

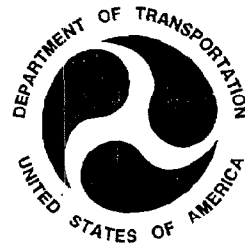
REPORT NO. 208-MGA-98-005
212-MGA-98-005
301-MGA-98-005

V2813
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VEHICLE SAFETY COMPLIANCE TESTING
FOR
FMVSS 208, OCCUPANT CRASH PROTECTION
FMVSS 212, WINDSHIELD MOUNTING
FMVSS 219, WINDSHIELD INTRUSION (PARTIAL)
FMVSS 301, FUEL SYSTEM INTEGRITY

Nissan Motor Company, Ltd.
1998 Nissan Altima 4 Door
NHTSA NO. CW5206

MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: March 6, 1998

Report Date: March 23, 1998

Final Report

Prepared For:

U.S DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ASSURANCE
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NSA-30
400 SEVENTH STREET, S.W., ROOM 6115
WASHINGTON, D.C 20590

TECHNICAL REPORT STANDARD TITLE PAGE

<p>1. Report No. 208-MGA-98-005 212-MGA-98-005 301-MGA-98-005</p>	<p>2. Government Accession No.</p>	<p>3. Recipient's Catalog No.</p>	
<p>4. Title and Subtitle Final Report for FMVSS 208 Compliance Testing of a 1998 Nissan Altima 4 Door NHTSA No. CW5206</p>		<p>5. Report Date March 23, 1998</p>	<p>6. Performing Organization Code MGA</p>
<p>7. Author(s) Enoch Narh</p>	<p>8. Performing Organization Report No. MGA-DOT-208-05</p>		
<p>9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105</p>		<p>10. Work Unit No.</p>	
<p>12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (Mail Code: NSA-30) 400 Seventh St., S.W., Room 6115 Washington, D.C. 20590</p>		<p>11. Contract or Grant No. DTNH22-93-D-21089</p>	
		<p>13. Type of Report and Period Covered Final Report March 6, 1998 - March 23, 1998</p>	
<p>15. Supplementary Notes</p>		<p>14. Sponsoring Agency Code NSA-30</p>	
<p>16. Abstract Compliance tests were conducted on the subject 1998 Nissan Altima 4 Door in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP208-09 on March 21, 1996 for the determination of FMVSS 208 compliance. Test failures identified were as follows: NONE</p>			
<p>17. Key Words Frontal Impact 30 mph Vehicle Safety Compliance Testing FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Mounting" FMVSS 219 (partial), "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity"</p>		<p>18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division, Room 5108 (NAD-52), 400 Seventh Street, S.W. Washington, D.C. 20590 Telephone No. (202) 366-4946</p>	
<p>19. Security Classif. (of this report) Unclassified</p>	<p>20. Security Classif. (of this page) Unclassified</p>	<p>21. No. of Pages 196</p>	<p>22. Price</p>

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SECTION 1
PURPOSE AND 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 MGA Research Corporation (MGA) under Contract No. DTNH22-93-D-21089. The purpose of this test was to determine whether the subject vehicle, a 1998 Nissan Altima 4 Door, NHTSA No. CW5206, 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-208-09 dated March 15, 1993. 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 and one (1) accelerometer to measure vertical axis acceleration. The vehicle's specified impact velocity range was 28.9 to 29.9 mph. The vehicle impacted a fixed flat barrier the face of which was covered with a sheet of 3/4 inch thick plywood.

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

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

The forty-two (42) data channels were multiplexed and recorded on five IBM PC compatible computers with Metrabyte DAS-16F A/D converter boards. The data was digitally sampled at 10,000 samples per second and processed per Section 11.13 through 11.15 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 the real-time motion picture camera.

The vehicle and occupant data are summarized in Section 2. The FMVSS 208, 212, 219 (partial) and 301 data are presented in Section 3. The vehicle, occupant, and camera measurements are presented in Section 4. Appendix A contains the still photographic prints. Appendix B contains the dummy and vehicle data plots. Appendix C contains the manufacturer's vehicle information.

SECTION 2
SUMMARY OF FRONTAL BARRIER IMPACT TEST

TEST RESULTS SUMMARY

This flat frontal barrier test was conducted at MGA Research Corporation on March 6, 1998.

The test vehicle, a 1998 Nissan Altima 4 Door, NHTSA No. CW5206, 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. The compressive forces transmitted through the upper legs did not exceed 2,250 pounds as measured by Part 572 E dummies seated in the front outboard designated seating positions. For each Part 572 E dummy, the chest deflection did not exceed 3.0 inches. The vehicle's restraint system met the applicable comfort and convenience requirements. The windshield periphery retention on each side of the vehicle centerline was greater than 50 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 an airbag and a Type 2 seat belt in the front outboard designated seating positions. Both dummies were restrained by the seat belts and airbags during the test. The vehicle's test weight was 3420 pounds. The vehicle's impact speed was 29.5 mph. The vehicle's maximum static crush was 16.8 inches.

The driver's HIC was 554. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 43 g's. The driver's chest maximum deflection was 1.5 inches. The driver's left and right femur maximum compressive forces were 285 pounds and 656 pounds, respectively.

The right front passenger's HIC was 562. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 41 g's. The right

front passenger's chest maximum deflection was 1.2 inches. The right front passenger's left and right femur maximum compressive forces were 229 pounds and 667 pounds, respectively.

There was no loss of windshield periphery retention and no penetration through the windshield.

Following the impact and during the static rollover test, no fluid spilled from the vehicle's fuel system.

TEST NOTES

TABLE 1 CRASH TEST SUMMARY

Vehicle Yr/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 Test Type: Frontal Barrier Impact

Test Date: 3/06/98 Time: 2:26 p.m. Temp: 69°F

Vehicle Test Weight: 3420 lbs. Vehicle/Barrier Impact Angle: 0°

Impact Velocity: 29.5 mph Maximum Static Crush: 16.8 inches

Vehicle Rebound: 27.5 inches

Dummies:	Driver	Passenger
Dummy Type	<u>Part 572E</u>	<u>Part 572E</u>
Serial Number	<u>340</u>	<u>312</u>
Restraint System	<u>Airbag</u>	<u>Airbag</u>
No. of Data Channels	<u>15</u>	<u>15</u>

Number of Cameras: 1 Real Time
14 High Speed

Door Opening Data: Left Front: Opened Left Rear: Opened
Right Front: Opened Right Rear: Opened

Front Seat(s) Data:	Driver	Passenger
Seat Track Failure	<u>0 in.</u>	<u>0 in.</u>
Seat Back Failure	<u>None</u>	<u>None</u>

Visible Dummy Contact Points:	Driver	Passenger
Head	<u>Airbag, headrest</u>	<u>Airbag, headrest</u>
Chest	<u>Airbag</u>	<u>Airbag</u>
Left Knee	<u>Dash</u>	<u>Glovebox, Dash</u>
Right Knee	<u>Dash</u>	<u>Glovebox, Dash</u>

TABLE 2 GENERAL TEST AND VEHICLE PARAMETER DATA

Vehicle Yr/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No: CW5206 VIN: 1N4DL01D8WC141986 Body Color: Nutmeg

Engine: 4 Cylinders; C.I.D.; 2.4 liters; CC

 Gas; Diesel; Turbocharged

 Longitudinal; X Transverse

Transmission: 3 Speed; Manual; X Automatic; X Overdrive

Final Drive: X Front Wheel; Rear Wheel; Four Wheel

Major Option: X A/C; X P/S; X P/B; X P/wdo; X P/door locks;
 P/seats; X Tilt Wheel; Anti-skid Brakes; X Cruise Control

Date Received: 2/26/98; Odometer Reading: 88 miles

Dealer's Name/Address: Wilde Nissan Inc.
1903 E. Moreland Blvd.
Waukesha, WI 53186

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Nissan Motor Company, Ltd.

Date of Manufacture: 9/97; VIN: 1N4DL01D8WC141986

GVWR: 3990 lbs; GAWR Front: 2152 lbs. GAWR Rear: 1863 lbs.

DATA FROM TIRE PLACARD:

Tire Pressure with maximum capacity vehicle load: Front 30 psi Rear 29 psi

Recommended Tire Size: P195/65R15

Recommended Cold Tire Pressure: Front 30 psi; Rear 29 psi

Tires on Vehicle: P195/65R15; Manufacturer: General

Type of Spare Tire: Space Saver; T125/70D15

Number of Occupants: 2 Front; 3 Rear; 3rd Seat; 5 TOTAL

Type of Front Seats: X Bucket; Bench; Split Bench

Type of Front Seat Back: Fixed; X Adj. With; X Lever; Rot. Knob Power

TABLE 2 GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER

(WITH MAXIMUM FLUIDS) = UDW:

Right Front = 923 lbs

Right Rear = 560 lbs

Left Front = 936 lbs

Left Rear = 565 lbs

TOTAL FRONT WEIGHT = 1859 lbs (62 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 1125 lbs (38 % of Total Vehicle Weight)

TOTAL UNLOADED DELIVERED WEIGHT (UDW) = 2984 lbs

CALCULATION FOR TARGET TEST WEIGHT:

UDW (Unloaded Delivered Weight) = 2984 lbs

VCW (Vehicle Capacity Weight) = 860 lbs

DSC (Designated Seating Capacity) = 5

RCLW*(Rated Cargo/Luggage Weight) = VCW - 150 (DSC) = 860 - 150 (5) = 110 lbs

Target Test Weight = UDW + RCLW + (2 Dummies x Dummy Weight)

Target Test Weight = 2984 + 110 + 344 = 3438 lbs

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND CARGO WEIGHT:

Right Front = 1014 lbs

Right Rear = 703 lbs

Left Front = 1009 lbs

Left Rear = 694 lbs

TOTAL FRONT WEIGHT = 2023 lbs (59 % of Total Vehicle Weight)

TOTAL REAR WEIGHT = 1397 lbs (41 % of Total Vehicle Weight)

TOTAL TEST WEIGHT = 3420 lbs

Weight of ballast secured in vehicle = 28 lbs

Vehicle components removed to meet target weight: Rear seat, jack, spare tire,

jack holder, rear tail light assembly, speakers, trunk interior, and seat belts

VEHICLE ATTITUDE (all dimensions in inches):

Delivered Attitude: RF 27.8 LF 27.5 RR 27.2 LR 27.0

Fully Loaded Attitude: RF 27.2 LF 26.9 RR 25.9 LR 25.8

Test Attitude: RF 27.2 LF 27.0 RR 26.0 LR 26.0

Wheel Base: 103 in; C.G. = 42.1 in rearward of front wheel centerline

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

TABLE 4 ACCIDENT INVESTIGATION DIVISION DATA

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Veh. NHTSA No.: CW5206;

VIN: 1N4DL01D8WC141986

Build Date: 9/97;

Test Date: 3/06/98

Veh. Size Category: Midsize;

Test Weight: 3420 lbs

Veh. Wheelbase: 103.0 in;

Front Overhang: 35.8 in;

Overall Width: 68.0 in

ACCELEROMETER DATA:

Location: As per measurements on page 2-11

Calibration Procedure: As per MGA Calibration Procedure

Linearity: >99.9% ; Integration Algorithm: Trapezoidal

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE:

Impact Mode: Frontal Barrier

Crush Depth C1 = 15.1 inches

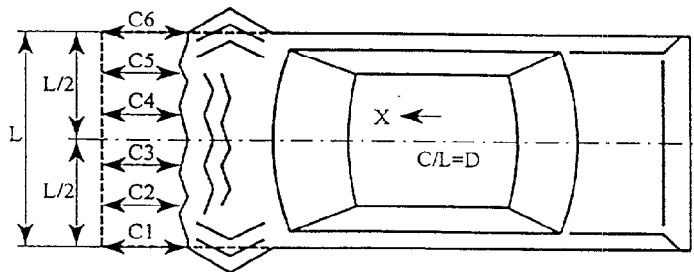
Dimensions: C2 = 16.1 inches

C3 = 16.7 inches

C4 = 15.6 inches

C5 = 13.9 inches

C6 = 12.0 inches



Midpoint of Damage: D = Vehicle Longitudinal Centerline

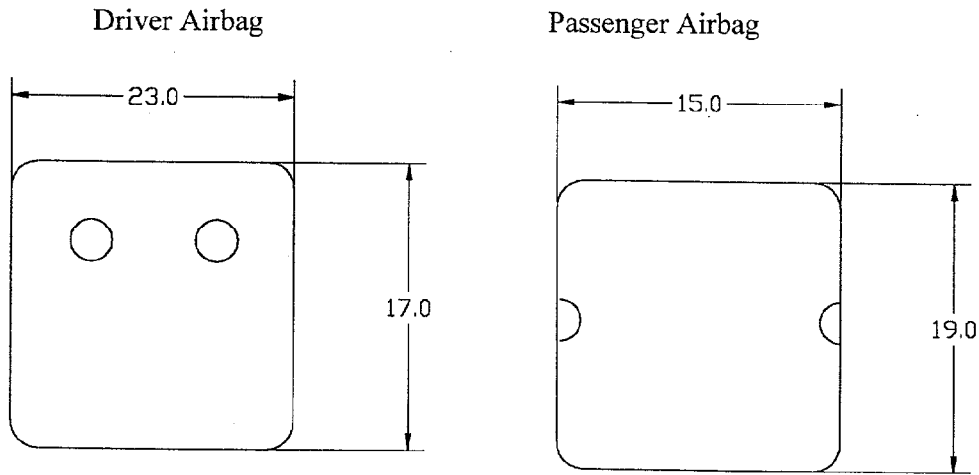
Length of Damaged Region: L = 53.5 inches

TABLE 5 POST TEST AIRBAG DATA

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No: CW5206; Test Date: 3/06/98; Technician: Dean Virgin

- A. No of Vent Holes: Driver 2; Passenger 2
- B. Size of Vent Holes: Driver 0.98 in. dia.; Passenger 1.69 in. dia.
- C. Total Vent Area: Driver 1.5 in²; Passenger 4.5 in²
- D. Deflated Airbag Length and Width Dimensions or, if Round, Diameter
 Driver; Length 17.0; Width 23.0; Diameter N/A
 Passenger; Length 19.0; Width 15.0; Diameter N/A
- E. Is the Airbag Tethered?
 Driver; Yes; No; If yes, record length of tether
 Passenger; Yes; No; If yes, record length of tether

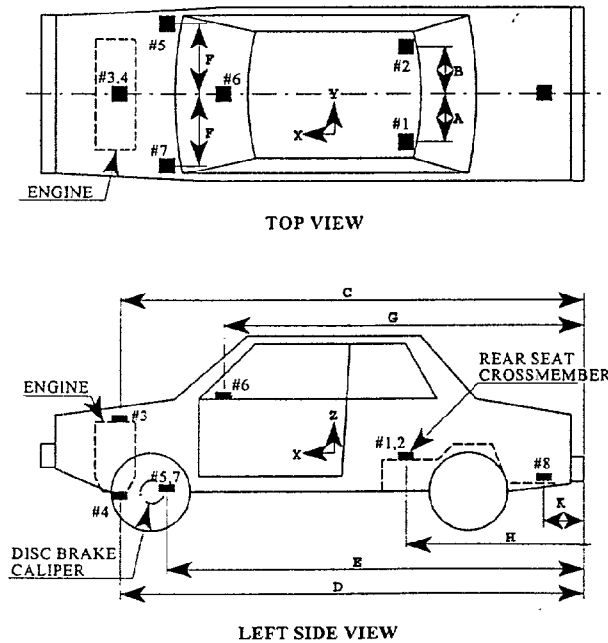


- F. Part Numbers and Manufacture Name of Airbag and Gas Generator
 Driver; Mfr Nissan; Airbag 98570-89912-C1-0004758; Gen N/A
 Passenger; Mfr Nissan; Airbag P121685-01-K972300490; Gen N/A

TABLE 6 VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206; Test Date: 3/06/98



ACCELEROMETER LOCATION (inches)		
	PRE-TEST	POST-TEST
A	12.8	12.8
B	12.8	12.8
C	141.6	135.4
D	146.7	140.0
E	142.1	139.1
F	26.5	26.3
G	112.4	113.7
H	63.4	62.8
K	0.4	0.9

ACCELEROMETER DATA SUMMARY					
No.	DESCRIPTION	MAXIMUM (g's)	TIME (msec)	MINIMUM (g's)	TIME (msec)
1	Left Rear Seat Crossmember	2.6	192	-34.8	44
2	Right Rear Seat Crossmember	2.2	129	-28.9	45
3	Top of Engine Block*	8.8	43	-112.5	35
4	Bottom of Engine	32.2	48	-72.3	31
5	Right Disc Brake Caliper	43.1	71	-92.4	50
6	Instrument Panel	8.8	46	-46.4	39
7	Left Disc Brake Caliper	39.3	71	-93.8	45
8	Trunk	13.9	43	-17.5	49

* Data not valid after 42 msec.

TABLE 7 REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

Contract Number: DTNH22-93-D-21089

From: MGA Research Corporation To: Mr. Charles Case, COTR
5000 Warren Road Office of Vehicle Safety Compliance
Burlington, WI 53105

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. The vehicle was again inspected after the above test had been conducted, and all changes were noted below. The final condition of the vehicle was also noted in detail.

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 Body Color: Nutmeg

VIN: 1N4DL01D8WC141986 Cost: \$16,428.00

Odometer: Arrival Date: 2/26/98 Reading: 88 miles

Completion Date: 3/06/98 Reading: miles

Engine: 4 Cylinders; 2.4 Liters; X Gas; Diesel

Transmission: 3 Speed; Manual; X Automatic

Final Drive: X Front Wheel; Rear Wheel; Four Wheel

Tire Size: P195/65R15; Manufacturer: General

Air Conditioner	<u>Yes</u>	Console	<u>Yes</u>	Brakes	<u>Power</u>
Tinted Glass	<u>No</u>	Tachometer	<u>Yes</u>	Front	<u>Disc</u>
Power Steering	<u>Yes</u>	Cruise Control	<u>Yes</u>	Rear	<u>Disc</u>
Power Windows	<u>Yes</u>	Rear Window Def.	<u>Yes</u>	Front Seats	<u>Bucket</u>
Power Door Locks	<u>Yes</u>	Sun/Moon Roof	<u>No</u>	Seat Type	
Radio	<u>Yes</u>	T-Top	<u>No</u>	Front	<u>Manual</u>
Clock	<u>Yes</u>	Tilt Steering Wheel	<u>Yes</u>	Rear	<u>Not Adjustable</u>
Roof Rack	<u>No</u>	Other Options:	<u>None</u>	No. of Seats	<u>Five</u>

Equipment that is no longer on the vehicle as noted above: Spare tire, jack, rear seats, rear door trim panels, taillights, rear speakers, rear cargo area trim.

Explanation:

Items removed to allow installation of data acquisition system.

Vehicle Condition:

The vehicle was subjected to a 30 mph frontal crash test. There is severe structural damage on the front body. Various interior and exterior portions of the vehicle have been painted and have had holes drilled to facilitate attachment of instrumentation. Various body parts have been removed. Stoddard solvent replaced the fuel in the fuel system and engine. THE VEHICLE IS FOR SALVAGE ONLY AND IS NOT TO BE REPAIRED FOR HIGHWAY USE.

SECTION 3
SUMMARY OF RESULTS FOR FMVSS 208
212, 219 (PARTIAL), AND 301

TABLE 8 FMVSS 208 OCCUPANT INJURY CRITERIA

Veh. Yr./Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Veh. NHTSA No.: CW5206 Test Date: 3/06/98

MAXIMUM ACCELERATION VALUES: (g's)	DRIVER DUMMY #340	PASSENGER DUMMY #312
Head Channel X	-59.8	-56.5
Head Channel Y	-9.7	-7.2
Head Channel Z	26.9	26.3
HEAD RESULTANT	63.7	58.7
Chest Channel X	-43.6	-41.8
Chest Channel Y	-11.6	-7.1
Chest Channel Z	7.85	6.0
CHEST RESULTANT	44.85	42.17

HEAD INJURY CRITERIA (HIC)
VALUES:

HIC	554	562
$t_1 =$ (msec)	65.6	68.1
$t_2 =$ (msec)	97.0	104.1

[The maximum time interval from t_1 to t_2 is 36 milliseconds.]

CHEST INJURY CRITERIA (CLIP) VALUES: (g's)

CLIP	43	41
$t^1 =$ (msec)	77.3	76.0
$t^2 =$ (msec)	80.4	79.1
CHEST DEFLECTION (in)	1.5	1.2

TABLE 8 FMVSS 208 OCCUPANT INJURY CRITERIA (CONTINUED)

Veh. Yr./Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Veh. NHTSA No.: CW5206 Test Date: 3/06/98

MAX. COMPRESSIVE FEMUR FORCES:	Units (lbs)	
	DRIVER DUMMY #340	PASSENGER DUMMY #312
Left Side	285	229
Right Side	656	667

NECK FORCES:

Neck Force X (N)	-532.9	-522.2
Neck Force Y (N)	-219.1	-197.1
Neck Force Z (N)	1875.5	1761.1

NECK MOMENTS:

Neck Moment X (N·m)	-8.1	-13.04
Neck Moment Y (N·m)	25.9	-42.32
Neck Moment Z (N·m)	9.1	9.91

NECK INJURY CRITERIA:

Peak Flexion Bending Moment about the Occipital Condyle (N·m)	24.8	28.7
Peak Extension Bending Moment about the Occipital Condyle (N·m)	8.7	33.5
Peak Axial Tension (N)	1875.5	1761.1
Peak Axial Compression (N)	428.3	302.0
Peak Fore Shear (N)	180.3	314.3
Peak Aft Shear (N)	532.9	522.2

TABLE 9 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 and chest impacted the airbag with the dummy's head rotating rearward. The driver dummy was restrained by the airbag. The dummy rebounded rearward into the seat back with the dummy's head contacting the head restraint. The driver dummy came to rest in the seat.

RIGHT FRONT PASSENGER DUMMY

Upon impact, the right front passenger dummy translated forward on the seat impacting both knees into the dashboard. The dummy's head and chest impacted the airbag with the dummy's head rotating rearward. The right front passenger dummy was restrained by the airbag. The dummy rebounded rearward into the seat back with the dummy's head contacting the head restraint. The right front passenger dummy came to rest in the seat.

TABLE 10

FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206; Date of Comfort/Convenience Check: 3/05/98

Technician Performing Check: Chris Novak

GVWR: 3990 lbs

Automatic seat belts installed in any vehicle, other than a walk-in van-type vehicle which has a gross vehicle weight rating of 10,000 pounds or less, and is manufactured on or after September 1, 1986, shall meet the requirements for convenience hooks, webbing tension relieving devices, and belt contact force.

Manual seat belts installed for compliance with this standard in front outboard designated seating positions of any vehicle, other than a walk-in van-type vehicle which has a gross vehicle rating of 10,000 pounds or less, and is manufactured on or after September 1, 1989, shall meet the requirements for belt contact force, plate access, retraction and seat belt guides, and hardware.

VEHICLE EQUIPMENT:

The vehicle's front outboard seating positions were equipped with manual Type 2 seat belts which must comply with the dynamic test requirements of S5.1; requirements for webbing tension-relieving devices (S7.4.2), belt contact force (S7.4.3), latchplate access (S7.4.4), retraction (S7.4.5), and seat belt guides and hardware (S7.4.6) apply.

CONVENIENCE HOOKS (S7.4.1):

Not applicable, the vehicle was not equipped with automatic seat belts.

WEBBING TENSION-RELIEVING DEVICE (S7.4.2)

The seat belt assembly on the front outboard seating positions did not have webbing tension-relieving devices.

TABLE 10 (Cont'd)

FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

BELT CONTACT FORCE (S7.4.3)

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206; Technician: Chris Novak Date: March 4, 1998

Designated Seating Position Tested: Left Rear Outboard

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- 1.1 Does the vehicle incorporate a webbing tension-relieving device?
 Yes - go to latchplate access
 No - continue with this checksheet
- 1.2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)
 Check
 N/A
- 1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.
 Check
 N/A
- 1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.
 Check
 N/A
- 1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.
 Check
 N/A

TABLE 10 (Cont'd)
FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

- 1.6 Place each adjustable head restraint in its highest adjustment position.
() Check
(X) N/A
- 1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)
() Check
(X) N/A
- 1.8 Position the test dummies according to dummy position placement instructions in Appendix B.
(X) Check
- 1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.
Contact Force 0.6 lb. (X) 0.0 to 0.7 pounds - Pass
() greater than 0.7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

BELT CONTACT FORCE (S7.4.3)

Designated Seating Position Tested: Right Rear

- 1.1 Does the vehicle incorporate a webbing tension-relieving device?
() Yes - go to latchplate access
(X) No - continue with this checksheet
- 1.2 Adjustable seats are in adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)
() Check
(X) N/A

TABLE 10 (Cont'd)
FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

- 1.3 If separately adjustable in a vertical direction, the seats are at the lowest position.
 Check
 N/A
- 1.4 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.
 Check
 N/A
- 1.5 Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.
 Check
 N/A
- 1.6 Place each adjustable head restraint in its highest adjustment position.
 Check
 N/A
- 1.7 Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)
 Check
 N/A
- 1.8 Position the test dummies according to dummy position placement instructions in Appendix B.
 Check
- 1.9 Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point, pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds.
Contact Force 0.6 lb. 0.0 to 0.7 pounds - Pass
 greater than 0.7 pounds - FAIL*

* If the seat belts are voluntarily installed by the manufacturer they do not have to comply.

TABLE 10 (Cont'd)
FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

LATCHPLATE ACCESS (S7.4.4)

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206; Technician: Chris Novak Date: March 4, 1998

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

(X) Not Applicable

This vehicle is a passenger car which is not applicable to this requirement.

TABLE 10 (Cont'd)
FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

RETRACTION (S7.4.5):

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206; Technician: Chris Novak Date: March 4, 1998

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

(X) Not Applicable

This vehicle is a passenger car which is not applicable to this requirement.

TABLE 10 (Cont'd)
FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206 ; Technician: Chris Novak Date: March 4, 1998

Designated Seating Position Tested: Left Rear Outboard

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable.
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

If the seats in this vehicle are different than the criteria above determine the following:

- 4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

Yes - Go to 4.2.
 No - this form is complete

- 4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

Yes - Pass
 No - **FAIL**

TABLE 10 (Cont'd)
FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

- 4.3 Are the remaining two seat belt parts accessible under normal conditions?
(X) Yes - Pass
() No - FAIL
- 4.4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:
- (A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (X) Check
- (B) The seat is moved to any position to which it is designed to be adjusted. (X) Check
- (C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position. (X) Check
- (X) Yes - Pass
() No - FAIL
- 4.5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?
(X) Yes - Pass
() No - FAIL

Designated Seating Position Tested: Rear Center

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable.
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

TABLE 10 (Cont'd)
FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

If the seats in this vehicle are different than the criteria above determine the following:

- 4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?
 Yes - Go to 4.2.
 No - this form is complete
- 4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?
 Yes - Pass
 No - **FAIL**
- 4.3 Are the remaining two seat belt parts accessible under normal conditions?
 Yes - Pass
 No - **FAIL**
- 4.4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:
- (A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. Check
- (B) The seat is moved to any position to which it is designed to be adjusted.
 Check
- (C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position.
 Check
- Yes - Pass
 No - **FAIL**
- 4.5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?
 Yes - Pass
 No - **FAIL**

TABLE 10 (Cont'd)
EMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

Designated Seating Position Tested: Right Rear Outboard

The requirements for accessibility **DO NOT APPLY** to:

- A. Seats whose seat cushions are movable so that the seat back serves a function other than seating (S7.4.6.1(b))
- B. Seats which are removable.
- C. Seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

If the seats in this vehicle are different than the criteria above determine the following:

- 4.1 Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?
 - Yes - Go to 4.2.
 - No - this form is complete

- 4.2 Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?
 - Yes - Pass
 - No - **FAIL**

- 4.3 Are the remaining two seat belt parts accessible under normal conditions?
 - Yes - Pass
 - No - **FAIL**

- 4.4 The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:
 - (A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. Check

 - (B) The seat is moved to any position to which it is designed to be adjusted. Check

TABLE 10 (Cont'd)
FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY

(C) The seat back, if foldable, is folded forward as far as possible and then moved backward into position.

Check

Yes - Pass

No - **FAIL**

4.5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

Yes - Pass

No - **FAIL**

TABLE 11 FMVSS 208 EQUIPMENT DATA (Cont'd)

FMVSS 208 READINESS INDICATOR (S4.5.2)

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206; Technician: Chris Novak; Date: March 4, 1998

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.

(11/8/94 legal interpretation)

1. Is the system totally mechanical? ()Yes (X)No

(If YES this Data Sheet is complete.)

2. Describe the location of the readiness indicator: Instrument cluster below tachometer
-

3. Is the readiness indicator clearly visible to the driver?

(X)Yes-Pass ()No-FAIL

4. Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided?

(X)Yes-Pass ()No-FAIL

TABLE 11 FMVSS 208 EQUIPMENT DATA (Cont'd)

FMVSS 208 REAR OUTBOARD SEATING POSITION SEAT BELTS

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206; Technician: Chris Novak; Date: March 4, 1998

1. Do all rear outboard seating positions have type 2 seat belts?

(X)Yes ()No

If NO, describe the seat belt installed, the seat location, and any other information about the seat that would explain why a type 2 belt was not installed.

TABLE 12 LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for **each** designated seating position with forward-facing seats, other than the driver's seat, or seats that can be adjusted to forward-facing **and** that has seat belt retractors that are not automatic locking retractors. (S7.1.1.5(c))

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door
NHTSA No.: CW5206; Technician: Chris Novak; Date: March 4, 1998
Designated Seating Position Tested: Right Front Outboard

1. Record the seating position. Mid-Position
(Any position is acceptable.)
2. Buckle the seat belt.
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature.
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle.
(X) Yes-Pass () No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing.
(X) Yes-Pass () No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
(X) Yes, go to 6.1 () No, go to 7.
 - 6.1 If yes, does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system.
(X) Yes-Pass () No-FAIL
7. Locate a reference point A on the seat belt buckle.

TABLE 12 LAP BELT LOCKABILITY (Cont'd)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly.
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system.
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly.
Measured distance between A and B is 54.8 inches.
11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing.
12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal.
The measured force application angle = 9 degrees.

Webbing Tension Pull Device

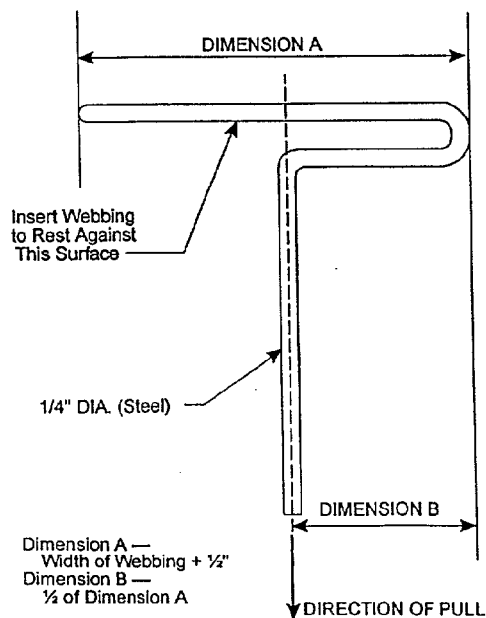


TABLE 12 LAP BELT LOCKABILITY (Cont'd)

13. The length between points A and B along the longitudinal centerline of the webbing while the preload is being applied.
Measured distance between A and B is 49.3 inches.
14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing.
Record onset rate: 15 lb/sec.
Record the distance between points A and B: 49.5 inches
15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? 14-13 = 0.2 inches (X)Yes-Pass () **No-FAIL**
16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more? 10-14 = 5.3 inches (X)Yes-Pass () **No-FAIL**

TABLE 12 LAP BELT LOCKABILITY (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206; Technician: Chris Novak; Date: March 4, 1998

Designated Seating Position Tested: Left Rear Outboard

1. Record the seating position. Non-adjustable
(Any position is acceptable.)
2. Buckle the seat belt.
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature.
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle.
 Yes-Pass No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing.
 Yes-Pass No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
 Yes, go to 6.1 No, go to 7.
 - 6.1 If yes, does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system.
 Yes-Pass No-FAIL
7. Locate a reference point A on the seat belt buckle.

TABLE 12 LAP BELT LOCKABILITY (Cont'd)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly.
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system.
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly.
Measured distance between A and B is 54.5 inches.
11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing.
12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal.
The measured force application angle = 13 degrees.

Webbing Tension Pull Device

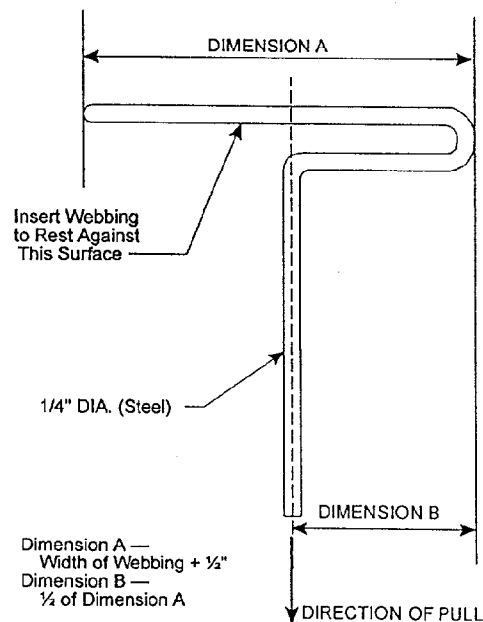


TABLE 12 LAP BELT LOCKABILITY (Cont'd)

13. The length between points A and B along the longitudinal centerline of the webbing while the preload is being applied.
Measured distance between A and B is 48.8 inches.
14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing.
Record onset rate: 15 lb/sec.
Record the distance between points A and B: 49.0 inches
15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? 14-13 = 0.2 inches (X)Yes-Pass () No-FAIL
16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more? 10-14 = 5.5 inches (X)Yes-Pass () No-FAIL

TABLE 12 LAP BELT LOCKABILITY (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206; Technician: Chris Novak;

Date: March 4, 1998

Designated Seating Position Tested: Center Rear

1. Record the seating position. Non-Adjustable
(Any position is acceptable.)
2. Buckle the seat belt.
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature.
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle.
(X)Yes-Pass () No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing.
(X)Yes-Pass () No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
(X)Yes, go to 6.1 () No, go to 7.
 - 6.1 If yes, does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system.
(X)Yes-Pass () No-FAIL
7. Locate a reference point A on the seat belt buckle.

TABLE 12 LAP BELT LOCKABILITY (Cont'd)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly.
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system.
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly.
Measured distance between A and B is 34.1 inches.
11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing.
12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal.
The measured force application angle = 9 degrees.

Webbing Tension Pull Device

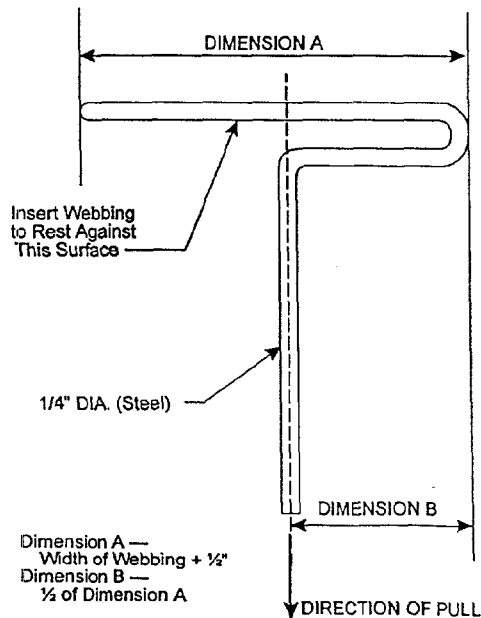


TABLE 12 LAP BELT LOCKABILITY (Cont'd)

13. The length between points A and B along the longitudinal centerline of the webbing while the preload is being applied.
Measured distance between A and B is 26.5 inches.
14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.)
Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing.
Record onset rate: 15 lb/sec.
Record the distance between points A and B: 26.6 inches
15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? 14-13 = 0.1 inches (X)Yes-Pass ()No-FAIL
16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more? 10-14 = 7.5 inches (X)Yes-Pass ()No-FAIL

TABLE 12 LAP BELT LOCKABILITY (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206; Technician: Chris Novak;

Date: March 4, 1998

Designated Seating Position Tested: Right Rear Outboard

1. Record the seating position. Non-Adjustable
(Any position is acceptable.)
2. Buckle the seat belt.
3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature.
4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle.
(X)Yes-Pass () No-FAIL
5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing.
(X)Yes-Pass () No-FAIL
6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
(X)Yes, go to 6.1 () No, go to 7.
 - 6.1 If yes, does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system.
(X)Yes-Pass () No-FAIL
7. Locate a reference point A on the seat belt buckle.

TABLE 12 LAP BELT LOCKABILITY (Cont'd)

8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly.
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system.
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly.
Measured distance between A and B is 53.6 inches.
11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing.
12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal.
The measured force application angle = 14 degrees.

Webbing Tension Pull Device

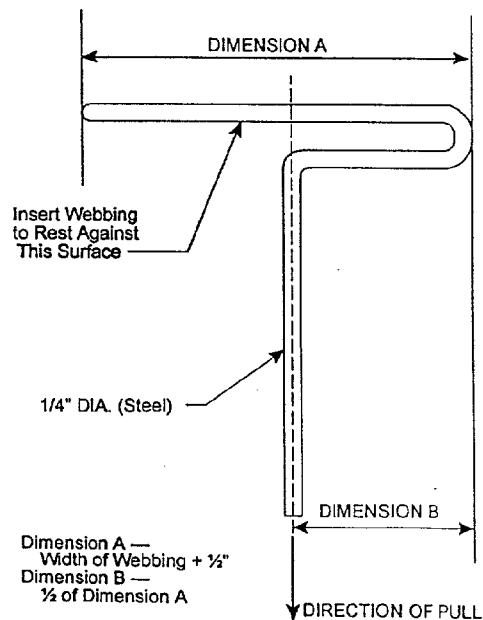


TABLE 12 LAP BELT LOCKABILITY (Cont'd)

13. The length between points A and B along the longitudinal centerline of the webbing while the preload is being applied.
Measured distance between A and B is 47.5 inches.
14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing.
Record onset rate: 20 lb/sec.
Record the distance between points A and B: 47.6 inches
15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? 14-13 = 0.1 inches (X)Yes-Pass ()No-FAIL
16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more? 10-14 = 6.0 inches (X)Yes-Pass ()No-FAIL

TABLE 13 AIR BAG LABELS

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

NHTSA No.: CW5206 ; Technician: Chris Novak ; Date: March 2, 1998

1. Air bag maintenance label and owner's manual instructions:
 - 1.1. Does the manufacturer recommend periodic maintenance or replacement of the airbag? Yes, go to 1.2 No, go to 2
 - 1.2. Does the vehicle have a maintenance or replacement label? Yes-Pass No-FAIL
 - 1.3. Does the label contain one of the following?
 Yes-Pass No-FAIL
 Schedule on label specifies month and year
 Schedule on label specifies vehicle mileage
 Schedule on label specifies interval measured from date on certification label
 - 1.4. Is the label permanently affixed within the passenger compartment? Yes-Pass No-FAIL
 - 1.5. Is the label lettered in English? Yes-Pass No-FAIL
 - 1.6. Is the label in block capitals and numerals? Yes-Pass No-FAIL
 - 1.7. Are the letters and numerals at least 3/32 inches high? Yes-Pass No-FAIL
 - 1.8. Does the owner's manual set forth the recommended schedule for maintenance or replacement? Yes-Pass No-FAIL
2. Does the owner's manual:
 - 2.1. Include a description of the vehicle's airbag system in an easily understandable format? Yes-Pass No-FAIL
 - 2.2. Include a statement that the vehicle is equipped with an airbag and a lap/shoulder belt at the front outboard seating positions? Yes-Pass No-FAIL

TABLE 13 AIR BAG LABELS (Cont'd)

- 2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating positions?
(X)Yes-Pass ()No-FAIL
- 2.4 Emphasize that all occupants, including the driver, should always wear their seat belts whether or not an airbag is also provided at their seating positions to minimize the risk of severe injury or death in the event of a crash?
(X)Yes-Pass ()No-FAIL
- 2.5 Provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to insure maximum safety protection for those occupants?
(X)Yes-Pass ()No-FAIL
- 2.6 Explain that no objects should be placed over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate?
(X)Yes-Pass ()No-FAIL
3. Does the vehicle:
- 3.1. Provide an automatic means to ensure that the airbag does not deploy when a child seat or child with a total mass of 30 kg or less is present on the front outboard passenger? ()Yes (X)No
- 3.2. Incorporate sensors, other than or in addition to weight sensors, which automatically prevent the passenger air bag from deploying in situations in which is might have an adverse effect on infants in rear-facing child seats, and unbelted or improperly belted children? ()Yes (X)No
- 3.3. have a passenger air bag designed to deploy in a manner that does not create a risk of serious injury to infants in rear-facing child seats, and unbelted or improperly belted children? ()Yes (X)No

TABLE 13 AIR BAG LABELS (Cont'd)

If yes to 3.1, or 3.2, or 3.3, the vehicle is not required to have a sunvisor warning label, an airbag alert label or a label on the dash and this check sheet is complete. If no to 3.1, 3.2, and 3.3, go to 4.

4. Sun Visor Warning Label

4.1. Is the label permanently affixed (may be permanent marking or molding) to either side of the sunvisor at each front outboard seating position with an airbag?

Driver Side - Yes-Pass No-FAIL

Passenger Side - Yes-Pass No-FAIL

4.2. Does the label conform in content (vehicles without back seats may omit the statement: "The back seat is the safest place for children.") to either label shown on the next page as appropriate at each front outboard seating position with an air bag?

4.2.1 **Dual air bags:** Not Applicable

Driver Side - Yes No-FAIL

Passenger Side - Yes No-FAIL

4.2.2 **Vehicle with driver air bag ONLY - either 4.2.1 or 4.2.2 is applicable, not both.**

4.2.2.1 Does the label conform in content to either label shown on the following page as appropriate?

Not Applicable

Driver Side - Yes-Pass No-FAIL

4.2.2.2 Does the label conform in content to the first label shown on the following page where the label can be modified to omit the pictogram and the message text may read:

TABLE 13 AIR BAG LABELS (Cont'd)

DEATH or SERIOUS INJURY can occur.

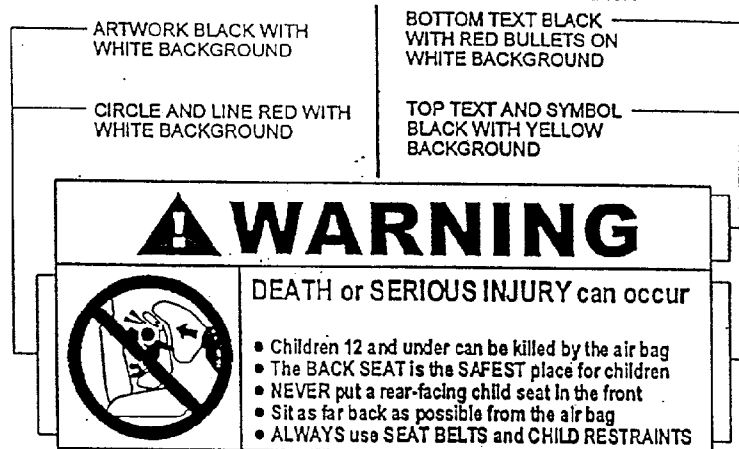
- Sit as far back as possible from the air bag.
- ALWAYS use SEAT BELTS and CHILD RESTRAINTS
- The BACK SEAT is the SAFEST place for children.

(X) Not Applicable

Driver Side - () Yes-Pass () No-FAIL

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN DOWN POSITION

LABEL OUTLINE, VERTICAL AND HORIZONTAL LINE BLACK



SUN VISOR LABEL VISIBLE WHEN VISOR IS IN DOWN POSITION

LABEL OUTLINE, VERTICAL AND HORIZONTAL LINE BLACK

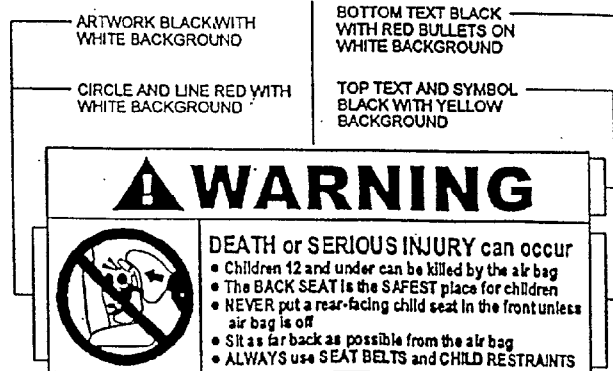


TABLE 13 AIR BAG LABELS (Cont'd)

- 4.3 Is the label heading area yellow with the word “warning” and the alert symbol in black?
Driver Side - (X)Yes-Pass () **No-FAIL**
Passenger Side - (X)Yes-Pass () **No-FAIL**
- 4.4 Is the message white with black text?
Driver Side - (X)Yes-Pass () **No-FAIL**
Passenger Side - (X)Yes-Pass () **No-FAIL**
- 4.5 Is the message area at least 30 cm²? Actual message area: 34 cm²
Driver Side - (X)Yes-Pass () **No-FAIL**
Passenger Side - (X)Yes-Pass () **No-FAIL**
- 4.6 Is the pictogram black with a red circle and slash on a white background?
For vehicles with driver side air bag ONLY () Not Applicable
Driver Side - (X)Yes-Pass () **No-FAIL**
Passenger Side - (X)Yes-Pass () **No-FAIL**
- 4.7 Is the pictogram at least 30 mm in diameter? Actual diameter: 32 mm
For vehicles with driver side air bag ONLY () Not Applicable
Driver Side - (X)Yes-Pass () **No-FAIL**
Passenger Side - (X)Yes-Pass () **No-FAIL**
- 4.8 Is the same side of the sun visor to which the sun visor label is affixed free of other information with the exception of an air bag maintenance label?
Driver Side - (X)Yes-Pass () **No-FAIL**
Passenger Side - (X)Yes-Pass () **No-FAIL**
- 4.9 Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label or the utility vehicle label?
Driver Side - (X)Yes-Pass () **No-FAIL**
Passenger Side - (X)Yes-Pass () **No-FAIL**

TABLE 13 AIR BAG LABELS (Cont'd)

5. Air Bag Alert Label

5.1 Is the Sun Visor Warning Label visible when the sunvisor is in the stowed position?

Driver Side - Yes, go to 6 No
Passenger Side - No air bag Yes No

5.2 Does the label conform in content to the label shown below?

Driver Side - Yes **No-FAIL**
Passenger Side - No air bag Yes-Pass **No-FAIL**

5.3 Is the message area black with yellow text?

Driver Side - Yes-Pass **No-FAIL**
Passenger Side - No air bag Yes-Pass **No-FAIL**

5.4 Is the message area at least 20 cm²? Actual message area: _____ cm²

Driver Side - Yes-Pass **No-FAIL**
Passenger Side - No air bag Yes-Pass **No-FAIL**

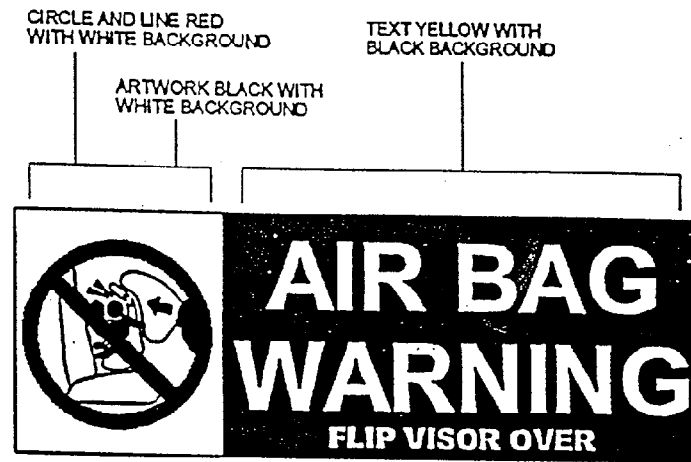
5.5 Is the pictogram black with a red circle and slash on a white background?

For vehicles with driver side air bag ONLY Not Applicable
 Yes-Pass **No-FAIL**

TABLE 13 AIR BAG LABELS (Cont'd)

- 5.6 Is the pictogram at least 20 mm in diameter? Actual diameter _____ mm
For vehicles with driver side air bag ONLY () Not Applicable
() Yes-Pass () **No-FAIL**

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN UP POSITION



6. Label On the Dash
- 6.1 Does the vehicle have a passenger side air bag?
(X)Yes () No, check sheet is complete.
- 6.2 Does the vehicle have a label on the dash or steering wheel hub?
(X)Yes-Pass () **No-FAIL**
- 6.3 Does the label conform in content (vehicles without back seats may omit the statement: "The back seat is the safest place for children 12 and under.") to the label shown below. (X)Yes-Pass () **No-FAIL**
- 6.4 Is the heading area yellow with the word "warning" and the alert symbol in black?
(X)Yes-Pass () **No-FAIL**

TABLE 14 FMVSS 212, "WINDSHIELD MOUNTING", DATA SUMMARY

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 Test Date: 3/06/98

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

Rubber trim with glue retention

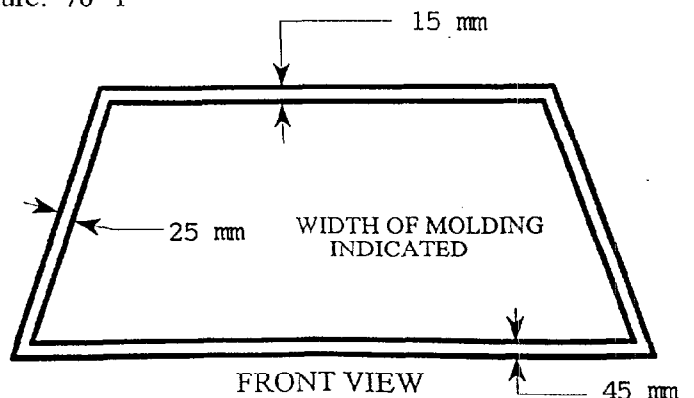
CLIPS OR BRACKETS USED TO RETAIN WINDSHIELD: None

FMVSS 212 REQUIREMENTS: The post-test periphery retention amount must be at least 75% of the pre-test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of windshield for vehicles equipped with automatic restraint systems for front occupants.

FMVSS 212 TEST DATA:

	WINDSHIELD PERIPHERY (inches)		
	PRE-TEST	POST-TEST	PERCENT RETENTION
RIGHT SIDE	81.8	81.8	100%
LEFT SIDE	83.9	83.9	100%
TOTAL	165.7	165.7	100%

Pre-Test Windshield Mounting Material Temperature: 70° F



FAILURE DETAILS: None

TABLE 15 FMVSS 219, "WINDSHIELD ZONE INTRUSION", DATA SUMMARY

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 Test Date: 3/06/98

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5" dia. rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. Draw the locus of points on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contact points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 1/2" distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

WINDSHIELD MEASUREMENTS:

A= 45.3 in

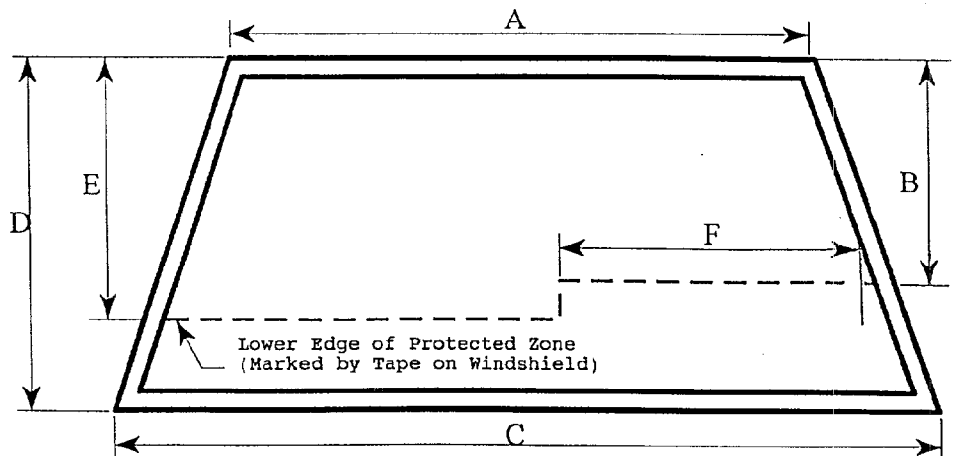
B= 18.2 in

C= 57.6 in

D= 31.4 in

E= 21.2 in

F= 32.6 in



FRONT VIEW

AREAS OF WINDSHIELD TEMPLATE PENETRATION GREATER THAN 1/4 IN:

None

AREAS OF WINDSHIELD PENETRATION, BELOW THE PROTECTED ZONE, THROUGH THE INNER SURFACE OF THE WINDSHIELD:

None

TABLE 16 FUEL SYSTEM DATA

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 Test Date: 3/06/98

Fuel System Capacity from Owner's Manual = 15.9 gallons

Usable Capacity Figure Furnished by COTR = 15.8 gallons

Test Volume Range (92 to 94% of Usable Capacity)

= 14.54 to 14.85 gallons

Actual Test Volume = 14.7 gallons

Test Fluid Type: Stoddard Solvent; Spec. Grav. = 0.77

Kinematic Viscosity = 1.788 centistokes; Color = Purple

Type of Fuel Pump: Electric; Mechanical

Does electric pump operate with ignition switch "On" and engine "Off"?

Yes; No

Details of Fuel System:

Vehicle contained an SFI fuel system.

TABLE 17 FMVSS 301 POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 Test Date: 3/06/98

TEST REQUIREMENTS:

Test vehicle's 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 572E test dummies located at each front designated seating position.

TEST VEHICLE IMPACT TYPE:

- Frontal (30 mph)
- Oblique (30 mph) with ___ ° barrier face first contacting (driver/passenger) side
- Rear Moving Barrier (30 mph)
- Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:

POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases	0 oz	1 oz
2. For 5 minute period after vehicle motion ceases	0 oz	5 oz
3. For next 25 minutes	0 oz	1 oz./1 min

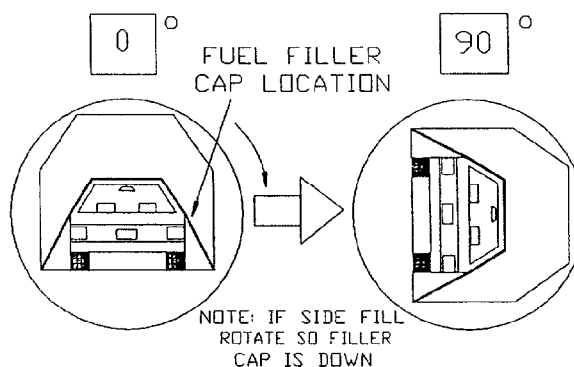
FUEL SPILLAGE LOCATION(S): None

TABLE 18 FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 Test Date: 3/06/98

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 45 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 45 seconds

Next Whole Minute Interval = 8 minutes

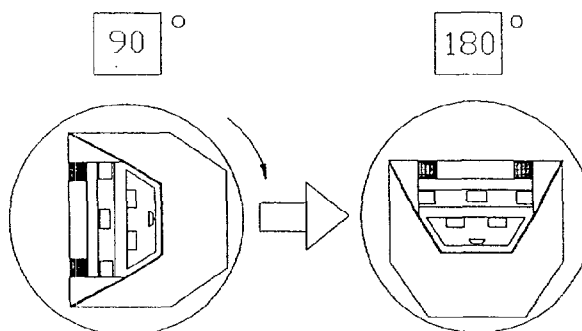
FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION (FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz.	5 oz
2. Sixth Minute From Onset of Rotation	0 oz.	1 oz
3. Seventh Minute From Onset of Rotation	0 oz.	1 oz
4. Eighth Minute if Required	0 oz.	1 oz

FUEL SPILLAGE LOCATIONS(S): None

TABLE 18 FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 30 seconds

Next Whole Minute Interval = 8 minutes

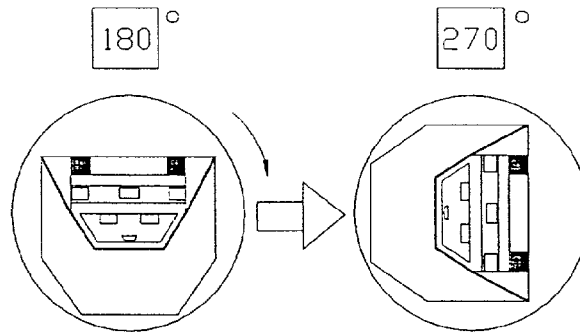
FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION (FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz.	5 oz
2. Sixth Minute From Onset of Rotation	0 oz.	1 oz
3. Seventh Minute From Onset of Rotation	0 oz.	1 oz
4. Eighth Minute if Required	0 oz.	1 oz

FUEL SPILLAGE LOCATIONS(S): None

TABLE 18 FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 22 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 22 seconds

Next Whole Minute Interval = 8 minutes

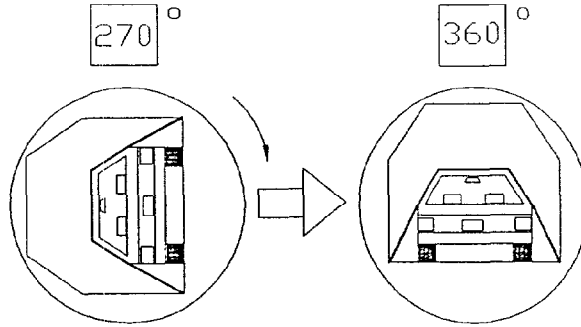
FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION (FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz.	5 oz
2. Sixth Minute From Onset of Rotation	0 oz.	1 oz
3. Seventh Minute From Onset of Rotation	0 oz.	1 oz
4. Eighth Minute if Required	0 oz.	1 oz

FUEL SPILLAGE LOCATIONS(S): None

TABLE 18 FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 42 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 42 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION (FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz.	5 oz
2. Sixth Minute From Onset of Rotation	0 oz.	1 oz
3. Seventh Minute From Onset of Rotation	0 oz.	1 oz
4. Eighth Minute if Required	0 oz.	1 oz

FUEL SPILLAGE LOCATIONS(S): None

SECTION 4
OCCUPANT, VEHICLE, AND CAMERA INFORMATION

TABLE 19 SEAT AND STEERING COLUMN POSITIONING DATA

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 Test Date: 3/06/98

NOMINAL DESIGN RIDING POSITION:

Driver Seat: Seat Back Angle = 18.7°

Passenger Seat: Seat Back Angle = 18.3°

SEAT FORE AND AFT POSITIONS:

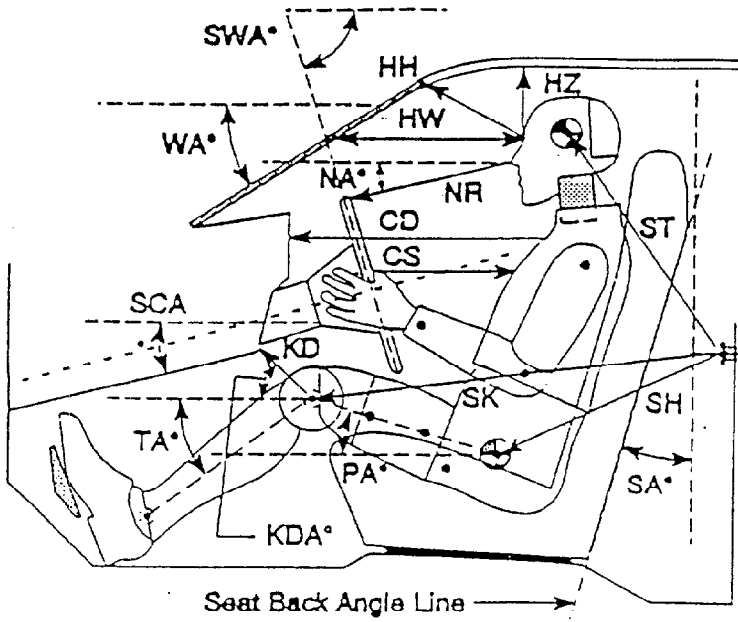
Driver Seat: The seat track had a total position movement of 20 notches and was positioned 11 notches rearward from the foremost position with the forwardmost locking position as zero.

Passenger Seat: The seat track had a total position movement of 20 notches and was positioned 11 notches rearward from the foremost position with the forwardmost locking position as zero.

STEERING COLUMN ADJUSTMENTS:

The steering column was positioned at the mid-point of its swing. The angle of the steering column was 24.2°.

FIGURE 1 DUMMY MEASUREMENT LOCATIONS FOR FRONT SEAT OCCUPANTS



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

- CD - Chest to Dash
- CS - Steering Wheel to Chest
- HH - Head to Header
- HW - Head to Windshield
- HZ - Head to Roof
- KDA - Knee to Dash Angle
- KDL - Left Knee to Dash
- KDR - Right Knee to Dash
- NA - Nose to Rim Angle
- NR - Nose to Rim
- PA - Pelvic Angle
- RA - Rim to Abdomen
- SA - Seat Back Angle
- SCA - Steering Column Angle
- SH - Striker to H-Point
- SK - Striker to Knee
- ST - Striker to Head
- SWA - Steering Wheel Angle
- TA - Tibial Angle
- WA - Windshield Angle

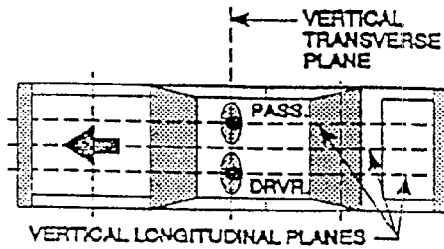
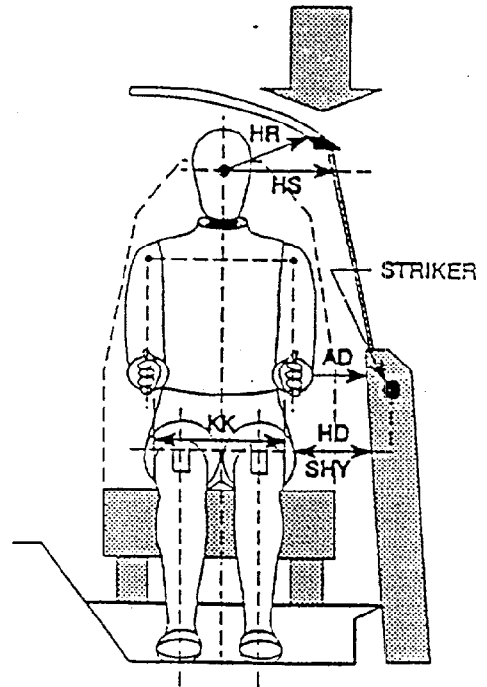


TABLE 20 DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

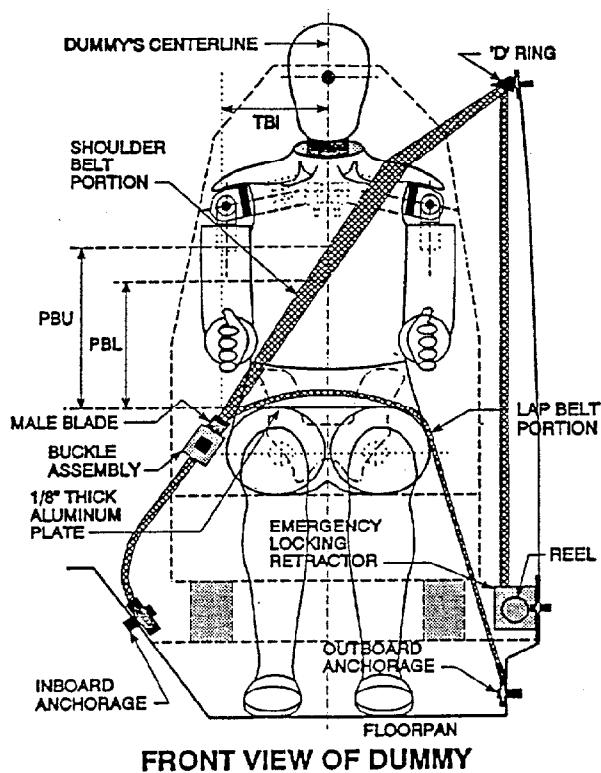
Vehicle NHTSA No.: CW5206 Test Date: 3/06/98

	DRIVER (Serial #340)	PASSENGER (Serial #312)
WA°	30°	
SWA°	24°	N/A
SCA°	24.2°	N/A
SA°	18.7°	18.3°
HZ	162	145
HH	308	290
HW	559	524
HR	234	222
NR	416 Angle (NA) 8.8°	N/A
CD	528	605
CS	333	N/A
RA	210	N/A
KDL	180 Angle (KDA) 22.4°	160
KDR	168	163 Angle (KDA) 20.0°
PA°	24.5°	24.0°
TA°	35.2°	20.4°
KK	314	255
ST*	508 Angle 2.6°	493 Angle 11.4°
SK*	582 Angle 92.4°	582 Angle 92.1°
SH*	232 Angle 35.5°	266 Angle 35.8°
SHY	258	250
HS	314	307
HD	130	127
AD	106	96

TABLE 21 SEAT BELT POSITIONING DATA

Vehicle Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 Test Date: 3/06/98



(Illustration)

	Driver Dummy	Passenger Dummy
<u>TBI</u> --Vertical centerline of 50% dummy to intersection of upper torso belt to lap belt	223	220
<u>PBU</u> --Top surface of aluminum plate to belt upper edge (mm)	347	342
<u>PBL</u> --Top surface of aluminum plate to belt lower edge (mm)	272	270

FIGURE 2 VEHICLE TARGET LOCATIONS

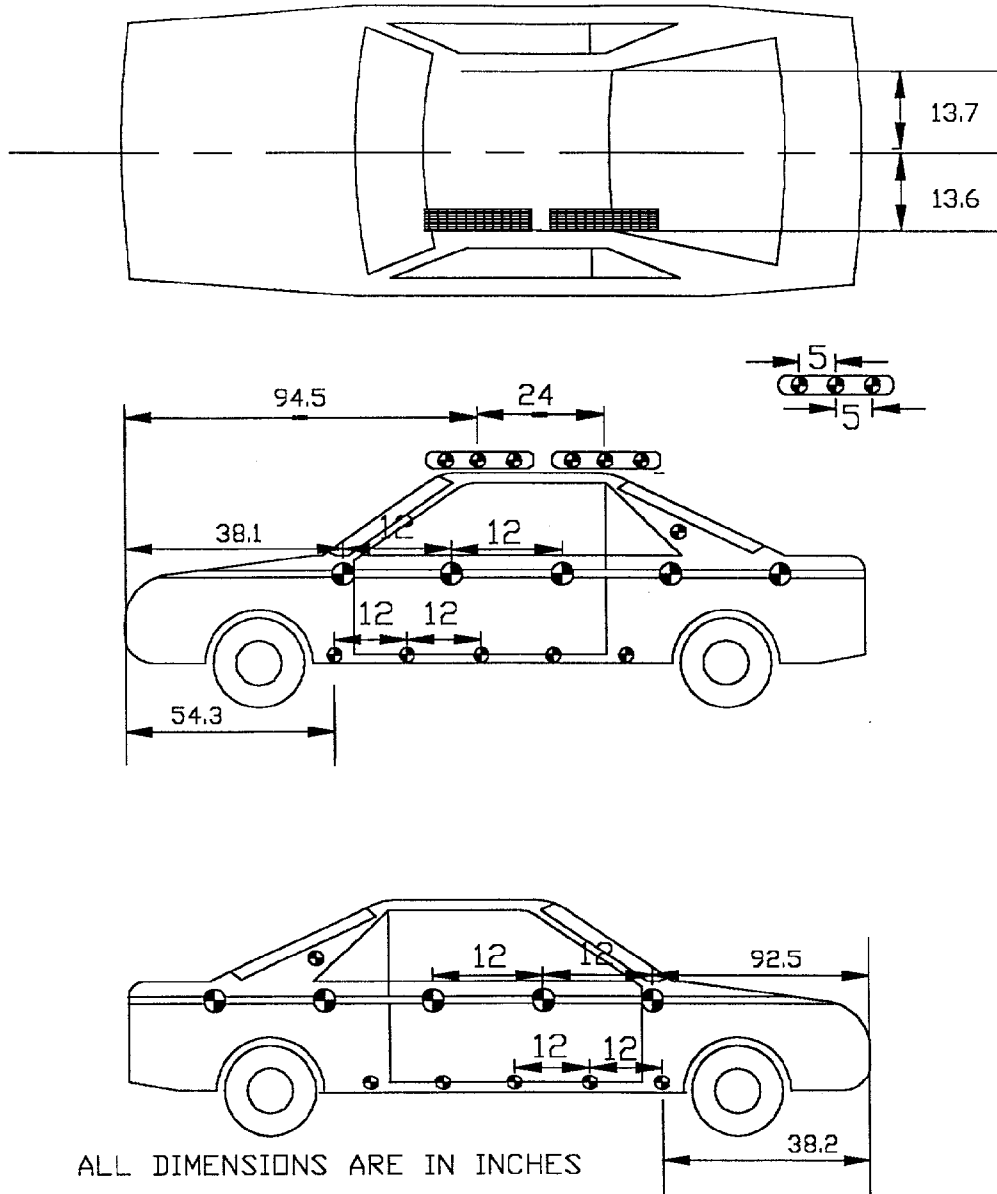


FIGURE 3 CAMERA POSITIONS

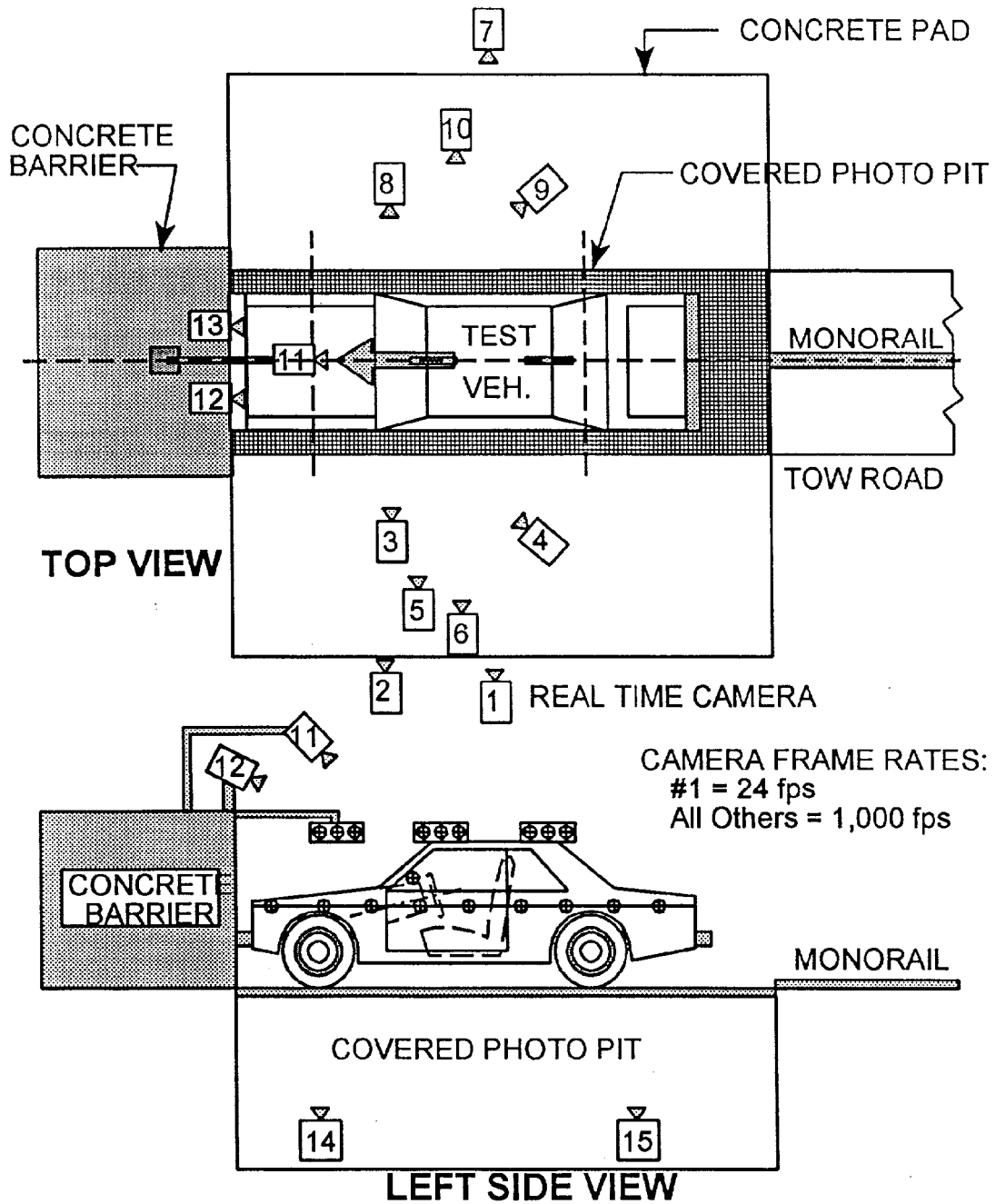


TABLE 22 CAMERA LOCATIONS

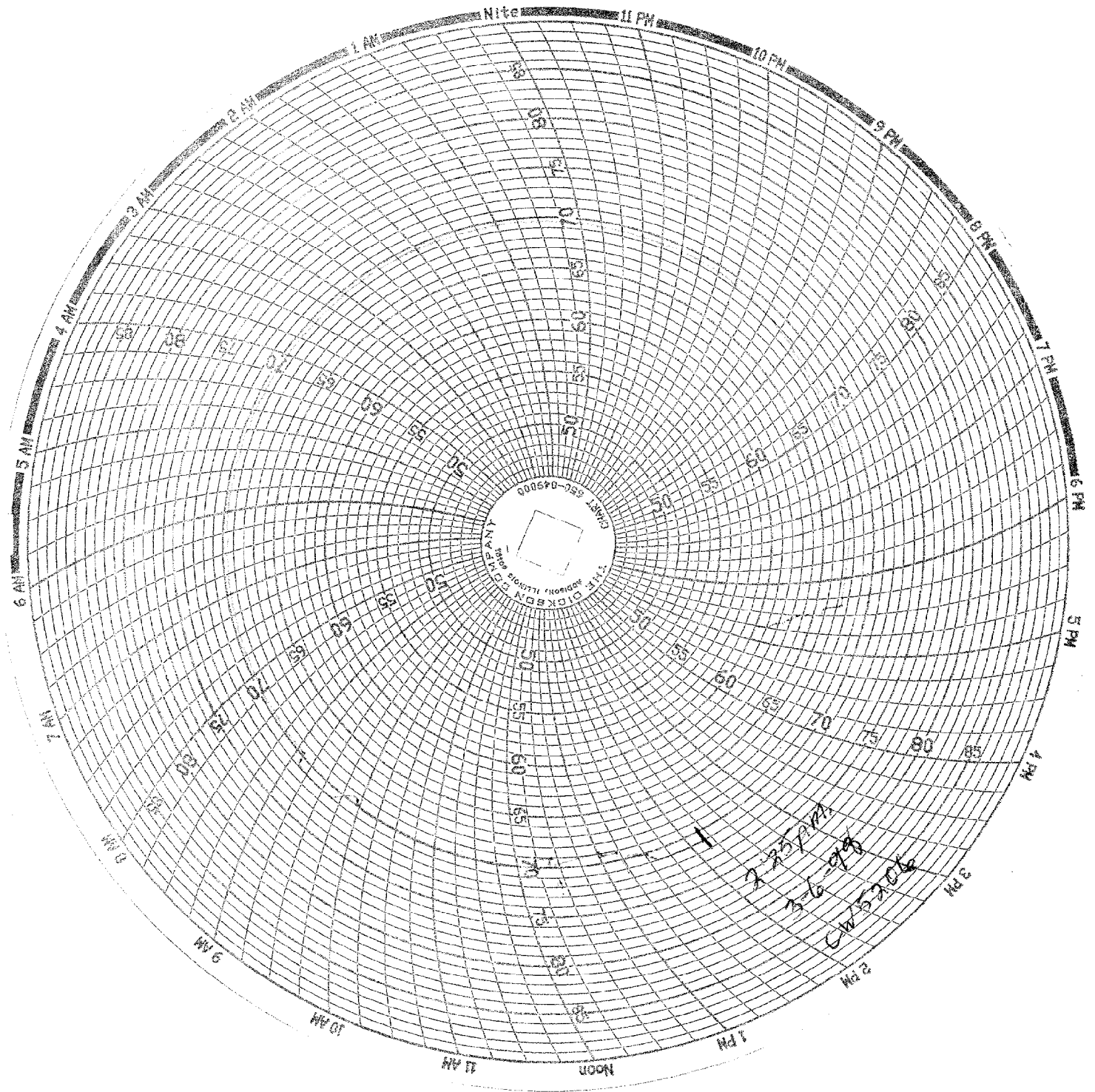
Veh. Year/Make/Model/Body Style: 1998/Nissan/Altima/4 Door

Vehicle NHTSA No.: CW5206 ; Test Date: 3/06/98

	VIEW	CAMERA POSITIONS (inches)*			ANGLE (deg)	LENS (mm)	SPEED (fps)
		X	Y	Z			
1	Real-Time Left Side View					10	24
2	Left Front	47.2	308.3	57.9	90	25	881
3	Driver Close-up	64.2	405.1	54.7	90	75	1075
4	Driver Angle Motion	195.7	210.6	77.2		50	1230
5	Steering Column Top	83.5	298.0	61.8	90	25	1010
6	Steering Column Bottom	83.9	297.6	40.6	90	25	957
7	Right Overall	71.3	-264.6	50.8	90	13	844
8	Right Close-up	53.9	-407.9	52.0	90	75	1124
9	Right Angle	184.6	-218.5	75.6		50	1227
10	Right Passenger	40.9	-307.5	50.0	90	25	1005
11	Top Overall	-7.9	0	106.3		13	1170
12	Top Driver	-10.6	18.5	68.9		13	1120
13	Top Passenger	-10.6	-18.5	69.3		13	990
14	Pit Front	45.7	0	-125.4		13	1005
15	Pit Rear View	107.5	0	-125.6		13	1008

- * +X = Film plane rearward of barrier
 +Y = Film plane to left of monorail centerline
 +Z = Film plane to above ground level

FIGURE 4 TEMPERATURE



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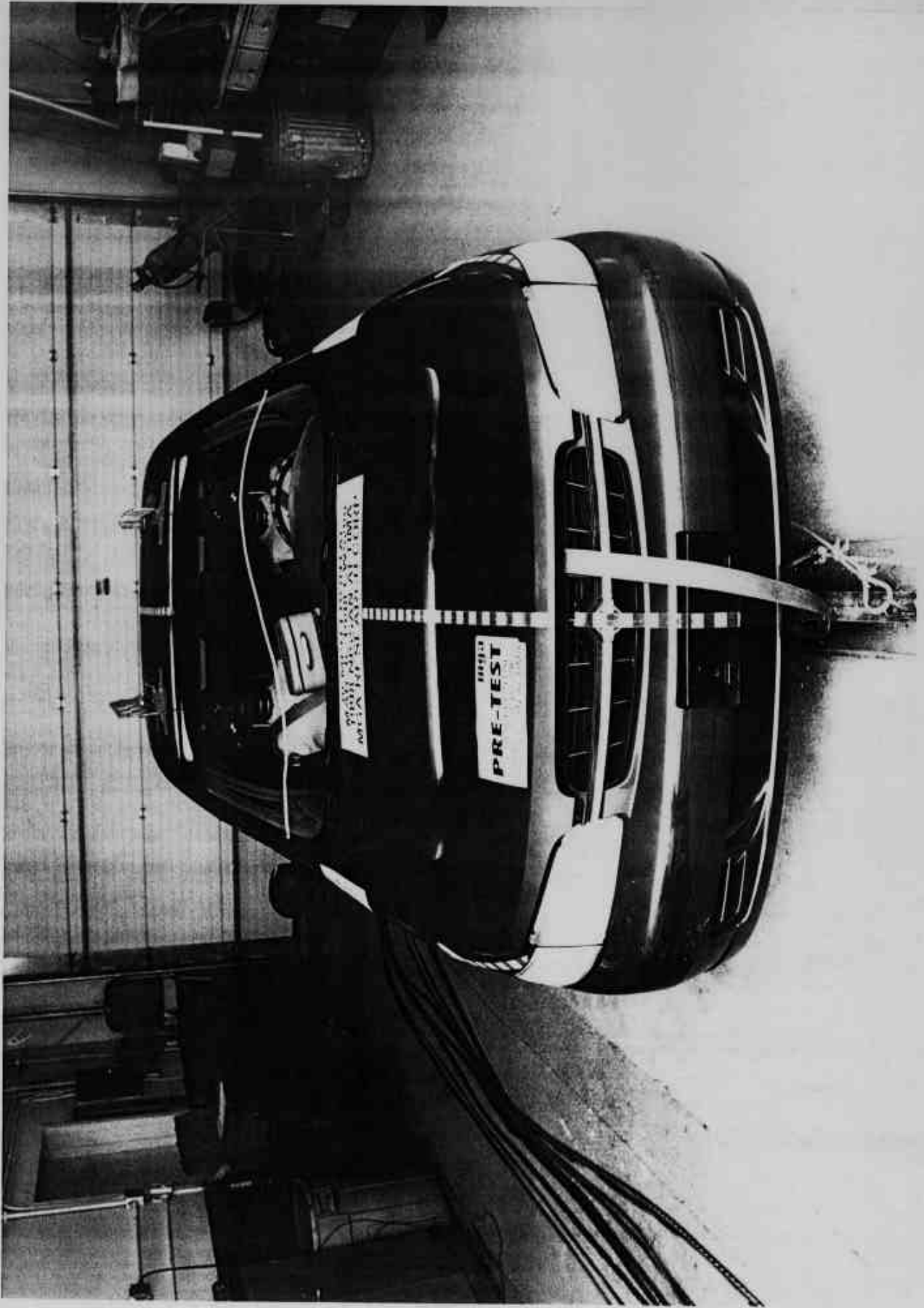


Photo No. A-1 - Pre-Test Front View

A-1

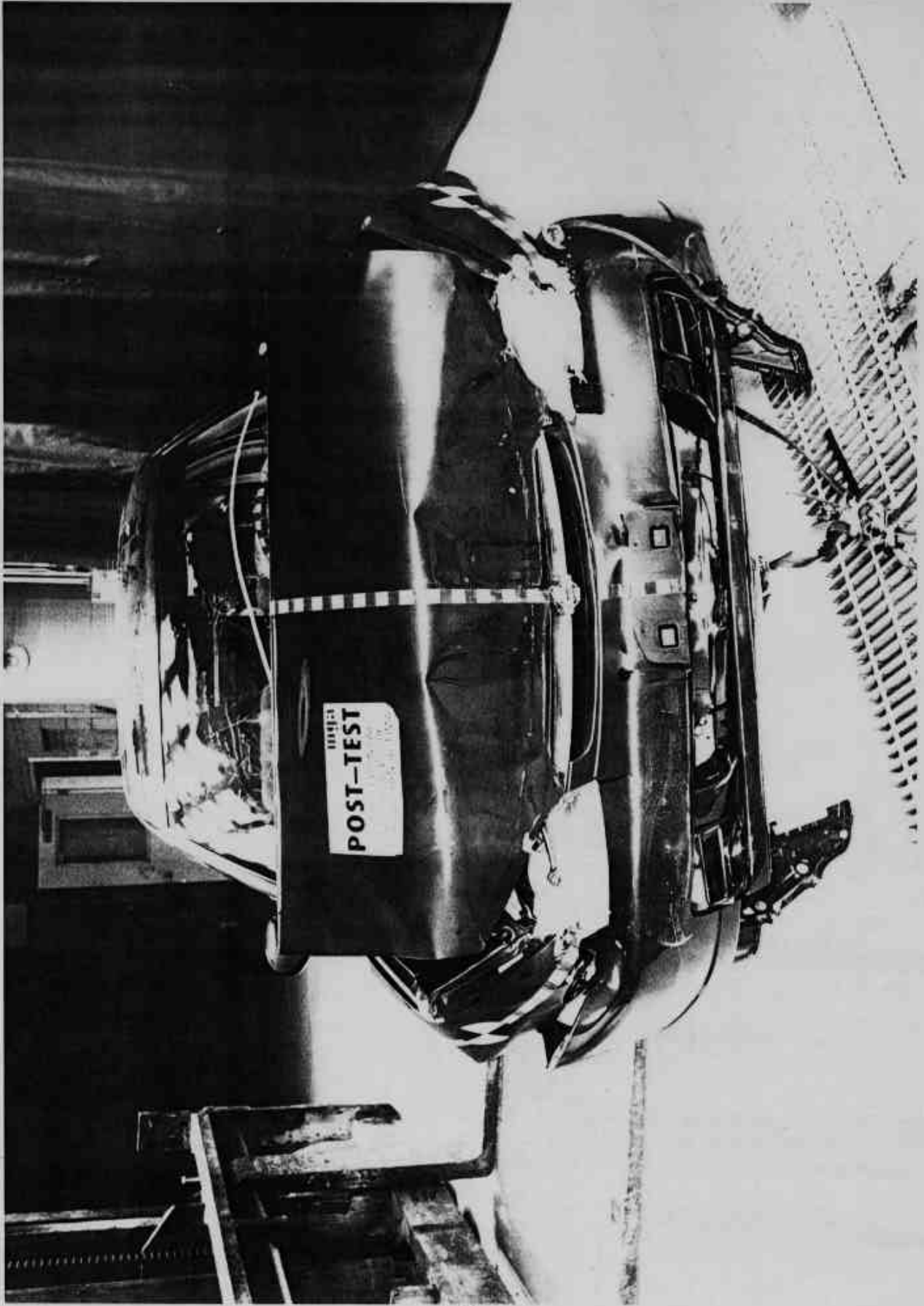


Photo No. A-2 - Post-Test Front View

A-2

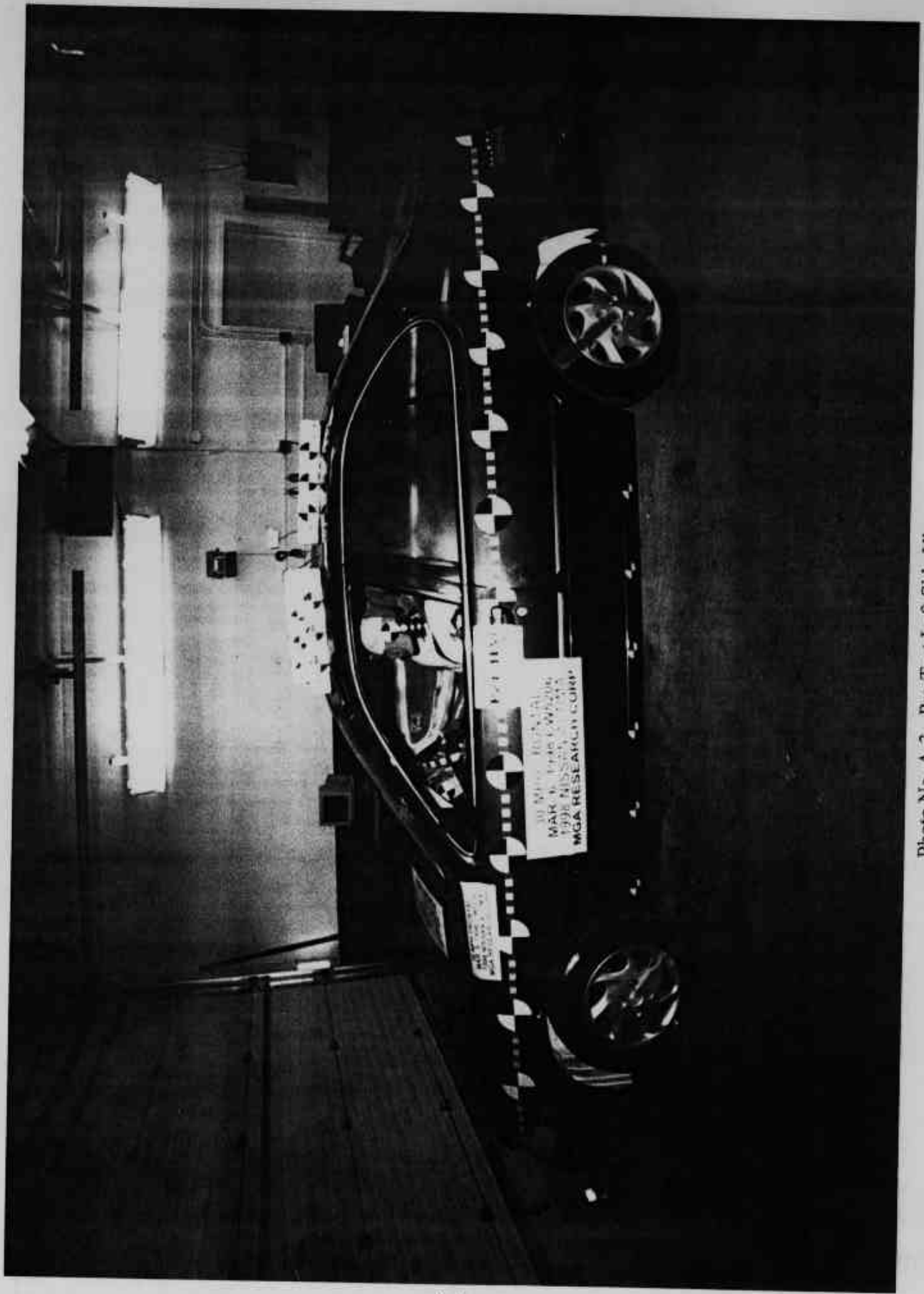
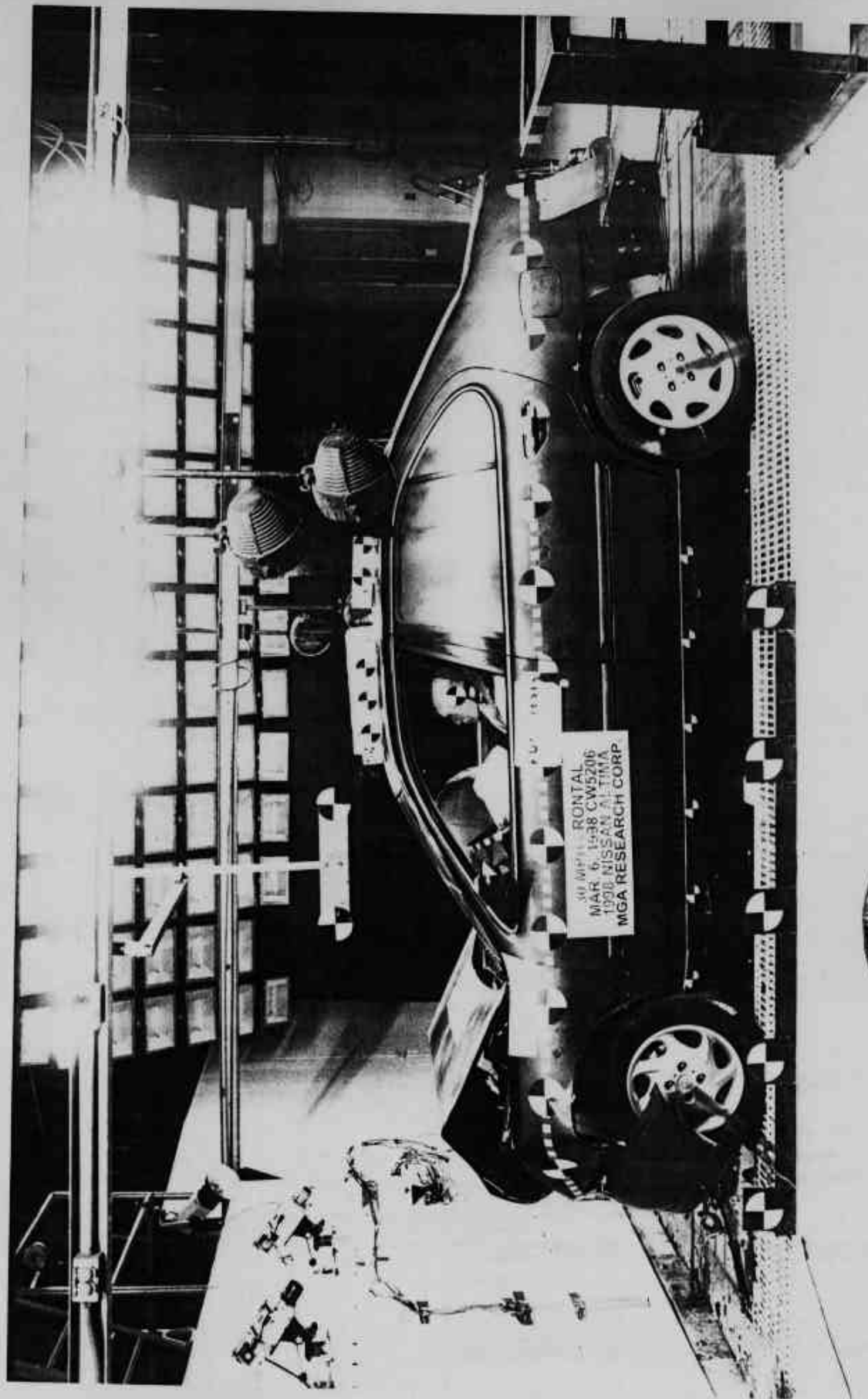


Photo No. A-3 - Pre-Test Left Side View



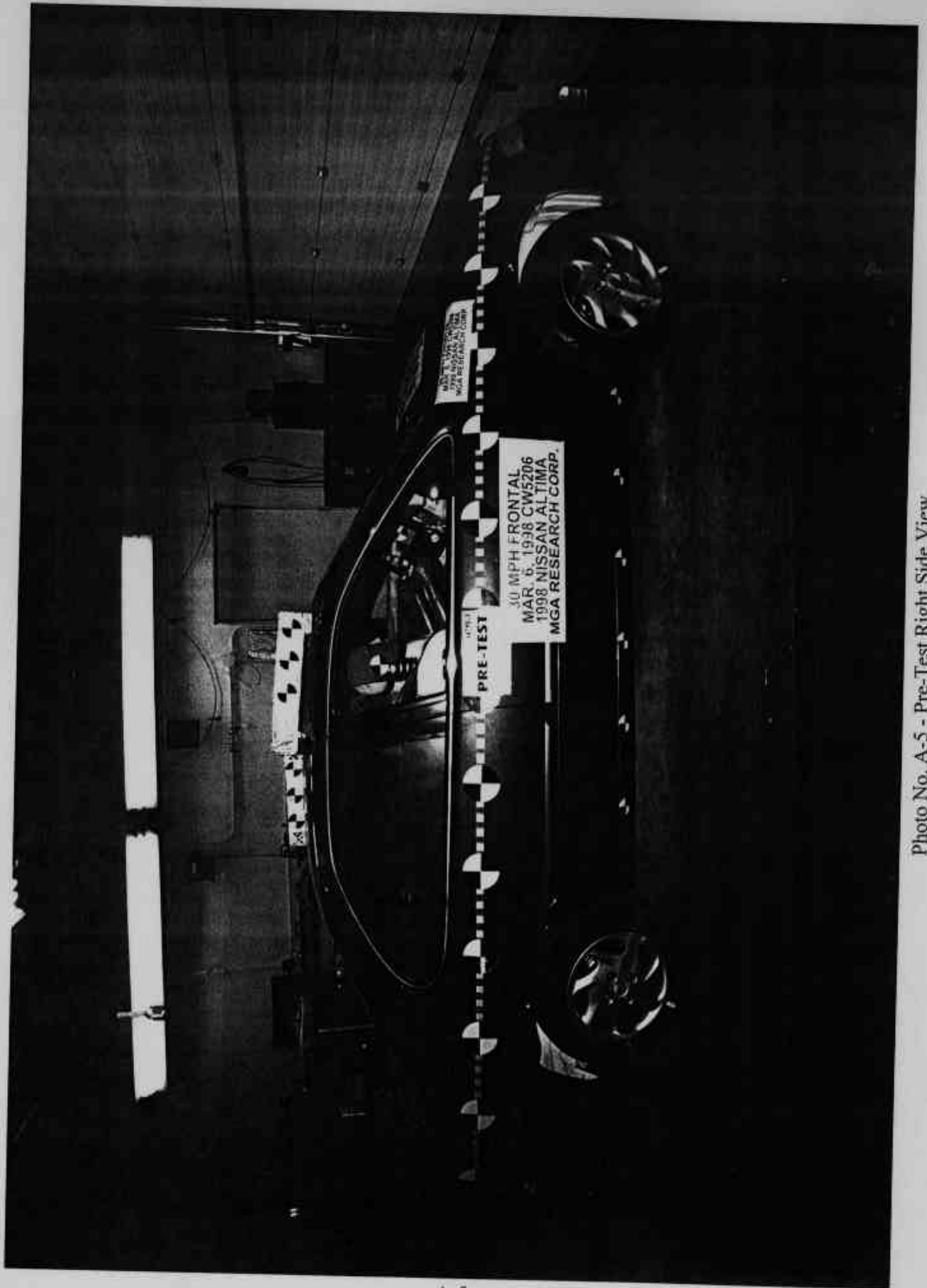
A-4



Photo No. A-4 - Post-Test Left Side View

gda





A-5

Photo No. A-5 - Pre-Test Right Side View

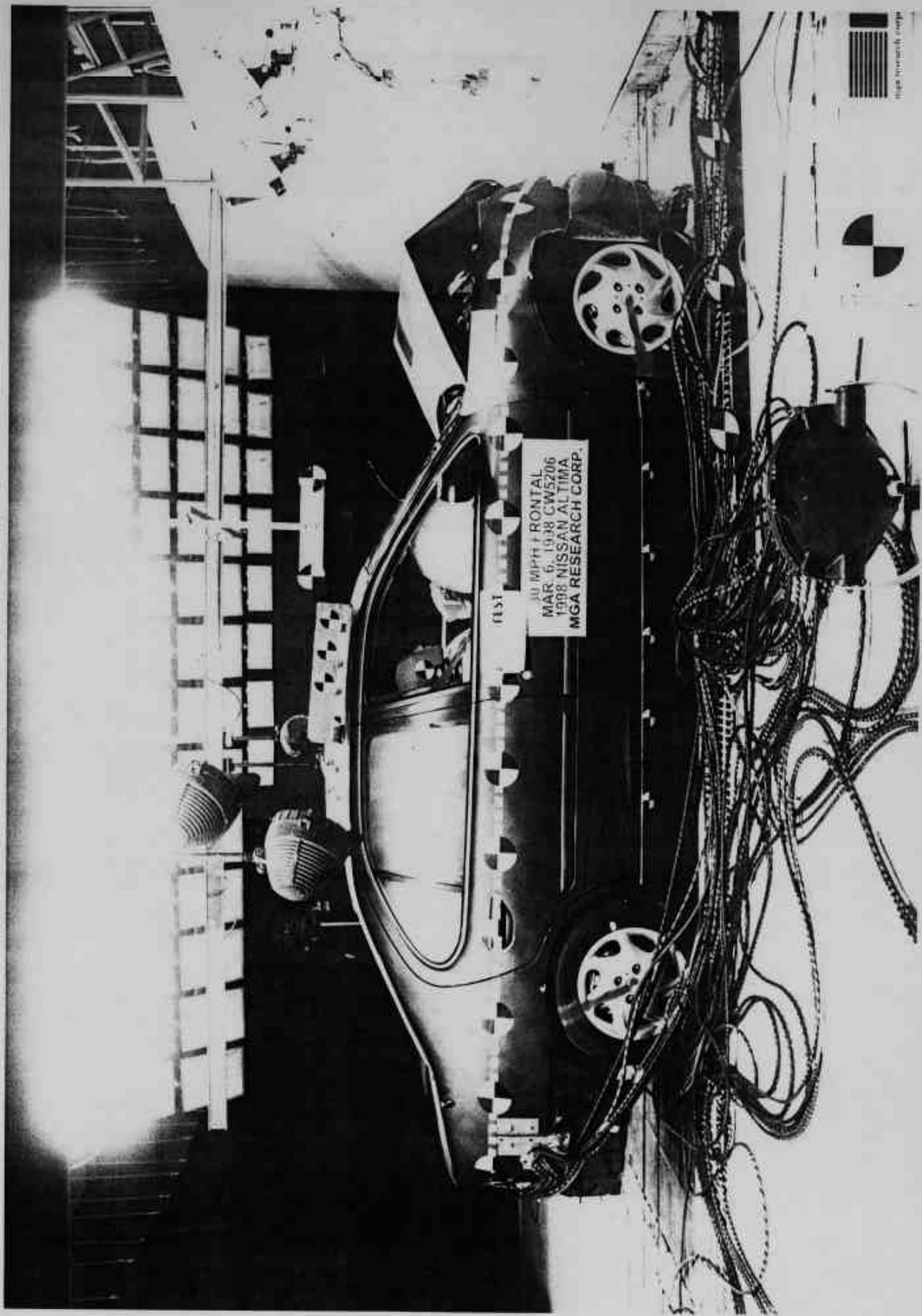


Photo No. A-6 - Post-Test Right Side View

A-6

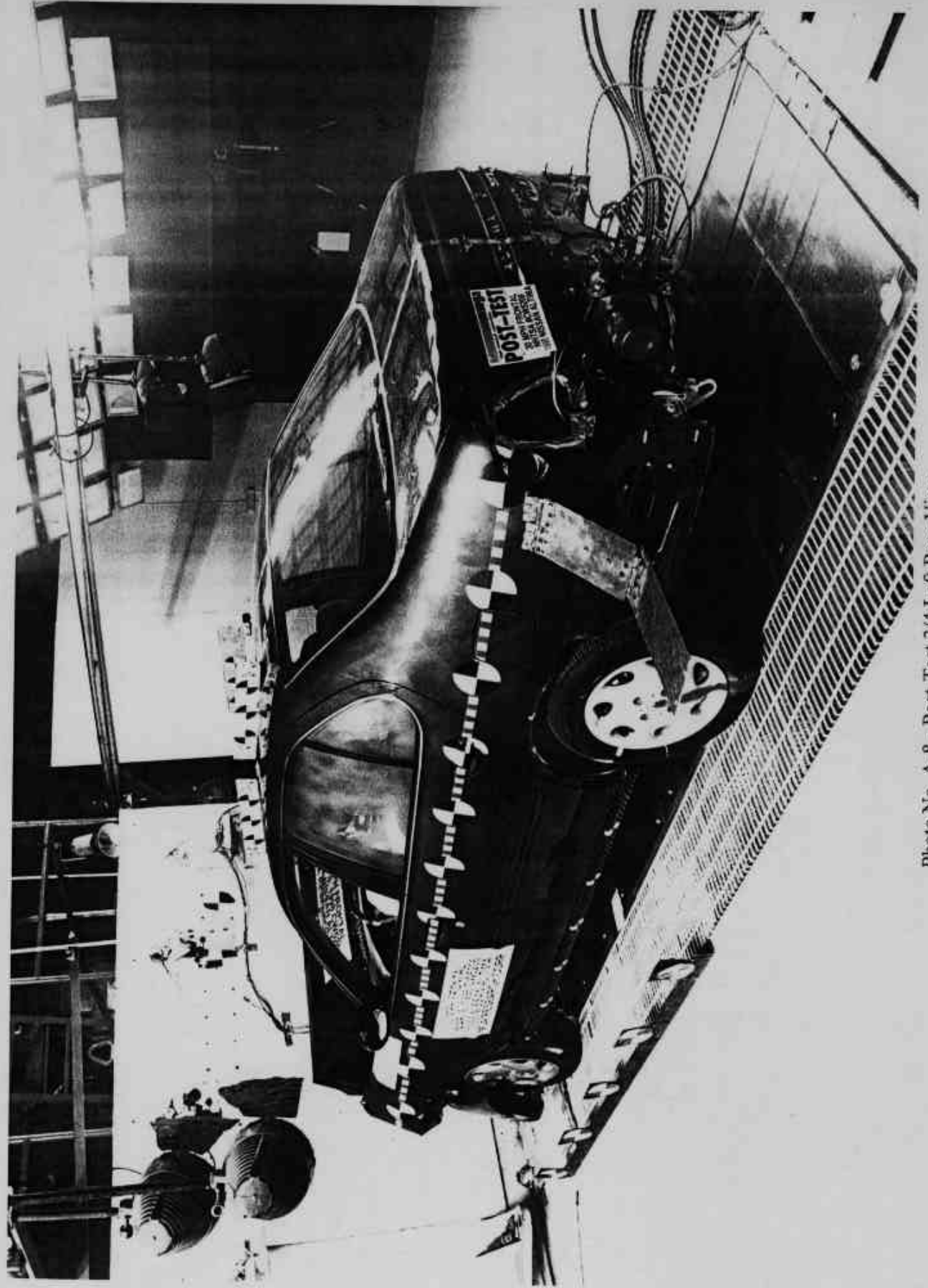


Photo No. A-8 - Post-Test 3/4 Left Rear View

A-8

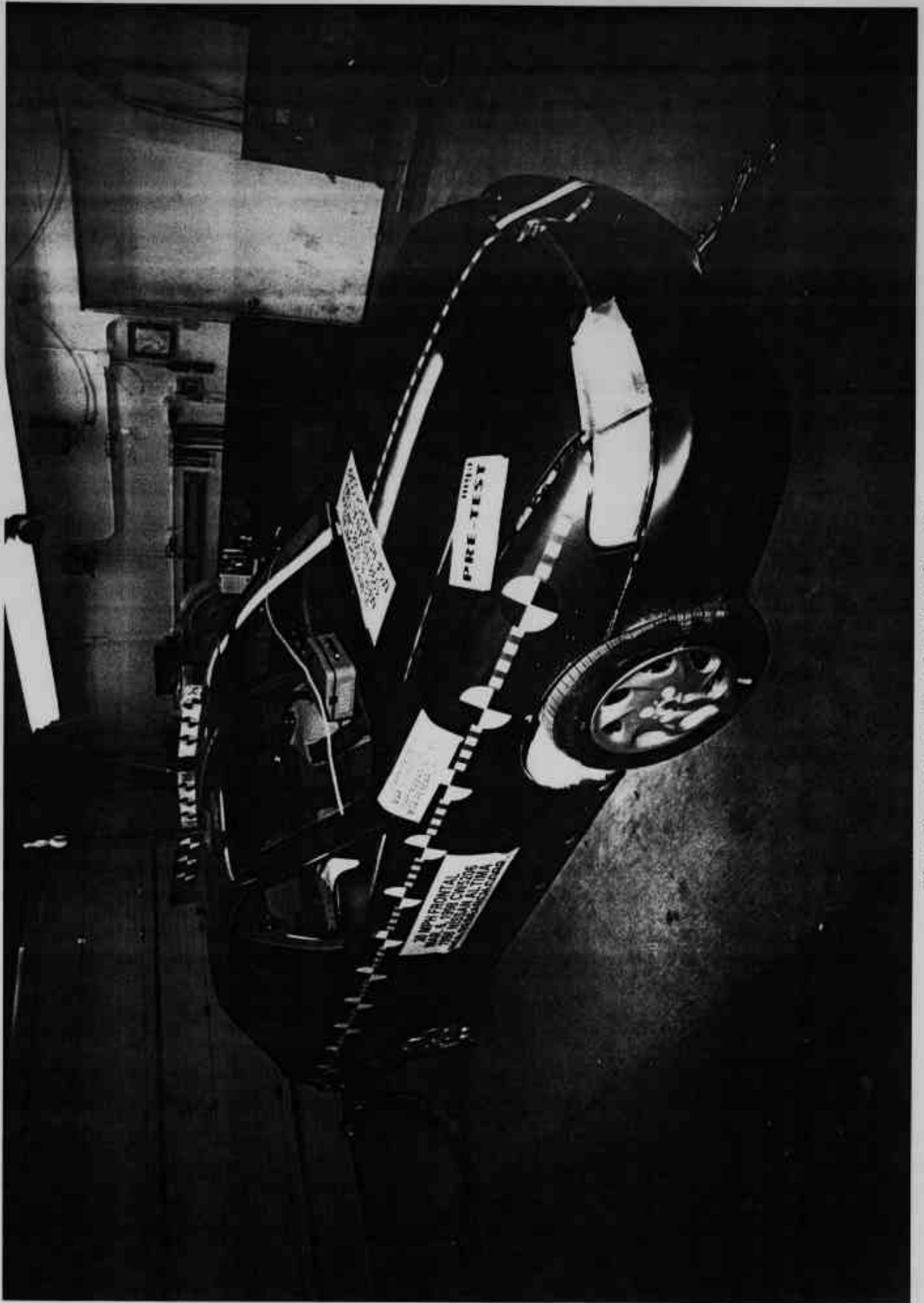


Photo No. A-9 - Pre-Test 3/4 Right Front View

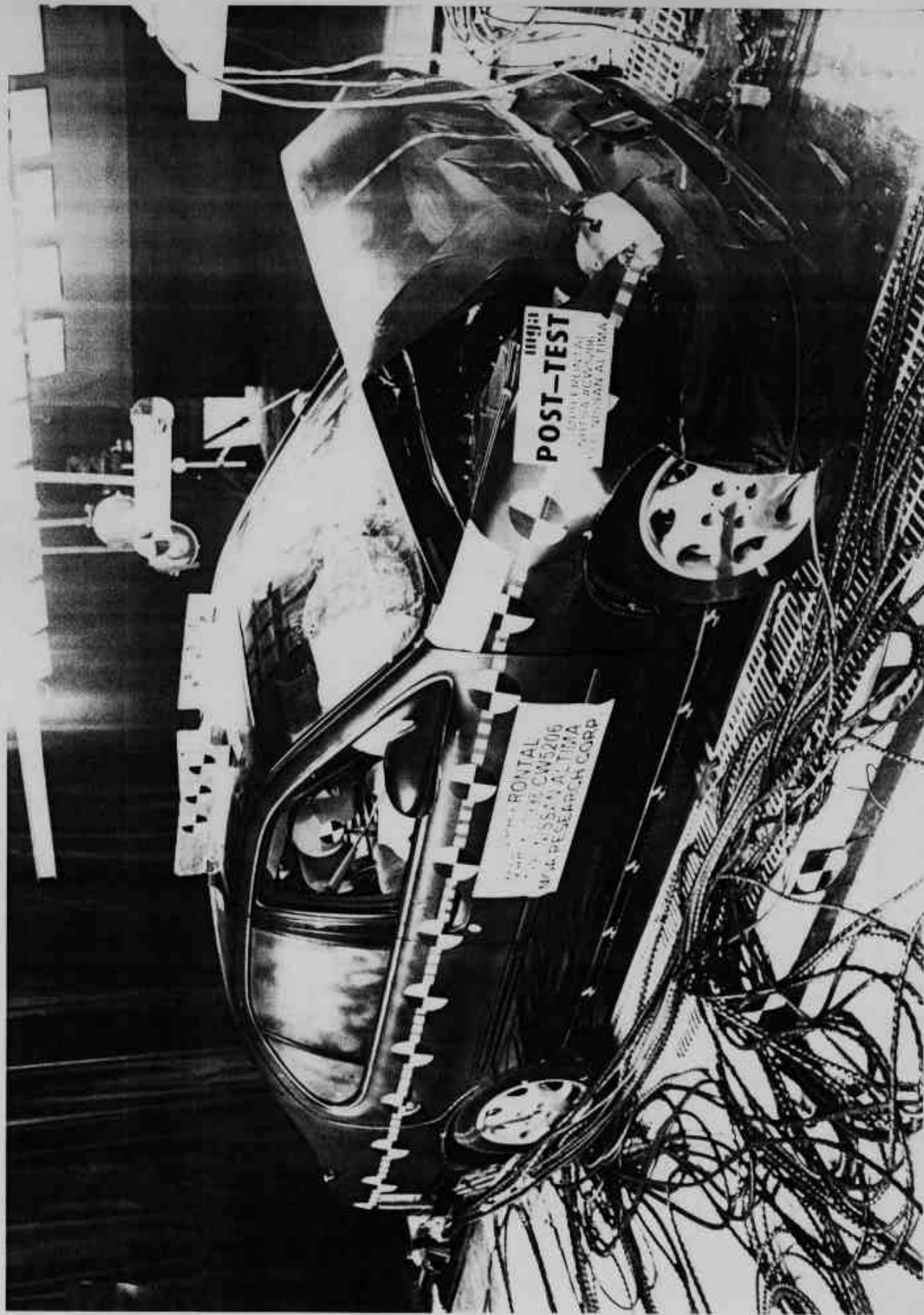


Photo No. A-10 - Post-Test 3/4 Right Front View

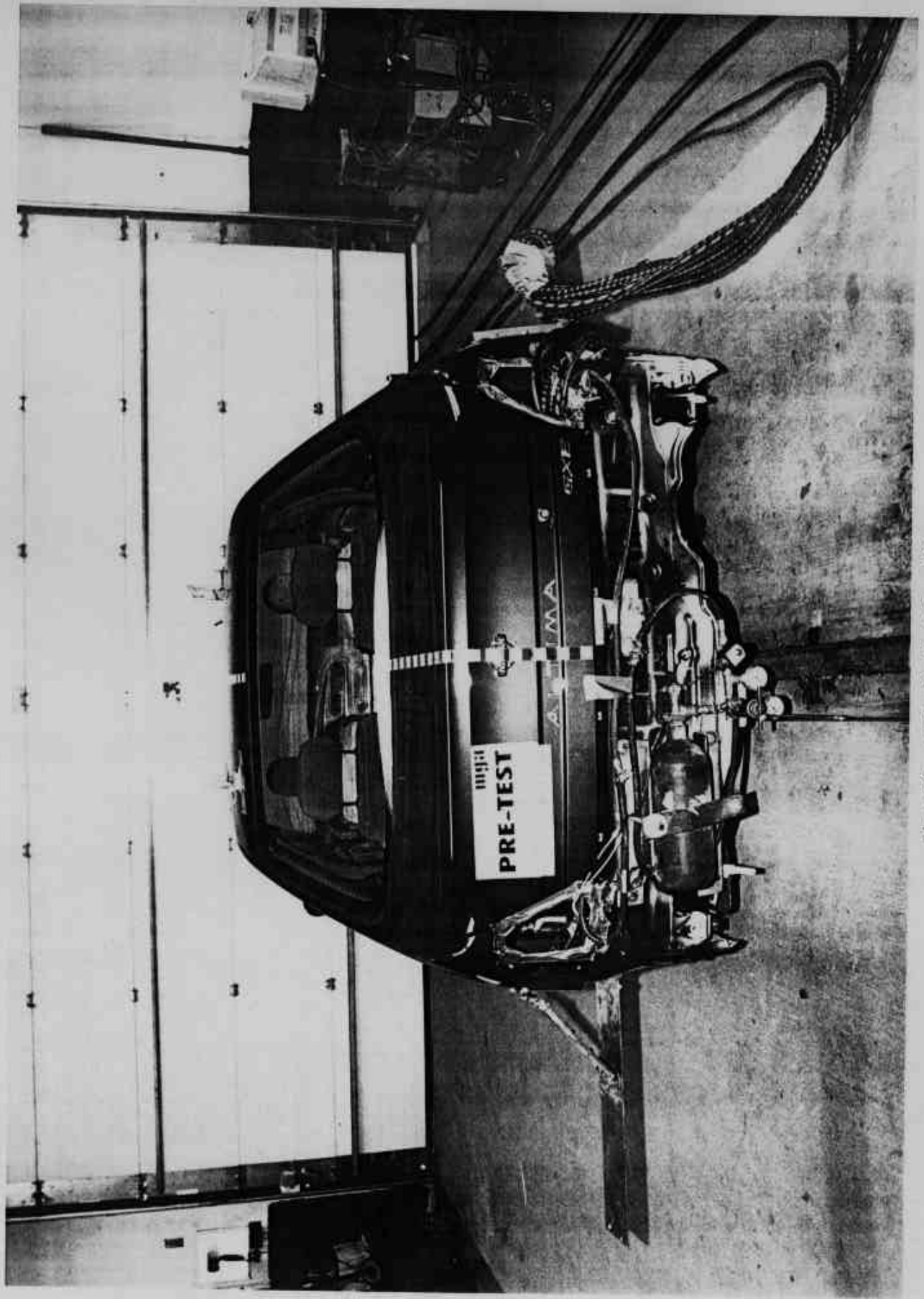


Photo No. A-11 - Pre-Test Rear View

A-11

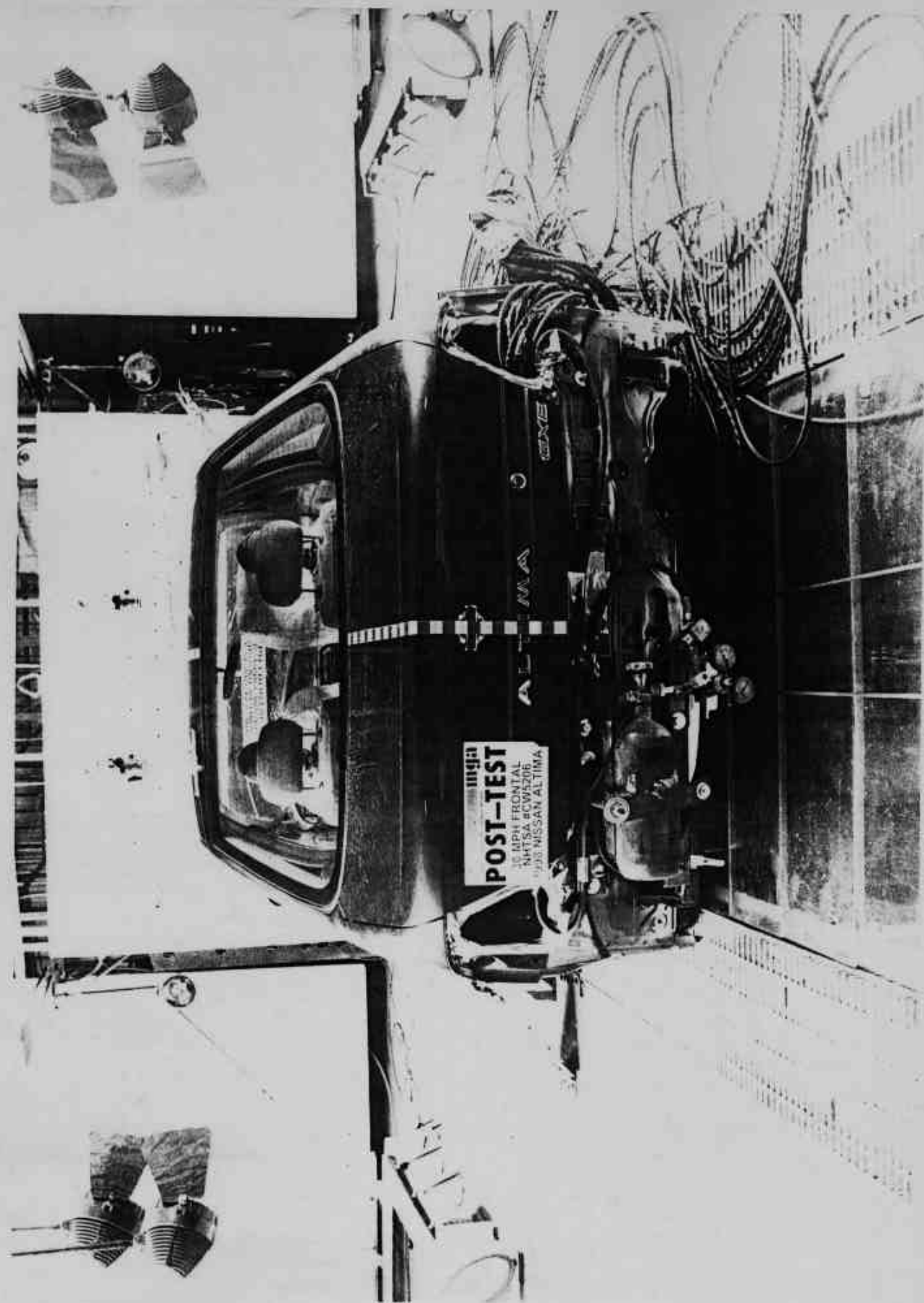


Photo No. A-12 - Post-Test Rear View

A-12

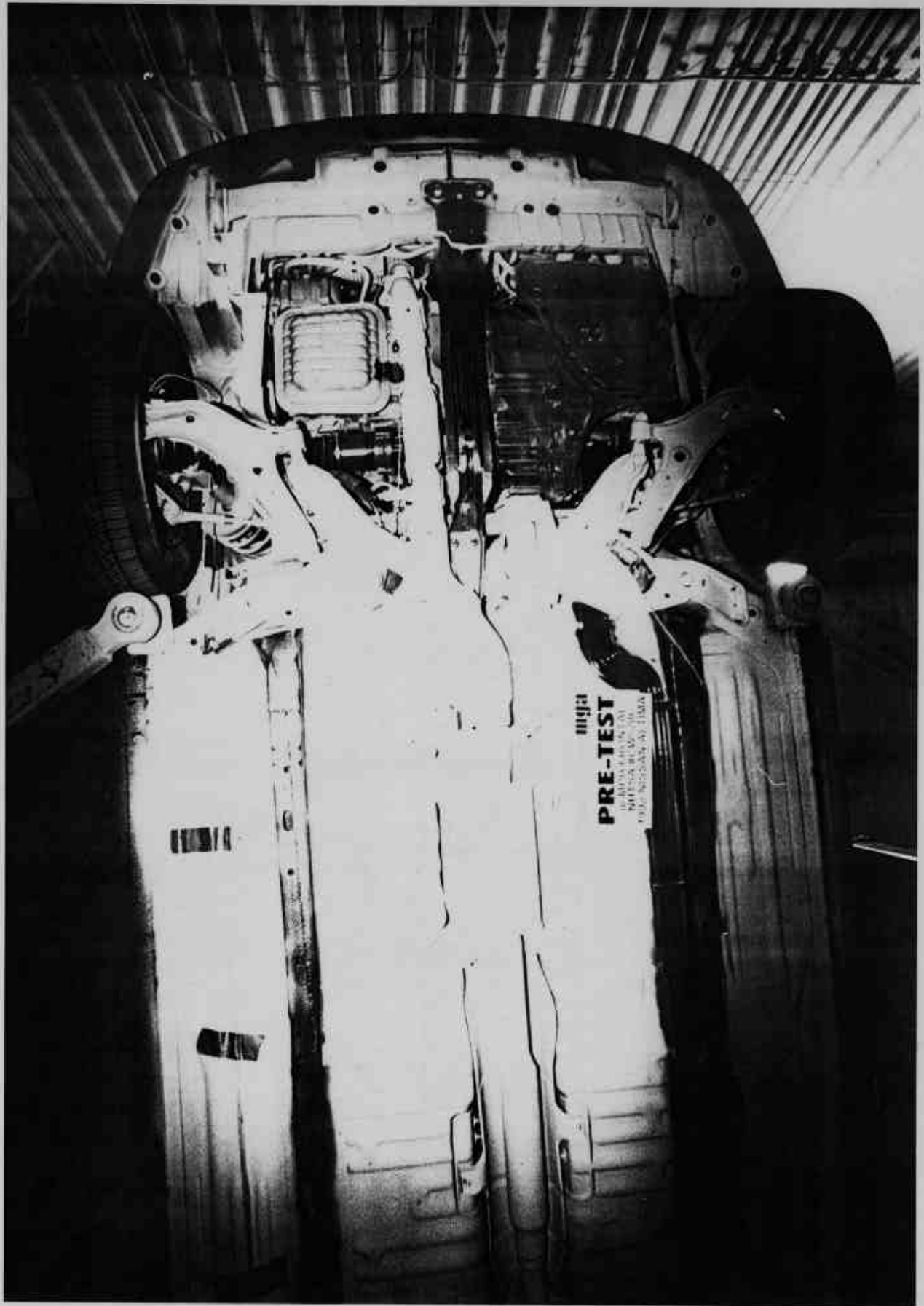


Photo No. A-13- Pre-Test Front Underbody View

A-13

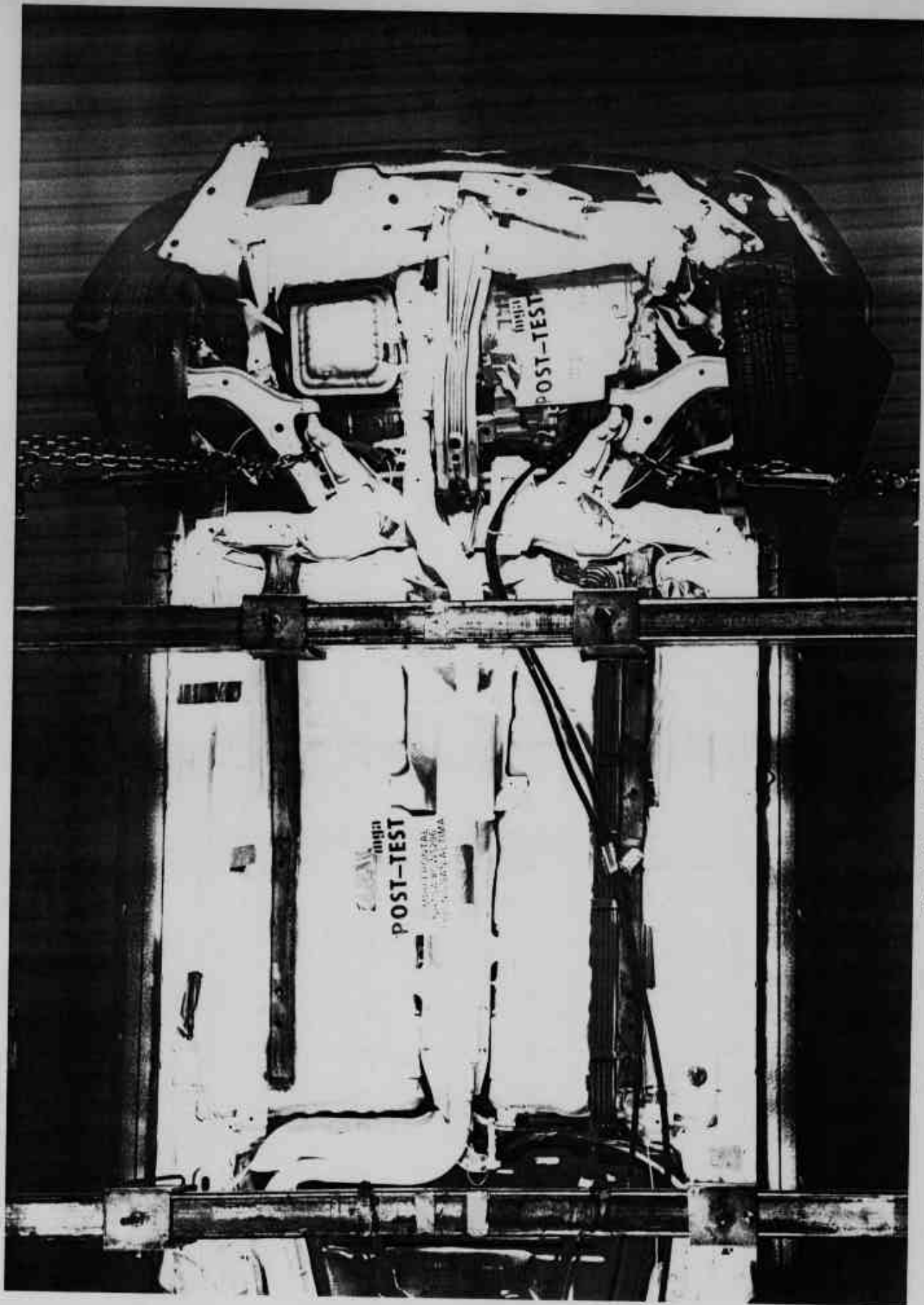


Photo No. A-14 - Post-Test Front Underbody View

A-14

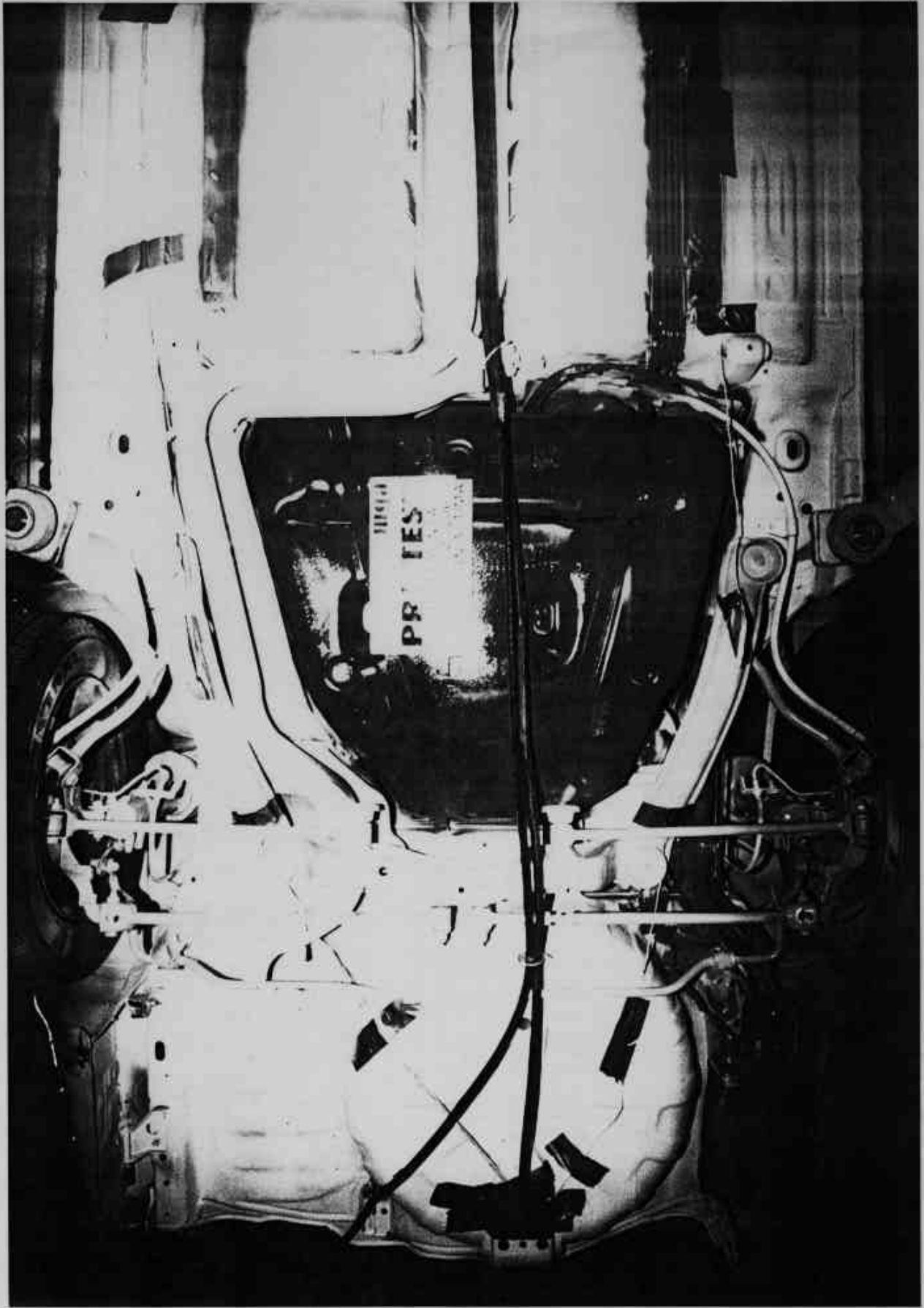


Photo No. A-15 - Pre-Test Rear Underbody View

A-15

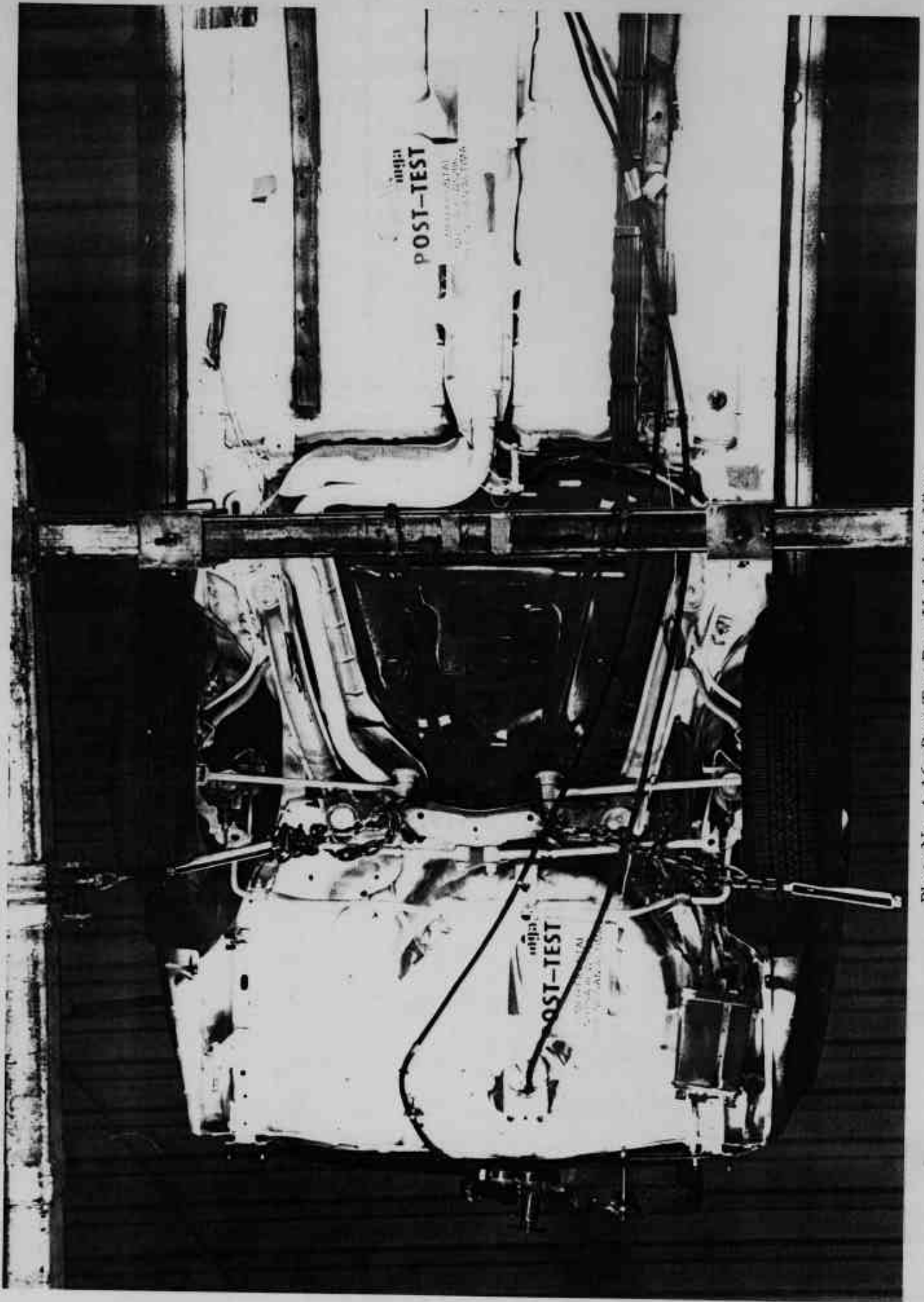


Photo No. A-16 - Post-Test Rear Underbody View

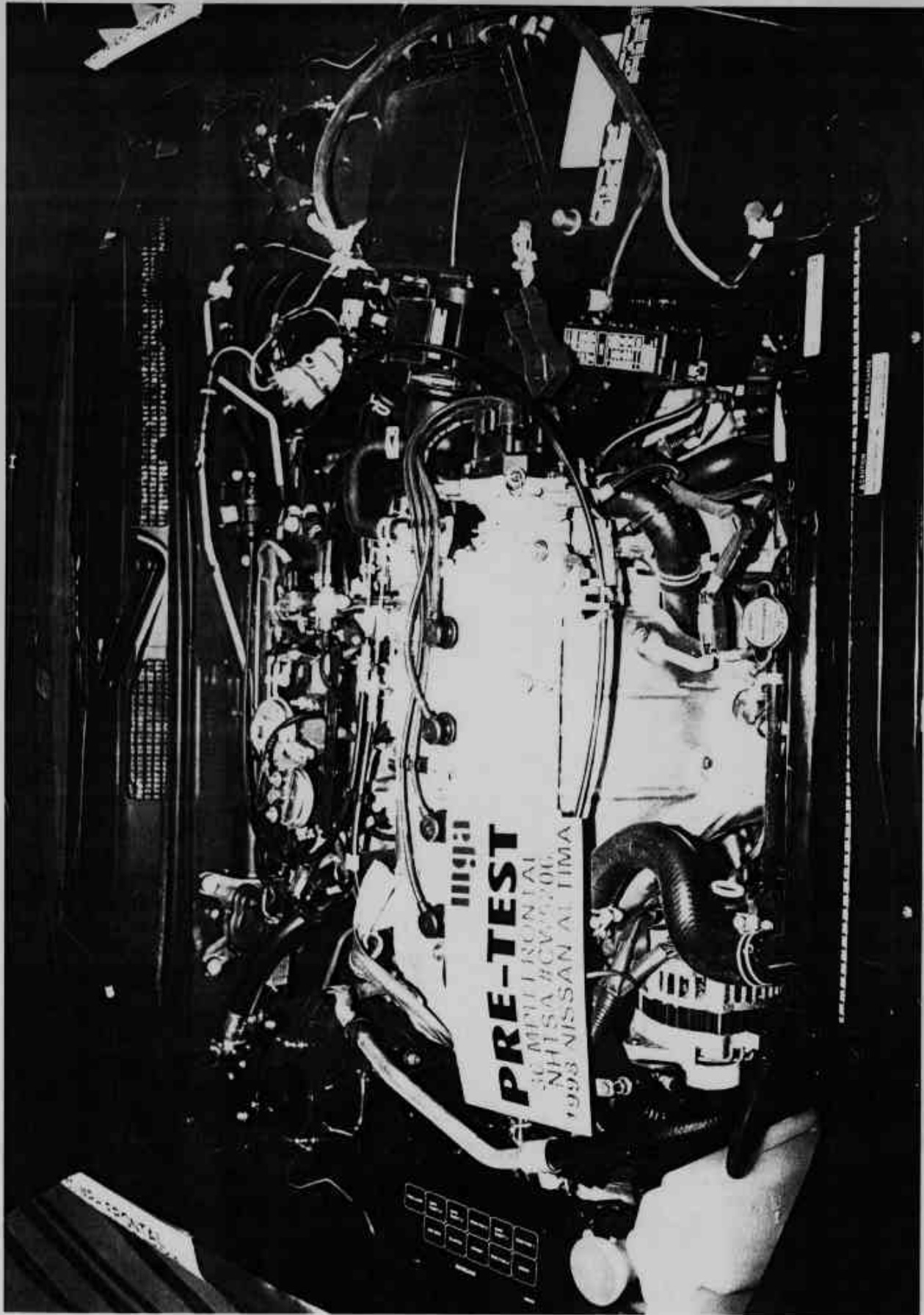


Photo No. A-17 - Pre-Test Engine Compartment View

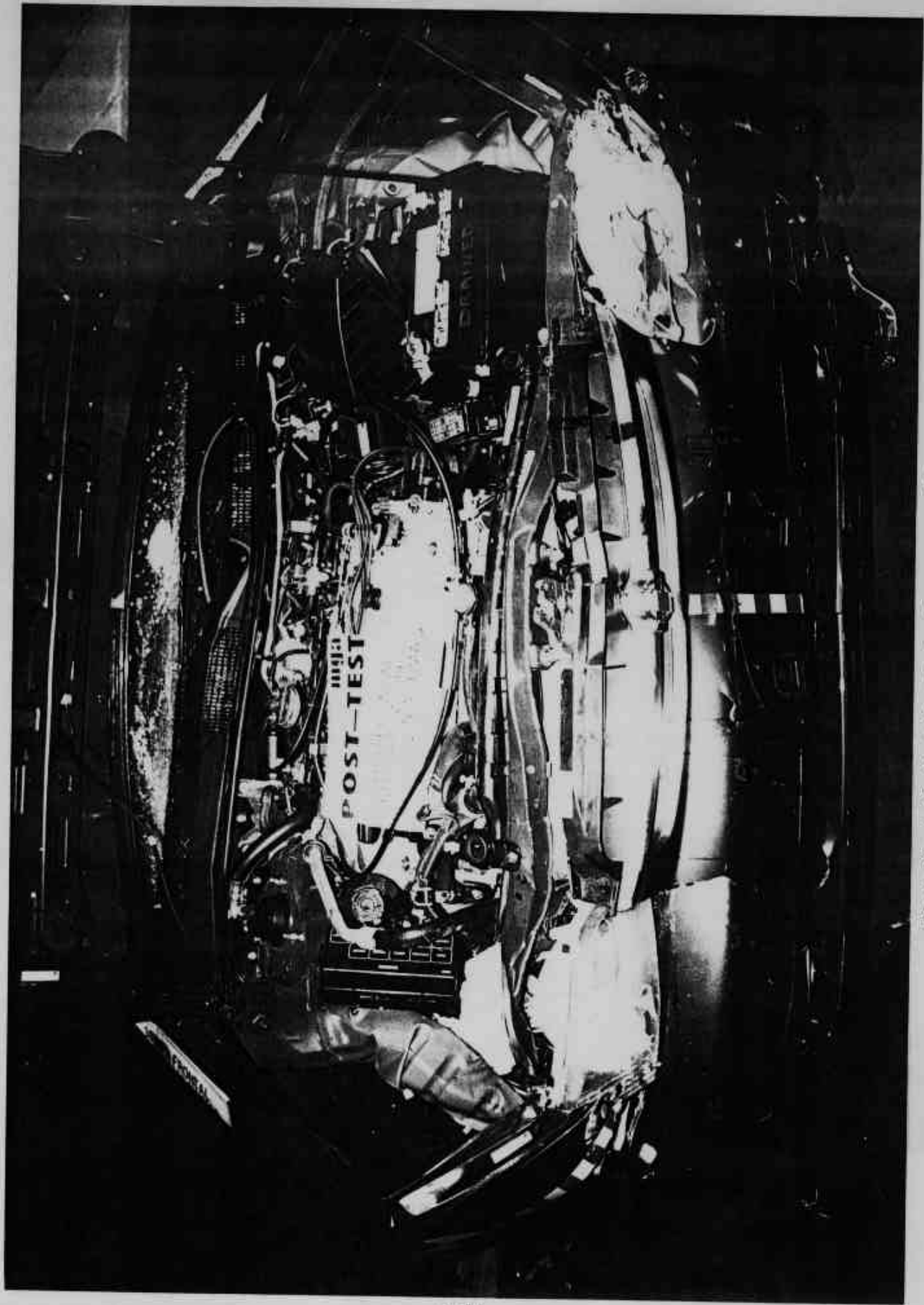


Photo No. A-18 - Post-Test Engine Compartment View

A-18

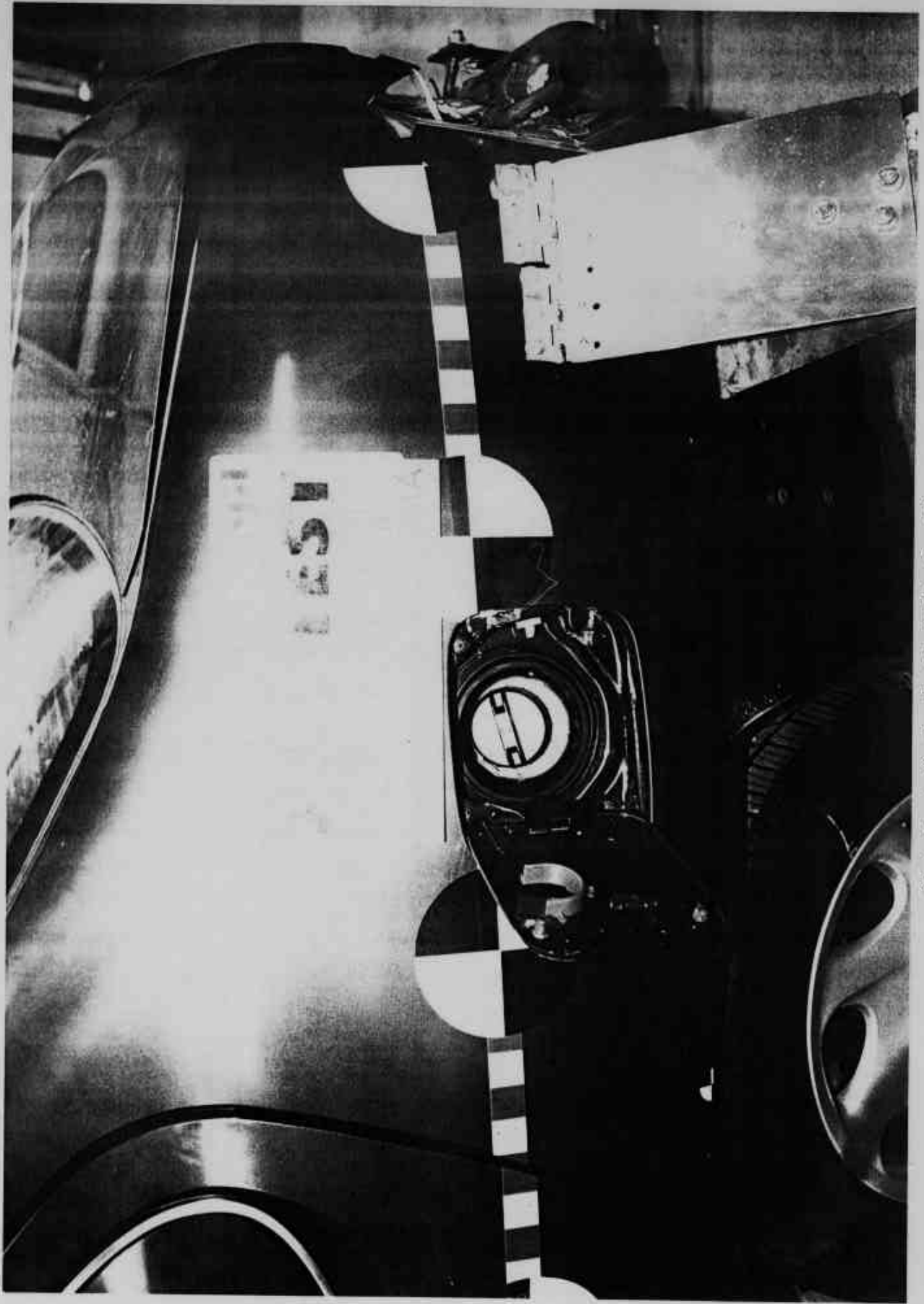
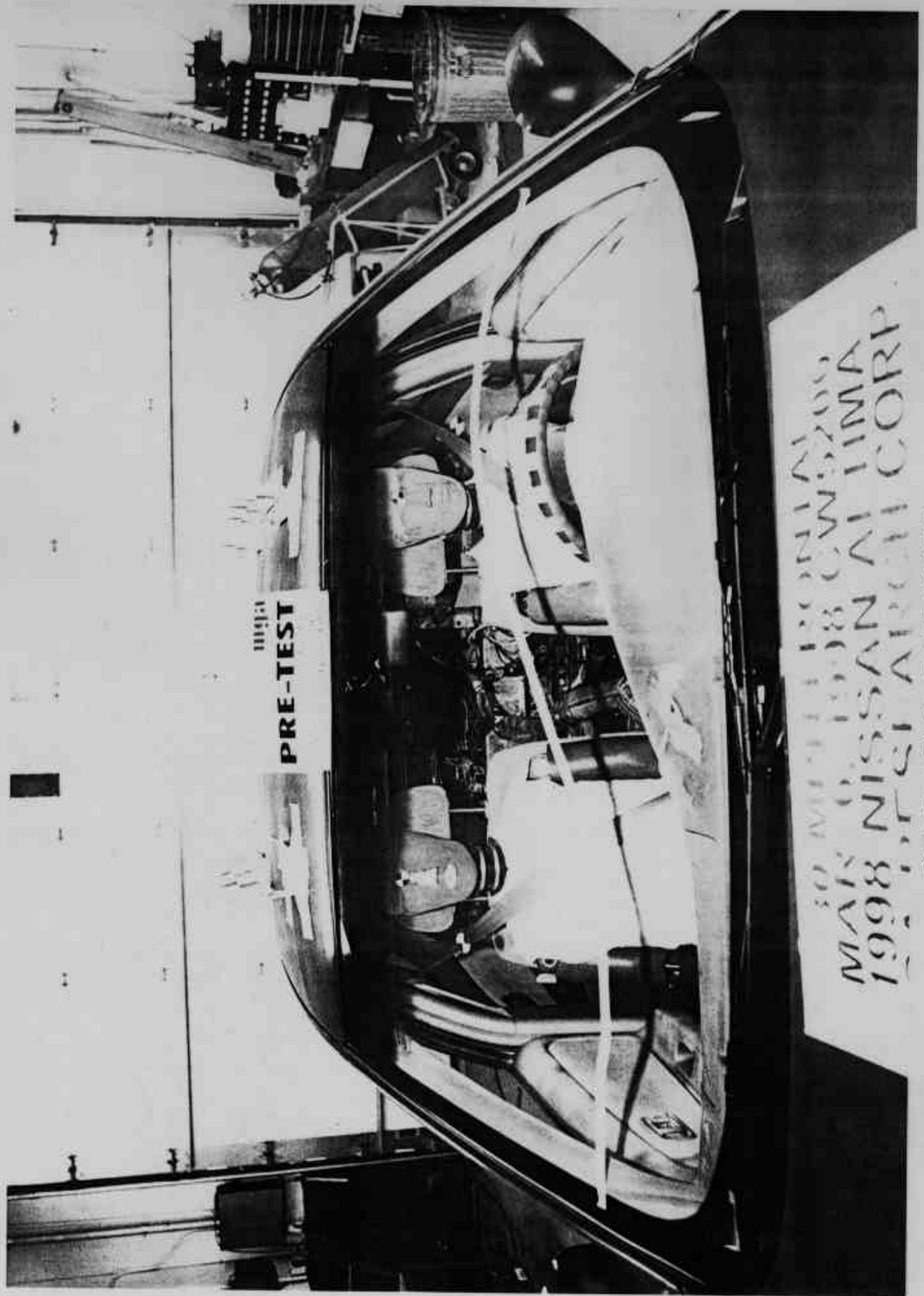


Photo No. A-19 - Pre-Test Fuel Filler Cap View

A-19



30 MILLER BLVD. MANASSAS, VA 20108
MAK NISSAN AT LIMA
1998 NISSAN ALTIMA
PRE-TEST ALTIMA CORP.

Photo No. A-20 - Pre-Test Windshield View

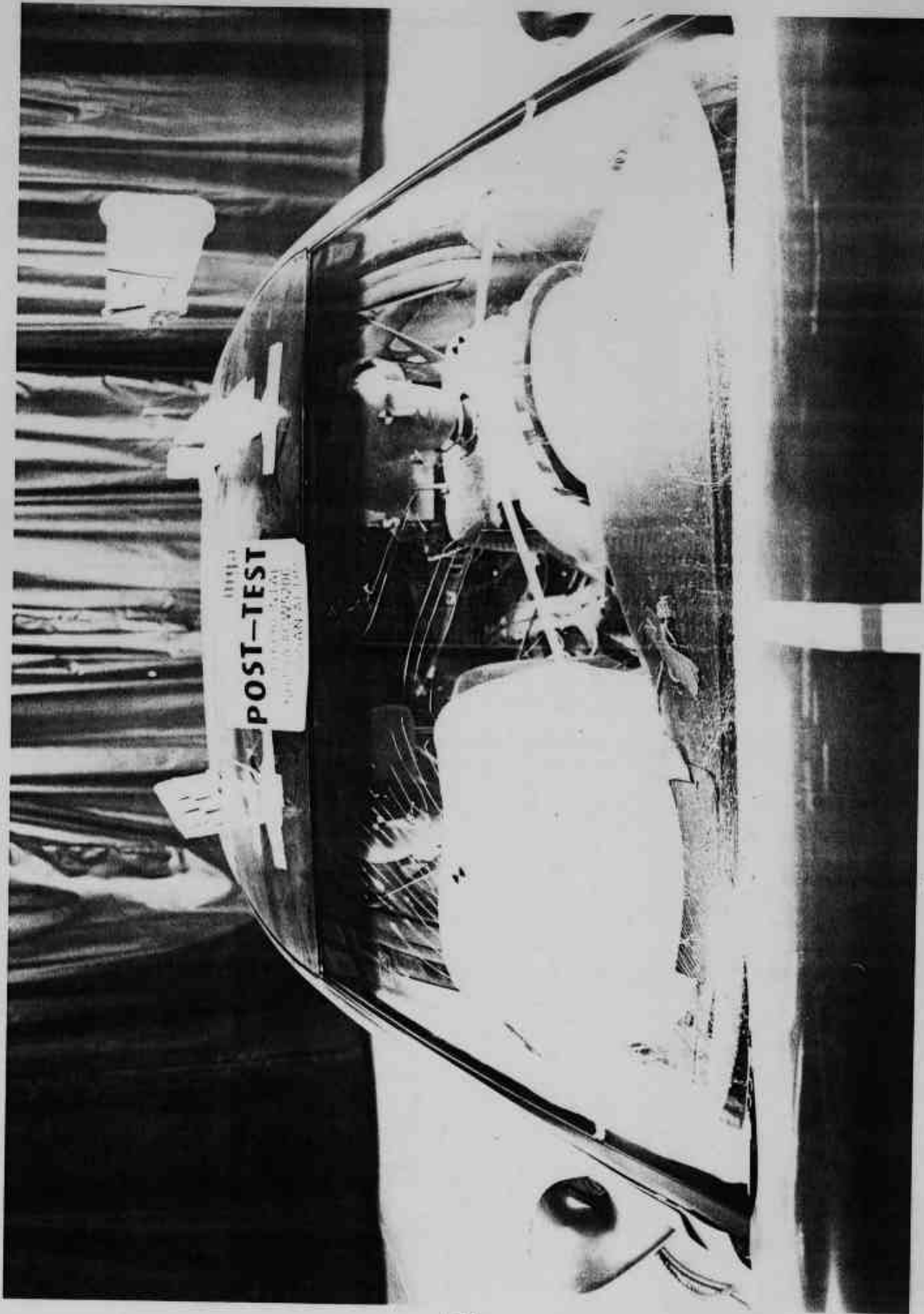


Photo No. A-21 - Post-Test Windshield View

A-21

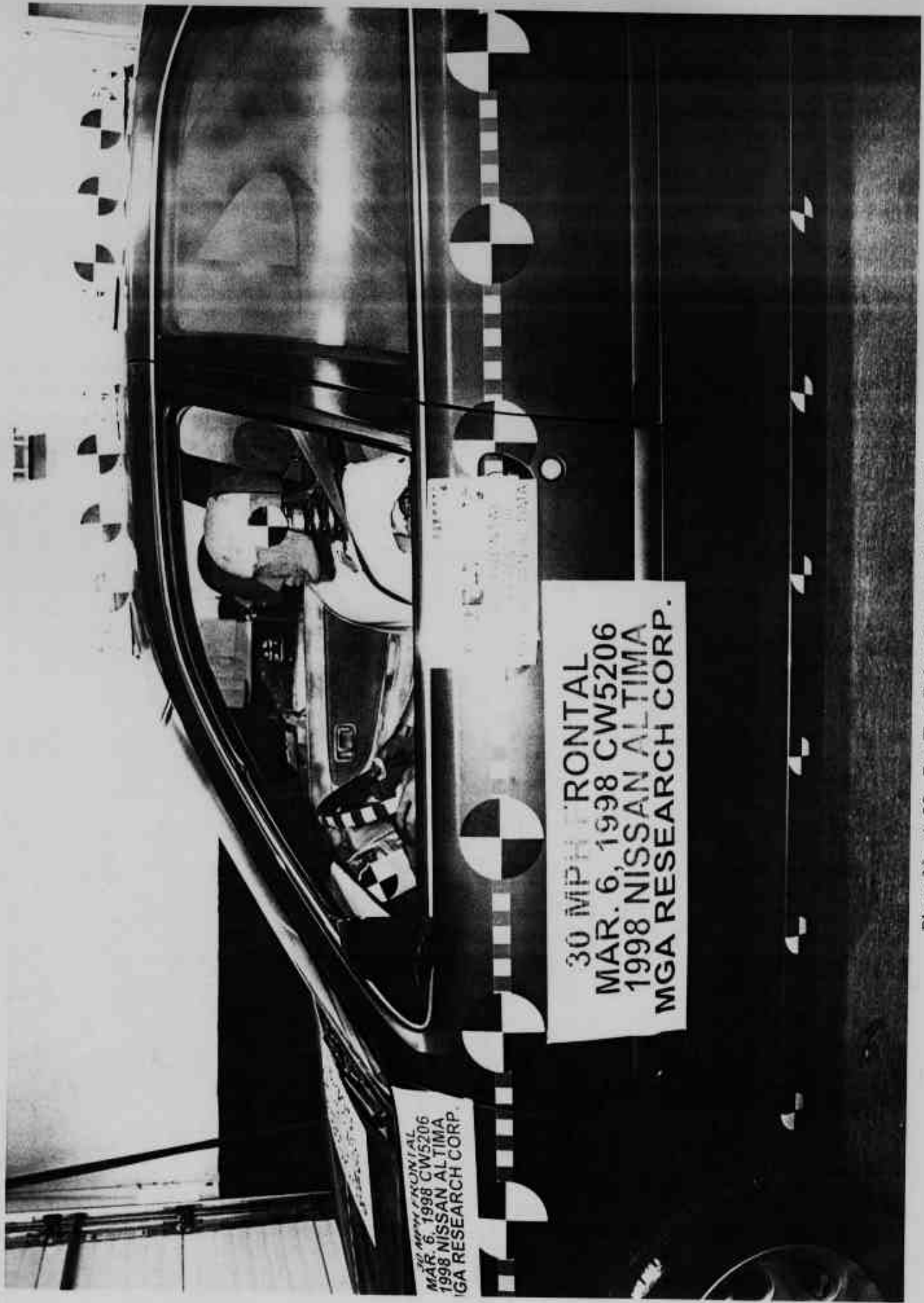
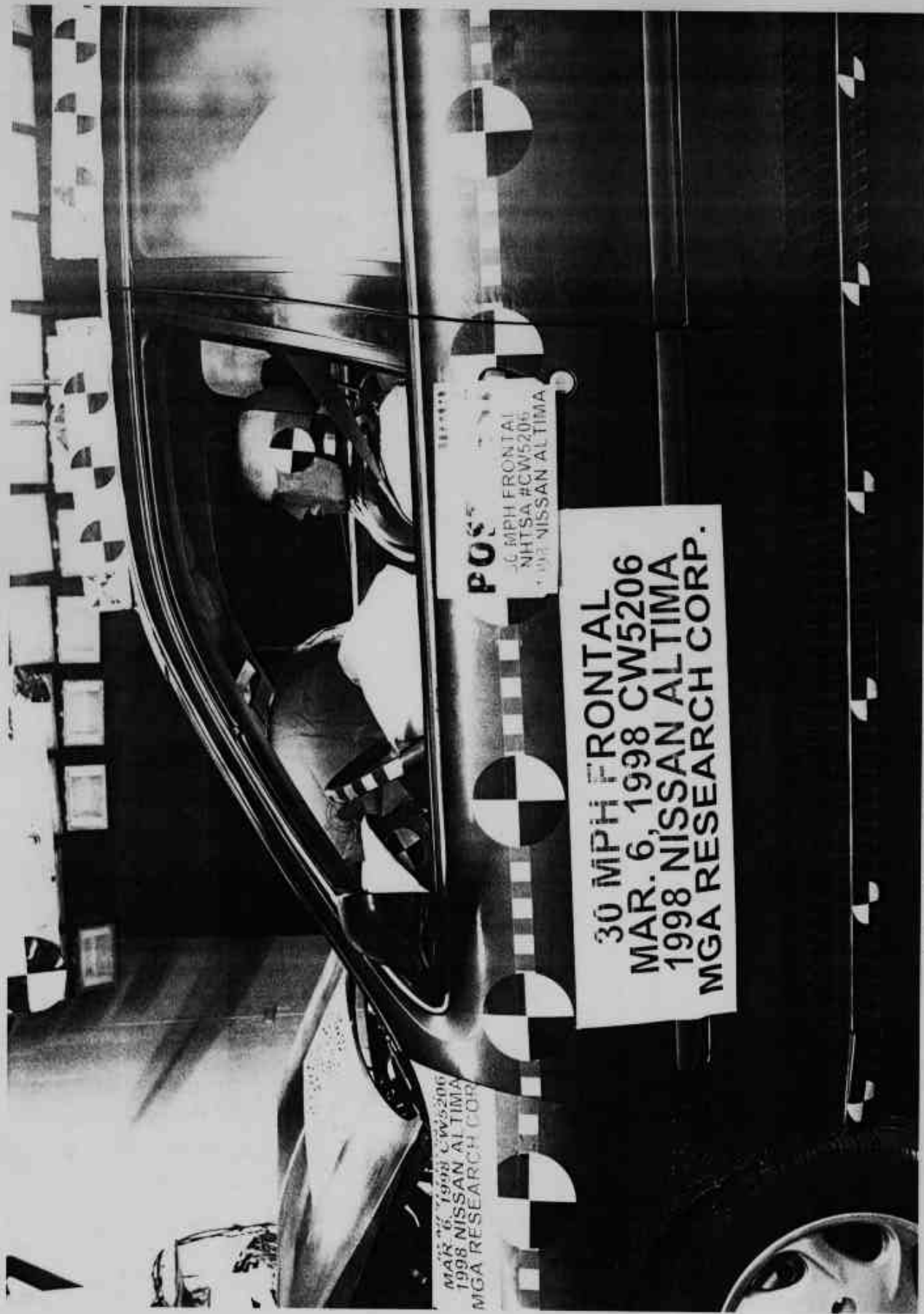
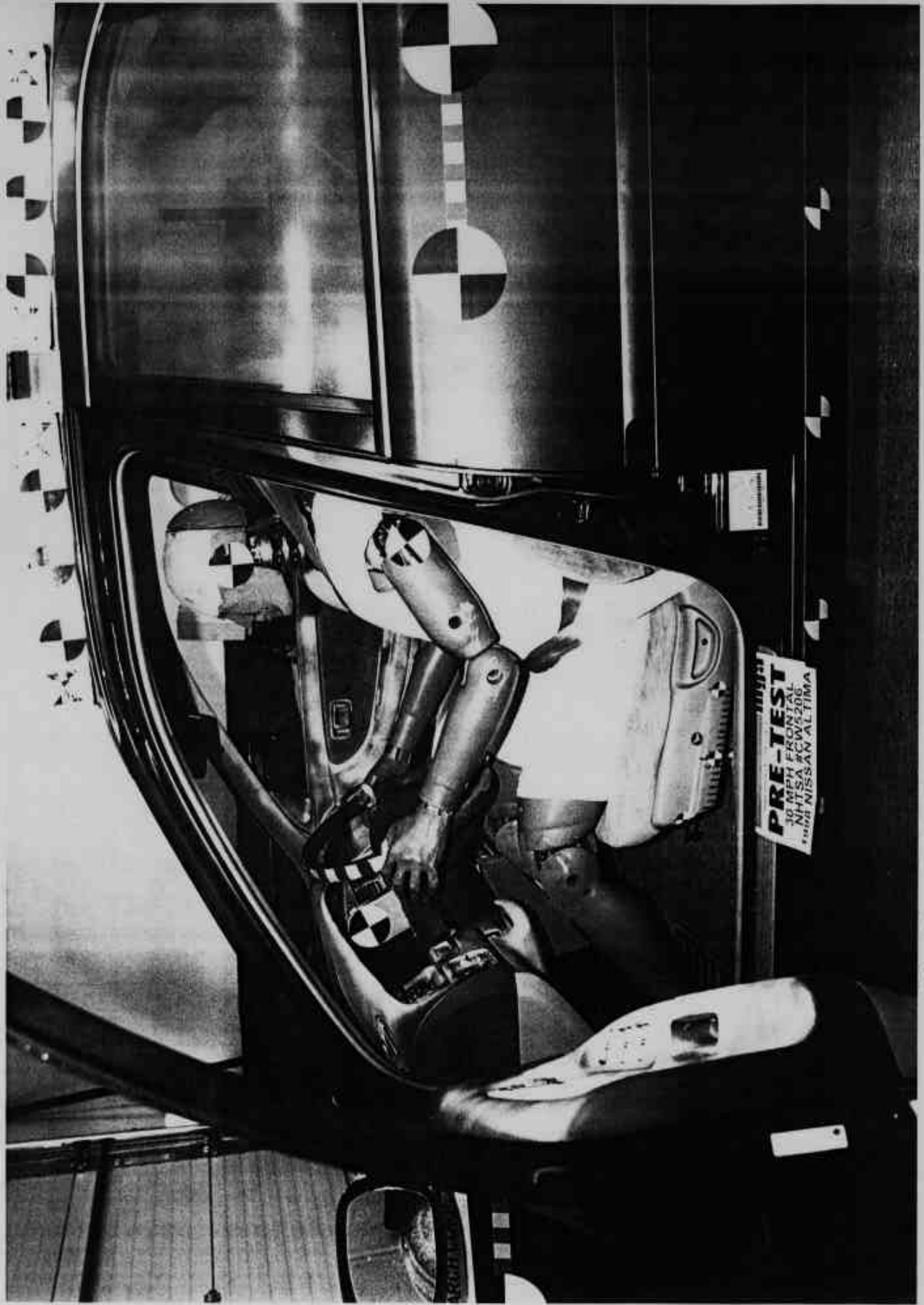


Photo No. A-22 - Pre-Test Driver Dummy Position View



A-23

Photo No. A-23 - Post-Test Driver Dummy Position View



A-24

Photo No. A-24 - Pre-Test Driver Dummy Position View (Door Open)



Photo No. A-25 - Post-Test Driver Dummy Position View (Door Open)

A-25

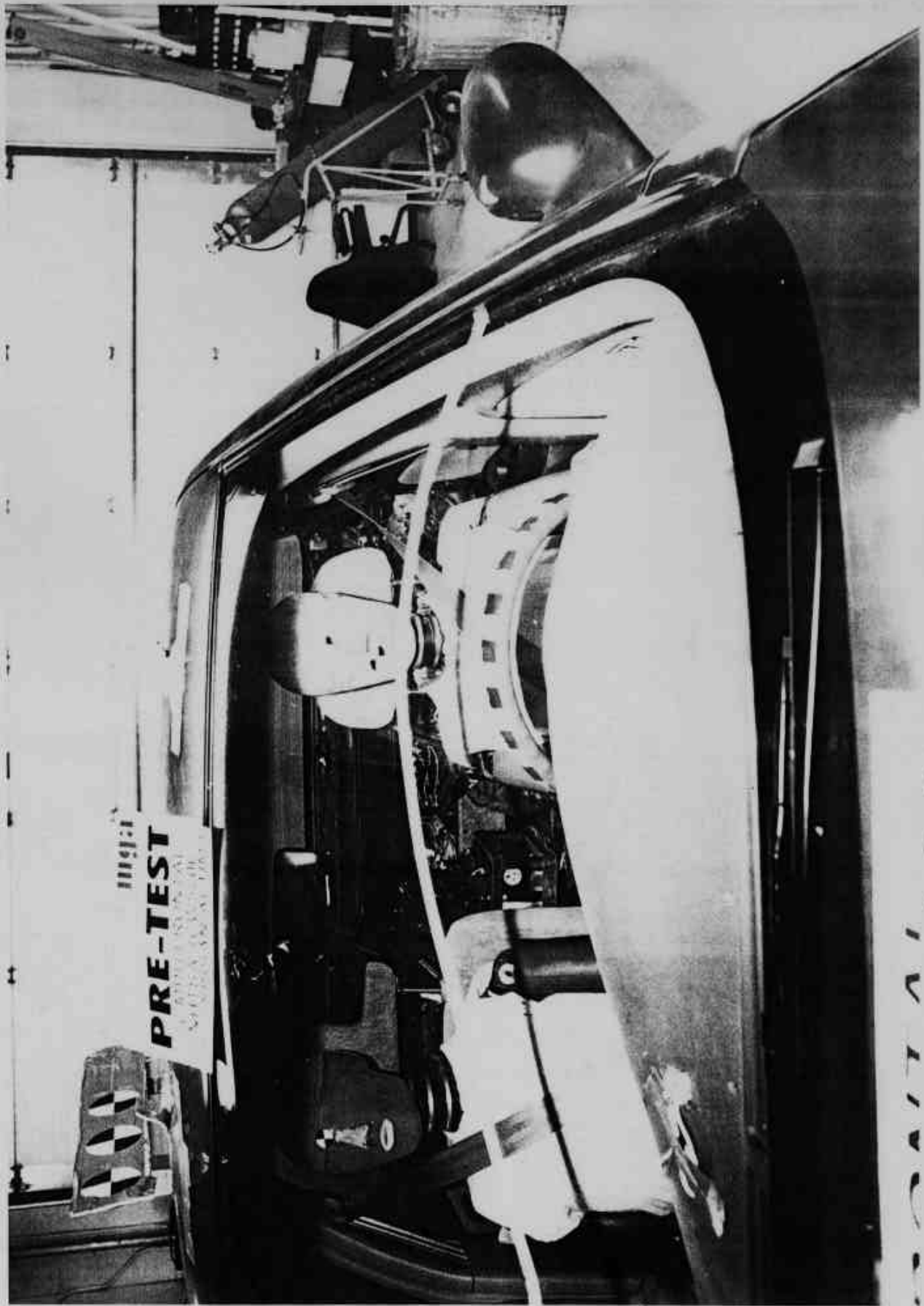


Photo No. A-26 - Pre-Test Driver Windshield View

A-26

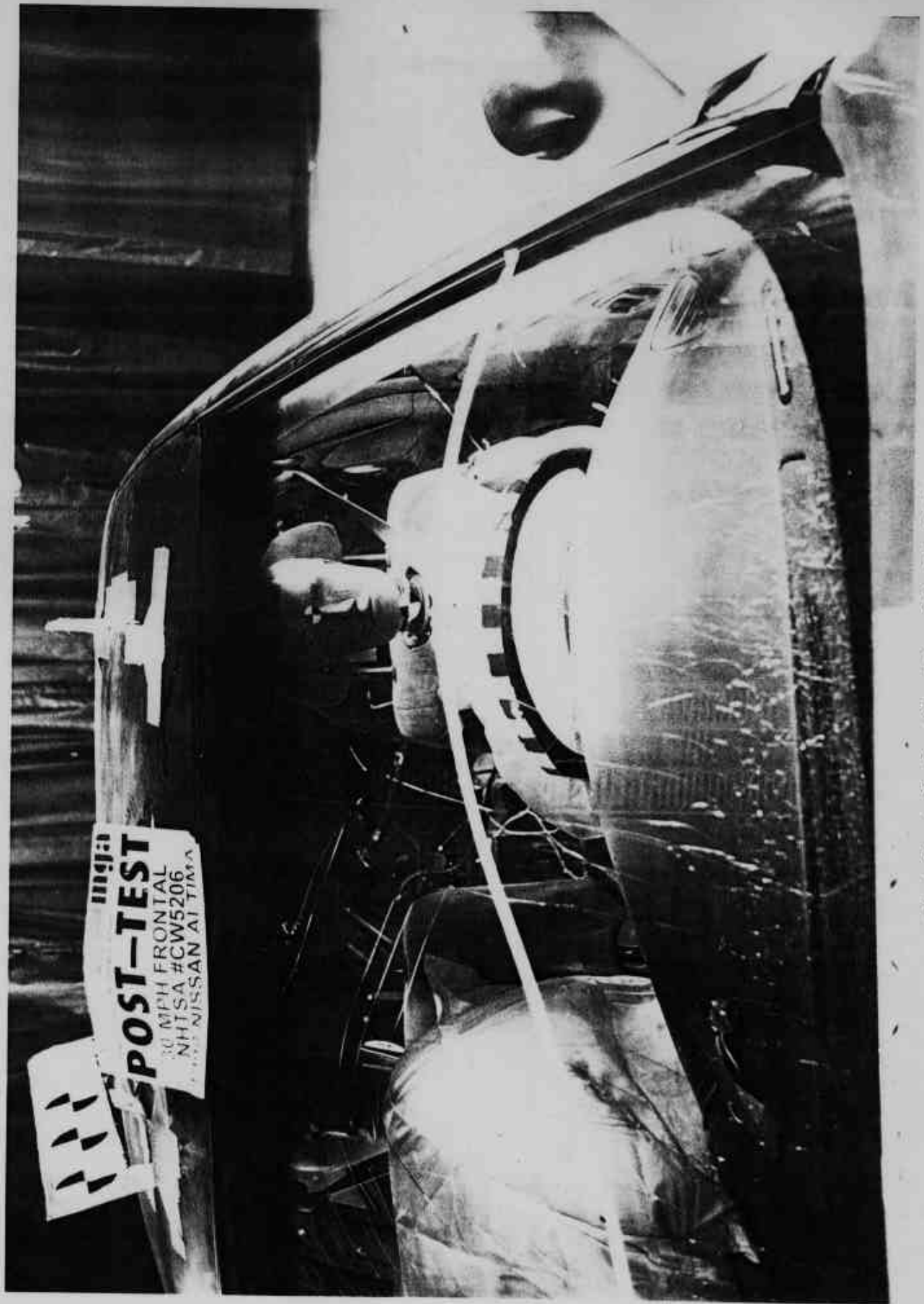


Photo No. A-27 - Post-Test Driver Windshield View

A-27

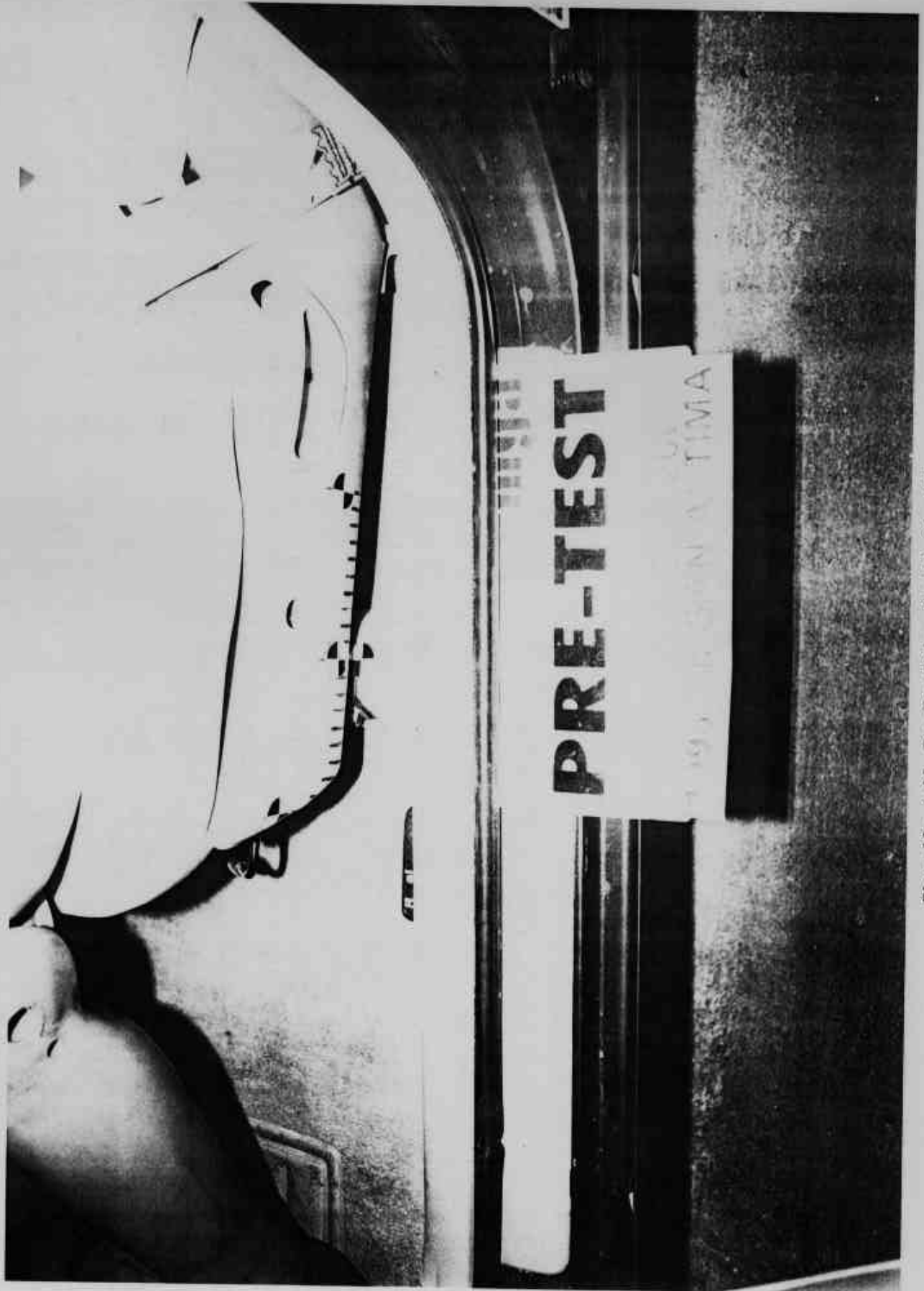


Photo No. A-28 - Pre-Test Driver Seat Position View



Photo No. A-29 - Post-Test Driver Seat Position View



Photo No. A-30 - Pre-Test Driver Knee Bolster View

A-30



Photo No. A-31 - Post-Test Driver Knee Bolster View



Photo No. A-32 - Post-Test Driver Airbag View



Photo No. A-33 - Post-Test Driver Head Contact View (headrest)

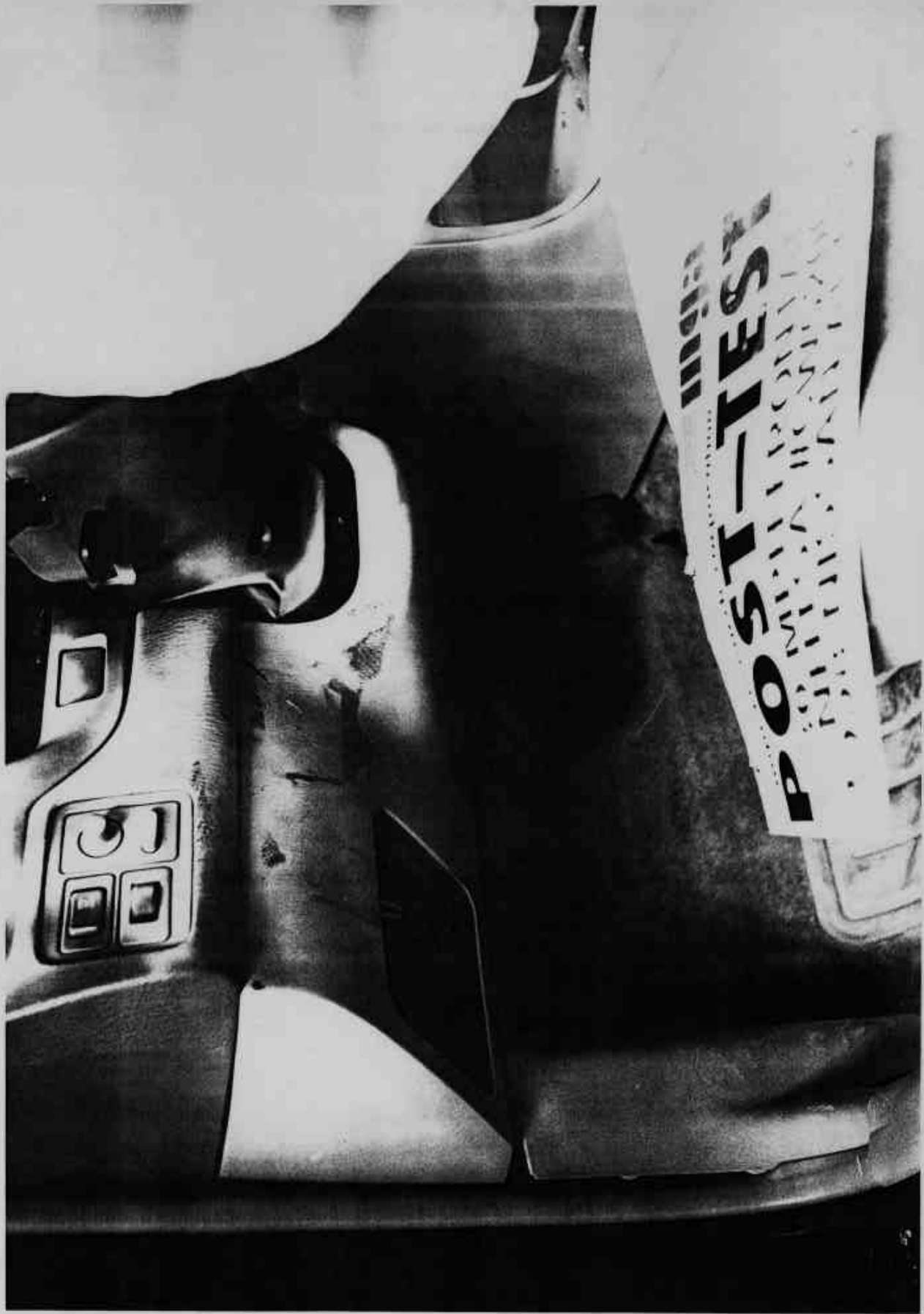


Photo No. A-34 - Post-Test Driver Knee Contact View (left side)



Photo No. A-35 - Post-Test Driver Knee Contact View (right side)



A-36

Photo No. A-36 - Pre-Test Passenger Dummy Position View

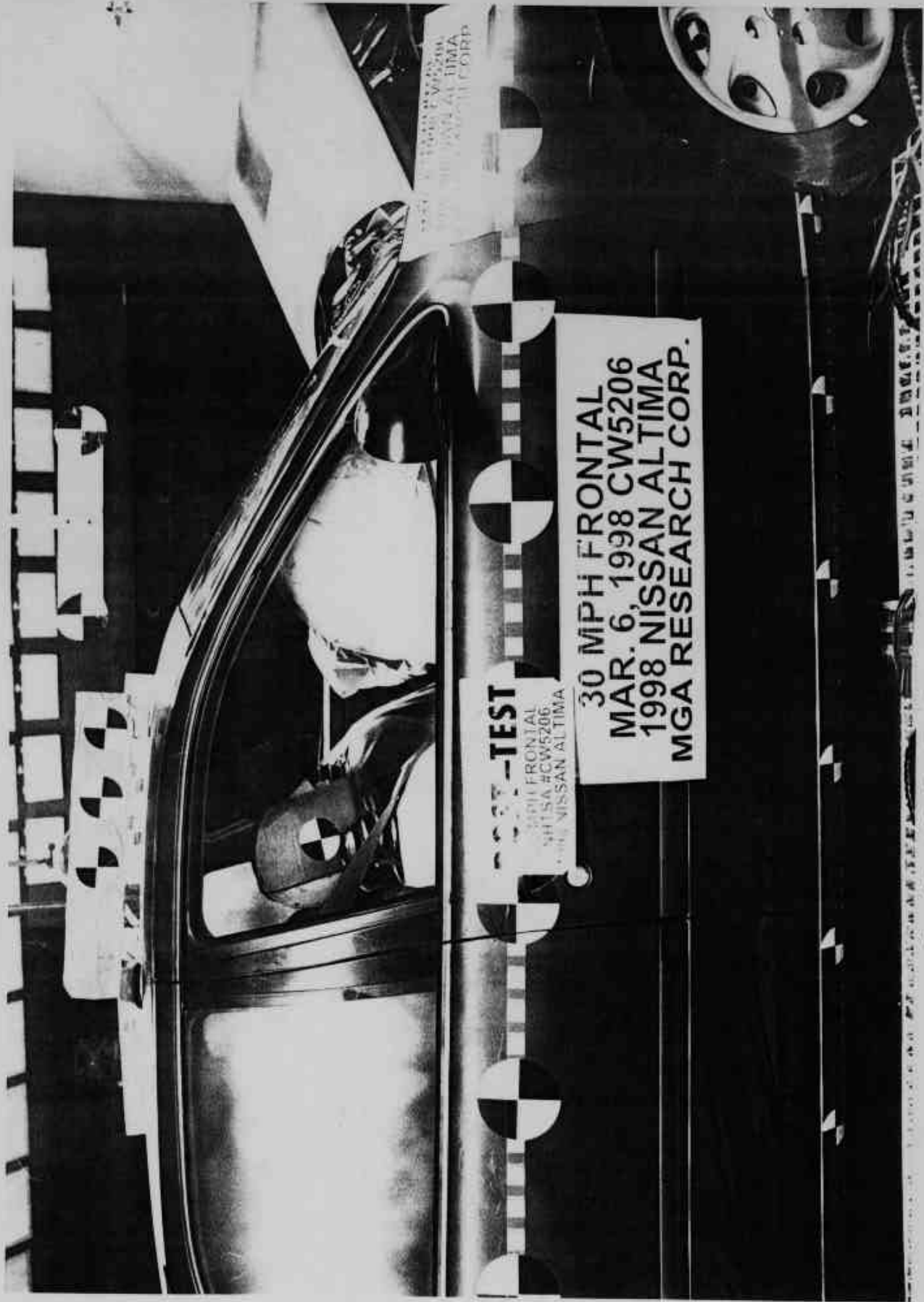


Photo No. A-37 - Post-Test Passenger Dummy Position View

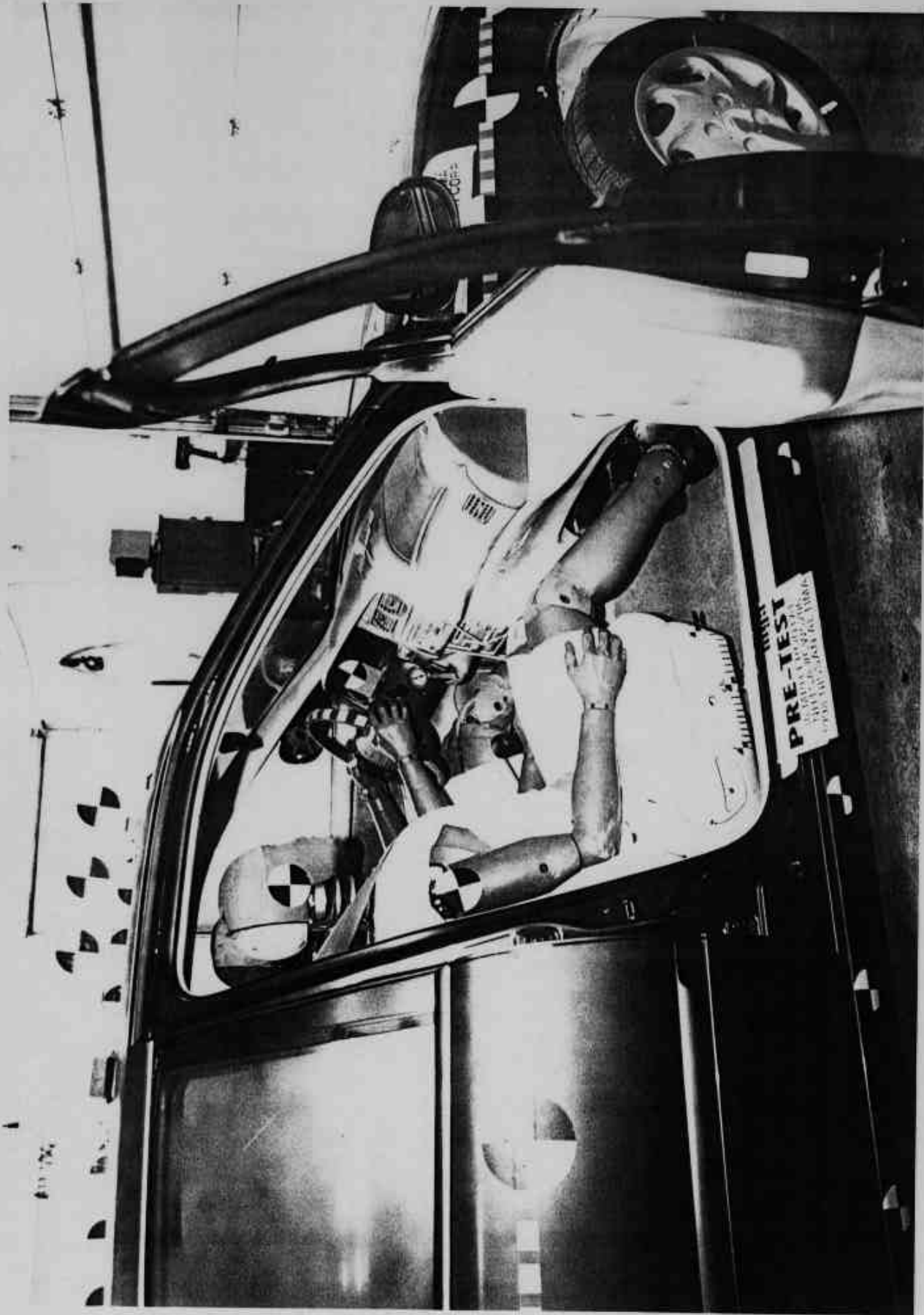


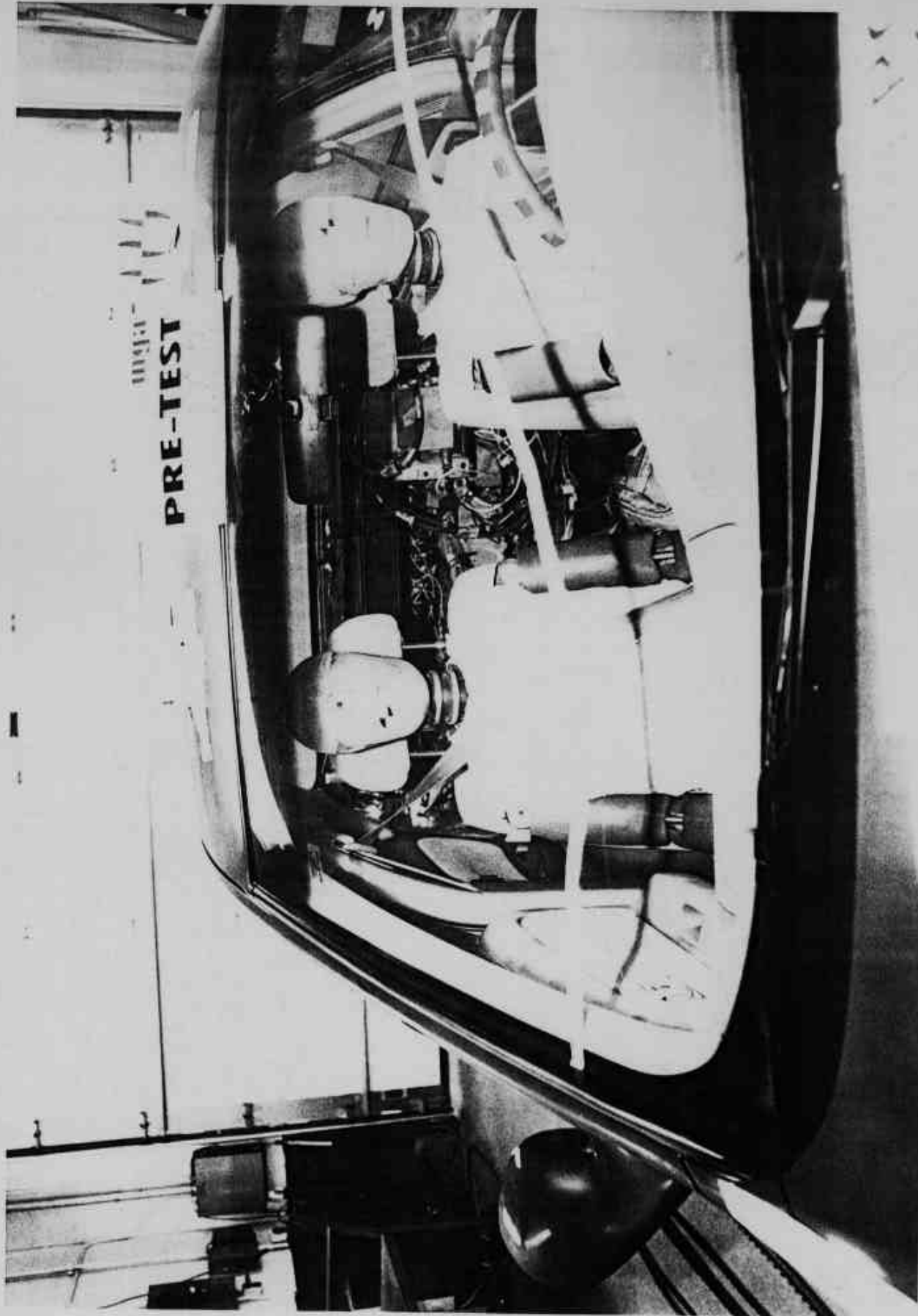
Photo No. A-38 - Pre-Test Passenger Dummy Position View (Door Open)

A-38



Photo No. A-39 - Post-Test Passenger Dummy Position View (Door Open)

A-39



PRE-TEST

Photo No. A-40 - Pre-Test Passenger Windshield View

A-40

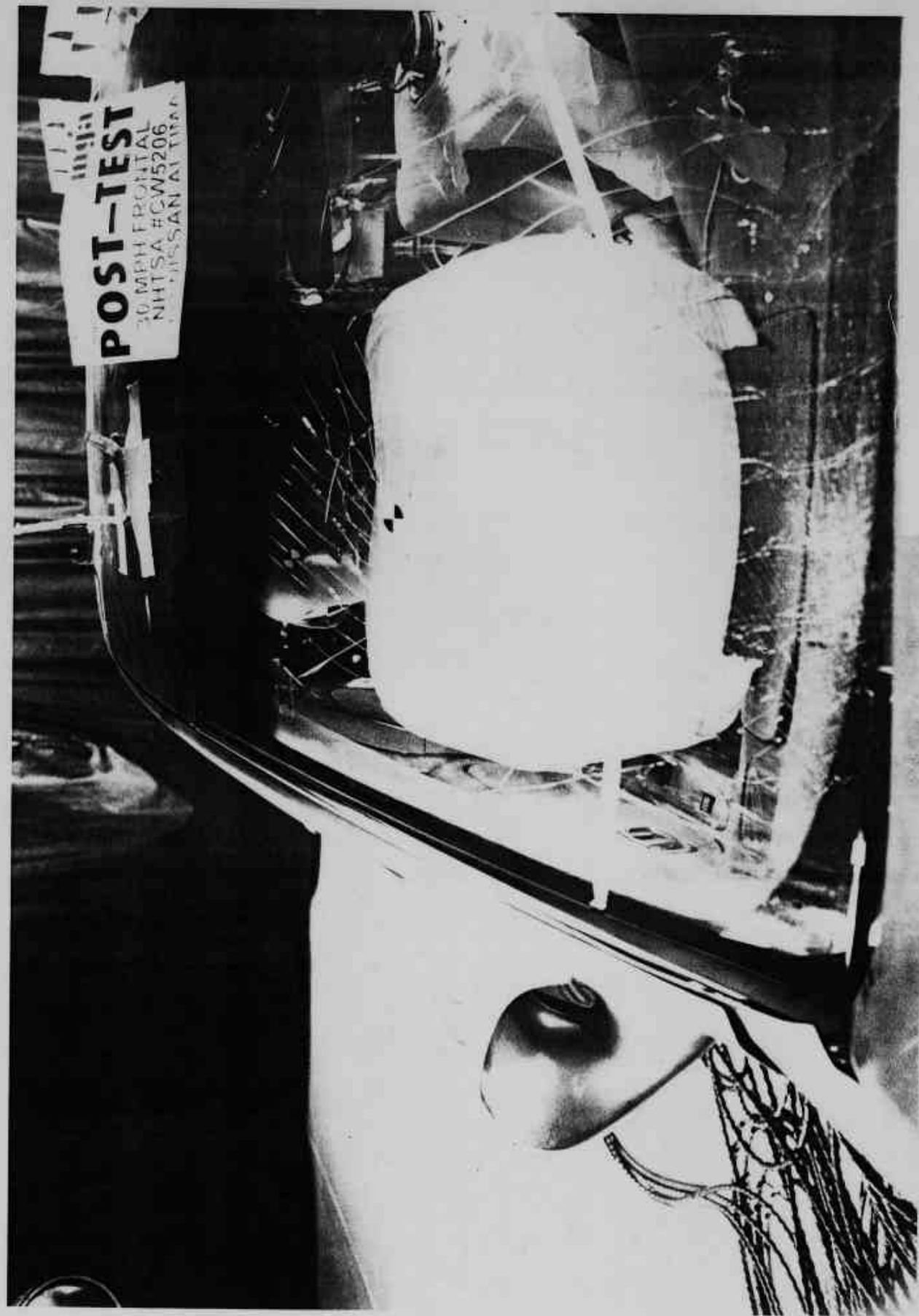


Photo No. A-41 - Post-Test Passenger Windshield View

A-41



Photo No. A-42 - Pre-Test Passenger Seat Position View



POST-TEST
30 MPH FRONTAL
NHTSA #CW5206
1998 NISSAN ALTIMA

Photo No. A-43 - Post-Test Passenger Seat Position View



Photo No. A-44 - Pre-Test Passenger Dummy Knee Bolster View



Photo No. A-45 - Post-Test Passenger Dummy Knee Bolster View

A-45



Photo No. A-46 - Post-Test Passenger Dummy Airbag View



Photo No. A-47 - Post-Test Passenger Dummy Head Contact View (headrest)



Photo No. A-48 - Post-Test Passenger Dummy Knee Contact View

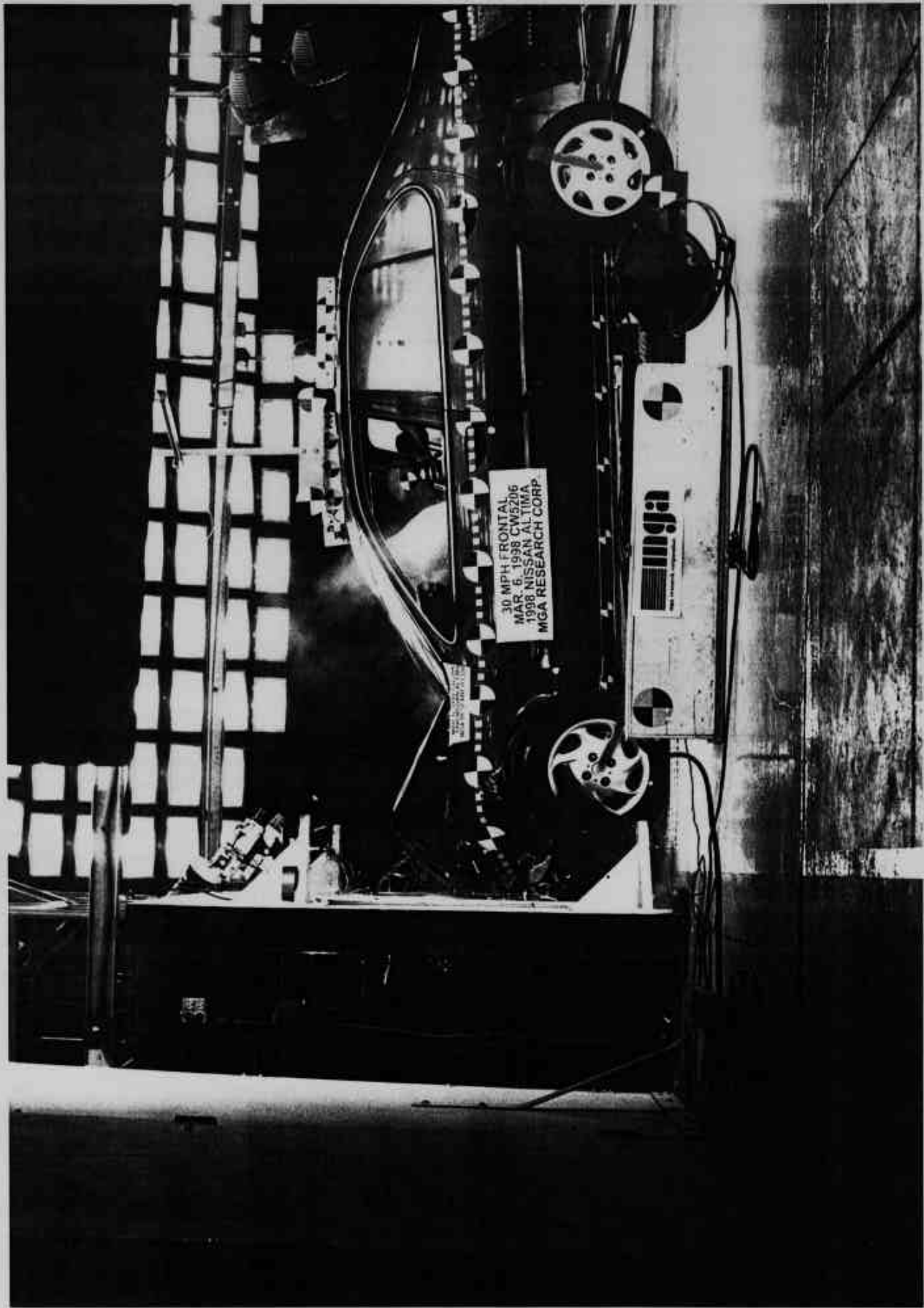


Photo No. A-49 - Vehicle Impact

MANUFACTURED BY NISSAN MOTOR CO., LTD.

DATE 05/27 1986
COUNTRY OF ORIGIN JAPAN
MODEL 8152 LE 3DR BR. 1983 LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR
VEHICLE SAFETY, BUMPER AND THEFT PREVENTION STANDARDS
IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

SEE OWNERS MANUAL FOR ADDITIONAL INFORMATION.

VIN: 1NADL01D8WC141986 PASSENGER CAR ENGINE

COLOR TRIM REAR FOUR WHEELS
CS2 C REAR FOUR WHEELS 825 82000

MODEL: 8859L BR-EUR



Photo No. A-50 - Vehicle Certification Label

VEHICLE CAPACITY WEIGHT POIDS UTILE DU VEHICULE		390kg 860 lbs	SEATING CAPACITY NOMBRE DE PLACES	FRONT 2 AVANT	REAR 3 ARRIERE	TOTAL TOTAL	5	SPARE TIRE ROUE DE SECOURS	KPA PSI	420 60
RECOMMENDED COLD TIRE INFLATION PRESSURE PRESSION DE GONFLAGE RECOMMANDEE DES PNEUS FROIDS		FRONT AVANT		REAR ARRIERE		200 kPa 29 psi		T-125-70015		
TIRE SIZE DIMENSIONS		FRONT AVANT		REAR ARRIERE		210 kPa 30 psi		DO NOT USE IN EXCESS OF 50 MPH (80 KM/H) MAXIMUM FOR SELECTIONS A UNE VITESSE UTILISATION SUP 50 MIL 50 MPH (80 KM/H) SE RECOMMENDE POUR LES BUS SCHWABER		

Photo No. A-51 - Tire Placard

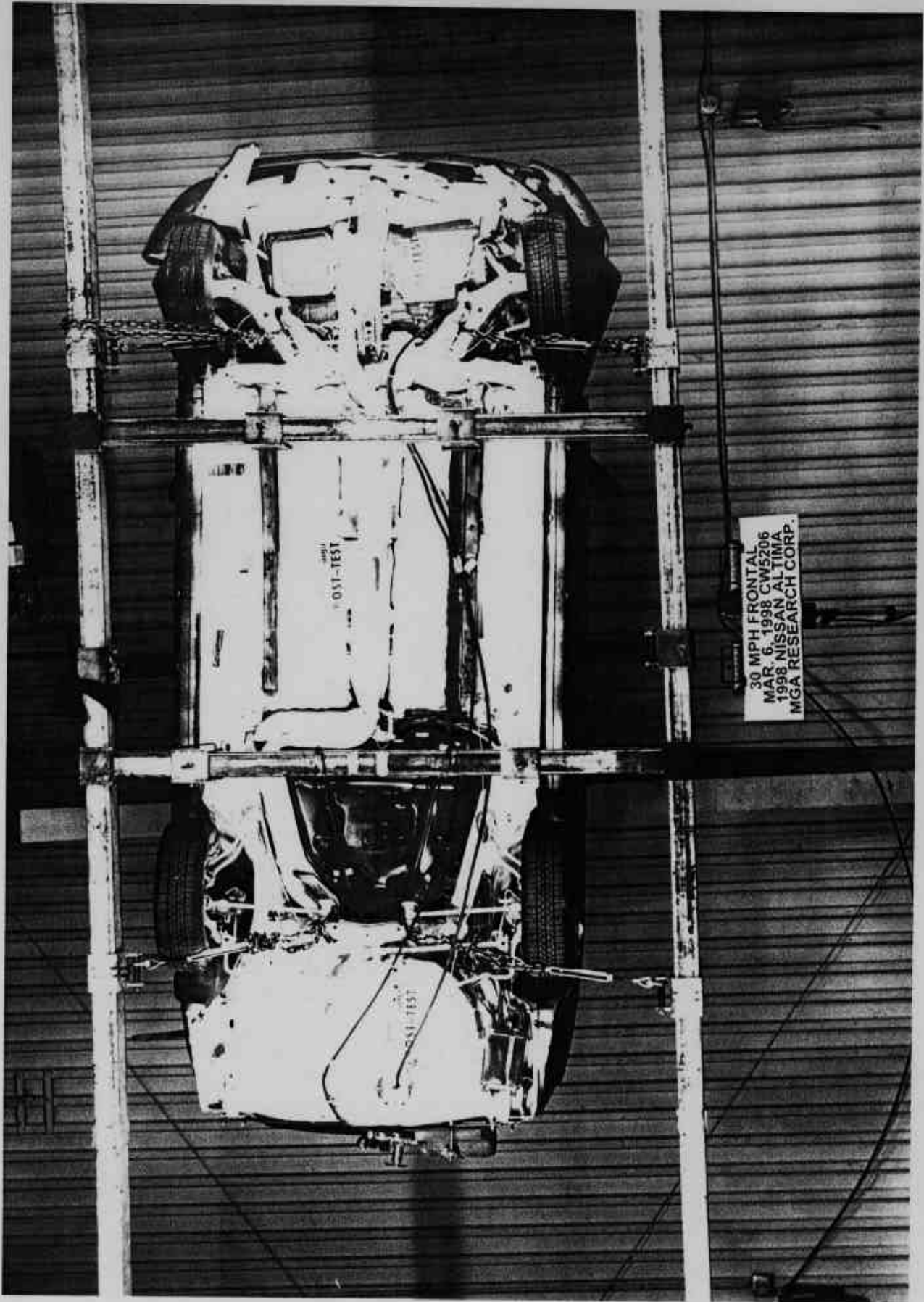
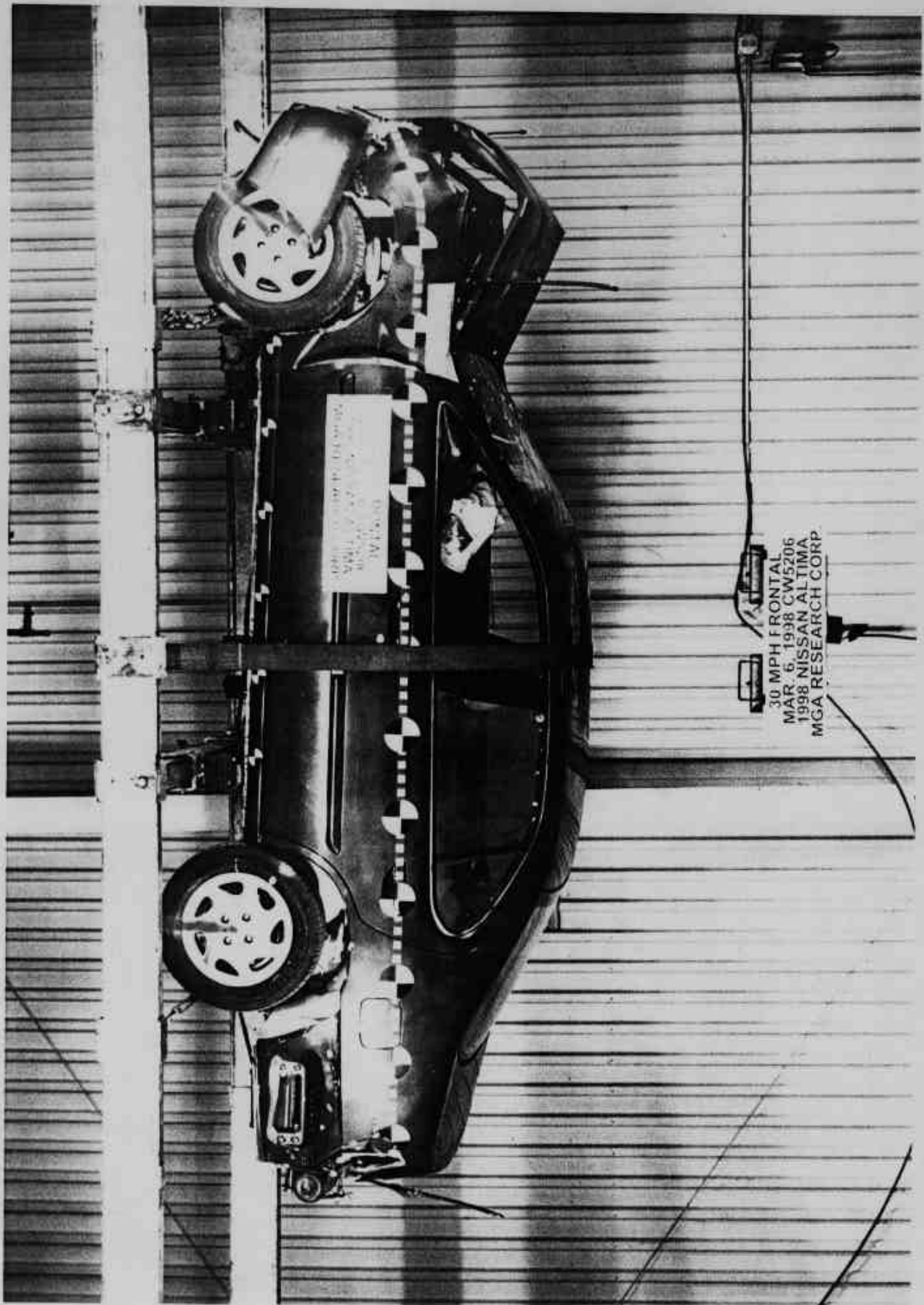


Photo No. A-52 - Rollover 90°



30 MPH FRONTAL
MAR. 6, 1998 CW5206
1998 NISSAN ALTIMA
MGA RESEARCH CORP.

30 MPH FRONTAL
MAR. 6, 1998 CW5206
1998 NISSAN ALTIMA
MGA RESEARCH CORP.

A-53

Photo No. A-53 - Rollover 180°

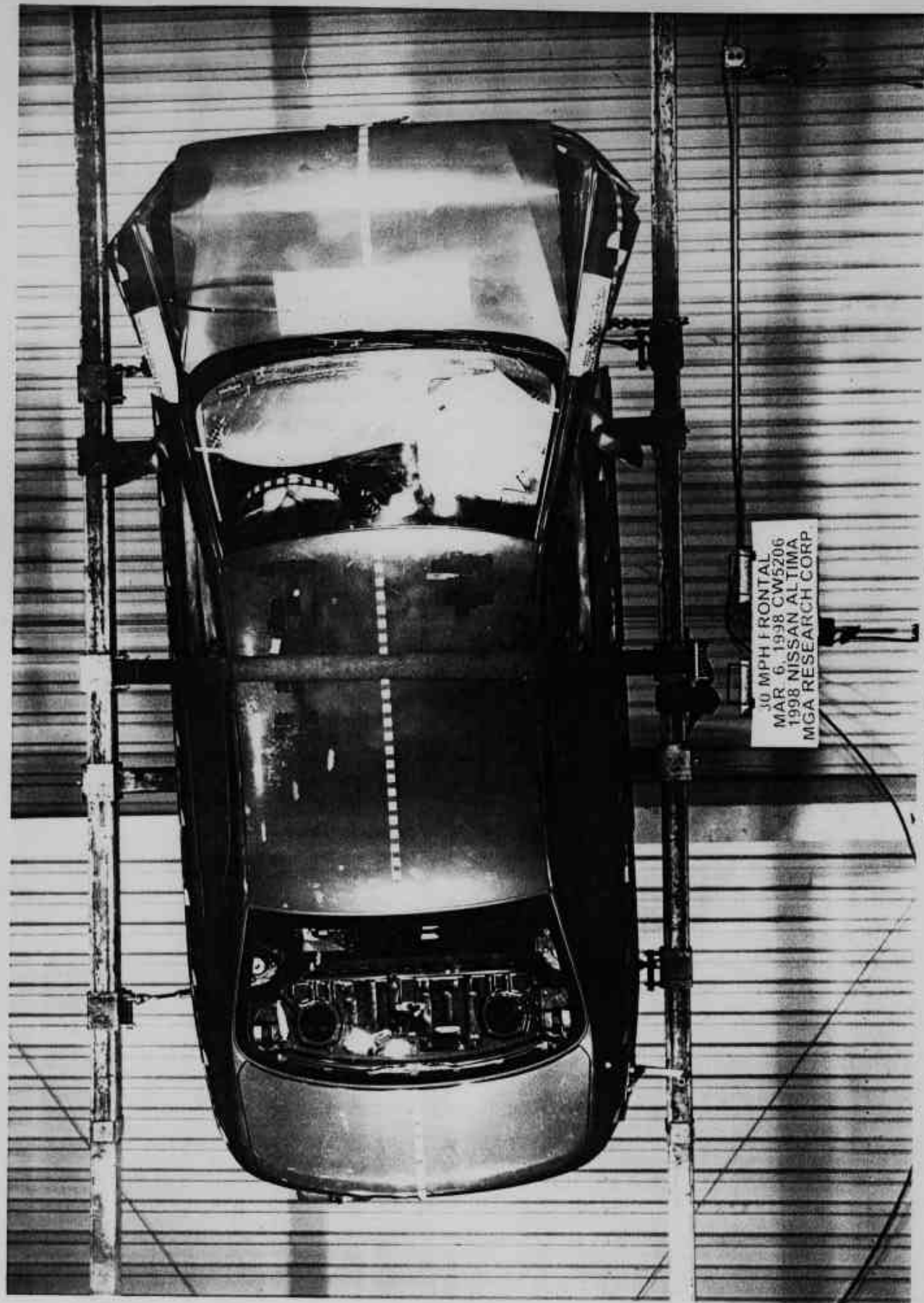
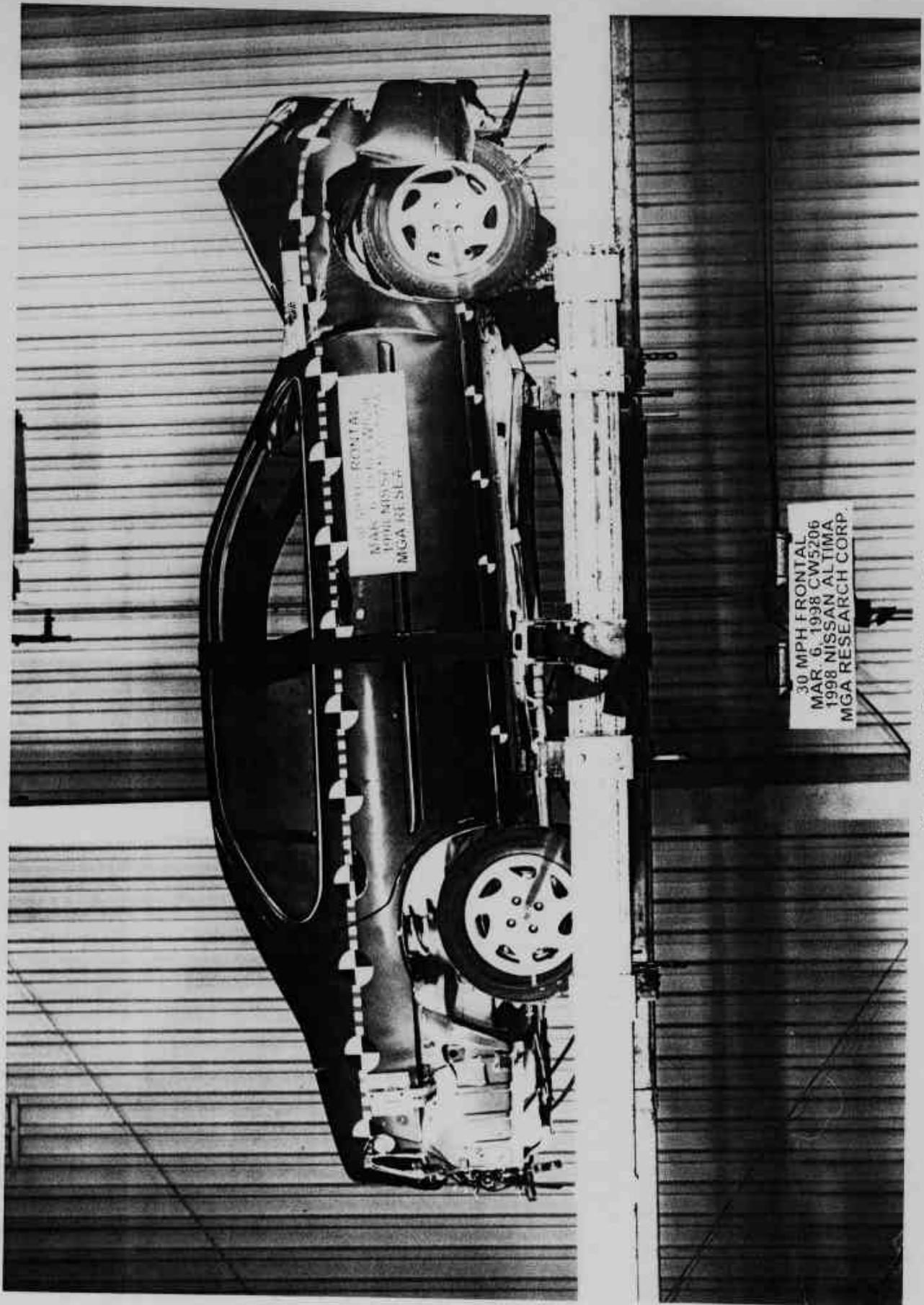


Photo No. A-54 - Rollover 270°

A-54



30 MPH FRONTAL
MAR. 6, 1998 CW5296
1998 NISSAN ALTIMA
MGA RESEARCH CORP.

30 MPH FRONTAL
MAR. 6, 1998 CW5296
1998 NISSAN ALTIMA
MGA RESEARCH CORP.

Photo No. A-55 - Rollover 360°

APPENDIX B
DATA PLOTS

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Figure B-48 - Trunk Z Acceleration vs. Time	B-48

* Data Not Valid After 42 msec.

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

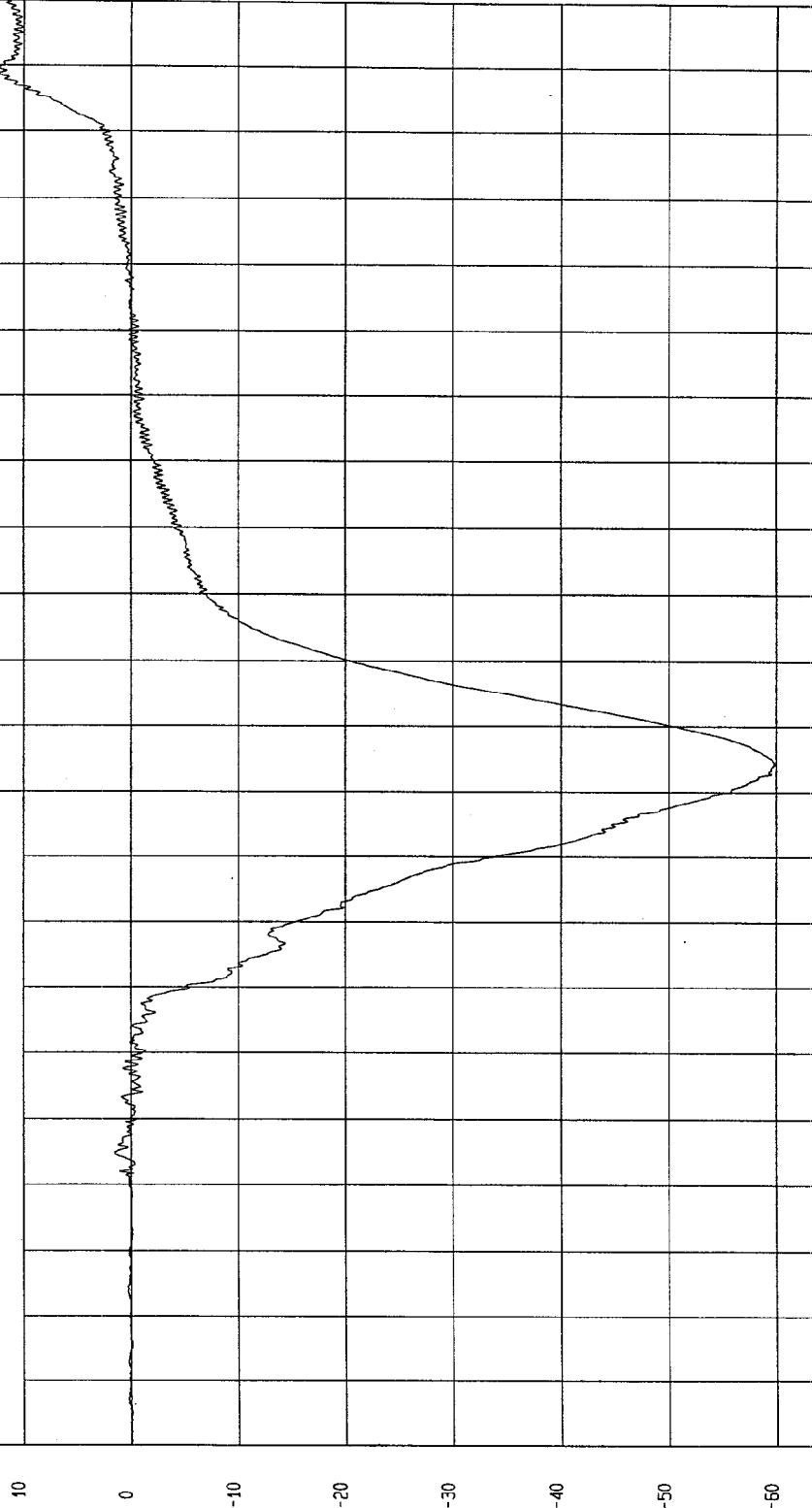
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -59.82 G'S at 84 msec

Maximum = 12.50 G'S at 190 msec

DRIVER HEAD X ACCELERATION

1 B98015AF.A12 Filterclass (1000)



MCA Research
03-06-1998 13:45

TIME (SECONDS)

G.S

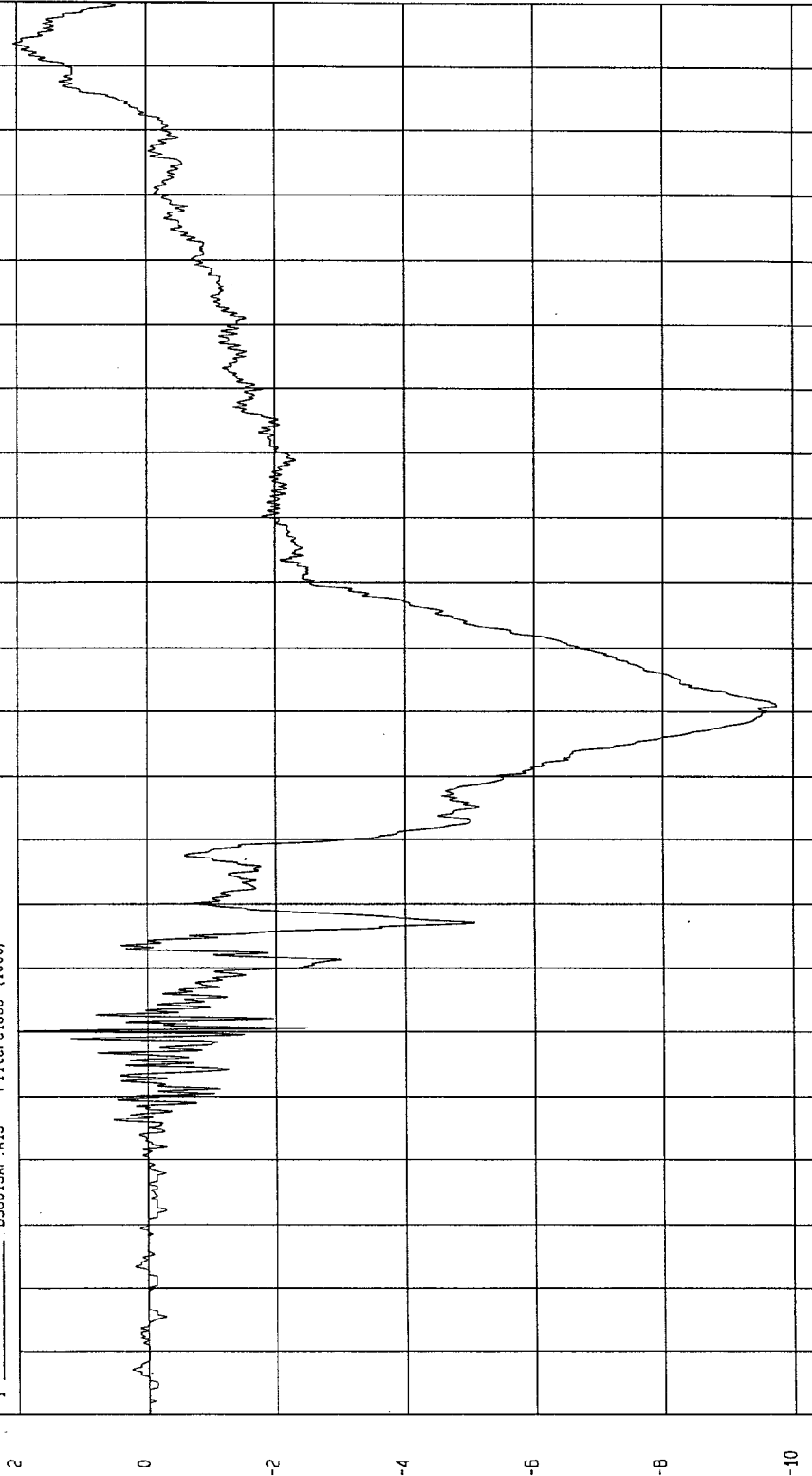
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -9.74 G'S at 91 msec
Maximum = 2.05 G'S at 194 msec

DRIVER HEAD Y ACCELERATION

1 _____ B98015AF.A13 Filterclass (1000)



MGA Research
03-06-1998 13:45

TIME (SECONDS)

G.S

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

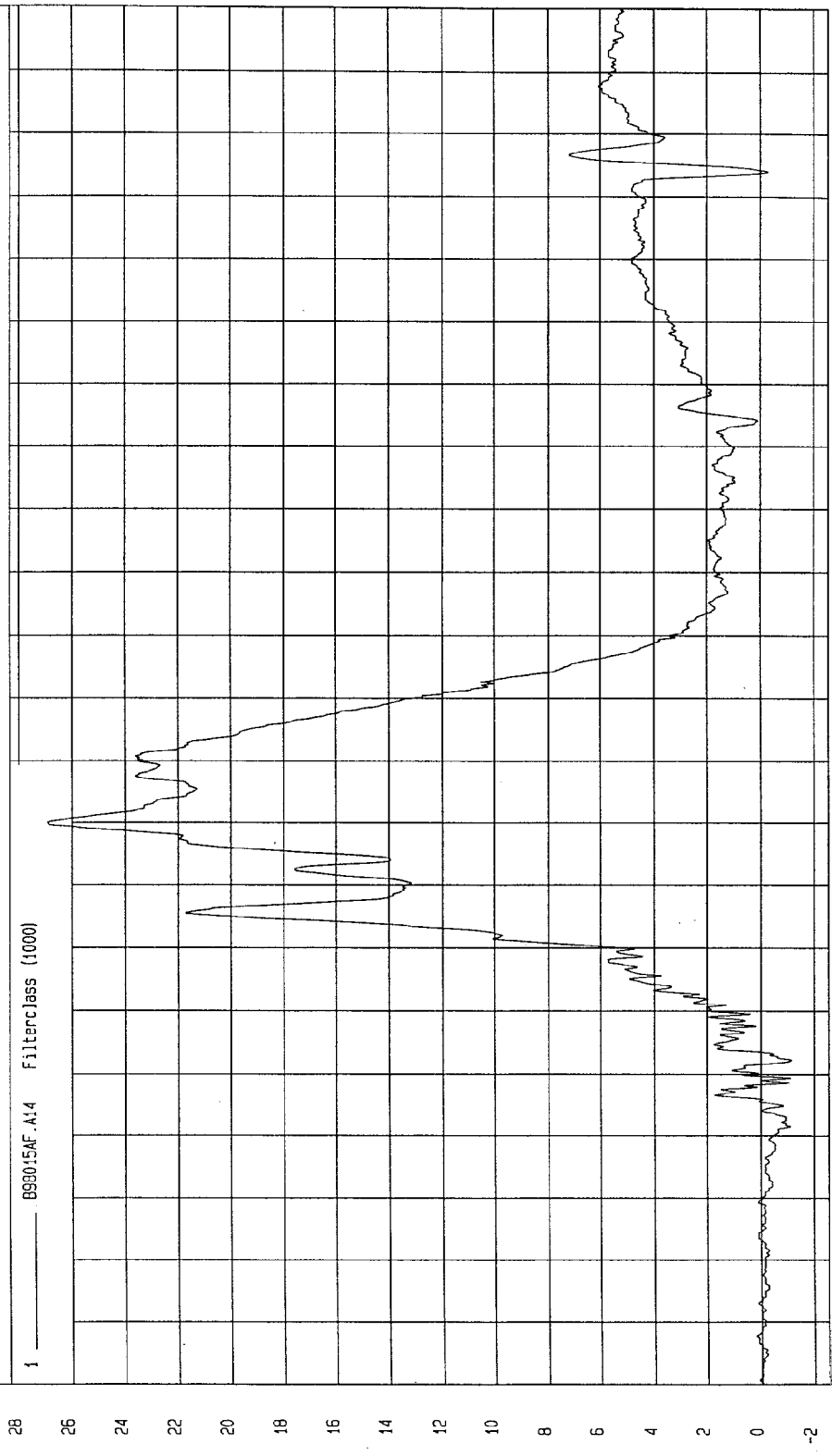
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -1.13 G'S at 32 msec

Maximum = 26.93 G'S at 70 msec

DRIVER HEAD Z ACCELERATION

1 ——— B99015AF.A14 Filterclass (1000)



MCA Research
03-06-1998 13:45

TEST: FMVSS 208 30 MPH FRONTAL IMPACT

TEST DATE: 03-06-1998

Speed: 29.5 MPH 47.5 KPH

COMPONENT: 1998 NISSAN ALTIMA (CW5206)

Minimum = 2.84E-02 G'S at -14 msec

Maximum = 63.69 G'S at 83 msec

DRIVER HEAD RESULTANT ACCELERATION

1 ——— B98015AV.A12 FilterClass (1000)



MSA Research
03-06-1998 13:45

TIME (SECONDS)

G.S

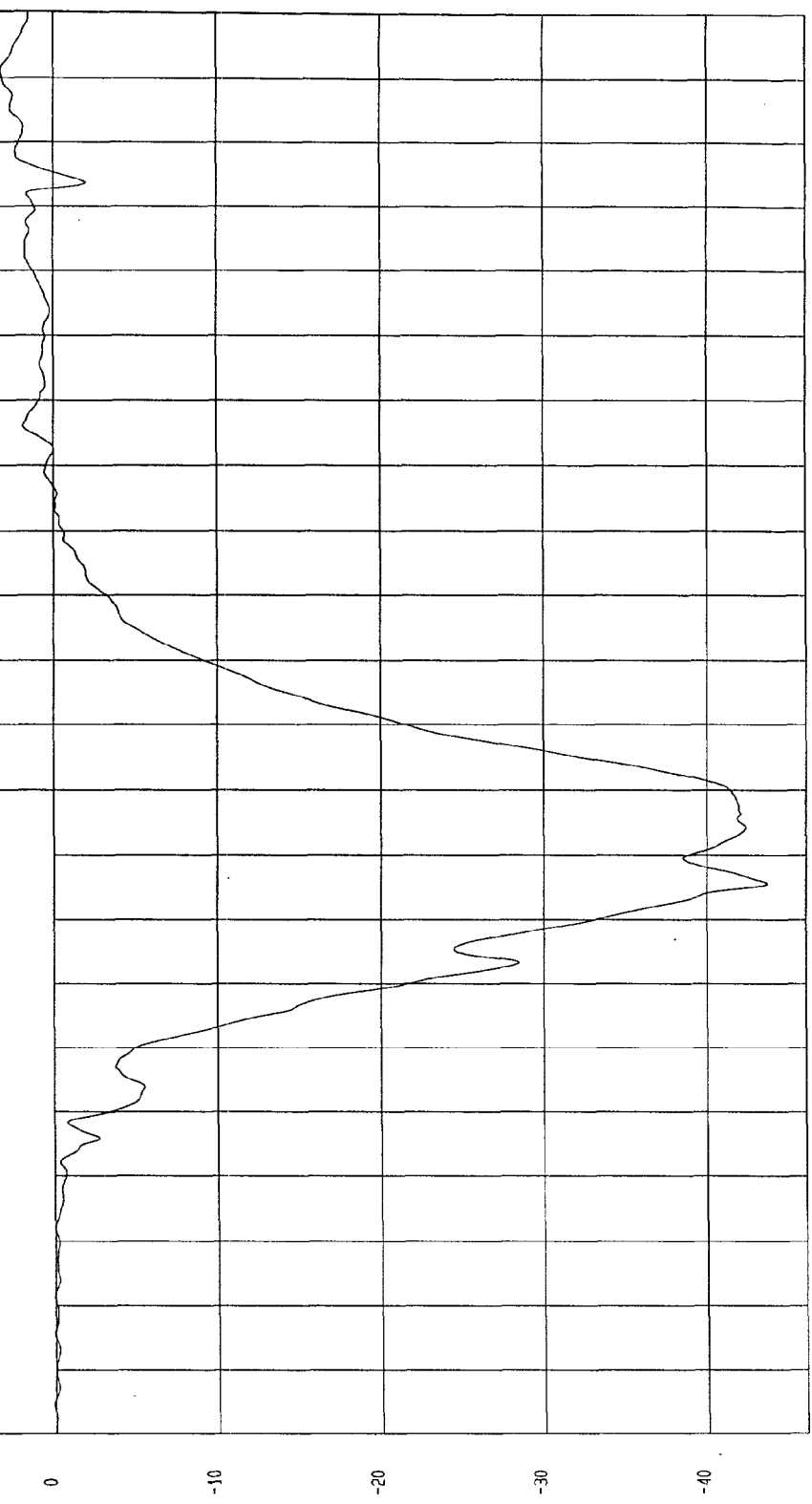
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -43.70 G'S at 66 msec Maximum = 3.26 G'S at 191 msec

DRIVER CHEST X ACCELERATION

1 898015AF.A15 FilterClass (180)



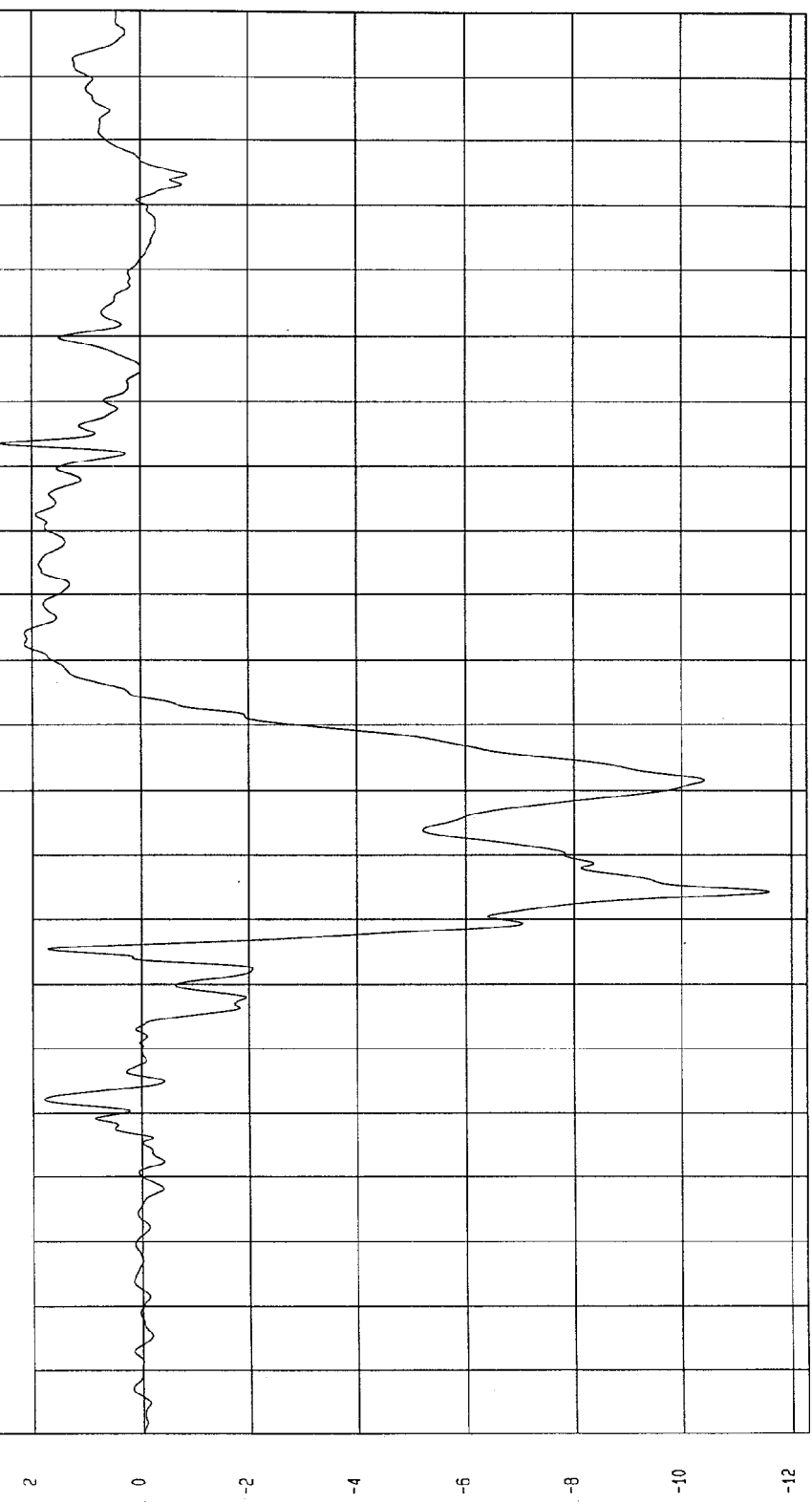
VGA Research
03-08-1998 13.45

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

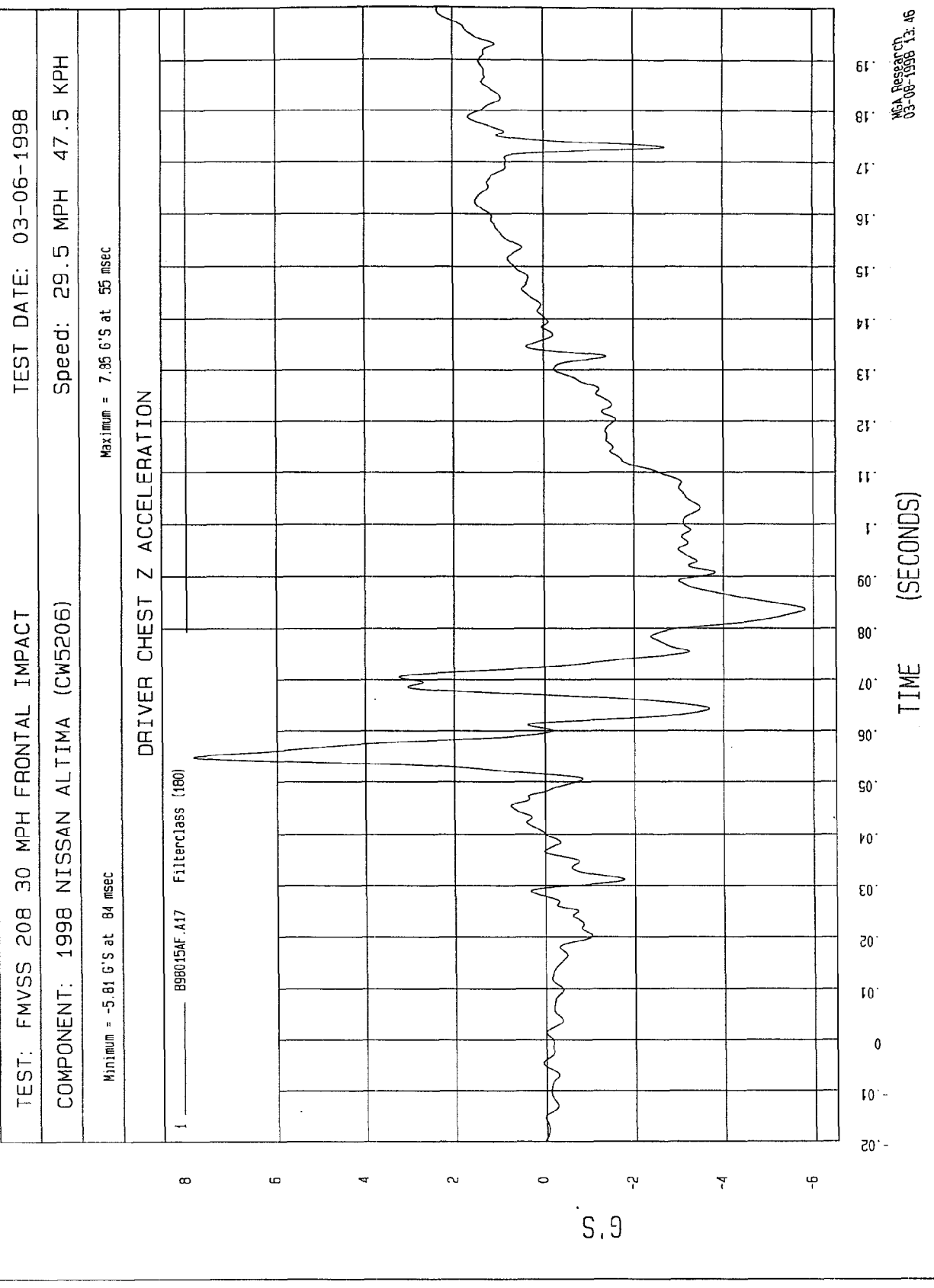
Minimum = -11.58 G'S at 64 msec Maximum = 2.58 G'S at 134 msec

DRIVER CHEST Y ACCELERATION

1 ——— B98015AF.A16 Filterclass (180)



MGA Research
03-06-1998 13: 45



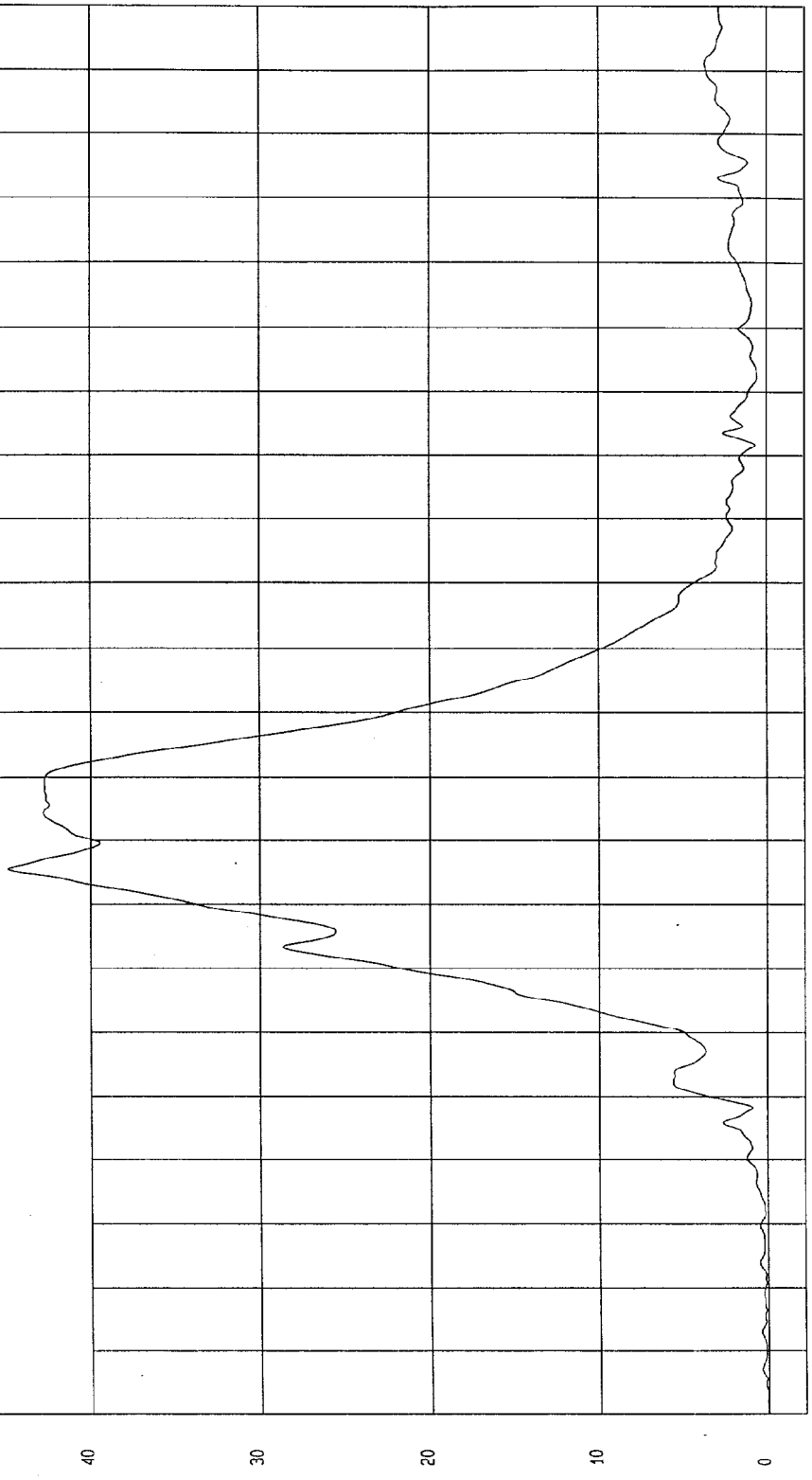
NSA Research
03-06-1998 13:46

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = 3.27E-02 G'S at -19 msec Maximum = 44.85 G'S at 66 msec

DRIVER CHEST RESULTANT ACCELERATION

1 ——— 898015AV.A15 filterc.ass (180)



MCA Research
03-06-1998 13:45

TIME (SECONDS)

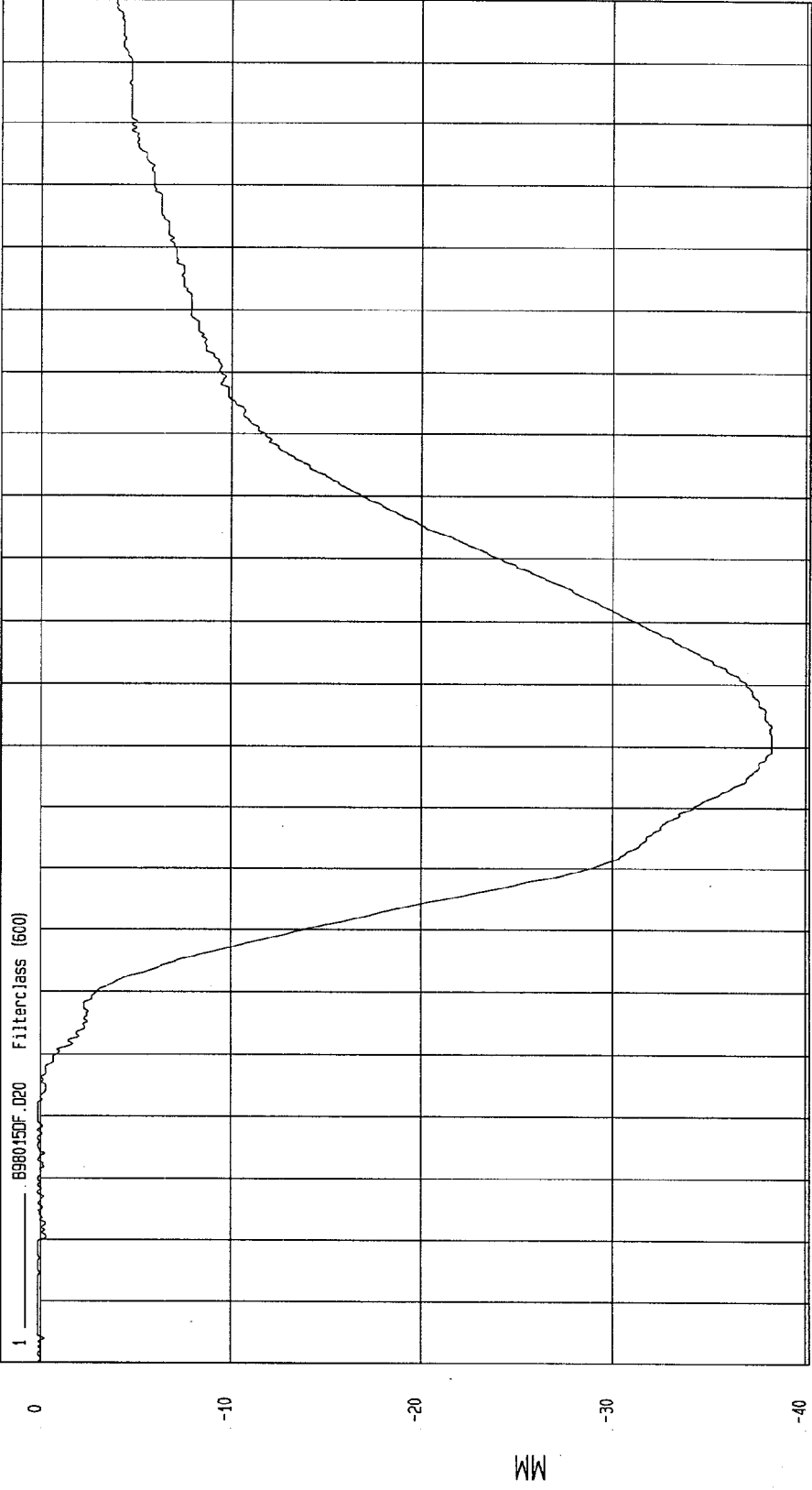
G.S

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -38.28 MM at 79 msec
Maximum = .17 MM at 8 msec

DRIVER CHEST COMPRESSION



TIME SECONDS
NBA Research
06-24-1998 10:06

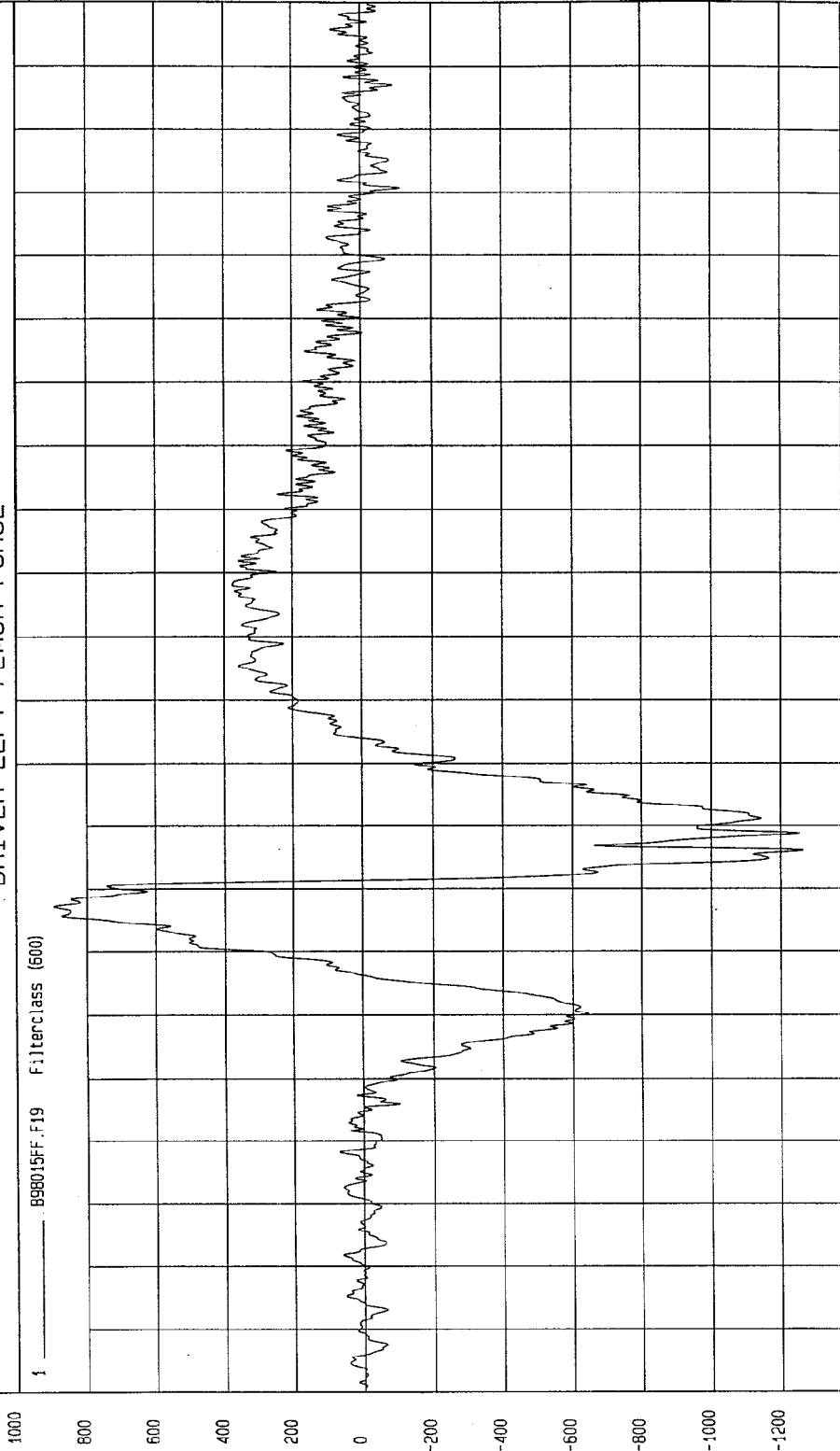
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -1265.97 N at 56 msec

Maximum = 893.78 N at 57 msec

DRIVER LEFT FEMUR FORCE



1 B98015FF.F19 Filterclass (500)

TIME (SECONDS)

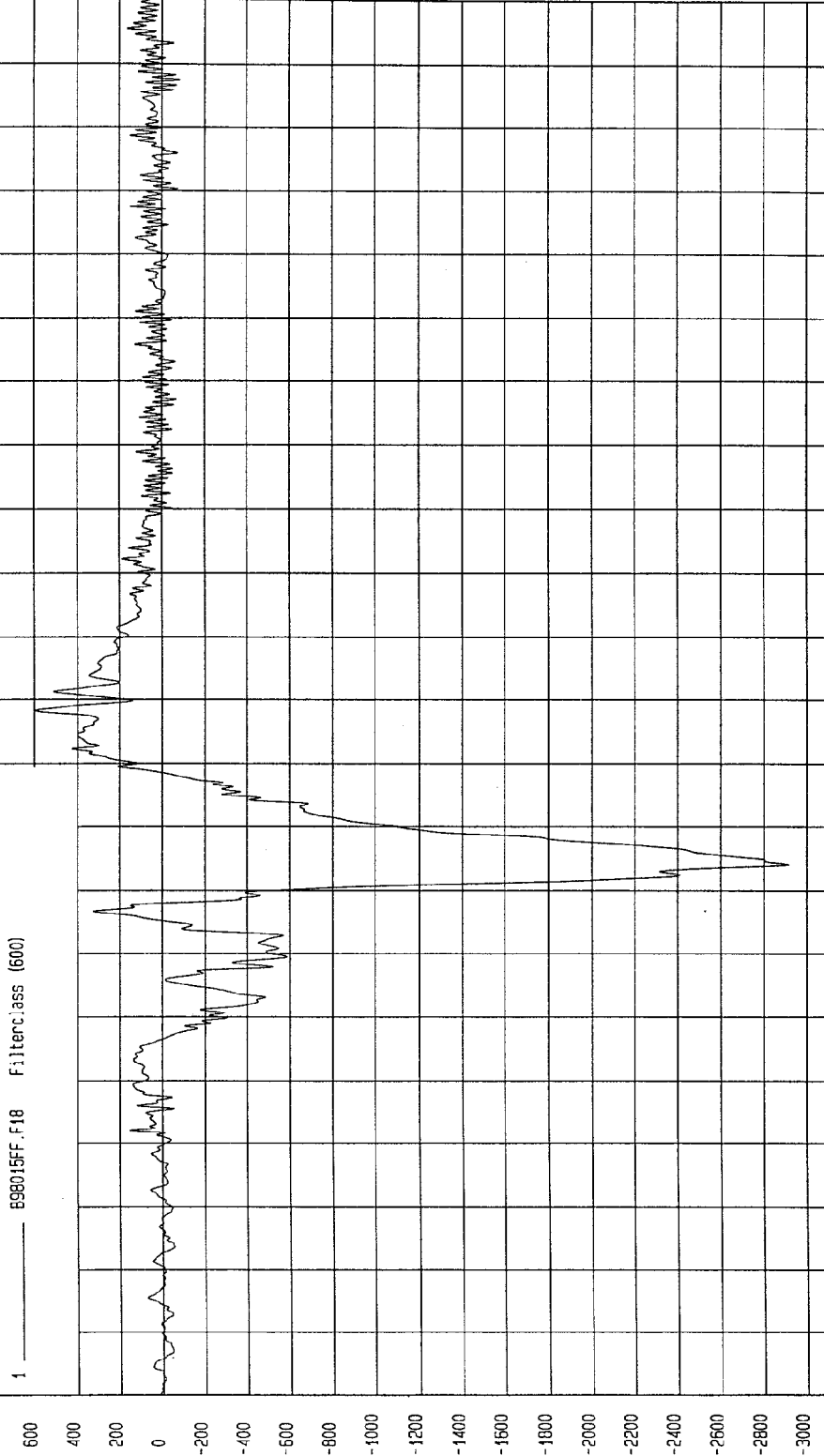
NIA Research
03-06-1998 13.46

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -2917.54 N at 64 msec Maximum = 597.10 N at 88 msec

DRIVER RIGHT FEMUR FORCE



MCA Research
03-06-1998 13:46

TIME (SECONDS)

TEST DATE: 03-06-1998

TEST: FMVSS 208 30 MPH FRONTAL IMPACT

Speed: 29.5 MPH 47.5 KPH

COMPONENT: 1998 NISSAN ALTIMA (CW5206)

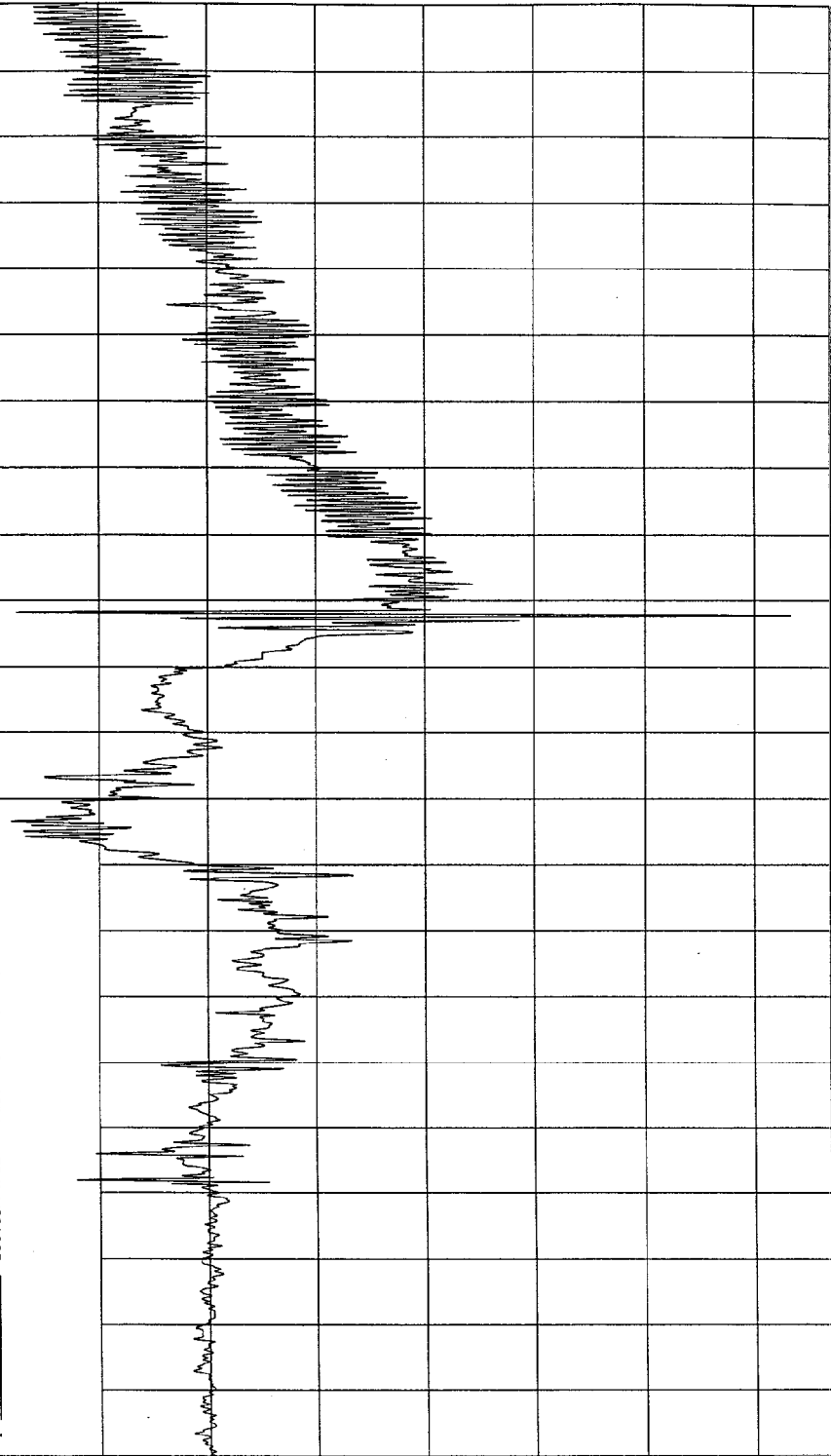
Maximum = 180.30 N at 77 msec

Minimum = -532.87 N at 108 msec

DRIVER NECK FORCE X

1 898015FF.F32 Filterclass (1000)

200
100
0
-100
-200
-300
-400
-500



MGA Research
03-06-1998 13: 46

TIME (SECONDS)

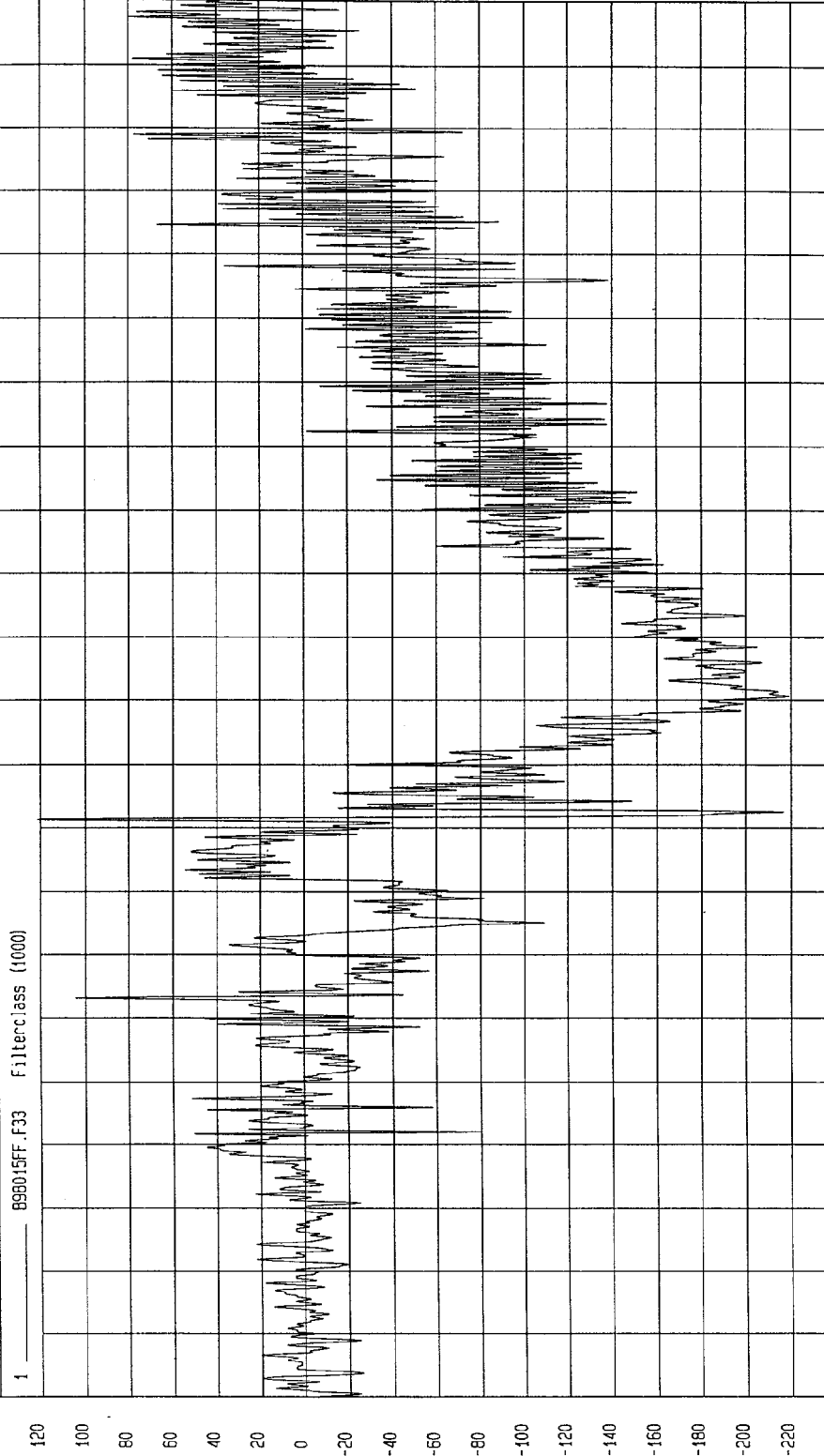
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -219.07 N at 91 msec

Maximum = 121.58 N at 71 msec

DRIVER NECK FORCE Y



MCA Research
03-06-1998 13:46

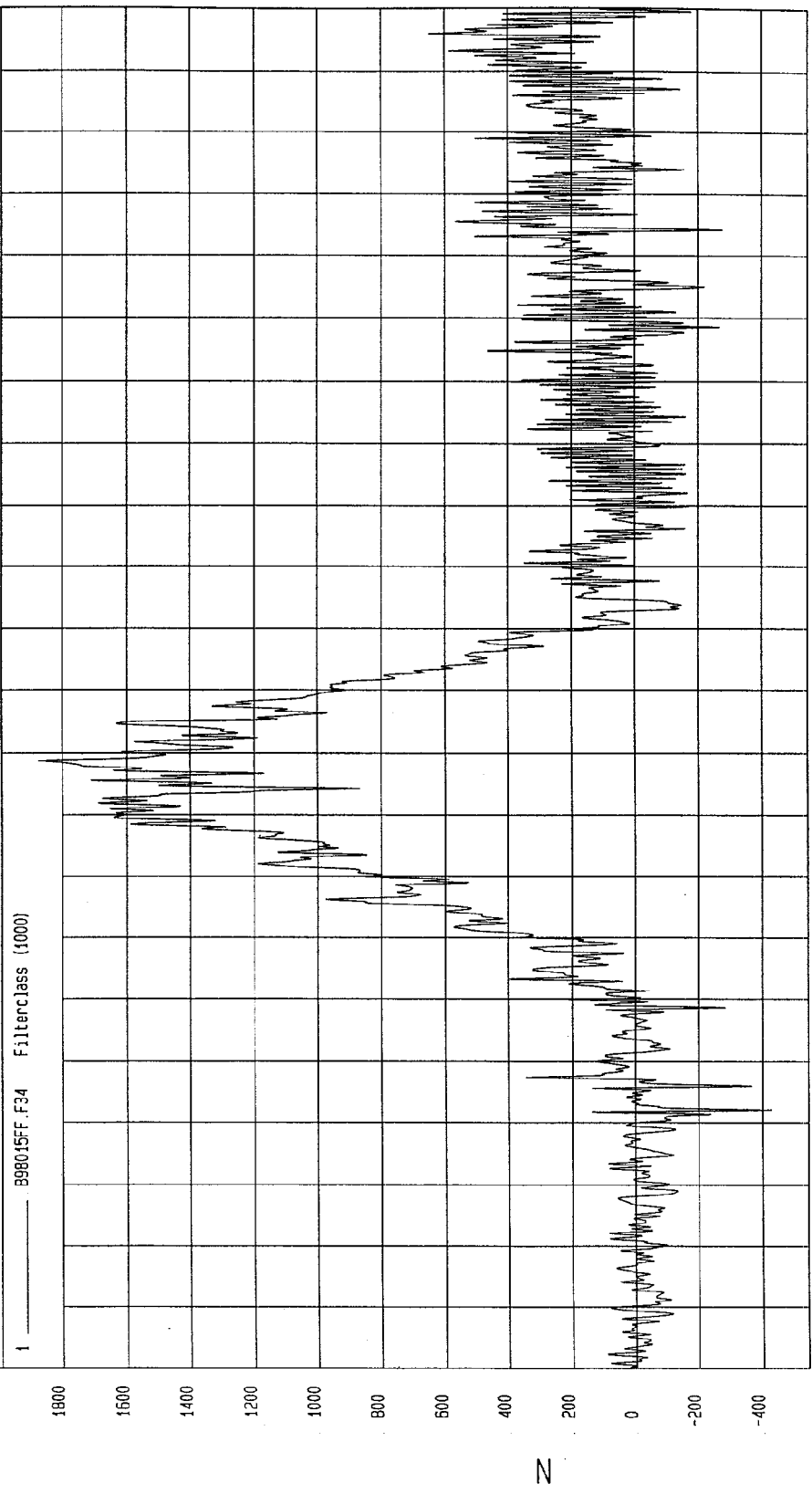
TIME (SECONDS)

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -428.30 N at 22 msec
Maximum = 1875.48 N at 79 msec

DRIVER NECK FORCE Z



MCA Research
03-06-1998 13:46

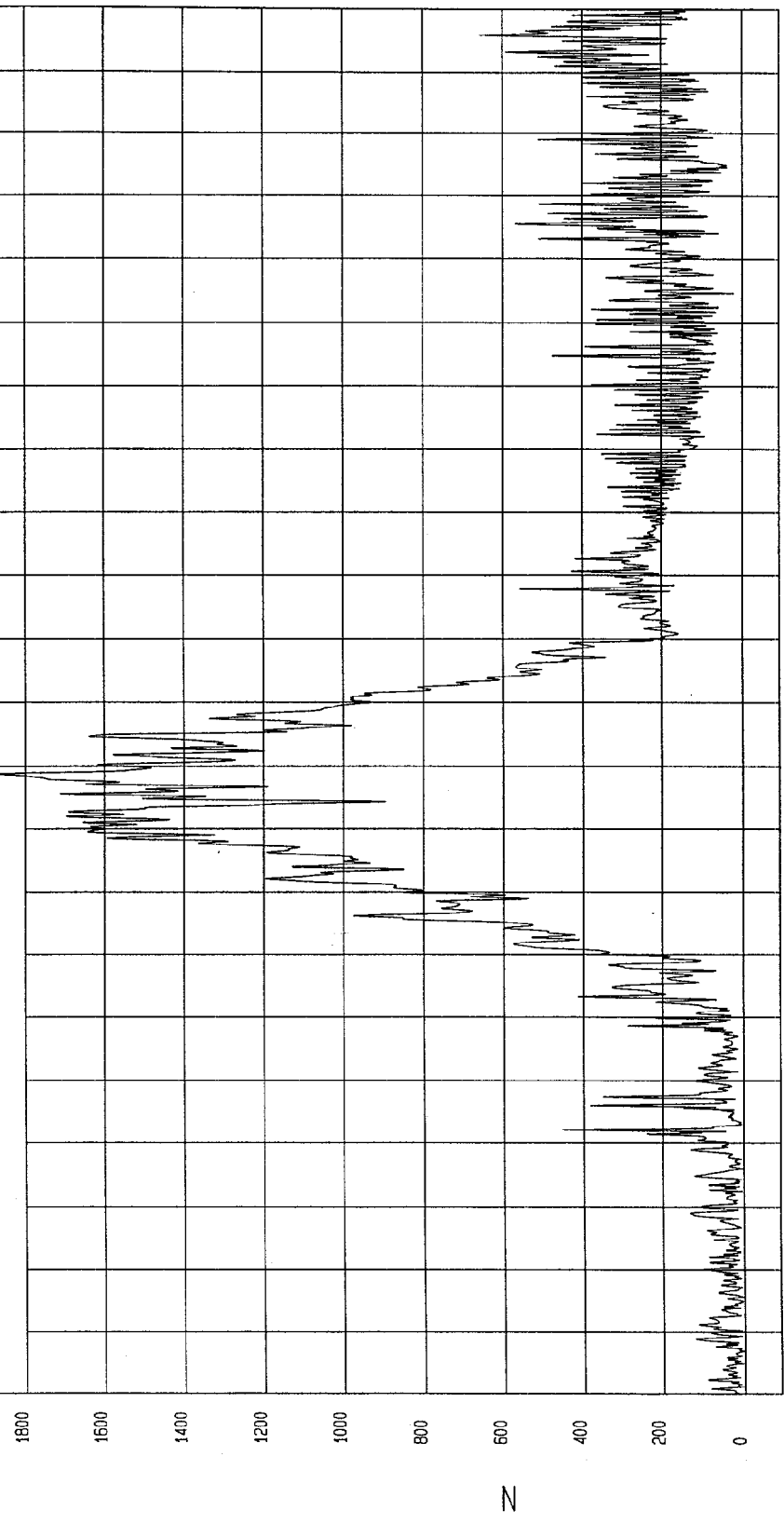
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = 2.51 N at -19 msec Maximum = 1881.15 N at 79 msec

DRIVER NECK FORCE RESULTANT

1 898015FV.F32 FilterClass (1000)



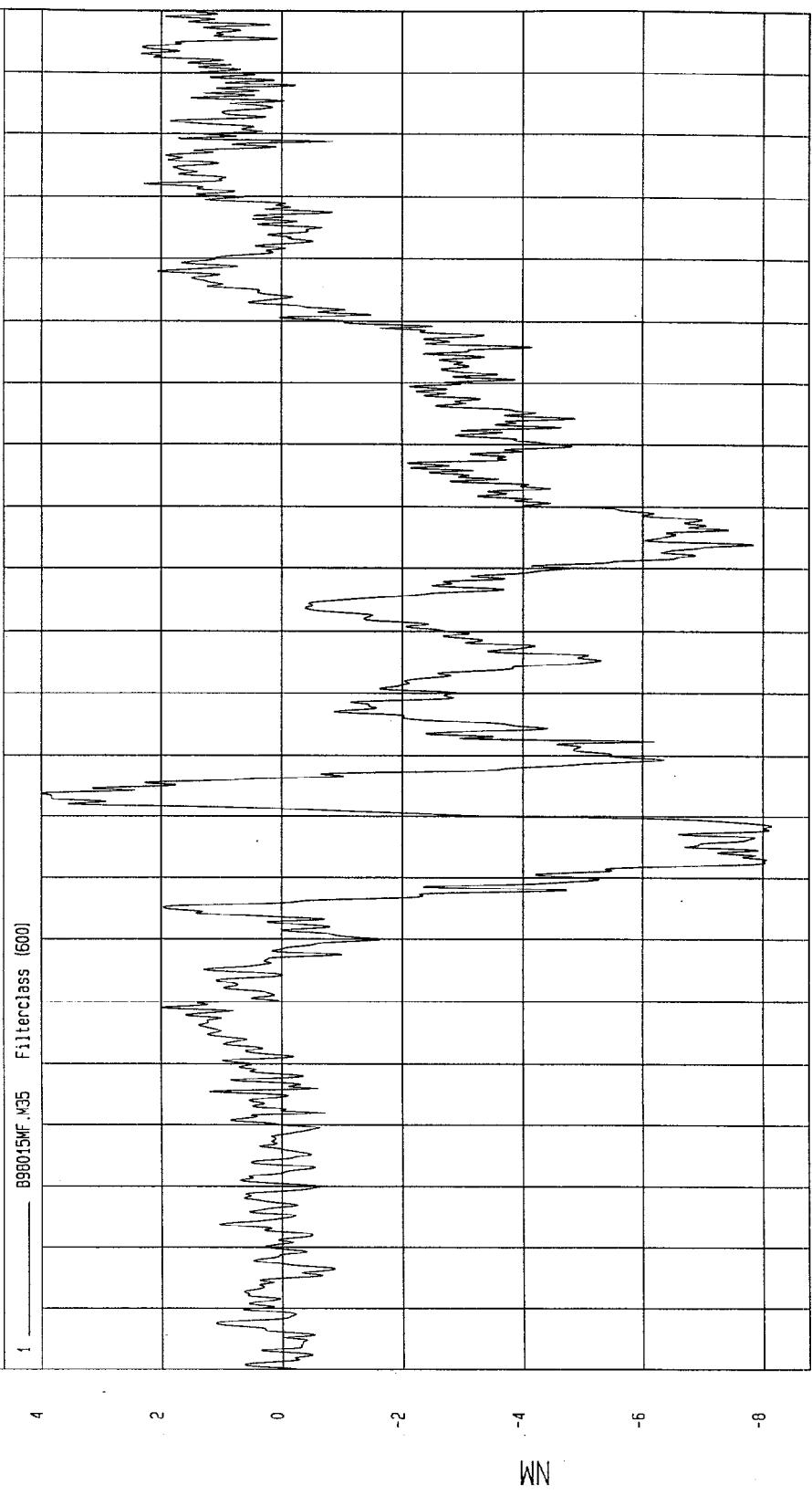
MCA Research
03-06-1998 14:07

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -8.14 NM at 68 msec Maximum = 4.01 NM at 74 msec

DRIVER NECK MOMENT X



TIME (SECONDS)

NGA Research
03-06-1998 13.47

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

Speed: 29.5 MPH 47.5 KPH

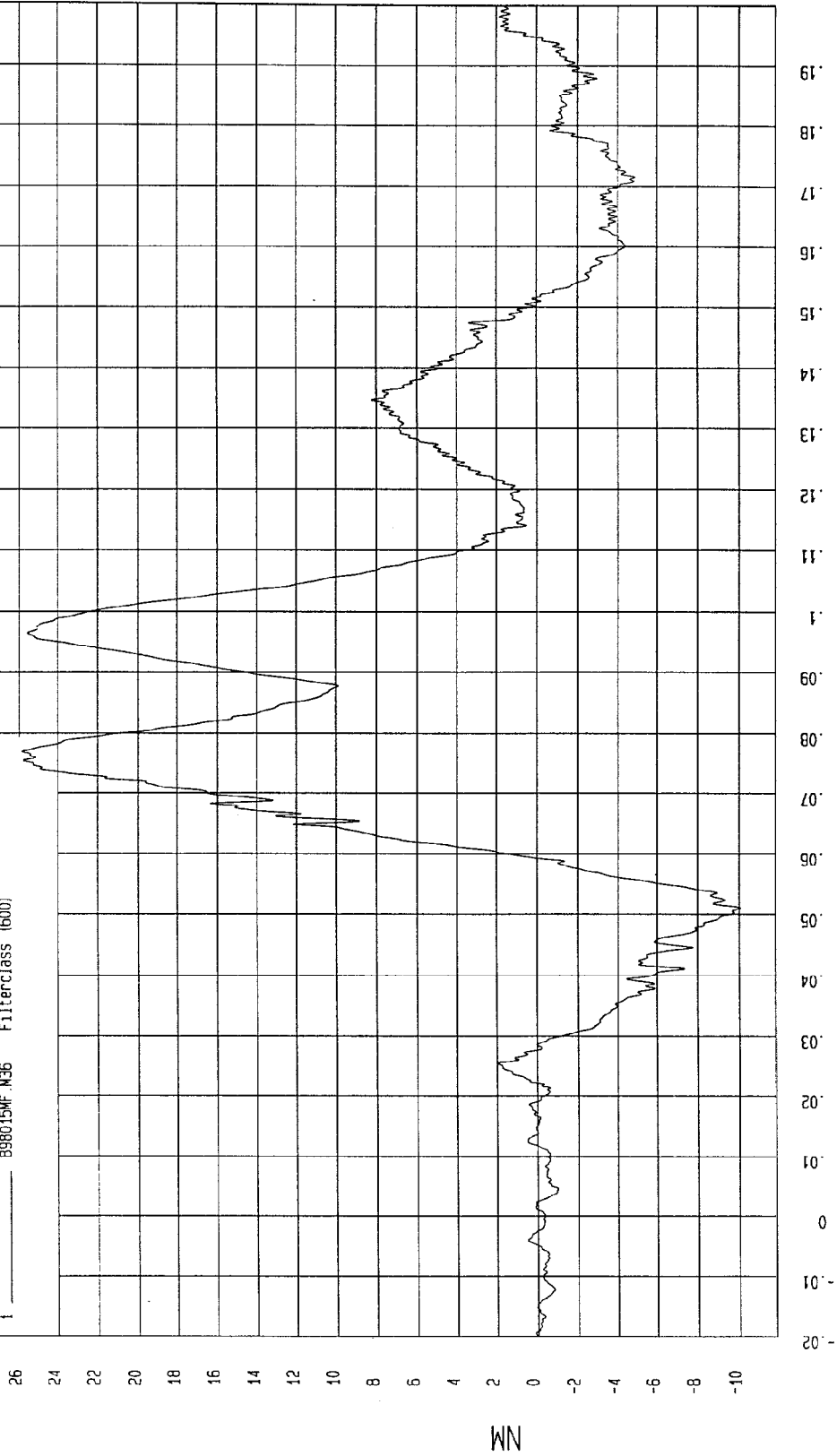
COMPONENT: 1998 NISSAN ALTIMA (CW5206)

Minimum = -10.05 NM at 51 msec

Maximum = 25.85 NM at 77 msec

DRIVER NECK MOMENT Y

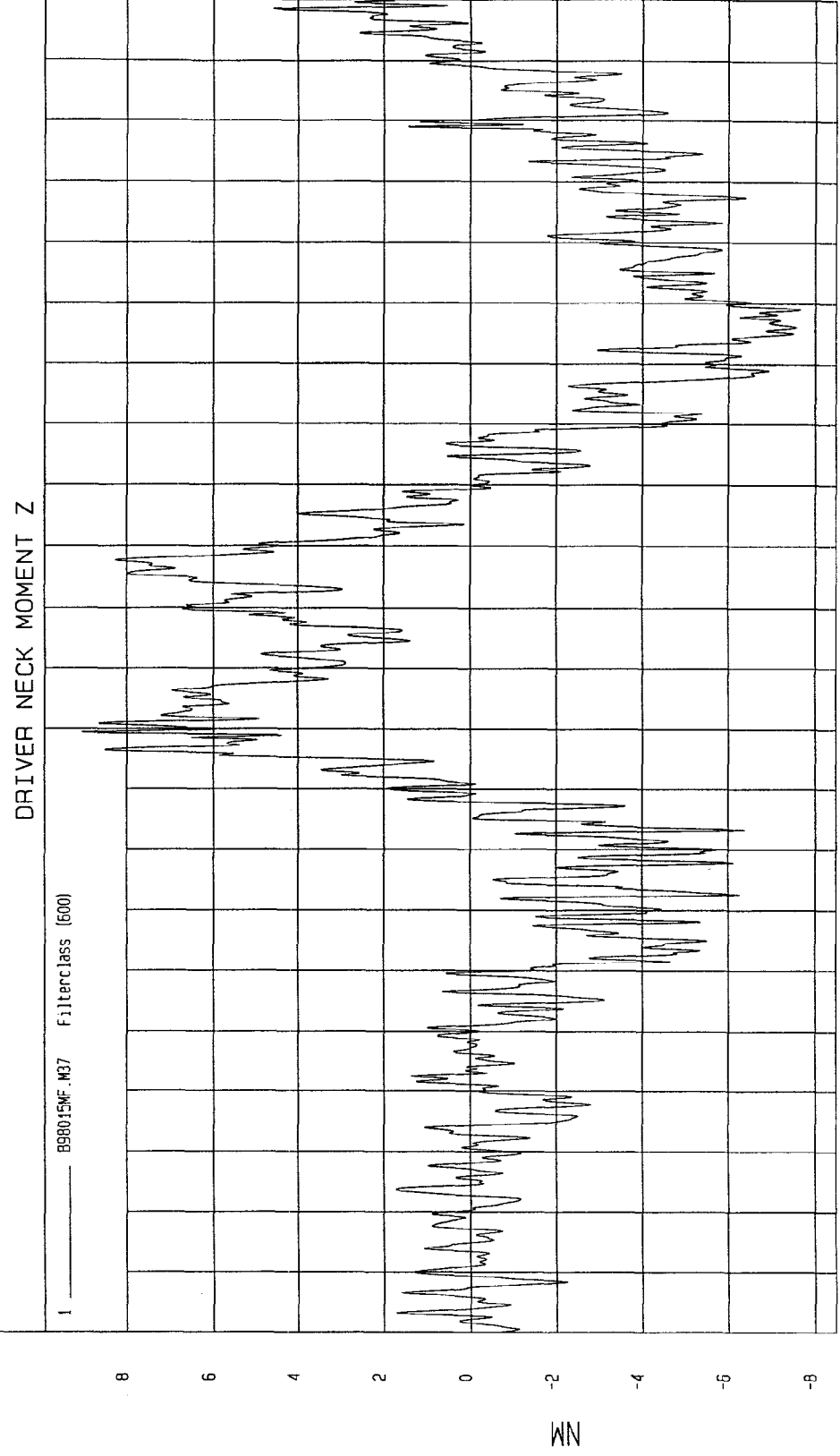
1 898015MF.M36 Filterclass (600)



MGA Research
03-06-1998 13:47

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -7.54 NM at 149 msec Maximum = 9.06 NM at 80 msec



TIME (SECONDS)

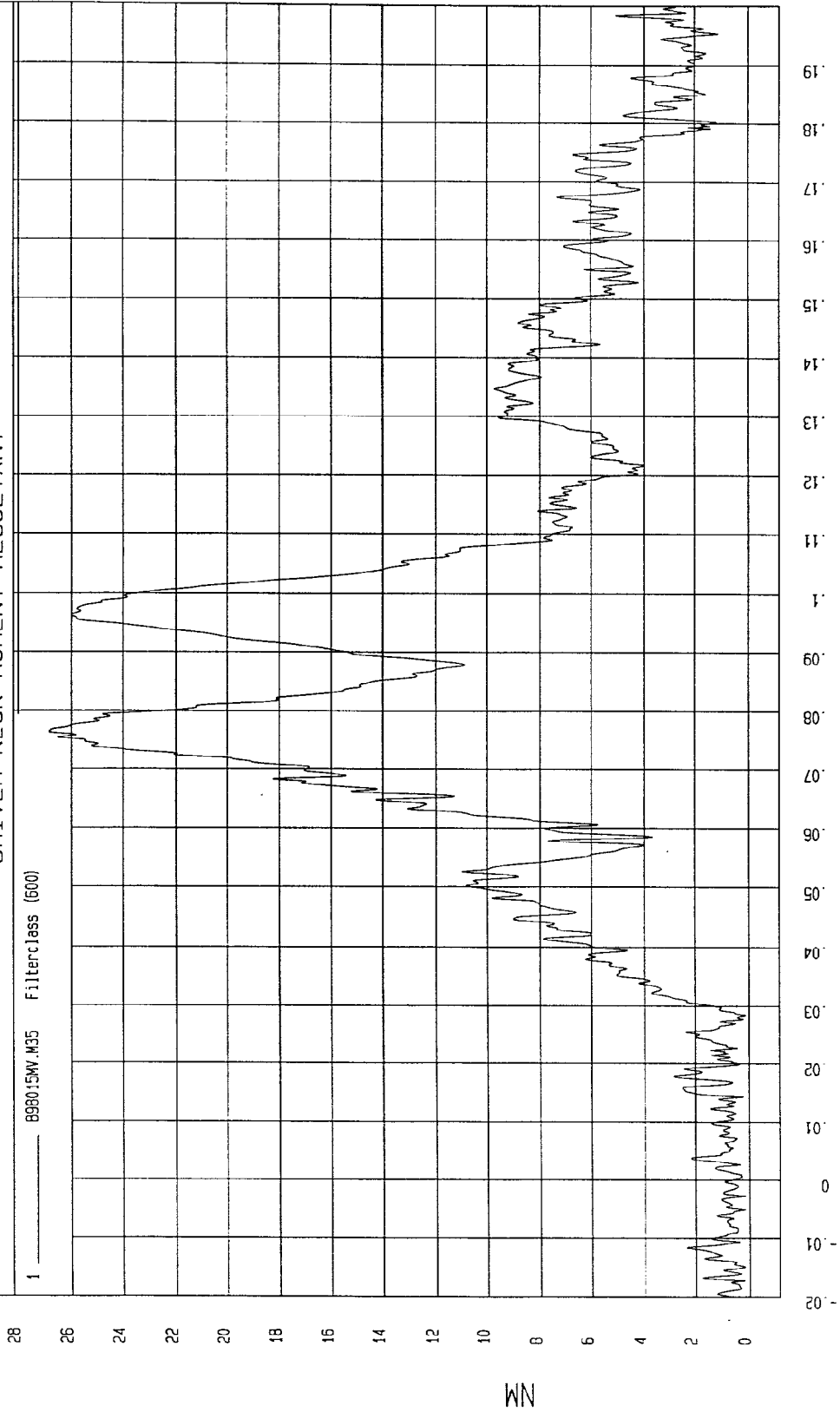
MCA Research
03-06-1998 13:47

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = .13 NM at 28 msec
Maximum = 26.84 NM at 76 msec

DRIVER NECK MOMENT RESULTANT



M&A Research
03-06-1998 14:07

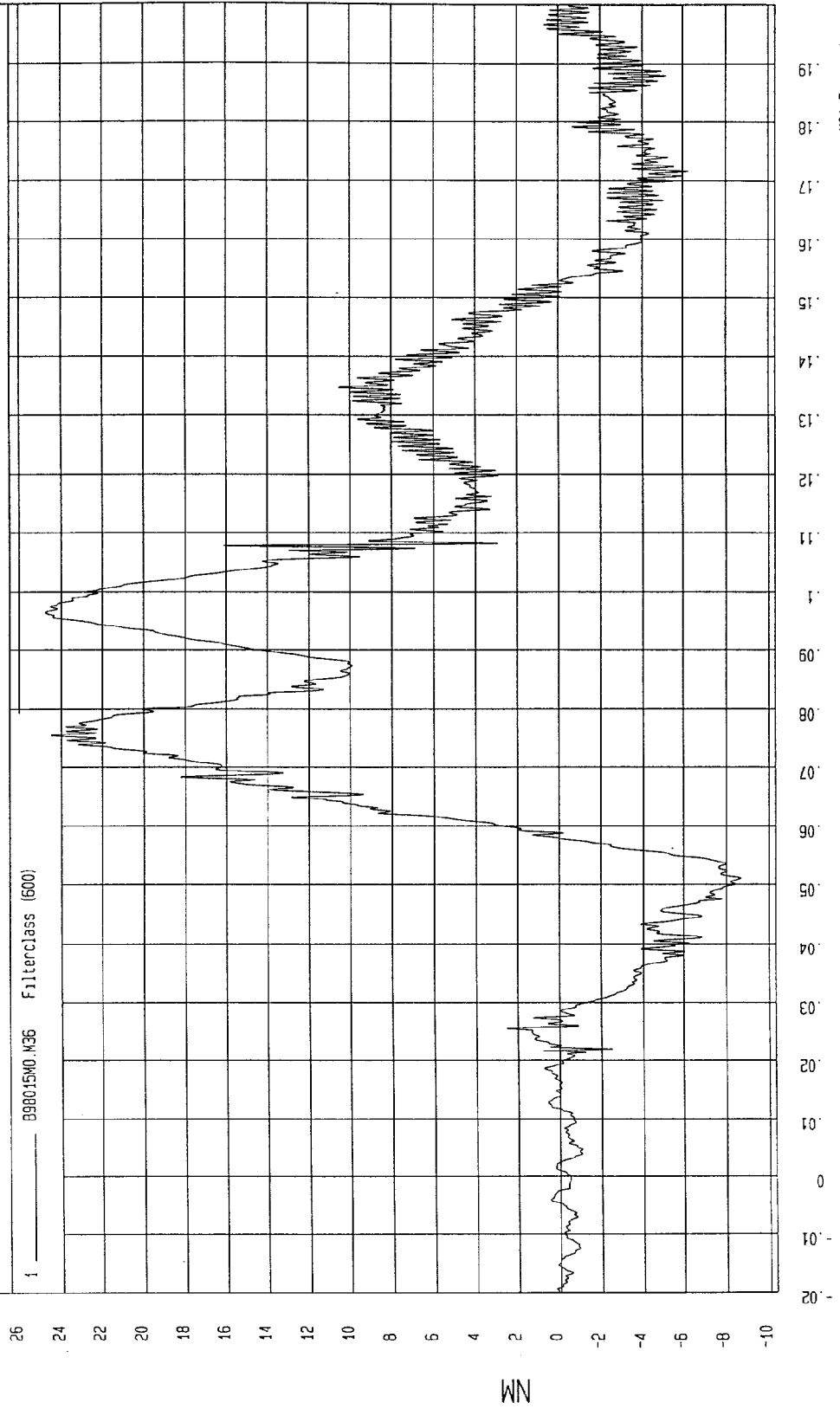
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -8.65 NM at 51 msec Maximum = 24.76 NM at 96 msec

DRIVER OCCIPITAL CONDYLE MOMENT Y

1 898015M0.M36 FilterClass (600)



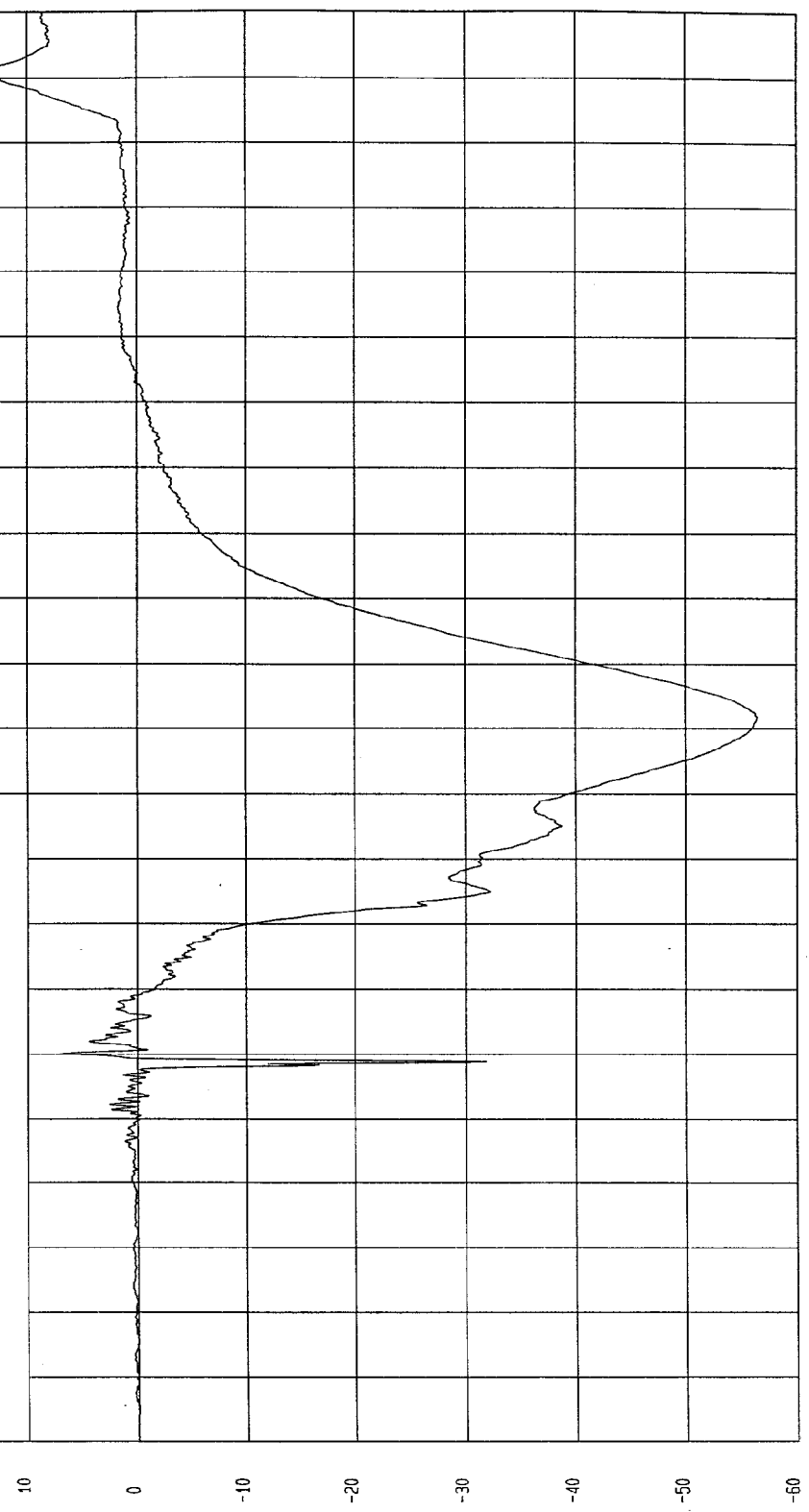
MSA Research
03-06-1998 13:47

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -56.49 G'S at 92 msec Maximum = 13.74 G'S at 191 msec

PASSENGER HEAD X ACCELERATION

1 898015AF.A22 FilterClass (1000)



MGA Research
03-08-1998 13:47

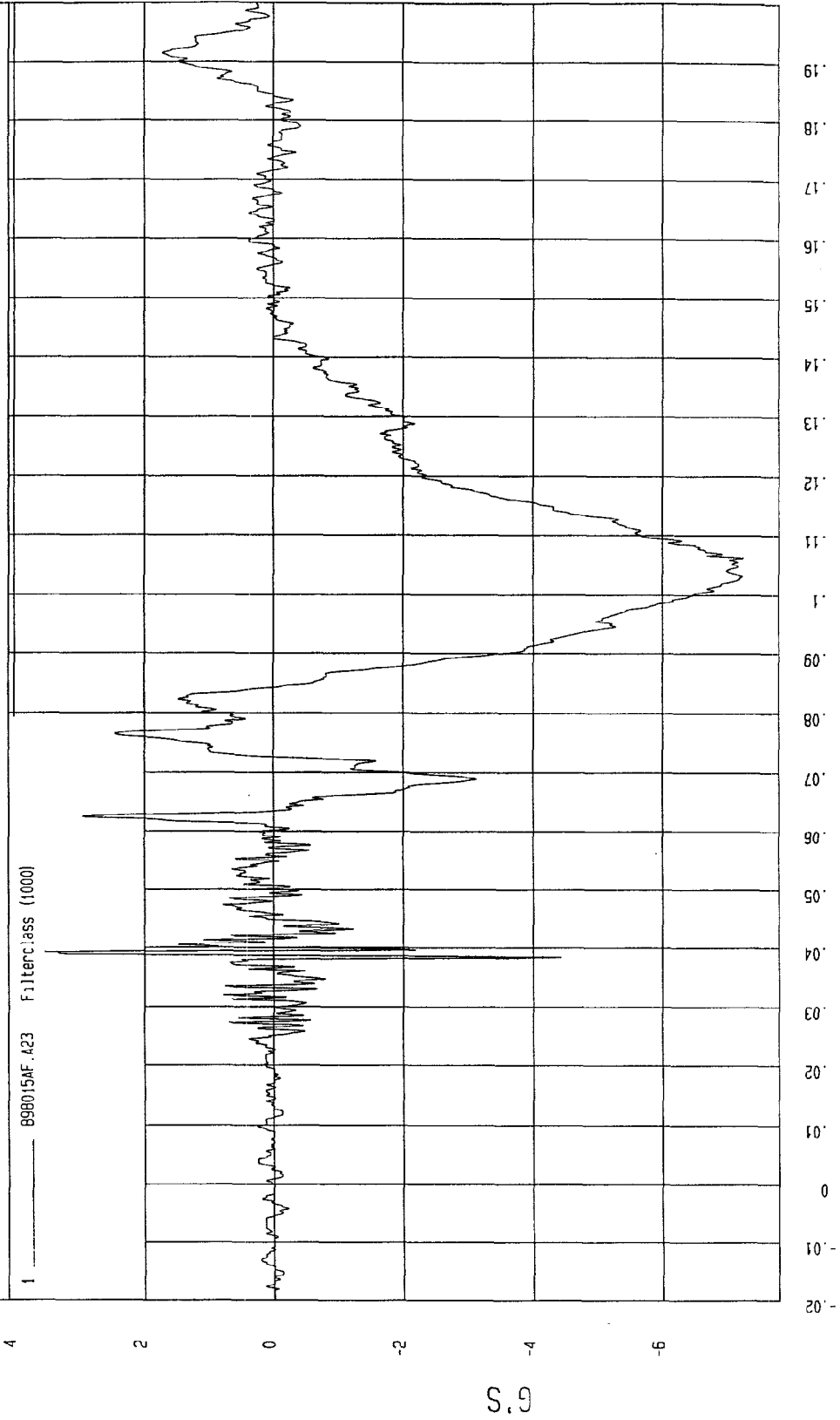
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -7.23 G'S at 106 msec
Maximum = 3.54 G'S at 39 msec

PASSENGER HEAD Y ACCELERATION

1 _____ 898015AF.A23 Filter: class (1000)



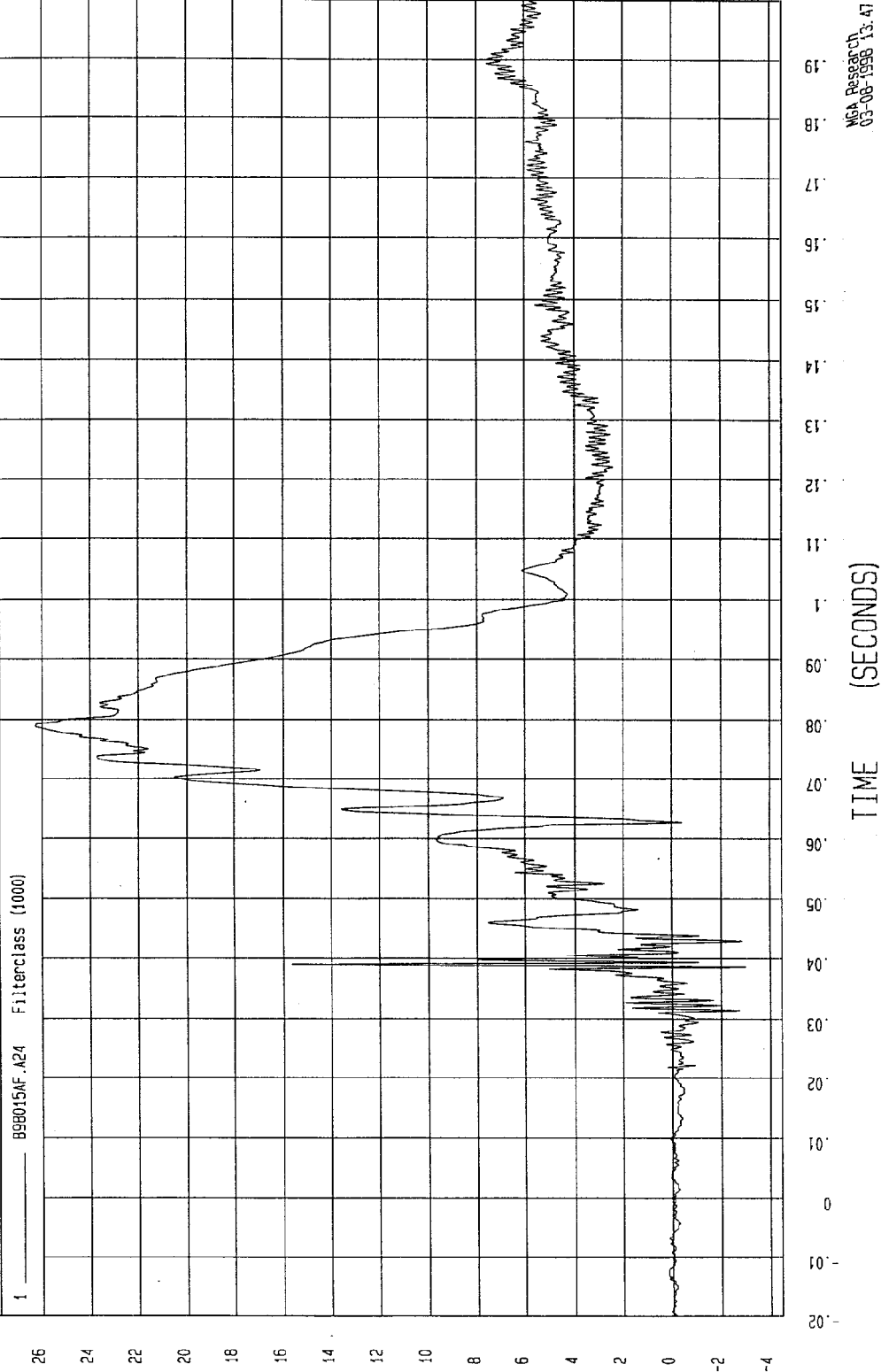
MCA Research
03-06-1998 13:47

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -3.02 G'S at 39 msec
Maximum = 26.26 G'S at 79 msec

PASSENGER HEAD Z ACCELERATION



MGA Research
03-08-1998 13.47

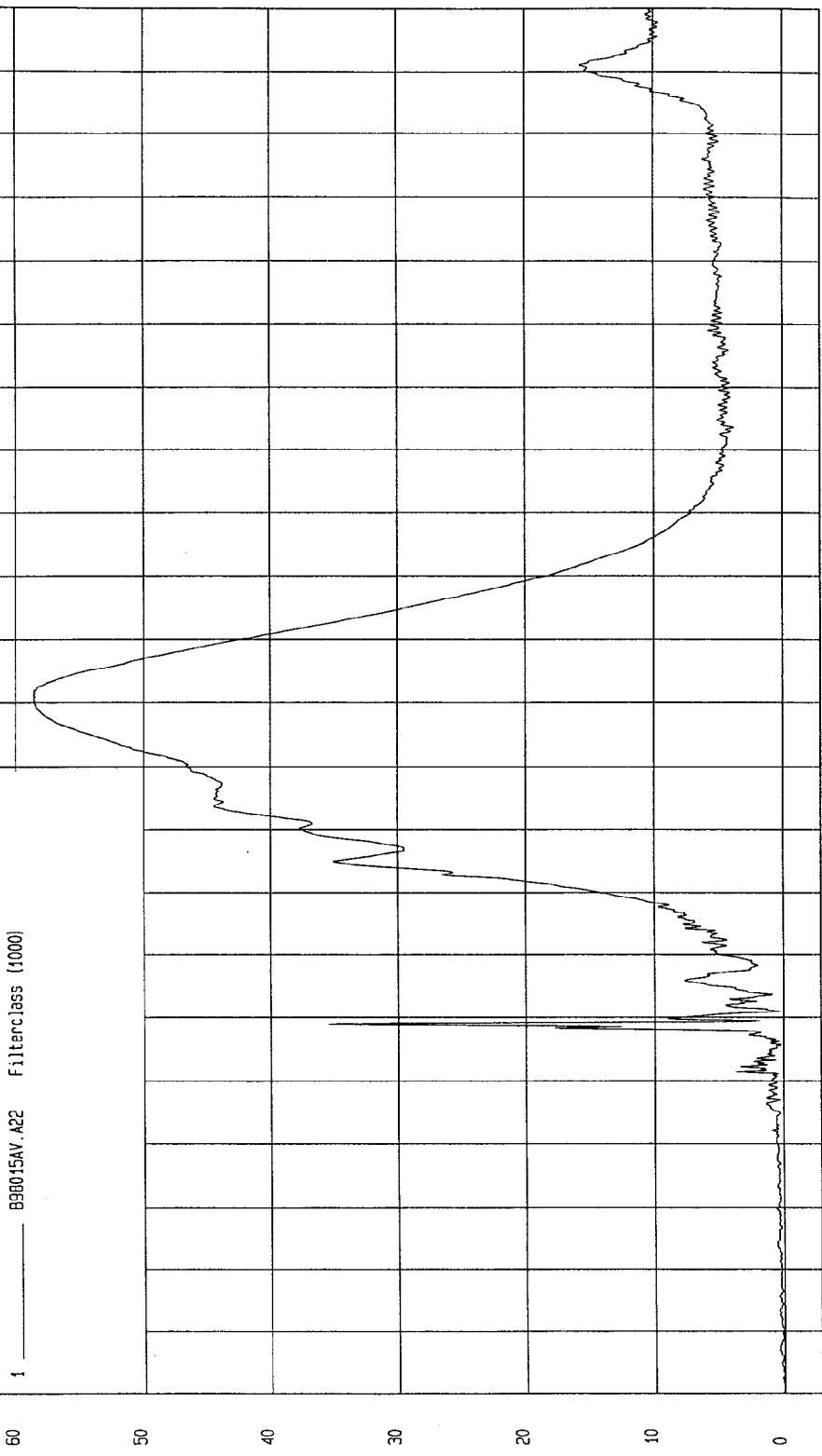
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = 1.72E-02 G'S at -17 msec
Maximum = 58.66 G'S at 90 msec

PASSENGER HEAD RESULTANT ACCELERATION

1 ——— B98015AV.A22 Filterclass (1000)



NSA Research
03-06-1998 13:48

TIME (SECONDS)

G.S

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

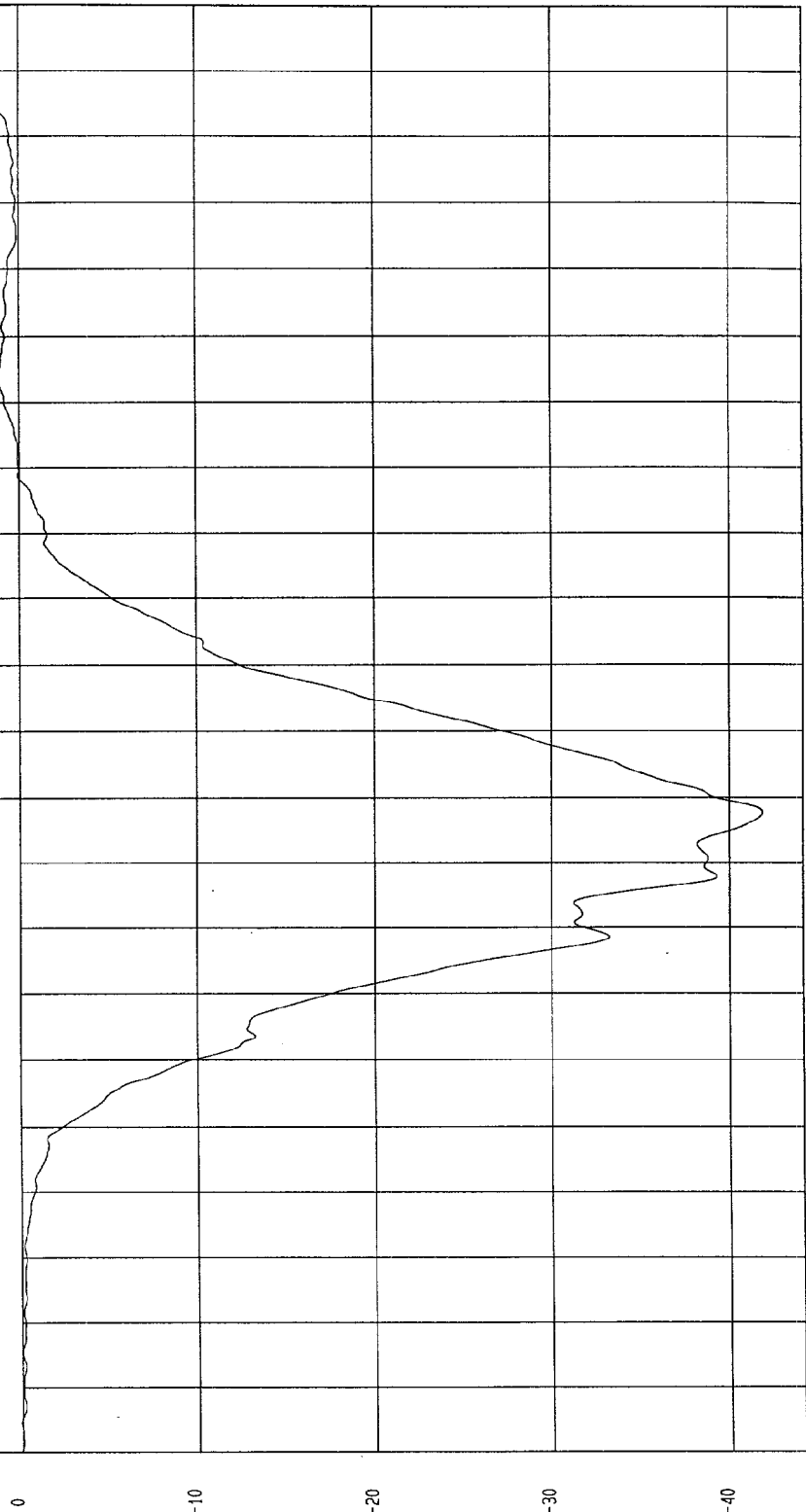
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -41.83 G'S at 78 msec

Maximum = 2.36 G'S at 195 msec

PASSENGER CHEST X ACCELERATION

1 898015AF.A25 Filterclass (180)



MCA Research
03-06-1998 13:48

TIME (SECONDS)

G.S

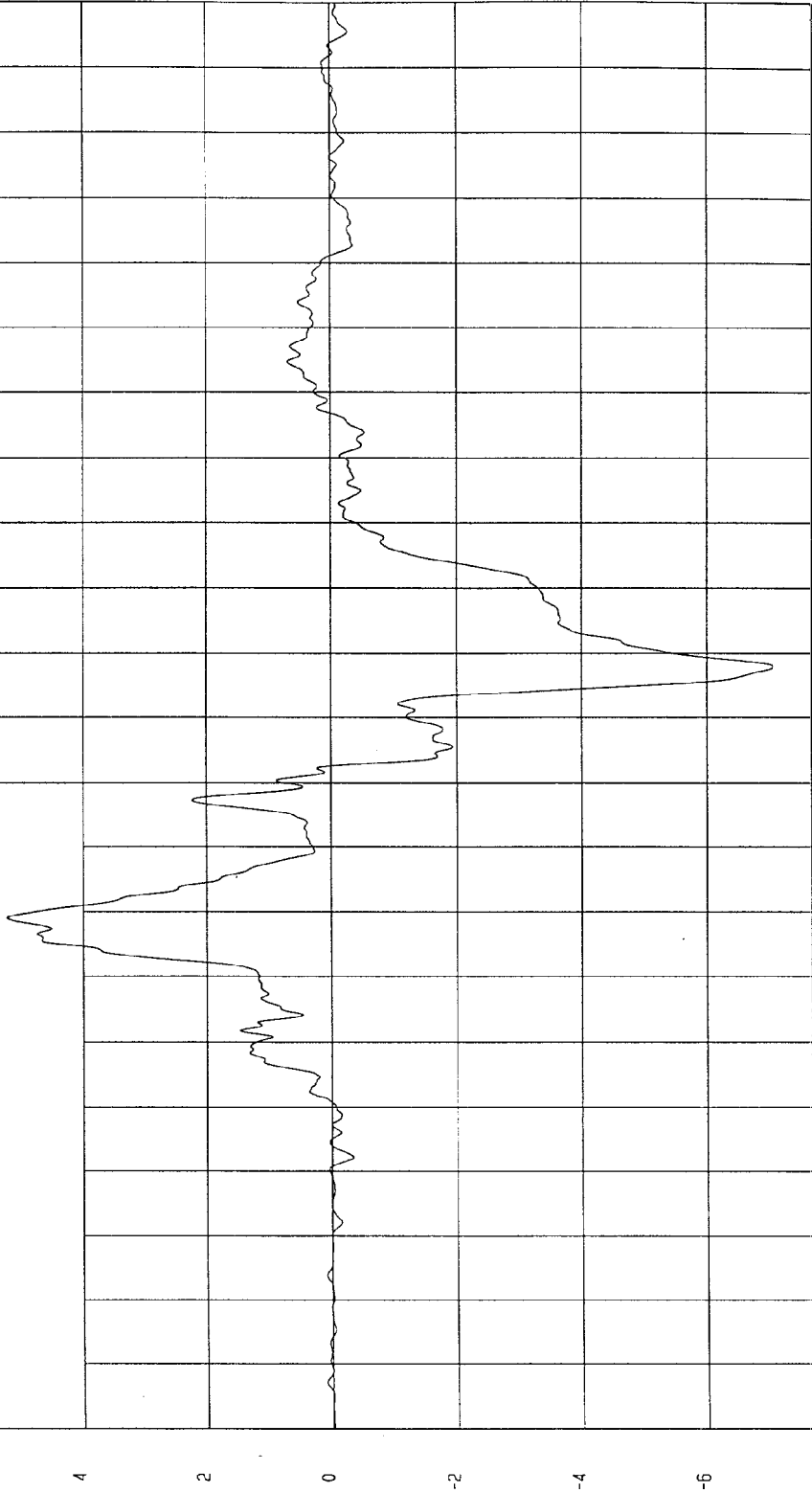
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

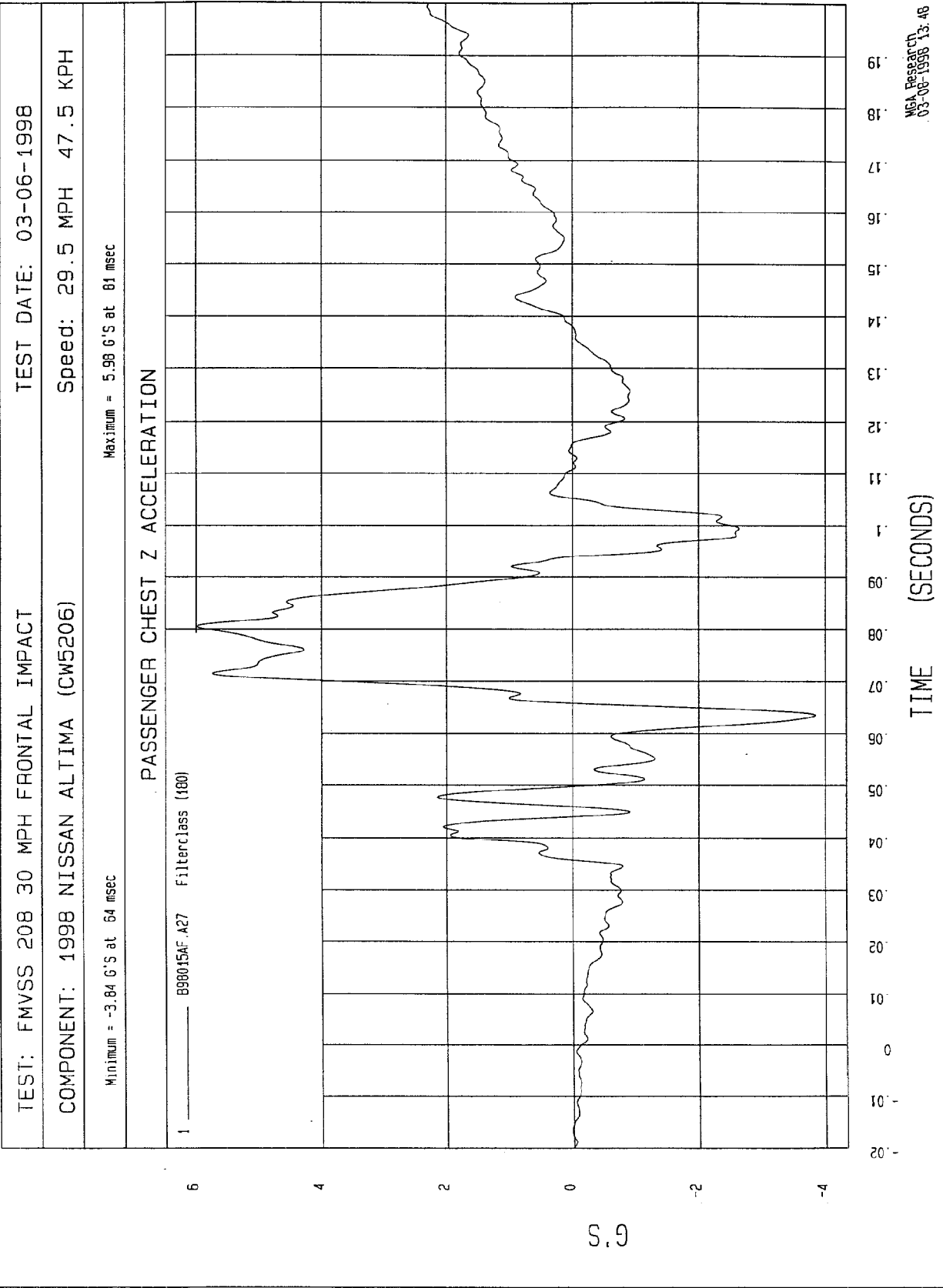
Minimum = -7.05 G'S at 98 msec
Maximum = 5.21 G'S at 59 msec

PASSENGER CHEST Y ACCELERATION

1 ——— 898015AF.A26 Filterclass (180)

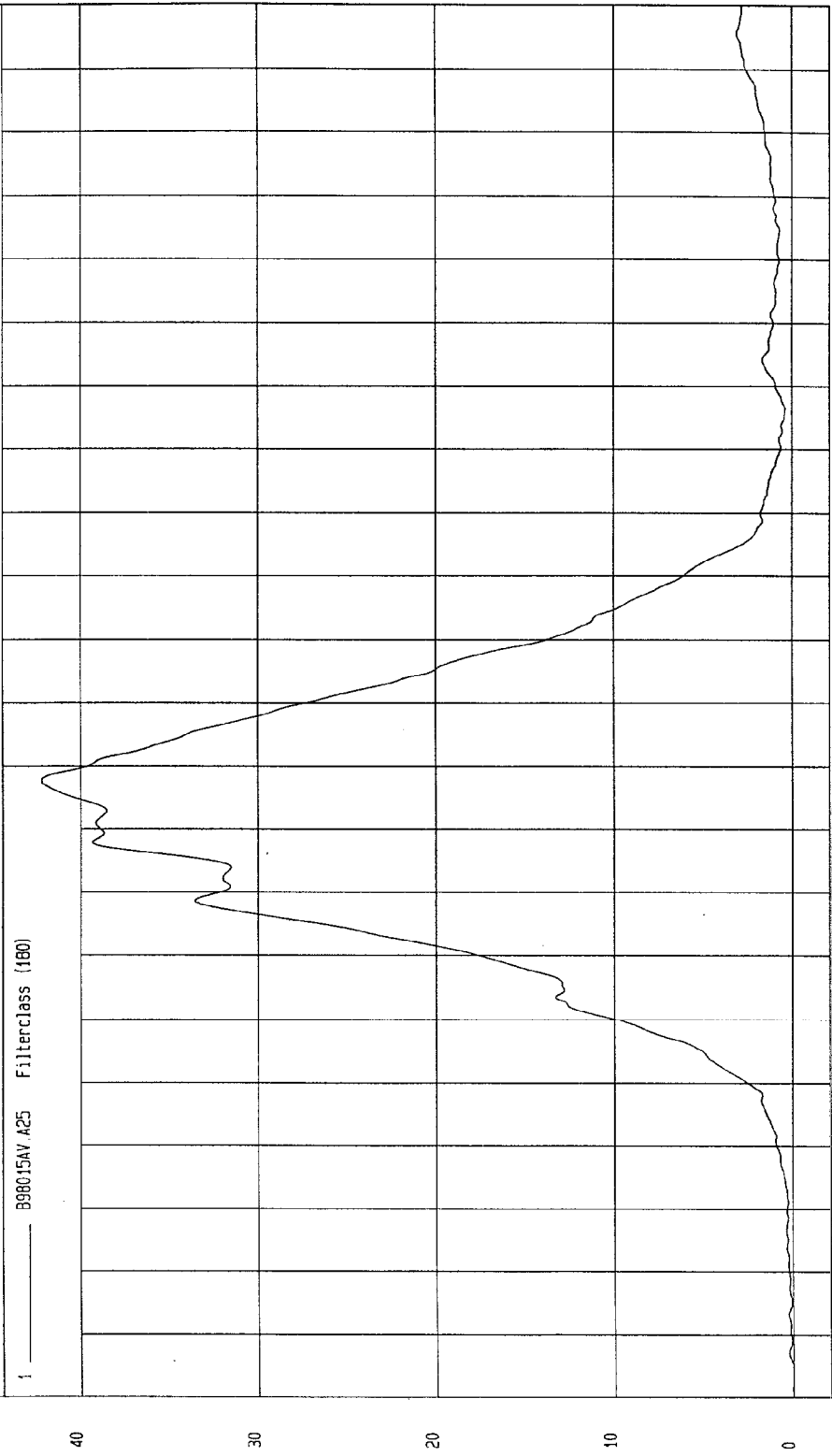


MCA Research
03-06-1998 13:46



TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998
 COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH
 Minimum = 1.73E-02 G'S at -16 msec Maximum = 42.17 G'S at 78 msec

PASSENGER CHEST RESULTANT ACCELERATION



MGA Research
 03-06-1998 13:48

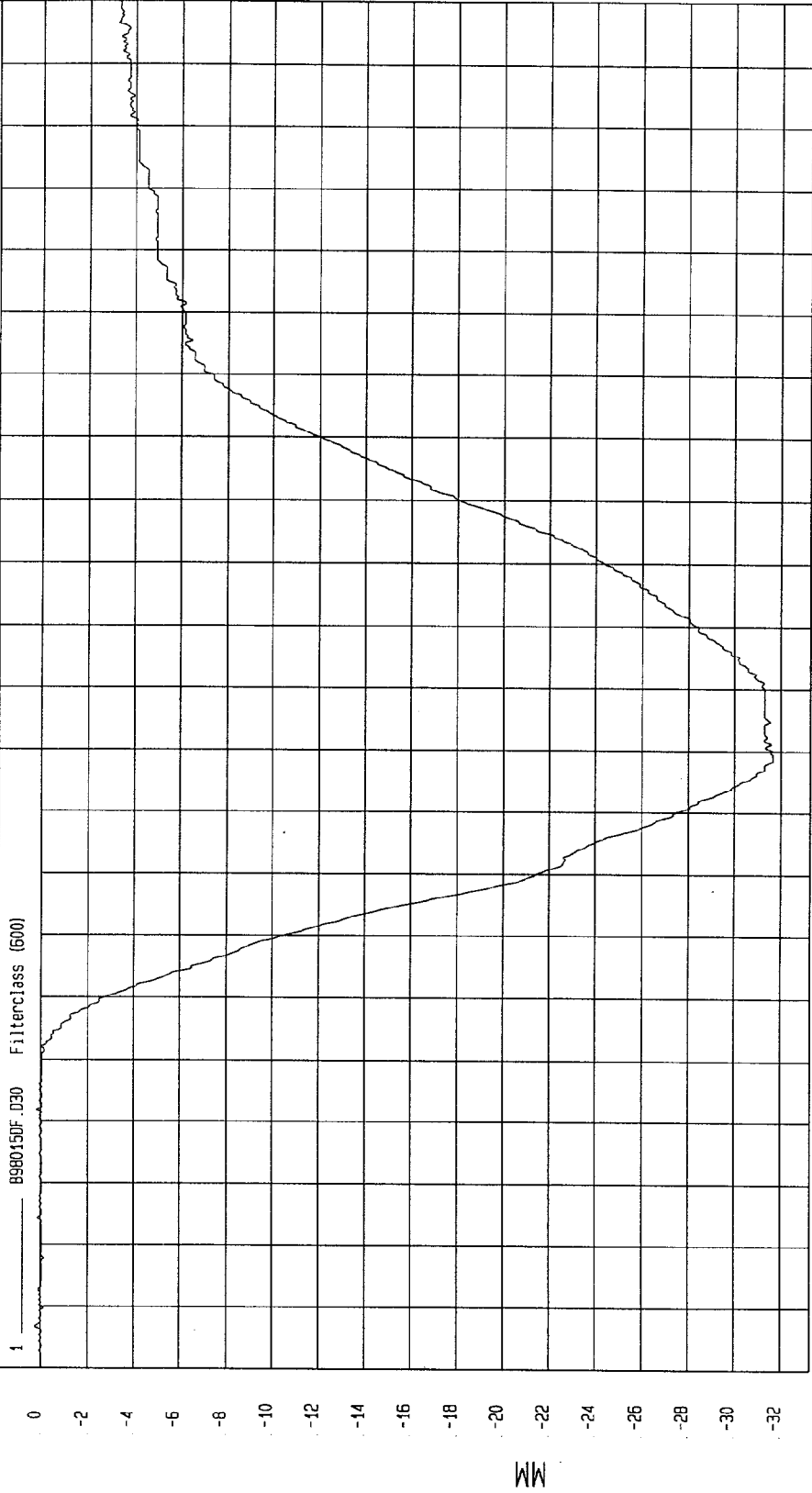
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -31.67 MM at 79 msec

Maximum = .25 MM at -13 msec

PASSENGER CHEST COMPRESSION



MOA Research
06-24-1998 10:06

TIME SECONDS

MM

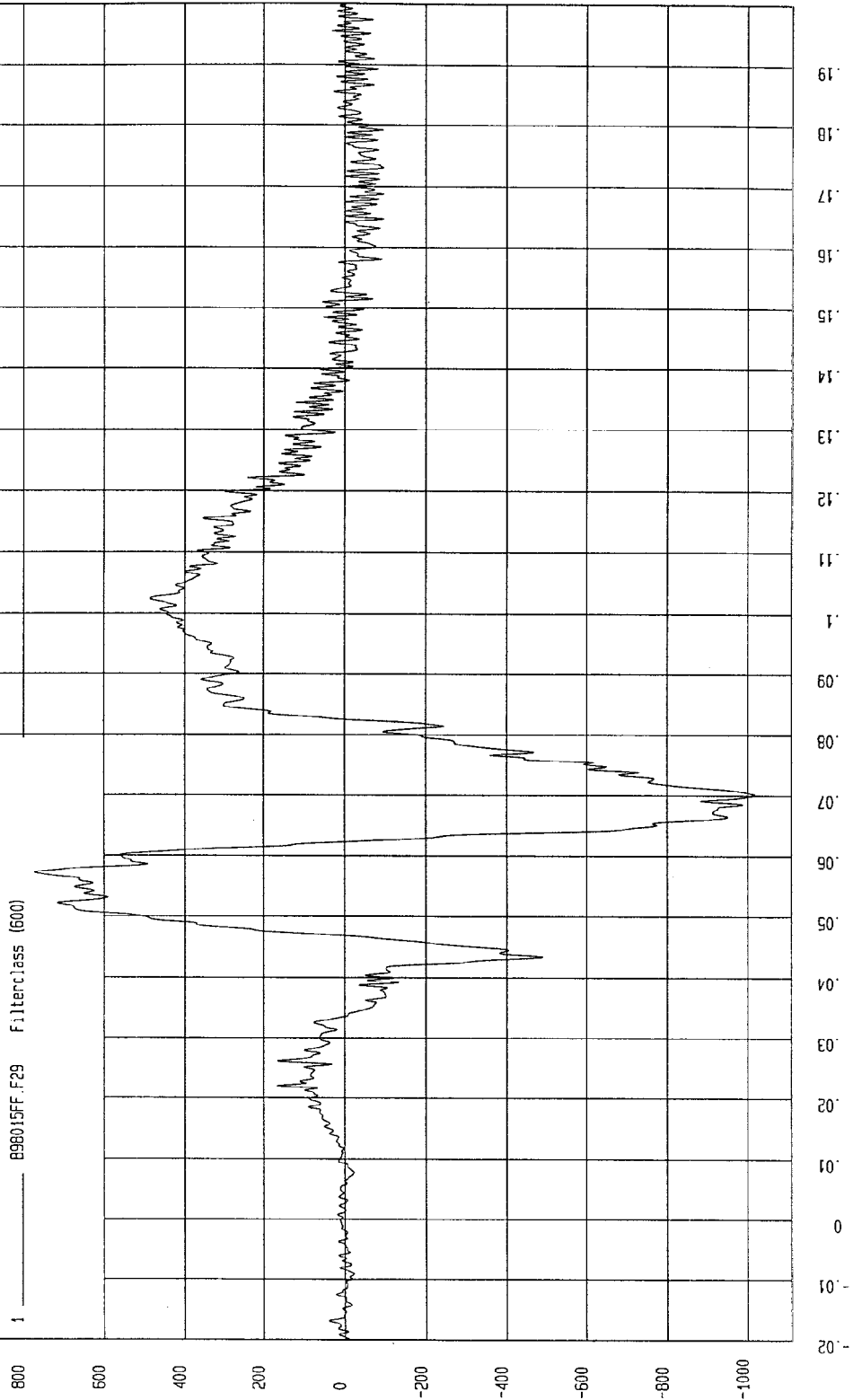
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -1018.09 N at 70 msec

Maximum = 771.95 N at 57 msec

PASSENGER LEFT FEMUR FORCE



MECA Research
03-06-1998 13:48

TEST DATE: 03-06-1998

TEST: FMVSS 208 30 MPH FRONTAL IMPACT

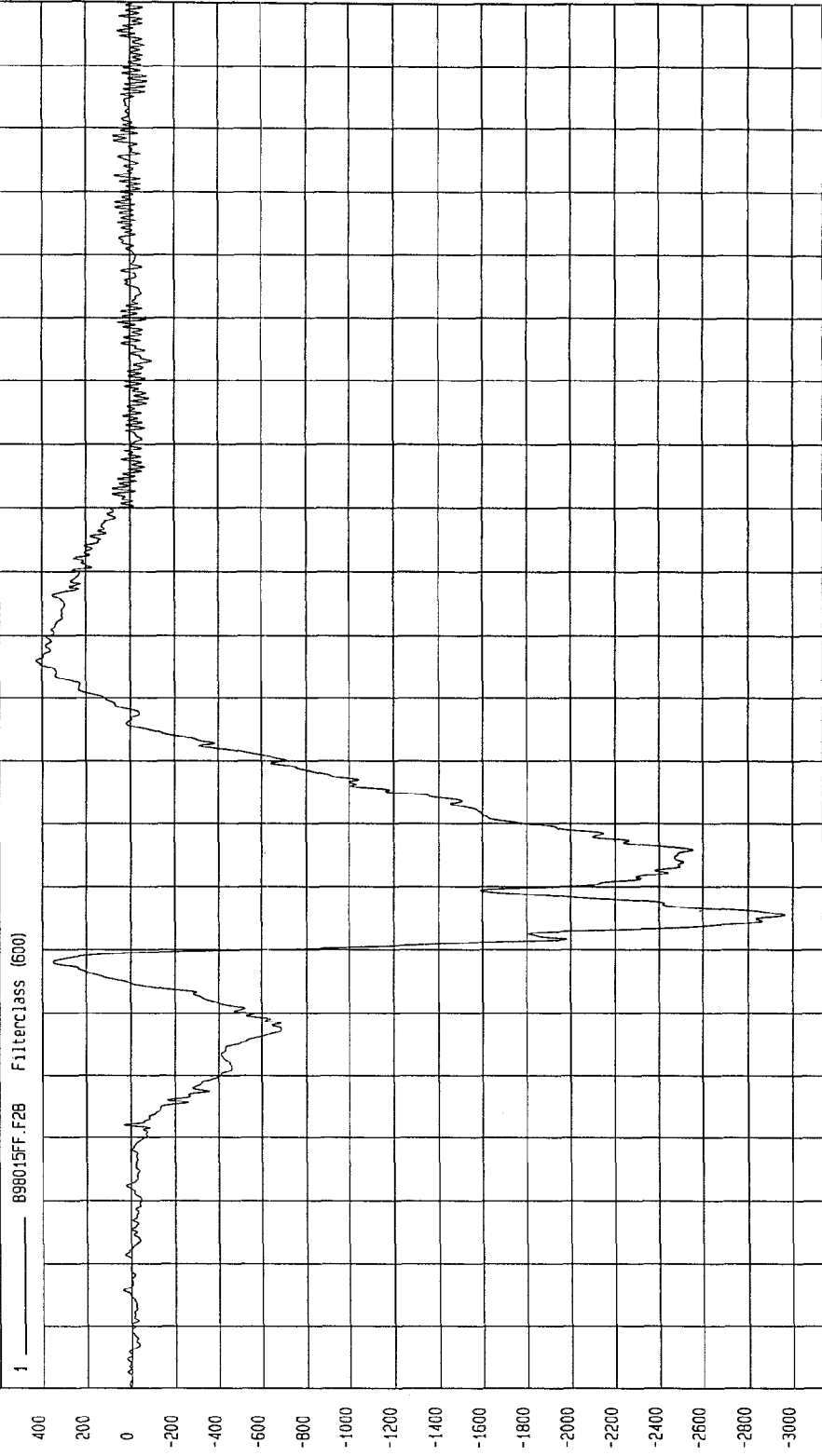
Speed: 29.5 MPH 47.5 KPH

COMPONENT: 1998 NISSAN ALTIMA (CW5206)

Maximum = 425.64 N at 96 msec

Minimum = -2967.80 N at 56 msec

PASSENGER RIGHT FEMUR FORCE



NSA Research
03-06-1998 13:49

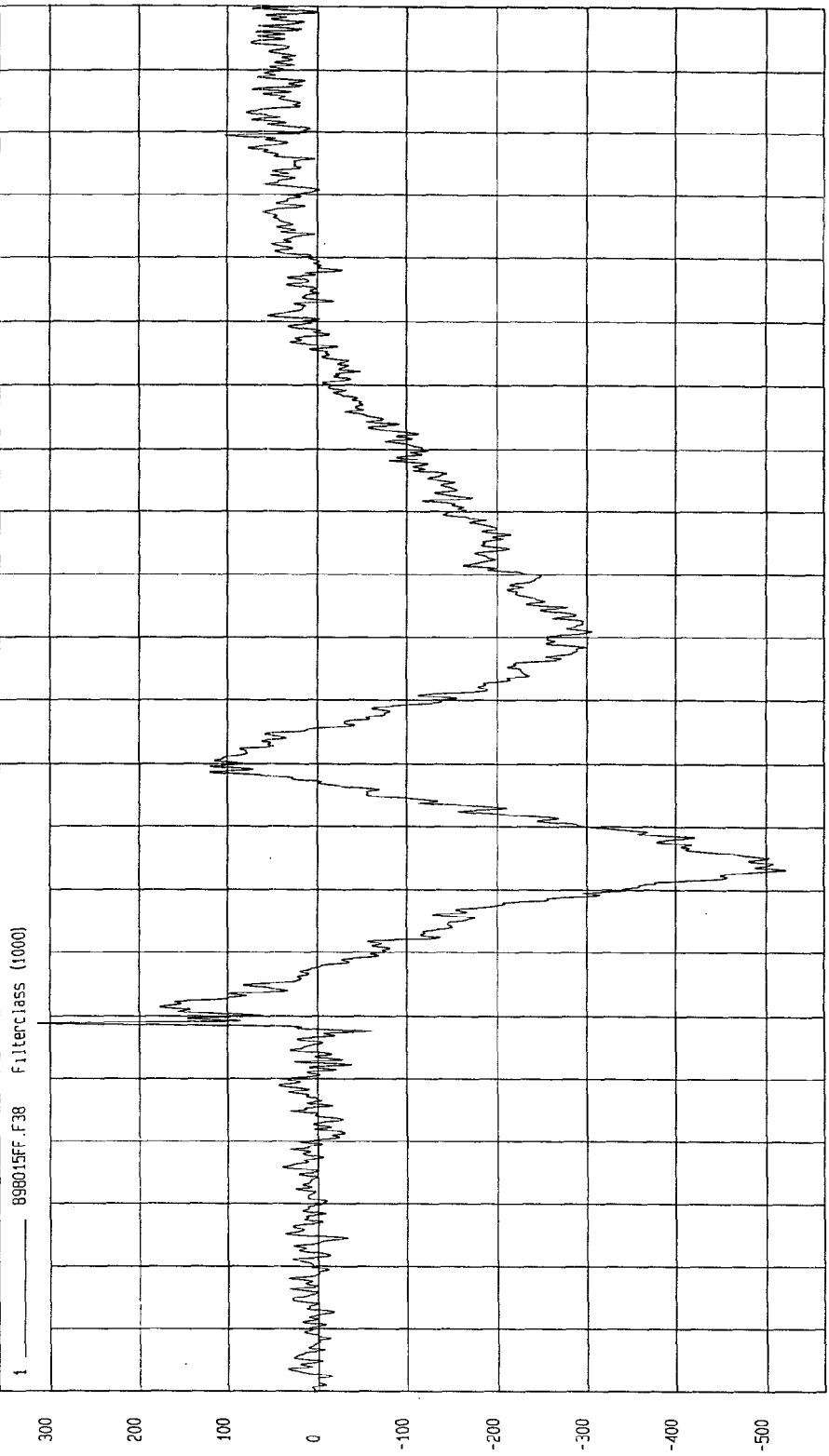
TIME (SECONDS)

N

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -522.20 N at 63 msec Maximum = 314.28 N at 39 msec

PASSENGER NECK FORCE X



TIME (SECONDS)

MCA Research
03-06-1998 13.49

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

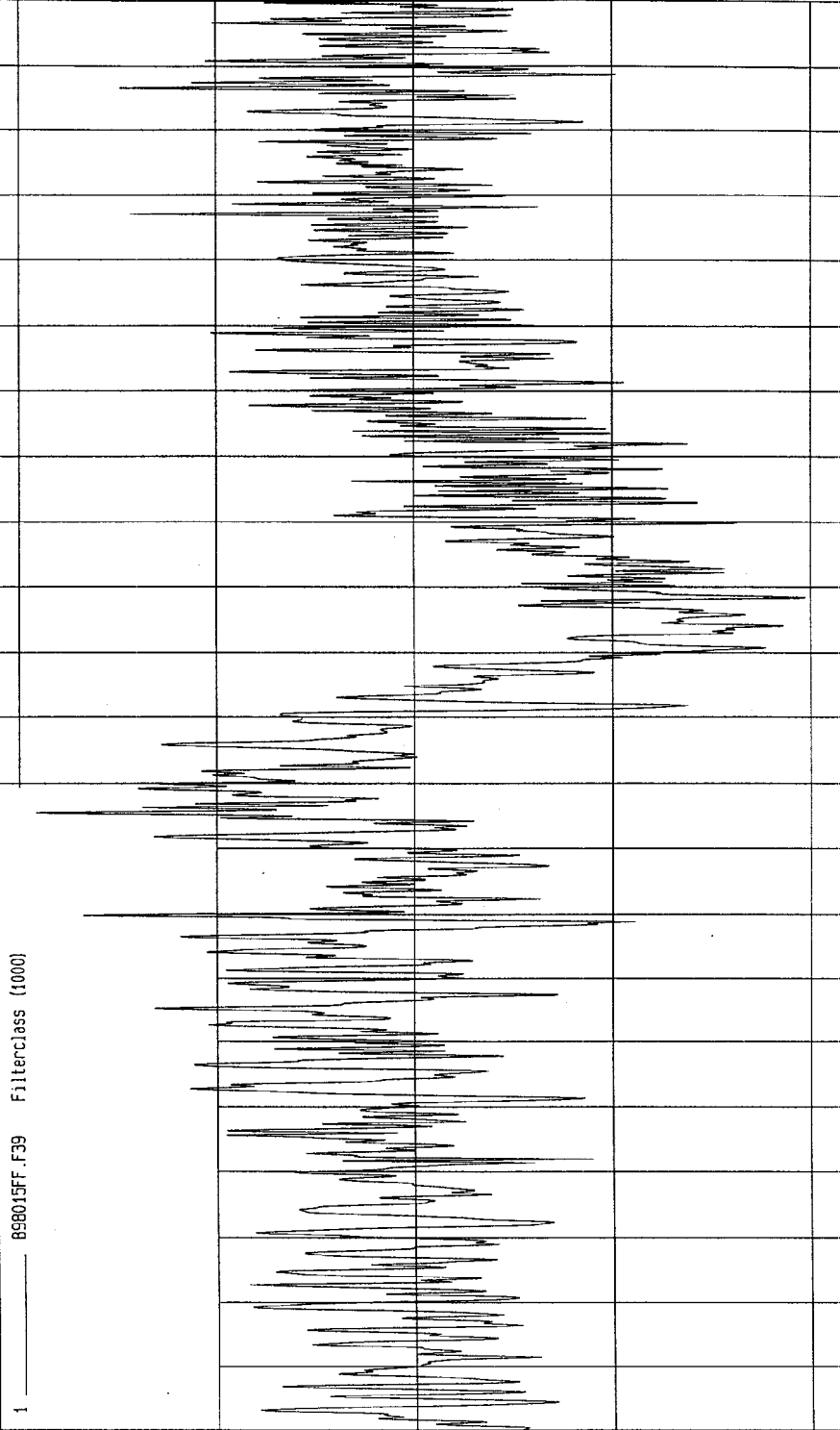
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -197.06 N at 108 msec
Maximum = 191.66 N at 75 msec

PASSENGER NECK FORCE Y

1 _____ 898015FF.F39 Filterclass (1000)

200
100
0
-100
-200



MCA Research
03-08-1998 13.49

TIME (SECONDS)

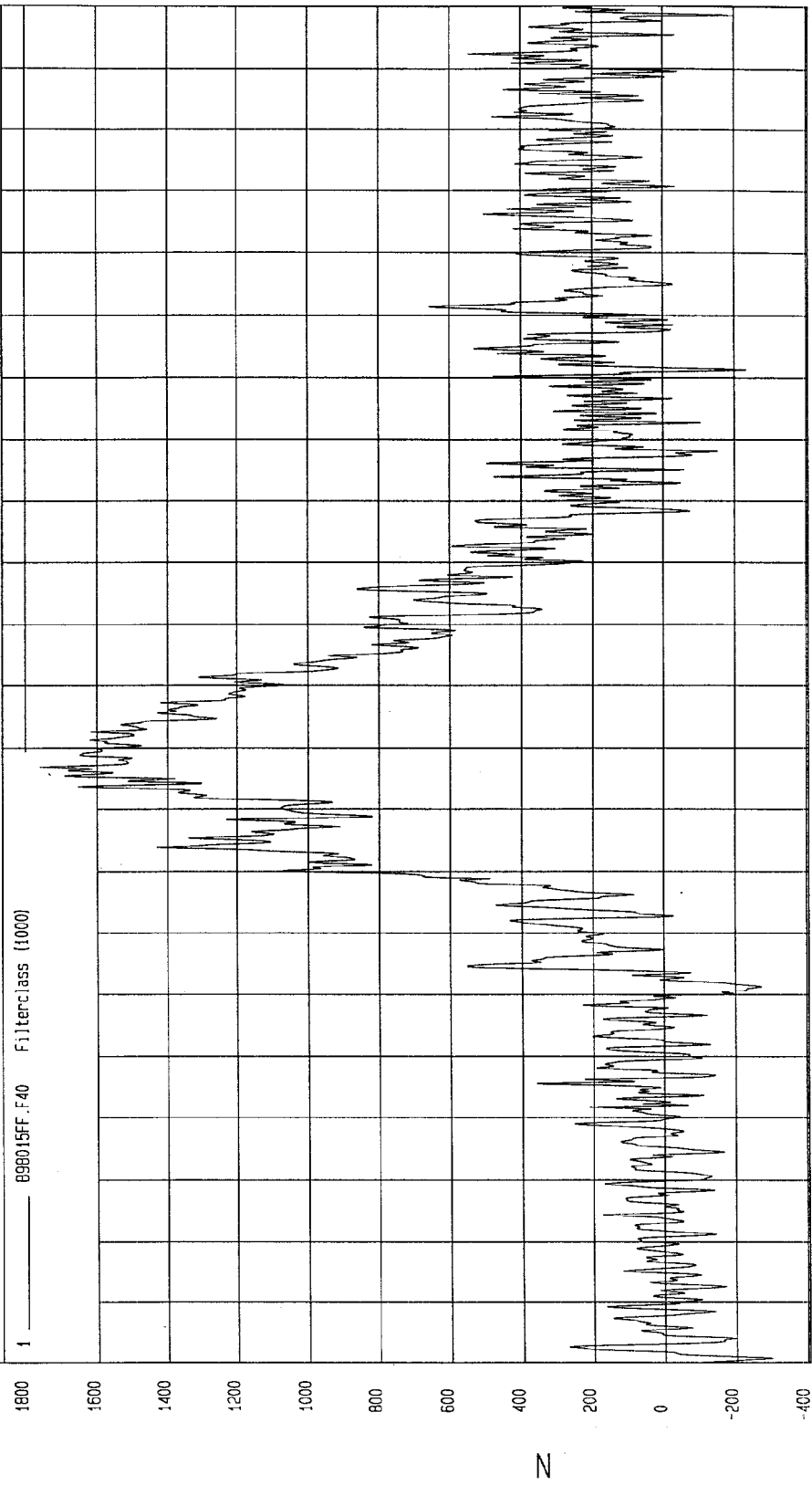
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -302.01 N at -19 msec
Maximum = 1761.12 N at 77 msec

PASSENGER NECK FORCE Z

1 ——— 896015FF.F40 Filterclass (1000)



TIME (SECONDS)

MCA Research
03-06-1998 13:49

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = 4.72 N at 15 msec

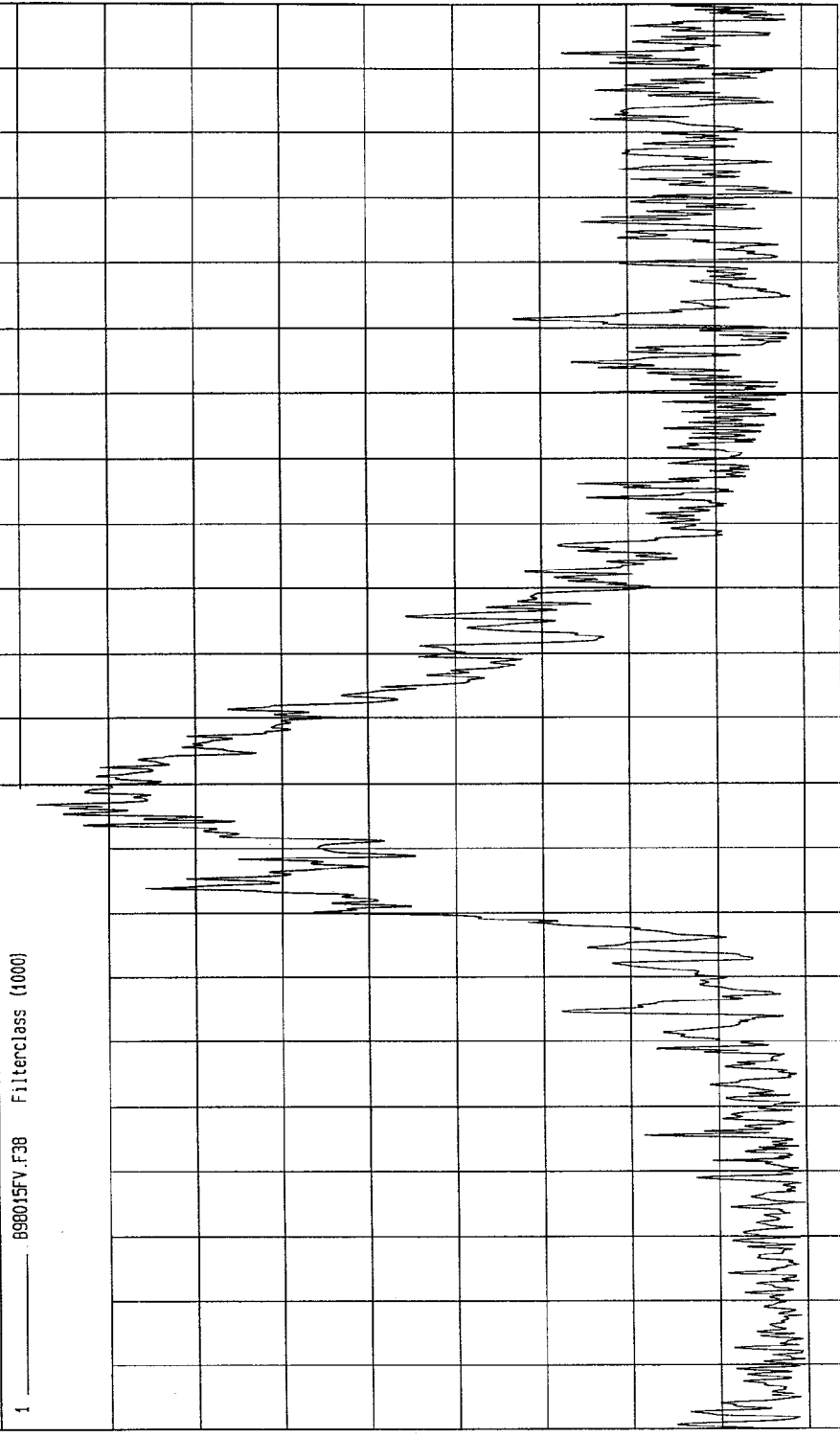
Maximum = 1764.61 N at 77 msec

PASSENGER NECK FORCE RESULTANT

1 898015FV.F38 Filterclass (1000)

1800
1600
1400
1200
1000
800
600
400
200
0

N



MGA Research
03-06-1998 14:07

TIME (SECONDS)

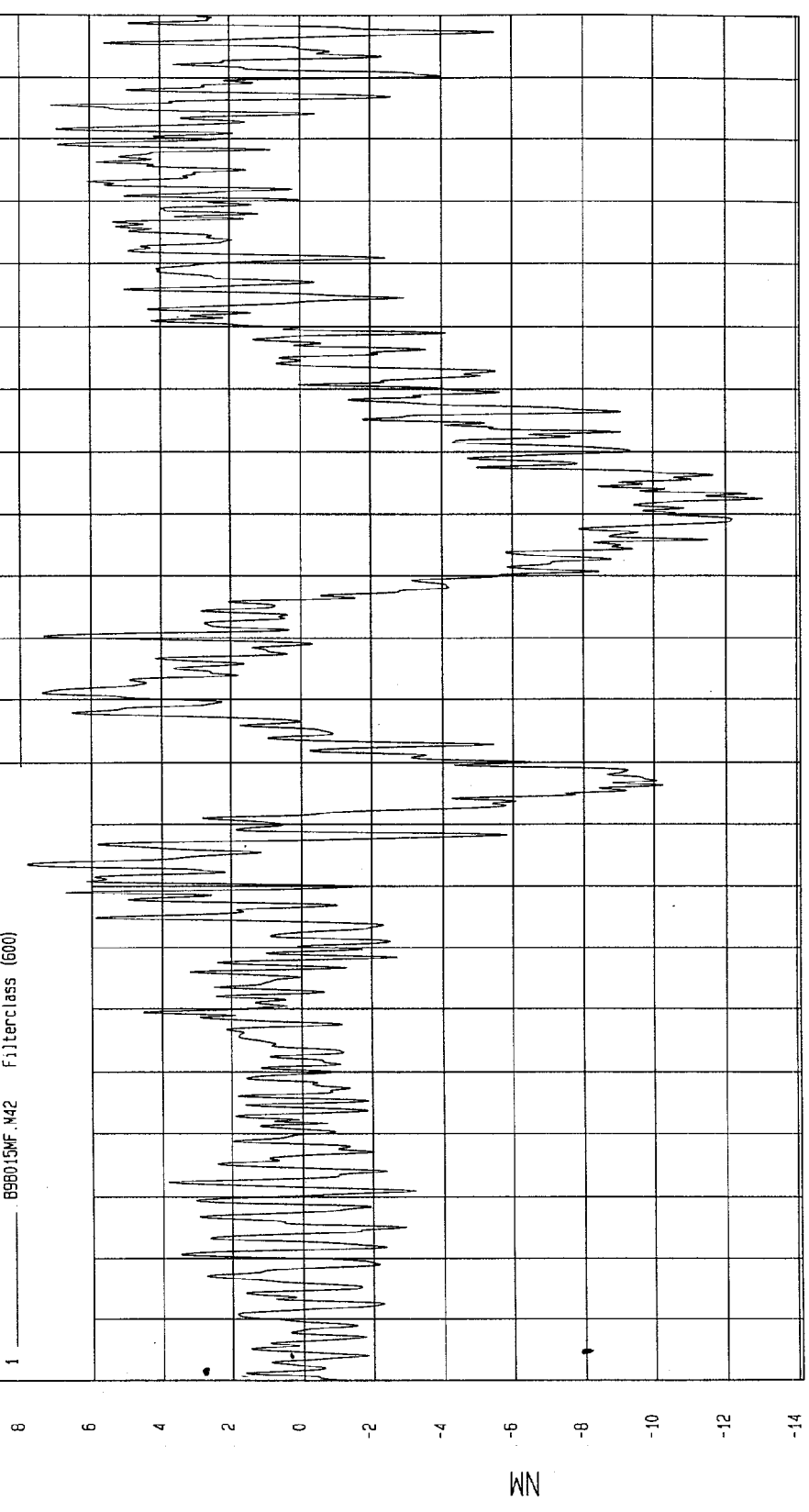
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -13.04 NM at 123 msec
Maximum = 7.83 NM at 64 msec

PASSENGER NECK MOMENT X

1 ——— B98015MF.M42 Filterclass (600)



NGA Report
03-06-1998 13:49

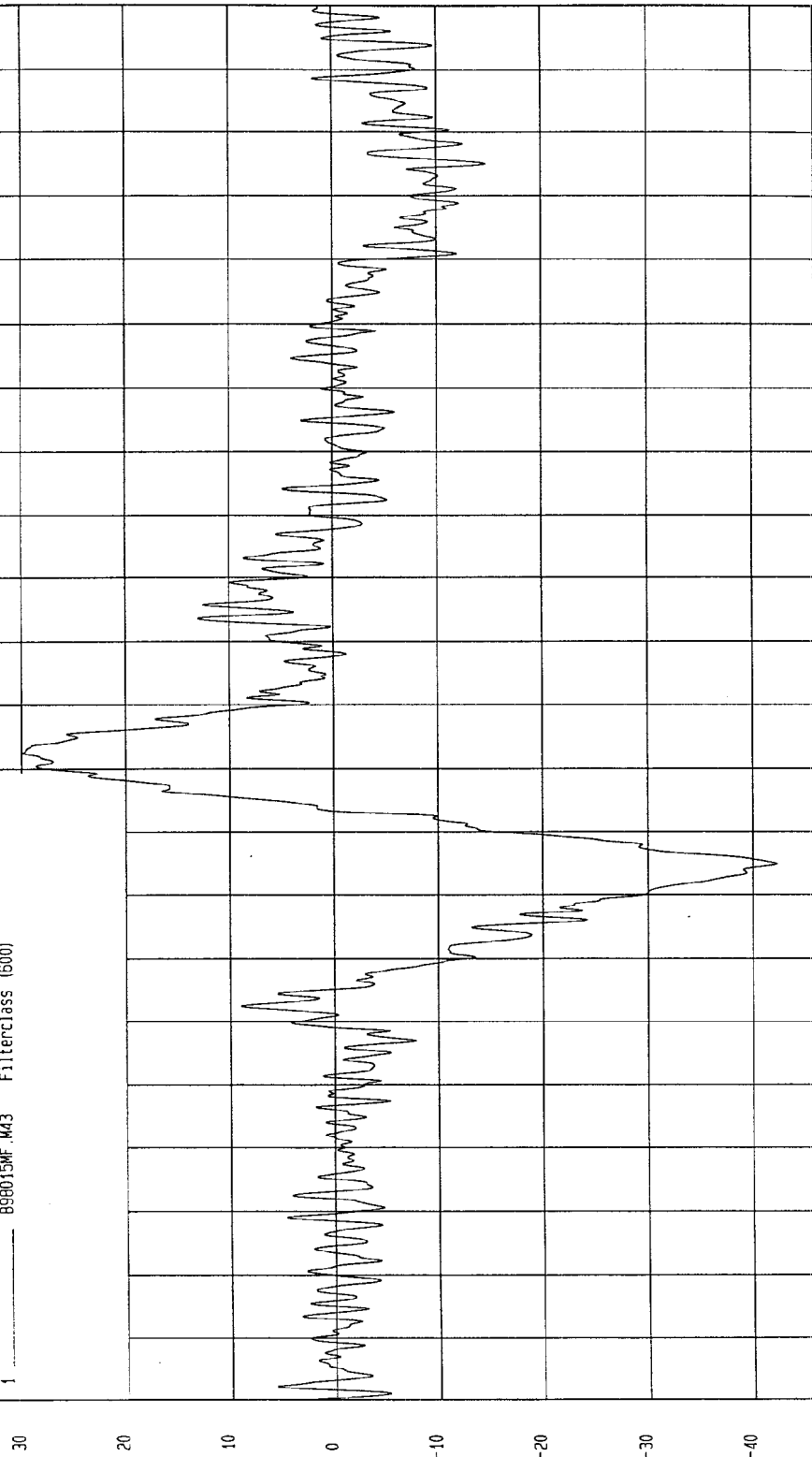
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -42.32 NM at 65 msec Maximum = 29.61 NM at 82 msec

PASSENGER NECK MOMENT Y

1 898015MF.M43 Filterclass (500)



MEA Research
03-06-1998 13:49

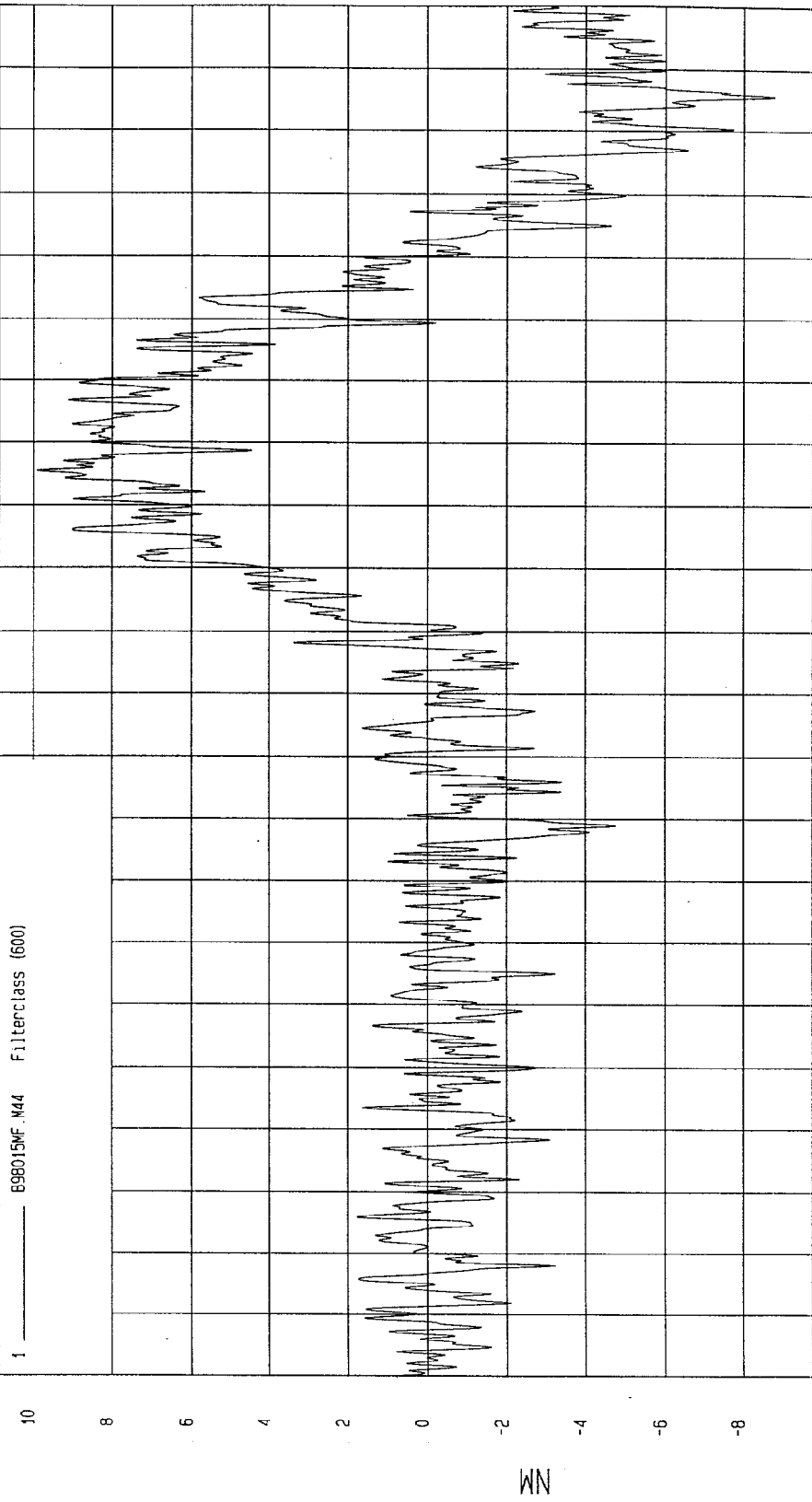
TIME (SECONDS)

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -8.78 NM at 186 msec Maximum = 9.91 NM at 126 msec

PASSENGER NECK MOMENT Z

1 ——— 898015MF.M44 Filterclass (600)



MCA Research
03-06-1998 13:50

TIME (SECONDS)

NM

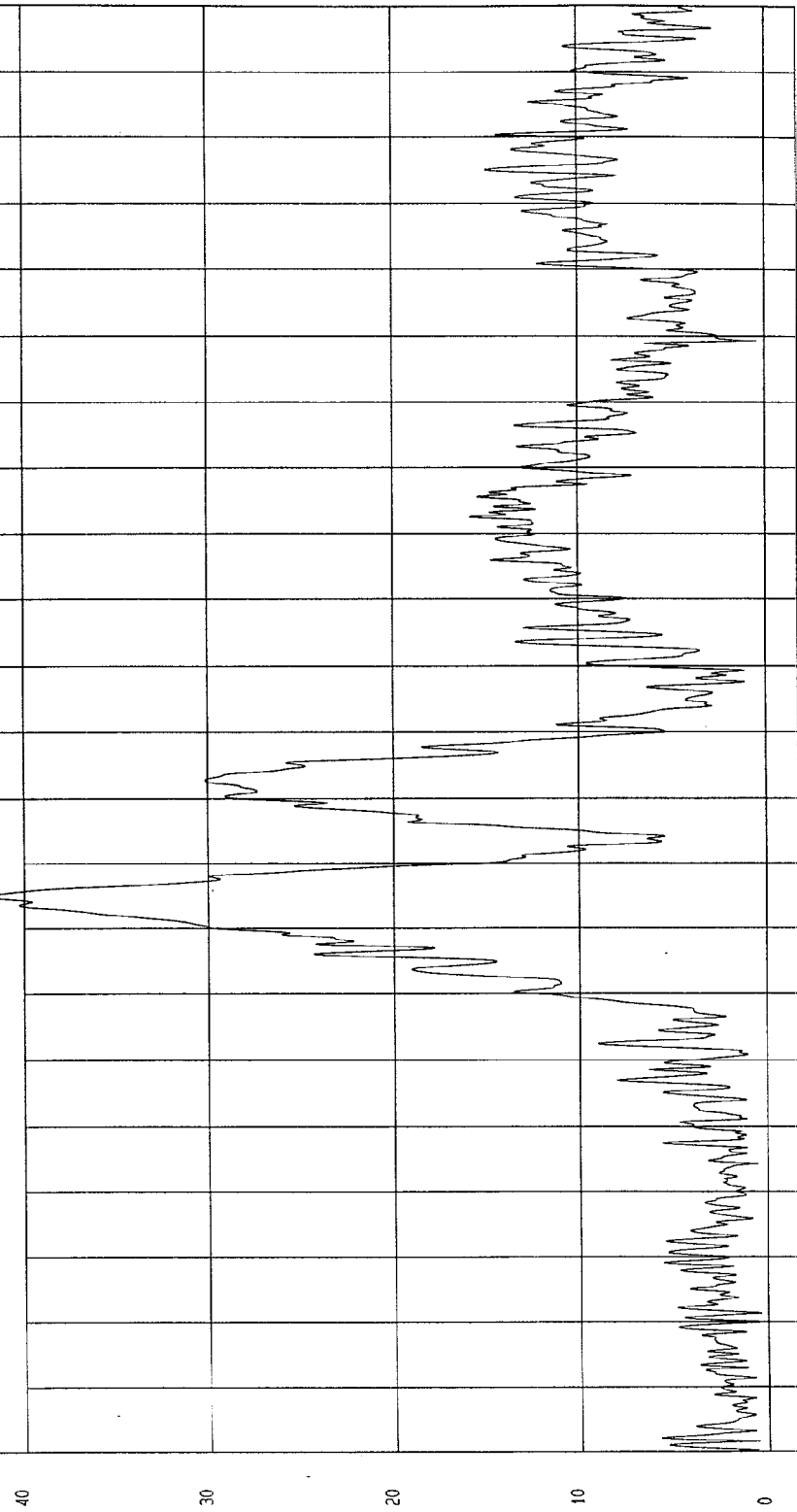
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = .37 NM at 1 msec Maximum = 42.43 NM at 65 msec

PASSENGER NECK MOMENT RESULTANT

1 _____ B98015NV.M42 Filterclass (600)



MGA Research
03-08-1998 14:07

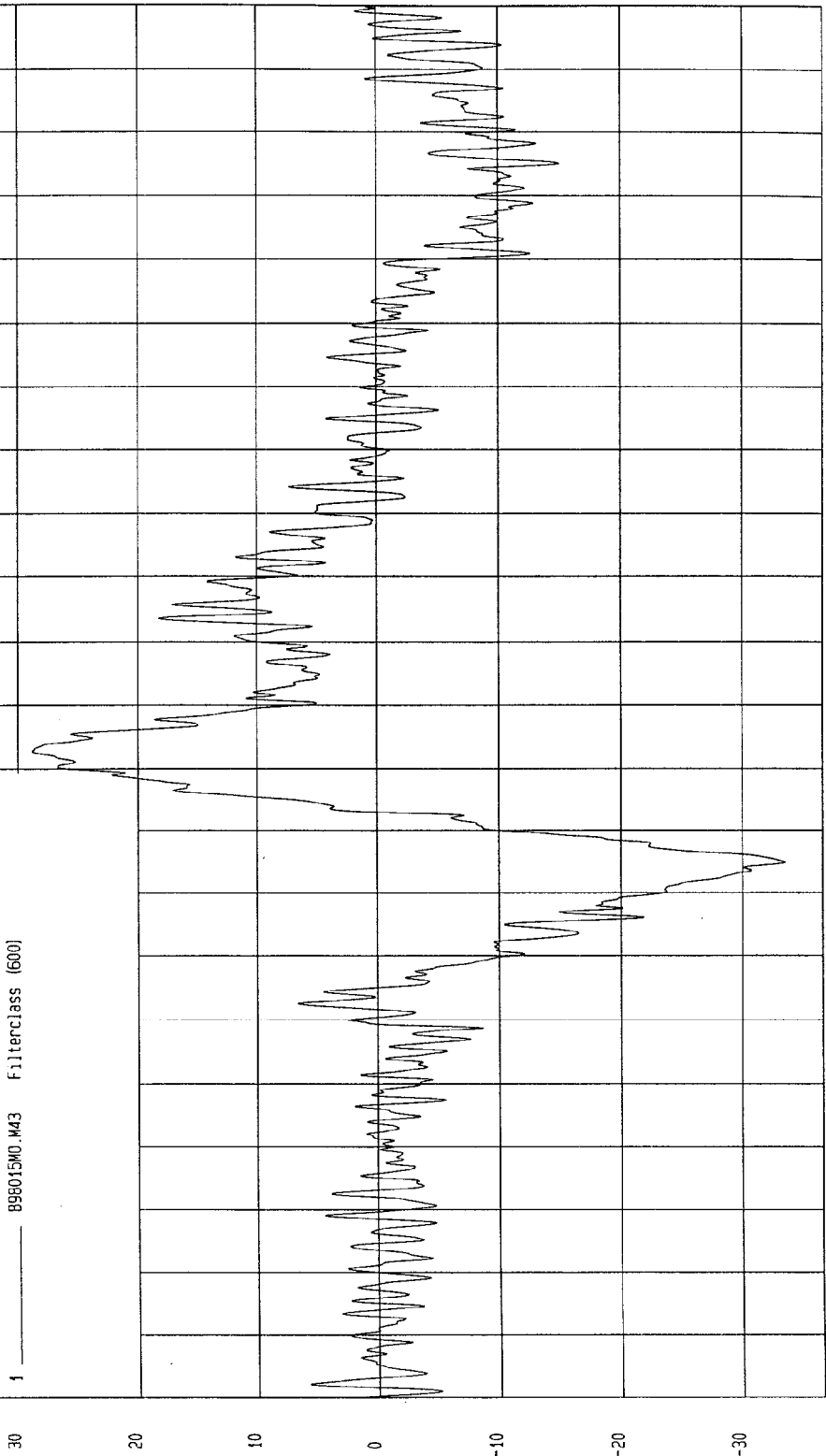
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -33.52 NM at 65 msec Maximum = 28.82 NM at 83 msec

PASSENGER OCCIPITAL CONDYLE MOMENT Y

1 _____ 896015M0.M43 FilterClass (600)

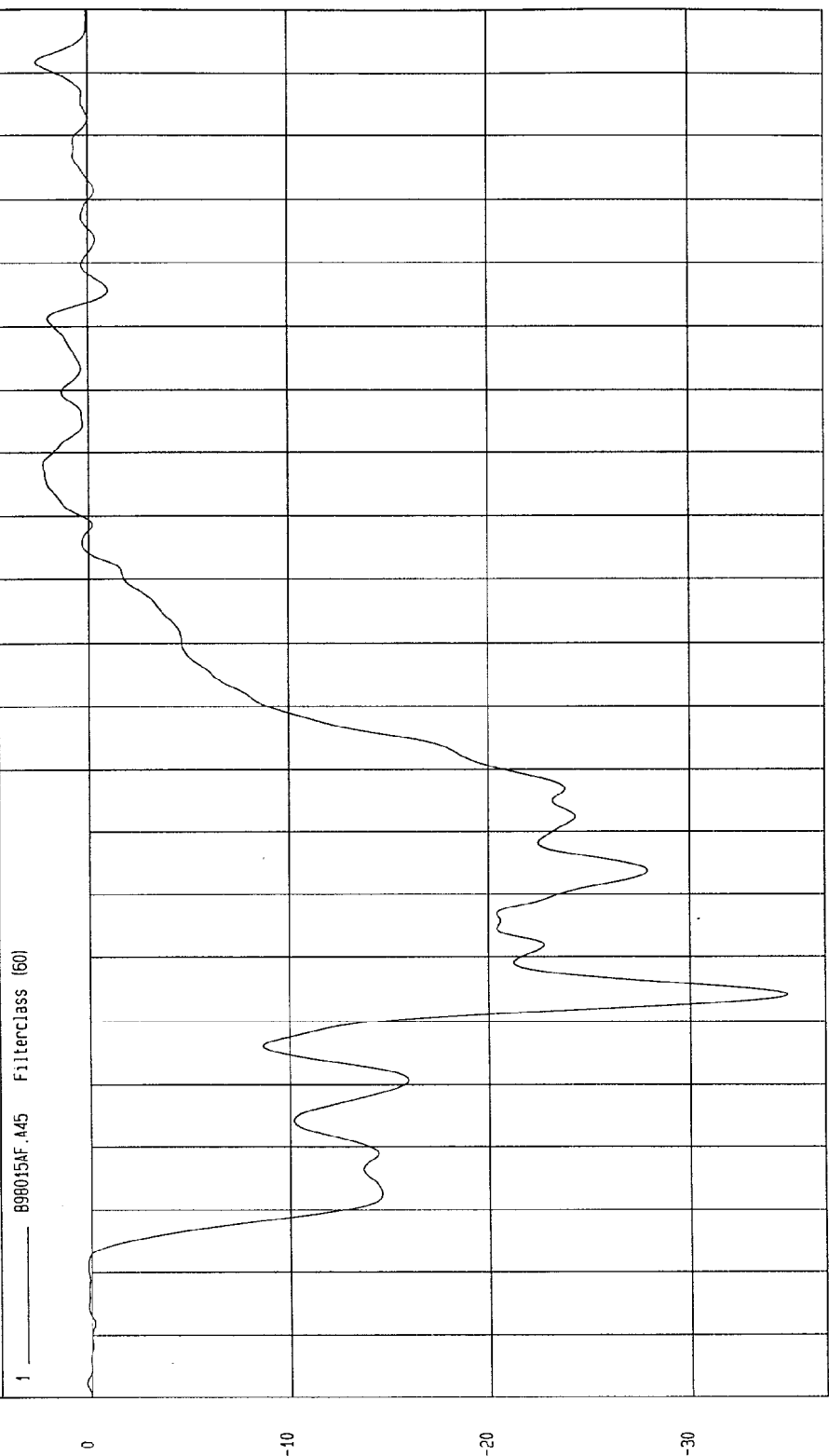


MCA Research
03-08-1998 13:50

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -34.78 G'S at 44 msec Maximum = 2.59 G'S at 192 msec

LEFT REAR SEAT CROSSMEMBER X ACCELERATION



MEV Research
03-06-1998 13:50
TIME (SECONDS)

G.S

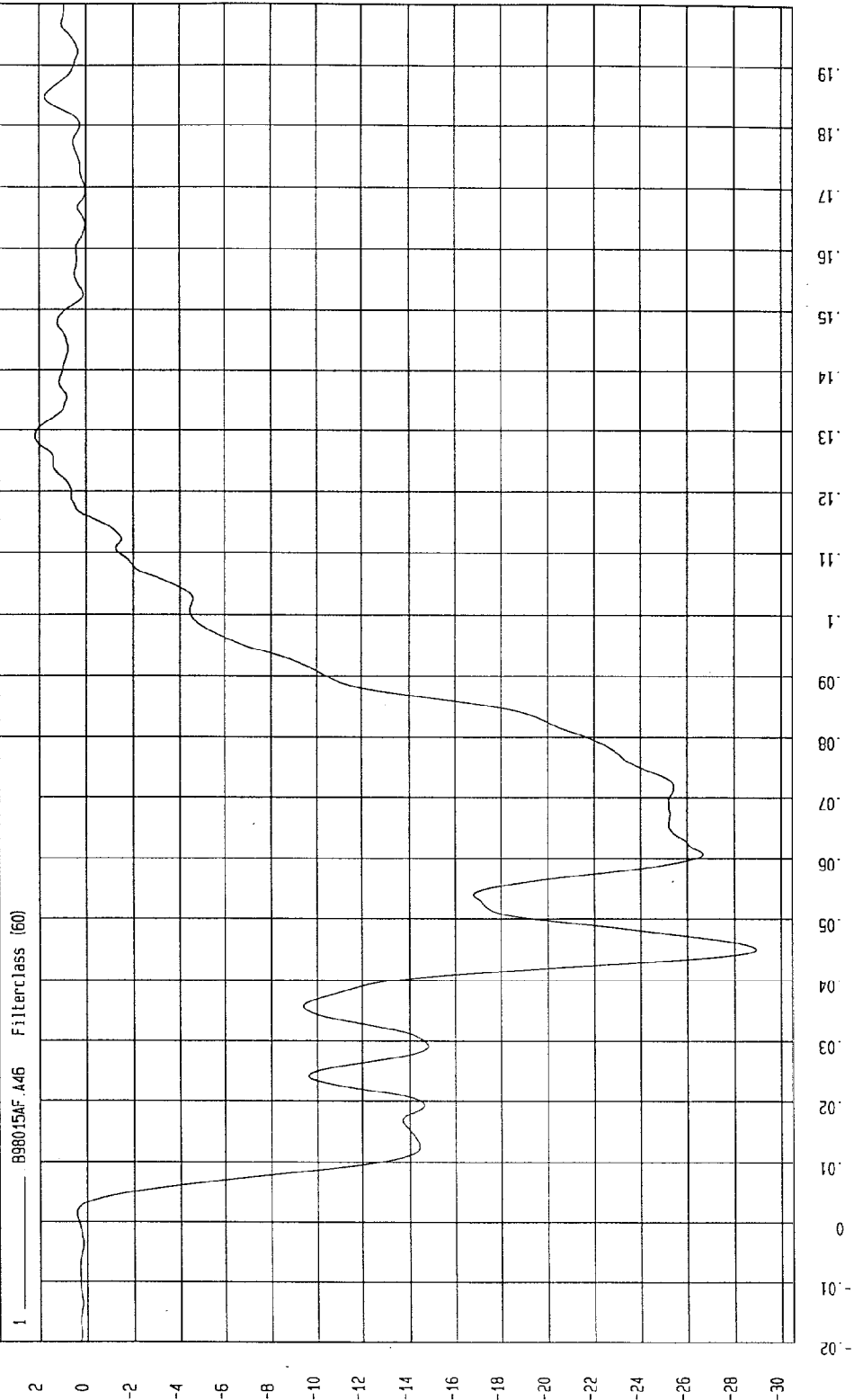
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -28.92 G's at 45 msec

Maximum = 2.15 G's at 129 msec

RIGHT REAR SEAT CROSSMEMBER X ACCELERATION



MGA Research
03-06-1998 13:50

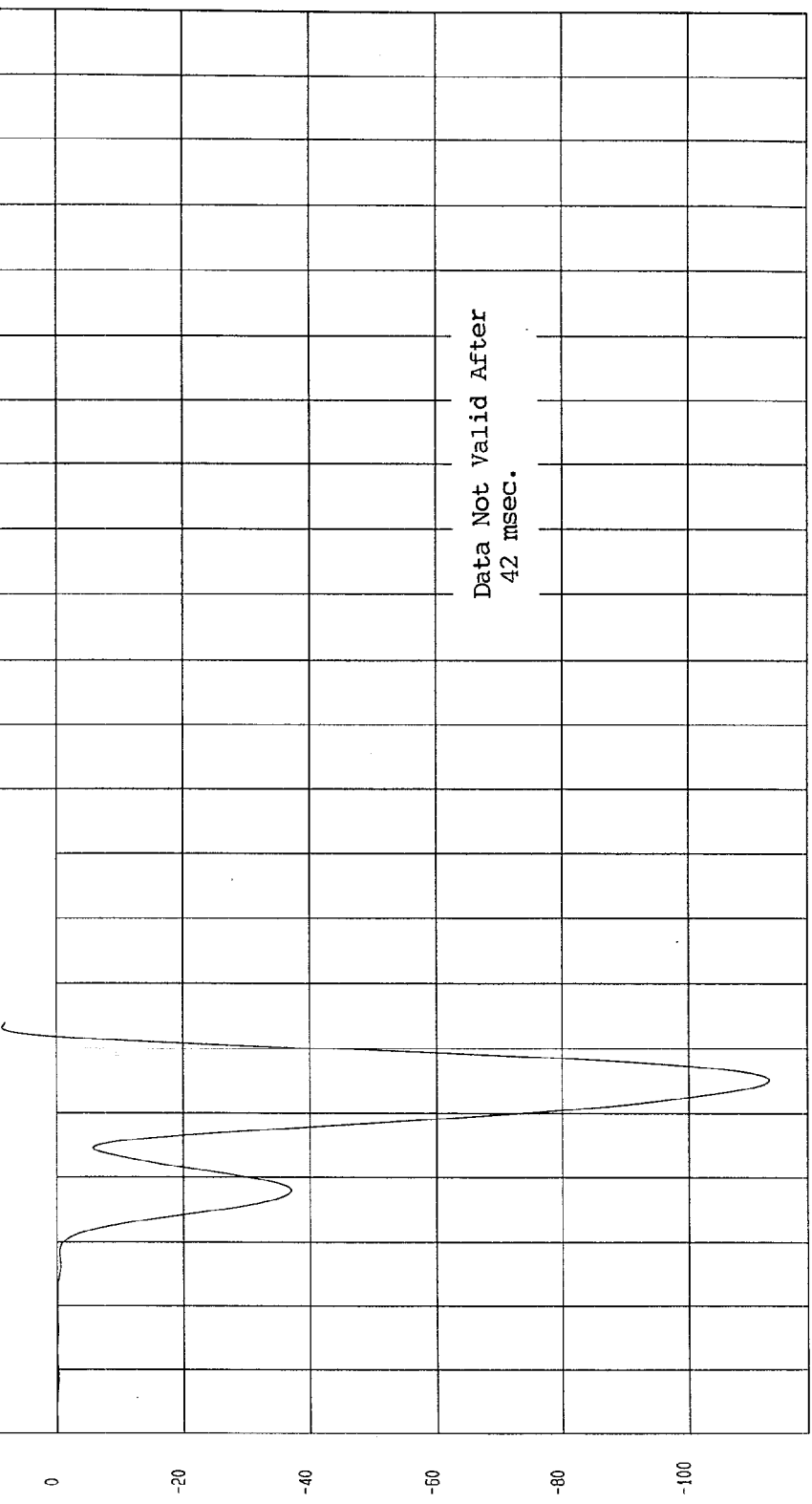
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -112.53 G'S at 35 msec

TOP OF ENGINE BLOCK X ACCELERATION

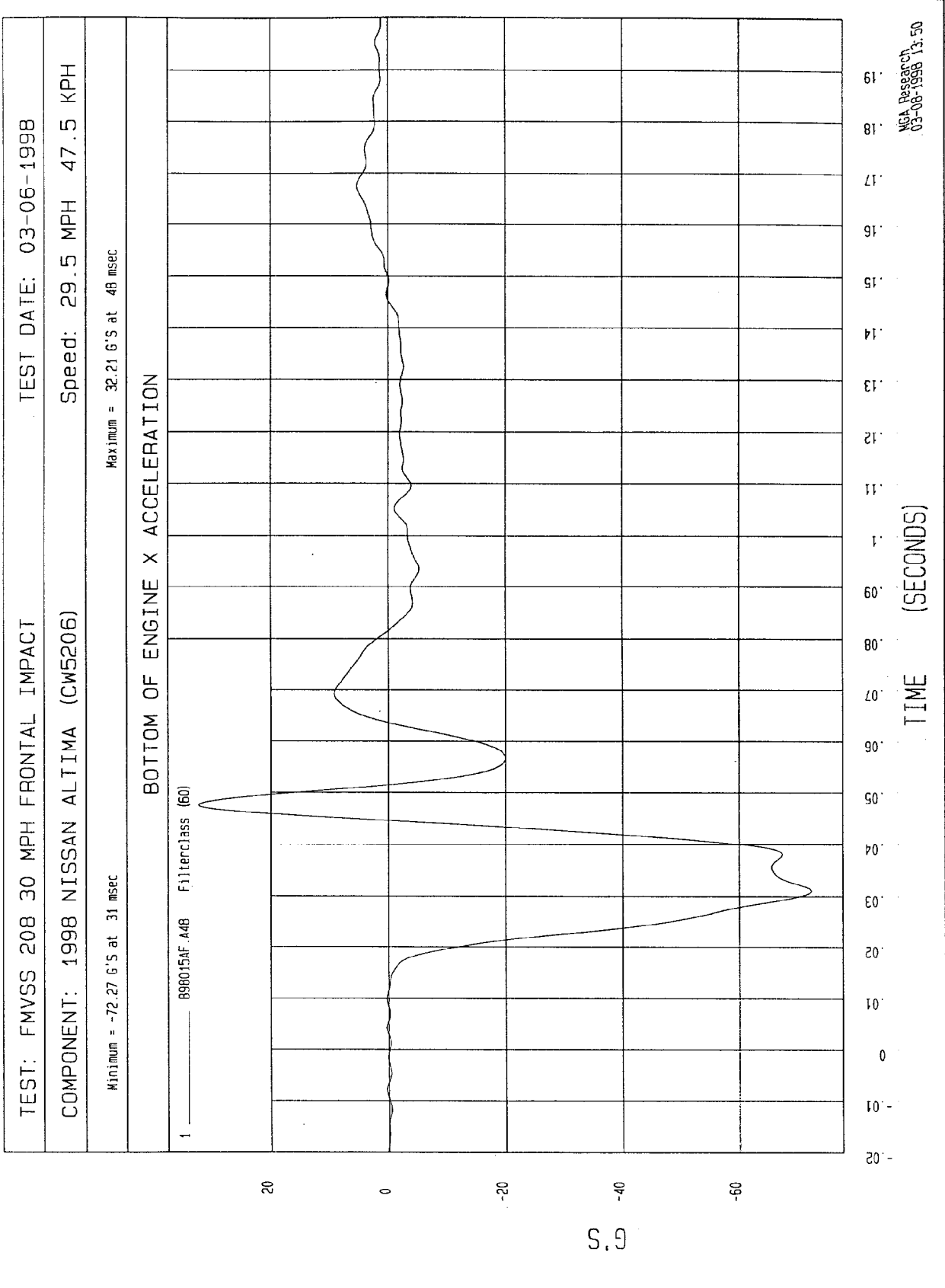
1 ——— 898015AF.A47 Filterclass (60)



Data Not Valid After 42 msec.

G.S

TIME (SECONDS) MCA Research 03-06-1998 14.03



MGA Research
03-08-1998 13:50

TIME (SECONDS)

G.S

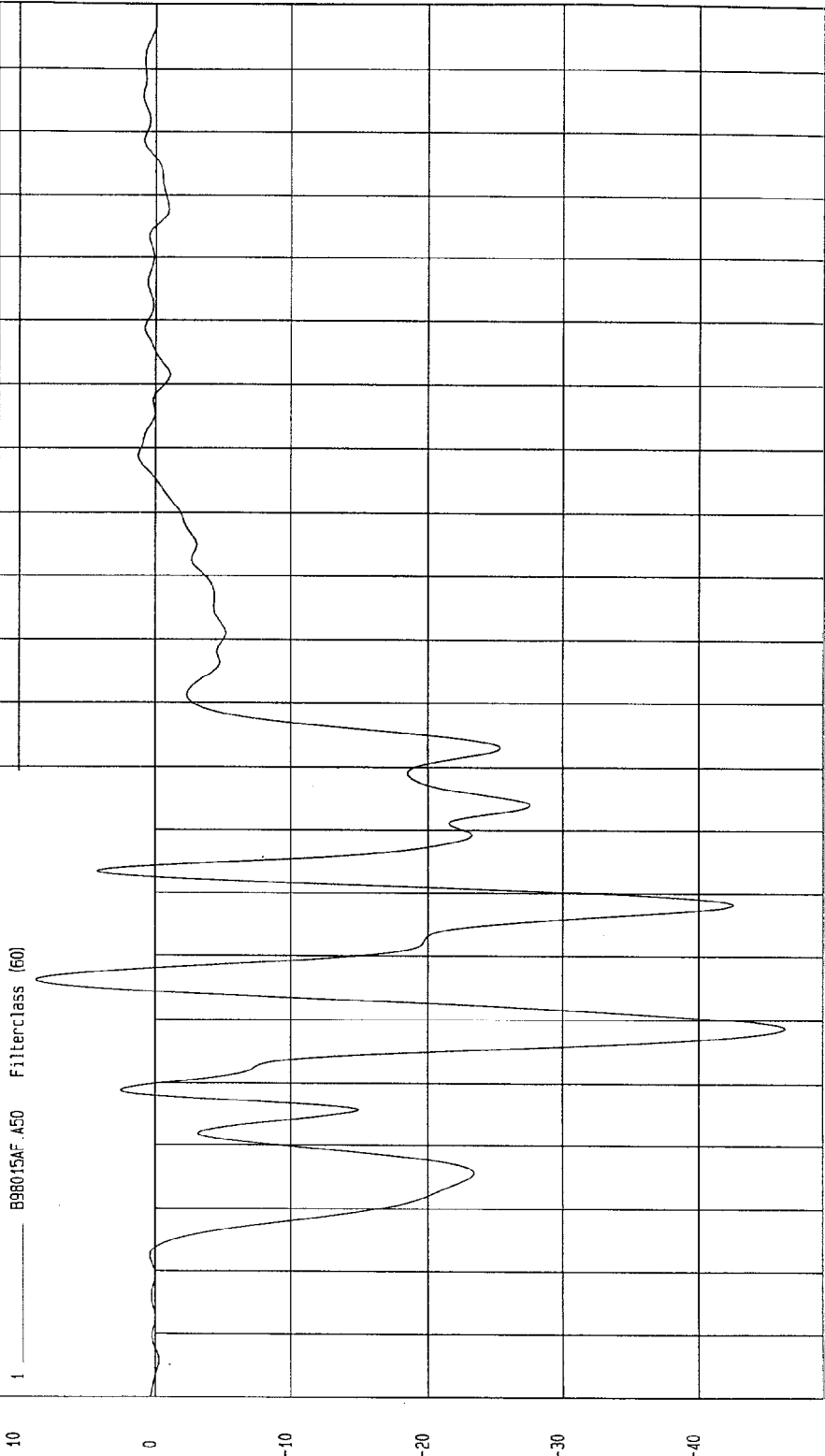
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -46.35 G'S at 39 msec
Maximum = 8.76 G'S at 46 msec

INSTRUMENT PANEL X ACCELERATION

1 B98015AF.A50 Filterclass (60)



MGA Research
03-06-1998 13:50

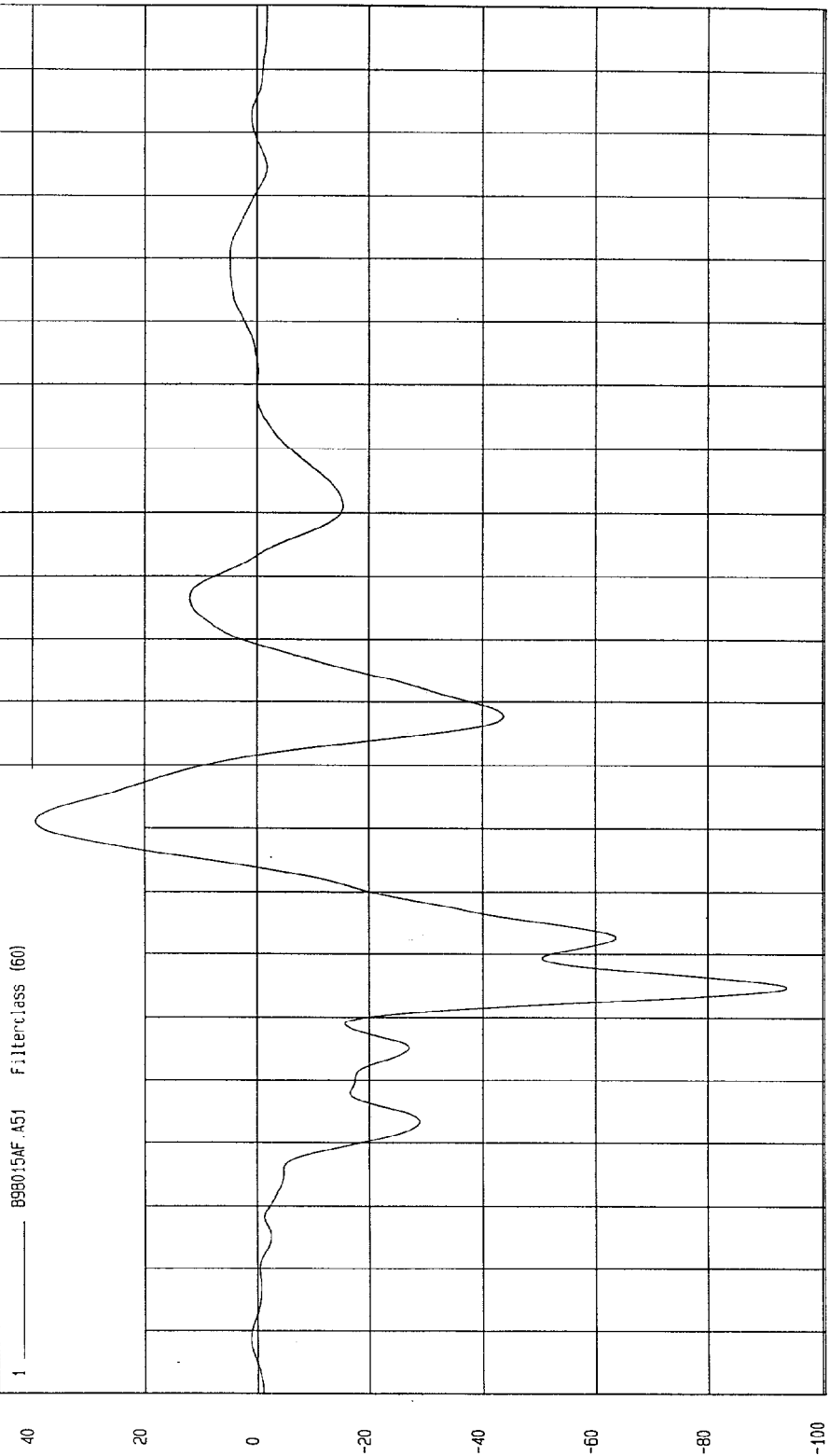
TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -93.76 G'S at 45 msec
Maximum = 39.33 G'S at 71 msec

LEFT FRONT BRAKE CALIPER X ACCELERATION

1 ——— 898015AF.A51 Filterclass (60)



MSA Research
03-06-1998 13:50

TIME (SECONDS)

G.S

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

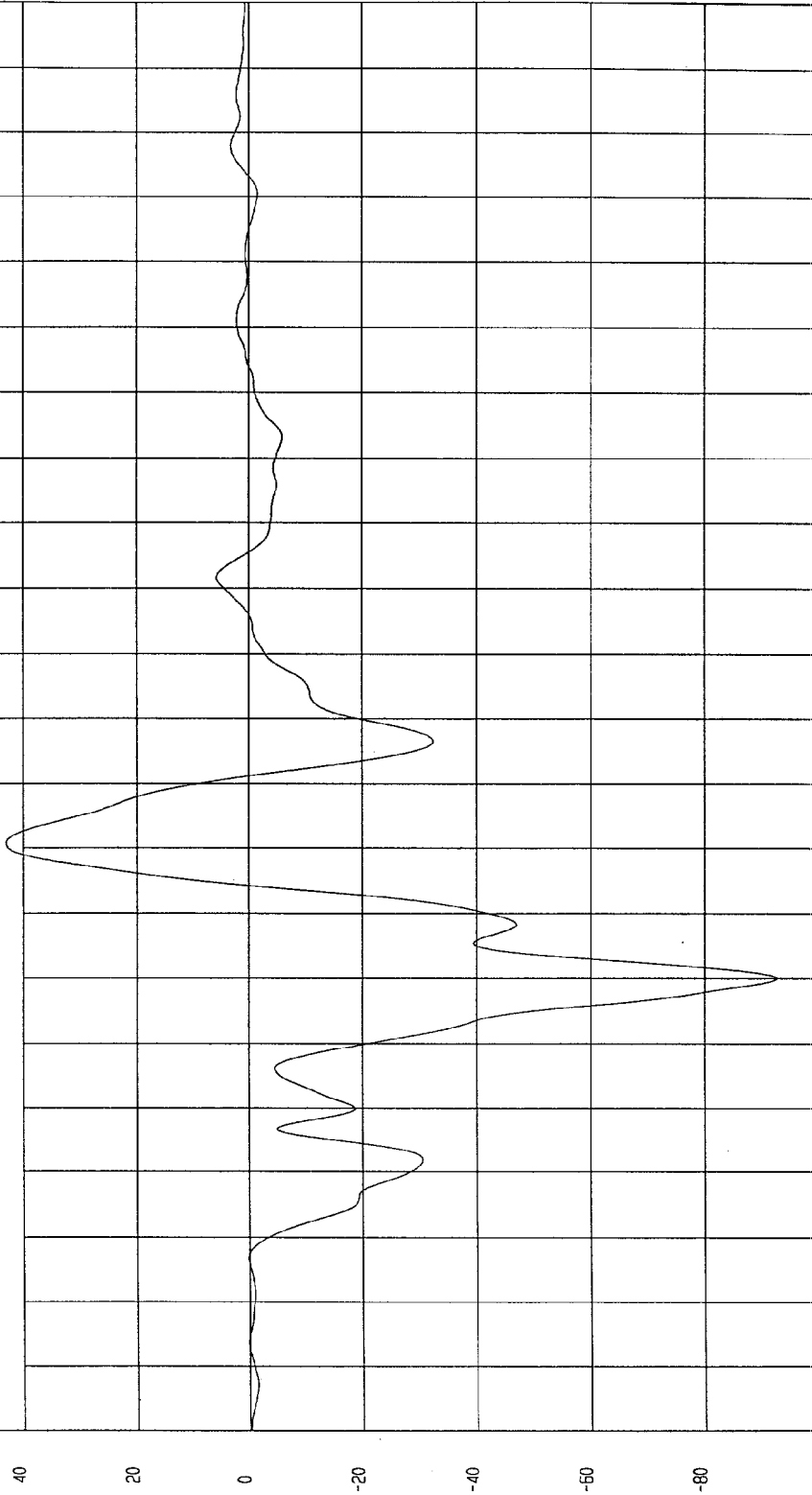
COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -92.35 G'S at 50 msec

Maximum = 43.14 G'S at 71 msec

RIGHT FRONT BRAKE CALIPER X ACCELERATION

1 ——— 898015AF.A49 Filterclass (60)



MCA Research
03-06-1998 13:51

TEST: FMVSS 208 30 MPH FRONTAL IMPACT TEST DATE: 03-06-1998

COMPONENT: 1998 NISSAN ALTIMA (CW5206) Speed: 29.5 MPH 47.5 KPH

Minimum = -17.51 G'S at 49 msec Maximum = 13.88 G'S at 43 msec

TRUNK Z ACCELERATION

1 ——— B98015AF.A52 Filterclass (60)

14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18

G.S

0.02 0.04 0.06 0.07 0.08 0.09 0.1 0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19

TIME (SECONDS)

MCA Research
03-06-1998 13:51

APPENDIX C
MANUFACTURER'S VEHICLE INFORMATION

1998 Nissan Altima

- 1) The air bag restraint system provided at each front outboard designated seating position in the 1998 Model Year Nissan Altima is installed to meet the requirements of FMVSS No. 208, S13.
 - Attachment 1 is a copy of the certification test report for FMVSS No. 208, S13 Alternative Unbelted Test.
 - Attachment 2 is a copy of the certification test report for FMVSS No. 208, Frontal 0° Belted Barrier.

Nissan made an engineering judgment for angle barrier test condition.

- 2) The 1998 Model Year Nissan Altima was designed from its inception to comply with the requirements of FMVSS No. 208, S13 as opposed to an existing model that has been redesigned to meet these requirements
- 3) Attachment 3, The VIN tag is labeled with "SRS II" as a depowered air bag vehicle on the 1998 Model Year Nissan Altima.
- 4) Attachment 4, "Method of Disconnecting Air Bags for Sled Test" describes the method Nissan used for certification of S13 of FMVSS No. 208.

A secondary sled accelerometer is used to determine when the sled acceleration reaches 0.5g. The 0.5 g acceleration is based on an analog filtered data at channel class 300.

- 5) The safety belt system in the 1998 Nissan Altima is not equipped with tension relieving device.
- 6) The windows were closed during Nissan's certification testing of the 1998 Nissan Altima. The vehicle is not equipped with vents.
- 7) The dummy placement measurements, diagrams and photographs are show in Appendix C.

The 1998 Nissan Altima is equipped with a driver foot rest.
- 8) The seat positioning, steering column positioning, and fuel tank data sheet is shown in Attachment 5 and Appendices A and B.
- 9) The 1998 Nissan Altima is equipped with adjustable upper seat belt anchorages for a 50th percentile adult male occupant. The adjustable upper seat belt anchorage is position at the topmost position for a 50th percentile adult male occupant.

- 10) Attachment 1, pages 2 and 3 shows the resulting injury criteria recorded for certification tests conducted to meet the requirements of S13.
- 11) The following components are the order of priority for removal to obtain the proper test weight.
 - Spare Tire
 - Jack and Tools
 - Rear Seat
 - Tail Lamps
 - Rear Fascia
 - Bumper
 - Trunk Lid

12) Not Applicable.

- 13) Explosive devices is used to inflate the air bags in the 1998 Nissan Altima. Attachment 6 is a copy of the certification report to demonstrate that it meets all the requirements of S9.2.

Attachment 5

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 14.74 gallons.

3.3 Is vehicle equipped with electric fuel pump? YES NO

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

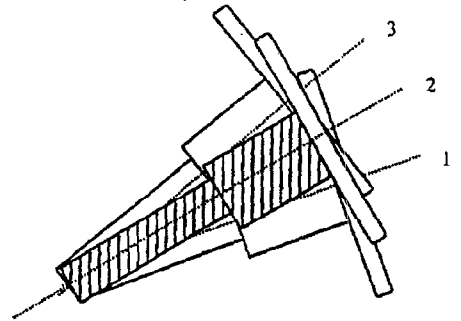
- The fuel pump will pump fuel: 1) for 5 seconds after the ignition is switched to "ON".
2) while the engine is running.
3) for 1.5 seconds after the engine stops running.

4. STEERING COLUMN ADJUSTMENTS **

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions: $\alpha = 24^\circ$

- 1) Adjust the steering column and lock it in the full up position. Measure the dimension from the header down to the steering wheel rim.
- 2) Adjust the steering column and lock it in the full down position. Measure the dimension from the header down to the steering wheel rim.
- 3) Adjust the steering column to the middle position of the highest and lowest positions as measured from the header down to the steering wheel rim.
- 4) Place both a straight edge and an inclinometer on the steering wheel and record the steering column angle. The steering column angle should be 24° .

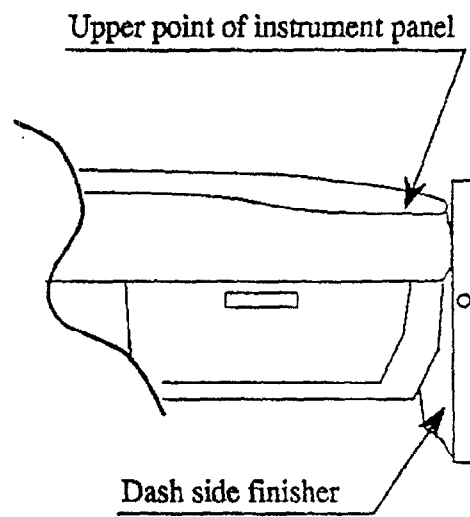
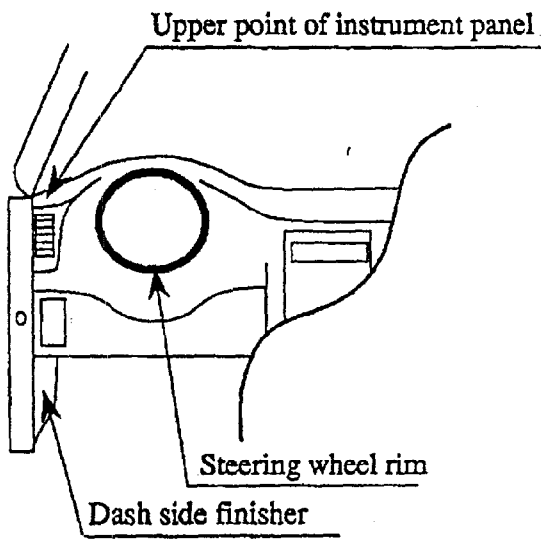
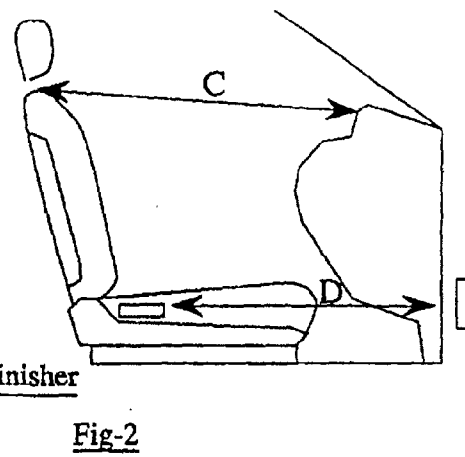
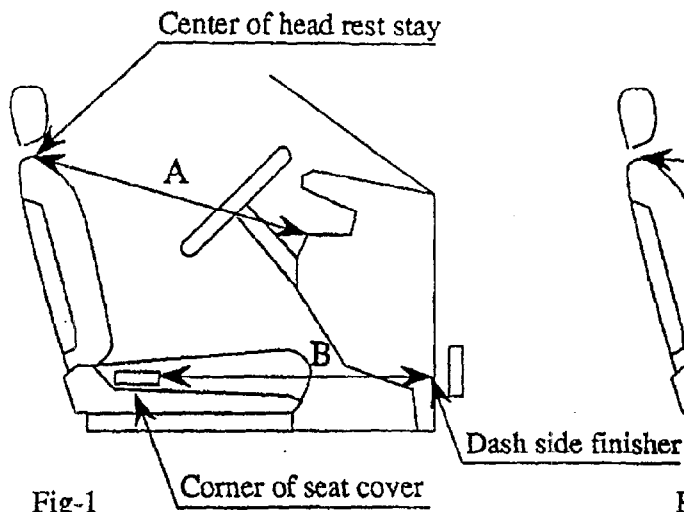


APPENDIX A

VEHICLE MODEL YEAR: 1998 VEHICLE MAKE: NISSAN
VEHICLE MODEL & BODY STYLE: ALTIMA 4DOOR SEDAN
DIMENSIONS FOR SEAT BACK ANGLE AND SEAT SLIDE SETTING

Reset is required when each dimension you measured has more than 0.6 in. difference from the dimension below.
(Refer to Figs. 1 -4 and photographs)

	Measurements Points	Photographs	Dimensions	
Driver Side (Power seat)	A Center of headrest stay - Upper point of instrument Panel	1 to 3	38.3 in.	Seat back setting data
	B Corner of seat cover- Dash side finisher	4 to 6	30.4 in.	Seat slide setting data
Passenger Side	C Center of headrest stay - Upper point of instrument Panel	7 to 9	39.2 in.	Seat back setting data
	D Corner of seat cover- Dash side finisher	10 to 12	30.5 in.	Seat slide setting data



1998 NISSAN ALTIMA 4DOOR SEDAN

APPENDIX B

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APPENDIX B
 VEHICLE MODEL YEAR: 1998 VEHICLE MAKE: NISSAN
 VEHICLE MODEL & BODY STYLE: ALTIMA 4DOOR SEDAN
 DIMENSIONS FOR TILT STEERING COLUMN POSITIONING

Reset is required when each dimension you measured has more than 0.6 in. difference from the dimension below.
 (Refer to Figs. 1 -2 and photographs .)

	Measurements Points	Photographs	Dimensions
Driver Side	A Center of steering horn pad - Edge of header rail	1,2,3	17.1 in.
	B Lower point of steering wheel rim - Edge of header rail	4,5	23.5 in.

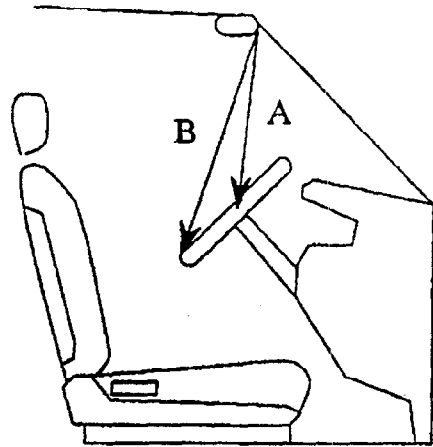
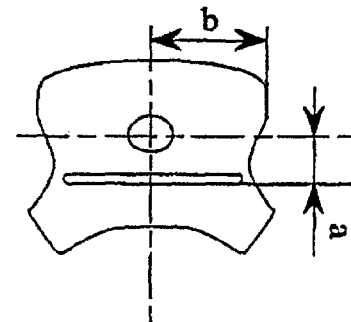
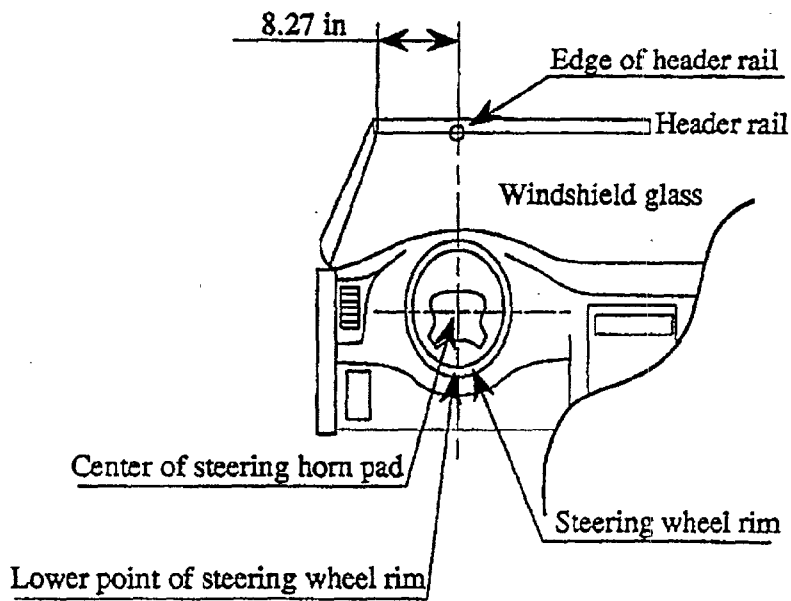


Fig-1



$a = 1.38$ in
 $b = 4.72$ in

Center of steering horn pad

Fig-2

DUMMY POSITIONING IN VEHICLE FRONT SEAT MEASUREMENT TABLE

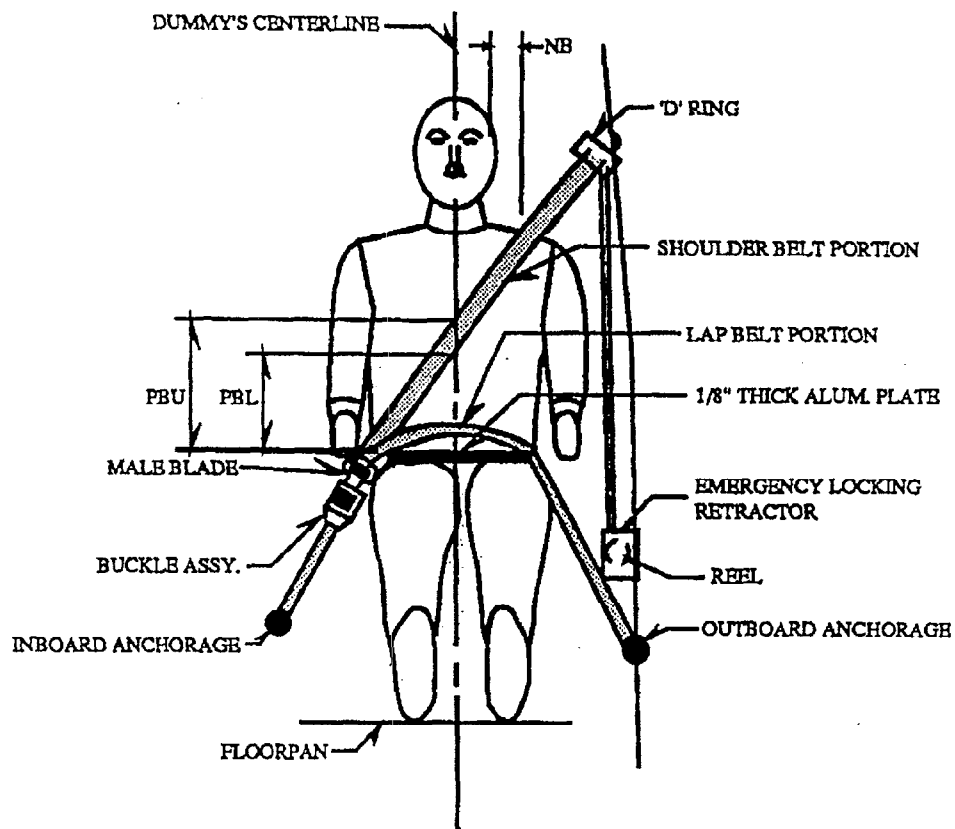
	DRIVER (Serial #)	PASS. (Serial #)
WA°	—————	
SWA°	24.0 deg	
SCA°	—————	
SA°	18.5 deg	18.7 deg
HZ	—————	
HH	12.8 in	13.0 in
HW	25.3 in	25.8 in
HR	7.9 in	7.9 in
NR	16.5 in	Angle (NA) N/A
CD	20.6 in	24.0 in
CS	12.3 in —————	
RA	—————	
KDL	4.5 in Angle (KDA) N/A	4.5 in
KDR	4.5 in	4.9 in Angle (KDA) N/A
PA°	N/A	N/A
TA°	N/A	N/A
KK	11.0 in	8.8 in
ST	N/A Angle N/A	N/A Angle N/A
SK	N/A Angle N/A	N/A Angle N/A
SH	N/A Angle N/A	N/A Angle N/A
SHY	N/A	
HS *1	15.9 in	15.9 in
HD *2	9.1 in	9.2 in
AD	4.3 in	4.5 in
HC *3	30.1 in	30.9 in

*1; HS-Head target to side door molding.

*2; HD-H-point to Body sill. Center of dummy hip point hole to Body sill.

*3; HC-H-point to Check link. Center of dummy hip point hole to Check link pin of front door.

Pre-Test
SEAT BELT POSITIONING DATA



FRONT VIEW OF DRIVER DUMMY

(sample belt configuration)

	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
PBU --- Top surface of alum. plate to upper edge (inches)	12.3 in	13.0 in
PBL--- Top surface of alum. plate to belt lower edge (inches)	9.4 in	9.8 in
LAP BELT TENSION (lbs.)	NO DATA	NO DATA
SHOULDER BELT TENSION (lbs.)	NO DATA	NO DATA
NB - Edge of neck to edge of belt	NO DATA	NO DATA