

Report Number: 208S-TRC-010

635513
V35'9

Vehicle Safety Compliance Testing for FMVSS 208
for Occupant Crash Protection
Sled Test

Mercedes-Benz
2001 Mercedes-Benz C-240
NHTSA Number: C10500
TRC Inc. Test Number: S010327

Transportation Research Center Inc.
10820 State Route 347
East Liberty, OH 43319



Test Date: March 27, 2001
Report Date: April 16, 2001

Final Report

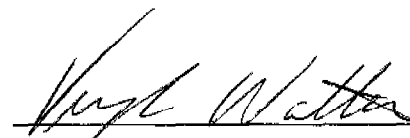
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Test Performed By: Brian T. Bautsch, Test Engineer

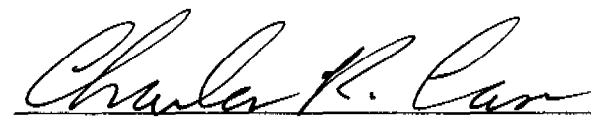
Report Approved By:



Date 4/16/01

Virginia L. Watters, Project Manager
Transportation Research Center Inc.

Final Report Accepted By:



Date 7/5/01

Contracting Officer's Technical Representative (COTR),
NHTSA, Office of Vehicle Safety Compliance

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km

	AREA			
m ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha

	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons	0.9	tonnes	t
	(2000 lb)			

	VOLUME			
tsp	teaspoons	5	milliliters	ml
Tabsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³

TEMPERATURE (exact)

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

When You Know	Multiply by	To Find	Symbol
	LENGTH		
millimeters	0.04	inches	in
centimeters	0.4	inches	in
meters	3.3	feet	ft
meters	1.1	yards	yd
kilometers	0.6	miles	mi

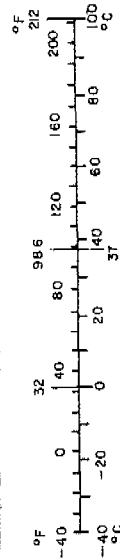
	AREA		
square centimeters	0.16	square inches	in ²
square meters	1.2	square yards	yd ²
square kilometers	0.4	square miles	mi ²
hectares (10 000 m ²)	2.5	acres	

	MASS (weight)		
grams	0.035	ounces	oz
kilograms	2.2	pounds	lb
tonnes (1000 kg)	1.1	short tons	

	VOLUME		
milliliters	0.03	fluid ounces	fl oz
liters	2.1	pints	pt
liters	1.06	quarts	qt
liters	0.26	gallons	gal
cubic meters	35	cubic feet	ft ³
cubic meters	1.3	cubic yards	yd ³

TEMPERATURE (exact)

°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F
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4	Title and Subtitle Final Report of FMVSS No 208 Compliance Sled Testing of a 2001 Mercedes-Benz C-240 NHTSA No. C10500	5.	Report Date April 16, 2001	6	Performing Organization Code TRC
7	Author(s) Virginia L. Watters, Project Manager Transportation Research Center Inc	8	Performing Organization Report No 208S-TRC-010	10	Work Unit No
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16	Abstract An FMVSS 208 Section 13 compliance sled test was conducted on a 2001 Mercedes-Benz C-240 4-door sedan, NHTSA No C10500, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No TP208S-01 for the determination of FMVSS 208 compliance. Possible test failures identified were as follows: None				
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Table of Contents

<u>Description</u>	<u>Page</u>
Purpose	1
Test Procedure	2
Test Results Summary	3
Sled Test Summary	6
General Test and Vehicle Parameter Data for the Sled Test Vehicle.....	7
Post-Impact Data	11
Seat and Steering Column Positioning Data.....	12
Dummy Measurement Data for Front Seat Occupants	13
Vehicle Accelerometer Placement	18
Vehicle Data Summary and Accelerometer Locations.....	19
Vehicle Targeting Measurements.....	21
Camera Positions	22
Motion Picture Camera Locations.....	23
FMVSS 208 Occupant Injury Data	24
FMVSS 208 Seat Belt Warning System Check.....	26
FMVSS 208 Readiness Indicator	27
FMVSS 208 Air Bag Labels	28
FMVSS 208 Rear Outboard Seating Position Seat Belts.....	36
FMVSS 208 Lap Belt Lockability.....	37
FMVSS 208 Seat Belt Comfort and Convenience Test.....	49
Appendix A - Photographs.....	A-1
Appendix B - Data Plots	B-1
Appendix C - Manufacturer Provided Test Information.....	C-1
Appendix D - Miscellaneous Test Information	D-1

List of Photographs

<u>Figure</u>	<u>Photograph Title</u>	<u>Page</u>
A-1.	Pre-Test Front View of Test Vehicle Mounted to Sled	A-2
A-2.	Pre-Test Left Side View of Test Vehicle Mounted to Sled	A-3
A-3.	Pre-Test Right Side View of Test Vehicle Mounted to Sled	A-4
A-4.	Pre-Test Windshield View	A-5
A-5.	Post-Test Windshield View	A-6
A-6.	Pre-Test Driver Dummy Position View with Door Open	A-7
A-7.	Post-Test Driver Dummy Position View with Door Open	A-8
A-8.	Pre-Test Driver Seat Track Position View	A-9
A-9.	Post-Test Driver Seat Track Position View	A-10
A-10.	Pre-Test Driver Dummy Position Front View	A-11
A-11.	Post-Test Driver Dummy Position Front View	A-12
A-12.	Pre-Test Passenger Dummy Position View with Door Open	A-13
A-13.	Post-Test Passenger Dummy Position View with Door Open	A-14
A-14.	Pre-Test Passenger Seat Track Position View	A-15
A-15.	Post-Test Passenger Seat Track Position View	A-16
A-16.	Pre-Test Passenger Dummy Position Front View	A-17
A-17.	Post-Test Passenger Dummy Position Front View	A-18
A-18.	Post-Test Driver Airbag View	A-19
A-19.	Post-Test Driver Dummy Removed from Vehicle Overall View	A-20
A-20.	Post-Test Driver Head Contact View	A-21
A-21.	Post-Test Passenger Airbag View	A-22
A-22.	Post-Test Passenger Dummy Removed from Vehicle Overall View	A-23
A-23.	Pre-Test Driver Knee Bolster View	A-24
A-24.	Post-Test Driver Knee Bolster View	A-25
A-25.	Pre-Test Passenger Glove Box View	A-26
A-26.	Post-Test Passenger Glove Box View	A-27
A-27.	Pre-Test Vehicle Certification Label View	A-28
A-28.	Pre-Test Vehicle Tire Information Label View	A-29

Purpose

This Federal Motor Vehicle safety Standard (FMVSS) 208 compliance sled test is part of the FMVSS compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by the Transportation Research Center Inc. (TRC Inc.) under Contract No. DTNH22-98-D-01055. The purpose of this test was to determine if the subject vehicle, a 2001 Mercedes-Benz C-240 4-door sedan, NHTSA No.C10500, meets the performance requirements of FMVSS 208, "Occupant Crash Protection," in the impact simulation sled test mode.

Test Procedure

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-208S-01, dated January 15, 1998. Data was obtained relative to FMVSS 208, "Occupant Crash Protection," performance.

The sled test vehicle was instrumented with six (6) accelerometers to measure longitudinal axis accelerations. The sled was instrumented with one (1) longitudinal accelerometer which is prefiltered with an analog filter to 200 Hz as an integral part of the sled firing circuit (this data is not recorded by the TRC data acquisition system), and two (2) additional longitudinal accelerometers: the primary accelerometer for pulse and integrated velocity determination and a backup accelerometer. In addition the sled was instrumented with one (1) light trap to measure velocity, and two (2) airbag firing timing circuits.

The sled test vehicle contained two (2) Part 572 E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedure specified in Appendix B of the Laboratory Test Procedure. The dummies were not restrained by seat belts.

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

The forty-one (41) data channels were digitally sampled at 12,500 samples per second and processed per Sections 11.7 through 11.9 of the Laboratory Test Procedure.

The sled test event was recorded by one (1) real-time motion picture camera and six (6) high-speed motion picture cameras. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.

Test Results Summary

This FMVSS 208 compliance sled test was conducted by TRC Inc. on March 27, 2001.

The test vehicle, a 2001 Mercedes-Benz C-240 4-door sedan, NHTSA No. C10500, does appear to comply with the performance requirements of FMVSS 208 in the impact simulation sled test mode as measured by Hybrid III 50th percentile male dummies.

	FMVSS 208 Max. Allowable Injury Assessment Values	Driver	Passenger
HIC	1000	112	95
Chest g	60 g	28.0	27.6
Chest Displacement	3 inches	0.7	0.5
Left Femur	2250 lbs	1302	1150
Right Femur	2250 lbs	1311	1213
Neck Extension	57 Nm	9.4	9.6
Neck Flexion	190 Nm	45.0 ¹	66.7
Neck Tension	3300 N	N/A ¹	278
Neck Compression	4000 N	126	452
Neck Shear	3100 N	761 ¹	843

The subject vehicle, a 2001 Mercedes-Benz C-240, NHTSA No. C10500, appears to meet all the other FMVSS 208 requirements for which it was tested. These results are shown in the data sheets that are included in this report.

The sled test vehicle was equipped with air bags at the driver and passenger seating positions. The dummies were not restrained by seat belts. The sled carriage was accelerated to 17.3 g with an integrated velocity change of 29.3 mph. The primary stages of the air bags were triggered at 20.2 milliseconds after 0.5 g acceleration was measured by the firing circuit. The secondary stages of the air bags were triggered at 35.1 milliseconds after acceleration was measured by the firing circuit.

¹ See Data Acquisition Explanations

Following subsequent digital data processing and filtering the primary sled acceleration signal to Channel Class 60, the primary stage air bag event trigger signal was 21.4 ms after the 0.5 g acceleration level was indicated and the secondary stage air bag event trigger signal was 36.3 milliseconds after the 0.5 g acceleration level was indicated.

Data Acquisition Explanations

The sled measured velocity trap data channel, SLDXV, recorded a data spike at approximately 159 milliseconds. The peak data reported in this report's tables excluded the spike.

The right vehicle body structure inside wheel well X-axis accelerometer, RFXG, recorded no valid data.

The driver dummy's six (6) neck load cell data channels recorded questionable data spikes between approximately 98 to 103 milliseconds. This also affected the calculated moment about the occipital condyle. The affected channels are:

NEKXF1, driver dummy's neck X-axis force

NEKYF1, driver dummy's neck Y-axis force

NEKZF1, driver dummy's neck Z-axis force

NEKXM1, driver dummy's neck X-axis force

NEKYM1, driver dummy's neck Y-axis force

NEKZM1, driver dummy's neck Z-axis force

NEKOM1, driver dummy's neck Y-axis moment about the occipital condyle (calculated)

The driver dummy's left femur Z-axis force data channel, LFMZF1, recorded questionable data spikes between approximately 98 and 103 milliseconds.

The driver dummy's right femur Z-axis force data channel, RFMZF1, recorded questionable data spikes between approximately 98 and 103 milliseconds.

Sled Test Summary

NHTSA number: C10500
Test type: Alternate FMVSS 208 Sled Test
Test date: 03/27/01
Test time: 1240
Ambient temperature at impact area: 71° F
Vehicle year/make/ model/body style: 2001/Mercedes-Benz/C-240/4-door sedan

Dummy Info:

Driver #314

Front #230

Type:

HIIL-Part 572E

HIIL-Part 572E

Location:

Left Front

Right Front

Restraint:

Airbag, supplemental,
dual stage inflator

Airbag, supplemental,
dual stage inflator

Number of data channels:

15

15

Number of Cameras:

Real-time:

1

High-speed:

6

Door Opening Data:

Left Front:

Easy

Right Front:

Easy

Front Seat Data:

Seat track failure:

None

None

Seat back failure

None

None

Visible Dummy Contact Points:

Head:

Airbag, sun visor

Airbag

Chest:

Airbag

Airbag

Left knee:

Knee bolster

Glove box

Right knee:

Knee bolster

Glove box

General Test and Vehicle Parameter Data for the Sled Test Vehicle

Test Vehicle Information:

Vehicle year/make/
model/body style: 2001/Mercedes-Benz /C-240/4-door sedan

Color: Desert Silver

VIN: WDBRF61J11F072533

NHTSA number: C10500

Engine data:

Placement: Inline

Cylinders: 6

Displacement: 2.6

Transmission data: 5 speed, manual, X automatic, overdrive

Final drive: fwd, X rwd, 4wd

Date vehicle received: 02/13/2001

Odometer reading: 3.3

Dealer's name
and address: Euro Motorcars, Inc.
7020 Arlington Road
Bethesda, Maryland 20814

Major Options:

Power steering	Yes	Other: Special child seat airbag deactivation
Power brakes	Yes	system, door mounted side impact airbags, head
Power windows	Yes	protective window curtain airbags, emergency
Air conditioning	Yes	tensioning retractors for outboard seat belts, rear
Power door locks	Yes	seat child restraint mounts.

Remarks:

General Test and Vehicle Parameter Data for the Sled Test Vehicle, Cont'd.

Data from Vehicle's Certification Label:

Vehicle manufactured by:	DaimlerChrysler AG Stuttgart
Date of manufacture:	January-01
VIN:	WDBRF61J11F072533
GVWR:	4350 lbs
GAWR: Front:	2125 lbs
Rear:	2225 lbs

Data from Vehicle's Tire Placard:

Tire pressure with maximum capacity vehicle load:

Front:	28 psi
Rear:	32 psi

Recommended tire size: 205/55R16

Load range: N/A

Recommended cold tire pressure:

Front:	28 psi
Rear:	32 psi

Size of tires on vehicle: 205/55R16

Spare tire: 205/55R16

Vehicle capacity data:

Type of front seats: Bucket

Number of occupants:

Front	2
Rear	3
Total	5

Remarks: None

General Test and Vehicle Parameter Data for the Sled Test Vehicle, Cont'd.

Weight of test vehicle as received (with maximum fluids):

Right front	919.3 lbs	Right rear	772.7 lbs
Left front	888.5 lbs	Left rear	802.5 lbs
Total front weight	1807.8 lbs	(53.4% of total vehicle weight)	
Total rear weight	1575.2 lbs	(46.6% of total vehicle weight)	
Total delivered weight	3383.0 lbs		

Calculation of test vehicle's target test weight:

RCLW = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (3383.0 lbs)

DSC = Designated Seating Capacity (5)

RCLW = 115 lbs

Target test weight = UDW + RCLW + (Number of Hybrid III dummies x 167 lbs per dummy)

Target test weight = 3383.0 + 115 + 334 = 3832 lbs

Weight of test vehicle with two dummies and 115.7 lbs of cargo weight:

Right front	997.6 lbs	Right rear	927.0 lbs
Left front	962.3 lbs	Left rear	945.8 lbs
Total front weight	1959.9 lbs	(51.1% of total vehicle weight)	
Total rear weight	1872.8 lbs	(48.9% of total vehicle weight)	
Total test weight	3832.7 lbs		

Remarks:

Weight of ballast secured in vehicle cargo area: None

Components removed to meet target test weight: None

General Test and Vehicle Parameter Data for the Sled Test Vehicle, Cont'd.

Test Vehicle Attitude:

As delivered door sill angle: 1.5° Nose Down

As tested door sill angle: 0.8° Nose Down

Fully loaded door sill angle: 0.8° Nose Down

Vehicle Wheelbase: 106.9 inches

Fuel System Data:

Fuel system capacity from owner's manual: 16.4 gallons
(including a reserve of 2.1 gallons)

Useable capacity figure furnished by COTR: 16.4 gallons

Remarks: The roll angle measurements were within 1 inch of each other.
The left and right side measurements were 29.8 inches and 29.7 inches respectively.

Post-Impact Data

Test number: S010327
NHTSA number: C10500
Test date: 03/27/01
Test time: 1240
Test type: Alternate FMVSS 208 Sled Test
Impact angle: 0°
Ambient temperature
at impact area: 71° F
Temperature in
occupant compartment: 71° F

Sled carriage velocity:

Integrated velocity from the integration of the entire sled acceleration: 29.3 mph
Measured velocity from the light trap device attached to the sled (backup): 28.6 mph
Specified integrated velocity range: 28.0 to 30.0 mph

Sled carriage acceleration:

Acceleration: 17.3 g
Specified acceleration range: 16.0 g - 18.2 g

Sled carriage acceleration duration:

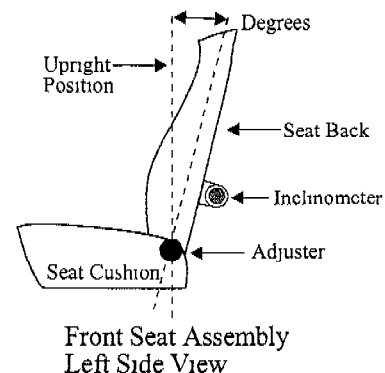
Time from T-0(-0.5 g) to 0.0 g: 125.9 ms
Specified acceleration duration: 120 - 130 ms

The sled acceleration curve was within the specified corridor.

Seat and Steering Column Positioning Data

Vehicle: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500



Nominal Design Riding Position

Driver Seat	Seat Back Angle = 23.5° Power adjustable	Measured on the back side of the upper seat back on the seat centerline
Passenger Seat	Seat Back Angle = 23.5° Power adjustable	Measured on the back side of the upper seat back on the seat centerline

Seat Fore and Aft Positions:

Driver Seat	Mid - The forwardmost and rearwardmost positions, irrespective of seat height, were established in power mode. Then the seat was lowered and manually moved to the mid-track mark previously established and checked to see that it was in the lowest position attainable at the mid-track mark. The thigh adjustment (front cushion) was set to the lowest adjustment.
Passenger:	Mid - The forwardmost and rearwardmost positions, irrespective of seat height, were established in power mode. Then the seat was lowered and manually moved to the mid-track mark previously established and checked to see that it was in the lowest position attainable at the mid-track mark. The thigh adjustment (front cushion) was set to the lowest adjustment.

Steering Column Adjustments:

The steering column was adjustable, both vertically and longitudinally. The column was set longitudinally by finding the mid point of the in and out travel distance. The column was set vertically by positioning the steering wheel at an angle mid way between the lowest and highest angles possible.

Dummy Measurement Data for Front Seat Occupants

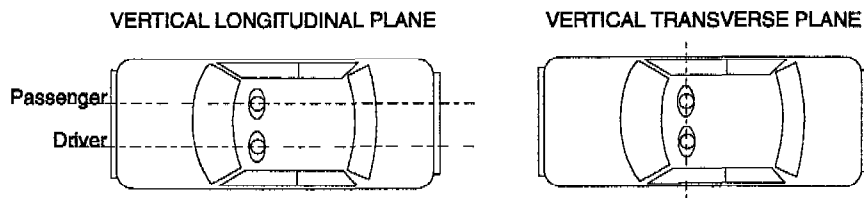
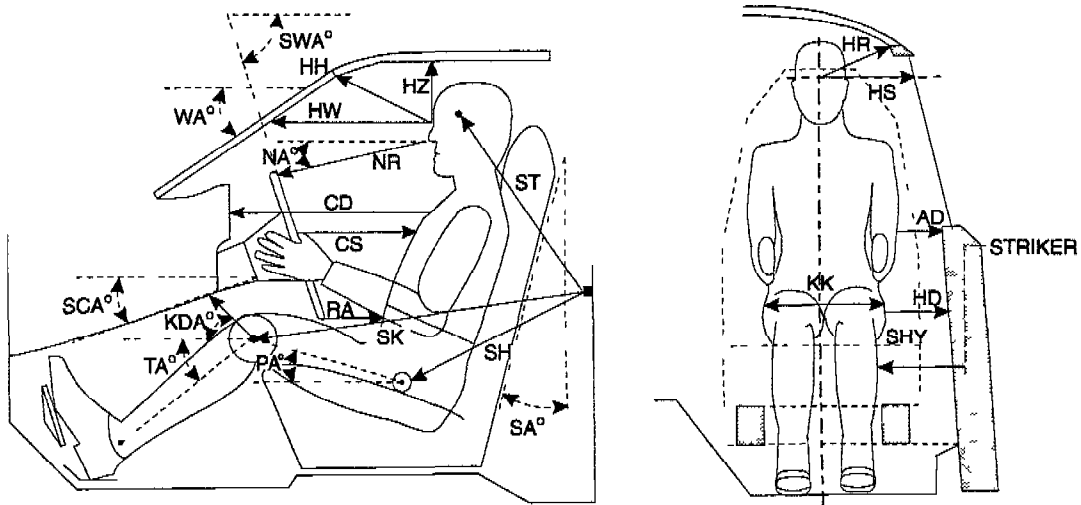
Designation	Type of Measurement	Driver (Serial #314)	Passenger (Serial #230)
WA	Windshield angle	29.7°	N/A
SWA	Steering wheel angle	22.1°	N/A
SCA	Steering column angle	21.6°	N/A
SA	Seat back angle	23.5°	23.5 °
HZ	Head to roof	7.1 in.	7.1 in.
HH	Head to header	13.2 in	14.1 in
HW	Head to windshield	24.4 in	23.3 in
HR	Head to side header	8.5 in	8.3 in
NR	Nose to rim	15.4 in	N/A
NA	Nose to rim angle	9.0°	N/A
CD	Chest to dash	18.3 in	21.2 in
CS	Steering wheel to chest	12.6 in	N/A
RA	Rim to abdomen	8.3 in	N/A
KDL	Left knee to dash	6.9 in	7.1 in
KDR	Right knee to dash	5.6 in	7.3 in
KDA	Outboard knee to dash angle	35.0°	27.0°
PA	Pelvis angle	24.4°	25.0°
TA	Tibia angle	35.8°	36.0°
KK	Knee to knee	10.6 in	10.6 in
ST ¹	Striker to head	11.8 in	14.5 in
	Striker to head angle	-76°	-84.5°
SK ¹	Striker to knee	23.2 in	23.2 in
	Striker to knee angle	23.1°	18.2°
SH ¹	Striker to H-point	12.6 in	10.2 in
	Striker to H-point angle	62.6°	50.0°
SHY	Striker to H-point (Y dir.)	4.7 in	4.7 in
HS	Head to side window	12.8 in	12.4 in
HD	H-point to door	4.6 in	4.5 in
AD	Arm to door	4.1 in	2.5 in

The seat back angle (SA°) is measured relative to vertical.

All other angles are measured relative to horizontal.

¹ A negative angle indicates the measurement point was located below the striker.

Dummy Measurement Locations for Front Seat Occupants



Descriptions of Dummy Measurements

When a level is to be used, it is to ensure that the line containing the two points described is either parallel or perpendicular to the ground. If a measurement to be made is less than 10 inches ignore the directions to use a level and approximate a level measurement. Also, when a measurement is to be taken to or from the center of a bolt on the dummy, take the measurement from the center of the bolt hole if the bolt is recessed.

The following measurements are to be made within a vertical longitudinal plane.

- * HH Head to Header, taken from the point where the dummy's nose meets his forehead (between his eyes) to the furthest point forward on the header.
- * HW Head to Windshield, taken from the point where the dummy's nose meets his forehead (between his eyes) to a point on the windshield. Use a level.
- HZ Head to Roof, taken from the point where the dummy's nose meets his forehead (between his eyes) to the point on the roof directly above it. Use a level.
- * CS Steering Wheel to Chest, taken from the center of the steering wheel hub to the dummy's chest. Use a level.
- * CD Chest to Dash, place a tape measure on the tip of the dummy's chin and rotate five inches of it downward toward the dummy to the point of contact on the transverse center of the dummy's chest. Then measure from this point to the closest point on the dashboard either between the upper part of the steering wheel between the hub and the rim, or measure to the dashboard placing the tape measure above the rim, whichever is a shorter measurement. See diagram.
- RA Steering Wheel Rim to Abdomen, taken from the bottommost point of the steering wheel rim horizontally rearward to the dummy. Use a level.
- NR Nose to Rim, taken from the tip of the dummy's nose to the closest point on the top of the steering wheel rim. Also indicate the angle this line makes with respect to the horizontal (NA).
- *¹ KDL,
KDR Left and Right Knees to Dashboard, taken from the center of the knee pivot bolt's outer surface to the closest point forward acquired by swinging the tape measure in continually larger arcs until it contacts the dashboard. Also reference the angle of this measurement with respect to the horizontal for the outboard knee (KDA). See diagram.

* Measurement used in Data Tape Reference Guide

¹ Only outboard measurement is referenced in Data Tape Reference Guide

Descriptions of Dummy Measurements, Cont'd.

SH,
SK,
ST

Striker to Hip, Knee, and Head, these measurements are to be taken in the X-Z plane measured from the forward most center point on the striker to the center of the H-point, outer knee bolt, and head target. When taking this measurement a firm device that can be rigidly connected to the striker should be used. Use a level. The angles of these measurements with respect to the horizontal should also be recorded. The measurement in the Y (transverse) direction from the striker to the H-point should also be taken (SHY). See diagram.

The following measurements are to be made within a vertical transverse plane.

- HS Head to Side Window, taken from the point where the dummy's nose meets his forehead (between his eyes) to the outside of the side window. In order to make this measurement, roll the window down to the exact height which allows a level measurement. Use a level. See diagram.
- * AD Arm to Door, taken from the outer surface of the elbow pivot bolt on a Hybrid II dummy to the first point it hits on the door. In the case of a Hybrid III dummy, measure from the bolt on the outer biceps. When a SID is used make the measurement from the center of the bottom of the arm segment where it meets the dummy's torso.
- * HD H-point to Door, taken from the H-point on the dummy to the closest point on the door. Use a level.
- * HR Head to Side Header, measure the shortest distance from the point where the dummy's nose meets his forehead (between his eyes) to the side edge of the header just above the window frame, directly adjacent to the dummy.
- SHY Striker to H-point, taken from a rod rigidly connected to the forward most center point on the striker to the H-point. Use a level. See diagram.
- KK Knee to Knee, for Hybrid II dummies measure the distance between knee pivot bolt head outer surfaces. For Hybrid III dummies measure the distance between the outboard knee clevis flange surfaces. (This measurement may not be exactly transverse.)

Angles

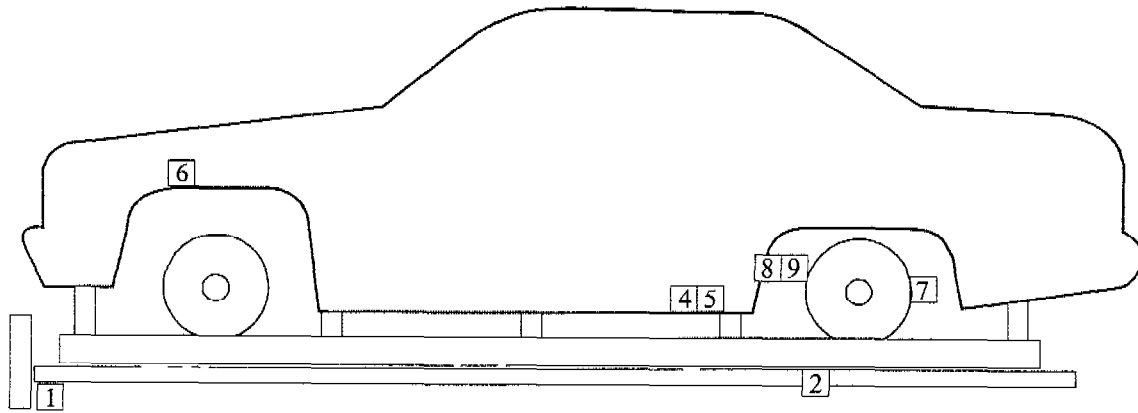
- SA Seat Back Angle, find this angle using the instructions provided by the manufacturer. If the manufacturer doesn't provide clear instructions contact the COTR.

* Measurement used in Data Tape Reference Guide

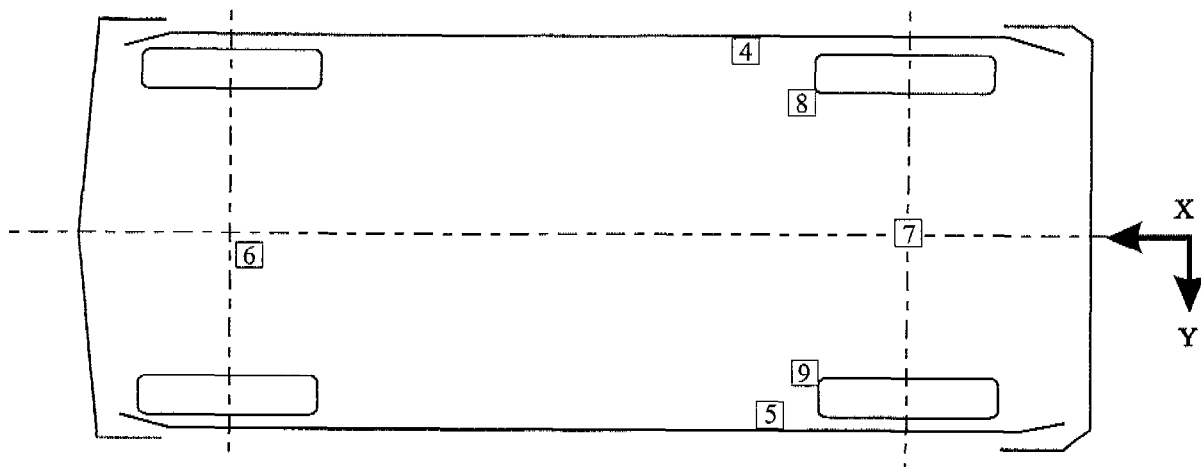
Descriptions of Dummy Measurements, Cont'd.

- PA Pelvis or Femur Angle, taken by inserting the pelvic angle gauge into the H-point gauging hole on the SID or the Hybrid III dummies and taking this angle with respect to the horizontal. Measure the angle of the line connecting the H-point hole and the outer knee pivot bolt hole on a Hybrid II dummy with respect to the horizontal, to find the femur angle.
- SWA Steering Wheel Angle, find this by placing a straight edge against the steering wheel rim along the longitudinal plane. Then measure the acute angle of the straight edge with respect to the horizontal.
- SCA Steering Column Angle, measured with respect to the horizontal by placing an inclinometer on the center of the underside of the steering column.
- NA Measure the angle made when taking the measurement NR with respect to the horizontal.
- KDA Knee to Dash Angle, the angle that the measurement KD is taken at with respect to the horizontal. Only get this angle for the outboard knee. See diagram.
- WA Windshield Angle, place an inclinometer along the transverse center of the windshield exterior (measurement is made with respect to horizontal).
- TA Tibia Angle, use a straight edge to connect the dummy's knee and ankle bolts. Then place an inclinometer on the straight edge and measure the angle with respect to the horizontal.

Vehicle Accelerometer Placement



Side View



Bottom View

Vehicle Data Summary and Accelerometer Locations

TEST NUMBER: S010327

No. LOCATION

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

X

Y

Z

1 SLED ACCELERATION PRIMARY	165.6 in	-1.0 in	NA	0.6 g	@ 201.7 ms	17.3 g	@ 57.2 ms
2 SLED ACCELERATION - BACKUP REDUNDANT	165.6 in	-1.0 in	NA	0.4 g	@ 127.5 ms	17.6 g	@ 58.5 ms
3 SLED VELOCITY MEASURED ¹ INTEGRATED ²	NA	NA	NA	0.1 mph ---	@ 8.0 ms @ ---	28.6 mph 29.3 mph	@ 136.0 ms @ 125.7 MS
4 LEFT REAR FLOORPAN CROSSMEMBER LONGITUDINAL	1570 in	-650 in	NA	1.0 g	@ 129.4 ms	17.7 g	@ 56.2 ms
5 RIGHT REAR FLOORPAN CROSSMEMBER LONGITUDINAL	1560 in	640 in	NA	1.1 g	@ 129.8 ms	17.6 g	@ 58.1 ms
6 TOP ENGINE LONGITUDINAL	3806 in	0 in	NA	3.1 g	@ 141.8 ms	18.4 g	@ 54.2 ms
7 REAR AXLE LONGITUDINAL	920 in	0 in	NA	1.4 g	@ 129.5 ms	18.0 g	@ 58.7 ms

Vehicle Data Summary and Accelerometer Locations, Cont'd.

TEST NUMBER: S010327 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
8 LEFT VERTICAL BODY STRUCTURE IN REAR WHEELWELL LONGITUDINAL	1267 in	-570 in	NA	1.8 g @ 129.9 ms	17.4 g @ 55.0 ms
9 RIGHT VERTICAL BODY STRUCTURE IN REAR WHEELWELL LONGITUDINAL ¹	1281 in	580 in	NA	---	---
10 DRIVER PRIMARY AIRBAG EVENT	NA	NA	NA	1.0 volt @ 21.4 ms	---
11 DRIVER SECONDARY AIRBAG EVENT	NA	NA	NA	1.0 volt @ 36.3 ms	---
12 PASSENGER PRIMARY AIRBAG EVENT	NA	NA	NA	1.0 volt @ 21.4 ms	---
13 PASSENGER SECONDARY AIRBAG EVENT	NA	NA	NA	1.0 volt @ 36.3 ms	---

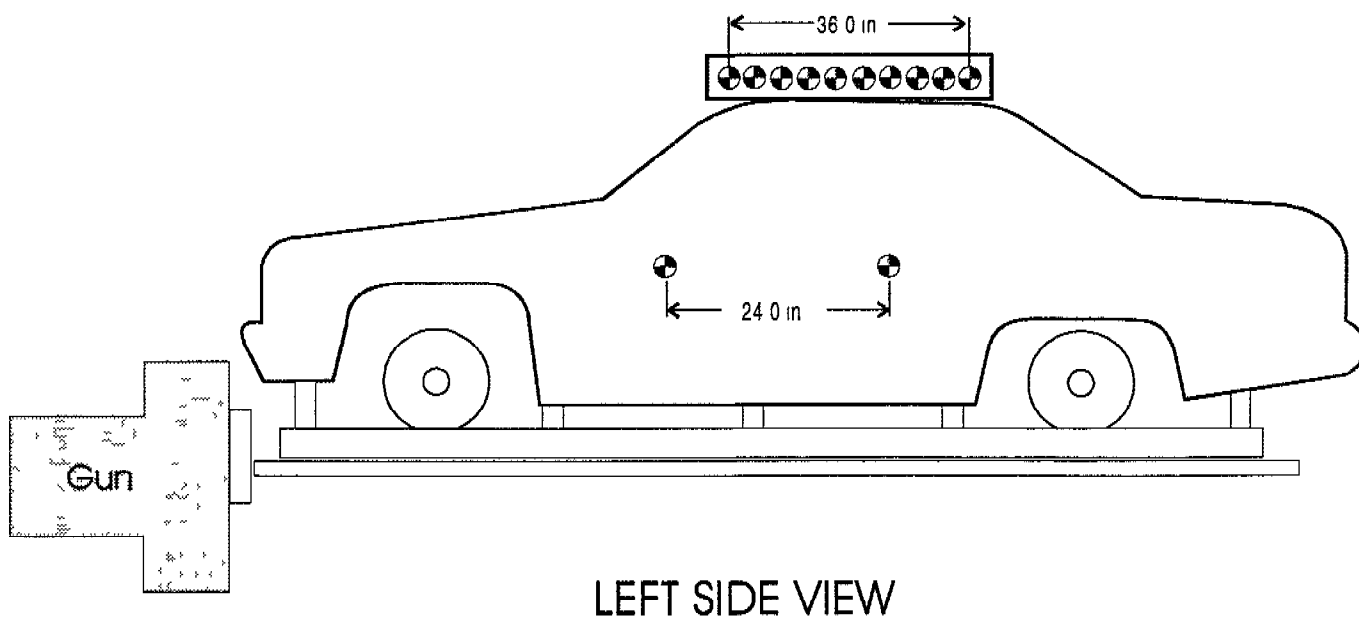
REFERENCE: X: + FORWARD FROM VEHICLE REAR SURFACE
Y: + RIGHTWARD FROM SLED CARRIAGE CENTERLINE

¹See Data Acquisition Explanations.

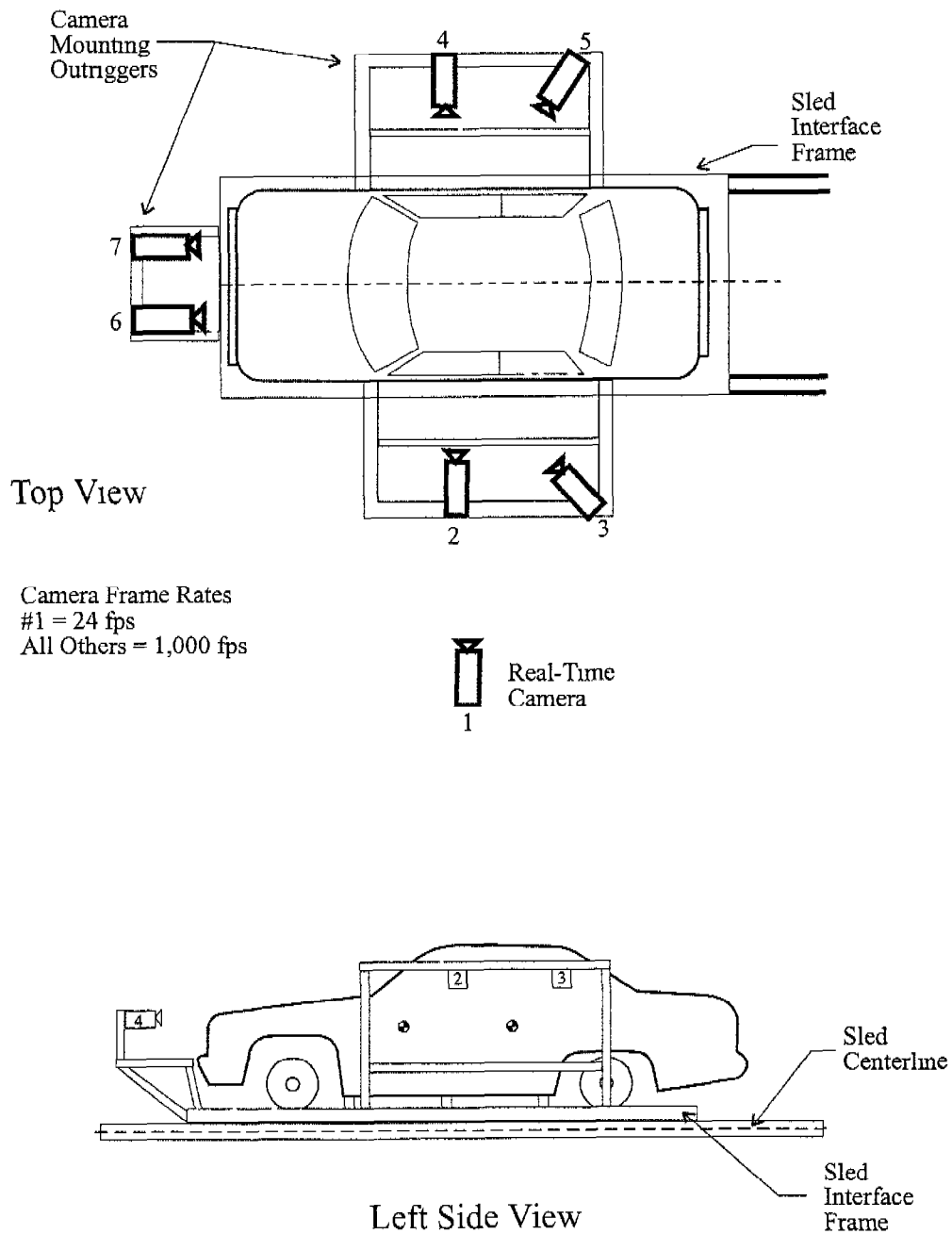
²No positive data in time frame of interest.

Vehicle Targeting Measurements

REFERENCE PHOTO TARGETS



Camera Positions



Motion Picture Camera Locations

Vehicle year/make/model/body style: 2001/Mercedes-Benz/C-240/4-door sedan NHTSA No.: C10500 Test Number: S010327

Camera Number	View	Camera Positions ¹			Camera Angle ²	Film Plane to Head Target	Camera Lens	Film Speed
		X	Y	Z				
1	Left side view offboard	93.0 in	314.9 in	56.4 in	0°	295.0 in	10 mm	24 frames/s
2	Left side view wide	72.8 in	72.2 in	51.5 in	-4.3°	55.6 in	8 mm	995 frames/s
3	Left side view over shoulder	98.7 in	49.0 in	58.2 in	-13.7°	37.3 in	8 mm	1000 frames/s
4	Right side view wide	73.4 in	91.0 in	51.3 in	-1.5°	74.0 in	13 mm	935 frames/s
5	Right side view over shoulder	101.4 in	49.0 in	57.5 in	-10.9°	37.8 in	8 mm	1017 frames/s
6	Front view - driver	27.1 in	17.7 in	52.0 in	-7.2°	49.0 in	8 mm	872 frames/s
7	Front view - passenger	26.0 in	16.0 in	52.0 in	-8.7°	50.0 in	8 mm	1000 frames/s

¹ X: Film plane to front of sled

Y: Film plane to sled centerline

Z: Film plane to top of sled

² Angle: Film plane of camera downward from horizontal plane

FMVSS 208 Occupant Injury Data

Vehicle: 2001/Mercedes-Benz/C-240/4-door sedan NHTSA No.: C10500 Date: 03/27/01

Maximum Acceleration Values: (g's) ¹	Driver Dummy #314	Passenger Dummy #230
Head Channel X	-23.8	-21.3
Head Channel Y	-3.7	-13.5
Head Channel Z	17.0	17.1
HEAD RESULTANT	28.6	26.2
Chest Channel X	-27.9	27.2
Chest Channel Y	4.0	-4.0
Chest Channel Z	-7.8	7.5
CHEST RESULTANT	28.6	27.7

Head Injury Criteria (HIC) Values:

HIC	112	95
t_1 = (ms)	87.52	89.44
t_2 = (ms)	123.52	125.44

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

Chest Injury Criteria (Clip) Values: (g's)

CLIP	28.0	27.6
t^1 = (ms)	94.48	101.12
t^2 = (ms)	97.52	104.20
Chest Deflection (in)	0.7	0.5

¹ Sign Convention per SAE J211, March 1995.

FMVSS 208 Occupant Injury Data, Cont'd.

Vehicle: 2001/Mercedes-Benz/C-240/4-door sedan NHTSA No.: C10500 Date: 03/27/01

Max. Compressive Femur Forces (lbs.):	Driver Dummy #314	Passenger Dummy #230
Left Side (lbs)	1302	1150
Right Side (lbs)	1311	1213

Neck Injury Criteria	Driver Dummy #314	Passenger Dummy #230
Peak Flexion Bending Moment (N-m)	45.0 ¹	66.7
Peak Extension Bending Moment (N-m)	9.4	9.6
Peak Axial Tension (N) ¹	N/A ¹	278
Peak Axial Compression (N)	126	452
Peak Positive X-axis Shear (N)	761 ¹	843
Peak Negative X-axis Shear (N)	151	248

¹ See Data Acquisition Explanations

FMVSS 208 Seat Belt Warning System Check

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Complete the following to determine which seat belt warning system option (S7.3(a)(1) or S7.3(a)(2)) is used. (Manufacturers may use either option.)

A. With occupant in driver's position and lap belt in stowed position and ignition switch placed in "Start/On" position:

A.1 S7.3(a)(1)

Time duration of audible warning signal = seconds
(4 to 8 seconds)

Time duration of reminder light operation = seconds
(no less than 60 seconds)

A.2 S7.3(a)(2)

Time duration of audible warning signal = 5 seconds
(4 to 8 seconds) (see 49 USCS @ 30124)

Time duration of reminder light operation = 5 seconds
(4 to 8 seconds)

B. With occupant in driver's position and lap belt in use and the ignition switch placed in "Start/On" position:

B.1 S7.3(a)(1)

Time duration of audible warning signal = seconds
(audible warning should not operate)

Time duration of reminder light operation = seconds
(reminder light does not operate)

B.2 S7.3(a)(2)

Time duration of audible warning signal = 0 seconds
(audible warning should not operate)

Time duration of reminder light operation = 6 seconds
(4 to 8 seconds)

C. Note wording of visual warning:

Fasten Seat Belt —

Fasten Belt

Symbol 101 ☒

FMVSS 208 Readiness Indicator

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement (11/8/94 legal interpretation).

Is the system totally mechanical?

Yes-☐; No-☒

Describe the location of the readiness indicator: Instrument panel lower right corner.

Is the readiness indicator clearly visible to the driver?

Yes-☒; No-☐

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

Yes-☒; No-☐

FMVSS 208 Air Bag Labels

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

1. Air Bag Maintenance Label and Owner's Manual Instructions:

- 1.1 Does the manufacturer recommend periodic maintenance or replacement of the air bag?

☐ Yes (Go to 1.2)

☒ No (Go to 2)

- 1.2 Does the Vehicle have a maintenance or replacement label?

☐ Yes-Pass ☐ No-Fail

- 1.3 Does the label contain one of the following?

☐ Yes-Pass ☐ No-Fail

☐ Schedule on label specifies month and year

☐ Schedule on label specifies vehicle mileage

☐ Schedule on label specifies interval measured from date on certification label

- 1.4 Is the label permanently affixed within the passenger compartment?

☐ Yes-Pass ☐ No-Fail

- 1.5 Is the label lettered in English?

☐ Yes-Pass ☐ No-Fail

- 1.6 Is the label in block capitals and numerals?

☐ Yes-Pass ☐ No-Fail

- 1.7 Are the letters and numerals at least 3/32 inch high?

☐ Yes-Pass ☐ No-Fail

- 1.8 Does the owner's manual set forth the recommended schedule for maintenance or replacement?

☐ Yes-Pass ☐ No-Fail

2. Does the owner's manual: (S4.5.1 (f))

- 2.1 Include a description of the vehicle's air bag system in an easily understandable format?

☒ Yes ☐ No-Fail

- 2.2 Include a statement that the vehicle is equipped with an air bag and a lap/shoulder belt at the front outboard seating positions?

☒ Yes ☐ No-Fail

FMVSS 208 Air Bag Labels, Cont'd.

- 2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating positions? ☒ Yes ☐ No-Fail
- 2.4 Emphasize that all occupants, including the driver, should always wear their seat belts whether or not an air bag is also provided at their seating positions to minimize the risk of severe injury or death in the event of a crash? ☒ Yes ☐ No-Fail
- 2.5 Provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to insure maximum safety protection for those occupants? ☒ Yes ☐ No-Fail
- 2.6 Explain that no objects should be place over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate? ☒ Yes ☐ No-Fail

3. Does the Vehicle:

- 3.1 Provide an automatic means to ensure that the air bag does not deploy when a child seat or child with a total mass of 30 kg or less is present on the front outboard seat? ☐ Yes ☒ No
- 3.2 Incorporate sensors, other than or in addition to weight sensors, which automatically prevent the passenger air bag from deploying in situations in which it might have an adverse effect on infants in rear-facing child seat, and unbelted or improperly belted children? ☐ Yes ☒ No
- 3.3 Have a passenger air bag designed to deploy in a manner that does not create a risk of serious injury to infants in rear-facing child seats, and unbelted or improperly belted children? ☐ Yes ☒ No

If yes to 3.1, or 3.2, or 3.3, the vehicle is not required to have a Sun Visor Warning Label (S4.5.1(b)), an air bag alert label (S4.5.1(c)) or a label on the dash (S4.5.1(e)) and this check sheet is complete. (S4.5.1) If no to 3.1, 3.2, and 3.3, go to 4.

