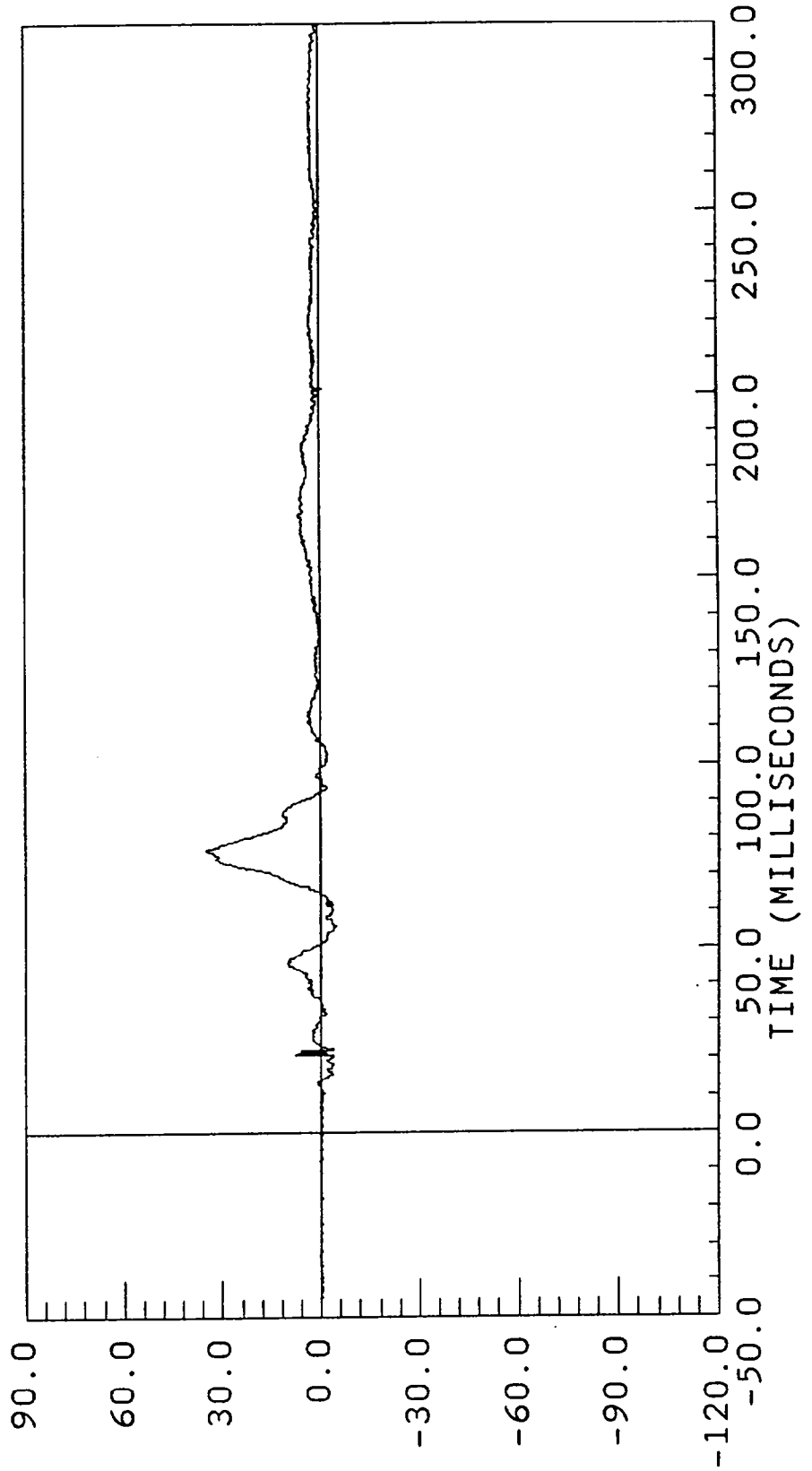
POS#1 HEAD Z

ZL AXIS

YMIN = -5.066100 at 55.80000

YMAX = 35.11900 at 76.72501

FILTER CUTOFF: 0HZ

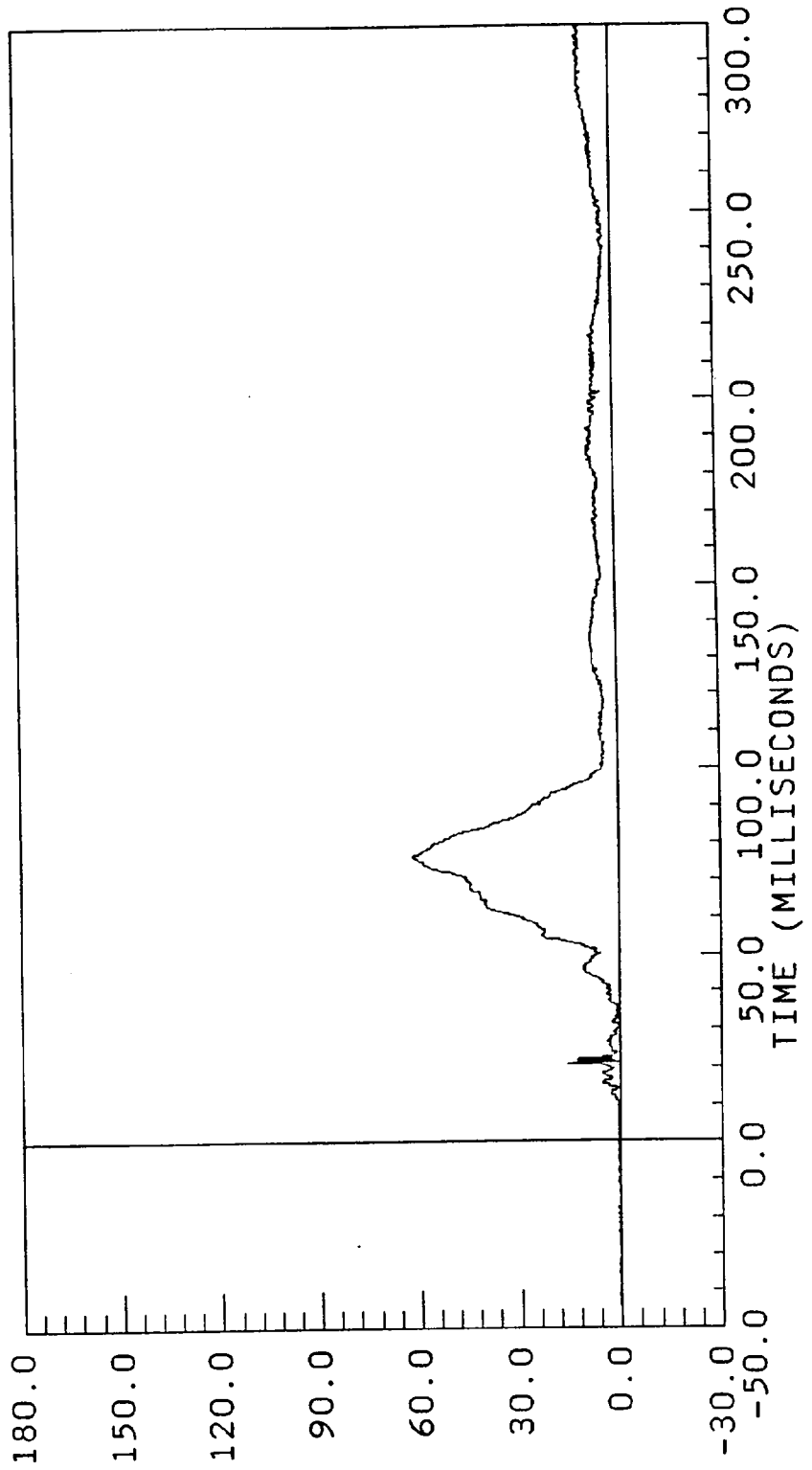


ACCELERATION * G * S *

HRES912-1.DAT

0.00 mph

POS#1 HEAD
NONSTANDARD
FILTER CUTOFF: 0HZ
RS AXIS
YMIN = 0.557995 at -40.12500
YMAX = 61.99163 at 76.72501

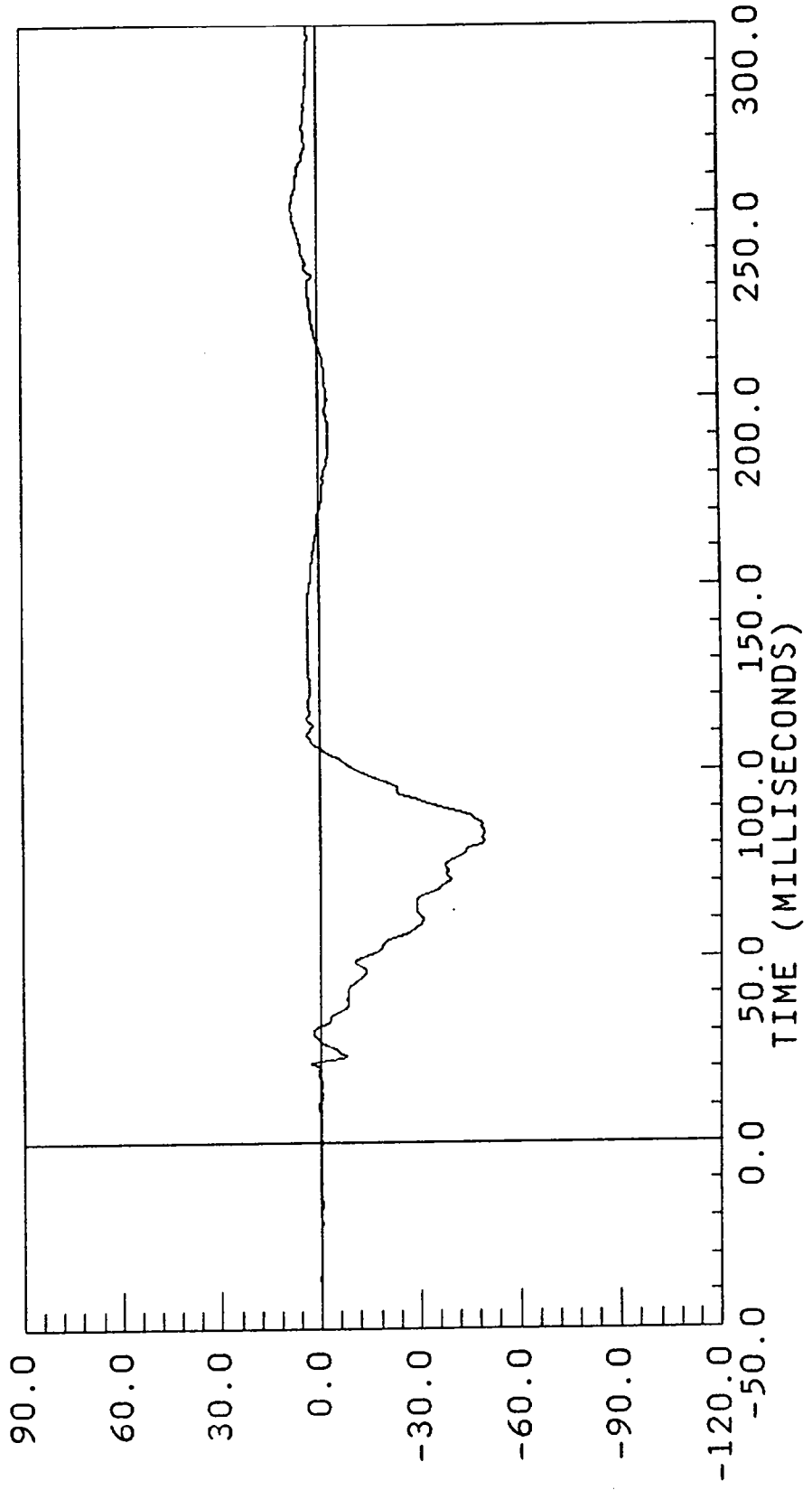


A C C E L E R A T I O N * G , S *
