

REPORT NOS. 208-TRC-92-001

212-TRC-92-001

301-TRC-92-001

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

TOYOTA MOTOR CORPORATION

1992 TOYOTA PASEO

2-DOOR COUPE

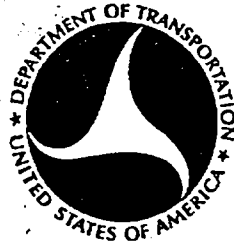
NHTSA NO. CN5101

TRC TEST NO. 911004

THE TRANSPORTATION RESEARCH CENTER OF OHIO

10820 STATE ROUTE 347

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OCTOBER 22, 1991

FINAL REPORT

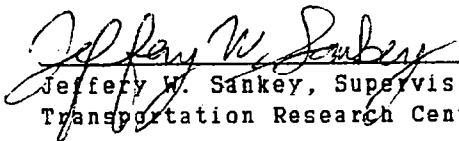
PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF VEHICLE SAFETY COMPLIANCE (NEF-31)
400 SEVENTH STREET, S.W., ROOM NO. 6111
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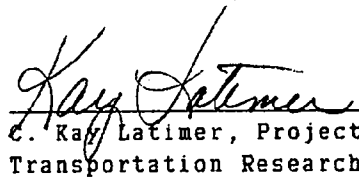
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This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-90-C-21003. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

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1. Report No. 208-TRC-92-001 212-TRC-92-001 301-TRC-92-001		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle FINAL REPORT OF FMVSS NOS. 208, 212, 219 (PARTIAL), AND 301 COMPLIANCE TESTING OF A 1992 TOYOTA PASEO 2-DOOR COUPE, NHTSA NO. CN5101				5. Report Date OCTOBER 22, 1991	
				6. Performing Organization Code	
7. Author(s) J.W. Sankey, Supervisor, Laboratory Engineering, TRC				8. Performing Organization Report No. 208-TRC-92-001 212-TRC-92-001 301-TRC-92-001	
9. Performing Organization Name and Address Transportation Research Center of Ohio 10820 State Route 347 East Liberty, Ohio 43319				10. Work Unit No. (TRAIS)	
				11. Contract or Grant No. DTNH22-90-C-21003	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (NEF-31) 400 Seventh St., S.W., Washington, DC 20590				13. Type of Report and Period Covered FINAL REPORT OCTOBER 1991	
				14. Sponsoring Agency Code NEF-30	
15. Supplementary Notes					
16. Abstract A 30 mph flat frontal barrier impact test was conducted on a 1991 Toyota Paseo 2-door coupe, NHTSA No. CN5101, at the Transportation Research Center of Ohio on October 4, 1991. This test was conducted to determine compliance with Federal Motor Vehicle Safety Standards: FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219 (partial), "Windshield Zone Intrusion"; FMVSS 301, "Fuel System Integrity." The barrier impact velocity was 29.5 mph. The vehicle's maximum static crush was 16.6 inches. The ambient temperature was 89° F. The driver's head injury criteria (HIC) was 442. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 47.2 g. The driver's left and right femur maximum axial forces were 979 pounds and 1354 pounds, respectively. The passenger's head injury criteria (HIC) was 889. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 46.6 g. The passenger's left and right femur maximum axial forces were 996 pounds and 837 pounds, respectively. The vehicle appears to comply with the applicable requirements of FMVSS 208, 212, 219 (partial), and 301.					
17. Key Words Frontal Impact 30 mph Vehicle Safety Compliance Testing: FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Mounting" FMVSS 219P, "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity"				18. Distribution Statement Available from: NHTSA Technical Reference Division Room 5108, (NAD-52) 400 Seventh Street, SW Washington, DC 20590 Attn: Mr. Robert Hornickie	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 125	
22. Price					

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures				Approximate Conversions from Metric Measures			
Symbol	When You Know	Multiply by	To Find	Symbol	When You Know	Multiply by	To Find
LENGTH				LENGTH			
in	inches	2.5	centimeters	mm	millimeters	0.04	inches
ft	feet	30	centimeters	cm	centimeters	0.4	inches
yd	yards	0.9	meters	m	meters	3.3	feet
mi	miles	1.6	kilometers	km	kilometers	1.1	yards
						0.6	miles
AREA				AREA			
in ²	square inches	6.5	square centimeters	cm ²	square centimeters	0.16	square inches
ft ²	square feet	0.09	square meters	m ²	square meters	1.2	square yards
yd ²	square yards	0.8	square meters	km ²	square kilometers	0.4	square miles
mi ²	square miles	2.6	square kilometers	ha	hectares (10,000 m ²)	2.5	acres
	acres	0.4	hectares				
MASS (weight)				MASS (weight)			
oz	ounces	28	grams	g	grams	0.035	ounces
lb	pounds	0.45	kilograms	kg	kilograms	2.2	pounds
	short tons	0.9	tonnes	t	tonnes (1000 kg)	1.1	short tons
VOLUME				VOLUME			
tsp	teaspoons	5	milliliters	ml	milliliters	0.03	fluid ounces
Tbsp	tablespoons	15	milliliters	l	liters	2.1	pints
fl oz	fluid ounces	30	milliliters	l	liters	1.06	quarts
c	cups	0.24	liters	l	liters	0.26	gallons
pt	pints	0.47	liters	m ³	cubic meters	35	cubic feet
qt	quarts	0.95	liters	m ³	cubic meters	1.3	cubic yards
gal	gallons	3.8	liters				
ft ³	cubic feet	0.03	cubic meters				
yd ³	cubic yards	0.76	cubic meters				
TEMPERATURE (exact)				TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature

* 1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25. SD Catalog No. C13.10286.

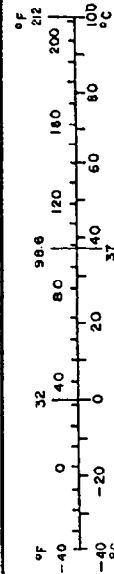


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SECTION 1.0

PURPOSE & TEST PROCEDURE

PURPOSE

This 30 mph flat 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 the Transportation Research Center of Ohio (TRC) under Contract No. DTNH22-90-C-21003. The purpose of this test was to determine if the subject vehicle, a 1992 Toyota Paseo 2-door coupe, NHTSA No. CN5101, meets the performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219 (partial), "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity," in the flat frontal barrier impact mode.

TEST PROCEDURE

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-208-08. Data was obtained relative to FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219 (partial), "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity," performance.

The test vehicle was instrumented with seven (7) accelerometers to measure longitudinal axis accelerations. The vehicle's specified impact velocity range was 28.9 to 29.9 mph. The vehicle impacted a flat frontal barrier.

The test vehicle contained two (2) Part 572 B 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedure specified in Appendices B and C of the Laboratory Test Procedure.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations, and with left and right femur load cells to measure axial forces.

The twenty-three (23) data channels were multiplexed and recorded on a 14-track tape drive. The data was digitally sampled at 8000 samples per second and processed per sections 12.8 and 12.9 of the Laboratory Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and fourteen (14) high-speed motion picture cameras. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.

The vehicle and occupant data are summarized in Section 2.0. The FMVSS 208, 212, 219 (partial) and 301 data are presented in Section 3.0. The vehicle, occupant, and camera measurements are presented in Section 4.0. Appendix A contains the still photographic prints. Appendix B contains the dummy and vehicle data plots.

SECTION 2.0

FRONTAL BARRIER IMPACT TEST SUMMARY

TEST RESULTS SUMMARY

This flat frontal barrier test was conducted at TRC on October 4, 1991.

The test vehicle, a 1992 Toyota Paseo 2-door coupe, NHTSA No. CN5101, appeared to comply with the performance requirements of FMVSS 208, 212, 219 (partial), and 301 in the flat frontal barrier impact mode. The Head Injury Criteria (HIC) calculations were less than 1000, the chest resultant accelerations did not exceed 60 g's, and the axial forces transmitted through the upper legs did not exceed 2,250 pounds as measured by Part 572 B dummies seated in the front outboard designated seating positions. The vehicle's restraint system met the applicable comfort and convenience requirements. The windshield periphery retention was 100 percent. There was no penetration into any portion of the windshield. No fluid spilled from the vehicle's fuel system following the impact or during the static rollover test.

The test vehicle was equipped with a 1.5 liter, transverse engine, manual transmission, power steering, and power brakes. The vehicle's test weight was 2481 pounds. The vehicle's impact speed was 29.5 mph. The vehicle's maximum static crush was 16.6 inches.

The driver's head injury criteria (HIC) was 442. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 47.2 g. The driver's left and right femur maximum axial forces were 979 pounds and 1354 pounds, respectively.

The right front passenger's HIC was 889. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 46.6 g. The right front passenger's left and right femur maximum axial forces were 996 pounds and 837 pounds, respectively.

There was no loss of windshield periphery retention.

There was no intrusion through the windshield.

No fluid spilled from the vehicle's fuel system following the crash test event or during the static rollover test.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: CN5101 TEST TYPE: Frontal Barrier Impact

TEST DATE: 10/04/91 TEST TIME: 1351 AMBIENT TEMP. (°F): 89

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1992/Toyota/Paseo/2-door coupe

VEHICLE TEST WEIGHT (LBS): 2481

IMPACT ANGLE (DEG)*: 0

IMPACT VELOCITY (MPH)**: PRIMARY = 29.5 SECONDARY = 29.5

MAXIMUM STATIC CRUSH (IN): 16.6

AVERAGE REBOUND (IN): 31.6

DUMMIES: Driver #354 Passenger #1173

TYPE: Part 572 B Part 572 B

LOCATION: Left front Right front

RESTRAINT: Two-point passive belt Two-point passive belt

NUMBER OF DATA CHANNELS: 23

NUMBER OF CAMERAS: HIGH-SPEED 14 REAL-TIME 2

*With respect to tow track centerline.

**Speed trap measurement ($\pm$.05 mph accuracy)

TABLE 2 TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Toyota Motor Corporation

MAKE/MODEL: Toyota/Paseo

VIN: JT2EL45F6N0032520

BODY STYLE: 2-door coupe

MODEL YEAR: 1991

NHTSA NO.: CN5101

COLOR: White

ENGINE DATA: TYPE: transverse CYLINDERS: 4 DISPLACEMENT: 1.5 liter

TRANSMISSION DATA: 5 SPEED, X MANUAL, AUTOMATIC, X FWD, RWD, 4WD

DATE VEHICLE RECEIVED: 08/21/91

ODOMETER READING: 67.0

DEALER'S NAME AND ADDRESS: Germain Toyota of Columbus
5777 Scarborough Blvd.
Columbus, OH 43232

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	No
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	Yes	REAR WINDOW DEFROSTER	Yes
OTHER	Floor mats Cassette player		

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? No
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

CERTIFICATION DATA FROM VEHICLE'S LABEL:

VEHICLE MANUFACTURED BY: Toyota Motor Corporation

DATE OF MANUFACTURE: 07/91

VIN: JT2EL45F6N0032520

GVWR: 2835 LBS

CAWR: FRONT: 1635 LBS., REAR: 1245 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Bridgestone Potenza RE92 175/65R14

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 35 PSI
REAR: 35 PSI

SPARE TIRE (MFR., LINE, SIZE): Bridgestone Tracompa/3 T115/70D14 88M

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually Adjustable

MAXIMUM WIDTH: 64.5 INCHES

WHEELBASE: 93.8 INCHES

LOCATION OF LABEL STATING TIRE & CAPACITY DATA: THE LABEL WAS LOCATED
INSIDE THE GLOVEBOX.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: FRONT: 175/65R14

RECOMMENDED COLD TIRE PRESSURE: FRONT: 26 PSI; REAR: 26 PSI

DESIGNATED SEATING CAPACITY: 2 FRONT 2 REAR 4 TOTAL

VEHICLE CAPACITY WEIGHT: 625 LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE: LF 24.6; RF 24.9; LR 24.9; RR 24.8

FULLY LOADED ATTITUDE: LF 24.2; RF 24.3; LR 23.9; RR 24.2

PRE-TEST ATTITUDE: LF 24.2; RF 24.2; LR 24.0; RR 24.0

POST-TEST ATTITUDE: LF 26.8; RF 26.9; LR 23.4; RR 23.5

TABLE 2 TEST VEHICLE INFORMATION CONT'D

WEIGHT OF TEST VEHICLE AS RECEIVED (WITH MAXIMUM FLUIDS):

RIGHT FRONT	689 LBS.	RIGHT REAR	385 LBS.
LEFT FRONT	669 LBS.	LEFT REAR	403 LBS.
TOTAL FRONT WEIGHT	1358 LBS.	(63.2% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	788 LBS.	(36.8% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT 2146 LBS.			

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (2146 LBS)

VCW = VEHICLE CAPACITY WEIGHT (625 LBS)

DSC = DESIGNATED SEATING CAPACITY (4)

$RCLW* = VCW - 150 (DSC) = 625 - 150 (4) = 25$

TARGET TEST WEIGHT = UDW + RCLW* + (NO. OF HYBRID II DUMMIES X 164 LBS/DUMMY)

TARGET TEST WEIGHT = 2146 + 25 + 328

TARGET TEST WEIGHT = 2499 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 7 LBS. OF CARGO WEIGHT:

RIGHT FRONT	758 LBS.	RIGHT REAR	464 LBS.
LEFT FRONT	755 LBS.	LEFT REAR	504 LBS.
TOTAL FRONT WEIGHT	1513 LBS.	(61.0% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	968 LBS.	(39.0% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	2481 LBS.	(0.2% UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE CARGO AREA: 0 LBS.

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: Rear bumper, carpet, rear seats, trunk lid, tail light, interior trim hardware.

CG = 36.6 INCHES REARWARD OF FRONT WHEEL CENTERLINE

*Cargo weight for multi-purpose passenger vehicles, trucks, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 300 pounds, whichever is less.

TABLE 3 POST-IMPACT DATA

TEST NUMBER: 911004 NHTSA NO.: CNS101
TEST DATE: 10/04/91 TEST TIME: 1351
TEST TYPE: Frontal Barrier Impact IMPACT ANGLE: 0
AMBIENT TEMPERATURE AT IMPACT AREA: 89° F
TEMPERATURE IN OCCUPANT COMPARTMENT: 71° F
IMPACT VELOCITY: PRIMARY = 29.5 MPH SECONDARY = 29.5 MPH
(SPECIFIED RANGE = 28.9 TO 29.9 MPH)

DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 26.0 IN.

EXITING VELOCITY TRAP = 2.0 IN.

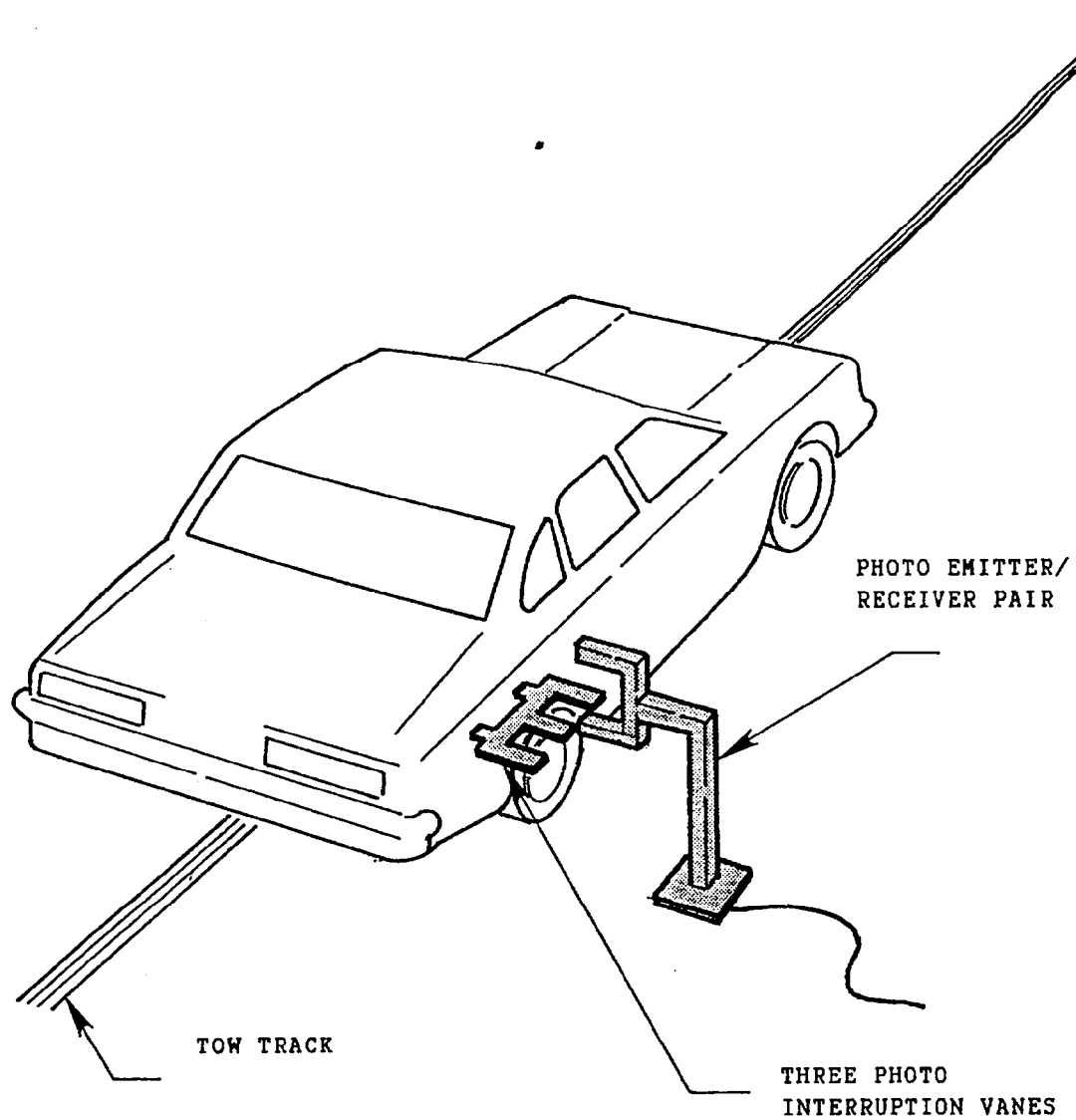
TEST VEHICLE STATIC CRUSH (ALL MEASUREMENTS ARE IN INCHES):

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 158.2; C 163.6; R 158.2
POST-TEST: L 144.0; C 148.0; R 144.8
TOTAL CRUSH: L 14.2; C 15.6; R 13.4
AVERAGE CRUSH: 14.4

TEST VEHICLE REBOUND FROM FLAT BARRIER (ALL MEASUREMENTS ARE IN INCHES):

DISTANCE FROM TEST VEHICLE TO BARRIER: L 32.6; C 29.6; R 32.6; AVG. 31.6

FIGURE 1 IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver two inches before impact.

The vanes have one foot spacing.

FIGURE 2 ACCIDENT INVESTIGATION DIVISION DATA
FOR 30 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Toyota/Paseo/2-door coupe

VEHICLE NHTSA NO.: CN5101; VIN: JT2EL45F6N0032520

MODEL YEAR: 1992; BUILD DATE: 07/91; TEST DATE: 10/04/91

VEHICLE SIZE CATEGORY: Minicompact"; TEST WEIGHT: 2481 LBS.

VEHICLE WHEELBASE: 93.8 INCHES

MAXIMUM WIDTH: 64.5 INCHES

FRONT OVERHANG: 36.4 INCHES

COLLISION DEFORMATION

CLASSIFICATION (CDC) CODE: 12FDEW2

CRUSH DEPTH
MEASUREMENTS:

C1 = 14.2 INCHES

C2 = 14.8 INCHES

C3 = 15.8 INCHES

C4 = 16.6 INCHES

C5 = 14.8 INCHES

C6 = 13.4 INCHES

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE
(LONGITUDINAL)

LENGTH OF DAMAGED
REGION: L = 50.0 INCHES

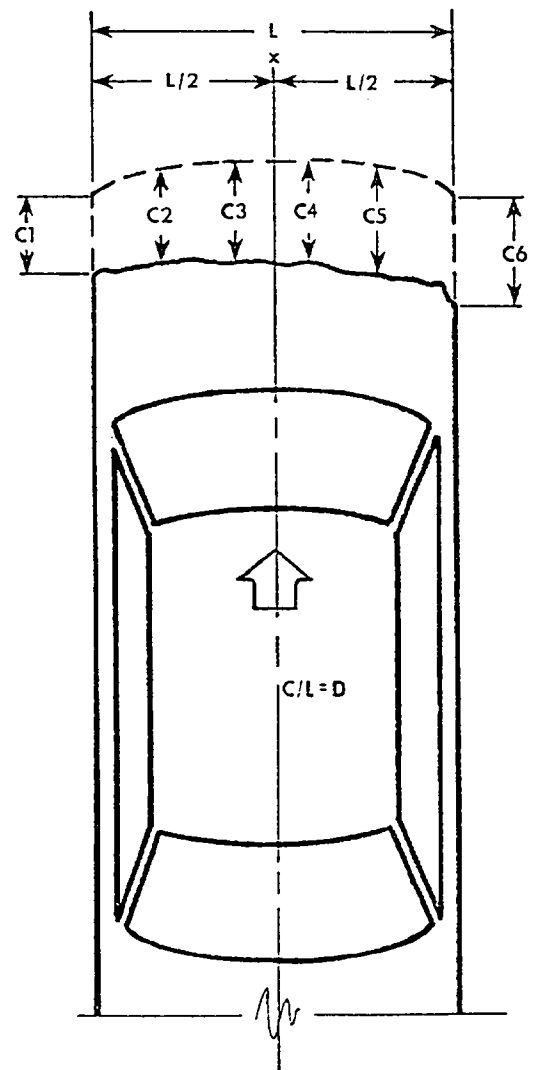
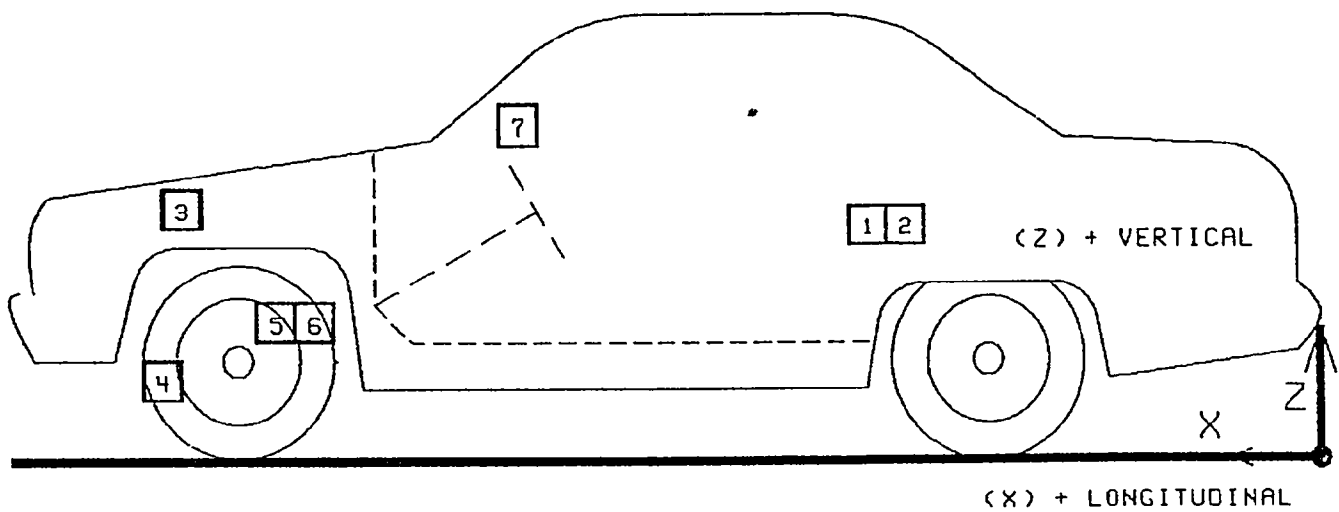
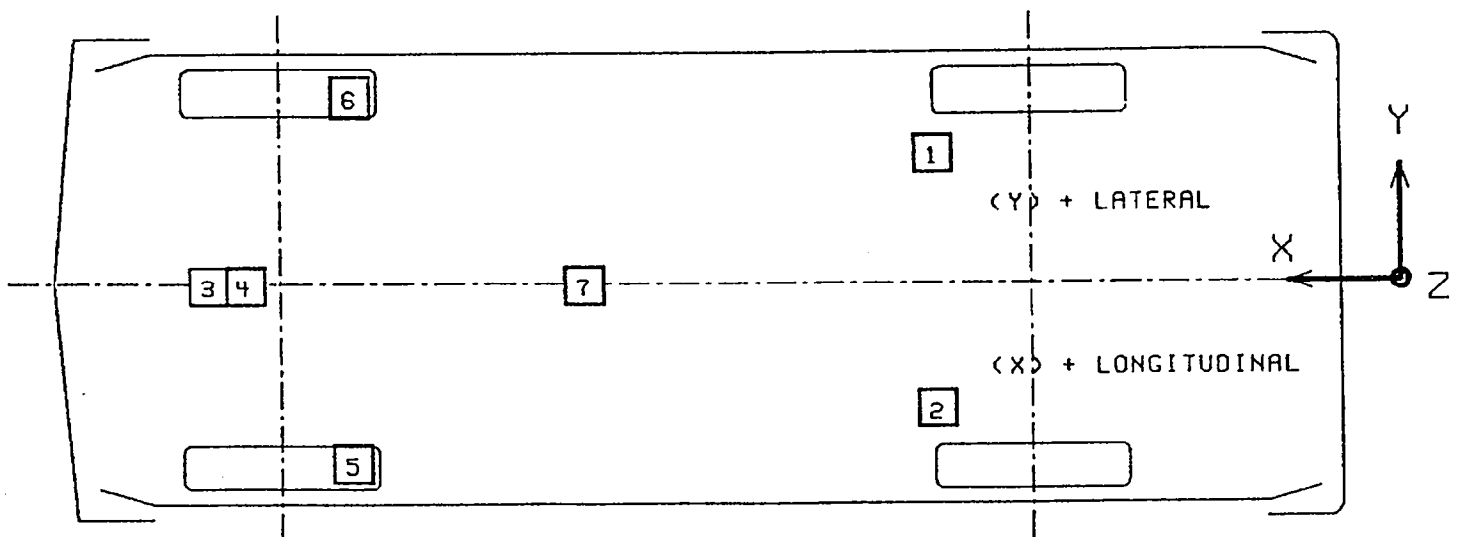


FIGURE 3

VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 911004

No.	LOCATION		X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
						MAX	G MSEC	MAX	G MSEC
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	54.6	22.2	13.6				
		POST	54.3	22.2	15.2				
						2.9	91.3	38.4	52.6
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	56.3	-22.5	14.0				
		POST	55.5	-22.5	14.0				
						1.9	95.6	37.2	62.6
3	ENGINE TOP LONGITUDINAL	PRE	137.1	-0.1	29.2				
		POST	134.5	-1.5	29.0				
						37.0	54.3	71.9	44.0
4	ENGINE BOTTOM LONGITUDINAL	PRE	133.9	-7.6	6.6				
		POST	129.5	-6.0	5.8				
						41.8	56.3	72.8	41.1
5	RIGHT BRAKE CALIPER LONGITUDINAL	PRE	130.4	-24.1	12.5				
		POST	130.0	-24.0	11.8				
						58.4	76.5	217.6	60.4
6	LEFT BRAKE CALIPER LONGITUDINAL	PRE	130.4	24.1	13.4				
		POST	129.5	25.0	12.6				
						5.5	81.0	56.3	56.3
7	INSTRUMENT PANEL CENTER LONGITUDINAL	PRE	108.6	0.2	33.2				
		POST	108.5	-0.5	33.4				
						32.0	82.9	62.0	67.1

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: + FORWARD FROM REAR BUMPER
 Y: + LEFTWARD FROM VEHICLE CENTERLINE
 Z: + UPWARD FROM GROUND LEVEL

REPORT OF VEHICLE CONDITION AT THE
COMPLETION OF TESTING

CONTRACT NO.: DTNH22-90-C-21003

FROM: The Transportation Research Center of Ohio
10820 State Route 347
East Liberty, OH 43319

TO: Mr. Charles Case

COTR

Office of Vehicle Safety Compliance

The following vehicle has been subjected to testing for FMVSS 208. The vehicle was inspected upon arrival at the laboratory for the test and found to contain all of the equipment listed below. All variances have been reported within 2 working days of vehicle arrival, by letter, to the NHTSA Industrial Property Manager/NAD-30, with a carbon copy to the responsible testing office. The vehicle is again inspected, after the above test has been conducted, and all changes are noted below. The final condition of the vehicle is also noted in detail.

NHTSA NO.: CN5101

MAKE/MODEL/BODY STYLE: Toyota/Paseo/2-door coupe

MODEL YEAR: 1992 BODY COLOR: White

VIN: JT2EL45F6N0032520

ODOMETER (ARRIVAL): 67 DATE: 08/21/91

ODOMETER (COMPLETION): 72 DATE: 10/04/91

COST: \$11,005.00

☒ AIR CONDITIONER	☒ CONSOLE	BRAKES: ☒ POWER
☒ TINTED GLASS	☒ TACHOMETER	FRONT: Disc
☒ POWER STEERING	☐ SPEED CONTROL	REAR: Drum
☐ POWER WINDOWS	☒ REAR WINDOW DEF.	
☐ POWER DOOR LOCKS	☐ SUN/MOON ROOF	FRONT SEATS: ☐ POWER
☒ RADIO	☐ T-TOP	SEAT TYPE: Bucket
☒ CLOCK	☐ TILT STEERING WHEEL	NO. OF SEATS: 4
☐ ROOF RACK	☒ OTHER OPTIONS: <u>Floor mats</u>	
	<u>Cassette player</u>	

ENGINE: 4 CYLINDERS; 1.5 LITERS

TRANSMISSION: 5-speed; DRIVE TYPE: Front wheel

TIRE SIZE: 175/65B14 Bridgestone

GASOLINE TYPE: Unleaded

EQUIPMENT THAT IS NO LONGER ON THE VEHICLE AS NOTED ABOVE: None

EXPLANATION: NA

VEHICLE CONDITION: Vehicle has been subjected to a 30 mph frontal
barrier crash test.

SECTION 3.0

FMVSS 208, 212, 219 (partial), & 301 DATA

TABLE 5 DUMMY INJURY CRITERIA

MAXIMUM ACCELERATION (G)

	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DRIVER	-30.8	14.7	-57.3	59.1*	48.0	10.0	10.4	47.2
PASSENGER	53.1	-20.6	-74.7	75.8	-45.9	7.9	13.6	46.6

MAXIMUM FEMUR COMPRESSIVE FORCE (LBS)

	LEFT FEMUR	RIGHT FEMUR
DRIVER	979	1354
PASSENGER	996	837

HEAD INJURY CRITERIA**

	HIC	TIME t_1 (MSEC) ¹	TIME t_2 (MSEC) ²
DRIVER	442	66.4	102.4
PASSENGER	889	70.1	106.1

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

TABLE 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #354	PASSENGER #1173
HEAD	<u>Chest</u>	<u>Chest</u>
CHEST	<u>None</u>	<u>None</u>
ABDOMEN	<u>None</u>	<u>None</u>
LEFT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>
RIGHT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>

DOOR OPENING:

	LEFT	RIGHT
FRONT	<u>Easy</u>	<u>Easy</u>
REAR	<u>NA</u>	<u>NA</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
FRONT	<u>None</u>	<u>None</u>
REAR	<u>NA</u>	<u>NA</u>

GLAZING DAMAGE:

The right side of the windshield was cracked upon
impact.

OTHER NOTABLE IMPACT EFFECTS:

None

DUMMY KINEMATIC SUMMARY

Driver Dummy

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated forward and contacted the dummy's chest as the dummy was restrained by the two-point passive belt. The dummy's head rotated rearward and rightward into the seat back. The dummy came to rest seated in the driver's seat, leaning toward the right, restrained by the two-point passive belt.

Right Front Passenger Dummy

Upon impact, the right front passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated forward and contacted the dummy's chest as the dummy was restrained by the two-point passive belt. The dummy's head rotated rearward as the dummy rebounded into the seat back. The dummy came to rest seated in the right front passenger's seat, restrained by the two-point passive belt.

TABLE 7 FMVSS 208 COMFORT & CONVENIENCE DATA FOR AUTOMATIC SEAT BELTS

MAKE/MODEL: Toyota/Paseo

VIN: JT2EL45F6N0032520

BODY STYLE: 2-door coupe

NHTSA NO.: CN5101

DATE OF MANUFACTURE: 07/91

CONVENIENCE HOOKS:

DEVICE TO STOW SEAT BELT WEBBING TO FACILITATE ENTERING OR EXITING THE VEHICLE AUTOMATICALLY RELEASES THE WEBBING WHEN THE IGNITION IS TURNED TO THE "ON" OR "START" POSITION AND (check one):

- ☐ The vehicle's drivetrain is engaged
- ☐ The vehicle's parking brake is in the released mode
- ☒ Not applicable, the vehicle's restraint system does not include convenience hooks or devices to stow seat belt webbing.

WEBBING TENSION - RELIEVING DEVICE:

DO OUTBOARD SEATING POSITION SEAT BELTS HAVE WEBBING TENSION - RELIEVING DEVICES?(check one): ☐ YES ☒ No

BELT CONTACT FORCE:

BELT CONTACT FORCE ON CHEST OF TEST DUMMY: 0.1 POUNDS

TABLE 8 FMVSS 208 SEAT BELT WARNING SYSTEM DATA

WITH OCCUPANT IN DRIVER'S POSITION AND LAP BELT IN STOWED POSITION AND
IGNITION SWITCH PLACED IN "START/ON" POSITION:

Duration of audible warning signal = 6 sec.

Duration of reminder light operation = 6 sec.

WITH OCCUPANT IN DRIVER'S POSITION AND LAP BELT IN USE AND THE IGNITION
SWITCH PLACED IN "START/ON" POSITION:

Duration of audible warning signal = 0 sec.

(NOTE: audible warning should not operate)

Duration of reminder light operation = 6 sec.

WORDING OF VISUAL WARNING:

 Fasten Seat Belt

 Fasten Belt

 X Symbol 101-80

 Other:

TABLE 9 FMVSS 208 LABELING AND DRIVER'S MANUAL DATA

DESCRIBE LOCATION OF LABEL WHICH DESCRIBES MANUFACTURER'S MAINTENANCE OR
REPLACEMENT SCHEDULE FOR CRASH-DEPLOYED OCCUPANT PROTECTON SYSTEM:

Not applicable, vehicle did not contain a crash-deployed occupant protection
system.

TABLE 10 FMVSS 208 READINESS INDICATOR DATA

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.

Not applicable, vehicle did not contain a crash-deployed occupant protection system.

FIGURE 4 FMVSS 212 TEST DATA

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

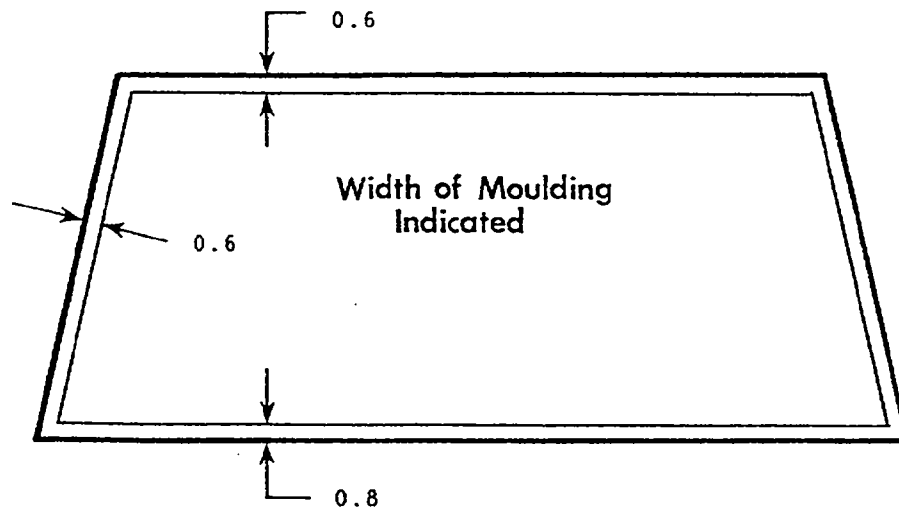
Plastic trim around outer perimeter, adhesive trim around inner perimeter.

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.

WINDSHIELD PERIPHERY MEASUREMENTS:

	PRE-TEST	POST-TEST	PERCENT RETENTION
RIGHT SIDE	75.2	75.2	100
LEFT SIDE	75.2	75.2	100
TOTAL	150.4	150.4	100

PRE-TEST WINDSHIELD MOUNTING MATERIAL TEMPERATURE: 71° F



FRONT VIEW OF WINDSHIELD*

LOSS OF WINDSHIELD RETENTION LENGTHS: None

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

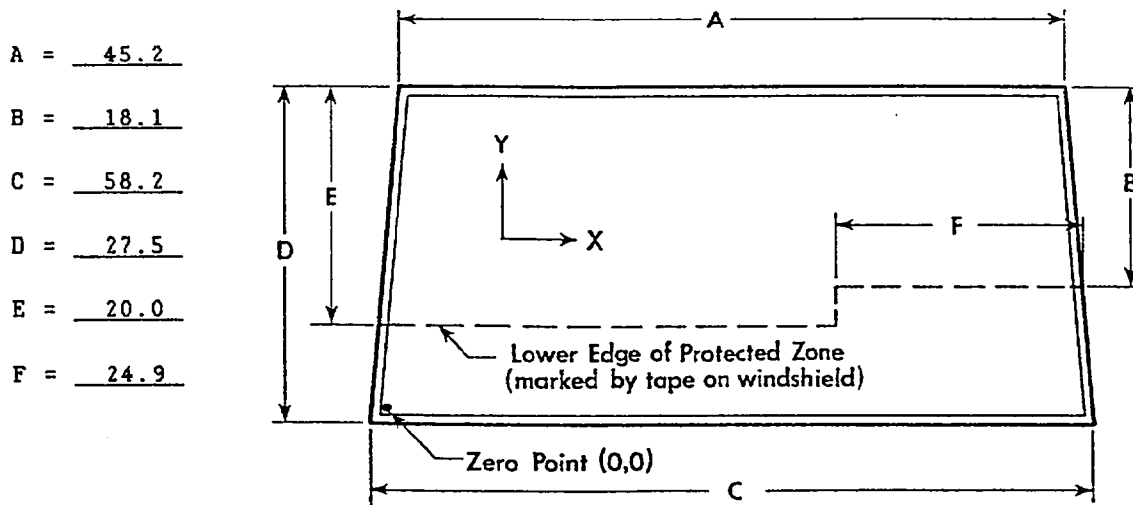
*INDICATE AREAS OF LOSS OF RETENTION, IF ANY, ON WINDSHIELD DIAGRAM.

FIGURE 5 FMVSS 219 TEST DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5 inch diameter 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. Draw the locus of points on the inner surface of the windshield contactable 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 0.5 inch from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

WINDSHIELD MEASUREMENTS:



FRONT VIEW

METHOD OF ADHERING PROTECTED ZONE TEMPLATE TO WINDSHIELD: NA

AREAS OF WINDSHIELD TEMPLATE PENETRATION
GREATER THAN 0.25 IN.: NA

COORDINATES

	X	Y
1.		
2.		
3.		

1.
2.
3.

AREAS OF WINDSHIELD PENETRATION, BELOW THE PROTECTED ZONE,
THROUGH THE INNER SURFACE OF THE WINDSHIELD: None

1.
2.
3.

ALL MEASUREMENTS ARE IN INCHES.

TABLE 11 FUEL SYSTEM DATA

MAKE/MODEL: Toyota/Paseo

NHTSA NO.: CN5101

FUEL SYSTEM CAPACITY: 11.9 GALLONS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 11.9 GALLONS (FURNISHED BY COTR)

TEST VOLUME RANGE: 10.9 GALLONS TO 11.2 GALLONS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 11.1 GALLONS (WITH ENTIRE FUEL SYSTEM FILLED)

TEST FLUID TYPE: STODDARD SOLVENT

SPECIFIC GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

TEST FLUID COLOR: PURPLE

DETAILS OF FUEL SYSTEM: The fuel filler neck was located on the left
side and entered the rear, center, of the tank. The fuel tank was
located in front of the rear axle. The fuel lines run along the left
frame rail to the front.

ELECTRIC FUEL PUMP: Yes

FUEL INJECTION: Yes

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT
OPERATING? No

TABLE 12 FMVSS 301 POST-IMPACT TEST DATA

TEST VEHICLE NHTSA NO.: CN5101; TEST DATE: 10/04/91
VEHICLE MAKE/MODEL/BODY STYLE: Toyota/Paseo/2-door coupe

TEST REQUIREMENTS:

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/PASS.) SIDE.
☐ REAR MOVING BARRIER (30 MPH)
☐ LATERAL MOVING BARRIER (20 MPH)

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

	<u>TEST</u> <u>RESULTS</u>	<u>MAXIMUM</u> <u>ALLOWABLE</u>
1. FROM IMPACT UNTIL VEHICLE MOTION CEASES - - -	0 OZ.	1 OZ.
2. 5 MINUTE PERIOD AFTER VEHICLE MOTION CEASES -	0 OZ.	5 OZ.
3. NEXT 25 MINUTES AFTER 5 MINUTE PERIOD - - - -	0 OZ.	1 OZ./1 MIN.

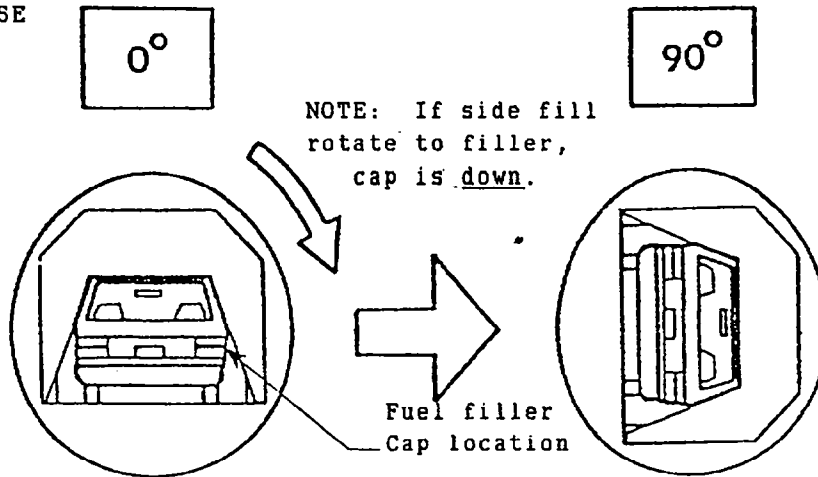
FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: CN5101

TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds

FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds

TOTAL - - - - - = 7 minutes, 00 seconds

NEXT WHOLE MINUTE INTERVAL - - - - = 7 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

<u>0° TO 90° ROTATION (FUEL FILLER CAP DOWN)</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

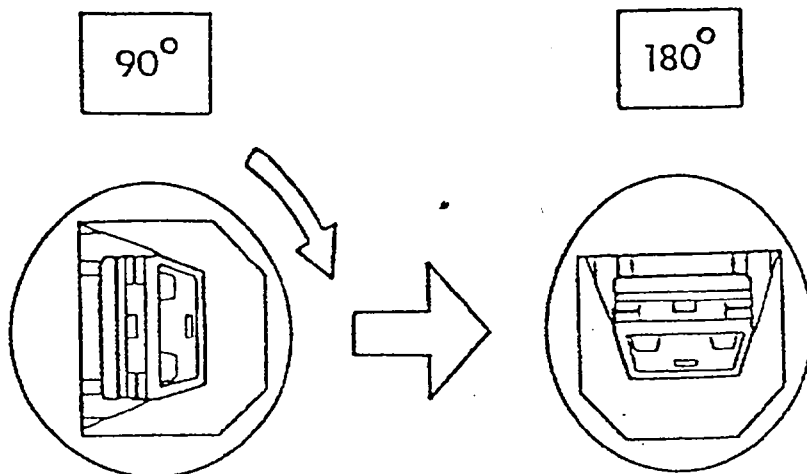
FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: CN5101

TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds

FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds

TOTAL - - - - - = 7 minutes, 00 seconds

NEXT WHOLE MINUTE INTERVAL - - - - - = 14 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

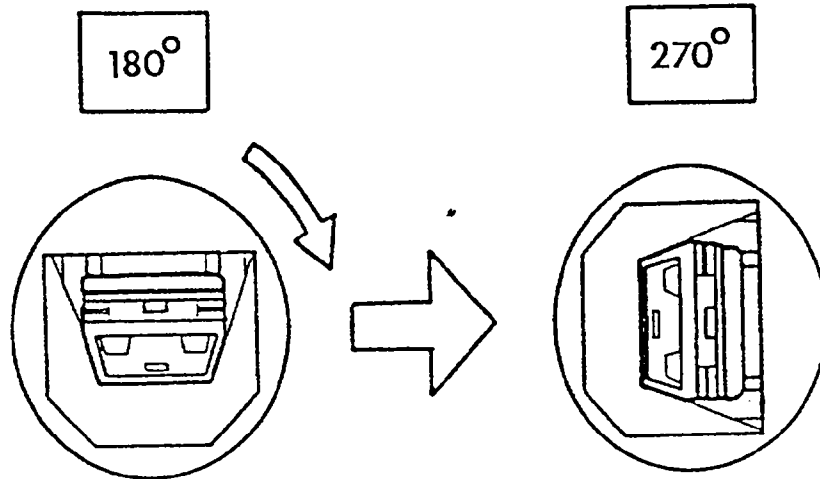
<u>90° TO 180° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: CN5101
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
TOTAL - - - - - = 7 minutes, 00 seconds
NEXT WHOLE MINUTE INTERVAL - - - - = 21 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

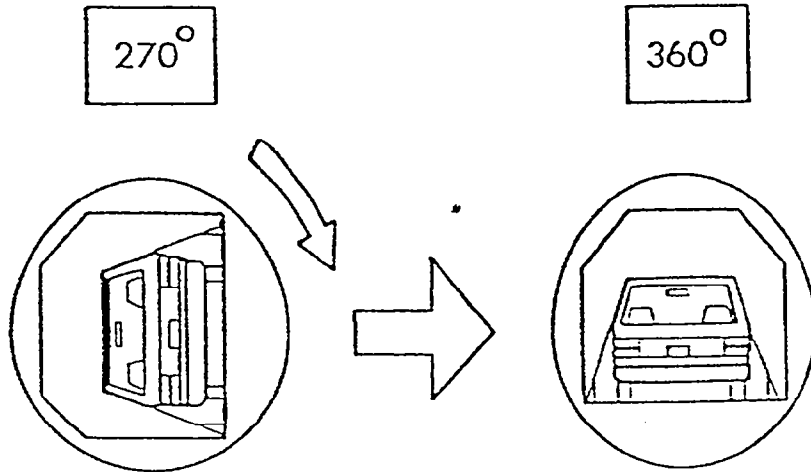
<u>180° TO 270° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: CN5101
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
TOTAL - - - - - = 7 minutes, 00 seconds
NEXT WHOLE MINUTE INTERVAL - - - - = 28 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

<u>270° TO 360° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

SECTION 4.0

VEHICLE, OCCUPANT, AND CAMERA MEASUREMENTS

FIGURE 7

PRE-TEST AND POST-TEST MEASUREMENT POINTS

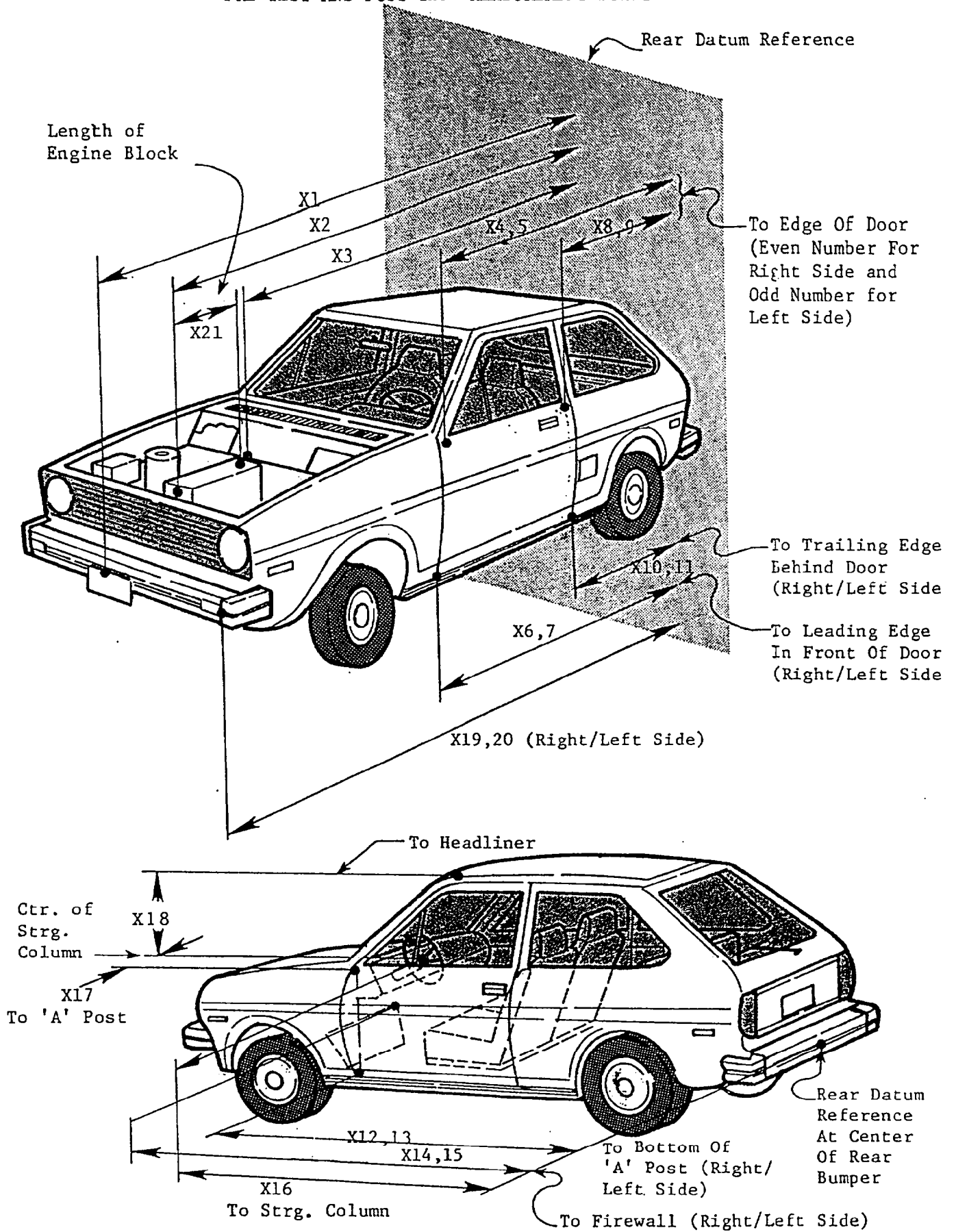
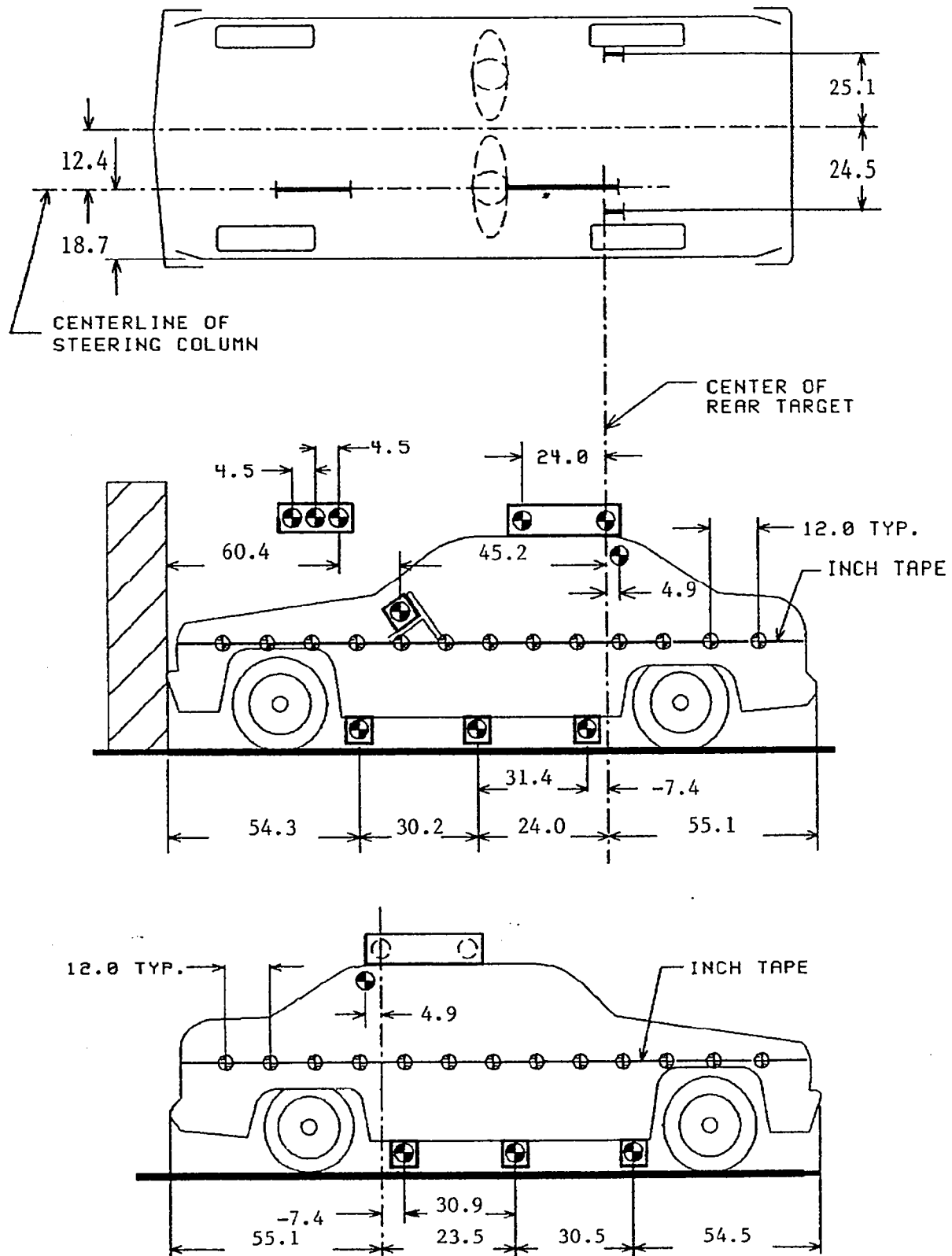


TABLE 13 IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Toyota/Paseo		TEST NUMBER: 911004		ALL MEASUREMENTS ARE IN INCHES		
NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.		
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	163.6	148.0	15.6		
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	138.6	136.0	2.6		
X3	REAR SURFACE OF VEHICLE TO FIREWALL	120.9	121.0	-0.1		
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	109.1	109.0	0.1		
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	108.6	108.9	-0.3		
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	109.2	109.1	0.1		
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	109.5	109.2	0.3		
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	61.1	61.5	-0.4		
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	61.2	61.2	0.0		
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	62.1	61.8	0.3		
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	61.9	61.9	0.0		
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	108.5	109.2	-0.7		
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	108.4	108.2	0.2		
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	120.6	120.8	-0.2		
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	120.6	120.2	0.4		
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	92.9	92.2	0.7		
X17	CENTER OF STEERING COLUMN TO "A" POST	13.6	13.5	0.1		
X18	CENTER OF STEERING COLUMN TO HEADLINER	15.4	14.5	0.9		
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	158.2	144.8	13.4		
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	158.2	144.0	14.2		
X21	LENGTH OF ENGINE BLOCK	16.0	16.0	0.0		

FIGURE 8

VEHICLE TARGET LOCATIONS



ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 9 DUMMY AND SEAT POSITIONING DATA

PRE-IMPACT DATA:

MAKE/MODEL: Toyota/Paseo
 BODY STYLE: 2-door coupe MODEL YEAR: 1991
 NHTSA NO.: CN5101 COLOR: White

DATA FROM CERTIFICATION LABEL:

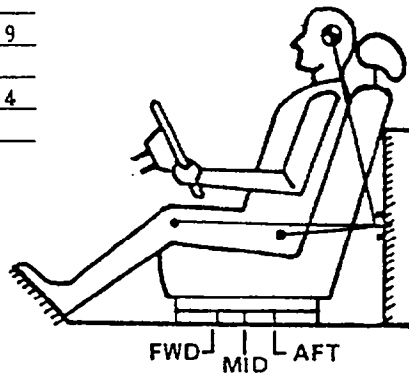
VEHICLE MANUFACTURER: Toyota Motor Corporation
 DATE OF MANUFACTURE: 07/91 VIN: JT2EL45F6N0032520
 GVWR: 2835 LBS.; GAWR: FRONT = 1635 LBS.; REAR = 1245 LBS.

POST-IMPACT DATA:

DATE OF TEST: 10/04/91 TIME: 1351 TEMPERATURE: 89° F
 IMPACT VELOCITY: PRIMARY = 29.5 MPH SECONDARY = 29.5 MPH
 REQUIRED IMPACT VELOCITY RANGE: 28.9 TO 29.9 MPH
 SEAT TYPE: Bucket ADJUSTER TYPE: Manual
 FRONT SEAT BACK TYPE: Manually adjustable
 TECHNICIANS: R. Branham, D. Jones, E. VanVoorhis

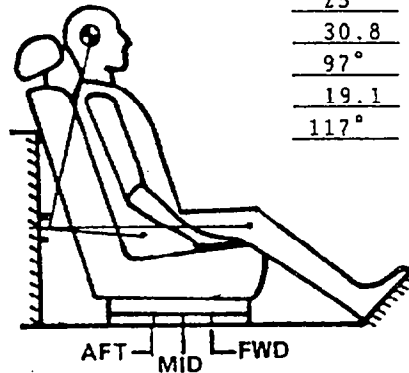
DRIVER DUMMY # 354 TYPE: HII

HEAD 19.1
 TARGET 33°
 KNEE 30.9
 JOINT 97°
 APPROX- 15.4
 IMATE 123°
 "H"
 POINT

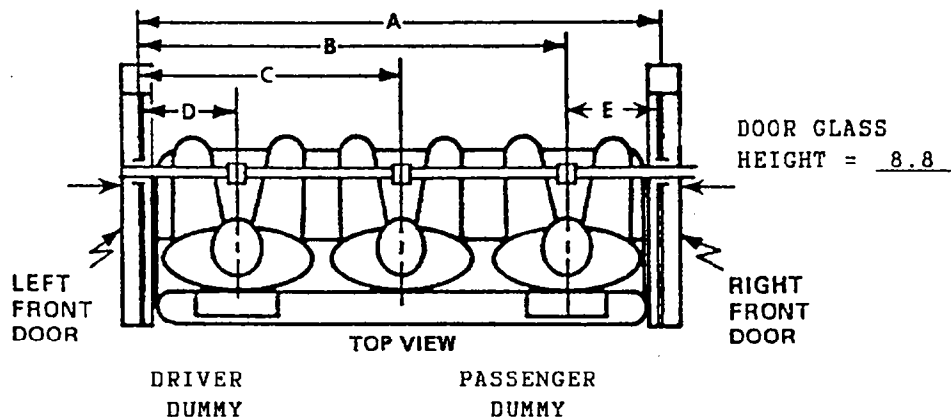


PASSENGER DUMMY # 1173 TYPE: HII

HEAD 18.5
 TARGET 25°
 KNEE 30.8
 JOINT 97°
 APPROX- 19.1
 IMATE 117°
 "H"
 POINT



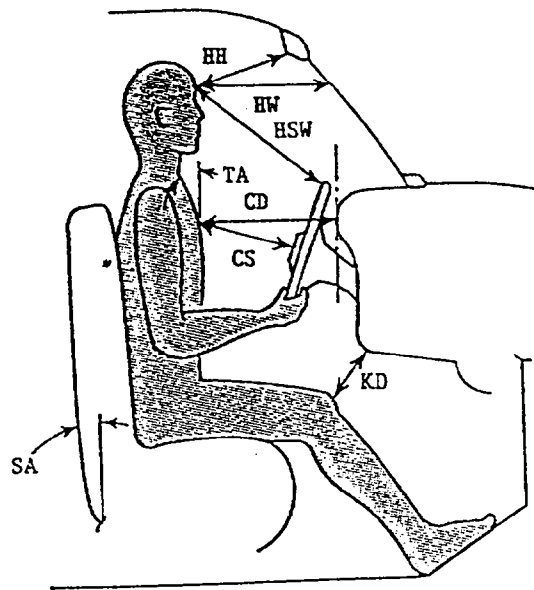
A = 51.6
 B = 38.6
 C = 25.8
 D = 13.0
 E = 13.0
 DOOR GLASS
 HEIGHT = 9.2



ALL ANGLES ARE RELATIVE TO VERTICAL PLANE THROUGH DOOR STRIKER.
 ALL DISTANCE MEASUREMENTS ARE IN INCHES/MILLIMETERS.

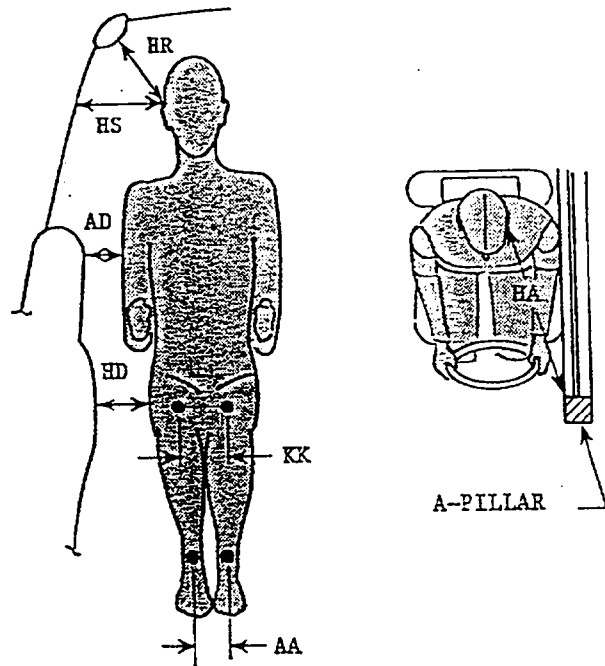
FIGURE 10 DUMMY IN VEHICLE POSITIONING DATA

	DRIVER	PASSENGER
HH	13.5	13.8
HW	20.1	18.1
CD	22.4	21.9
CS	13.6	NA
KDL	4.2	4.9
KDR	4.9	4.6
TA	21°	22°
SA	12°	12°
HSW	19.5	NA



	DRIVER	PASSENGER
HR	5.9	5.6
HS	9.9	9.6
AD	4.4	4.4
HD	4.7	5.4
KK	10.5	7.9
AA	12.0	8.2
HA	19.4	17.5

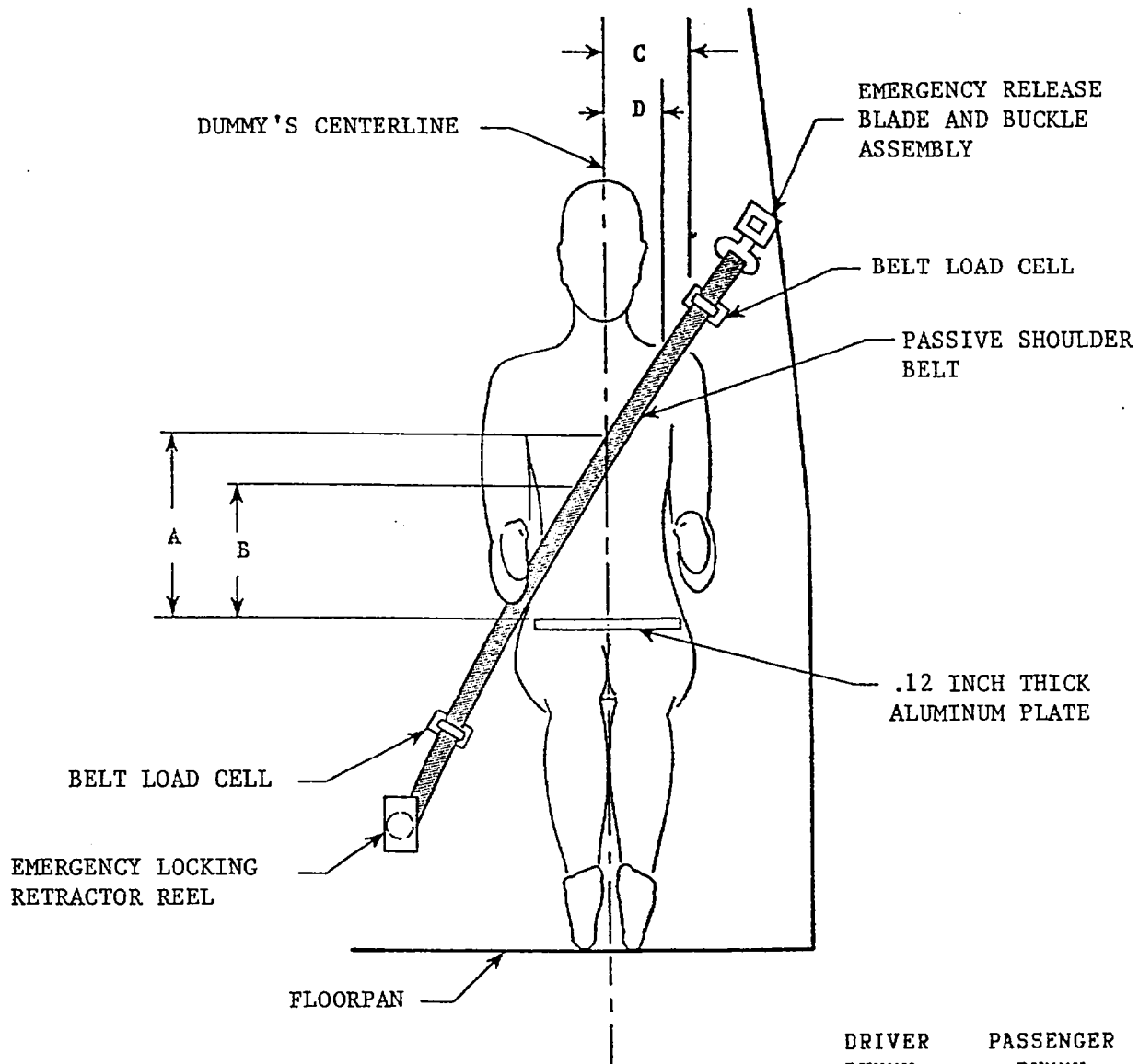
KNEE OUTER BOLT HEAD TO OUTER
BOLT HEAD SPACING:
DRIVER = 14.5
PASSENGER = 11.8



HH = HEAD TO WINDSHIELD HEADER	HR = HEAD C.G. TARGET TO SIDE ROOF HEADER
HW = HEAD TO WINDSHIELD	HS = HEAD C.G. TARGET TO SIDE WINDOW
CD = CHEST TO DASH	AD = ARM TO DOOR
CS = CHEST TO STEERING WHEEL	HD = HIP TO DOOR
KD = KNEE TO DASH	KK = KNEE TO KNEE
TA = TORSO ANGLE	AA = ANKLE TO ANKLE
SA = SEAT BACK ANGLE	HA = HEAD C.G. TARGET TO A-PILLAR
HSW = HEAD TO STEERING WHEEL	

TORSO AND SEAT BACK ANGLES ARE RELATIVE TO VERTICAL.
ALL DISTANCE MEASUREMENTS ARE IN INCHES.

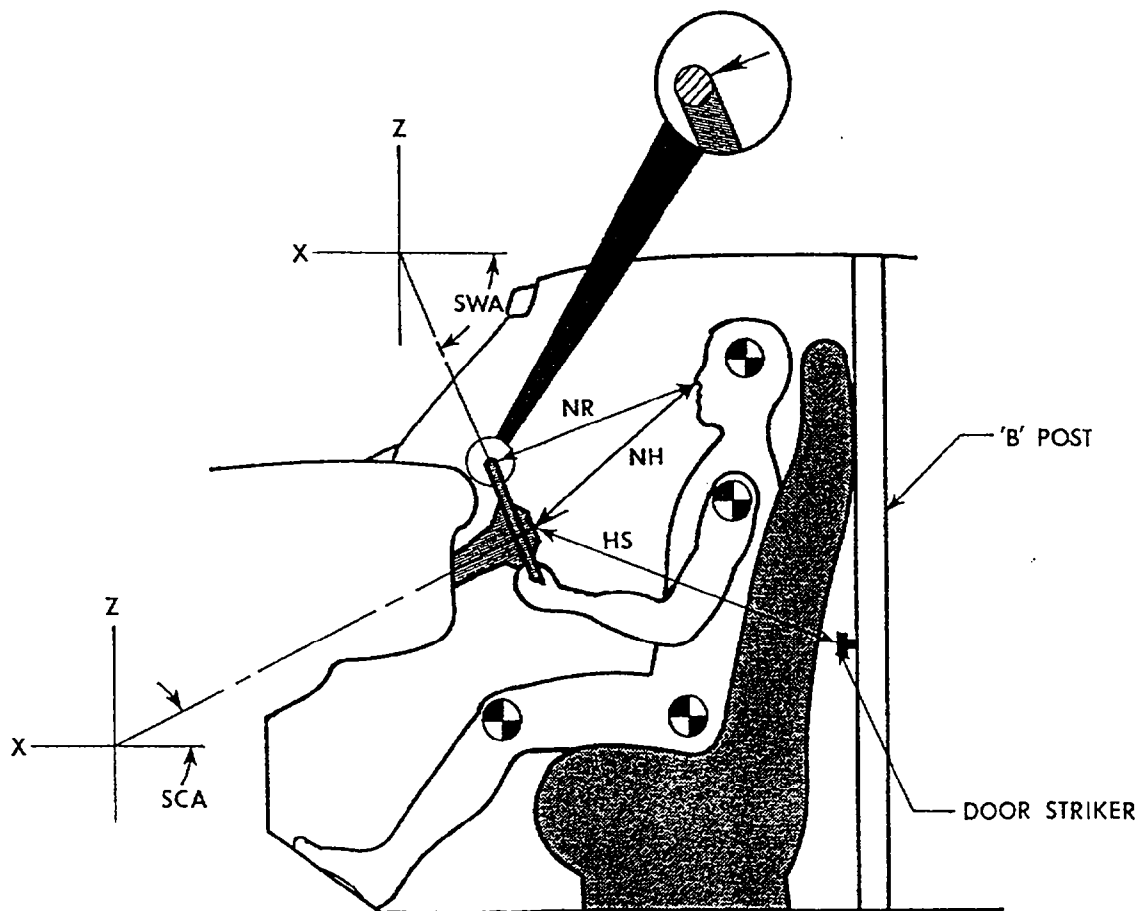
FIGURE 11 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUM. PLATE TO BELT UPPER EDGE	13.2	14.8
B - TOP SURFACE OF ALUM. PLATE TO BELT LOWER EDGE	10.0	11.0
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	5.2	5.6
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	2.9	2.8

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 12 DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSEMBLY DATA



POSITION OF STEERING COLUMN TILTING AND TELESCOPING ADJUSTMENTS, IF ANY:
The steering column was not adjustable. The shoulder anchorages for the
two-point passive belts were placed in the upper position.

MEASUREMENTS

NR	- DISTANCE FROM TIP OF DUMMY'S NOSE TO TOP REAR SURFACE OF STEERING WHEEL RIM.	17.7
NH	- DISTANCE FROM TIP OF DUMMY'S NOSE TO CENTER OF STEERING COLUMN HUB.	17.9
HS	- DISTANCE FROM CENTER OF STEERING COLUMN HUB TO THE FORWARD SURFACE OF THE DOOR LOCK STRIKER PIN.	30.1
SCA	- ANGLE OF STEERING COLUMN RELATIVE TO THE HORIZONTAL X AXIS	26°
SWA	- ANGLE OF STEERING WHEEL RELATIVE TO THE HORIZONTAL X AXIS	65°

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 13
CAMERA POSITIONS

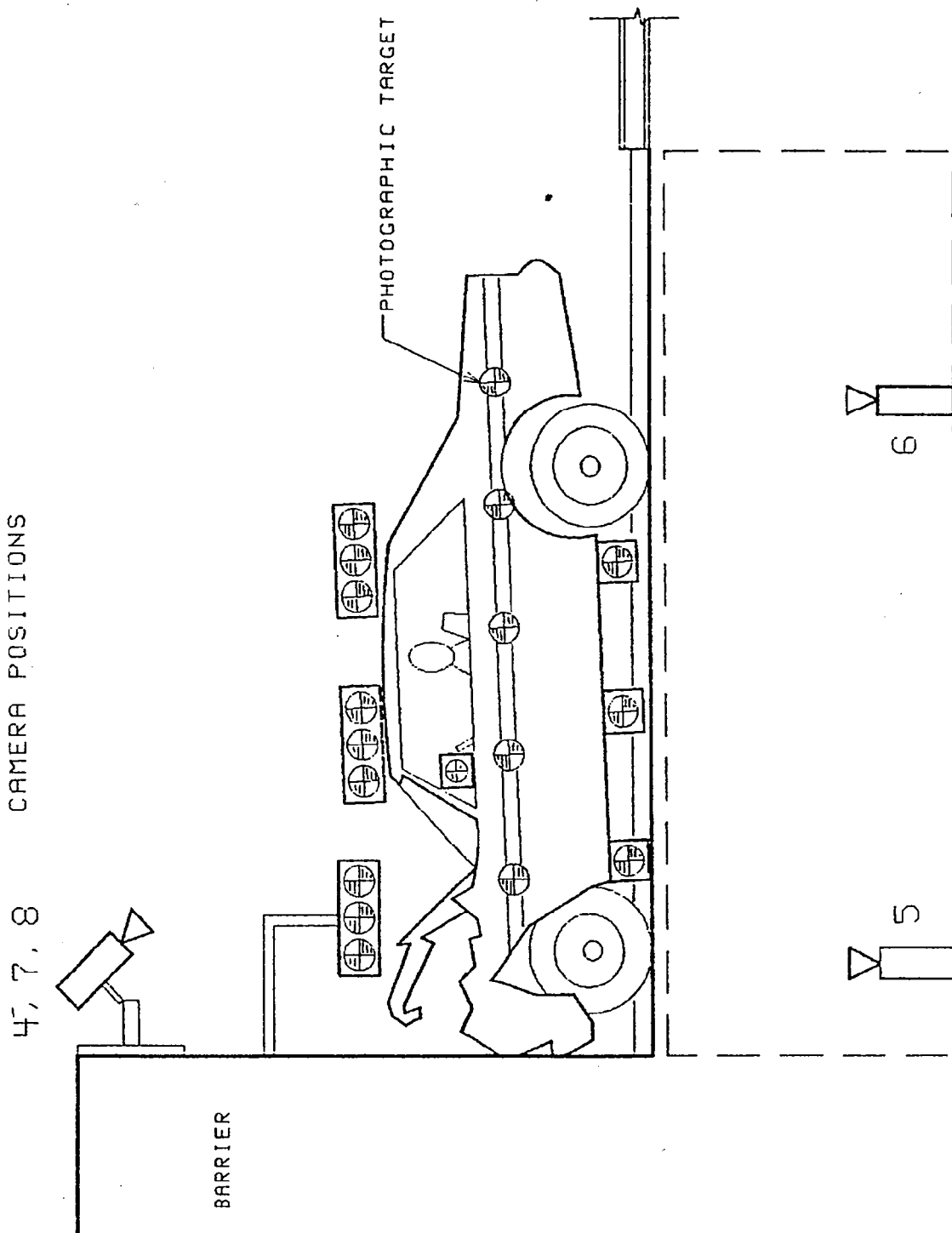


FIGURE 13
CAMERA POSITIONS, CONTINUED

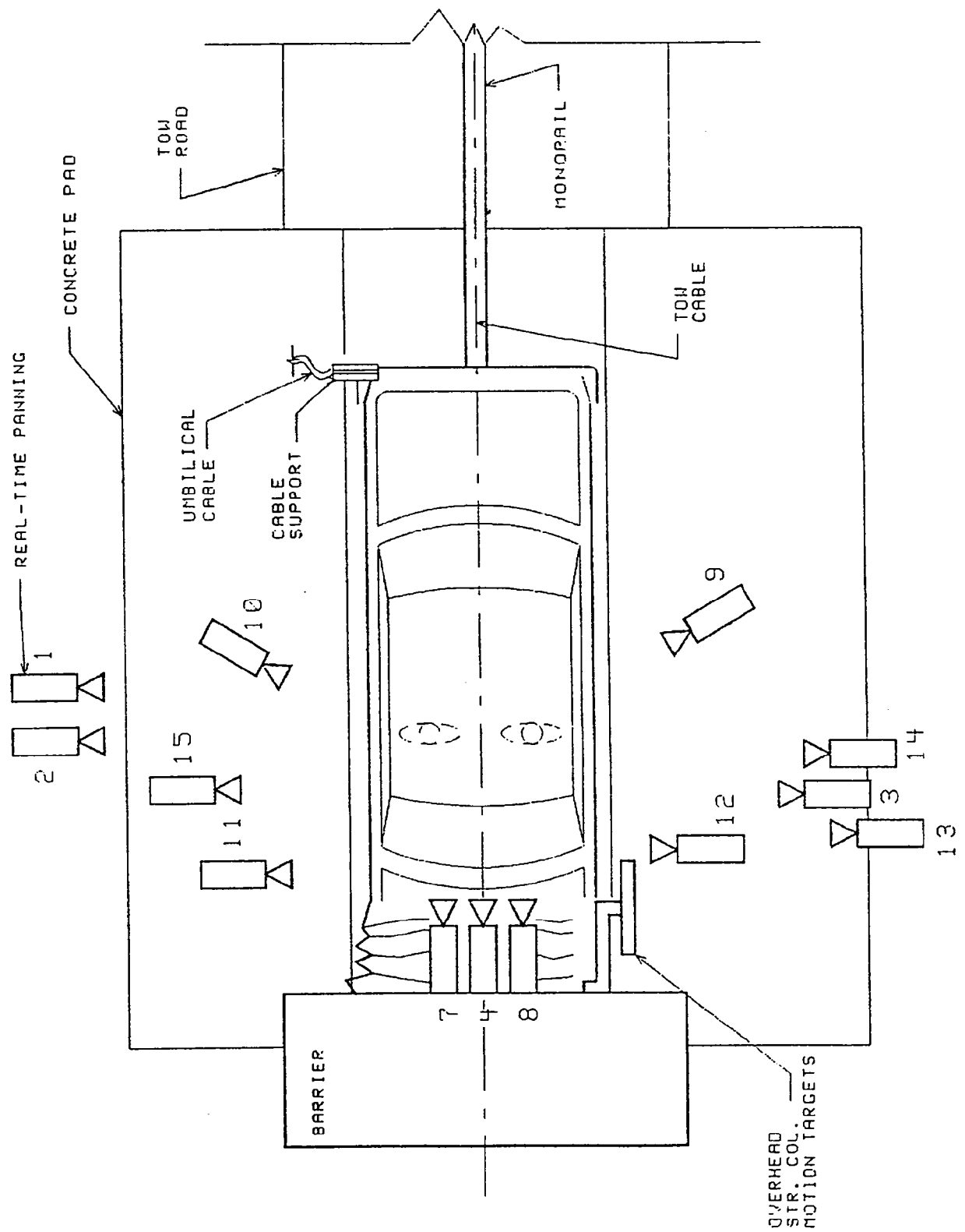


TABLE 14 MOTION PICTURE CAMERA LOCATIONS

TEST NO.:		911004	VEHICLE: Toyota/Paseo/2-door coupe					FILM PLANE			FILM
CAMERA NO.	VIEW	CAMERA POSITIONS (IN)*					ANGLE** (DEG)	TO HEAD TARGET (IN)	LENS (MM)	SPEED (FPS)	
		X	Y	Z							
1	Real-time panning	-142.0	-504.0	61.0	NA	NA	16	24			
2	Right overall	-81.3	-266.4	37.1	-2	NA	13	485			
3	Left vehicle crush	-41.5	295.0	44.0	-4	222.0	25	483			
4	Windshield front view	-6.0	0.0	84.0	-40	NA	13	490			
5	Pit front position	-50.5	0.0	-92.4	90	NA	13	1000			
6	Pit rear position	-99.3	0.0	-99.0	90	NA	13	1000			
7	Passenger front view	-4.5	-13.8	93.0	-50	NA	17	498			
8	Driver front view	-6.8	14.5	93.0	-50	NA	17	500			
9	Driver kinematics	-157.3	116.0	87.0	-27	103.0	25	500			
10	Passenger kinematics	-152.1	-116.0	87.0	-26	112.0	25	505			
11	Right windshield intrusion	-38.1	-306.1	44.0	0	NA	50	500			
12	Left windshield intrusion	-53.0	309.4	42.3	0	NA	50	500			
13	Steering column motion	-96.0	285.0	103.0	-14	NA	25	500			
14	Steering column motion	-96.0	285.0	75.1	-9	NA	25	498			
15	Passenger kinematics	-38.8	-293.0	45.3	-4	217.0	25	505			
16	Real-time documentation	NA	NA	NA	NA	NA	12-120	24			

* +X = Film plane forward of barrier face

+Y = Film plane to left of monorail centerline

+Z = Film plane above ground level

** +Angle = Film plane angled upward from horizontal plane

APPENDIX A

PHOTOGRAPHS

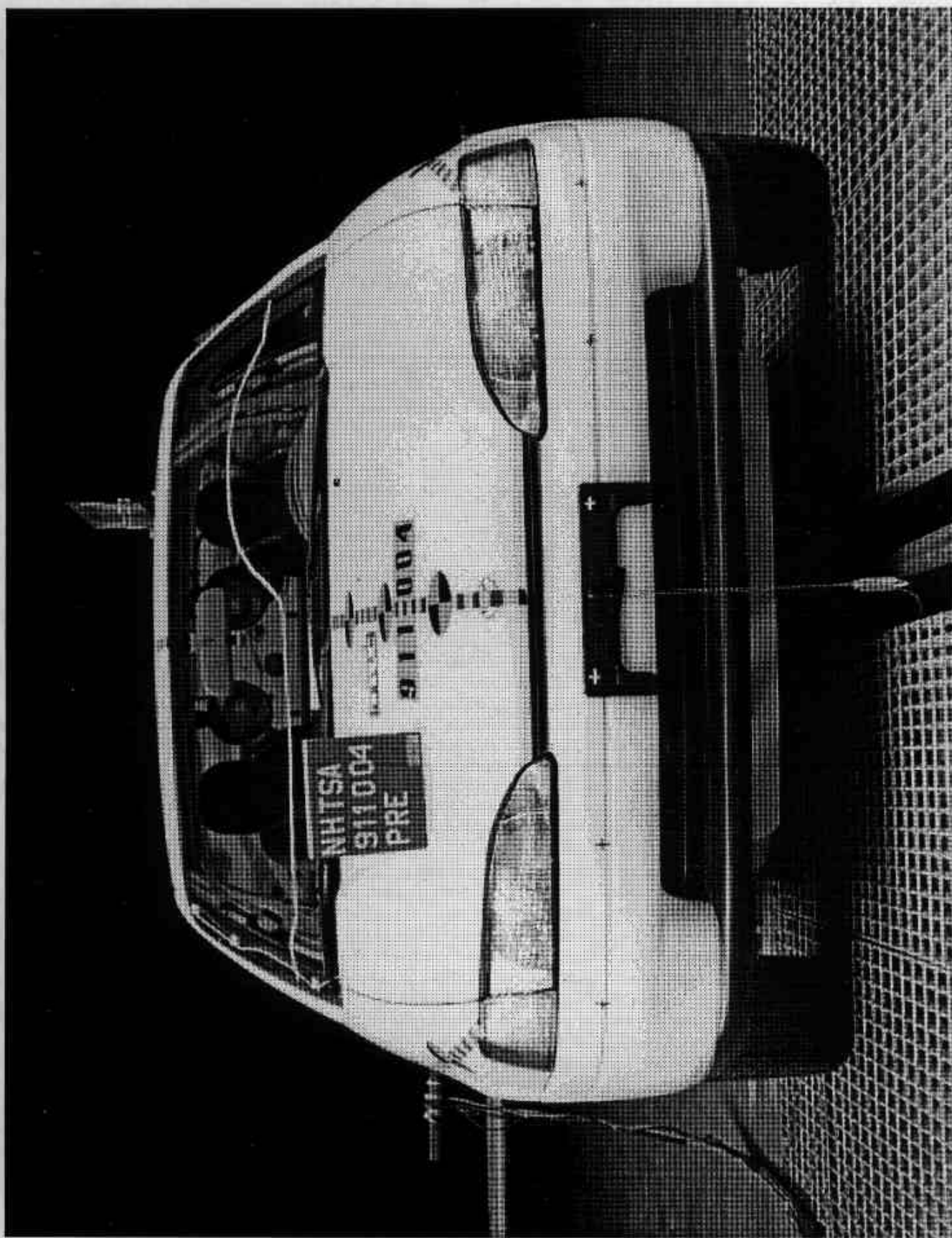


FIG. A-1 PRE-TEST FRONT VIEW

A-2

911004

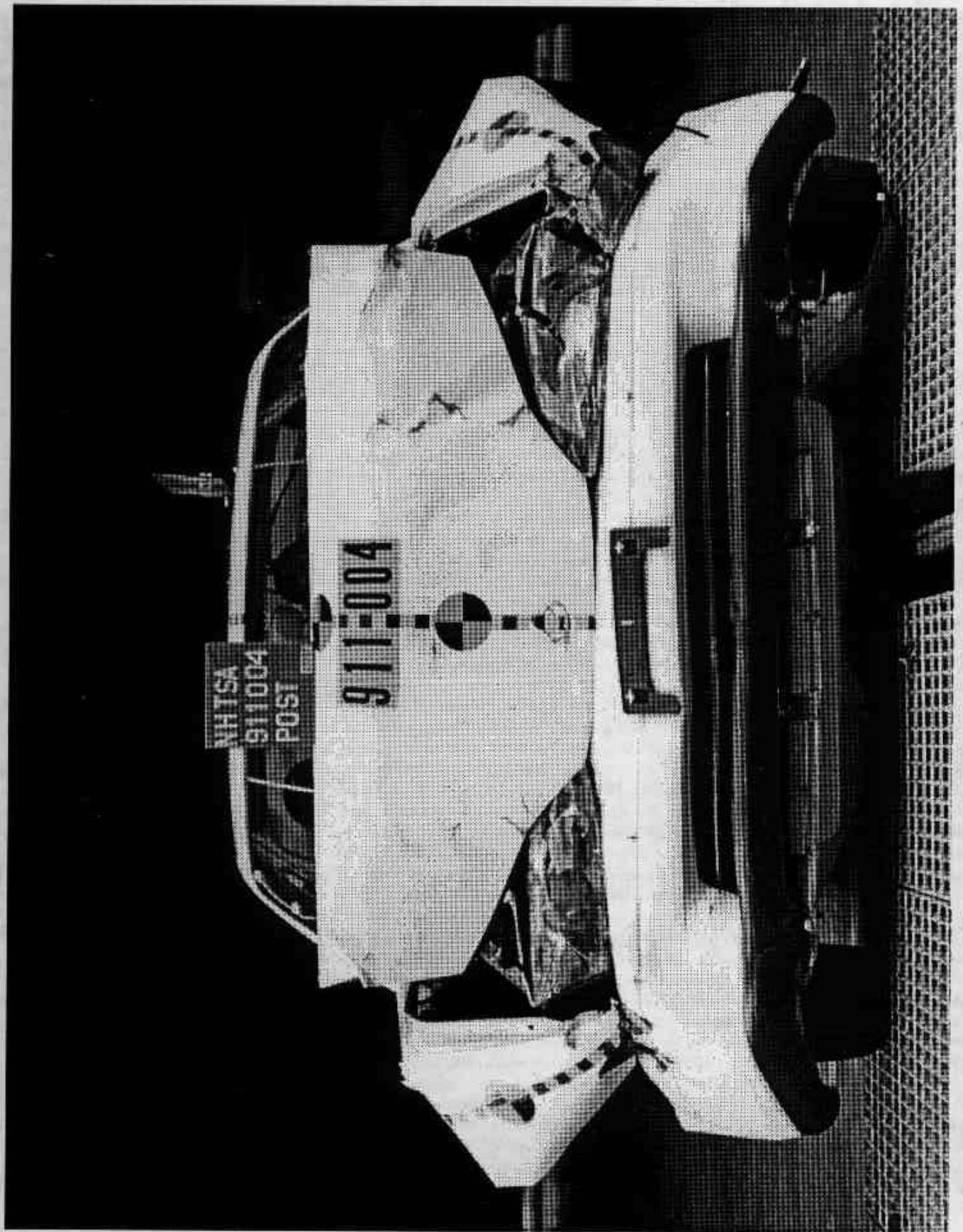


FIG. A-2 POST-TEST FRONT VIEW

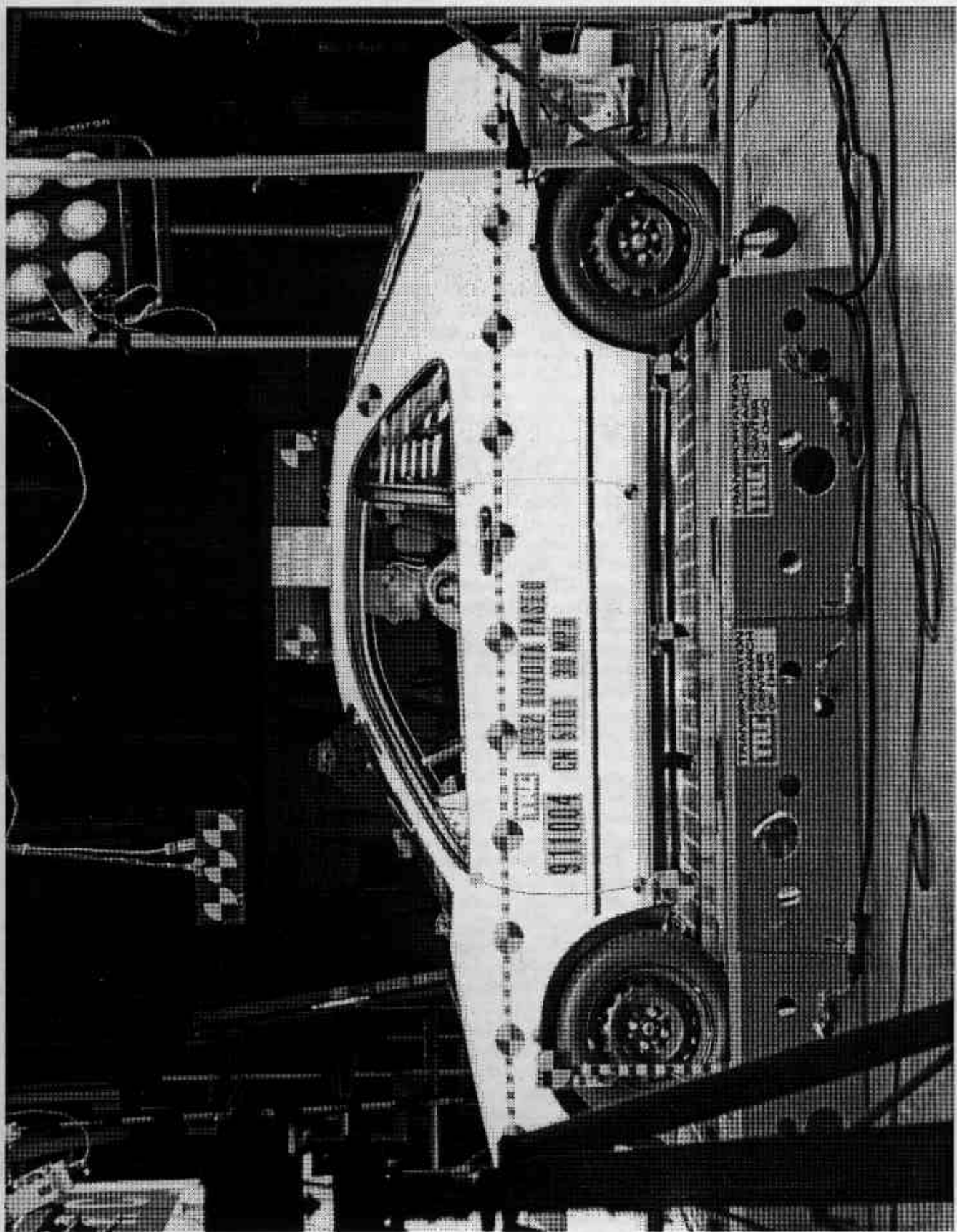


FIG. A-3 PRE-TEST LEFT SIDE VIEW

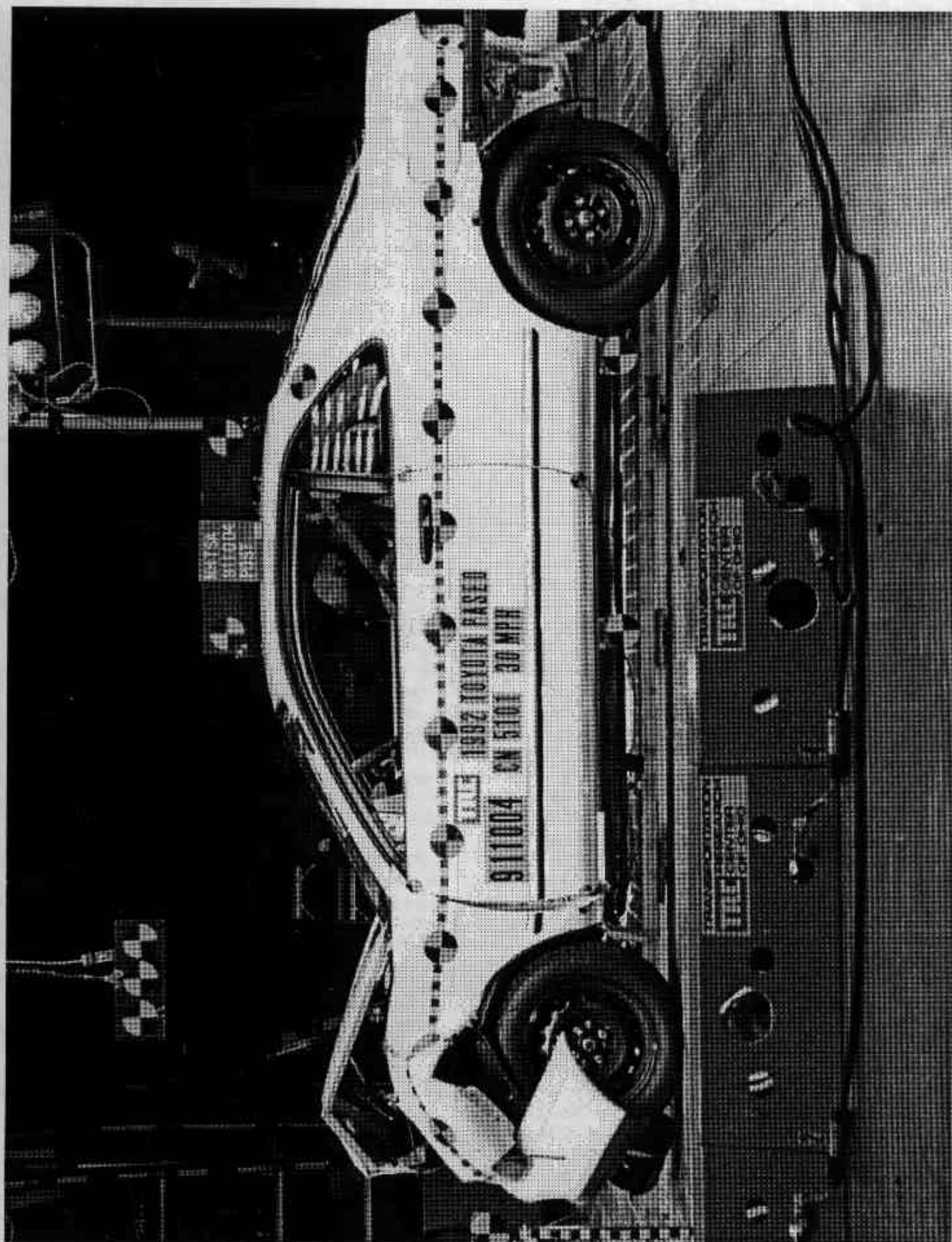


FIG. A-4 POST-TEST LEFT SIDE VIEW

A-5

911004

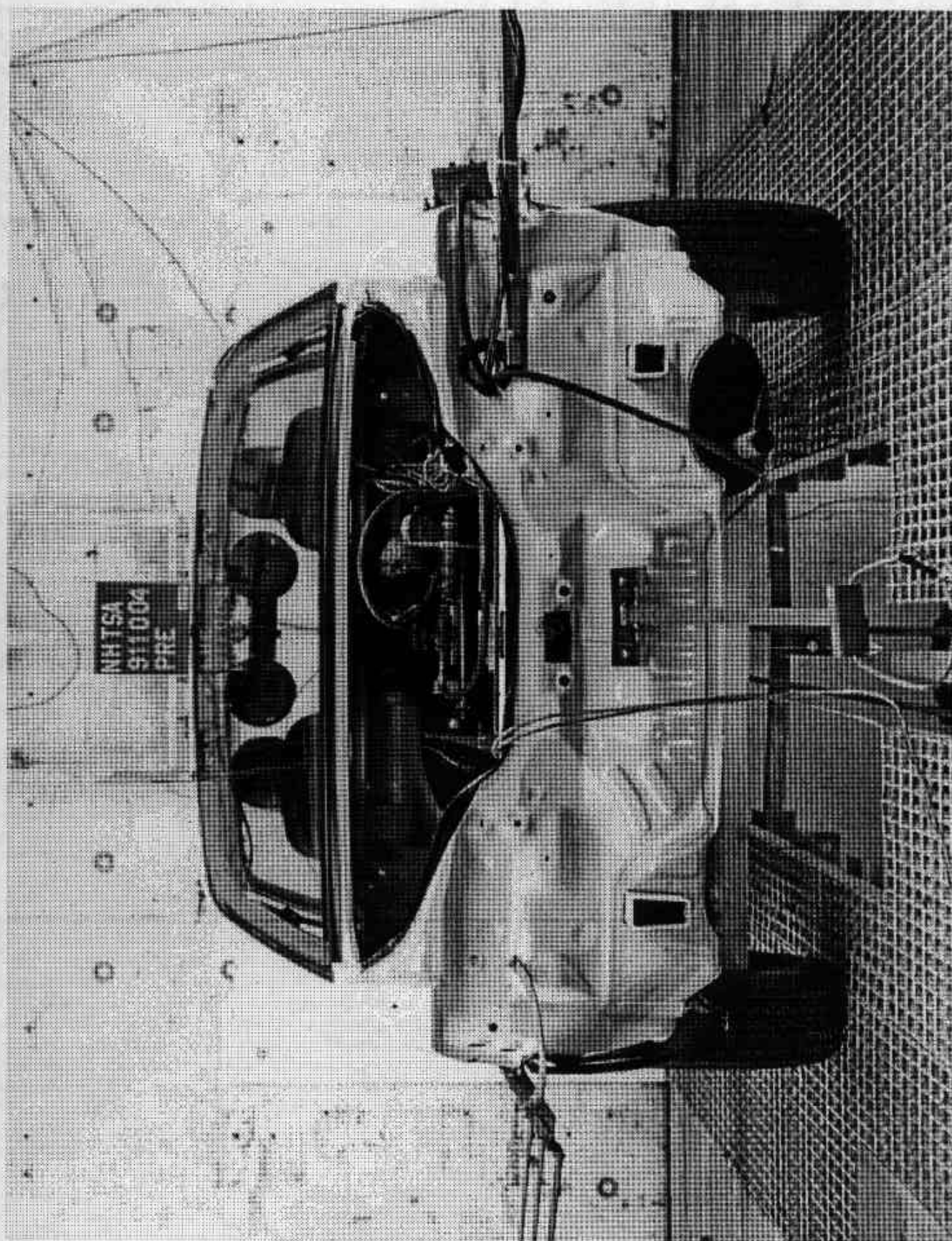


FIG. A-5 PRE-TEST REAR VIEW

A-6

911004

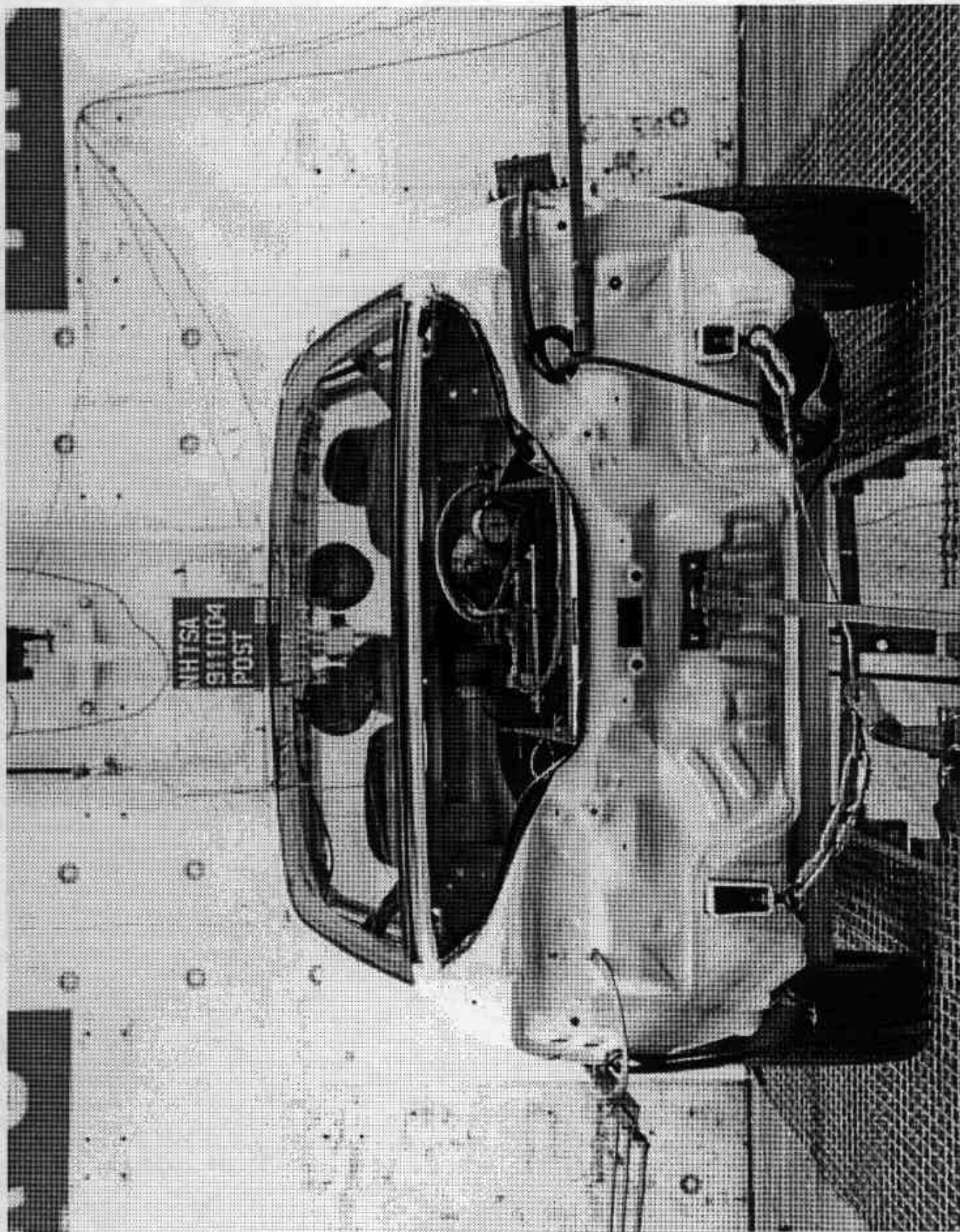


FIG. A-6 POST-TEST REAR VIEW

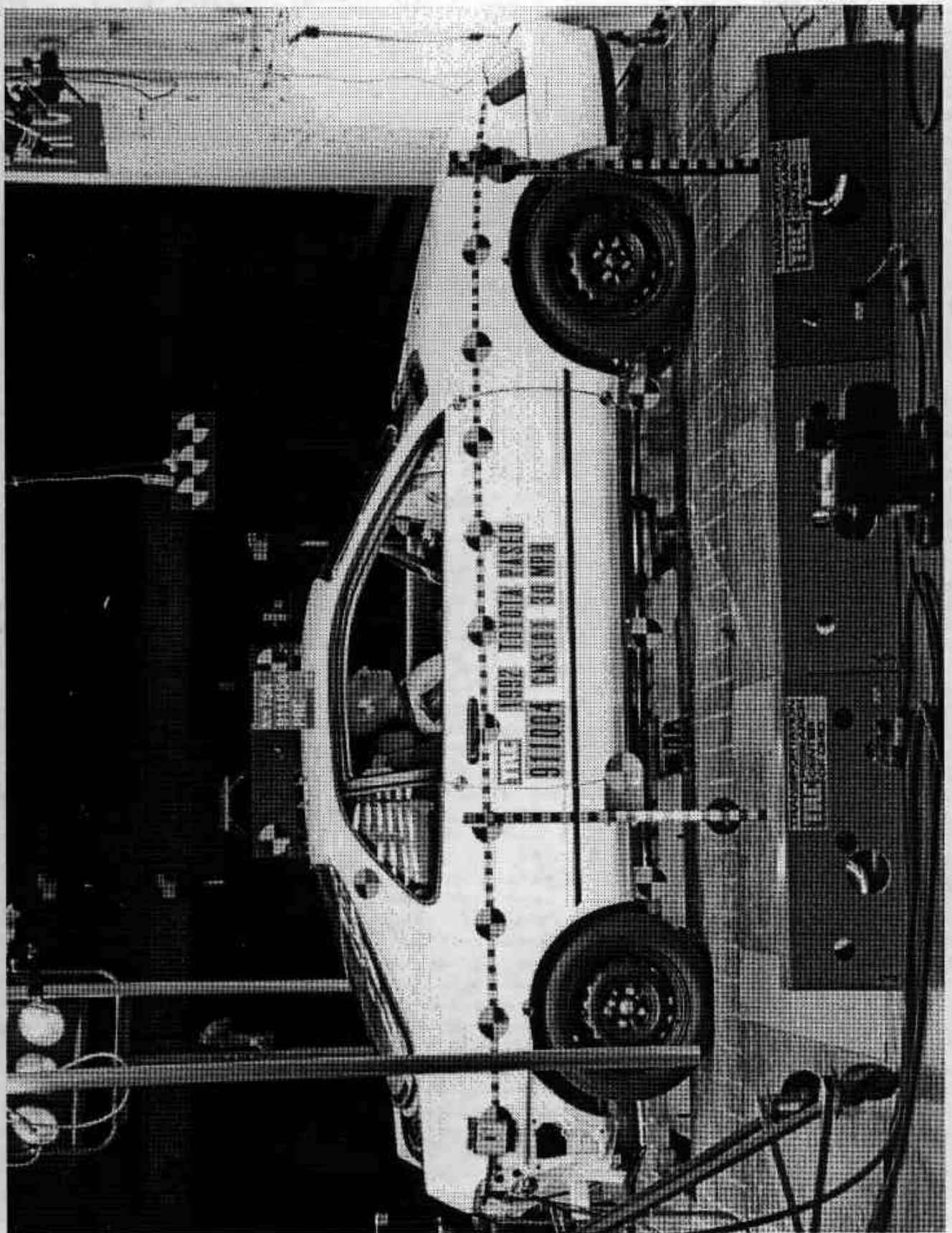


FIG. A-7 PRE-TEST RIGHT SIDE VIEW

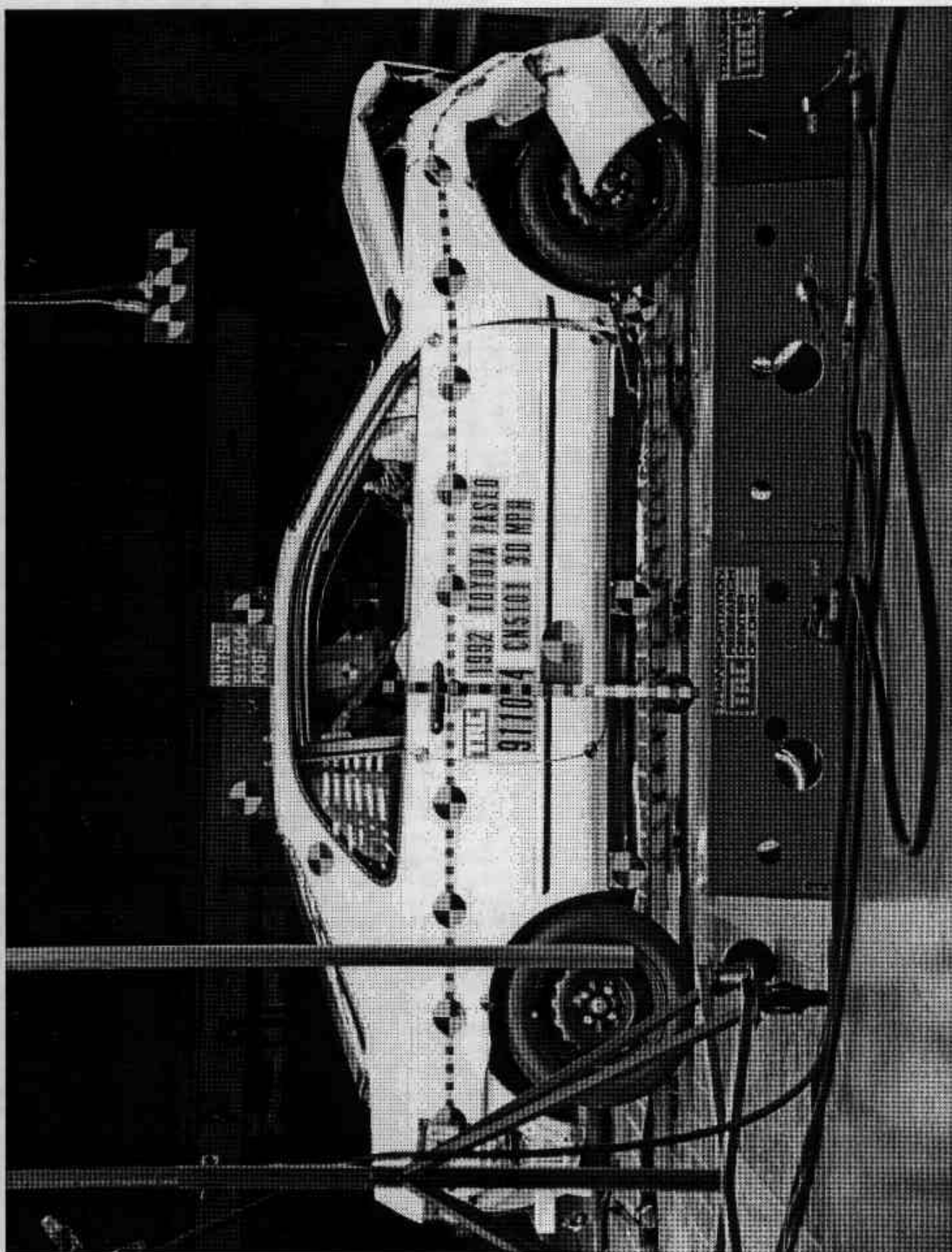


FIG. A-8 POST-TEST RIGHT SIDE VIEW

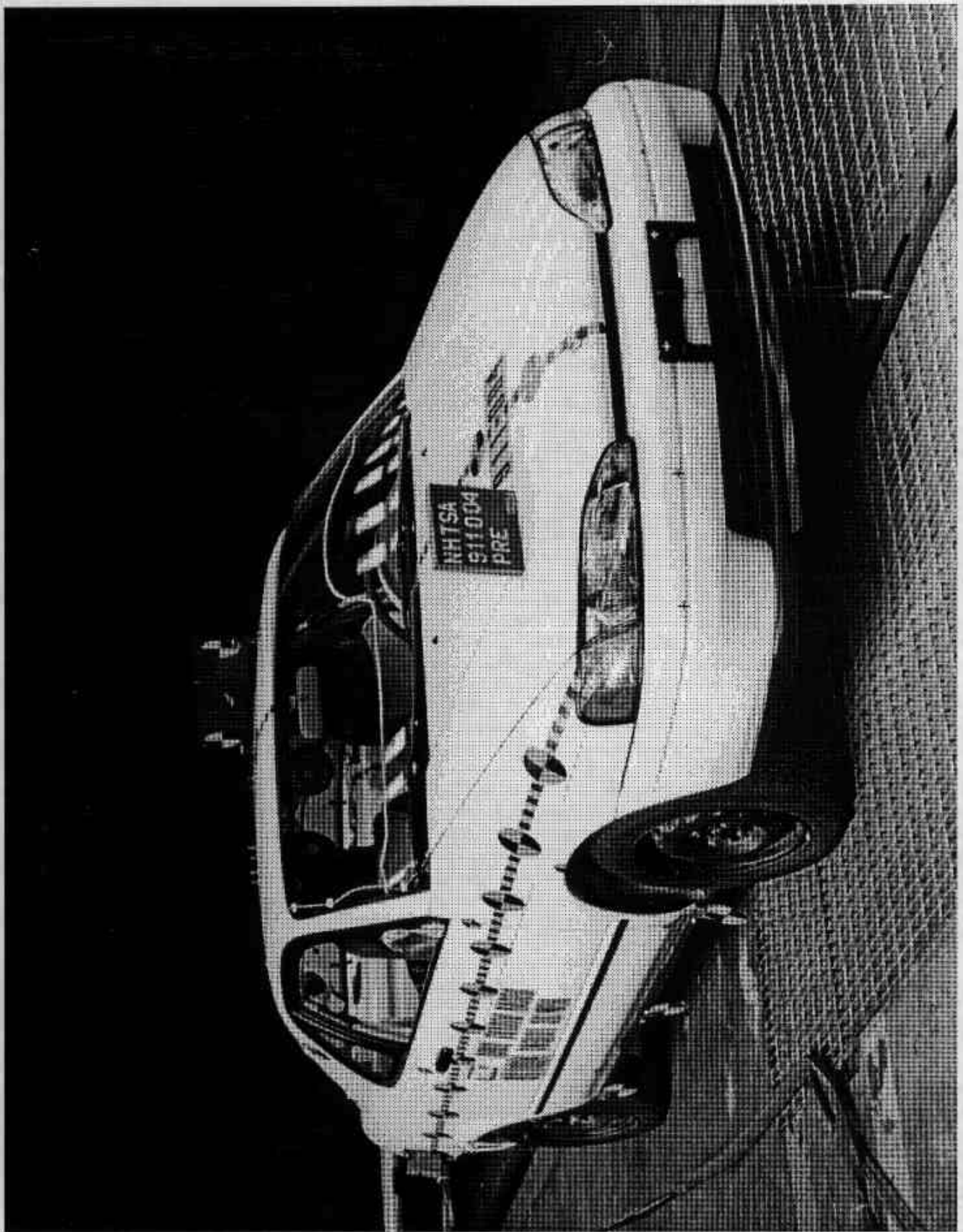


FIG. A-9 PRE-TEST RIGHT FRONT THREE QUARTER VIEW

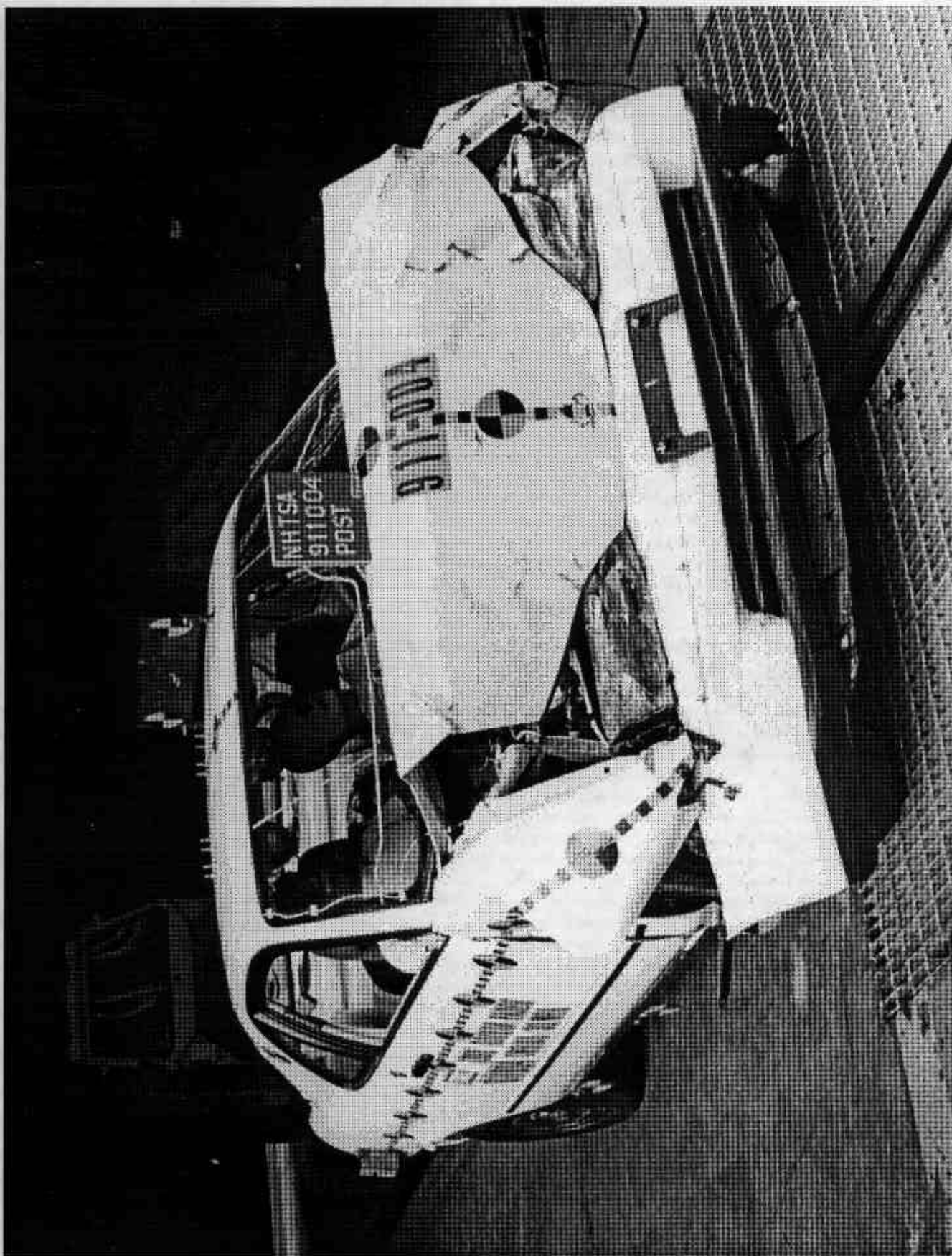


FIG. A-10 POST-TEST RIGHT FRONT THREE QUARTER VIEW



FIG. A-11 PRE-TEST LEFT REAR THREE-QUARTER VIEW

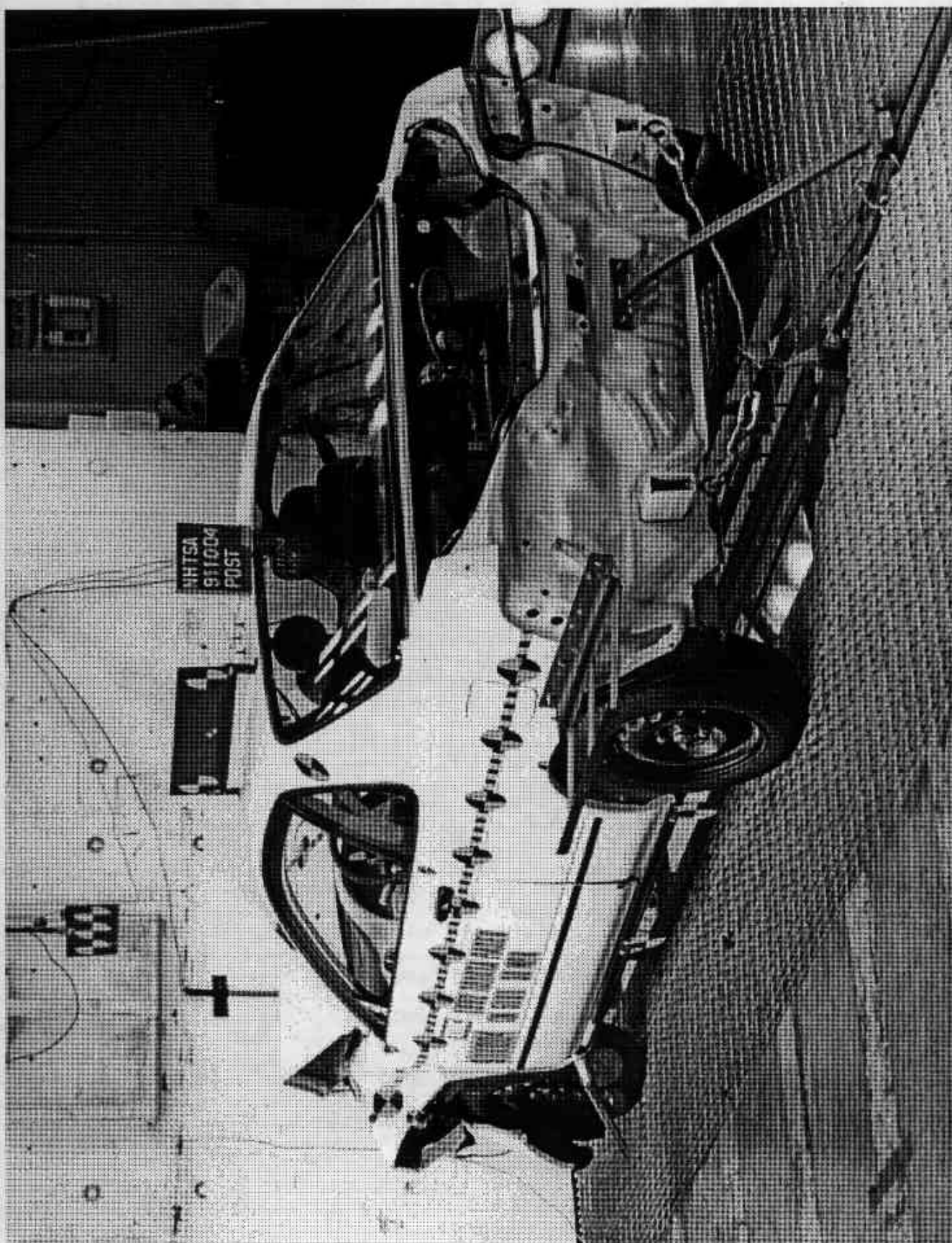


FIG. A-12 POST-TEST LEFT REAR THREE-QUARTER VIEW

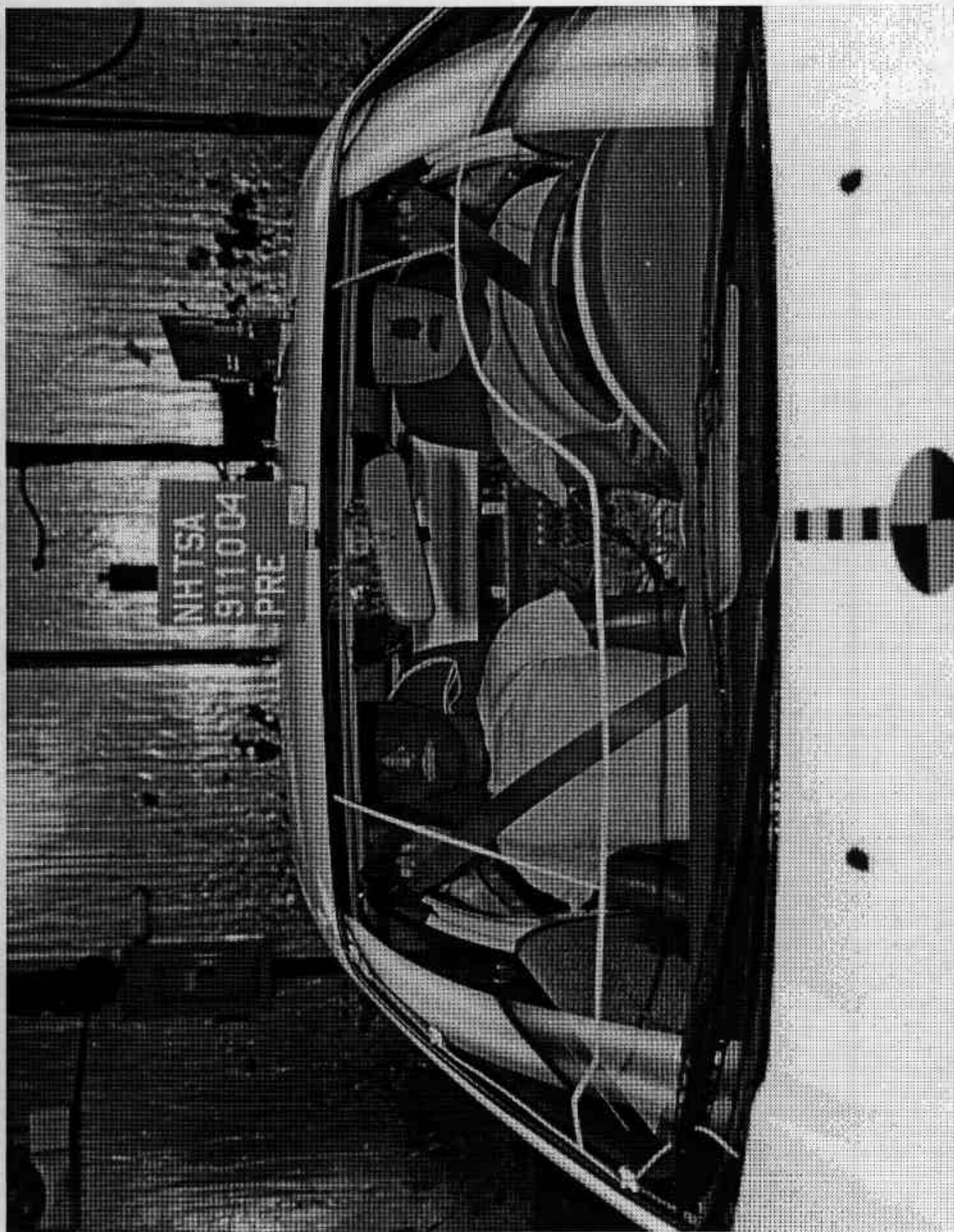


FIG. A-13 PRE-TEST WINDSHIELD VIEW

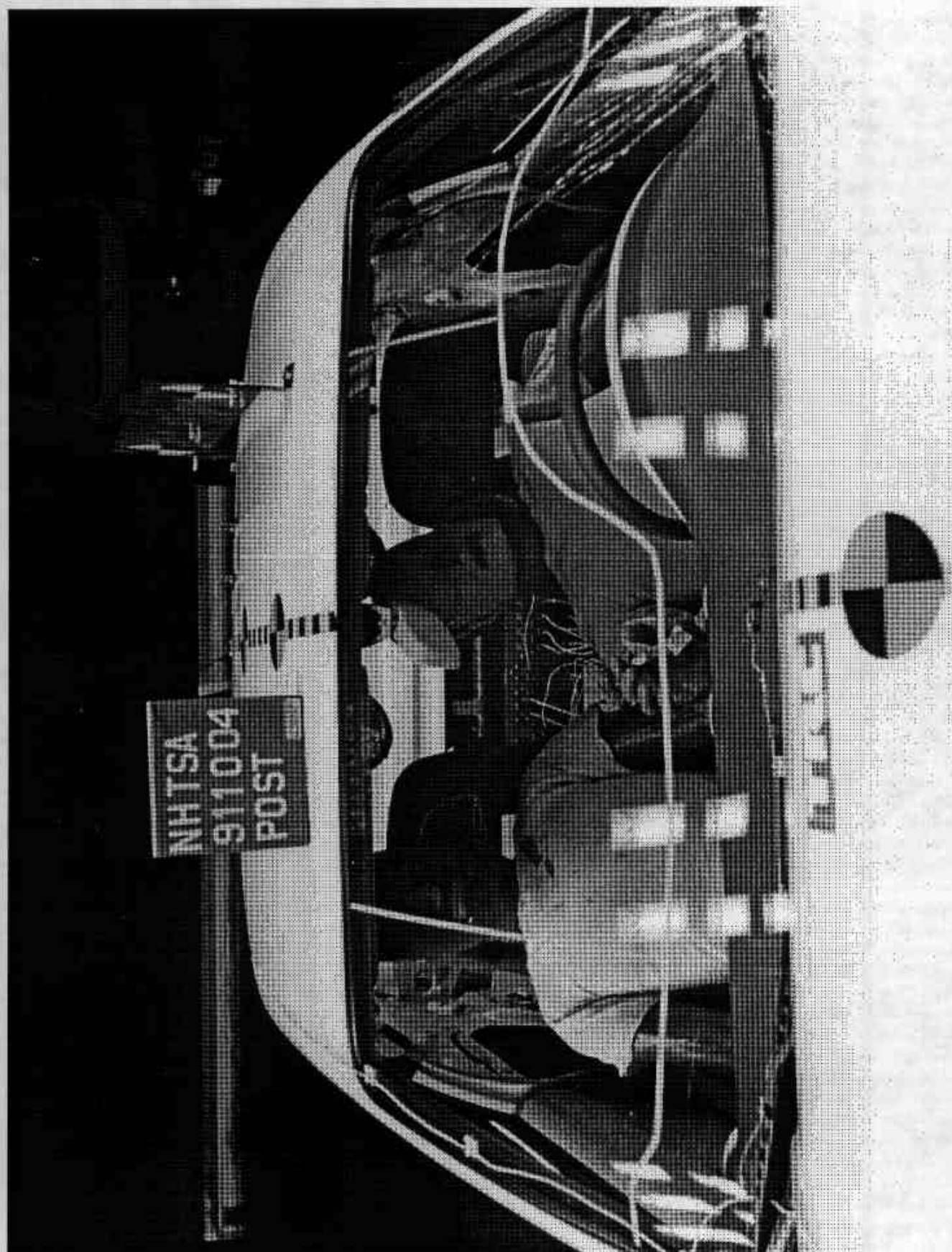


FIG. A-14 POST-TEST WINDSHIELD VIEW

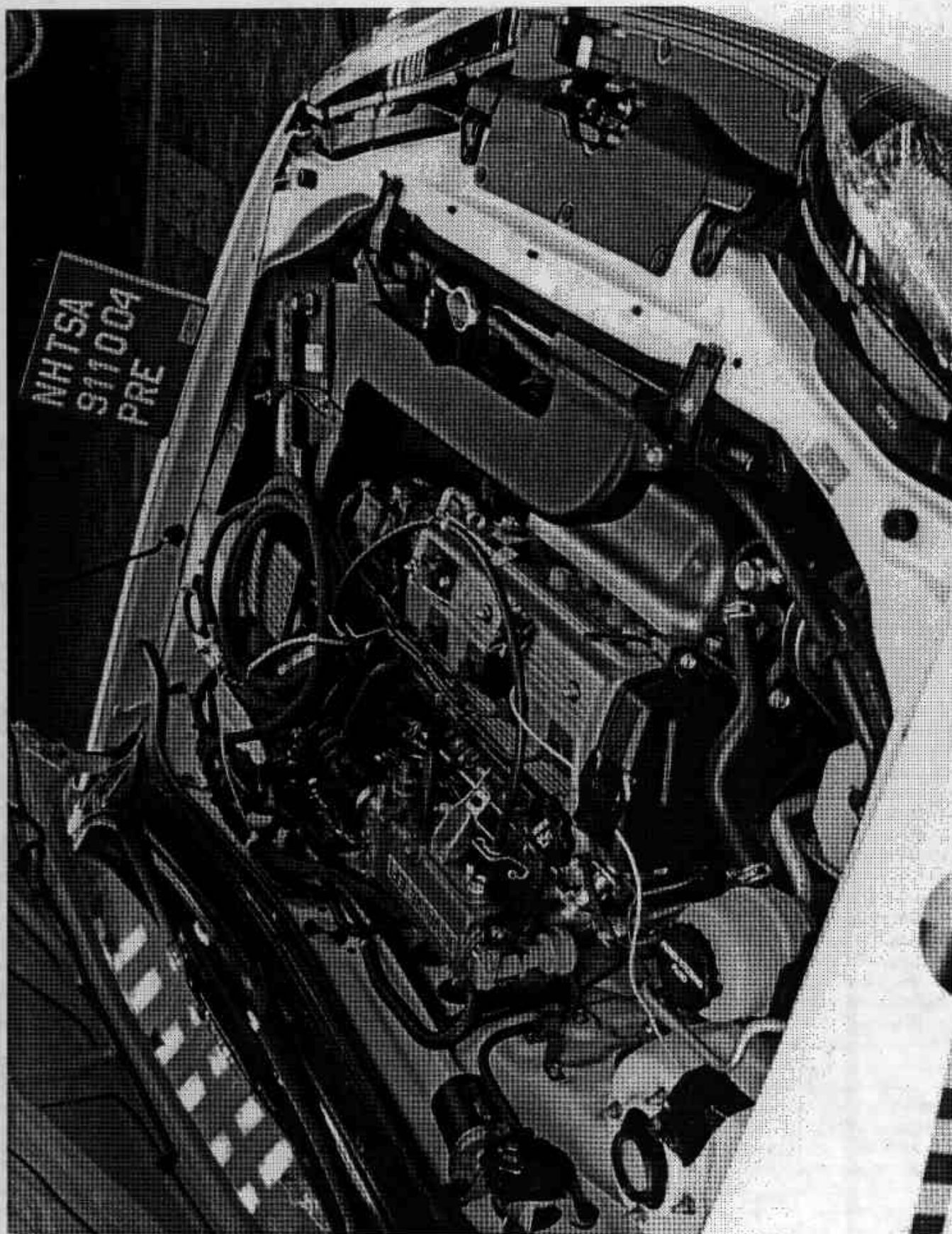


FIG. A-15 PRE-TEST ENGINE COMPARTMENT VIEW

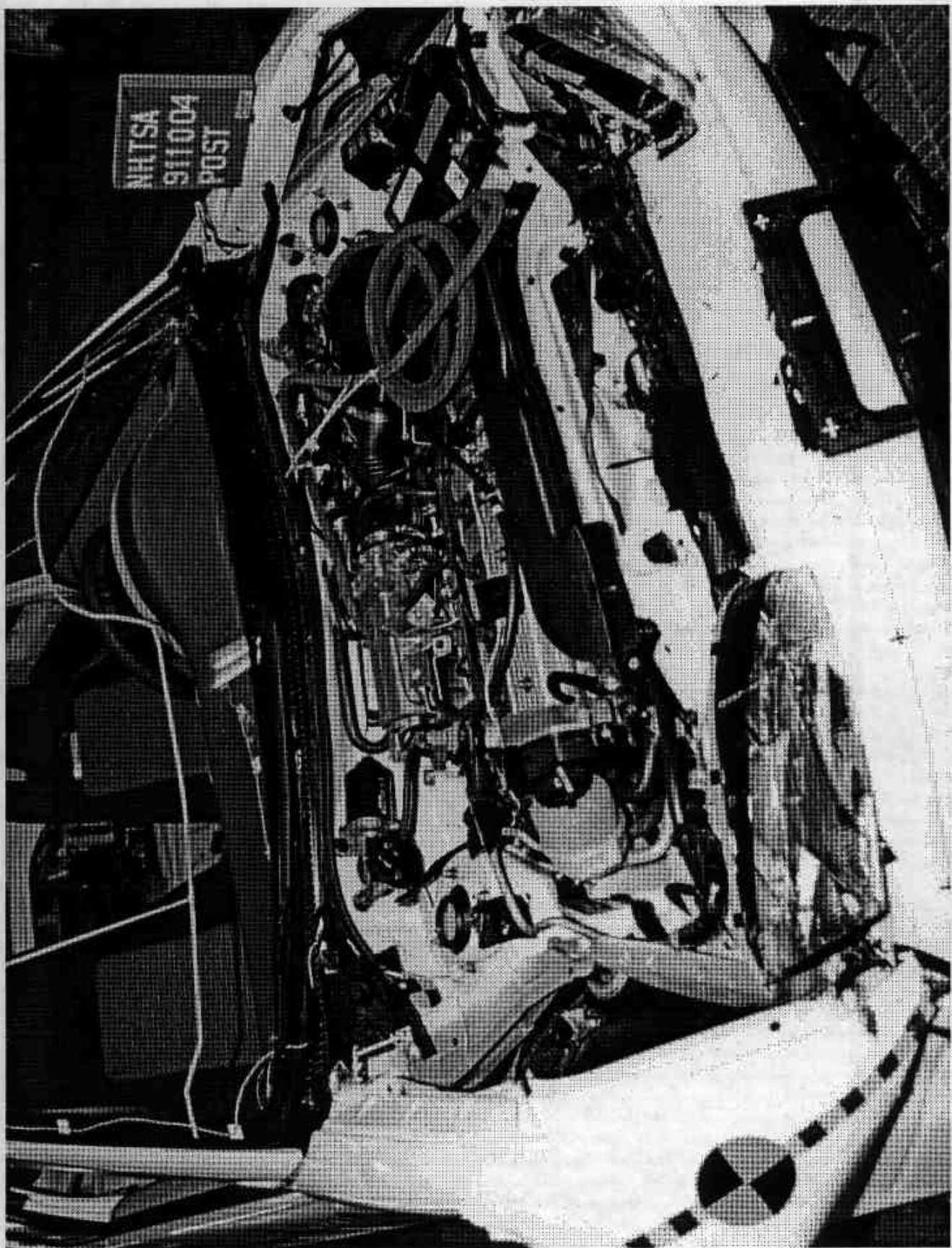


FIG. A-16 POST-TEST ENGINE COMPARTMENT VIEW



FIG. A-17 PRE-TEST FUEL FILLER CAP VIEW



FIG. A-18 POST-TEST FUEL FILLER CAP VIEW



FIG. A-19 PRE-TEST FUEL FILLER NECK VIEW

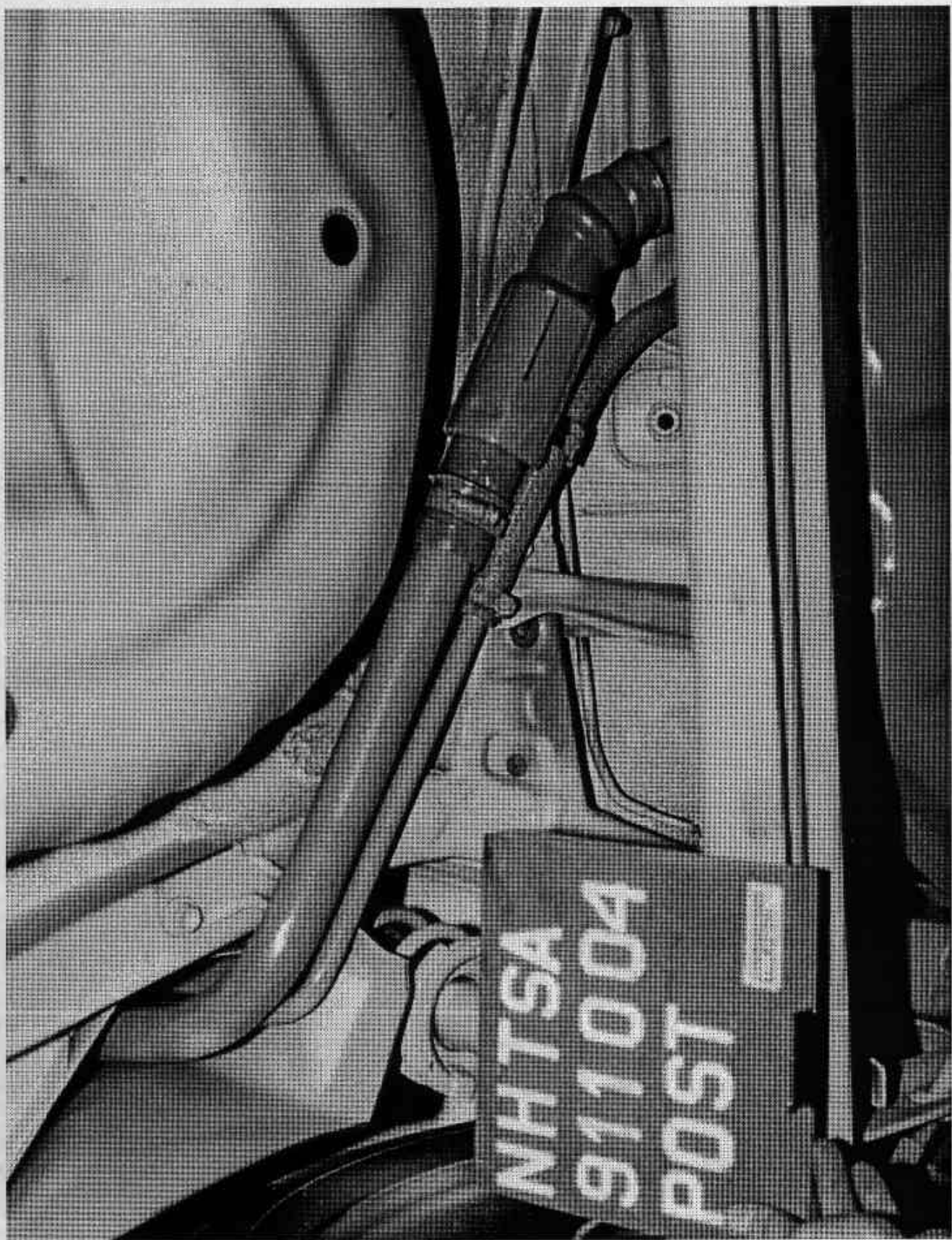


FIG. A-20 POST-TEST FUEL FILLER NECK VIEW

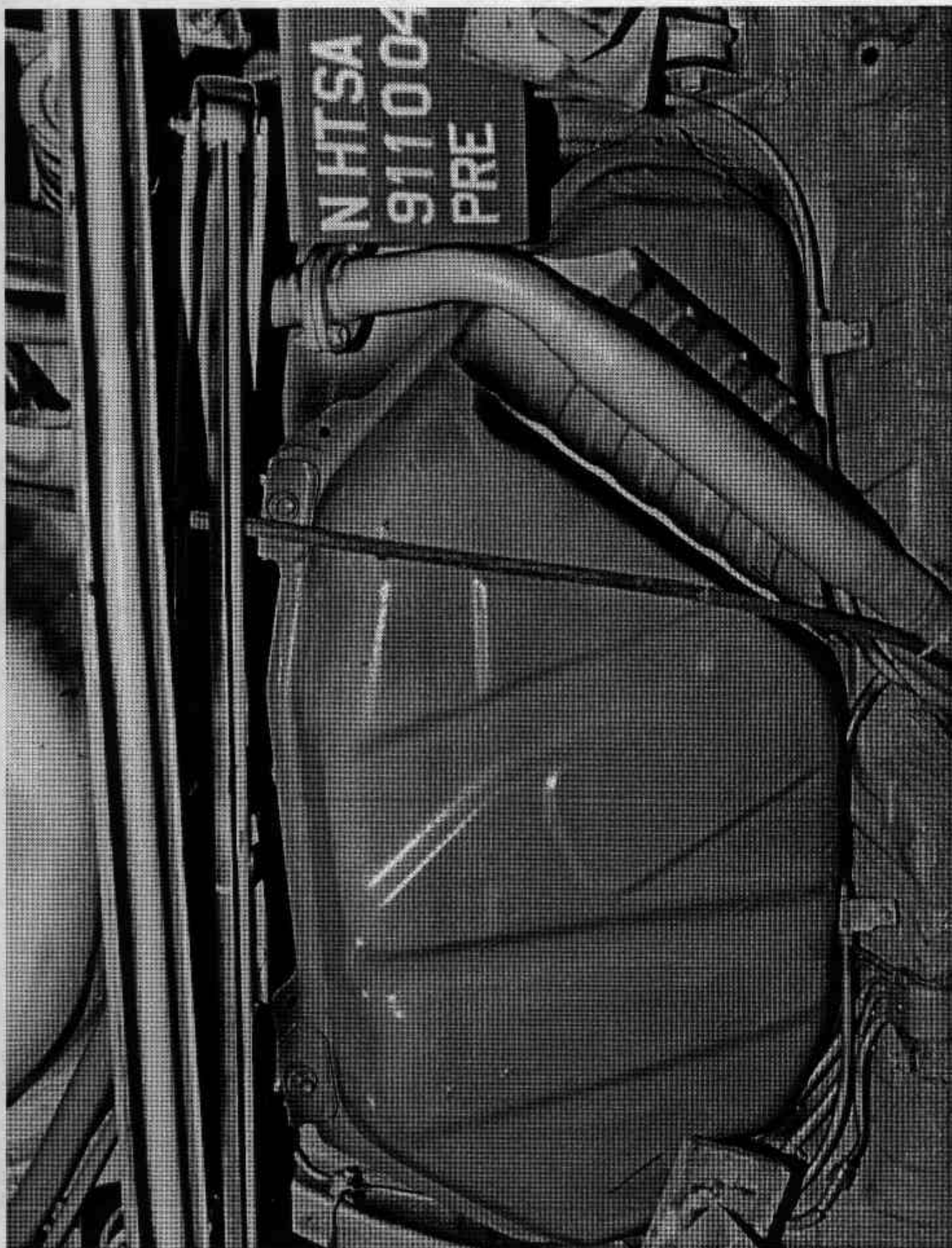


FIG. A-21 PRE-TEST FUEL TANK VIEW



FIG. A-22 POST-TEST FUEL TANK VIEW

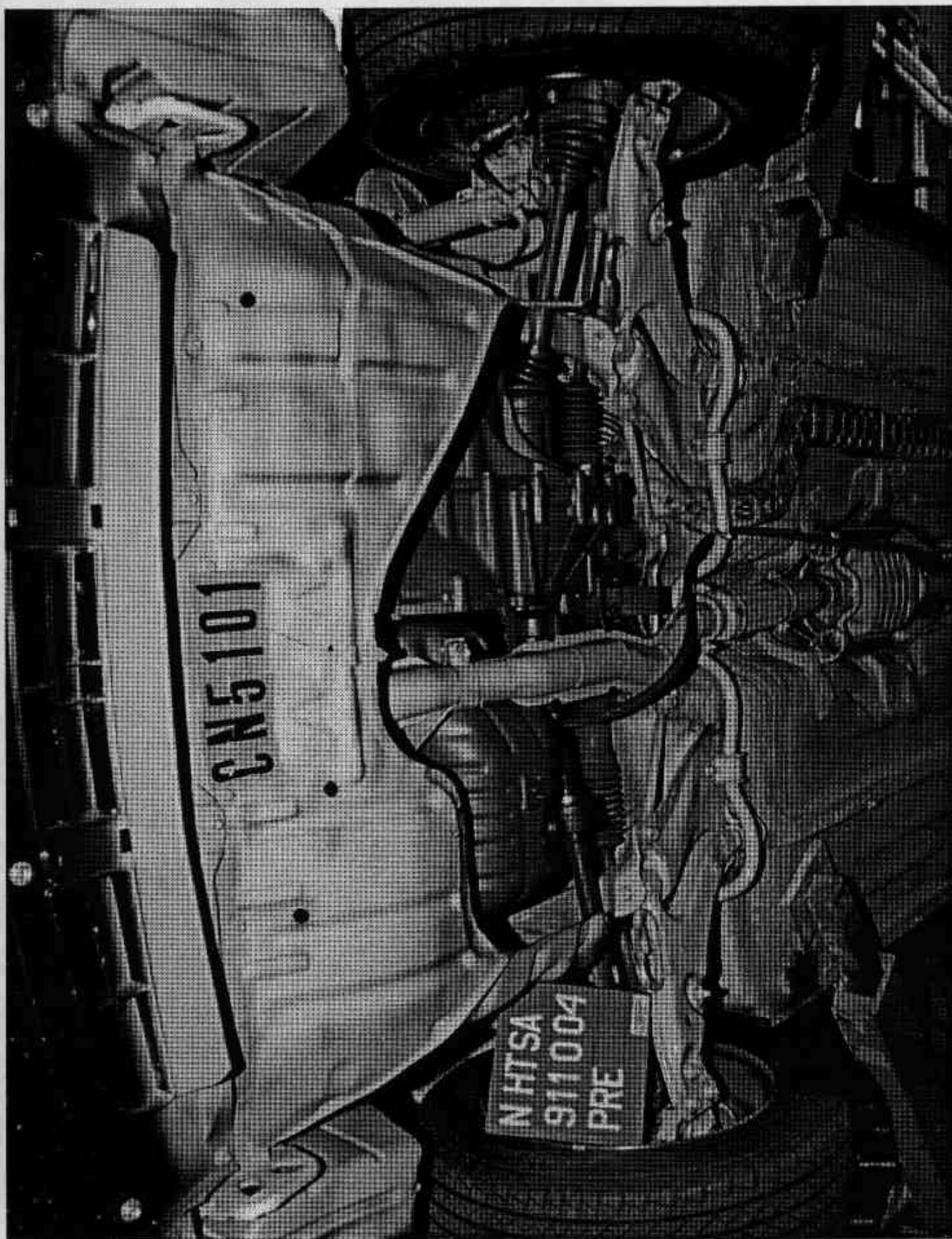


FIG. A-23 PRE-TEST FRONT UNDERBODY VIEW

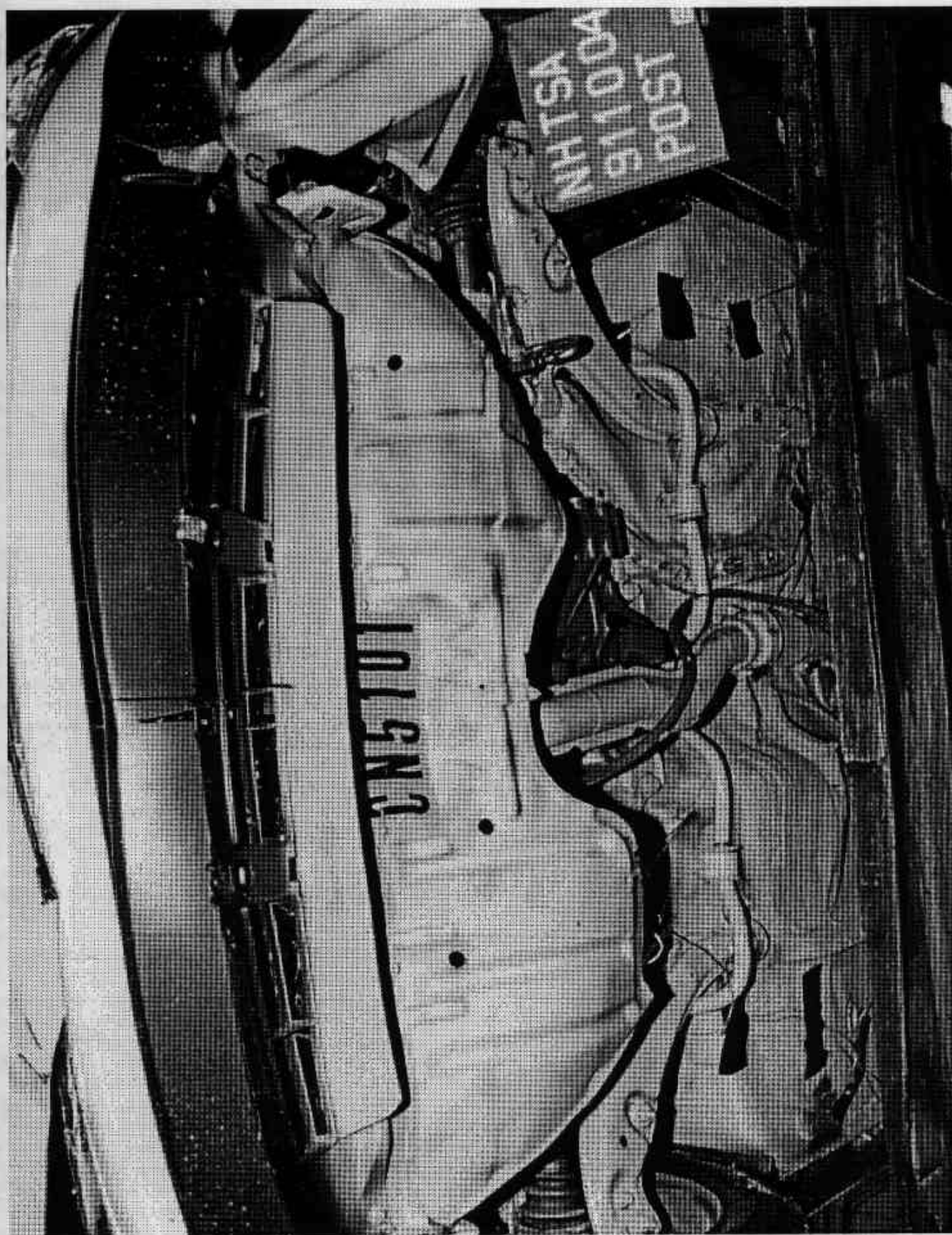


FIG. A-24 POST-TEST FRONT UNDERBODY VIEW

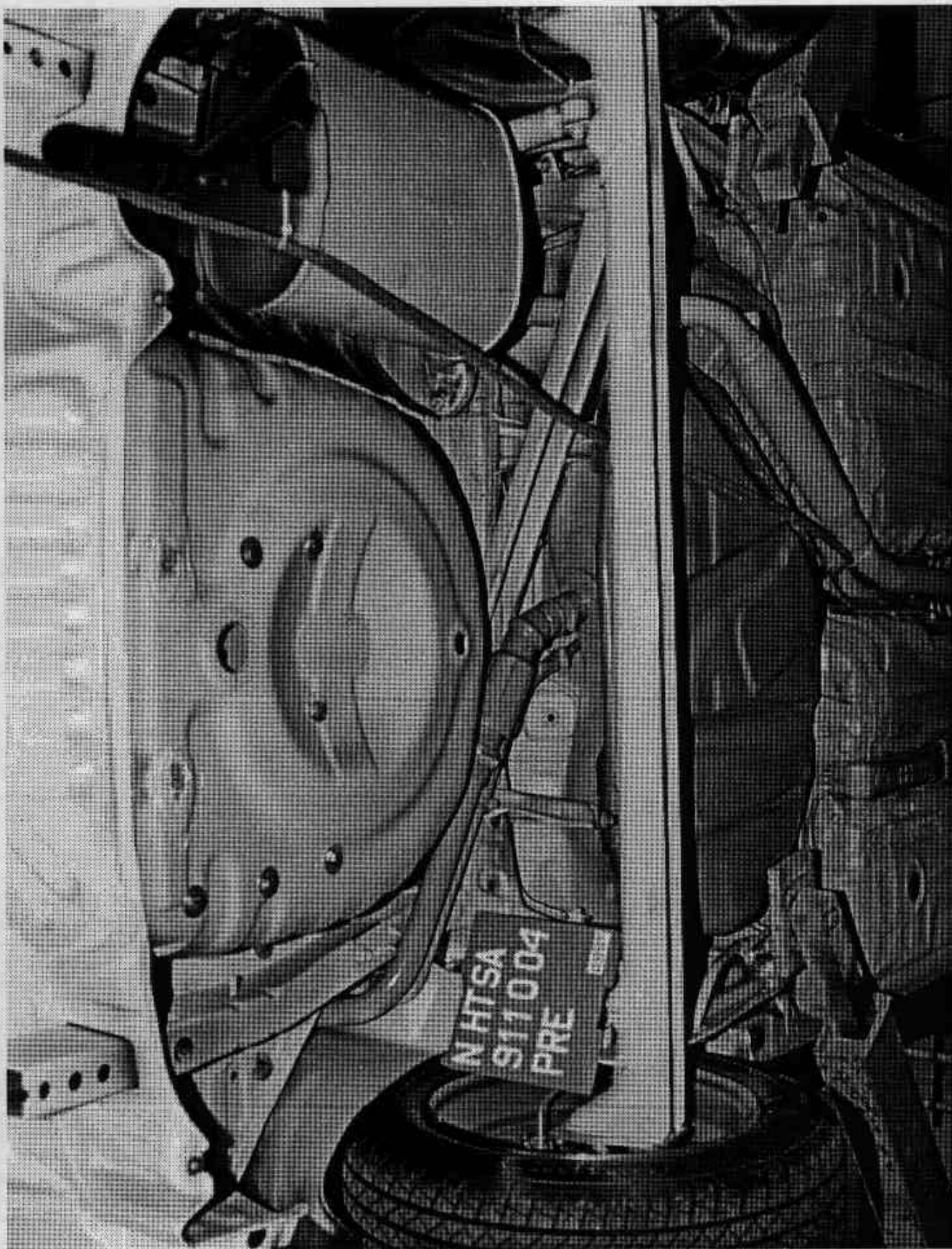


FIG. A-25 PRE-TEST REAR UNDERBODY VIEW

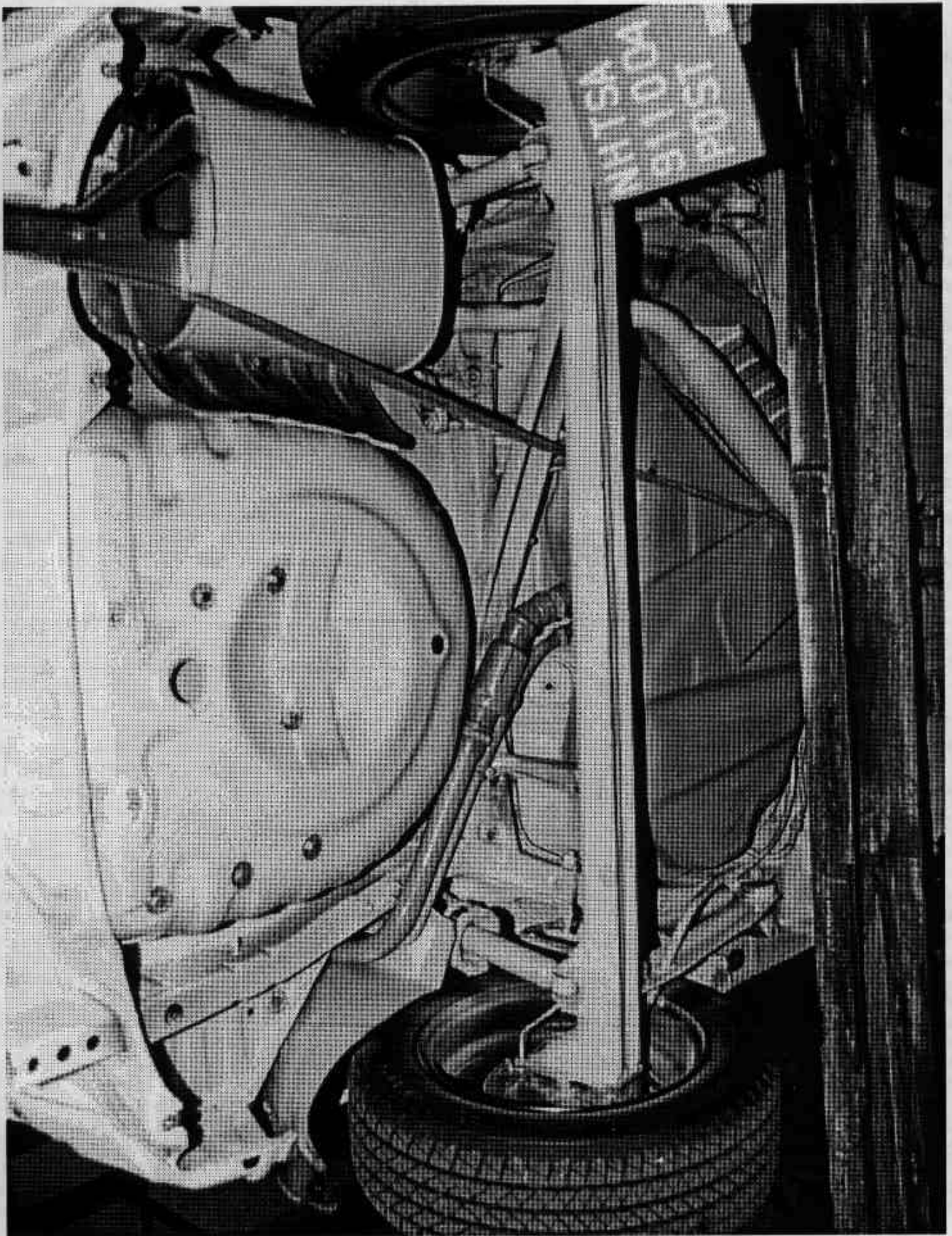


FIG. A-26 POST-TEST REAR UNDERBODY VIEW



FIG. A-27 PRE-TEST DRIVER DUMMY POSITION VIEW

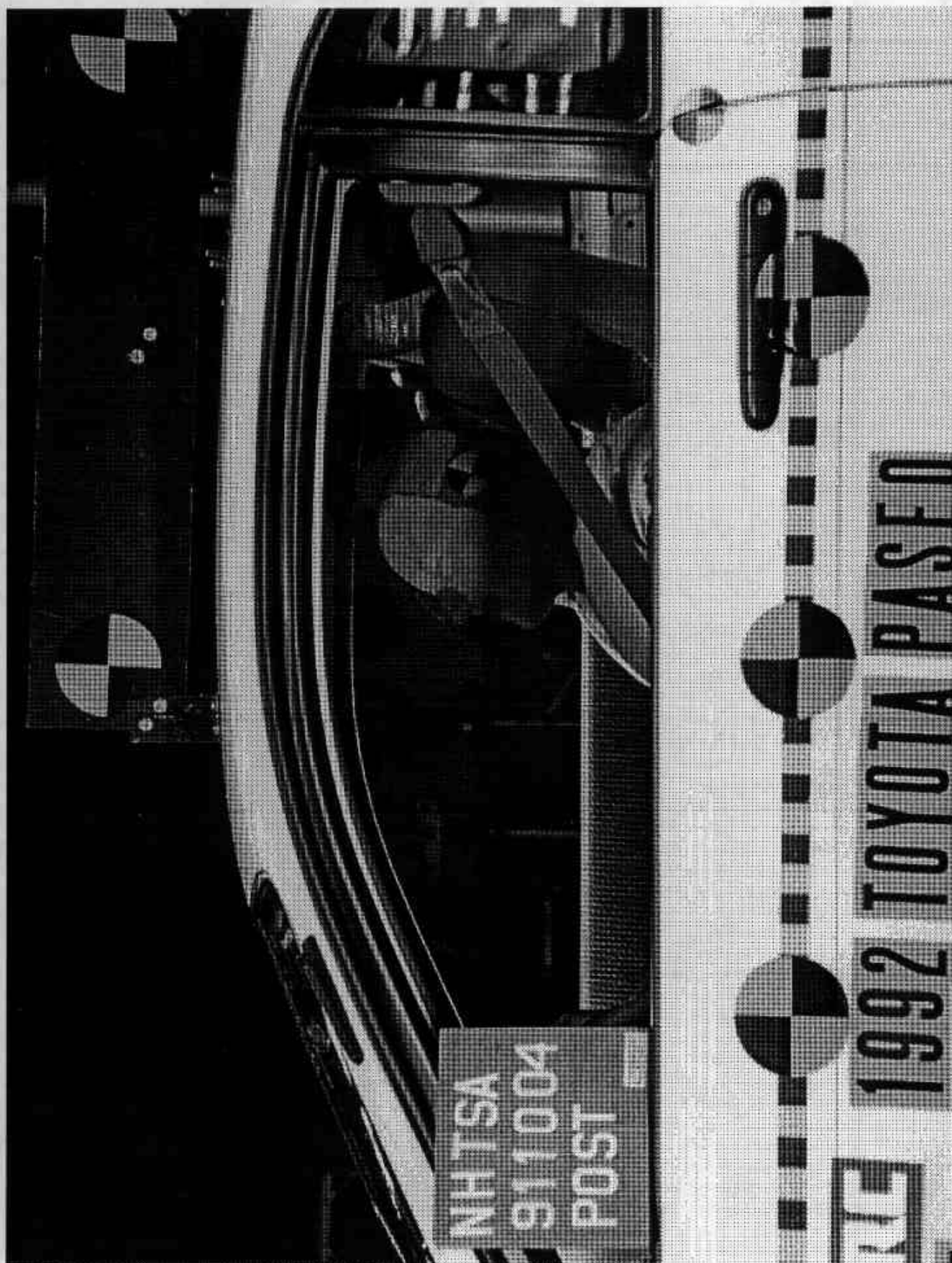


FIG. A-28 POST-TEST DRIVER DUMMY POSITION VIEW



FIG. A-29 PRE-TEST PASSENGER DUMMY POSITION VIEW

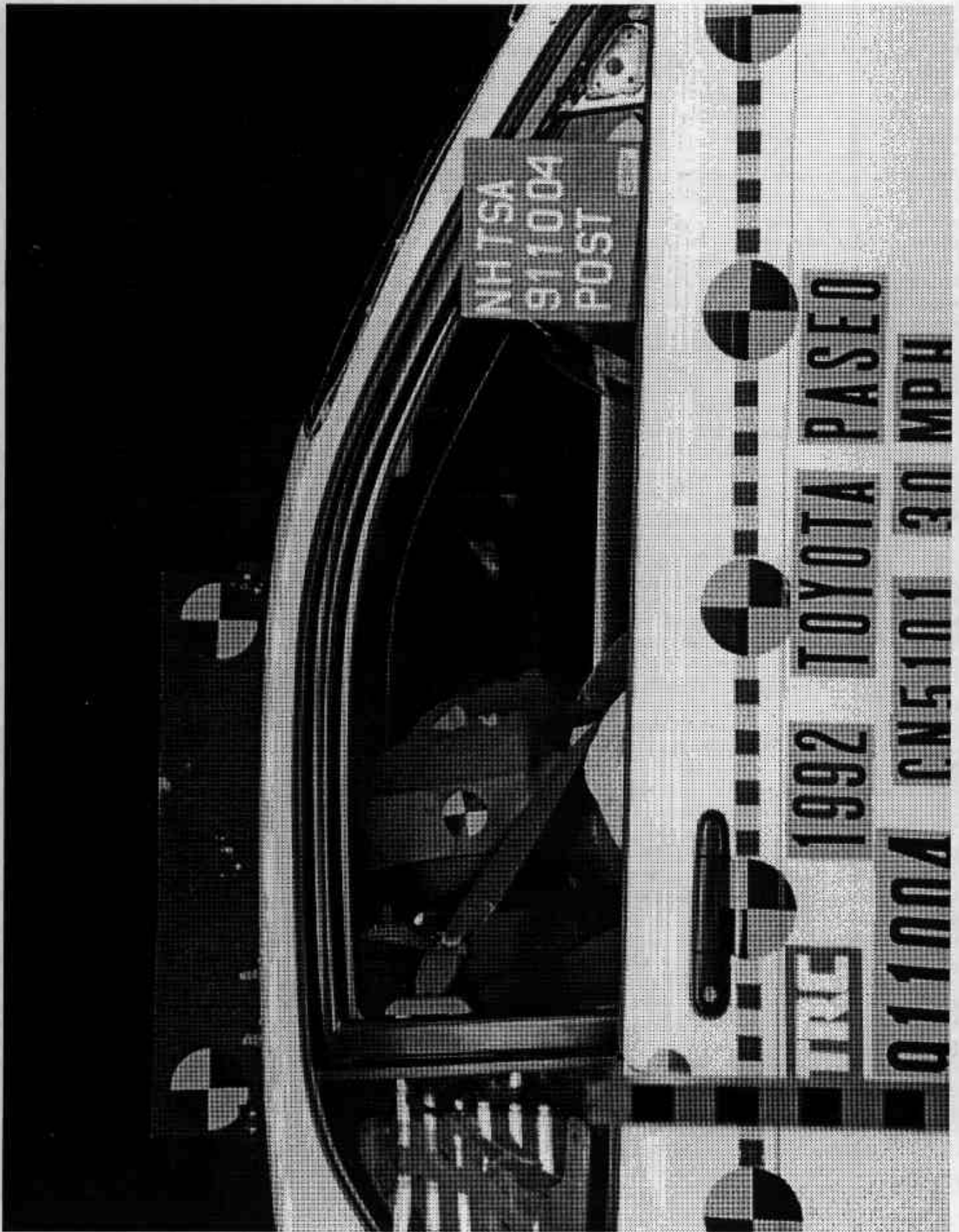


FIG. A-30 POST-TEST PASSENGER DUMMY POSITION VIEW



FIG. A-31 PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR VIEW

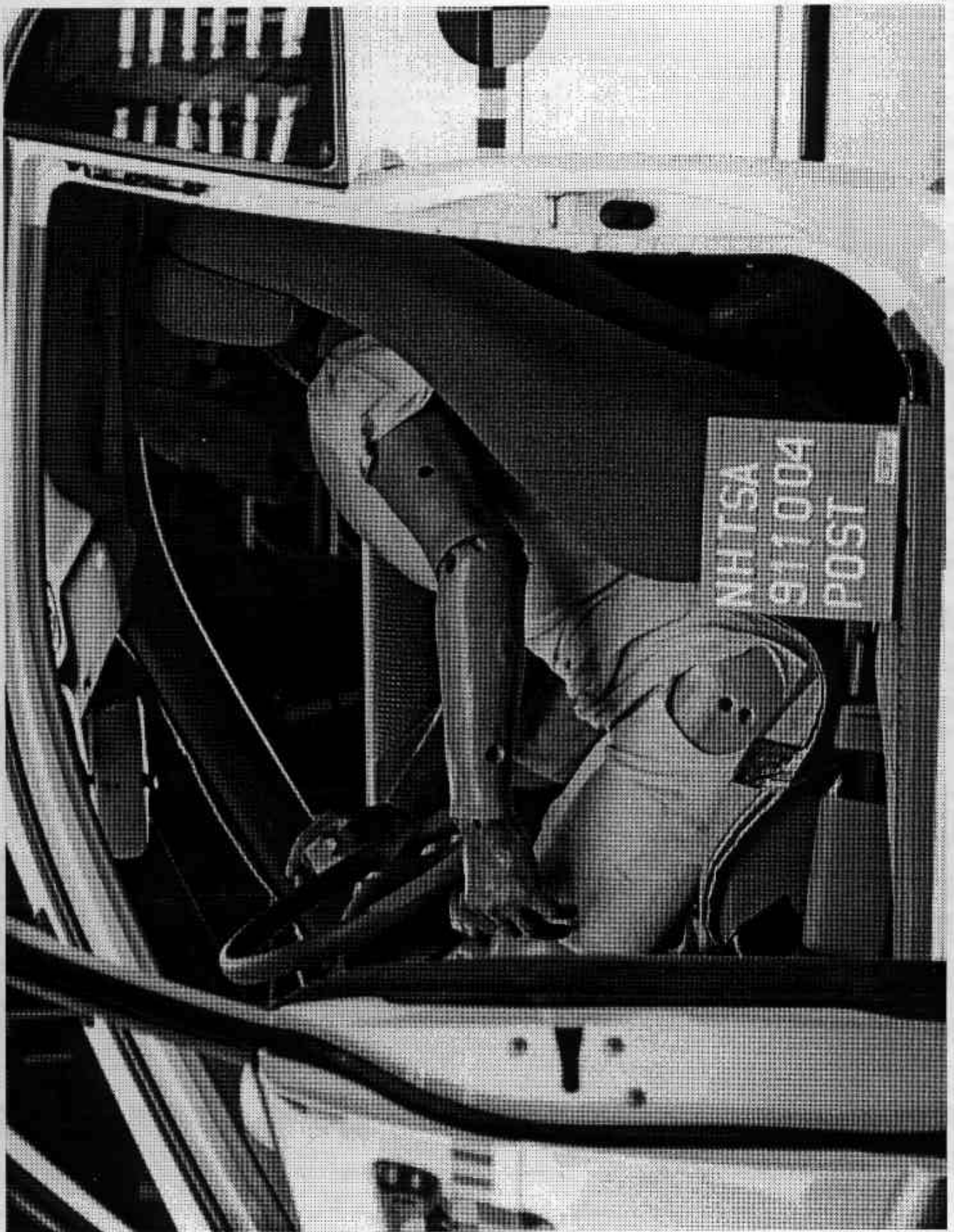


FIG. A-32 POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - 1



FIG. A-33 POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - 2



FIG. A-34 PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW



FIG. A-35 POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - 1



FIG. A-36 POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - 2

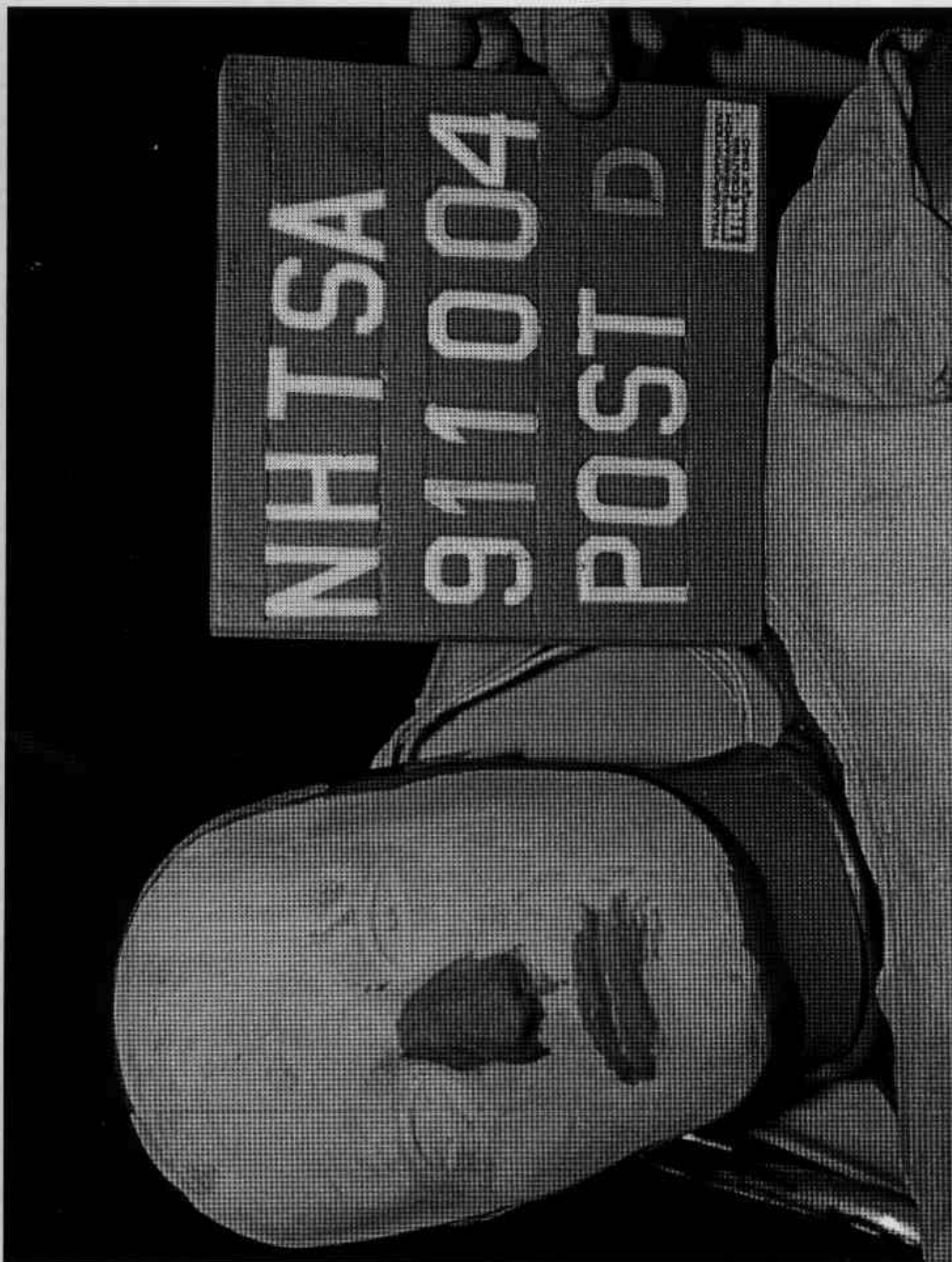


FIG. A-37 POST-TEST DRIVER DUMMY HEAD CONTACT

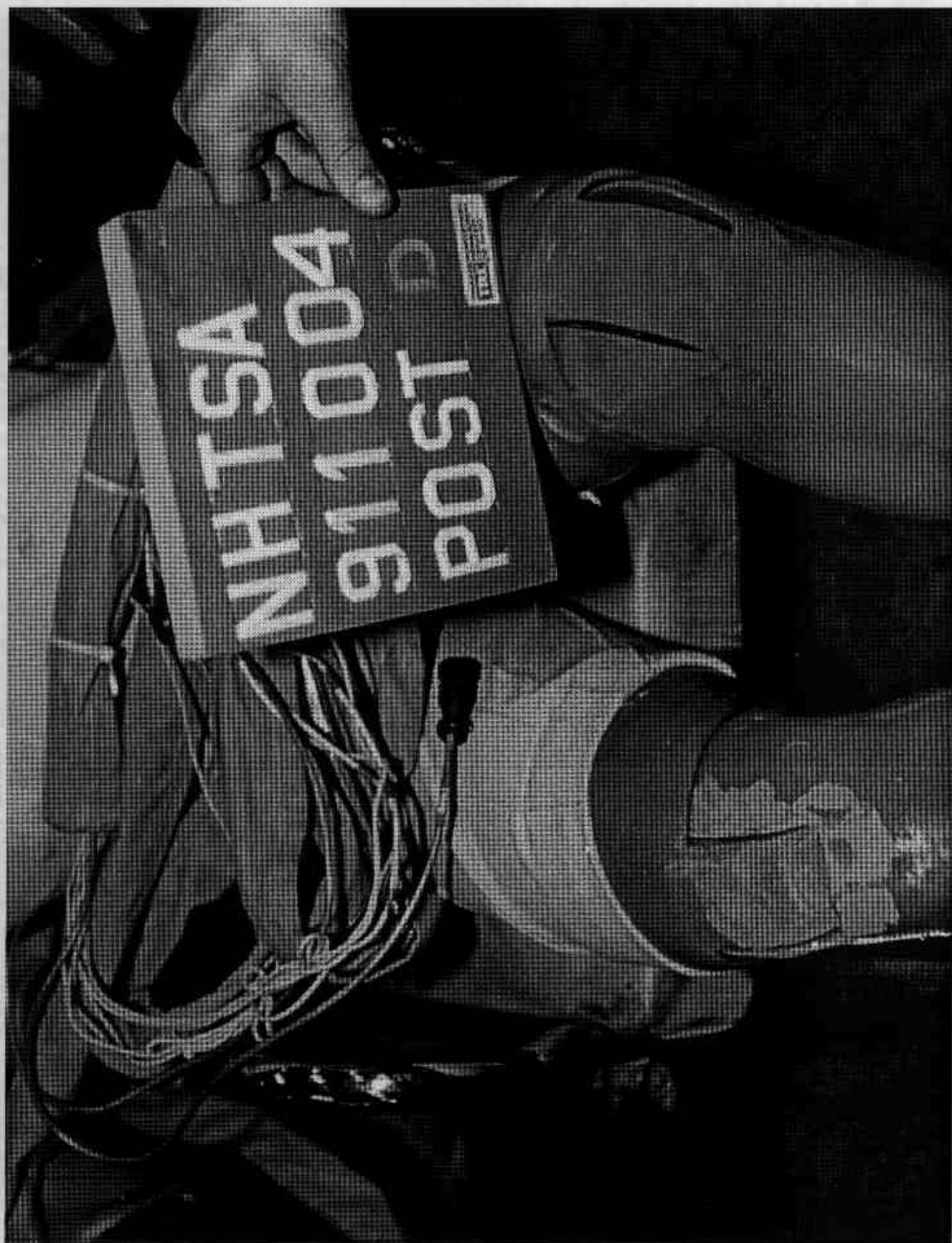


FIG. A-38 POST-TEST DRIVER DUMMY KNEE CONTACT - 1

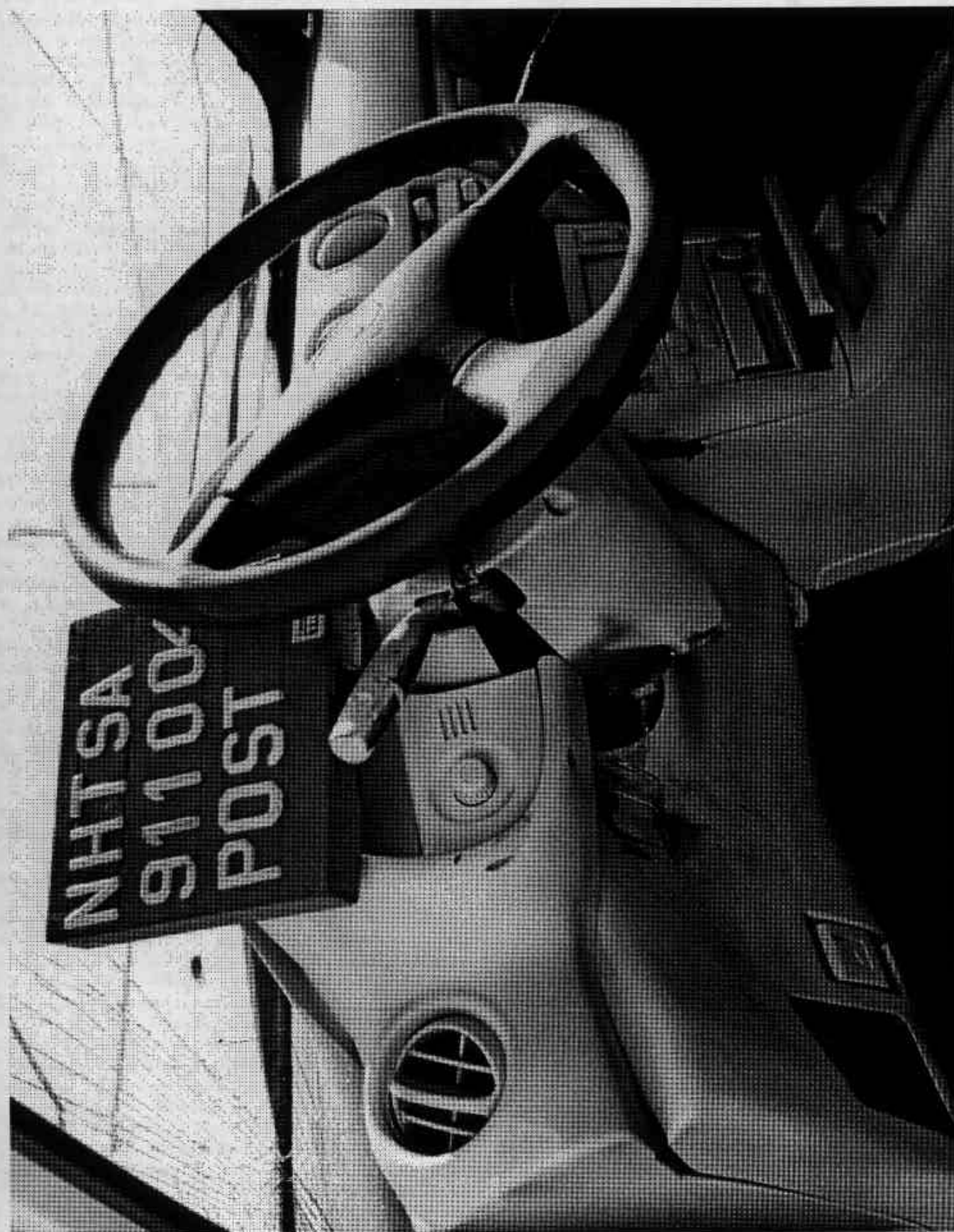


FIG. A-39 POST-TEST DRIVER DUMMY KNEE CONTACT - 2

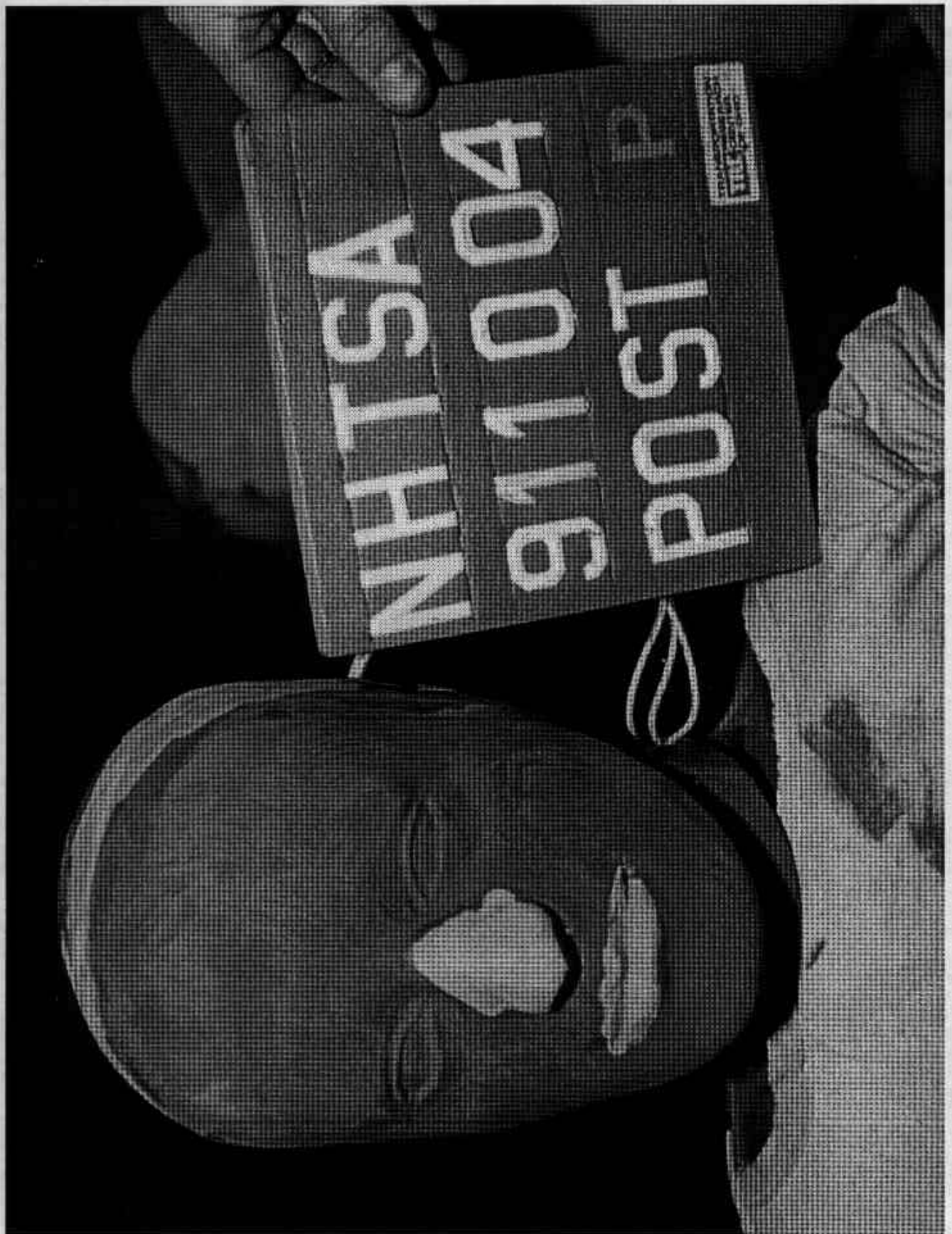


FIG. A-40 POST-TEST PASSENGER DUMMY HEAD CONTACT



FIG. A-41 POST-TEST PASSENGER DUMMY KNEE CONTACT - 1

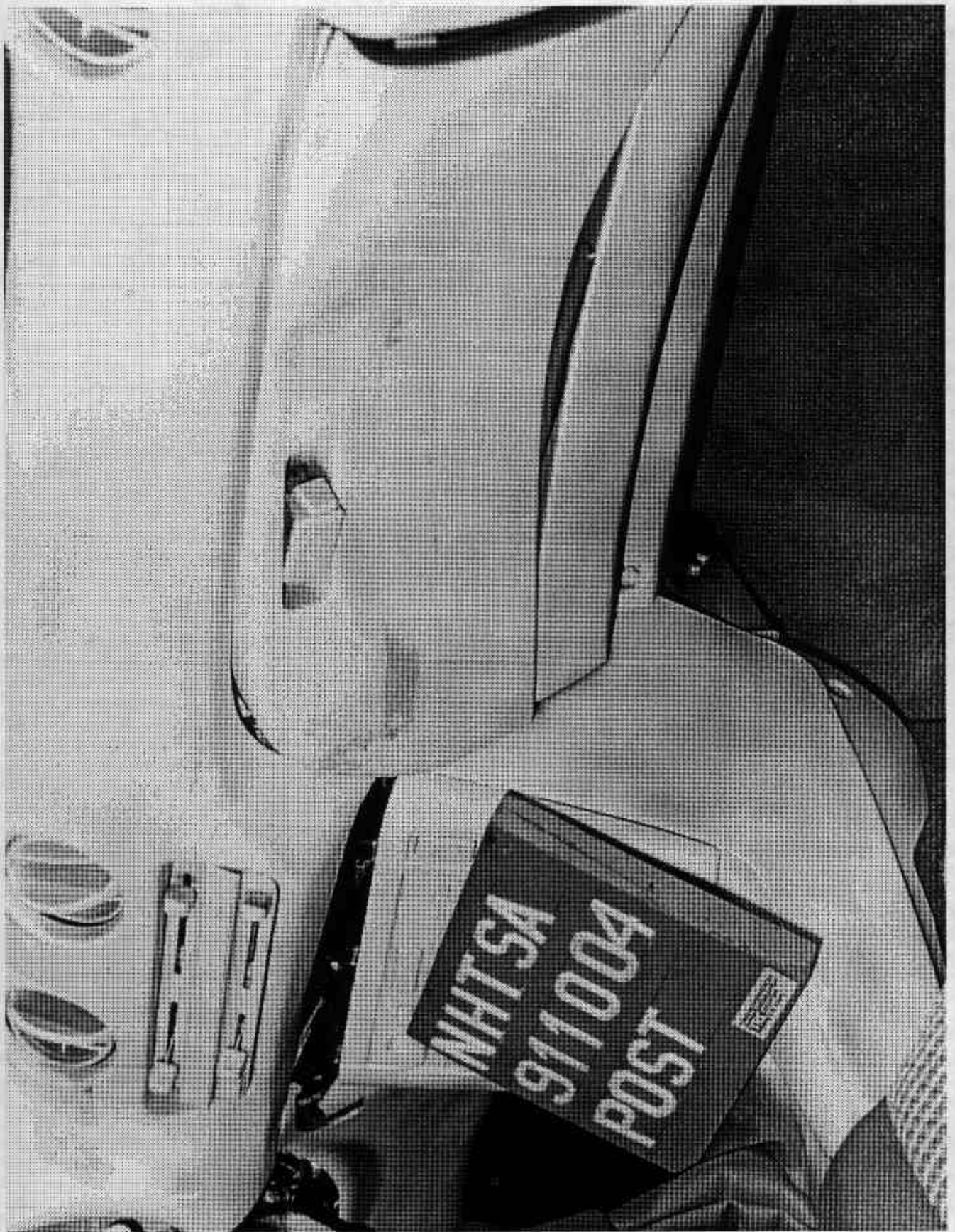
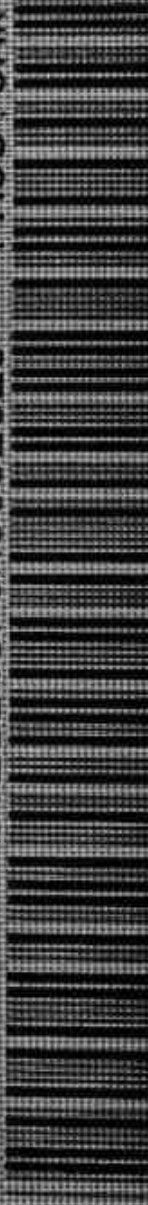


FIG. A-42 POST-TEST PASSENGER DUMMY KNEE CONTACT - 2

070191

MFD. BY: TOYOTA MOTOR CORPORATION 07/91
GVWR 2835LB GAWR FR 1635LB RR 1245LB
THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY BUMPER AND
THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE
JT2EL45F6N0032520 PASS CAR



C/TR: 040/HL80 MODEL: EL44L-DCMSKA
A/TM: -542/C150 MADE IN JAPAN
NO. 821

BA01625631

FIG. A-43 PRE-TEST VEHICLE CERTIFICATION LABEL VIEW

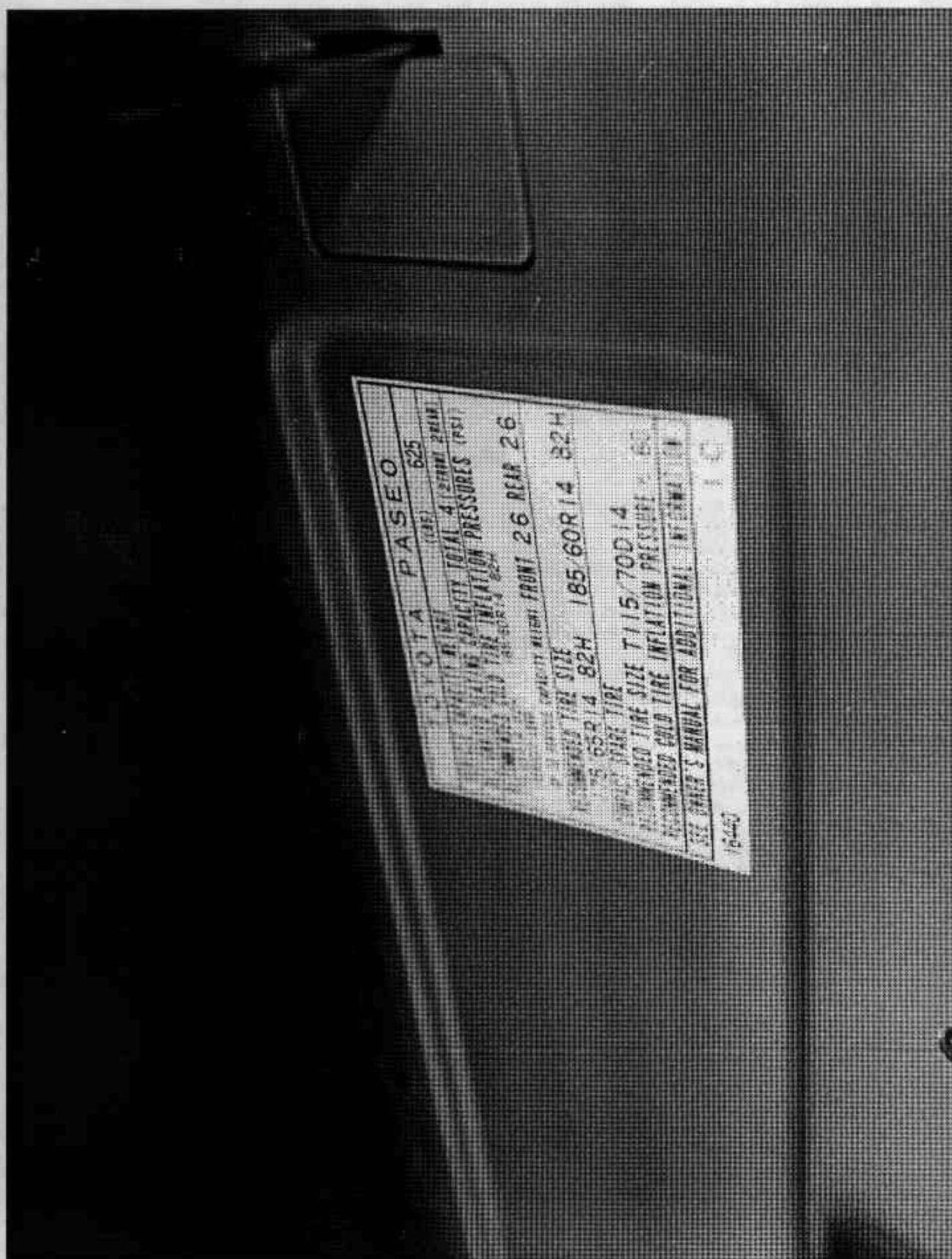


FIG. A-44 PRE-TEST VEHICLE RECOMMENDED TIRE PRESSURE LABEL

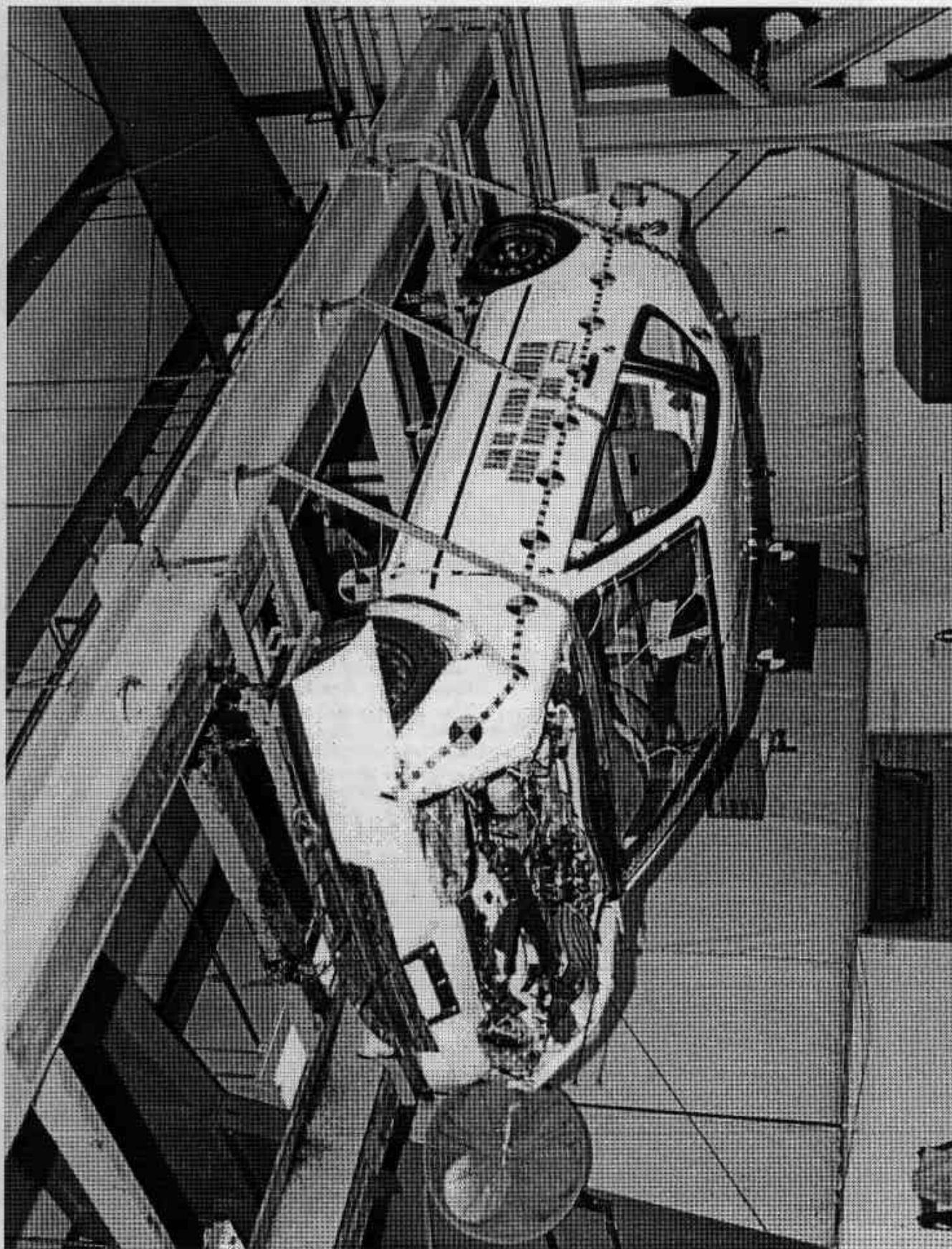


FIG. A-45 POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE

APPENDIX B

DATA PLOTS

208 COMPLIANCE TESTING

91277

HEDXG1

FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = -30.76 92.88

15.35 200.25

240.00

180.00

120.00

60.00

0.00

-60.00

-120.00

-180.00

-240.00

ACCELERATION

[G]

B-2

911004

-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

220.00

250.00

280.00

310.00

340

TIME

(MSEC)

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER

DRIVER HEAD X-AXIS ACCELERATION

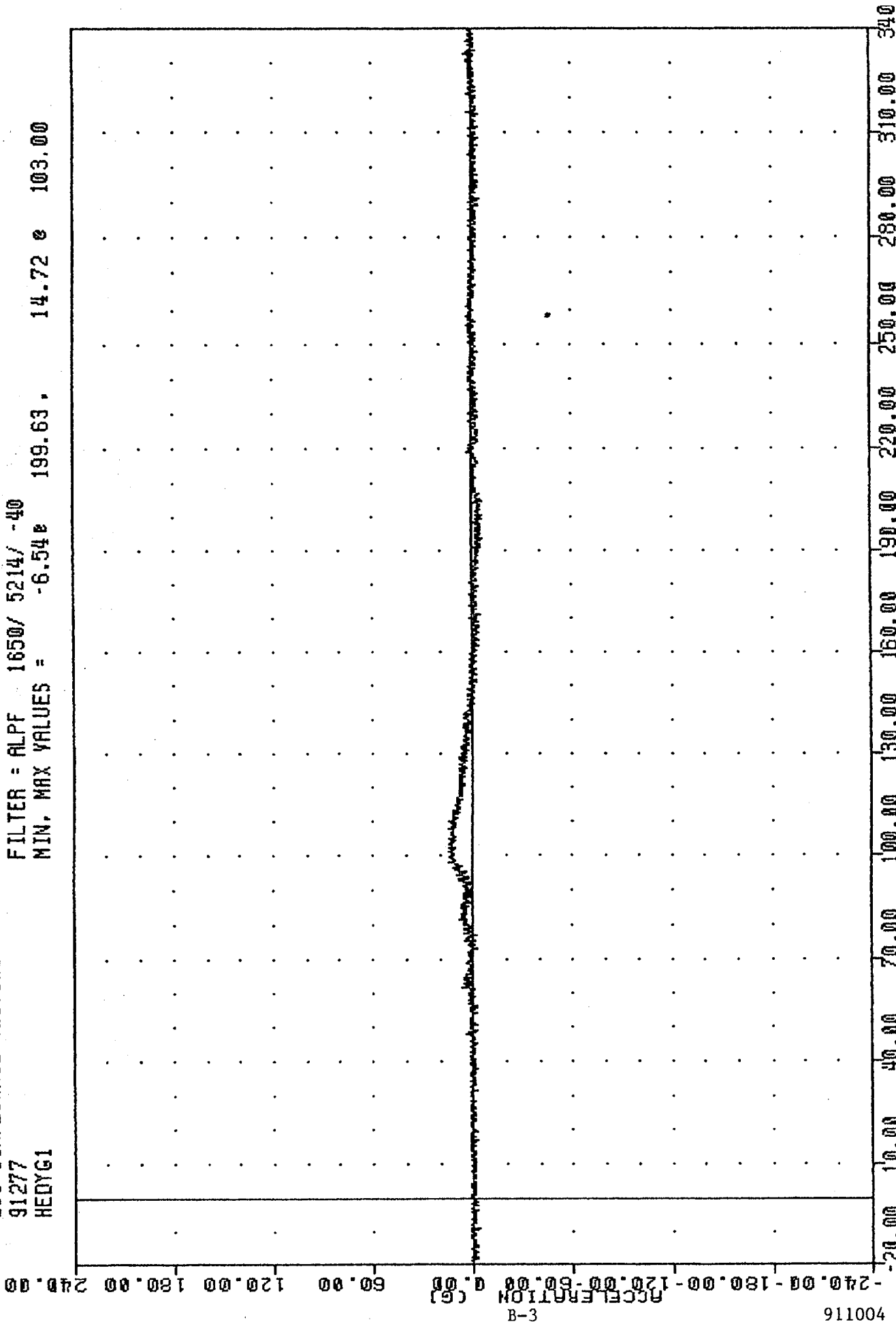
200 COMPLIANCE TESTING

91277

HEDYG1

FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = -6.54 199.63 , 14.72 103.00



200 COMPLIANCE TESTING

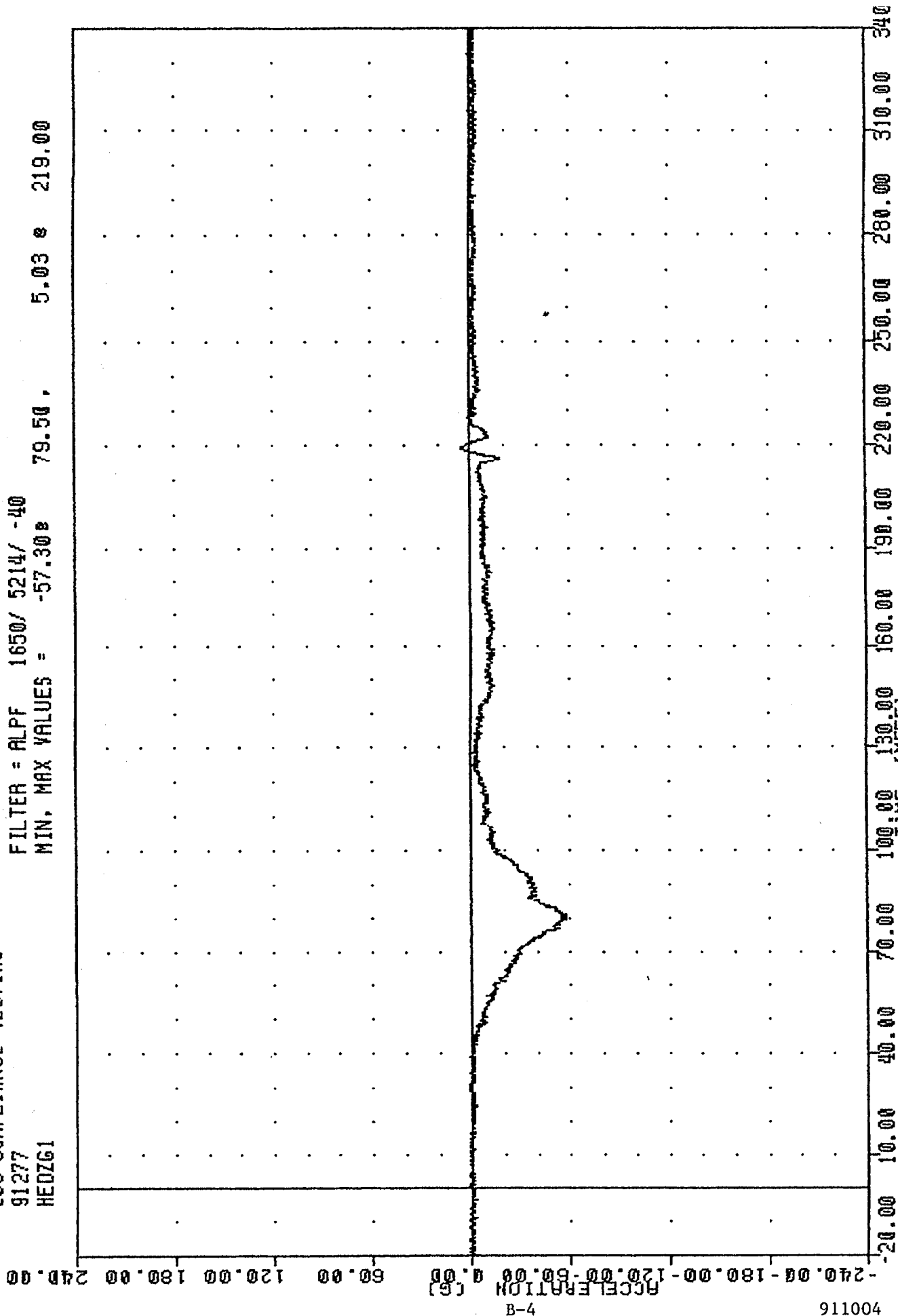
91277

HEDZG1

FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = -57.30 79.50

5.03 219.00



B-4

911004

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
DRIVER HEAD Z-AXIS ACCELERATION

208 COMPLIANCE TESTING

91277

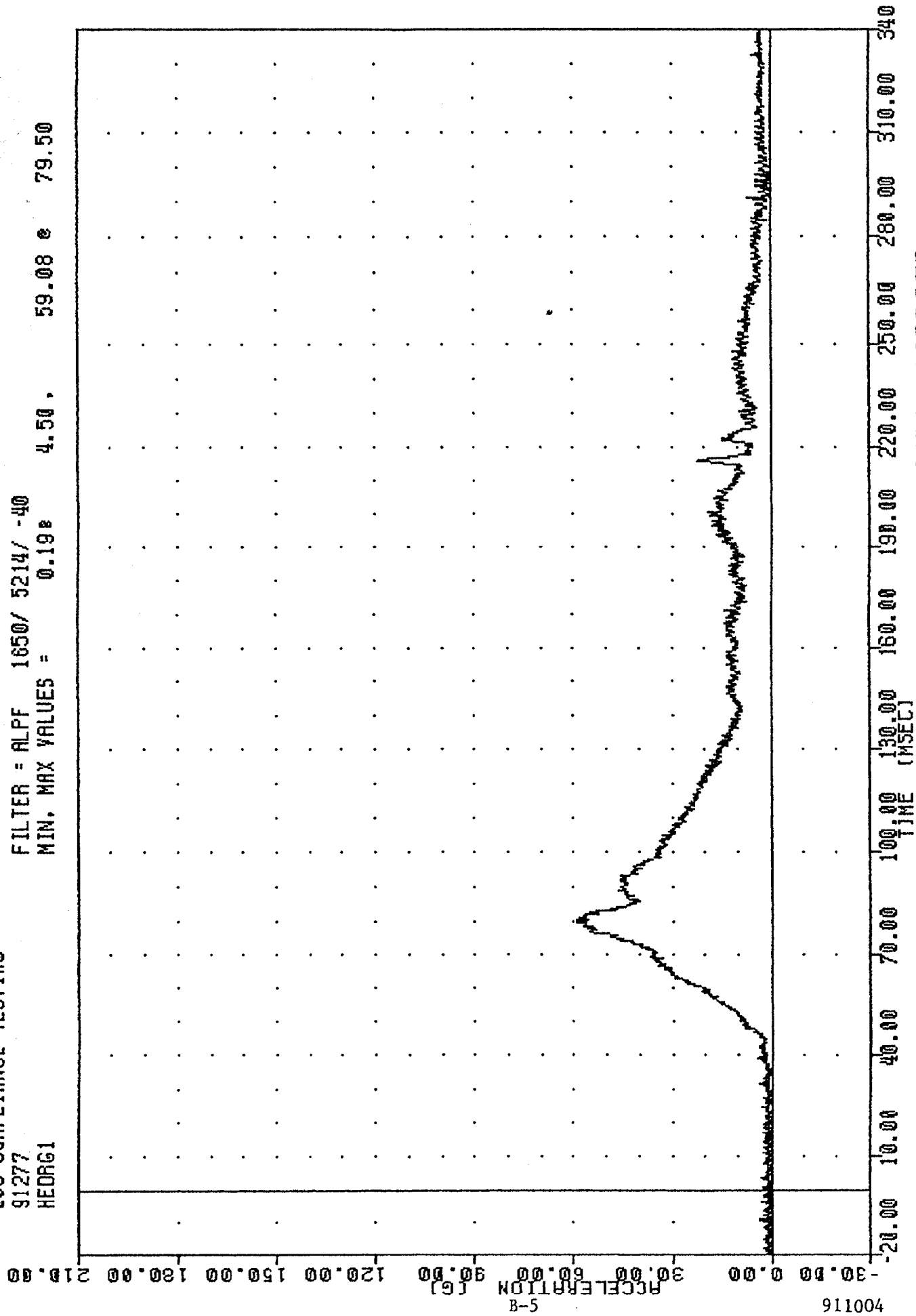
HEDRG1

FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = 0.19e

4.50 .

59.08 e 79.50



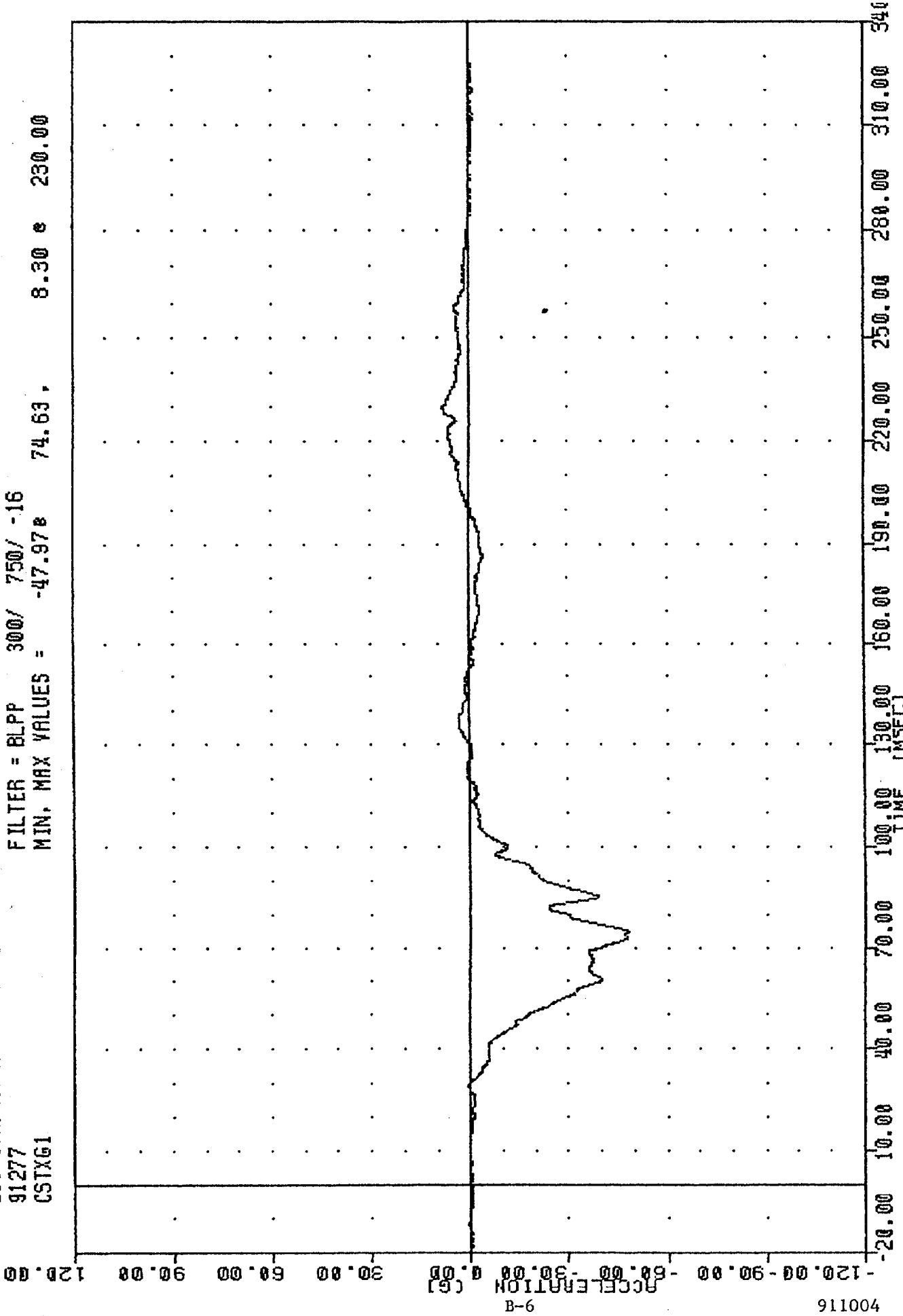
208 COMPLIANCE TESTING

91277

CSTXG1

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = -47.97 74.63 8.30 230.00



B-6

911004

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
DRIVER CHEST X-AXIS ACCELERATION

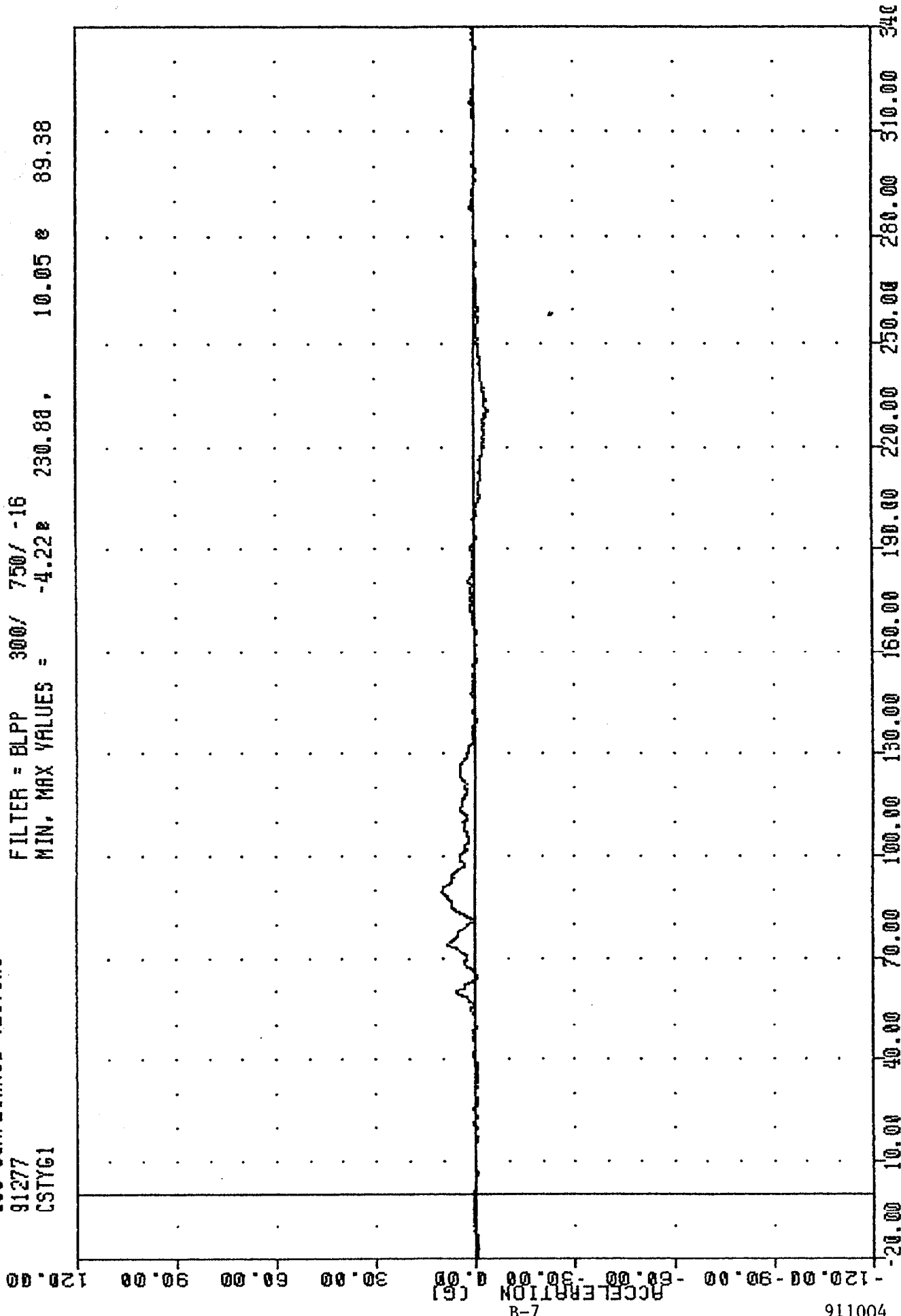
208 COMPLIANCE TESTING

91277

CSTYG1

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = -4.22 230.88 10.05 89.38



B-7

911004

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION

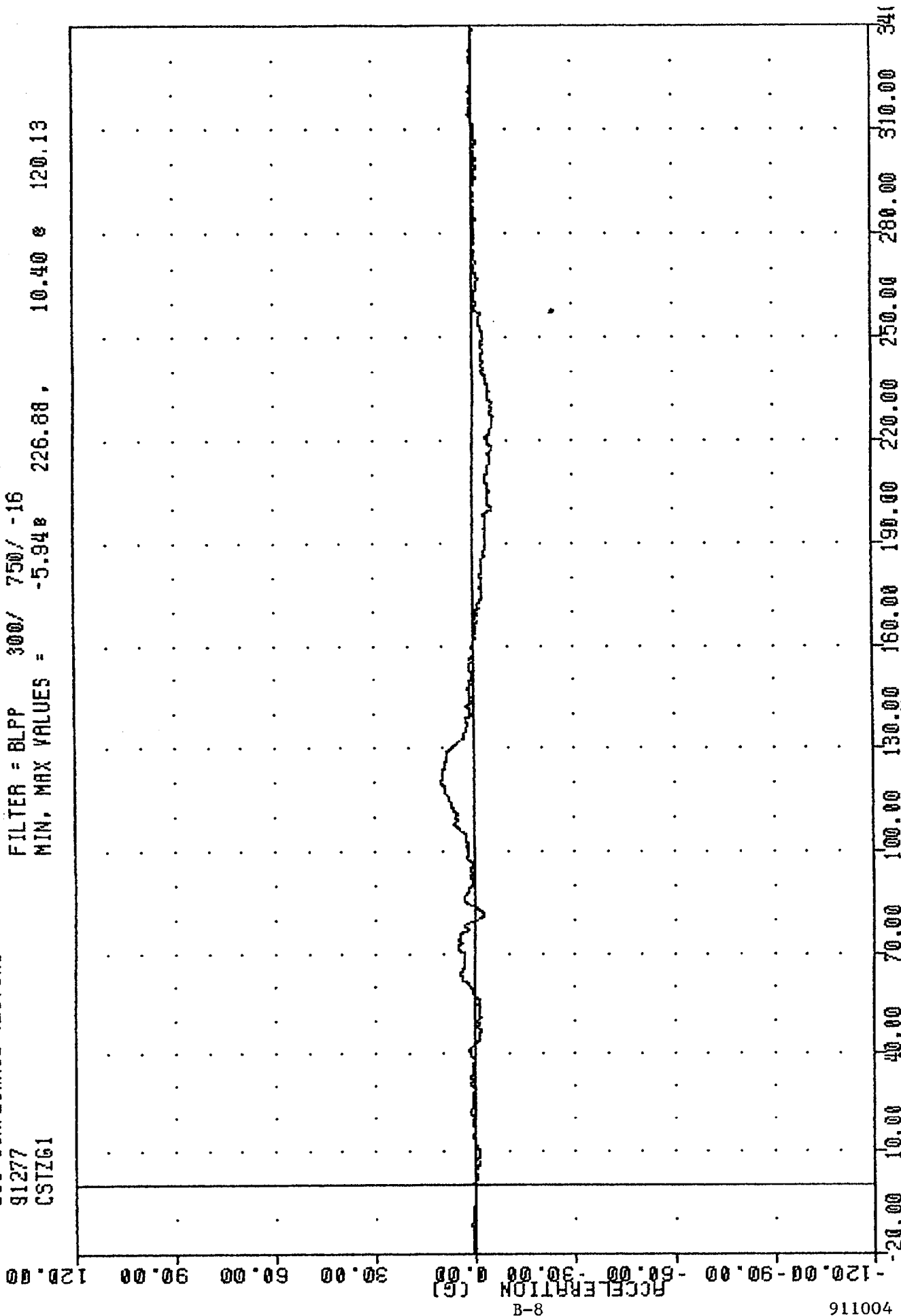
208 COMPLIANCE TESTING

91277

CSTZG1

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = -5.94g 226.88, 10.40 g 120.13



B-8

911004

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION

200 COMPLIANCE TESTING

91277

CSTRG1

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = 0.12g

334.75,

48.75 g

74.50

105.00

90.00

75.00

60.00

45.00

30.00

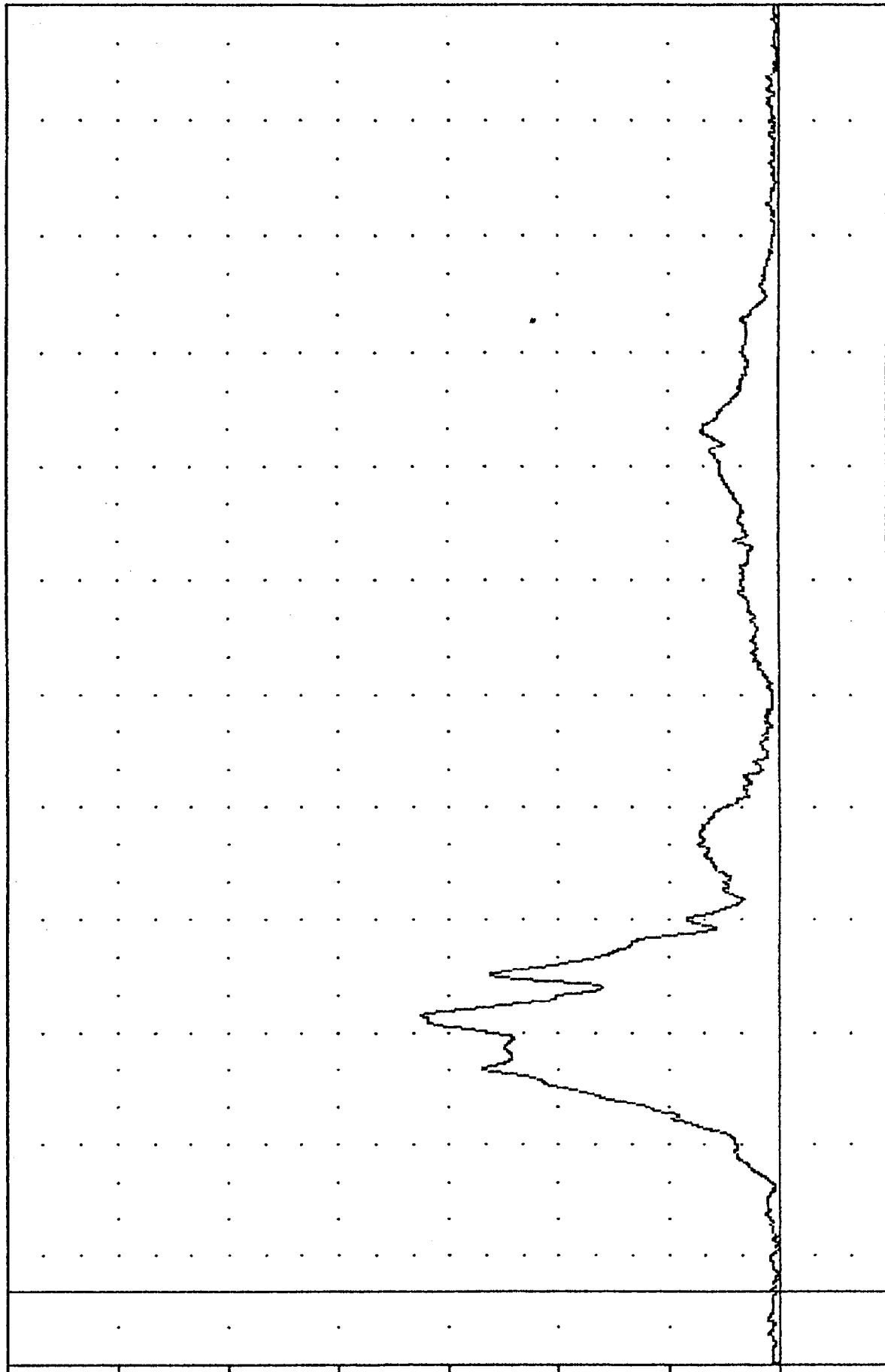
15.00

0.00

-15.00

6-B

911004



1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER

DRIVER CHEST RESULTANT ACCELERATION

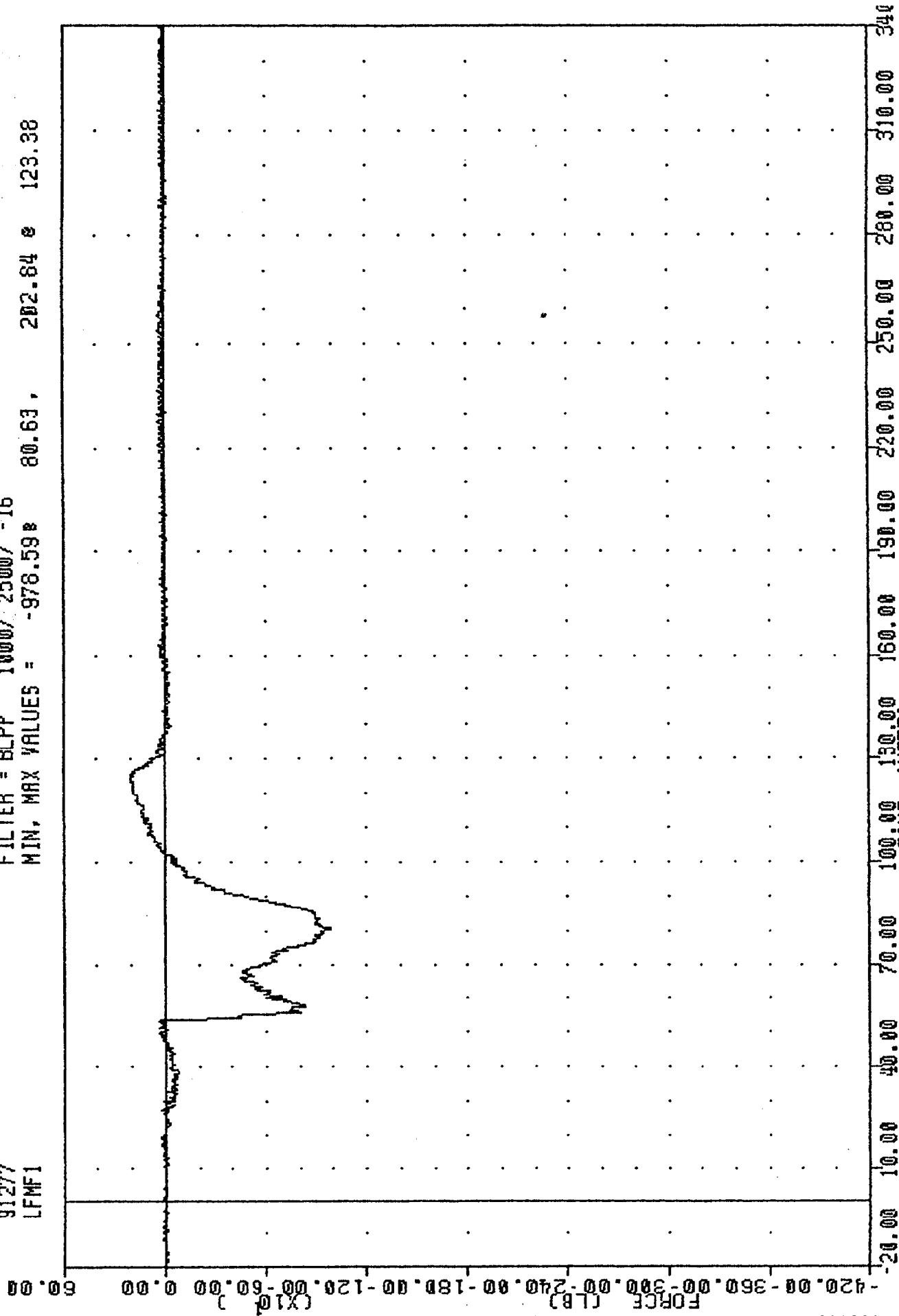
200 COMPLIANCE TESTING

91277

LFMF1

FILTER = BLPP 1000/ 2500/ -16

MIN, MAX VALUES = -978.59# 80.63, 202.84 @ 123.38



1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
DRIVER LEFT FEMUR FORCE

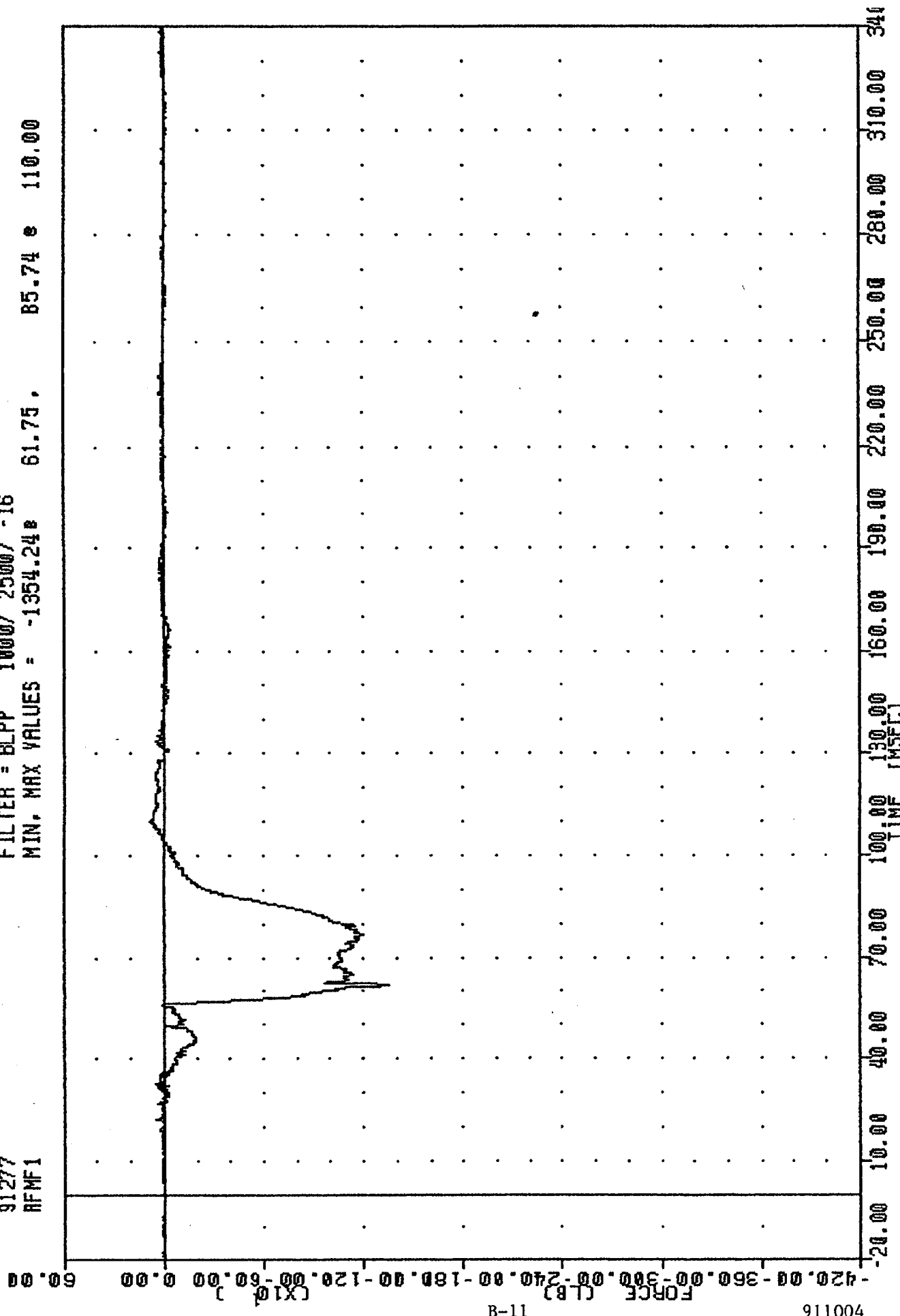
208 COMPLIANCE TESTING

91277

AFMF1

FILTER = BLPP 1000/ 2500/ -16

MIN. MAX VALUES = -1354.24 61.75 85.74 110.00



1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
DRIVER RIGHT FEMUR FORCE

208 COMPLIANCE TESTING

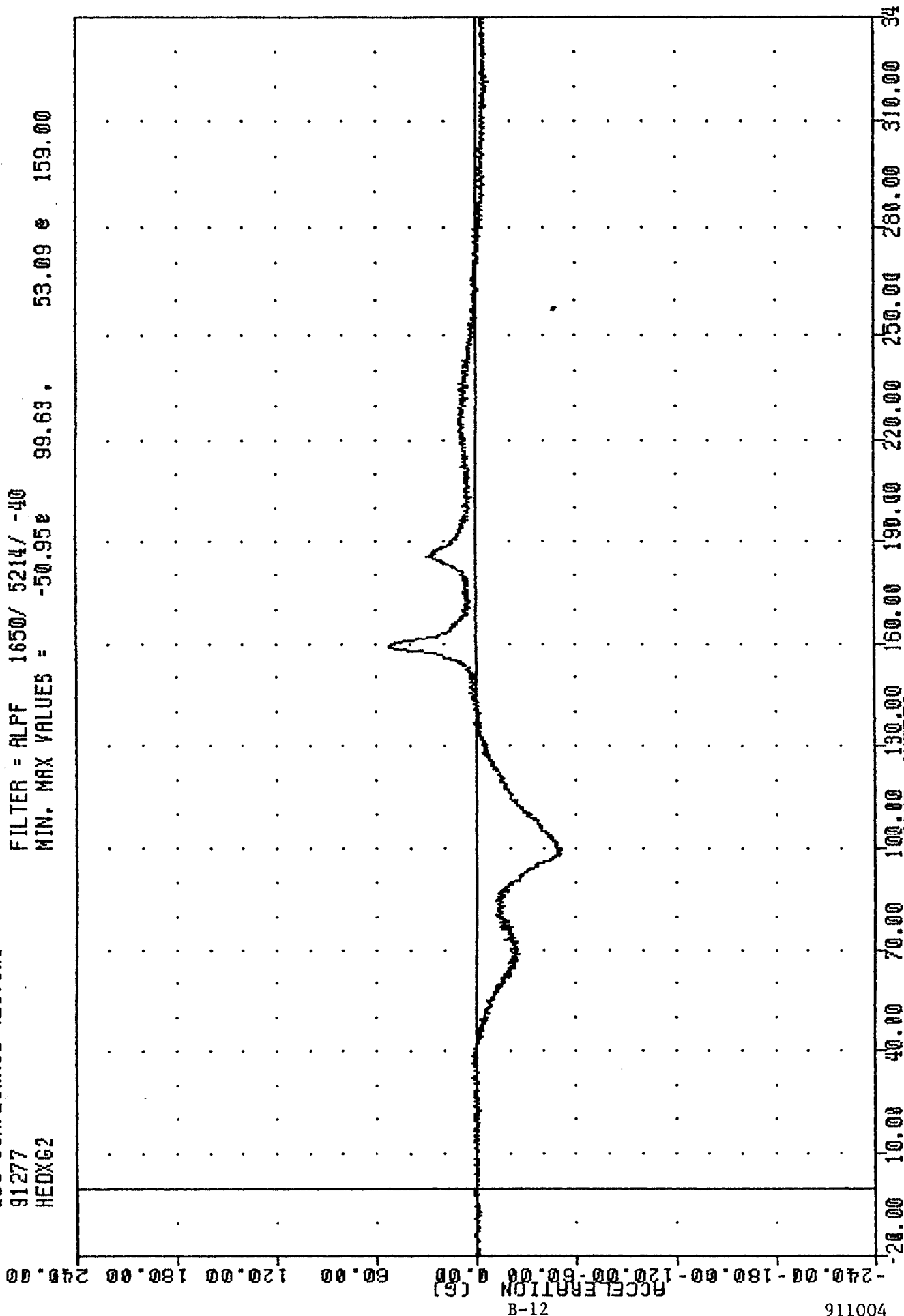
91277

HEDXG2

FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = -50.95e 99.63,

53.09 e 159.00



B-12

911004

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION

208 COMPLIANCE TESTING

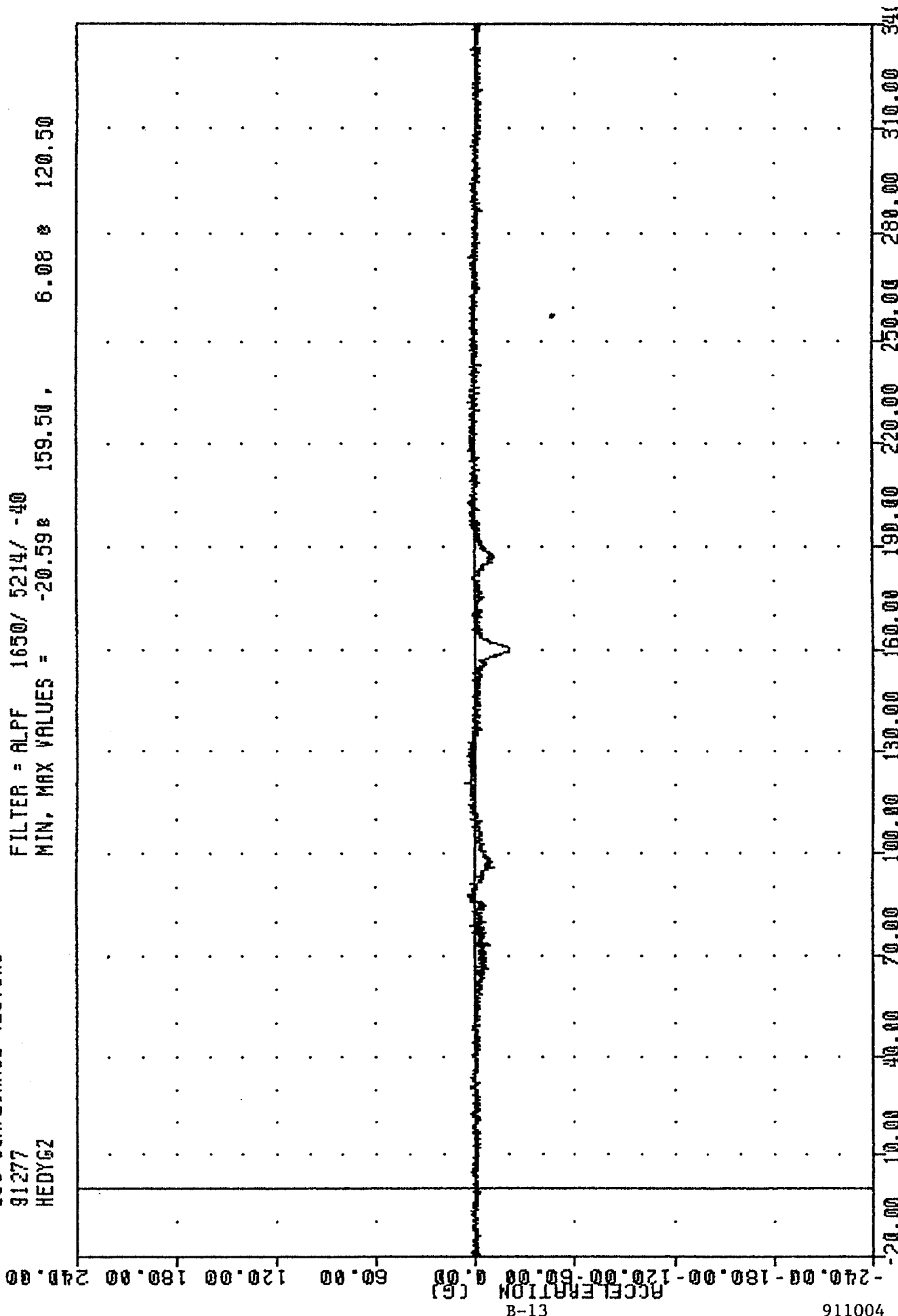
91277

HEDYG2

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = -20.598 159.50 ,

6.08 8 120.50



200 COMPLIANCE TESTING

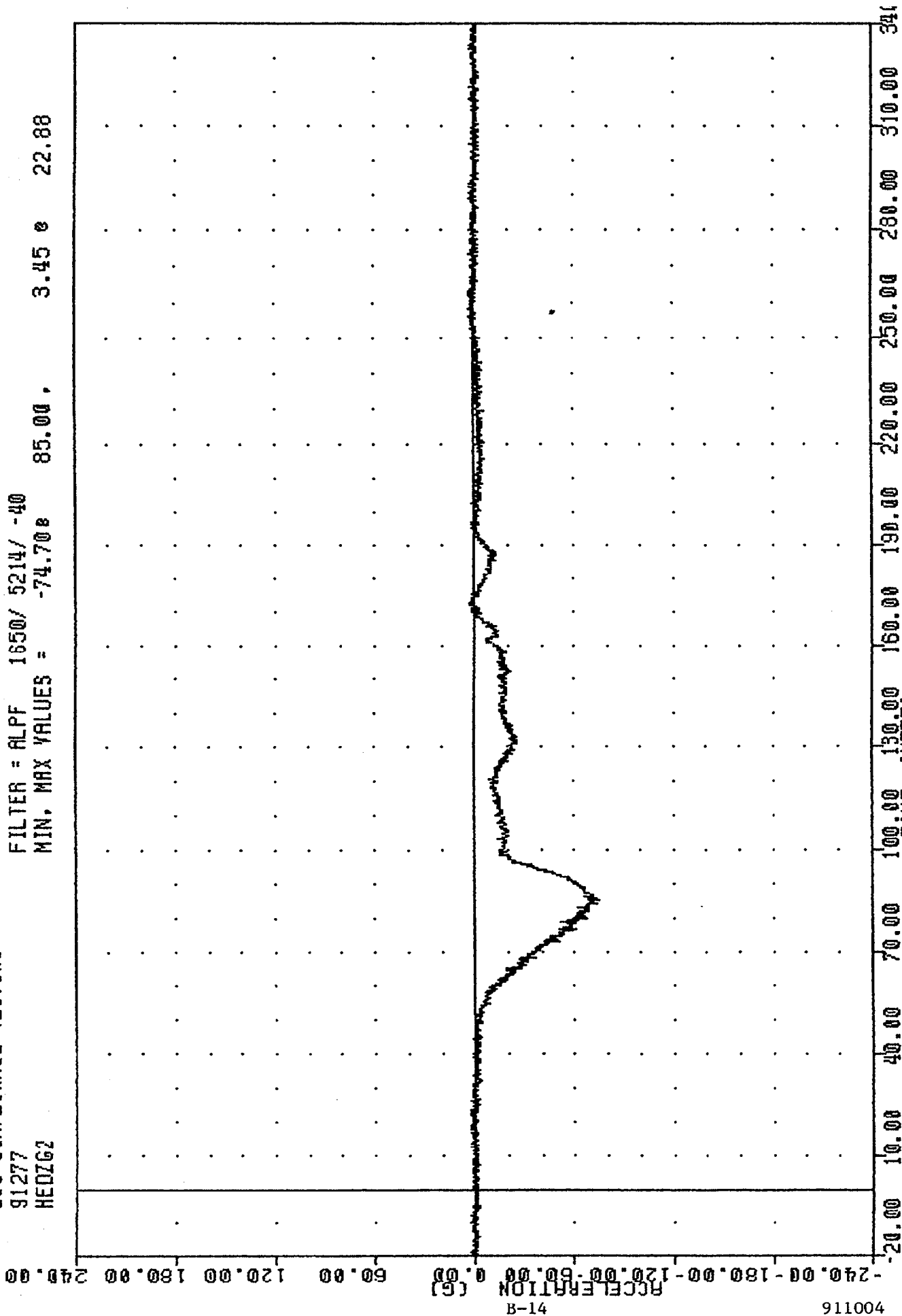
91277

HEDZG2

FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = -74.70 85.00 ,

3.45 22.88



B-14

911004

200 COMPLIANCE TESTING

91277

HEADG2

FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = 0.23e

6.00.

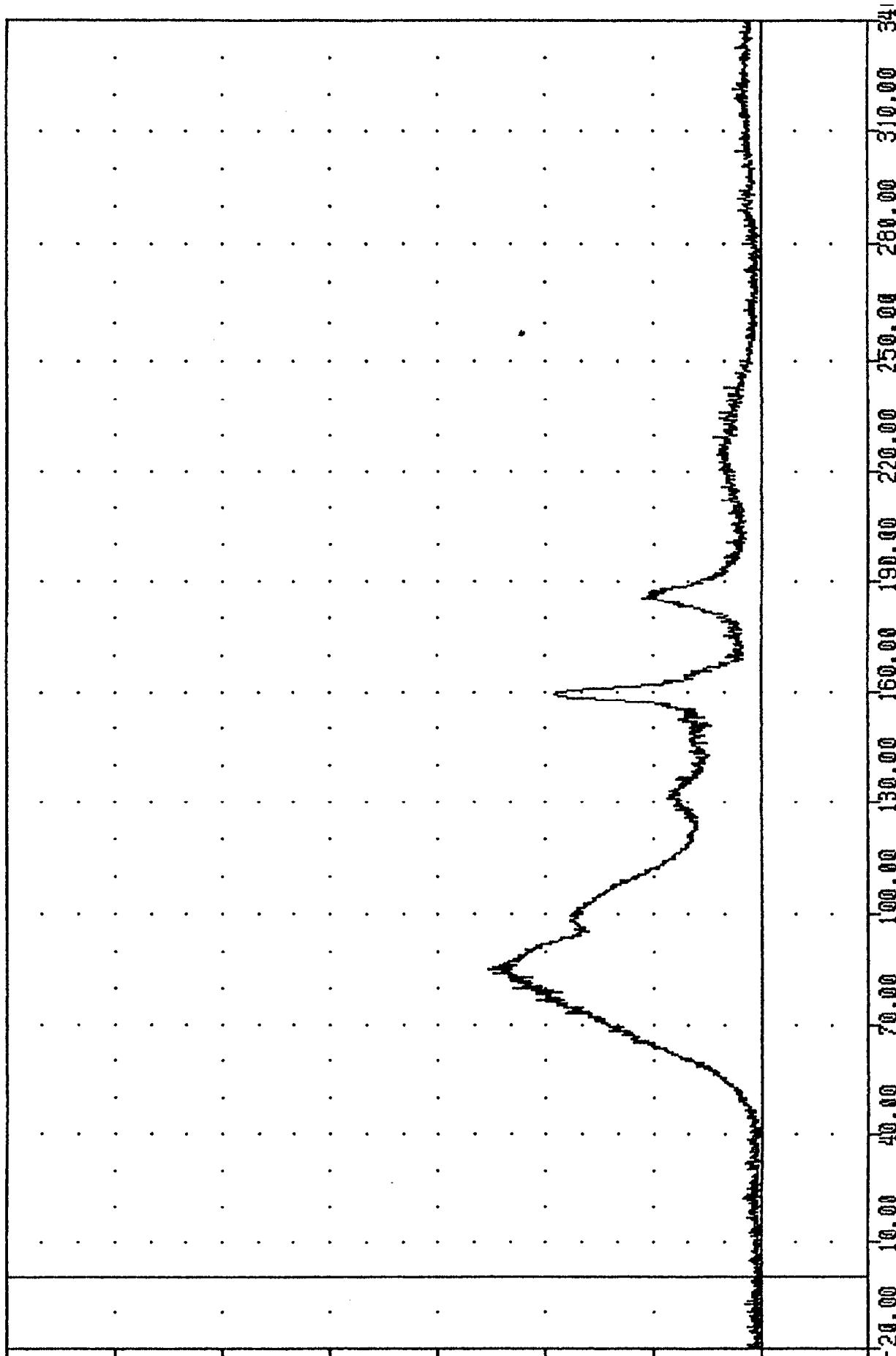
75.85 e

85.00

ACCELERATION (G)

B-15

911004

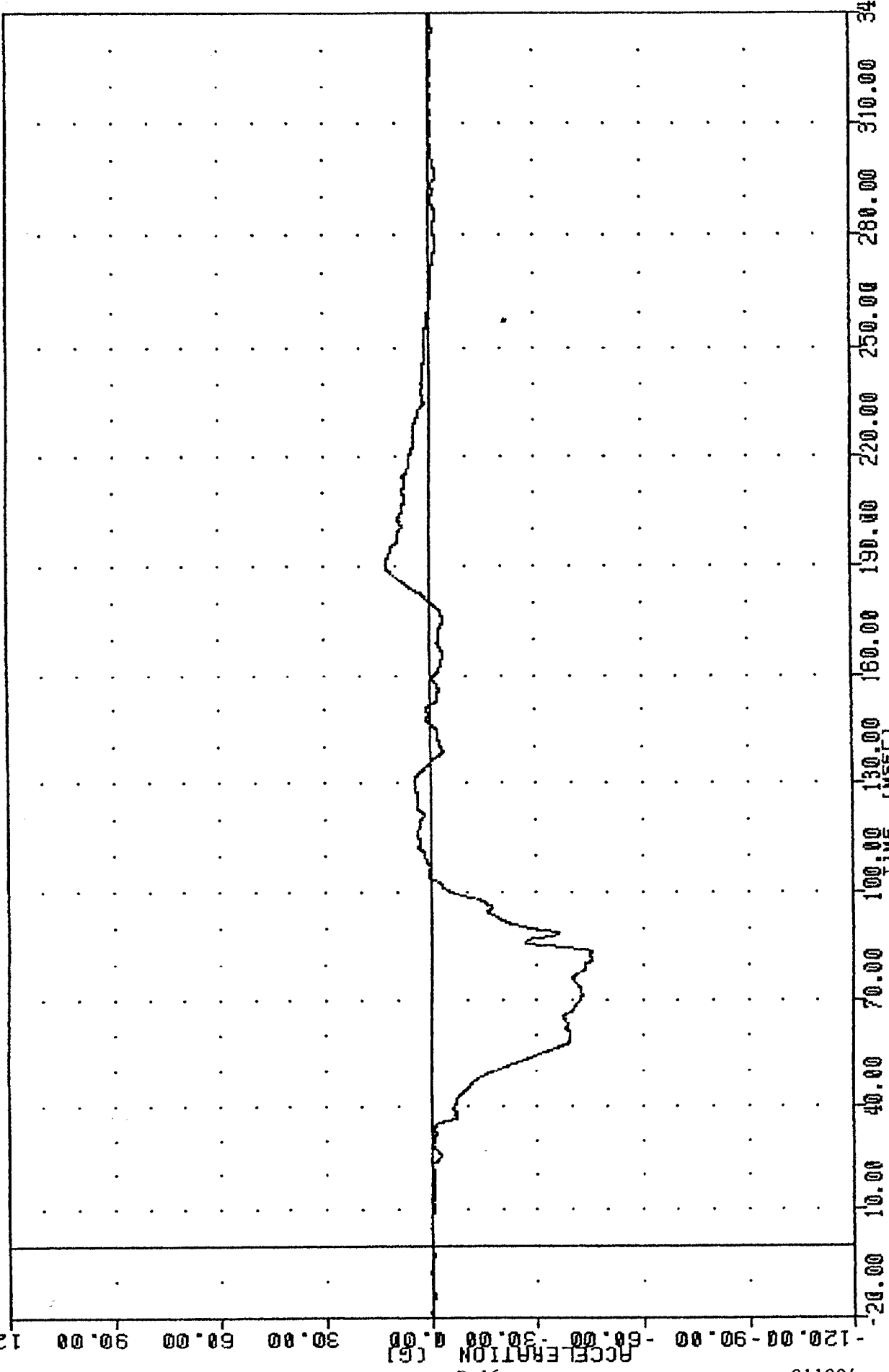


1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

200 COMPLIANCE TESTING

91277
CSTXG2

FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -45.87 81.38, 12.30 190.50



B-16

911004

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

200 COMPLIANCE TESTING

91277

CSTYG2

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = -6.92% 78.75 .

7.87 e 84.00

120.00

90.00

60.00

30.00

0.00

-30.00

-60.00

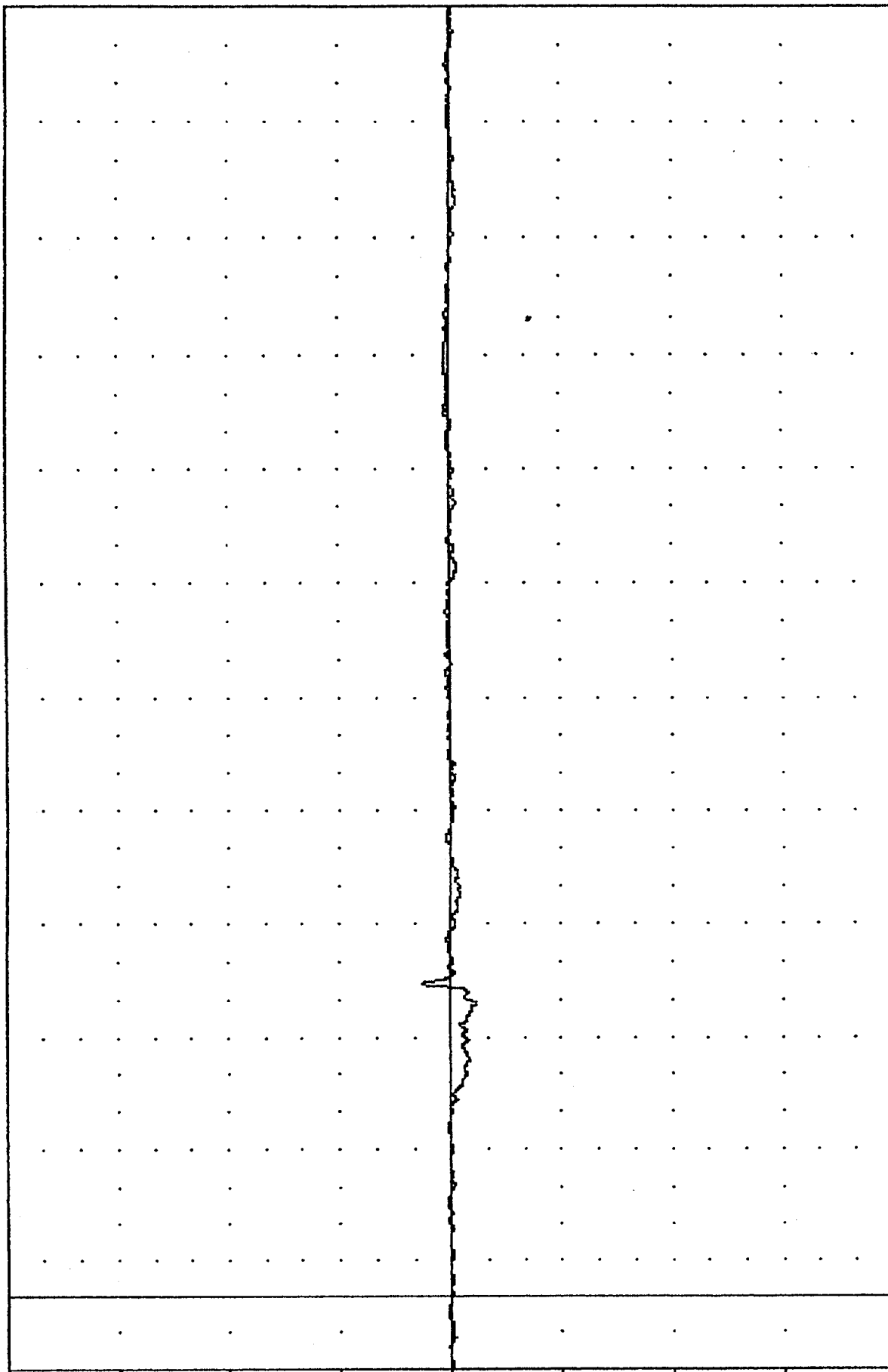
-90.00

-120.00

ACCELERATION (G)

B-17

911004



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

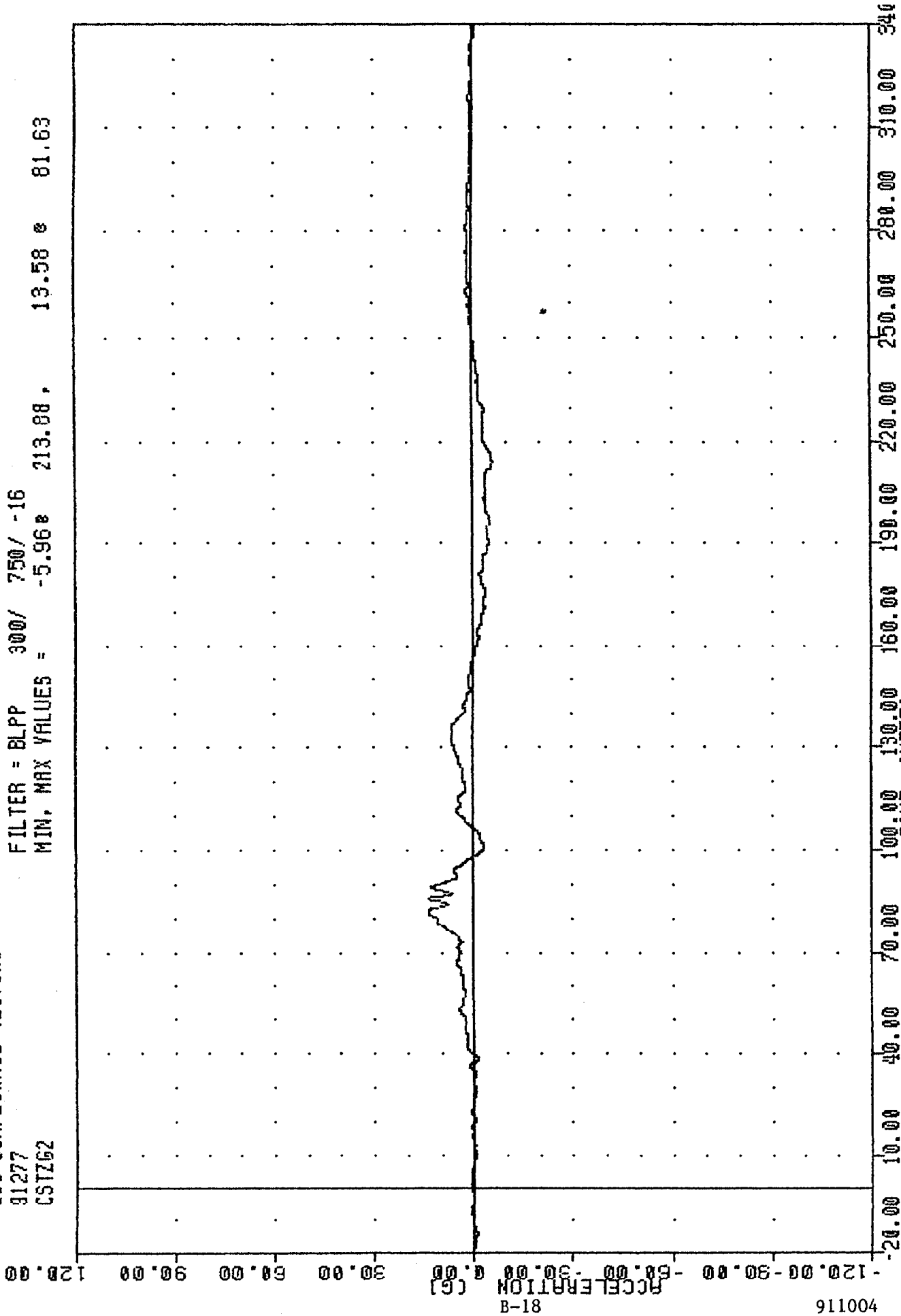
200 COMPLIANCE TESTING

91277

CSTZ62

FILTER = BLPP 300/ 750/ -16

MIN, MAX VALUES = -5.96e 213.88, 13.58 e 81.63



B-18

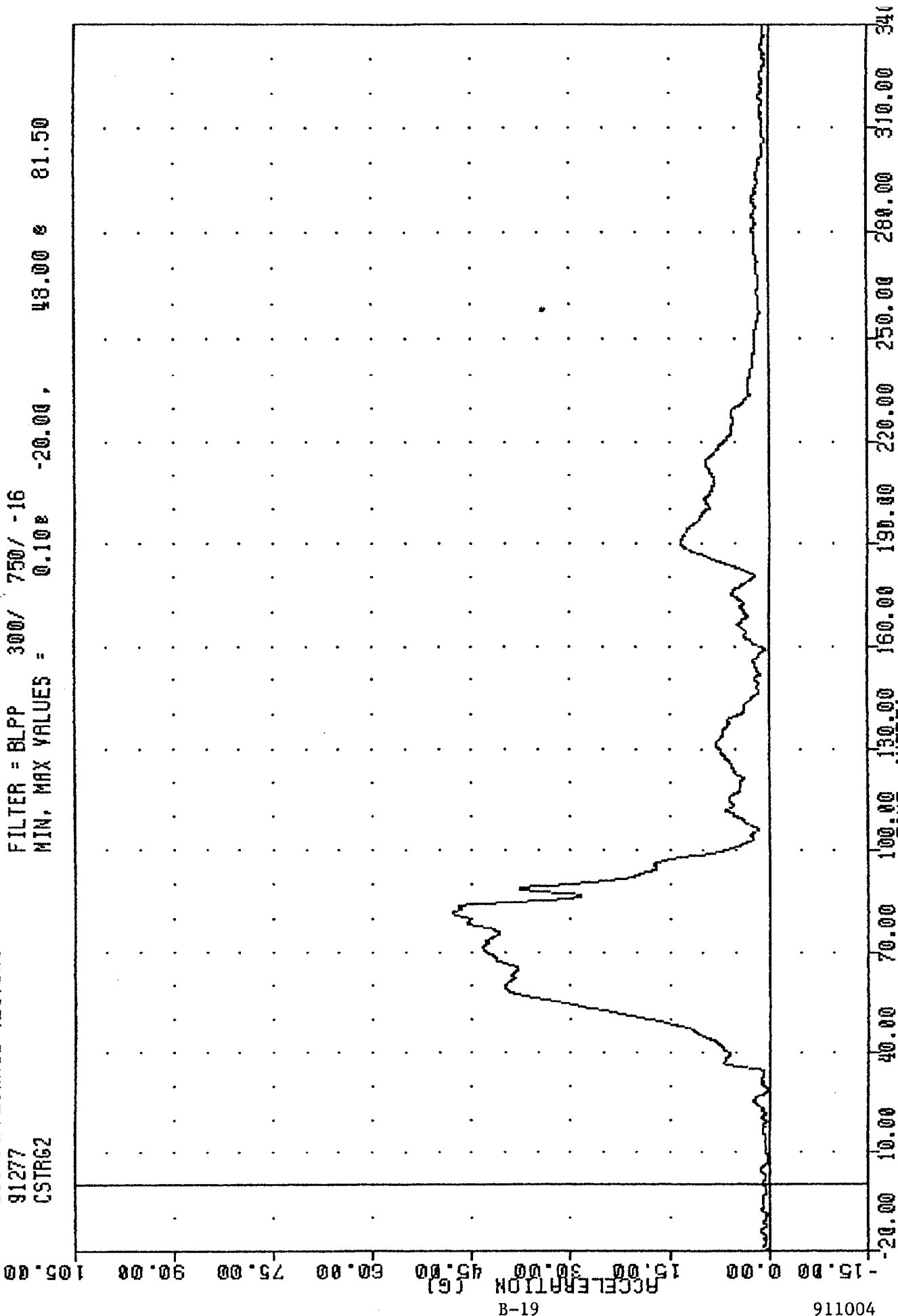
911004

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

208 COMPLIANCE TESTING

91277
CSTRG2

FILTER = BLPP 300/ 750/ -16
MIN. MAX VALUES = 0.10E -20.00 48.00 81.50



B-19

911004

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

200 COMPLIANCE TESTING

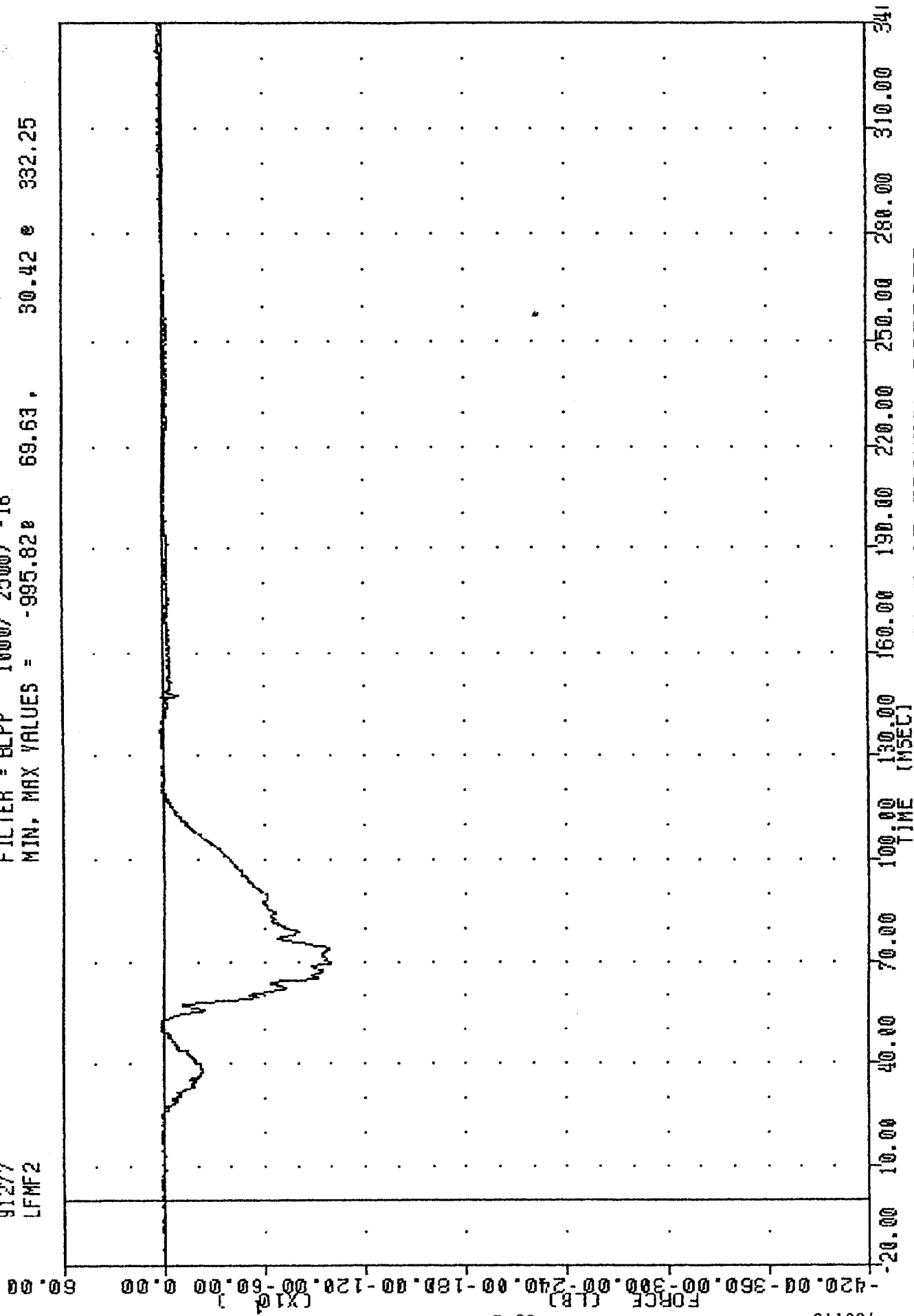
91277

LFMF2

FILTER = BLPP 1000/ 2500/ -16

MIN, MAX VALUES = -995.820 69.63 ,

30.42 @ 332.25



1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER LEFT FEMUR FORCE

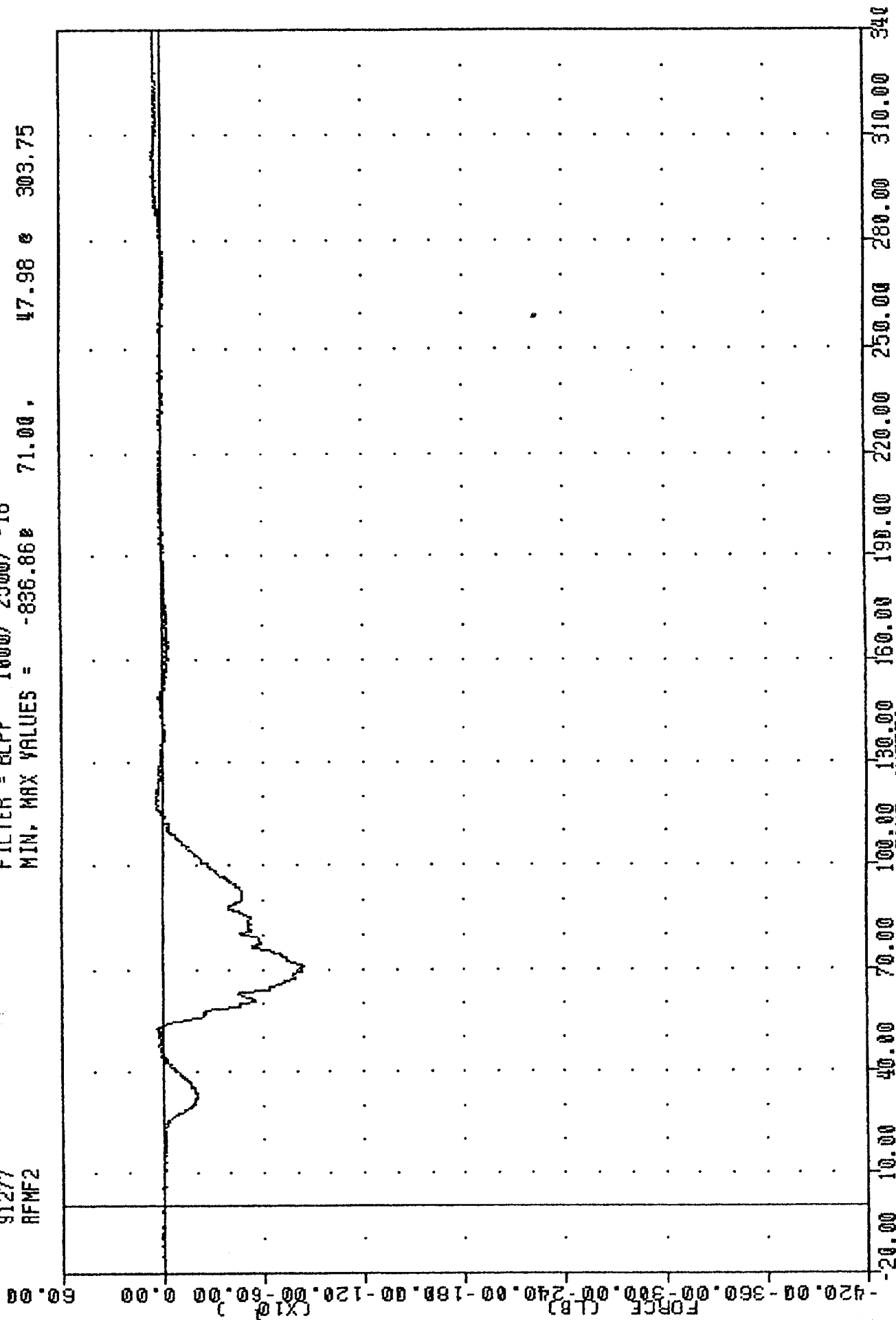
200 COMPLIANCE TESTING

91277

RFMF2

FILTER = BLPP 1000/ 2500/ -16

MIN. MAX VALUES = -836.86 71.00 . 47.98 303.75

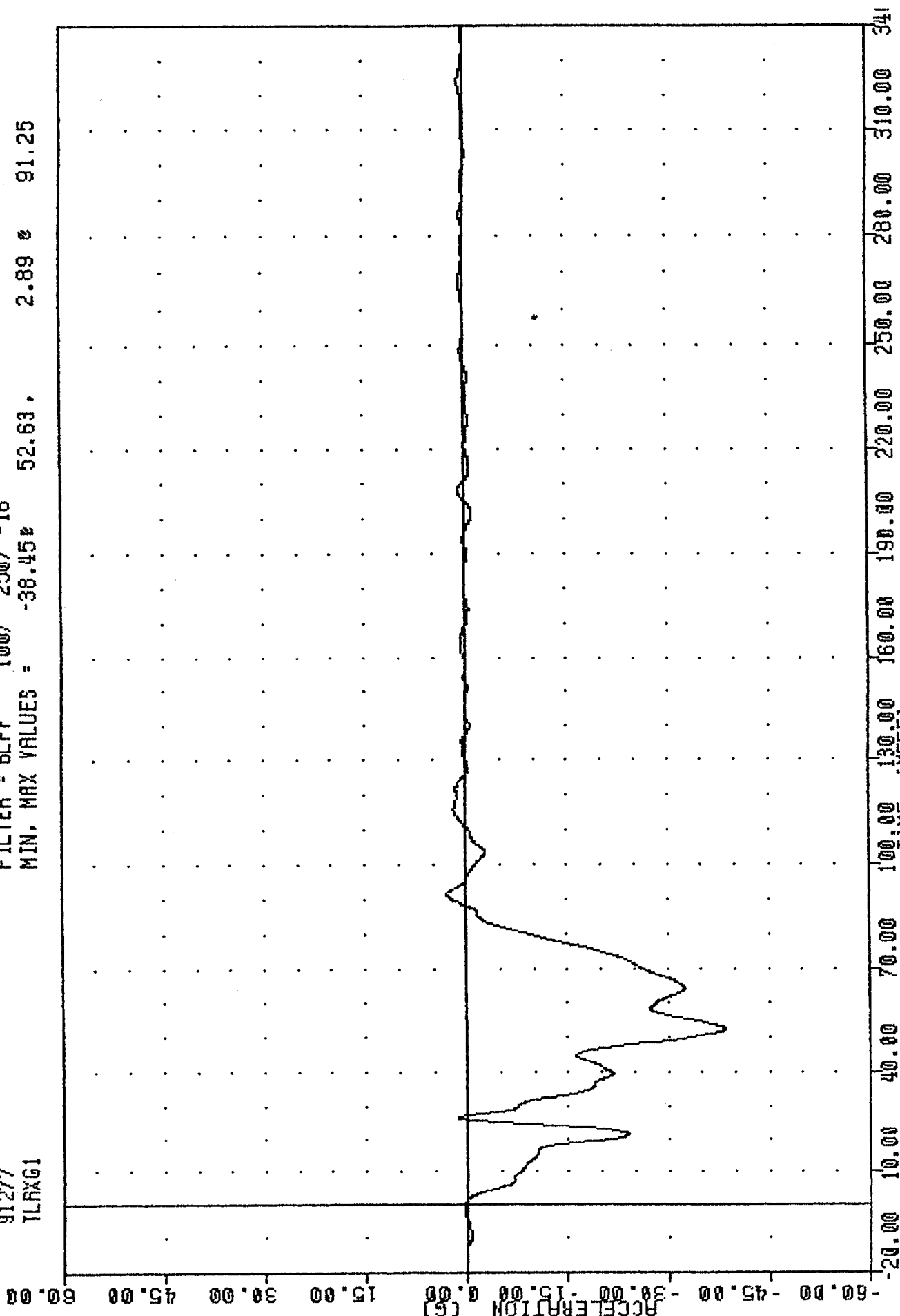


1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

208 COMPLIANCE TESTING

91277
TLRXG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -38.45# 52.63# 2.89 # 91.25



1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION

200 COMPLIANCE TESTING

91277

TRXG1

FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -37.16 62.63

1.87 95.63

62.63

1.87

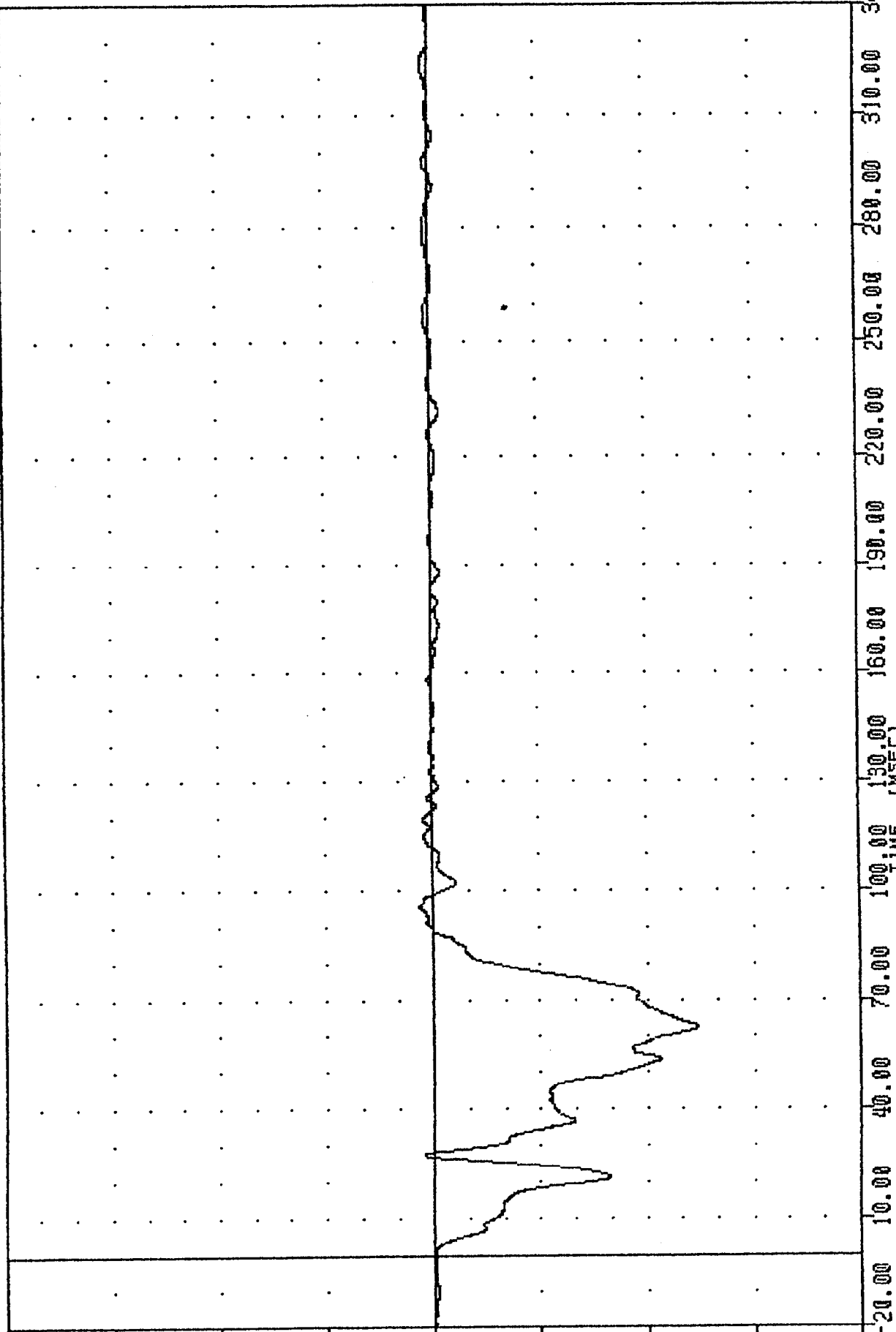
95.63

60.00
45.00
30.00
15.00
0.00
-15.00
-30.00
-45.00
-60.00

ACCELERATION (G)

B-23

911004

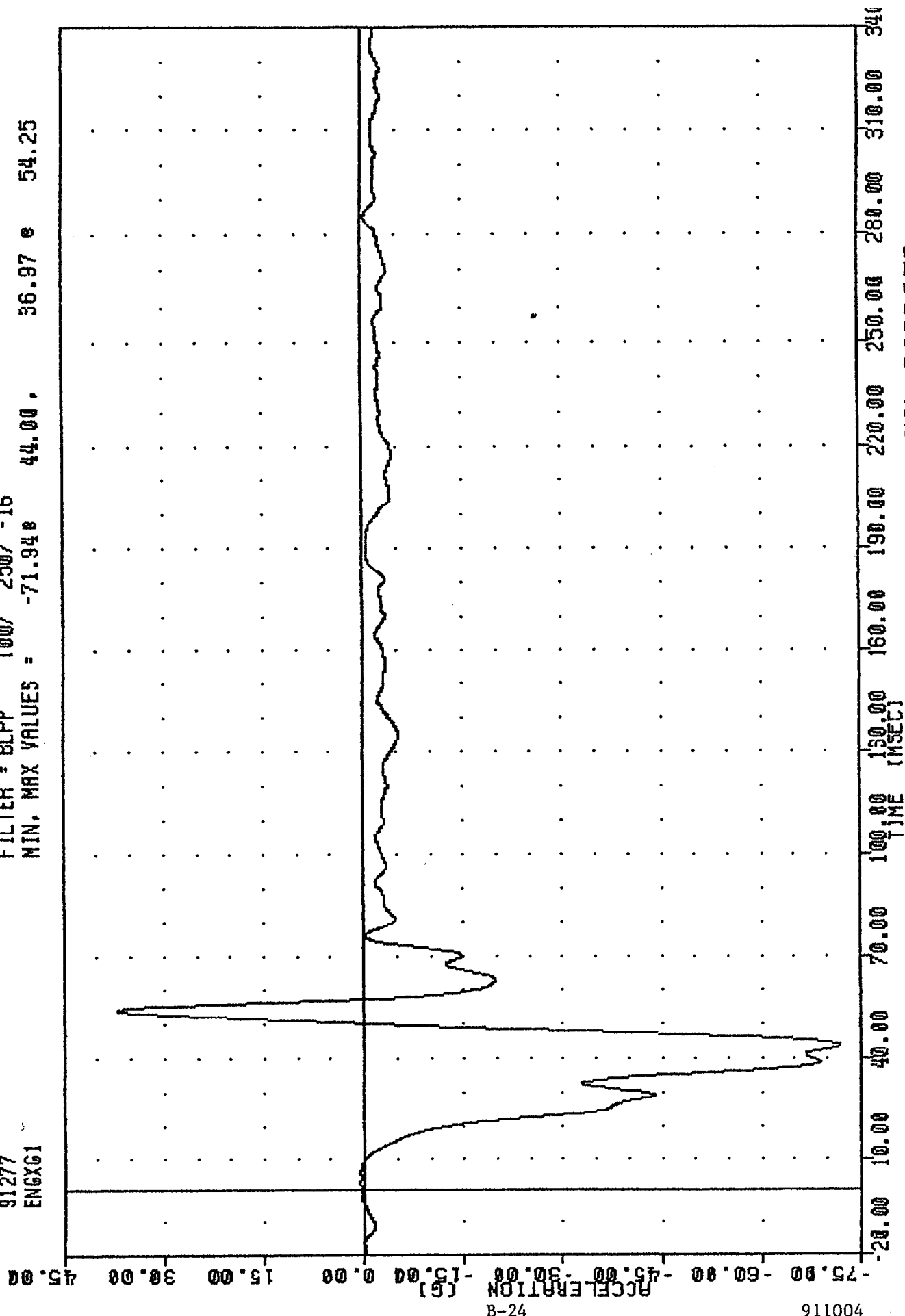


1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

208 COMPLIANCE TESTING

91277
ENGXG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -71.94 44.00 36.97 54.25

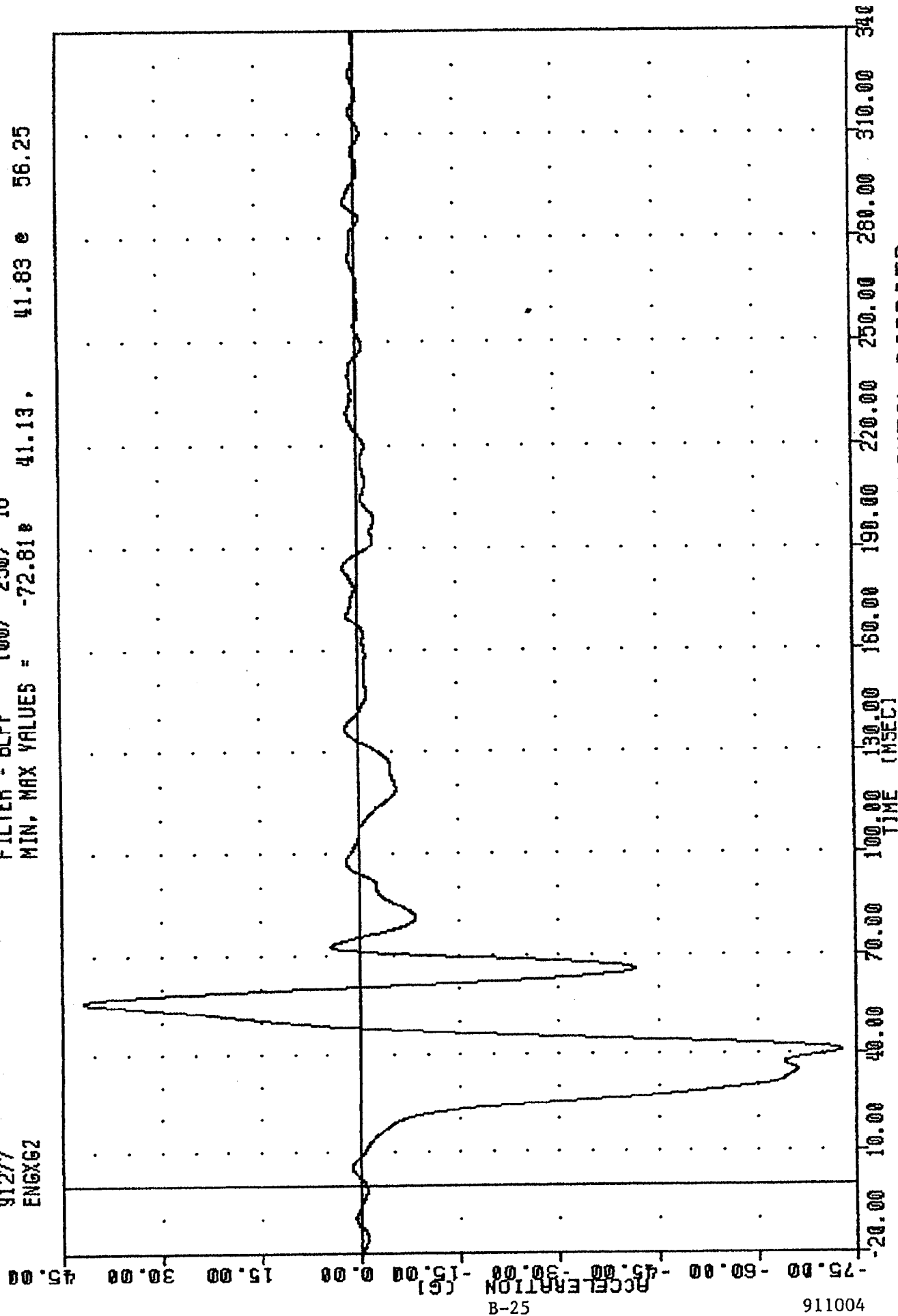


1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
ENGINE TOP X-AXIS ACCELERATION

208 COMPLIANCE TESTING

91277
ENGX62

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -72.81 41.13 41.83 e 56.25

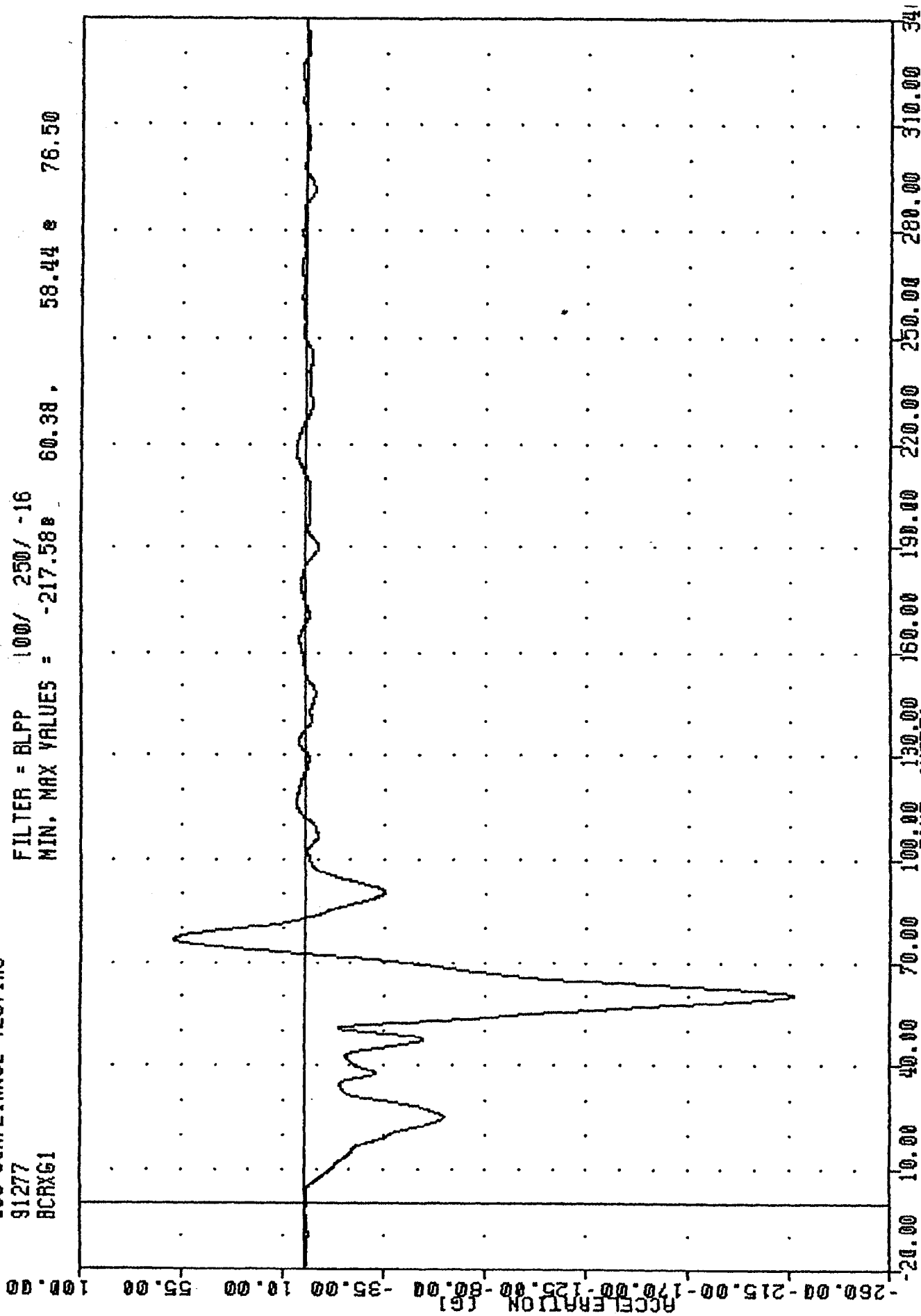


B-25

911004

91277 BCXG1

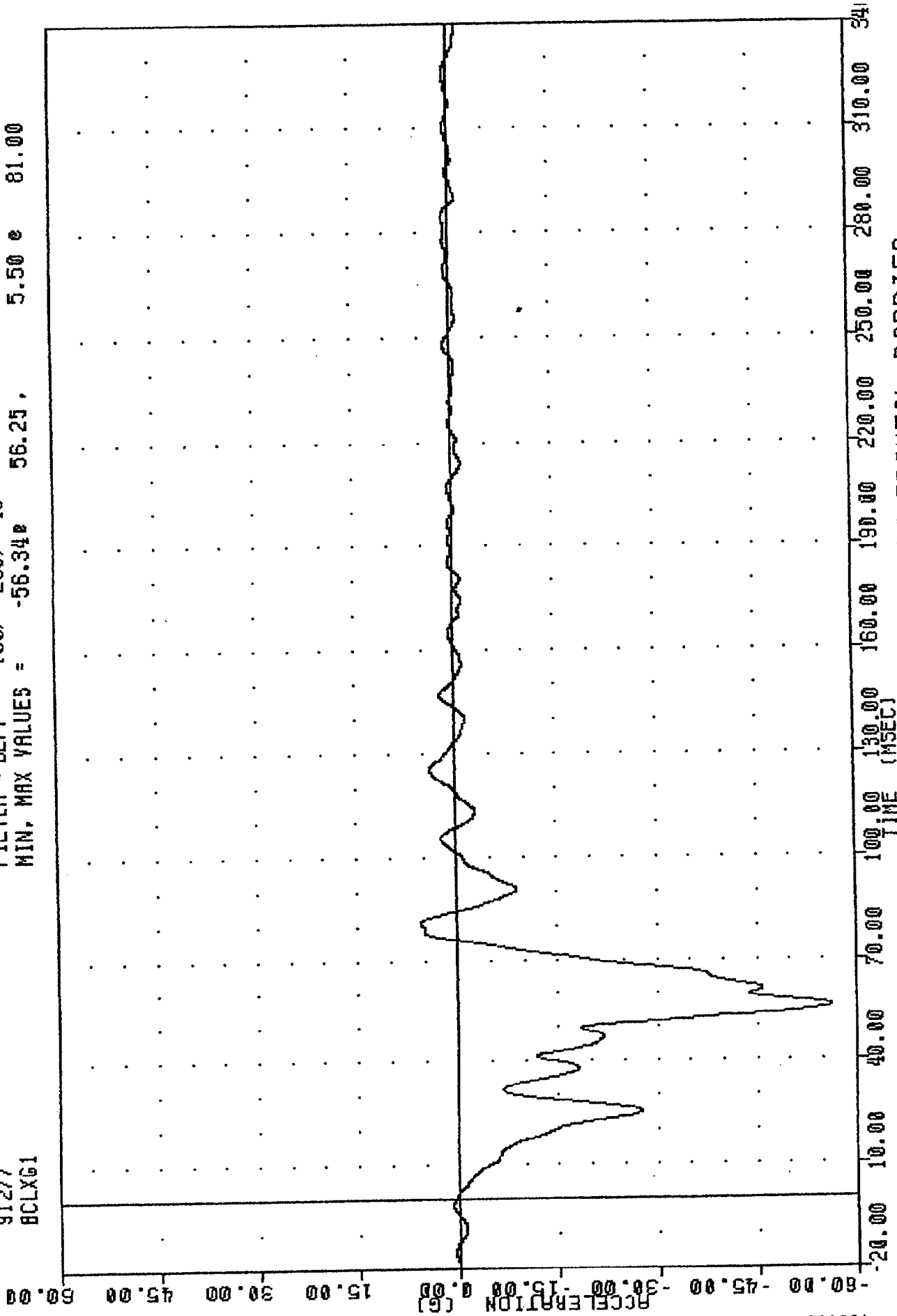
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -217.58 60.38 58.44 76.50



1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

INC. P. 0110002
200 COMPLIANCE TESTING
91277
BCLXG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -56.34 56.25, 5.50 81.00

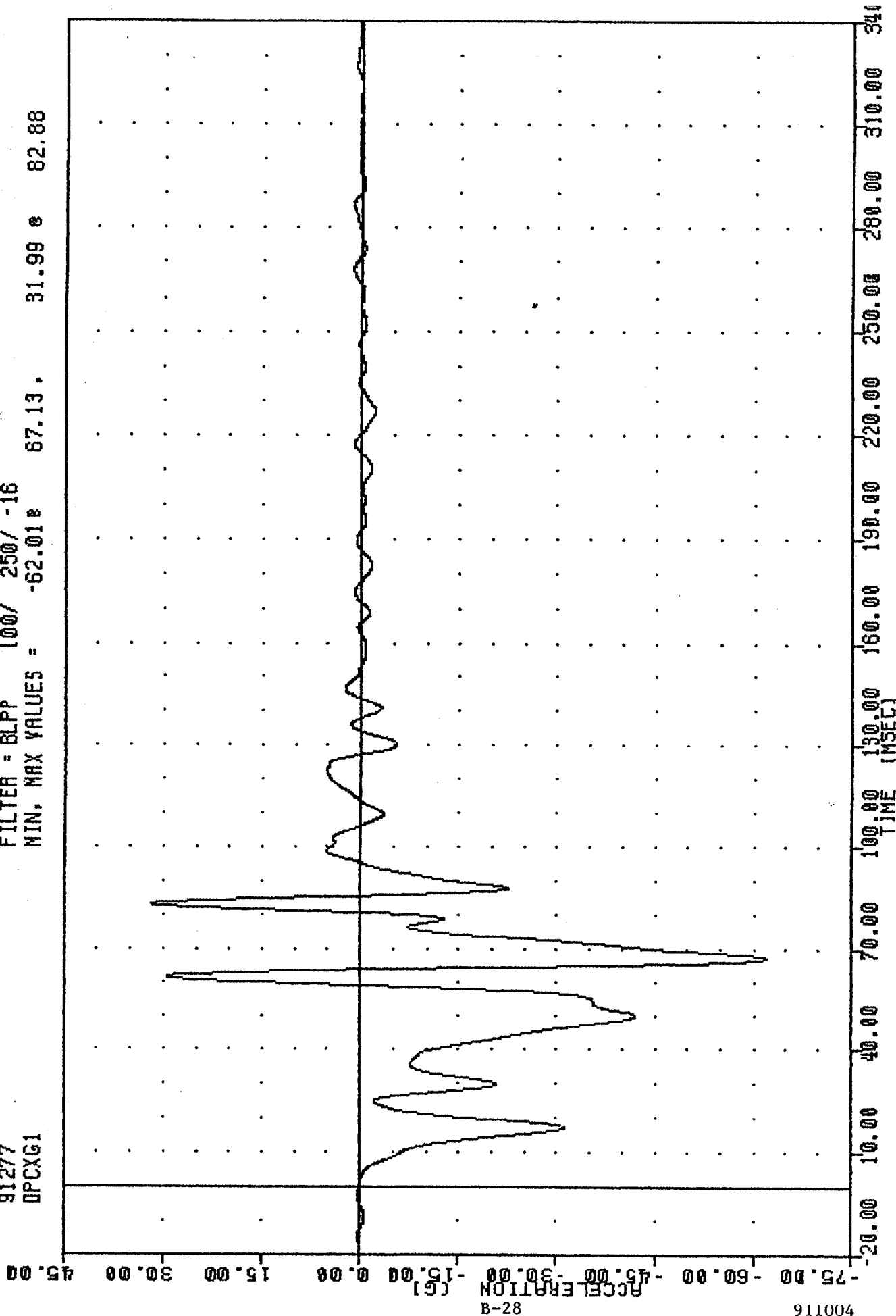


B-27

911004

91277
0PCXG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -62.01 67.13 31.99 82.88



B-28

911004

1992 TOYOTA PASEO INTO FLAT FRONTAL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION