

V1793

**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

NISSAN MOTOR CORP.
1993 NISSAN QUEST
MINIVAN MPV
NHTSA NO. MP5201

MOBILITY SYSTEMS AND EQUIPMENT COMPANY
9920 LA CIENEGA BOULEVARD SUITE 708
INGLEWOOD, CALIFORNIA 90301



NOVEMBER 13, 1992

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
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Prepared by: Dr. Anil V. Khadilkar, Program Manager

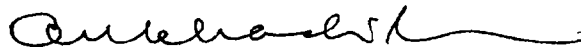
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MOBILITY SYSTEMS AND EQUIPMENT COMPANY

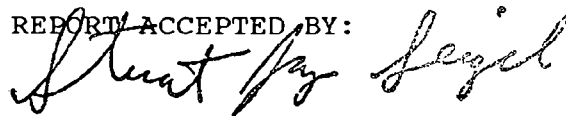
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Manager, New Car Assessment Program

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16. Abstract A 35 MPH Frontal barrier impact test using a load cell barrier was conducted on a 1993 Nissan Quest MPV at the Mobility Systems and Equipment Company (MSE) crash test facility in San Bernadino, CA, on October 29, 1992. The impact velocity was 56.69 km/h, and the ambient temperature at the barrier face at the time of impact was 16 degrees C. The vehicle's maximum post-test static crush was 600 mm. Occupant injury response data summary is as follows: <table border="1"> <thead> <tr> <th>Injury Criteria Threshold Value</th> <th>Driver Dummy</th> <th>Passenger Dummy</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criterion HIC = 1000</td> <td>685.9</td> <td>396.9</td> </tr> <tr> <td>Chest Resultant Peak 60 G's (3 msec clip)</td> <td>44.4</td> <td>37.9</td> </tr> <tr> <td>Femur Force Left 10009 N Right</td> <td>5345.9 6996.9</td> <td>7458.3 1501.6</td> </tr> </tbody> </table> Type of occupant restraint system: 2 point automatic shoulder and 2 point manual lap belt system at each front outboard seating position.						Injury Criteria Threshold Value	Driver Dummy	Passenger Dummy	Head Injury Criterion HIC = 1000	685.9	396.9	Chest Resultant Peak 60 G's (3 msec clip)	44.4	37.9	Femur Force Left 10009 N Right	5345.9 6996.9	7458.3 1501.6
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SECTION 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is a part of the FY'93 Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-90-D-32121. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph (48.27 km/h) FMVSS 208/212/219/301-75 requirements.

This 35 mph (56.32 km/h) frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test Procedure, dated 01 January 1990.

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SECTION 2

SUMMARY OF FRONTAL BARRIER IMPACT TEST

A barrier was impacted by a 1993 Nissan Quest Minivan, NHTSA No. MP5201, at a velocity of 56.69 km/h. The frontal impact test was conducted by Mobility Systems and Equipment Company (MSE) on 29 October 1992. The general test and vehicle description information are presented in Tables 1 and 2. Pretest and posttest photographs of the test vehicle and dummies are shown in Appendix A.

Two (2) Part 572 50th percentile adult male Anthropomorphic Test Devices (ATDs) were placed in the driver and right front passenger designated seating positions (DSP's) according to the NHTSA test requirements.

The ATD's were instrumented with head and chest triaxial accelerometers and right/left femur load cells. In addition, load cells were placed on the driver's and passenger's lap and shoulder belts to measure dummy upper torso and pelvic section belt loading. A summary of dummy configuration and performance verification test data is presented in Appendix C.

The frontal impact event was documented by one (1) real time camera and fifteen (15) high-speed cameras. The camera location data are presented in Table 7.

Sixty-seven (67) channels of crash parameters were recorded using two (2) FM tape recorders and three (3) direct analog to digital acquisition unit and data acquisition computers. Time history plots of all recorded channels are presented in Appendix B.

2.1 GENERAL COMMENTS

The 1993 Nissan Quest Minivan, was equipped with 2960 cubic cm, 6 cylinder engine and 3 speed automatic transmission. The test weight of the 1993 Nissan Quest Minivan, with two (2) 50th percentile male dummies, instrumentation, cameras and ballast was 2059 kg.

The 1993 Nissan Quest Minivan, was involved in a frontal barrier crash at a velocity of 56.69 km/h.

The maximum static crush for the vehicle of 600 mm occurred 427 mm to the left of the centerline of the bumper. The windshield was cracked, but otherwise the vehicle glazing remained intact. Both the driver's and passenger's front doors were opened without the aid of tools.

The driver ATD's face hit the steering wheel center hub. The top of his head made no contact. The driver's left and right

knees hit the dash panel. The bottom of the steering wheel rim impacted the driver's upper right chest. The driver ATD had a HIC value of 686, the maximum chest acceleration (resultant clipped) was 44.4 g's and the maximum femur loads were 5346 (left) and 6997 (right) Newtons.

The passenger ATD's chin contacted his chest. Both of his knees hit the dash panel. The HIC value for the passenger ATD was 397, the maximum chest acceleration (resultant clipped) was 37.9 g's and the maximum femur loads were 7458 (left) and 1502 (right) Newtons.

Seat belt spoolout, measured mechanically, was 64 mm for the driver and 38 mm for the passenger.

There were no apparent visual indications of any standard solvent leaks. The windshield separated along the periphery on the lower side along 205 mm at the right corner and along 160 mm at the left corner. The corner of the hood contacted the extreme lower right and lower left corners of the windshield.

Appendix D shows occupant restraint system instructions by the manufacturer and Appendix E shows the instrumentation and calibration data.

DATA TABLE No. 1
TEST VEHICLE DATA

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1993/Nissan/Quest/Minivan
VEHICLE NHTSA No.: M P 5 2 0 1; VIN: 4 N 2 D N 1 1 W 8 P D 8 0 2 5 2 0
VEHICLE BODY COLOR: Blue; MONTH AND YEAR OF MANUFACTURE: 08/92
ENGINE: 6 Cylinders; 180.6 cu in; Liters; 2960 cc
X Gas; Diesel; Turbocharged
PLACEMENT: Longitudinal; X Transverse (Lateral)
TRANSMISSION: 3 Speed; Manual; X Automatic; X Overdrive
FINAL DRIVE: X Front Wheel Drive; Rear Wheel Drive; Four Wheel Drive
DATE VEHICLE AVAILABLE FOR 35 MPH CRASH TESTING: 10/02/92
ODOMETER READING: 180 km; OPTIONS: X A/C; X P/S; X P/Window;
X Tilt Whl.; Cruise Control

DATA RECORD FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): 240 kPa Front; 240 kPa Rear
Recommended Tire Size: P205/75RX15S
Tires on Vehicle: P205/75R15; Manufacturer: General
Number of Occupants: 2 Front; 2 Rear; 3 Third Seat; 7 TOTAL
Type of Front Seats: X Bucket; Bench; Split Bench
Type of Front Seat Back: Fixed; X Adj. Lever; Adj. Rotating Knob
Vehicle Maximum Capacity Loading: N/A kg
No. of Occupants x 68 kg: N/A kg
Cargo Capacity (Max - Occupants): 136 kg

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front:	<u>502</u> kg		
Left Front:	<u>540</u> kg	Total Front:	<u>1042</u> kg (59% of Total)
Right Rear:	<u>376</u> kg		
Left Rear:	<u>361</u> kg	Total Rear:	<u>737</u> kg (41% of Total)
		Total Weight:	<u>1779</u> kg

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids:	<u>1779</u> kg
Maximum Cargo Carrying Capacity of Test Vehicle:	<u>136</u> kg
Weight of Two Part 572 ATD's (2 * 74.5 kg):	<u>149</u> kg
TEST VEHICLE TARGET WEIGHT:	<u>2064</u> kg

DATA TABLE No. 1 (Cont.)
TEST VEHICLE DATA

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 ATD's AND CARGO:

Right Front:	<u>558</u> kg		
Left Front:	<u>578</u> kg	Total Front:	<u>1136</u> kg (55% of Total)
Right Rear:	<u>470</u> kg		
Left Rear:	<u>453</u> kg	Total Rear:	<u>923</u> kg (45% of Total)
Total Weight: <u>2059</u> kg (includes <u>141</u> kg of ballast secured in the cargo / luggage area)			

VEHICLE COMPONENTS REMOVED TO MEET TARGET WEIGHT:

- | | |
|---------------------------|-------------------------|
| 1. Jack | 3. Rear seat assemblies |
| 2. Left tail lamp housing | |

TEST VEHICLE ATTITUDE:

As Delivered - Right Front:	<u>780</u> mm	Ready for Test - Right Front:	<u>767</u> mm
Left Front:	<u>780</u> mm	Left Front:	<u>767</u> mm
Right Rear:	<u>798</u> mm	Right Rear:	<u>762</u> mm
Left Rear:	<u>798</u> mm	Left Rear:	<u>752</u> mm

TEST VEHICLE DIMENSIONS:

Total Vehicle Length:	Right Side:	<u>4676</u> mm
	Left Side:	<u>4676</u> mm
	Centerline:	<u>4829</u> mm

Wheelbase: 2850 mm

C. G. is 1278 mm rearward of front axle centerline.

DATA TABLE No. 2
POST CRASH TEST DATA

DATE OF 35 MPH FRONTAL BARRIER IMPACT RATING TEST: 10/29/92

TIME OF TEST: 1640 Hrs; AMBIENT TEMPERATURE AT BARRIER FACE: 16° C

VEHICLE OCCUPANT COMPARTMENT TEMPERATURE: 20° C (Req. Range 19° C to 26° C)

VEHICLE WINDSHIELD MOLDING TEMPERATURE: 20° C

VEHICLE IMPACT VELOCITY: (Req. Range 55.52 to 57.13 km/h)
Primary Speed Trap: 56.69 km/h
Secondary Speed Trap: 56.54 km/h
Distance from vehicle leading edge to barrier face when:
Entering Speed Trap: 1524 mm
Exiting Speed Trap: 305 mm

VEHICLE STATIC CRUSH:	Pretest	Posttest	Static Crush
Right Side (mm)	<u>4676</u>	<u>4270</u>	<u>406</u>
Centerline (mm)	<u>4829</u>	<u>4250</u>	<u>579</u>
Left Side (mm)	<u>4676</u>	<u>4180</u>	<u>496</u>

VEHICLE REBOUND FROM BARRIER: Right Side: 417 mm
Centerline: 508 mm
Left Side: 457 mm

ATD CONTACT POINTS:

	Driver ATD (ID# 814)				Pass. ATD (ID# 830)		
	Airbag	Steering Col. Hub	Steering Wheel	Instru. Panel	Instru. Panel	Knee Assy.	Glove Box Door
Head	N/A	Yes	No	No	No	No	No
Right Knee	N/A	No	No	Yes	Yes	No	No
Left Knee	N/A	No	No	Yes	Yes	No	No

VEHICLE DOOR OPENING INFORMATION:

Door	Opened	Jammed
Right Front	Yes	No
Left Front	Yes	No
Right Rear	Yes	No
Left Rear	N/A	N/A

VEHICLE FRONT SEAT MOVEMENT DURING IMPACT EVENT:

Seat Cushion Shift - Right = 0 mm Left = 0 mm
Seat Adjustor Failure - Right: No Left No
Details of Any Failure: None

OTHER NOTABLE IMPACT EFFECTS:

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

I. OMI DATA

Dummy Injury Criteria Data Summary
Dummy Positioning Data
Seat Belt Positioning Data
Seat Belt Performance Assessment Data
Driver Dummy to Steering Column Dimensions
Camera Locations

II. OVR DATA

Load Cell Barrier Data
Vehicle Accelerometer Data

DATA TABLE No. 3
FMVSS No. 208 OCCUPANT CRASH PROTECTION DATA SHEET

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1993 Nissan/Quest/MPV

VEH. NHTSA NO.: MP5201

TEST DATE: 10/29/92

MAXIMUM ACCELERATION VALUES:	DRIVER ATD No. 814	PASSENGER ATD No. 830
Head X	-73.4	-21.9
Head Y	-14.2	23.2
Head Z	54.3	44.9
HEAD RESULTANT	90.1	50.5
Chest X	-46.2	-42.3
Chest Y	-38.1	-37.7
Chest Z	19.4	15.4
CHEST RESULTANT (3msec clip)	44.4	37.9
TIME INTERVAL (msec)	65.6 to 68.6	78.3 to 81.3

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	685.9	396.9
t_1 (msec)	65.2	62.5
t_2 (msec)	96.5	98.2
Avg. Acceleration t_1 to t_2	54.4	41.5

MAXIMUM FEMUR FORCES:

Right Femur (N)	-6996.9	-1501.6
Left Femur (N)	-5345.9	-7458.3

MAXIMUM SEAT BELT FORCES:

Lap Belt (N)	4913.4	6798.4
Shoulder Belt (N)	9457.3	10066.0

MAXIMUM SEAT BELT WEBBING SPOOLOUT:

Lap/Shoulder Belt Combination	N/D	N/D
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DATA TABLE No. 4
TEST ATD POSITIONING DATA

PRE - IMPACT DATA:

Make / Model: Nissan Quest
Body Style: Minivan
Model Year: 1993
Color: Blue
NHTSA No.: MP5201

DATA FROM CERTIFICATION LABEL:

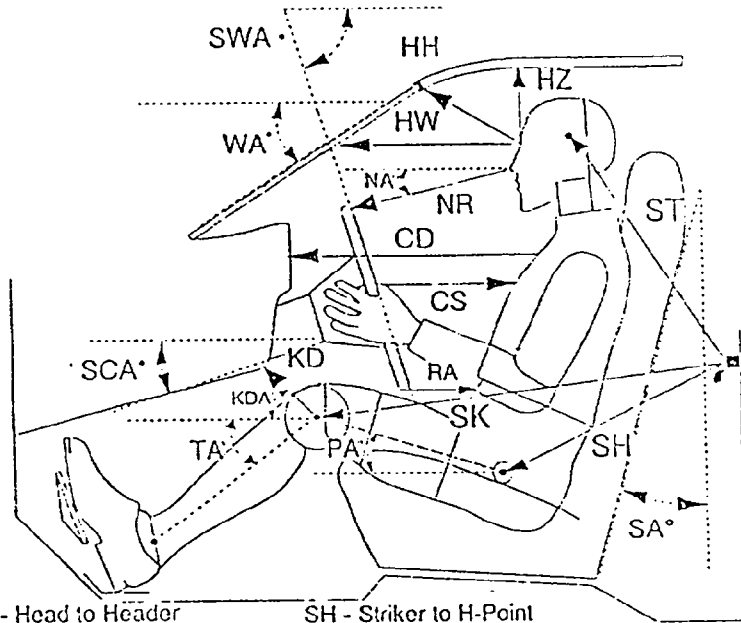
Vehicle Manufacturer: Nissan
Date of Manufacture: 08/92
VIN: 4N2DN11W8PD802520
GVWR: 2469
GAWR Front: 1231
GAWR Rear: 1270

POST IMPACT DATA:

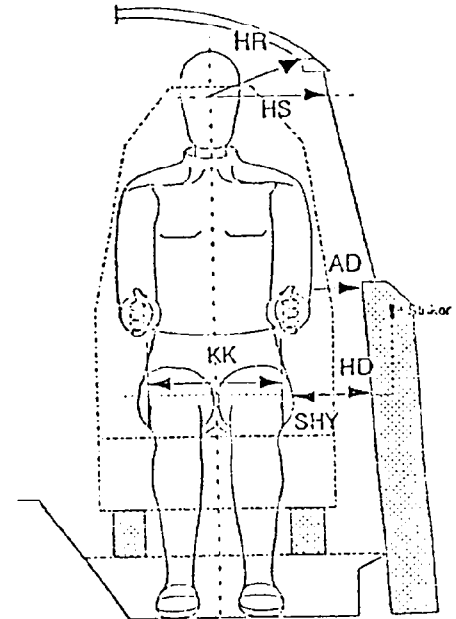
Date of Test: 10/29/92
Time: 1640 Hrs.
Temperature: 16°C
Required Impact Velocity Range: 55.52 to 57.13 km/h
Impact Velocity - Primary: 56.69 km/h
Secondary: 56.54 km/h
Seat Type: Bucket
Adjustor Type: Lever
Bucket Seat Back Type: Adjustable Head Restraint

ATD POSITIONING TECHNICIANS: Brian O'Keefe, Levi Navarro

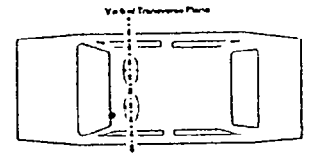
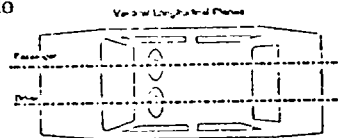
DATA TABLE No. 4 (Cont.)
TEST ATD POSITIONING DATA



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



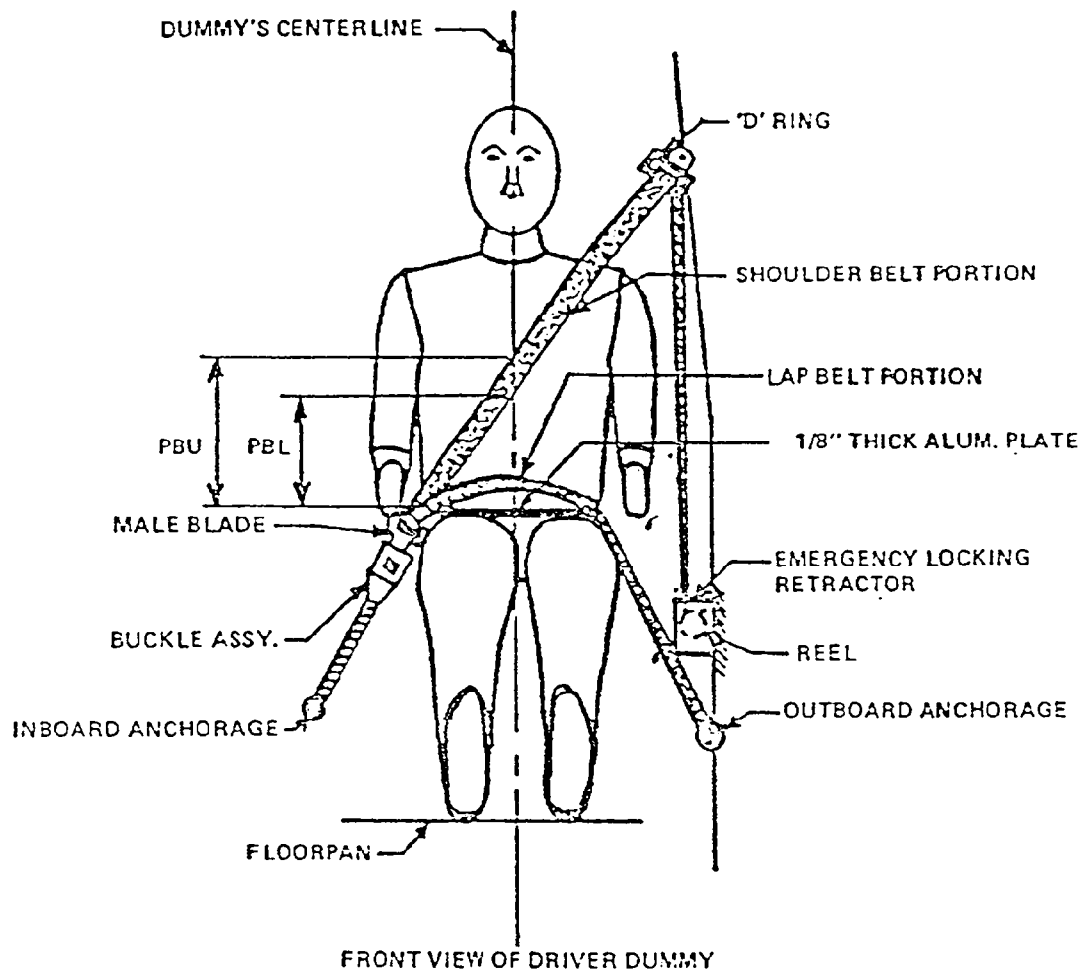
HR - Head to Side Header
HS - Head to Side Window
AD - Arm to Door
HD - H-Point to Door
SHY - Striker to H-Point (Y Dir.)
KK - Knee to Knee



DATA TABLE No. 4 (Cont.)
TEST ATD POSITIONING DATA

Measurement	Driver (Serial No. 814)		Passenger (Serial No. 830)	
	Length (mm)	Angle (Degrees)	Length (mm)	Angle (Degrees)
WA	-	31	-	-
SWA	-	62	-	-
SCA	-	32	-	-
HZ	191	90	185	90
HH	409	0	432	0
HW	612	0	622	0
HR	211	-	198	N -
NR	442	16	-	-
CD	594	-	617	-
CS	358	0	-	-
RA	213	0	-	-
KDL	224	24	216	-
KDR	178	-	213	29
PA	-	15	-	15
TA	-	54	-	54
KK	366	-	312	-
ST	660	82	645	79
SK	663	7	665	5
SH	274	-14	274	-13
SHY	274	0	254	0
HS	305	0	320	0
HD	175	0	173	0
AD	89	0	114	0

DATA TABLE No. 5
SEAT BELT POSITIONING DATA



Measurement	Driver ATD	Passenger ATD
PBU - Top Surface of alum. plate to belt upper edge (mm)	343	320
PBL - Top Surface of alum. plate to belt lower edge (mm)	272	241
Lap Belt Tension (N)	-	-
Shoulder Belt Tension (N)	-	-

DATA TABLE 6
SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

Total belt length from retractor reel to bolt hole anchor point for continuous webbing systems (mm) _____

Retractor reel to 'D' ring as measured on Part 572 ATD (mm) _____

Shoulder belt length as measured on Part 572 ATD (mm) _____

Lap belt length as measured on Part 572 ATD (mm) _____

Remainder of belt webbing left on the retractor reel (mm) _____

DRIVER SIDE		PASSENGER SIDE	
PRETEST	POSTTEST	PRETEST	POSTTEST
-	-	-	-
-	-	-	-
1168	1219	1168	1219
864	864	838	838
Sh: 381 Lap:381	Sh: 330 Lap:381	Sh: 381 Lap:368	Sh: 330 Lap:368

BELT SPOOL-OFF DATA:

As determined by film analysis (mm) _____

As determined electronically (mm) _____

As determined mechanically (mm) _____

NO DATA	NO DATA
NO DATA	NO DATA
64	38

BELT STRAIN DATA: Measured on the shoulder belt

As determined electronically (%) _____

As determined mechanically (%) _____

7.64	8.11
0.0	0.0

DATA TABLE NO. 7

Dimensions also shown on page 12.

DATA TABLE No. 8
FMVSS No. 208 CAMERA LOCATION DATA

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1993/Nissan/Quest/Minivan

VEH. NHTSA NO.: MP5201

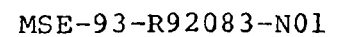
TEST DATE: 10/29/92

TIME: 1640 Hrs.

CAMERA NO.	VIEW	CAMERA POS. (mm)			ANGLE (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Left Side View	5867	14350	3404	-20	14436	15-70 Zoom	24
2	Right Side View	1270	6553	1016	+1	6187	13	*
3	Left Side View	1219	9906	1727	-5	9505	25	390
4	Overhead	-152	0	4039	-69	3714	13	710
5	Pit - Engine	635	25	-1829	90	3690	13	600
6	Pit - Fuel Tank	N/R	N/R	N/R	N/R	N/R	N/R	N/R
7	Front - Passenger	-406	406	2438	-43	3015	16	600
8	Front - Driver	-406	-305	2438	-36	3020	16	520
9	Left Side - Driver	2337	2946	2007	-17	2545	16	610
10	Right Side - Pass.	2413	3302	1956	-15	2879	16	560
11	Right Side - A-Post	127	5004	1143	+2	5094	28	*
12	Left Side - A-Post	635	11150	127	-4	10887	50	710
13	Onboard - Left Side	2921	356	584	-4	837	13	600
14	Onboard - Right Side	2921	356	584	-3	837	13	600
15	Left Side - St. Col.	1422	9576	3277	-17	9343	28	610
16	Left Side - St. Col.	1422	9576	2896	-15	9273	28	500
17	Right Side - Pass.	1956	3658	1397	-3	3208	16	*

REFERENCE: X - Film plane to barrier face
Y - Film plane to monorail centerline
Z - Film plane to ground

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DATA TABLE No. 9
VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

No.	Description	Location			Maximum Value (g's)			
		X	Y	Z	-X	msec	+X	msec
1	Left rear seat cross member	3353	-432	457	48.0	40.5	2.3	118.7
2	Right rear seat cross member	3353	432	457	46.8	41.1	14.2	73.5
3	Top of Engine Block	597	64	737	171.7	27.8	45.4	38.8
4	Bottom of engine	737	0	178	101.9	32.3	61.2	41.7
5	Right Brake Caliper	867	724	292	72.8	49.3	26.2	68.8
6	Instrument Panel	1499	0	1092	58.7	48.7	22.2	94.3
7	Left Brake Caliper	867	-724	292	29.0	35.5	1.2	44.4
8	Left rear seat cross member Redun.	3353	-432	457	47.8	40.6	2.4	118.7
9	Right rear seat cross member Redun.	3353	432	457	N.D.	N.D.	N.D.	N.D.

REFERENCE: X - Front Bumper Leading Edge
Y - Vehicle Centerline (Right Pos., Left Neg.)
Z - Ground Level

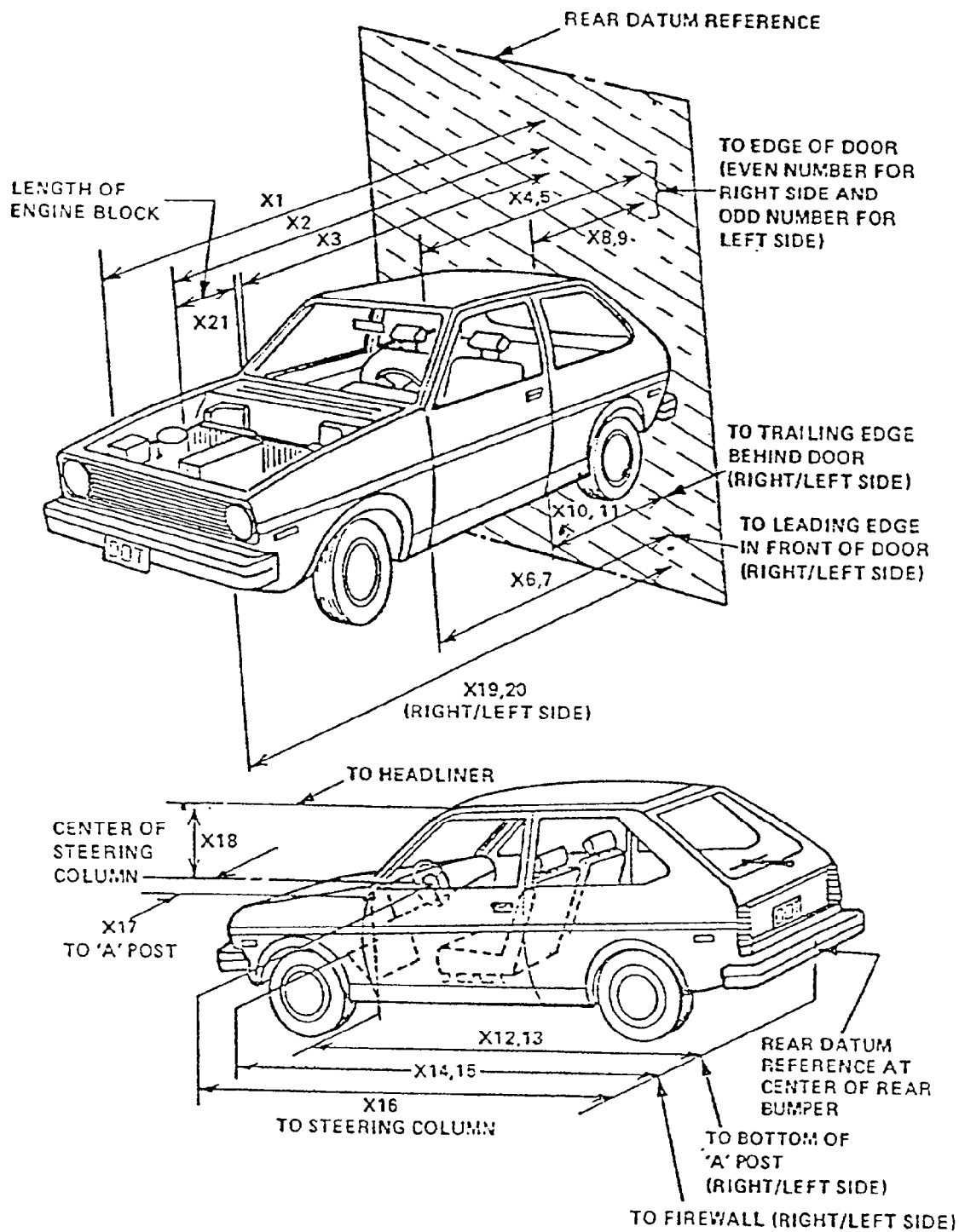
All measurements in mm

DATA TABLE No. 10
TEST VEHICLE MEASUREMENTS

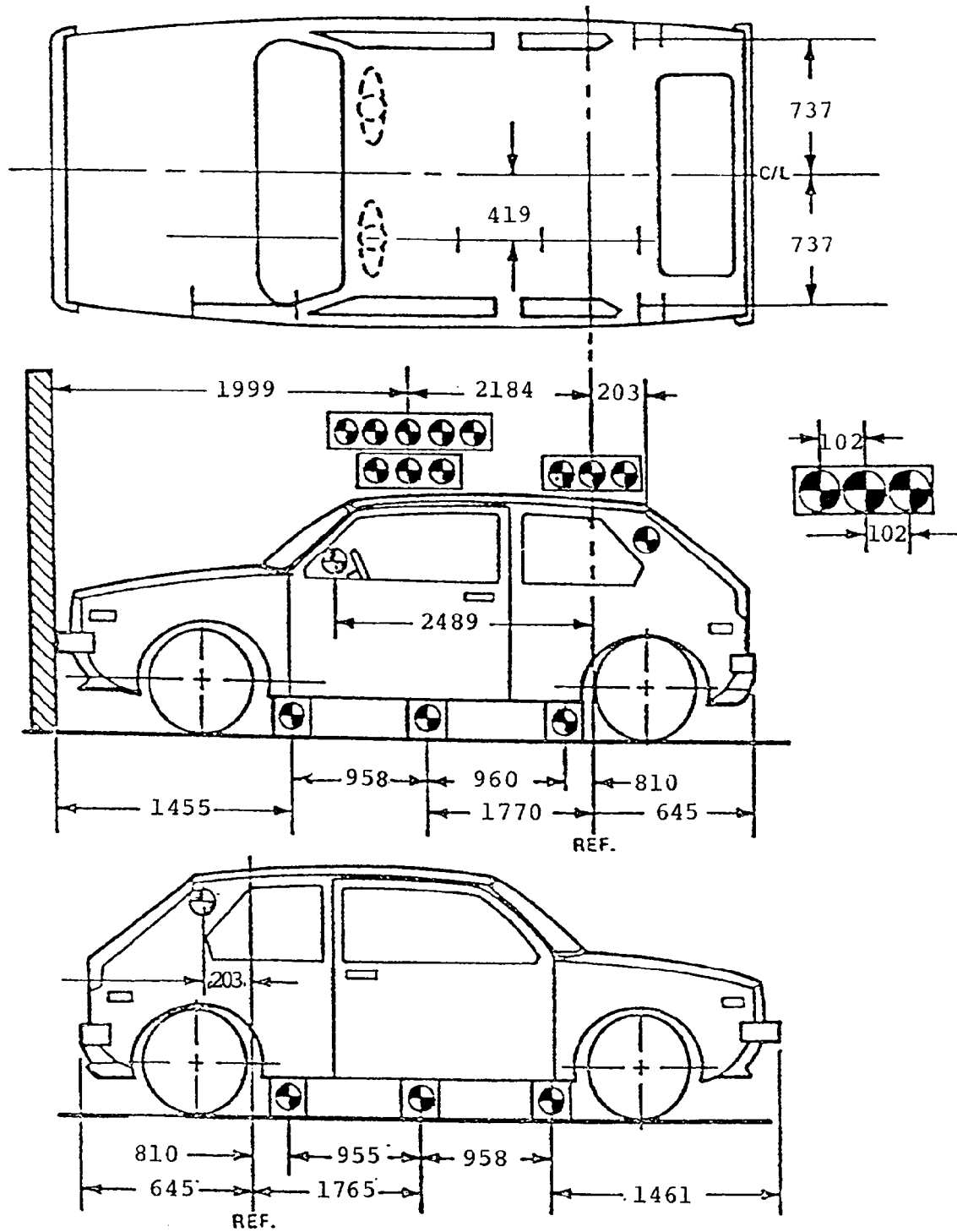
No.	Measurement Description	Pretest	Posttest	Change
1	Length of test vehicle at centerline	4829	4250	579
2	Rear surface of vehicle to front of engine	4219	4070	149
3	Rear of vehicle to firewall centerline	3647	3540	107
4	Rear to upper leading edge of right door	2868	2880	-12
5	Rear to upper leading edge of left door	2868	2882	-14
6	Rear to lower leading edge of right door	3340	3333	7
7	Rear to lower leading edge of left door	3340	3331	9
8	Rear to upper trailing edge of right door	2200	2230	-30
9	Rear to upper trailing edge of left door	2202	2215	-13
10	Rear to lower trailing edge of right door	2245	2248	-3
11	Rear to lower trailing edge of left door	2248	2243	5
12	Rear to bottom of right 'A' pillar	3429	3412	17
13	Rear to bottom of left 'A' pillar	3429	3380	49
14	Rear surface to firewall on right side	3670	3570	100
15	Rear surface to firewall on left side	3645	3528	117
16	Rear surface to steering column	2896	2920	-24
17	Center of steering column to left 'A' pillar	457	435	22
18	Center of steering column to headlining	470	385	85
19	Rear surface to right side of front bumper	4676	4270	406
20	Rear surface to left side of front bumper	4676	4180	496
21	Length of engine block	368	368	0

All measurements in mm

DATA TABLE No. 10 (Cont.)
TEST VEHICLE MEASUREMENTS



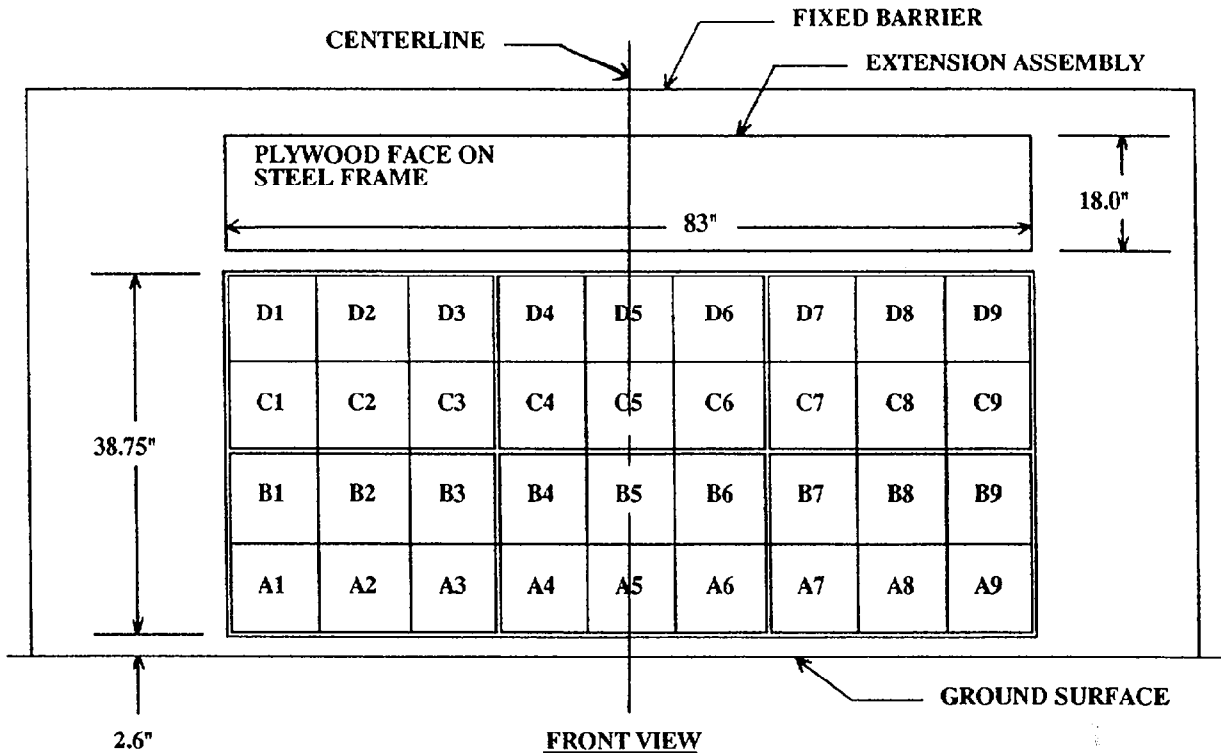
DATA TABLE No. 11
VEHICLE TARGET LOCATIONS



Dimensions in mm

DATA TABLE No. 12
LOAD CELL LOCATIONS ON FIXED BARRIER

36 Load cells
4 Rows
9 Columns
6 Groupings (6 cells/group)



6 GROUPS OF 6 LOAD CELLS EACH

Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

DATA REQUIREMENTS:

- (1) Data from 36 individual load cells
- (2) Total or sum of 36 individual load cells
- (3) Data from 6 groupings shown above (6 cells/group)
- (4) Total load vs. vehicle dynamic crush

DATA TABLE No. 13
ACCIDENT INVESTIGATION DIVISION DATA FOR 35 MPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Nissan/Quest/Minivan

Veh. NHTSA No.: MP5201 ; VIN: 4N2DN11W8PD802520

Model Year: 1993 ; Build Date: 08/92 ; Test Date: 10/28/92

Veh. Size Category: N/A ; Test Weight: 2059 kg

Veh. Wheelbase: 2850 mm ; Front Overhang: 991 mm ; Overall Width: 1871 mm

ACCELEROMETER DATA:

Location: Left and right side passenger compartment

Calibration Procedure: 6 months / Drop test

Linearity: Good ; Integration Algorithm: NHTSA Standard

Veh. Impact Speed: 56.69 km/h ; Time of separation: 84.9 msec

Velocity Change: 65.0 km/h (Left) ; 65.6 km/h (Right)

Collision Deformation Classification (CDC) Code: F (Frontal)

Crush Depth Dimensions:

C1 = 508 mm

C2 = 600 mm

C3 = 586 mm

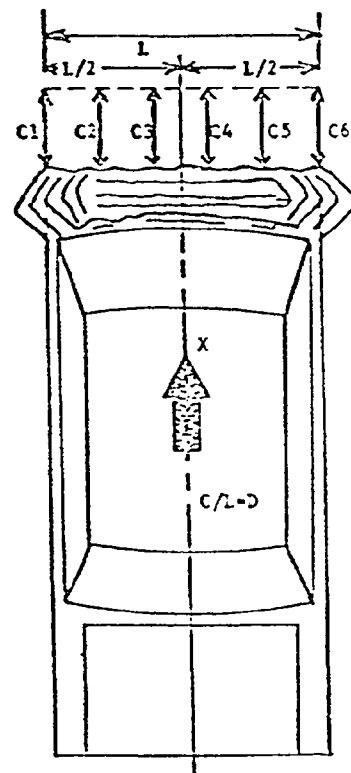
C4 = 577 mm

C5 = 599 mm

C6 = 419 mm

Midpoint of Damage: Vehicle Centerline

Length of Damaged Region: L = 1422 mm



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MSE-93-R92083-N01

SECTION 4

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

This section shows full list of Test Equipment and the calibration dates.

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MSE-93-R92083-N01

General Test Information

VERSNO: V2 TGID: 1
TITLE: 1993 56.35 KM/H NCAP FRONTAL BARRIER IMPACT
TSTOBJ: ACQUIRE NCAP DATA USING TWO INSTR. DUMMIES AND LOAD CELL BARRIER
TSTDAT: 29/OCT/92 TSTPRF: MSE CONNO: DTNH22-90-D-32121
TSTREF: MP5201 TSTTYP: NCA TSTCFN: VTB
TKSURF: CON TKCOND: DRY TEMP: 16 RECTYP: FMT
LINK: UMB CLSSPD: 56.7 IMPANG: 0 OFFSET: 0.0
IMPPNT: 9999.9 MEASUR: MET TOTCRV: 69
TSTCOM: NO COMMENTS

Vehicle Information

VGID: 2 VEHNO: 1 MAKE: 64 MODEL: 99 YEAR: 93 BODY: VN
 VIN: 4N2DN11W8PD802520 ENGINE: OTHR ENGDSP: 3.0 LITRE TRANSM: AF
 VEHTWT: 2059 WHLBAS: 285.0 VEHLLEN: 482.9 VEHWID: 187.1
 VEHCG: 127.8 STRSEP: NO COLMEC: CYL MODIND: P
 MODDSC: UNMODIFIED

BX

1: 482.9
 2: 421.9
 3: 364.7
 4: 286.8
 5: 286.8
 6: 334.0
 7: 334.0
 8: 220.0
 9: 220.2
 10: 224.5
 11: 224.8
 12: 342.9
 13: 342.9
 14: 367.0
 15: 364.5
 16: 289.6
 17: 45.7
 18: 47.0
 19: 467.6
 20: 467.6
 21: 36.8

VEHSPD: 56.7 CRBANG: 0 PDOF: 0 BMPENG: NA

SILENG: NA APLENG: NA

DPD

1: 50.8
 2: 60.0
 3: 58.6
 4: 57.7
 5: 59.9
 6: 41.9

VDI: 12FCAW9 LENCNT: 187.1 DAMDST: 0.0 CRHDST: 60.0

AX

1: 425.0
 2: 407.0
 3: 354.0
 4: 288.0
 5: 288.2
 6: 333.3
 7: 333.1
 8: 223.0
 9: 221.5
 10: 224.8
 11: 224.3
 12: 341.2
 13: 338.0
 14: 357.0
 15: 352.8
 16: 292.0
 17: 43.5
 18: 38.5
 19: 427.0
 20: 418.0
 21: 36.8

CARANG: 999

VEHOR: 999

VEHCOM: MODEL:QUEST, ENGINE:V6 TRANSVERSE FRONT

Barrier Information

Barrier ID: 3

BARRIG: R

BARSHP: LCB

BARANG: 0

BARDIA: 999.9

BARCOM: 36 50KLB LOAD CELLS ARRANGED IN A 9 WIDE BY 4 HIGH MATRIX.

Occupant Information

Occupant Group ID: 4 VEHNO: 1
OCCLOC: 01 OCCTYP: P5 OCCAGE: 99 OCCSEX: M OCCHT: 999 OCCWT: 999
MTHCAL: P5 DUMSIZ: 50
DUMMAN: MFG: HUMANOID SYSTEMS, S/N: 814
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 40.9 HW: 61.2 HR: 21.1 HS: 30.5 CD: 59.4 CS: 35.8 AD: 8.9 HD: 17.9
KD: 17.8 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: PS2 RESTR2: NON
RESTXT: NO COMMENTS
SEPOSN: CN AIRDEP: NA
CNTRH1: SH CNTRH2: NO CNTRC1: SW CNTRC2: NO CNTRL1: DP CNTRL2: NO
HIC: 686. T1: 65.200 T2: 96.500
CLIP3M: 44.4 LFEM: 5346. RFEM: 6997. CSI: 433. LBELT: 4913. SBELT: 945
OCCCOM: NONE

Occupant Information

Occupant Group ID: 4 VEHNO: 1
OCCLOC: 02 OCCTYP: P5 OCCAGE: 99 OCCSEX: M OCCHT: 999 OCCWT: 999
MTHCAL: P5 DUMSIZ: 50
DUMMAN: MFG: HUMANOID SYSTEMS, S/N: 183
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 43.2 HW: 62.2 HR: 19.8 HS: 32.0 CD: 61.7 CS:999.9 AD: 11.4 HD: 17.3
KD: 21.3 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: PS2 RESTR2: NON
REXTXT: NO COMMENTS
SEPOSN: CN AIRDEP: NA
CNTRH1: NO CNTRH2: NO CNTRC1: NO CNTRC2: NO CNTRL1: DP CNTRL2: OT
HIC: 397. T1: 62.500 T2: 98.200
CLIP3M: 37.9 LFEM: 7458. RFEM: 1502. CSI: 336. LBELT: 6798. SBELT: 9999.
OCCCOM: HEAD CONTACTS: CHIN TO CHEST

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 001	
SENTYP: AC	SENLOC: 01	SENATT: HDCG	
AXIS: XL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BJ28H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 37	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 002	
SENTYP: AC	SENLOC: 01	SENATT: HDCG	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BT28H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 7	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 003	
SENTYP: AC	SENLOC: 01	SENATT: HDCG	
AXIS: ZL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: AE29	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 27	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 004	
SENTYP: AC	SENLOC: 01	SENATT: CHST	
AXIS: XL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BI14H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 24	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 005	
SENTYP: AC	SENLOC: 01	SENATT: CHST	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BI19H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 38	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 006	
SENTYP: AC	SENLOC: 01	SENATT: CHST	
AXIS: ZL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BI92H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 23	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 007	
SENTYP: LC	SENLOC: 01	SENATT: FMRL	
AXIS: XL	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: GSE INC.	MODEL: 2430,	S/N: 735	
CALDAT: 09/OCT/92	INSRAT: 3000	CHLMAX: 40	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 008	
SENTYP: LC	SENLOC: 01	SENATT: FMRR	
AXIS: XL	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: GSE INC,	MODEL: 2430,	S/N: 710	
CALDAT: 09/OCT/92	INSRAT: 3000	CHLMAX: 53	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 009	
SENTYP: AC	SENLOC: 02	SENATT: HDCG	
AXIS: XL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BJ61H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 11	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 010	
SENTYP: AC	SENLOC: 02	SENATT: HDCG	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BG95H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 11	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 011	
SENTYP: AC	SENLOC: 02	SENATT: HDCG	
AXIS: ZL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BJ54H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 22	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 012	
SENTYP: AC	SENLOC: 02	SENATT: CHST	
AXIS: XL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BJ27H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 27	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 013	
SENTYP: AC	SENLOC: 02	SENATT: CHST	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: BG78H	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 39	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 014	
SENTYP: AC	SENLOC: 02	SENATT: CHST	
AXIS: ZL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO,	MODEL: 7264-200,	S/N: AR39	
CALDAT: 02/OCT/92	INSRAT: 200	CHLMAX: 30	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 015	
SENTYP: LC	SENLOC: 02	SENATT: FMRL	
AXIS: XL	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: GSE INC,	MODEL: 2430,	S/N: 634	
CALDAT: 09/OCT/92	INSRAT: 3000	CHLMAX: 63	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 016	
SENTYP: LC	SENLOC: 02	SENATT: FMRR	
AXIS: XL	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: GSE INC,	MODEL: 2430, S/N: 550		
CALDAT: 09/OCT/92	INSRAT: 3000	CHLMAX: 12	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 017	
SENTYP: LC	SENLOC: 01	SENATT: LPBO	
AXIS: OT	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: LEBOW,	MODEL: 3371, S/N: 333		
CALDAT: 13/OCT/92	INSRAT: 3500	CHLMAX: 41	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 018	
SENTYP: LC	SENLOC: 01	SENATT: SHBT	
AXIS: OT	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: LEBOW,	MODEL: 3371, S/N: 327		
CALDAT: 13/OCT/92	INSRAT: 3500	CHLMAX: 71	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 019	
SENTYP: LC	SENLOC: 02	SENATT: LPBO	
AXIS: OT	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: LEBOW,	MODEL: 3371, S/N: 330		
CALDAT: 13/OCT/92	INSRAT: 3500	CHLMAX: 53	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 020	
SENTYP: LC	SENLOC: 02	SENATT: SHBT	
AXIS: OT	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: LEBOW,	MODEL: 3371, S/N: 308		
CALDAT: 13/OCT/92	INSRAT: 3500	CHLMAX: 81	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 021
SENTYP: DS SENLOC: 01 SENATT: SHBT
AXIS: OT UNITS: OTH PREFIL: 1650
INSMAN: MFG: ETI, MODEL: LCP12A-12, S/N: 1
CALDAT: 29/OCT/92 INSRAT: 25 CHLMAX: 8 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: PERCENT OF TOTAL BELT STRETCH

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 022
SENTYP: DS SENLOC: 02 SENATT: SHBT
AXIS: OT UNITS: OTH PREFIL: 1650
INSMAN: MFG: ETI, MODEL: LCP12A-12, S/N: 2
CALDAT: 29/OCT/92 INSRAT: 25 CHLMAX: 8 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: PERCENT OF TOTAL BELT STRETCH

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 023
SENTYP: DS SENLOC: 01 SENATT: SHBE
AXIS: OT UNITS: CMS PREFIL: 1650
INSMAN: MFG: CELESCO, MODEL: 20 IN., S/N: NA
CALDAT: 29/OCT/92 INSRAT: 20 CHLMAX: 0 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: MN
INSCOM: NOT USED

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 024
SENTYP: DS SENLOC: 02 SENATT: SHBE
AXIS: OT UNITS: CMS PREFIL: 1650
INSMAN: MFG: MSE, MODEL: 24 IN. LIN., S/N: 112
CALDAT: 29/OCT/92 INSRAT: 24 CHLMAX: 0 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: MN
INSCOM: NOT USED

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 025
SENTYP: AC SENLOC: NA SENATT: SULF
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 29-200
CALDAT: 09/OCT/92 INSRAT: 200 CHLMAX: 45 INIVEL: 56.7
NFP: -300 NLP: 2999 DELT: 100 DASTAT: CF
INSCOM: CHANNEL FAILED AT 39.8 MSEC

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 026	
SENTYP: AC	SENLOC: NA	SENATT: SURF	
AXIS: XG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 25-200			
CALDAT: 09/OCT/92	INSRAT: 200	CHLMAX: 76	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 027	
SENTYP: AC	SENLOC: NA	SENATT: ENGN	
AXIS: XG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 33-200			
CALDAT: 09/OCT/92	INSRAT: 200	CHLMAX: 99	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 028	
SENTYP: AC	SENLOC: NA	SENATT: ENGN	
AXIS: XG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 27-200			
CALDAT: 09/OCT/92	INSRAT: 200	CHLMAX: 159	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 029	
SENTYP: AC	SENLOC: NA	SENATT: DPLC	
AXIS: XG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 28-200			
CALDAT: 09/OCT/92	INSRAT: 200	CHLMAX: 38	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 030	
SENTYP: AC	SENLOC: NA	SENATT: FLLR	
AXIS: XG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 23-200			
CALDAT: 09/OCT/92	INSRAT: 200	CHLMAX: 120	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 031	
SENTYP: AC	SENLOC: NA	SENATT: FLRR	
AXIS: XG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N:			
CALDAT: 09/OCT/92	INSRAT: 200	CHLMAX: 114	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 032	
SENTYP: AC	SENLOC: NA	SENATT: OTHR	
AXIS: XG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: BELL & HOWELL, MODEL: 4-202-0001, S/N: 20839			
CALDAT: 19/OCT/92	INSRAT: 200	CHLMAX: 85	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 033	
SENTYP: AC	SENLOC: NA	SENATT: TRFC	
AXIS: XG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: BELL & HOWELL, MODEL: 4-202-0001, S/N: 19428			
CALDAT: 19/OCT/92	INSRAT: 200	CHLMAX: 0	INIVEL: 56.7
NFP: -300	NLP: 2999	DELT: 100	DASTAT: MN
INSCOM: REDUNDANT ACCEL STRUCK BY BALLAST DURING IMPACT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 034	
SENTYP: LC	SENLOC: NA	SENATT: LCA1	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19349			
CALDAT: 14/MAY/85	INSRAT: 22727	CHLMAX: 2	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 035	
SENTYP: LC	SENLOC: NA	SENATT: LCA2	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19324			
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 4	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 036	
SENTYP: LC	SENLOC: NA	SENATT: LCA3	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19283		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 7	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 037	
SENTYP: LC	SENLOC: NA	SENATT: LCA3	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19263		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 14	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 038	
SENTYP: LC	SENLOC: NA	SENATT: LCA5	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19265		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 19	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 039	
SENTYP: LC	SENLOC: NA	SENATT: LCA6	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19266		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 42	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 040	
SENTYP: LC	SENLOC: NA	SENATT: LCA7	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19317		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 10	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 041	
SENTYP: LC	SENLOC: NA	SENATT: LCA8	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19270		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 7	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 042	
SENTYP: LC	SENLOC: NA	SENATT: LCA9	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19428		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 3	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 043	
SENTYP: LC	SENLOC: NA	SENATT: LCB1	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19273		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 3	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 044	
SENTYP: LC	SENLOC: NA	SENATT: LCB1	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19276		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 045	
SENTYP: LC	SENLOC: NA	SENATT: LCB3	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19258		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 72	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 046	
SENTYP: LC	SENLOC: NA	SENATT: LCB4	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19278		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 44	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 047	
SENTYP: LC	SENLOC: NA	SENATT: LCB5	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19279		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 65	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 048	
SENTYP: LC	SENLOC: NA	SENATT: LCB6	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19282		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 70	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 049	
SENTYP: LC	SENLOC: NA	SENATT: LCB7	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19262		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 60	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 050	
SENTYP: LC	SENLOC: NA	SENATT: LCB8	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19285		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 16	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 051	
SENTYP: LC	SENLOC: NA	SENATT: LCB9	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19286	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 5	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 052	
SENTYP: LC	SENLOC: NA	SENATT: LCC1	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19287	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 053	
SENTYP: LC	SENLOC: NA	SENATT: LCC2	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19288	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 16	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 054	
SENTYP: LC	SENLOC: NA	SENATT: LCC3	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19289	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 16	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 055	
SENTYP: LC	SENLOC: NA	SENATT: LCC4	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19291	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 11	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 056	
SENTYP: LC	SENLOC: NA	SENATT: LCC5	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19324		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 12	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 057	
SENTYP: LC	SENLOC: NA	SENATT: LCC6	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19313		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 16	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 058	
SENTYP: LC	SENLOC: NA	SENATT: LCC7	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19314		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 20	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 059	
SENTYP: LC	SENLOC: NA	SENATT: LCC8	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19315		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 13	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 060	
SENTYP: LC	SENLOC: NA	SENATT: LCC9	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19316		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 7	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 061	
SENTYP: LC	SENLOC: NA	SENATT: LCD1	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19317	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 5	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 062	
SENTYP: LC	SENLOC: NA	SENATT: LCD2	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19318	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 5	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 063	
SENTYP: LC	SENLOC: NA	SENATT: LCD3	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19322	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 4	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 064	
SENTYP: LC	SENLOC: NA	SENATT: LCD4	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19323	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 3	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 065	
SENTYP: LC	SENLOC: NA	SENATT: LCD5	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,		S/N: 19260	
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 8	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 066	
SENTYP: LC	SENLOC: NA	SENATT: LCD6	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19325		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 2	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 067	
SENTYP: LC	SENLOC: NA	SENATT: LCD7	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19332		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 5	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 068	
SENTYP: LC	SENLOC: NA	SENATT: LCD8	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19333		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 4	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 0	CURNO: 069	
SENTYP: LC	SENLOC: NA	SENATT: LCD9	
AXIS: XG	UNITS: NWT	PREFIL: 1650	
INSMAN: MFG: INTERFACE, MODEL: 1220-FS,	S/N: 19338		
CALDAT: 14/MAY/85	INSRAT: 22725	CHLMAX: 2	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 120	DASTAT: AM
INSCOM: NO COMMENT			

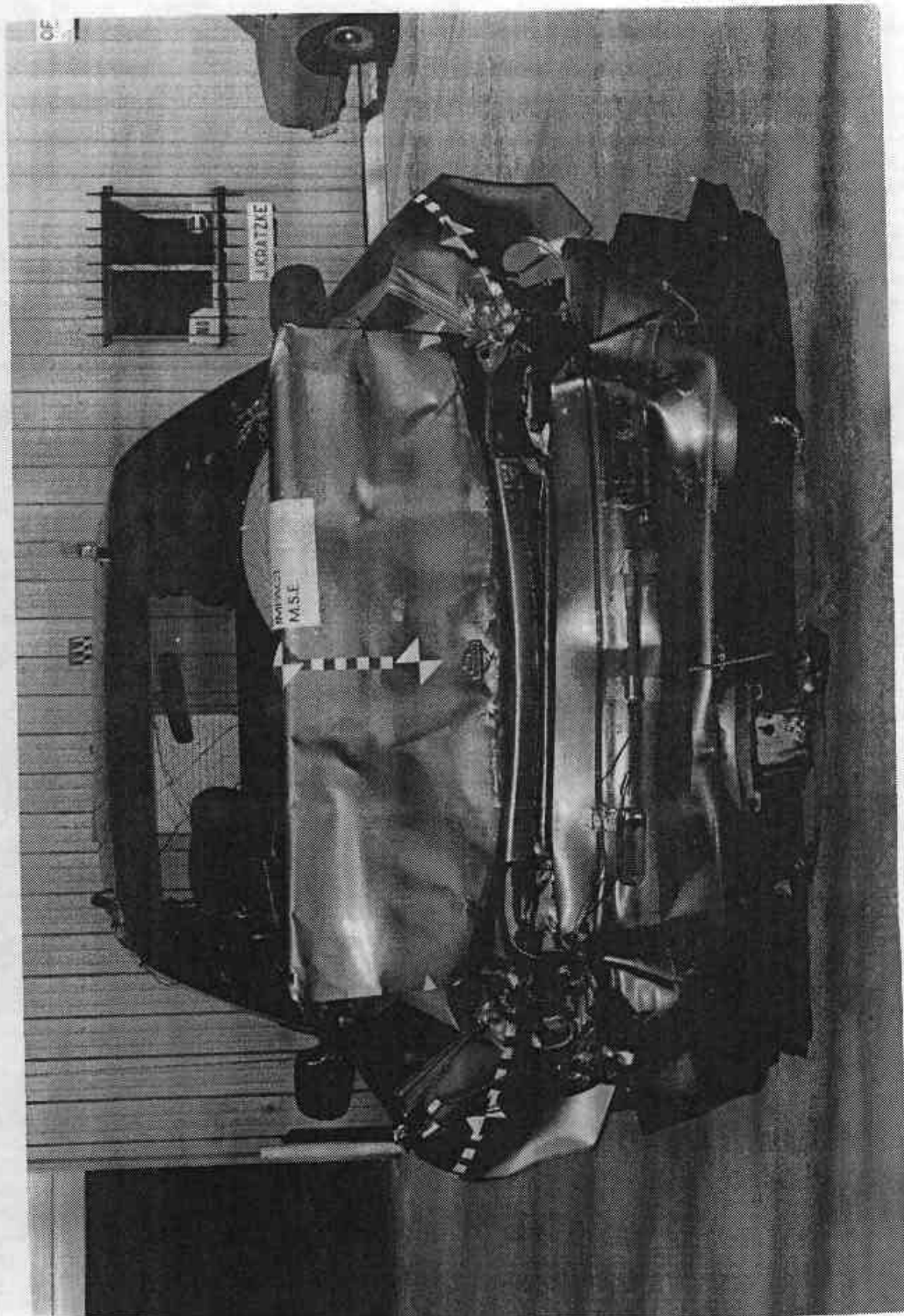
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APPENDIX A
PHOTOGRAPHS

PRETEST FRONT VIEW
POSTTEST FRONT VIEW
PRETEST LEFT SIDE VIEW
POSTTEST LEFT SIDE VIEW
PRETEST RIGHT SIDE VIEW
POSTTEST RIGHT SIDE VIEW
PRETEST RIGHT FRONT 3/4 VIEW
POSTTEST RIGHT FRONT 3/4 VIEW
PRETEST LEFT REAR 3/4 VIEW
POSTTEST LEFT REAR 3/4 VIEW
PRETEST WINDSHIELD VIEW
POSTTEST WINDSHIELD VIEW
PRETEST ENGINE COMPARTMENT VIEW
POSTTEST ENGINE COMPARTMENT VIEW
PRETEST FRONT UNDERBODY VIEW
POSTTEST FRONT UNDERBODY VIEW
PRETEST REAR UNDERBODY VIEW
POSTTEST REAR UNDERBODY VIEW
PRETEST DRIVER DUMMY POSITION VIEW
POSTTEST DRIVER DUMMY POSITION VIEW
PRETEST PASSENGER DUMMY POSITION VIEW
POSTTEST PASSENGER DUMMY POSITION VIEW
PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
PRETEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST DRIVER DUMMY (ATD) HEAD AND KNEE CONTACT AREA
POSTTEST PASSENGER DUMMY (ATD) KNEE CONTACT AREA

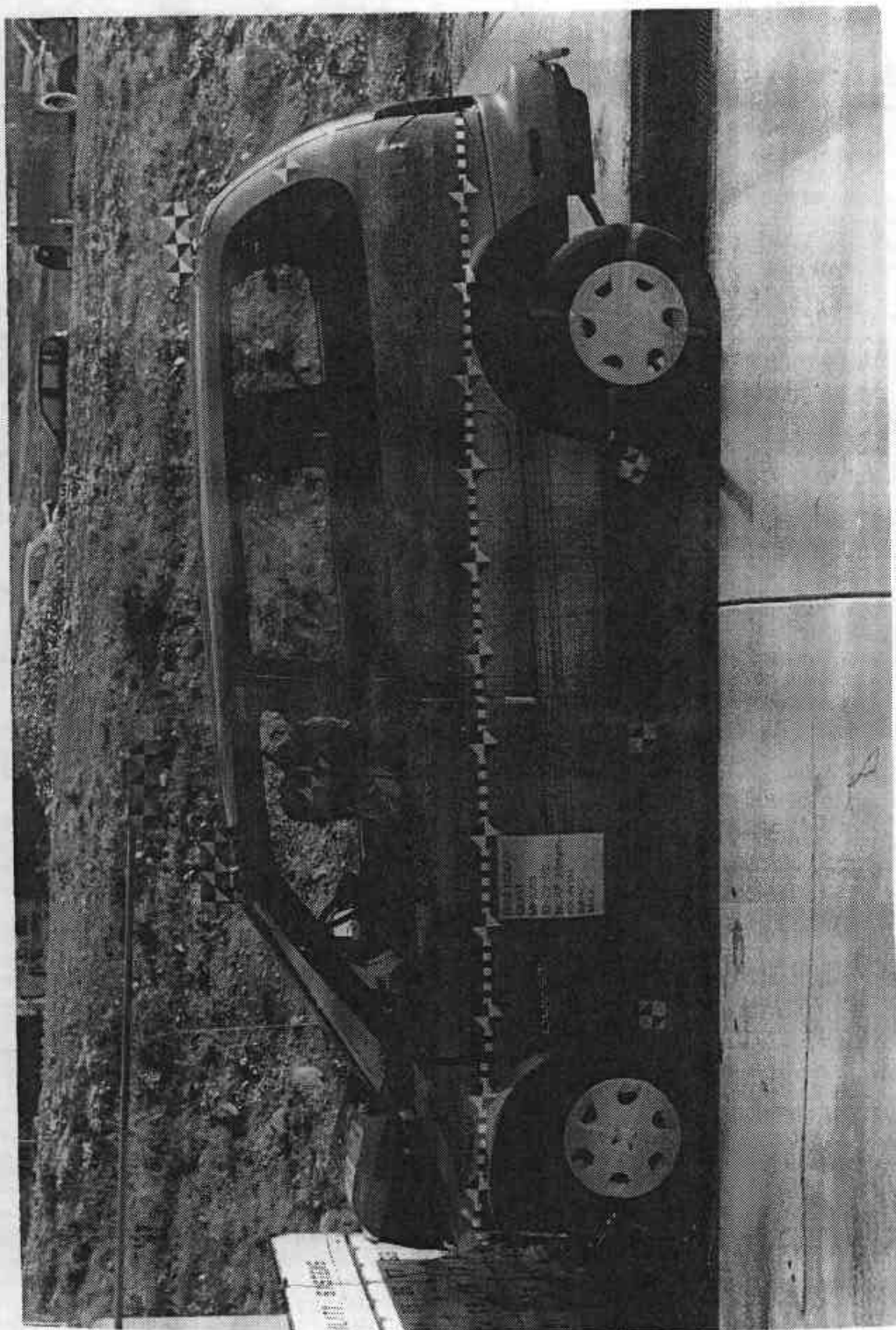


PRETEST FRONT VIEW

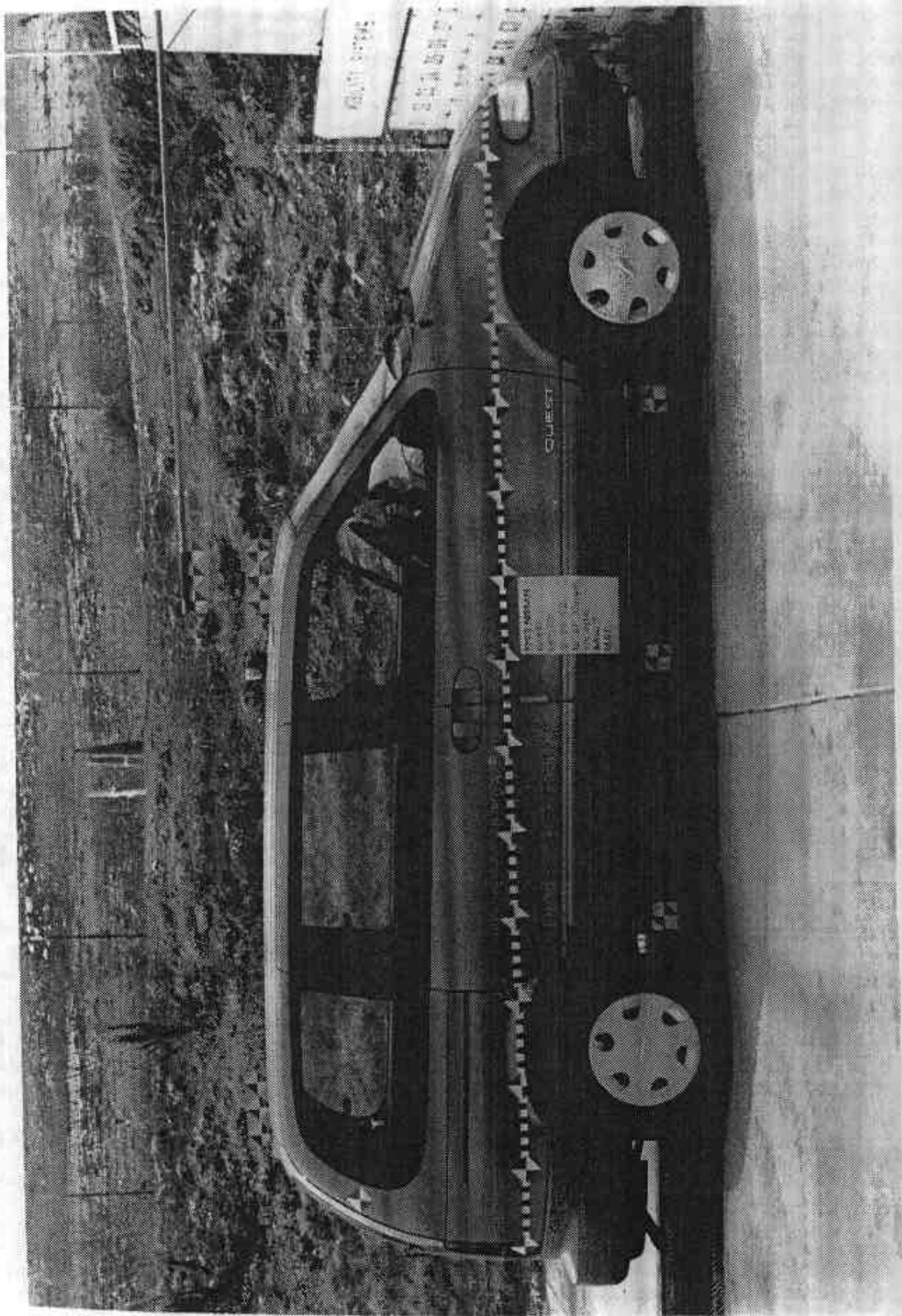


POSTTEST FRONT VIEW

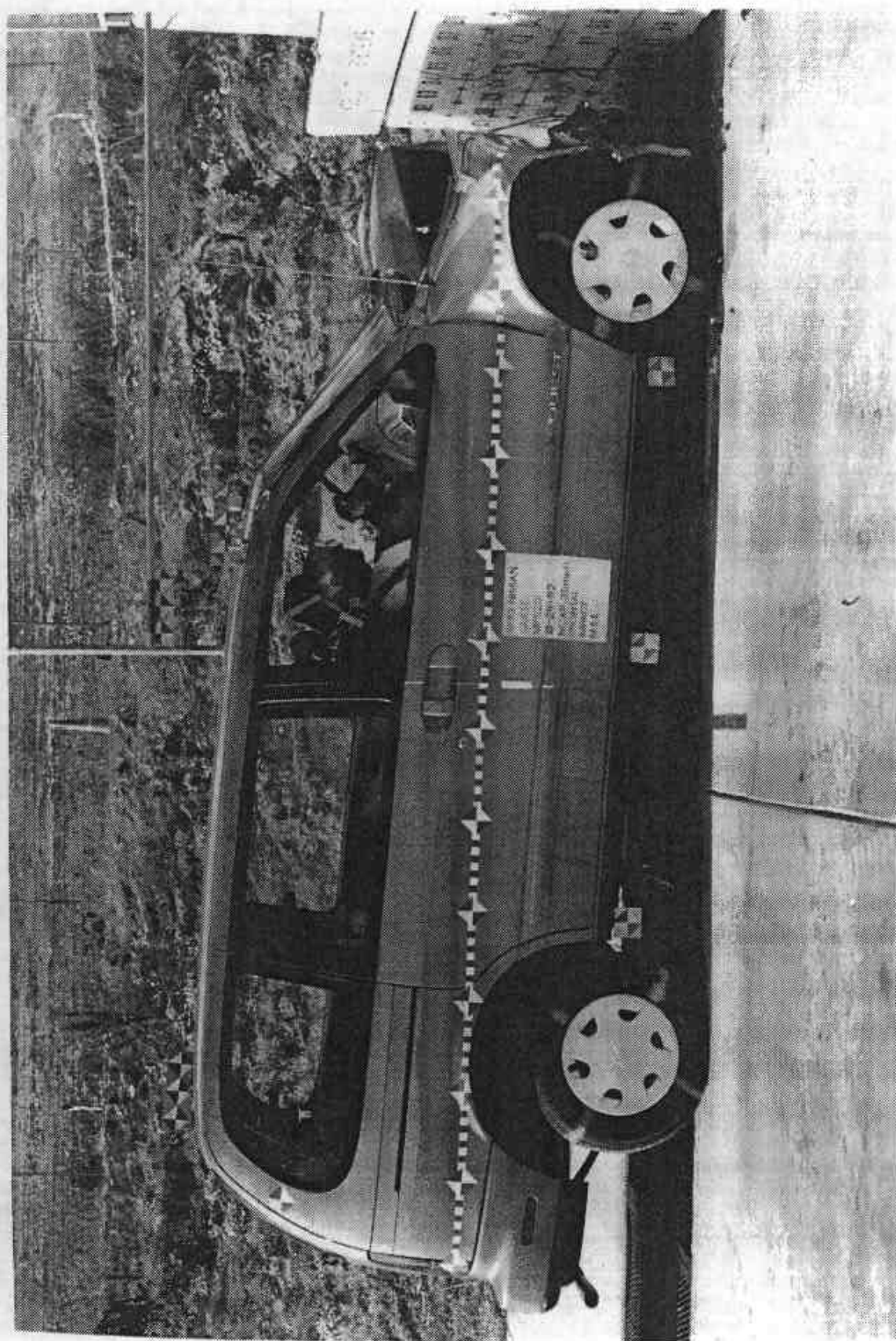




POSTTEST LEFT SIDE VIEW



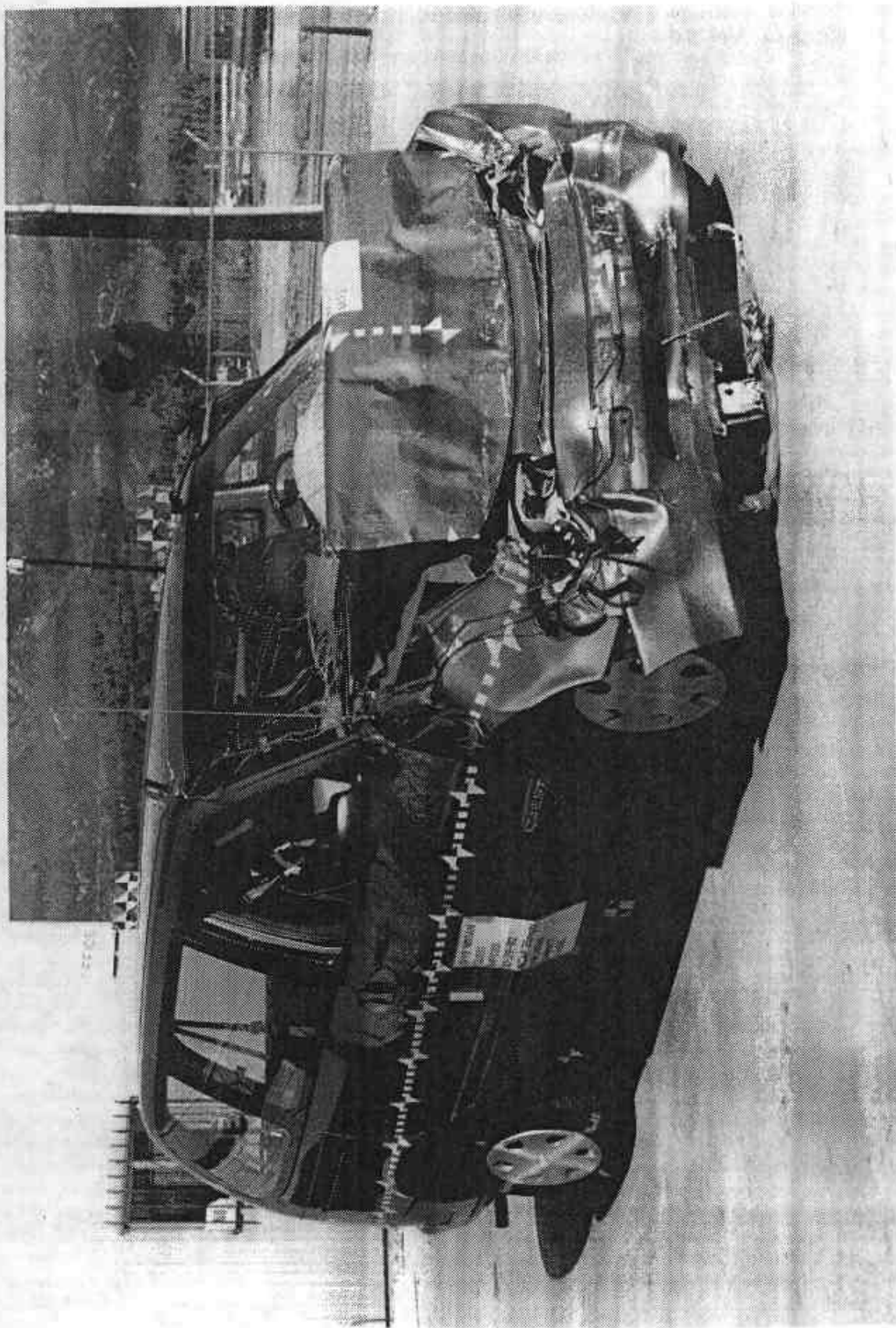
PRETEST RIGHT SIDE VIEW



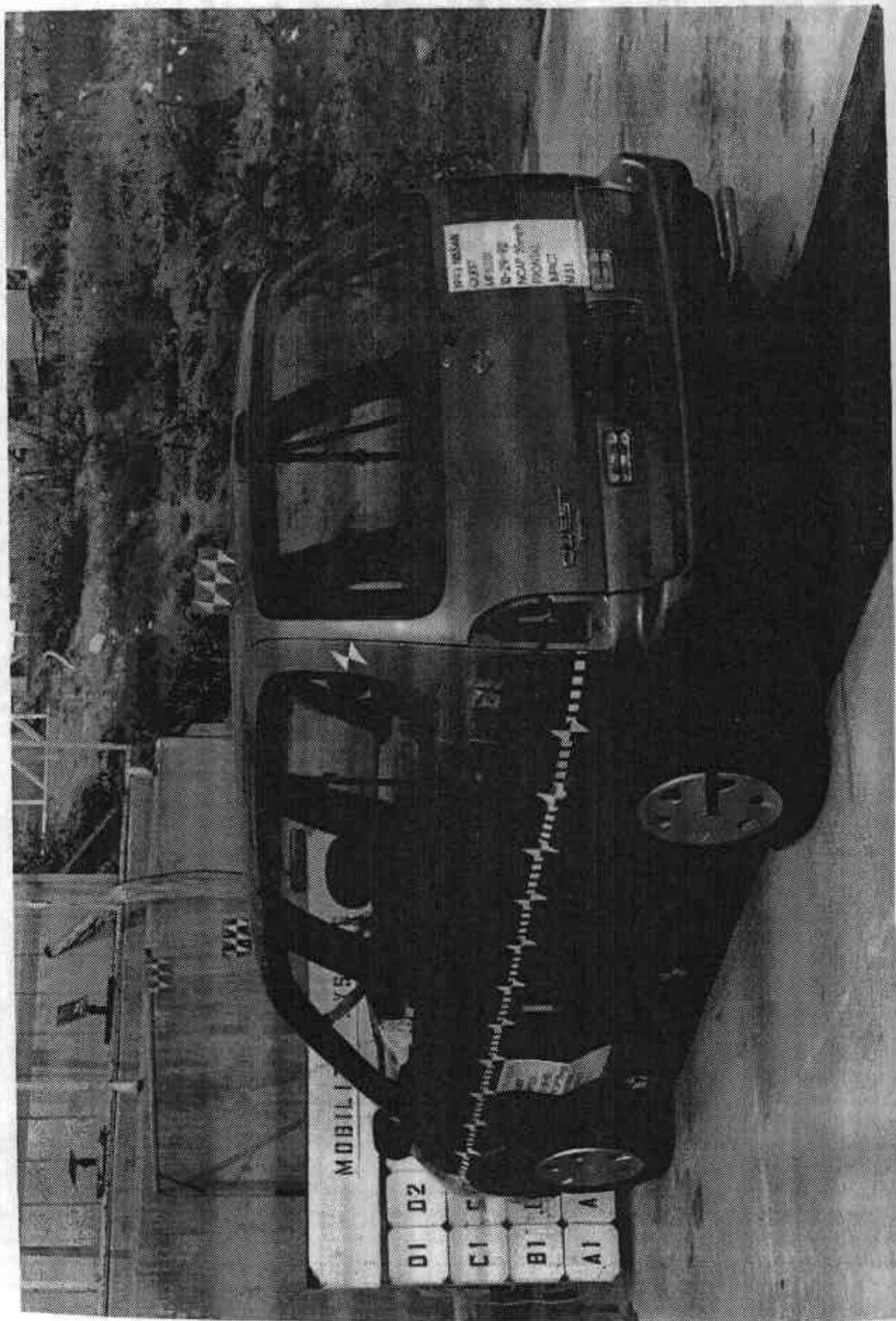
POSTTEST RIGHT SIDE VIEW



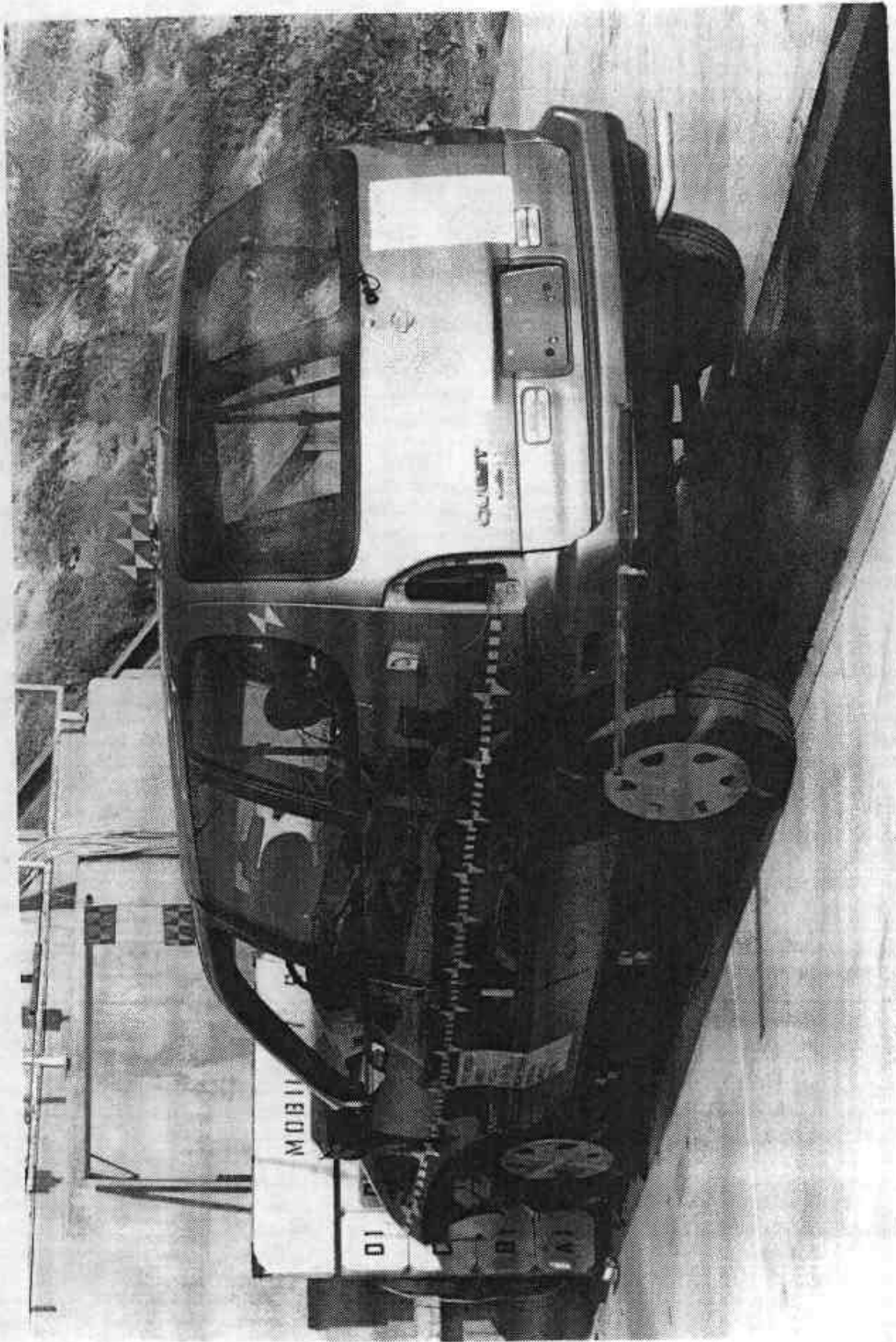
PRETEST RIGHT FRONT 3/4 VIEW



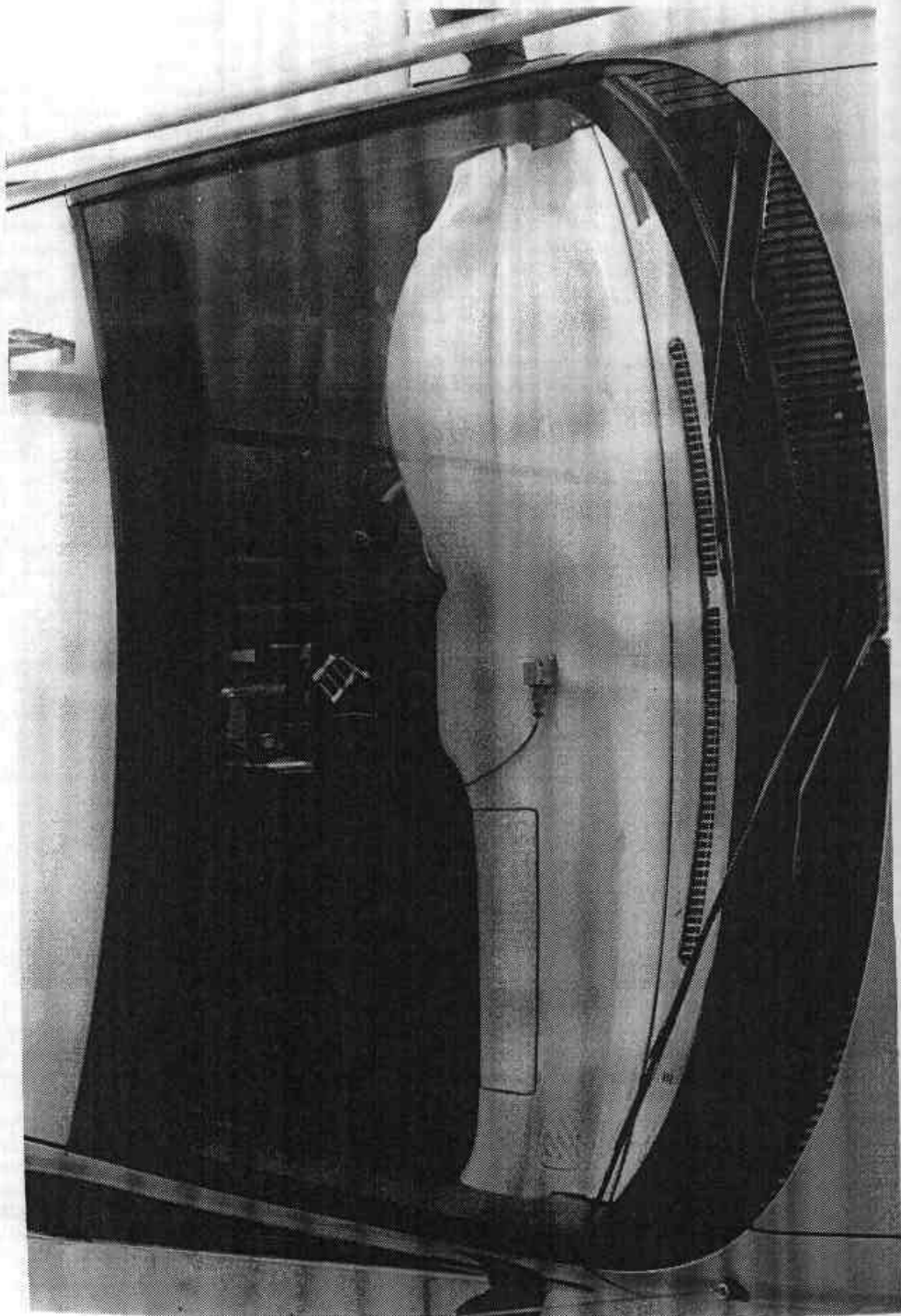
POSTTEST RIGHT FRONT 3/4 VIEW



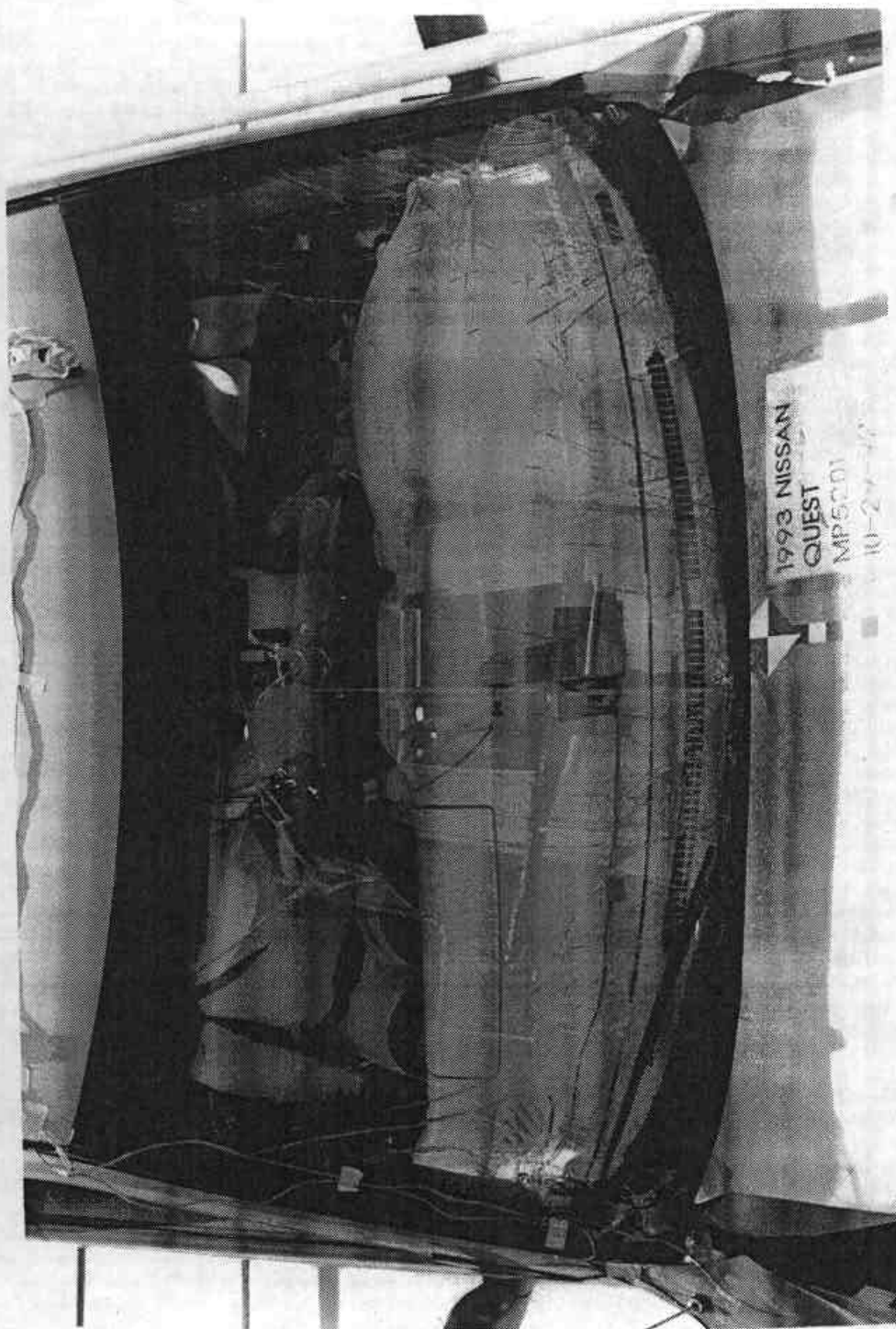
PRETEST LEFT REAR 3/4 VIEW



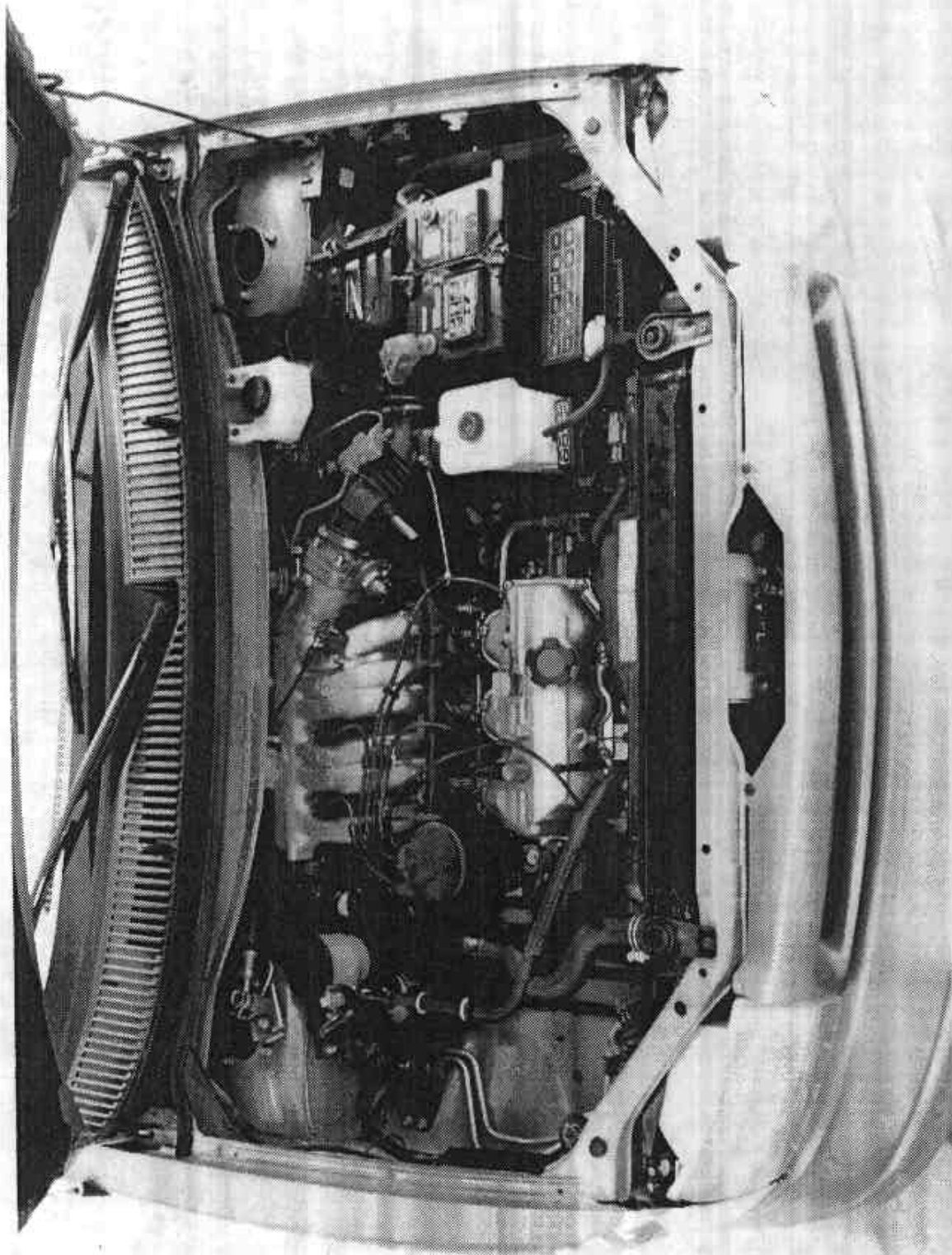
POSTTEST LEFT REAR 3/4 VIEW



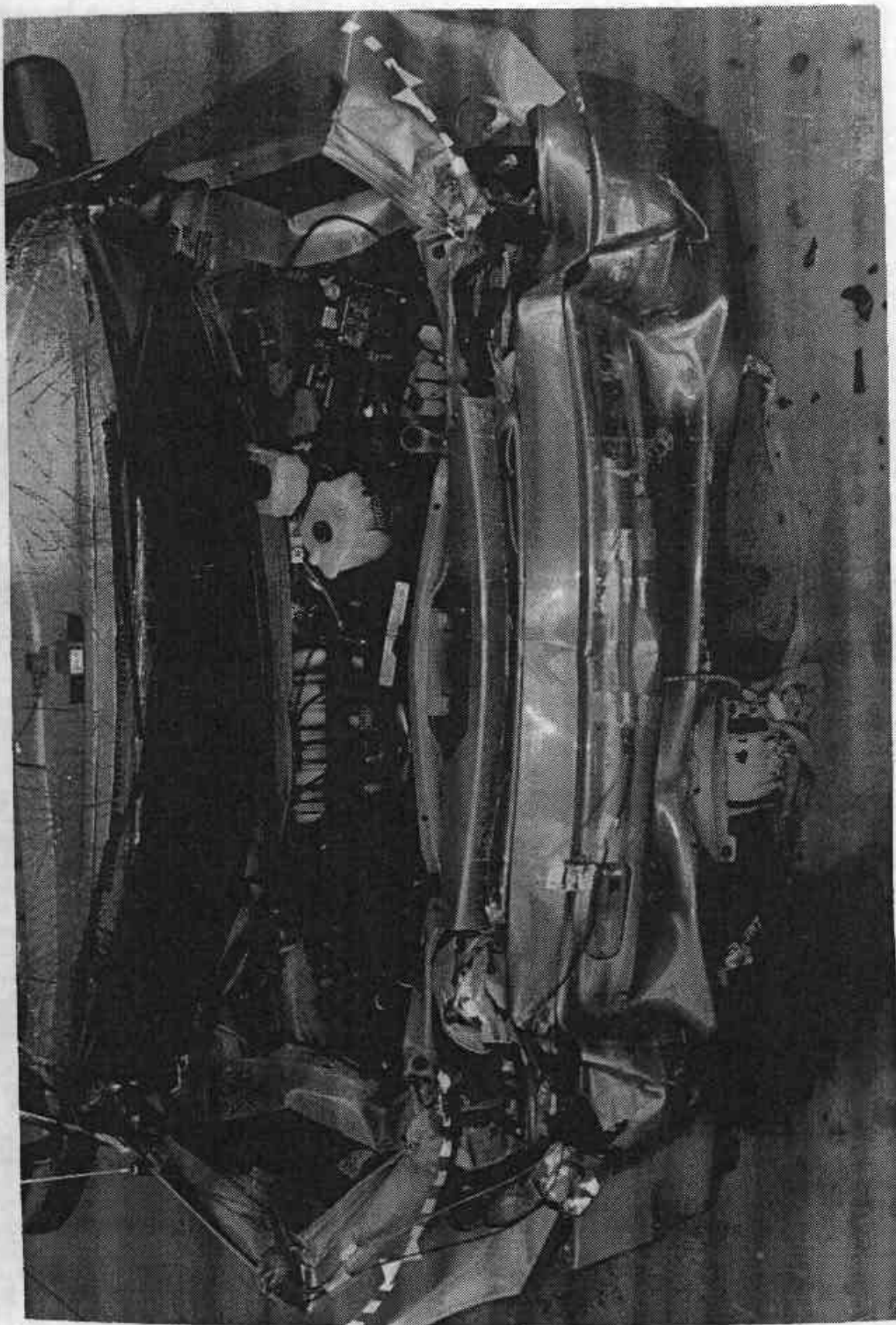
PRETEST WINDSHIELD VIEW



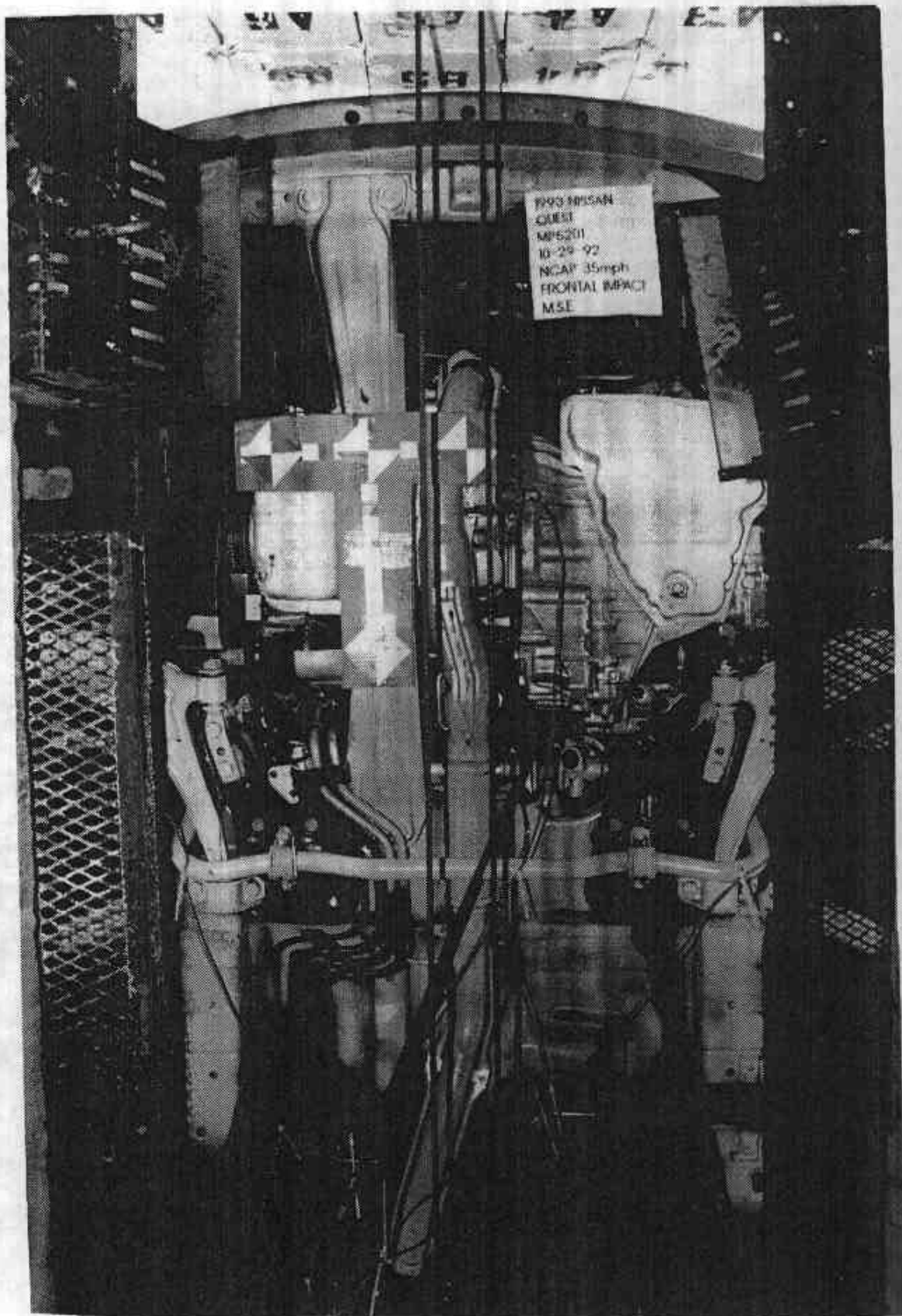
POSTTEST WINDSHIELD VIEW



PRETEST ENGINE COMPARTMENT VIEW



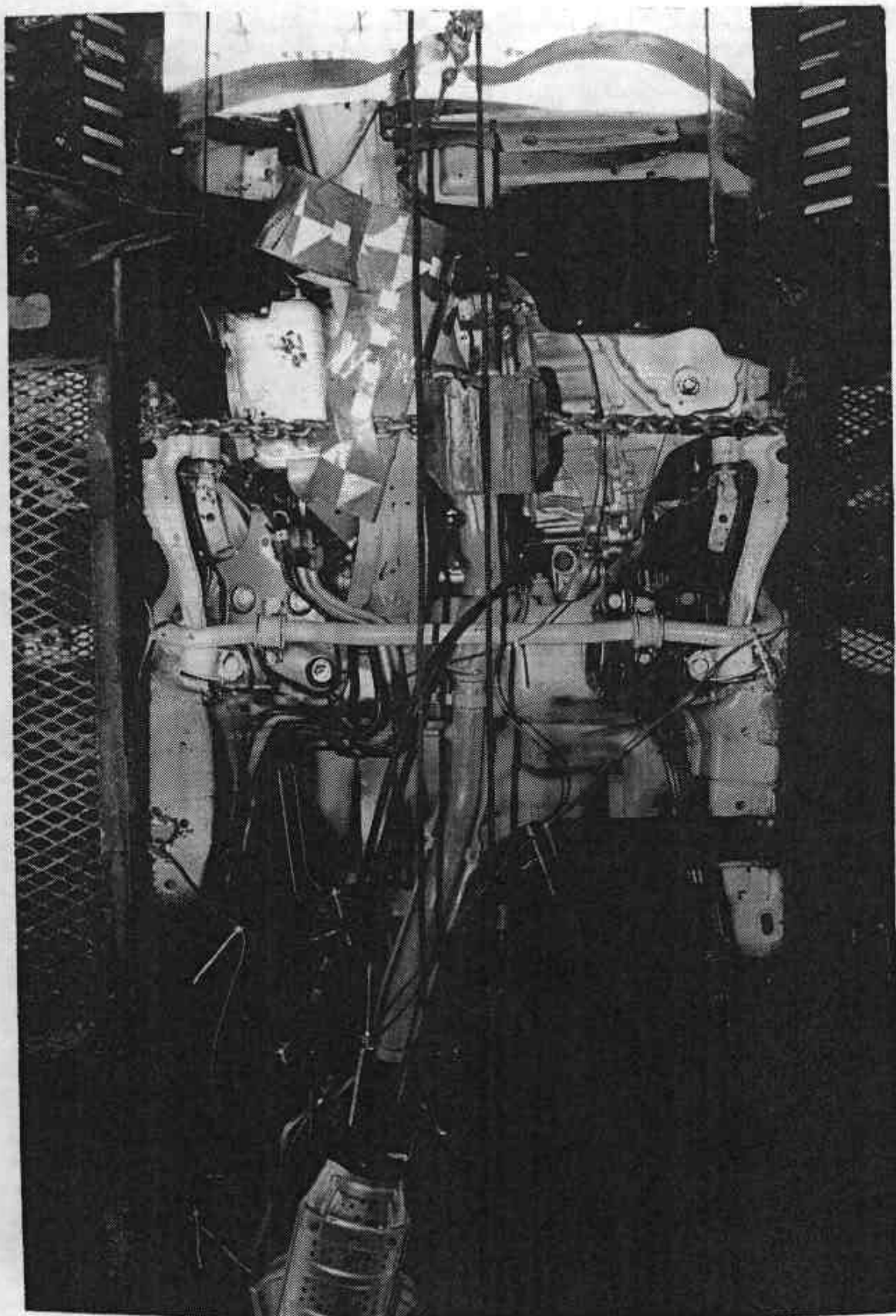
POSTTEST ENGINE COMPARTMENT VIEW



PRETEST FRONT UNDERBODY VIEW

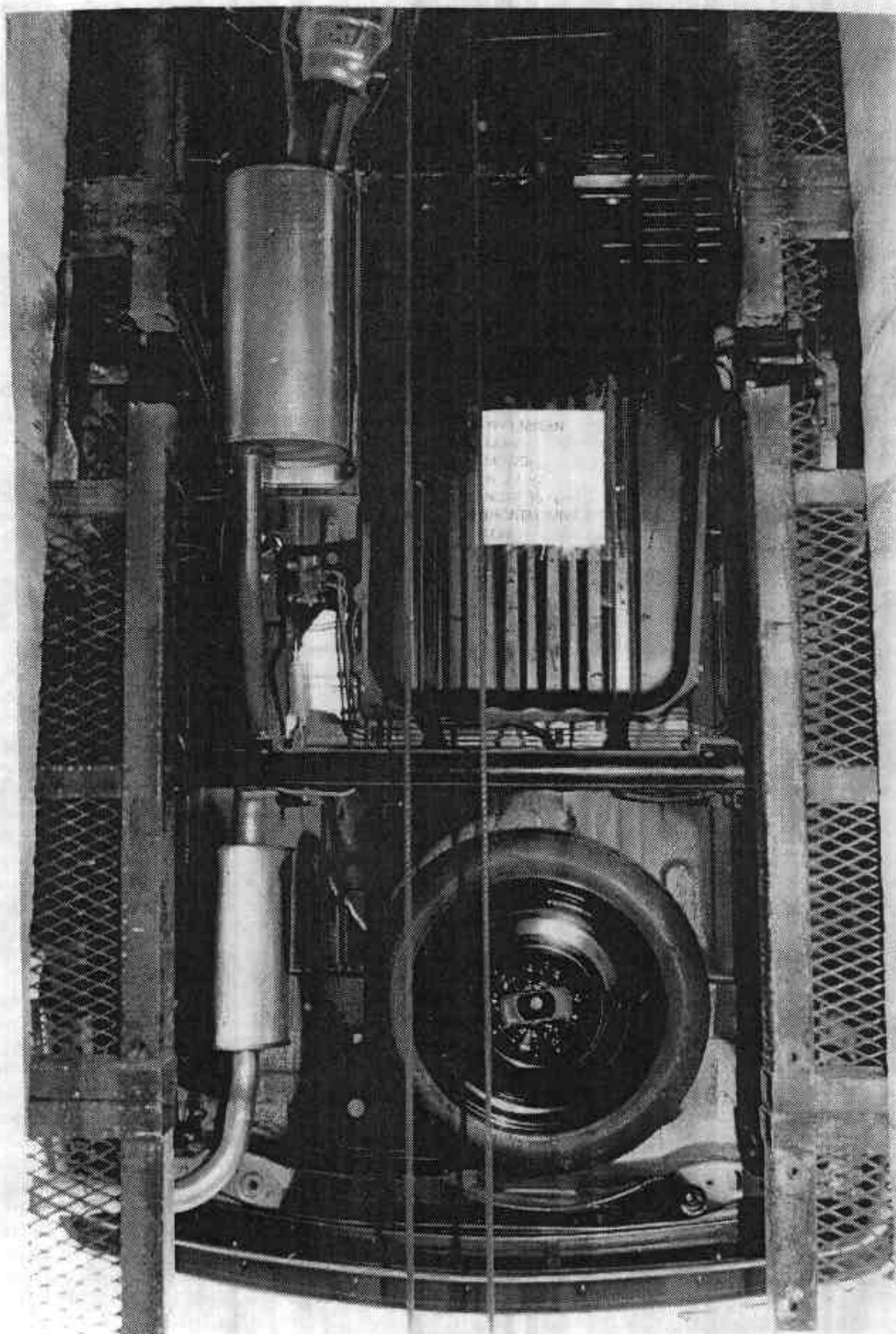
A-15

MSE-93-R92083-N01



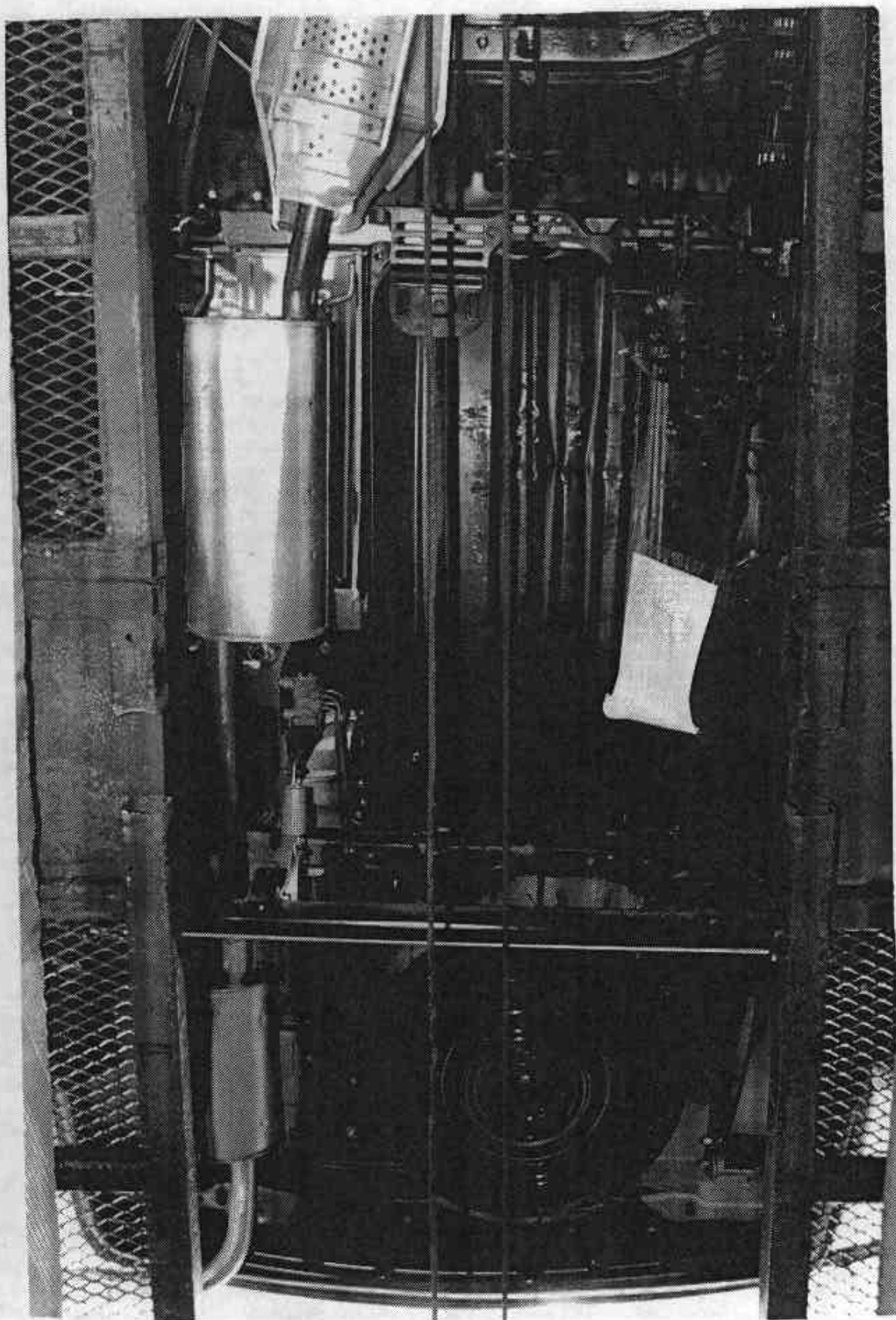
POSTTEST FRONT UNDERBODY VIEW
A-16

MSE-93-R92083-N01



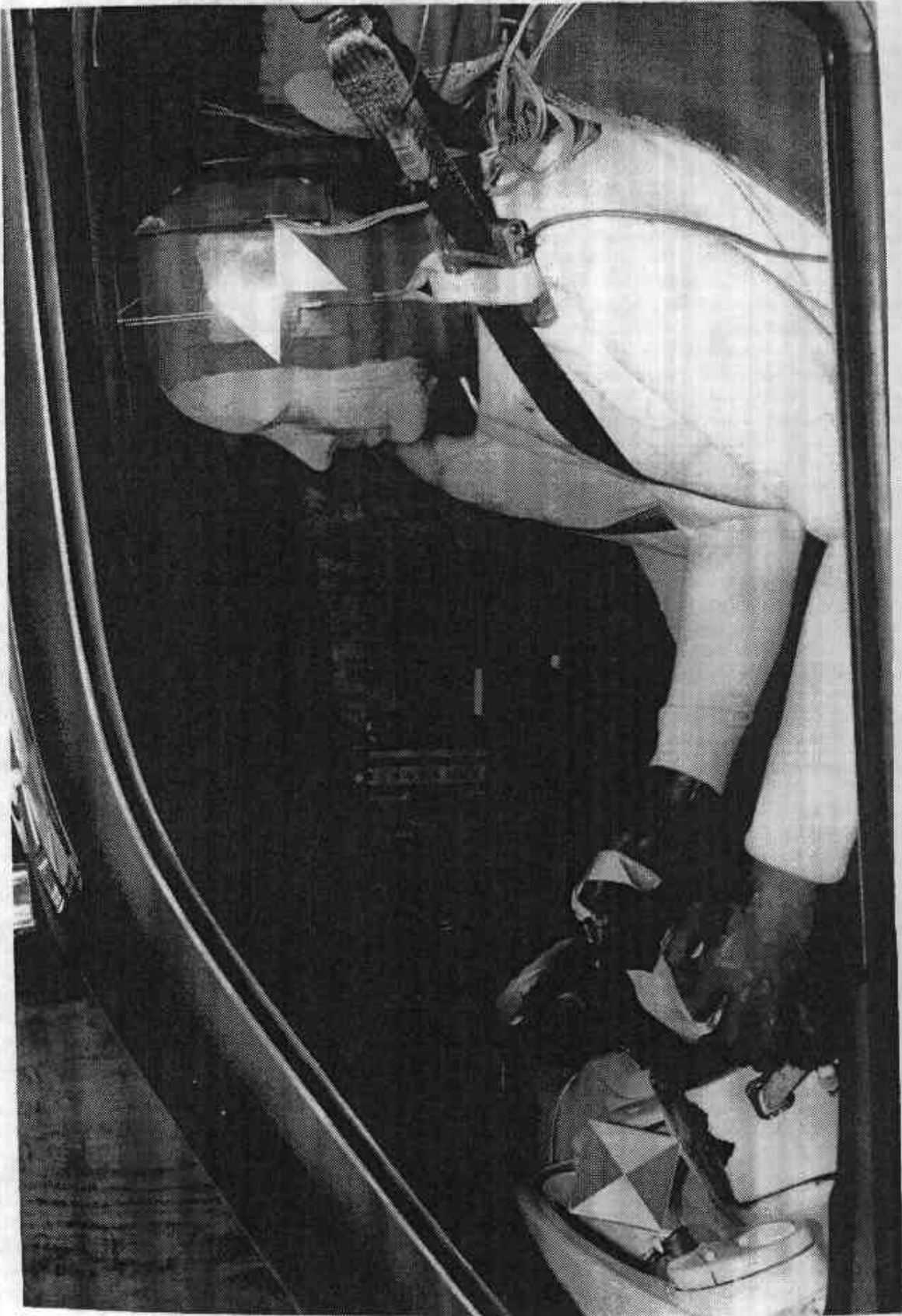
PRETEST REAR UNDERBODY VIEW
A-17

MSE-93-R92083-N01



POSTTEST REAR UNDERBODY VIEW
A-18

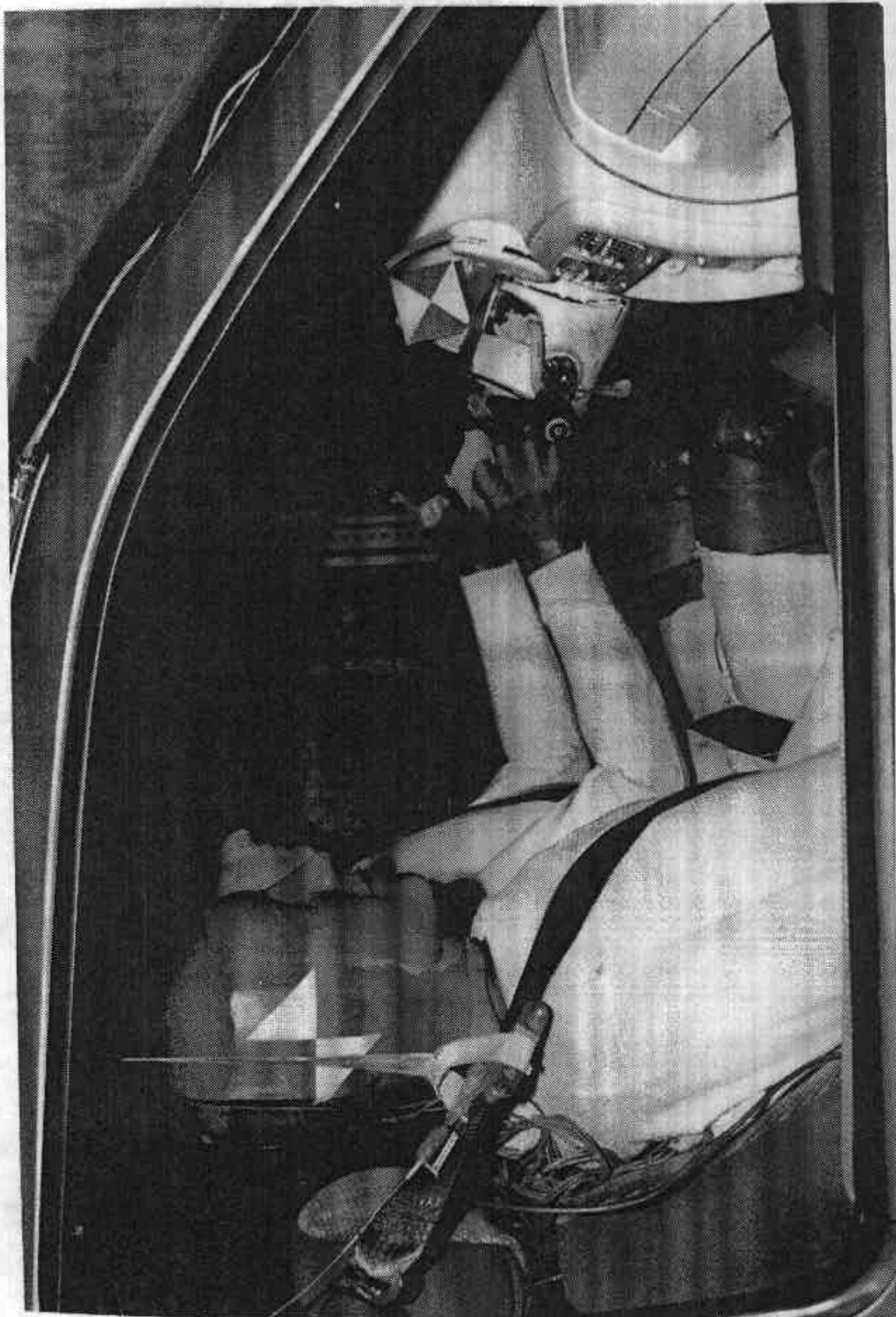
MSE-93-R92083-N01



PRETEST DRIVER DUMMY POSITION VIEW



POSTTEST DRIVER DUMMY POSITION VIEW



PRETEST PASSENGER DUMMY POSITION VIEW



POSTTEST PASSENGER DUMMY POSITION VIEW



PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

A-23

MSE-93-R92083-N01



POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

A-24

MSE-93-R92083-N01



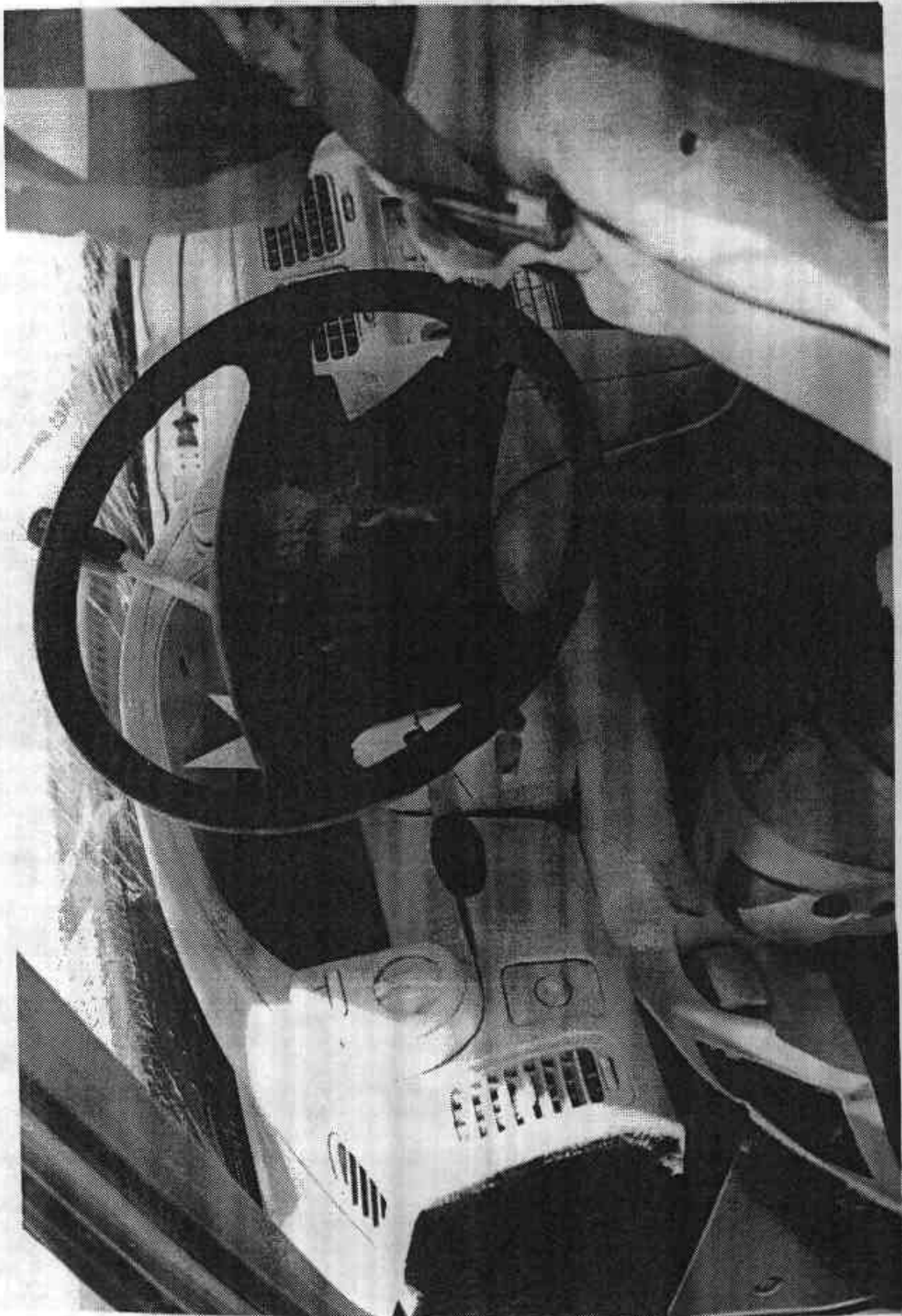
PRETEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

A-25

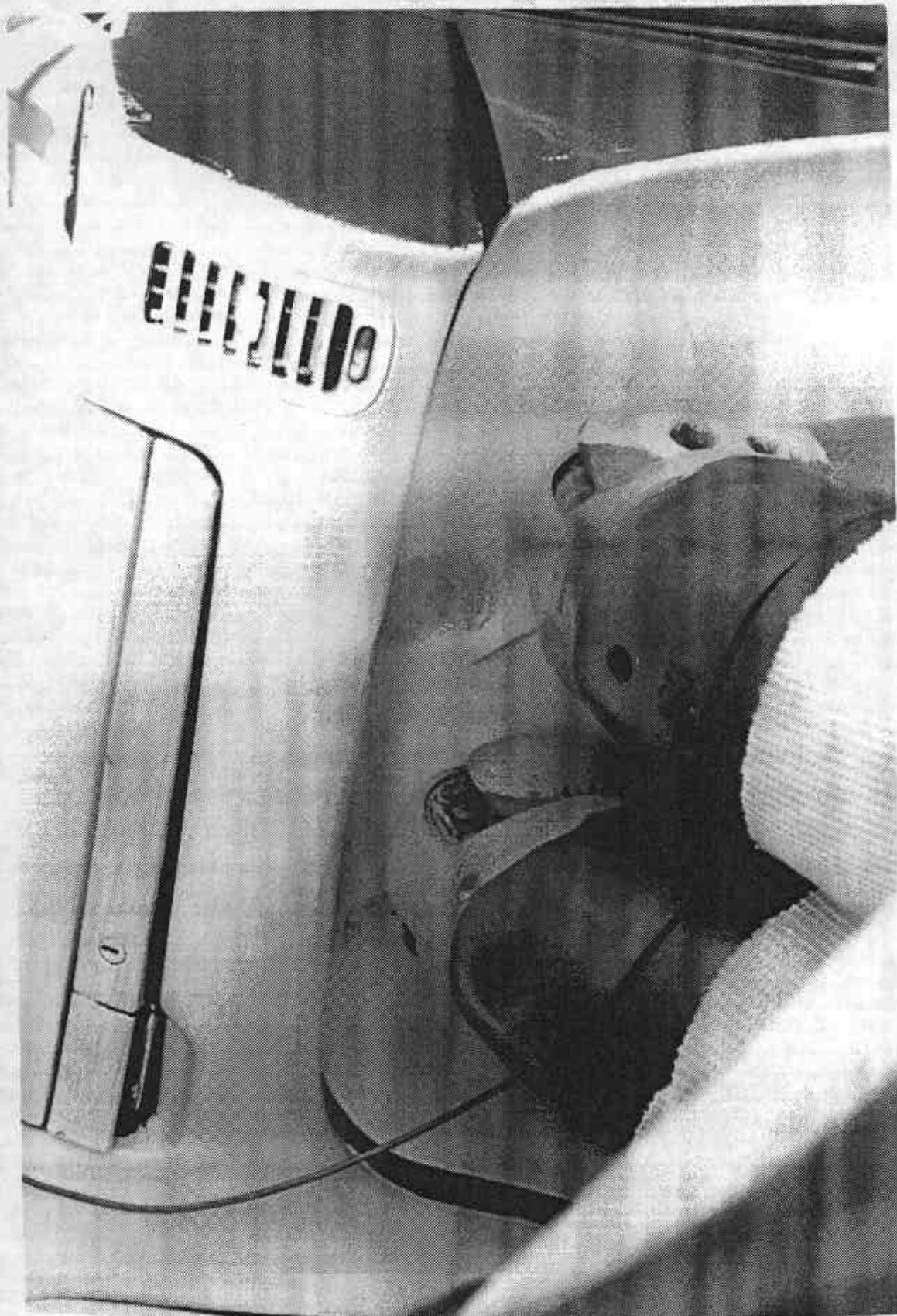
MSE-93-R92083-N01



POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
A-26 MSE-93-R92083-N01



POSTTEST DRIVER DUMMY (ATD) HEAD AND KNEE CONTACT AREA



POSTTEST PASSENGER DUMMY (ATD) KNEE CONTACT AREA

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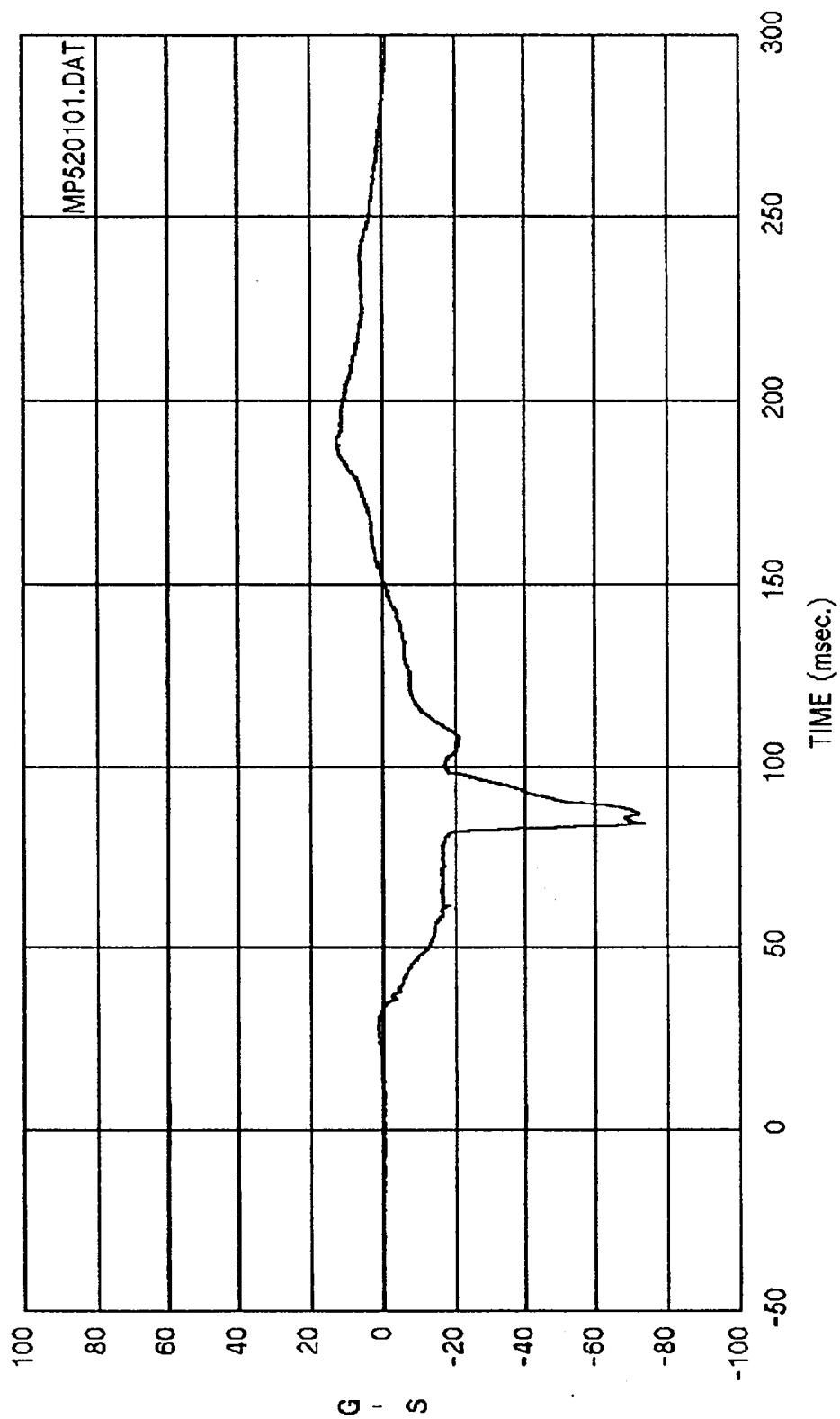
APPENDIX B-1

VEHICLE AND DUMMY (ATD) RESPONSE DATA

DATA FILTERING:

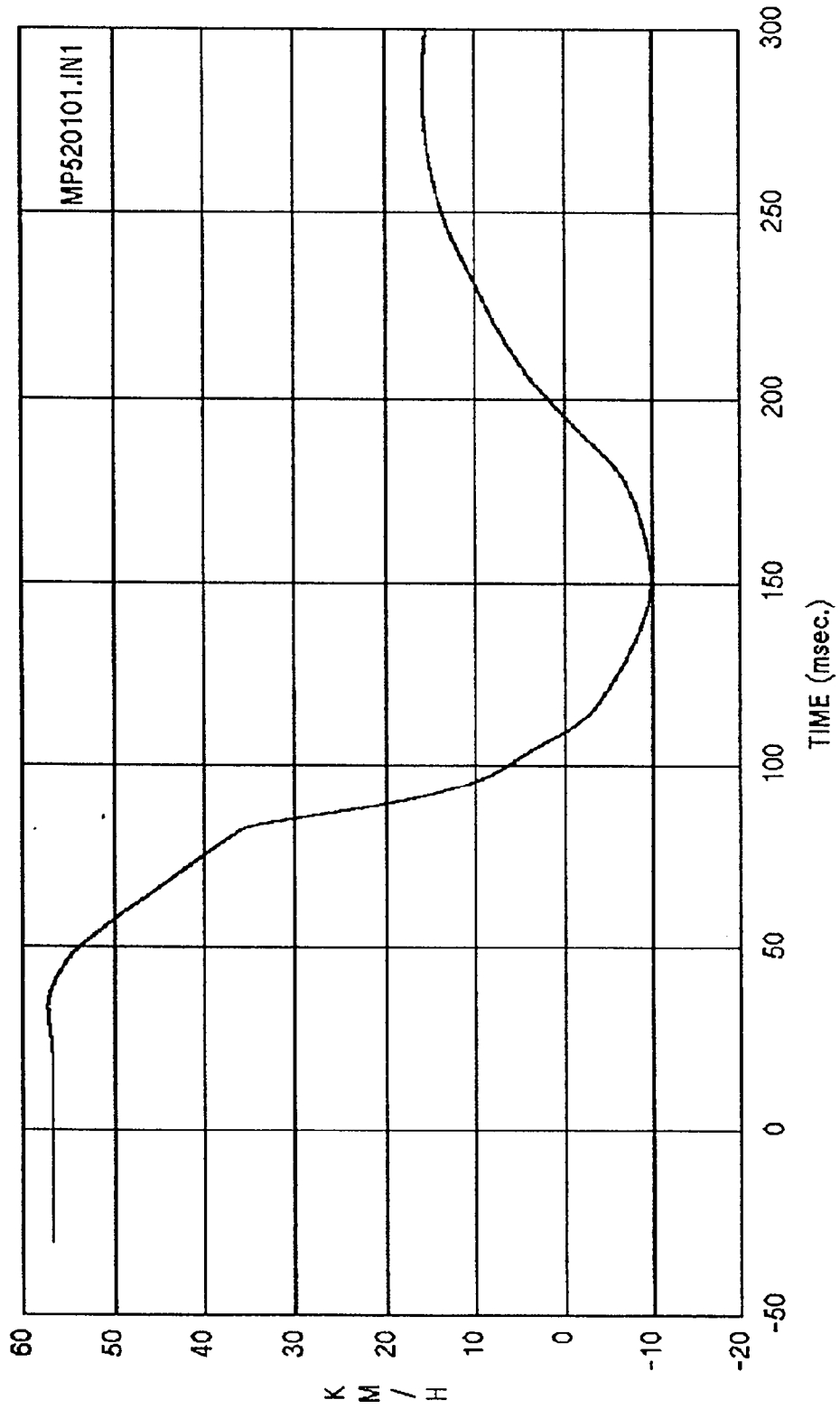
ATD Head Channels	- Class 1000
ATD Chest Channels	- Class 180
ATD Femur Channels	- Class 600
Vehicle Channels	- Class 60

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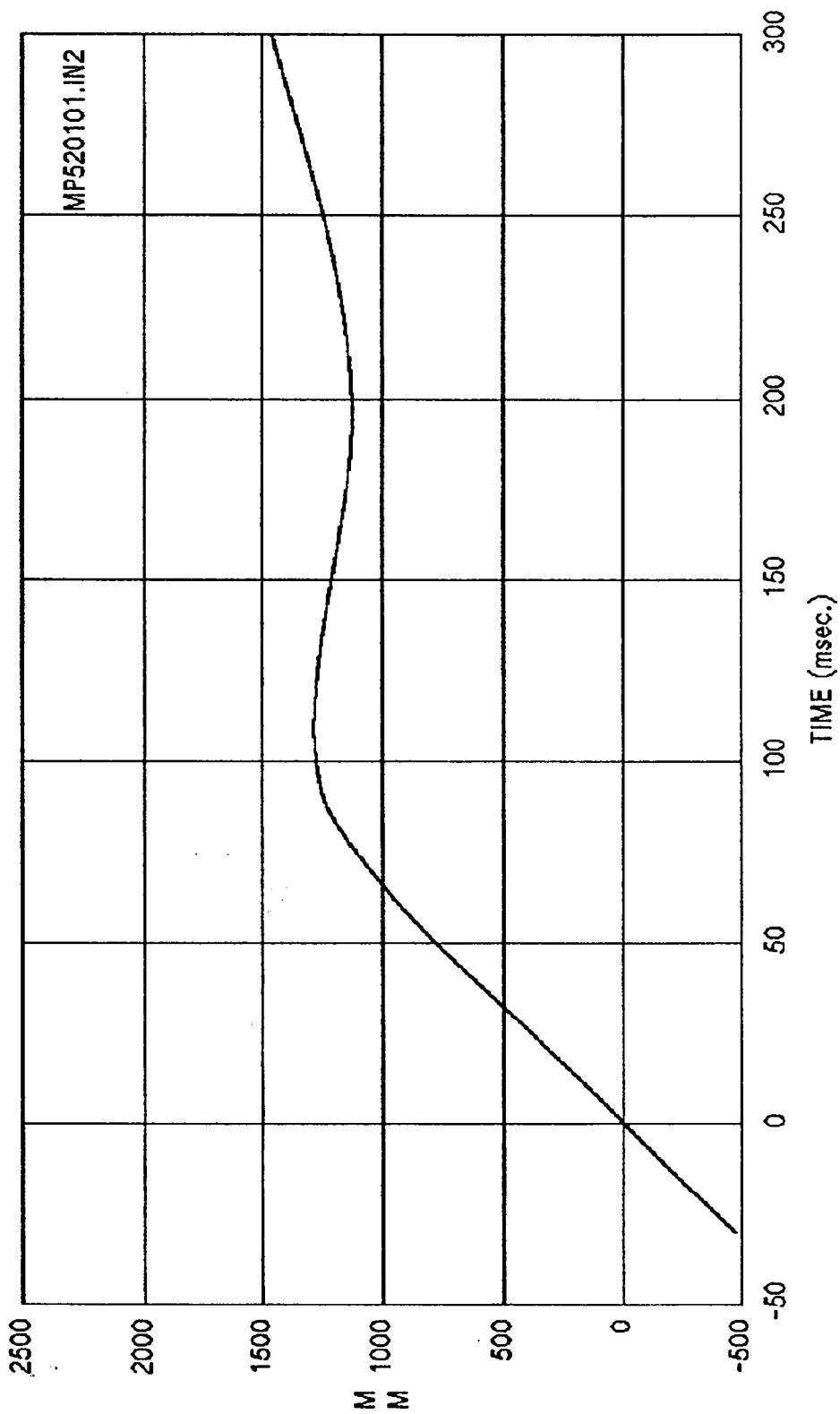


Curve: Driver head acceleration -- X axis Filter: SAE CLASS 1000 Max = 12.496 Min = -73.405

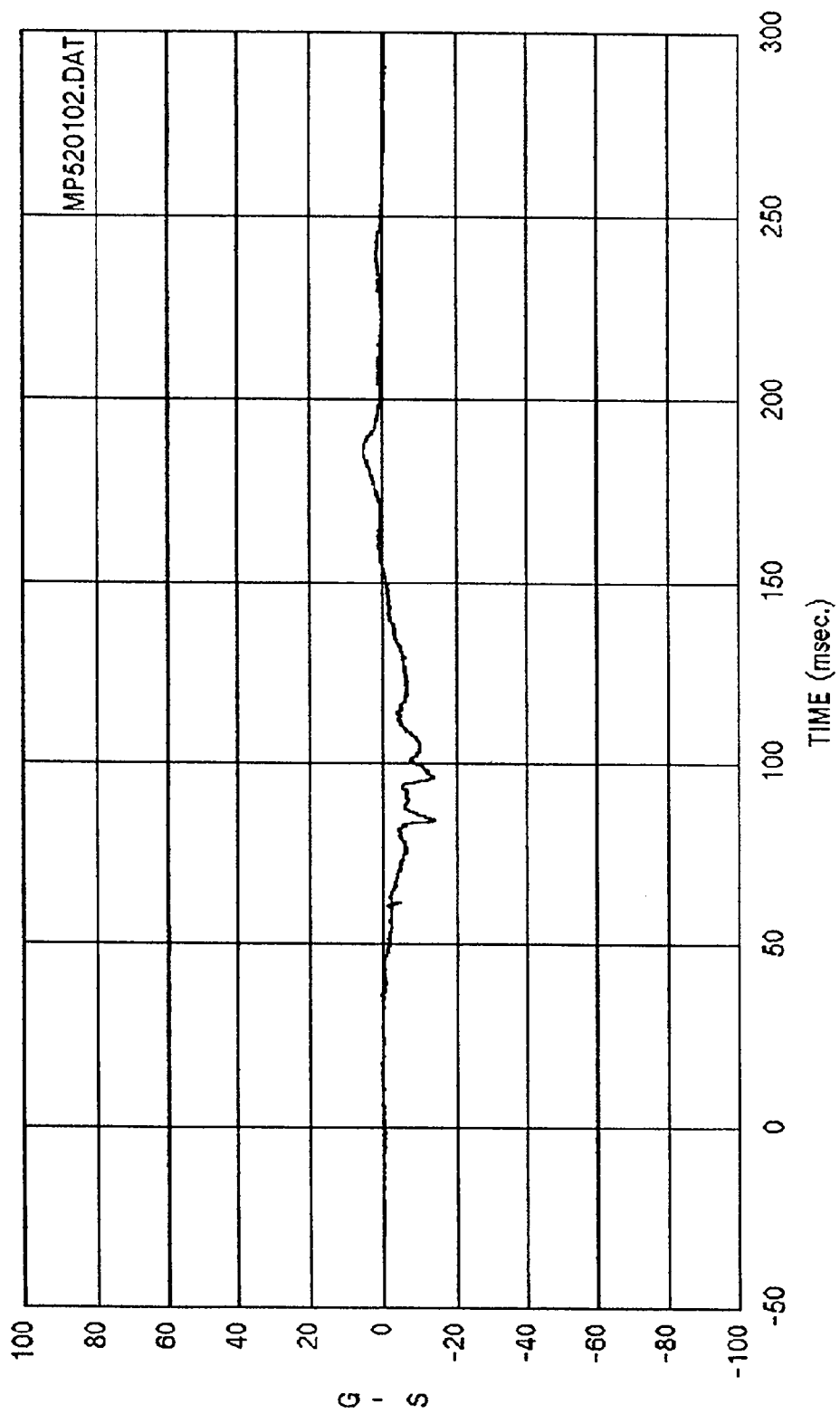
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Driver head delta V -- X axis Filter: SAE CLASS 180 Max = 57.272 Min = -9.8733
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

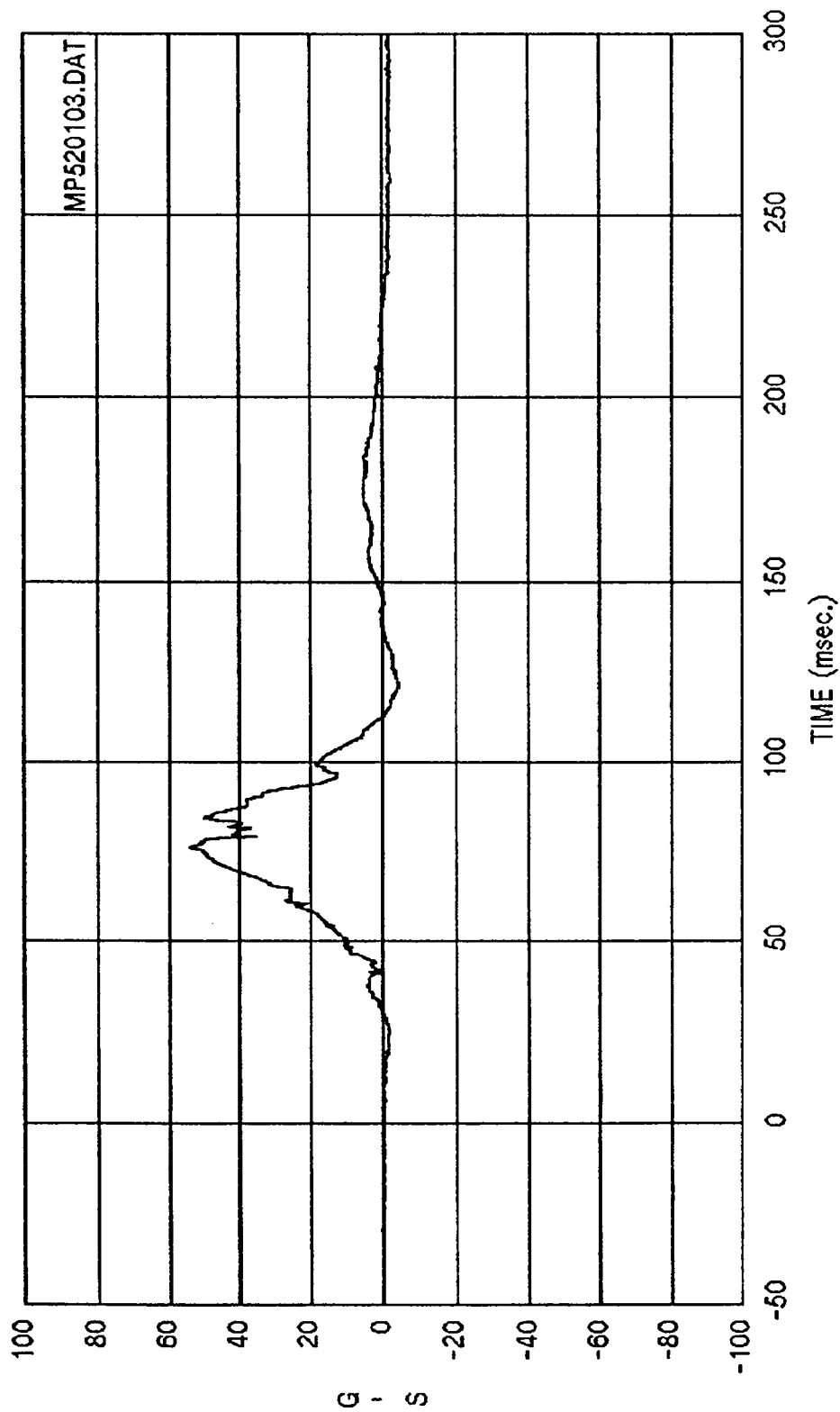


Curve: Driver head displacement -- X axis Filter: SAE CLASS 180 Max = 1460.7 Min = 1126.5
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



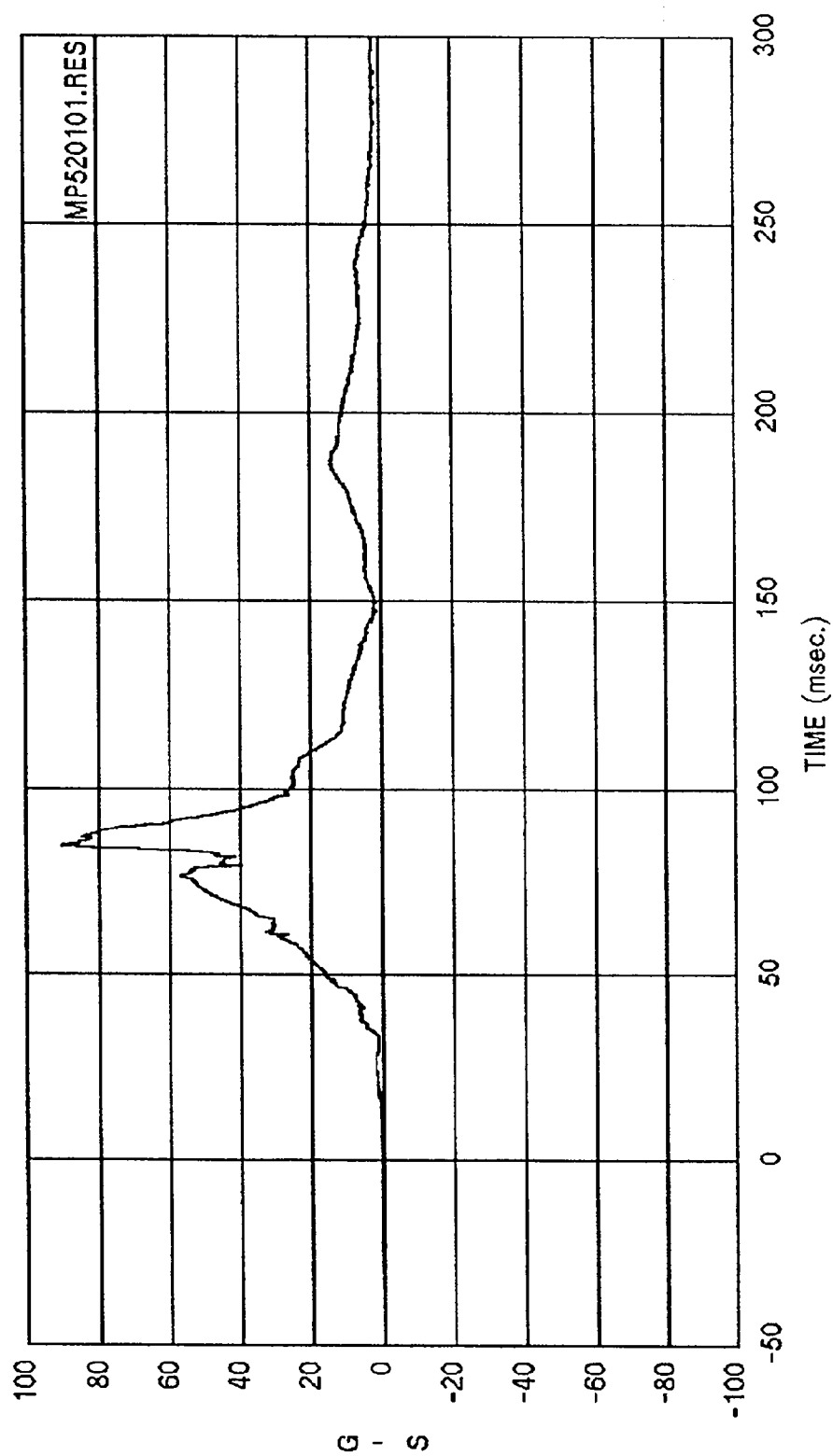
Curve: Driver head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 5.5402 Min = -14.206

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



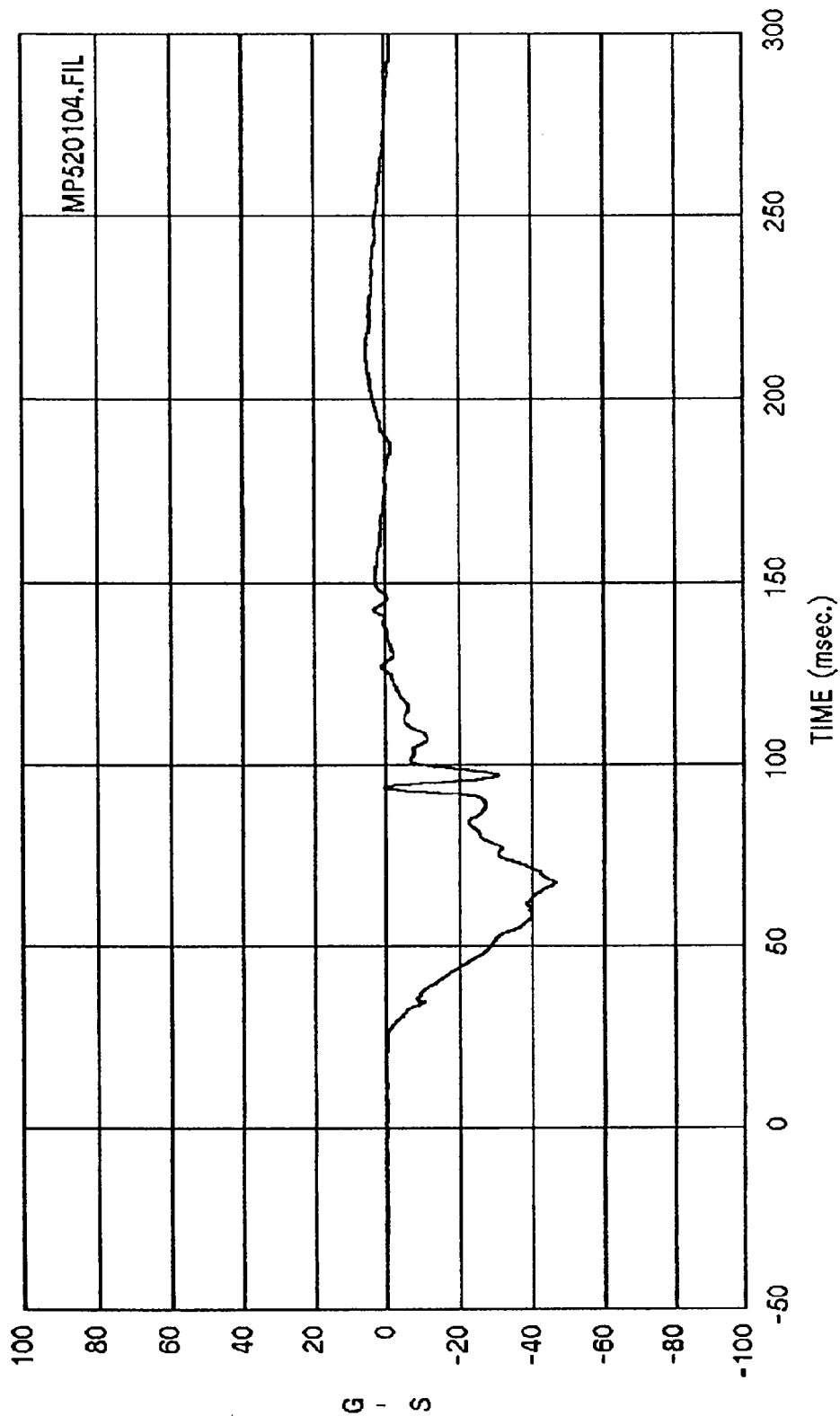
Curve: Driver head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 54.301 Min = -4.3437

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



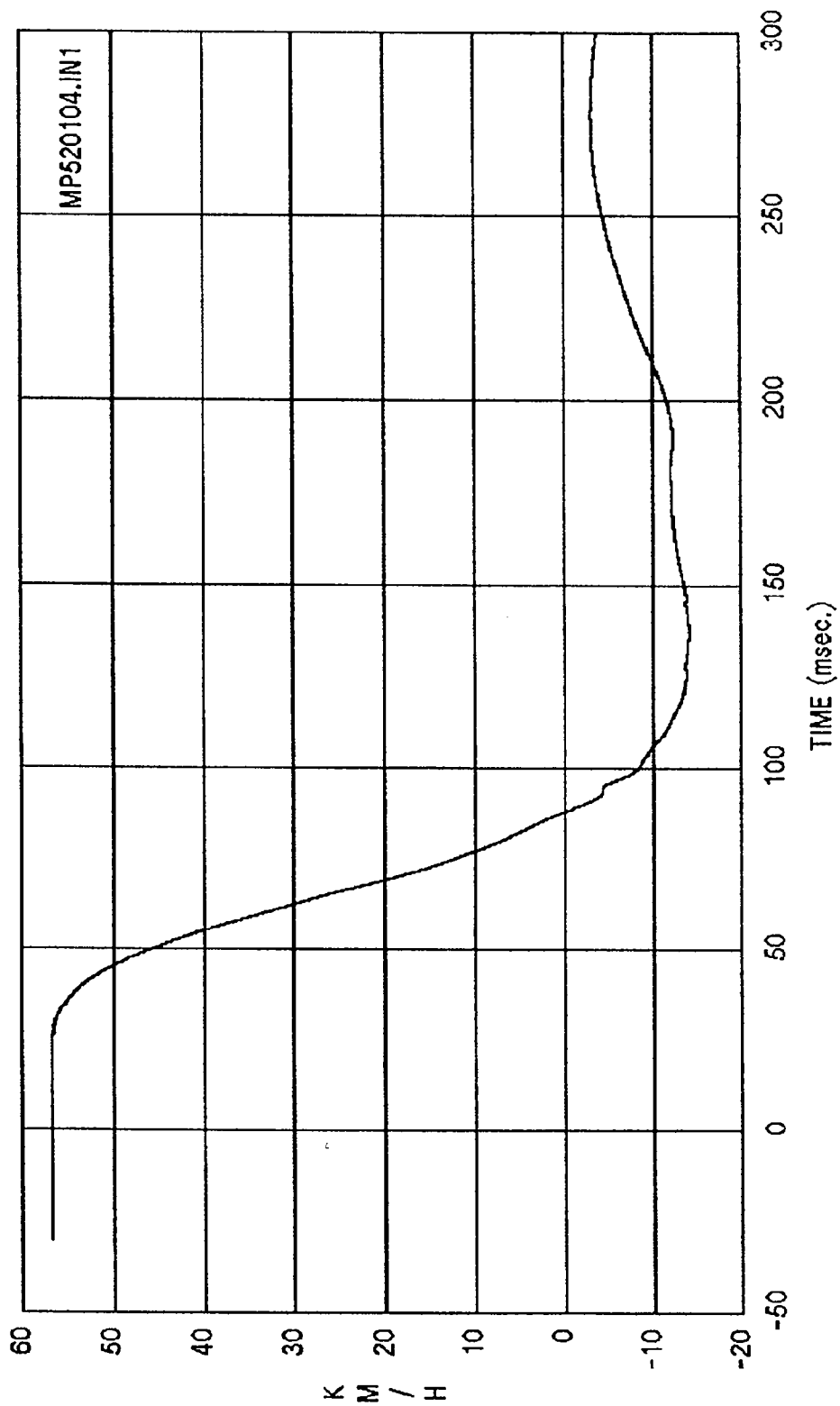
Curve: Driver head acceleration --- Resultant Filter: SAE CLASS 1000 Max = 90.089 Min = .25294
01

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

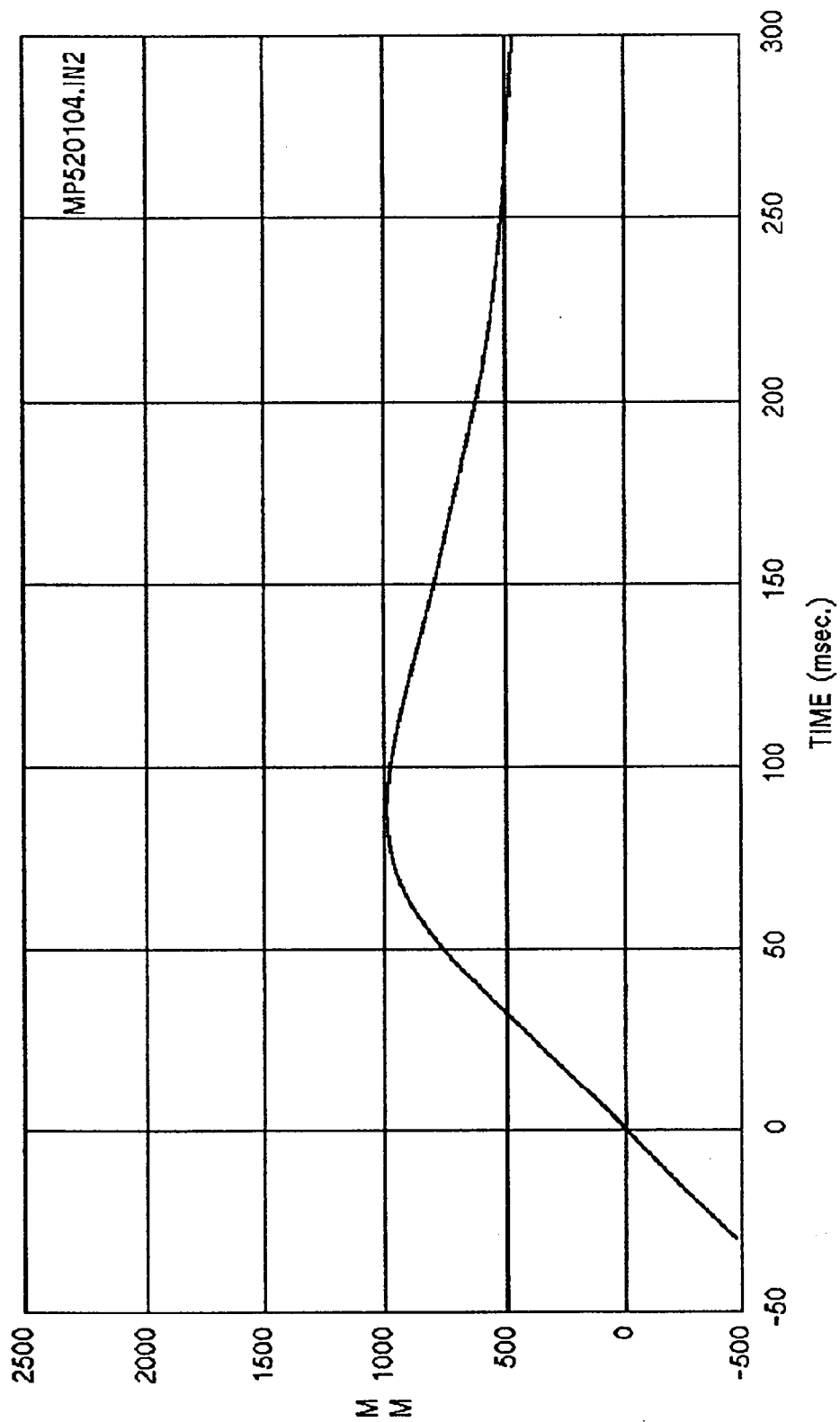


Curve: Driver chest acceleration -- X axis Filter: SAE CLASS 180 Max = 5.3174 Min = -46.199

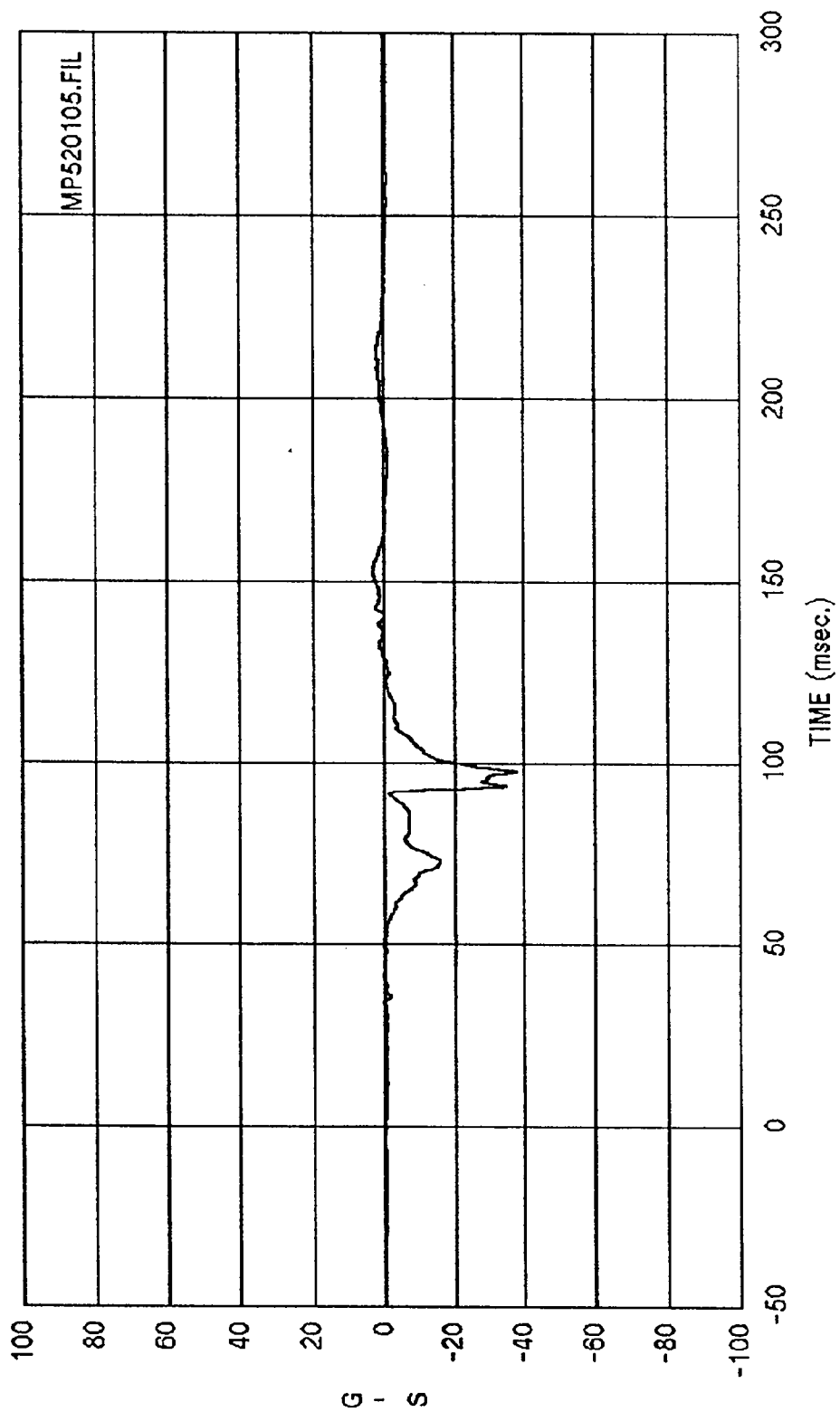
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Driver chest delta V -- X axis Filter: SAE CLASS 180 Max = 56.704 Min = -14.052
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

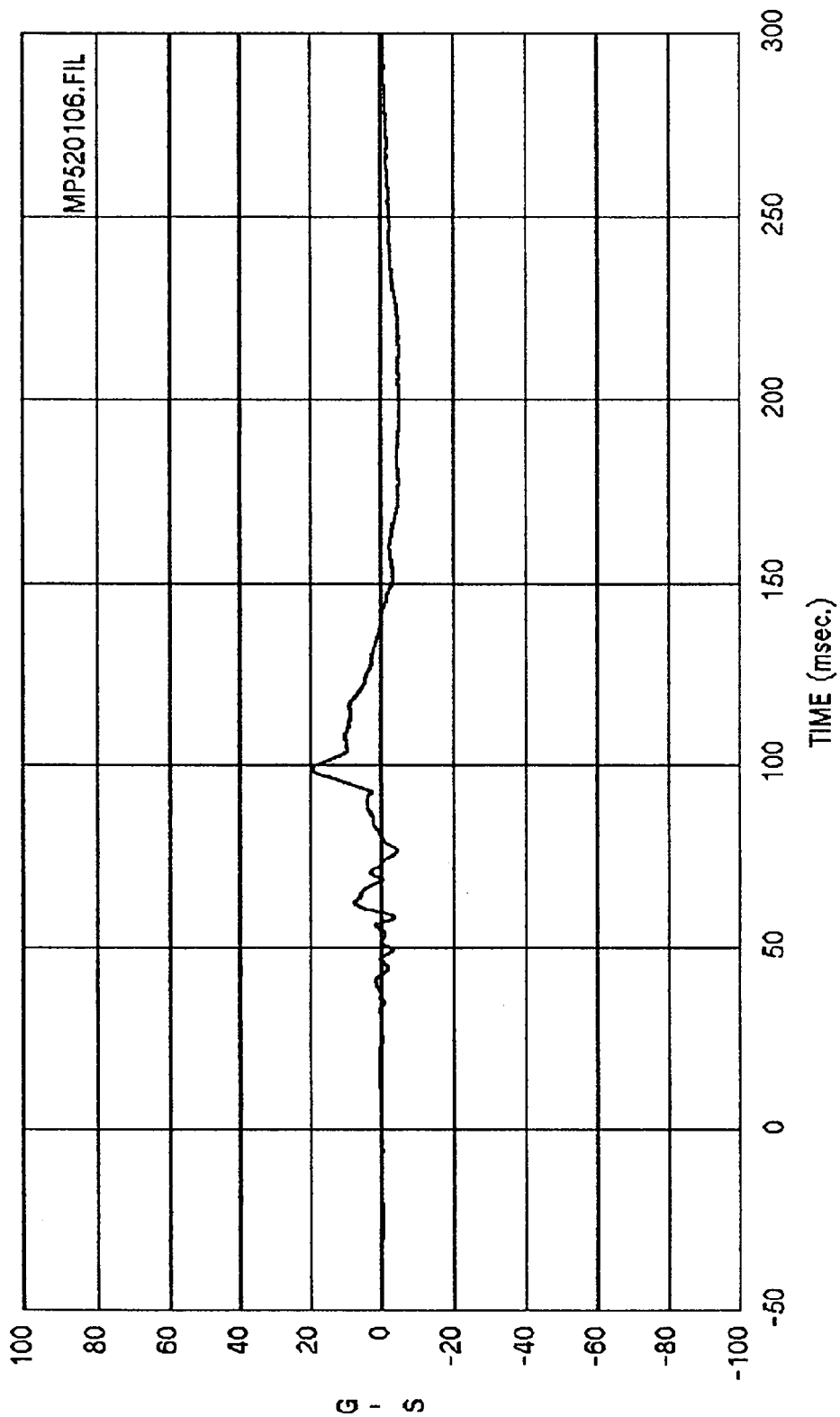


Curve: Driver chest displacement -- X axis Filter: SAE CLASS 180 Max = 988.61 Min = 472.52
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

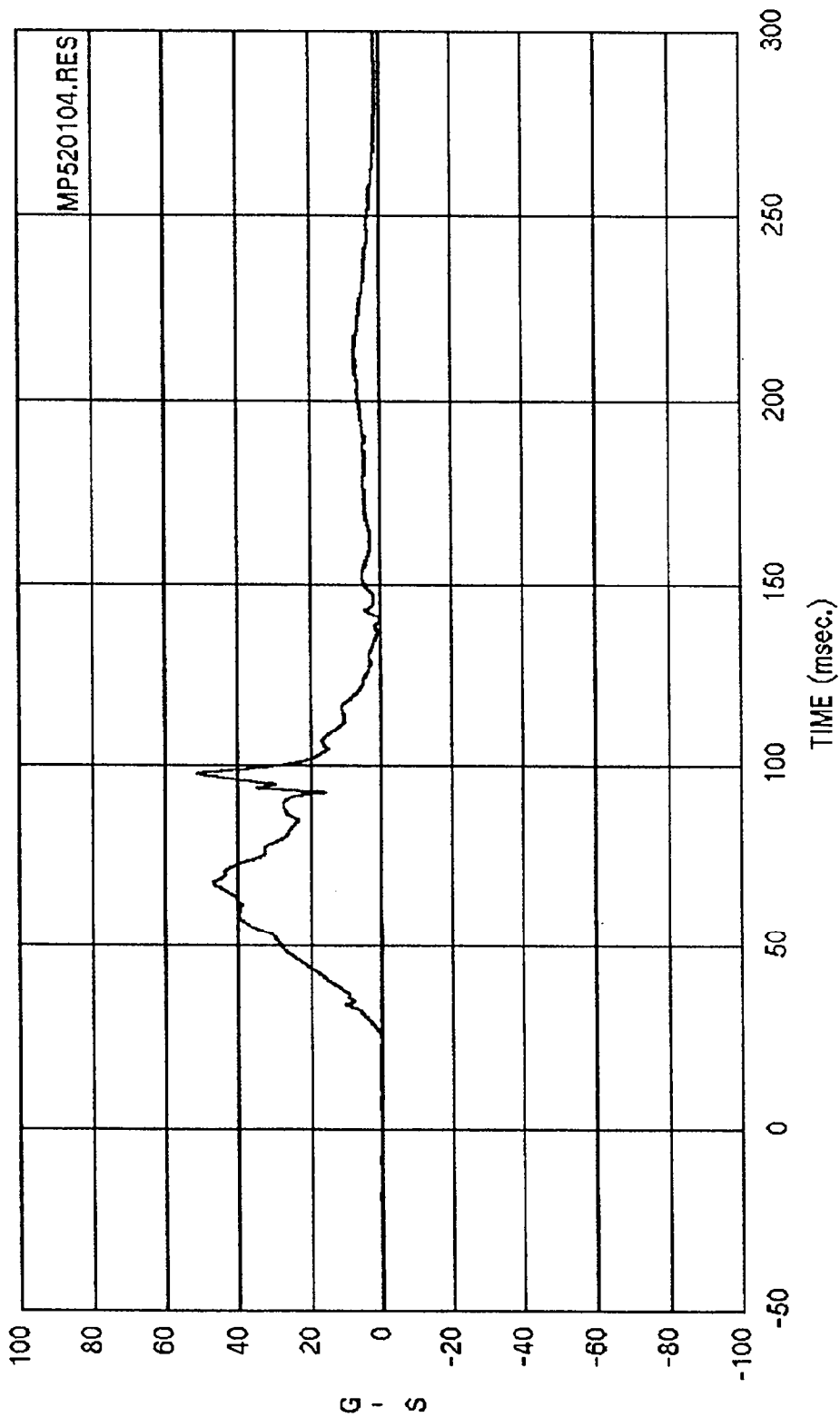


Curve: Driver chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 3.2353 Min = -38.101

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

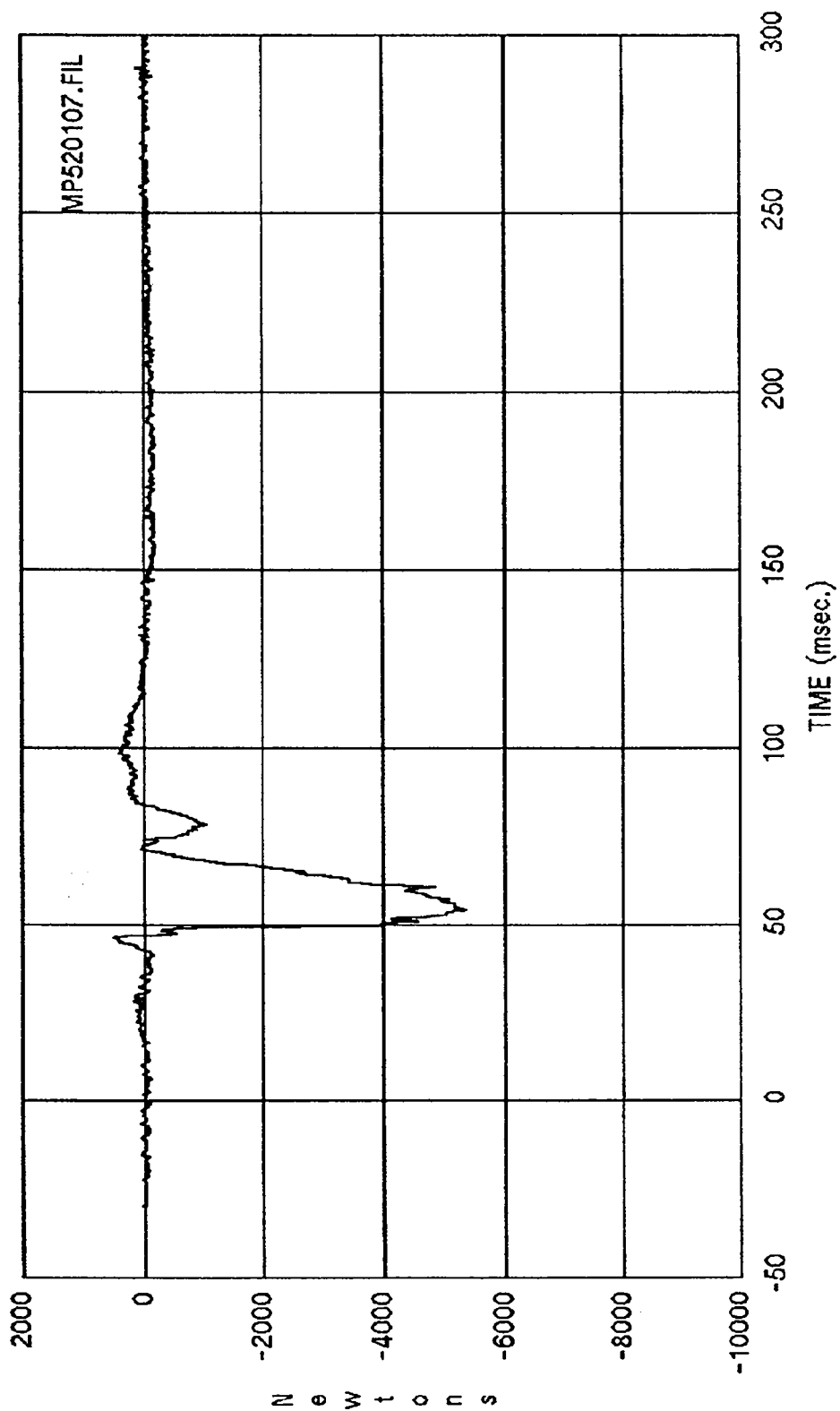


Curve: Driver chest acceleration -- Z axis Filter: SAE CLASS 180 Max = 19.419 Min = -5.2264
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



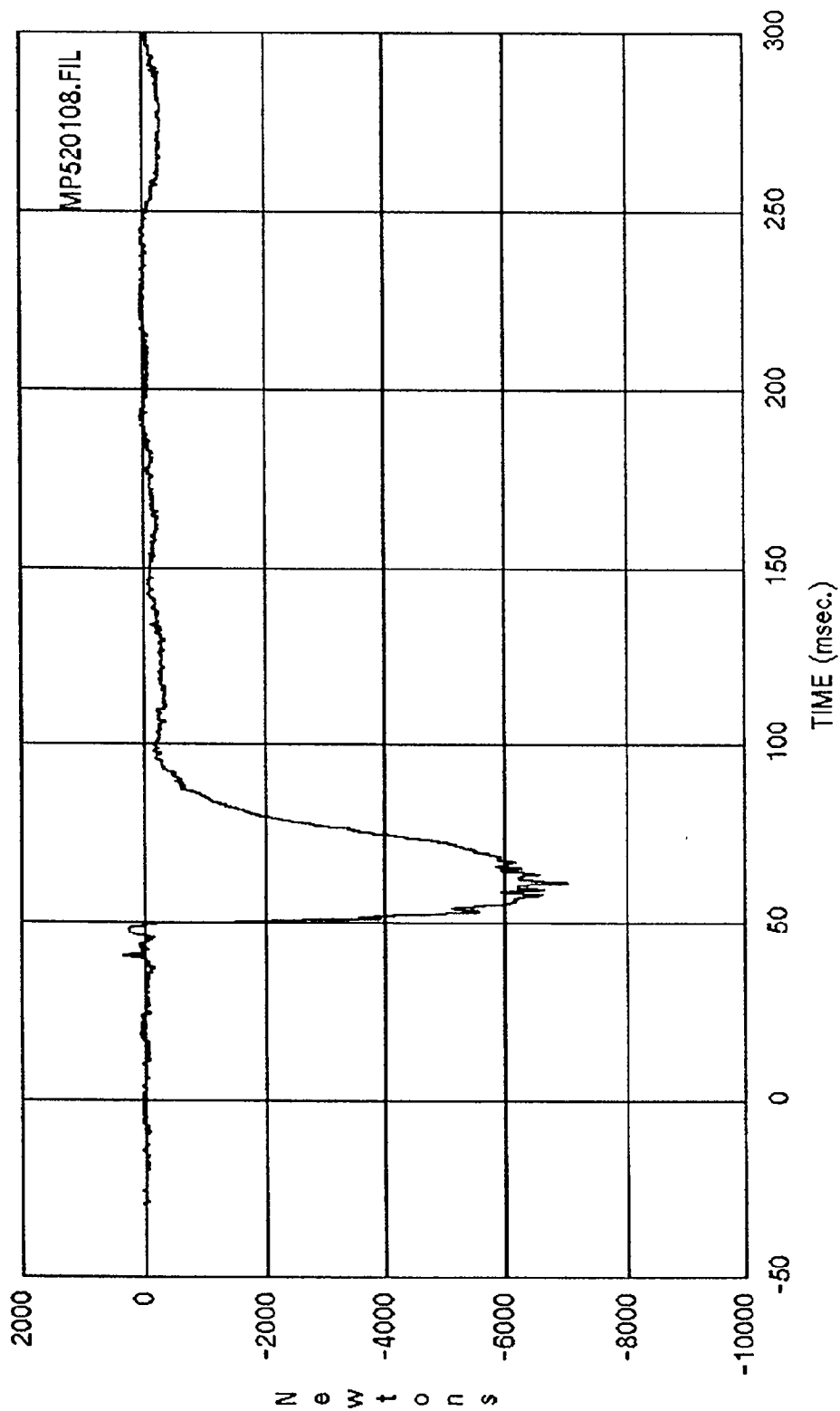
Curve: Driver chest acceleration -- Resultant Filter: SAE CLASS 180 Max = 51.250 Min = .15926
01

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

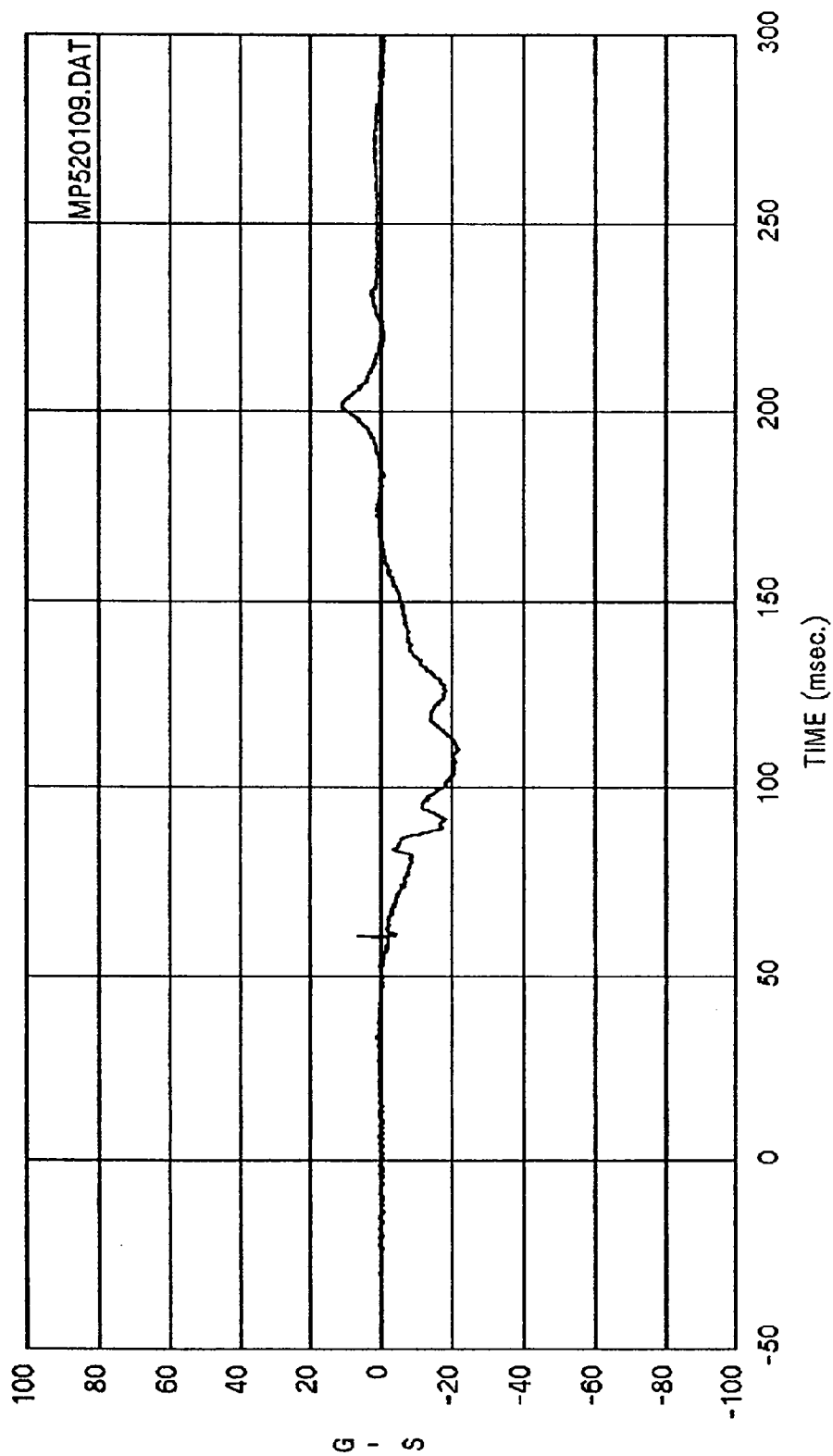


Curve: Driver left femur force Filter: SAE CLASS 600 Max = 514.80 Min = -5345.9

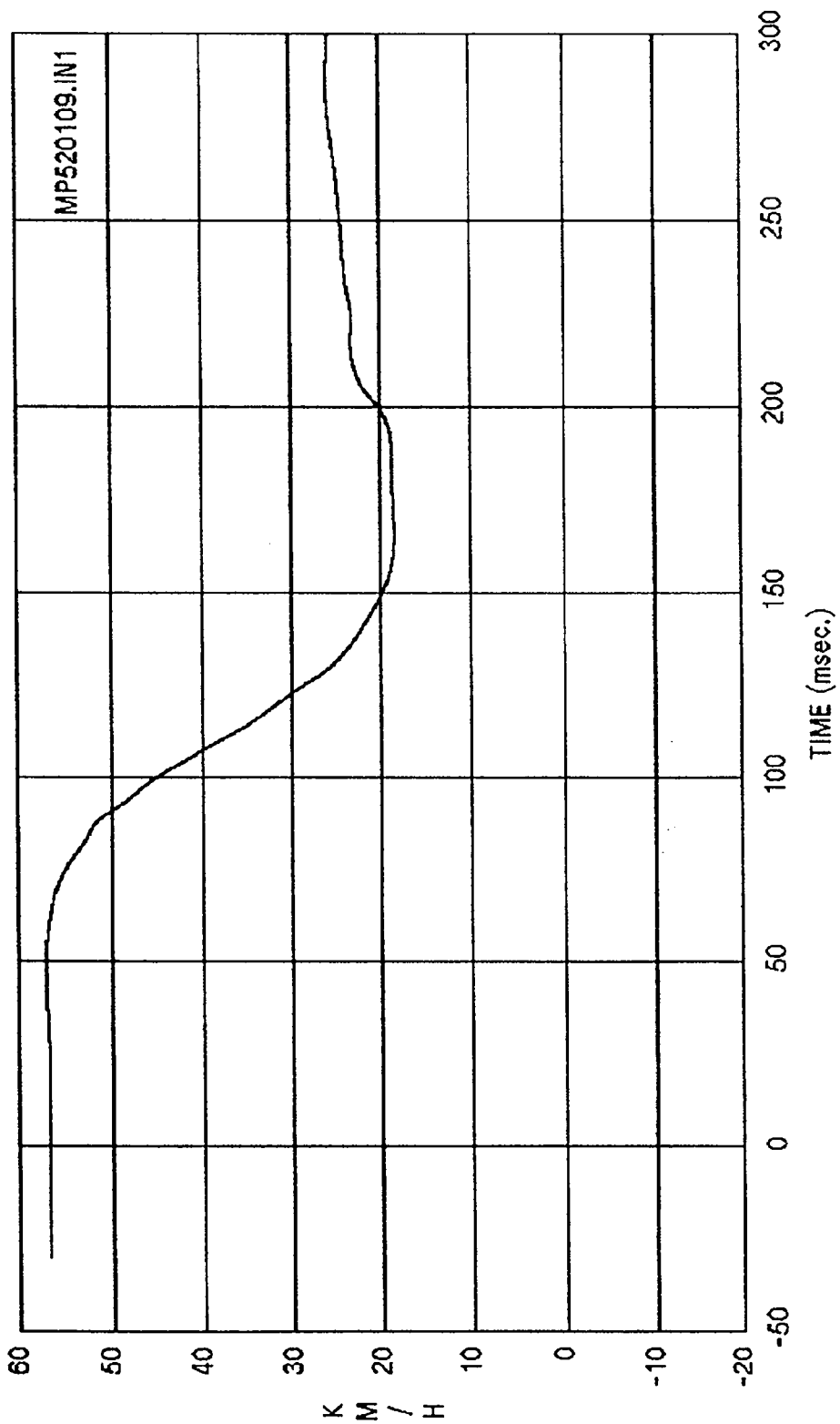
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Driver right femur force Filter: SAE CLASS 600 Max = 343.24 Min = -6996.9
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

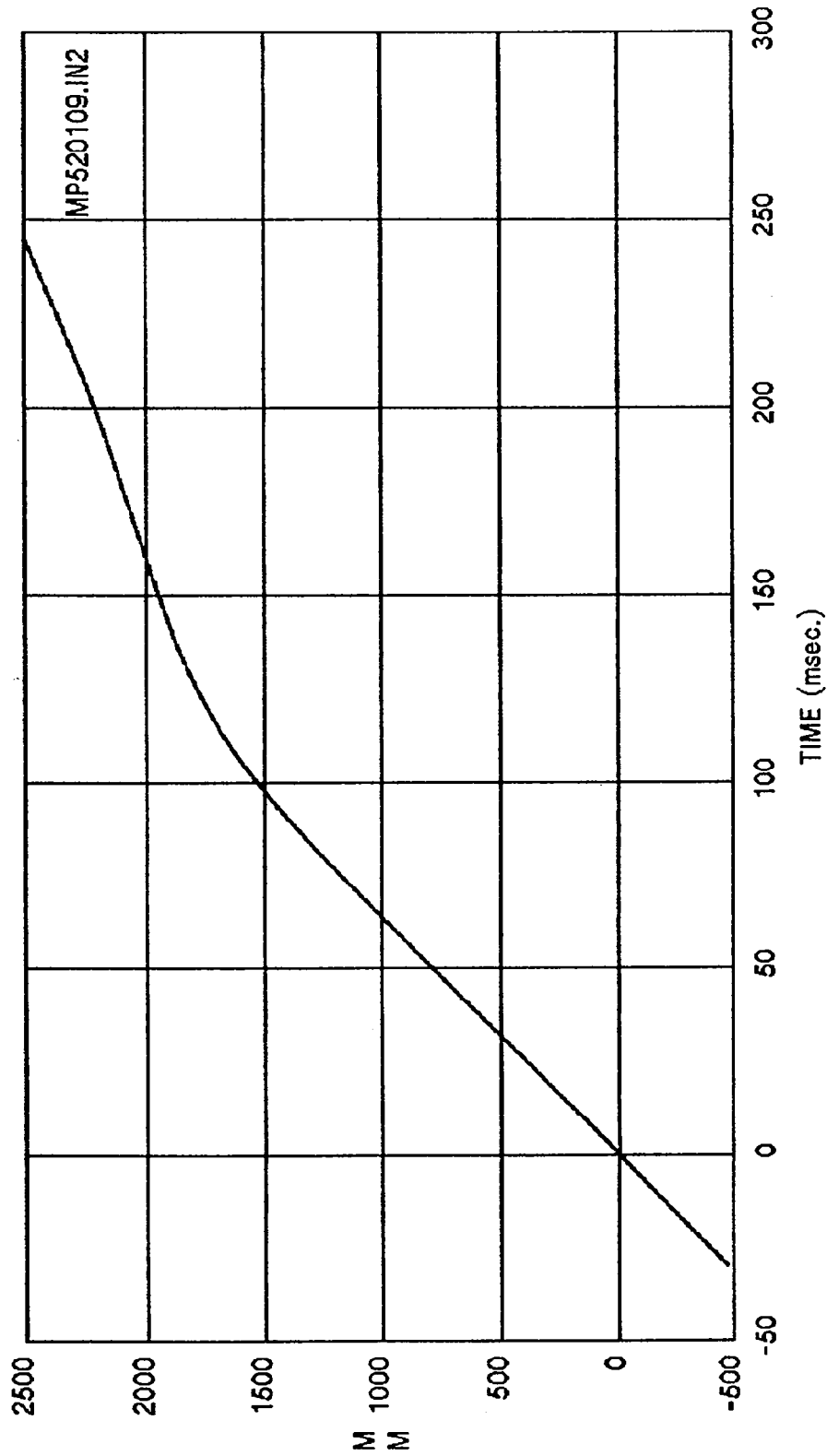


Curve: Passenger head acceleration -- X axis Filter: SAE CLASS 1000 Max = 11.032 Min = -21.93
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



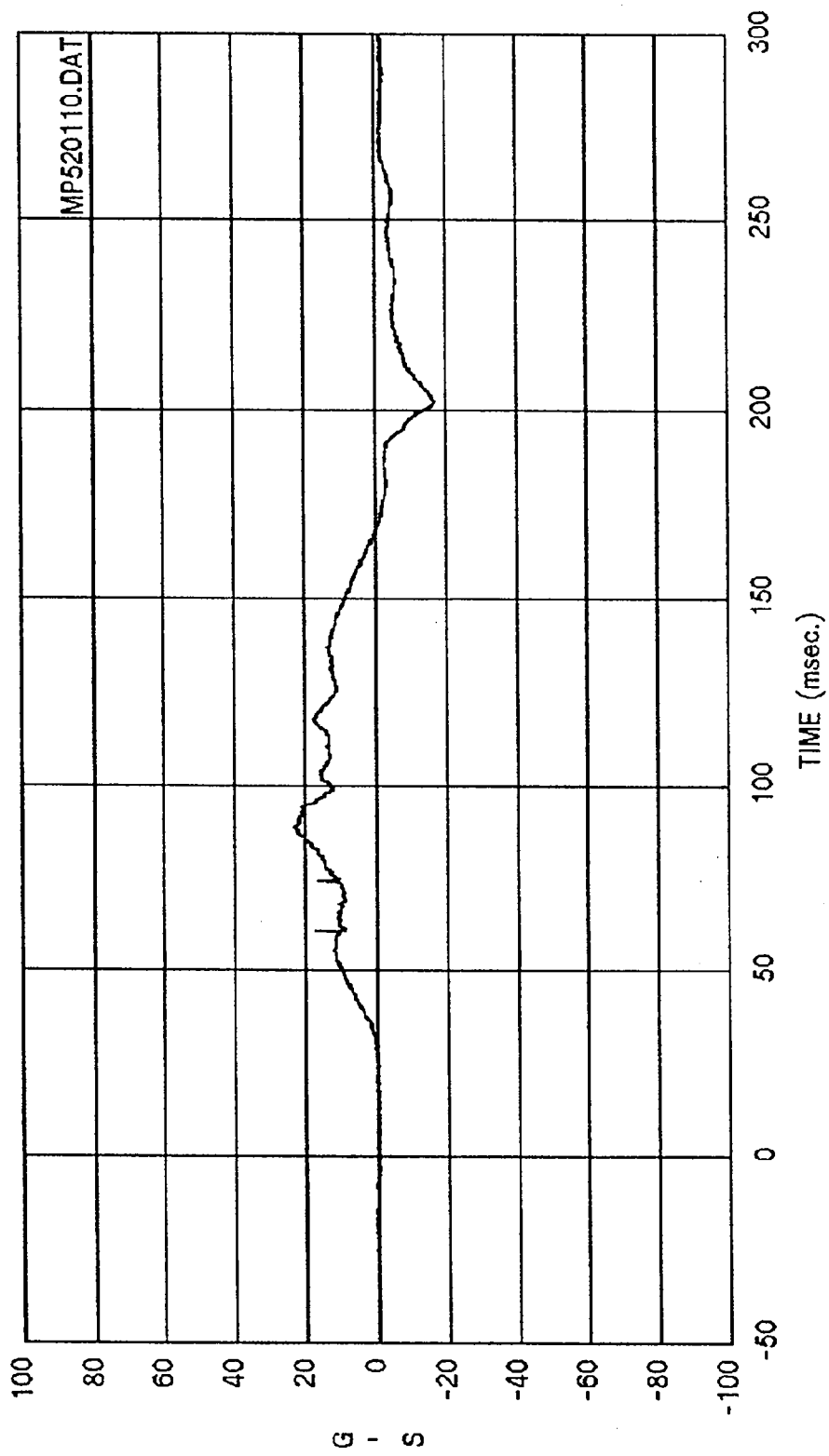
Curve: Passenger head delta V -- X axis Filter: SAE CLASS 180 Max = 57.032 Min = 18.460

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



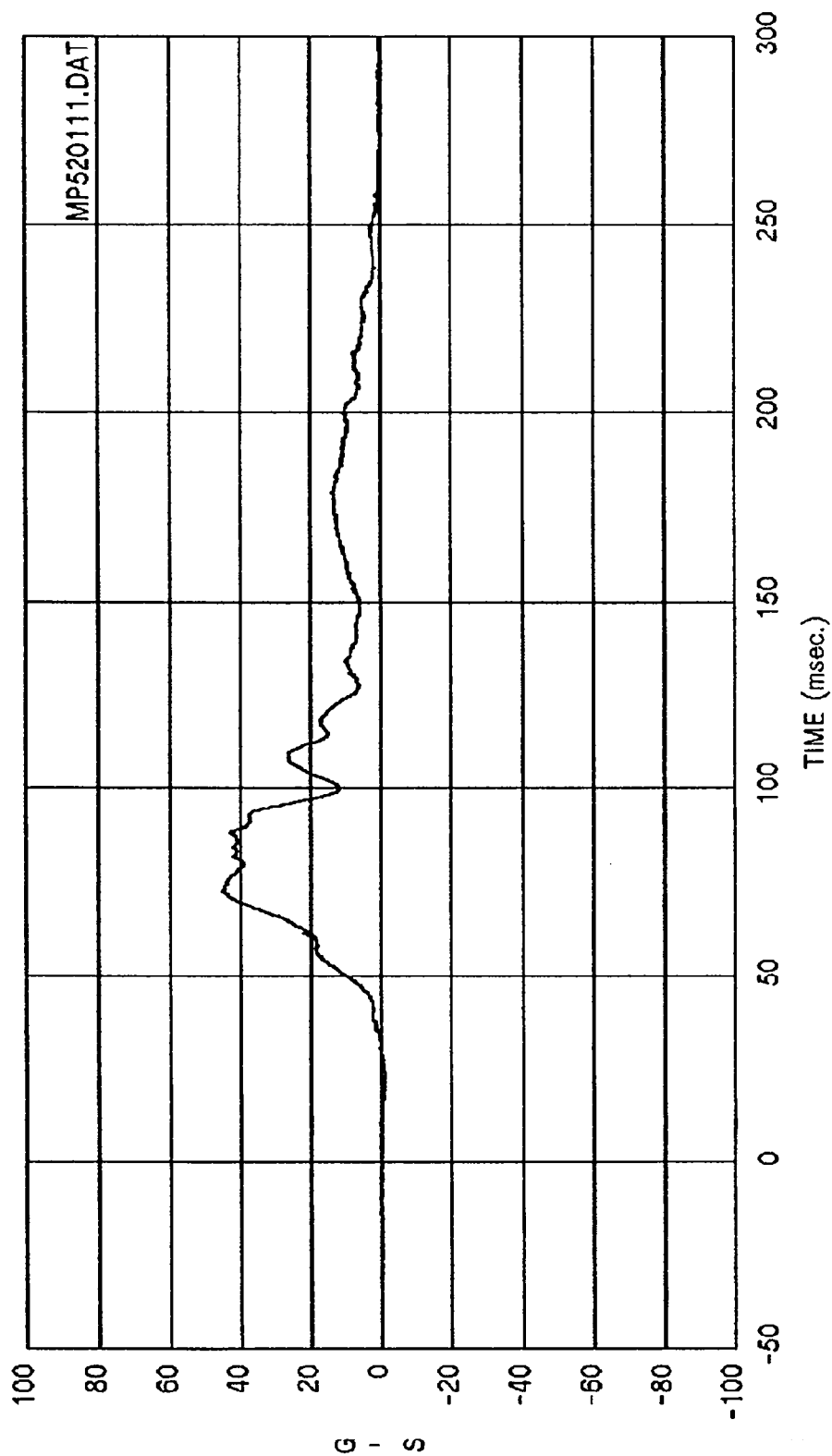
Curve: Passenger head displacement -- X axis Filter: SAE CLASS 180 Max = 2884.6 Min = .10000E+11

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



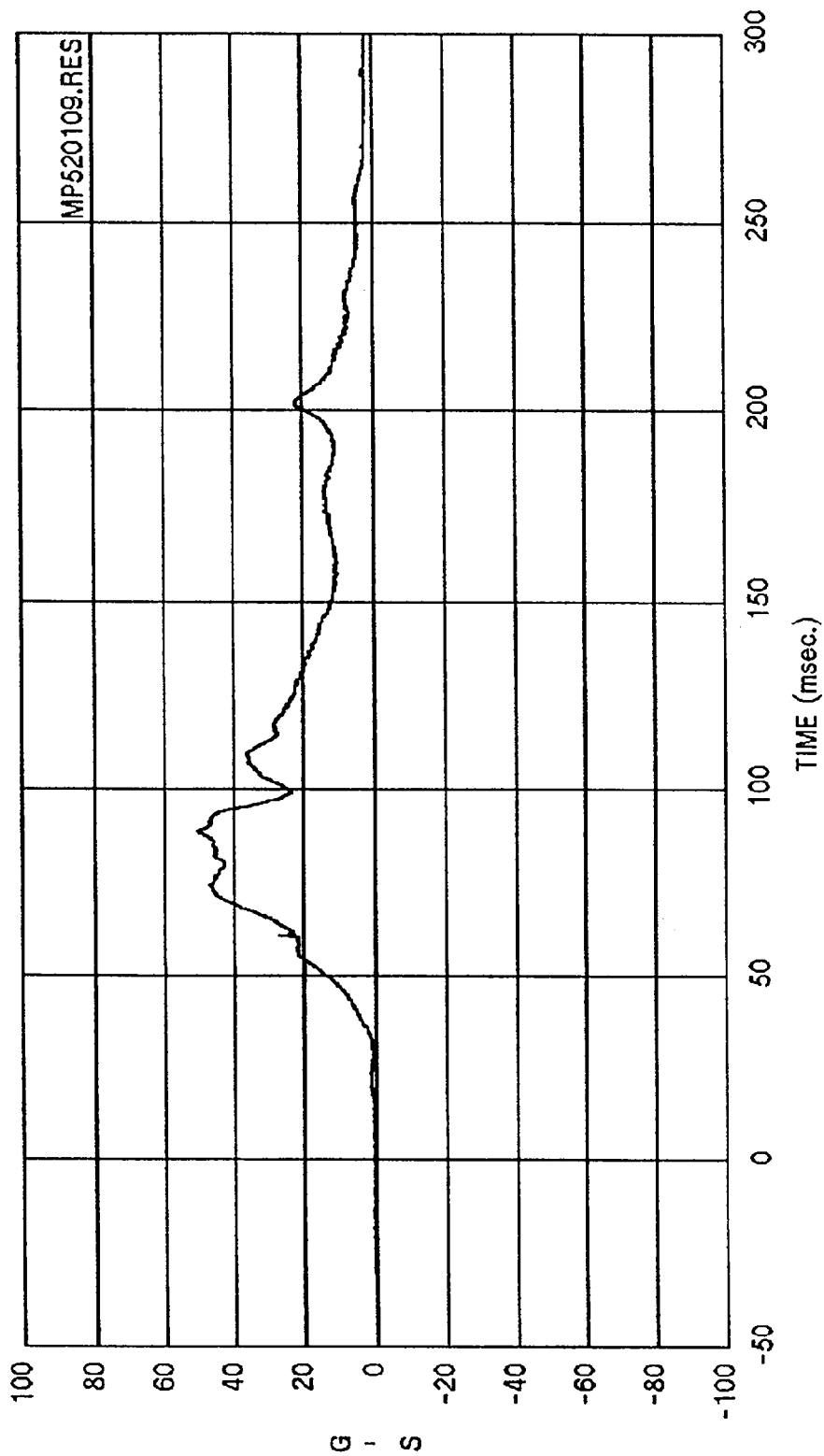
Curve: Passenger head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 23.205 Min = -16.827

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



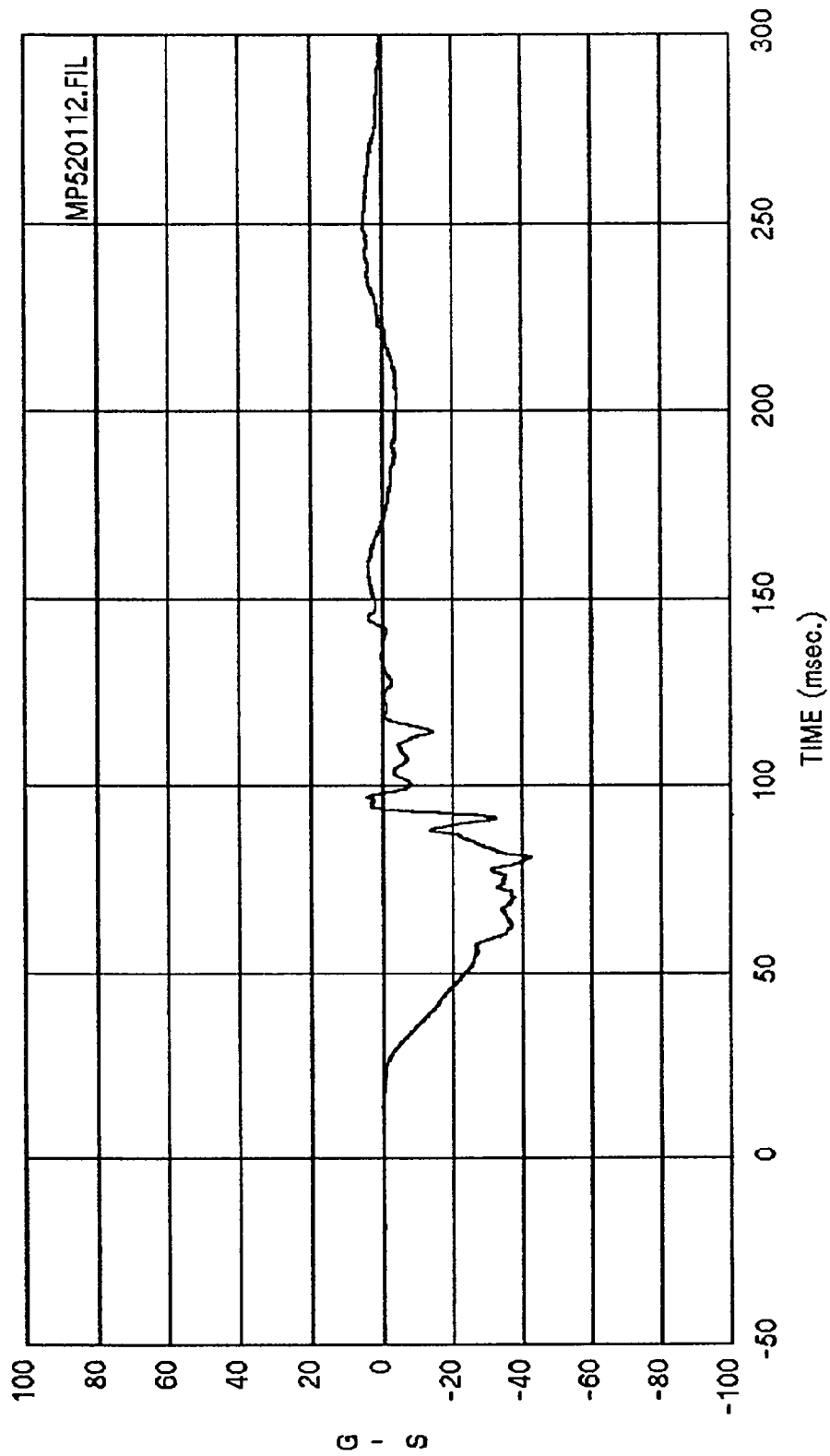
Curve: Passenger head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 44.930 Min = -1.506C

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

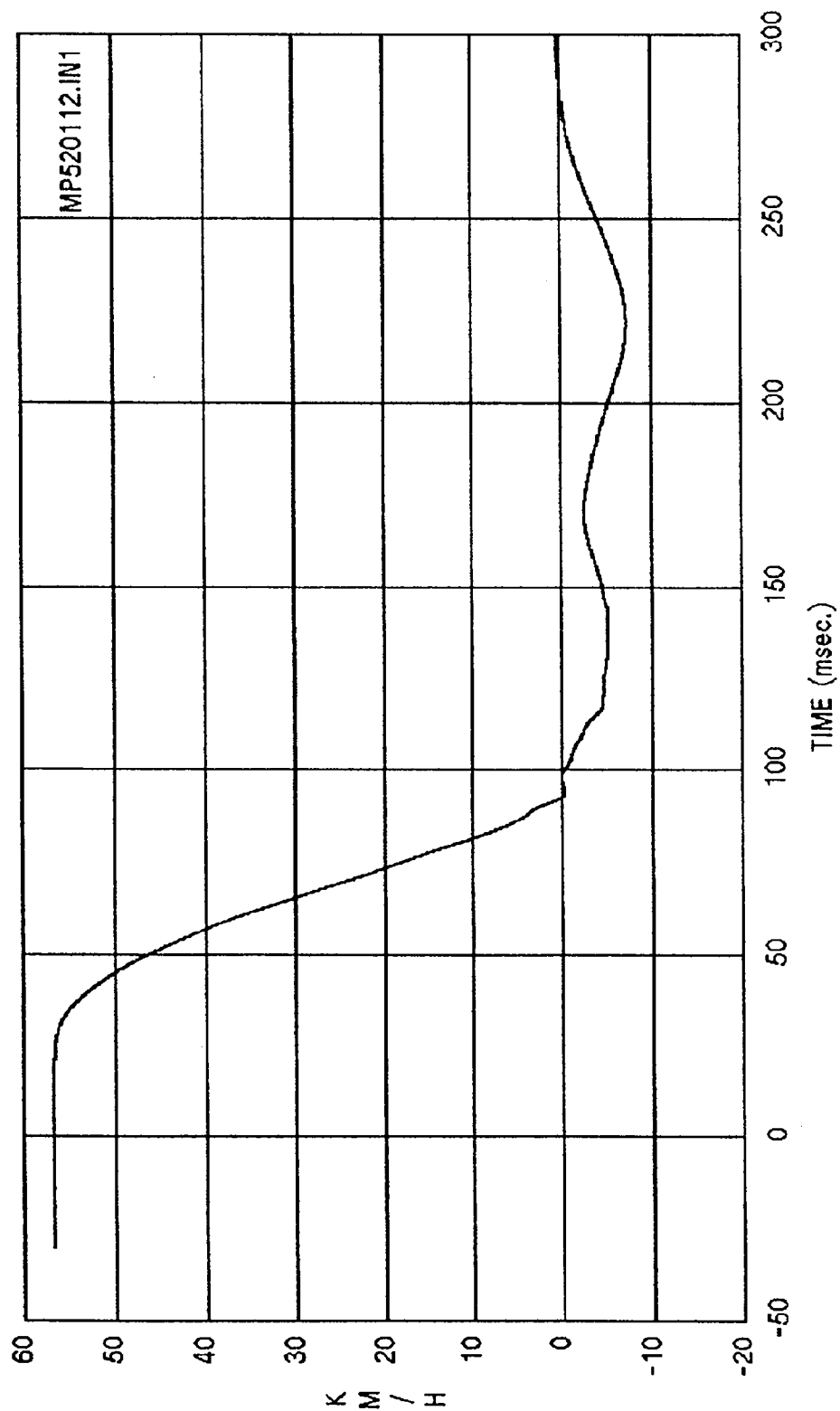


Curve: Passenger head acceleration -- Resultant Filter: SAE CLASS 1000 Max = 50.548 Min = .12550

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

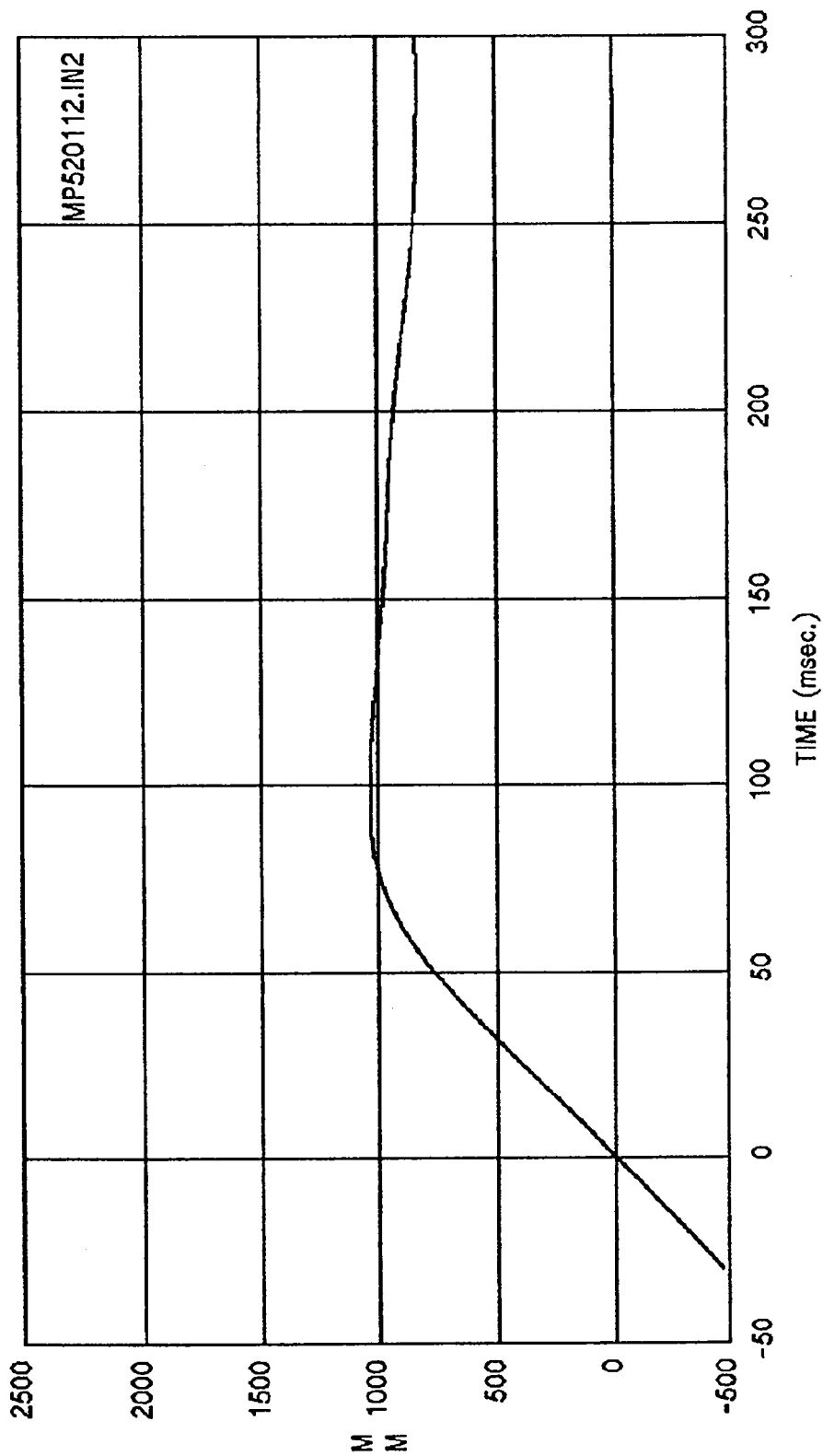


Curve: Passenger chest acceleration -- X axis Filter: SAE CLASS 180 Max = 5.3088 Min = -42.287
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



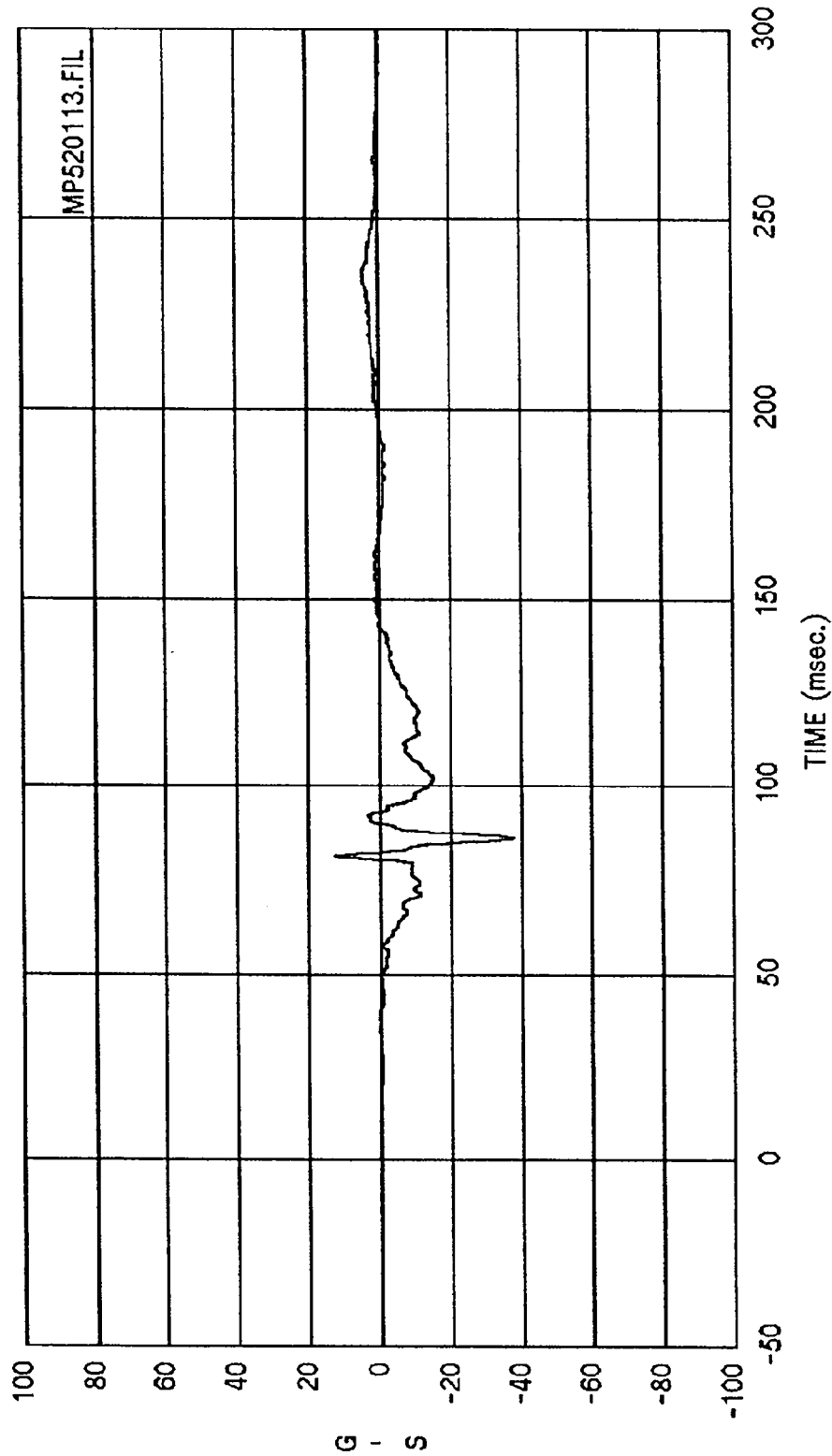
Curve: Passenger chest delta V -- X axis Filter: SAE CLASS 180 Max = 56.727 Min = -7.3049

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

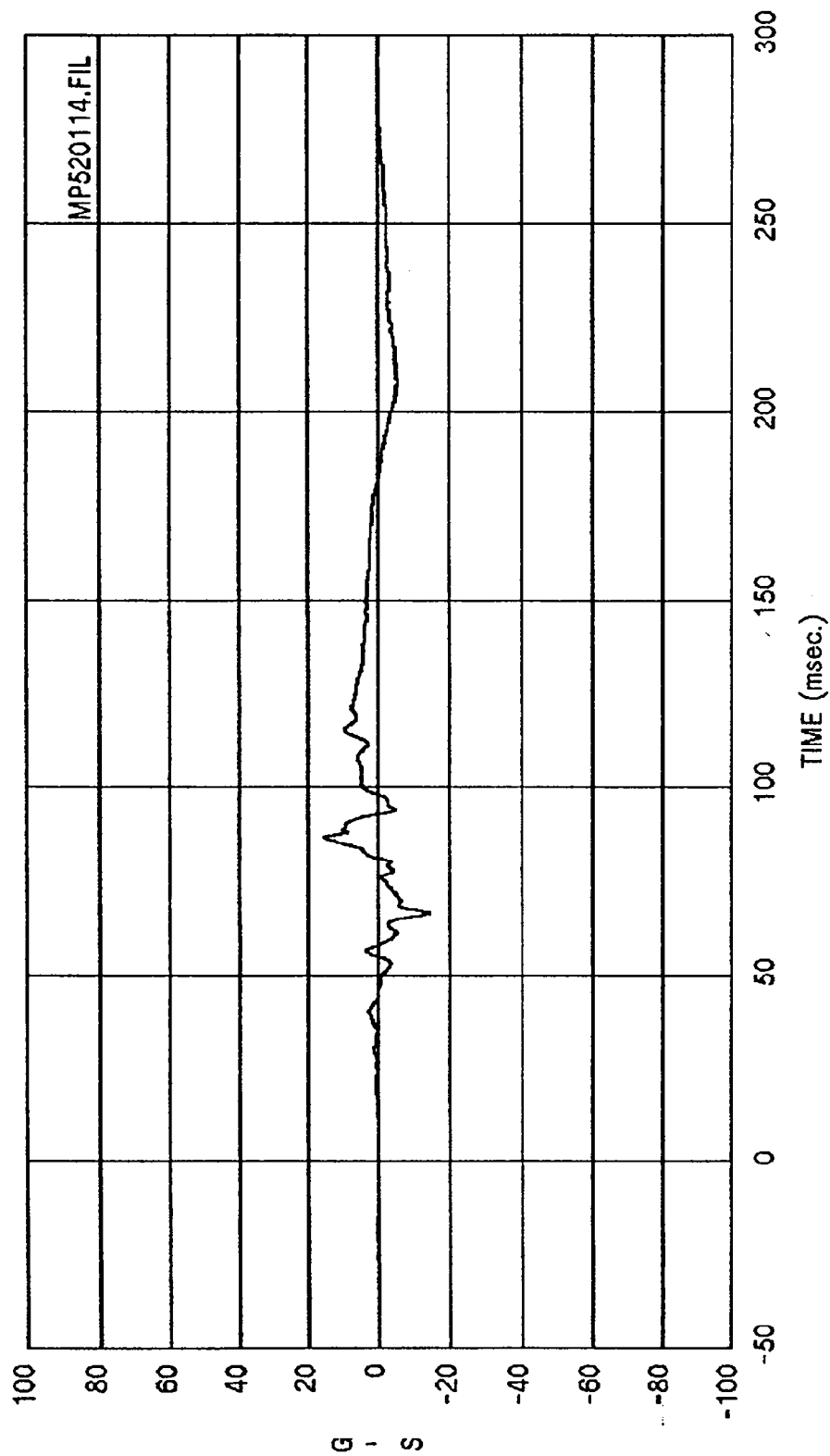


Curve: Passenger chest displacement -- X axis Filter: SAE CLASS 180 Max = 1031.1 Min = 825.36

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

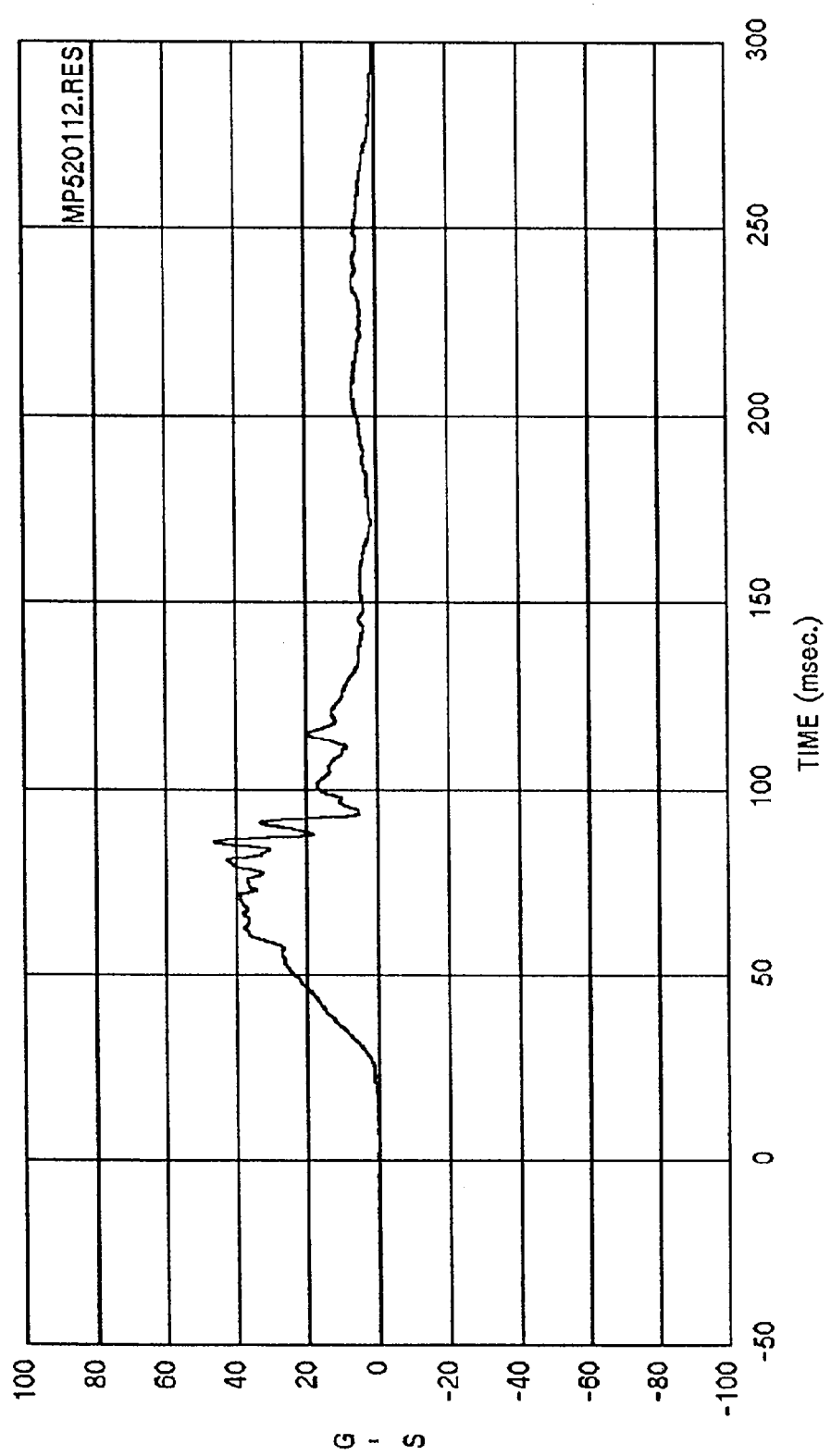


Curve: Passenger chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 12.782 Min = -37.715
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



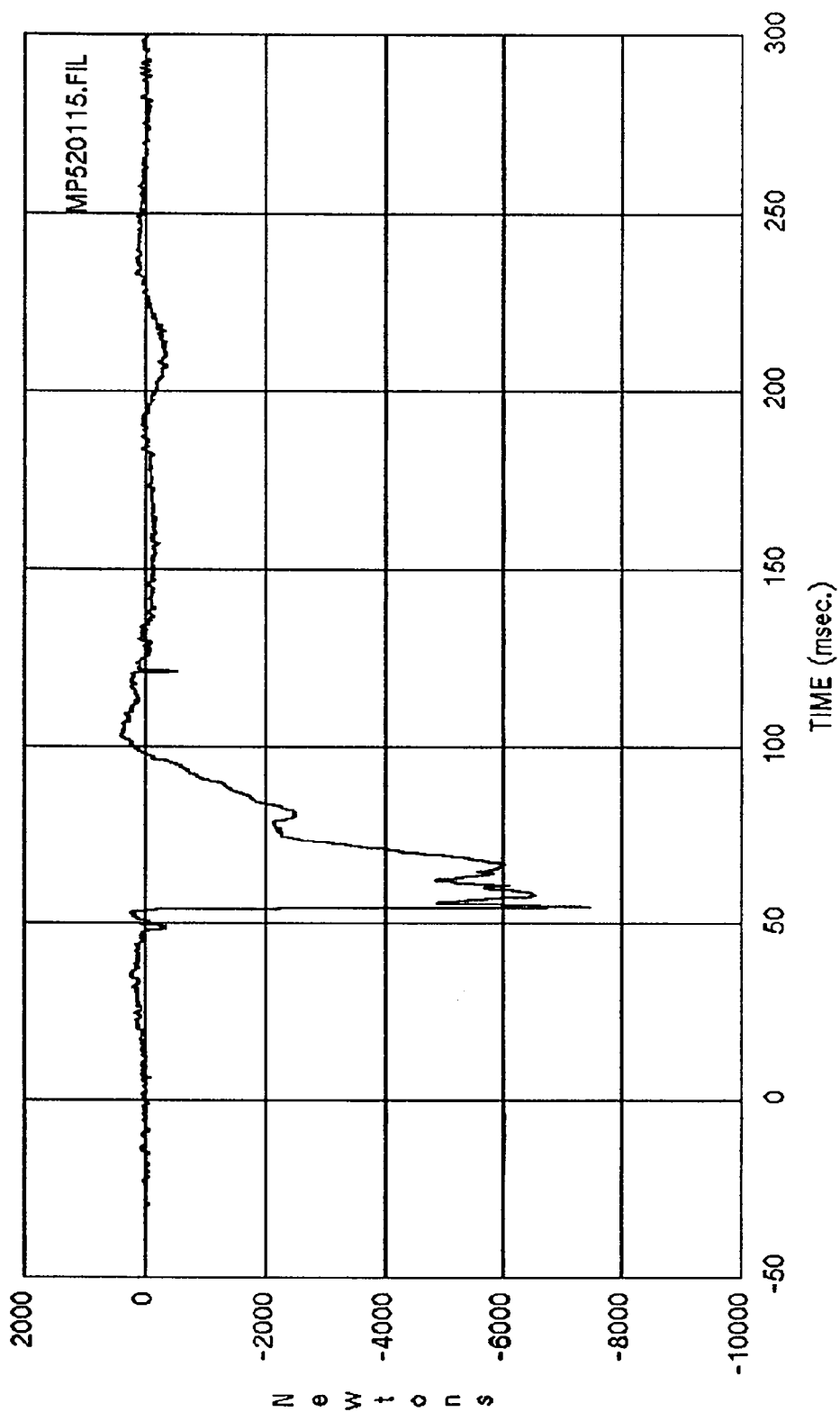
Curve: Passenger chest acceleration -- Z axis Filter: SAE CLASS 180 Max = 15.385 Min = -14.420

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

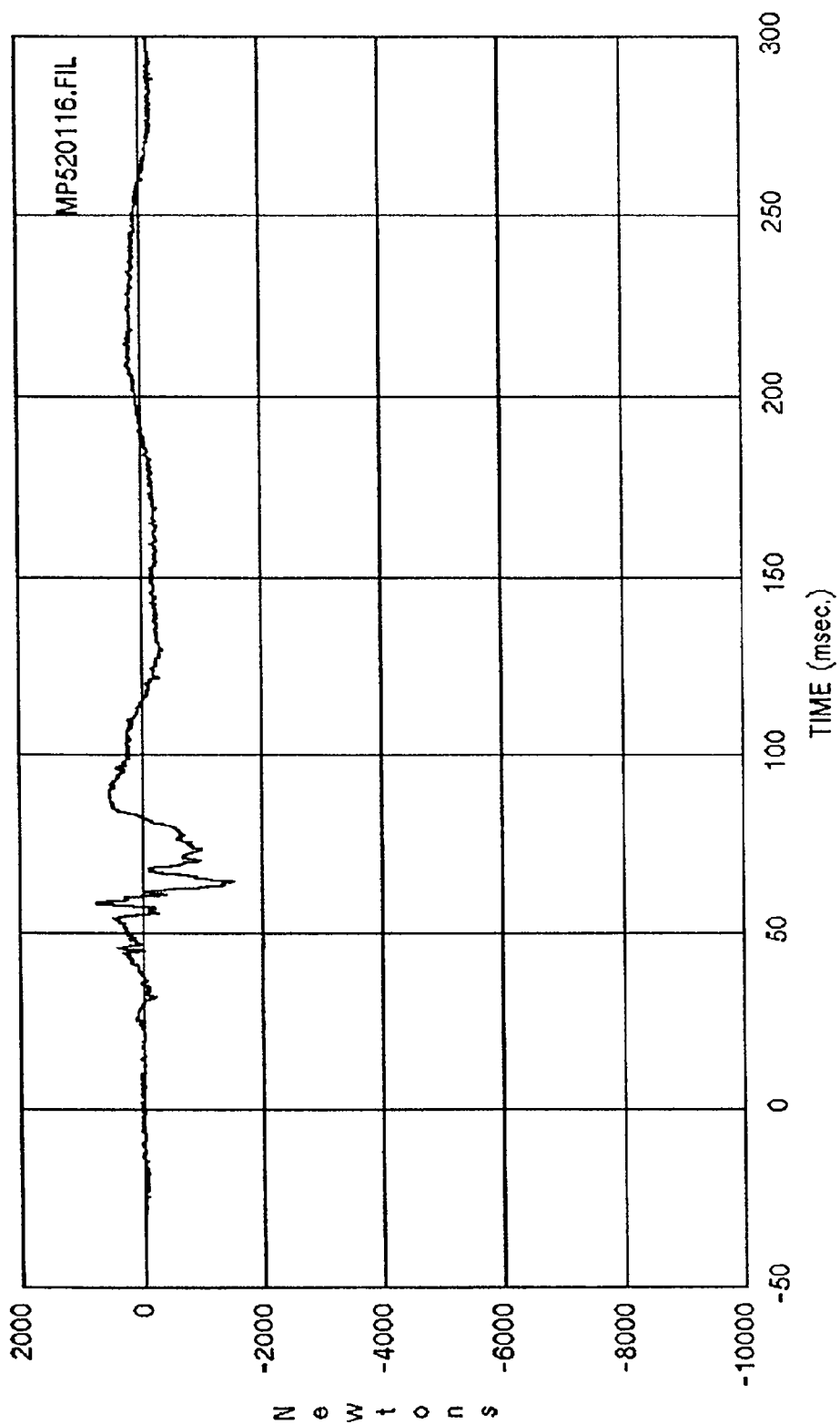


Curve: Passenger chest acceleration -- Resultant Filter: SAE CLASS 180 Max = 46.186 Min = .2667
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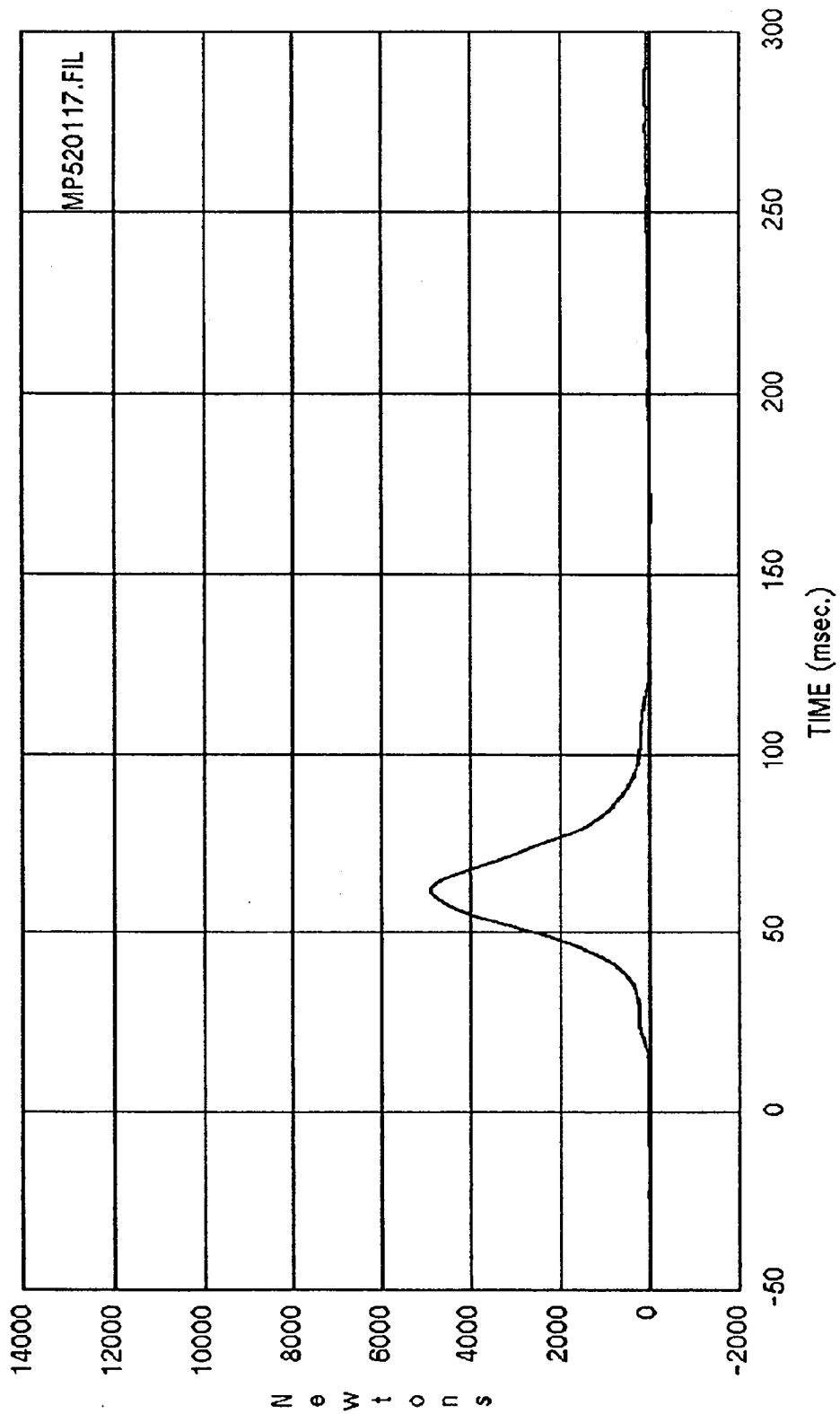
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Passenger left femur force Filter: SAE CLASS 600 Max = 415.74 Min = -7458.3
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

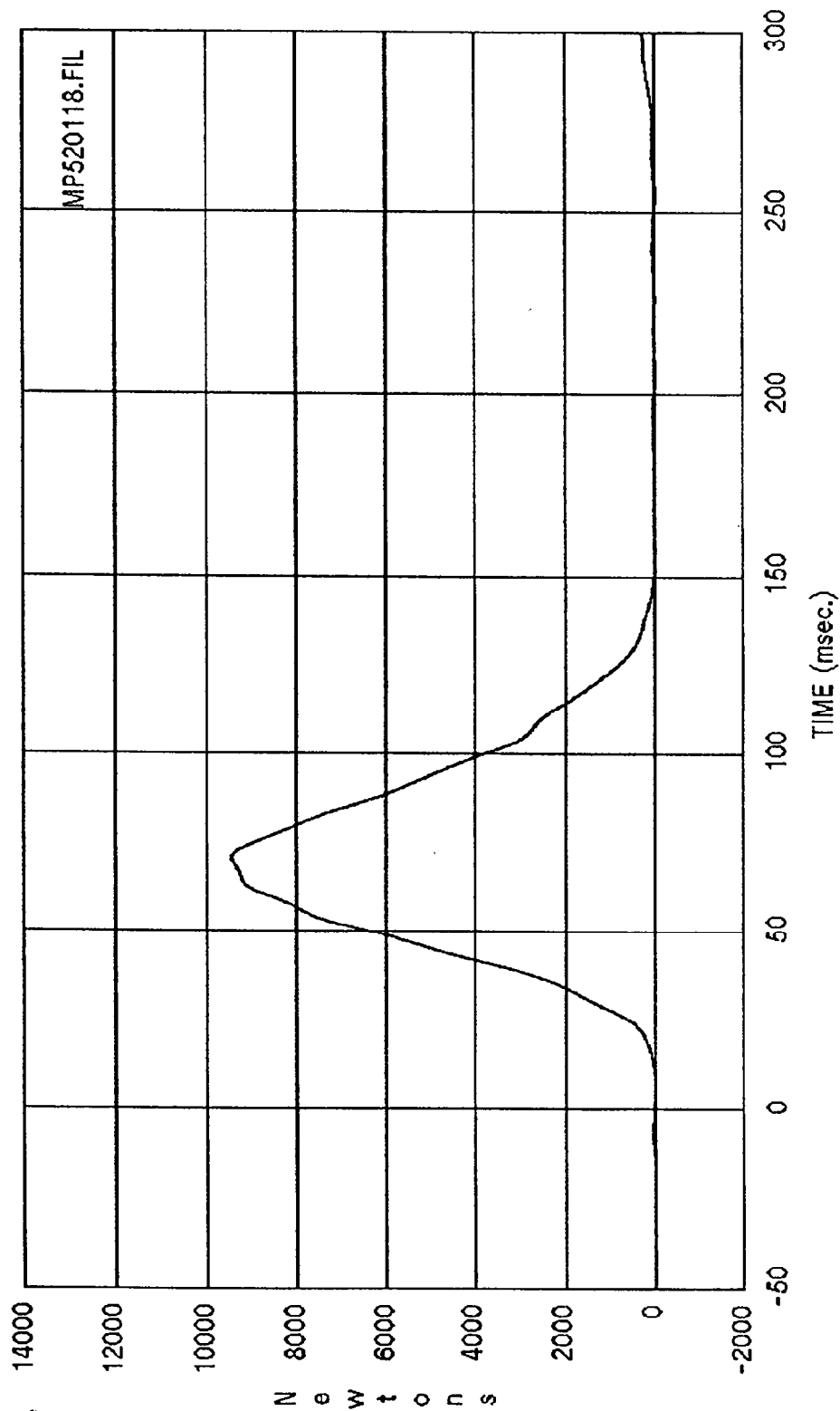


Curve: Passenger right femur force Filter: SAE CLASS 600 Max = 765.90 Min = -1501.6
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

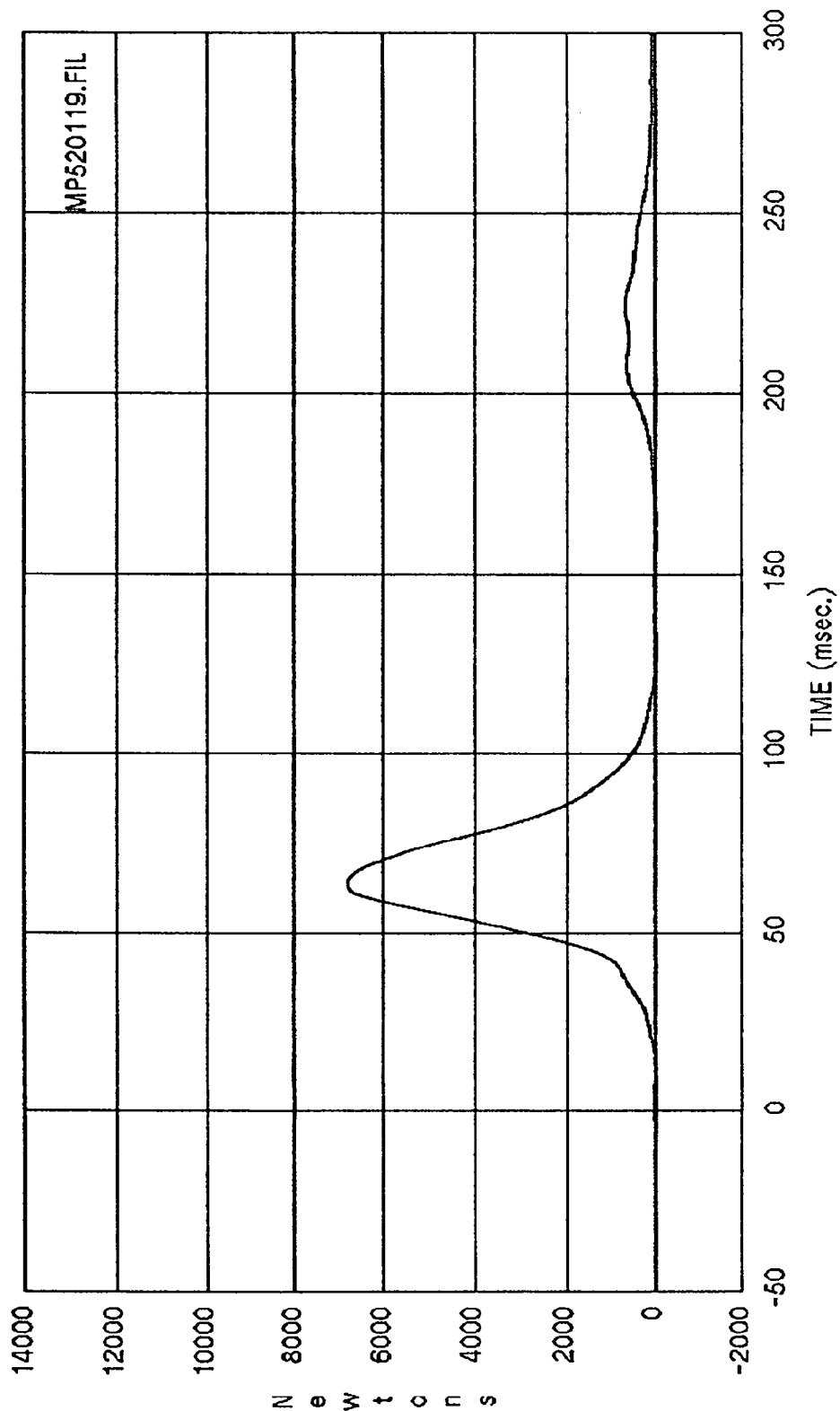


Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 4913.4 Min = -32.481

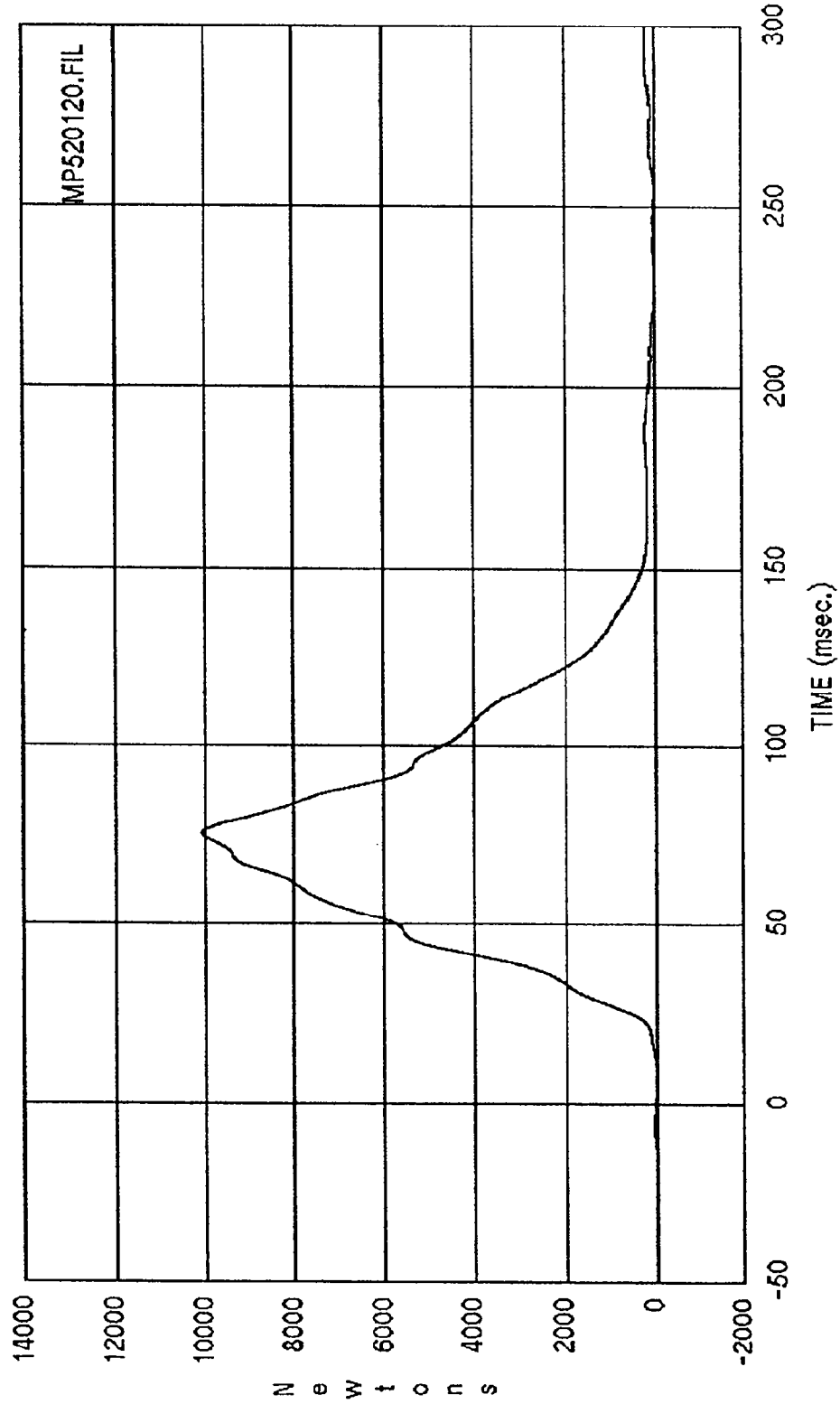
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Driver shoulder belt load Filter: SAE CLASS 60 Max = 9457.3 Min = -40.891
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

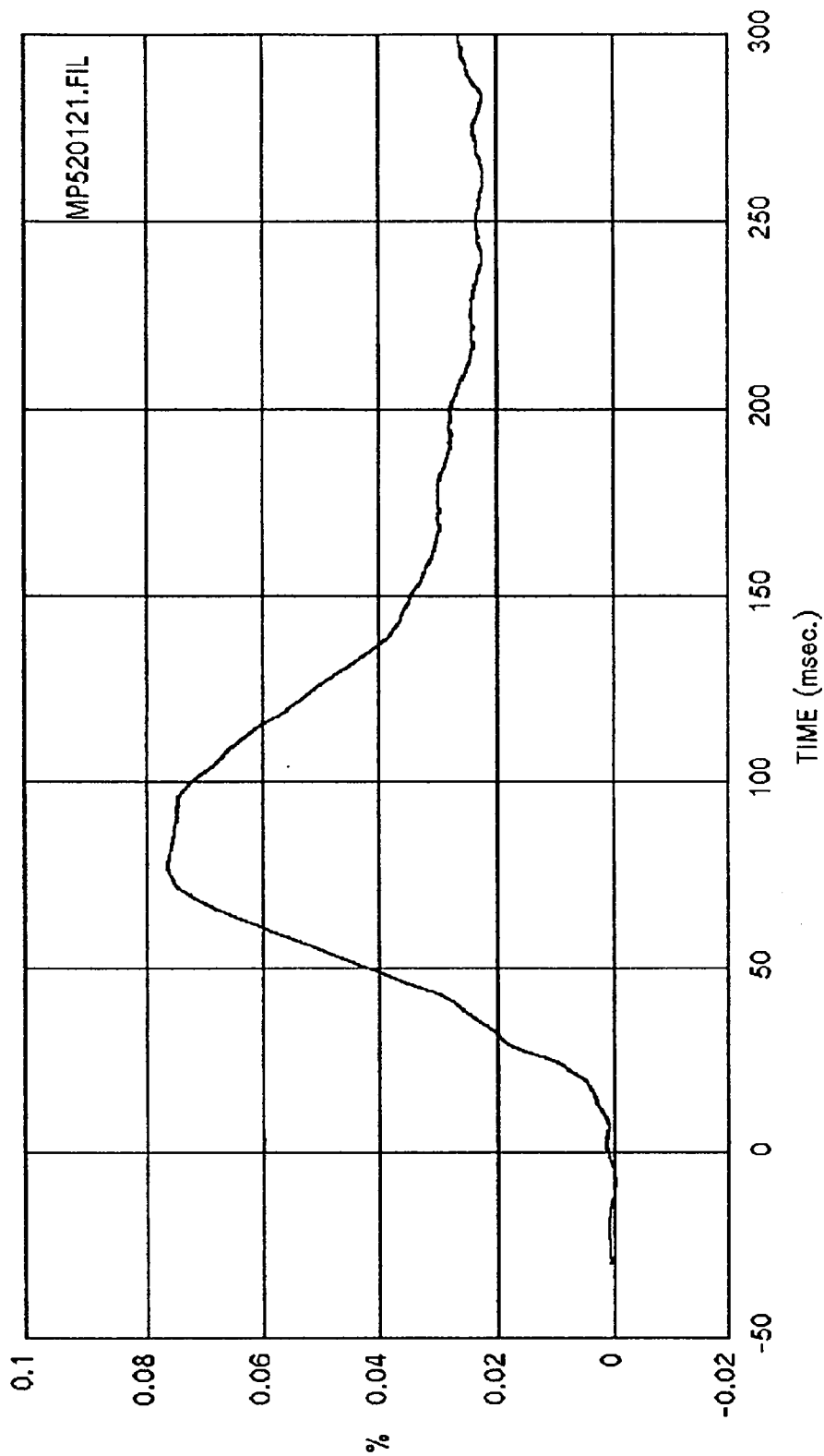


Curve: Passenger lap belt load Filter: SAE CLASS 00 Max = 6798.4 Min = -33.800
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

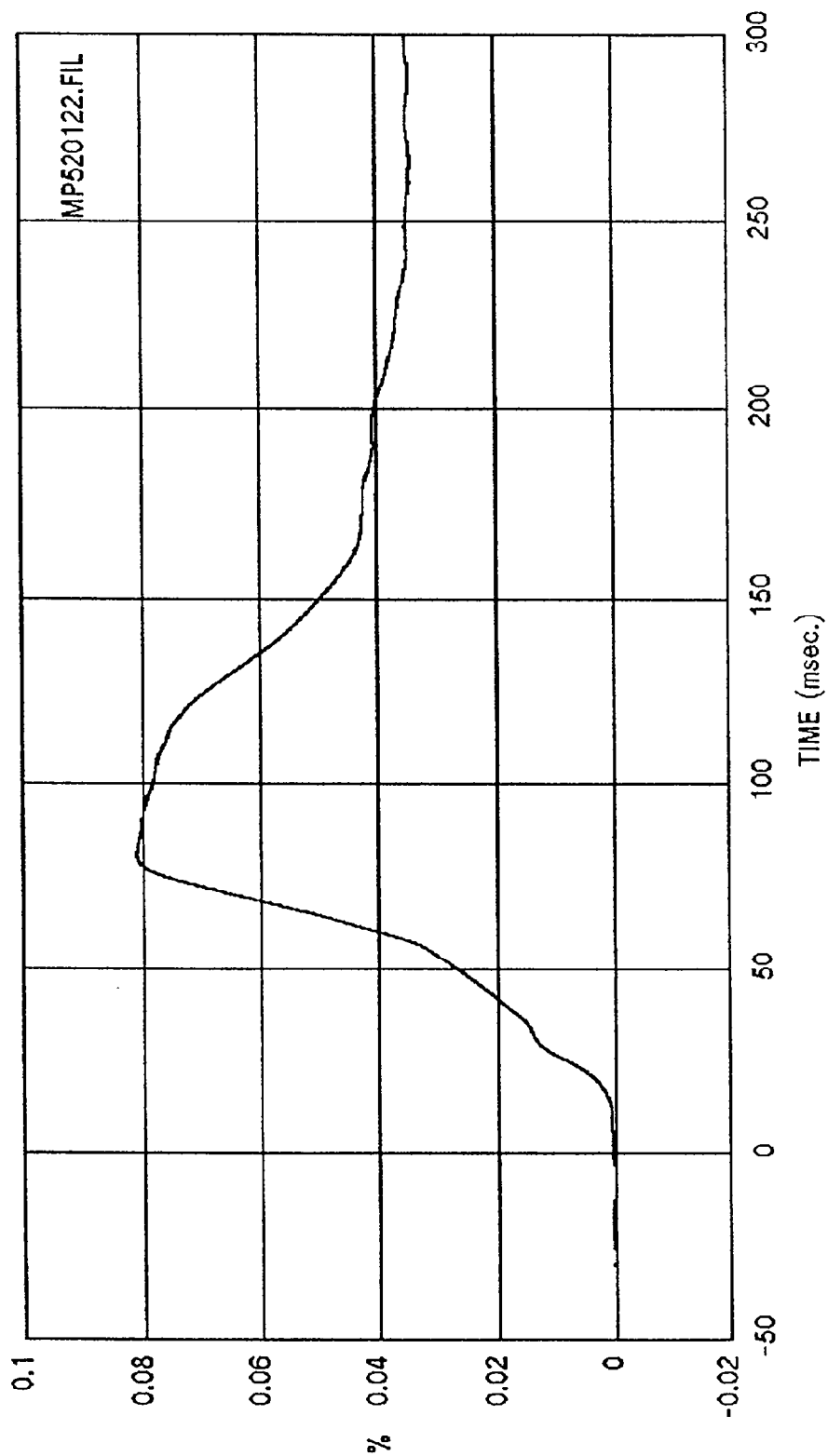


Curve: Passenger shoulder belt load Filter: SAE CLASS 00 Max = 10066. Min = -19.360

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

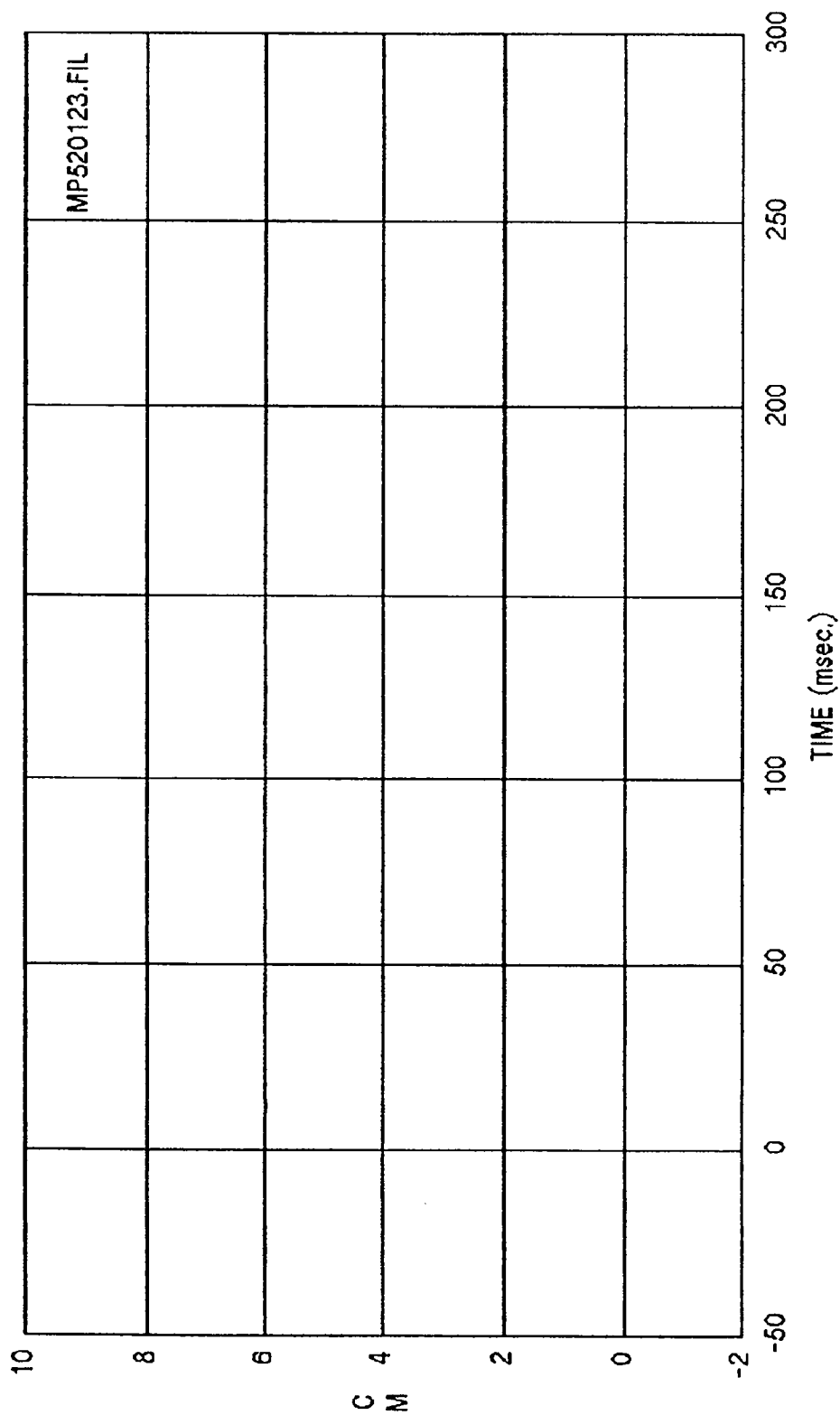


Curve: Driver shoulder belt elongation Filter: SAE CLASS 60 Max = .76406E-01 Min = .97460E-02
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

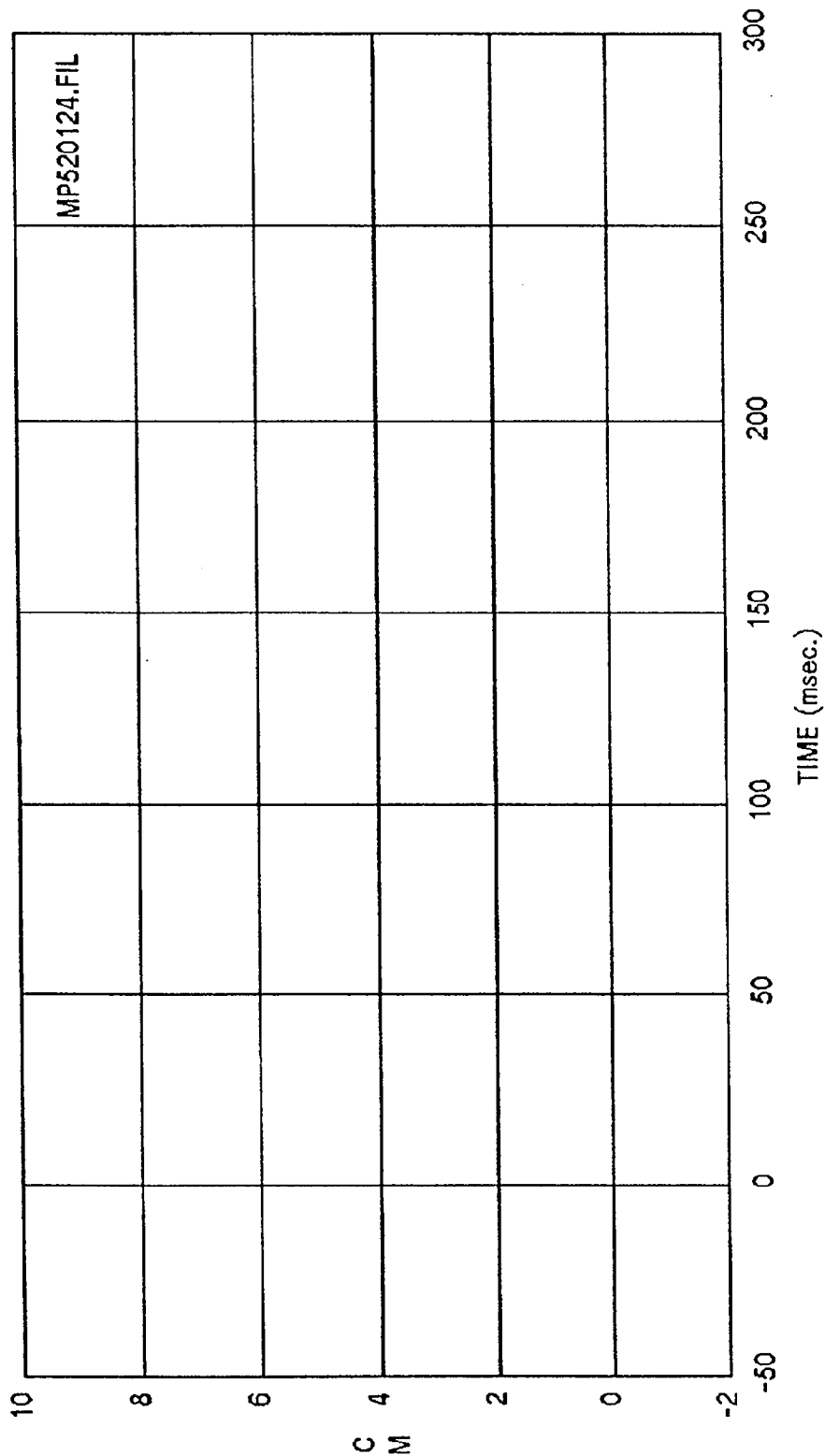


Curve: Passenger shpolder belt elongation Filter: SAE CLASS 60 Max = .81055E-01 Min = .48494
03

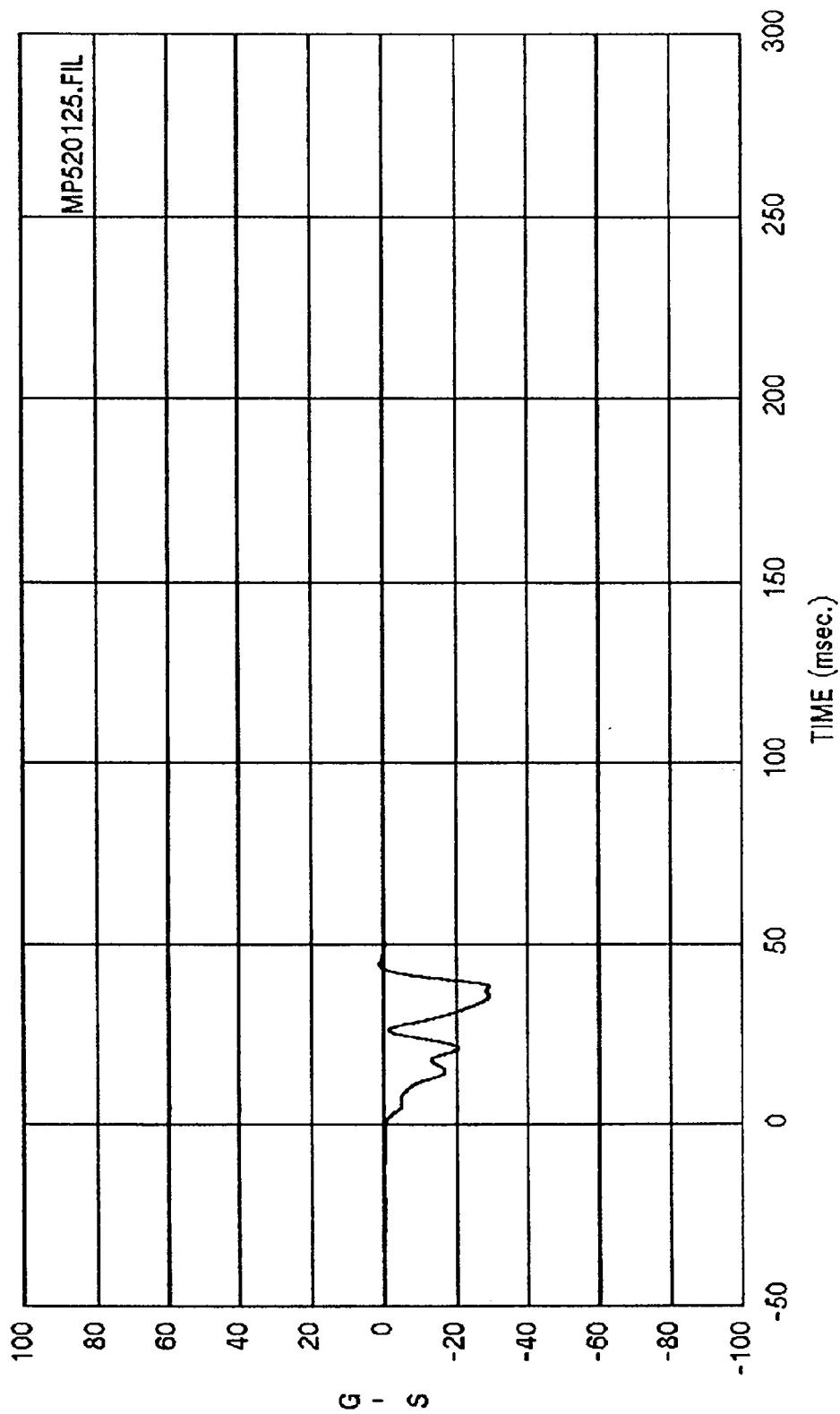
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



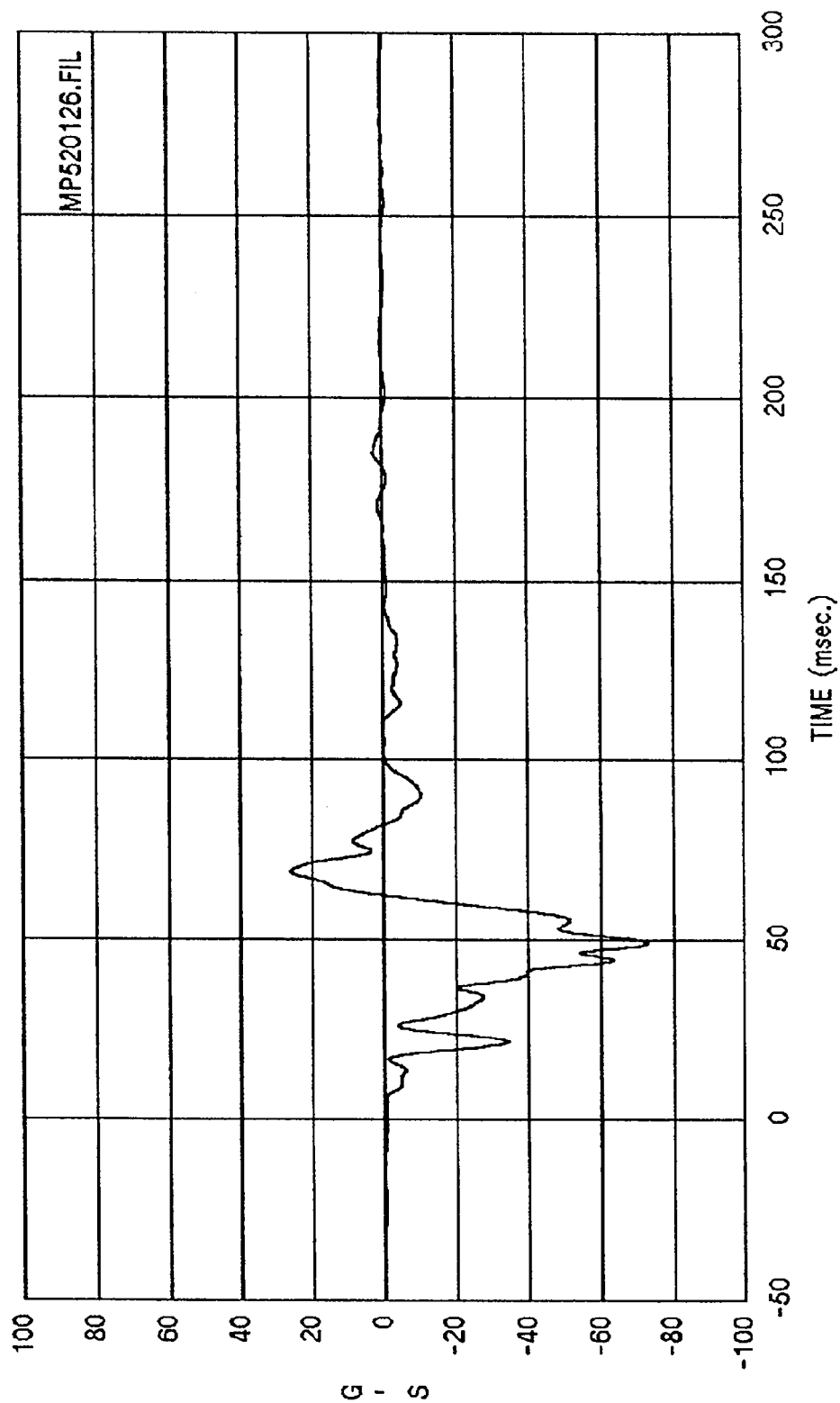
Curve: Driver shoulder belt spoolout (not used) Filter: SAE CLASS 60 Max = .00000 Min = .00000
 MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



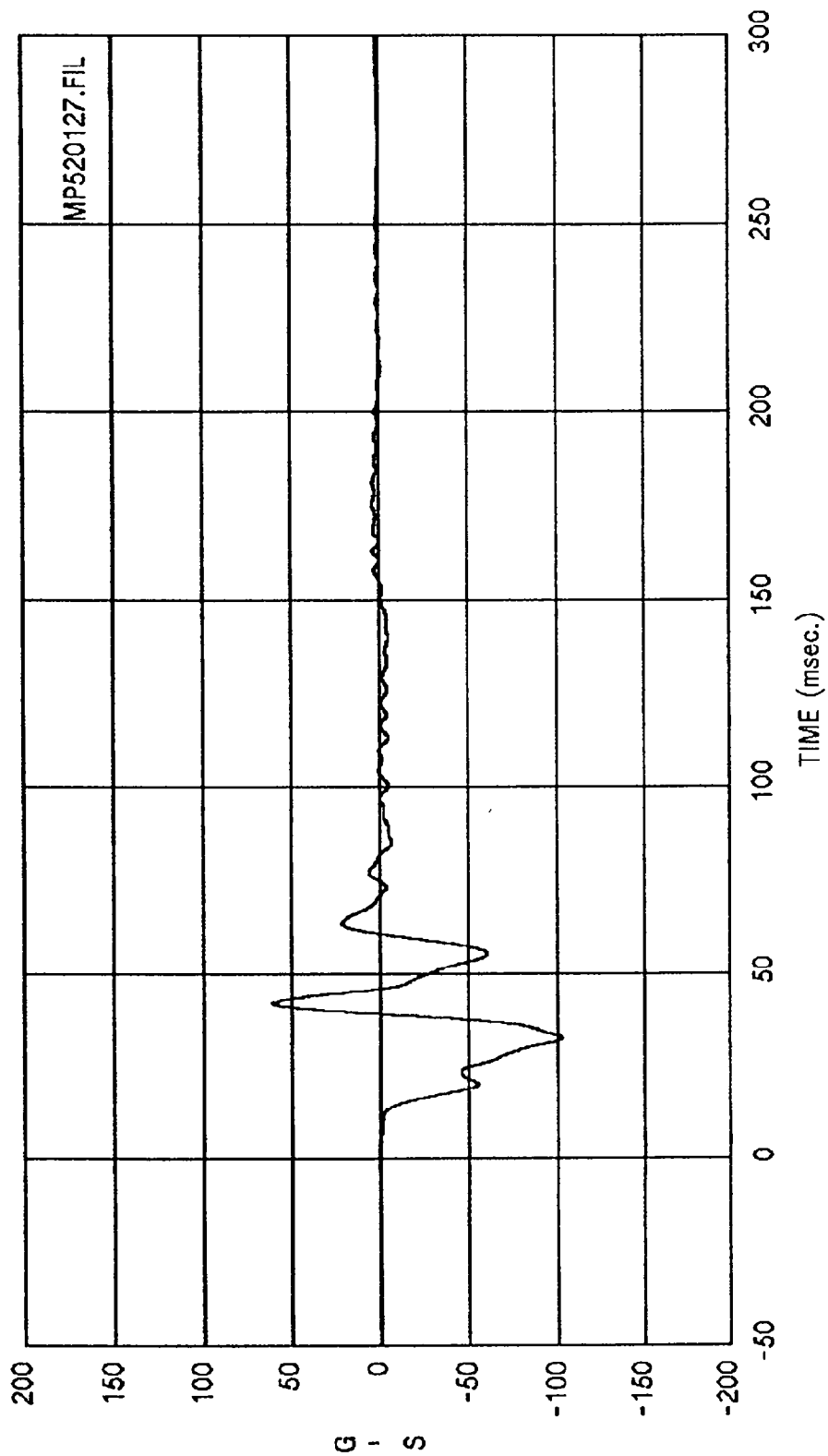
Curve: Passenger shoulder belt spoolout (not used) Filter: SAE CLASS 60 Max = .00000 Min = .00000
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



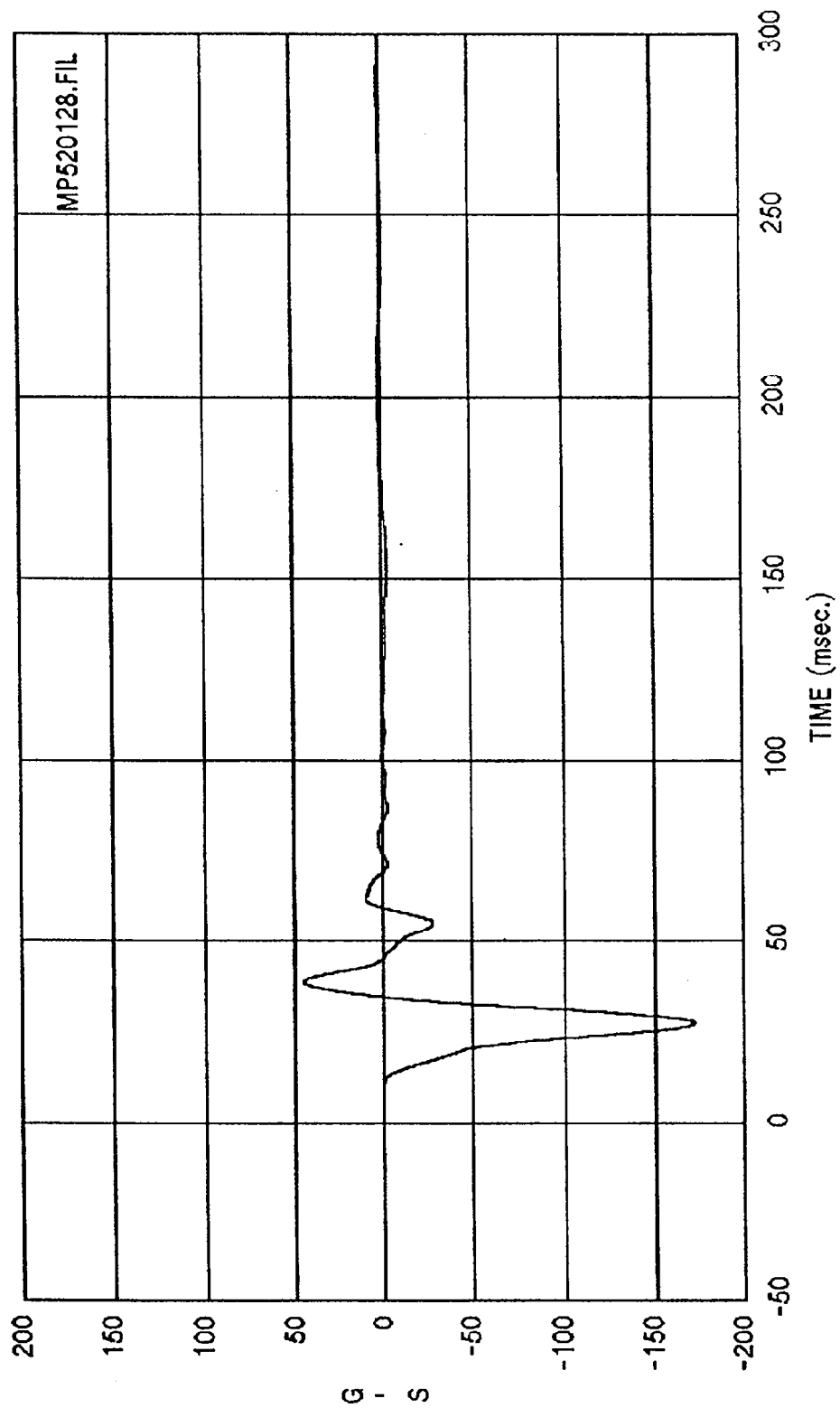
Curve: Left front calliper acceleration -- X axis Filter: SAE CLASS 60 Max = 1.1761 Min = -28.993
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Right front caliper acceleration -- X axis Filter: SAE CLASS 60 Max = 26.161 Min = -72.844
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

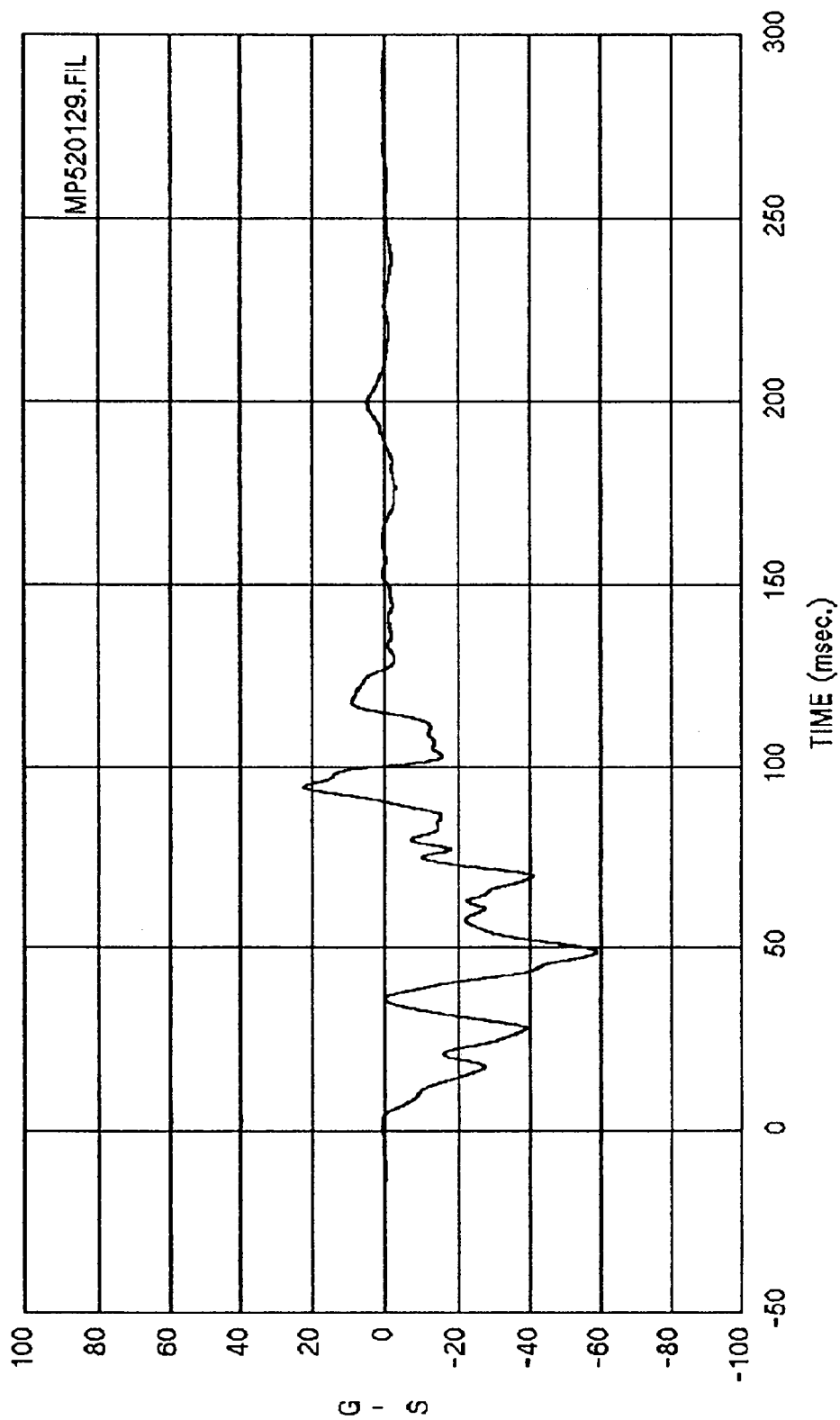


Curve: Engine bottom acceleration -- X axis Filter: SAE CLASS 60 Max = 61.164 Min = -101.88
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

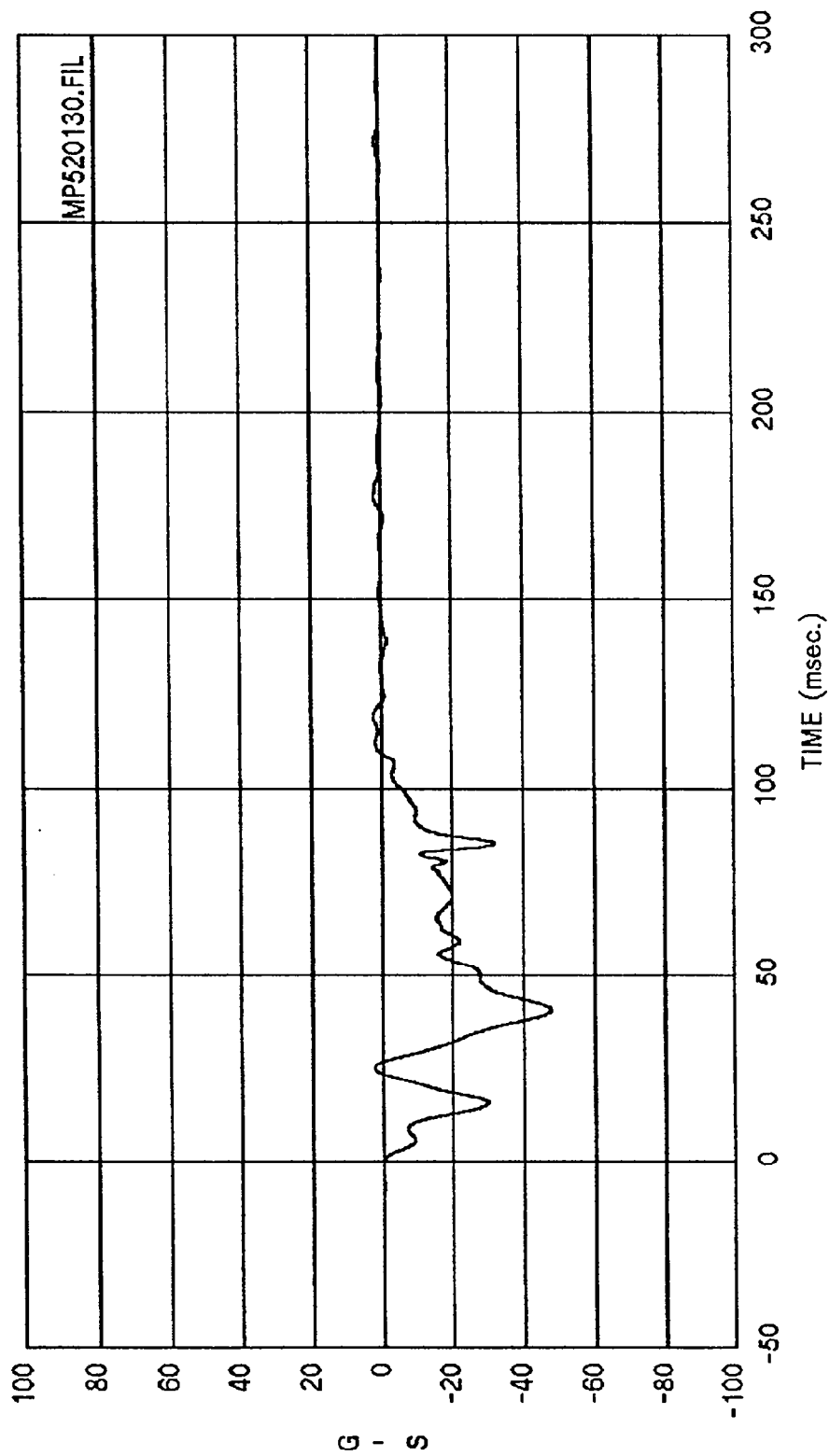


Curve: Engine top acceleration -- X axis Filter: SAE CLASS 60 Max = 45.380 Min = -171.70

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

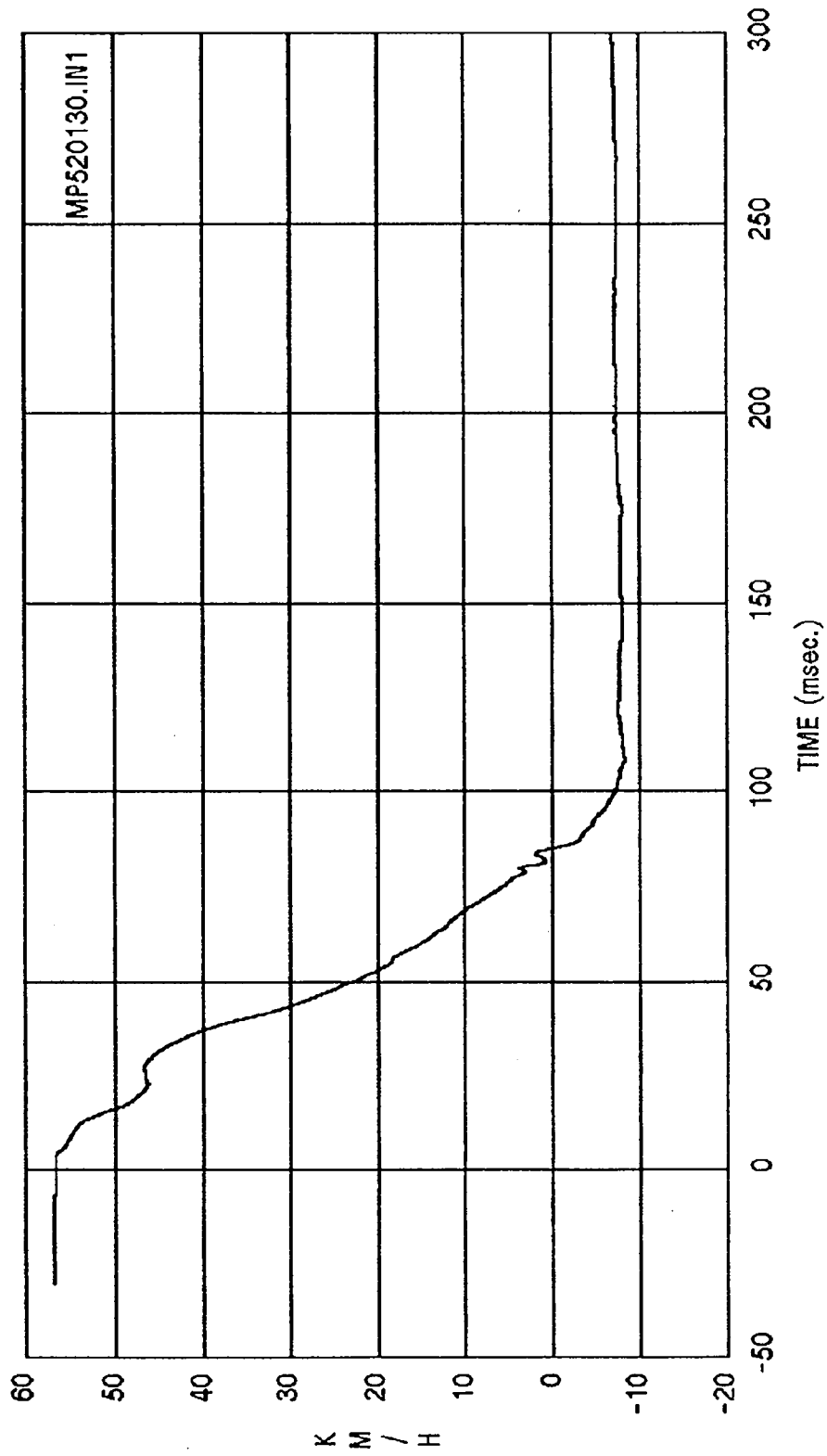


Curve: Dashpanel acceleration -- X axis Filter: SAE CLASS 60 Max = 22.238 Min = -58.683
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



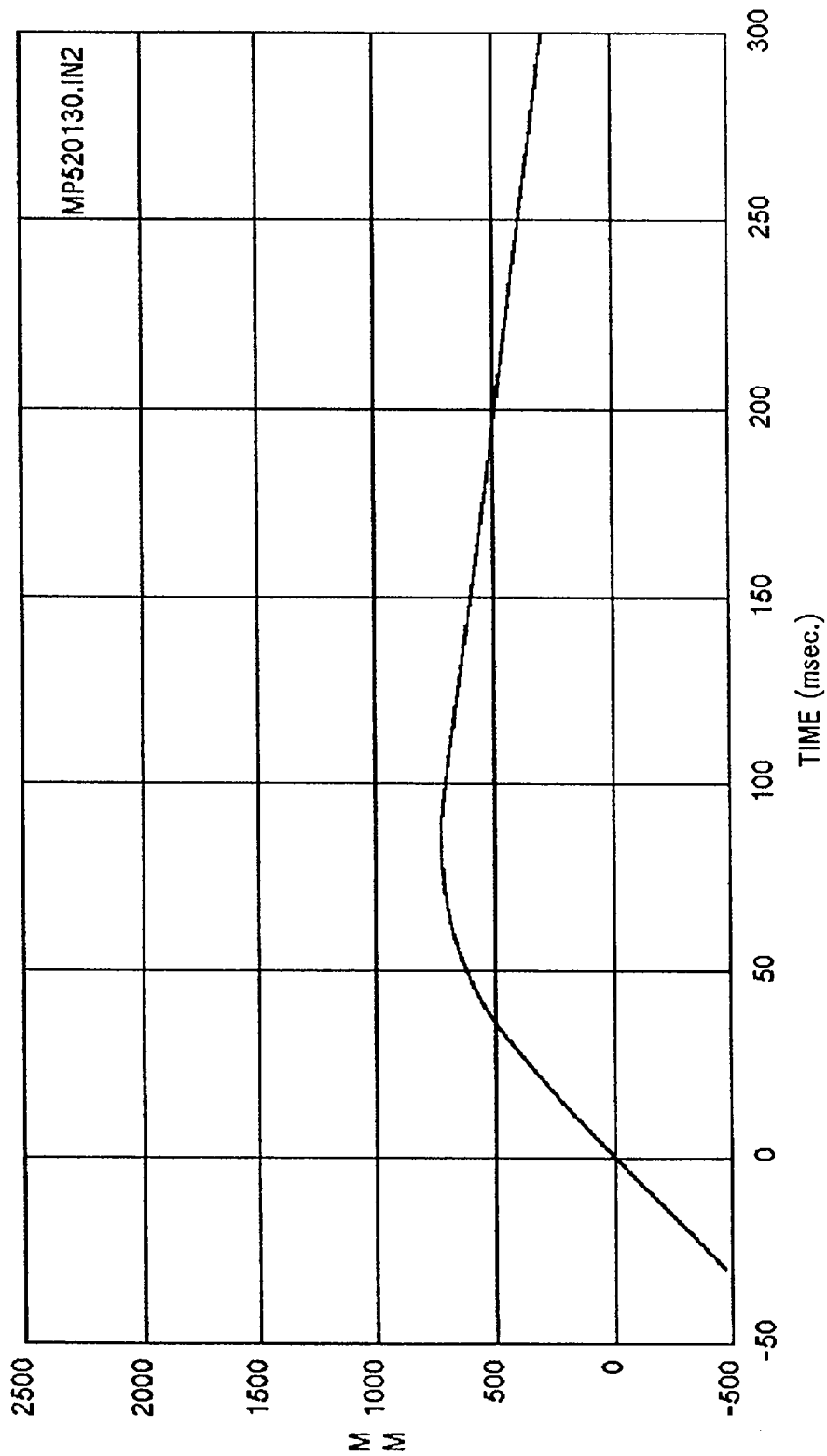
Curve: Left rear cross-member accel. - X axis (primary) Filter: SAE CLASS 60 Max = 2.3081 Min = -48.0

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

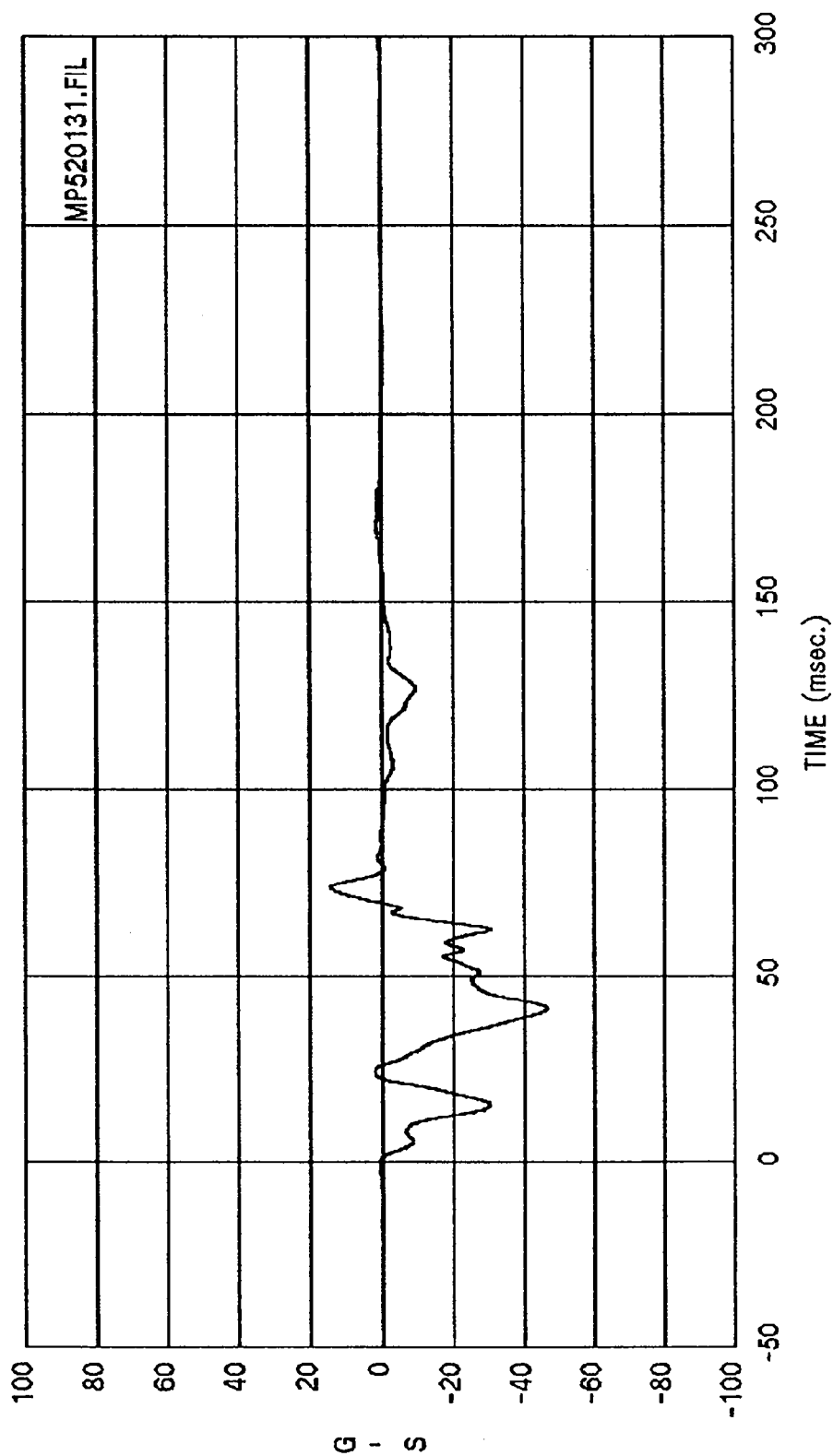


Curve: Left rear cross-member delta V -- X axis (Pri) Filter: SAE CLASS 180 Max = 56.703 Min = -8.304

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

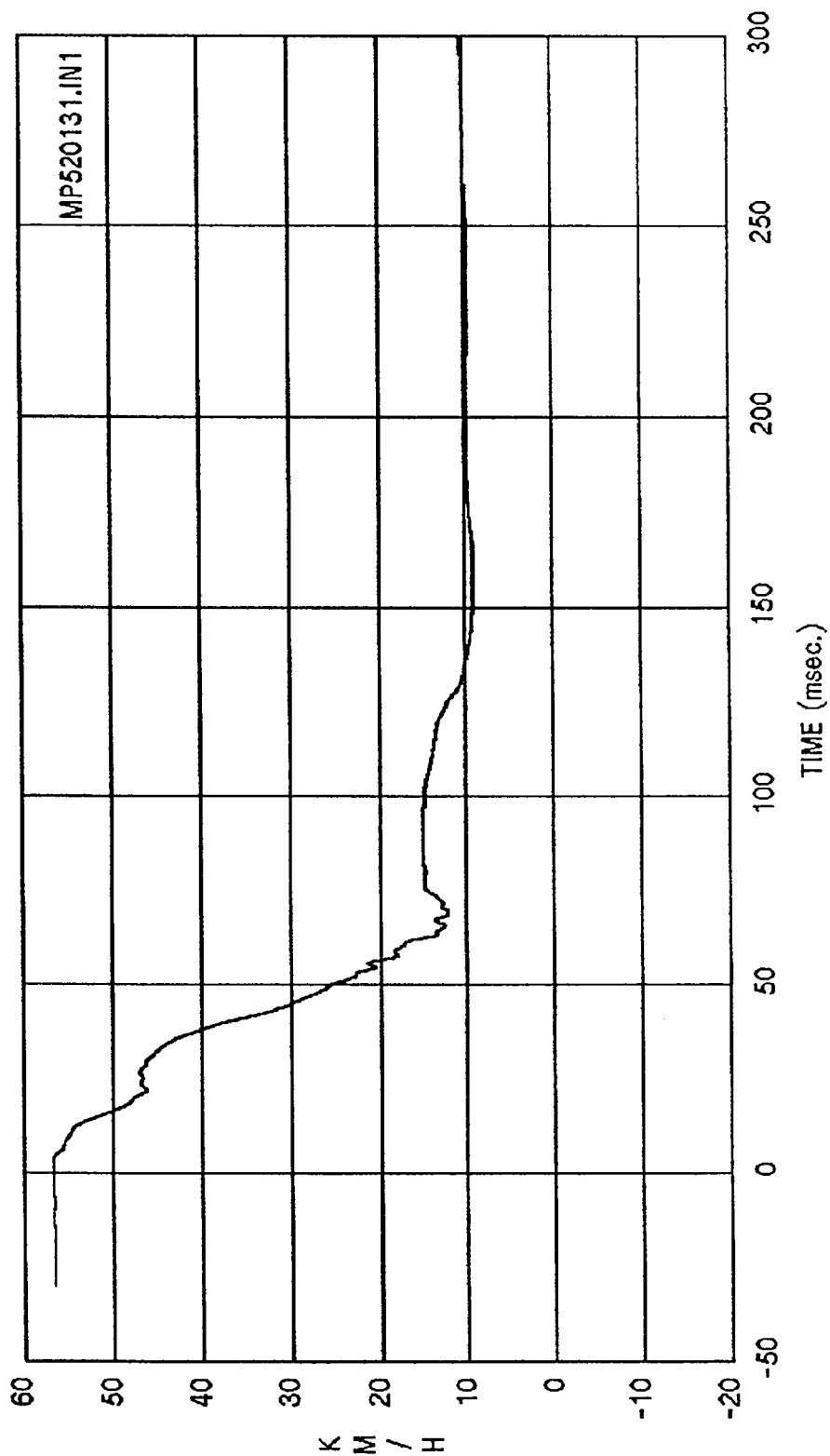


Curve: Left rear cross-member disp. - X axis (primary) Filter: SAE CLASS 180 Max = 724.92 Min = 291.43
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

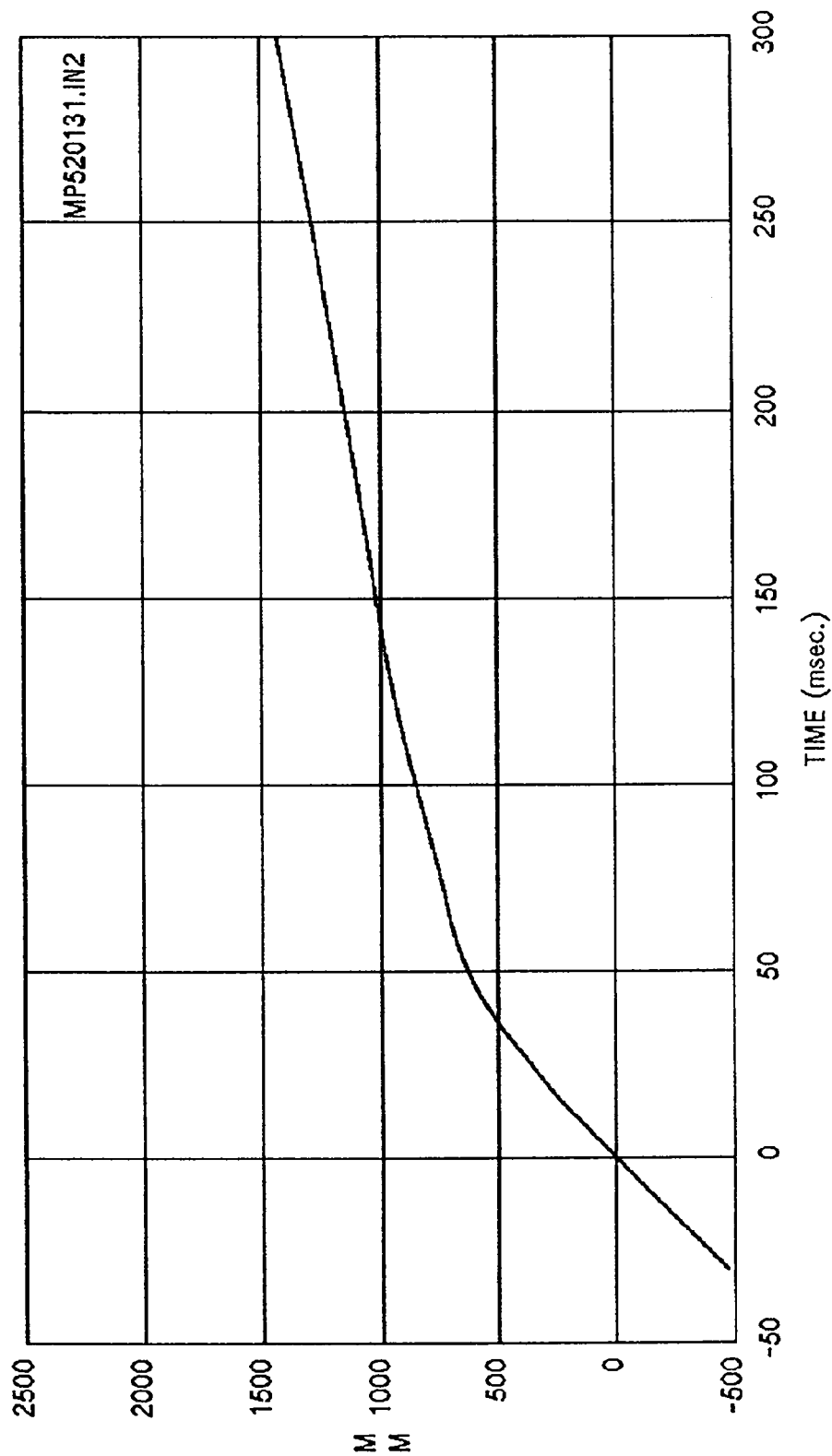


Curve: Right rear cross-member acc. - X axis (primary) Filter: SAE CLASS 60 Max = 14.202 Min = -46.7.

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

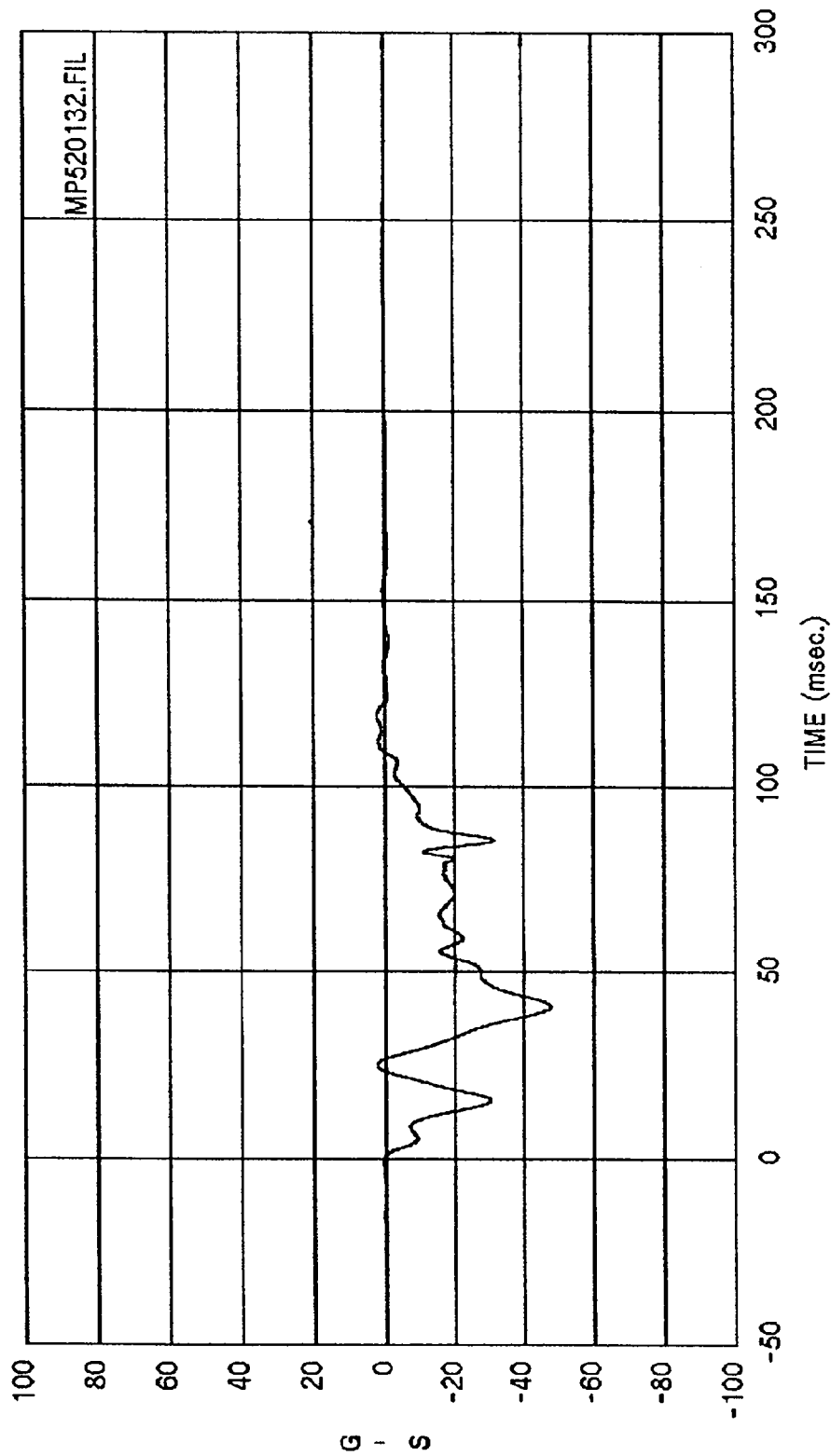


Curve: Right rear cross-member delta V -- X axis(Pri) Filter: SAE CLASS 180 Max = 56.769 Min = 9.0880
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



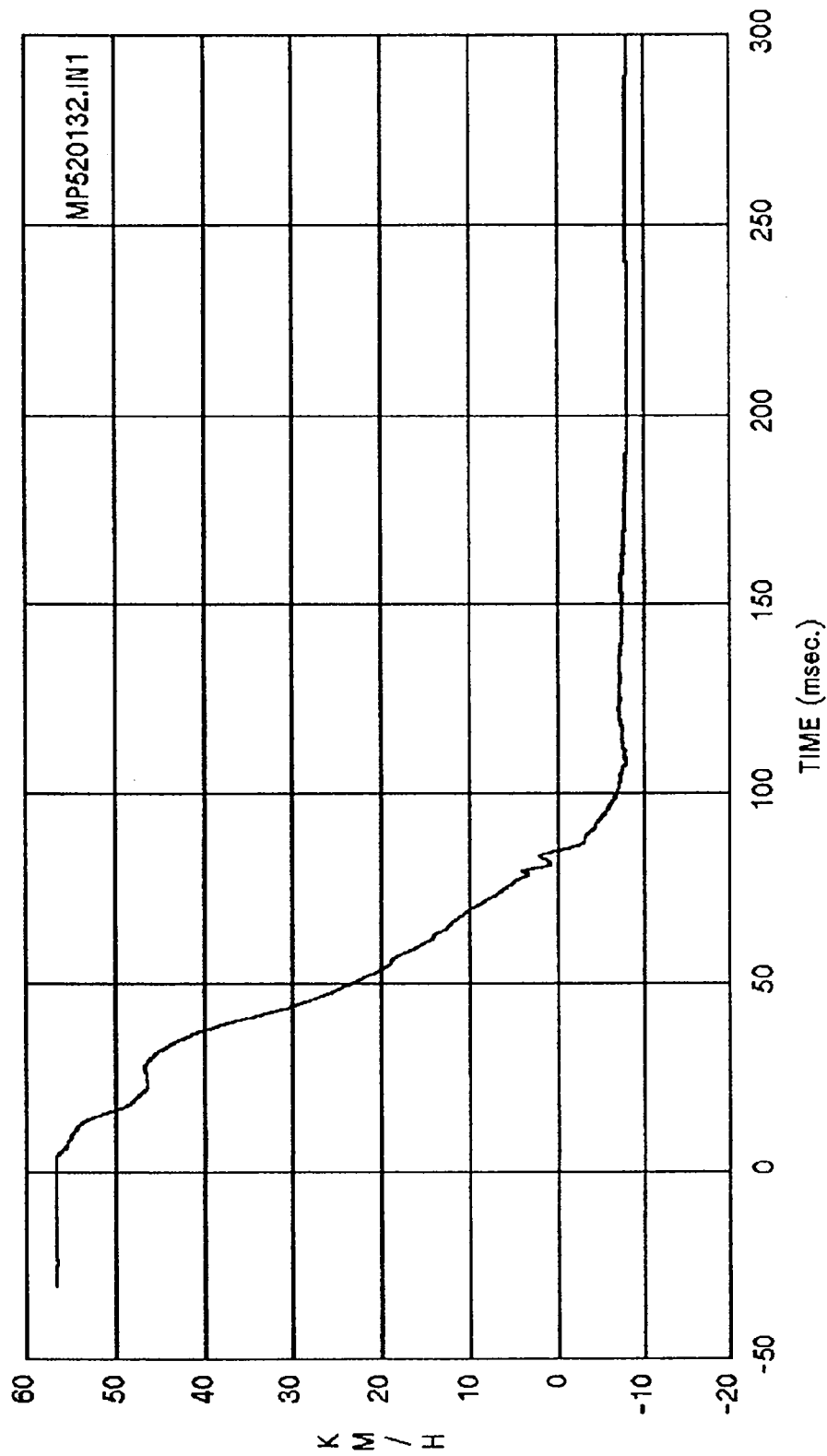
Curve: Right rear cross-member disp. - X axis (primary) Filter: SAE CLASS 180 Max = 1427.6 Min = .10000E+11

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



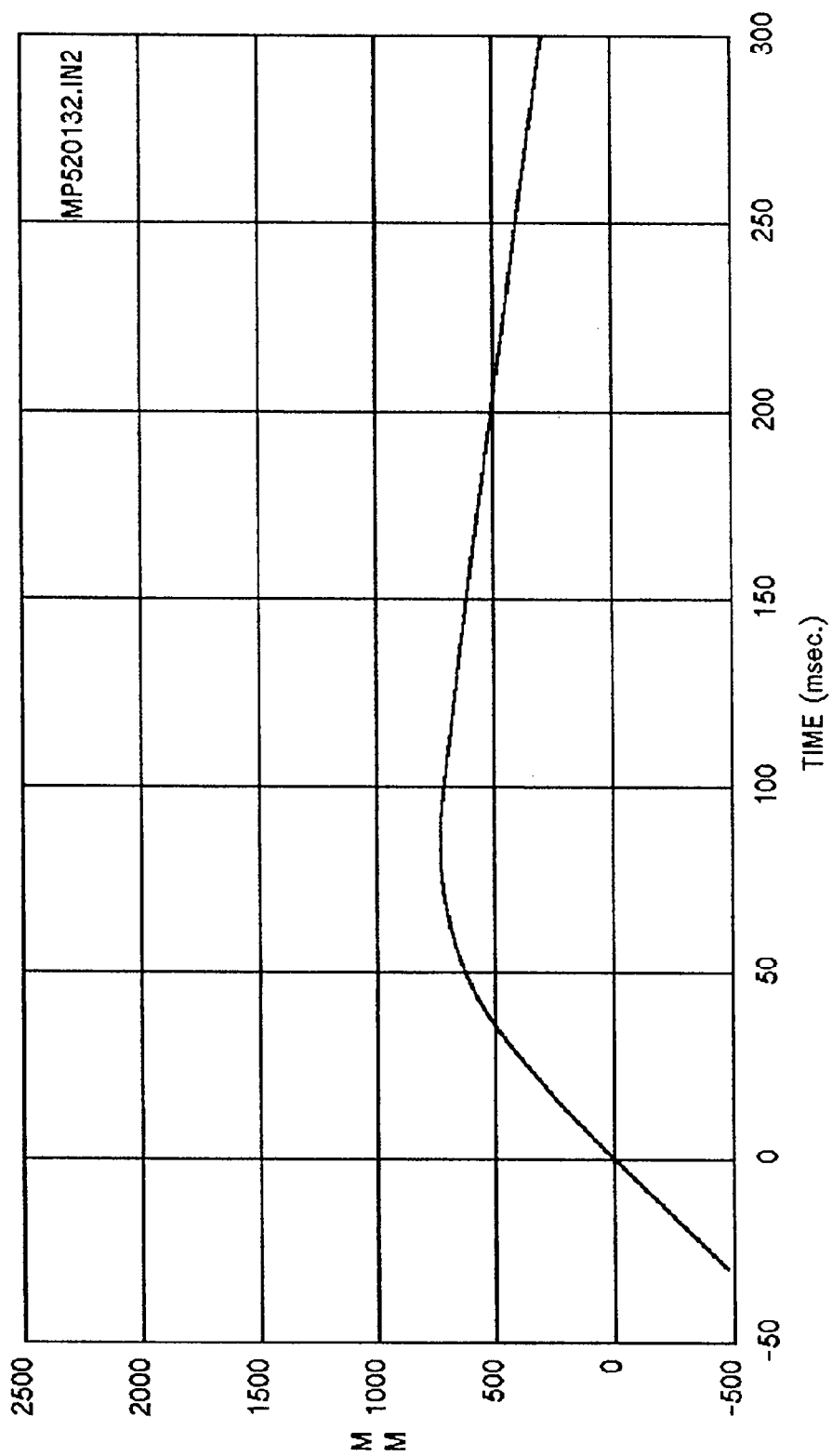
Curve: Left rear cross-member accel. - X axis(secondary) Filter: SAE CLASS 60 Max = 2.3839 Min = -47.4

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Left rear cross-member delta V -- X axis (Sec) Filter: SAE CLASS 180 Max = 56.728 Min = -8.01.

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Left rear cross-member disp. - X axis(secondary) Filter: SAE CLASS 180 Max = 731.40 Min = 288.

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

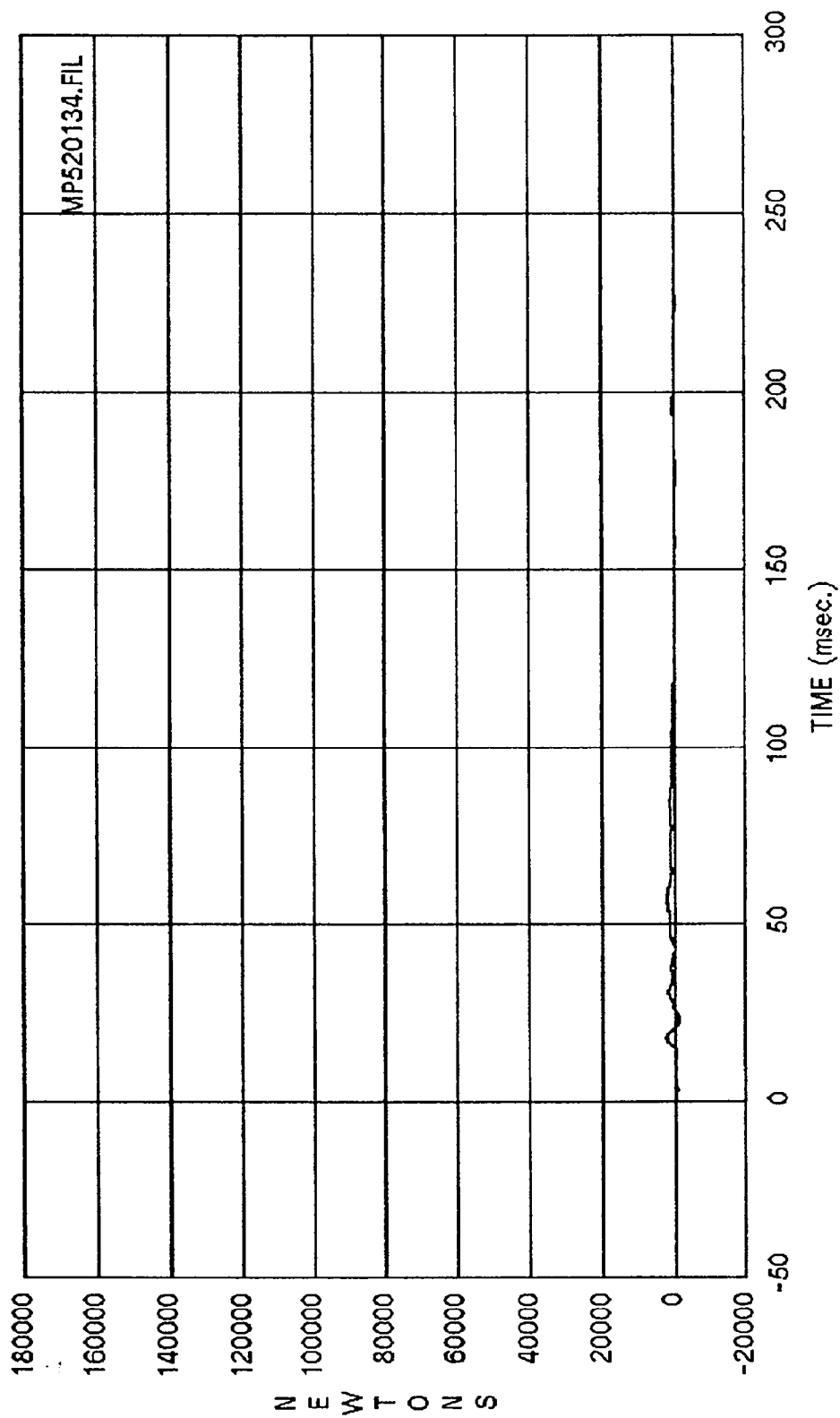
APPENDIX B-2

LOAD CELL BARRIER DATA

DATA FILTERING:

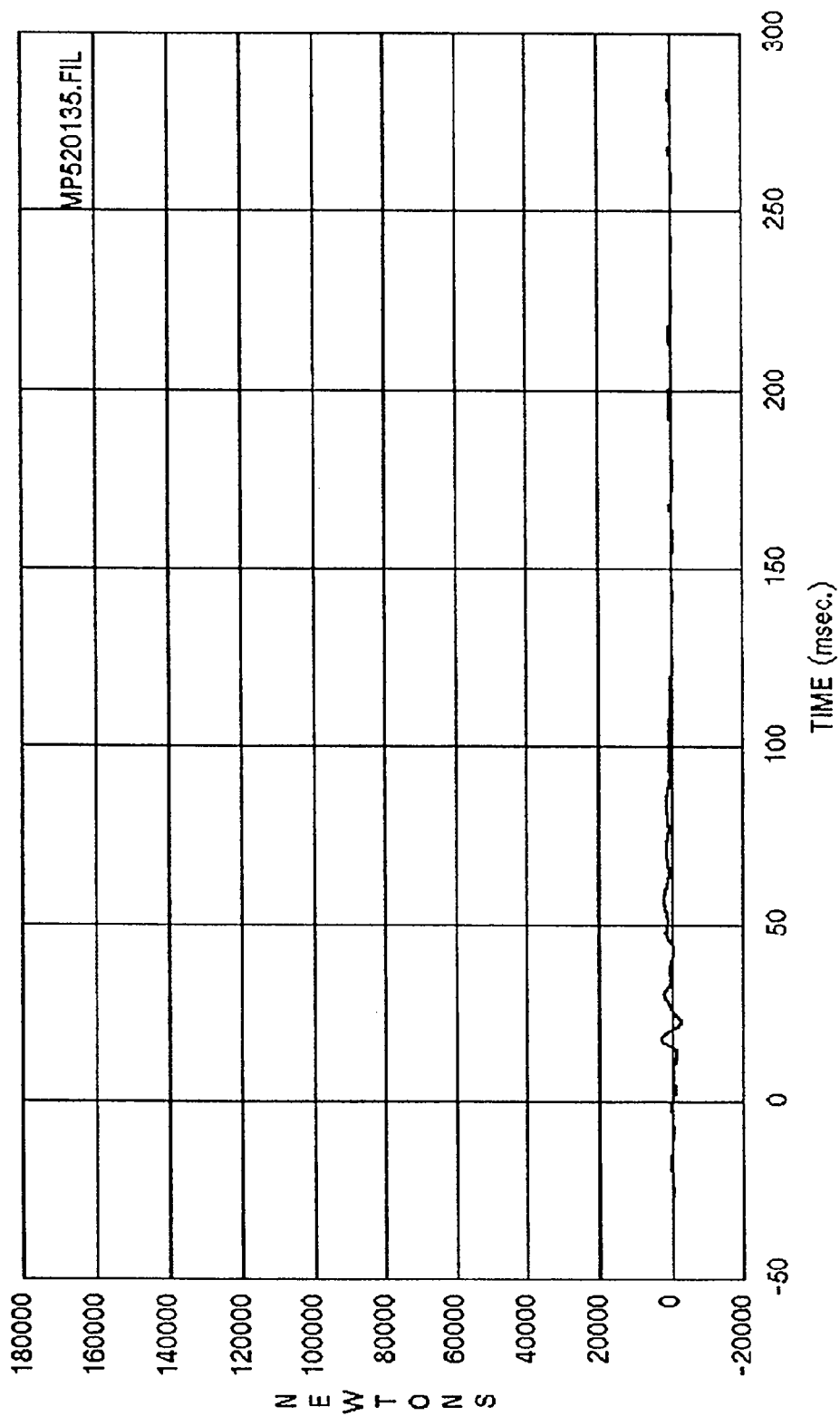
Load Cell Barrier Channels - Class 60

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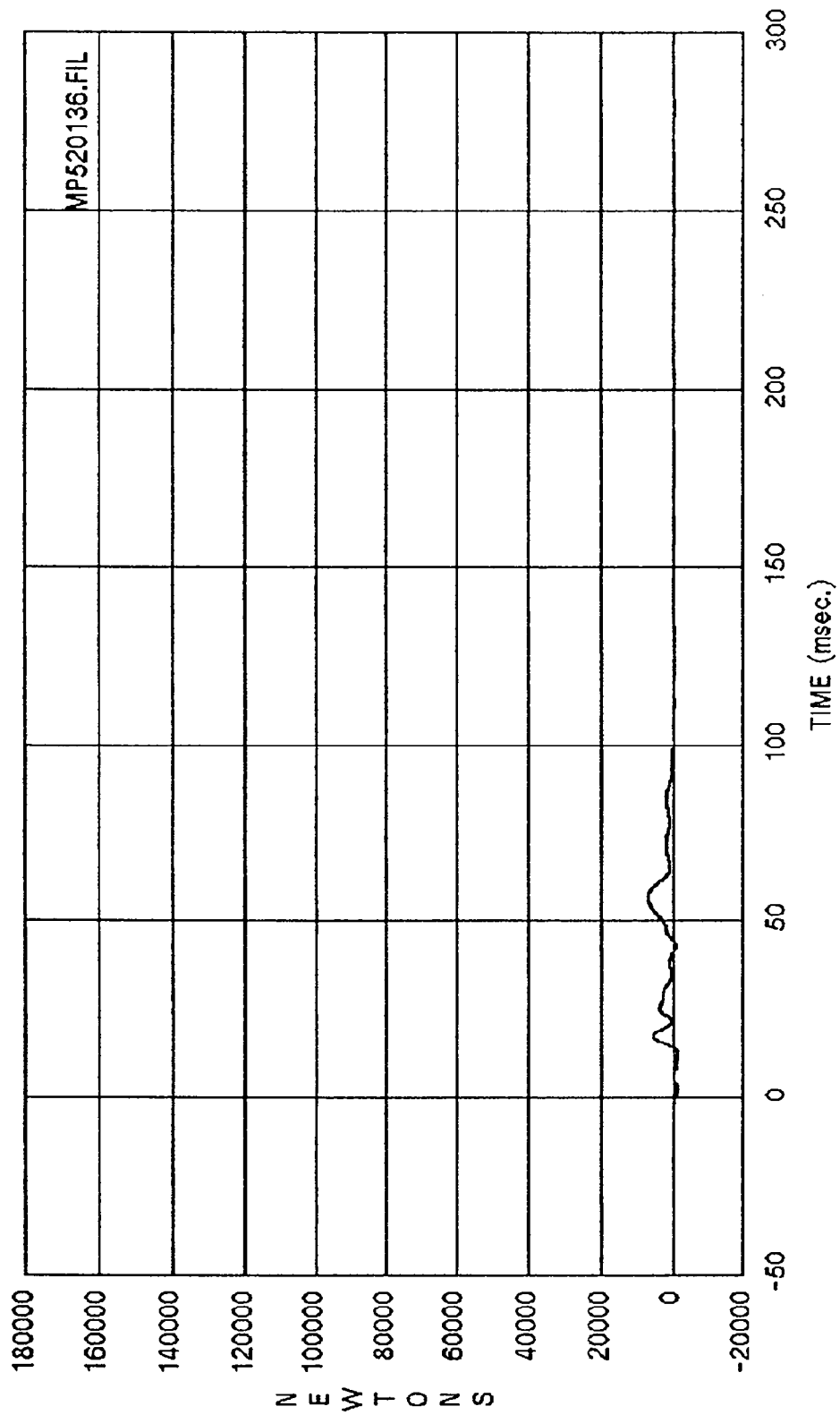


Curve: Force on barrier location A1 Filter: SAE CLASS 60 Max = 2469.6 Min = -1165.0

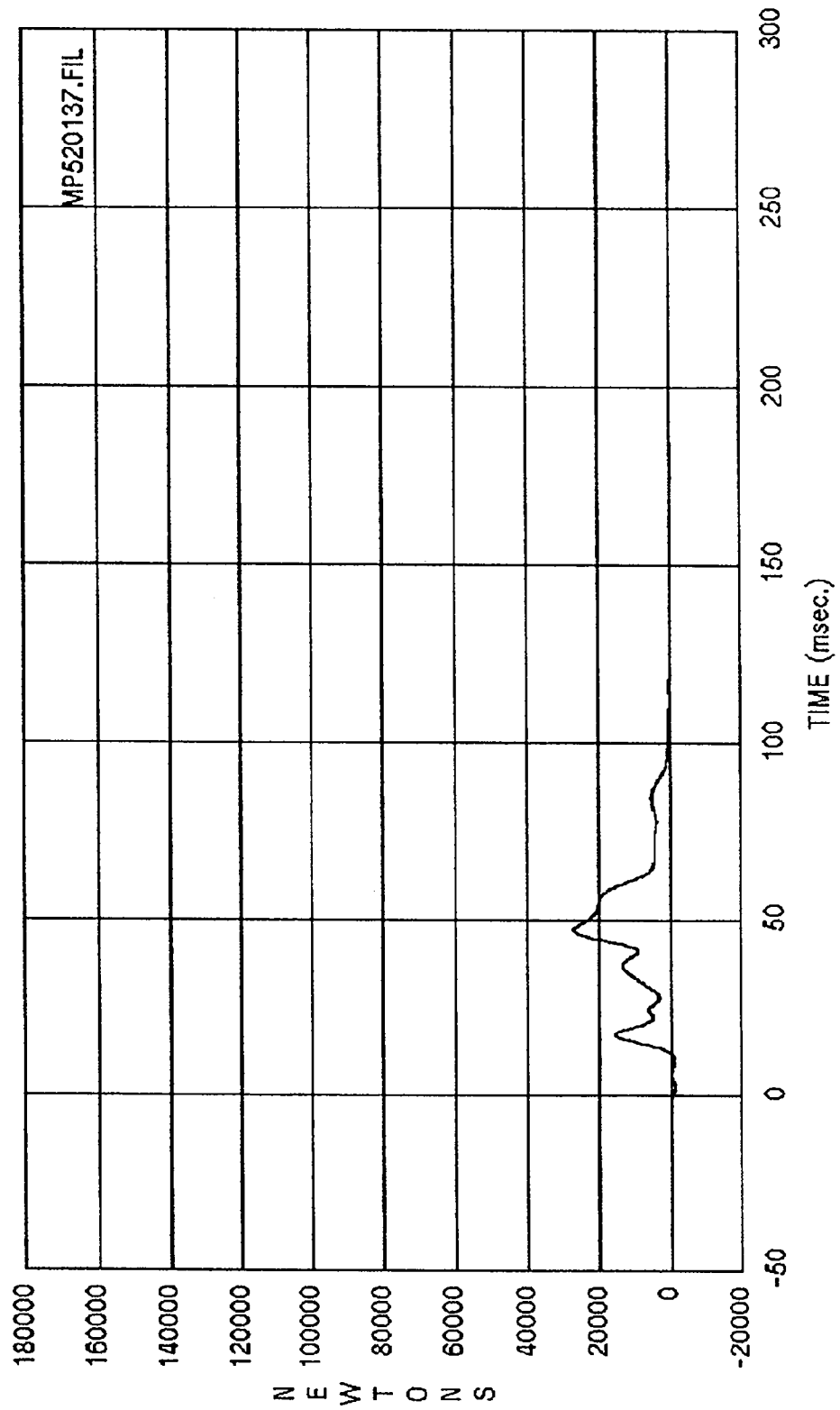
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Force on barrier location A2 Filter: SAE CLASS 60 Max = 3054.5 Min = -2115.0
 MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

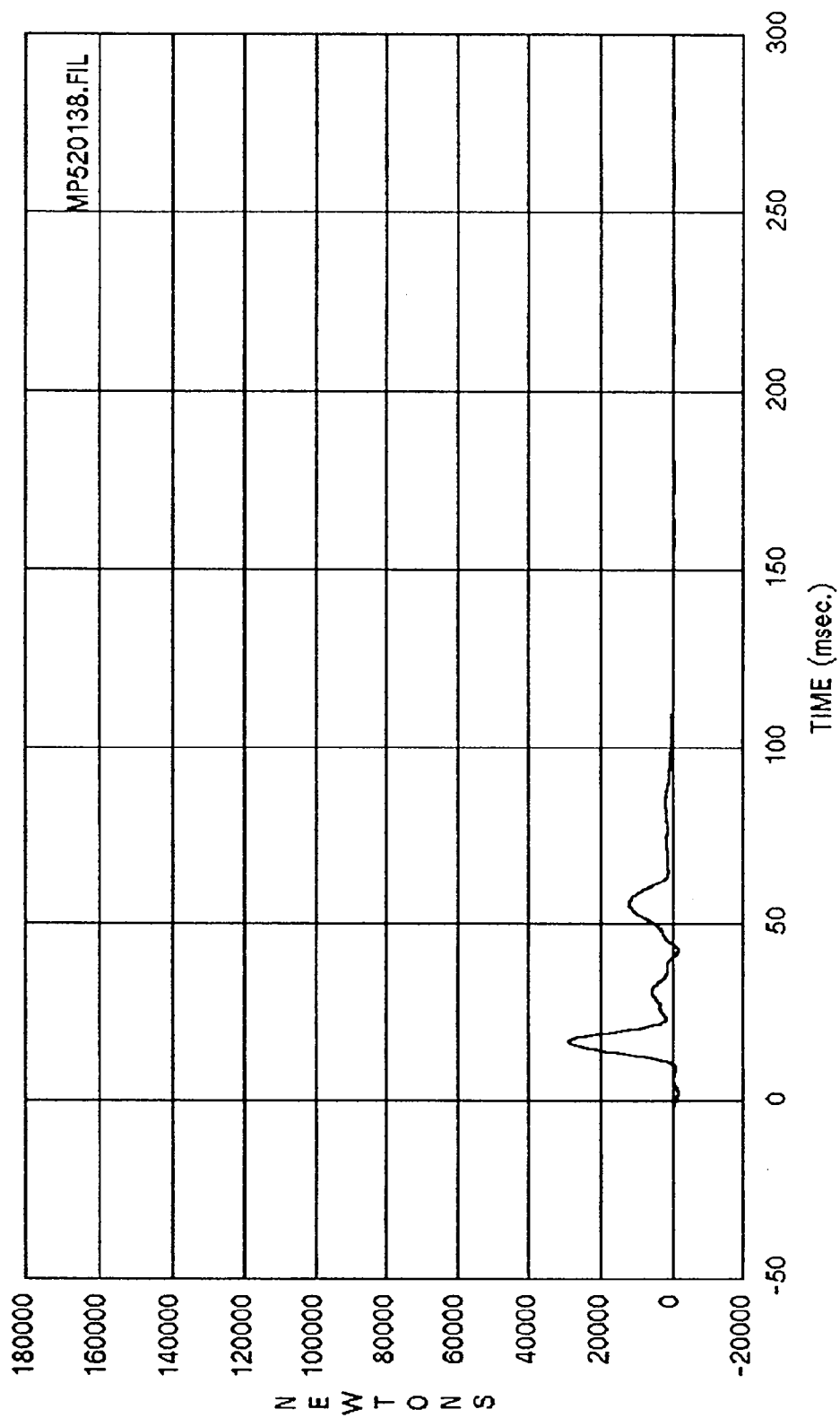


Curve: Force on barrier location A3 Filter: SAE CLASS 60 Max = 7258.9 Min = -1210.5
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

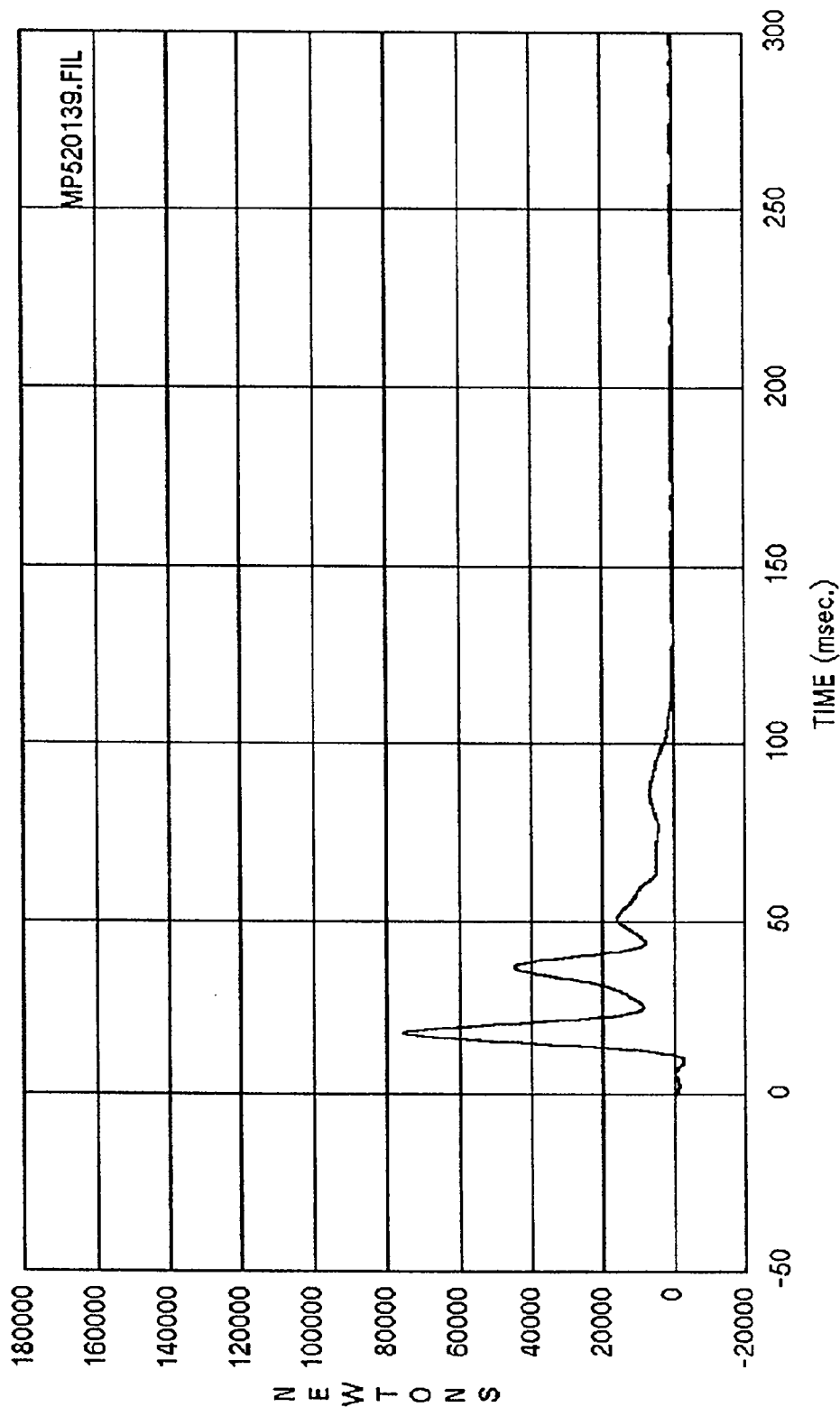


Curve: Force on barrier location A4 Filter: SAE CLASS 60 Max = 27342. Min = -1152.8

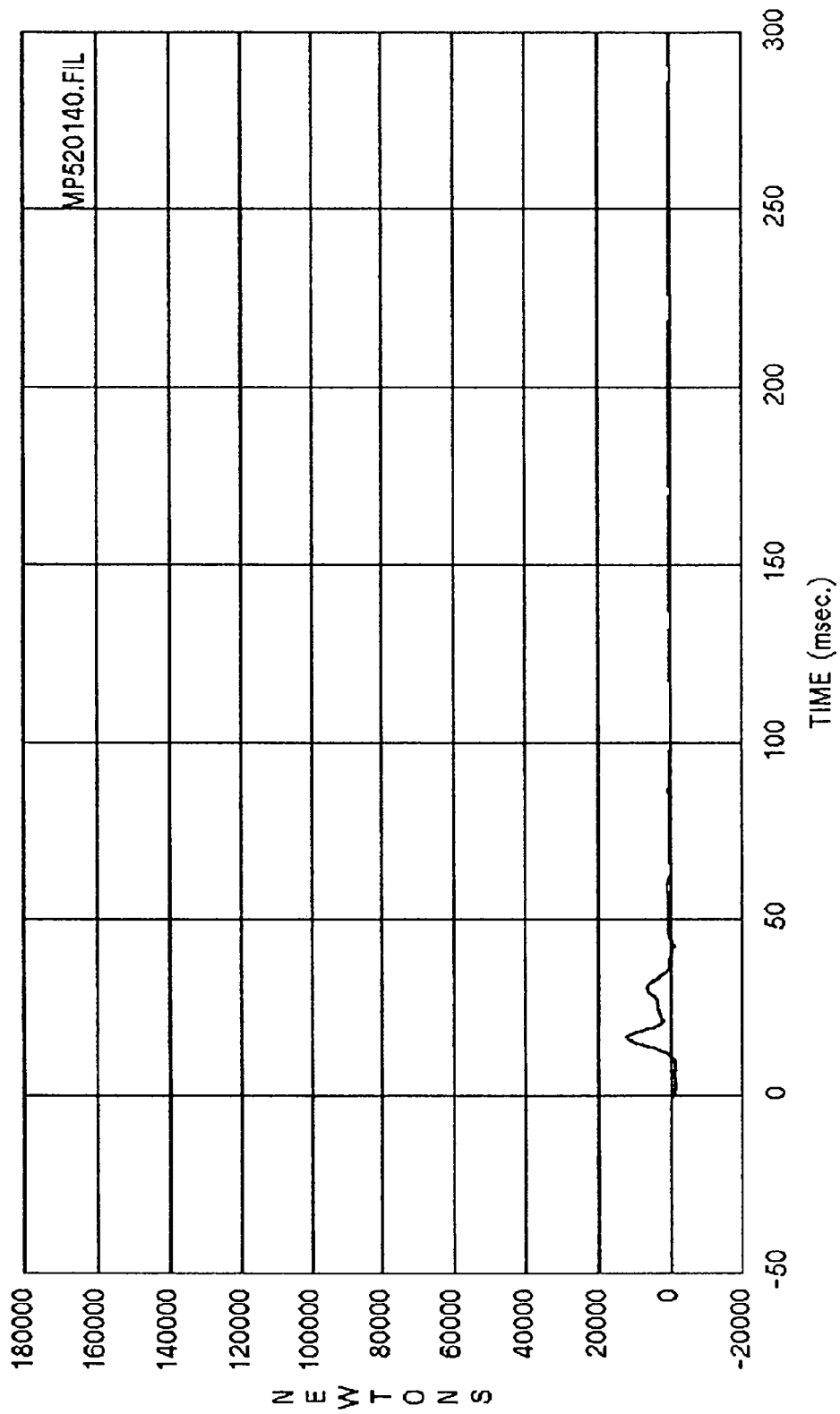
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Force on barrier location A5 Filter: SAE CLASS 60 Max = 29232. Min = -1501.0
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

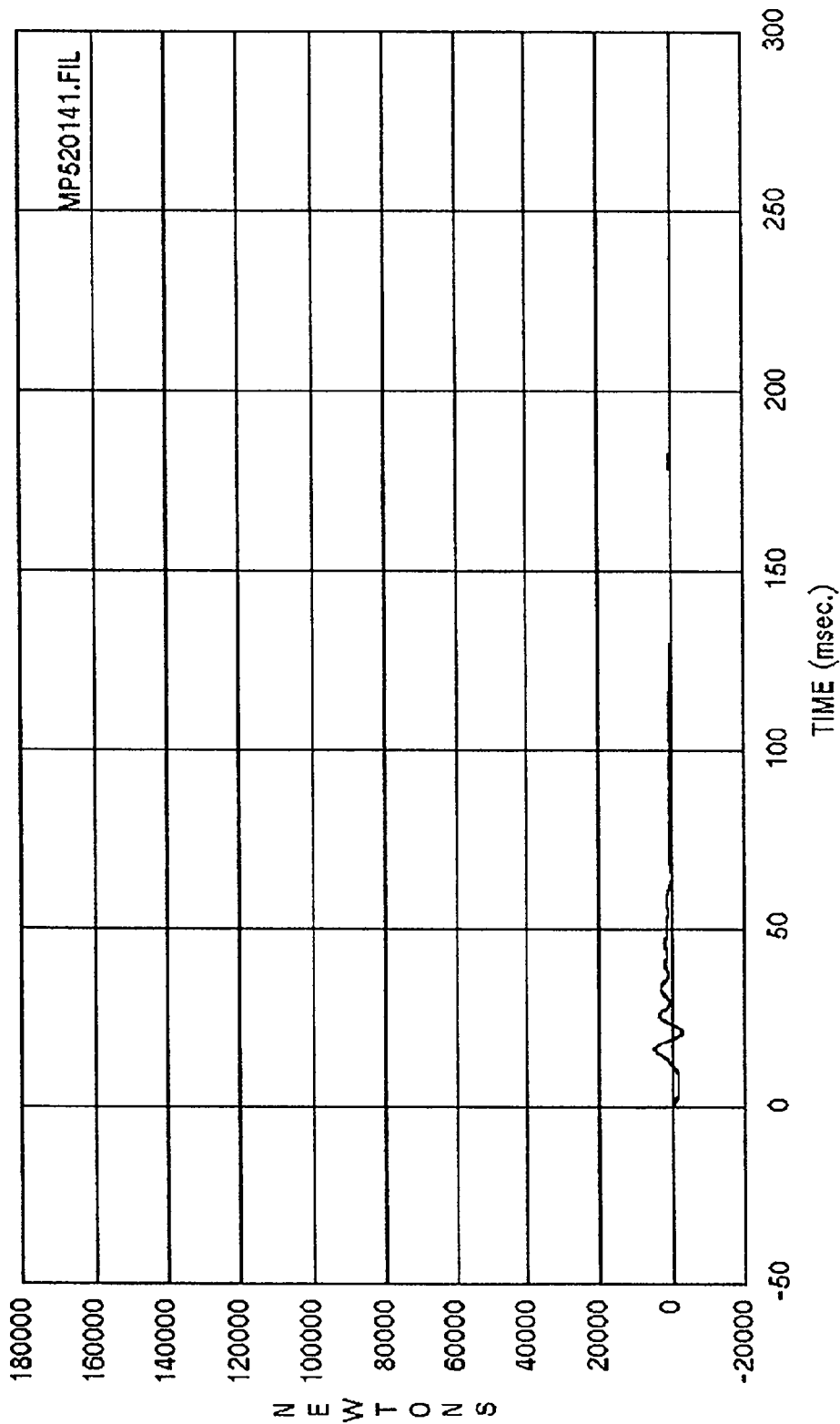


Curve: Force on barrier location A6 Filter: SAE CLASS 60 Max = 75338. Min = -2521.9
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



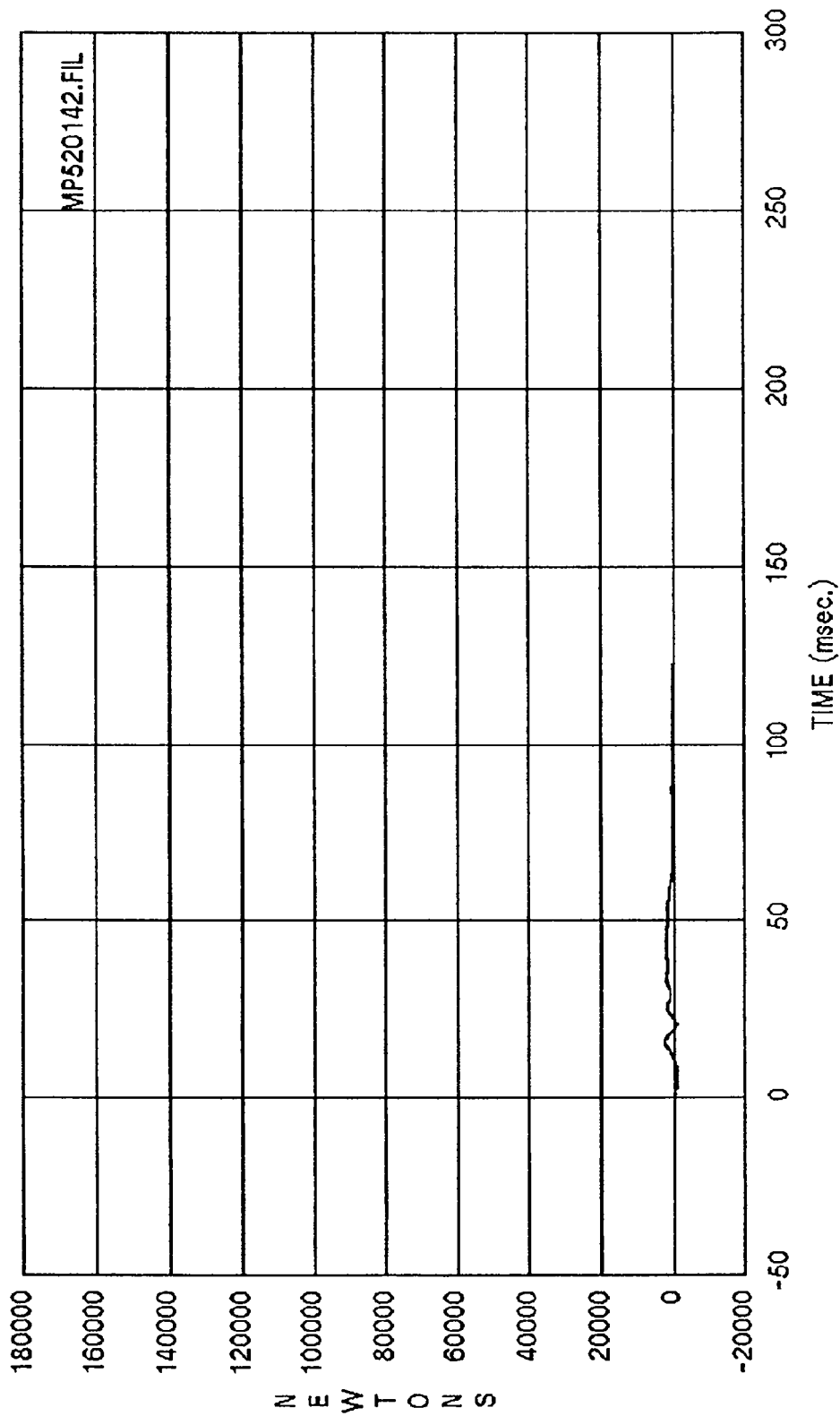
Curve: Force on barrier location A7 Filter: SAE CLASS 60 Max = 12217. Min = -1234.1

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

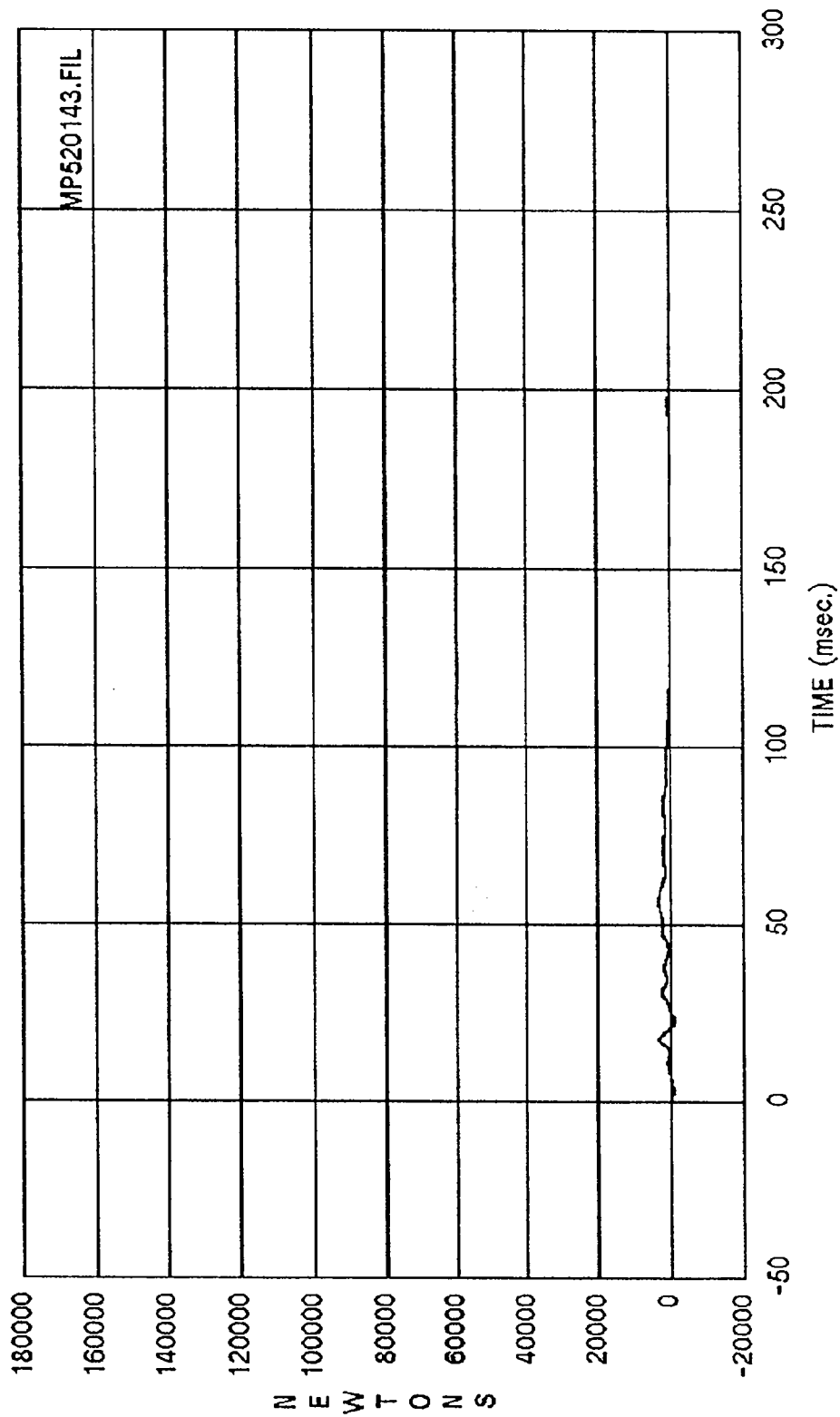


Curve: Force on barrier location A8 Filter: SAE CLASS 60 Max = 4815.3 Min = -2594.3

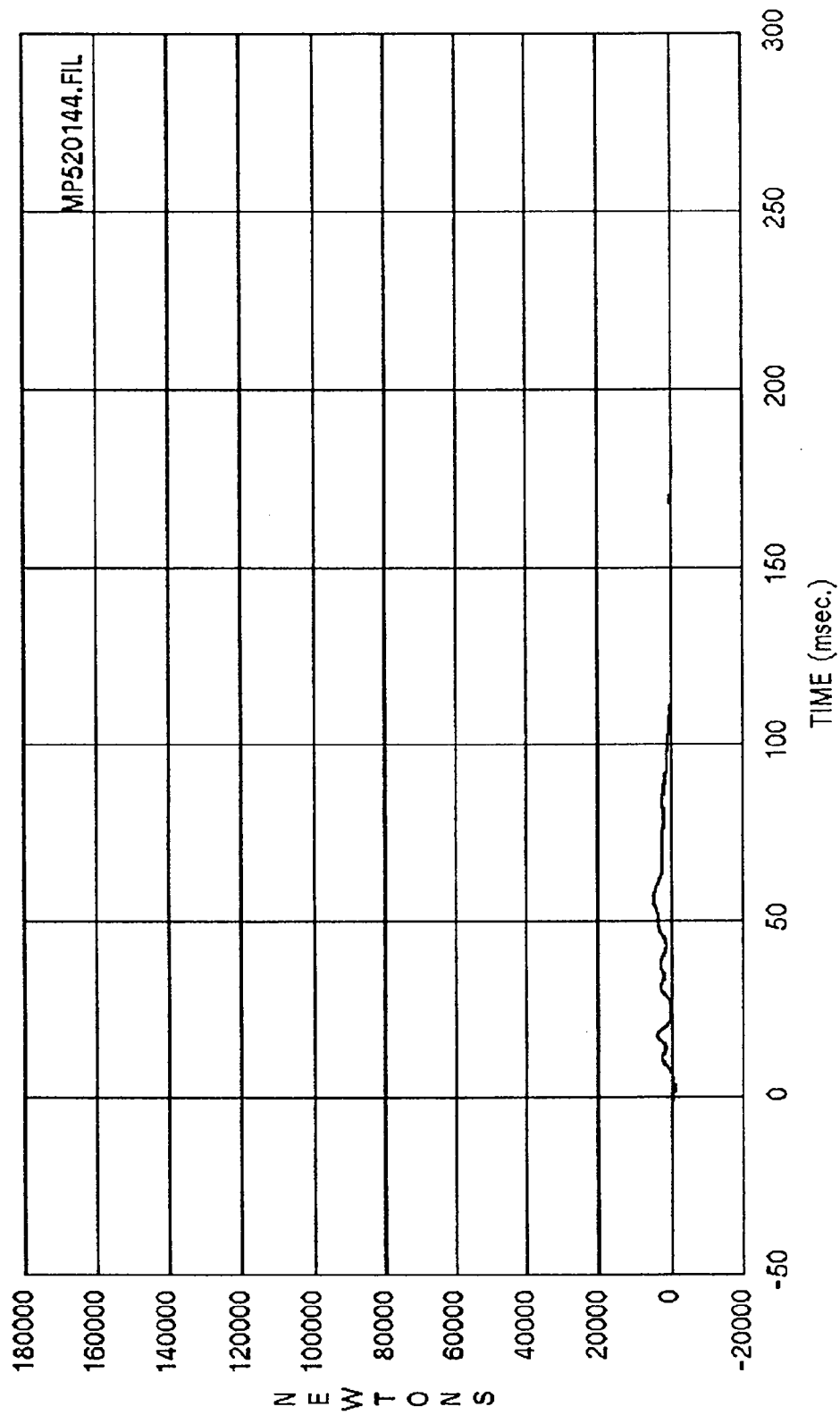
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Force on barrier location A9 Filter: SAE CLASS 60 Max = 2803.5 Min = -697.01
 MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

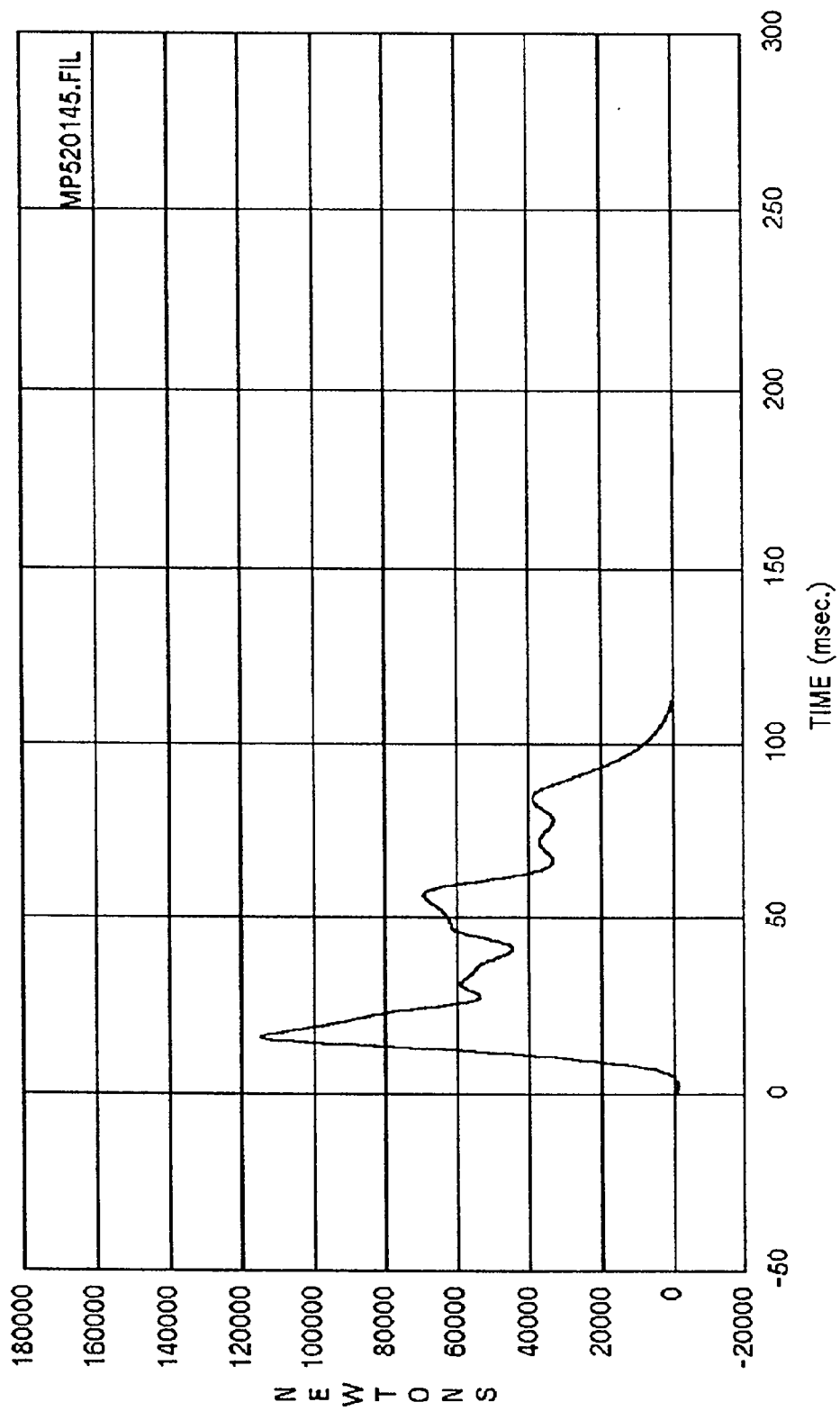


Curve: Force on barrier location B1 Filter: SAE CLASS 60 Max = 3327.0 Min = -872.19
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



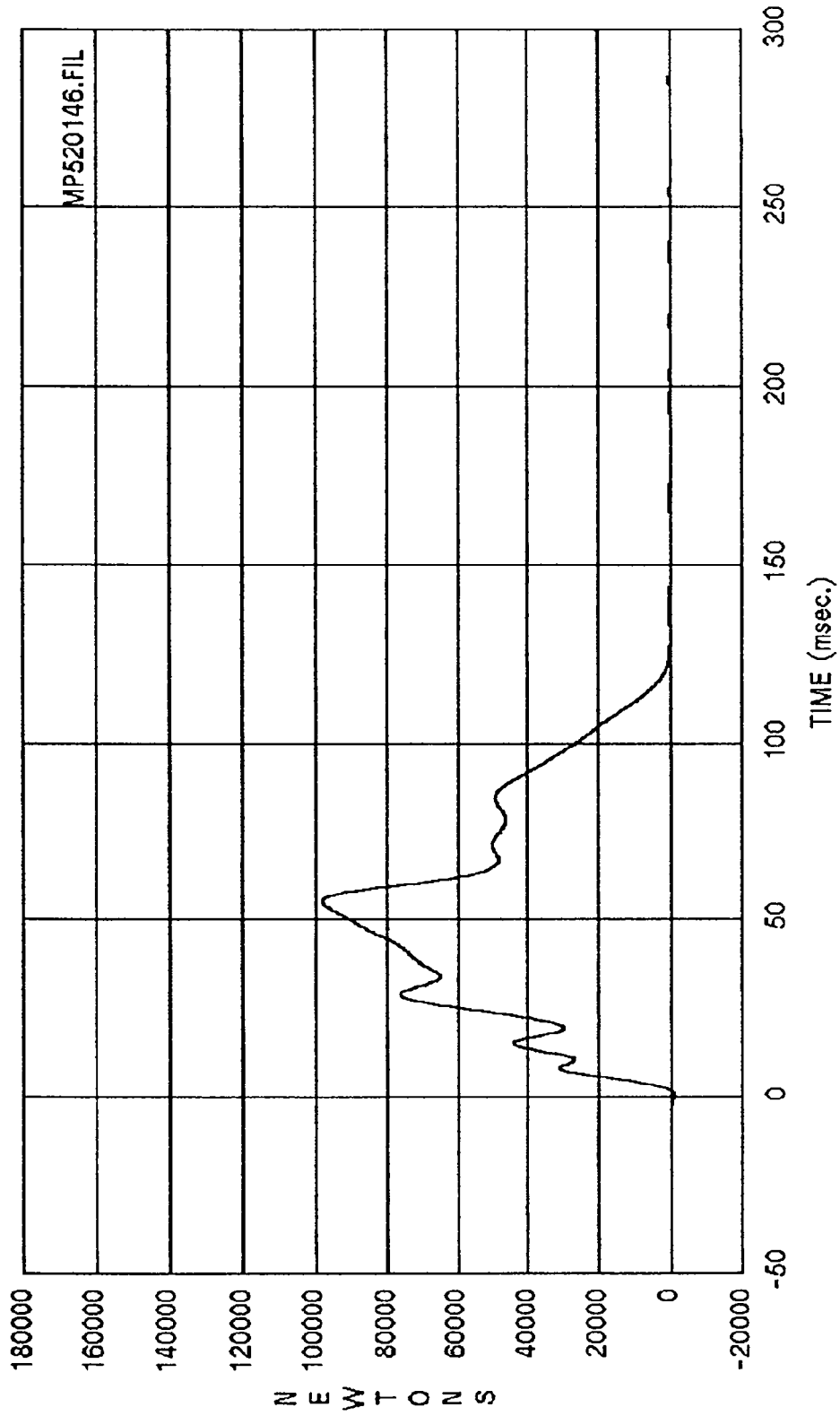
Curve: Force on barrier location B2 Filter: SAE CLASS 60 Max = 4915.3 Min = -634.32

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

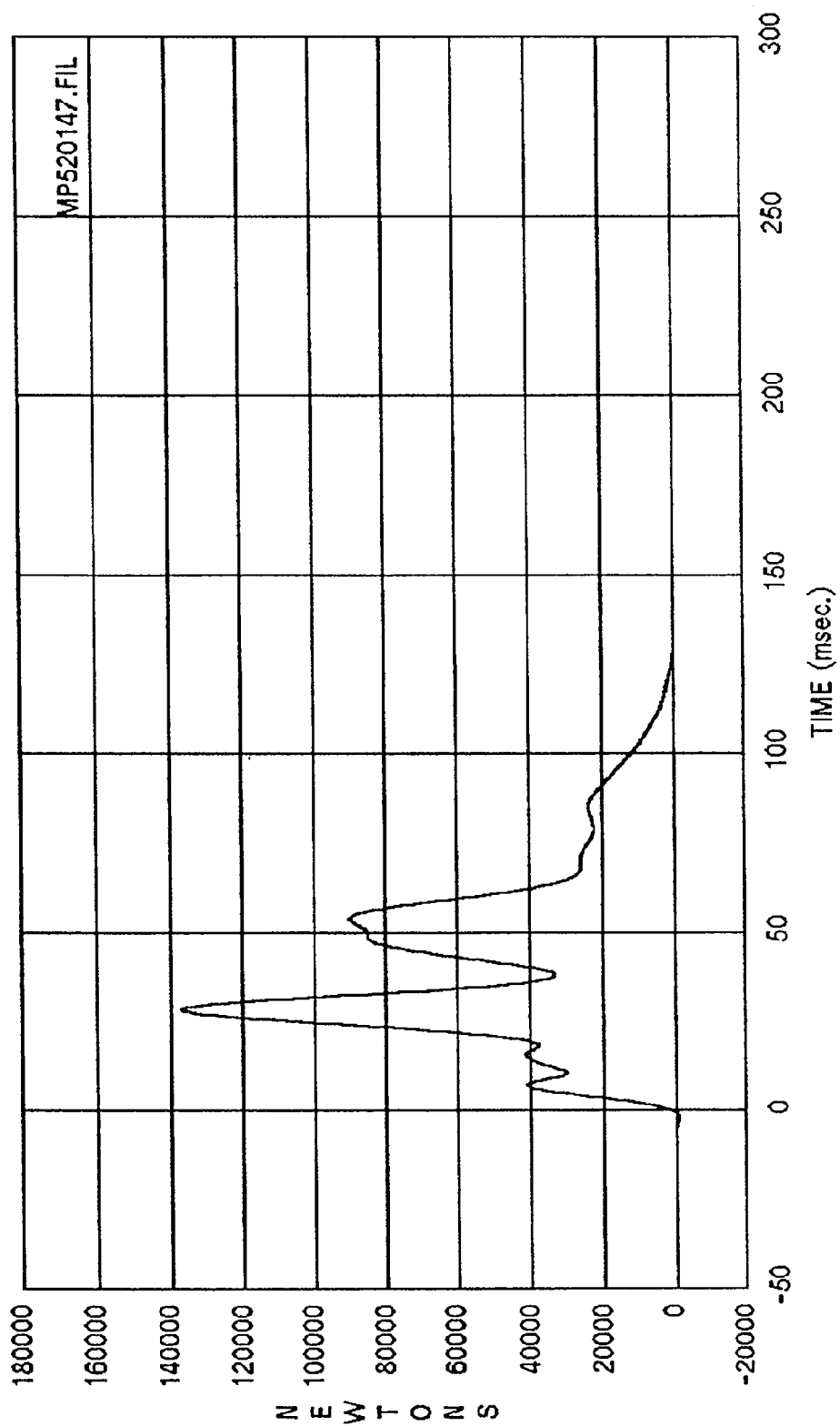


Curve: Force on barrier location B3 Filter: SAE CLASS 60 Max = .11505E+06 Min = -1092.8

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

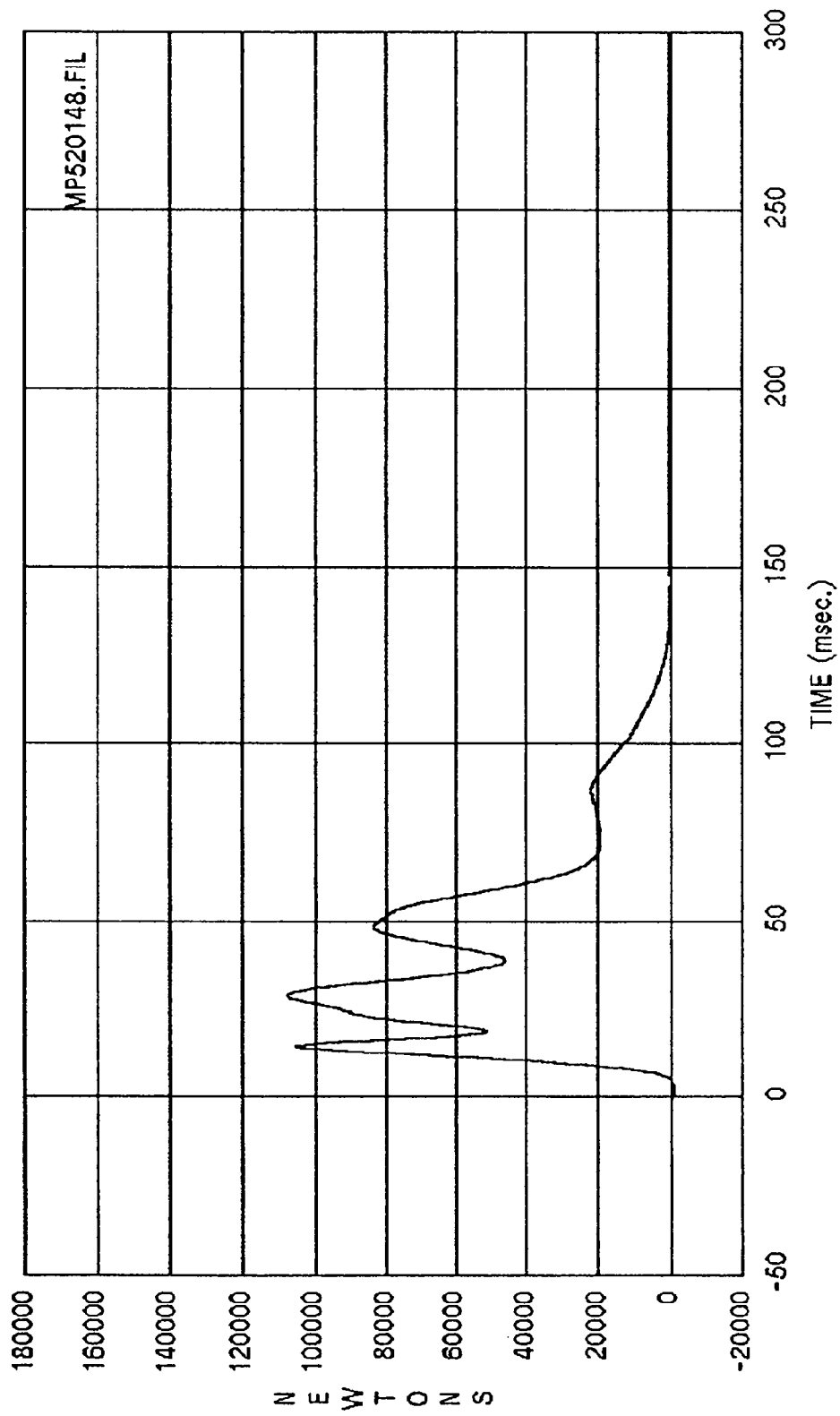


Curve: Force on barrier location B4 Filter: SAE CLASS 60 Max = 98245. Min = -737.69
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

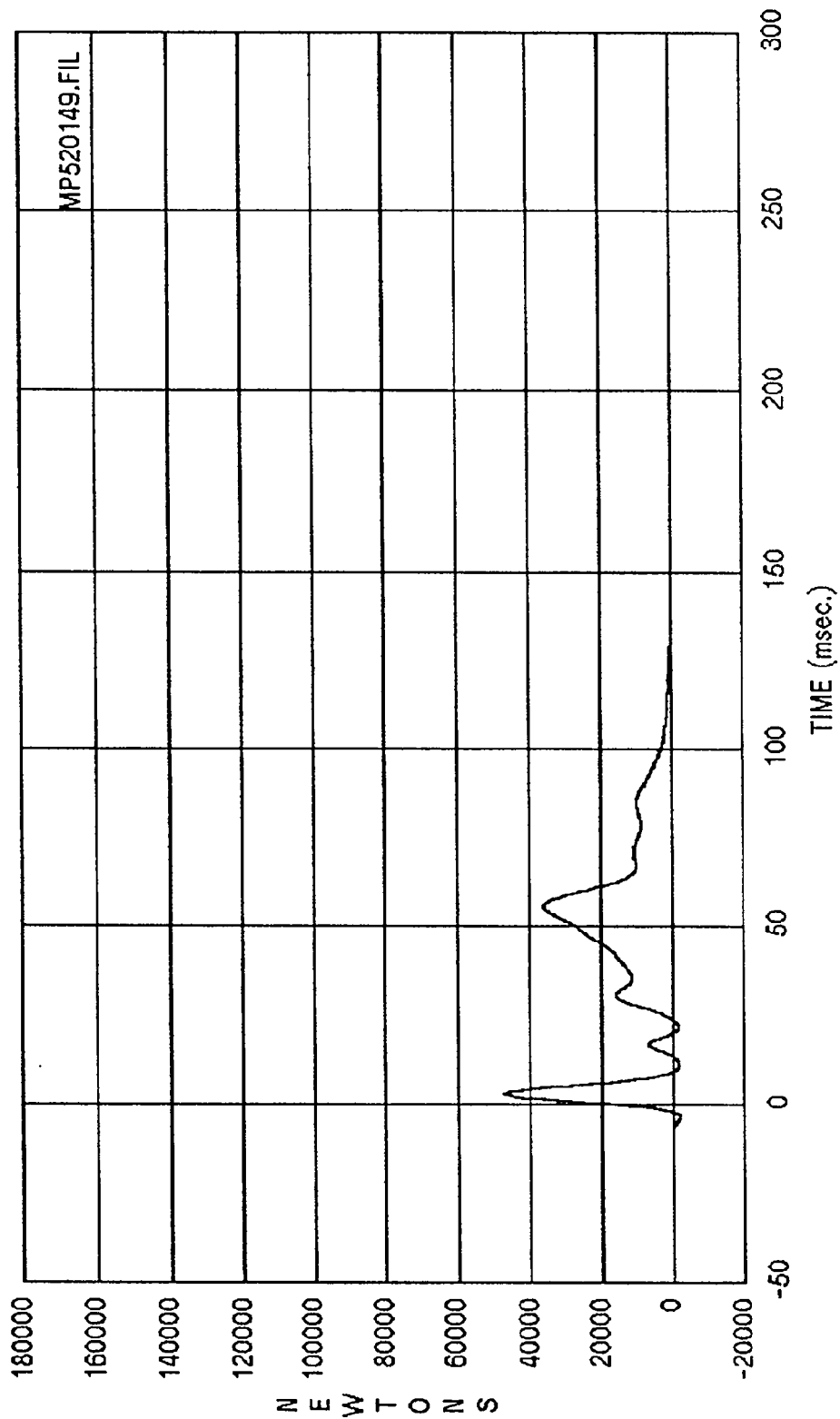


Curve: Force on barrier location B5 Filter: SAE CLASS 60 Max = .13694E+06 Min = -86.643

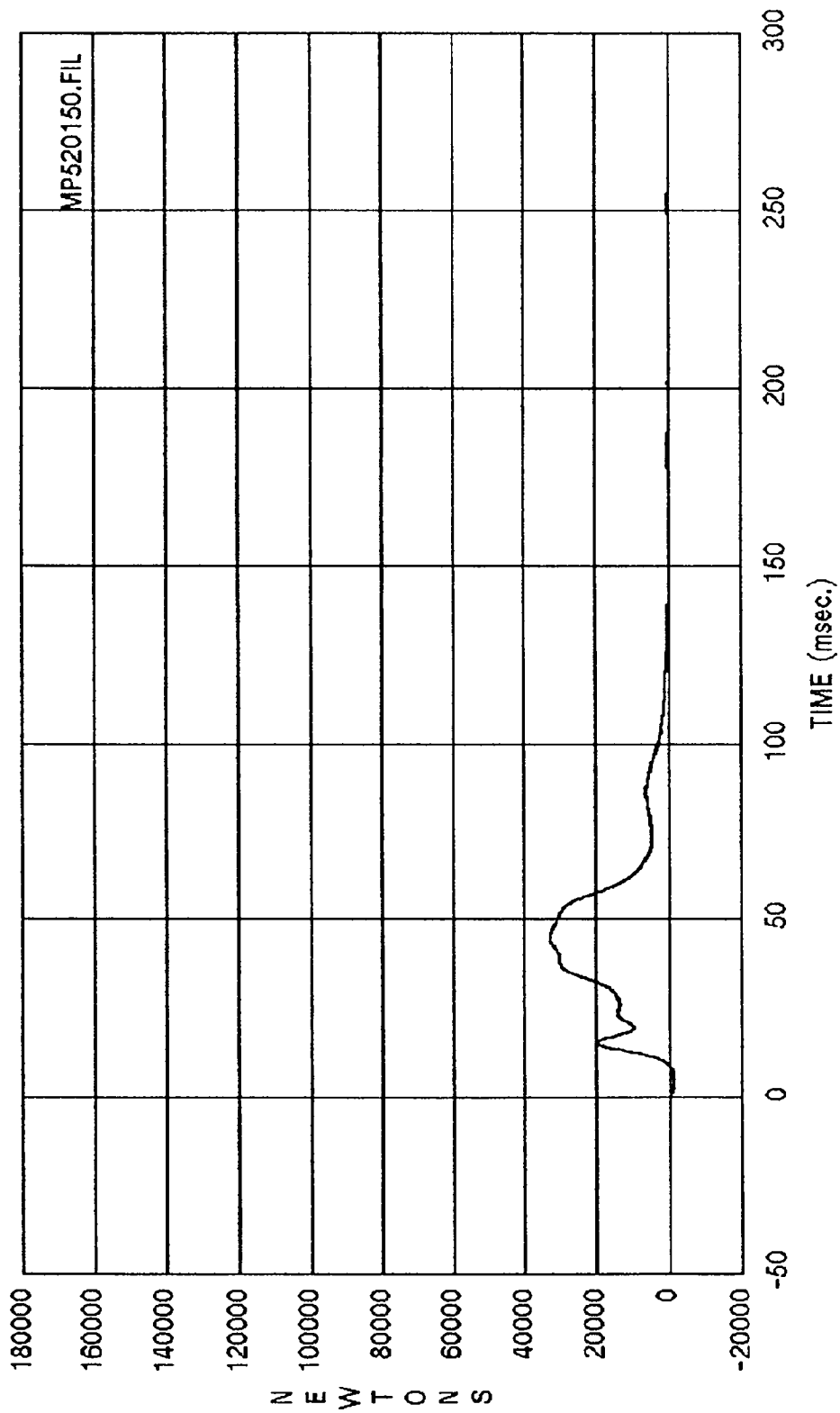
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



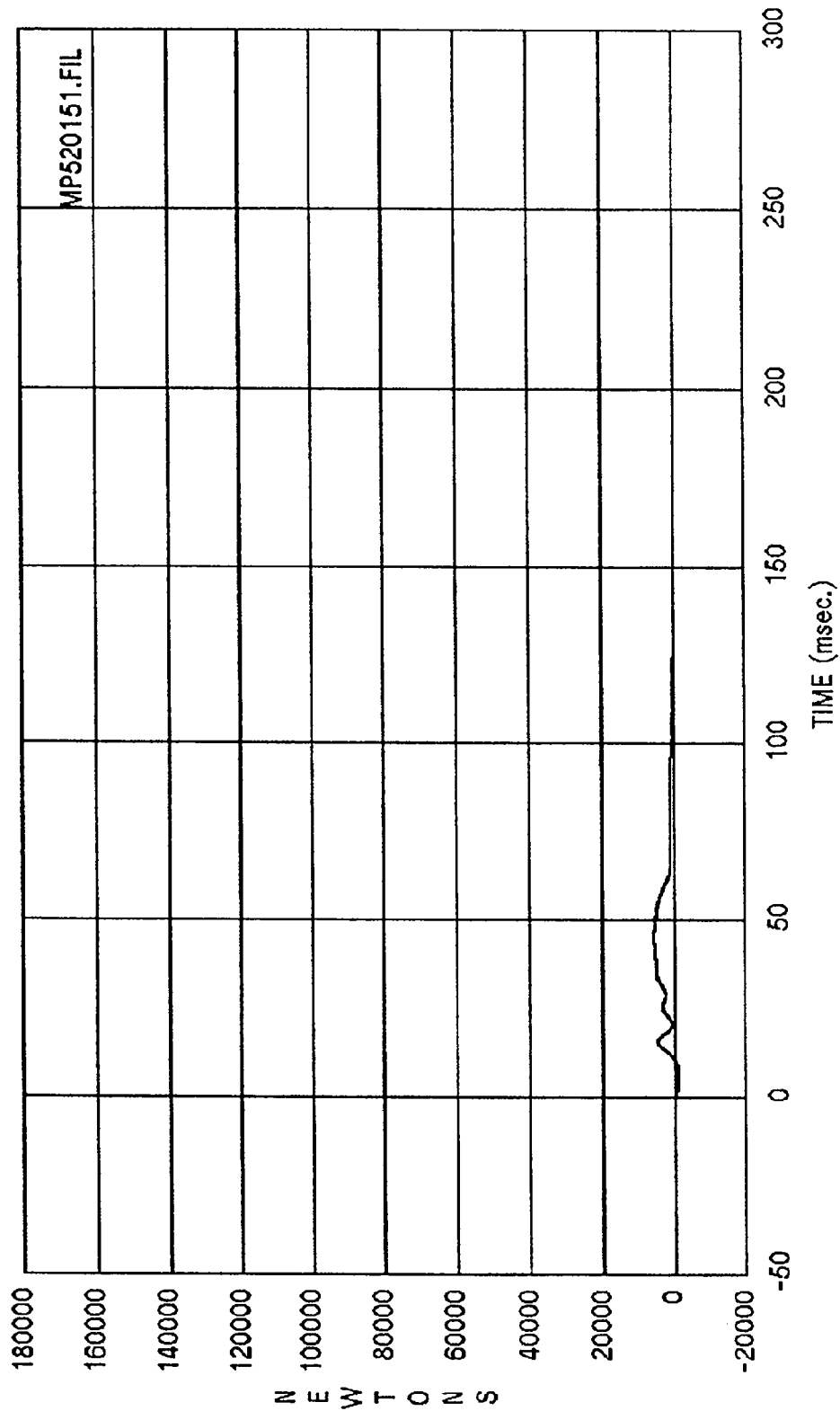
Curve: Force on barrier location B6 Filter: SAE CLASS 60 Max = .10805E+06 Min = -870.67
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Force on barrier location B7 Filter: SAE CLASS 60 Max = 47058. Min = -1654.3
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

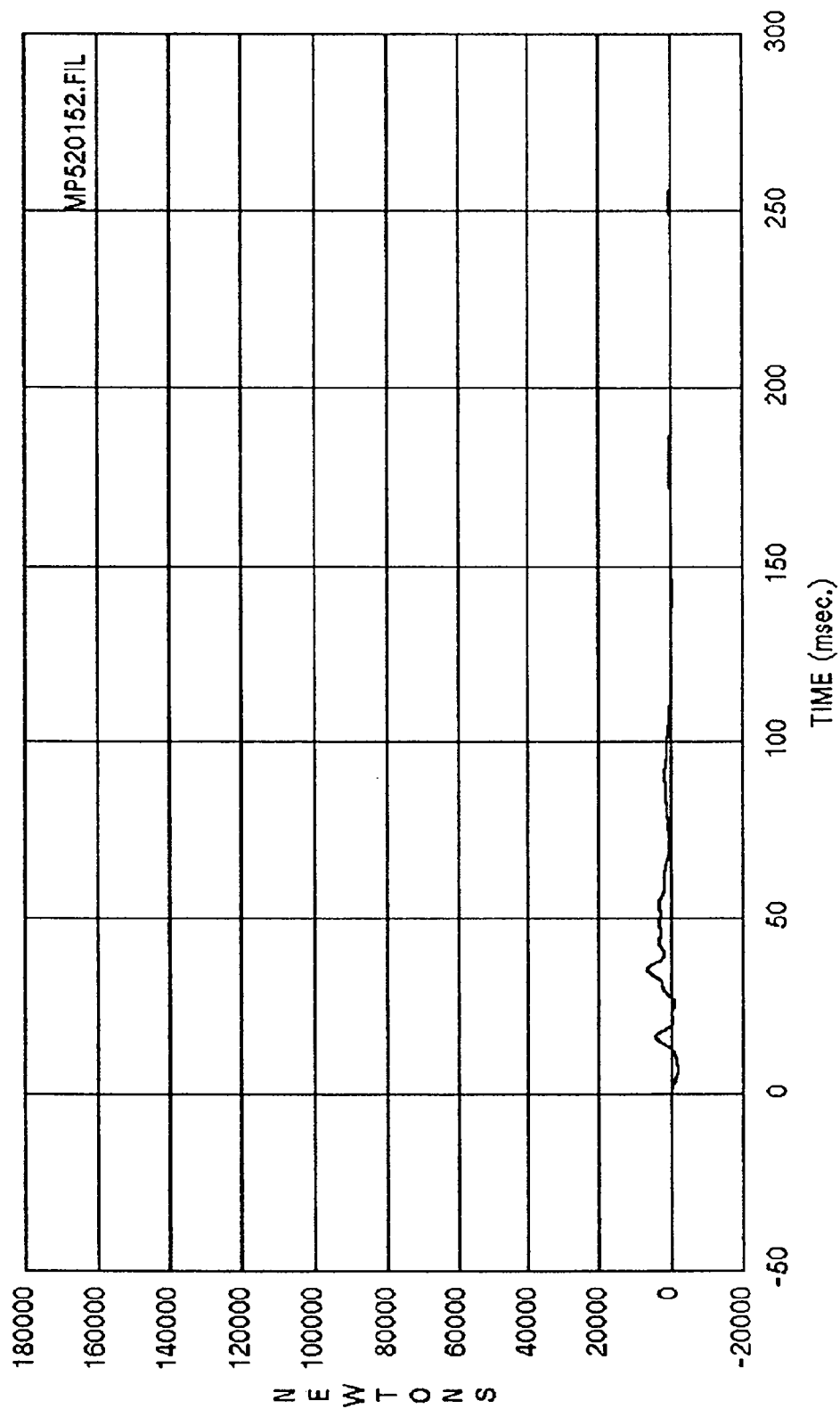


Curve: Force on barrier location B8 Filter: SAE CLASS 60 Max = 33046. Min = -1253.9
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

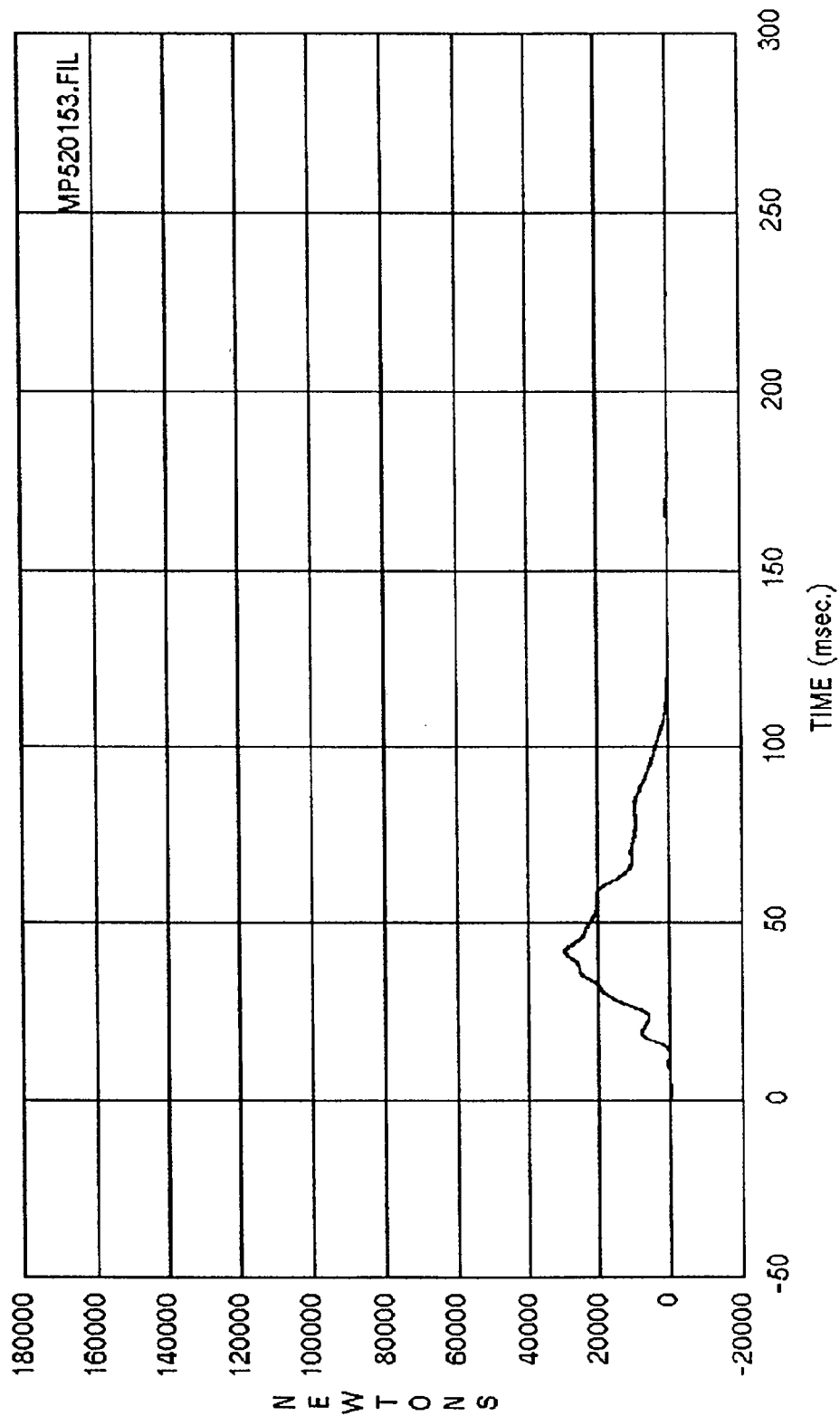


Curve: Force on barrier location B9 Filter: SAE CLASS 60 Max = 5943.5 Min = -873.78

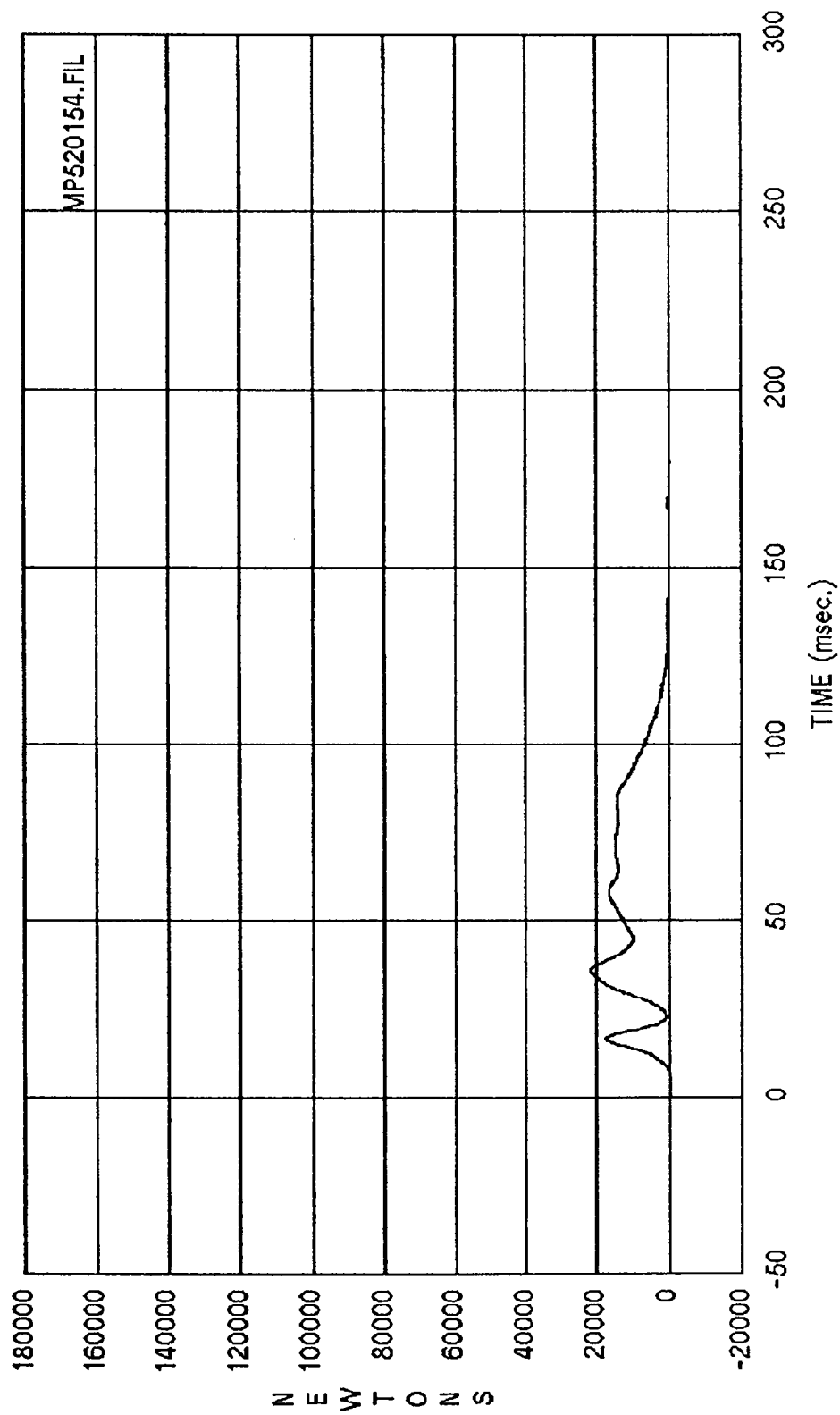
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



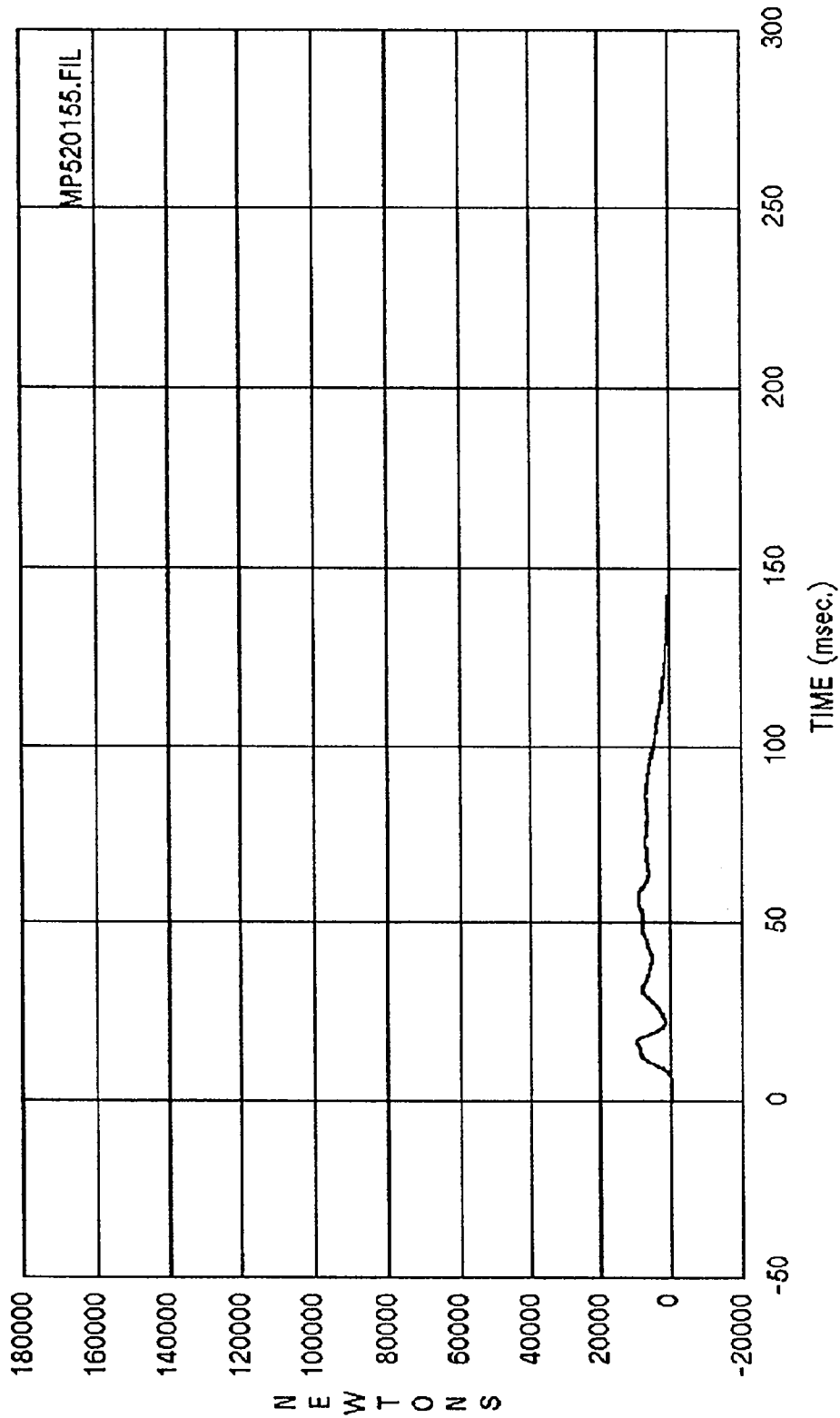
Curve: Force on barrier location C1 Filter: SAE CLASS 60 Max = 6615.4 Min = -1737.1
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Force on barrier location C2 Filter: SAE CLASS 60 Max = 29830. Min = -325.97
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

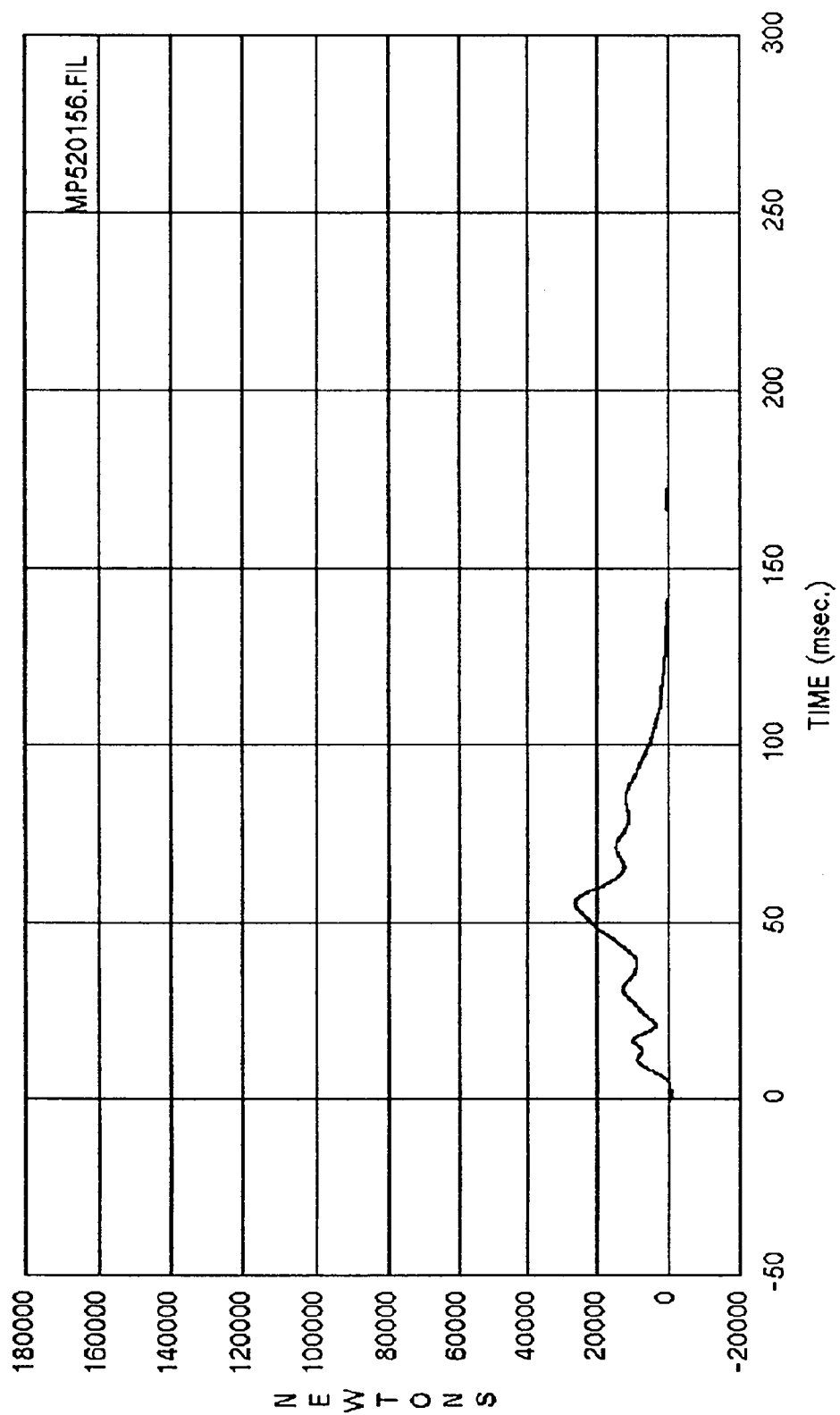


Curve: Force on barrier location C3 Filter: SAE CLASS 60 Max = 21707. Min = -411.67
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

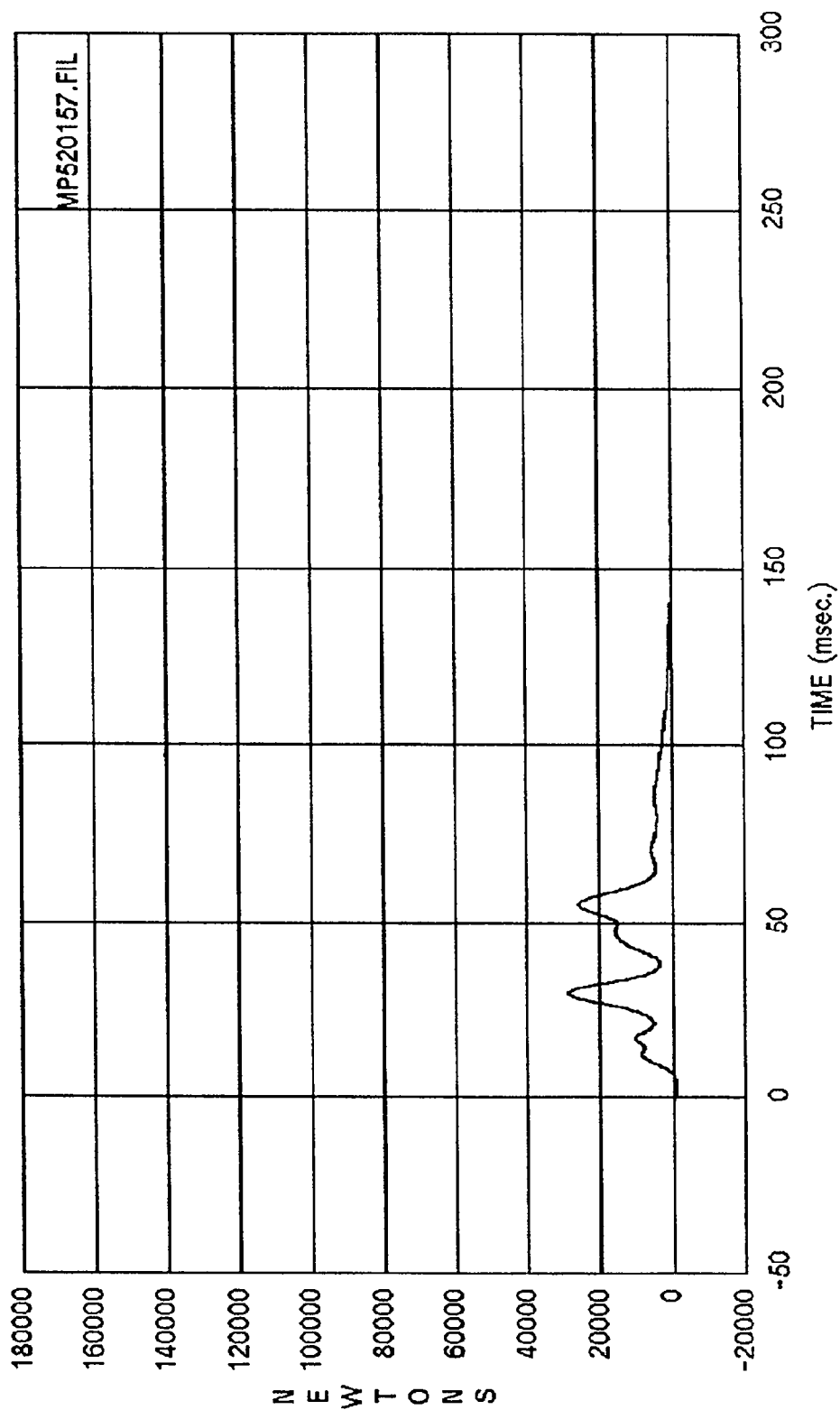


Curve: Force on barrier location C4 Filter: SAE CLASS 60 Max = 9694.0 Min = -476.14

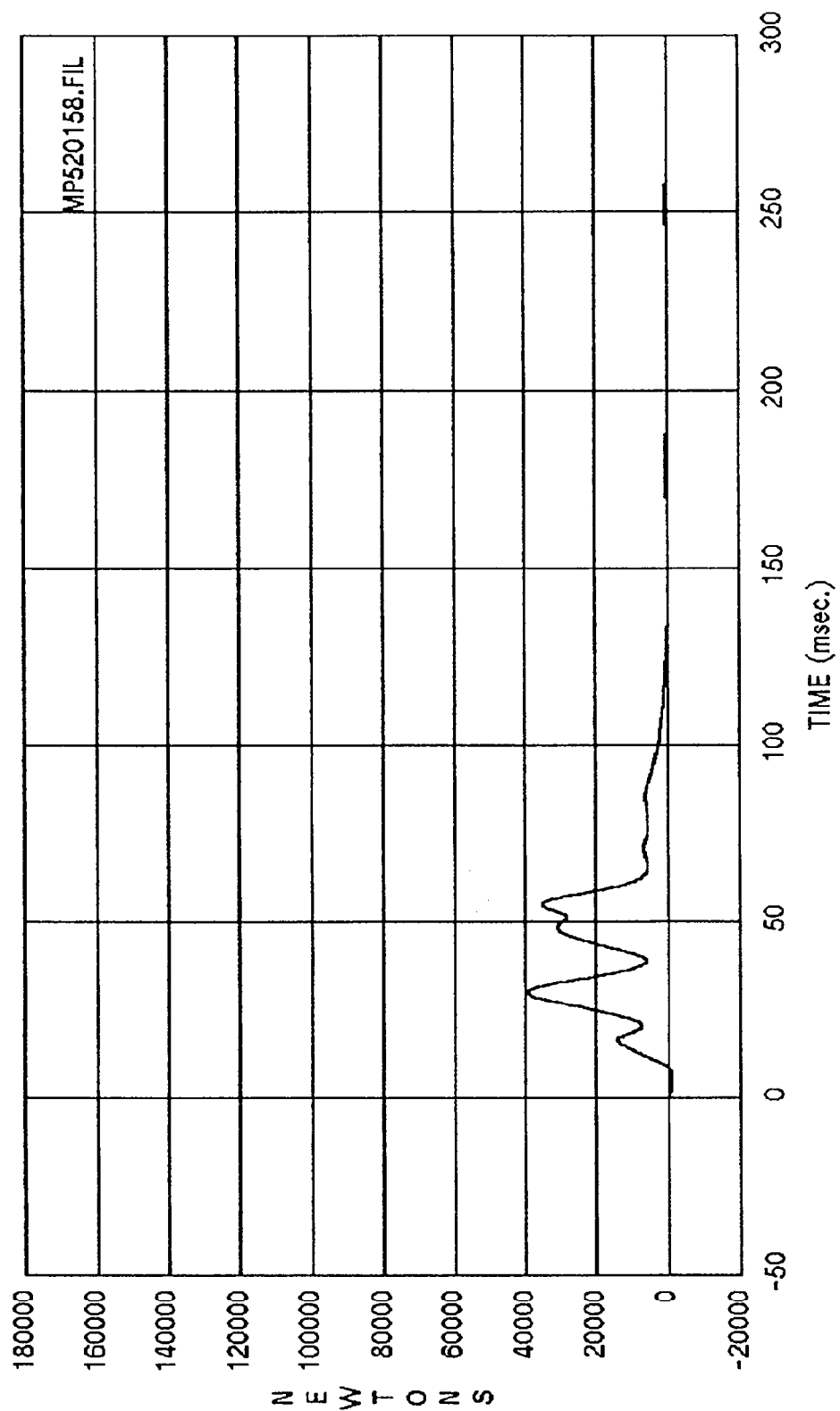
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Force on barrier location C5 Filter: SAE CLASS 60 Max = 26452. Min = -679.21
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

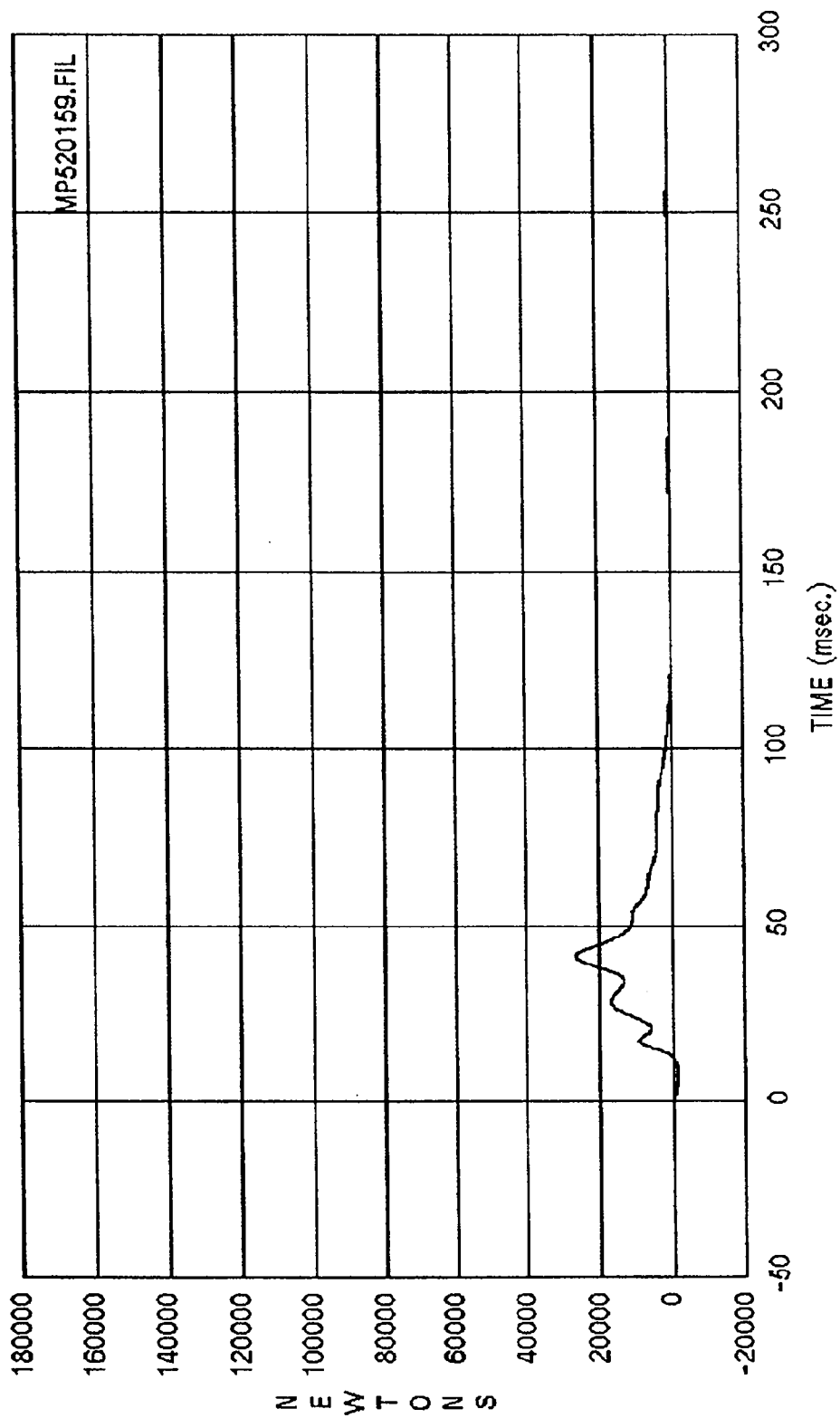


Curve: Force on barrier location C6 Filter: SAE CLASS 60 Max = 28746. Min = -700.53
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



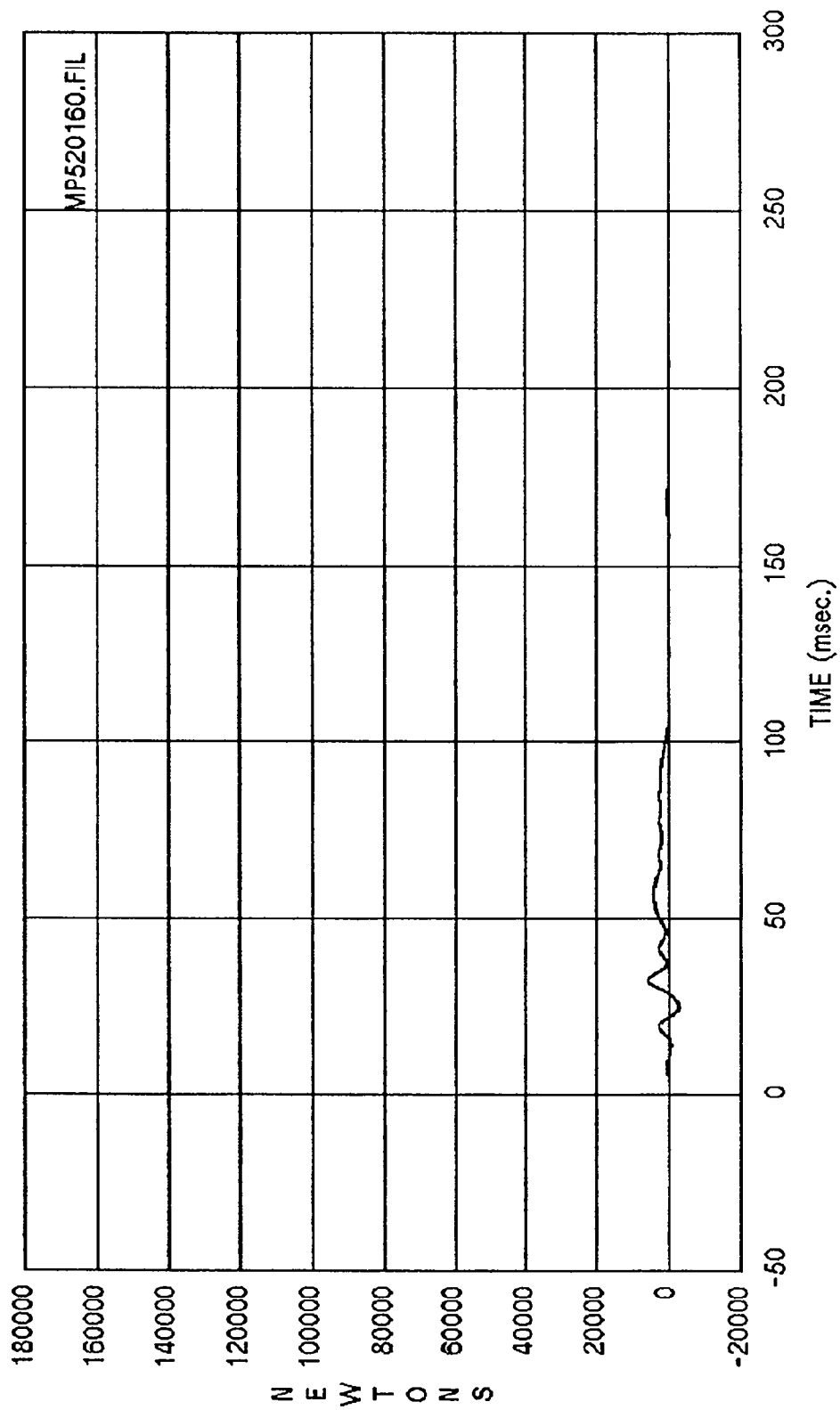
Curve: Force on barrier location C7 Filter: SAE CLASS 60 Max = 39741. Min = -887.52

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



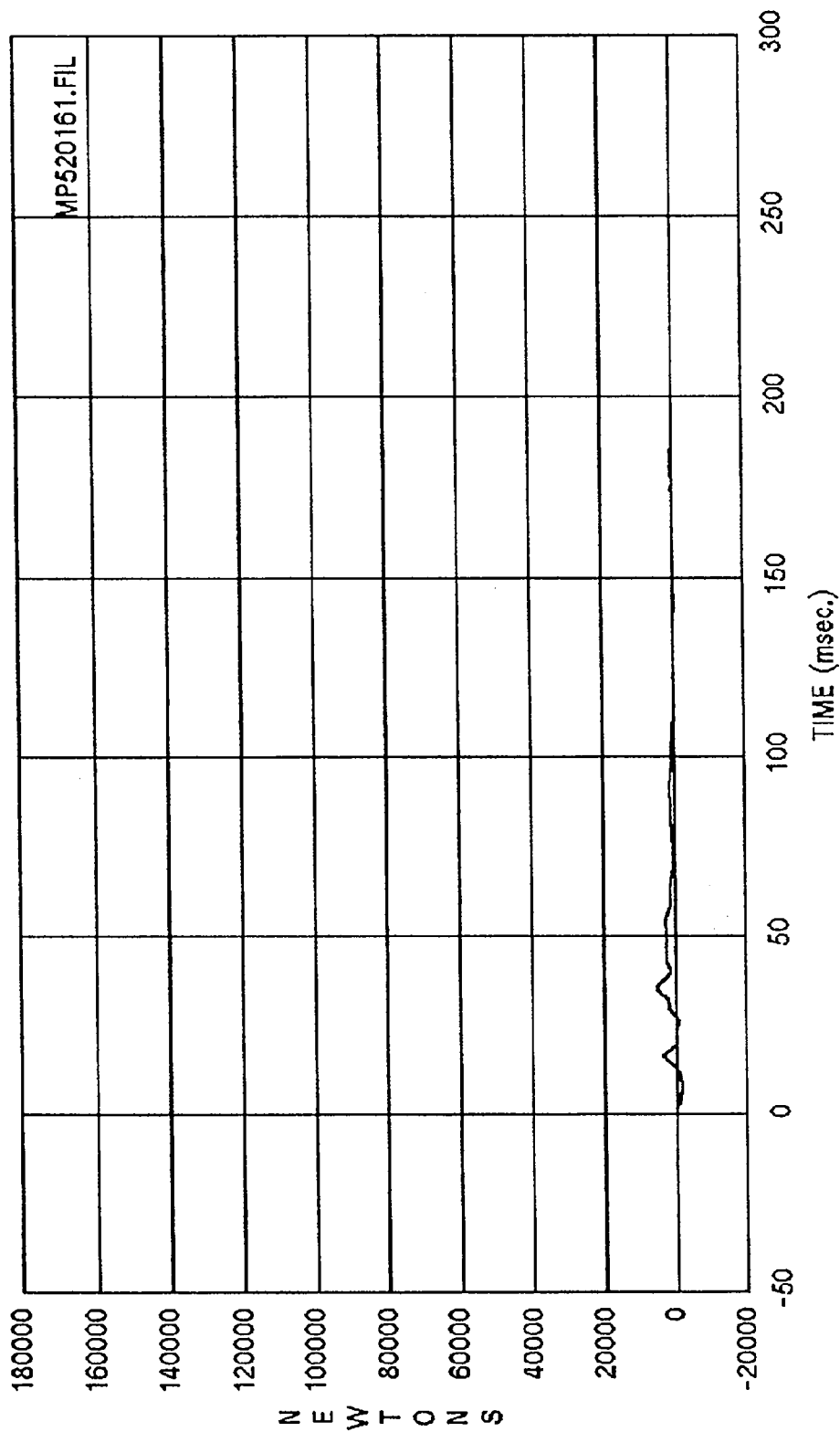
Curve: Force on barrier location C8 Filter: SAE CLASS 60 Max = 26616. Min = -1256.0

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

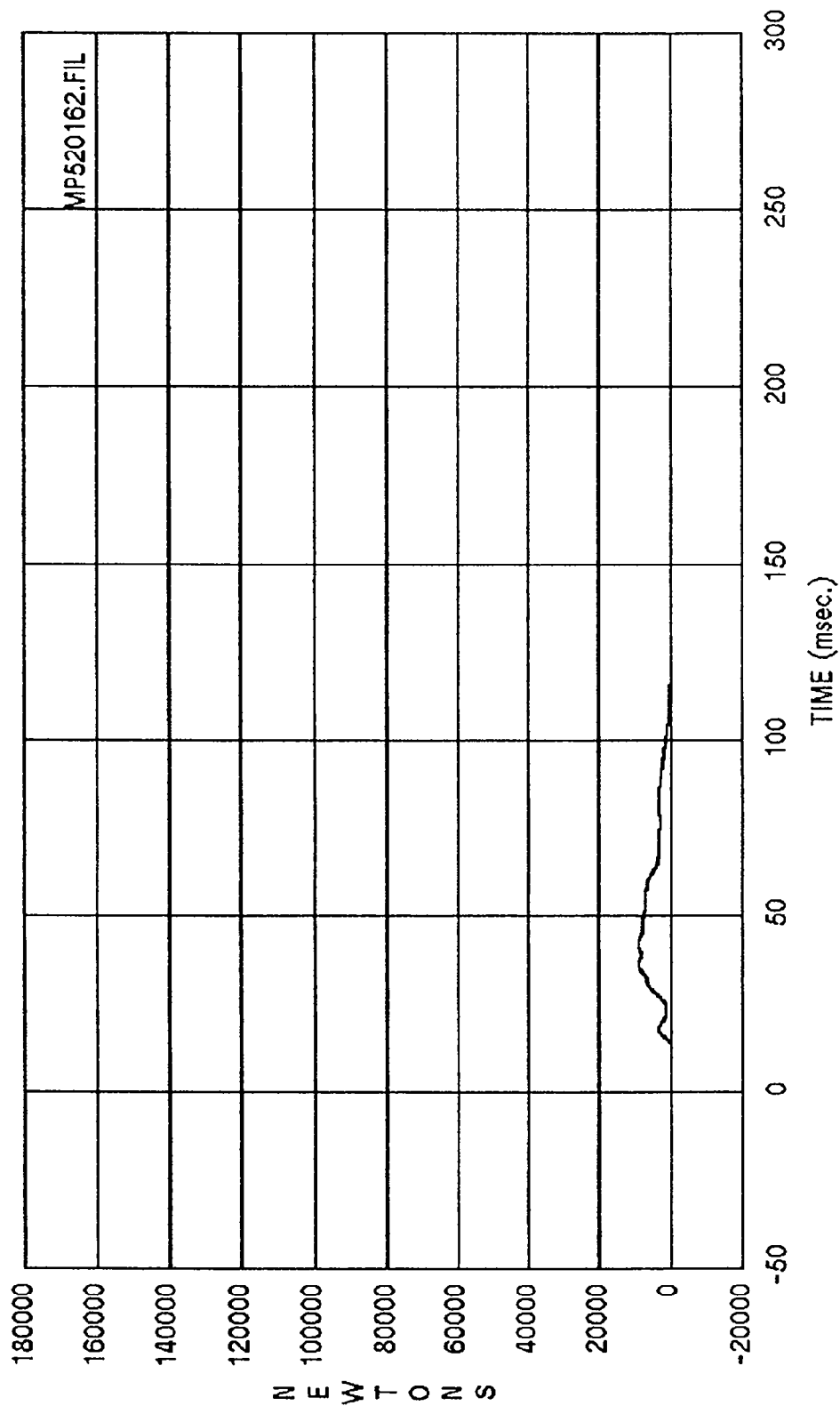


Curve: Force on barrier location C9 Filter: SAE CLASS 60 Max = 5815.0 Min = -2787.8

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

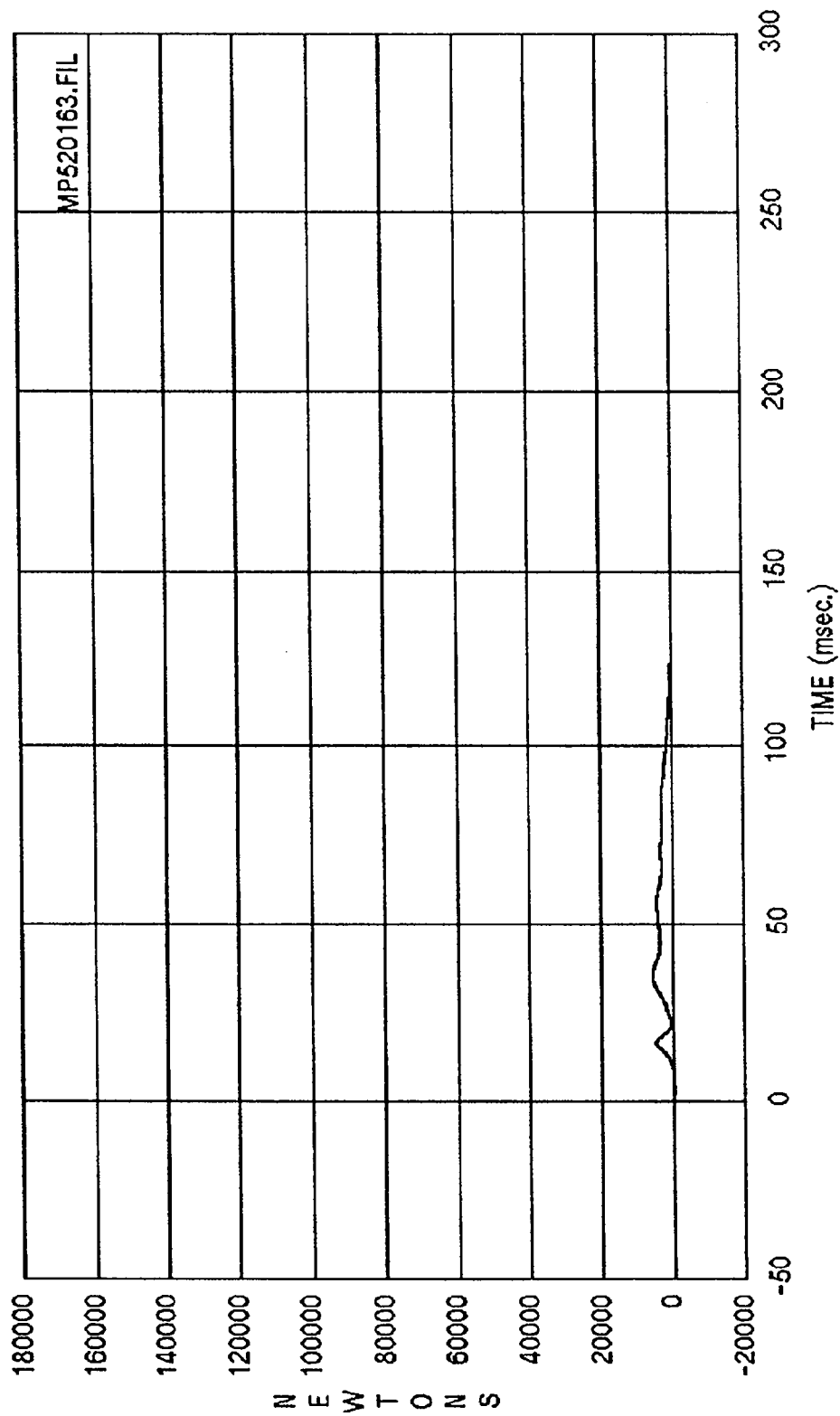


Curve: Force on barrier location D1 Filter: SAE CLASS 60 Max = 5297.1 Min = -1406.9
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

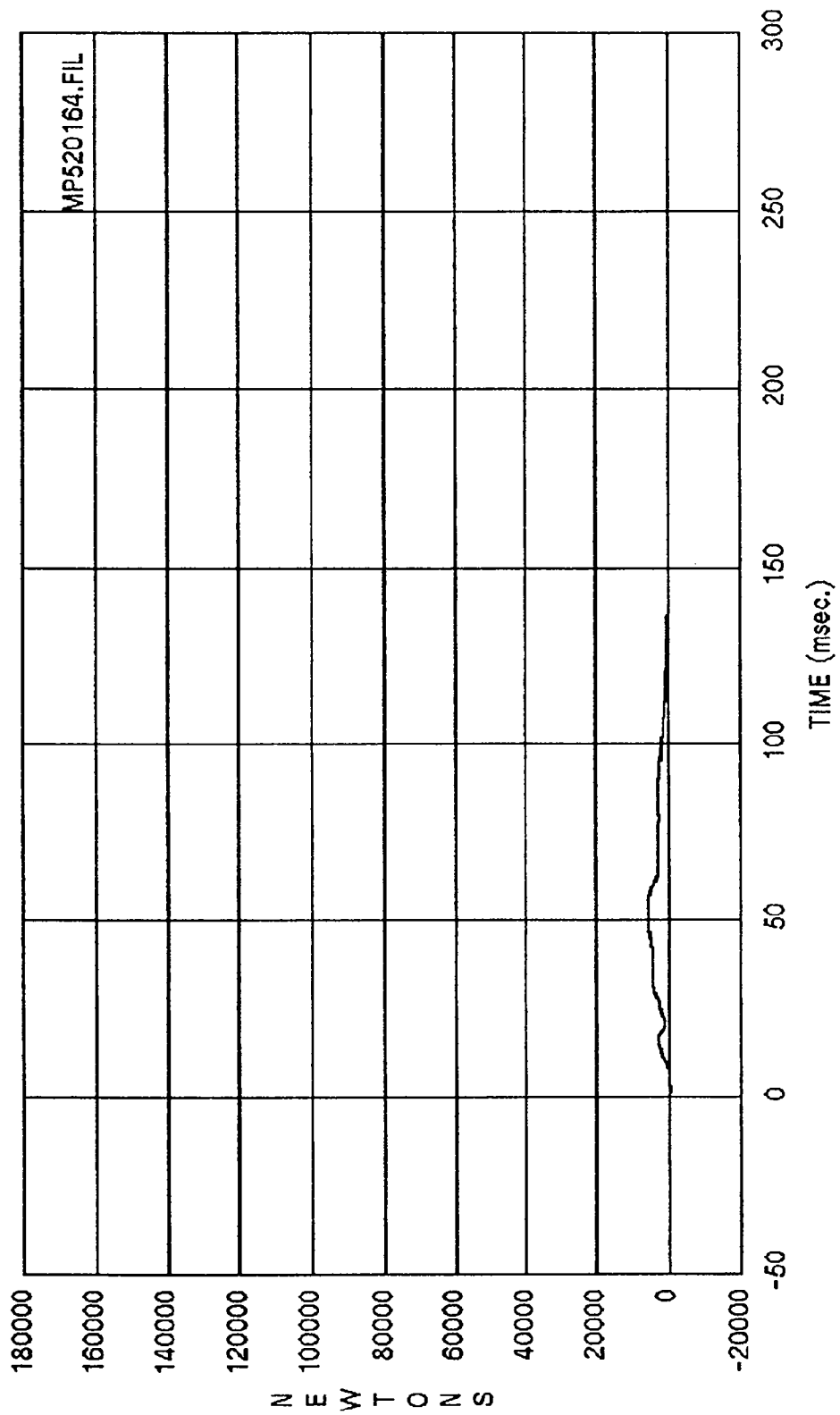


Curve: Force on barrier location D2 Filter: SAE CLASS 60 Max = 9193.3 Min = -147.39

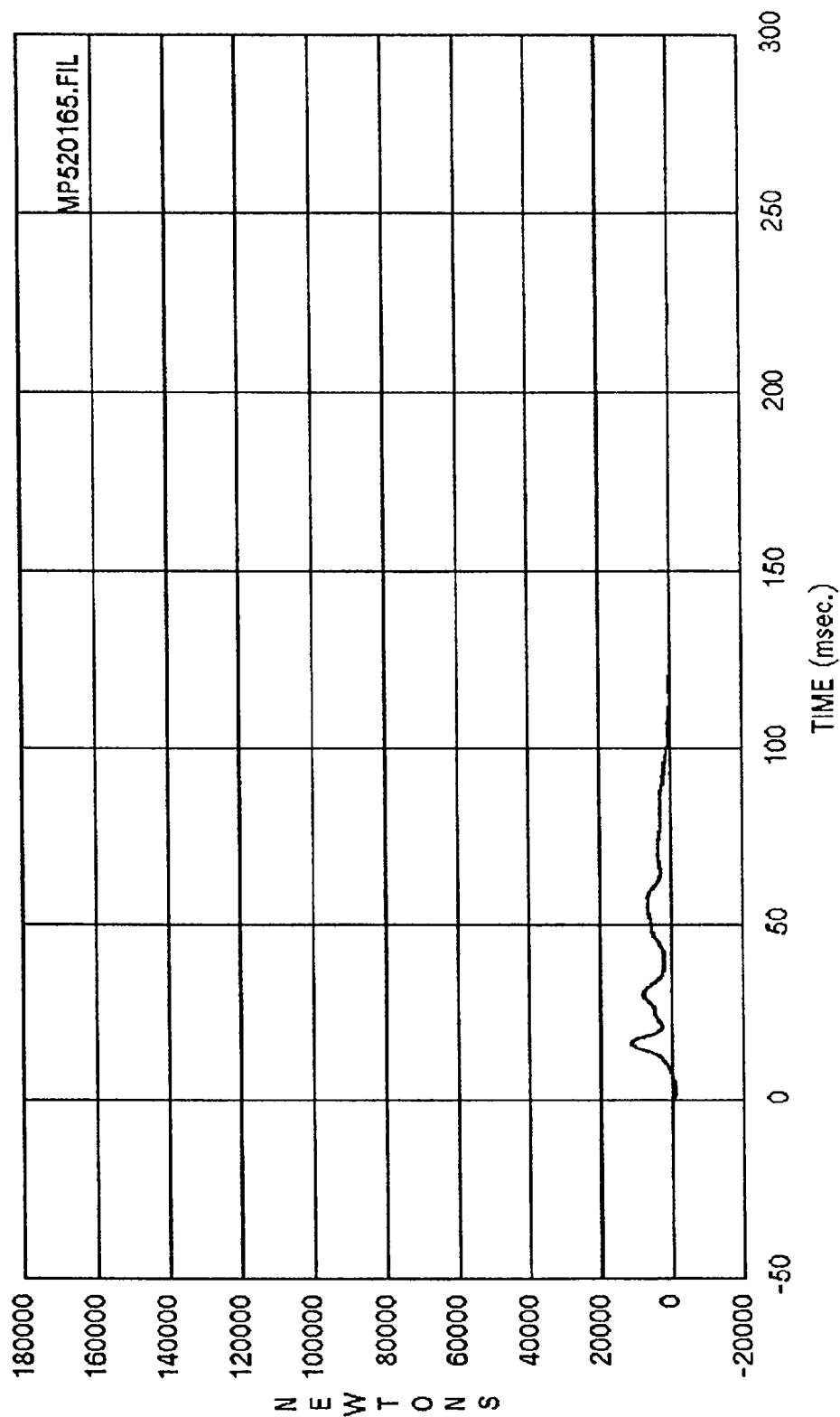
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



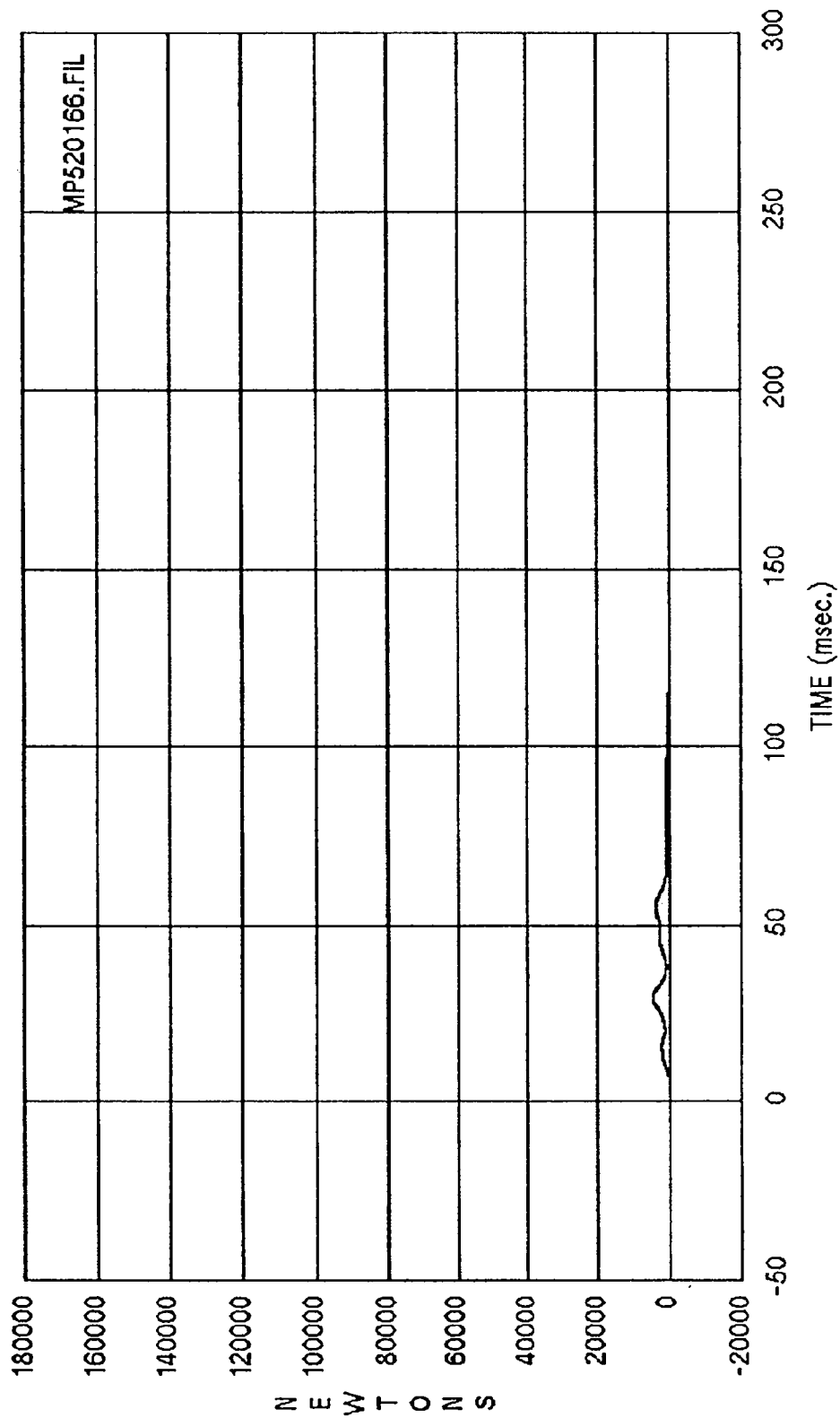
Curve: Force on barrier location D3 Filter: SAE CLASS 60 Max = 5777.4 Min = -166.20
 MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Force on barrier location D4 Filter: SAE CLASS 60 Max = 5787.6 Min = -186.27
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

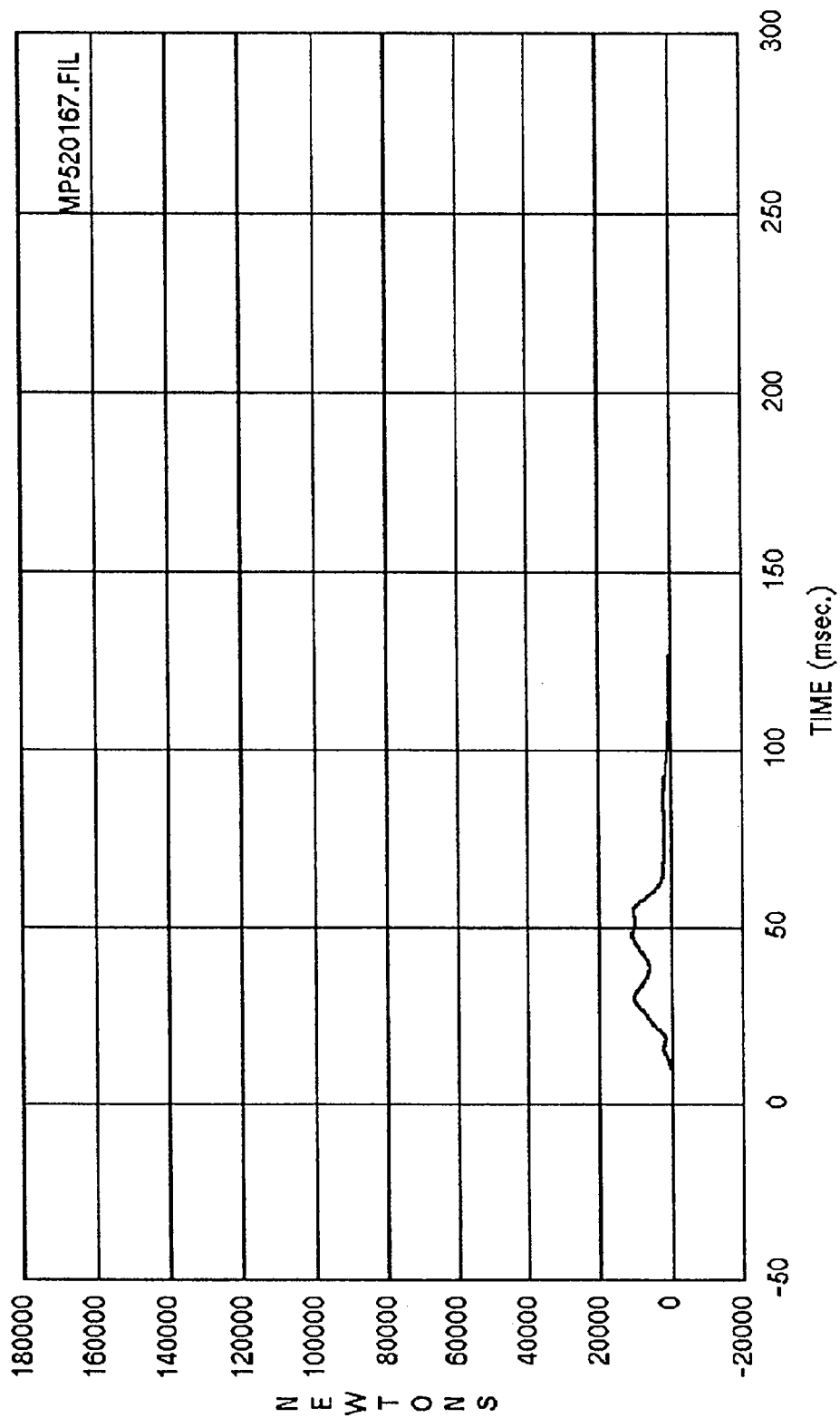


Curve: Force on barrier location D5 Filter: SAE CLASS 60 Max = 11759. Min = -1051.6
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

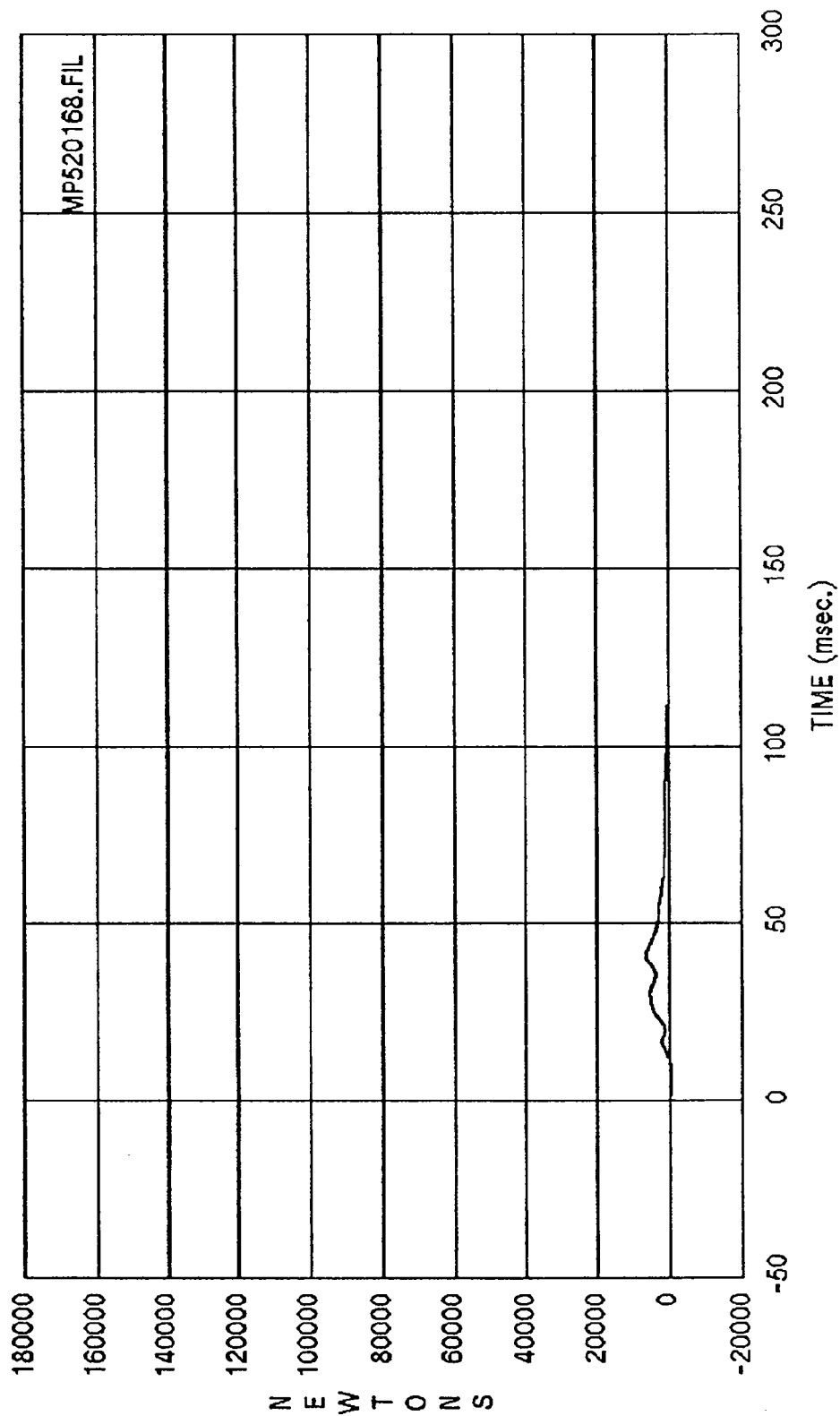


Curve: Force on barrier location D6 Filter: SAE CLASS 60 Max = 4662.9 Min = -95.527

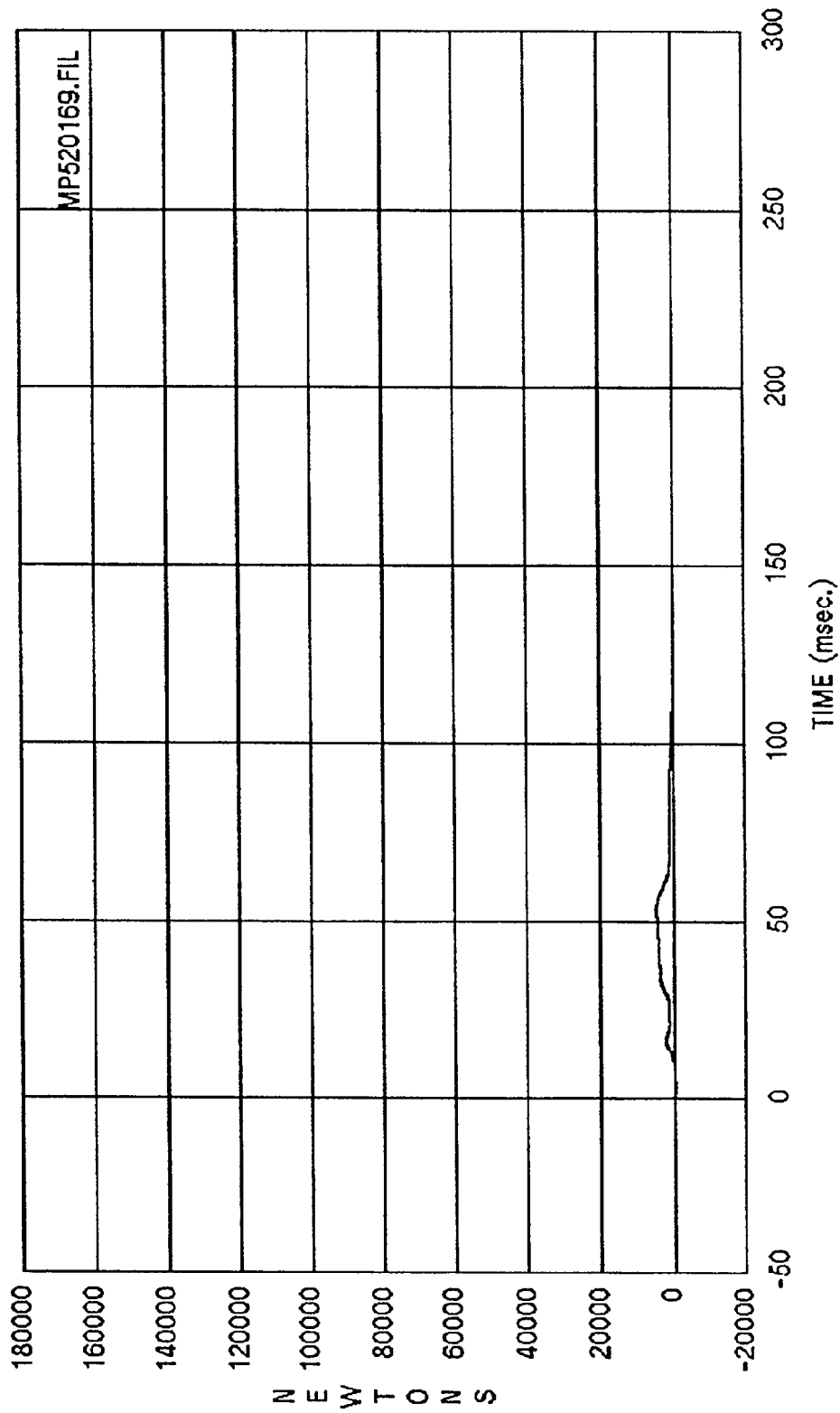
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



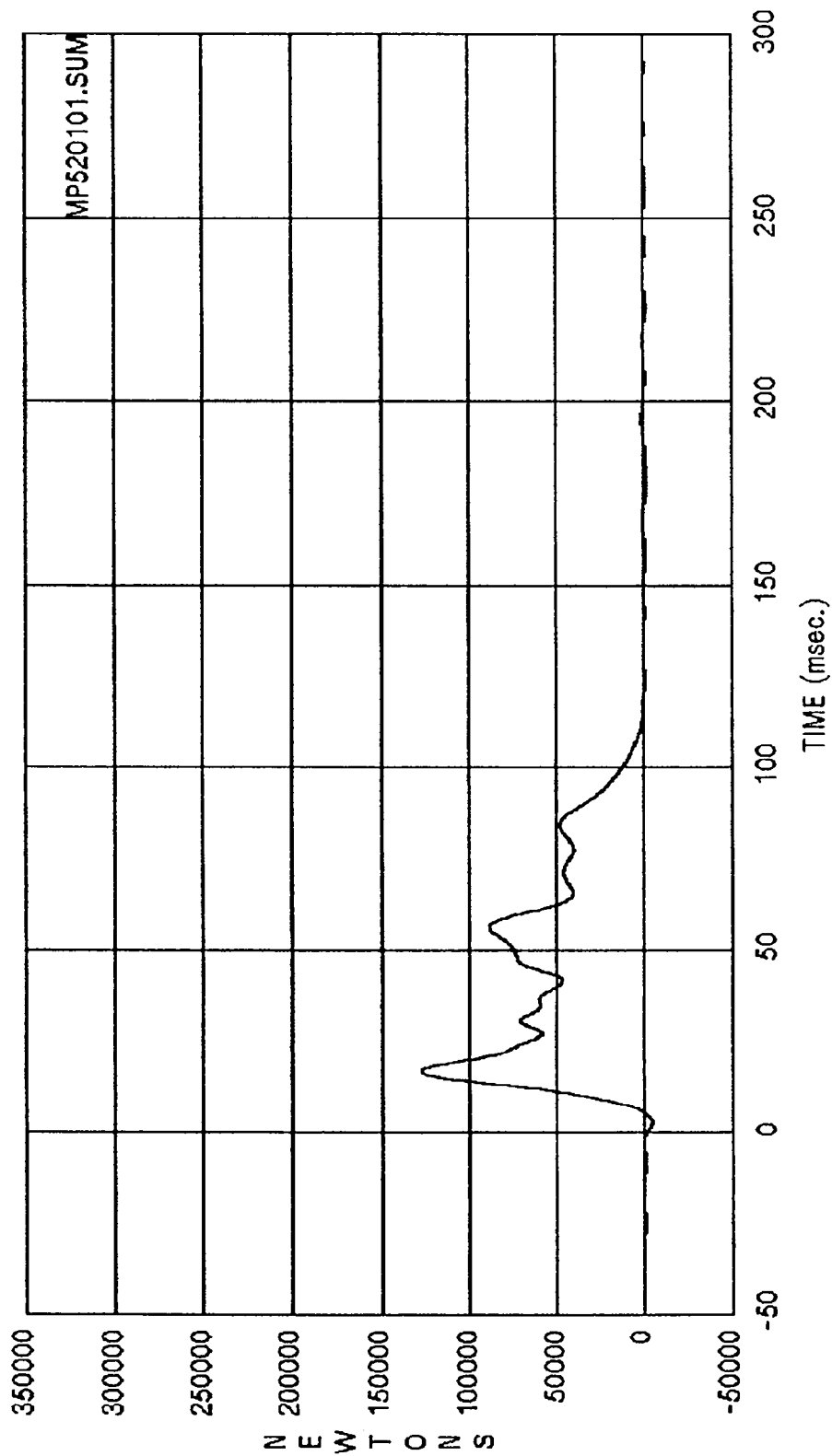
Curve: Force on barrier location D7 Filter: SAE CLASS 60 Max = 10763. Min = -63.470
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Force on barrier location D8 Filter: SAE CLASS 60 Max = 6575.6 Min = -278.87
 MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

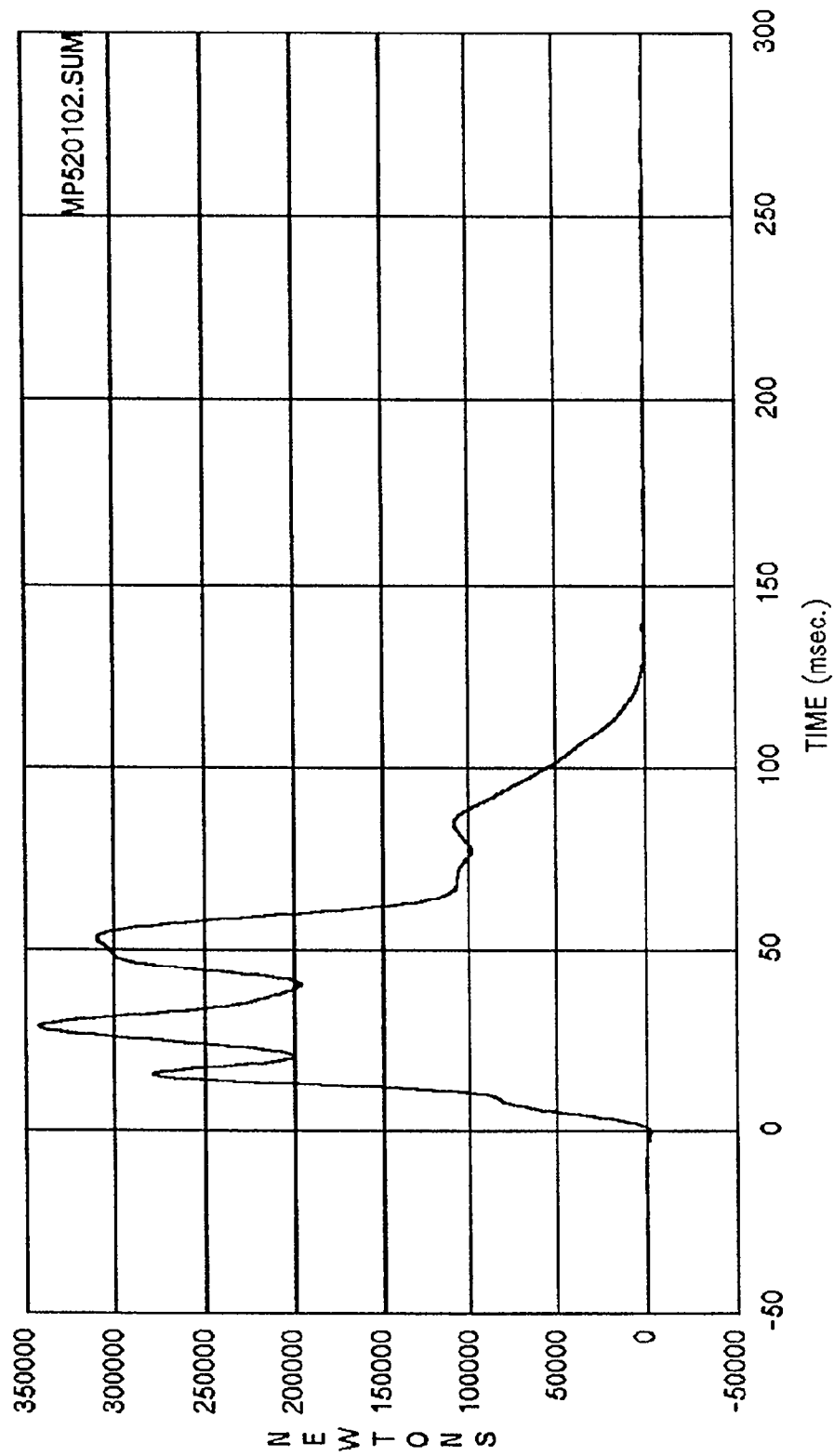


Curve: Force on barrier location D9 Filter: SAE CLASS 60 Max = 4806.5 Min = -218.50
MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



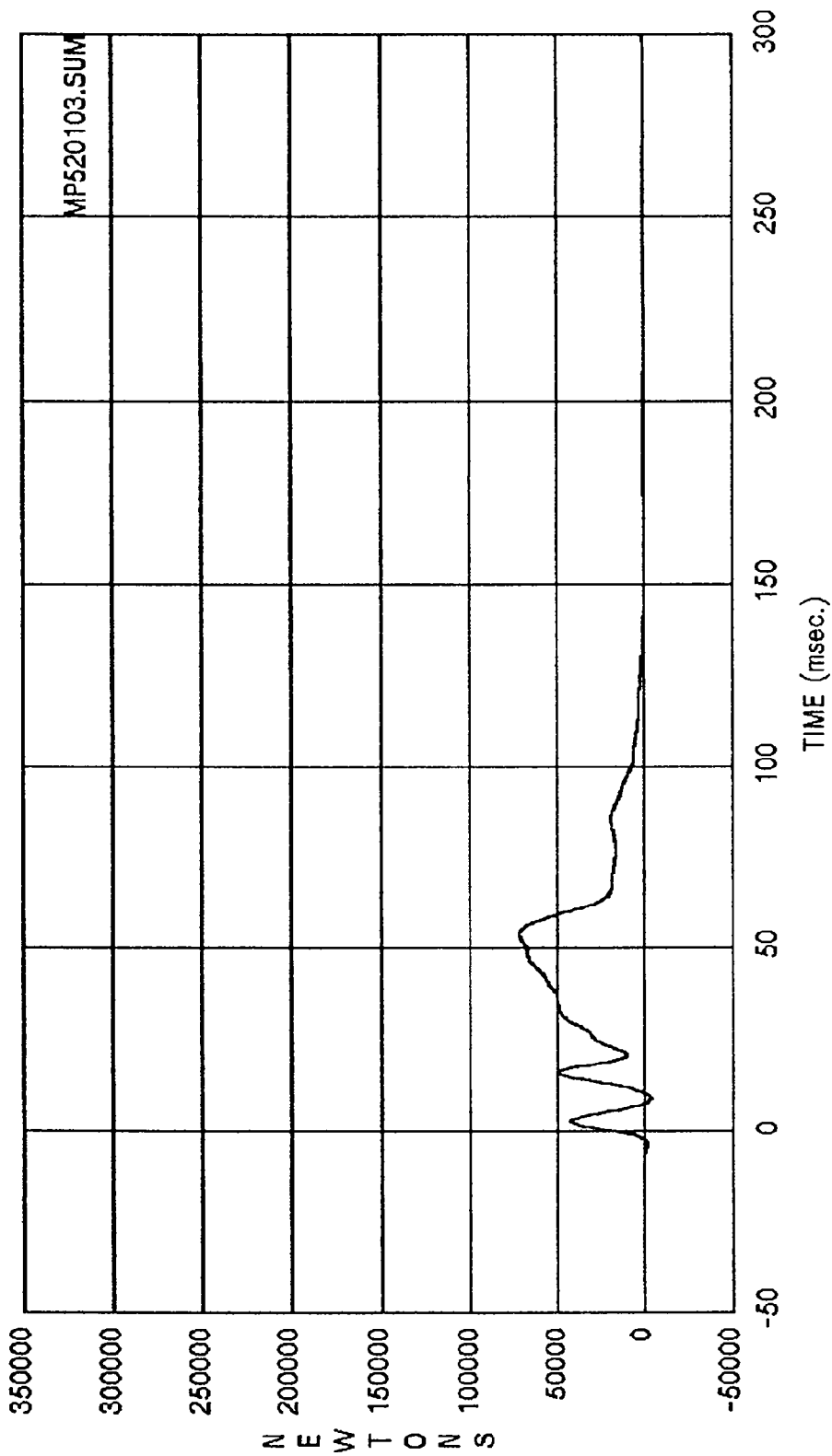
Curve: Barrier sum force A1,A2,A3,B1,B2,B3 -- Group 1 Filter: SAE CLASS 60 Max = .12829E+06 Min = 4577.9

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



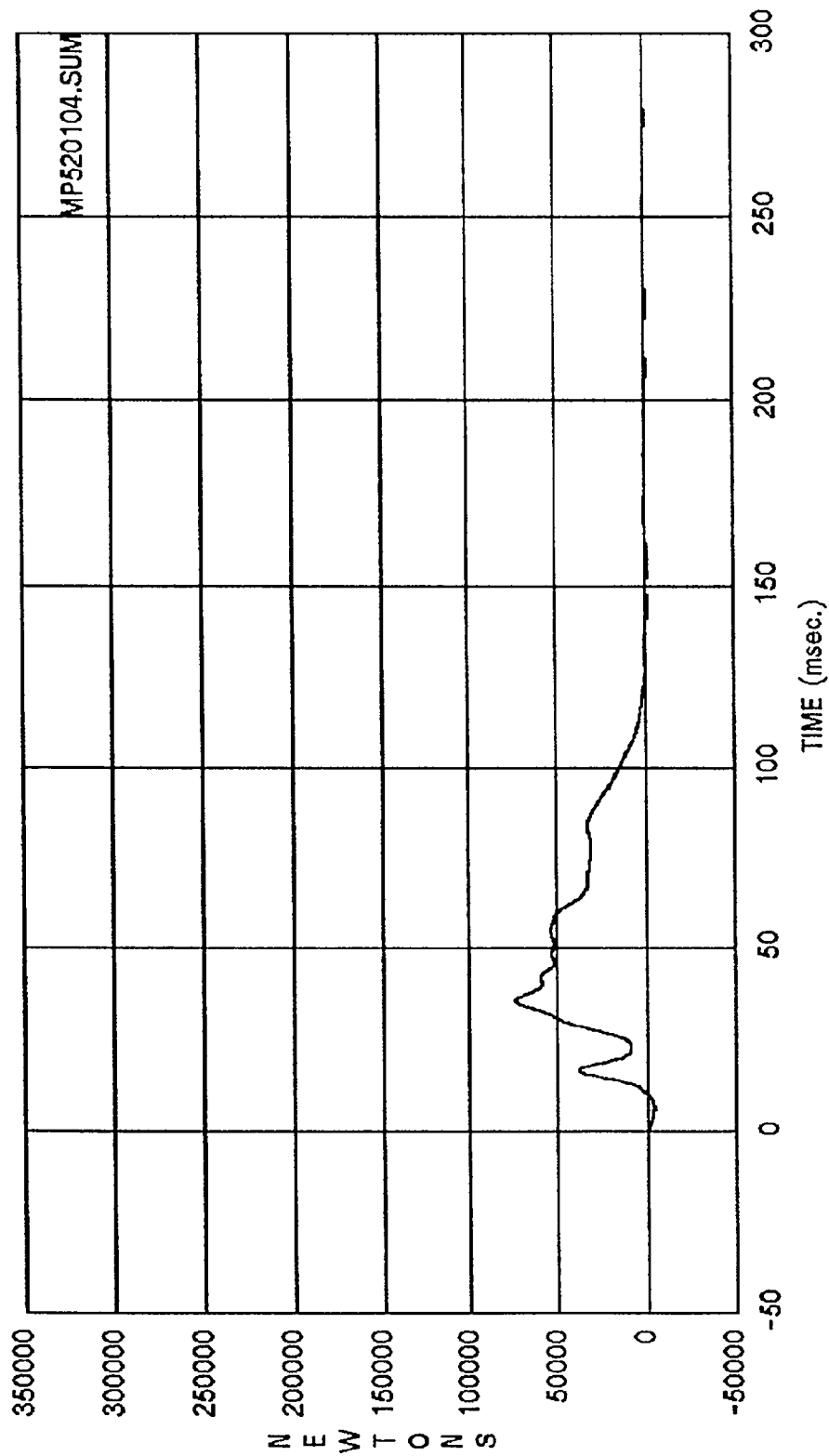
Curve: Barrier sum force A4,A5,A6,B4,B5,B6 --- Group 2 Filter: SAE CLASS 60 Max = .34298E+06 Min : 117.46

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



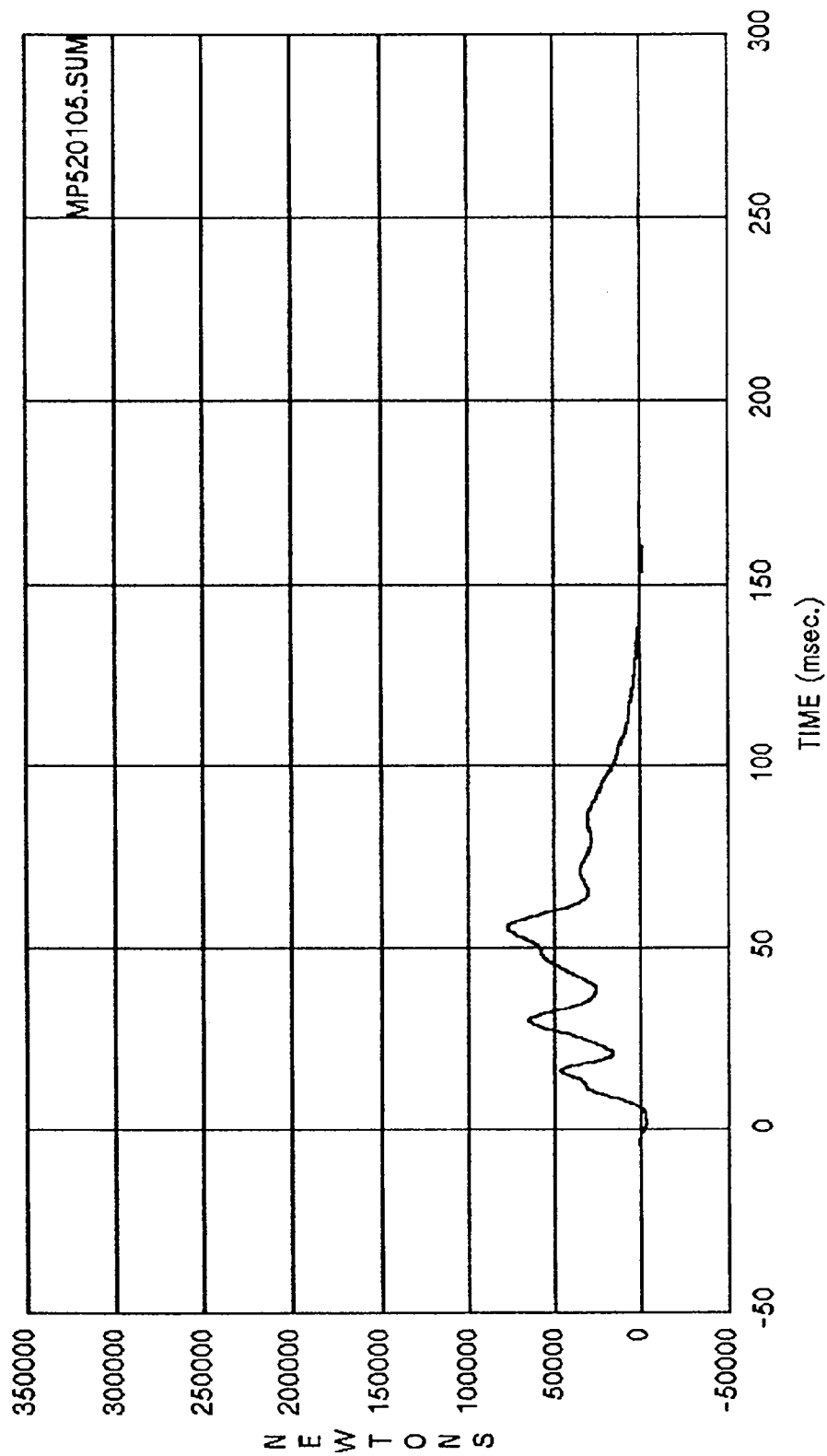
Curve: Barrier sum force A7,A8,A9,B7,B8,B9 -- Group 3 Filter: SAE CLASS 60 Max = 72211. Min = -35

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



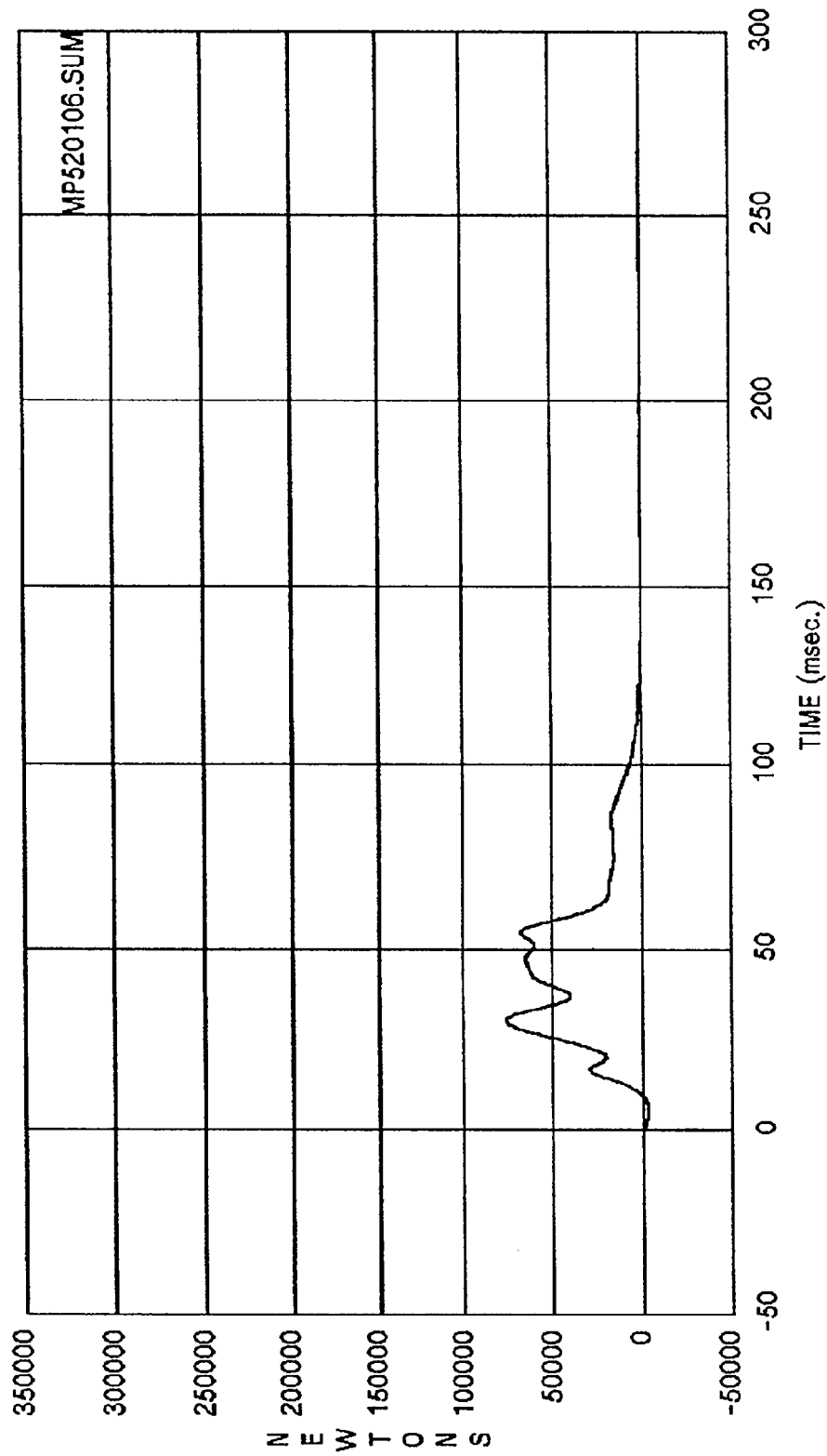
Curve: Barrier sum force C1,C2,C3,D1,D2,D3 -- Group 4 Filter: SAE CLASS 60 Max = 73498. Min = -34

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



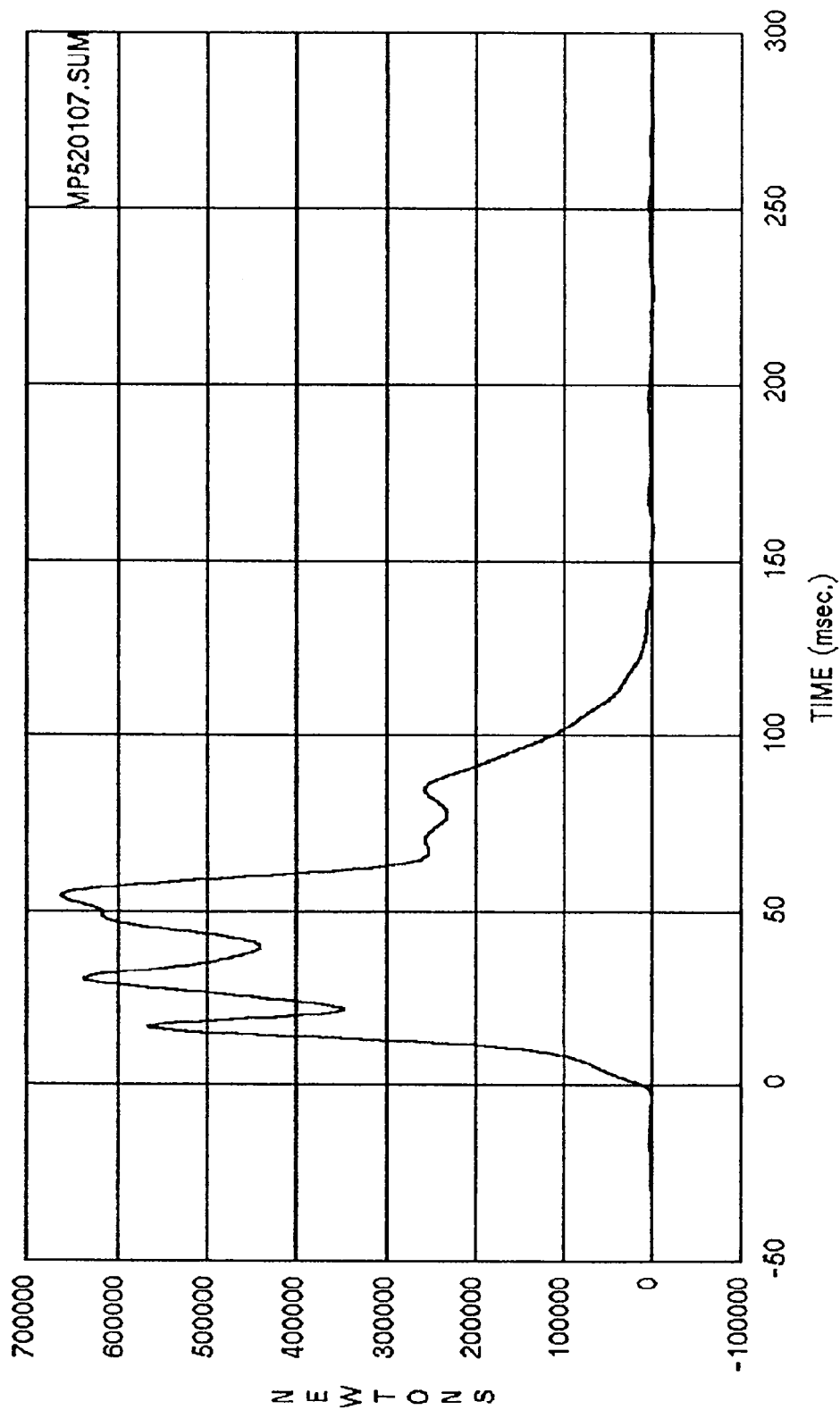
Curve: Barrier sum force C4,C5,C6,D4,D5,D6 -- Group 5 Filter: SAE CLASS 60 Max = 77685. Min = -30

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Barrier sum force C7,C8,C9,D7,D8,D9 -- Group 6 Filter: SAE CLASS 60 Max = 76499. Min = -21

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest



Curve: Barrier sum force -- Total Filter: SAE CLASS 60 Max = .66310E+06 Min = -1682.

MSE Date: 10/29/92 Program: 1993 NCAP, test number 1 Vehicle: 1993 Nissan Quest

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APPENDIX C

PART 572 DUMMY CONFIGURATION AND
PERFORMANCE VERIFICATION TESTS

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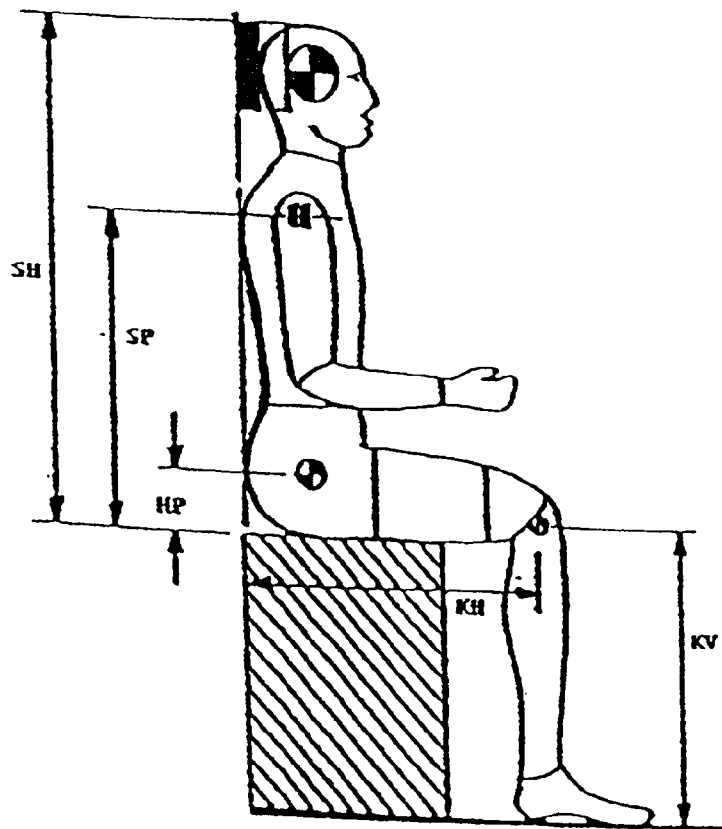
PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA ATD I.D. NUMBER: 814

LAB TECHNICIAN: P. Puzzuto/L. Rawlings

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 10/05/92 to 10/14/92



I. CONFIGURATION VERIFICATION DATA, PRETEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
SH - Seated height	mm	904 - 909	907
SP - Shoulder pivot height	mm	554 - 569	561
HP - Hip pivot height	mm	99 reference	99
KH - Knee pivot from back	mm	511 - 526	520
KV - Knee pivot from floor	mm	490 - 505	502
SW - Shoulder width	mm	452 - 467	460
HW - Hip width	mm	356 - 391	368

PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (Cont.)

NHTSA ATD I.D. NUMBER: 814

LAB TECHNICIAN: P. PUZZUTO/L. RAWLINGS

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 10/05/92 to 10/14/92

II. PERFORMANCE VERIFICATION DATA, PRETEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Temperature in laboratory	Deg C	18.9 - 25.6	24.1
Humidity in laboratory	%	10 - 70	38
HEAD DROP TEST			
Peak resultant acceleration	G's	210 - 260	238.0
Peak lateral acceleration	G's	less than 10	5.5
Time above 100 G's	msec	0.9 to 1.5	1.1
ABDOMINAL COMPRESSION TEST			
Force at 12mm displacement	kg	10.5 - 16.4	15.5
Force at 19mm displacement	kg	16.4 - 22.7	21.8
Force at 25mm displacement	kg	22.7 - 28.6	28.2
Force at 33mm displacement	kg	23.2 - 40.0	39.1
CHEST IMPACT TEST, HIGH ENERGY			
Probe speed	mps	6.64 - 6.77	6.69
Peak deflection	mm	43.2 maximum	42.4
Peak resistive force	kg	1023 maximum	910
Internal hysteresis	%	50 - 70	60
CHEST IMPACT TEST, LOW ENERGY			
Probe speed	mps	4.22 - 4.31	4.27
Peak deflection	mm	27.9 maximum	27.5
Peak resistive force	kg	659 maximum	585
Internal hysteresis	%	50 - 70	58

PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (CONT.)

NHTSA ATD I.D. NUMBER: 814

LAB TECHNICIAN: P. Puzzuto/L. Rawlings

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 10/05/92 to 10/14/92

II. PERFORMANCE VERIFICATION DATA, PRETEST				
TESTED PARAMETER		UNITS	SPECIFICATION	TEST RESULTS
NECK BEND TEST				
Pendulum speed		mps	6.55 - 7.77	7.15
Pendulum avg. decel. ($T_1 - T_2$)		G's	20 - 24	22.0
Pendulum decel. ($T_2 - T_1$)		msec	less than 3	1.7
Pendulum decel. ($T_3 - T_2$)		msec	25 - 30	28.1
Pendulum decel. ($T_4 - T_3$)		msec	less than 10	8.5
Resultant head acceleration		G's	less than 26	25.1
Maximum head rotation		deg.	63 - 73	64.0
CHORDAL DISPLACEMENT / HEAD ROTATION ANGLE				
0 deg.	Time	msec	-2.0 - 2.0	0.0
	Displ.	mm	-13 - 13	1
30 deg.	Time	msec	25.6 - 34.4	31.1
	Displ.	mm	53 - 79	68
60 deg.	Time	msec	40.3 - 51.7	46.1
	Displ.	mm	109 - 135	127
Maximum	Time	msec	53.2 - 66.8	59.8
	Displ.	mm	127 - 152	150
60 deg.	Time	msec	67.0 - 83.0	73.5
	Displ.	mm	109 - 135	129
30 deg.	Time	msec	85.4 - 104.6	88.0
	Displ.	mm	53 - 79	70
0 deg.	Time	msec	101.0 - 123.0	102.0
	Displ.	mm	-13 - 13	4

PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (CONT.)

NHTSA ATD I.D. NUMBER: 814

LAB TECHNICIAN: P. Puzzuto/L. Rawlings

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 10/05/92 to 10/14/92

II. PERFORMANCE VERIFICATION DATA, PRETEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
KNEE IMPACT TEST, LEFT			
Probe speed	mps	2.06 to 2.15	2.12
Maximum force	kg	841 to 1136	935
Time above 455 kg	msec	1.7 minimum	1.7
KNEE IMPACT TEST, RIGHT			
Probe speed	mps	2.06 to 2.15	2.11
Maximum force	kg	841 to 1136	920
Time above 455 kg	msec	1.7 minimum	1.8
LUMBAR FLEXION TEST			
Force at 20 degrees	kg	10.0 to 15.5	14.1
Force at 30 degrees	kg	15.5 to 20.9	18.2
Force at 40 degrees	kg	20.9 to 26.4	22.4
Lumbar return angle	deg	12 maximum	10

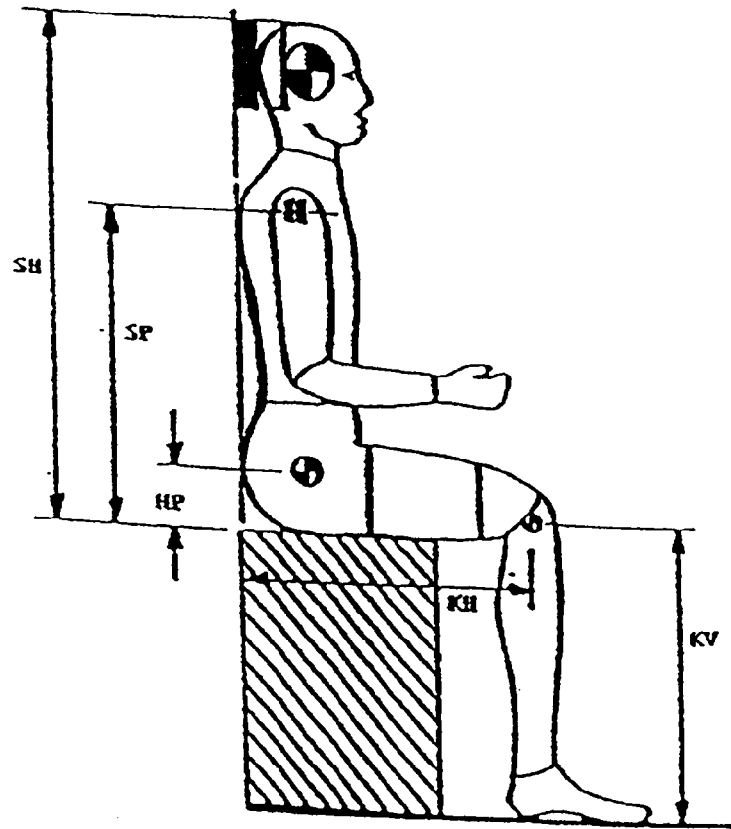
PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA ATD I.D. NUMBER: 830

LAB TECHNICIAN: P. Puzzuto/L. Rawlings

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 10/05/92 to 10/14/92



I. CONFIGURATION VERIFICATION DATA, PRETEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
SH - Seated height	mm	904 - 909	906
SP - Shoulder pivot height	mm	554 - 569	554
HP - Hip pivot height	mm	99 reference	99
KH - Knee pivot from back	mm	511 - 526	523
KV - Knee pivot from floor	mm	490 - 505	504
SW - Shoulder width	mm	452 - 467	461
HW - Hip width	mm	356 - 391	381

PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (Cont.)

NHTSA ATD I.D. NUMBER: 830

LAB TECHNICIAN: P. PUZZUTO/L. RAWLINGS

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 10/05/92 to 10/14/92

II. PERFORMANCE VERIFICATION DATA, PRETEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Temperature in laboratory	Deg C	18.9 - 25.6	23.3
Humidity in laboratory	%	10 - 70	39
HEAD DROP TEST			
Peak resultant acceleration	G's	210 - 260	255.2
Peak lateral acceleration	G's	less than 10	4.1
Time above 100 G's	msec	0.9 to 1.5	1.2
ABDOMINAL COMPRESSION TEST			
Force at 12mm displacement	kg	10.5 - 16.4	13.6
Force at 19mm displacement	kg	16.4 - 22.7	19.5
Force at 25mm displacement	kg	22.7 - 28.6	28.0
Force at 33mm displacement	kg	23.2 - 40.0	39.5
CHEST IMPACT TEST, HIGH ENERGY			
Probe speed	mps	6.64 - 6.77	6.69
Peak deflection	mm	43.2 maximum	42.0
Peak resistive force	kg	1023 maximum	900
Internal hysteresis	%	50 - 70	55
CHEST IMPACT TEST, LOW ENERGY			
Probe speed	mps	4.22 - 4.31	4.27
Peak deflection	mm	27.9 maximum	27.7
Peak resistive force	kg	659 maximum	557
Internal hysteresis	%	50 - 70	53

PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (CONT.)

NHTSA ATD I.D. NUMBER: 830

LAB TECHNICIAN: P. Puzzuto/L. Rawlings

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 10/05/92 to 10/14/92

II. PERFORMANCE VERIFICATION DATA, PRETEST				
TESTED PARAMETER		UNITS	SPECIFICATION	TEST RESULTS
NECK BEND TEST				
Pendulum speed		mps	6.55 - 7.77	6.68
Pendulum avg. decel. ($T_1 - T_2$)		G's	20 - 24	22.6
Pendulum decel. ($T_2 - T_1$)		msec	less than 3	2.6
Pendulum decel. ($T_3 - T_2$)		msec	25 - 30	29.5
Pendulum decel. ($T_4 - T_3$)		msec	less than 10	7.8
Resultant head acceleration		G's	less than 26	24.7
Maximum head rotation		deg.	63 - 73	63.9
CHORDAL DISPLACEMENT / HEAD ROTATION ANGLE				
0 deg.	Time	msec	-2.0 - 2.0	0.0
	Displ.	mm	13 - 13	0
30 deg.	Time	msec	25.6 - 34.4	28.0
	Displ.	mm	53 - 79	62
60 deg.	Time	msec	40.3 - 51.7	46.2
	Displ.	mm	109 - 135	122
Maximum	Time	msec	53.2 - 66.8	57.1
	Displ.	mm	127 - 152	131
60 deg.	Time	msec	67.0 - 83.0	68.4
	Displ.	mm	109 - 135	119
30 deg.	Time	msec	85.4 - 104.6	89.7
	Displ.	mm	53 - 79	56
0 deg.	Time	msec	101.0 - 123.0	101.4
	Displ.	mm	13 - 13	1

PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (CONT.)

NHTSA ATD I.D. NUMBER: 830

LAB TECHNICIAN: P. Puzzuto/L. Rawlings

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 10/05/92 to 10/14/92

II. PERFORMANCE VERIFICATION DATA, PRETEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
KNEE IMPACT TEST, LEFT			
Probe speed	mps	2.06 to 2.15	2.14
Maximum force	kg	841 to 1136	1131
Time above 455 kg	msec	1.7 minimum	1.7
KNEE IMPACT TEST, RIGHT			
Probe speed	mps	2.06 to 2.15	2.11
Maximum force	kg	841 to 1136	1108
Time above 455 kg	msec	1.7 minimum	1.7
LUMBAR FLEXION TEST			
Force at 20 degrees	kg	10.0 to 15.5	14.3
Force at 30 degrees	kg	15.5 to 20.9	18.6
Force at 40 degrees	kg	20.9 to 26.4	24.5
Lumbar return angle	deg	12 maximum	11

APPENDIX D

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

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SEAT BELTS

Cleaning the seat tracks

The seat tracks for the three-passenger sliding bench seat should be cleaned periodically with a high-powered vacuum cleaner. If the seat tracks become dirty it may reduce the ability to slide the seat. A wet cleansing agent may be used if necessary, but the seat tracks must be thoroughly dried.

Use a cloth wrapped around a screwdriver (or similar object) to clean the seat tracks. Do not use your fingers to clean debris from the tracks.

Do not apply any type of lubricant to the seat tracks.

WARNING:

Never insert fingers into the seat track rails. The rails may be sharp and could cause injury.

PRECAUTIONS ON SEAT BELT USAGE

Your chances of being injured in an accident and/or the severity of injury may be greatly reduced if you are wearing your seat belt and it is properly adjusted. NISSAN strongly encourages you and all of your passengers to buckle up every time you drive.

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

WARNING:

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

- The belt should be adjusted to a snug fit. Slack in the lap-shoulder belt will reduce the effectiveness of the entire restraint system.

- Never wear the belt inside out or twisted.
- Do not allow more than one person to use the same seat belt.
- All seat belt assemblies, including retractors and attaching hardware, should be inspected after any collision at your NISSAN dealer. NISSAN recommends

that all seat belt assemblies in use during a collision be replaced unless the collision was minor and the belts show no damage and continue to operate properly. Seat belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.

WARNING:

If the seat belt warning light glows continuously while the ignition is turned "ON" with all doors closed and all seat belts fastened, it may indicate a malfunction in the system. Have the system checked by your NISSAN dealer.

Be sure to observe the following cautions when using seat belts. Failure to do so could increase the chance and/or severity of injury in an accident.

- Always pass the shoulder belt over your shoulder and across your chest. Never run the belt under your arm. Serious injury can occur if a seat belt is not worn properly.
- Position the lap belt as low as possible AROUND THE HIPS, NOT THE WAIST.

Infant or small child

NISSAN recommends that infants or small children be seated in a child restraint system. You should choose a child restraint system that fits your vehicle and always follow the manufacturer's instructions for installation and use.

Children

Children who are too large for child restraint systems should be seated and restrained by the seat belts which are provided.

NISSAN recommends that children sit in a rear seat if available. According to accident statistics, children are safer when properly restrained in a rear seat than in a front seat.

If the child's seating position has a shoulder belt that fits close to the face or neck, the use of a booster seat (commercially available) may help overcome this. The booster seat should raise the child so that the shoulder belt is centered across the top, middle portion of the shoulder and the lap belt is low on the hips. The booster seat should fit the vehicle seat and have a label certifying that it complies with Federal Motor Vehicle Safety Standards or Canadian Motor Vehicle Safety Standards. Once the child has grown enough

so the shoulder belt is no longer on or near the face and neck, use the shoulder belt without the booster seat.

Never let a child stand or kneel on any seat and do not allow a child in the cargo areas while the vehicle is moving.

Pregnant women

NISSAN recommends that pregnant women use seat belts. Contact your doctor for specific recommendations. The lap belt should be worn snug and positioned as low as possible around the hips, not the waist.

Injured persons

NISSAN recommends that injured persons use seat belts, depending on the injury. Check with your doctor for specific recommendations.

2-POINT AUTOMATIC SEAT BELT SYSTEM

The Automatic Seat Belt system consists of a 2-point shoulder belt for the driver and front passenger seat positions. The shoulder belts automatically adjust to the body and seating positions when the door is closed and the ignition key is turned "ON". A manual lap belt for the driver and front passenger seat posi-

tions is also provided for increased protection in many types of accidents.

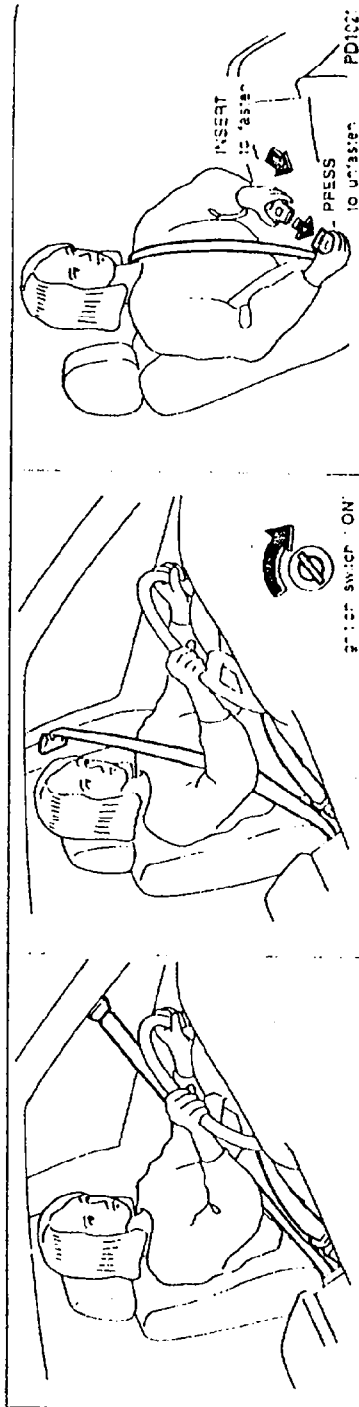
WARNING:

- For most effective protection, always wear the manual lap belt in addition to the automatic shoulder belt.
- If you do not wear your lap belt, you may increase your chance of being injured or increase the severity of injury. The shoulder belt alone may not fully restrain you in some types of accidents.
- To properly operate the automatic seat belt system, the shoulder belt tongue should always remain inserted in the shoulder belt buckle, located in the rail of the door opening.

NISSAN recommends that children be seated in the rear seats. See Precautions on Seat Belt Usage earlier in this Section.

System malfunction

If, while the ignition switch is turned "ON" with either front door open, the seat belt warning light illuminates and remains illuminated and the chime sounds faster than usual for about 6 seconds, it may indicate a malfunction in the system. Have the system checked by your NISSAN dealer.



Fastening the belts

1. Open the door and make sure that the shoulder buckle is in the forward position. Then get into the vehicle and close the door.

When the ignition switch is in the "ON" position and the door is closed, the shoulder buckle will move to the rear position.

2. Adjust the seat.

The seatback should not be in a reclining position any more than needed for comfort. Seat belts are most effective when the

passenger sits well back and straight up in the seat.

3. Turn the ignition switch to "ON". The shoulder buckle will move to the rear position and will fit across your chest. Pull the shoulder belt toward the retractor to take up extra slack.

- Do not touch the door guide rail while the shoulder buckle is moving.

- Do not wear the shoulder belt across the neck or under your outer arm. The shoulder belt should be positioned mid-

way over the shoulder for the most effective protection.

4. Slowly pull the lap belt out of the retractor and insert the tongue into the lap buckle until it snaps. Position the lap belt low on the hips and pull the belt toward the retractor to take up extra slack.

- Do not wear the lap belt across the shoulder belt.

- The retractors are designed to lock during a sudden stop or on impact. A slow pulling motion will permit the belt to move, and allow you some freedom of movement in the seat.

The front seat passenger side lap belt has a cinching mechanism for child seat installation. It is referred to as the automatic locking mode. When the cinching mechanism is activated the seat belt cannot be withdrawn again until the seat belt tongue is detached from the buckle and fully retracted. Refer to "Child Restraint Systems for Infants and Small Children" later in this section for more information.

WARNING:

- The automatic locking mode should be used only for child seat installation. During normal seat belt use by a passenger, the locking mode should not be activated. If it is activated it will cause uncomfortable seat belt tension.

Unfastening the belts

1. To unfasten the lap belt, press the button on the lap buckle. The seat belt will automatically retract.
 2. Open the door. The shoulder belt buckle will move to the forward position and the shoulder belt will move away from your chest.
- Do not touch the door guide rail while

the shoulder buckle is moving and do not place any body part or other objects in the path of the moving shoulder buckle.

- Do not unfasten the shoulder belt tongue from the buckle except in an emergency. See "Operation in an accident" later in this section.

How the automatic shoulder belt works

While the ignition switch is "ON":

The shoulder buckle will move to the forward position when the door is opened, and it will move to the rear position when the door is closed.

While the ignition switch is "OFF":

The shoulder buckle will remain or move to the front position when the door is opened, and it will remain in the front position when the door is closed until the ignition switch is turned "ON".

If the shoulder buckle operates abnormally, have the system checked by your NISSAN dealer.

Seat belt warning light " " and warning chime

When the ignition switch is turned "ON" with the door open (the shoulder buckle is at the front position):

The chime will sound for about 6 seconds, and the warning light will illuminate. The warning light will go off when the door is closed and the shoulder buckle reaches the rear position.

When the ignition switch is turned "ON" with the door closed:

The chime will sound and the warning light will illuminate until the shoulder buckle reaches the rear position.

If the shoulder belt tongue is disconnected from the buckle:

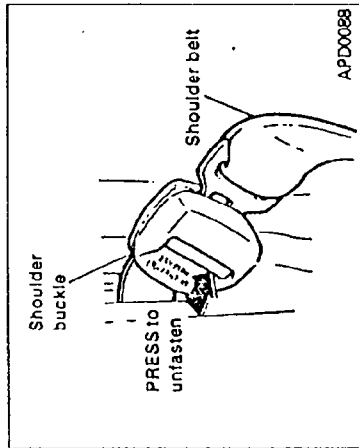
When the ignition switch is turned "ON" and the shoulder buckle reaches the rear position, the warning light will continue to illuminate for about 10 seconds and the chime will sound for about 6 seconds until the shoulder belt is connected to the shoulder buckle. Insert the shoulder belt tongue into the shoulder buckle before driving.

If the driver side lap belt is not fastened:
When the ignition switch is turned "ON" and the shoulder buckle reaches the rear position, the warning light will come on for about 5 seconds and the chime will sound for about 6 seconds until the lap belt is fastened. Fasten the lap belt before driving.

WARNING:

If the seat belt warning light glows continuously while the ignition is turned "ON" with both doors closed and all seat belts fastened, it may indicate a malfunction in the system. Have the system checked by your NISSAN dealer.

If the vehicle is stopped quickly, the belt retractor may lock. Be sure to check if the shoulder belt is free before opening the door.



Operation in an accident

Emergency release

If you need to release the shoulder belt from the shoulder belt buckle in an emergency, press the red button marked with "EMERGENCY RELEASE". Use this feature only when the shoulder belt keeps you from leaving the vehicle in an accident.

For normal use, the shoulder belt should always be connected to the buckle.

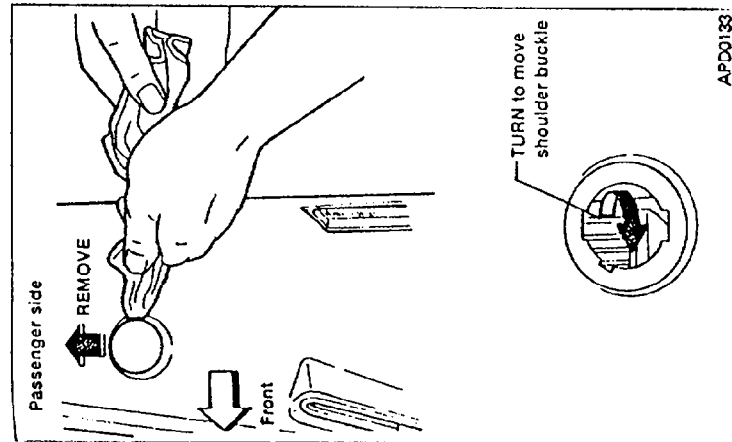
IF EITHER SHOULDER BELT BUCKLE DOES NOT OPERATE

1. Slide the seat forward as far as possible.
2. Remove the blind cap in the lower portion of the center pillar with a screwdriver. You will see the override thumbwheel.

You can also use a key (wrapped in a cloth to protect the cap) to remove the blind cap.

Use your thumb to move the thumbwheel toward the front of the vehicle for passenger's shoulder belt and toward the rear of the vehicle for the driver's shoulder belt. You will see the shoulder belt buckle move toward the back of the door guide rail. Keep turning the thumbwheel until the buckle reaches the back of the door guide rail.

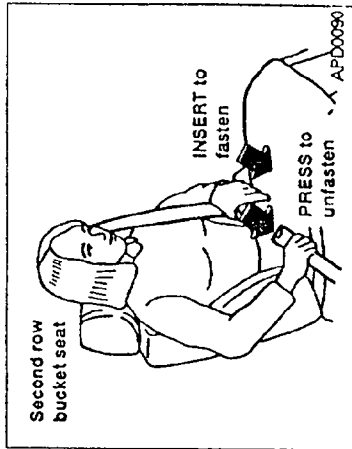
3. Have the automatic seat belt system checked and repaired by your NISSAN dealer.



Checking seat belt retractor operation (automatic seat belt)

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

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



3-POINT TYPE WITH RETRACTOR FOR SECOND ROW BUCKET SEATS

Fastening the belts

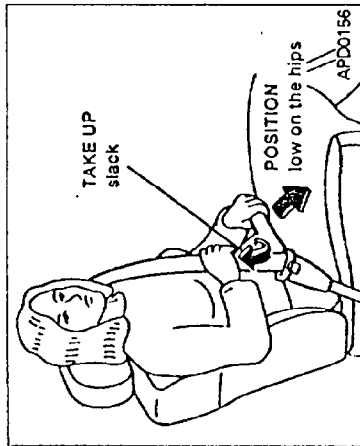
1. Adjust the seat.

The seatback should not be in a reclining position any more than needed for comfort. Seat belts are most effective when the passenger sits well back and straight up in the seat.

2. Slowly pull the seat belt out of the retractor

and insert the tongue into the buckle until it snaps.

The retractor is designed to lock during a sudden stop or on impact. A slow pulling motion will permit the belt to move, and allow you some freedom of movement in the seat.



rides in this seating position of the two passenger bench seat.

Failure to do so may result in improper positioning of seat belt which could lead to increased likelihood or severity of injury in a sudden stop or collision.

3. Position the lap belt portion low on the hips as shown.

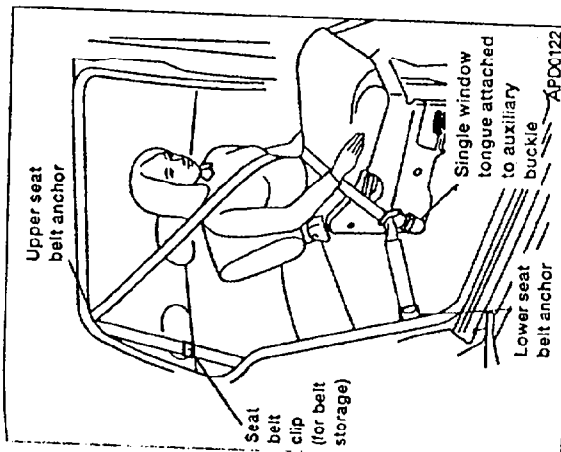
4. Pull the shoulder belt portion toward the retractor to take up extra slack.

Two buckle seat belt system for the second row bench seat

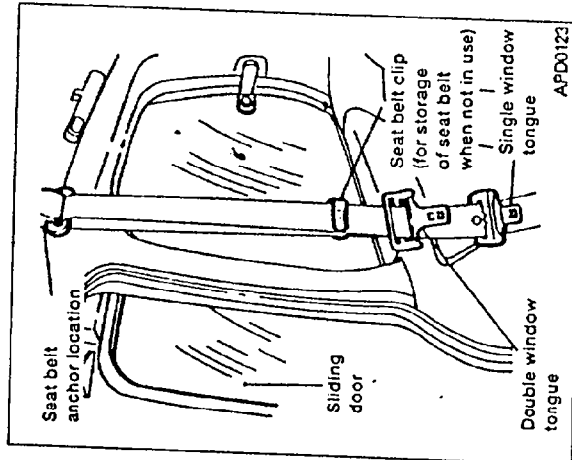
There is a two buckle seat belt system for the seating position of the second row bench seat next to the sliding door.

WARNING:

It is very important that you follow the instructions in this section before anyone



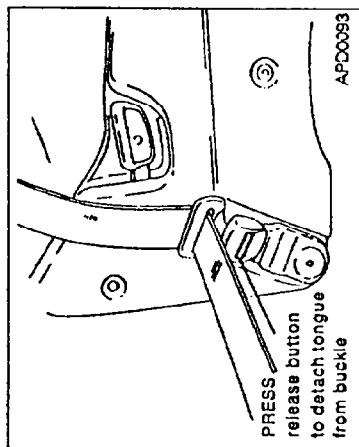
The two-passenger bench seat in the second row has a seat belt system made up of two buckles and two tongues. There are two body attaching points (one upper and one lower) that attach each end of the seat belt webbing.



One of the seat belt tongues has two "windows" (or holes) and the other has only one "window". The seat belt tongue with one window attaches to the buckle mounted to the side of the seat. The seat belt tongue with two windows should be positioned properly

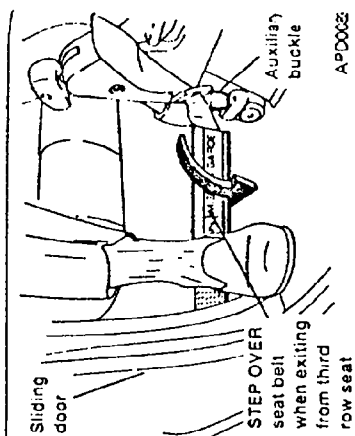
and fastened to the buckle mounted in the location in the middle of the seat.

When the two buckle seat belt system is not in use the webbing can be secured with the seat belt clip. The seat belt clip should not be used with a child seat or during seat belt usage. The seat belt clip opening should face the front of the vehicle.



moved from the vehicle, you must detach the single window tongue from the auxiliary buckle.

If the three-passenger bench seat is moved up to the second row position, the outside passenger (near the sliding door) only needs to use the double window tongue and the standard buckle. Because the third row seat is so much wider and is closer to the sliding door, the single window tongue and the auxiliary buckle are not necessary.



WARNING:

Third row passengers must be very careful when exiting, because of the auxiliary seat belt. It is important to step over the seat belt guide and belt webbing to avoid tripping.

Unfastening the belts

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

A twisted belt may prevent the retractor from working properly. If the two buckle seat belt system is twisted, disengage the single window tongue from the buckle on the side of the seat, remove the twist and re-install the tongue into the buckle until you hear a snap and feel the latch engage.

Both tongues must be attached to their appropriate buckles whenever someone is riding in that seating position. If the tongue is released to allow a third row passenger to enter or exit, the tongue must be reattached.

When the two-passenger bench seat is re-

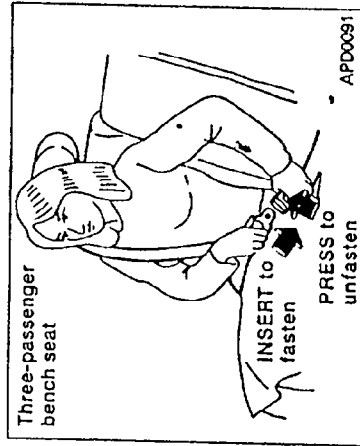
Checking seat belt operation (3-point type with retractor)

The second and third row seat belt retractors are designed to lock belt movement using two separate methods:

- 1) When the belt is pulled quickly from the retractor.
 - 2) When the vehicle slows down rapidly.
- To increase your confidence in the belts, check the operation as follows:

- Grasp the shoulder belt and pull quickly forward. The retractor should lock and restrict further belt movement.

If the retractor does not lock during this check or if you have any questions about belt operation, see your NISSAN dealer.



THREE-PASSENGER BENCH SEAT

Fastening the seat belts

1. Adjust the seat.

The seatback should not be in a reclining position any more than needed for comfort. Seat belts are most effective when the passenger sits well back and straight up in the seat.

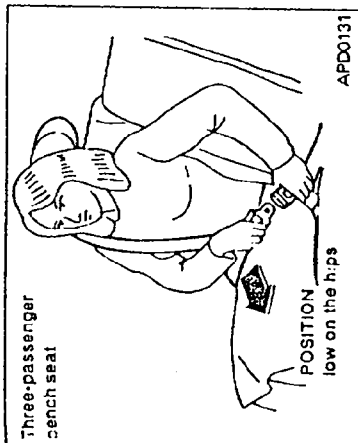
Third row passengers should be aware that their shoulder belt is located slightly behind the third row seating position. Never try to

use the seat belts for the second row passengers which are in front of the three-passenger bench seat.

WARNING:

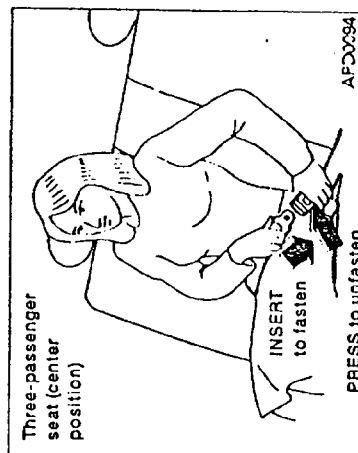
- Use of the second row 3-point seat belts by third row passengers could increase injury in a sudden stop or an accident.
- 2. Slowly pull the seat belt out of the retractor and insert the tongue into the buckle until it snaps.

The retractor is designed to lock during a sudden stop or on impact. A slow pulling motion will permit the belt to move, and allow you some freedom of movement in the seat.



3. Position the lap belt portion low on the hips as shown.

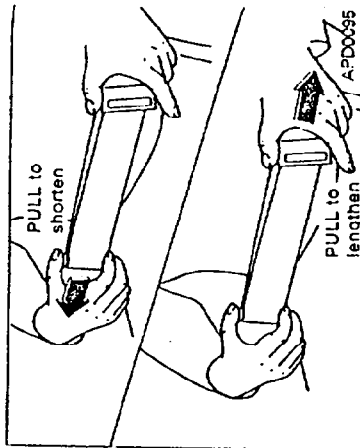
- Pull the shoulder belt portion toward the retractor to take up extra slack.



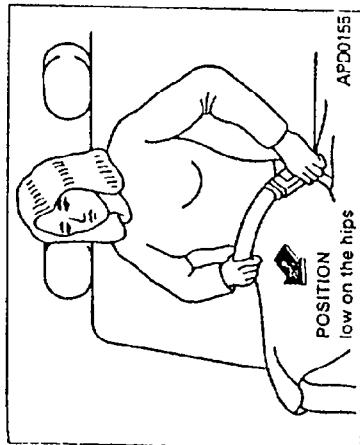
2-POINT TYPE WITHOUT RETRACTOR (Center of three-passenger bench seat)

Fastening the belts

1. Insert the tongue into the buckle until it snaps.



2. To lengthen, hold the tongue at a right angle to the belt and pull on the belt. To shorten, pull the free end of the belt away from the tongue.

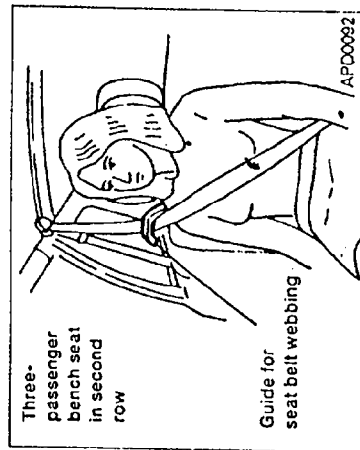


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3. Position the lap belt low on the hips as illustrated.

Unfastening the belts

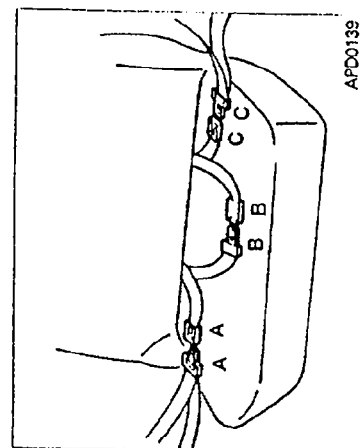
To unfasten the belt, press the button on the buckle.



APD0092

THREE-PASSENGER BENCH SEAT (IN SECOND ROW)

A seat belt guide is provided only on the head restraint of the passenger side of the three-passenger bench seat in vehicles equipped with the second row bench seat. The guide is designed for the comfort of the passenger when the three-passenger bench seat is moved up to the second row position, if the shoulder belt fits close to the passenger's face or neck, the belt webbing should be positioned under the seat belt guide. If the shoulder belt fits comfortably over the passenger's shoulder and across the chest, it is not necessary to use the guide.



APD0139

Selecting correct set of belts

The seat belt tongues must be fastened into the seat belt buckle as illustrated above.

WARNING:

- Any rear seat belt tongue will connect to any seat belt buckle, therefore it is important to follow the illustration above. Failure to do so could increase the chance and/or severity of injury in an accident.

SEAT BELT MAINTENANCE

- To clean the belt webbing, apply a mild soap solution or any solution recommended for cleaning upholstery or carpets. Then brush it, wipe with a cloth and allow it to dry in the shade. Do not allow the belts to retract until they are completely dry.
- Periodically check to see that the belt and the metal components such as buckles, tongues, retractors, flexible wires and anchors work properly. If loose parts, deterioration, cuts or other damage on the webbing is found, the entire belt assembly should be replaced.

CHILD RESTRAINT SYSTEMS FOR INFANTS AND SMALL CHILDREN

Infants and small children should always be placed in an infant or child restraint system while riding in the vehicle.

WARNING:

- Children and infants should never be carried on your lap. It is not possible for even the strongest adult to resist the forces of an accident. The child could be

crushed between the adult and parts of the vehicle. Also, do not put the same seat belt around both your child and yourself.

- In general, child restraint systems are designed to be installed with a lap belt or the lap portion of a three-point type seat belt.

A child restraint system should never be installed with an automatic belt (also known as a "passive" belt), since such a belt will not properly secure the child seat.

- According to traffic accident statistics, the rear seat is safer than the front seat for installation of a child restraint.
- NISSAN recommends that the child restraint system be installed in a rear seat, unless the child is an infant and you are the only adult in the car. According to accident statistics, children are safer when properly restrained in a rear seat than in a front seat.
- An improperly installed child restraint could lead to serious injury in an accident.

Child restraint systems specially designed for infants and small children are offered by several manufacturers. Some systems may be used for both infants and small children. When selecting any child restraint system, keep the following points in mind:

- 1) Choose only a system with a label certifying that it complies with Federal Motor Vehicle Safety Standard 213 or Canadian Motor Vehicle Safety Standard 213.
- 2) Place your child in the child restraint and check the various adjustments to be sure the child restraint is compatible with your child. Always follow all recommended procedures.
- 3) Check the child restraint in your vehicle to be sure it is compatible with the vehicle's seat belt system.

WARNING:

- Follow all of the child restraint manufacturer's instructions for installation and use. When purchasing a child restraint be sure to select one which will fit your child and vehicle as it may not be possible to properly install some types of child restraints in your vehicle.

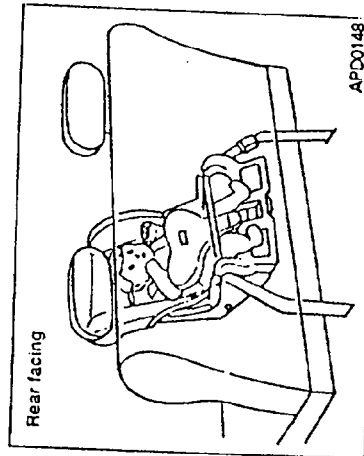
- Improper use of a child restraint system can result in increased injuries for both the infant or child and other occupants in the vehicle.
- For information concerning the approved installation of a Genuine NISSAN Infant/Child Safety Seat on the front or rear seats of this vehicle, contact your NISSAN dealer.
- When your child restraint system is not in use, keep it secured with a seat belt to prevent it from being thrown forward in case of a sudden stop or accident.
- Remember that a child restraint left in a closed vehicle can become very hot. Check the seating surface and buckles before placing your child in the child restraint.
- All U.S. states and some provinces or territories require that infants and small children be restrained in approved child restraint systems at all times while the vehicle is being operated.

WARNING:

- If the seat belt in the position where the child seat is installed requires a locking

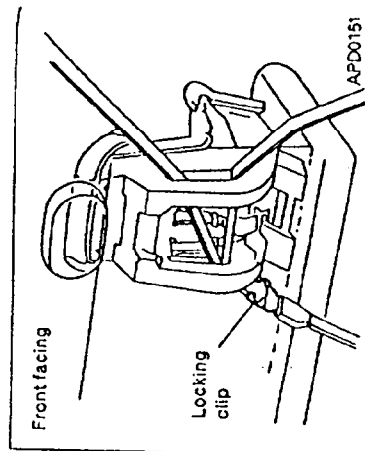
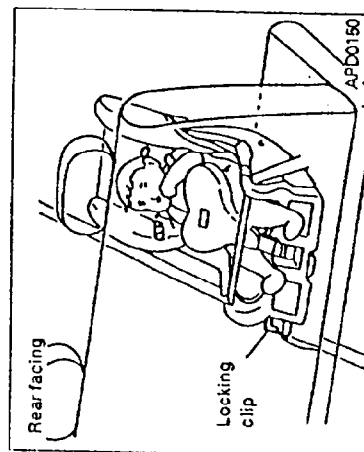
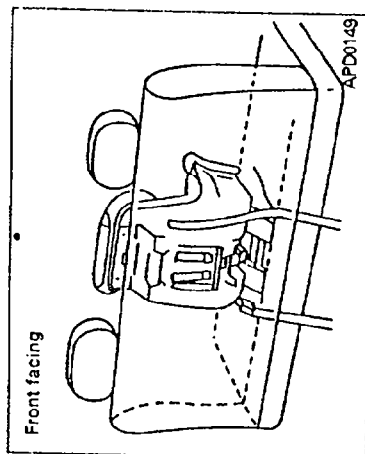
clip and it is not used, injuries could result from the child seat tipping over during normal vehicle braking or cornering.

- After attaching the child restraint seat, test the seat before you place the child in it. Tilt the seat from side to side. Try to tug the seat forward and check to see if the belt holds the seat in place. If the seat is not secure, tighten the belt as necessary, or put the safety seat in another seat and test it again.
- If the child restraint seat is not anchored properly, the risk of a child being injured in a collision or a sudden stop greatly increases.
- Adjustable seatbacks should be positioned to fit the child restraint seat, but as upright as possible.



INSTALLATION AT THREE-PASSENGER BENCH SEAT CENTER POSITION

Secure the child seat with the lap belt as illustrated. Remove all slack in the lap belt for a very tight fit by pulling the free end of the belt away from the tongue.



INSTALLATION AT SECOND AND THIRD ROW OUTBOARD POSITIONS

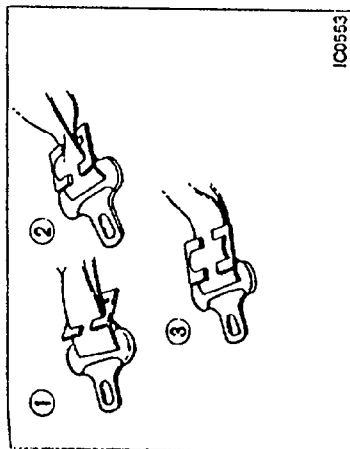
The following instructions apply to second row bucket seats, the second row bench seat and the outboard positions of the three-passenger bench seat.

Secure the child seat with the lap belt as illustrated. To prevent slack in the lap belt, it will be necessary to secure the lap/shoulder belt in place with a locking clip.

Before using the locking clip, read the instructions attached to the clip.

WARNING:

- When installing a child restraint in the two-passenger bench seat, if it is placed in the seating position next to the sliding door, be sure both the auxiliary buckle and main buckle are properly fastened. Failure to do so could increase the chance and/or severity of injury in an accident.



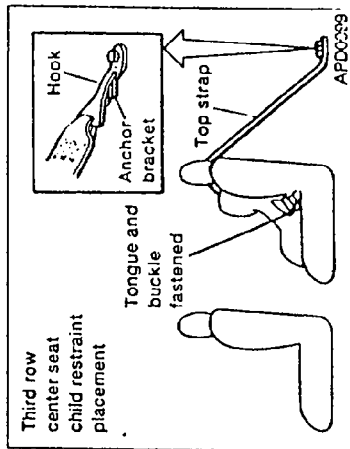
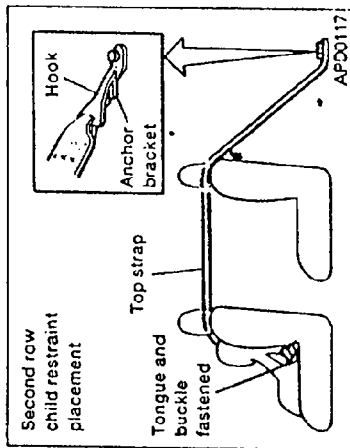
IC0553

Use a NISSAN genuine locking clip (part number H8010-89970, available from your NISSAN dealer), or one which is equivalent in dimensions and strength.

When your child restraint system is not in use, keep the locking clip in the glove box to prevent it from being lost.

WARNING:

- Do not use a locking clip supplied with the child seat to shorten a lap belt unless instructions with the child seat specifically tell you to do so.



If your child restraint has a top strap, install the anchor bracket to the provided anchor point. To gain access to an anchor point bolt, cut along the U-shaped anchor point indicators on the floor of the luggage area. Secure the child restraint with one of the seat belts and latch the top strap hook onto the anchor bracket. To install the anchor bracket, a metric bolt of the dimensions listed below must be used.

Bolt diameter: 8.0 mm

Bolt length: more than 1.18 in (30 mm)

Thread pitch: 1.25 mm

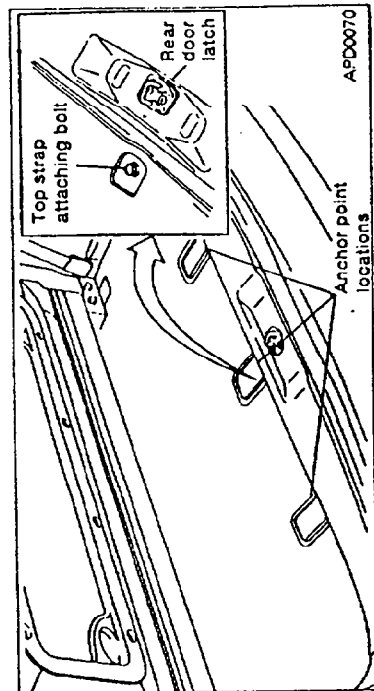
Child restraint anchor points are designed

to withstand only those loads imposed by correctly fitted child restraints. Under no circumstances are they to be used for adult seat belts or harnesses.

A child restraint anchored with a top strap can be installed in either the second row bucket seats, second row bench seat, or three-passenger bench seat. If it is installed in a second row seating position, the top strap must go over the third seat and be secured to the anchor point attaching bolt.

A child restraint with a top strap should only be placed in a second row seat if there are no third seat occupants.

The top strap should be secured to the attaching bolt which provides the straightest installation of the top strap.



Anchor point location

Anchor point attaching bolts are located under the carpet of the rear luggage area floor.

WARNING:

The anchor bolt should be installed at all times to prevent the possibility of exhaust fumes entering the passenger compartment through the holes.

INSTALLATION ON THE FRONT PASSENGER SEAT

A child restraint with a top strap should not be used in the front row passenger seat.

WARNING:

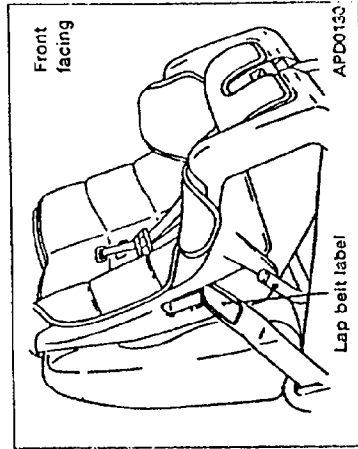
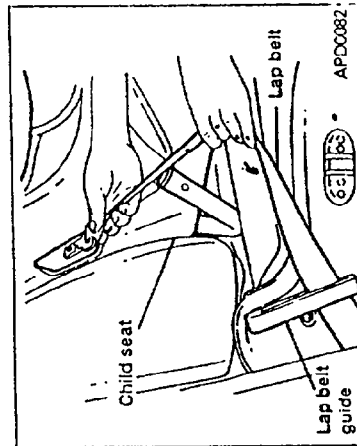
Your vehicle is equipped with a locking mode retractor on the lap belt for the front passenger seat. The automatic locking mode must be used when installing a child seat or infant carrier in the front passenger seat.

WARNING:

- Failure to do so will result in the child restraint not being properly secured. The seat could tip over or otherwise be unsecured and cause injury to the child in a sudden stop or collision.
- Make sure the front motorized shoulder belt is disconnected so it does not cross or rest in front of the child's face or neck. Always reattach it when child restraint is removed from the seat.

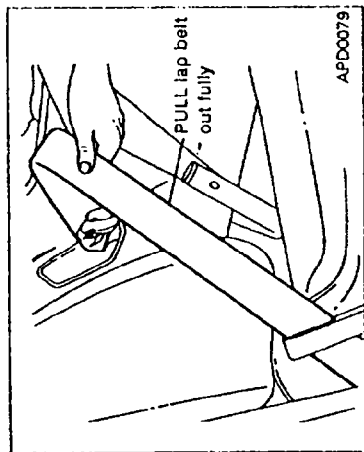
If you choose to install a child restraint or infant carrier in the front seat follow these steps:

1. Position the child restraint or infant carrier in the front passenger seat of the vehicle. It can be placed in a forward facing or rear facing direction, depending on the size of the child and the restraint manufacturer's instructions.

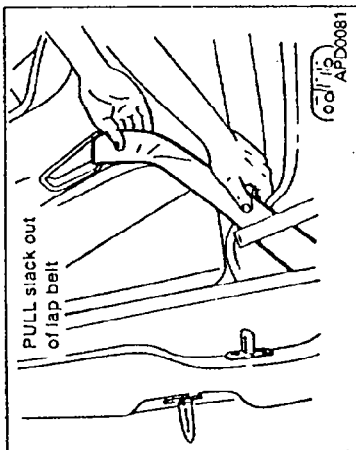


2. Follow the child restraint or infant carrier manufacturer's instructions. Route the lap belt through the child restraint or infant carrier and insert the belt tongue into the buckle until you hear and feel the latch engage.

Be sure to follow the child restraint manufacturer's instructions for belt routing.



3. Grasp the lap belt below the child seat label which is on the belt. Pull upward until all of the belt is extracted and a click is heard. At this time, the lap belt retractor is in the automatic locking mode (child seat restraint mode).



4. Allow the belt to retract. A clicking sound will be heard as the belt retracts. This indicates that the retractor is in the automatic locking mode. Pull down on the belt to remove any slack in the belt.

5. Before placing the child in the child seat or infant carrier, use force to tilt the seat from side to side, and tug it forward to make sure that the seat is securely held in place.

6. Double check that the retractor is in the automatic locking mode. Try to pull more belt out of the retractor, if you cannot, the belt is in the automatic locking mode.

7. Check to make sure that the child seat or infant carrier is properly secured prior to each use. If the lap belt is not locked, repeat steps 3 through 6.

To remove the retractor from the automatic locking mode, unbuckle the belt and allow the webbing to retract fully.

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APPENDIX E
INSTRUMENTATION AND CALIBRATION DATA

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CALIBRATION DATA FOR INSTRUMENTATION USED IN DUMMY CALIBRATION

DUMMY INSTRUMENTS	MFR	MODEL	S/N	CAL DATE	CAL DUE DATE
CHEST DEFLECTION POT	BECKMAN	5311	N/A	EACH USE	EACH USE
CHEST IMPACTOR ACCEL	ENTRAN	EGV-1	14N3N-V13-1	09/28/92	03/28/93
NECK PENDULUM ACCEL	"	"	"	"	"
NECK ROTATION NO. 1	BECKMAN	5311	N/A	EACH USE	EACH USE
NECK ROTATION NO. 2	BECKMAN	5311	N/A	EACH USE	EACH USE
NECK EXTENSION POT	BOURNS	80294-20518-1840202	1684-067	EACH USE	EACH USE
ABDOMINAL COMPRESSION LOAD	LEBOW/EATON	3167	1573	10/02/92	04/02/93
LUMBAR FLEXION LOAD	"	"	"	"	"
LUMBAR ROTATION	BOURNS	3590S-2-102	N/A	EACH USE	EACH USE
ABDOMINAL DISPLACEMENT	CELESCO	PT-101-15B	0786551	EACH USE	EACH USE
TIMER	MSE	MSE TIM	#1	10/01/92	04/01/93
TIME TRAP	MSE	1"	#1	10/01/92	04/01/93