

REPORT NOS. 208-TRC-91-016

212-TRC-91-016

301-TRC-91-016

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

NISSAN MOTOR CO., LTD.

1991 INFINITI G20

4-DOOR SEDAN

NHTSA NO. CM5203

TRC TEST NO. 910719

THE TRANSPORTATION RESEARCH CENTER OF OHIO

10820 STATE ROUTE 347

EAST LIBERTY, OHIO 43319



AUGUST 6, 1991

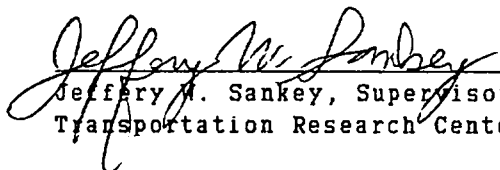
FINAL REPORT

PREPARED FOR:

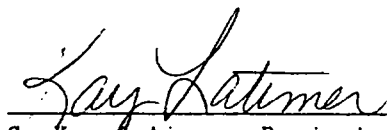
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF VEHICLE SAFETY COMPLIANCE (NEF-31)
400 SEVENTH STREET, S.W., ROOM NO. 6111
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16. Abstract <p>A 30 mph flat frontal barrier impact test was conducted on a 1991 Infiniti G20 4-door sedan, NHTSA No. CM5203, at the Transportation Research Center of Ohio on July 19, 1991. This test was conducted to determine compliance with Federal Motor Vehicle Safety Standards: FMVSS No. 208, "Occupant Crash Protection"; FMVSS No. 212, "Windshield Mounting"; FMVSS No. 219 (partial), "Windshield Zone Intrusion"; FMVSS 301, "Fuel System Integrity." The barrier impact velocity was 29.5 mph. The vehicle's maximum crush was 15.0 inches. The ambient temperature was 91° F.</p> <p>The driver's head injury criteria (HIC) was 526. The driver's maximum chest deceleration over three (3) milliseconds was 47.9 g. The driver's maximum left and right femur forces were 1558 pounds and 1611 pounds, respectively.</p> <p>The passenger's head injury criteria (HIC) was 499. The passenger's maximum chest deceleration over three (3) milliseconds was 36.7 g. The passenger's maximum left and right femur forces were 653 pounds and 1313 pounds, respectively.</p> <p>The vehicle appears to comply with the applicable requirements of FMVSS 208, 212, 219 (partial), and 301.</p>					
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 Hornickle		
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

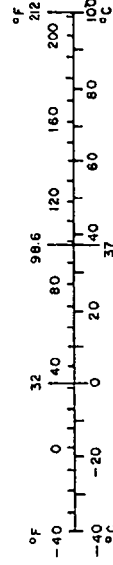
Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³

TEMPERATURE (exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	ac
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	st
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



* 1 in = 2.54 centimeters. For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25, SD Catalog No. C13.10.286.

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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 1991 Infiniti G20 4-door sedan, NHTSA No. CM5203, 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 July 19, 1991.

The test vehicle, a 1991 Infiniti G20 4-door sedan, NHTSA No. CM5203, appeared to comply with the performance requirements of FMVSS test Nos. 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 compressive 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 2.0 liter, transverse engine, manual transmission, power steering, and power brakes. The vehicle's test weight was 3241 pounds. The vehicle's impact speed was 29.5 mph. The vehicle's maximum crush was 15.0 inches.

The driver's head injury criteria (HIC) was 526. The driver's maximum chest resultant acceleration over three (3) milliseconds was 47.9 g. The driver's maximum left and right femur forces were 1558 pounds and 1611 pounds, respectively.

The right front passenger's HIC was 499. The right front passenger's maximum chest resultant acceleration over three (3) milliseconds was 36.7 g. The right front passenger's maximum left and right femur forces were 653 pounds and 1313 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.: CM5203 TEST TYPE: Frontal Barrier Impact

TEST DATE: 07/19/91 TEST TIME: 1329 AMBIENT TEMP. (°F): 91

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1991/Infiniti G20/4-door sedan

VEHICLE TEST WEIGHT (LBS): 3241

IMPACT ANGLE (DEG)*: 0

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

MAXIMUM STATIC CRUSH (IN): 15.0

AVERAGE REBOUND (IN): 25.7

DUMMIES: Driver #1173 Passenger #353

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: Nissan Motor Co., Ltd.

MAKE/MODEL: Infiniti/G20

VIN: JNKCP01PXMT212735

BODY STYLE: 4-door sedan

MODEL YEAR: 1991

NHTSA NO.: CM5203

COLOR: Beige

ENGINE DATA: TYPE: transverse CYLINDERS: 4 DISPLACEMENT: 2.0 liter

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

DATE VEHICLE RECEIVED: 06/03/91

ODOMETER READING: 118.0

DEALER'S NAME AND ADDRESS: Infiniti of Dayton
299 Loop Rd.
Centerville, OH 45459

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	No
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	Yes
POWER SEATS	No	TILTING STEERING WHEEL	Yes
POWER WINDOWS	Yes	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	Yes
CLOCK	Yes	REAR WINDOW DEFROSTER	Yes
OTHER	None		

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 ALTERED BY: Nissan Motor Co., Ltd.

DATE OF MANUFACTURE: 04/91 VIN: JNKCP01PXMT212735

GVWR: 3814 LBS

GAWR: FRONT: 2072 LBS., REAR: 1918 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Michelin MXV3 195/60R14

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 44 PSI
REAR: 44 PSI

SPARE TIRE (MFR., LINE, SIZE): Yokohama Temporary T125/70D15

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually Adjustable

MAXIMUM WIDTH: 66.9 INCHES

WHEELBASE: 99.5 INCHES

LOCATION OF LABEL STATING TIRE & CAPACITY DATA: THE LABEL WAS LOCATED ON THE INSIDE OF THE CENTER CONSOLE COMPARTMENT LID.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: FRONT: P195/60R14

RECOMMENDED COLD TIRE PRESSURE: FRONT: 32 PSI; REAR: 29 PSI

DESIGNATED SEATING CAPACITY: 2 FRONT 3 REAR 5 TOTAL

VEHICLE CAPACITY WEIGHT: 860 LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE: LF 26.1; RF 26.0; LR 26.5; RR 26.4

FULLY LOADED ATTITUDE: LF 24.3; RF 25.4; LR 24.8; RR 24.8

PRE-TEST ATTITUDE: LF 24.6; RF 25.5; LR 24.9; RR 24.9

POST-TEST ATTITUDE: LF 25.2; RF 25.4; LR 23.6; RR 23.1

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	869 LBS.	RIGHT REAR	546 LBS.
LEFT FRONT	884 LBS.	LEFT REAR	519 LBS.
TOTAL FRONT WEIGHT	1753 LBS.	(62.2% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1065 LBS.	(37.8% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT 2818 LBS.			

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (2818 LBS)

VCW = VEHICLE CAPACITY WEIGHT (860 LBS)

DSC = DESIGNATED SEATING CAPACITY (5)

$RCLW* = VCW - 150 (DSC) = 860 - 150 (5) = 110$

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

TARGET TEST WEIGHT = 2818 + 110 + 328

TARGET TEST WEIGHT = 3256 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 95 LBS. OF CARGO WEIGHT:

RIGHT FRONT	936 LBS.	RIGHT REAR	685 LBS.
LEFT FRONT	946 LBS.	LEFT REAR	674 LBS.
TOTAL FRONT WEIGHT	1882 LBS.	(58.1% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1359 LBS.	(41.9% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	3241 LBS.	(0.5% UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE CARGO AREA: 25 LBS.

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: None

CG = 41.7 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: 910719 NHTSA NO.: CM5203
TEST DATE: 07/19/91 TEST TIME: 1329
TEST TYPE: Frontal Barrier Impact IMPACT ANGLE: 0
AMBIENT TEMPERATURE AT IMPACT AREA: 91° 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.

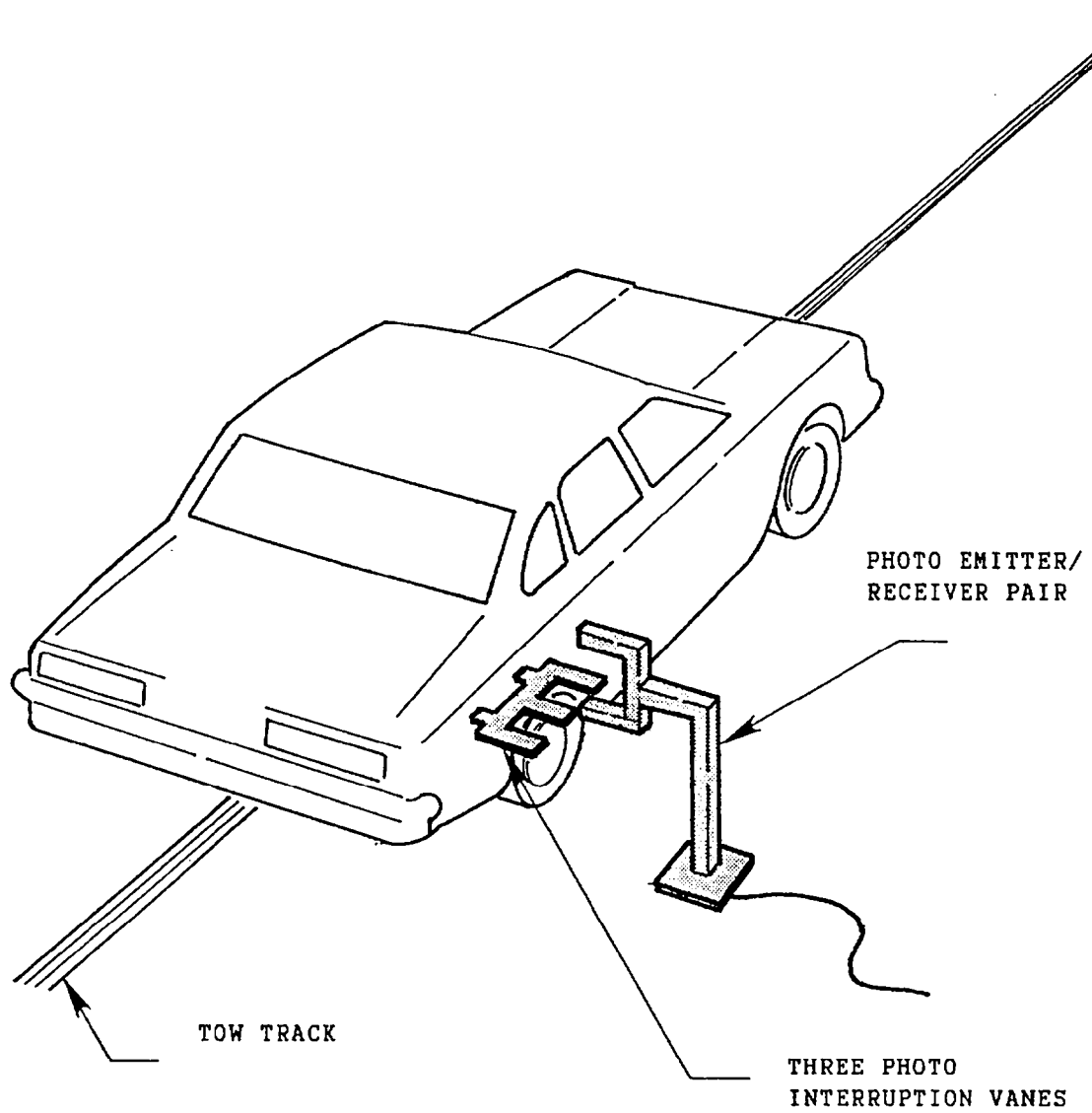
TEST VEHICLE STATIC CRUSH (ALL MEASUREMENTS ARE IN INCHES):

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 170.2; C 174.8; R 170.4
POST-TEST: L 157.9; C 160.1; R 157.8
TOTAL CRUSH: L 12.3; C 14.7; R 12.6
AVERAGE CRUSH: 13.2

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 25.1; C 24.9; R 27.2; AVG. 25.7

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: Infiniti/G20/4-door sedan

VEHICLE NHTSA NO.: CM5203; VIN: JNKCP01PXMT212735

MODEL YEAR: 1991; BUILD DATE: 04/91; TEST DATE: 07/19/91

VEHICLE SIZE CATEGORY: Compact; TEST WEIGHT: 3241 LBS.

VEHICLE WHEELBASE: 99.5 INCHES

MAXIMUM WIDTH: 66.9 INCHES

FRONT OVERHANG: 35.2 INCHES

COLLISION DEFORMATION
 CLASSIFICATION (CDC) CODE: 12FDEW2

CRUSH DEPTH
 MEASUREMENTS:

C1 =	<u>12.3</u>	INCHES
C2 =	<u>14.6</u>	INCHES
C3 =	<u>15.0</u>	INCHES
C4 =	<u>14.8</u>	INCHES
C5 =	<u>14.6</u>	INCHES
C6 =	<u>12.6</u>	INCHES

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE (LONGITUDINAL)

LENGTH OF DAMAGED
 REGION: L = 54.5 INCHES

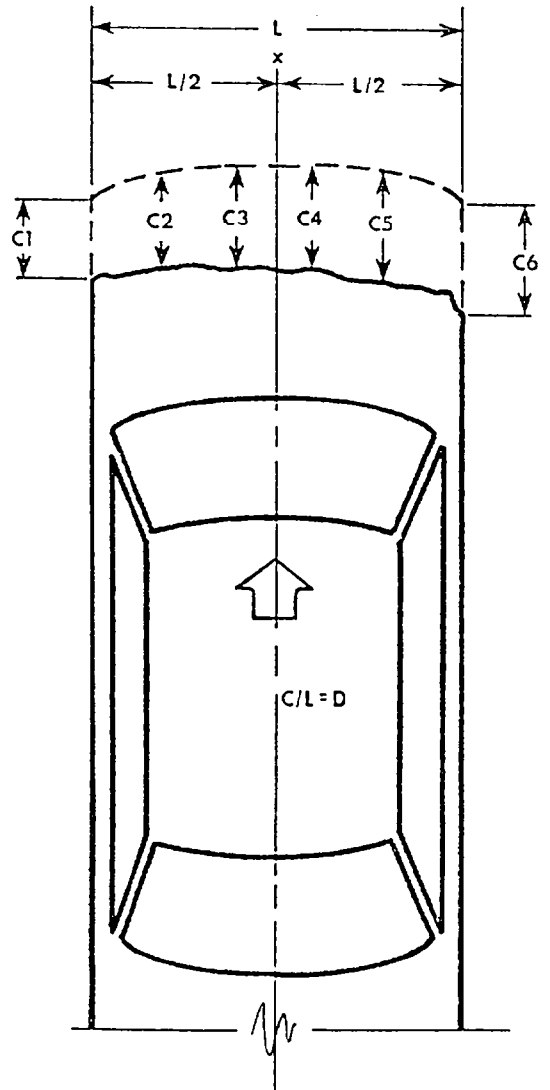
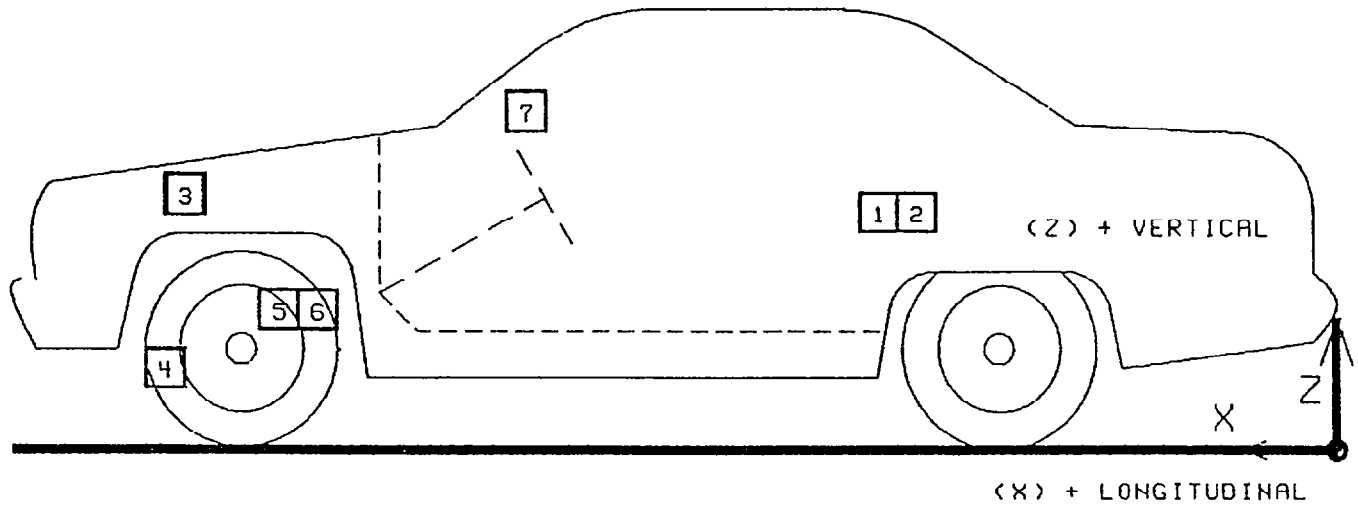
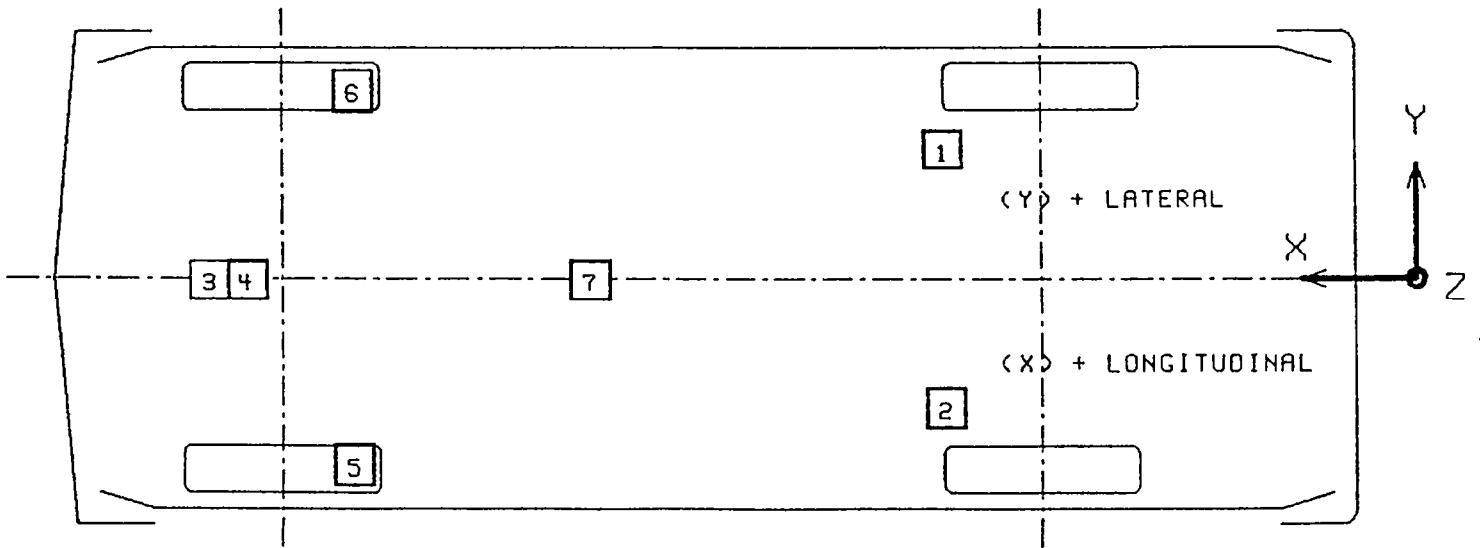


FIGURE 3
VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 910719

No.	LOCATION		X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
						MAX G	MSEC	MAX G	MSEC
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	67.8	22.5	12.8				
		POST	67.8	22.5	12.8	1.6	84.8	32.3	56.3
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	68.0	-22.8	12.8				
		POST	68.0	-22.8	12.8	4.2	84.4	33.3	59.3
3	ENGINE TOP LONGITUDINAL	PRE	149.0	-1.8	29.1				
		POST	144.0	-1.2	27.5	49.5	41.8	127.0	32.9
4	ENGINE BOTTOM LONGITUDINAL	PRE	148.3	-11.0	5.8				
		POST	142.3	-10.6	4.2	26.1	42.3	91.9	25.4
5	RIGHT BRAKE CALIPER LONGITUDINAL	PRE	144.2	-25.4	11.0				
		POST	141.4	-26.6	9.6	49.7	66.1	78.1	43.8
6	LEFT BRAKE CALIPER LONGITUDINAL	PRE	144.8	25.4	11.0				
		POST	142.4	25.8	9.6	24.8	58.8	72.3	39.5
7	INSTRUMENT PANEL CENTER LONGITUDINAL	PRE	118.2	0.0	37.0				
		POST	117.0	0.0	38.4	23.9	62.0	60.1	56.4

* 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. Glen Brammeier
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.: CM5203
MAKE/MODEL/BODY STYLE: Infiniti/G20/4-door sedan
MODEL YEAR: 1991 BODY COLOR: Beige
VIN: JNKCP01PXMT212735
ODOMETER (ARRIVAL): 118 DATE: 06/03/91
ODOMETER (COMPLETION): 124 DATE: 07/19/91
COST: \$16,085.00

<input checked="" type="checkbox"/> AIR CONDITIONER	<input checked="" type="checkbox"/> CONSOLE	BRAKES: <input checked="" type="checkbox"/> POWER
<input type="checkbox"/> TINTED GLASS	<input checked="" type="checkbox"/> TACHOMETER	FRONT: Disc
<input checked="" type="checkbox"/> POWER STEERING	<input checked="" type="checkbox"/> SPEED CONTROL	REAR: Disc
<input checked="" type="checkbox"/> POWER WINDOWS	<input checked="" type="checkbox"/> REAR WINDOW DEF.	
<input checked="" type="checkbox"/> POWER DOOR LOCKS	<input type="checkbox"/> SUN/MOON ROOF	FRONT SEATS: <input type="checkbox"/> POWER
<input checked="" type="checkbox"/> RADIO	<input type="checkbox"/> T-TOP	SEAT TYPE: Bucket
<input checked="" type="checkbox"/> CLOCK	<input checked="" type="checkbox"/> TILT STEERING WHEEL	NO. OF SEATS: 5
<input type="checkbox"/> ROOF RACK	<input type="checkbox"/> OTHER OPTIONS: _____	

ENGINE: 4 CYLINDERS; 2.0 LITERS
TRANSMISSION: 5-speed; DRIVE TYPE: Front wheel
TIRE SIZE: P195/60R14 Michelin
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	-31.8	13.6	-66.2	66.7	-47.2	10.4	14.9	47.9
PASSENGER	-25.5	29.5	-61.8	69.9	-38.2	-17.9	10.6	36.7

MAXIMUM FEMUR COMPRESSIVE FORCE (LBS)

	LEFT FEMUR	RIGHT FEMUR
DRIVER	1558	1611
PASSENGER	653	1313

HEAD INJURY CRITERIA**

	HIC	TIME t ₁ (MSEC) ¹	TIME t ₂ (MSEC) ²
DRIVER	526	64.5	100.5
PASSENGER	499	65.6	101.6

*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 #1173	PASSENGER #353
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>Easy</u>	<u>Easy</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 entire 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, impacting the dummy's chest. The dummy's head and upper torso rotated counterclockwise as the dummy's upper torso 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 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, impacting the dummy's chest. The dummy's head and upper torso rotated clockwise as the dummy's upper torso 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, leaning to the left, restrained by the two-point passive belt.

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

MAKE/MODEL: Infiniti/G20

VIN: JNKCP01PXMT212735

BODY STYLE: 4-door sedan

NHTSA NO.: CM5203

DATE OF MANUFACTURE: 04/91

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
- Whenever the switch is turned to "ON"

WEBBING TENSION - RELIEVING DEVICE:

DO OUTBOARD SEATING POSITION SEAT BELTS HAVE WEBBING TENSION - RELIEVING DEVICES? No

BELT CONTACT FORCE:

BELT CONTACT FORCE ON CHEST OF TEST DUMMY: .1 POUNDS

TABLE 8 FMVSS 208 SEAT BELT WARNING SYSTEM DATA

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

Duration of audible warning signal = 7 sec.

Duration of reminder light operation = 7 sec.

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

Duration of audible warning signal = * sec.

(NOTE: audible warning should not operate)

*The audible warning sounds once while the two-point passive belt is
travelling to its latched position.

Duration of reminder light operation = 7 sec.

WORDING OF VISUAL WARNING:

Fasten Seat Belt

Fasten Belt

Symbol 101-80 X

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.:

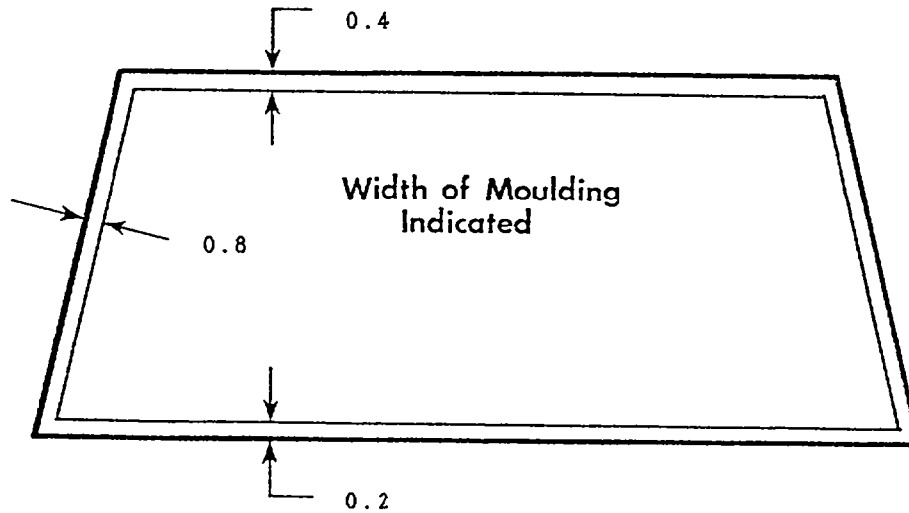
Adhesive around inner perimeter, plastic trim around outer perimeter.

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	78.8	78.8	100%
LEFT SIDE	78.8	78.8	100%
TOTAL	157.6	157.6	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.

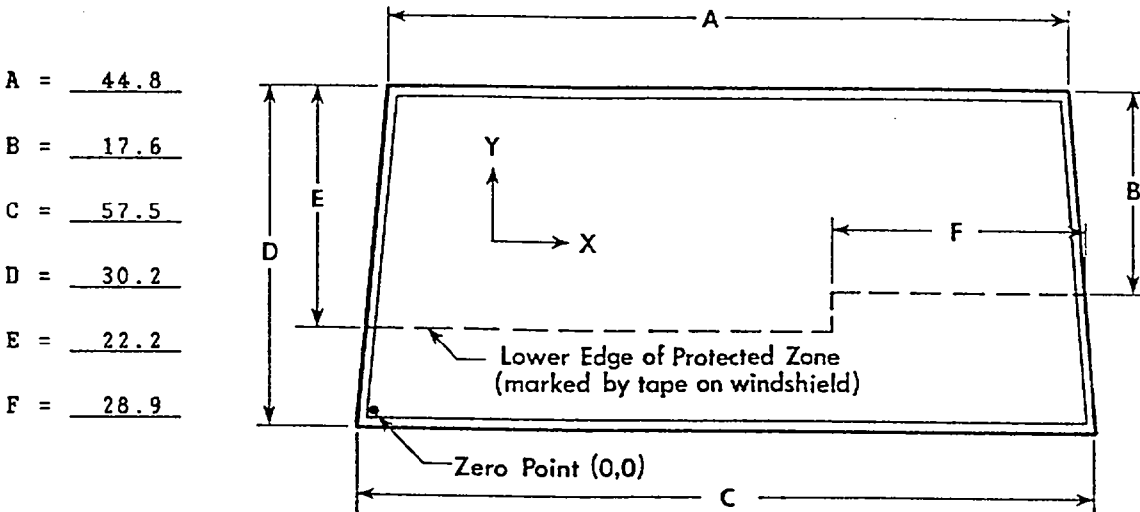
*INDICATE AREAS OF LOSS OF RETENTION, IF ANY, ON WINDSHIELD DIAGRAM.

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.		