FMVSS 208 Air Bag Labels, Cont'd.

4. Sun Visor Warning Label

- 4.1 Is the label permanently affixed (may be permanent marking or molding) to either side of the sun visor at each front outboard seating position with an air bag?

Driver side	☒ Yes-Pass	☐ No-Fail
Passenger side	☒ Yes-Pass	☐ No-Fail

- 4.2 Does the label conform in content (vehicles without back seats may omit the statement: "The BACK SEAT is the SAFEST place for children.") (S4.5.1(b)(2)(v)) to the label shown in either Figure 6a or 6b as appropriate at each front outboard seating position with an air bag? (S4.5.1(b)(2))

4.2.1 Dual air bags

Driver side	☒ Yes-Pass	☐ No-Fail
Passenger side	☒ Yes-Pass	☐ No-Fail

- 4.2.2 Vehicles with driver air bag ONLY - either 4.2.1 or 4.2.2 is applicable, not both. (S4.5.1(b)(2)(iv))

- 4.2.2.1 Does the label conform on content to the label shown in either Figure 6a or 6b as appropriate?

	☐ N/A
Driver side	☐ Yes-Pass ☐ No-Fail

- 4.2.2.2 Does the label conform in content to the label shown in Figure 6a where the label can be modified to omit the pictogram and the message may read:

DEATH or SERIOUS INJURY can occur.

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

	☐ N/A
Driver side	☐ Yes-Pass ☐ No-Fail

FMVSS 208 Air Bag Labels, Cont'd.

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN DOWN POSITION
LABEL OUTLINE, VERTICAL AND HORIZONTAL LINE BLACK

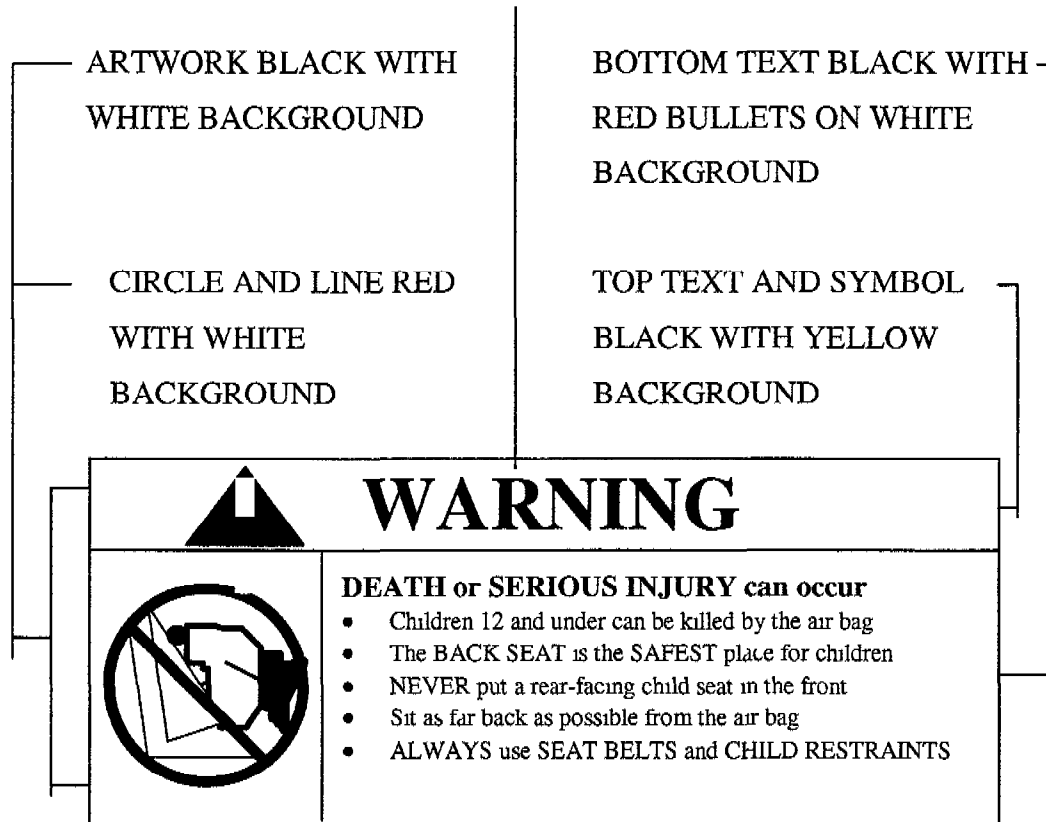


Figure 6a
(S4.5.1(b)(2))

FMVSS 208 Air Bag Labels, Cont'd.

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN DOWN POSITION

LABEL OUTLINE, VERTICAL AND HORIZONTAL LINE BLACK

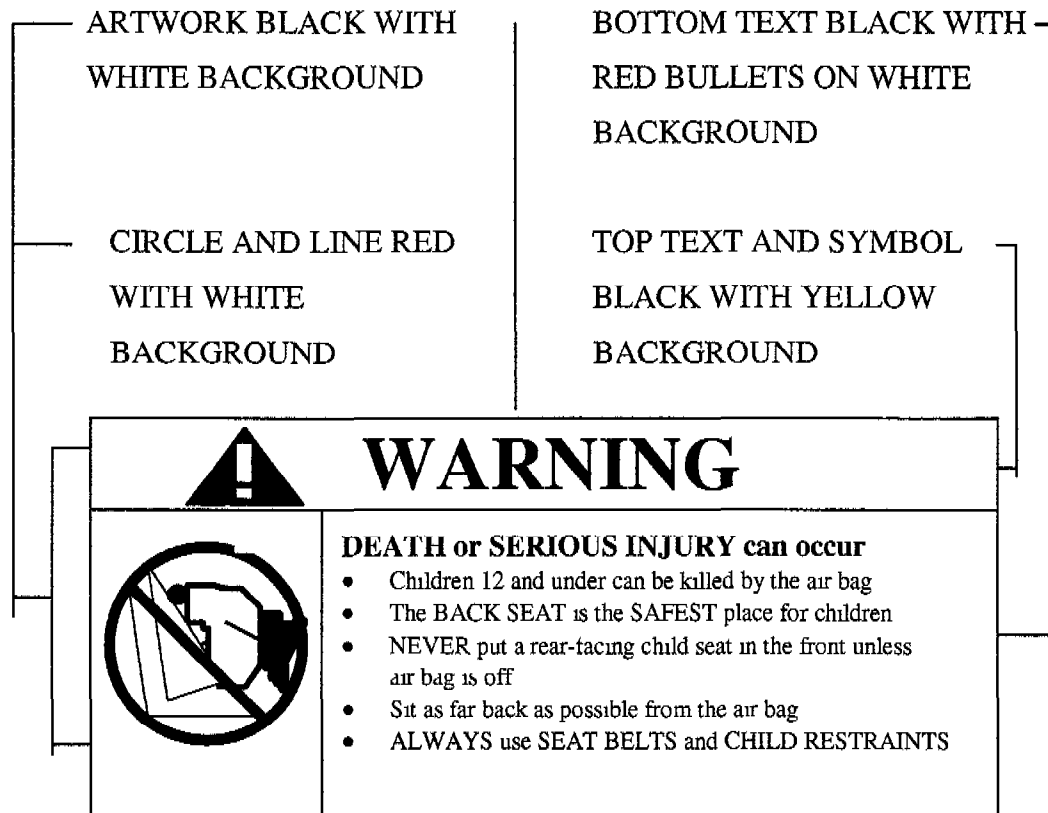


Figure 6b
(S4 5 1(b)(2))

- 4.3 Is the driver side label heading area yellow with the word "warning" and the alert symbol in black? (S4.5.1.(b)(2)(i))

Driver side ☒ Yes-Pass ☐ No-Fail

Passenger side ☒ Yes-Pass ☐ No-Fail

- 4.4 Is the message white with black text? (S4.5.1 (b)(2)(ii))

Driver side ☒ Yes-Pass ☐ No-Fail

Passenger side ☐ No air bag ☒ Yes-Pass ☐ No-Fail

- 4.5 Is the message area at least 30 cm²? (S4.5.1(b)(2)(ii))

Actual message area, driver side 30.8 cm²

Actual message area, passenger side 30.8 cm²

Driver side ☒ Yes-Pass ☐ No-Fail

Passenger side ☐ No air bag ☒ Yes-Pass ☐ No-Fail

FMVSS 208 Air Bag Labels, Cont'd.

- 4.6 Is the pictogram black with a red circle and slash on a white background?
(S4.5.1(b)(2)(iii)) & (S4.5.1(b)(2)(iv))

For vehicles with driver side air bag ONLY ☐ N/A

Driver side ☒ Yes-Pass ☐ No-Fail

Passenger side ☐ No air bag ☒ Yes-Pass ☐ No-Fail

- 4.7 Is the pictogram at least 30 mm in diameter? (S4.5.1(b)(2)(iii))

Actual diameter, driver side 30 mm

Actual diameter, passenger side 30 mm

For vehicles with driver side air bag ONLY ☐ N/A

Driver side ☒ Yes-Pass ☐ No-Fail

Passenger side ☐ No air bag ☒ Yes-Pass ☐ No-Fail

- 4.8 Is the same side of the sun visor to which the sun visor label is affixed free of other information with the exception of an air bag maintenance label?
(S4.5.1(b)(3))

Driver side ☒ Yes-Pass ☐ No-Fail

Passenger side ☐ No air bag ☒ Yes-Pass ☐ No-Fail

- 4.9 Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label or the utility vehicle label?

Driver side ☒ Yes-Pass ☐ No-Fail

Passenger side ☐ No air bag ☒ Yes-Pass ☐ No-Fail

5. Air Bag Alert Label

- 5.1 Is the Sun Visor Warning Label visible when the sun visor is in the stowed position?

Driver ☐ Yes ☒ No Passenger ☐ Yes ☒ No If yes, go to 6

- 5.2 Does the label conform in content to the label shown in Figure 6c?
(S4.5.1(c)(2))

☒ Yes-Pass ☐ No-Fail

Circle and Line Red
with White
Background

Artwork Black with
White Background

Text Yellow with
Black Background

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN UP POSITION

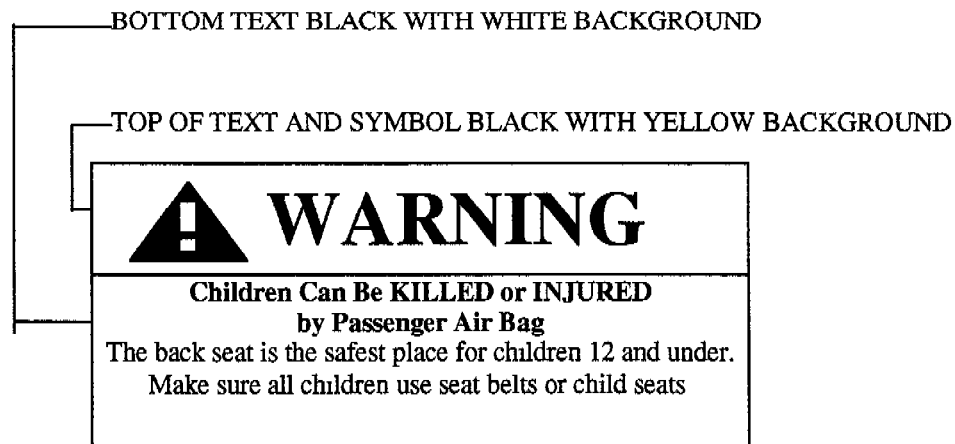


Figure 6c
(S4.5.1(c)(2))

FMVSS 208 Air Bag Labels, Cont'd.

- 5.3 Is the message area black with yellow text? (S4.5.1(c)(2)(i))
☒ Yes-Pass ☐ No-Fail
- 5.4 Is the message area at least 20 cm²? (S4.5.1(c)(2)(i))
Actual message area **20.7** cm² ☒ Yes-Pass ☐ No-Fail
- 5.5 Is the pictogram black with a red circle and slash on a white background?
(S4.5.1(c)(2)(i))
For vehicles with driver side air bag ONLY ☐ N/A
☒ Yes-Pass ☐ No-Fail
- 5.6 Is the pictogram at least 20 mm in diameter? (S4.5.1(c)(2)(ii))
Actual diameter is **20** mm
For vehicles with driver side air bag ONLY ☐ N/A
☒ Yes-Pass ☐ No-Fail
6. Label On the Dash
- 6.1 Does the vehicle have a passenger air bag?
☒ Yes ☐ No
- If no, this check list is complete.**
- 6.2 Does the vehicle have a label on the dash or steering wheel hub? (S4.5.1(e))
☒ Yes-Pass ☐ No-Fail
- 6.3 Does the label conform in content (vehicles without back seats may omit the statement: "The back seat is the safest place for children 12 and under.") (S4.5.1(e)(iii)) to the label shown in Figure 7? (S4.5.1(e))
☒ Yes-Pass ☐ No-Fail

Figure 7
(S4.5.1(e))



FMVSS 208 Air Bag Labels, Cont'd.

6.4 Is the heading area yellow with the word "warning" and the alert symbol in black?
(S4.5.1(e)(i))

☒ Yes-Pass ☐ No-Fail

6.5 Is the message white with black text? (S4.5.1(e)(ii))

☒ Yes-Pass ☐ No-Fail

6.6 Is the message area at least 30 cm²? (S4.5.1(e)(ii))
Actual message area 32.7 cm²

☒ Yes-Pass ☐ No-Fail

FMVSS 208 Rear Outboard Seating Position Seat Belts

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: Brian T. Bautsch

Date: 03/27/01

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

Yes-☒; No-☐; N/A ☐ (No Back Seat)

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

FMVSS 208 Lap Belt Lockability

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

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

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Right Front

- ☒ 1. Record test seat position: Mid
(S7.1.1.5(c)(1)) (Any position is acceptable.)
- ☒ 2. Buckle the seat belt. (S7.1.1.5(c)(1))
- ☒ 3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
- ☒ 4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part to the vehicle?
(S7.1.1.5(a)) ☒ Yes-Pass ☐ No-Fail
- ☒ 5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing? (S7.1.1.5(a)) ☒ Yes-Pass ☐ No-Fail
- ☒ 6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?

If yes, go to 6.1. If no, go to 7.

☒ Yes ☐ No

- 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b)) ☒ Yes-Pass ☐ No-Fail

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Right Front

- ☒ 7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
- ☒ 8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
- ☒ 9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
- ☒ 10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2)) Measured distance between A and B 56.7 inches.
- ☒ 11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
- ☒ 12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4)) Measured force application angle 10 degrees. (Spec. 5~15 degrees)
- ☒ 13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4)) Measured distance between A and B 28.4 inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Right Front

- ☒ 14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

Record onset rate 10 lbs/sec (spec. 10 ~50 lb/sec)

The measured distance between A and B is 28.7 inches (S7.1.1.5(c)(6))

- ☒ 15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? (S7.1.1.5 (c)(7))

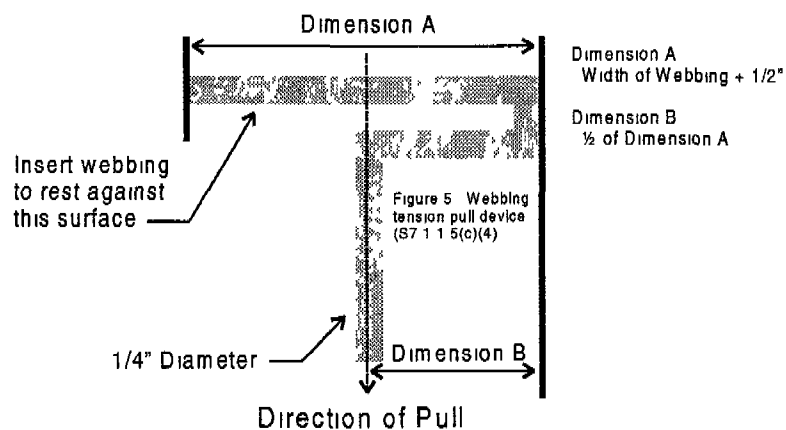
14-13= 0.3 inches

☒ Yes-Pass ☐ No-Fail

- ☒ 16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more? (S7.1.1.5(c)(8))

10-14= 28.0 inches.

☒ Yes-Pass ☐ No-Fail



FMVSS 208 Lap Belt Lockability

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

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

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Right Rear

- ☒ 1. Record test seat position: Non-adjustable
(S7.1.1.5(c)(1)) (Any position is acceptable.)
- ☒ 2. Buckle the seat belt. (S7.1.1.5(c)(1))
- ☒ 3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
- ☒ 4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part to the vehicle?
(S7.1.1.5(a)) ☒ Yes-Pass ☐ No-Fail
- ☒ 5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing? (S7.1.1.5(a)) ☒ Yes-Pass ☐ No-Fail
- ☒ 6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?

If yes, go to 6.1. If no, go to 7.

☒ Yes ☐ No

- 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b)) ☒ Yes-Pass ☐ No-Fail

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Right Rear

- ☒ 7. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
- ☒ 8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
- ☒ 9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
- ☒ 10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2)) Measured distance between A and B 52.5 inches.
- ☒ 11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
- ☒ 12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4)) Measured force application angle 10 degrees. (Spec. 5~15 degrees)
- ☒ 13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4)) Measured distance between A and B 19.8 inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Right Rear

- ☒ 14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1 5(c)(5))

Record onset rate 10 lbs/sec (spec. 10 ~50 lb/sec)

The measured distance between A and B is 20.6 inches (S7.1.1.5(c)(6))

- ☒ 15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? (S7.1.1.5 (c)(7))

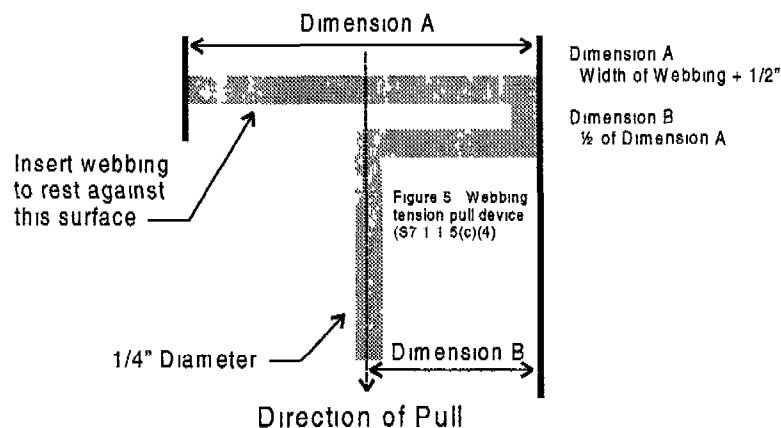
14-13= 0.8 inches

☒ Yes-Pass ☐ No-Fail

- ☒ 16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more? (S7.1.1.5(c)(8))

10-14= 31.9 inches.

☒ Yes-Pass ☐ No-Fail



FMVSS 208 Lap Belt Lockability

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

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

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Center Rear

- ☒ 1. Record test seat position: Non-adjustable
(S7.1.1.5(c)(1)) (Any position is acceptable.)
- ☒ 2. Buckle the seat belt. (S7.1.1.5(c)(1))
- ☒ 3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
- ☒ 4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part to the vehicle?
(S7.1.1.5(a)) ☒ Yes-Pass ☐ No-Fail
- ☒ 5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing? (S7.1.1.5(a)) ☒ Yes-Pass ☐ No-Fail
- ☒ 6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?

If yes, go to 6.1. If no, go to 7.

☒ Yes ☐ No

- 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b)) ☒ Yes-Pass ☐ No-Fail

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Center Rear

- ☒7. Locate a reference point a on the seat belt buckle. (S7.1.1.5(c)(2))
- ☒8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
- ☒9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
- ☒10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2)) Measured distance between A and B 56.8 inches.
- ☒11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
- ☒12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4)) Measured force application angle 10 degrees. (Spec. 5~15 degrees)
- ☒13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4)) Measured distance between A and B 20.5 inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Center Rear

- ☒ 14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

Record onset rate 10 lbs/sec (spec. 10 ~50 lb/sec)

The measured distance between A and B is 20.8 inches (S7.1.1.5(c)(6))

- ☒ 15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? (S7.1.1.5 (c)(7))

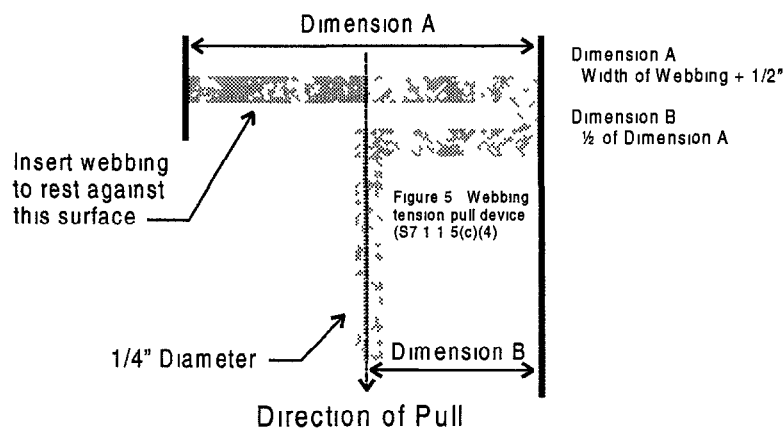
14-13= 0.3 inches

☒ Yes-Pass ☐ No-Fail

- ☒ 16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more? (S7.1.1.5(c)(8))

10-14= 36.0 inches.

☒ Yes-Pass ☐ No-Fail



FMVSS 208 Lap Belt Lockability

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

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

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Left Rear

- ☒ 1. Record test seat position: Non-adjustable
(S7.1.1.5(c)(1)) (Any position is acceptable.)
- ☒ 2. Buckle the seat belt. (S7.1.1.5(c)(1))
- ☒ 3. Complete any procedures recommended in the vehicle owner's manual to activate any locking feature. (S7.1.1.5(c)(1))
- ☒ 4. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part to the vehicle?
(S7.1.1.5(a)) ☒ Yes-Pass ☐ No-Fail
- ☒ 5. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing? (S7.1.1.5(a)) ☒ Yes-Pass ☐ No-Fail
- ☒ 6. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?

If yes, go to 6.1. If no, go to 7.

☒ Yes ☐ No

- 6.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b)) ☒ Yes-Pass ☐ No-Fail

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Left Rear

- ☒7. Locate a reference point a on the seat belt buckle. (S7.1.1.5(c)(2))
- ☒8. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
- ☒9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2))
- ☒10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2)) Measured distance between A and B 52.8 inches.
- ☒11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
- ☒12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4)) Measured force application angle 10 degrees. (Spec. 5~15 degrees)
- ☒13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4)) Measured distance between A and B 20.7 inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

NHTSA No.: C10500

Technician: N. Kinney and S. Bell

Date: 03/20/2001

Designated Seating Position: Left Rear

- ☒ 14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

Record onset rate 10 lbs/sec (spec. 10 ~50 lb/sec)

The measured distance between A and B is 21.6 inches (S7.1.1.5(c)(6))

- ☒ 15. Subtract the measurement in 13 from the measurement in 14. Is the difference 2 inches or less? (S7.1.1.5 (c)(7))

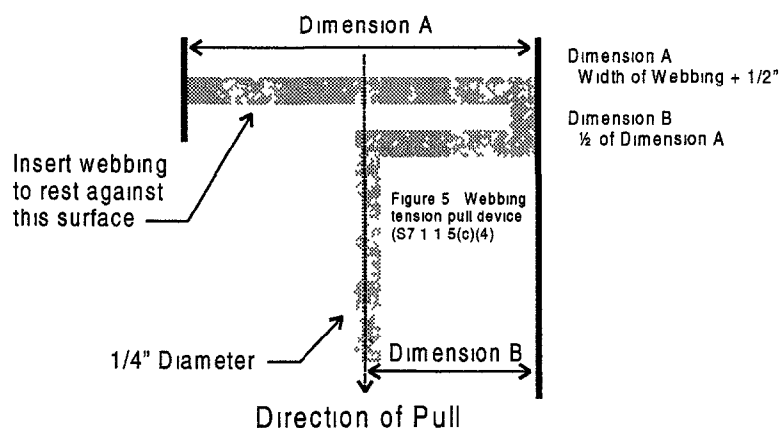
14-13= 0.9 inches

☒ Yes-Pass ☐ No-Fail

- ☒ 16. Subtract the measurement in 14 from the measurement in 10. Is the difference 3 inches or more? (S7.1.1.5(c)(8))

10-14= 31.2 inches.

☒ Yes-Pass ☐ No-Fail



FMVSS 208 Seat Belt Comfort And Convenience Test

Belt Contact Force (S7.4.3)

Test Vehicle NHTSA No.: C10500

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

Designated Seating Position Tested: Right Rear

Date of Comfort and Convenience Check: 03/20/2001

Technician Performing Check: N. Kinney and S. Bell

GVWR: 4350 pounds

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

1. Does the vehicle incorporate a webbing tension-relieving device?

☐ Yes-go to latchplate access
☒ No-continue with this check sheet

2. Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

☐ Check
☒ N/A

3. If separately adjustable in a vertical direction, the seats are at the lowest position.

☐ Check
☒ N/A

4. Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

☐ Check
☒ N/A

5. Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

☐ Check
☒ N/A

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.
Belt Contact Force (S7.4.3)

6. Place each adjustable head restraint in its highest adjustment position.

☒ Check
☐ N/A

7. Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

☐ Check
☒ N/A

8. Position the test dummy according to the dummy position placement instructions in Appendix B of the Laboratory Test Procedure.

☒ Check

9. Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds. Contact force is 0.6 pounds.

☒ 0.0 to 0.7 pounds - Pass
☐ greater than 0.7 pounds - FAIL*

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

FMVSS 208 Seat Belt Comfort And Convenience Test

Belt Contact Force (S7.4.3)

Test Vehicle NHTSA No.: C10500

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

Designated Seating Position Tested: Center Rear

Date of Comfort and Convenience Check: 03/20/2001

Technician Performing Check: N. Kinney and S. Bell

GVWR: 4350 pounds

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

1. Does the vehicle incorporate a webbing tension-relieving device?

☐ Yes-go to latchplate access
☒ No-continue with this check sheet

2. Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

☐ Check
☒ N/A

3. If separately adjustable in a vertical direction, the seats are at the lowest position.

☐ Check
☒ N/A

4. Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

☐ Check
☒ N/A

5. Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

☐ Check
☒ N/A

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.

Belt Contact Force (S7.4.3)

6. Place each adjustable head restraint in its highest adjustment position.

☒ Check
☐ N/A

7. Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

☐ Check
☒ N/A

8. Position the test dummy according to the dummy position placement instructions in Appendix B of the Laboratory Test Procedure.

☒ Check

9. Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds. Contact force is 0.5 pounds.

☒ 0.0 to 0.7 pounds - Pass
☐ greater than 0.7 pounds - FAIL*

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

FMVSS 208 Seat Belt Comfort And Convenience Test

Belt Contact Force (S7.4.3)

Test Vehicle NHTSA No.: C10500

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

Designated Seating Position Tested: Left Rear

Date of Comfort and Convenience Check: 03/20/2001

Technician Performing Check: N. Kinney and S. Bell

GVWR: 4350 pounds

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

1. Does the vehicle incorporate a webbing tension-relieving device?

☐ Yes-go to latchplate access
☒ No-continue with this check sheet

2. Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2)

☐ Check
☒ N/A

3. If separately adjustable in a vertical direction, the seats are at the lowest position.

☐ Check
☒ N/A

4. Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer.

☐ Check
☒ N/A

5. Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR.

☐ Check
☒ N/A

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.

Belt Contact Force (S7.4.3)

6. Place each adjustable head restraint in its highest adjustment position.

☒ Check
☐ N/A

7. Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3)

☐ Check
☒ N/A

8. Position the test dummy according to the dummy position placement instructions in Appendix B of the Laboratory Test Procedure.

☒ Check

9. Fasten the seat belt latch. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Measure the contact force exerted by the belt webbing on the dummy's chest. Contact the COTR if the contact force exceeds 0.7 pounds. Contact force is 0.6 pounds.

☒ 0.0 to 0.7 pounds - Pass
☐ greater than 0.7 pounds - FAIL*

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

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.
Latchplate Access (S7.4.4)

Test Vehicle NHTSA No.: C10500

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

Designated Seating Position Tested: Does not apply

Date of Comfort and Convenience Check: 03/20/2001

Technician Performing Check: N. Kinney and S. Bell

GVWR: 4350 pounds

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

1. Position the seat in its forward most adjustment position. ☐ Check
2. Position the test dummy using the procedures in Appendix B. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position.) ☐ Check
3. Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant. ☐ Check
4. Attach the inboard and outboard reach string following the instructions on Figure 1C. ☐ Check
5. Place the latch plate in the stowed position. ☐ Check
6. Extend each line backward and outboard to generate arcs of the reach envelope of the test dummy's arms. Is the latchplate within the reach envelope?
Yes- ☐ Pass; No- ☐ Fail
7. Using the clearance test block, specified in Figure 2C of the test procedure, determine if there is sufficient clearance between the vehicle seat and the side of vehicle to allow the test block to move unhindered to the latchplate or buckle.
Yes- ☐ Pass; No- ☐ Fail

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.
Retraction (S7.4.5)

Test Vehicle NHTSA No.: C10500

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

Designated Seating Position Tested: Does not apply

Date of Comfort and Convenience Check: 03/20/2001

Technician Performing Check: N. Kinney and S. Bell

GVWR: 4350 pounds

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

1. Is the vehicle a passenger car or walk-in van-type vehicle? ☒ Yes
☐ No
If yes, go to seat belt guides and hardware.
2. Adjustable seats are in the adjustment position midway between the forward most and rearmost positions. If an adjustment position does not exist midway between the forward most and rearmost positions, the next closest adjustment position to the rear of the midpoint is used. (S8.1.2) ☐ Check
3. If separately adjustable in a vertical direction, the seats are at the lowest position. ☐ Check
4. Place any adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer. ☐ Check
5. Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male (50M) occupant. This information will be furnished by the COTR. ☐ Check
6. Place each adjustable head restraint in its highest adjustment position. ☐ Check
7. Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position. (S8.1.3) ☐ Check
8. Use anthropomorphic test dummies whose arms have been removed and position the dummies in the front outboard designated seating positions according to instructions in Appendix B. ☐ Check

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.
Retraction (S7.4.5)

9. Restrain the dummies using the belt systems for the position being tested. ☐ Check
10. Stow outboard armrests that are capable of being stowed. ☐ Check
11. Check the statement that applies to this test vehicle:
- (A) The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latchplate is released. ☐ Pass
- (B) The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latchplate is released. ☐ Pass
- (C) Neither A or B apply. ☐ **FAIL**
12. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
- Yes- ☐ Pass; No- ☐ **Fail**
13. If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated? ☐ N/A
- Yes- ☐ Pass; No- ☐ **Fail**

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.

Seat Belt Guides And Hardware (S7.4.6)

Test Vehicle NHTSA No.: C10500

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

Designated Seating Position Tested: Right Rear

Date of Comfort and Convenience Check: 03/20/2001

Technician Performing Check: N. Kinney and S. Bell

GVWR: 4350 pounds

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

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

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

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

1. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

☒ Yes: go to 2.
☐ No: this form is complete.
2. Does one of the following three parts, the seat belt latchplate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

Yes-☒ Pass; No- ☐ **Fail**
3. Are the remaining two seat belt parts accessible under normal conditions?

Yes-☒ Pass; No- ☐ **Fail**

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.

Seat Belt Guides And Hardware (S7.4.6)

4. The buckle and latchplate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

☒ Check

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

☒ Check

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

☒ Check

Yes- ☒ Pass; No- ☐ Fail

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

Yes- ☒ Pass; No- ☐ Fail

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.

Seat Belt Guides And Hardware (S7.4.6)

Test Vehicle NHTSA No.: C10500

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

Designated Seating Position Tested: Left Rear

Date of Comfort and Convenience Check: 03/20/2001

Technician Performing Check: N. Kinney and S. Bell

GVWR: 4350 pounds

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

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

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

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

1. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

☒ Yes: go to 2.
☐ No: this form is complete.
2. Does one of the following three parts, the seat belt latchplate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

Yes-☒ Pass; No- ☐ Fail
3. Are the remaining two seat belt parts accessible under normal conditions?

Yes-☒ Pass; No- ☐ Fail

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.

Seat Belt Guides And Hardware (S7.4.6)

4. The buckle and latchplate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

☒ Check

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

☒ Check

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

☒ Check

Yes- ☒ Pass; No- ☐ Fail

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

Yes- ☒ Pass; No- ☐ Fail

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.

Seat Belt Guides And Hardware (S7.4.6)

Test Vehicle NHTSA No.: C10500

Vehicle Model Year/Make/Model/Body Style: 2001/Mercedes-Benz/C-240/4-door sedan

Designated Seating Position Tested: Center Rear

Date of Comfort and Convenience Check: 03/20/2001

Technician Performing Check: N. Kinney and S. Bell

GVWR: 4350 pounds

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

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

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

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

1. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back?

☒ Yes: go to 2.
☐ No: this form is complete.
2. Does one of the following three parts, the seat belt latchplate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)?

Yes-☒ Pass; No- ☐ Fail
3. Are the remaining two seat belt parts accessible under normal conditions?

Yes-☒ Pass; No- ☐ Fail

FMVSS 208 Seat Belt Comfort And Convenience Test Summary, Cont'd.

Seat Belt Guides And Hardware (S7.4.6)

4. The buckle and latchplate do not pass through the guides or conduits provided and fall behind the seat when the following events occur in order:

(A) The belt is completely retracted or, if the belt is nonretractable, the belt is unlatched.

☒ Check

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

☒ Check

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

☒ Check

Yes- ☒ Pass; No- ☐ **Fail**

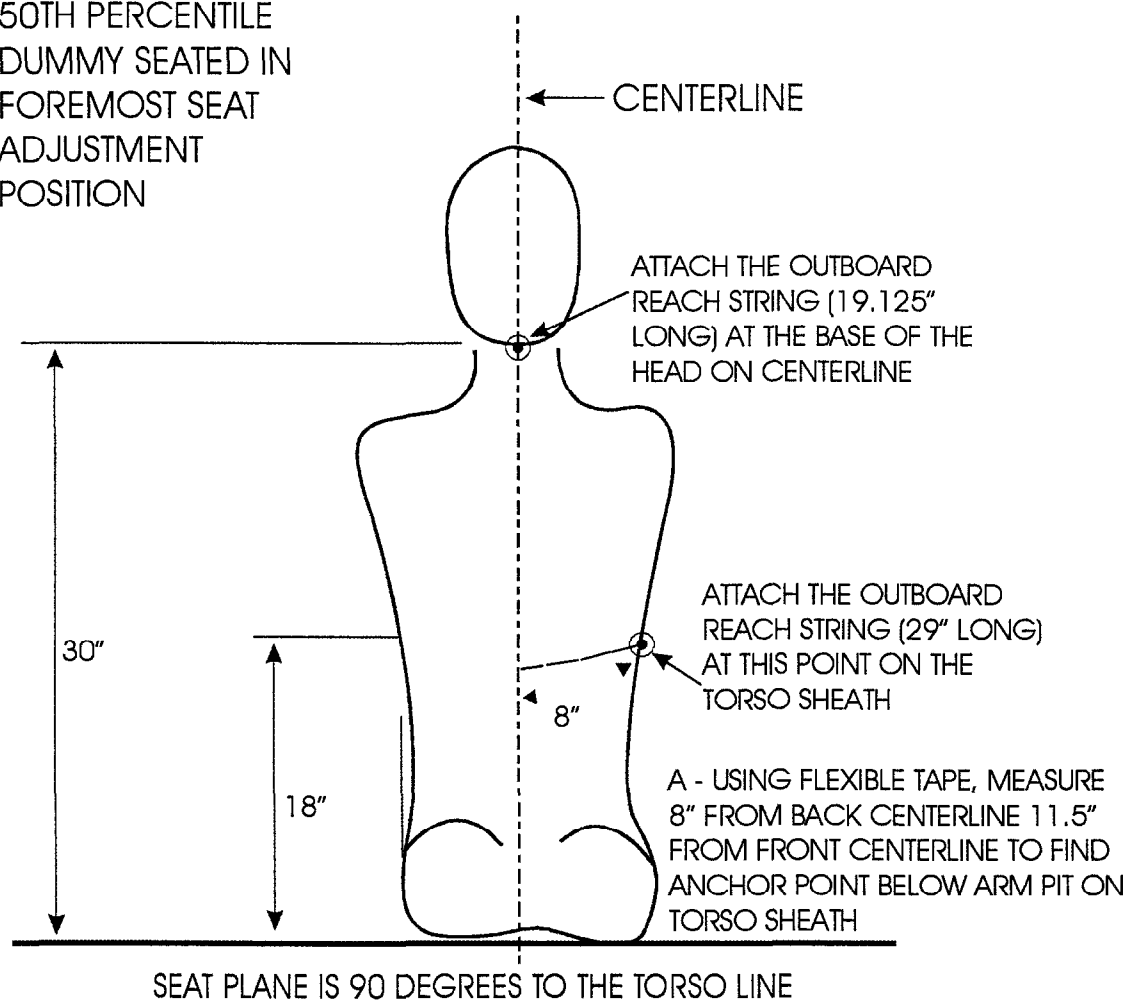
5. Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

Yes- ☒ Pass; No- ☐ **Fail**

LOCATION OF ANCHORING POINTS FOR LATCHPLATE REACH LIMITING CHAINS OR STRINGS TO TEST FOR LATCHPLATE ACCESSIBILITY

PART 572E DUMMY

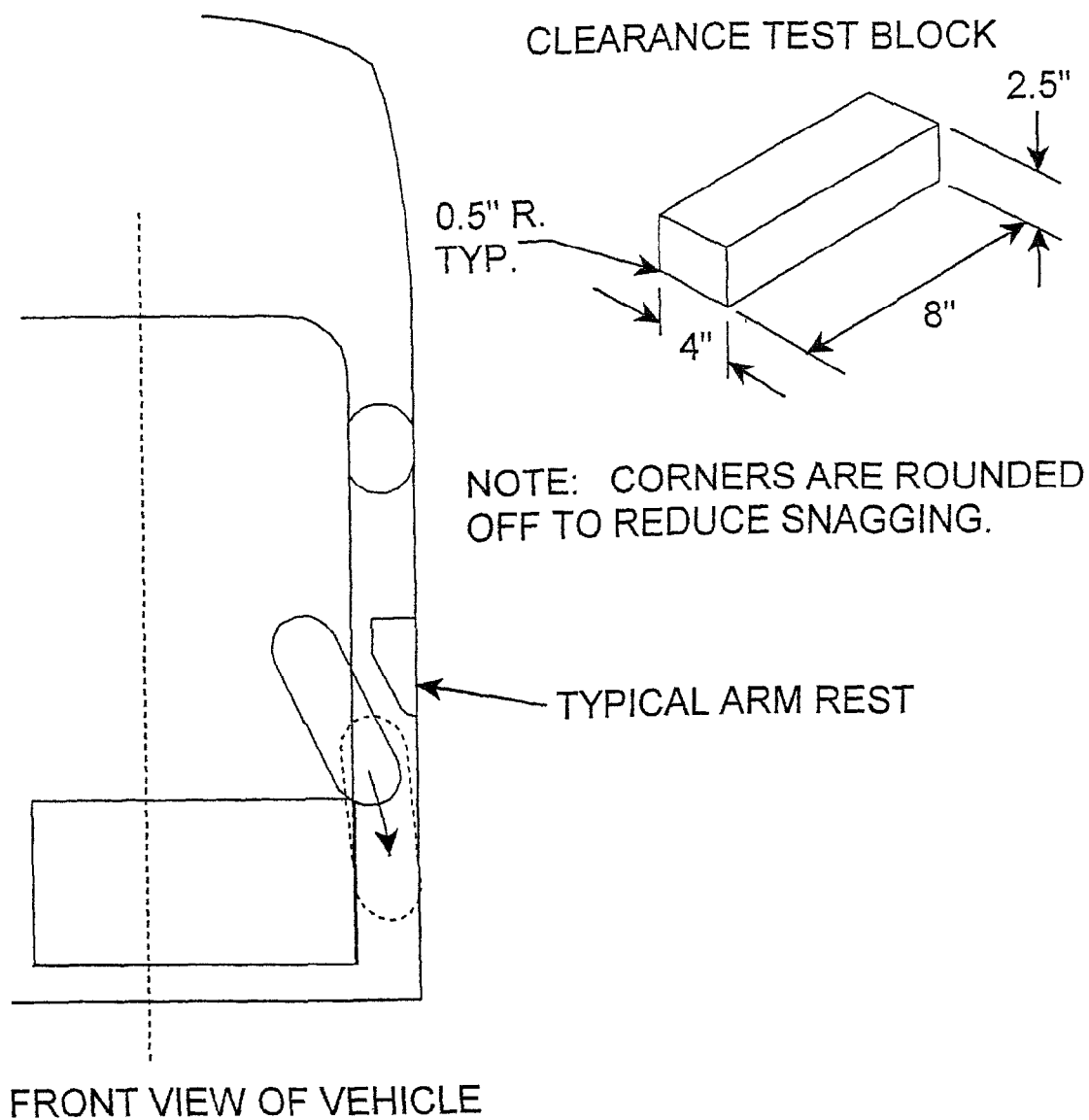
50TH PERCENTILE
DUMMY SEATED IN
FOREMOST SEAT
ADJUSTMENT
POSITION



REAR VIEW

Laboratory Test Procedure Figure 1C

USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS



Laboratory Test Procedure Figure 2C

Appendix A

Photographs

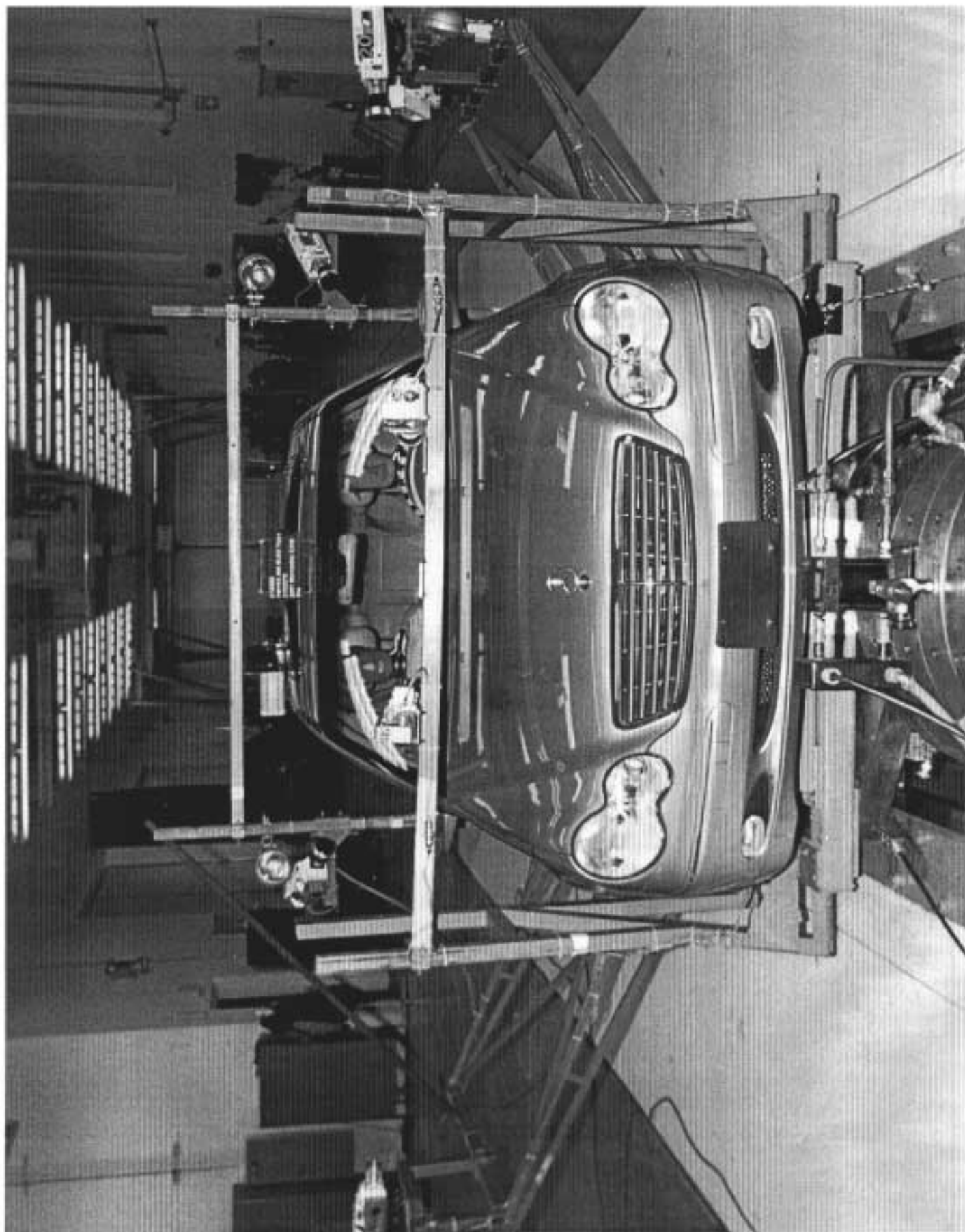


Figure A-1 Pre-Test Front View of Test Vehicle Mounted to Sled

A-2

S010327

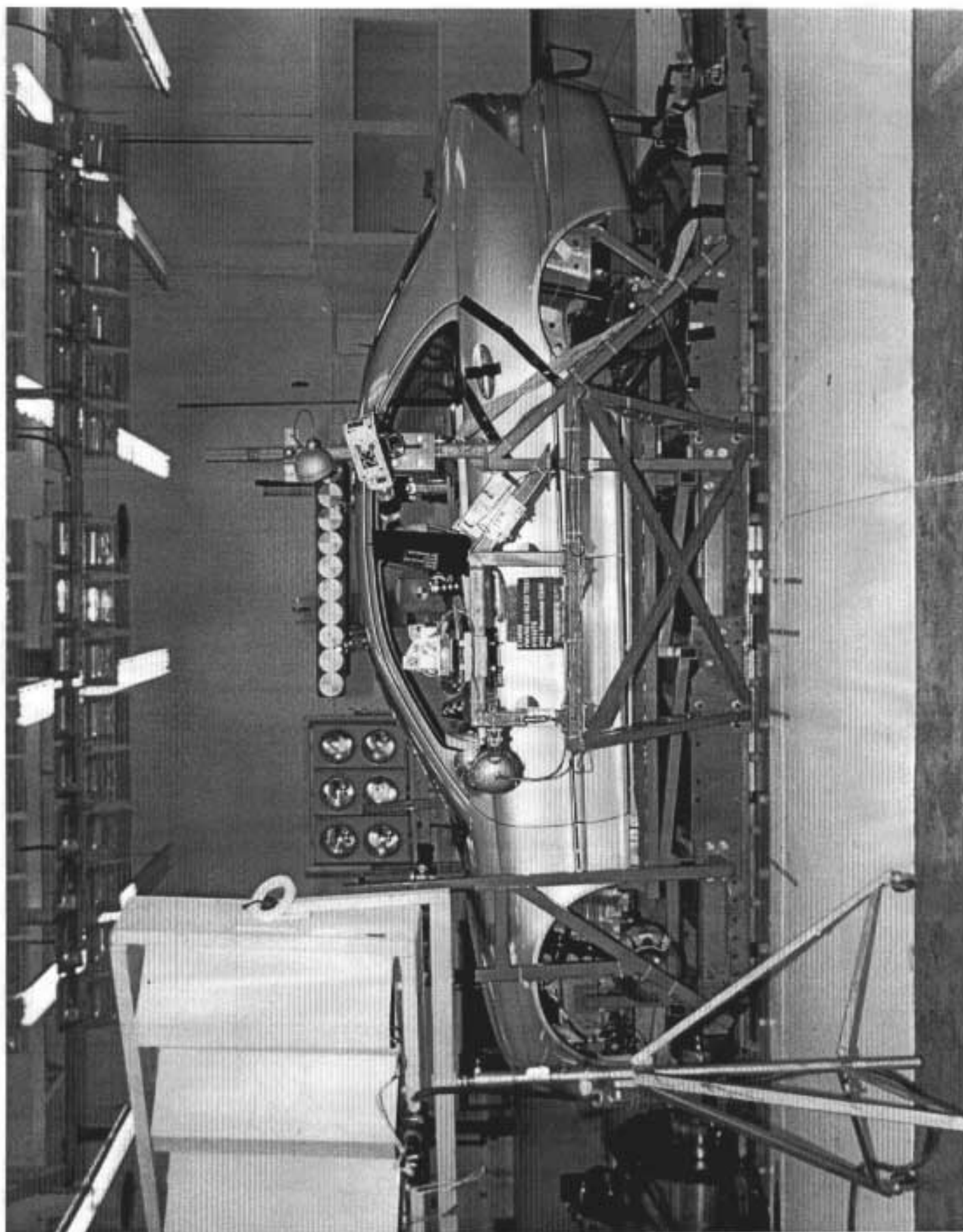


Figure A-2 Pre-Test Left Side View of Test Vehicle Mounted to Sled

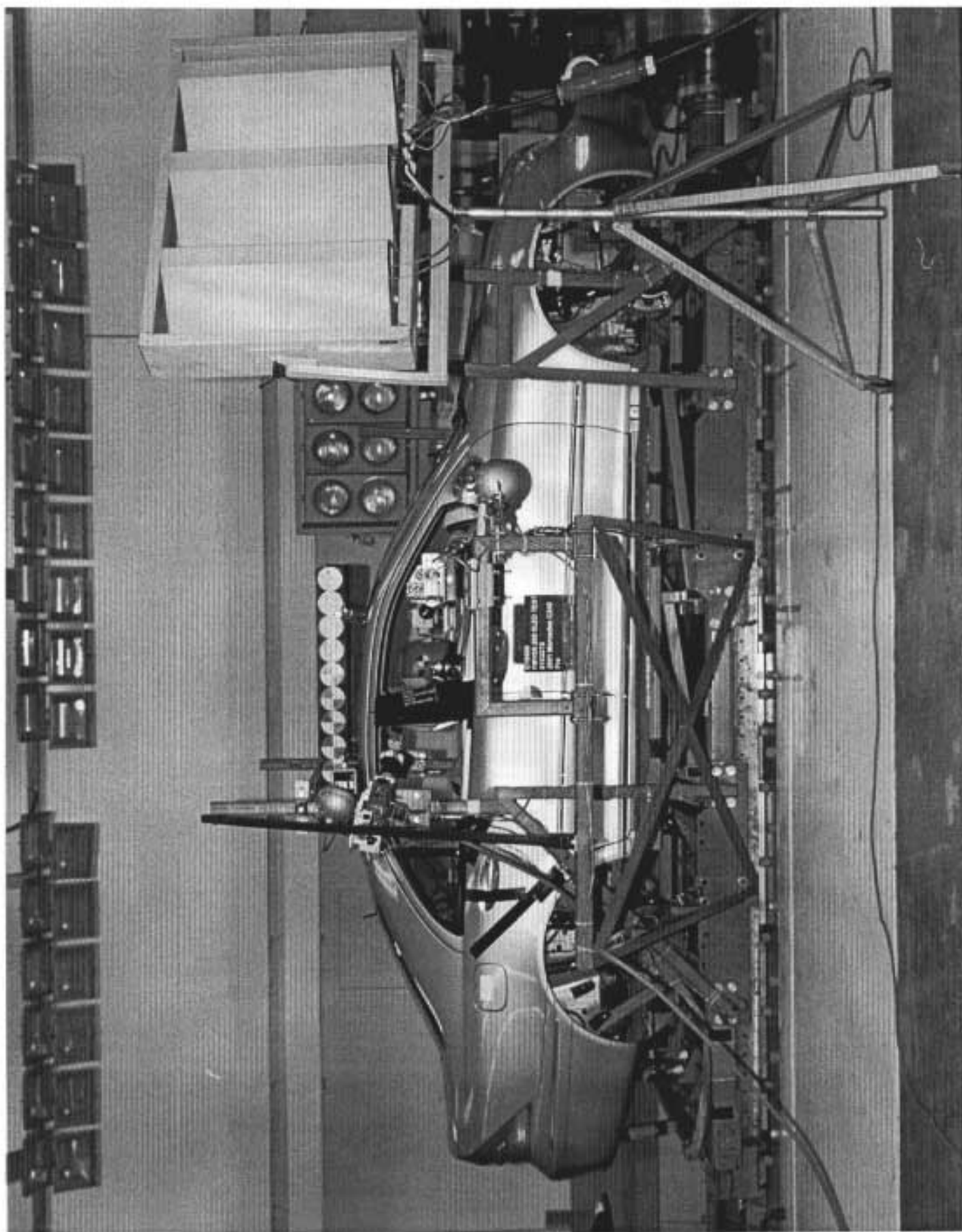


Figure A-3 Pre-Test Right Side View of Test Vehicle Mounted to Sled

A-4

S010327

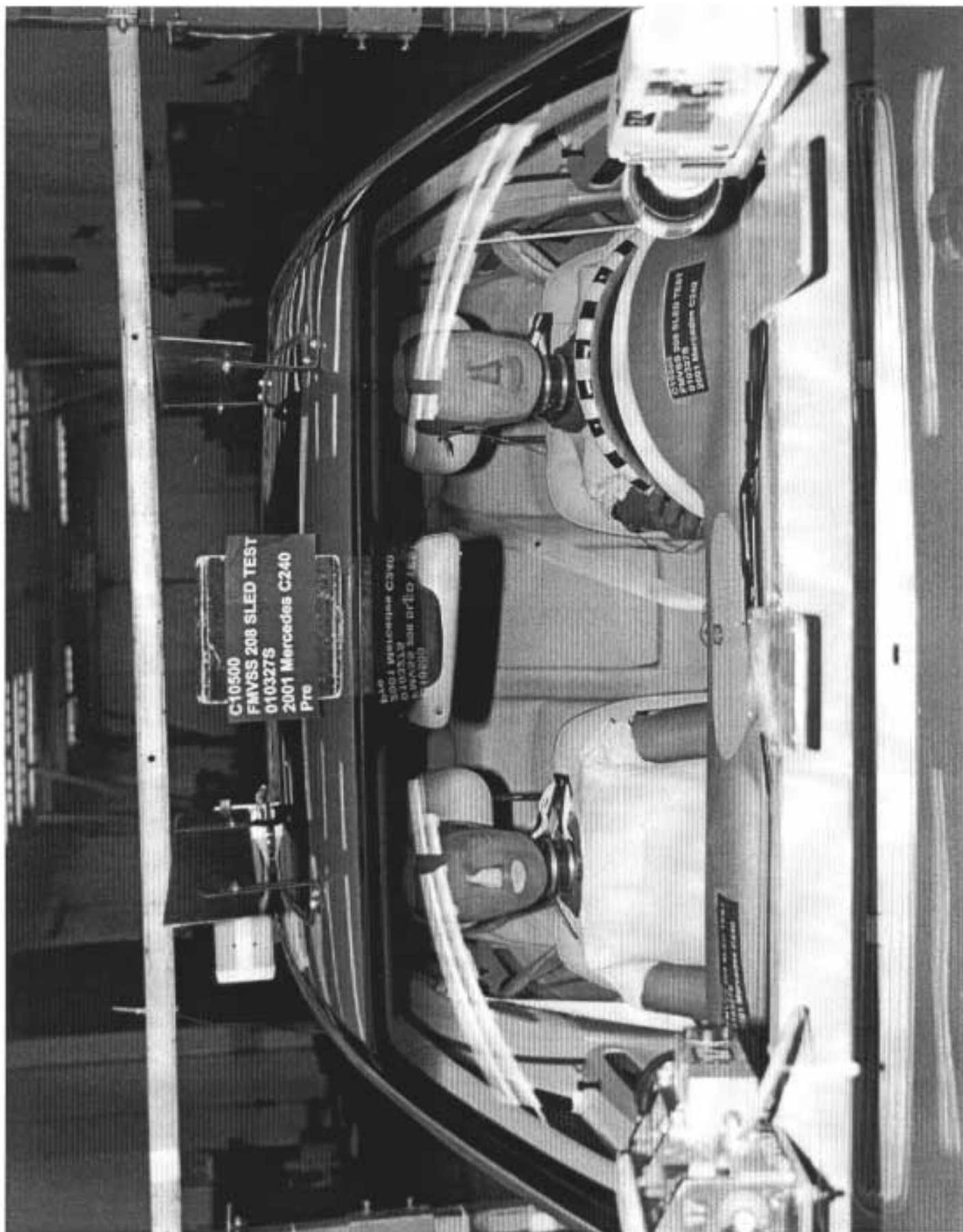


Figure A-4 Pre-Test Windshield View
A-5

S010327

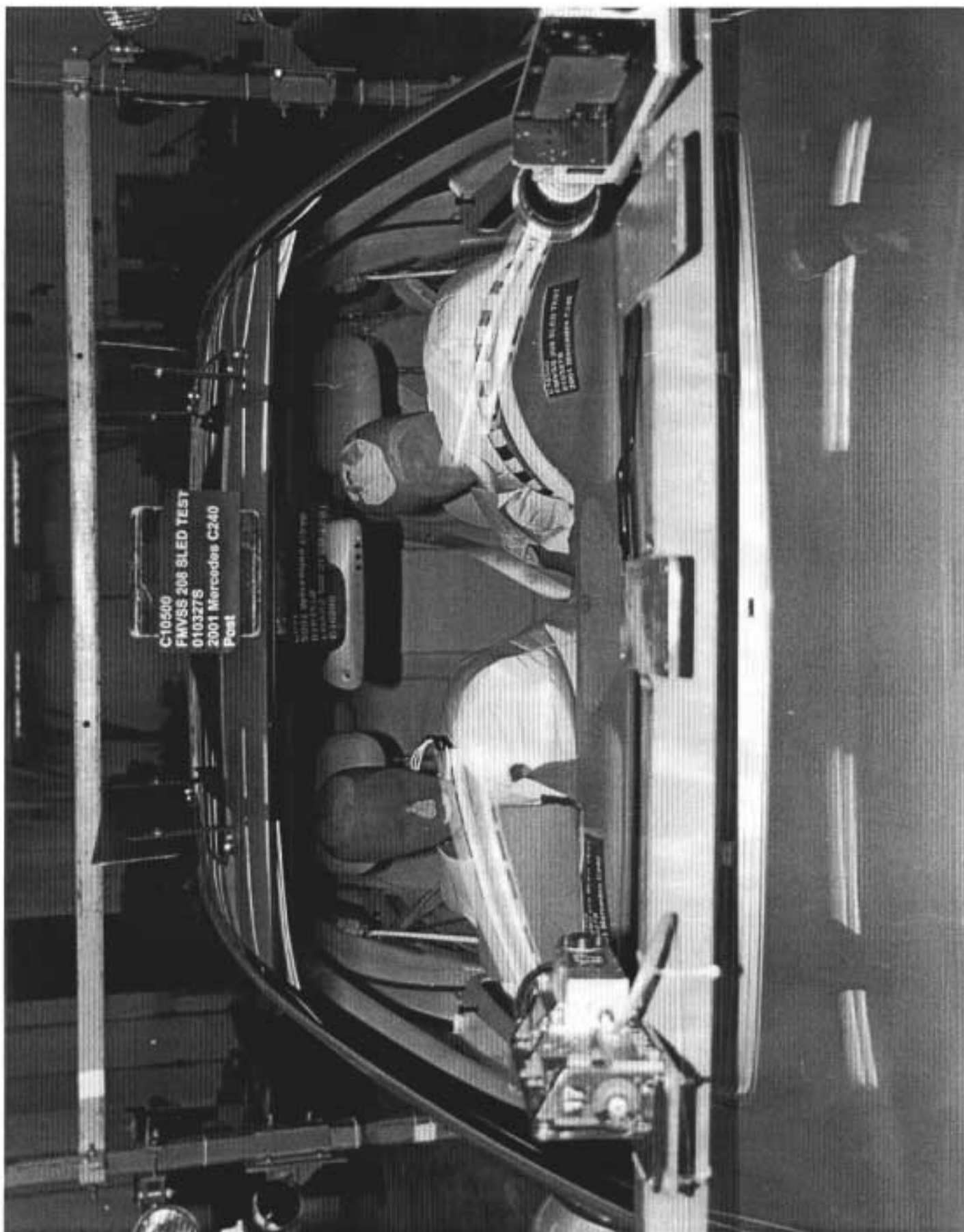


Figure A-5 Post-Test Windshield View
A-6

S010327



Figure A-6 Pre-Test Driver Dummy Position View with Door Open

A-7

S010327



Figure A-7 Post-Test Driver Dummy Position View with Door Open

A-8

S010327

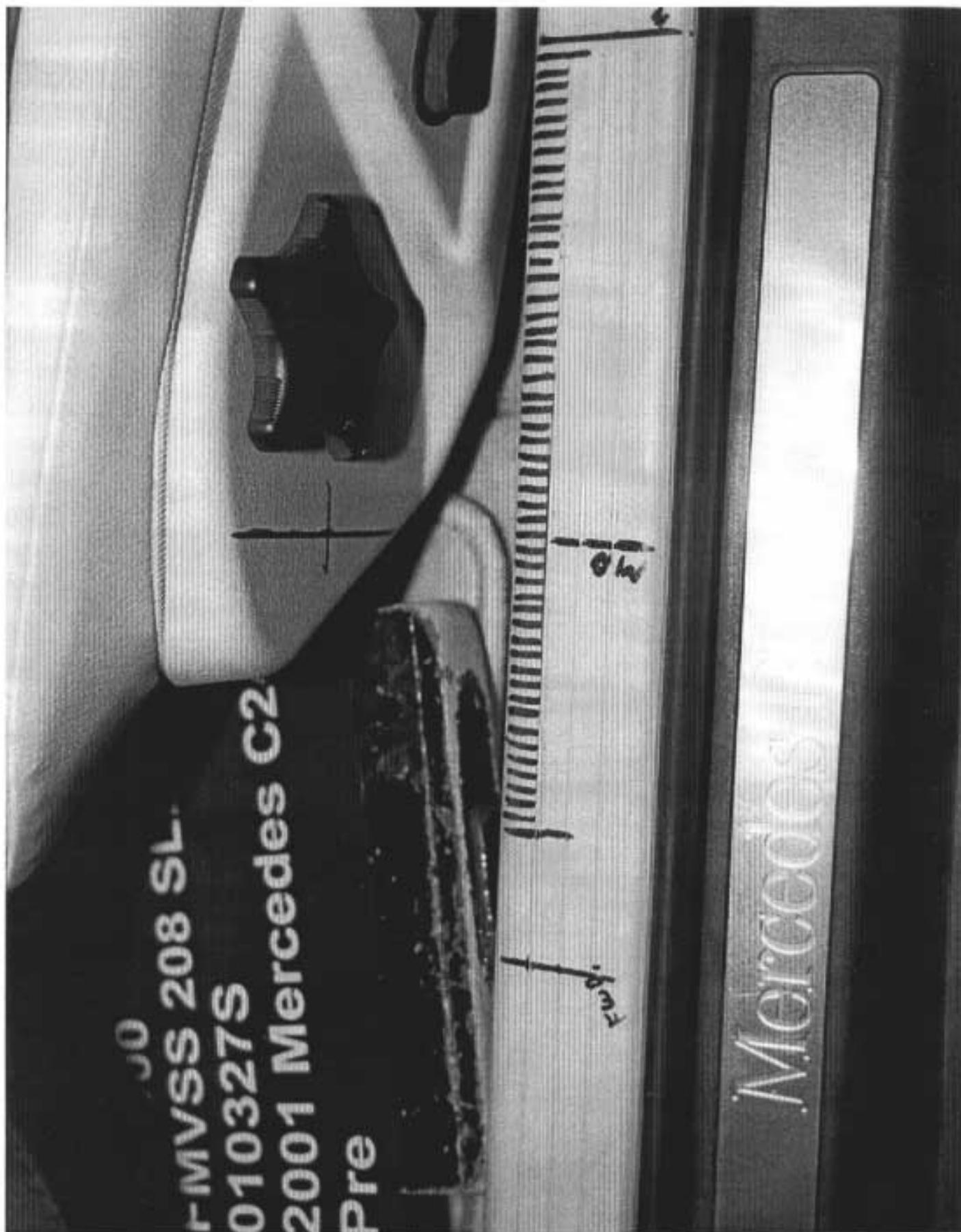


Figure A-8 Pre-Test Driver Seat Track Position View
A-9

S010327



Figure A-9 Post-Test Driver Seat Track Position View
A-10

S010327

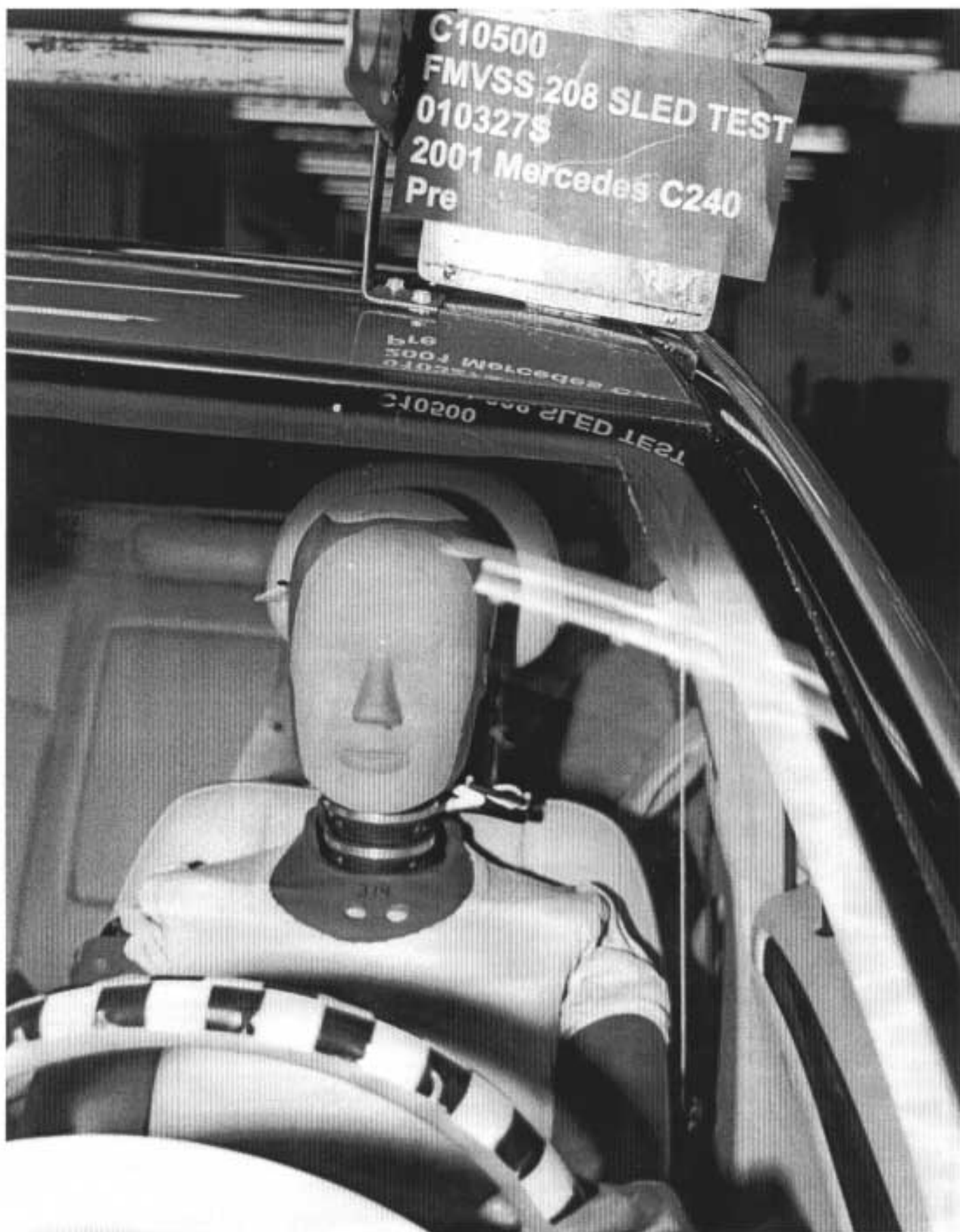


Figure A-10 Pre-Test Driver Dummy Position Front View
A-11

S010327

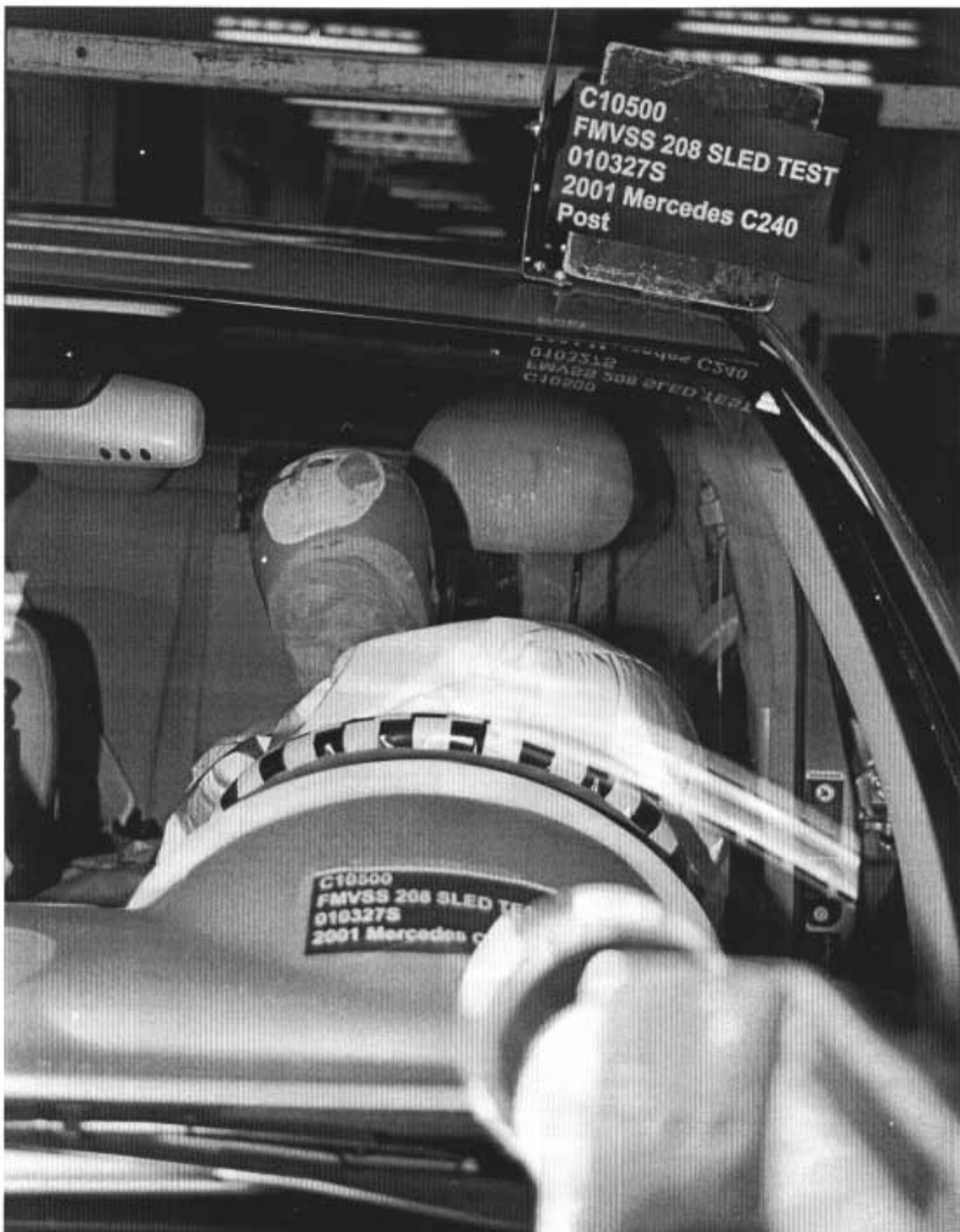


Figure A-11 Post-Test Driver Dummy Position Front View
A-12

S010327

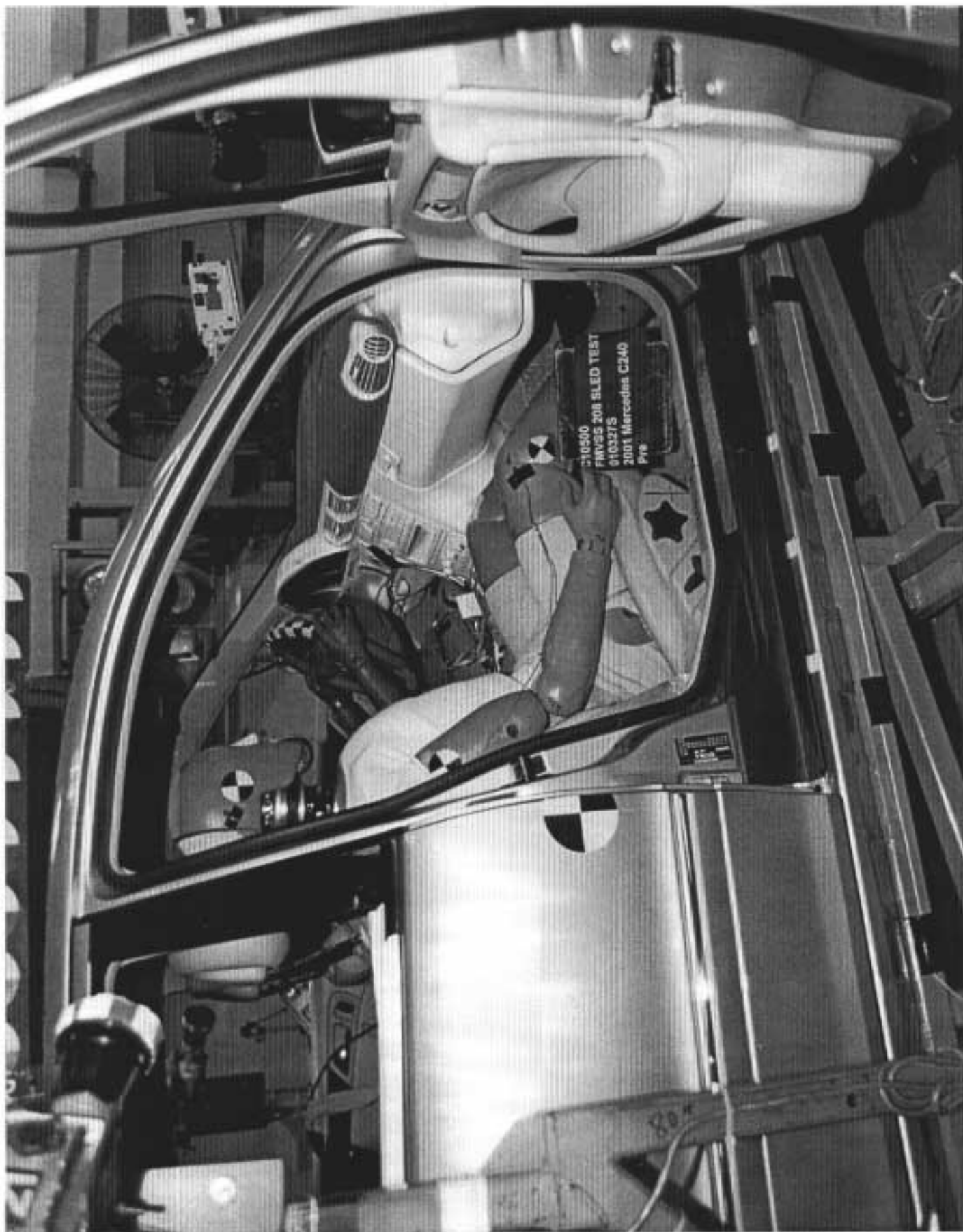


Figure A-12 Pre-Test Passenger Dummy Position View with Door Open

A-13

S010327



Figure A-13 Post-Test Passenger Dummy Position View with Door Open

A-14

S010327



Figure A-14 Pre-Test Passenger Seat Track Position View
A-15

S010327

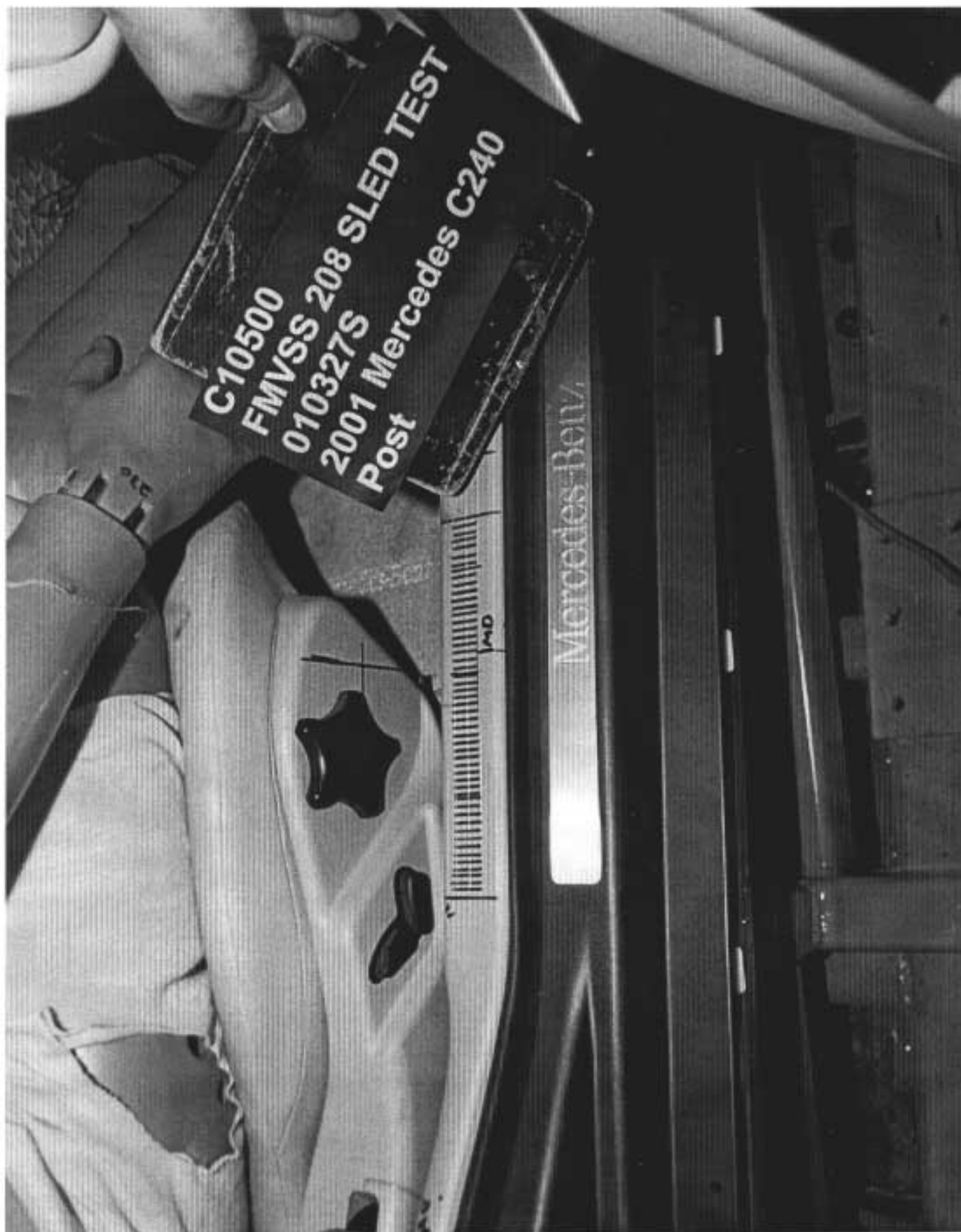


Figure A-15 Post-Test Passenger Seat Track Position View



Figure A-16 Pre-Test Passenger Dummy Position Front View



Figure A-17 Post-Test Passenger Dummy Position Front View



Figure A-18 Post-Test Driver Airbag View
A-19

S010327



C10500
FMVSS 208 SLED TEST
010327S
2001 Mercedes C240
Post

Figure A-19 Post-Test Driver Dummy Removed from Vehicle Overall View

A-20

S010327



Figure A-20 Post-Test Driver Dummy Head Contact View



Figure A-21 Post-Test Passenger Airbag View
A-22

S010327



Figure A-22 Post-Test Passenger Dummy Removed from Vehicle Overall View
A-23 S010327

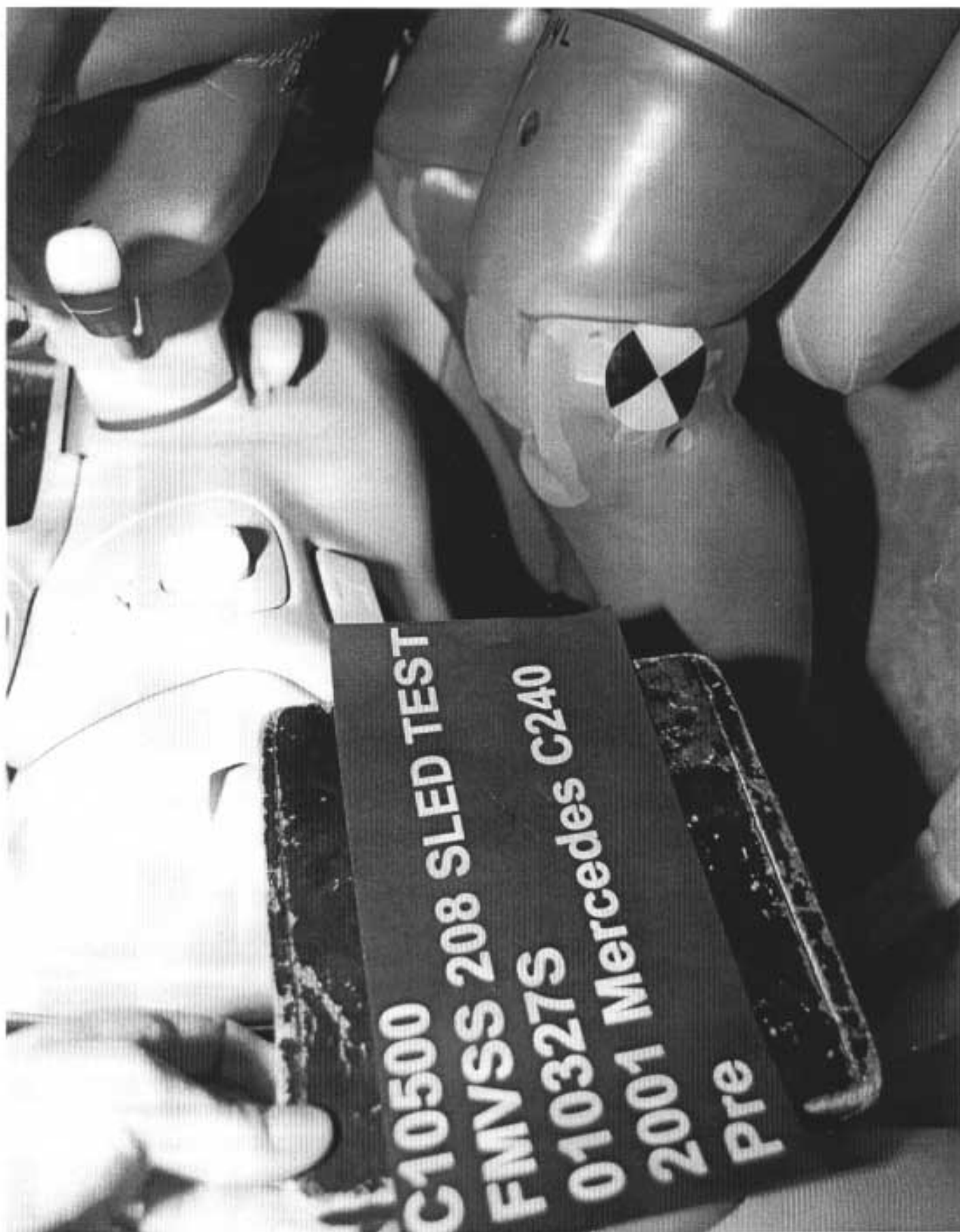


Figure A-23 Pre-Test Driver Knee Bolster View
A-24

S010327

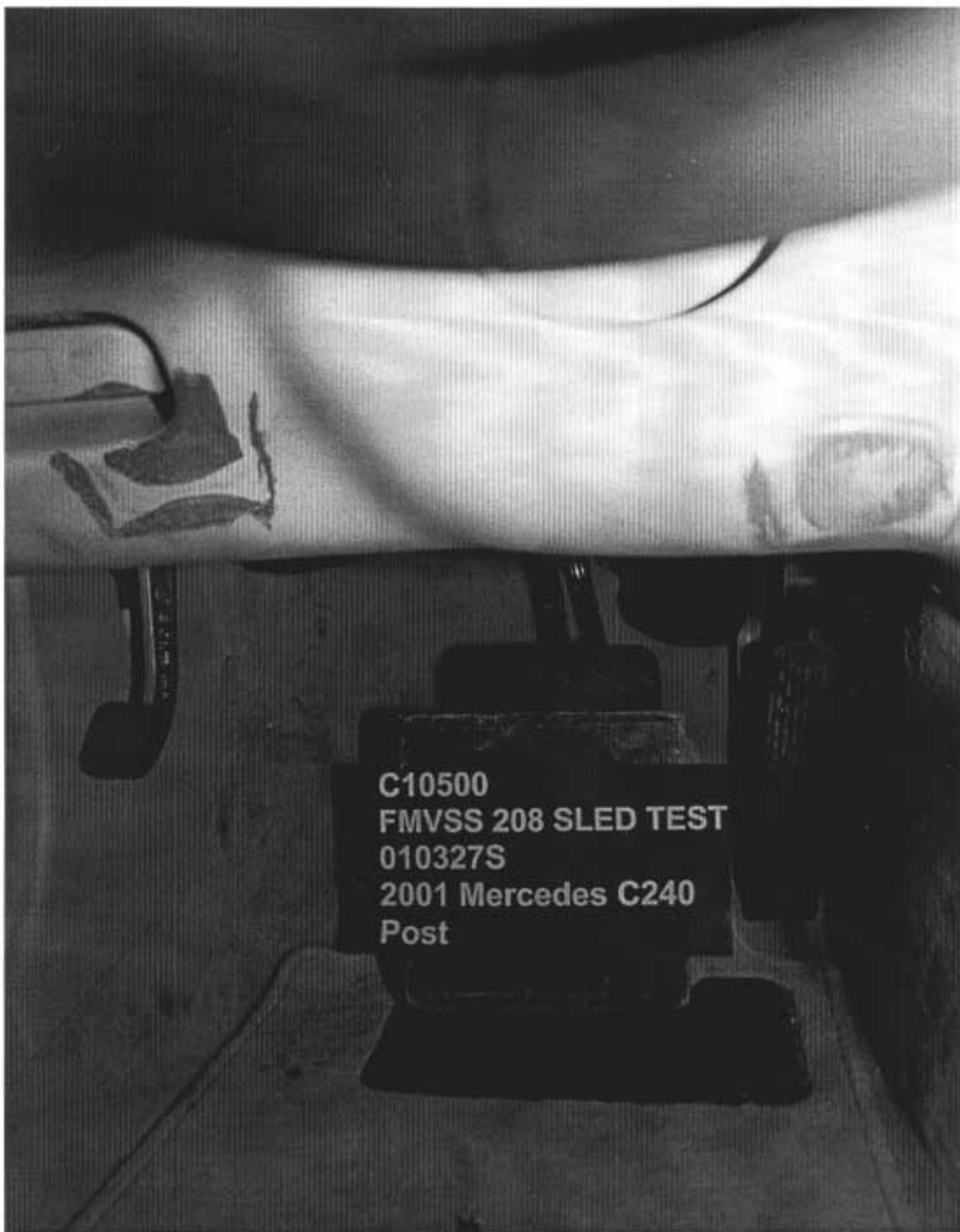


Figure A-24 Post-Test Driver Knee Bolster View
A-25

S010327



Figure A-25 Pre-Test Passenger Glove Box View
A-26

S010327

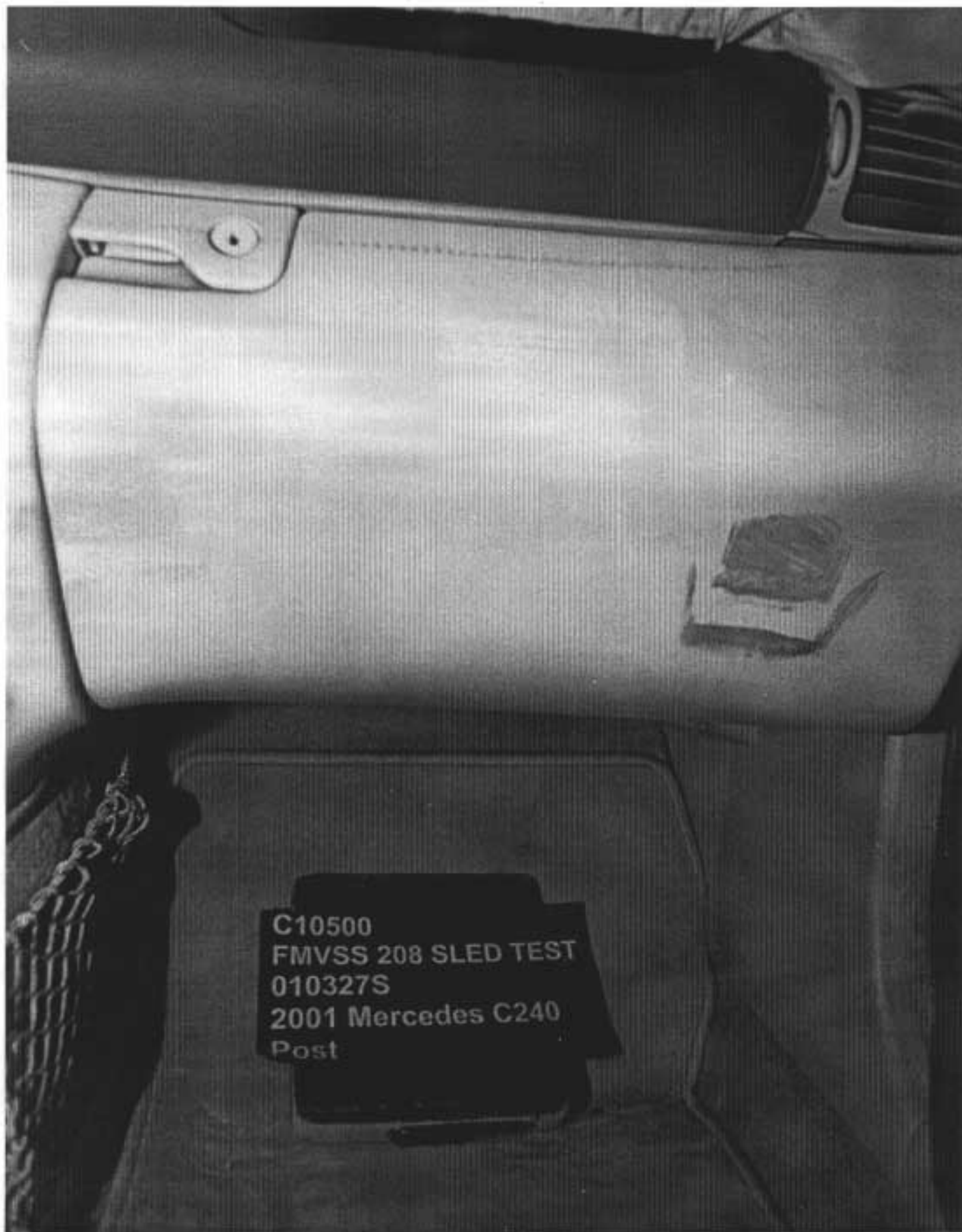


Figure A-26 Post-Test Passenger Glove Box View
A-27

S010327

MFD BY DAIMLERCHRYSLER AG STUTTGART

GVWR	KG	LBS	PASSENGER CAR	MADE IN GERMANY	01/01
	1975	4350	THIS VEHICLE CONFORMS TO ALL APPLICABLE		
GAWR FRONT	965	2125	U.S. FEDERAL MOTOR VEHICLE SAFETY BUMPER		
GAWR REAR	1010	2225	AND THEFT PREVENTION STANDARDS IN EFFECT		
			ON THE DATE OF MANUFACTURE SHOWN ABOVE		
WDBRF61J11F072533			693		

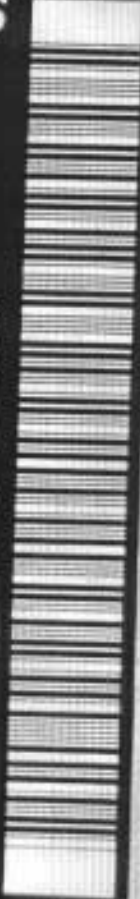


Figure A-27 Pre-Test Vehicle Certification Label View
A-28

S010327

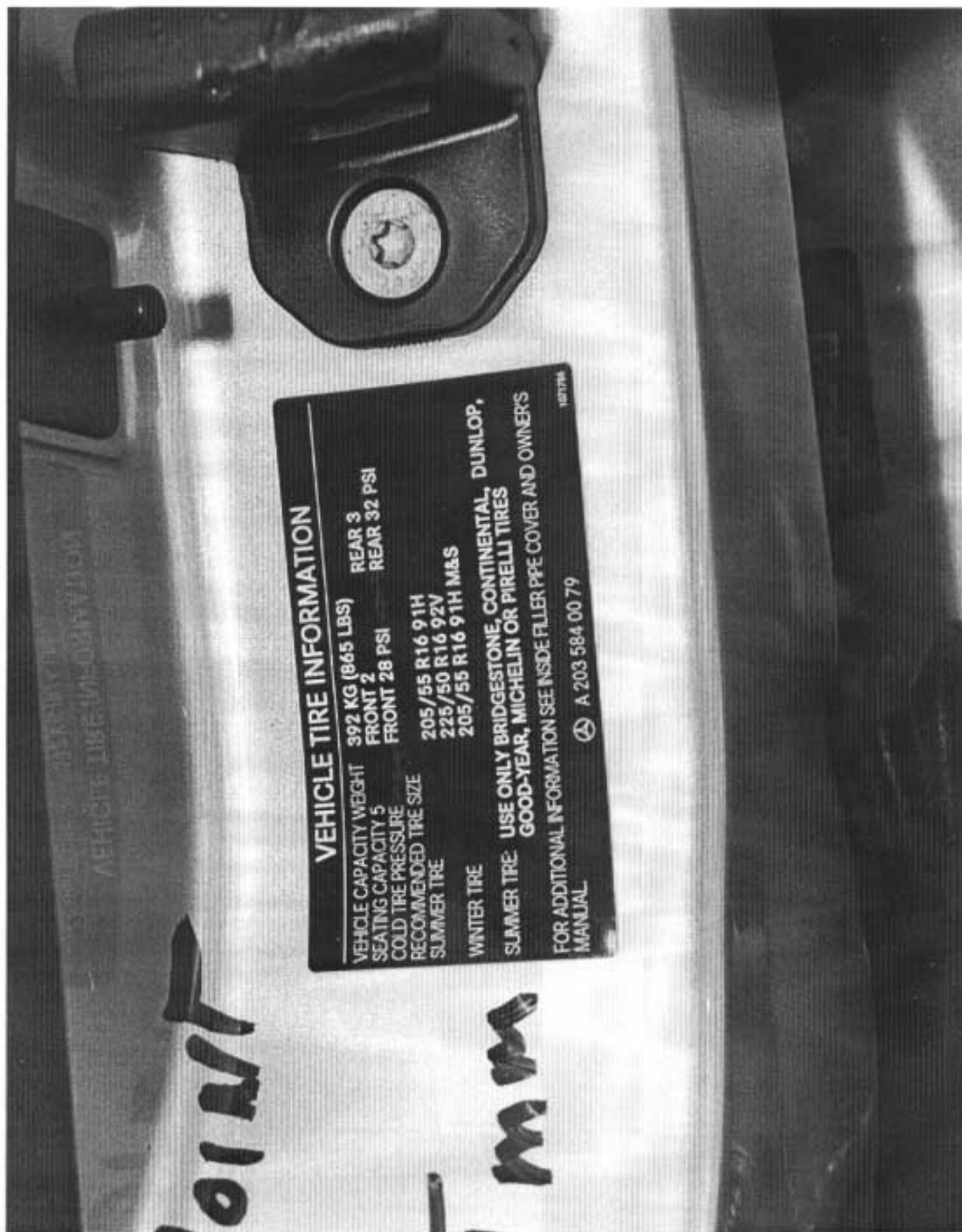


Figure A-28 Pre-Test Vehicle Tire Information Label View

Appendix B

Data Plots

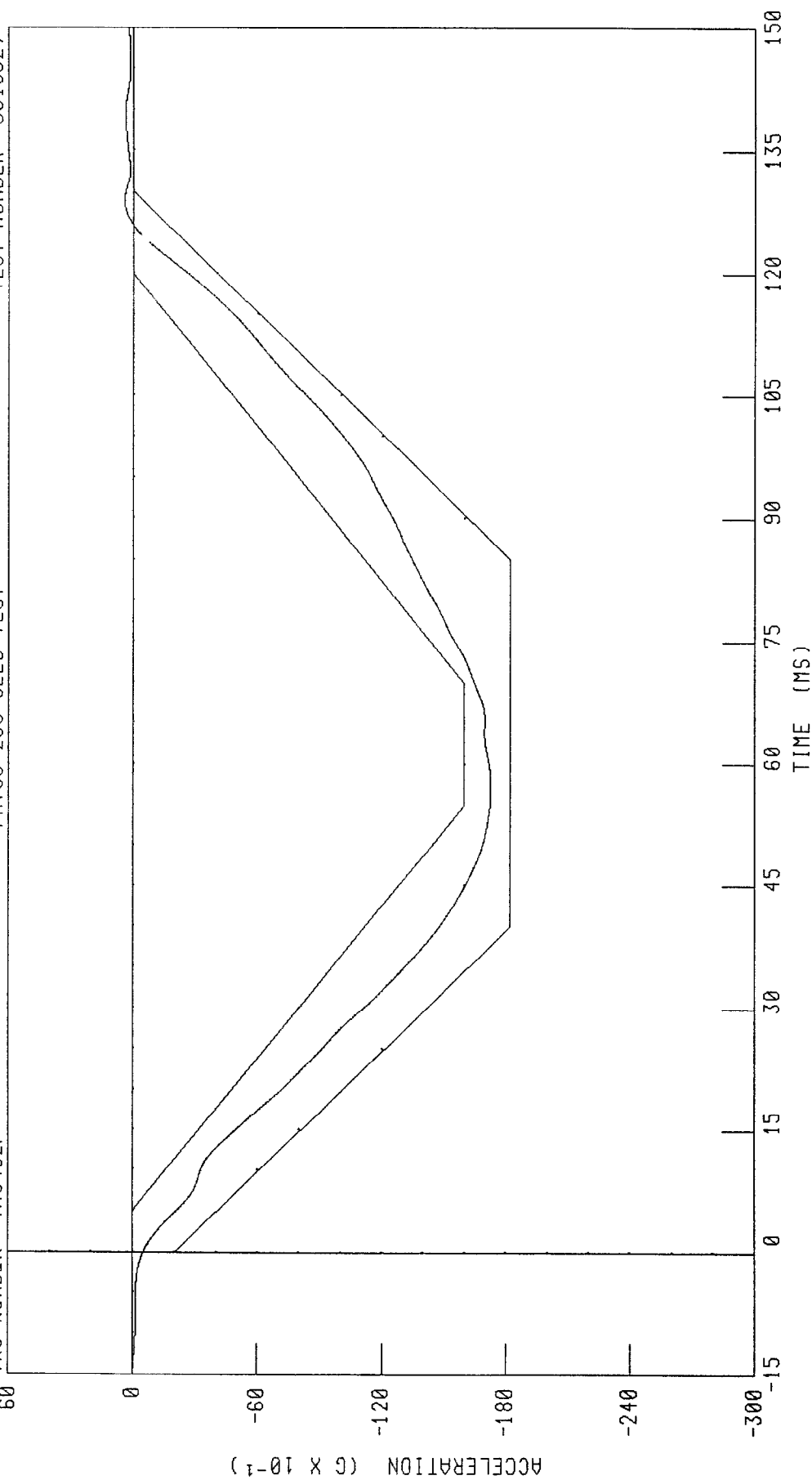
C10500 / 2001 MERCEDES C240

SLED ACCELERATION

FMVSS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327



CHANNEL SLDXC FILTER CH CLASS 60

PEAK DATA 0 43 G @ 128 88 MS, -17 28 G @ 57 20 MS

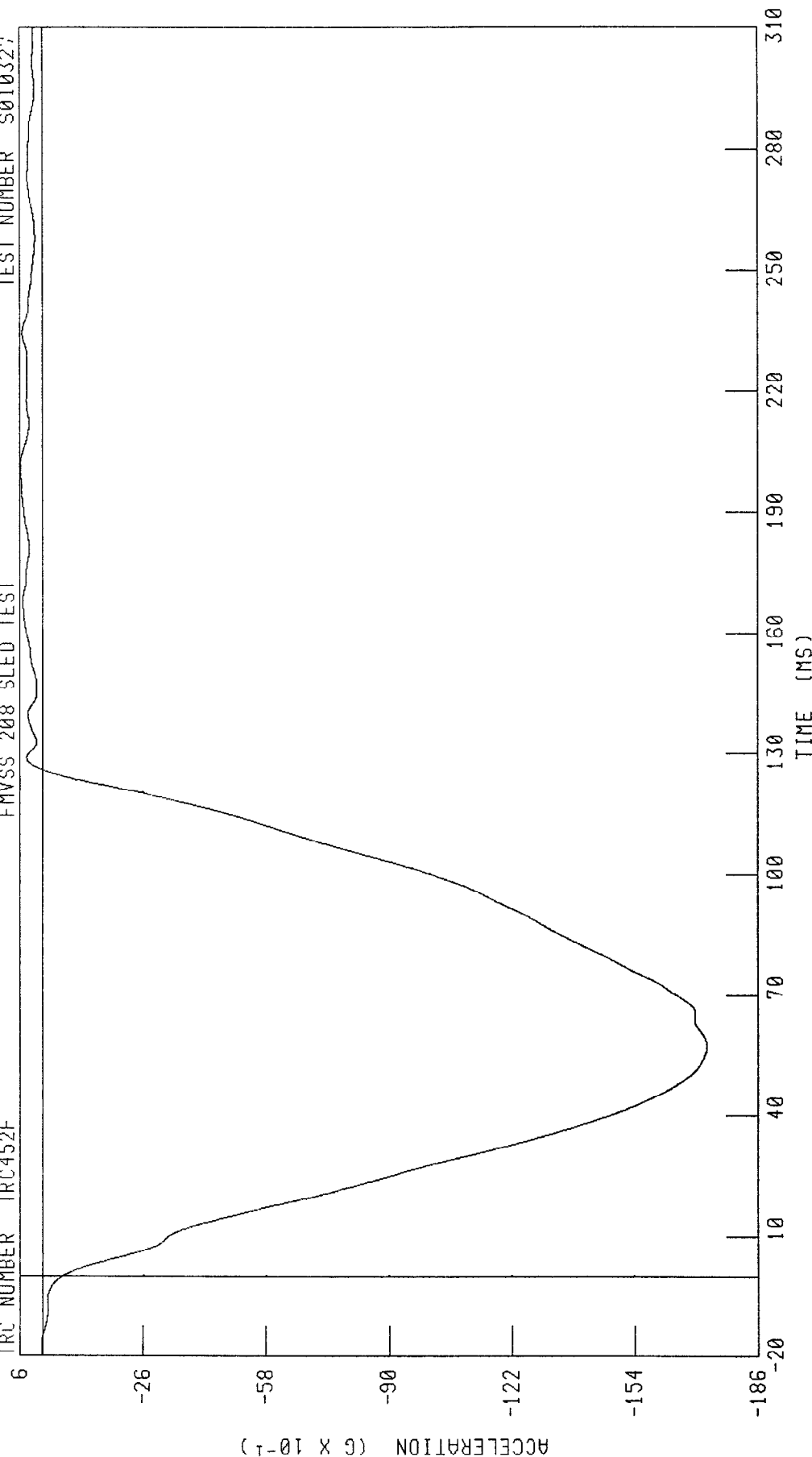
C10500 / 2001 MERCEDES C240

SLED ACCELERATION

FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F



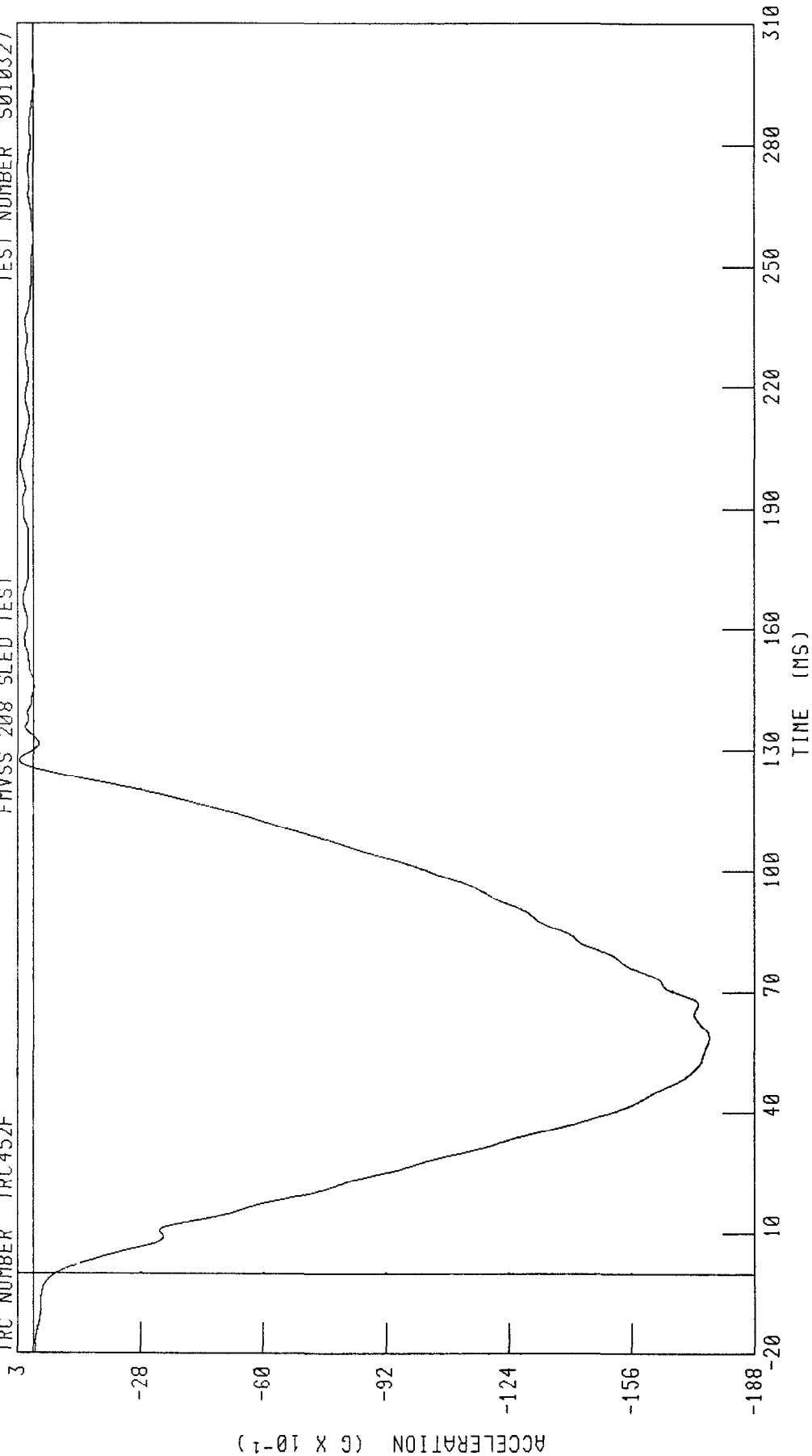
PEAK DATA 0 58 G 0 201 68 MS, -17 28 G 0 57 20 MS

CHANNEL SLDXC FILTER CH CLASS 60

C10500 / 2001 MERCEDES C240
SLED ACCELERATION - EACKUP
FMVSS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327



CHANNEL SLDXCA FILTER CH CLASS 60

PEAK DATA 0 36 G 0 127 52 MS, -17 63 G 0 58 48 MS

C10500 / 2001 MERCEDES C240

MEASURED VELOCITY TRAP

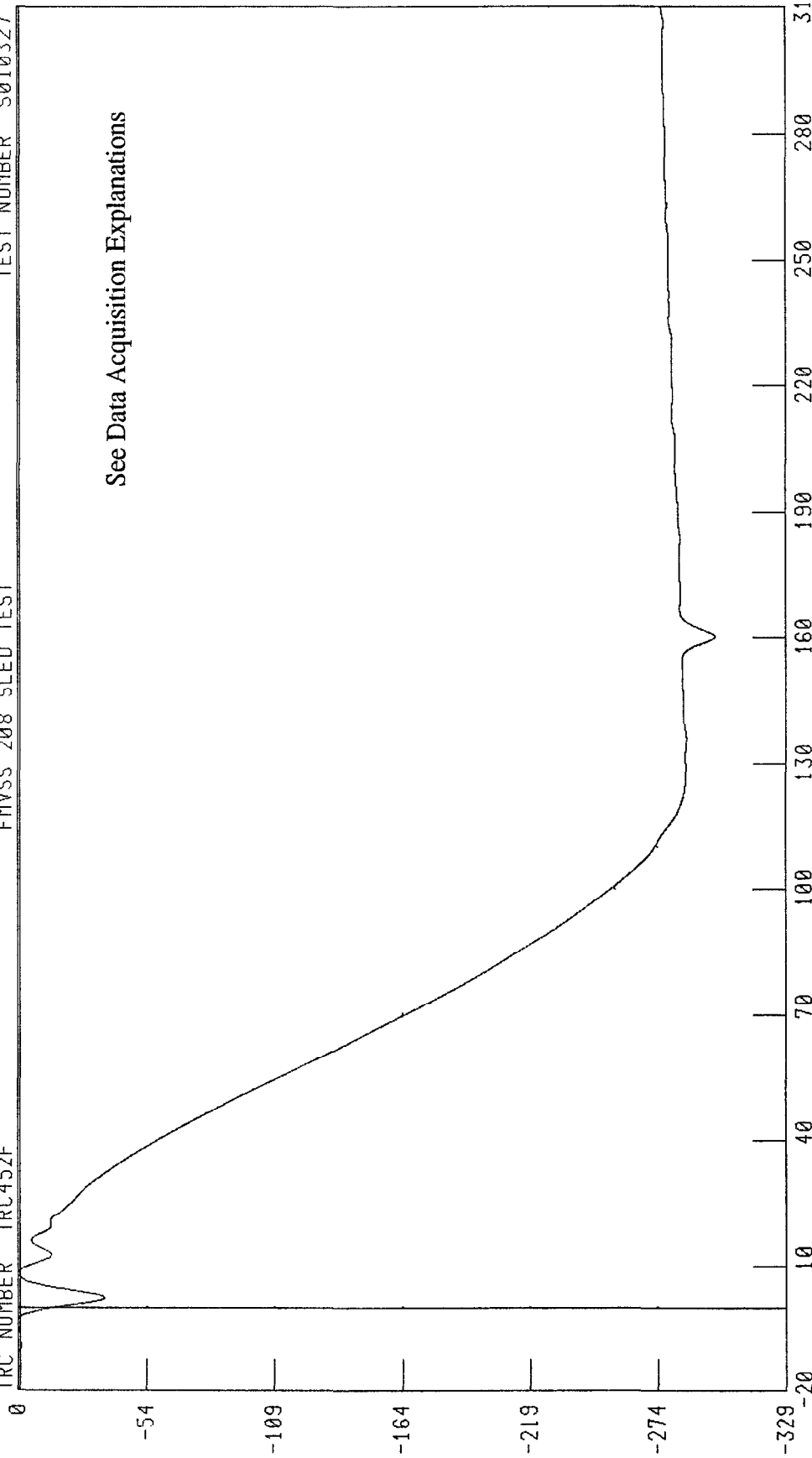
FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F

See Data Acquisition Explanations

VELOCITY (MPH X 10⁻¹)



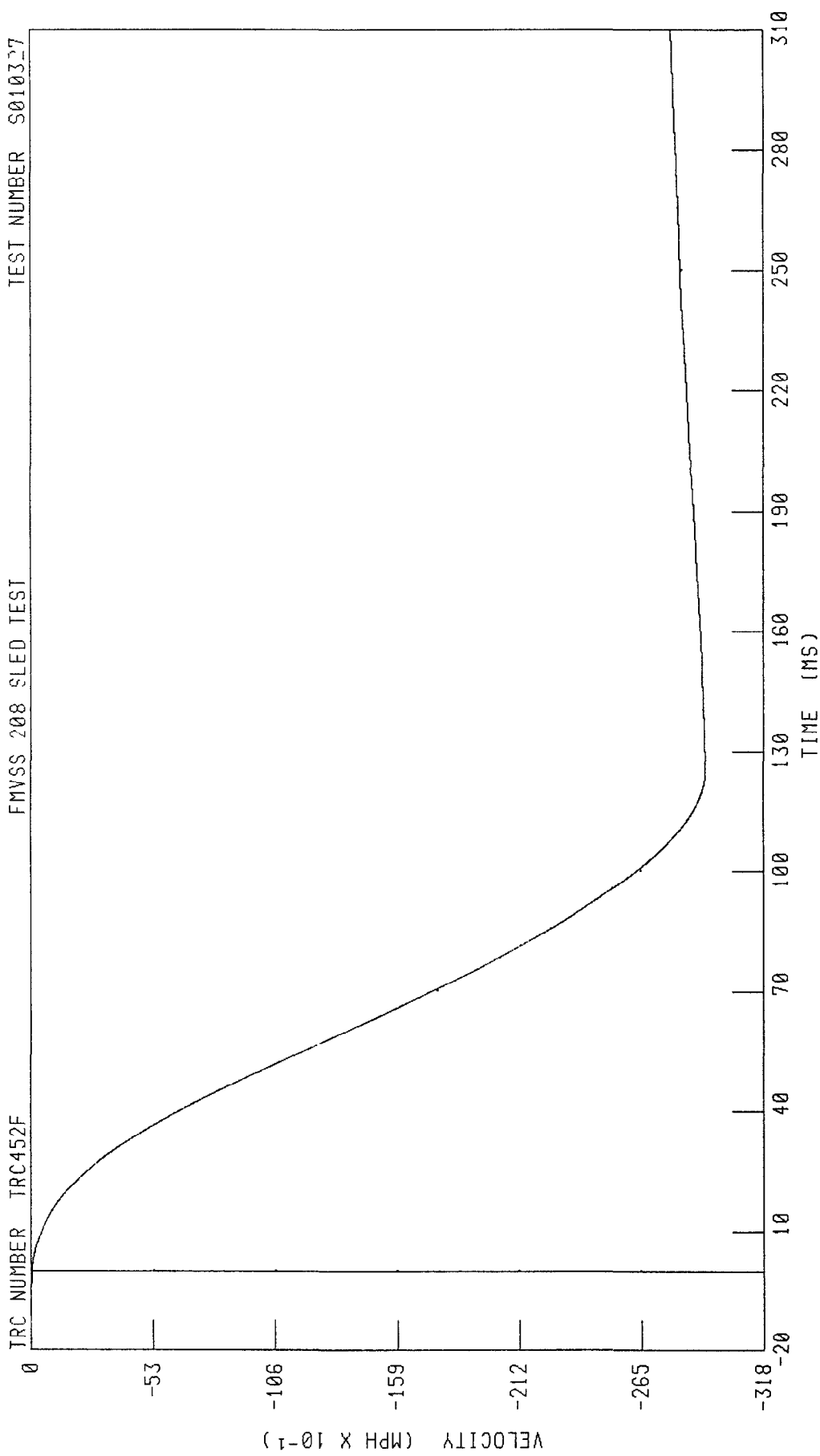
TIME (MS)

PEAK DATA 0 16 MPH @ -3 44 MS, -29 88 MPH @ 160 32 MS

CHANNEL SLDXV FILTER CH CLASS 60

C10500 / 2001 MERCEDES C240
SLED VELOCITY (INTEGRATED)
FMVSS 208 SLED TEST

TRC NUMBER TRC452F TEST NUMBER S010327



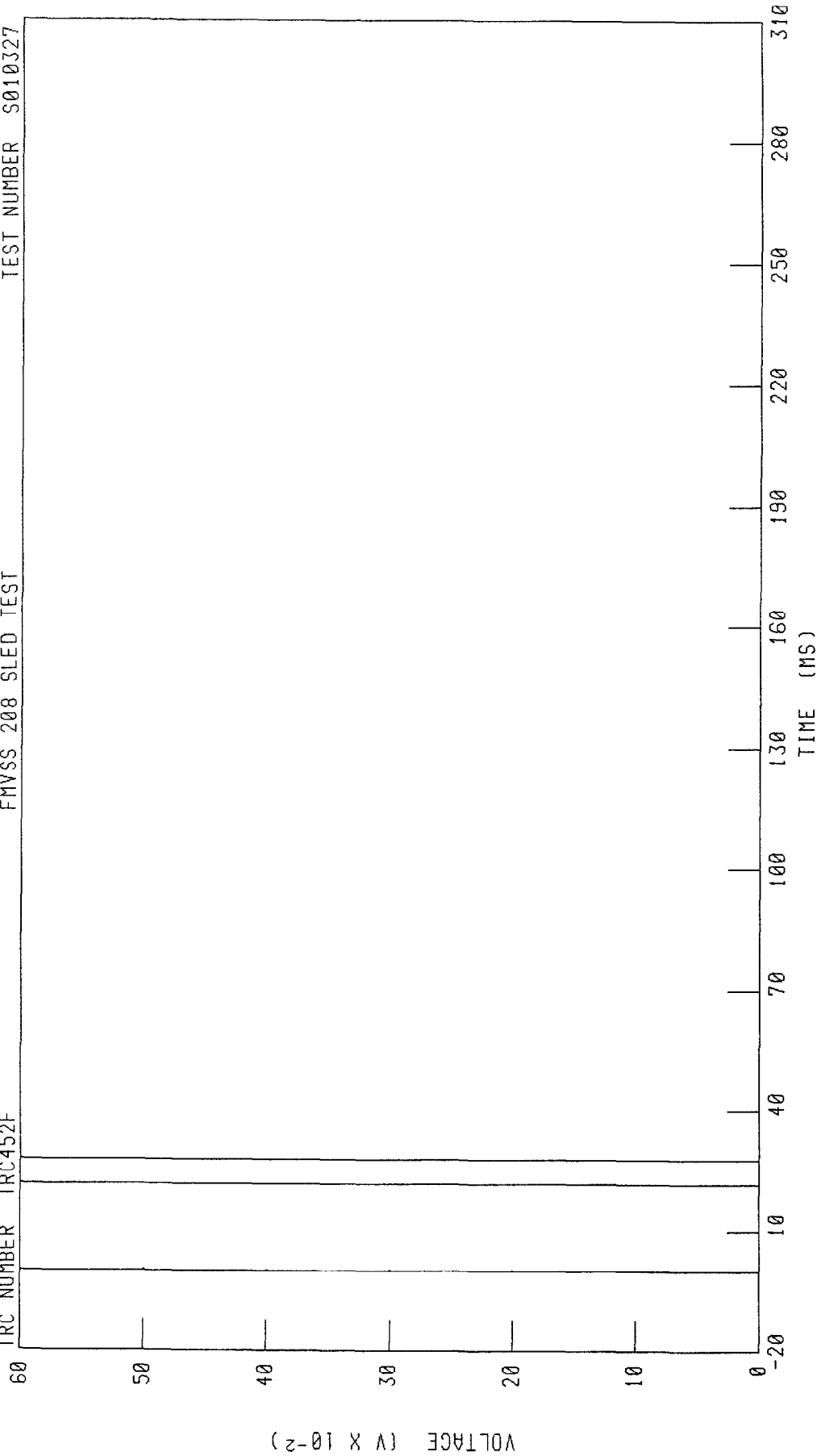
PEAK DATA 0 02 MPH @ -14 64 MS, -29 30 MPH @ 125 68 MS

CHANNEL SLDXVI FILTER CH CLASS 180

C10500 / 2001 MERCEDES C240
DRIVER PRIMARY AIRBAG EVENT
FMVSS 208 SLED TEST

TEST NUMBER S010327

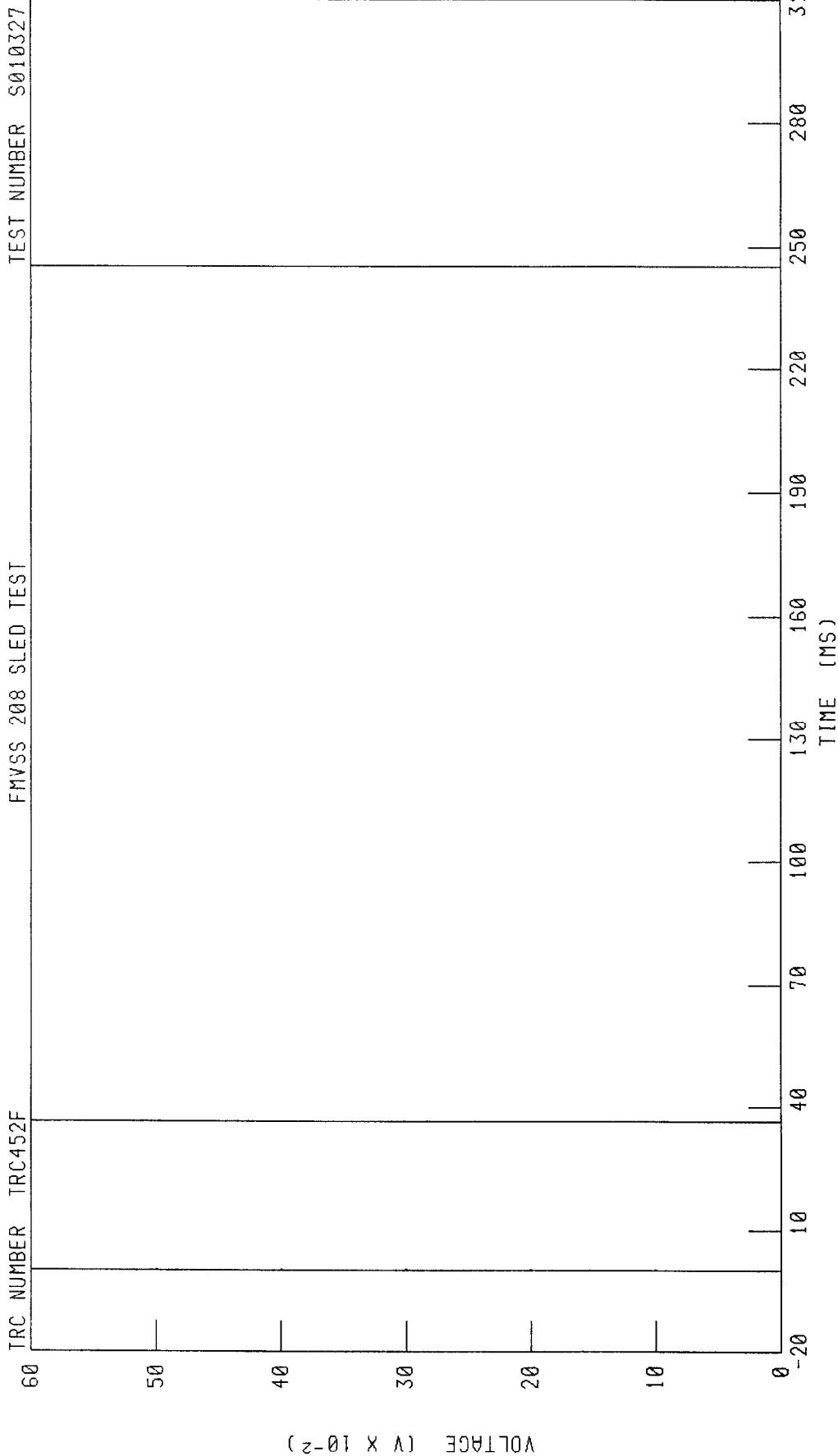
TRC NUMBER TRC452F



PEAK DATA 1 00 V @ 21 36 MS, 0 00 V @ -20 00 MS

CHANNEL ABEVT1 FILTER CH CLASS 1000

C10500 / 2001 MERCEDES C240
DRIVER SECONDARY AIRBAG EVENT
FMVSS 208 SLED TEST

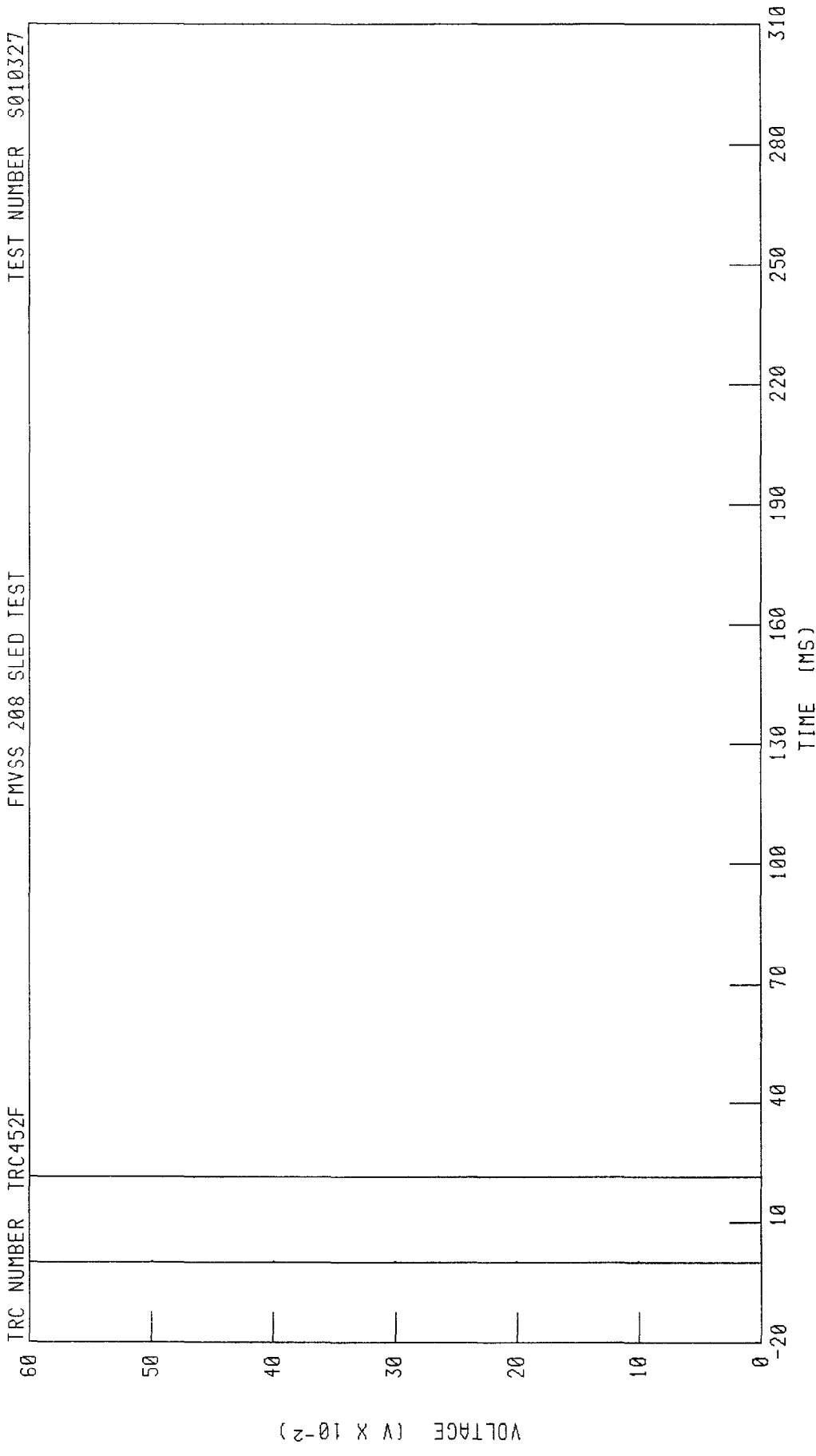


CHANNEL ABEVT2 FILTER CH CLASS 1000

C10500 / 2001 MERCEDES C240
PASSENGER PRIMARY AIRBAG EVENT
FMVSS 208 SLED TEST

TEST NUMBER S010327

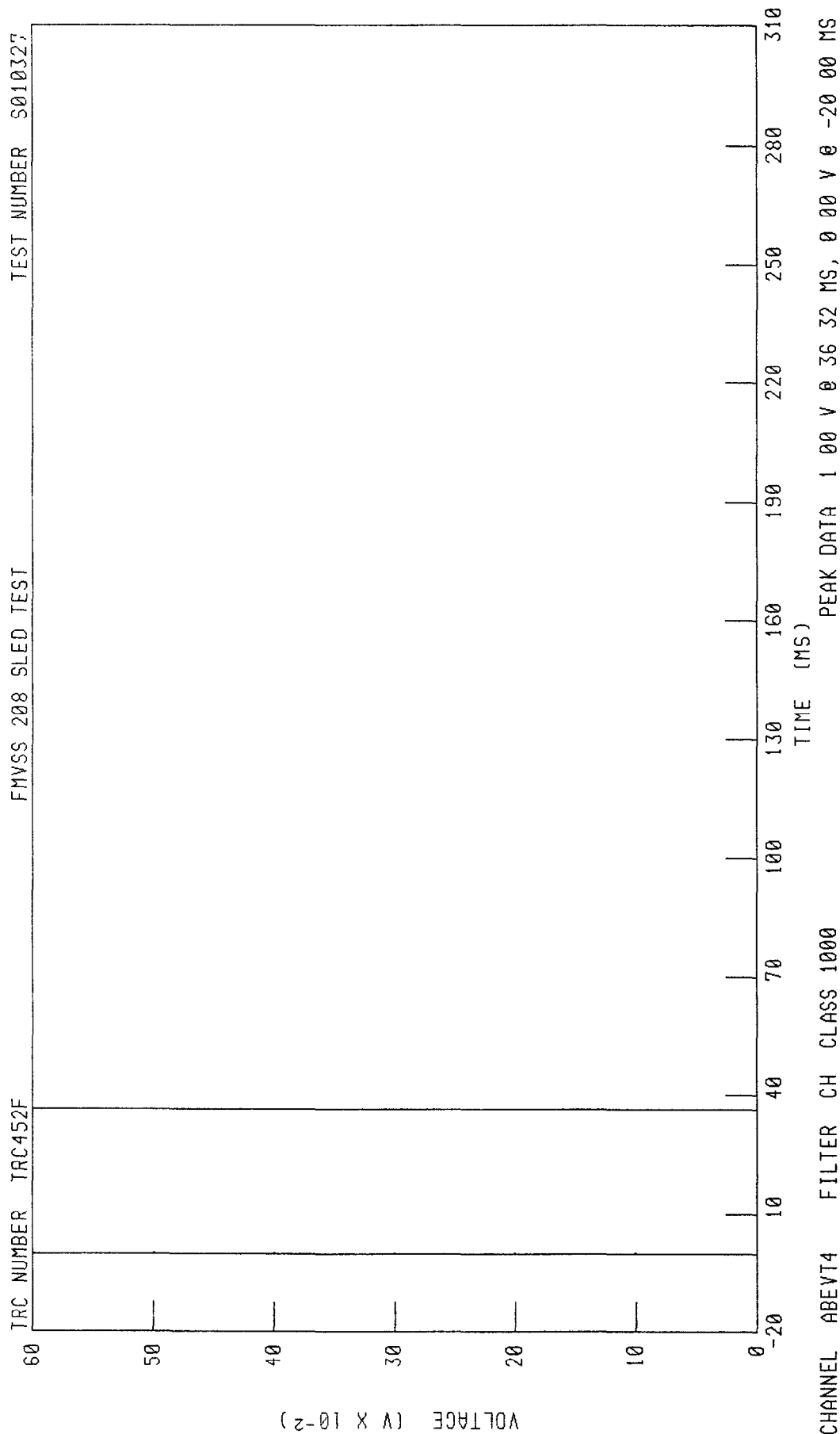
TRC NUMBER TRC452F



PEAK DATA 1 00 V @ 21 36 MS, 0 00 V @ -20 00 MS

CHANNEL ABEVT3 FILTER CH CLASS 1000

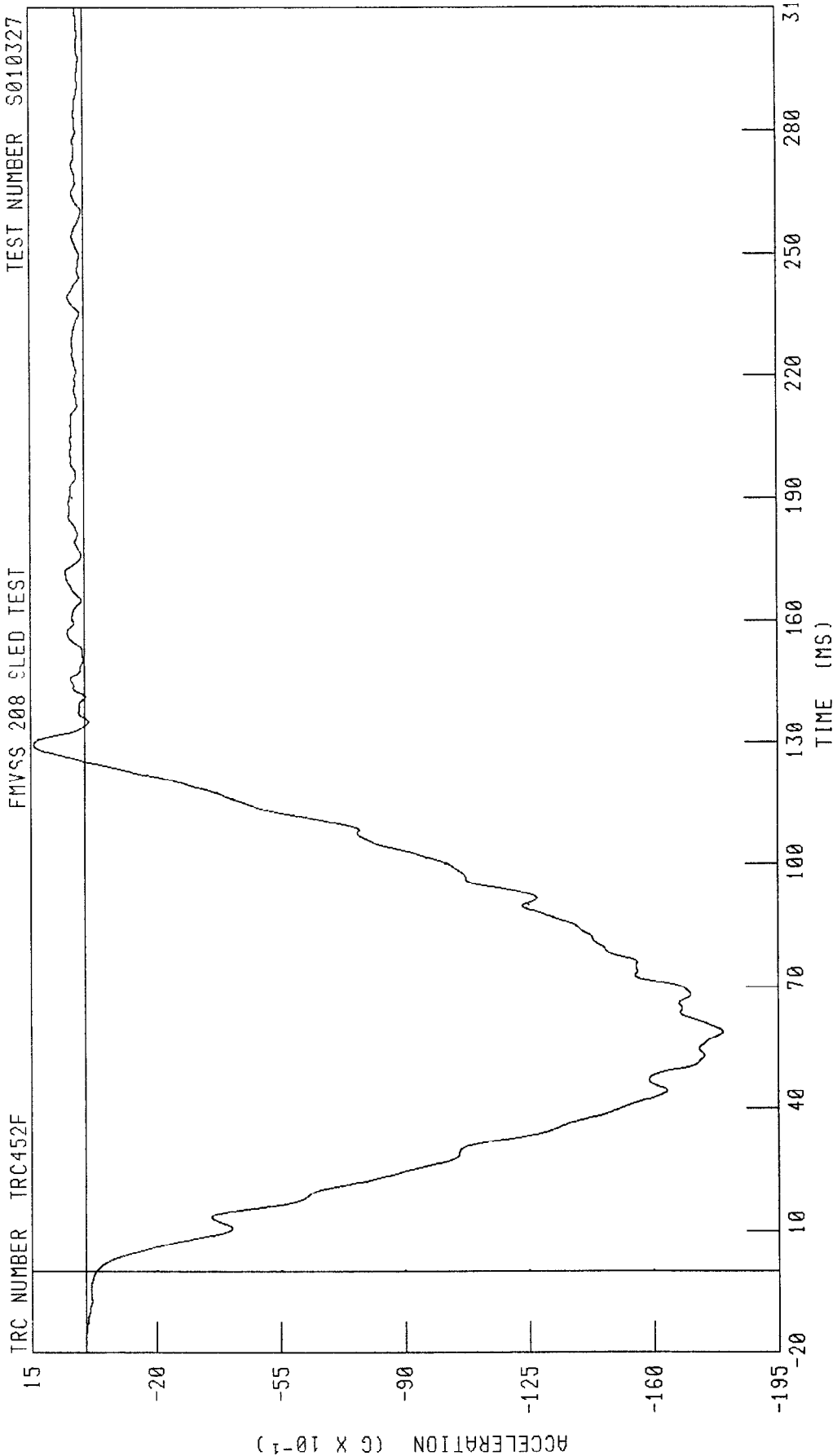
C10500 / 2001 MERCEDES C240
 PASSENGER SECONDARY AIRBAG EVENT
 FMVSS 208 SLED TEST



C10500 / 2001 MERCEDES C240
REAR AXLE X-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010327

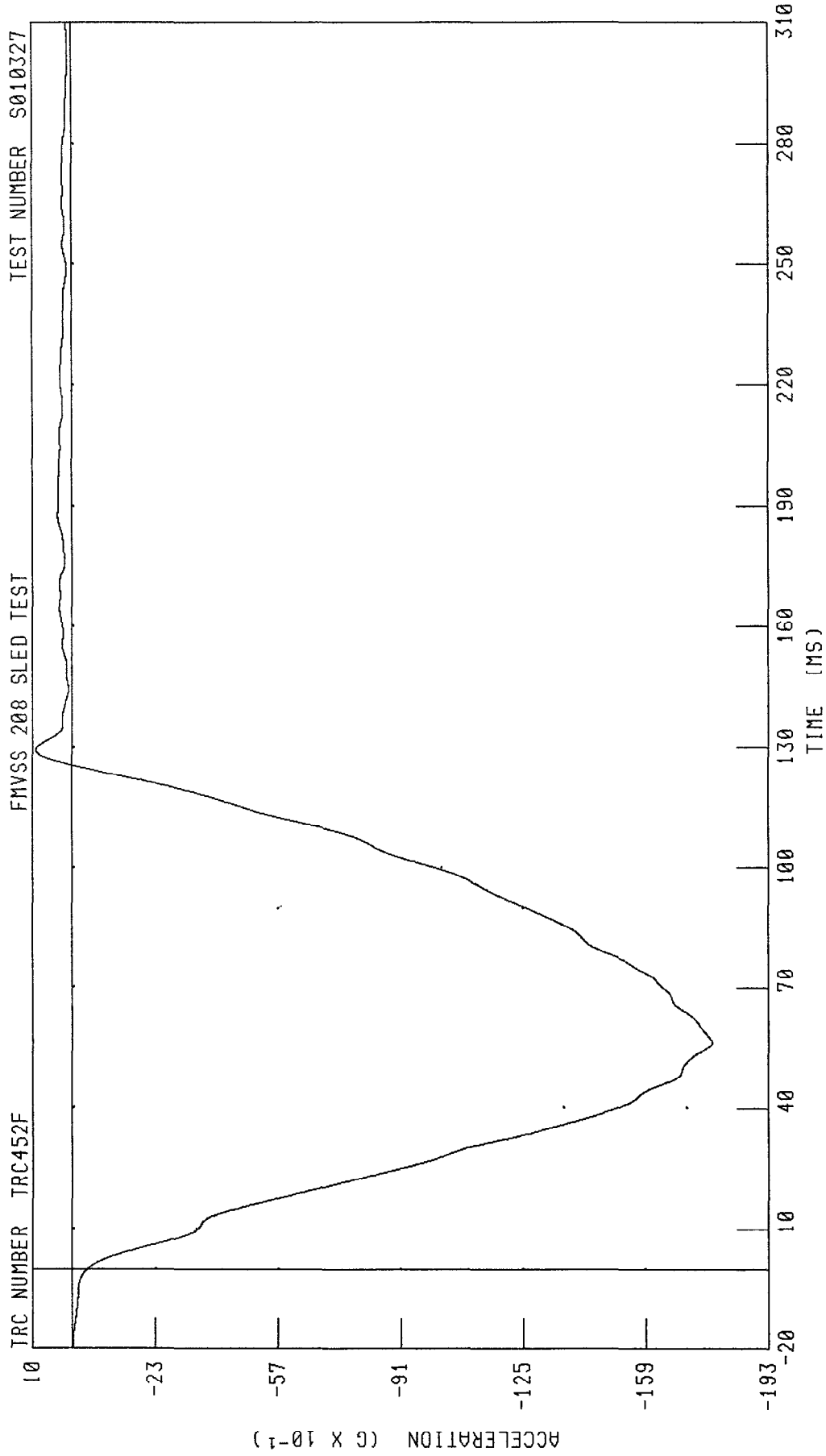
TRC NUMBER TRC452F



PEAK DATA 1 42 G 0 129 52 MS, -17 96 G 0 58 72 MS

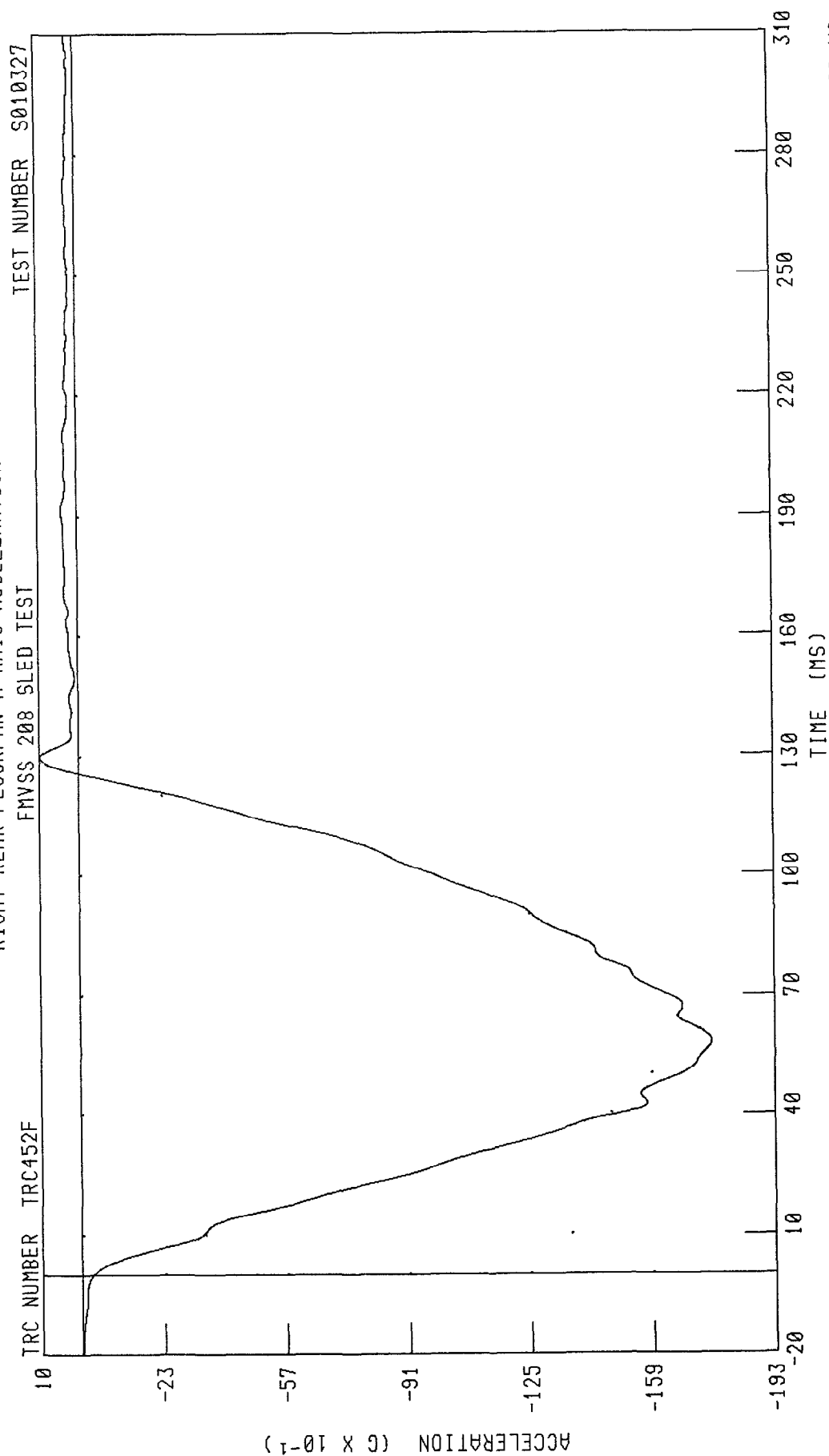
CHANNEL RAXG FILTER CH CLASS 60

C10500 / 2001 MERCEDES C240
 LEFT REAR FLOORPAN X-AXIS ACCELERATION



CHANNEL LBXC FILTER CH CLASS 60

C10500 / 2001 MERCEDES C240
RIGHT REAR FLOORPAN X-AXIS ACCELERATION



CHANNEL RBXC FILTER CH CLASS 60

010327

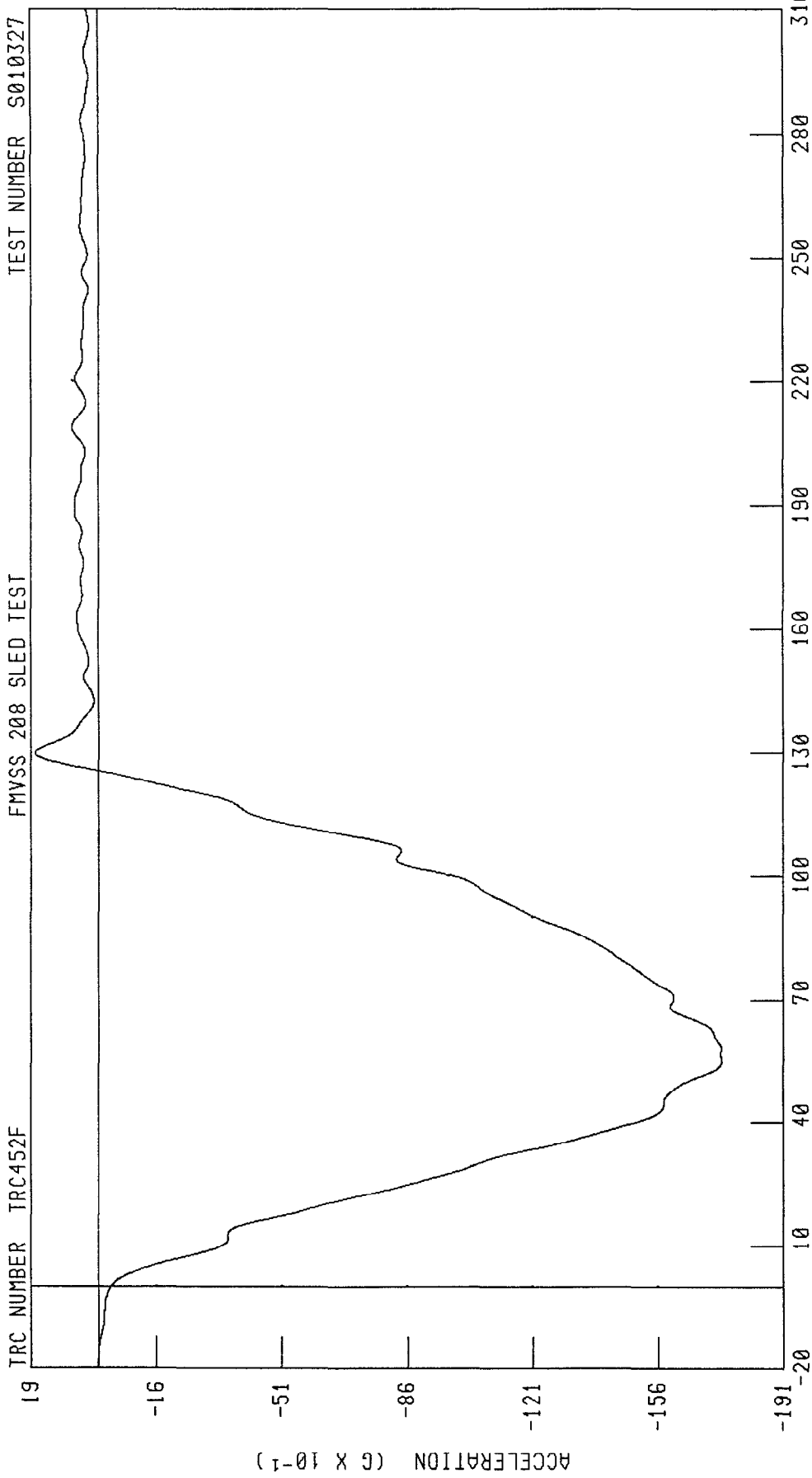
C10500 / 2001 MERCEDES C240

LEFT VEHICLE BODY STRUCTURE INSIDE REAR WHEELWELL X-AXIS ACCELERATION

TEST NUMBER S010327

FMVSS 208 SLED TEST

TRC NUMBER TRC452F



PEAK DATA 1 80 G @ 129 92 MS, -17 38 G @ 54 96 MS

CHANNEL LFXG FILTER CH CLASS 60

C10500 / 2001 MERCEDES C240

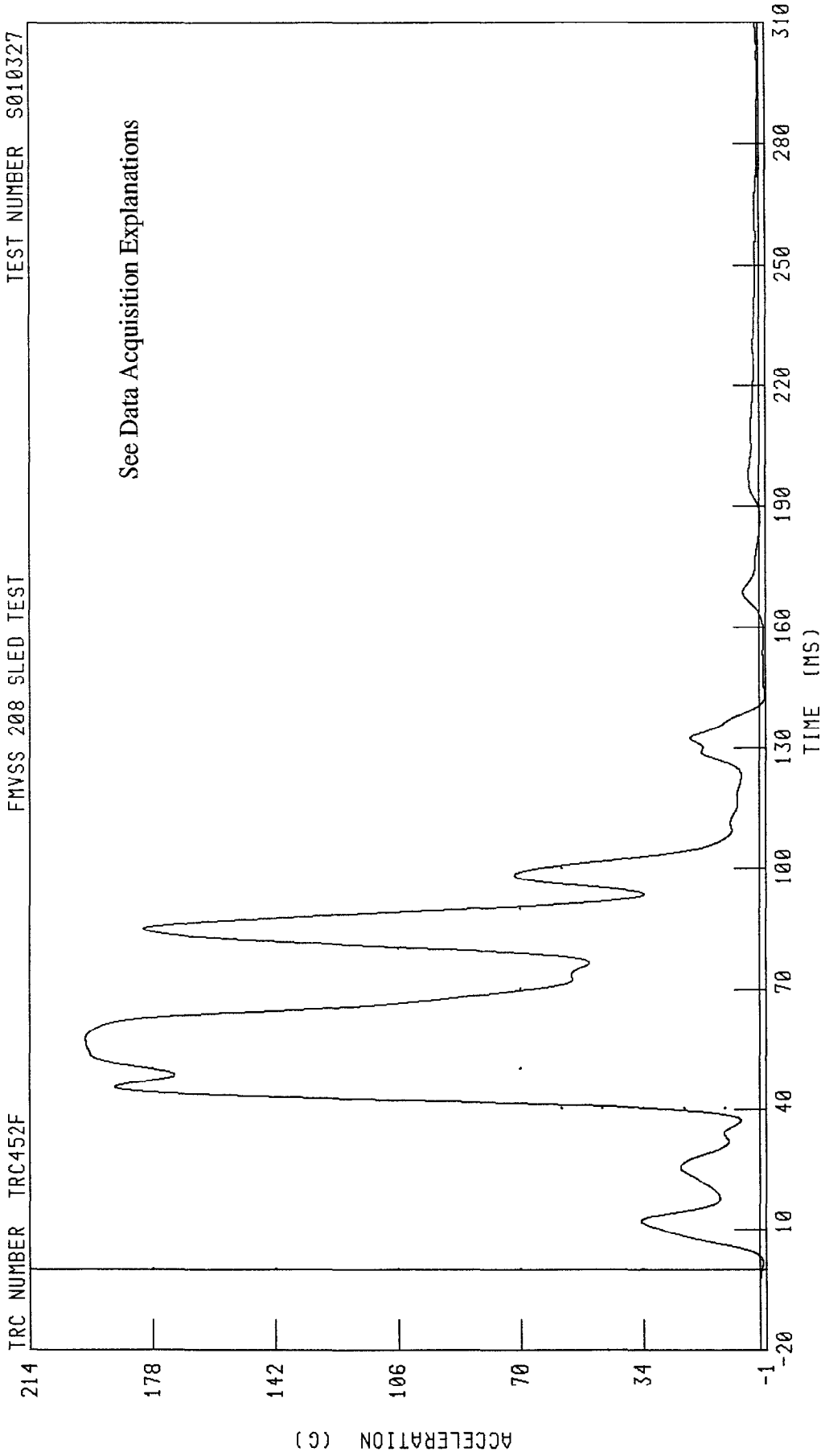
RIGHT VEHICLE BODY STRUCTURE INSIDE REAR WHEELWELL X-AXIS ACCELERATION

TEST NUMBER S010327

FMVSS 208 SLED TEST

TRC NUMBER TRC452F

See Data Acquisition Explanations

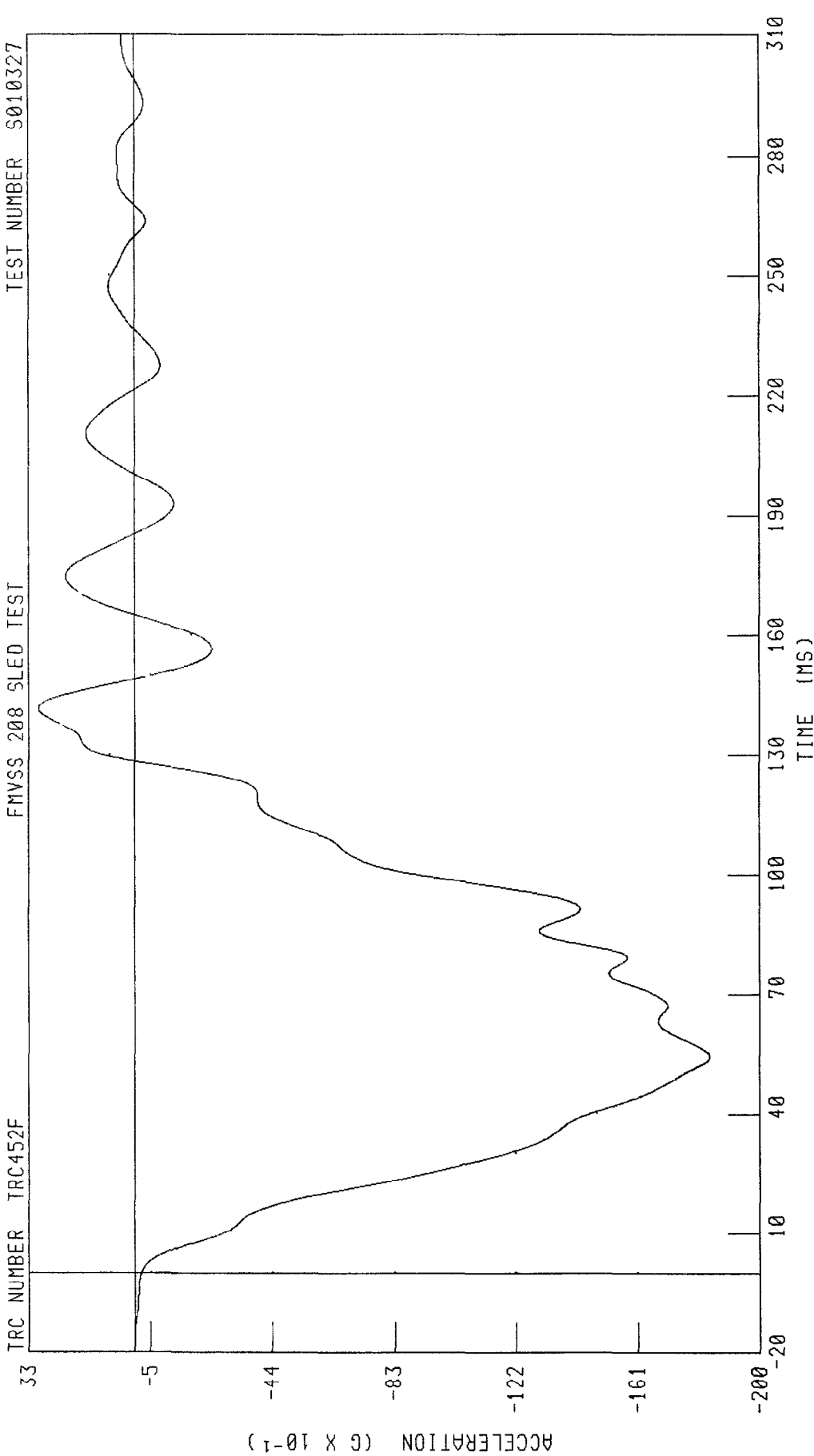


PEAK DATA 197 92 G @ 57 52 MS, -1 73 G @ 143 12 MS

CHANNEL RFXG FILTER CH CLASS 60

C10500 / 2001 MERCEDES C240
TOP ENGINE X-AXIS ACCELERATION
FMVSS 208 SLED TEST

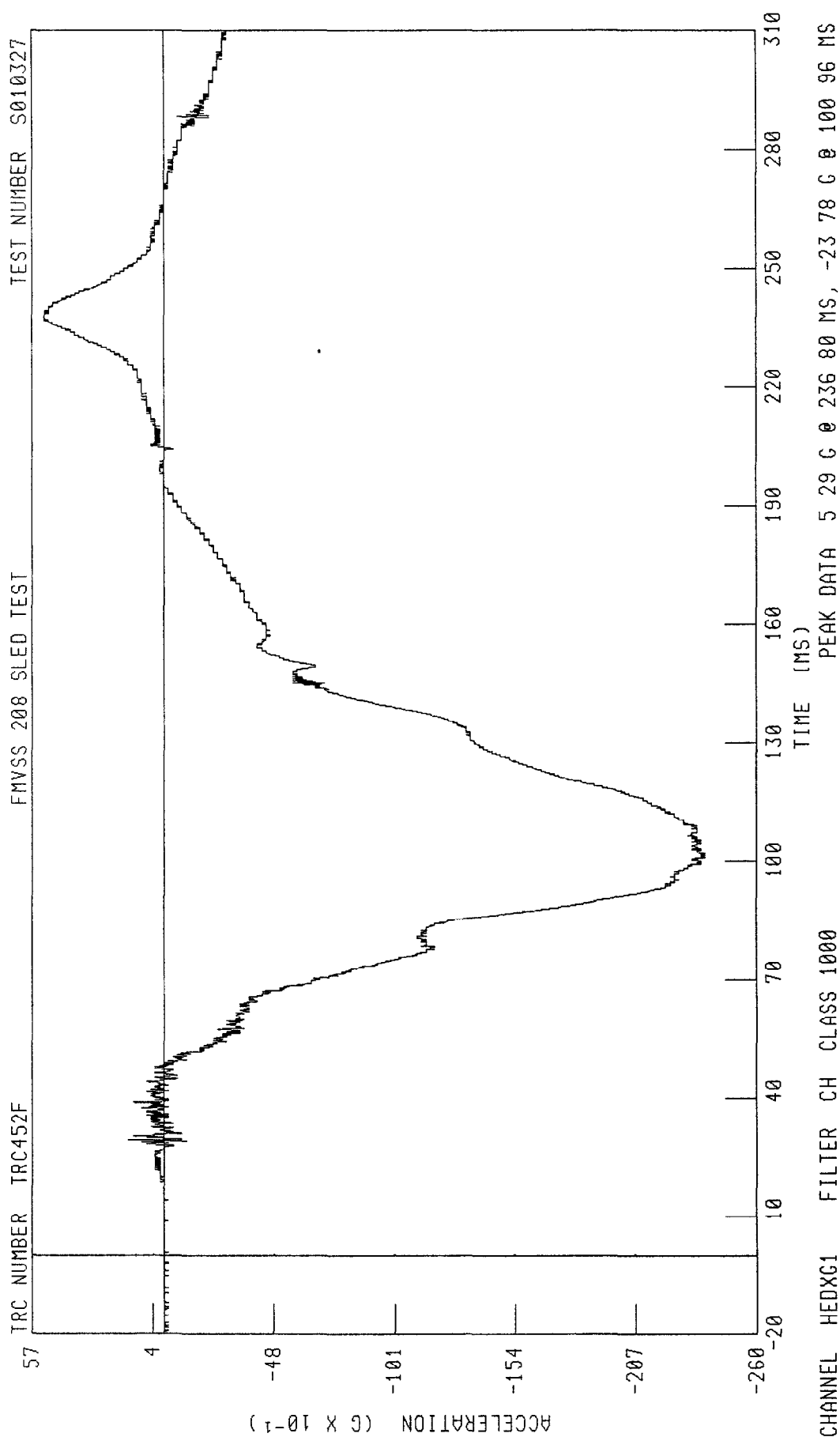
TRC NUMBER TRC452F TEST NUMBER S010327



CHANNEL TEXTC FILTER CH CLASS 60

PEAK DATA 3 09 G @ 141 76 MS, -18 42 G @ 54 24 MS

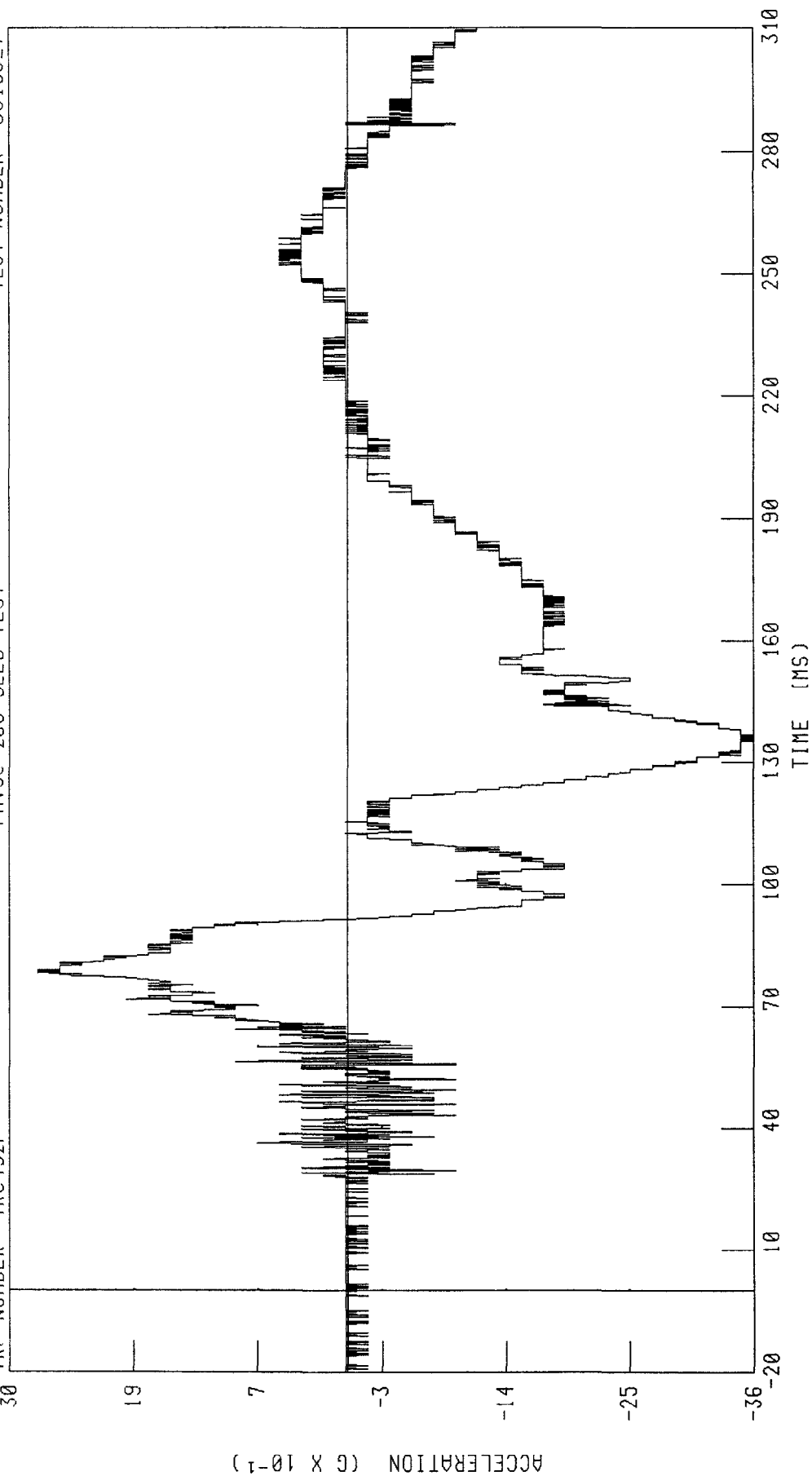
C10500 / 2001 MERCEDES C240
 DRIVER HEAD X-AXIS ACCELERATION
 FMVSS 208 SLED TEST



C10500 / 2001 MERCEDES C240
DRIVER HEAD Y-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F



CHANNEL HEDYG1 FILTER CH CLASS 1000

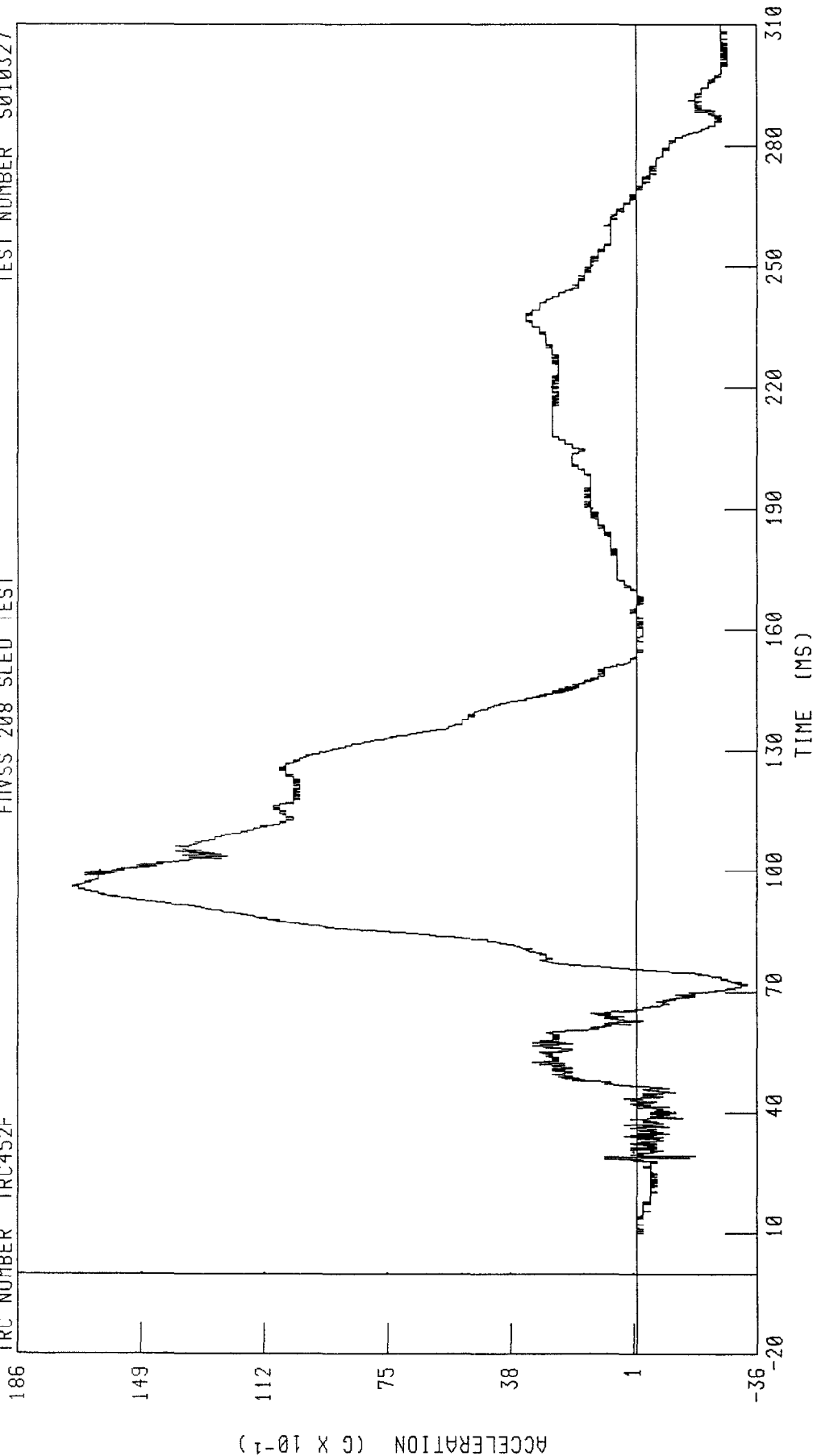
PEAK DATA 2 75 G @ 78 16 MS, -3 68 G @ 135 12 MS

C10500 / 2001 MERCEDES C240
 DRIVER HEAD Z-AXIS ACCELERATION

TEST NUMBER S010327

TRC NUMBER TRC452F

FIWSS 208 SLED TEST



PEAK DATA 16 99 G @ 96 08 MS, -3 32 G @ 71 68 MS

CHANNEL HEDZG1 FILTER CH CLASS 1000

C10500 / 2001 MERCEDES C240
DRIVER HEAD RESULTANT ACCELERATION
FMVSS 208 SLED TEST

TRC NUMBER TRC452F TEST NUMBER S010327

312

260

208

156

104

52

0

-20

ACCELERATION (G X 10⁻¹)

TIME (MS)

100

130

160

190

220

250

280

310

CHANNEL HEDRG1 FILTER CH CLASS 1000

PEAK DATA 28 60 G @ 99 76 MS, 0 03 G @ -20 00 MS

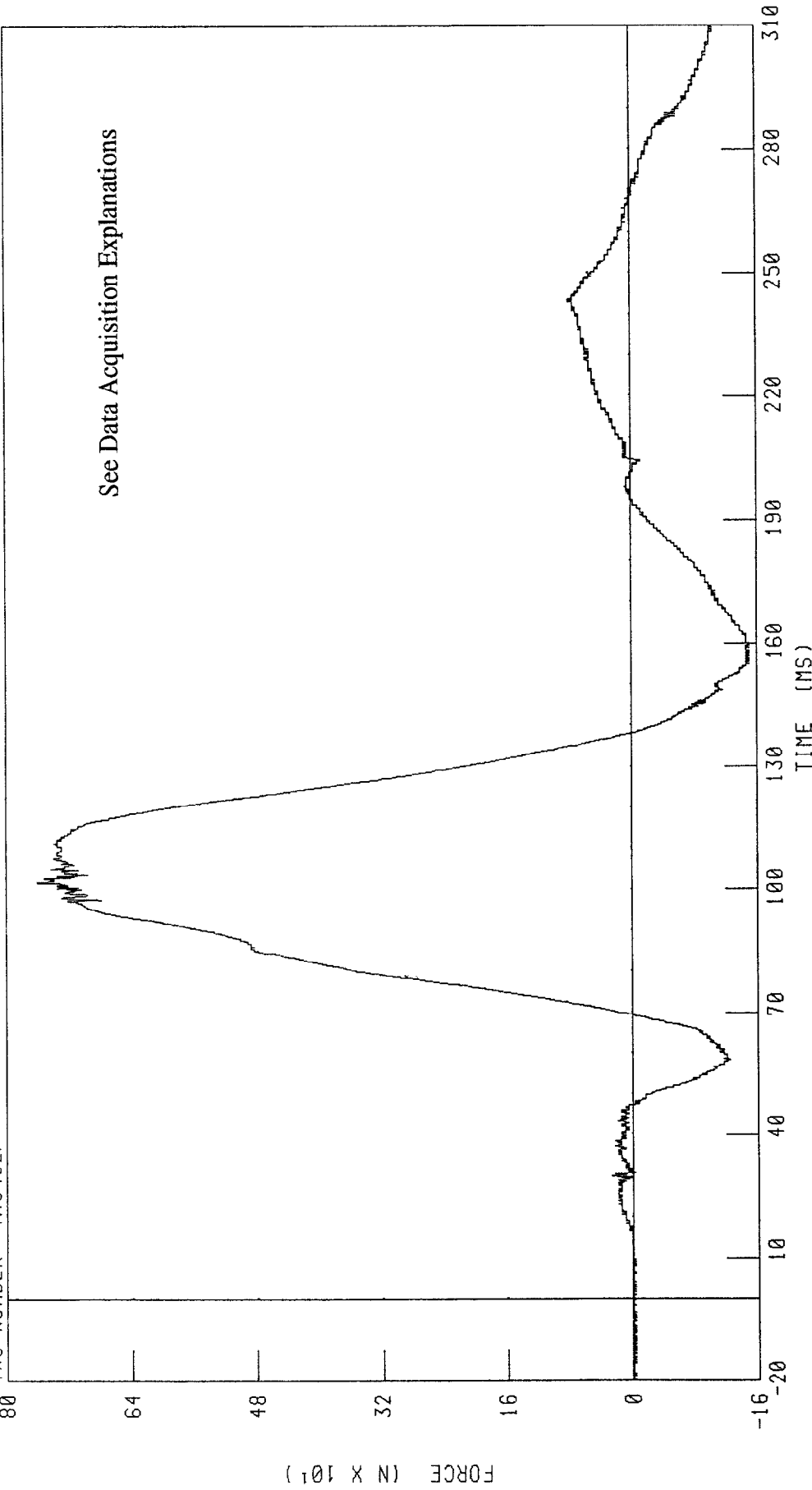
010327

B-20

C10500 / 1001 MERCEDES C240
DRIVER NECK X-AXIS SHEAR FORCE
FMVSS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327



See Data Acquisition Explanations

PEAK DATA 760 75 N @ 101 76 MS, -151 06 N @ 155 04 MS

CHANNEL NEKXF1 FILTER CH CLASS 1000

C10500 / 2001 MERCEDES C240
DRIVER NECK Y-AXIS SHEAR FORCE
FMVSS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327

219

169

119

69

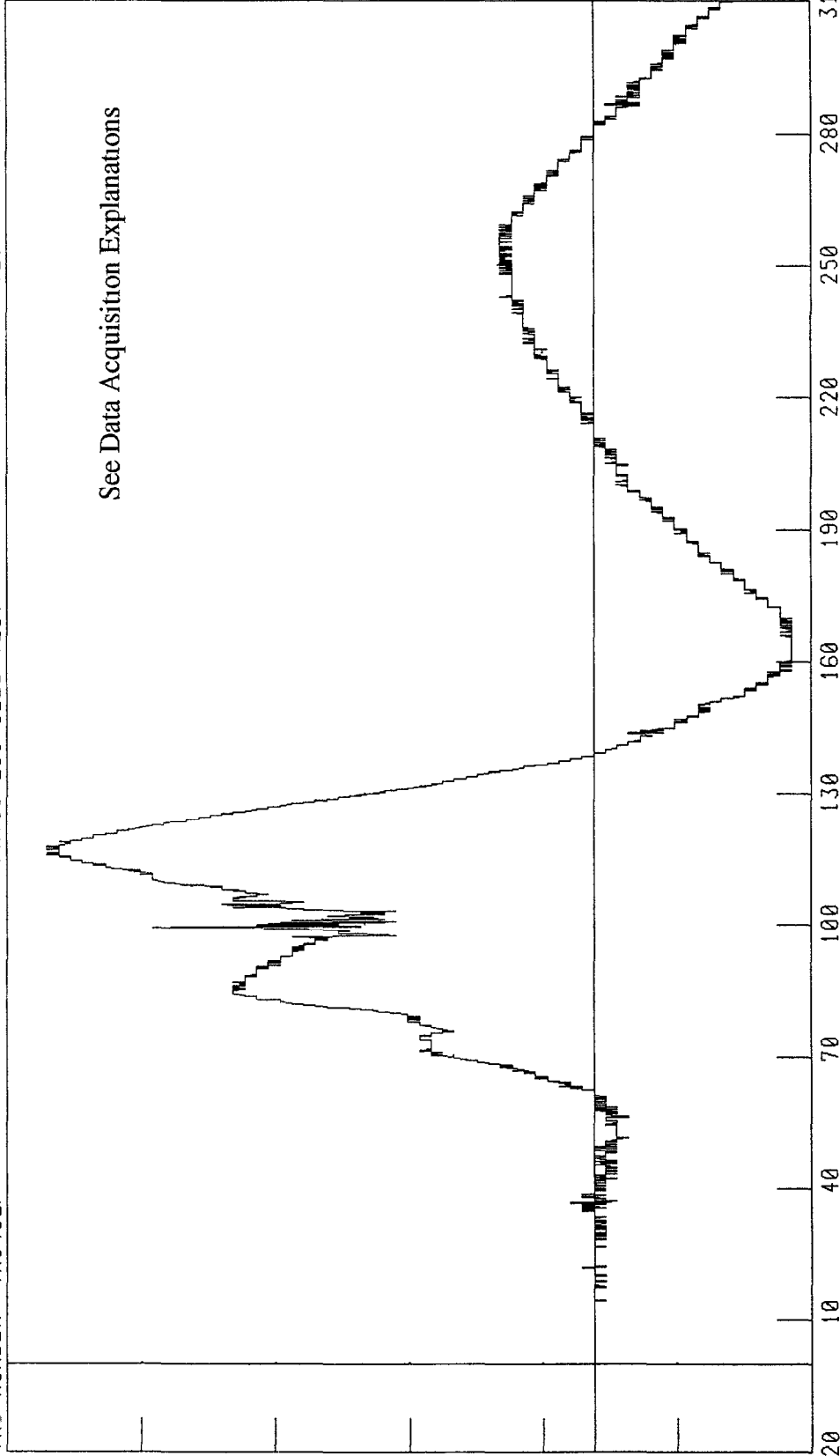
19

-31

-81

FORCE (N)

See Data Acquisition Explanations



TIME (MS)

PEAK DATA 204 16 N @ 115 84 MS, -73 85 N @ 158 08 MS

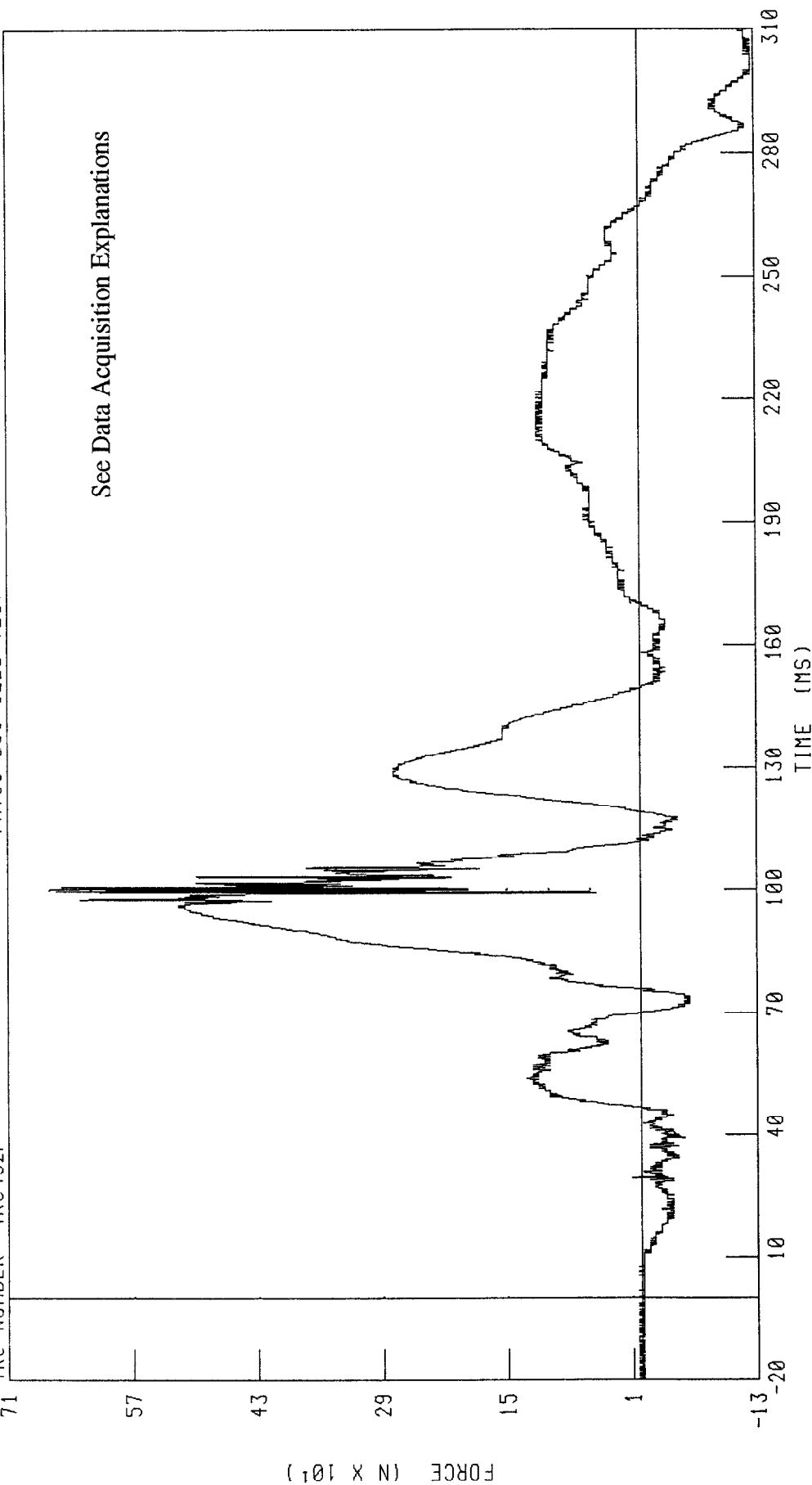
CHANNEL NEKYF1 FILTER CH CLASS 1000

C10500 / 2001 MERCEDES C240
DRIVER NECK Z-AXIS AXIAL FORCE
FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F

See Data Acquisition Explanations



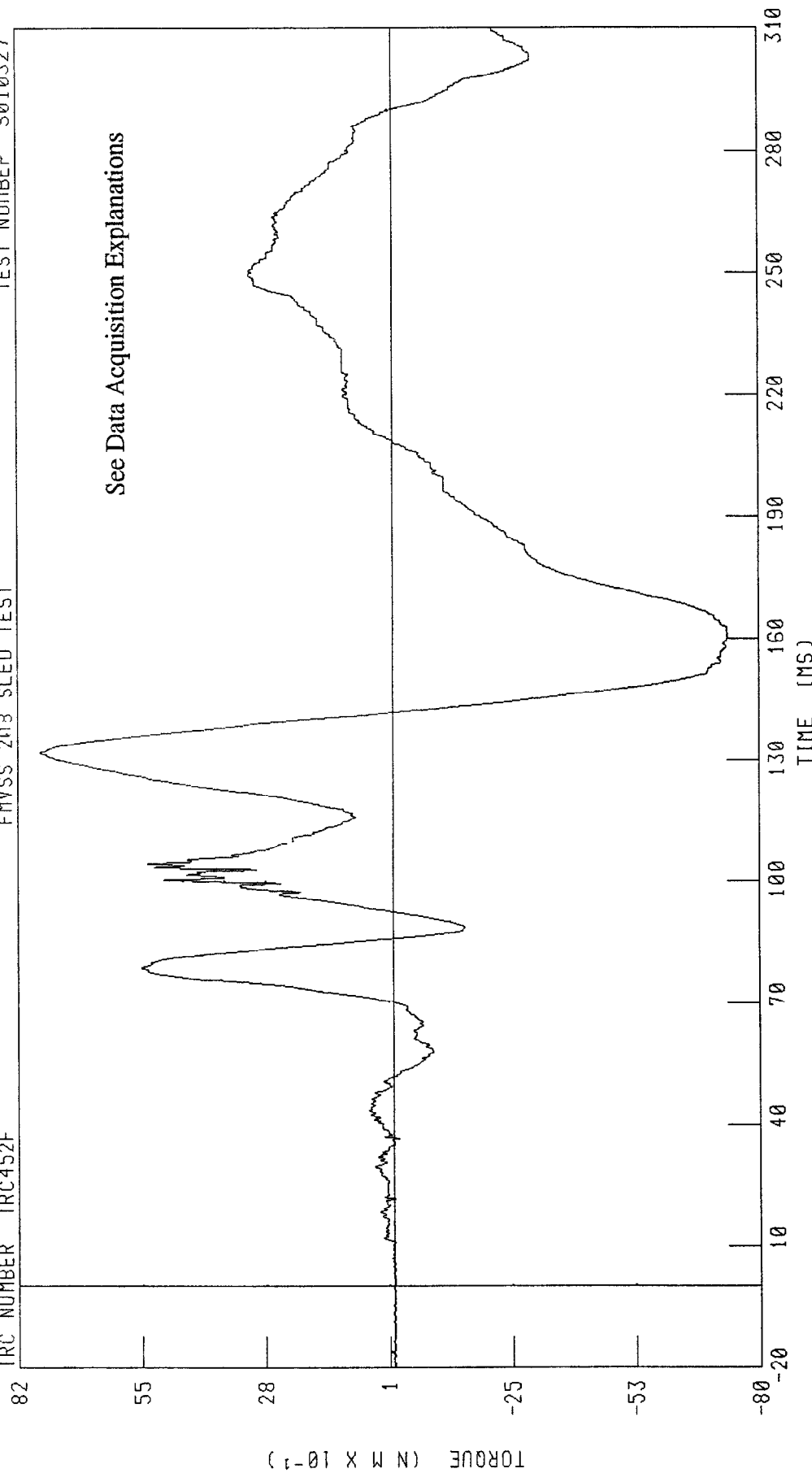
CHANNEL NEKZF1 FILTER CH CLASS 1000 PEAK DATA 662 42 N @ 100 24 MS, -126 32 N @ 299 04 MS

C10500 / 2001 MERCEDES C240
DRIVER NECK MOMENT ABOUT X AXIS

TEST NUMBER S010327

TRC NUMBER TRC452F

FMVSS 203 SLED TEST



PEAK DATA 7 71 N M @ 132 08 MS, -7 35 N M @ 161 20 MS

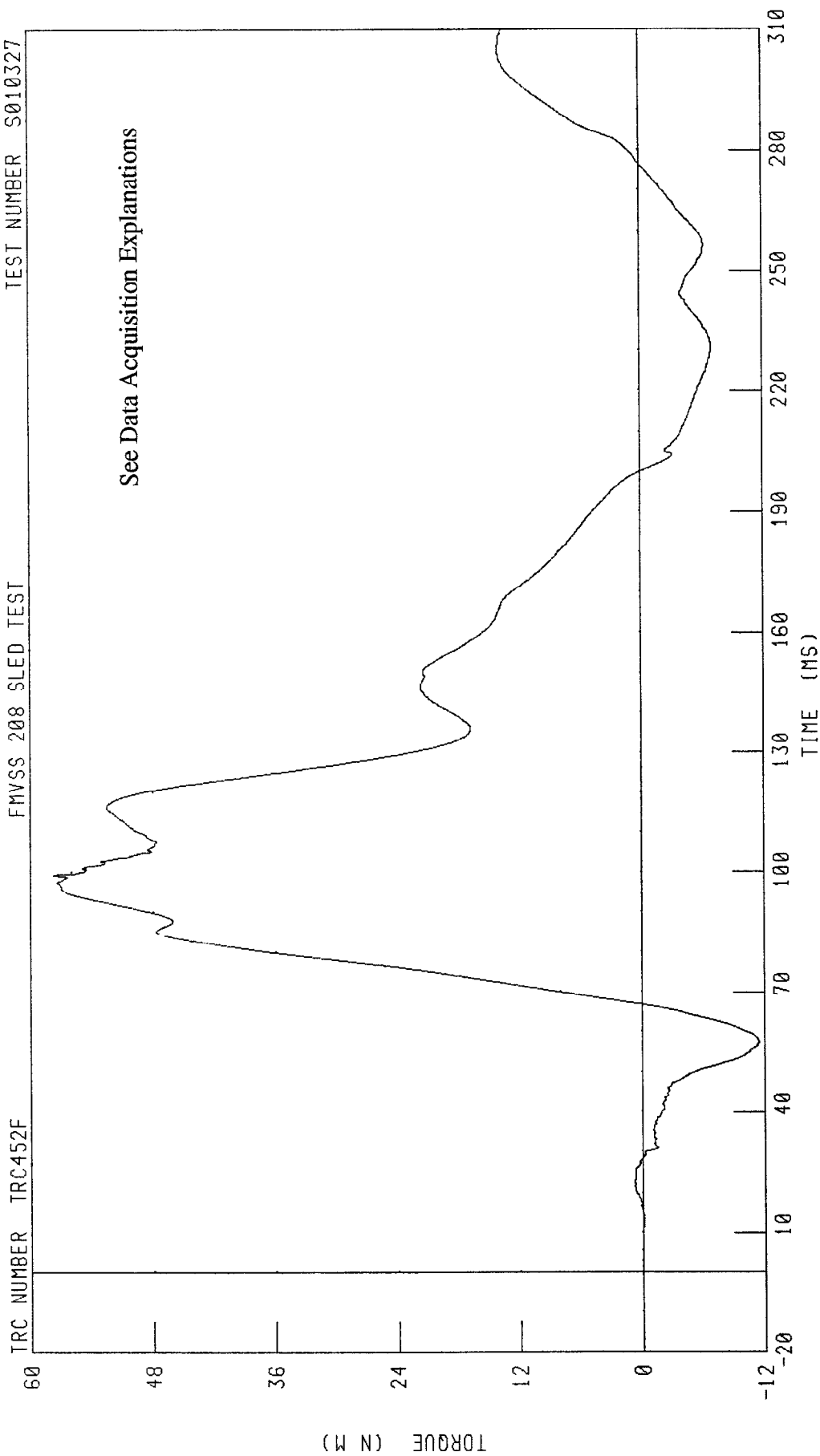
CHANNEL NEKXM1 FILTER CH CLASS 600

C10500 / 2001 MERCEDES C240
DRIVER NECK MOMENT ABOUT Y AXIS
FMVSS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327

See Data Acquisition Explanations



PEAK DATA 57 76 N M @ 99 36 MS, -11 48 N M @ 57 36 MS

CHANNEL NEKYM1 FILTER CH CLASS 600

C10500 / 2001 MERCEDES C240
DRIVER NECK MOMENT ABOUT Z AXIS
FMVSS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327

87

61

36

11

-13

-38

-63

TORQUE (N M X 10⁻¹)

See Data Acquisition Explanations

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

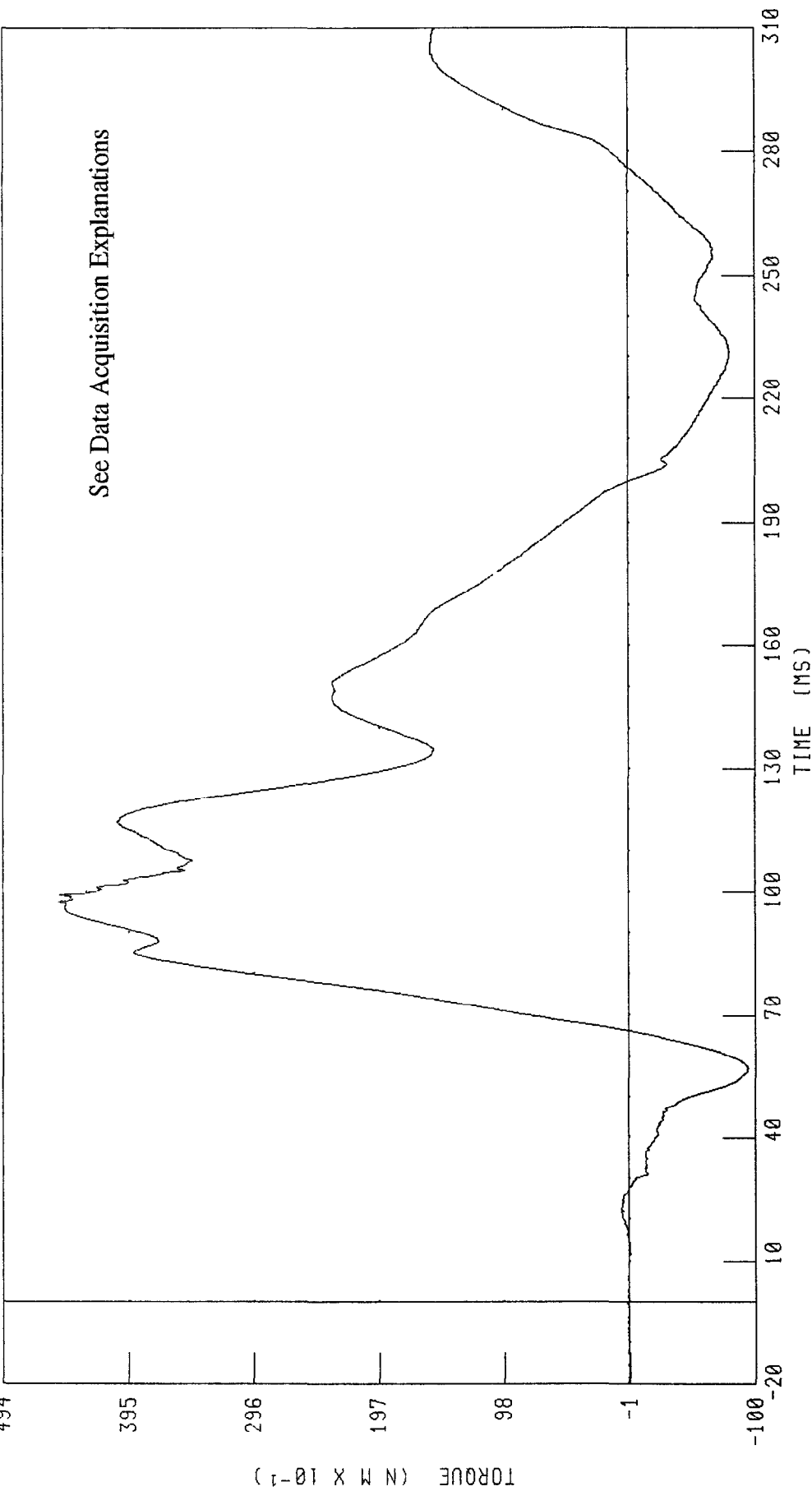
PEAK DATA 8 29 N M @ 143 60 MS, -5 82 N M @ 99 44 MS

CHANNEL NEKZM1 FILTER CH CLASS 600

C10500 / 2001 MERCEDES C240
DRIVER NECK MOMENT ABOUT Y AXIS OCCIPITAL CONDYLE
FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F



See Data Acquisition Explanations

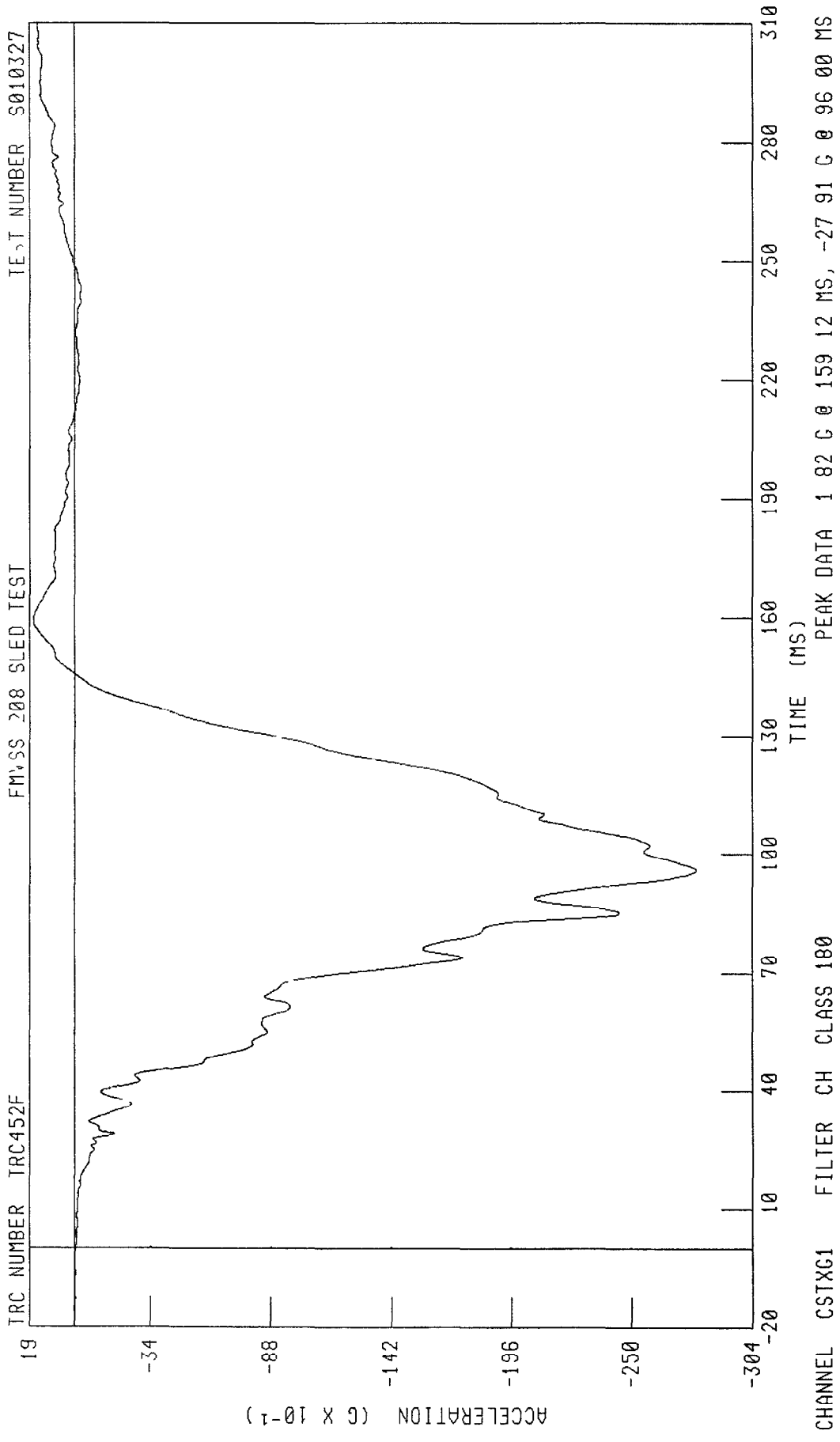
PEAK DATA 45 05 N M @ 97 60 MS, -9 44 N M @ 57 28 MS

CHANNEL NEKOM1 FILTER CH CLASS 600

C10500 / 2001 MERCEDES C240
DRIVER CHEST X-AXIS ACCELERATION
FMVSS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327

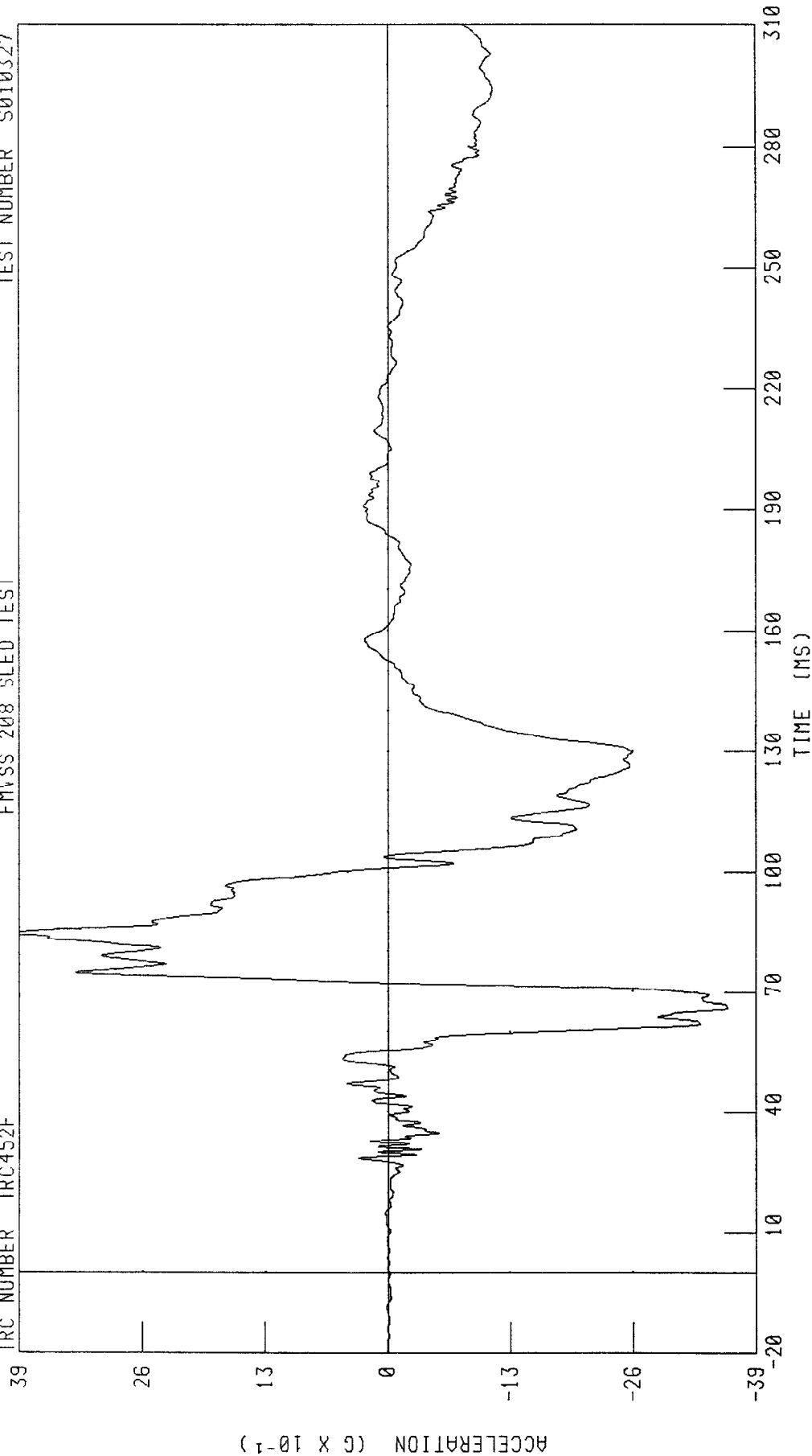


CHANNEL CSTXG1 FILTER CH CLASS 180

C10500 , 2001 MERCEDES C240
DRIVER CHEST Y-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F



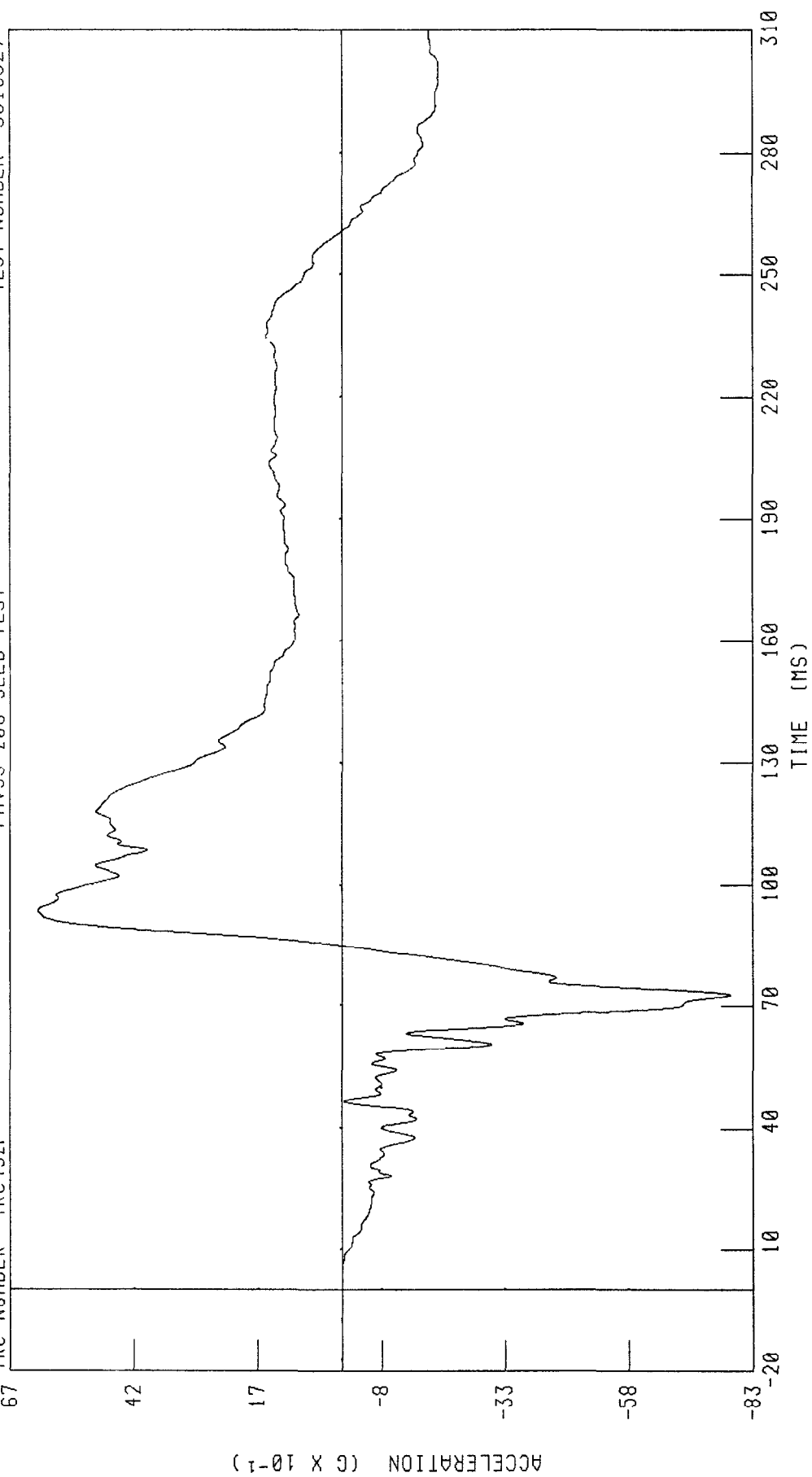
PEAK DATA 4 02 G 0 84 72 MS, -3 60 G 0 66 00 MS

CHANNEL CSTYG1 FILTER CH CLASS 180

C10500 / 2001 MERCEDES C240
DRIVER CHEST Z-AXIS ACCELERATION
FMVSS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327



CHANNEL CSTZG1 FILTER CH CLASS 180

PEAK DATA 6 14 G @ 93 68 MS, -7 85 G @ 72 80 MS

C10500 / 2001 MERCEDES C240
 DRIVER CHEST RESULTANT ACCELERATION
 FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F

312

260

ACCELERATION (G X 10⁻¹)

208

156

104

52

0

TIME (MS)

310

280

250

220

190

160

130

100

70

40

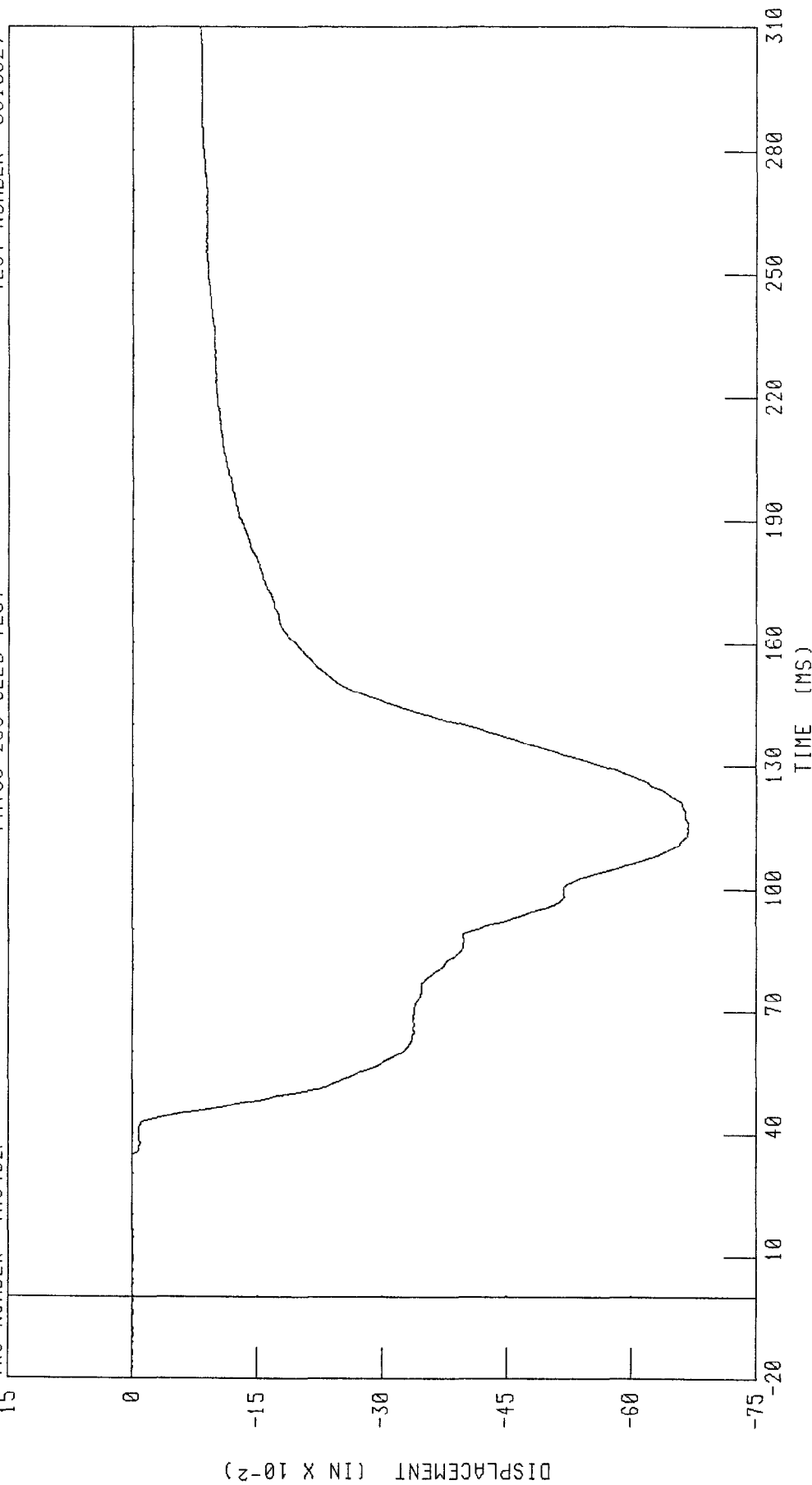
10

PEAK DATA 28 55 G @ 95 92 MS, 0 00 G @ -18 24 MS

CHANNEL CSTRG1 FILTER CH CLASS 180

C10500 / 2001 MERCEDES C240
DRIVER CHEST DEFLECTION
FMVSS 208 SLED TEST

TRC NUMBER TRC452F TEST NUMBER S010327



CHANNEL CSTXD1 FILTER CH CLASS 600

PEAK DATA 0 00 IN @ 28 64 MS, -0 67 IN @ 115 92 MS

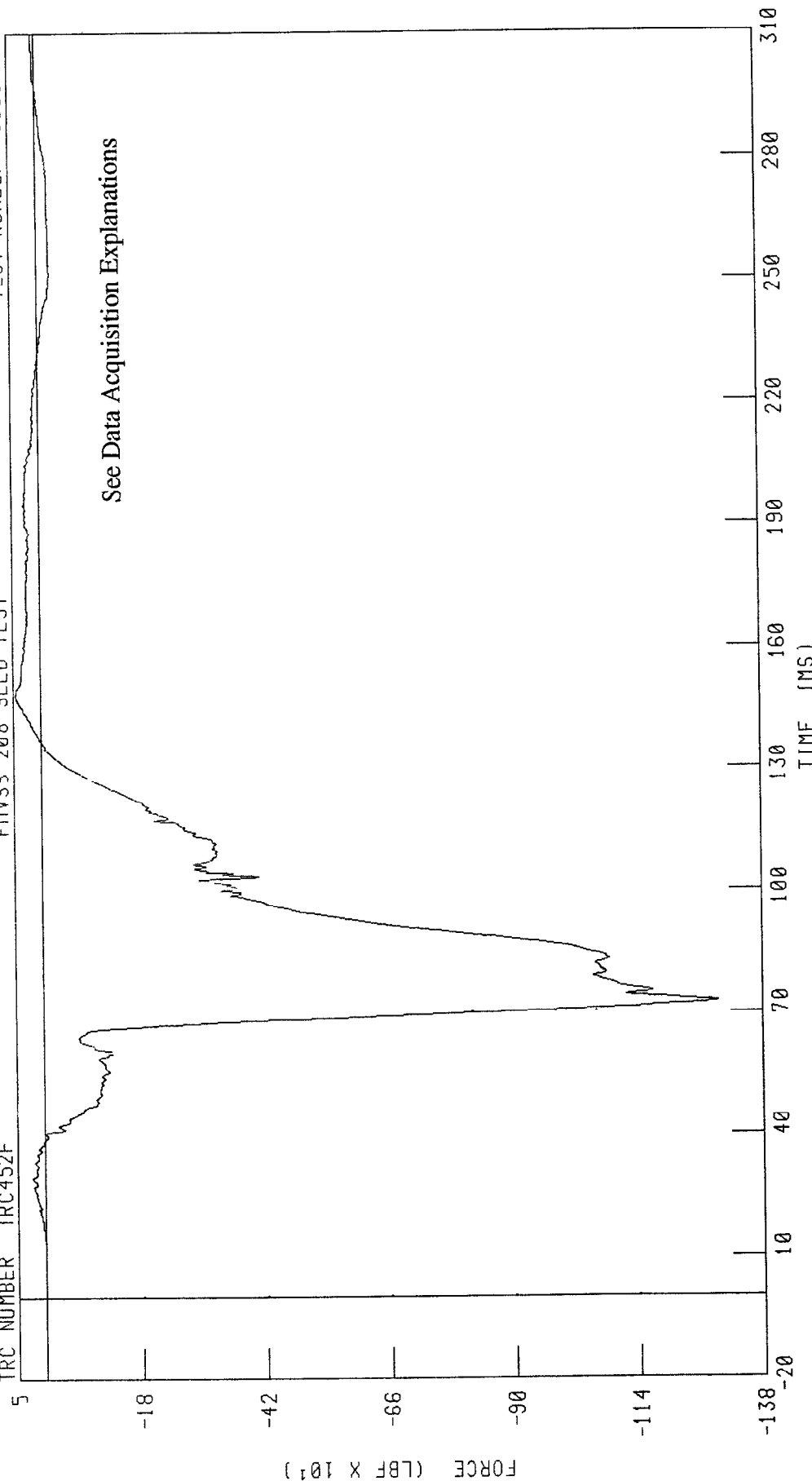
C10500 / 2001 MERCEDES C240

DRIVER LEFT FEMUR FORCE

FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F



PEAK DATA 48 89 LBF @ 148 32 MS, -1301 90 LBF @ 72 64 MS

CHANNEL LFMZF1 FILTER CH CLASS 600

C10500 / 2001 MERCEDES C240

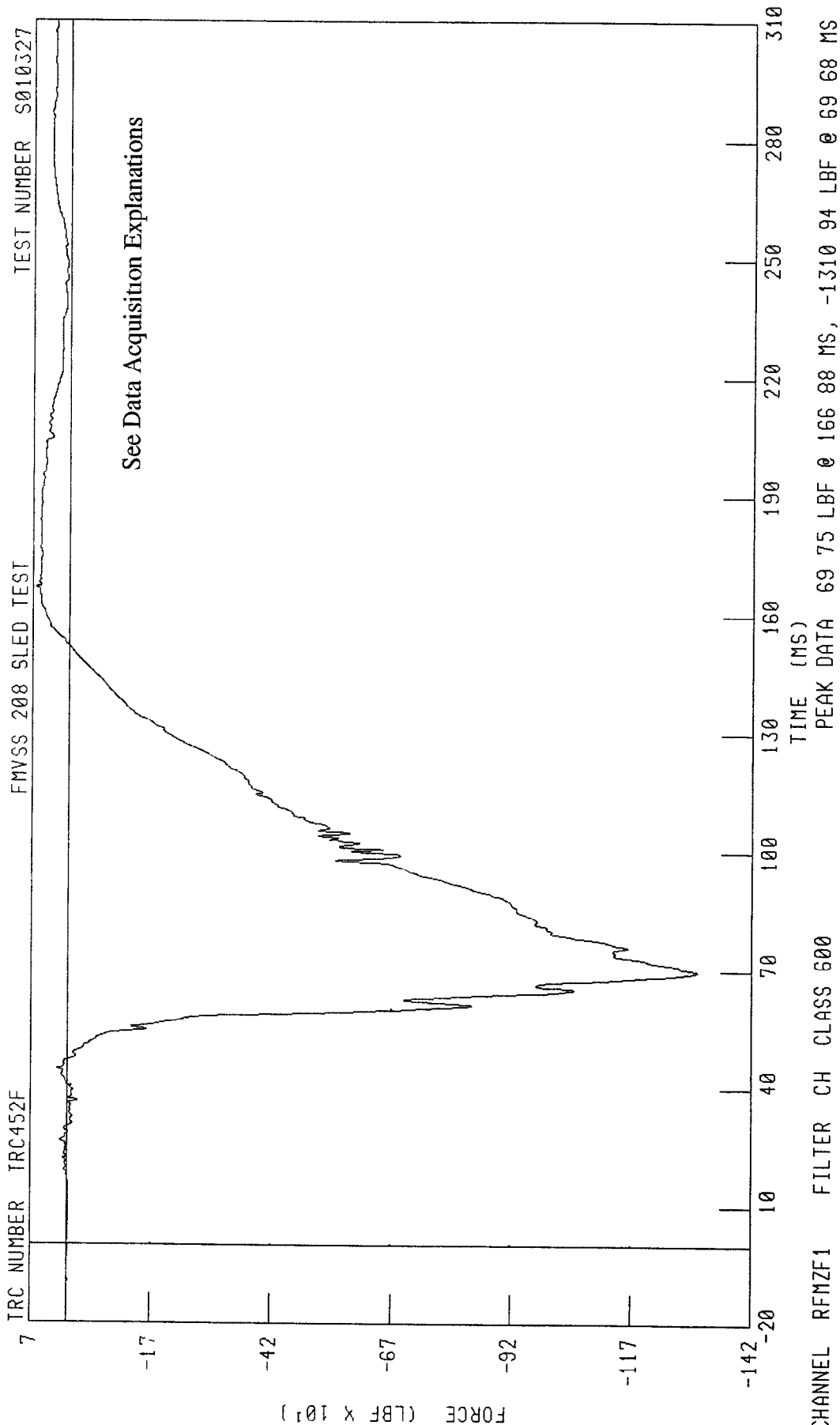
DRIVER RIGHT FEMUR FORCE

FMVSS 208 SLED TEST

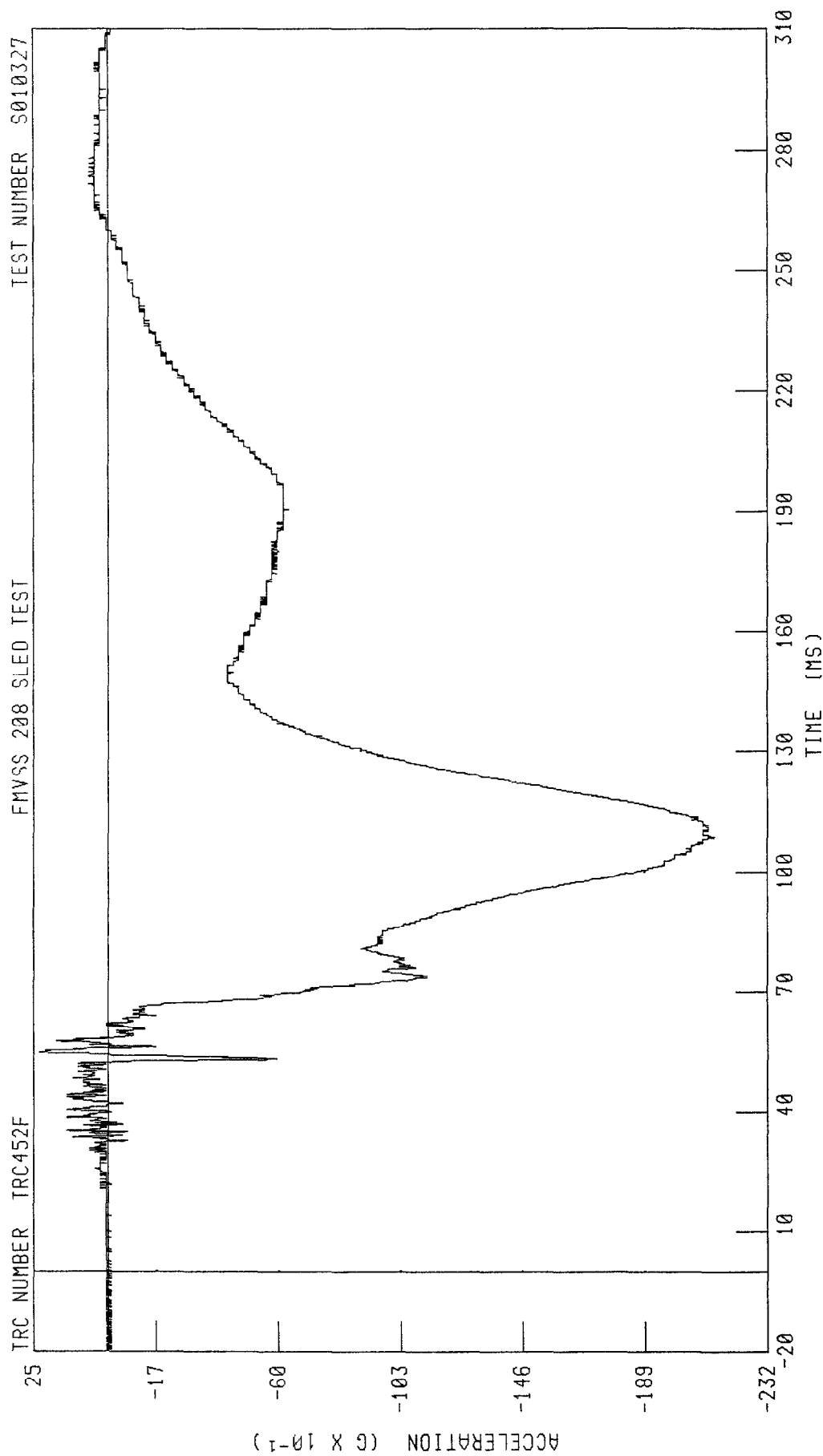
TEST NUMBER S010327

TRC NUMBER TRC452F

See Data Acquisition Explanations



C10500 / 2001 MERCEDES C240
 RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION
 FMVSS 208 SLED TEST

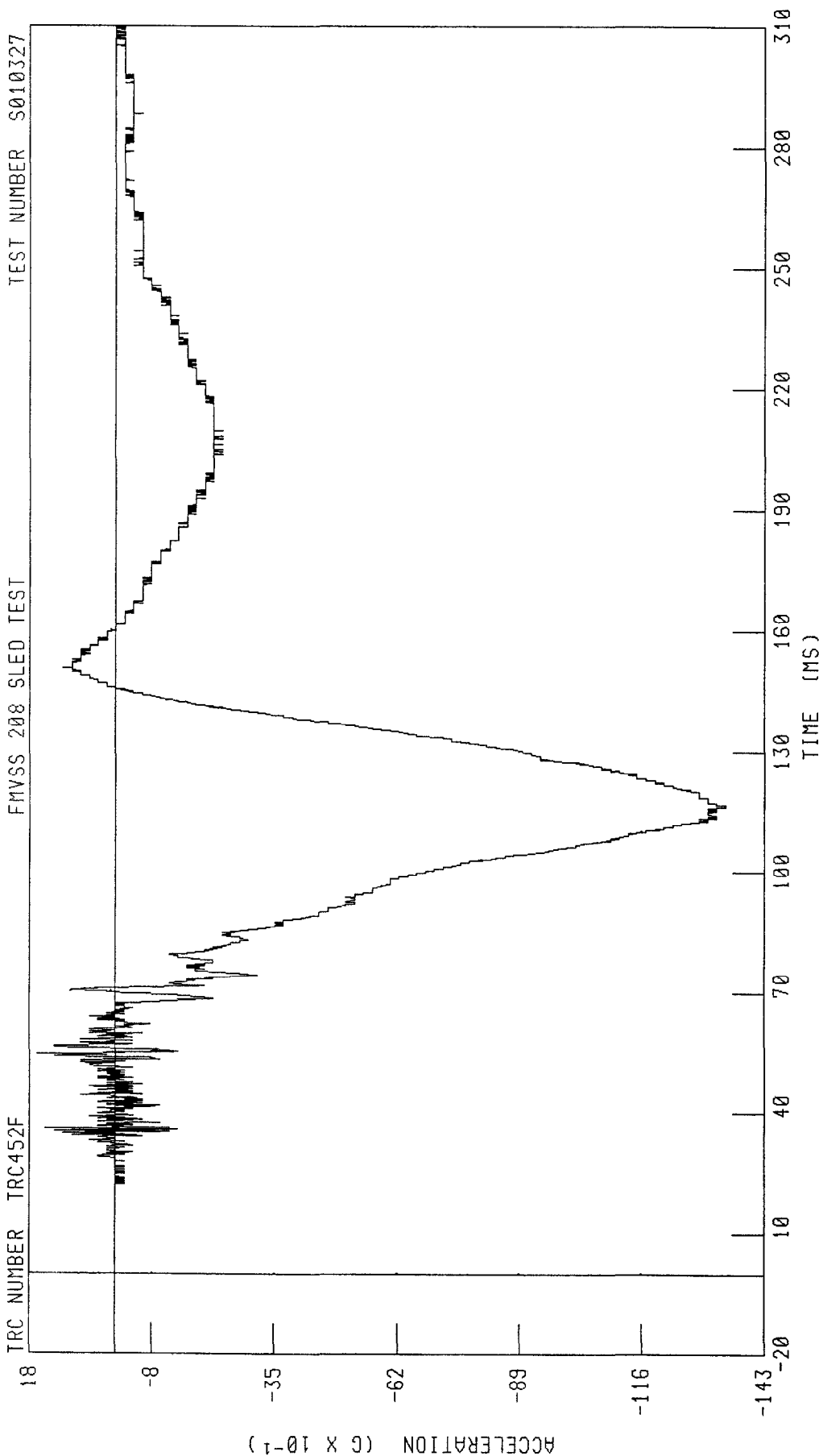


PEAK DATA 2 41 G @ 54 88 MS, -21 34 G @ 108 56 MS

CHANNEL HEDXC2 FILTER CH CLASS 1000

C10500 / 2001 MERCEDES C240
 RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION
 FMVSS 208 SLED TEST

TRC NUMBER TRC452F TEST NUMBER S010327



CHANNEL HEDYC2 FILTER CH CLASS 1000

PEAK DATA 1 75 G @ 54 64 MS, -13 45 G @ 116 48 MS

C10500 / 2001 MERCEDES C240
 RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION
 FIIVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F

183

147

111

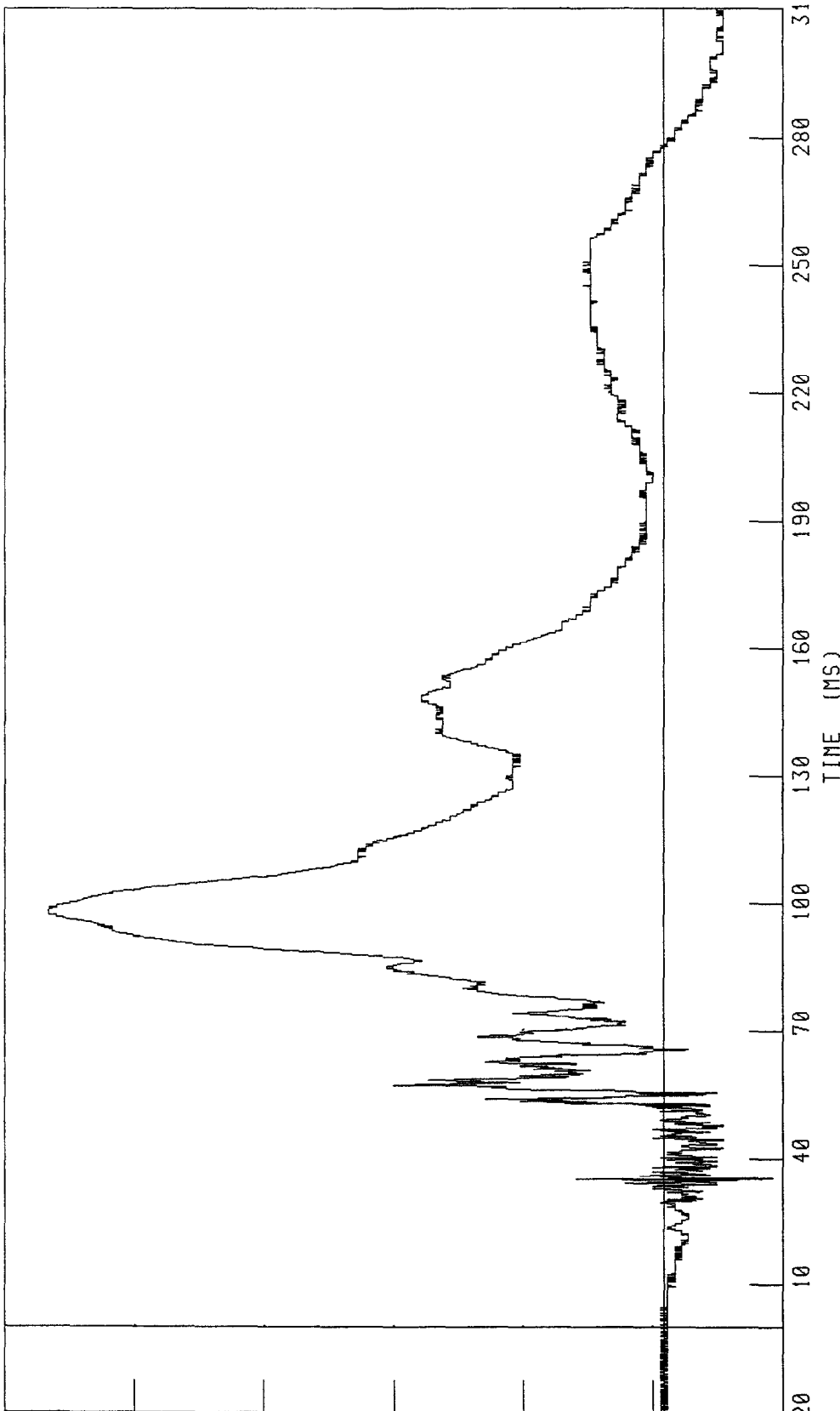
75

39

3

-33

ACCELERATION (G X 10⁻¹)



CHANNEL HEDZC2 FILTER CH CLASS 1000

PEAK DATA 17 08 G @ 97 12 MS, -3 04 G @ 35 28 MS

C10500 / 2001 MERCEDES C240
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION
FMVSS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327

288

240

192

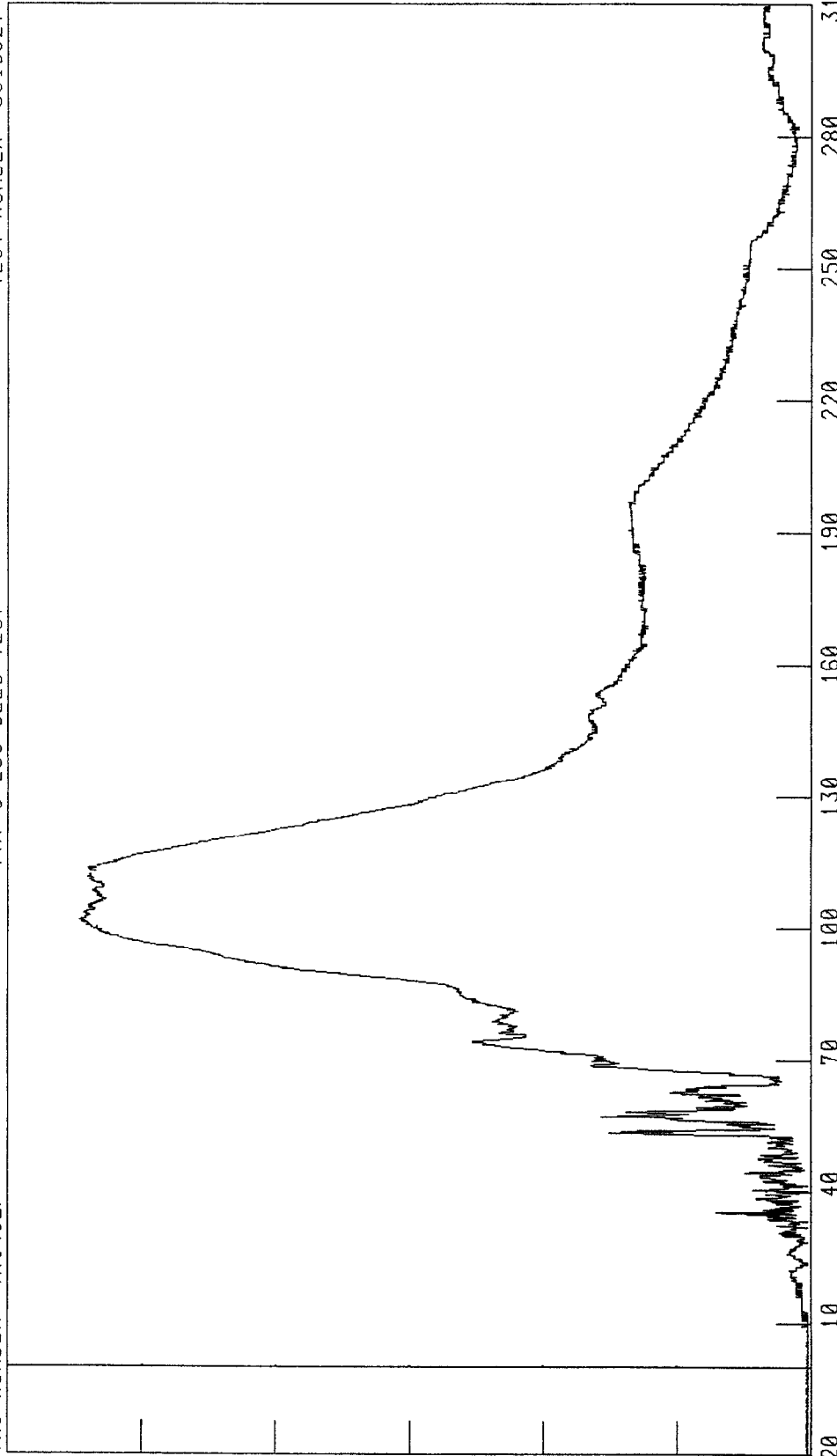
144

96

48

0

ACCELERATION (G X 10⁻¹)

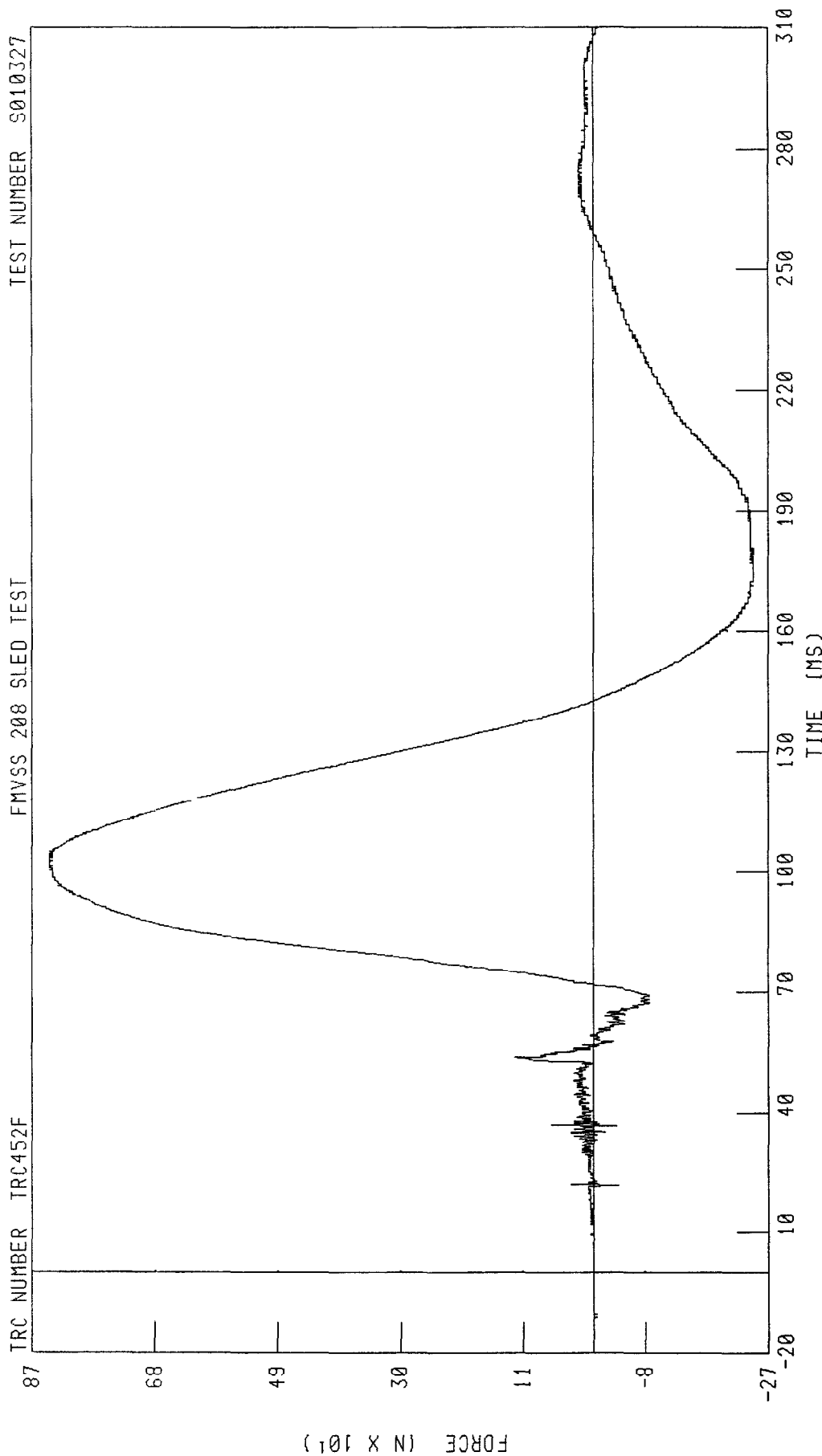


TIME (MS)

CHANNEL HEDRC2 FILTER CH CLASS 1000

PEAK DATA 26 24 0 101 84 MS, 0 11 0 0 -20 00 MS

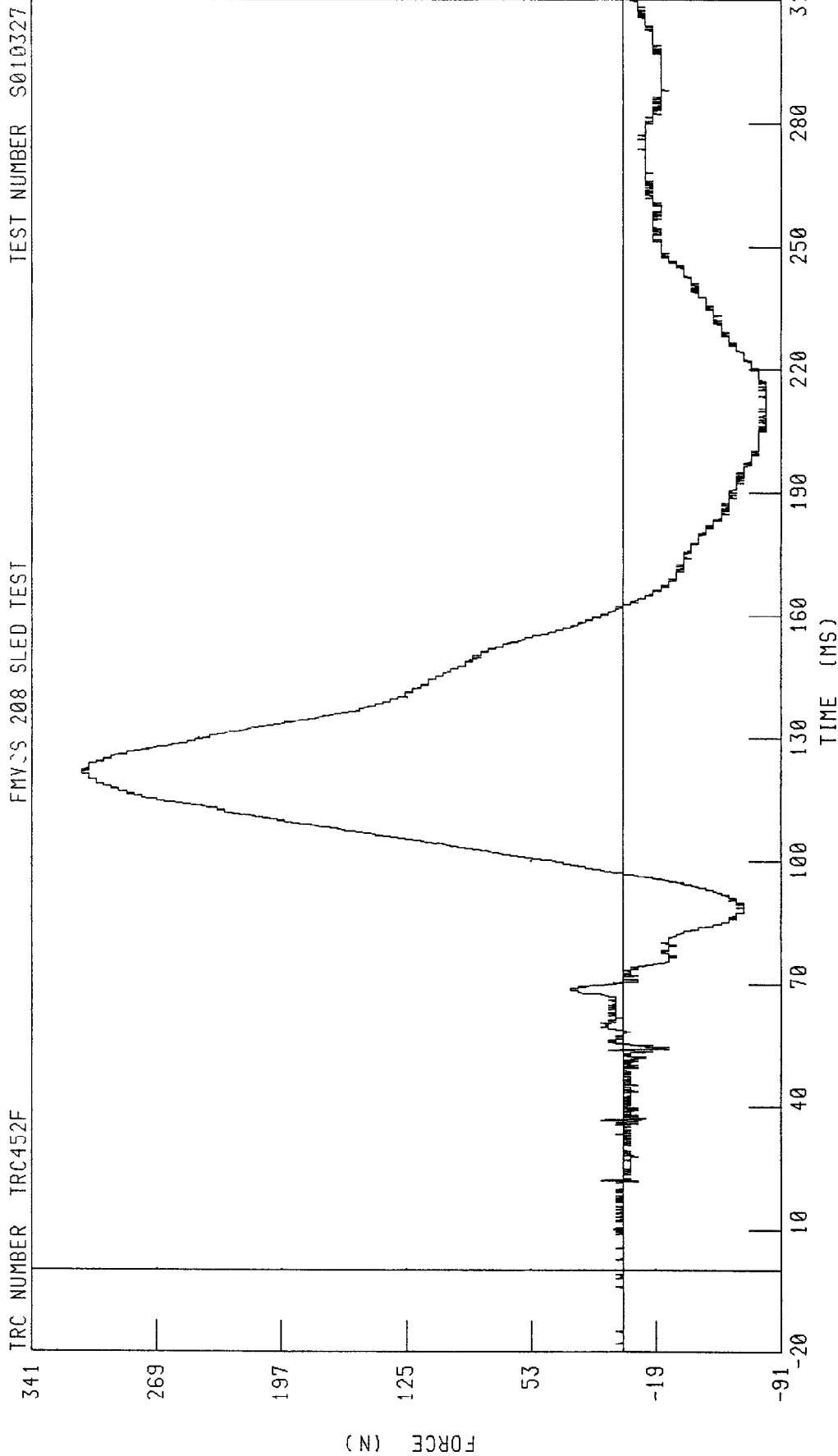
C10500 / 2001 MERCEDES C240
 PIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE
 FMVSS 208 SLED TEST



PEAK DATA 842 94 N @ 100 72 MS, -247 52 N @ 171 60 MS

CHANNEL NEKXF2 FILTER CH CLASS 1000

C10500 / 2001 MERCEDES C240
 RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE
 FMV'S 208 SLED TEST

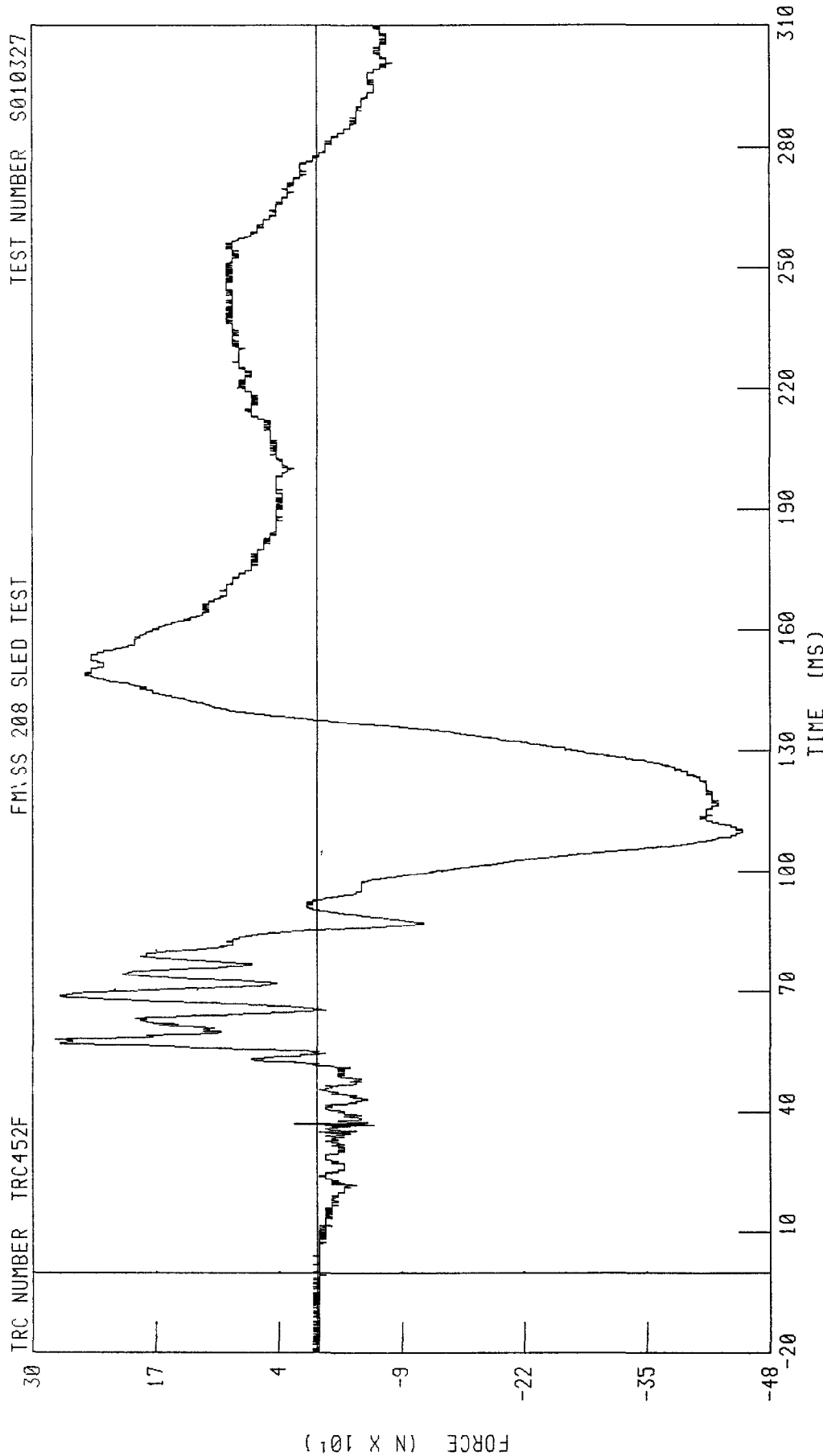


CHANNEL NEKYF2 FILTER CH CLASS 1000 PEAK DATA 312 63 N @ 121 28 MS, -82 75 N @ 205 04 MS

C10500 / 2001 MERCEDES C240
RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE
FM'SS 208 SLED TEST

TRC NUMBER TRC452F

TEST NUMBER S010327



CHANNEL NEKZF2 FILTER CH CLASS 1000

PEAK DATA 277 62 N @ 57 92 MS, -451 95 N @ 109 68 MS

C10500 / 2001 MERCEDES C240
RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS
FMVSS 208 SLED TEST

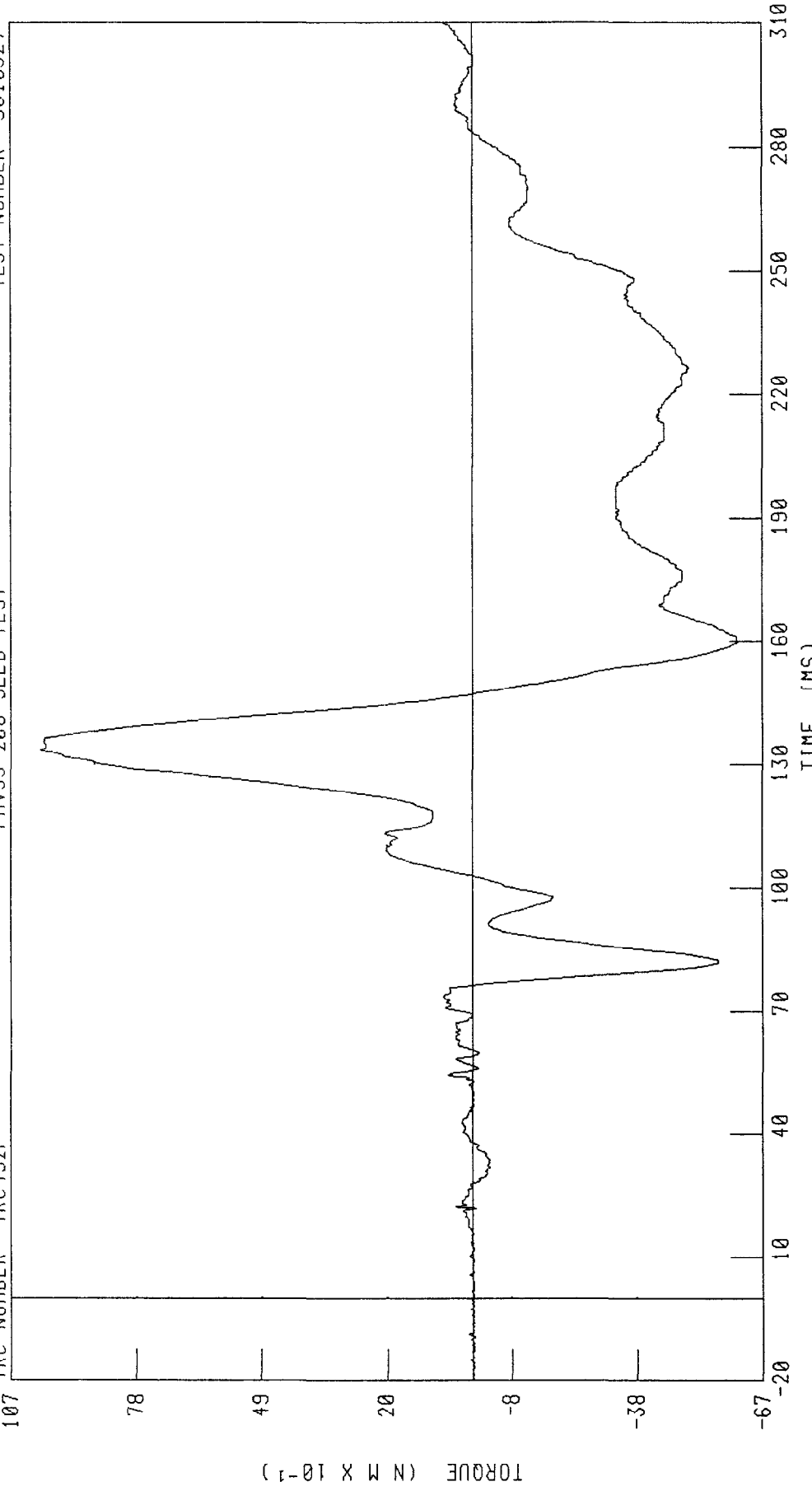
TRC NUMBER TRC452F

TEST NUMBER S010327

CHANNEL NEKXM2

FILTER CH CLASS 600

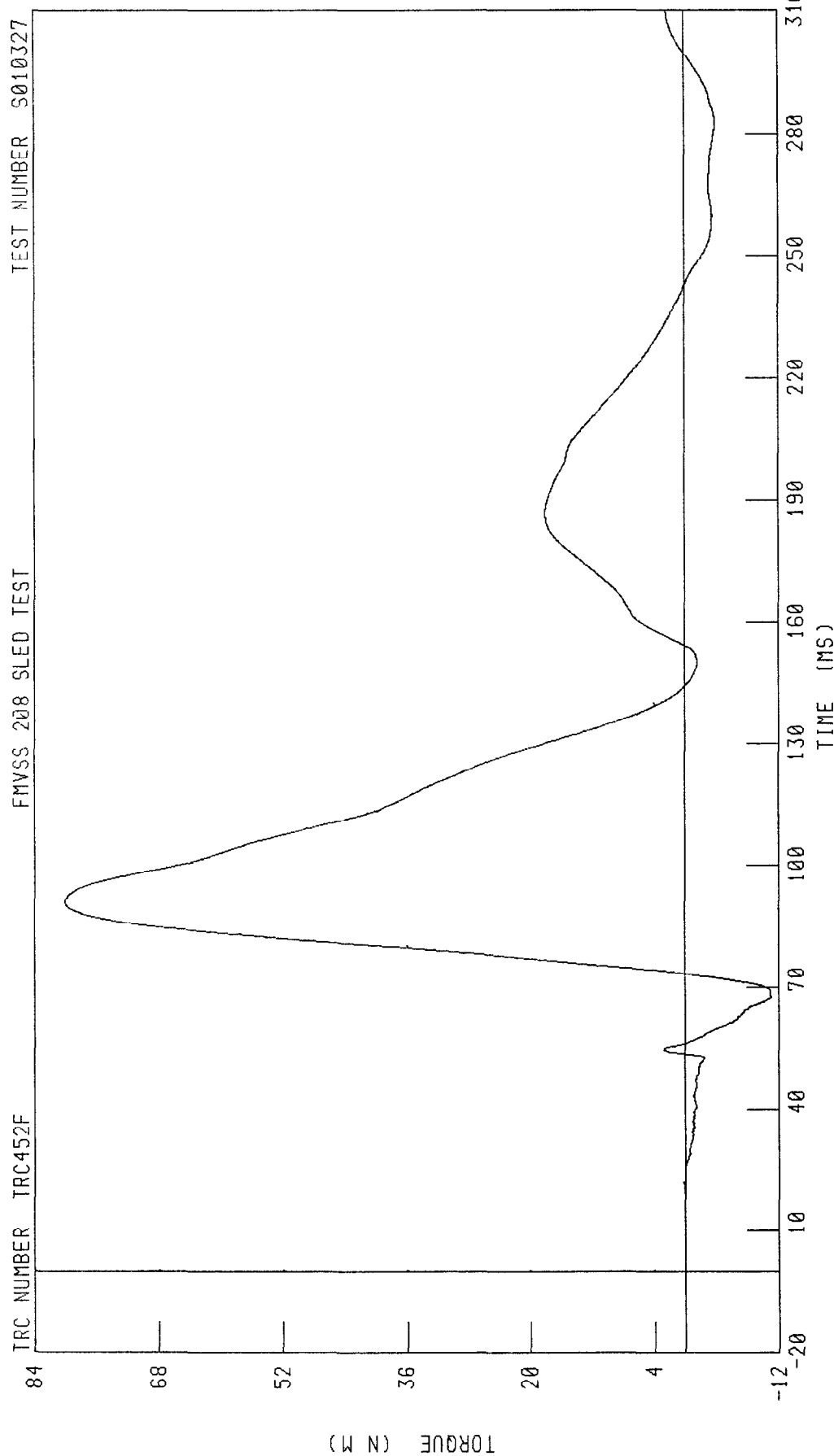
PEAK DATA 10 02 N M @ 133 52 MS, -6 14 N M @ 159 84 MS



C10500 / 2001 MERCEDES C240
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS
FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F



PEAK DATA 80 09 N M 0 90 96 MS, -11 01 N M 0 67 44 MS

CHANNEL NEKYM2 FILTER CH CLASS 600

C10500 / 2001 MERCEDES C240
 RIGHT FRONT PASSENGER NECK MOMENT ABOUT Z AXIS
 FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F

276

210

144

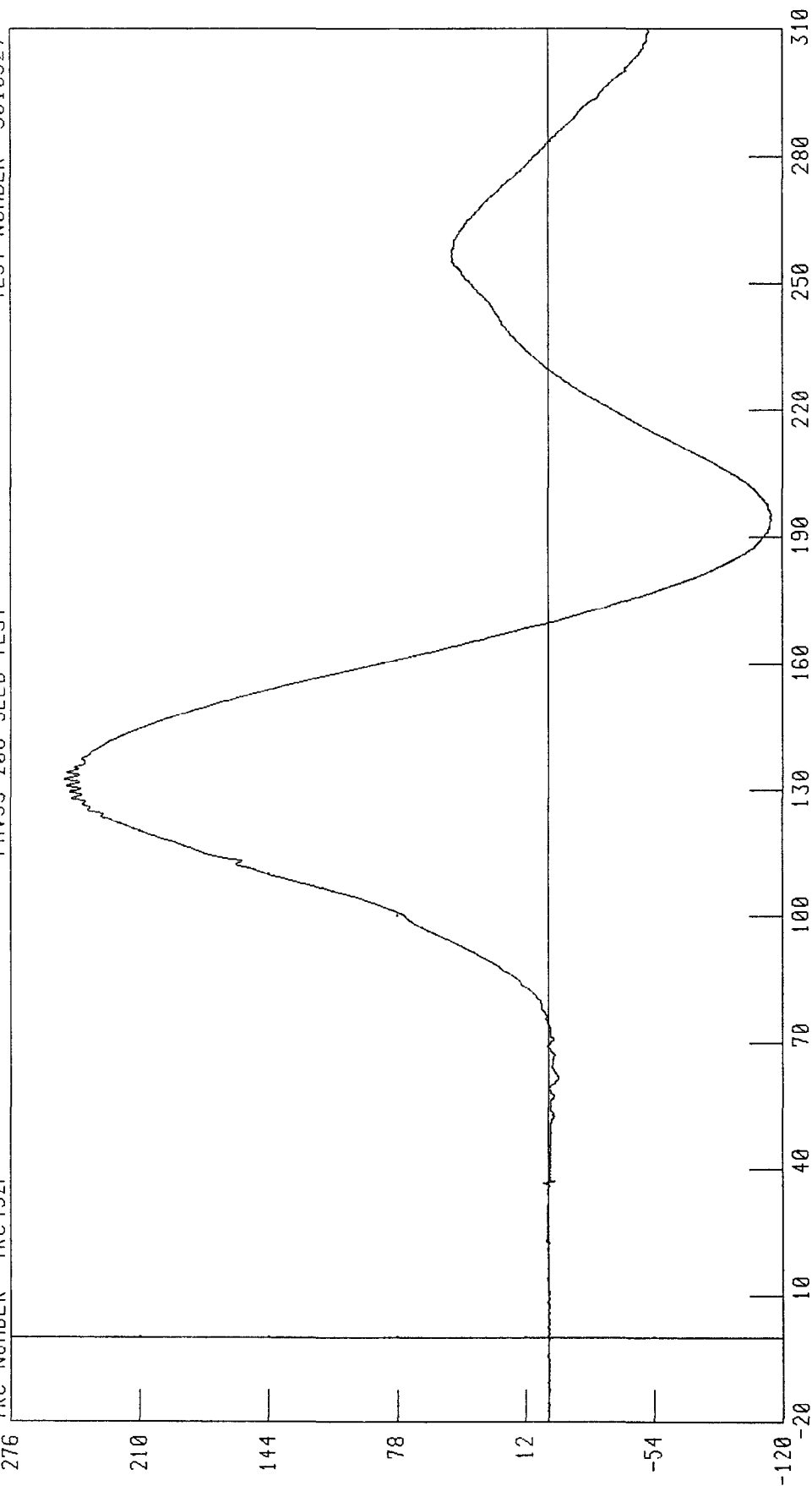
78

12

-54

-120

TORQUE (N M X 10⁻¹)



TIME (MS)

CHANNEL NEKZM2 FILTER CH CLASS 600

PEAK DATA 24 89 N M @ 132 56 MS, -11 44 N M @ 194 00 MS

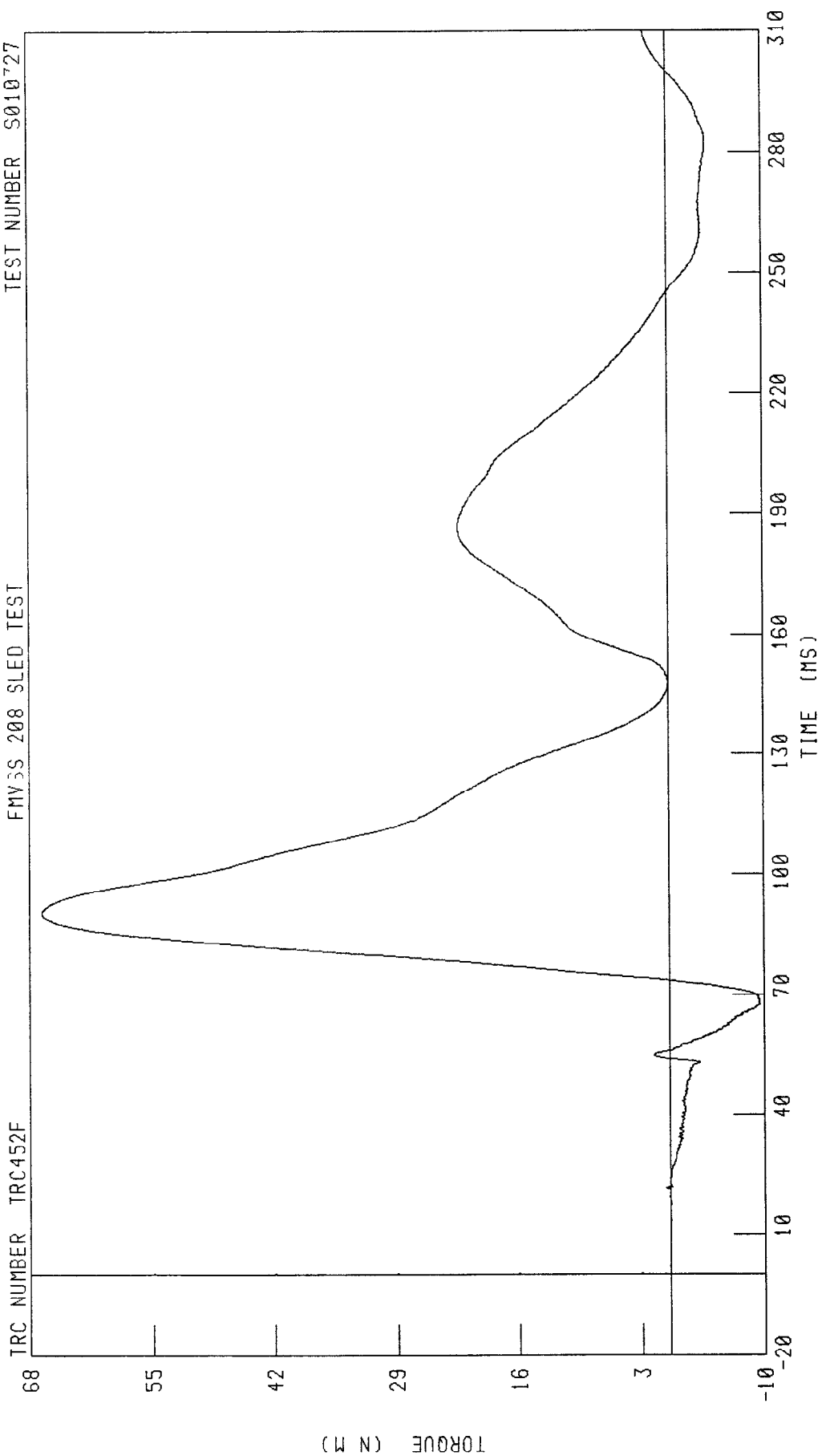
C10500 / 2001 MERCEDES C240

RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS OCCIPITAL CONDYLE

TRC NUMBER TRC452F

FMV3S 208 SLED TEST

TEST NUMBER S010727



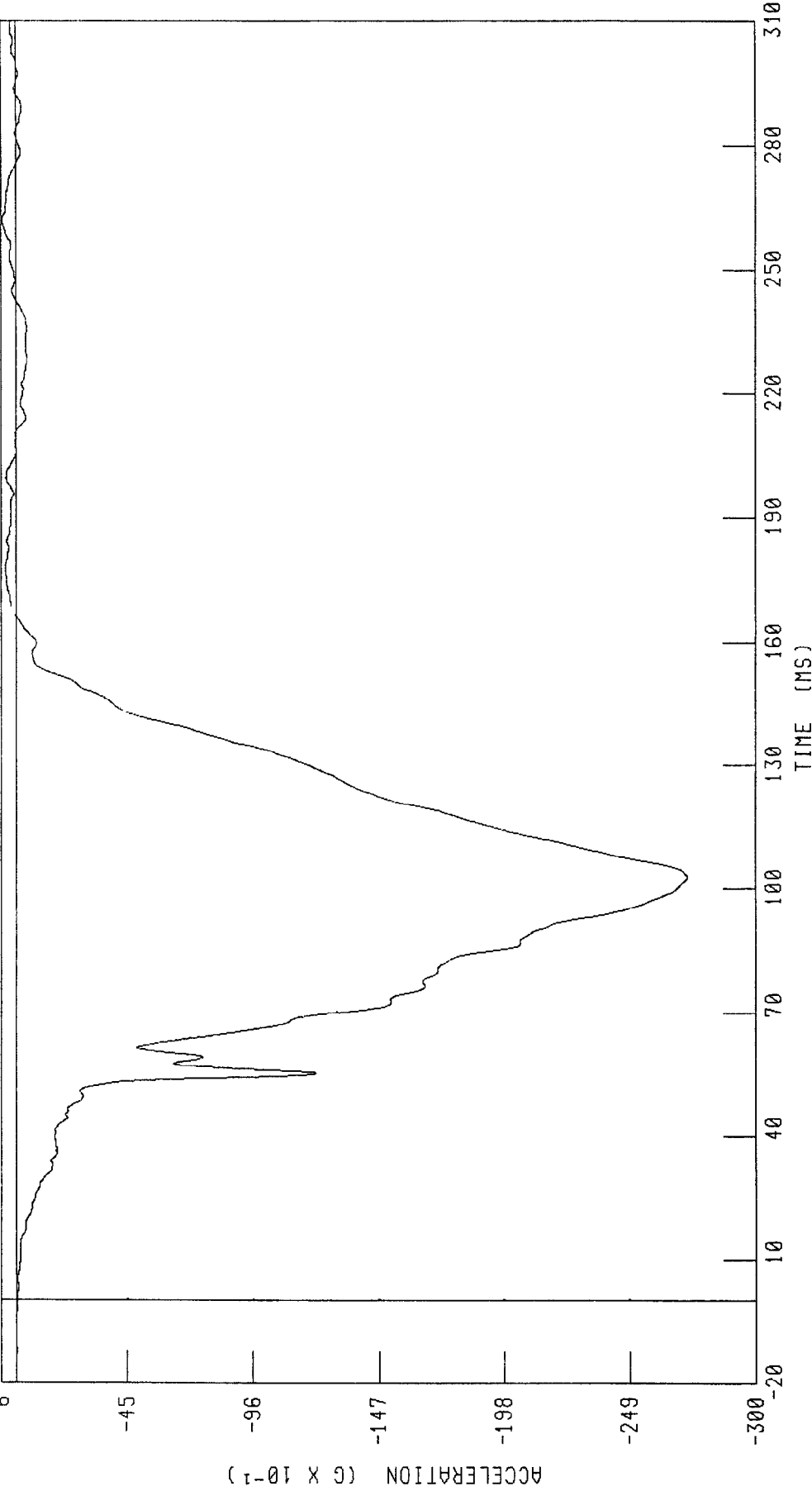
PEAK DATA 66 68 N M 0 90 16 MS, -9 62 N M 0 67 52 MS

CHANNEL NEKOM2 FILTER CH CLASS 600

C10500 / 2001 MERCEDES C240
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010327

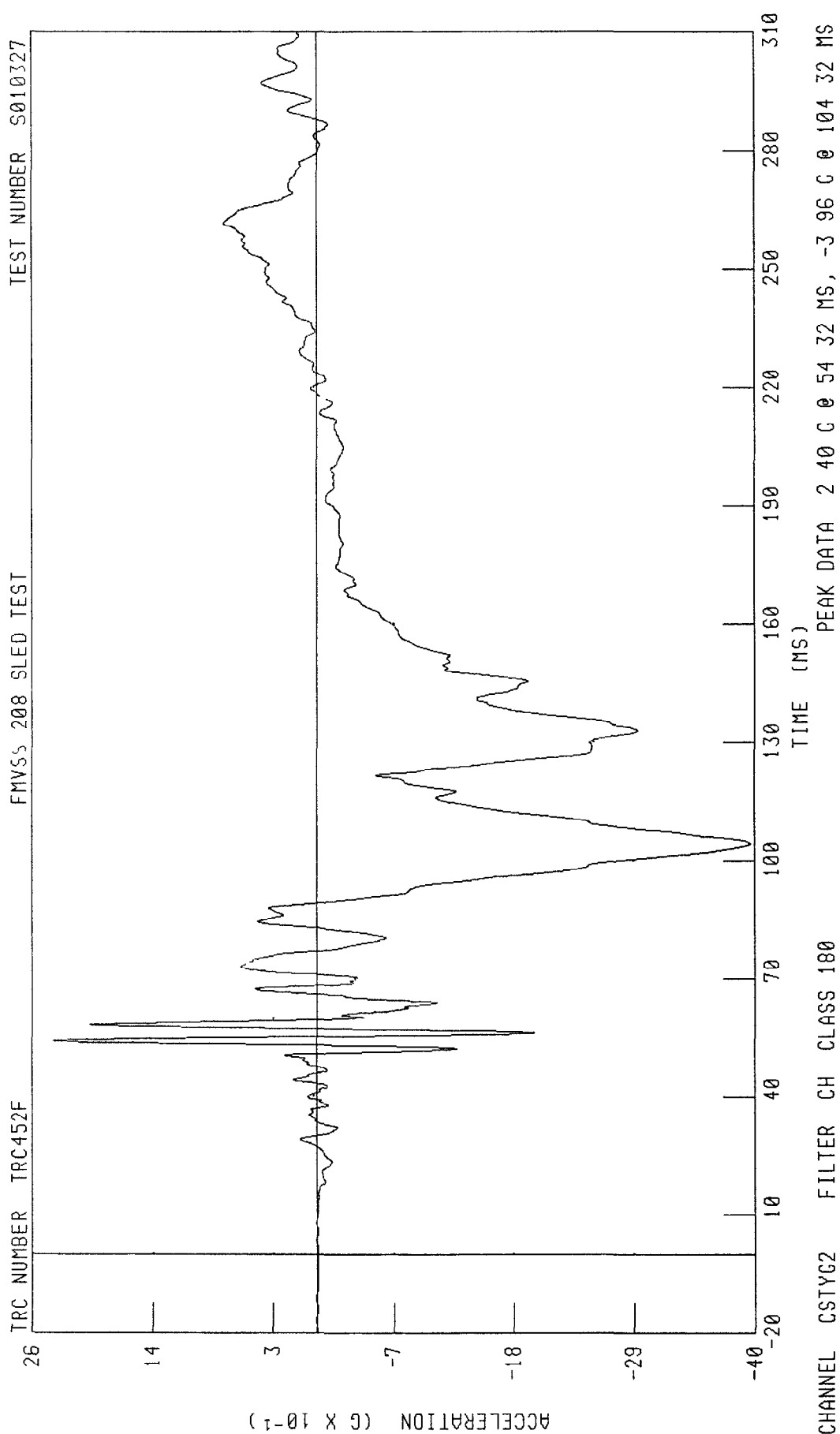
TRC NUMBER TRC452F



PEAK DATA 0 59 G @ 261 76 MS, -27 24 G @ 102 80 MS

CHANNEL CSTXC2 FILTER CH CLASS 180

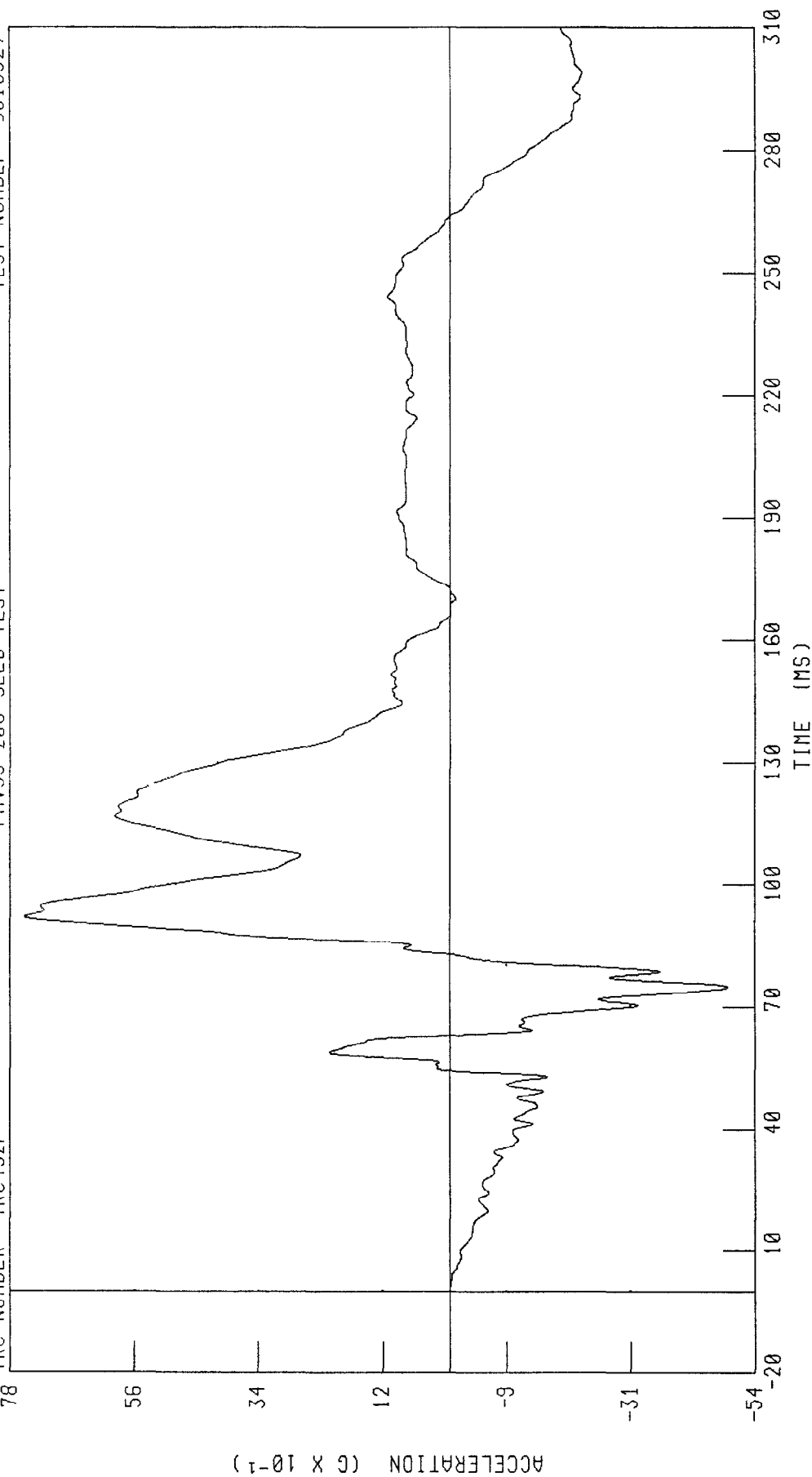
C10500 / 2001 MERCEDES C240
 RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION
 FMVSS 208 SLED TEST



C10500 / 2001 MERCEDES C240
 RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION
 FMVSS 208 SLED TEST

TEST NUMBER 3010327

TRC NUMBER TRC452F



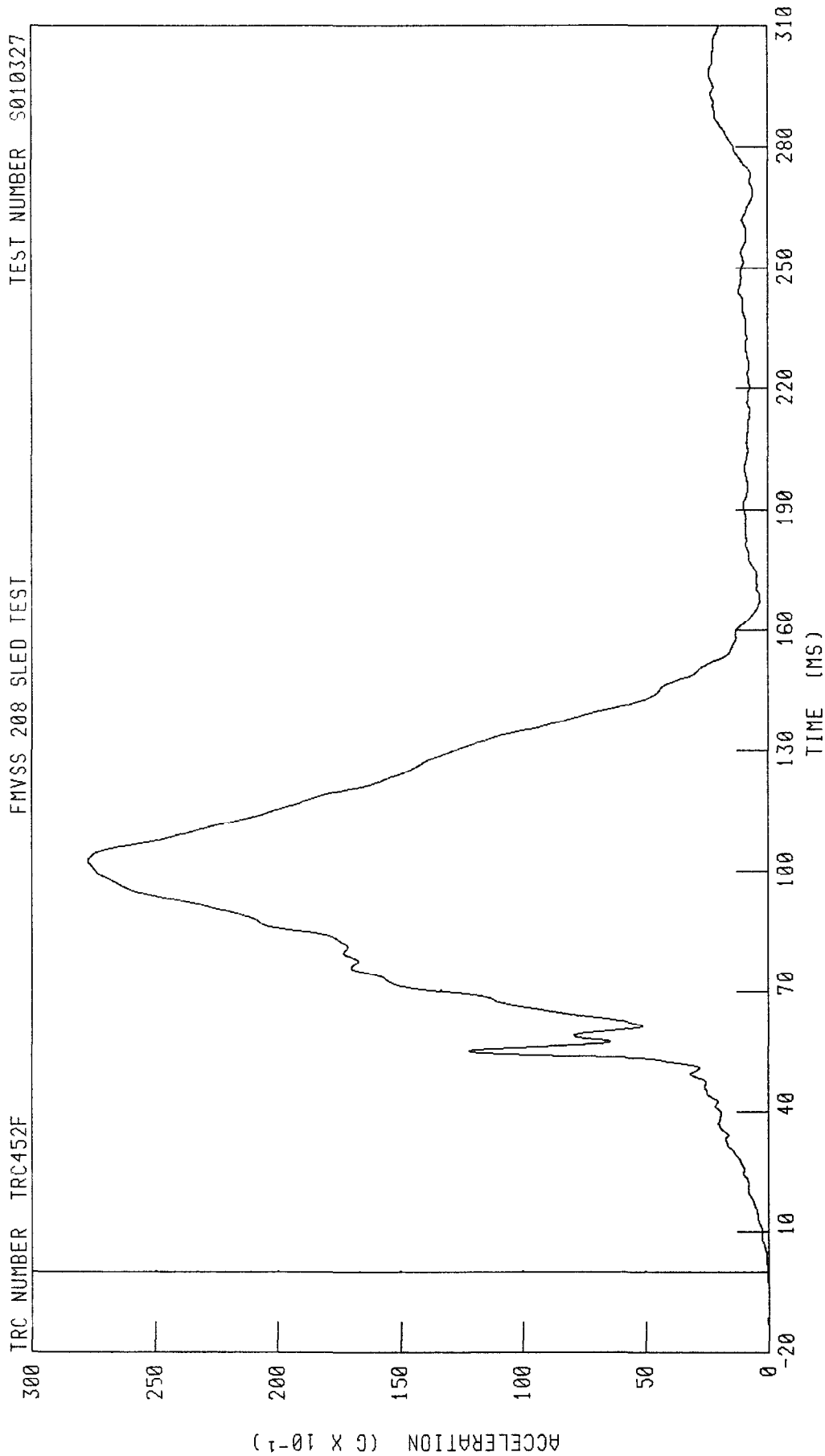
PEAK DATA 7 55 G @ 92 00 MS, -4 92 G @ 74 80 MS

CHANNEL CSTZC2 FILTER CH CLASS 180

C10500 / 2001 MERCEDES C240
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F



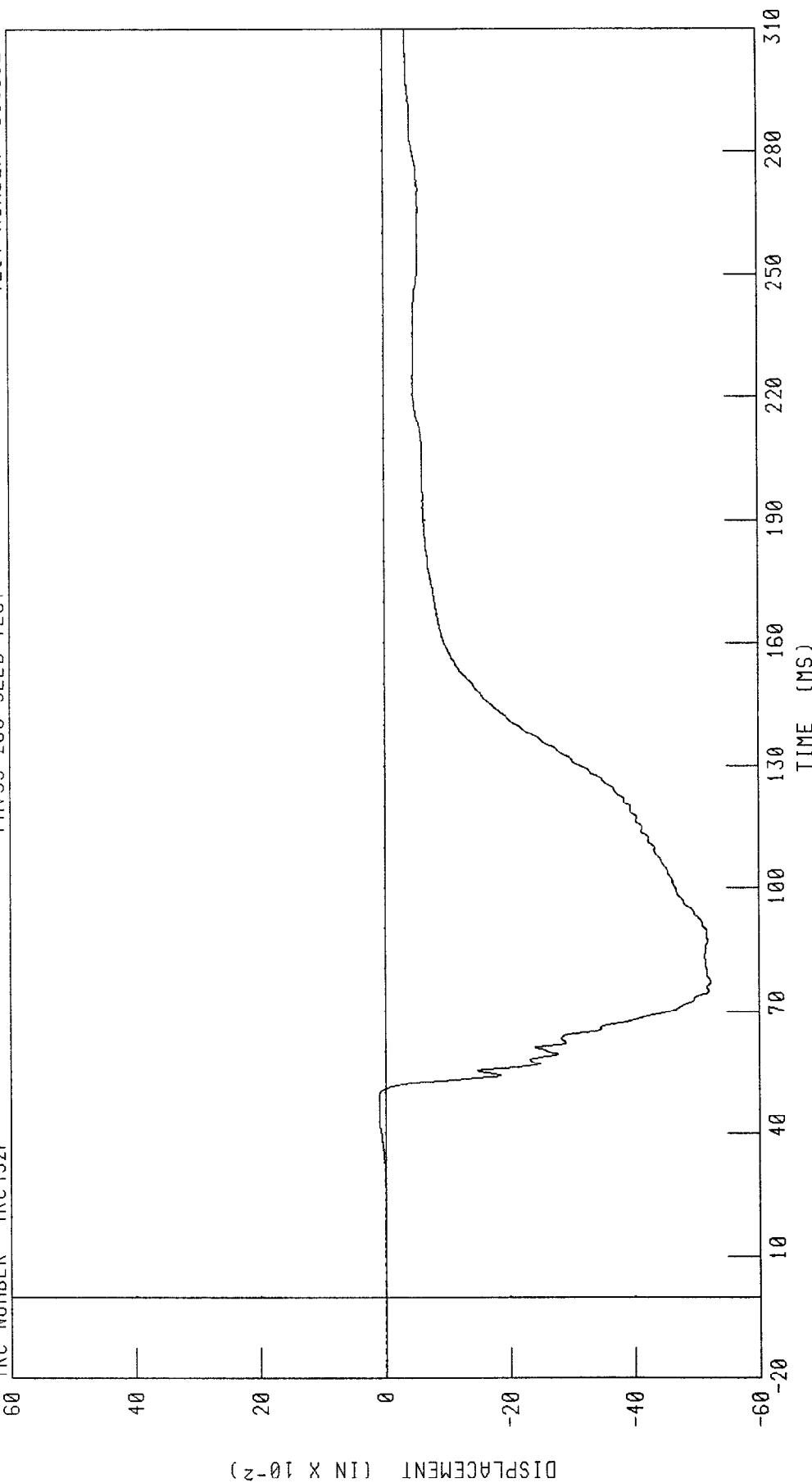
PEAK DATA 27 73 G @ 102 64 MS, 0 00 G @ -3 60 MS

CHANNEL CSTRC2 FILTER CH CLASS 180

C10500 / 2001 MERCEDES C240
 FIGHT FRONT PASSENGER CHEST DEFLECTION
 FMVSS 208 SLED TEST

TEST NUMBER S010327

TRC NUMBER TRC452F

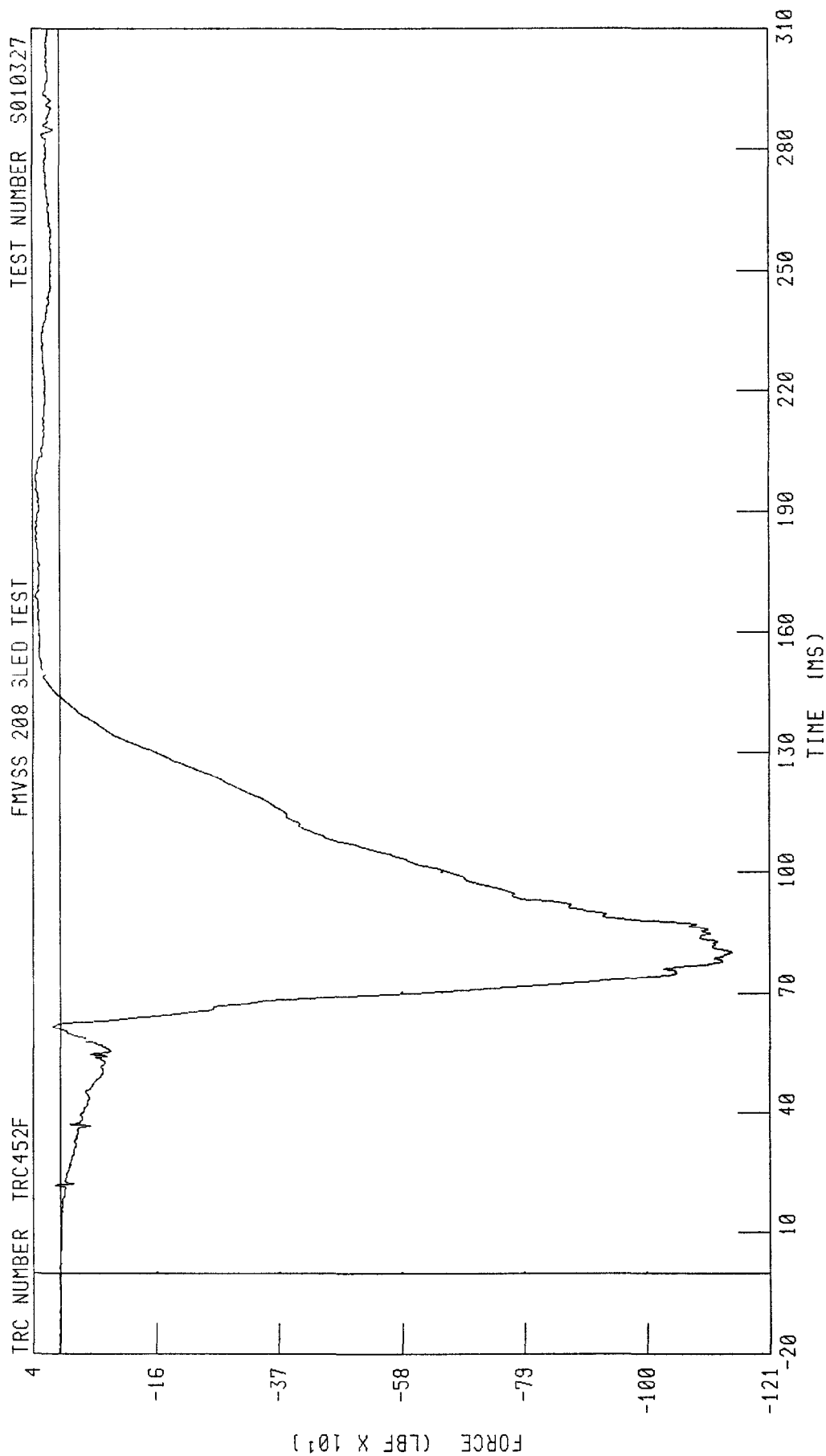


TIME (MS)

PEAK DATA 0 01 IN @ 46 40 MS, -0 52 IN @ 77 04 MS

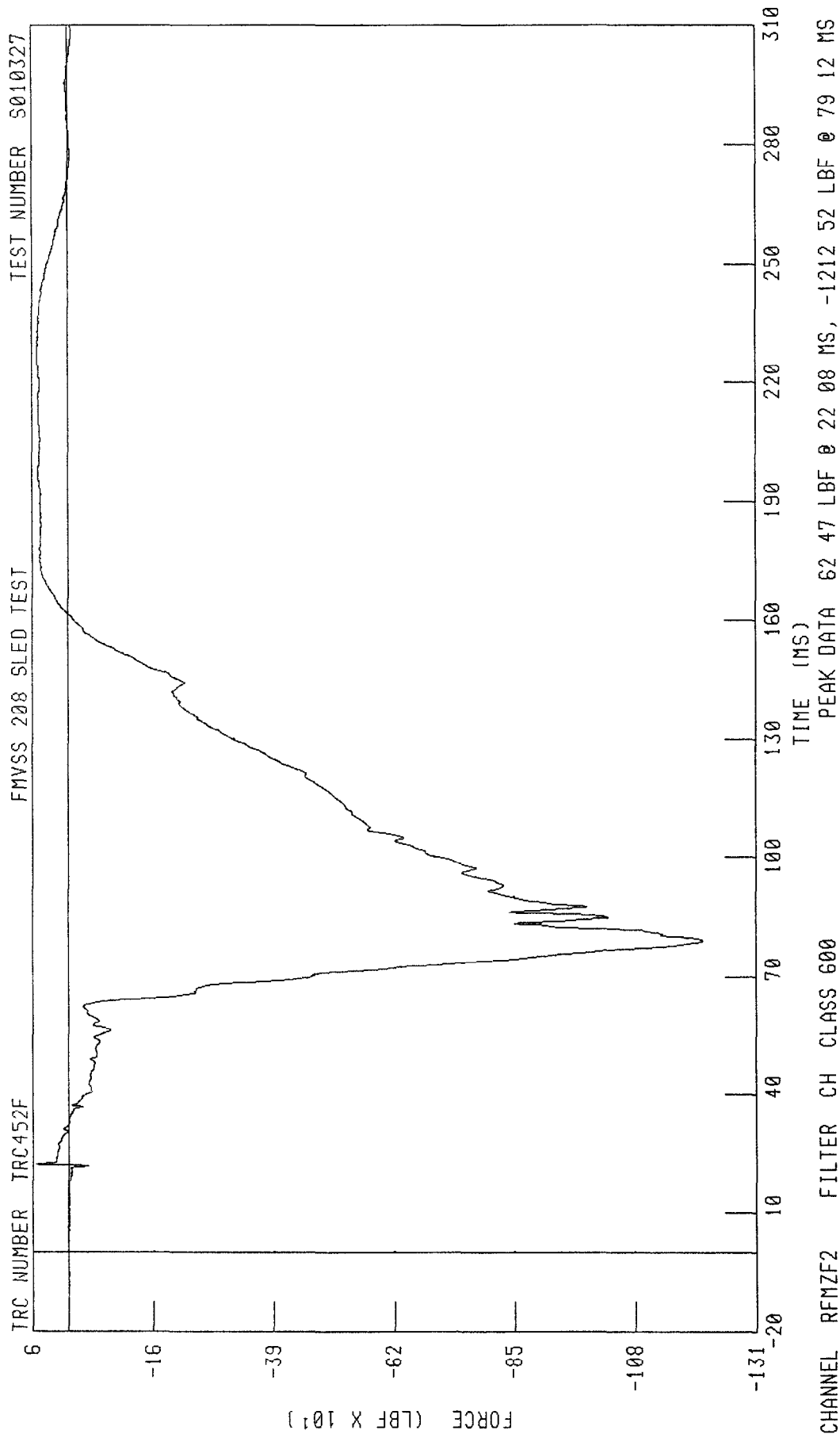
CHANNEL CSTXD2 FILTER CH CLASS 600

C10500 / 2001 MERCEDES C240
RIGHT FRONT PASSENGER LEFT FEMUR FORCE
FMVSS 208 3LED TEST



CHANNEL LFMZF2 FILTER CH CLASS 600
PEAK DATA 41 12 LBF @ 168 80 MS, -1150 47 LBF @ 80 08 MS

C10500 / 2001 MERCEDES C240
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE
FMVSS 208 SLED TEST



Appendix C

Miscellaneous Test Information

Seat belts and integrated restraint system

Your vehicle is equipped with seat belts for all seats, emergency tensioning retractors for all outboard seat belts, dual front airbags, door mounted side impact airbags, and head protective window curtain airbags. Their protective functions are designed to complement one another.

Seat belts

Important!

Laws in most states and all Canadian provinces require seat belt use.

All states and provinces require use of child restraints that comply with U.S. Federal Motor Vehicle Safety Standard 213 and Canadian Motor Vehicle Safety Standard 213.

All child restraint systems are designed to be secured in vehicle seats by lap belts or the lap belt portion of a lap-shoulder belt.

For your safety and that of your passengers we strongly recommend their use.

Warning!

Children 12 years old and under must never ride in the front seat, except in a Mercedes-Benz authorized BabySmart™ compatible child seat, which operates with the BabySmart™ system installed in the vehicle to deactivate the passenger side front airbag when it is properly installed. Otherwise they will be struck by the airbag when it inflates in a crash. If this happens, serious or fatal injury will result.

According to accident statistics, children are safer when properly restrained in the rear seating positions than in the front seating positions. Infants and small children must ride in back seats and be seated in an appropriate infant or child restraint system, which is properly secured with the vehicle's seat belt, fully in accordance with the child seat manufacturer's instructions.

A child's risk of serious or fatal injuries is significantly increased if the child restraints are not properly secured in the vehicle and the child is not properly secured in the child restraint.

Restraint systems

64

Warning!

Never ride in a moving vehicle with the backrest reclined. Sitting in an excessively reclined position can be dangerous. You could slide under the seat belt in a collision. If you slide under it, the belt would apply force at the abdomen or neck. That could cause serious or even fatal injuries. The backrest and seat belt provide the best restraint when the wearer is in an upright position and the belt is properly positioned on the body.

Seat belt nonusage warning system

With the electronic key in starter switch position 2, a warning sounds for a short time if the driver's seat belt is not fastened

Automatic comfort-fit seat belt.

An automatic comfort-fit feature for driver and front passenger seat belt is activated when the electronic key in the starter switch is turned to position 1 or 2

The retraction force of the inertia reel is reduced, increasing the level of seat belt comfort

Note

For cleaning and care of the seat belts see page 359

Warning!

Failure to wear and properly fasten and position your seat belt greatly increases your risk of injuries and their likely severity in an accident. You and your passengers should always wear seat belts.

If you are ever in an accident, your injuries can be considerably more severe without your seat belt properly buckled. Without your seat belt buckled, you are much more likely to hit the interior of the vehicle or be ejected from it. You can be seriously injured or killed.

In the same crash, the possibility of injury or death is lessened if you are wearing your seat belt.

Warning!

Never let more people ride in the vehicle than there are seat belts available. Be sure everyone riding in the vehicle is correctly restrained with a separate seat belt.

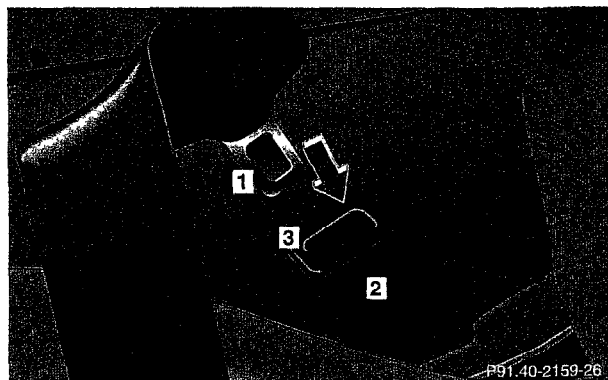
Restraint systems

65

Restraint systems

66

Fastening seat belts



- 1 Latch plate
- 2 Buckle
- 3 Release button

Push latch plate (1) into buckle (2) until it clicks. Do not twist the belt. A twisted seat belt may cause injury.

The lap belt should be positioned as low as possible on your hips and not across the abdomen.

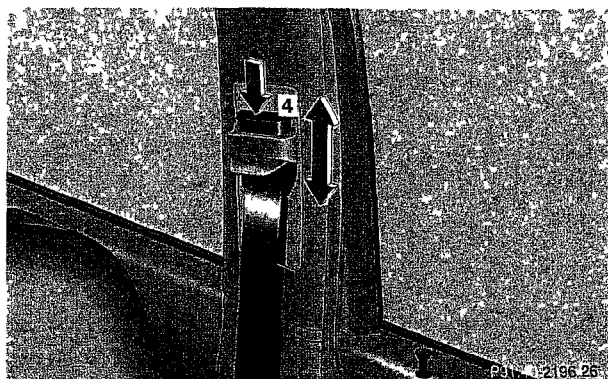
Warning!

Always fasten your seat belt before driving off. Always make sure your passengers are properly restrained – even those sitting in the rear.

Tighten the lap portion to a snug fit by pulling shoulder portion up.

The shoulder portion of the seat belt must be pulled snug and checked for snugness immediately after engaging it.

Adjust seat belt so that shoulder portion is located as close as possible to the middle of your shoulder (it should not touch the neck). For this purpose, you can adjust the height of the belt outlet.



- 4 Button for belt outlet height adjustment

To raise, slide belt outlet upward.

To lower, press button (4) and slide belt outlet downward.

Operation of seat belts

The inertia reel stops the belt from unwinding during sudden stops or when quickly pulling on the belt.

The locking function of the reel may be checked by quickly pulling out the belt.

Adjust seat belt so that shoulder portion is located as close as possible to the middle of your shoulder (it should not touch the neck).

Caution!

For safety reasons, avoid adjusting the seat or seat back into positions which could affect the correct seat belt positioning.

Unfastening of seat belts

Press release button (3) in the belt buckle (2).

Allow the retractor to completely rewind the seat belt by guiding the latch plate (1).

Restraint systems

67

Restraint systems

68

Warning!

USE SEAT BELTS PROPERLY.

- Seat belts can only work when used properly. Never wear seat belts in any other way than as described in this section, as that could result in serious injuries in case of an accident.
- Each occupant should wear their seat belt at all times, because seat belts help reduce the likelihood of and potential severity of injuries in accidents, including rollovers. The integrated restraint system includes "SRS" (driver airbag, front passenger airbag, side impact airbags, head protection window curtain airbags for side windows), "ETR" (seat belt emergency tensioning retractors), and front seat knee bolsters. The system is designed to enhance the protection offered to properly belted occupants in certain frontal (front airbags) and side (side impact and window curtain airbags) impacts which exceed preset deployment thresholds.

- Never wear the shoulder belt under your arm, against your neck or off your shoulder. In a crash, your body would move too far forward. That would increase the chance of head and neck injuries. The belt would also apply too much force to the ribs or abdomen, which could severely injure internal organs such as your liver or spleen.
- Never wear belts over rigid or breakable objects in or on your clothing, such as eyeglasses, pens, keys etc., as these might cause injuries.
- Position the lap belt as low as possible on your hips and not across the abdomen. If the belt is positioned across your abdomen, it could cause serious injuries in a crash.
- Each seat belt should never be used for more than one person at a time. Do not fasten a seat belt around a person and another person or other objects.
- Belts should not be worn twisted. In a crash, you wouldn't have the full width of the belt to manage impact forces. The twisted belt against your body could cause injuries.

- Pregnant women should also use a lap-shoulder belt. The lap belt portion should be positioned as low as possible on the hips to avoid any possible pressure on the abdomen.
- Never place your feet on the instrument panel or on the seat. Always keep both feet on the floor in front of the seat.

Warning!

USE CHILD RESTRAINTS PROPERLY.

Children 12 years old and under must never ride in the front seat, except in a Mercedes-Benz authorized BabySmart™ compatible child seat, which operates with the BabySmart™ system installed in the vehicle to deactivate the passenger front airbag when it is properly installed.

Otherwise they will be struck by the airbag when it inflates in a crash. If this happens, serious or fatal injury will result.

According to accident statistics, children are safer when properly restrained in the rear seating positions than in the front seating positions. Infants and small children must ride in the back seats and be seated in an appropriate infant or child restraint system, which is properly secured with the vehicle's seat belt, fully in accordance with the child seat manufacturer's instructions.

A child's risk of serious or fatal injuries is significantly increased if the child restraints are not properly secured in the vehicle and the child is not properly secured in the child restraint.

Children too big for child restraint systems must ride in back seats using regular seat belts. Position shoulder belt across chest and shoulder, not face or neck. A booster seat may be necessary to achieve proper belt positioning.

Restraint systems

69

Restraint systems

70

BabySmart™ airbag deactivation system

Special BabySmart™ compatible child seats, designed for use with the Mercedes-Benz system and available at any authorized Mercedes-Benz Center are required for use with the BabySmart™ airbag deactivation system. With the special child seat properly installed, the passenger front airbag will not deploy.

The  indicator lamp located in the center console will be illuminated, except with electronic key removed or in starter switch position 0. The system does not deactivate the door mounted side impact airbag.

Self-test BabySmart™ without special child seat installed

After turning electronic key in starter switch to position 1 or 2, the  indicator lamp located in the center console comes on for approximately 6 seconds and then extinguishes.

If the indicator lamp should not come on or is continuously lit, the system is not functioning. You must see an authorized Mercedes-Benz Center before seating any child on the front passenger seat. See page 286 for notes on the .

Warning!

The BabySmart™ airbag deactivation system will **ONLY** work with a special child seat designed to operate with it. It will not work with child seats which are not BabySmart™ compatible.

Never place anything between seat cushion and child seat (e.g. pillow), since it reduces the effectiveness of the deactivation system.

Follow the manufacturer's instructions for installation of special child seats.

The passenger front airbag will not deploy only if the  indicator lamp remains illuminated.

Please be sure to check the indicator every time you use the special system child seat. Should the light go out while the restraint is installed, please check installation. If the light remains out, do not use the BabySmart™ restraint to transport children on the front passenger seat until the system has been repaired.

BabySmart™ is a trademark of Siemens Automotive Corp.

Supplemental Restraint System (SRS)

Airbags are intended as a supplement to seat belts. Airbags alone cannot protect as well as airbags plus seat belts in impacts for which the airbags were designed to operate, and do not afford any protection whatsoever in crashes for which the airbags are not designed to deploy.

The SRS uses two crash severity levels (thresholds) to activate either the emergency tensioning retractor (ETR) or front airbag or both. Activation depends on the direction and severity of the impact exceeding the preset thresholds and whether the seat belt is fastened.

Seat belt fastened

- first threshold exceeded ETR activates
- second threshold exceeded airbag also activates

Seat belt not fastened**Front seats**

- first threshold exceeded airbag activates, not ETR

Rear outer seats

- first threshold exceeded ETR activates

Driver and front passenger and rear outer seat systems operate independently of each other.

Restraint systems

71

Restraint systems

Emergency tensioning retractor (ETR)

The seat belts for the front and rear outer seats are equipped with emergency tensioning retractors. These tensioning retractors are located in each belt's inertia reel and become operationally ready with the electronic key in starter switch position 1 or 2.

The emergency tensioning retractors are designed to activate only when the seat belts are fastened during frontal impacts exceeding the first threshold of the SRS and in rear impacts exceeding a preset severity level.

They remove slack from the belts in such a way that the seat belts fit more snugly against the body restricting its forward movement as much as possible.

In cases of other frontal impacts, angled impacts, roll-overs, certain side impacts, or other accidents without sufficient frontal or rear impact forces, the emergency tensioning retractors will not be activated. The driver and passengers will then be protected by the fastened seat belts and inertia reel in the usual manner.

Airbags

Warning!

Accident research shows that the safest place for children in an automobile is in the rear seat. Should you choose to place a child 12 years old or under in the front passenger seat of your vehicle, you must properly use a BabySmart™ child restraint which will turn off the passenger side front airbag. BabySmart™ will not, however, turn off the vehicle's side impact airbag.

It should be noted that with respect to both front and rear side impact airbags there is a possibility for a side airbag related injury if occupants, especially children, are not properly seated or restrained when next to a side airbag which needs to deploy rapidly in a side impact in order to do its job.

To help avoid the possibility of injury, please follow these guidelines: (1) occupants, especially children, should never place their bodies or lean their heads in the area of the door where the side airbag inflates. This could result in serious injuries or death should the side airbag be activated; (2) always sit upright, properly use the seat belts and use an appropriately sized infant or child restraint system for all children 12 years old or under; and (3) always wear seat belts properly.

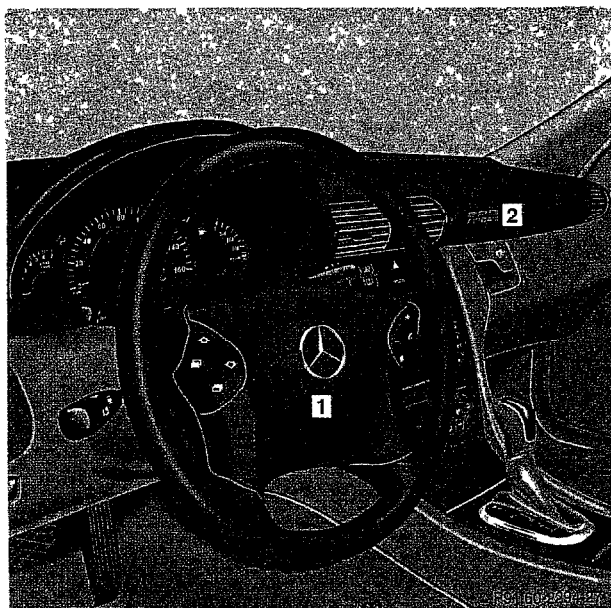
If you believe that, even with the use of these guidelines, it would be safer for your rear seat occupants to have both rear door mounted side airbags deactivated, then deactivation can be accomplished upon your written election to do so at your authorized Mercedes-Benz Center at an additional cost. Please contact your local authorized Mercedes-Benz Center or call our Client Assistance Center at 1-800-FOR-MERCEDES (1-800-367-6372) for details.

Restraint systems

Restraint systems

74

Front airbags



1 Driver airbag

2 Front passenger airbag

The most effective occupant restraint system yet developed for use in production vehicles is the seat belt. In some cases, however, the protective effect of a seat belt can be further enhanced by an airbag.

In conjunction with wearing the seat belts, the driver and front passenger airbags can provide increased protection for the driver and front passenger in certain frontal impacts exceeding preset thresholds.

Side impact and head protection window curtain airbags can provide increased protection to belted occupants on the impacted side of the vehicle in side impacts exceeding its preset threshold.

The operational readiness of the airbag system is verified by the indicator lamp "SRS" in the instrument cluster when turning the electronic key in starter switch to position 1. When turning the electronic key in starter switch to position 2 the indicator lamp "SRS" in the instrument cluster comes on. If no fault is detected, the lamp will go out when the engine is running. After the lamp goes out, the system continues to monitor the components and circuitry of the airbag system and will indicate a malfunction by coming on again. If the lamp

does not come on at all or if it fails to extinguish or if it comes on thereafter, a malfunction in the system has been detected.

The following system components are monitored or undergo a self-check: crash-sensor(s), airbag ignition circuits, front seat belt buckles, emergency tensioning retractors, seat sensor.

Have the system checked at your authorized Mercedes-Benz Center immediately.

In the operational mode, after the indicator lamp has gone out following the initial check, interruptions or short circuits in the airbag ignition circuit and in the driver and front passenger seat belt buckle harnesses, and low voltage in the entire system are detected and indicated.

Warning!

In the event a malfunction of the "SRS" is indicated as outlined above, the "SRS" may not be operational. For your safety, we strongly recommend that you visit an authorized Mercedes-Benz Center immediately to have the system checked; otherwise the "SRS" may not be activated when needed in an accident, which could result in serious or fatal injury, or it might deploy unexpectedly and unnecessarily which could also result in injury.

Note

See page 283 for information on the supplemental restraint system (SRS) indicator lamp.

Restraint systems

75

Restraint systems

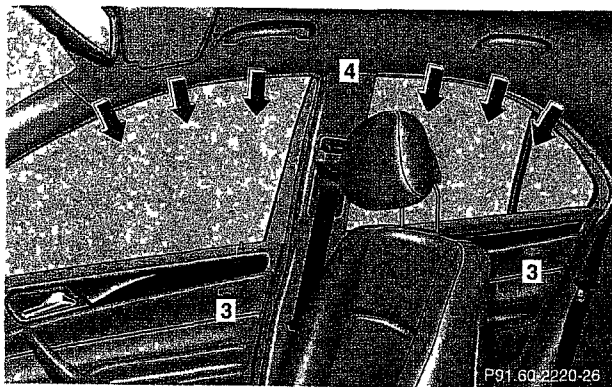
76

The driver and passenger front airbags are designed to activate only in certain frontal impacts exceeding a preset threshold. The front passenger airbag deploys only if the front passenger seat is occupied and the **AIRBAG OFF** indicator lamp in the center console is not illuminated.

Note

Heavy objects on the front passenger seat can appear to the "SRS" to indicate the presence of an occupant in that seat which causes the passenger front airbag to deploy in a crash exceeding the appropriate threshold.

Side impact airbags, window curtain airbags



- 3 Side impact airbags
- 4 Window curtain airbags

Side impact airbags

The side impact airbags are designed to activate only in certain side impacts exceeding a preset threshold. Only the side impact airbags on the impacted side of the vehicle deploy.

The side impact airbag for the front passenger deploys only if the front passenger seat is occupied.

Side impact airbags operate best in conjunction with a properly positioned and fastened seat belt.

Note

Heavy objects on front passenger seat can cause the front passenger side impact airbag to deploy in a crash.

Window curtain airbag

The head protection window curtain airbags afford greater protection against injuries to the head and upper body. They fill up in the area between the A and C pillars (see arrows) between the side windows and an occupant's head.

The window curtain airbags are designed to activate only in certain side impacts exceeding a preset threshold. Only the head protection window curtain airbag on the impacted side of the vehicle deploys.

Restraint systems

77

Restraint systems

78

Important!

Airbags are designed to activate only in certain frontal (front airbags) impacts, or side (side impact and head protection window curtain airbags) impacts which exceed preset thresholds

Only during these types of impacts, if of sufficient severity to meet the deployment thresholds, will they provide their supplemental protection

The driver and passenger should always wear their seat belts, otherwise it is not possible for the airbags to provide their supplemental protection.

In cases of other frontal impacts, angled impacts, roll-overs, other side impacts, rear collisions, or other accidents, the airbags will not be activated. The driver and passengers will then be protected by the fastened seat belts

We caution you not to rely on the presence of the airbags in order to avoid wearing your seat belt

Warning!

Airbags are designed to reduce the potential of injury in certain frontal (front airbags) impacts, or side (side impact and head protection window curtain airbags) impacts which may cause significant injuries, however, no system available today can totally eliminate injuries and fatalities.

The activation of the "SRS" temporarily releases a small amount of dust from the airbags. This dust, however, is neither injurious to your health, nor does it indicate a fire in the vehicle. The dust might cause some temporary breathing difficulty for people with asthma or other breathing trouble. To avoid this, you may wish to get out of the vehicle as soon as it is safe to do so. If you have any breathing difficulty but cannot get out of the vehicle after the airbag inflates, then get fresh air by opening a window or door.

The service life of the airbags extends to the date indicated on the label located on the driver side door latch post. To provide continued reliability after that date, they should be inspected by an authorized Mercedes-Benz Center at that time and replaced when necessary.

Your vehicle was originally equipped with airbags which are designed to activate in certain impacts exceeding a preset threshold to reduce the potential and severity of injury. It is important to your safety and that of your passenger that you replace deployed airbags and repair any malfunctioning airbags to ensure the vehicle will continue to provide crash protection for occupants

Warning!

To reduce the risk of injury when the front airbags inflate, it is very important for the driver and front passenger to always be in a properly seated position and to wear your seat belt.

For maximum protection in the event of a collision always be in normal seated position with your back against the backrest. Fasten your seat belt and ensure that it is properly positioned on your body.

Since the airbag inflates with considerable speed and force, a proper seating and hands on steering wheel position will help to keep you at a safe distance from the airbag. Occupants who are unbelted, out of position or too close to the airbag can be seriously injured by an airbag as it inflates with great force in the blink of an eye:

- Sit properly belted in an upright position with your back against the backrest.
- Adjust the driver seat as far as possible rearward, still permitting proper operation of vehicle controls. The distance from the center of the driver's breastbone to the center of the airbag cover on the steering wheel must be at least ten inches (25 cm) or more. You should be able to accomplish this by a combination of adjustments to the seat and steering wheel. If you have any problems, please see your authorized Mercedes-Benz Center.
- Do not lean with your head or chest close to the steering wheel or dashboard.
- Keep hands on the outside of steering wheel rim. Placing hands and arms inside the rim can increase the risk and potential severity of hand/arm injury when driver front airbag inflates.
- Adjust the front passenger seat as far as possible rearward from the dashboard when the seat is occupied.

Restraint systems

79

Restraint systems

80

- Occupants, especially children, should never lean their heads in the area of the door where the side airbag inflates. This could result in serious injuries or death should the airbag be triggered.
- Children 12 years old and under must never ride in the front seat, except in a Mercedes-Benz authorized Baby Smart™ compatible child seat, which operates with the BabySmart™ system installed in the vehicle to deactivate the passenger side front airbag when it is properly installed. Otherwise they will be struck by the airbag when it inflates in a crash. If this happens, serious or fatal injury can result.

Failure to follow these instructions can result in severe injuries to you or other occupants.

Safety guidelines for the seat belt, emergency tensioning retractor and airbag

Warning!

- Damaged seat belts or belts that were highly stressed in an accident must be replaced and their anchoring points must also be checked. Use only belts installed or supplied by an authorized Mercedes-Benz Center.
- Airbags and "ETR's" are designed to function on a one-time-only basis. An airbag or emergency tensioning retractor (ETR) that was activated must be replaced.
- No modifications of any kind may be made to any components or wiring of the "SRS". This includes changing or removing any component or part of the "SRS", the installation of additional trim material, badges etc. over the steering wheel hub, front passenger airbag cover, door trim panels, or door frame trims, and installation of additional electrical/electronic equipment on or near "SRS" components and wiring. Keep area between airbags and occupants free from objects (e.g. packages, purses, umbrellas, etc).

- Do not pass belts over sharp edges.
- Do not make any modification that could change the effectiveness of the belts.
- Do not use handles above doors for placing such items as coat hangers etc.
- An airbag system component within the steering wheel gets hot after the airbag has inflated. Do not touch.
- Improper work on the system, including incorrect installation and removal, can lead to possible injury through an unintended activation of the "SRS".
- In addition, through improper work there is a risk of rendering the "SRS" inoperative or causing unintended airbag deployment. Work on the "SRS" must therefore only be performed by an authorized Mercedes-Benz Center.

- For your protection and the protection of others, when scrapping the airbag unit or emergency tensioning retractor, our safety instructions must be followed. These instructions are available from your authorized Mercedes-Benz Center.
- Given the considerable deployment speed and the textile structure of the airbags, there is the possibility of abrasions or other injuries resulting from airbag deployment.

When you sell your vehicle we strongly urge you to give notice to the subsequent owner that it is equipped with an "SRS" by alerting them to the applicable section in the Operator's Manual.

Restraint systems

81

Infant and child restraint systems

We recommend all infants and children be properly restrained at all times while the vehicle is in motion. All lap-shoulder belts except the driver seat belt have special seat belt retractors for secure fastening of child restraints.

To activate, pull shoulder belt out completely and let it retract. During the seat belt retraction a ratcheting sound can be heard to indicate that the special seat belt retractor is activated. The belt is now locked.

To deactivate, release seat belt buckle and let seat belt retract completely. The seat belt can again be used in the usual manner.

Note

For child seats with mounting fittings for tether anchorages refer to page 84 (installation of infant and child restraint systems).

Warning!

Never release the seat belt buckle while vehicle is in motion, since the special seat belt retractor will be deactivated.

Warning!

Children 12 years old and under must never ride in the front seat, except in a Mercedes-Benz authorized BabySmart™ compatible child seat, which operates with the BabySmart™ system installed in the vehicle to deactivate the passenger front airbag when it is properly installed. Otherwise they will be struck by the airbag when it inflates in a crash. If this happens, serious or fatal injury can result.

According to accident statistics, children are safer when properly restrained in the rear seating positions than in the front seating positions. Infants and small children must ride in back seats and be seated in an appropriate infant or child restraint system, which is properly secured with the vehicle's seat belt, fully in accordance with the child seat manufacturer's instructions.

Important!

The use of infant or child restraints is required by law in all 50 states and all Canadian provinces.

Infants and small children should be seated in an appropriate infant or child restraint system properly secured by a lap-shoulder belt, and that complies with U.S. Federal Motor Vehicle Safety Standard 213 and Canadian Motor Vehicle Safety Standard 213. A statement by the child restraint manufacturer of compliance with this standard can be found on the instruction label on the restraint and in the instruction manual provided with the restraint.

When using any infant or child restraint system, be sure to carefully read and follow all manufacturer's instructions for installation and use.

Please read and observe warning labels affixed to the inside of the vehicle and to infant or child restraints.

Infants and small children should never share a seat belt with another occupant. During an accident, they could be crushed between the occupant and seat belt.

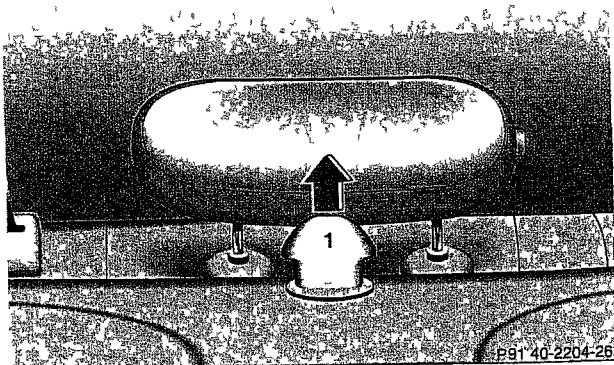
Children too big for child restraint systems must ride in back seats using regular seat belts. Position shoulder belt across chest and shoulder, not face or neck. A booster seat may be necessary to achieve proper belt positioning for children from 41 lbs. to the point where a lap/shoulder belt fits properly without one.

When the child restraint is not in use, remove it from the vehicle or secure it with the seat belt to prevent the child restraint from becoming a projectile in the event of an accident.

Restraint systems

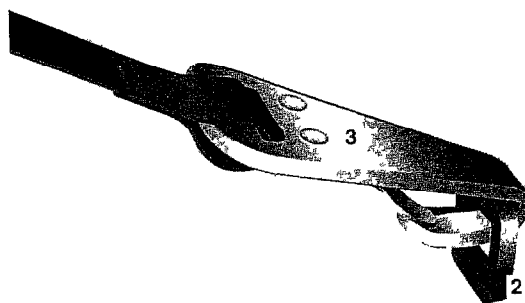
84

Installation of infant and child restraint systems



This vehicle is provided with tether anchorages for a top tether strap at each of the rear seating positions

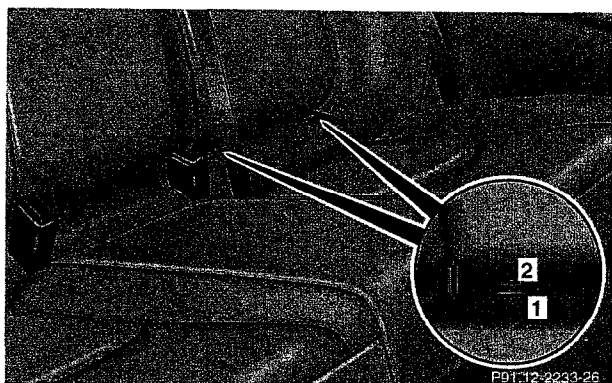
Prior to installing a tether strap, remove cover (1) from anchorage ring (2) and store in a convenient place (e.g. glove box).



To secure a tether strap to the anchorage, securely fasten the hook (3), which is part of the tether strap, to the anchorage ring (2). For safety, please make sure that the hook has attached to the ring beyond the safety catch, as illustrated.

After removing the tether strap, reinstall the cover (1).

Child seat mounts



This vehicle is provided with two mounts (at each of the outer rear seats) for the installation of a child seat having the matching mounting fittings. The mounts can be folded back between the seat cushion and the backrest.

To install a child seat, the mounts (1) must be folded forward until they lock in place. To do so, grip inner side of mounts and fold forward. Install child seat according to the manufacturer's instructions.

To fold mounts (1) back, press down button (2) on each mount and return mount into its catch.

Note

With a child seat installed in the left rear seat, the seat belt for the center seat occupied by a passenger must operate freely. Guide seat belt between its seat cushion mount and backrest mount along outside of right side child seat mount.

Restraint systems

85

Supplemental restraint system (SRS) indicator lamp



When turning the electronic key in starter switch to position 1 the indicator lamp "SRS" in the instrument cluster comes on. If no fault is detected, the lamp will go out after approximately 4 seconds.

When turning the electronic key in starter switch to position 2 the indicator lamp "SRS" in the instrument cluster comes on. If no fault is detected, the lamp will go out when the engine is running.

The operational readiness of the airbag system is verified by the indicator lamp "SRS" in the instrument cluster when turning the electronic key in starter switch to position 1 or 2.

After the lamp goes out, the system continues to monitor the components and circuitry of the airbag system and will indicate a malfunction by coming on again.

Warning!

In the event a malfunction of the "SRS" is indicated as outlined above, the "SRS" may not be operational. For your safety, we strongly recommend that you visit an authorized Mercedes-Benz Center immediately to have the system checked; otherwise the "SRS" may not be activated when needed in an accident, which could result in serious or fatal injury, or it might deploy unexpectedly and unnecessarily which could also result in injury.

See page 73 for notes on airbags, see page 71 for belt tensioners and page 63 for infant and child seat restraint.

function and warning messages

286

Malfunction and indicator lamp in the center console

AIRBAG OFF indicator lamp

The  indicator lamp will light up for approximately 6 seconds when you turn the electronic key in starter switch to position 1 or 2.

It does not light up if there is a fault in the system

The  indicator lamp stays lit as long as a Baby Smart™ child seat is properly installed on the front passenger seat. It indicates that the front passenger airbag is switched off.

See page 70 for BabySmart™ airbag and its deactivation system.

Malfunction and warning messages in the multifunction display

Malfunction and warning messages for the following systems will be displayed immediately in the multifunction display.

They are divided into three categories

Category C1

Messages of most immediate priority

These cannot be cleared from the instrument cluster using the reset knob on the instrument cluster (see page 98).

Categories C2 and C3

Messages of less immediate priority

These can be cleared from the instrument cluster using the reset knob on the instrument cluster (see page 98) and are then stored in the malfunction message memory. See page 117.

Baby Smart™ is a trademark of Siemens Automotive Corp.

With the ABS malfunctioning, the BAS and ESP are also switched off. The malfunction indicator lamps and malfunction messages in the multifunction display come on with the engine running.

If the charging voltage falls below 10 volts, the malfunction indicator lamp comes on and the ABS is switched off. When the voltage is above this value again, the malfunction indicator lamp should go out and the ABS is operational.

Have the system checked at your authorized Mercedes-Benz Center as soon as possible.

See page 270 for notes on antilock brake system (ABS).

Electronic stability program (ESP) – warning lamp



The yellow ESP warning lamp in the speedometer dial comes on with the electronic key in starter switch position 2.

It should go out with engine running.

If the ESP malfunction indicator lamp remains illuminated with the engine running, a malfunction has been detected in the system. Pressing the accelerator pedal will require greater effort. Only partial engine output will be available.

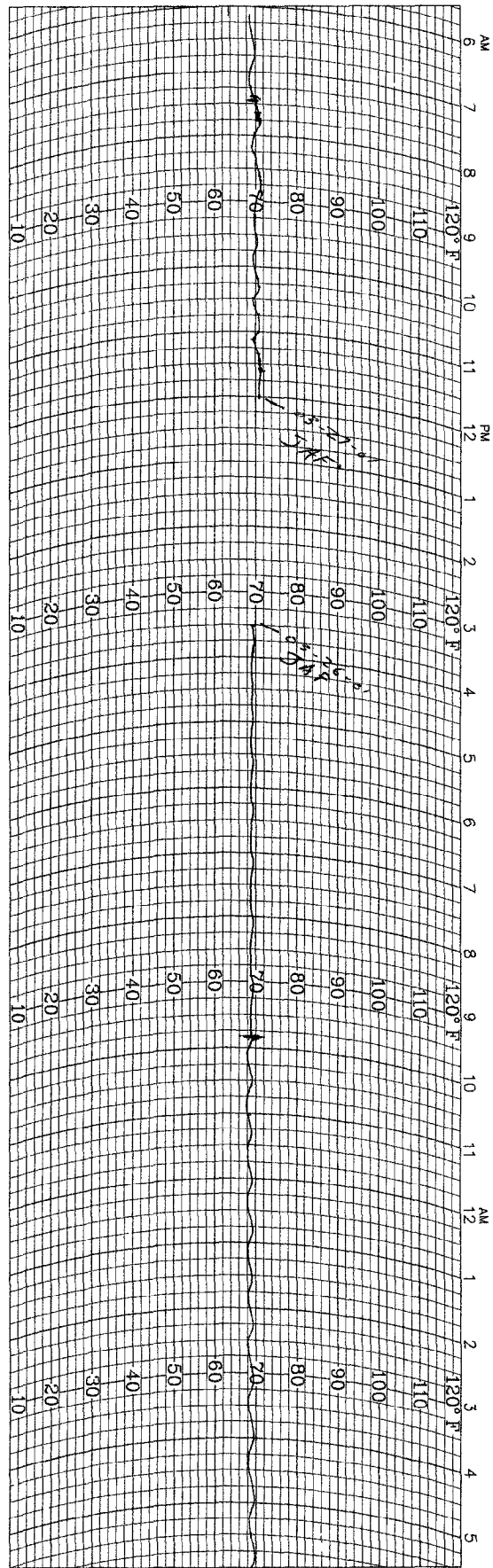
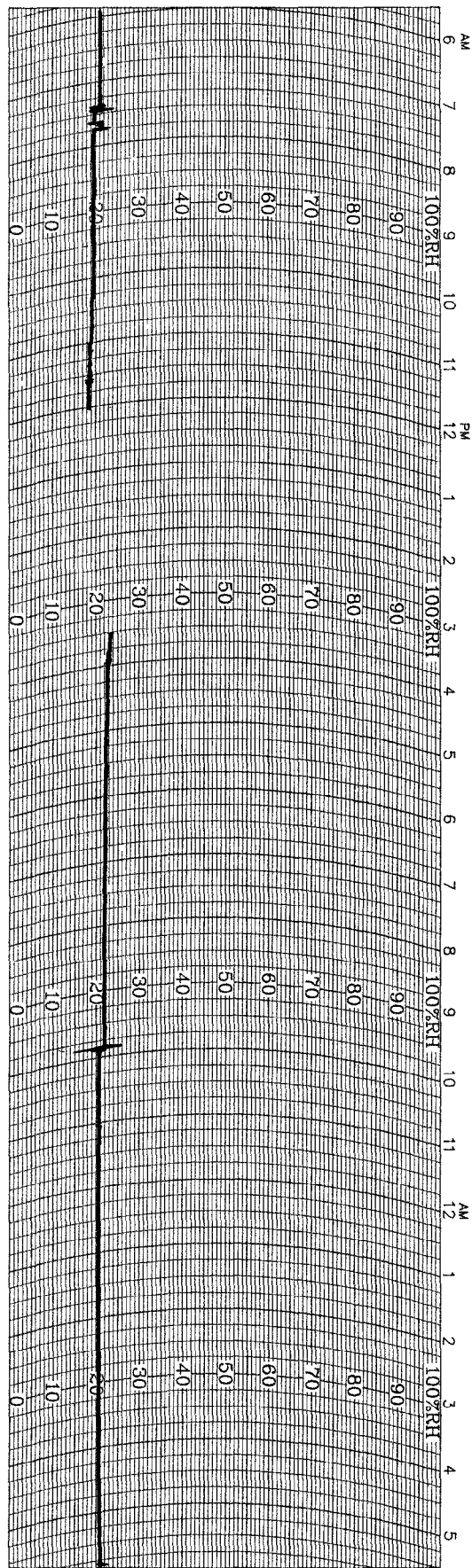
See electronic stability program (ESP) on page 272 if the warning lamp lights up or flashes when the vehicle is moving.

Seat belt nonusage warning lamp



With the electronic key in starter switch position 2, the seat belt nonusage warning lamp comes on, and a warning sounds for a short time if the driver's seat belt is not fastened.

After starting the engine, the seat belt nonusage warning lamp blinks for a brief period to remind the driver and passengers to fasten seat belts.



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