

V2062

REPORT NO. MSE-94- N05

R93030-05

NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

FORD MOTOR COMPANY
1994 FORD ESCORT WAGON
NHTSA No. MR0200

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



20 May, 1994

FINAL REPORT

Prepared For:

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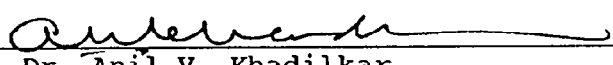
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Prepared by: Dr. Anil V. Khadilkar, Program Manager

Mr. Gary Fladmark, Test Engineer

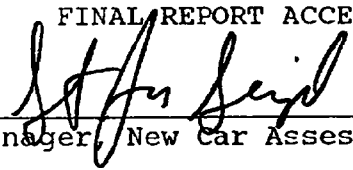
Mr. Jerry Kratzke, Test Engineer

MOBILITY SYSTEMS AND EQUIPMENT COMPANY

Approved by: 
Dr. Anil V. Khadilkar

Date: 05-20-1994

FINAL REPORT ACCEPTED BY:


Manager, New Car Assessment Program

JUL 25 1994

Date of Report Acceptance


COTR, New Car Assessment Program

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Technical Report Documentation Page

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16. Abstract A 56 kph Frontal barrier impact test using a load cell barrier was conducted on a 1994 Ford Escort Wagon at the Mobility Systems and Equipment Company (MSE) crash test facility in San Bernardino, CA, on March 09, 1994. The impact velocity was 56.3 km/h, and the ambient temperature at the barrier face at the time of impact was 21.2 degrees C. The vehicle's maximum post-test static crush was 483 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>532.7</td> <td>524.6</td> </tr> <tr> <td>Chest Resultant Peak 60 G's (3 msec clip)</td> <td>47.0</td> <td>46.2</td> </tr> <tr> <td>Femur Force Left 10009 N Right</td> <td>4202.7 4936.0</td> <td>6433.6 5366.9</td> </tr> </tbody> </table> Type of occupant restraint system: A 2 point motorized shoulder belt and manual lap belt at both seating positions, an airbag at the driver position.						Injury Criteria Threshold Value	Driver Dummy	Passenger Dummy	Head Injury Criterion HIC = 1000	532.7	524.6	Chest Resultant Peak 60 G's (3 msec clip)	47.0	46.2	Femur Force Left 10009 N Right	4202.7 4936.0	6433.6 5366.9
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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 Ford Escort Wagon, NHTSA No. MR0200, at a velocity of 56.3 km/h. The frontal impact test was conducted by Mobility Systems and Equipment Company (MSE) on 09 March 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.

One (1) Hybrid III, Part 572, Subpart E, serial No. 34 and one (1) Hybrid II, Part 572, Subpart B, serial No. 830, 50th percentile adult male Anthropomorphic Test Devices (ATD's) were placed in the driver and front outboard passenger designated seating positions (DSP's), respectively, according to the NHTSA test requirements. The ATD's were previously used for the following NCAP testing: #34 was used for the Ford F150 since recalibration. Number 830 was previously used for the Ford F150 test.

The ATD's were instrumented with head, neck and chest triaxial accelerometers and right and left femur load cells. The driver ATD was also instrumented with a chest displacement gauge and an upper neck load/moment sensor. 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.

Seventy-three (73) 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. Data channel not used were 19, 26, 27, 28, 29, 30, 31, 34, 35 and 38, due to the different instrumentation for the Hybrid II ATD. Channels that failed were Nos. 44, 47, and 48 through 83. The cause is unknown.

2.1 GENERAL COMMENTS

The 1994 Ford Escort Wagon was equipped with a 1900 cc, 4 cylinder engine and a 3 speed automatic transmission. The test weight of the 1994 Ford Escort Wagon with two (2) 50th percentile male ATD's, instrumentation and cameras was 1369 kg.

The 1994 Ford Escort Wagon was involved in a frontal barrier crash at a velocity of 56.3 km/h.

The maximum static crush for the vehicle of 483 mm occurred 434 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 532.7, the maximum chest acceleration (resultant clipped) was 47.0 g's and the maximum femur loads were -4202.7 newtons (left) and -4936.0 newtons (right).

Both of the passenger ATD's knees hit the glove box door. The passenger ATD had a HIC value of 524.6, the maximum chest acceleration (resultant clipped) was 46.2 g's and the maximum femur loads were -6433.6 newtons (left) and -5366.9 newtons (right).

Shoulder seat belt spoolout, measured mechanically, was 120 mm for the driver and 105 mm for the passenger. Seat belt spoolout and strain data are presented in Table 6.

The 1994 Ford Escort Wagon 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.

DATA TABLE No. 1
TEST VEHICLE DATA

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1994/Ford/Escort Wagon

VEHICLE NHTSA No.: M R 0 2 0 0 ; VIN: 1 F A R P 1 5 J 8 R W 1 2 7 6 0 6

VEHICLE BODY COLOR: Red ; MONTH AND YEAR OF MANUFACTURE: 12/93

ENGINE: 4 Cylinders; 116.0 cu in; 1.9 Liters; 1900 cc
X Gas; Diesel; Turbocharged
PLACEMENT: Longitudinal; X Transverse (Lateral)

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

FINAL DRIVE: X Front Wheel Drive; Rear Wheel Drive; Four Wheel Drive

DATE VEHICLE AVAILABLE FOR 35 MPH CRASH TESTING: 02/01/94

ODOMETER READING: 50 km; OPTIONS : X A/C; X P/S; P/Window;
 Tilt Whl.; Cruise Control

DATA RECORD FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): 221 kPa Front; 221 kPa Rear

Recommended Tire Size: P175/65R14

Tires on Vehicle: P175/65R14 ; Manufacturer: Goodyear

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: 377 kg

No. of Occupants x 68 kg: 340 kg

Cargo Capacity (Max - Occupants): 37 kg

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front: 376 kg

Left Front: 351 kg Total Front: 727 kg (61% of Total)

Right Rear: 232 kg

Left Rear: 233 kg Total Rear: 465 kg (39% of Total)

Total Weight: 1192 kg

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids: 1192 kg

Maximum Cargo Carrying Capacity of Test Vehicle: 37 kg*

Weight of Two Part 572 ATD's (1*74.5 kg, 1*75.8 kg): 150 kg

TEST VEHICLE TARGET WEIGHT: 1379 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>393</u> kg		
Left Front:	<u>407</u> kg	Total Front:	<u>800</u> kg (<u>58</u> % of Total)
Right Rear:	<u>288</u> kg		
Left Rear:	<u>281</u> kg	Total Rear:	<u>569</u> kg (<u>42</u> % of Total)

Total Weight: 1369 kg (includes 0 kg of ballast secured in the cargo / luggage area)

VEHICLE COMPONENTS REMOVED TO MEET TARGET WEIGHT:

1. Jack
2. Left tail lamp housing
3. Rear seat assembly

TEST VEHICLE ATTITUDE:

As Delivered - Right Front:	<u>650</u> mm	Ready for Test - Right Front:	<u>638</u> mm
Left Front:	<u>648</u> mm	Left Front:	<u>628</u> mm
Right Rear:	<u>628</u> mm	Right Rear:	<u>600</u> mm
Left Rear:	<u>628</u> mm	Left Rear:	<u>610</u> mm

TEST VEHICLE DIMENSIONS:

Total Vehicle Length:	Right Side:	<u>4242</u> mm
	Left Side:	<u>4242</u> mm
	Centerline:	<u>4343</u> mm

Wheelbase: 2502 mm

C. G. is 1051 mm rearward of front axle centerline.

DATA TABLE No. 2 POST CRASH TEST DATA

DATE OF 35 MPH FRONTAL BARRIER IMPACT RATING TEST: 03/09/94

TIME OF TEST: 1138 Hrs; AMBIENT TEMPERATURE AT BARRIER FACE: 21.2° C

VEHICLE OCCUPANT COMPARTMENT TEMPERATURE: 21.2° C (Req. Range 19° C to 26° C)

VEHICLE WINDSHIELD MOLDING TEMPERATURE: 21.2° C

VEHICLE IMPACT VELOCITY: (Req. Range 55.52 to 57.13 km/h)
 Primary Speed Trap: 56.3 km/h
 Secondary Speed Trap: 55.90 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>4242</u>	<u>3759</u>	<u>483</u>
Centerline (mm)	<u>4343</u>	<u>3912</u>	<u>431</u>
Left Side (mm)	<u>4242</u>	<u>3886</u>	<u>356</u>

VEHICLE REBOUND FROM BARRIER: Right Side: 676 mm
 Centerline: 625 mm
 Left Side: 704 mm

ATD CONTACT POINTS:

	Driver ATD (ID# 34)	Pass. ATD (ID# 830)
Head	Airbag and visor	No Contact
Chest	Airbag	No Contact
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	No	Yes
Left Front	Yes	No
Right Rear	Yes	No
Left Rear	Yes	No

VEHICLE FRONT SEAT MOVEMENT DURING IMPACT EVENT:

Seat Cushion Shift - Driver = 9 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

ATD Injury Criteria Data Summary
ATD 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: 1994/Ford/Escort/Wagon

VEH. NHTSA NO.: MR0200

TEST DATE: 03/09/94

MAXIMUM ACCELERATION VALUES:

	DRIVER ATD No. 34	PASSENGER ATD No. 830
Head X	-42.6	-24.4
Head Y	4.7	-9.3
Head Z	38.6	69.3
HEAD RESULTANT	54.8	70.5
Chest X	-47.2	-48.1
Chest Y	-7.9	53.9
Chest Z	12.3	5.3
CHEST RESULTANT (3msec clip)	47.0	46.2
TIME INTERVAL (msec)	72.0 to 75.0	80.4 to 83.4

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	532.7	524.6
t ¹ (msec)	64.9	69.2
t ² (msec)	100.9	105.2
Avg. Acceleration t ¹ to t ²	46.5	46.3

MAXIMUM FEMUR FORCES:

Left Femur (N)	-4202.7	-6433.6
Right Femur (N)	-4936.0	-5366.9

MAXIMUM SEAT BELT FORCES:

Lap Belt (N)	5174.5	N/D
Shoulder Belt (N)	9527.6	2945.2

MAXIMUM SEAT BELT WEBBING SPOOLOUT: (by mechanical analysis)

Lap/Shoulder Belt Combination	120	105
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TABLE No. 3 (Continued)
FMVSS No. 208 OCCUPANT CRASH PROTECTION DATA SHEET

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1994/Ford/Escort/Wagon

VEH. NHTSA NO.: MR0200

TEST DATE: 03/09/94

MAXIMUM ACCELERATION VALUES:	DRIVER ATD No. 34	PASSENGER ATD No. 830
Neck Force X (N)	919.2	N/A
Neck Force Y (N)	174.7	N/A
Neck Force Z (N)	2422.6	N/A
Neck Moment X	-15.7	N/A
Neck Moment Y	39.9	N/A
Neck Moment Z	9.3	N/A
Neck Moment Resultant	40.1	N/A
Chest Displacement (mm)	57.3	N/A
Time of Max. Occurrence (msec)	82.9	N/A

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DATA TABLE No. 4
TEST ATD POSITIONING DATA

PRE - IMPACT DATA:

Make / Model: Ford Escort
Body Style: Wagon
Model Year: 1994
Color: Red
NHTSA No.: MR0200

DATA FROM CERTIFICATION LABEL:

Vehicle Manufacturer: Ford Motor Co., USA
Date of Manufacture: 12/93
VIN: 1FARP15J8RW127606
GVWR: 1578 kg
GAWR Front: 847 kg
GAWR Rear: 761 kg

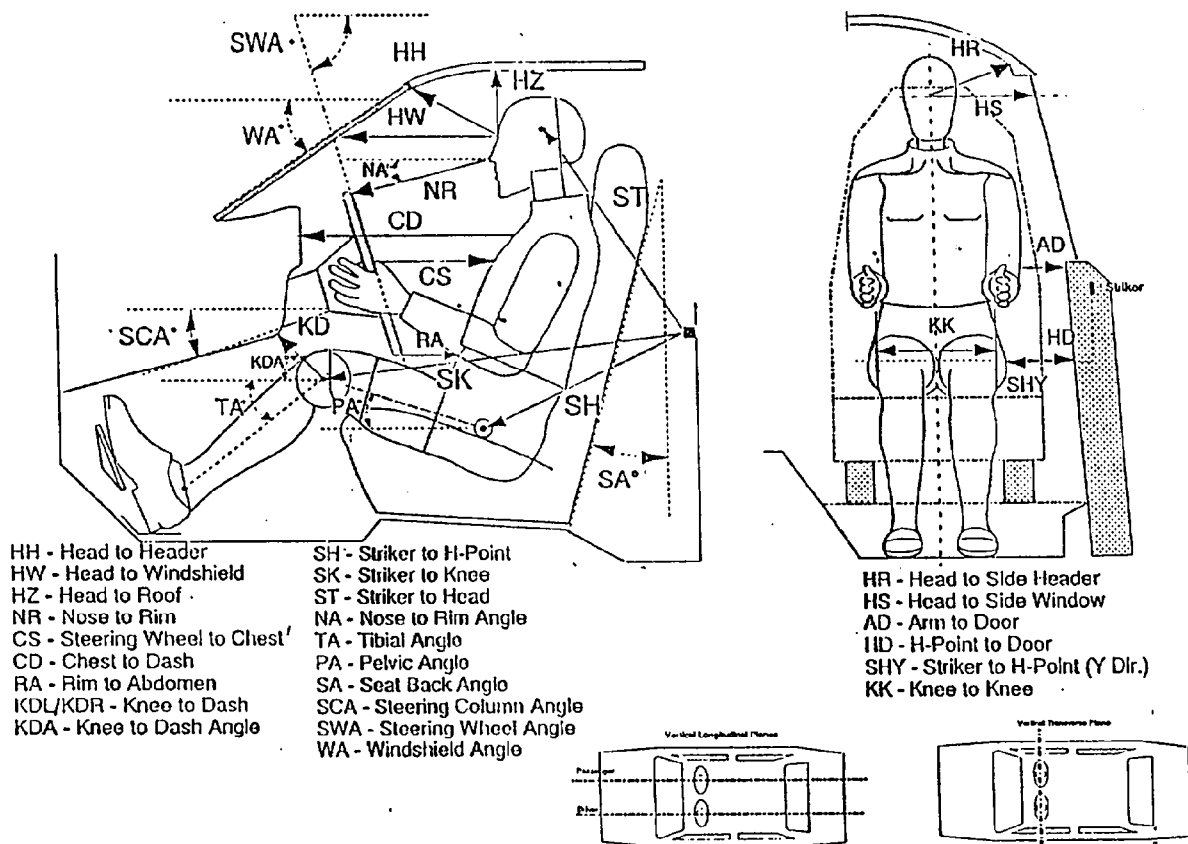
POST IMPACT DATA:

Date of Test: 03/09/94
Time: 1138 Hrs.
Temperature: 21.2°C
Required Impact Velocity Range: 55.52 to 57.13 km/h
Impact Velocity - Primary: 56.3 km/h
Secondary: 55.9 km/h
Seat Type: Bucket
Adjustor Type: Adjustable lever
Bucket Seat Back Type: Adjustable head restraint

ATD POSITIONING TECHNICIANS: Frank Richardson

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

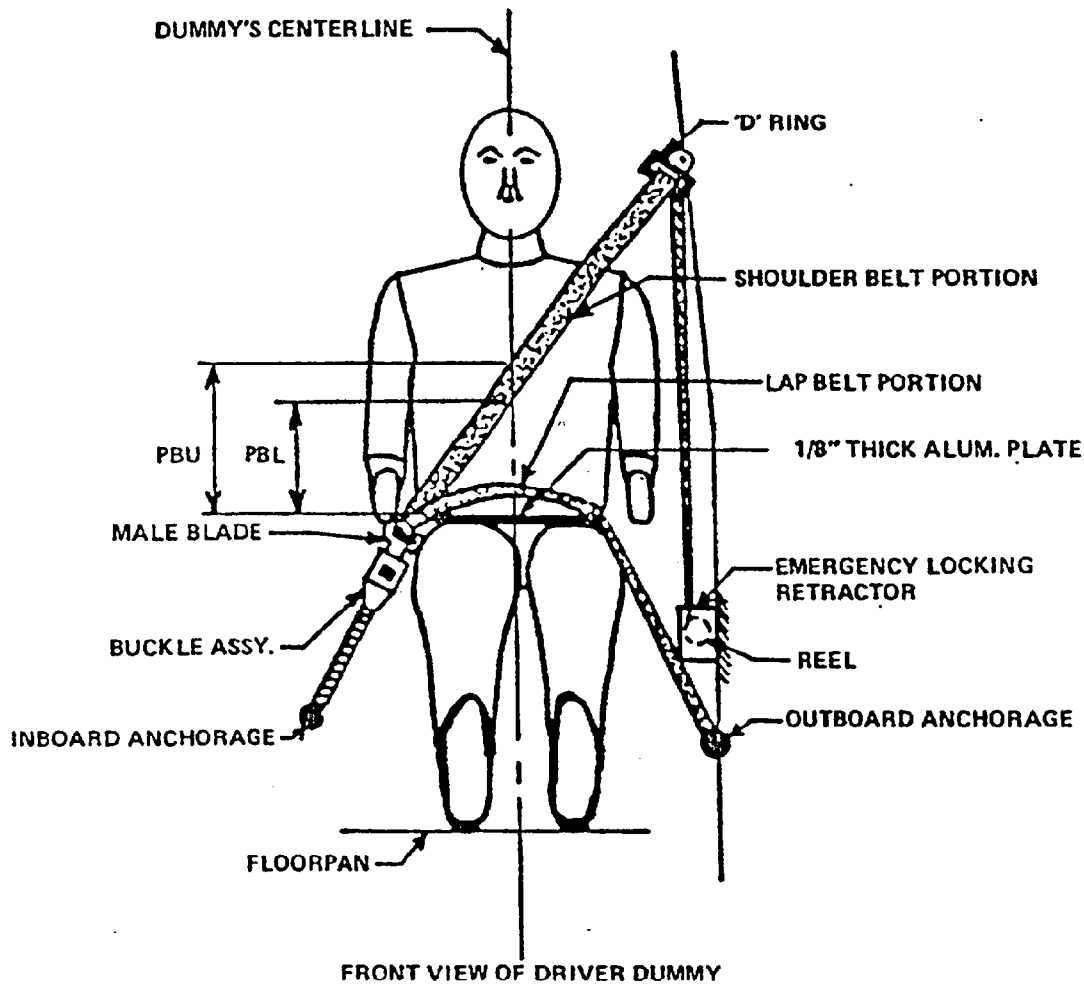
DUMMY MEASUREMENTS FOR FRONT SEAT PASSENGERS



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

Measurement	Driver (Serial No. 34)		Passenger (Serial No. 830)	
	Length (mm)	Angle (Degrees)	Length (mm)	Angle (Degrees)
WA	---	33	---	---
SWA	---	64	---	---
SCA	---	24	---	---
HZ	170	90	140	90
HH	275	---	313	---
HW	470	---	426	0
HR	195	---	202	---
NR	332	13	---	---
CD	490	---	530	---
CS	255	0	---	---
RA	155	0	---	---
KDL	173	N/A	175	---
KDR	155	---	175	32
PA	---	24	---	---
TA	---	30	---	---
KK	340	---	300	---
ST	385	51	697	62
SK	585	2	572	7
SH	135	30	293	3
SHY	255	0	251	0
HS	290	0	310	0
HD	203	0	170	0
AD	120	0	85	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)	320	290
PBL - Top Surface of alum. plate to belt lower edge (mm)	260	220
Lap Belt Tension (N)	N/D	N/D
Shoulder Belt Tension (N)	N/D	N/D

DATA TABLE 6
SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

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

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

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

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

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

DRIVER SIDE		PASSENGER SIDE	
PRETEST	POSTTEST	PRETEST	POSTTEST
2780	2680	2675	2632
840	813	820	813
1030	1016	1025	1991
910	851	830	832
430	51 locked	410	13 locked

BELT SPOOL-OFF DATA:

As determined by film analysis (mm) _____

As determined electronically (mm) _____

As determined mechanically (mm) _____

N/D	N/D
N/D	N/D
120	105

BELT STRAIN DATA: Measured on the shoulder belt

As determined electronically (%) _____

As determined mechanically (%) _____

2.9	4.0
0	0

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

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1994/Ford/Escort/Wagon

VEH. NHTSA NO.: MR0200

TEST DATE: 03/09/94

TIME: 1138 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	14577	15-70 Zoom	24
2	Right Side View	3460	18400	3700	-11	18212	28	800
3	Left Side View	3770	13120	3700	-13	13044	28	720
4	Overhead	-410	0	5190	-77	4751	13	540
5	Pit - Engine	600	60	-1605	87	3377	13	N/D
6	Pit - Fuel Tank	4455	0	-1550	90	3600	13	N/D
7	Front - Passenger	-530	370	2510	-48	3069	13	1025
8	Front - Driver	-530	330	2510	-48	3070	13	670
9	Left Side - Driver	3310	2405	1610	-5	2284	13	860
10	Right Side - Pass.	3370	2440	1810	-14	2377	13	770
11	Right Side - A-Post	1530	5760	1120	4	5432	19	1750
12	Left Side - A-Post	1825	9510	2160	-7	9178	13	520
13	Onboard - Left Side	2970	-290	1320	4	689	35	N/A
14	Onboard - Right Side	2970	280	1310	3	689	13	N/A
15	Left Side - St. Col.	2205	9960	3140	-10	9751	28	770
16	Left Side - St. Col.	2265	9960	2390	-16	9637	28	615
17	Right Side - Pass.	1960	5900	1100	1	5529	19	800

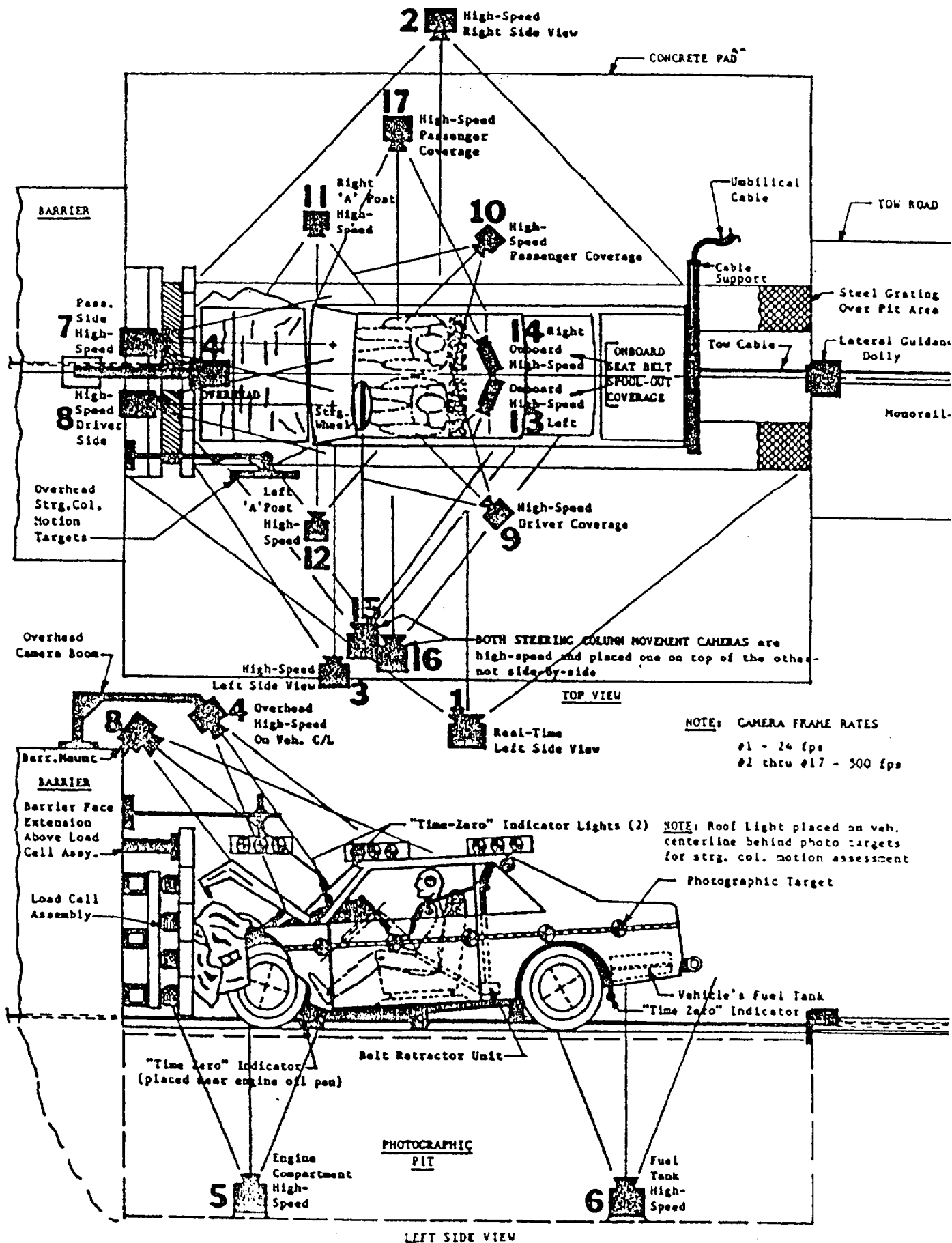
REFERENCE: X - Film plane to barrier face

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	-1845	-554	368	0.00	0.1	0.0	0.0
2	Right rear seat cross member	-1816	559	368	25.2	50.5	2.2	138.8
3	Top of engine block	203	64	806	34.0	38.7	1.5	49.2
4	Bottom of engine	203	255	127	115.2	34.8	12.5	72.0
5	Right brake caliper	76	600	206	85.6	54.6	15.9	68.3
6	Instrument panel	-584	30	860	3.4	44.7	1.1	70.3
7	Left brake caliper	76	-595	206	133.0	48.7	24.3	70.7
8	Left rear seat cross member Redun.	-1886	-559	368	33.2	42.2	1.8	10.9
9	Right rear seat cross member Redun.	-1848	559	368	N/D	N/D	N/D	N/D

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

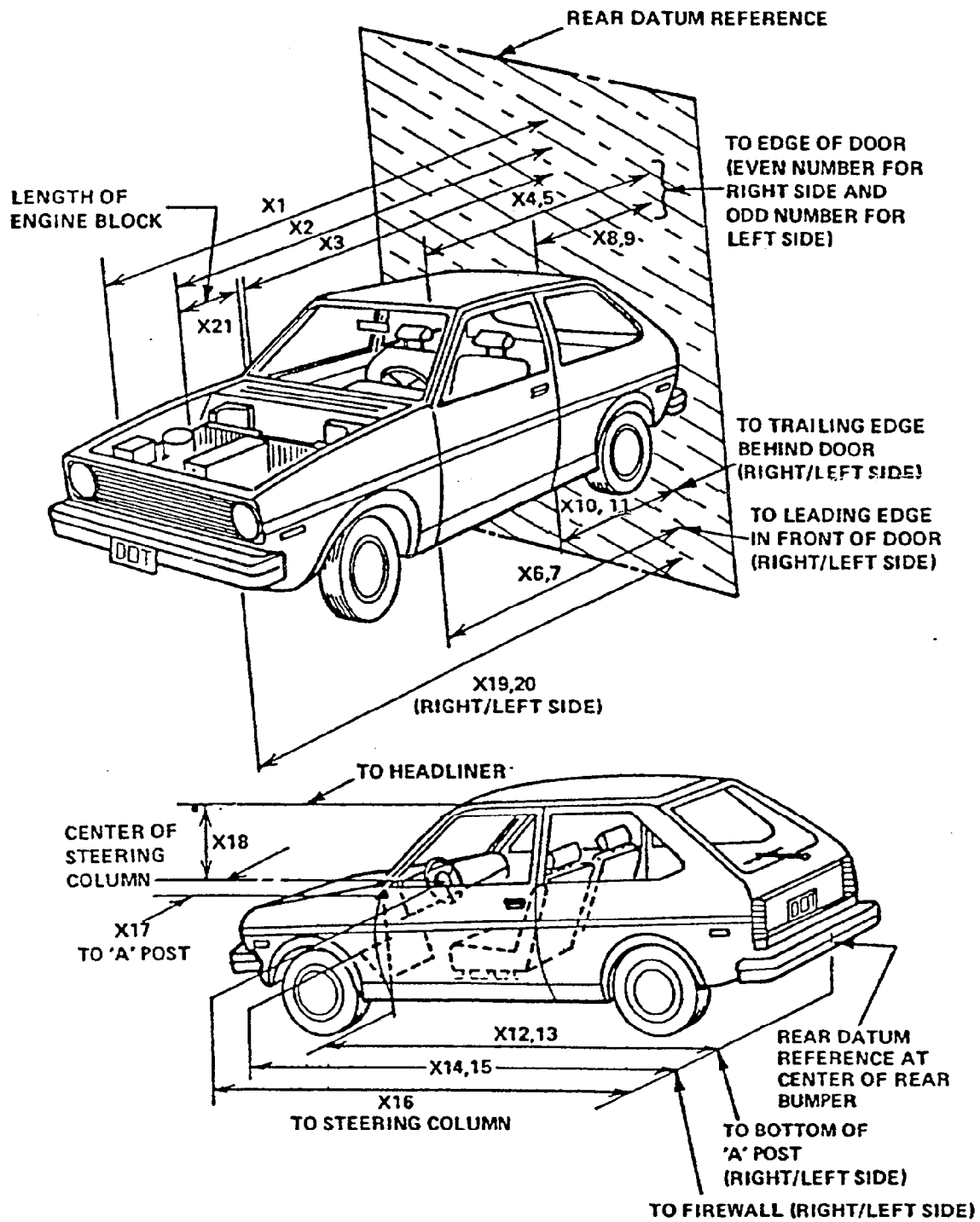
All dimensions in mm

DATA TABLE No. 9
TEST VEHICLE MEASUREMENTS

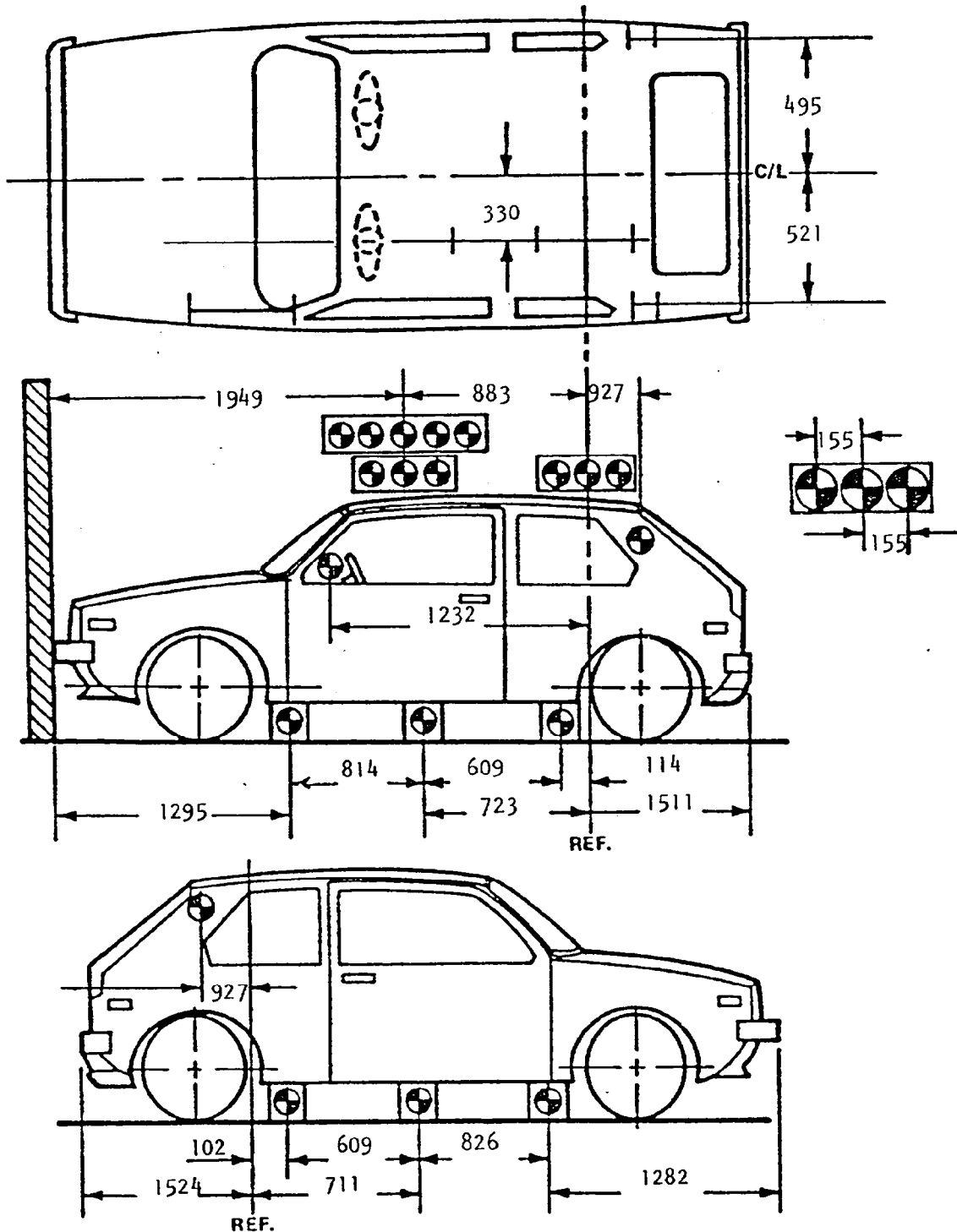
No.	Measurement Description	Pretest	Posttest	Change
1	Length of test vehicle at centerline	4343	3912	431
2	Rear surface of vehicle to front of engine	3886	3607	279
3	Rear of vehicle to firewall centerline	3302	3226	76
4	Rear to upper leading edge of right door	2388	2388	0
5	Rear to upper leading edge of left door	2413	2426	-13
6	Rear to lower leading edge of right door	2991	2972	19
7	Rear to lower leading edge of left door	2985	2985	0
8	Rear to upper trailing edge of right door	1943	1943	0
9	Rear to upper trailing edge of left door	1943	1956	-13
10	Rear to lower trailing edge of right door	1944	1963	-19
11	Rear to lower trailing edge of left door	1944	1986	-42
12	Rear to bottom of right 'A' pillar	3023	2997	26
13	Rear to bottom of left 'A' pillar	3029	3023	6
14	Rear surface to firewall on right side	3251	3099	152
15	Rear surface to firewall on left side	3251	3099	152
16	Rear surface to steering column	2565	2553	12
17	Center of steering column to left 'A' pillar	464	470	-6
18	Center of steering column to headlining	431	431	0
19	Rear surface to right side of front bumper	4242	3759	483
20	Rear surface to left side of front bumper	4242	3886	356
21	Length of engine block	343	343	0

All measurements in mm

DATA TABLE No. 9 (Continued)
TEST VEHICLE MEASUREMENTS



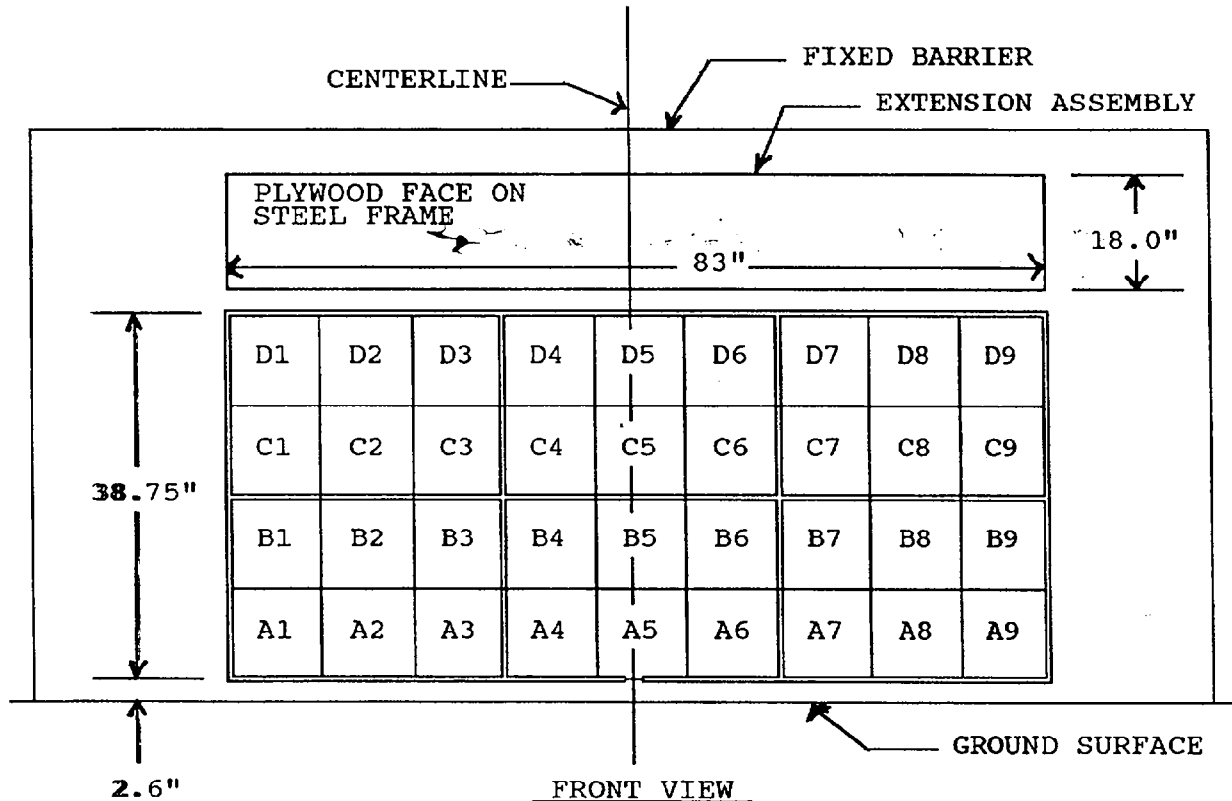
DATA TABLE No. 10
VEHICLE TARGET LOCATIONS



all measurements 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 LOAD CELLS EACH

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

DATA REQUIREMENTS:

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

DATA TABLE No. 12
ACCIDENT INVESTIGATION DIVISION DATA FOR 35 MPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Ford/Escort/Wagon
Veh. NHTSA No.: MR0200 ; VIN: 1FARP15J8RW127606
Model Year: 1994 ; Build Date: 12/93 ; Test Date: 03/09/94
Veh. Size Category: N/A ; Test Weight: 1369 kg
Veh. Wheelbase: 2502 mm ; Front Overhang: 900 mm ; Overall Width: 1630 mm

ACCELEROMETER DATA:

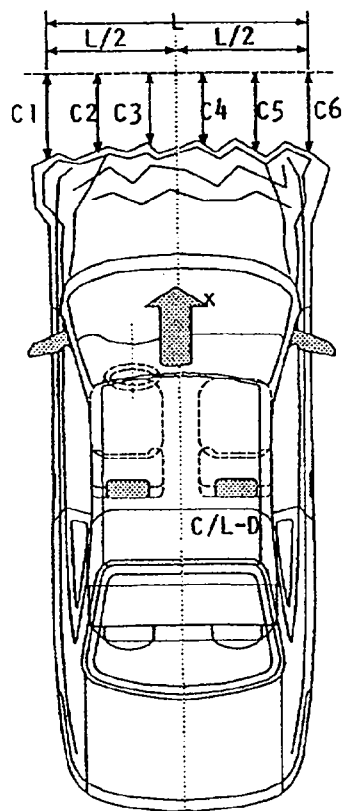
Location: Left and right side passenger compartment
Calibration Procedure: 6 months / Drop test
Linearity: Good ; Integration Algorithm: NHTSA Standard
Veh. Impact Speed: 56.30 km/h ; Time of separation: 0.0 msec
Velocity Change: 0.0 km/h (Left); 49.4 km/h (Right)
Collision Deformation Classification (CDC) Code: F (Frontal)

Crush Depth Dimensions:

C1 = 327 mm
C2 = 390 mm
C3 = 416 mm
C4 = 441 mm
C5 = 460 mm
C6 = 441 mm

Midpoint of Damage: Vehicle Centerline

Length of Damaged Region: L = 1448 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

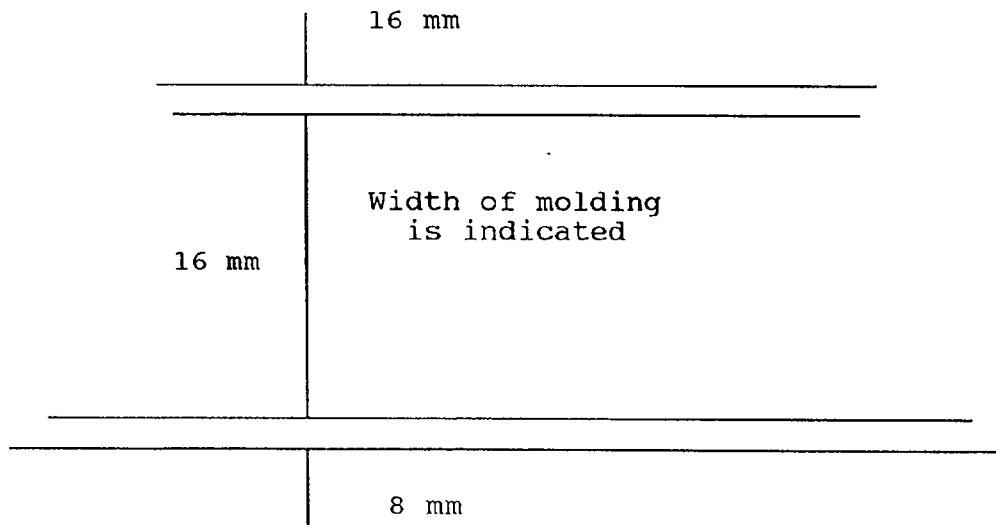
Details of windshield mounting: Glass is secured to the vehicle frame with a rubber type adhesive with rubber molding along the top and sides and rubber and plastic molding along the bottom.

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% 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	1994	1994	100
Left Side	1994	1994	100
Total	3988	3988	100

AREA OF RETENTION FAILURE:



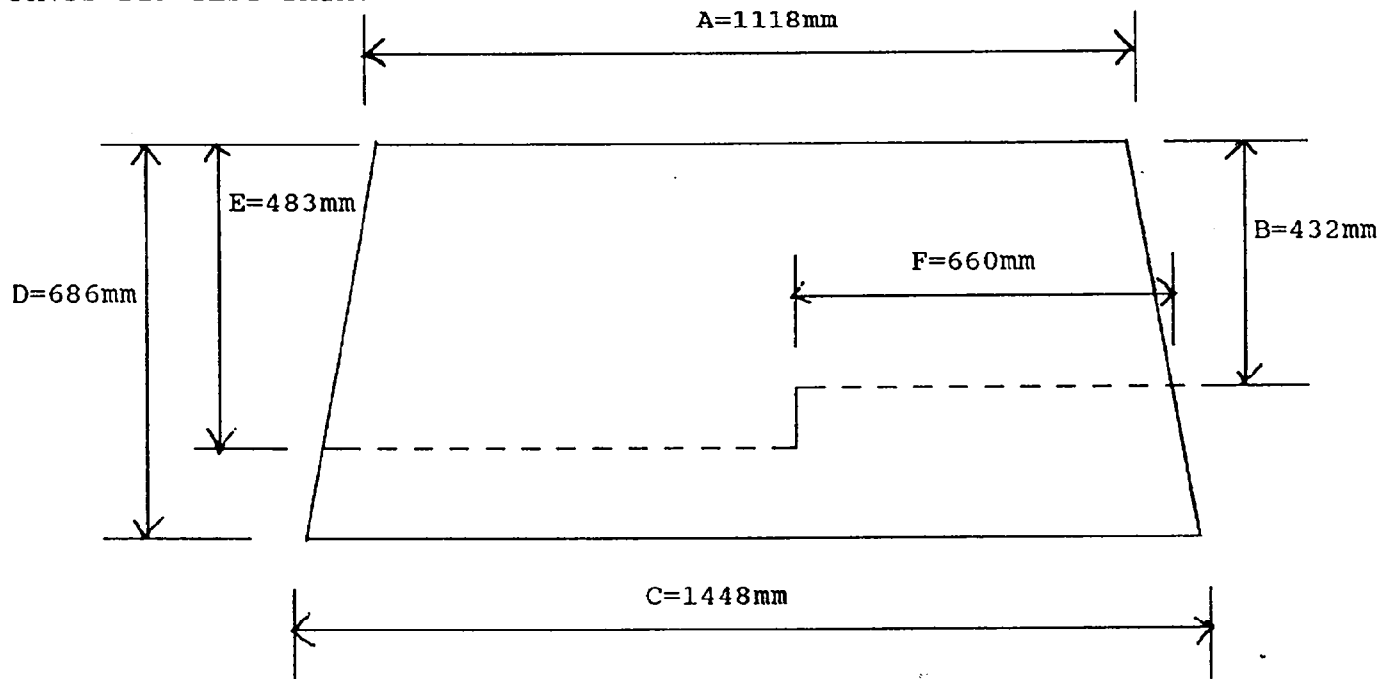
FAILURE DETAILS: None

DATA TABLE No. 14
FMVSS No. 219 WINDSHIELD ZONE INTRUSION

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/Ford/Escort/Wagon

VEH. NHTSA NO.: MR0200 TEST DATE: 03/09/94

USABLE CAPACITY OF VEHICLE'S FUEL TANK: 45 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:

42.1 Liters, which is 93.5% 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

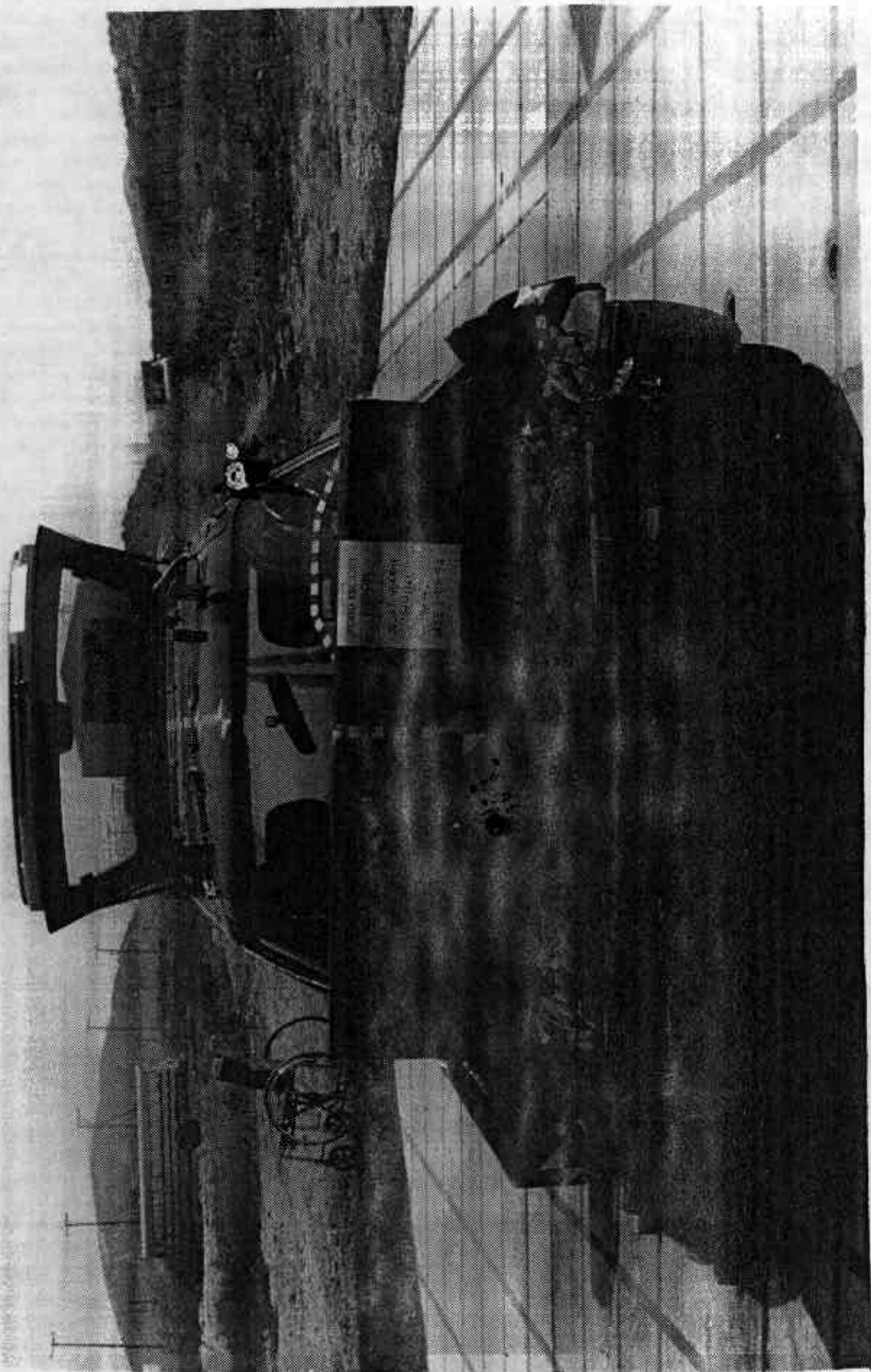
SOLVENT SPILLAGE LOCATIONS: None

APPENDIX A
PHOTOGRAPHS

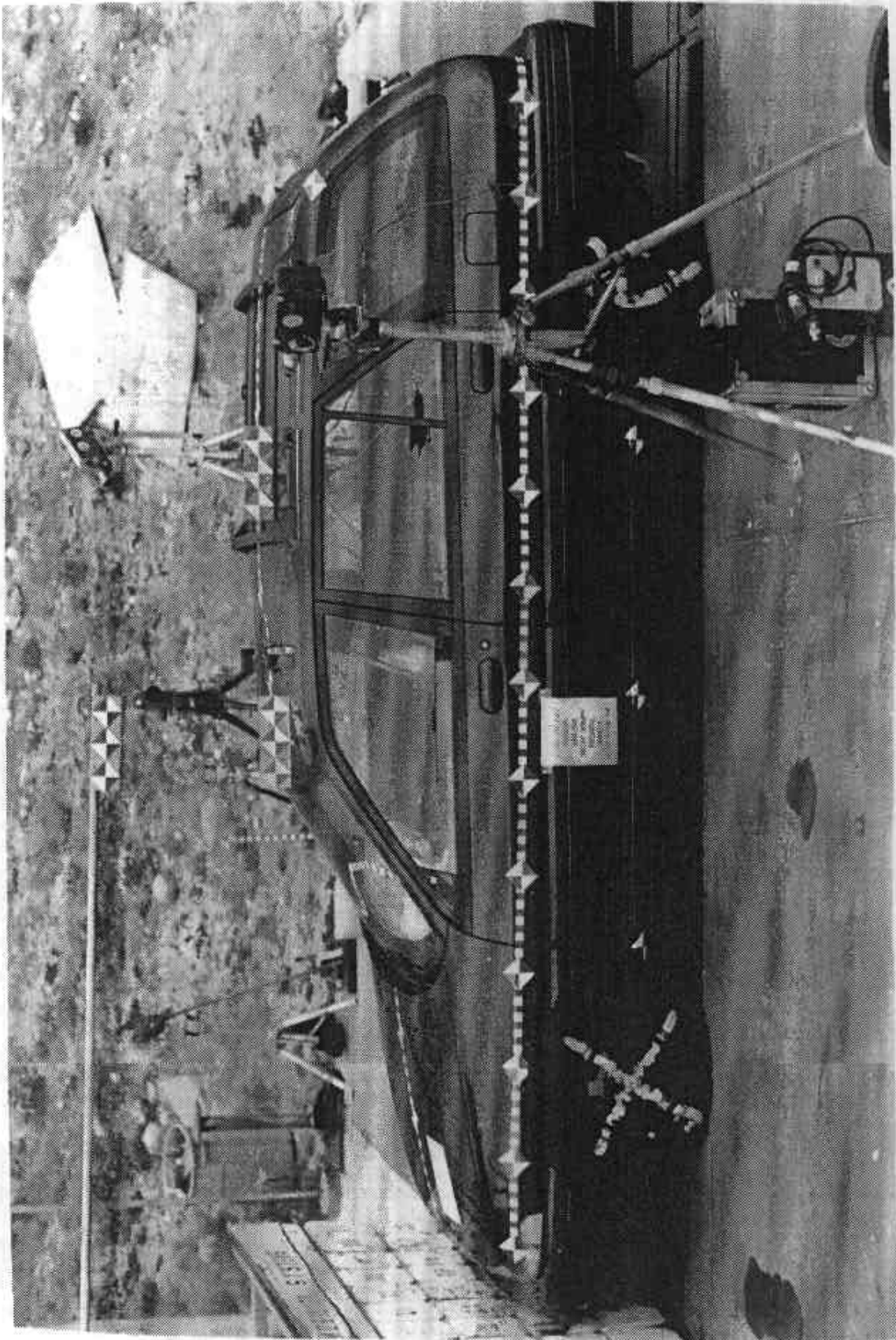
Pretest Front View
Posttest Front View
Pretest Left Side View
Posttest Left Side View
Pretest Right Side View
Posttest Right Side View
Pretest Right Front 3/4 View
Posttest Right Front 3/4 View
Pretest Left Rear 3/4 View
Posttest Left Rear 3/4 View
Pretest Windshield View
Posttest Windshield View
Pretest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



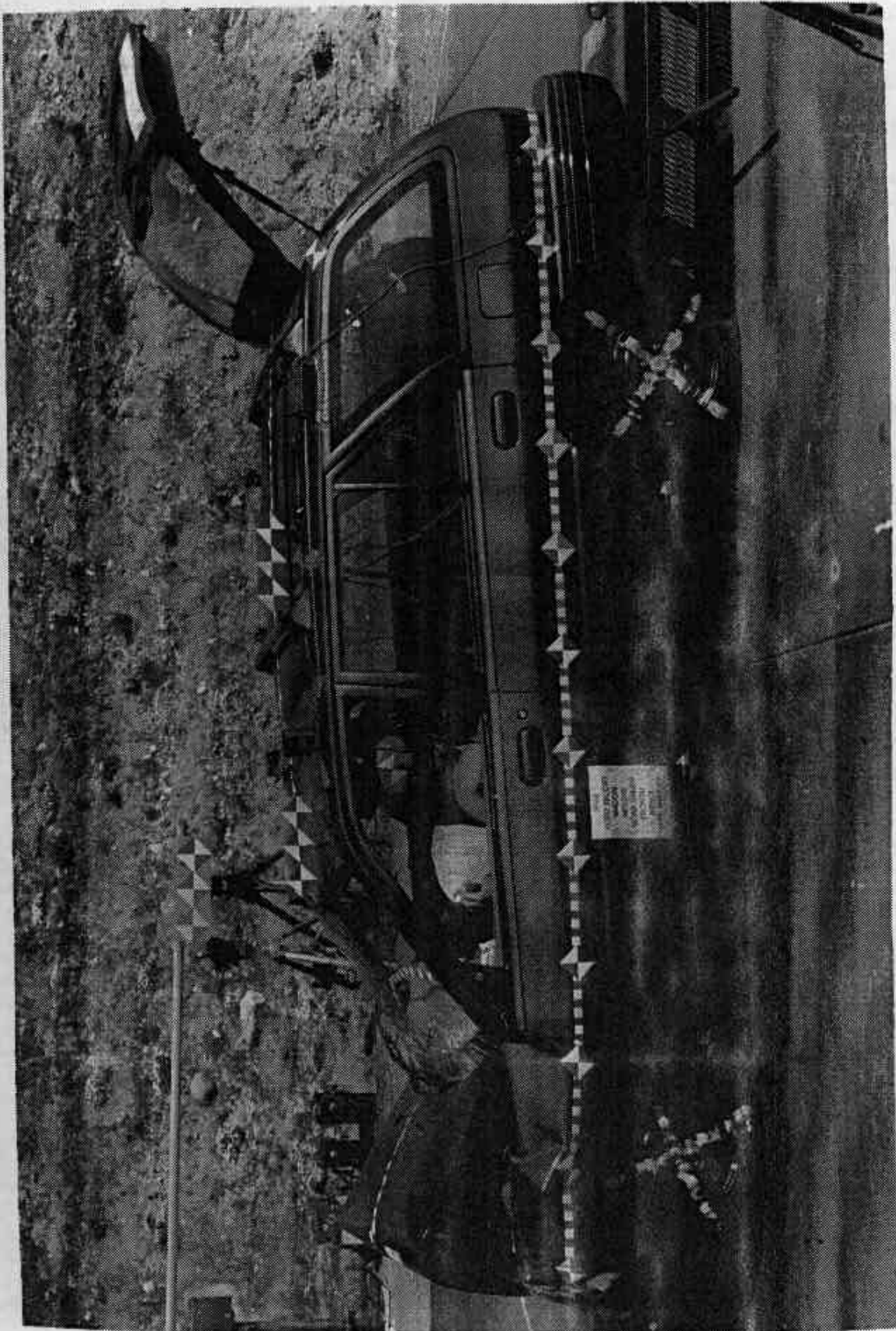
PRETEST FRONT VIEW



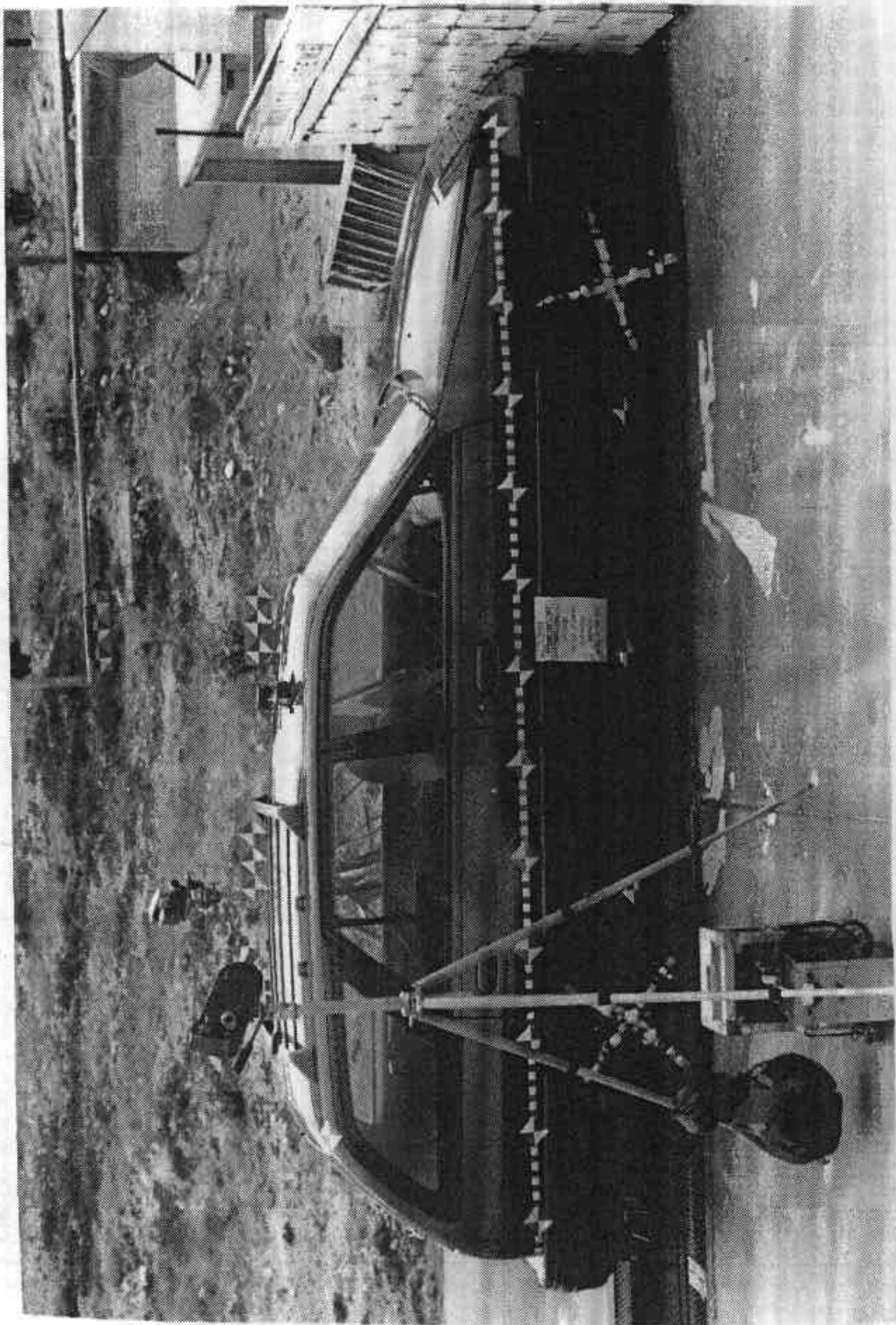
POSTTEST FRONT VIEW



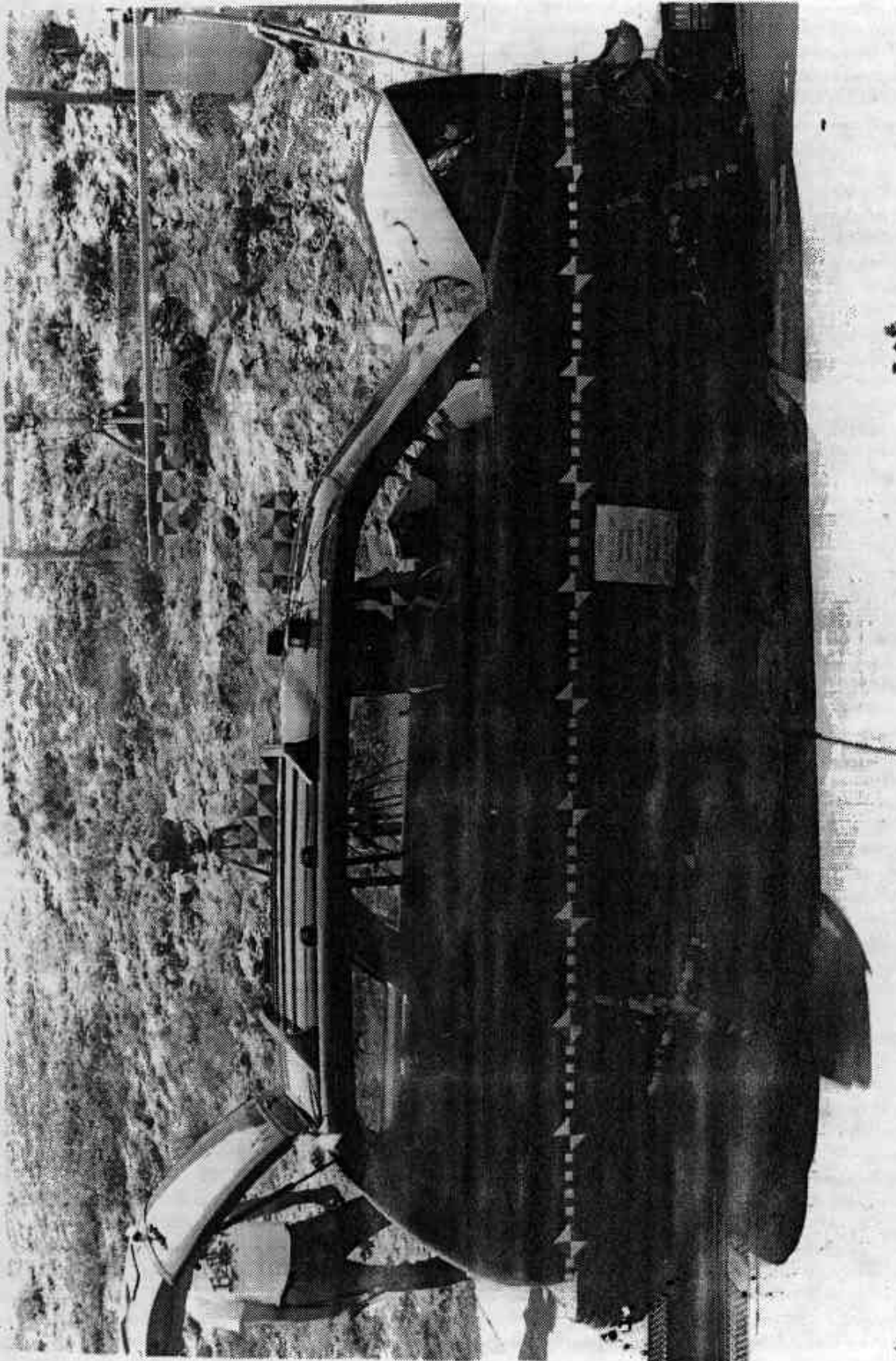
PRETEST LEFT SIDE VIEW



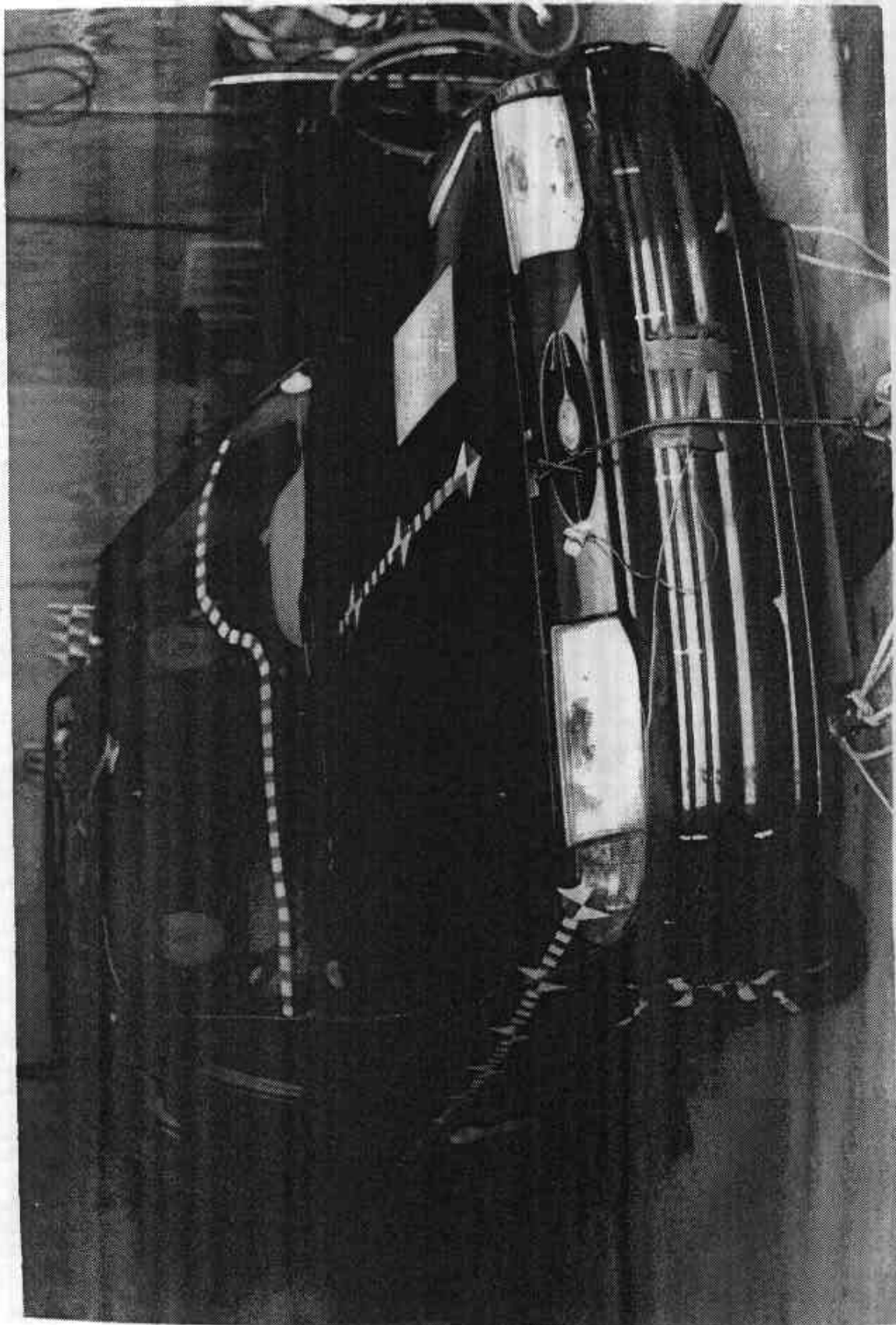
POSTTEST LEFT SIDE VIEW



PRETEST RIGHT SIDE VIEW



POSTTEST RIGHT SIDE VIEW



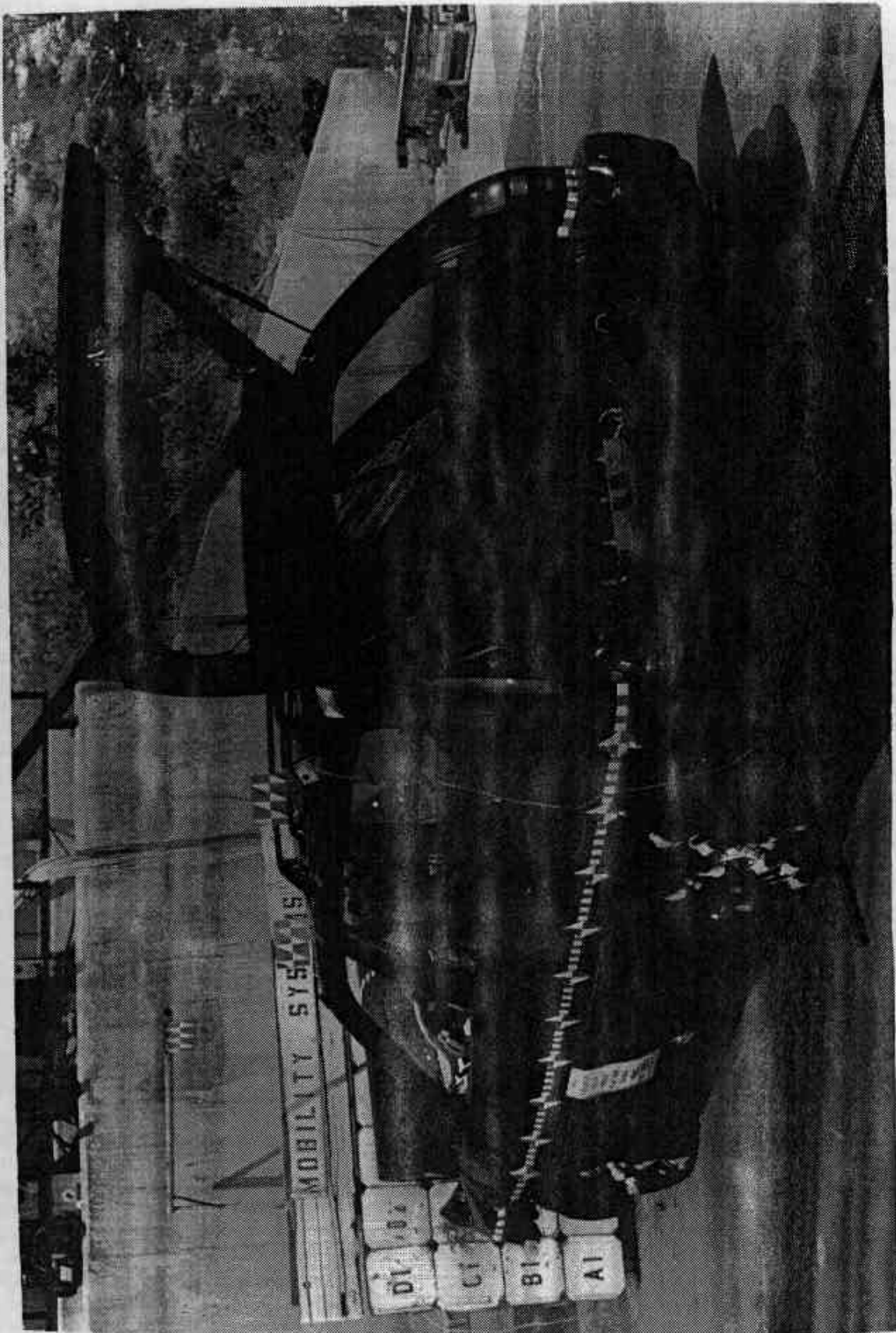
PRETEST RIGHT FRONT 3/4 VIEW



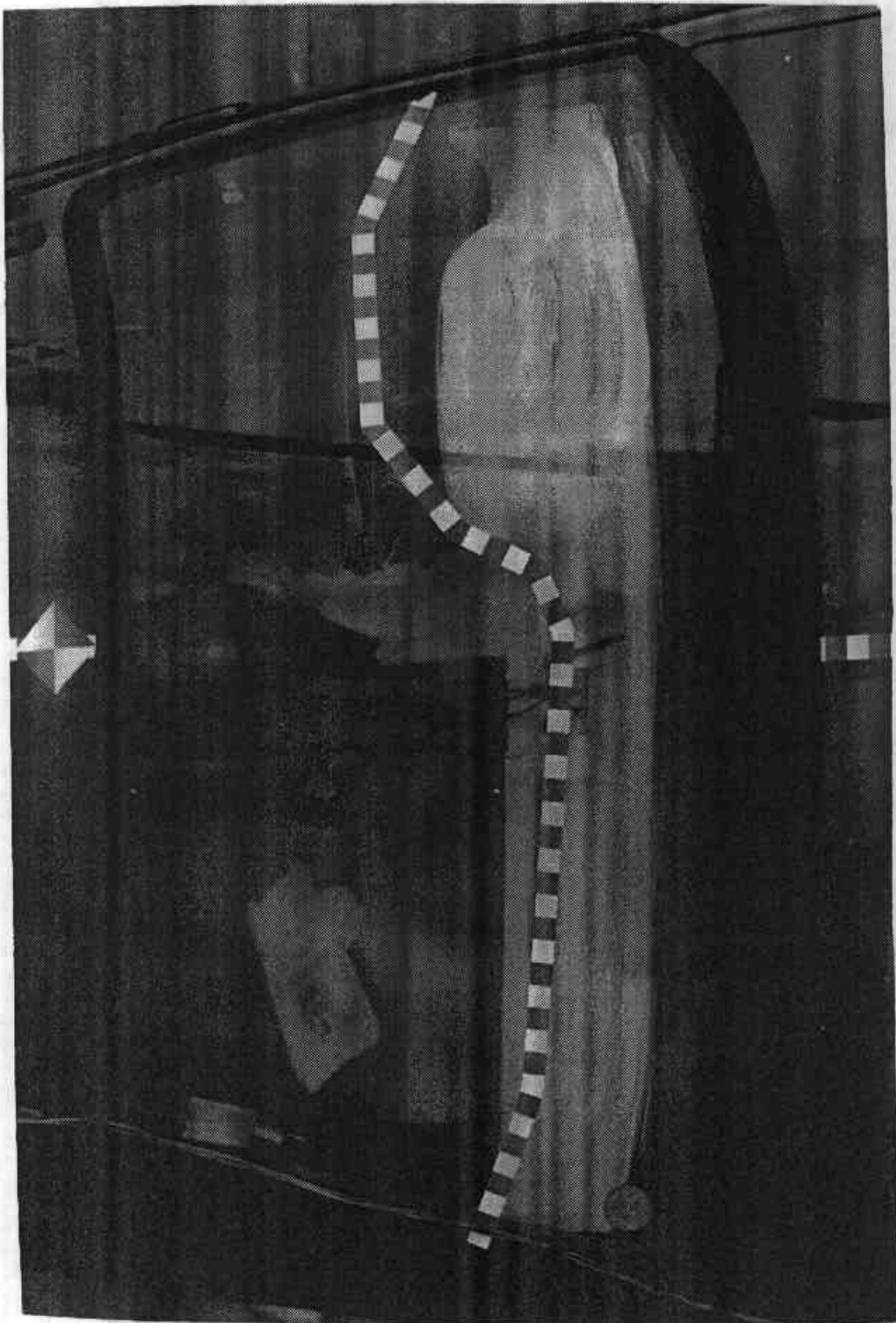
POSTTEST RIGHT FRONT 3/4 VIEW



PRETEST LEFT REAR 3/4 VIEW



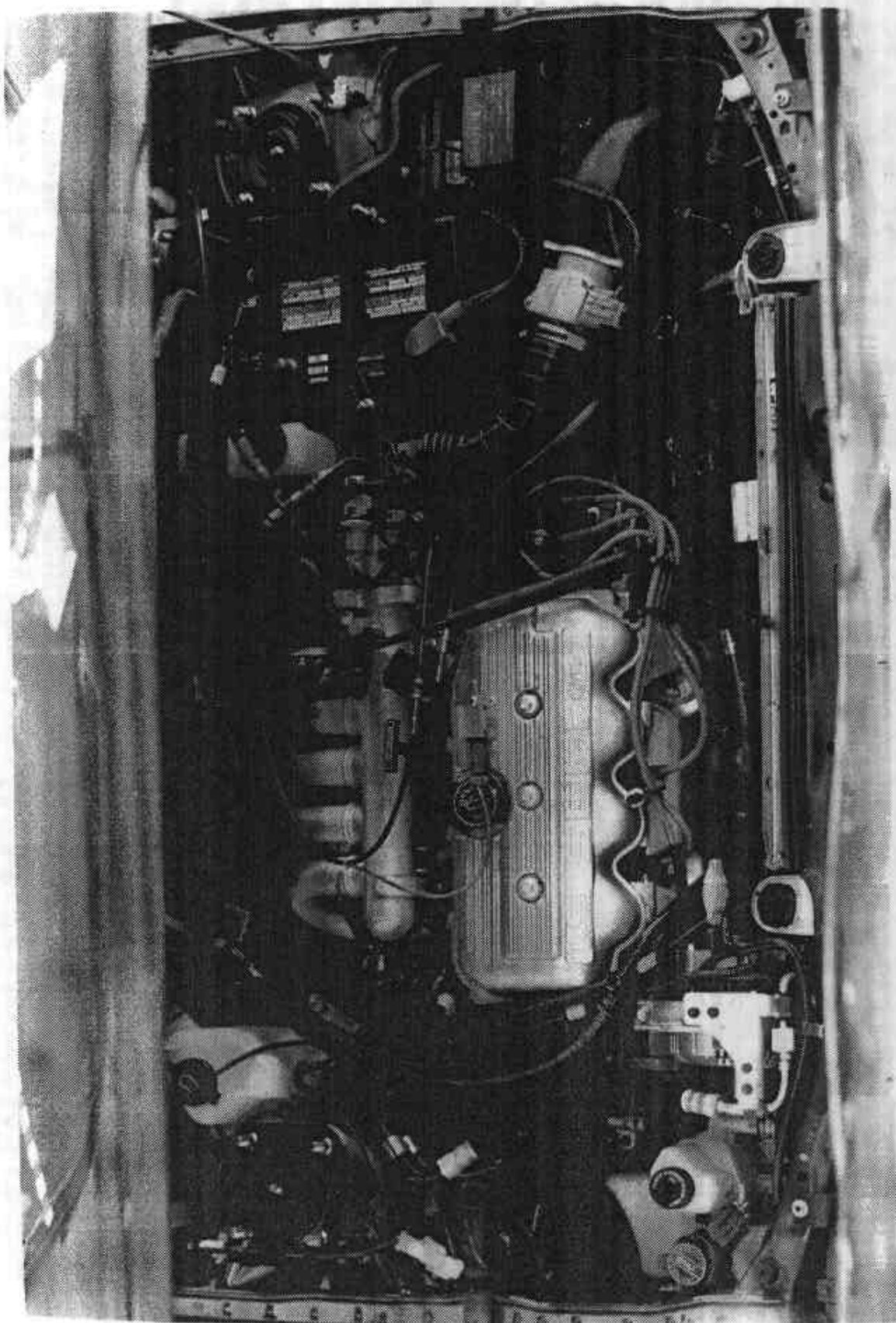
POSTTEST LEFT REAR 3/4 VIEW



PRETEST WINDSHIELD VIEW



POSTTEST WINDSHIELD VIEW

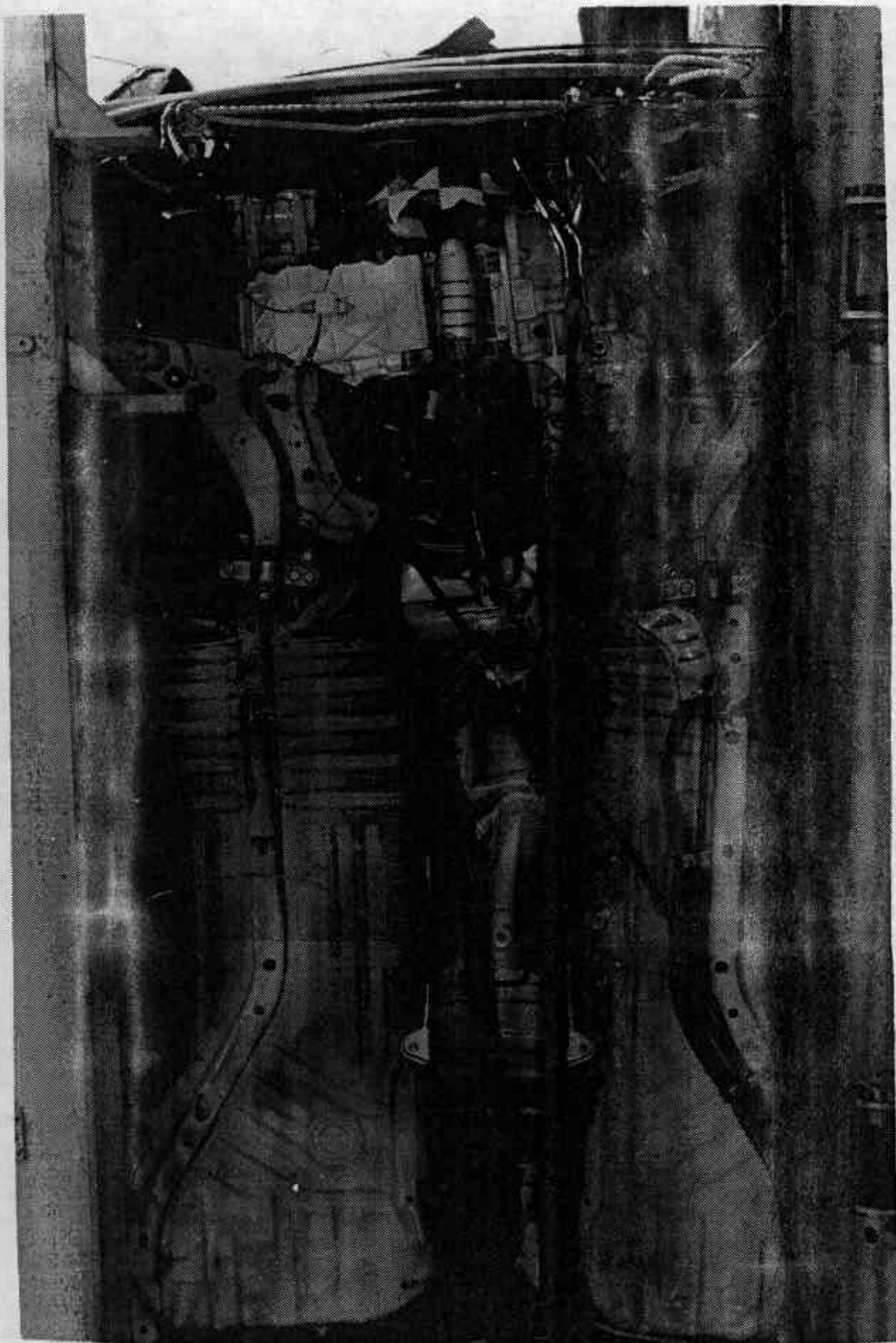


PRETEST ENGINE COMPARTMENT VIEW

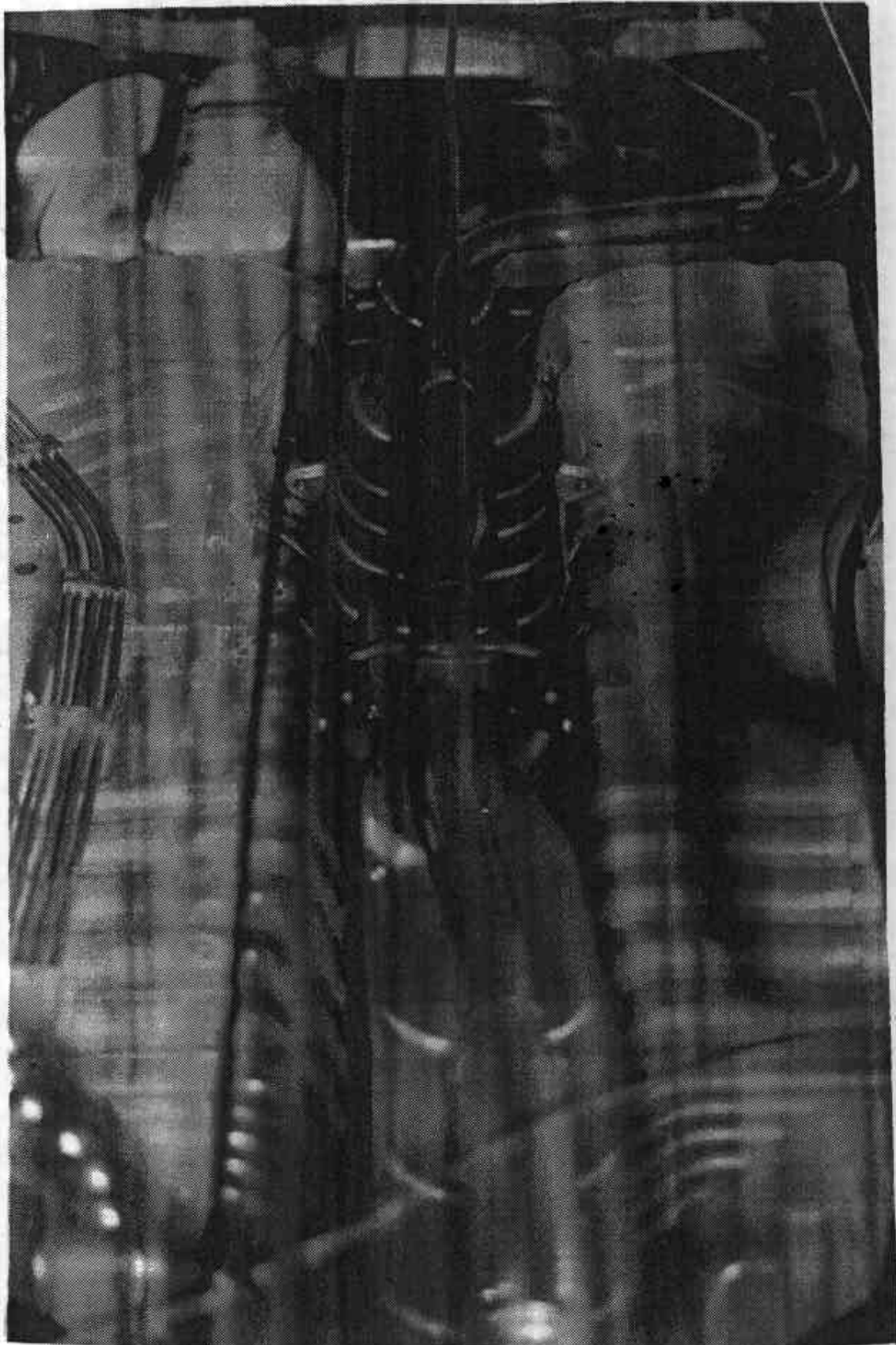
FIGURE A14
POSTTEST ENGINE COMPARTMENT VIEW
PHOTOGRAPH NOT AVAILABLE



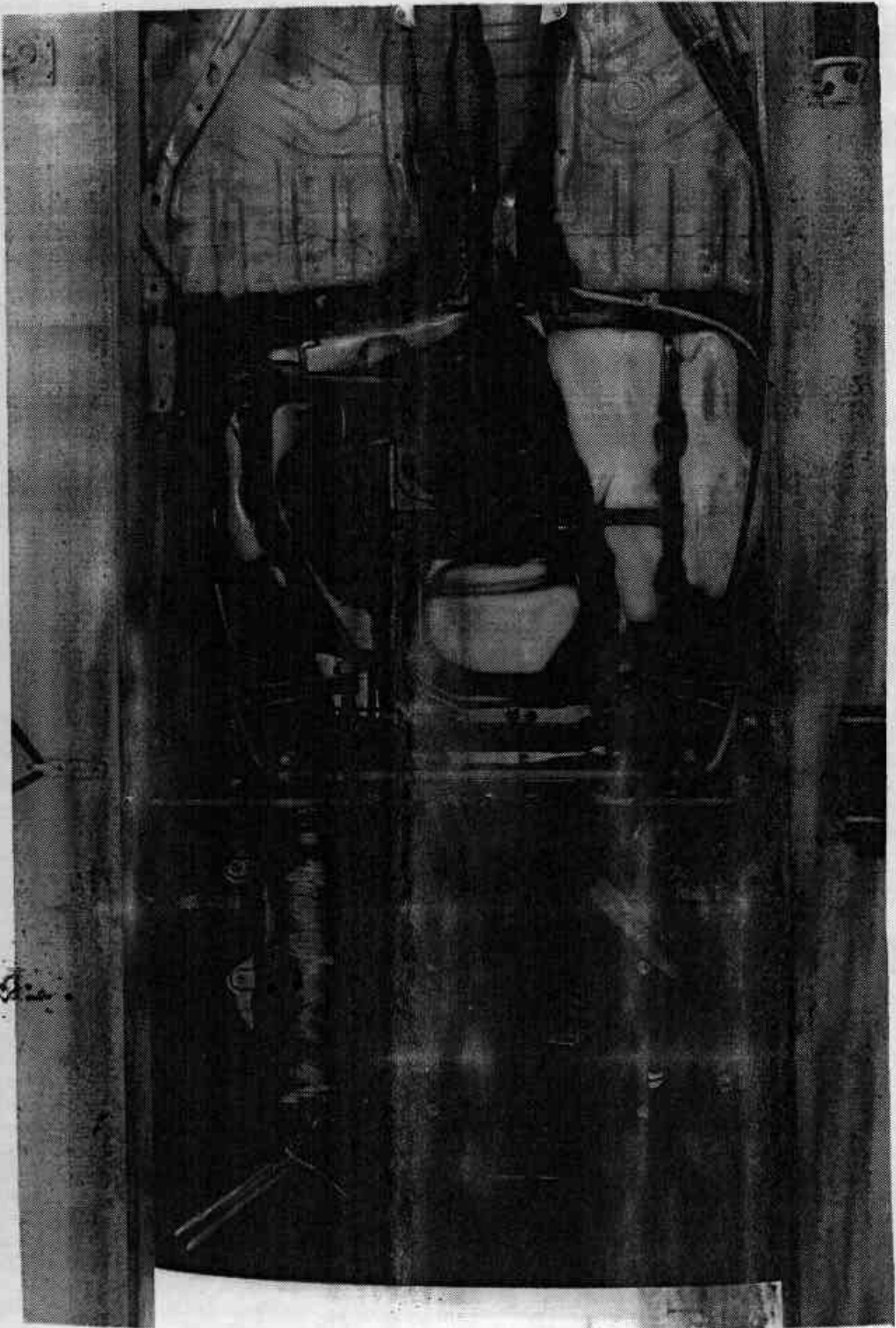
PRETEST FRONT UNDERBODY VIEW



POSTTEST FRONT UNDERBODY VIEW



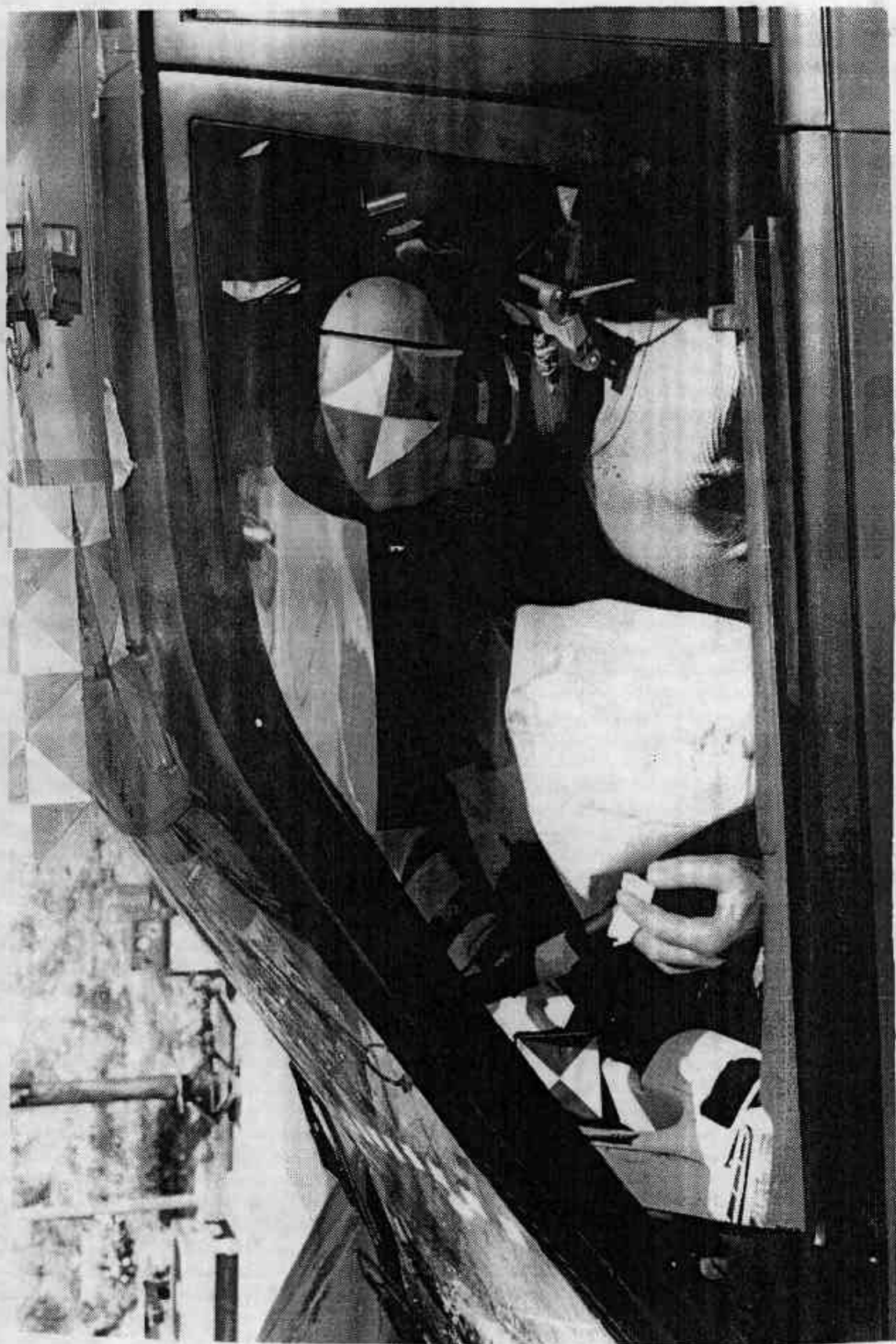
PRETEST REAR UNDERBODY VIEW



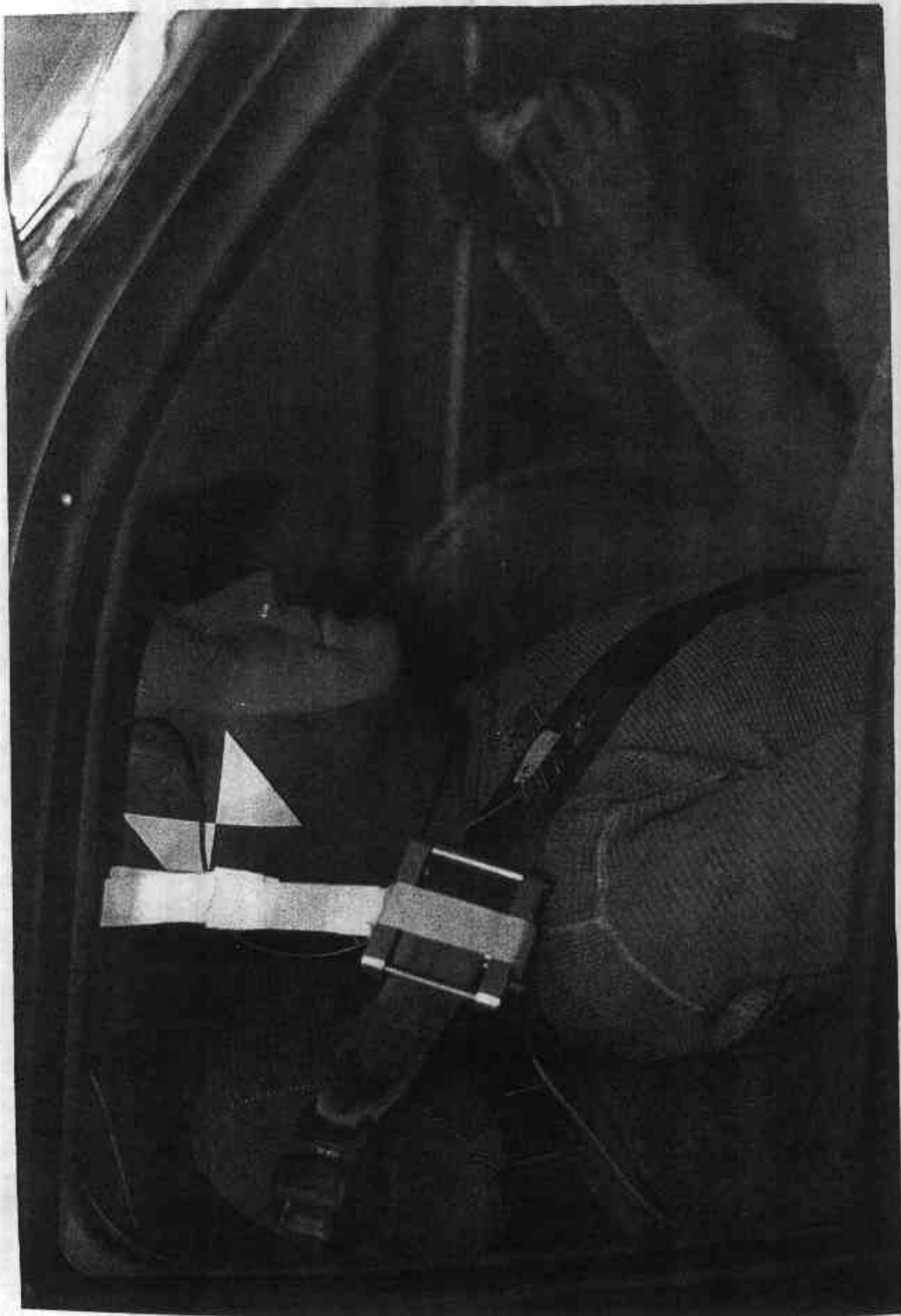
POSTTEST REAR UNDERBODY VIEW



PRETEST DRIVER ATD POSITION VIEW



POSTTEST DRIVER ATD POSITION VIEW



PRETEST PASSENGER ATD
POSITION VIEW

PRETEST PASSENGER ATD POSITION VIEW



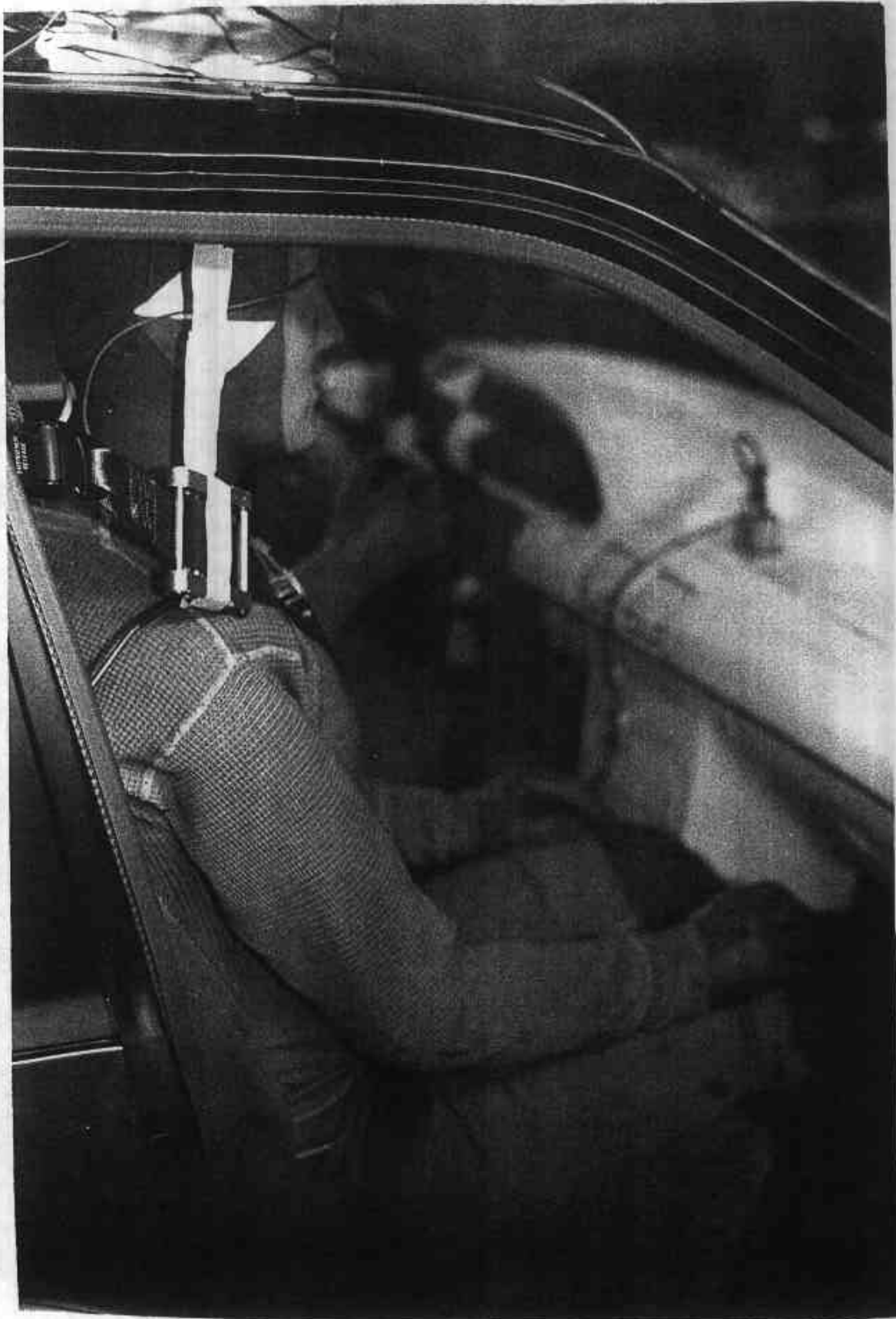
POSTTEST PASSENGER AND POSITION VIEW



PRETEST DRIVER ATD & VEHICLE
INTERIOR VIEW (DOOR OPEN)



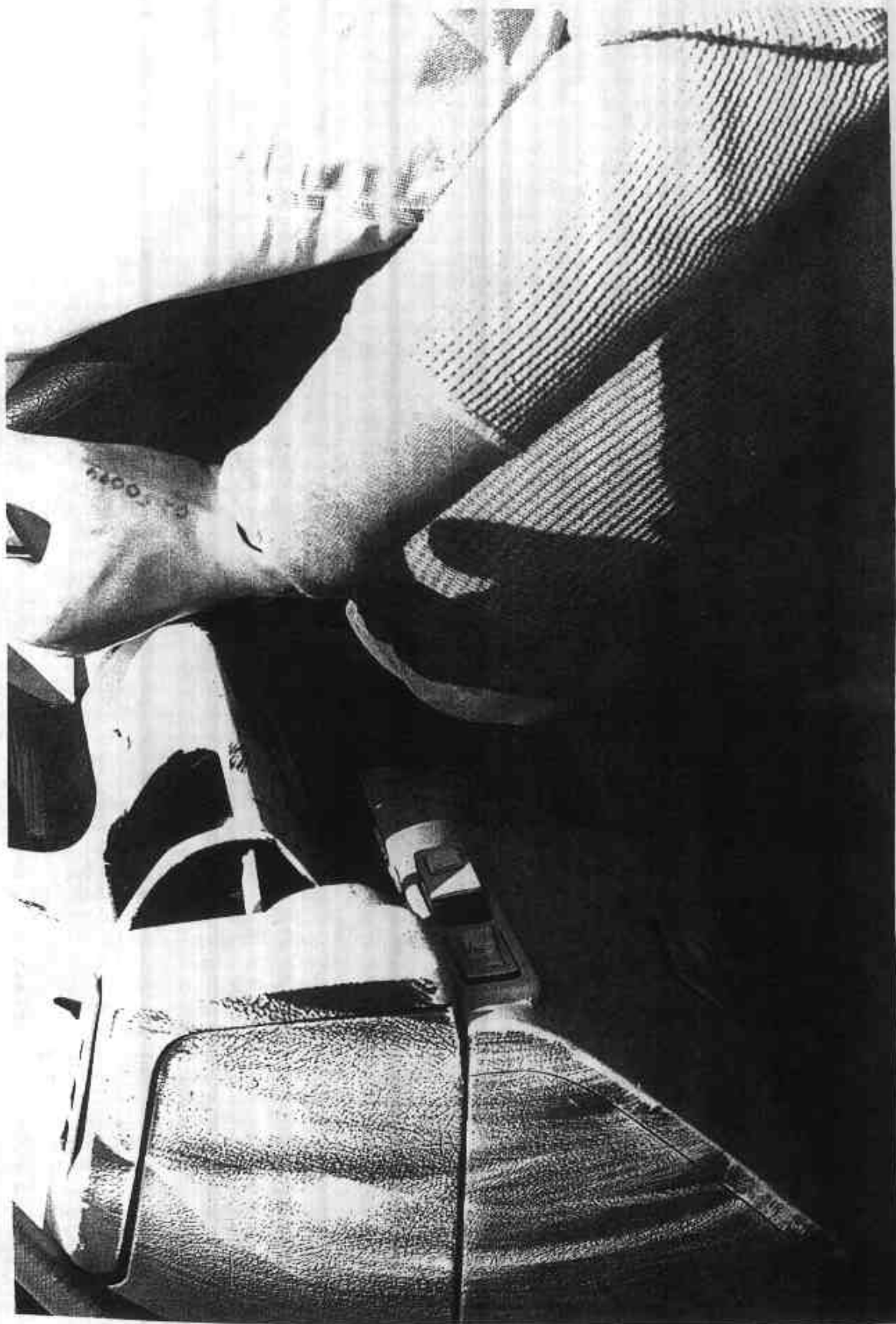
POSTTEST DRIVER ATD & VEHICLE INTERIOR
VIEW (DOOR OPEN)



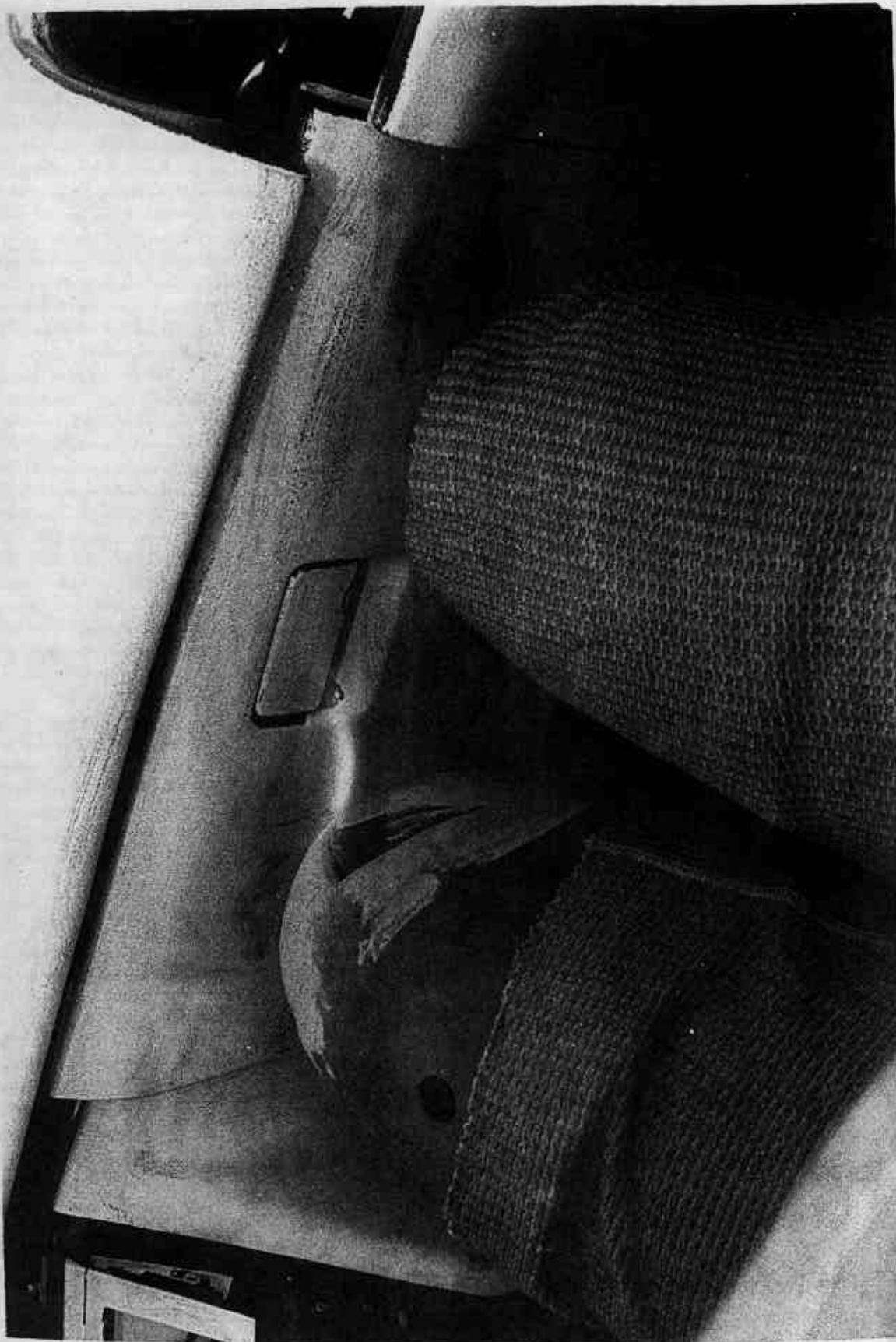
PRETEST PASSENGER ATD & VEHICLE
INTERIOR VIEW (DOOR OPEN)



POSTTEST PASSENGER & VEHICLE
INTERIOR VIEW (DOOR OPEN)



POSTTEST DRIVER ATD KNEE CONTACT AREA



POSTTEST PASSENGER ATD KNEE CONTACT AREA

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APPENDIX B - 1

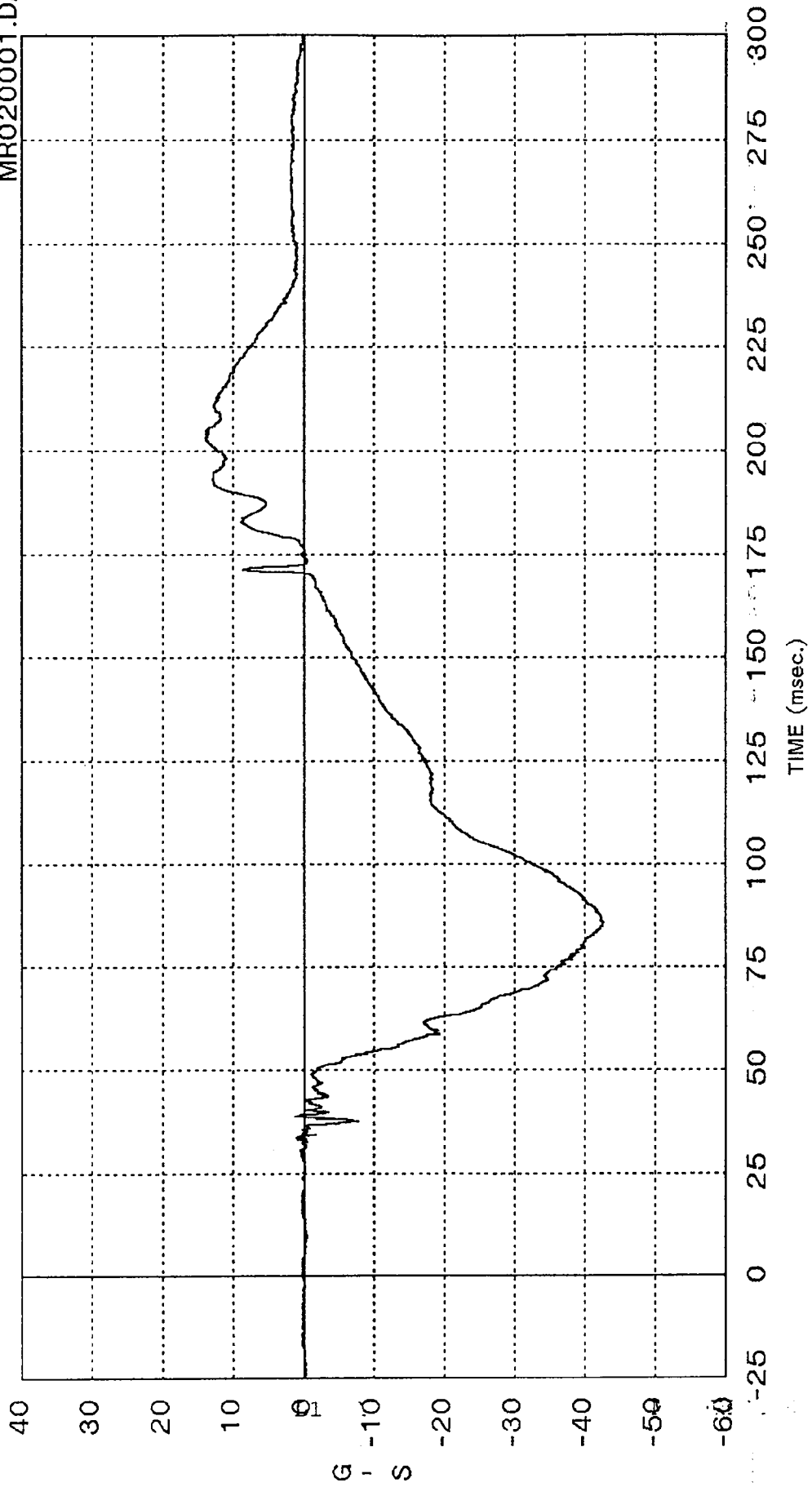
VEHICLE AND ATD (ATD) RESPONSE DATA

DATA FILTERING:

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

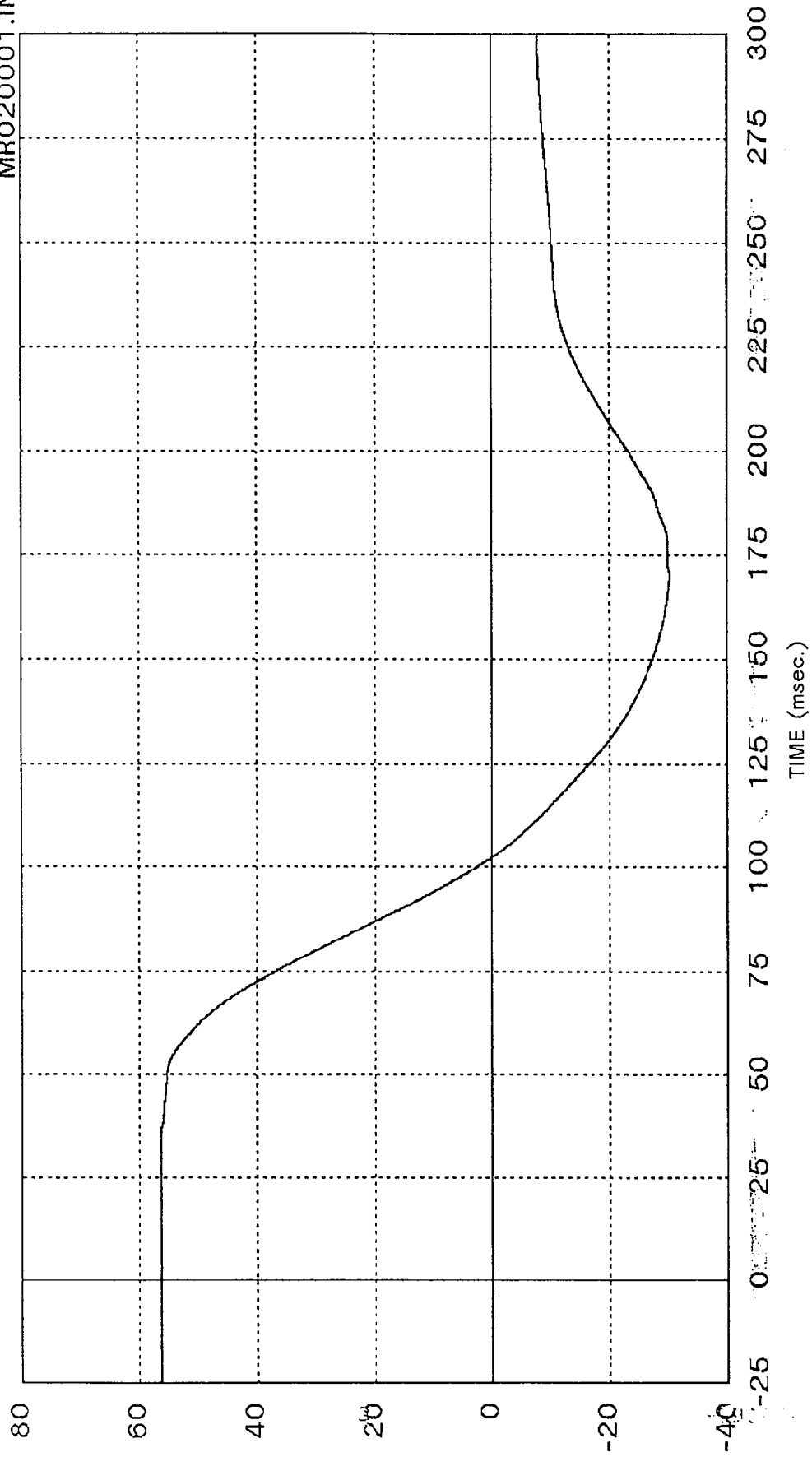
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MR020001.D,



Curve: Driver head acceleration -- X axis Filter: SAE CLASS 1000 Max = 13.970 Min = -42.623

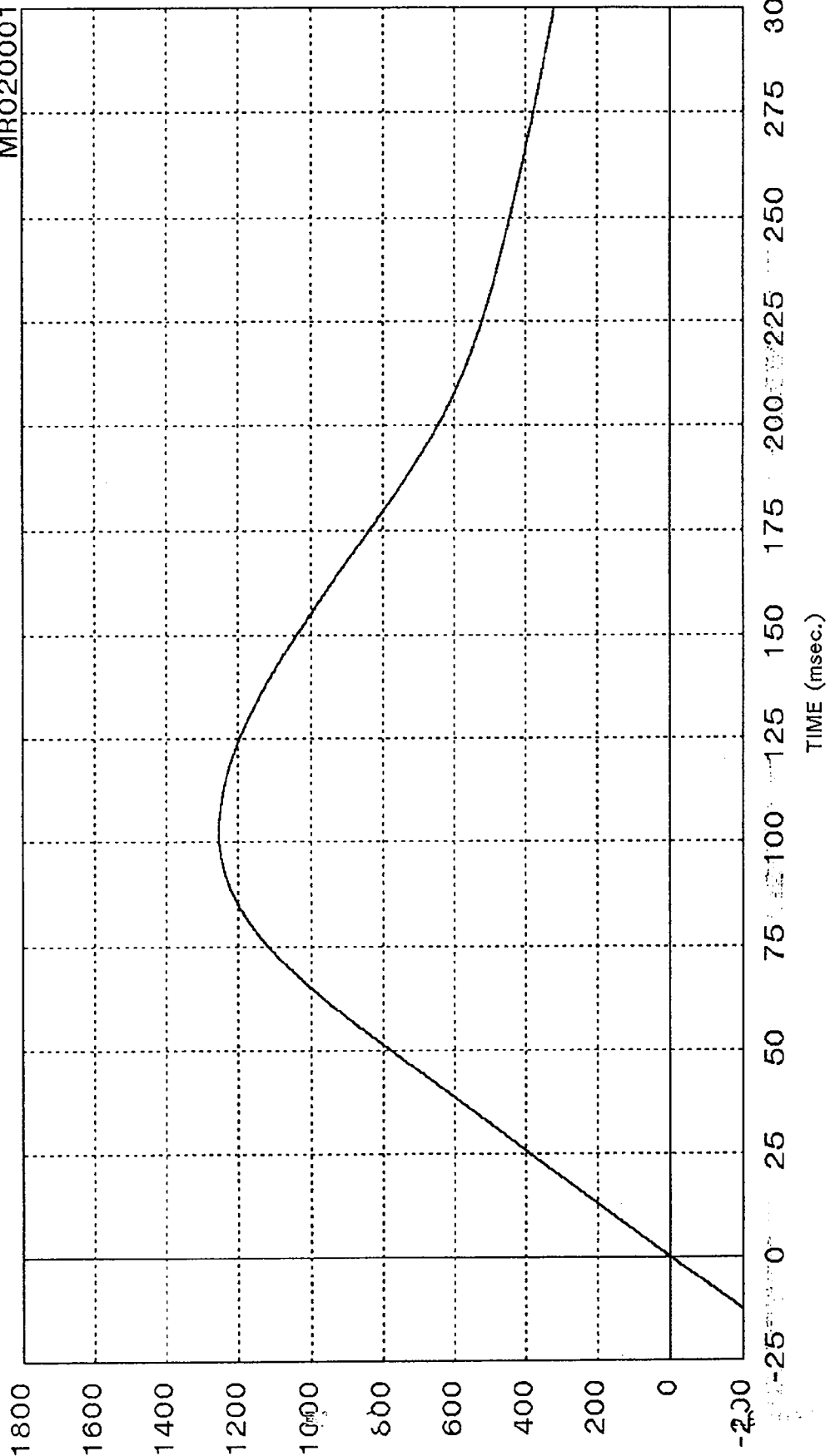
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Driver head delta V -- X axis Filter: SAE CLASS 180 Max = 56.370 Min = -30.286

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

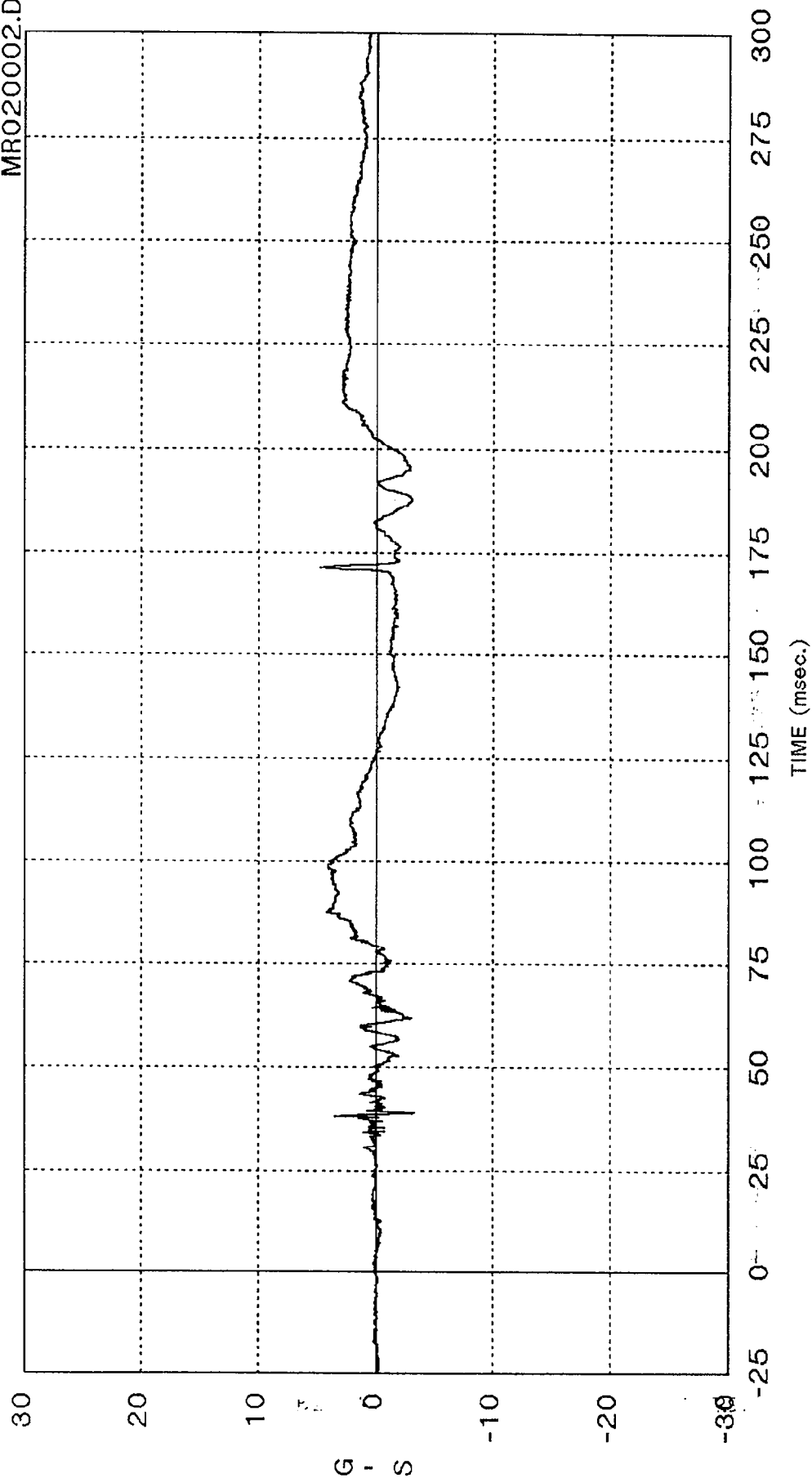
MR0200001.IN



Curve: Driver head displacement -- X axis Filter: SAE CLASS 180 Max = 1253.8 Min = 320.84

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

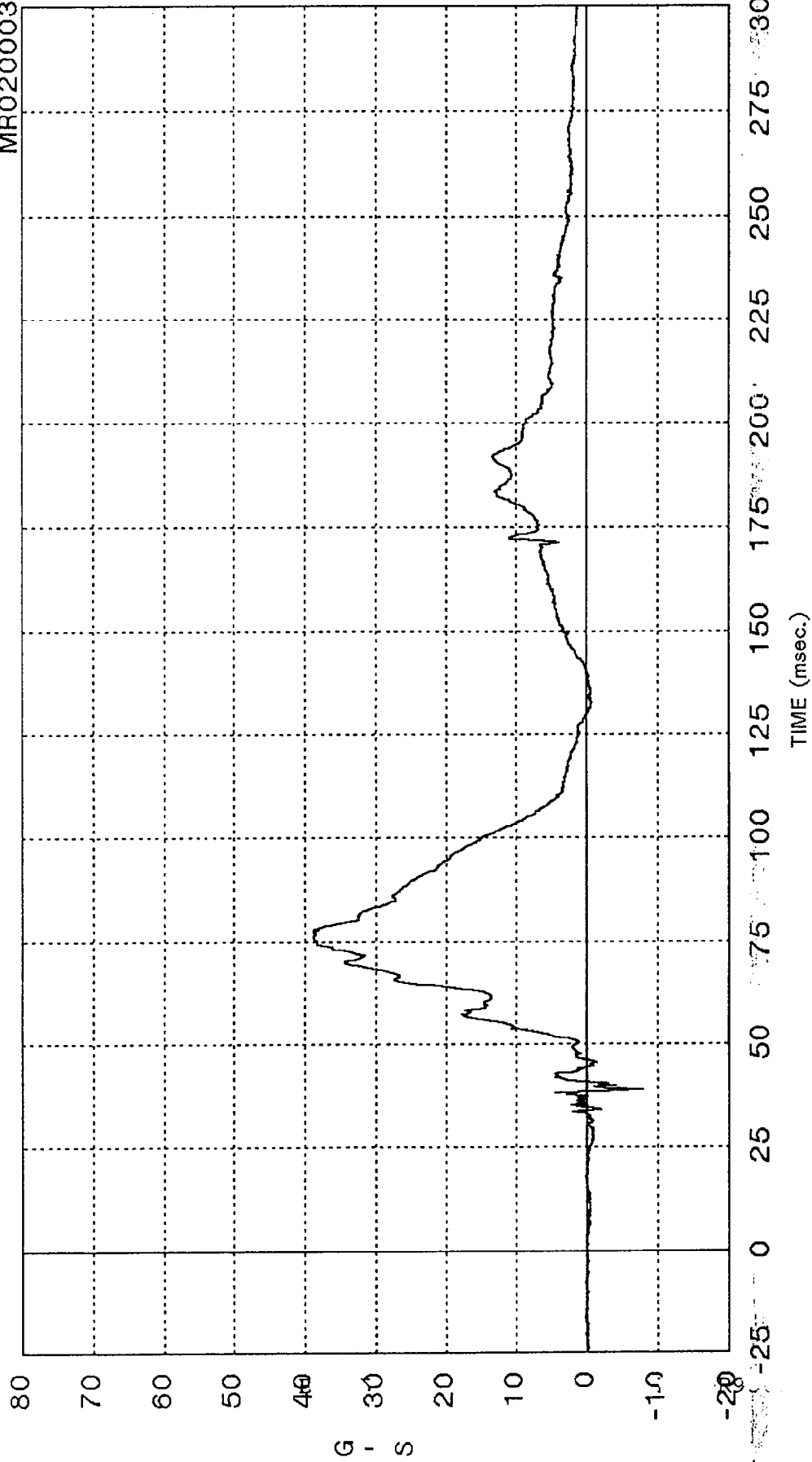
MR020002.D,



Curve: Driver head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 4.7492 Min = -3.2753

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

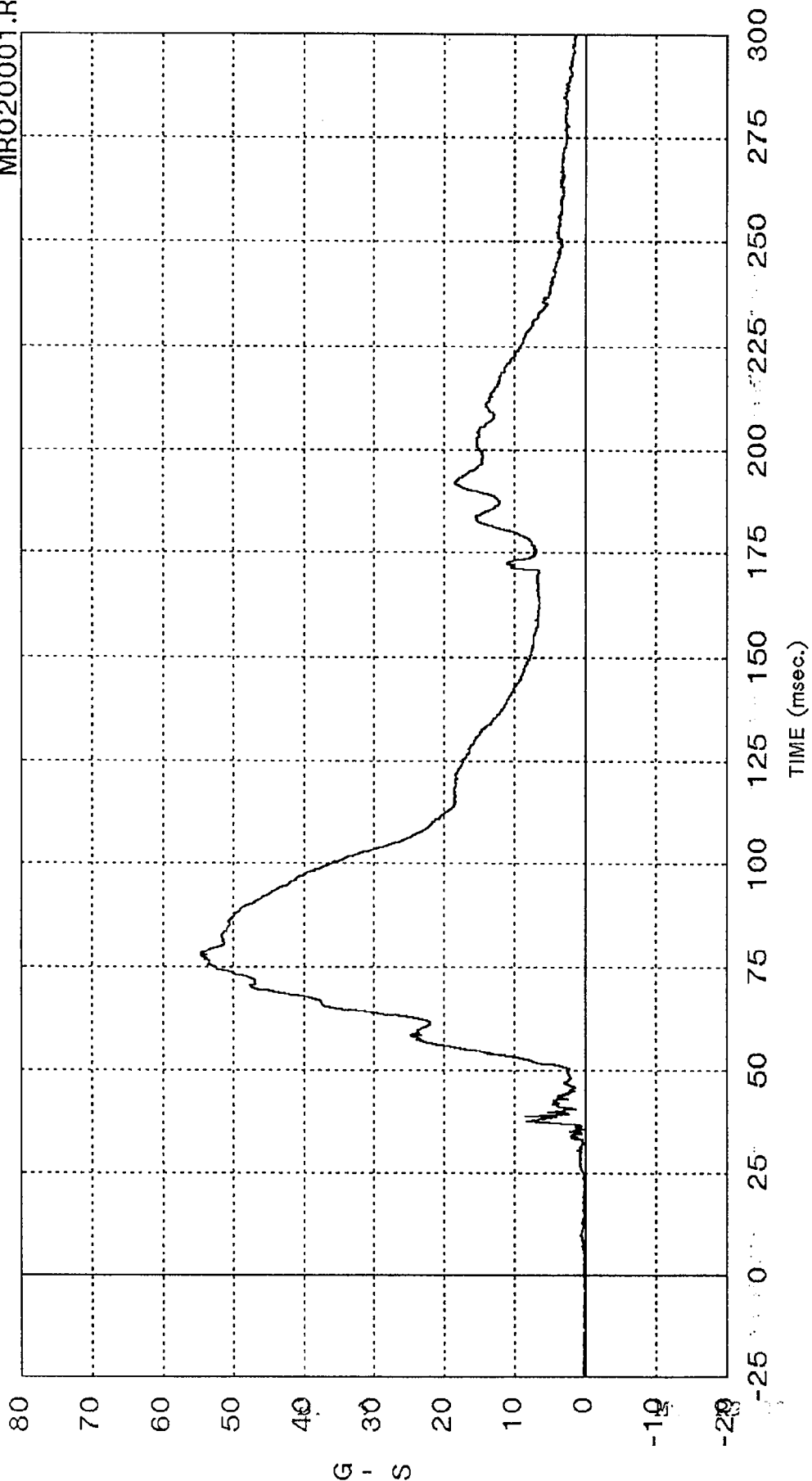
MR0200003.D,



Curve: Driver head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 38.855 Min = -7.7988

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

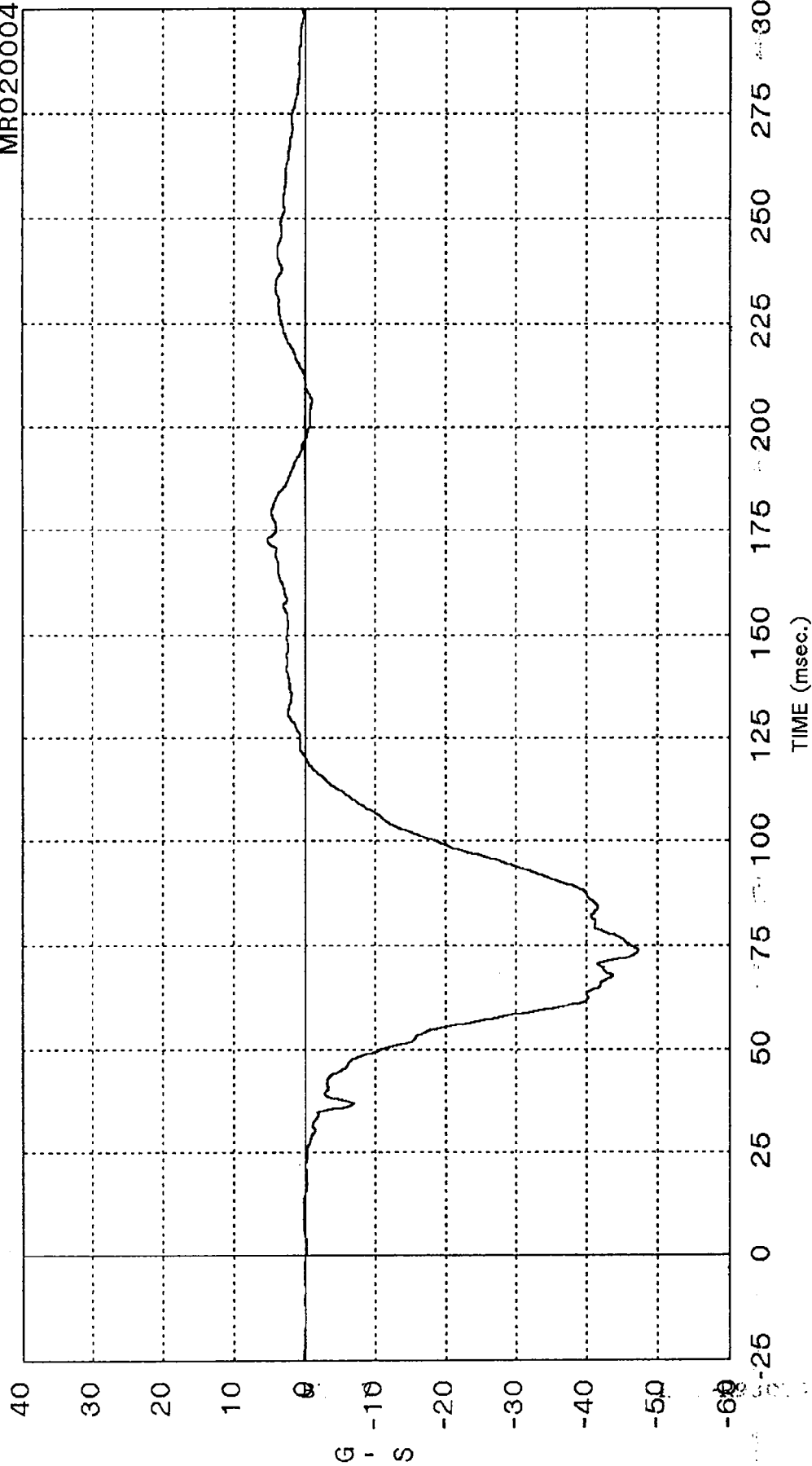
MR020001.RI



Curve: Driver head acceleration -- Resultant Filter: SAE CLASS 1000 Max = 54.776 Min = .69632E-01

MSE Date: 032/095/ 94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

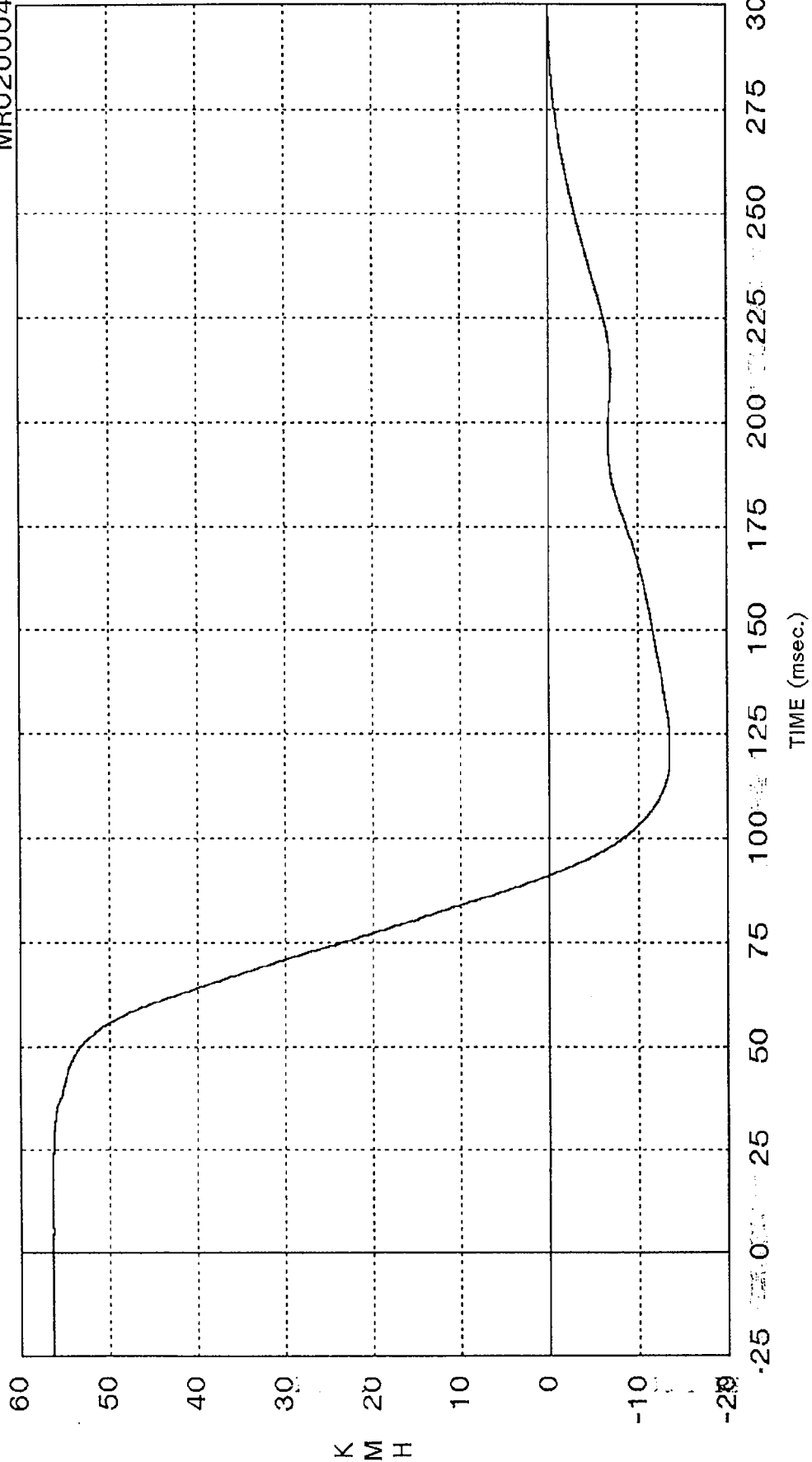
MR020004.FI



Curve: Driver chest acceleration -- X axis Filter: SAE CLASS 180 Max = 5.2862 Min = -47.234

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

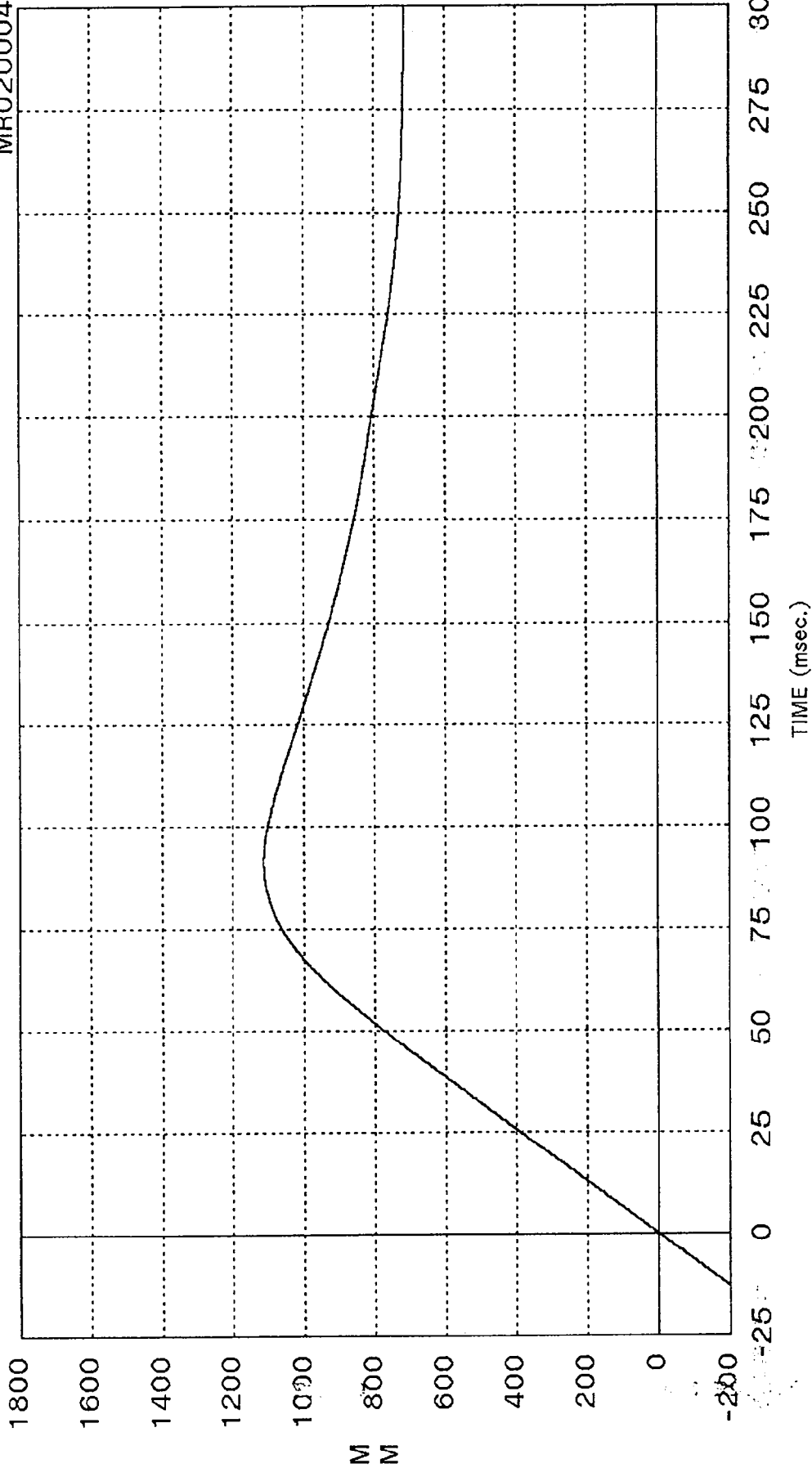
MR020004.IN



Curve: Driver chest delta V -- X axis Filter: SAE CLASS 180 Max = 56.391 Min = -13.580

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

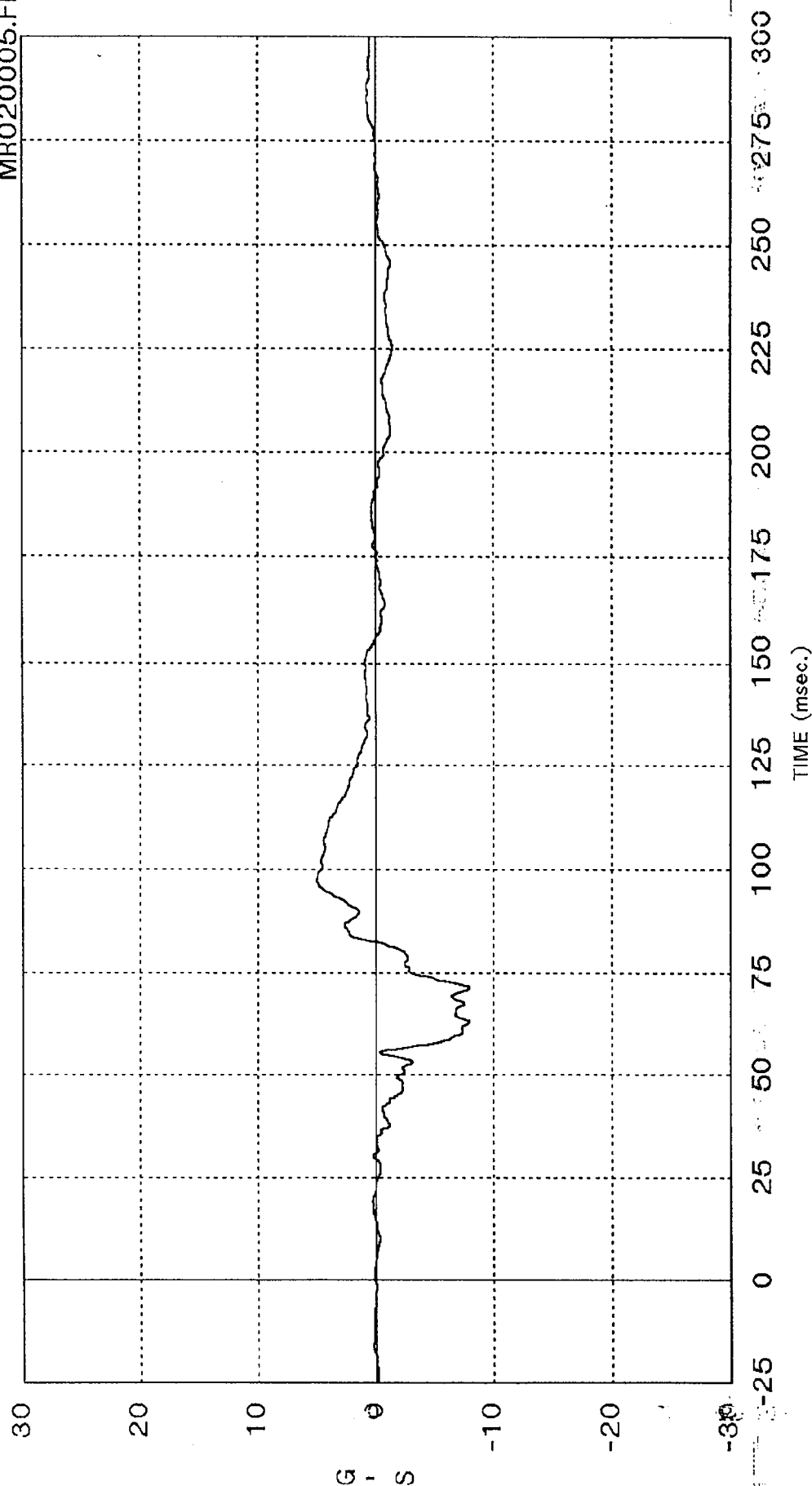
MR0200004.IN



Curve: Driver chest displacement -- X axis Filter: SAE CLASS 180 Max = 1112.7 Min = 712.62

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

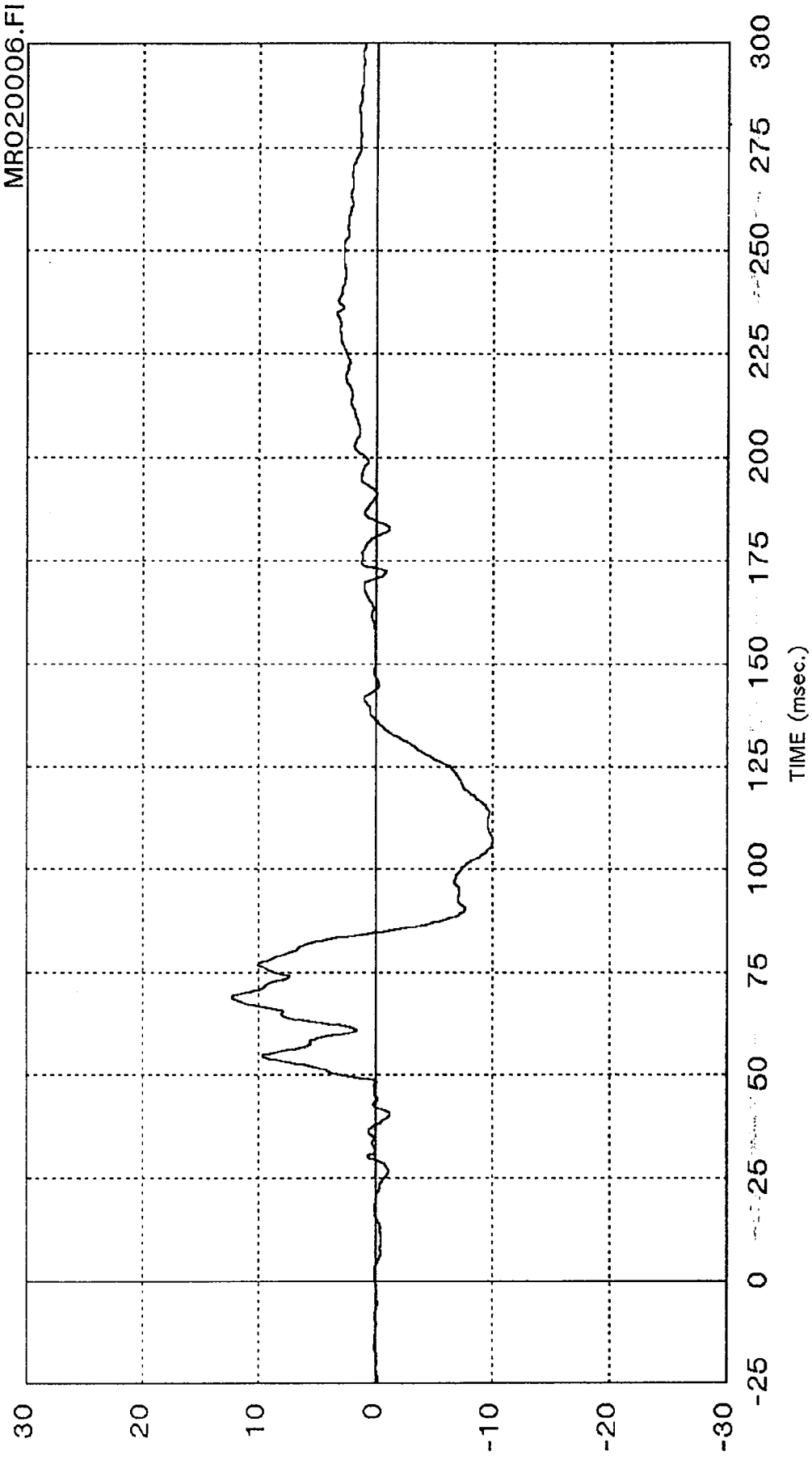
MR020005.FI



Curve: Driver chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 5.0320 Min = -7.9485

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

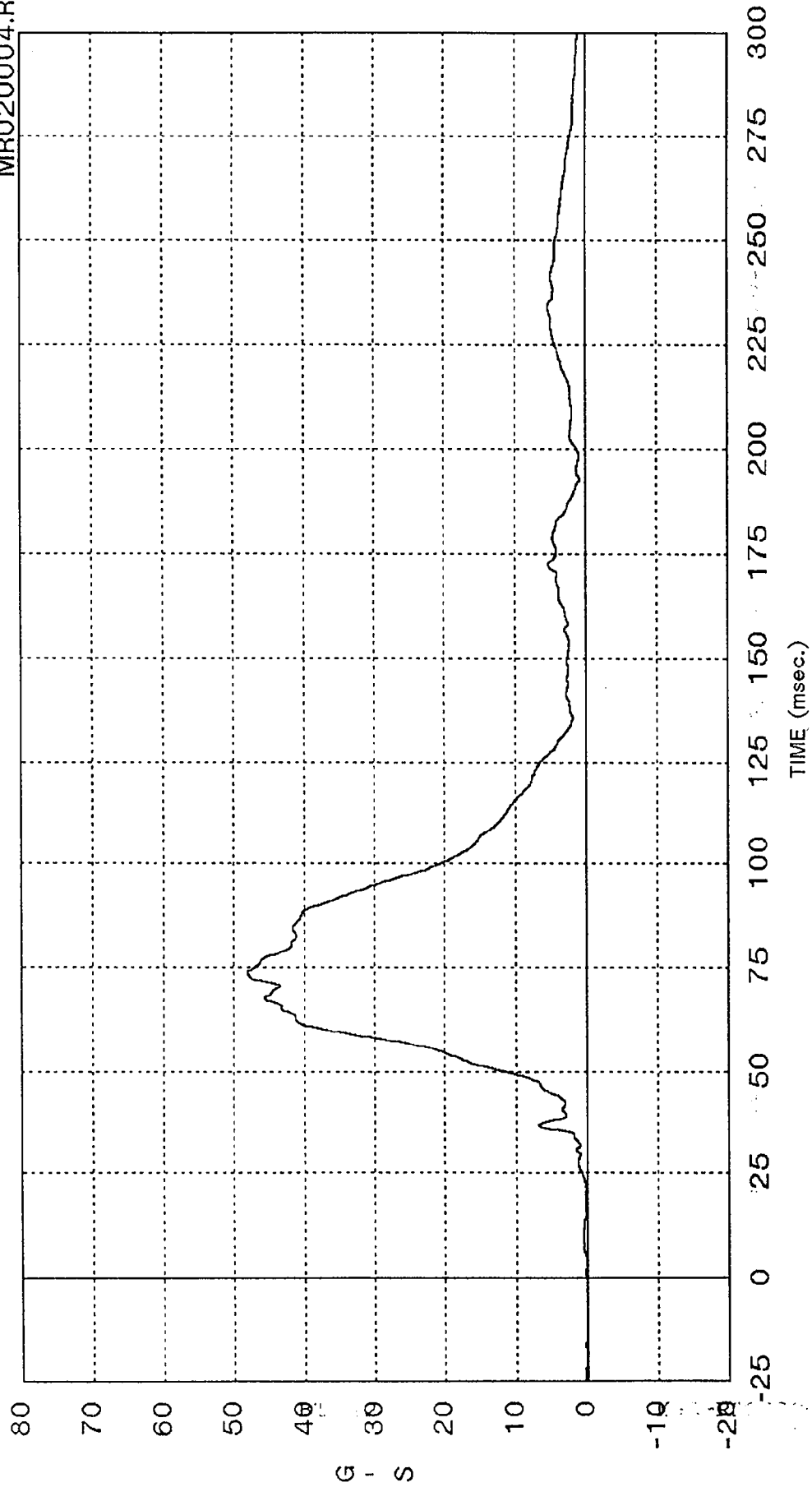
MR020006.FI



Curve: Driver chest acceleration -- Z axis Filter: SAE CLASS 180 Max = 12.307 Min = -9.9536

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

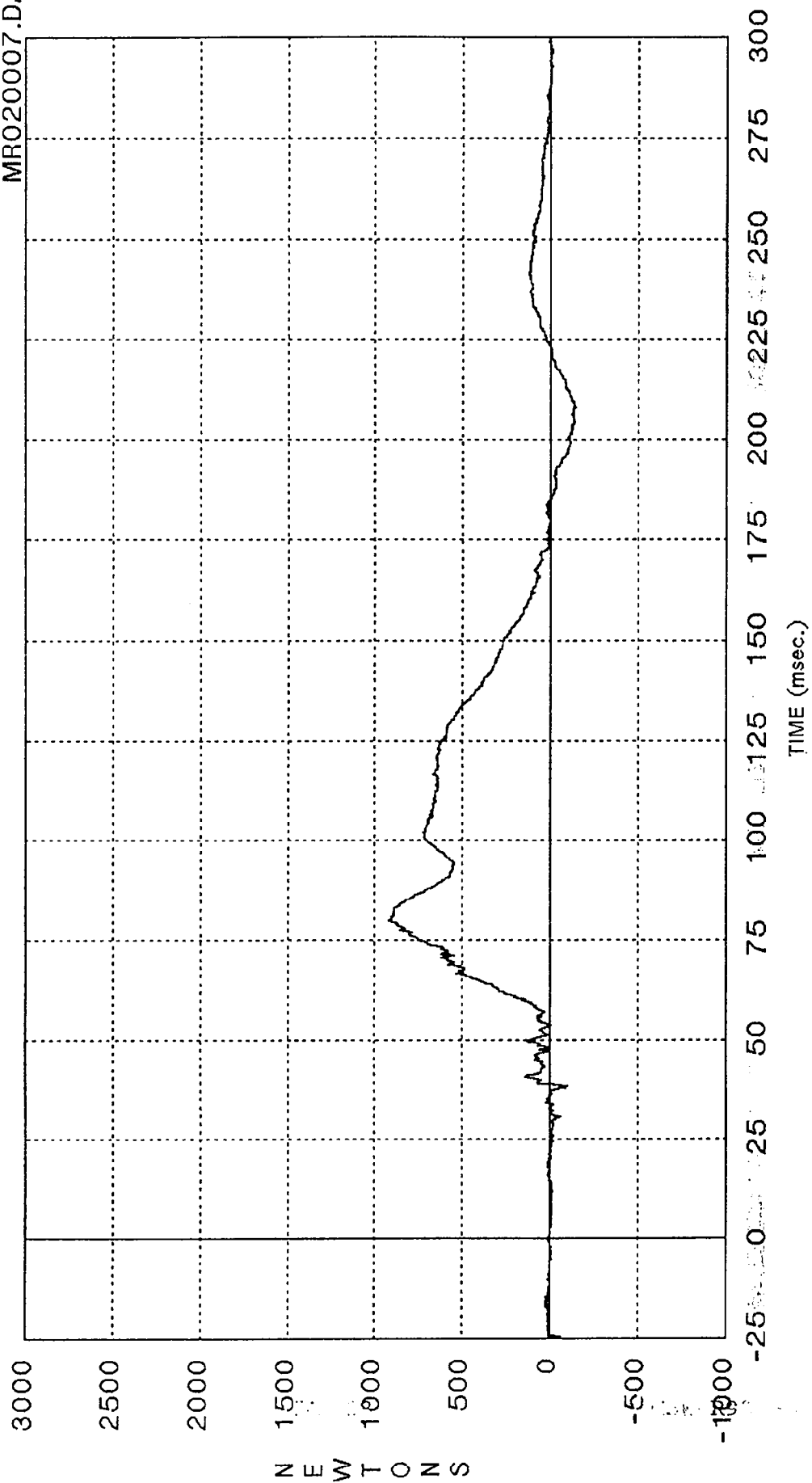
MR020004.RI



Curve: Driver chest acceleration -- Resultant Filter: SAE CLASS 180 Max = 48.067 Min = .13081

MSE Date: 032/095/ 94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

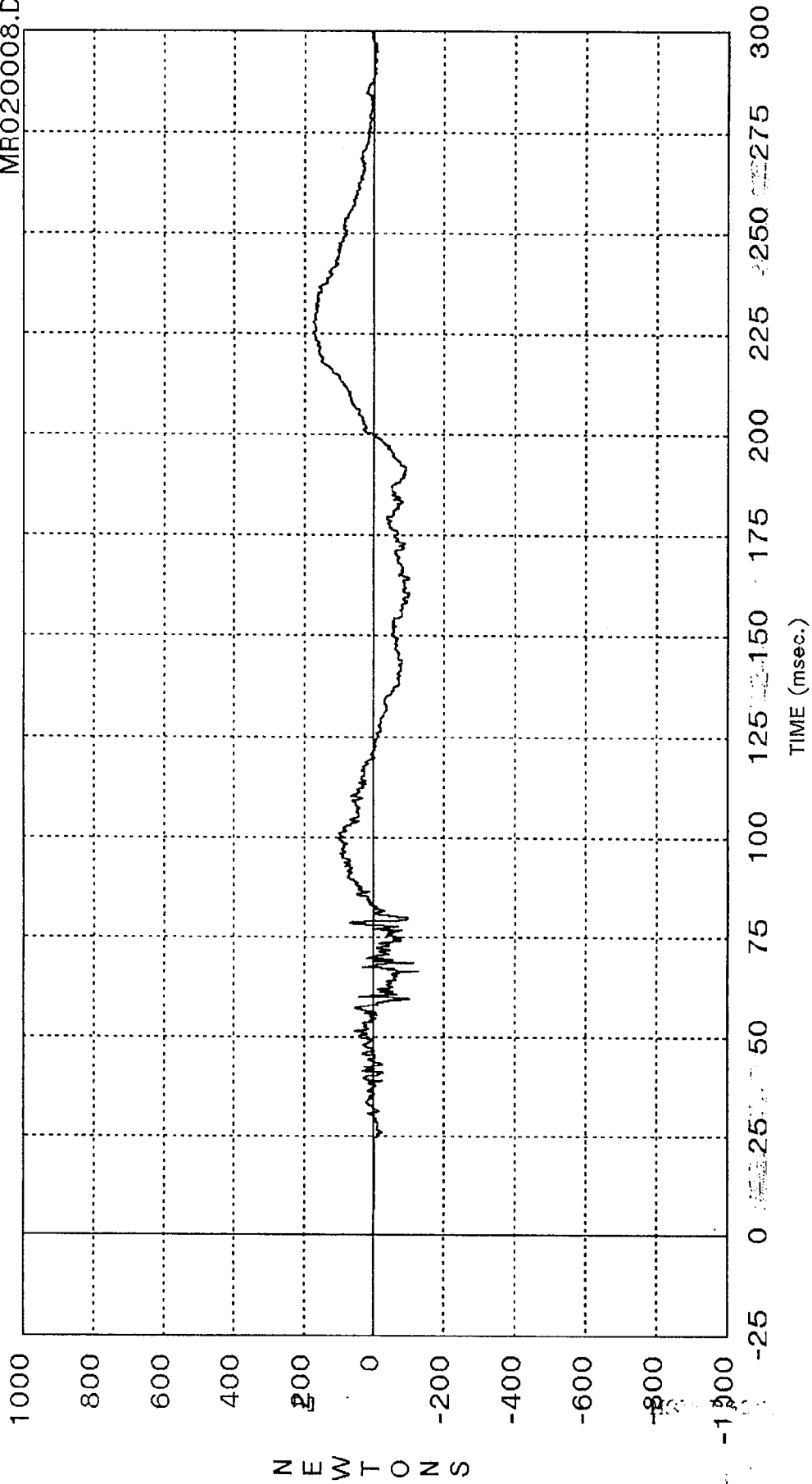
MR020007.D,



Curve: Driver neck force -- X axis Filter: SAE CLASS 1000 Max = 919.17 Min = -146.76

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020008.D,



Curve: Driver neck force -- Y axis Filter: SAE CLASS 1000 Max = 174.70 Min = -134.81

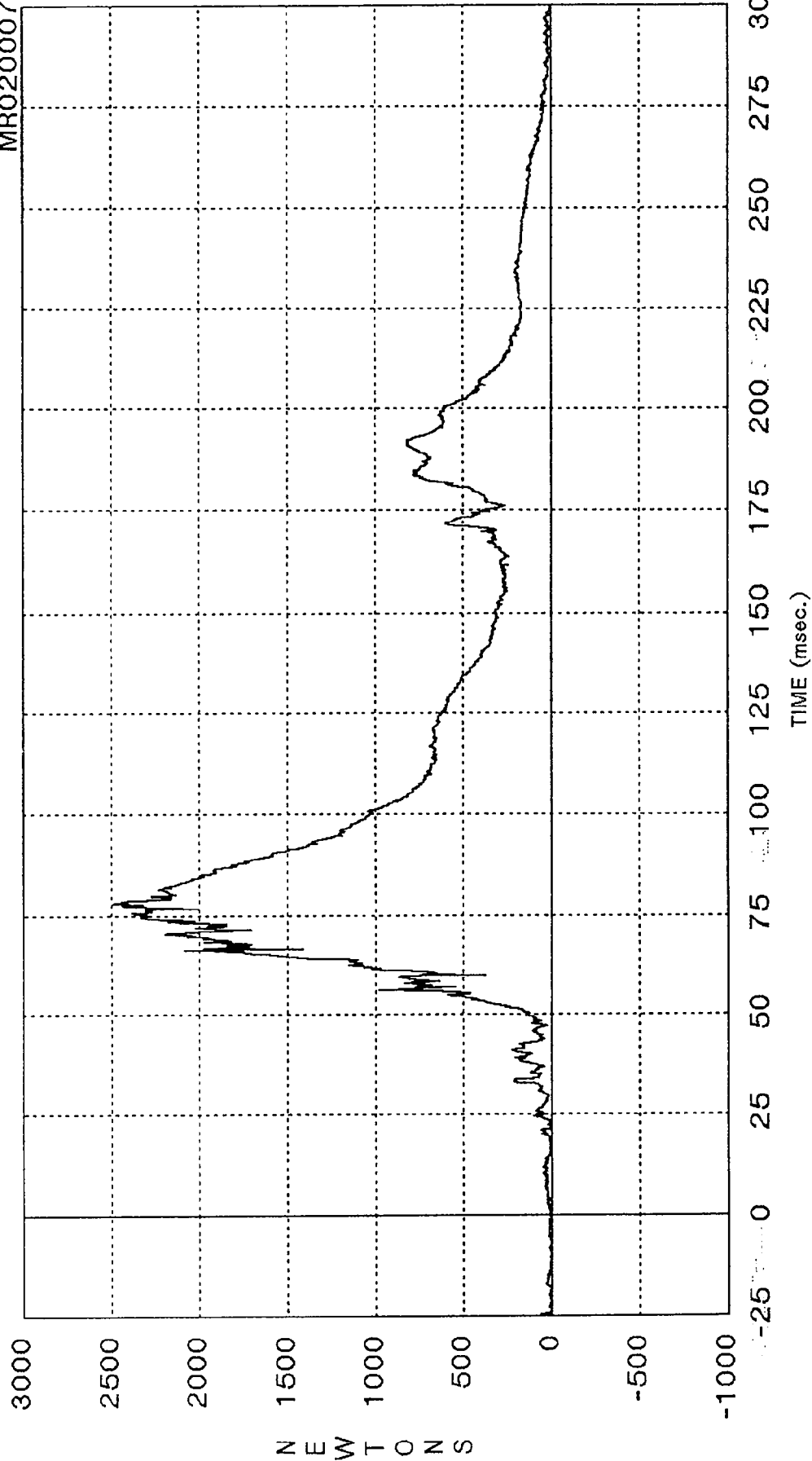
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

NEWTONS

B1 14

MSE-R93030-05

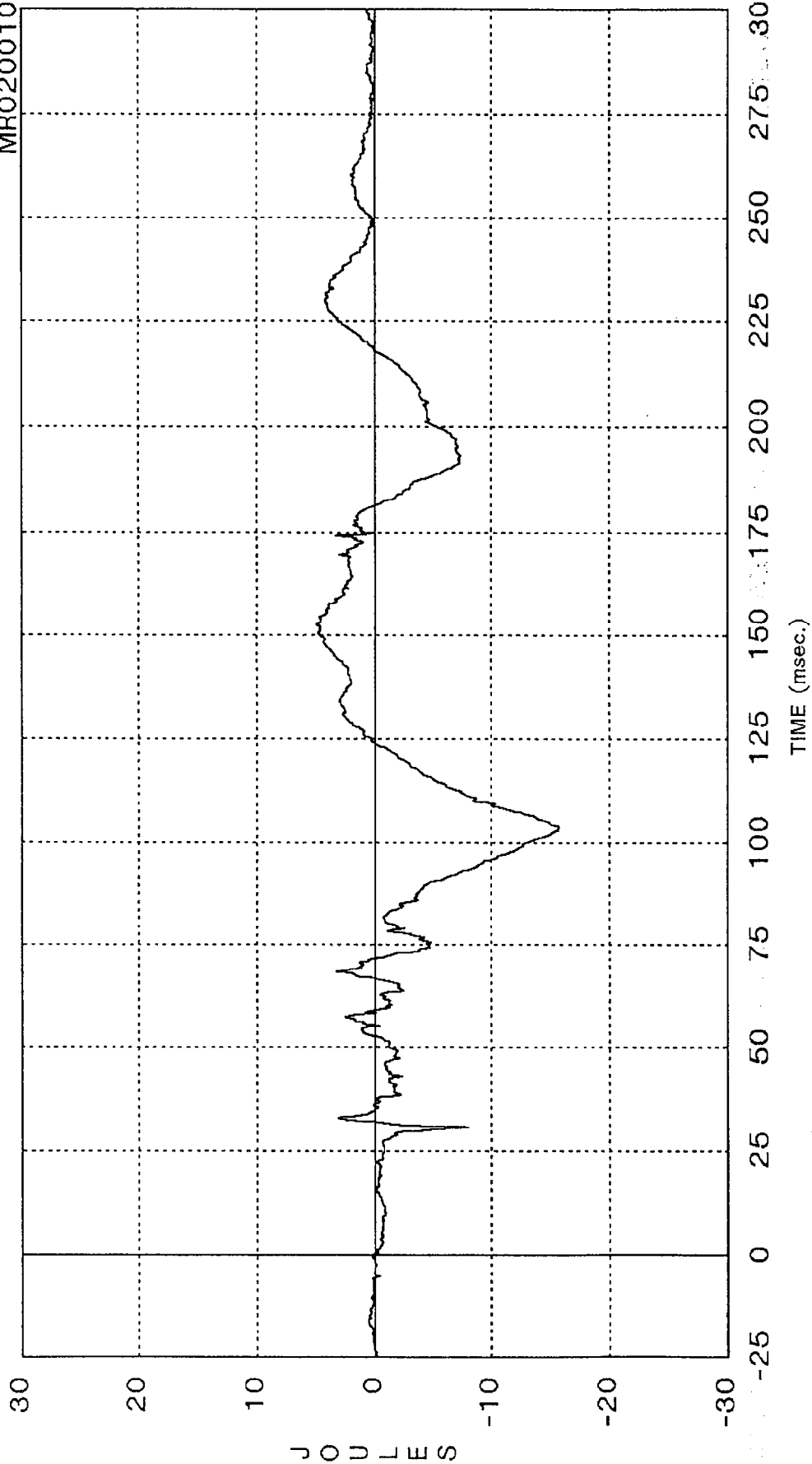
MR020007.RI



Curve: Driver neck force -- Resultant Filter: SAE CLASS 1000 Max = 2559.8 Min = .53552E-01

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

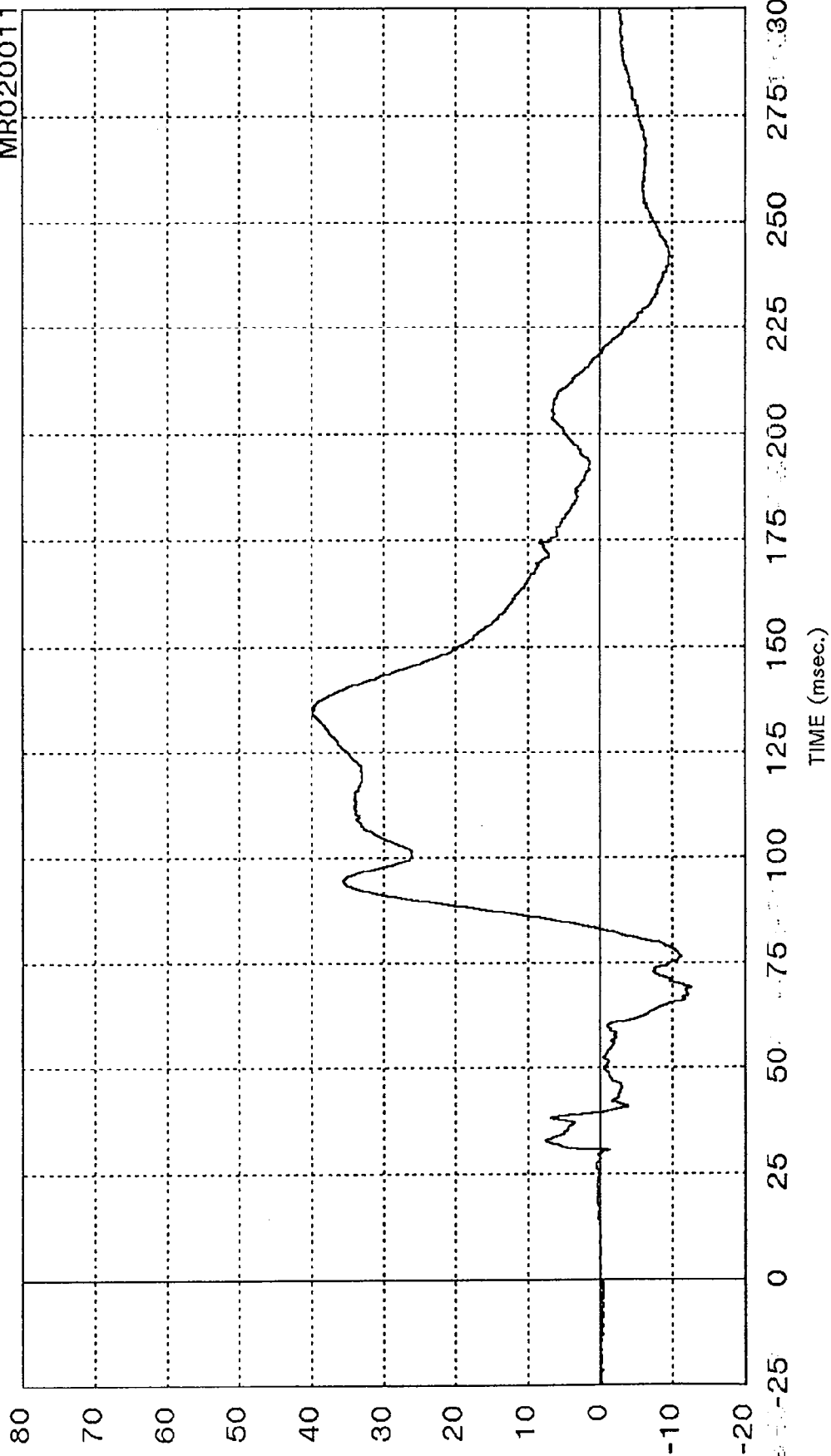
MR020010.FI



Curve: Driver neck moment -- X axis Filter: SAE CLASS 600 Max = 5.0438 Min = -15.708

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR0200011.FI

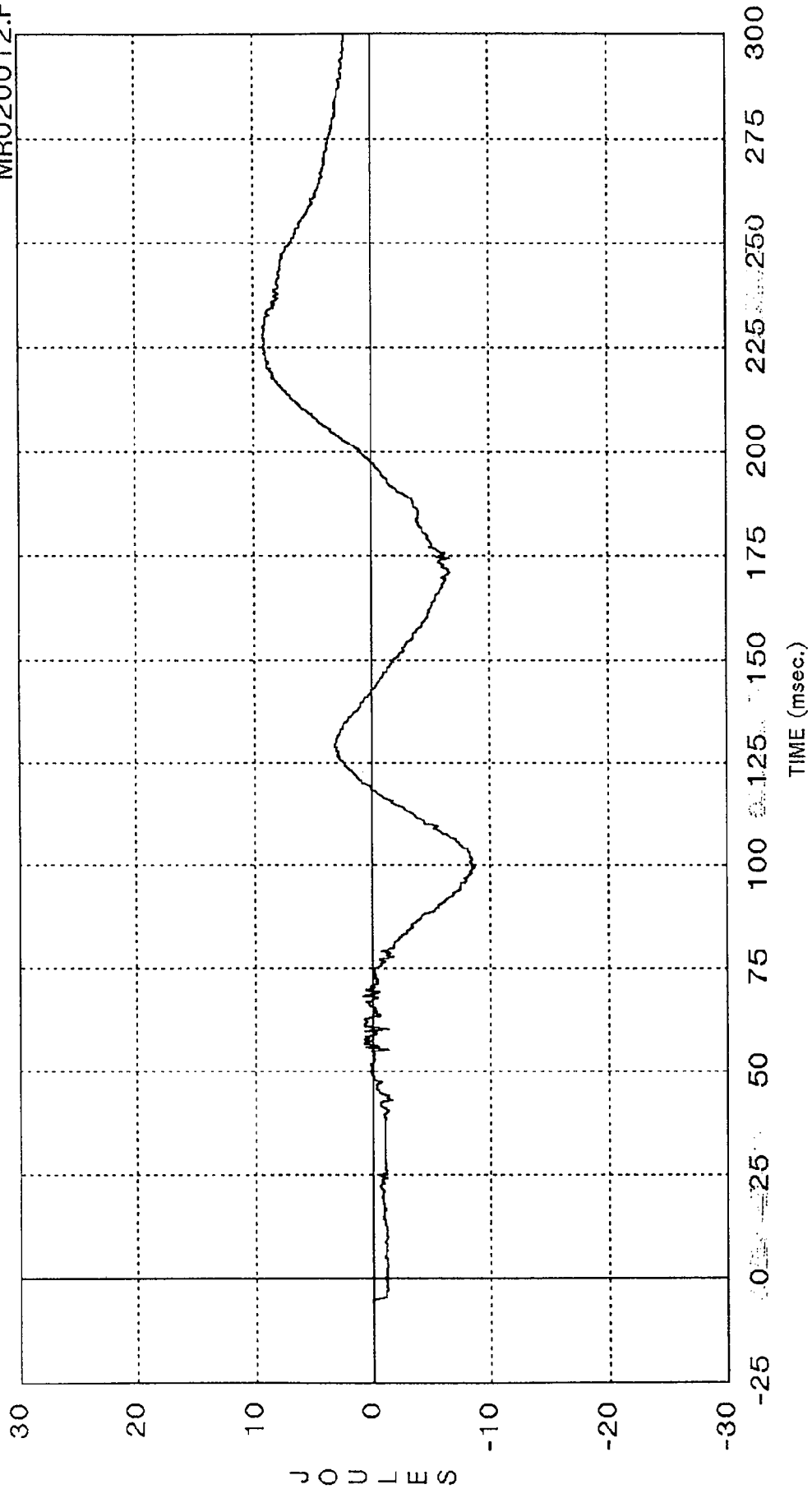


Curve: Driver neck moment -- Y axis Filter: SAE CLASS 600 Max = 39.854 Min = -12.635

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

J O U L E S

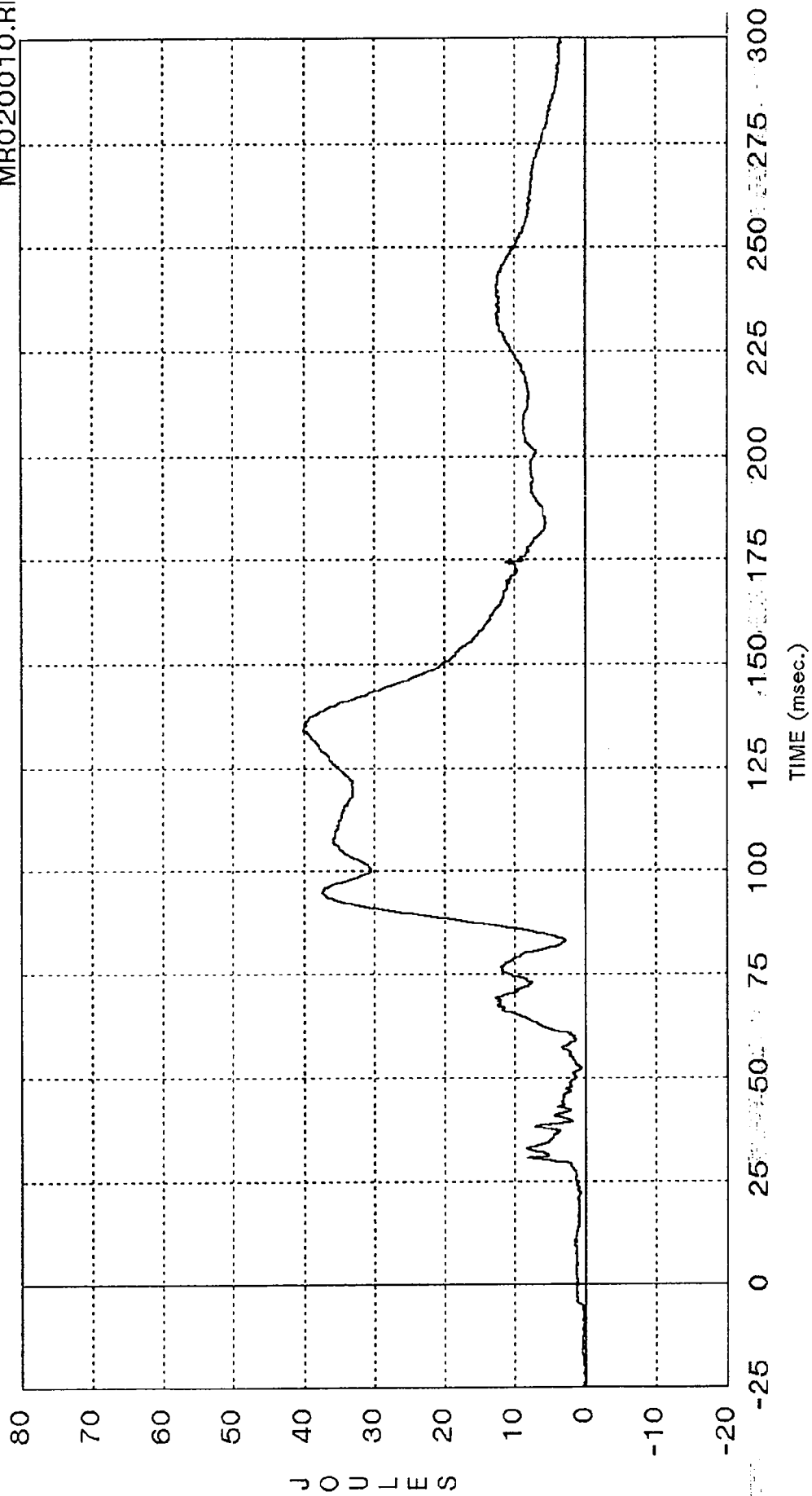
MR020012.FI



Curve: Driver neck moment -- Z axis Filter: SAE CLASS 600 Max = 9.2663 Min = -8.7153

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

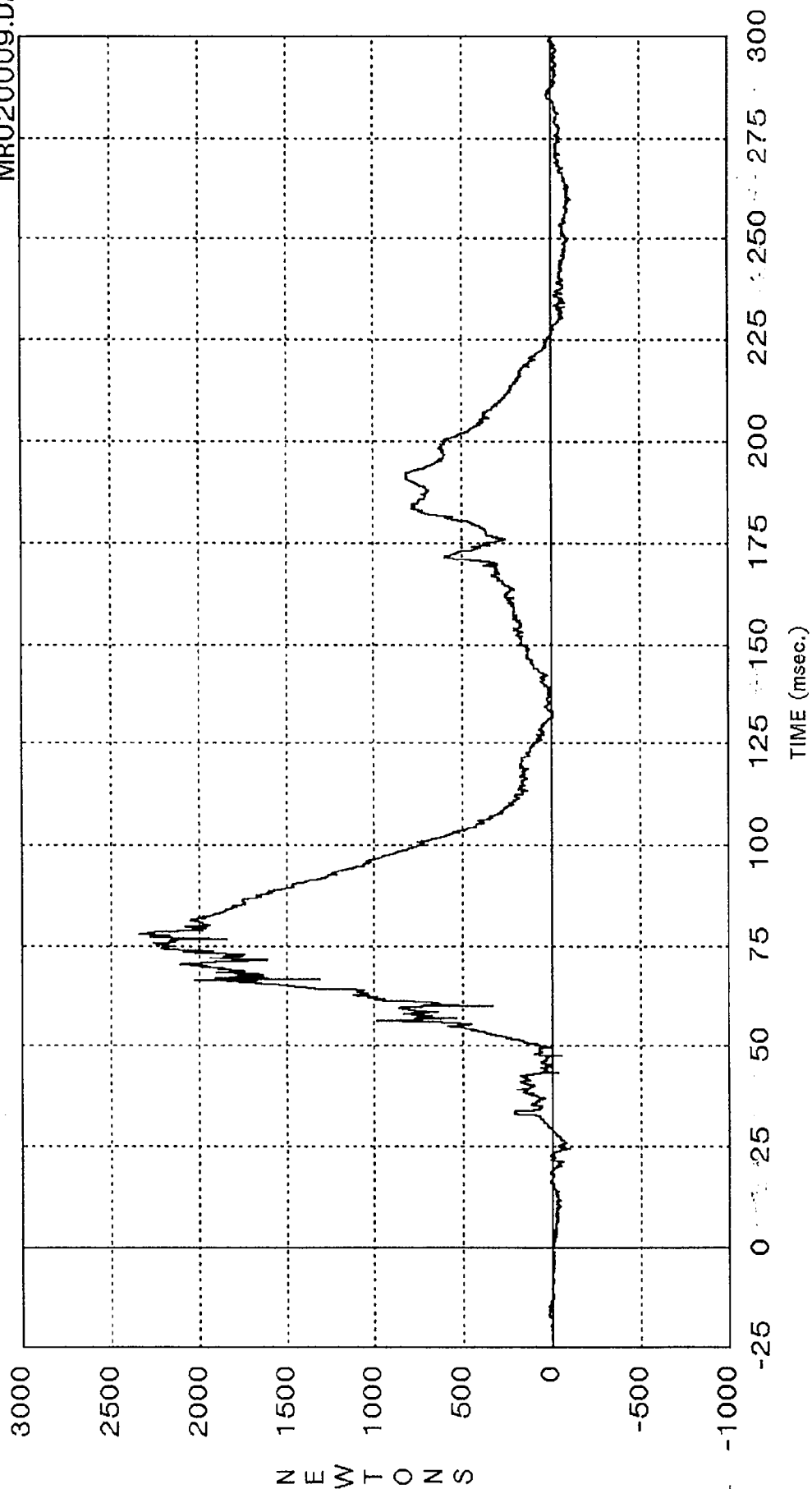
MR020010.RI



Curve: Driver neck moment -- Resultant Filter: SAE CLASS 600 Max = 40.052 Min = .50554

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020009.D,

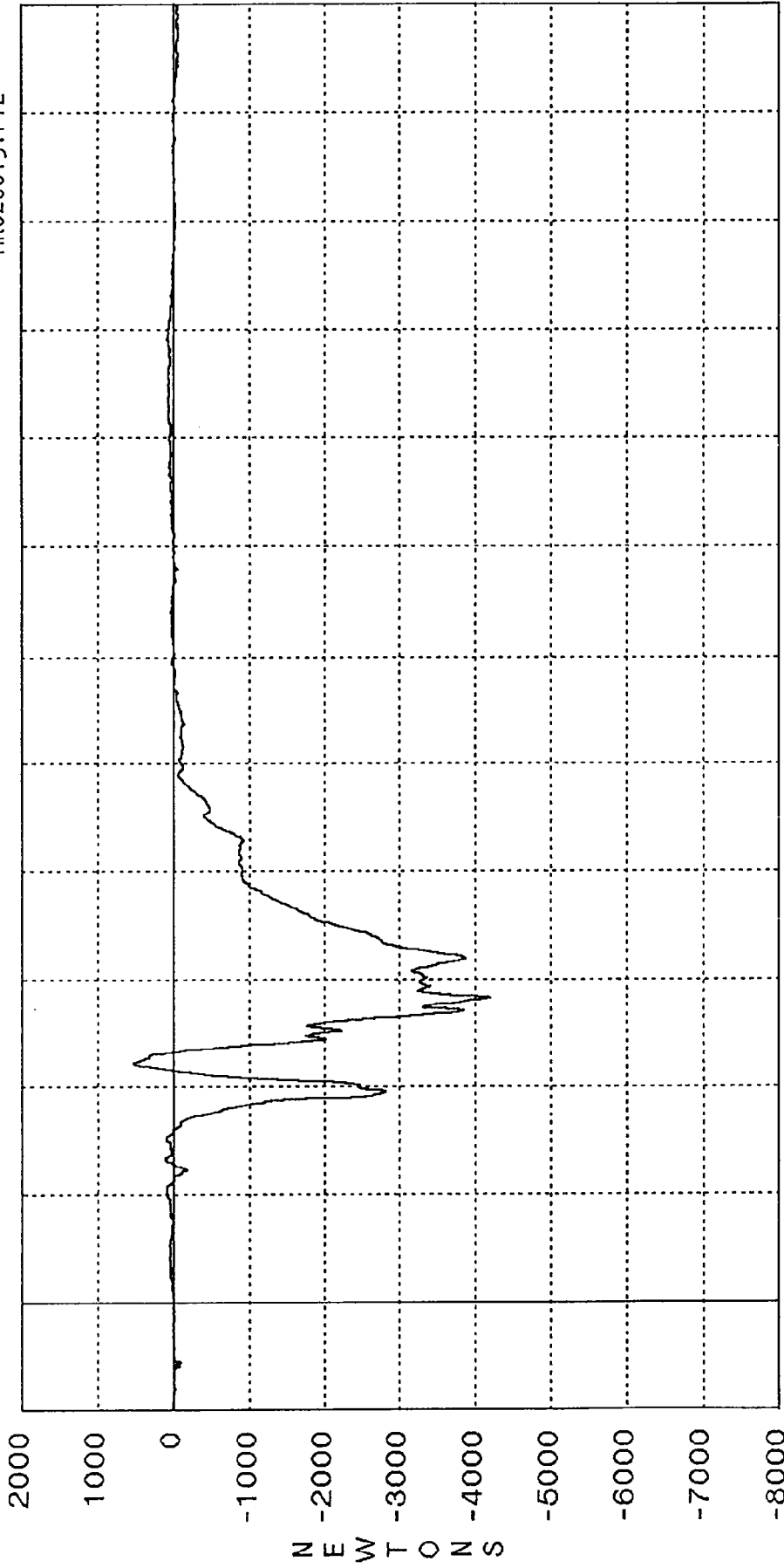


Curve: Driver neck force -- Z axis

Filter: SAE CLASS 1000 Max = 2422.6 Min = -114.94

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020013.FIL

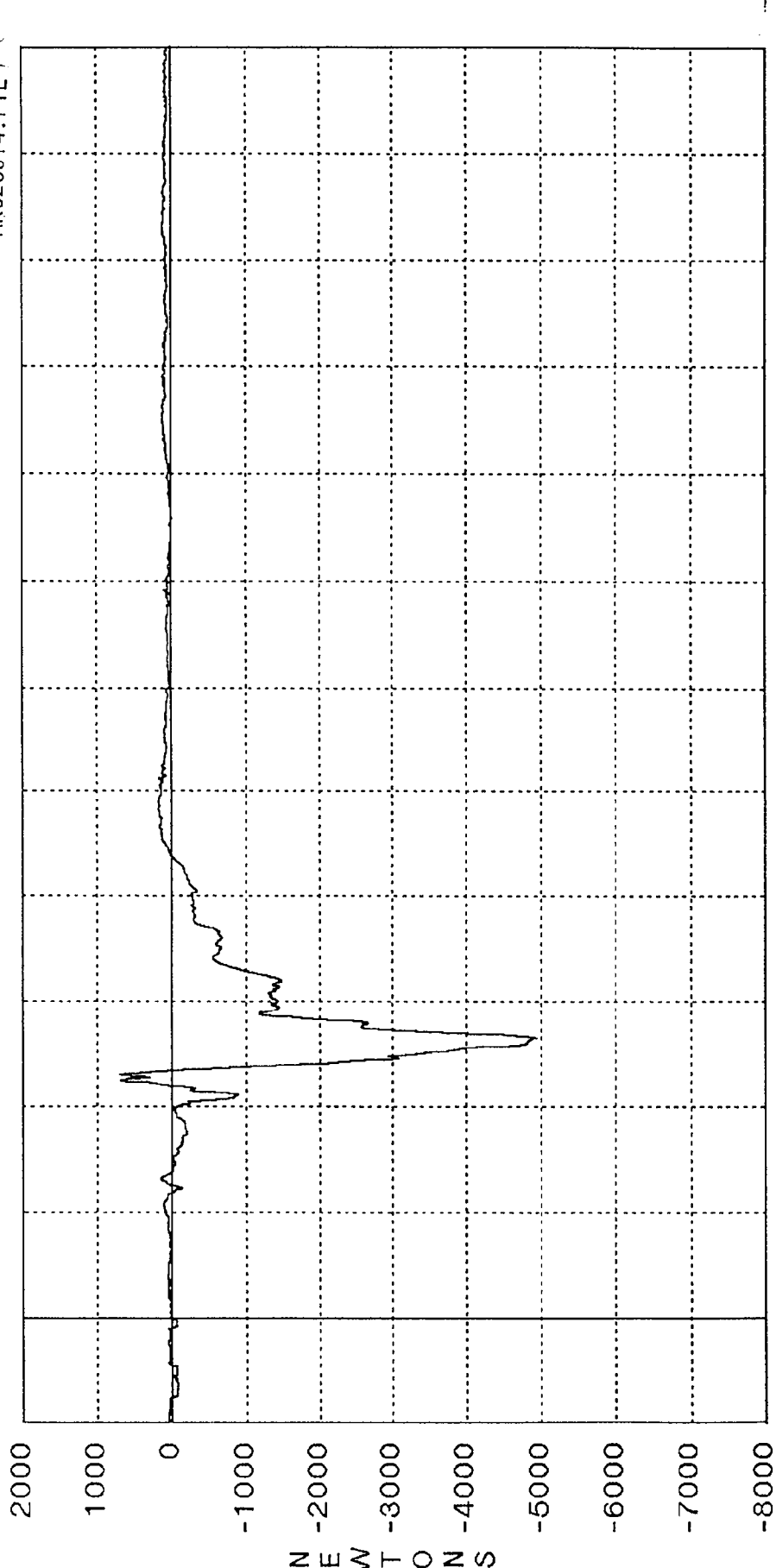


Curve: Driver left femur

Filter: SAE CLASS 600 Max = 548.21 Min = -4204.7

MSE Date: 03/09/94 Program: New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020014.FIL



717.44

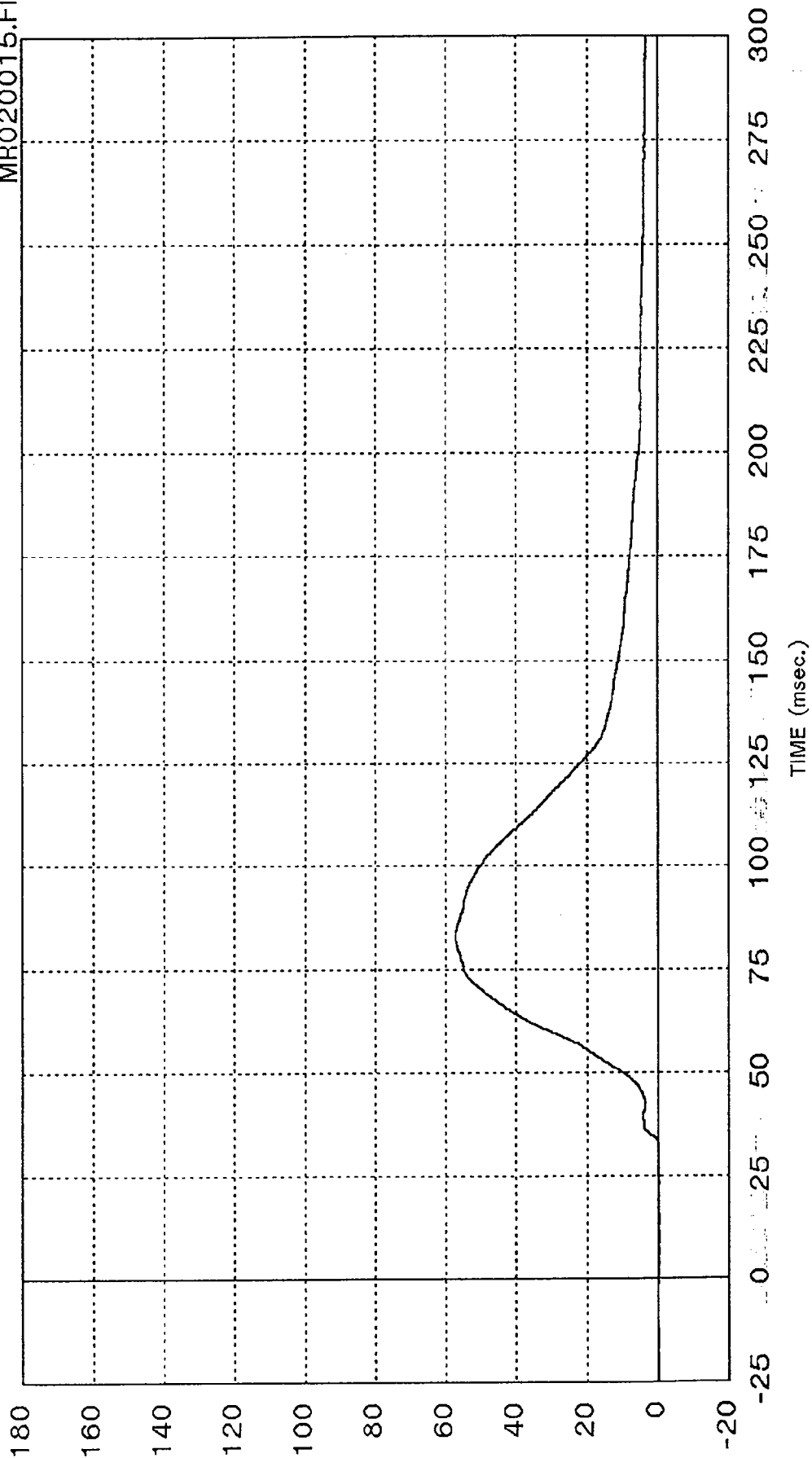
Max = 717.44

Min = -4936.0

Curve: Driver Right Femur

MSE Date: 03/09/94 Program: New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020015.FI

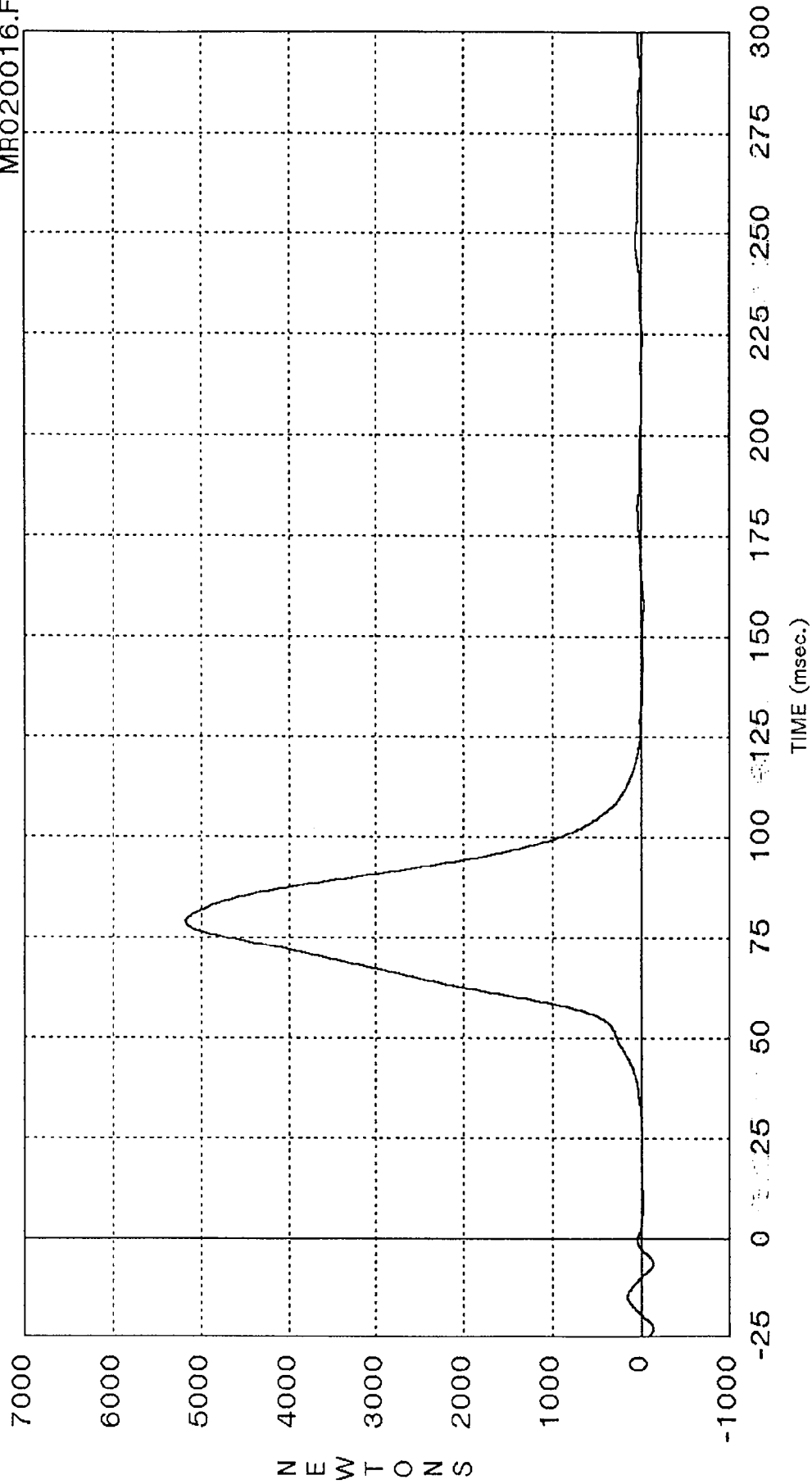


Curve: Driver chest displacement

Filter: SAE CLASS 180 Max = 57.303 Min = -.42004

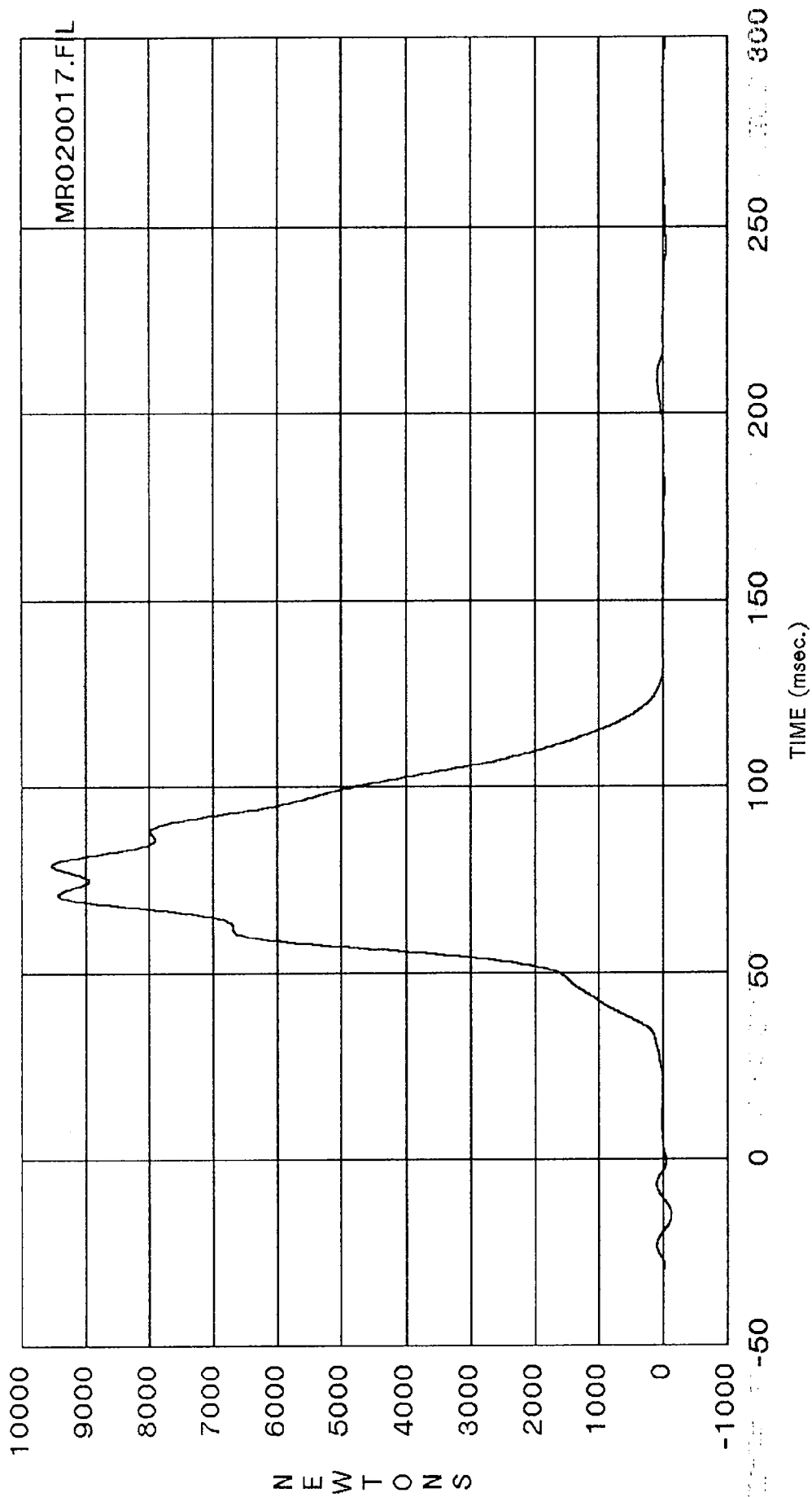
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020016.FI



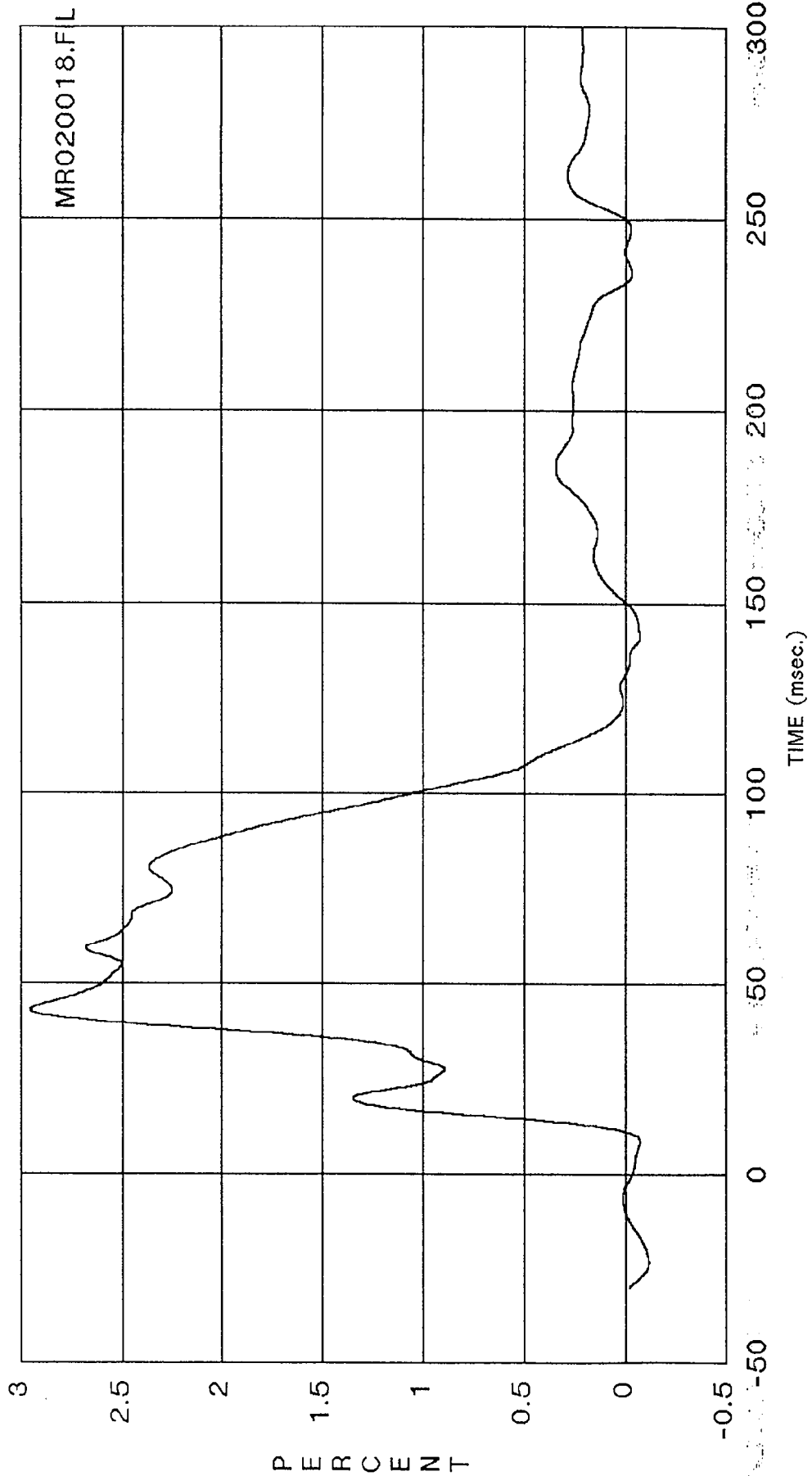
Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 5174.5 Min = -34.585

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Driver shoulder belt load Filter: SAE CLASS 60 Max = 9527.6 Min = -50.760

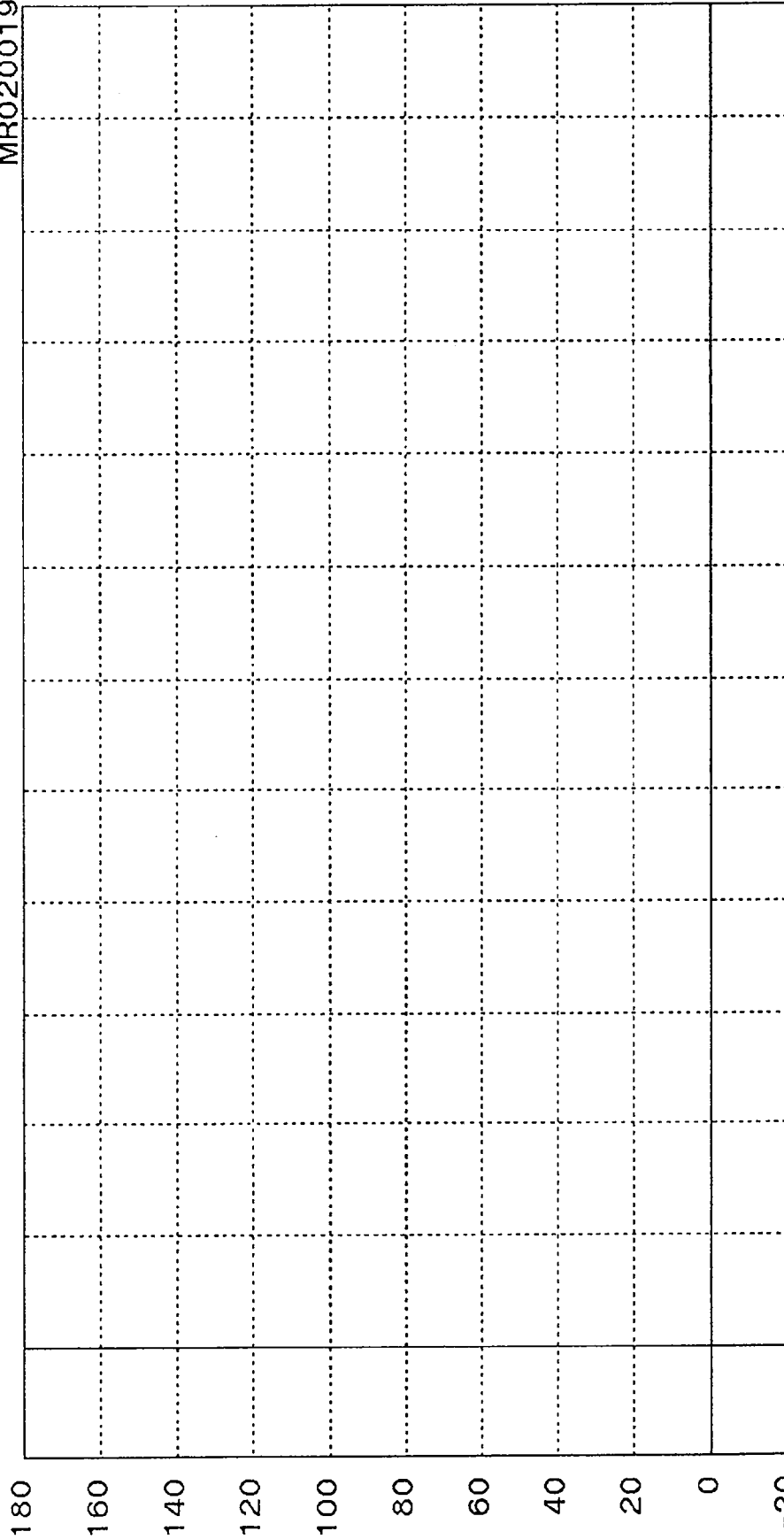
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Driver shoulder belt elongation Filter: SAE CLASS 60 Max = 2.9552 Min = -.71776E-01

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020019.FI



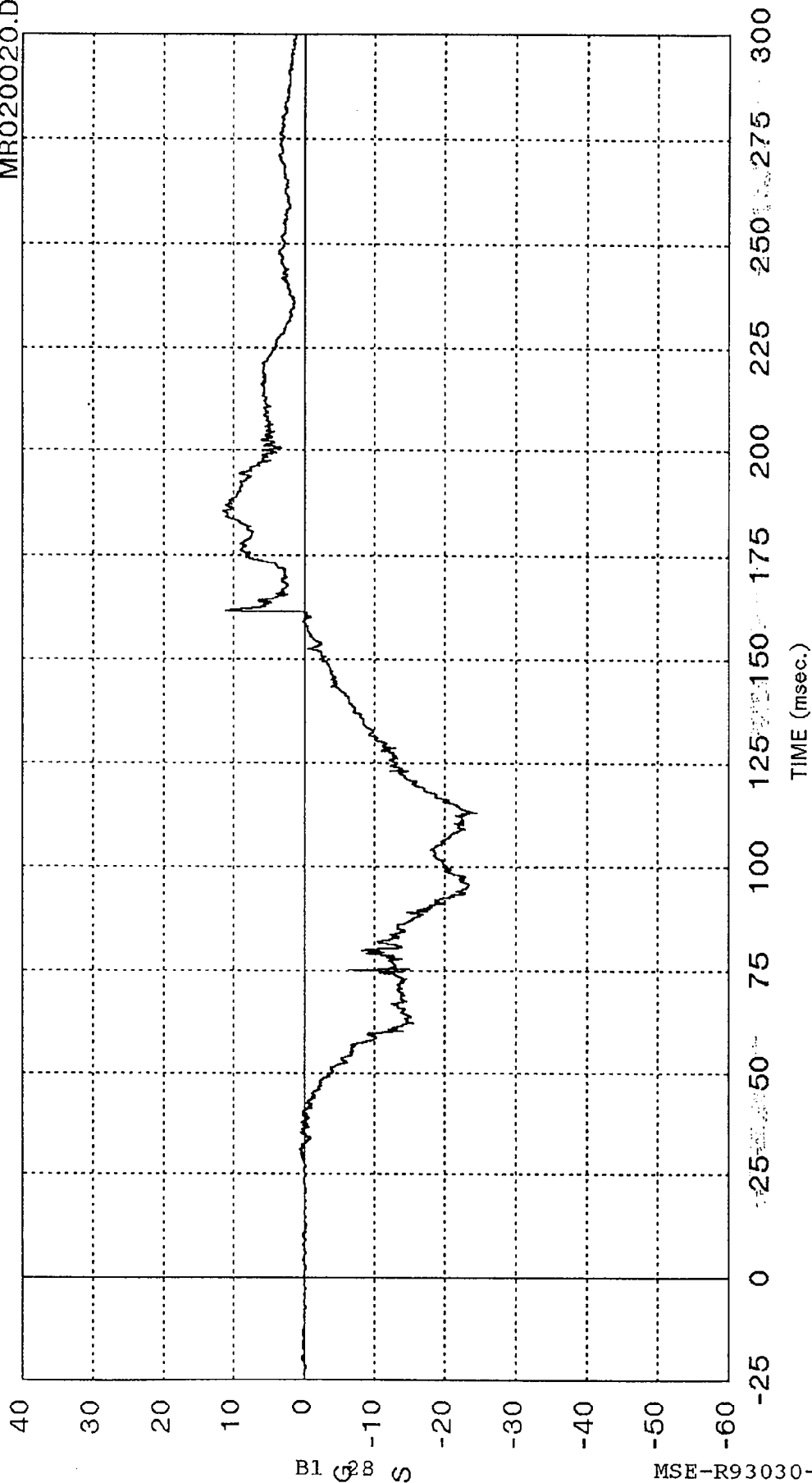
TIME (msec.)

Curve: Driver seat belt pullout (Not used)

Filter: SAE CLASS 60 Max = .00000 Min = .00000

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020020.D,

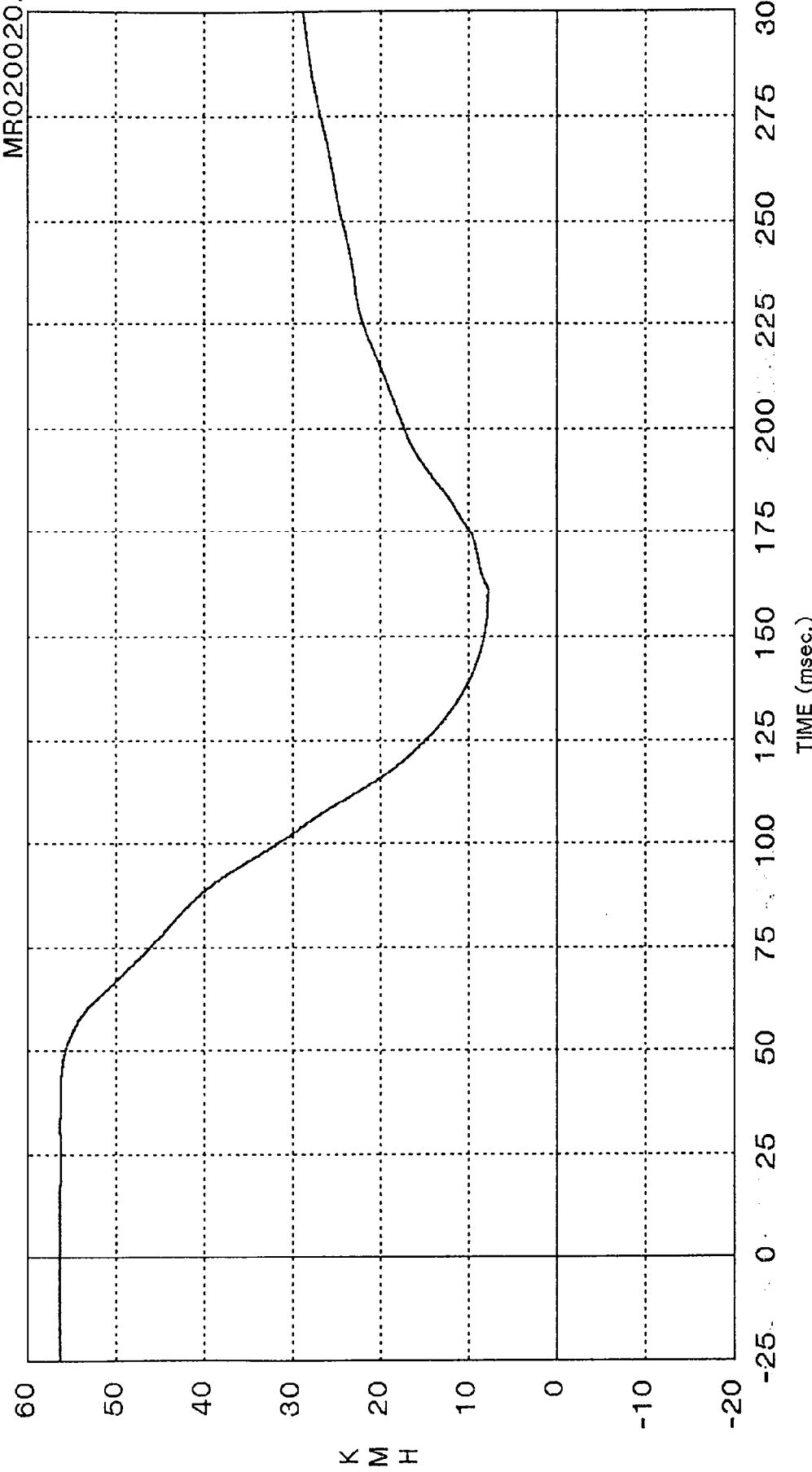


Curve: Passenger head acceleration -- X axis Filter: SAE CLASS 1000 Max = 11.600 Min = -24.393

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

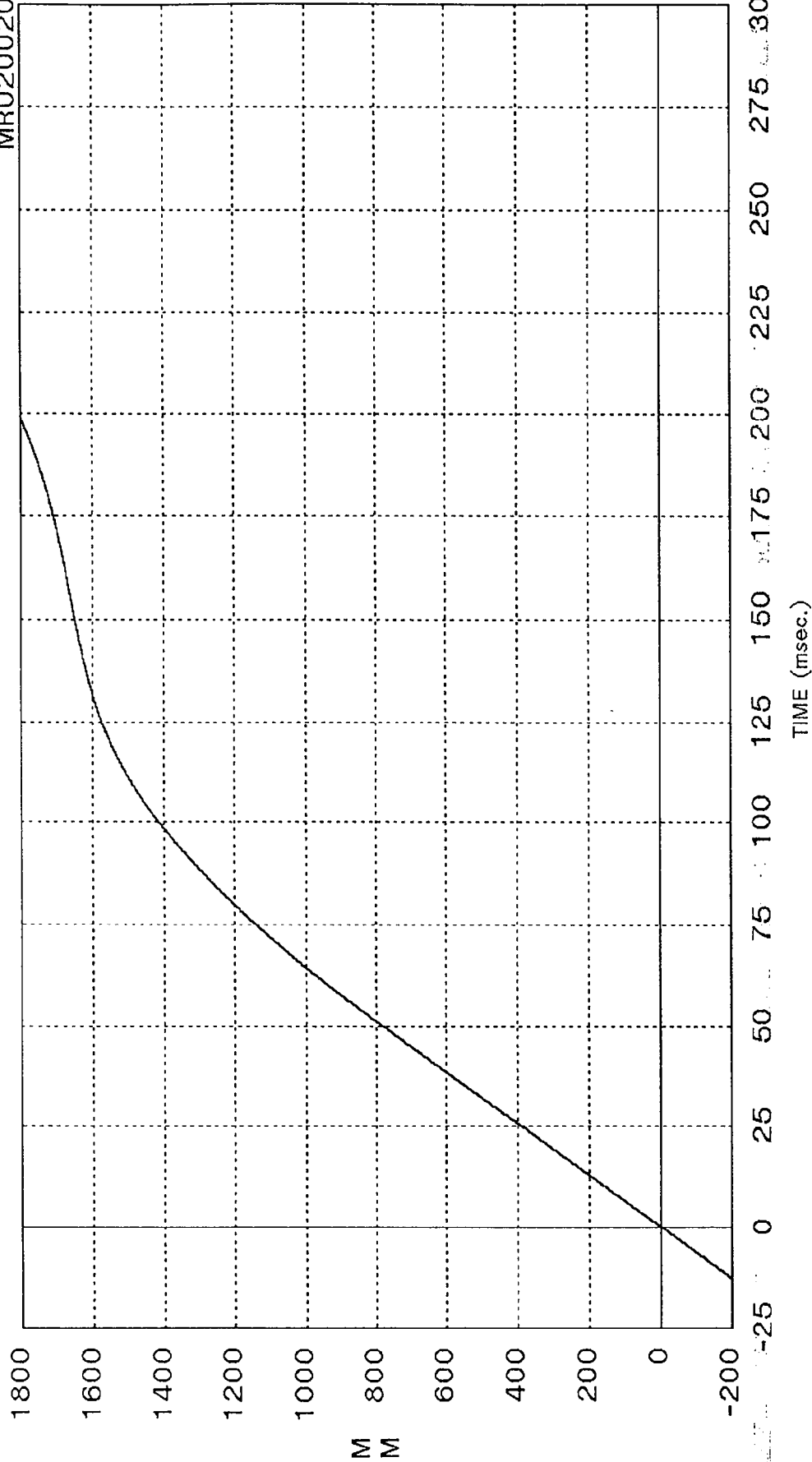
MSE-R93030-05

MR020020.IN



Curve: Passenger head delta V -- X axis Filter: SAE CLASS 180 Max = 56.355 Min = 7.7486

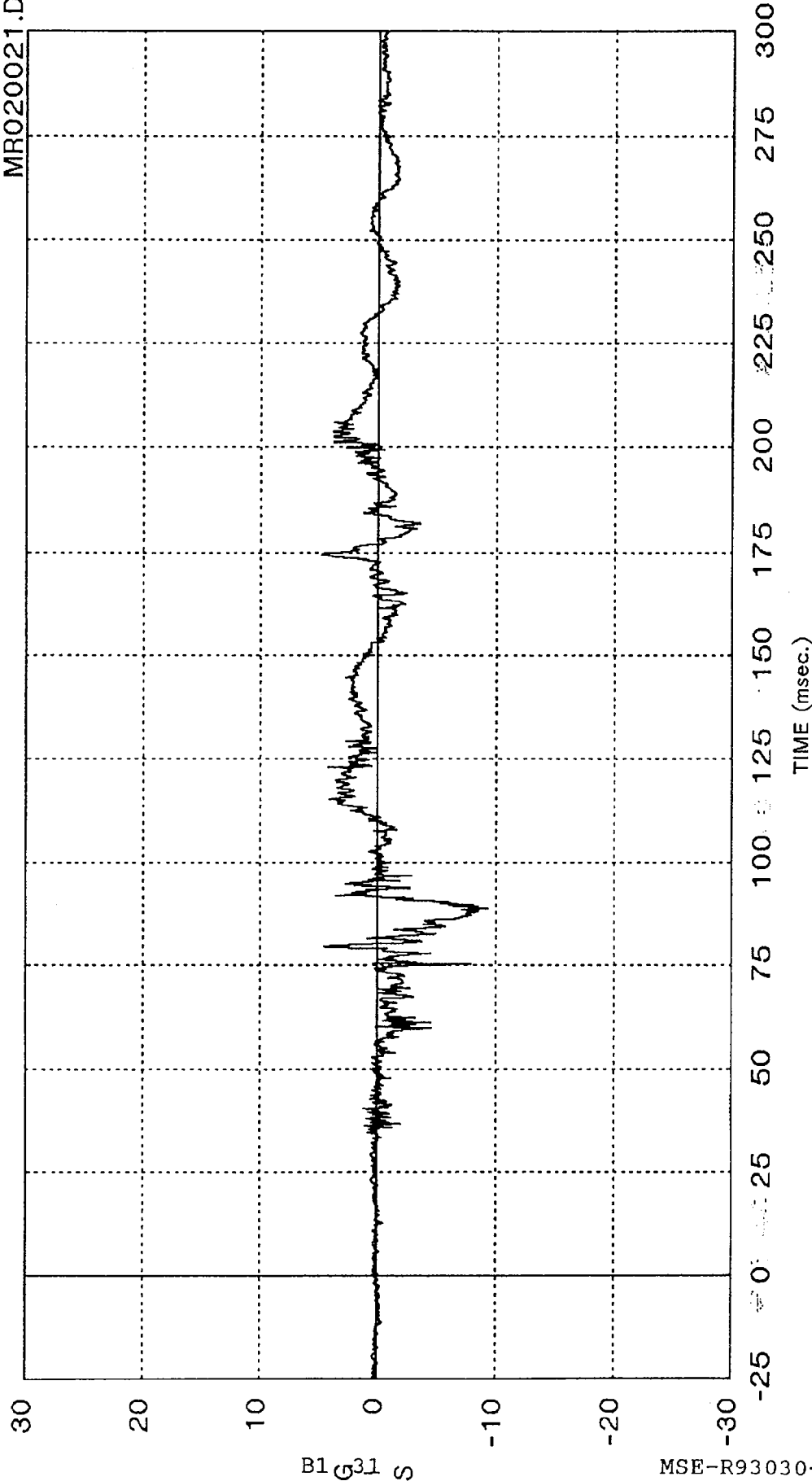
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Passenger head displacement -- X axis Filter: SAE CLASS 180 Max = 2473.0 Min = .10000E+11

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020021.D

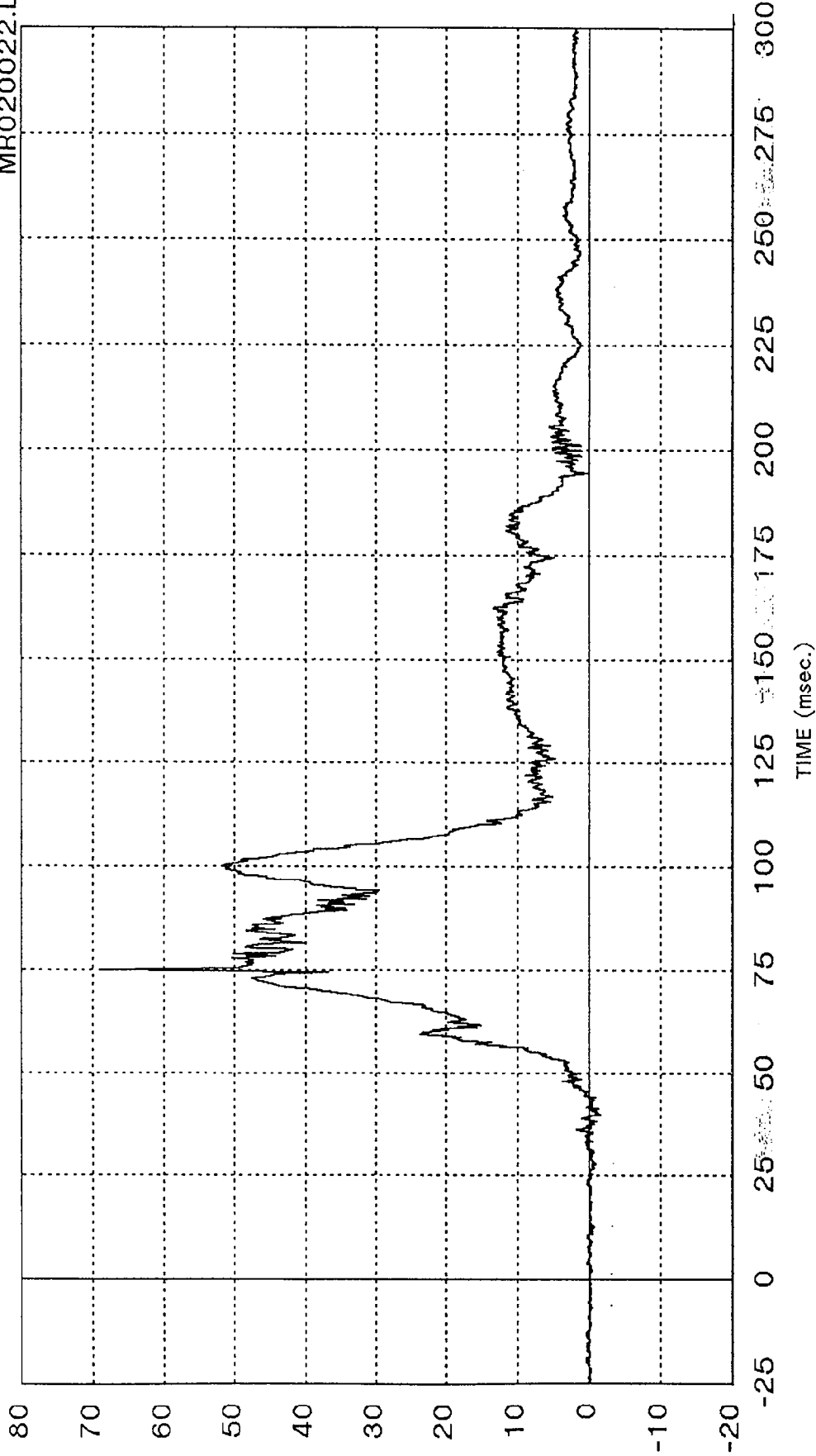


Curve: Passenger head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 5.1498 Min = -9.2697

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MSE-R93030-05

MR020022.D,



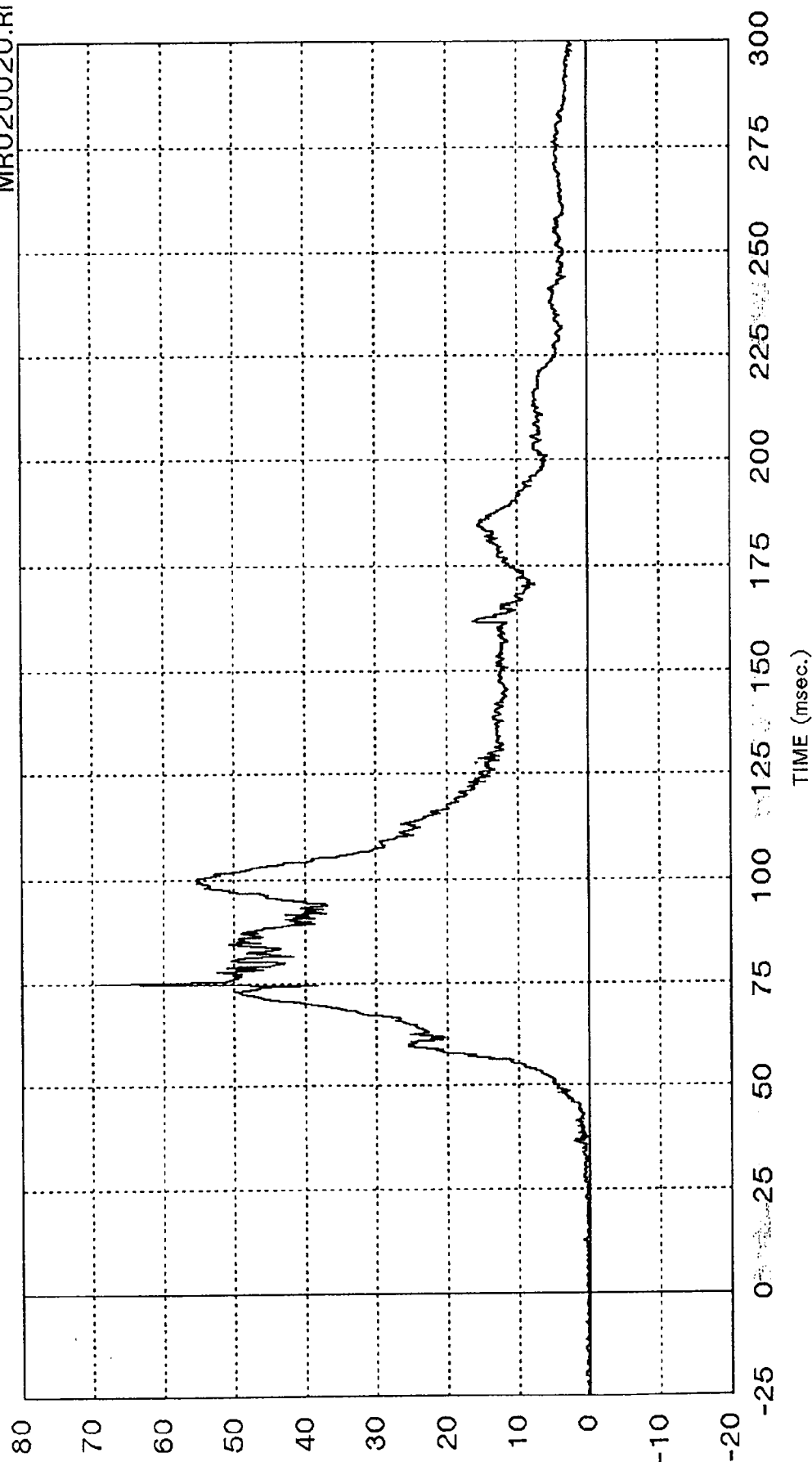
B1 G4 S

MSE-R93030-05

Curve: Passenger head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 69.278 Min = -1.5983

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MRO20020.RI



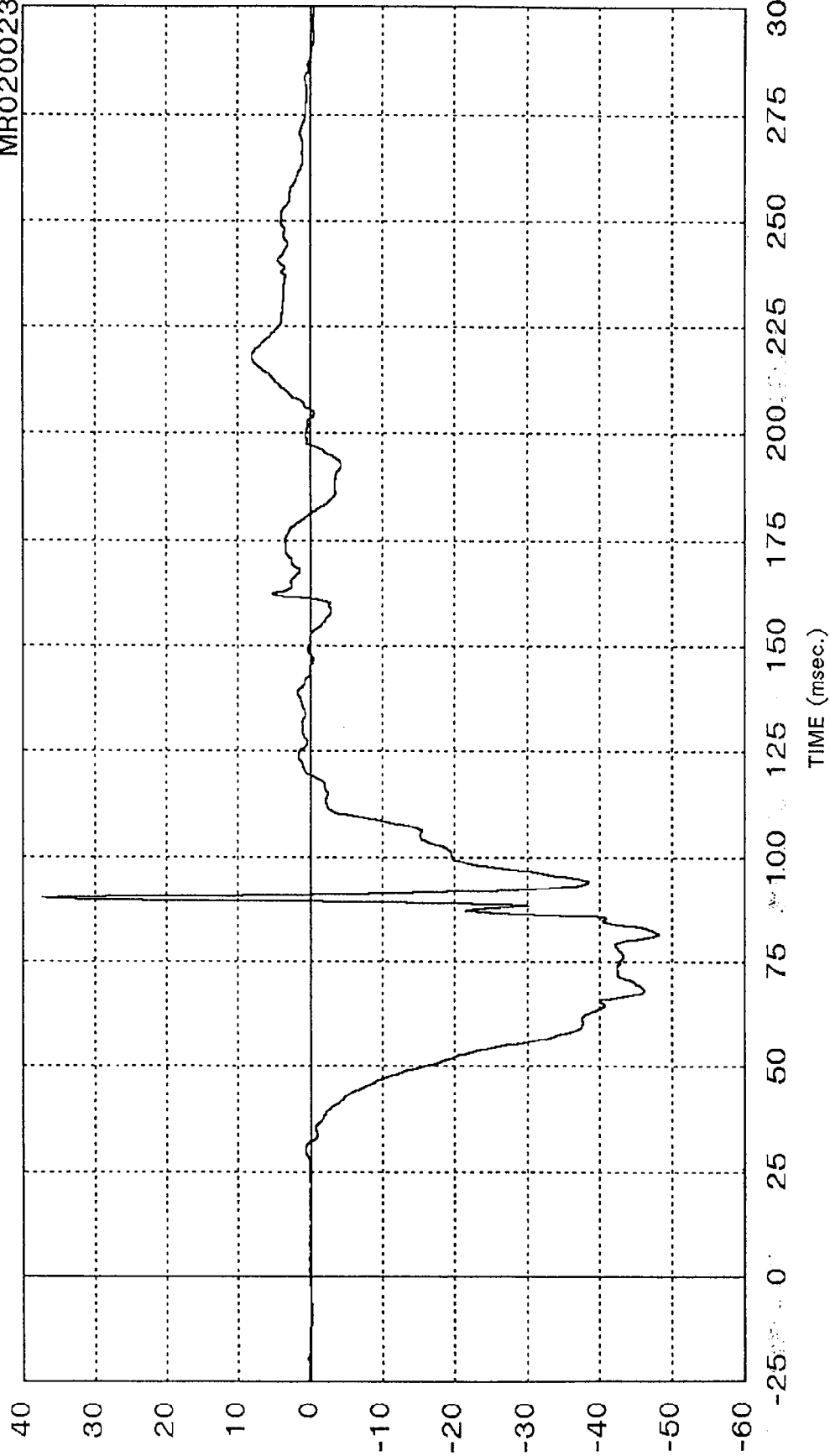
Curve: Passenger head acceleration -- Resultant Filter: SAE CLASS 1000 Max = 70.513 Min = .44781E-01

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

B1 G3 S

MSE-R93030-05

MR020023.FI



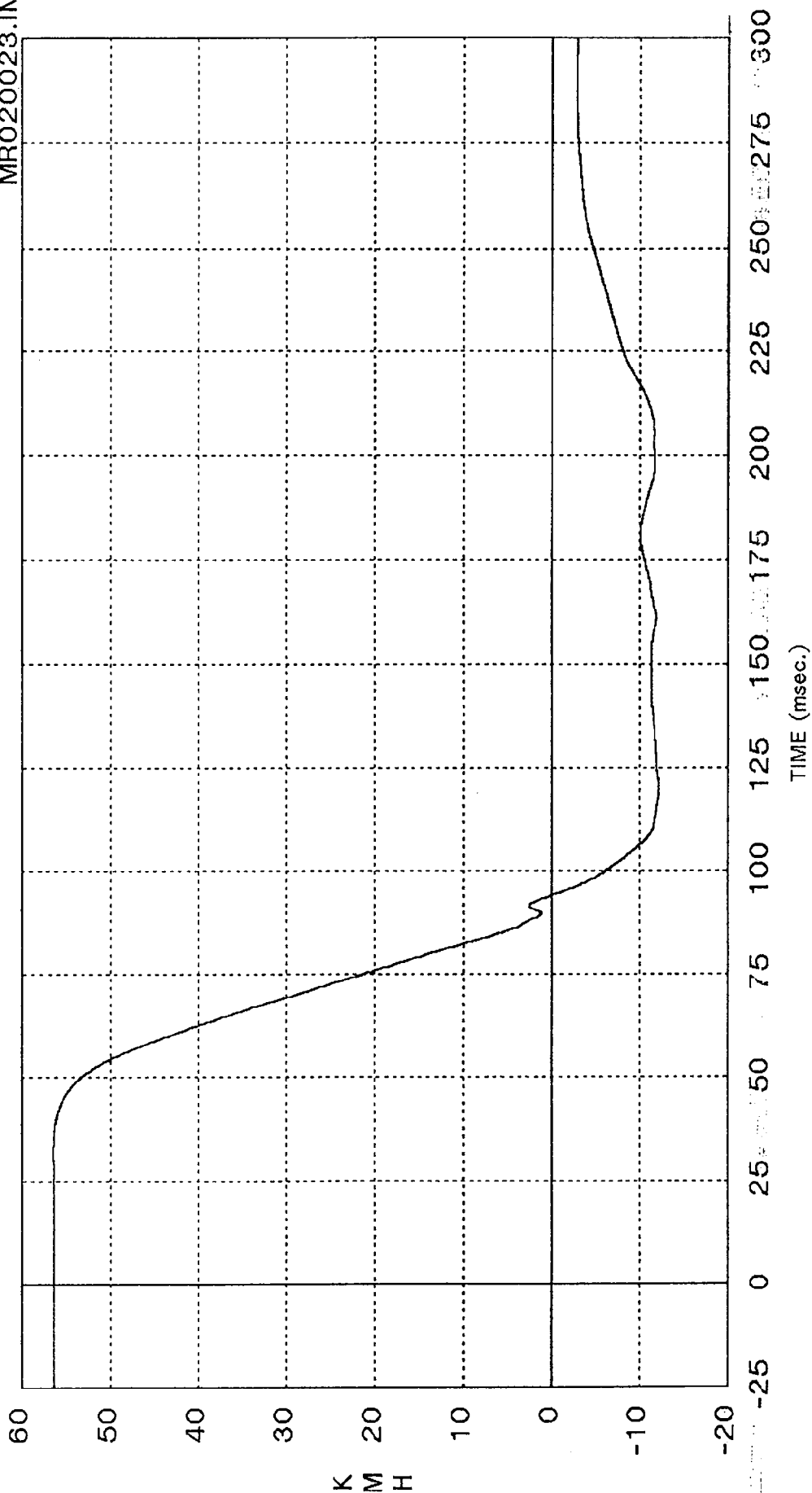
Curve: Passenger chest acceleration -- X axis Filter: SAE CLASS 180 Max = 37.569 Min = -48.107

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

B1 G34 S

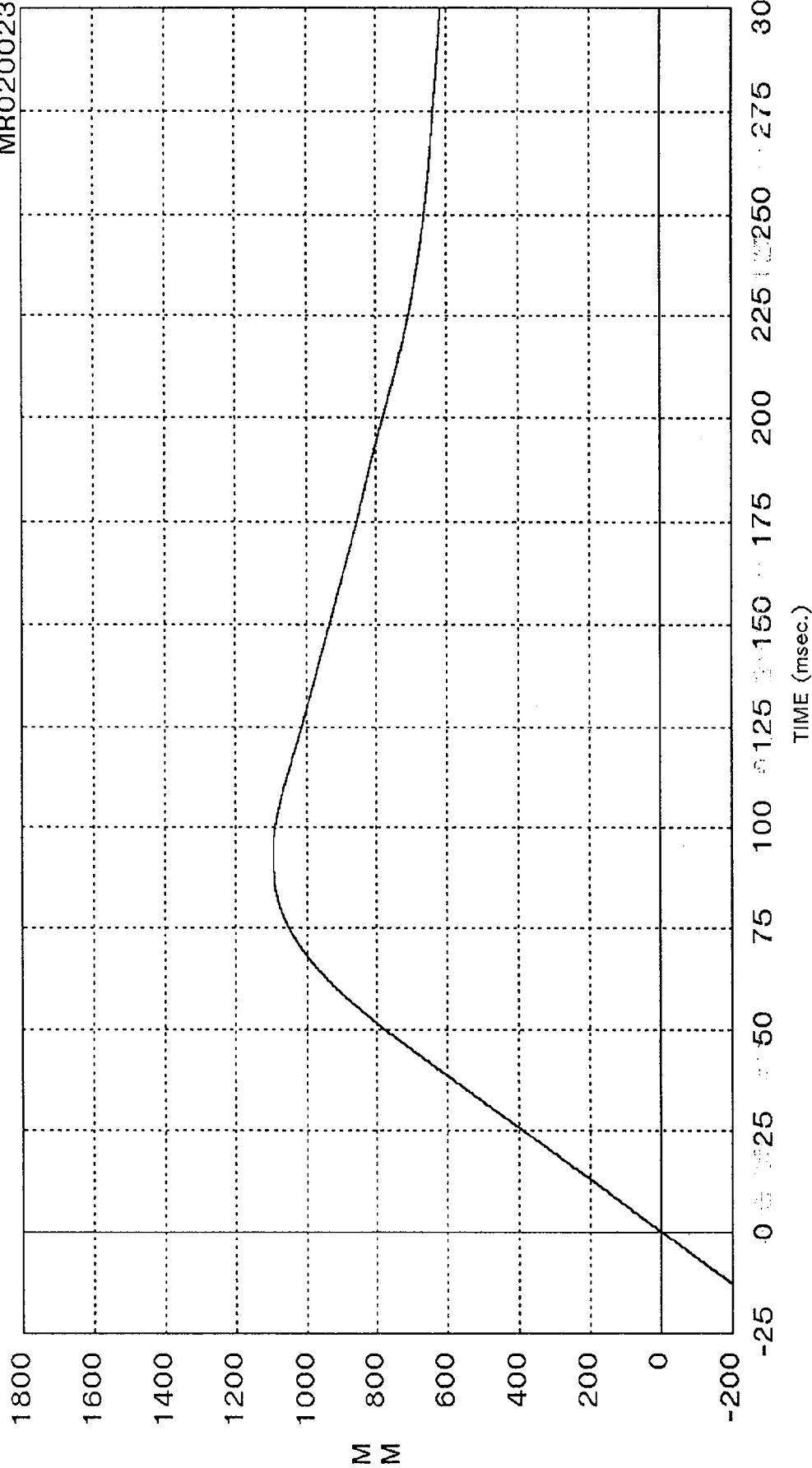
MSE-R93030-05

MR020023.IN



Curve: Passenger chest delta V -- X axis Filter: SAE CLASS 180 Max = 56.477 Min = -12.215

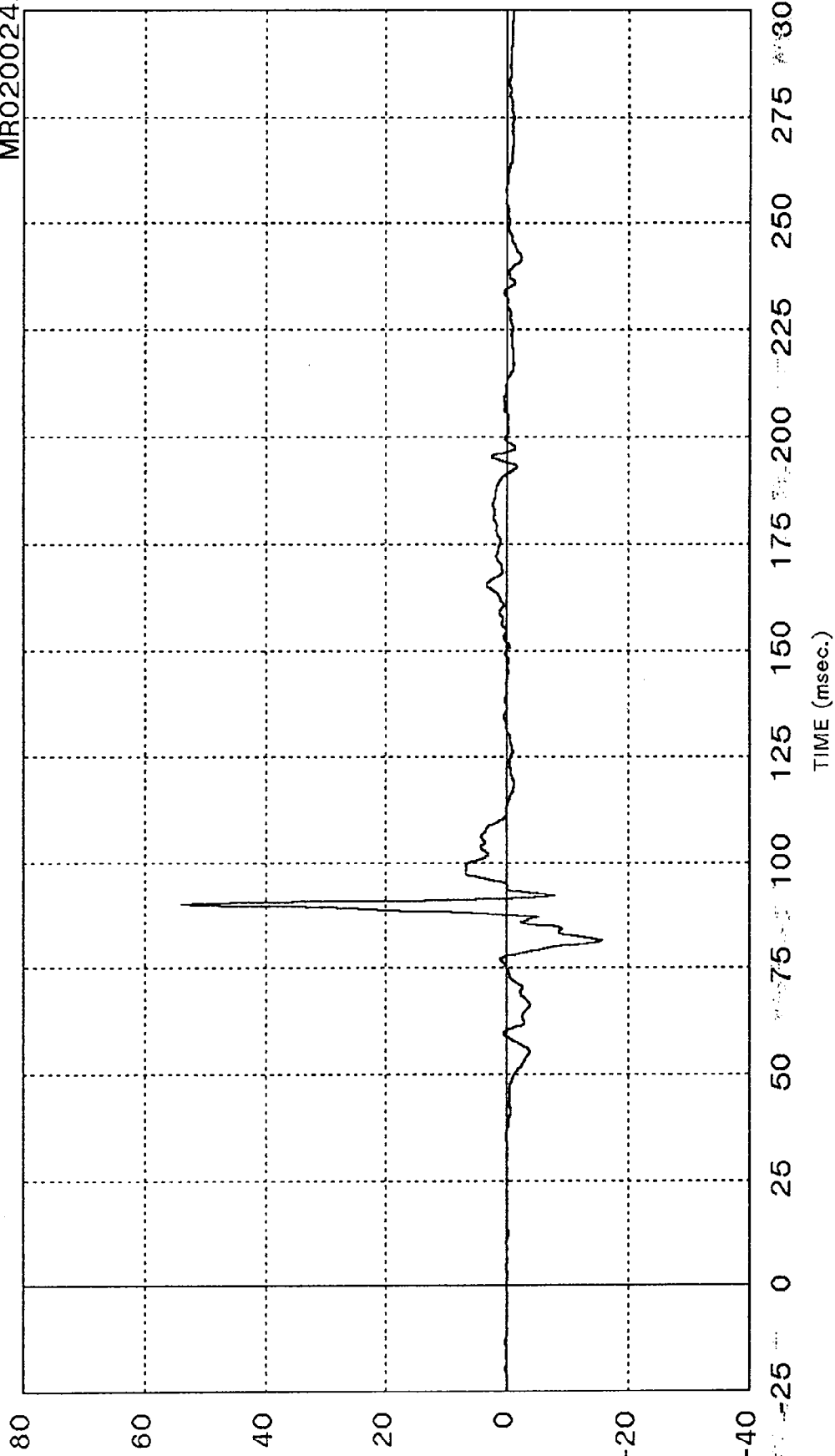
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Passenger chest displacement -- X axis Filter: SAE CLASS 180 Max = 1094.8 Min = 615.45

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020024.FI



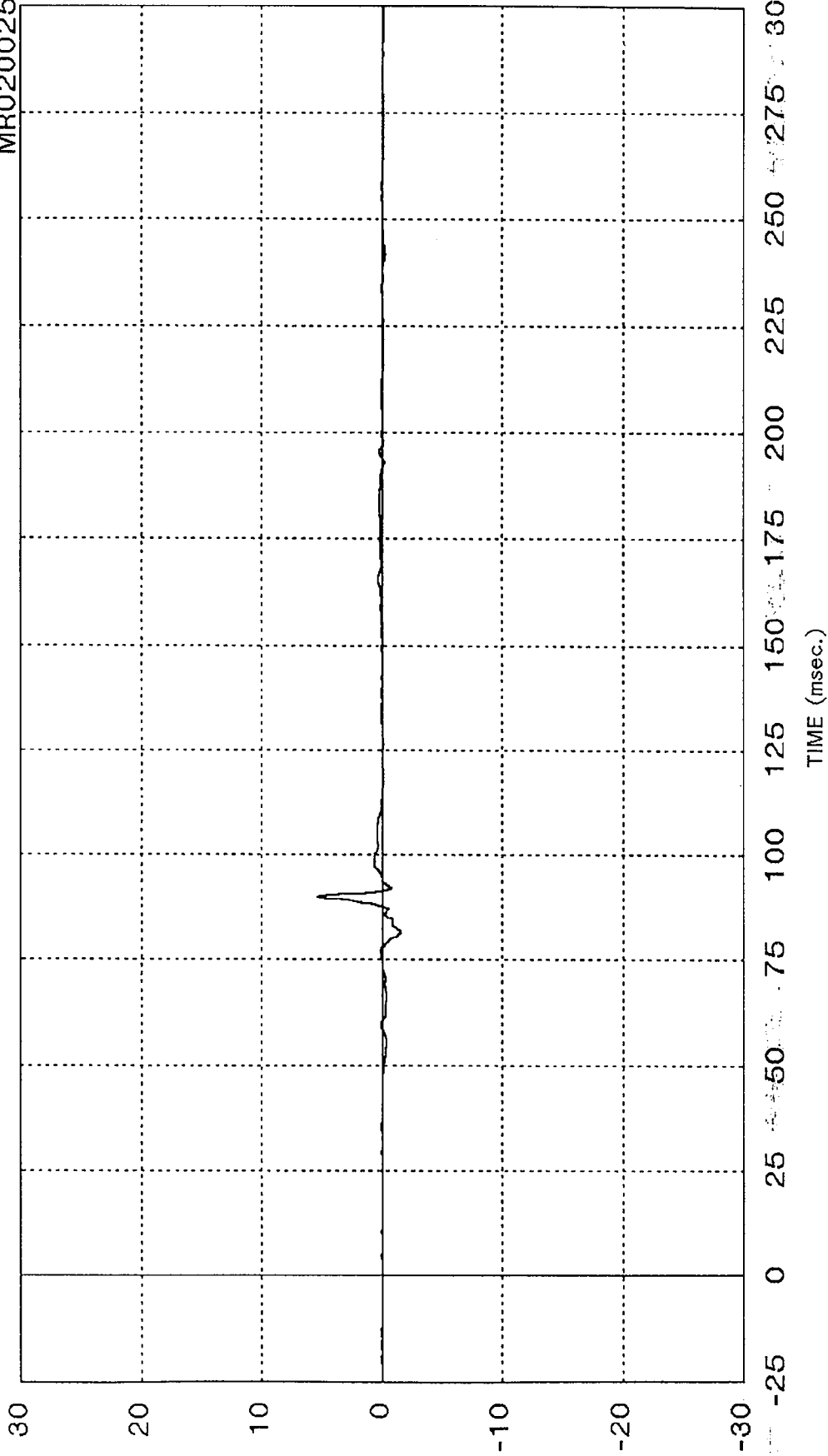
B1 Gz S

MSE-R93030-05

Curve: Passenger chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 53.946 Min = -15.603

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020025.FI

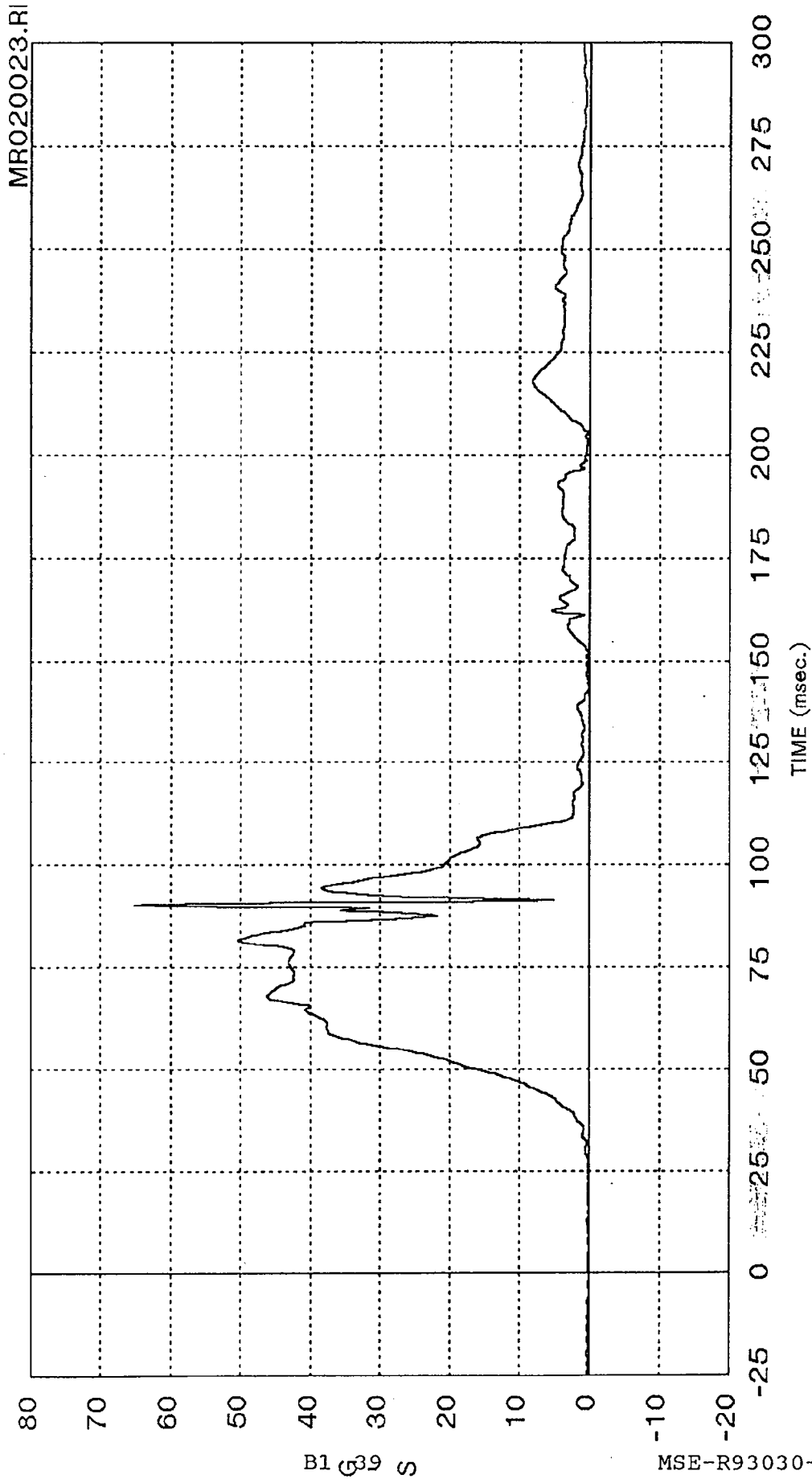


Curve: Passenger chest acceleration -- Z axis Filter: SAE CLASS 180 Max = 5.3946 Min = -1.5603

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

B1 G38 S

MSE-R93030-05

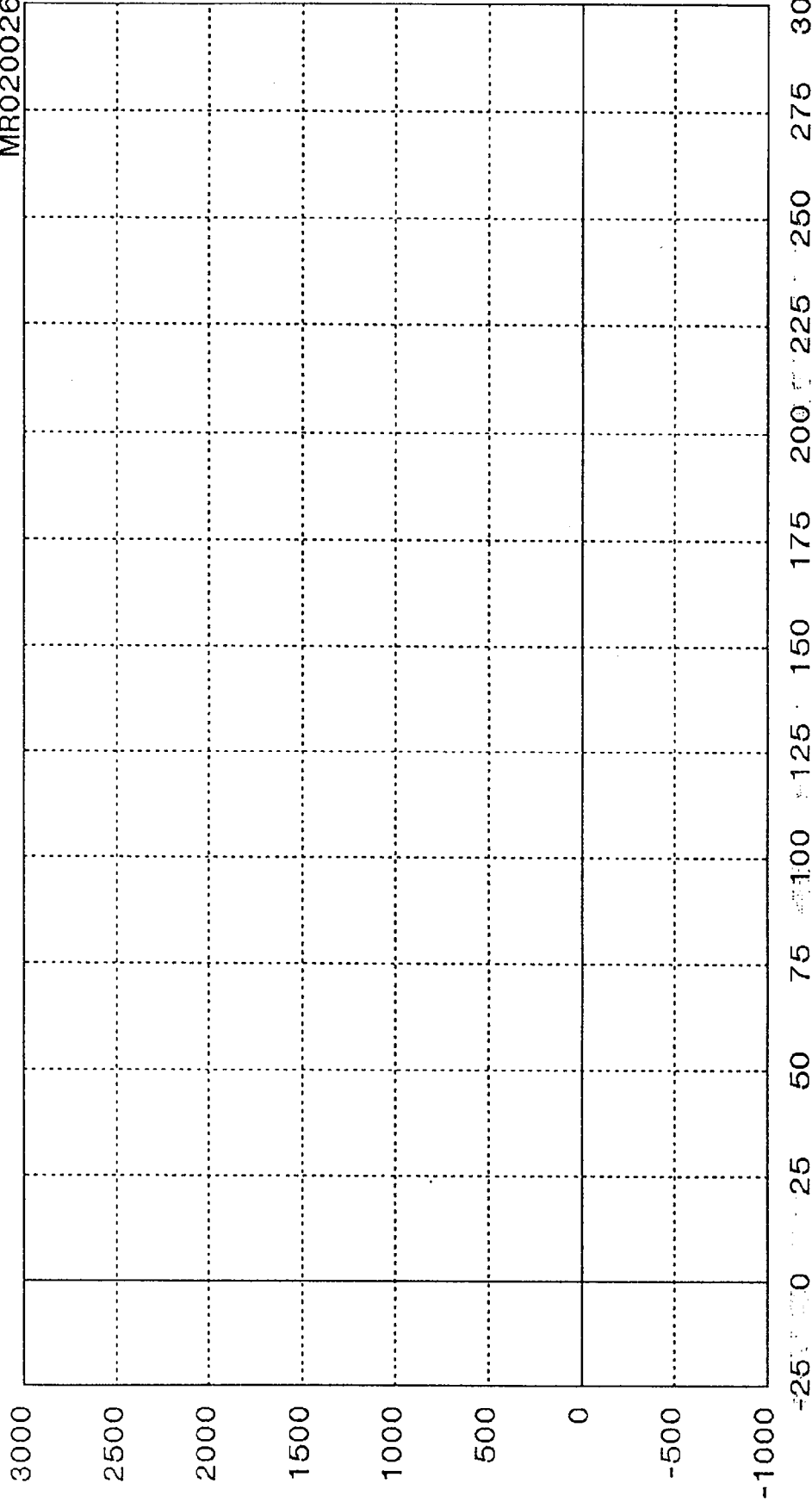


Curve: Passenger chest acceleration -- Resultant Filter: SAE CLASS 180 Max = 65.233 Min = .13054E-01

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MSE-R93030-05

MR020026.D



TIME (msec.)

Curve: Passenger neck force -- X axis (Not used) Filter: SAE CLASS 1000 Max = .00000 Min = .00000

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

N B1 W40 T O N S

MSE-R93030-05

MR020027.D,

1000

800

600

400

200

0

-200

-400

-600

-800

-1000

NEWTONS

25 0 25 50 75 100 125 150 175 200 225 250 275 300

TIME (msec.)

Curve: Passenger neck force -- Y axis (Not used) Filter: SAE CLASS 1000 Max = .00000 Min = .00000

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MSE-R93030-05

MR020028.D

3000

2500

2000

1500

1000

500

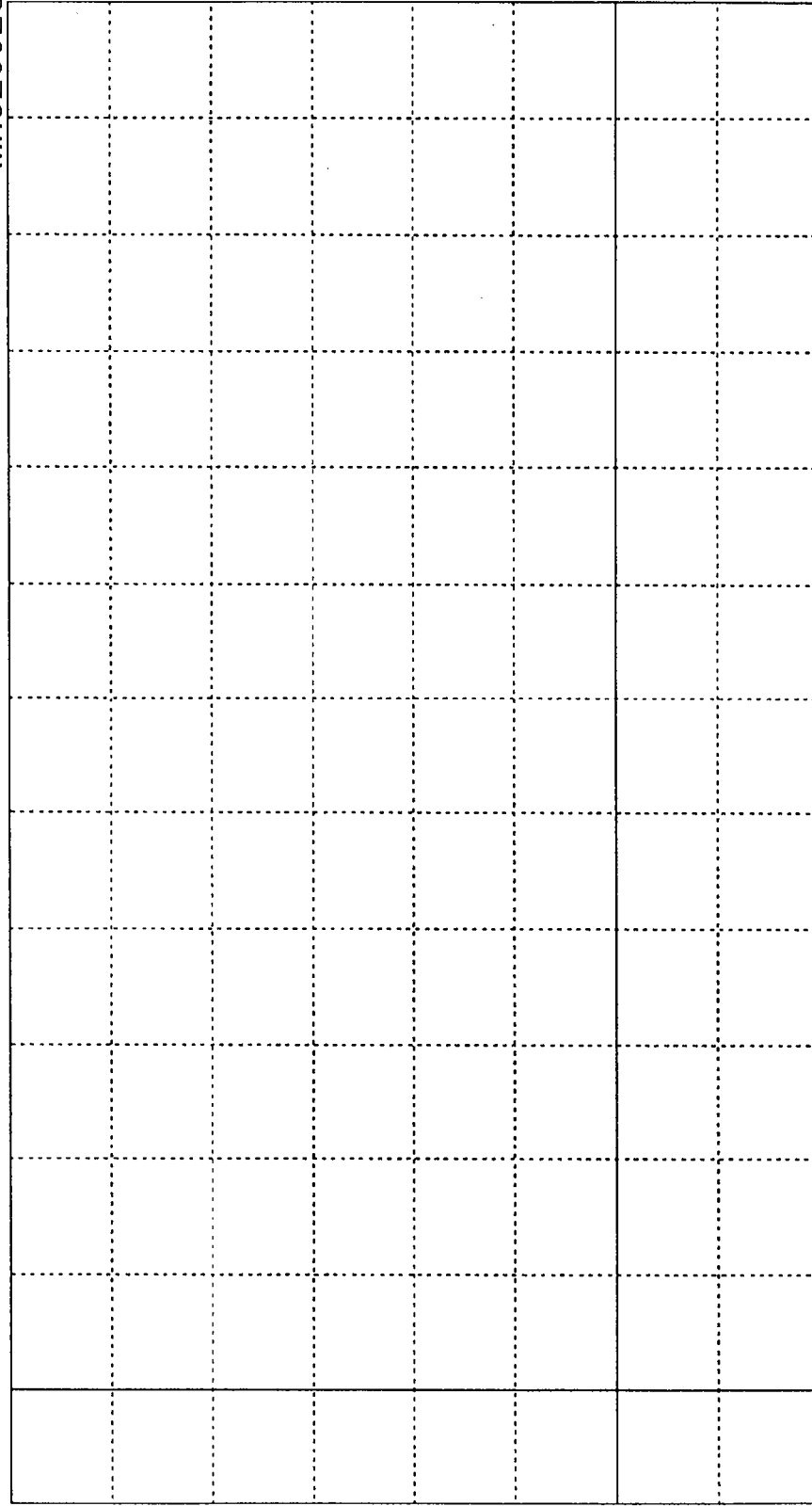
0

-500

-1000

N B1 W4 O N S

MSE-R93030-05

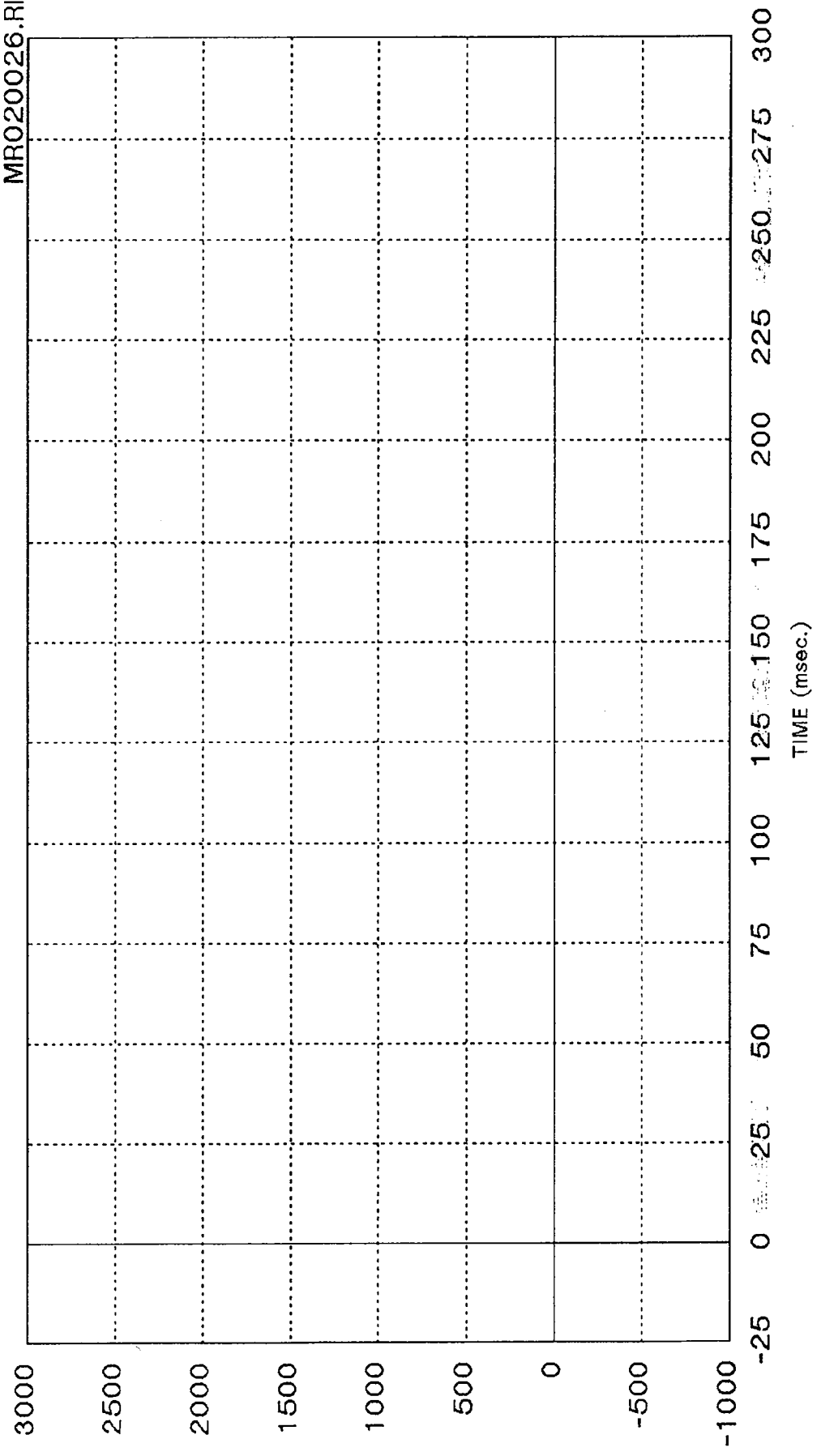


TIME (msec.)

Curve: Passenger neck force -- Z axis (Not used) Filter: SAE CLASS 1000 Max = .00000 Min = .00000

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020026.RI



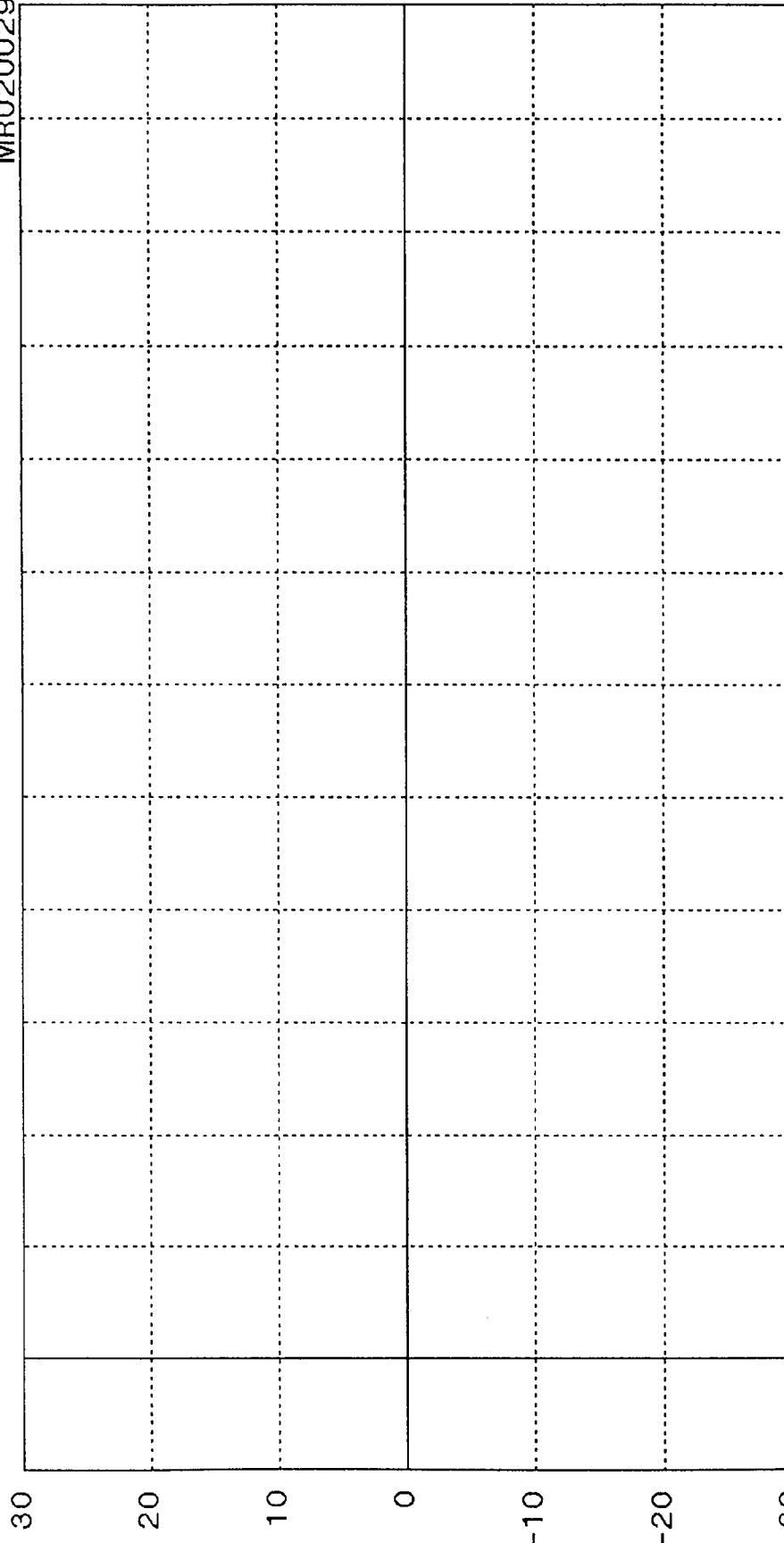
N B W 4 3 O N S

MSE-R93030-05

Curve: Passenger neck force -- Resultant (Not used) Filter: SAE CLASS 1000 Max = .00000 Min = .00000

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020029.FI



B104 U L E S

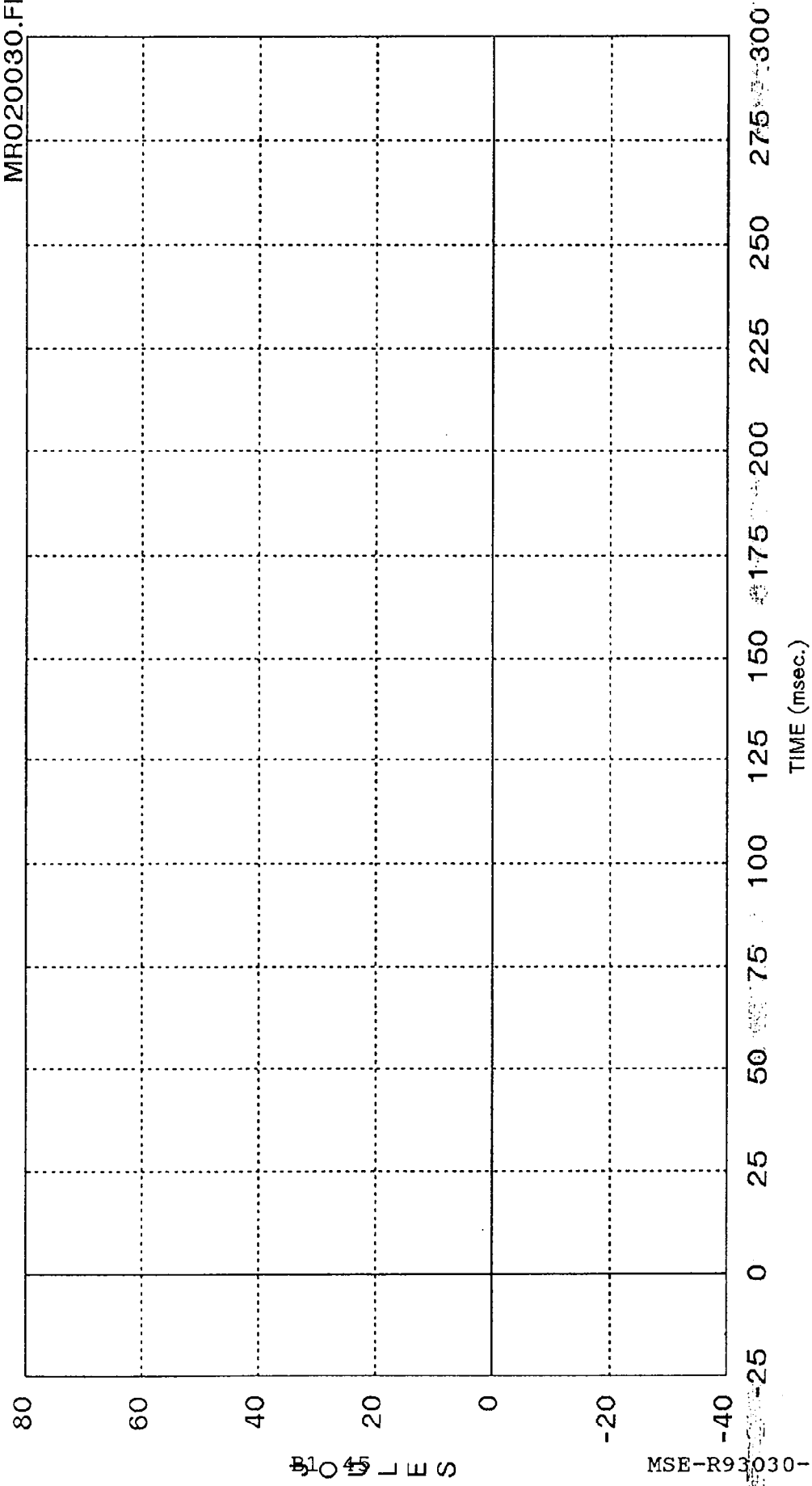
MSE-R93030-05

Curve: Passenger neck moment -- X axis (Not used) Filter: SAE CLASS 600 Max = .00000 Min = .00000

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

SAE CLASS 600

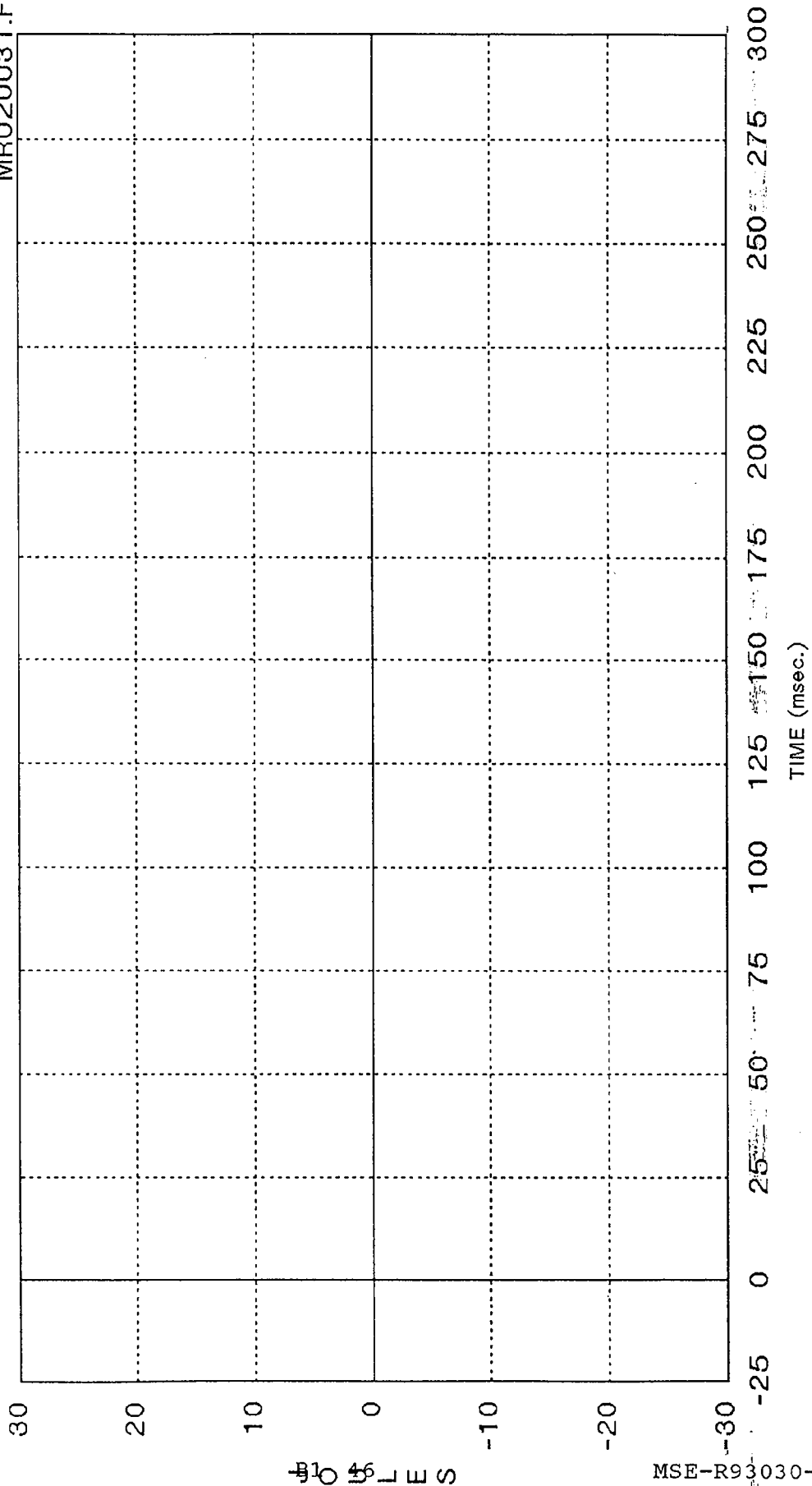
MRO20030.FI



Curve: Passenger neck moment -- Y axis (Not used) Filter: SAE CLASS 600 Max = .00000 Min = .00000

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020031.FI

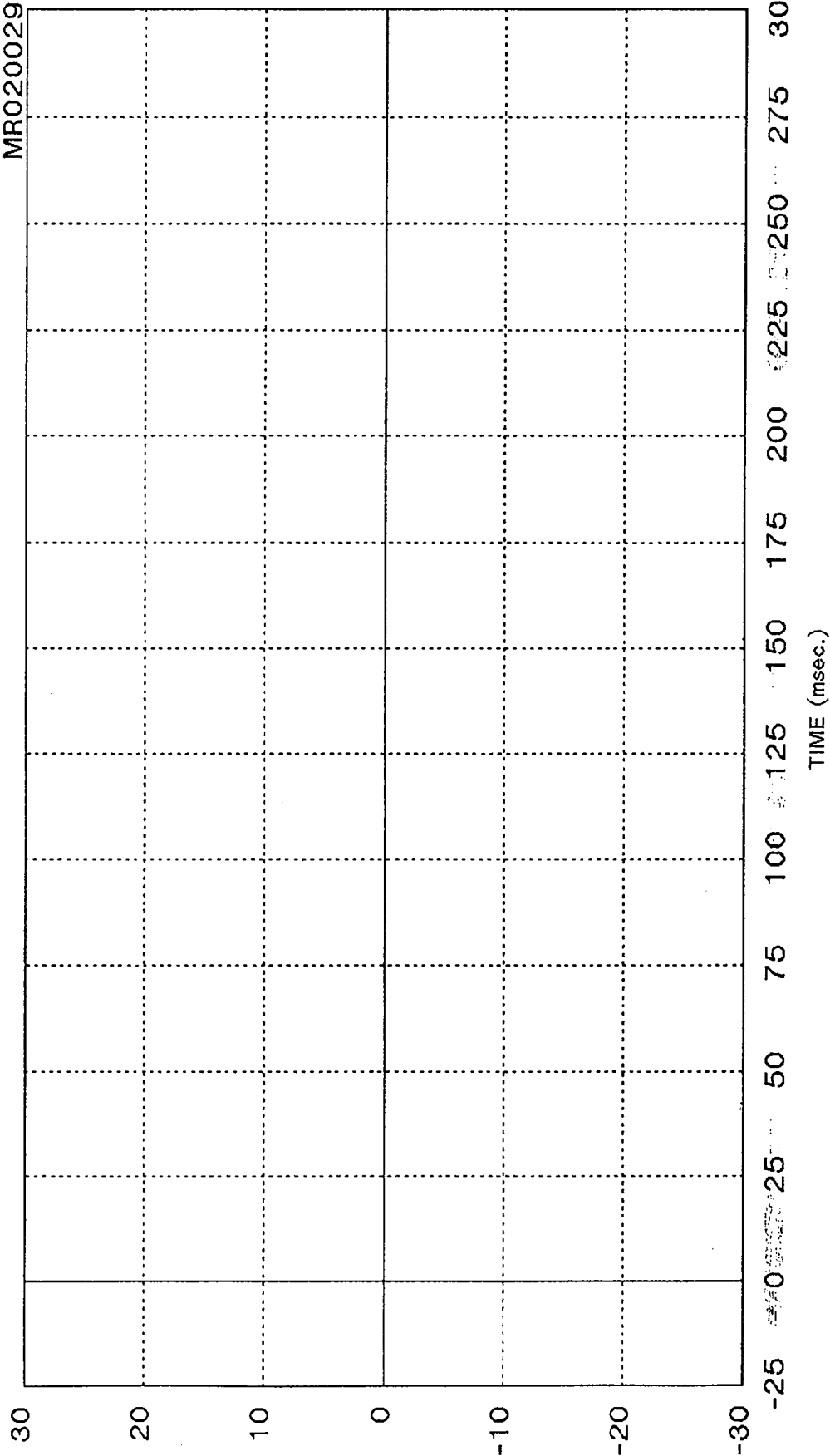


MSE-R93030-05

Curve: Passenger neck moment -- Z axis (Not used) Filter: SAE CLASS 600 Max = .00000 Min = .00000

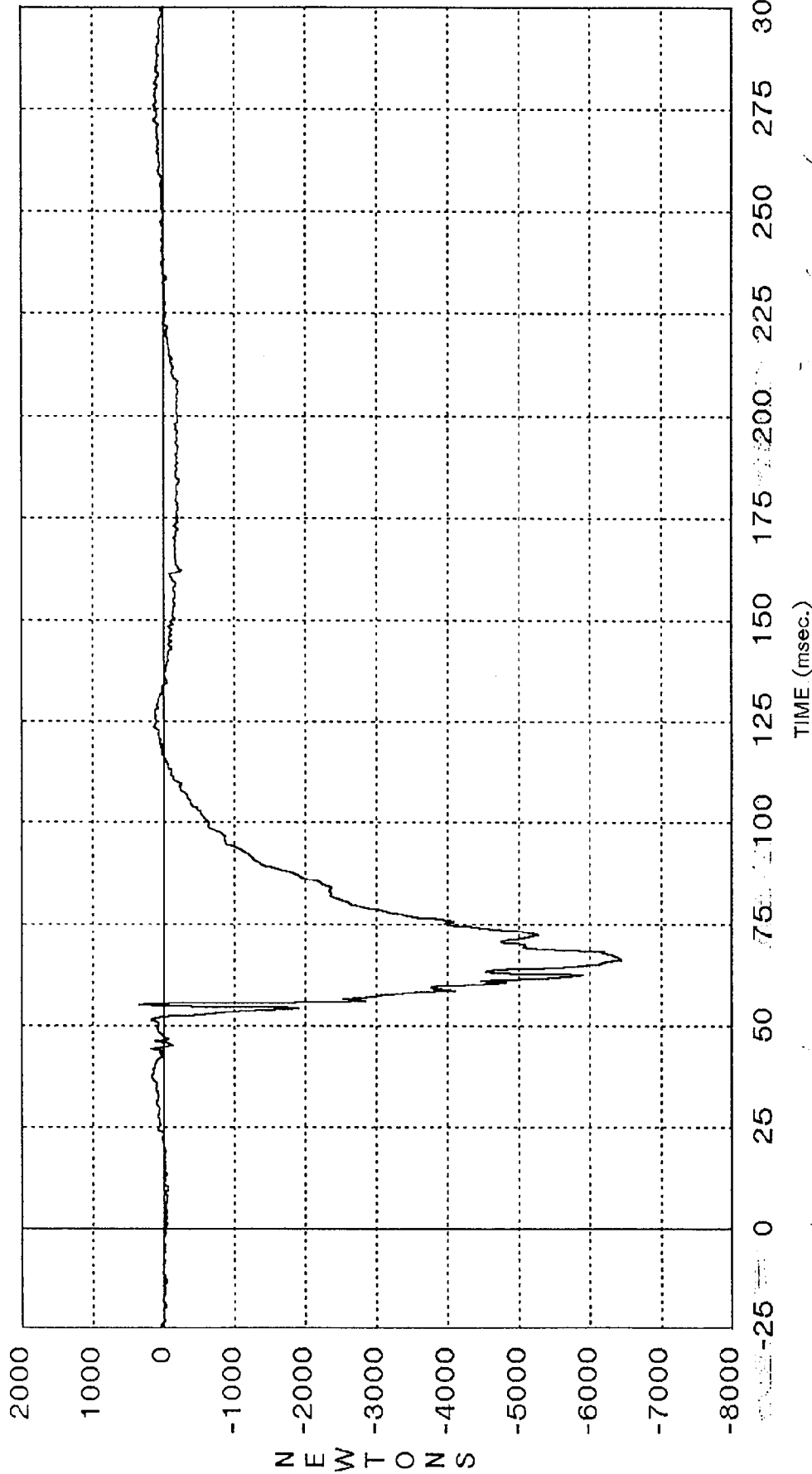
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR0200029.RI



Curve: Passenger neck moment -- Resultant (Not used) Filter: SAE CLASS 600 Max = .00000 Min = .00000

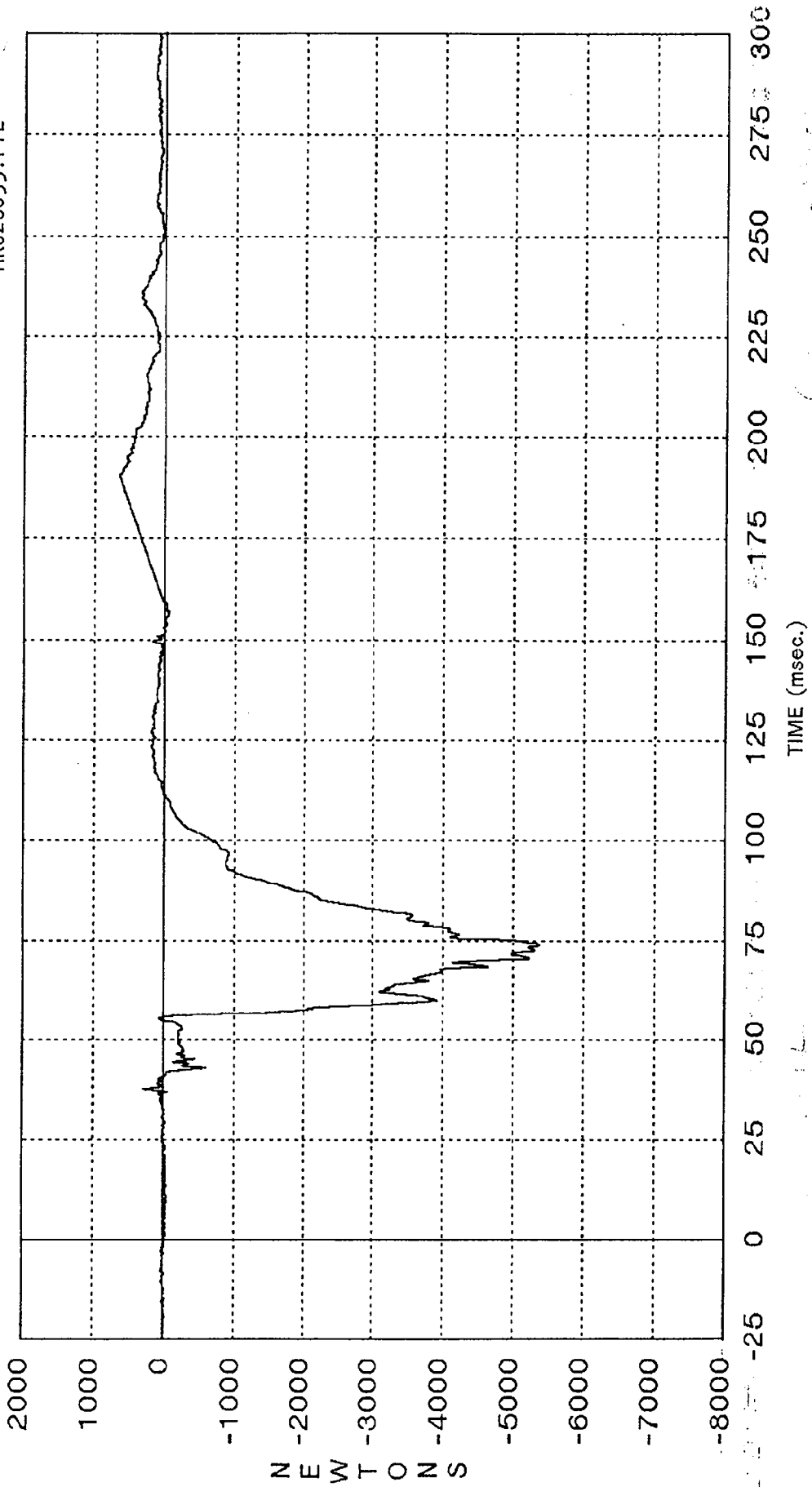
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Passenger Left Femur Filter: SAE CLASS 600 Max = 353.30 Min = -6433.6

MSE Date: 03/09/94 Program: New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020033.FIL

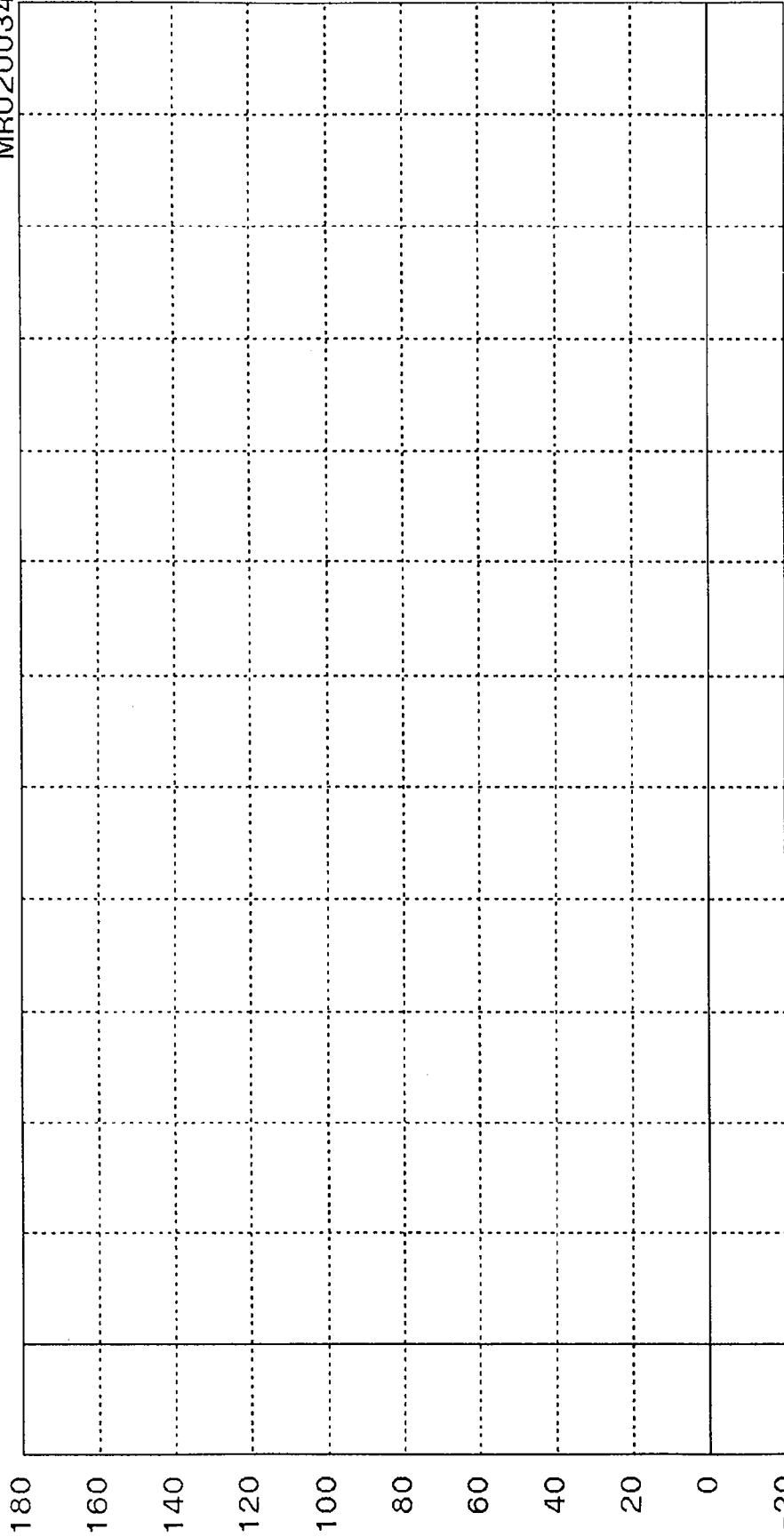


Curve: Passenger Right Femur

Filter: SAE CLASS 600 Max = 654.50 Min = -5366.9

MSE Date: 03/09/94 Program: New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

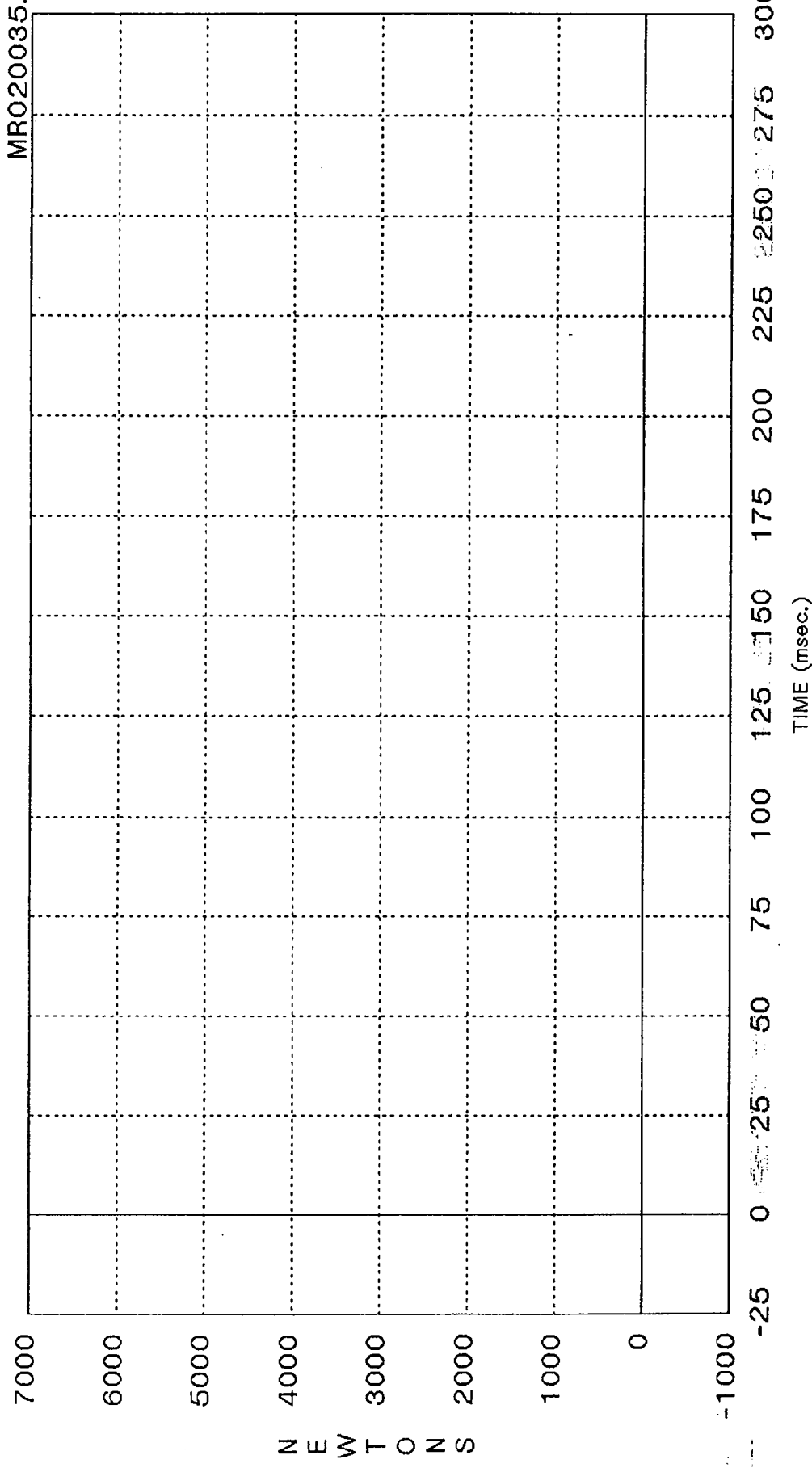
MR020034.FI



Curve: Passenger chest displacement (Not used) Filter: SAE CLASS 180 Max = .00000 Min = .00000

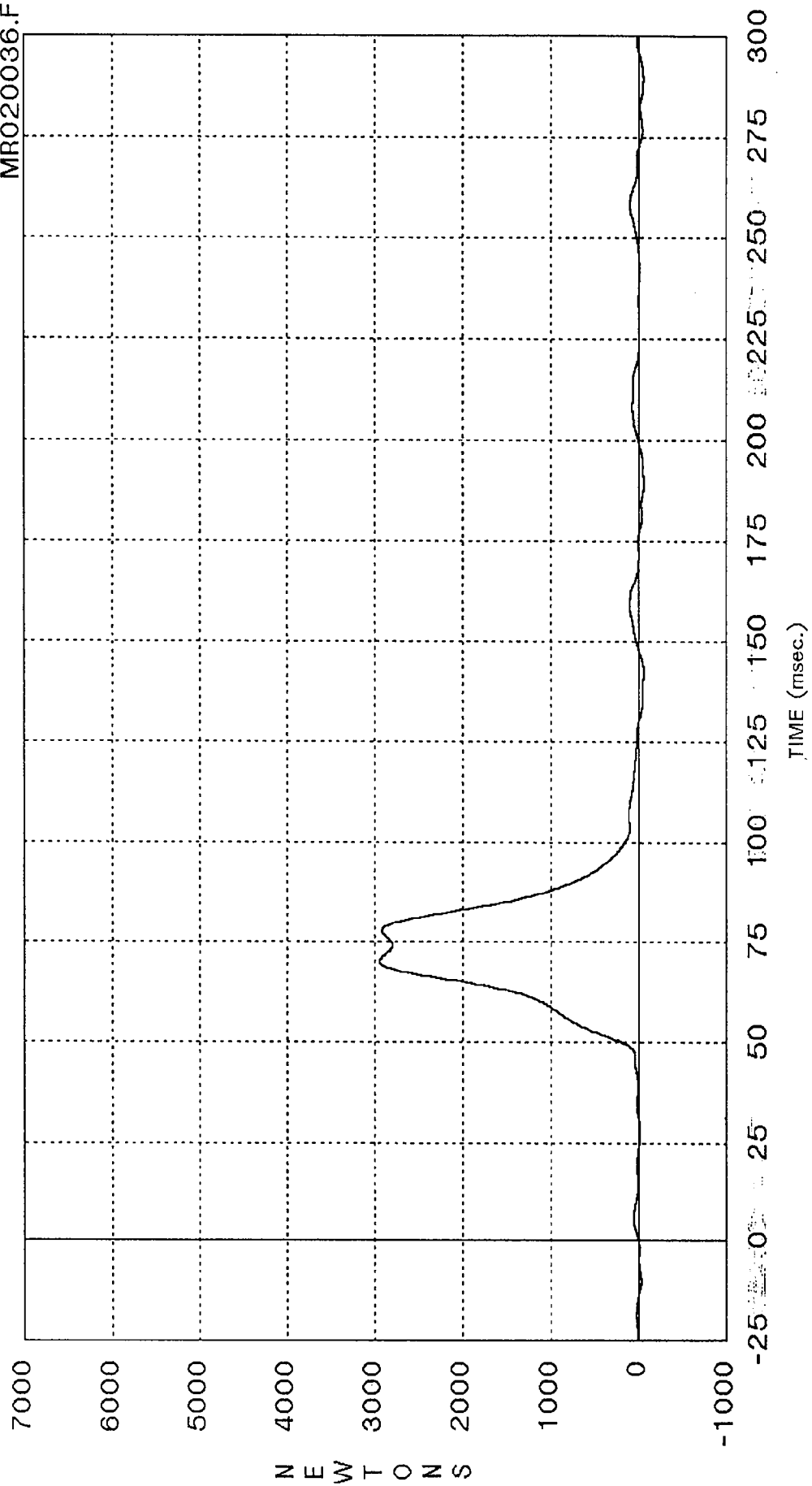
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020035.FI



Curve: Passenger lap belt load (No data) Filter: SAE CLASS 60 Max = .00000 Min = .00000
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

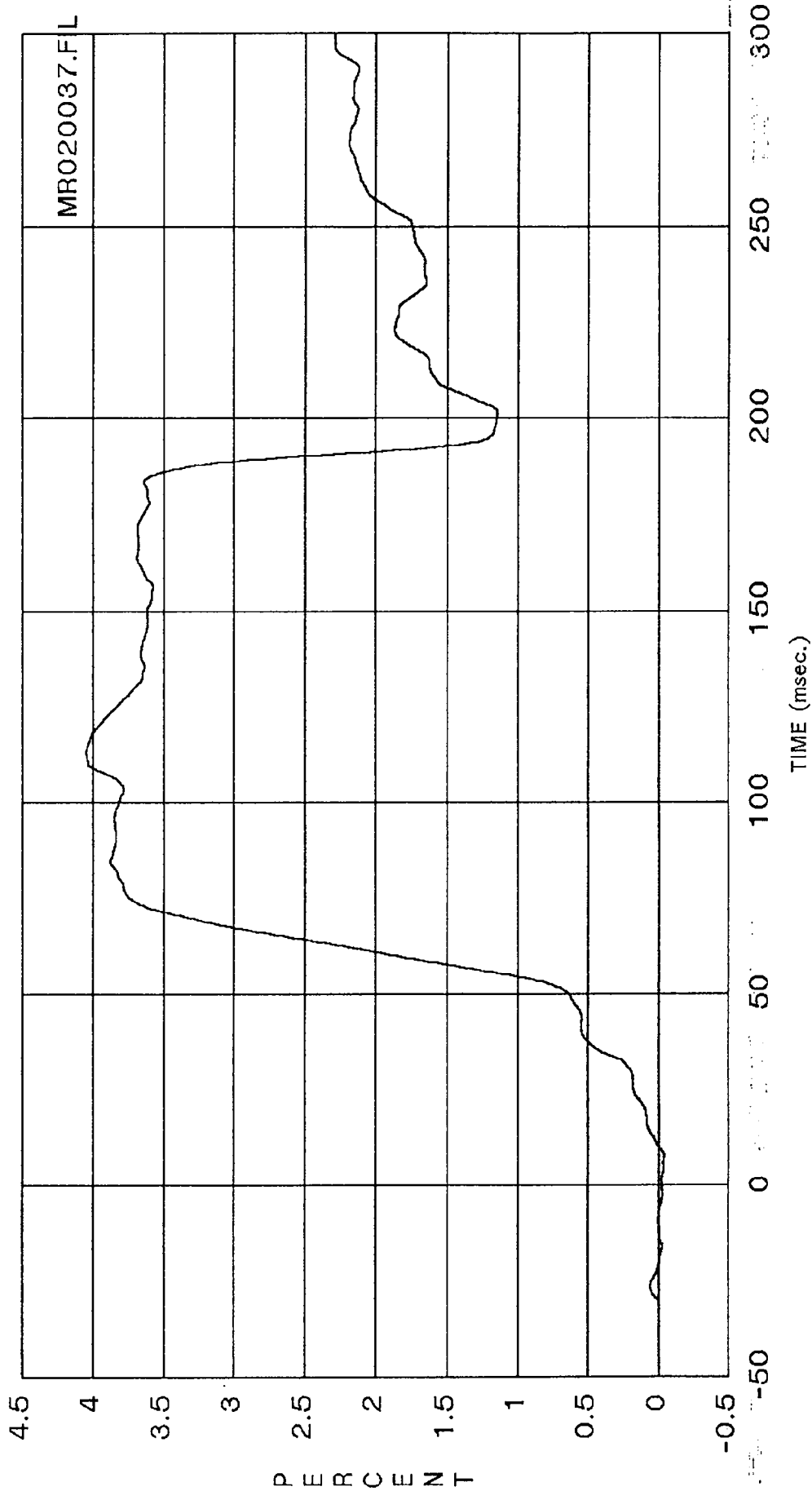
MR020036.FI



Curve: Passenger shoulder belt load

Filter: SAE CLASS 60 Max = 2945.2 Min = -60.607

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Passenger shoulder belt elongation

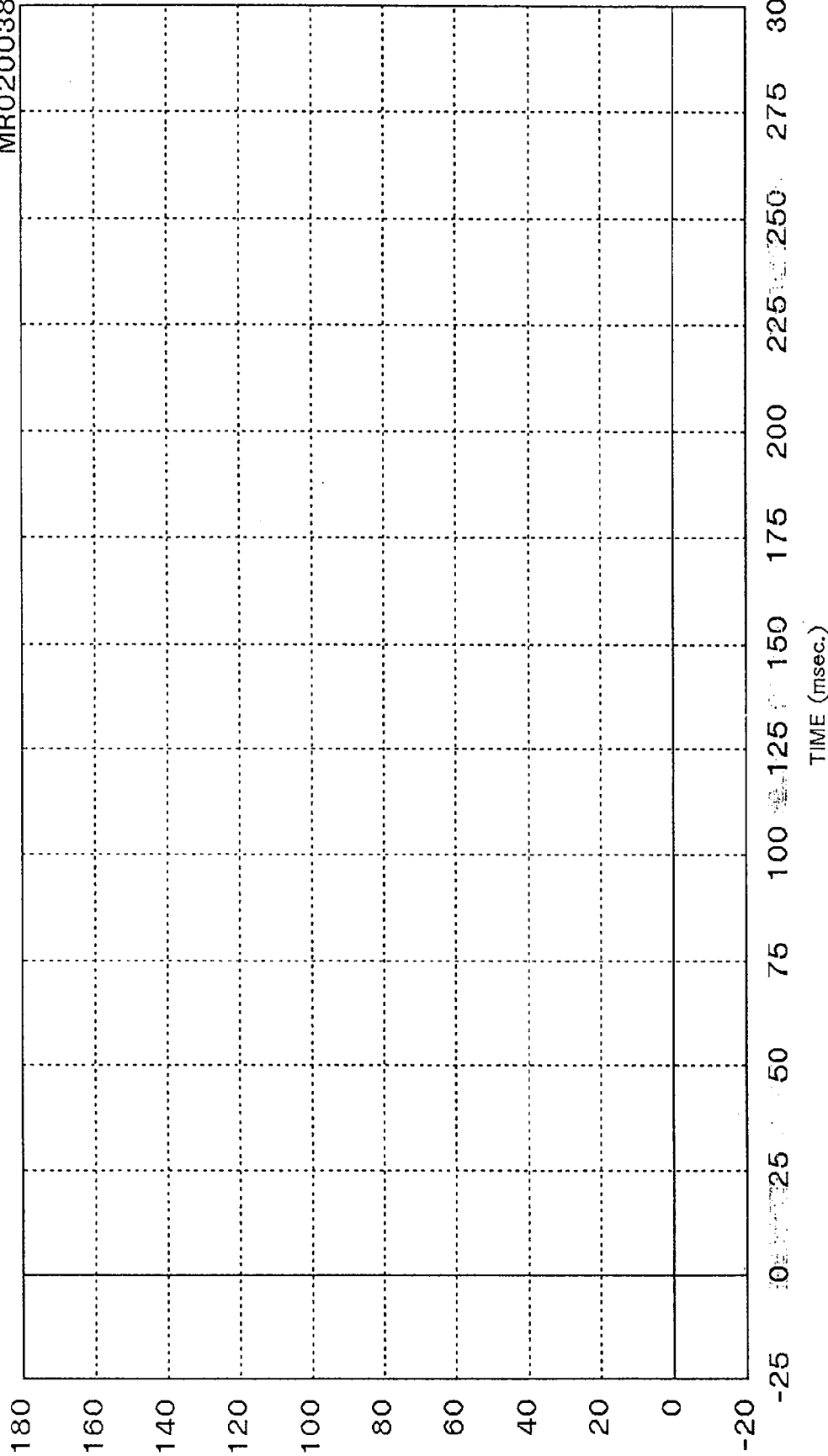
Filter: SAE CLASS 60

Max = 4.0465

Min = -.43427E-01

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

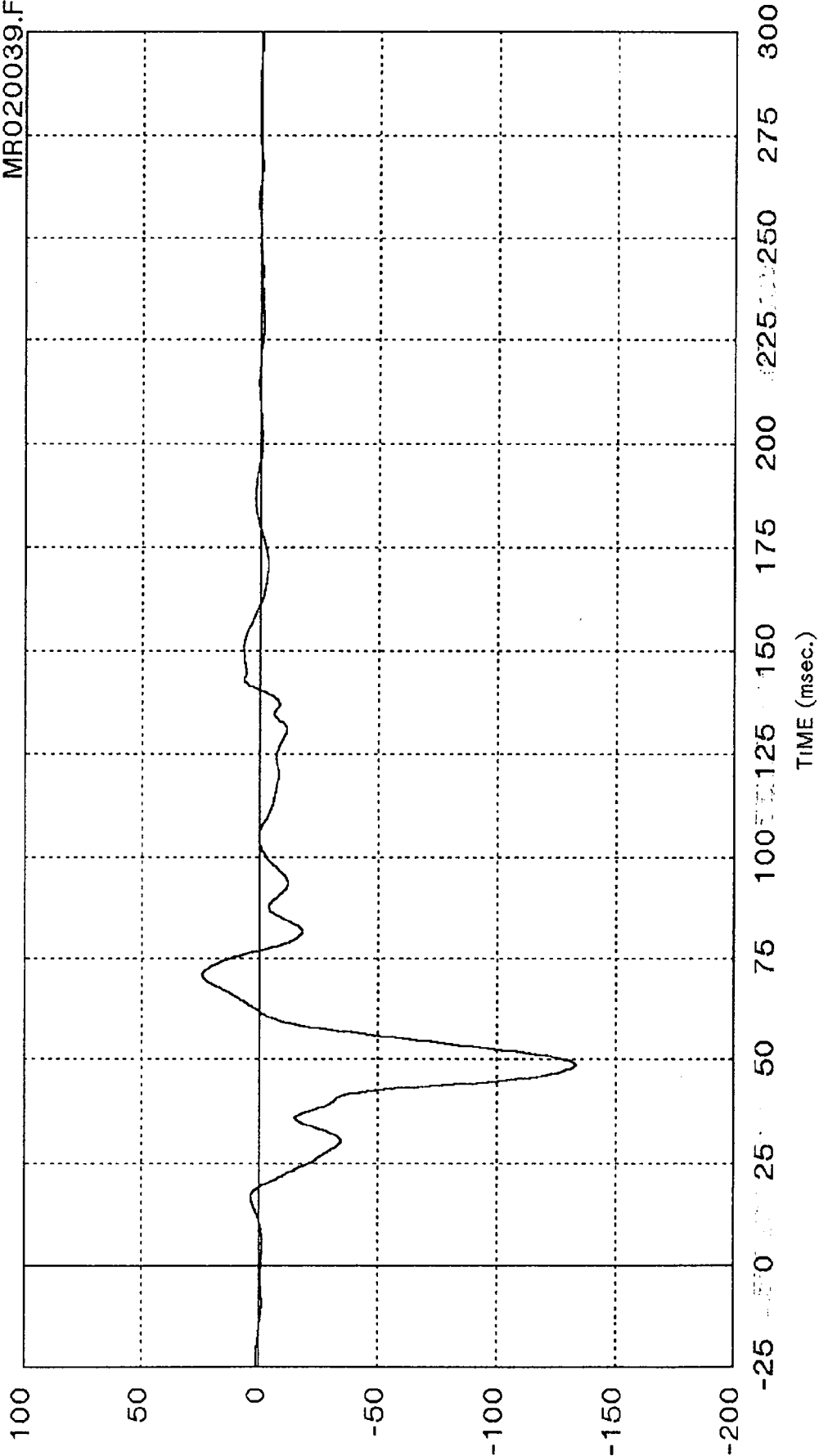
MR020038.FI



Curve: Passenger seat belt pullout (Not used) Filter: SAE CLASS 60 Max = .00000 Min = .00000

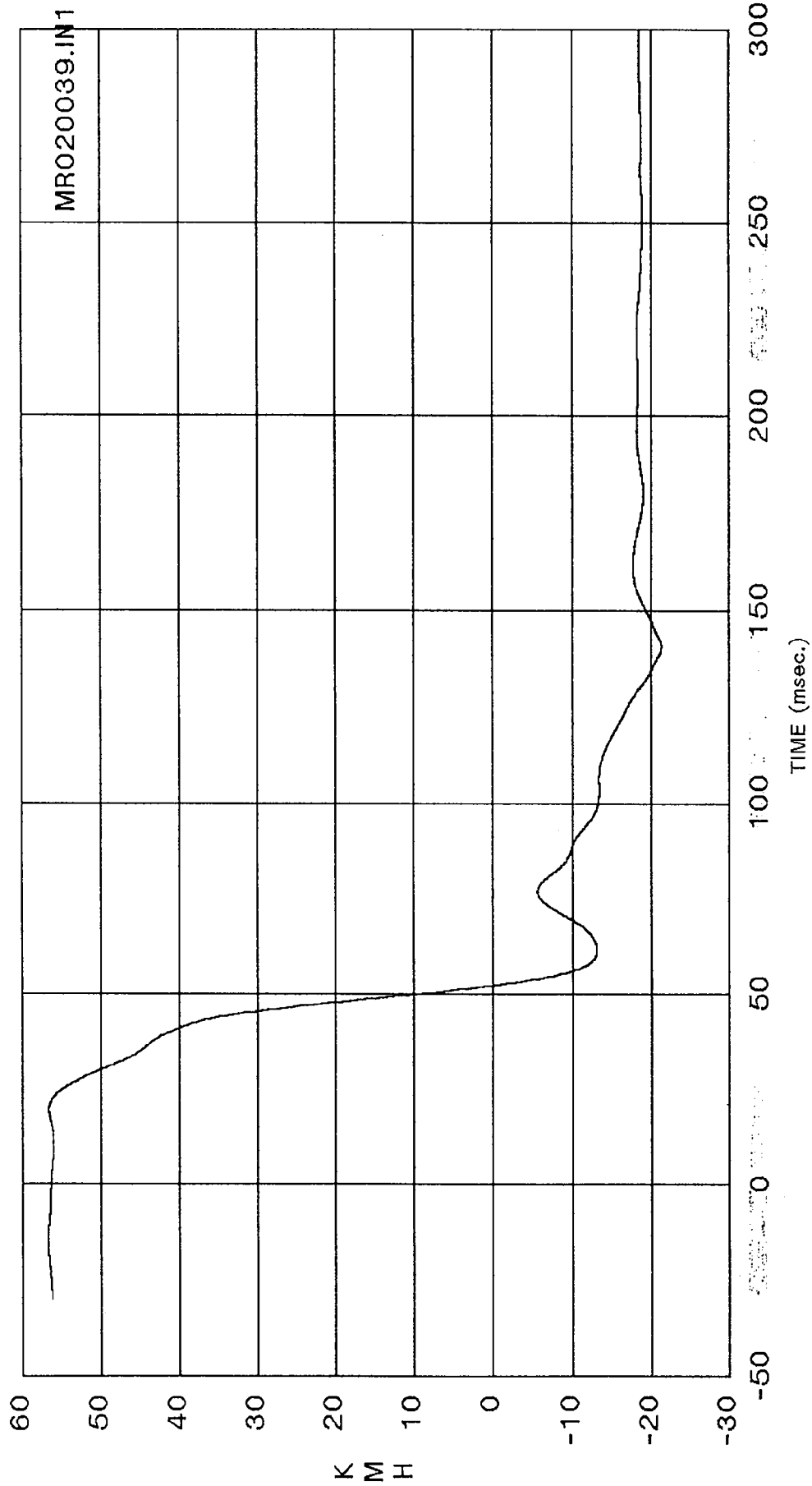
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020039.FI



Curve: Vehicle left front caliper acceleration Filter: SAE CLASS 60 Max = 24.326 Min = -133.03

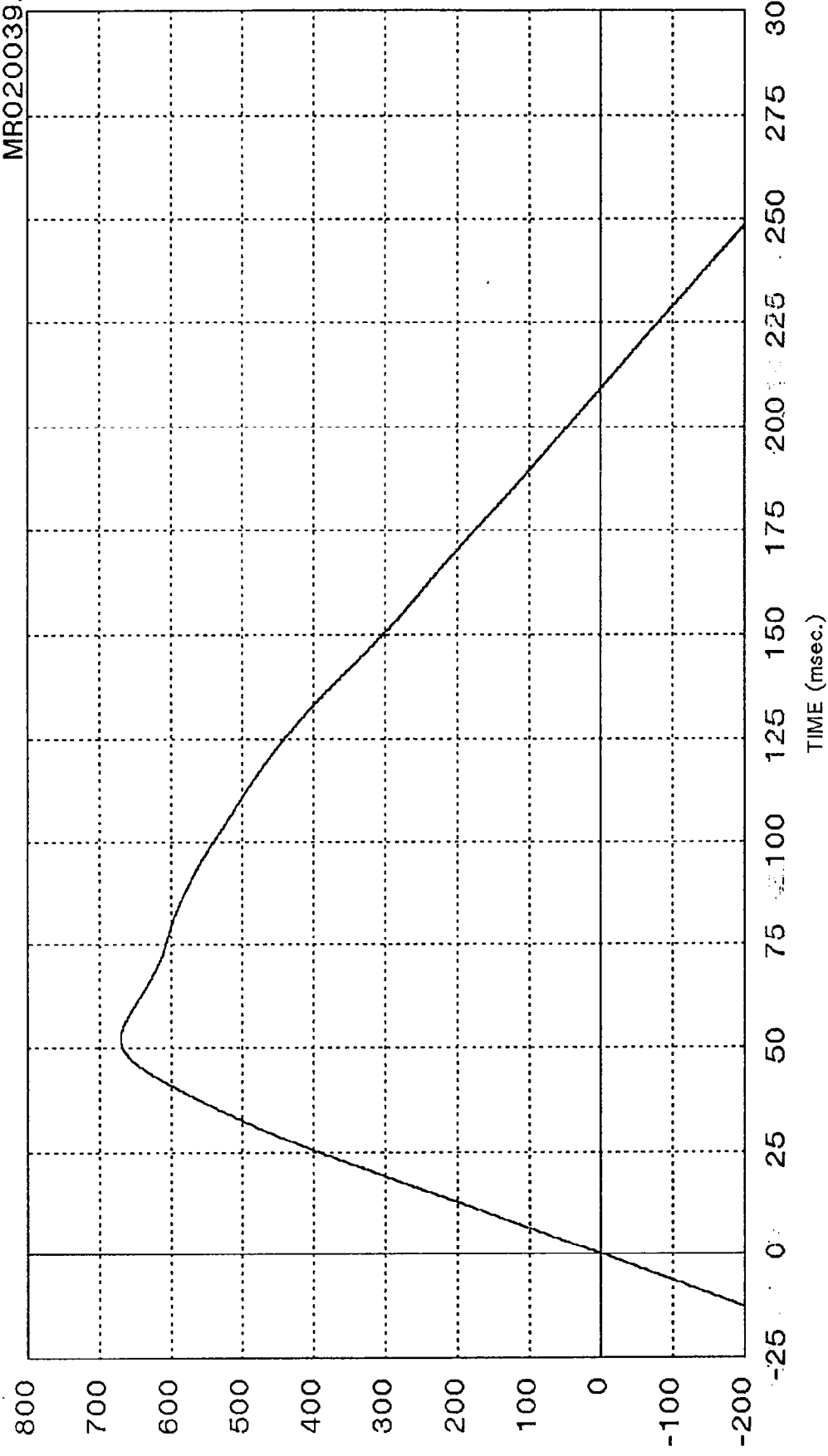
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Vehicle left front caliper -- delta V Filter: SAE CLASS 180 Max = 56.643 Min = -21.391

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

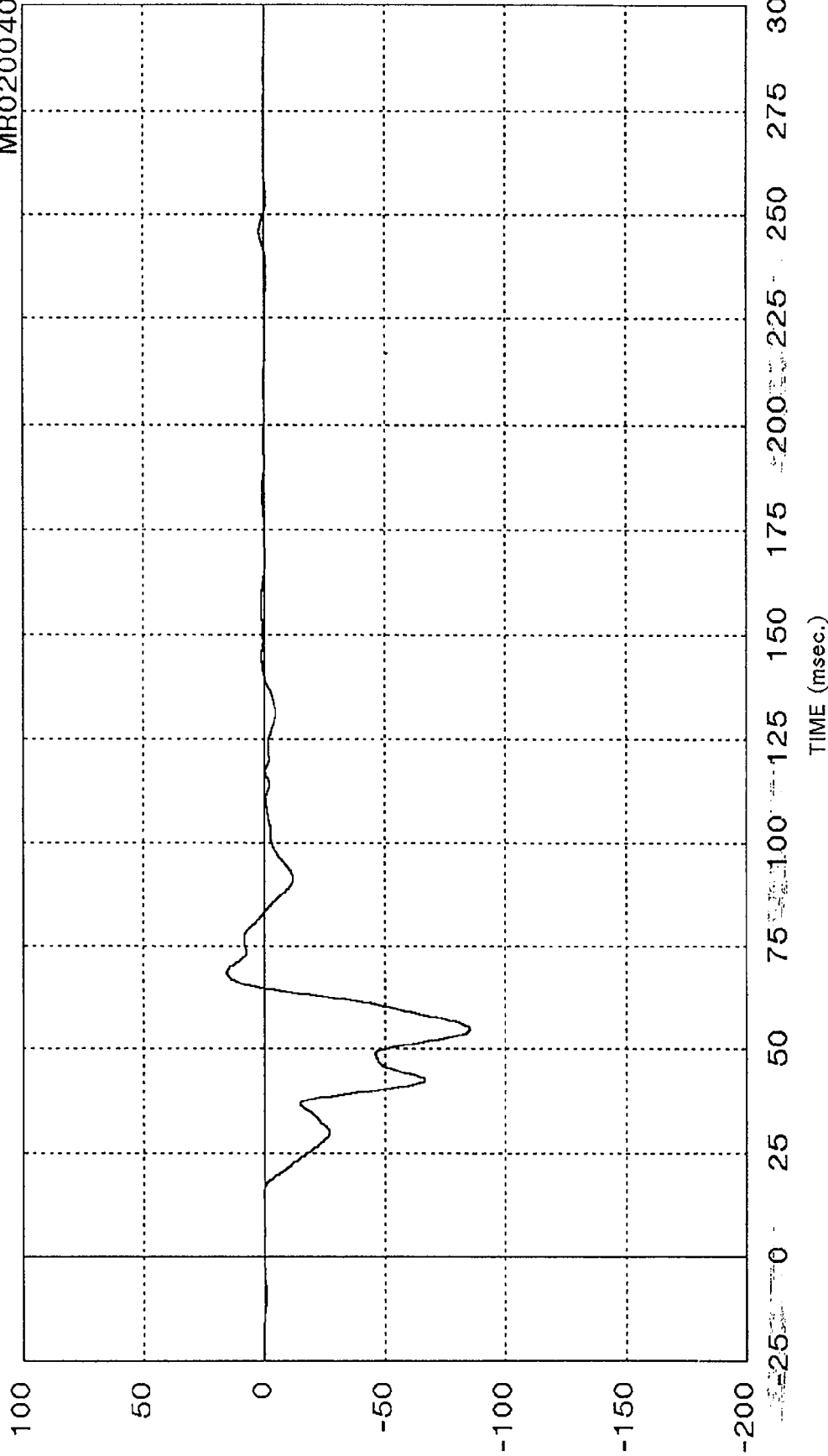
MRO20039.IN



Curve: Vehicle left front caliper -- displacement Filter: SAE CLASS 180 Max = 670.90 Min = -469.54

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR0200040.FI



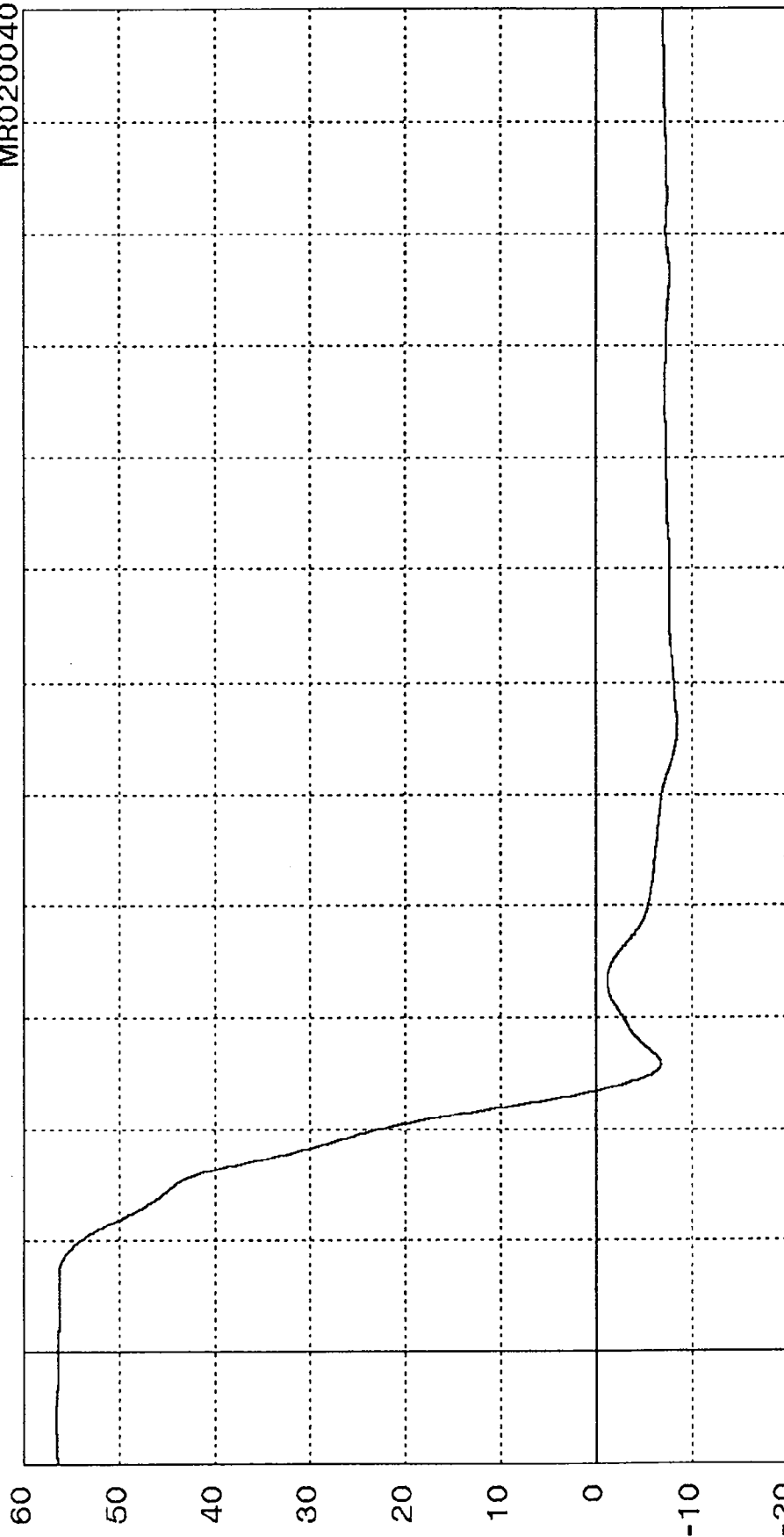
B1 Gs S

MSE-R93030-05

Curve: Vehicle right front caliper acceleration Filter: SAE CLASS 60 Max = 15.876 Min = -85.587

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

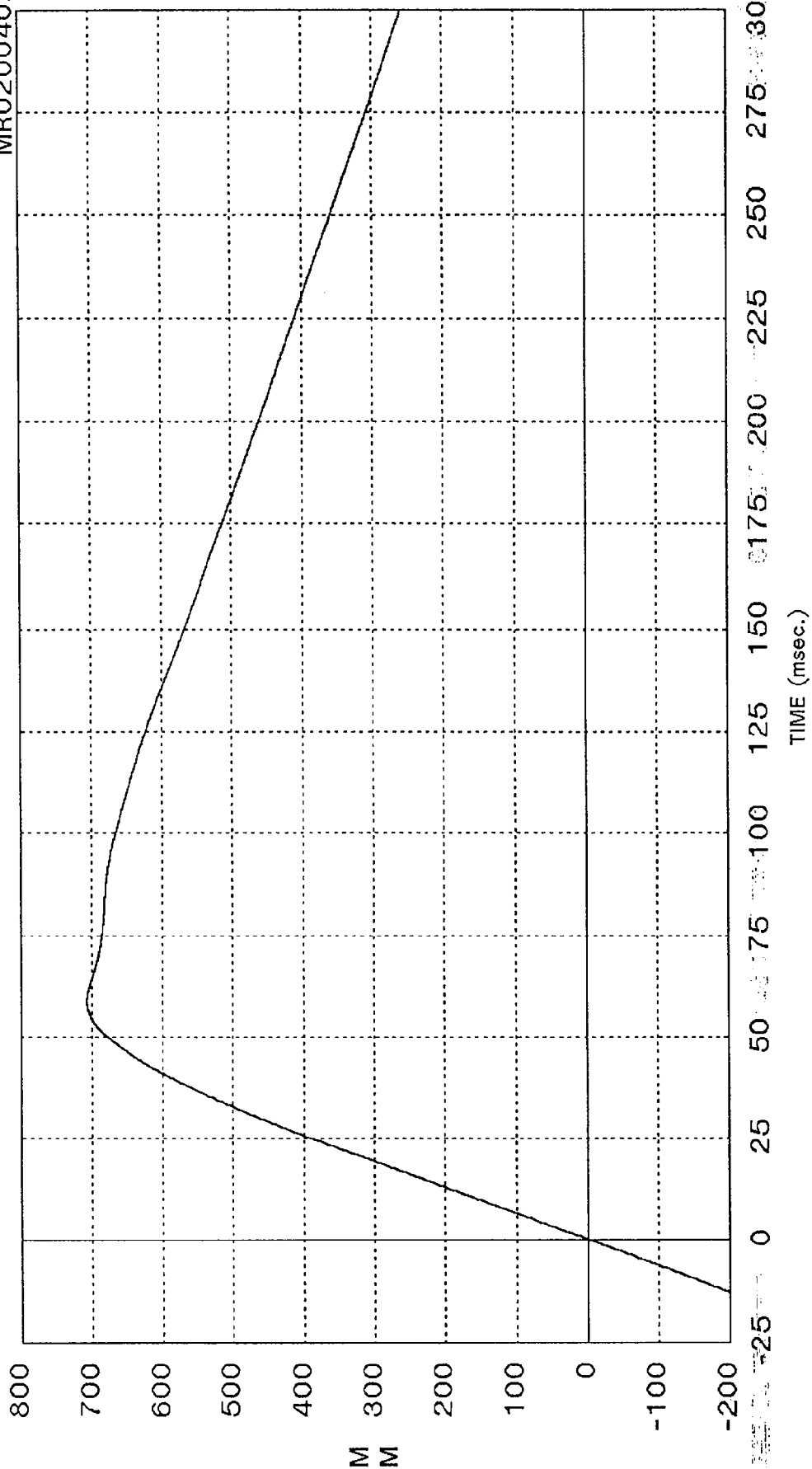
MR0200040.IN



Curve: Vehicle right front caliper -- delta V Filter: SAE CLASS 180 Max = 56.350 Min = -8.4941

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

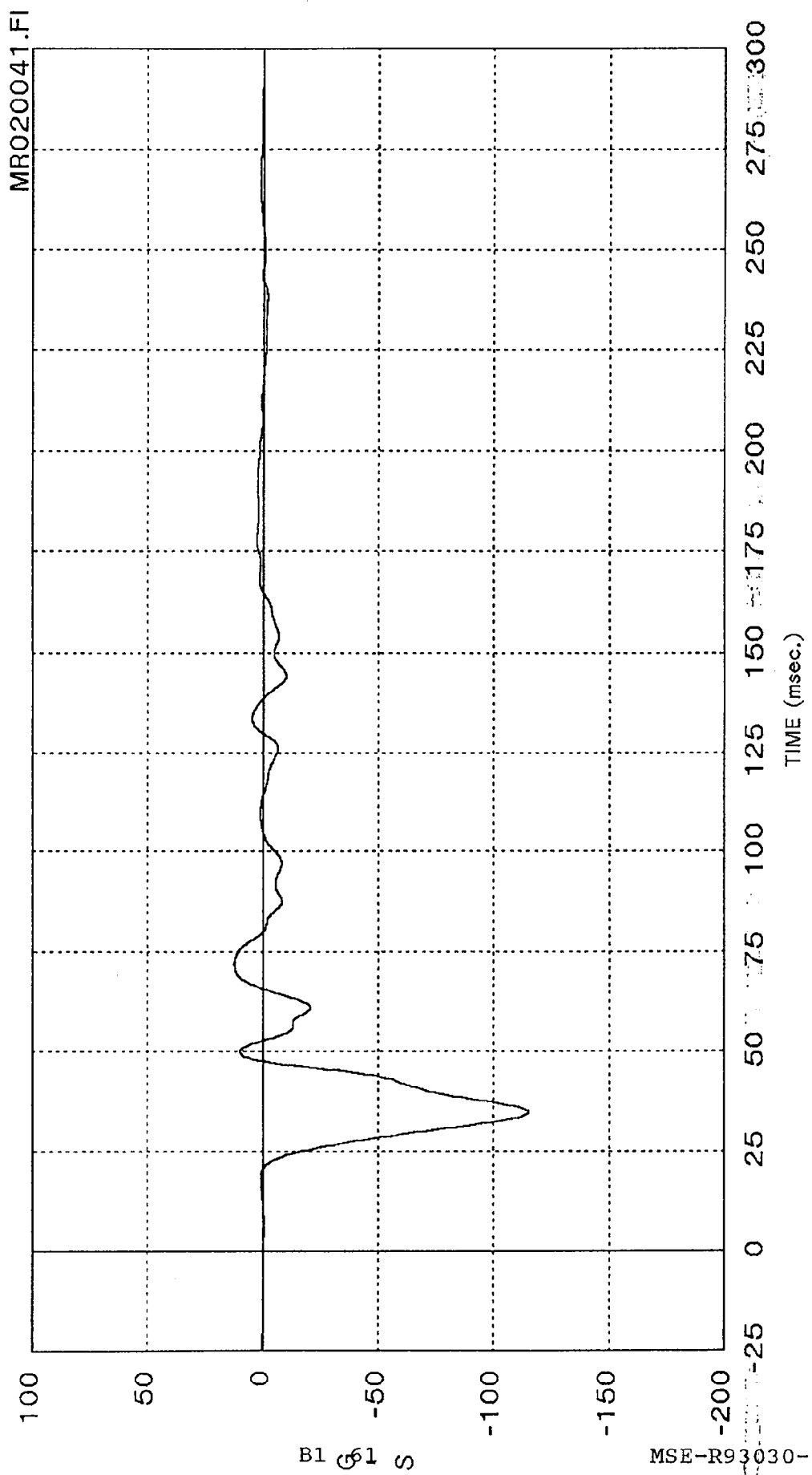
MR020040.IN



Curve: Vehicle right front caliper -- displacement Filter: SAE CLASS 180 Max = 706.51 Min = 257.98

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020041.FI



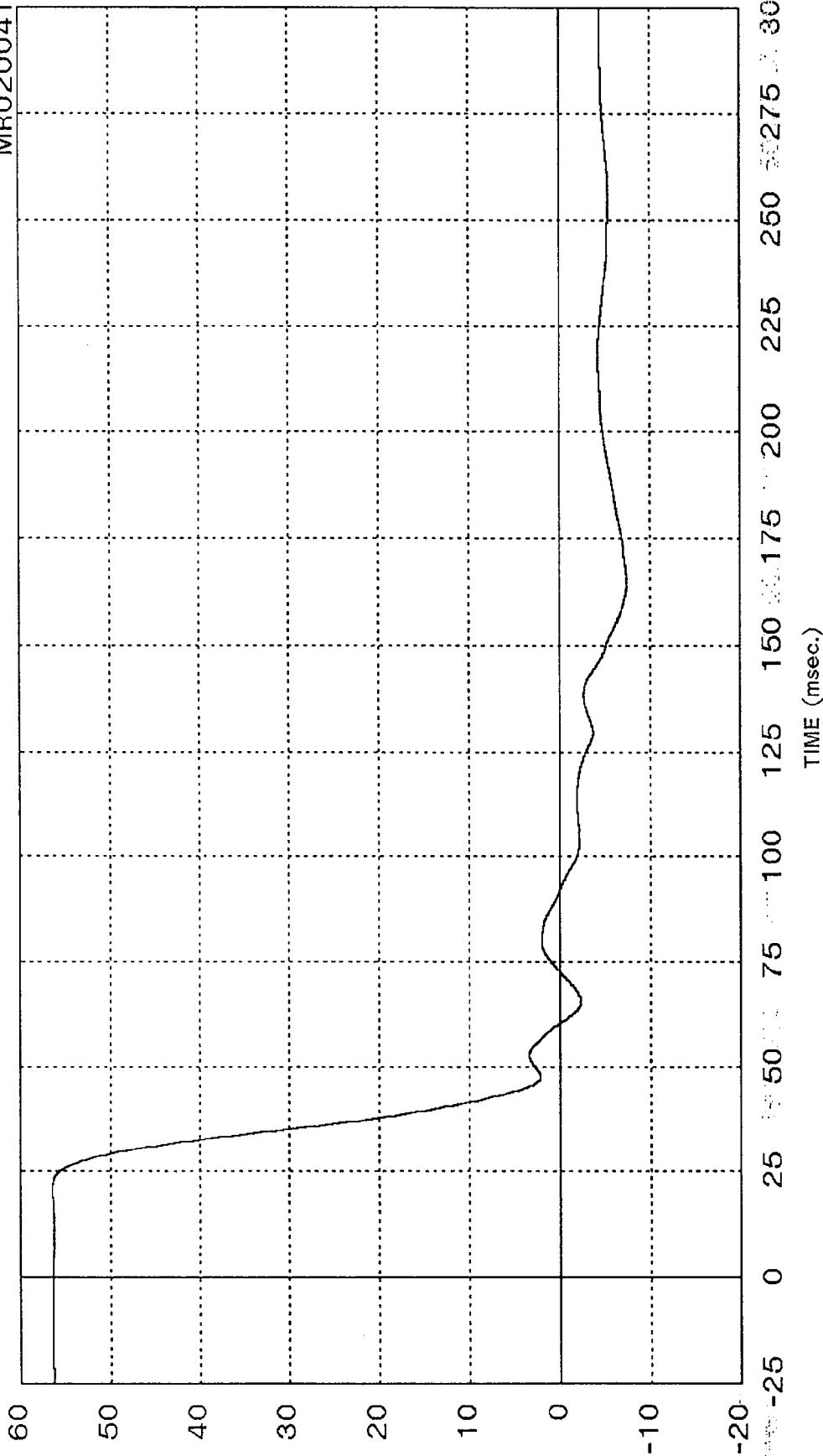
Curve: Vehicle engine bottom acceleration Filter: SAE CLASS 60 Max = 12.481 Min = -115.15

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

B1 G1 S

MSE-R93030-05

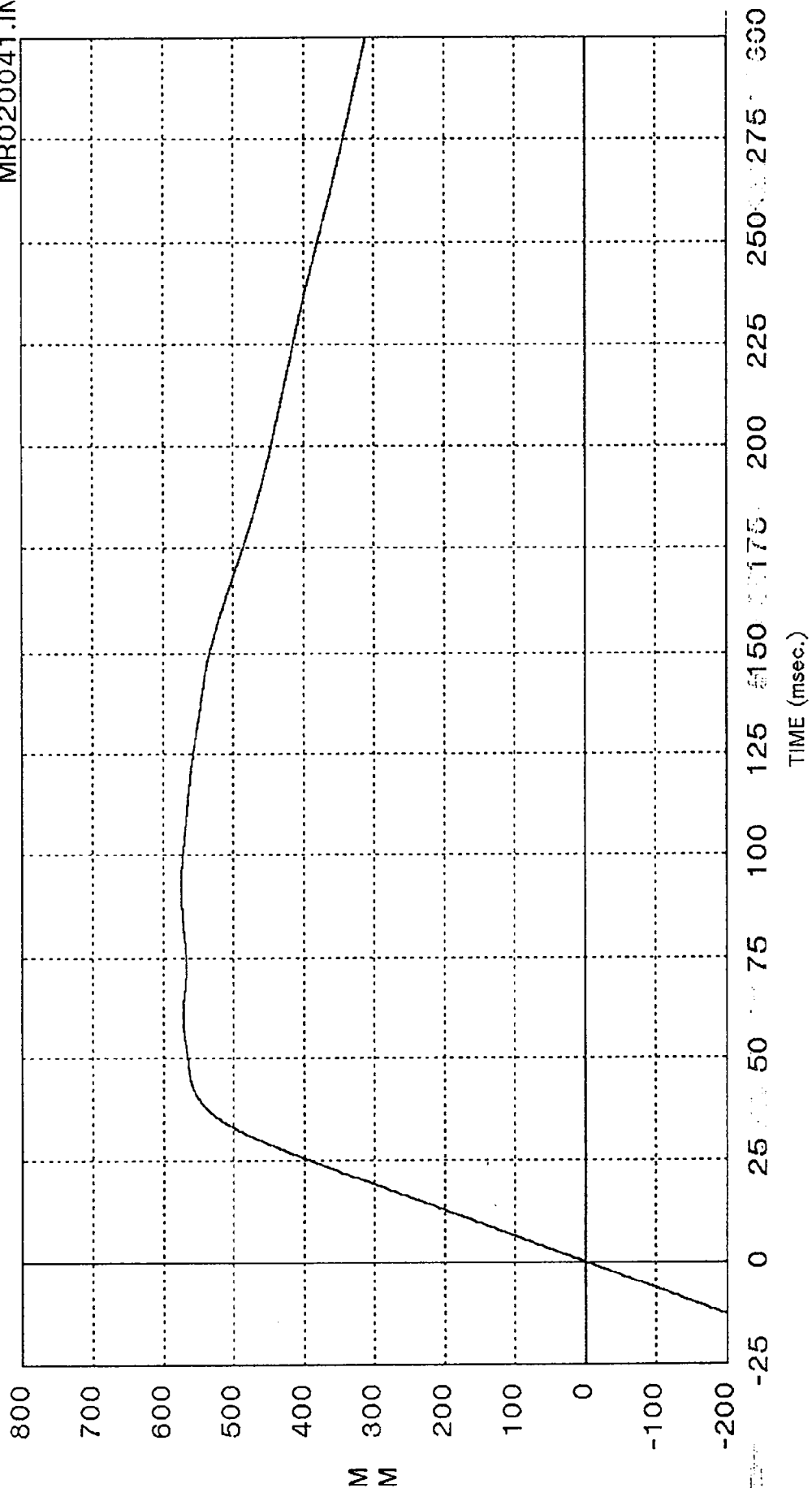
MR0200041.IN



Curve: Vehicle engine bottom -- delta V Filter: SAE CLASS 180 Max = 56.488 Min = -7.4617

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

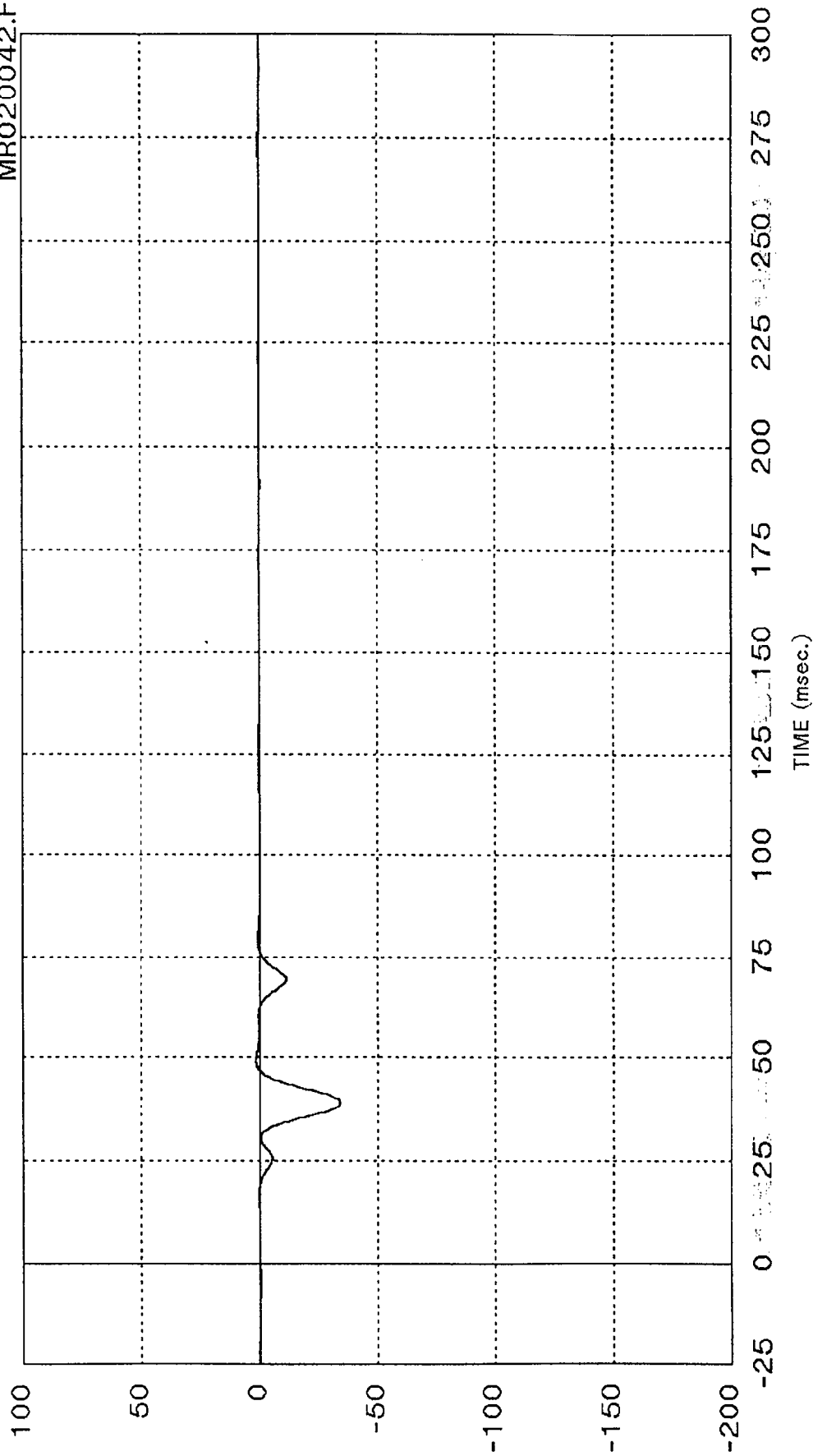
MR020041.IN



Curve: Vehicle engine bottom -- displacement Filter: SAE CLASS 180 Max = 574.88 Min = 311.61

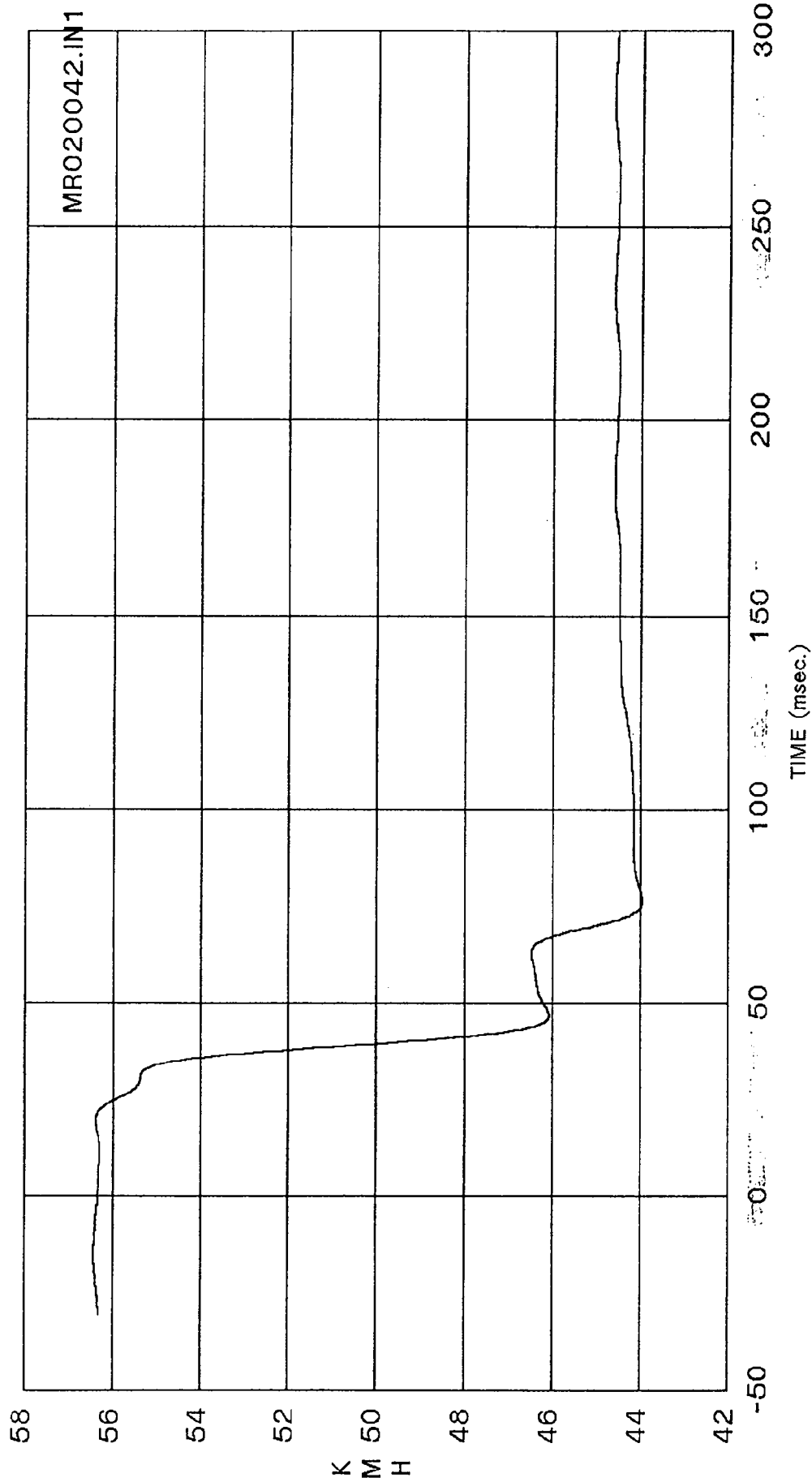
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR020042.FI



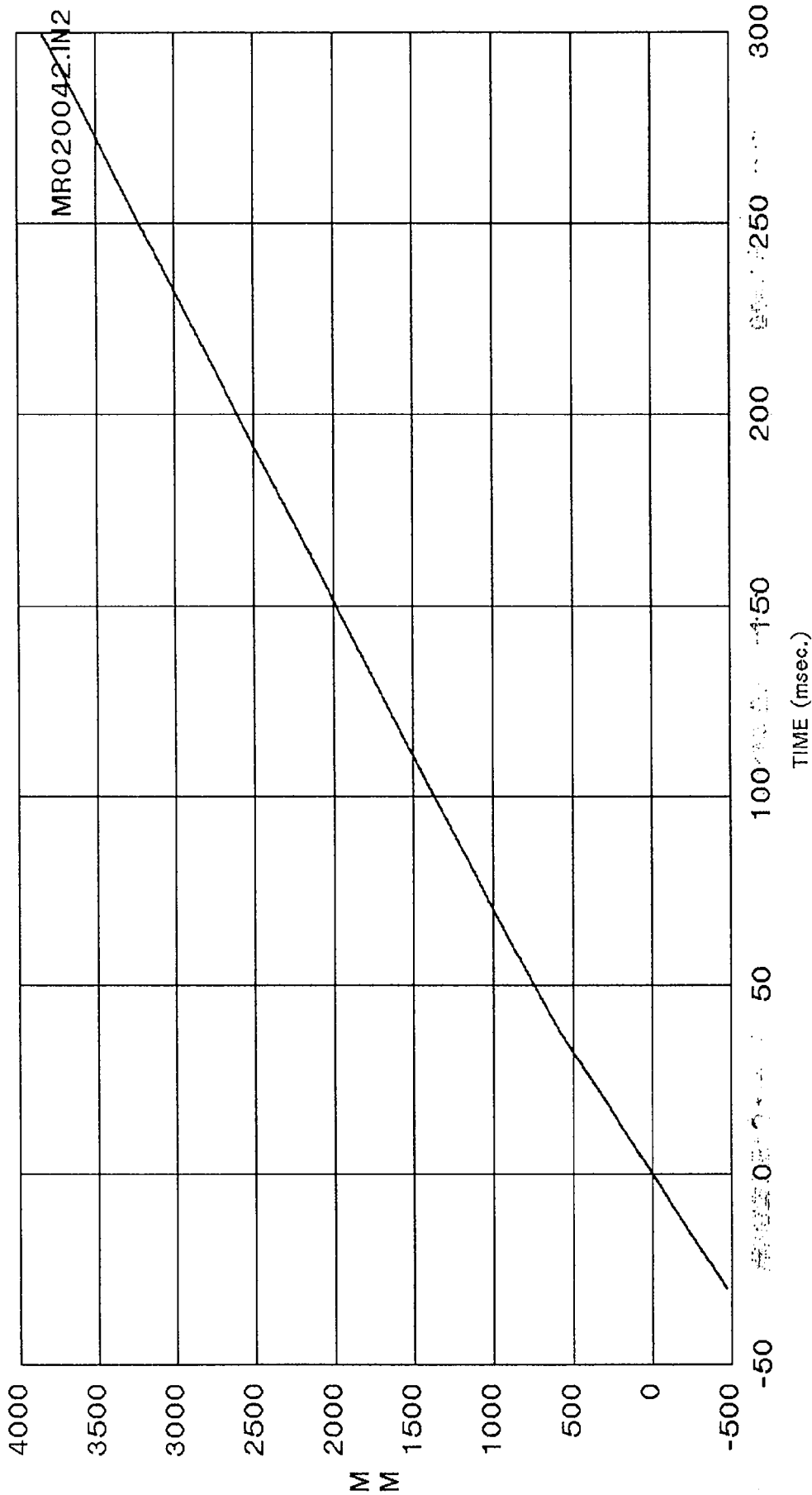
Curve: Vehicle engine top acceleration Filter: SAE CLASS 60 Max = 1.5481 Min = -34.029

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Vehicle engine top acceleration Filter: SAE CLASS 60 Max = 56.396 Min = 43.945

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Vehicle engine top acceleration

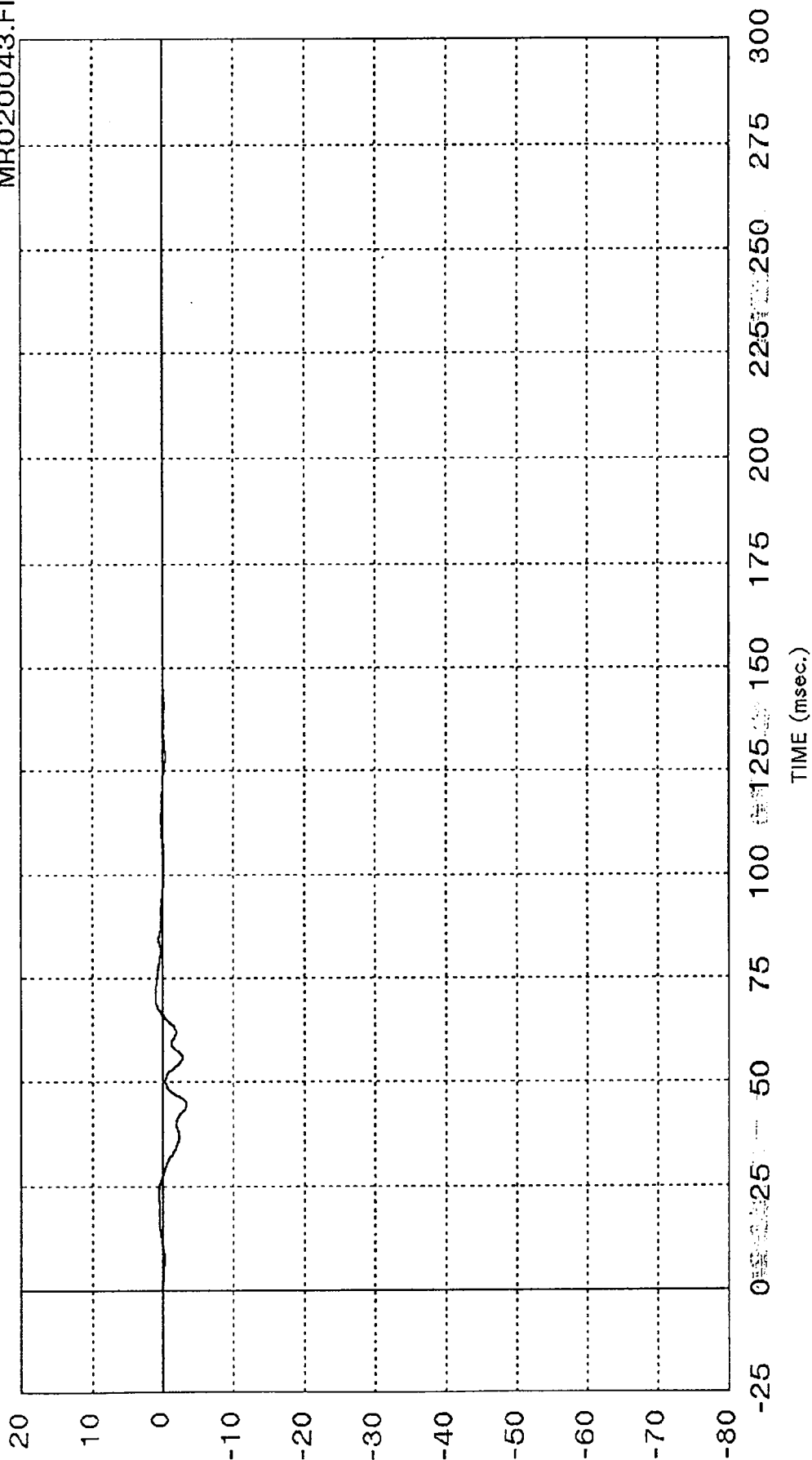
Filter: SAE CLASS 60

Max = 3841.9 Min = .10000E+11

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

Printed on 03/09/94 at 10:00 AM

MR0200043.FI

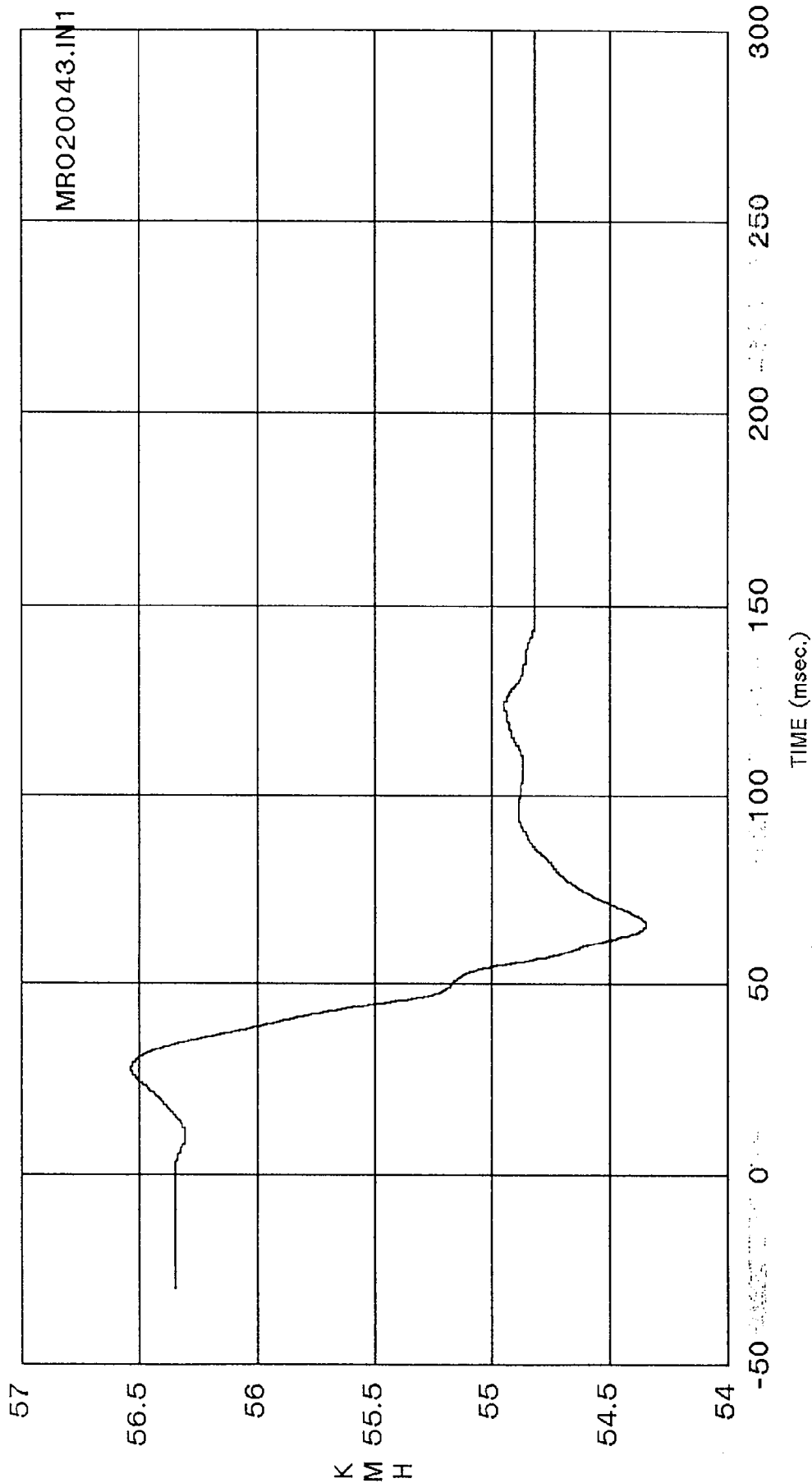


B1 67 S

MSE-R93030-05

Curve: Vehicle Instrument panel acceleration CF Filter: SAE CLASS 60 Max = 1.0515 Min = -3.3588

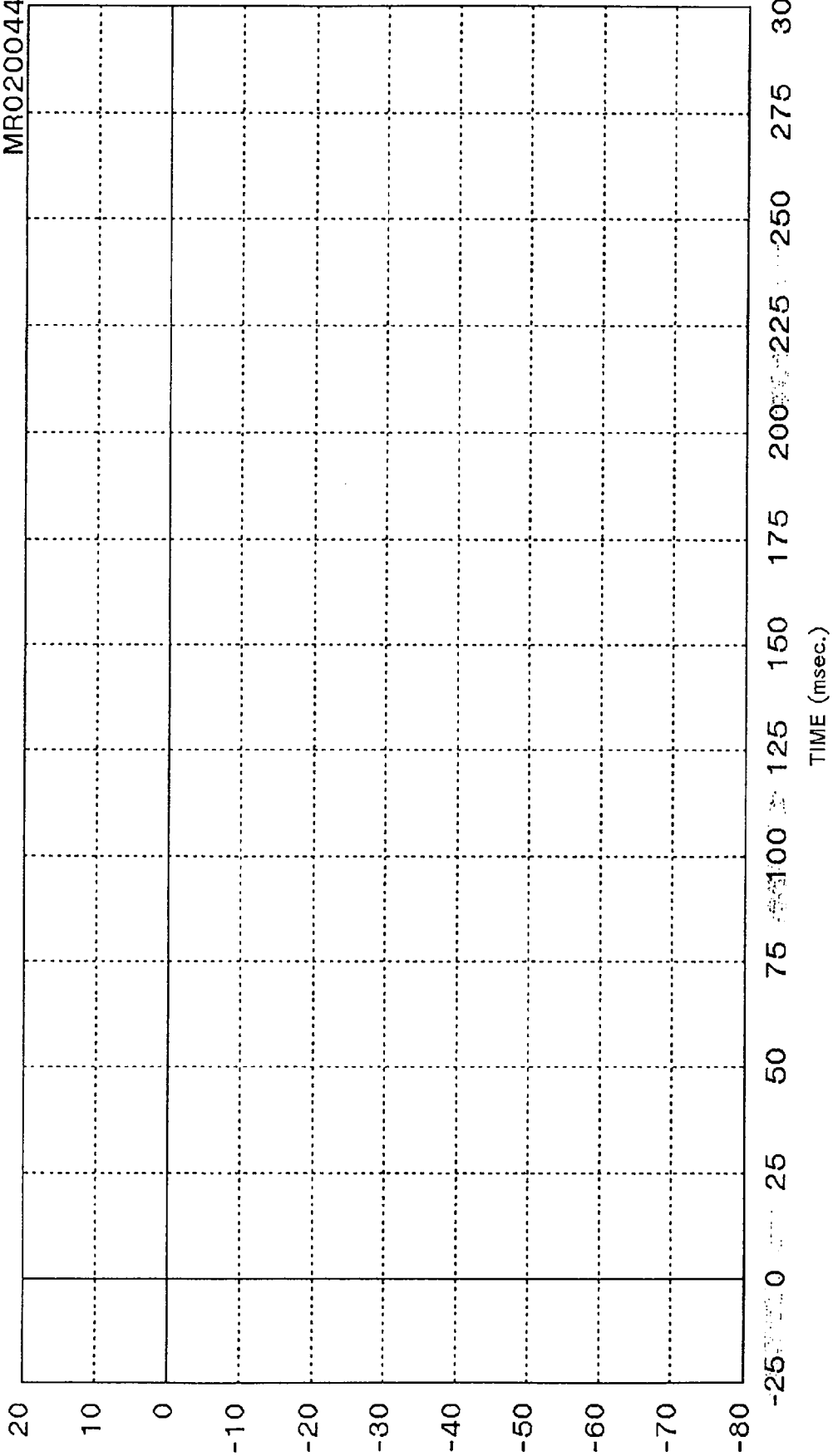
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Vehicle instrument panel acceleration Filter: SAE CLASS 60 Max = 56.536 Min = 54.348

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

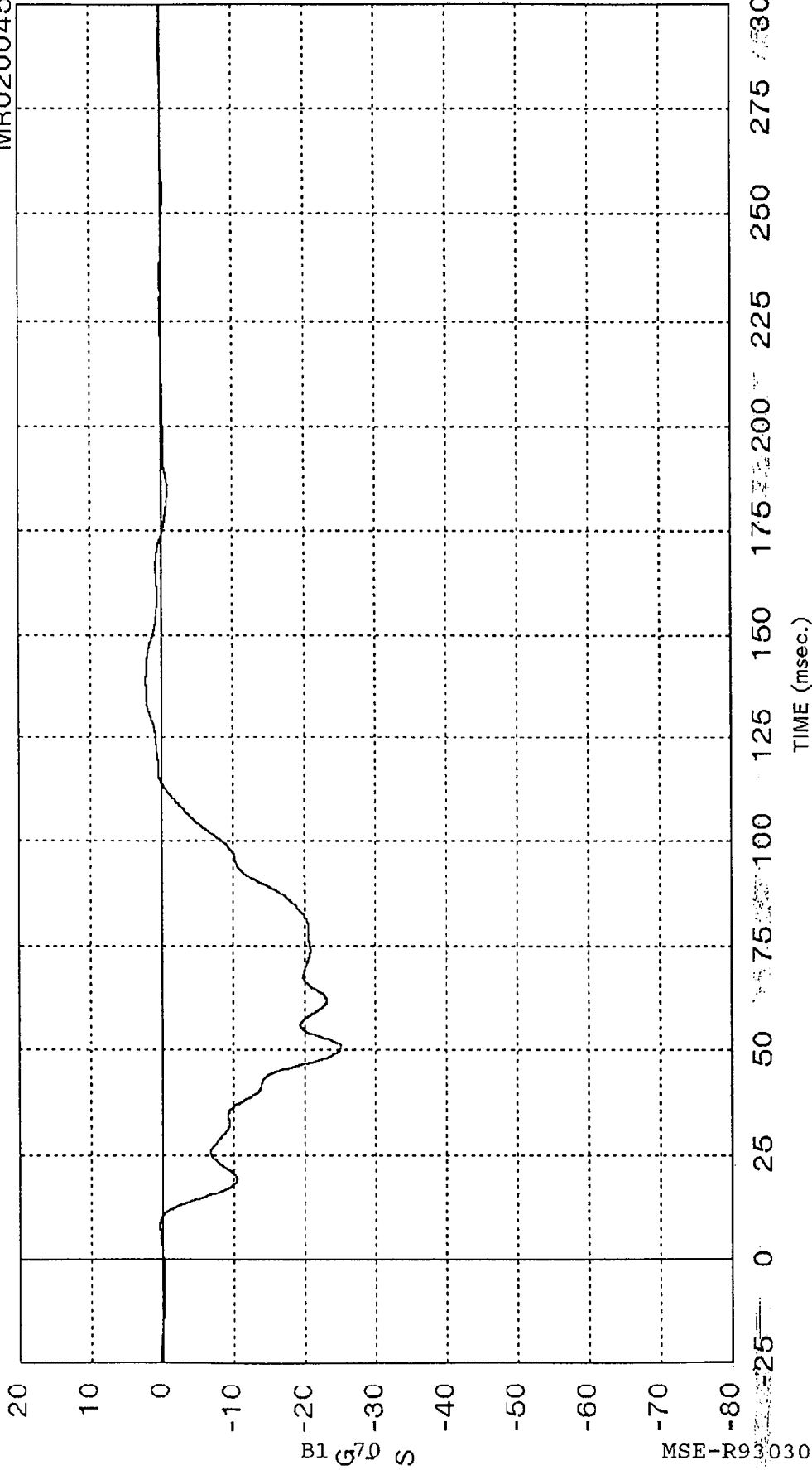
MR020044.FI



Curve: Vehicle left rear X-member acceleration (Pri.) ND Filter: SAE CLASS 60 Max = .00000 Min = .00000

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR0200045.FI

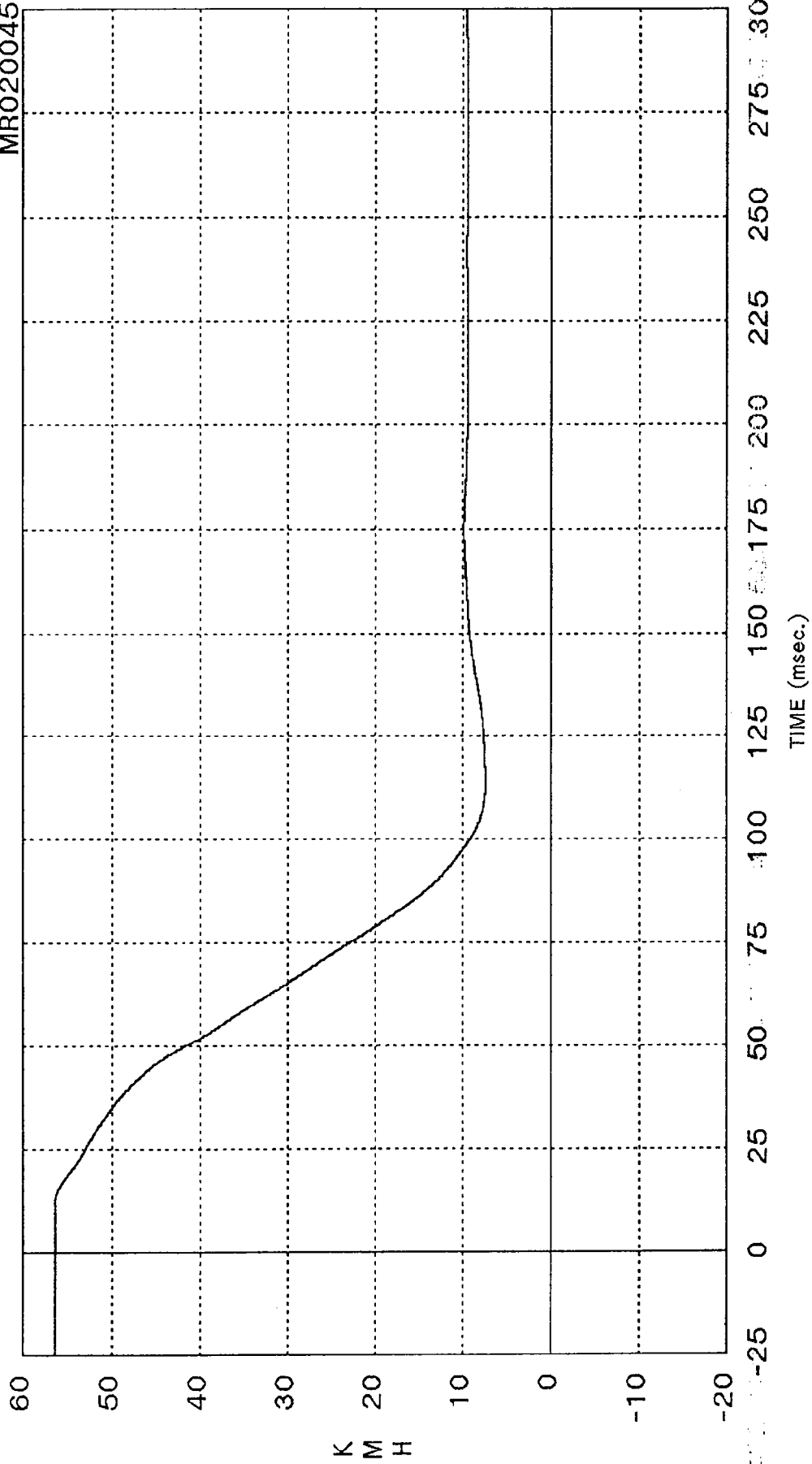


Curve: Vehicle right rear X-member acceleration (Pri.) Filter: SAE CLASS 60 Max = 2.2304 Min = -25.168

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

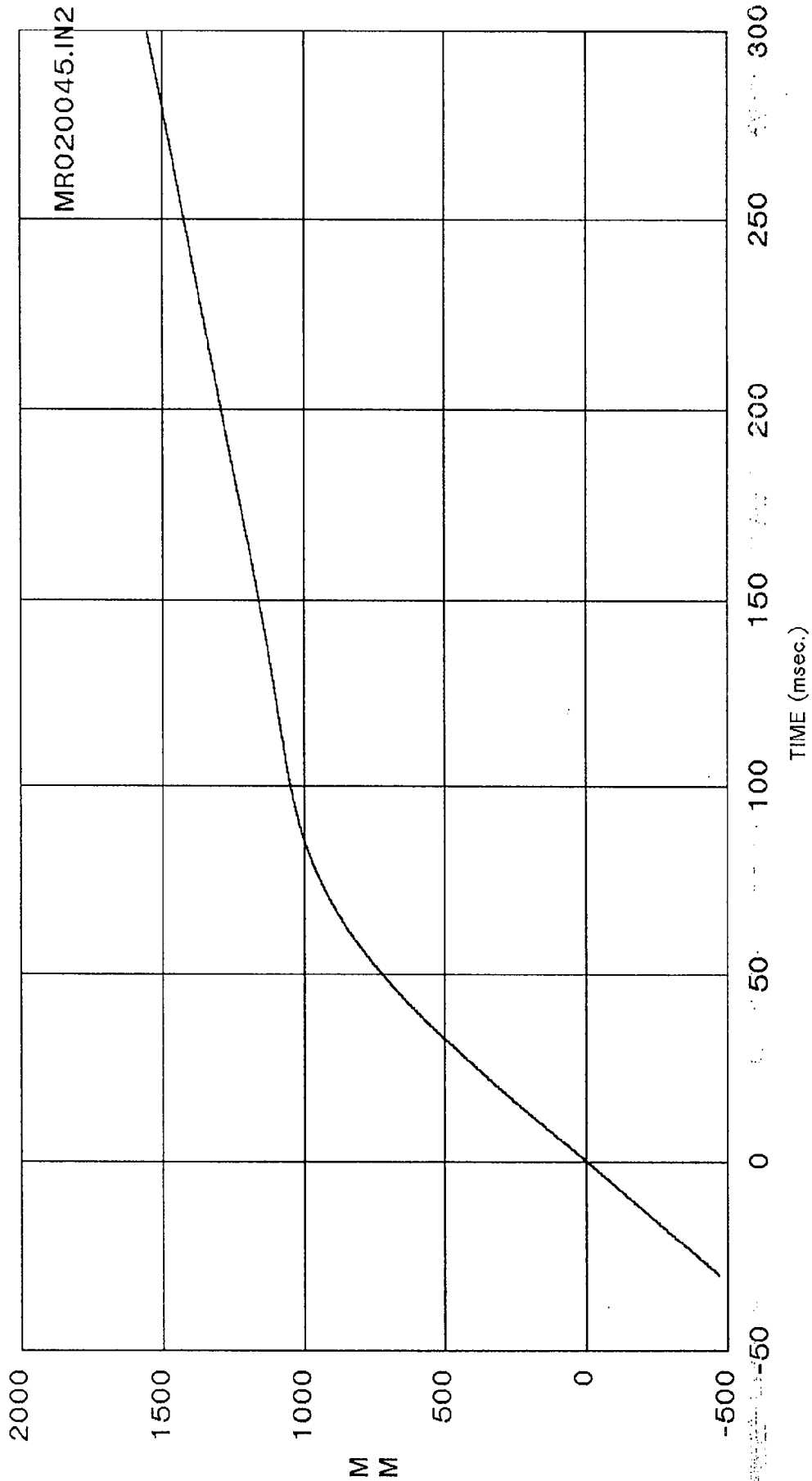
MSE-R93030-05

MR0200045.IN



Curve: Vehicle right rear X-member -- delta V (Pri.) Filter: SAE CLASS 60 Max = 56.421 Min = 7.3825

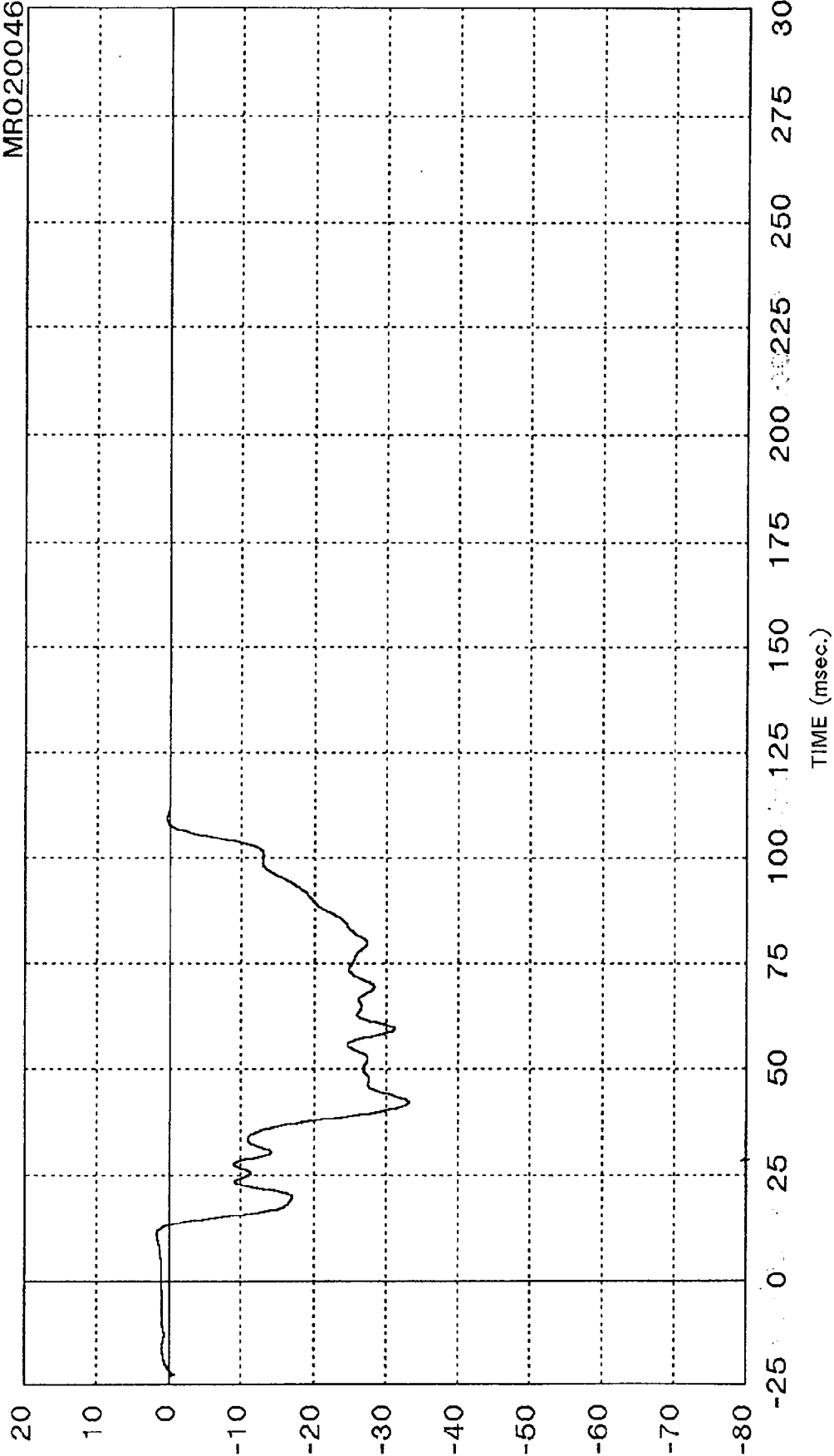
MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Vehicle right rear X-member - displacement (Pri.) Filter: SAE CLASS 60 Max = 1554.0 Min = .10000E+11

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

MR0200046.FI

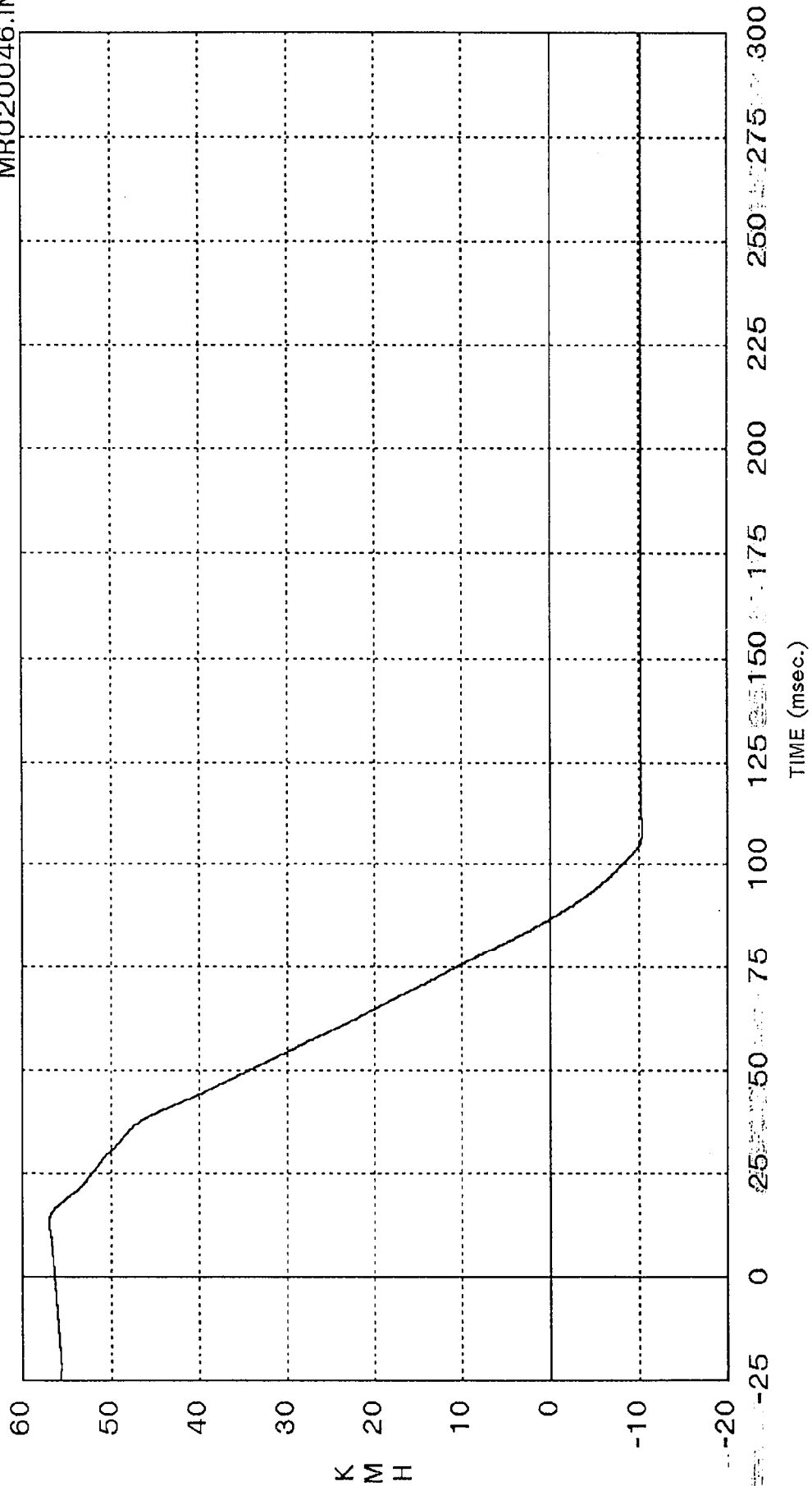


Curve: Vehicle left rear X-member acceleration (Sec.) CF Filter: SAE CLASS 60 Max = 1.7801 Min = -33.201

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

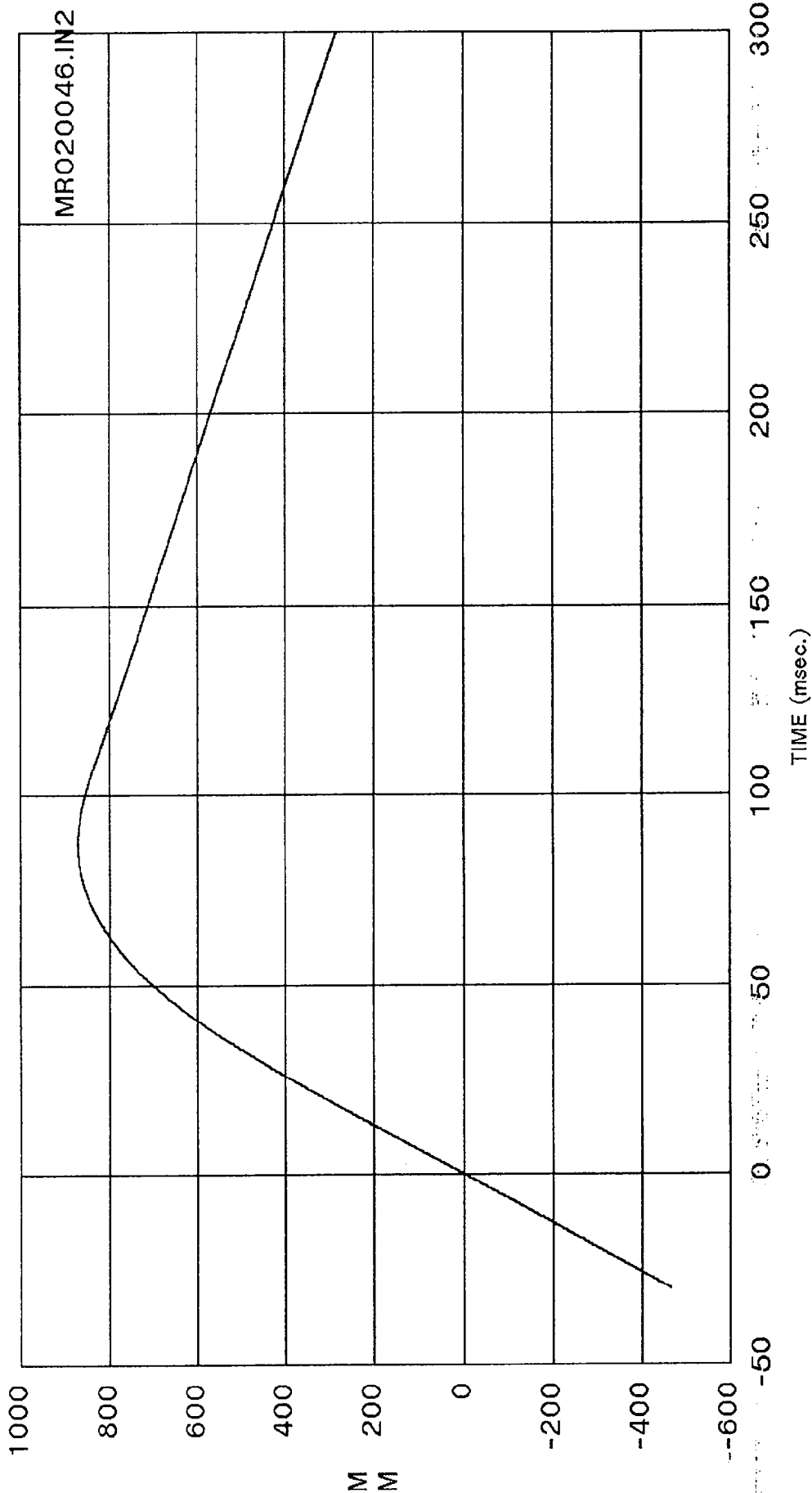
B1 Gz S

MSE-R93030-05



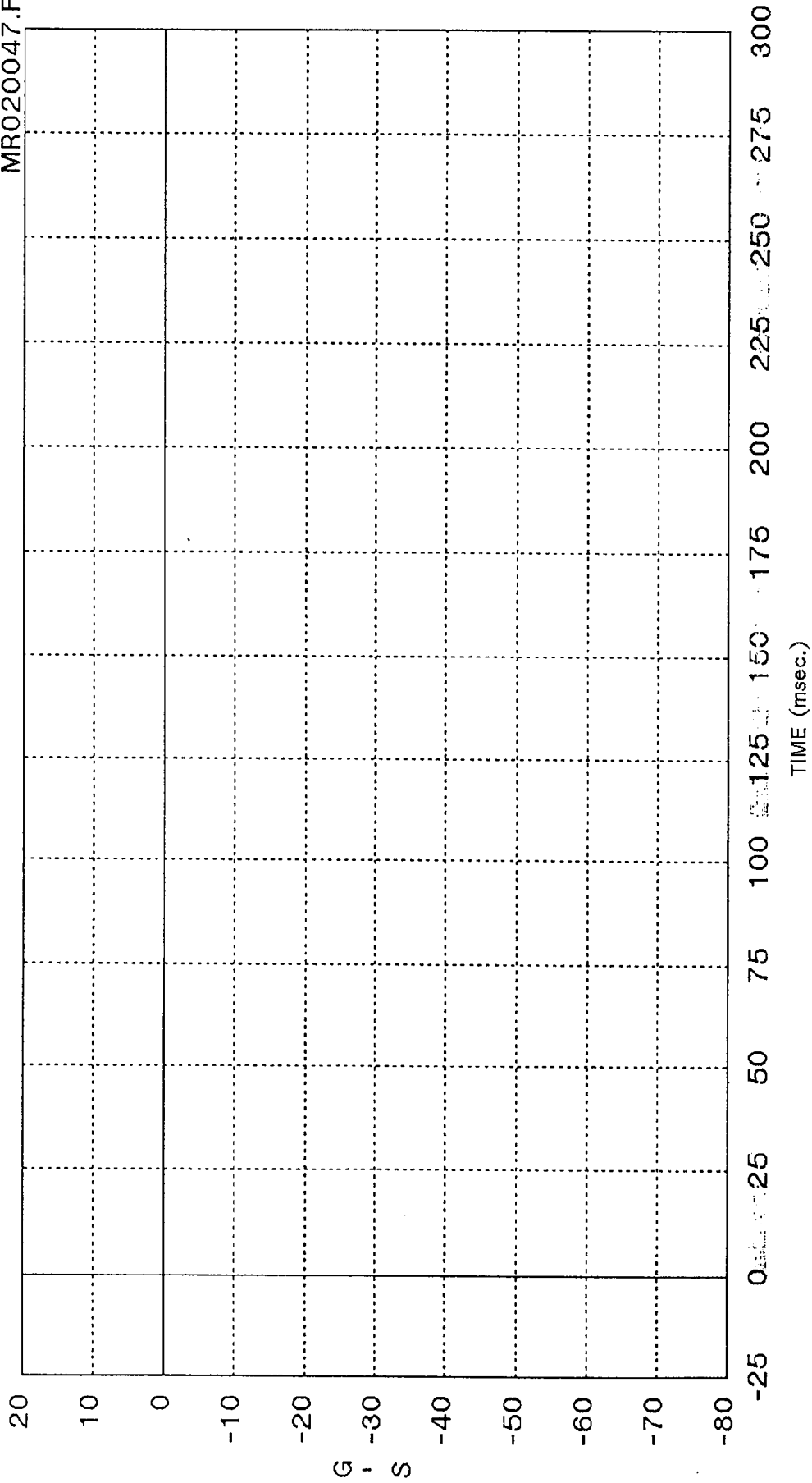
Curve: Vehicle left rear X-member -- delta V (Sec.) Filter: SAE CLASS 60 Max = 56.965 Min = -10.364

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Vehicle left rear X-member - displacement (Sec.) Filter: SAE CLASS 60 Max = 871.39 Min = 282.87

MSE Date: 03/09/94 Program: 1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon



Curve: Vehicle right rear X-member acceleration (Sec.)ND Filter: SAE CLASS 60 Max = .00000 Min = .00000

MSE Date: 03/09/94 Program:1994 New Car Assessment Program Vehicle: 1994 Ford Escort Wagon

APPENDIX B - 2
LOAD CELL BARRIER DATA

NO LOAD CELL BARRIER DATA IS AVAILABLE

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APPENDIX C

PART 572 ATD 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: 02

CALIBRATION DATE: 02/17/94 to 02/18/94

I. CONFIGURATION VERIFICATION DATA, PRETEST

TESTED PARAMETER	UNIT	SPECIFICATION	TEST RESULTS
AA - Location for Chest Circ.	MM	429.3 to 434.3	430.2
BB - 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
Q - Chest Depth	MM	213.4 to 228.6	215.9
C - "H" Point Height	MM	83.8 to 88.9	88.2
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	883.5
F - Thigh Clearance	MM	139.7 to 154.9	147.3
K - Buttock to Knee Length	MM	579.1 to 604.5	594.4
M - 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
E - Foot Length	MM	251.5 to 266.7	260.5
W - Foot Breadth	MM	91.4 to 106.7	106.7
F - 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	516.4
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	289.6 to 304.8	294.2

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to
02/18/94

HEAD DROP TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Temperature in laboratory	Deg C	20.6 - 22.2	21.4
Humidity in laboratory	%	10 - 70	50
Peak resultant acceleration	G's	225 - 275	245.0
Peak lateral acceleration	G's	15 max	8.9
Is acceleration curve unimodal ?		YES	YES

LAB TECHNICIAN: Patrick J. Puzzuto

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

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to
02/18/94

THORAX IMPACT TEST

TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Temperature in laboratory	Deg C	20.6 - 22.2	21.0
Humidity in laboratory	%	10 - 70	50
Probe speed	MPS	6.58 - 6.83	6.75
Peak deflection	MM	63.5 - 72.6	67.2
Peak resistive force	Kgs	526.6 - 601.6	557.66
Internal hysteresis	%	69 - 89	74.0

LAB TECHNICIAN: P. Puzzuto

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NECK FLEXION TEST

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to
02/18/94

TESTED PARAMETER		UNITS	SPECIFICATION	TEST RESULTS
Lab temperature		Deg C	20.6 - 22.2	21.1
Lab relative humidity		%	10 - 70	50
Pendulum speed		MPS	6.89 - 7.13	6.95
Pendulum deceleration	10 msec	G's	22.50 - 27.50	24.72
	20 msec	G's	17.60 - 22.60	20.20
	30 msec	G's	12.50 - 18.50	15.40
Max decel. above 30 msec		G's	29.00 max	15.00
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	64.20
	Time	msec	57.0 - 64.0	62.20
Moment About Occipital Condyle	Maximum	Mt.Kgs	9.0 - 11.1	9.20
	Time	msec	47.0 - 58.0	57.20
Rotation angle decay time to cross zero		msec	113.0 - 128.0	121.50
Positive moment decay time to cross zero		msec	97.0 - 107.0	105.70

LAB TECHNICIAN: P. Puzzuto

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NECK EXTENSION TEST

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to
02/18/94

TESTED PARAMETER		UNITS	SPECIFICATION	TEST RESULTS
Lab temperature		Deg C	20.6 - 22.2	21.0
Lab relative humidity		%	10 - 70	52
Pendulum speed		MPS	5.94 - 6.19	6.11
Pendulum deceleration	10 msec	G's	17.20 - 21.20	19.65
	20 msec	G's	14.00 - 19.00	17.40
	30 msec	G's	11.00 - 16.00	14.58
Max decel. above 30 msec		G's	22.00 max	14.50
Deceleration decay time to first cross 5 G's		msec	38.0 - 46.0	45.20
"D" Plane	Rotation	Deg.	81.0 - 106.0	94.00
	Time	msec	72.0 - 82.0	74.60
Occipital Condyle	Moment	Mt.Kgs	-8.2 to -5.4	8.00
	Time	msec	65.0 - 79.0	68.70
Rotation angle decay time to cross zero		msec	147.0 - 174.0	158.40
Negative moment decay time to cross zero		msec	120.0 - 148.0	132.80

LAB TECHNICIAN: P. Puzzuto

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to
02/18/94

LEFT KNEE IMPACT TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Lab temperature	Deg C	18.9 - 25.6	21.2
Lab relative humidity	%	10 - 70	52
Probe velocity	MPS	2.07 - 2.13	2.11
Peak impact force (Probe mass x deceleration)	Kgs	481.2- 590.2	560.4

LAB TECHNICIAN: P. Puzzuto

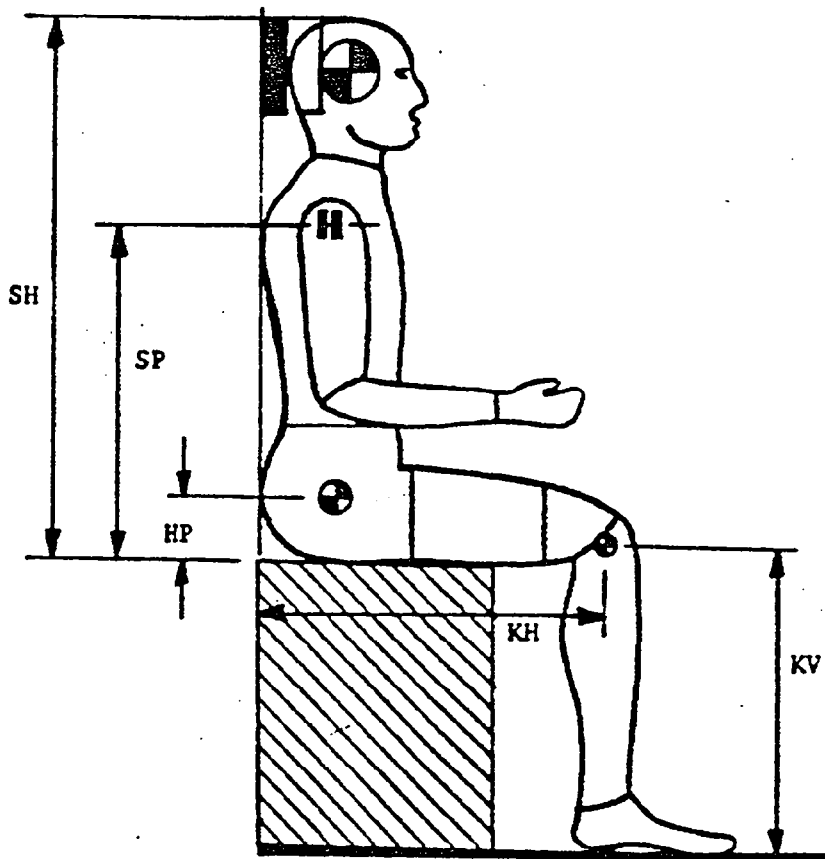
RIGHT KNEE IMPACT TEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Lab temperature	Deg C	18.9 - 25.6	21.2
Lab relative humidity	%	10 - 70	52
Probe velocity	MPS	2.07 - 2.13	2.12
Peak impact force (Probe mass x deceleration)	Kgs	481.2 - 590.2	520.4

LAB TECHNICIAN: P. Puzzuto

PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA ATD I.D. NUMBER: 830 LAB TECHNICIAN: P. Puzzuto

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



I. CONFIGURATION VERIFICATION DATA, PRETEST

TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
SH - Seated height	mm	904 - 909	908
SP - Shoulder pivot height	mm	554 - 569	567
HP - Hip pivot height	mm	99 reference	99
KH - Knee pivot from back	mm	511 - 526	520
KV - Knee pivot from floor	mm	490 - 505	500
SW - Shoulder width	mm	452 - 467	461
HW - Hip width	mm	356 - 391	370

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

NHTSA ATD I.D. NUMBER: 830 LAB TECHNICIAN: P. PUZZUTO

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

II. PERFORMANCE VERIFICATION DATA, PRETEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
Temperature in laboratory	Deg C	18.9 - 25.6	21.5
Humidity in laboratory	%	10 - 70	48
HEAD DROP TEST			
Peak resultant acceleration	G's	210 - 260	245.5
Peak lateral acceleration	G's	less than 10	3.6
Time above 100 G's	msec	0.9 to 1.5	1.1
ABDOMINAL COMPRESSION TEST			
Force at 12mm displacement	kg	10.5 - 16.4	12.8
Force at 19mm displacement	kg	16.4 - 22.7	18.4
Force at 25mm displacement	kg	22.7 - 28.6	25.6
Force at 33mm displacement	kg	33.2 - 40.0	36.8
CHEST IMPACT TEST, HIGH ENERGY			
Probe speed	mps	6.64 - 6.77	6.70
Peak deflection	mm	43.2 maximum	43.0
Peak resistive force	kg	1023 maximum	985
Internal hysteresis	%	50 - 70	52
CHEST IMPACT TEST, LOW ENERGY			
Probe speed	mps	4.22 - 4.31	4.27
Peak deflection	mm	27.9 maximum	27.0
Peak resistive force	kg	659 maximum	610
Internal hysteresis	%	50 - 70	60

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

NHTSA ATD I.D. NUMBER: 830 LAB TECHNICIAN: P. Puzzuto/L. Rawlings

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

II. PERFORMANCE VERIFICATION DATA, PRETEST				
TESTED PARAMETER		UNITS	SPECIFICATION	TEST RESULTS
NECK BEND TEST				
Pendulum speed		mps	6.55 - 7.77	6.69
Pendulum avg. decel. (T1-T2)		G's	20 - 24	22.5
Pendulum decel. (T2-T1)		msec	less than 3	2.2
Pendulum decel. (T3-T2)		msec	25 - 30	28.5
Pendulum decel. (T4-T3)		msec	less than 10	4.5
Resultant head acceleration		G's	less than 26	25.5
Maximum head rotation		deg.	63 - 73	64.3
CHORDAL DISPLACEMENT / HEAD ROTATION ANGLE				
0 deg.	Time	msec	-2.0 - 2.0	0.0
	Displ.	mm	-13 - 13	0
30 deg.	Time	msec	25.6 - 34.4	29.7
	Displ.	mm	53 - 79	60
60 deg.	Time	msec	40.3 - 51.7	46.8
	Displ.	mm	109 - 135	115
Maximum	Time	msec	53.2 - 66.8	61.5
	Displ.	mm	127 - 152	133
60 deg.	Time	msec	67.0 - 83.0	68.5
	Displ.	mm	109 - 135	118
30 deg.	Time	msec	85.4 - 104.6	94.0
	Displ.	mm	53 - 79	57
0 deg.	Time	msec	101.0 - 123.0	105.4
	Displ.	mm	-13 - 13	5

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

NHTSA ATD I.D. NUMBER: 830 LAB TECHNICIAN: P. Puzzuto/L. Rawlings

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

II. PERFORMANCE VERIFICATION DATA, PRETEST			
TESTED PARAMETER	UNITS	SPECIFICATION	TEST RESULTS
KNEE IMPACT TEST, LEFT			
Probe speed	mps	2.06 to 2.15	2.10
Maximum force	kg	841 to 1136	1085
Time above 455 kg	msec	1.7 minimum	1.8
KNEE IMPACT TEST, RIGHT			
Probe speed	mps	2.06 to 2.15	2.09
Maximum force	kg	841 to 1136	1035
Time above 455 kg	msec	1.7 minimum	1.7
LUMBAR FLEXION TEST			
Force at 20 degrees	kg	10.0 to 15.5	13.9
Force at 30 degrees	kg	15.5 to 20.9	18.0
Force at 40 degrees	kg	20.9 to 26.4	25.1
Lumbar return angle	deg	12 maximum	9

APPENDIX D

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTION

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Safety Restraints

Using Safety Restraints Properly

Safety Belts

The use of safety belts helps restrain you and your passengers in case of a collision. In most states, the law requires their use. We strongly recommend that you use them every time you travel in your vehicle.

Safety belts provide best restraint when:

- ☐ the seatback is upright
- ☐ the occupant is sitting upright (not slouched)
- ☐ the lap belt is snug and low on the hips
- ☐ the shoulder belt is snug against the chest
- ☐ the knees are straight forward

For your safety, your vehicle has different types of safety belts:

- ☐ **Motorized Shoulder Belt Passive Restraints** — an automatic shoulder belt for people who sit in the front seat.
- ☐ **Manual Front Lap Belts** — for people who sit in the front seat and have an automatic shoulder belt.
- ☐ **Manual Front Lap and Shoulder Belts** (available only on Canadian vehicles) — for people who sit in the front seat.
- ☐ **Rear Lap and Shoulder Belts** — for people who sit next to the side windows in the rear seat.

- ☐ **Rear Lap Belts** — for people who sit in the center of the rear seat.

See the following sections for directions on how to properly use these safety belts. Also see *Safety Restraints for Children* in this chapter for special instructions about using safety belts for children.

Warning: Make sure that you and your passengers, including pregnant women, wear safety belts. Be sure that the lap belt portion of your safety belt fits snugly and as low as possible around the hips. If safety belts are not used properly, the risk of you or your passengers being injured in a collision greatly increases.

Do not allow any people to ride in the cargo area of your vehicle. People who are not riding in seats with their safety belts fastened are much more likely to be injured in a collision.

Warning: Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around the neck over the inside shoulder. Never use a single belt for more than one person. Failure to follow these precautions could increase the risk and/or severity of injury in a collision.

Warning: Always drive and ride with your seatback upright and both the shoulder and lap belt snug, with the lap belt low on the hips. This will reduce the risk of serious injury to the abdomen or neck that could be caused by sliding under the safety belts in a collision.

Children should always ride with the seatback in the fully upright position. When the seatback is not fully upright, there is a greater risk that the child will slide under the safety belt and be seriously injured in a collision.

Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

Never use a single belt for more than one person or across more than one seating position. This greatly increases the risk that one or both of the people will be injured in a collision. Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair.

Warning: Lock the doors of your vehicle before driving to lessen the risk of the door coming open in a collision.

Safety Belt Maintenance

Check the safety belt systems periodically to make sure that they work properly and are not damaged.

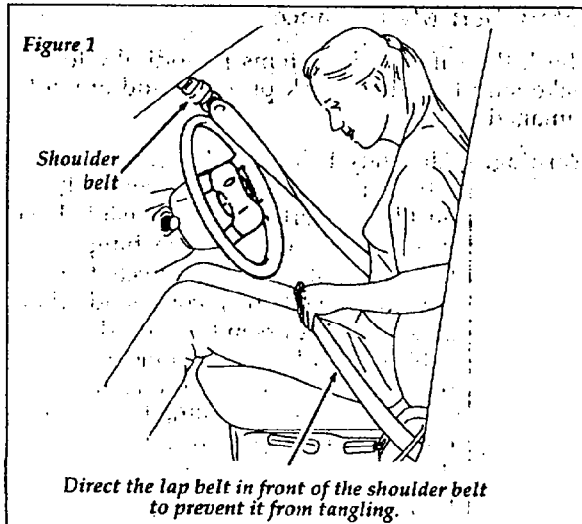
Warning: All safety belt assemblies, including retractors, buckles, front seat belt buckle support assemblies (slide bar) (if so equipped), and attaching hardware, should be inspected after any collision. Ford recommends that all safety belt assemblies used in vehicles involved in a collision be replaced. However, if the collision was minor and a qualified technician finds that the belts do not show damage and continue to operate properly, they do not need to be replaced. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.

Motorized Shoulder Belt Passive Restraint System (Not available on Canadian vehicles)

The front seat shoulder belts automatically adjust and together with the manual lap belt, help to provide added restraint in the event of a collision.

While you drive, the shoulder belt adjusts to your movement. However, if you brake hard, turn hard, or if your car receives an impact of 5 mph (8 km/h) or more, the shoulder belt locks and helps reduce your forward movement.

Figure 1



The proper position of the front lap safety belt

Warning: The lap belt must be manually buckled by the driver and passenger and should fit snugly and as low as possible around the hips, not around the waist. Failure to do so may increase the risk of injury in the event of a collision.

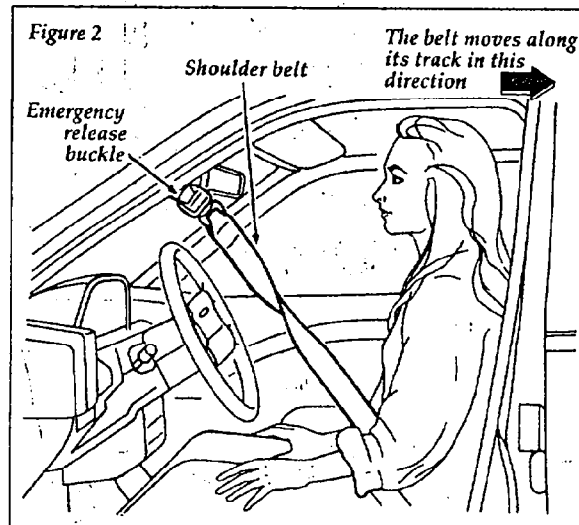
To operate the motorized shoulder belt:

1. Get into your car and close the door. Check to be sure the shoulder belt is latched to the emergency release buckle.
2. If it is not latched, pull the shoulder belt from the retractor and buckle it to the emergency release buckle. Note the twist in the shoulder belt as in Figures 1 and 2.
3. Turn the ignition key to the ON position.

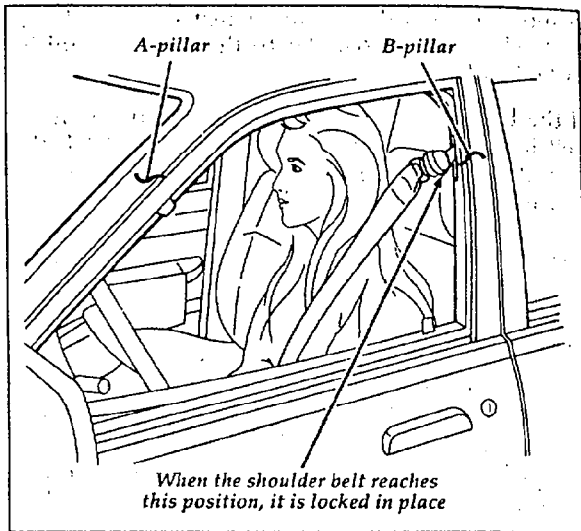
A motor causes the shoulder belt to slide along its track from the A-pillar to the B-pillar until it locks in place.

If the belt does not lie flat against you, or the belt has a twist in it at the retractor, unlatch the belt at the buckle, remove twist, and relatch the belt into the buckle.

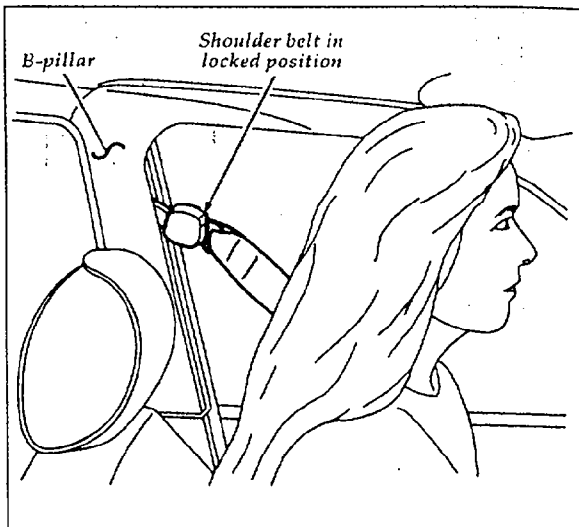
Figure 2



The shoulder belt sliding along its track



The shoulder belt in the locked position



The shoulder belt in the locked position

If the driver does not fasten the lap belt before the ignition key is turned to ON, the chime will sound for 4 to 8 seconds. The safety belt warning indicator lamp in the instrument cluster will also illuminate for one to two minutes. In the unlikely event the shoulder belt should stall before it reaches the B-pillar, the indicator light will flash continuously until the shoulder belt is in its locked position at the B-pillar. If the indicator lamp remains illuminated for more than one minute, check to be sure that both shoulder belts are latched to the emergency release buckle. If the indicator lamp remains illuminated with both front seat shoulder belts latched to the emergency release buckles, refer to the section titled *What To Do If Your Shoulder Belt Does Not Engage Properly* before driving the vehicle.

Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around your neck over the inside shoulder. Never use a single belt for more than one person. Failure to follow these precautions could increase the risk and/or severity of injury in a collision.

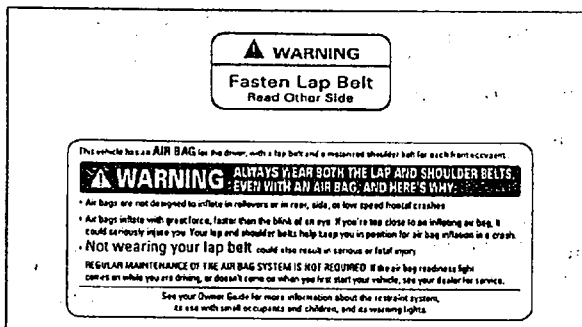
When the ignition is in any position and the door is opened, the shoulder belt will move forward to the A-pillar. This will allow ample room for the driver or passenger to exit from the vehicle. DO NOT use the belt as an assist handle when entering or exiting the vehicle. The door should not be opened while the vehicle is in motion.

Warning: Always drive and ride with your seatback upright and the lap belt portion of your safety belt snug and low across the hips. This will reduce the risk of serious injury to the abdomen or neck that could be caused by sliding under the safety belts in a collision.

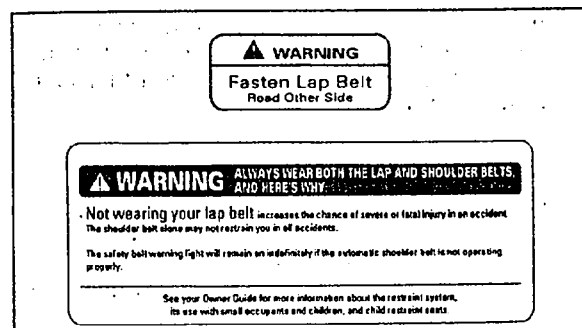
Children should always ride with the seatback in the fully upright position. When the seatback is not fully upright, there is a greater risk that the child will slide under the safety belt and be seriously injured in a collision.

Important For Your Safety

Before driving the car, read the label on the back of the sun visor (USA vehicles) or on the headliner above the driver's seat (Canadian vehicles). See the following figures.



Driver sun visor labels



Passenger sun visor labels

What To Do If Your Shoulder Belt Does Not Engage Properly

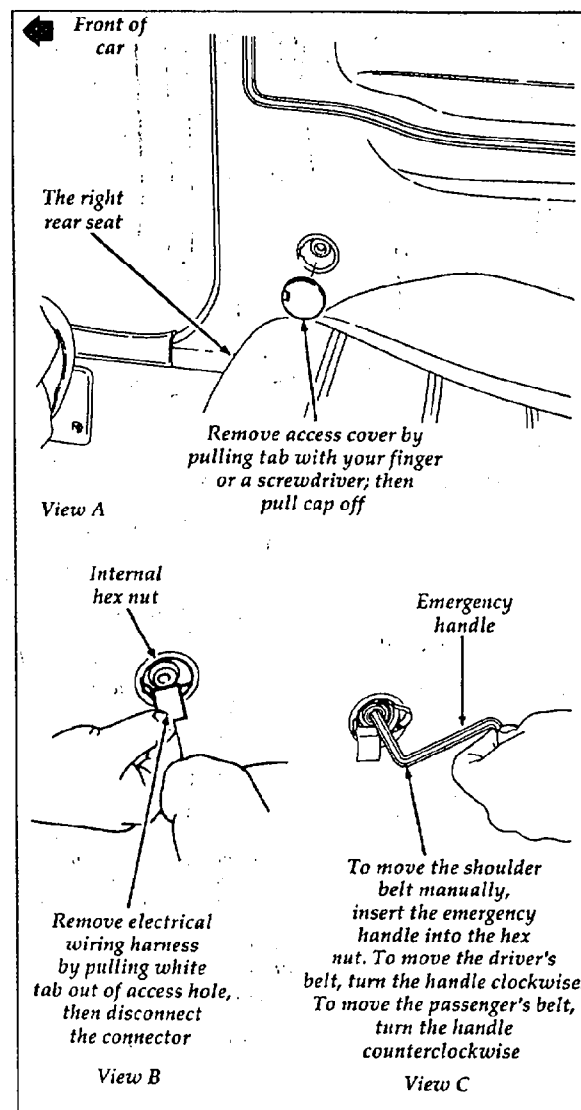
If your shoulder belt does not move all the way across to the locked position on the B-pillar, follow these steps:

1. Make sure the ignition switch is in the LOCK position.
2. Make sure your door is fully closed. The shoulder belt does not work if your door is open and will remain in the forward position at the A-pillar.

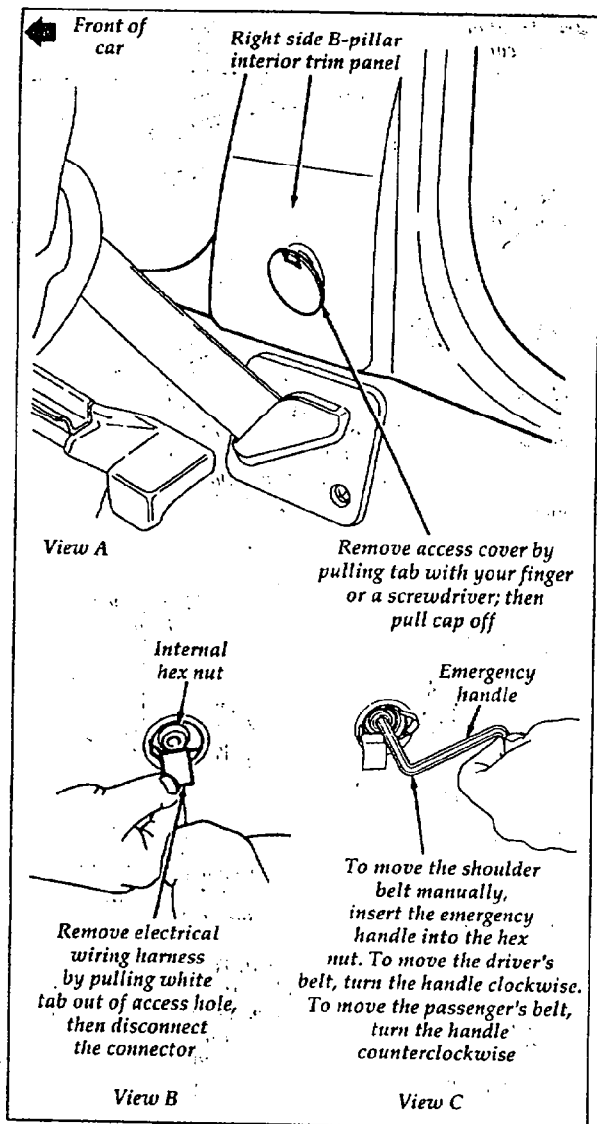
Warning: The vehicle should not be driven unless the doors are fully closed and the shoulder belts are in the locked position on the door lock pillar.

3. Unbuckle the shoulder belt by pressing the red emergency release button on the buckle. Then, reinsert the shoulder belt tongue into the buckle until you hear a snap and feel the latch engage.
4. Turn the key to the ON position.

5. If the shoulder belt doesn't move across you, turn the ignition switch to the LOCK position and then release the shoulder belt from the buckle.
6. Remove the access cap located in the lower portion of the trim panel, rearward of the front door opening.
7. Pull the electrical wiring harness out through the access hole and disconnect the connector. The electrical wiring harness is located near the internal hex nut. To disconnect the connector, pull the left and right sides apart. You may have to loosen the tape to disconnect the electrical connector.
8. Then, insert the emergency handle into the hex nut inside the access hole. The emergency handle is stored in the owner portfolio in the glove compartment.



Moving the shoulder belt manually – 2-door model



Moving the shoulder belt manually — 4-door model

9. Turn the emergency handle to move the buckle rearward until you hear a click. To move the driver's buckle, turn the handle clockwise. To move the passenger's buckle, turn the handle counterclockwise.
10. Reinsert the shoulder belt tongue into the buckle.

Warning: If it is necessary to use the emergency handle to put the shoulder belt in position, have the system serviced by a qualified technician as soon as possible.

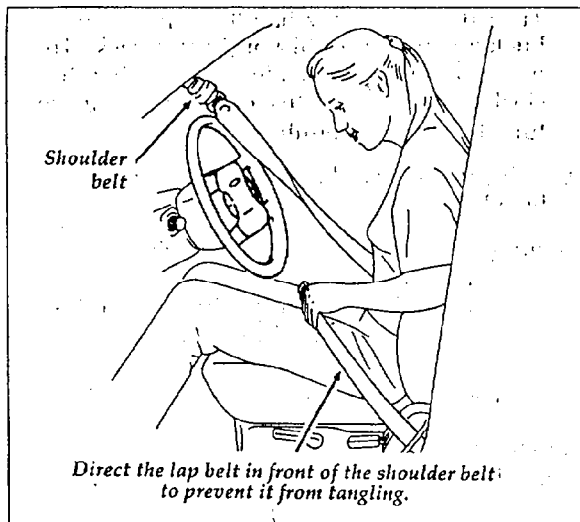
Manual Front Lap Belts

You should always wear the lap belt in addition to the shoulder belt.

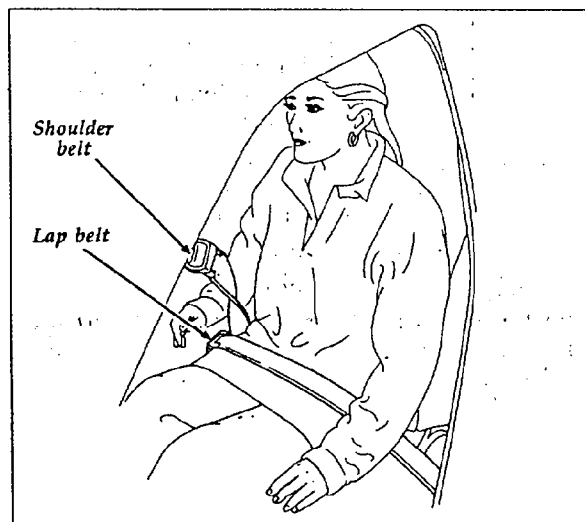
Warning: The lap belt must be manually buckled by the driver and passenger and should fit snugly and as low as possible around the hips, not around the waist. Failure to do so may increase the risk of injury in the event of a collision.

Warning: Front seat occupants, including pregnant women, should wear both lap and shoulder belts for optimum protection in a collision.

To fasten the lap belt: Pull the belt out of the retractor and bring it across your lap. Insert the tongue into the buckle until it snaps and locks in place.

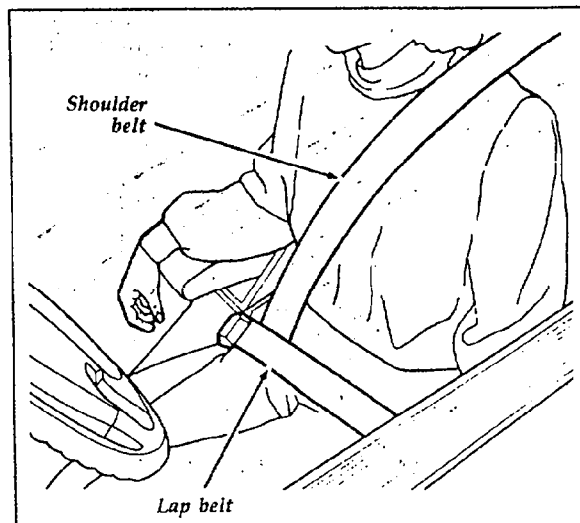


Buckling the lap belt



The lap belt fastened

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The lap and shoulder belts in place

A warning light in the instrument panel lights up and a chime sounds if you don't fasten your lap belt before starting your car.

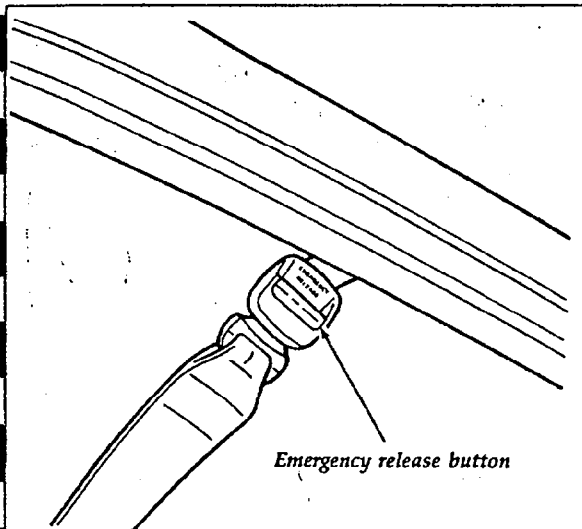
Shoulder Belt Emergency Release Buttons

If the shoulder belt locks up in a collision, it may stay locked. To unlock the belt, press the emergency release button on the shoulder belt buckle. This allows the tongue to unlatch from the buckle. If the shoulder belt is unlatched and partially retracted, a warning light in the instrument panel lights up and remains on; the warning chime sounds for about 5 seconds.

To insert the tongue back into the shoulder belt buckle, push it in until you hear a click.

If the belt does not lie flat against you, or the belt has a twist in it at the retractor, unlatch the belt at the buckle, remove twist, and relatch the belt into the buckle.

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The emergency release button for the shoulder belt

After a collision, refer to *Safety Belt Maintenance* in this section.

If your shoulder belts stop working after a collision, the fuel pump shut-off switch may have been triggered. Minor parking lot bumping and severe road impacts (such as potholes) may trigger the switch even when there is no apparent body damage. In many instances, you might not even know that the switch has been triggered. The FUEL CUTOUT light will light up in the instrument cluster. The shut-off switch cuts power to the motors that move the shoulder belts in addition to stopping the flow of fuel to the engine. To reset the switch, see *Engine, starting after a collision* in the Index.

If your shoulder belts are not working properly, get your vehicle serviced as soon as possible.

If the fuel pump shut-off switch is not the cause for the shoulder belt not moving, have the system serviced by a qualified technician as soon as possible.

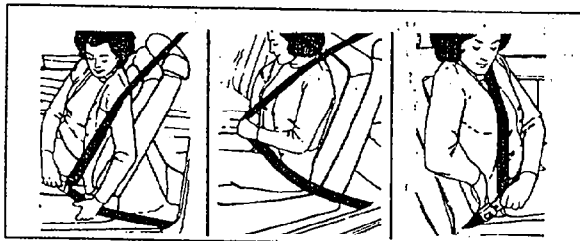
Warning: If the shoulder belt is released from the emergency release buckle, store the tongue end away from the seat tracks. Failure to do this may result in the seat belt being cut or torn when the seat is adjusted forward or back. Any damaged shoulder belt must be replaced.

Manual Front Lap and Shoulder Belt (Available only on Canadian vehicles)

While in motion, the combination lap and shoulder belt adjusts to your movement. However, if you brake hard, turn hard, or if your vehicle receives an impact of 5 mph (8 km/h) or more, the lap and shoulder belt locks and helps reduce your forward movement.

After you get into your vehicle, close the door and lock it. Then adjust the seat to the position that suits you best.

To fasten the belt, find the long strap of the belt near the door, pull it across your shoulder and chest, and insert the tongue into the proper buckle on your seat until you hear a snap and feel it lock. Be sure to use the correct buckle and check to make sure the buckle is securely fastened.



Fastening the front seat lap and shoulder belt.

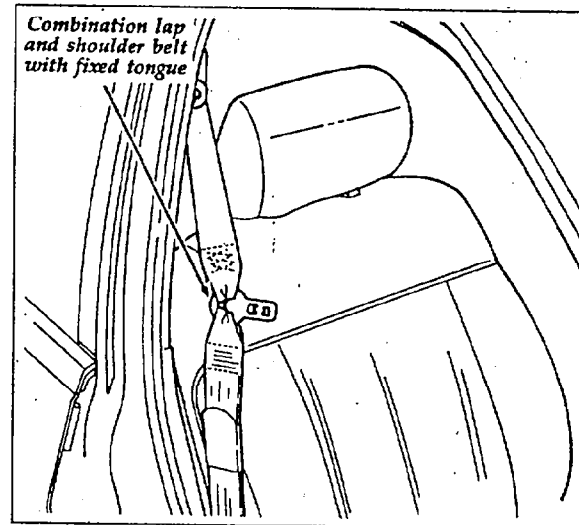
Warning: Make sure that the lap portion of the safety belt is as low around your hips as possible. Do not wear the lap belt around your waist. If you do not use the lap belts properly, the risk of being injured in a collision greatly increases.

Warning: Front seat occupants, including pregnant women, should wear both lap and shoulder belts for optimum protection in a collision.

Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around your neck over the inside shoulder. Never use a single belt for more than one person. Failure to follow these precautions could increase the chance and/or severity of injury in a collision.

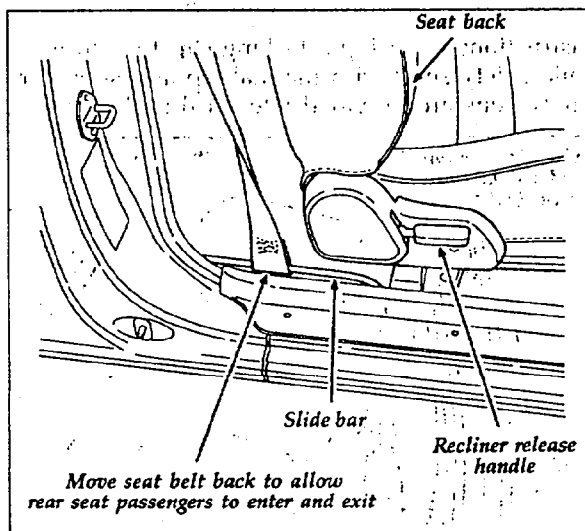
Adjust the lap part of the belt by pulling up on the shoulder belt until the lap belt fits snugly and as low as possible around your hips.

Instructions for using a locking clip to secure child safety seats with manual lap and shoulder safety belts are provided later in this chapter.



Combination lap and shoulder belt with a fixed tongue (available only on Canadian vehicles)

Rear Seat Entry (Canadian 2-door hatchback models)



Rear seat entry

The slide bar on the safety belt system is designed to make it easier to enter and exit from the rear seat and to help front seat passengers reach the belt. To enter the rear seat:

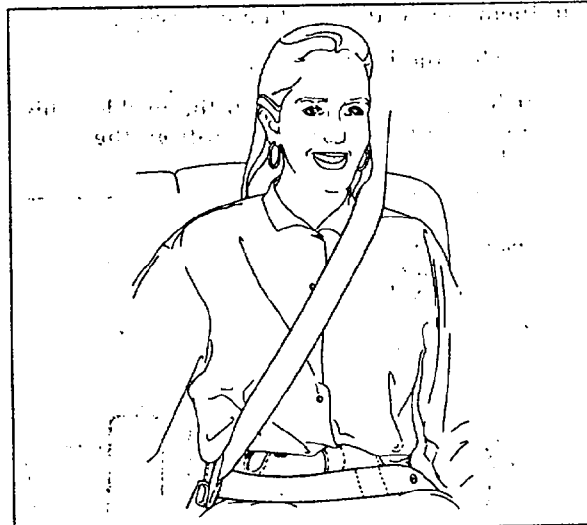
- ☐ Move the safety belt out of the way with the slide bar. (The belt should be at the front end of the slide bar when the belt is in use.)
- ☐ Enter the rear seat in front of the safety belt.

Rear Lap and Shoulder Belts

To fasten the belt, find the long strap of the belt near the door, pull it across your shoulder and chest, and insert the tongue into the proper buckle on your seat until you hear a snap and feel it lock. Be sure to use the correct buckle and check to make sure the buckle is securely fastened.

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While in motion, the combination lap and shoulder belt adjusts to your movement. However, if you brake hard, turn hard, or if your vehicle receives an impact of 5 mph (8 km/h) or more, the lap and shoulder belt locks and helps reduce your forward movement.



The rear lap and shoulder belt fastened

Warning: Front and rear seat occupants, including pregnant women, should wear safety belts for optimum protection in an accident.

Warning: Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around the neck over the inside shoulder. Never use a single belt for more than one person. Failure to follow these precautions could increase the risk and/or severity of injury in a collision.

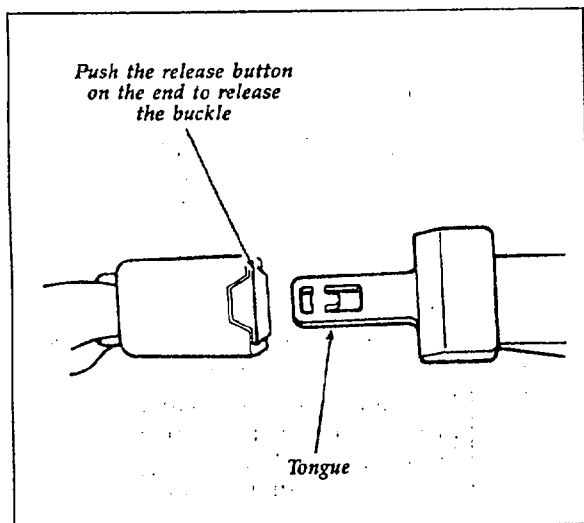
47

Adjust the lap part of the belt by pulling up on the shoulder belt until the lap belt fits snugly and as low as possible around your hips.

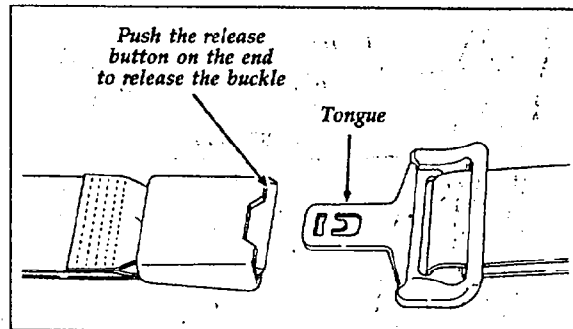
Due to folding rear seats, sometimes the buckles and tongues toward the center of the car may be hidden by the rear edge of the seat cushion. Pull them out so they will be accessible.

To unfasten the belt:

1. Push the release button on the buckle. This allows the tongue to unlatch from the buckle.



Unfastening the safety belts for the center seating position



Unfastening the safety belts

2. While the belt retracts, guide the tongue to its original position. If you do not guide the tongue, it may strike you or part of the vehicle.

How to Untwist or Unjam a Safety Belt Retractor

If you should jam the lap belt retractor by allowing the belt to retract when it is twisted, you can free the webbing with this procedure:

1. Pull the belt out of its holder as far as it will go and untwist the belt or remove the object that is jamming the belt. Let the belt retract.
2. Then pull the belt out and let it retract several times to make sure that the belt works properly.

Procedure to Correct a Twisted Safety Belt at the "D" Ring (if so equipped) Front and/or Rear Outboard Seating Positions

NOTE: The restraint system shown in the following figures may be different than your vehicle. However, use these figures and this procedure to correct a twisted safety belt at any outboard seating position that has a "D" ring.

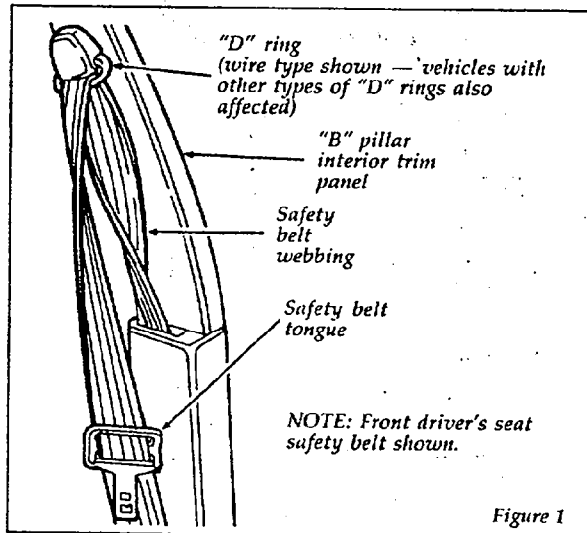


Figure 1

1. Grasp the belt webbing at the "D" ring. See Figure 2.

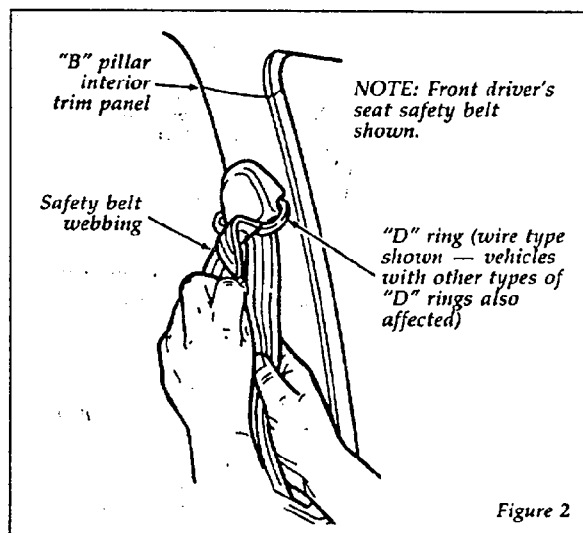
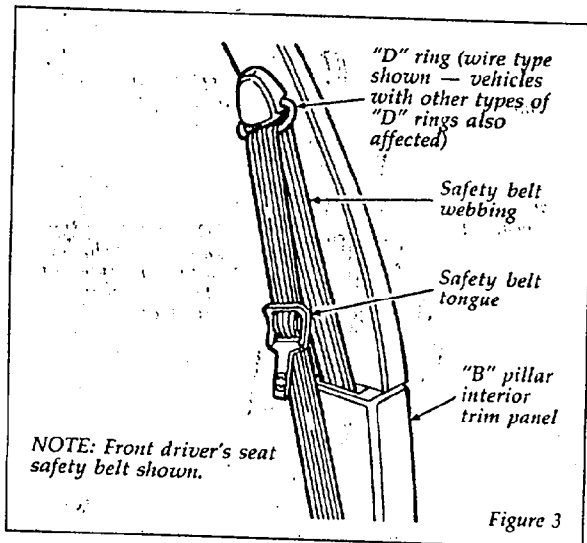


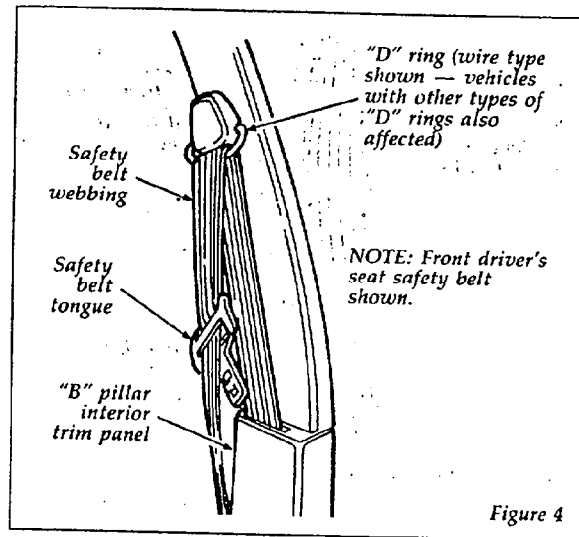
Figure 2

2. Rotate and fold the belt webbing over itself as required to remove the twist.
3. Feed the folded portion of the belt through the "D" ring.
4. When completed, safety belt should look like Figure 3.

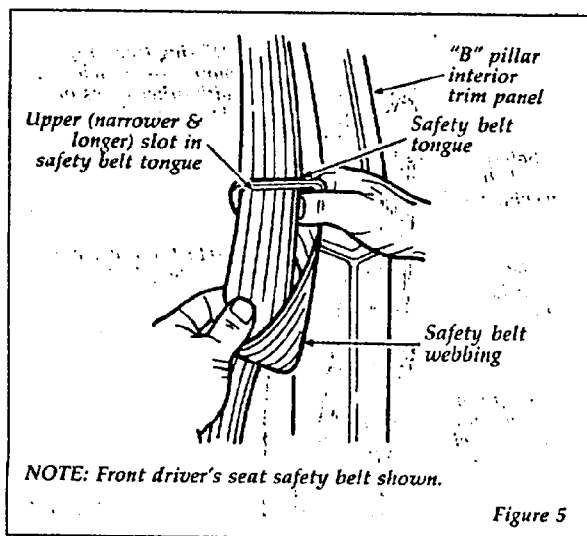


Procedure to Correct a Rotated Tongue on the Safety Belt (Front and/or rear outboard seating positions)

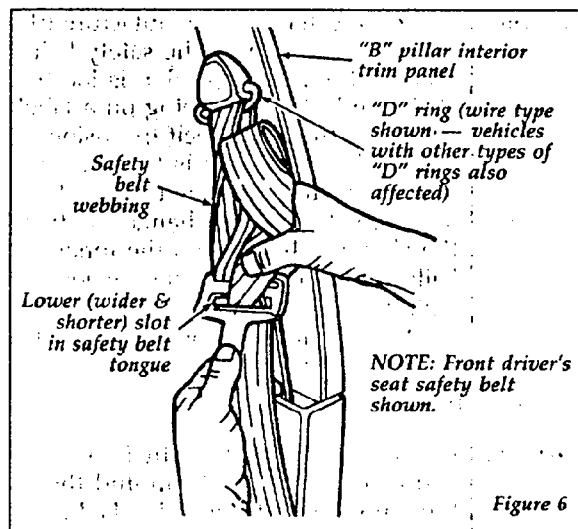
NOTE: The restraint system shown in the following figures may be different than your vehicle. However, use these figures and this procedure to correct a rotated tongue on the safety belt at any outboard seating position that has a "D" ring.



1. Grasp the belt tongue and pull down on the belt webbing closest to you to form a loop through the upper (narrow and longer) slot in the tongue. See Figure 5.



2. Working within the upper slot, rotate and fold the belt webbing over itself as required to remove the twist.
3. Pull the excess belt webbing back through the upper slot in the tongue.
4. Repeat the above steps to complete the removal of the twist at the lower (wider and shorter) slot in the tongue. See Figure 6.



5. When completed, the safety belt should look like Figure 3.

Safety Belt Extension Assembly

For some people, the safety belt may be too short even when it is fully extended. You can add about eight inches (20 cm) to the belt length with a safety belt extension assembly. Safety belt extensions are available from your dealer.

Warning: Use only extensions manufactured by the same supplier as the safety belt. Manufacturer identification is located at the end of the webbing on a label. Also, use the safety belt extension only if the safety belt is too short for you when fully extended. Do not use the extension to change the fit of the shoulder belt across the torso. Failure to follow these instructions will affect the performance of the safety belts and increase the risk of personal injury.

Rear Lap Belt

Warning: Be sure the lap belt is fitted snugly and as low as possible around the hips, not around the waist. Failure to do so may increase the risk of injury in the event of a collision.

Before you fasten your lap belt, you may need to lengthen it.

To lengthen the belt, position the belt tongue at a right angle to the belt. Pull the belt tongue over your lap until it reaches the buckle.

To fasten the belt, pull the belt across your hips and insert the tongue into the correct buckle on your seat until you hear a snap and feel it lock. Make sure the buckle is securely fastened.

Adjust the belt so that it fits snugly around your hips, as low as possible.

If you need to lengthen the belt, unfasten it and repeat the procedure above. If you need to shorten the belt, pull on the loose end of the webbing.

To unfasten the belt, push the release button on the end of the buckle. This allows the tongue to

unlatch from the buckle. Because the center lap belt does not have a retractor, it should be shortened and fastened when not in use.

Air Bag Supplemental Restraint System (SRS)

Your car is equipped with an air bag for the driver, located in the steering wheel. This air bag is a supplemental restraint system. It is designed to be used in addition to safety belts to help protect against head and chest injuries in certain moderate to severe frontal collisions.

The Importance of Wearing Safety Belts

Warning: Safety belts must be worn by all vehicle occupants to be properly restrained and help reduce the risk of injury in a collision.

There are four very important reasons to use safety belts even with an air bag system. Use your safety belts to:

- ☐ help keep you in the proper position (away from the air bag) when it inflates
- ☐ reduce the risk of harm in rollover, side or rear impact collisions, because an air bag is not designed to inflate in such situations
- ☐ reduce the risk of harm in frontal collisions that are not severe enough to activate the air bag
- ☐ reduce the risk of being thrown from your vehicle

The Importance of Being Properly Seated

In a collision, the air bag must inflate extremely fast to help provide additional protection for you. In order to do this, the air bag must inflate with considerable force. If you are not seated in

normal riding position with your back against the seatback, the air bag may not protect you properly and could possibly hurt you as it inflates.

How the Air Bag Supplemental Restraint System Operates

The air bag supplemental restraint system has two main parts. One part is the air bag system with the driver air bag. The second part is the electrical system, consisting of impact sensors and a system diagnostic module. The sensors sense the crash and send an electrical pulse to activate the air bag. The diagnostic module monitors its own circuits, the air bag electrical system, the air bag readiness light, the air bag power, and the air bag igniters.

The driver air bag is in the center of the steering wheel.

The air bag system uses a readiness light and a tone to indicate the condition of the system. The readiness light is in the instrument cluster. When you turn the ignition key to ON, this light will illuminate for approximately six (6) seconds and then turn off. This indicates that the system is operating normally. **NOTE:** Maintenance of the air bag system is not required.

Warning: A problem with the system is indicated by one or more of the following:

- ☐ the readiness light will either flash or stay lit, or
- ☐ it will not light, or
- ☐ a group of five beeps will be heard.

If any of these things happens, have the air bag system serviced at your Ford or Lincoln-Mercury dealer immediately.

Tone generator

The air bag readiness light indicates the air bag system condition. However, a series of five sets of five beeps will be heard only if the readiness light doesn't work and there is a problem with the air bag system. This also means that the Air Bag Supplemental Restraint System (SRS) is in need of service. The tone pattern will repeat (five sets of five beeps) periodically until the problem and light are repaired. Unless serviced, the Air Bag Supplemental Restraint System may not function properly in the event of a collision.

Warning: Do not attempt to service, repair, or modify the Air Bag Supplemental Restraint System; tampering could cause activation of the system and increase the risk of personal injury. For servicing of the Air Bag Supplemental Restraint System, see your dealer.

The air bag system is designed to stay out of sight until it is activated. The air bag system is designed to deploy in frontal and front-angled collisions more severe than hitting a parked vehicle of similar size and weight head-on at about 28 mph (45 km/h). Because the system senses the crash severity rather than vehicle speed, some frontal collisions at speeds above 28 mph (45 km/h) will not inflate the air bag.

The following four steps show how the air bag system works:

1. Sensors in the vehicle will detect the degree of severity of a frontal impact. When two sensors (one primary and one safing) close at the same time, electric current flows to the inflator and the system ignites the gas generant.
2. The propellant then rapidly burns in the metal container. The rapid burning produces nitrogen gas and small amounts of dust. The nitrogen gas and dust are cooled and filtered during inflation of the air bag.
3. The inflating air bag splits open the trim cover. The air bag then rapidly unfolds and inflates in front of the driver.

NOTE: STEPS 1-3 TAKE PLACE IN A FRACTION OF A SECOND.

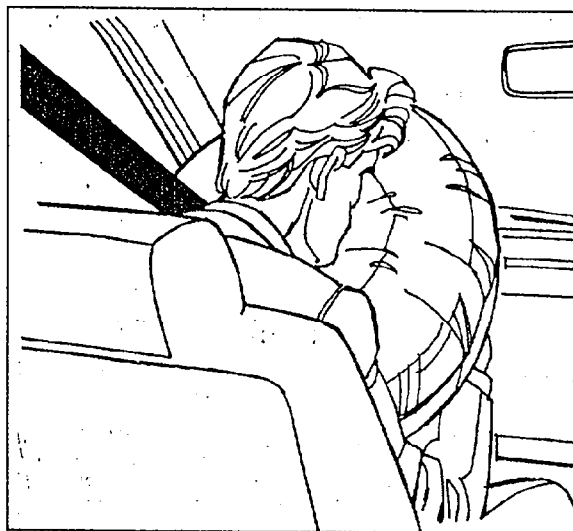
4. After inflation, the gas empties through holes in the air bag. The air bag deflates at once.

The surface of the air bag and the vehicle interior may be dusted with a powdery residue. The powder is corn starch or talcum powder, which is used to lubricate the air bag as it inflates, and sodium compounds such as sodium carbonates (e.g., baking soda), and possibly a very small amount of sodium hydroxide that may be irritating to the skin and eyes, but is not toxic.

Right after air bag inflation, you may notice smoke (from the powder and dust) and smell the burnt propellant. This is normal.

Warning: Several air bag system components get hot after inflation. Do not try to touch them after inflation.

Air bags may not inflate in certain frontal collisions, even though the vehicle may be badly damaged. The fact that your air bag did not inflate in such a collision does not mean that something is wrong with the air bag system. Rather, it means the crash forces were not severe enough to need an air bag to prevent serious injury.



Inflated driver-side air bag

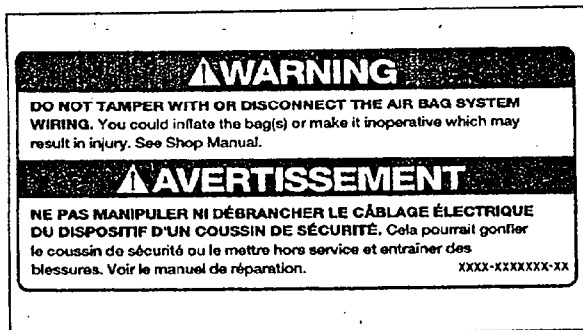
Warning: The air bag will inflate only once. The system is designed to function on a one-time-only basis. If the air bag is inflated, **THE AIR BAG WILL NOT FUNCTION AGAIN AND MUST BE REPLACED IMMEDIATELY.** If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.

Disposal of air bag equipped vehicles

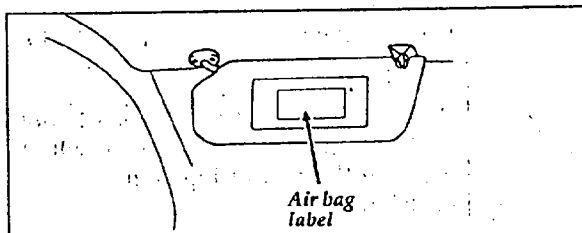
For disposal of air bags or air bag equipped vehicles, see your local Ford or Lincoln-Mercury dealer, or refer to the procedures in the 1994 Ford Service Manual. Information on how to order a service manual is available at an authorized Ford or Lincoln-Mercury dealer. You can also order a service manual using the order form in the *Accessories* chapter of your Owner Guide.

Service and information labels

Service and information labels are attached to the sun visor (USA vehicles), on the headliner above the driver's sun visor (Canadian vehicles), and near the radiator support in the engine compartment.

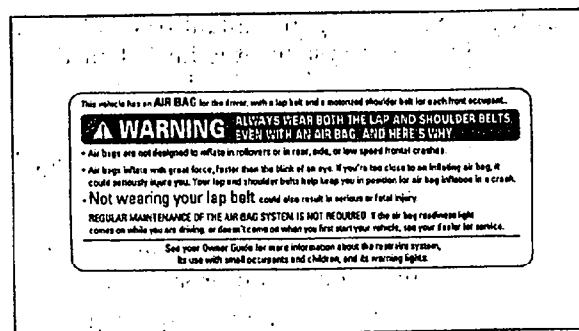


Label on the radiator support in the engine compartment



Location of air bag label on driver's side

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Label located on driver's visor

Safety Restraints for Children

In most states and in Canada, you are required by law to use safety restraints for children. If small children ride in your vehicle — this generally includes children who are four years old or younger and who weigh 40 pounds (18 kg) or less — you must put them in safety seats that are made specially for children. Safety belts alone do not provide maximum protection for these children. Check your local and state laws for specific requirements.

Warning: Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

Warning: Never let children ride in the cargo area of your vehicle. Make sure they sit where they can be properly restrained. If they are not restrained the risk of their being injured in a collision greatly increases.

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Warning: When using any infant or child restraint system, it is important that you follow the instructions and warnings provided by the manufacturer concerning its installation and use. Failure to follow each of the manufacturer's instructions could increase the risk of, or the severity of an injury in the event of a collision or sudden stop.

Warning: Never leave a child unattended in your vehicle. Always remove the key from the ignition and take it with you.

Safety belts and seats can become hot in a vehicle that has been closed up in sunny weather; they could burn a small child. Check seat covers and buckles before you place a child anywhere near them.

When possible, put children in the rear seat of your vehicle. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating positions.

Safety Belts for Children

Children who are too large for child safety seats should always wear safety belts. (See instructions with your child seat, or contact its manufacturer, to determine maximum size of child.)

Warning: If safety belts are not properly worn and adjusted as described below, the risk of serious injury to the child in a collision will be much greater.

Warning: If the shoulder belt portion of one of the lap and shoulder belts can be positioned so that it does not cross or rest in front of the child's face or neck, the child should wear the lap and shoulder belt. Moving the child closer to the center of the vehicle may help provide a good shoulder belt fit.

If the shoulder belt cannot be properly positioned, the child should sit in the center rear seat and use the lap belt.

The lap belt or the lap belt portion of lap and shoulder belts should always be worn snugly and below the hips, touching the child's thighs.

Always drive and ride with your seatback upright and the lap belt snug across the hips to reduce the risk of serious injury to the abdomen or neck that could be caused by sliding under the safety belt in a collision.

Safety Seats for Children

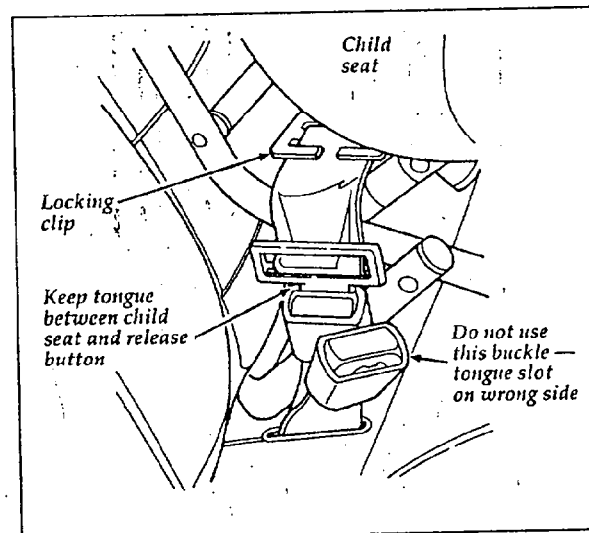
Use a safety seat that is recommended for the size and weight of the child. Always follow the safety seat manufacturer's instructions when installing and using the safety seat.

Warning: All safety seats for children are designed to be secured to the seat of your vehicle by lap belts or by the lap portion of a lap and shoulder belt. If you do not properly secure the safety seat to the vehicle, the risk is greater that a child, occupying the seat during a collision or sudden stop, will be injured. An unsecured safety seat could also injure other passengers in the vehicle.

Carefully follow all of the manufacturer's instructions that come with the safety seat that you put in your vehicle. Make sure that the shoulder belt does not cross or rest in front of the child's face or neck. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

Warning: If a child safety seat is positioned in the right front passenger seat of a car equipped with motorized front shoulder belts, the child seat must be secured with the lap belt which is also provided in this seating position. The motorized shoulder belt **cannot** be used to secure a child safety seat. Use the lap belt with a locking clip to secure the child seat.

Warning: Always keep the buckle release button pointing upward and away from the child seat, with the tongue between the child seat and the release button as shown in the following illustration. Failure to follow these instructions could result in accidental unbuckling of the safety belt if the child safety seat hits the release button. Release of the safety belt could result in serious injuries.



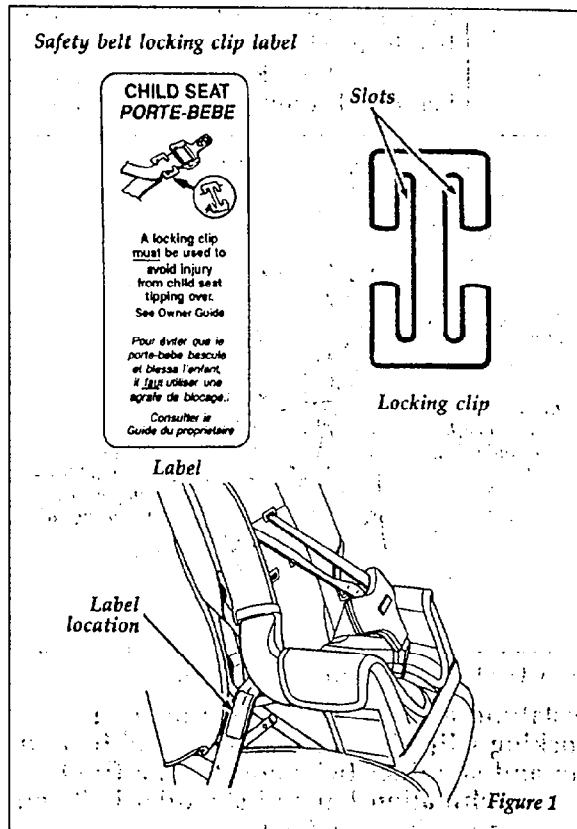
Safety belt buckle placement for child seats

Installing a Child Safety Seat using a Locking Clip (For all rear seat combination lap and shoulder belts and for the front seat combination lap and shoulder belts on Canadian 2-door models)

The locking clip must be used to secure a child seat when your vehicle has a shoulder and lap belt with a sliding tongue. Every Ford safety

belt that requires a locking clip is identified on the belt, with the label as shown in Figure 1. The locking clip is installed on a sample piece of webbing to show proper installation.

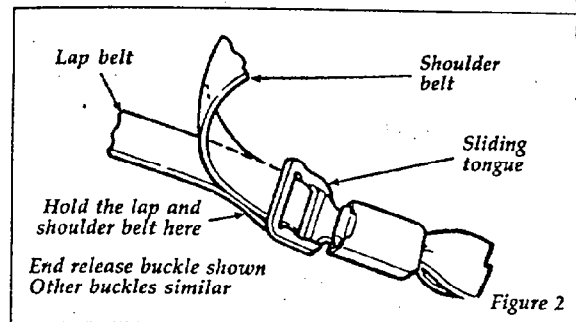
Obtain the locking clip kit at no charge from an authorized Ford or Lincoln-Mercury dealer.



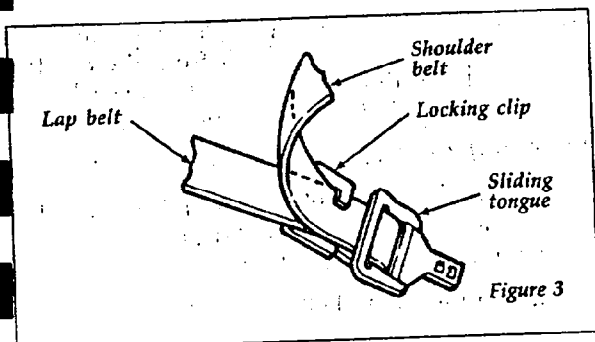
Warning: If you do not use a locking clip, injuries could result from the child seat tipping over during normal vehicle braking or cornering.

To install the locking clip

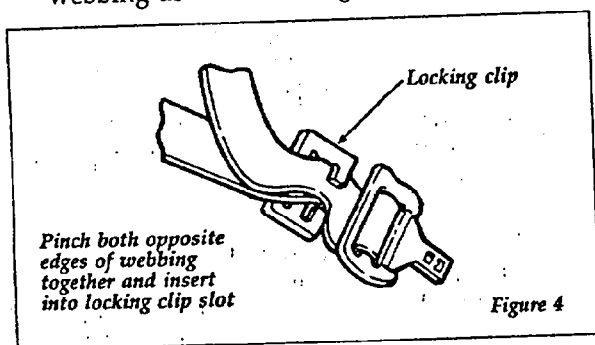
1. Thread the belt webbing through the child seat according to the child seat manufacturer's instructions.
2. Buckle the safety belt.



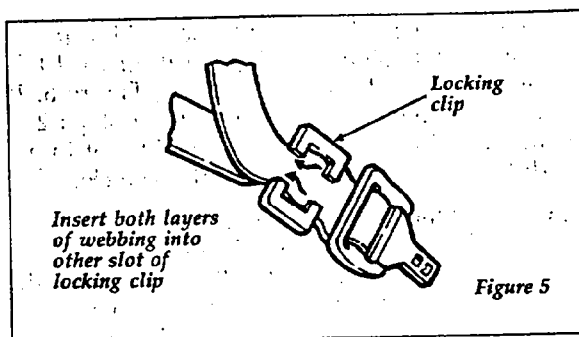
3. Pull on shoulder portion of the belt to make the lap portion fit snugly. Keeping the lap belt snug, hold the lap and shoulder belt portions of the webbing together next to the slip tongue and unbuckle the seat belt, Figure 2.



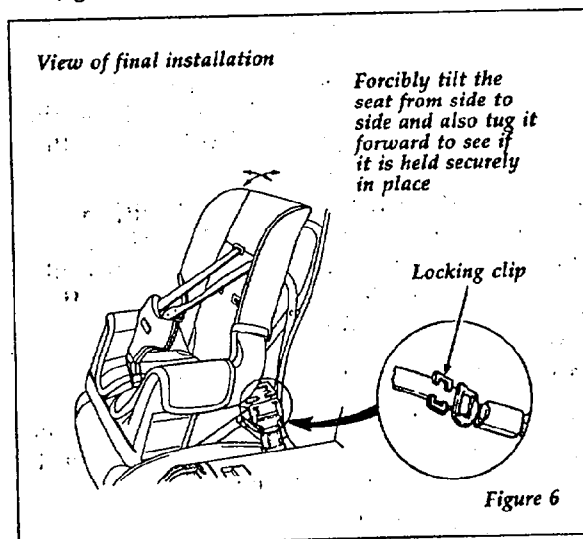
4. Slide either corner of the locking clip slot closest to the tongue over both layers of webbing as shown in Figure 3.



5. Pinch both opposite edges of webbing together and insert them into the locking clip slot as shown in Figure 4.



6. Pinch both layers of webbing together and insert into other slot of locking clip, Figure 5.



7. Re-buckle belt. Forcibly tilt the child seat from side to side and also tug it forward to see if it is held securely in place, Figure 6. If excessive movement occurs, repeat steps 2 through 7 or properly install child seat in a different seating position in the vehicle.

Warning: Once you have attached the safety seat, test the seat before you place the child in it. Tilt the seat from side to side. Also try to tug the seat forward. Check to see if the belt holds the seat in place. If the lap belt is too loose, tighten it by moving the locking clip, or put the safety seat in another seat and test it again. If the safety seat is not anchored properly, the risk of a child being injured in a collision or sudden stop greatly increases. Reclining seatbacks should be in the most upright position for use with child safety seats.

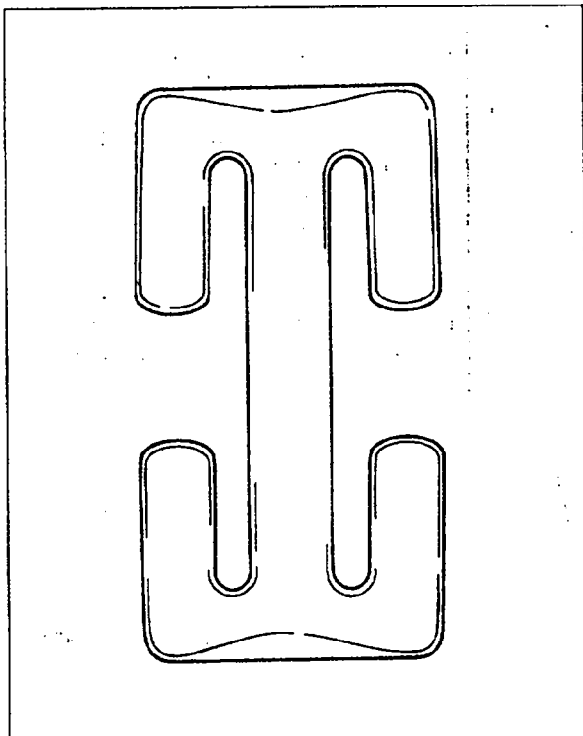
Installing the Child Safety Seat with a Locking Clip (For the manual lap belt portion of the motorized passive restraint system and for the lap belt portion of the front seat combination lap and shoulder belt for Canadian 4-door sedan, 4-door hatchback, and station wagon models)

To secure a child seat in the front seat, pull the lap belt out fully, and use a Ford locking clip to secure the excess belt webbing.

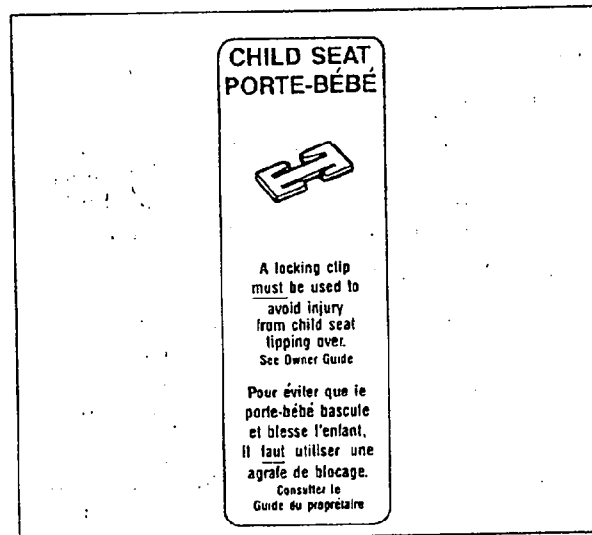
You can obtain the locking clip at no charge from an authorized dealer.

Warning: A locking clip must be used to properly secure a safety seat with the manual lap belt of the motorized passive restraint system. It also must be used with the combination lap and shoulder belt with the fixed tongue found in Canadian vehicles. See your dealer to obtain a locking clip.

If you do not use a locking clip, injuries could result from the child seat tipping over during normal braking or turning.



The Ford locking clip (actual size)



The locking clip label on the lap belt

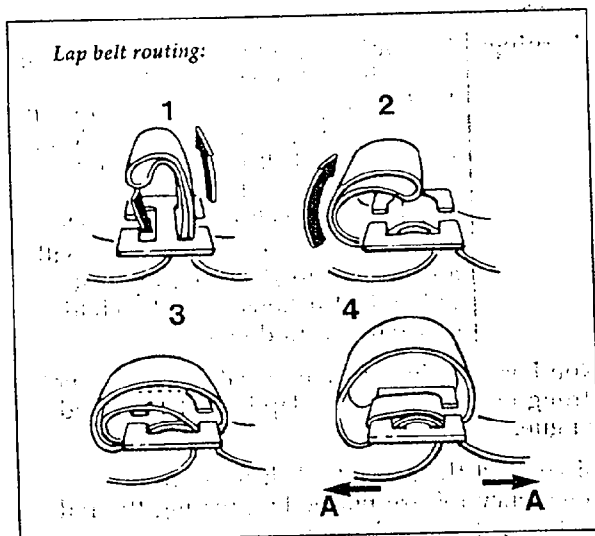
Warning: Use only a genuine Ford locking clip or equivalent to shorten the lap belt. Locking clips designed only to keep a sliding tongue from sliding along a lap-shoulder belt may bend and release the belt when used to shorten a lap belt in this way. Do not use a locking clip supplied with a child seat to shorten a lap belt unless instructions with the child seat tell you to do so.

Non-Ford locking clips are smaller and are not strong enough to hold a lap belt with a fixed tongue.

Disconnect the shoulder belt from the emergency release buckle by pressing the red button. Allow the belt to fully retract. The seat belt warning light will remain on while the shoulder belt is disconnected. Be sure to

reconnect the shoulder belt after the child seat or infant carrier is removed.

1. Slide the seat to the rearmost position.
2. Position the child safety seat in the front seat of the vehicle. Fasten the child safety seat with the lap belt following the child safety seat manufacturer's instructions.
3. Pull the lap belt out fully.
4. Remove any slack from the lap belt with the locking clip (as shown in the illustration) at any convenient point in the lap belt. Make the outer loop as big as possible to tighten the locking clip.
5. After installing the locking clip, pull on the belt, as shown by "A" in the illustration, to make sure that it does not slip.



Adjusting the lap belt with the locking clip

Warning: Once you have attached the safety seat, test the seat before you place the child in it. Tilt the seat from side to side. Also try to tug the seat forward. Check to see if the belt holds the seat in place. If the lap belt is too loose, tighten it by moving the locking clip, or put the safety seat in another seat and test it again. If the safety seat is not anchored properly, the risk of a child being injured in a collision or sudden stop greatly increases. Reclining seatbacks should be in the most upright position for use with child safety seats.

Attaching Child Safety Seats with Tether Straps

Some manufacturers make safety seats that include a tether strap that goes over the back of the vehicle seat and attaches to an anchoring point. Other manufacturers offer the tether strap as an accessory. Contact the manufacturer of your child safety seat for information about ordering a tether strap.

Warning: Use tethered safety seats in a rear seating position with the tether strap attached to the tether anchoring point as shown in this guide.

Warning: Failure to follow these precautions could increase the risk and/or severity of injury in a collision.

If you use a tethered safety seat on the right front passenger seat, hook it to the tongue of the rear center lap belt.

If you use a tethered safety seat in the rear seat you may place it in either the right, left, or

Center seat position and anchor it to the appropriate tether anchor behind that seating position.

Tether anchor hardware (Canadian vehicles only)

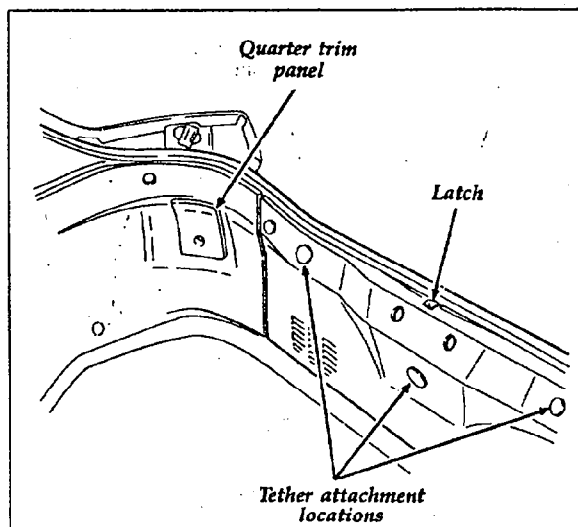
All vehicles built for sale in Canada include a tether anchor hardware kit for use with Canadian child safety seats. Attachment holes (at each rear seating position) have been provided in your vehicle to attach the anchor hardware, if required. Additional kits can be obtained at no charge from any Ford or Lincoln-Mercury dealer.

Tether anchor hardware (USA vehicles only)

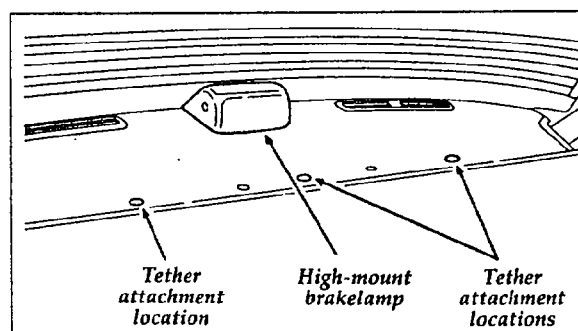
Vehicles built for sale in the USA do not include a tether anchor hardware kit for use with child safety seats. However, attachment holes (at each rear seating position) have been provided in your vehicle to attach the tether anchor hardware. Tether anchor hardware kits can be obtained at no charge from any Ford or Lincoln-Mercury dealer.

To attach the tether anchors in the 2-door hatchback, 4-door hatchback, and wagon models, remove the trim plugs covering the access holes (at the locations shown) by prying them out with a screwdriver. On the 4-door sedan model, holes have to be cut through the package tray (at the locations shown) to attach the tether anchors. The package tray trim panel has visible markings at these locations showing where to cut the holes. (See the appropriate illustration.) A sharp knife is recommended for cutting through the panel.

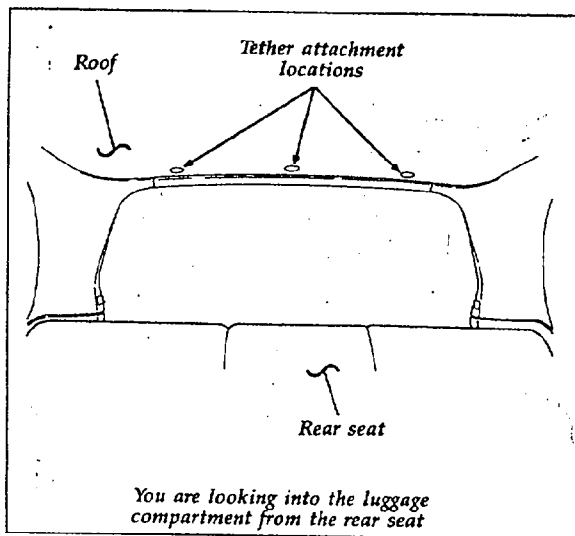
Install the hardware for anchoring the tether following the instructions that come with the tether anchorage hardware kit.



Tether attachment locations in the 2-door hatchback and 4-door hatchback models



Tether attachment locations for the 4-door LX model



Tether attachment locations in the wagon model

APPENDIX E
INSTRUMENTATION AND CALIBRATION DATA

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INSTRUMENTATION AND CALIBRATION DATA

DRIVER ATD SN 34

H#	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	11/02/93
08	LC	NECK FORCE Y	R.A. DENTON	1716A/0440FY	11/02/93
09	LC	NECK FORCE Z	R.A. DENTON	1716A/0440FZ	11/02/93
10	LC	NECK MOMENT X	R.A. DENTON	1716A/0440MX	11/02/93
11	LC	NECK MOMENT Y	R.A. DENTON	1716A/0440MY	11/02/93
12	LC	NECK MOMENT Z	R.A. DENTON	1716A/0440MZ	11/02/93
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	03/09/94
19	DS	BELT PULLOUT OT	MSE	701-36/113	03/09/94

INSTRUMENTATION AND CALIBRATION DATA

PASSENGER ATD SN 830/HYBRID II

CH#	TYP	LOCATION/AXIS		MAKE	MODEL/SERIAL No	CAL DATE
20	AC	HEAD C.G.	X	ENDEVCO	7264-2000/ACB35	11/01/9
21	AC	HEAD C.G.	Y	ENDEVCO	7264-2000/ACC13	11/01/93
22	AC	HEAD C.G.	Z	ENDEVCO	7264-2000/ACC71	11/01/9
23	AC	CHEST	X	ENDEVCO	7264-2000/AAL54	11/01/93
24	AC	CHEST	Y	ENDEVCO	7264-2000/ACC82	11/01/9
25	AC	CHEST	Z	ENDEVCO	7264-2000/AAMN8	11/01/9
26	LC	NECK FORCE	X	NOT USED	N/A	N/A
27	LC	NECK FORCE	Y	NOT USED	N/A	N/A
28	LC	NECK FORCE	Z	NOT USED	N/A	N/A
29	LC	NECK MOMENT	X	NOT USED	N/A	N/A
30	LC	NECK MOMENT	Y	NOT USED	N/A	N/A
31	LC	NECK MOMENT	Z	NOT USED	N/A	N/A
32	LC	LEFT FEMUR	X	R.A. DENTON	2121A/0263	11/09/9
33	LC	RIGHT FEMUR	X	R.A. DENTON	2121A/0264	11/09/93
34	DS	CHEST DISP.	X	NOT USED	N/A	N/A
35	LC	LAP BELT	OT	LEBOW	3371/333	11/09/9
36	LC	SHOULDER BELT	OT	LEBOW	3371/327	11/09/93
37	DS	BELT ELONG.	OT	ETI	LCP-12A-12/002	03/09/9
38	DS	BELT PULLOUT	OT	CELESCO	PT0620	03/09/94

INSTRUMENTATION AND CALIBRATION DATA

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
48	LC	A1 XG	Interface	1220-F3/19349	05/14/85
49	LC	A2 XG	Interface	1220-F3/19349	05/14/85
50	LC	A3 XG	Interface	1220-F3/19349	05/14/85
51	LC	A4 XG	Interface	1220-F3/19349	05/14/85
52	LC	A5 XG	Interface	1220-F3/19349	05/14/85
53	LC	A6 XG	Interface	1220-F3/19349	05/14/85
54	LC	A7 XG	Interface	1220-F3/19349	05/14/85
55	LC	A8 XG	Interface	1220-F3/19349	05/14/85
56	LC	A9 XG	Interface	1220-F3/19349	05/14/85
57	LC	B1 XG	Interface	1220-F3/19349	05/14/85
58	LC	B2 XG	Interface	1220-F3/19349	05/14/85
59	LC	B3 XG	Interface	1220-F3/19349	05/14/85
60	LC	B4 XG	Interface	1220-F3/19349	05/14/85
61	LC	B5 XG	Interface	1220-F3/19349	05/14/85
62	LC	B6 XG	Interface	1220-F3/19349	05/14/85
63	LC	B7 XG	Interface	1220-F3/19349	05/14/85
64	LC	B8 XG	Interface	1220-F3/19349	05/14/85
65	LC	B9 XG	Interface	1220-F3/19349	05/14/85

INSTRUMENTATION AND CALIBRATION DATA

LOAD CELL BARRIER

CH#	TYP	LOCATION/AXIS	MAKE	MODEL/SERIAL No	CAL DATE
66	LC	C1 XG	Interface	1220-F3/19349	05/14/85
67	LC	C2 XG	Interface	1220-F3/19349	05/14/85
68	LC	C3 XG	Interface	1220-F3/19349	05/14/85
69	LC	C4 XG	Interface	1220-F3/19349	05/14/85
70	LC	C5 XG	Interface	1220-F3/19349	05/14/85
71	LC	C6 XG	Interface	1220-F3/19349	05/14/85
72	LC	C7 XG	Interface	1220-F3/19349	05/14/85
73	LC	C8 XG	Interface	1220-F3/19349	05/14/85
74	LC	C9 XG	Interface	1220-F3/19349	05/14/85
75	LC	D1 XG	Interface	1220-F3/19349	05/14/85
76	LC	D2 XG	Interface	1220-F3/19349	05/14/85
77	LC	D3 XG	Interface	1220-F3/19349	05/14/85
78	LC	D4 XG	Interface	1220-F3/19349	05/14/85
79	LC	D5 XG	Interface	1220-F3/19349	05/14/85
80	LC	D6 XG	Interface	1220-F3/19349	05/14/85
81	LC	D7 XG	Interface	1220-F3/19349	05/14/85
82	LC	D8 XG	Interface	1220-F3/19349	05/14/85
83	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