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 12 FMVSS 301 POST-IMPACT TEST DATA

TEST VEHICLE NHTSA NO.: CM5203 ; TEST DATE: 07/19/91

VEHICLE MAKE/MODEL/BODY STYLE: Infiniti/G20/4-door sedan

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:

- 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:

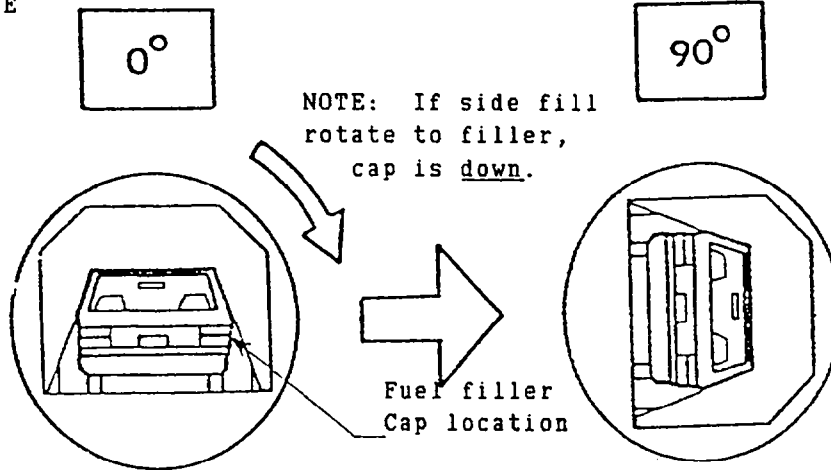
	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FROM IMPACT UNTIL VEHICLE MOTION CEASES - - -	0 OZ.	1 OZ.
2. 5 MINUTE PERIOD AFTER VEHICLE MOTION CEASES -	0 OZ.	5 OZ.
3. NEXT 25 MINUTES AFTER 5 MINUTE PERIOD - - -	0 OZ.	1 OZ./1 MIN.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: CM5203
 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:

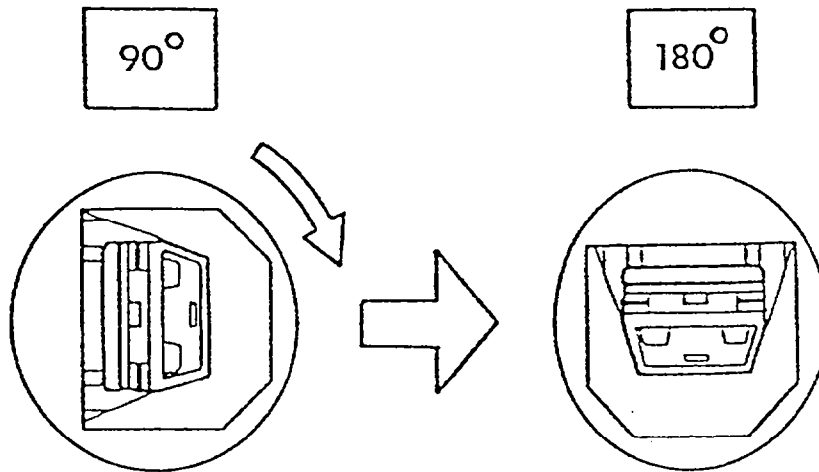
<u>0° TO 90° ROTATION (FUEL FILLER CAP DOWN)</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CM5203
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.

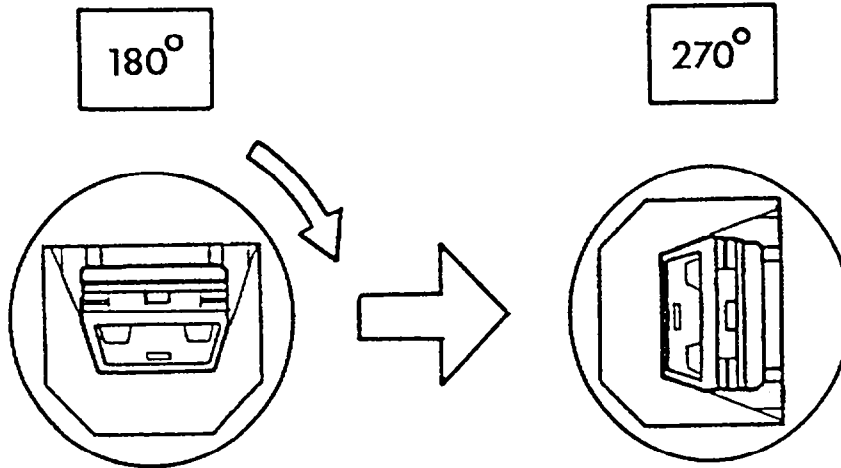
FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CM5203

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:

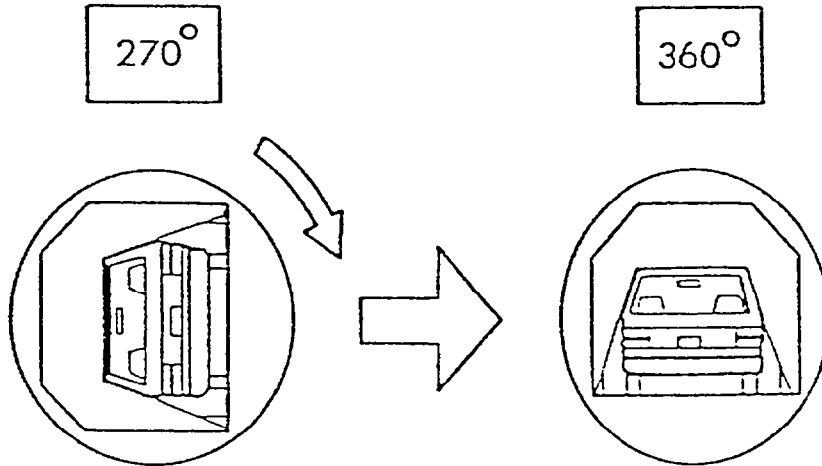
<u>180° TO 270° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CM5203
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

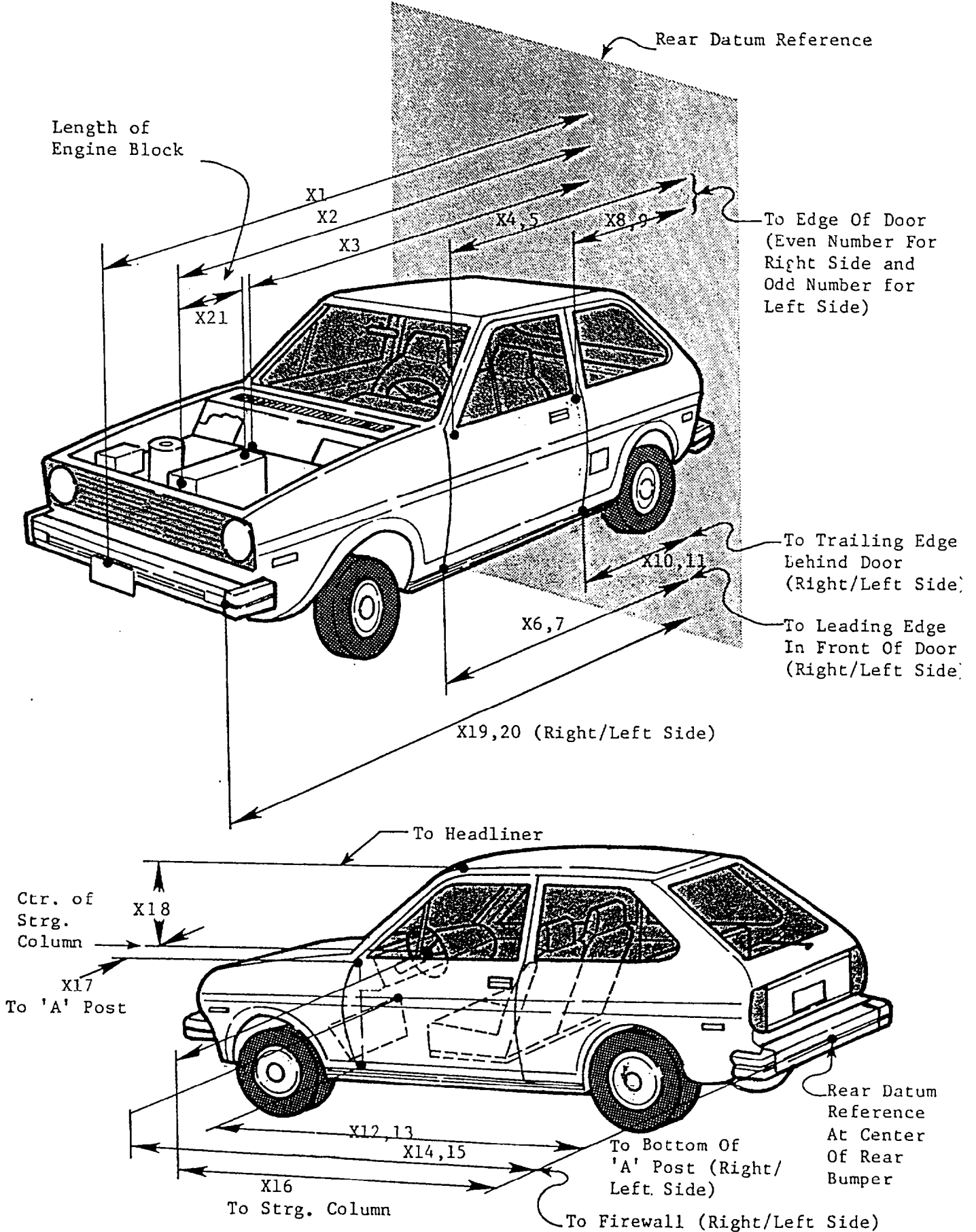
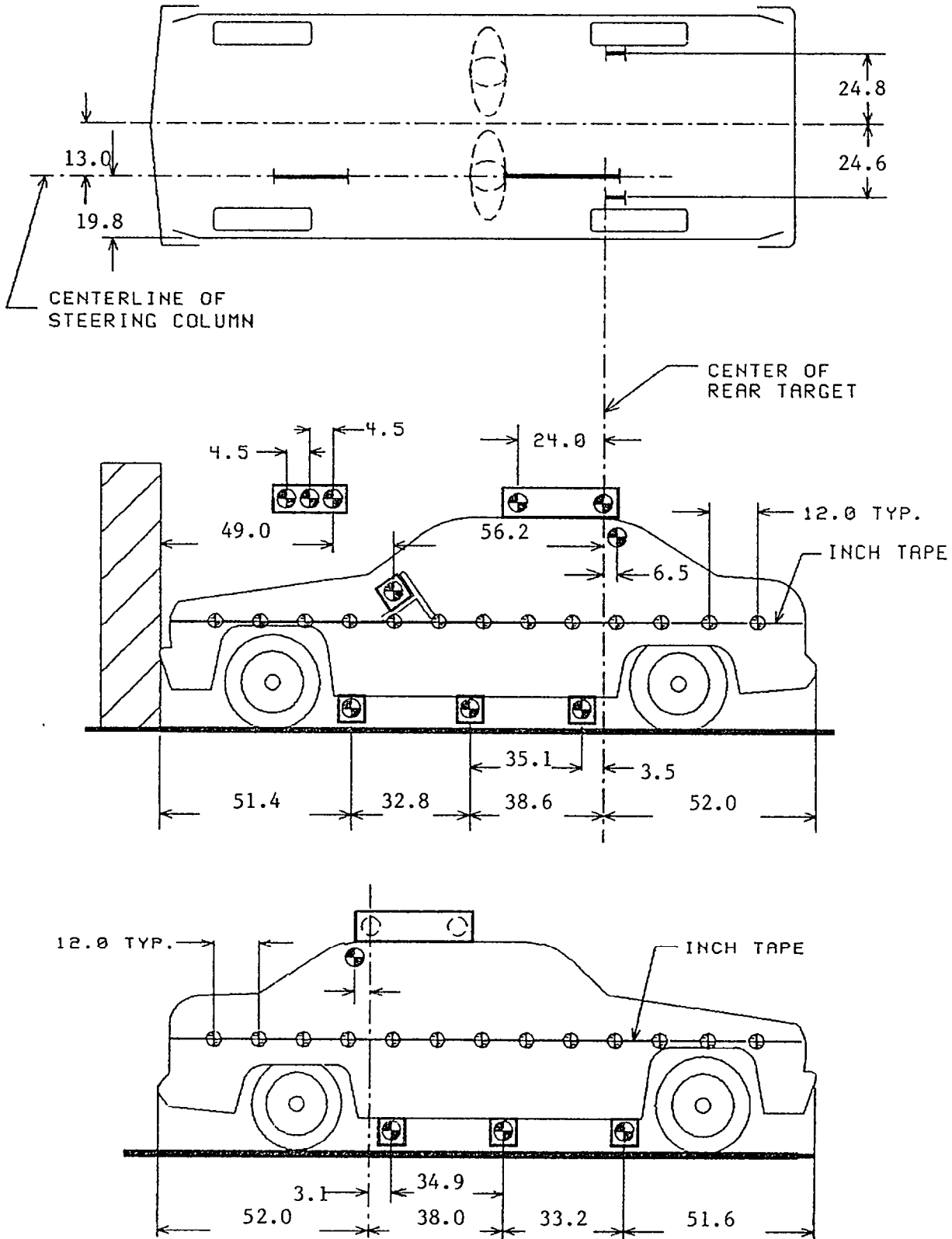


TABLE 13 IMPACTED VEHICLE MEASUREMENTS

NO.	TYPE OF MEASUREMENT	ALL MEASUREMENTS ARE IN INCHES		
		PRE-TEST	POST-TEST	DIFF.
	VEHICLE MAKE/MODEL: <u>Infiniti/G20</u>			
	TEST NUMBER: <u>910719</u>			
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	174.8	160.1	14.7
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	154.0	147.8	6.2
X3	REAR SURFACE OF VEHICLE TO FIREWALL	133.4	133.0	0.4
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	122.9	122.8	0.1
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	123.1	122.9	0.2
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	122.1	122.0	0.1
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	122.6	122.2	0.4
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	79.1	79.0	0.1
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	79.2	78.9	0.3
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	79.0	78.8	0.2
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	79.2	79.0	0.2
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	121.1	120.9	0.2
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	121.1	120.8	0.3
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	131.5	131.0	0.5
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	132.0	131.9	0.1
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	103.6	105.0	-1.4
X17	CENTER OF STEERING COLUMN TO "A" POST	11.6	11.0	0.6
X18	CENTER OF STEERING COLUMN TO HEADLINER	18.5	17.8	0.7
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	170.4	157.8	12.6
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	170.2	157.9	12.3
X21	LENGTH OF ENGINE BLOCK	20.0	20.0	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: Infiniti/G20
 BODY STYLE: 4-door sedan MODEL YEAR: 1991
 NHTSA NO.: CM5203 COLOR: Beige

DATA FROM CERTIFICATION LABEL:

VEHICLE MANUFACTURER: Nissan Motor Co., Ltd.
 DATE OF MANUFACTURE: 04/91 VIN: JNKCPO1PXMT212735
 GVWR: 3814 LBS.; GAWR: FRONT = 2072 LBS.; REAR = 1918 LBS.

POST-IMPACT DATA:

DATE OF TEST: 07/19/91 TIME: 1329 TEMPERATURE: 91° 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: B. Miller, B. Fishbaugh, & D. Baker

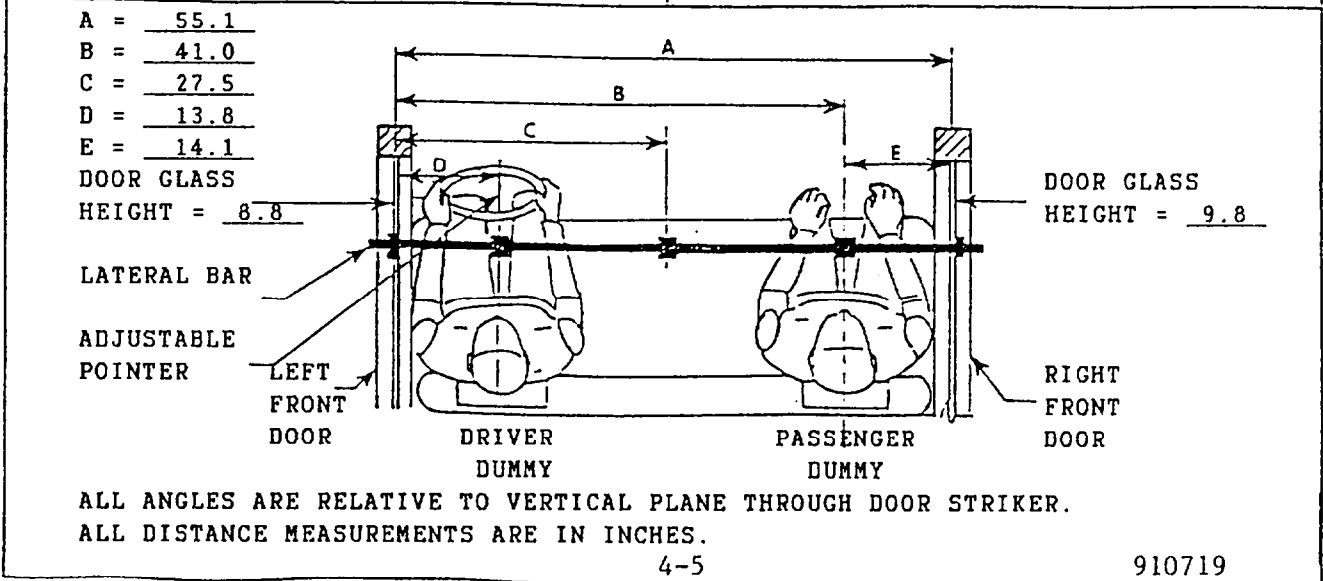
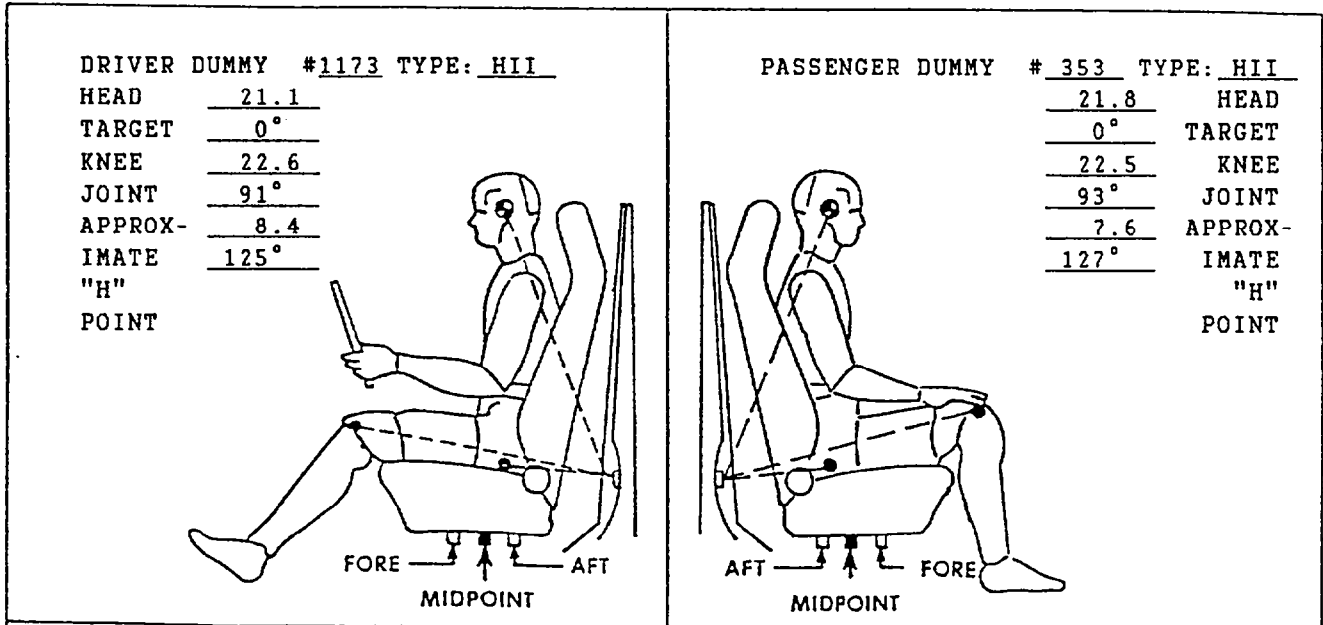
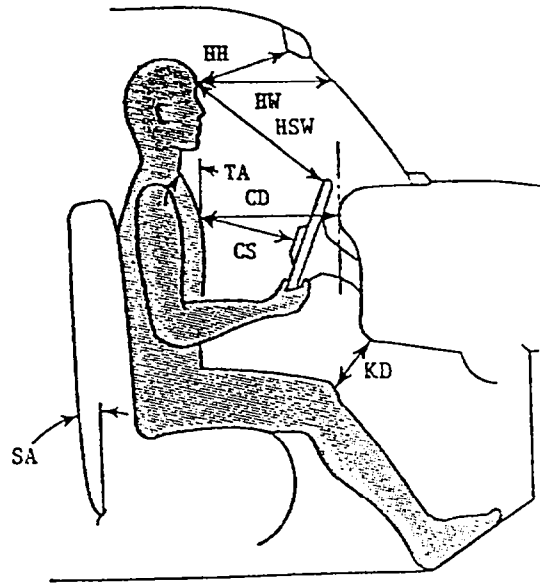
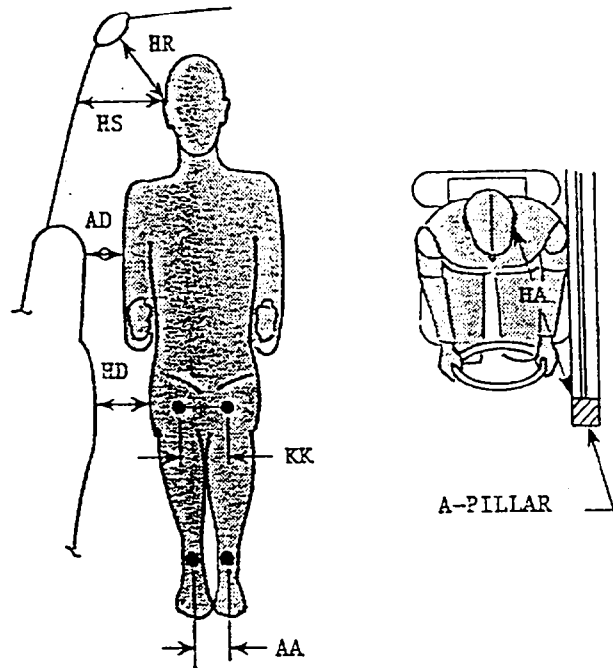


FIGURE 10 DUMMY IN VEHICLE POSITIONING DATA

	DRIVER	PASSENGER
HH	22.9	15.8
HW	21.9	21.6
CD	16.8	23.9
CS	15.2	NA
KDL	4.3	6.6
KDR	4.4	6.2
TA	28°	21°
SA	25°	25°
HSW	22.2	NA



	DRIVER	PASSENGER
HR	6.0	5.4
HS	10.1	9.2
AD	4.4	4.5
HD	7.4	7.5
KK	10.4	7.7
AA	11.0	7.0
HA	22.2	21.9

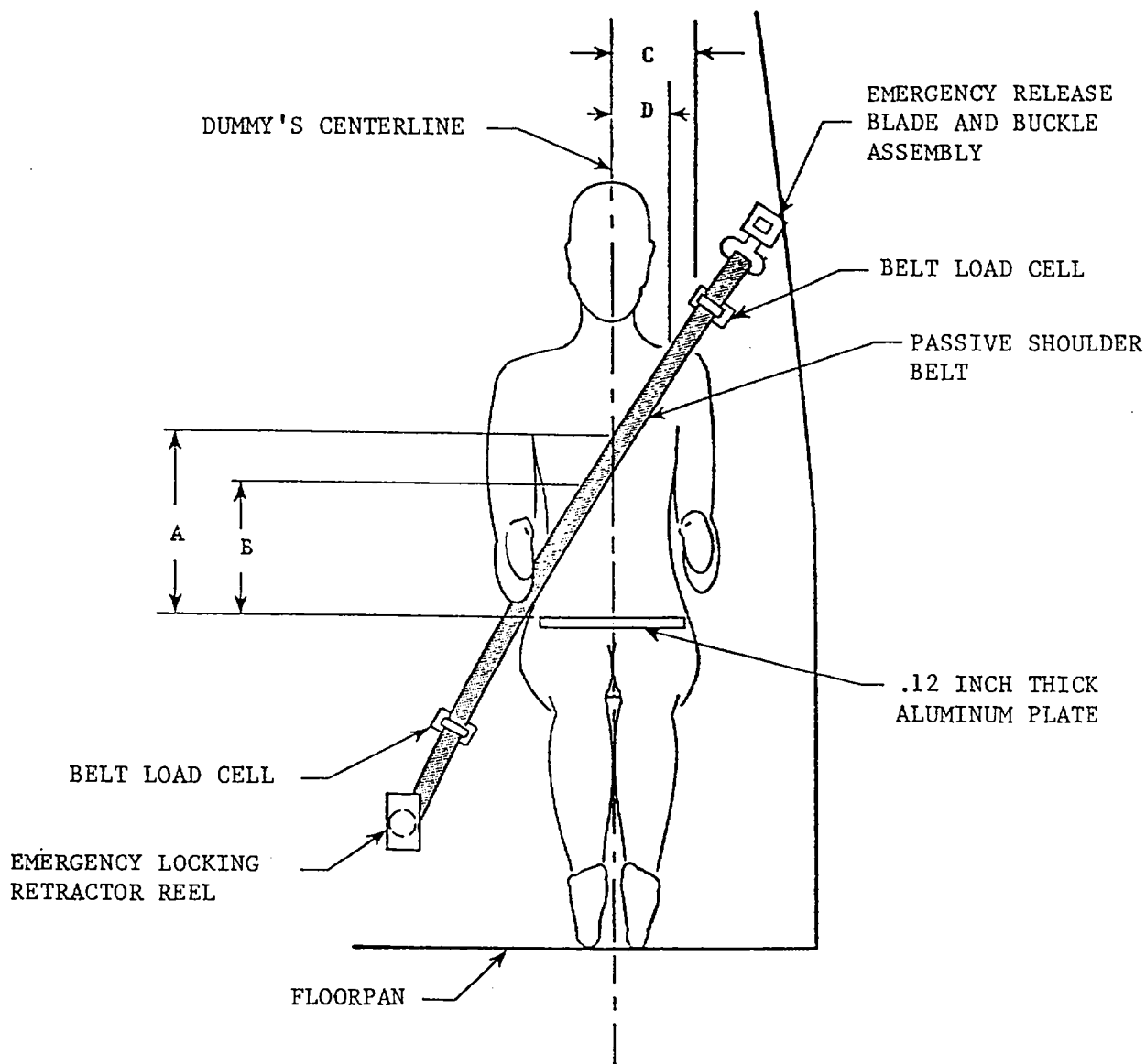


KNEE OUTER BOLT HEAD TO OUTER
BOLT HEAD SPACING:
DRIVER = 14.5
PASSENGER = 11.8

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.

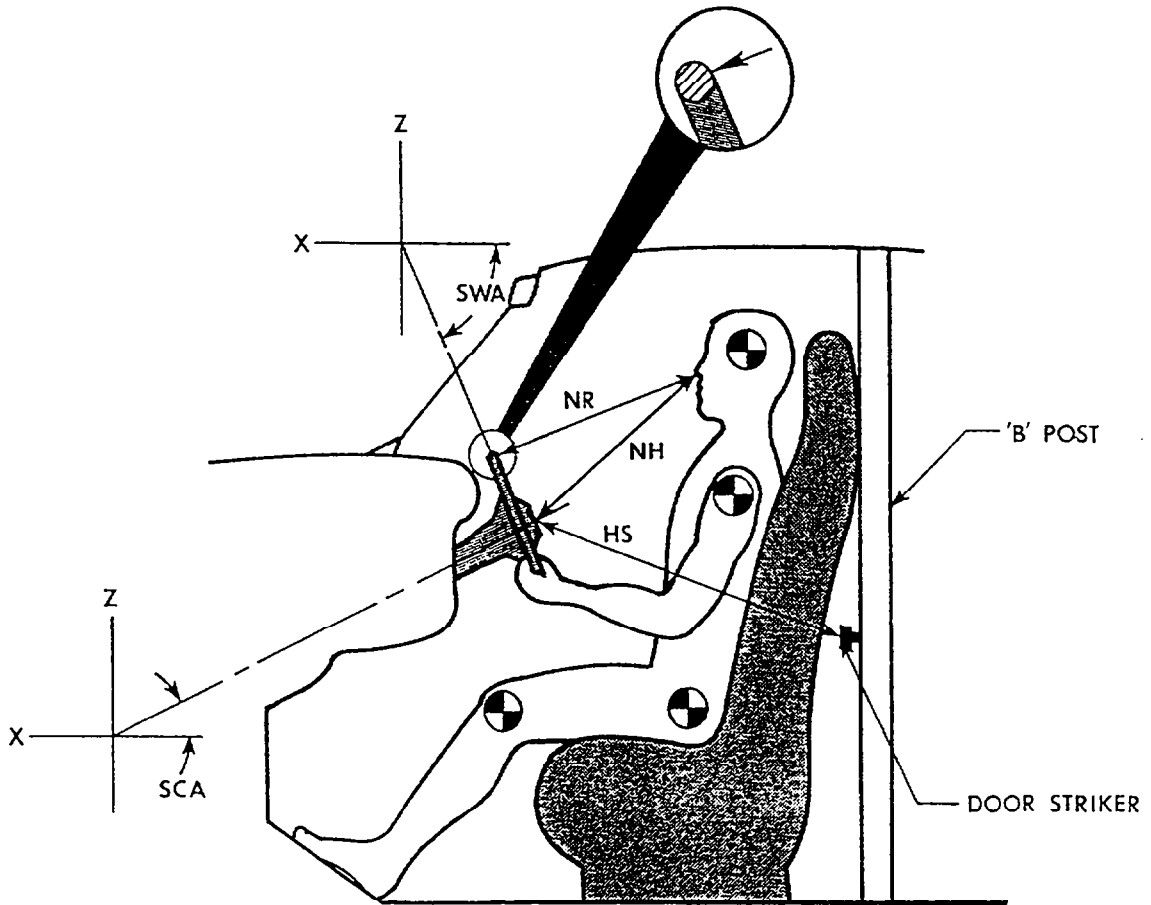
FIGURE 11 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUM. PLATE TO BELT UPPER EDGE	13.1	13.3
B - TOP SURFACE OF ALUM. PLATE TO BELT LOWER EDGE	10.2	10.0
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	7.2	7.9
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	4.5	5.0

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 latched in the mid point of the infinitely-adjustable tilt range.

MEASUREMENTS

NR	- DISTANCE FROM TIP OF DUMMY'S NOSE TO TOP REAR SURFACE OF STEERING WHEEL RIM.	20.0
NH	- DISTANCE FROM TIP OF DUMMY'S NOSE TO CENTER OF STEERING COLUMN HUB.	20.0
HS	- DISTANCE FROM CENTER OF STEERING COLUMN HUB TO THE FORWARD SURFACE OF THE DOOR LOCK STRIKER PIN.	23.5
SCA	- ANGLE OF STEERING COLUMN RELATIVE TO THE HORIZONTAL X AXIS	24°
SWA	- ANGLE OF STEERING WHEEL RELATIVE TO THE HORIZONTAL X AXIS	66°

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 13
CAMERA POSITIONS

4, 7, 8

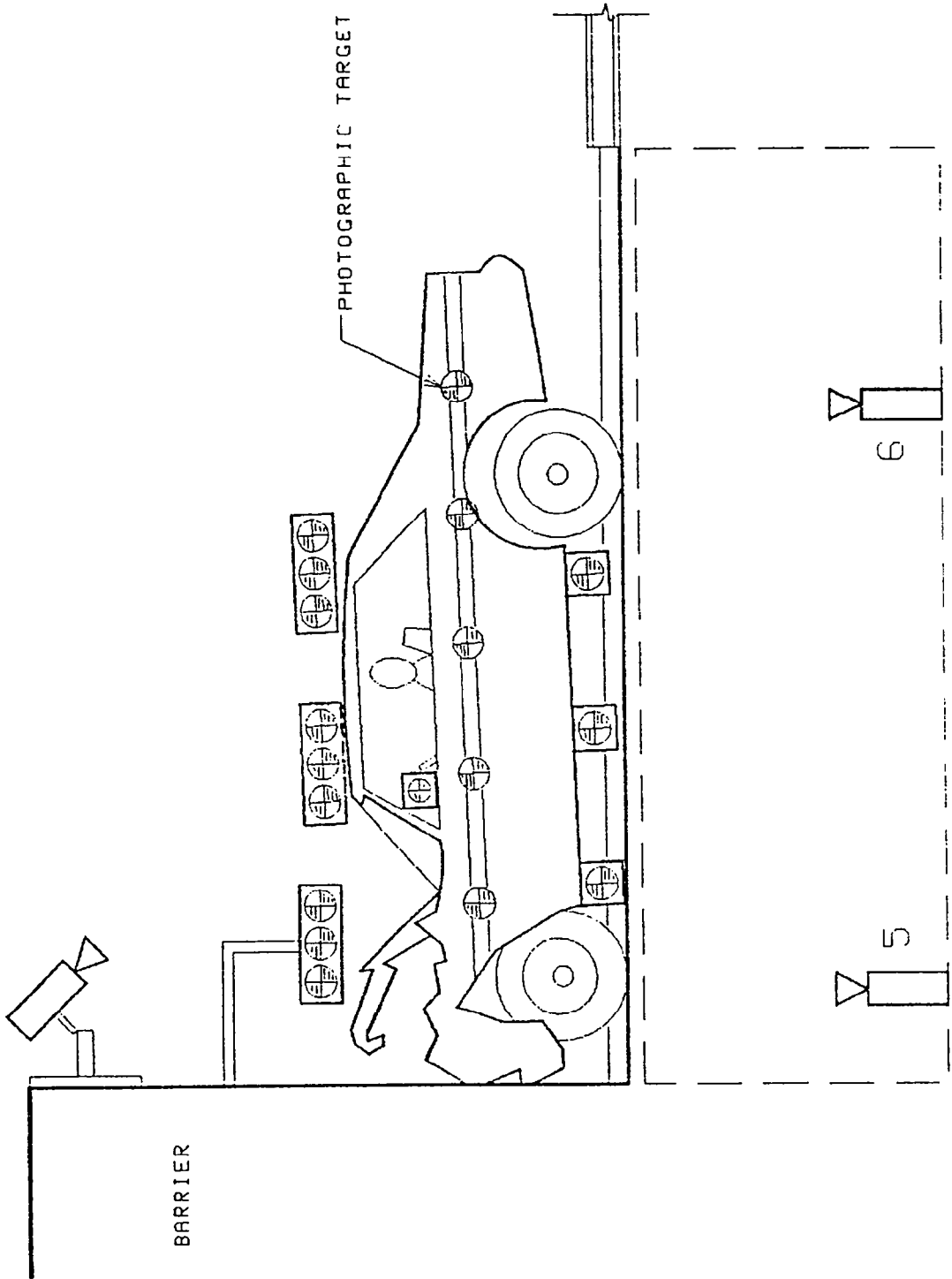


FIGURE 13
CAMERA POSITIONS, CONTINUED

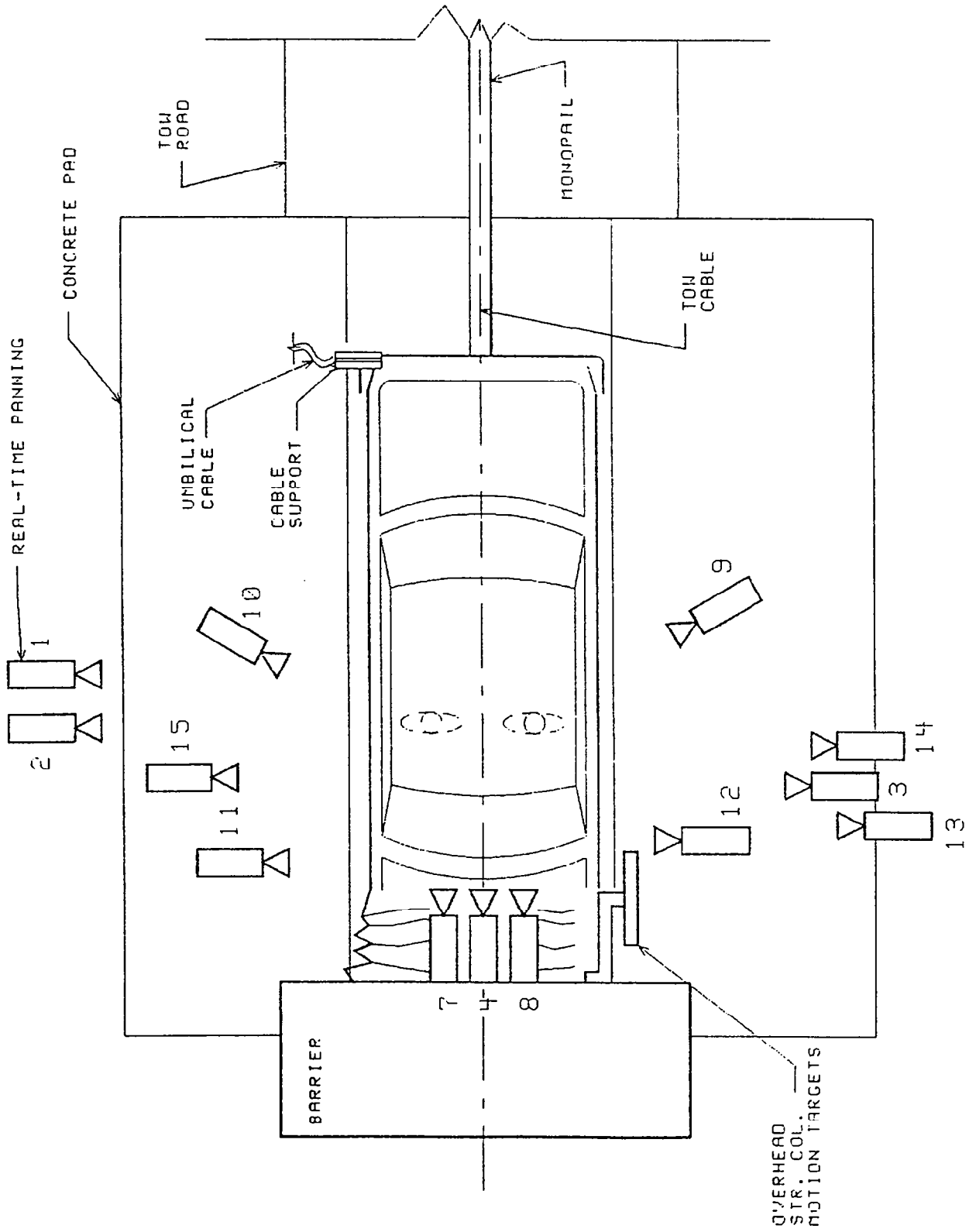


TABLE 14 MOTION PICTURE CAMERA LOCATIONS

TEST NO.:	CAMERA NO.	VIEW	VEHICLE: <u>Infiniti/G20 4-door sedan</u>			FILM PLANE		FILM SPEED (FPS)	
			X	Y	Z	ANGLE** (DEG)	TO HEAD TARGET(IN)		LENS (MM)
	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	500
	3	Left vehicle crush	-41.5	295.0	44.0	-4	191.0	25	502
	4	Windshield front view	-6.0	0.0	96.0	-40	NA	13	495
	5	Pit front position	-50.5	0.0	-92.4	90	NA	13	990
	6	Pit rear position	-99.3	0.0	-99.0	90	NA	13	998
	7	Passenger front view	-4.5	-13.8	93.0	-50	NA	17	505
	8	Driver front view	-6.8	14.5	93.0	-50	NA	17	500
	9	Driver kinematics	-157.3	116.0	87.0	-27	86.0	25	500
	10	Passenger kinematics	-152.1	-116.0	87.0	-26	83.0	25	507
	11	Right windshield intrusion	-38.1	-306.1	44.0	0	NA	50	493
	12	Left windshield intrusion	-53.0	309.4	42.3	0	NA	50	498
	13	Steering column motion	-90.0	256.0	103.0	-14	NA	25	500
	14	Steering column motion	-90.0	256.0	75.1	-9	NA	25	500
	15	Passenger kinematics	-38.8	-293.0	45.3	-4	241.0	25	490
	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



Figure A-1. PRE-TEST FRONT VIEW

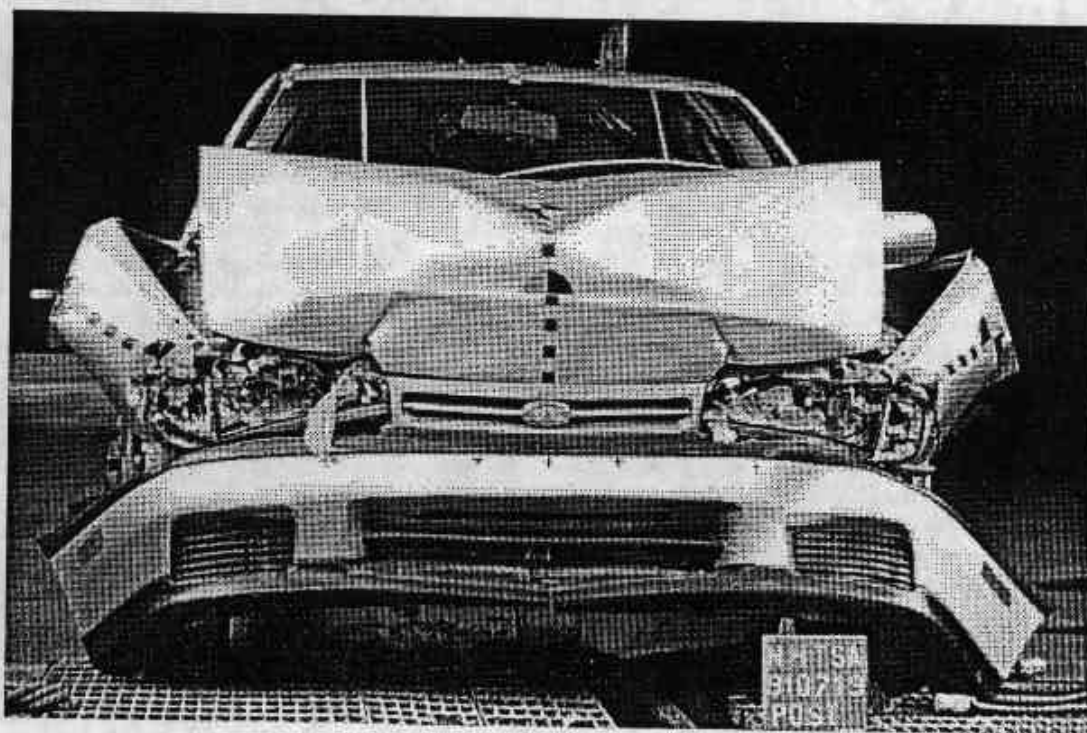


Figure A-2. POST-TEST FRONT VIEW

A-2

910719



Figure A-3. PRE-TEST LEFT SIDE VIEW



Figure A-4. POST-TEST LEFT SIDE VIEW

A-3

910719

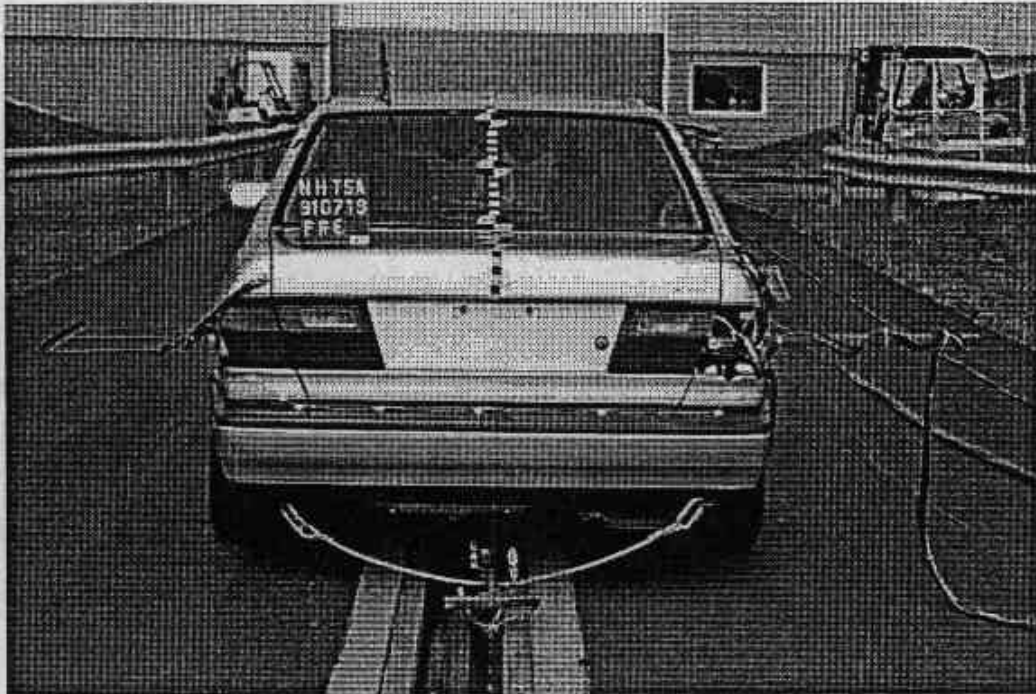


Figure A-5. PRE-TEST REAR VIEW



Figure A-6. POST-TEST REAR VIEW



Figure A-7. PRE-TEST RIGHT SIDE VIEW



Figure A-8. POST-TEST RIGHT SIDE VIEW



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

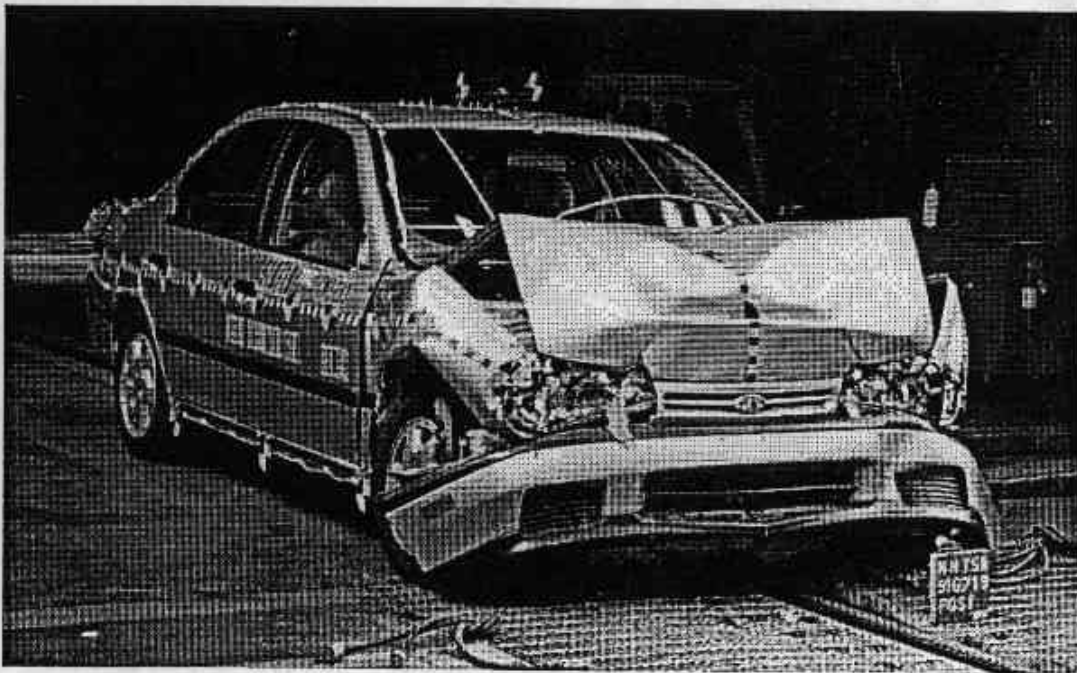


Figure A-10 POST-TEST RIGHT FRONT THREE-QUARTER VIEW



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



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

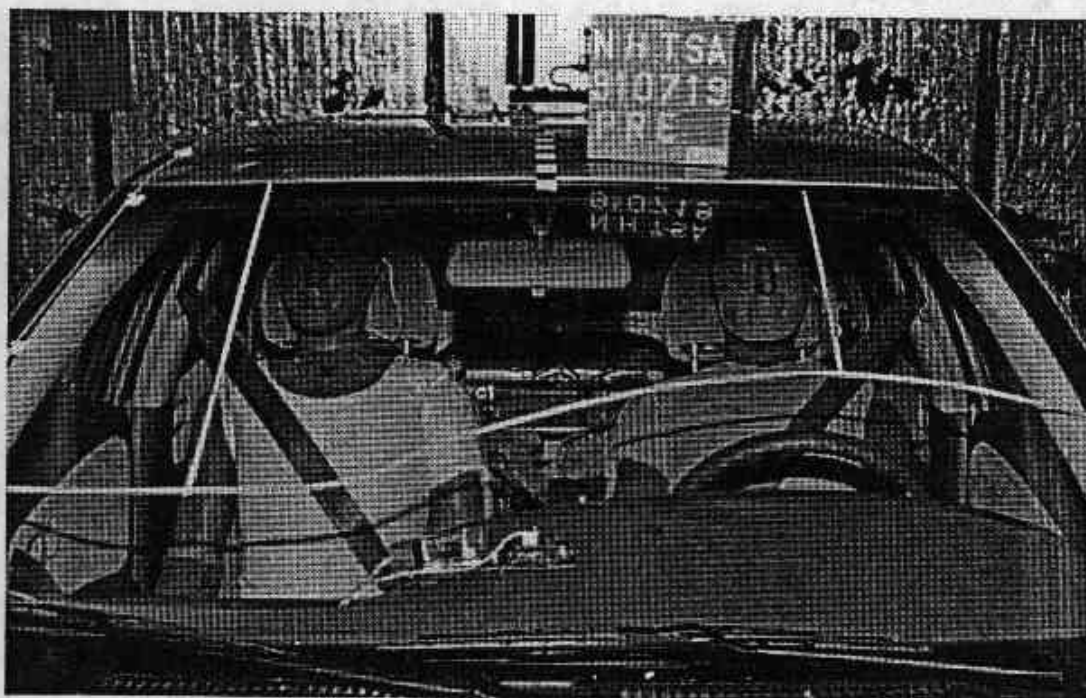


Figure A-13. PRE-TEST WINDSHIELD VIEW

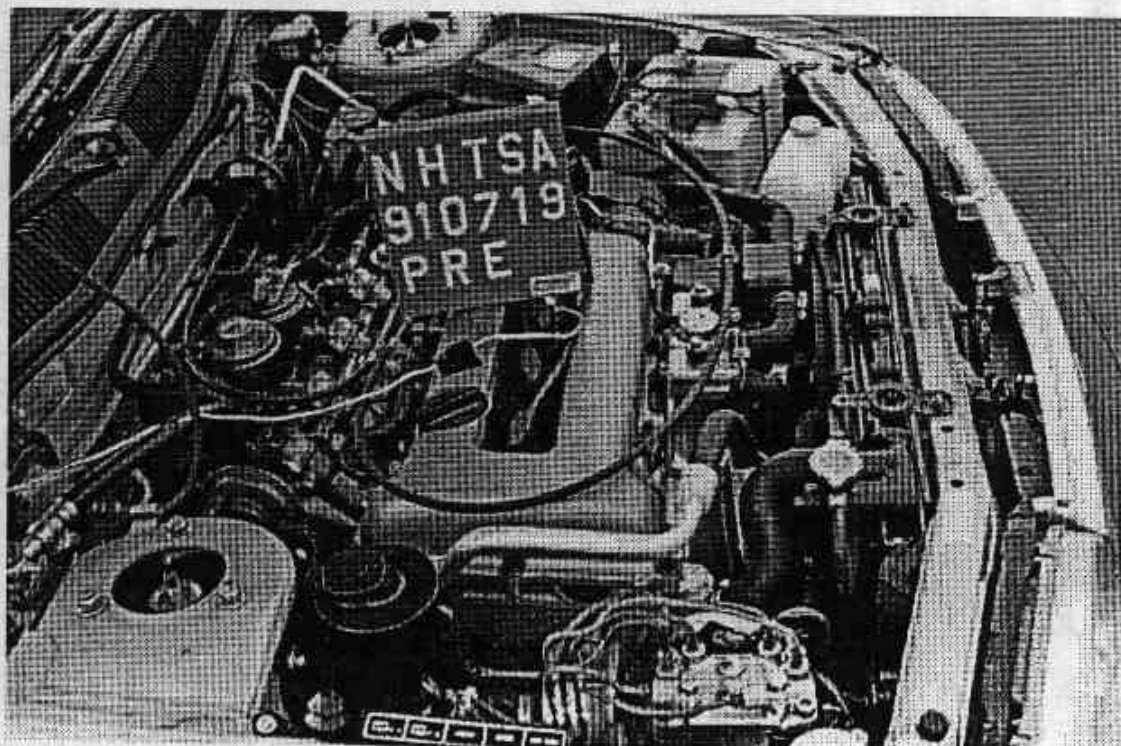


Figure A-14. PRE-TEST ENGINE COMPARTMENT VIEW

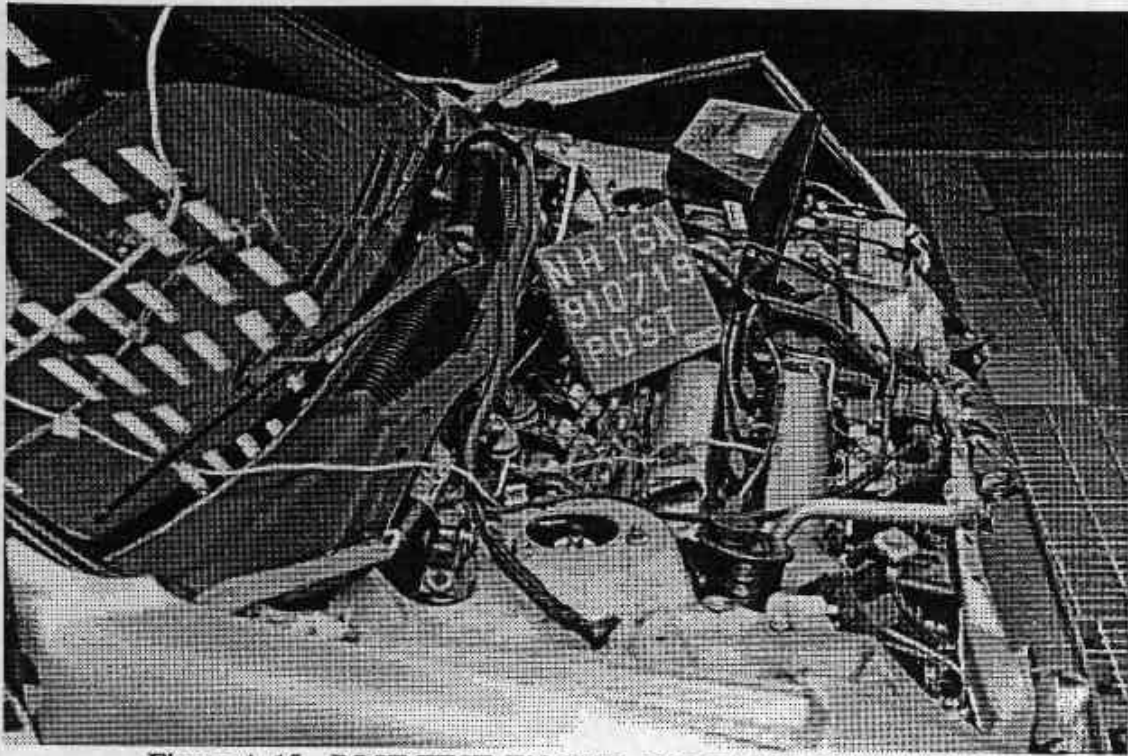


Figure A-15. POST-TEST ENGINE COMPARTMENT VIEW



Figure A-16. PRE-TEST BALLAST LOCATION VIEW

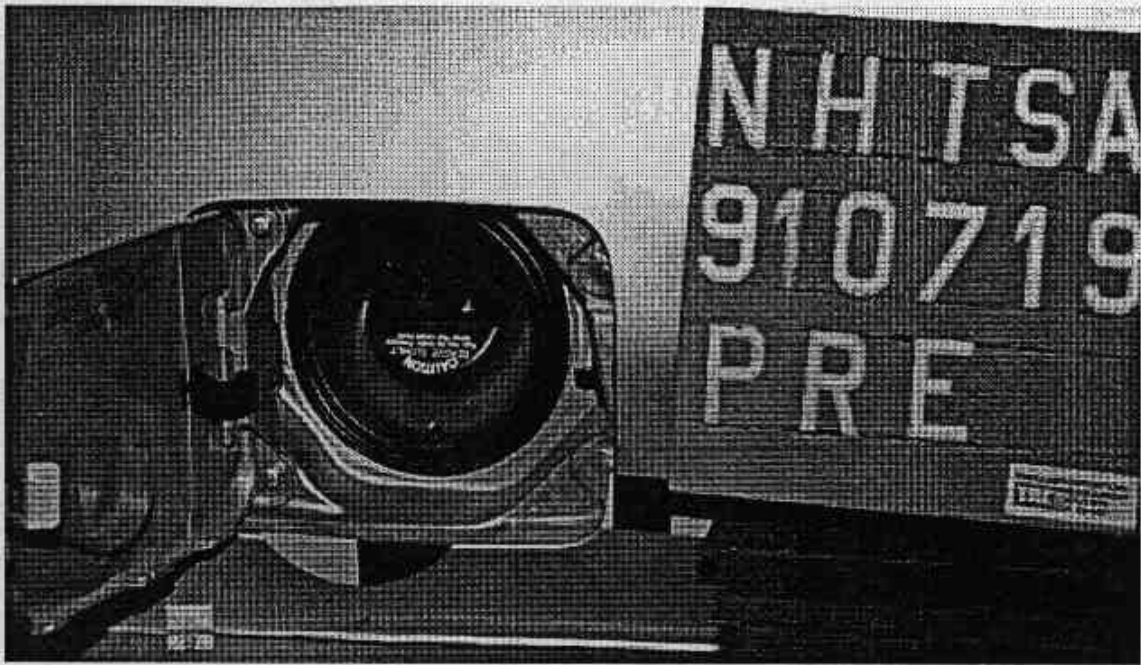


Figure A-17. PRE-TEST FUEL FILLER CAP VIEW

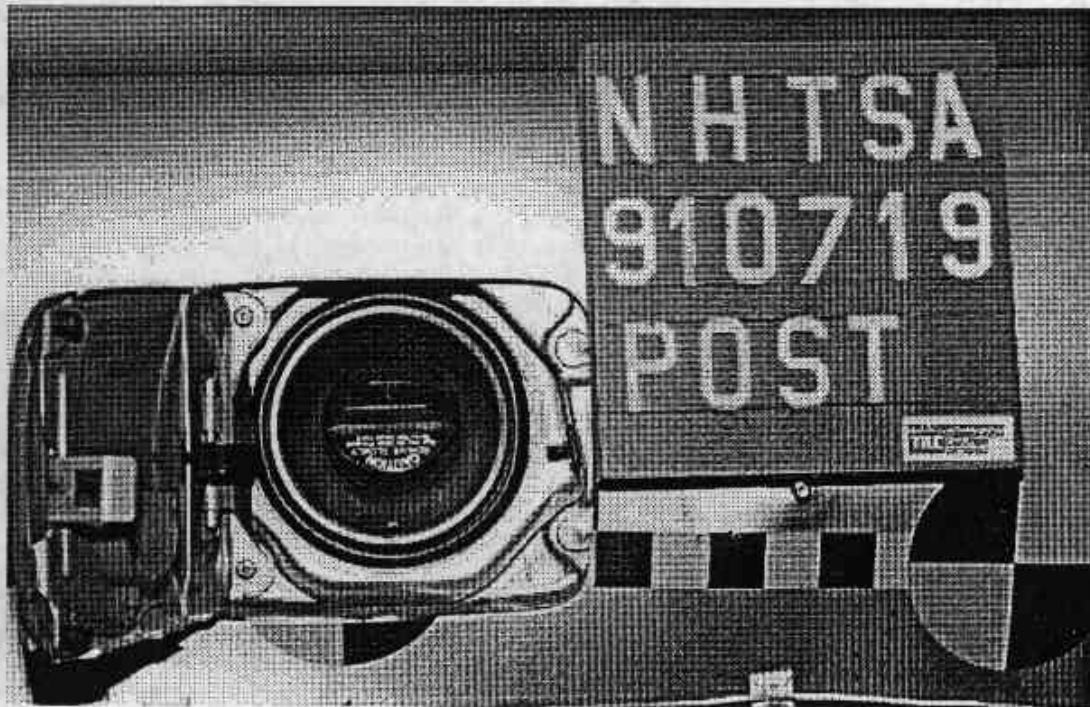


Figure A-18. POST-TEST FUEL FILLER CAP VIEW

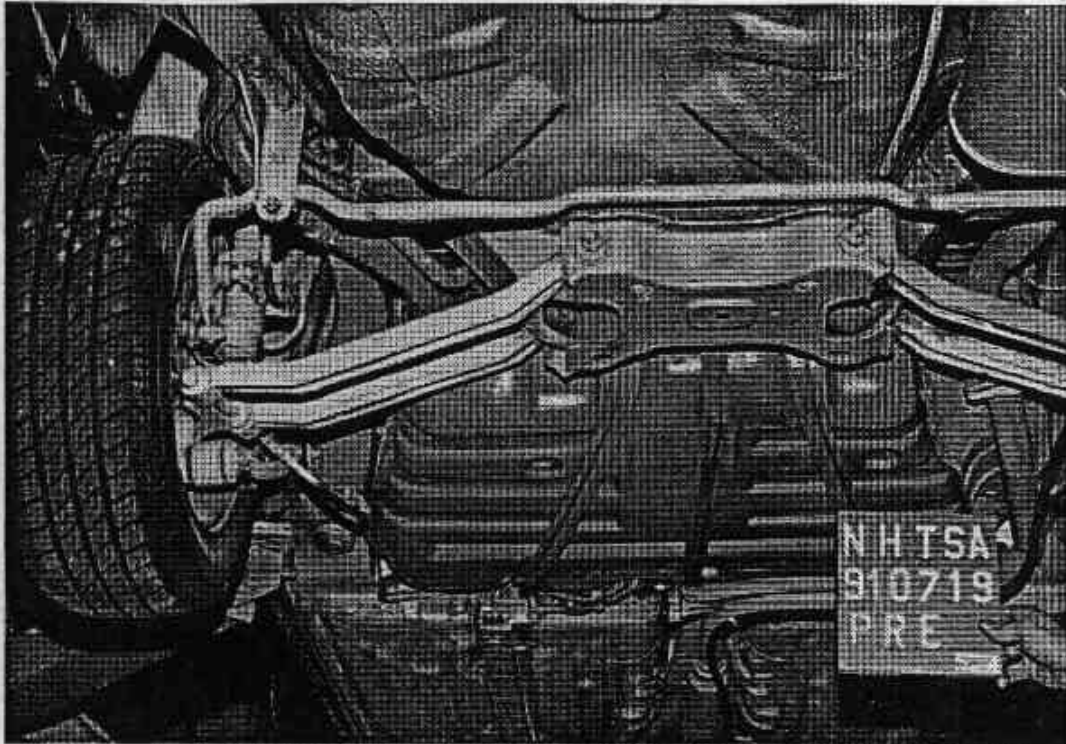


Figure A-19. PRE-TEST FUEL FILLER NECK AND FUEL TANK VIEW

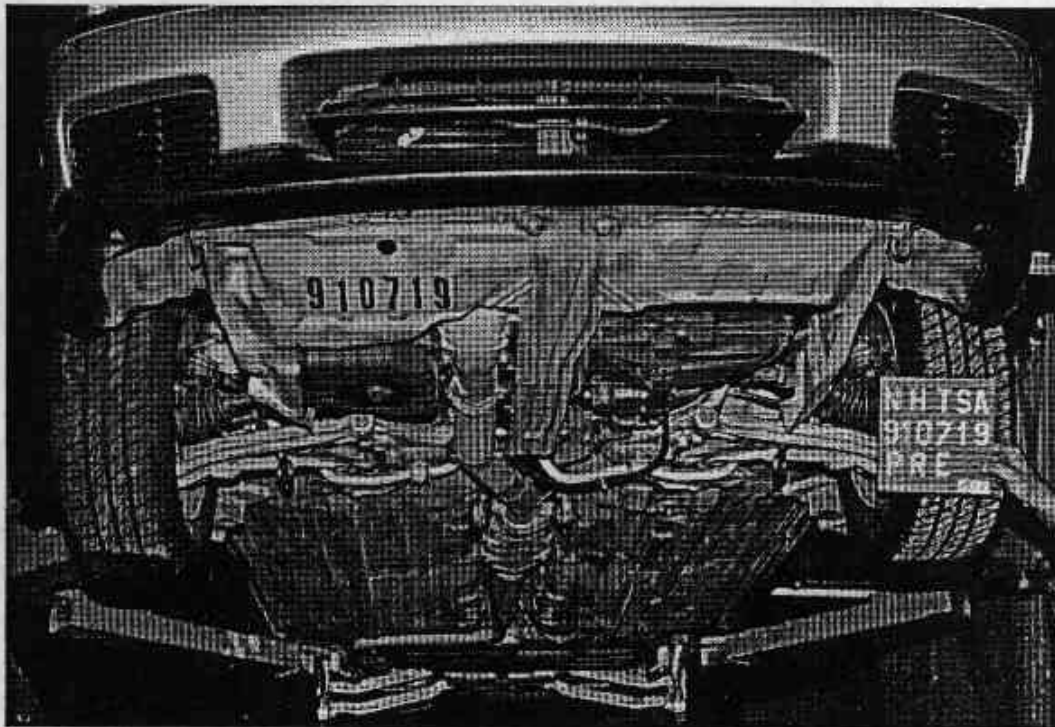


Figure A-20. PRE-TEST FRONT UNDERBODY VIEW

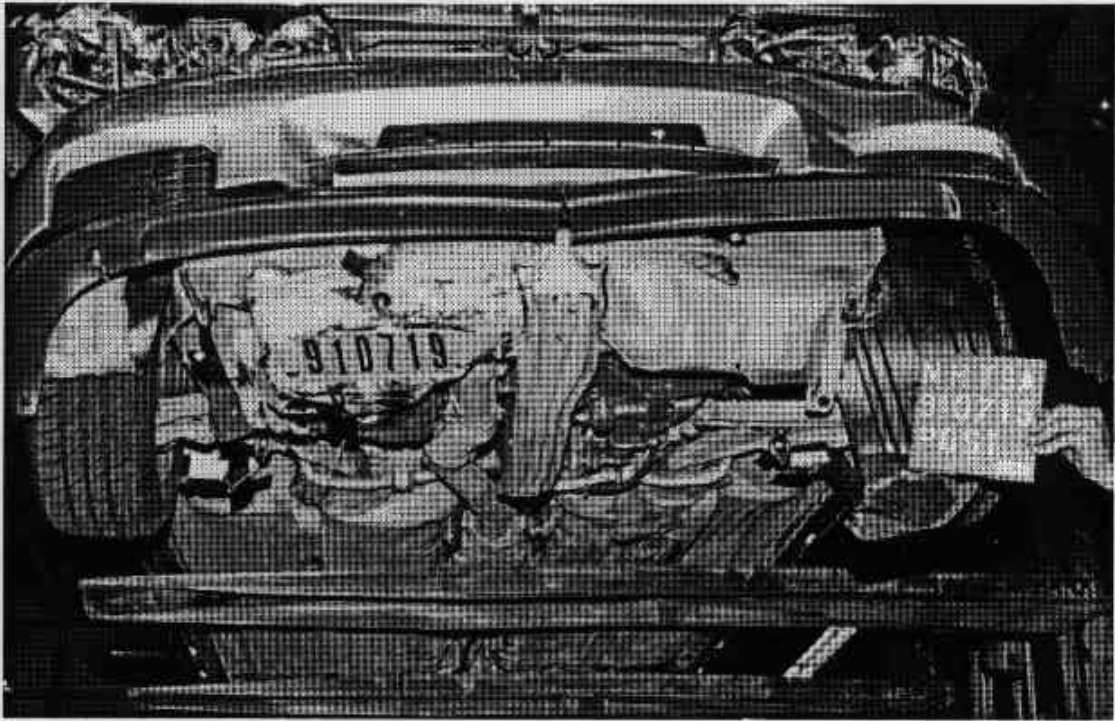


Figure A-21. POST-TEST FRONT UNDERBODY VIEW

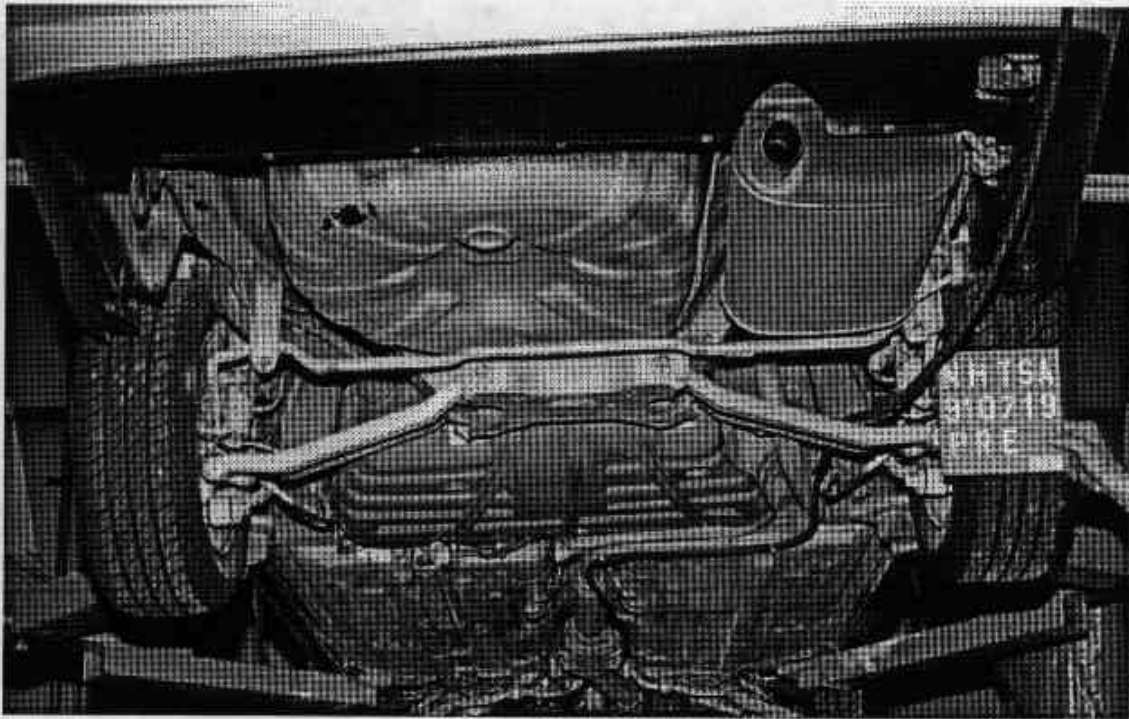


Figure A-22. PRE-TEST REAR UNDERBODY VIEW

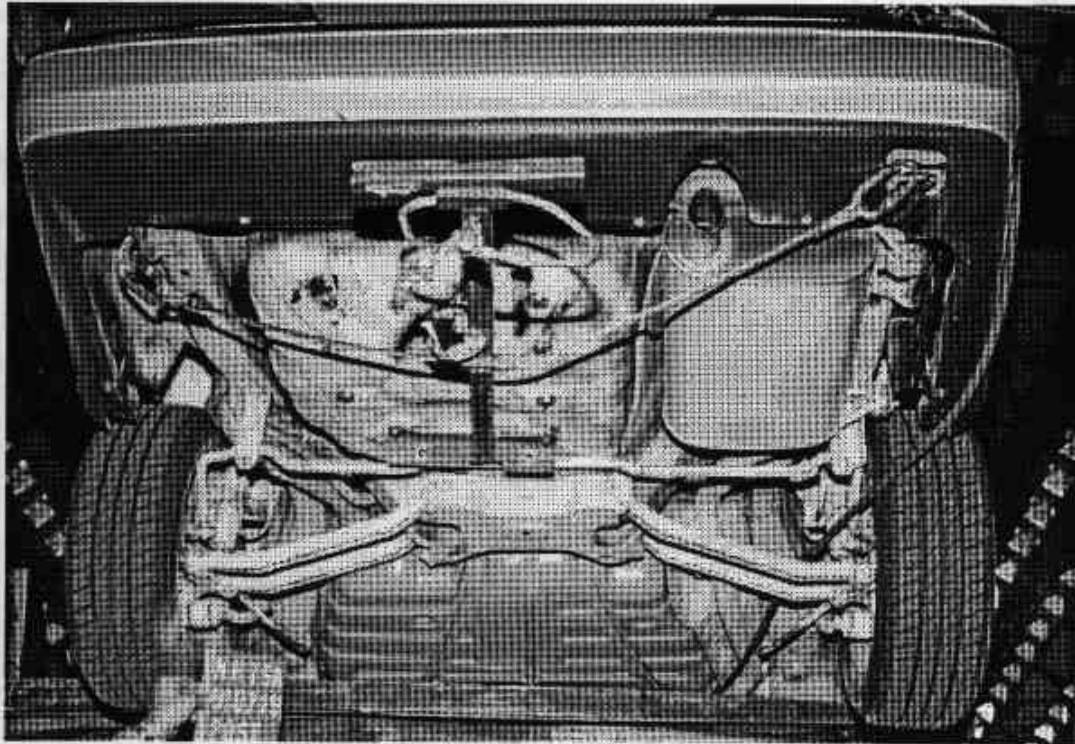


Figure A-23. POST-TEST REAR UNDERBODY VIEW



Figure A-24. PRE-TEST DRIVER DUMMY POSITION VIEW

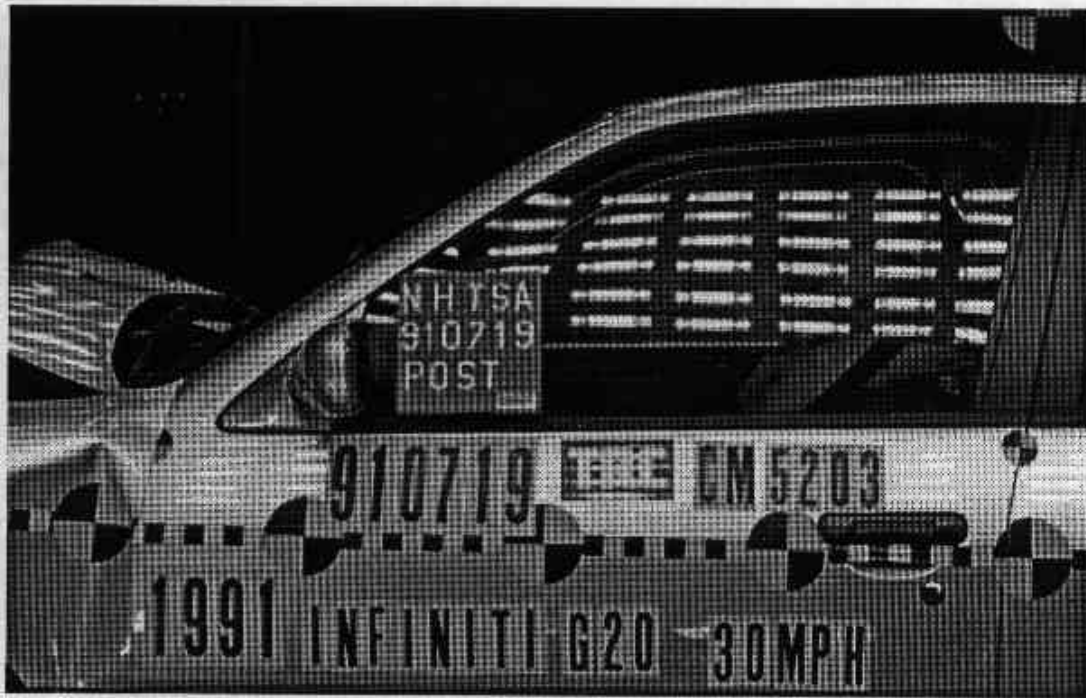


Figure A-25. POST-TEST DRIVER DUMMY POSITION VIEW



Figure A-26. PRE-TEST PASSENGER DUMMY POSITION VIEW



Figure A-27. POST-TEST PASSENGER DUMMY POSITION VIEW



Figure A-28 PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR VIEW



Fig A-29. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR VIEW 1



Fig A-30. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR VIEW 2



Fig A-31. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW



Fig A-32. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW 1



Fig A-33. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW 2



Fig A-34. POST-TEST DRIVER DUMMY HEAD CONTACT VIEW



Fig A-35. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1



Fig A-36. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

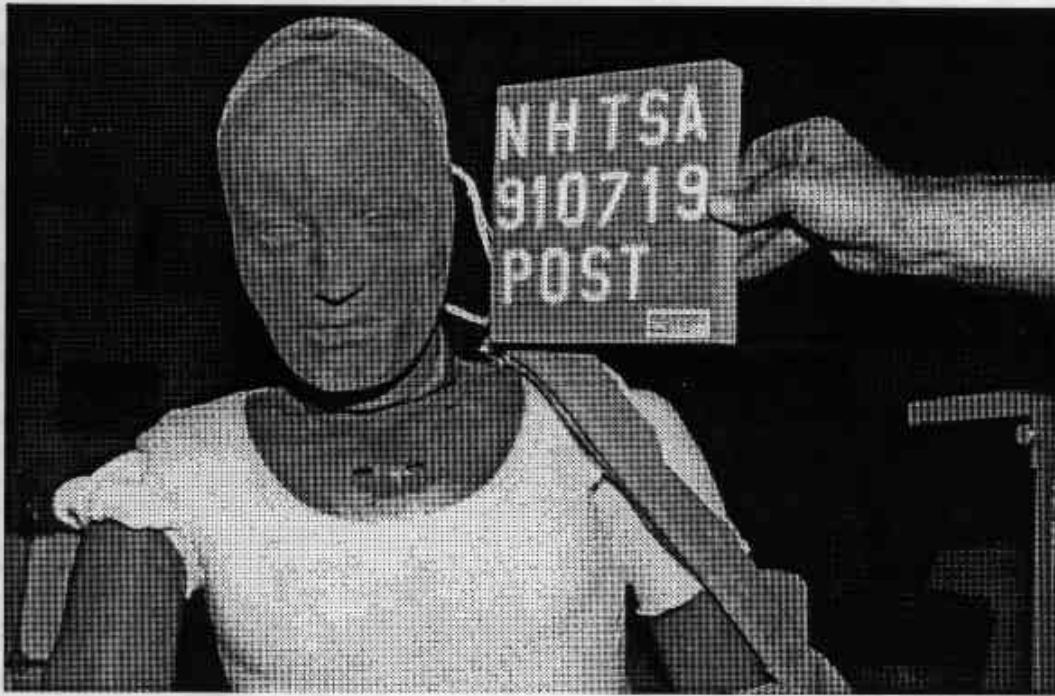


Fig A-37. POST-TEST PASSENGER DUMMY HEAD CONTACT VIEW

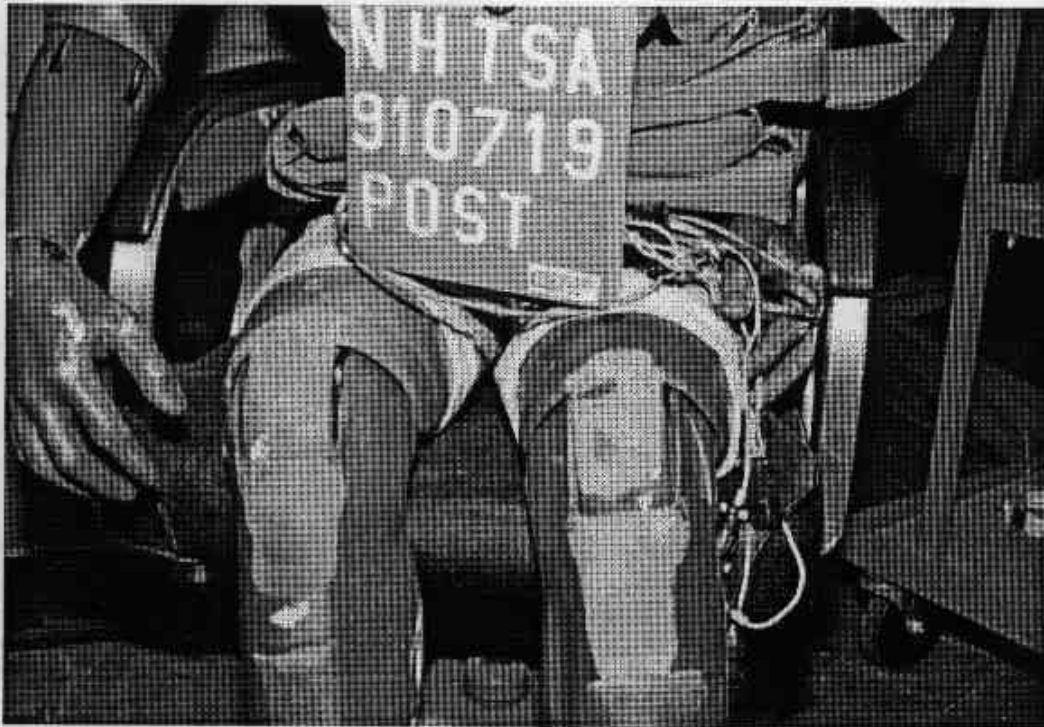


Fig A-38. POST-TEST PASSENGER DUMMY KNEE CONTACT VIEW 1

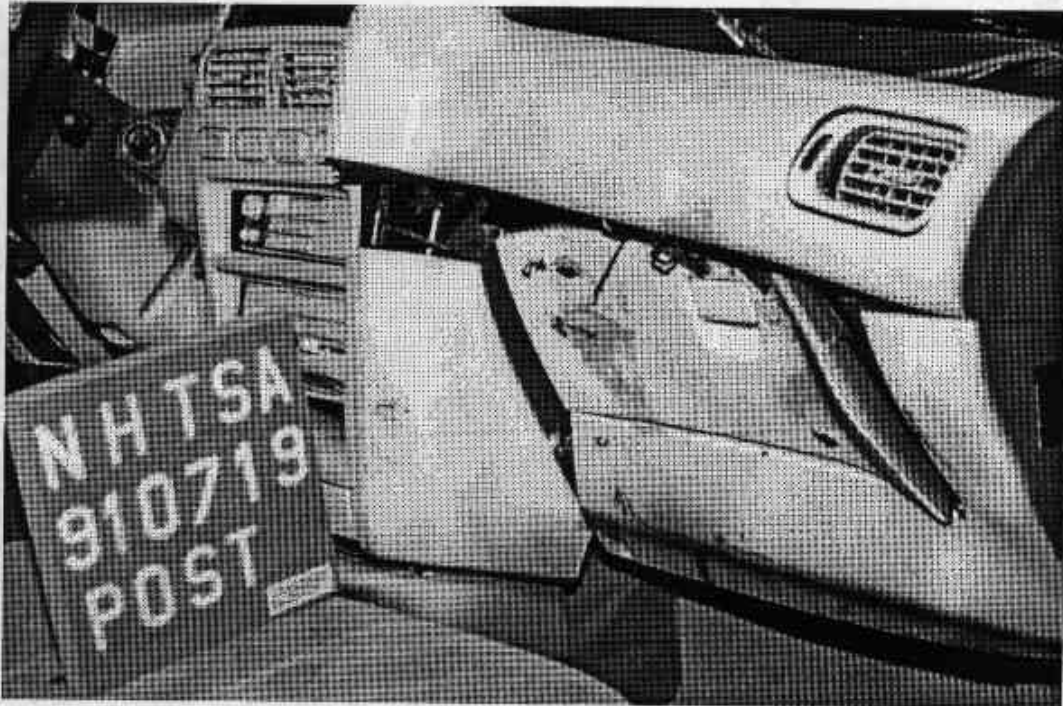


Fig A-39. POST-TEST PASSENGER DUMMY KNEE CONTACT VIEW 2

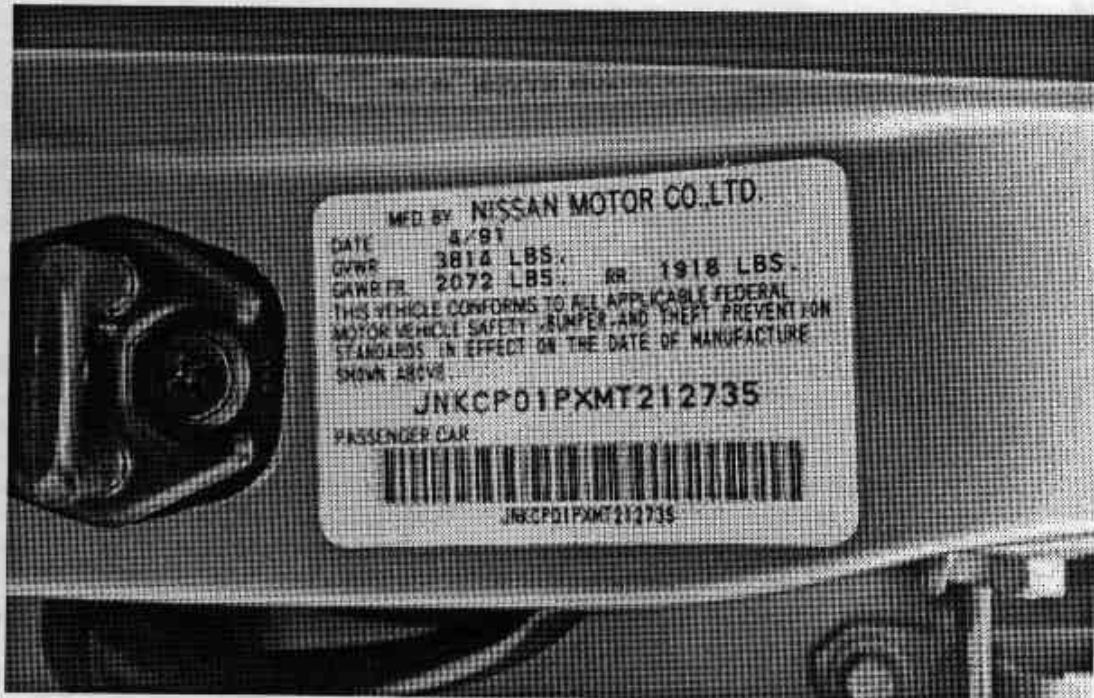


Fig A-40. PRE-TEST VEHICLE CERTIFICATION LABEL VIEW

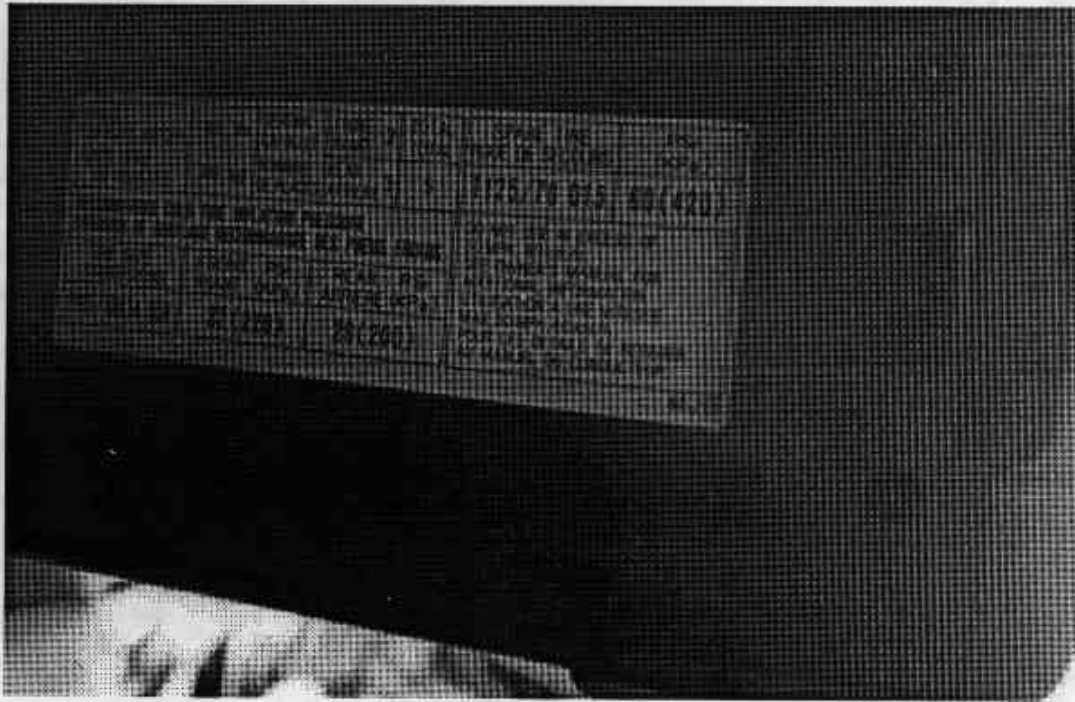


Fig A-41. PRE-TEST VEHICLE RECOMMENDED TIRE PRESSURE LABEL

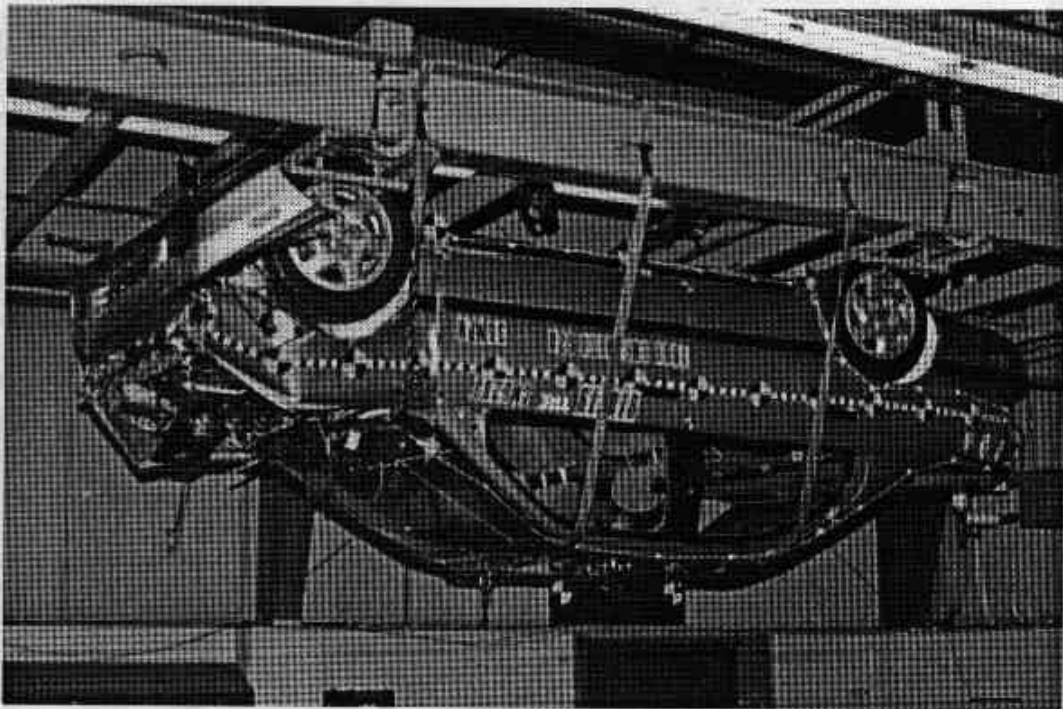


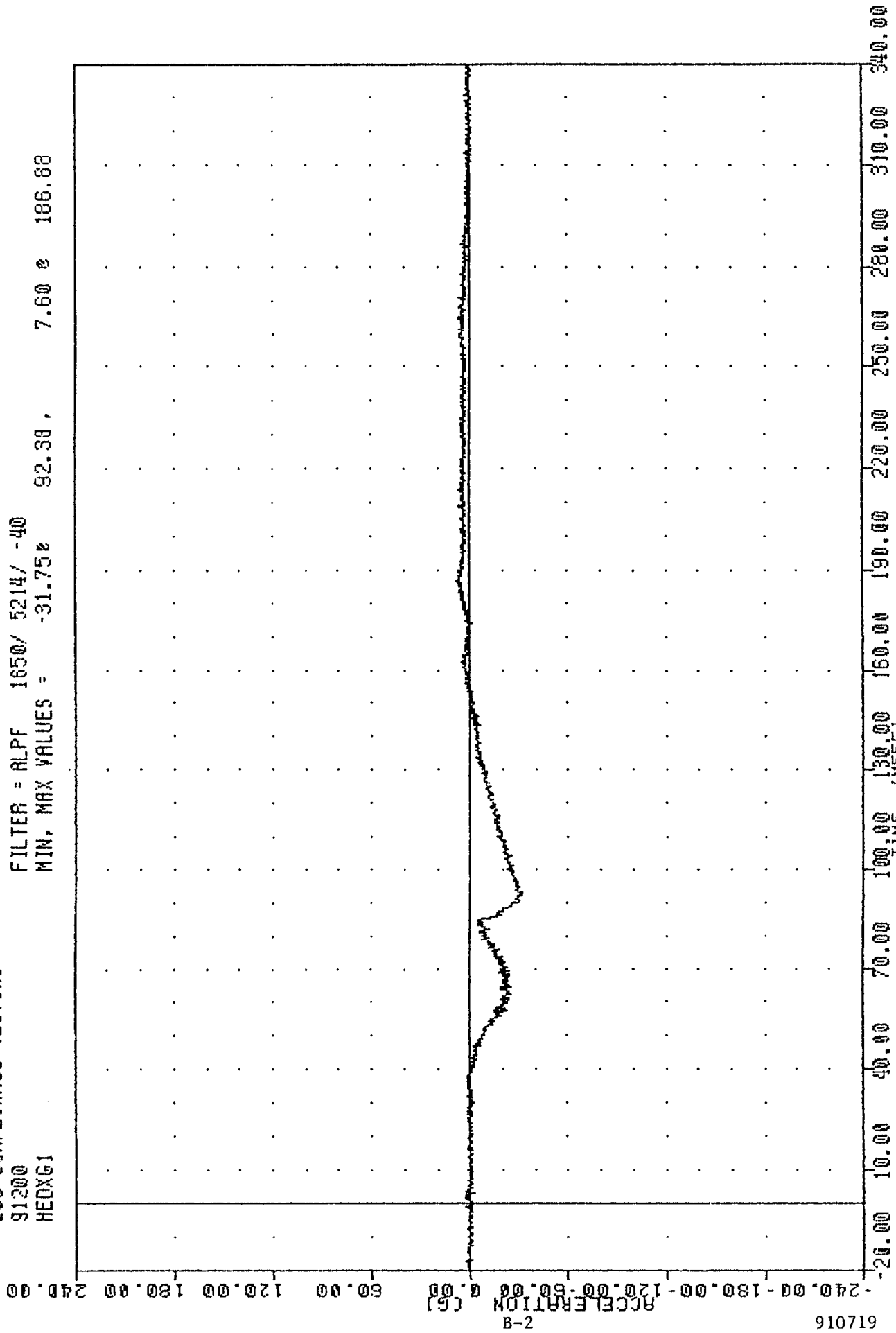
Fig A-42. POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE VIEW

APPENDIX B

DATA PLOTS

TRC , 910719
208 COMPLIANCE TESTING
91200
HEDXG1

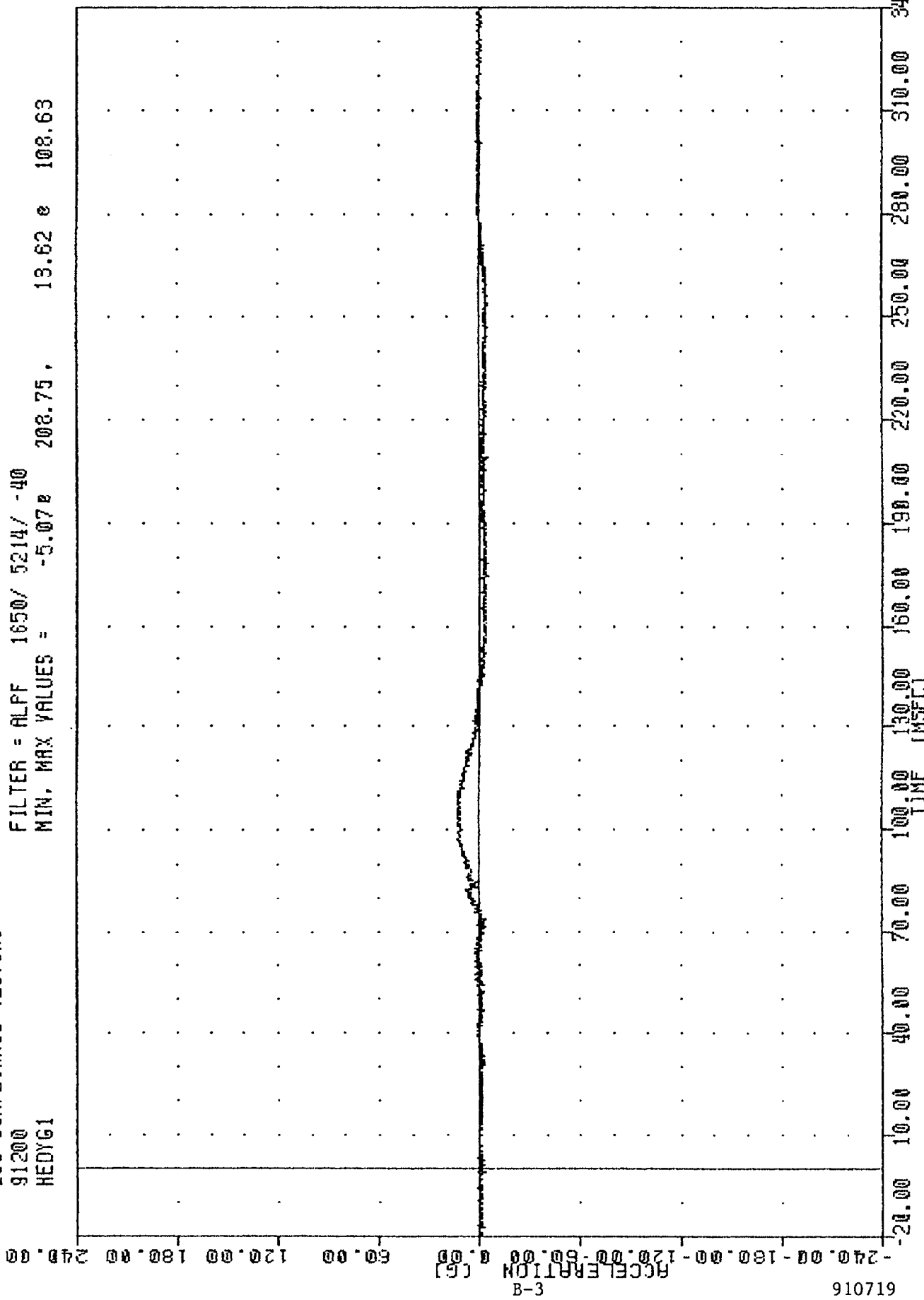
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -31.75e 92.38 , 7.60 e 186.68



1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
DRIVER HEAD X-AXIS ACCELERATION

TBC
208 COMPLIANCE TESTING
91200
HEDY61

FILTER = ALFF 1650/ 5214/ -40
MIN. MAX VALUES = -5.07 e 208.75 , 13.62 e 108.63

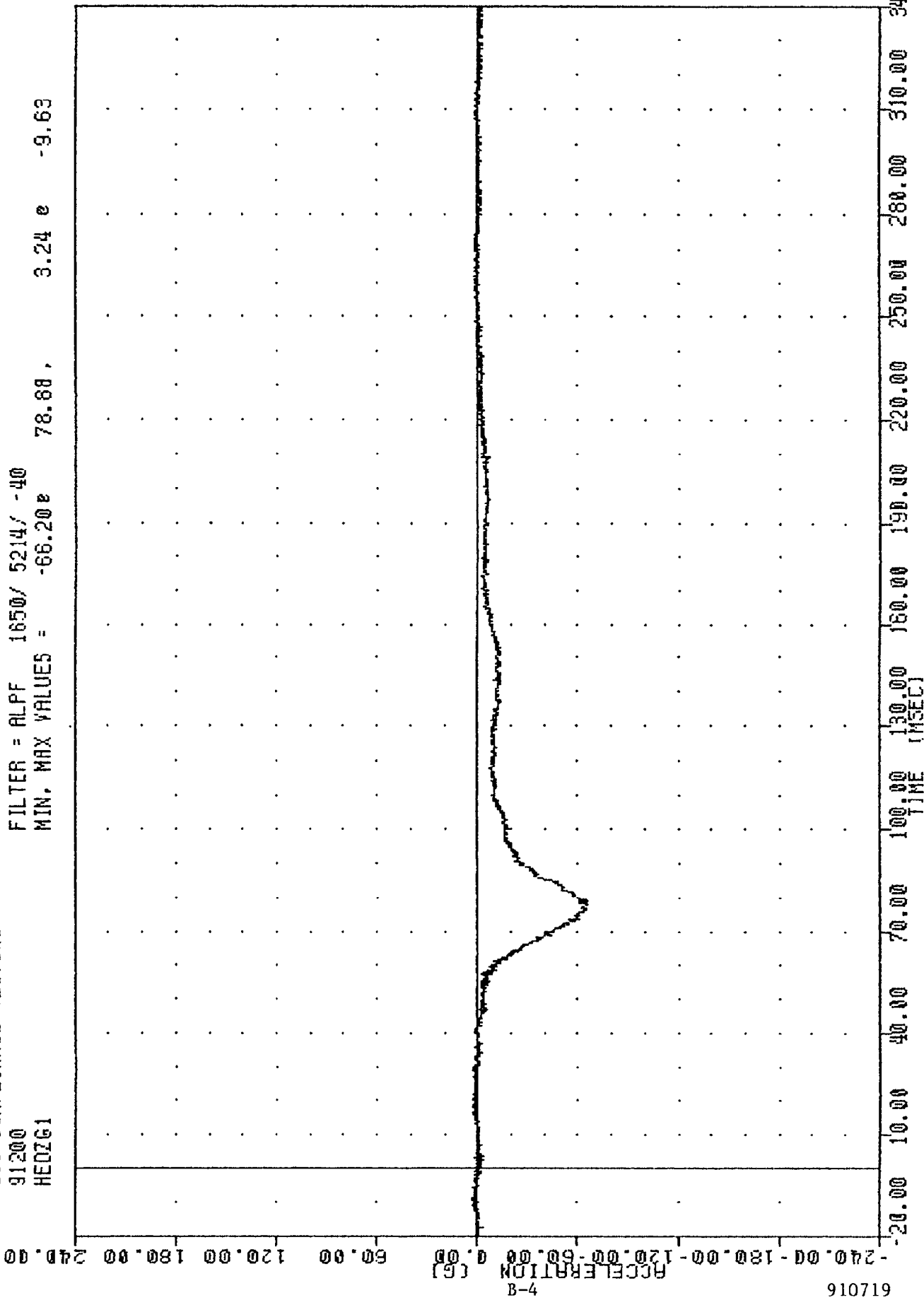


910719

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION

TRC , 910719
208 COMPLIANCE TESTING
91200
HEADZG1

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -66.20e 78.88 , 3.24 e -9.63



910716

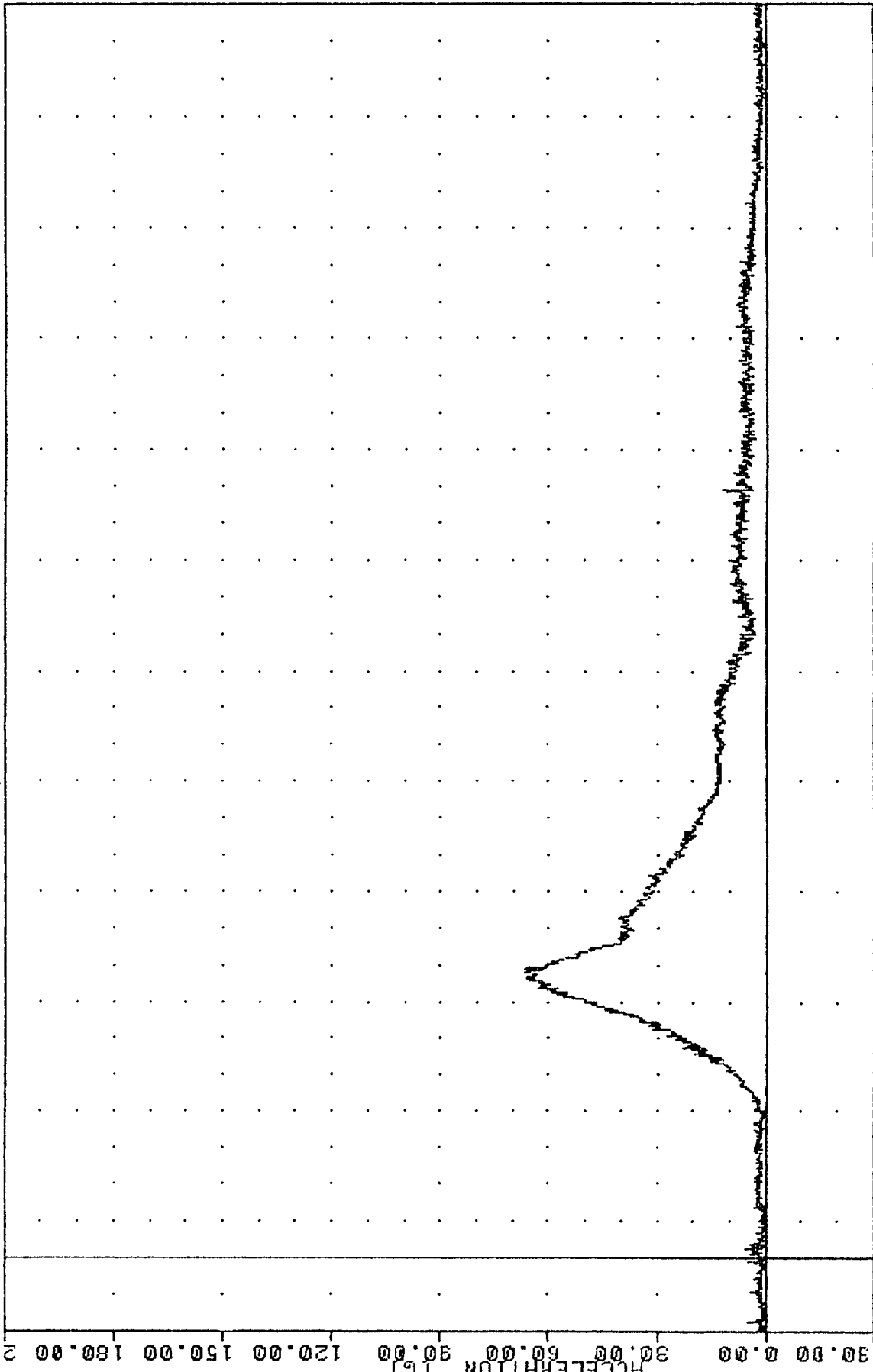
1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
DRIVER HEAD Z-AXIS ACCELERATION

TRC
208 COMPLIANCE TESTING
91200
HEDRG1

, 910719

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = 0.09g 12.88g 66.67g 78.88g

210.00



910719

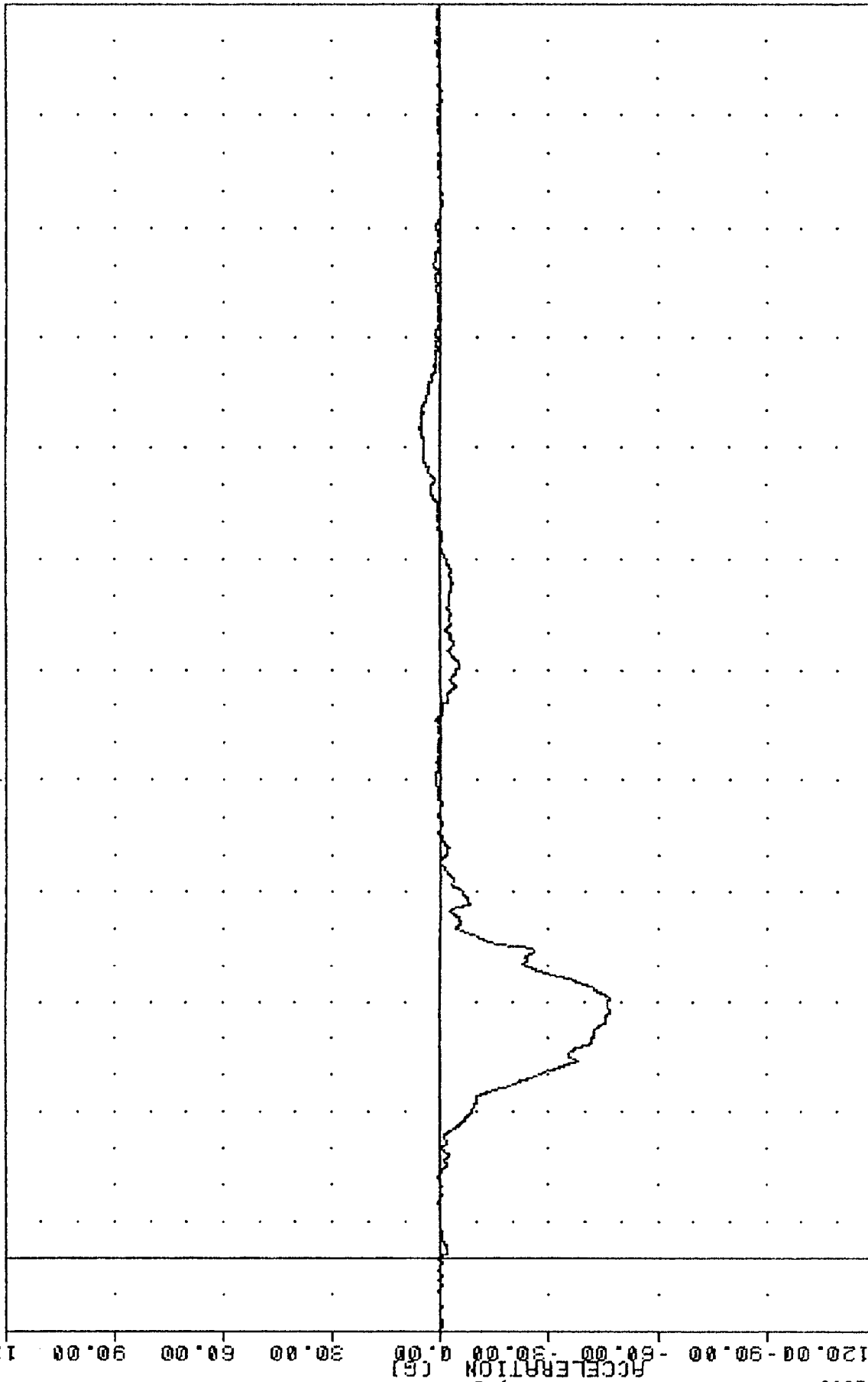
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSECT)

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

TRC , 910719
208 COMPLIANCE TESTING
91200
CSTXG1

FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -47.16e 67.25, 5.64 e 225.00

129.00

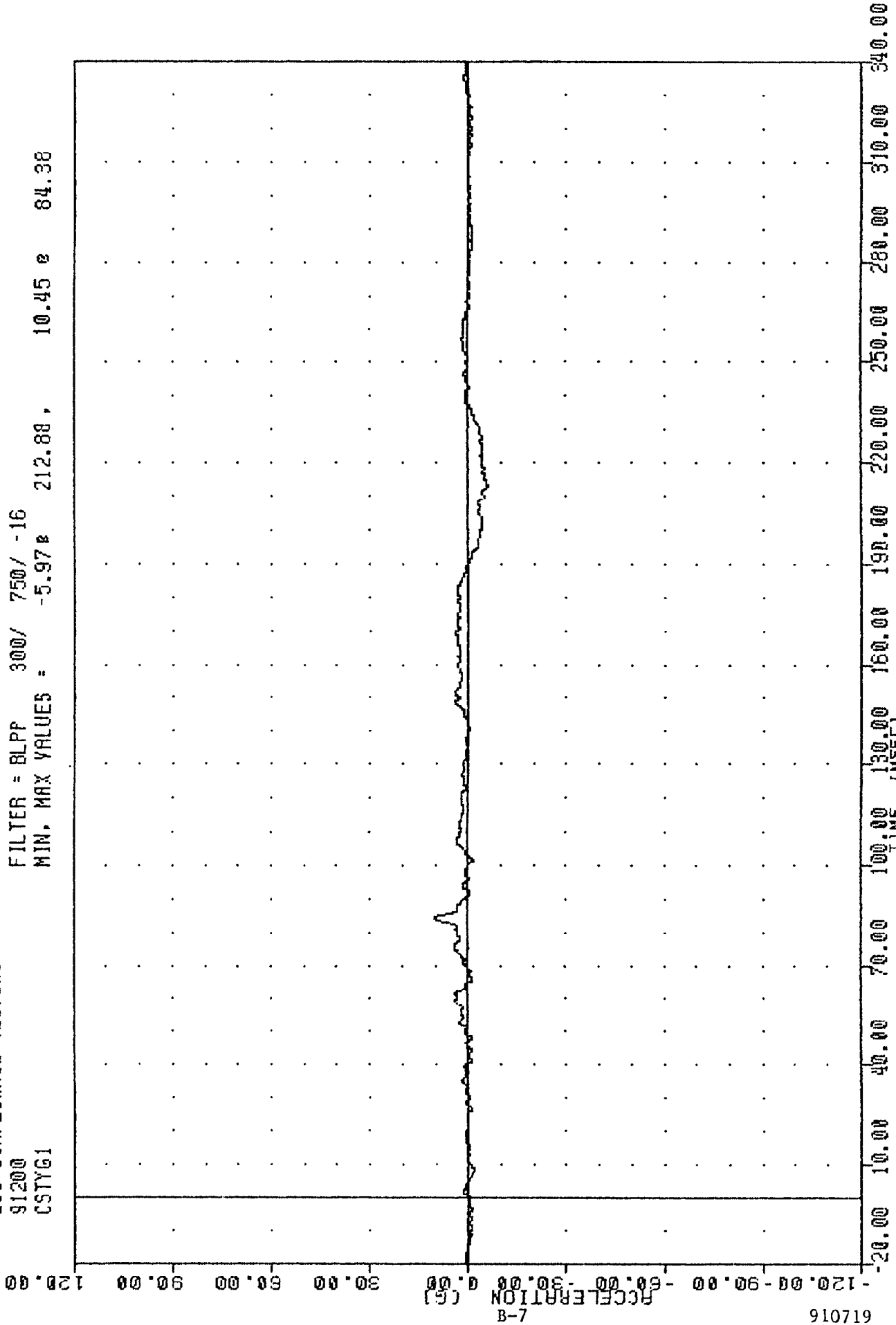


910716

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
DRIVER CHEST X-AXIS ACCELERATION

TRC , 910719
208 COMPLIANCE TESTING
91200
CSTYG1

FILTER = BLPP 300/ 750/ -16
MIN. MAX VALUES = -5.97 212.88 10.45 84.38

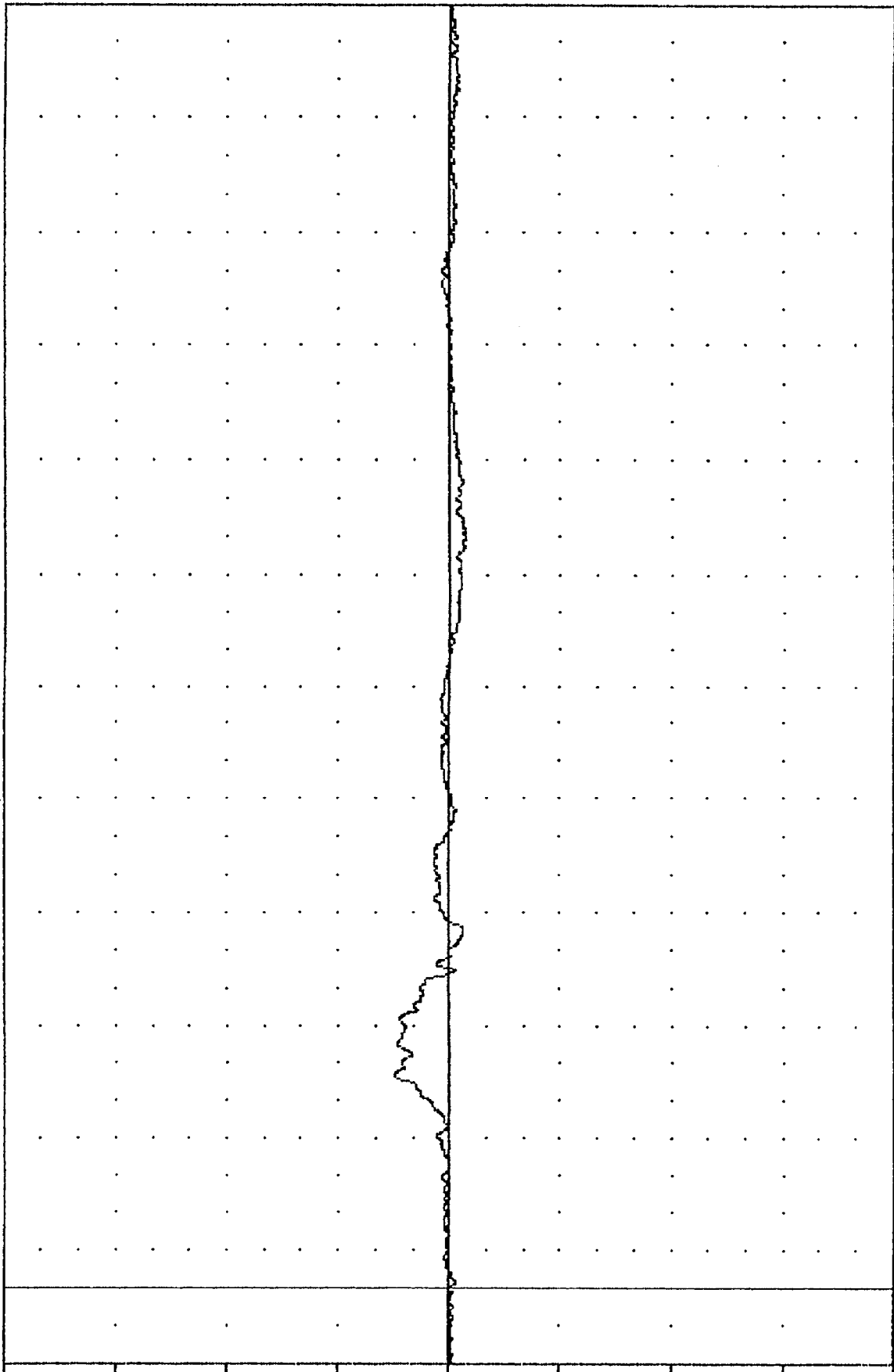


TRC
208 COMPLIANCE TESTING
91200
CSTZG1

, 910719

FILTER = BLPP 300/ 750/ -16
MIN. MAX VALUES = -4.47e 14.94 e 57.25

120.00



-120.00 -90.00 -60.00 -30.00 0.00 30.00 60.00 90.00 120.00
-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
TIME (MSECT)

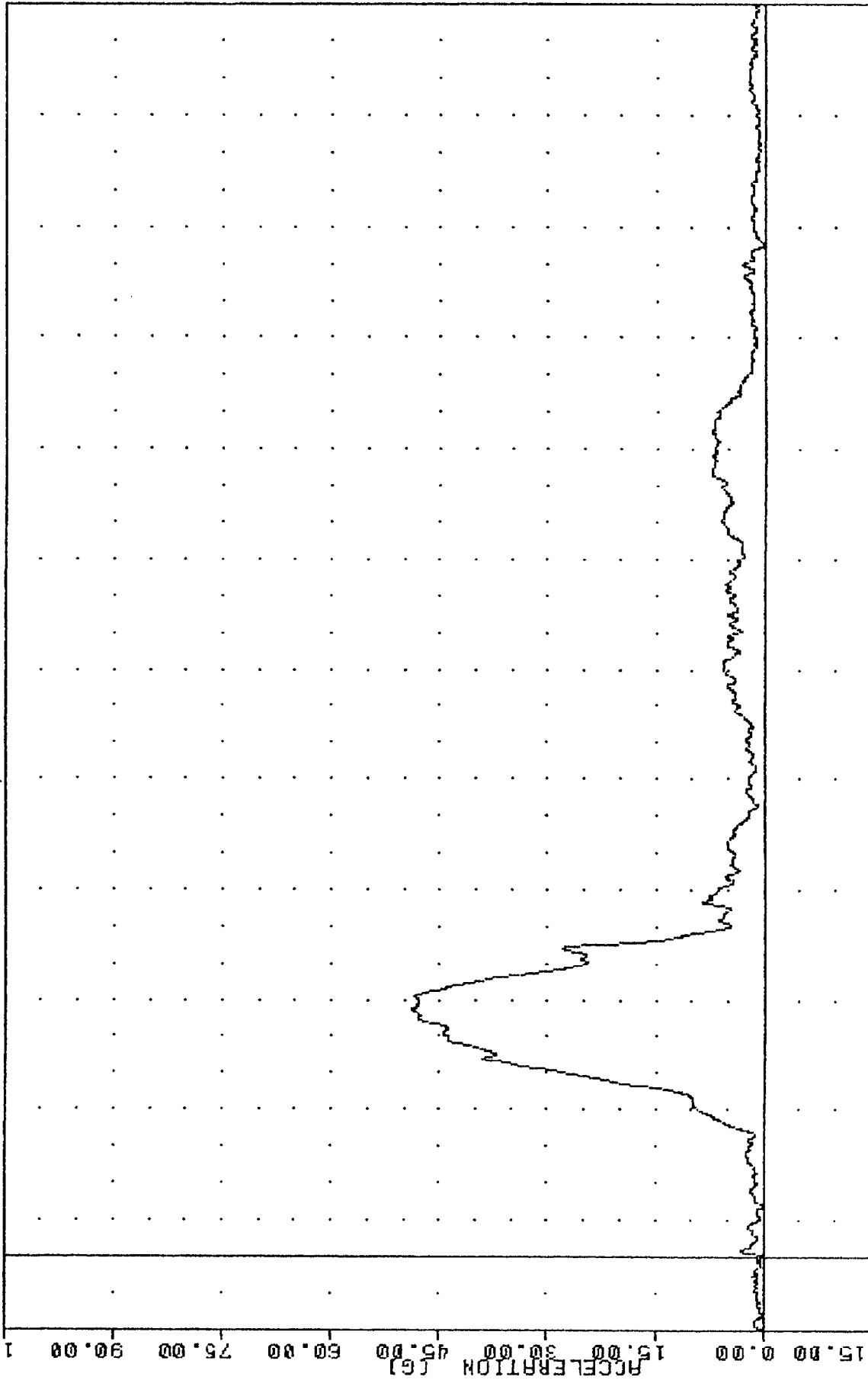
910719

B-8

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION

TAC
208 COMPLIANCE TESTING
91200
CSTRG1

FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = 0.098 13.50, 48.83 e 67.25



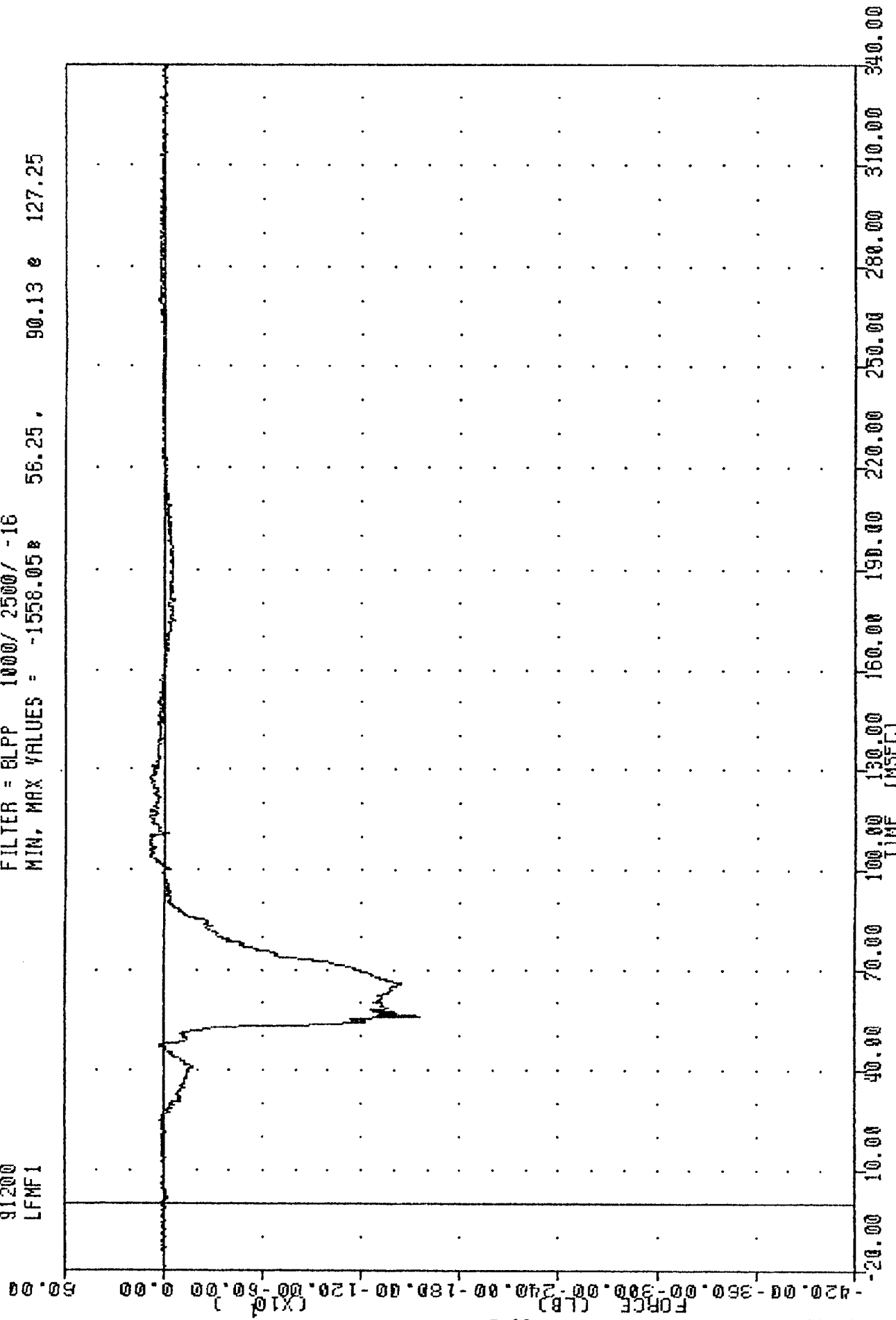
910719

1991 INFINITI 620 INTO FLAT FRONTAL BARRIER
DRIVER CHEST RESULTANT ACCELERATION

TRC
208 COMPLIANCE TESTING
91200
LFMF1

910719

FILTER = 8LPP 1000/ 2500/ -16
MIN, MAX VALUES = -1558.05 56.25 90.13 e 127.25



1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
DRIVER LEFT FEMUR FORCE

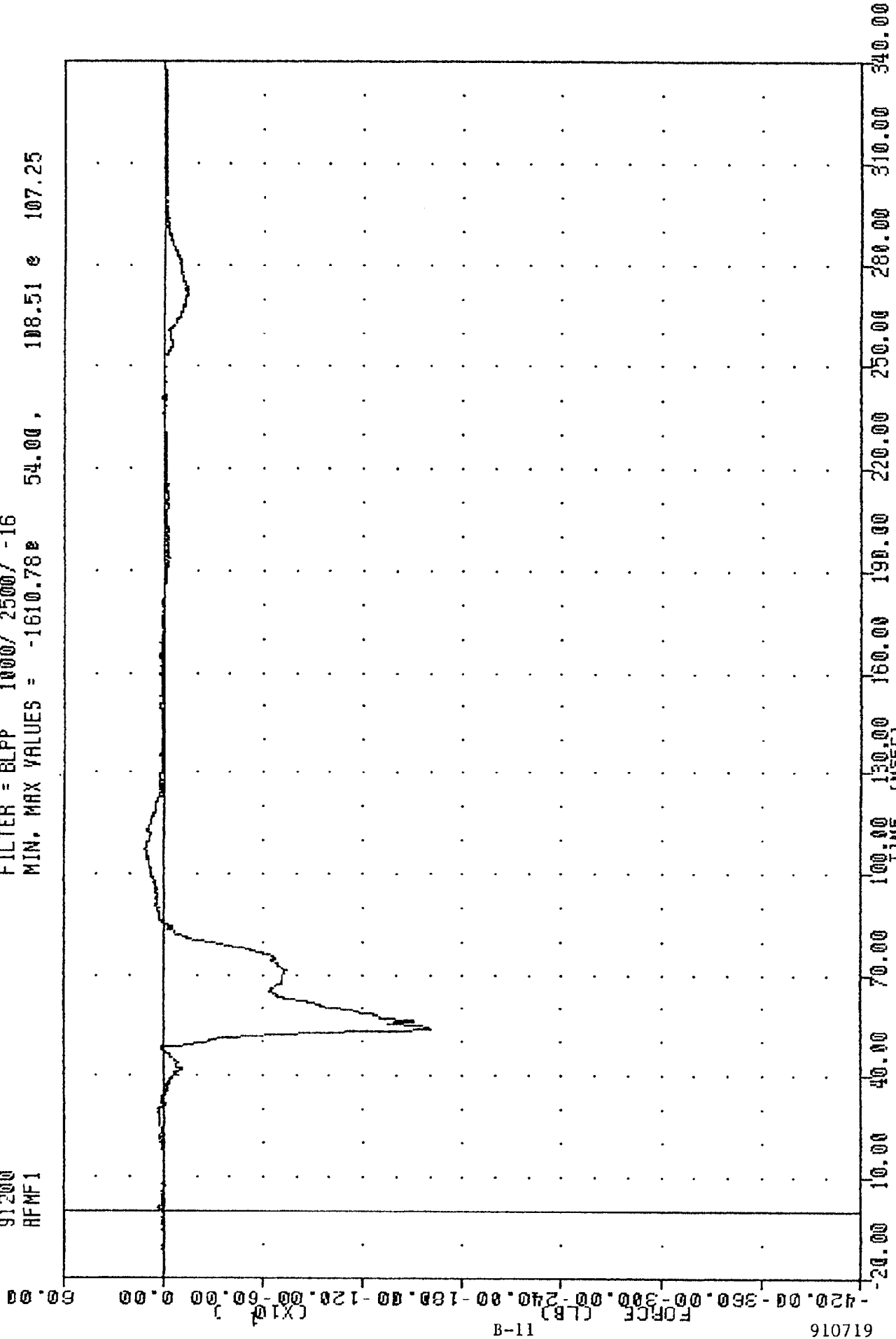
TRC
91200
AFMF1

910719

208 COMPLIANCE TESTING

FILTER = BLPP 1000/ 2500/ -16

MIN. MAX VALUES = -1610.78 e 54.00, 108.51 e 107.25



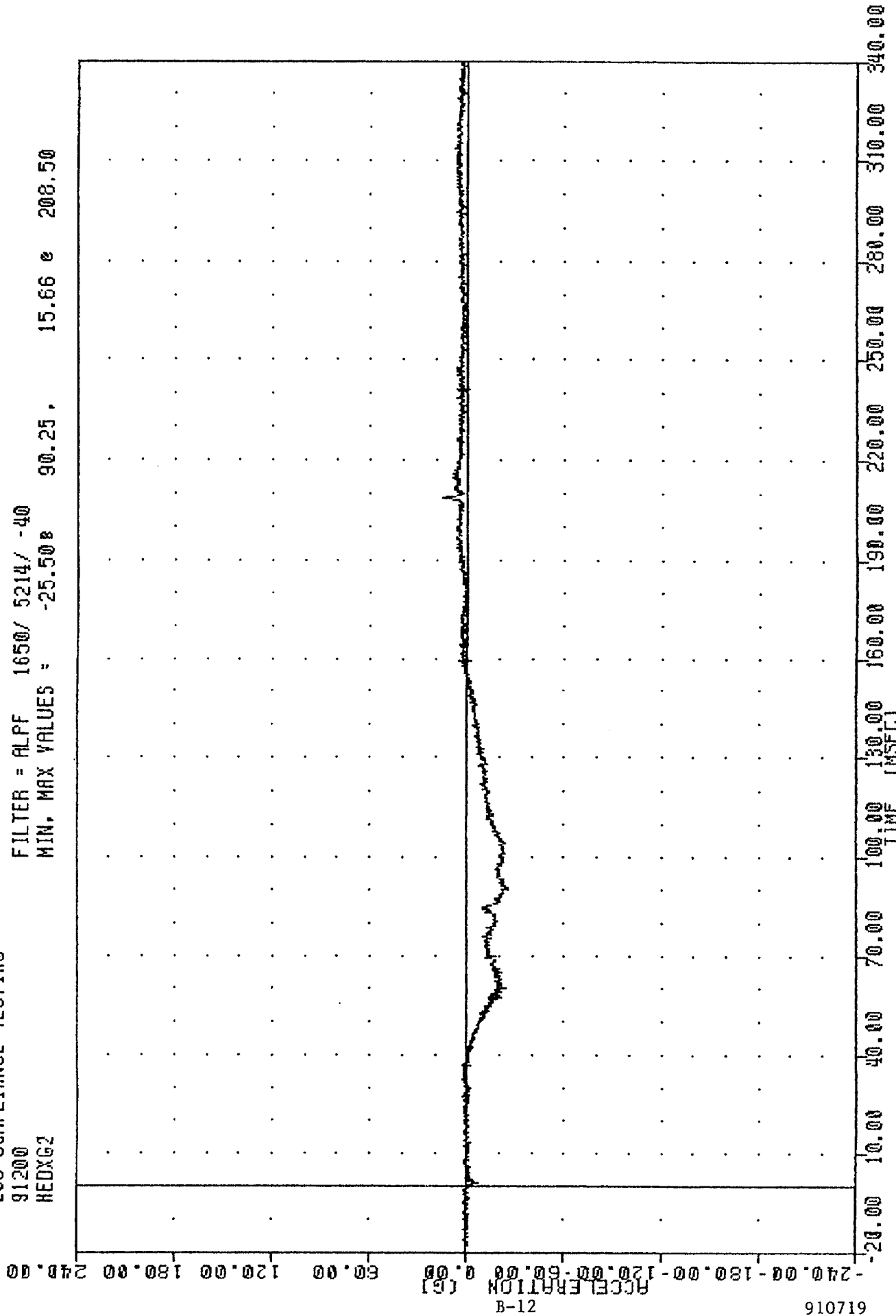
B-11

910719

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
DRIVER RIGHT FEMUR FORCE

TRC 910719
208 COMPLIANCE TESTING
91200
HEDXG2

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = 90.25 . 15.66 e 208.50



910719

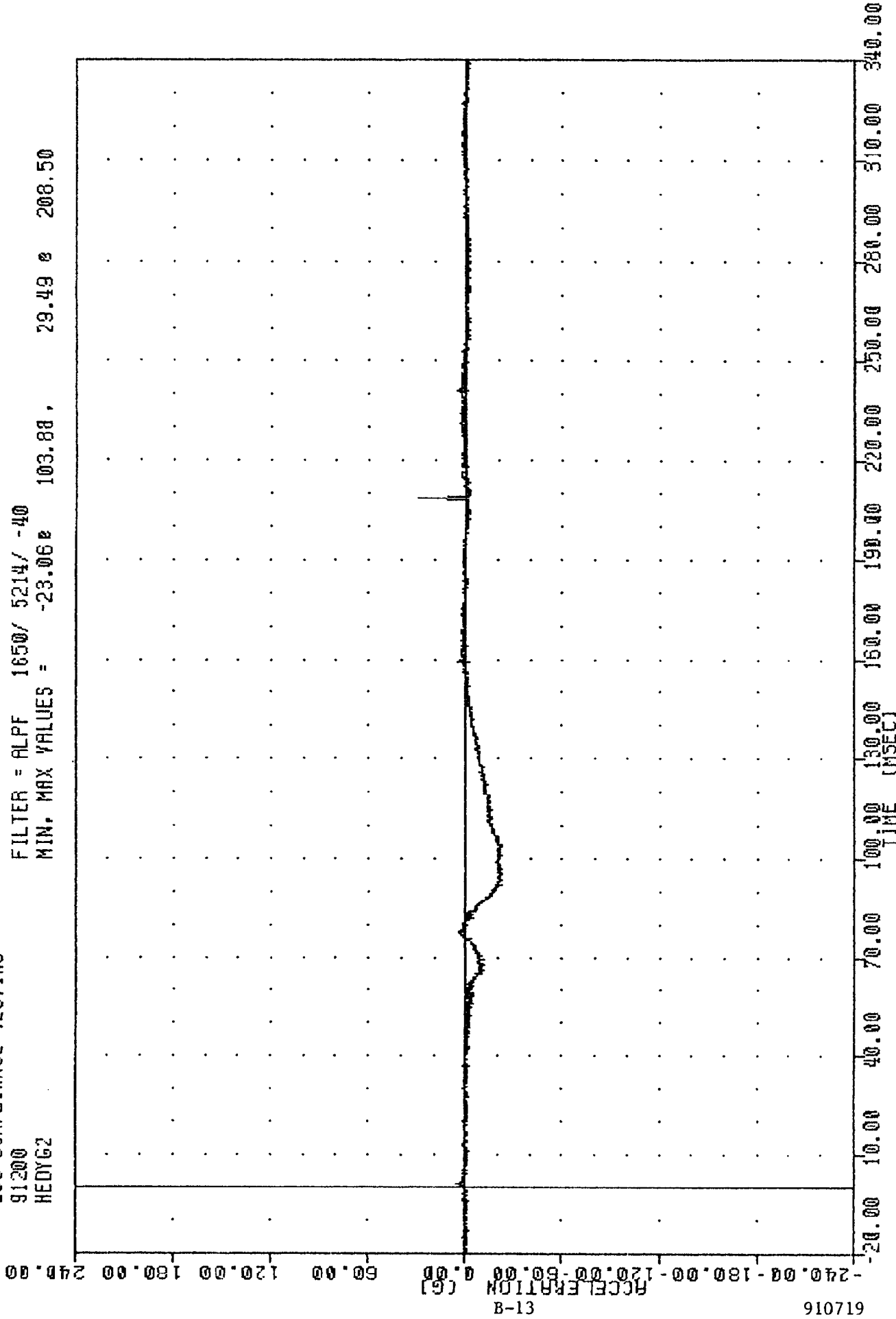
B-12

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION

TRC 910719
208 COMPLIANCE TESTING

91200
HEDYG2

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -23.06e 103.88, 29.49 e 208.50



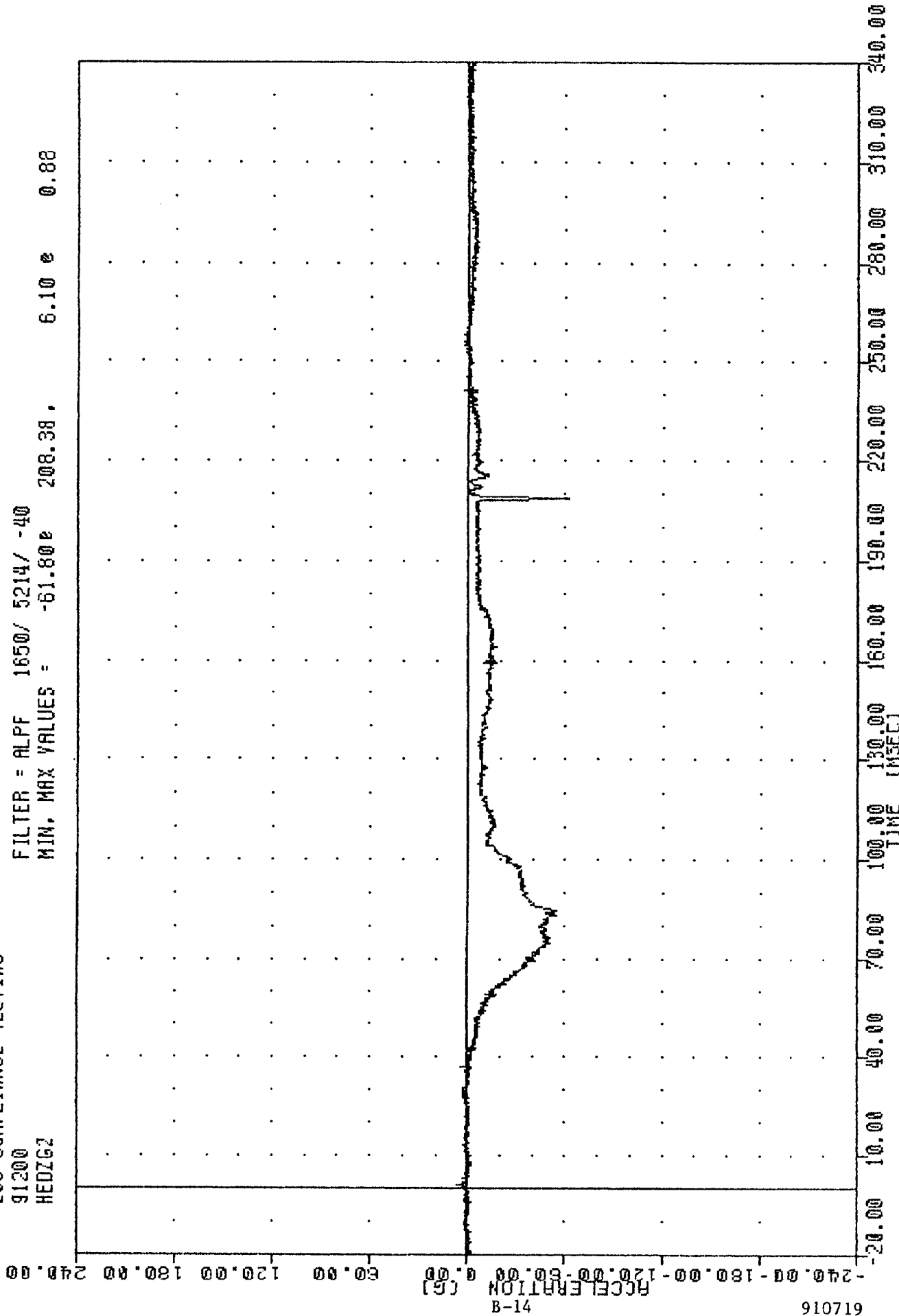
910719

11-8

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

TRC 910719
208 COMPLIANCE TESTING
91200
HEDZG2

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -61.80e 208.38, 6.10 e 0.88

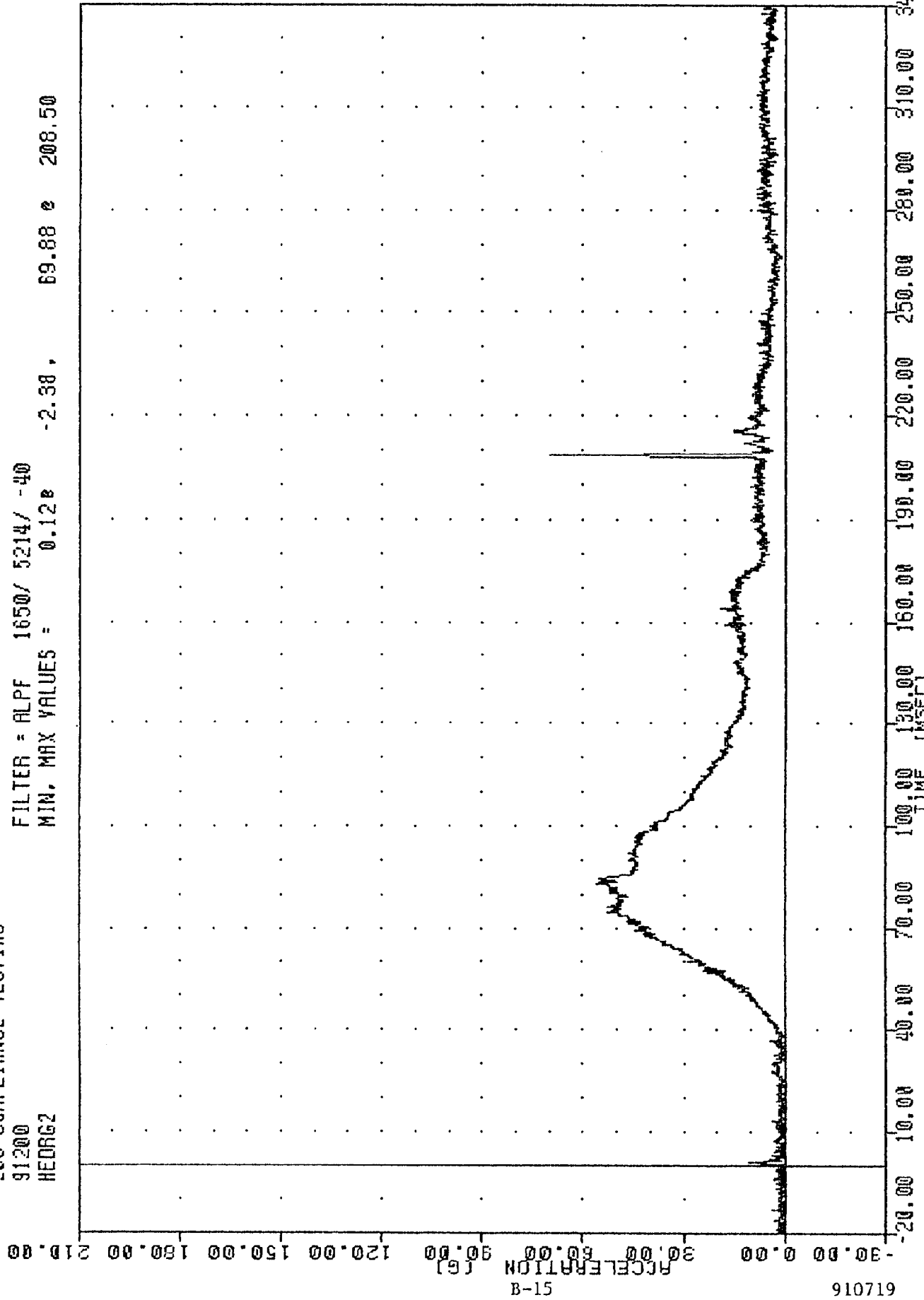


910719

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

TRC
910719
208 COMPLIANCE TESTING
91200
HEDRG2

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = 0.12e -2.38, 69.88 e 208.50

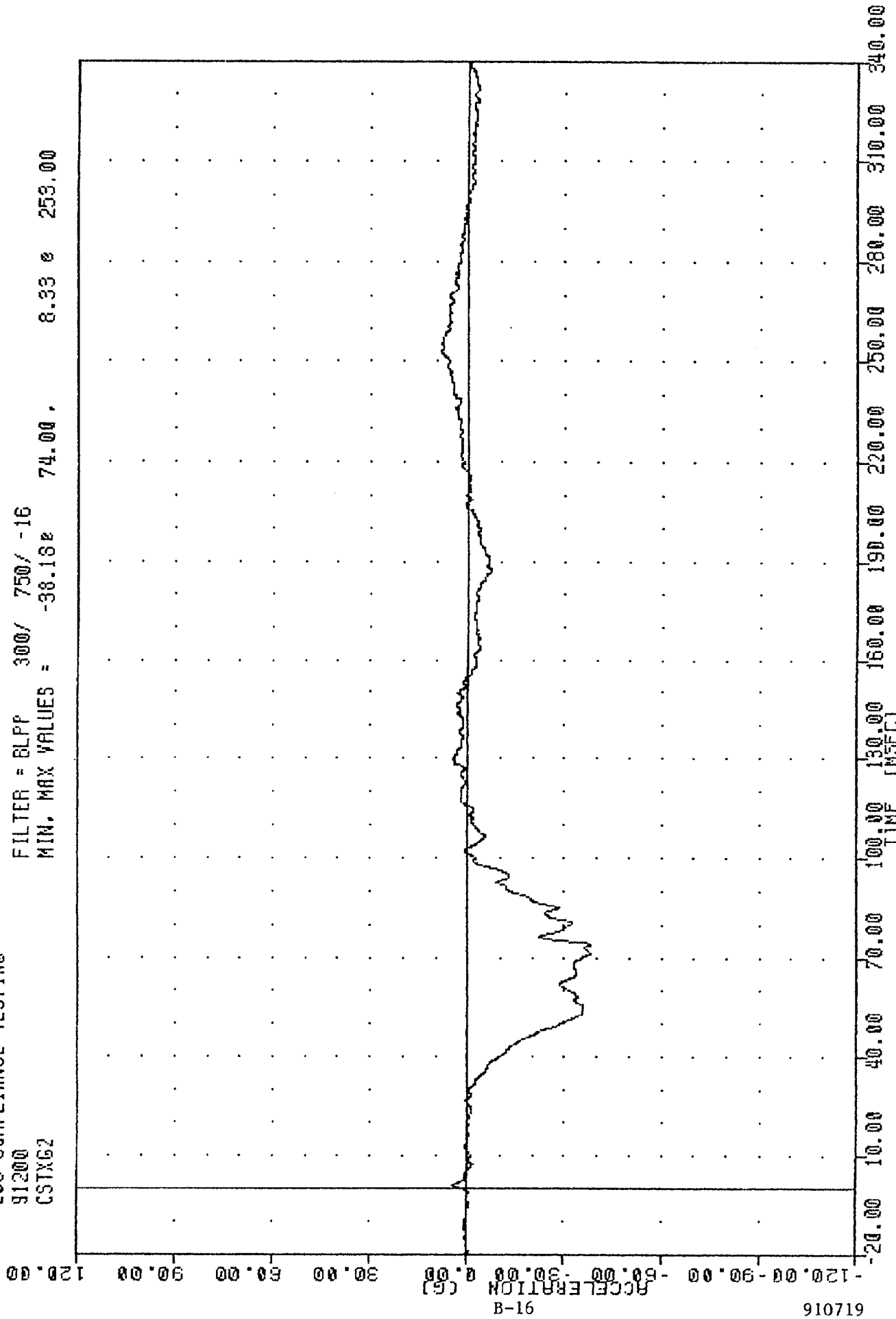


910719

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

TRC , 910719
208 COMPLIANCE TESTING
91200
CSTXG2

FILTER = BLFF 300/ 750/ -16
MIN. MAX VALUES = -38.18e 74.00 . 8.33 e 253.00



B-16

910719

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

TAC, 910719

208 COMPLIANCE TESTING

91200

CSTY62

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = -17.90e 84.63, 8.36 e 74.50

120.00

90.00

60.00

30.00

0.00

-30.00

-60.00

-90.00

-120.00

-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

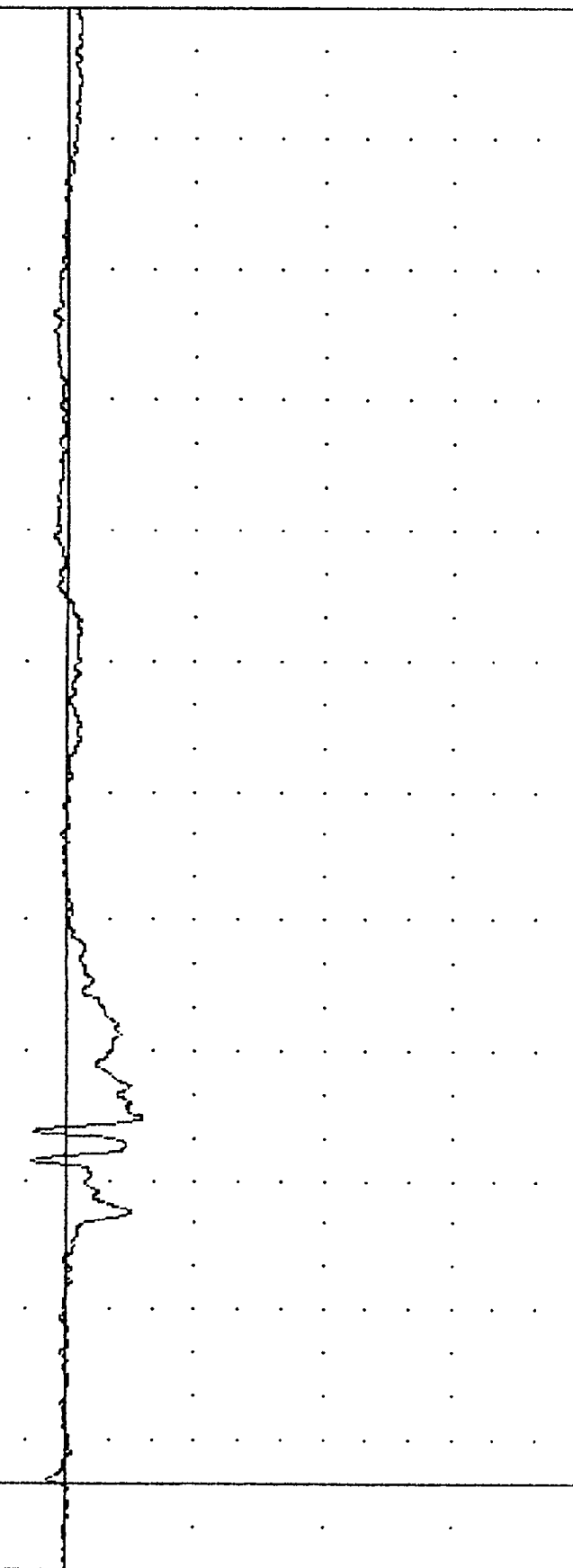
220.00

250.00

280.00

310.00

340.00



B-17

910719

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

TRC 810/18

208 COMPLIANCE TESTING

91200

CSTZG2

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = -6.07e 211.88, 10.60 e 75.38

120.00

90.00

60.00

30.00

0.00

-30.00

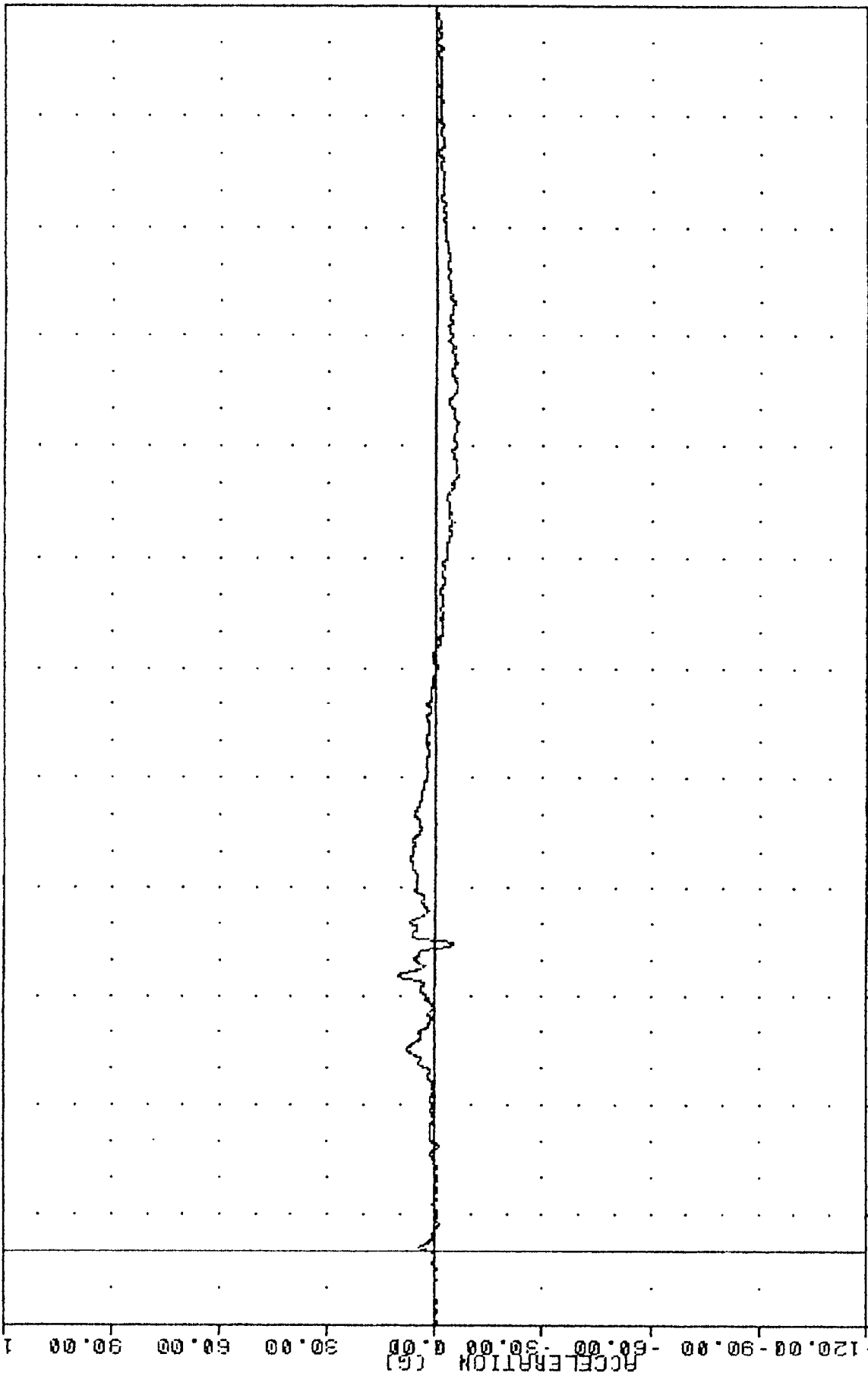
-60.00

-90.00

-120.00

910719

B-18



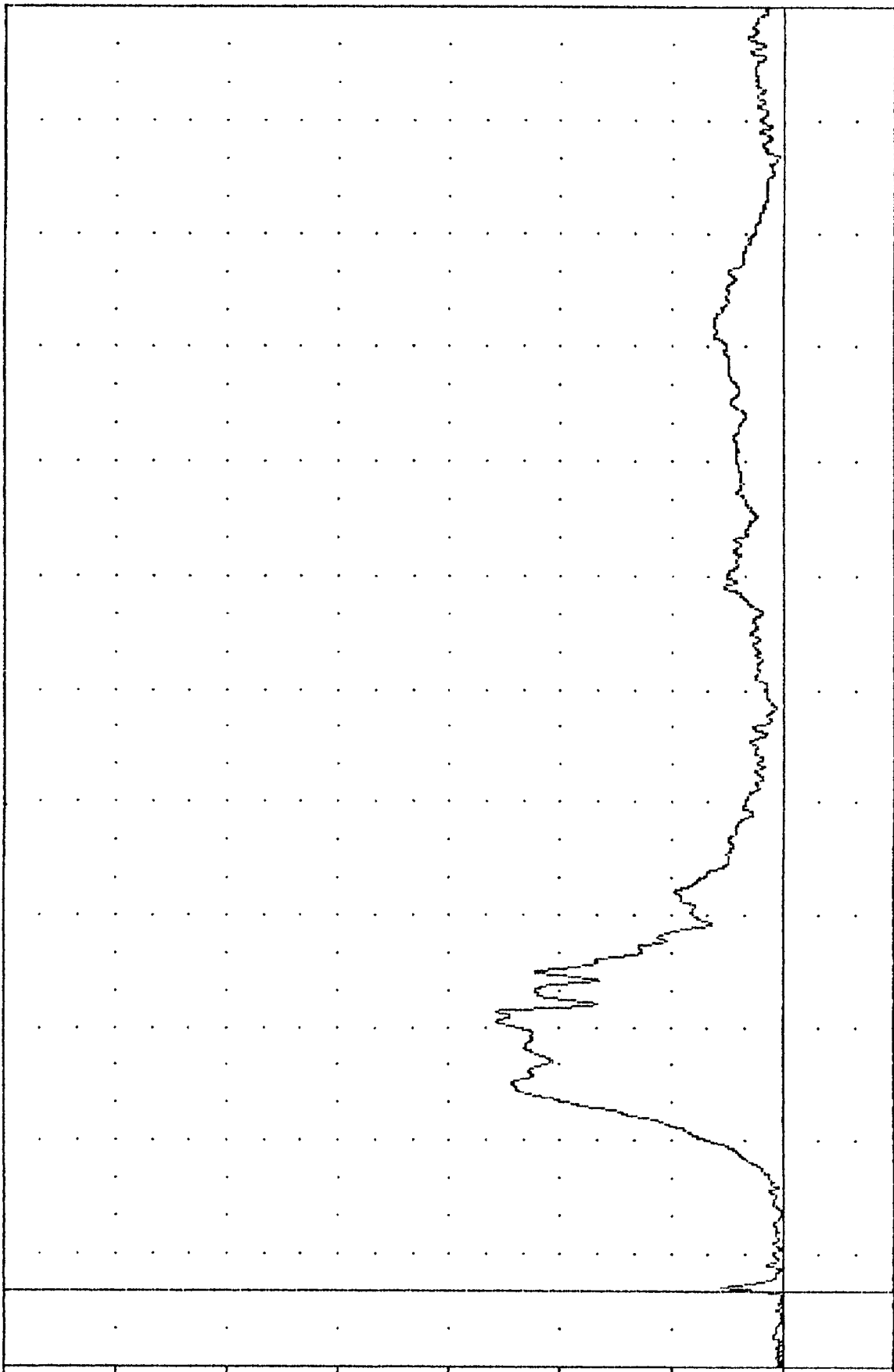
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1991 INFINITI 620 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

TAC 91200, 910719
 208 COMPLIANCE TESTING
 91200
 CSTRG2

FILTER = 6LPP 300/ 750/ -16
 MIN. MAX VALUES = 0.088 -8.38 58.80 74.13

105.00
 90.00
 75.00
 60.00
 45.00
 30.00
 15.00
 0.00
 -15.00

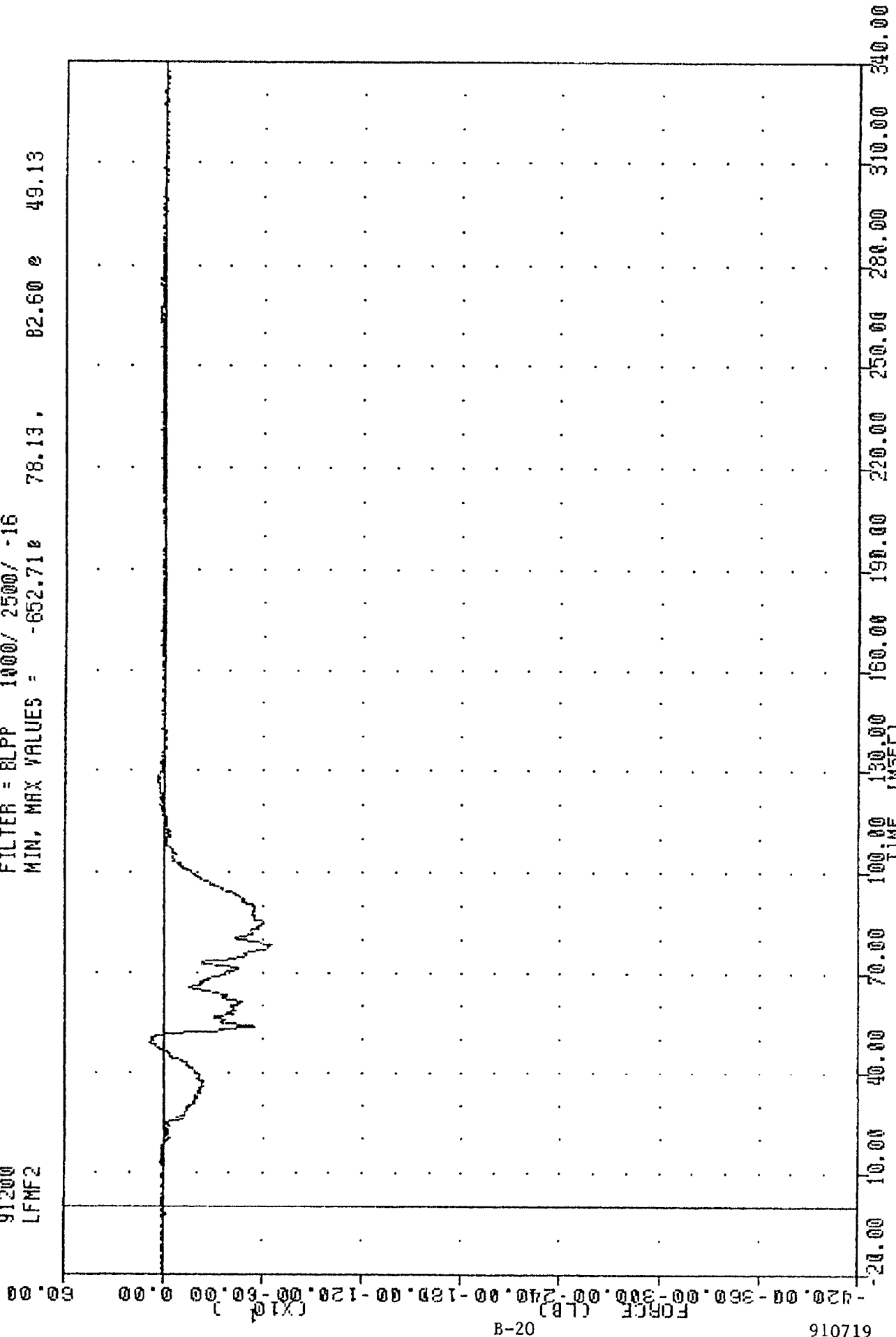


617016
 -20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

IRL 910719
208 COMPLIANCE TESTING
91200
LFMF2

FILTER = 8LPP 1000/ 2500/ -16
MIN, MAX VALUES = -652.71e 78.13, 82.60 e 49.13



B-20

910719

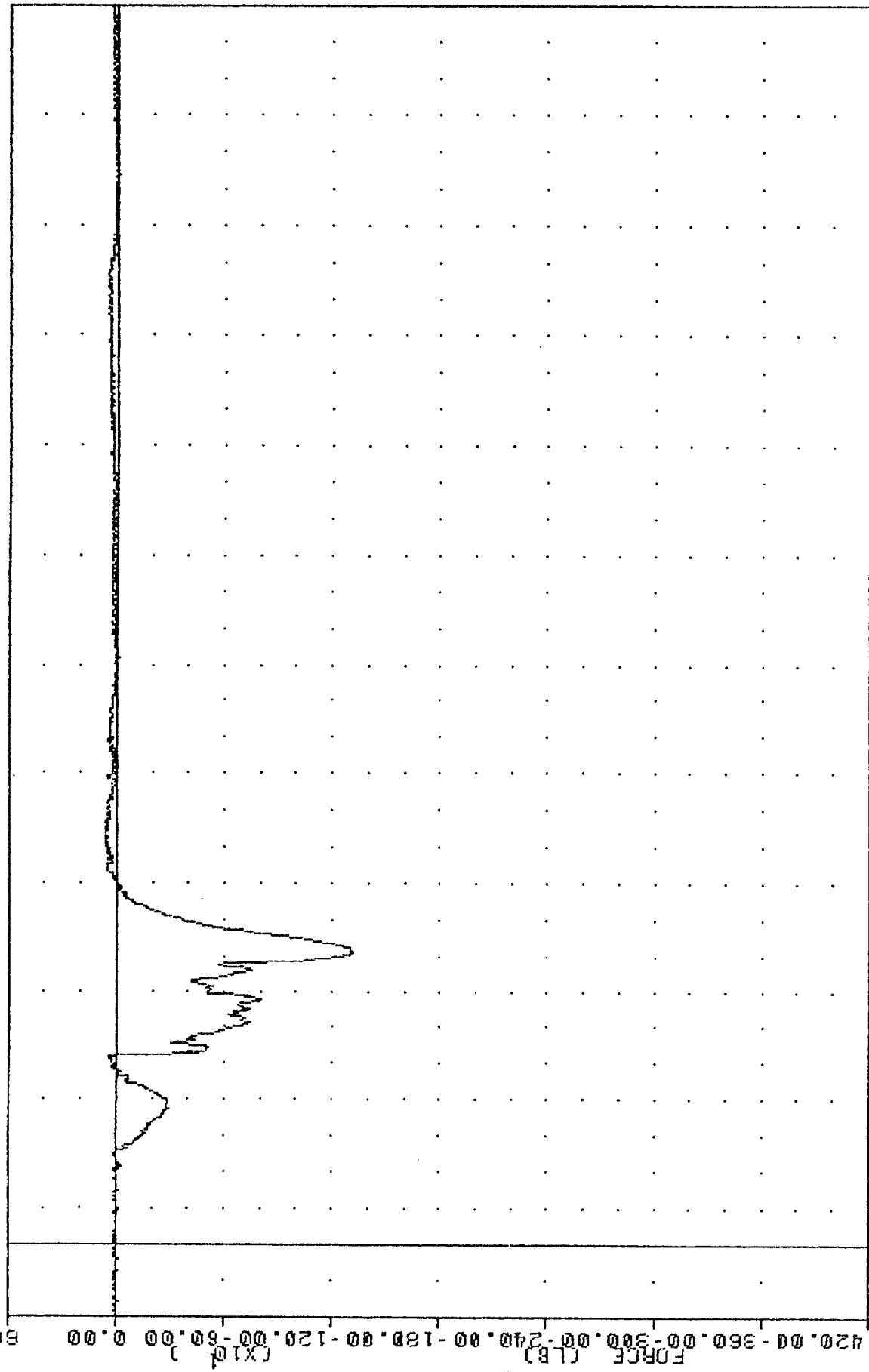
1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER LEFT FEMUR FORCE

TAC, STW719
208 COMPLIANCE TESTING

FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -1313.07e 61.25, 65.42 e 111.63

91200
AFMF2

50.00

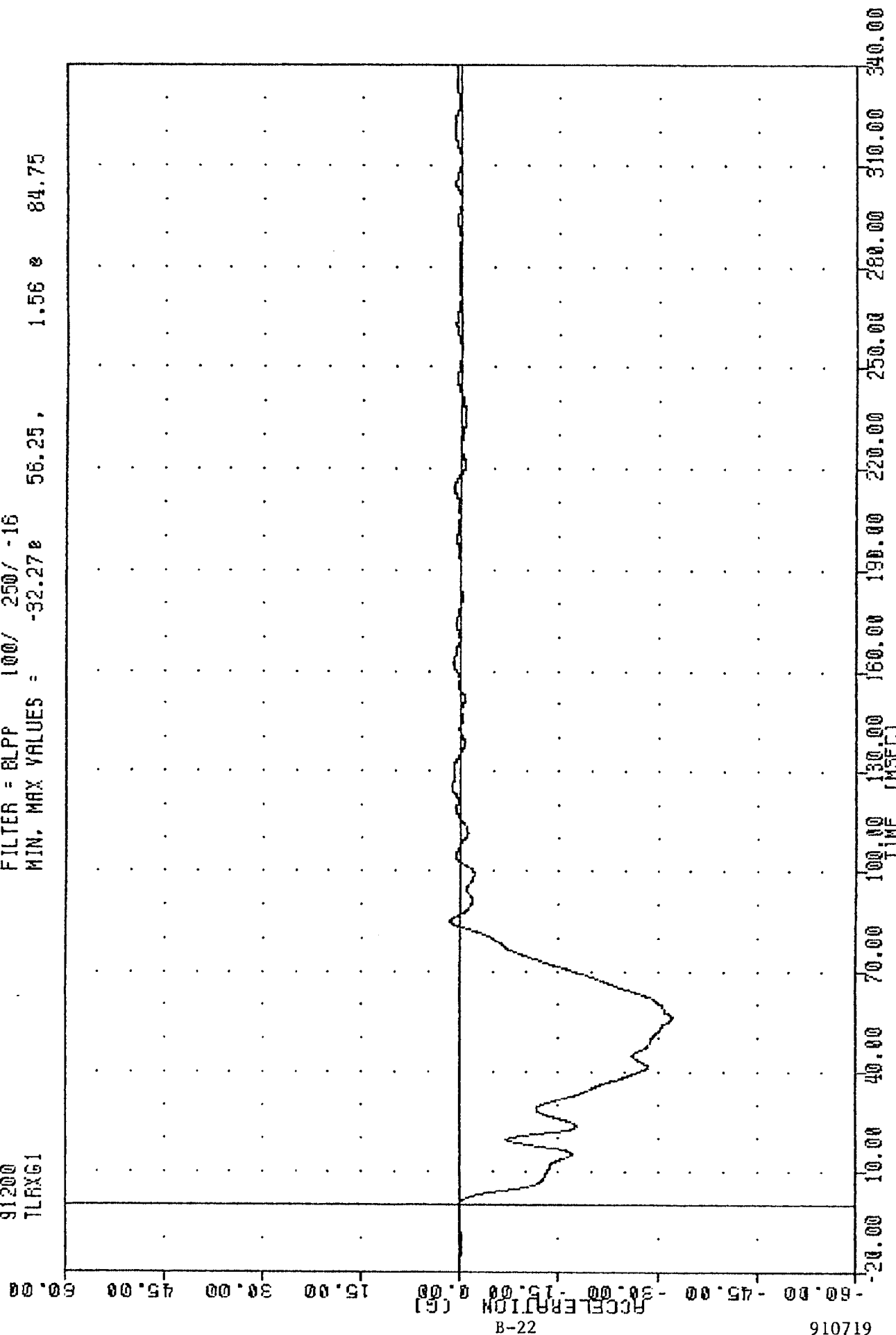


-420.00 -360.00 -300.00 -240.00 -180.00 -120.00 -60.00 0.00 50.00
20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00

1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

TRC 910719
208 COMPLIANCE TESTING
91200
TLRXG1

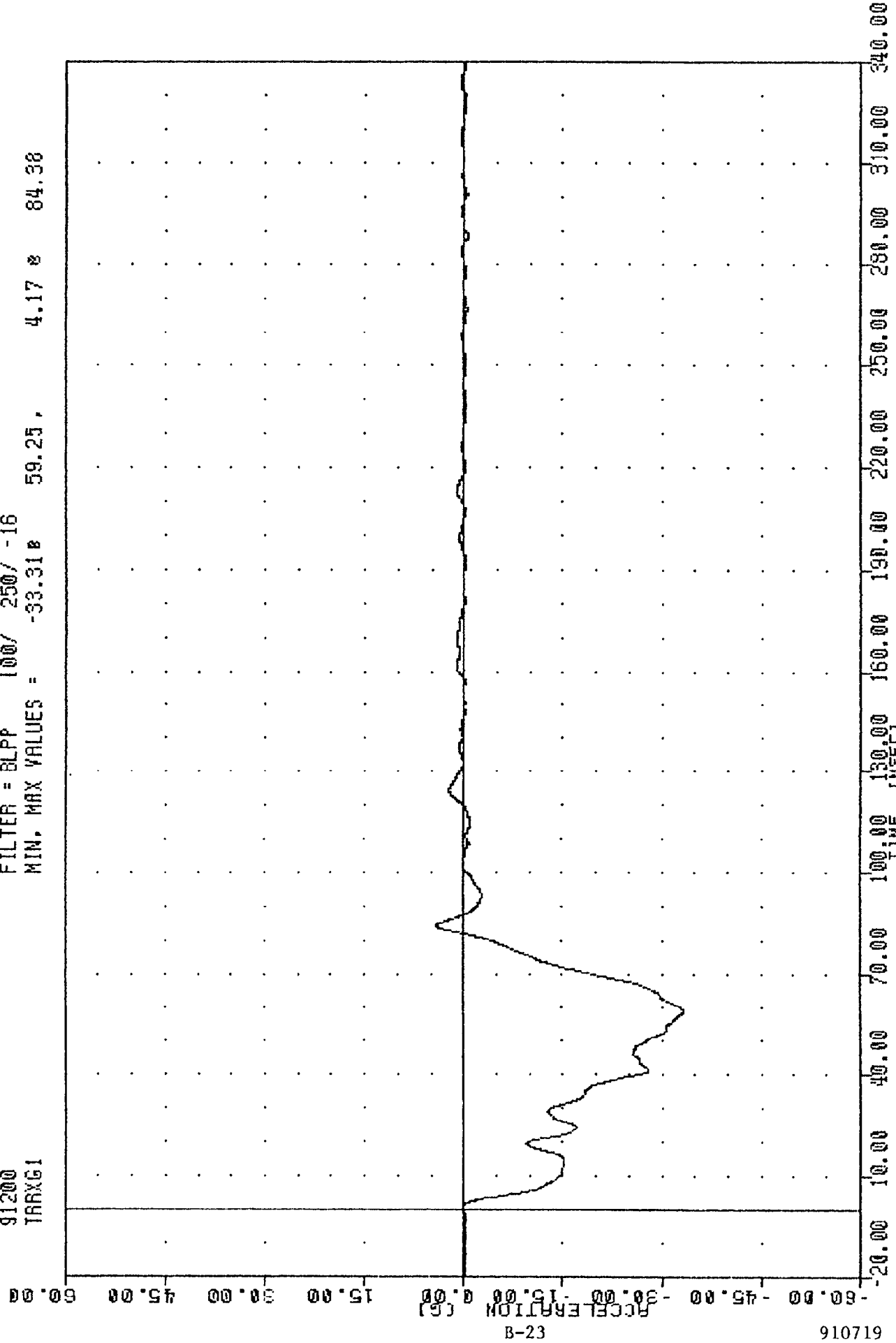
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -52.27 56.25 , 1.56 84.75



1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION

TAC, STW719
208 COMPLIANCE TESTING
91200
TRRXG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -33.31 59.25, 4.17 84.38

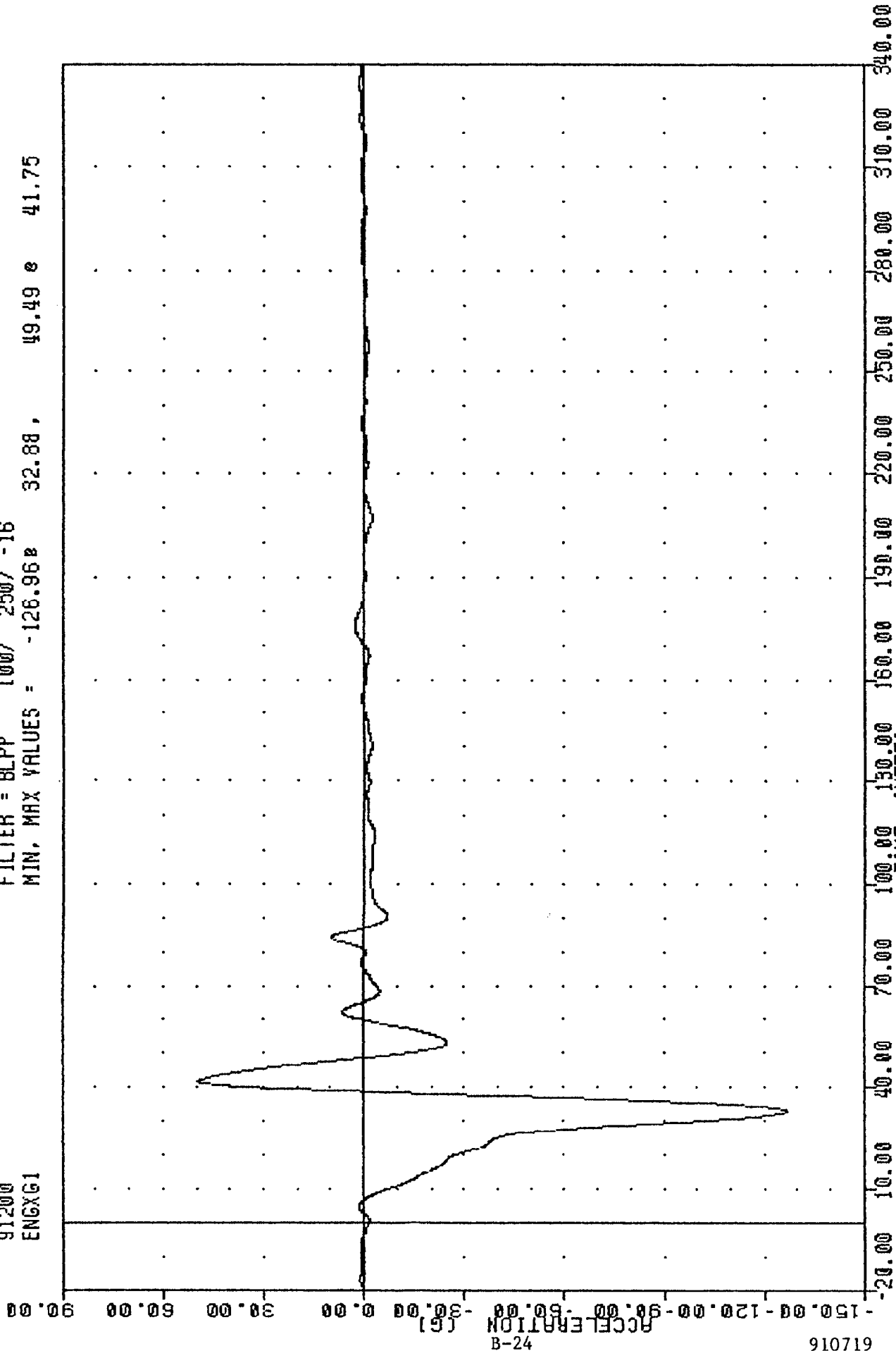


1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

TRC, 910719
208 COMPLIANCE TESTING

91200
ENGXG1

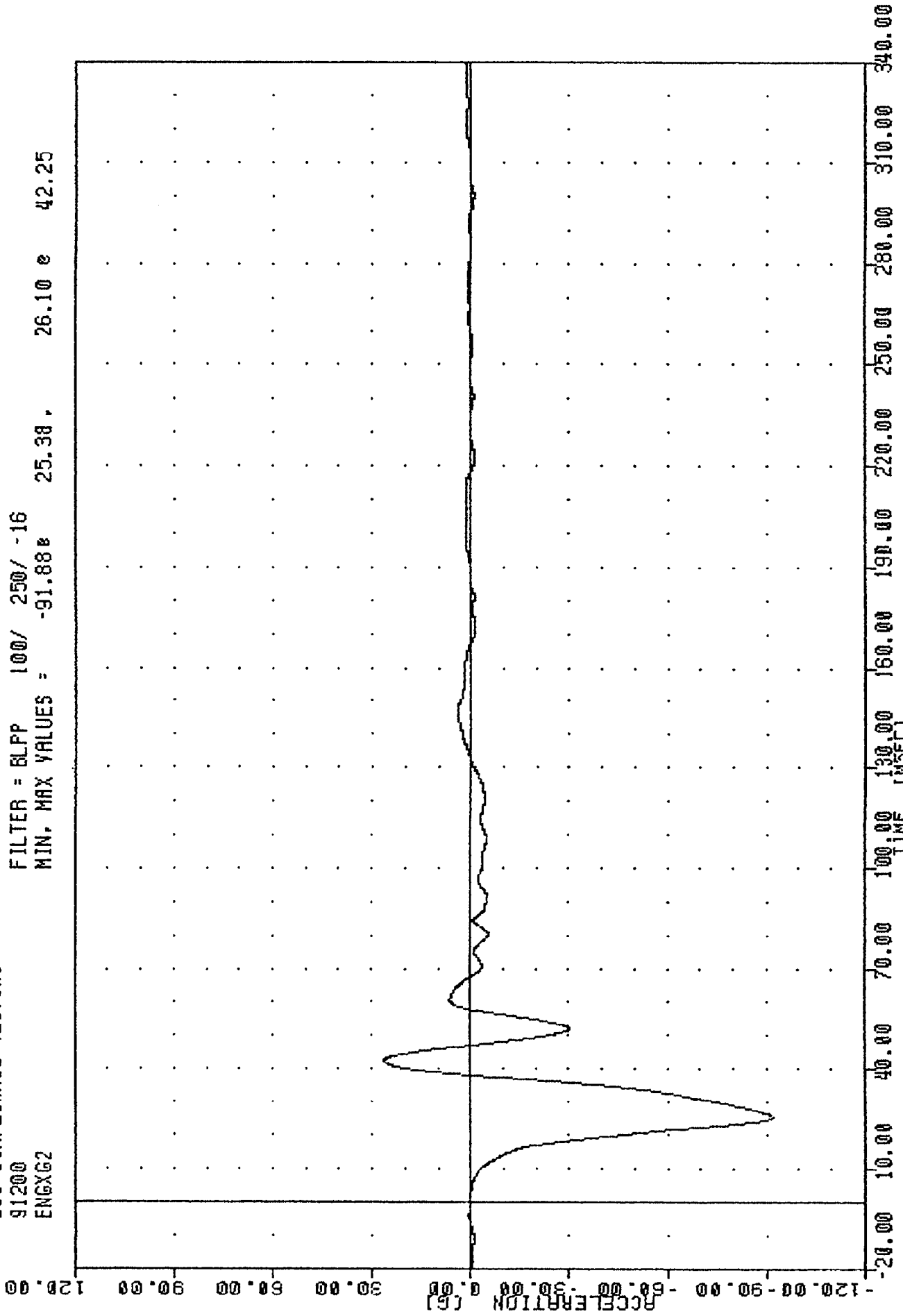
FILTER = 8LPP 100/ 250/ -16
MIN. MAX VALUES = -126.96 32.88, 49.49 e 41.75



1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
ENGINE TOP X-AXIS ACCELERATION

TRC 910719
208 COMPLIANCE TESTING
91200
ENGXG2

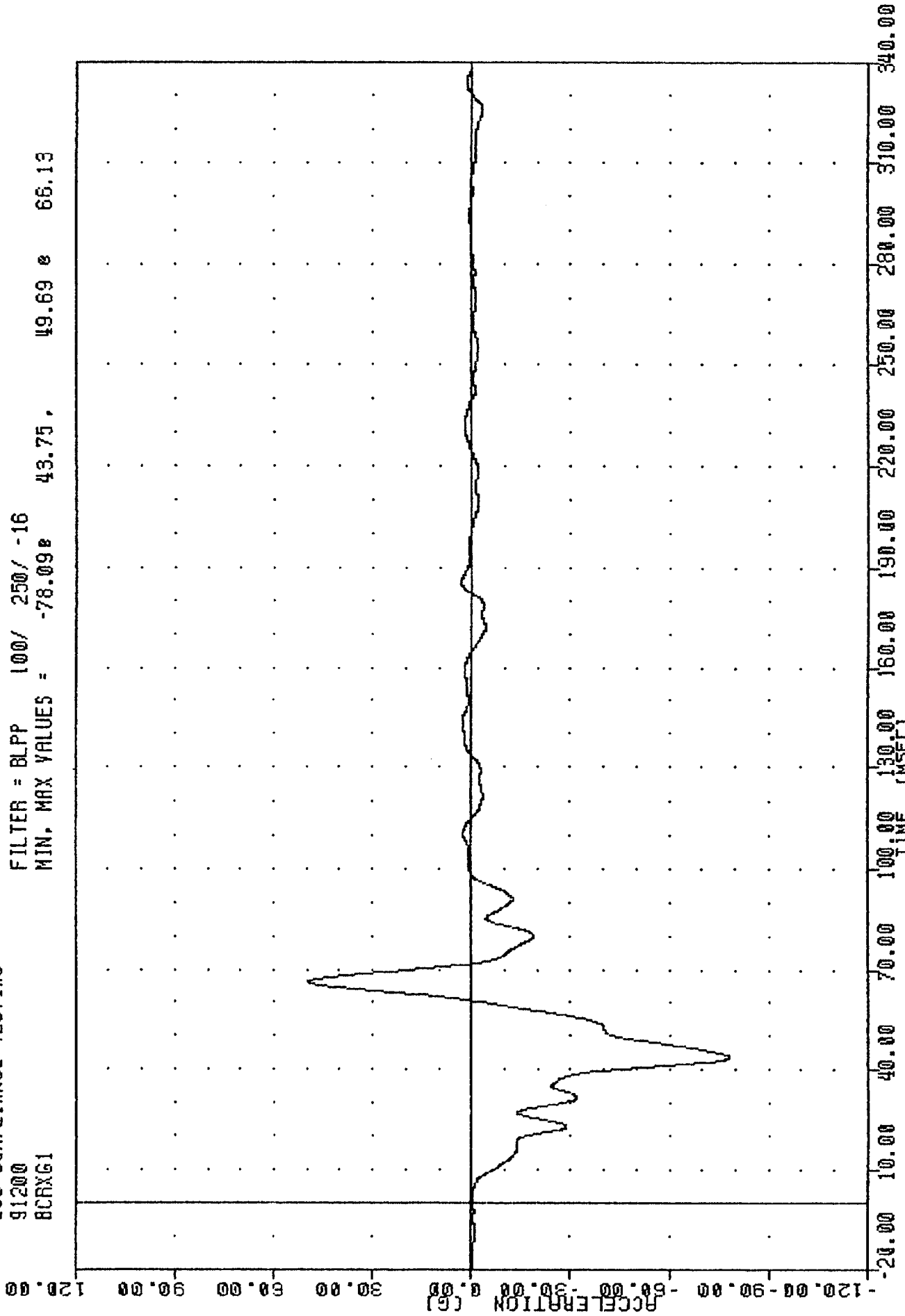
FILTER = 8LPP 100/ 250/ -16
MIN. MAX VALUES = -91.88 e 25.38 . 26.10 e 42.25



1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION

TAC , 910719
208 COMPLIANCE TESTING
91200
BCRXG1

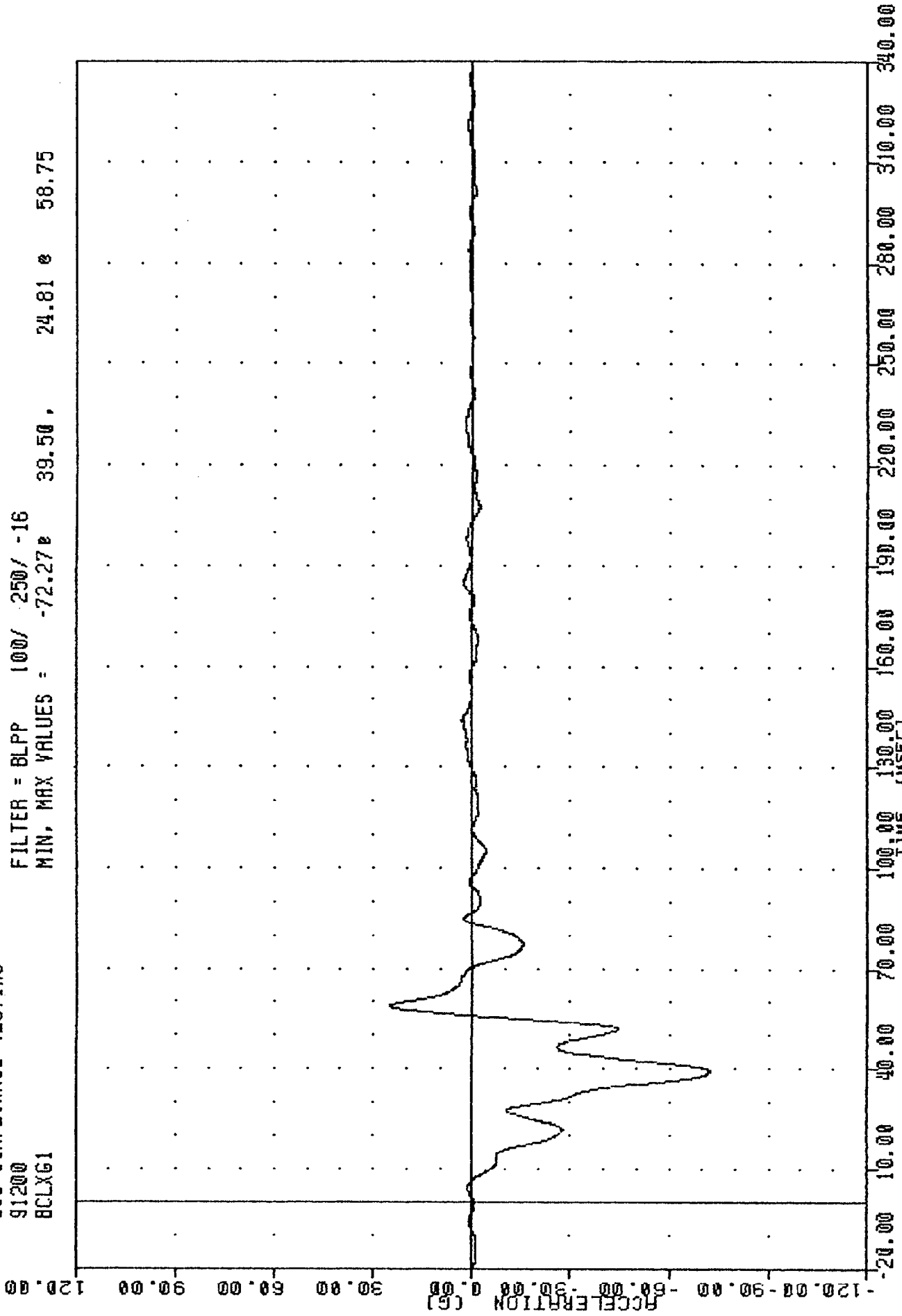
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -78.09 43.75 , 49.69 66.13



1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

TRC 910719
208 COMPLIANCE TESTING
91200
BCLXG1

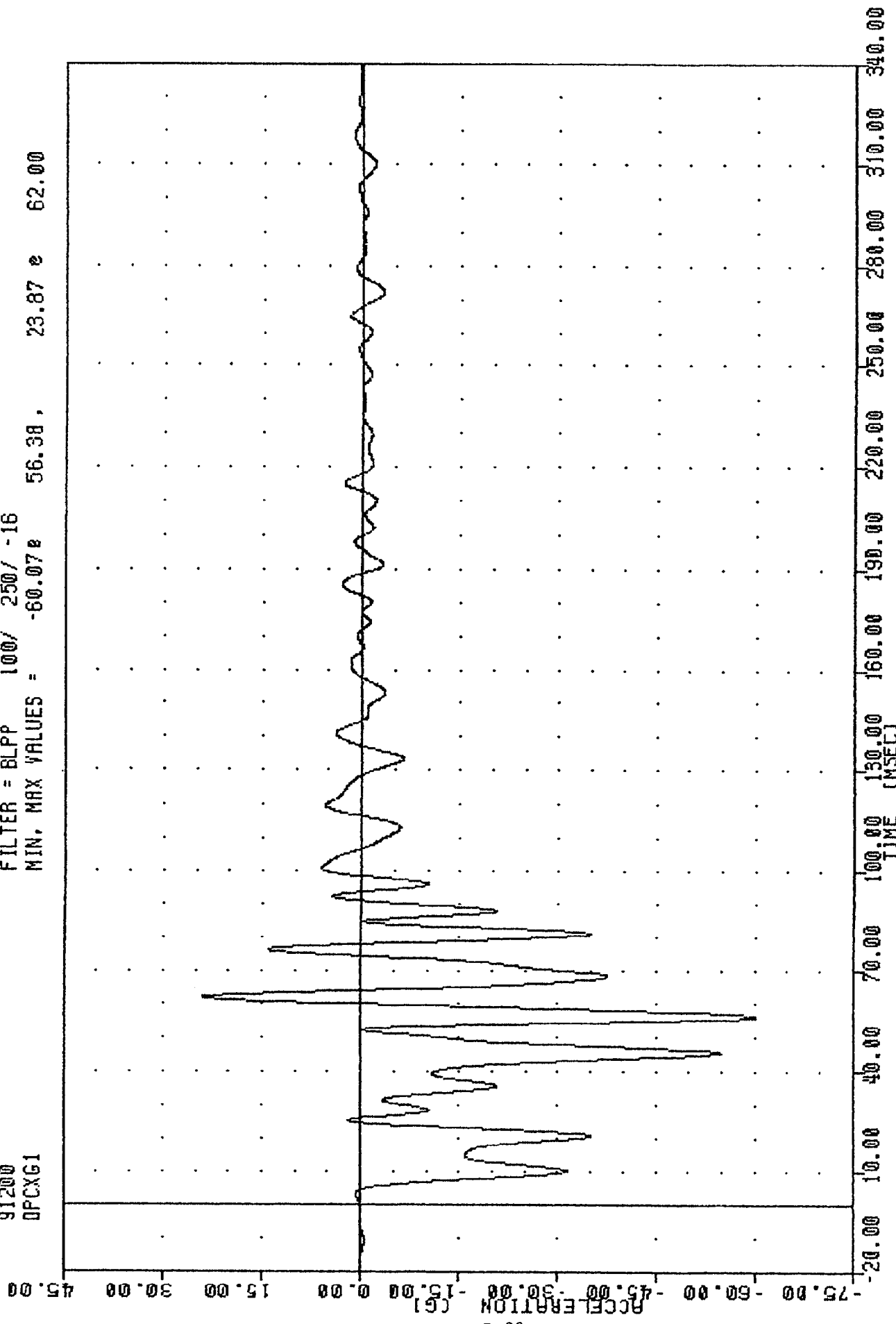
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -72.27 39.50, 24.81 58.75



1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TRC 910719
208 COMPLIANCE TESTING
91200
DPCXG1

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -60.07e 56.38, 23.87 e 62.00



1991 INFINITI G20 INTO FLAT FRONTAL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION