

NEW CAR ASSESSMENT PROGRAM

FRONTAL BARRIER IMPACT TEST

TOYOTA MOTOR CORPORATION
1994 TOYOTA COROLLA
4 DOOR SEDAN
NHTSA No. MR5101

MOBILITY SYSTEMS AND EQUIPMENT COMPANY
9920 LaCienega Boulevard, Suite 708
Inglewood, California 90301



11 March, 1994

FINAL REPORT

Prepared For:

U. S. DEPARTMENT OF TRANSPORTATION
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OFFICE OF MARKET INCENTIVES
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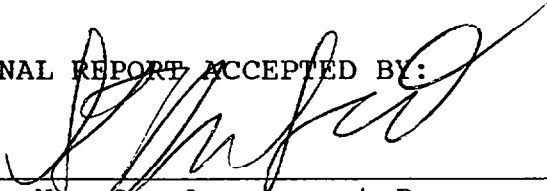
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MOBILITY SYSTEMS AND EQUIPMENT COMPANY

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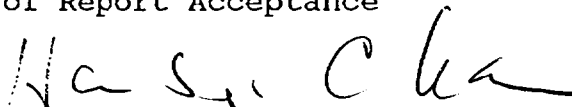
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Manager, New Car Assessment Program

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16. Abstract A 56 kph Frontal barrier impact test using a load cell barrier was conducted on a 1994 Toyota Corolla 4 Dr. Sedan at the Mobility Systems and Equipment Company (MSE) crash test facility in San Bernardino, CA, on February 05, 1994. The impact velocity was 56.2 km/h, and the ambient temperature at the barrier face at the time of impact was 19 degrees C. The vehicle's maximum post-test static crush was 513 mm. The test vehicle satisfied the requirements of FMVSS No.'s 212, 219 and 301-75. 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>384.1</td> <td>433.0</td> </tr> <tr> <td>Chest Resultant Peak 60 G's (3 msec clip)</td> <td>54.2</td> <td>49.3</td> </tr> <tr> <td>Femur Force Left 10009 N Right</td> <td>5541.3 6288.4</td> <td>2551.7 4335.8</td> </tr> </tbody> </table> Type of occupant restraint system: A 3 point continuous webbing belt system and an airbag at both seating positions.				Injury Criteria Threshold Value	Driver Dummy	Passenger Dummy	Head Injury Criterion HIC = 1000	384.1	433.0	Chest Resultant Peak 60 G's (3 msec clip)	54.2	49.3	Femur Force Left 10009 N Right	5541.3 6288.4	2551.7 4335.8
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17. Key Words 35 MPH Frontal Barrier Impact Test New Car Assessment Program (NCAP) 1994 Toyota Corolla 4 Dr. Sedan		18. Distribution Statement Copies of this report are available from: Technical Reference Division Nat'l Highway Traffic Safety Admin. Room 5108, Nassif Building 400 7th St., S.W., Wash. D.C. 20590													
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SECTION 1

PURPOSE AND TEST PROCEDURE

This 56.32 km/h (35 mph) frontal barrier impact test is a part of the FY'94 Vehicle Barrier Impact and 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 48.27 km/h (30 mph) FMVSS 208/212/219/301-75 requirements.

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

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SECTION 2

SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier was impacted by a 1994 Toyota Corolla 4 Door Sedan, NHTSA No. MR5101, at a velocity of 56.2 km/h. The frontal impact test was conducted by Mobility Systems and Equipment Company (MSE) on 05 February 1994. 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) Hybrid III, Part 572, Subpart E, 50th percentile adult male Anthropomorphic Test Devices (ATD's) were placed in the driver and front outboard passenger designated seating positions (DSP's) according to the NHTSA test requirements.

ATD's, Serial No.s 34 and 35, were not previously used for NCAP testing. The ATD's were instrumented with head, neck and chest triaxial accelerometers, chest displacement gauge, upper neck load/moment sensor and right and left femur load cells. In addition, load cells were placed on both lap and shoulder seat belts to measure ATD upper torso and pelvic section belt loading. Displacement transducers were attached to the shoulder belts to measure seat belt elongation and belt spoolout. A summary of ATD data is presented in Table 3. A summary of ATD configuration and performance verification test data is presented in Appendix C.

The frontal impact event was documented by one (1) real time camera and sixteen (16) high-speed cameras. Camera location data and film speeds are presented in Table 7.

Eighty-three (83) channels of crash parameters were recorded using three (3) FM tape recorders and three (3) data acquisition computers with direct analog to digital acquisition units. Time history plots of all recorded data channels are presented in Appendix B. There were no data channels not used. Channels that failed were Nos. 12, 15, 16, 18, 27, 37, 43, and 43.

2.1 GENERAL COMMENTS

The 1994 Toyota Corolla 4 Door Sedan was equipped with a 1762 cc, 4 cylinder engine and a 4 speed automatic transmission. The test weight of the 1994 Toyota Corolla 4 Door Sedan with two (2) 50th percentile male ATD's, instrumentation and cameras was 1345 kg.

The 1994 Toyota Corolla 4 Door Sedan was involved in a frontal barrier crash at a velocity of 56.2 km/h.

The maximum static crush for the vehicle of 513 mm occurred 420 mm to the right of the centerline of the bumper. The windshield was cracked, but otherwise the vehicle glazing remained intact. All doors were opened without the aid of tools.

The driver ATD's face hit the airbag. The driver's left and right knees hit the dash panel. The driver ATD had a Head Injury Criteria (HIC) value of 384, the maximum chest acceleration (resultant clipped) was 54 g's and the maximum femur loads were 5541 newtons (left) and 6288 newtons (right).

The passenger ATD's forehead and the top of his head hit the airbag. Both of the passenger ATD's knees hit the glove box door. The passenger ATD had a HIC value of 433, the maximum chest acceleration (resultant clipped) was 49 g's and the maximum femur loads were 2551.7 newtons (left) and 4335.8 newtons (right).

Shoulder seat belt spoolout, measured by high-speed film analysis, was 114 mm for the driver and 38 mm for the passenger. Seat belt spoolout and strain data are presented in Table 6.

The 1994 Toyota Corolla 4 Door Sedan passed the requirements of FMVSS 212, FMVSS 219 and FMVSS 301-75. Data pertaining to these standards are presented in Section 4, in Tables 13, 14 and 15, respectively.

Appendix D contains the manufacturer's occupant restraint system instructions as presented in the owner's manual. Appendix E contains the instrumentation calibration data.

TEST VEHICLE DATA

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1994/Toyota/Corolla/4 Dr. Sedan

VEHICLE NHTSA No.: M R 5 1 0 1 ; VIN: 1 N X A E 0 9 B 3 R Z 1 1 9 3 2 0

VEHICLE BODY COLOR: Red ; MONTH AND YEAR OF MANUFACTURE: 08/93

ENGINE: 4 Cylinders; 107.5 cu in; 1.8 Liters; 1762 cc
X Gas; Diesel; Turbocharged
PLACEMENT: Longitudinal; X Transverse (Lateral)

TRANSMISSION: 4 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: 12/14/93

ODOMETER READING: 18 km; OPTIONS : X A/C; X P/S; X P/Window;
X Tilt Whl.; X Cruise Control

DATA RECORD FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): 210 kPa Front; 210 kPa Rear
Recommended Tire Size: P185/65R14 855
Tires on Vehicle: P185/65R14855; Manufacturer: Firestone
Number of Occupants: 2 Front; 3 Rear; Third Seat; 5 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: 386 kg
No. of Occupants x 68 kg: 341 kg
Cargo Capacity (Max - Occupants): 45 kg

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front:	<u>340</u> kg		
Left Front:	<u>382</u> kg	Total Front:	<u>722</u> kg (62% of Total)
Right Rear:	<u>230</u> kg		
Left Rear:	<u>206</u> kg	Total Rear:	<u>436</u> kg (38% of Total)
		Total Weight:	<u>1158</u> kg

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids:	<u>1158</u> kg
Maximum Cargo Carrying Capacity of Test Vehicle:	<u>45</u> kg*
Weight of Two Part 572 ATD;s (2*74.5 kg):	<u>149</u> kg
TEST VEHICLE TARGET WEIGHT:	<u>1352</u> kg

* 136 kg for light trucks and MPV's

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

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

Right Front:	<u>366</u> kg		
Left Front:	<u>420</u> kg	Total Front:	<u>786</u> kg (58% of Total)
Right Rear:	<u>303</u> kg		
Left Rear:	<u>256</u> kg	Total Rear:	<u>559</u> kg (42% of Total)

Total Weight: 1345 kg (includes 5 kg of ballast secured in the cargo / luggage area)

VEHICLE COMPONENTS REMOVED TO MEET TARGET WEIGHT:

- | | |
|---------------------------|-----------------------|
| 1. Jack & Spare Tire | 3. Rear seat assembly |
| 2. Left tail lamp housing | 4. Side Mirrors |

TEST VEHICLE ATTITUDE:

As Delivered - Right Front:	<u>650</u> mm	Ready for Test - Right Front:	<u>630</u> mm
Left Front:	<u>650</u> mm	Left Front:	<u>635</u> mm
Right Rear:	<u>655</u> mm	Right Rear:	<u>602</u> mm
Left Rear:	<u>635</u> mm	Left Rear:	<u>595</u> mm

TEST VEHICLE DIMENSIONS:

Total Vehicle Length:	Right Side:	<u>4270</u> mm
	Left Side:	<u>4270</u> mm
	Centerline:	<u>4372</u> mm

Wheelbase: 2170 mm

C. G. is 902 mm rearward of front axle centerline.

DATA TABLE NO. 2
POST CRASH TEST DATA

DATE OF 35 MPH FRONTAL BARRIER IMPACT RATING TEST: 02/05/94

TIME OF TEST: 1425 Hrs; AMBIENT TEMPERATURE AT BARRIER FACE: 19 °C

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

VEHICLE WINDSHIELD MOLDING TEMPERATURE: 19 °C

VEHICLE IMPACT VELOCITY: (Req. Range 55.52 to 57.13 km/h)
Primary Speed Trap: 56.2 km/h
Secondary Speed Trap: 57.0 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>4270</u>	<u>3805</u>	<u>465</u>
Centerline (mm)	<u>4372</u>	<u>3907</u>	<u>465</u>
Left Side (mm)	<u>4270</u>	<u>3810</u>	<u>460</u>

VEHICLE REBOUND FROM BARRIER: Right Side: 533 mm
Centerline: 605 mm
Left Side: 528 mm

ATD CONTACT POINTS:

	Driver ATD (ID# 34)	Pass. ATD (ID# 35)
Head	Airbag	Airbag
Chest	Airbag	Airbag
Abdomen	No Contact	No Contact
Right Knee	Instrument Panel	Glove Box Door
Left Knee	Instrument Panel	Glove Box Door

VEHICLE DOOR OPENING INFORMATION:

Door	Opened	Jammed
Right Front	Yes	No
Left Front	Yes	No
Right Rear	Yes	No
Left Rear	Yes	No

VEHICLE FRONT SEAT MOVEMENT DURING IMPACT EVENT:

Seat Cushion Shift - Driver = 0 mm Passenger = 0 mm
Seat Adjustor Failure - Driver: No Passenger: No
Details of Any Failure: None

OTHER NOTABLE IMPACT EFFECTS: None

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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
Camera Locations

II. OVR DATA

Load Cell Barrier Data
Vehicle Accelerometer Data

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

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1993/Toyota/Corolla/4 Door Sedan

VEH. NHTSA NO.: MR5101

TEST DATE: 02/05/94

MAXIMUM ACCELERATION VALUES:	DRIVER ATD No. 34	PASSENGER ATD No. 35
Head X	-49.7	-45.0
Head Y	15.6	-26.9
Head Z	5.2	28.4
HEAD RESULTANT	51.6	56.9
Chest X	-50.0	-50.7
Chest Y	-23.1	-5.2
Chest Z	-26.3	12.1
CHEST RESULTANT (3msec clip)	54.2	49.3
TIME INTERVAL (msec)	73.0 to 76.4	64.1 to 67.1

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	384.1	433.0
t ¹ (msec)	48.0	49.6
t ² (msec)	84.0	85.6
Avg. Acceleration t ¹ to t ²	40.8	42.8

MAXIMUM FEMUR FORCES:

Left Femur (N)	-5541.3	- 2251.7
Right Femur (N)	-6288.4	- 4335.8

MAXIMUM SEAT BELT FORCES:

Lap Belt (N)	3134.7	3868.1
Shoulder Belt (N)	4662.5	6384.0

MAXIMUM SEAT BELT WEBBING SPOOLOUT:

Lap/Shoulder Belt Combination	114	38
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FMVSS No. 208 OCCUPANT CRASH PROTECTION DATA SHEET

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1994/Toyota/Corolla/4 Dr. Sedan

VEH. NHTSA NO.: MR0501

TEST DATE: 02/05/94

MAXIMUM ACCELERATION VALUES:	DRIVER ATD No. 34	PASSENGER ATD No. 35
Neck Force X (N)	-406.4	-545.3
Neck Force Y (N)	-241.9	N/D
Neck Force Z (N)	-449.0	1124.0
Neck Moment X (JOULES)	18.5	24.7
Neck Moment Y (JOULES)	-18.8	65.0
Neck Moment Z (JOULES)	N/D	20.7
Neck Moment Resultant (JOULES)	24.1	67.9
Chest Displacement (mm)	N/D	62.0
Time of Max. Occurrence (msec)	0	71.5

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TEST ATD POSITIONING DATA

PRE - IMPACT DATA:

Make / Model: Toyota Corolla
Body Style: 4 dr. Sedan
Model Year: 1994
Color: Red
NHTSA No.: MR5101

DATA FROM CERTIFICATION LABEL:

Vehicle Manufacturer: New United Motor Manufacturing
Date of Manufacture: 08/93
VIN: 1NXAE09B3RZ119320
GVWR: 1589 kg
GAWR Front: 835 kg
GAWR Rear: 763 kg

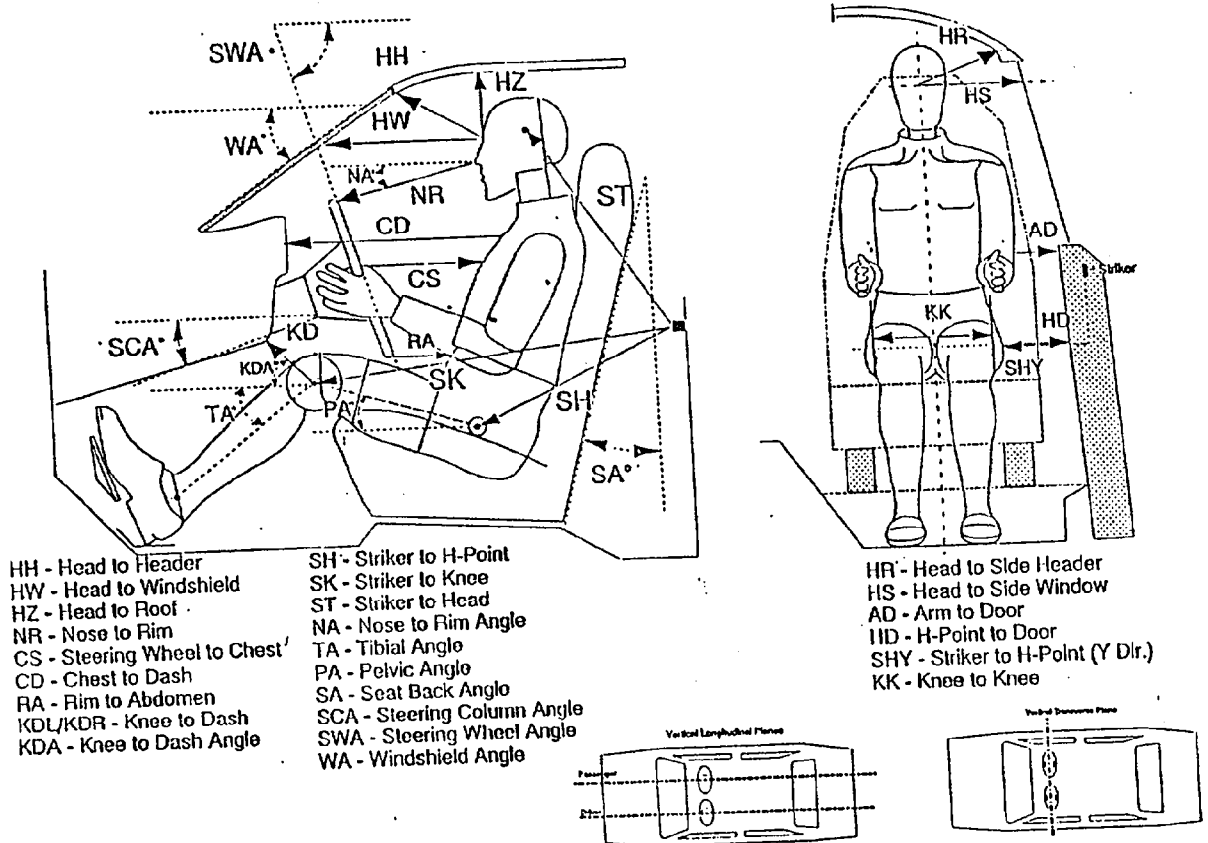
POST IMPACT DATA:

Date of Test: 02/05/94
Time: 1425 Hrs.
Temperature: 19.0° C
Required Impact Velocity Range: 55.52 to 57.13 km/h
Impact Velocity - Primary: 56.2 km/h
Secondary: 57.0 km/h
Seat Type: Bucket
Adjustor Type: Adjustable lever
Bucket Seat Back Type: Adjustable Head Restraint

ATD POSITIONING TECHNICIANS: Brian O'Keefe

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

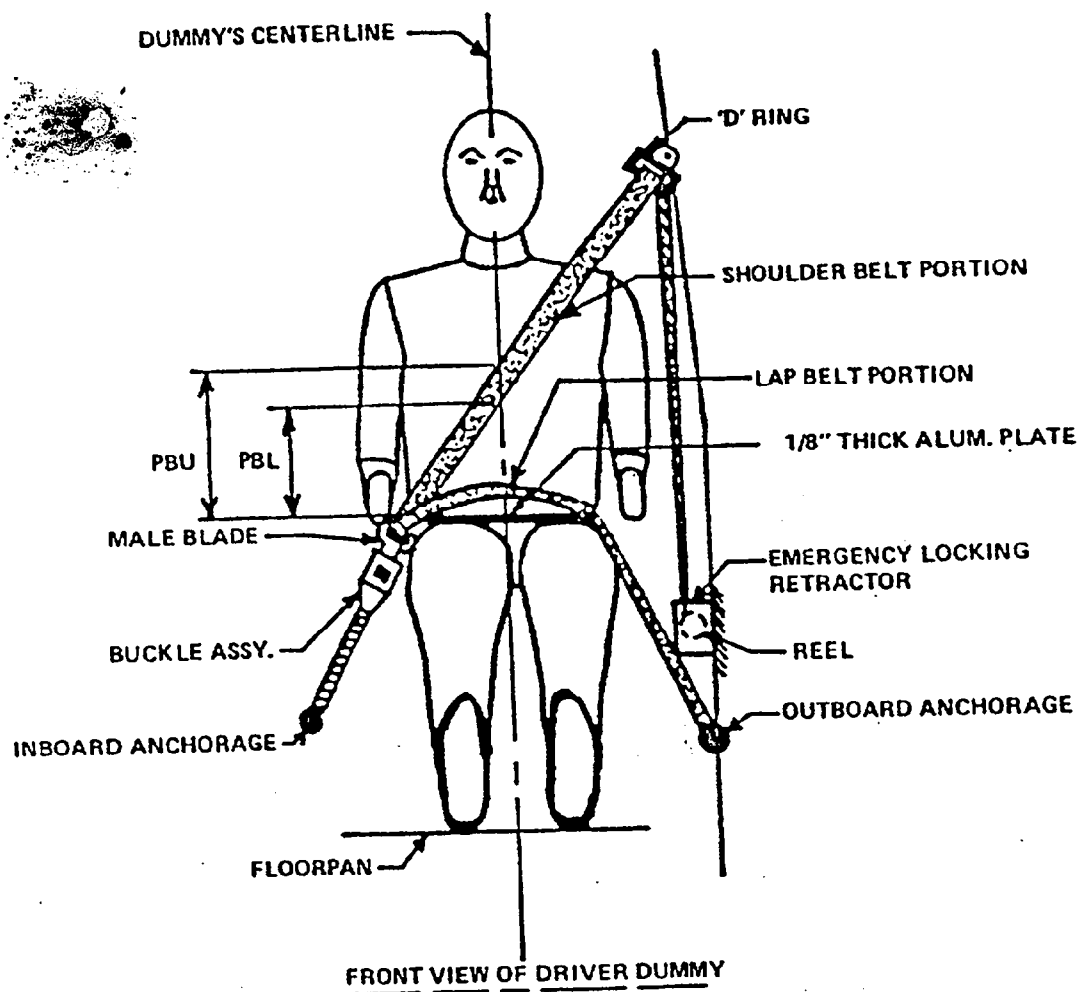
DUMMY MEASUREMENTS FOR FRONT SEAT PASSENGERS



DATA TABLE NO. 4 (CONT.)
TEST ATD POSITIONING DATA

Measurement	Driver (Serial No. 34)		Passenger (Serial No. 35)	
	Length (mm)	Angle (Degrees)	Length (mm)	Angle (Degrees)
WA	---	-30	---	---
SWA	---	64	---	---
SCA	---	-25	---	---
HZ	150	90	180	90
HH	278	---	325	---
HW	470	0	495	0
HR	210	---	205	---
NR	353	-13	---	---
CD	480	---	530	---
CS	360	0	---	---
RA	162	0	---	---
KDL	168	24	150	---
KDR	150	---	150	21
PA	---	25	---	23
TA	---	-39	---	-46
KK	290	---	280	---
ST	565	81	545	87
SK	580	-1	560	3
SH	220	-25	145	-31
SHY	200	0	210	0
HS	285	0	275	0
HD	122	0	115	0
AD	75	0	25	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)	340	335
PBL - Top Surface of alum. plate to belt lower edge (mm)	260	255
Lap Belt Tension (N)	N/D	N/D
Shoulder Belt Tension (N)	N/D	N/D

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
1885	1850	1850	1875
190	190	190	190
850	855	830	875
845	805	830	810
670	705	750	725

BELT SPOOL-OFF DATA:

As determined by film analysis (mm) _____

As determined electronically (mm) _____

As determined mechanically (mm) _____

114	38
115	42
115	65

BELT STRAIN DATA: Measured on the shoulder belt

As determined electronically (%) _____

As determined mechanically (%) _____

N/D	N/D
0.0	0.0

DATA TABLE No. 7
FMVSS No. 208 CAMERA LOCATION DATA

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1994/Toyota/Corolla/4 Door Sedan

VEH. NHTSA NO.: MR5101

TEST DATE: 02/05/94

TIME: 1425 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	5900	14350	3400	-20	14745	15-70 Zoom	24
2	Right Side View	3460	18400	3700	-12	18218	28	610
3	Left Side View	3770	13120	3700	-10	13097	28	550
4	Overhead	-410	0	5190	-77	4262	13	620
5	Pit - Engine	-60	0	-1630	79	3386	13	670
6	Pit - Fuel Tank	3340	0	-1660	93	3611	13	620
7	Front - Passenger	-530	370	2510	-48	2271	13	**
8	Front - Driver	-530	-330	2510	-47	2273	13	620
9	Left Side - Driver	3010	2015	1600	-19	2236	13	500
10	Right Side - Pass.	3080	2230	1710	-18	2451	13	1150
11	Right Side - A-Post	1530	5760	845	0	5343	19	1150
12	Left Side - A-Post	1825	9510	2160	-8	9108	13	***
13	Onboard - Left Side	2560	190	660	24	1407	35	* N/D
14	Onboard - Right Side	2440	-230	660	19	1407	13	* N/D
15	Left Side - St. Col.	2205	9960	3140	-16	9708	28	1000
16	Left Side - St. Col.	2265	9960	2390	-11	9605	28	1000
17	Right Side - Pass.	1960	5900	1100	-3	5488	19	530

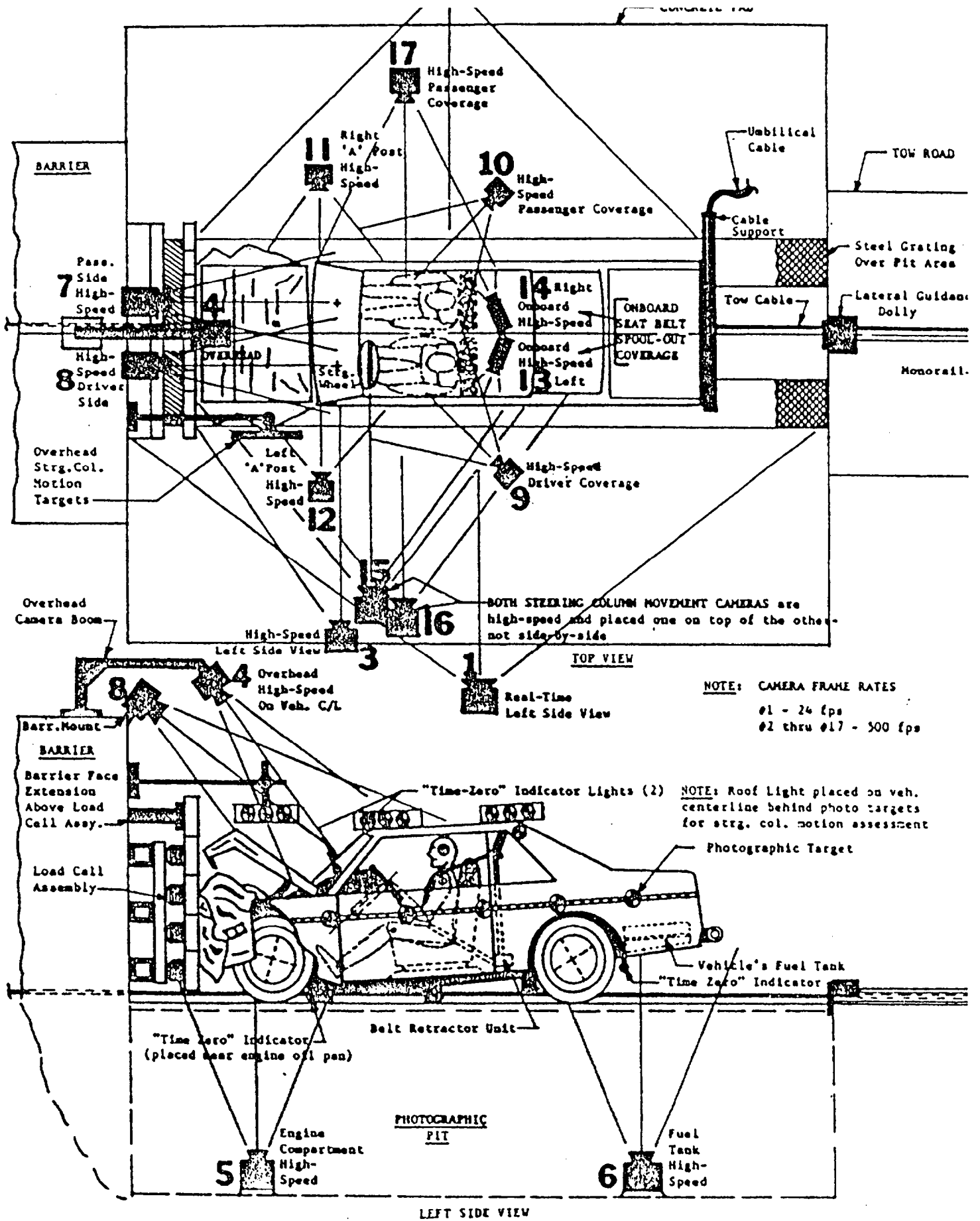
REFERENCE: X - Film plane to barrier face

Y - Film plane to monorail centerline

Z - Film plane to ground

NOTES: * Film is good but film speed could not be determined.

** Film was destroyed during test *** Film was destroyed during processing



DATA TABLE No. 8
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	1800	-630	320	55.7	32.6	1.4	113.2
2	Right rear seat cross member	1800	630	320	45.0	33.1	2.6	117.9
3	Top of engine block	650	125	760	156.0	26.3	5.1	33.7
4	Bottom of engine	520	150	600	178.8	25.7	68.1	34.1
5	Right brake caliper	770	650	320	146.2	36.1	29.6	31.1
6	Instrument panel	1410	70	910	N/D	N/D	N/D	N/D
7	Left brake caliper	770	-650	320	117.2	42.6	53.8	59.6
8	Left rear seat cross member Redun.	1800	-630	320	57.5	32.6	2.0	120.6
9	Right rear seat cross member Redun.	1800	7630	320	45.4	32.1	2.6	117.9

REFERENCE: X - Front bumper leading edge
Y - Vehicle centerline (Right Pos., Left Neg.)
Z - Ground level

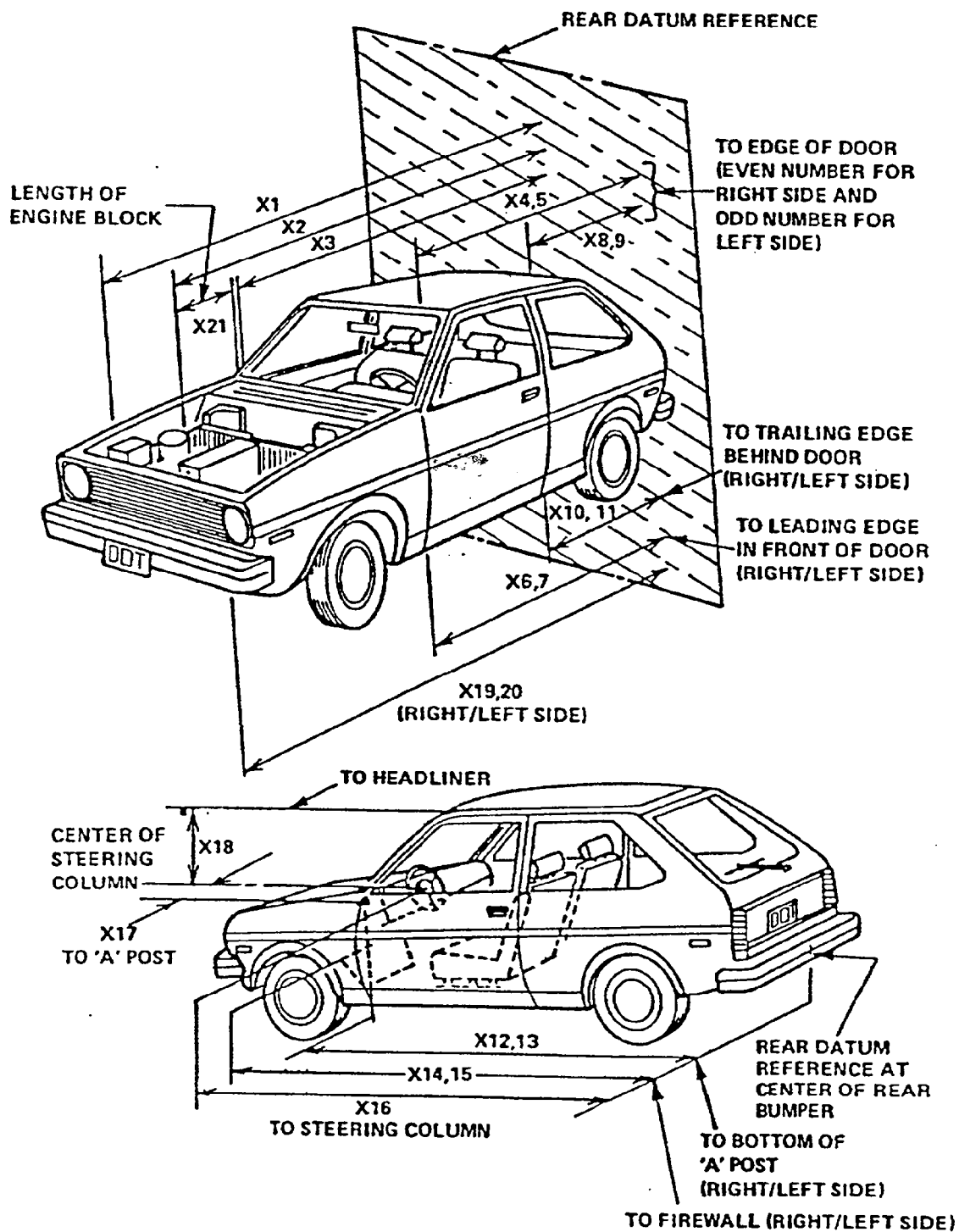
All dimensions in mm

TEST VEHICLE MEASUREMENTS

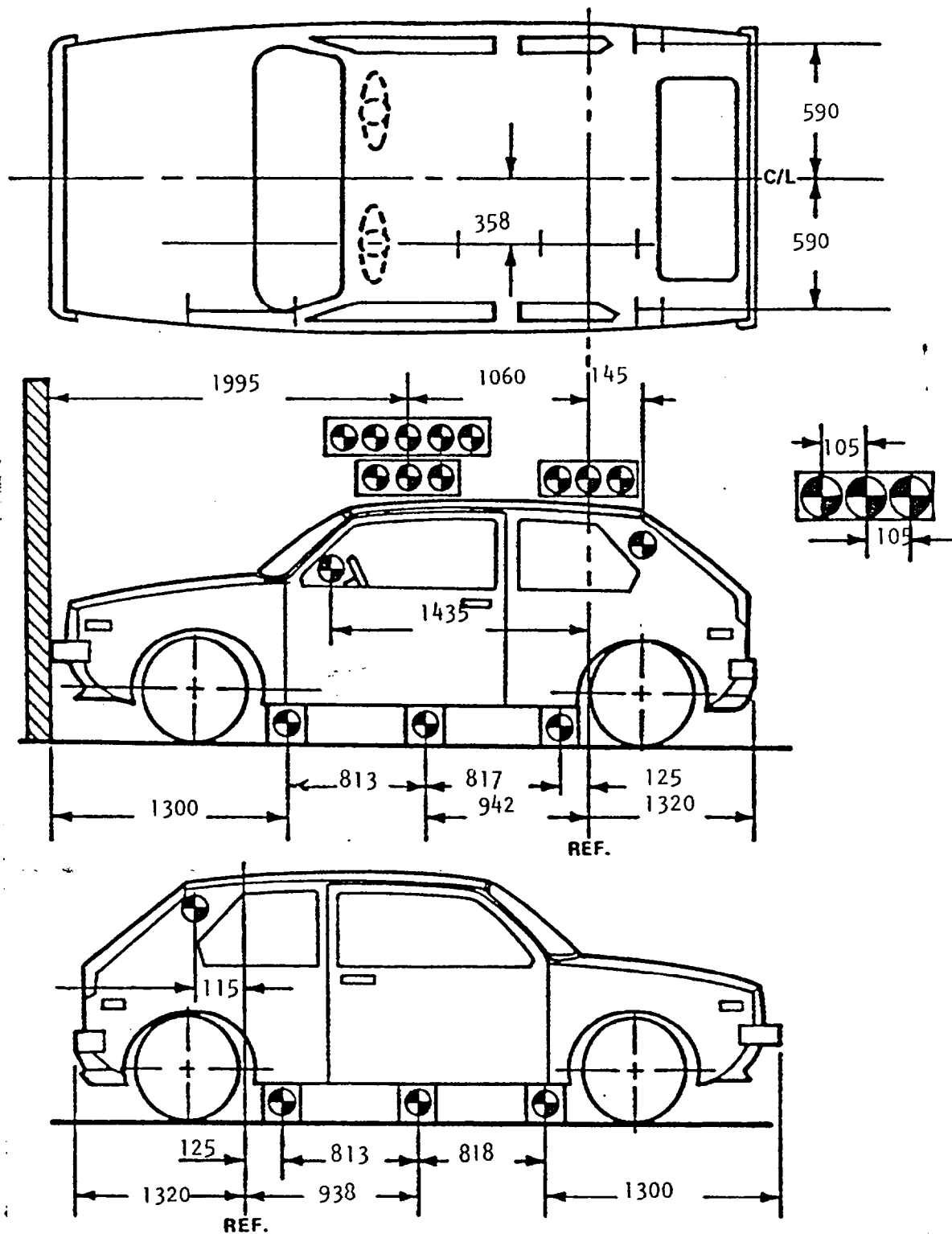
No.	Measurement Description	Pretest	Posttest	Change
1	Length of test vehicle at centerline	4372	3907	465
2	Rear surface of vehicle to front of engine	3820	3592	228
3	Rear of vehicle to firewall centerline	3290	3177	133
4	Rear to upper leading edge of right door	2980	2985	-5
5	Rear to upper leading edge of left door	2980	2973	7
6	Rear to lower leading edge of right door	2990	2980	10
7	Rear to lower leading edge of left door	3000	2975	25
8	Rear to upper trailing edge of right door	1925	1968	-43
9	Rear to upper trailing edge of left door	1930	1945	-15
10	Rear to lower trailing edge of right door	2005	1995	10
11	Rear to lower trailing edge of left door	2010	1995	15
12	Rear to bottom of right 'A' pillar	3060	3040	20
13	Rear to bottom of left 'A' pillar	3070	3060	10
14	Rear surface to firewall on right side	3250	3180	70
15	Rear surface to firewall on left side	3245	3185	60
16	Rear surface to steering column	2570	2620	-50
17	Center of steering column to left 'A' pillar	412	435	-23
18	Center of steering column to headlining	415	320	95
19	Rear surface to right side of front bumper	4270	5805	465
20	Rear surface to left side of front bumper	4270	3810	460
21	Length of engine block	200	200	0

All measurements in mm

DATA TABLE No. 9 (Continued)
TEST VEHICLE MEASUREMENTS



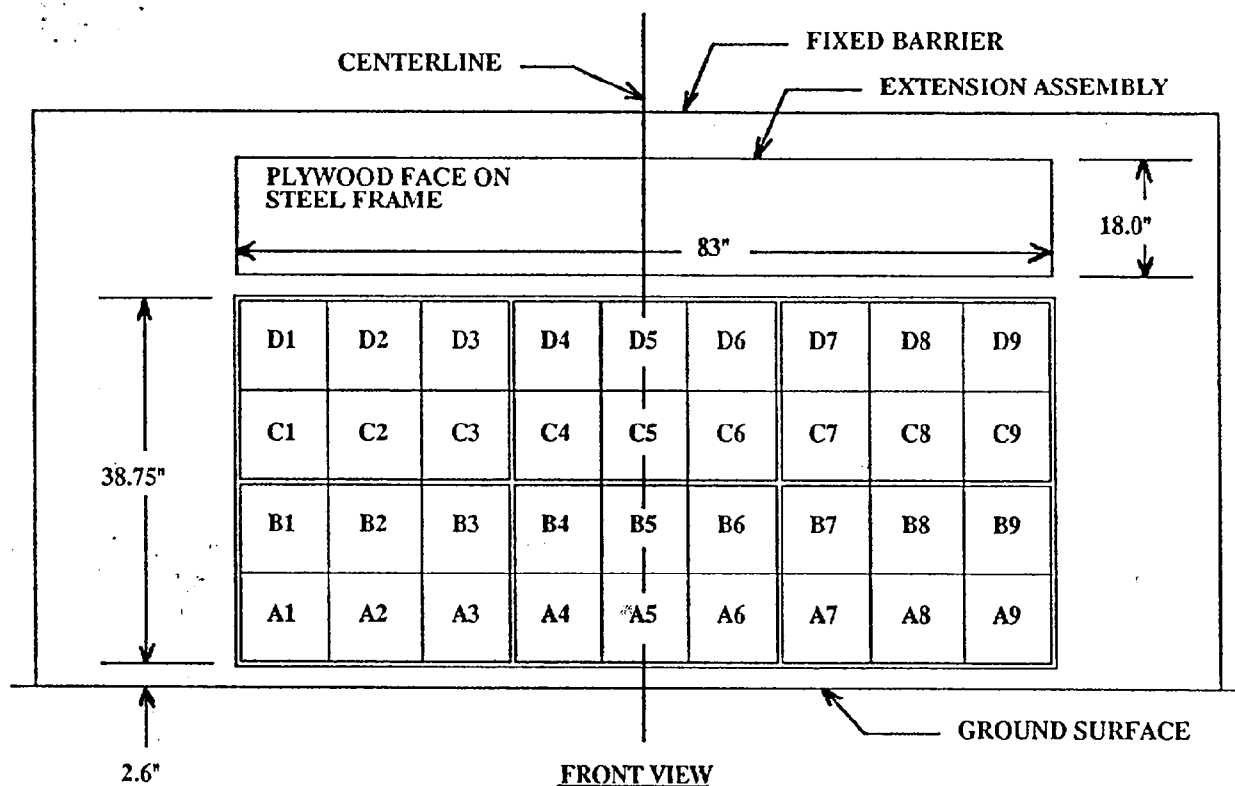
DATA TABLE No. 10
VEHICLE TARGET LOCATIONS



all measurements are in mm

DATA TABLE No. 11
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

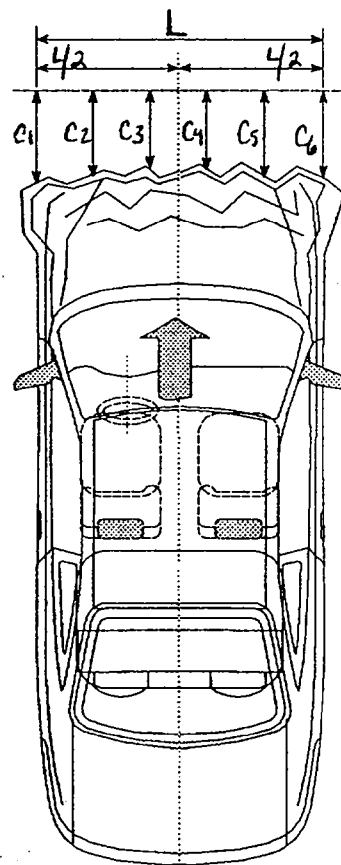
ACCIDENT INVESTIGATION DIVISION DATA FOR 35 MPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Toyota/Corolla/4 Dr. SedanVeh. NHTSA No.: MR5101 ; VIN: 1NXAE09B3RZ119320Model Year: 1994 ; Build Date: 08/93 ; Test Date: 02/05/94Veh. Size Category: N/A ; Test Weight: 1345 kgVeh. Wheelbase: 2170 mm ; Front Overhang: 865 mm ; Overall Width: 1685 mm

ACCELEROMETER DATA:

Location: Left and right side passenger compartmentCalibration Procedure: 6 months / Drop testLinearity: Good ; Integration Algorithm: NHTSA StandardVeh. Impact Speed: 56.2 km/h ; Time of separation: 74.6 msecVelocity Change: 66.4 km/h (Left); 66.4 km/h (Right)Collision Deformation Classification (CDC) Code: F (Frontal)

Crush Depth Dimensions:

C1 = 464 mmC2 = 488 mmC3 = 498 mmC4 = 498 mmC5 = 513 mmC6 = 464 mmMidpoint of Damage: Vehicle CenterlineLength of Damaged Region: L = 1400 mm

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SECTION 4

SUMMARY OF RESULTS FOR:

FMVSS 212, "Windshield Mounting"
FMVSS 219, "Windshield Zone Intrusion"
FMVSS 301-75, "Fuel System Integrity"

DATA TABLE No. 13
FMVSS No. 212, WINDSHIELD MOUNTING

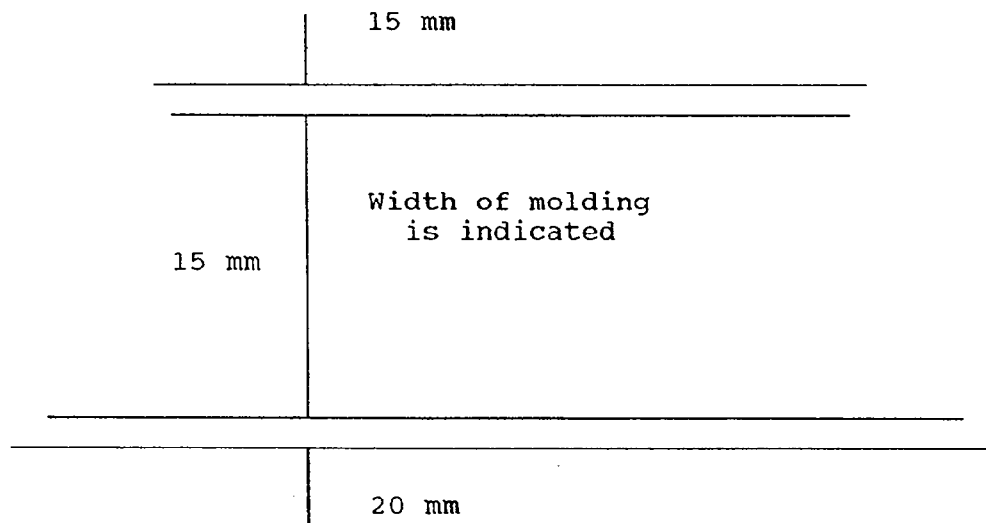
Details of windshield mounting: Glass is secured to the vehicle frame with a rubber type adhesive with rubber molding along the top and sides and rubber and plastic molding along the bottom.

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

FMVSS 212 Test Data:

	Windshield Periphery Retention		
	Pretest (mm)	Posttest (mm)	Percent Retention
Right Side	1935	1935	100
Left Side	1935	1935	100
Total	3870	3870	100

AREA OF RETENTION FAILURE:

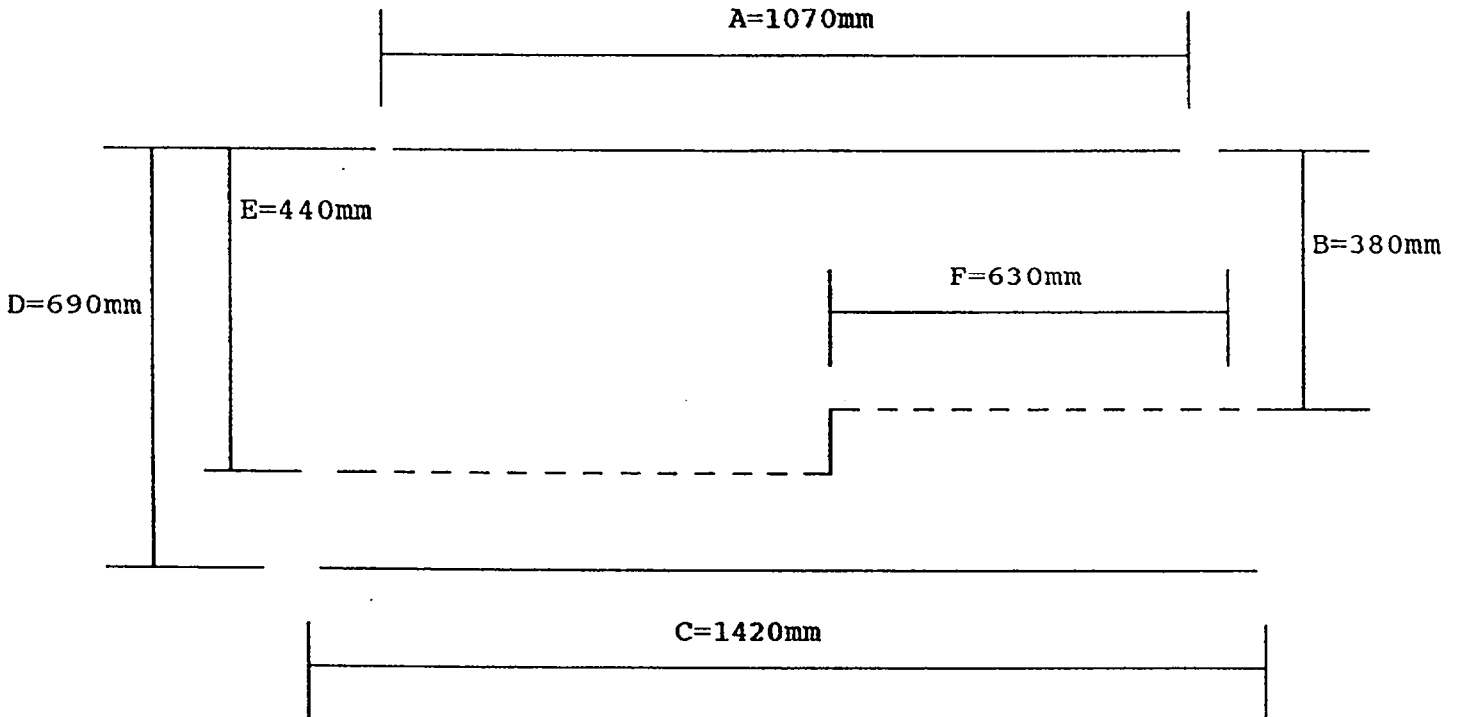


FAILURE DETAILS: None

PROTECTED ZONE LOWER EDGE REQUIREMENT

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

FMVSS 219 TEST DATA:



DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 1/4": None
(Location shown on above sketch)

Data Table No. 15
FMVSS No. 301-75, Fuel System Integrity

VEH. YEAR/MAKE/MODEL/BODY STYLE: 19 94/Toyota/Corolla/4 Door Sedan

VEH. NHTSA NO.: MR5101 TEST DATE: 02/05/94

USABLE CAPACITY OF VEHICLE'S FUEL TANK: 49.9 Liters (furnished by Mfr.)

TEST REQUIREMENTS:

Vehicle's engine operated to "run dry" condition and a small amount of Stoddard solvent, dyed red, was added to the vehicle's fuel tank. Fuel pump was operated to fill the fuel system ahead of the fuel tank, then added 92% to 94% of the stated usable capacity to the fuel tank.

AMOUNT OF STODDARD SOLVENT ADDED TO THE VEHICLE'S FUEL TANK:

46.3 Liters, which is 92.8% of the stated usable capacity

SOLVENT SPILLAGE MEASUREMENT AFTER 35 MPH FRONTAL BARRIER IMPACT TEST:

	Actual	Max. Allowed
From impact until vehicle motion ceases	<u>0 oz.</u>	1 oz.
For 5 min. period after vehicle motion ceases	<u>0 oz.</u>	5 oz.
For next 25 min. at barrier face	<u>0 oz.</u>	1 oz./min.

SOLVENT SPILLAGE DETAILS: None

STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. range = 1 to 3 min)

Time reqd. for machine to rotate 90°	<u>1</u> minutes, <u>20</u> seconds
FMVSS 301-75 position hold time	<u>5</u> minutes, <u>00</u> seconds
Total	<u>6</u> minutes, <u>20</u> seconds
Next whole minute interval	<u>7</u> minutes

VEHICLE STATIC ROLLOVER DATA:

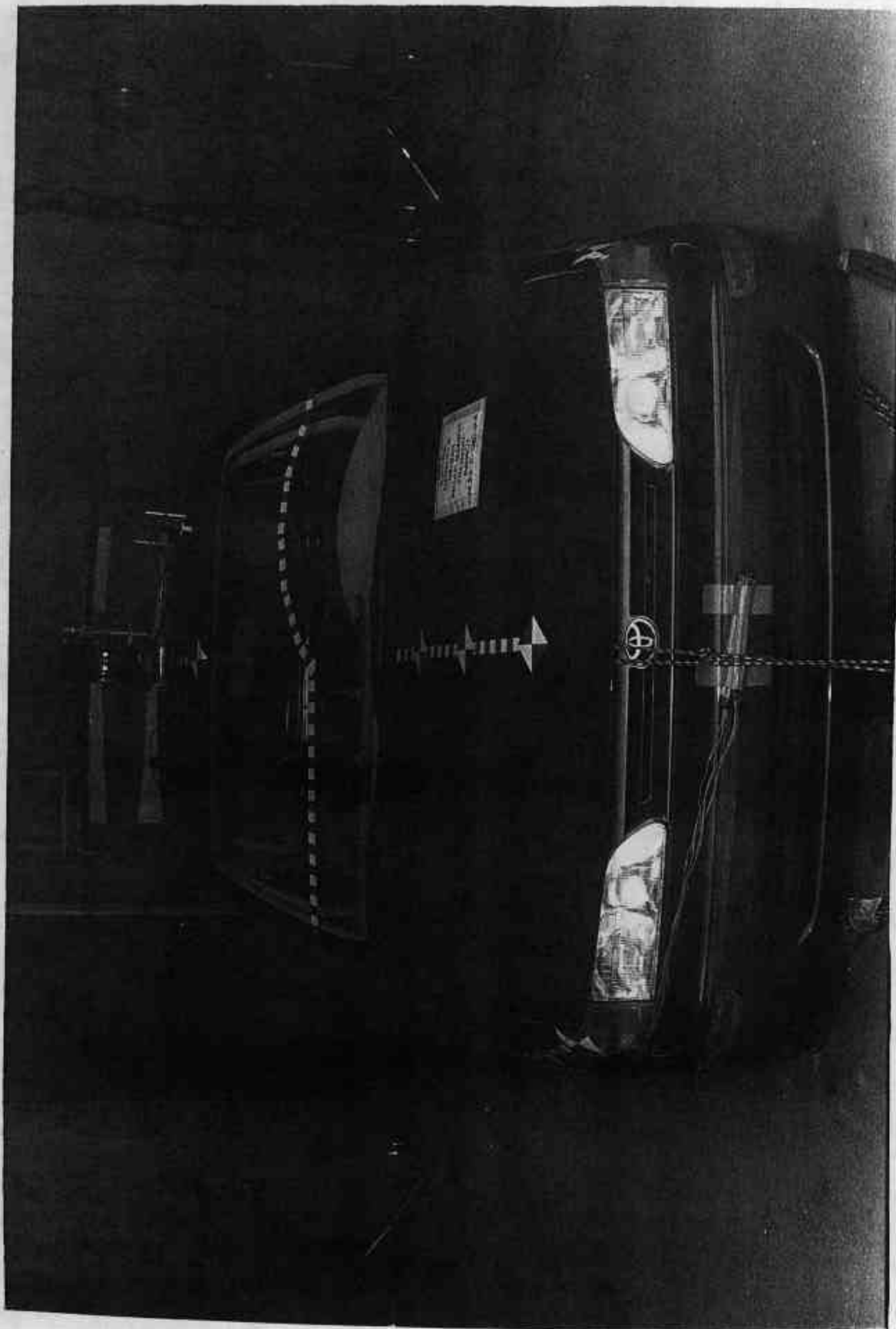
	1st 5 Min.	6th min.	7th min.	8th min.
Max allowable solvent spillage	5 oz.	1 oz.	1 oz.	1 oz.
0° to 90° (filler cap down)	0 oz.	0 oz.	0 oz.	N/A
90° to 180°	0 oz.	0 oz.	0 oz.	N/A
180° to 270°	0 oz.	0 oz.	0 oz.	N/A
270° to 360°	0 oz.	0 oz.	0 oz.	N/A

SOLVENT SPILLAGE LOCATIONS: None

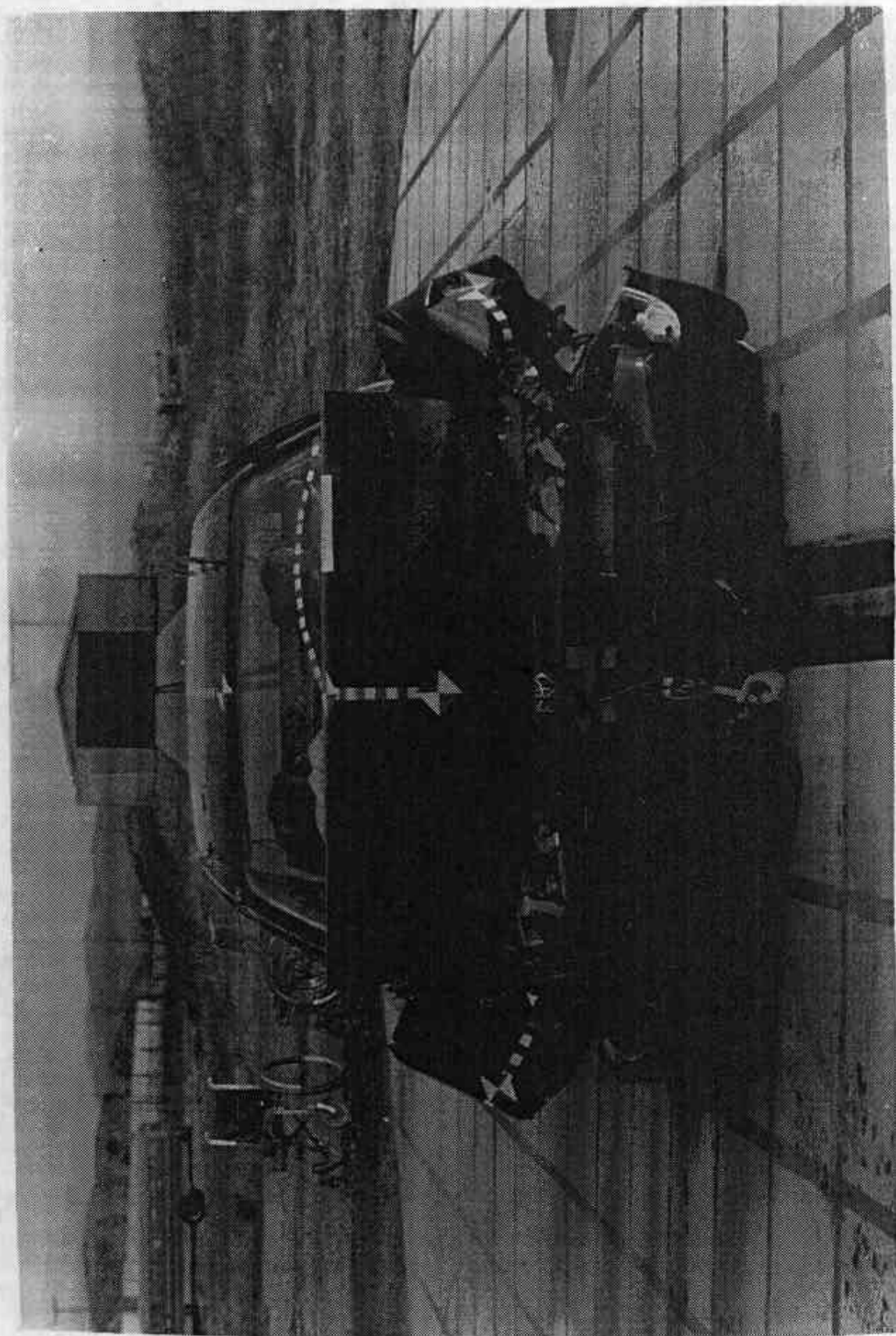
APPENDIX A

PHOTOGRAPHS

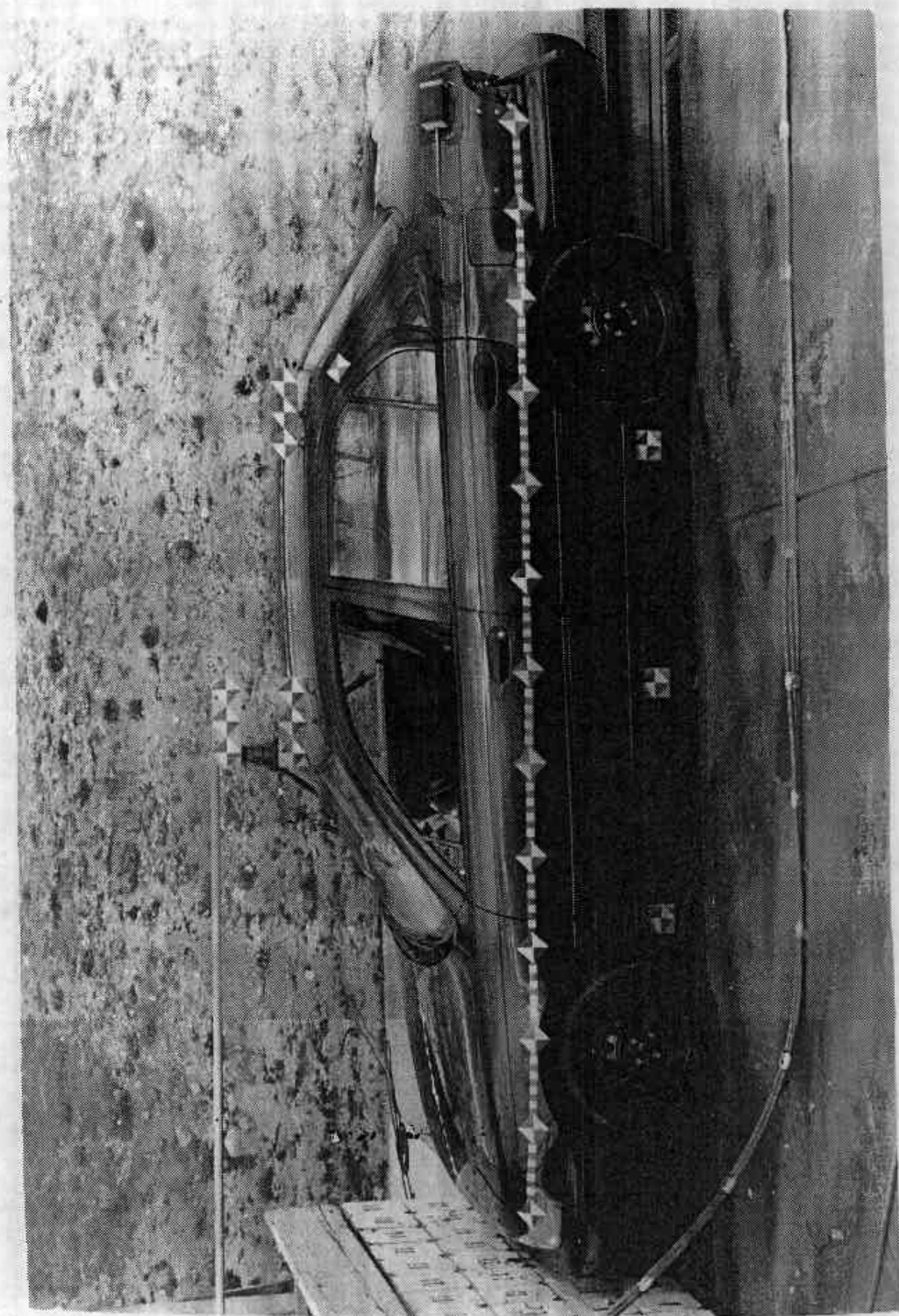
Pretest Front View
Posttest Front View
Pretest Left Side View
Posttest Left Side View
Pretest Right Side View
Posttest Right Side View
Pretest Right Front 3/4 View
Posttest Right Front 3/4 View
Pretest Left Rear 3/4 View
Posttest Left Rear 3/4 View
Pretest Windshield View
Posttest Windshield View
Pretest 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 and Vehicle Interior View (Door Open)
Posttest Driver Dummy and Vehicle Interior View (Door Open)
Pretest Passenger Dummy and Vehicle Interior View (Door Open)
Posttest Passenger Dummy and Vehicle Interior View (Door Open)
Posttest Driver Dummy Head and Knee Contact Area
Posttest Passenger Dummy Head and Knee Contact Area



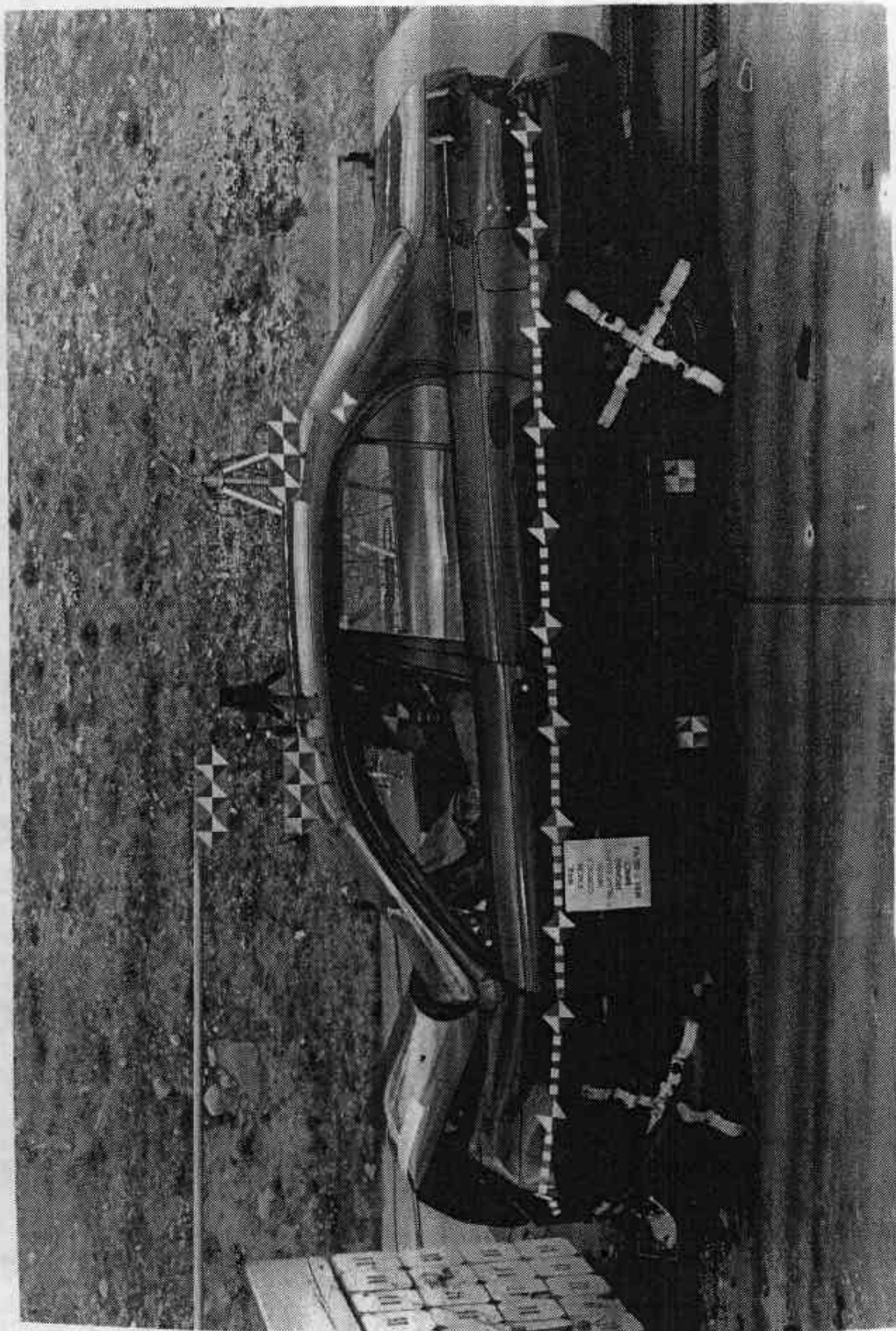
PRETEST FRONT VIEW



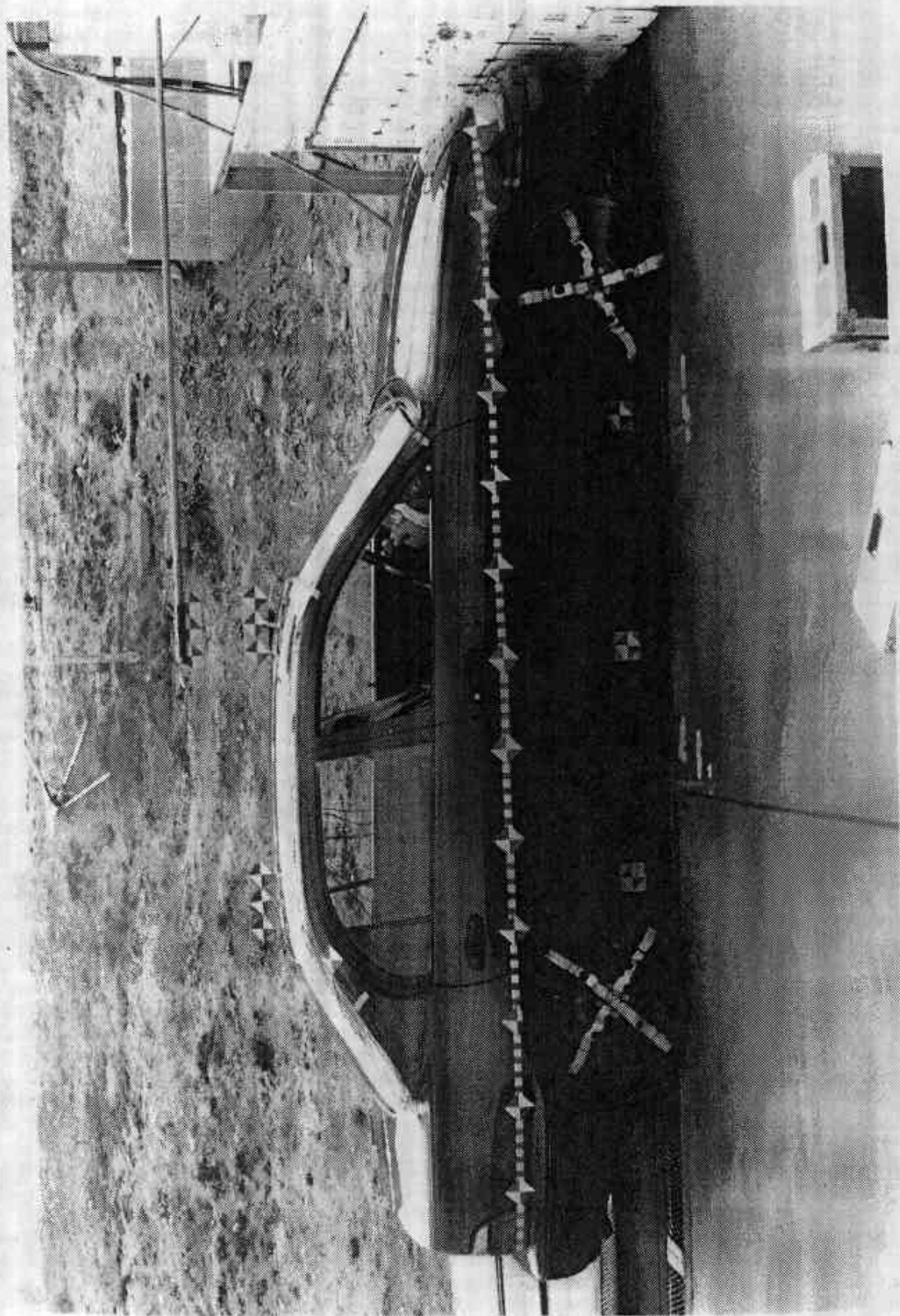
POSTTEST FRONT VIEW



PRETEST LEFT SIDE VIEW



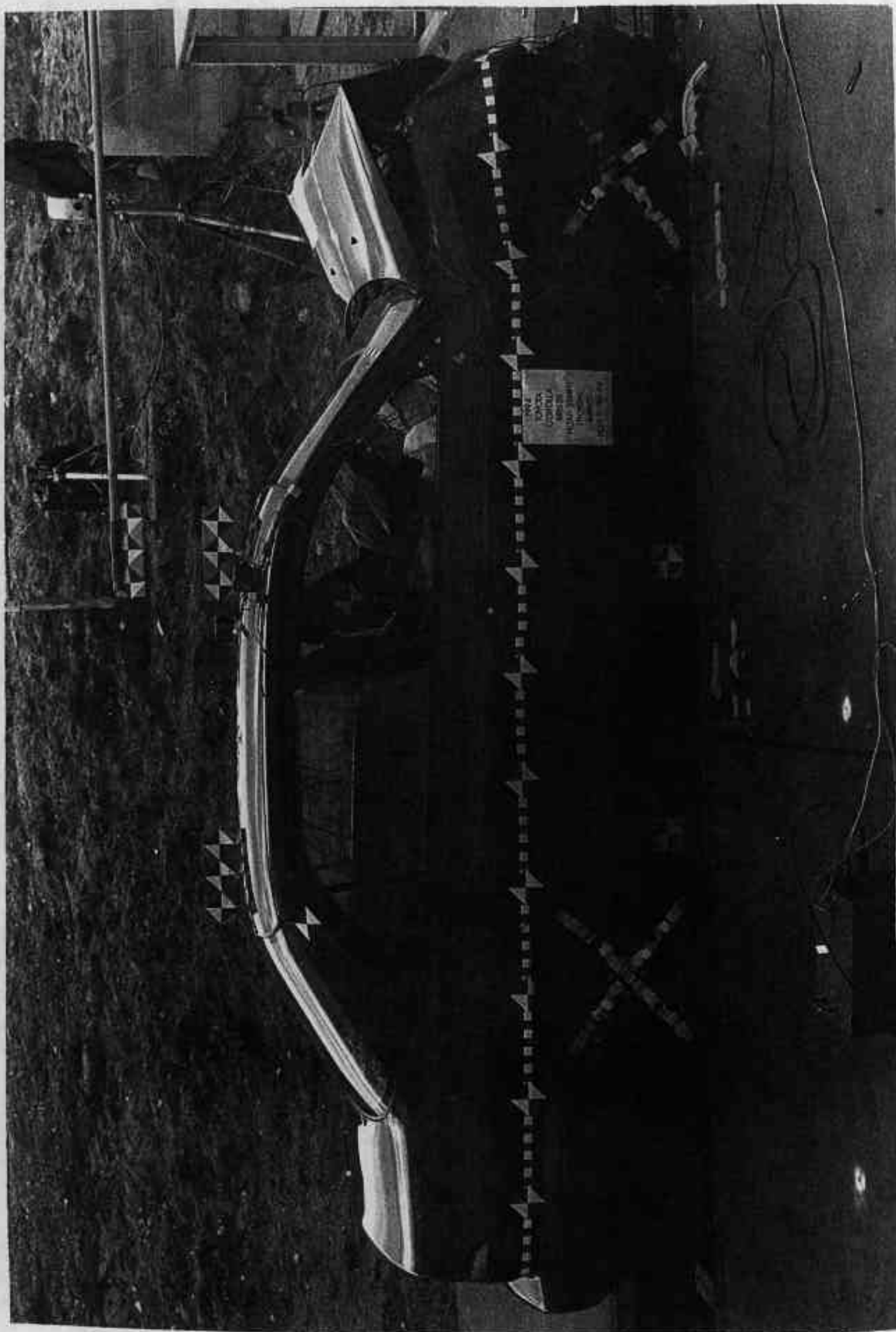
POSTTEST LEFT SIDE VIEW



PRETEST RIGHT SIDE VIEW

A5

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POSTTEST RIGHT SIDE VIEW

FIGURE A-7

PRETEST RIGHT FRONT 3/4 VIEW

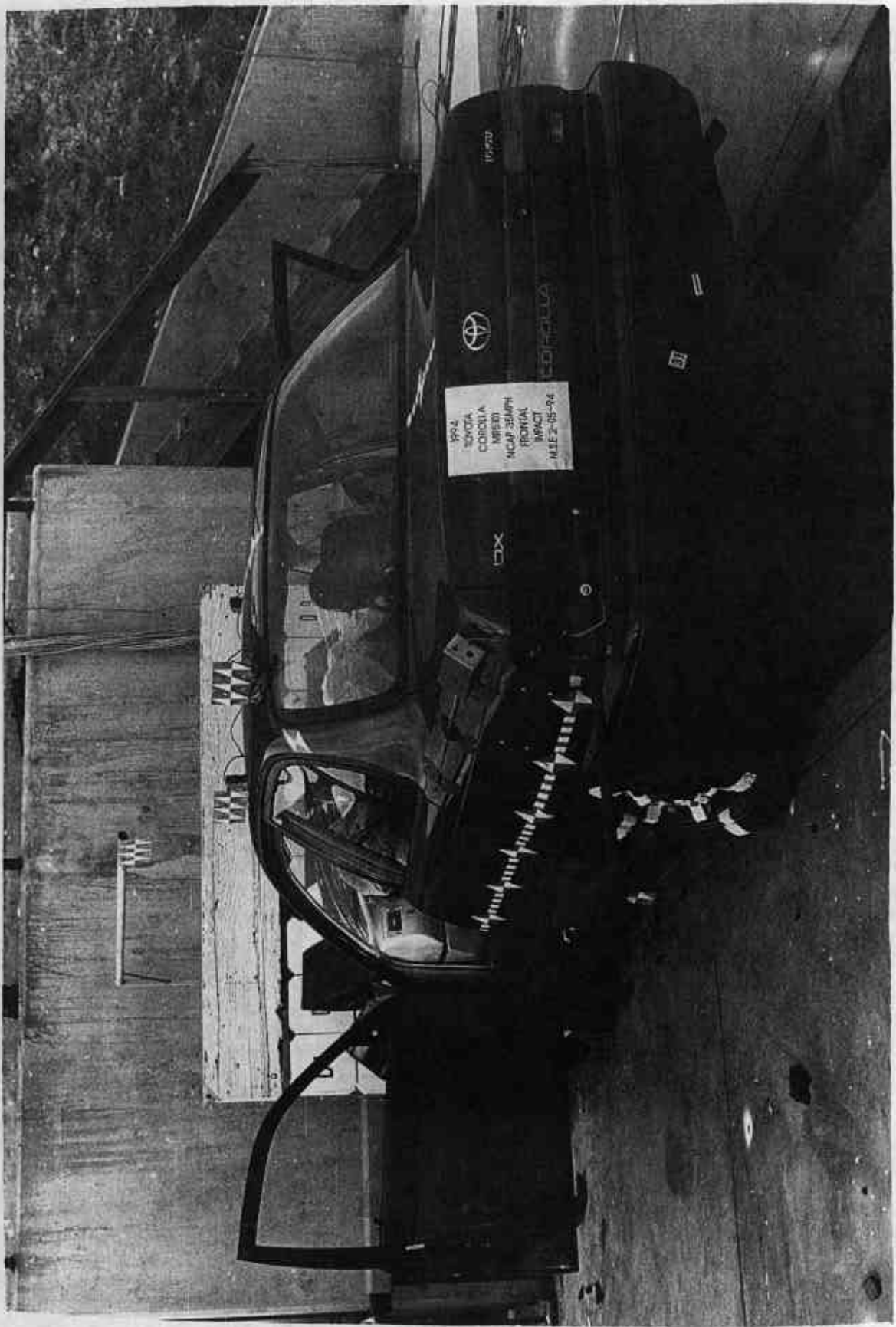
PHOTOGRAPH UNAVAILABLE



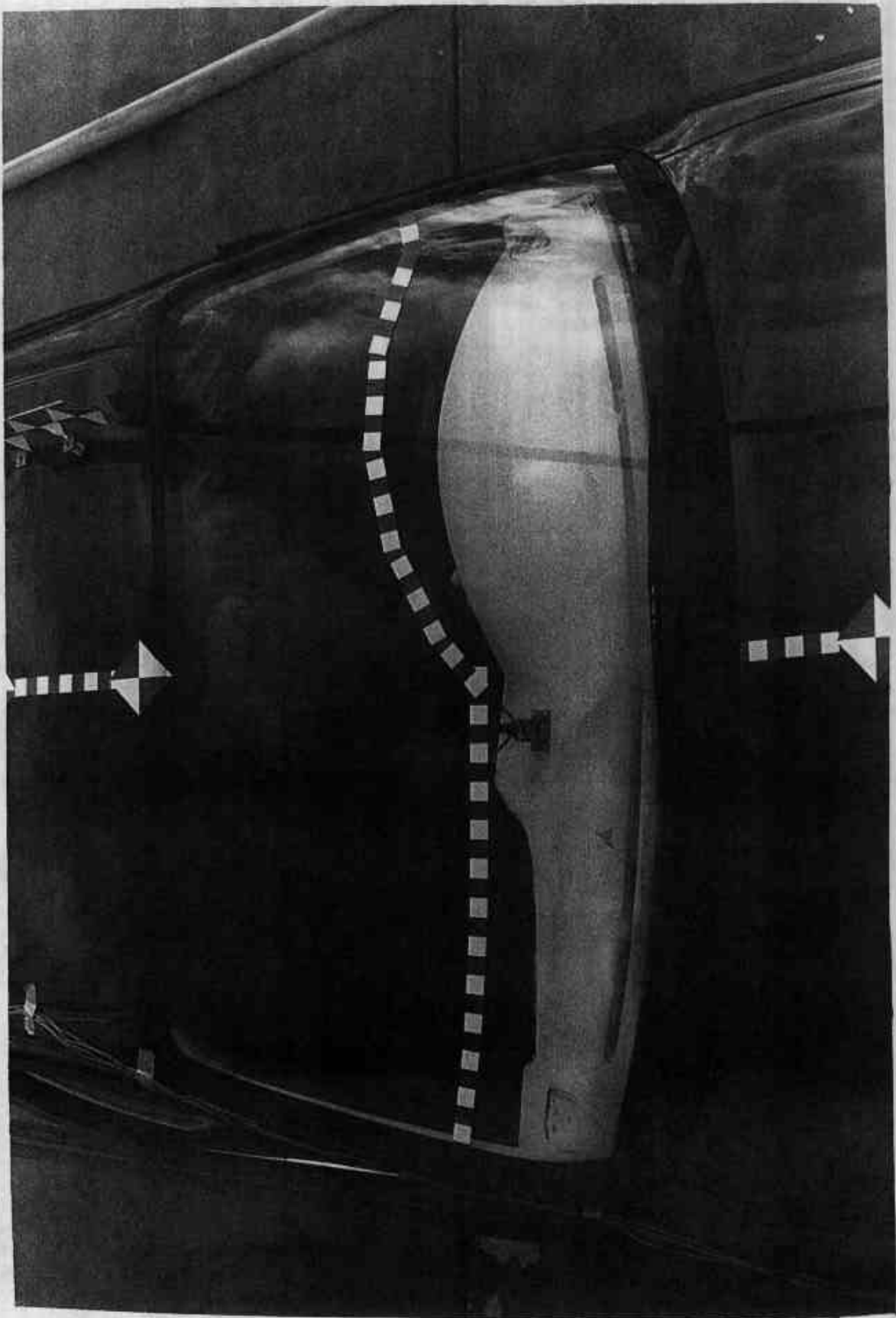
POSTTEST RIGHT FRONT 3/4 VIEW



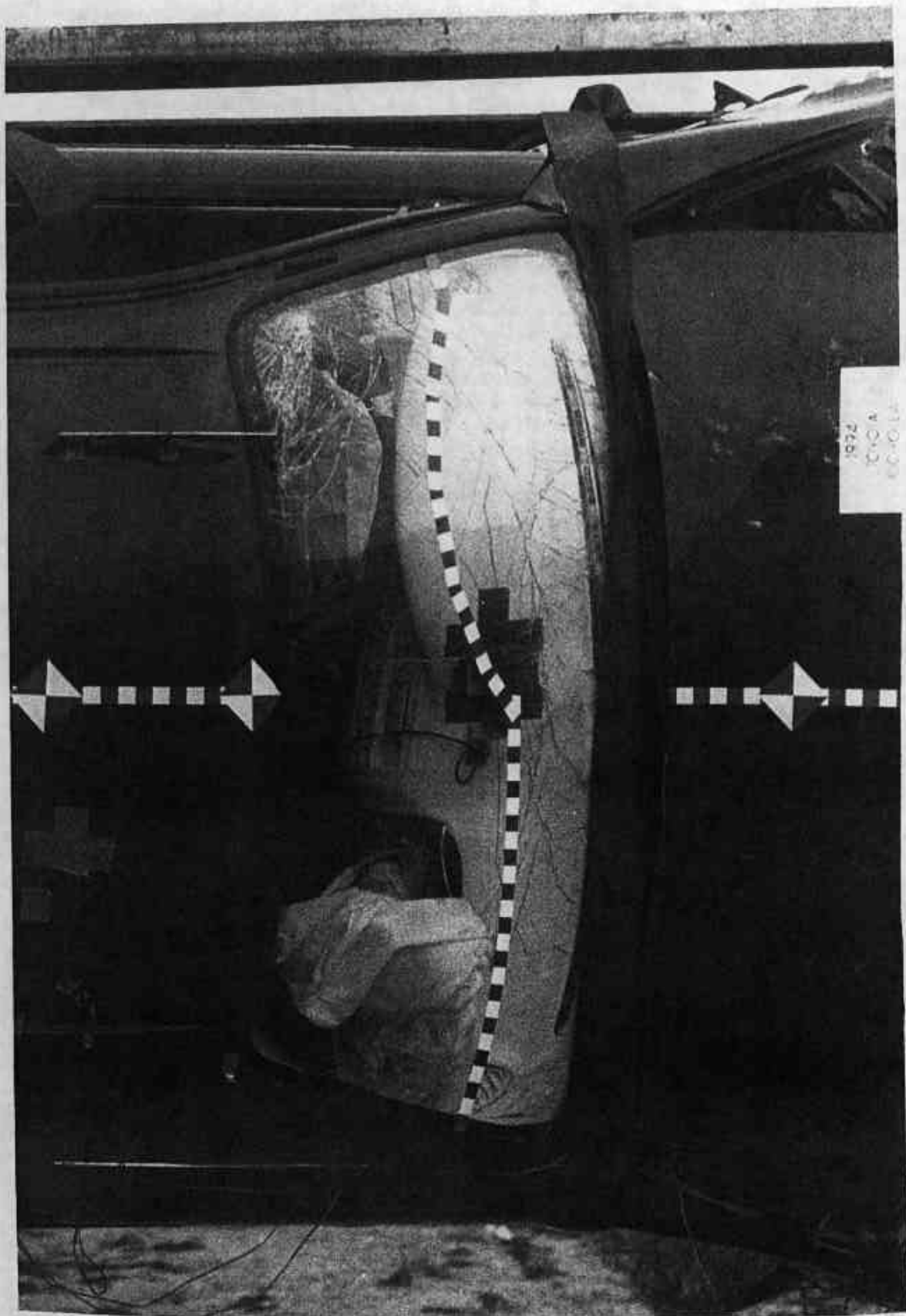
PRETEST LEFT REAR 3/4 VIEW



POSTTEST LEFT REAR 3/4 VIEW

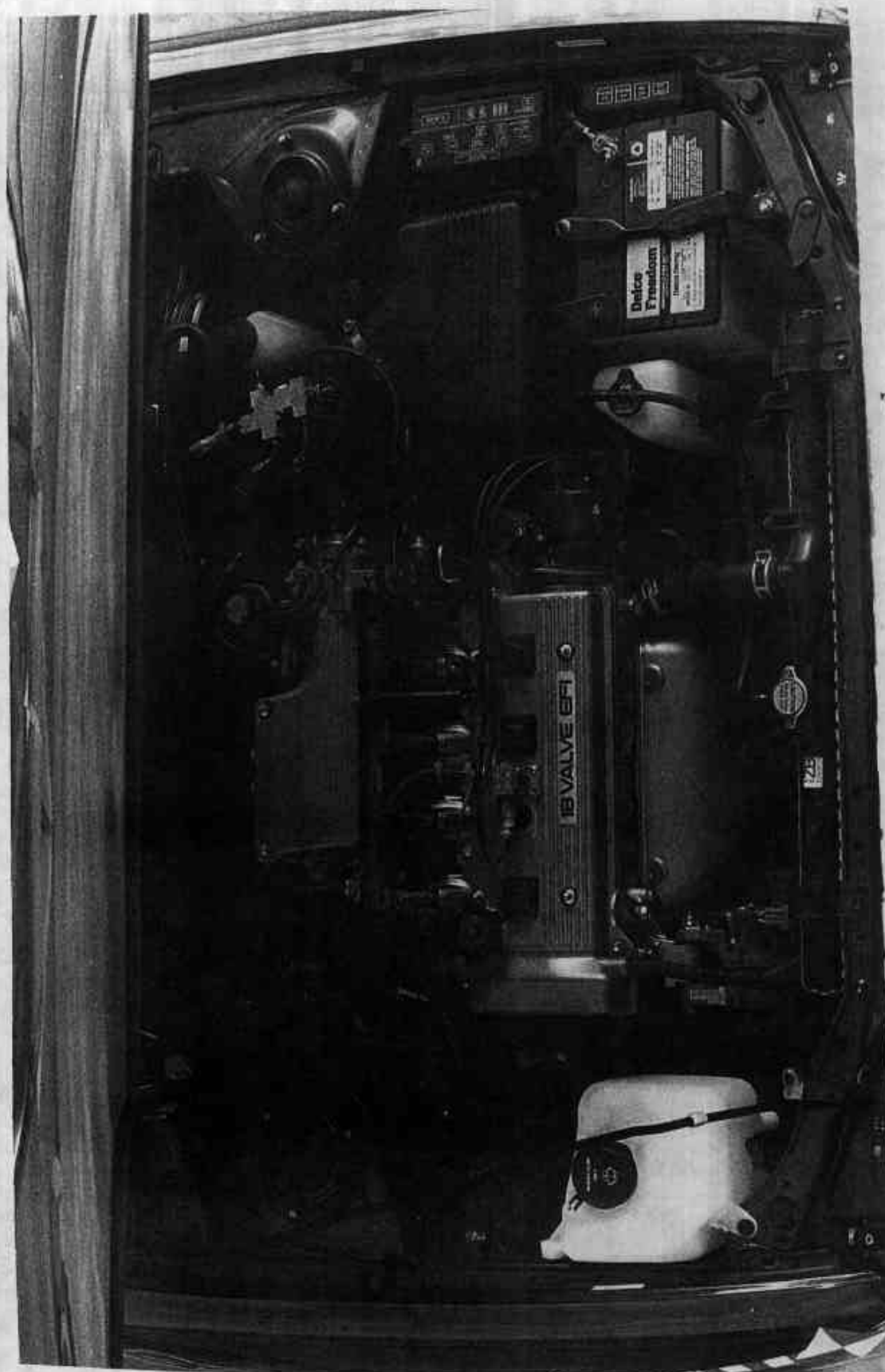


PRETEST WINDSHIELD VIEW

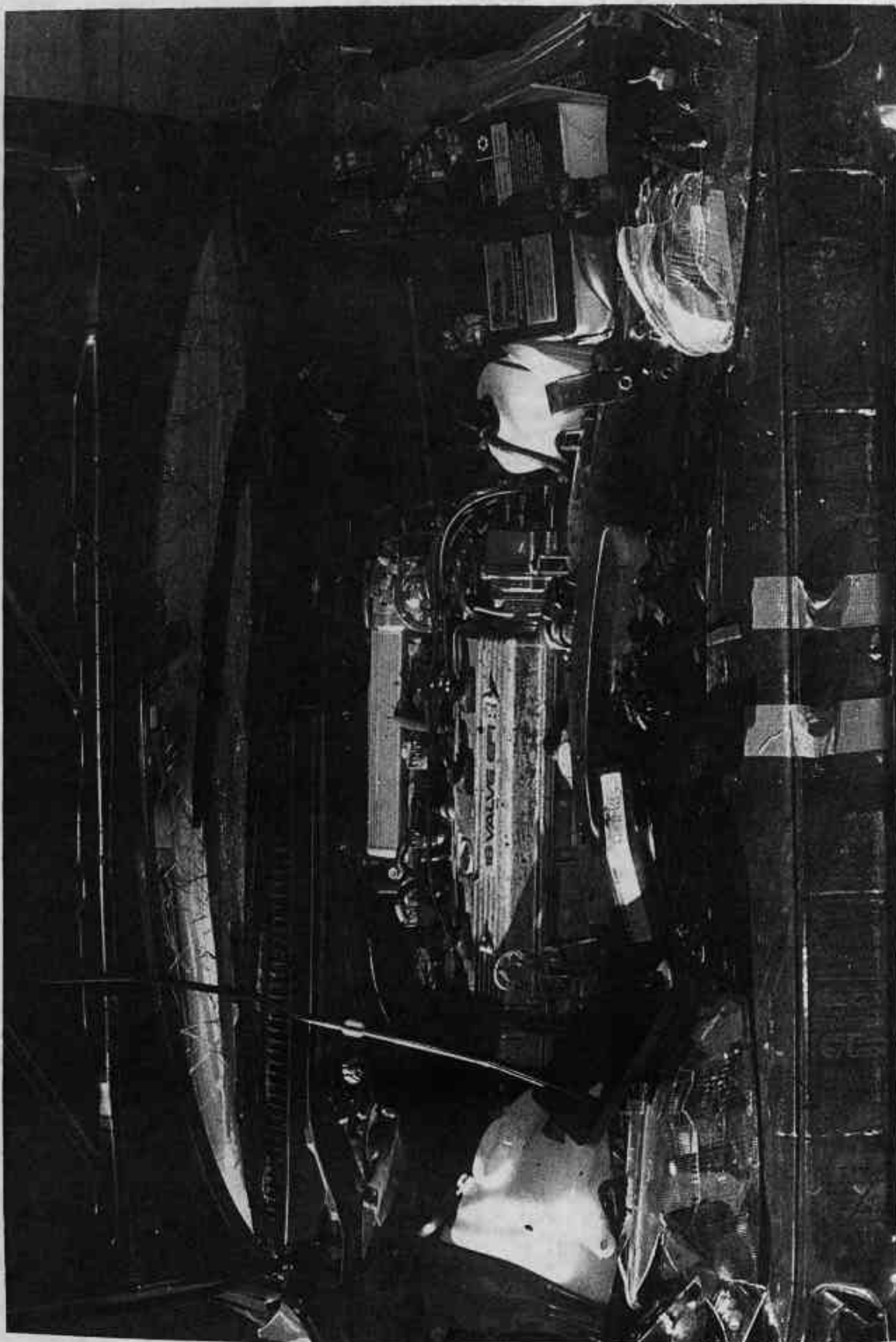


1972
C-10 A
60-014

POSTTEST WINDSHIELD VIEW



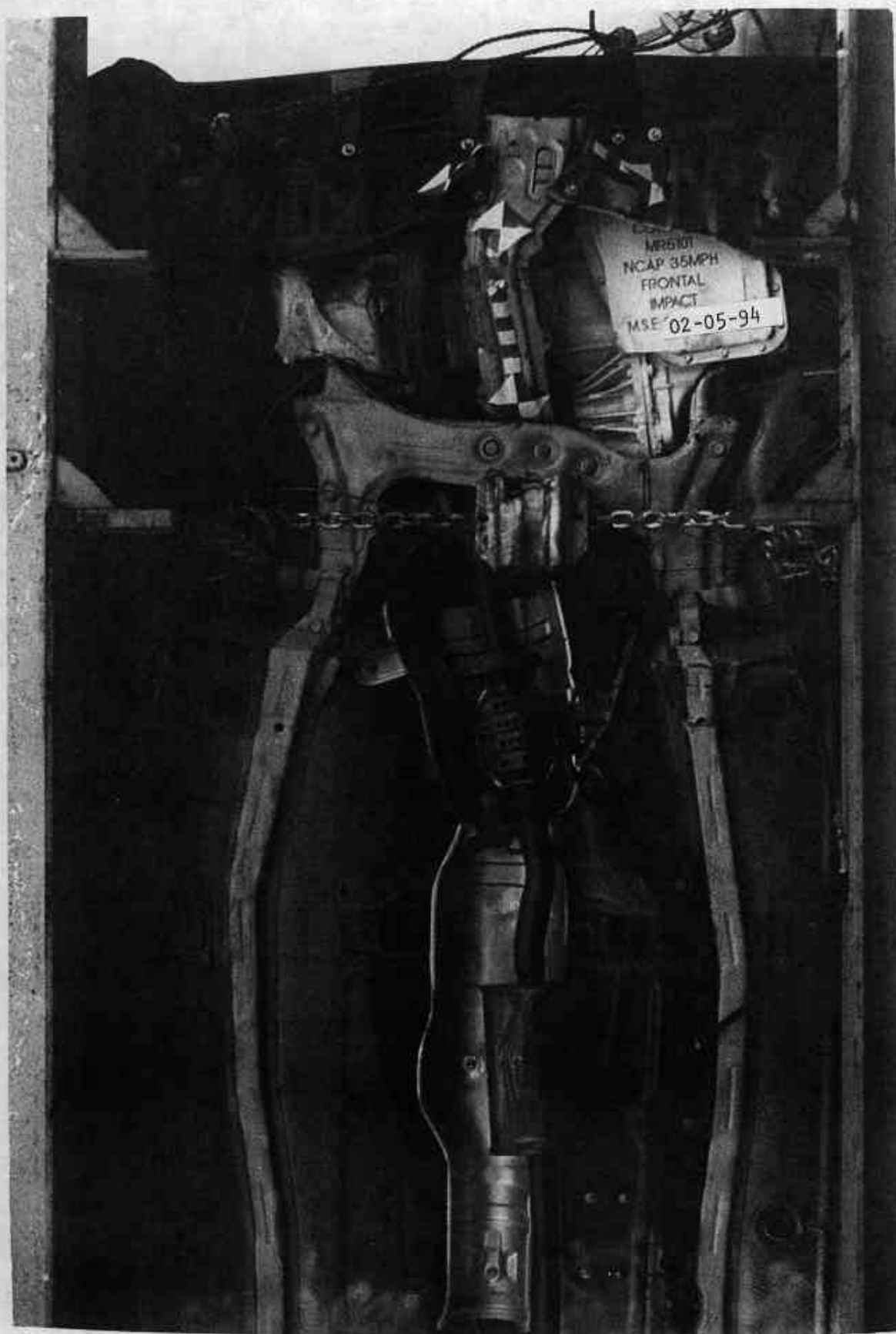
PRETEST ENGINE COMPARTMENT VIEW



POSTTEST ENGINE COMPARTMENT VIEW



PRETEST FRONT UNDERBODY VIEW

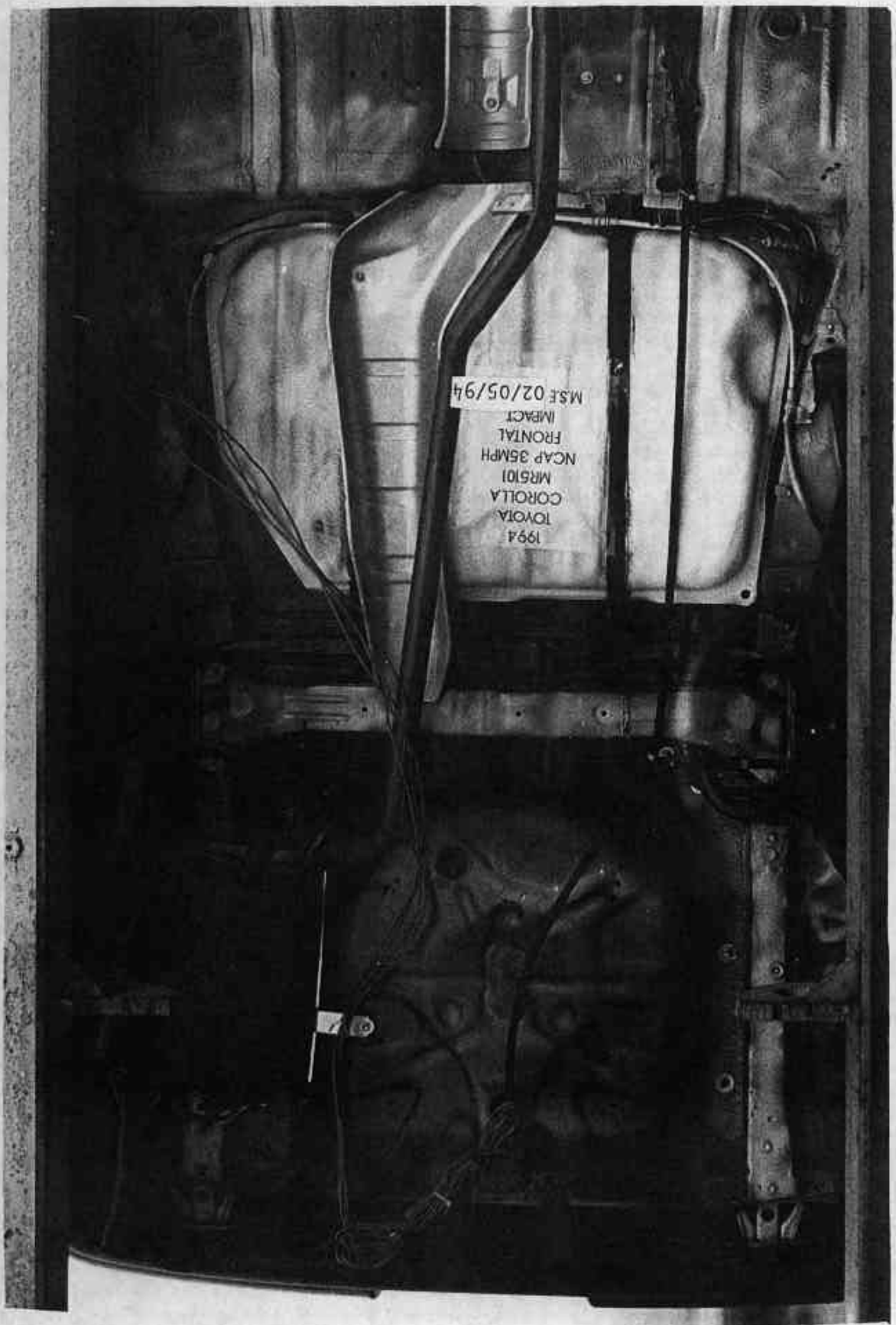


POSTTEST FRONT UNDERBODY VIEW

FIGURE A17
PRETEST REAR UNDERBODY
PHOTOGRAPH NOT AVAILABLE

A17

MSE-R93030-01



POSTTEST REAR UNDERBODY VIEW

A18

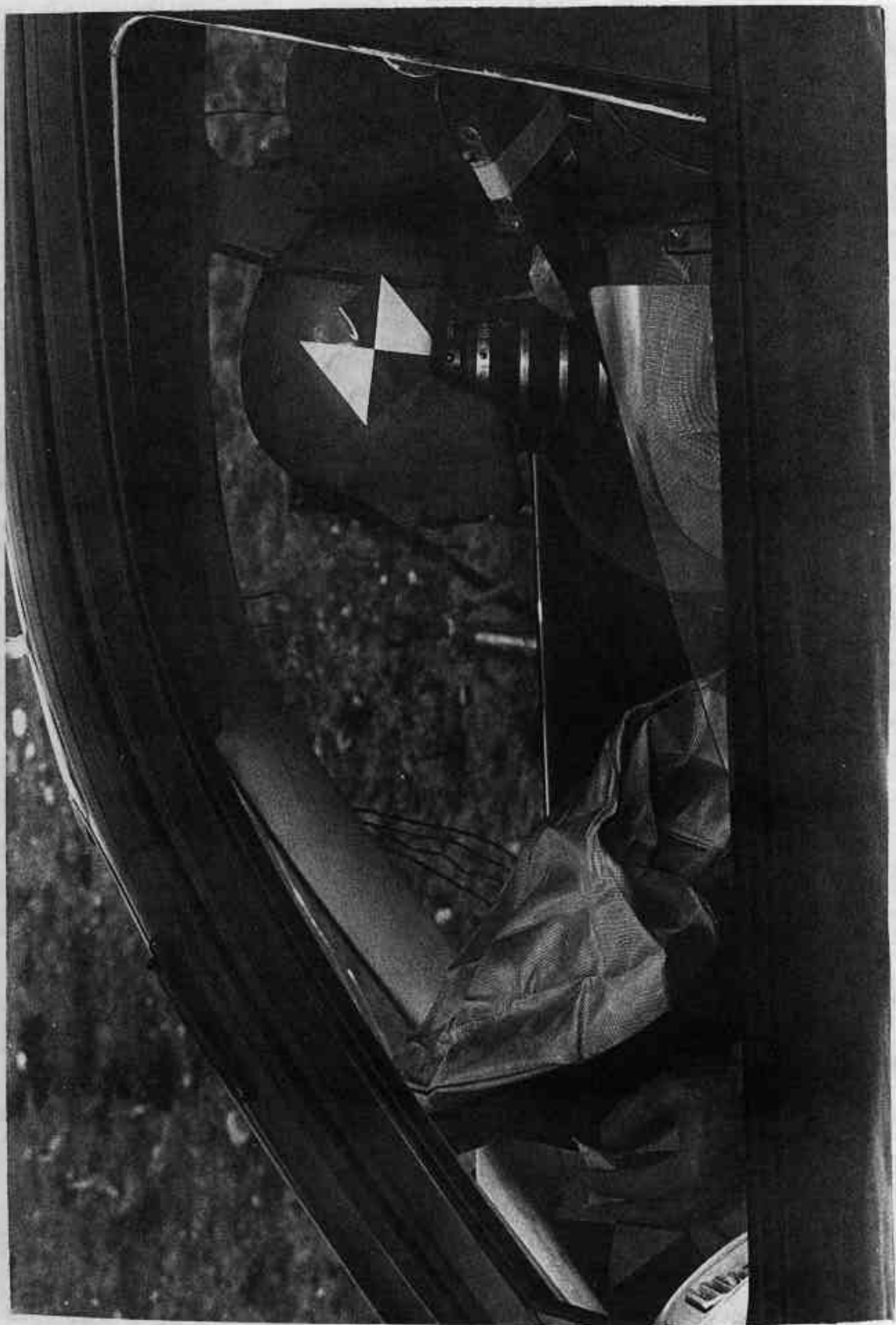
MSE-R93030-01



PRETEST DRIVER DUMMY POSITION VIEW

A19

MSE-R93030-01



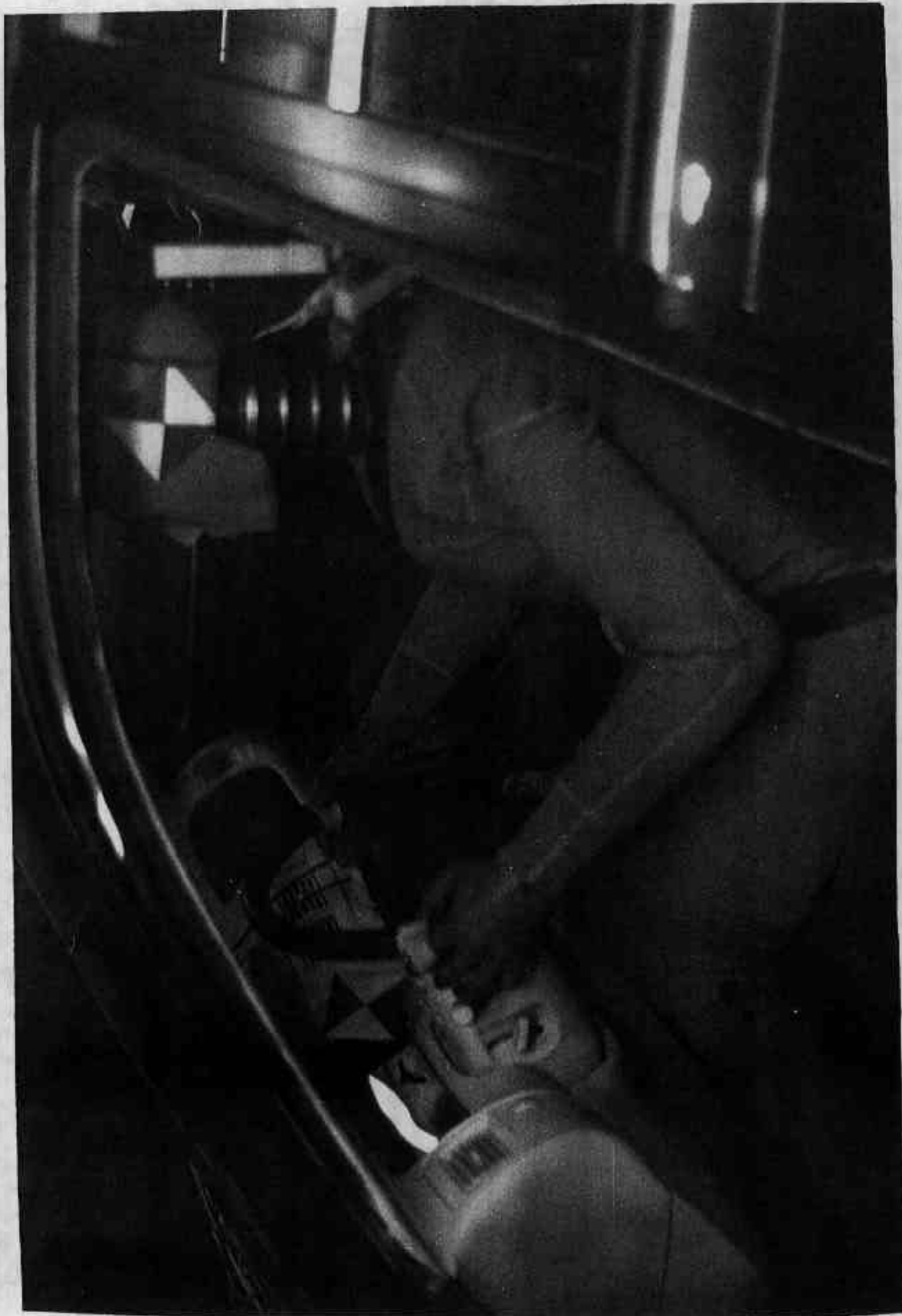
POSTTEST DRIVER DUMMY POSITION VIEW



PRETEST PASSENGER DUMMY POSITION VIEW



POSTTEST PASSENGER DUMMY POSITION VIEW



PRETEST DRIVER DUMMY AND VEHICLE

INTERIOR VIEW (DOOR OPEN)



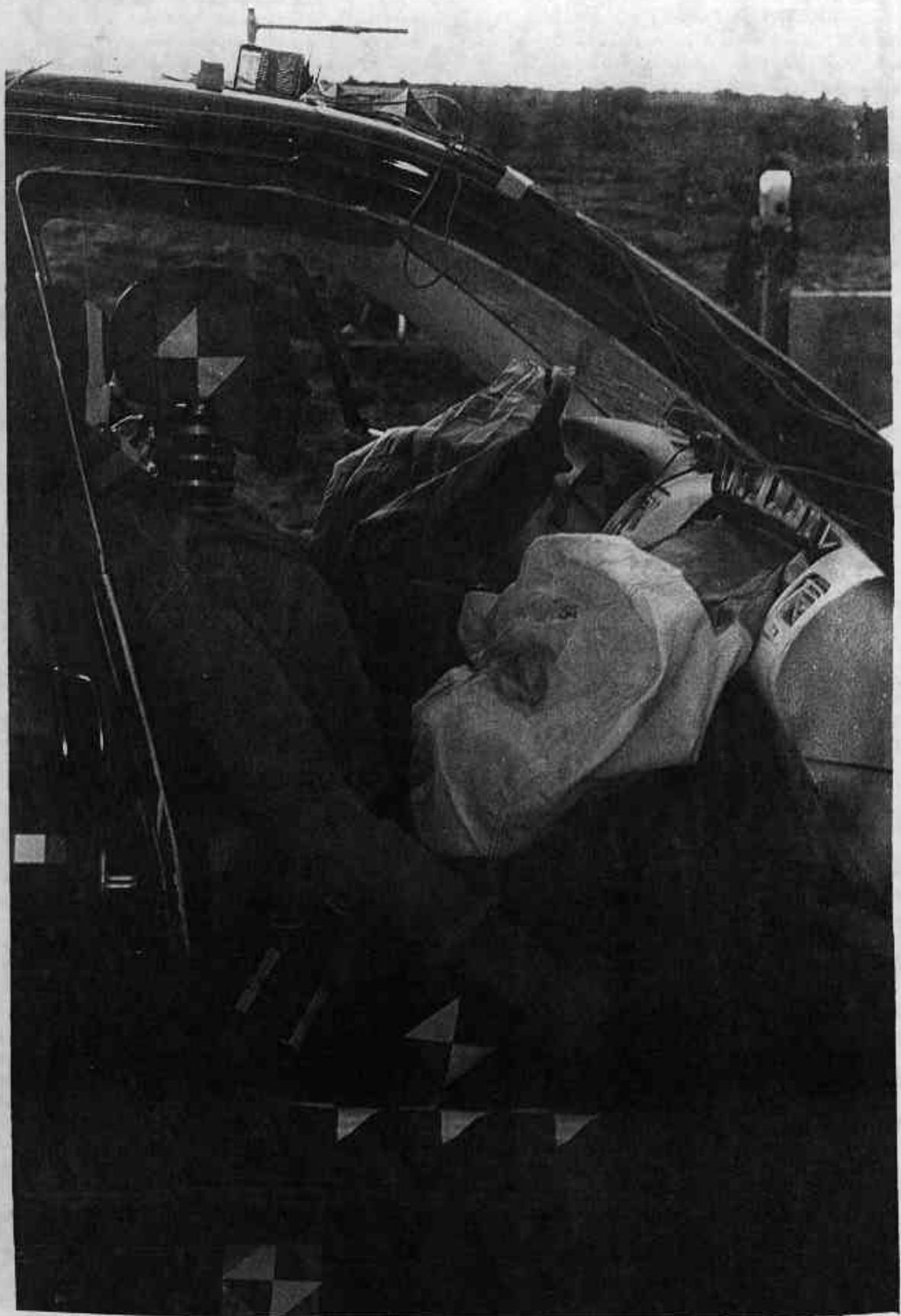
POSTTEST DRIVER DUMMY AND VEHICLE
INTERIOR VIEW (DOOR OPEN)



PRETEST PASSENGER DUMMY AND
VEHICLE INTERIOR VIEW (DOOR OPEN)

A25

MSE-R93030-01



POSTTEST PASSENGER DUMMY AND
VEHICLE INTERIOR VIEW (DOOR OPEN)



POSTTEST DRIVER DUMMY KNEE CONTACT AREA



POSTTEST PASSENGER DUMMY KNEE CONTACT AREA

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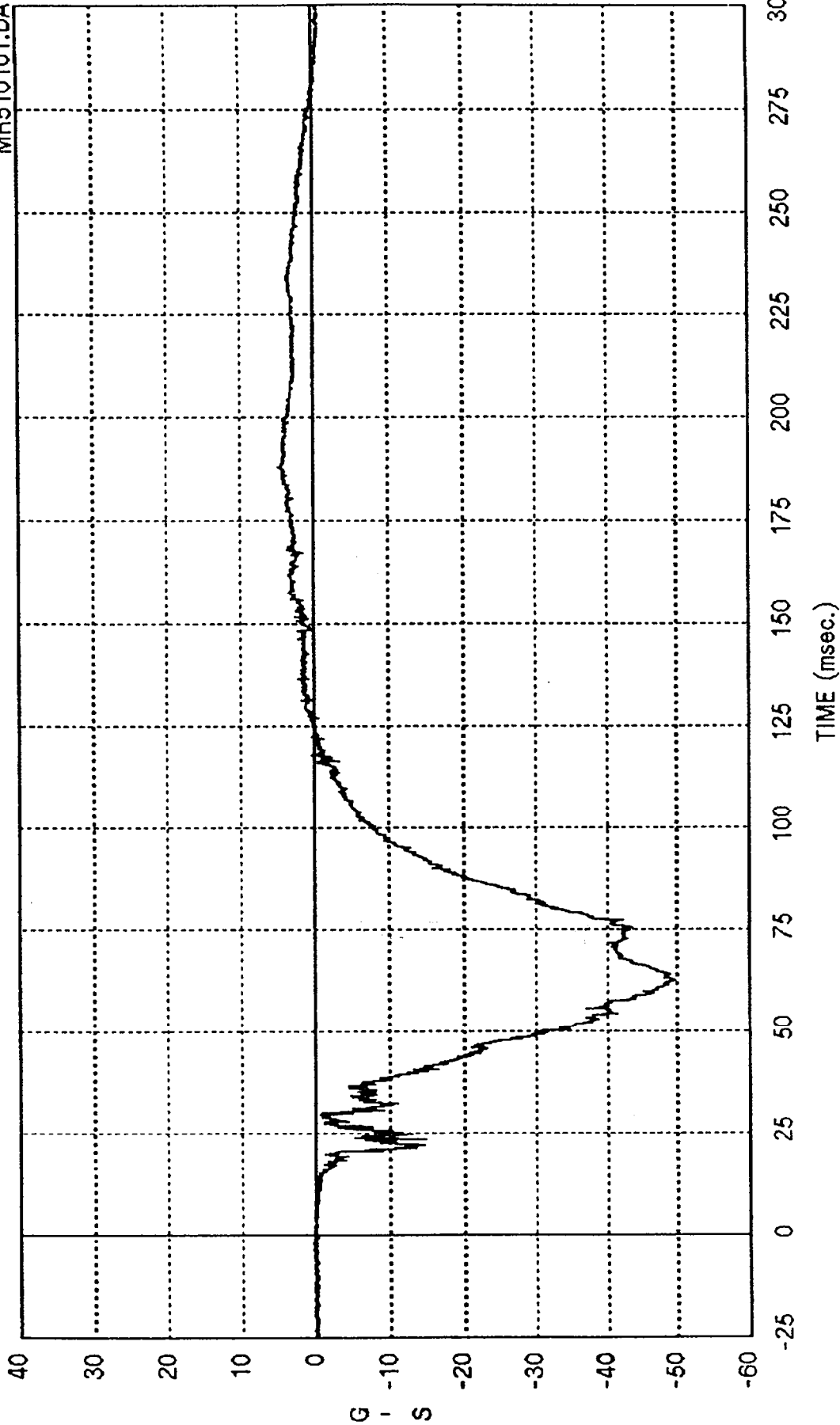
APPENDIX B - 1

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

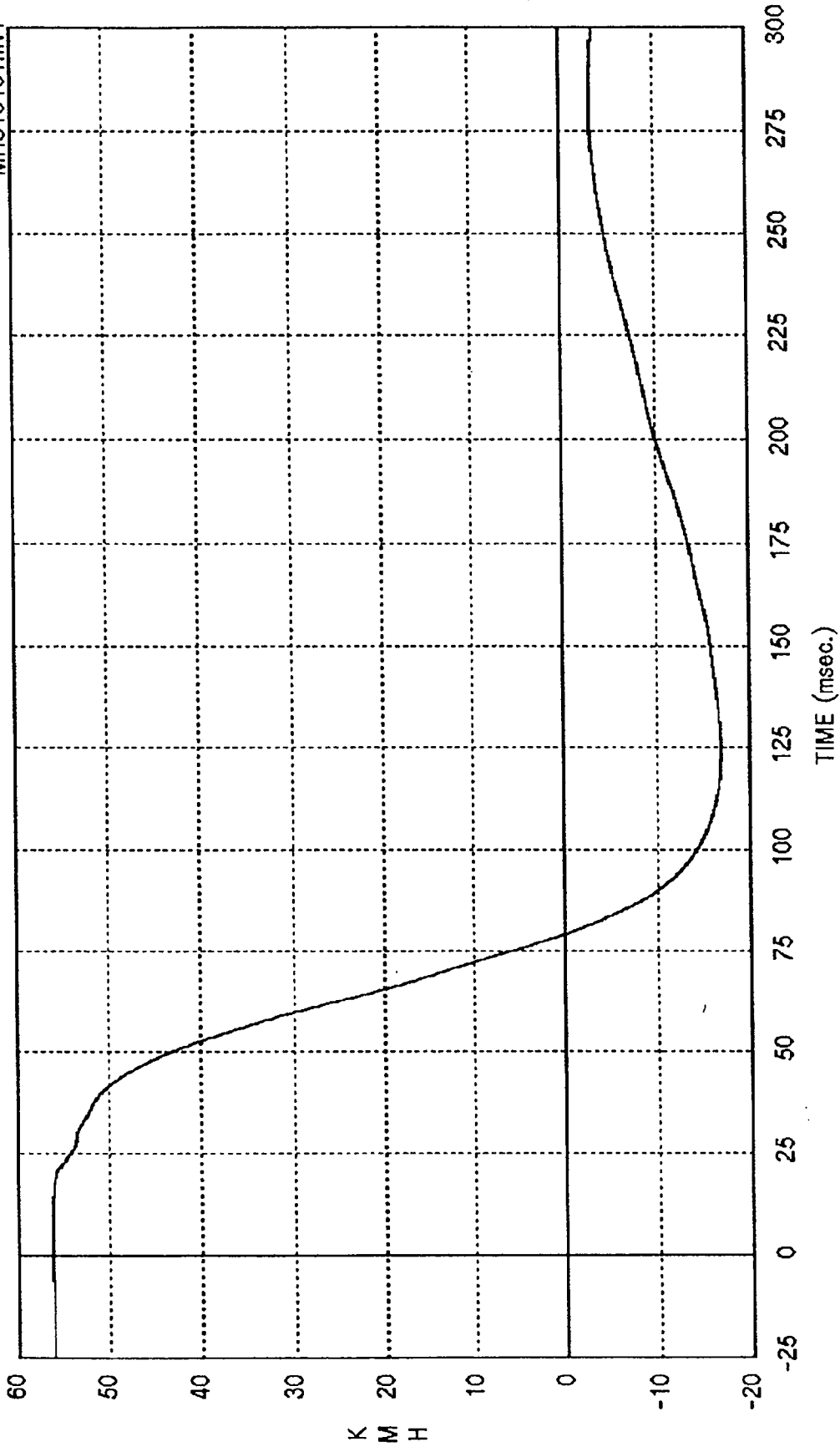
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Curve: Driver head acceleration -- X axis Filter: SAE CLASS 1000 Max = 4.7765 Min = -49.711

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

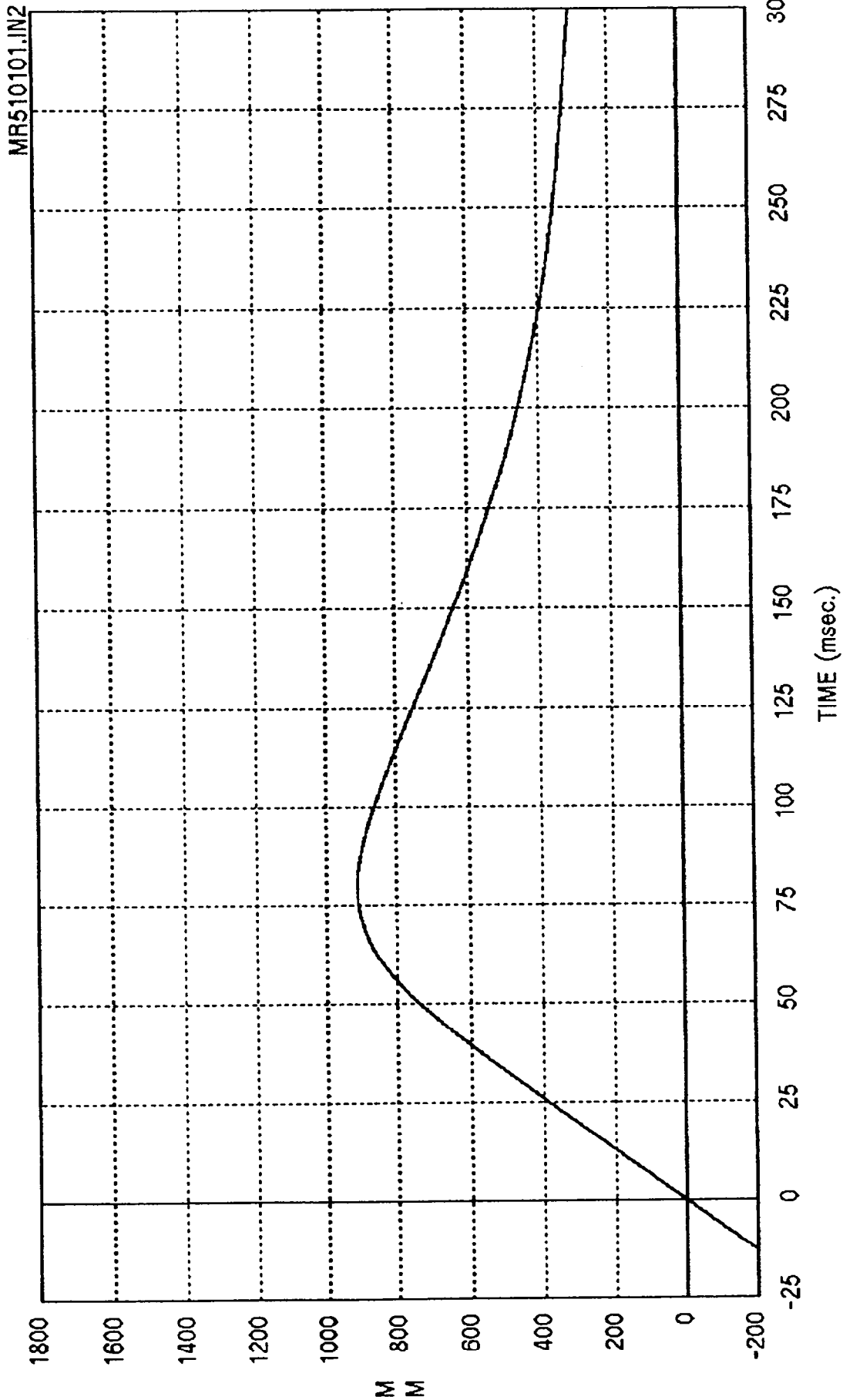
MR510101.IN1



Curve: Driver head delta V -- X axis Filter: SAE CLASS 180 Max = 56.213 Min = -16.812

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

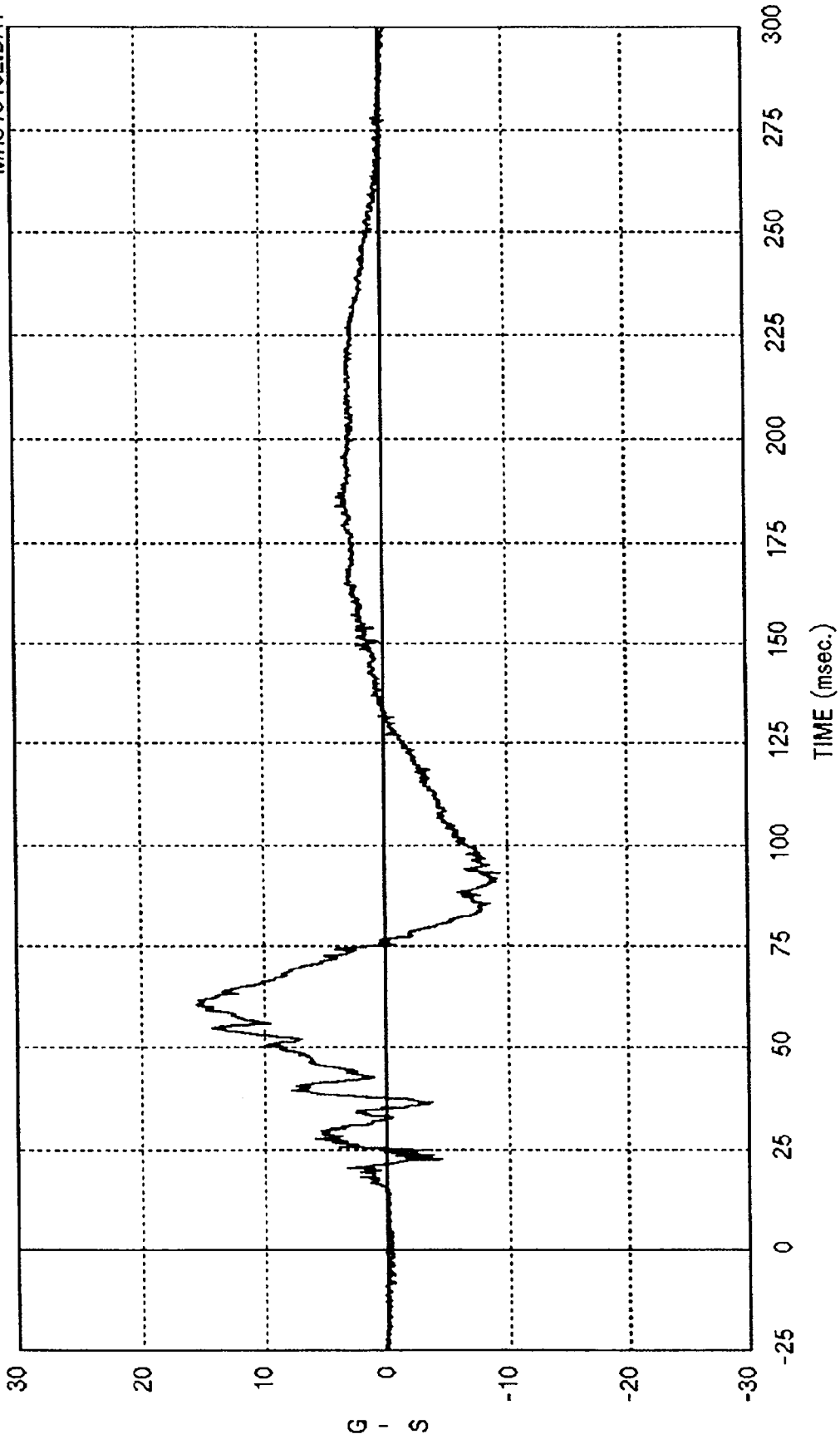


Curve: Driver head displacement -- X axis Filter: SAE CLASS 180 Max = 915.12 Min = 305.60

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

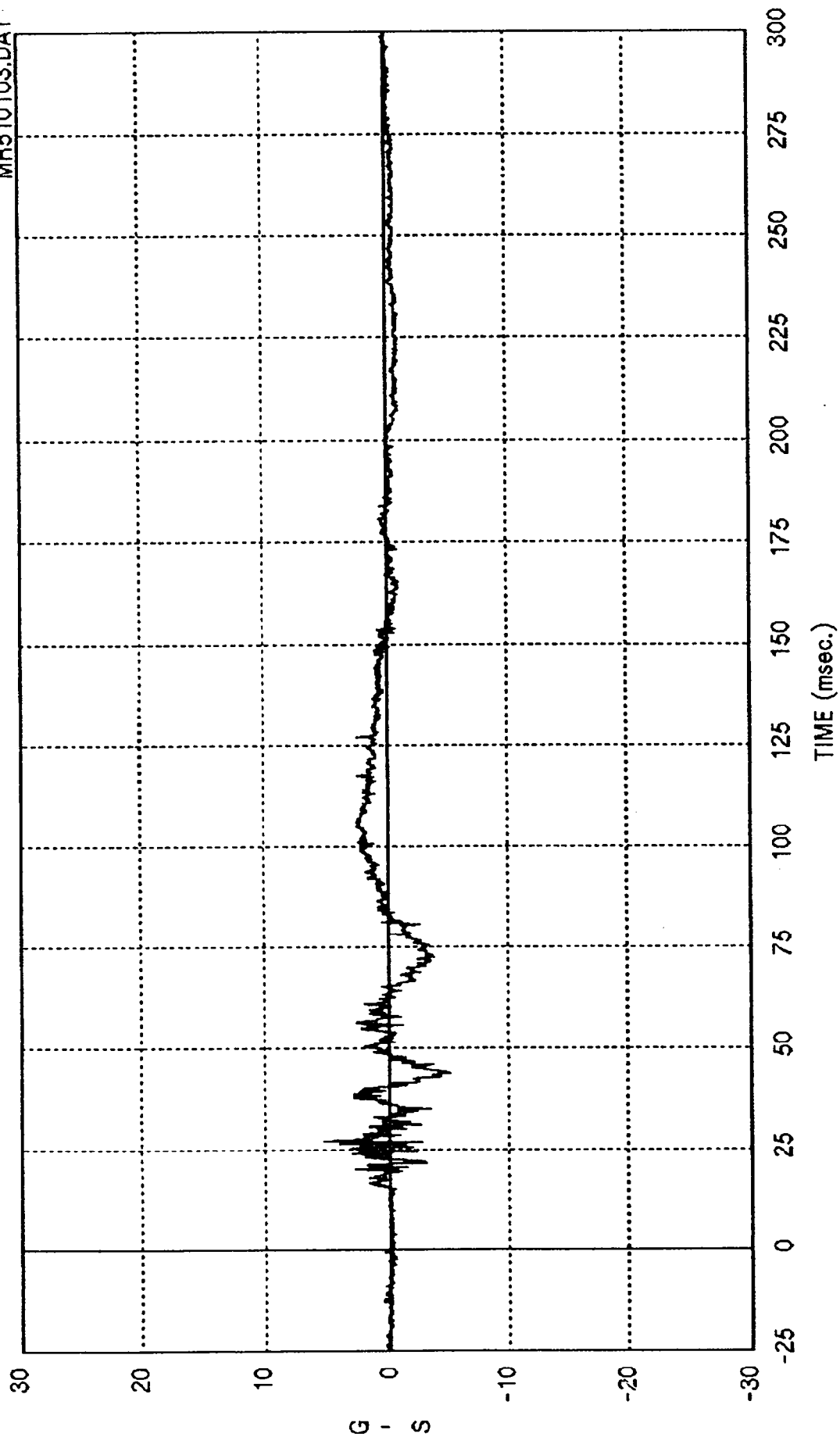
MR510102.DAT



Curve: Driver head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 15.584 Min = -9.3024

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

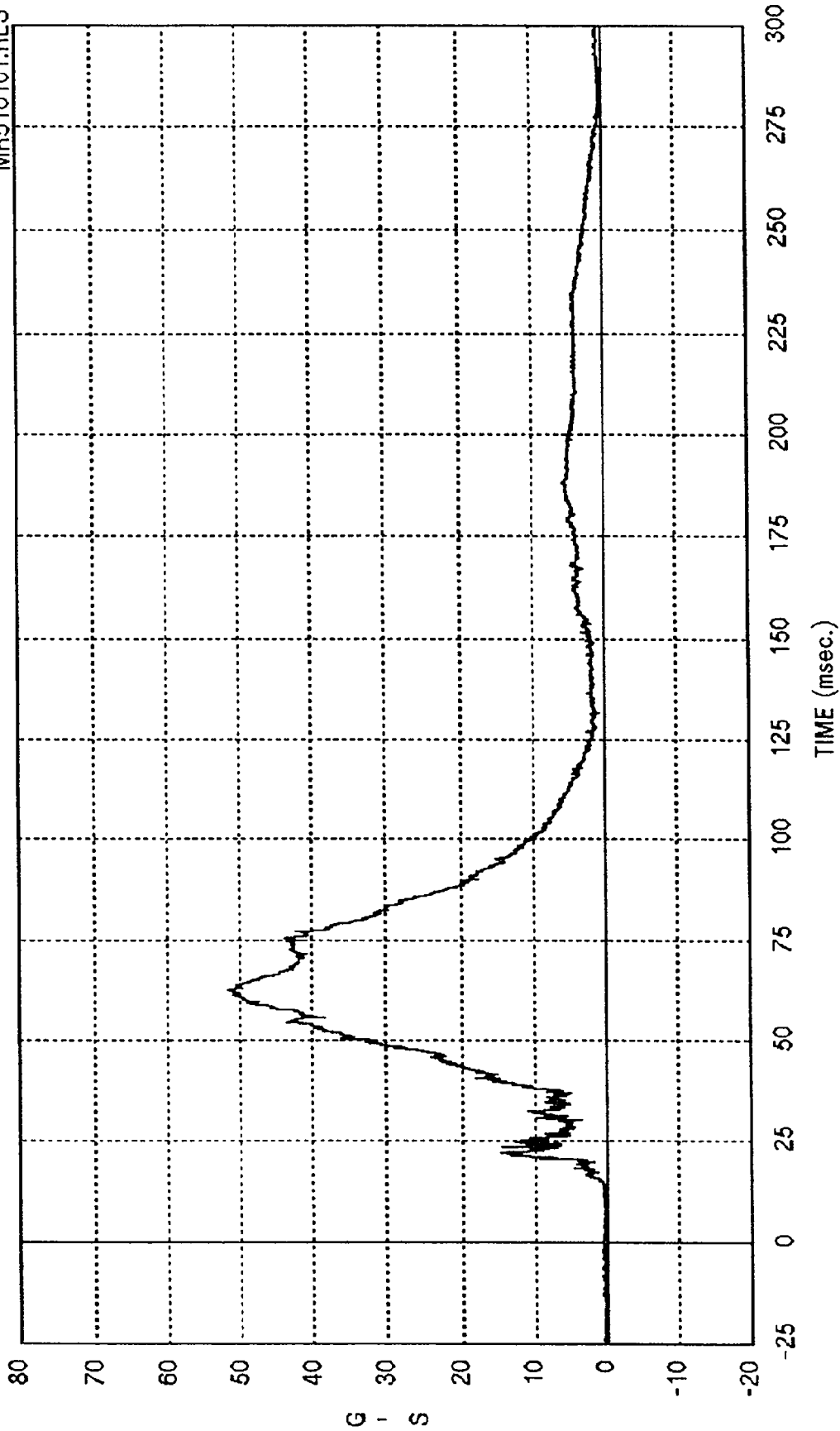
G - S



Curve: Driver head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 5.1916 Min = -5.0186

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

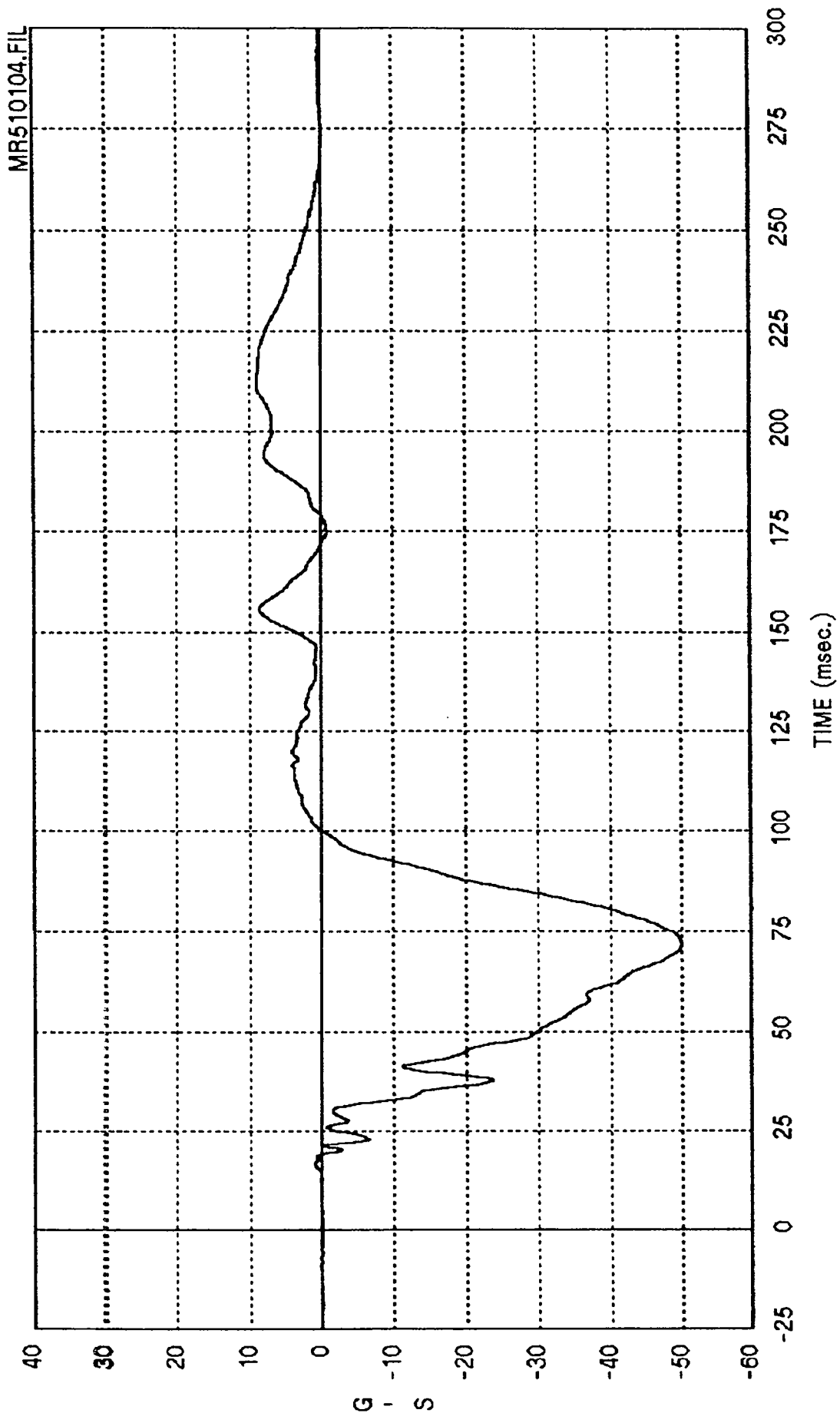
MR510101.RES



Curve: Driver head acceleration -- Resultant Filter: SAE CLASS 1000 Max = 51.644 Min = .86527E-01

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

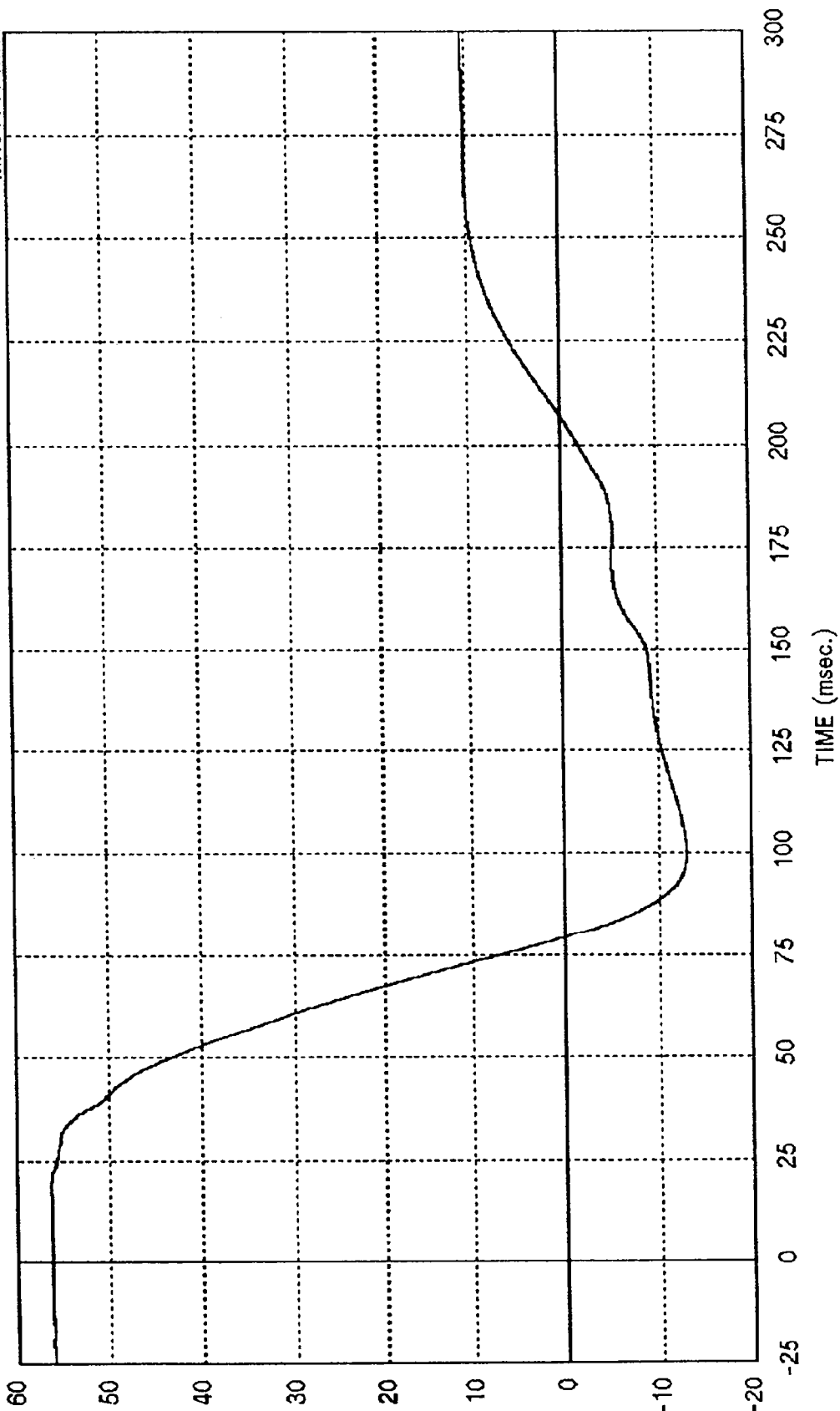
G - S



Curve: Driver chest acceleration -- X axis Filter: SAE CLASS 180 Max = 9.0963 Min = -49.973

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510104.IN1

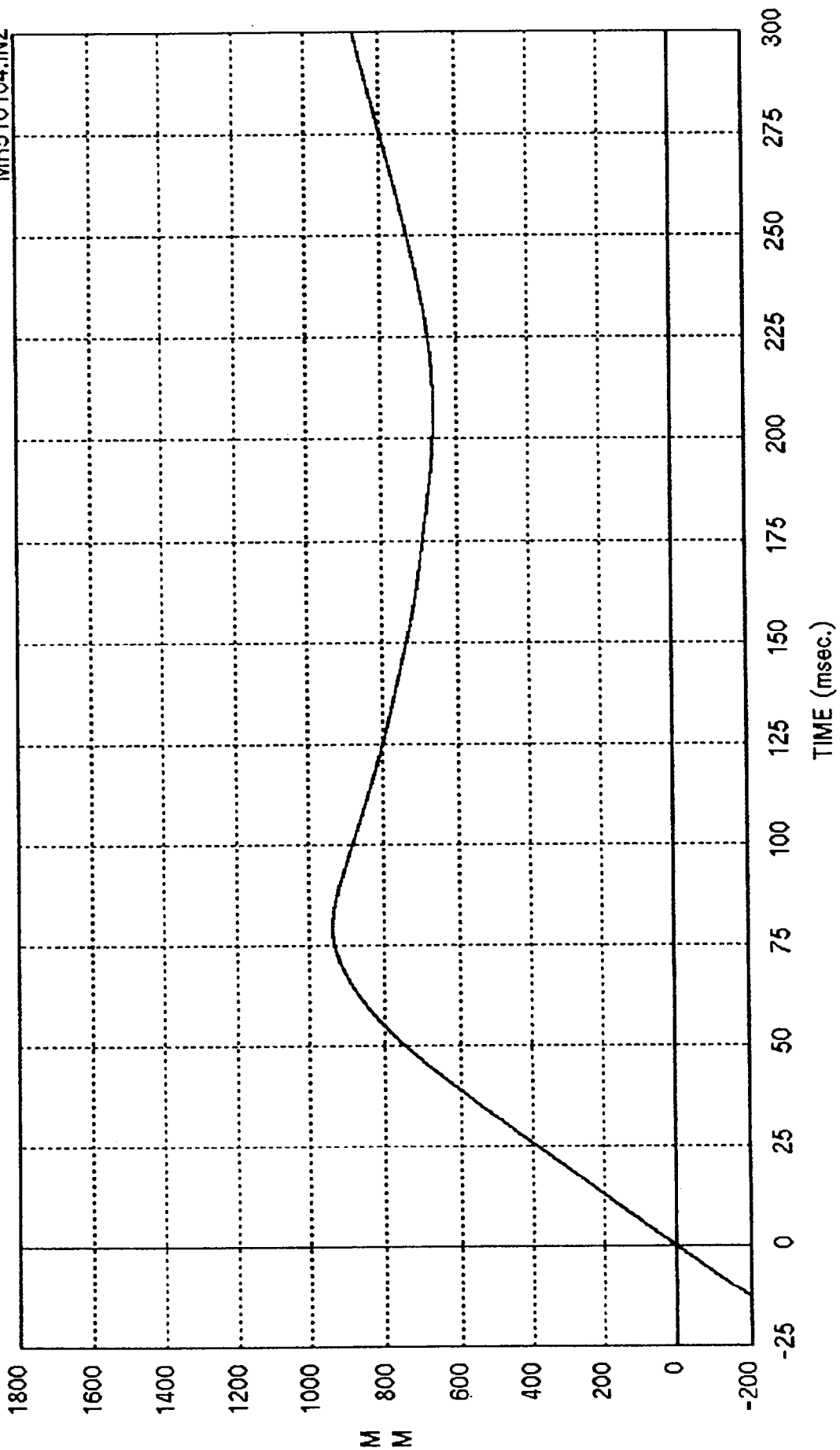


Curve: Driver chest delta V -- X axis Filter: SAE CLASS 180 Max = 56.333 Min = -12.970

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

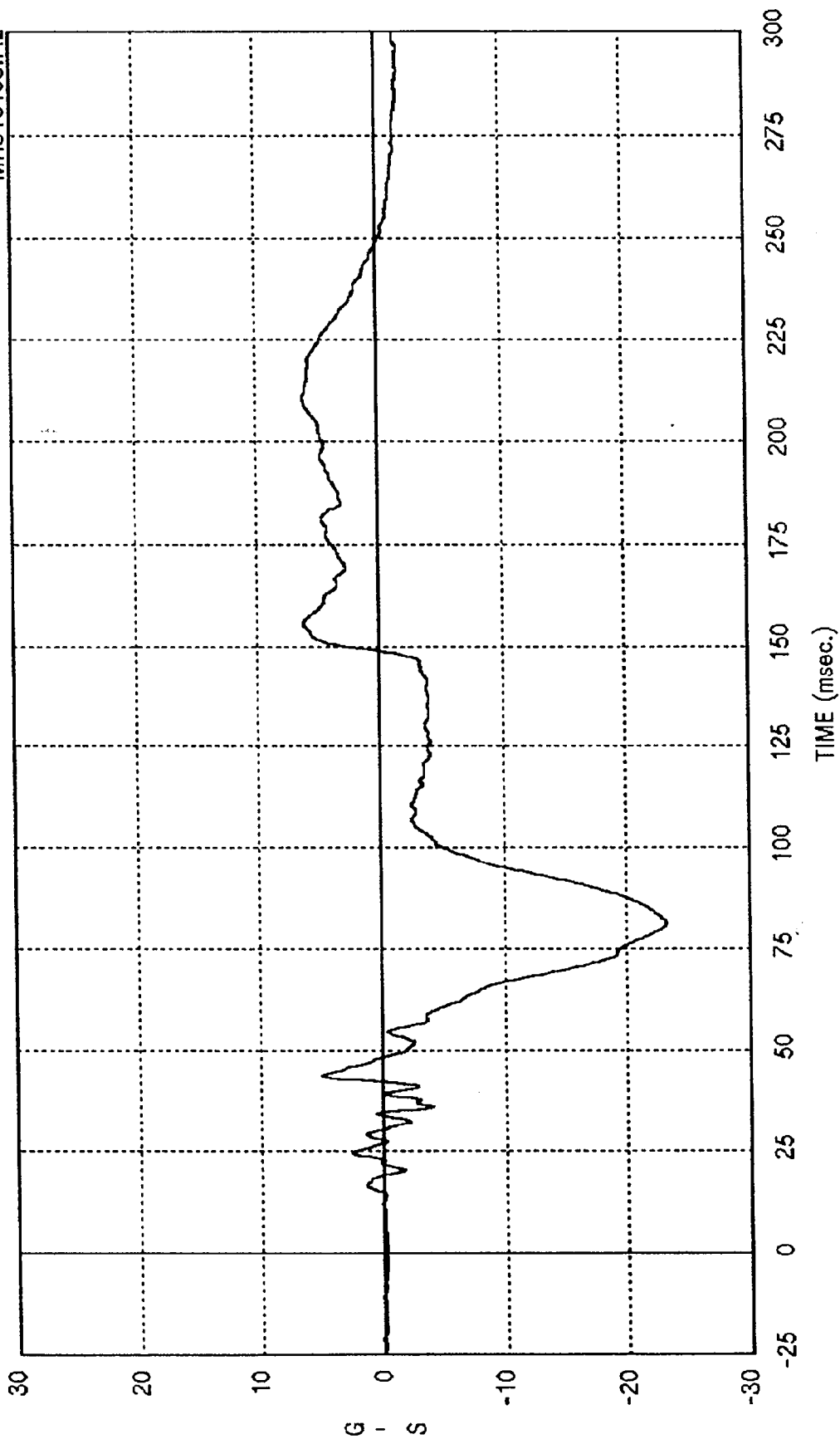
MR510104.IN2



Curve: Driver chest displacement -- X axis Filter: SAE CLASS 180 Max = 936.93 Min = 660.01

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

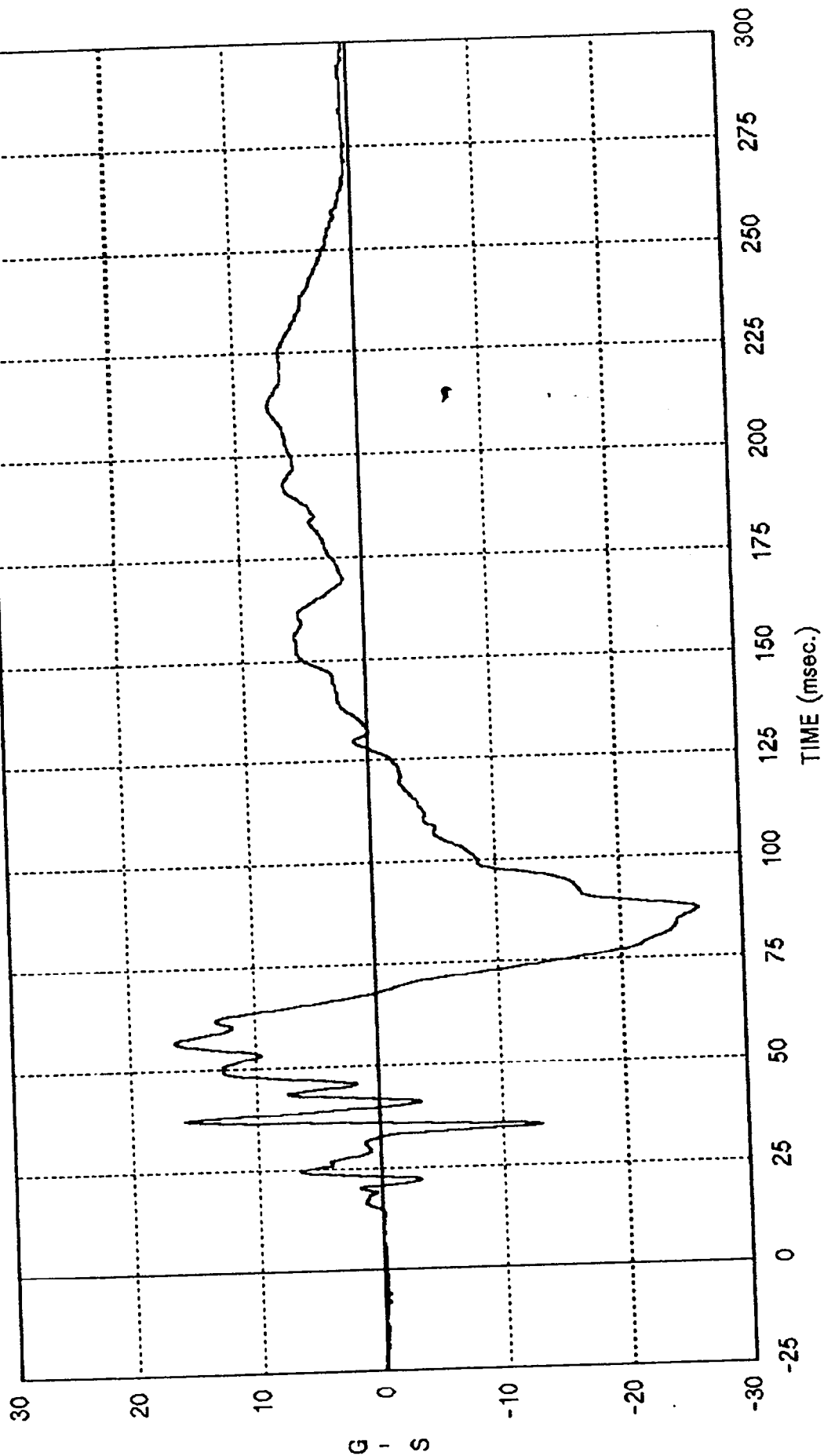
MR510105.FIL



Curve: Driver chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 6.2231 Min = -23.146

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

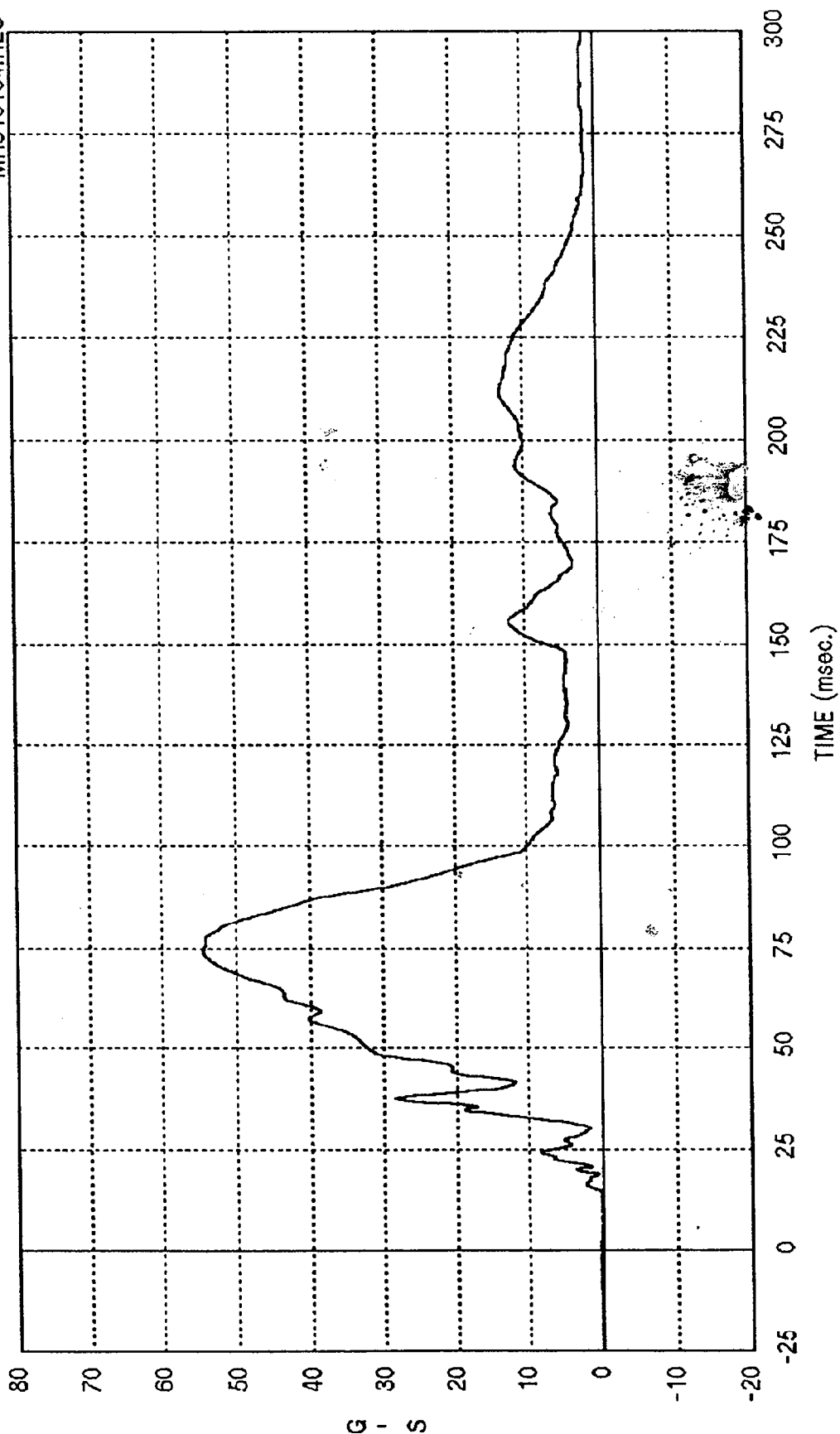
MSE-R93030-01



Curve: Driver chest acceleration -- Z axis Filter: SAE CLASS-180 Max = 16.457 Min = -26.286

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510104.RES

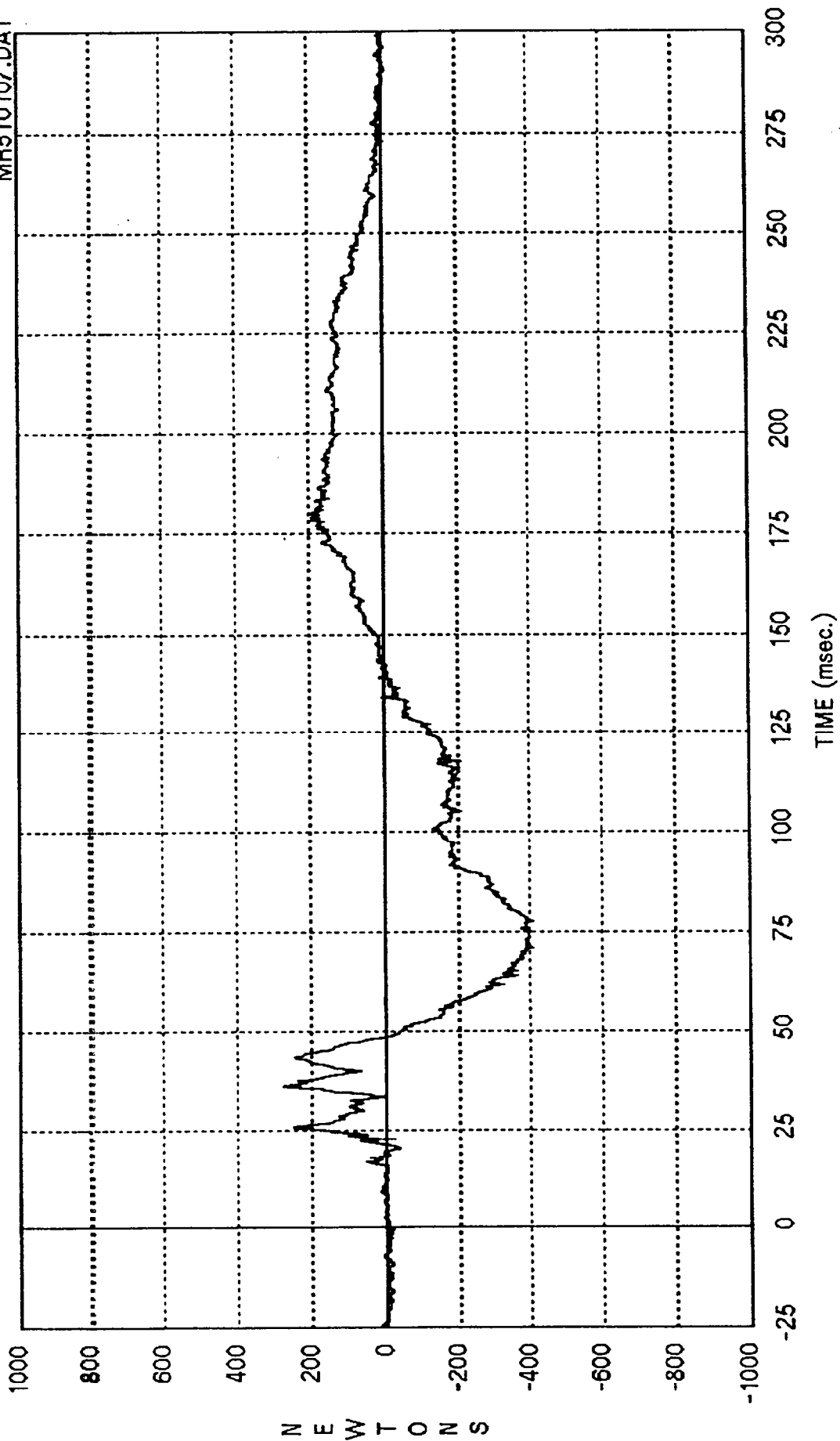


G - S

B-1 12

MSE-R93030-01

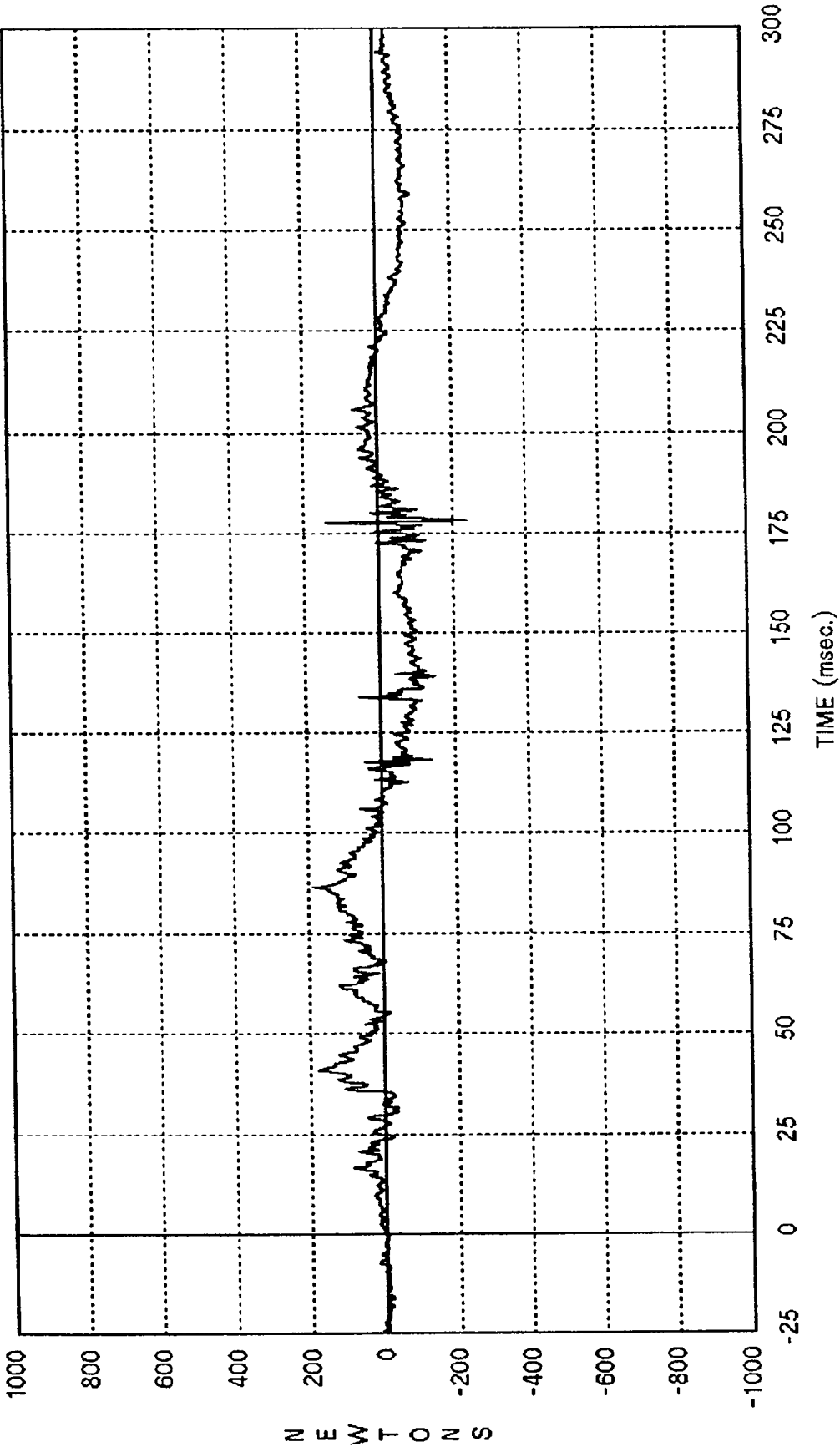
Curve: Driver chest acceleration -- Resultant Filter: SAE CLASS 180 Max = 54.416 Min = .49483E-01
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Driver neck force -- X axis Filter: SAE CLASS 1000 Max = 275.51 Min = -406.36

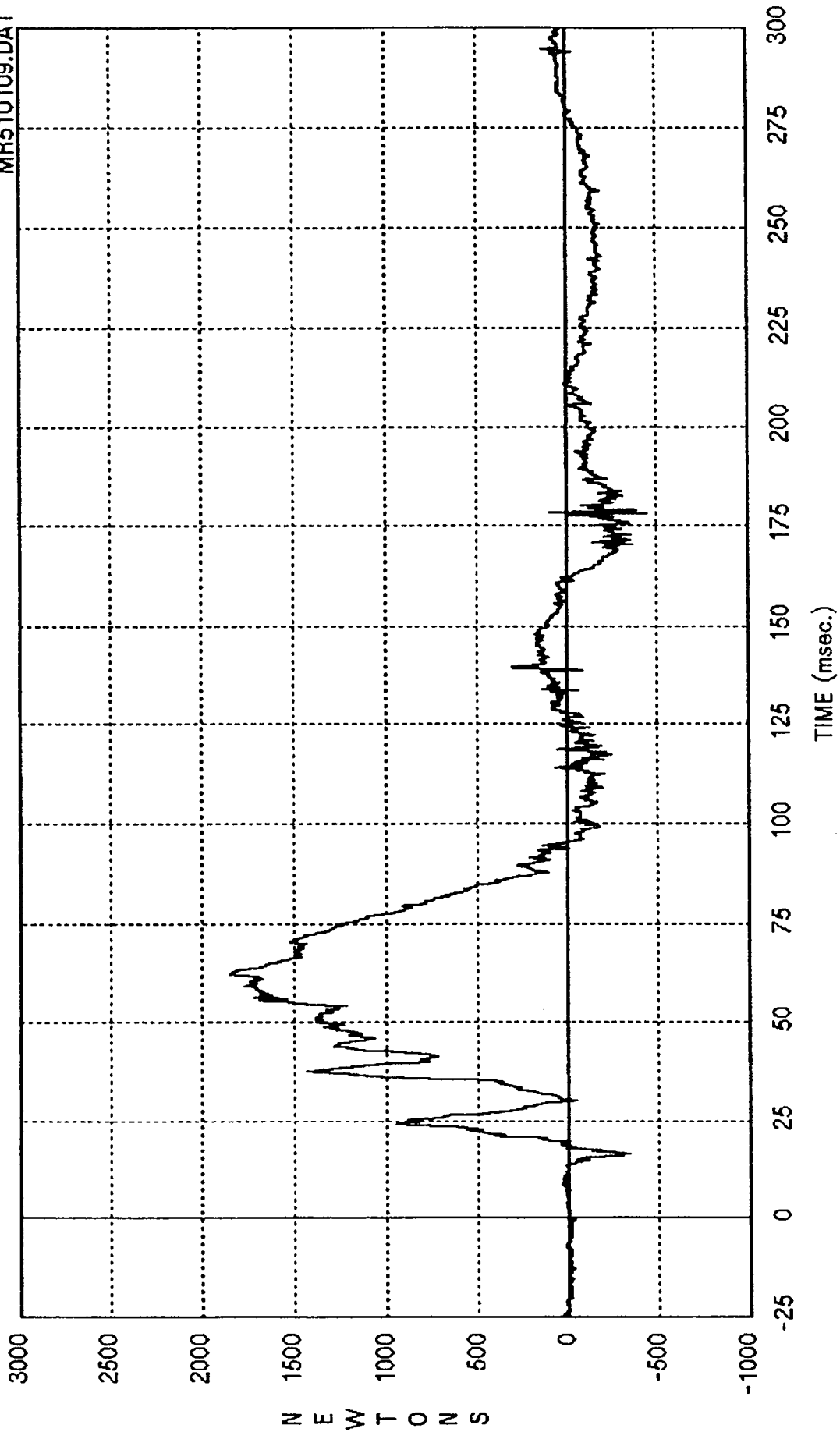
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510108.DAT



Curve: Driver neck force -- Y axis Filter: SAE CLASS 1000 Max = 187.50 Min = -241.86

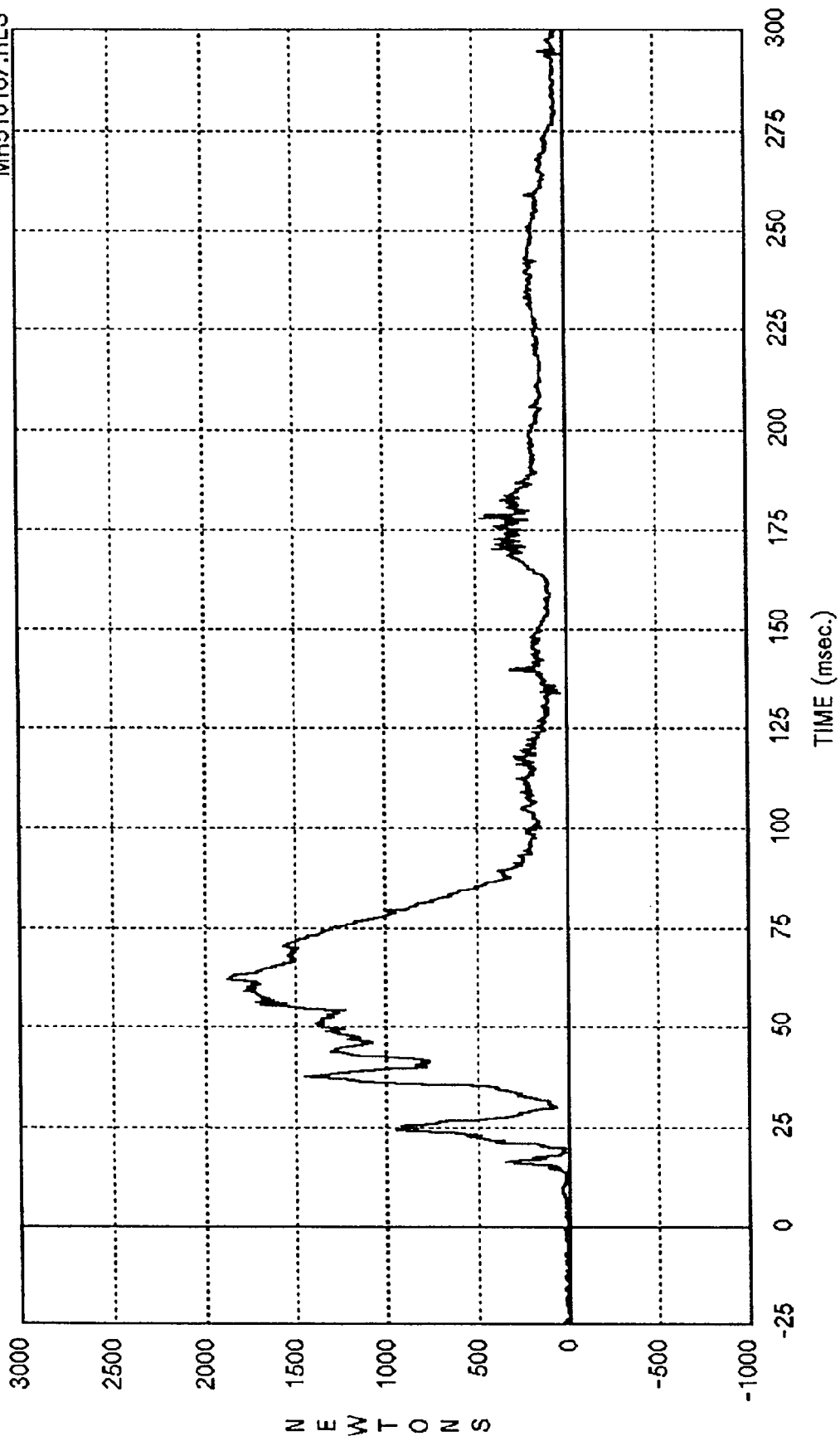
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Driver neck force -- Z axis Filter: SAE CLASS 1000 Max = 1851.5 Min = -448.98

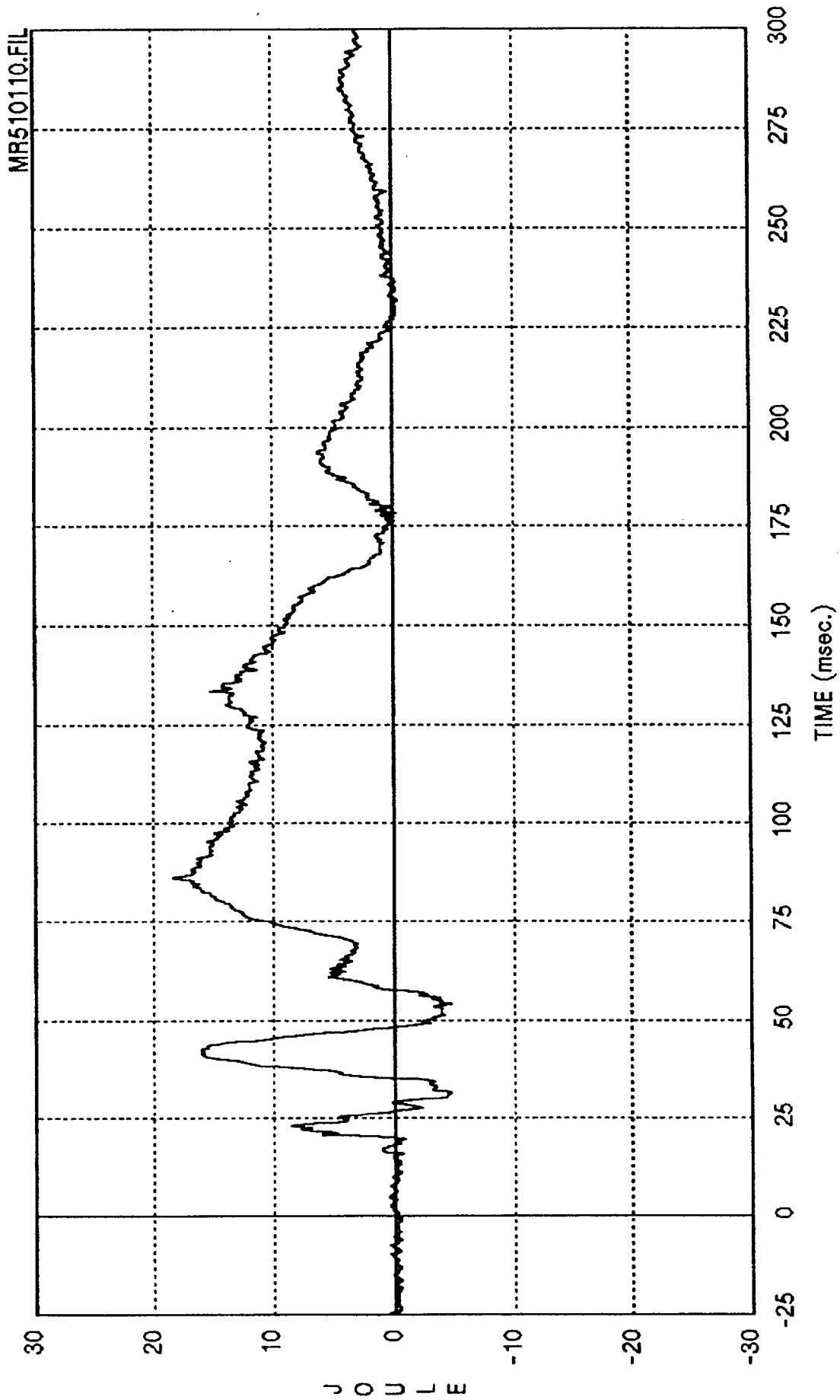
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510107.RES



Curve: Driver neck_force -- Resultant Filter: SAECLASS 1000 Max = 1876.9 Min = 4.8857

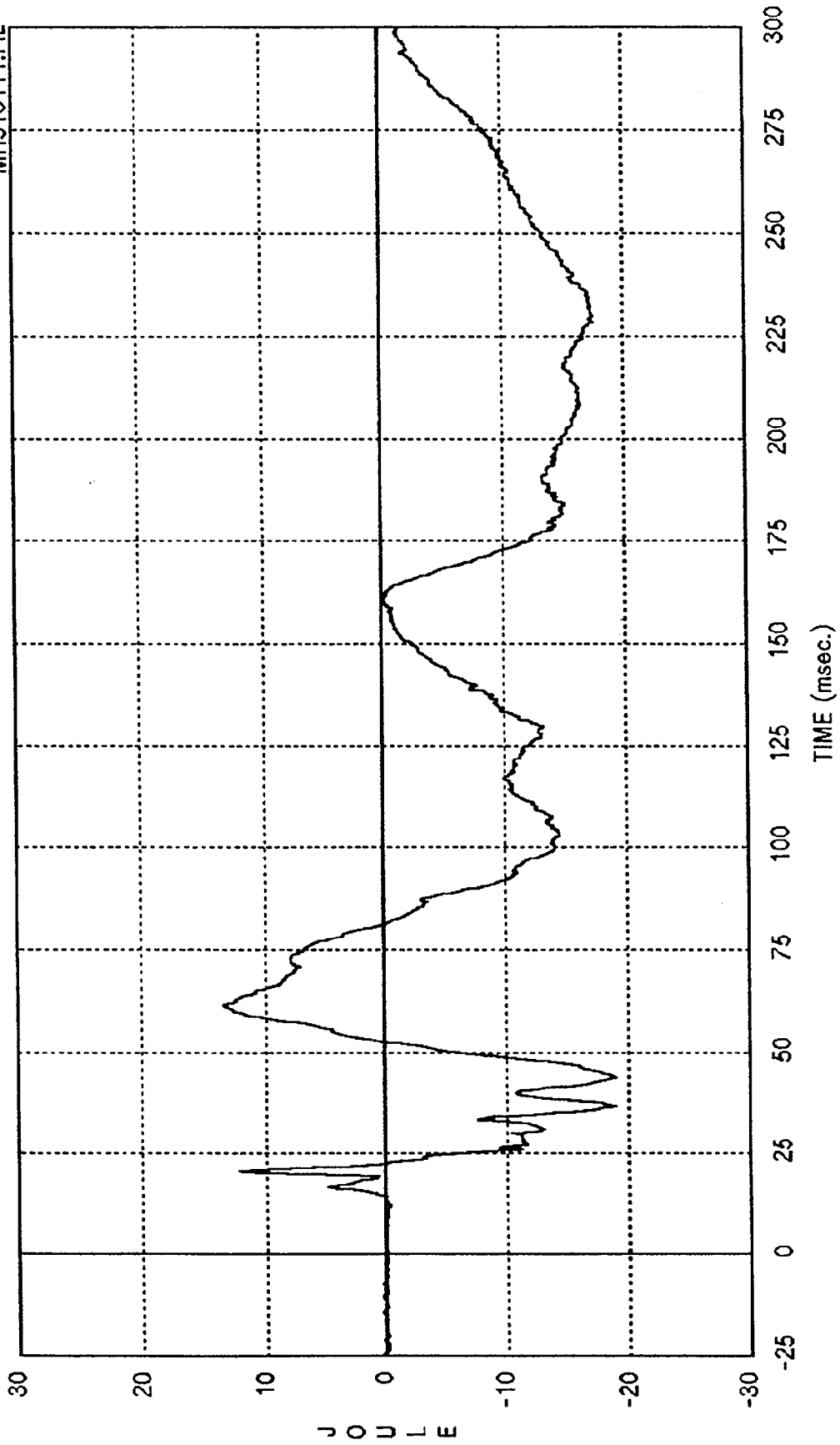
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Driver neck moment -- X axis Filter: SAE CLASS 600 Max = 18.473 Min = -4.7385

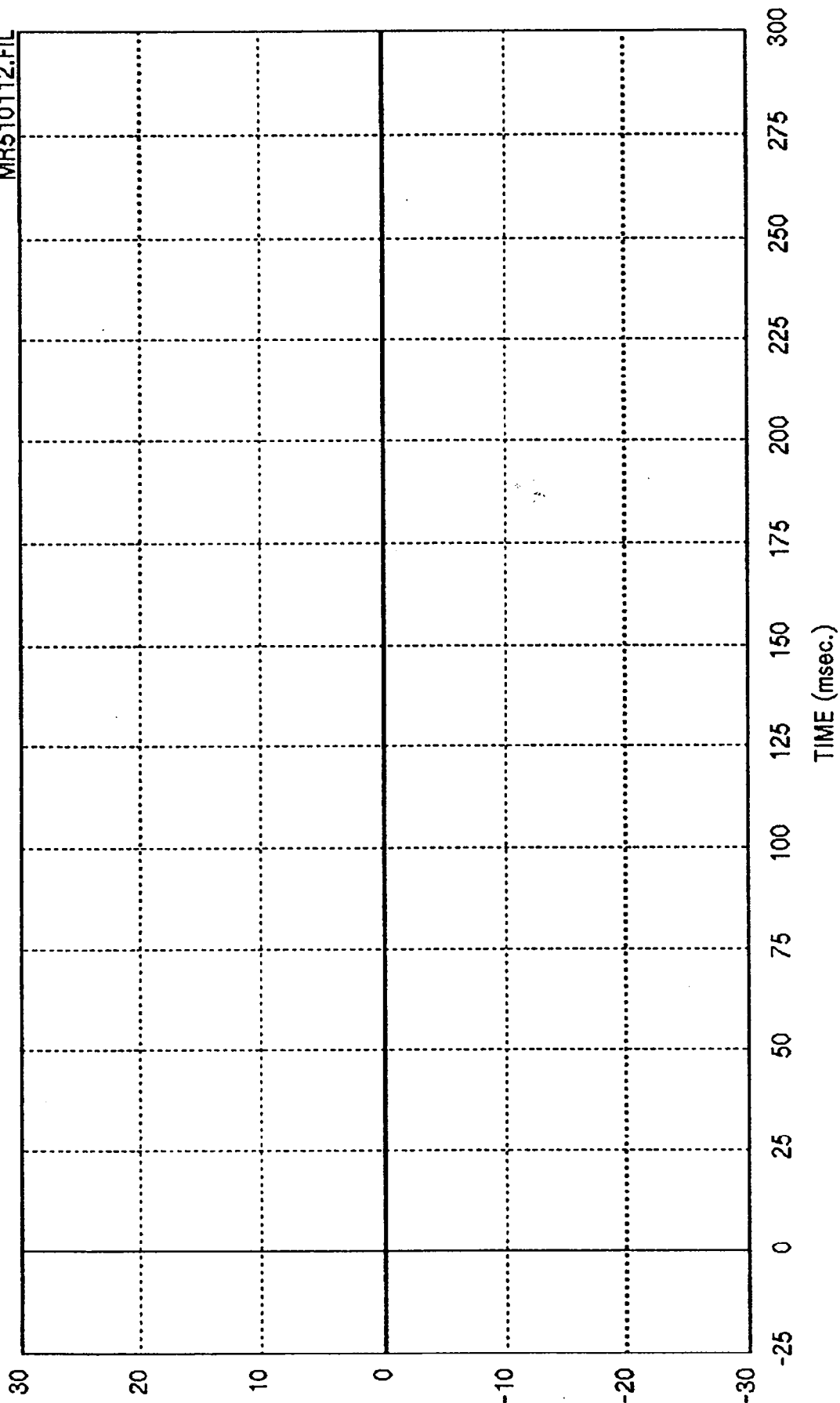
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510111.FIL



Curve: Driver neck moment -- Y axis Filter: SAE CLASS 600 Max = 13.552 Min = -18.823

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

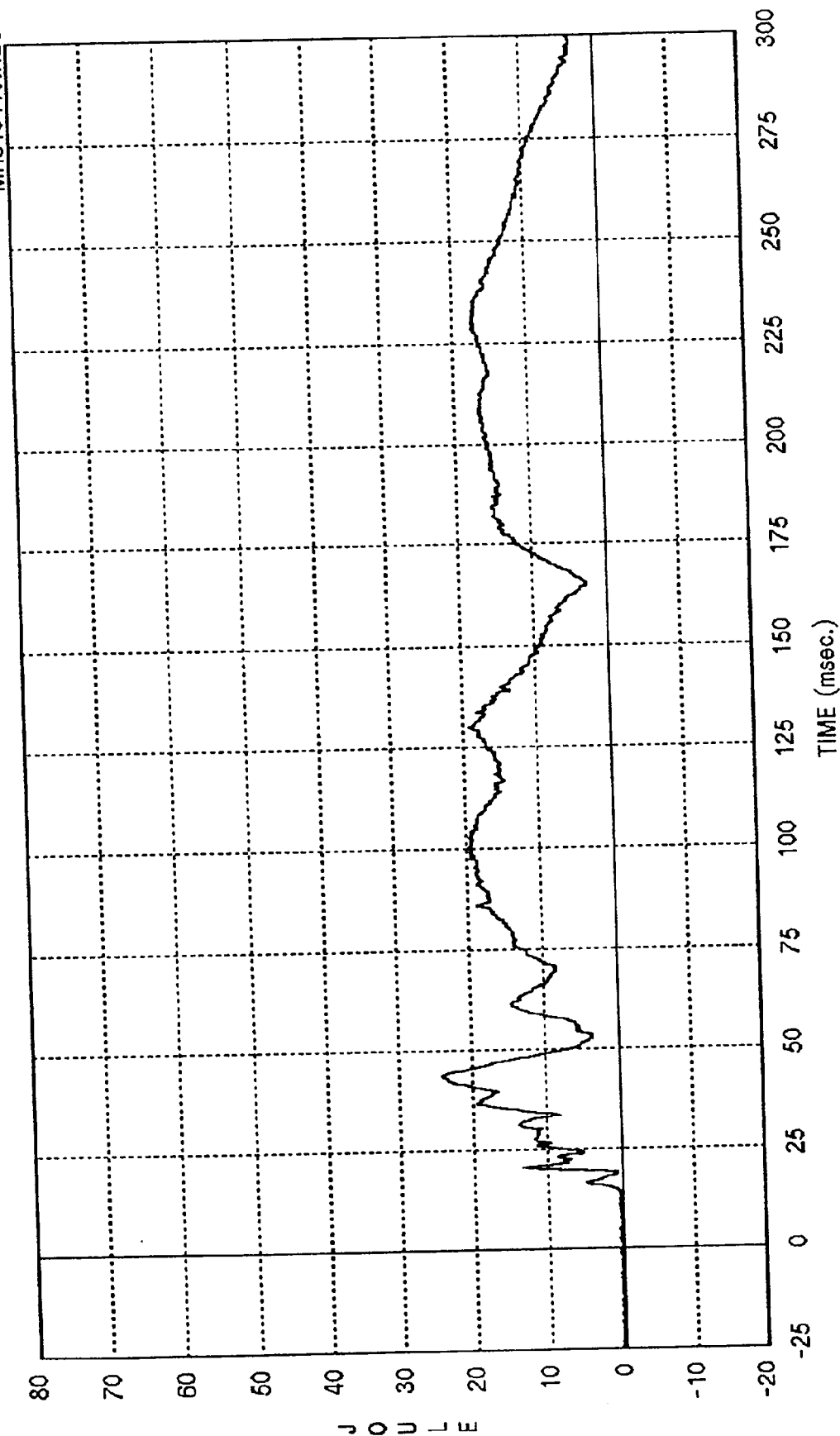


Curve: Driver neck moment -- Z axis (No data) Filter: SAE CLASS 600 Max = .00000 Min = .00000

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

J O U L E

MR510110.RES

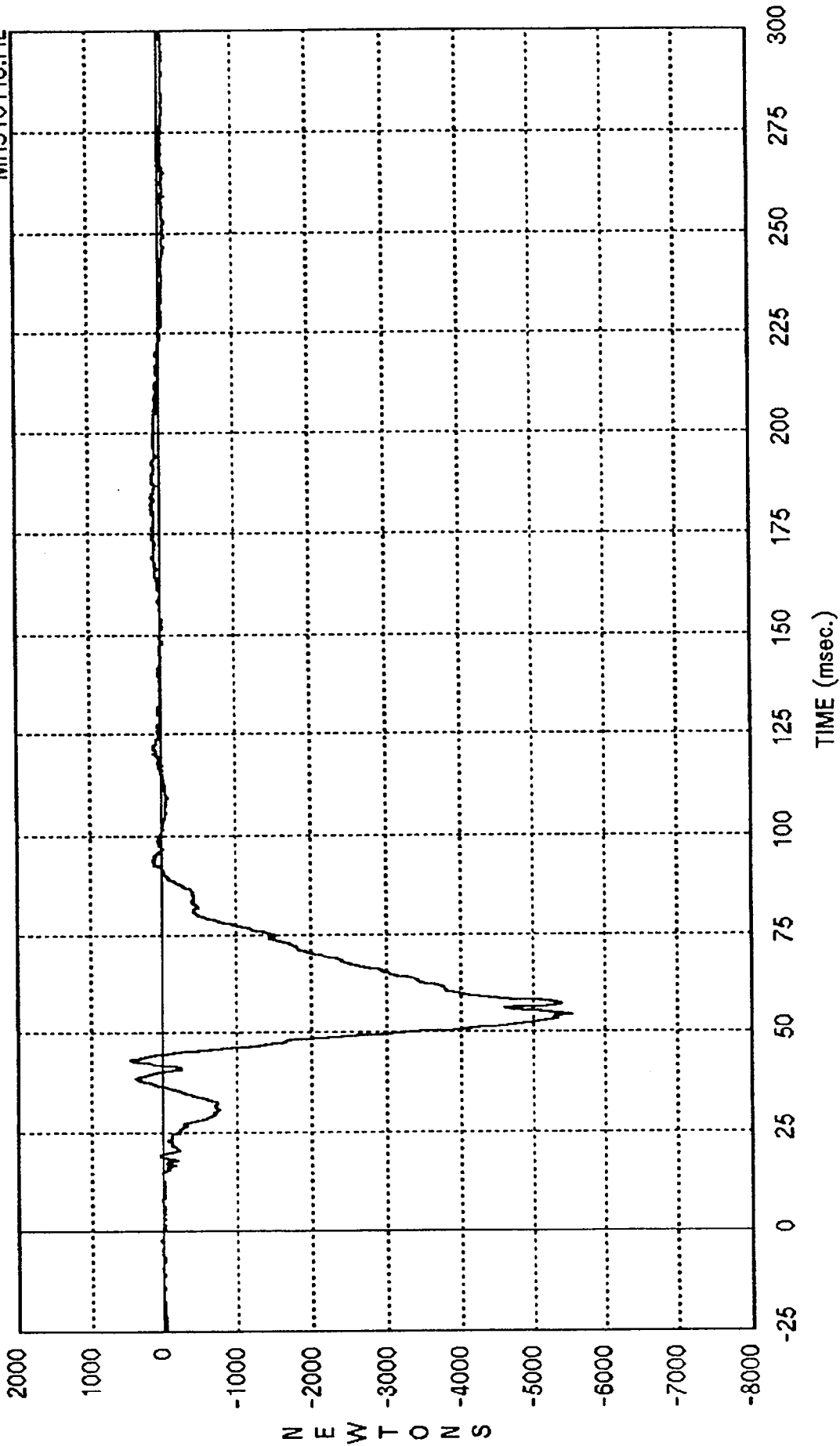


Filter: SAE CLASS 600 Max = 24.068 Min = .89987E-02

Curve: Driver neck moment -- Resultant

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

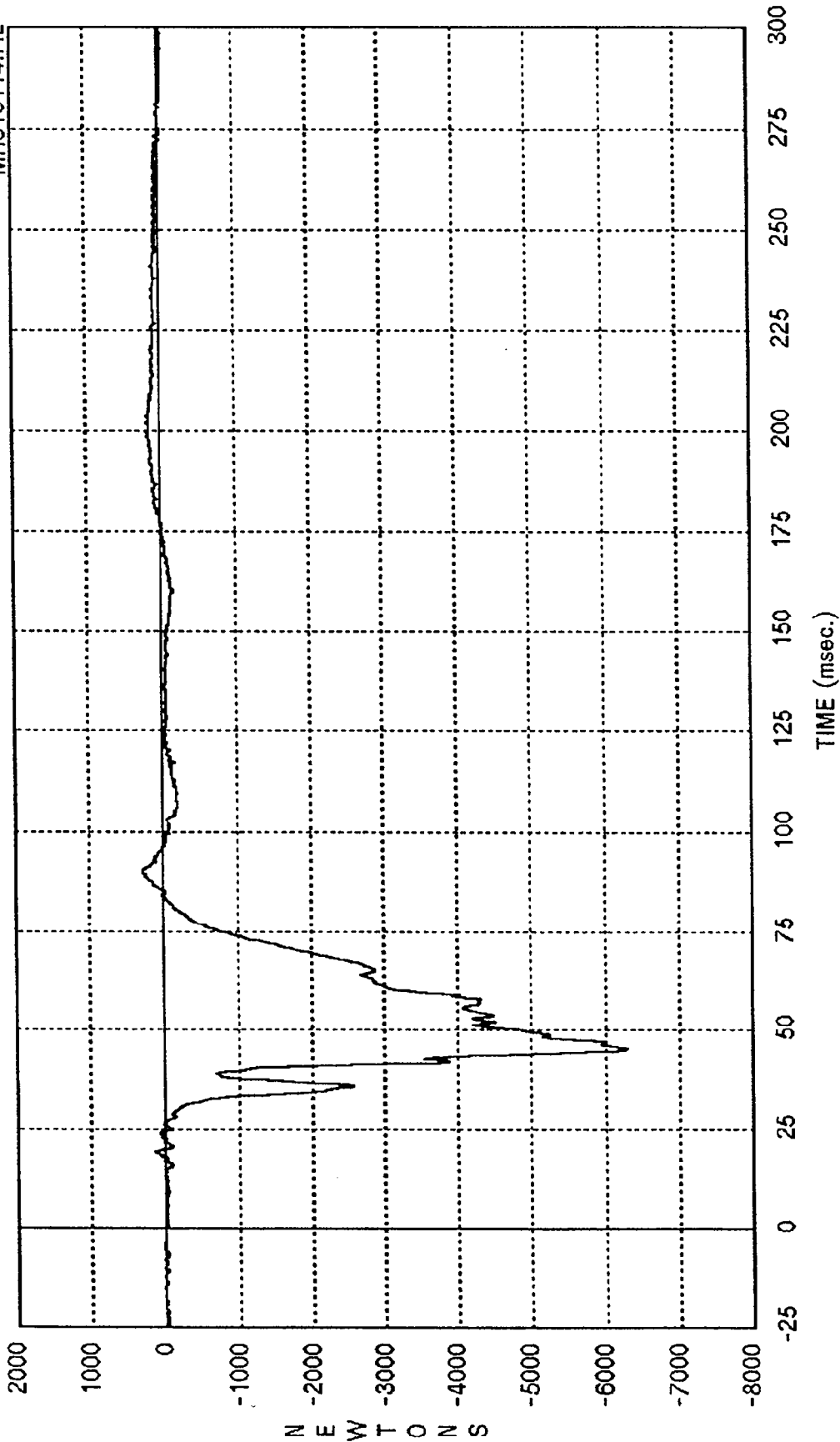
MSE-R93030-01



Curve: Driver left femur Filter: SAE CLASS 600 Max = 449.25 Min = -5541.3

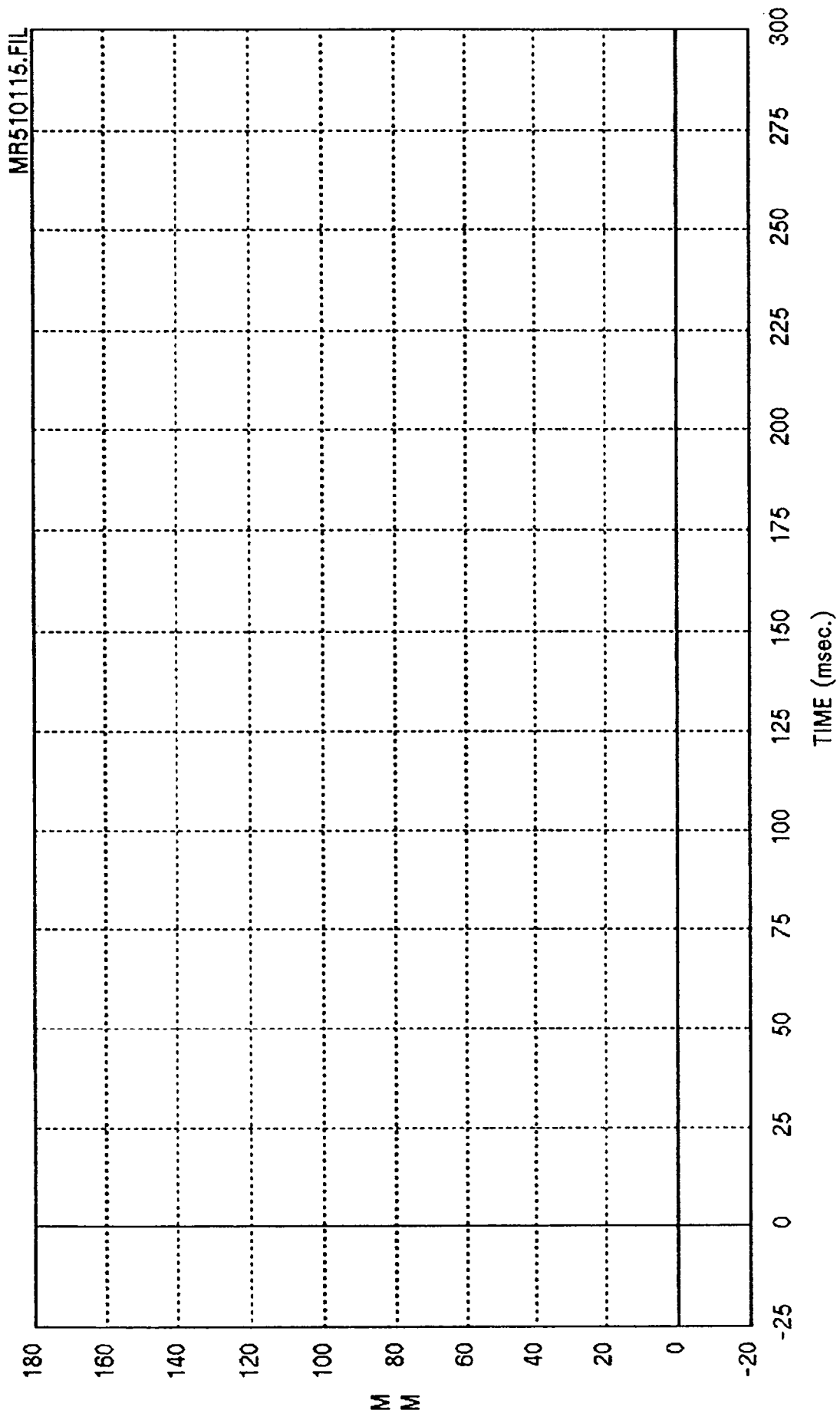
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510114.FIL



Curve: Driver right femur Filter: SAE CLASS 600 Max = 282.56 Min = -6288.4

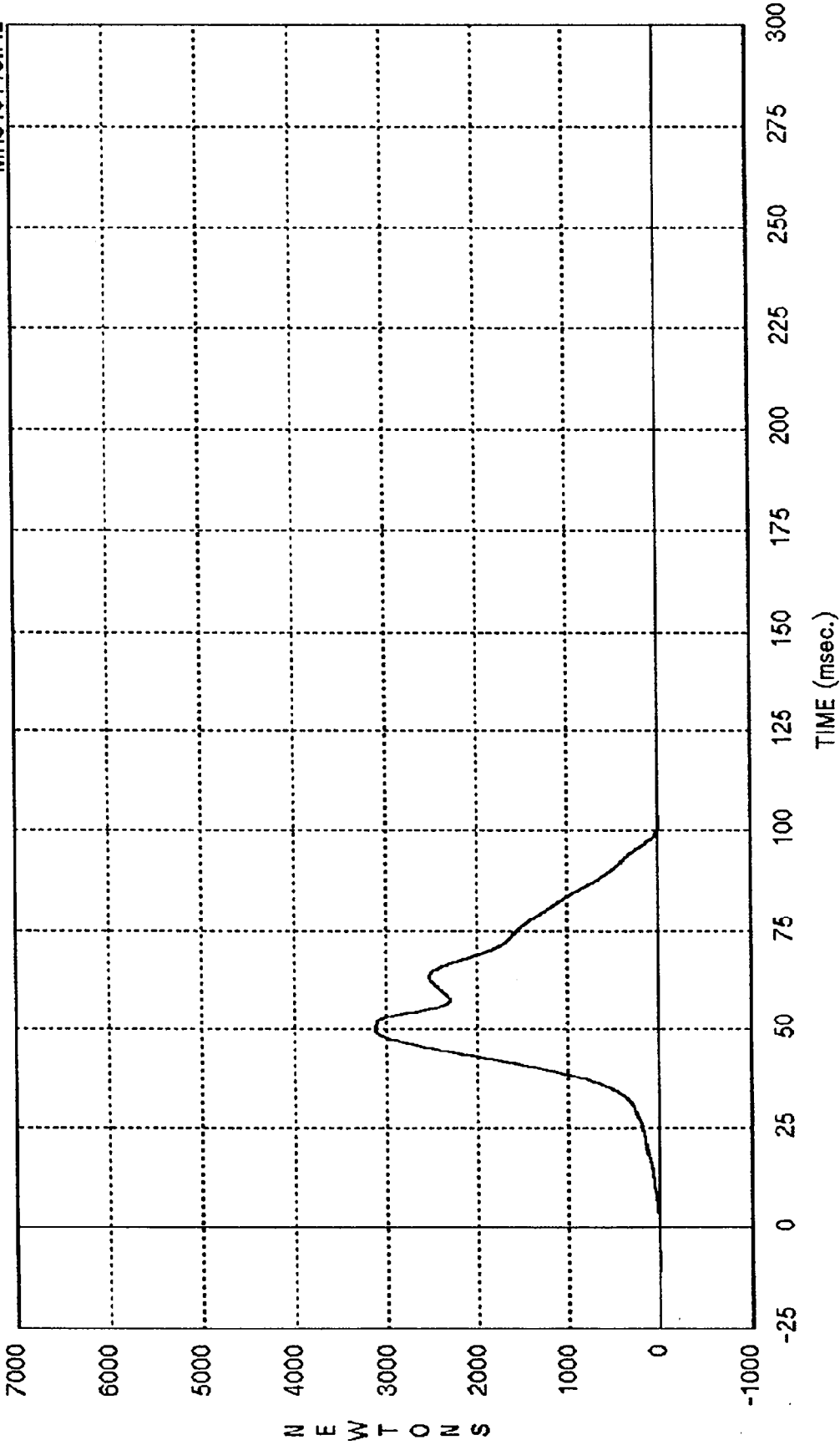
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Driver chest displacement (No data) Filter: SAE CLASS 180 Max = .00000 Min = .00000

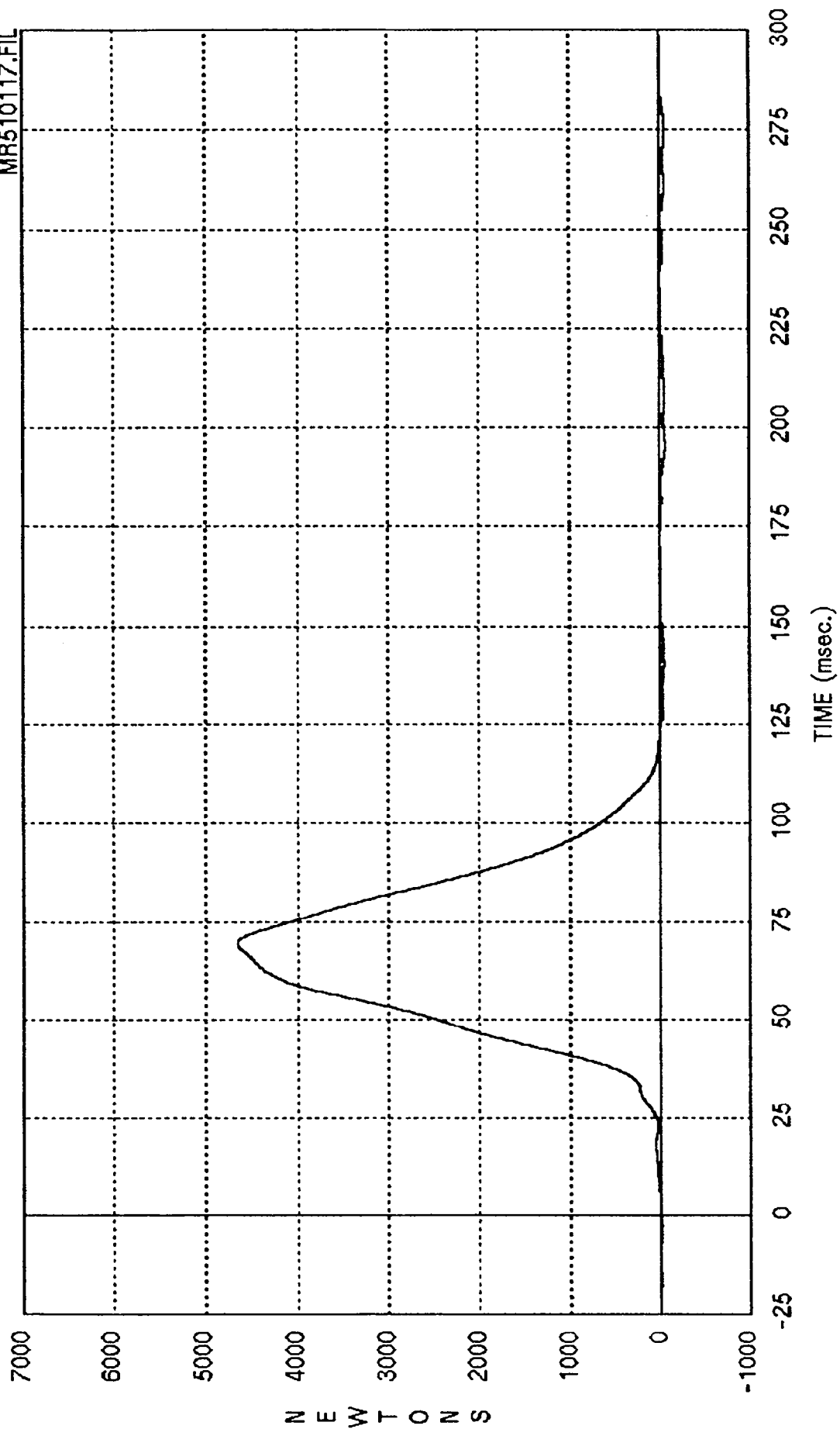
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510116.FIL



Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 3134.7 Min = -7.5232

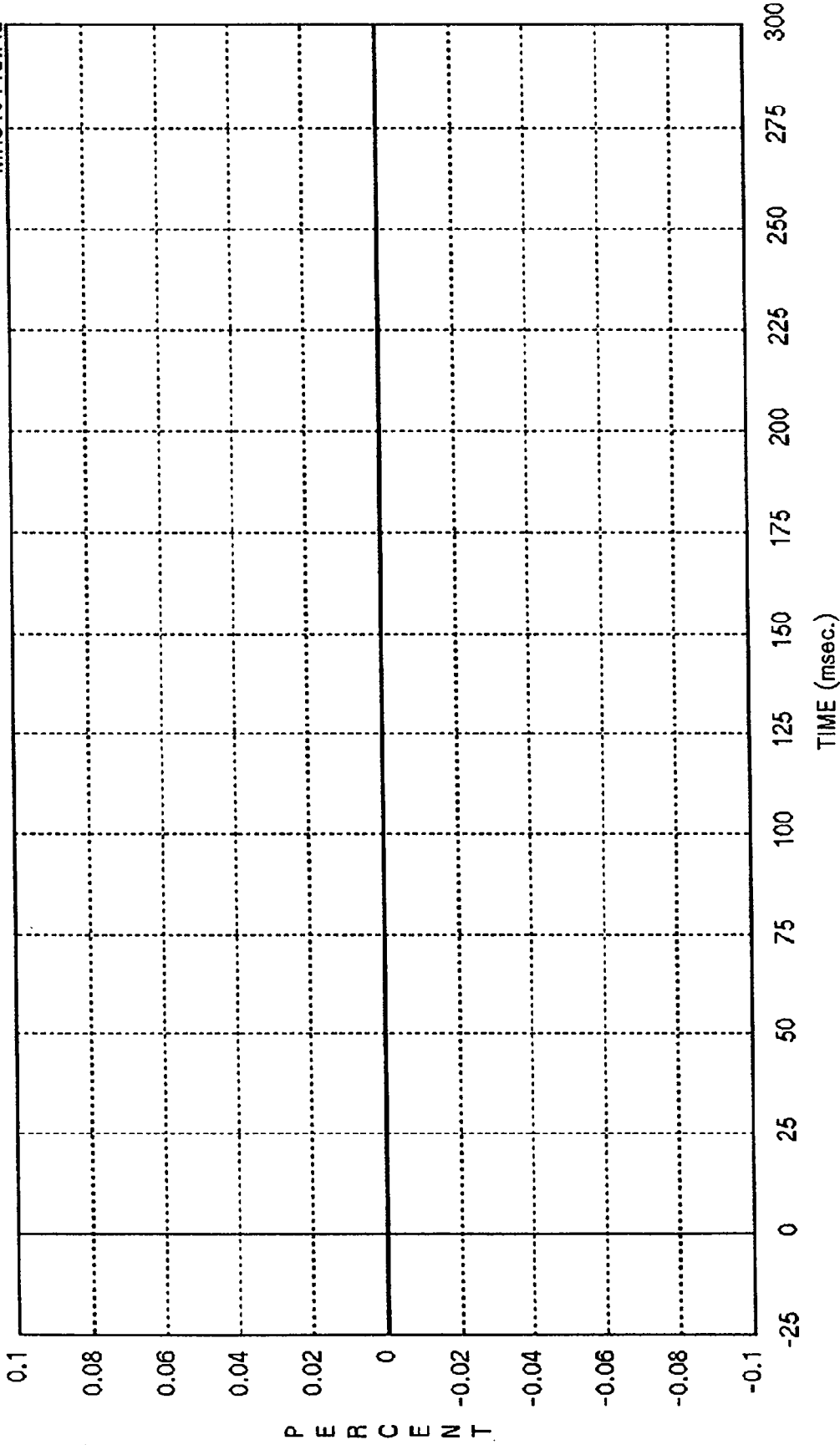
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Driver shoulder belt load Filter: SAE CLASS 60 Max = 4662.5 Min = -58.090

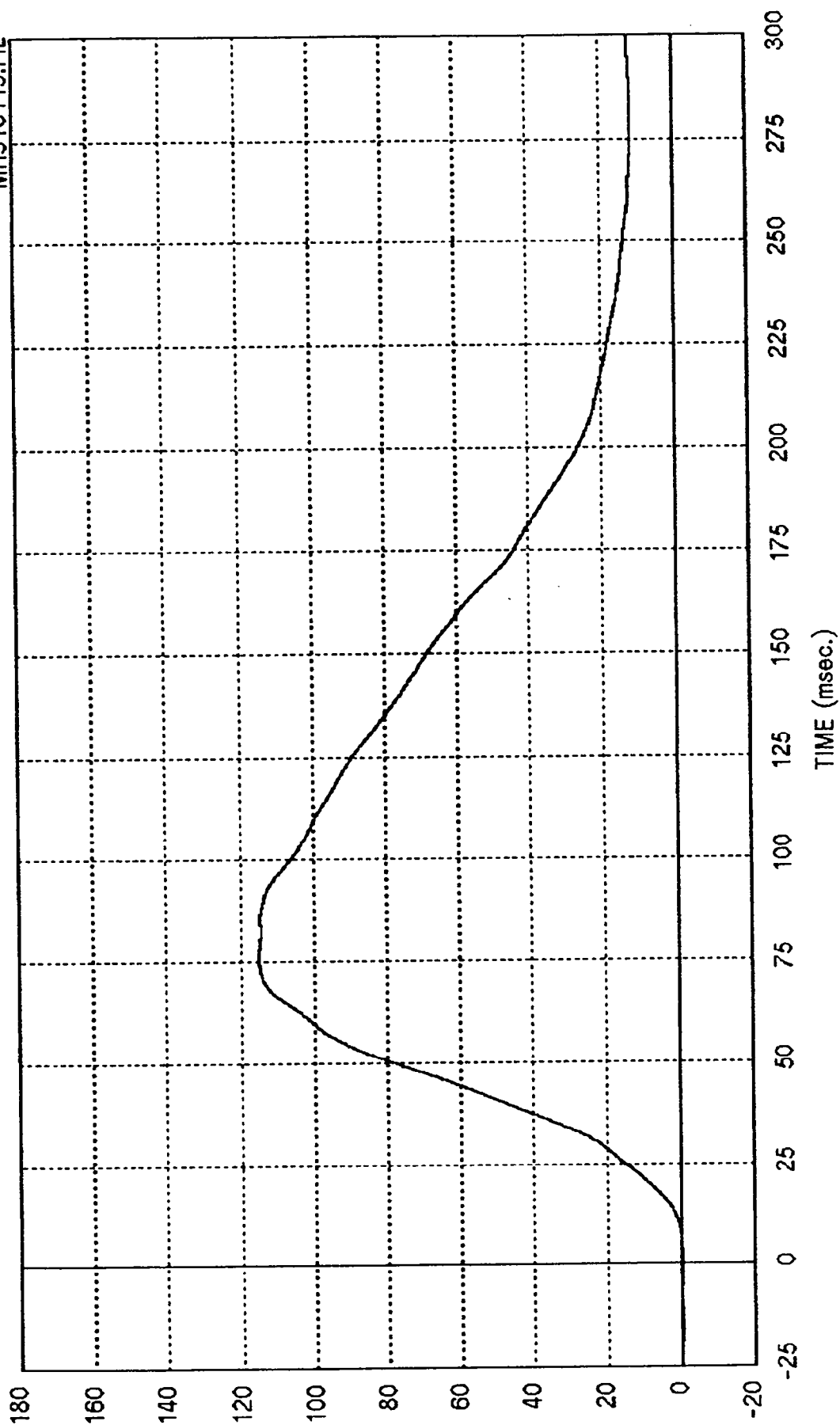
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510118.FIL



Curve: Driver shoulder belt elongation (No data) Filter: SAE CLASS 60 Max = .00000 Min = .00000

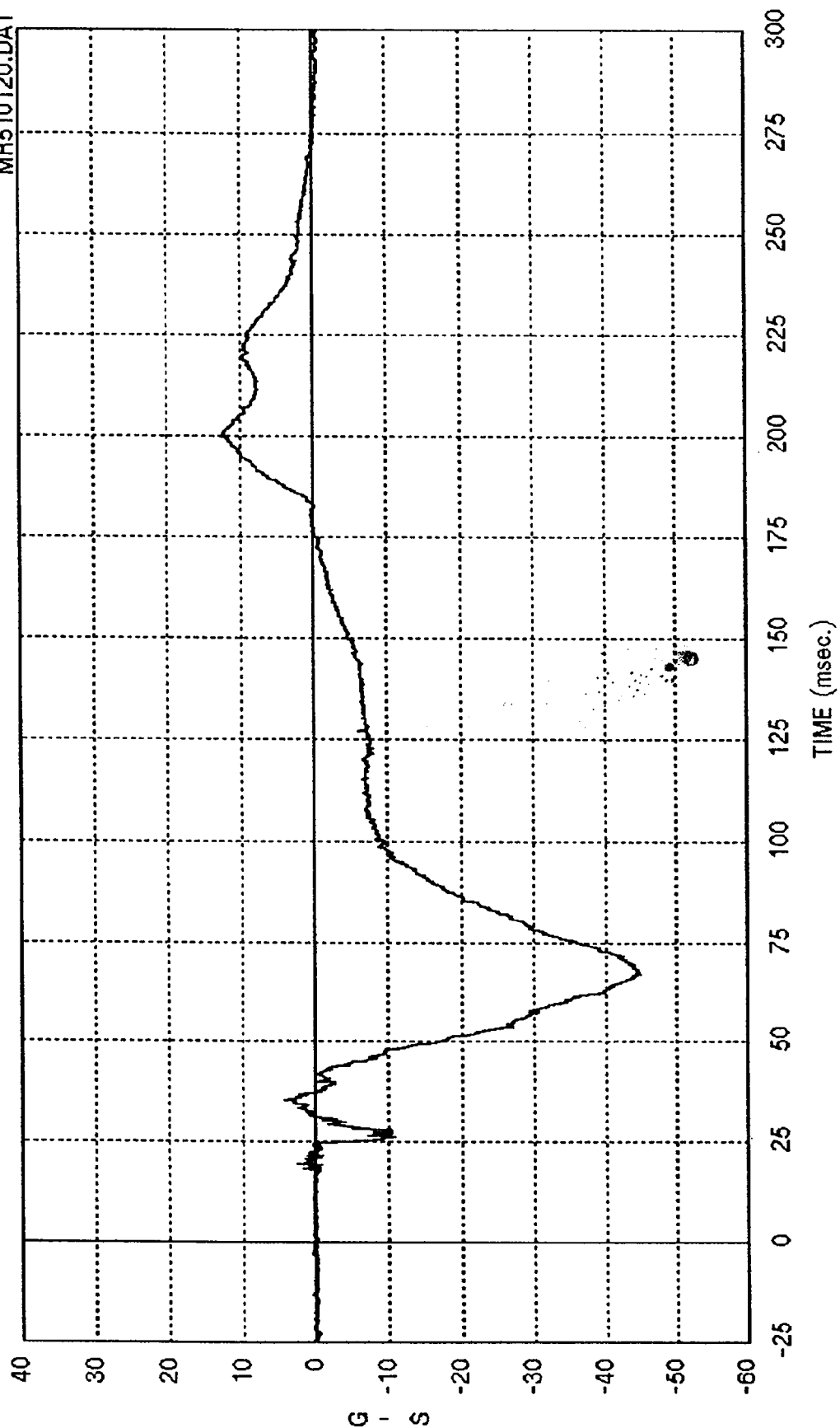
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Driver seat belt pullout Filter: SAE CLASS 60 Max = 115.44 Min = 11.448

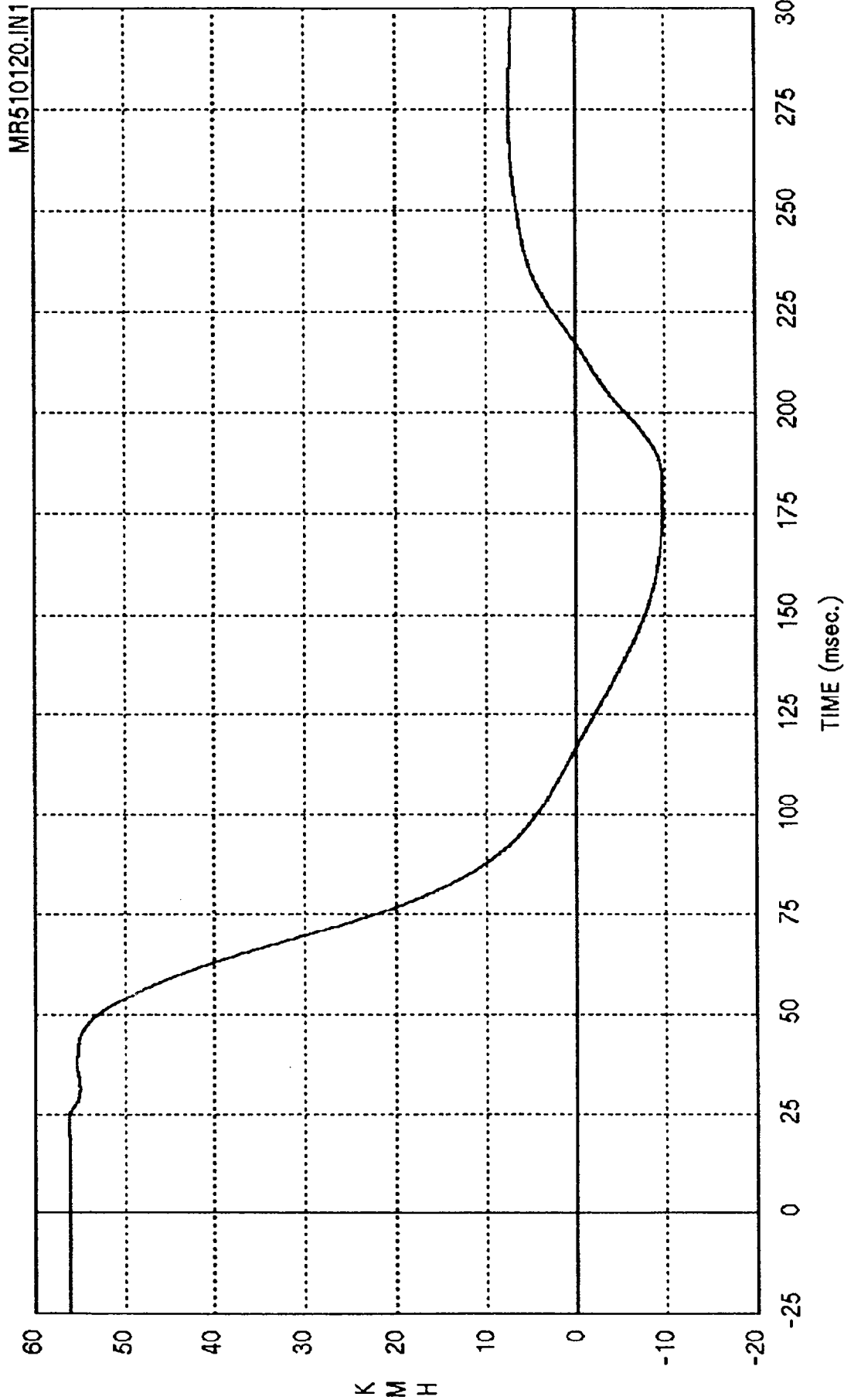
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510120.DAT



Curve: Passenger head acceleration -- X axis Filter: SAE CLASS 1000 Max = 12.595 Min = -45.007

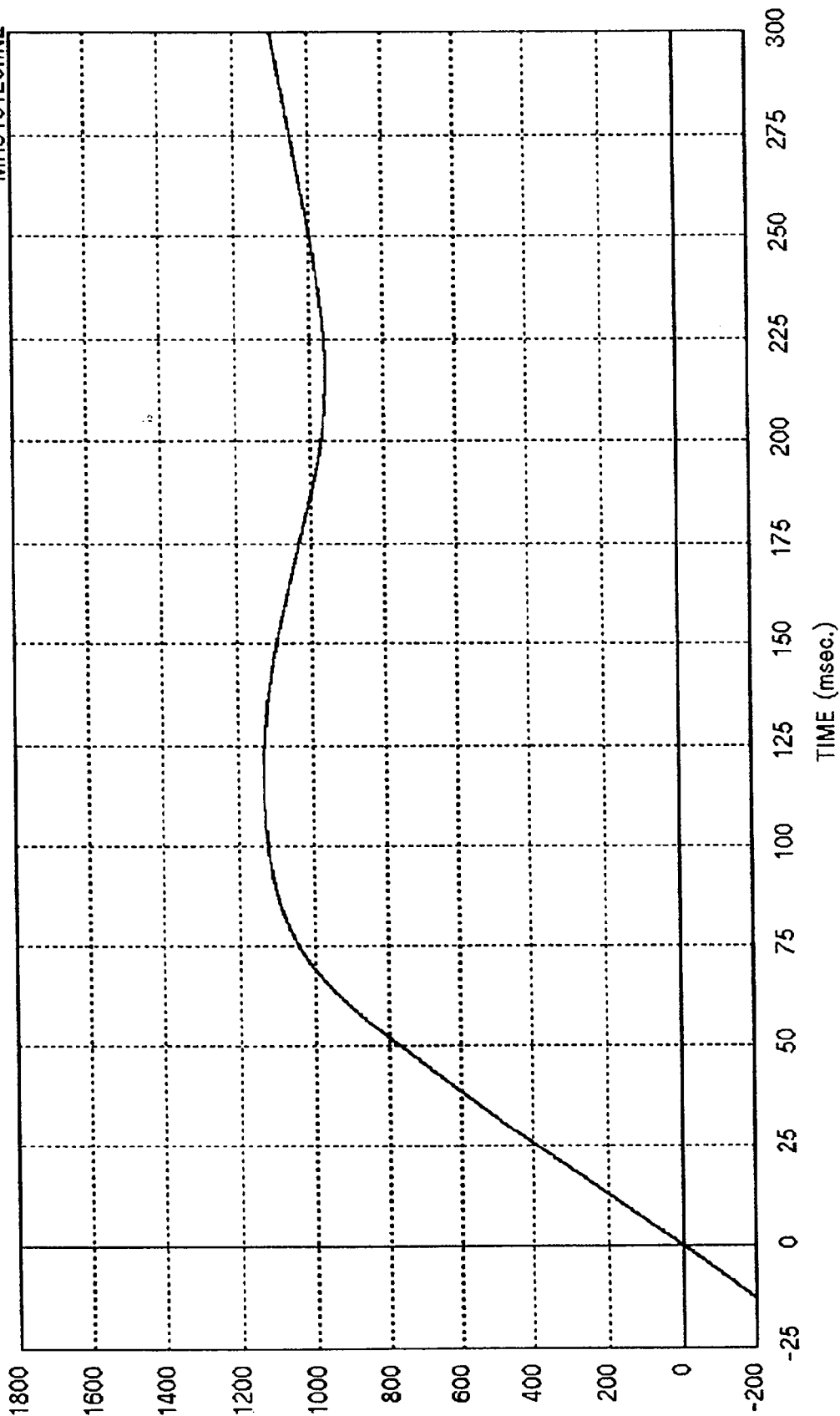
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Passenger head delta V -- X axis Filter: SAE CLASS 180 Max = 56.355 Min = -9.7585

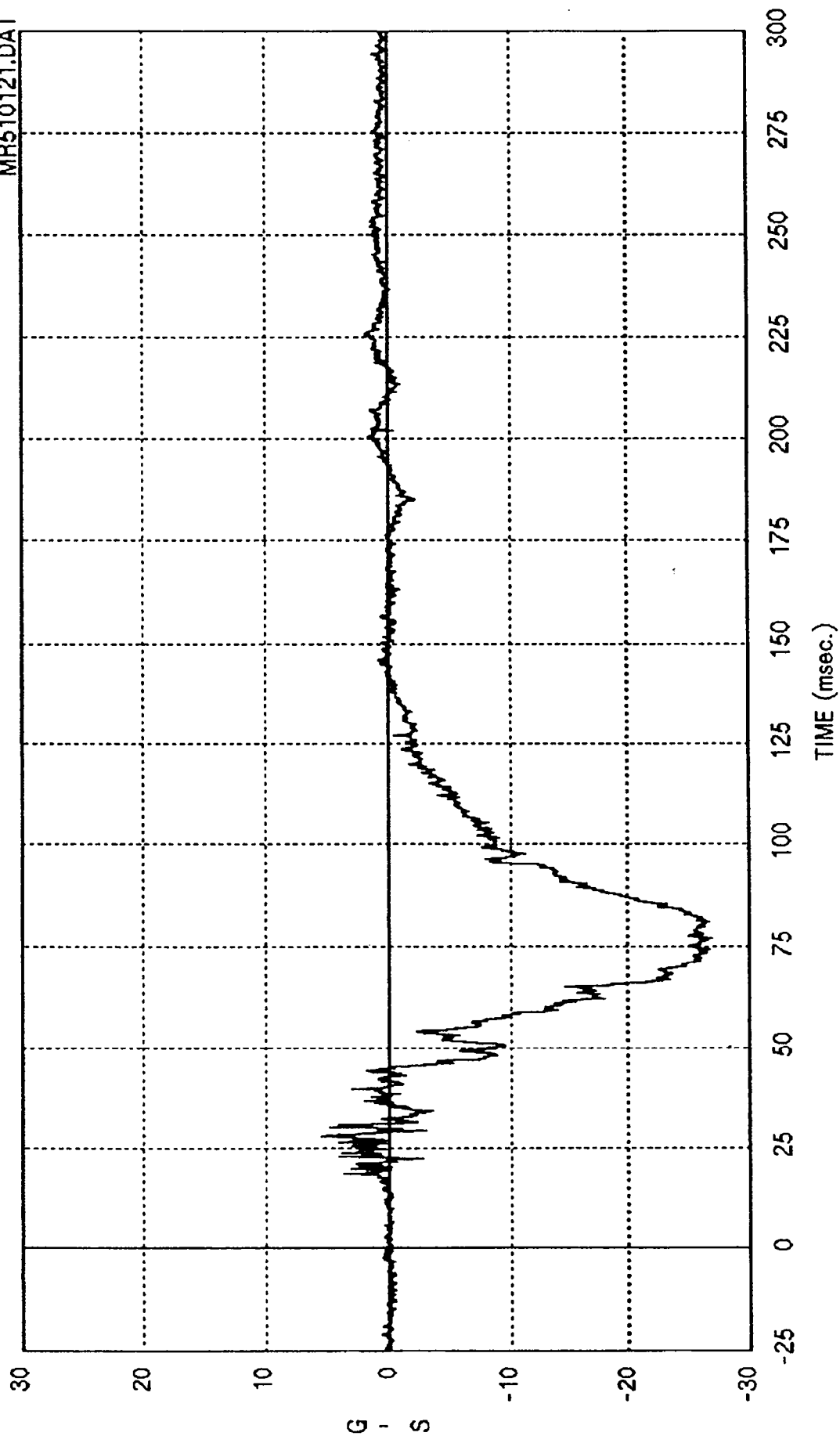
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510120.IN2



Curve: Passenger head displacement -- X axis: Displacement Filter: SAE CLASS 180 Max = 1134.6 Min = 961.63

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



G - S

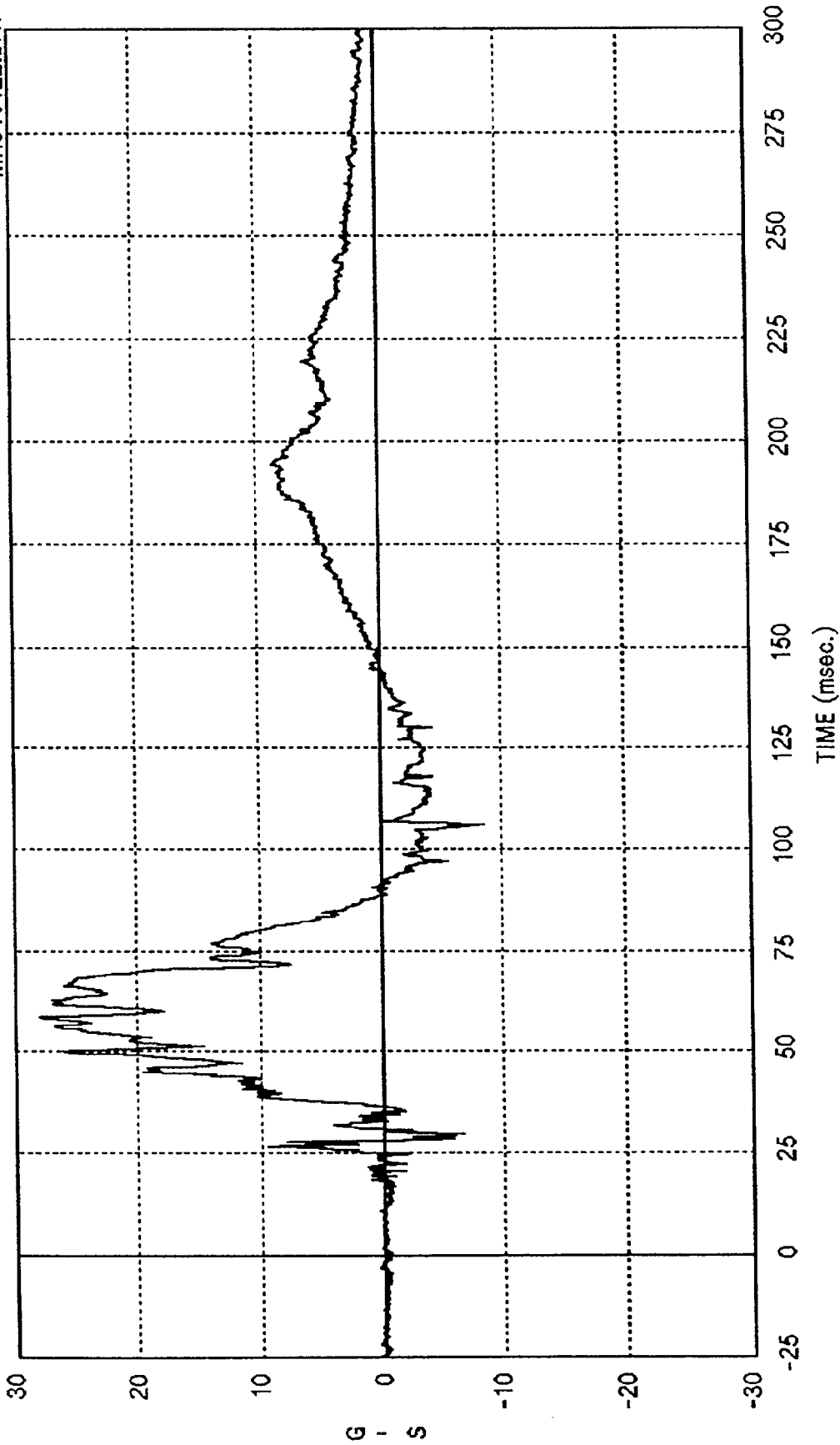
B-1 31

Curve: Passenger head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 6.3817 Min = -26.919

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

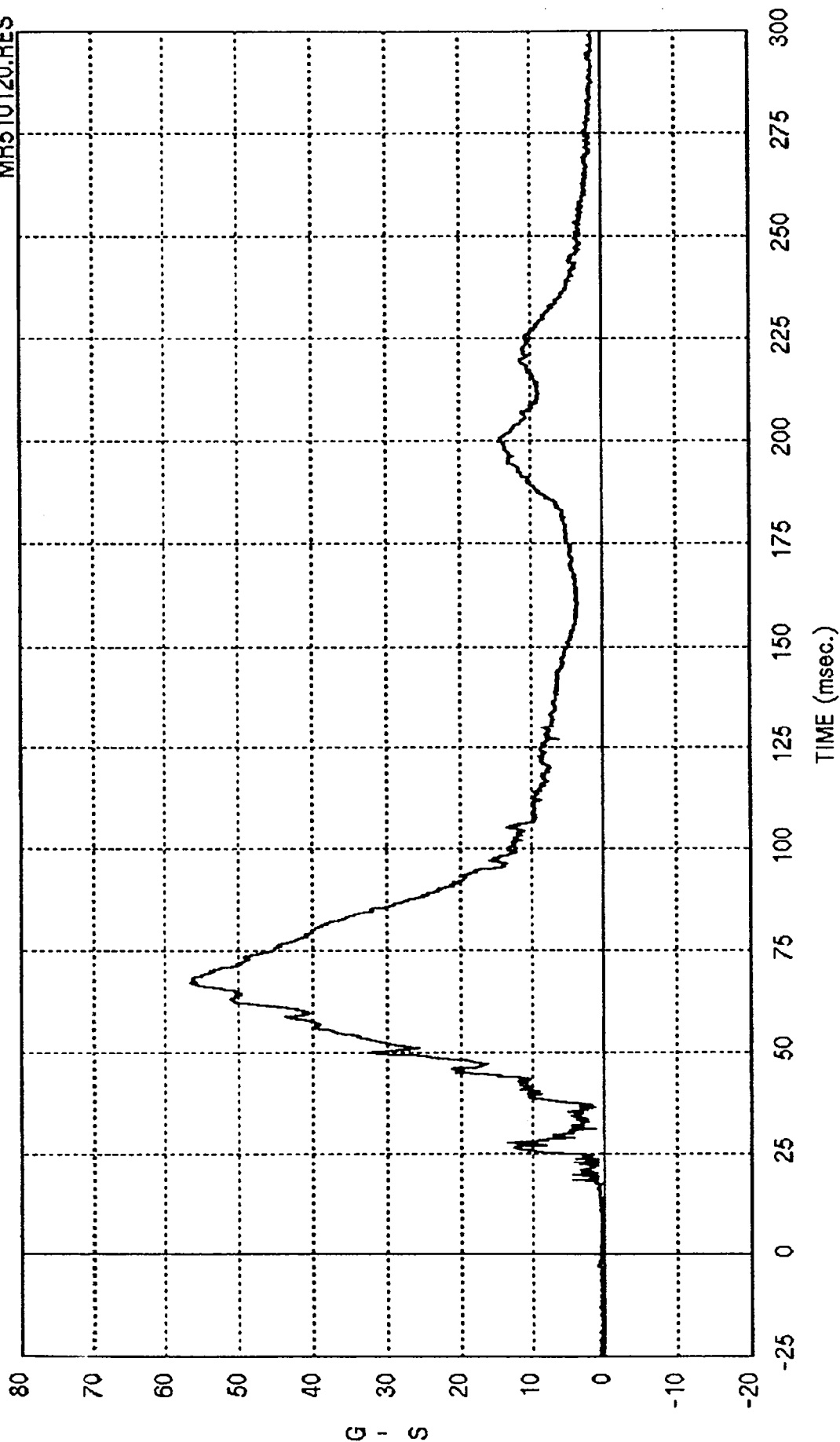
MR510122.DAT



Curve: Passenger head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 28.420 Min = -8.9527

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510120.RES

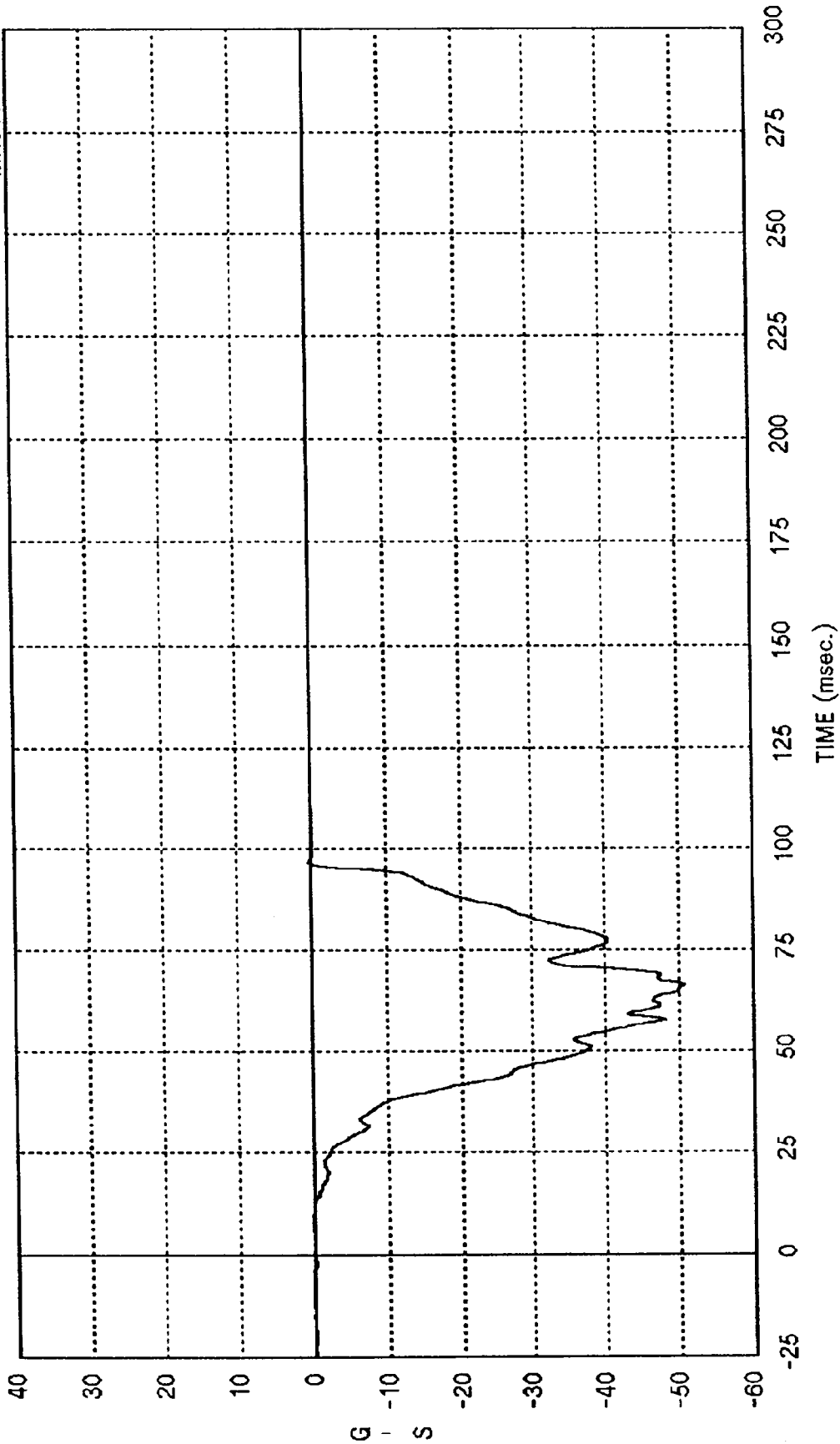


Curve: Passenger head acceleration -- Resultant: SAE CLASS 1000 Max = 56.874 Min = .81877E-01

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

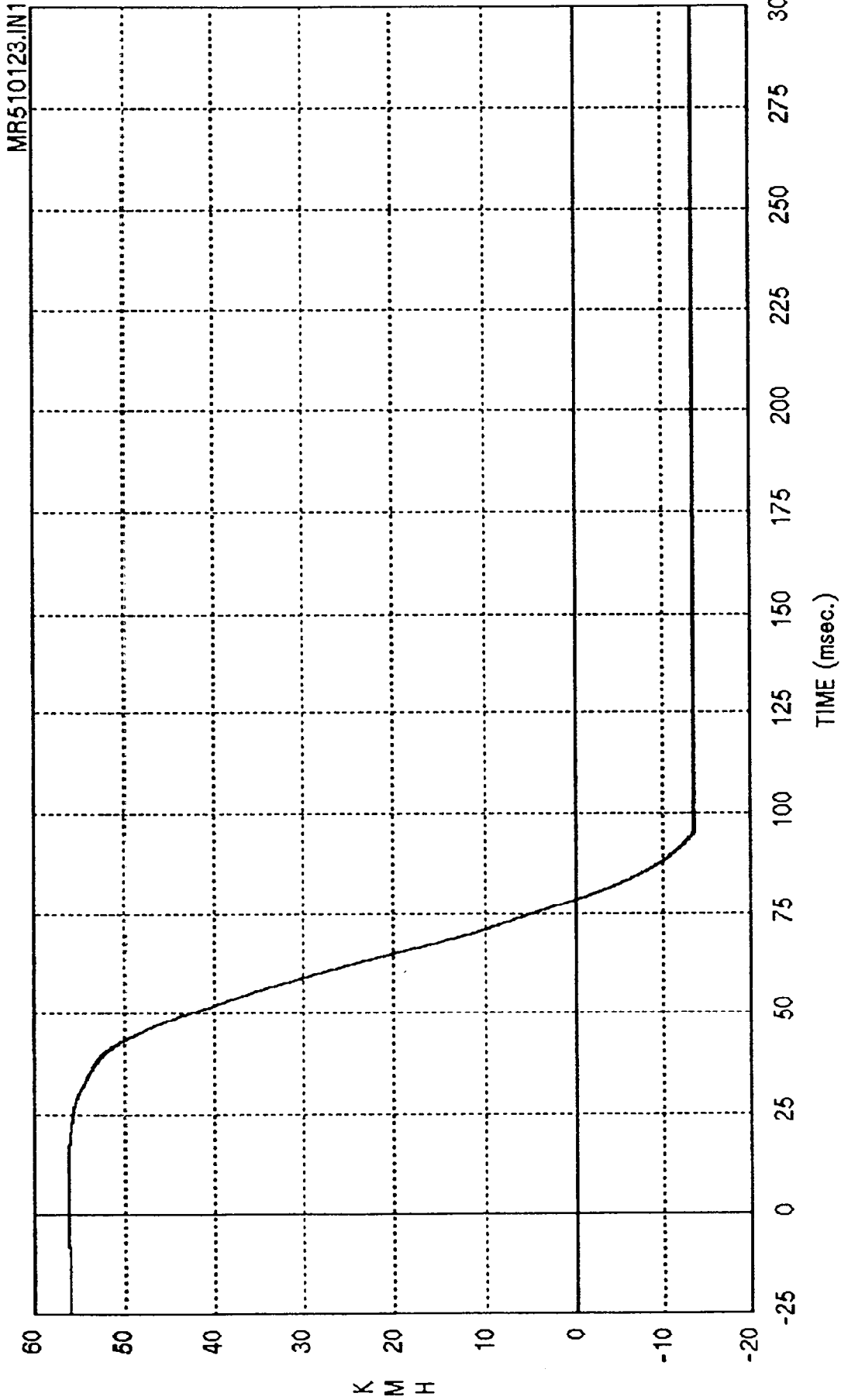
G S

MR510123.FIL



Curve: Passenger chest acceleration --- X axis Filter: SAE-CLASS:180 Max = .36432 Min = -50.666

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Passenger chest delta V -- X axis Filter: SAE CLASS 180 Max = 56.252 Min = -13.617

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

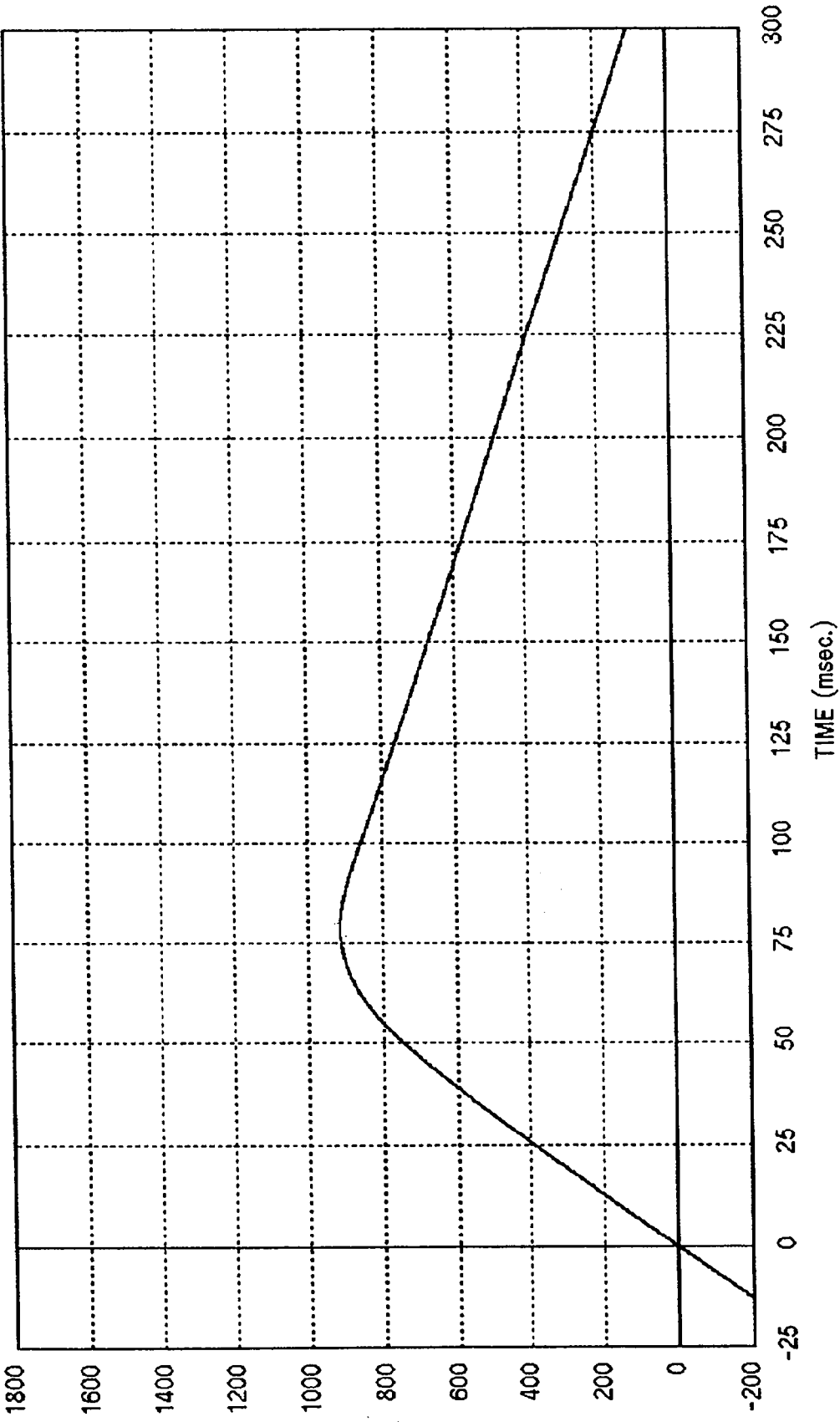
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35

MSE-R93030-01

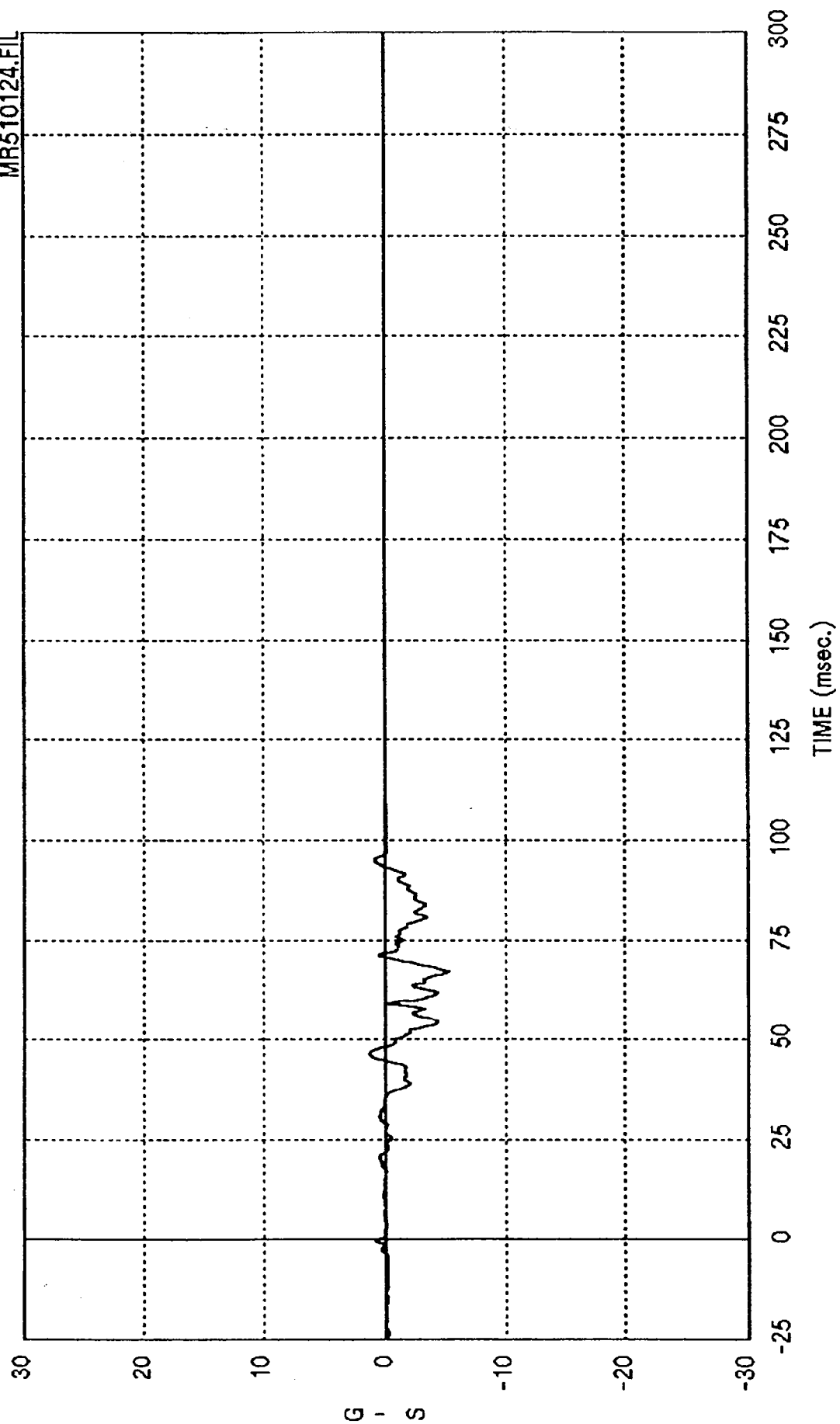
MR510123.IN2



Curve: Passenger chest displacement -- X axis Filter: SAE CLASS 180 : Max = 916.61 Min = 105.01

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

M M

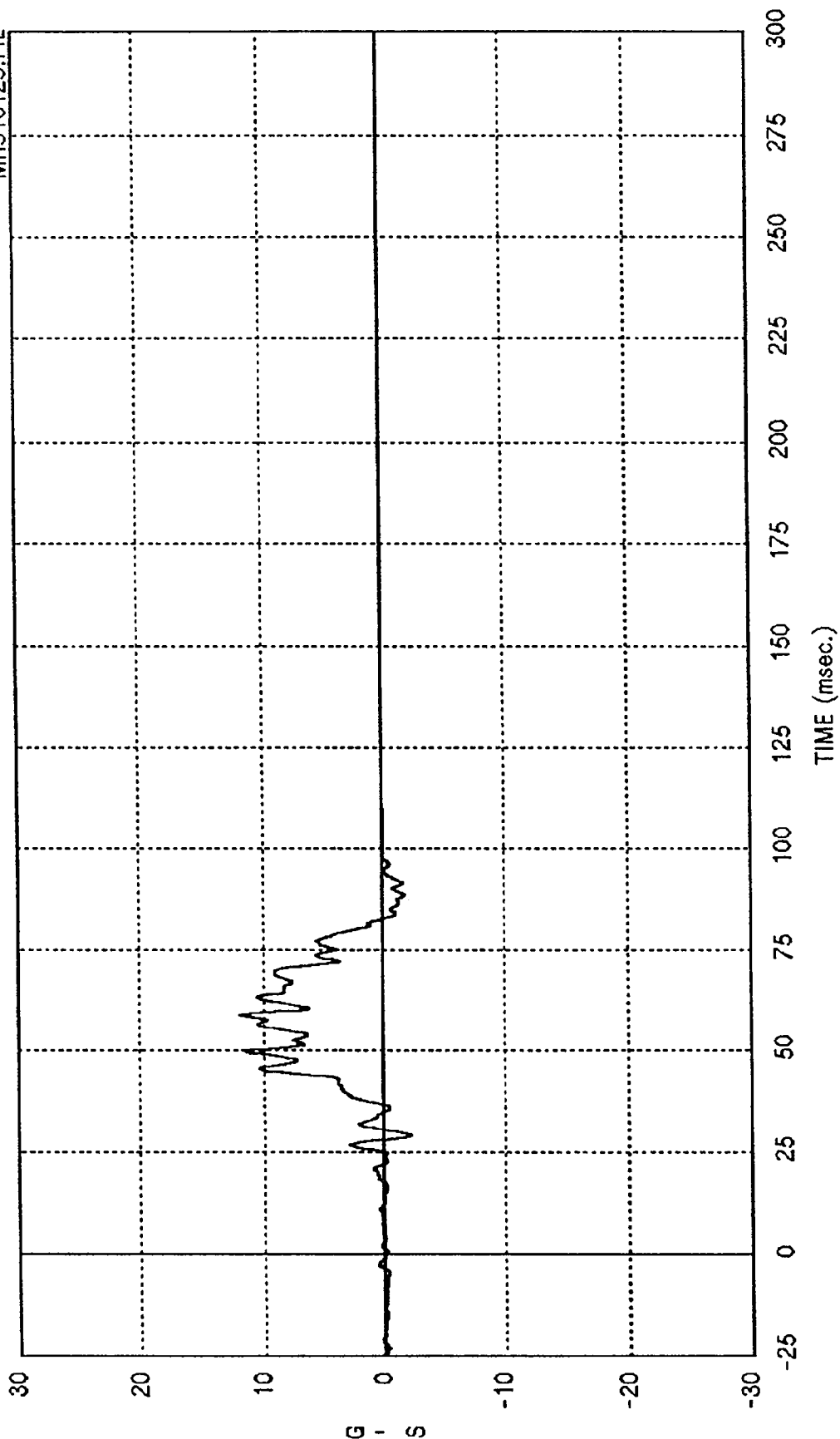


Curve: Passenger chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 1.3930 Min = -5.1763

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

G - S

MR510125.FIL



G - S

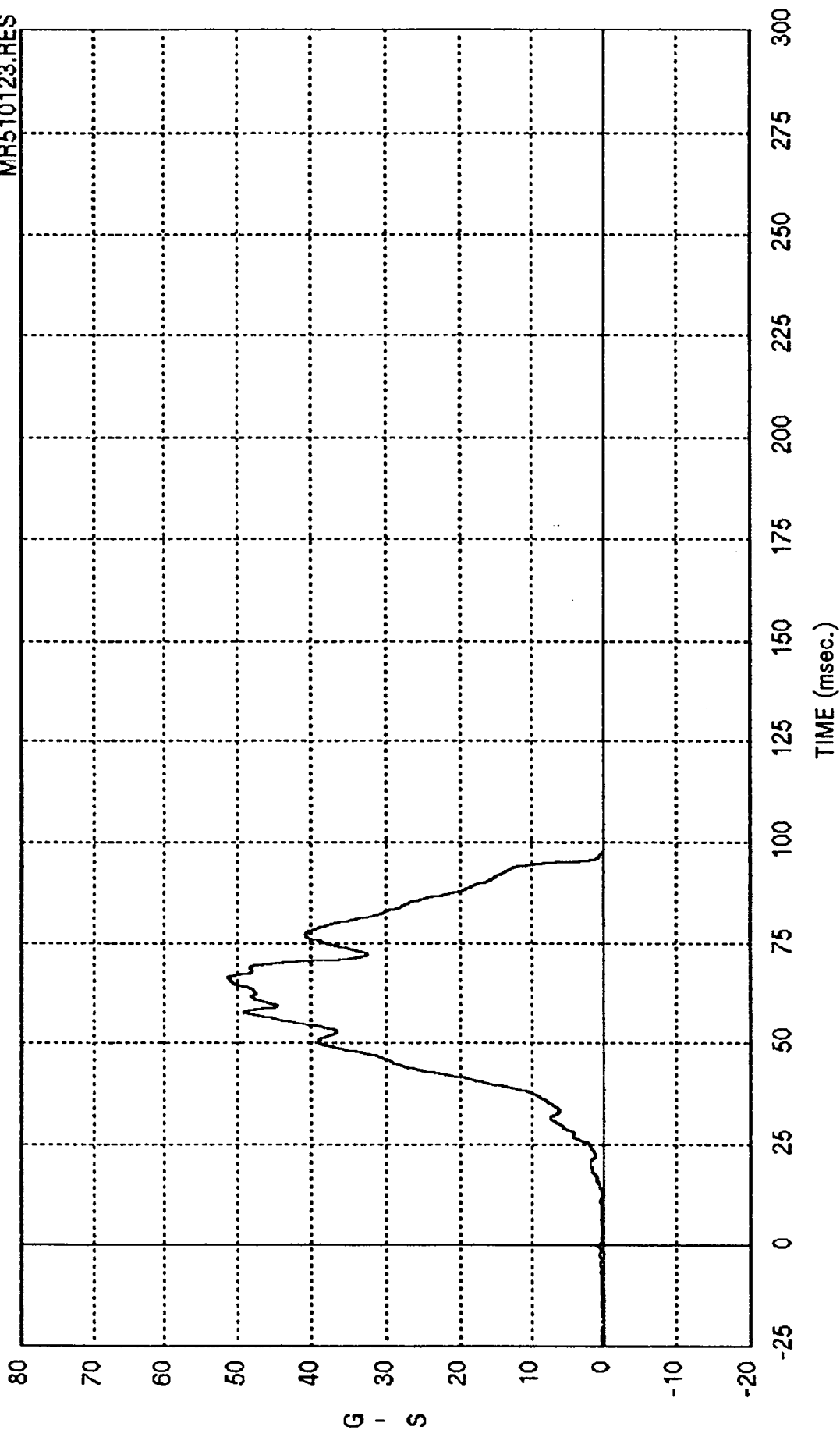
B-1 38

Curve: Passenger chest acceleration -- Z axis Filter: SAE CLASS-180 Max = 12.054 Min = -2.2836

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

MR510123.RES

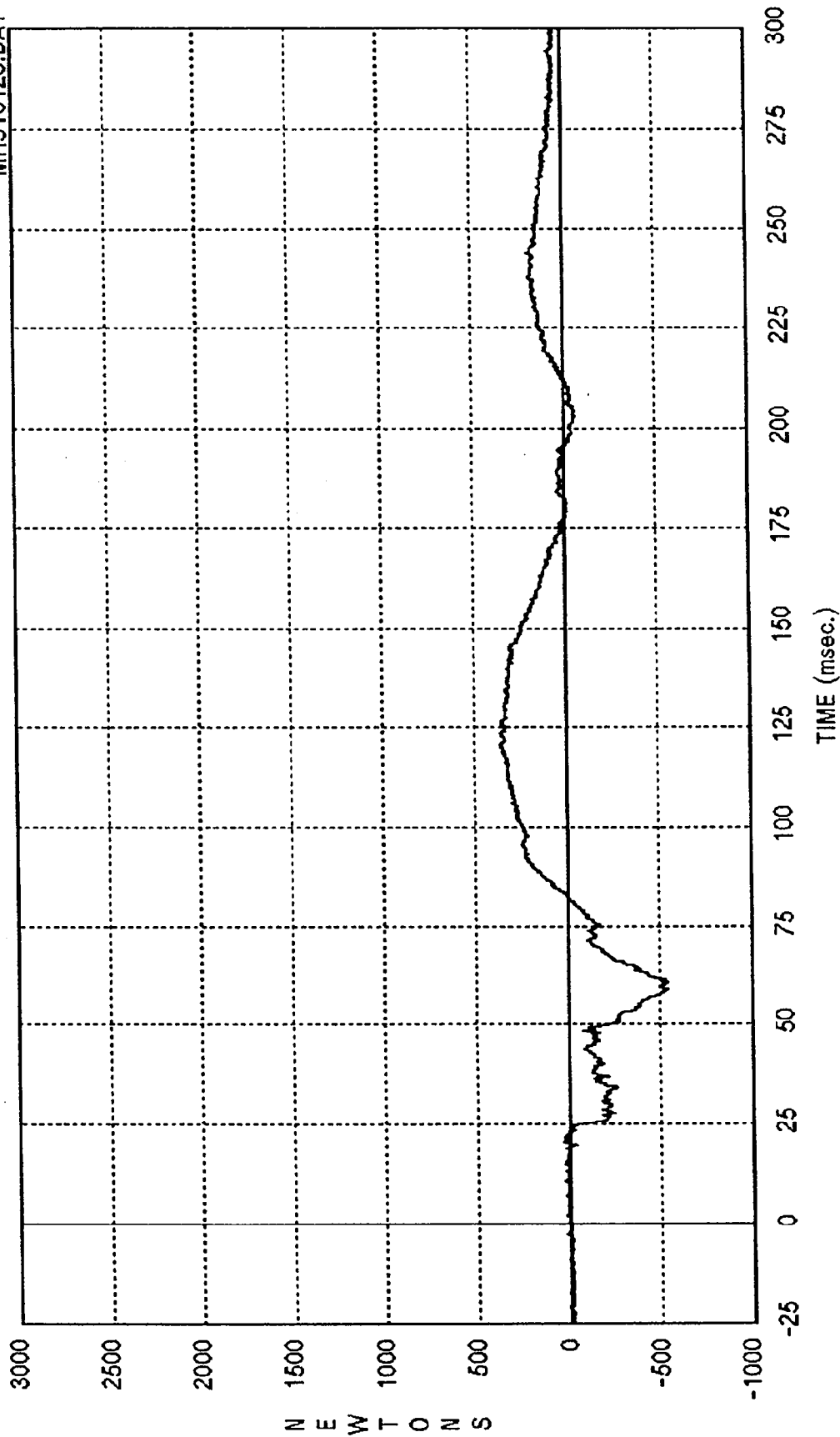


Curve: Passenger chest acceleration -- Resultant Filter: SAE CLASS 180 -- Max = 51.498 Min = .84078E-44

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

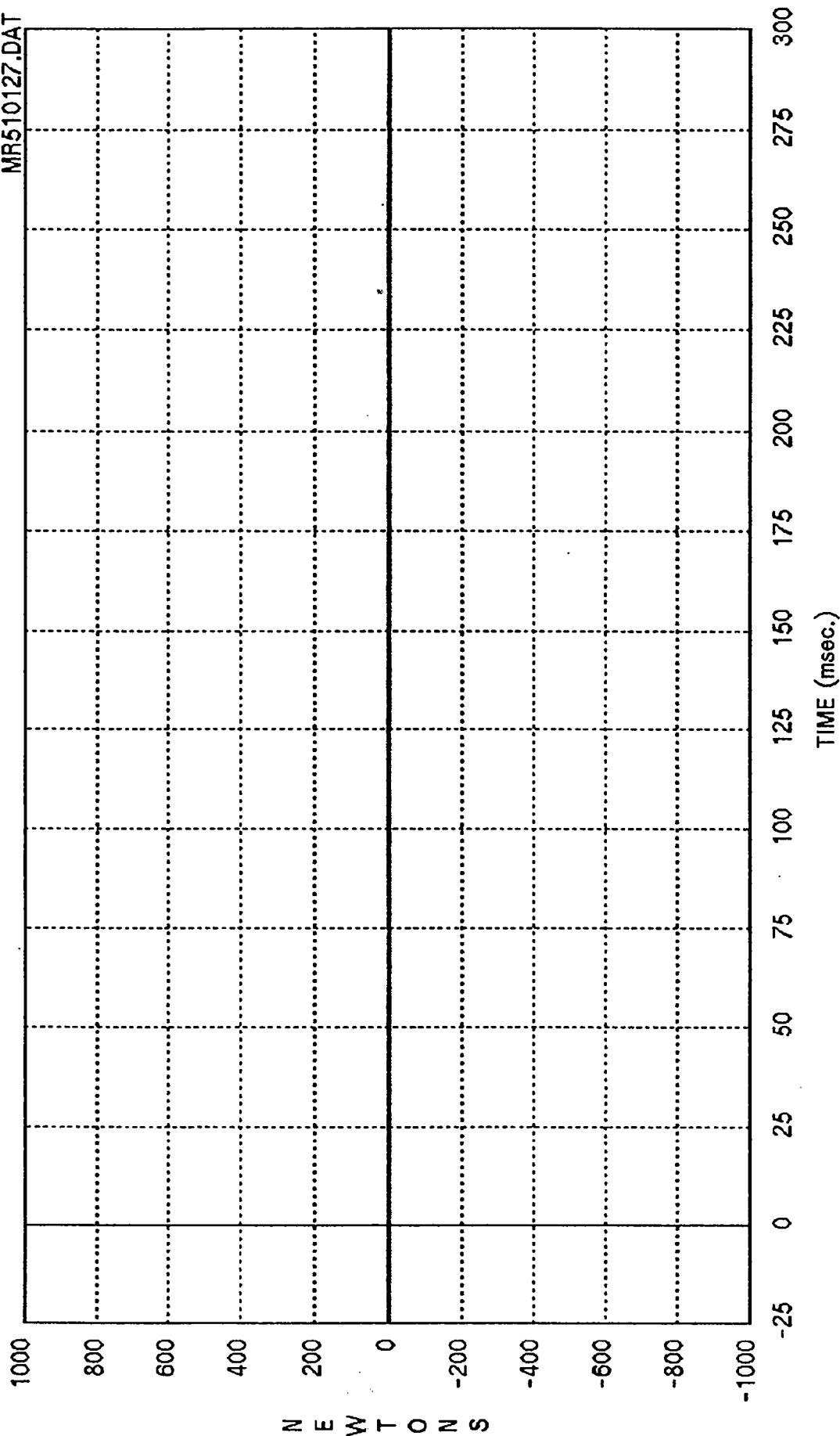
G - S

MR510126.DAT



Curve: Passenger neck force -- X axis Filter: SAE CLASS 1000 Max = 367.95 Min = -545.27

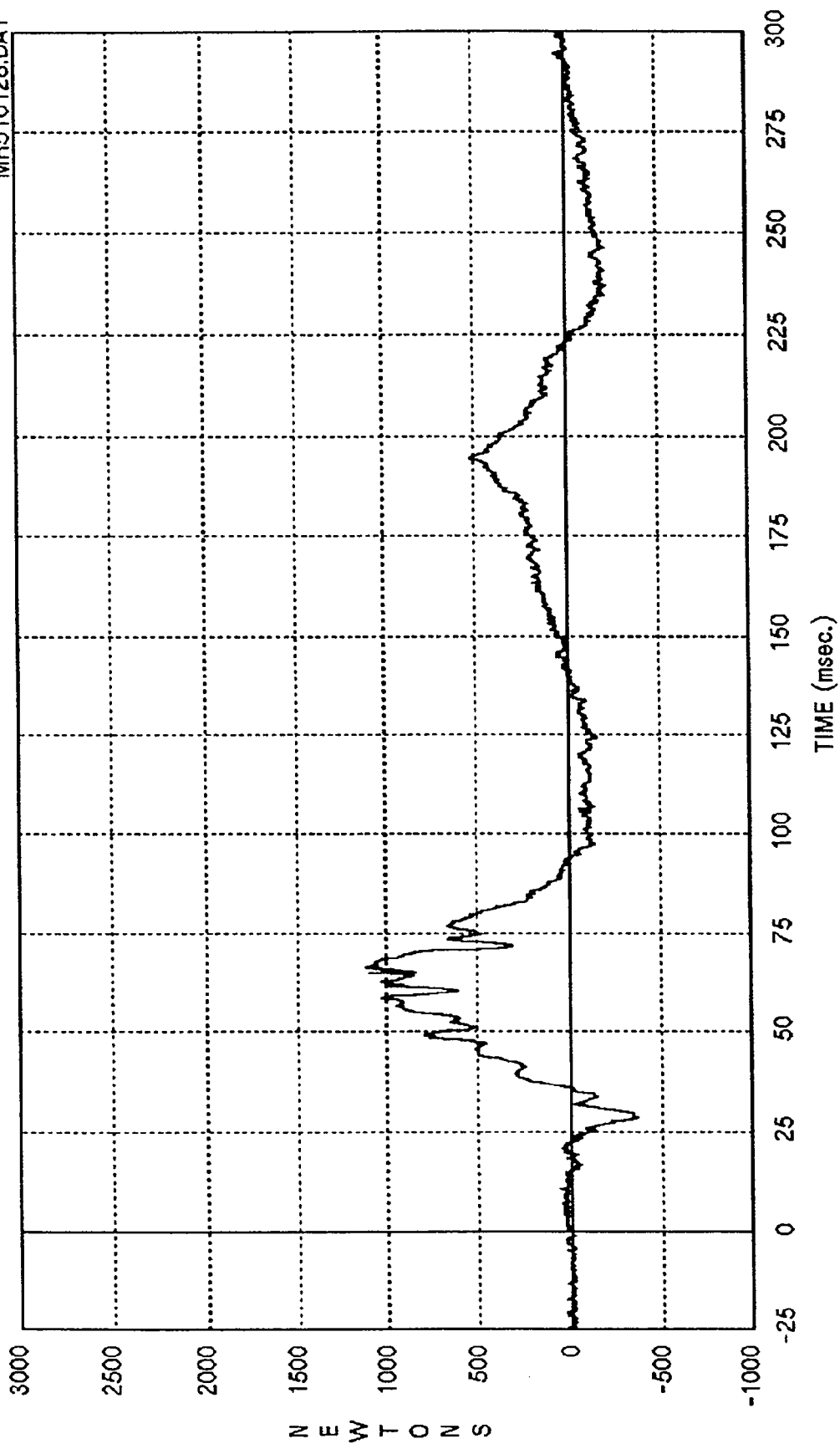
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Passenger neck force -- Y axis Filter: SAE CLASS 1000 Max = .00000 Min = .00000

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

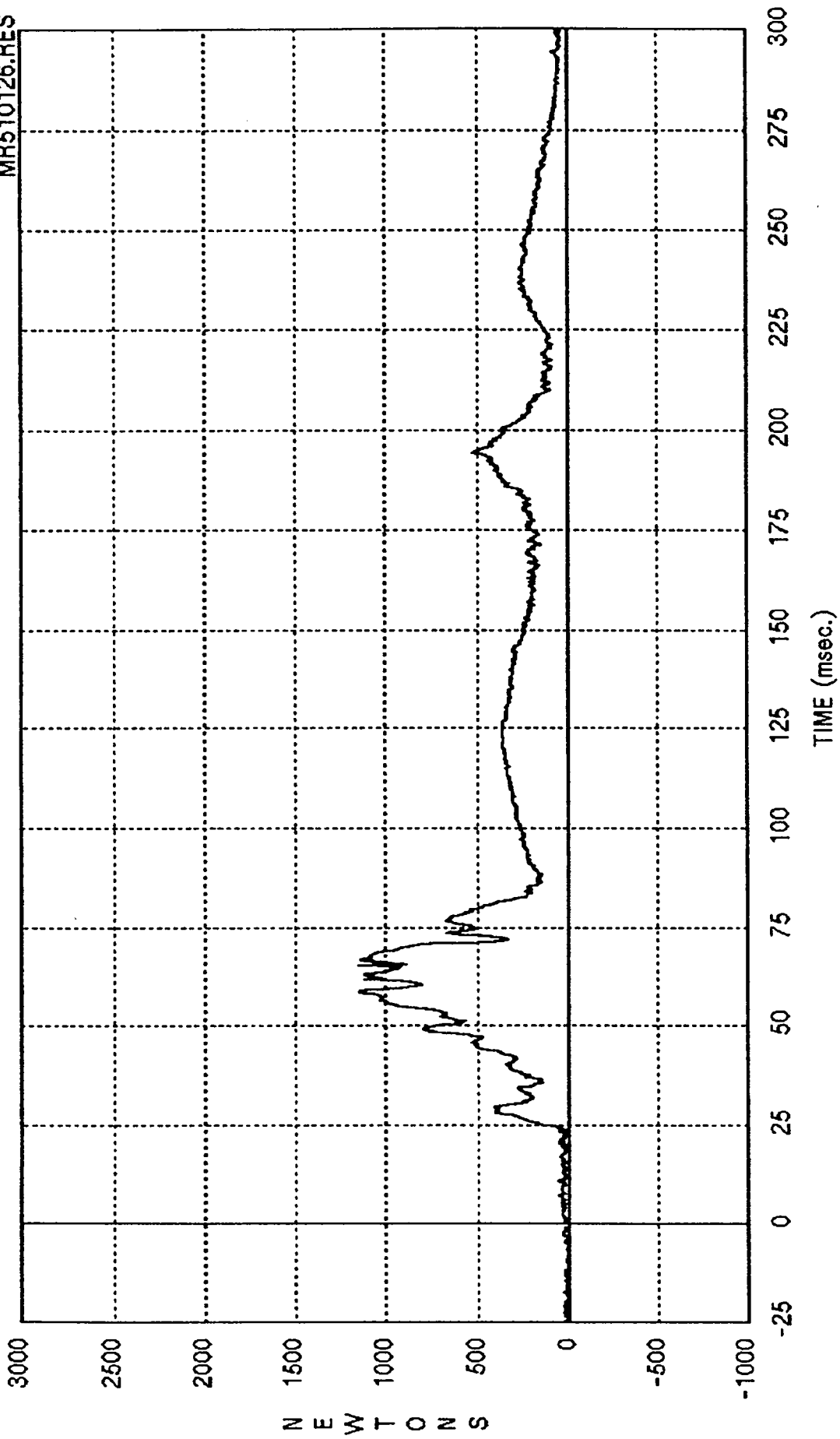
MR510128.DAT



Curve: Passenger neck force -- Z axis Filter: SAE CLASS-1000 Max = 1124.0 Min = -364.50

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

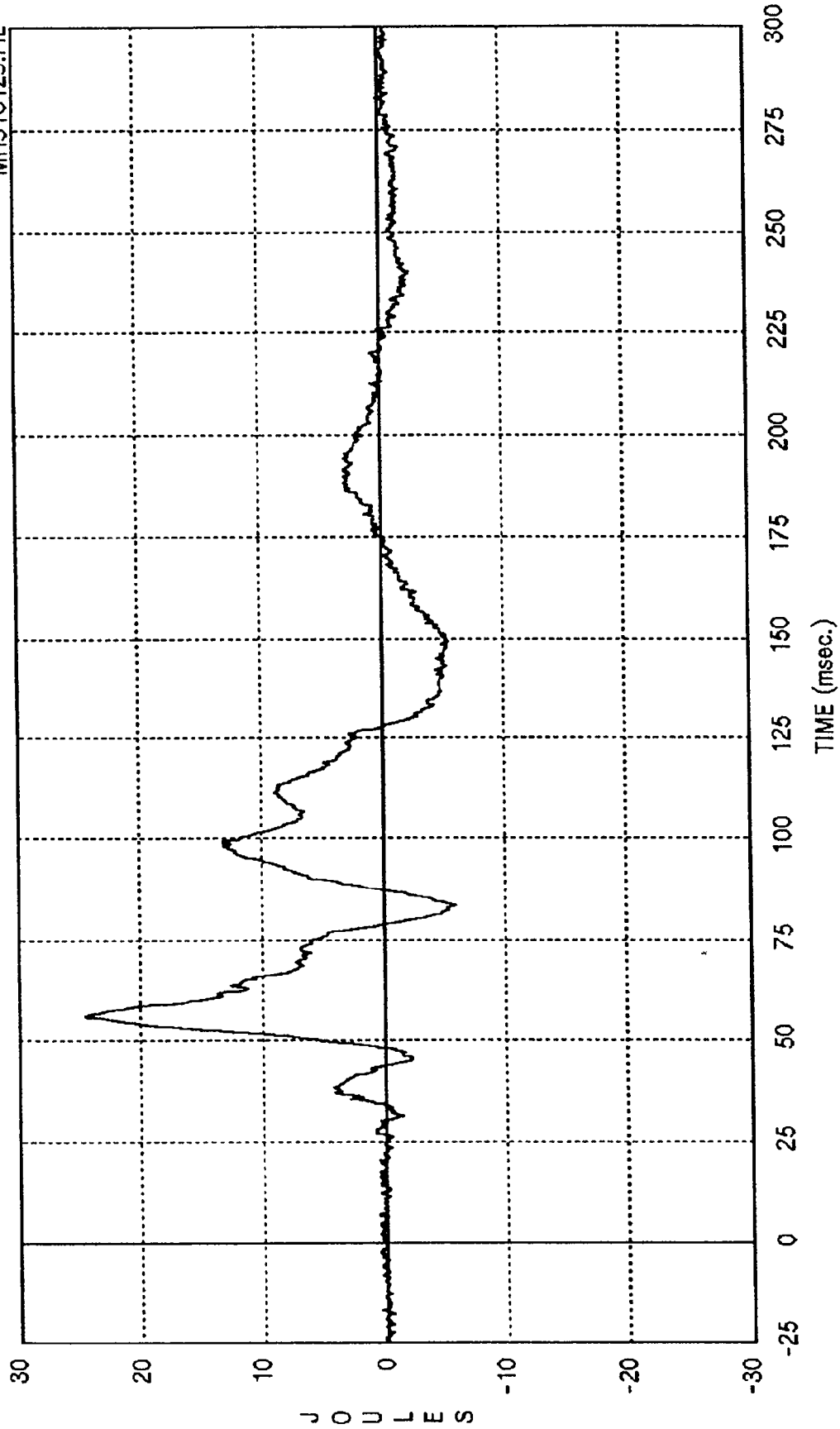
MR510126.RES



Curve: Passenger neck force -- Resultant Filter: SAE CLASS 1000 Max = 1154.2 Min = 200000

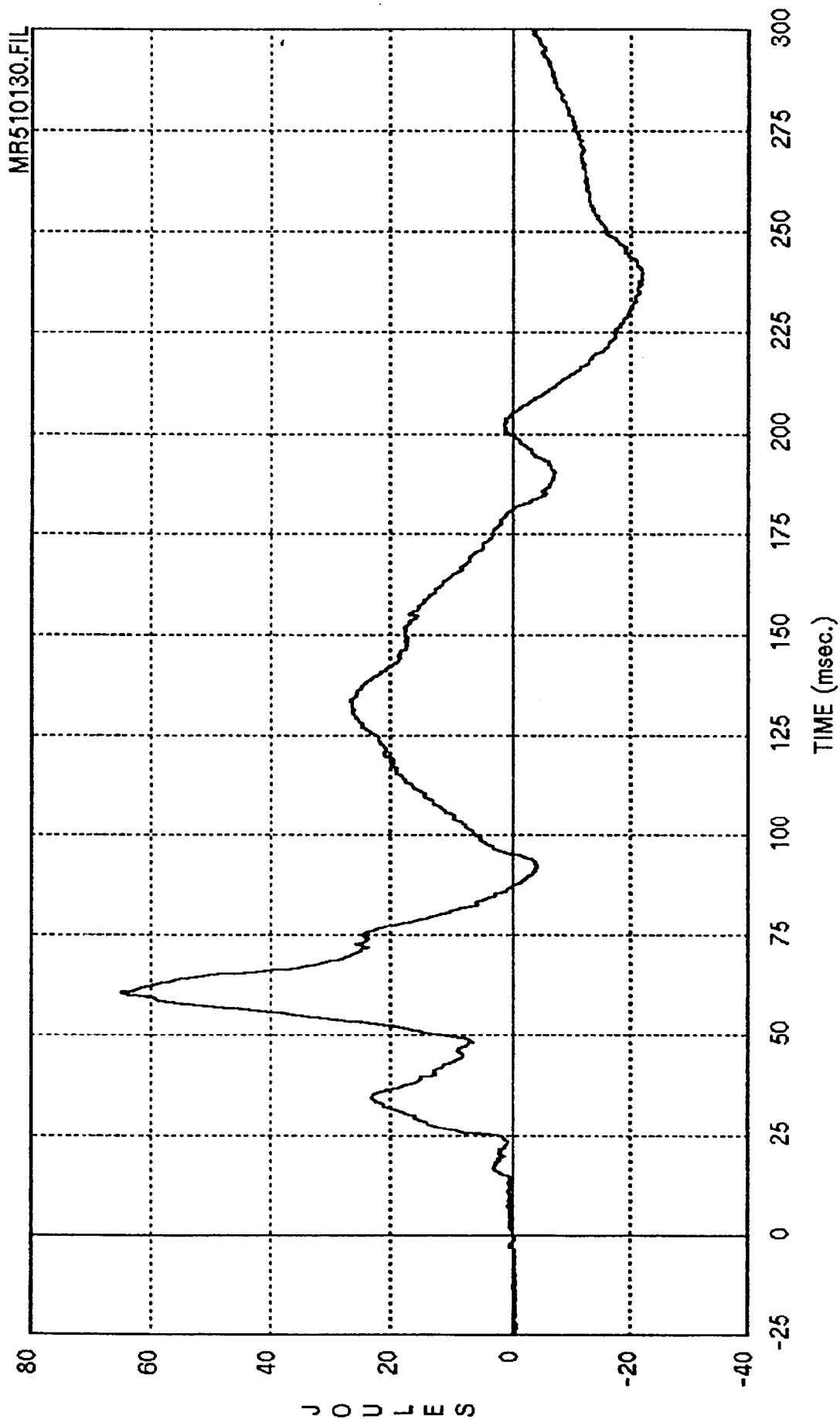
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510129.FIL



Curve: Passenger neck moment -- X axis Filter: SAE CLASS 600 Max = 24.668 Min = -5.9493

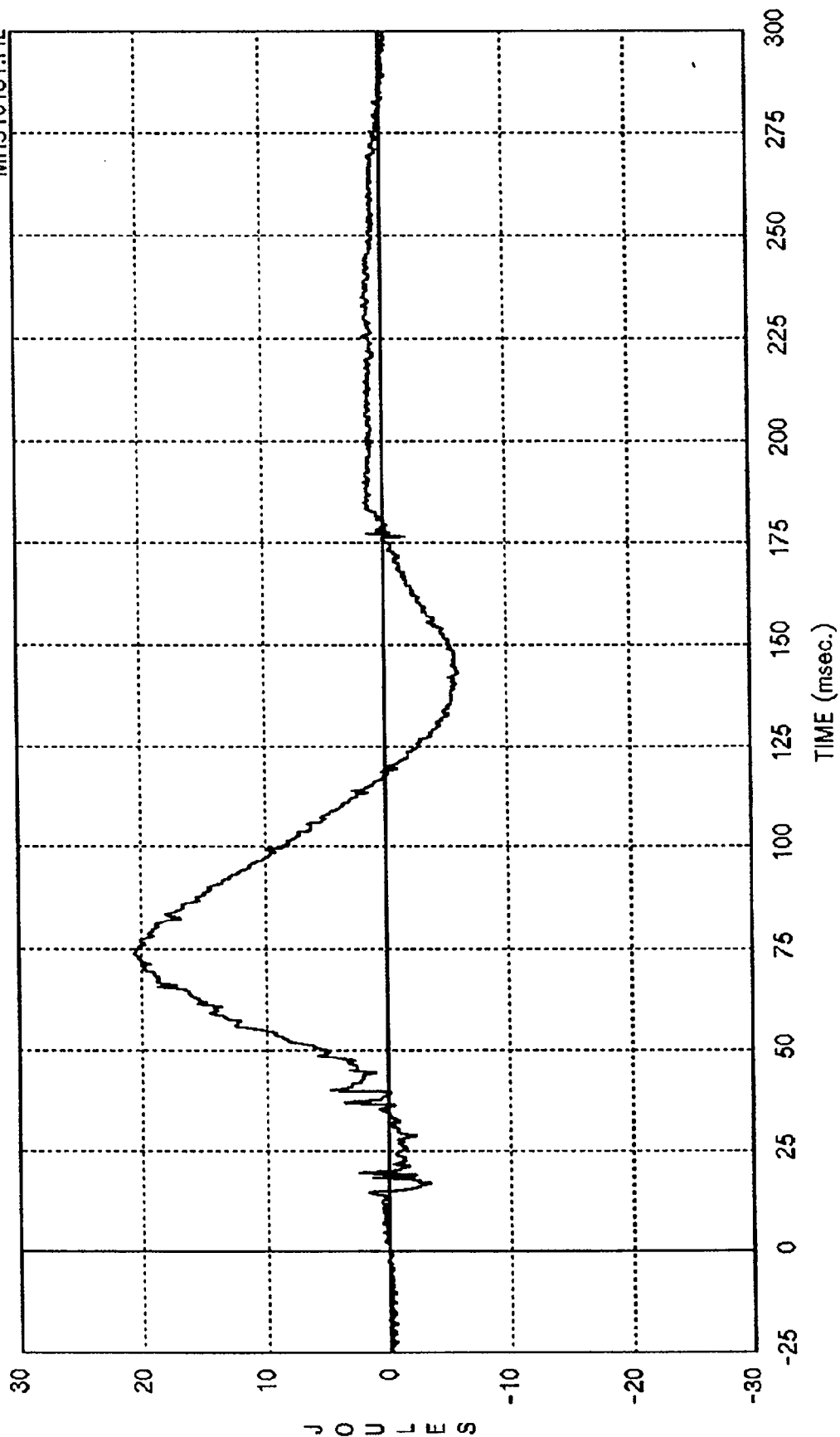
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Passenger neck moment -- Y axis Filter: SAE CLASS 600 Max = 64.971 Min = -21.978

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

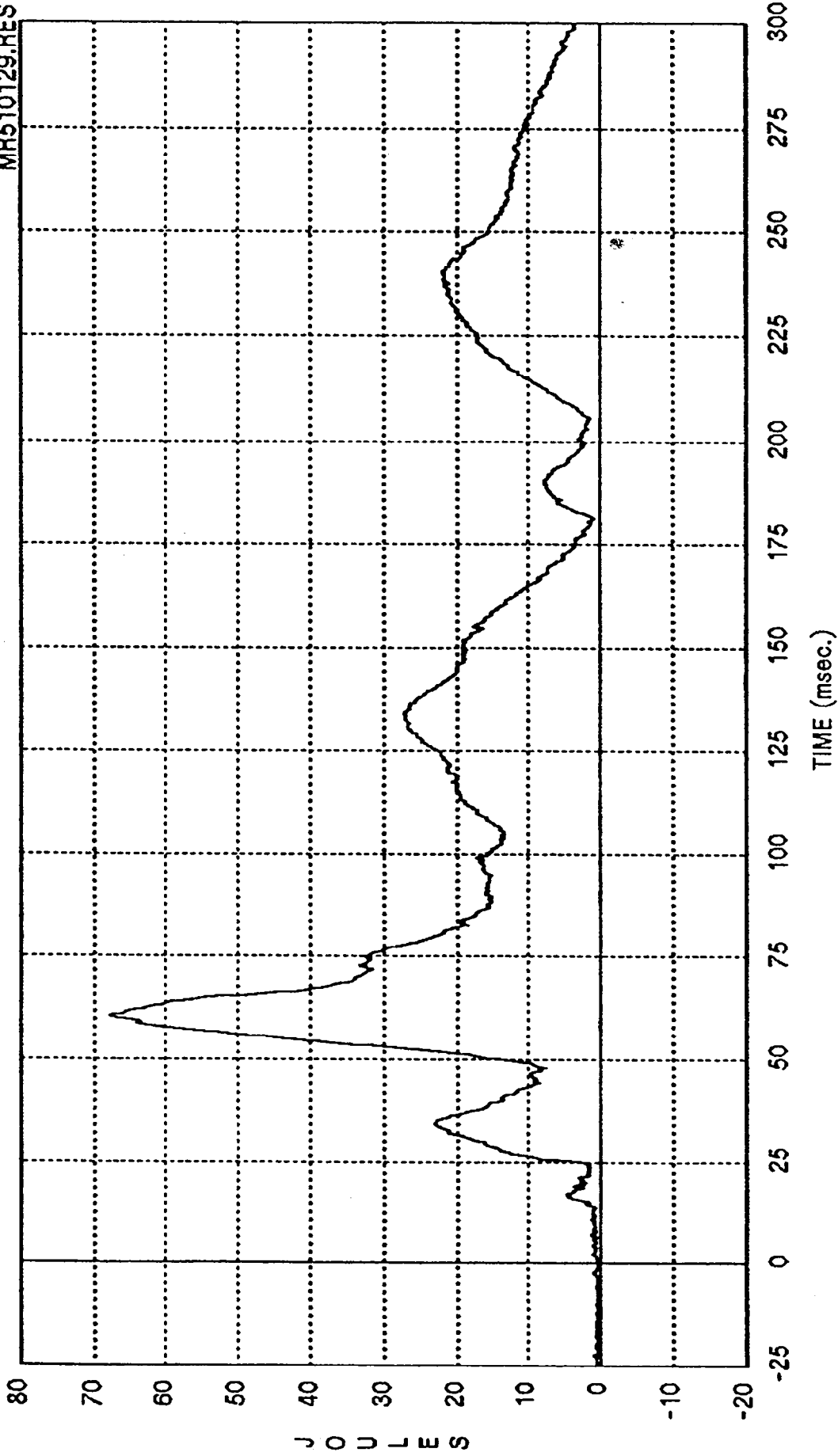
MR510131.FIL



Curve: Passenger neck moment -- Z axis Filter: SAE CLASS 600 Max = 20.727 Min = -6.0350

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

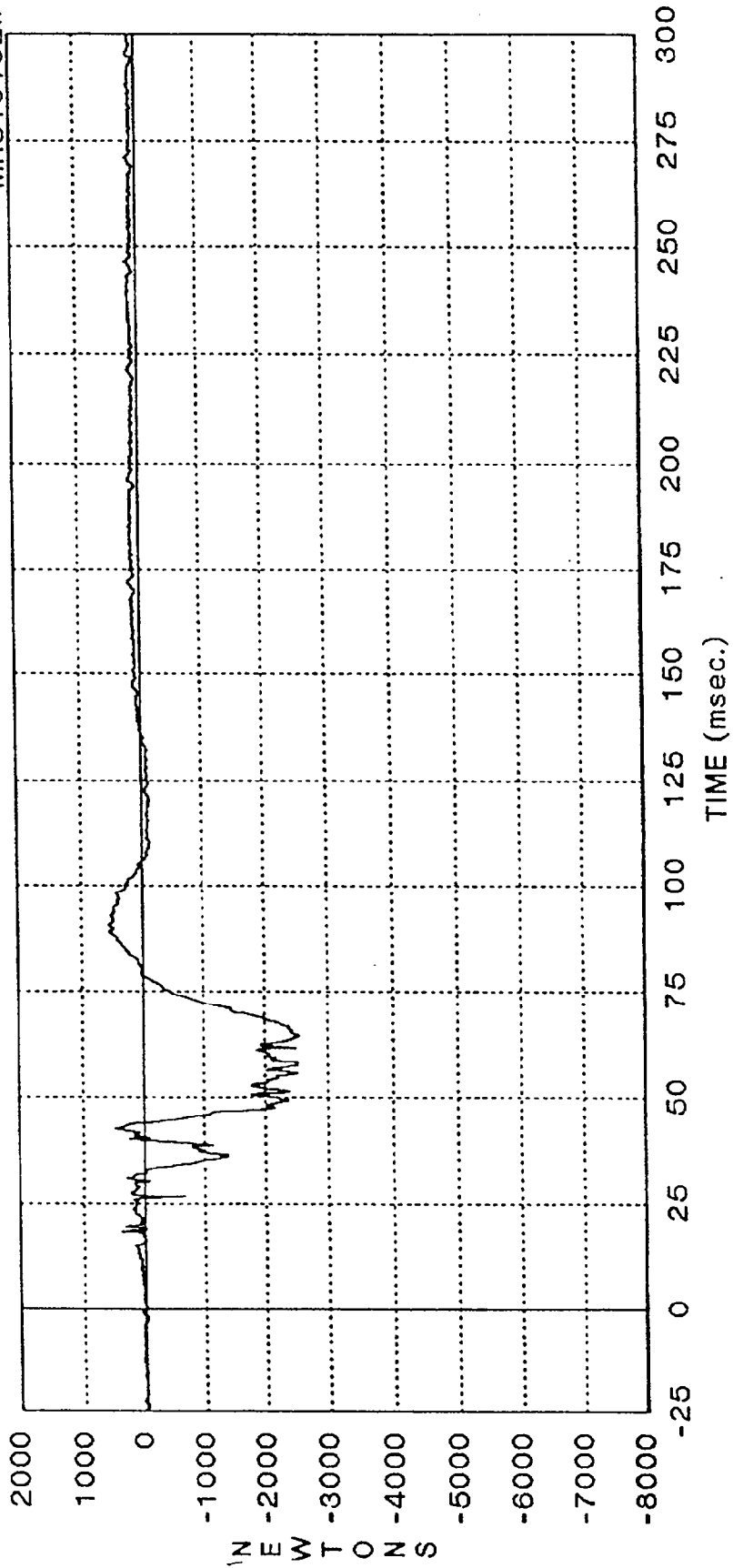
MR510129.RES



Curve: Passenger neck moment -- Resultant Filter: SAE CLASS 600 Max = 67.925 Min = 3.32608

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510132.FIL

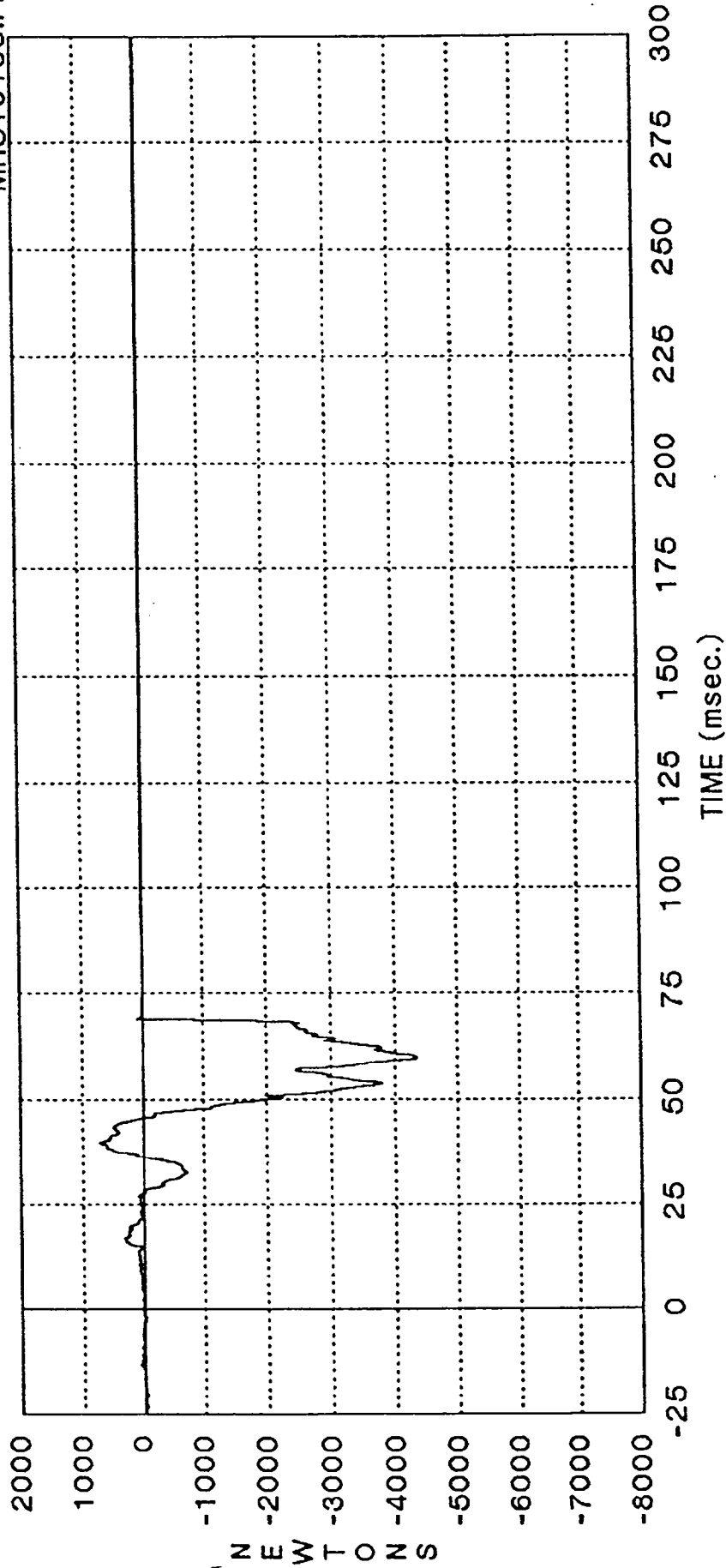


Filter: SAE CLASS 600 Max = 540.13 Min = -2551.7

Curve: Passenger left femur

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

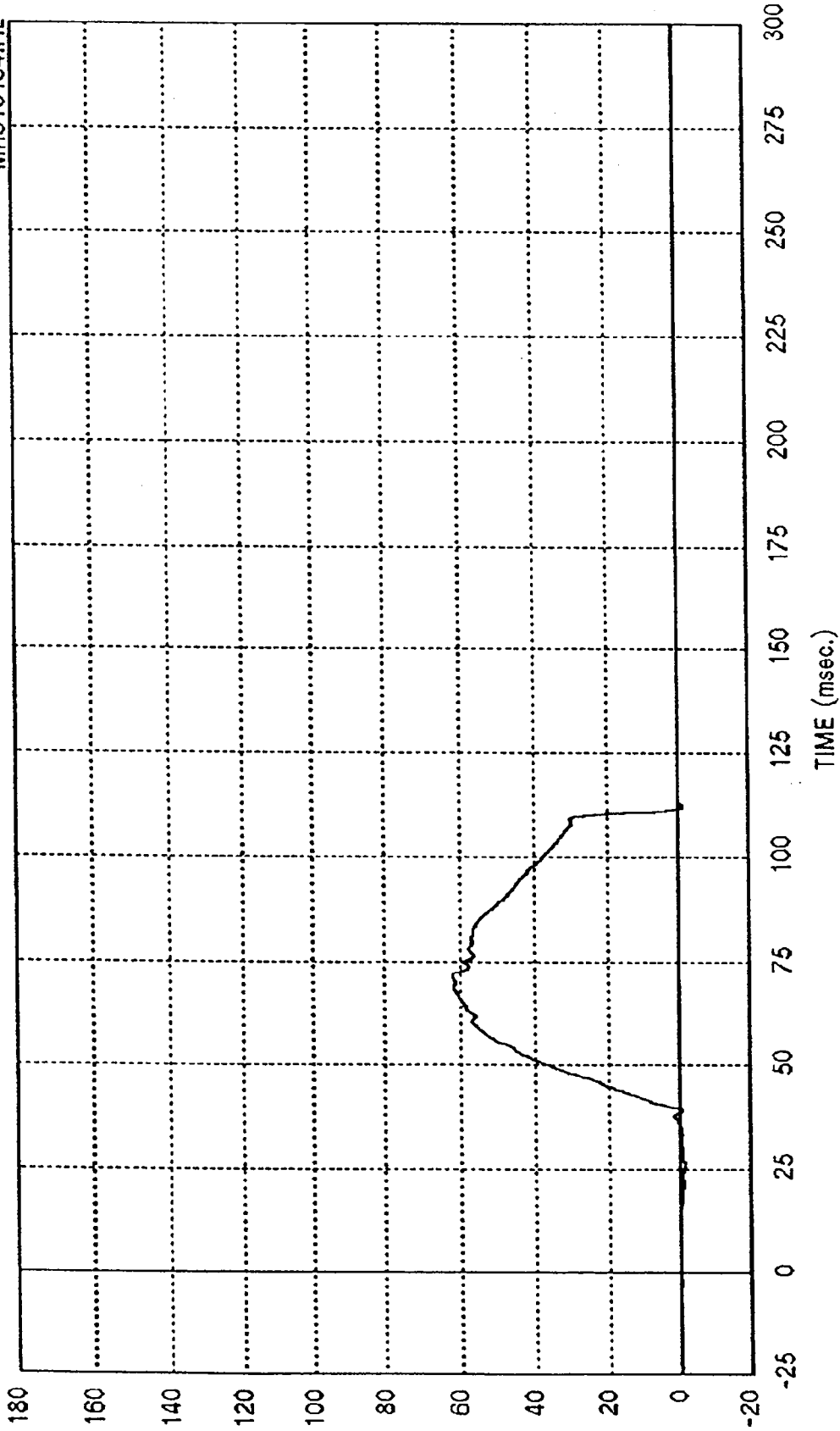
MR510133.FIL



Curve: Passenger right femur
Filter: SAE CLASS 600 Max = 719.24 Min = -4335.8

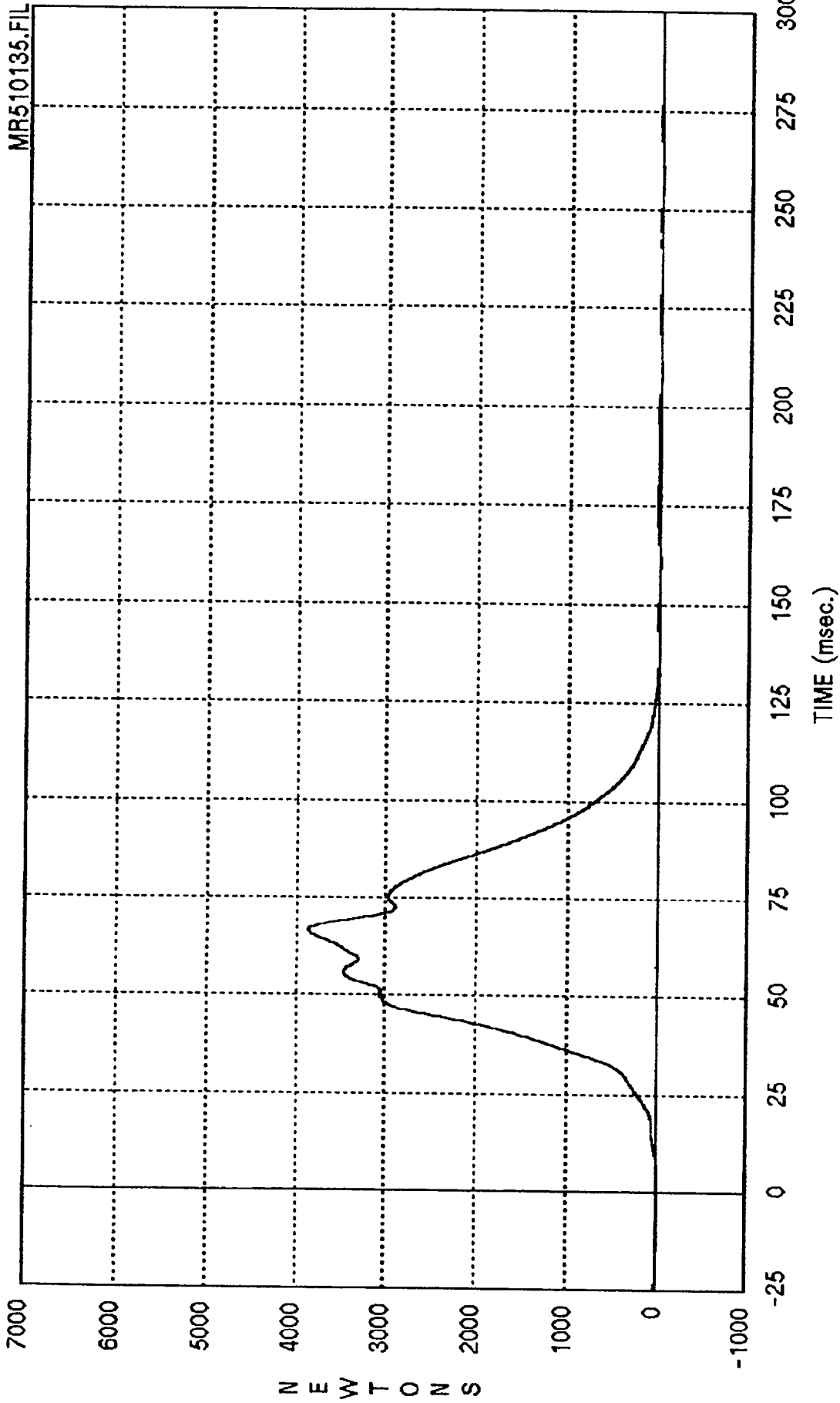
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510134.FIL



Curve: Passenger chest displacement Filter: SAE CLASS 180-- Max = 61.994 Min = -1.4127

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

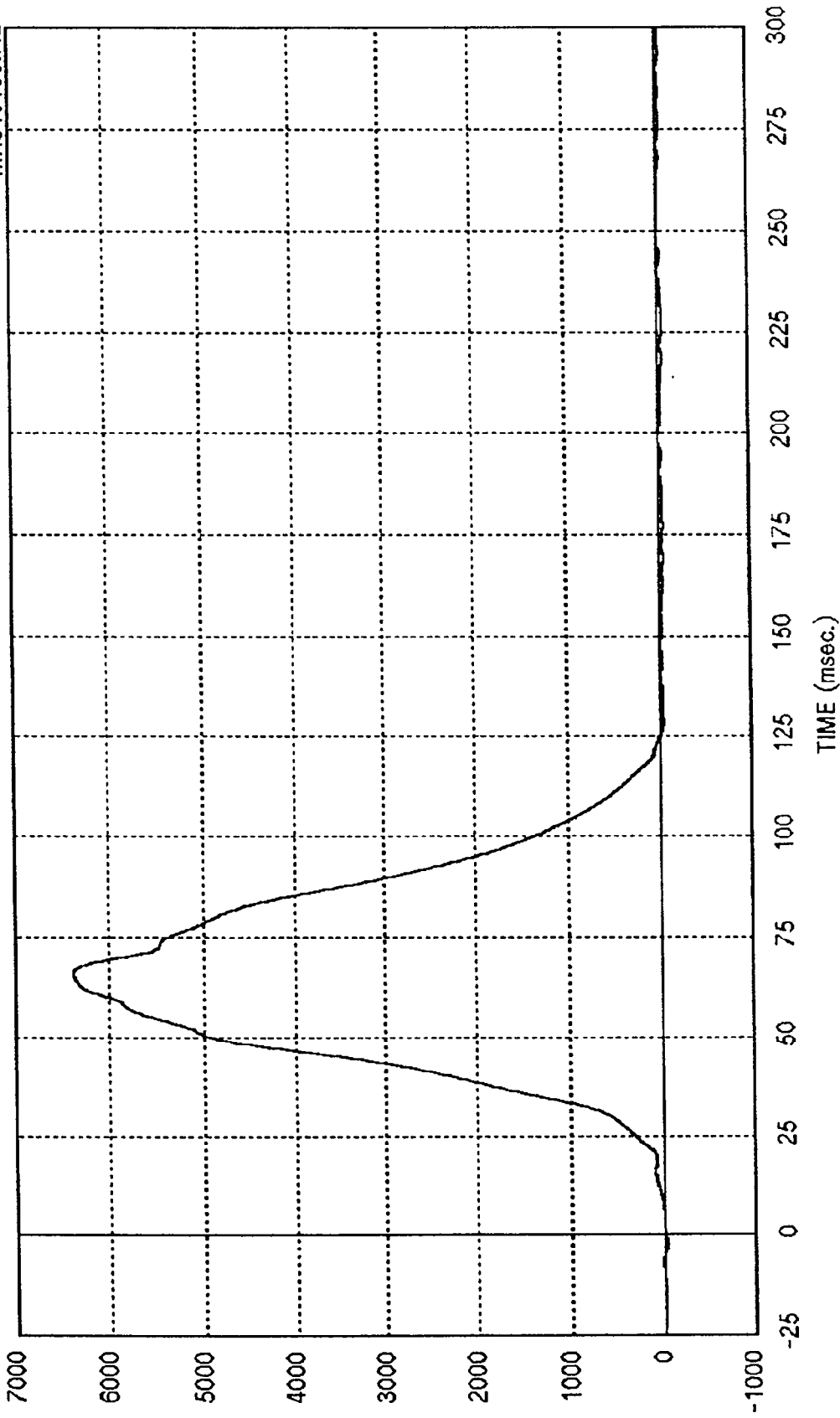


Curve: Passenger lap belt load

Filter: SAE CLASS 60 Max = 3868.1 Min = -8.6763

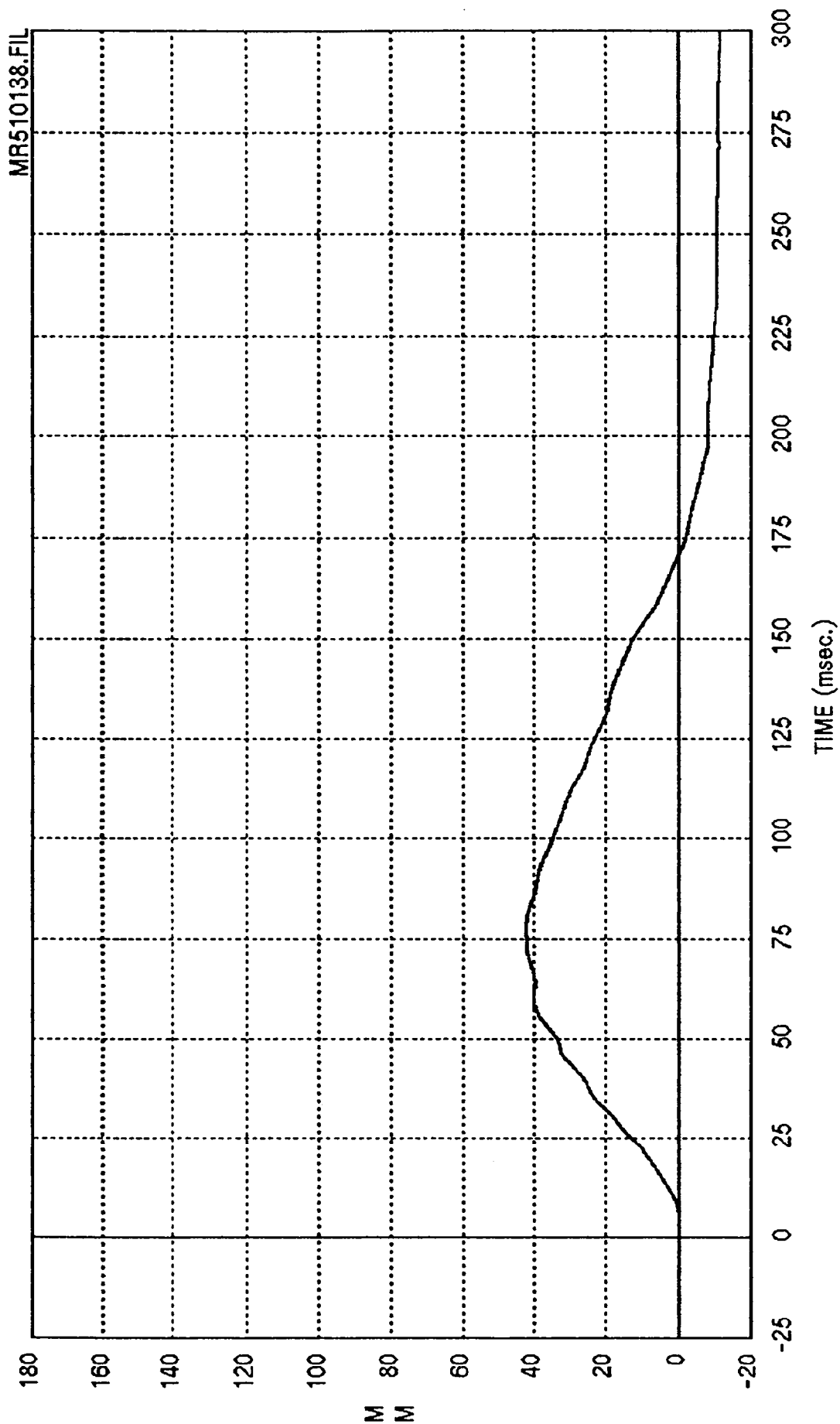
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510136.FIL



Curve: Passenger shoulder belt load Filter: SAE CLASS 60 Max = 6384.0 Min = -55.008

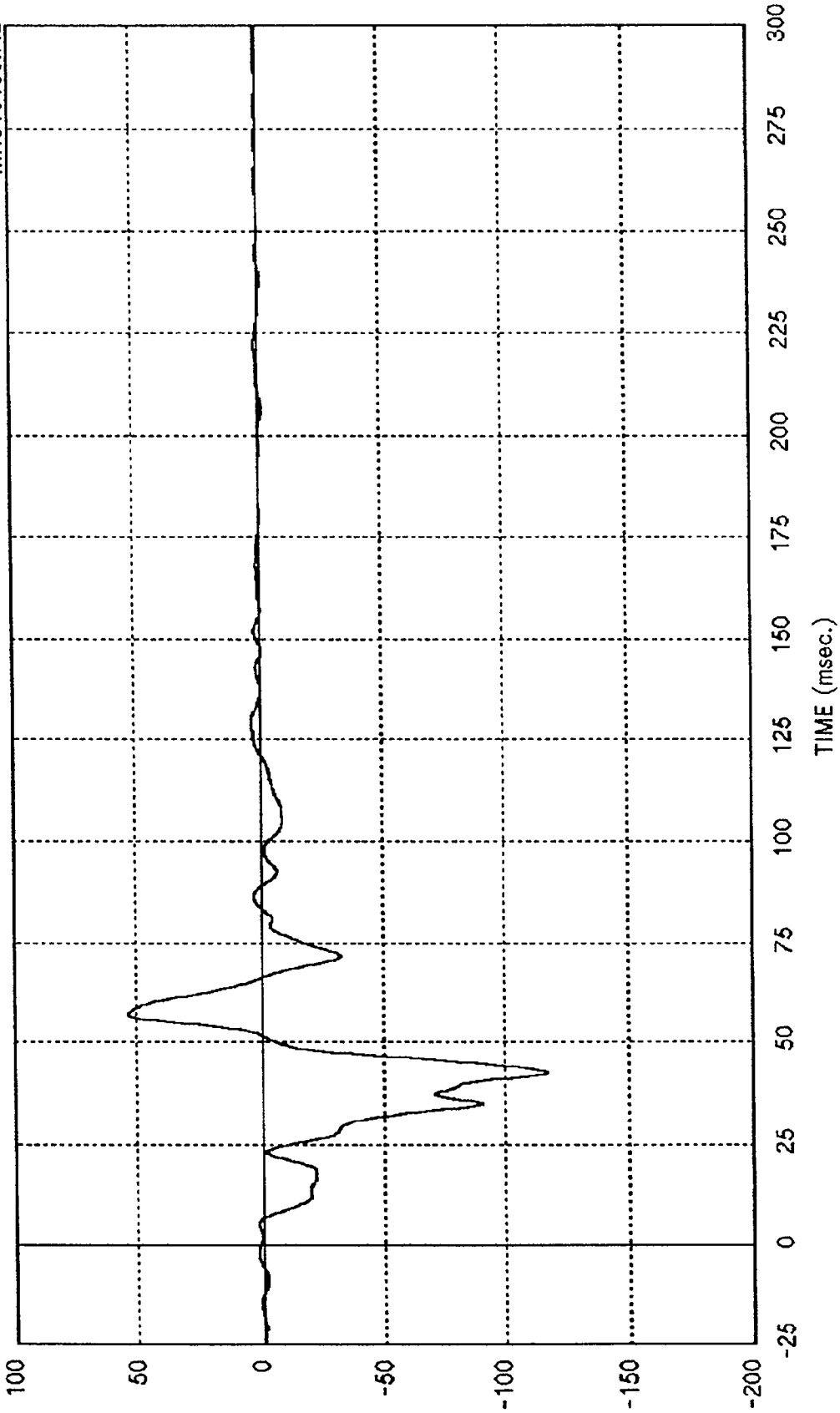
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Passenger seat belt pullout Filter: SAE CLASS 60 Max = 42.192 Min = -11.548

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510139.FIL



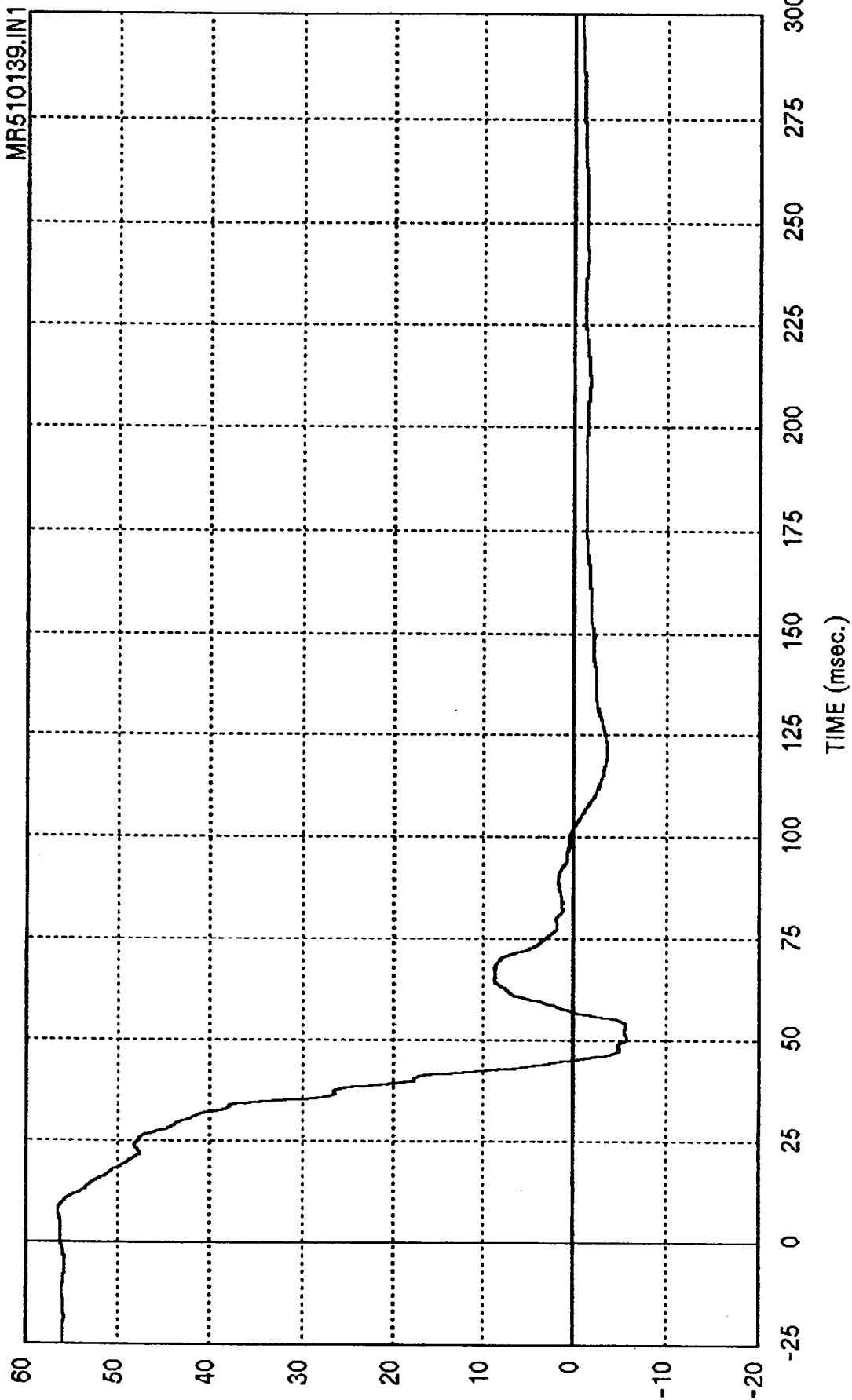
Curve: Vehicle left front caliper acceleration Filter: SAE CLASS 60 Max = 53.783 Min = -117.17

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

G - S

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MSE-R93030-01



Curve: Vehicle left front caliper -- delta V Filter: SAE CLASS 180 Max = 56.526 Min = -5.7888

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

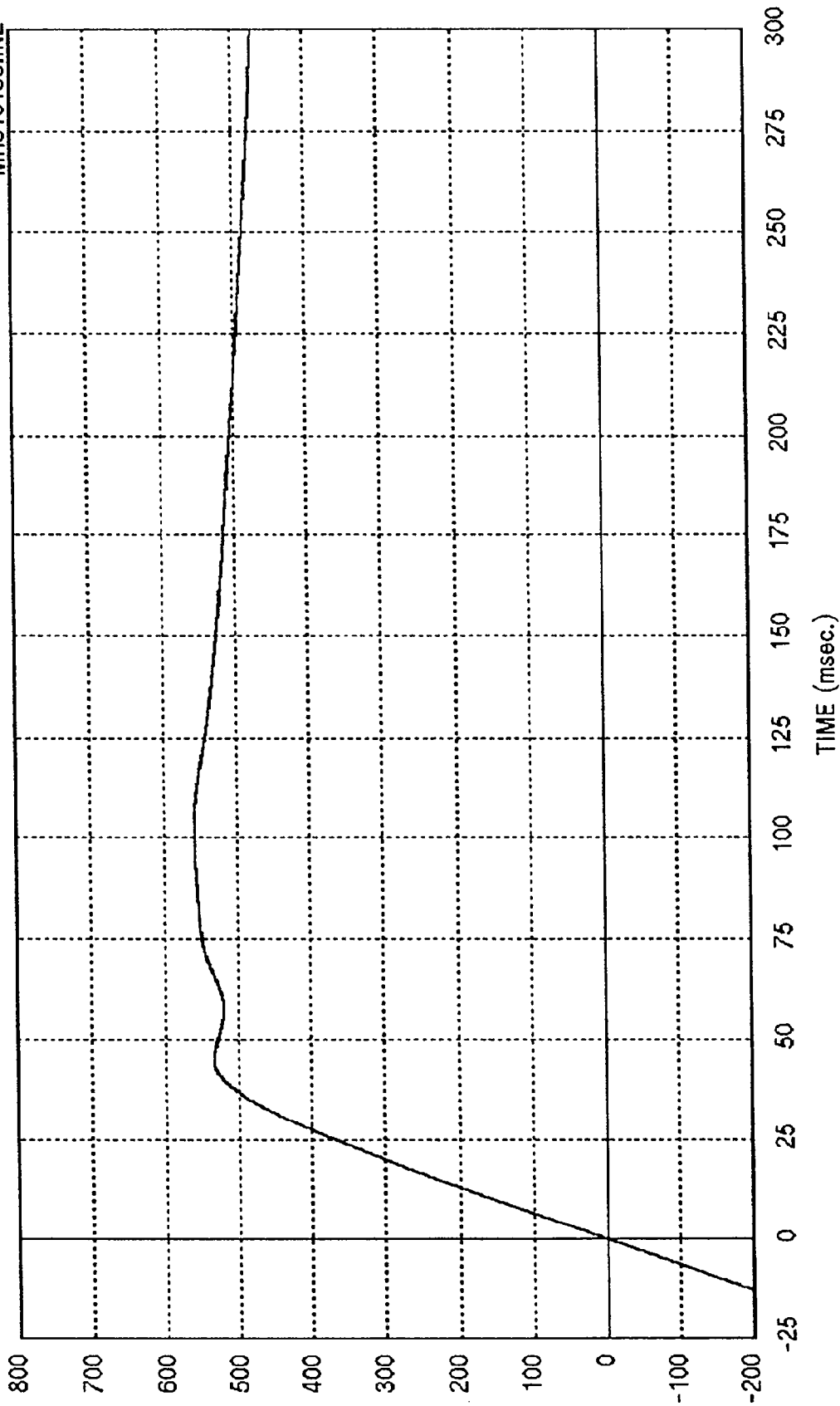
K M H

B-1

55

MSE-R93030-01

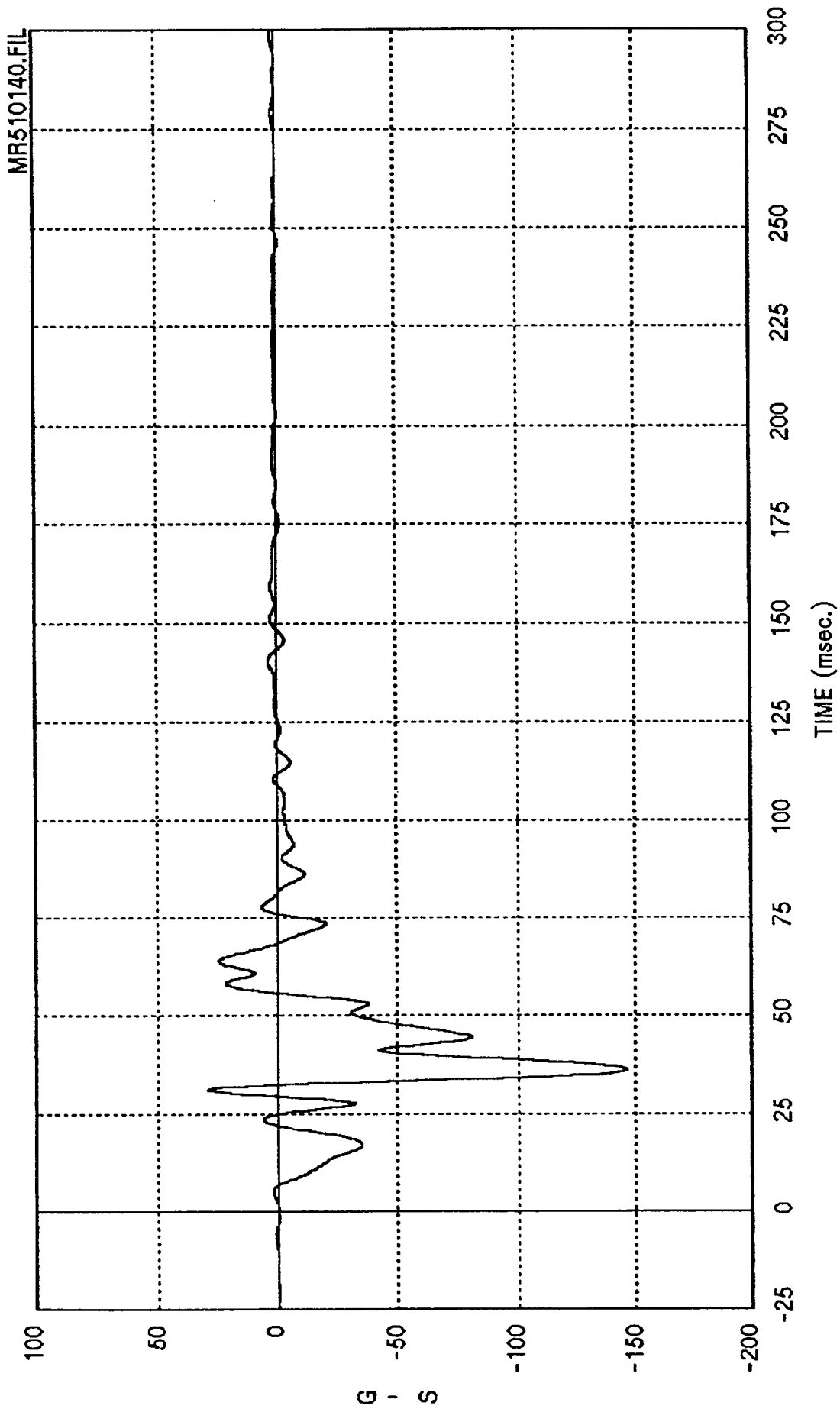
MR510139.IN2



Curve: Vehicle left front calliper -- displacement Filter: SAE CLASS:180 Max = 560.65 Min = 472.43

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

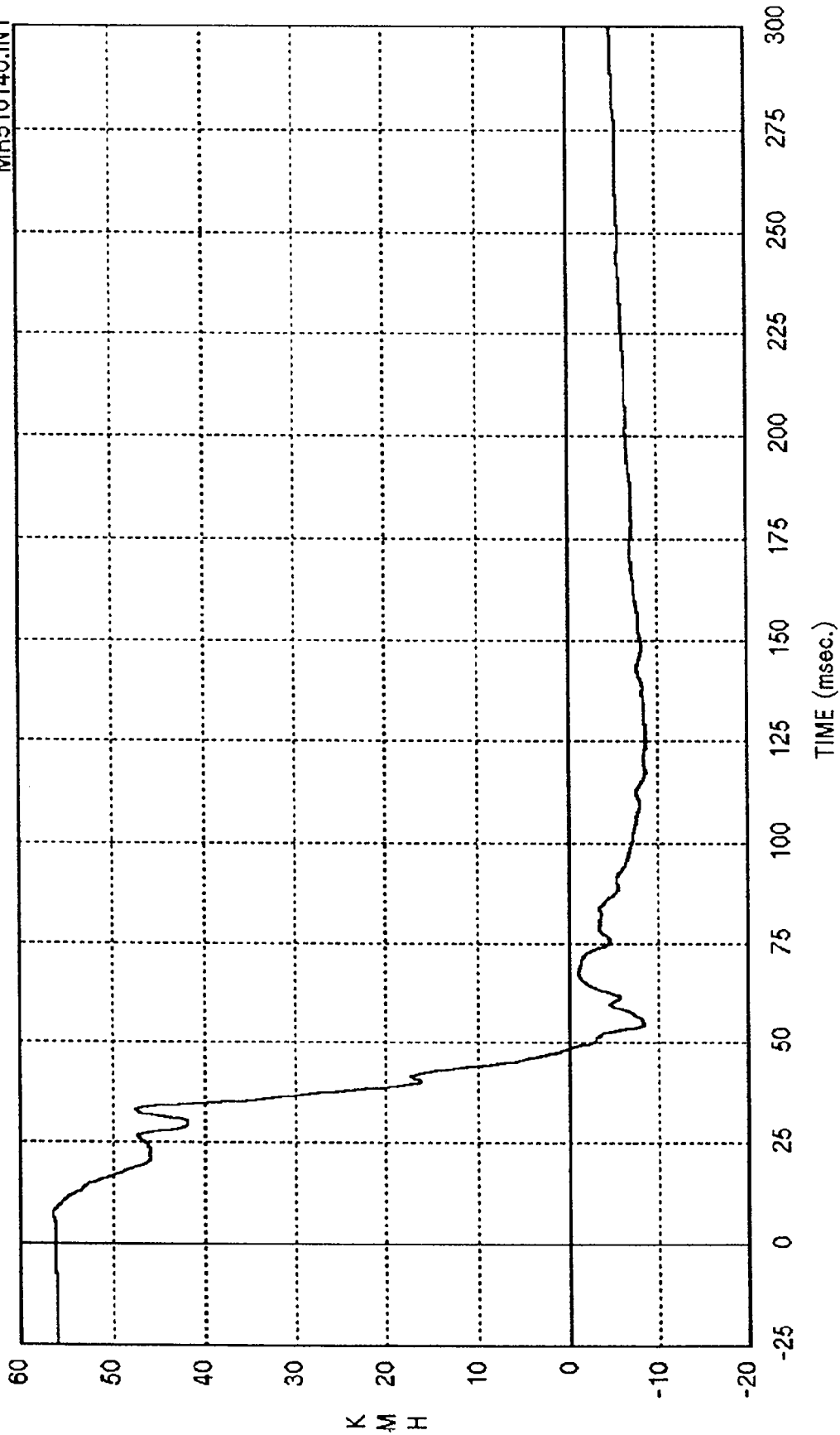
M M



Curve: Vehicle right front callper acceleration
Filter: SAE CLASS 60 Max = 29.571 Min = -146.18

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

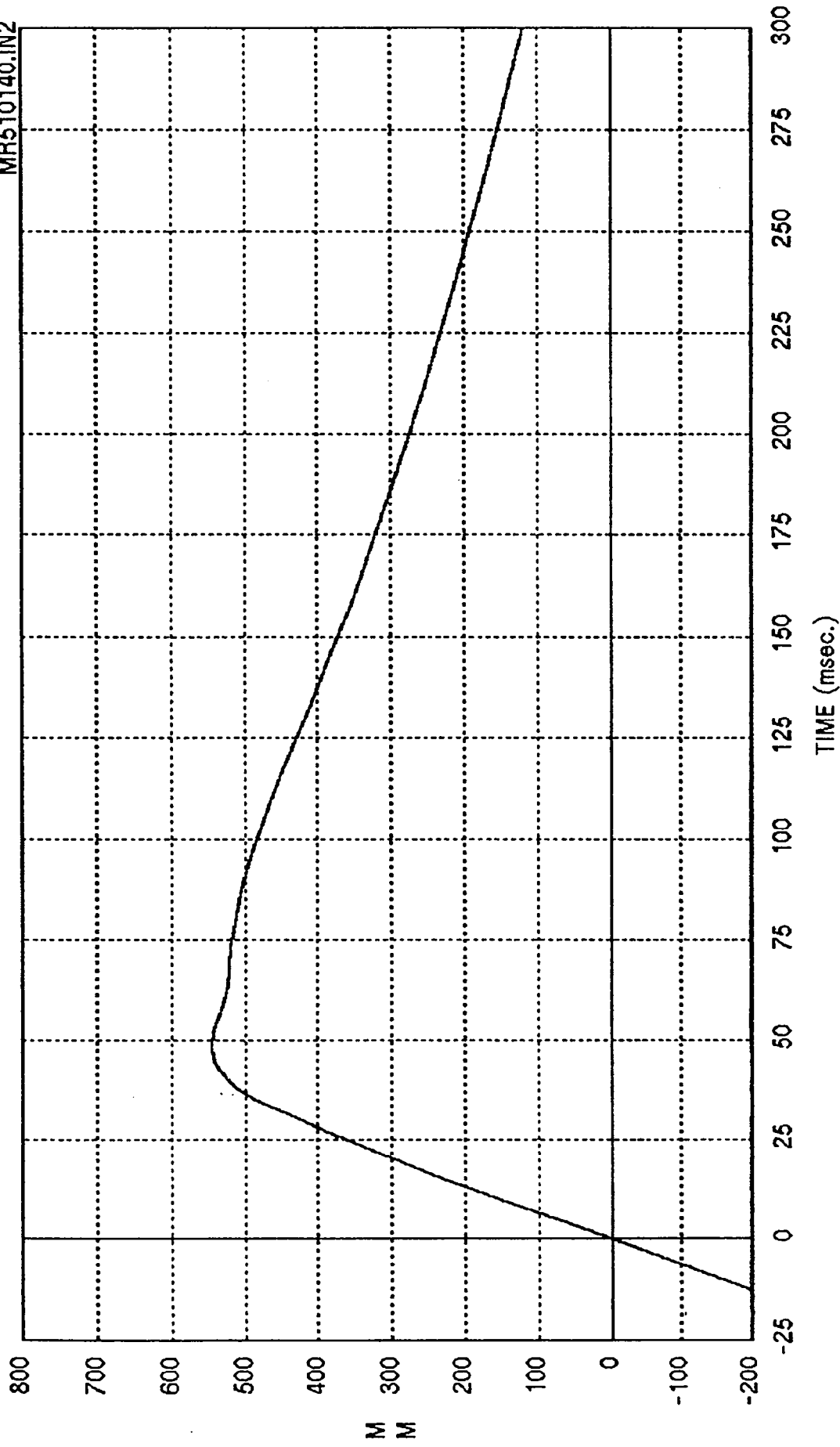
MR510140.IN1



Curve: Vehicle right front callper -- delta V Filter: SAE CLASS 180 Max = 56.508 Min = -8.6438

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

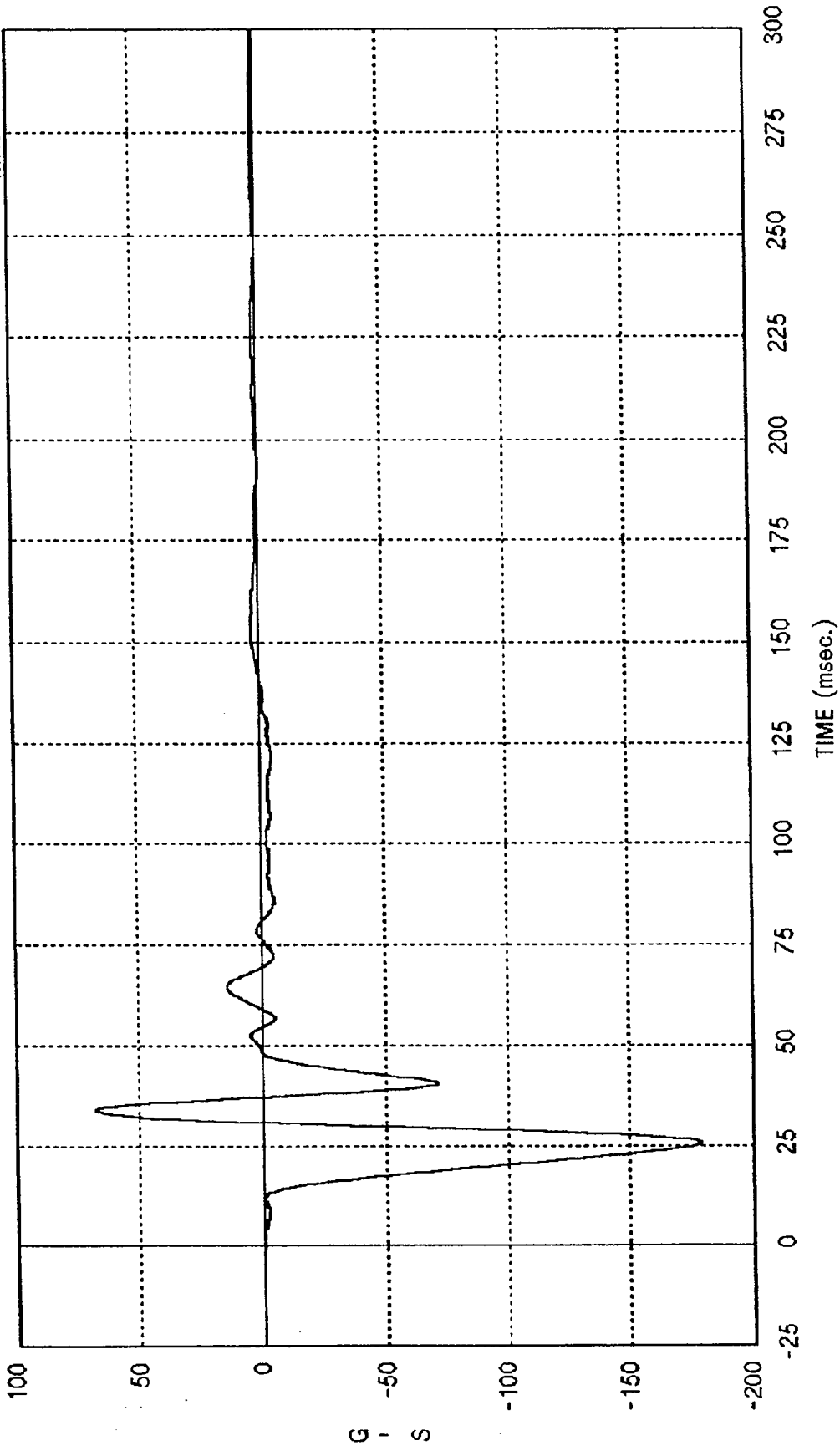
MR510140.IN2



Curve: Vehicle right front caliper -- displacement Filter: SAE CLASS 180 Max = 546.19 Min = 118.78

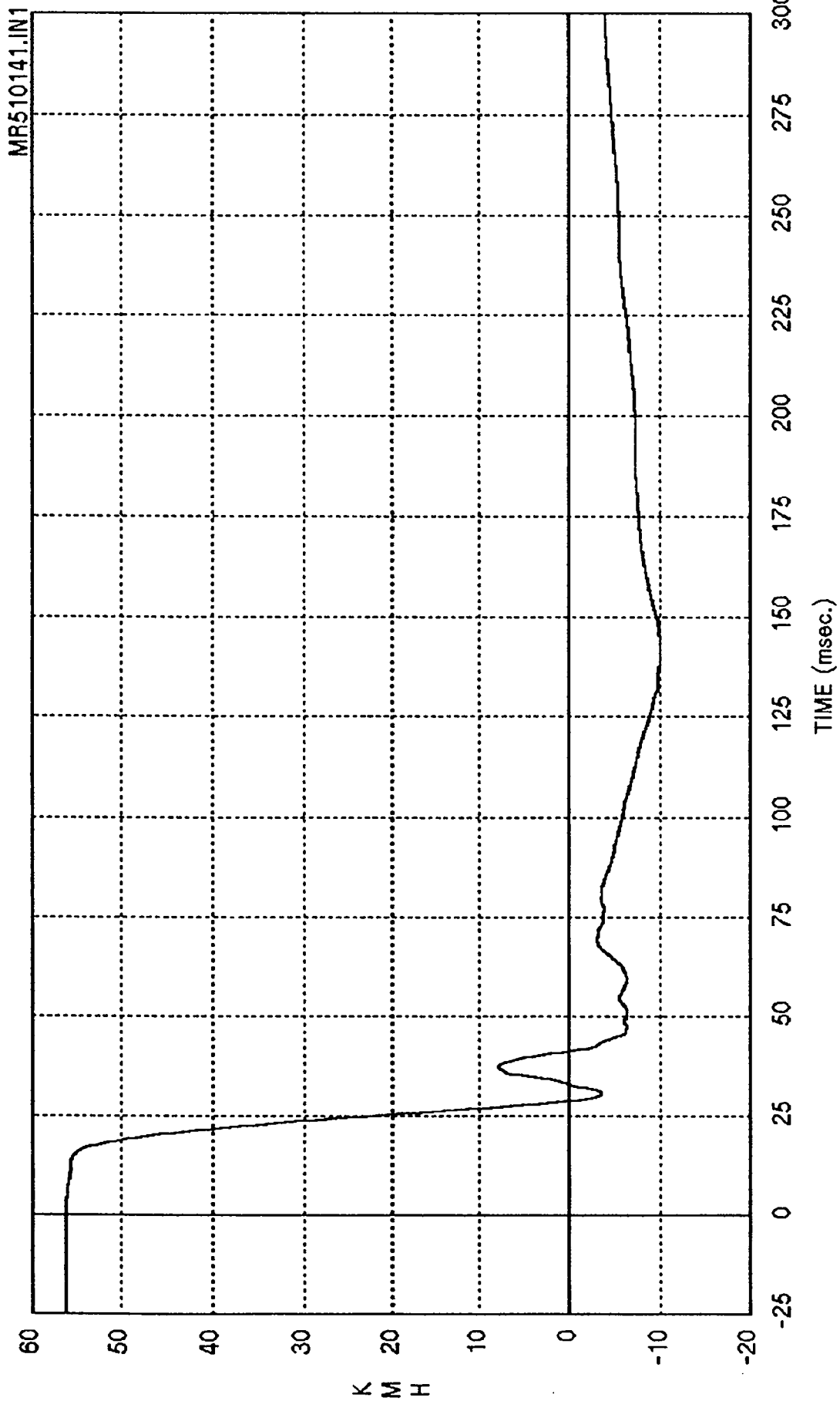
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510141.FIL



Curve: Vehicle engine bottom acceleration Filter: SAE CLASS 60 Max = 68.108 Min = -178.78

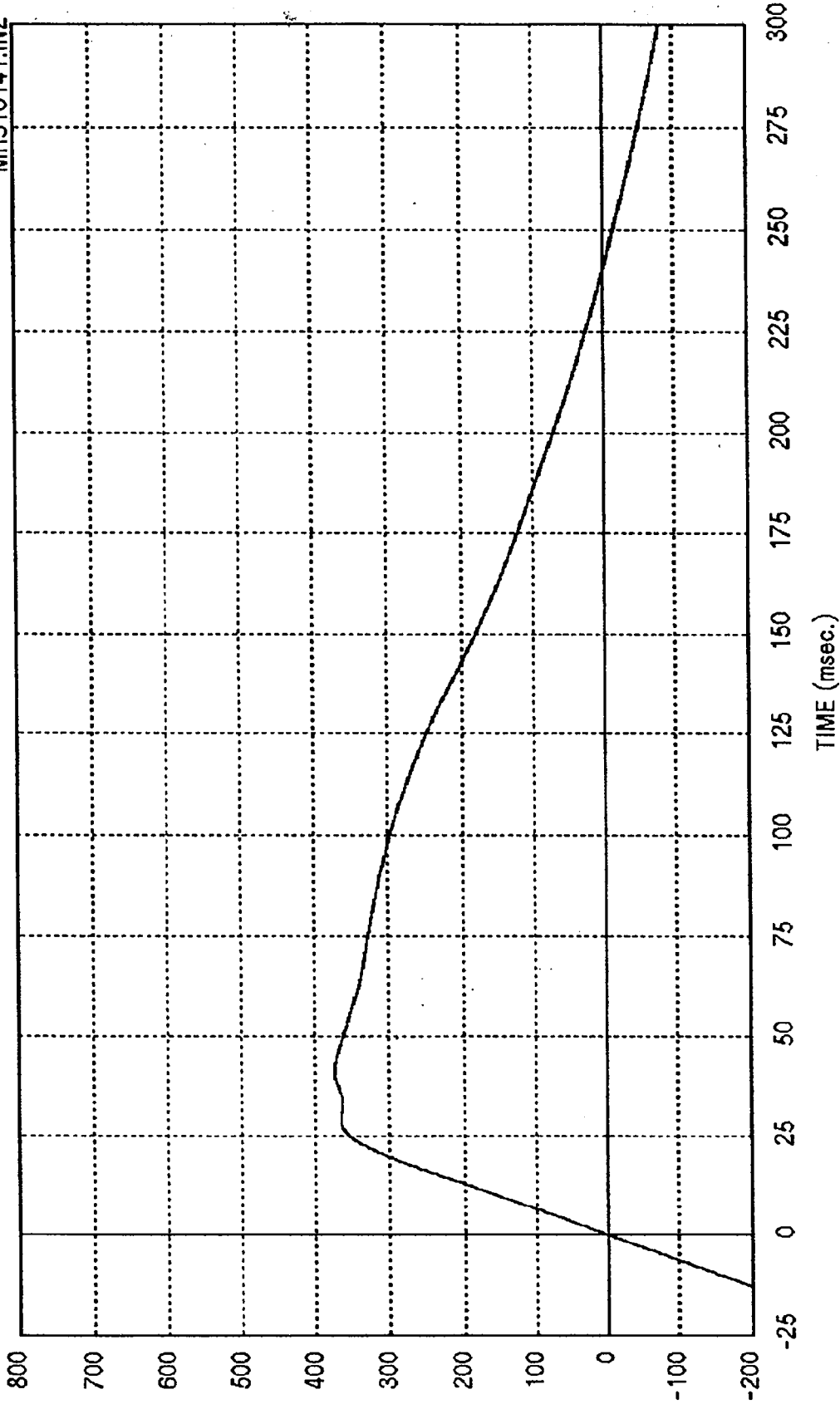
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Vehicle engine bottom -- delta V -- Filter: SAE CLASS 180 Max = 56.187 Min = -9.9695

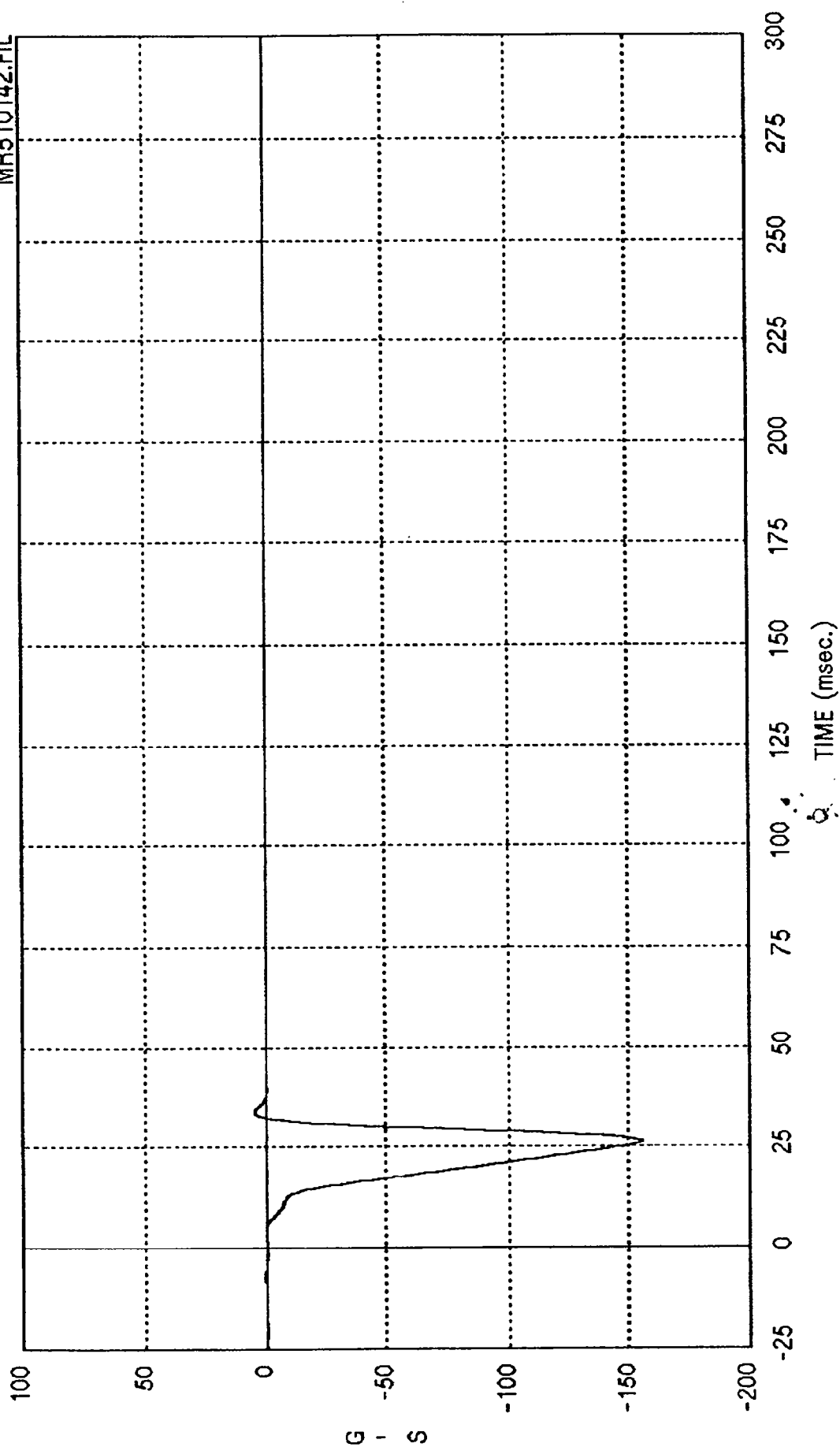
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510141.IN2



Curve: Vehicle engine bottom -- displacement Car Filter: SAE CLASS 180 Max = 374.33 Min = -80.760

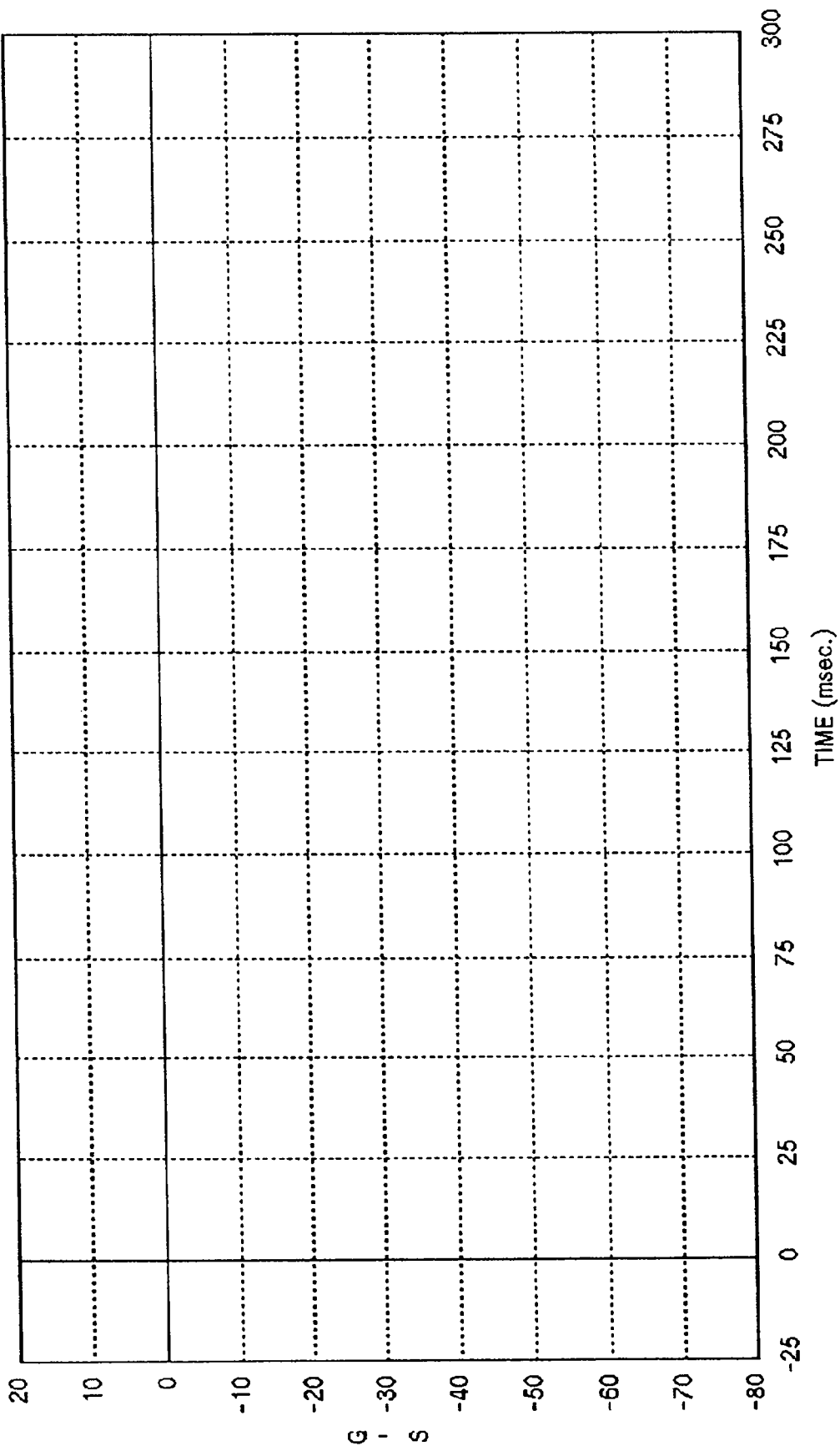
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Vehicle engine top acceleration (CF at 29.9 msec) Filter: SAE CLASS 60 Max = 5.0536 Min = -155.98

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

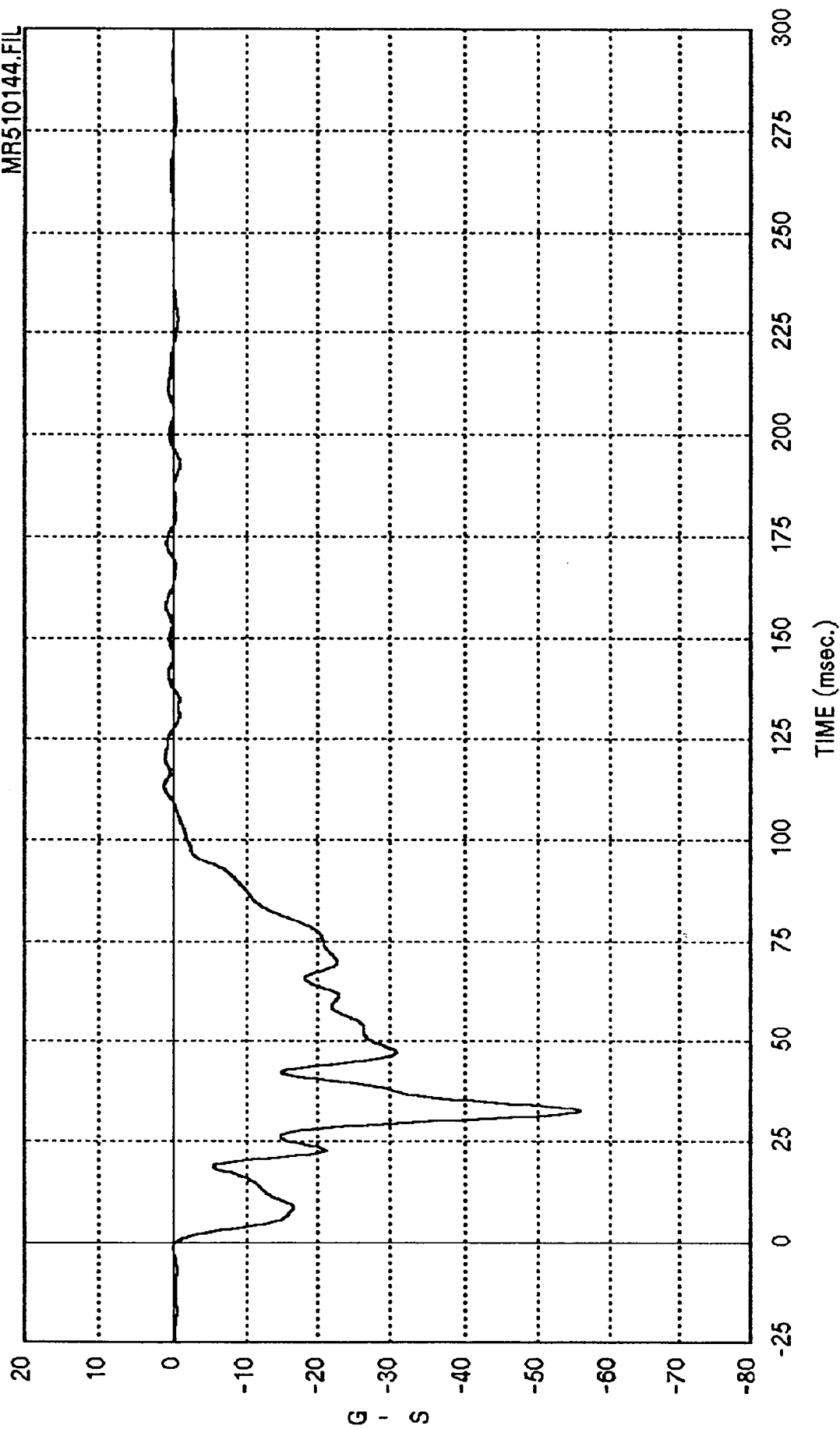
MR510143.FIL



Curve: Vehicle Instrument panel acceleration. (No data) Filter: SAE CLASS 60 Max = .00000 Min = .00000

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01



Curve: Vehicle left rear X-member acceleration (Pri.)

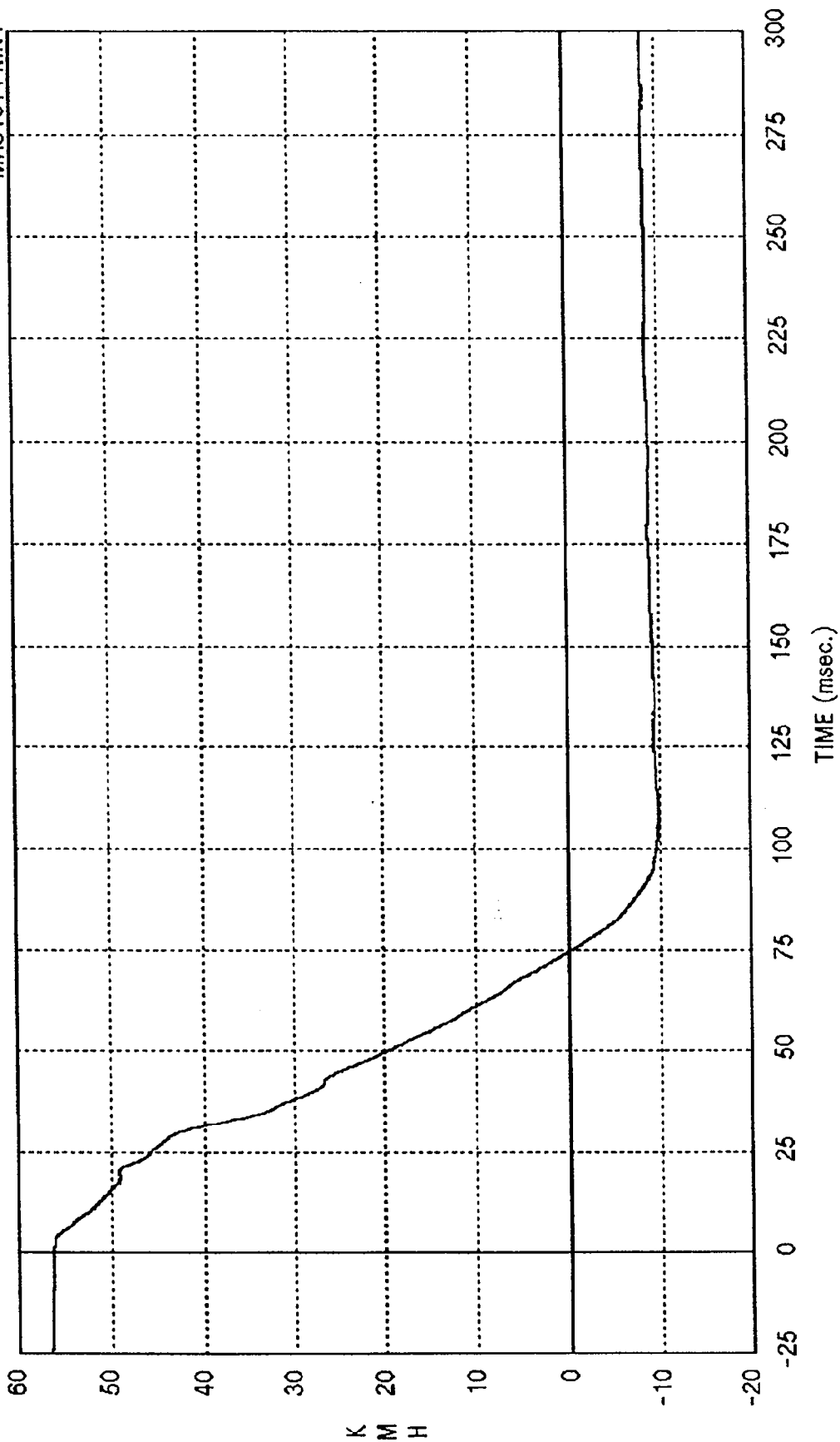
Filter: SAE CLASS-60

Max = 1.3583

Min = -55.719

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

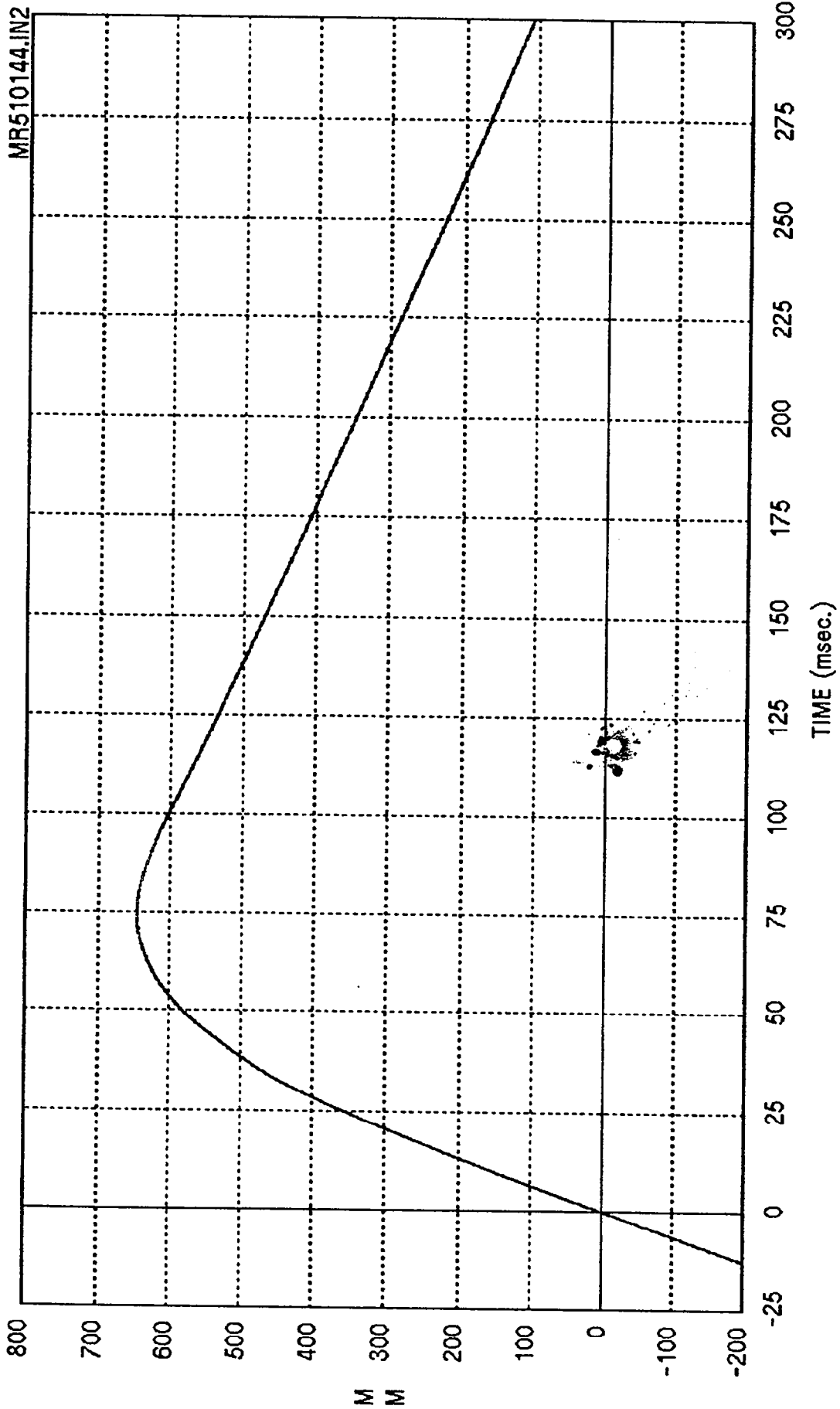
MR510144.IN1



Curve: Vehicle left rear X-member -- delta V (Pri.) Filter: SAE CLASS 60 Max = 56.187 Min = -9.8116

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

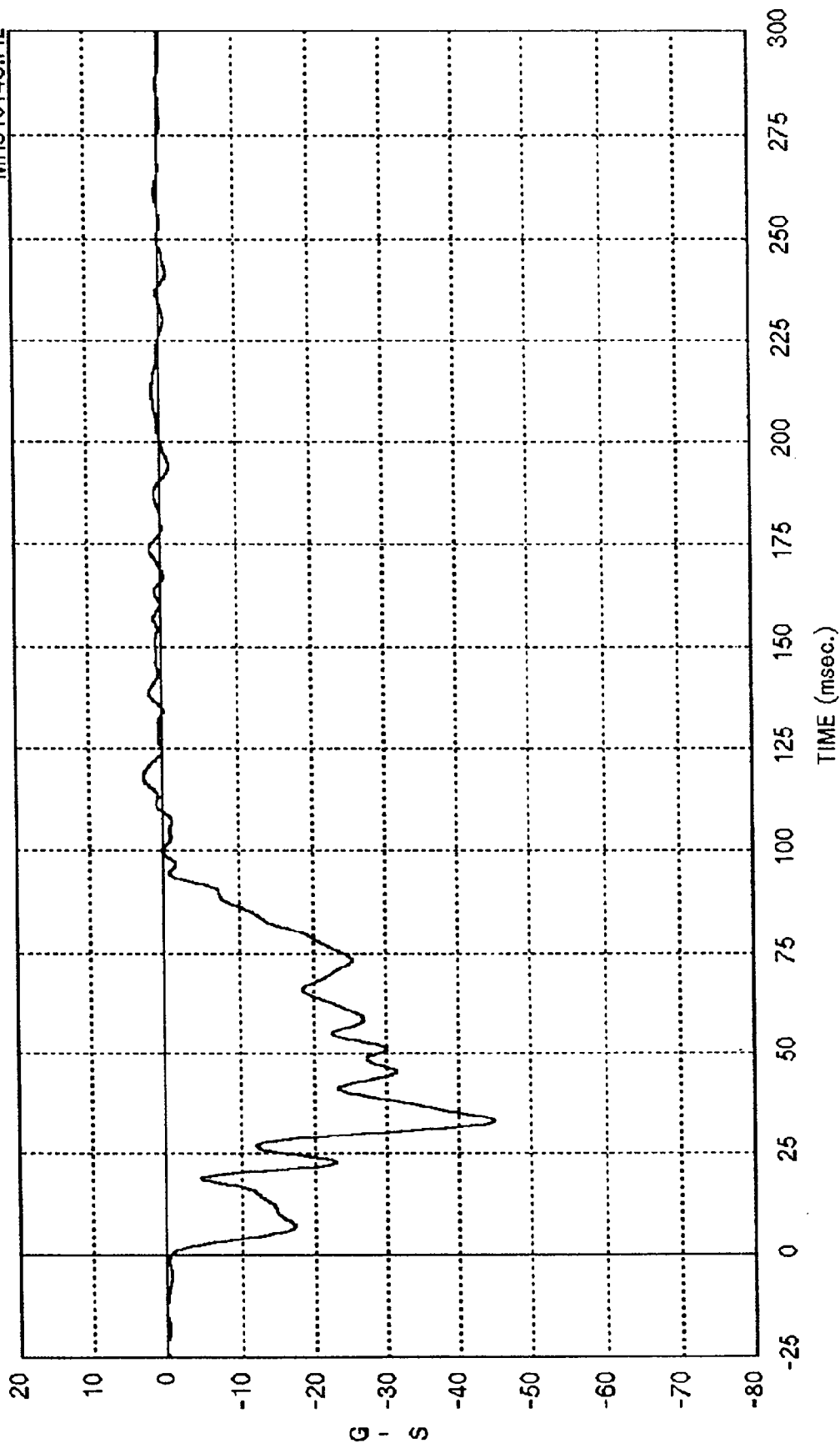


Curve: Vehicle left rear X-member - displacement (Pri.) Filter: SAE CLASS 60 Max = 646.80 Min = 106.73

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

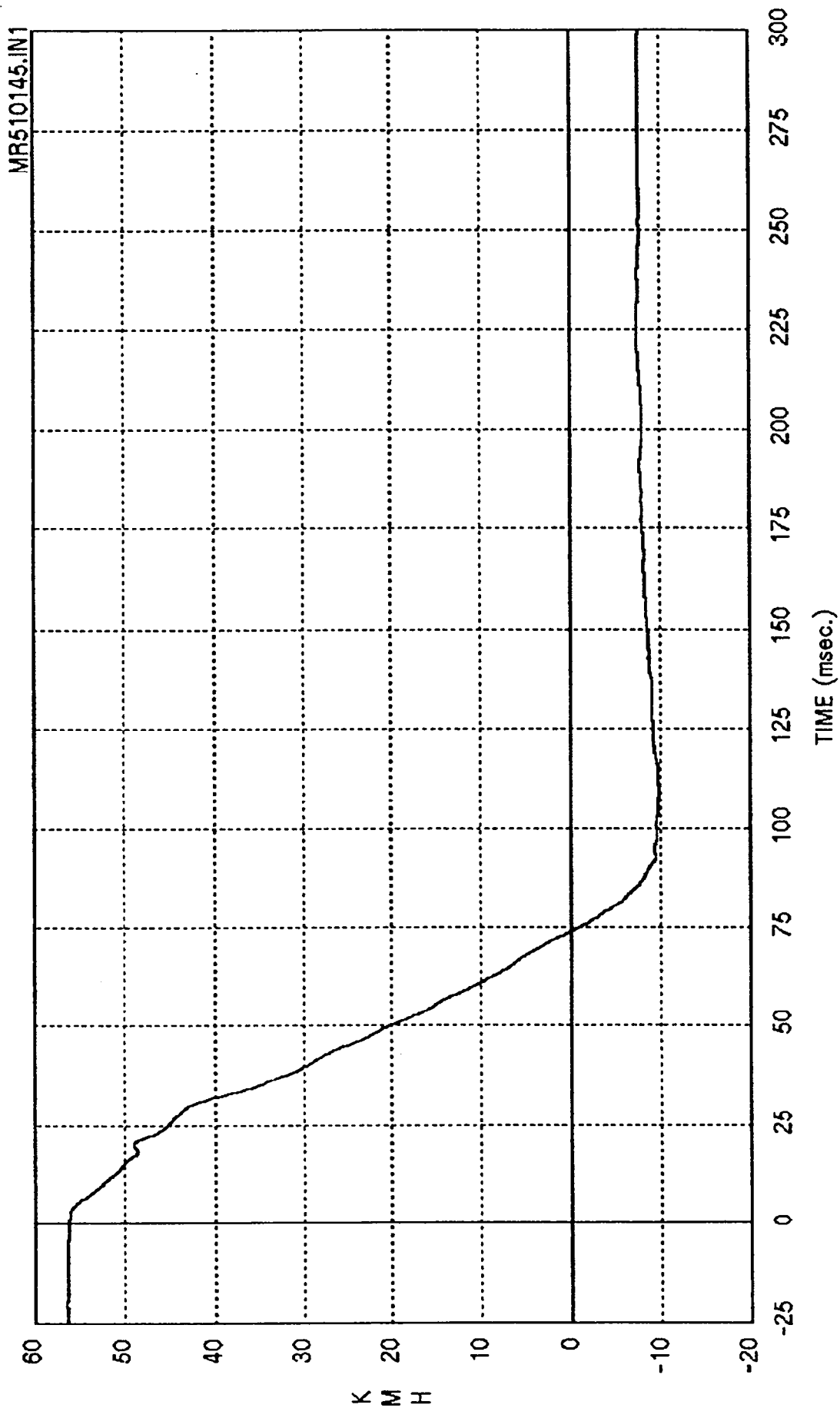
MR510145.FIL



Curve: Vehicle right.rear X-member acceleration (Pri.) Filter: SAE CLASS 60 Max = 2.6261 Min = -44.963

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

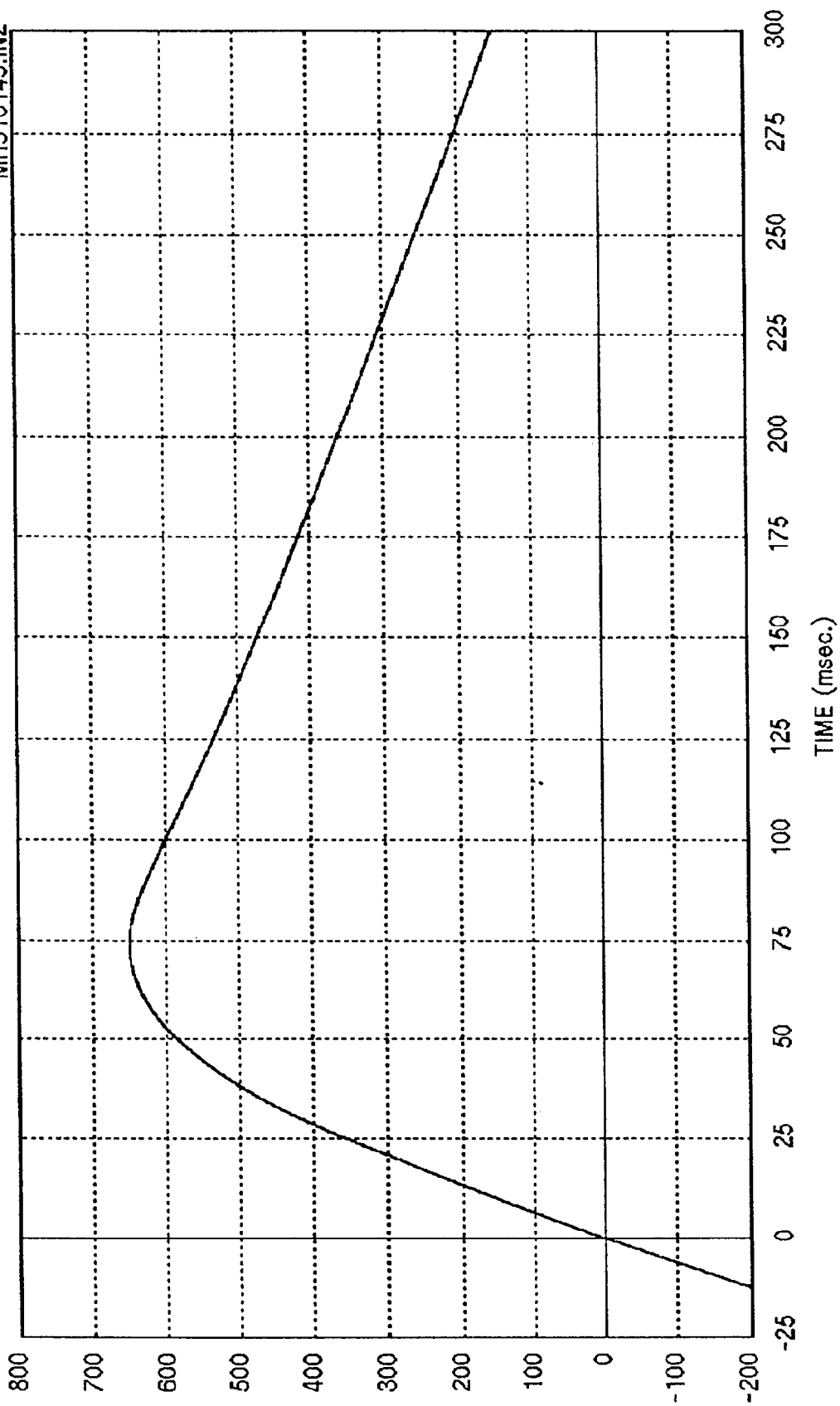


Curve: Vehicle right rear X-member -- delta V (Pri.) Filter: SAE-CLASS-60 Max = 56.185 Min = -9.8712

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

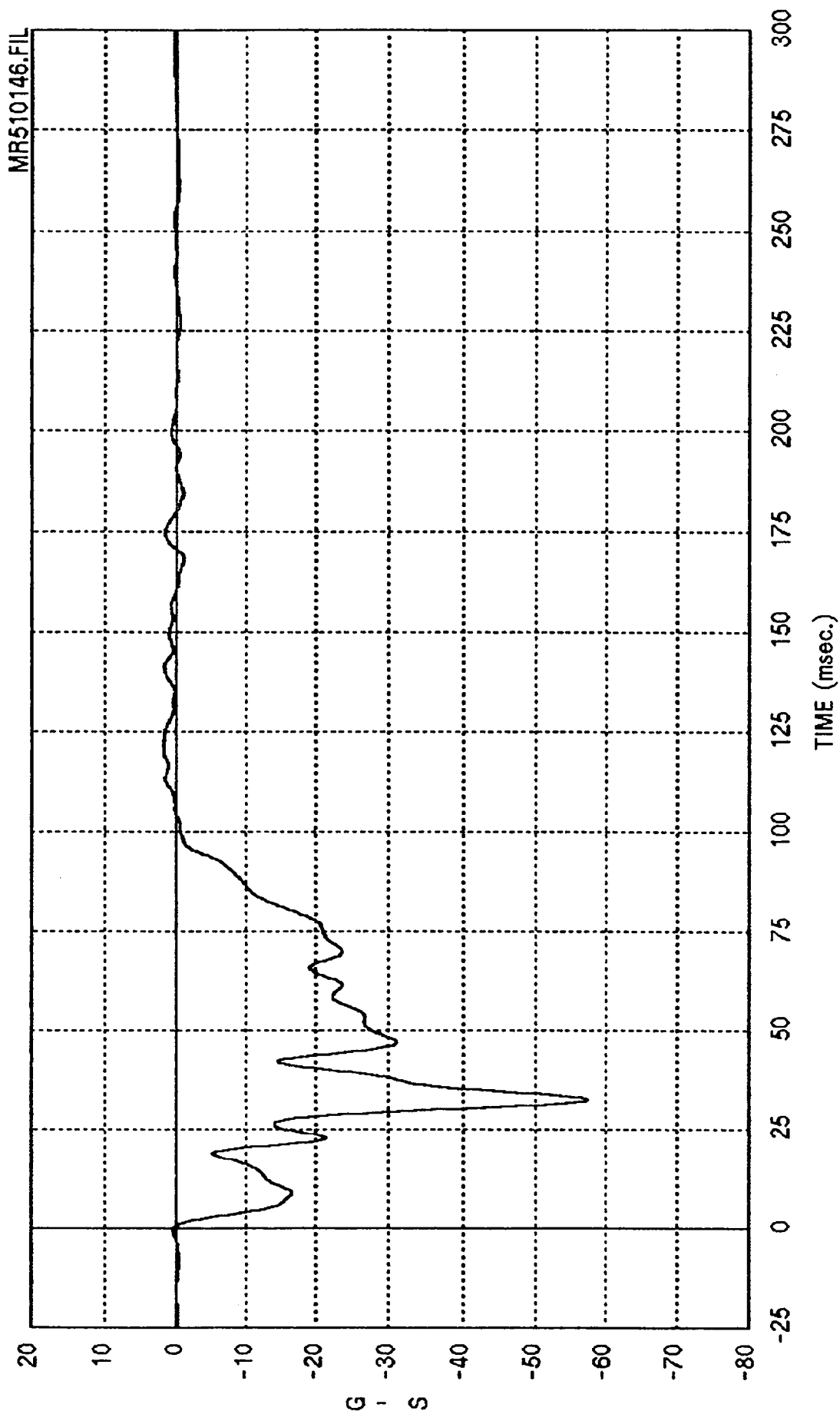
MSE-R93030-01

MR510145.IN2



Curve: Vehicle right rear X-member - displacement (Pri.) Filter: SAE CLASS: 60 Max = 650.31 Min = 151.72

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

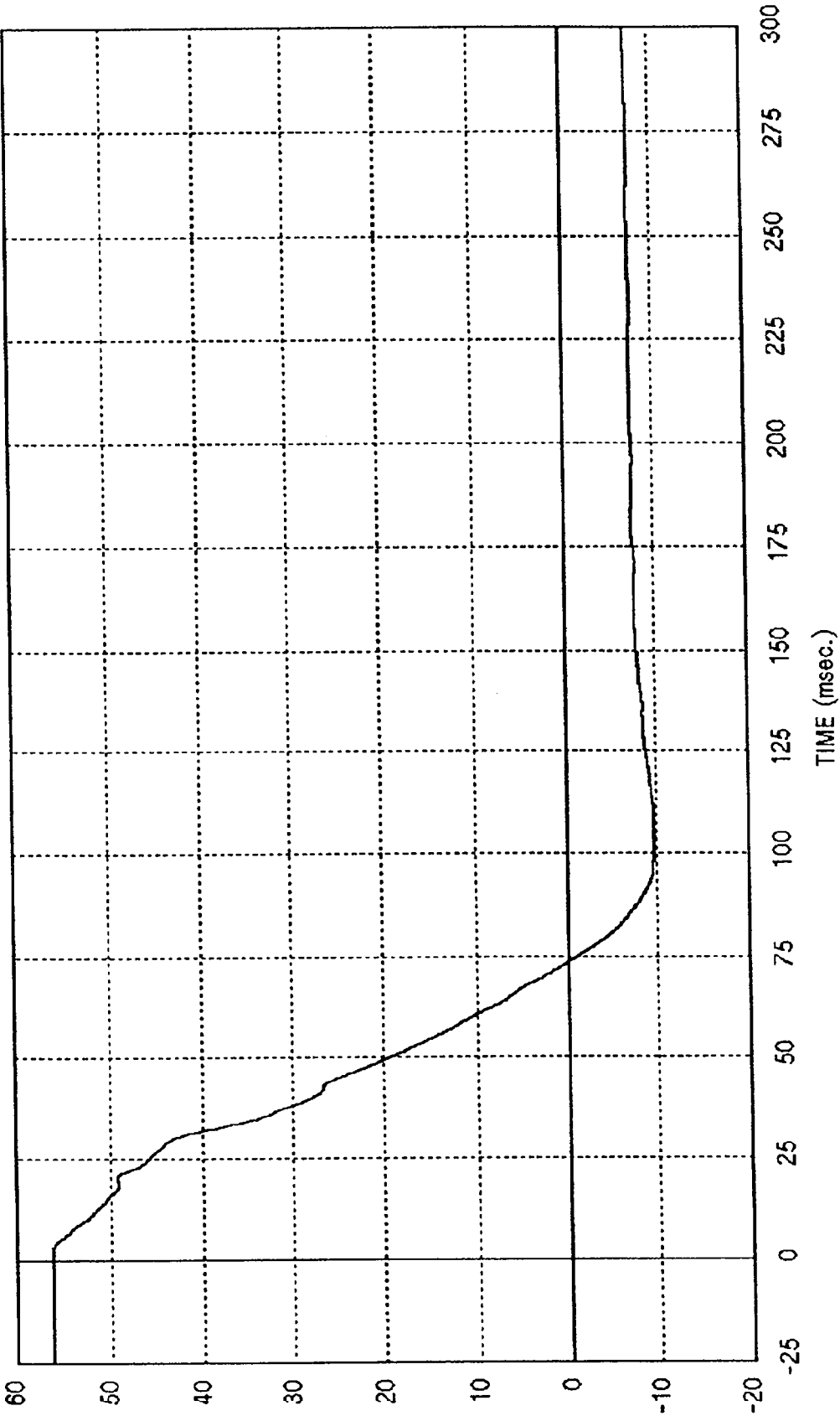


Curve: Vehicle left rear X-member acceleration (Sec.) Filter: SAE CLASS 60 Max = 1.9780 Min = -57.507

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

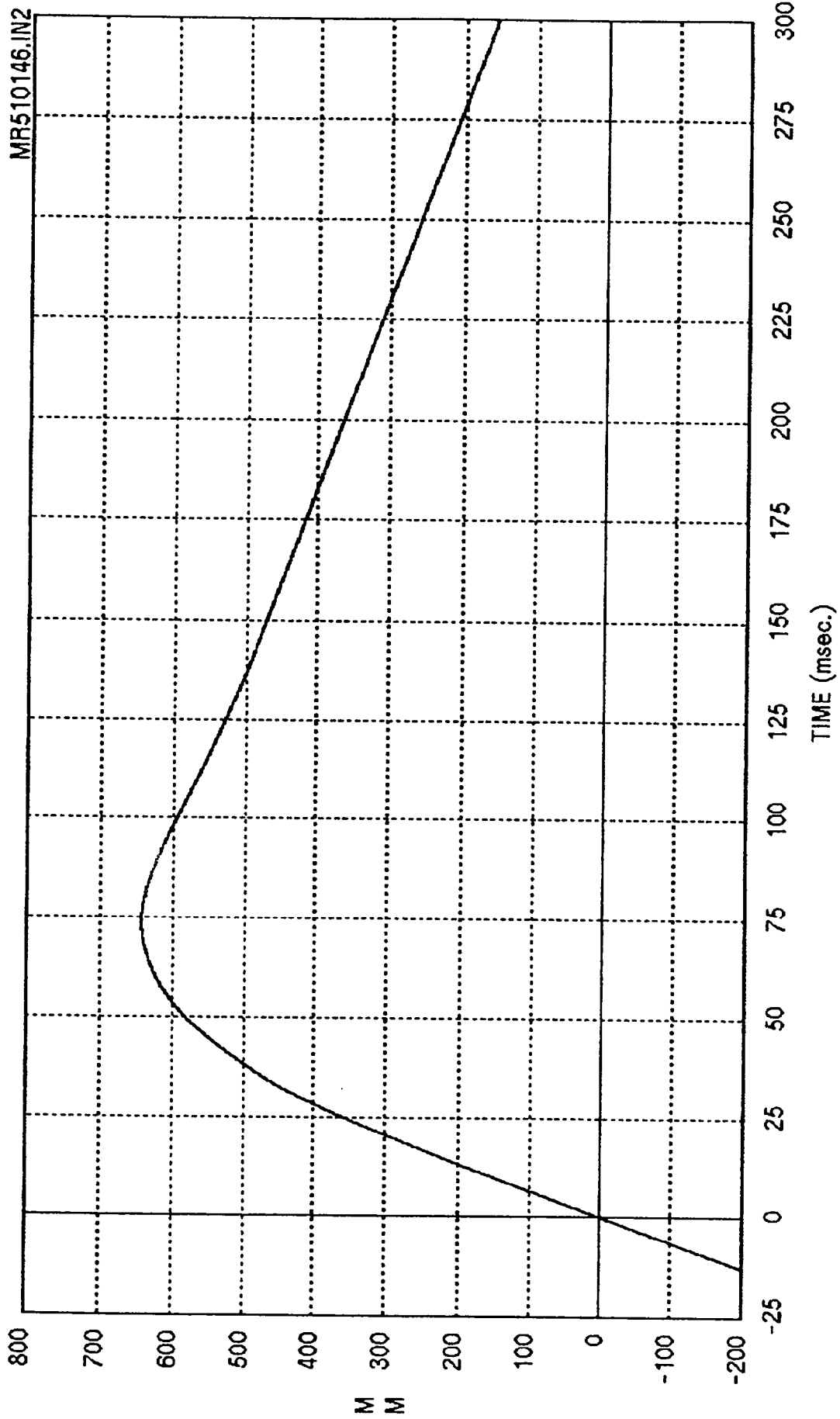
G - S

MR510146.IN1



Curve: Vehicle left rear X-member -- delta V (Sec.) -- Filter: SAE CLASS 60 Max = 56.212 Min = -9.7619

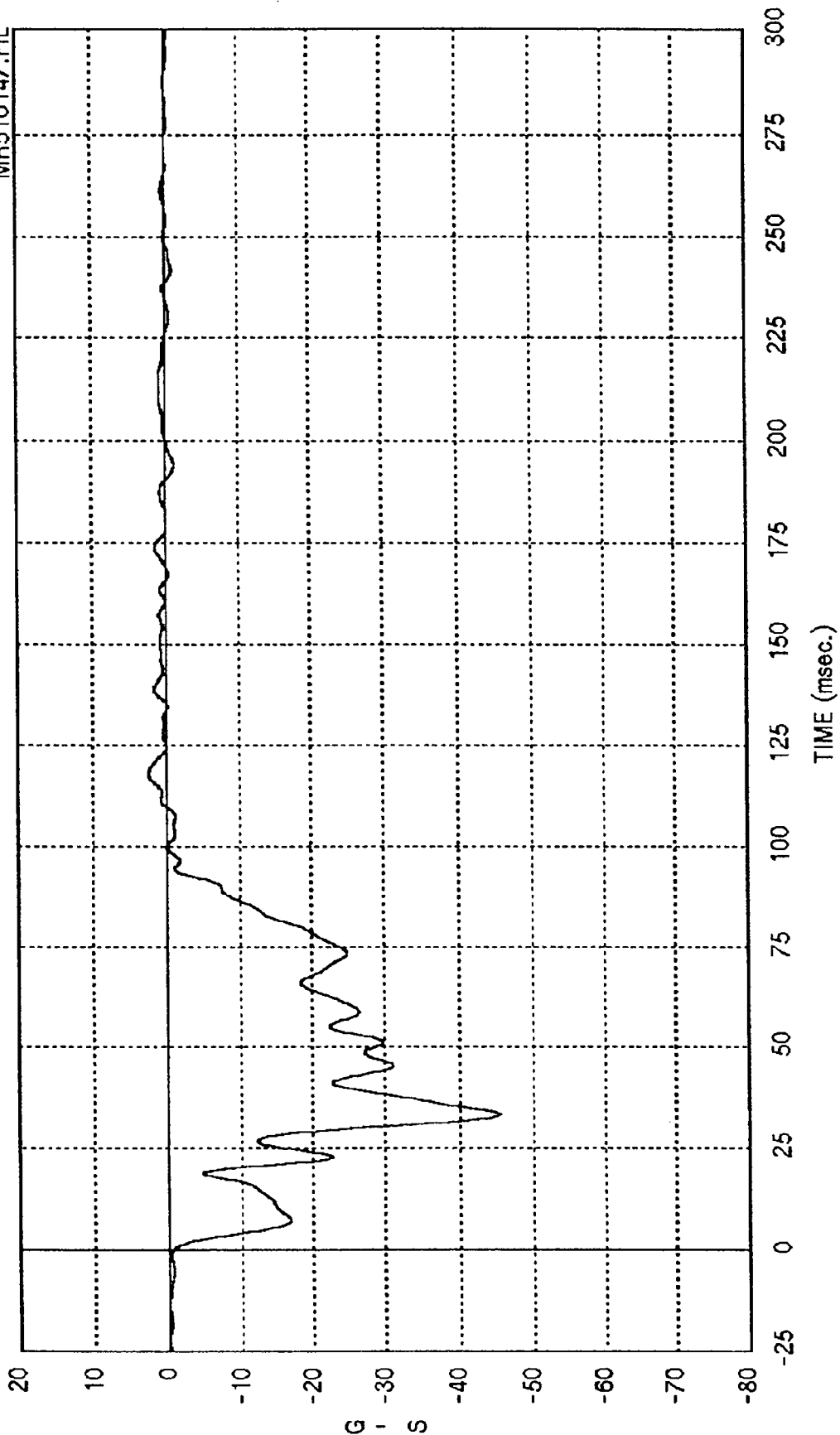
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Vehicle left rear X-member - displacement (Sec.) Filter: SAE CLASS 60 Max = 644.10 Min = 155.84

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

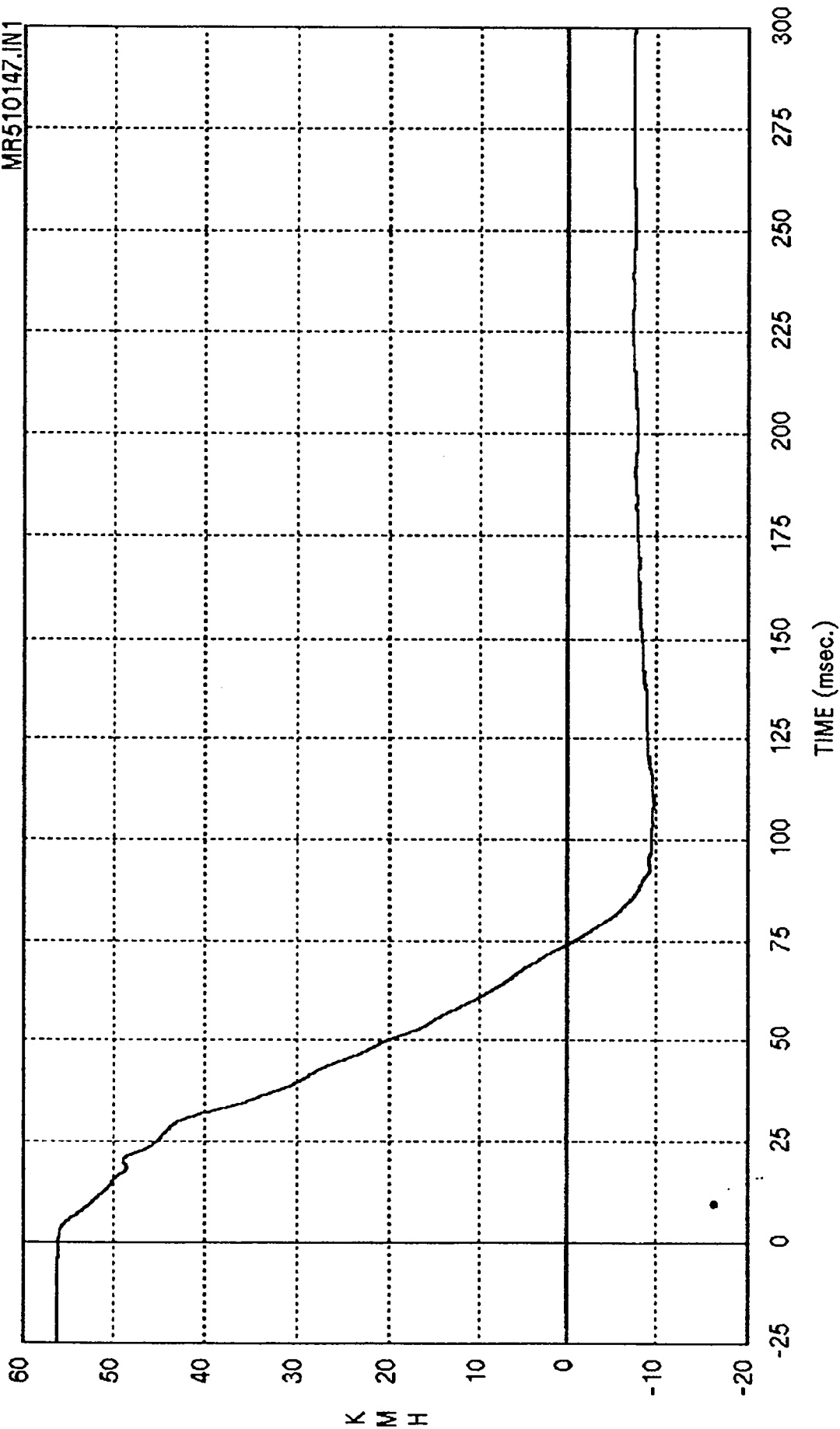
MR510147.FIL



Curve: Vehicle right rear X-member acceleration (Sec.) Filter: SAE CLASS 60 Max: 2.5649 Min: -45.441

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

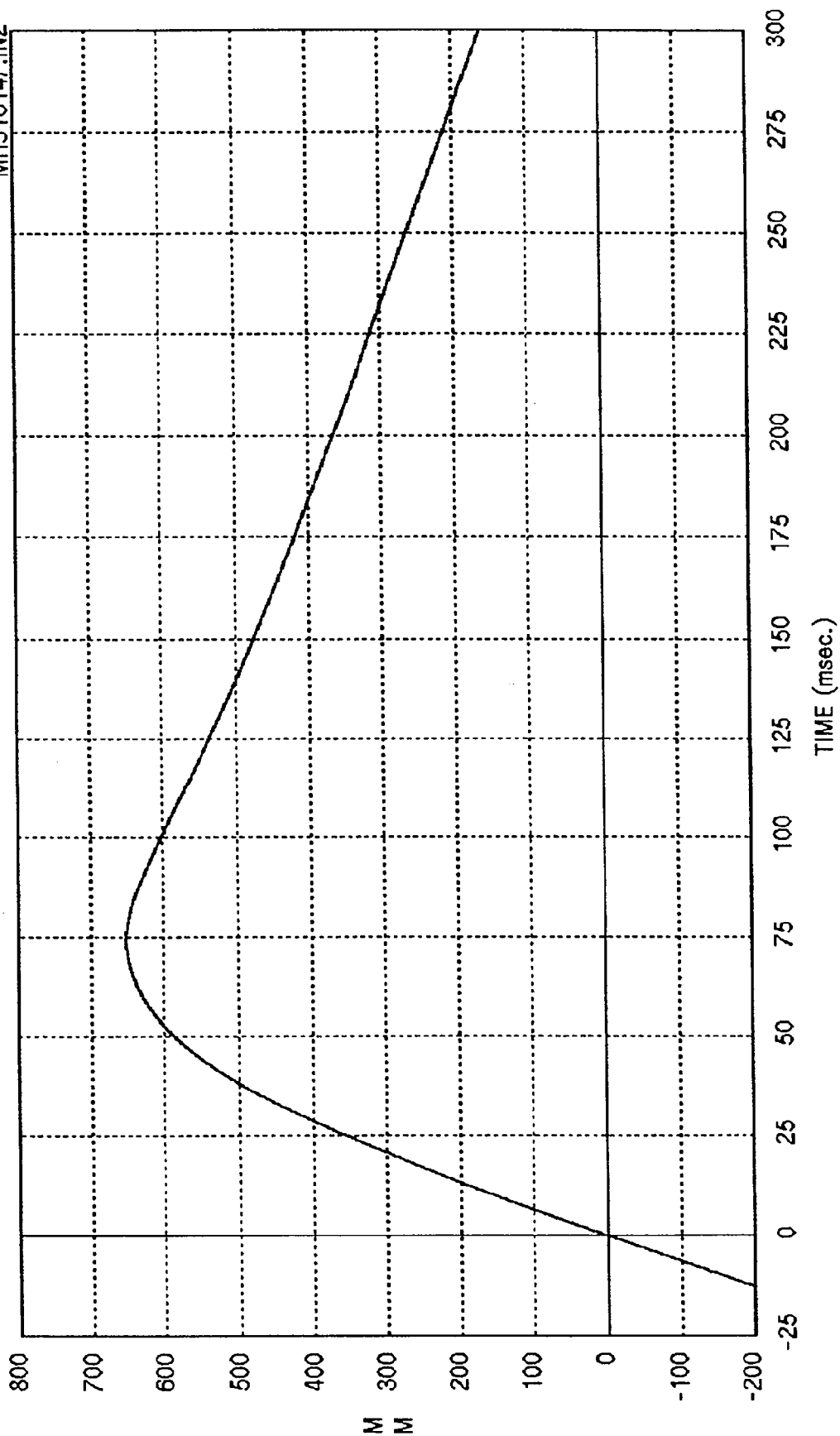
MR510147.IN1



MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

K M H

MR510147.IN2



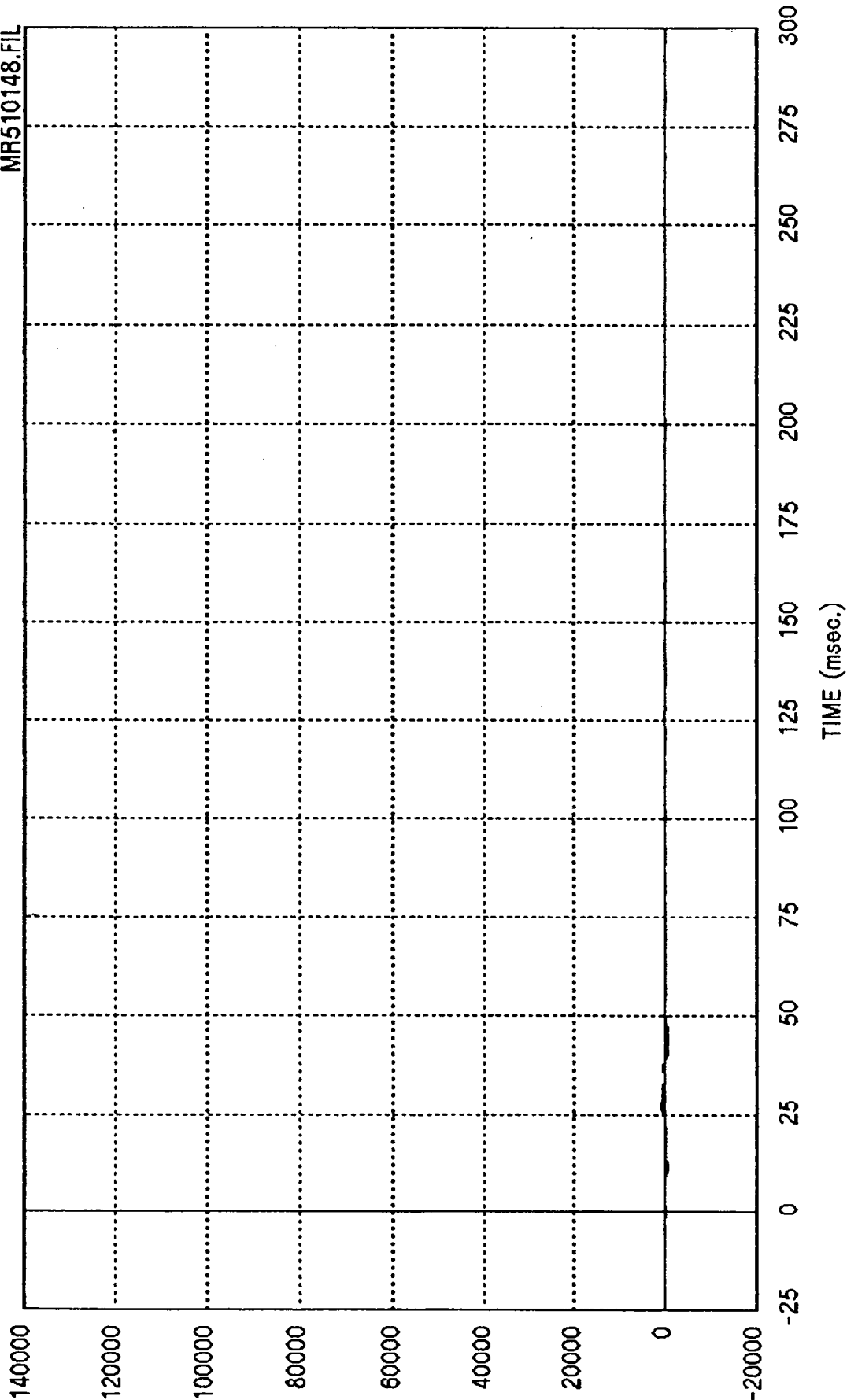
Curve: Vehicle right rear X-member - displacement(See.) Filter: SAE CLASS 60 Max = 650.96 Min = 160.38

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

APPENDIX B - 2
LOAD CELL BARRIER DATA

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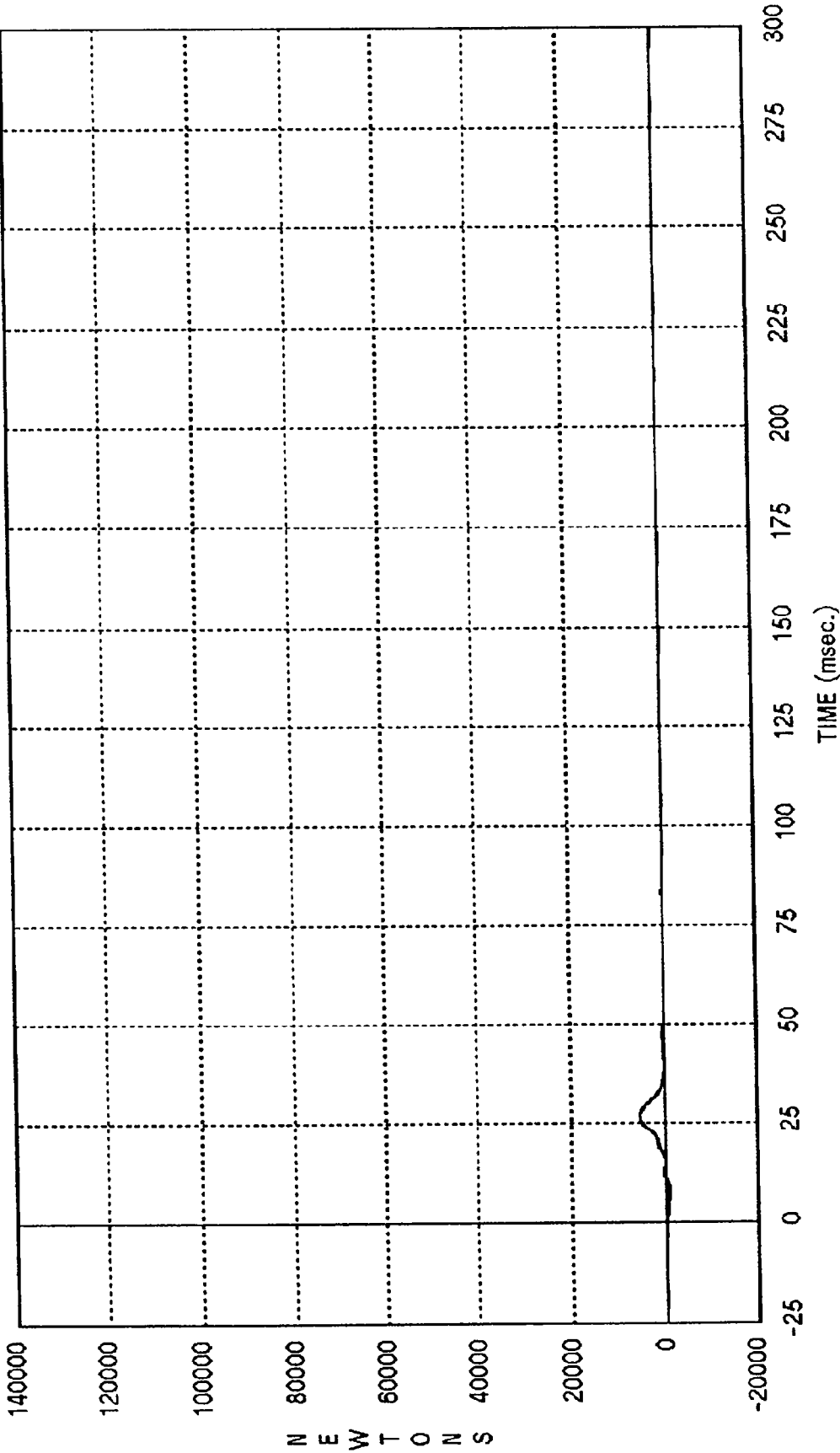
MR510148.FIL



Curve: Force on barrier location A1 Filter: SAE CLASS 60 Max = 580.35 Min = -569.88

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510149.FIL

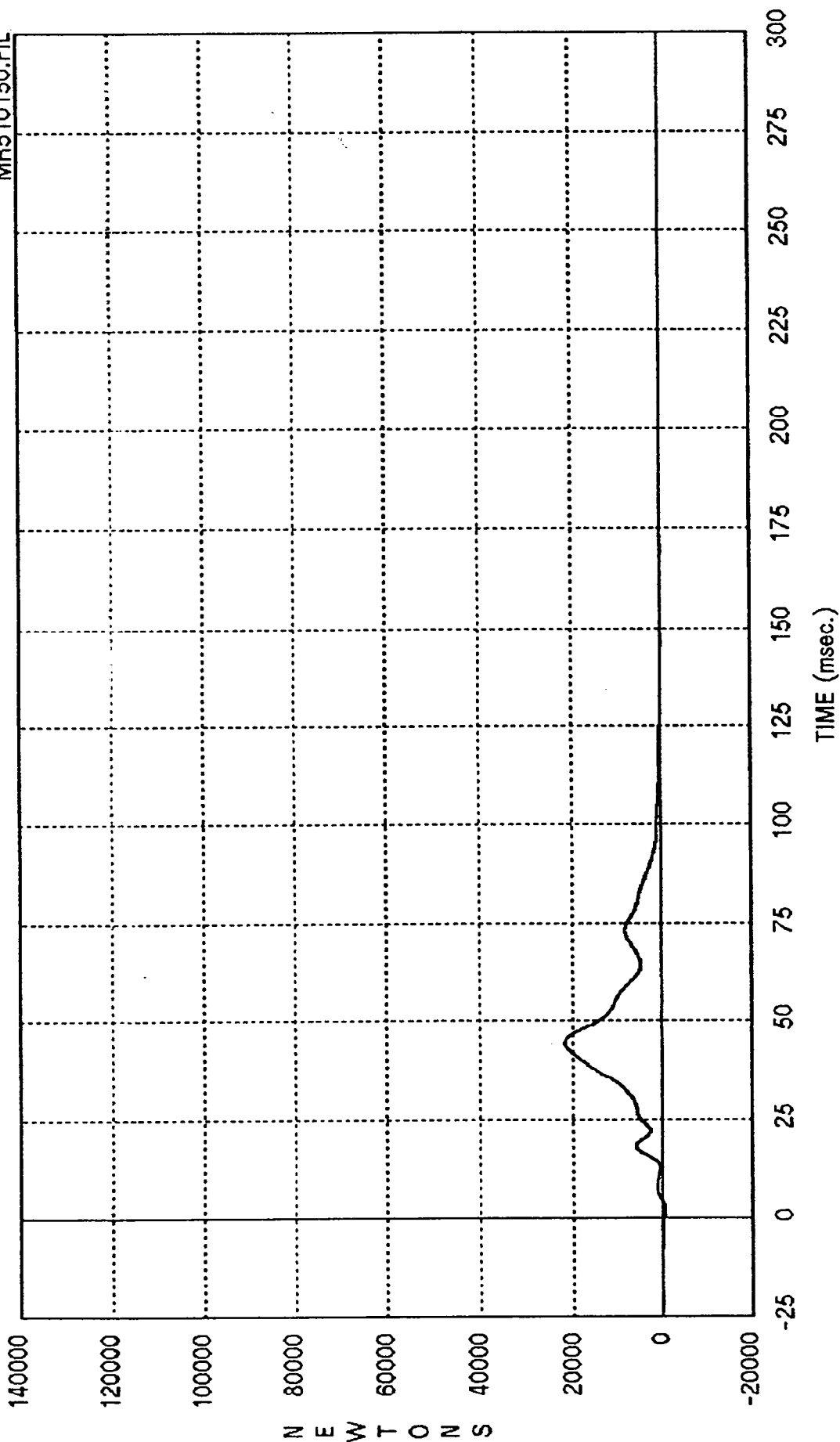


Curve: Force on barrier location A2 Filter: SAE CLASS 60 Max = 5569.5 Min = -742.60

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

MR510150.FIL

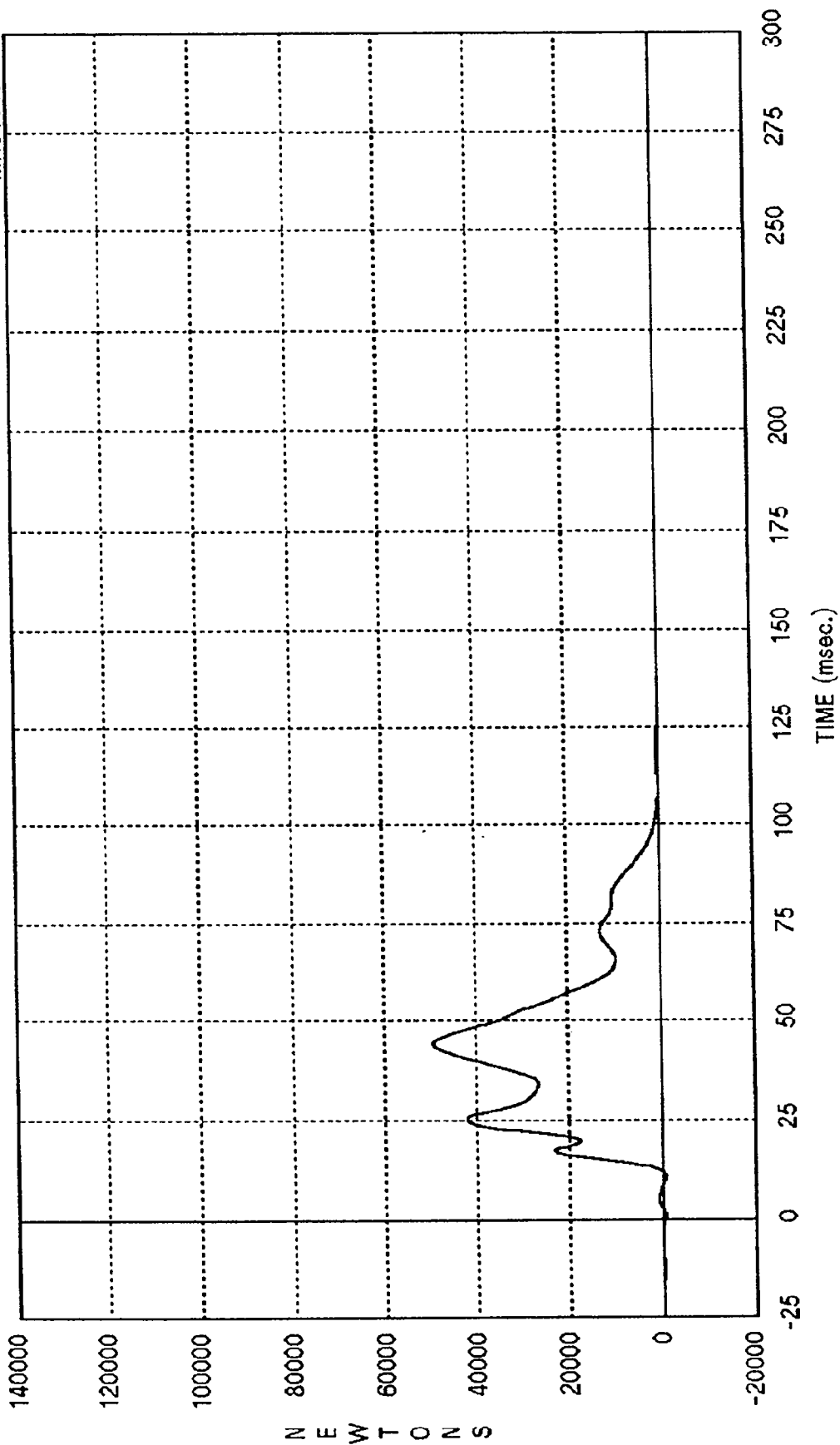


Curve: Force on barrier location A3 Filter: SAE CLASS 60 Max = 21902. Min = -493.60

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

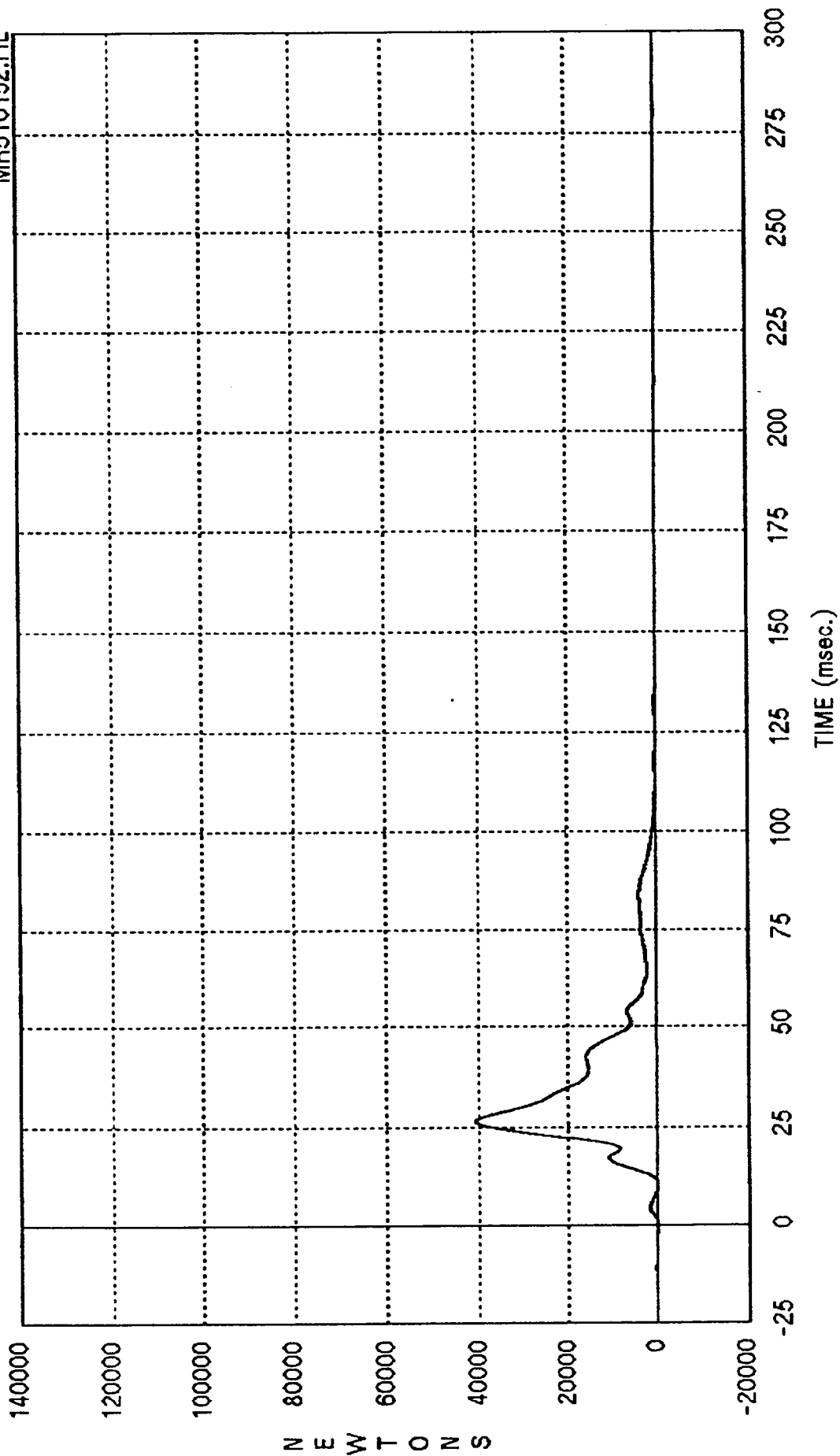
MR510151.FIL



Curve: Force on barrier location A4 Filter: SAE CLASS 60 Max = 49592. Min = -393.88

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510152.FIL

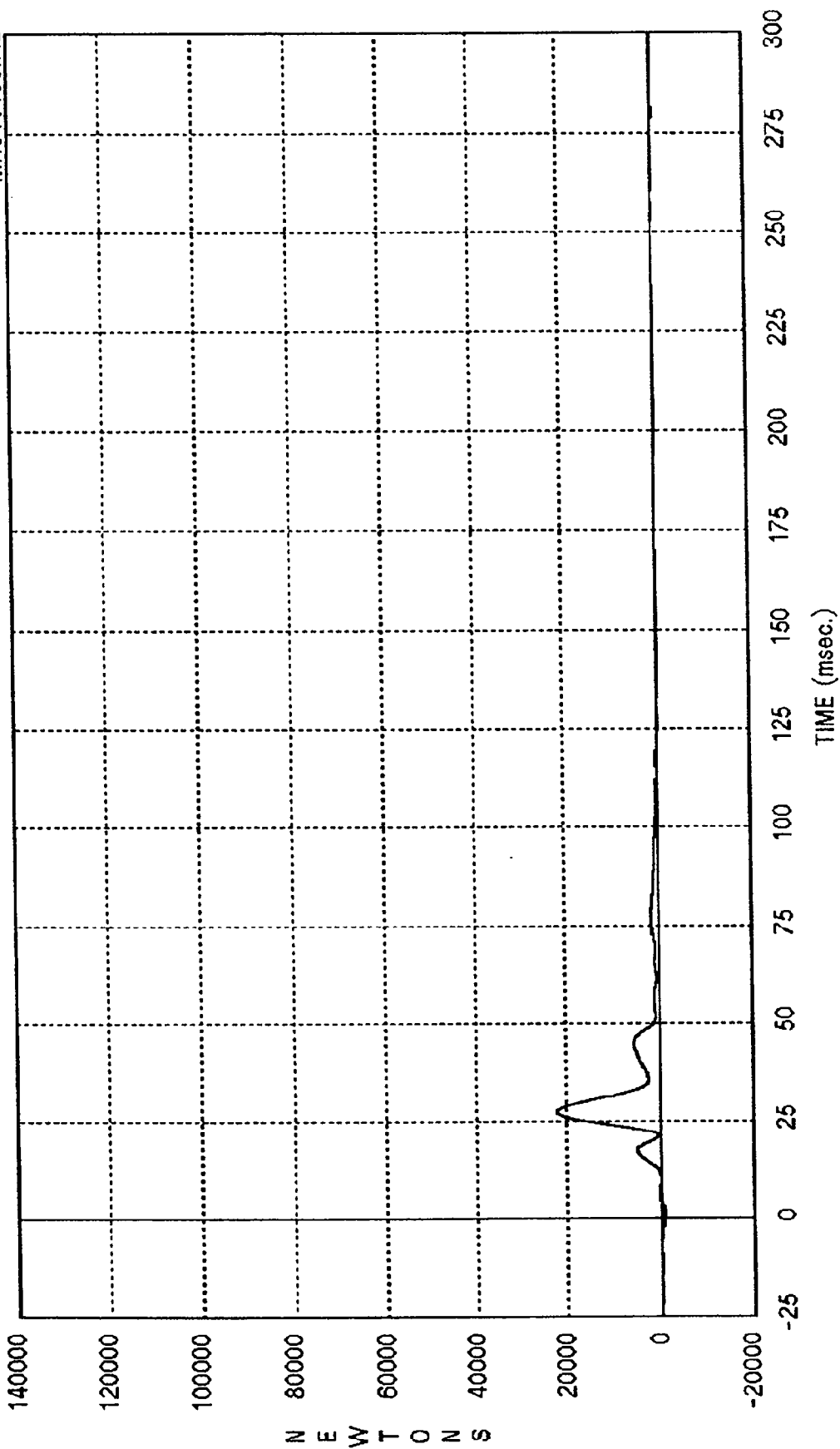


Curve: Force on barrier location A5 Filter: SAE CLASS 60 Max = 41006. Min = -283.02

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

MR510153.FIL

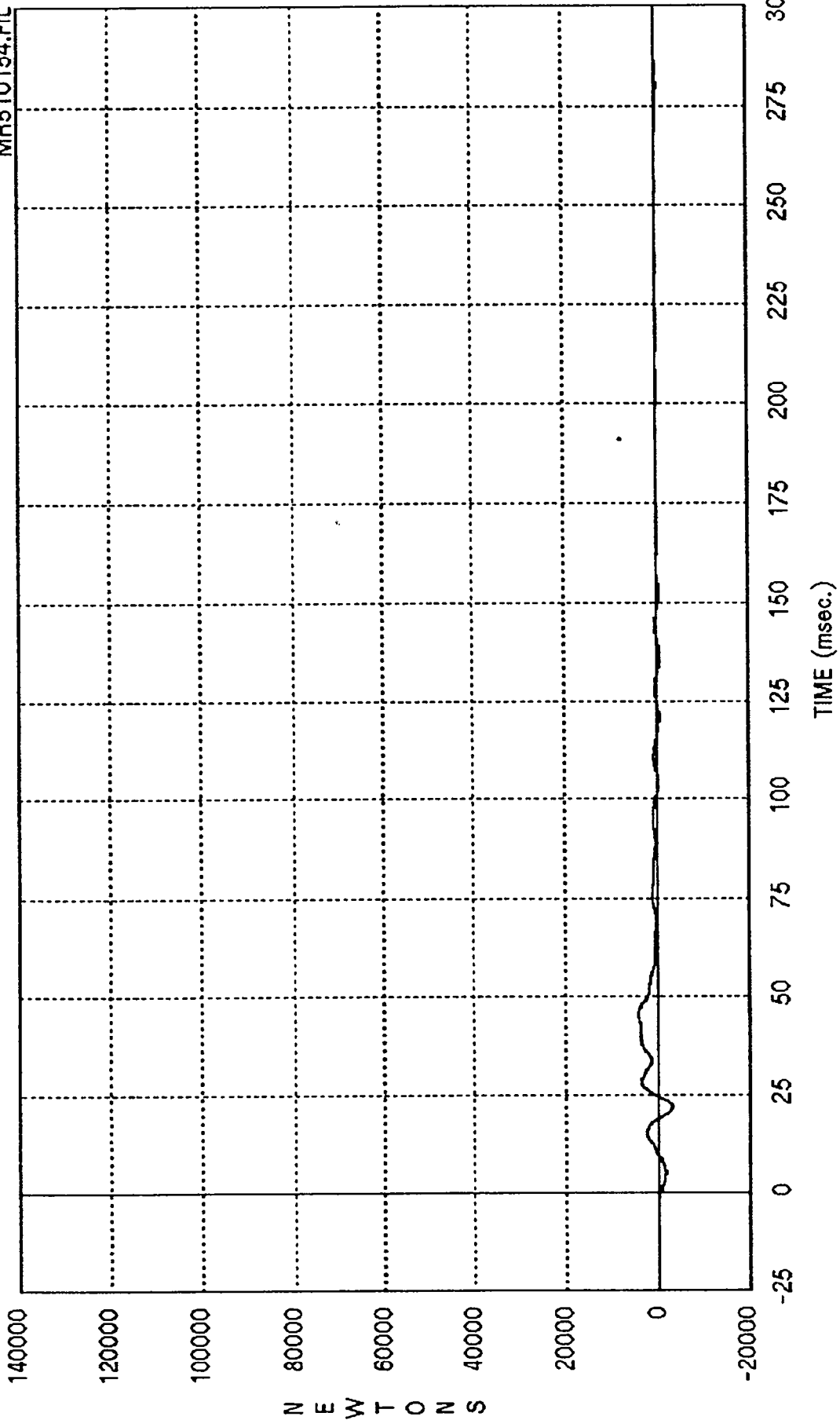


Curve: Force on barrier location A6 Filter: SAE CLASS 60 Max = 22100 Min = -69235

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

MR510154.FIL



Curve: Force on barrier location A7

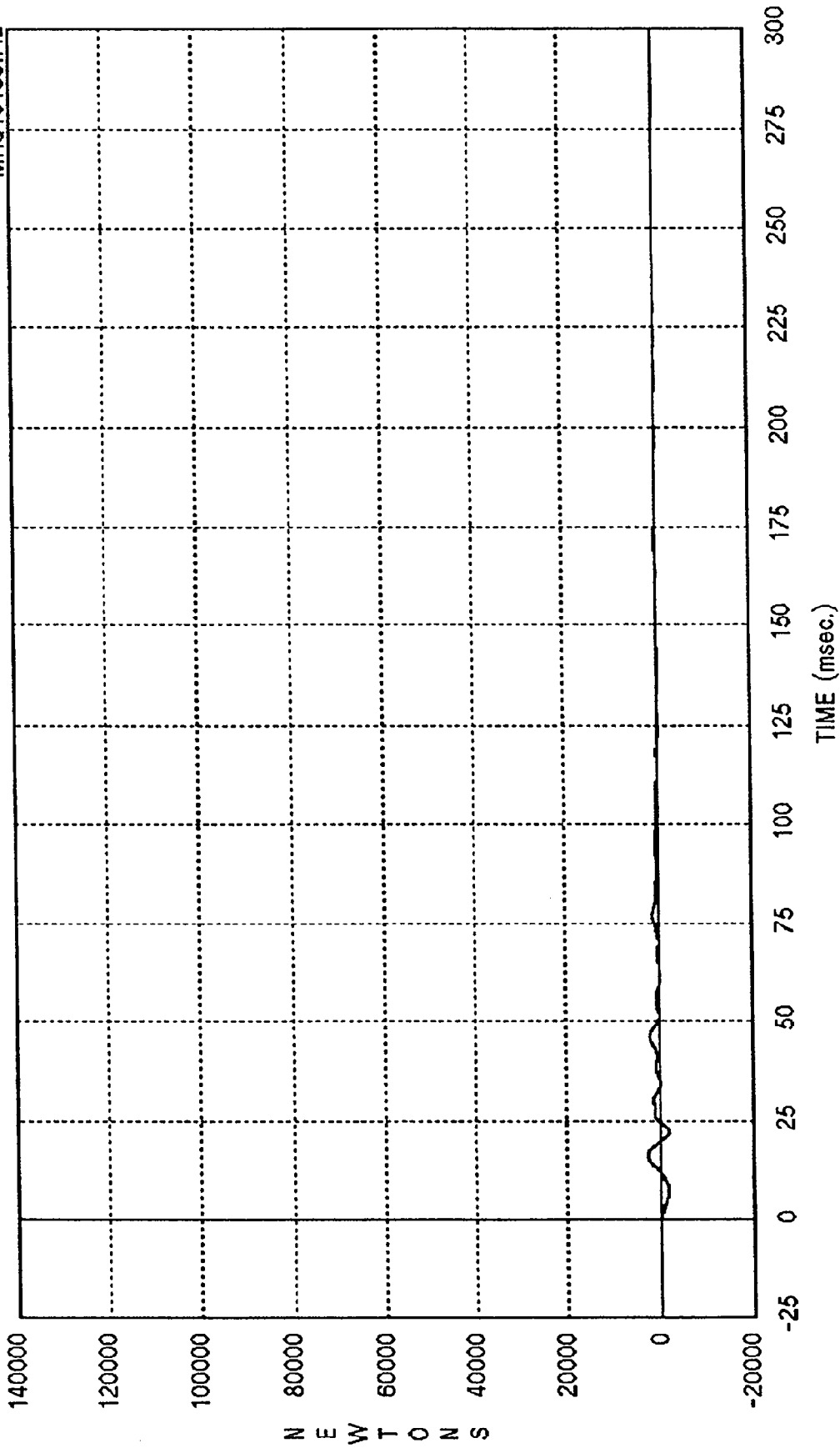
Filter: SAE CLASS 60

Max = 4334.3

Min = -3149.0

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510155.FIL

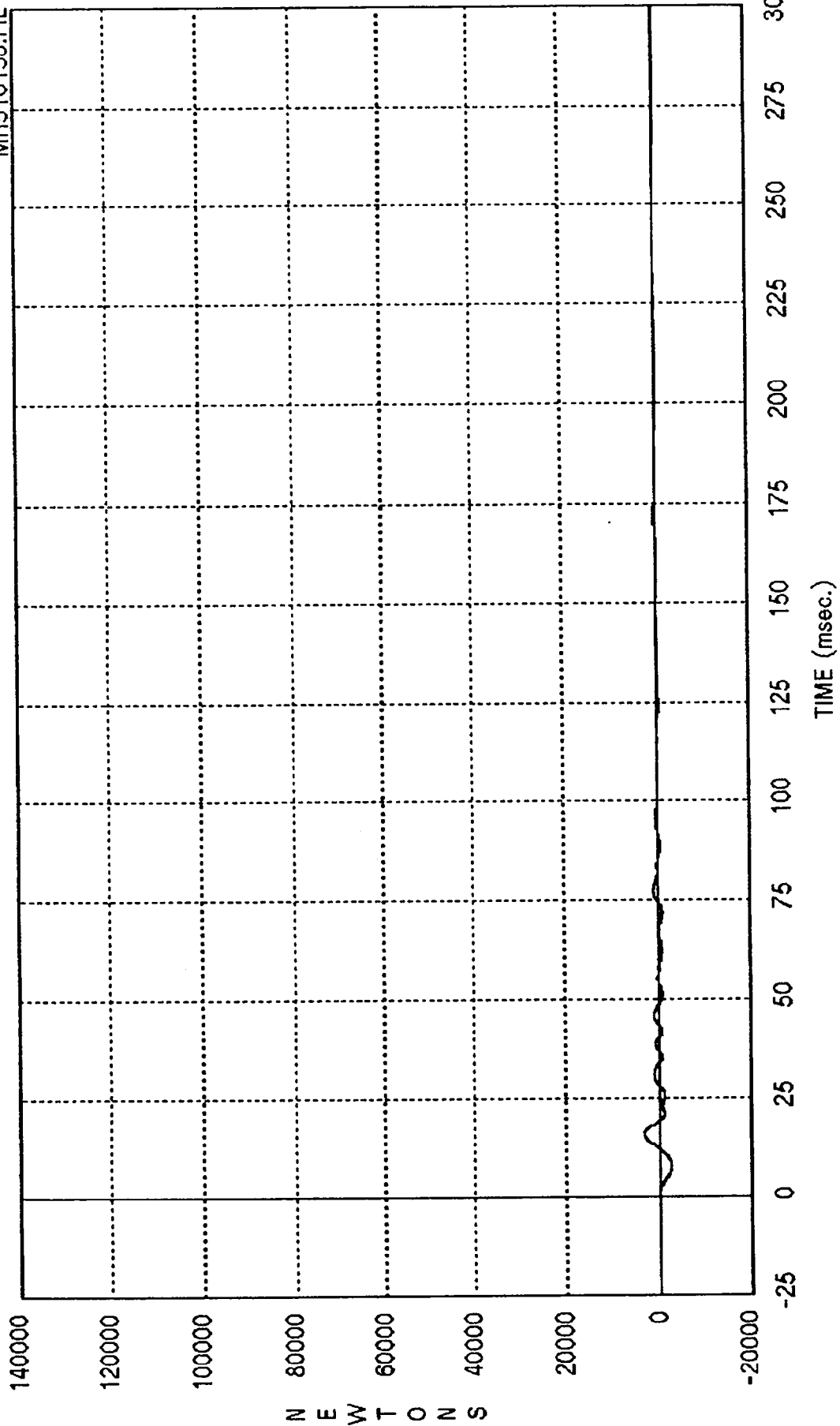


Curve: Force on barrier location A8 Filter: SAE CLASS 60 Max = 2898.1 Min = -1815.6

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

MR510156.FIL

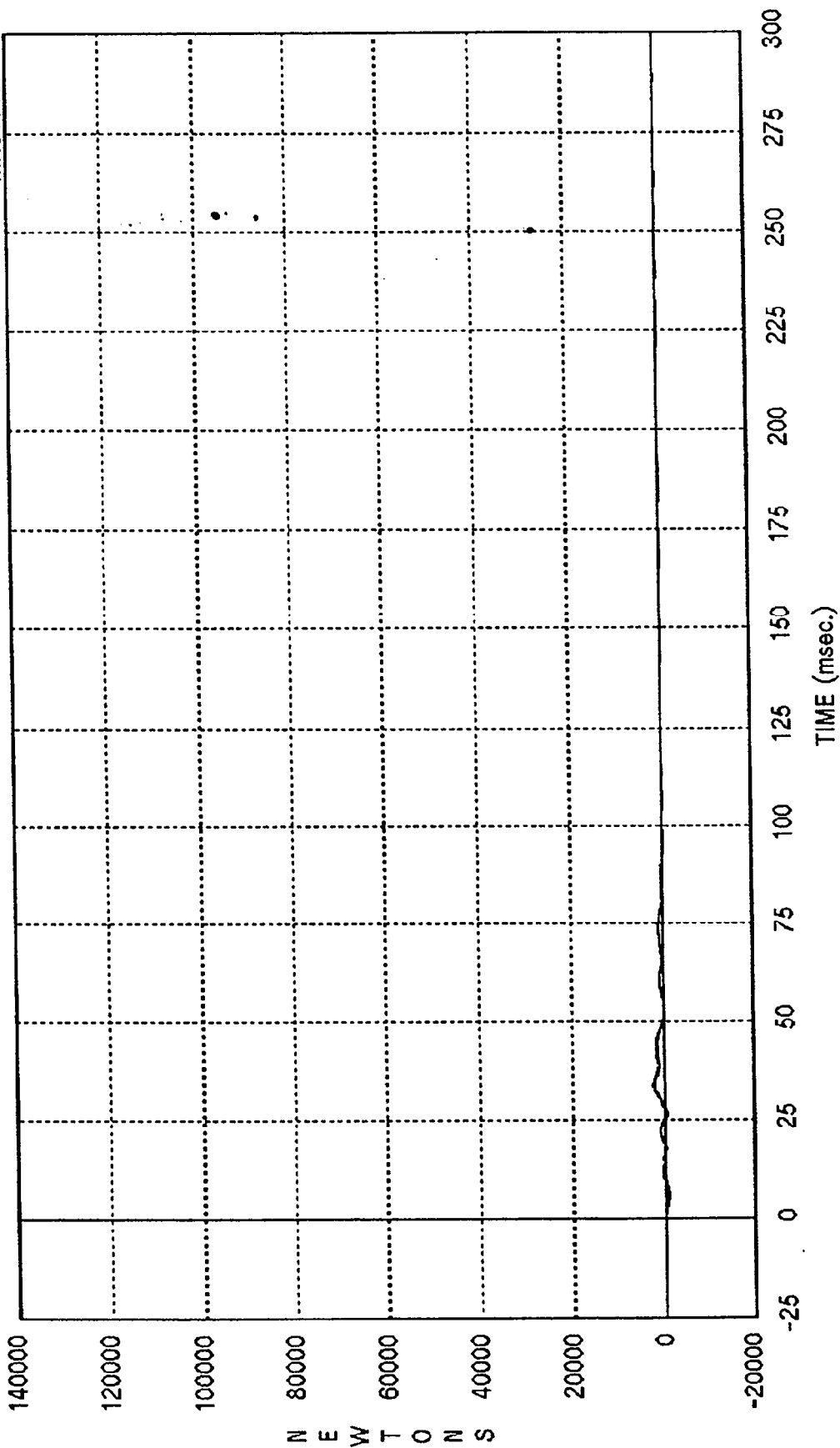


Curve: Force on barrier location A9 Filter: SAE CLASS 60 Max = 3338.7 Min = -2357.1

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

MR510157.FIL

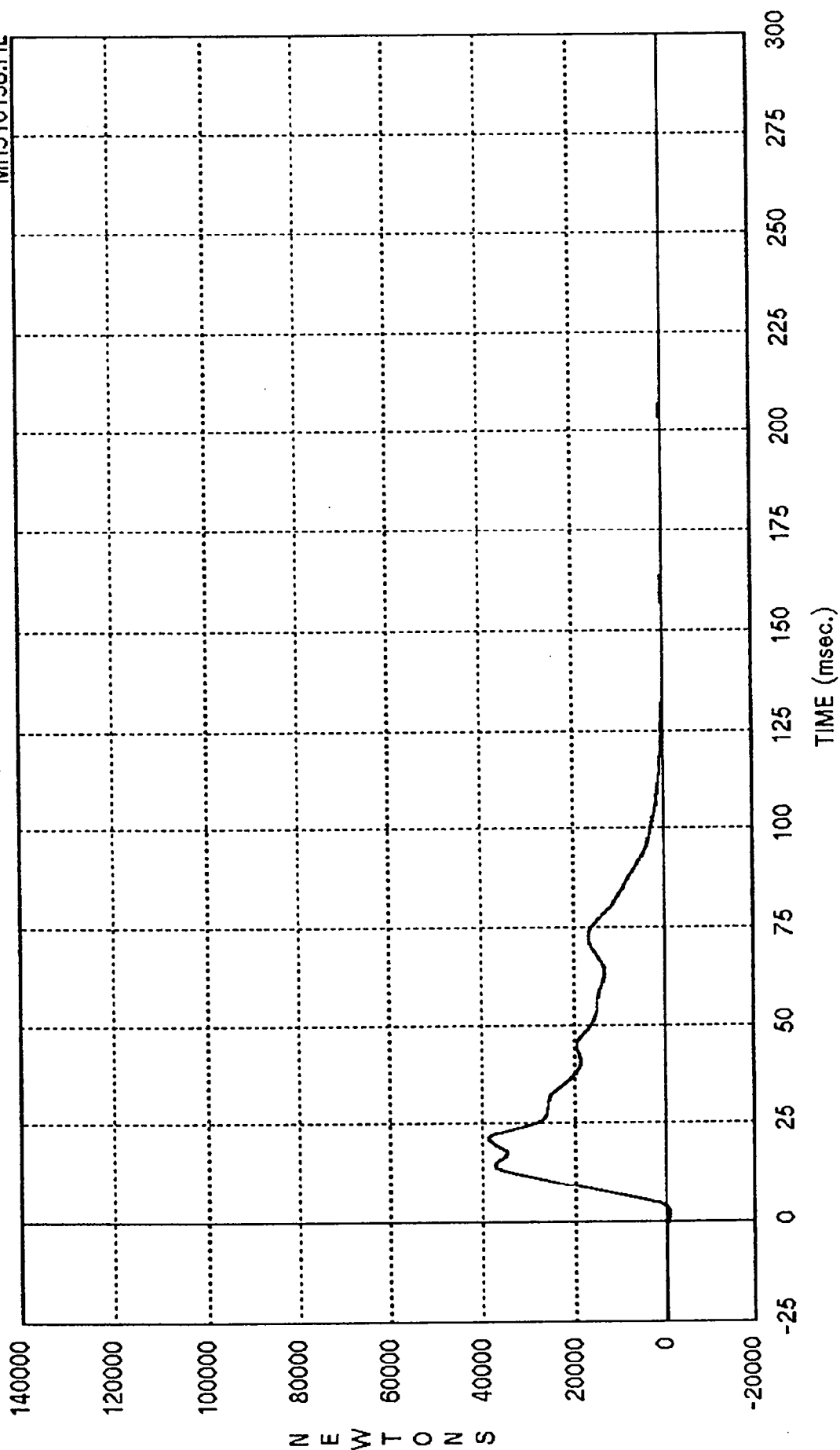


Curve: Force on barrier location B1 Filter: SAE CLASS 60 Max = 2396.0 Min = -642.03

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MSE-R93030-01

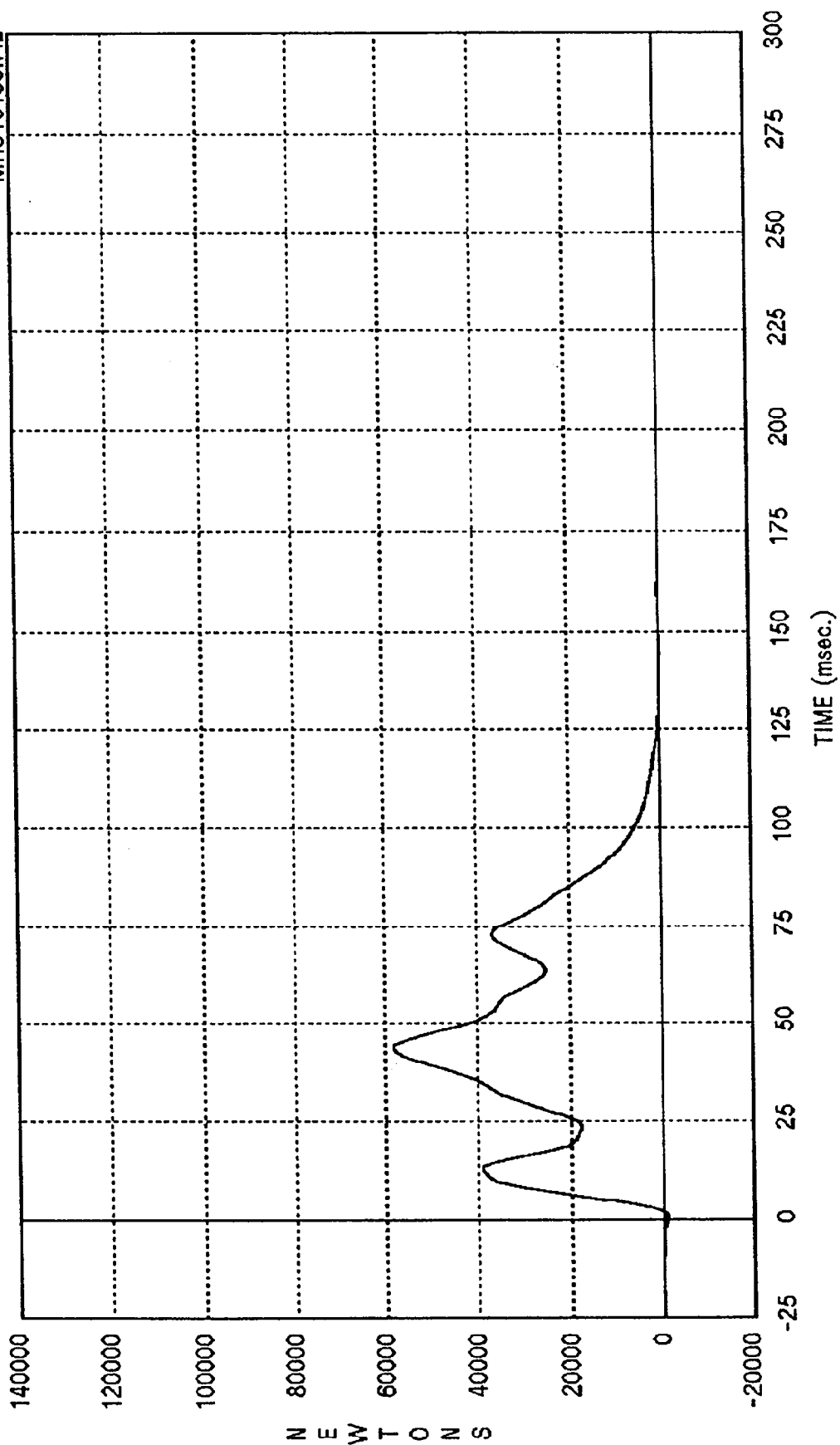
MR510158.FIL



Curve: Force on barrier location B2 Filter: SAE CLASS 60 Max = 38796 Min = -735.77

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

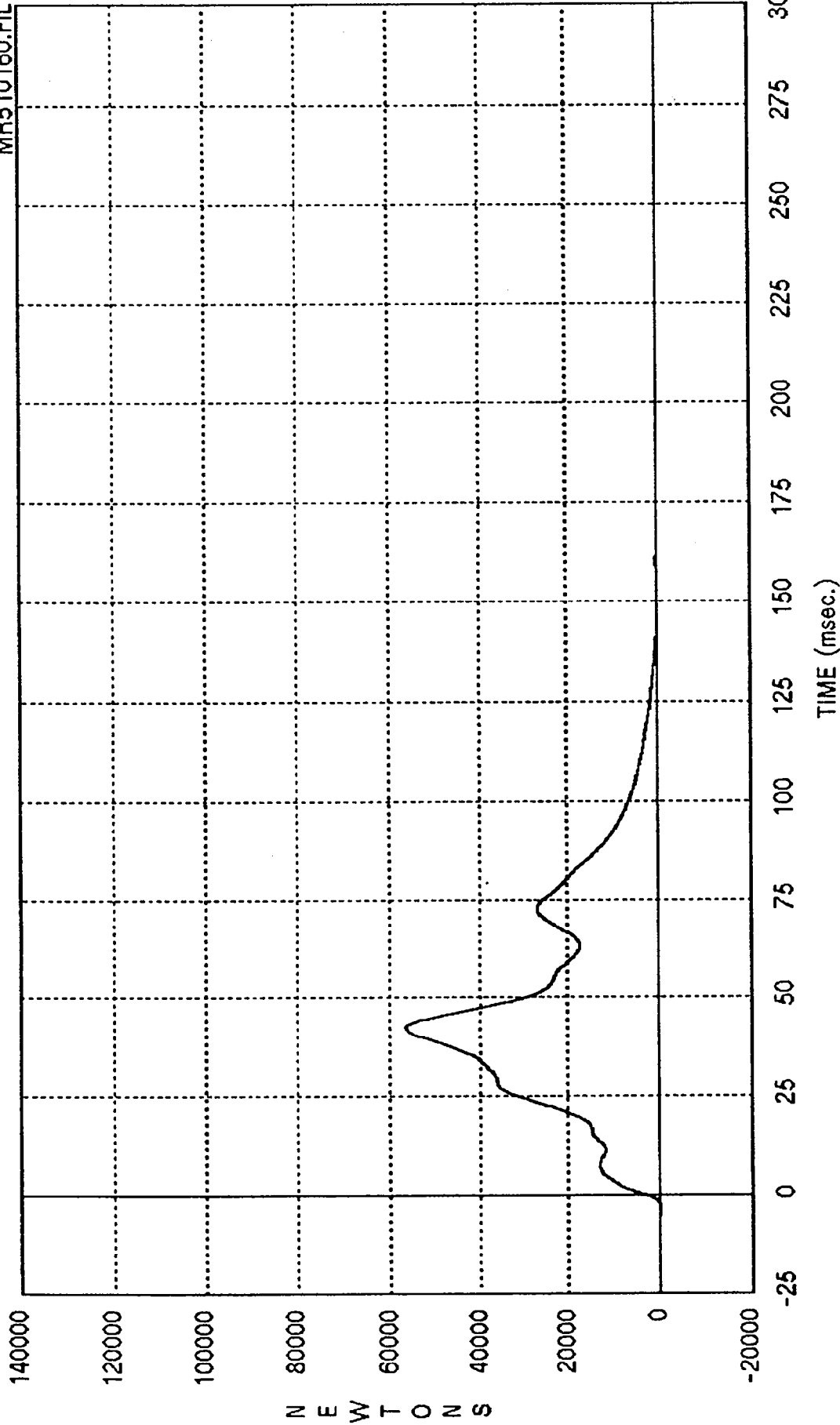
MR510159.FIL



Curve: Force on barrier location B3 Filter: SAE CLASS 60 Max = 58342. Min = -944.34

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

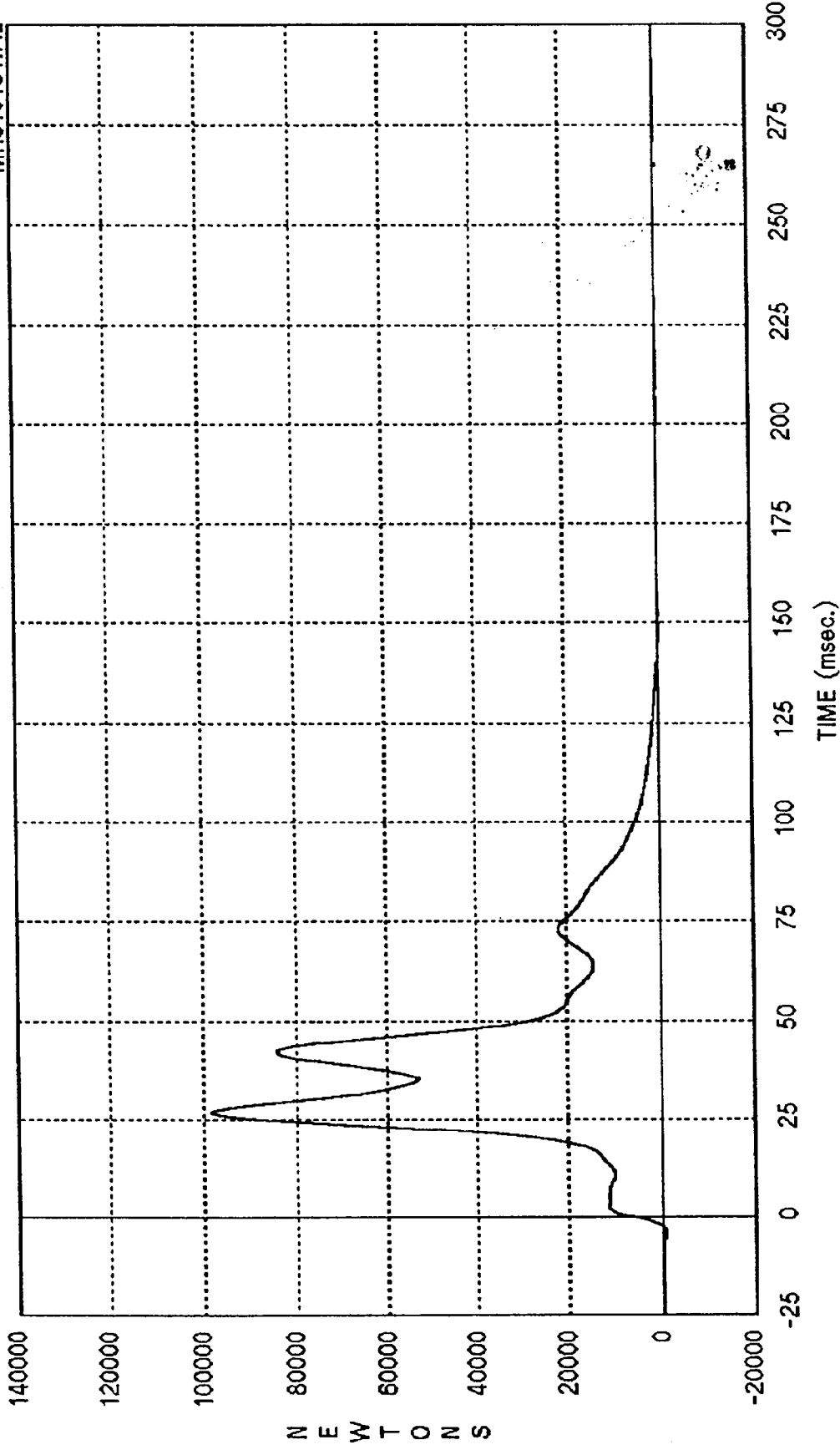
MR510160.FIL



Curve: Force on barrier location B4 Filter: SAE CLASS 60 Max = 56687. Min = 30.936

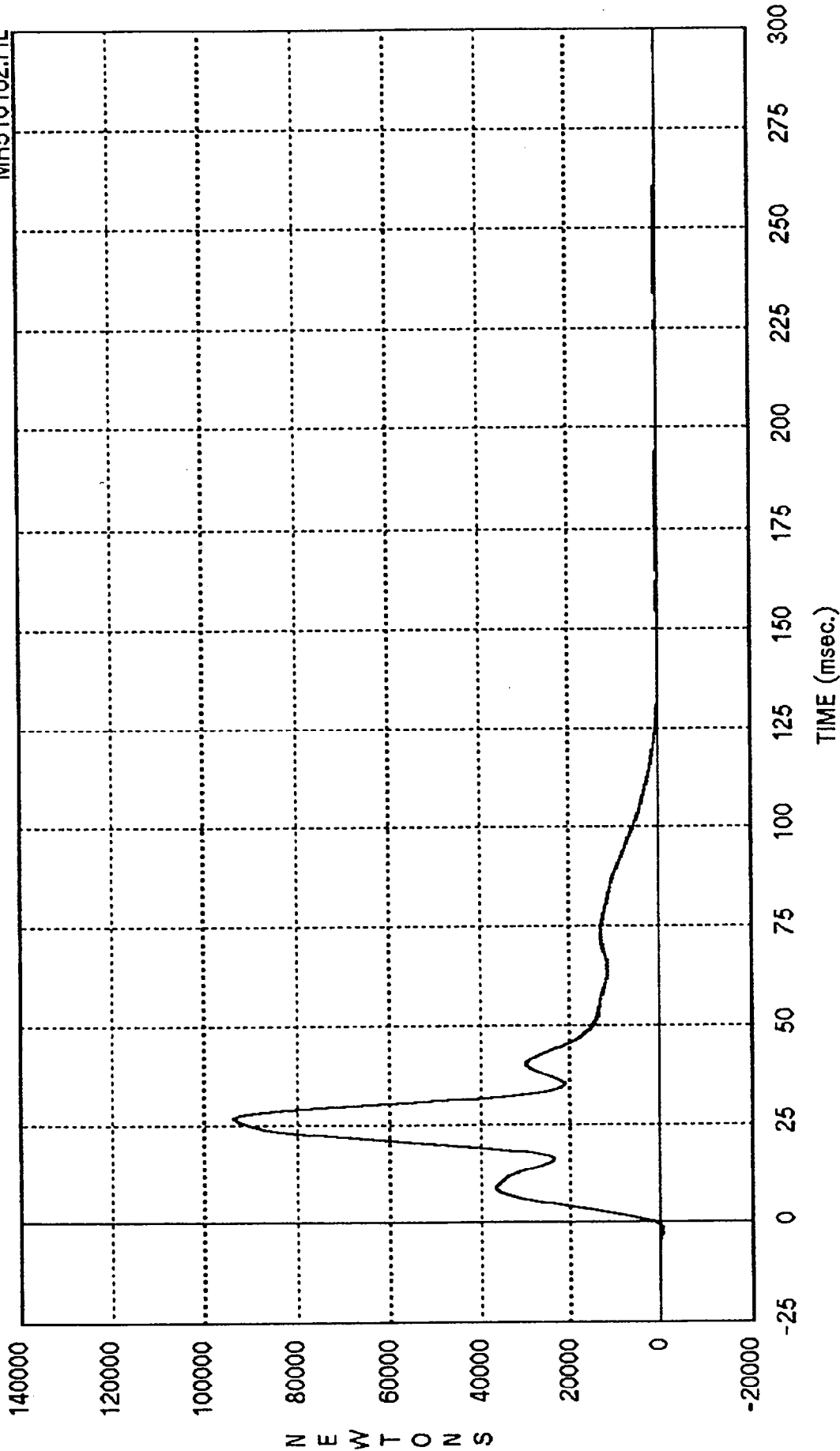
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510161.FIL



Curve: Force on barrier location B5 Filter: SAE CLASS 60 Max = 98480. Min = -94.226

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

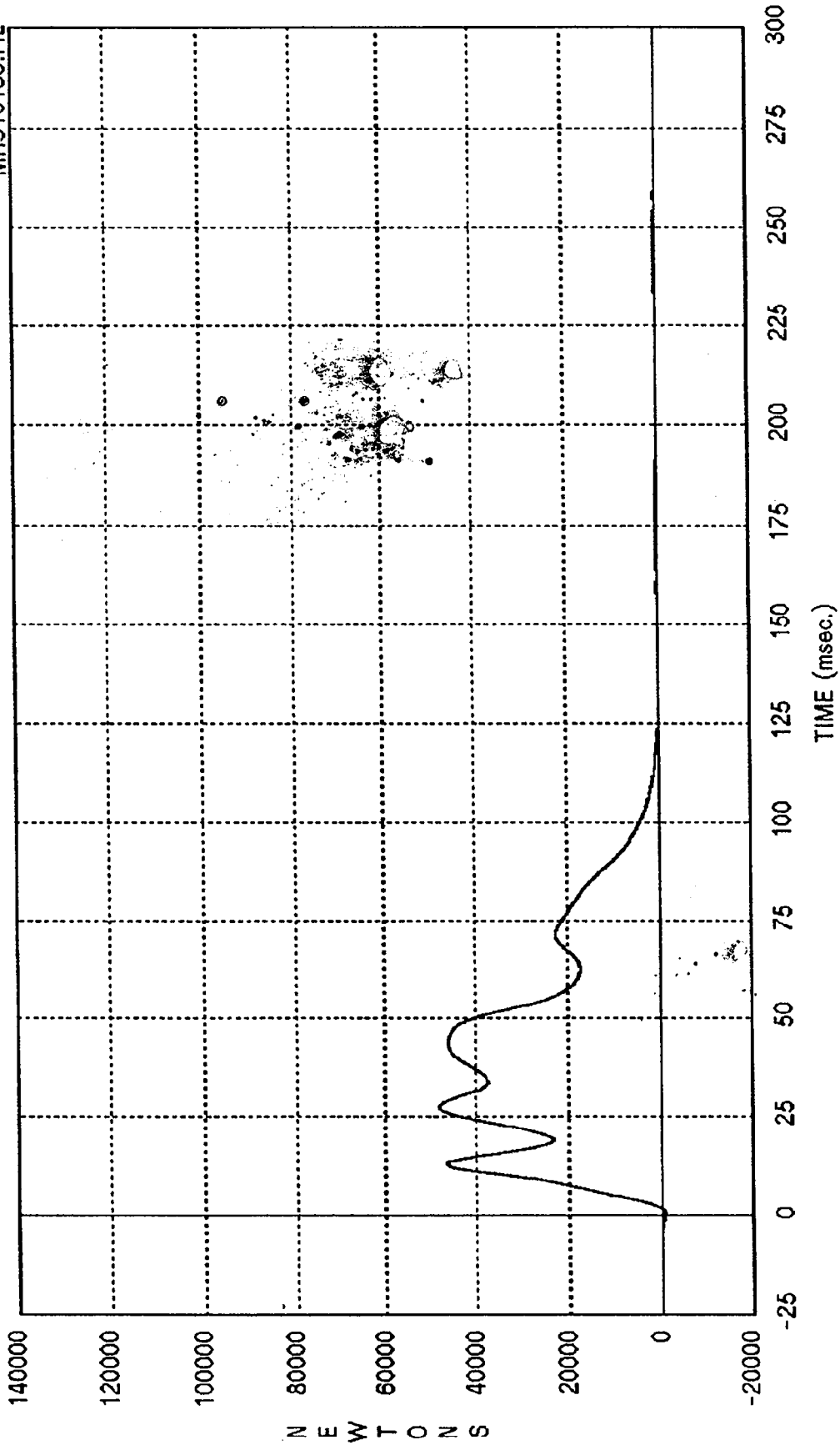


Curve: Force on barrier location B6

Filter: SAE CLASS 60 Max = 93671. Min = 82.191

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

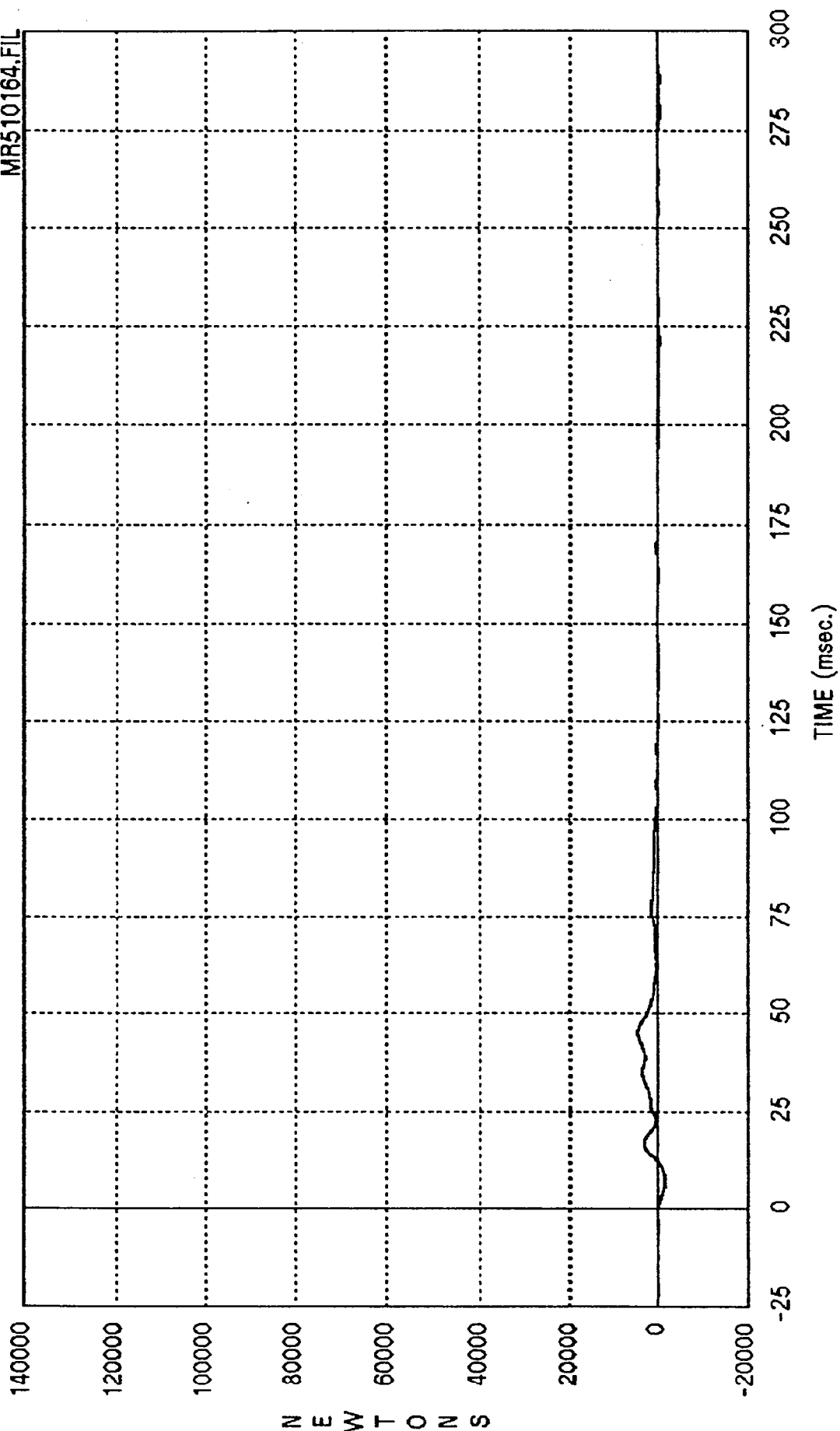
MR510163.FIL



Curve: Force on barrier location B7 Filter: SAE CLASS 60 Max = 48102. Min = -619.98

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510164.FIL

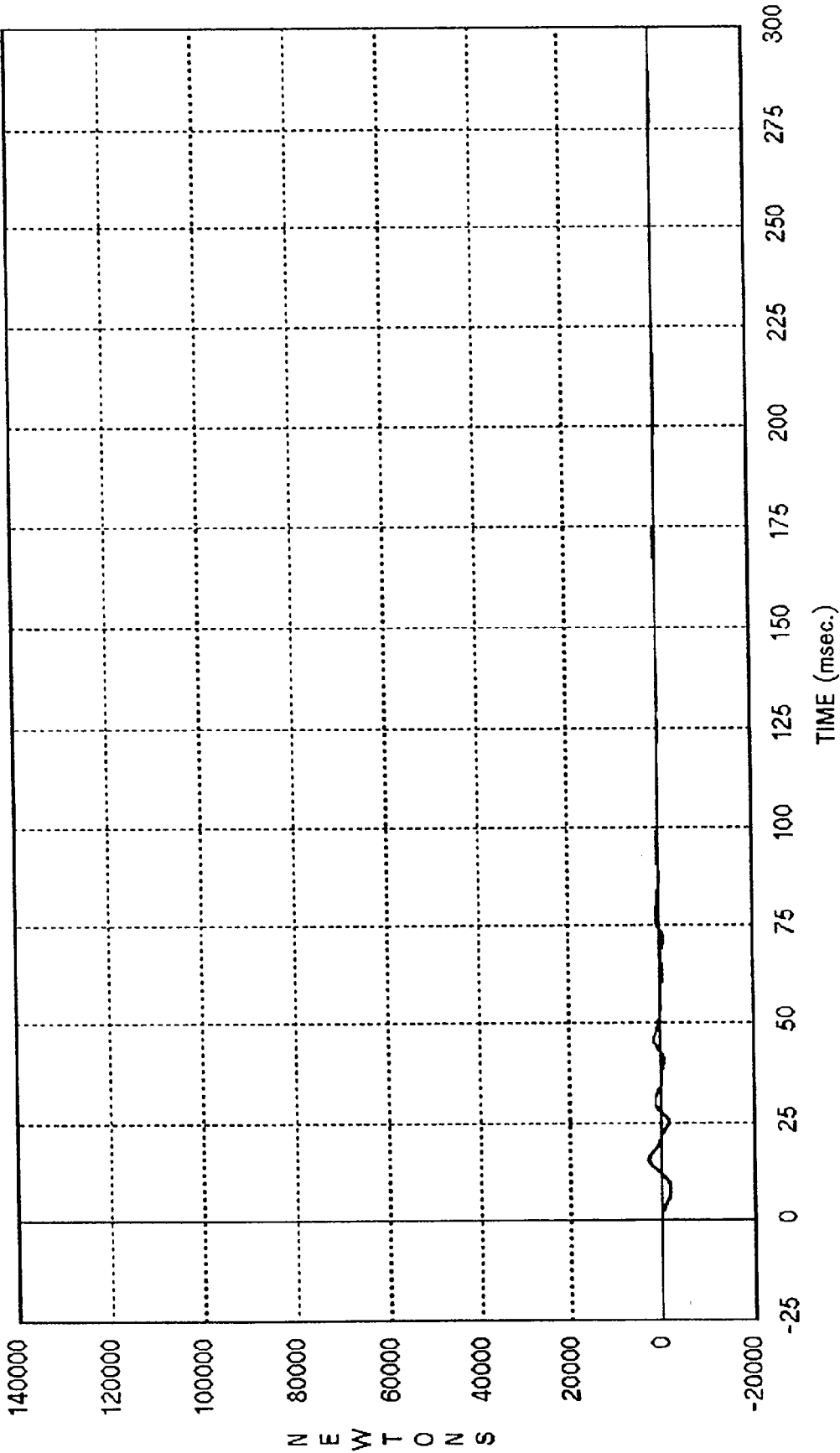


Curve: Force on barrier location B8

Filter: SAE CLASS 60 Max = 4598.2 Min = -1551.9

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

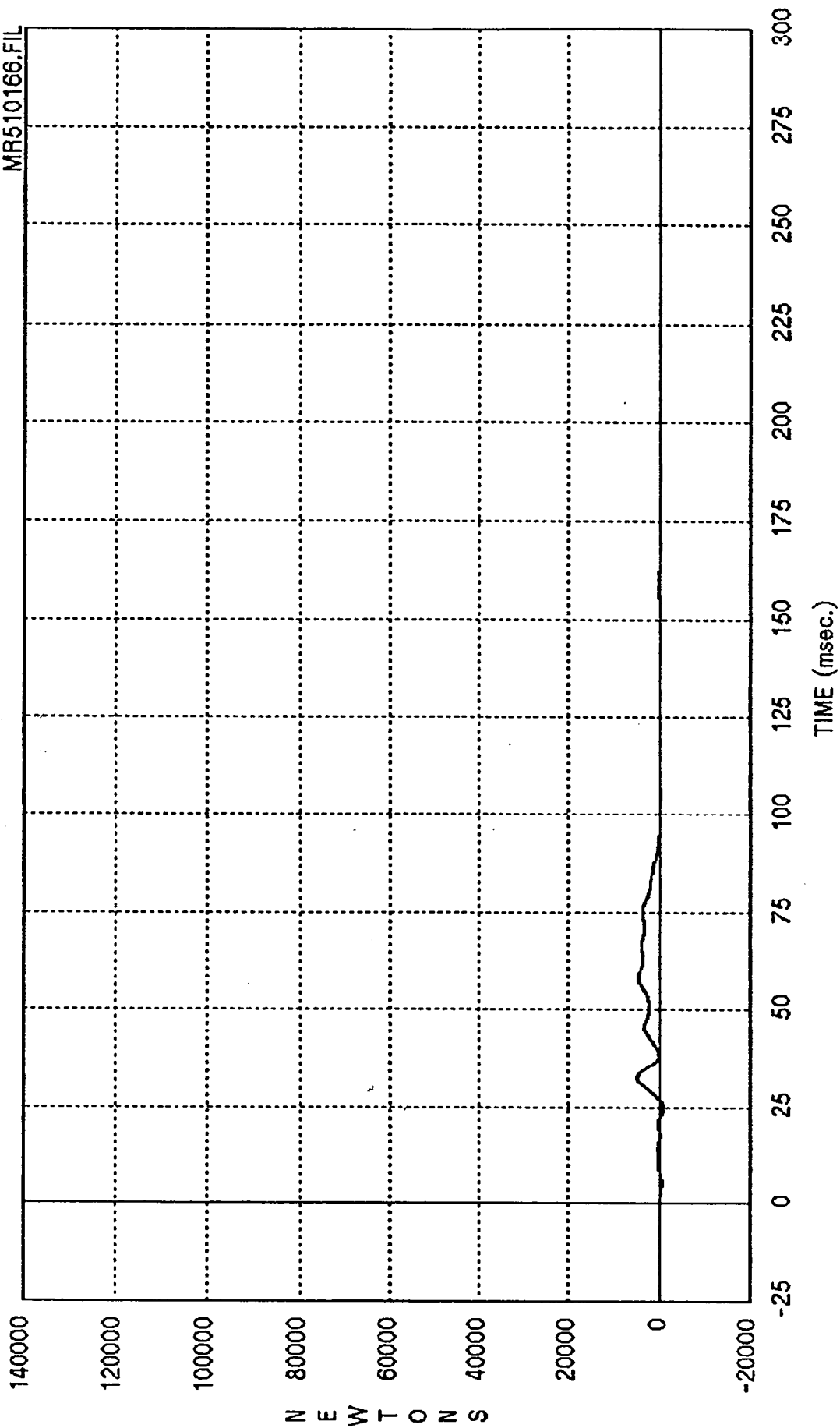
MR510165.FIL



Curve: Force on barrier location B9 Filter: SAE CLASS 60 Max = 2681.1 Min = -1901.9

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510166.FIL

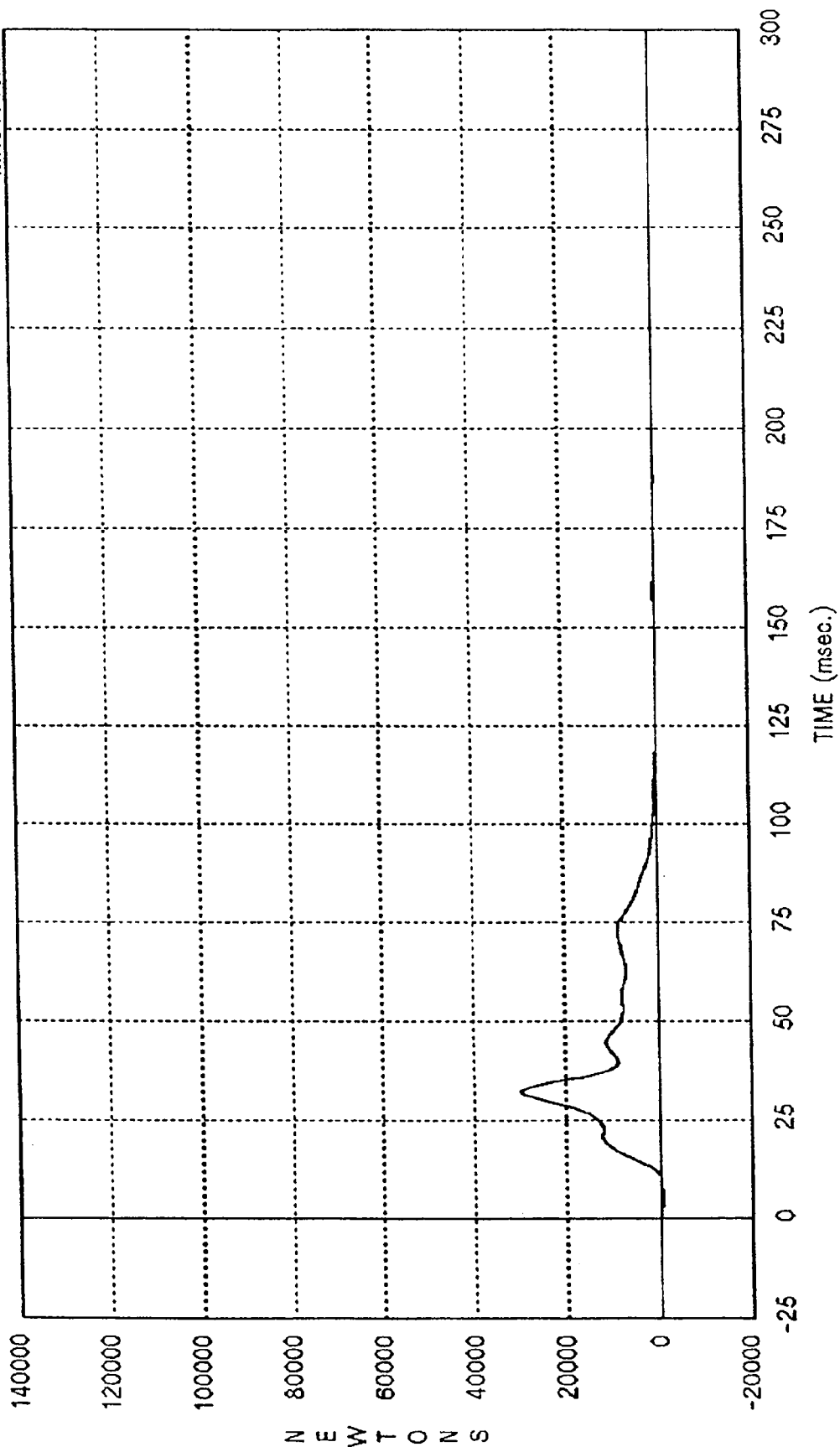


Curve: Force on barrier location C1

Filter: SAE CLASS 60 Max = 5148.4 Min = -783.26

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

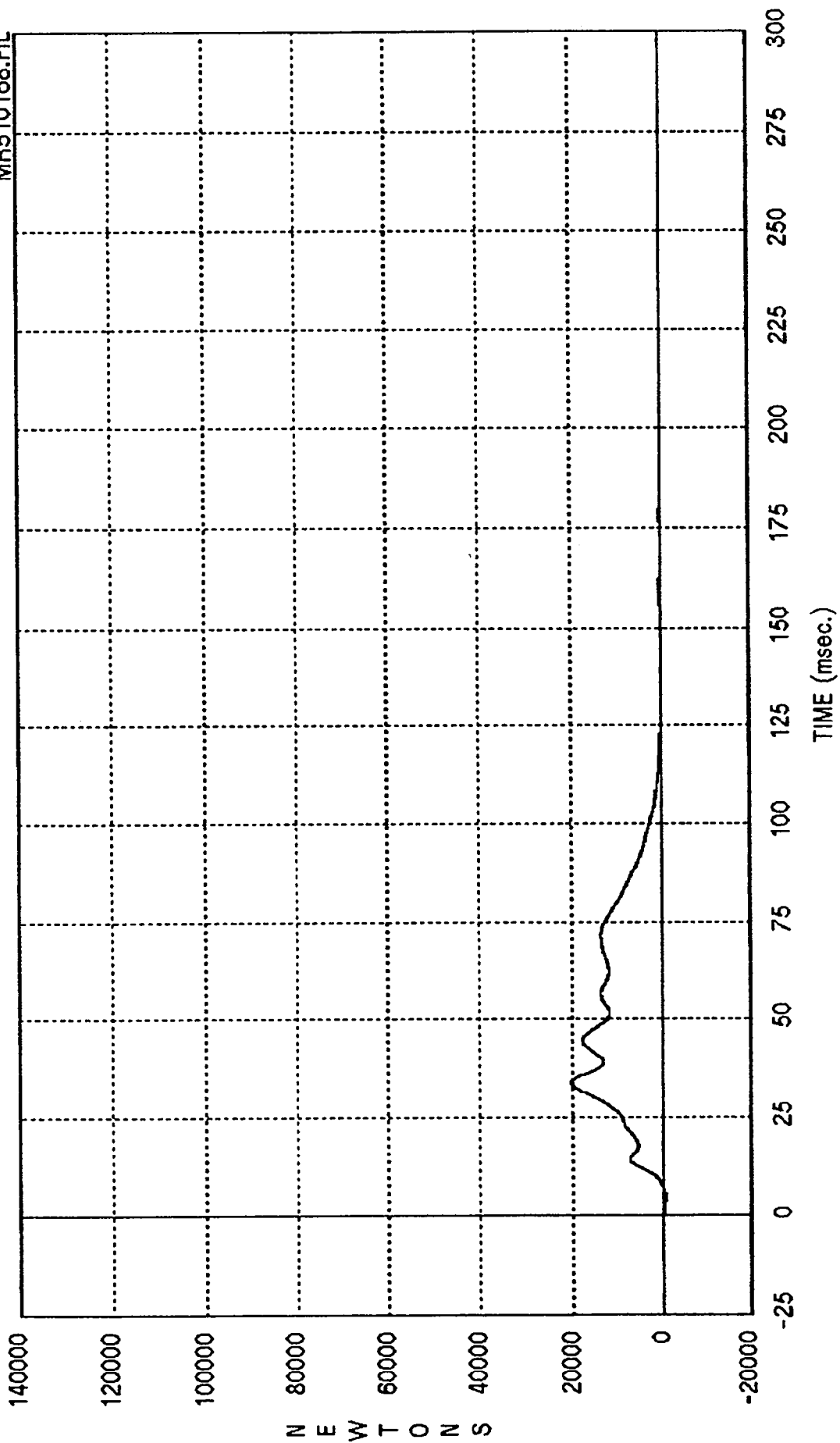
MR510167.FIL



Curve: Force on barrier location C2 Filter: SAE-CLASS 60 Max = 29718. Min = -484.30

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

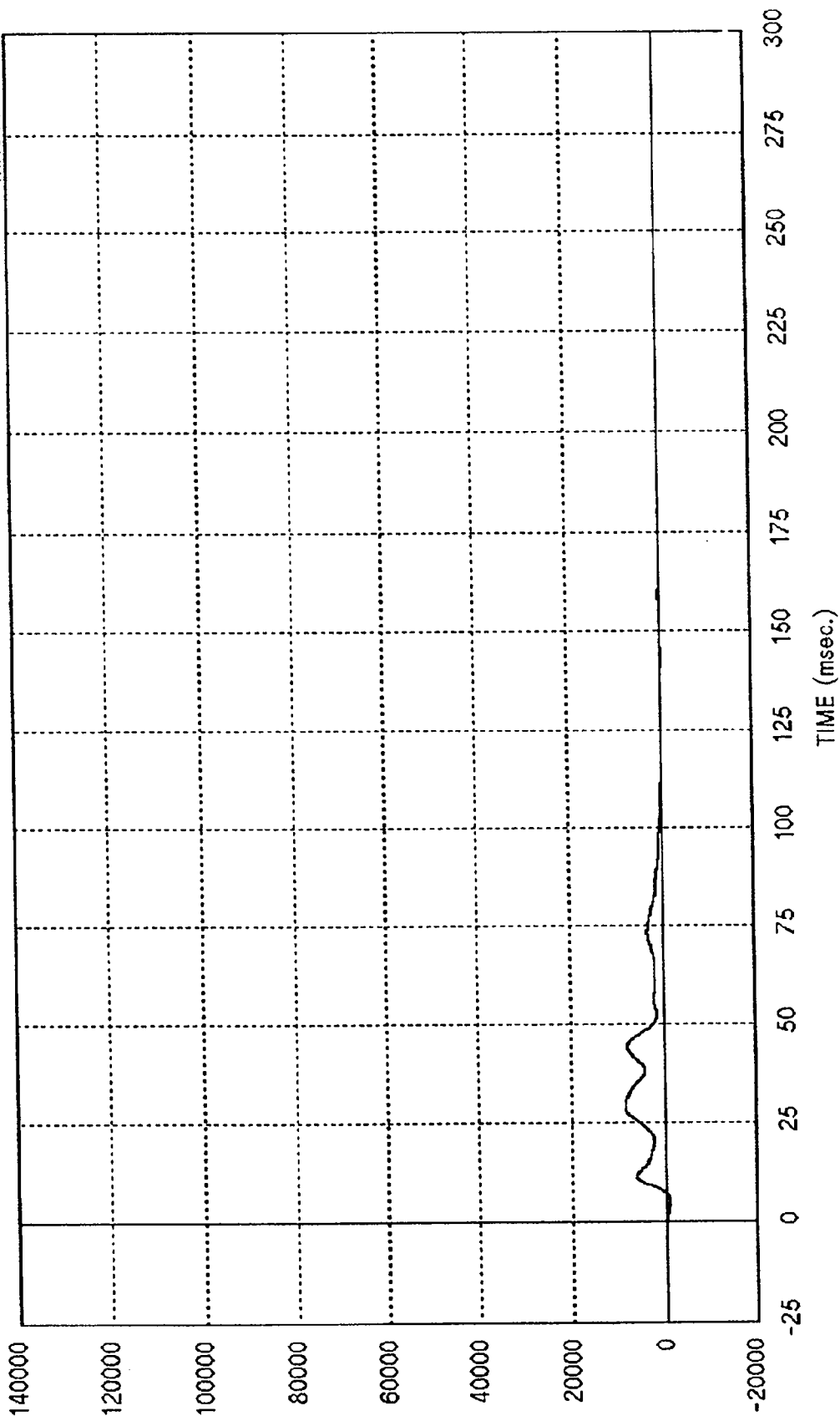
MR510168.FIL



Curve: Force on barrier location C3 Filter: SAE CLASS 60 Max = 20344. Min = -432.26

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510169.FIL



NEWTONS

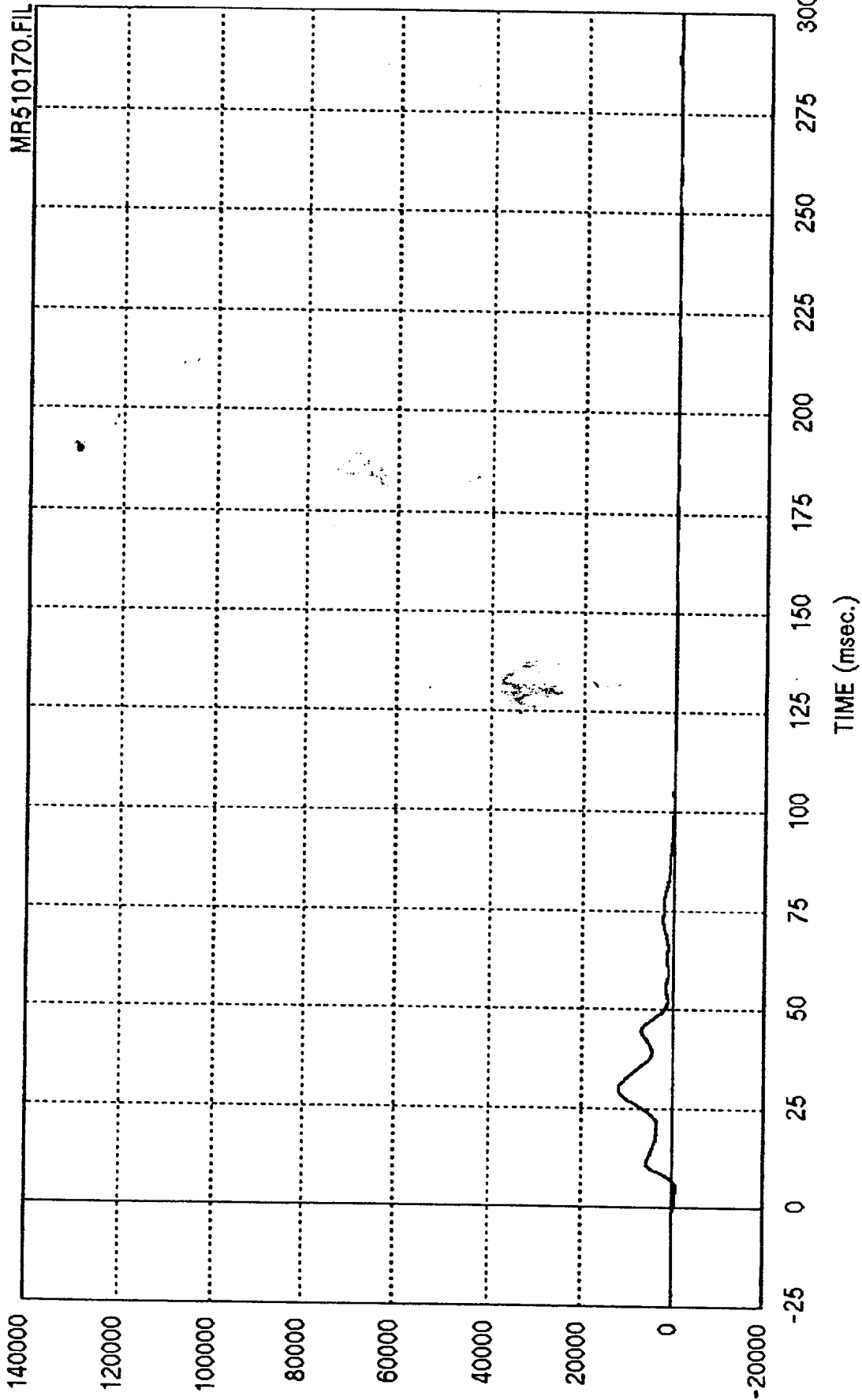
B - 2 22

MSE-R93030-01

Curve: Force on barrier location C4 Filter: SAE CLASS 60 Max = 8868.6 Min = -769.69

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510170.FIL



Curve: Force on barrier location C5 Filter: SAE CLASS 60 Max = 12092. Min = -749.23

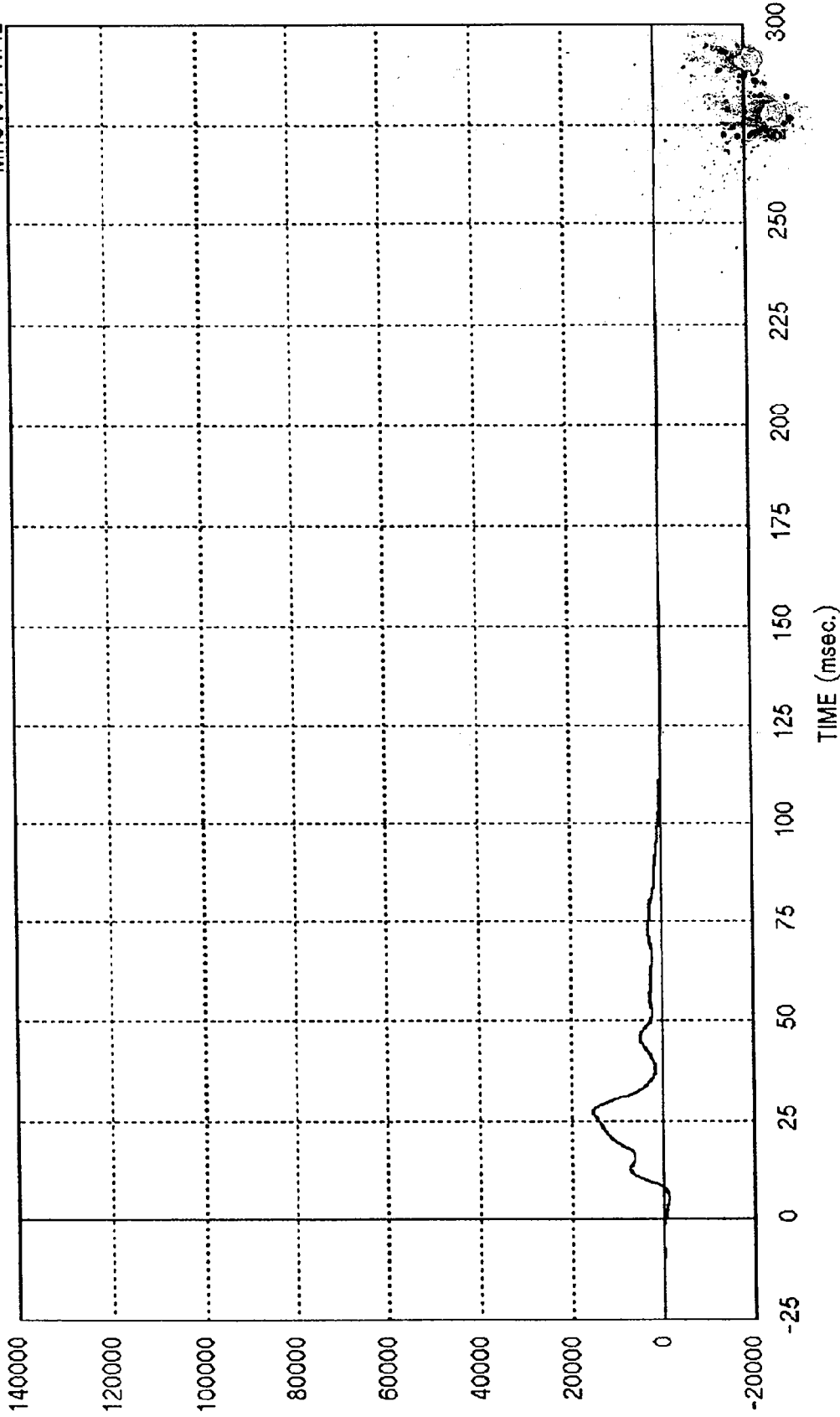
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

N E W T O N S

B - 2 23

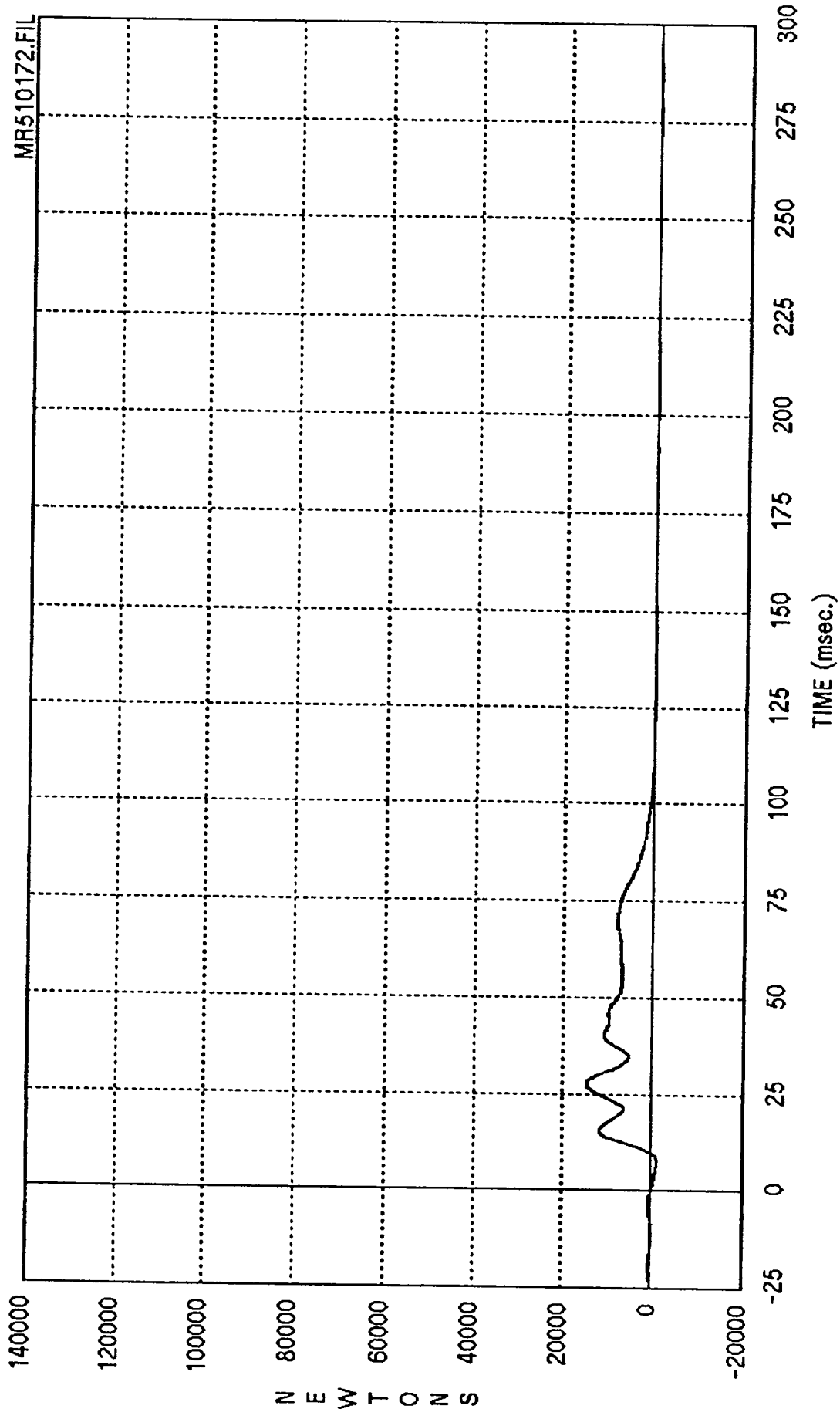
MSE-R93030-01

MR510171.FIL



Curve: Force on barrier location C6 Filter: SAE CLASS 60 Max = 15539. Min = -1168.9

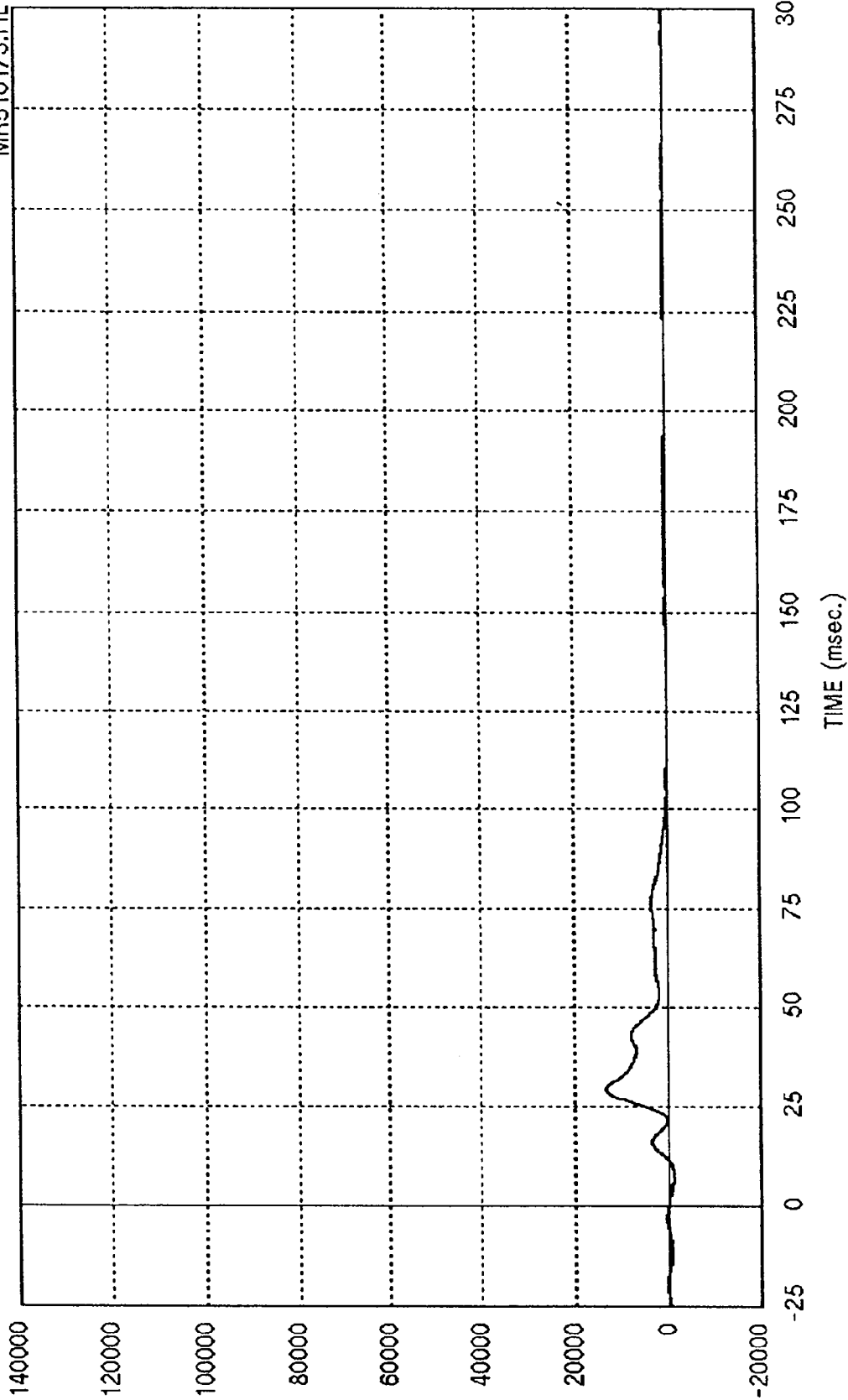
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Force on barrier location C7 Filter: SAE CLASS 60 Max = 14819. Min = -1276.1

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

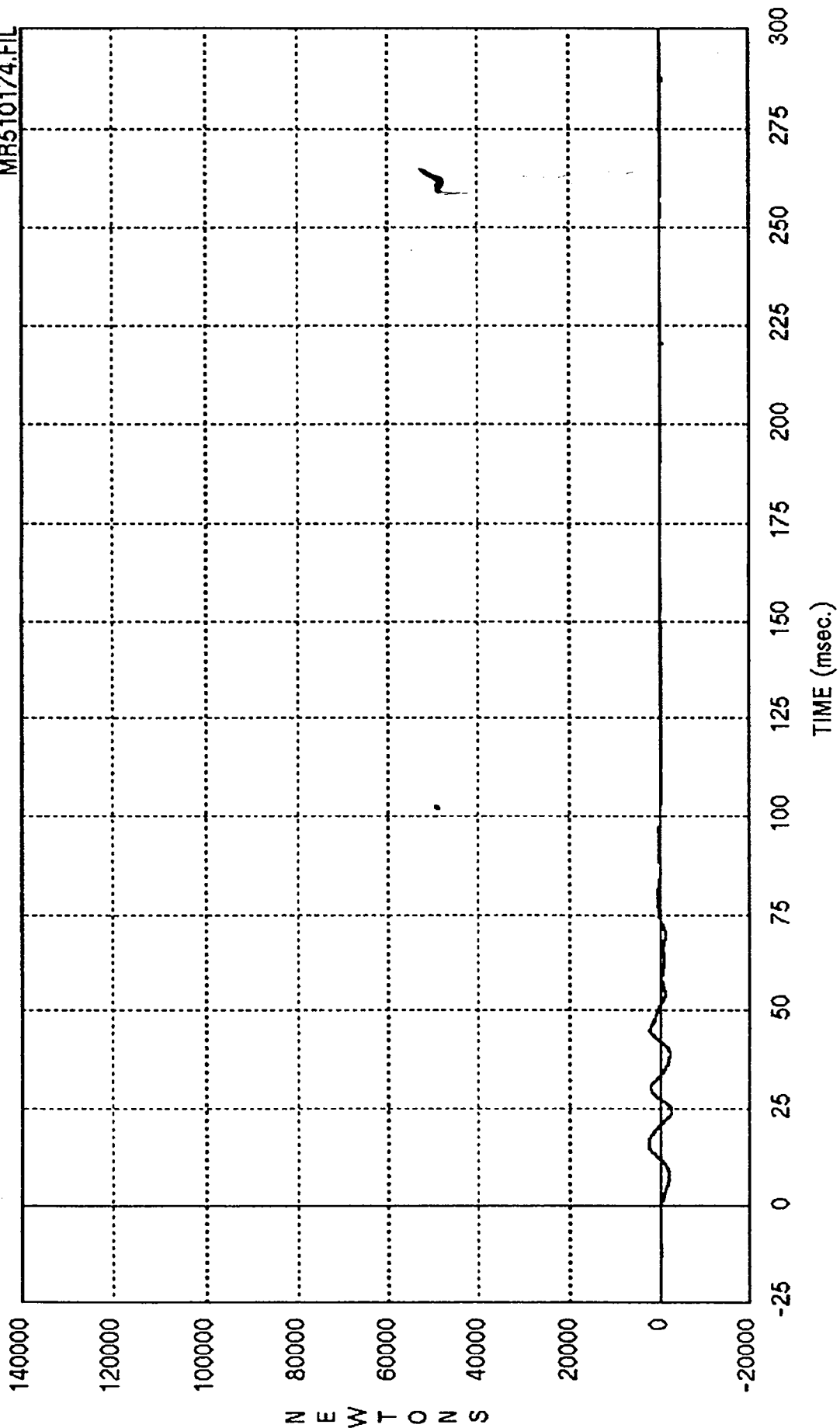
MR510173.FIL



Curve: Force on barrier location C8 Filter: SAE CLASS 60 Max = 13496. Min = -1013.7

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

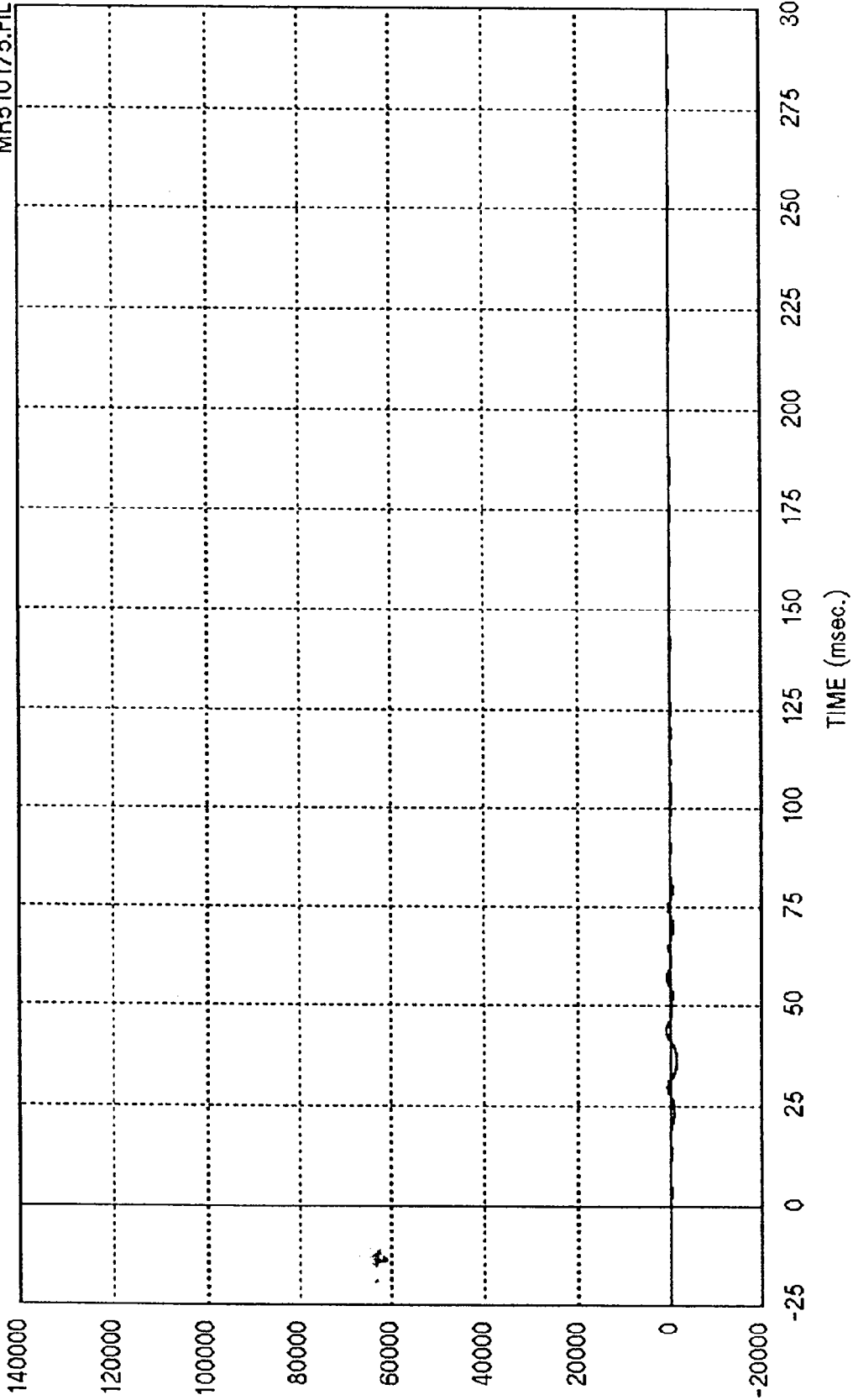
MR510174.FIL



Curve: Force on barrier location C9 Filter: SAE CLASS 60 Max = 2622.9 Min = -2485.0

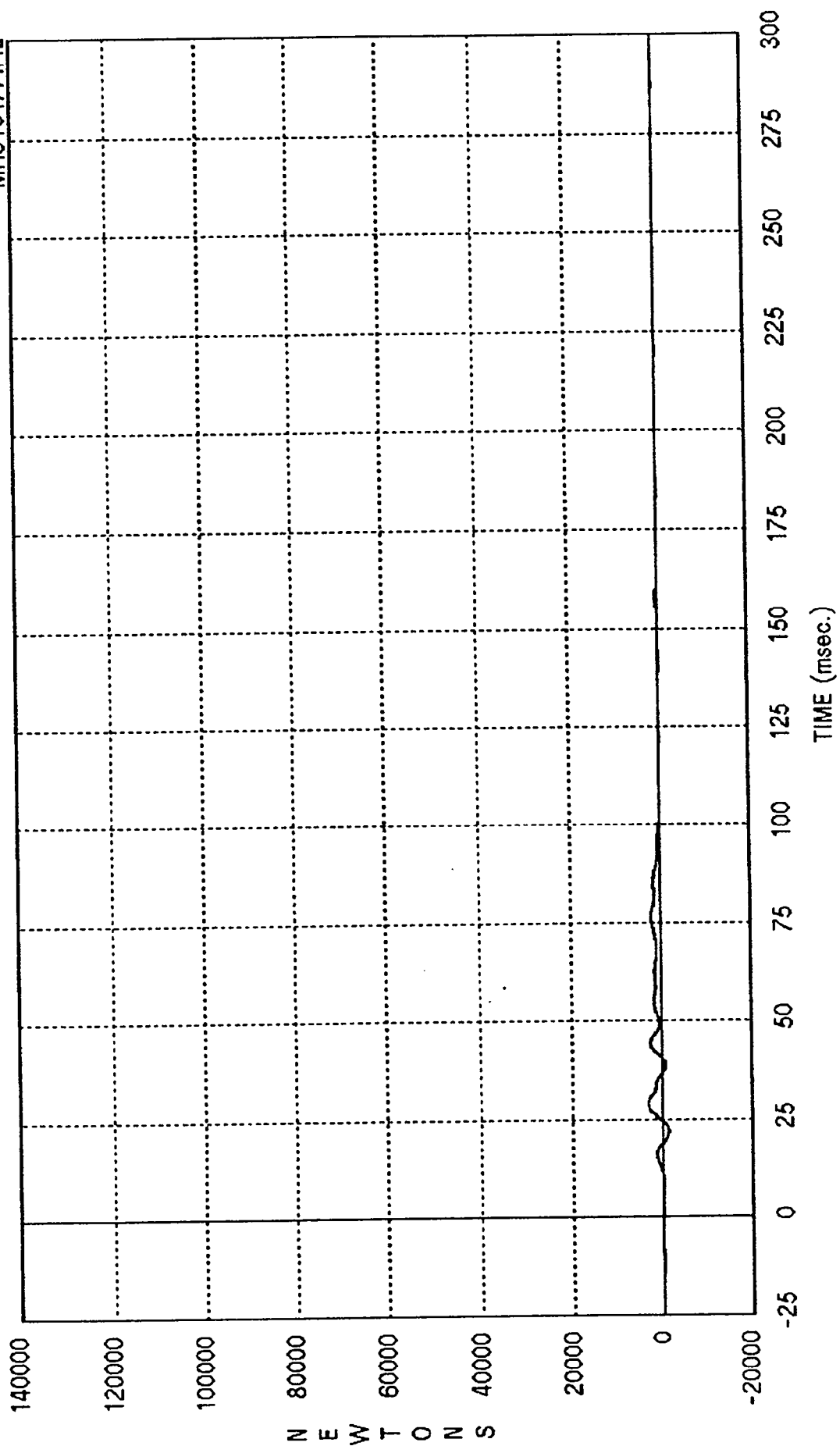
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510175.FIL



Curve: Force on barrier location D1 Filter: SAE CLASS:60 Max = 848.41 Min = -1304.5

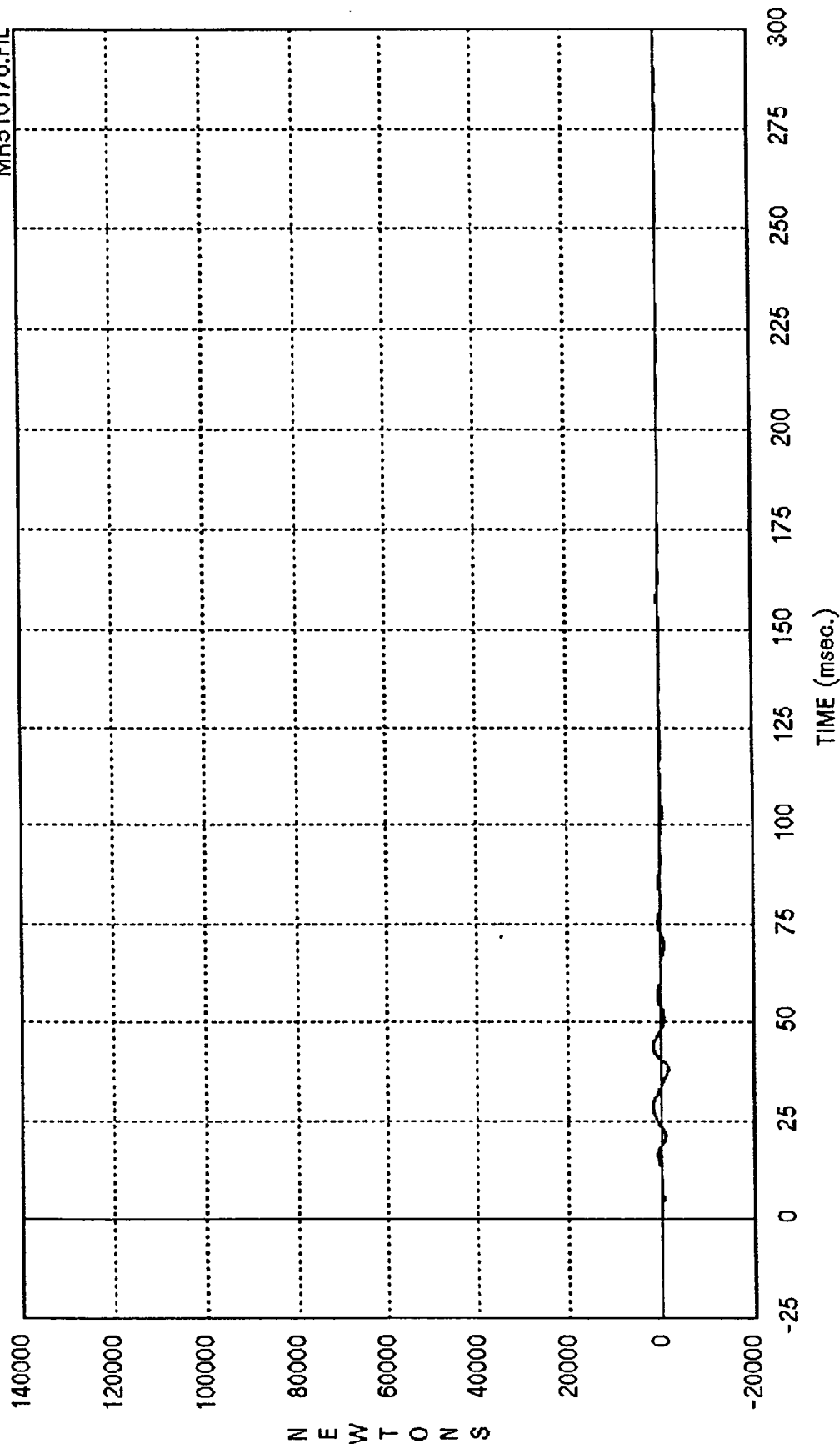
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Force on barrier location D3 Filter: SAE CLASS 60 Max = 3227.2 Min = -1455.1

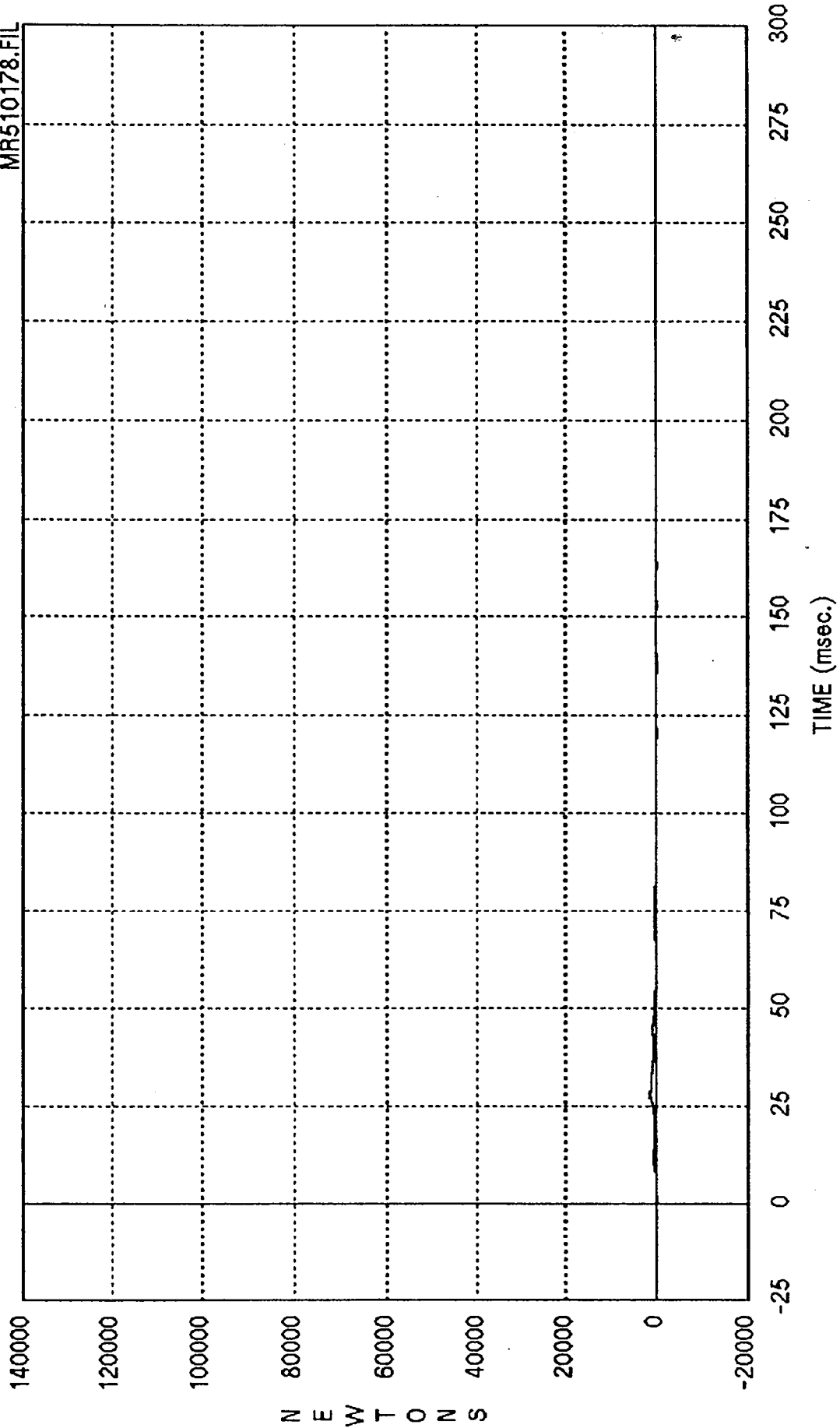
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510176.FIL



Curve: Force on barrier location D2 Filter: SAE CLASS 60 Max = 1788.0 Min = 1470.8

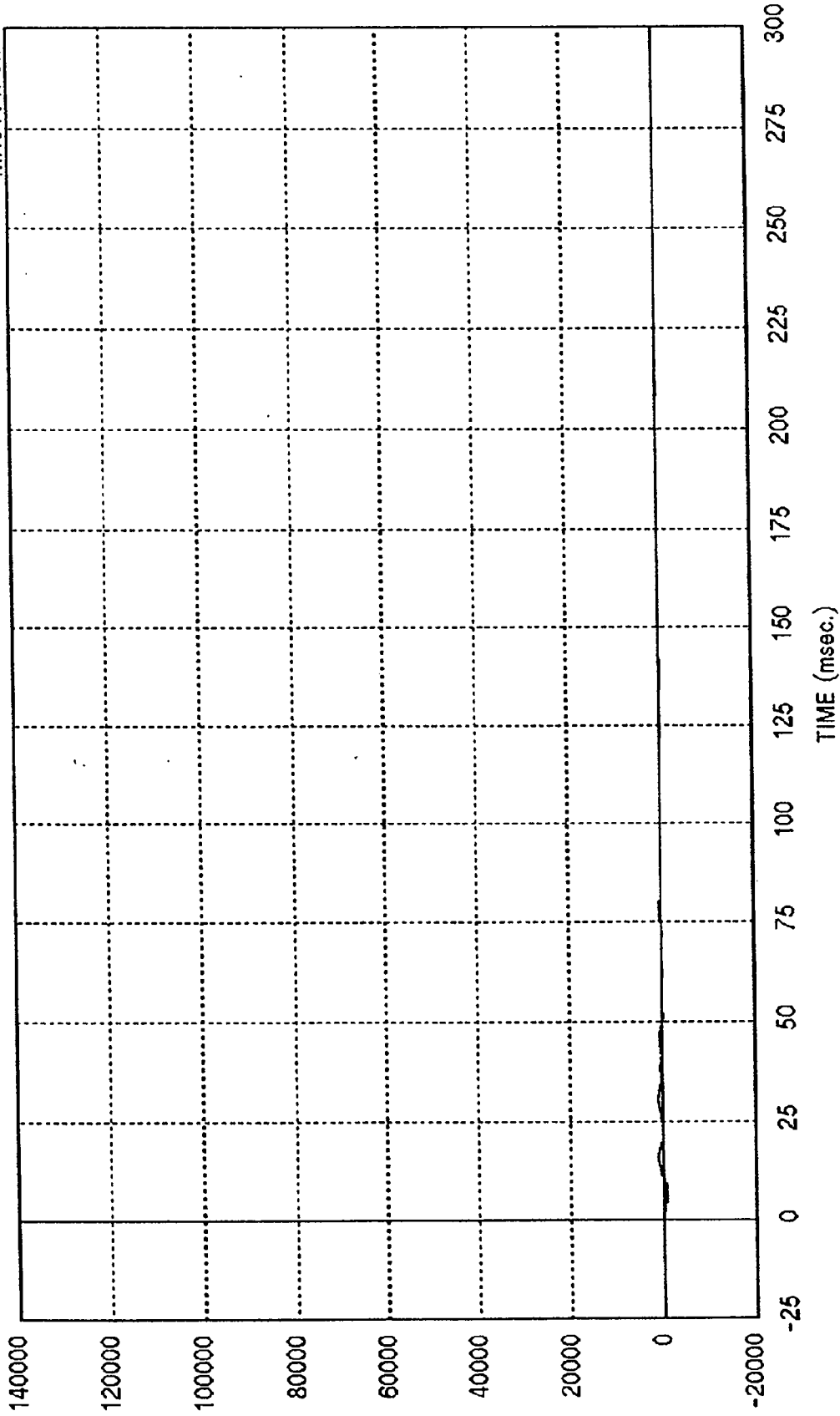
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Force on barrier location D4 Filter: SAE CLASS 60 Max = 1329.4 Min = -70.366

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

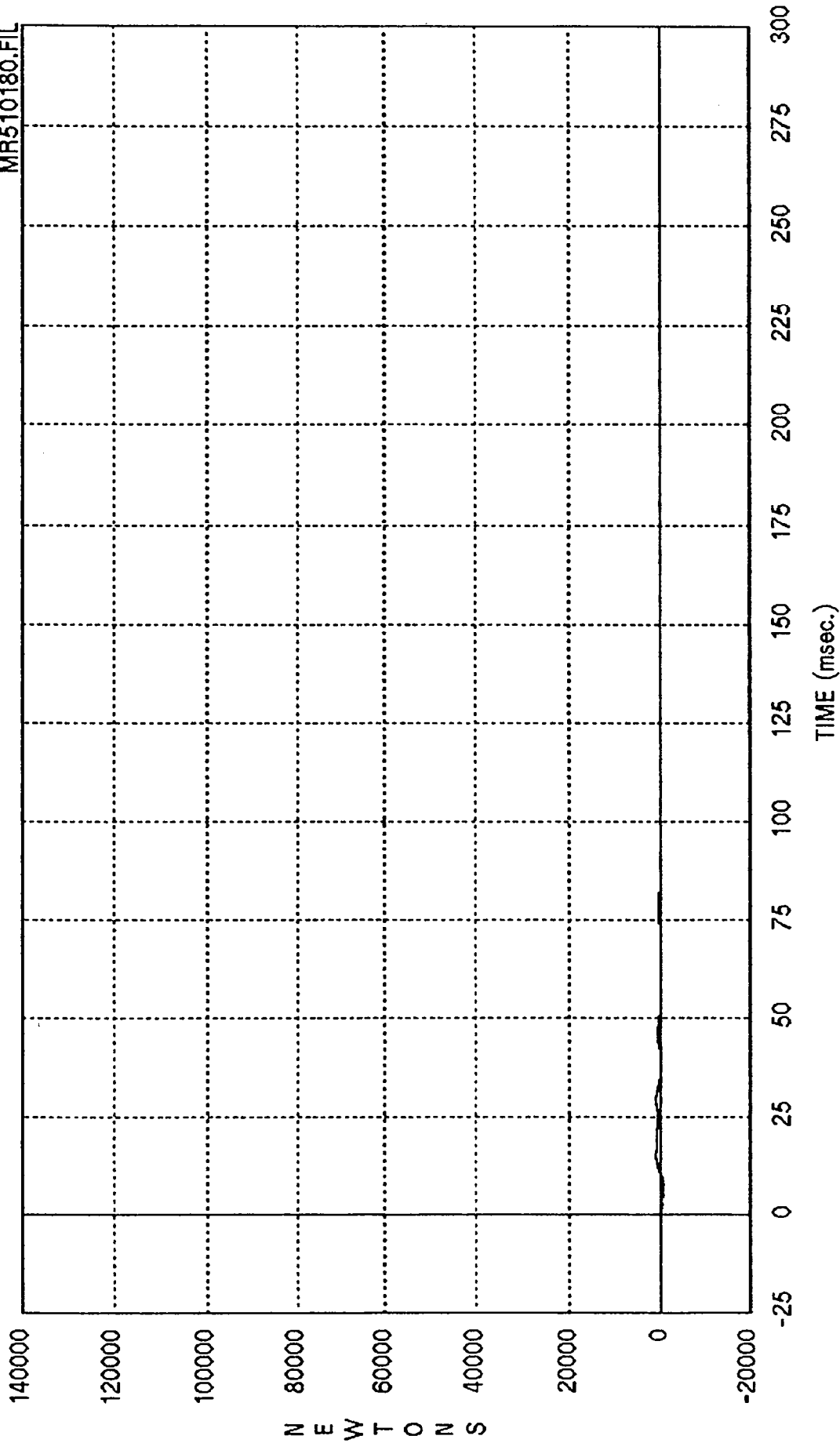
MR510179.FIL



Curve: Force on barrier location D5 Filter: SAE CLASS 60 Max = 1099.1 Min = -565.80

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510180.FIL



Curve: Force on barrier location D6

Filter: SAE CLASS 60

Max =

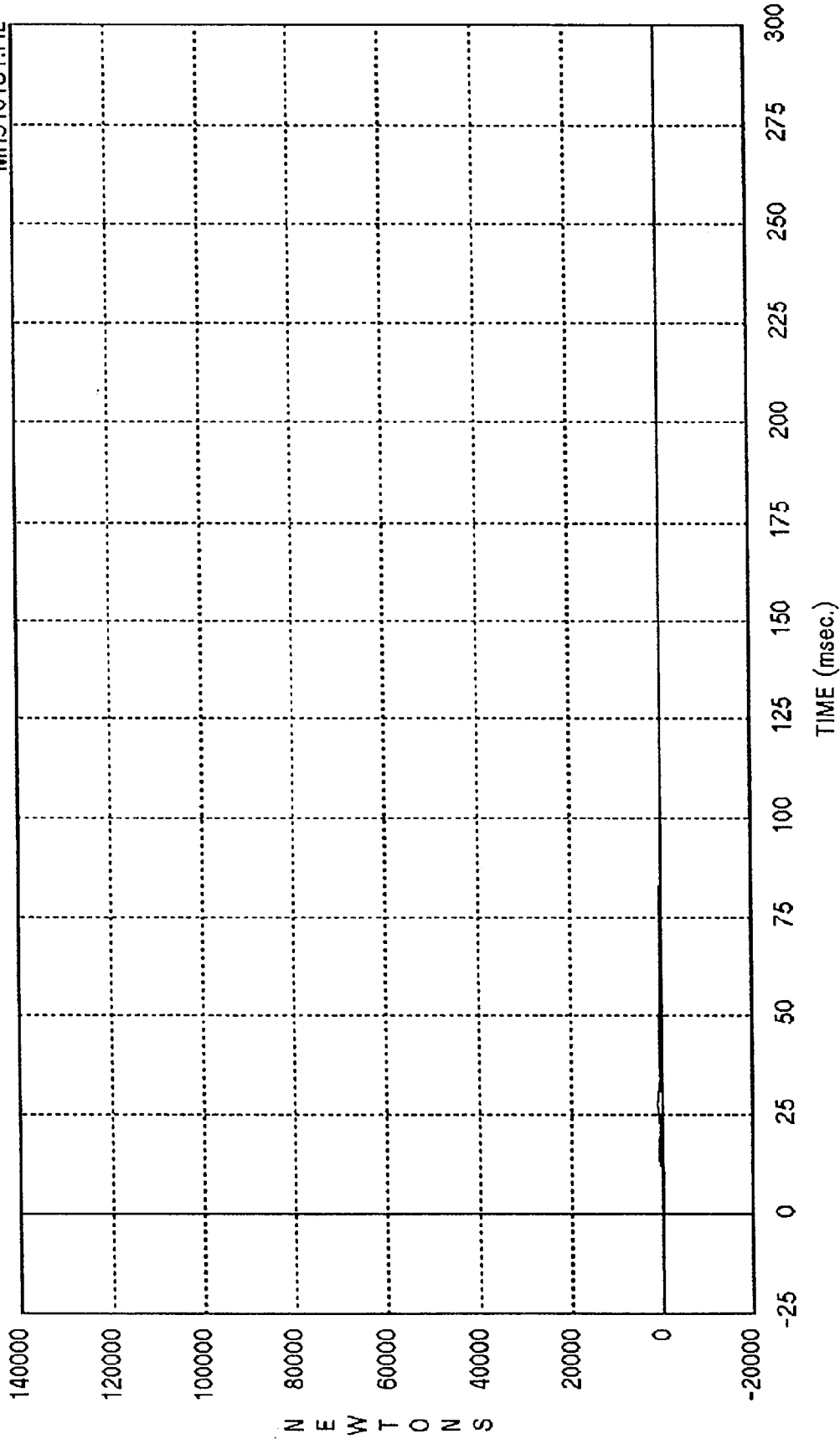
1108.3

Min =

-514.20

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

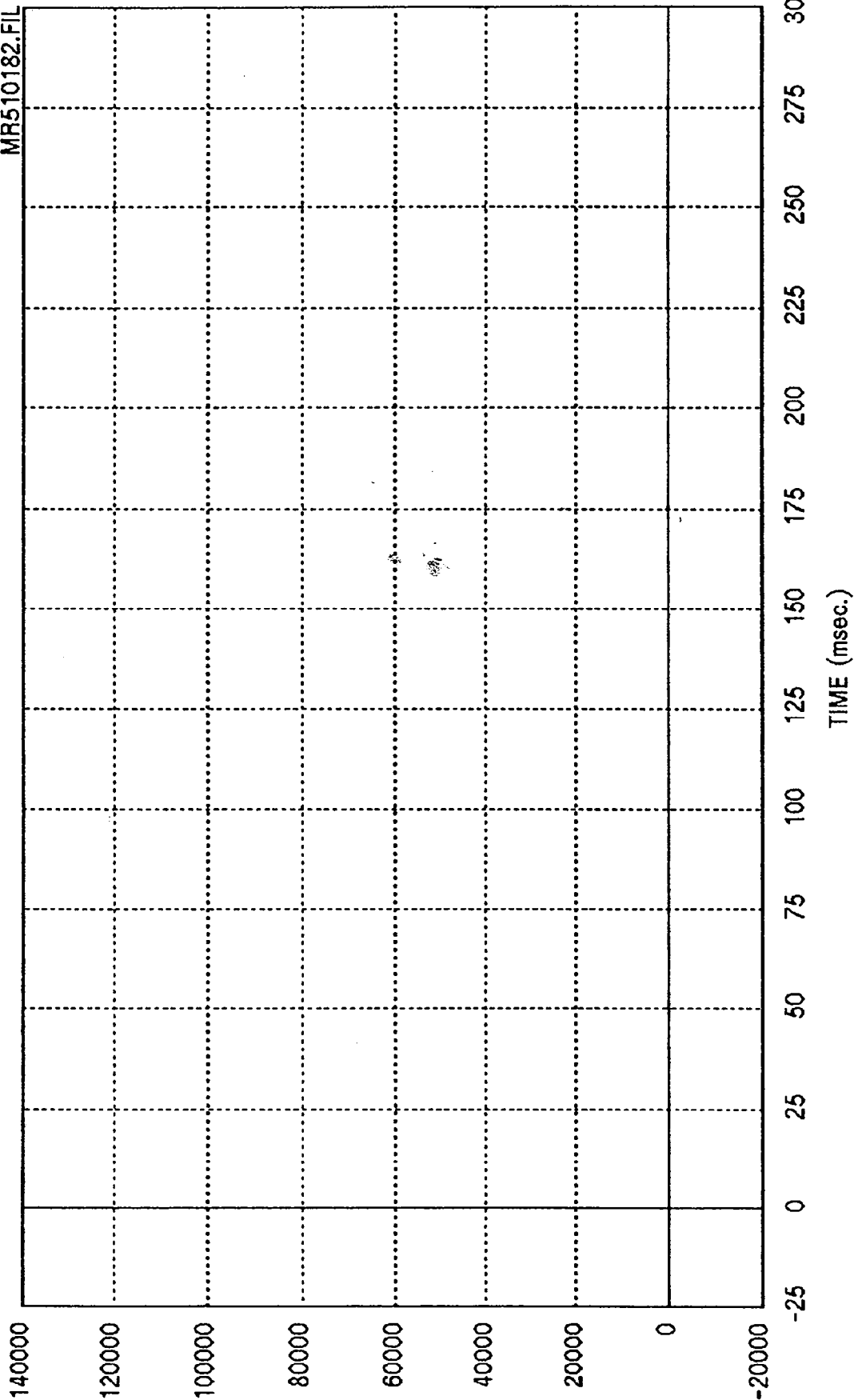
MR510181.FIL



Curve: Force on barrier location D7 Filter: SAE CLASS 60 Max = 1066.6 Min = -79.157

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

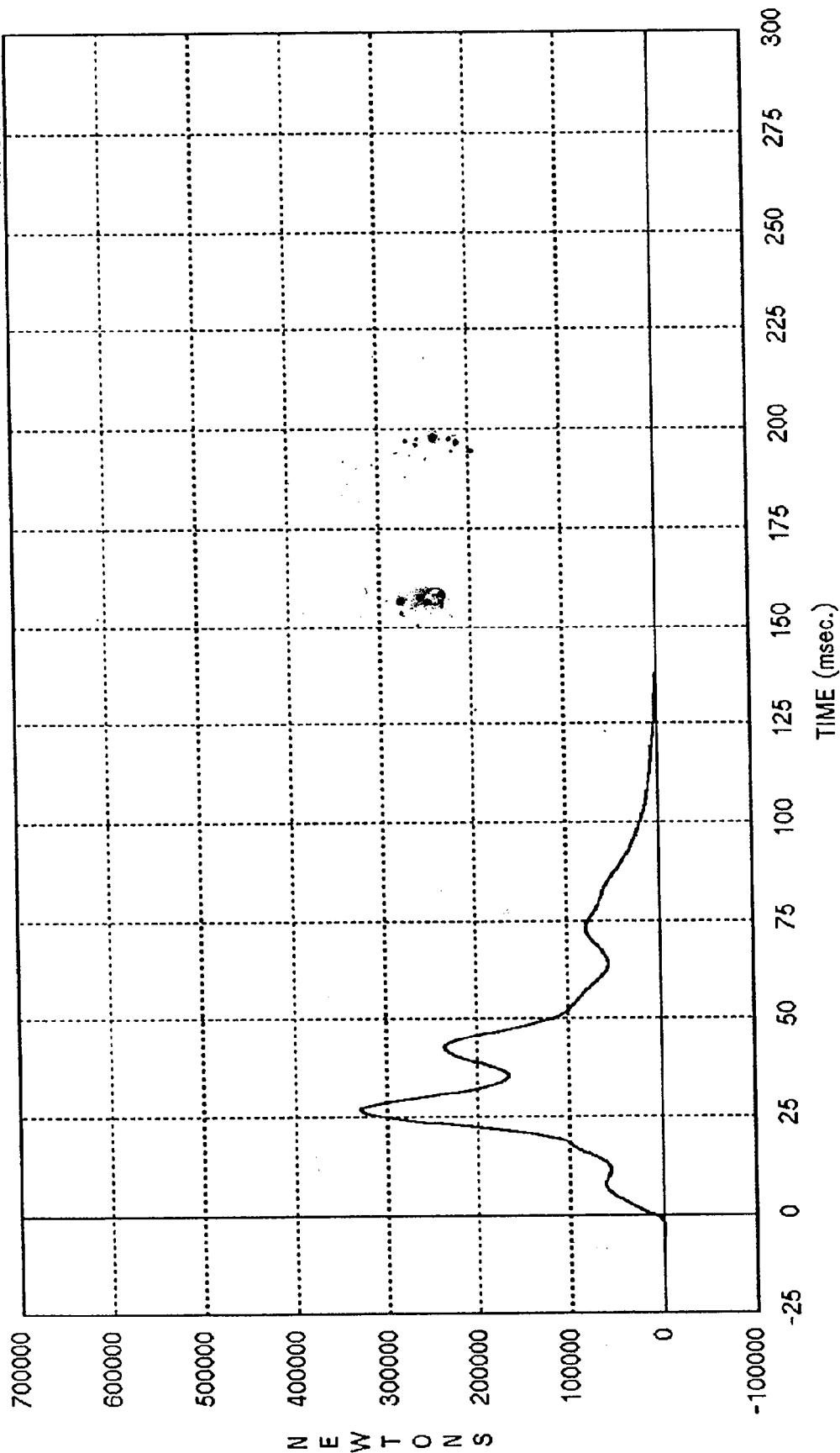
MR510182.FIL



Curve: Force on barrier location D8 (No data) Filter: SAE CLASS 60 Max = .00000 Min = .00000

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

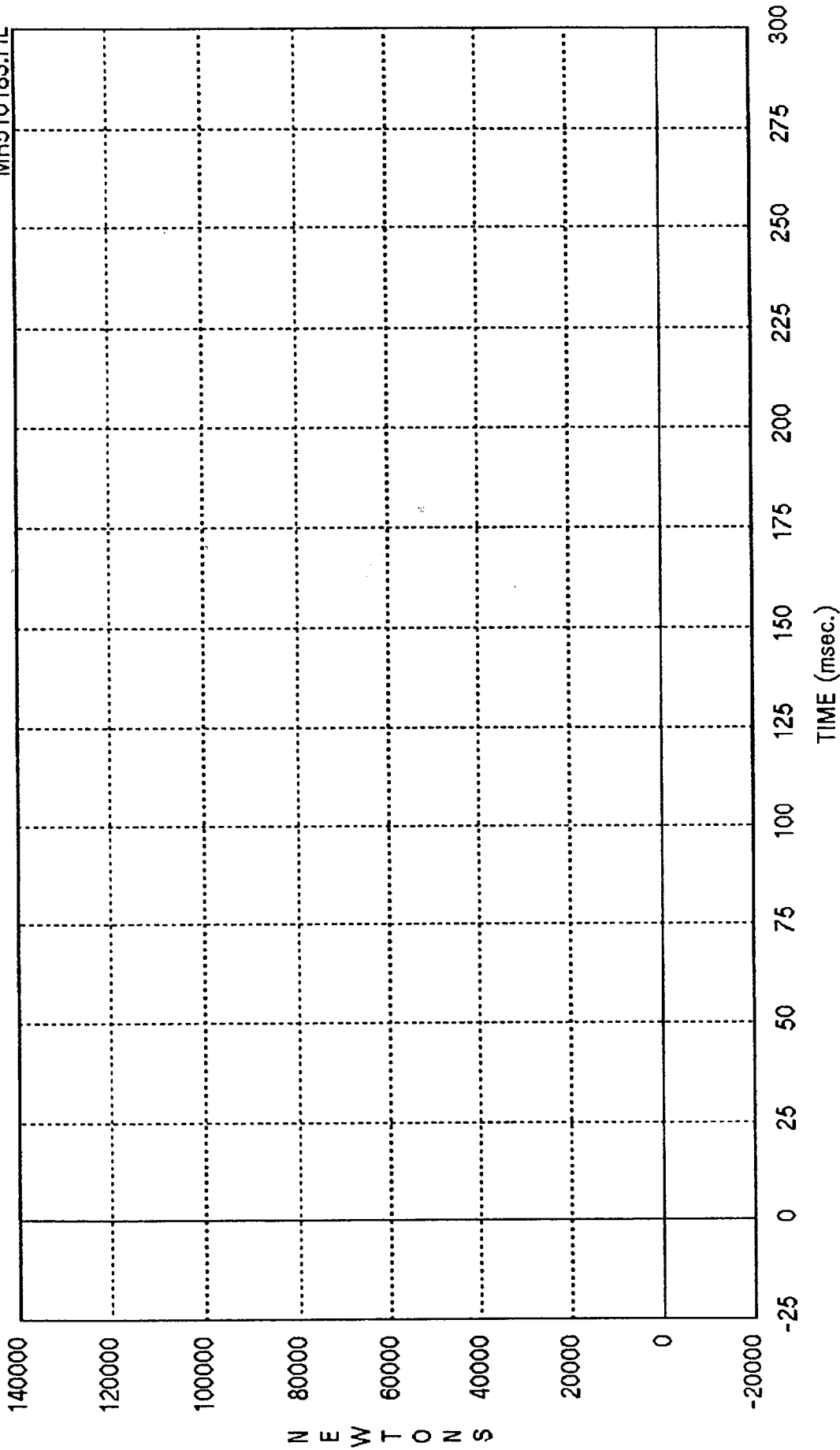
MR510102.SUM



Curve: Barrier sum force A4,A5,A6,B4,B5,B6 -- Group 2 Filter: SAE CLASS 60 Max = .32998E+06 Min = -328.10

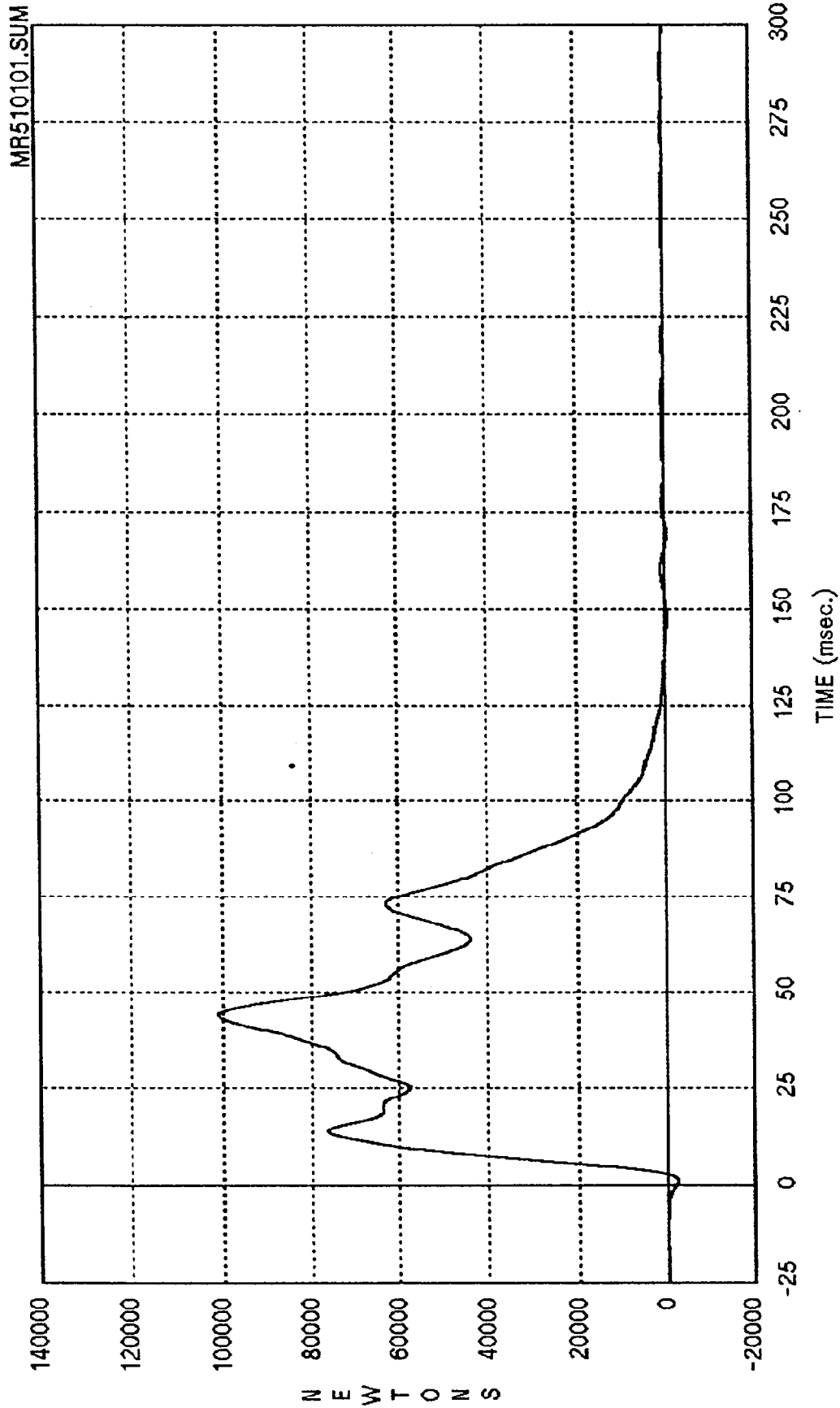
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510183.FIL



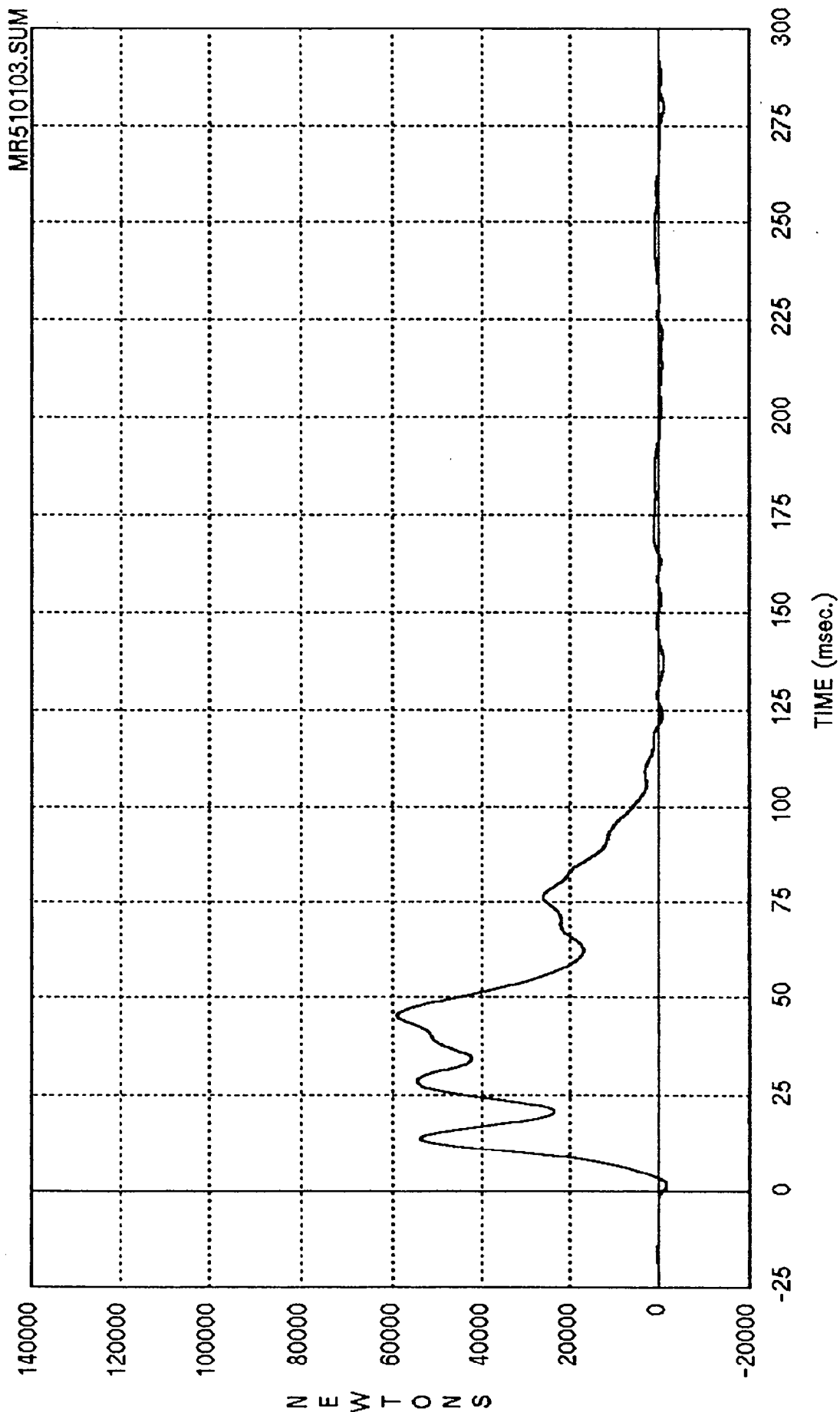
Curve: Force on barrier location D9 (No data) Filter: SAE=CLASS 60 Max = .00000 Min = .000000

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



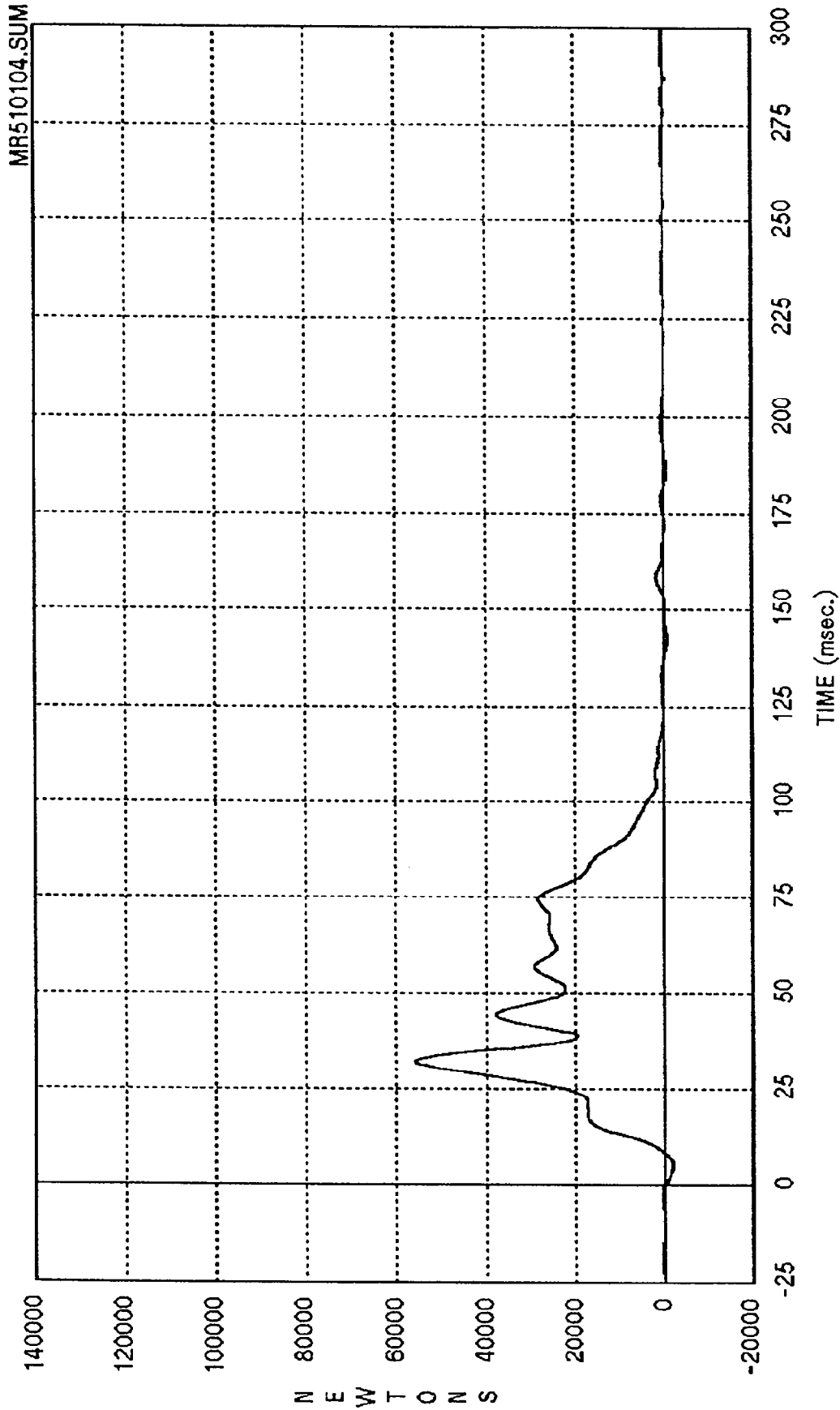
Curve: Barrier sum force A1,A2,A3,B1,B2,B3 -- Group 1 Filter: SAE CLASS 60 Max = .10106E+06 Min = -2317.6

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Barrier sum force A7,A8,A9,B7,B8,B9 -- Group 3 Filter: SAE CLASS 60 Max = 59237. Min = -1662.9

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



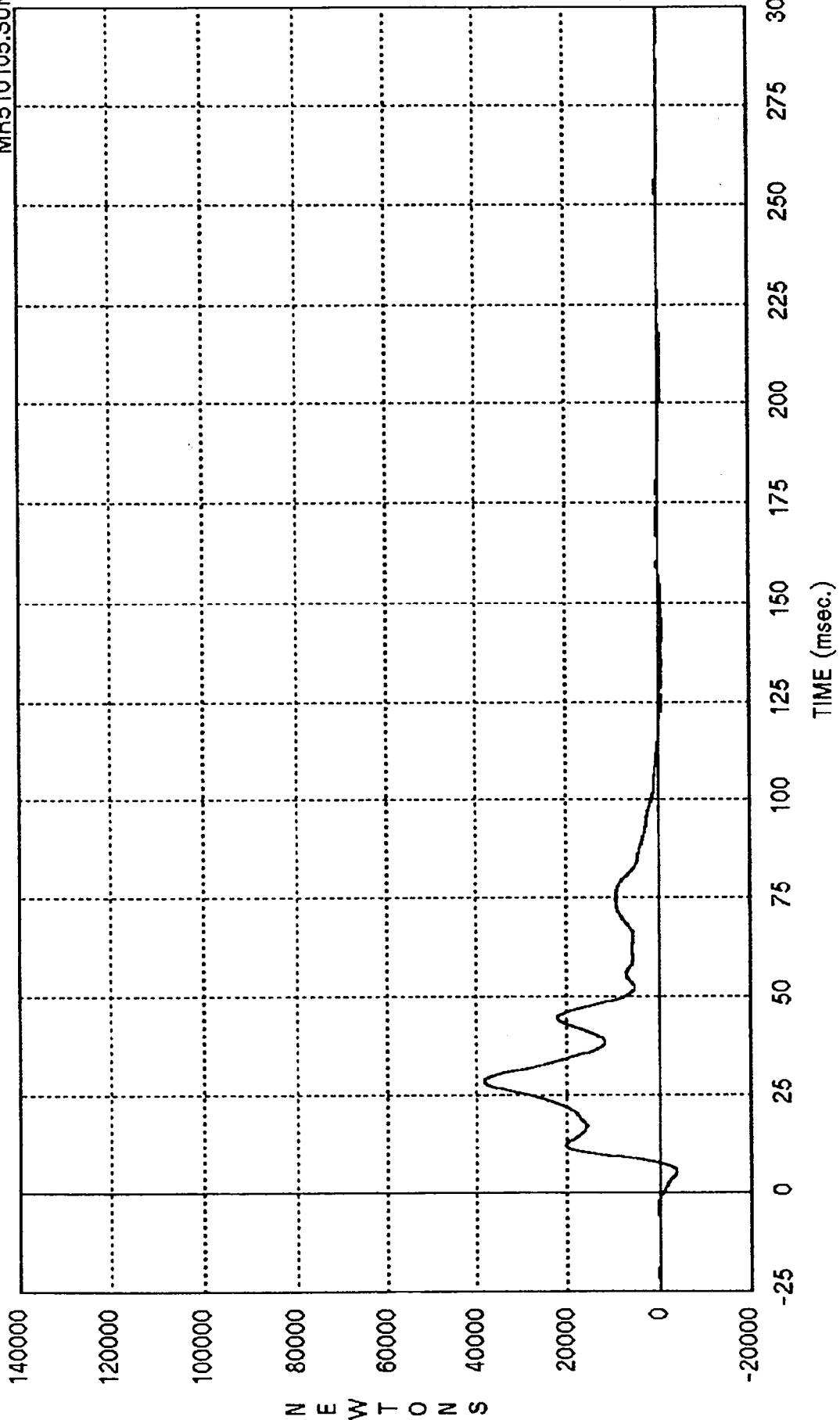
B - 2 : 40

MSE-R93030-01

Curve: Barrier sum force C1,C2,C3,D1,D2,D3 -- Group 4 Filter: SAE CLASS 60 Max = 55855. Min = -1867.2

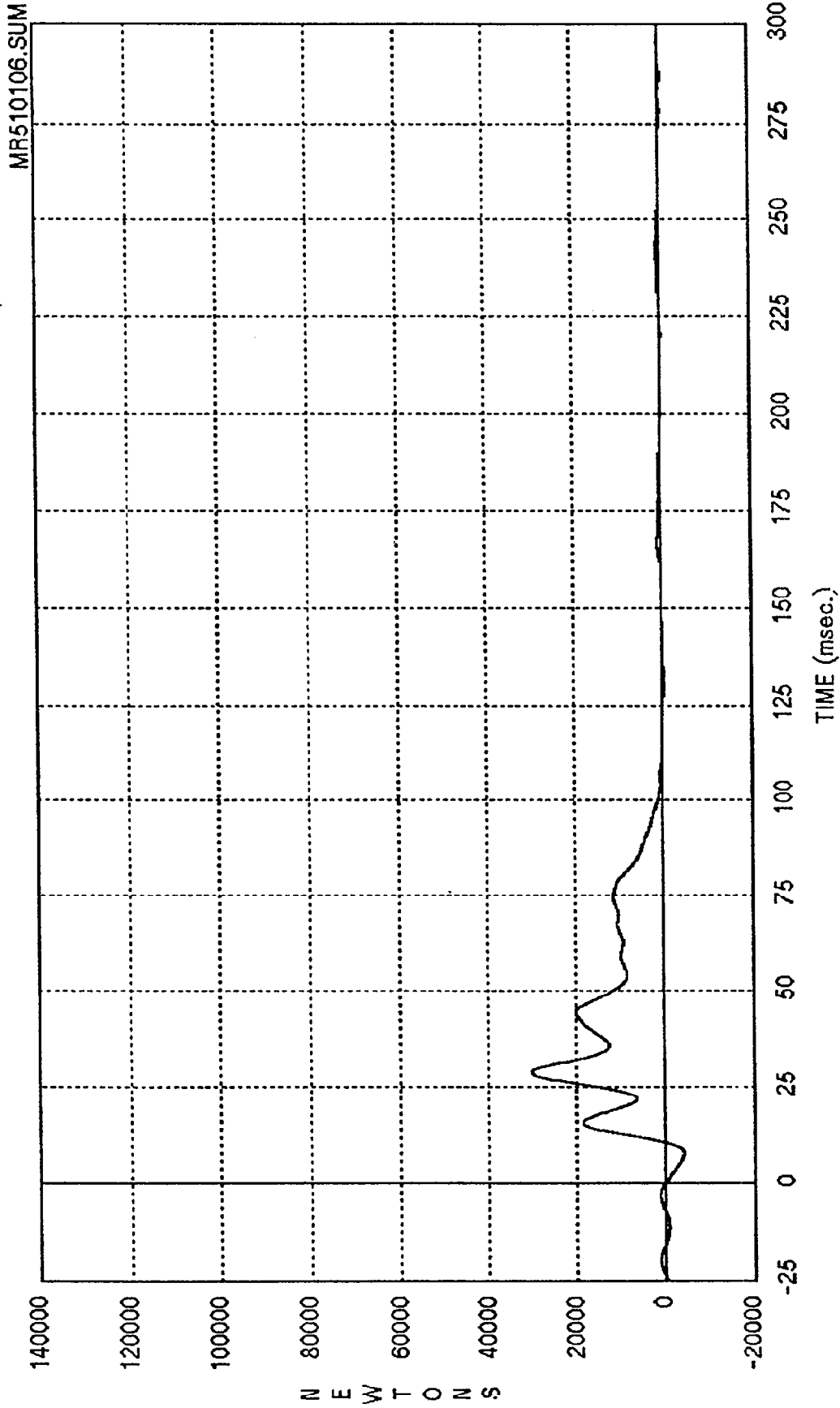
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510105.SUM



Curve: Barrier sum force C4,C5,C6,D4,D5,D6 -- Group 5 Filter: SAE CLASS 60 Max = 38308. Min = -3547.6

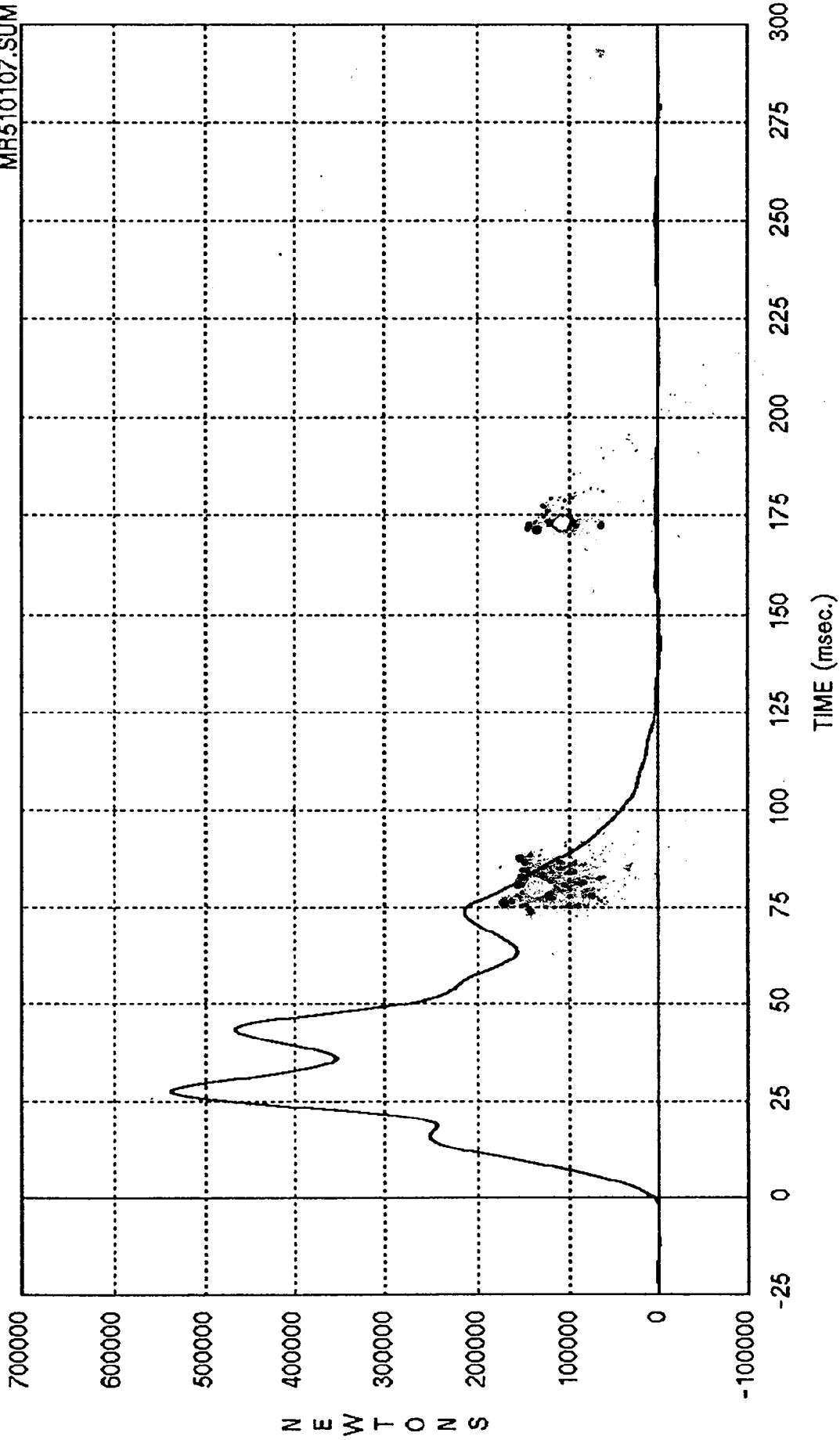
MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla



Curve: Barter sum force C7,C8,C9,D7,D8,D9 -- Group 6 Filter: SAE CLASS 60 Max = 30202. Min = -4183.7

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

MR510107.SUM



Curve: Barrier sum force -- Total Filter: SAE CLASS 60 Max = .53957E+06 Min = -1792.9

MSE Date: 02/05/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Toyota Corolla

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APPENDIX C

PART 572 DUMMY CONFIGURATION AND
PERFORMANCE VERIFICATION TABLES

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HYBRID III ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA ATD I.D. NUMBER: 34

LAB TECHNICIAN: Patrick Puzzuto

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/01/93 to 12/03/93

I. CONFIGURATION VERIFICATION DATA, PRETEST

TESTED PARAMETER	UNIT	SPECIFICATION	TEST RESULTS
A - Location for Chest Circ.	MM	429.3 to 434.3	431.8
B - Location for Waist Circ.	MM	226.1 to 231.1	228.6
Y - Chest Circumference	MM	970.3 to 1000.8	985.5
Z - Waist Circumference	MM	815.3 to 866.1	863.6
O - Chest Depth	MM	213.4 to 228.6	215.9
C - "H" Point Height	MM	83.8 to 88.9	88.9
D - "H" Point from Seat Back	MM	134.6 to 139.7	137.2
H - Skull Cap to Back Line	MM	40.6 to 45.7	43.2
A - Total Sitting Height	MM	878.8 to 889.0	881.4
F - Thigh Clearance	MM	139.7 to 154.9	147.3
K - Buttock to Knee Length	MM	579.1 to 604.5	594.4
N - Buttock Popliteal Length	MM	452.1 to 477.5	475.0
L - Popliteal Length	MM	429.3 to 454.7	431.8
M - Knee Pivot Height	MM	485.1 to 500.4	495.3
P - Foot Length	MM	251.5 to 266.7	259.1
W - Foot Breadth	MM	91.4 to 106.7	106.7
E - Shoulder Pivot from Back	MM	84.0 to 94.0	88.9
V - Shoulder Breadth	MM	421.6 to 436.9	421.6
B - Shoulder Pivot Height	MM	505.5 to 520.7	515.6
J - Elbow Rest Height	MM	190.5 to 210.8	198.1
I - Shoulder to Elbow Length	MM	330.2 to 345.4	332.7
G - Elbow Back to Wrist Pivot	MM	330.2 to 345.4	338.6

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/03/93

HEAD DROP TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Temperature in laboratory	Deg C	20.6 - 22.2	21.7
Humidity in laboratory	%	10 - 70	45
Peak resultant acceleration	G's	225 - 275	239.8
Peak lateral acceleration	G's	15 max	10.9
Is acceleration curve unimodal ?		YES	YES

LAB TECHNICIAN: Patrick J. Puzzuto

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/03/93

THORAX IMPACT TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Temperature in laboratory	Deg C	20.6 - 22.2	21.1
Humidity in laboratory	%	10 - 70	54
Probe speed	MPS	6.58 - 6.83	6.71
Peak deflection	MM	63.5 - 72.6	66.29
Peak resistive force	Kgs	526.6 - 601.6	559.65
Internal hysteresis	%	69 - 89	74.3

LAB TECHNICIAN: P. Puzzuto

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NECK FLEXION TEST

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/01/93

TESTED PARAMETER		UNITS	SPECIFICATION	TEST RESULTS
Lab temperature		Deg C	20.6 - 22.2	21.1
Lab relative humidity		%	10 - 70	35
Pendulum speed		MPS	6.89 - 7.13	6.90
Pendulum deceleration	10 msec	G's	22.50 - 27.50	24.61
	20 msec	G's	17.60 - 22.60	20.12
	30 msec	G's	12.50 - 18.50	15.24
Max decel. above 30 msec		G's	29.00 max	15.18
Deceleration decay time to first cross 5 G's		msec	34.0 - 42.0	38.90
"D" Plane Rotation	Maximum	Deg.	64.0 - 78.0	64.69
	Time	msec	57.0 - 64.0	63.80
Moment About Occipital Condyle	Maximum	Mt.Kgs	9.0 - 11.1	9.14
	Time	msec	47.0 - 58.0	57.80
Rotation angle decay time to cross zero		msec	113.0 - 128.0	123.90
Positive moment decay time to cross zero		msec	97.0 - 107.0	105.90

LAB TECHNICIAN: P. Puzzuto

NECK EXTENSION TEST

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/02/93

TESTED PARAMETER		UNITS	SPECIFICATION	TEST RESULTS
Lab temperature		Deg C	20.6 - 22.2	20.6
Lab relative humidity		%	10 - 70	40
Pendulum speed		MPS	5.94 - 6.19	6.11
Pendulum deceleration	10 msec	G's	17.20 - 21.20	19.64
	20 msec	G's	14.00 - 19.00	17.30
	30 msec	G's	11.00 - 16.00	14.56
Max decel. above 30 msec		G's	22.00 max	14.51
Deceleration decay time to first cross 5 G's		msec	38.0 - 46.0	45.80
"D" Plane	Rotation	Deg.	81.0 - 106.0	94.37
	Time	msec	72.0 - 82.0	74.20
Occipital Condyle	Moment	Mt.Kgs	-8.2 to -5.4	8.01
	Time	msec	65.0 - 79.0	68.90
Rotation angle decay time to cross zero		msec	147.0 - 174.0	159.30
Negative moment decay time to cross zero		msec	120.0 - 148.0	133.30

LAB TECHNICIAN: P. Puzzuto

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/02/93

LEFT KNEE IMPACT TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Lab temperature	Deg C	18.9 - 25.6	22.2
Lab relative humidity	%	10 - 70	27
Probe velocity	MPS	2.07 - 2.13	2.11
Peak impact force (Probe mass x deceleration)	Kgs	481.2- 590.2	545.8

LAB TECHNICIAN: P. Puzzuto

RIGHT KNEE IMPACT TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Lab temperature	Deg C	18.9 - 25.6	22.2
Lab relative humidity	%	10 - 70	27
Probe velocity	MPS	2.07 - 2.13	2.09
Peak impact force (Probe mass x deceleration)	Kgs	481.2 - 590.2	510.3

LAB TECHNICIAN: P. Puzzuto

NHTSA ATD I.D. NUMBER: 35

LAB TECHNICIAN: Patrick Puzzuto

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/01/93 to 12/03/93

I. CONFIGURATION VERIFICATION DATA, PRETEST			
TESTED PARAMETER	UNIT	SPECIFICATION	TEST RESULTS
AA - Location for Chest Circ.	MM	429.3 to 434.3	431.8
BB - Location for Waist Circ.	MM	226.1 to 231.1	228.6
Y - Chest Circumference	MM	970.3 to 1000.8	985.6
Z - Waist Circumference	MM	815.3 to 866.1	863.6
O - Chest Depth	MM	213.4 to 228.6	215.9
C - "H" Point Height	MM	83.8 to 88.9	88.9
D - "H" Point from Seat Back	MM	134.6 to 139.7	137.2
H - Skull Cap to Back Line	MM	40.6 to 45.7	43.2
A - Total Sitting Height	MM	878.8 to 889.0	881.4
F - Thigh Clearance	MM	139.7 to 154.9	147.3
K - Buttock to Knee Length	MM	579.1 to 604.5	594.4
N - Buttock Popliteal Length	MM	452.1 to 477.5	475.0
L - Popliteal Length	MM	429.3 to 454.7	431.8
M - Knee Pivot Height	MM	485.1 to 500.4	495.3
P - Foot Length	MM	251.5 to 266.7	259.1
W - Foot Breadth	MM	91.4 to 106.7	106.7
E - Shoulder Pivot from Back	MM	84.0 to 94.0	88.9
V - Shoulder Breadth	MM	421.6 to 436.9	421.6
B - Shoulder Pivot Height	MM	505.5 to 520.7	515.6
J - Elbow Rest Height	MM	190.5 to 210.8	198.1
I - Shoulder to Elbow Length	MM	330.2 to 345.4	332.7
G - Elbow Back to Wrist Pivot	MM	330.2 to 345.4	338.6

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NHTSA ATD I.D. NUMBER: 35

CALIBRATION SEQUENCE: 01 CALIBRATION DATE: 12/03/93

HEAD DROP TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Temperature in laboratory	Deg C	20.6 - 22.2	21.1
Humidity in laboratory	%	10 - 70	47
Peak resultant acceleration	G's	225 - 275	230.2
Peak lateral acceleration	G's	15 max	4.7
Is acceleration curve unimodal ?		YES	YES

LAB TECHNICIAN: Patrick J. Puzzuto

NHTSA ATD I.D. NUMBER: 35

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/03/93

THORAX IMPACT TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Temperature in laboratory	Deg C	20.6 - 22.2	21.7
Humidity in laboratory	%	10 - 70	49
Probe speed	MPS	6.58 - 6.83	6.67
Peak deflection	MM	63.5 - 72.6	65.28
Peak resistive force	Kgs	526.6 - 601.6	568.32
Internal hysteresis	%	69 - 89	72.9

LAB TECHNICIAN: P. Puzzuto

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NECK FLEXION TEST

NHTSA ATD I.D. NUMBER: 35

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/01/93

TESTED PARAMETER		UNITS	SPECIFICATION	TEST RESULTS
Lab temperature		Deg C	20.6 - 22.2	21.1
Lab relative humidity		%	10 - 70	35
Pendulum speed		MPS	6.89 - 7.13	6.89
Pendulum deceleration	10 msec	G's	22.50 - 27.50	23.28
	20 msec	G's	17.60 - 22.60	19.42
	30 msec	G's	12.50 - 18.50	16.50
Max decel. above 30 msec		G's	29.00 max	16.40
Deceleration decay time to first cross 5 G's		msec	34.0 - 42.0	41.50
"D" Plane Rotation	Maximum	Deg.	64.0 - 78.0	72.28
	Time	msec	57.0 - 64.0	60.00
Moment About Occipital Condyle	Maximum	Mt.Kgs	9.0 - 11.1	10.44
	Time	msec	47.0 - 58.0	55.20
Rotation angle decay time to cross zero		msec	113.0 - 128.0	115.10
Positive moment decay time to cross zero		msec	97.0 - 107.0	99.58

LAB TECHNICIAN: P. Puzzuto

NECK EXTENSION TEST

NHTSA ATD I.D. NUMBER: 35

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/02/93

TESTED PARAMETER		UNITS	SPECIFICATION	TEST RESULTS
Lab temperature		Deg C	20.6 - 22.2	20.6
Lab relative humidity		%	10 - 70	38
Pendulum speed		MPS	5.94 - 6.19	6.18
Pendulum deceleration	10 msec	G's	17.20 - 21.20	20.97
	20 msec	G's	14.00 - 19.00	18.84
	30 msec	G's	11.00 - 16.00	15.82
Max decel. above 30 msec		G's	22.00 max	15.77
Deceleration decay time to first cross 5 G's		msec	38.0 - 46.0	42.40
"D" Plane	Rotation	Deg.	81.0 - 106.0	99.70
	Time	msec	72.0 - 82.0	72.60
Occipital Condyle	Moment	Mt.Kgs	-8.2 to -5.4	8.04
	Time	msec	65.0 - 79.0	65.30
Rotation angle decay time to cross zero		msec	147.0 - 174.0	151.90
Negative moment decay time to cross zero		msec	120.0 - 148.0	123.20

LAB TECHNICIAN: P. Puzzuto

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NHTSA ATD I.D. NUMBER: 35

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/02/93

LEFT KNEE IMPACT TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Lab temperature	Deg C	18.9 - 25.6	22.2
Lab relative humidity	%	10 - 70	27
Probe velocity	MPS	2.07 - 2.13	2.10
Peak impact force (Probe mass x deceleration)	Kgs	481.2- 590.2	557.4

LAB TECHNICIAN: P. Puzzuto

RIGHT KNEE IMPACT TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Lab temperature	Deg C	18.9 - 25.6	22.2
Lab relative humidity	%	10 - 70	27
Probe velocity	MPS	2.07 - 2.13	2.10
Peak impact force (Probe mass x deceleration)	Kgs	481.2 - 590.2	553.7

LAB TECHNICIAN: P. Puzzuto

APPENDIX D

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTION

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Seat belts—

—Seat belt precautions

Toyota recommends that the driver and passengers in the vehicle be properly restrained at all times with the seat belts provided. Failure to do so could increase the chance of injury and/or the severity of injury in accidents.

Baby or small child. Use a child restraint system which fits your vehicle. See "Child restraint" for details.

Child. If a child is too large for a child restraint system, the child should sit in the rear seat and must be restrained using the vehicle's seat belt. According to accident statistics, the child is safer when properly restrained in the rear seat than in the front seat. Do not allow the child to stand up or kneel on the seat. If the shoulder belt falls across the child's neck or face, move the child to the center position and use the center lap belt.

Pregnant woman. Toyota recommends the use of a seat belt. Ask your doctor for specific recommendations. The lap belt should be worn securely and as low as possible over the hips and not on the waist.

Injured person. Toyota recommends the use of a seat belt. Depending on the injury, however, first check with your doctor.

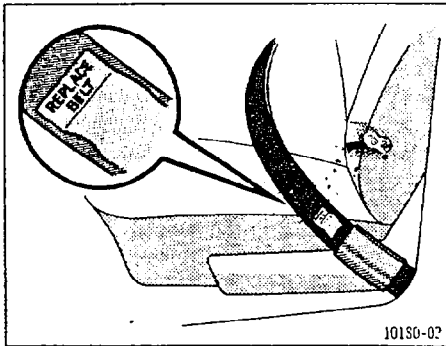
CAUTION:

Persons should ride in their seats properly wearing their seat belts whenever the vehicle is moving. Otherwise, they are much more likely to suffer serious bodily injury in the event of sudden braking or a collision.

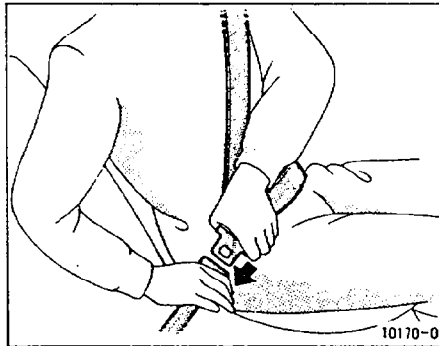
When using the seat belts, observe the following:

- Use the belt ~~for~~ only one person at a time. Do not use a single belt for two or more people—even children.
- Avoid reclining the seatbacks too much. The seat belts provide maximum protection when the seatbacks are in the upright position. (See the seat adjustment instructions.)
- Be careful not to damage the belt webbing or hardware. Take care that they do not get caught or pinched in the seat or doors.
- Inspect the belt system periodically. Check for cuts, fraying, and loose parts. Damaged parts should be replaced. Do not disassemble or modify the system.
- Keep the belts clean and dry. If need cleaning, use a mild soap solution or lukewarm water. Never use bleach, dye, or abrasive cleaners—they may severely weaken the belt.
- Replace the belt assembly if it has been used in a severe impact. The entire assembly should be replaced even if damage is not obvious.

— Front seat belts and rear outside seat belts



- Replace the front seat belt if the warning label under the sleeve can be seen. The warning label, "REPLACE BELT", will appear if the belt receives a severe impact or other force.



Adjust the seat as needed (front seat only) and sit up straight and well back in the seat. To fasten your belt, pull it out of the retractor and insert the tab into the buckle.

You will hear a click when the tab locks into the buckle.

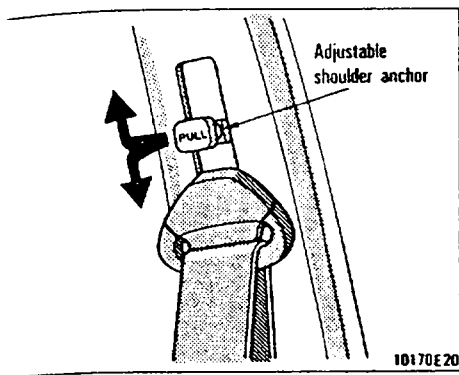
The seat belt length automatically adjusts to your size and the seat position.

The retractor will lock the belt during a sudden stop or on impact. It also may lock if you lean forward too quickly. A slow, easy motion will allow the belt to extend, and you can move around freely.

If the seat belt cannot be pulled out of the retractor, firmly pull the belt and release it. You will then be able to smoothly pull the belt out of the retractor.

When a passenger's shoulder belt is completely extended and is then retracted slightly, the belt is locked in that position and cannot be extended. This feature is used to hold the child restraint system securely. For details, see "Child restraint" in this chapter. To free the belt again, fully retract the belt and then pull the belt out once more.

CAUTION: After inserting the tab, make sure the connection is secure and that the belt is not twisted.

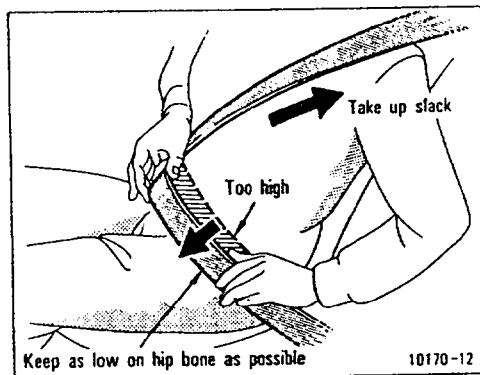


Seat belts with an adjustable shoulder anchor—

Adjust the shoulder anchor position to your size.

To adjust the anchor position, pull the knob out and slide it up or down. Release the knob and make sure the anchor is locked in position.

CAUTION: Always be sure that the belt is positioned across your shoulder, as close to your neck as possible; not on your upper arm or neck. Failure to do so could reduce the amount of protection in an accident and increase the chance of injury.

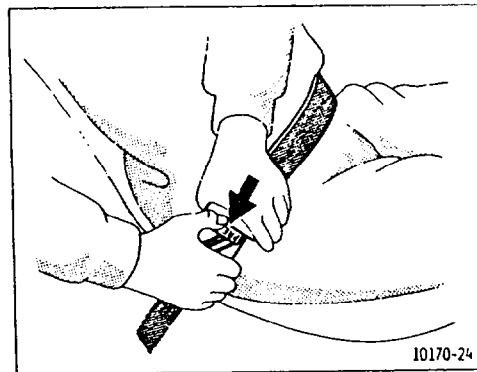


Adjust the position of the lap and shoulder belts.

Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit by pulling the shoulder portion upward through the latch plate.

CAUTION:

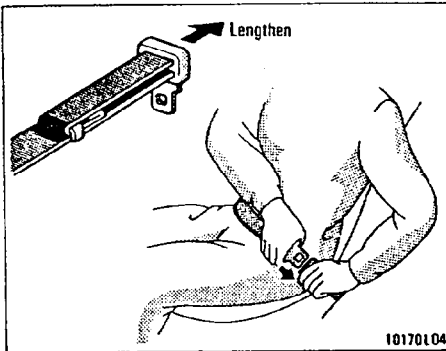
- High-positioned lap belts and loose-fitting shoulder belts both could increase the chance of injury due to sliding under the lap belt during an accident.
- For your safety, do not place the shoulder belt under your arm.



To release the belt, press the buckle-release button and allow the belt to retract.

If the belt does not retract smoothly, pull it out and check for kinks or twists. Then make sure it remains untwisted as it retracts.

—Rear center seat belt

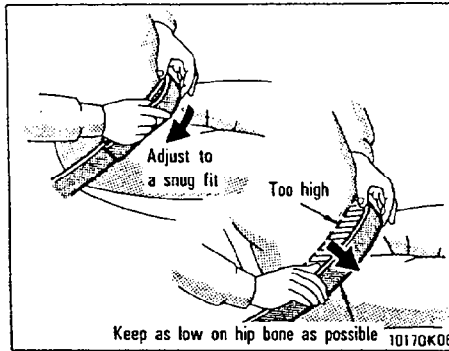


Sit up straight and well back in the seat. To fasten your belt, insert the tab into the buckle.

You will hear a click when the tab locks into the buckle.

If the belt is not long enough for you, hold the tab at a right angle to the belt and pull on the tab.

CAUTION: After inserting the tab, make sure the connection is secure and that the belt is not twisted.

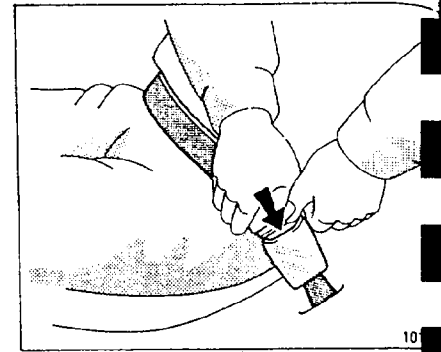


Remove excess length of the belt and adjust the belt position.

To shorten the belt, pull the free end of the belt.

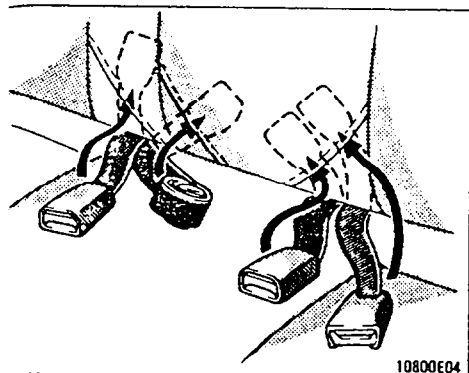
Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit.

CAUTION: High-positioned lap belt could increase the chance of injury due to sliding under the lap belt during an accident.



To release the belt, press the buckle-release button.

- Stowing the rear center seat belts (wagon)



the rear seat belts can be stowed when not in use.

Seat belts must be stowed before you fold the seatback. (See "Fold-down rear seat" in this chapter.)

- Seat belt extender

If your seat belt cannot be fastened securely because it is not long enough, a personalized seat belt extender is available from your Toyota dealer free of charge.

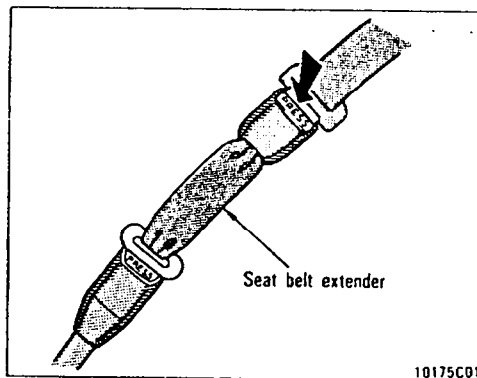
Please contact your local Toyota dealer so that the dealer can order the proper required length for the extender. Bring the heaviest coat you expect to wear for proper measurement and selection of length. Additional ordering information is available at your Toyota dealer.

CAUTION:

When using the seat belt extender, observe the following. Failure to follow these instructions could result in less effectiveness of the seat belt restraint system in case of vehicle accident, increasing the chance of personal injury.

- Never use the seat belt extender if you can fasten the seat belt without it.
- Remember that the extender provided for you may not be safe when used on a different vehicle, or for another person and at different seating position than the one originally intended for.

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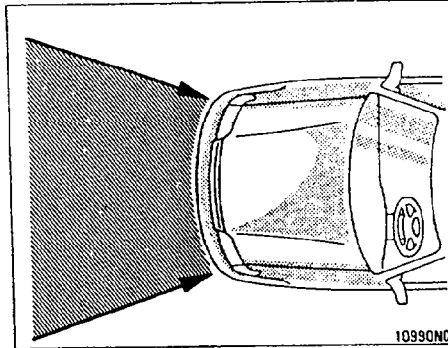
To connect the extender to the seat belt, insert the tab into the seat belt buckle so that the "PRESS" signs on the buckle-release buttons of the extender and the seat belt are both facing outward as shown.

You will hear a click when the tab locks into the buckle.

When releasing the seat belt, press on the buckle-release button on the extender, not on the seat belt. This helps prevent damage to the vehicle interior and extender itself.

When not in use, remove the extender and store in the vehicle for future use.

SRS airbags (for driver and front passenger)



CAUTION:

After inserting the tab, make sure the connection is secure and that the seat belt extender is not twisted.

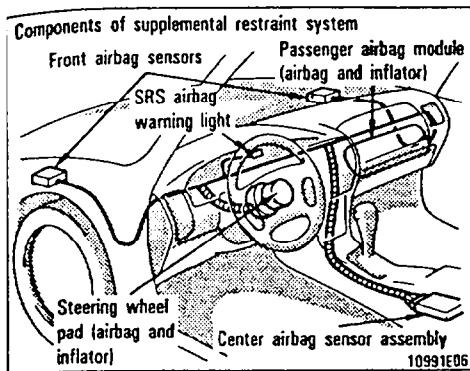
The SRS (Supplemental Restraint System) airbags are designed to be activated in response to a severe frontal impact within the shaded area between the arrows in the illustration, and to provide the driver and front passenger with further protection in addition to the protection provided by the seat belts.

The SRS airbag system is not designed to protect the driver and front passenger from an impact from the side or rear, a vehicle overturn or frontal collision at low speeds.

For instructions and precautions concerning the seat belt system, see "Seat belts".

CAUTION:

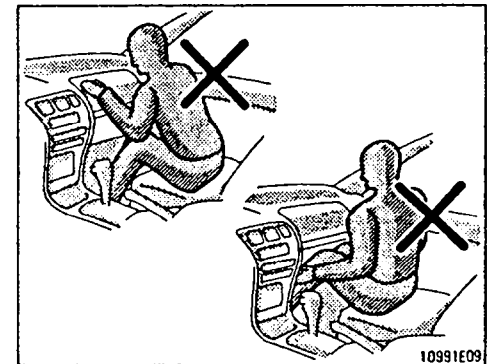
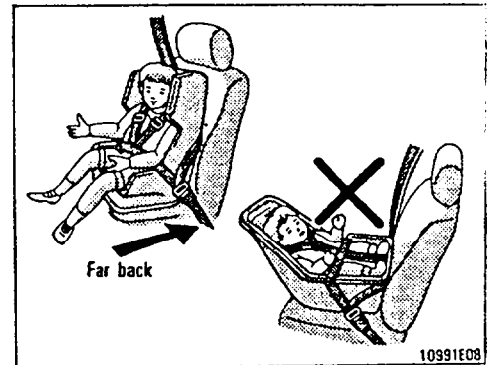
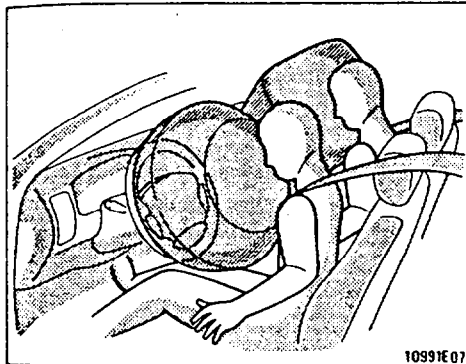
- The SRS airbag system is designed only as a supplement to the seat belt system of the driver and front passenger. The front seat occupants are particularly susceptible to injury if they do not wear their seat belts, when braking or a collision occurs, they can be thrown forward. To obtain maximum protection in an accident, the driver and all passengers in the vehicle should always wear their seat belts when driving.
- A baby or small child who is too small to use a seat belt should be properly secured in a rear seat using a child restraint system.

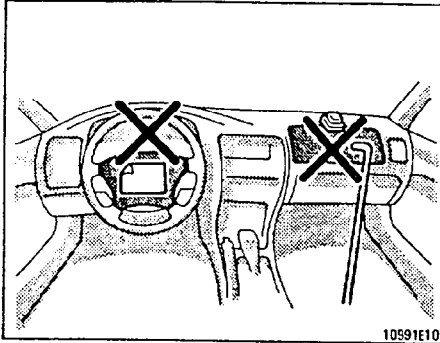


The center airbag sensor assembly consists of a safing sensor and center airbag sensor. In the event of a severe frontal impact, a front airbag sensor and safing sensor, or center airbag sensor and safing sensor detect the shock, the center airbag sensor assembly triggers the inflators, and the inflators fill the airbags to help restrain forward motion of the occupants.

When the SRS airbags inflate, an operating noise will be heard and a small amount of smoke-like gas will be released. This gas is harmless and does not indicate that a fire is occurring.

In response to a severe frontal impact, the airbags inflate and reduce the likelihood of the driver and front passenger's heads from directly hitting the steering wheel or instrument panel. The passenger's airbag is activated together with the driver's airbag, even with no passenger sitting in the front seat.





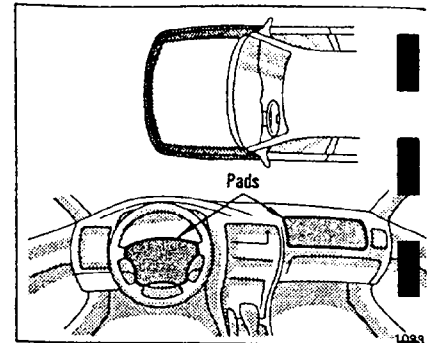
CAUTION:

- Do not use a rear-facing child restraint system in the front seat because the force of the rapid inflation of the passenger's airbag may cause severe injury to the child. When using a forward-facing child restraint system in the front seat, the seat must be moved as far back as possible. For instructions concerning the installation of a child restraint system, see "Child restraint" in this chapter.

- Do not sit on the edge of the seat or lean over the instrument panel when the vehicle is in use. The airbags inflate with considerable speed and force; you may be severely injured. Sit up straight and well back in the seat, and always use the seat belts.
- Do not put objects on or in front of the instrument panel that houses the airbag system. They might restrict inflation or cause personal injury.
- Do not modify or remove any component or wiring, such as the steering wheel, column cover, front passenger's airbag cover, front passenger's airbag, center airbag sensor assembly or front airbag sensors. Doing any of these may cause sudden SRS airbag inflation or disable the system, which could result in personal injury.

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NOTICE:

Do not perform any of the following changes without prior approval from Toyota dealers. Repairs or service of this kind can interfere with proper operation of the SRS airbag system in some cases.



- ◆ Installation of electronic items such as a mobile two-way radio, cassette tape player or Compact Disc player.
- ◆ Modifications to the suspension system.
- ◆ Repairs made on or near the front fender, rear console, steering column, steering wheel or instrument panel near the passenger's airbag.

In the following cases, contact your Toyota dealer as soon as possible:

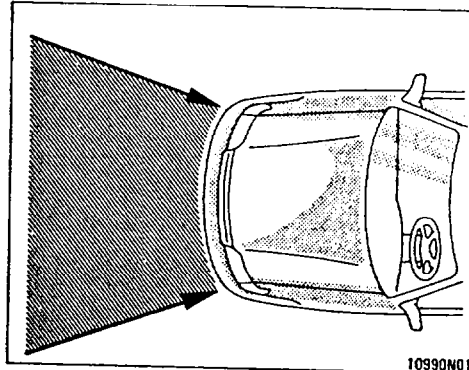
- The SRS airbag system malfunctioned. This SRS airbag system has a warning light to indicate operating problems. See "Service reminder indicators and warning buzzers" in Chapter 1-5.

- The SRS airbags have been inflated.
- The front part of the vehicle (shown in the illustration) was involved in an accident which was not of the extent to cause the SRS airbags to inflate.
- The pad section of the steering wheel or front passenger airbag cover (shown in the illustration) is scratched, cracked, or otherwise damaged.

NOTICE:

Do not disconnect the battery cables before contacting your Toyota dealer.

SRS airbag (for driver)

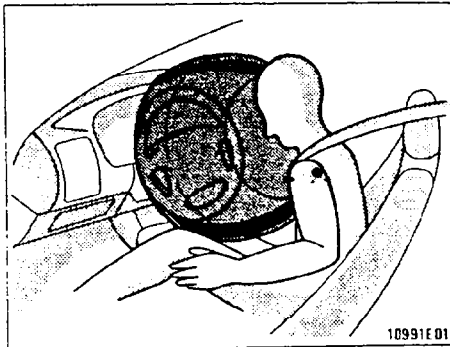
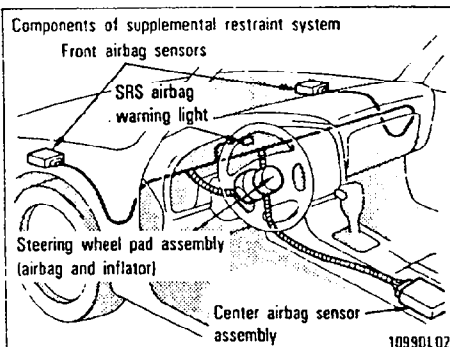


The SRS (Supplemental Restraint System) airbag is designed to be activated in response to a severe frontal impact within the shaded area between the arrows in the illustration, and to provide the driver with further protection in addition to the protection provided by the driver's seat belt.

The SRS airbag system is not designed to protect the driver from an impact from the side or rear, a vehicle overturn or frontal collision at low speeds.

For instructions and precautions concerning the seat belt system, see "Seat belts".

CAUTION: The SRS airbag system is designed only as a supplement to the driver's seat belt system. To obtain further protection in an accident, the driver and all passengers in the vehicle should always wear their seat belts when driving.



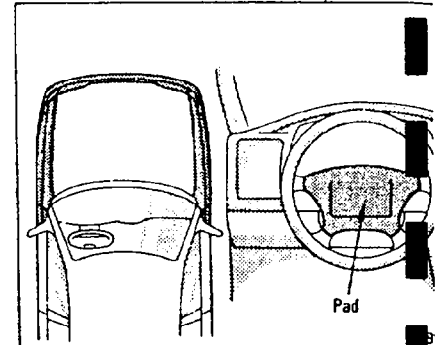
The center airbag sensor assembly consists of a safing sensor and center airbag sensor. In the event of a severe frontal impact, a front airbag sensor and safing sensor, or center airbag sensor and safing sensor detect the shock, the center airbag sensor assembly triggers the inflator, and the inflator fills the airbag to help restrain the driver's forward motion.

When the SRS airbag inflates, an operating noise will be heard and a small amount of smoke-like gas will be released. This gas is harmless and does not indicate that a fire is occurring.

CAUTION: Do not modify or remove any component or wiring, such as the steering wheel, column cover, center airbag sensor assembly or front airbag sensors. Doing any of these may cause sudden SRS airbag inflation or disable the system, which could result in personal injury.

NOTICE:

Do not perform any of the following changes without prior approval from Toyota dealers. Repairs or service of this kind can interfere with proper operation of the SRS airbag system in some cases.



- ◆ Installation of electronic items such as a mobile two-way radio or cassette tape player.
- ◆ Modifications to the suspension system.
- ◆ Repairs made on or near the front fender, front and rear console, steering column, or steering wheel.

In the following cases, contact your Toyota dealer as soon as possible:

- The SRS airbag system malfunction indicator lamp (MIL) is on. This SRS airbag system has a service reminder indicator to indicate operational problems. See "Service reminder indicators and warning buzzers" in Chapter 1.
- The SRS airbag has been inflated.

The front part of the vehicle (shown in the illustration) was involved in an accident which was not of the extent to cause the SRS airbag to inflate.

The pad section of the steering wheel (shown in the illustration) is scratched, cracked, or otherwise damaged.

NOTICE:

Do not disconnect the battery cables before contacting your Toyota dealer.

Child restraint—

—Child restraint precautions

Toyota strongly urges the use of child restraint systems for children small enough to use it.

The laws of all fifty states in the U.S.A. and Canada now require the use of a child restraint system.

CAUTION:

For effective protection in automobile accidents and sudden stops, children must be properly restrained. Holding a child in your arms is not a substitute for a child restraint system. In an accident, the child can be crushed against the windshield, or between you and the vehicle's interior if you are unrestrained.

.....

—Child restraint system

A child restraint system for a small child or baby must itself be restrained on the seat with either the lap belt or the lap portion of the lap/shoulder belt.

The child restraint system should conform to the size of the child and properly fit the vehicle seat. For greater safety, the child restraint system should be installed in the rear seat. According to accident statistics, children are safer when properly restrained in the rear seat than in the front seat.

When installing a child restraint system, follow the instructions provided by the manufacturer or the system. General directions are also provided under the following illustrations.

CAUTION:

After installation, make sure it is secured in place. If it is not restrained securely, it may cause injury to the child in the event of a sudden stop or accident.

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When not using the child restraint system, keep it secured with the seat belt or place it somewhere other than in the vehicle. This will prevent it injuring passengers in the event of a sudden stop or accident.

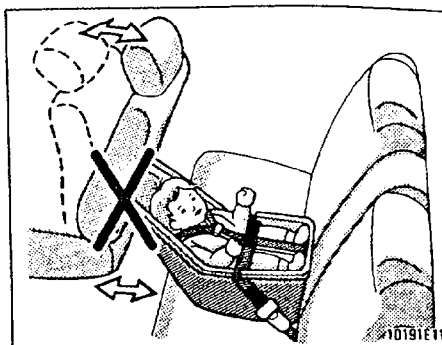
Your vehicle has anchors for securing the top strap of a child restraint system. The anchor nuts are welded beneath the sheet metal to permit installation of an anchor bracket for a child restraint system.

To install an anchor bracket, use an 8 mm x 30 mm x 1.25 mm coarse thread metric bolt and 10 mm (0.4 in.) spacer. Note that the bolts accompanying many child restraint systems are not metric. You can damage the anchor nuts on your vehicle if you force bolts with different thread into the anchor nuts.

For instructions about how to install the anchor bracket, see "(C) TOP STRAP ANCHORS AND LOCATIONS".

If your child restraint system does not provide any of the necessary parts, you can purchase the following items from your Toyota dealer.

- * CRS installation kit
(Part No. 04731-22012)
—contains 1 bolt, 3 types of spacers and 1 locking clip.
- * Bolt (Part No. 91511-60830)

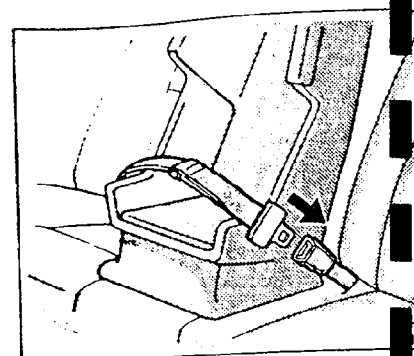


(A) INSTALLATION ON REAR SEAT CENTER

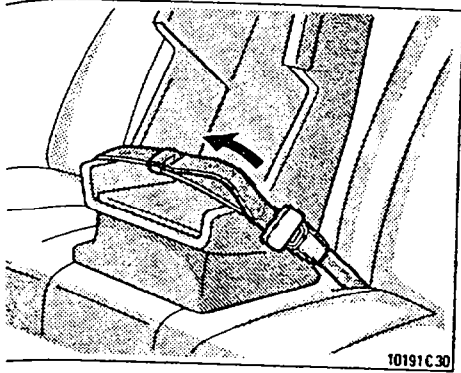
When installing a rear-facing child restraint system, follow the same procedure to install a forward-facing child restraint system.

CAUTION:

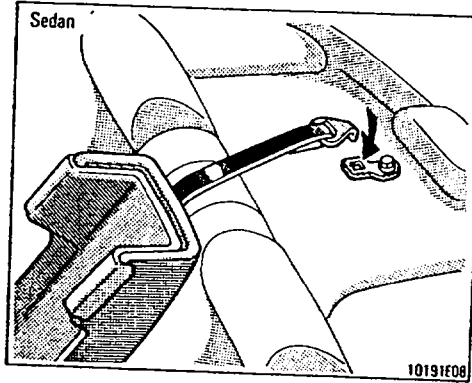
Do not use a rear-facing child restraint system in the rear seat if it interferes with the lock mechanism of the front seats. This may cause severe injury to the child and front passenger in case of sudden braking or a collision.



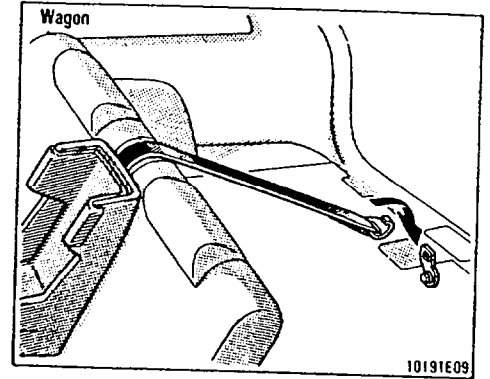
1. Fasten the center lap belt over the child restraint system following the instructions provided by its manufacturer.

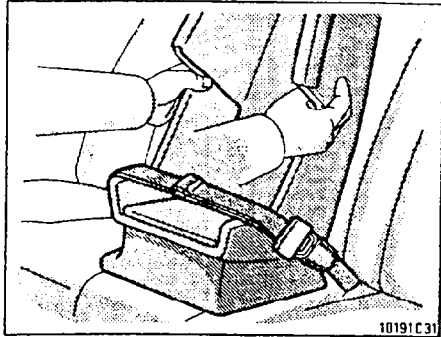


Make sure the belt is tight by pulling its free end while you firmly push down the child restraint system.

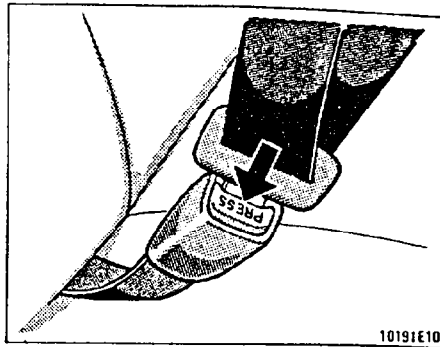


3. If your child restraint system requires the use of a top strap, latch the hook onto the anchor bracket and tighten the top strap.

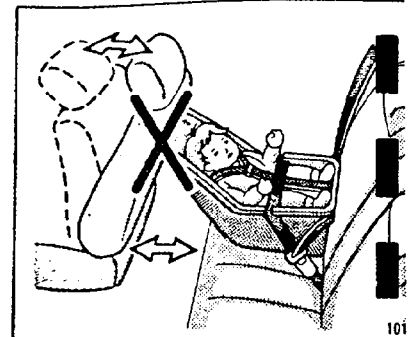




CAUTION: Push and pull the child restraint system in different directions to be sure it is secure.



4. To remove the child restraint system, press the buckle-release button and unhook the top strap.

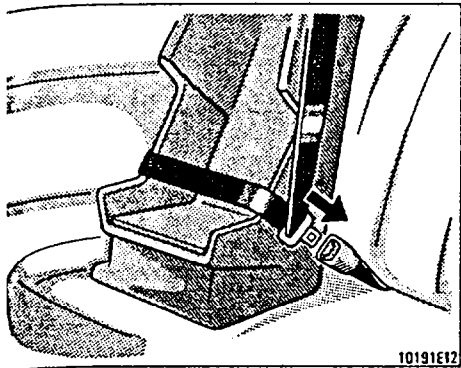


(B) INSTALLATION ON REAR SEAT SIDE

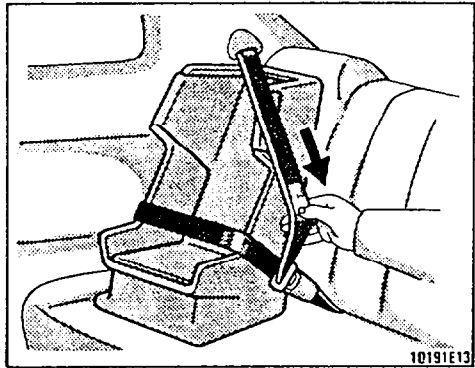
When installing a rear-facing child restraint system, follow the same procedure for a forward-facing child restraint system.

CAUTION:

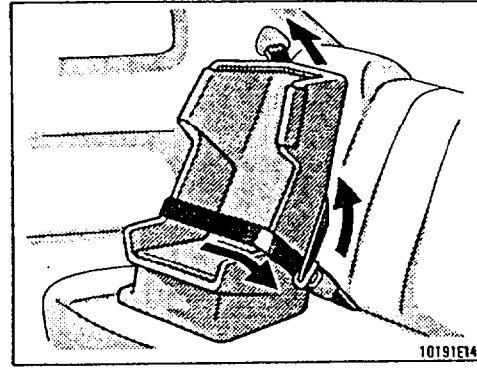
Do not use a rear-facing child restraint system in the rear seat if it interferes with the lock mechanism of the front seat. This may cause severe injury to the driver and front passenger in case of braking or a collision.



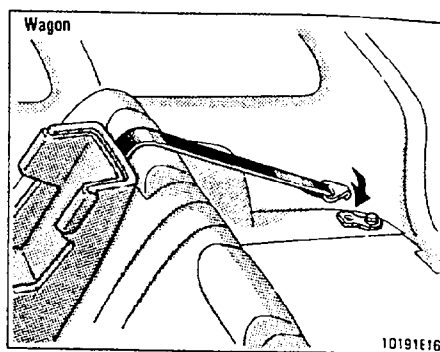
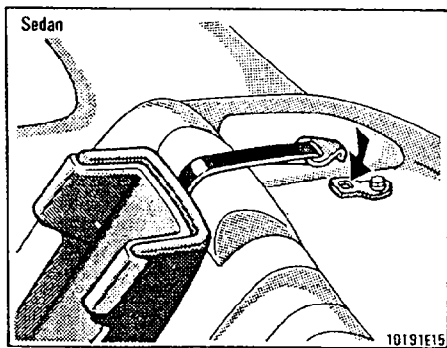
1. Fasten the lap and shoulder belt over the child restraint system following the instruction provided by its manufacturer. Keep the lap portion of the belt tight.



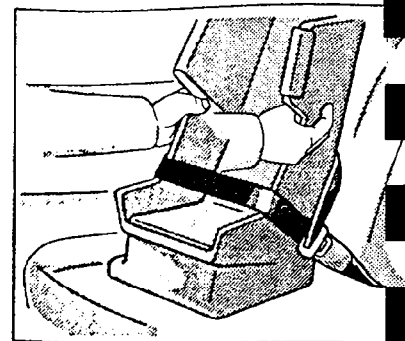
2. Fully extend the shoulder belt to put it in the lock mode.



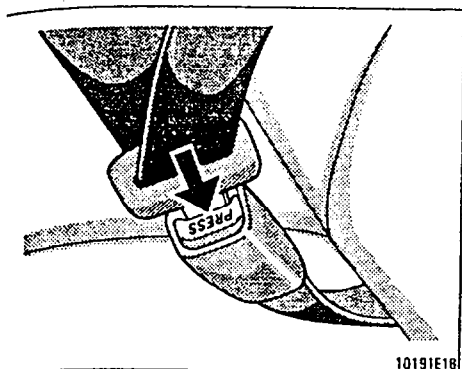
3. Place the shoulder belt between the vehicle seatback and the child restraint system and allow it to retract. To hold the child restraint system securely, let the shoulder belt retract as far as it will go while firmly pushing down the child restraint system.



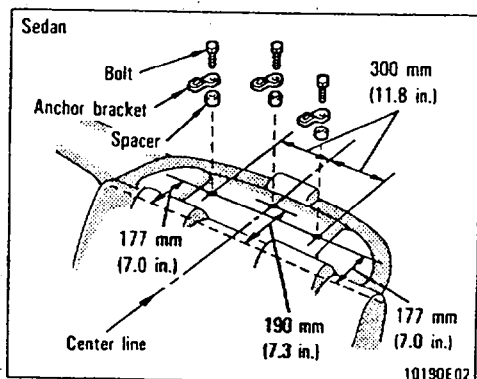
4. If your child restraint system requires the use of a top strap, latch the hook onto the anchor bracket and tighten the top strap.



CAUTION: Make sure the seat belt is locked and that the child restraint system is secure by pushing and pulling it in different direction.



To remove the child restraint system, press the buckle-release button and allow the seat to retract. Unhook the top strap.



(C) TOP STRAP ANCHORS AND LOCATIONS

Sedan —On the filler panel behind the rear seat

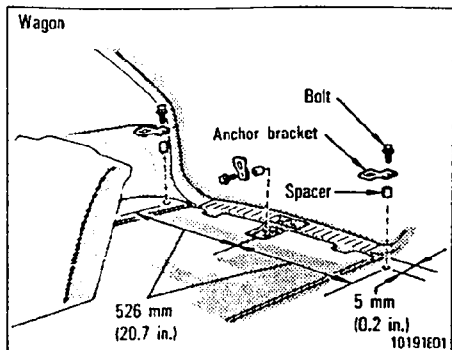
With filler panel trim—

- Using the illustration as a guide, run your fingers across the trim of the filler panel itself to locate the position of the holes underneath.
- Make a hole in the covering directly above the hole in the filler panel.
- Insert a 10 mm (0.4 in.) spacer and tighten down the anchor bracket for your child restraint system with a bolt. Torque the bolt to 16.5–24.7 N.m (1.68–2.52 kgf.m, 12.2–18.2 ft.lb.).

Without filler panel trim—

- Remove the cap on the filler panel you wish to use.
- Insert a 10 mm (0.4 in.) spacer and tighten down the anchor bracket for your child restraint system with a bolt. Torque the bolt to 16.5–24.7 N.m (1.68–2.52 kgf.m, 12.2–18.2 ft.lb.).

To comply with Canada Motor Vehicle Safety Standards, vehicles sold in Canada are provided with a bracket set in the glove-box, designed for use with any of the 3 anchor locations shown in the illustration.



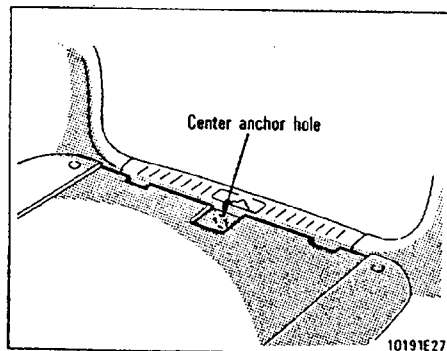
Wagon —On the rear cargo floor

a. Roll up the covering on the rear cargo floor.

Center anchor hole only—The center anchor hole is plugged. Cut out the rear deck trim along the dotted line.

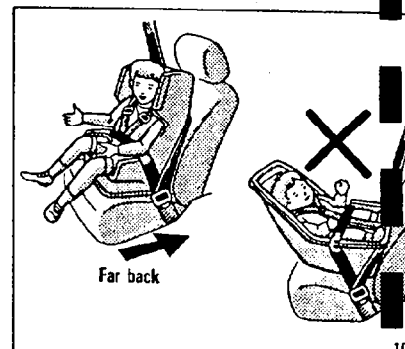
b. Insert a 10 mm (0.4 in.) spacer and tighten down the anchor bracket for your child restraint system with a bolt. Torque the bolt to 16.5–24.7 N.m (1.68–2.52 kgf.m, 12.2–18.2 ft.lb.).

c. Cut a small hole in the floor covering to allow the anchor bracket to come through and then reinstall the floor covering.



To comply with Canada Motor Vehicle Safety Standards, vehicles sold in Canada are provided with a bracket set in the glove-box, designed for use with any of the 3 anchor locations shown in the illustration.

If you remove the anchor brackets when the child restraint system is necessary no longer, replace the bolts in the holes to prevent entry of exhaust emissions, water or dirt.



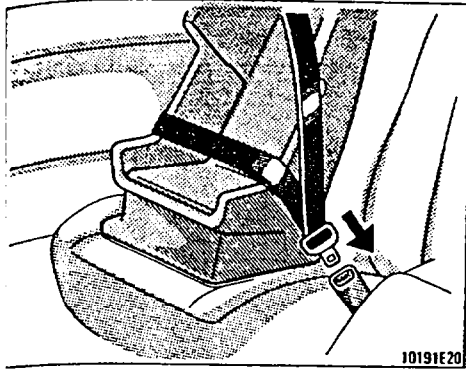
(D) INSTALLATION ON FRONT SEAT

—Vehicles with front passenger airbag

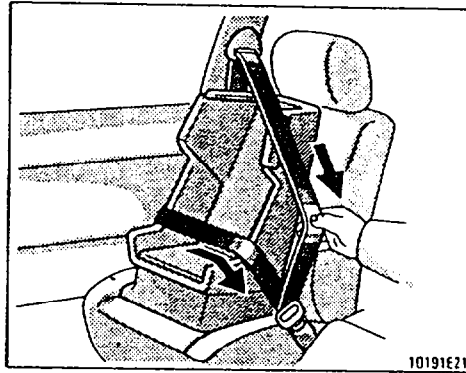
CAUTION:

Do not use a rear-facing child restraint system in the front seat because the force of the rapid inflation of the passenger airbag may cause severe injury to child. When using a forward-facing restraint system, move the seat back as possible.

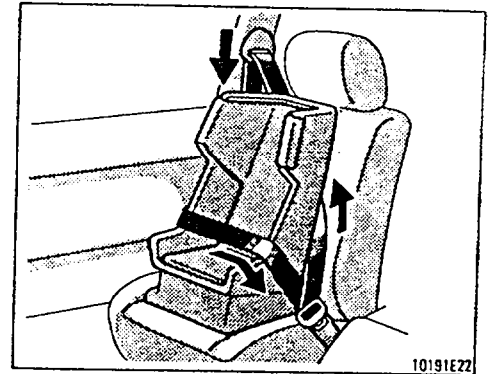
.....



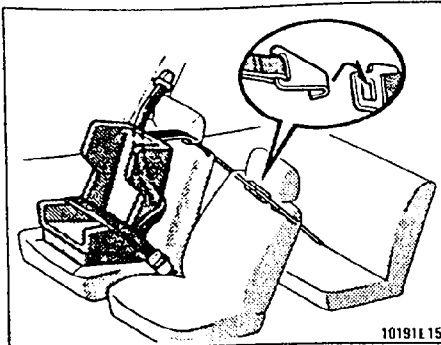
1. Fasten the lap and shoulder belt over the child restraint system following the instruction provided by its manufacturer. Keep the lap portion of the belt tight.



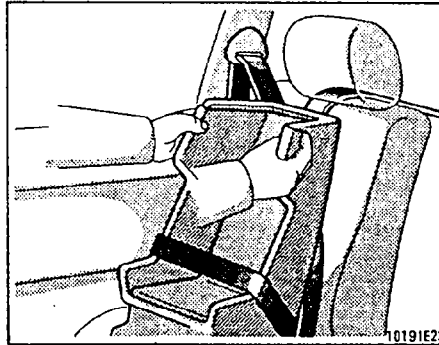
2. Fully extend the shoulder belt to put in the lock mode.



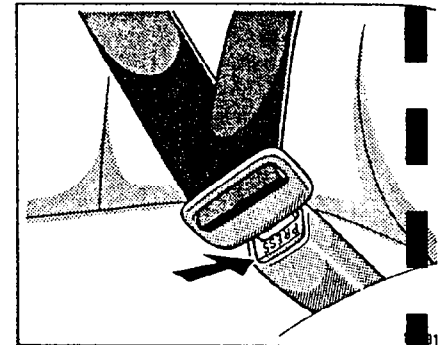
3. Place the shoulder belt between the vehicle seatback and the child restraint system and allow it to retract. To hold the child restraint system securely, let the shoulder belt retract as far as it will go while firmly pushing down the child restraint system.



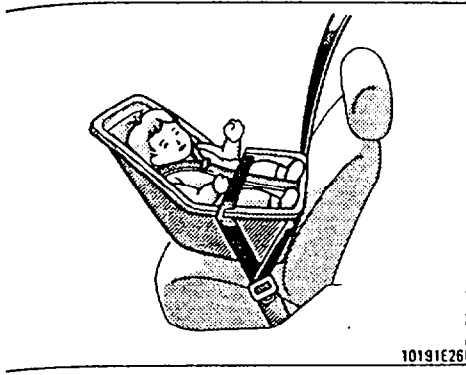
4. If your child restraint system requires the use of a top strap, latch the hook onto the tab of the rear center belt and tighten the top strap.



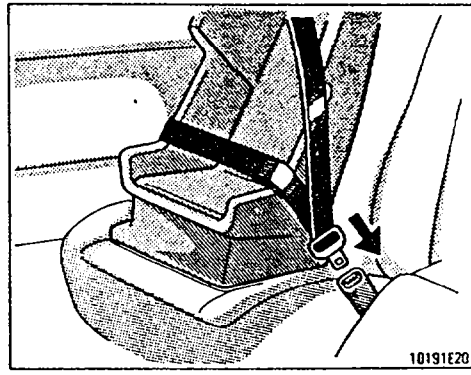
CAUTION: Make sure the seat belt is securely locked and that the child restraint system is secure by pushing and pulling it in different direction.



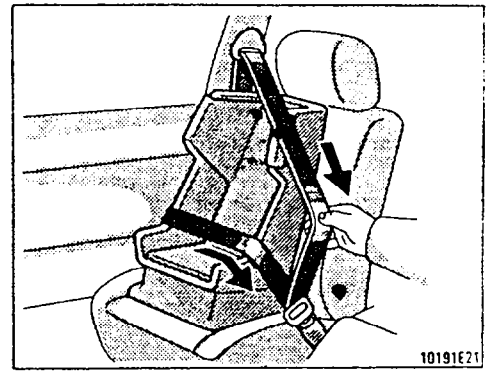
5. To remove the child restraint system, press the buckle-release button and allow the belt to retract. Unhook the top strap.



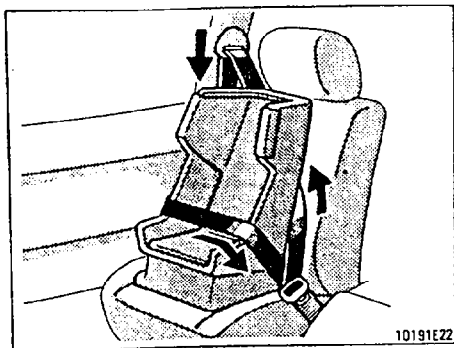
-Vehicles without front passenger airbag
When installing a rear-facing child restraint system, follow the same procedure to install forward-facing child restraint system.



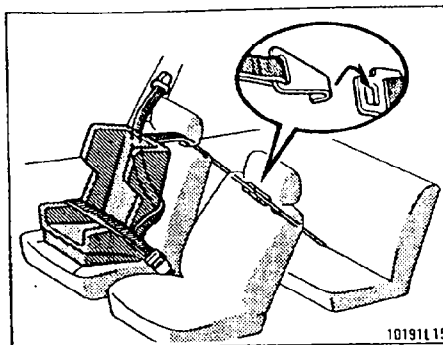
1. Fasten the lap and shoulder belt over the child restraint system following the instruction provided by its manufacturer. Keep the lap portion of the belt tight.



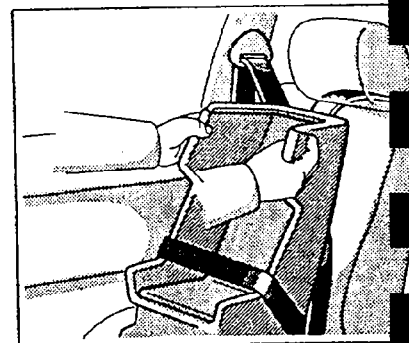
2. Fully extend the shoulder belt to put it in the lock mode.



3. Place the shoulder belt between the vehicle seatback and the child restraint system and allow it to retract. To hold the child restraint system securely, let the shoulder belt retract as far as it will go while firmly pushing down the child restraint system.



4. If your child restraint system requires the use of a top strap, latch the hook onto the tab of the rear center belt and tighten the top strap.



CAUTION: Make sure the seat belt is locked and that the child restraint is secure by pushing and pulling it in different direction.

APPENDIX E

INSTRUMENTATION AND CALIBRATION DATA

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DRIVER ATD SN 34

CH#	TYP	LOCATION/AXIS	MAKE	MODEL/SERIAL No	CAL DATE
01	AC	HEAD C.G. X	ENDEVCO	7264-2000/ACC59	11/01/93
02	AC	HEAD C.G. Y	ENDEVCO	7264-2000/ACCD1	11/01/93
03	AC	HEAD C.G. Z	ENDEVCO	7264-2000/ACC62	11/01/93
04	AC	CHEST X	ENDEVCO	7264-2000/ACC65	11/01/93
05	AC	CHEST Y	ENDEVCO	7264-2000/ACC66	11/01/93
06	AC	CHEST Z	ENDEVCO	7264-2000/ACC67	11/01/93
07	LC	NECK FORCE X	R.A. DENTON	1716A/0400FX	11/02/92
08	LC	NECK FORCE Y	R.A. DENTON	1716A/0440FY	11/02/92
09	LC	NECK FORCE Z	R.A. DENTON	1716A/0440FZ	11/02/92
10	LC	NECK MOMENT X	R.A. DENTON	1716A/0440MX	11/02/92
11	LC	NECK MOMENT Y	R.A. DENTON	1716A/0440MY	11/02/92
12	LC	NECK MOMENT Z	R.A. DENTON	1716A/0440MZ	11/02/92
13	LC	LEFT FEMUR X	R.A. DENTON	2121A/0255	11/09/93
14	LC	RIGHT FEMUR X	R.A. DENTON	2121A/0256	11/09/93
15	DS	CHEST DISP. X	SERVO	14CBI-2897/9241	12/02/93
16	LC	LAP BELT OT	LEBOW	3371/330	11/09/93
17	LC	SHOULDER BELT OT	LEBOW	3371/308	11/09/93
18	DS	BELT ELONG. OT	ETI	LPC 12A-12/001	02/02/94
19	DS	BELT PULLOUT OT	MSE	701-36/113	02/02/94

INSTRUMENTATION AND CALIBRATION DATA

PASSENGER ATD SN 35

CH#	TYP	LOCATION/AXIS	MAKE	MODEL/SERIAL No	CAL DATE
20	AC	HEAD C.G. X	ENDEVCO	7264-2000/ACC63	11/01/93
21	AC	HEAD C.G. Y	ENDEVCO	7264-2000/ACCC9	11/01/93
22	AC	HEAD C.G. Z	ENDEVCO	7264-2000/ACCY2	11/01/93
23	AC	CHEST X	ENDEVCO	7264-2000/ACCF3	11/01/93
24	AC	CHEST Y	ENDEVCO	7264-2000/ACC02	11/01/93
25	AC	CHEST Z	ENDEVCO	7264-2000/ACC67	11/01/93
26	LC	NECK FORCE X	R.A. DENTON	1716A/0400FX	11/02/93
27	LC	NECK FORCE Y	R.A. DENTON	1716A/0440FY	11/02/93
28	LC	NECK FORCE Z	R.A. DENTON	1716A/0440FZ	11/02/93
29	LC	NECK MOMENT X	R.A. DENTON	1716A/0440MX	11/02/93
30	LC	NECK MOMENT Y	R.A. DENTON	1716A/0440MY	11/02/93
31	LC	NECK MOMENT Z	R.A. DENTON	1716A/0440MZ	11/02/93
32	LC	LEFT FEMUR X	R.A. DENTON	2121A/0263	11/09/93
33	LC	RIGHT FEMUR X	R.A. DENTON	2121A/0264	11/09/93
34	DS	CHEST DISP. X	SERVO	14CBI-2897/9242	12/02/93
35	LC	LAP BELT OT	LEBOW	3371/333	11/09/93
36	LC	SHOULDER BELT OT	LEBOW	3371/327	11/09/93
37	DS	BELT ELONG. OT	ETI	LCP-12A-12/002	02/02/94
38	DS	BELT PULLOUT OT	CELESCO	PT0620	02/05/94

VEHICLE

CH#	TYP	LOCATION/AXIS	MAKE	MODEL/SERIAL No	CAL DATE
39	AC	Lt. Fr. Caliper X	I. C. Sensor	3031-200/23-200	11/02/93
40	AC	Rt. Fr. Caliper X	I. C. Sensor	3031-200/34-200	11/02/93
41	AC	Engine Bottom X	I. C. Sensor	3031-200/21-200	11/02/93
42	AC	Engine Top X	I. C. Sensor	3031-200/29-200	11/02/93
43	AC	Instr. Panel X	I. C. Sensor	3031-200/27-200	11/02/93
44	AC	LfRr X-mbr Pri X	I. C. Sensor	3031-200/25-200	11/02/93
45	AC	RtRr X-mbr Pri X	I. C. Sensor	3031-200/26-200	11/02/93
46	AC	LfRr X-mbr Sec X	I. C. Sensor	3031-200/28-200	11/02/93
47	AC	RtRr X-mbr Sec X	I. C. Sensor	3031-200/26-200	11/02/93

INSTRUMENTATION AND CALIBRATION DATA

LOAD CELL BARRIER

CH#	TYP	LOCATION/AXIS	MAKE	MODEL/SERIAL No	CAL DATE
01	LC	A1 XG	Interface	1220-F3/19349	05/14/85
02	LC	A2 XG	Interface	1220-F3/19349	05/14/85
03	LC	A3 XG	Interface	1220-F3/19349	05/14/85
04	LC	A4 XG	Interface	1220-F3/19349	05/14/85
05	LC	A5 XG	Interface	1220-F3/19349	05/14/85
06	LC	A6 XG	Interface	1220-F3/19349	05/14/85
07	LC	A7 XG	Interface	1220-F3/19349	05/14/85
08	LC	A8 XG	Interface	1220-F3/19349	05/14/85
09	LC	A9 XG	Interface	1220-F3/19349	05/14/85
10	LC	B1 XG	Interface	1220-F3/19349	05/14/85
11	LC	B2 XG	Interface	1220-F3/19349	05/14/85
12	LC	B3 XG	Interface	1220-F3/19349	05/14/85
13	LC	B4 XG	Interface	1220-F3/19349	05/14/85
14	LC	B5 XG	Interface	1220-F3/19349	05/14/85
15	LC	B6 XG	Interface	1220-F3/19349	05/14/85
16	LC	B7 XG	Interface	1220-F3/19349	05/14/85
17	LC	B8 XG	Interface	1220-F3/19349	05/14/85
18	LC	B9 XG	Interface	1220-F3/19349	05/14/85

LOAD CELL BARRIER

CH#	TYP	LOCATION/AXIS	MAKE	MODEL/SERIAL No	CAL DATE
19	LC	C1 XG	Interface	1220-F3/19349	05/14/85
20	LC	C2 XG	Interface	1220-F3/19349	05/14/85
21	LC	C3 XG	Interface	1220-F3/19349	05/14/85
22	LC	C4 XG	Interface	1220-F3/19349	05/14/85
23	LC	C5 XG	Interface	1220-F3/19349	05/14/85
24	LC	C6 XG	Interface	1220-F3/19349	05/14/85
25	LC	C7 XG	Interface	1220-F3/19349	05/14/85
26	LC	C8 XG	Interface	1220-F3/19349	05/14/85
27	LC	C9 XG	Interface	1220-F3/19349	05/14/85
28	LC	D1 XG	Interface	1220-F3/19349	05/14/85
29	LC	D2 XG	Interface	1220-F3/19349	05/14/85
30	LC	D3 XG	Interface	1220-F3/19349	05/14/85
31	LC	D4 XG	Interface	1220-F3/19349	05/14/85
32	LC	D5 XG	Interface	1220-F3/19349	05/14/85
33	LC	D6 XG	Interface	1220-F3/19349	05/14/85
34	LC	D7 XG	Interface	1220-F3/19349	05/14/85
35	LC	D8 XG	Interface	1220-F3/19349	05/14/85
36	LC	D9 XG	Interface	1220-F3/19349	05/14/85

CALIBRATION DATA FOR INSTRUMENTATION

USED IN ATD CALIBRATION

ATD INSTRUMENTS	MANUFACTURER	MODEL/SERIAL No	CAL DATE	DUE
Chest Deflection Pot	BECKMAN	5311 / N/A	EACH USE	EACH USE
Chest Impactor Accelerometer	ENTRAN	EGV-1/14N3N-V13-1	09/14/93	03/14/94
Neck Pendulum Accelerometer	ENTRAN	EGV-1/14N3N-V13-1	09/14/93	03/14/94
Neck Rotation No. 2	BECKMAN	5311 / N/A	EACH USE	EACH USE
Neck Rotation No. 1	BECKMAN	5311 / N/A	EACH USE	EACH USE
Neck Extension Pot	BOURNS	80294-20518 184020/1684-067	EACH USE	EACH USE
Abdominal Compression Load	LEBOW/EATON	3167 /1573	09/14/93	03/14/94
Lumbar Flexion Load	LEBOW/EATON	3167 / 1573	09/14/93	03/14/94
Lumbar Rotation	BOURNS	3590S-2-102/ N/A	EACH USE	EACH USE
Abdominal Displacement	CELESCO	PT-101-158/0786551	EACH USE	EACH USE
Timer	MSE	MSE TIM/1	02/11/94	08/11/94
Time Trap	MSE	1 IN./1	02/11/94	08/11/94