B-38 7715-10

BW912-4.DAT

0.00 mph

POS#1 CHEST X
FILTERED
FILTER CUTOFF: 300HZ
XL AXIS
YMIN = -49.53383 at 83.40000
YMAX = 7.854453 at 251.8500

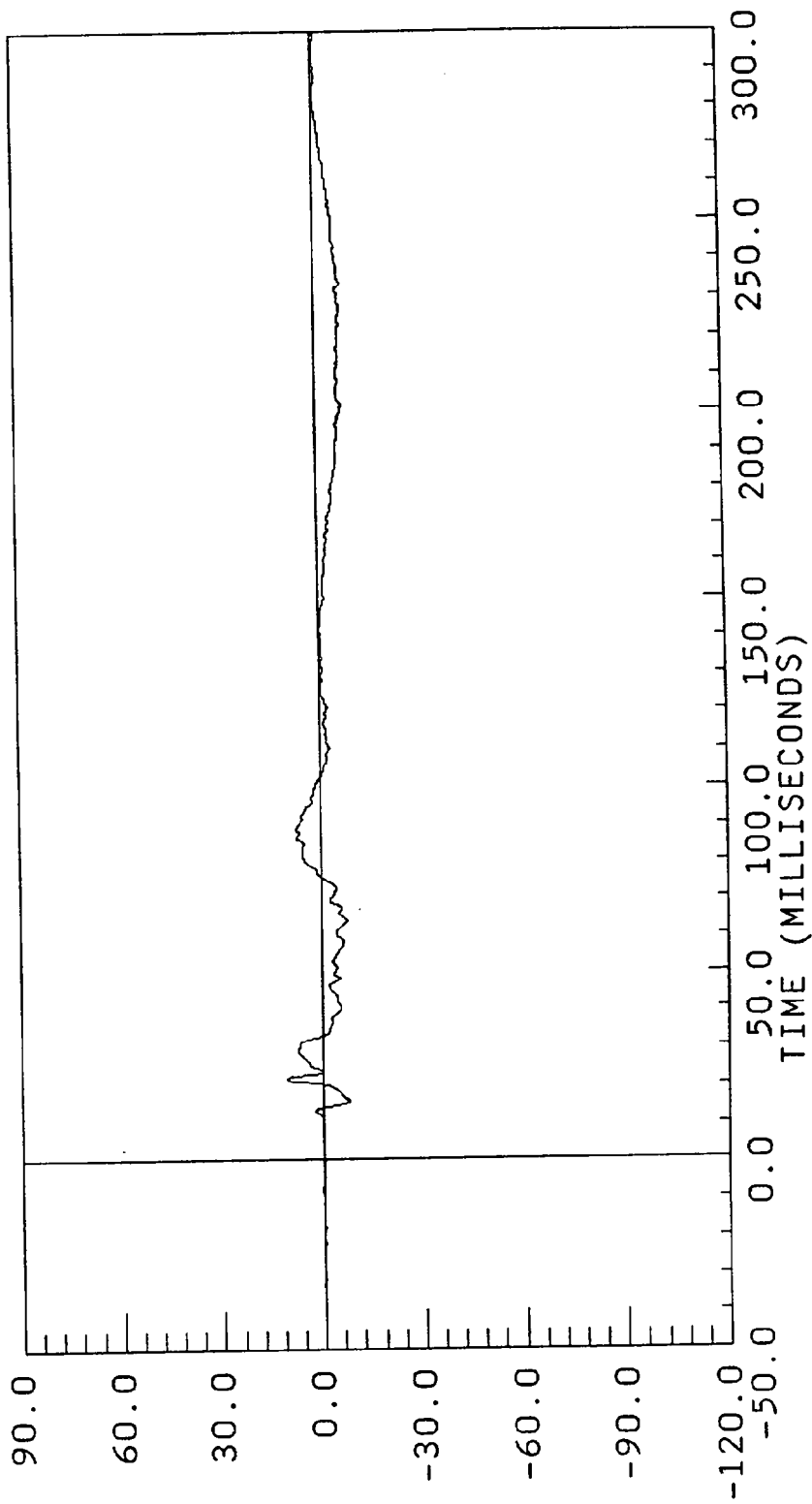


ACCELERATION * G , S *
B-39 7715-10

BW912-5.DAT

0.00 mph

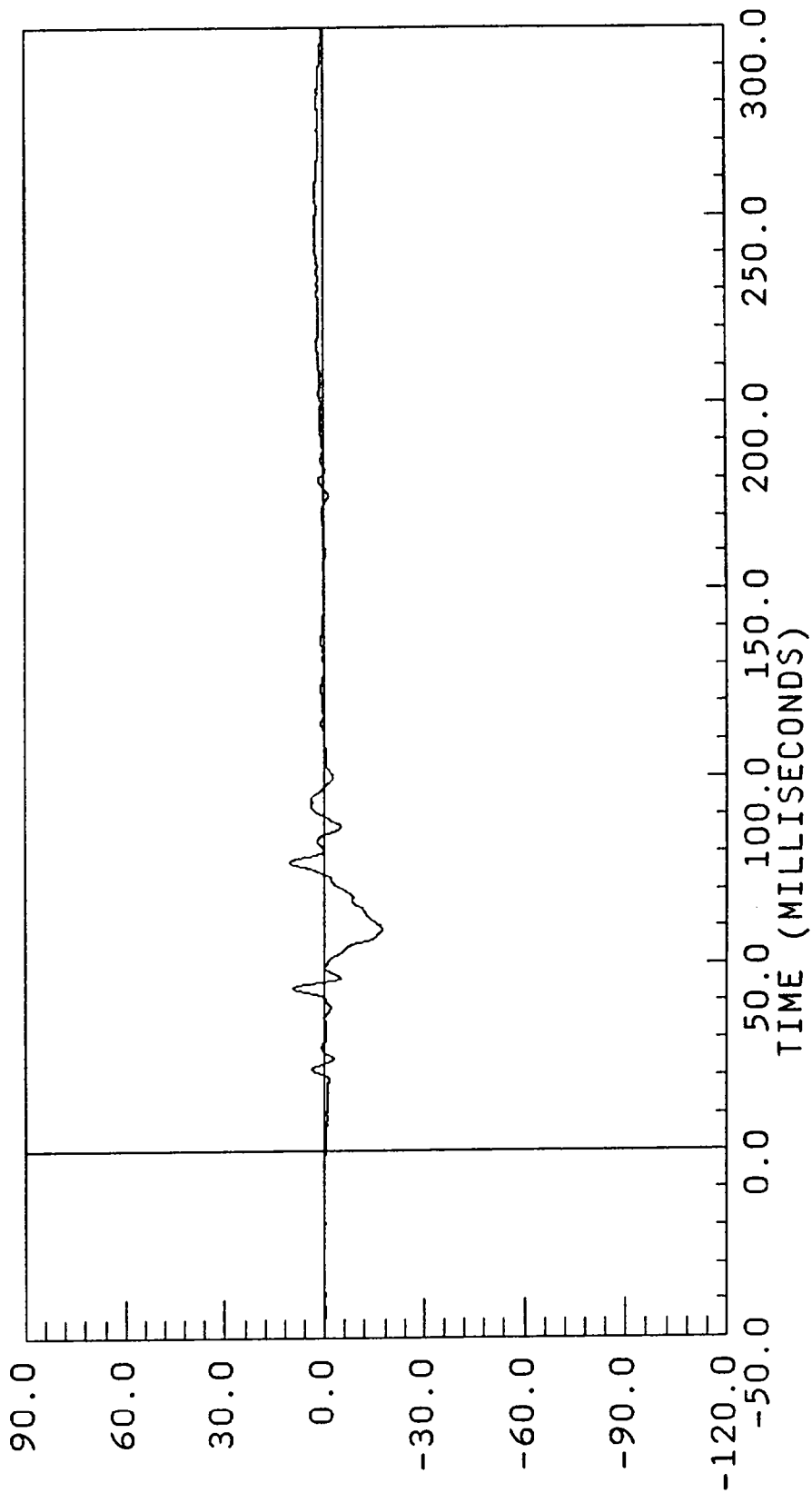
POS#1 CHEST Y
FILTERED
FILTER CUTOFF: 300HZ
YL AXIS
YMIN = -7.995055 at 201.9000
YMAX = 11.14096 at 21.45000



ACCELERATION * G, S *
B-40 7715-10

0.00 mph

POS#1 CHEST Z
FILTERED
FILTER CUTOFF: 300HZ
ZL AXIS
YMIN = -17.20580 at 59.10000
YMAX = 10.63745 at 77.32500

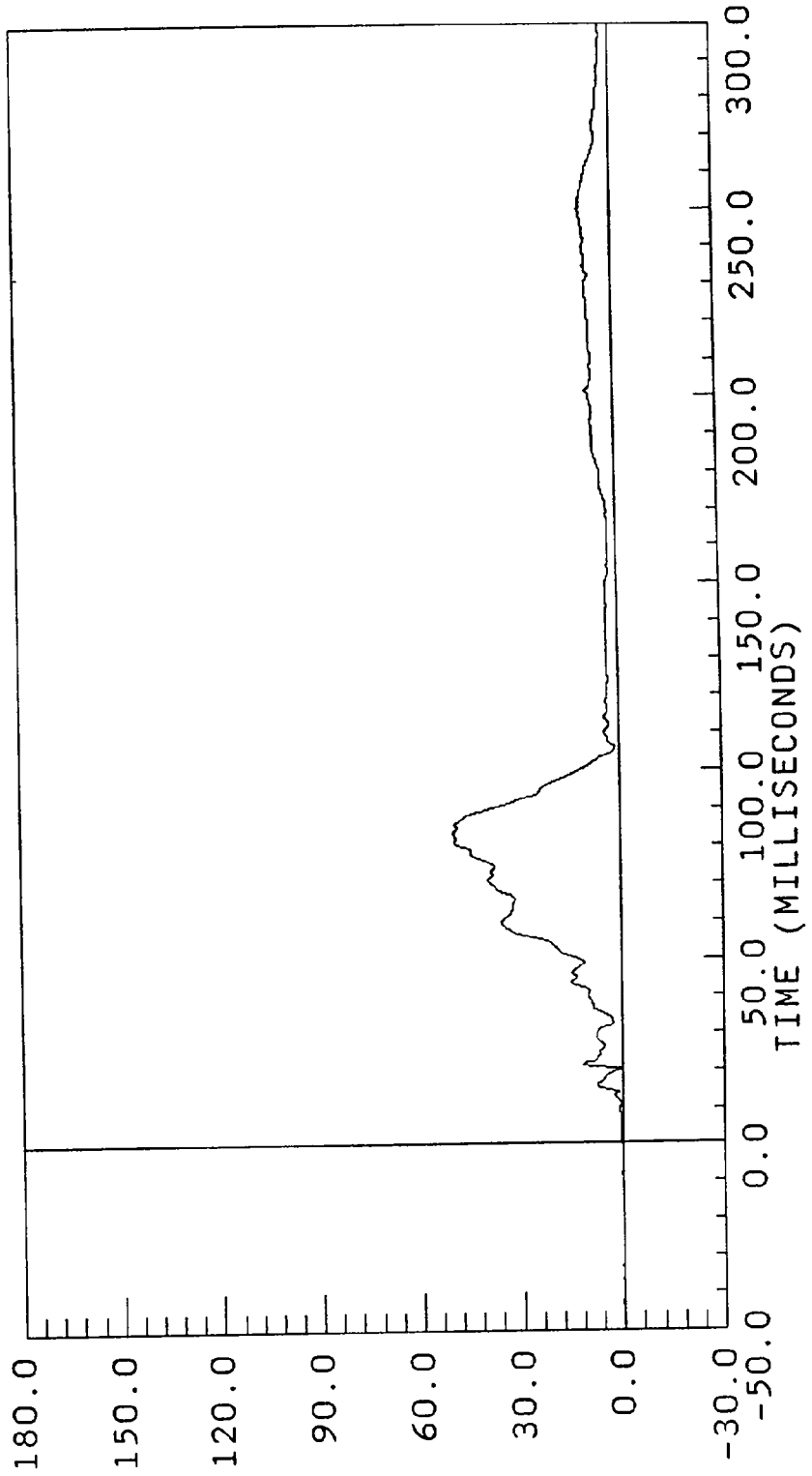


ACCELERATION * G * S *
B-41 7715-10

CHST912-1.DAT

0.00 mph

POS#1 CHEST
COMPUTED
FILTER CUTOFF: 300Hz
RS AXIS
YMIN = 0.0262735 at 59.10000
YMAX = 49.89054 at 83.40000



ACCELERATION

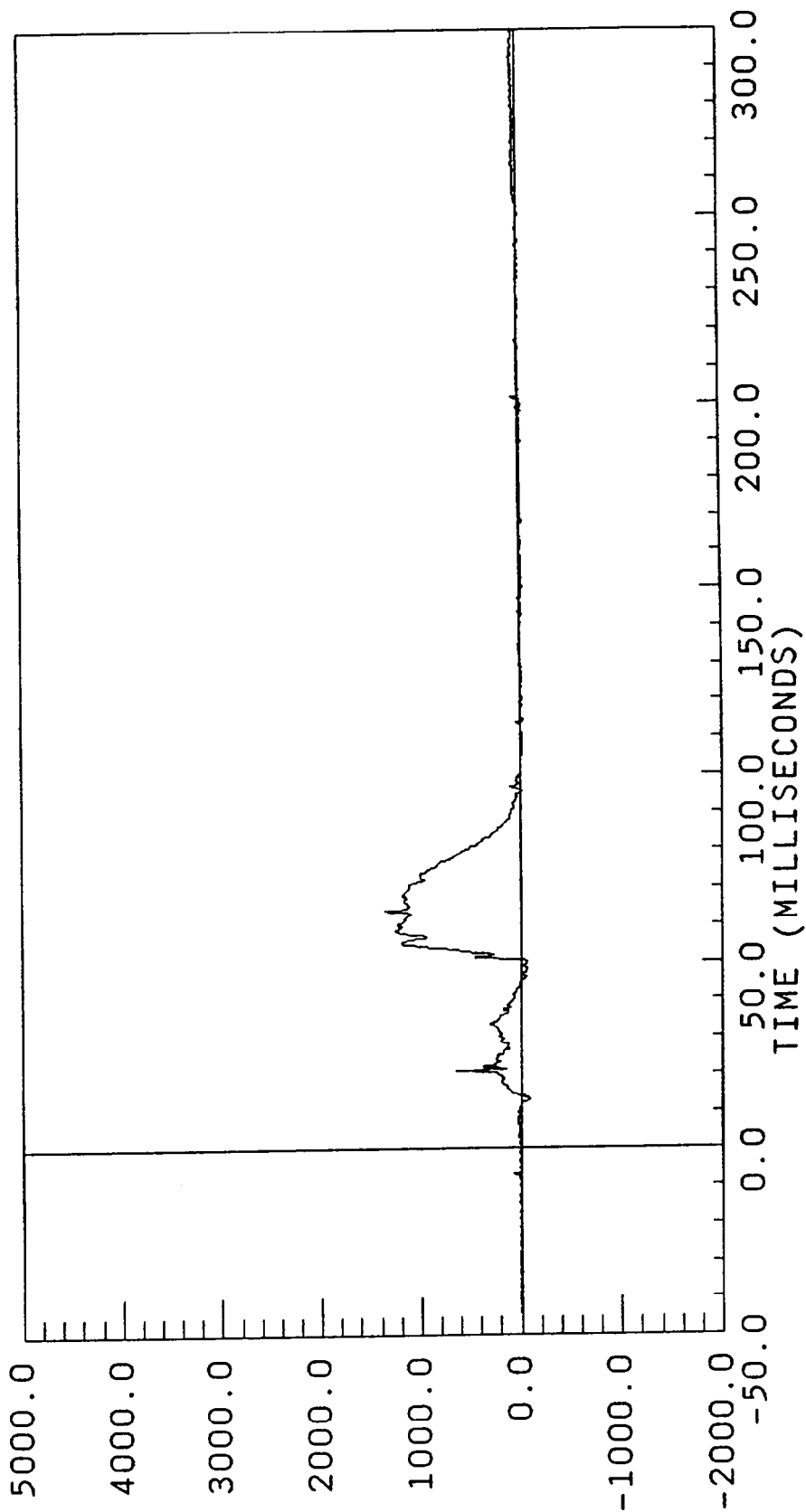
* G * S *

B-42

7715-10

0.00 mph

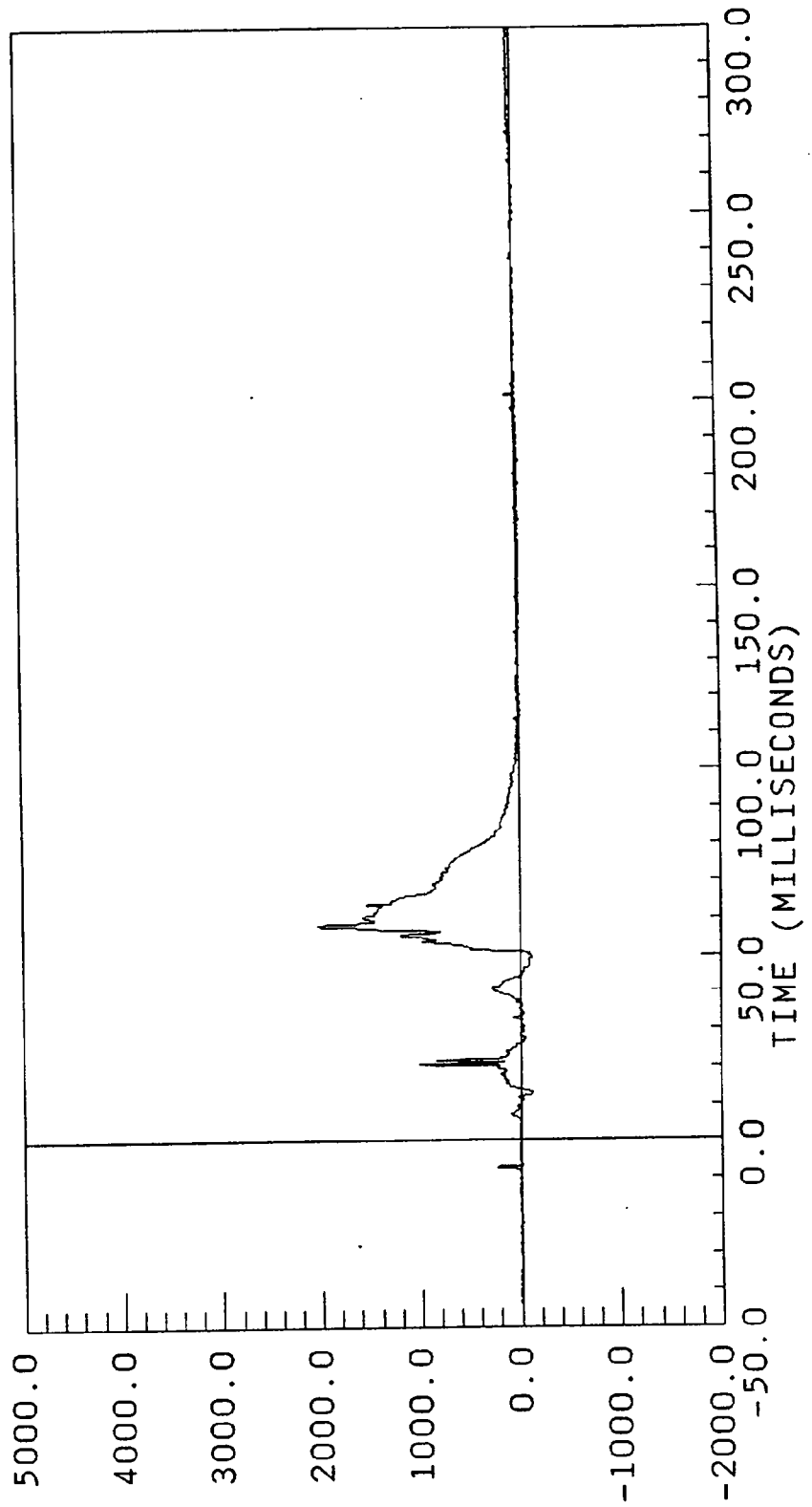
POS#1 LEFT FEMUR
FILTERED
FILTER CUTOFF: 1000HZ
NA AXIS
YMIN = -82.35471 at 13.05000
YMAX = 1362.523 at 63.75000



BW912-8.DAT

0.00 mph

POS#1 RIGHT FEMUR NA AXIS
FILTERED YMIN = -128.9014 at 12.90000
FILTER CUTOFF: 1000HZ YMAX = 2029.954 at 58.05000



HEAD INJURY CRITERION
HEAD SEVERITY INDEX
36MS. MAXIMUM DURATION

NHTSA CRASH TEST - PROC. 208

RUN= 912

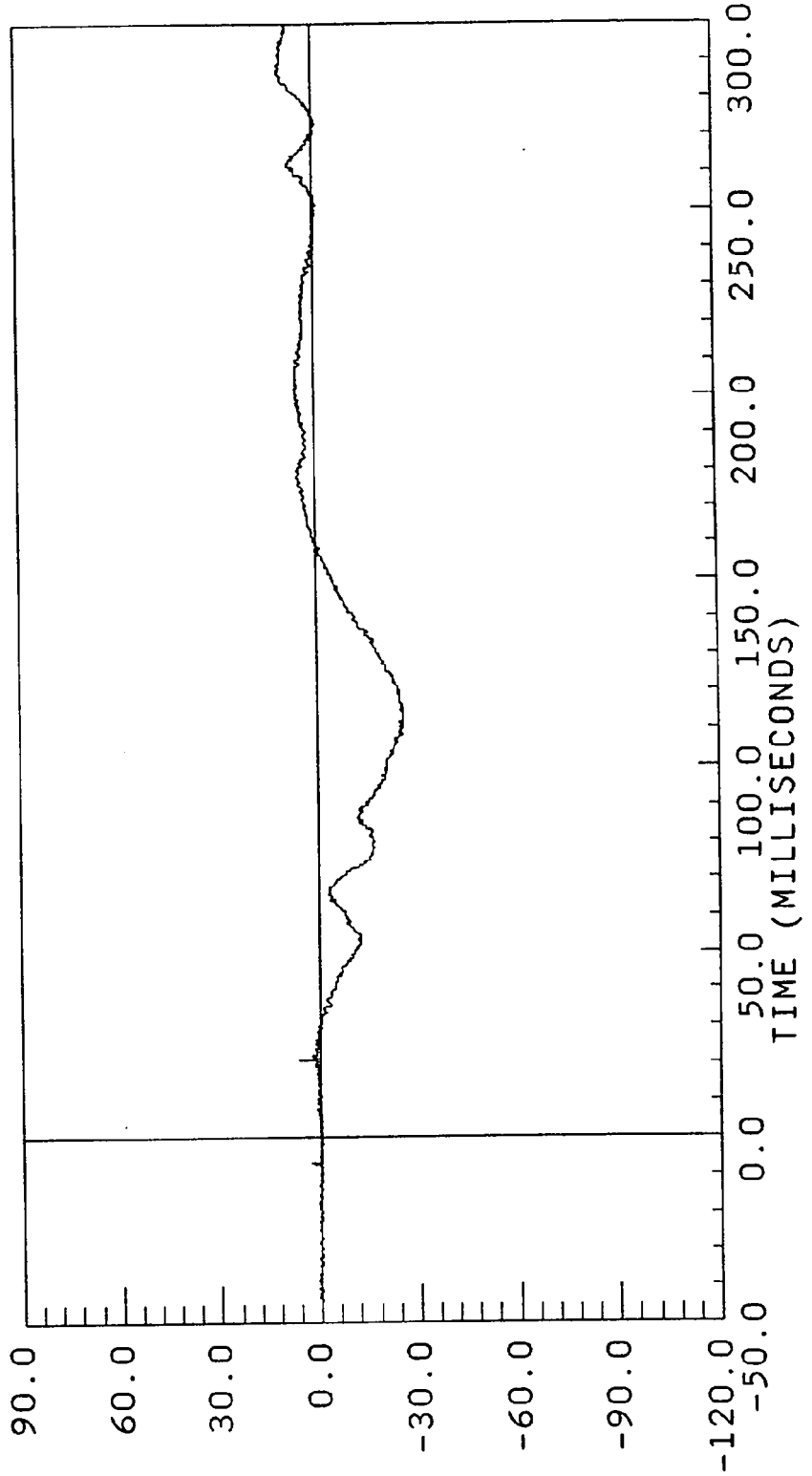
POS#2 HEAD R

HIC= 303.7 FROM T1= .05812 TO T2= .09412
AVERAGE ACCELERATION BETWEEN T1 AND T2= 37.2G'S
EVENT TIME= 300.0 MSEC
SEVERITY INDEX= 594.9

UDS\$912-11.DA

0.00 mph

POS#2 HEAD X
XL AXIS
YMIN = -25.54800 at 108.3000
YMAX = 10.61200 at 286.3500
FILTER CUTOFF: 0Hz



ACCELERATION

* G, S *

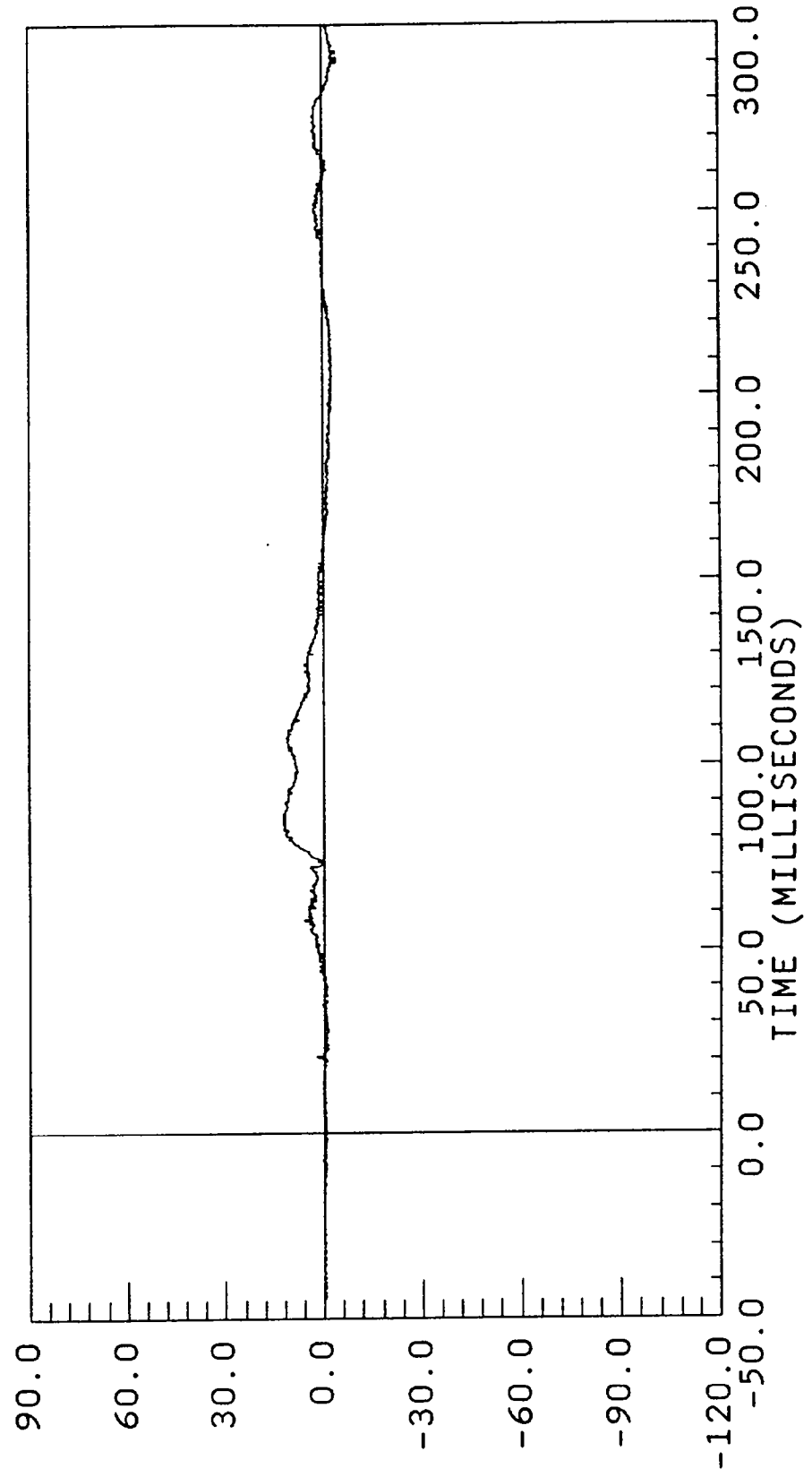
B-46

7715-10

UDS\$912-12.DA

0.00 mph

POS#2 HEAD Y
YL AXIS
YMIN = -4.192400 at 289.9500
YMAX = 12.40000 at 82.42500
FILTER CUTOFF: 0HZ

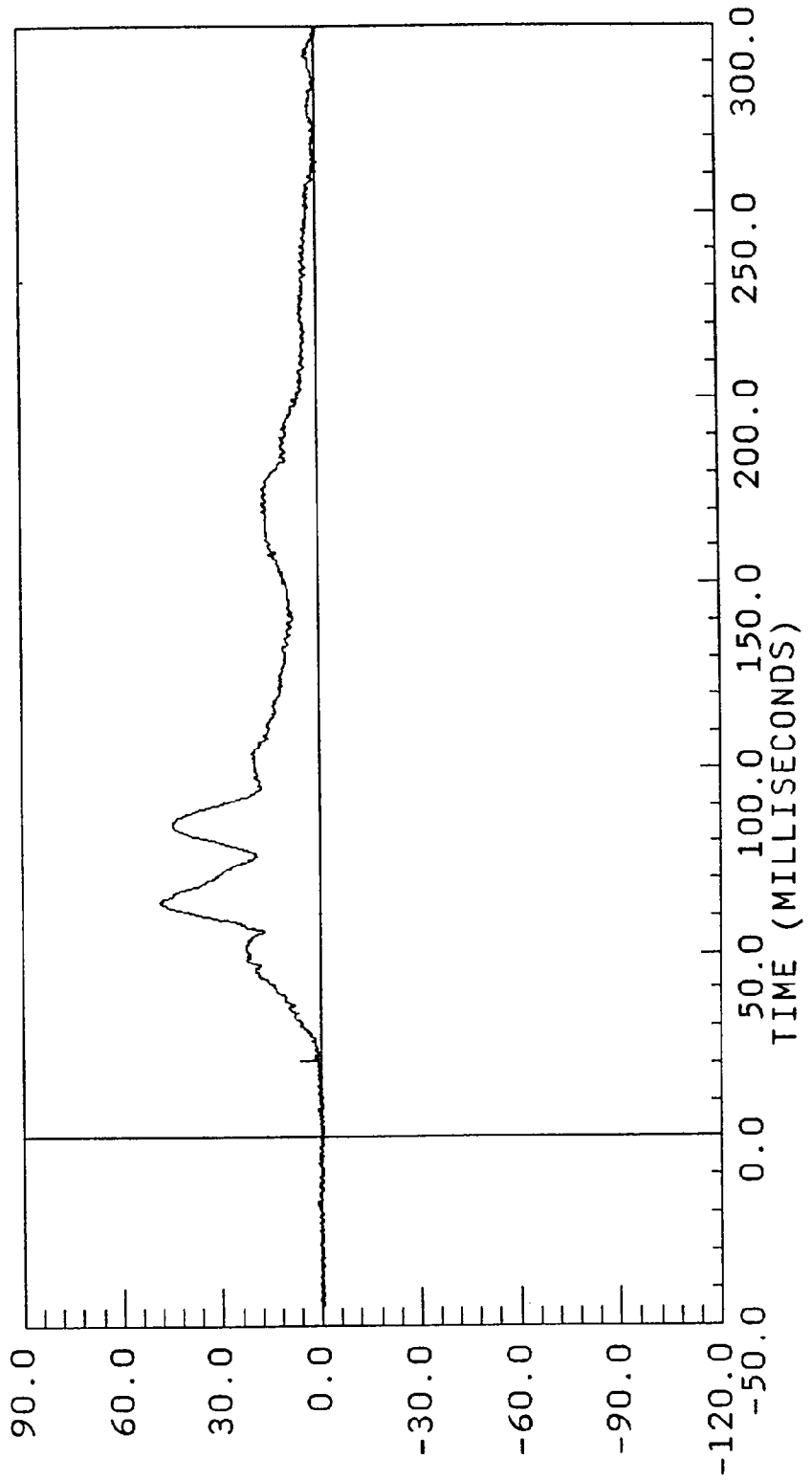


ACCELERATION * G ' S *
B-47 7715-10

UDS\$912-13.DA

0.00 mph

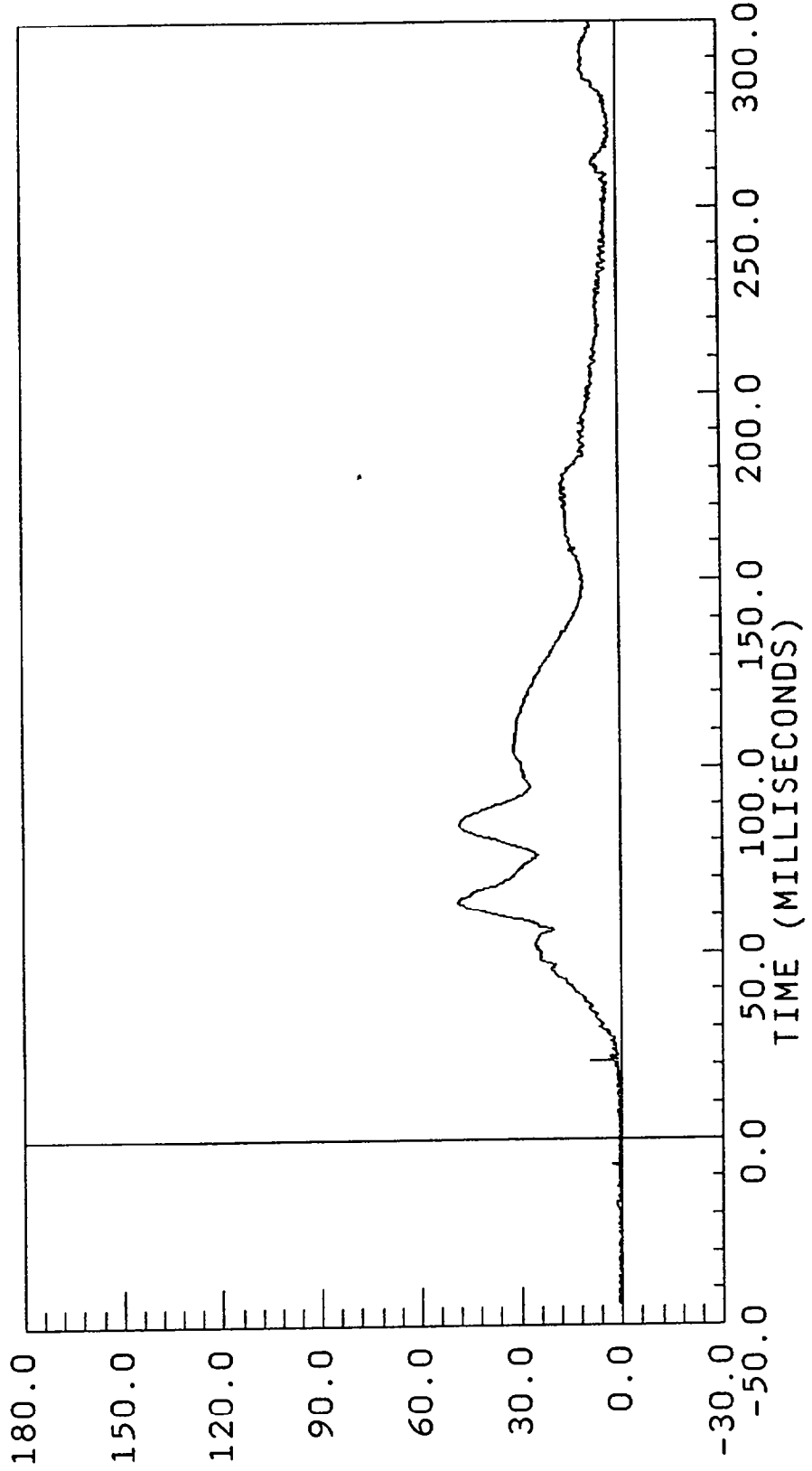
POS#2 HEAD Z ZL AXIS
 YMIN = -0.254750 at -44.32500
FILTER CUTOFF: YMAX = 48.69700 at 63.60000



ACCELERATION * G * S *
B-48 7715-10

0.00 mph

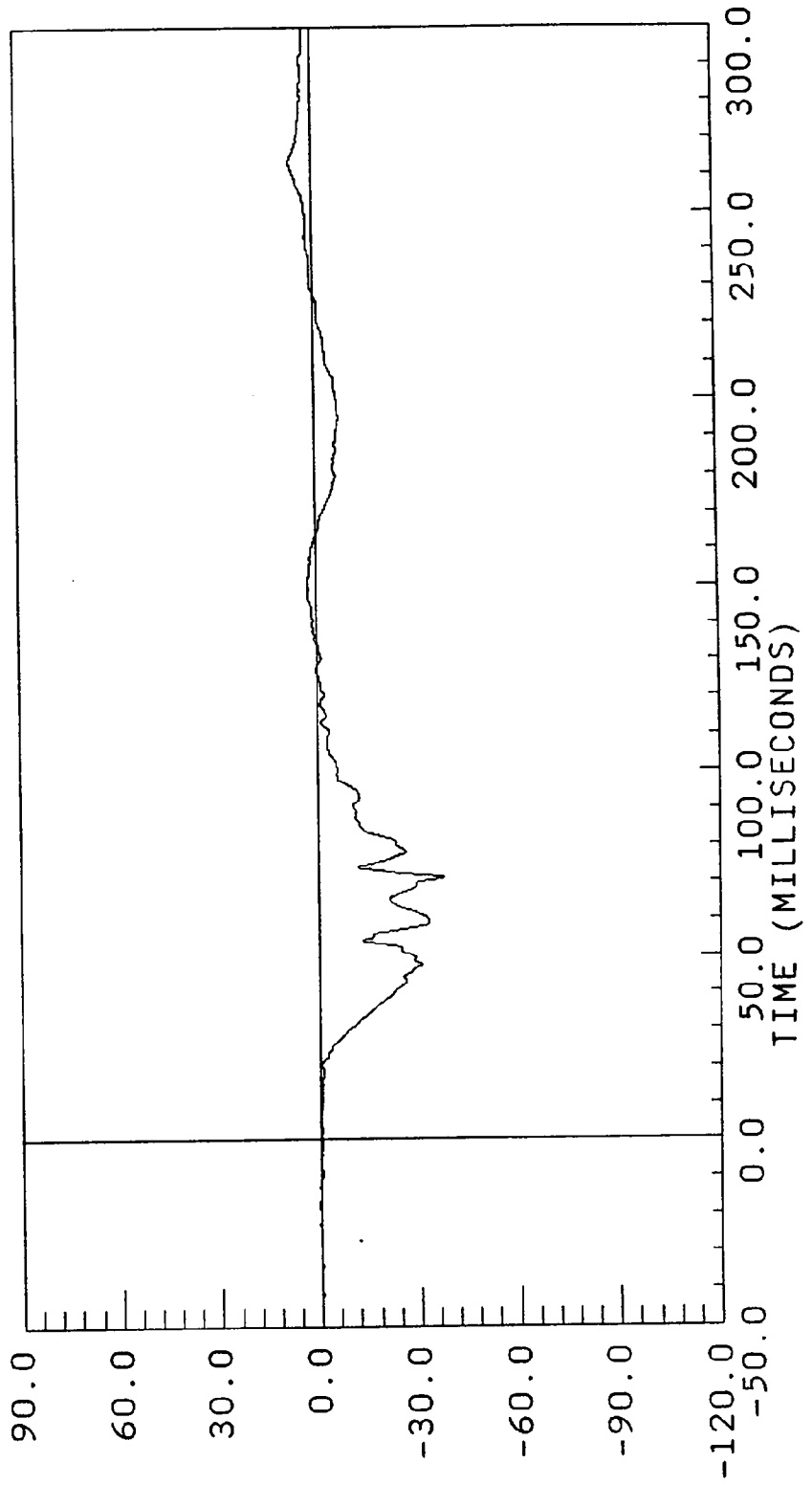
POS#2 HEAD
NONSTANDARD
FILTER CUTOFF: 0HZ
RS AXIS
YMIN = 0.414750 at -36.15000
YMAX = 49.12038 at 63.60000



BW912-14.DAT

0.00 mph

POS#2 CHEST X
FILTERED
FILTER CUTOFF: 300Hz
XL AXIS
YMIN = -37.60184 at 71.10001
YMAX = 6.796609 at 263.7000

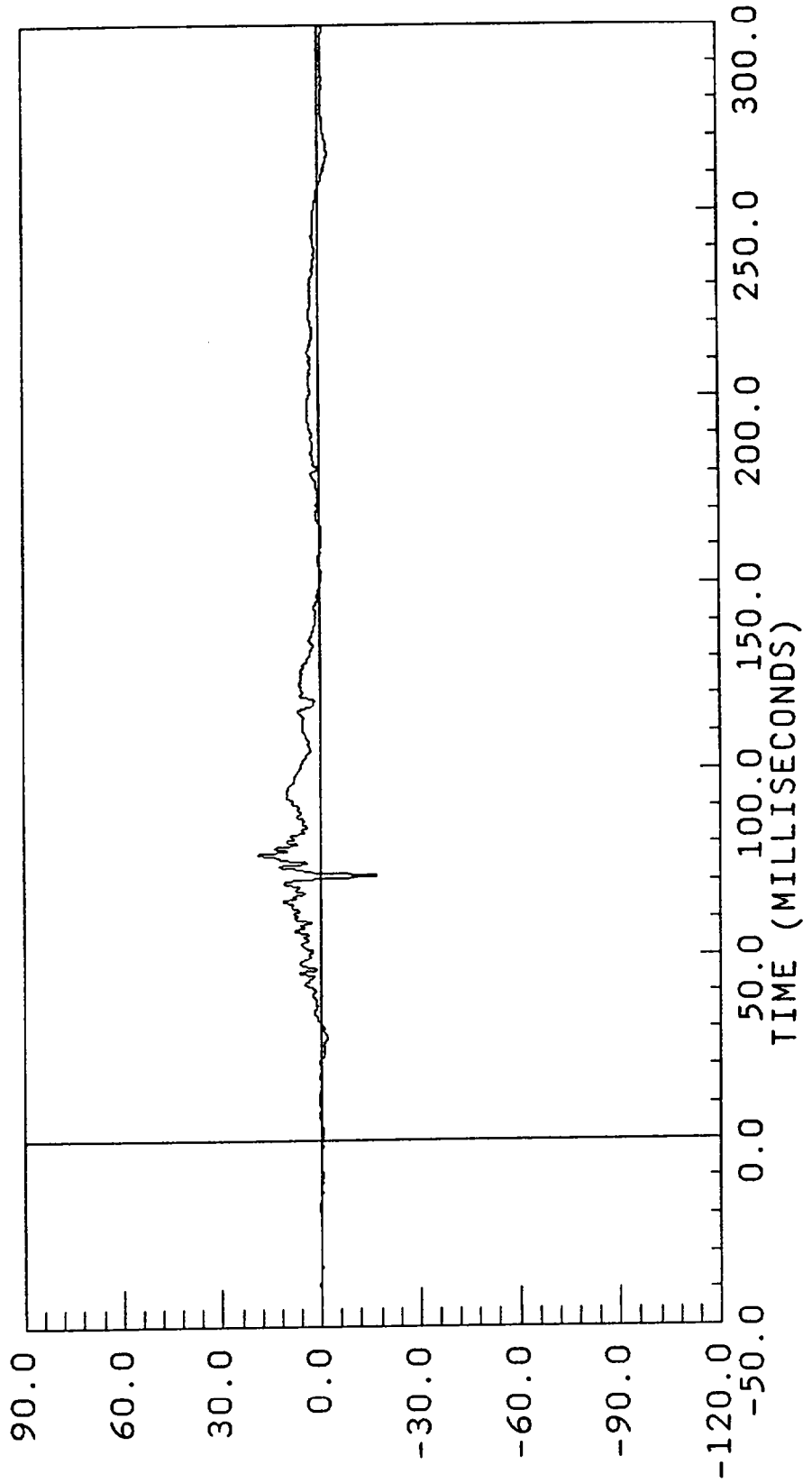


A C C E L E R A T I O N * G ' S *
B-50 7715-10

BW912-15.DAT

0.00 mph

POS#2 CHEST Y
FILTERED
FILTER CUTOFF: 300HZ
YL AXIS
YMIN = -16.63403 at 71.55000
YMAX = 19.46021 at 77.17500

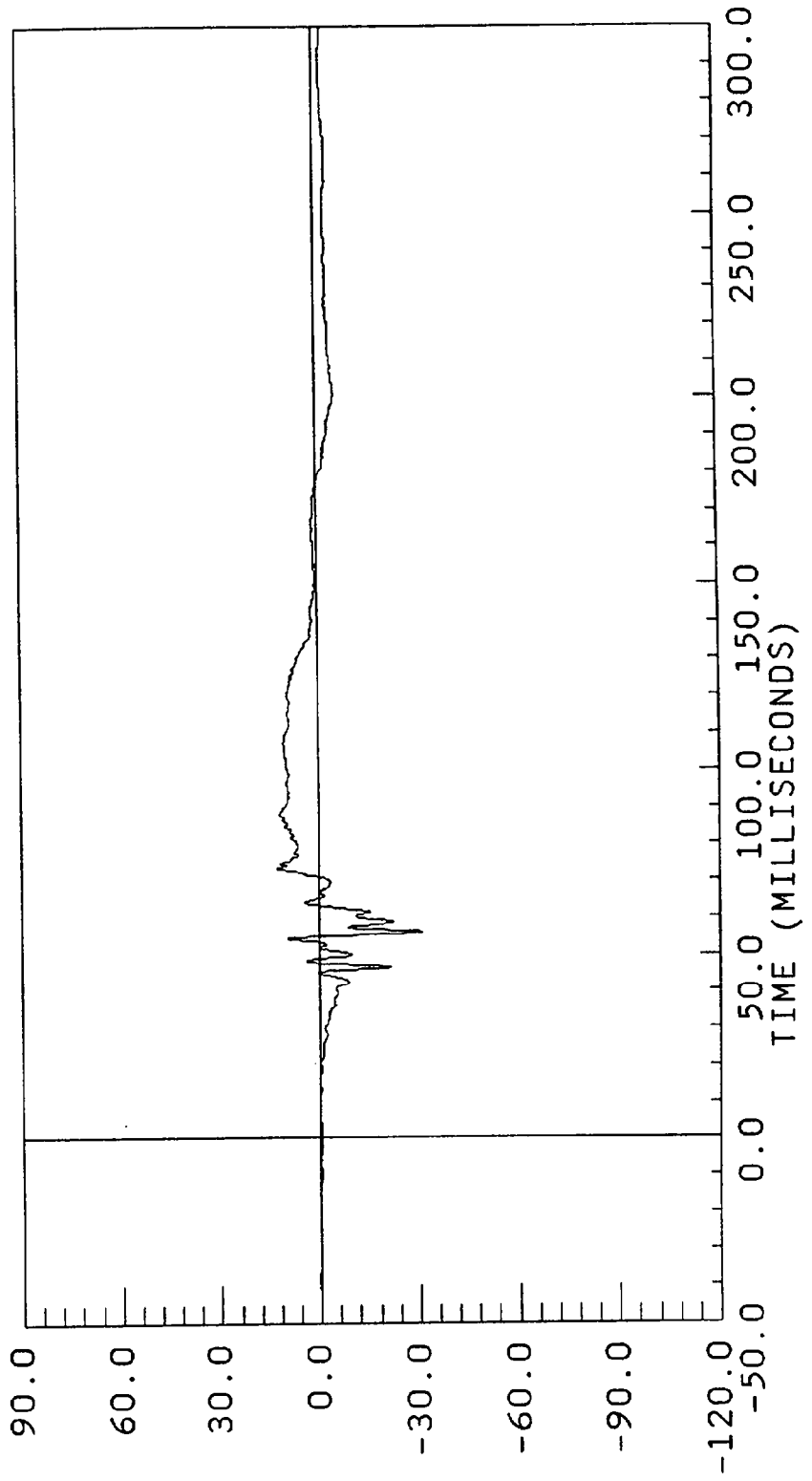


ACCELERATION * G ' S *
B-51 7715-10

BW912-16.DAT

0.00 mph

POS#2 CHEST Z
FILTERED
FILTER CUTOFF: 300HZ
ZL AXIS
YMIN = -30.88583 at 56.10000
YMAX = 13.07180 at 73.35001

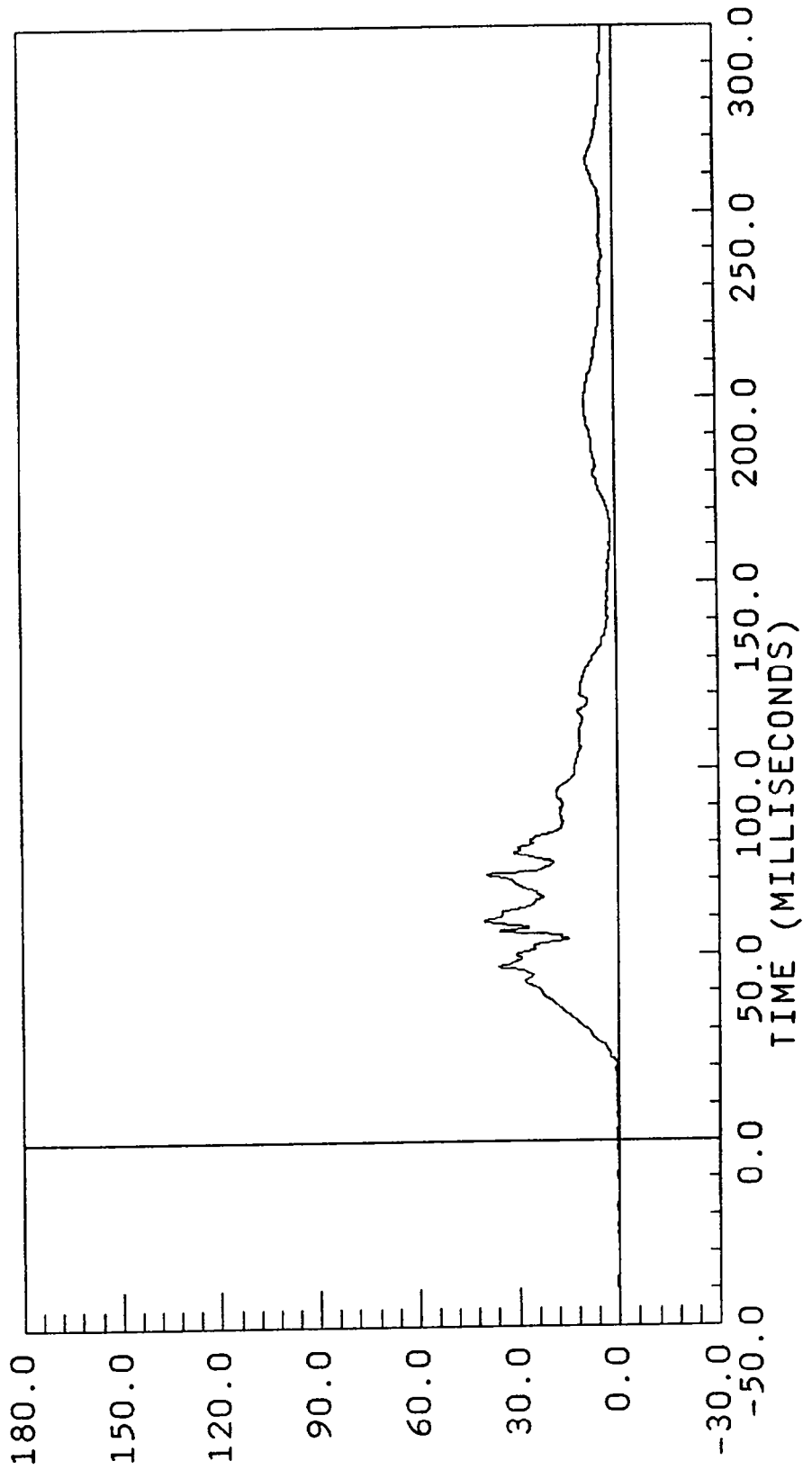


ACCELERATION * G * S *
B-52. 7715-10

CHST912-2.DAT

0.00 mph

POS#2 CHEST
COMPUTED
FILTER CUTOFF: 300HZ
RS AXIS
YMIN = 0.0398014 at 5.100000
YMAX = 40.01715 at 58.87500



A C C E L E R A T I O N * G * S *

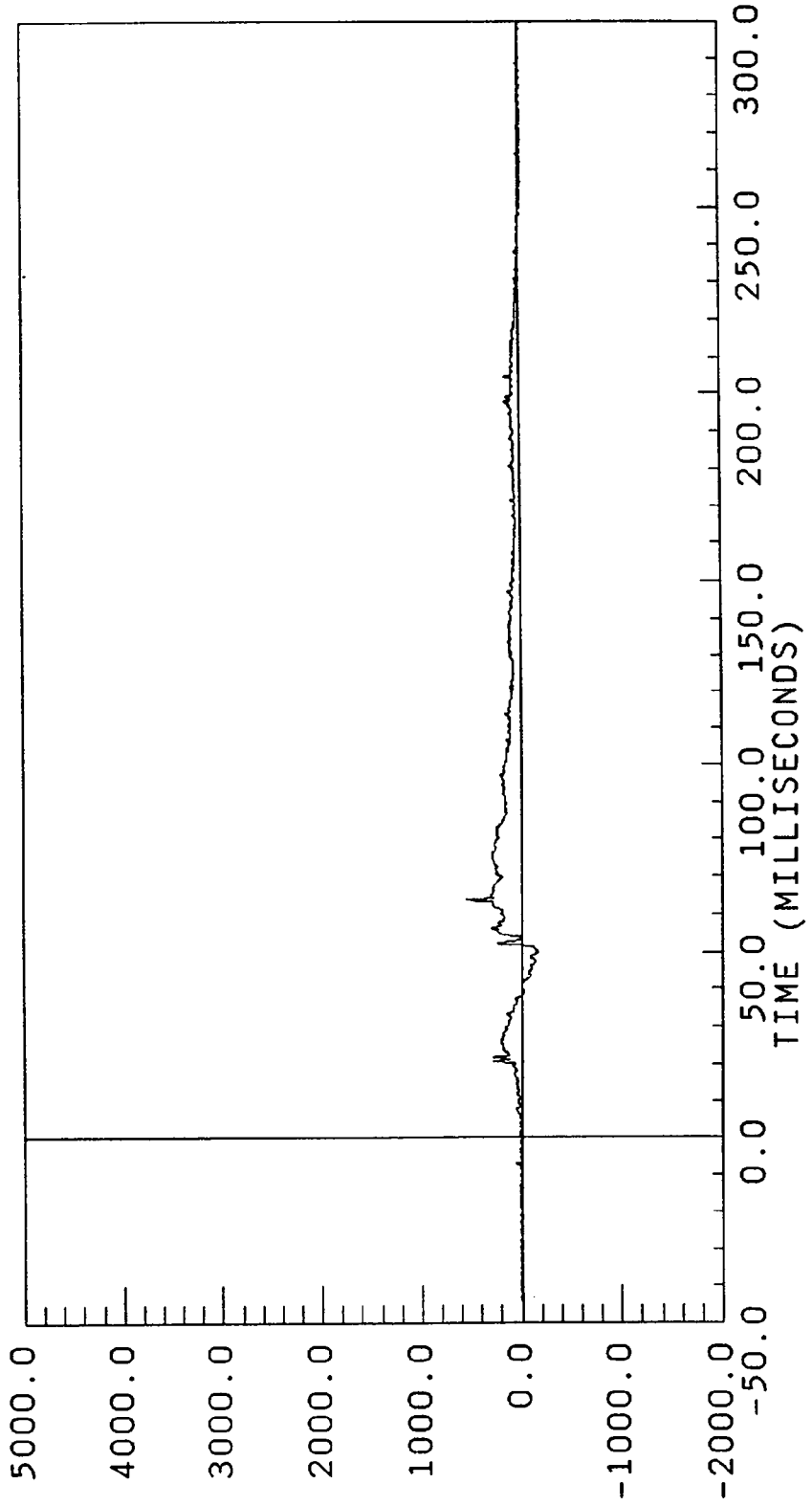
B-53

7715-10

BW912-9.DAT

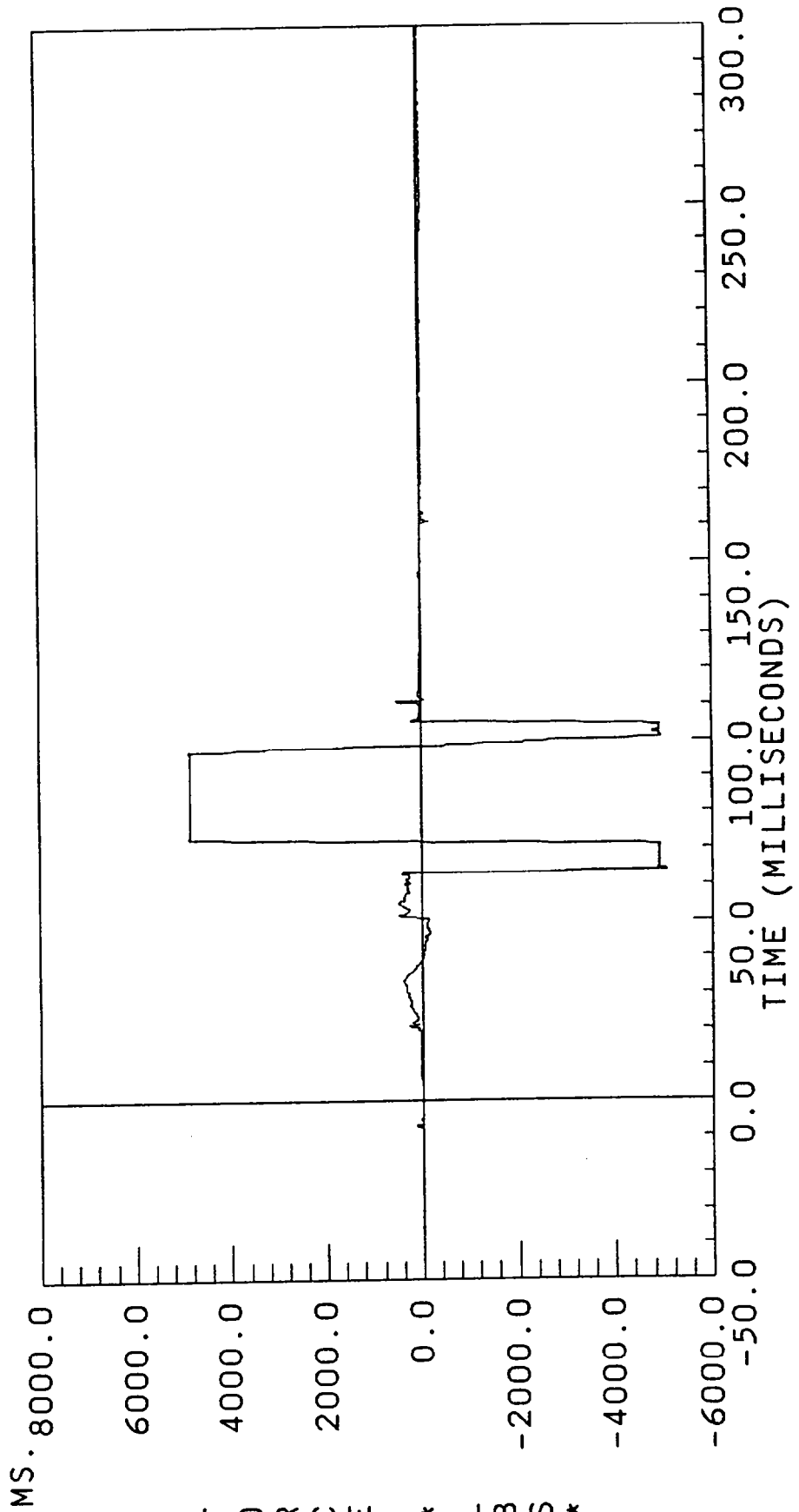
0.00 mph

POS#2 LEFT FEMUR
FILTERED
FILTER CUTOFF: 1000HZ
NA AXIS
YMIN = -170.0410 at 50.02500
YMAX = 559.4886 at 63.75000



0.00 mph

POS#2 RIGHT FEMUR
FILTERED
FILTER CUTOFF: 1000HZ
ACCELEROMETER EXPERIENCED INTERMITTENT DATA BETWEEN 60 AND 108
NA AXIS
YMIN = -5068.253 at 64.05000
YMAX = 4882.490 at 97.05000

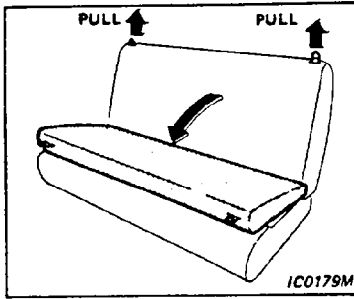




Appendix C

VEHICLE OWNERS MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

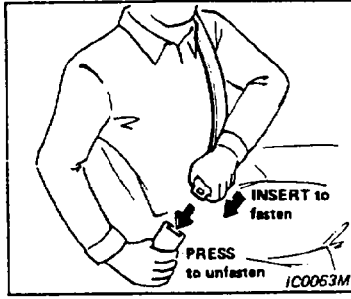
SEAT BELTS 3-POINT TYPE WITH RETRACTOR



Folding

Pull both levers and pull the seat back forward to fold it down.

Never allow anyone to ride in the luggage area or on the folded down rear seat. A sudden stop or accident may cause risk of injury.



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

Fastening the belts

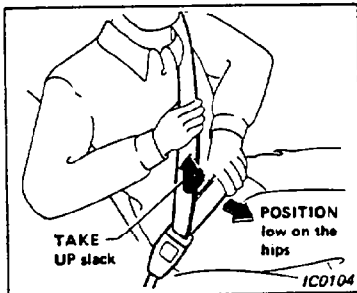
1. Adjust the seat.

The seatback should not be 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.

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

The retractor is 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.

1-27



3. Position the lap belt portion low on the hips as shown.
4. Pull the shoulder belt portion toward the retractor to take up extra slack.

Unfastening the belts

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

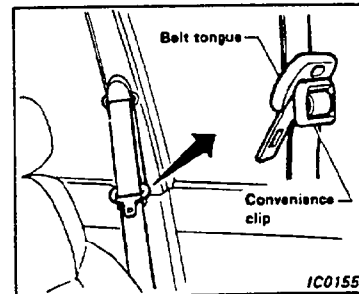
Checking seat belt operation

Your seat belt retractors are designed to lock belt movement **only** when the vehicle slows down rapidly. Pulling on the belt will not cause the retractor to lock, no matter how fast you pull.

If you wish to have the locking operation of your seat belts checked for you, or if you have any question about belt operation, see your NISSAN dealer.

Replacing front seat belt

The front seat belts are shock absorber type. Replace the belt when the loop has been pulled out and "REPLACE BELT" is visible as this indicator means the seat belt has been overstressed.



Convenience clip

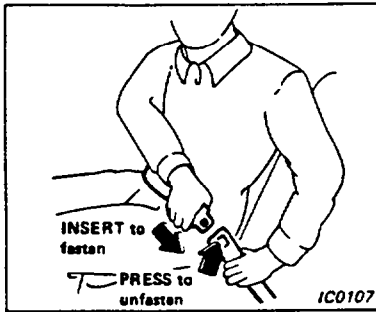
The convenience clip is provided to keep the belt tongue in an accessible position when not being used.

Slide the convenience clip down if the clip prevents the belt from being retracted into the retractor.

Slide it away from the buckle if the convenience clip contacts the belt tongue when the belt is worn.

1-28

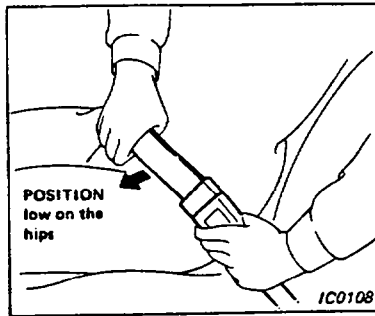
2-POINT TYPE WITH RETRACTOR



Fastening the belts

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

If the retractor locks and restricts further movement, let the belt rewind into the retractor, then slowly pull the belt out.



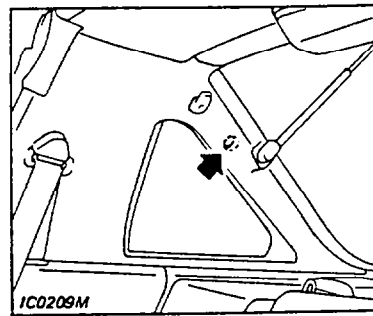
2. Position the lap belt low on the hips as shown.

3. Pull the belt toward the retractor to take up extra slack.

Unfastening the belts

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

SHOULDER BELT ANCHORAGE



Shoulder belt anchorages for the rear outboard seat belt are located as shown in the illustration.

Rear seat shoulder/lap belt assemblies may be purchased from and installed in your vehicle by your NISSAN dealer. Operating instructions will be provided by the dealer when you purchase the belts.

1-29

SEAT BELT EXTENDERS

If, because of body size or driving position, it is not possible to properly fit the lap-shoulder belt and fasten it, an extender is available which is compatible with the installed seat belts. The extender adds approximately 8 inches (200 mm) of length and may be used for either the driver or front passenger seating position. See your NISSAN dealer for assistance if the extender is required.

- Only NISSAN belt extenders, made by the same company which made the original equipment belts, should be used with NISSAN belts.
- Persons who can use the standard seat belt should not use an extender. Such unnecessary use could result in serious personal injury in the event of an accident.

PRECAUTIONS ON SEAT BELT USAGE

NISSAN strongly encourages you and all of your passengers to buckle up every time you drive.

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.

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

- 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 at 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.

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

Children seated in the front seat should wear both the lap and shoulder belts. If the shoulder belt contacts the neck or face due to the child's size, the child should sit in the rear seat and wear a lap belt.

Never let a child stand or kneel on any seat or 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.

1-30

Supplemental Restraint System Manual
Air Bag

INFORMATION

This booklet contains detailed information on the Supplemental Restraint System "Air Bag". Some of the information contained in the owner's manual is repeated in this supplement. Please read this supplement carefully to make sure you understand the operation and use of the air bag.

This supplement is part of the owner's manual and both the supplement and the owner's manual should be kept in the vehicle. Nissan reserves the right to make changes in the contents of this supplement at any time without prior notice.

SUPPLEMENTAL RESTRAINT SYSTEM

Nissan Motor Company is proud to offer you this high quality Pulsar NX. The Pulsar NX has, as an option, a Supplemental Restraint System "Air Bag", to help reduce impact force to the driver in a frontal collision. The air bag is designed to **supplement** the accident protection provided by the driver's seat belt and is **not a substitute** for the three-point seat belt system.

WARNING:

The seat belts are designed to help reduce the risk or severity of injury in various kinds of accidents and should be worn by all occupants of the vehicle. The seat belt must be worn as the air bag only supple-

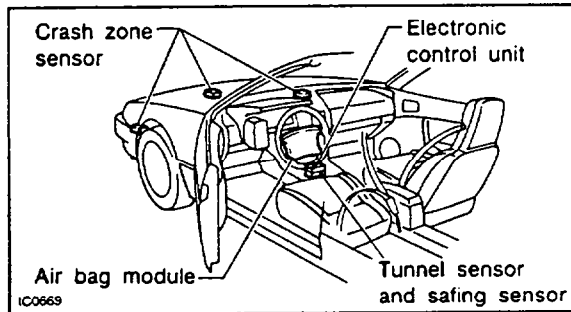
ments in reducing the impact force in a frontal collision. (See Seat Belts Section of Owner's Manual.)

AIR BAG SYSTEM

The air bag is located in the center of the steering wheel and will deploy in a moderate to severe frontal collision. The air bag will not usually deploy in the event of a side impact, rear impact or a roll-over accident. There are no air bags for the passenger seat. When the air bag system receives a signal from the crash zone sensors, a fairly loud deploying noise will be heard, followed by release of smoke. This smoke is not injurious and does not indicate a fire. The air bag, along with the use of a seat belt, helps to cushion the impact force on the driver's face and chest. The seat belt should be correctly worn and the driver seated a suitable distance from the steering wheel. Since the air bag deploys quickly in order to protect the driver, the force of the air bag deploying can increase the risk of injury if the driver is very close to or is against the steering wheel during deployment. The air bag will deflate quickly after the collision is over.

The air bag will operate only when the ignition switch is in the "ON" or "START" position.

- 1 -



The air bag system consists of 5 sensors, an air bag module inside the steering wheel pad and an electronic control unit which sends electrical signals to the air bag module. The 5 sensors are as follows.

1. Right crash zone sensor
2. Center crash zone sensor
3. Left crash zone sensor
4. Tunnel sensor
5. Safing sensor

In a moderate to severe frontal impact, the sensors and electronic control unit will trigger the deployment of the air bag.

WARNING:

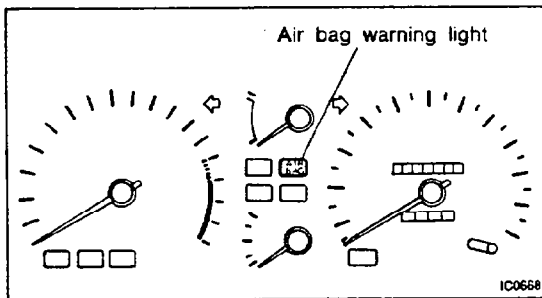
There must be no changes made to any components or wiring of the air bag system. This is to prevent

accidental deployment of the air bag or damage to the air bag operation. Tampering with the air bag system may result in serious personal injury. This includes changes made to the steering wheel, placing material over the steering wheel pad or installing additional trim material around the air bag system. Objects attached to the steering wheel pad may become dangerous projectiles and cause injury if the air bag deploys. Work around and on the air bag system should be done by an authorized NISSAN dealer. Installation of electrical equipment should also be done by an authorized NISSAN dealer. Electrical test equipment and probing devices must not be used on the air bag system.

- 2 -

<p>WARNING SRS-AIRBAG</p> <p>THIS CAR IS EQUIPPED WITH A DRIVER AIR BAG AS A SUPPLEMENTAL RESTRAINT SYSTEM (SRS). ALL SRS ELECTRICAL WIRING AND CONNECTORS ARE COLORED YELLOW.</p> <p>DO NOT USE ELECTRICAL TEST EQUIPMENT ON THESE CIRCUITS.</p> <p>TAMPERING WITH OR DISCONNECTING THE SRS WIRING AND CONNECTORS COULD RESULT IN ACCIDENTAL DEPLOYMENT OF THE AIR BAG OR MAKE THE SYSTEM INOPERATIVE WHICH MAY RESULT IN SERIOUS INJURY.</p>		<p>INFORMATION SRS-AIRBAG</p> <p>THIS CAR IS EQUIPPED WITH A DRIVER AIR BAG AS A SRS TO HELP PROTECT THE DRIVER IN A FRONTAL COLLISION. THE SYSTEM IS DESIGNED TO ADD TO ACCIDENT PROTECTION PROVIDED BY THE DRIVER'S SEAT BELT BUT IT IS NOT A SUBSTITUTE FOR THE BELT SYSTEM.</p> <p>ALWAYS WEAR YOUR SEAT BELT WHEN THE CAR IS IN USE. THE SYSTEM MUST BE INSPECTED 10 YEARS AFTER DATE OF MANUFACTURE AS NOTED ON THE CERTIFICATION LABEL.</p> <p>THE AIRBAG LAMP WILL LIGHT MOMENTARILY WHEN THE IGNITION KEY IS TURNED TO THE ON OR START POSITION THIS MEANS THE SYSTEM IS OPERATIONAL.</p> <p>HOWEVER IF ANY OF THE FOLLOWING CONDITIONS OCCUR THE SYSTEM MUST BE SERVICED:</p> <ol style="list-style-type: none"> 1. THE AIRBAG LAMP DOES NOT GO ON AS DESCRIBED ABOVE. 2. THE AIRBAG LAMP FLASHES INTERMITTENTLY OR REMAINS ON. 3. ANY PORTION OF THE FRONT END OF THE CAR IS DAMAGED. 4. THE AIR BAG HAS DEPLOYED. <p>SEE YOUR OWNER'S MANUAL FOR DETAILS ABOUT THE FUNCTIONING SERVICE AND DISPOSAL PROCEDURES FOR THE SYSTEM.</p>
<p>NOTICE SRS-AIRBAG</p> <p>THIS CAR IS EQUIPPED WITH A DRIVER AIR BAG AS A SUPPLEMENTAL RESTRAINT SYSTEM (SRS).</p> <p>IT IS DESIGNED TO SUPPLEMENT THE SEAT BELT.</p> <p>ALWAYS WEAR YOUR SEAT BELT!</p>		<p>IC0670</p>

INFORMATION AND WARNING LABELS
 Information and warning labels about the air bag system are placed in the vehicle.



AIR BAG WARNING LIGHT

The air bag light, displaying "AIR BAG" in the instrument panel, monitors the circuits of the air bag. The circuits monitored by the air bag light are the 3 crash zone sensors, tunnel sensor, safing sensor and all related wiring.

When the ignition key is in the "ON" or "START" position, the air bag light will illuminate for about 7 seconds and then turn off. This means the system is operational.

If any of the following conditions occur, the air bag needs servicing and must be taken to your nearest authorized NISSAN dealer.

1. The air bag light does not come on for 7 seconds and then go off as described above.

2. The air bag light flashes intermittently or remains on.
3. The air bag light does not come on at all.

Under these conditions, the Supplemental Restraint System "Air Bag" will not operate properly. It must be checked and repaired.

REPAIR AND REPLACEMENT PROCEDURE

The air bag system is designed to inflate on a one-time-only basis. As a reminder, the air bag light will remain illuminated after deployment has occurred. Repair and replacement of the air bag system must be done only by an authorized NISSAN dealer. To ensure long-term functioning, the system must be inspected 10 years after the date of manufacture as noted on the certification label located on the driver side lock pillar.

When maintenance work is required on the vehicle, the air bag system and related parts should be pointed out to the person conducting the maintenance. The ignition key must always be in the "LOCK" position when working under the hood or inside the vehicle.

WARNING:

- Once the air bag is deployed, the air bag module will not function again and must be replaced. The air bag module cannot be repaired.
- The air bag system must be serviced by an authorized NISSAN dealer if there is any damage made

to the front end portion of the vehicle or if the air bag has deployed.

When selling your vehicle, we request you inform the buyer about the air bag system and guide the buyer to the appropriate sections in the Owner's Manual and Supplement Booklet.

 **WARNING:**

- If you need to dispose of the air bag or scrap the vehicle, contact an authorized NISSAN dealer. Correct air bag disposal procedures are set forth in the appropriate NISSAN Service Manual. Incorrect disposal procedures could cause personal injury.

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