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Report Number: 208S-TRC-009

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

General Motors Corporation
2001 Chevrolet Tahoe
NHTSA Number: C10106
TRC Inc. Test Number: S010320

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



Test Date: March 20, 2001
Report Date: April 9, 2001

Final Report

Prepared For:
U. S. Department of Transportation
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance (NSA-30)
400 Seventh Street, S.W., Room No. 6115
Washington, DC 20590

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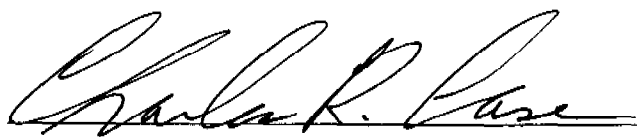
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Final Report Accepted By:

 Date 5/16/01
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

m inches 2.5
ft feet 30
yd yards 0.9
mi miles 1.6
cm centimeters
m meters
km kilometers

AREA

m² square inches 6.5
ft² square feet 0.09
yd² square yards 0.8
mi² square miles 2.6
acres 0.4
cm² square centimeters
m² square meters
km² square kilometers
ha hectares

MASS (weight)

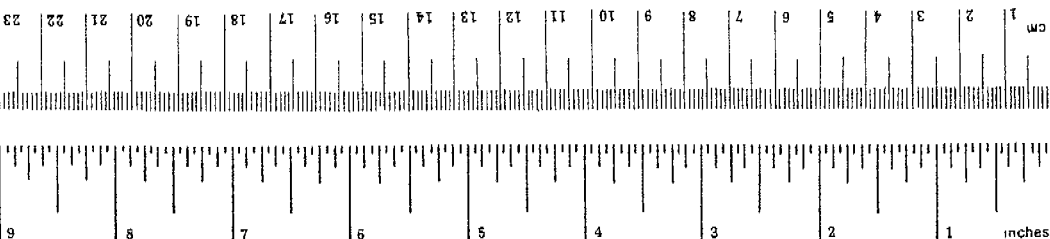
oz ounces 28
lb pounds 0.45
short tons (2000 lb) 0.9
g grams
kg kilograms
t tonnes

VOLUME

tsp teaspoons 5
Tbsp tablespoons 15
fl oz fluid ounces 30
c cups 0.24
pt pints 0.47
qt quarts 0.95
gal gallons 3.8
ft³ cubic feet 0.03
yd³ cubic yards 0.76
ml milliliters
l liters
m³ cubic meters

TEMPERATURE (exact)

°F Fahrenheit temperature 5/9 (after subtracting 32) °C Celsius temperature



Symbol When You Know Multiply by To Find Symbol

LENGTH

mm millimeters 0.04
cm centimeters 0.4
m meters 3.3
yd yards 1.1
mi miles 0.6
in inches
ft feet
mi miles

AREA

cm² square centimeters 0.16
m² square meters 1.2
km² square kilometers 0.4
ha hectares (10 000 m²) 2.5
in² square inches
yd² square yards
mi² square miles
acres

MASS (weight)

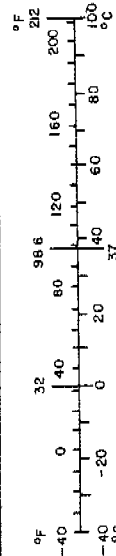
g grams 0.035
kg kilograms 2.2
t tonnes (1000 kg) 1.1
oz ounces
lb pounds
short tons

VOLUME

ml milliliters 0.03
l liters 2.1
fl oz fluid ounces
pt pints
qt quarts
gal gallons
ft³ cubic feet
yd³ cubic yards

TEMPERATURE (exact)

°C Celsius temperature 9/5 (then add 32) °F Fahrenheit temperature



111 254 (exact) For other exact conversions and more detailed tables see NBS Monograph 286
Units of Weights and Measures Price \$2.25 SO Catalog No. C 3 10 286

Technical Report Documentation Page

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16. Abstract An FMVSS 208 Section 13 compliance sled test was conducted on a 2001 Chevrolet Tahoe MPV, NHTSA No C10106, 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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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 Chevrolet Tahoe, NHTSA No. C10106, 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 20, 2001.

The test vehicle, a 2001 Chevrolet Tahoe, NHTSA No. C10106, 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	188	235
Chest g	60 g	38.8	32.2
Chest Displacement	3 inches	1.4	0.2
Left Femur	2250 lbs	1273	988
Right Femur	2250 lbs	1693	1360
Neck Extension	57 Nm	8.4	42.1
Neck Flexion	190 Nm	32.9	43.3
Neck Tension	3300 N	1166	2650
Neck Compression	4000 N	130	159
Neck Shear	3100 N	664	915

The subject vehicle, a 2001 Chevrolet Tahoe, NHTSA No. C10106, appears to meet 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 29.1 mph. The air bags were triggered at 20.2 milliseconds after 0.5 g acceleration was measured by the firing circuit. Following subsequent digital data processing and filtering the primary sled acceleration signal to Channel Class 60, the air bag event trigger signal was 21.4 ms after the 0.5 g acceleration level was indicated.

Data Acquisition Explanations

The measured velocity data channel, SLDXV, from the light trap vane attached to the sled, recorded an anomalous data spike at approximately 159 milliseconds and several anomalous spikes between 230 and 260 milliseconds. The peak measured velocity reported excludes the data spikes.

The vehicle's engine top X-axis accelerometer, TEXG, recorded no valid data throughout the event.

The two (2) dummies were temperature soaked in a laboratory maintained between 69° and 72° F for more than 16 hours, however, a hygrothermograph recording of this temperature is only available for approximately five and one-half hours before the test. To verify that all dummy components were within the specified temperature range at the time of the test, thermisters on the dummy components were also monitored for approximately one-half hour before the test.

Sled Test Summary

NHTSA number: C10106
Test type: Alternate FMVSS 208 Sled Test
Test date: 03/20/01
Test time: 15:21
Ambient temperature at impact area: 70° F
Vehicle year/make/ model/body style: 2001/Chevrolet/Tahoe/MPV

<u>Dummy Info:</u>	<u>Driver #230</u>	<u>Front Passenger #314</u>
Type:	HIIL-Part 572E	HIIL-Part 572E
Location:	Left Front	Right Front
Restraint:	Airbag, supplemental	Airbag, supplemental
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 and B-pillar	Airbag and sun visor
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/Chevrolet/Tahoe/MPV
Color: Medium Charcoal Gray Metallic
VIN: 1GNEC13T91R121073
NHTSA number: C10106
Engine data:
Placement: Inline
Cylinders: 8
Displacement: 5300
Transmission data: 4 speed, manual, X automatic, overdrive
Final drive: fwd, X rwd, 4wd
Date vehicle received: 02/16/2001
Odometer reading: 89
Dealer's name
and address: Voss Chevrolet Inc.
100 Loop Road
Centerville, Ohio 45459

Major Options:

Power steering	Yes	Other: Selectable tow/haul transmission mode,
Power brakes	Yes	side impact airbags, 4-wheel disc brakes with
Power windows	Yes	ABS, rear door child safety locks.
Air conditioning	Yes	
Power door locks	Yes	

Remarks: None

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

Data from Vehicle's Certification Label:

Vehicle manufactured by: General Motors Corporation

Date of manufacture: November-00

VIN: 1GNEC13T91R121073

GVWR: 6500 lbs

GAWR: Front: 3200 lbs

Rear: 3750 lbs

Recommended tire size: P245/75R16

Recommended cold tire pressure:

Front: 35 psi

Rear: 35 psi

Tire pressure with maximum capacity vehicle load:

Front: 44 psi

Rear: 44 psi

Load range: N/A

Size of tires on vehicle: P245/75R16

Spare tire: P245/75R16

Vehicle capacity data:

Type of front seats: Split bench 40/20/40

Number of occupants:

Front 3

Rear 3

Total 6

Remarks: None

¹ Number of occupants determined from the number of seat belts in the vehicle.

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

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

Right front	1291.9 lbs	Right rear	1244.5 lbs
Left front	1347.0 lbs	Left rear	1177.3 lbs
Total front weight	2638.9 lbs	(52.1% of total vehicle weight)	
Total rear weight	2421.8 lbs	(47.9% of total vehicle weight)	
Total delivered weight	5060.7 lbs		

Calculation of test vehicle's target test weight:

RCLW = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (5060.7 lbs)

DSC = Designated Seating Capacity (6)

$RCLW = GVWR - UDW - DSC(150) = 539.3 \text{ lbs}^1$

Target test weight = $UDW + RCLW^1 + (\text{Number of Hybrid III dummies} \times 167 \text{ lbs per dummy})$

Target test weight = $5060.7 + 300^1 + 334 = 5694.7 \text{ lbs}$

Weight of test vehicle with two dummies and 292.1 lbs of cargo weight:

Right front	1379.0 lbs	Right rear	1469.4 lbs
Left front	1435.2 lbs	Left rear	1403.2 lbs
Total front weight	2814.2 lbs	(49.5% of total vehicle weight)	
Total rear weight	2872.6 lbs	(50.5% of total vehicle weight)	
Total test weight	5686.8 lbs		

Remarks:

Weight of ballast secured in vehicle cargo area: None

Components removed to meet target test weight: None

¹ Rated cargo and luggage weight is set at a maximum of 300 lbs for target test weight determination.

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

Test Vehicle Attitude:

As delivered door sill angle: 1.0° Nose Down

As tested door sill angle: 0.9° Nose Down

Fully loaded door sill angle: 0.7° Nose Down

Vehicle Wheelbase: 116 inches

Fuel System Data:

Fuel system capacity from owner's manual: 26.0 gallons

Useable capacity figure furnished by COTR: 26.0 gallons

Remarks: The roll angle measurements were within 1 inch of each other.
The left and right side measurements were 29.3 inches and 29.3 inches respectively.

Post-Impact Data

Test number: S010320
NHTSA number: C10106
Test date: 03/20/01
Test time: 15:21
Test type: Alternate FMVSS 208 Sled Test
Impact angle: 0°
Ambient temperature
at impact area: 70° F
Temperature in
occupant compartment: 71° F

Sled carriage velocity:

Integrated velocity from the integration of the entire sled acceleration: 29.1 mph
Measured velocity from the light trap device attached to the sled (backup): 28.4 mph
Specified integrated velocity range: 28 to 30 mph

Sled carriage acceleration:

Acceleration: 17.3 g
Specified acceleration range: 16 g - 18.2 g

Sled carriage acceleration duration:

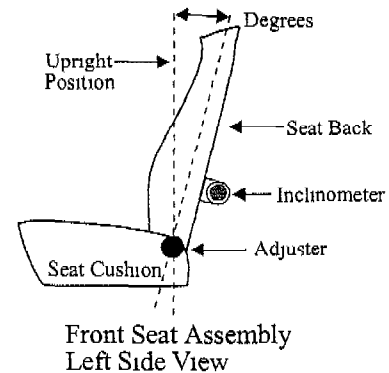
Time from T-0(-0.5 g) to 0.0 g: 124.9 ms
Specified acceleration duration: 120 - 130 ms

The sled acceleration curve was within the specified corridor.

Seat and Steering Column Positioning Data

Vehicle: 2001/Chevrolet/Tahoe/MPV

NHTSA No.: C10106



Nominal Design Riding Position:

- | | |
|----------------|---|
| Driver Seat | Seat Back Angle = 15.5° Manual adjustable. Seat back angle was measured with an inclinometer on the outboard seat back frame, with fabric cut away, approximately 9 to 10 inches above the seat back pivot. |
| Passenger Seat | Seat Back Angle = 16.2° Manual adjustable. Seat back angle was measured with an inclinometer on the outboard seat back frame, with fabric cut away, approximately 9 to 10 inches above the seat back pivot. |

Seat Fore and Aft Positions:

- | | |
|--------------|--|
| Driver Seat. | Mid - Power seats were marked at full forward and full rearward to locate the mid position by measurement. |
| Passenger | Mid - Power seats were marked at full forward and full rearward to locate the mid position by measurement. |

Steering Column Adjustments:

The steering column was adjustable. The column was placed in the middle, or third detent, of five available positions.

Dummy Measurement Data for Front Seat Occupants

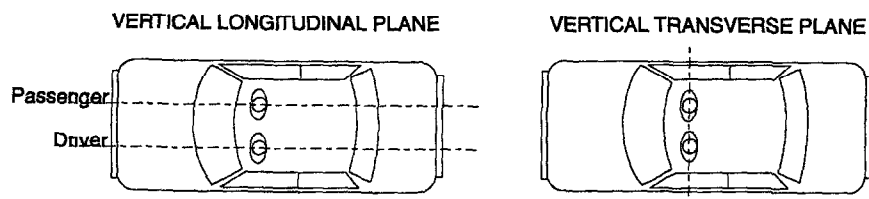
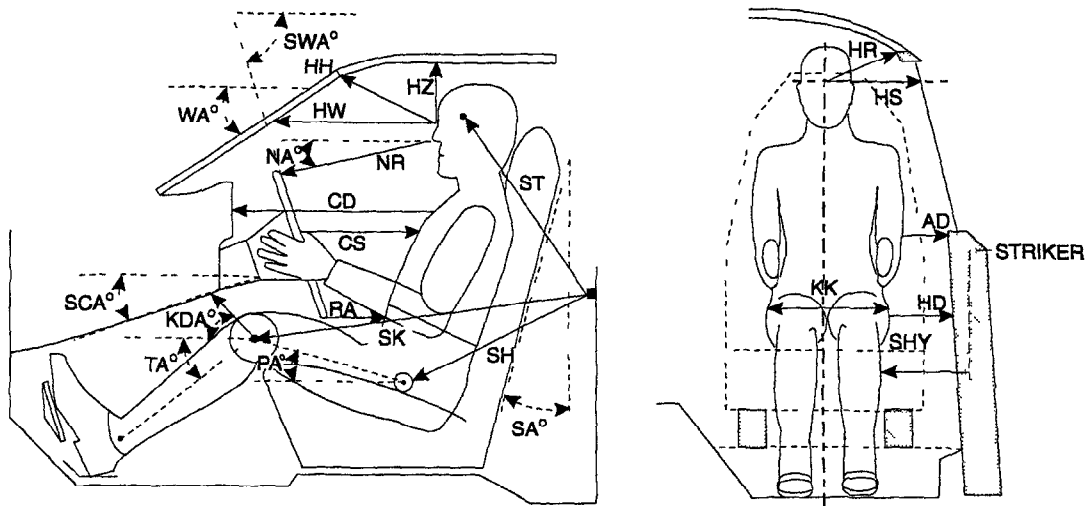
Designation	Type of Measurement	Driver (Serial #230)	Passenger (Serial #314)
WA	Windshield angle	39.4°	N/A
SWA	Steering wheel angle	21.1°	N/A
SCA	Steering column angle	25.0°	N/A
SA	Seat back angle	15.5°	16.2°
HZ	Head to roof	10.9 in	11.1 in
HH	Head to header	20.5 in	19.6 in
HW	Head to windshield	28.1 in	27.6 in
HR	Head to side header	11.1 in	11.0 in
NR	Nose to rim	15.8 in	N/A
NA	Nose to rim angle	10°	N/A
CD	Chest to dash	21.9 in	17.2 in
CS	Steering wheel to chest	12.4 in	N/A
RA	Rim to abdomen	7.5 in	N/A
KDL	Left knee to dash	6.5 in	6.0 in
KDR	Right knee to dash	5.5 in	6.1 in
KDA	Outboard knee to dash angle	27.0°	27.0°
PA	Pelvis angle	24.5°	22.5°
TA	Tibia angle	54.9°	50.2°
KK	Knee to knee	10.6 in	10.6 in
ST ¹	Striker to head	24.3 in	24.7 in
	Striker to head angle	-72.9°	-69.0°
SK ¹	Striker to knee	27.3 in	27.3 in
	Striker to knee angle	-3.2°	-4.5°
SH ¹	Striker to H-point	13.2 in	13.4 in
	Striker to H-point angle	11.3°	12.3°
SHY	Striker to H-point (Y dir.)	9.6 in	9.4 in
HS	Head to side window	13.5 in	13.3 in
HD	H-point to door	6.7 in	6.4 in
AD	Arm to door	5.7 in	5.5 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

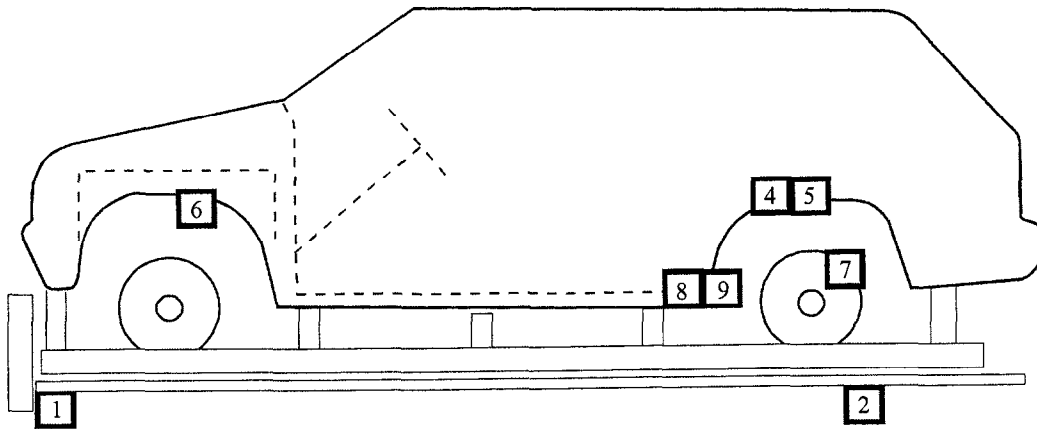
- SA Seat Back Angle, find this angle using the instructions provided by the manufacturer. If the manufacturer doesn't provide clear instructions contact the COTR.

* Measurement used in Data Tape Reference Guide

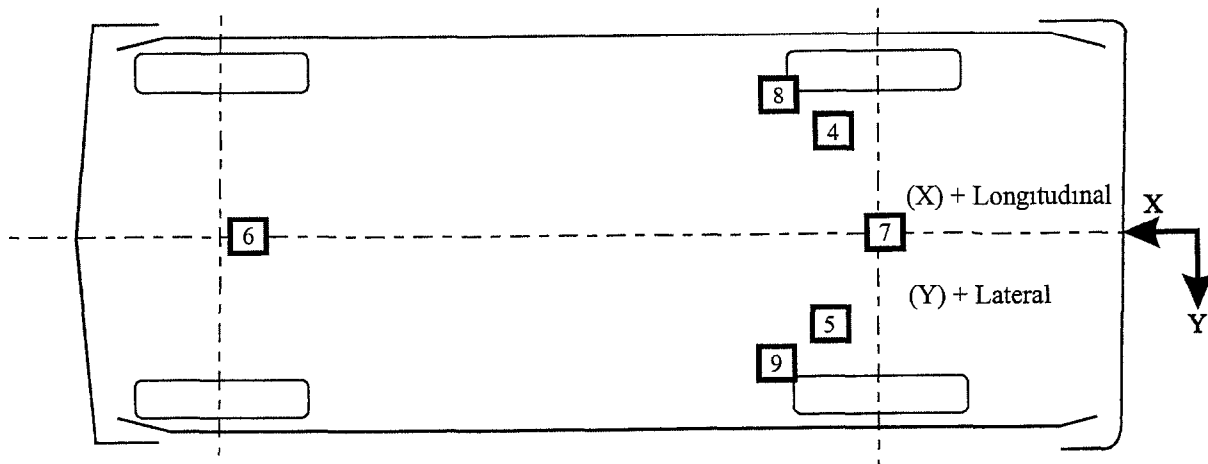
Descriptions of Dummy Measurements, Cont'd.

- 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: S010320 No. LOCATION	X	Y	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 SLED ACCELERATION PRIMARY	165.6 in	-1.0 in	0.6 g @ 211.4 ms	17.3 g @ 55.8 ms
2 SLED ACCELERATION BACKUP	165.6 in	-1.0 in	0.7 g @ 127.1 ms	17.9 g @ 56.1 ms
3 SLED VELOCITY MEASURED ¹ INTEGRATED ²			0.1 mph @ 7.6 ms 0.0 mph @ 7.6 ms	29.8 mph @ 136.2 ms 29.1 mph @ 124.6 ms
4 LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	53.1 in	-23.1 in	1.5 g @ 129.8 ms	18.3 g @ 55.9 ms
5 RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	52.8 in	23.1 in	1.4 g @ 129.7 ms	17.7 g @ 60.2 ms
6 TOP ENGINE LONGITUDINAL ¹	155.9 in	1.2 in	110.6 g @ 60.6 ms	10.0 g @ 77.8 ms
7 REAR AXLE LONGITUDINAL	40.9 in	-1.6 in	1.8 g @ 128.9 ms	17.3 g @ 59.6 ms
8 LEFT VEHICLE FRAME LONGITUDINAL	58.1 in	-25.2 in	1.5 g @ 129.3 ms	17.9 g @ 57.7 ms

Vehicle Data Summary and Accelerometer Locations, Cont'd.

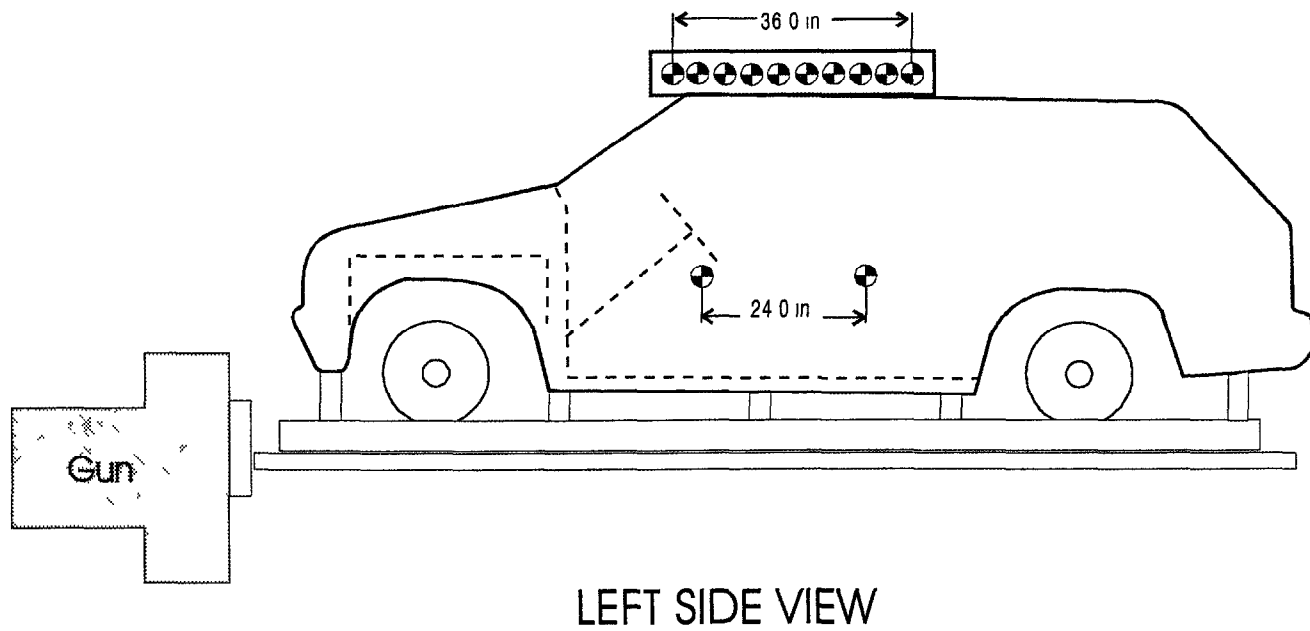
TEST NUMBER: S010320					
No. LOCATION	X	Y	POSITIVE DIRECTION		NEGATIVE DIRECTION
9 RIGHT VEHICLE FRAME LONGITUDINAL	57.8 in	25.2 in	1.3 g	@ 128.7 ms	17.8 g @ 59.9 ms
10 DRIVER AIRBAG EVENT			1.0 volt	@ 21.4 ms	
11 PASSENGER AIRBAG EVENT			1.0 volt	@ 21.4 ms	

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

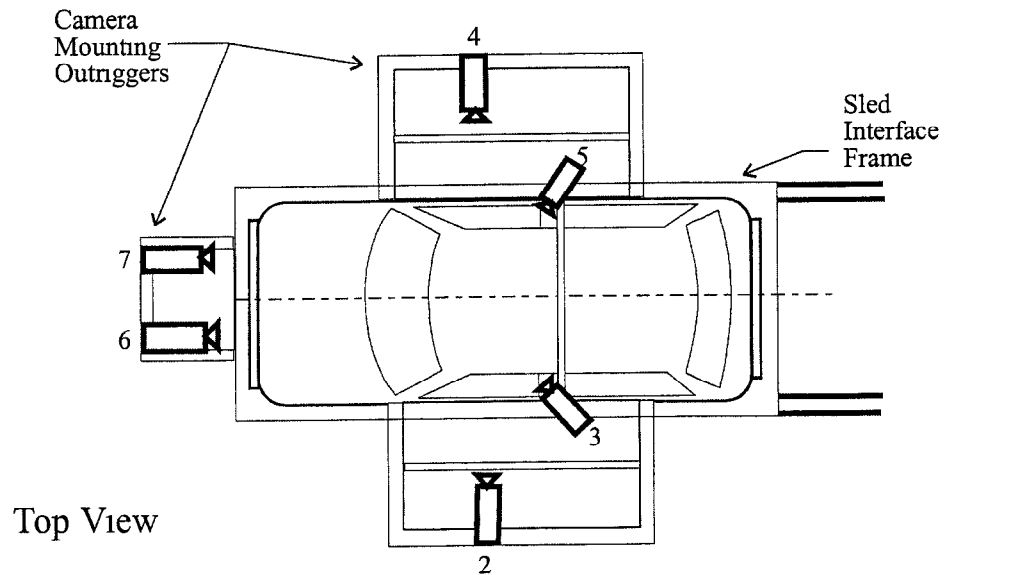
¹See DATA ACQUISITION EXPLANATIONS
²No positive data in time frame of interest.

Vehicle Targeting Measurements

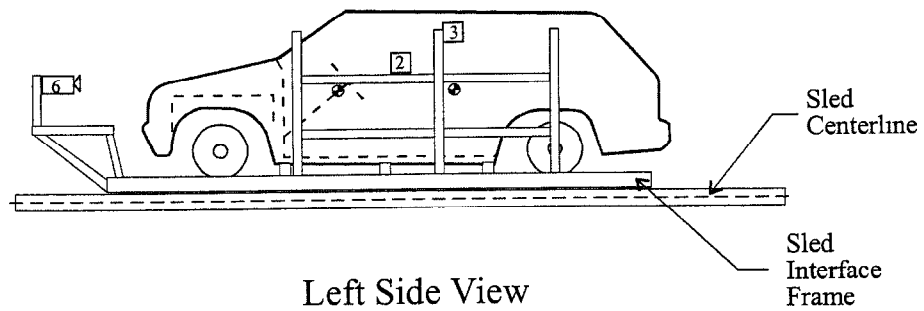
REFERENCE PHOTO TARGETS



Camera Positions



Camera Frame Rates
 #1 = 24 fps
 All Others = 1,000 fps



Motion Picture Camera Locations

Vehicle year/make/model/body style: 2001/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Test Number: S010320

Camera Number	View	Camera Positions ¹			Camera to Head Target	Camera Angle ²	Film Plane	
		X	Y	Z			Lens	Speed
1	Left side view offboard	93.0 in	-312.4 in	55.5 in	-0.3°	290.0 in	10 mm	24 frames/s
2	Left side view wide	72.6 in	-72.4 in	51.8 in	-3.0°	53.0 in	8 mm	995 frames/s
3	Left side view over shoulder	98.4 in	-49.7 in	68.2 in	13.6°	33.0 in	8 mm	995 frames/s
4	Right side view wide	72.8 in	89.6 in	51.9 in	-6.6°	71.9 in	13 mm	1007 frames/s
5	Right side view over shoulder	101.5 in	48.9 in	65.8 in	11.4°	34.2 in	8 mm	1017 frames/s
6	Front view - driver	26.3 in	-13.3 in	64.2 in	6.3°	57.1 in	8 mm	1015 frames/s
7	Front view - passenger	26.8 in	16.5 in	63.3 in	7.7°	55.9 in	8 mm	1002 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/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Date: 03/20/01

Maximum Acceleration Values: (g's) ¹	Driver Dummy #230	Passenger Dummy #314
Head Channel X	-37.6	-42.7
Head Channel Y	-4.3	12.1
Head Channel Z	11.3	22.5
HEAD RESULTANT	39.2	45.7
Chest Channel X	-38.7	-31.2
Chest Channel Y	-3.8	3.3
Chest Channel Z	8.6	12.8
CHEST RESULTANT	39.5	32.9

Head Injury Criteria (HIC) Values:

HIC	188	235
t ₁ = (ms)	82.40	104.24
t ₂ = (ms)	118.40	140.24

[The maximum time interval from t₁ to t₂ is 36 milliseconds.]

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

CLIP	38.8	32.2
t ¹ = (ms)	101.84	98.24
t ² = (ms)	104.88	101.28
Chest Deflection (in)	1.4	0.2

¹ Sign Convention per SAE J211, March 1995.

FMVSS 208 Occupant Injury Data, Cont'd.

Vehicle: 2001/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Date: 03/20/01

Max. Compressive Femur Forces (lbs.):	Driver Dummy #230	Passenger Dummy #314
Left Side (lbs)	1273	988
Right Side (lbs)	1693	1360

Neck Injury Criteria:	Driver Dummy #230	Passenger Dummy #314
Peak Flexion Bending Moment (N-m)	32.9	43.3
Peak Extension Bending Moment (N-m)	8.4	42.1
Peak Axial Tension (N)	1166	2650
Peak Axial Compression (N)	130	159
Peak Positive X-axis Shear (N)	664	915
Peak Negative X-axis Shear (N)	157	423

FMVSS 208 Seat Belt Warning System Check

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney

Date: 03/08/2001

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 = 8 seconds seconds
(4 to 8 seconds)

Time duration of reminder light operation = stays on for 18 seconds,
(no less than 60 seconds) then flashes.
- A.2 S7.3(a)(2)
Time duration of audible warning signal = seconds
(4 to 8 seconds) (see 49 USCS @ 30124)

Time duration of reminder light operation = 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 = 0 seconds
(audible warning should not operate)

Time duration of reminder light operation = 0 seconds
(reminder light does not operate)
- B.2 S7.3(a)(2)
Time duration of audible warning signal = seconds
(audible warning should not operate)

Time duration of reminder light operation = 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/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney

Date: 03/08/2001

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: Upper right of center section of instrument cluster.

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/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney

Date: 03/08/2001

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?

Driver side ☐ Yes-Pass ☒ N/A
☐ 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.

Driver side ☐ Yes-Pass ☒ N/A
☐ 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

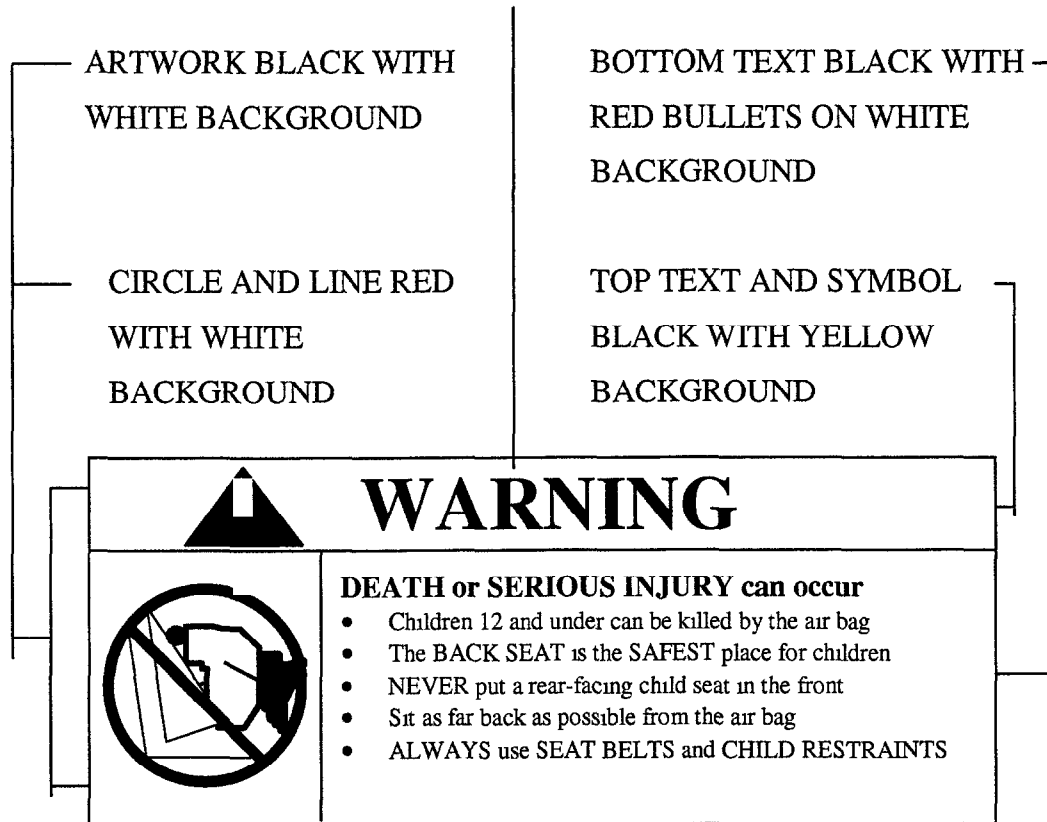


Figure 6a
(S4 5 1(b)(2))

FMVSS 208 Air Bag Labels, Cont'd.

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN DOWN POSITION

LABEL OUTLINE, VERTICAL AND HORIZONTAL LINE BLACK

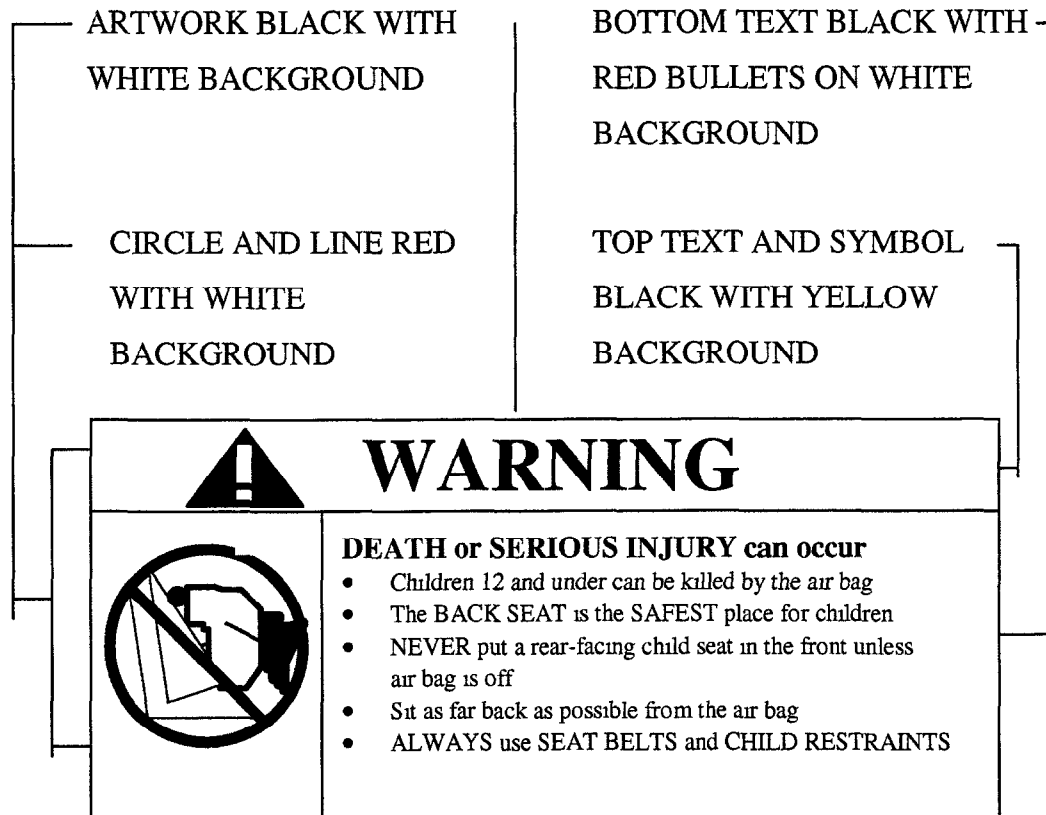


Figure 6b
(S4 5 1(b)(2))

- 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 cm²

Actual message area, passenger side 30 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

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN UP POSITION

Artwork Black with
White Background

Text Yellow with
Black Background

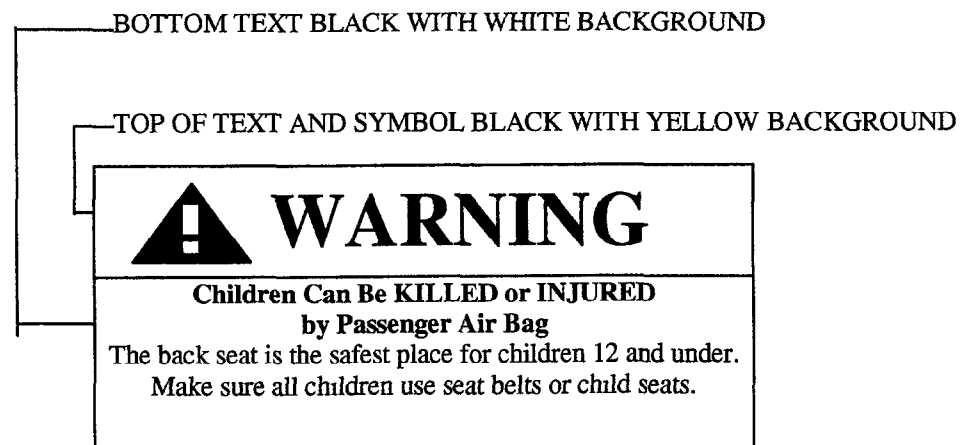
Figure 6c
(S4.5.1(c)(2))



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 N/A 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)(ii))
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 N/A mm
For vehicles with driver side air bag ONLY ☒ N/A
☐ Yes-Pass ☐ No-Fail
6. Label On the Dash: Label not present when vehicle was received from dealer.
- 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)) ☐ Yes-Pass ☐ No-Fail
Actual message area N/A cm²

FMVSS 208 Rear Outboard Seating Position Seat Belts

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Ronald D. Stoner

Date: 03/20/01

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/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney, Steve Bell

Date: 03/08/2001

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/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney, Steve Bell

Date: 03/08/2001

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 54.1 inches.
- ☒ 11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (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 29.1 inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney, Steve Bell

Date: 03/08/2001

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 29.5 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))

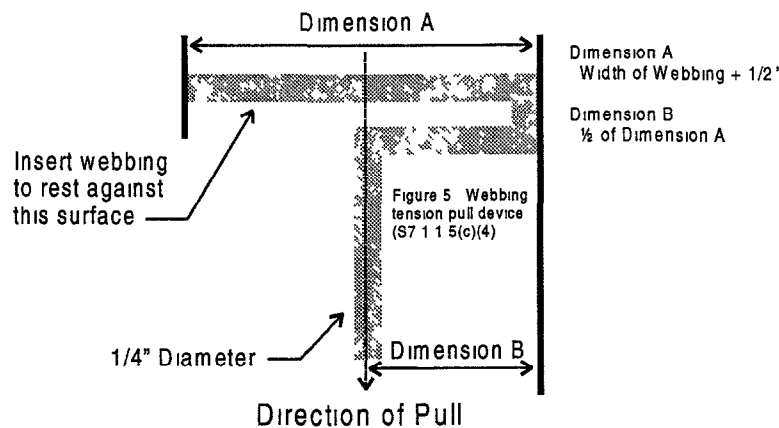
14-13= 0.5 inches

☒ 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= 24.6 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/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney, Steve Bell

Date: 03/08/2001

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/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney, Steve Bell

Date: 03/08/2001

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 **66.6** inches.
- ☒11. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (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 **31.9** inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney, Steve Bell

Date: 03/08/2001

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 32.7 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))

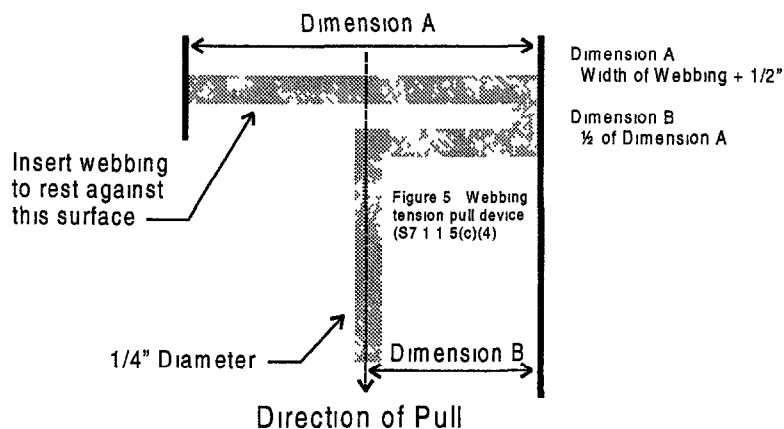
14-13= 0.8 inches

☒ 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= 33.9 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/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney, Steve Bell

Date: 03/08/2001

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/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney, Steve Bell

Date: 03/08/2001

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 60.8 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 32.3 inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

NHTSA No.: C10106

Technician: Norm Kinney, Steve Bell

Date: 03/08/2001

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 32.9 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))

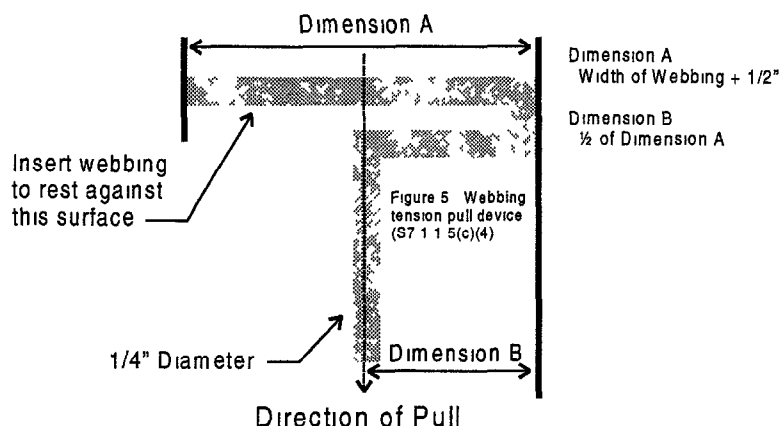
14-13= 0.6 inches

☒ 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= 27.9 inches.

☒ Yes-Pass ☐ No-Fail



FMVSS 208 Seat Belt Comfort And Convenience Test

Belt Contact Force (S7.4.3)

Test Vehicle NHTSA No.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Left Front

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney, Steve Bell

GVWR: 6500 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.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Right Front

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney, Steve Bell

GVWR: 6500 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.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Right Rear

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney, Steve Bell

GVWR: 6500 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.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Left Rear

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney, Steve Bell

GVWR: 6500 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 Summary, Cont'd.

Latchplate Access (S7.4.4)

Test Vehicle NHTSA No.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Left Front

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

Technician Performing Check: Ron Stoner

GVWR: 6500 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 of the Laboratory Test Procedure. (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 of the Laboratory Test Procedure. ☒ 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 Laboratory 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.

Latchplate Access (S7.4.4)

Test Vehicle NHTSA No.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Right Front

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney

GVWR: 6500 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 of the Laboratory Test Procedure. (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 of the Laboratory Test Procedure. ☒ 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 Laboratory 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.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Left Front

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney

GVWR: 6500 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

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

Retraction (S7.4.5)

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 of the Laboratory Test Procedure. ☒ Check
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.

Retraction (S7.4.5)

Test Vehicle NHTSA No.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Right Front

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney

GVWR: 6500 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

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

Retraction (S7.4.5)

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
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.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Right Front

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney

GVWR: 6500 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.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Left Front

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney

GVWR: 6500 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.: C10106

Vehicle Model Year/Make/Model/Body Style: 2001/Chevrolet/Tahoe/MPV

Designated Seating Position Tested: Not applicable to Center Front due to item A below. Not applicable to Left Rear, Center Rear, and Right Rear seats due to items A & C below.

Date of Comfort and Convenience Check: 03/08/2001

Technician Performing Check: Norm Kinney

GVWR: 6500 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.

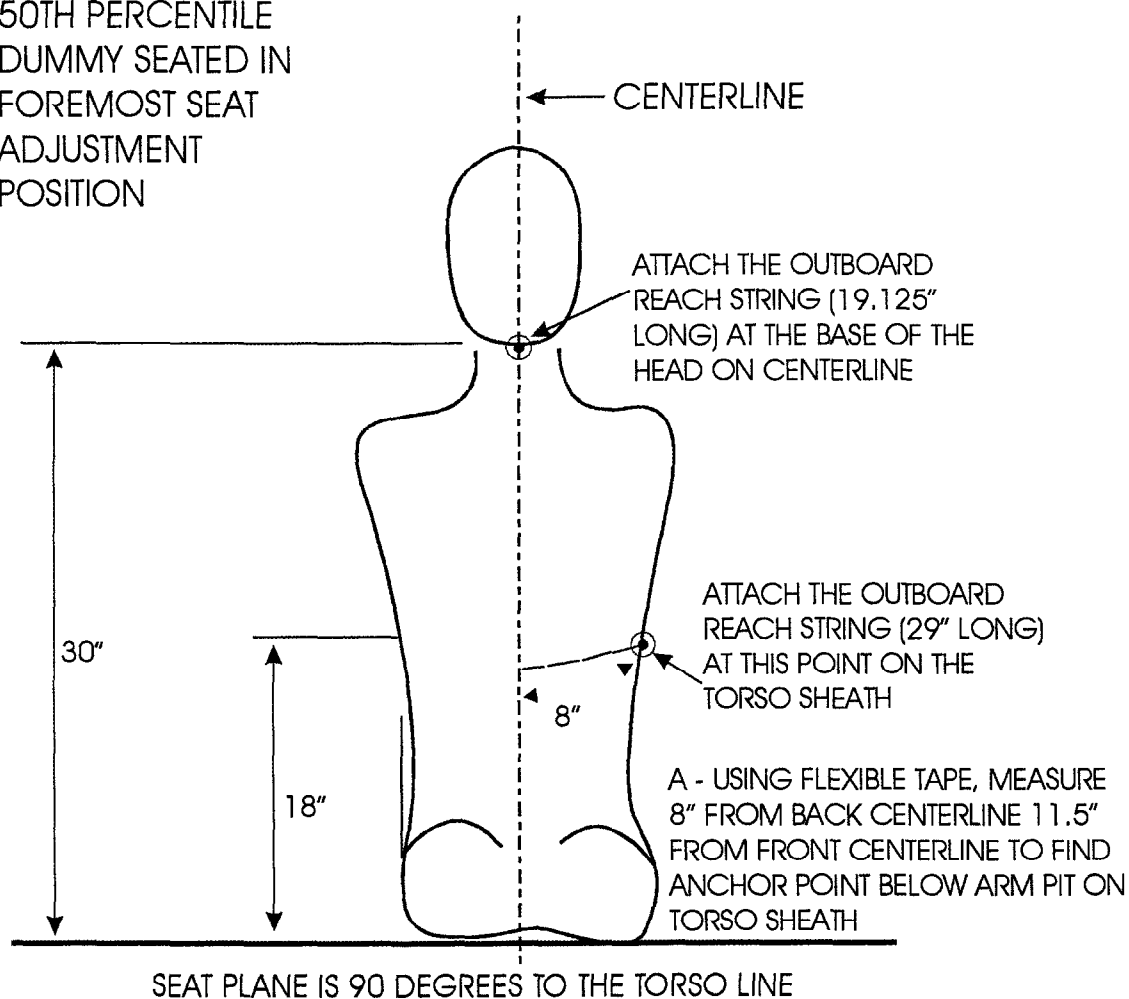
Seat Belt Guides And Hardware (S7.4.6)

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

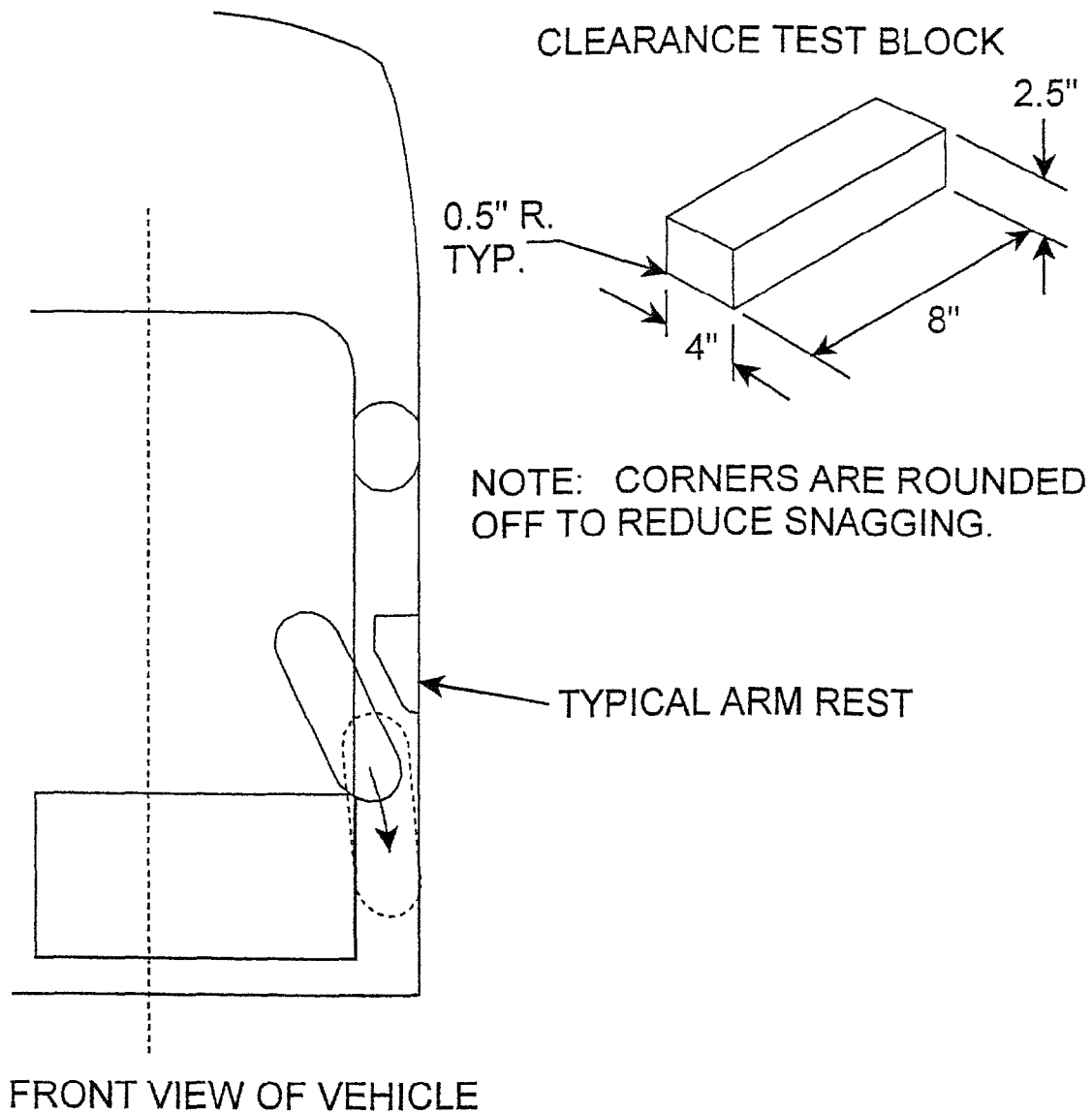
50TH PERCENTILE
DUMMY SEATED IN
FOREMOST SEAT
ADJUSTMENT
POSITION



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

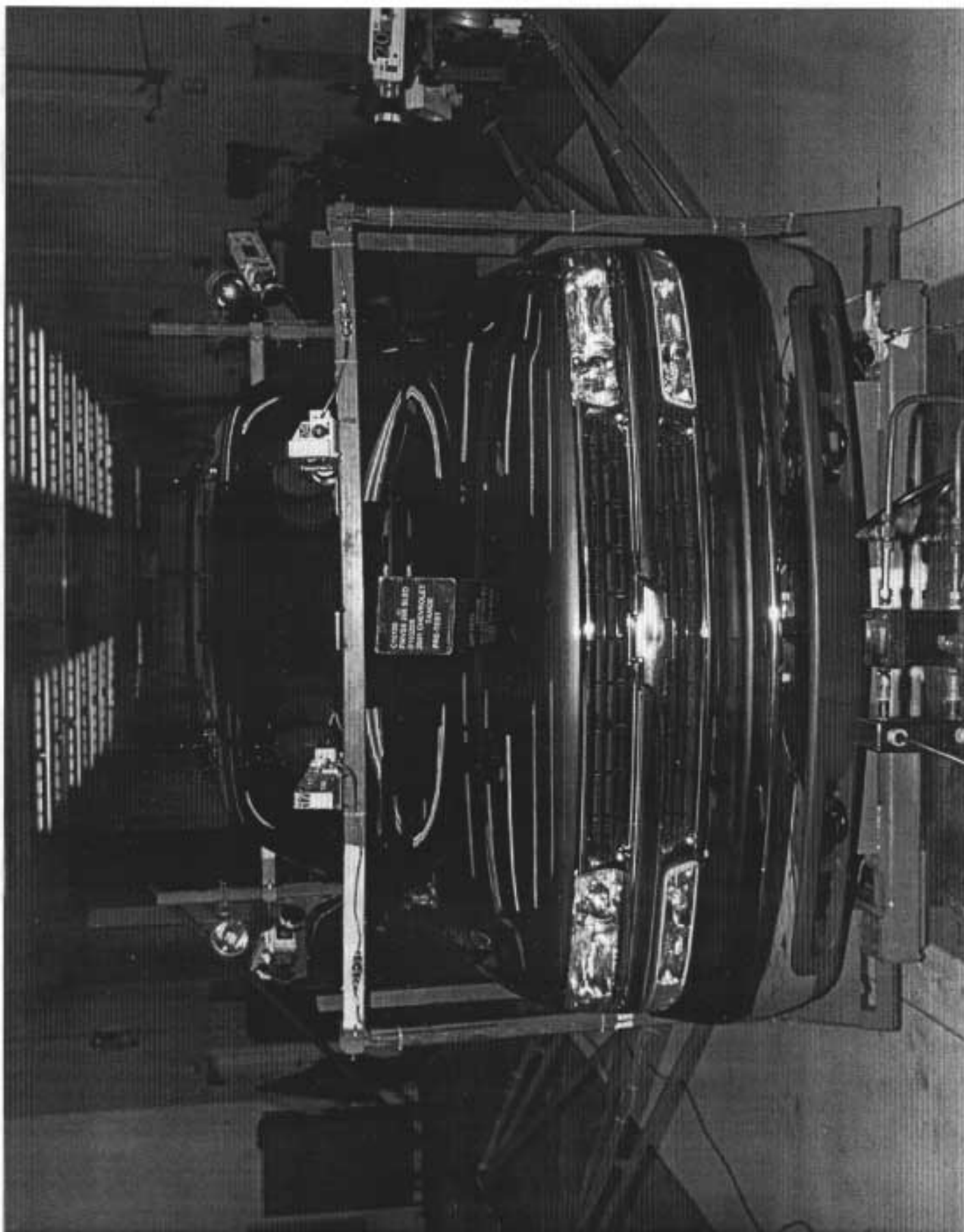


Figure A-1 Pre-Test Front View of Test Vehicle Mounted to Sled

A-2

S010320

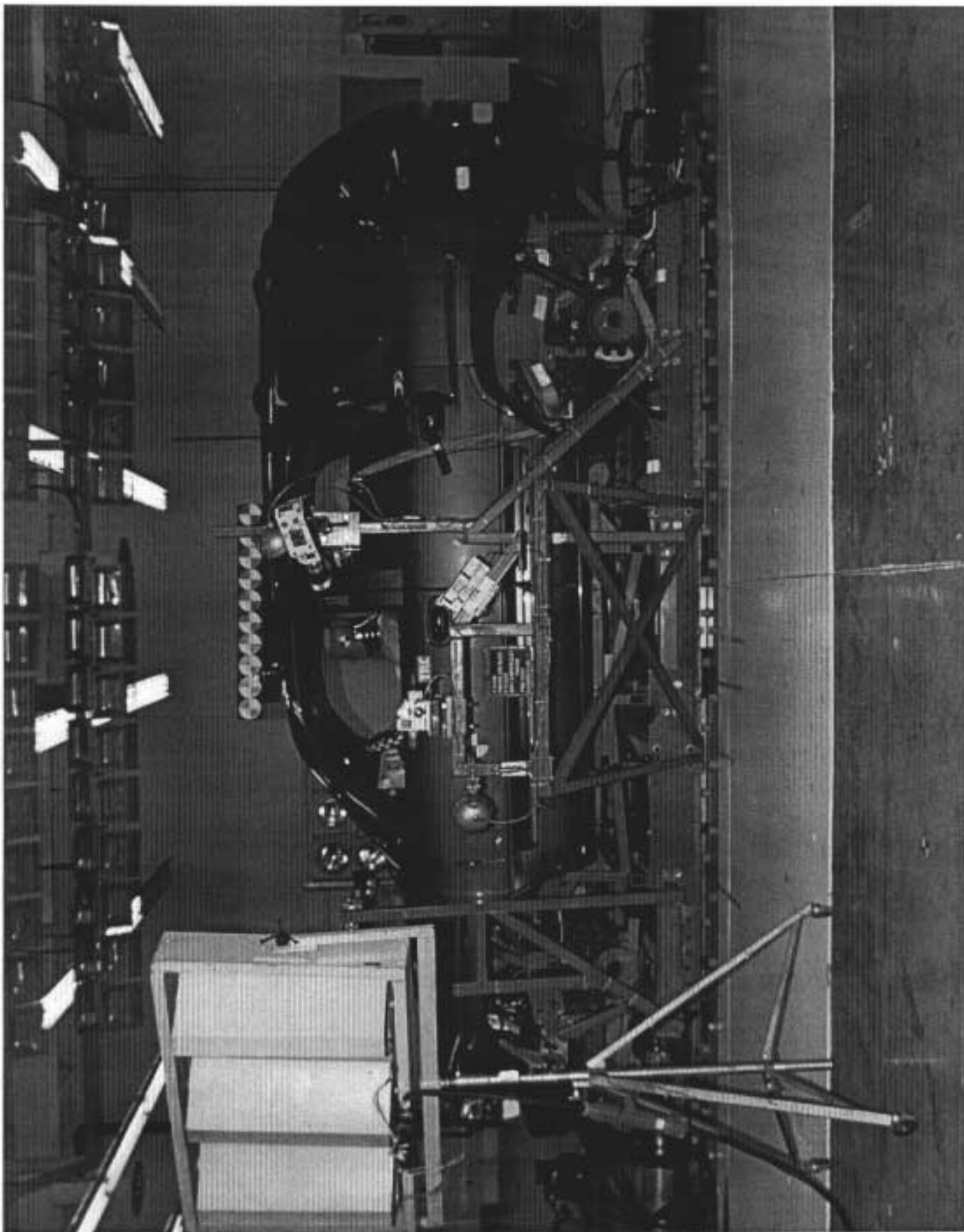


Figure A-2 Pre-Test Left Side View of Test Vehicle Mounted to Sled

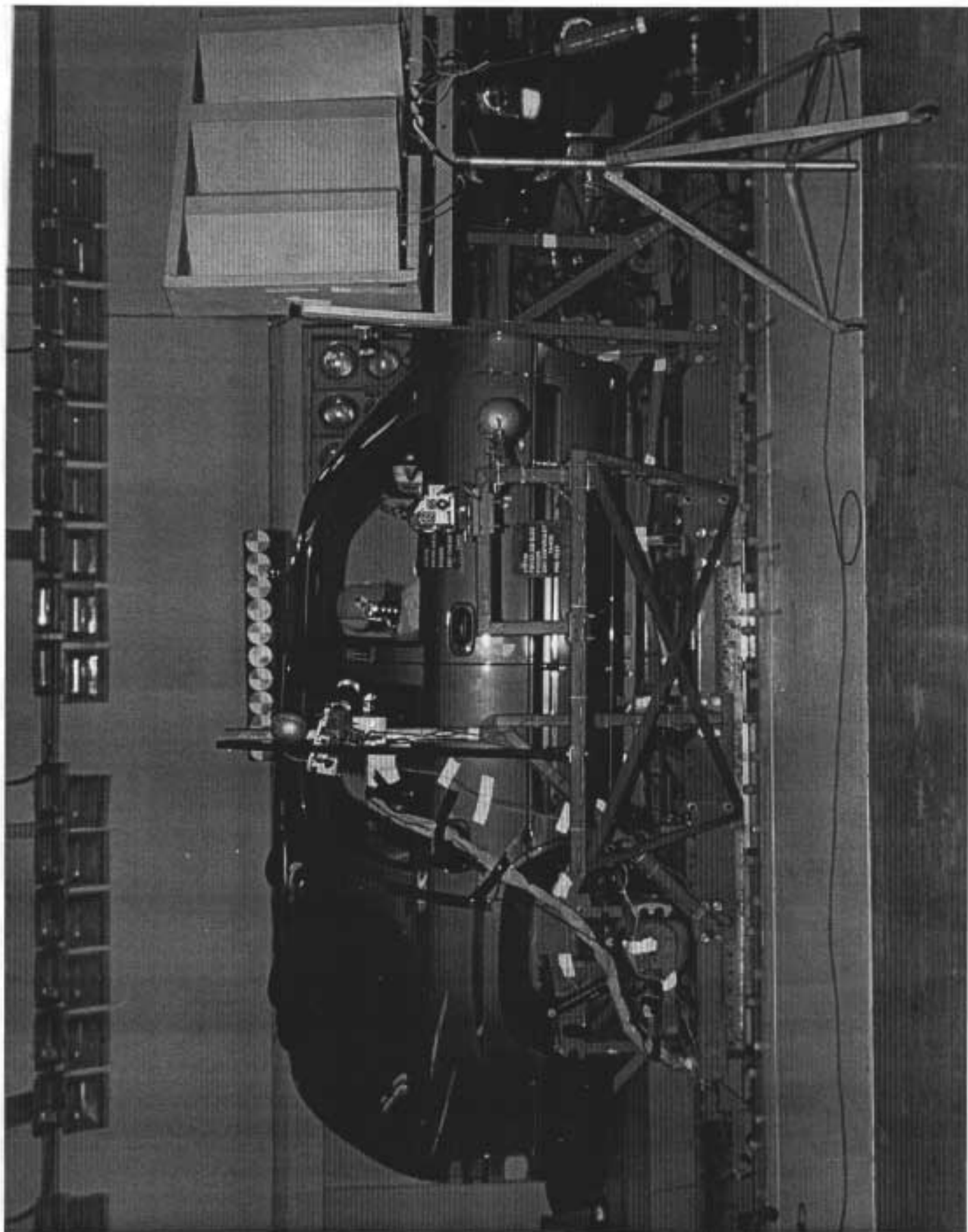


Figure A-3 Pre-Test Right Side View of Test Vehicle Mounted to Sled

A-4

S010320

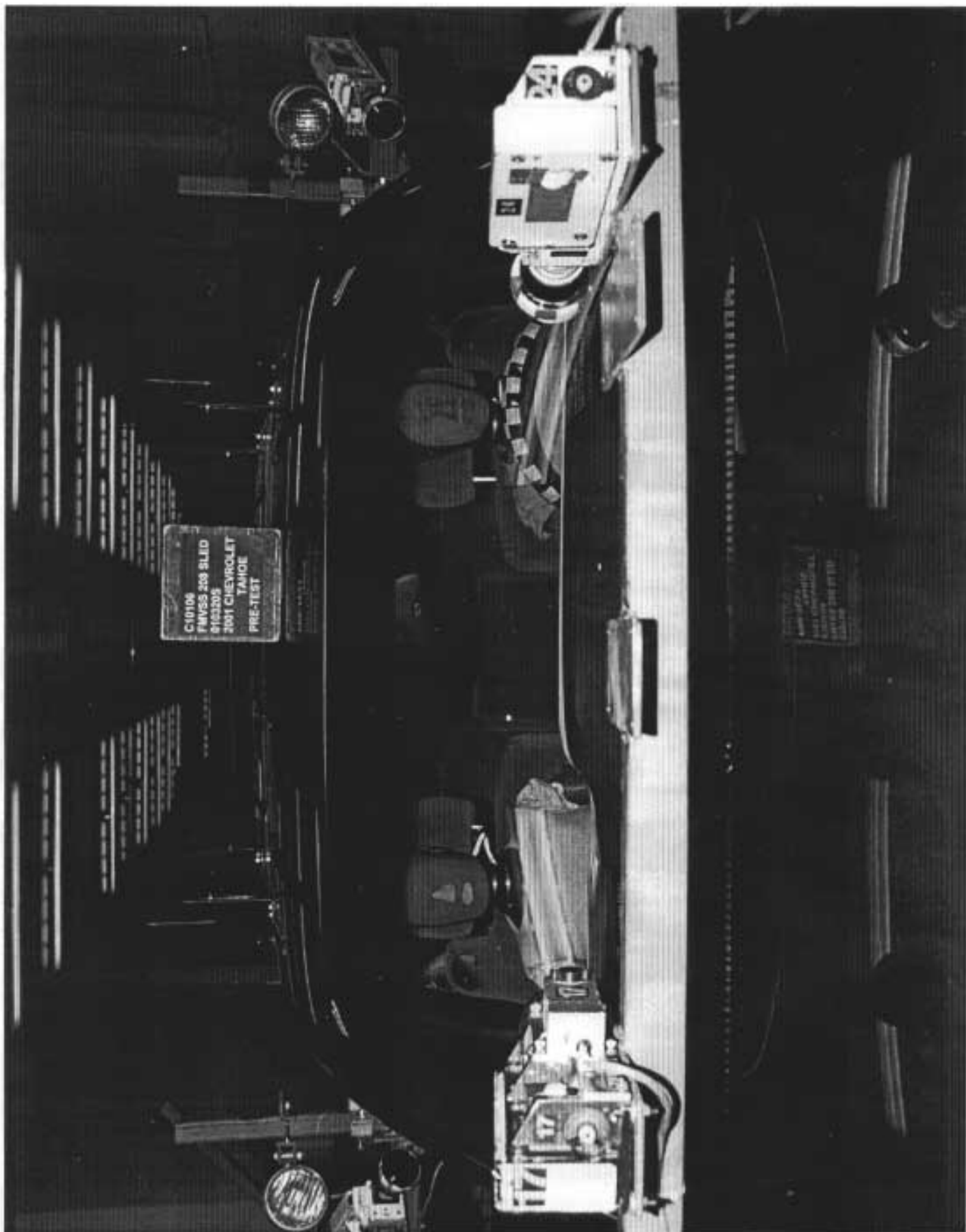


Figure A-4 Pre-Test Windshield View
A-5

S010320

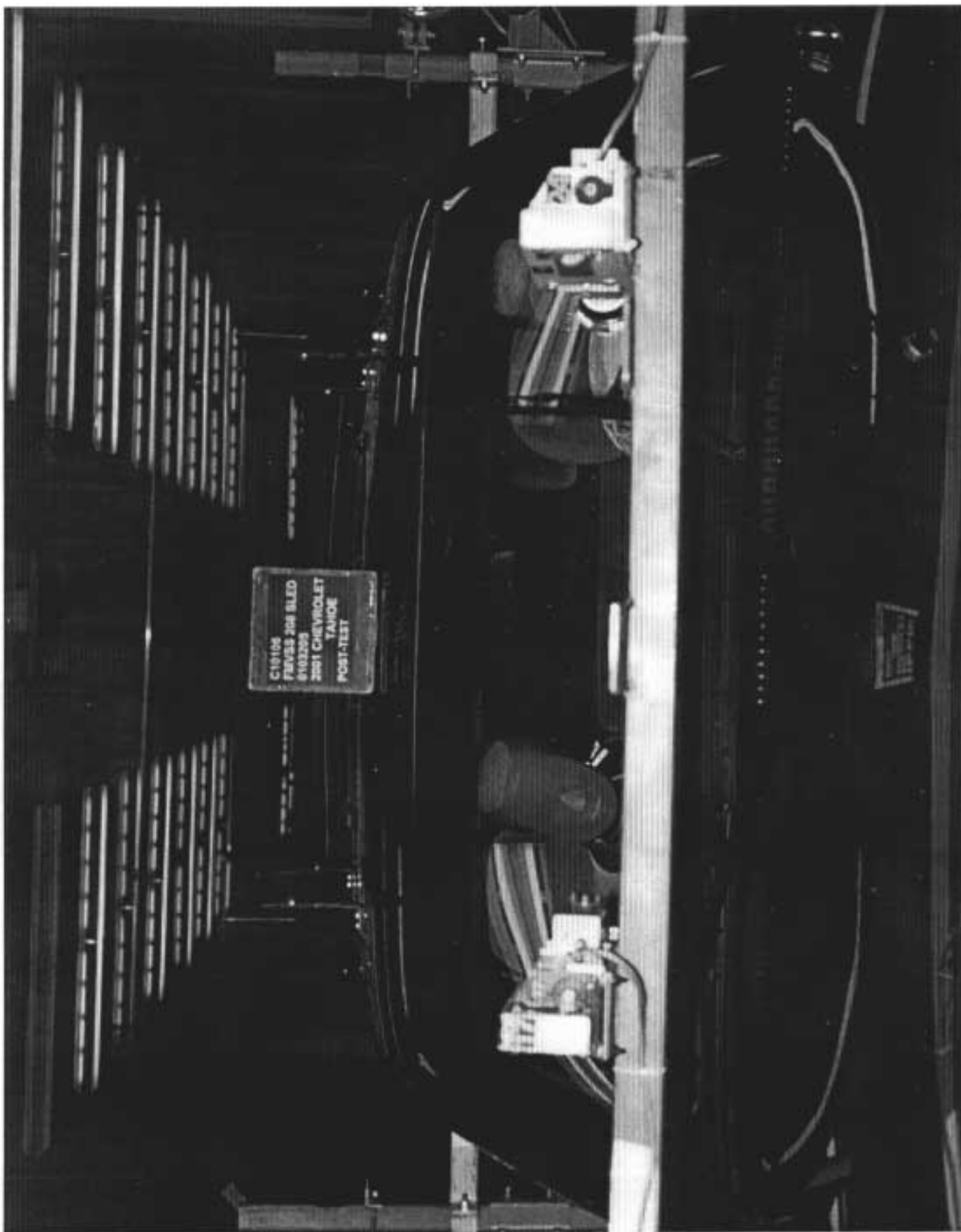


Figure A-5 Post-Test Windshield View
A-6

S010320



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



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

A-8

S010320



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

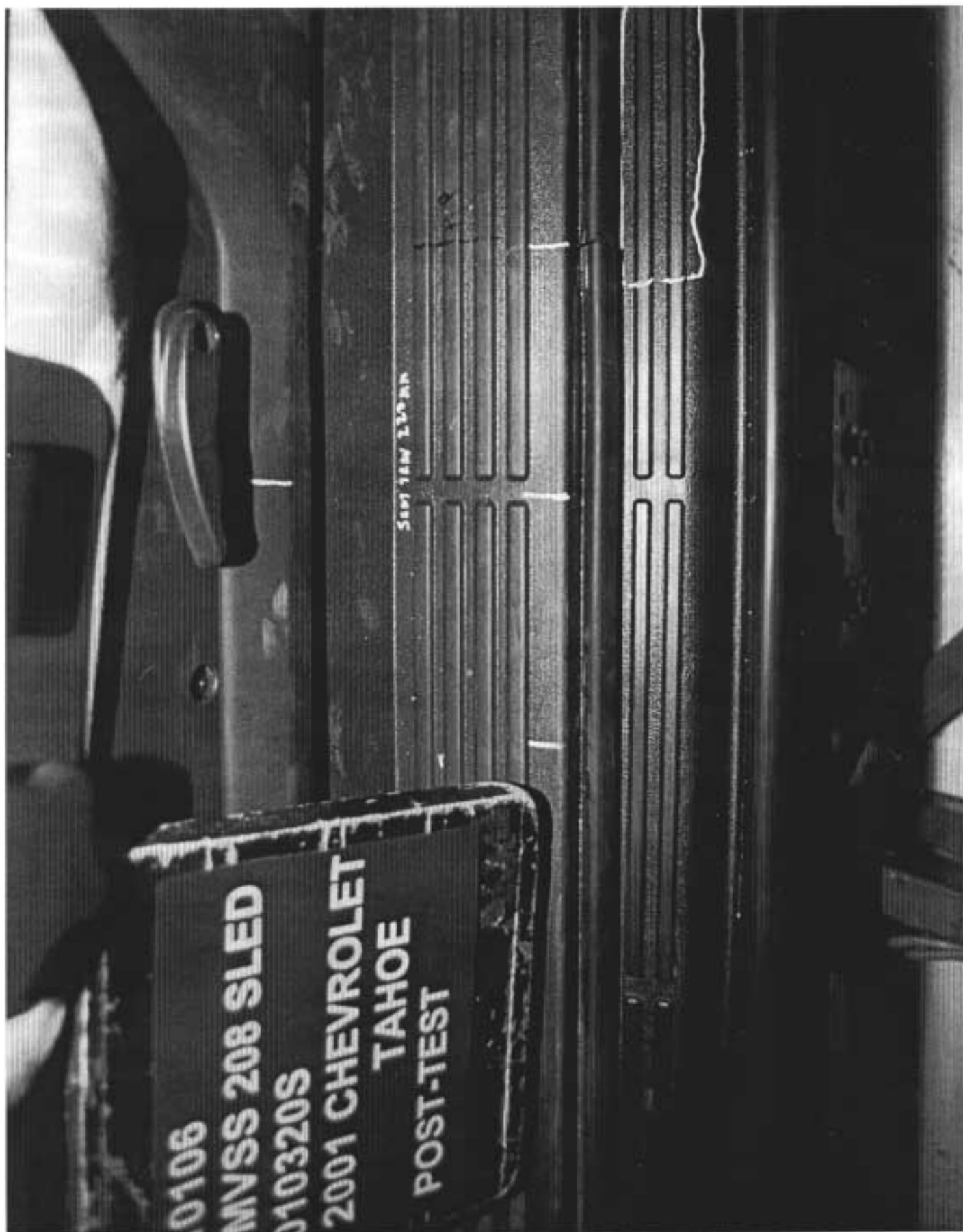


Figure A-9 Post-Test Driver Seat Track Position View
A-10

S010320



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



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



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

A-13

S010320



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

A-14

S010320



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

S010320



Figure A-15 Post-Test Passenger Seat Track Position View
A-16

S010320

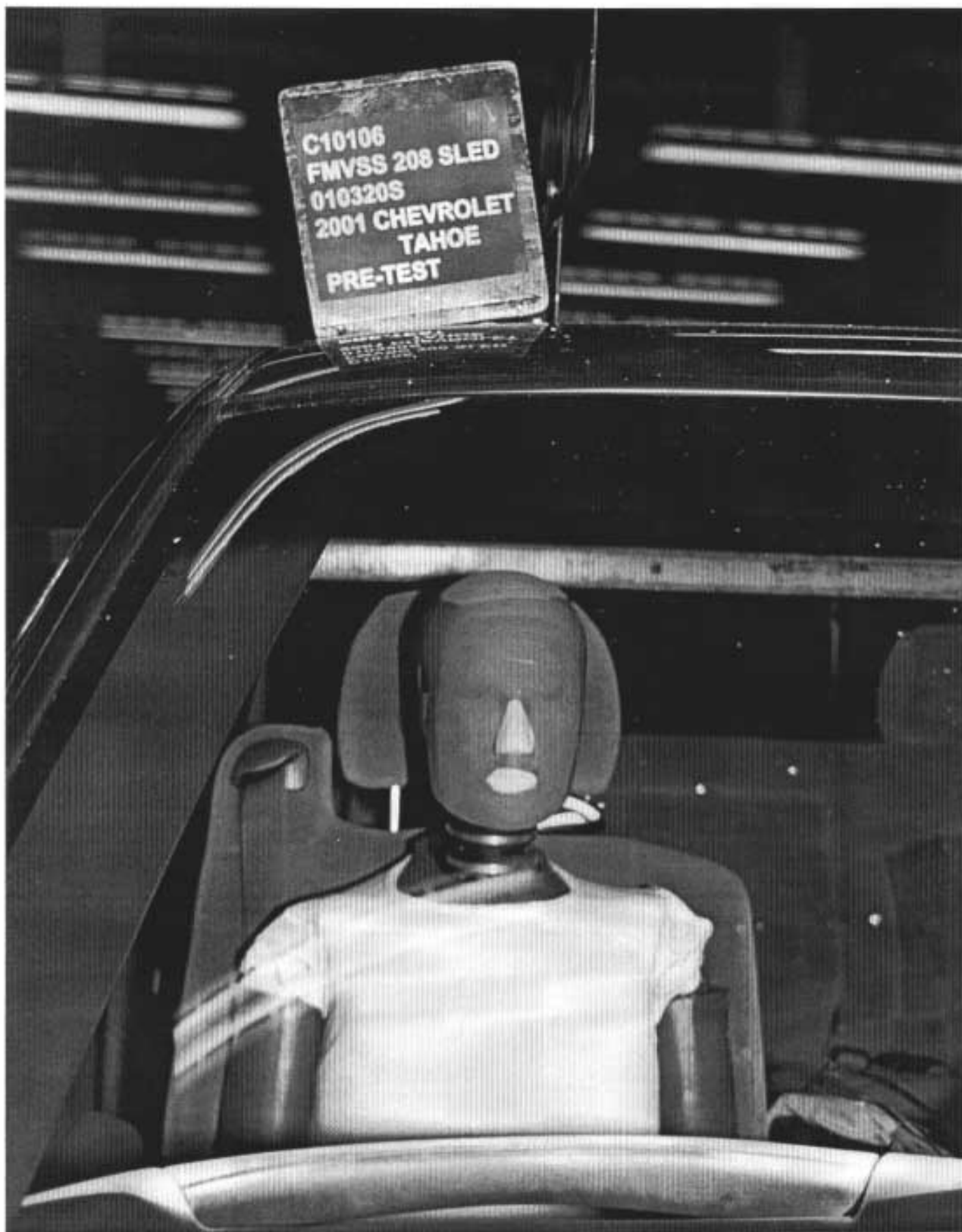


Figure A-16 Pre-Test Passenger Dummy Position Front View

A-17

S010320

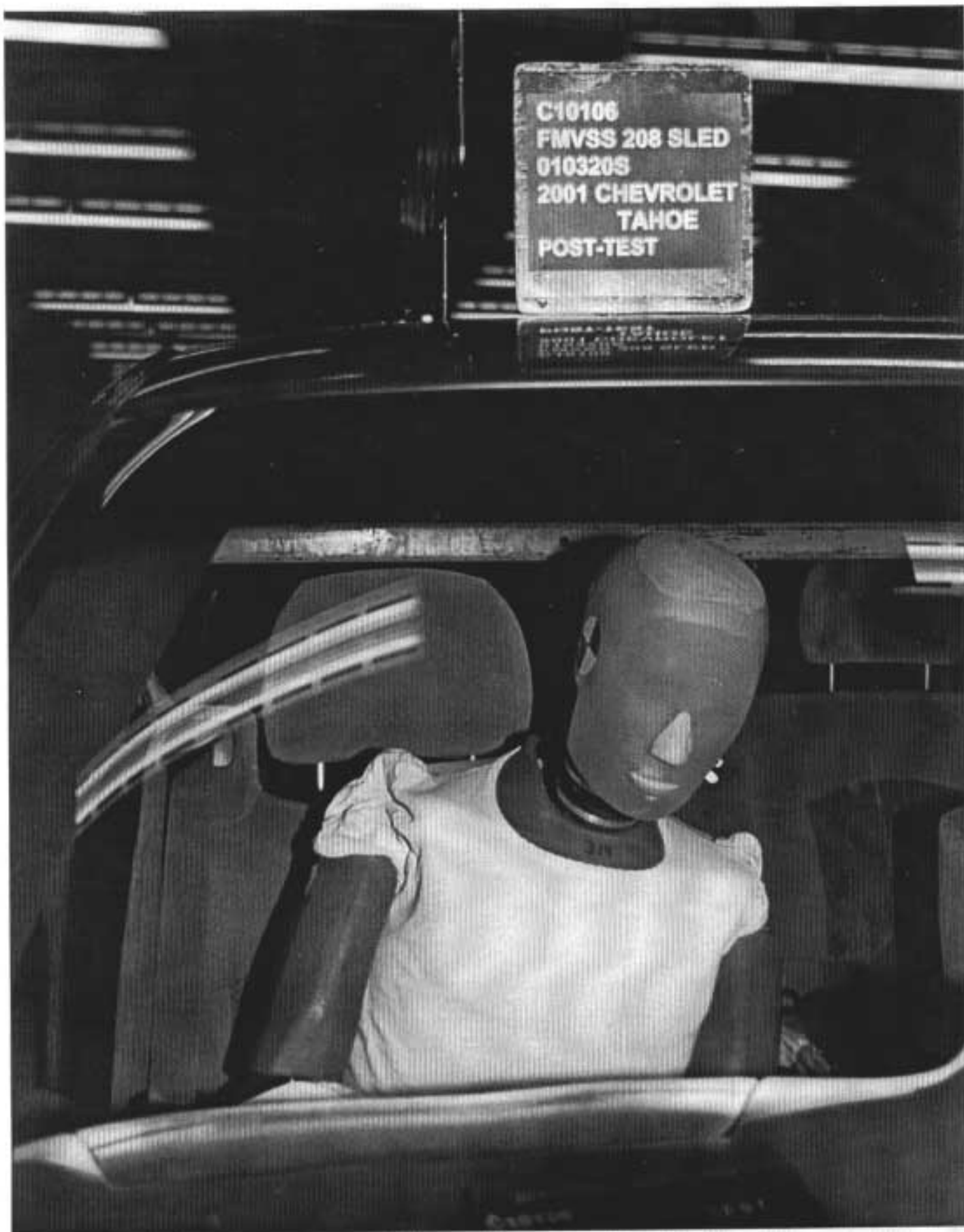


Figure A-17 Post-Test Passenger Dummy Position Front View

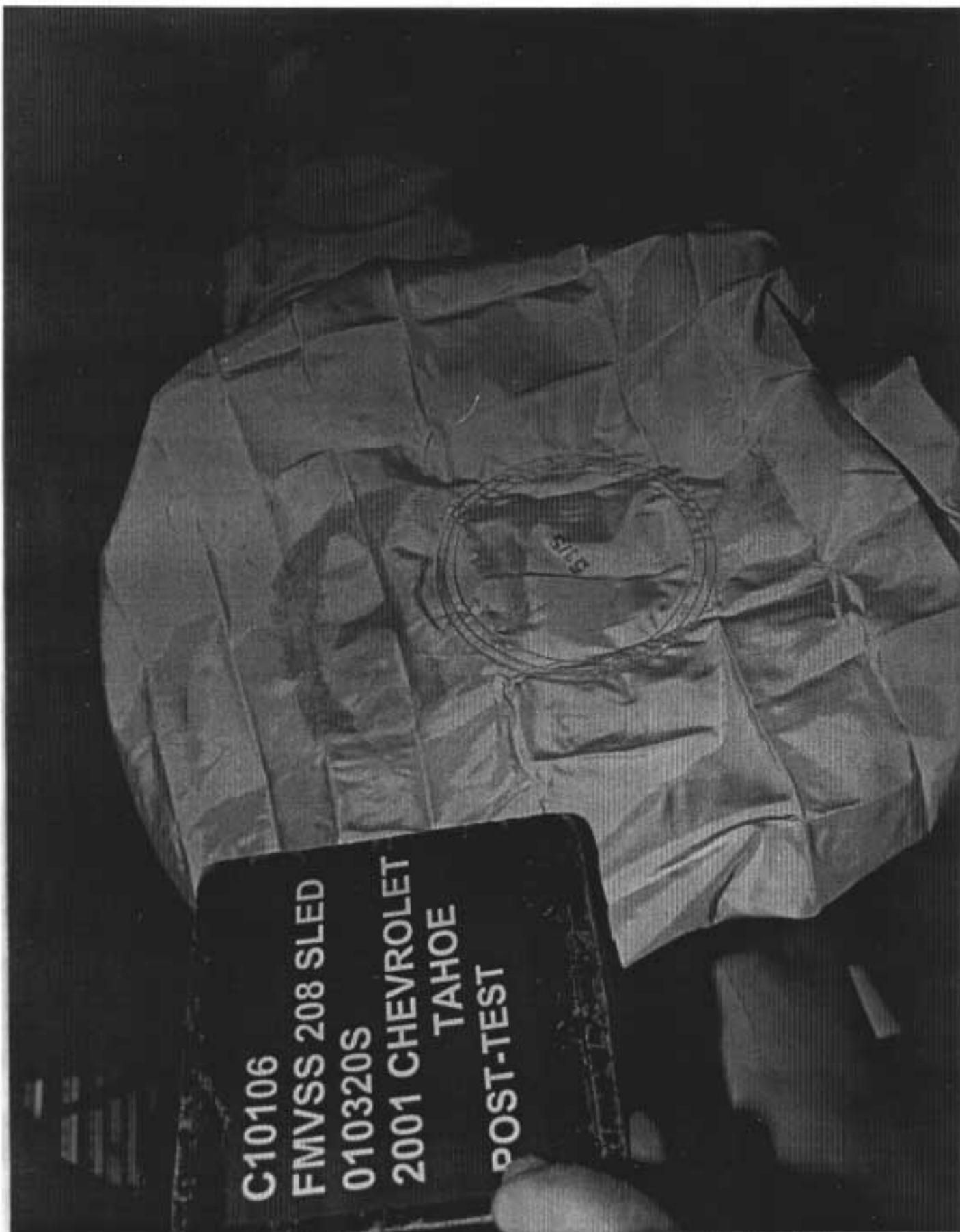


Figure A-18 Post-Test Driver Airbag View
A-19

S010320



Figure A-19 Post-Test Driver Dummy Removed from Vehicle Overall View
A-20 S010320

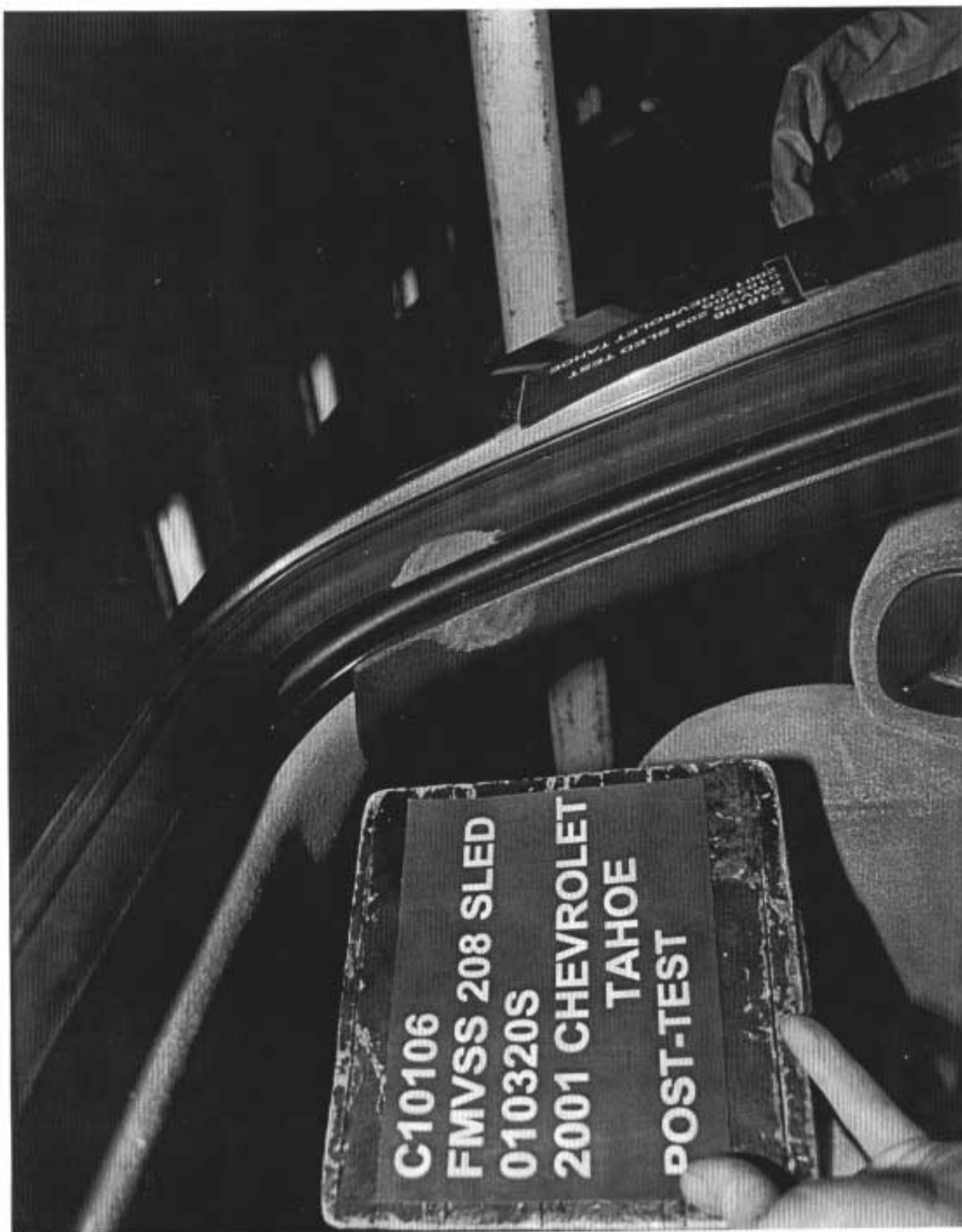


Figure A-20 Post-Test Driver Dummy Head Contact View
A-21

S010320



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

S010320

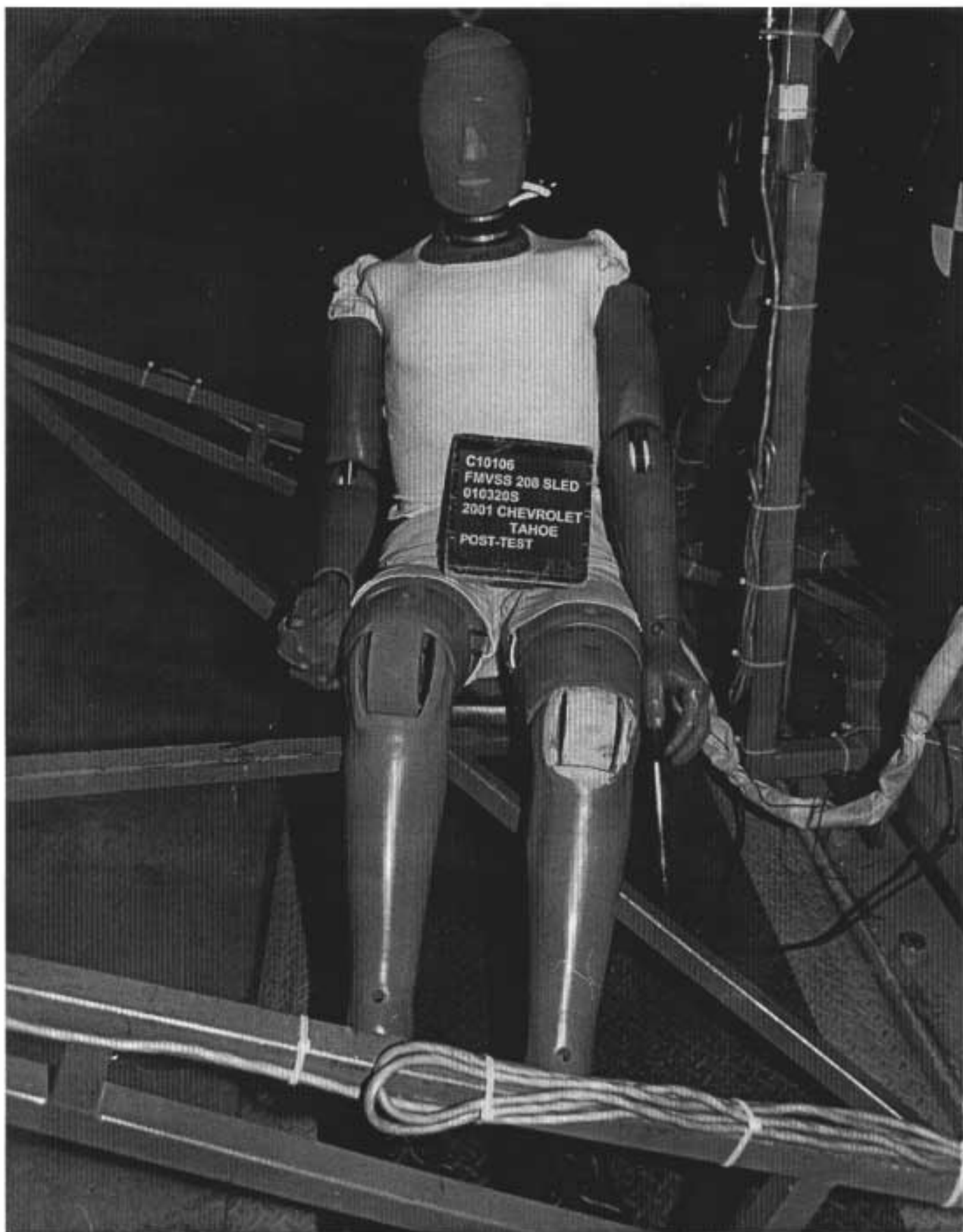


Figure A-22 Post-Test Passenger Dummy Removed from Vehicle Overall View
A-23 S010320



Figure A-23 Post-Test Passenger Dummy Head Contact View



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

S010320



Figure A-25 Post-Test Driver Knee Bolster View
A-26

S010320

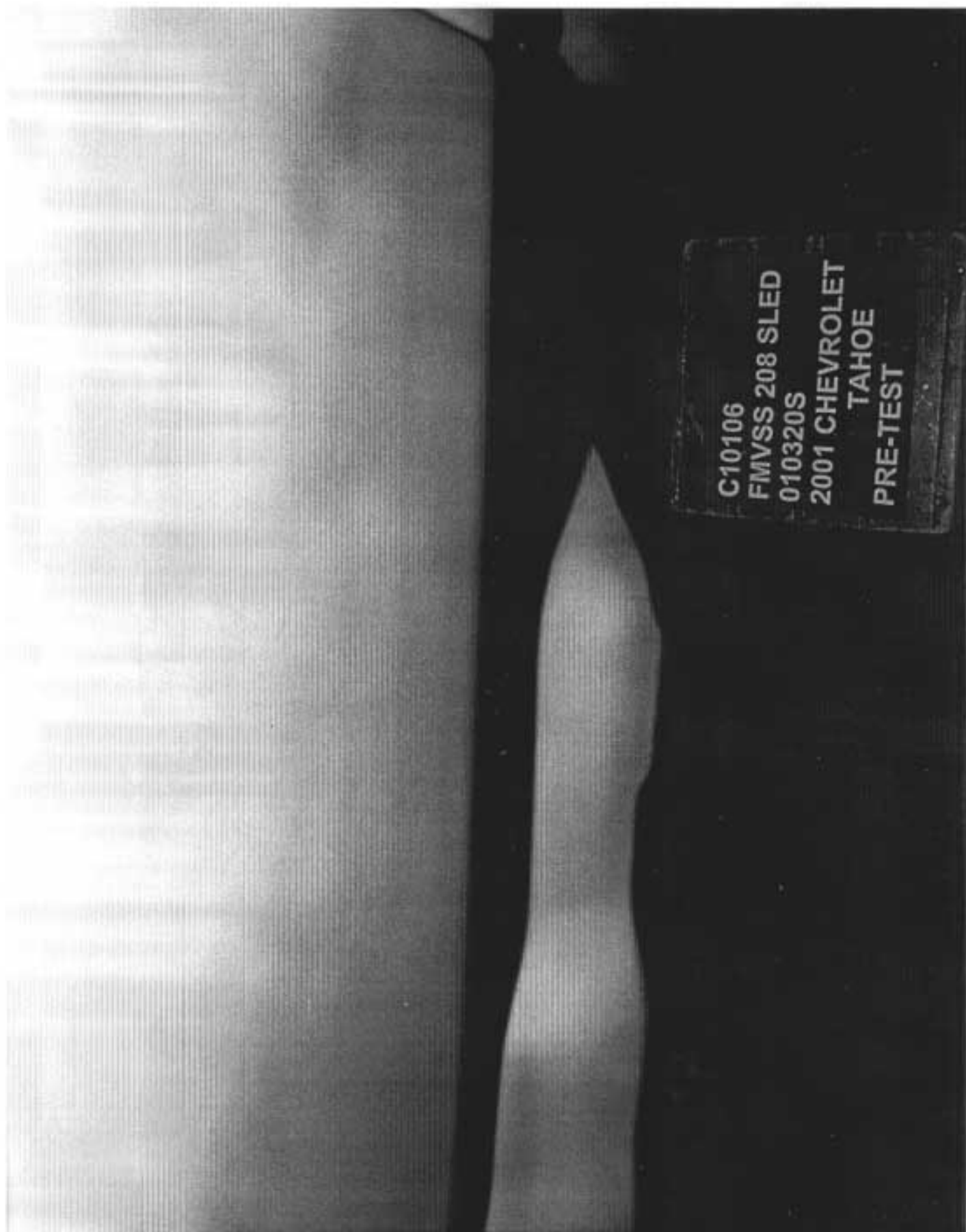


Figure A-26 Pre-Test Passenger Glove Box View
A-27

S010320



Figure A-27 Post-Test Passenger Glove Box View
A-28

S010320

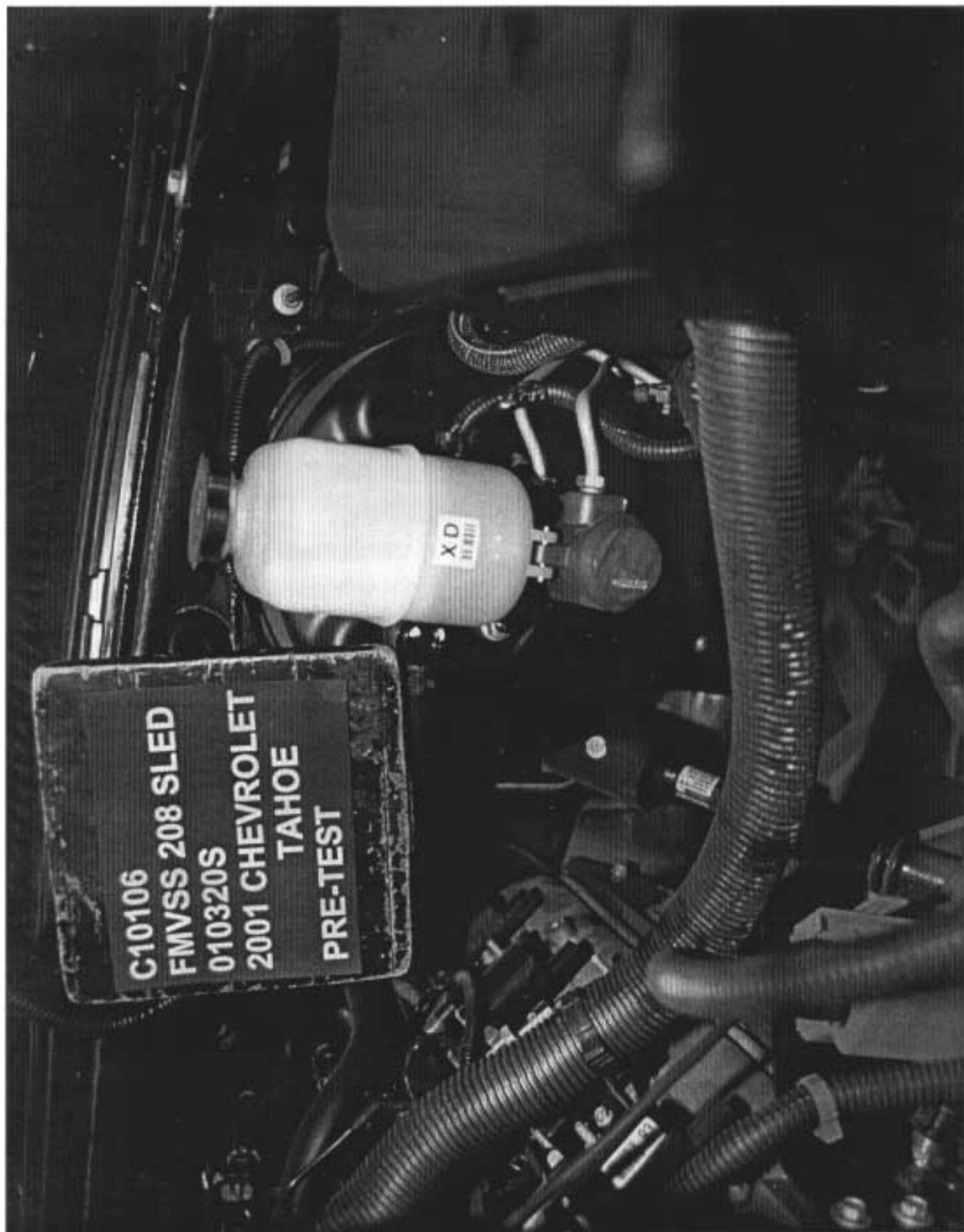


Figure A-28 Pre-Test Steering Column Linkage in Engine Compartment View

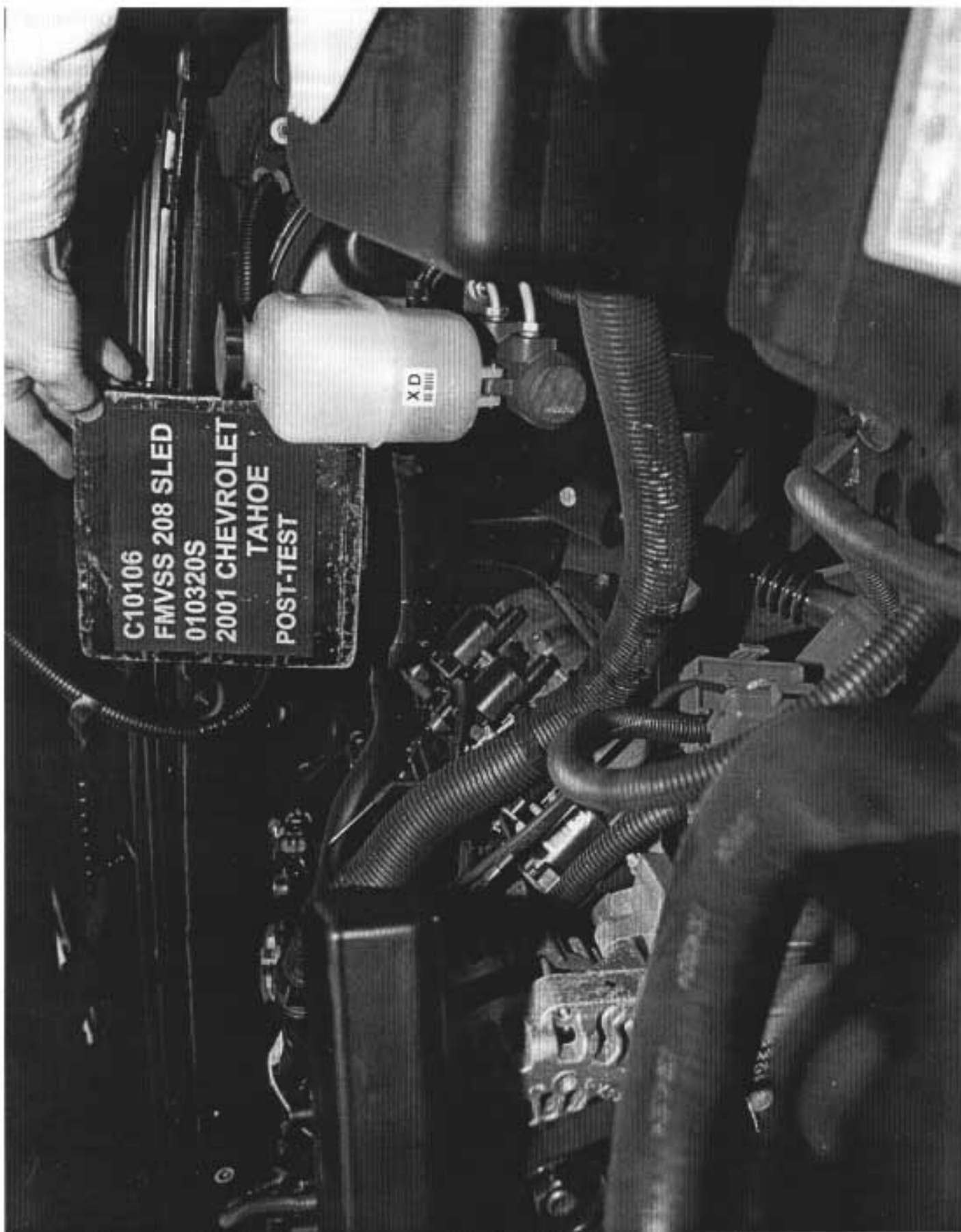


Figure A-29 Post-Test Steering Column Linkage in Engine Compartment View
A-30 S010320

Appendix B

Data Plots

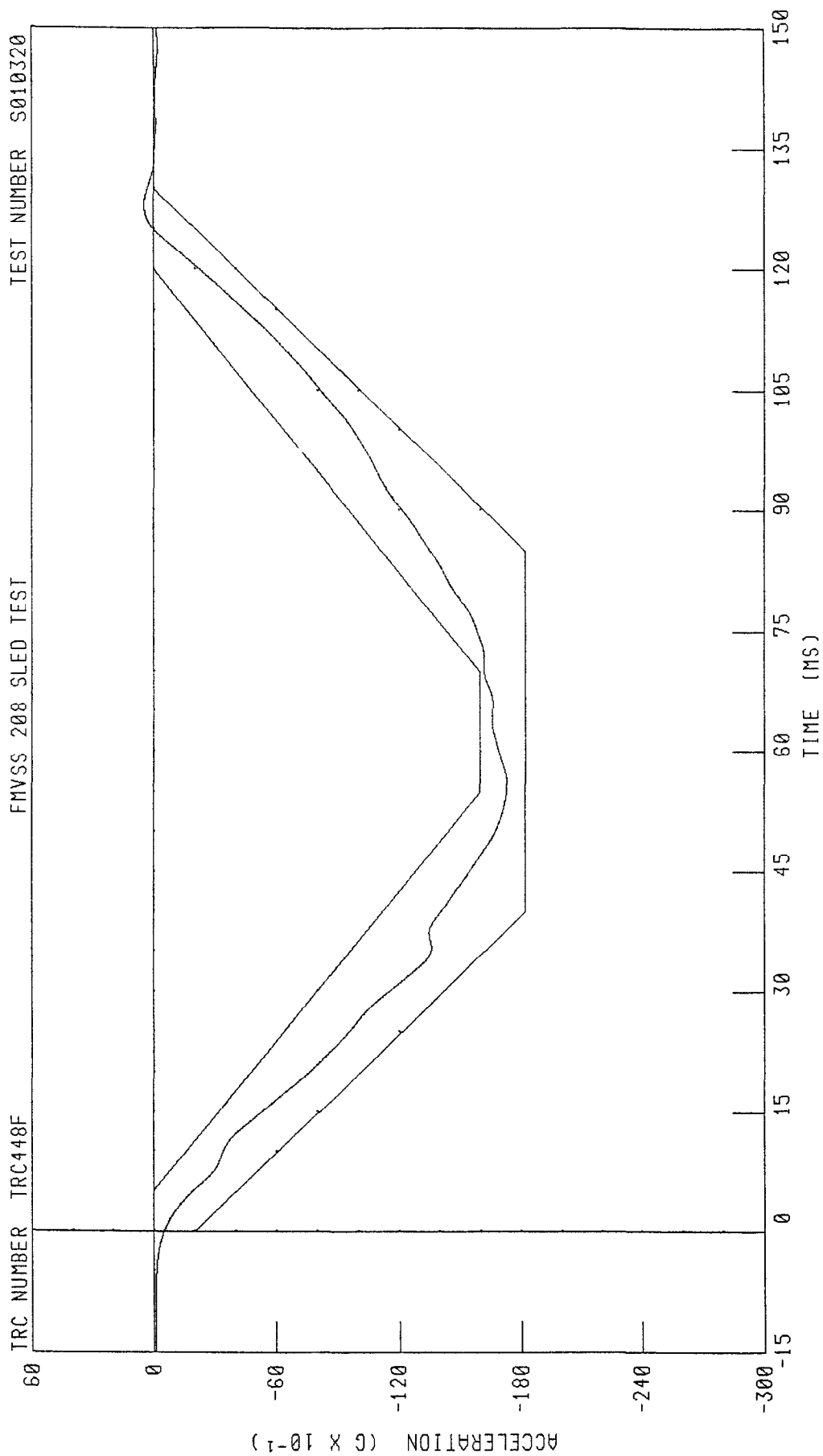
C10106 / 2001 CHEVROLET TAHOE

SLED ACCELERATION

FMVSS 208 SLED TEST

TRC NUMBER TRC448F

TEST NUMBER S010320



CHANNEL SLDXC FILTER CH CLASS 60

PEAK DATA 0 47 G 0 127 92 MS, -17 31 G 0 55 84 MS

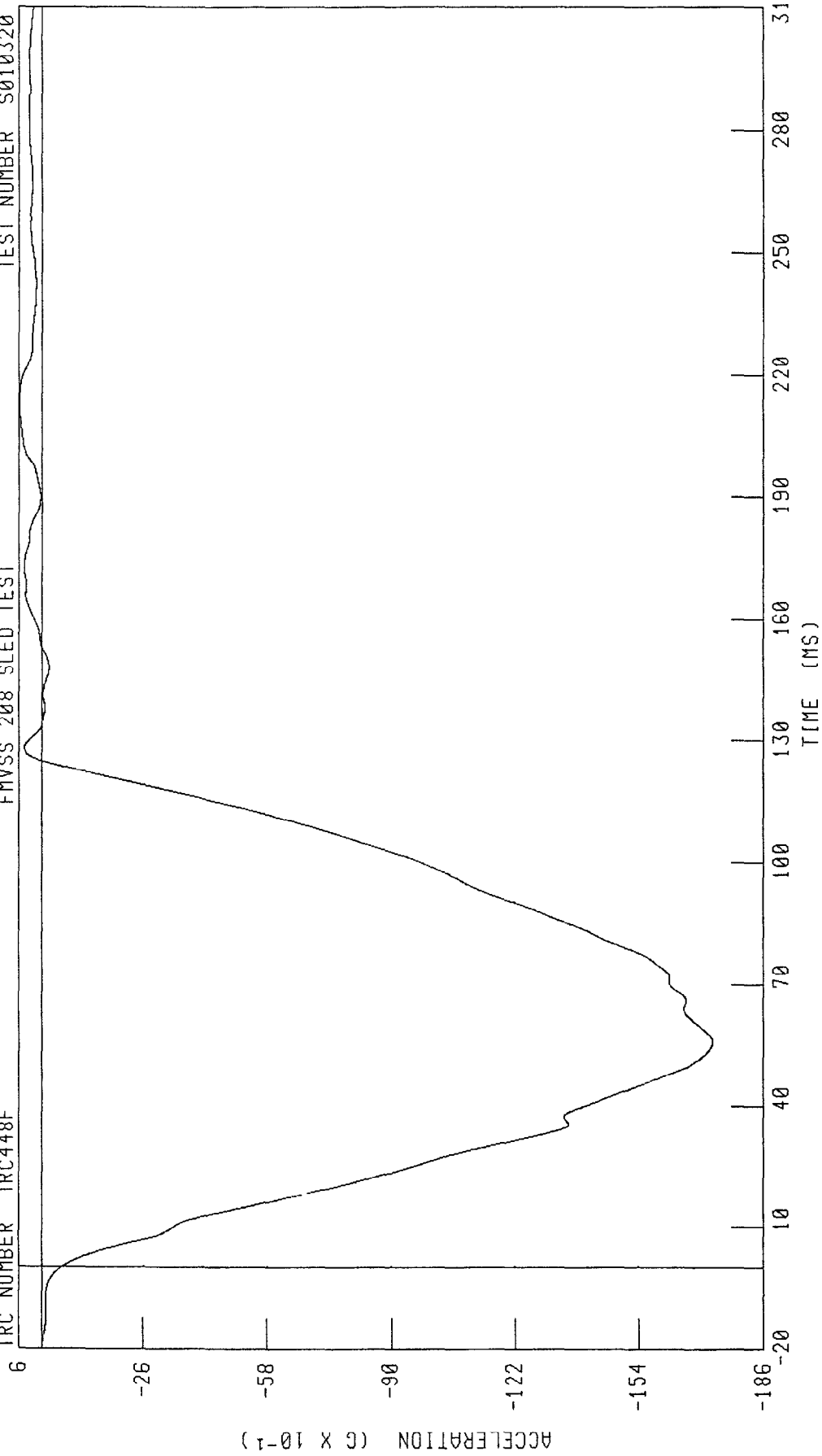
C10106 / 2001 CHEVROLET TAHOE

SLED ACCELERATION

FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F



CHANNEL SLDXC FILTER CH CLASS 60

PEAK DATA 0 59 C 0 211 36 MS, -17 31 C 0 55 84 MS

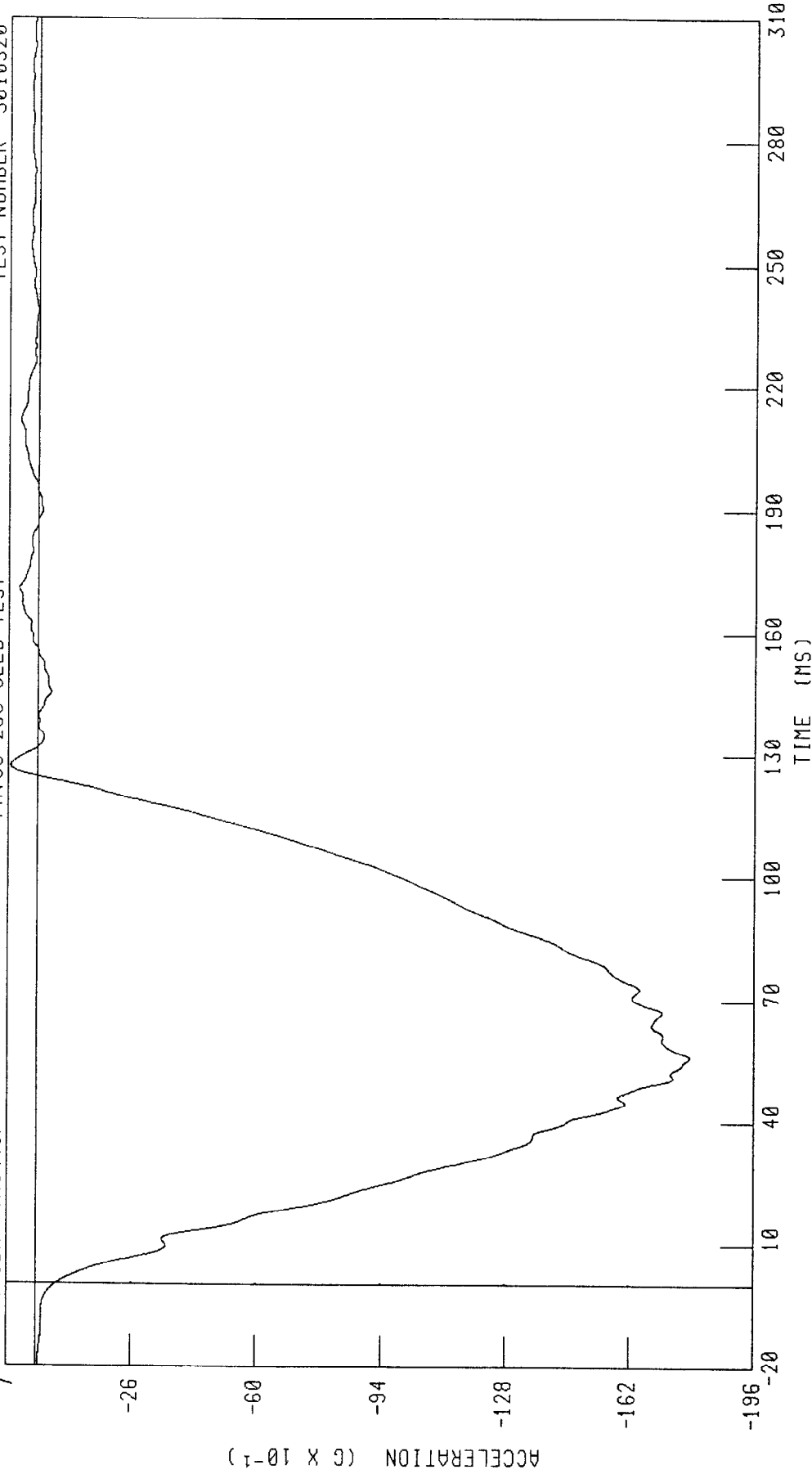
C10106 / 2001 CHEVROLET TAHOE

SLED ACCELERATION - BACKUP

FMVSS 208 SLED TEST

TEST NUMBER S010320

7 TRC NUMBER TRC448F



TIME (MS)

CHANNEL SLOXGA FILTER CH CLASS 60

PEAK DATA 0 74 G 0 127 12 MS, -17 86 G 0 56 08 MS

C10106 / 2001 CHEVROLET TAHOE

MEASURED VELOCITY TRAP

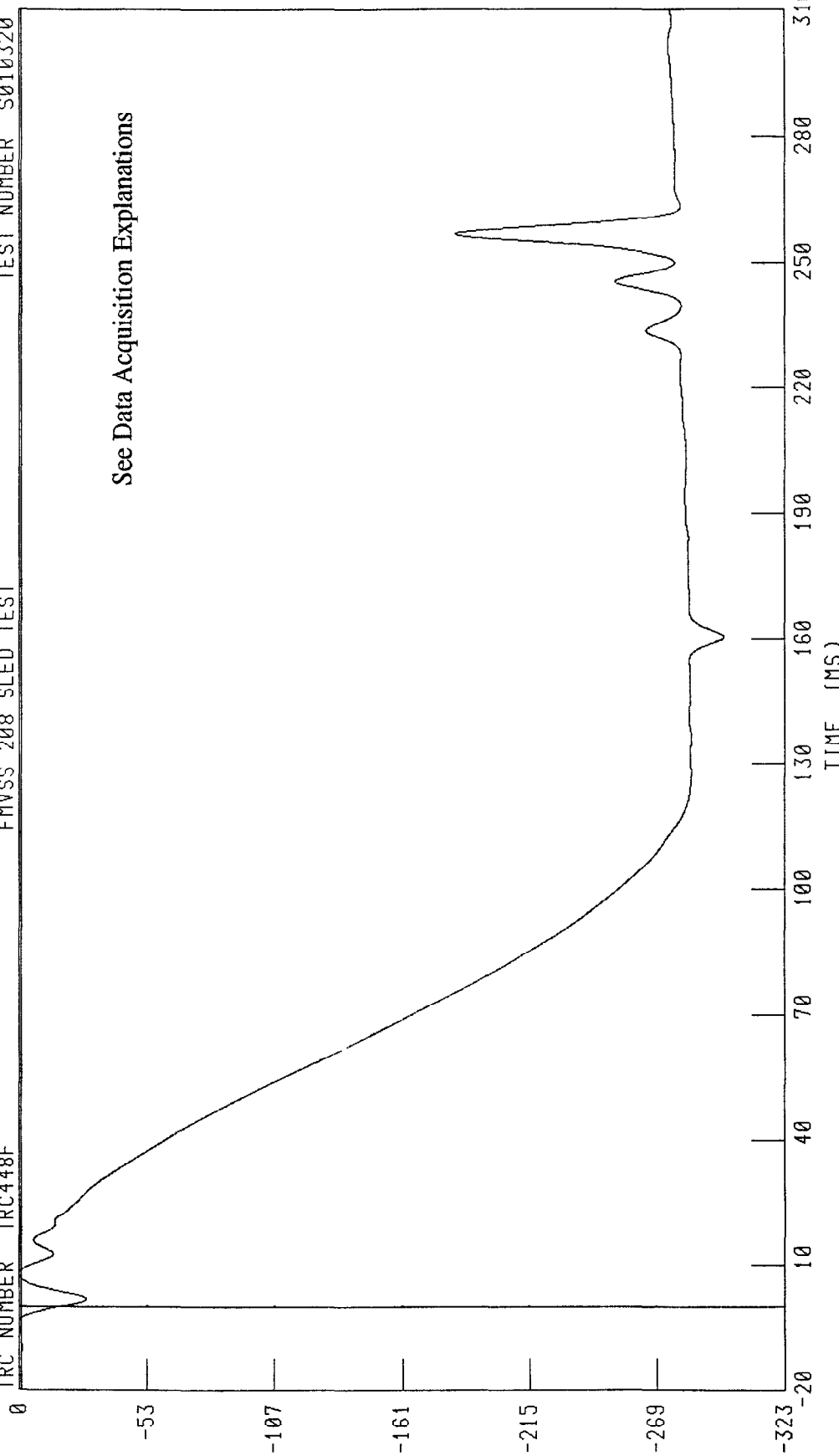
FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F

See Data Acquisition Explanations

VELOCITY (MPH X 10⁻¹)



PEAK DATA 0 12 MPH @ -4 00 MS, -29 76 MPH @ 160 56 MS

CHANNEL SLDXV FILTER CH CLASS 60

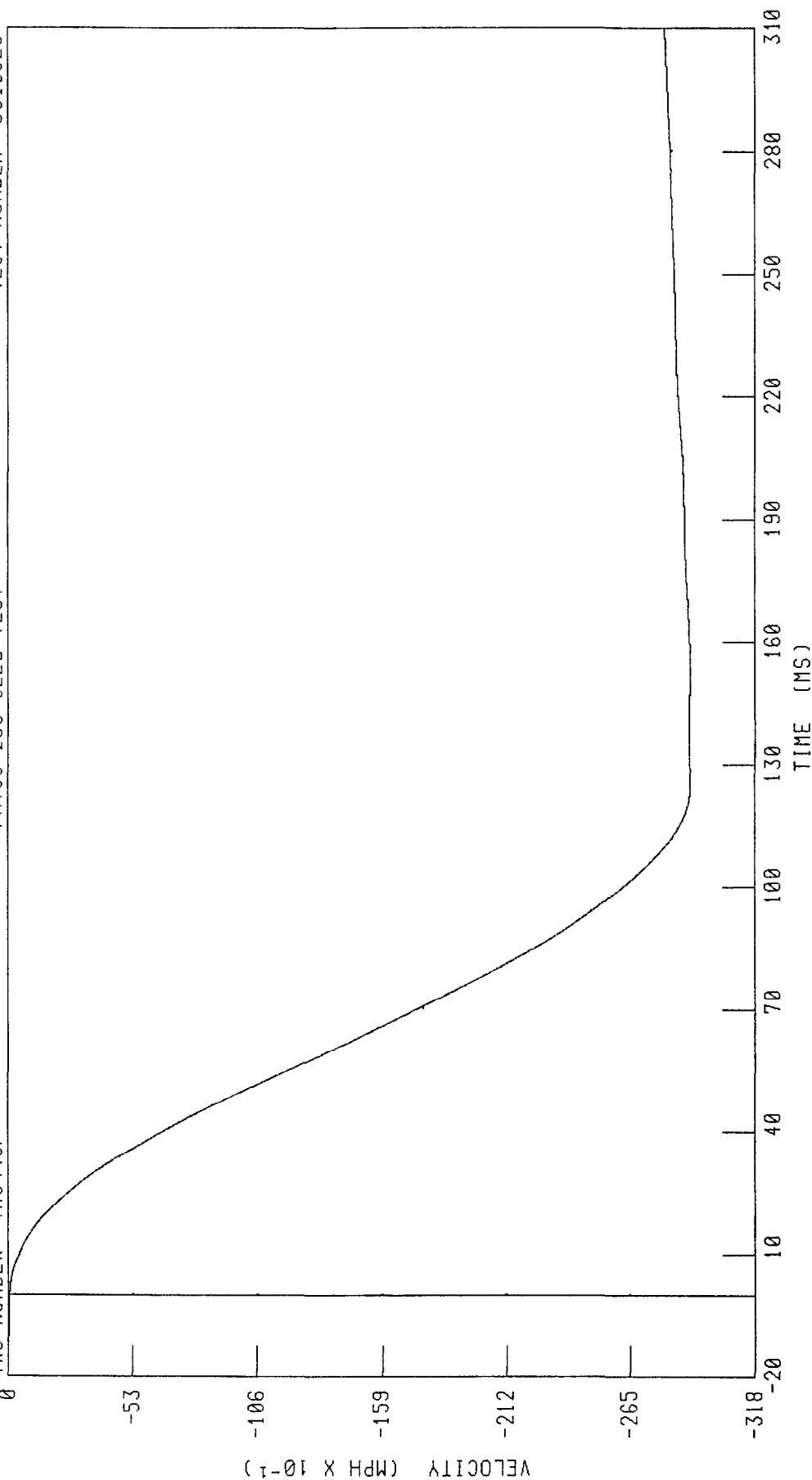
C10106 / 2001 CHEVROLET TAHOE

SLED VELOCITY (INTEGRATED)

FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F



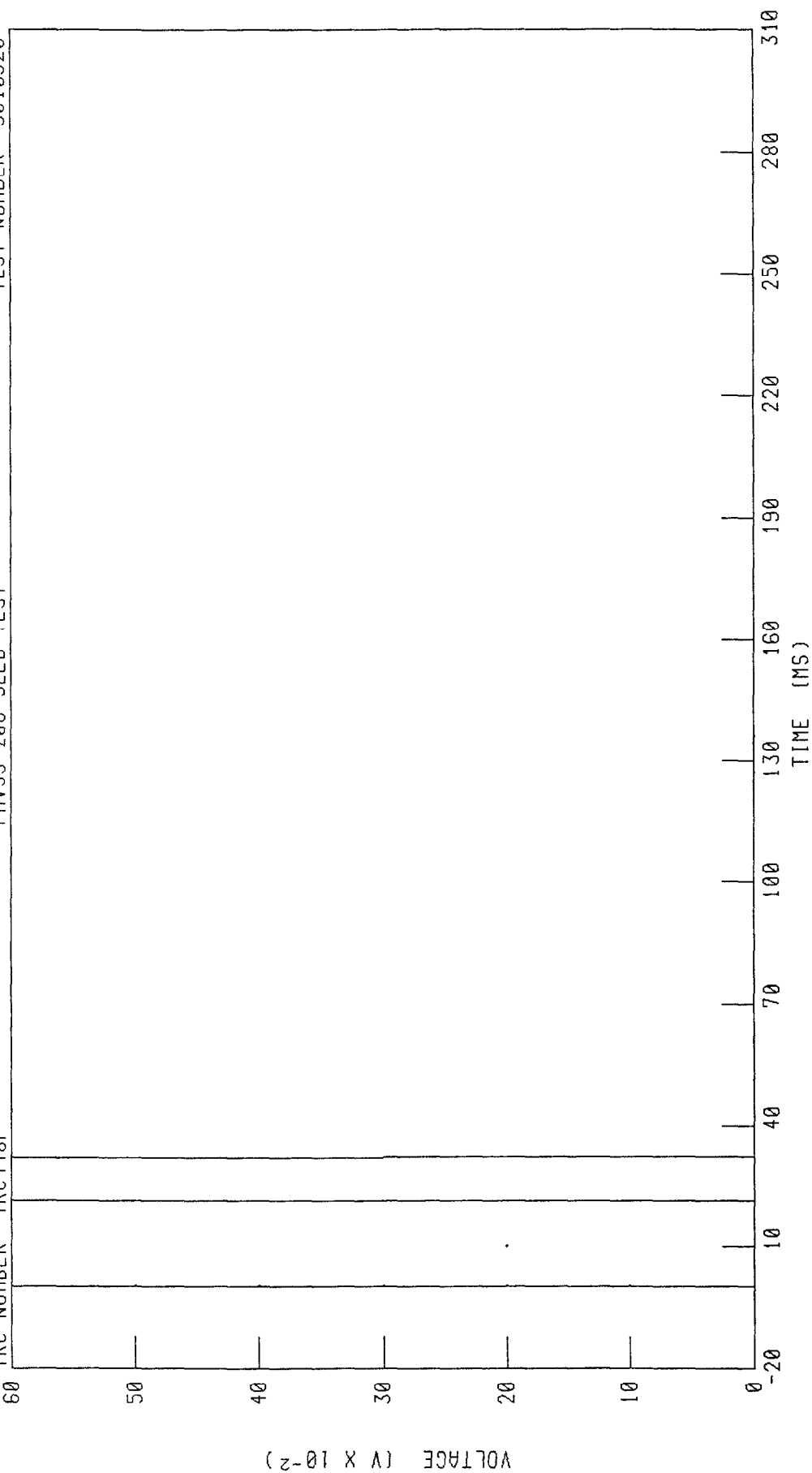
CHANNEL SLDXVI FILTER CH CLASS 180

PEAK DATA 0 00 MPH @ -18 40 MS, -29 08 MPH @ 124 64 MS

C10106 / 2001 CHEVROLET TAHOE
DRIVER AIRBAG EVENT
FMVSS 208 SLED TEST

TRC NUMBER TRC448F

TEST NUMBER S010320



CHANNEL ABEVT1 FILTER CH CLASS 1000

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

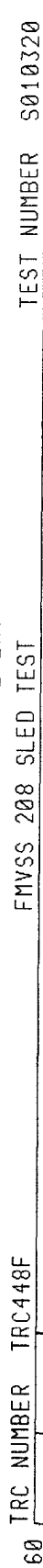
C10106 / 2001 CHEVROLET TAHOE

PASSENGER AIRBAG EVENT

FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F



VOLTAGE (V X 10⁻²)

TIME (MS)

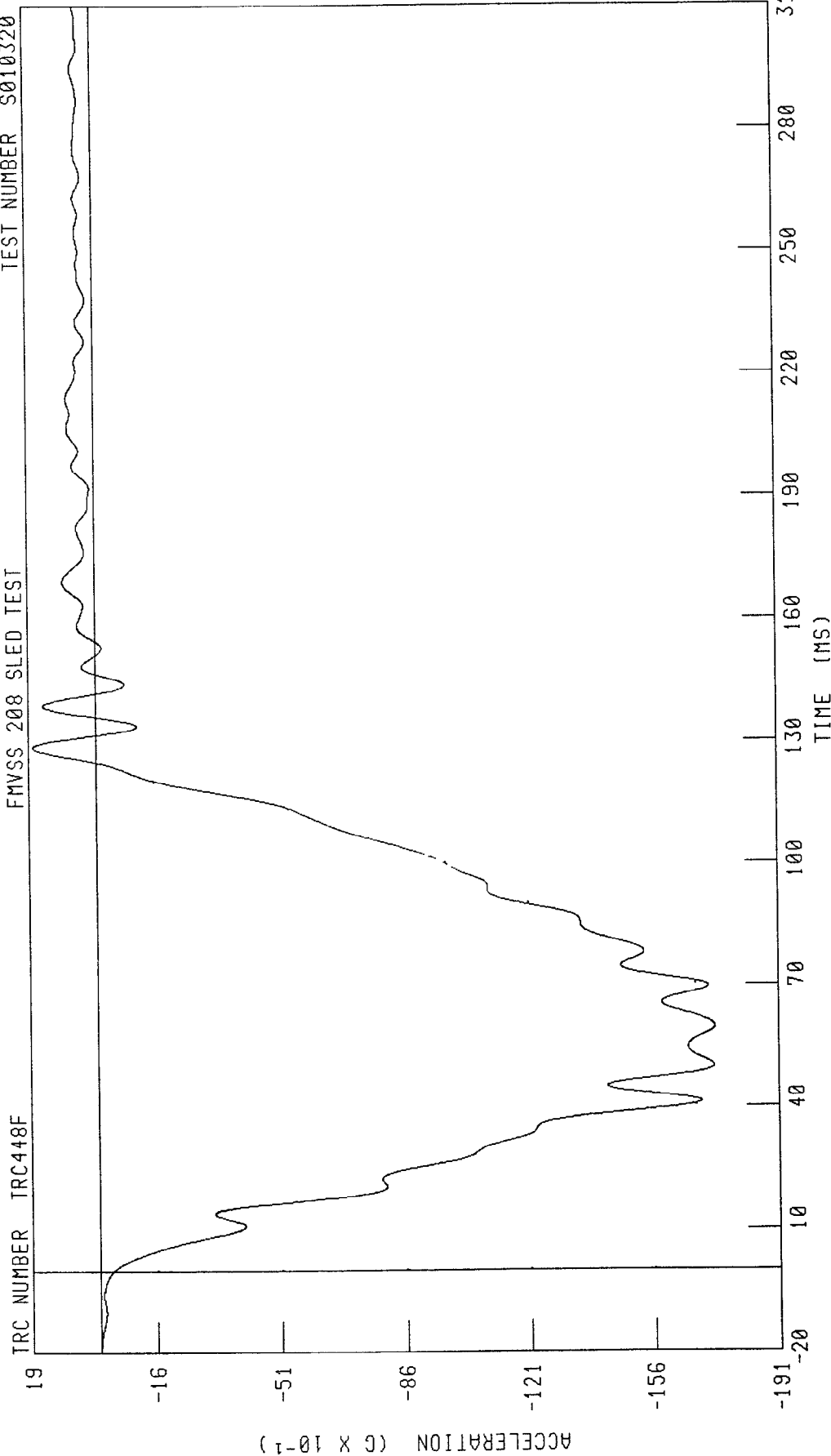
PEAK DATA 1 00 V 0 21 36 MS, 0 00 V 0 -20 00 MS

CHANNEL ABEVT2 FILTER CH CLASS 1000

C10106 / 2001 CHEVROLET TAHOE
REAR AXLE X-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010320

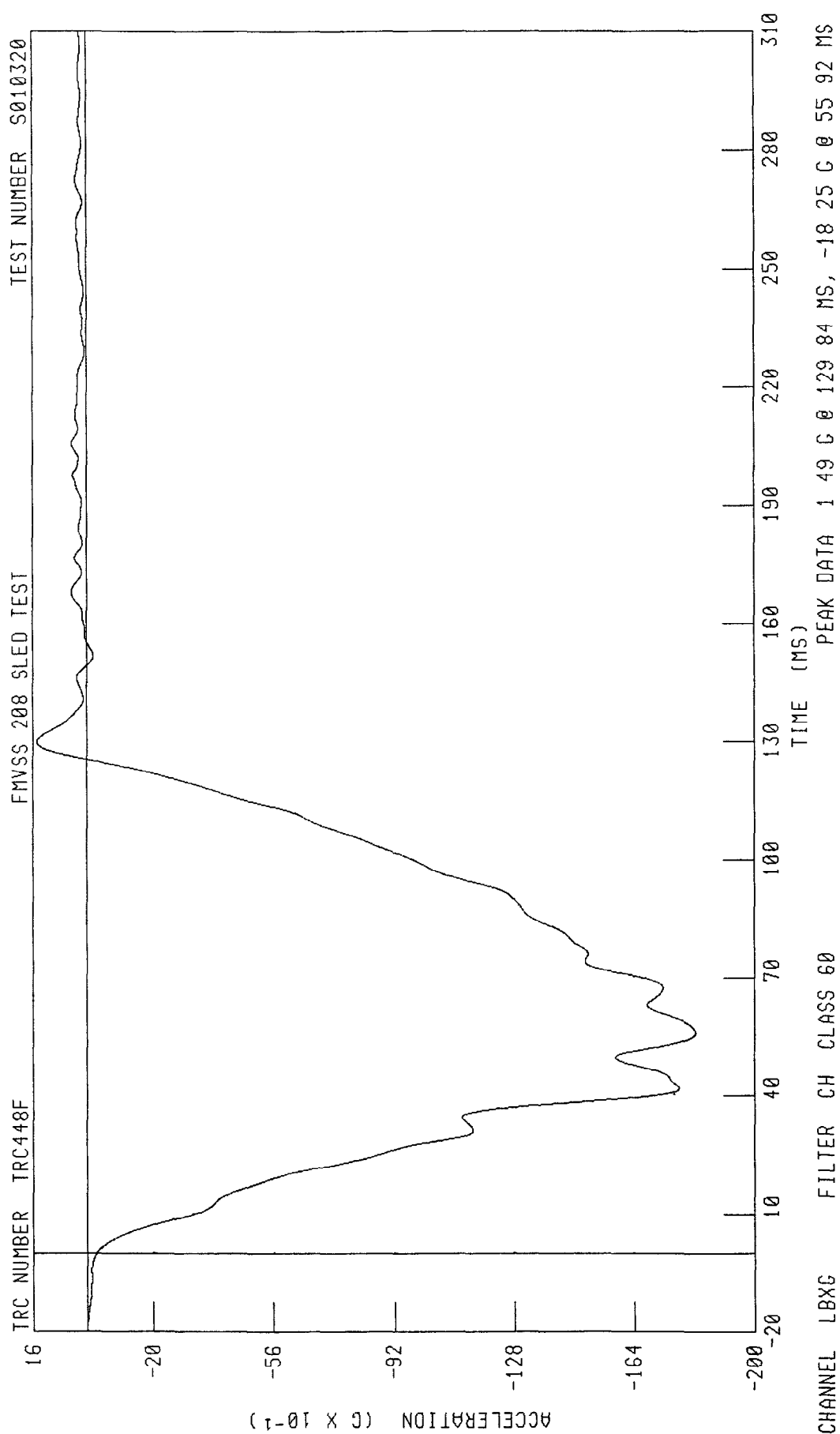
TRC NUMBER TRC448F



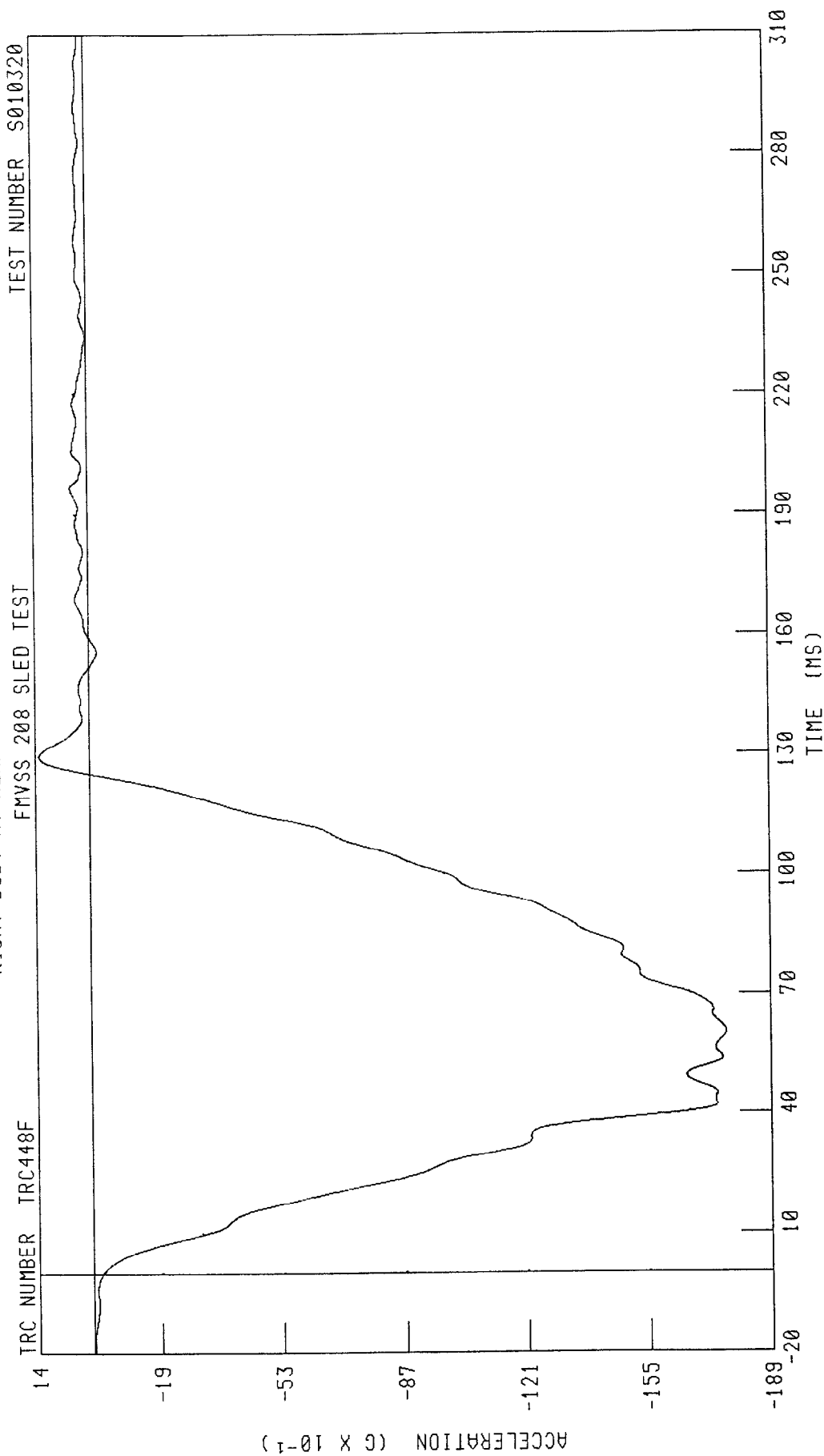
PEAK DATA 1 78 G @ 128 88 MS, -17 32 G @ 59 60 MS

CHANNEL RAXC FILTER CH CLASS 60

C10106 / 2001 CHEVROLET TAHOE
LEFT BODY AT REAR SEAT X-AXIS ACCELERATION

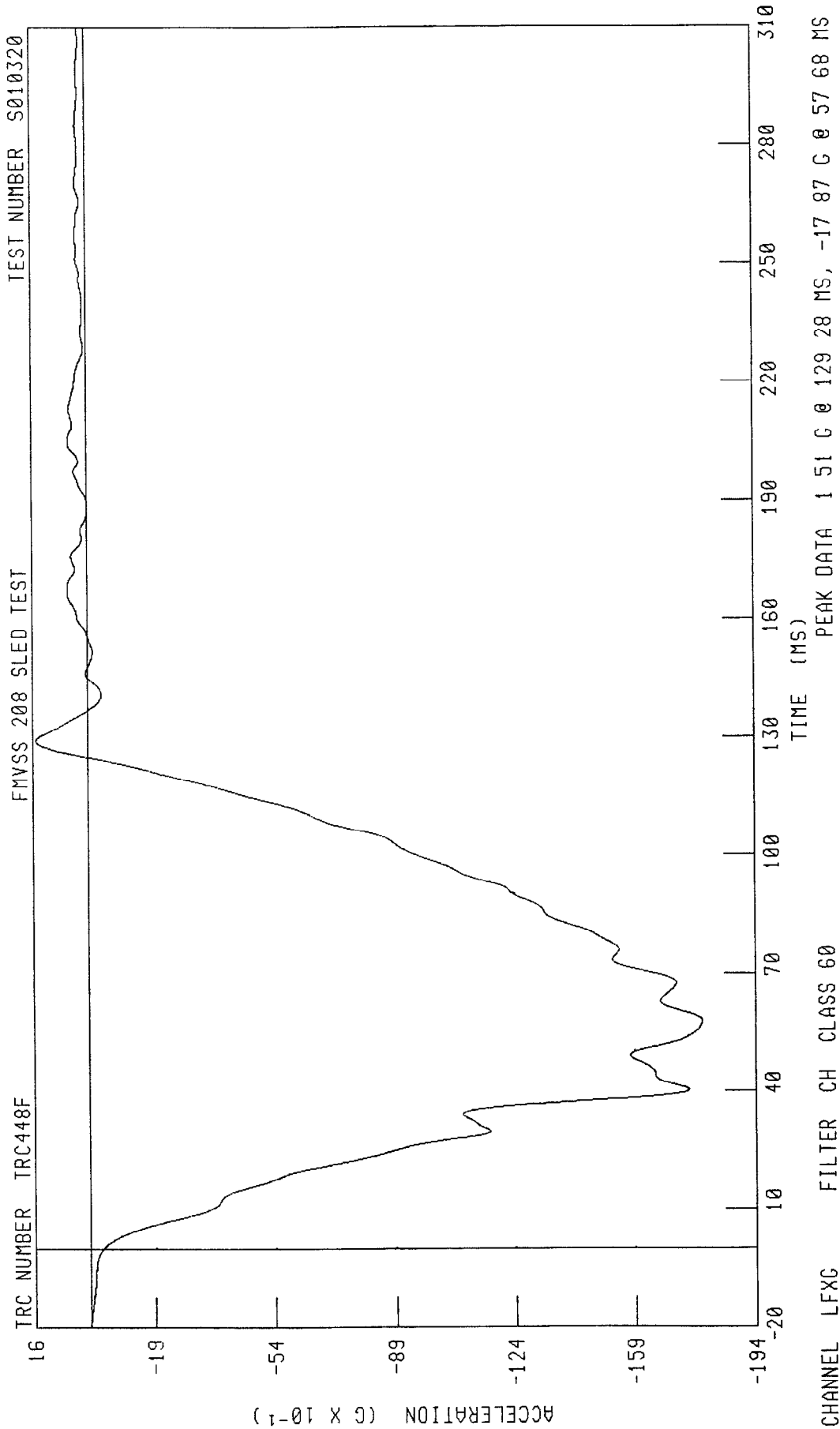


C10106 / 2001 CHEVROLET TAHOE
 RIGHT BODY AT REAR SEAT X-AXIS ACCELERATION

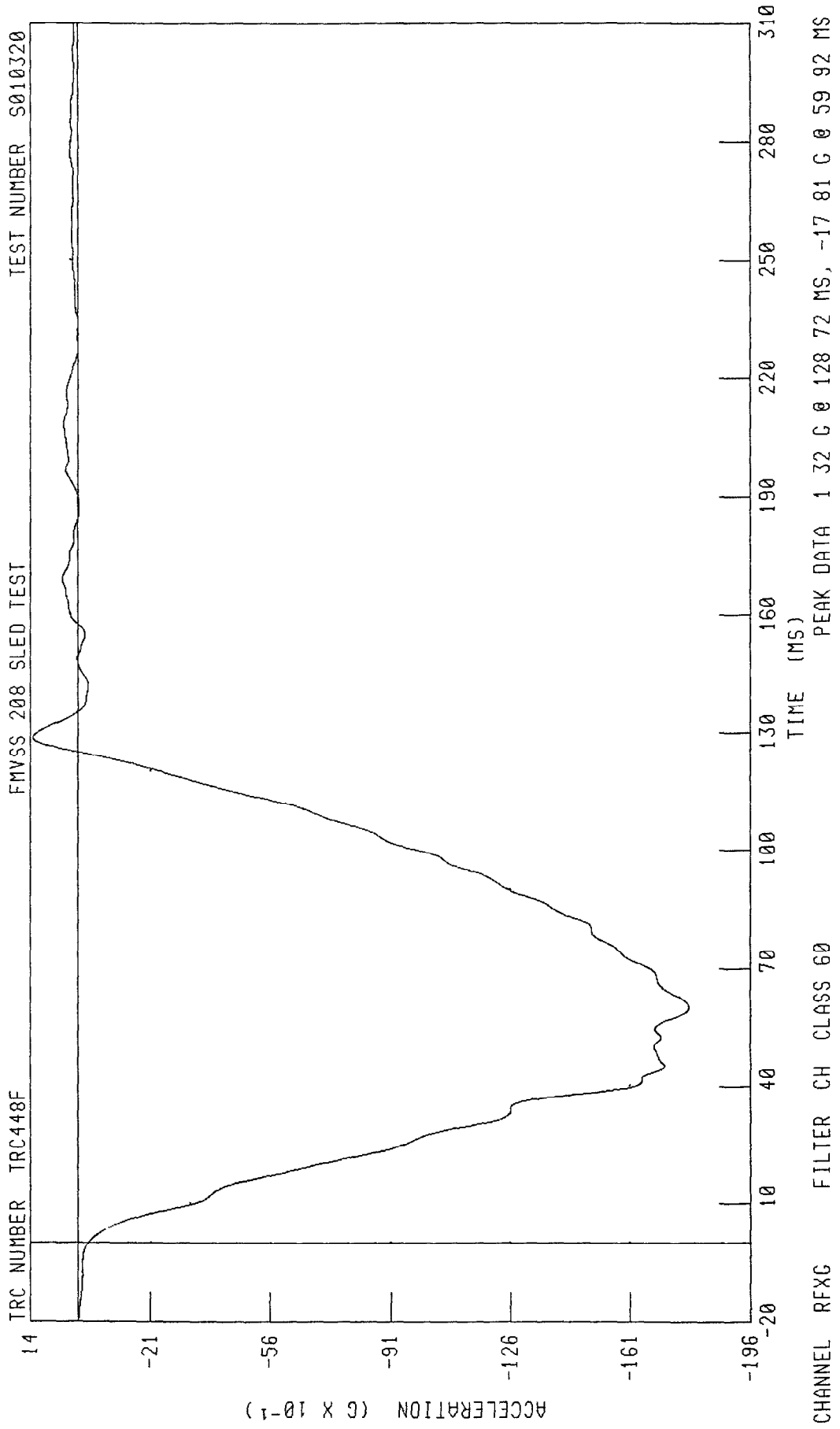


CHANNEL RBXC FILTER CH CLASS 60

C10106 / 2001 CHEVROLET TAHOE
LEFT FRAME X-AXIS ACCELERATION



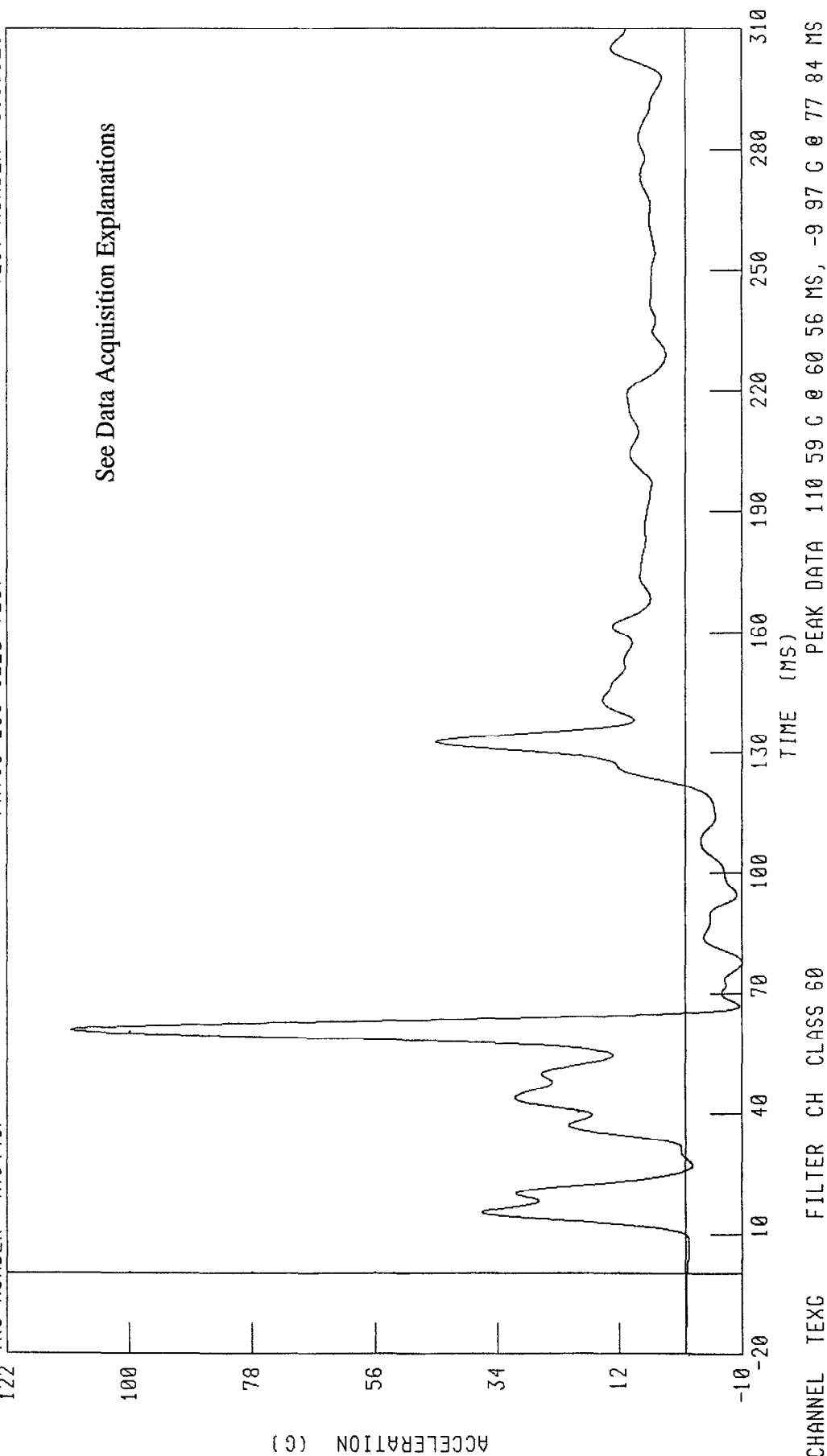
C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRAME X-AXIS ACCELERATION



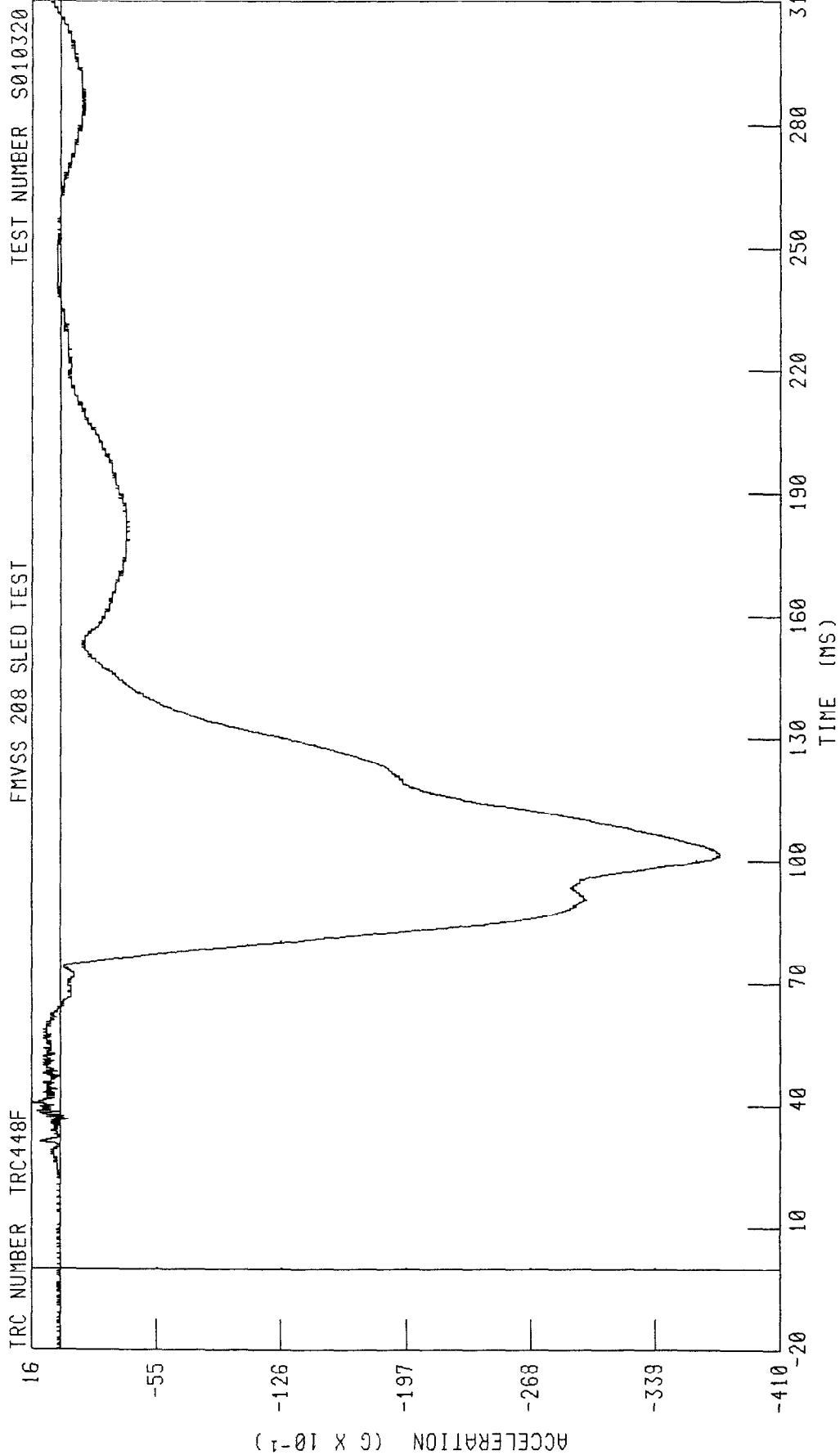
C10106 / 2001 CHEVROLET TAHOE
TOP ENGINE X-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F



C10106 / 2001 CHEVROLET TAHOE
 DRIVER HEAD X-AXIS ACCELERATION
 FMVSS 208 SLED TEST



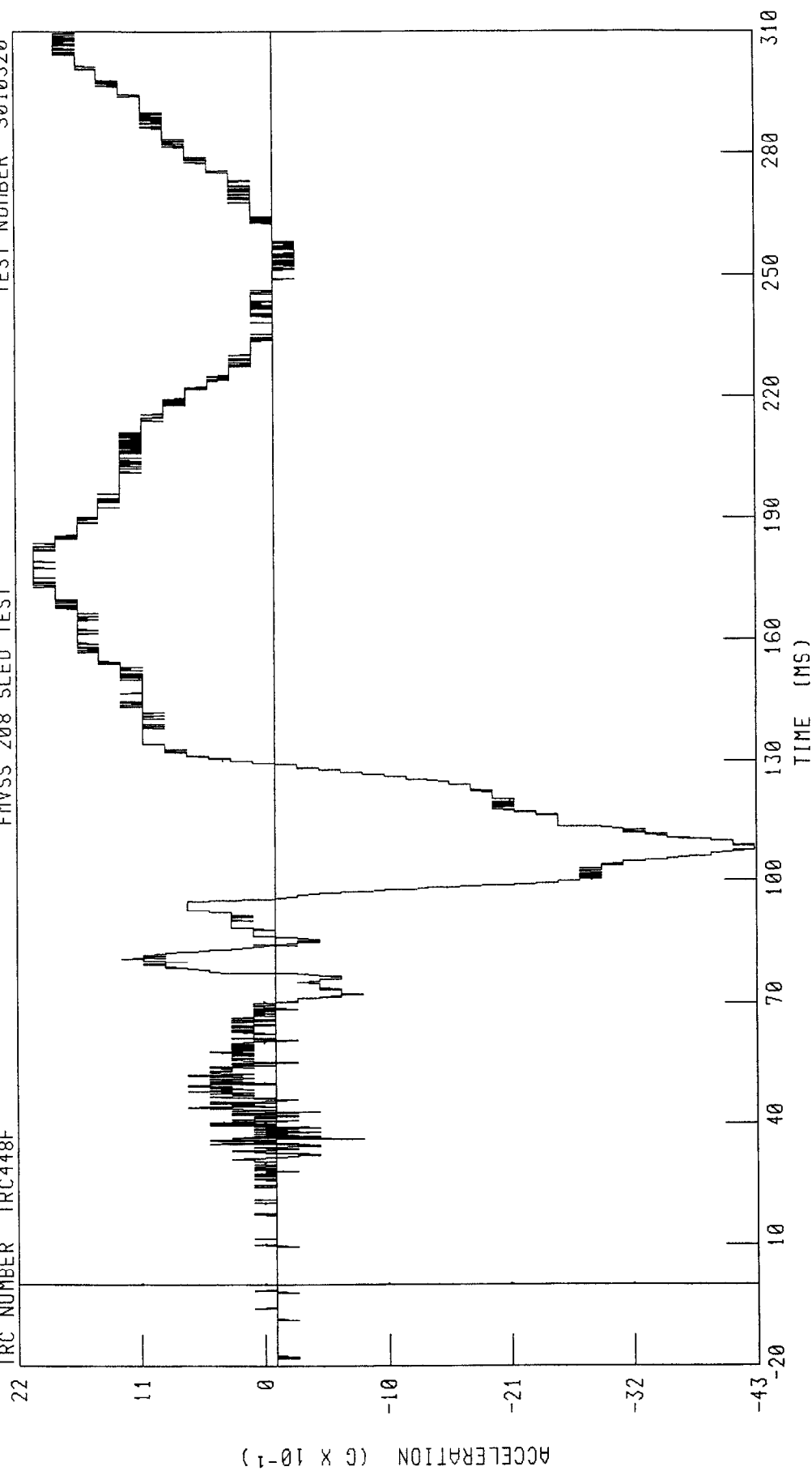
PEAK DATA 1 54 G @ 40 48 MS, -37 59 G @ 101 12 MS

CHANNEL HEDXC1 FILTER CH CLASS 1000

C10106 / 2001 CHEVROLET TAHOE
DRIVER HEAD Y-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F



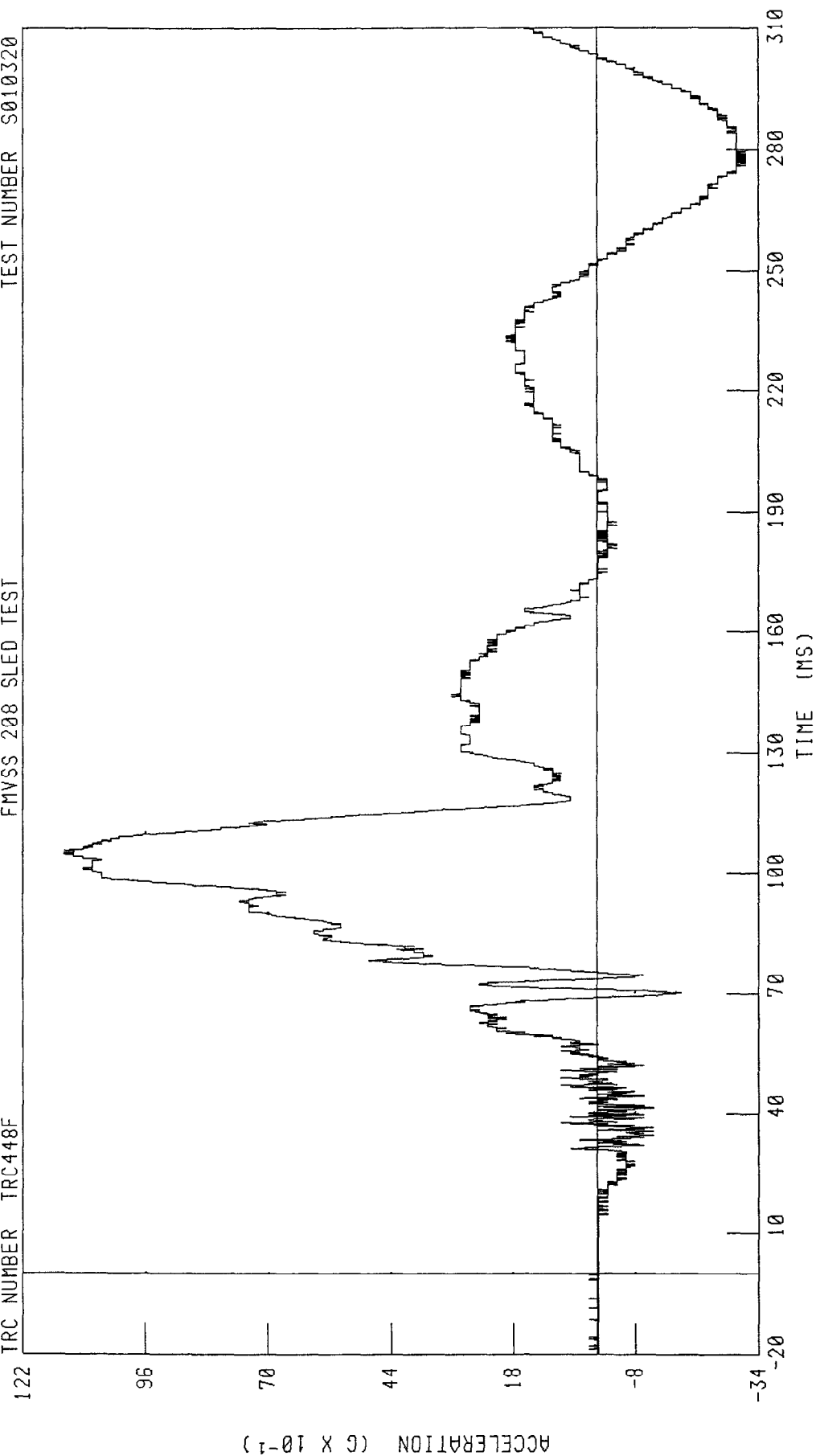
CHANNEL HEDYG1 FILTER CH CLASS 1000

PEAK DATA 2 15 G @ 173 04 MS, -4 29 G @ 107 60 MS

C10106 / 2001 CHEVROLET TAHOE
DRIVER HEAD Z-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010320

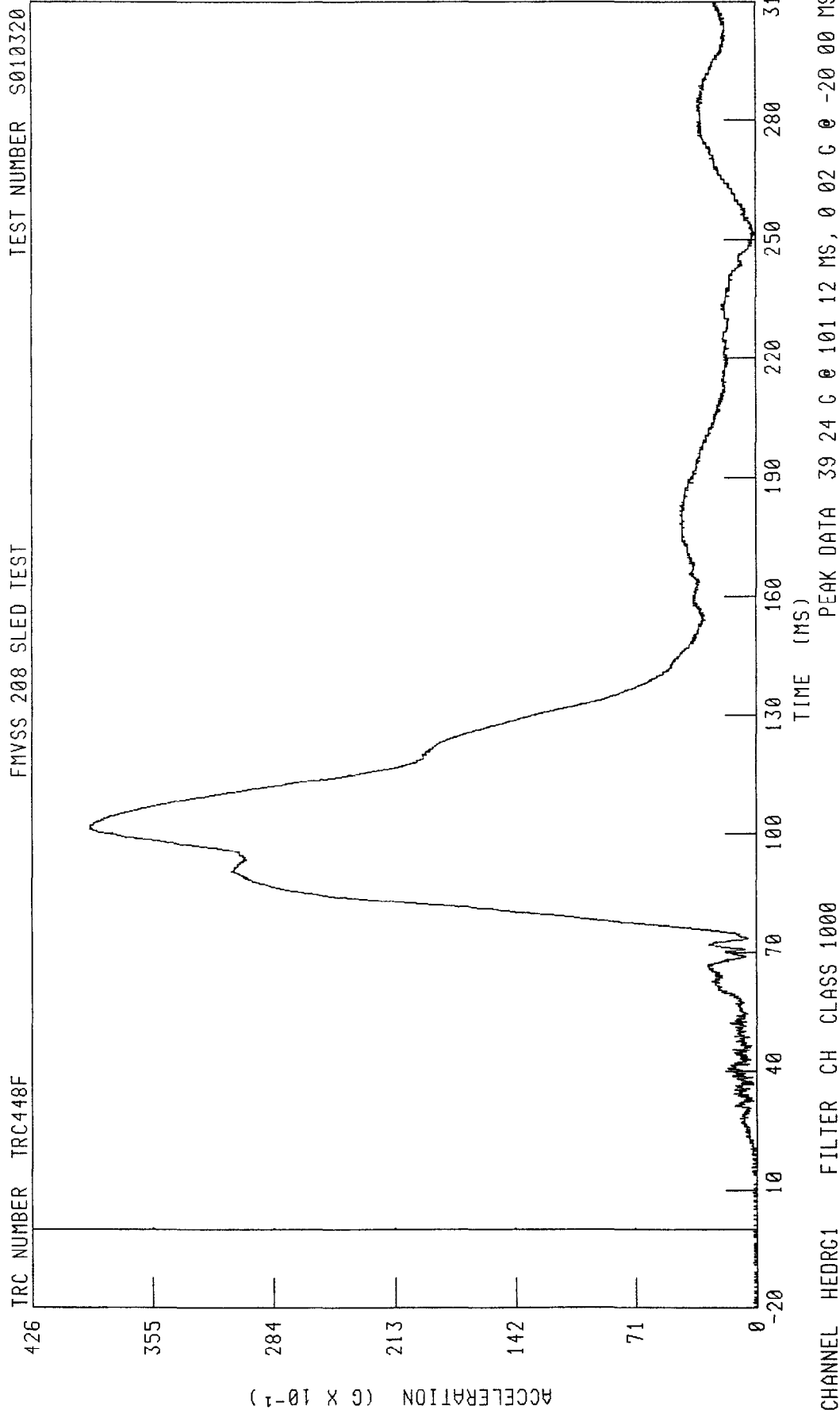
TRC NUMBER TRC448F



CHANNEL HEDZG1 FILTER CH CLASS 1000

PEAK DATA 11 32 G @ 104 64 MS, -3 14 G @ 276 00 MS

C10106 / 2001 CHEVROLET TAHOE
DRIVER HEAD RESULTANT ACCELERATION
FMVSS 208 SLED TEST

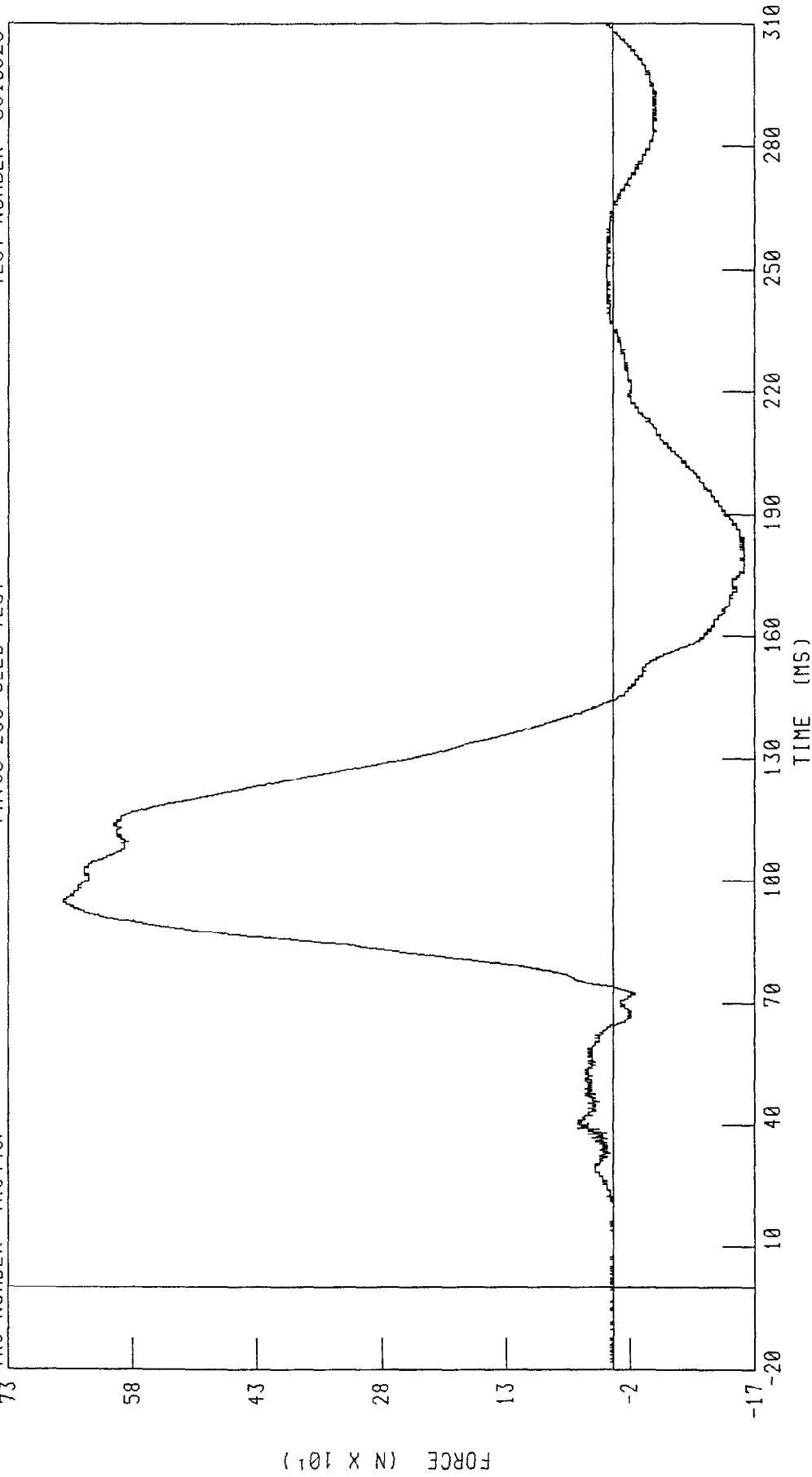


C10106 / 2001 CHEVROLET TAHOE
DRIVER NECK X-AXIS SHEAR FORCE

TRC NUMBER TRC448F

TEST NUMBER S010320

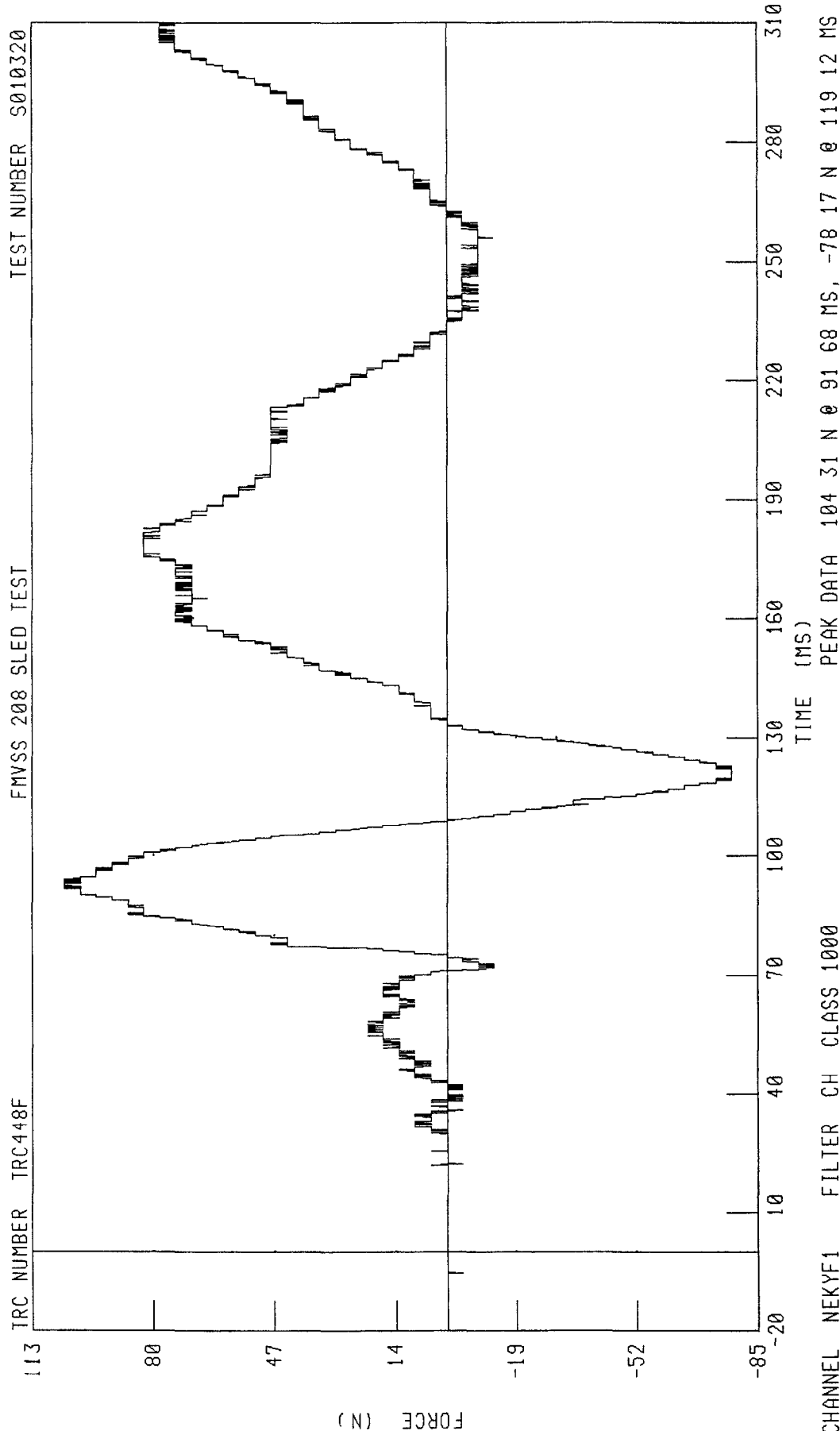
FMVSS 208 SLED TEST



CHANNEL NEKF1 FILTER CH CLASS 1000

PEAK DATA 664 29 N @ 94 64 MS, -156 82 N @ 175 76 MS

C10106 / 2001 CHEVROLET TAHOE
DRIVER NECK Y-AXIS SHEAR FORCE



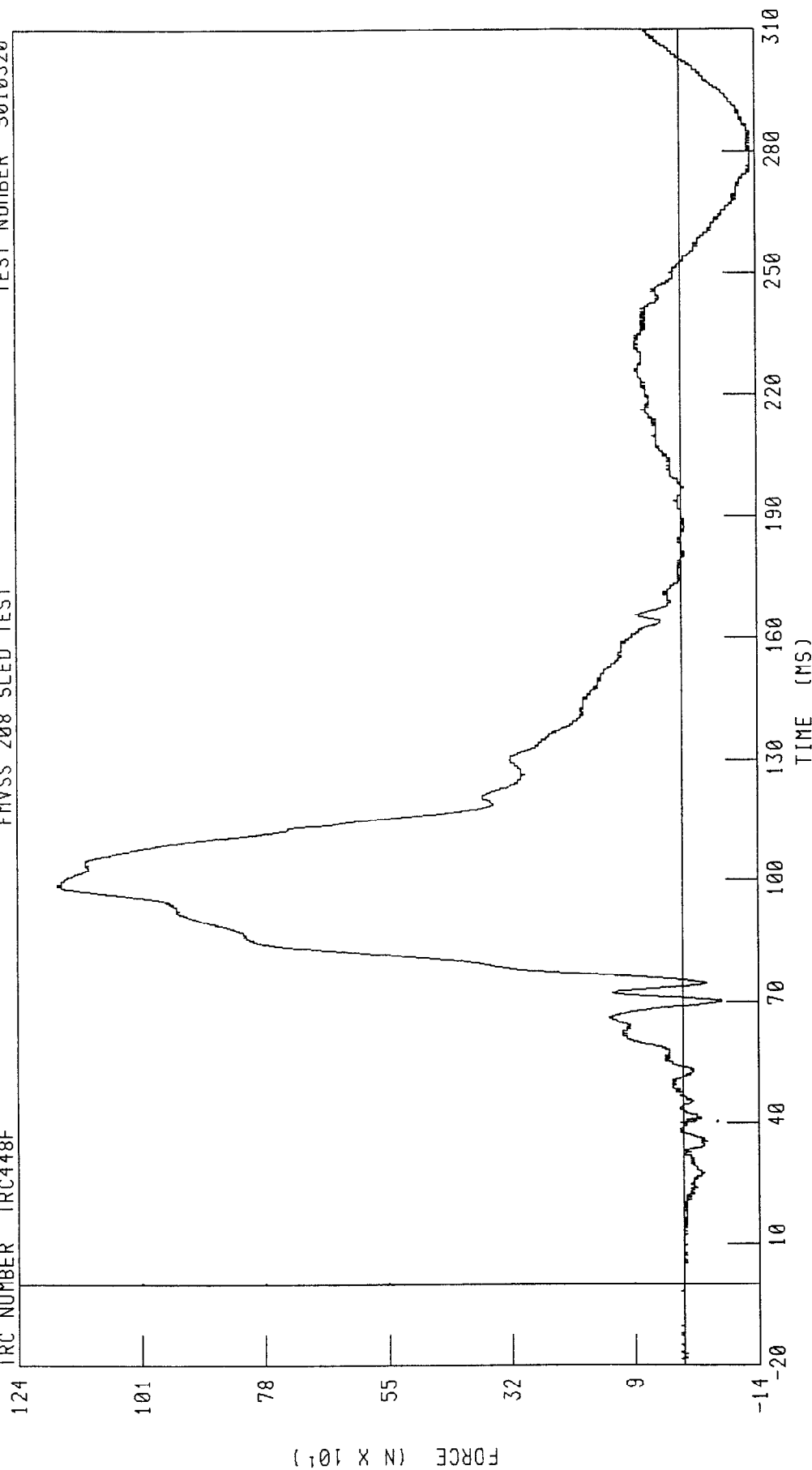
CHANNEL NEKYF1 FILTER CH CLASS 1000

C10106 / 2001 CHEVROLET TAHOE
DRIVER NECK Z-AXIS AXIAL FORCE

FMVSS 208 SLED TEST

TRC NUMBER TRC448F

TEST NUMBER S010320



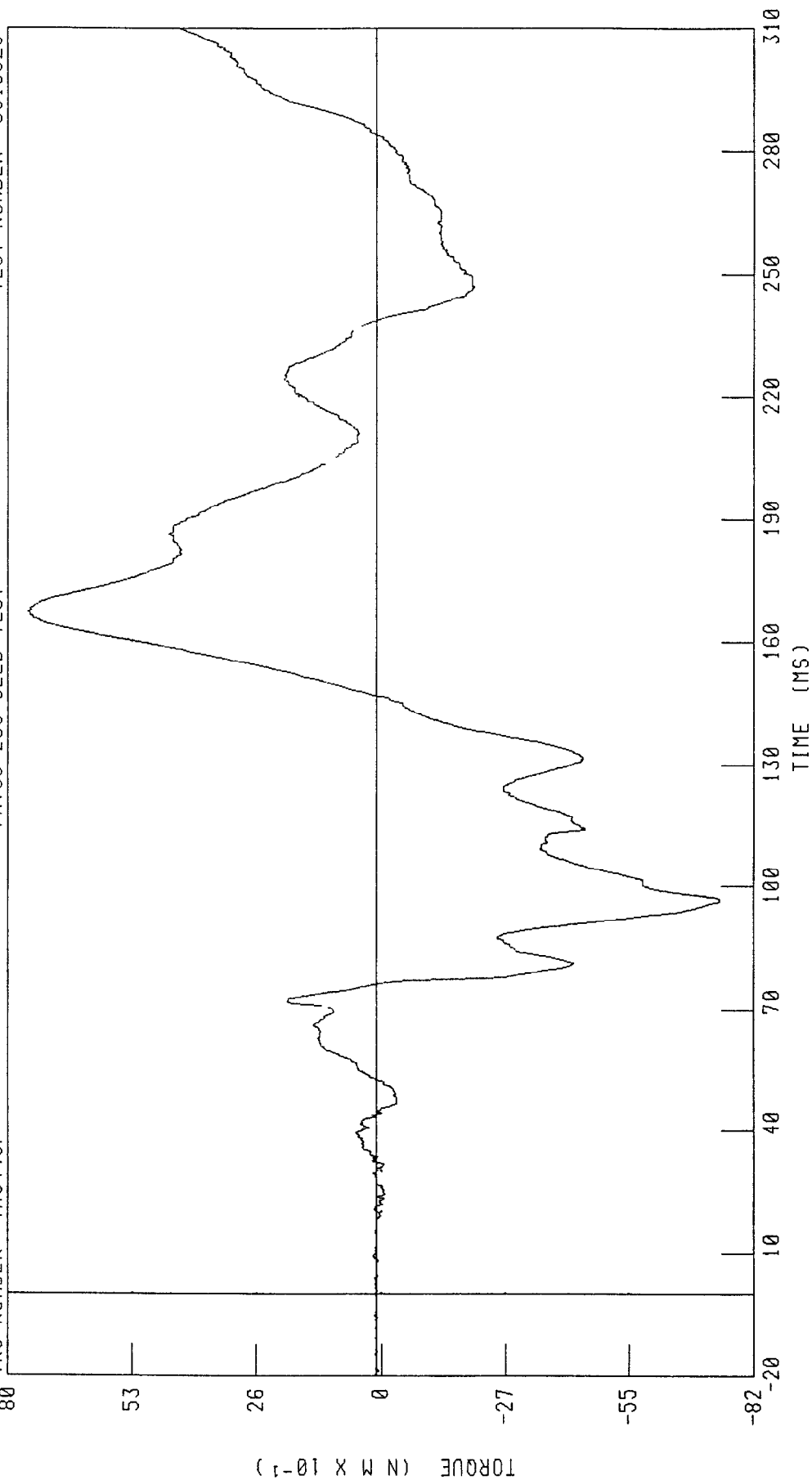
CHANNEL NEKZF1 FILTER CH CLASS 1000

PEAK DATA 1165 90 N @ 98 56 MS, -130 39 N @ 274 64 MS

C10106 / 2001 CHEVROLET TAHOE
DRIVER NECK MOMENT ABOUT X AXIS
FMVSS 208 SLED TEST

TRC NUMBER TRC448F

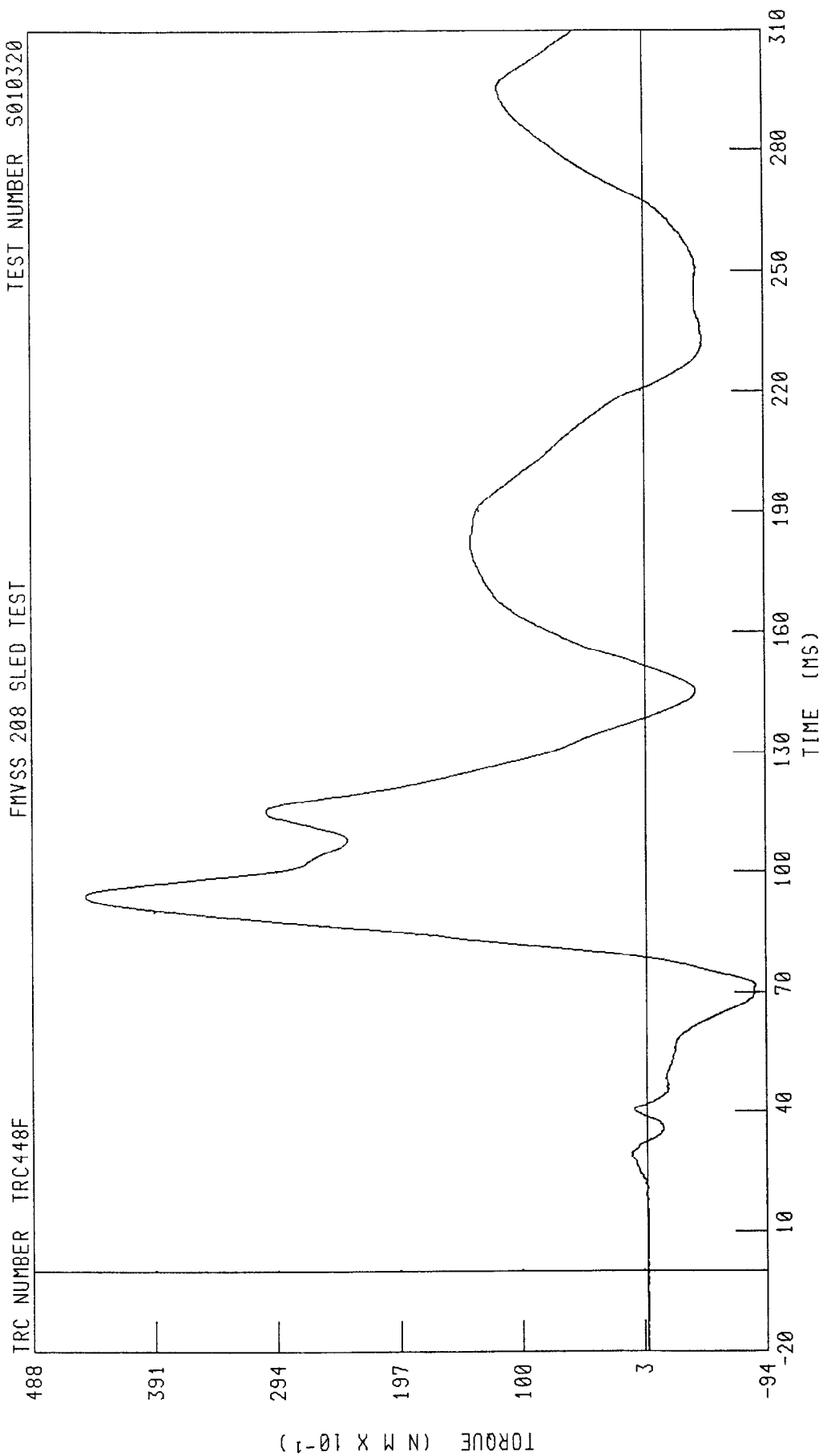
TEST NUMBER S010320



CHANNEL NEKX11 FILTER CH CLASS 600

PEAK DATA 7 57 N M @ 167 28 MS, -7 47 N M @ 96 48 MS

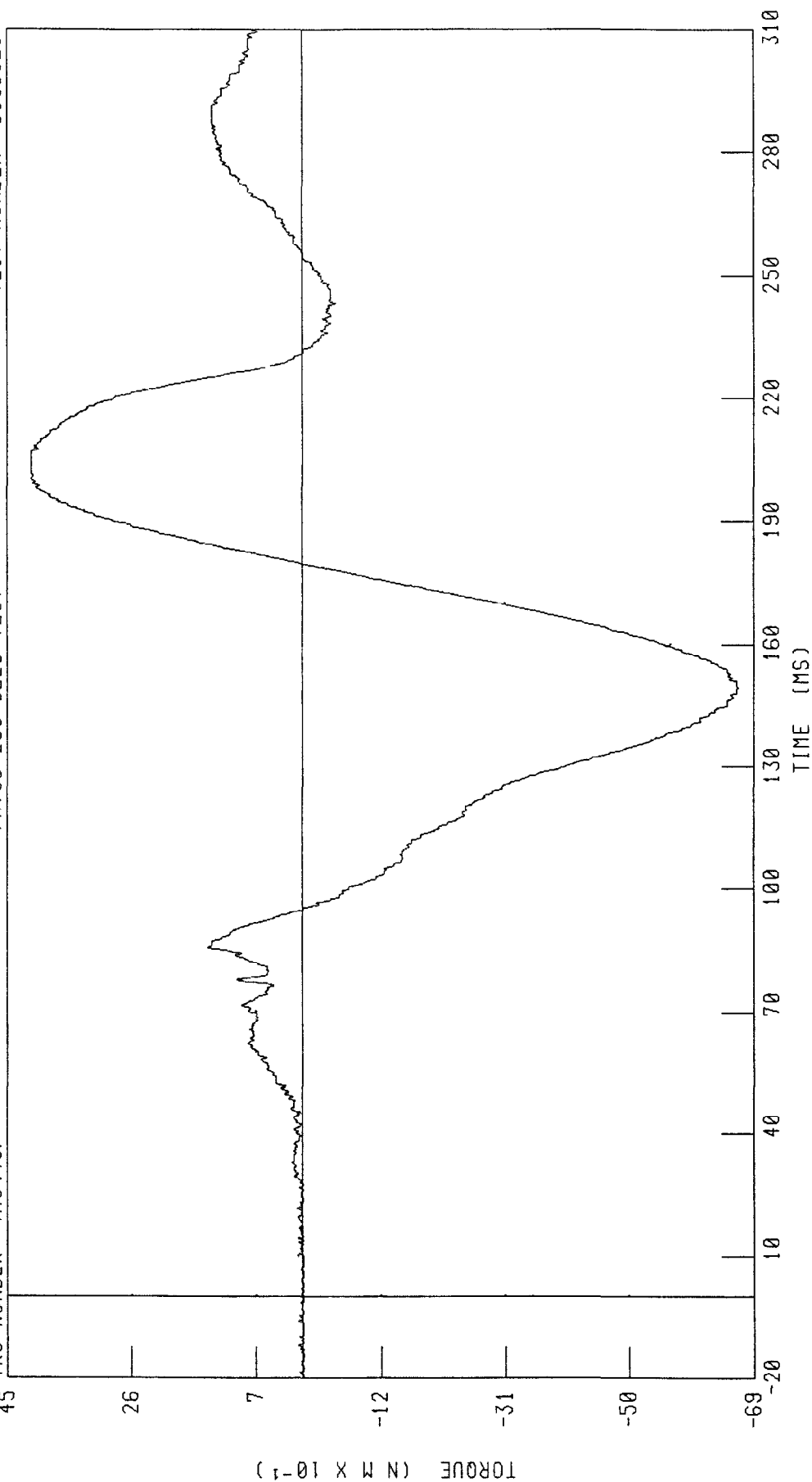
C10106 / 2001 CHEVROLET TAHOE
DRIVER NECK MOMENT ABOUT Y AXIS



C10106 / 2001 CHEVROLET TAHOE
DRIVER NECK MOMENT ABOUT Z AXIS
FMVSS 208 SLED TEST

TRC NUMBER TRC448F

TEST NUMBER S010320



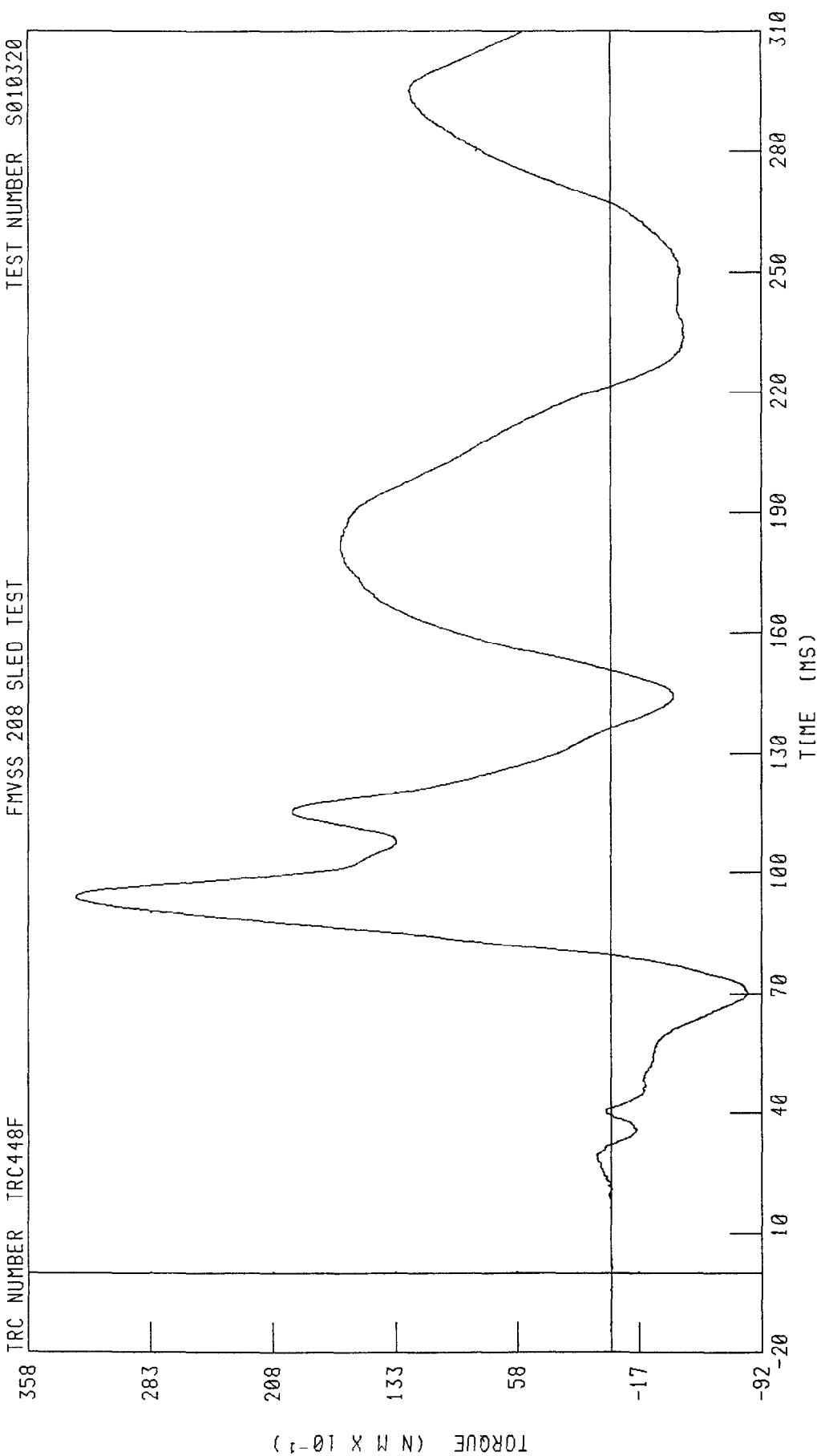
CHANNEL NEKZM1 FILTER CH CLASS 600

PEAK DATA 4 13 N M @ 206 96 MS, -6 67 N M @ 149 44 MS

C10106 / 2001 CHEVROLET TAHOE
 DRIVER NECK MOMENT ABOUT Y AXIS OCCIPITAL CONDYLE
 FMVSS 208 SLED TEST

TEST NUMBER S010320

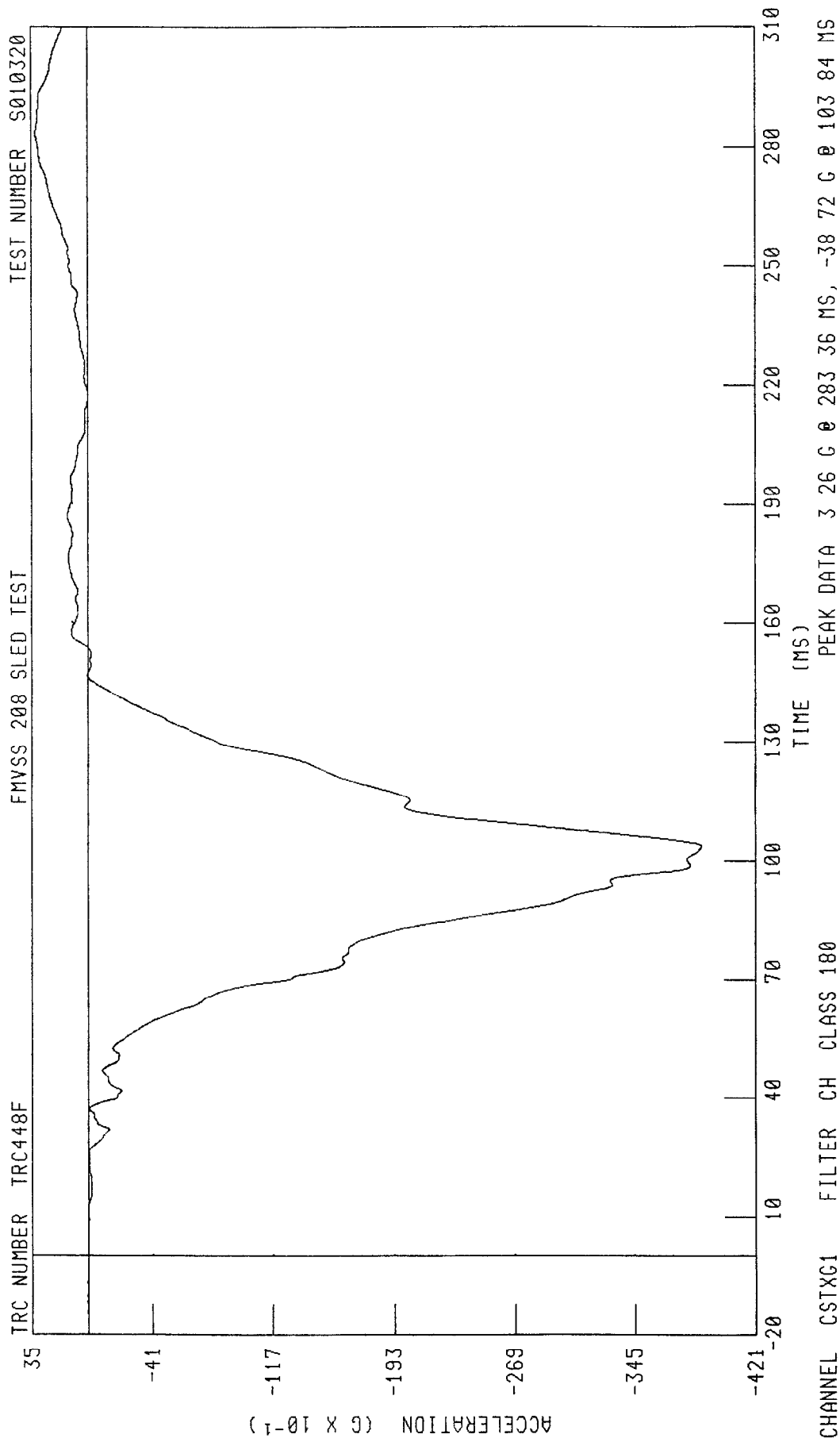
TRC NUMBER TRC448F



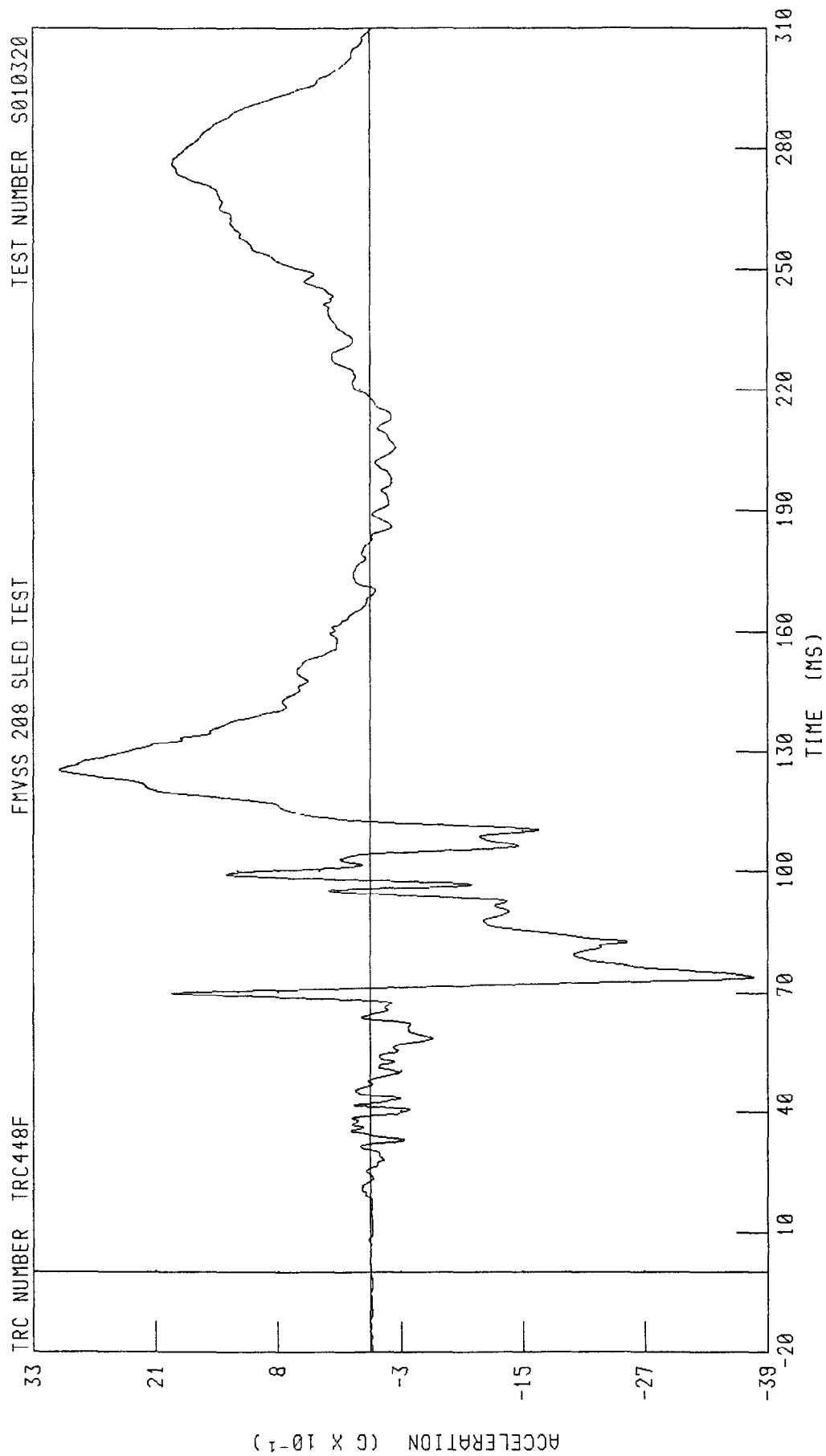
PEAK DATA 32 90 N M @ 93 76 MS, -8 38 N M @ 69 92 MS

CHANNEL NEKOM1 FILTER CH CLASS 600

C10106 / 2001 CHEVROLET TAHOE
 DRIVER CHEST X-AXIS ACCELERATION
 FMVSS 208 SLED TEST

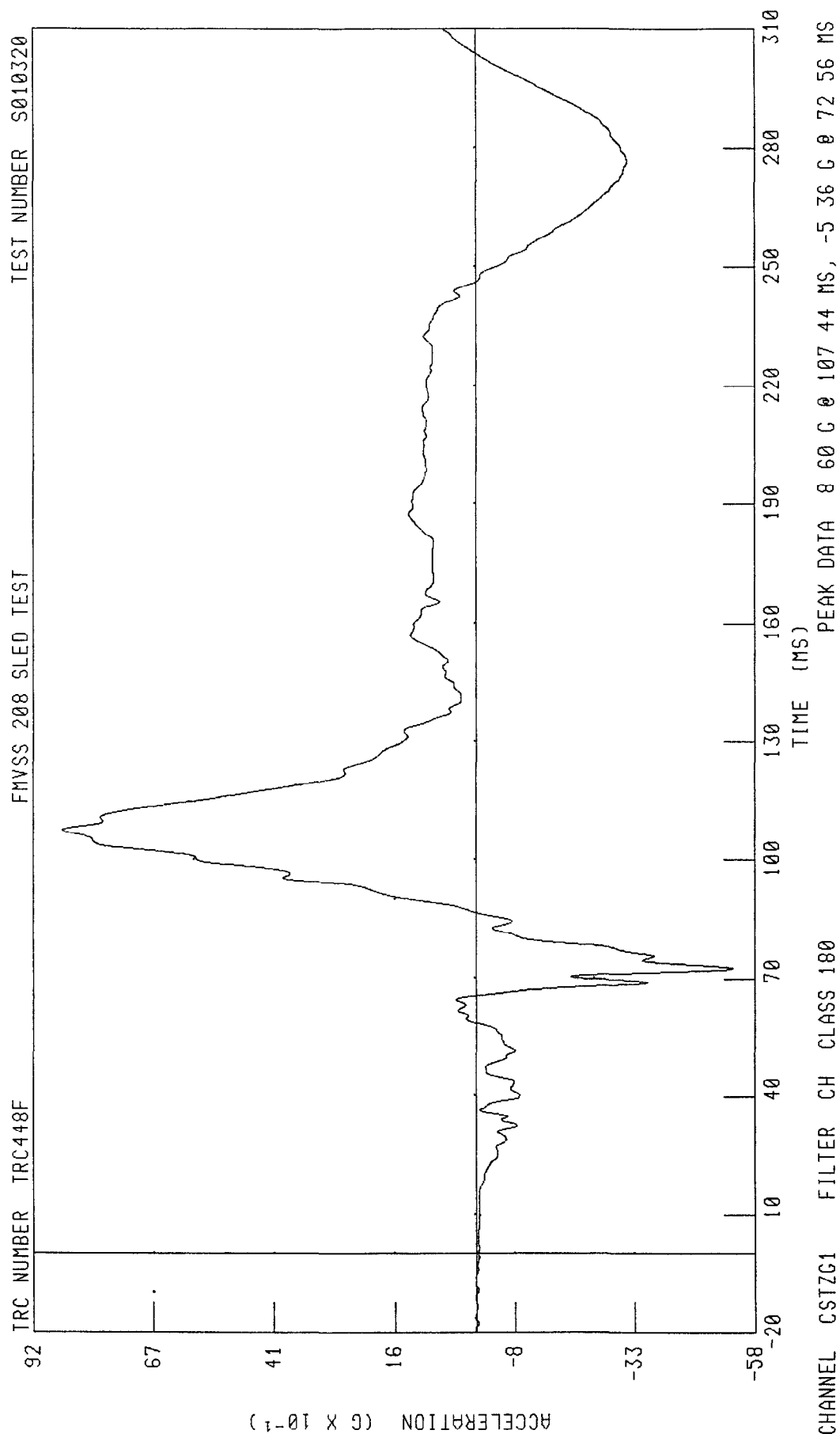


C10106 / 2001 CHEVROLET TAHOE
DRIVER CHEST Y-AXIS ACCELERATION



CHANNEL CSTYC1 FILTER CH CLASS 180

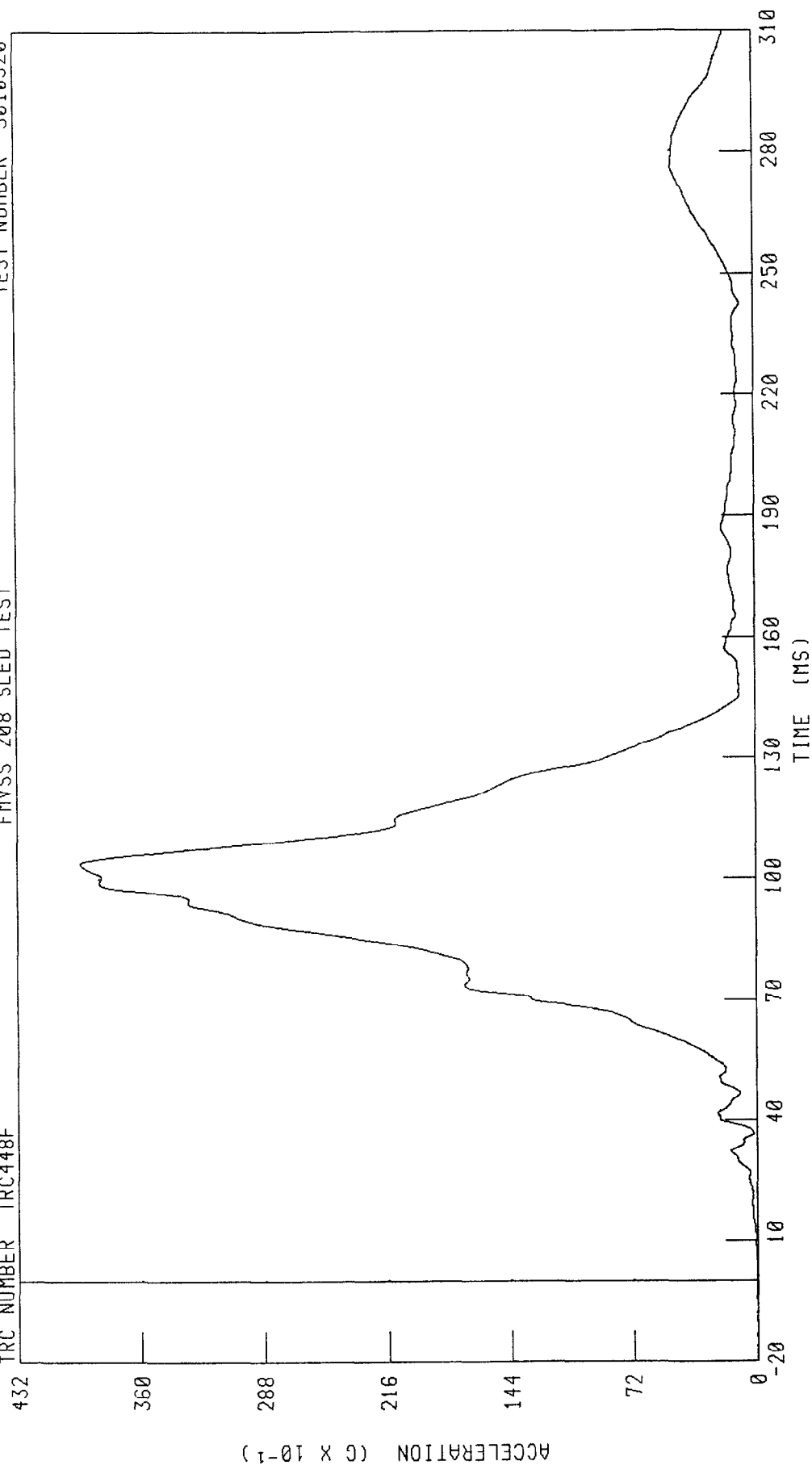
C10106 / 2001 CHEVROLET TAHOE
 DRIVER CHEST Z-AXIS ACCELERATION
 FMVSS 208 SLED TEST



C10106 / 2001 CHEVROLET TAHOE
DRIVER CHEST RESULTANT ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F



PEAK DATA 39 51 G @ 103 84 MS, 0 00 G @ -12 72 MS

CHANNEL CSTRG1 FILTER CH CLASS 180

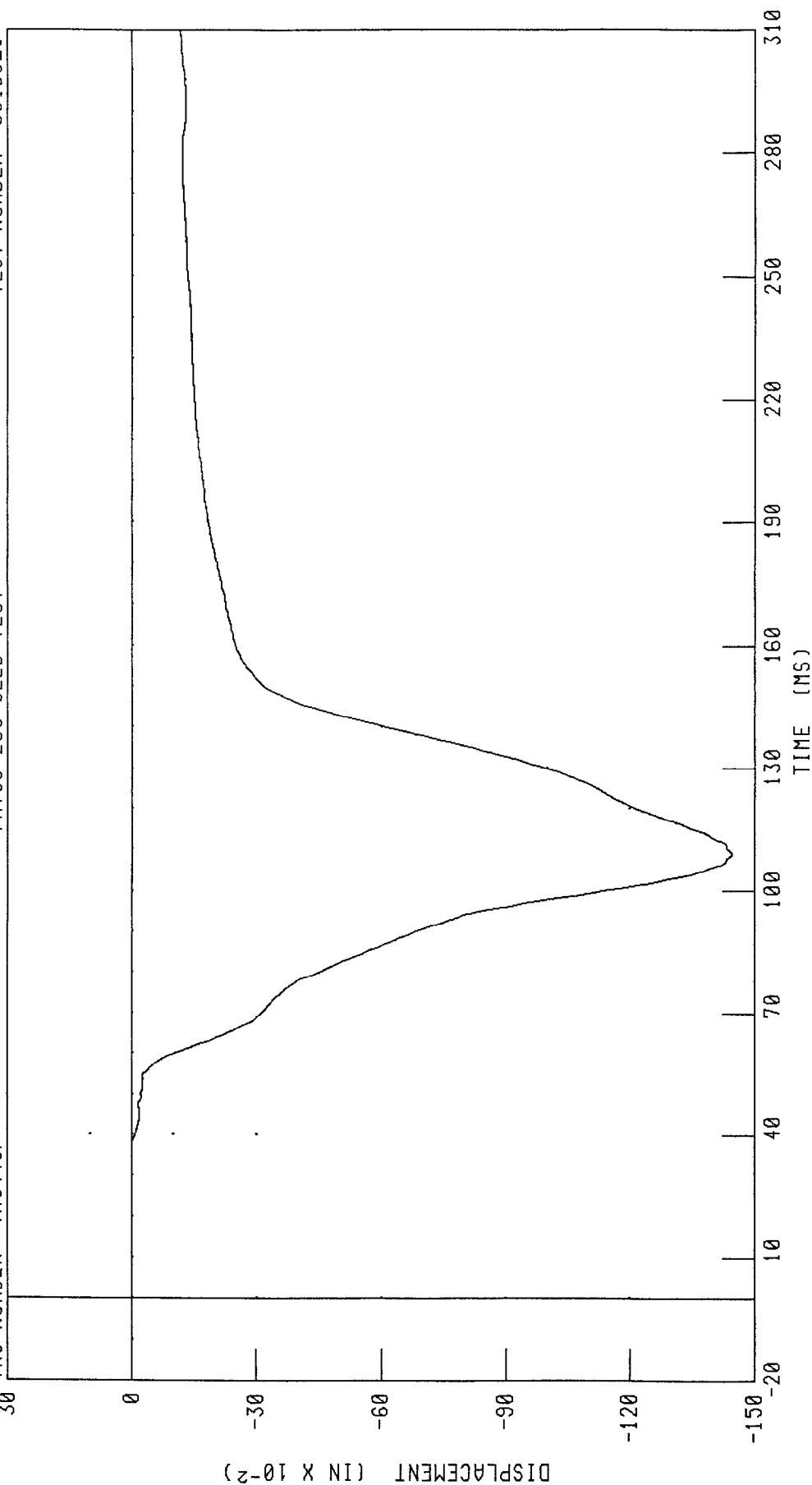
C10106 / 2001 CHEVROLET TAHOE

DRIVER CHEST DEFLECTION

FMVSS 208 SLED TEST

TRC NUMBER TRC448F

TEST NUMBER S010320



TIME (MS)

PEAK DATA 0 00 IN @ 28 16 MS, -1 45 IN @ 109 12 MS

CHANNEL CSTXD1 FILTER CH CLASS 600

DISPLACEMENT (IN X 10⁻²)

C10106 / 2001 CHEVROLET TAHOE

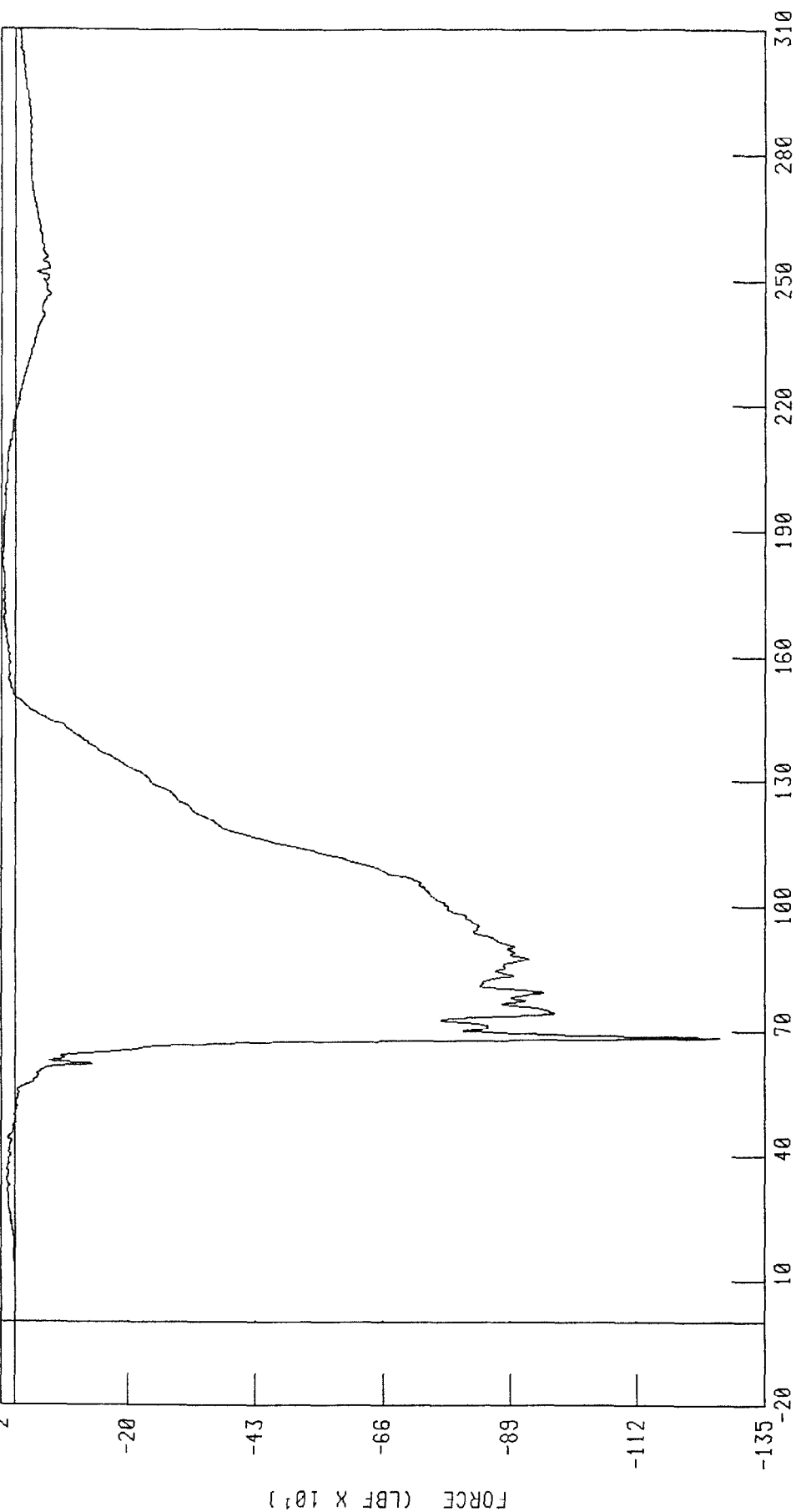
DRIVER LEFT FEMUR FORCE

FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F

2

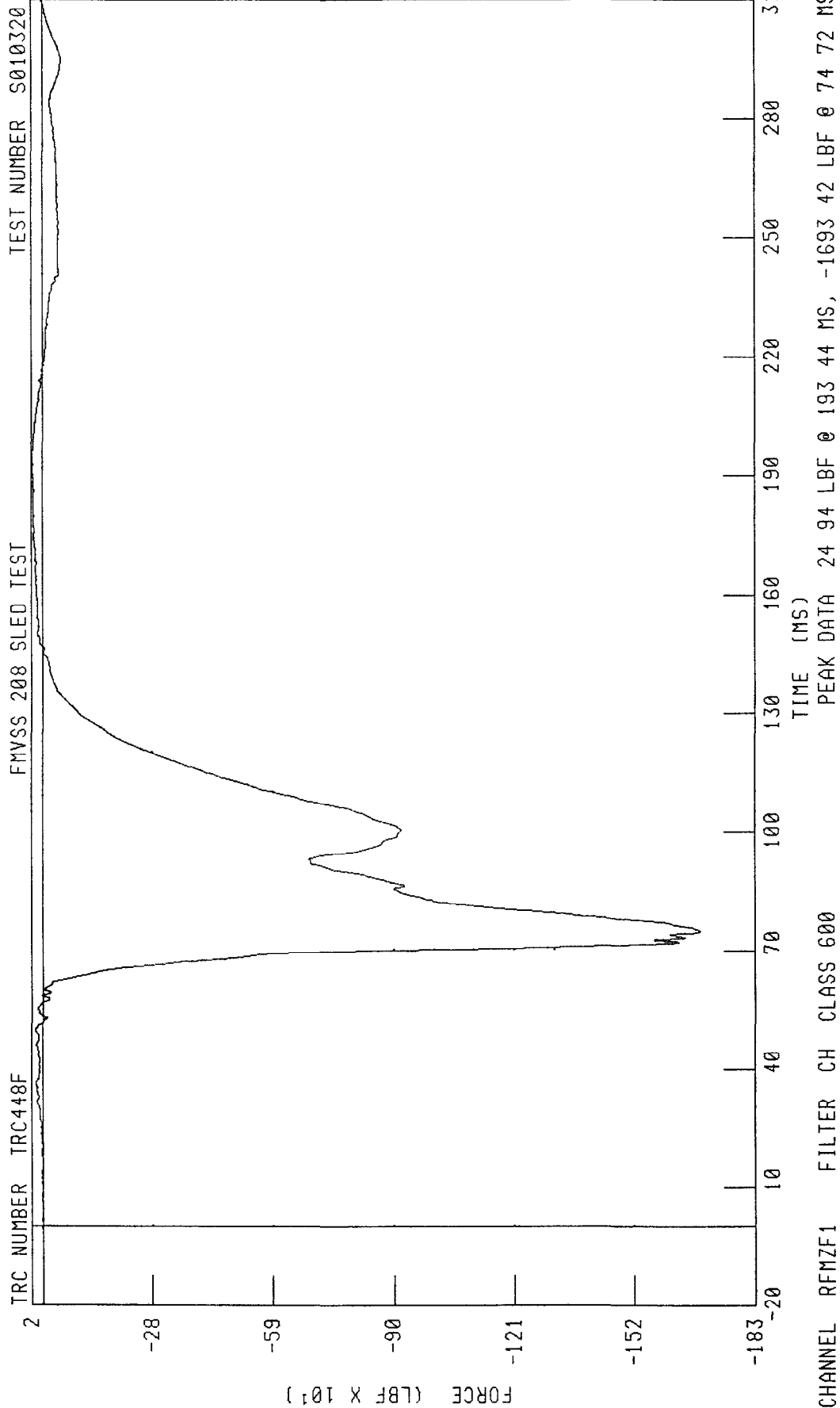


TIME (MS)

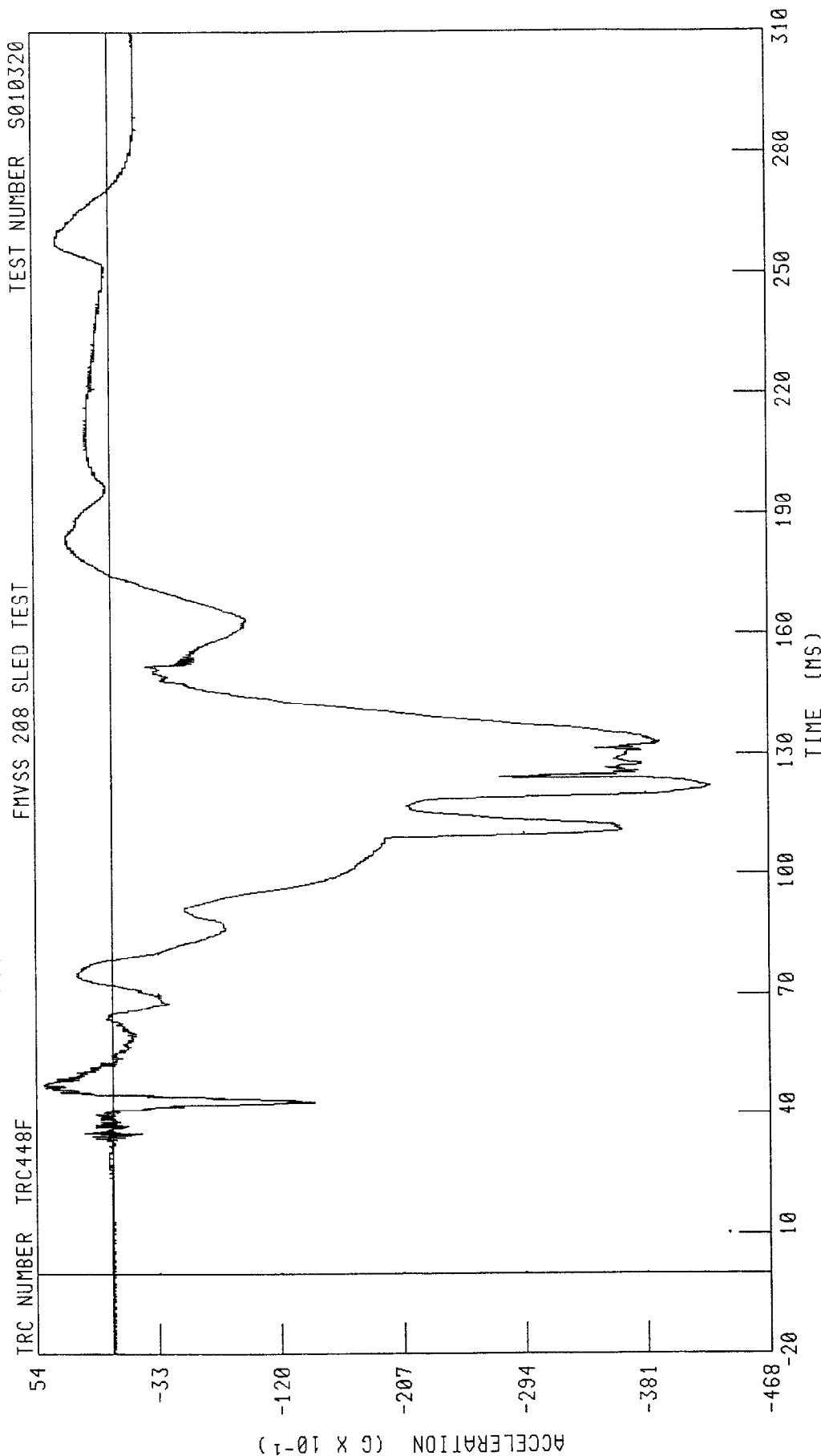
CHANNEL LFMZF1 FILTER CH CLASS 600

PEAK DATA 23 11 LBF @ 183 84 MS, -1273 28 LBF @ 68 32 MS

C10106 / 2001 CHEVROLET TAHOE
DRIVER RIGHT FEMUR FORCE
FMVSS 208 SLED TEST



C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION
 FMVSS 208 SLED TEST

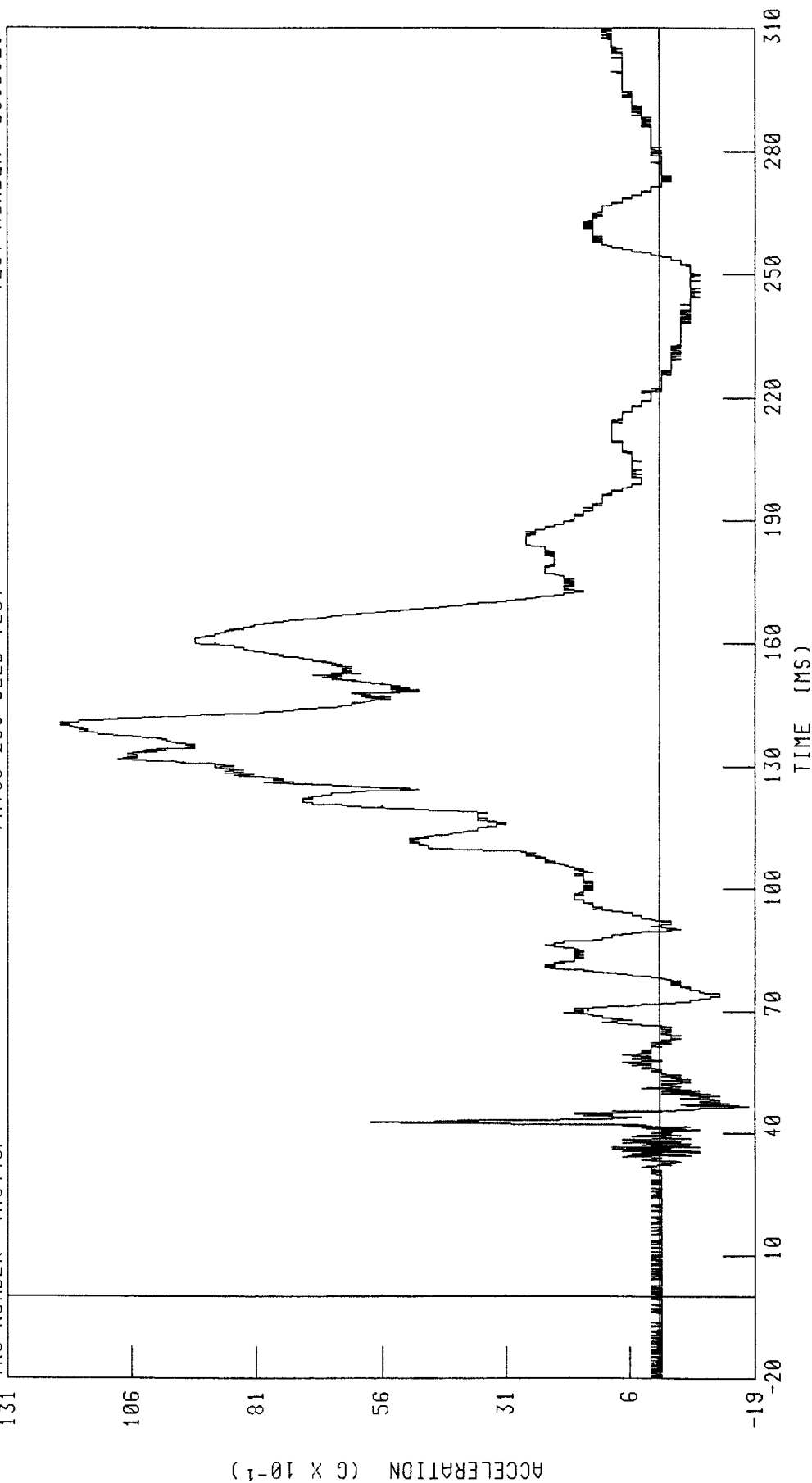


CHANNEL HEDXC2 FILTER CH CLASS 1000

C10106 / 2001 CHEVROLET TAHOE
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F



CHANNEL HEDYC2 FILTER CH CLASS 1000

PEAK DATA 12 06 G @ 139 84 MS, -1 78 G @ 46 56 MS

C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION
 FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F

244

197

150

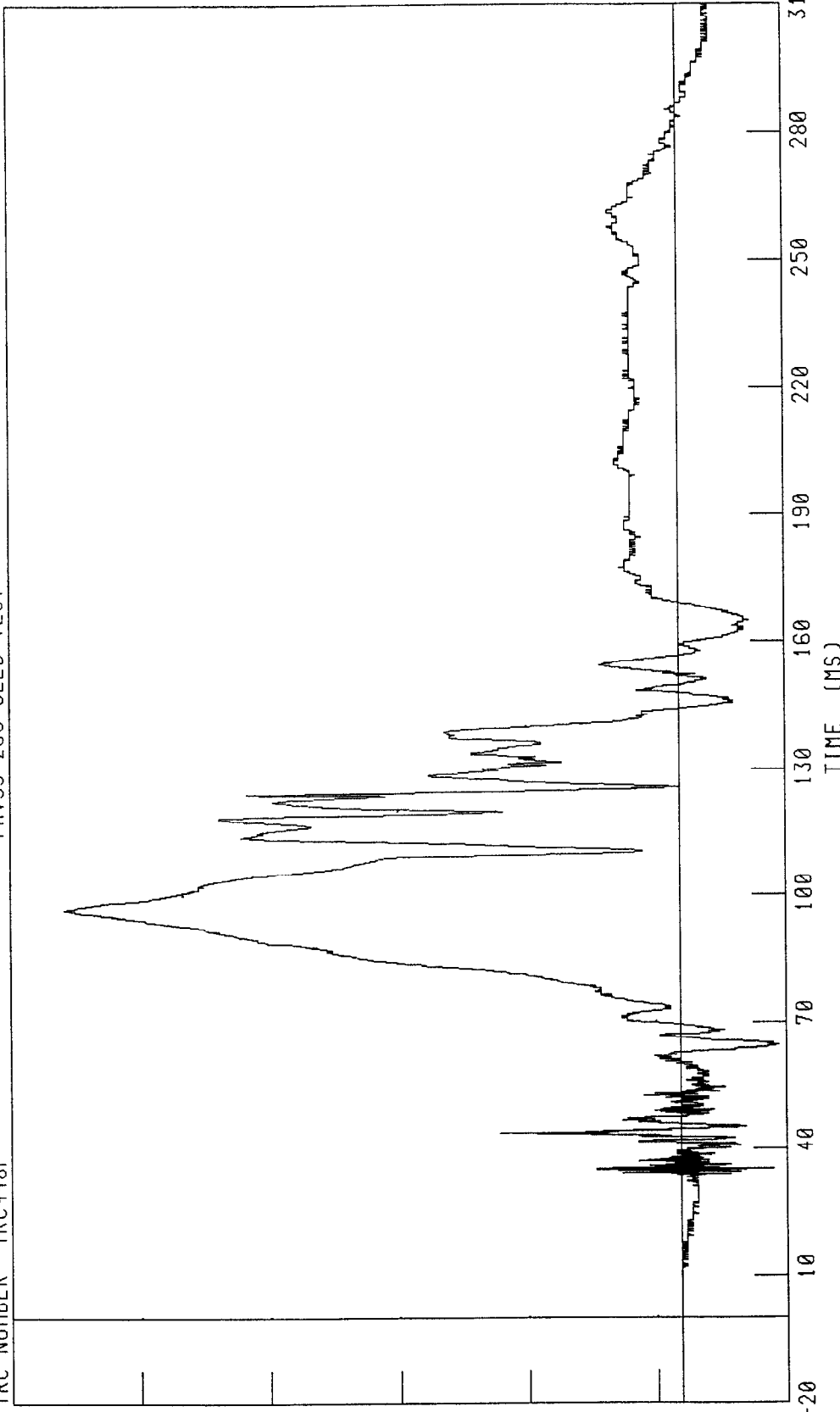
103

56

9

-38

ACCELERATION ($G \times 10^{-1}$)



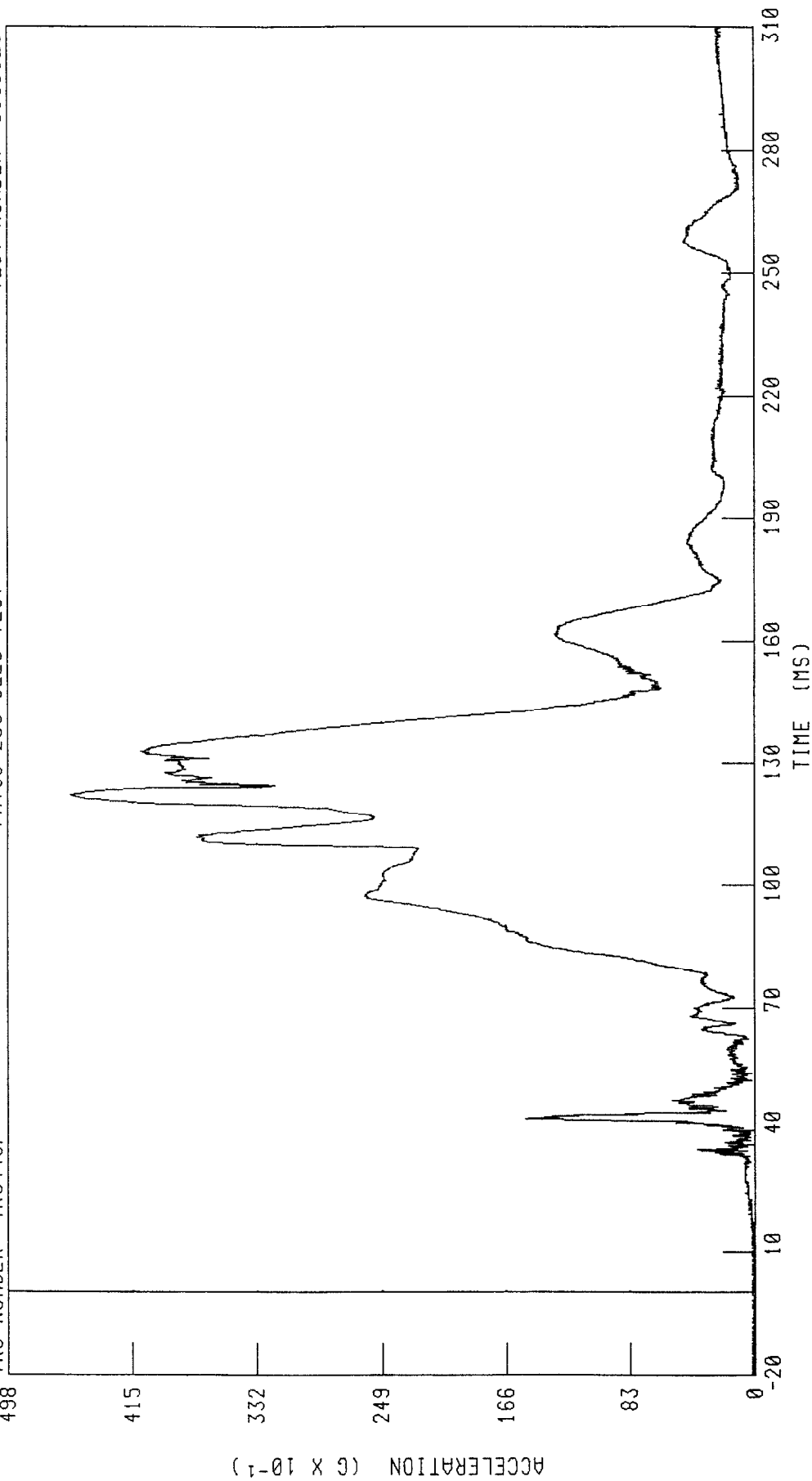
PEAK DATA 22 46 G @ 96 88 MS, -3 52 G @ 64 48 MS

CHANNEL HEDZG2 FILTER CH CLASS 1000

C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION
 FMVSS 208 SLED TEST

TEST NUMBER S010320

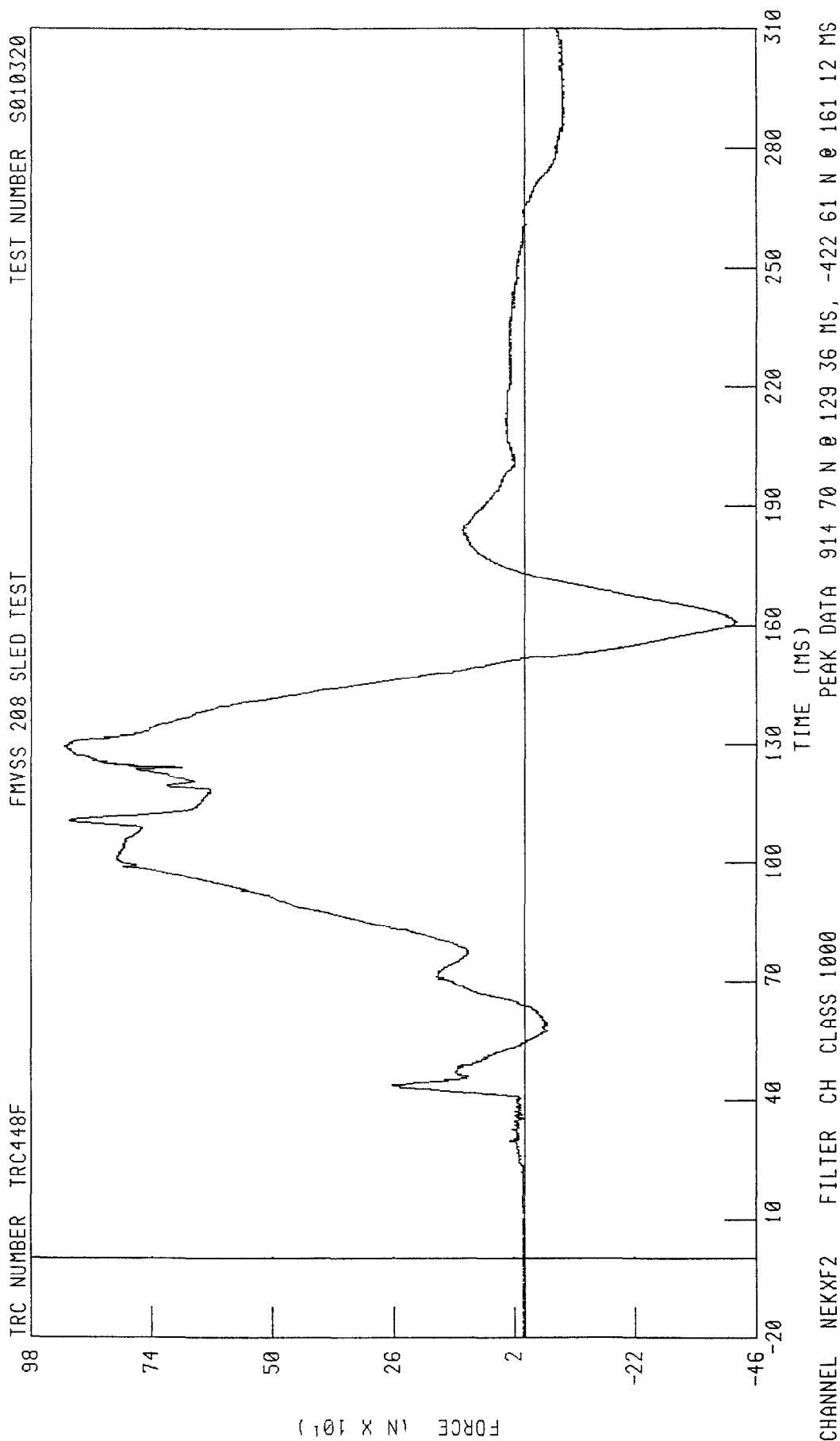
TRC NUMBER TRC448F



PEAK DATA 45 69 0 122 24 MS, 0 05 0 0 -19 76 MS

CHANNEL HEDRC2 FILTER CH CLASS 1000

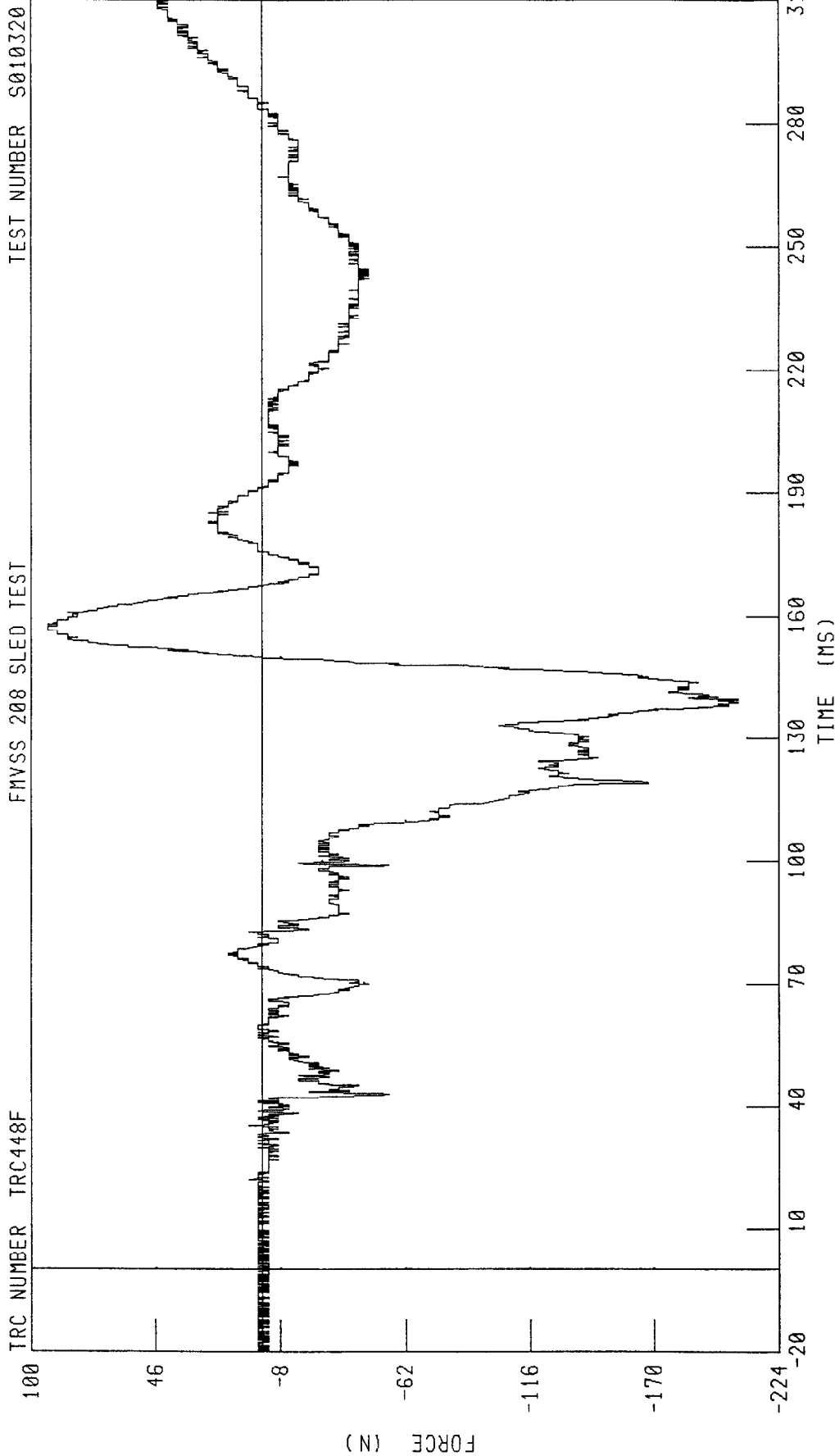
C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE
 FMVSS 208 SLED TEST



C10106 / 2001 CHEVROLET TAHOE
RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE
FMVSS 208 SLED TEST

TRC NUMBER TRC448F

TEST NUMBER S010320



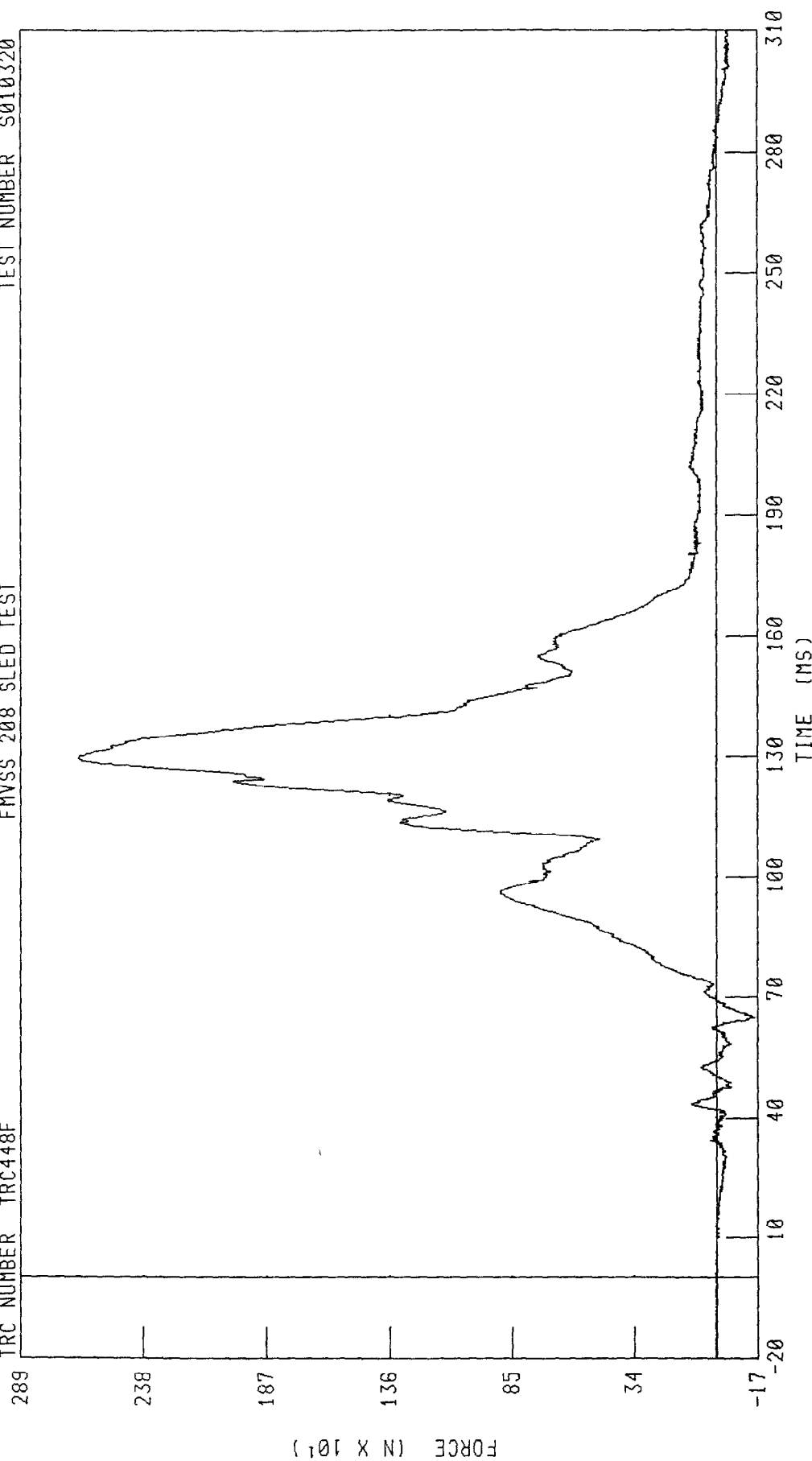
CHANNEL NEKYF2 FILTER CH CLASS 1000

PEAK DATA 92 94 N @ 156 56 MS, -206 79 N @ 138 80 MS

C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE
 FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F



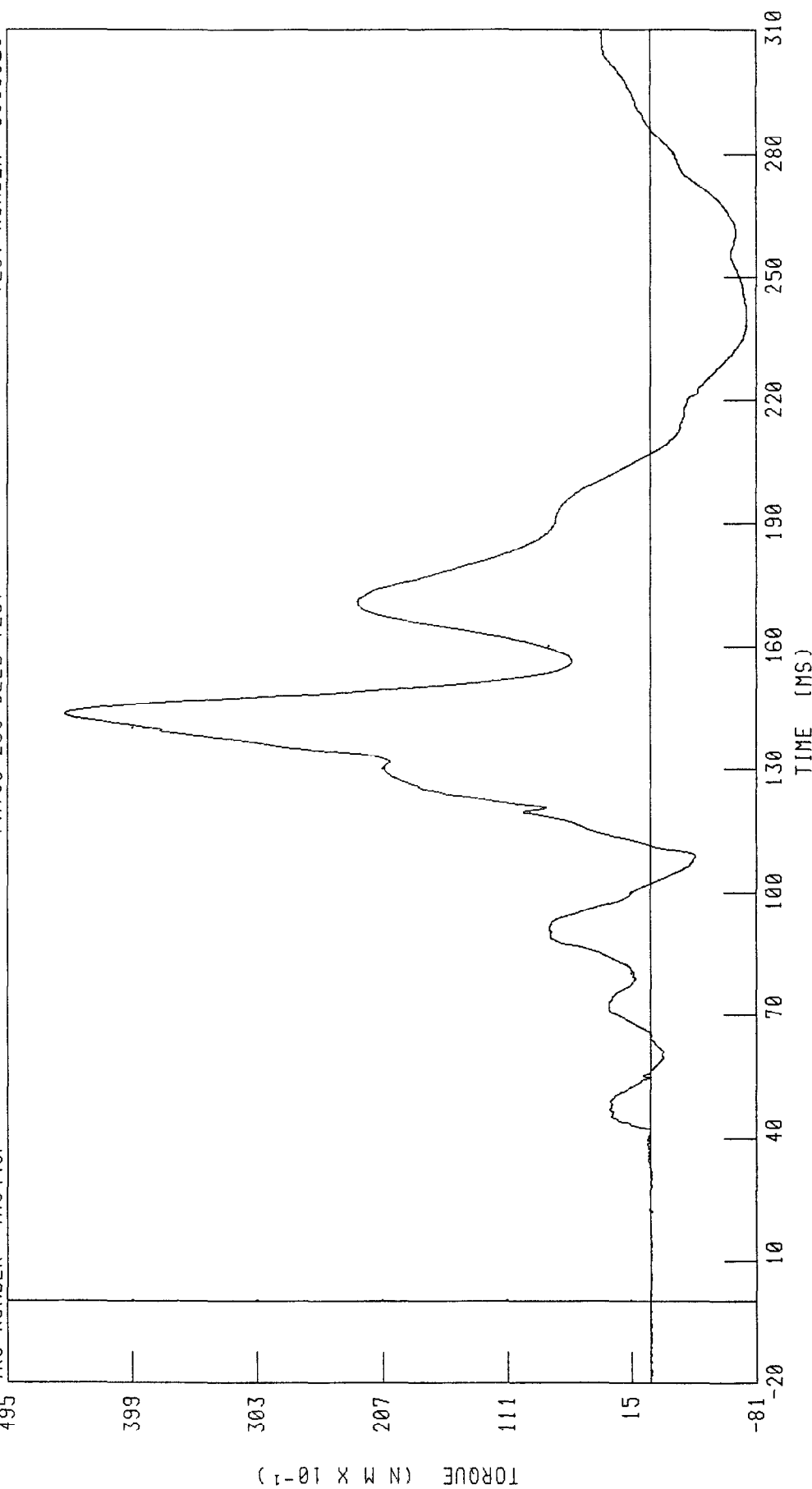
CHANNEL NEKZF2 FILTER CH CLASS 1000

PEAK DATA 2650 23 N @ 129 20 MS, -159 25 N @ 64 88 MS

C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS
 FMVSS 208 SLED TEST

TEST NUMBER S010320

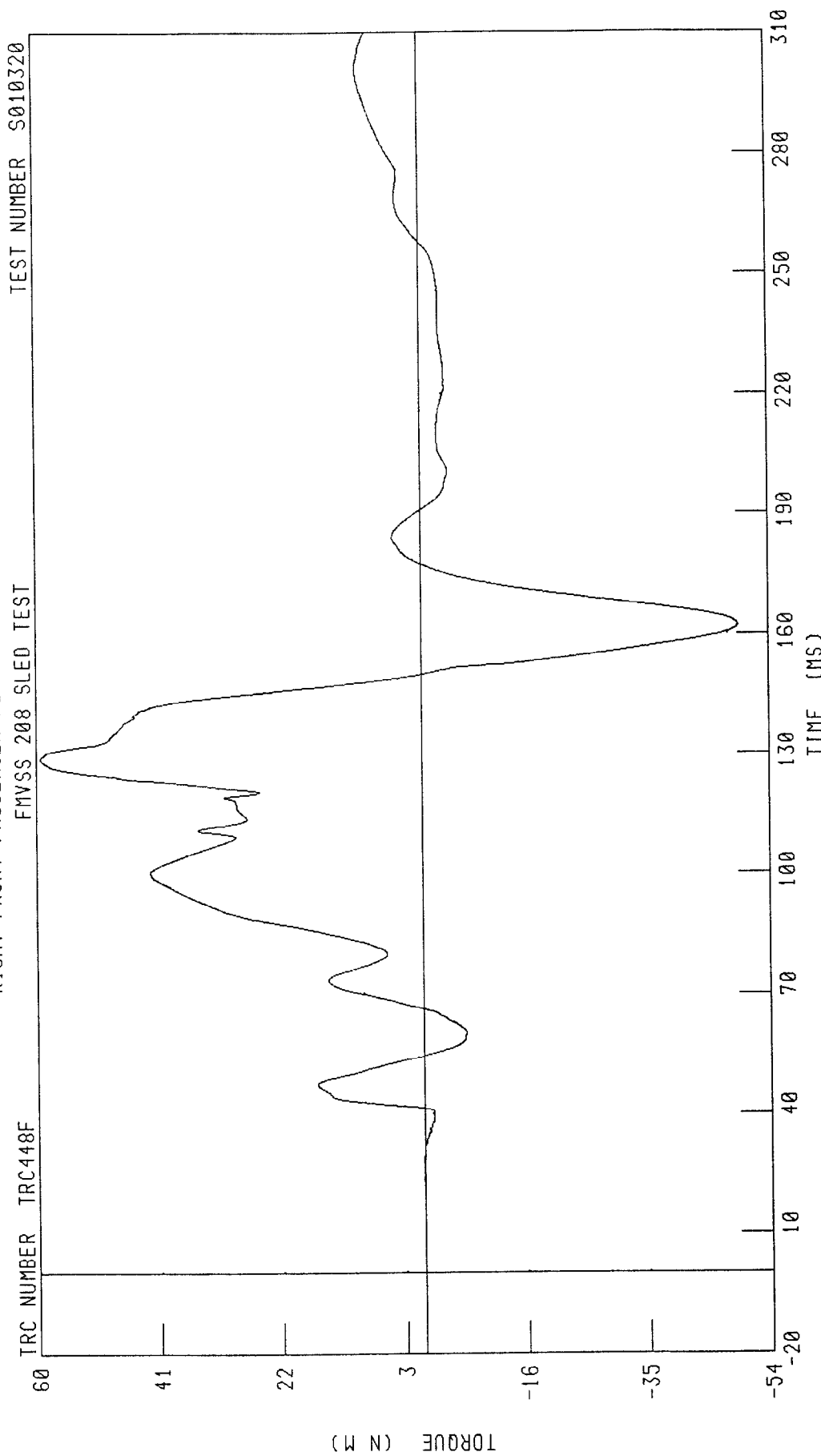
TRC NUMBER TRC448F



CHANNEL NEKX2 FILTER CH CLASS 600

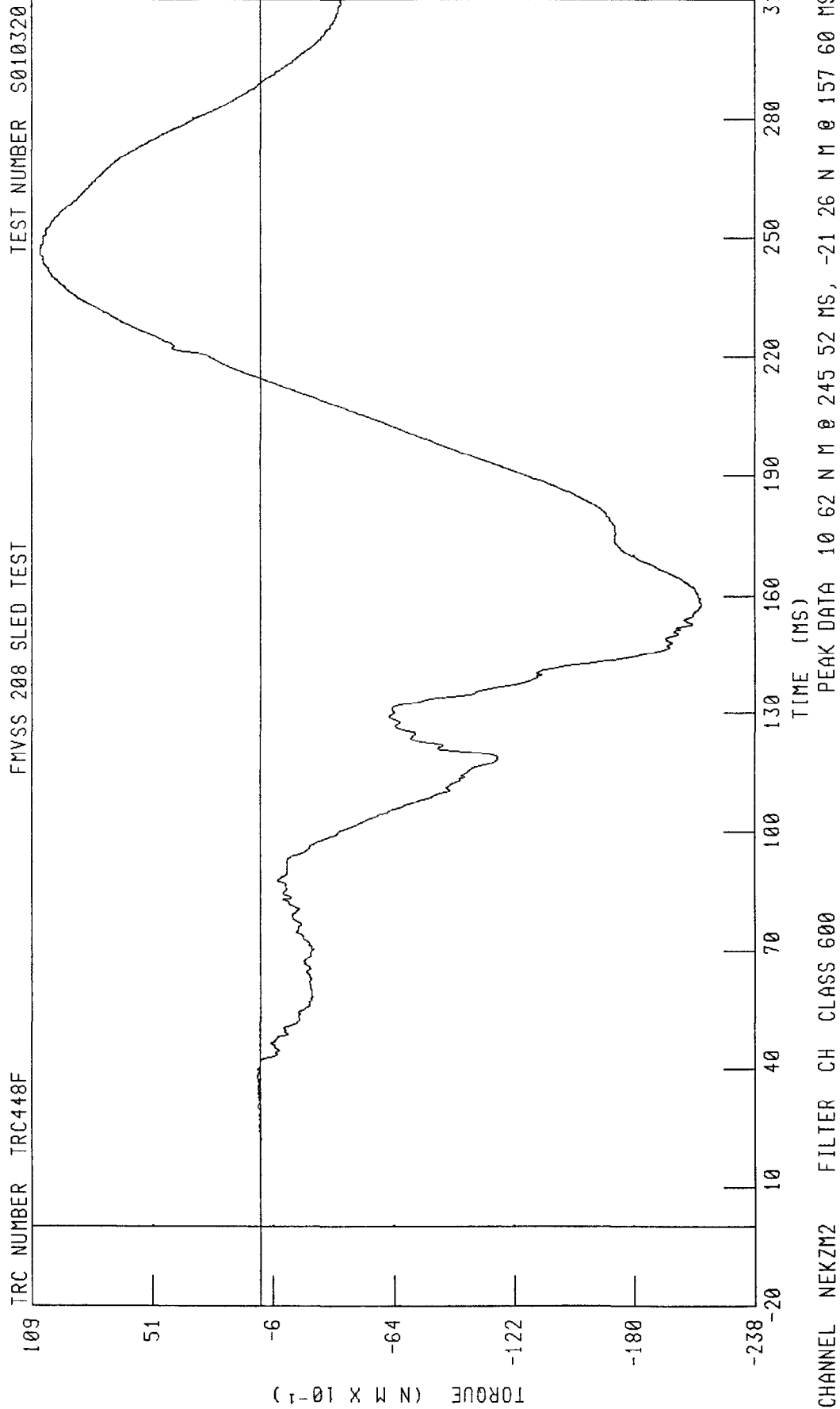
PEAK DATA 45 11 N M @ 143 52 MS, -7 39 N M @ 238 88 MS

C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS



CHANNEL NEKYM2 FILTER CH CLASS 600

C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER NECK MOMENT ABOUT Z AXIS
 FMVSS 208 SLED TEST



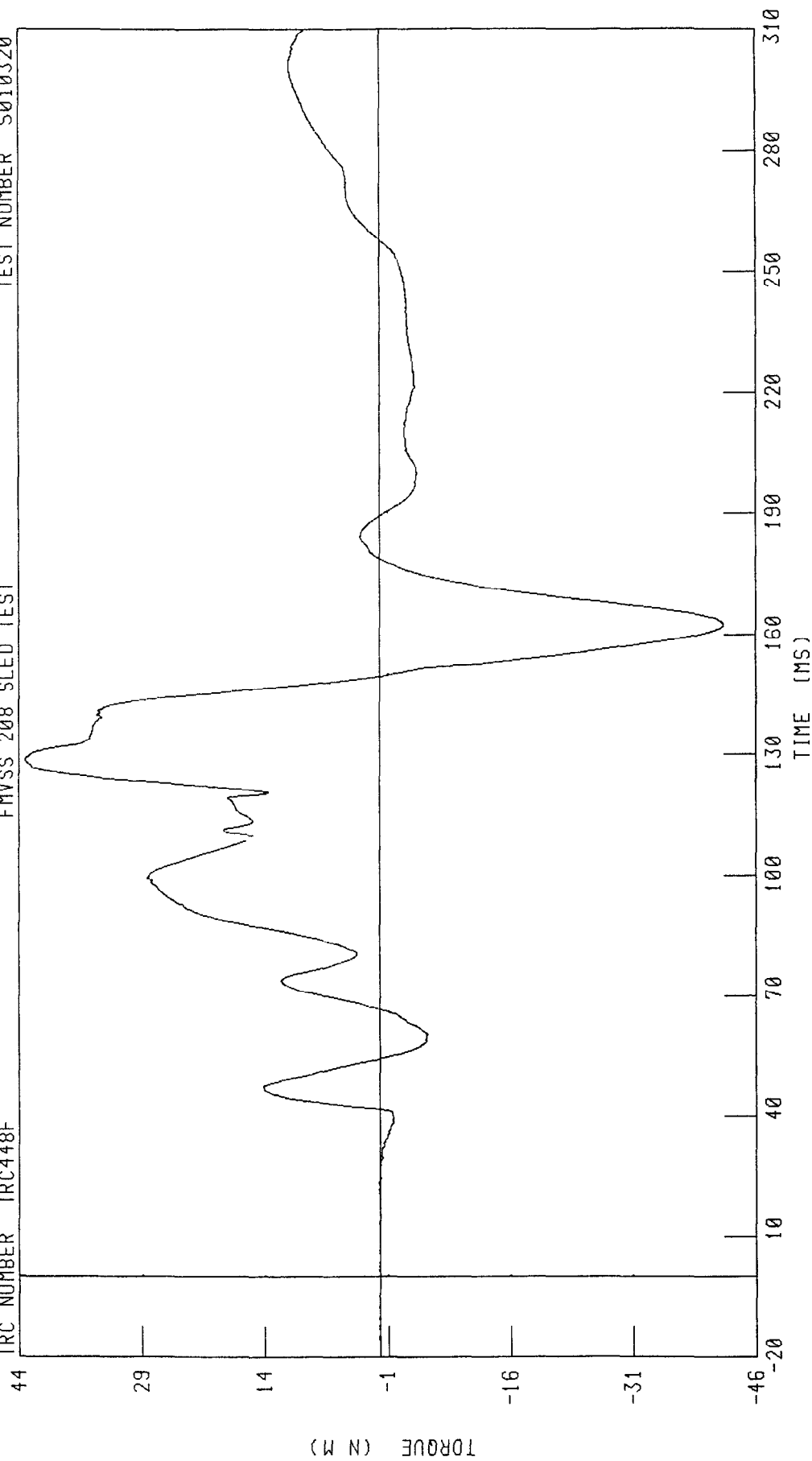
C10106 / 2001 CHEVROLET TAHOE

RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS OCCIPITAL CONDYLE

TEST NUMBER S010320

TRC NUMBER TRC448F

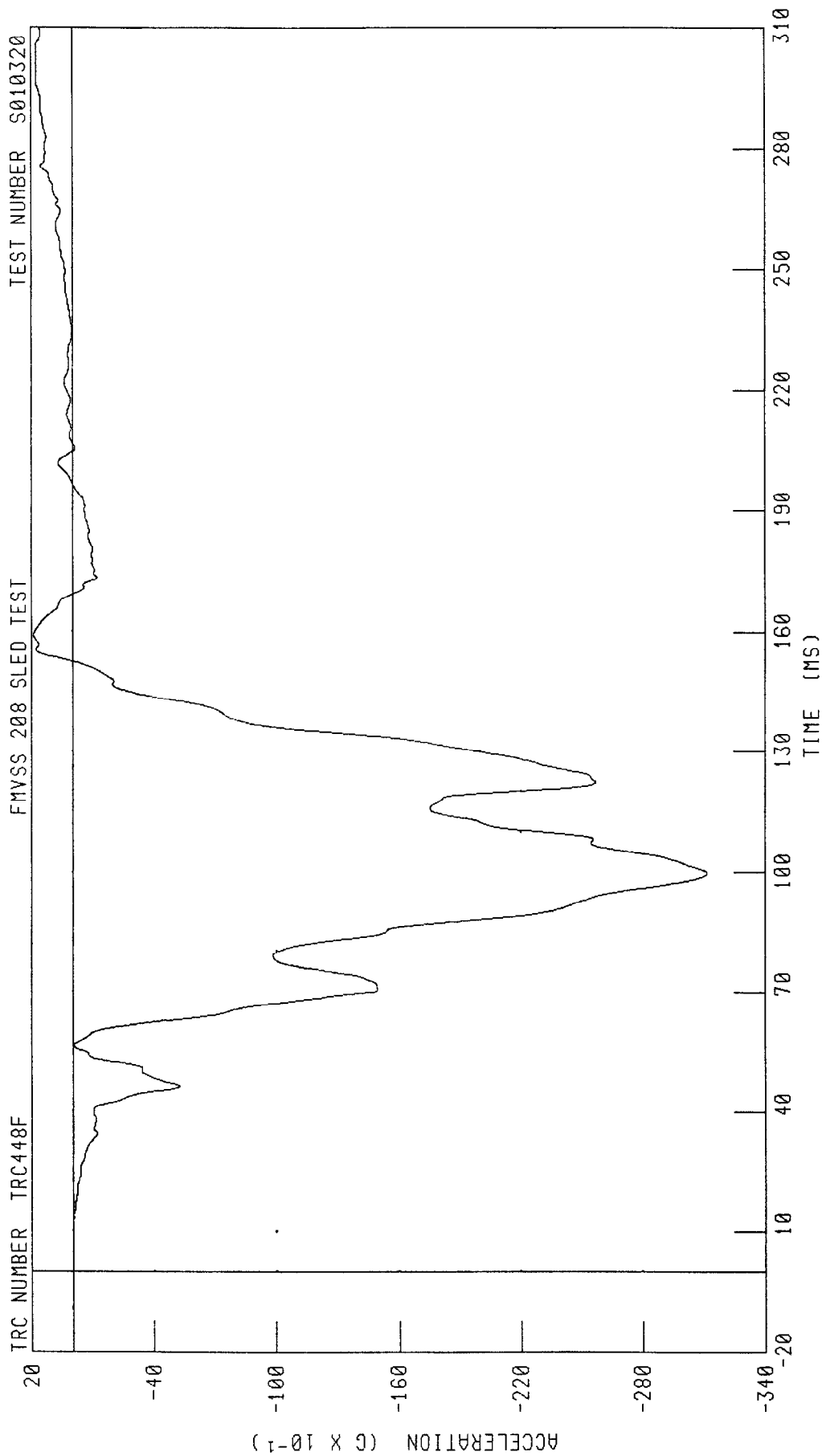
FMVSS 208 SLED TEST



CHANNEL NEKOM2 FILTER CH CLASS 600

PEAK DATA 43 26 N M @ 128 64 MS, -42 11 N M @ 162 48 MS

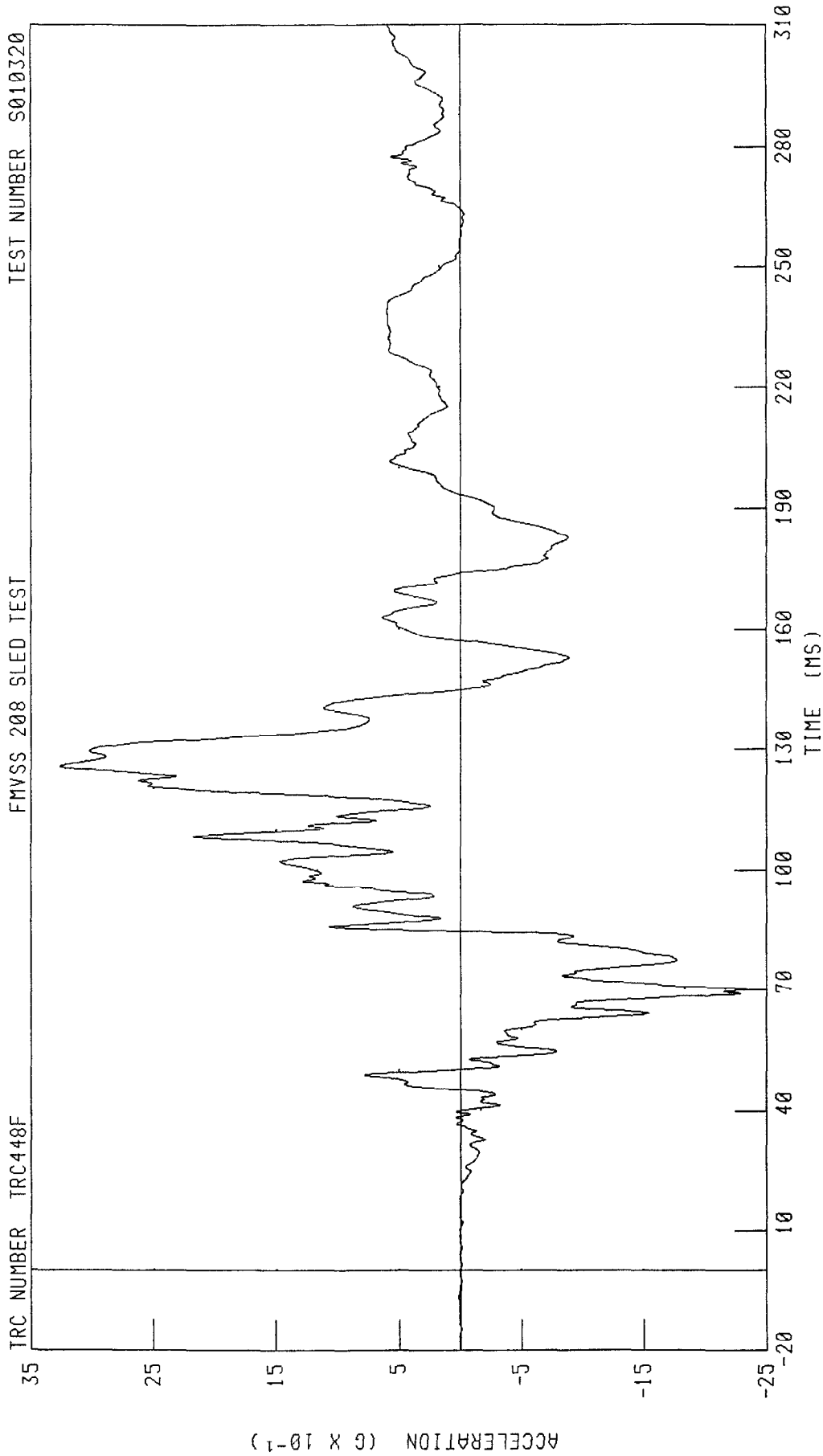
C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION
 FMVSS 208 SLED TEST



C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

TRC NUMBER TRC448F TEST NUMBER S010320

FMVSS 208 SLED TEST



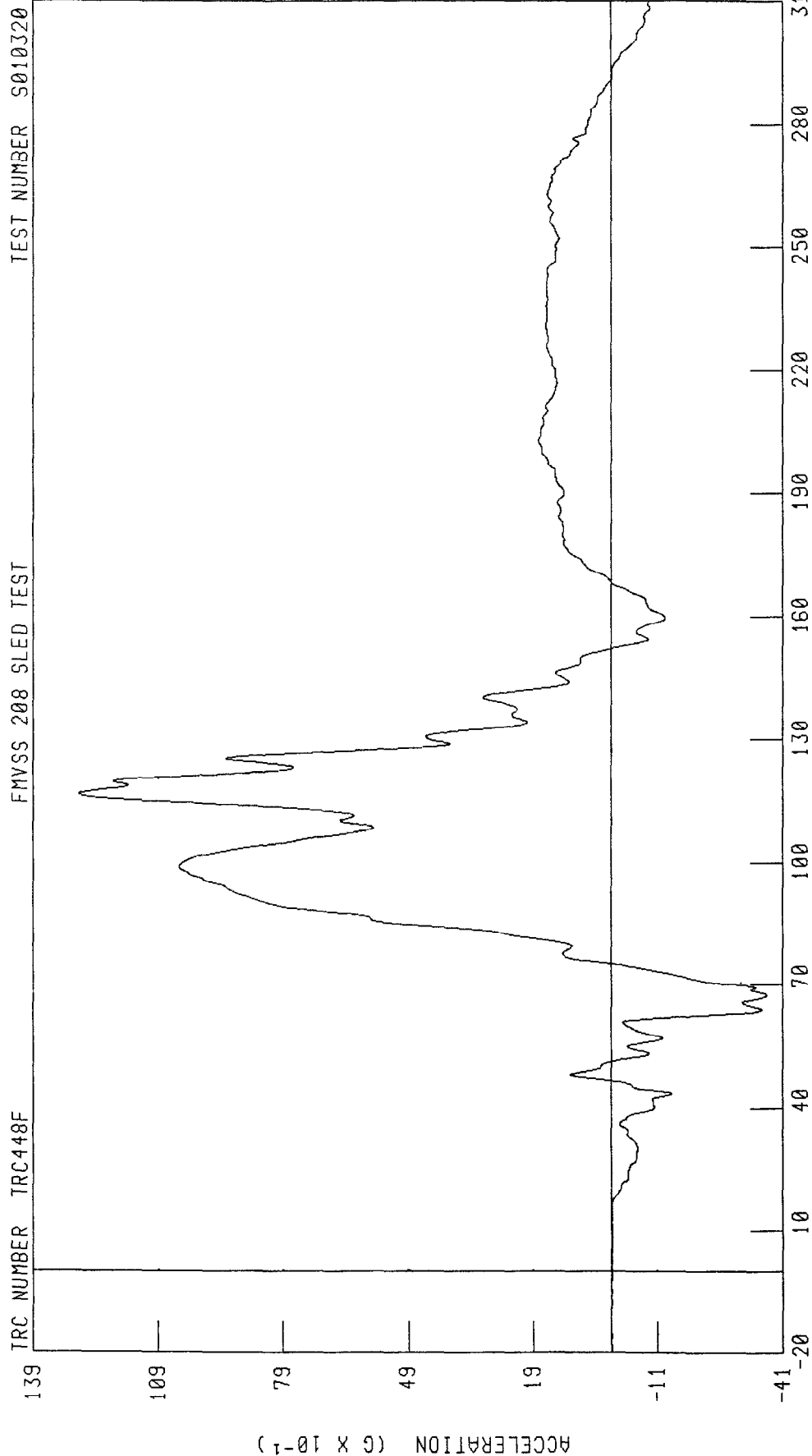
CHANNEL CSTYG2 FILTER CH CLASS 180

PEAK DATA 3 27 G @ 125 68 MS, -2 34 G @ 70 00 MS

C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION
 FMVSS 208 SLED TEST

TEST NUMBER S010320

TRC NUMBER TRC448F

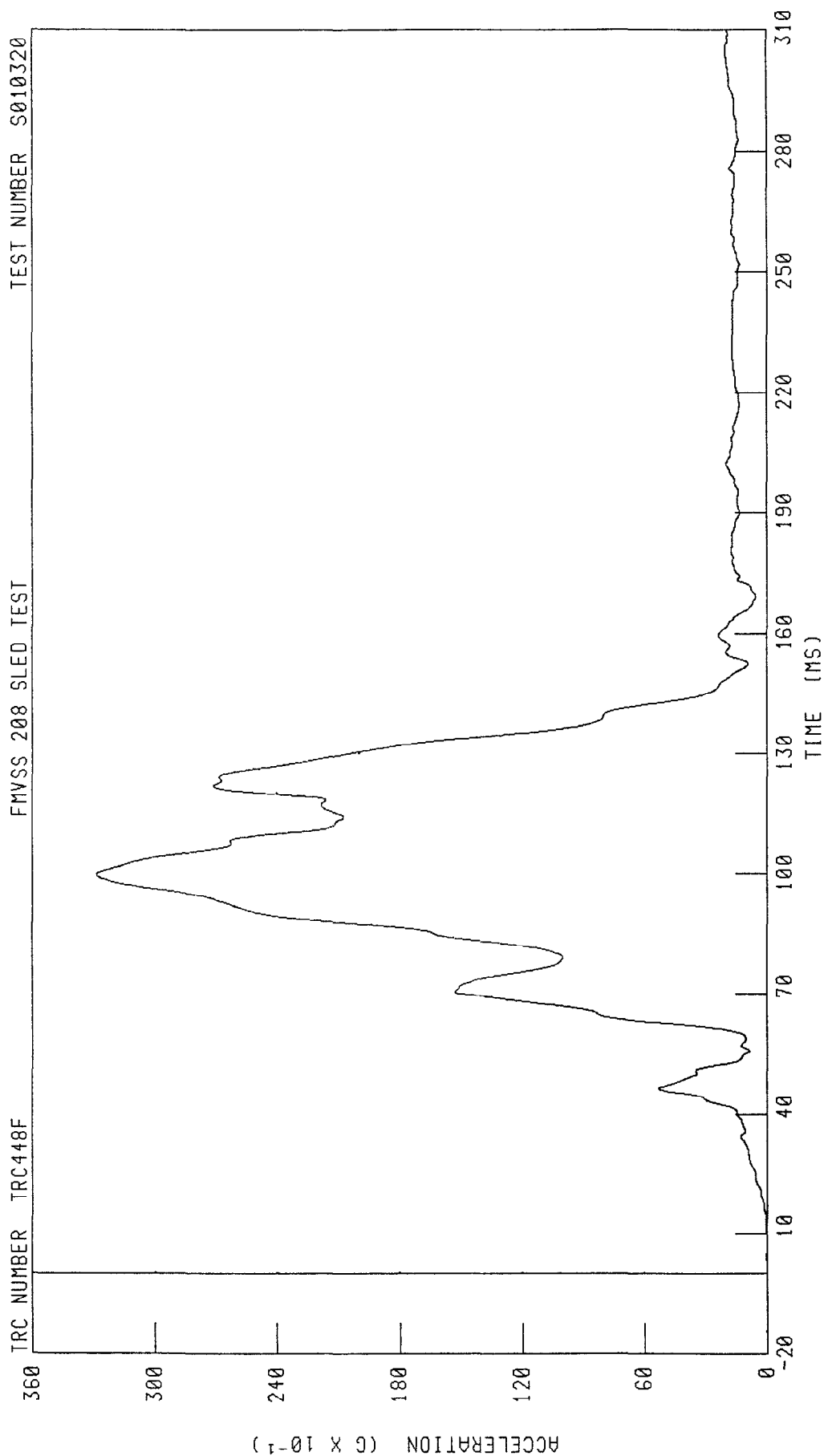


TIME (MS)

PEAK DATA 12 81 G @ 116 56 MS, -3 73 G @ 67 28 MS

CHANNEL CSTZC2 FILTER CH CLASS 180

C10106 / 2001 CHEVROLET TAHOE
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

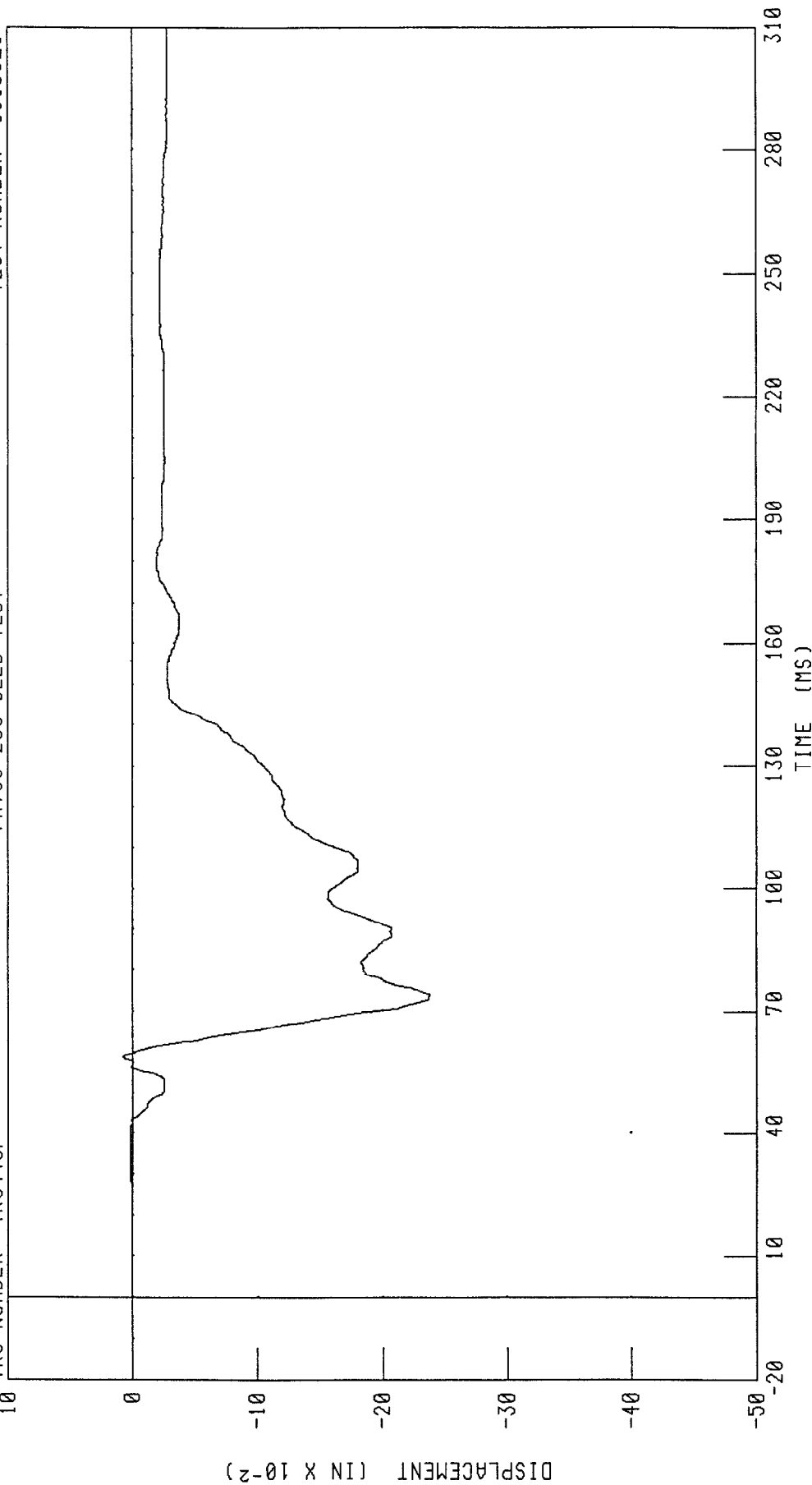


CHANNEL CSTRC2 FILTER CH CLASS 180 PEAK DATA 32 88 G @ 99 84 MS, 0 00 G @ -18 24 MS

C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER CHEST DEFLECTION
 FMVSS 208 SLED TEST

TEST NUMBER S010320

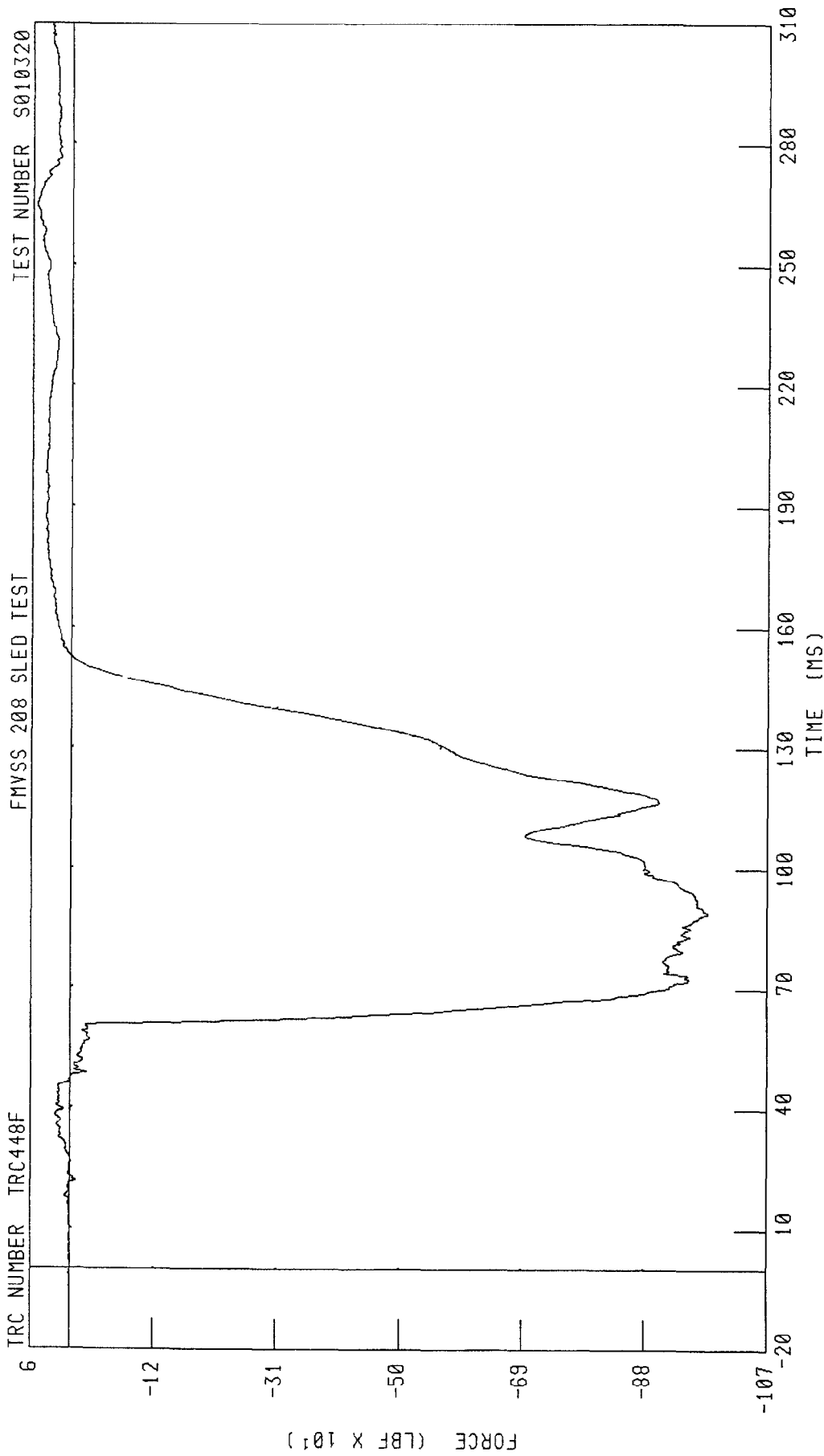
TRC NUMBER TRC448F



PEAK DATA 0 01 IN 0 59 12 MS, -0 24 IN 0 73 92 MS

CHANNEL CSTXD2 FILTER CH CLASS 600

C10106 / 2001 CHEVROLET TAHOE
 RIGHT FRONT PASSENGER LEFT FEMUR FORCE
 FMVSS 208 SLED TEST



TRC NUMBER TRC448F

TEST NUMBER S010320

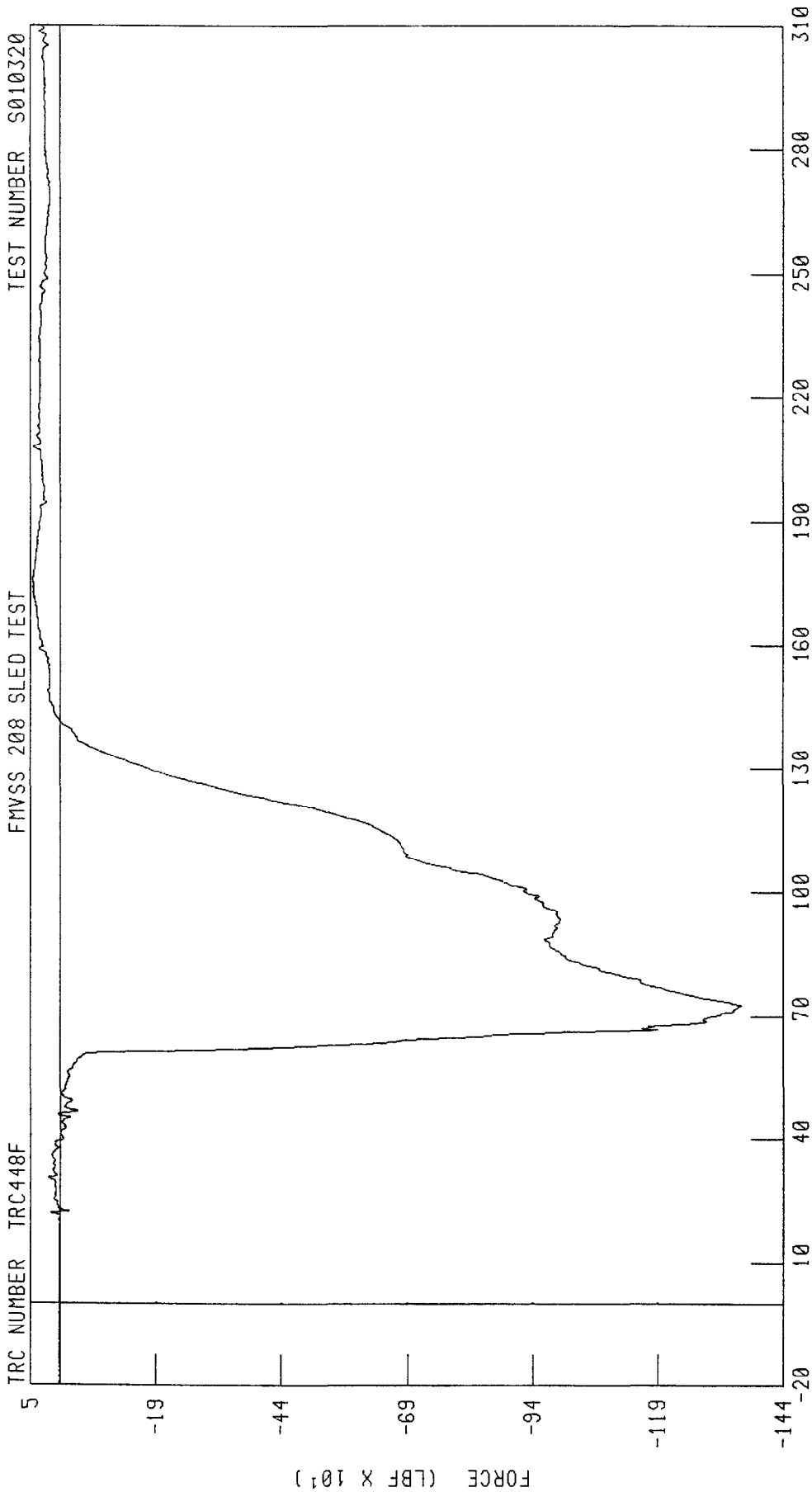
CHANNEL LFMZF2 FILTER CH CLASS 600

PEAK DATA 55 55 LBF @ 265 12 MS, -987 68 LBF @ 88 96 MS

C10106 / 2001 CHEVROLET TAHOE
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE
FMVSS 208 SLED TEST

TRC NUMBER TRC448F

TEST NUMBER S010320



TIME (MS)

CHANNEL RFMF2 FILTER CH CLASS 600

PEAK DATA 53 39 LBF @ 174 16 MS, -1360 15 LBF @ 72 64 MS

Appendix C

Manufacturer's Vehicle Information



NHTSA IR: NSA-31CCa
OA-208-0010180
2001 Chevrolet Tahoe

Question 1

Please inform OVSC if the air bag restraint system is certified to meet the requirements of S4.1.5.1(a)(1) or S13.

If the air bags were installed to meet the requirements of S4.1.5.1(a)(1) please provide a copy of the certification test reports for the frontal/angular barrier impact tests of the automatic restraint system with the manual safety belts unfastened and fastened.

If the air bags were installed to meet the requirements of S13 please provide a copy of the certification test reports for the frontal/angular barrier impact tests of the automatic restraint system with the manual safety belts fastened and the certification test reports for the sled test using only the automatic restraint system.

GM Response

The air bag restraint system provided at the driver's and passenger's seating positions in the subject vehicle is installed to meet S13. In addition, the air bag restraint system provided at the driver's and passenger's seating positions, along with the manual 3-point safety belt, were installed to meet the requirements of paragraphs S4.1.5.1(a)(3) of FMVSS 208.

Attachment A includes those portions of the frontal barrier test reports and sled tests pertinent to the requirements of FMVSS 208.

Question 2

Provide the following: (1) describe the difference between the MY 2001 air bag system and the MY 2000 air bag system, (2) explain what other restraint changes have been made, (3) explain what other vehicle changes have been made that might have affected FMVSS 208 performance, and (4) describe any features that might affect performance with respect to children and out of position occupants.

GM Response

- 1) The MY 2001 air bag system design has not changed from the MY 2000 air bag system.
- 2) For MY 2000i, the original seat belt supplier changed their webbing to have increased lateral and longitudinal bending stiffness to aid in seat belt retraction. Also for MY 2000i, a 685 gram mass damper was added to the steering wheel to reduce vibrations at high speeds and structural



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OA-208-001018O
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enhancements were added to the seat backs to reduce lateral shake. For MY 2001 minor changes to the steering column tilt head were made.

- 3) No other vehicle changes were made that might affect FMVSS 208 performance.
- 4) No other features affecting children and out of position occupants were changed.

Question 3

If the vehicle was certified with unrestrained dummies to meet the requirements of S13, describe how to disconnect the air bags from the vehicle sensors and connect them to the triggering mechanism used in the sled test. Describe the method used in certification to determine when to trigger the air bag system and the system used to trigger the air bag.

For air bags with dual stage or multistage inflators describe when the stages are triggered and provide data to show that this is similar to what would occur in a crash of similar severity. (See enclosure 1)

GM Response

Sled tests used to meet the requirements of S13 were performed on a sled buck, in which the air bags were never connected to vehicle sensors. Air bags for full-scale tests can be electronically disconnected from the vehicle harness and a separate electrical harness can be attached directly to the air bags, specifically for test deployment.

The air bag system should be disabled prior to performing the following actions. Disablement can be accomplished by disconnecting the battery negative cable from the battery. Wait approximately one hour following disconnection to ensure stored energy is dissipated.

On the driver's side, remove the air bag module from the steering wheel by inserting a flat head screwdriver into each of the slots located behind the steering wheel shroud. Press the screwdriver point towards the center of the steering wheel to disengage each spring latch on the air bag module. Slowly lift the air bag module from the steering column and disconnect the yellow air bag connector from the back of the air bag module. A spare connector is used to connect the module to the sled triggering system. However, the leads could be cut-off from the top of the steering column and then wired into the triggering mechanism. Reinstall the air bag module, ensuring that it is properly aligned with the snap features, allowing the leads, or connector, to hang on the outside of the shroud.



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On the passenger side, remove the glove box door to access the yellow air bag wire located at the left knee bolster bracket. Disconnect the yellow air bag connector and attach to the sled triggering mechanism.

For GM's sled testing, the air bags are powered and activated by remote system whether a full vehicle or sled buck is used. This remote air bag control system is electronically wired to the air bag through a junction box. To deploy the air bags, the air bag control system provides the power through the interconnect of electronic wiring. The air bag control system is programmed to activate the air bag as follows;

The FMVSS 208 requirement states that the air bag "is to be activated at 20 ms $\pm$ 2 ms from the time that 0.5 g is measured on the dynamic test platform". GM's sled facility generates a time reference signal when the sled reaches 1.0 g. After reviewing the reference signal's time difference between 0.5 g and 1.0 g in several sled tests, the average difference was determined to be 0.61 ms. Using this information, the remote air bag control system at GM's sled facility is programmed to trigger at 19 ms after the 1.0 g reference level to activate the air bag within the required timing stated above

Question 4

State for any safety belt system in this vehicle whether or not it is equipped with a tension-relieving device. Provide a copy of the information furnished in accordance with S7.4.2 if the tension-relieving device is used.

GM Response

The 2001 Tahoe Utility Truck Model safety belts are not equipped with tension relieving devices.

Question 5

FMVSS No. 208, S8.1.5 allows the manufacturer the option of having movable vehicle windows and vents placed in the closed position. State whether the vehicle's movable windows and vents were opened or closed for the certification tests.

GM Response

Movable windows on FMVSS 208 certification barrier tests for 2001 Tahoe model were positioned as follows;

Zero degree frontal barrier tests:

C12002; LF window was open, RF window was open



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C11978;	LF window was closed, RF window was closed
C12023;	LF window was open, RF window was open
C12075;	LF window was open, RF window was open
C12067;	LF window was open, RF window was open
C11852;	LF window was open, RF window was open

30 degree right frontal barrier tests:

C11907;	LF window was open, RF window was closed
C12022;	LF window was open, RF window was closed
C12006;	LF window was open, RF window was closed

30 degree left frontal barrier tests:

C12322;	LF window was closed, RF window was open
C12281;	LF window was closed, RF window was open
C12003;	LF window was closed, RF window was open
C12050;	LF window was closed, RF window was open
C12387;	LF window was closed, RF window was closed

Question 6

Submit dummy placement measurements, including diagrams or photographs which show exactly where measurements were taken. Enclosed is a diagram of some of OVSC's dummy measurements. Where possible, use the dimensions shown in the diagram to provide the individual dummy placement measurements.

State whether the vehicle has a foot rest for the driver.

GM Response

Attachment B includes all dummy placement measurements

This vehicle is not equipped with a footrest.

Question 7

Provide the seat positioning, steering column positioning, and fuel tank data on the enclosed form. If more than one front seating, steering column or fuel tank configuration are available on this vehicle, provide separate information for each. In addition, provide the seating reference point for each seat for the lockable seat belt requirement in S7.1.1.5.



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GM Response

Attachment C includes all vehicle test information required on the NHTSA form.

Question 8

If the vehicle is equipped with adjustable seat belt anchorages, provide the manufacturer's nominal design position for a 50th percentile adult male occupant.

GM Response

The 2001 Tahoe front outboard seats are equipped with all belts-to-seat safety belt systems and do not have upper adjustable anchorages.

Question 9

For barrier tests provide the speed at impact, vehicle test weight, and resulting injury criteria (i.e. HIC, chest acceleration, chest compression, and femur loads) recorded for all certification tests conducted to meet the requirements of S4.1.5.1(a)(1). For sled tests, provide the resulting injury criteria (i.e. HIC, chest acceleration, chest compression, femur loads, and neck moments and forces) recorded for all certification tests conducted to meet the requirements of S13.

GM Response

Attachment D provides the requested barrier and sled test information.

Question 10

When vehicle components must be removed to obtain the proper test weight for the barrier test, what components do you recommend for removal and in what priority order do you recommend removal?

GM Response

GM does not typically prioritize which components are to be removed from a test vehicle to accommodate test weight. However, components that have been removed during our testing include the rear bumper and spare tire. In addition, interior trim components behind the "B" pillar, including rear seats, carpeting and trim panels could be removed if necessary.



Truck Group

USG 3593
Enclosure 1

NHTSA IR: NSA-31CCa
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2001 Chevrolet Tahoe

The air bag restraints installed in this vehicle do not incorporate a pressure vessel to inflate the system.

Question 12

If the vehicle uses an explosive device to inflate the air bag, provide a copy of the test report or engineering analysis to demonstrate that it meets all the requirements of S9.2.

GM Response

The air bag restraints installed in this vehicle do not incorporate an explosive device to inflate the system.



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2001 Chevrolet Tahoe

Attachment B

Page 1 of 2

PRE-TEST DUMMY POSITIONING IN VEHICLE

(All dimensions in mm or degrees)

	Driver	Passenger
WA °	N/A	N/A
SWA °	69	N/A
SCA °	21	N/A
SA °	15.5	15.5
HZ	N/A	N/A
HH	492 (dummy eyebrow to glass edge under header)	497 (dummy eyebrow to glass edge under header)
HW	661	661
HR	N/A	N/A
NR	361 (nose tip to top rear surface of steering wheel)	467 (nose tip to center of IP grab handle)
CD	N/A	N/A
CS	286 (center indent on chest to rear center edge of SIR module)	455 (center indent on chest to center of IP SIR module)
RA	N/A	N/A
KDL	100 (lower knee crevice perpendicular to knee bolster surface – outboard)	94 (lower knee crevice perpendicular to knee bolster surface – inboard)
KDR	103 (lower knee crevice perpendicular to knee bolster surface – inboard)	89 (lower knee crevice perpendicular to knee bolster surface – outboard)
PA °	21.7	22.2
TA °	N/A	N/A
KK	240	191
ST	N/A	N/A
SK	N/A	N/A
SH	N/A	N/A
SHY	N/A	N/A
HS	N/A	N/A
HD	N/A	N/A
AD	N/A	N/A

N/A = Not available

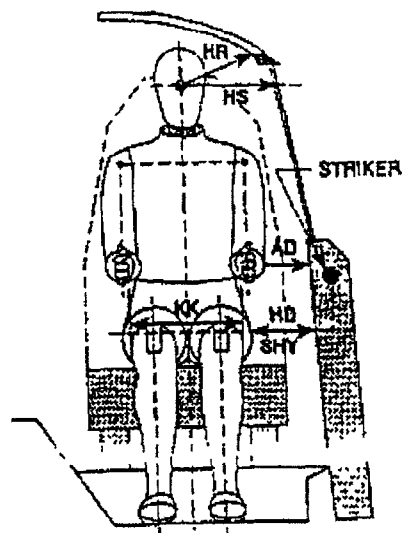
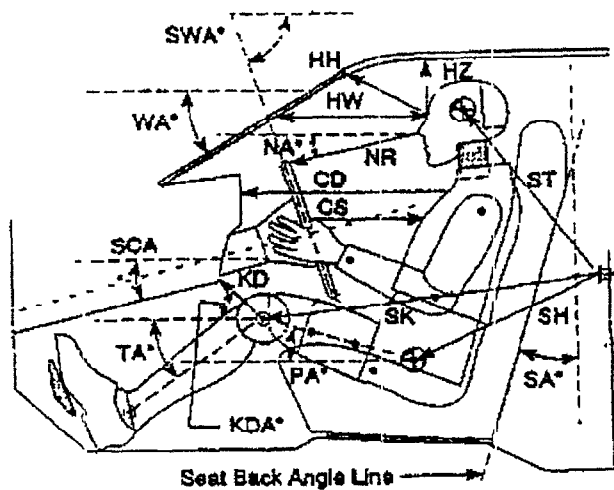


Truck Group

USG 3593
Enclosure 1

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Attachment B
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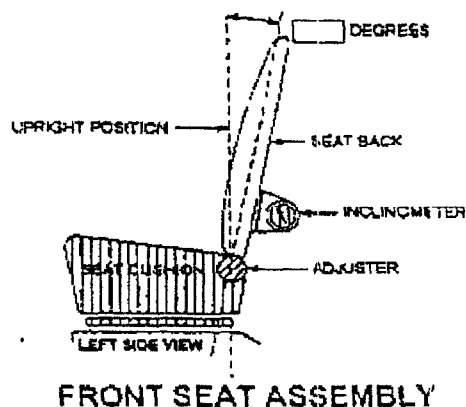




NHTSA IR: NSA-31CCa
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2001 Chevrolet Tahoe

Attachment C
Page 1 of 4
TEST VEHICLE INFORMATION

Vehicle Model Year and Make: 2001 Chevrolet
Vehicle Model and Body Style: Tahoe 4dr Utility vehicle



Nominal Design Riding Position

For adjustable driver and passenger seat backs

Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent if applicable. Indicate, if applicable, how the detents are numbered (Is the first detent "0" or "1" ?) Indicate if the seat back angle is measured with the dummy in the seat.

Seat back angle for Driver's seat = 15.5 degrees

Measurement Instructions:

See passenger seat instructions.

Seat back angle for Passenger's seat = 15.5 degrees

Measurement Instructions:

This information applies for both driver and passenger seats for all seat trim options. An inclinometer should be placed on the rearward surface of the outboard metal seat frame (square belt tower tube.)

Starting approximately 9-10 inches above the seat back pivot point near the outboard edge, press against the seat back rear surface to feel for hard structure (i.e. steel frame). Cut through the seat fabric, foam, and cardboard in this area to expose the metal frame. Make sure that there is enough flat surface on the frame to correctly position the inclinometer. Place inclinometer firmly on the frame without the fabric opening and adjust the seat back until the correct angle is indicated. Measure without the dummy in the seat, and again with the dummy in the seat (adjust seat back angle if needed to achieve 15.5 degrees.)



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2001 Chevrolet Tahoe

Attachment C
Page 2 of 4

Seat Fore & Aft Positions

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, indicate how the detents are numbered (Is the first detent "0" or "1" ?) Provide information to locate the detent in which the seat track is to be locked.

Positioning of the driver's seat:

See passenger seat instructions below

Positioning of the passenger's seat (if applicable):

This information applies for both driver and passenger seats for all seat trim options. Manual and power seat adjusters are available for driver and passenger seats.

Manual adjuster - Place the seat in full forward position and mark with a paint pen on the seat adjuster. Mark the same location when the seat is positioned in the full rearward location. Measure the distance between the two paint marks and place the seat in the mid point.

Power adjuster - Lower seat to full down (the lowest vertical adjustment position). Adjust lumbar comfort features (if fitted) to the minimum level. The seat bottom cushion tilt should be adjusted with the front of the seat at the full-down position. Measure total available seat fore/aft travel as detailed above and mark mid position.

Front driver and passenger Seating Reference Points

Manual adjuster: x = 2467, y = - 455 dr., 455 pass, and z = 948

Power adjuster: x = 2467, y = - 455 dr., 455 pass and z = 938

Driver's Seat Front Outboard Anchorage: x = 2103, y = - 680 and z = 640.8

Rear Seating Reference Points:

2nd Row 60/40 Split Bench

Driver's side: x = 3361, y = -455, z = 976

Center: x = 3361, y = 0, z = 976

Passenger side: x = 3361, y = 455, z = 976

3rd Row 50/50 Split Bench (optional)

Driver's side: x = 4227, y = -361, z = 1002

Center: x = 4227, y = 0, z = 1002

Passenger side: x = 4227, y = 361, z = 1002

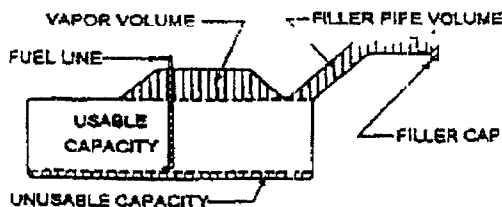
Sign convention: x: Rearward (+), Forward (-),
y: Passenger side (+), Driver side (-)
z: Upward (+), Downward (-)

Design Torso Angle: 21 degrees



NHTSA IR: NSA-31CCa
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2001 Chevrolet Tahoe

Attachment C
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VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY DATA

- A "Useable Capacity" of standard equipment fuel tank = 26 gallons (utility)
- B "Useable Capacity" of standard equipment fuel tank = 32.5 gallons (suburban)
- C "Useable Capacity" of vehicle(s) used for certification to requirements of FMVSS 301 =
26 gallons (utility) and 32.5 gallons (suburban)

Operational Instructions

Establish the unusable capacity (0.2 gallon/0.76 liters) first and add 95% of the usable capacity.

Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 95% of usable gallons

Is vehicle equipped with electric fuel pump? Yes ☒ No ☐

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

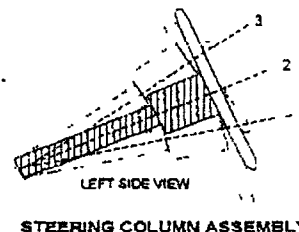
With the ignition on, fuel pump will operate for 3 seconds and stop. With the engine running, the pump will run continuously.

Steering Column Adjustments

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions.

If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center?

Operating Instructions:





Truck Group

USG 3593
Enclosure 1

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There are 5 column tilt detents, with the top detent referred to as position "1". Set the wheel to the 3rd detent. To measure column angle, place a level or straight edge up/down across the center of the driver air bag module resting it on the upper and lower steering wheel rims. Place an inclinometer on the level or straight edge to measure the steering column angle. The inclinometer should read approximately 21 degrees relative to a level vehicle rocker.

Appendix D

Miscellaneous Test Information

Suburban/Yukon XL: To put the seat back in, place the front of the seat on the load floor, facing the front of the vehicle. While holding the rear of the seat up, use the wheels on the front of the seat to roll it towards the seat hooks in the floor. When the latches are engaged in the hooks, let the seat drop into place. Lift up on the carrying handle to make sure the seat is locked in place.

Raise the seatback into the upright position. Push and pull on the seat to make sure it is locked into place. The seatback cannot be raised to the upright position unless the seat is secured to the floor.

 CAUTION:

A seat that isn't locked into place properly can move around in a collision or sudden stop. People in the vehicle could be injured. Be sure to lock the seat into place properly when installing it.

Safety Belts: They're for Everyone

This part of the manual tells you how to use safety belts properly. It also tells you some things you should not do with safety belts.

And it explains the air bag system.

 CAUTION:

Don't let anyone ride where he or she can't wear a safety belt properly. If you are in a crash and you're not wearing a safety belt, your injuries can be much worse. You can hit things inside the vehicle or be ejected from it. You can be seriously injured or killed. In the same crash, you might not be if you are buckled up. Always fasten your safety belt, and check that your passengers' belts are fastened properly too.

⚠ CAUTION:

It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and safety belts. Be sure everyone in your vehicle is in a seat and using a safety belt properly.



Your vehicle has a light that comes on as a reminder to buckle up. See "Safety Belt Reminder Light" in the Index

In most states and Canadian provinces, the law says to wear safety belts. Here's why *They work*

You never know if you'll be in a crash. If you do have a crash, you don't know if it will be a bad one.

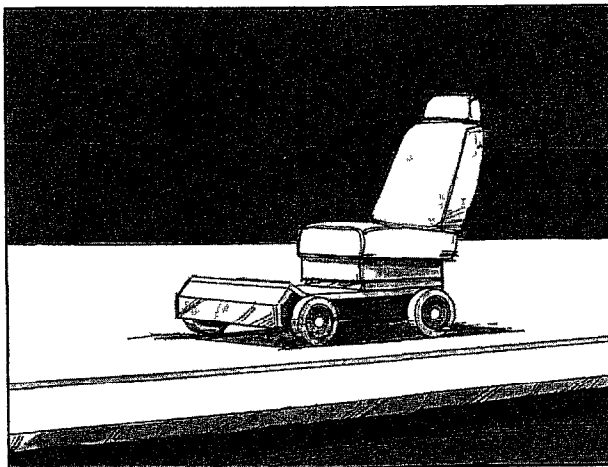
A few crashes are mild, and some crashes can be so serious that even buckled up a person wouldn't survive. But most crashes are in between. In many of them, people who buckle up can survive and sometimes walk away. Without belts they could have been badly hurt or killed.

After more than 30 years of safety belts in vehicles, the facts are clear. In most crashes buckling up does matter a lot!

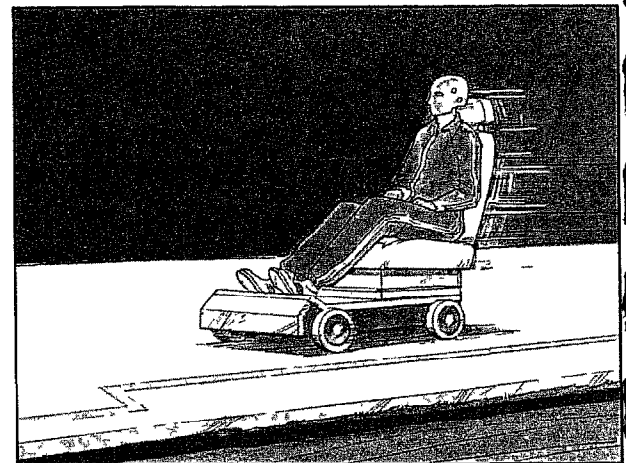
1-16

Why Safety Belts Work

When you ride in or on anything, you go as fast as it goes.

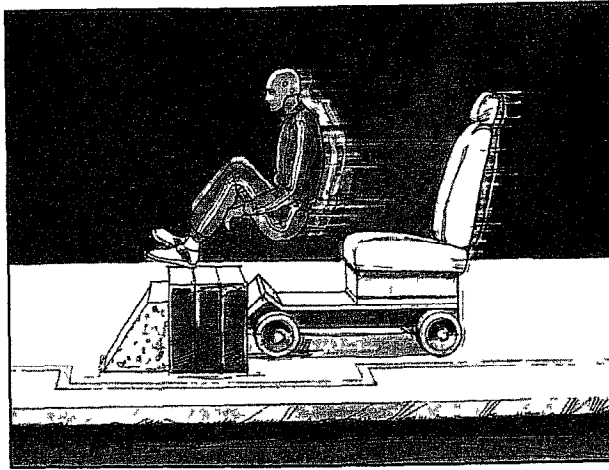


Take the simplest vehicle. Suppose it's just a seat on wheels.



Put someone on it.

1-17

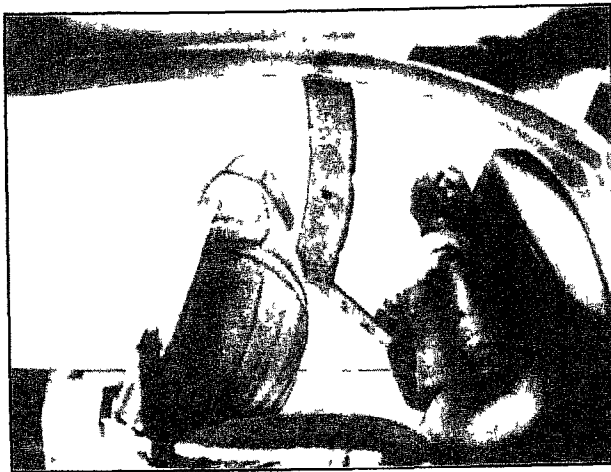


Get it up to speed Then stop the vehicle The rider doesn't stop

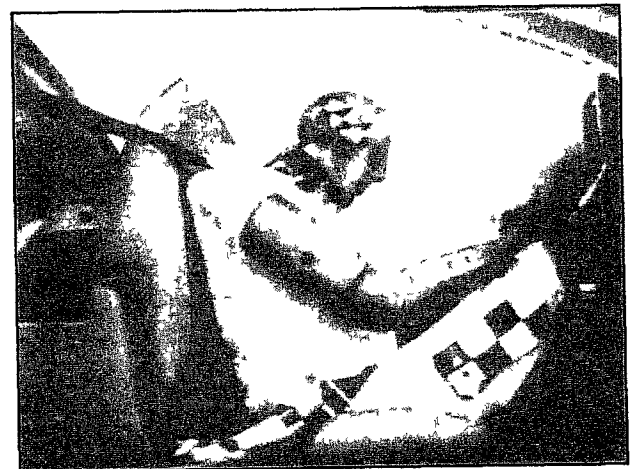


The person keeps going until stopped by something
In a real vehicle, it could be the windshield

1-18



or the instrument panel



or the safety belts!

With safety belts, you slow down as the vehicle does
You get more time to stop You stop over more distance,
and your strongest bones take the forces That's why
safety belts make such good sense

1-19

Here Are Questions Many People Ask About Safety Belts -- and the Answers

Q: Won't I be trapped in the vehicle after an accident if I'm wearing a safety belt?

A: You *could* be -- whether you're wearing a safety belt or not. But you can unbuckle a safety belt, even if you're upside down. And your chance of being conscious during and after an accident, so you *can* unbuckle and get out, is *much* greater if you are belted.

Q: If my vehicle has air bags, why should I have to wear safety belts?

A: Air bags are in many vehicles today and will be in most of them in the future. But they are supplemental systems only, so they work *with* safety belts -- not instead of them. Every air bag system ever offered for sale has required the use of safety belts. Even if you're in a vehicle that has air bags, you still have to buckle up to get the most protection. That's true not only in frontal collisions, but especially in side and other collisions.

Q: If I'm a good driver, and I never drive far from home, why should I wear safety belts?

A: You may be an excellent driver, but if you're in an accident -- even one that isn't your fault -- you and your passengers can be hurt. Being a good driver doesn't protect you from things beyond your control, such as bad drivers.

Most accidents occur within 25 miles (40 km) of home. And the greatest number of serious injuries and deaths occur at speeds of less than 40 mph (65 km/h).

Safety belts are for everyone.

1-20

How to Wear Safety Belts Properly

Adults

This part is only for people of adult size.

Be aware that there are special things to know about safety belts and children. And there are different rules for smaller children and babies. If a child will be riding in your vehicle, see the part of this manual called "Children." Follow those rules for everyone's protection.

First, you'll want to know which restraint systems your vehicle has.

We'll start with the driver position.

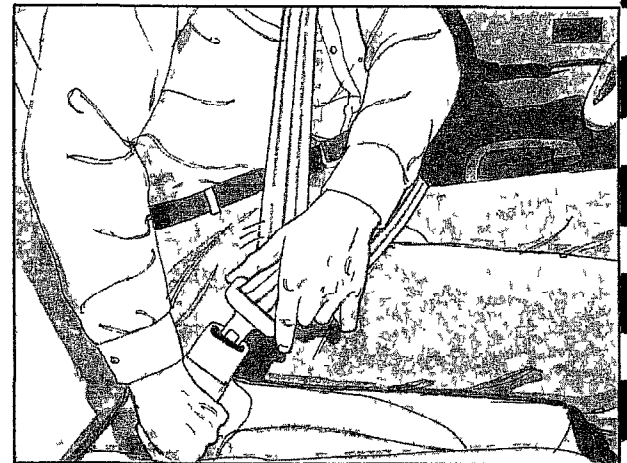
Driver Position

This part describes the driver's restraint system.

Lap-Shoulder Belt

The driver has a lap-shoulder belt. Here's how to wear it properly.

- 1 Close and lock the door.
- 2 Adjust the seat so you can sit up straight. To see how, see "Seats" in the Index.

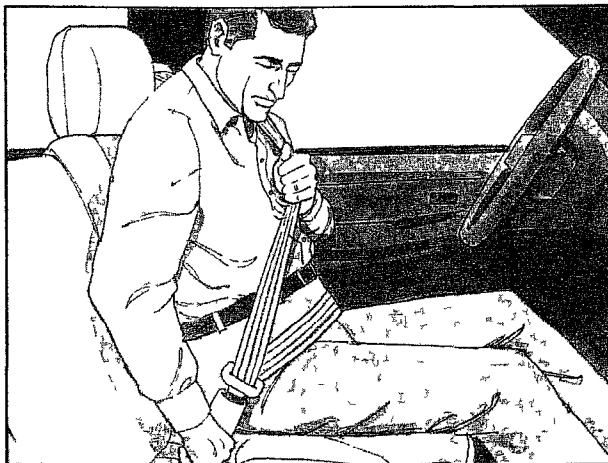


- 3 Pick up the latch plate and pull the belt across you. Don't let it get twisted.

The shoulder belt may lock if you pull the belt across you very quickly. If this happens, let the belt go back slightly to unlock it. Then pull the belt across you more slowly.

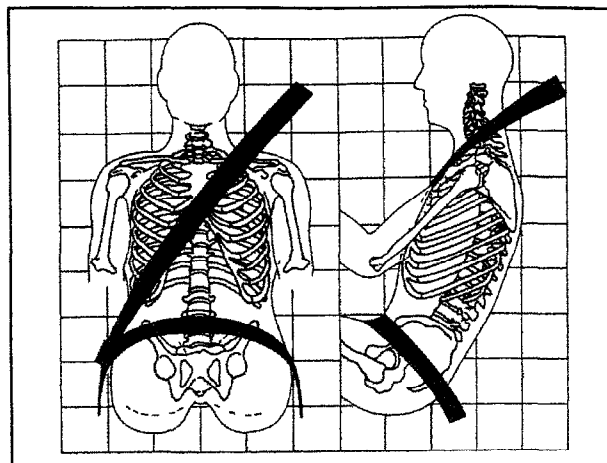
1-21

- 4 Push the latch plate into the buckle until it clicks
Pull up on the latch plate to make sure it is secure
If the belt isn't long enough, see "Safety Belt Extender" at the end of this section
Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to



- 5 To make the lap part tight, pull down on the buckle end of the belt as you pull up on the shoulder belt

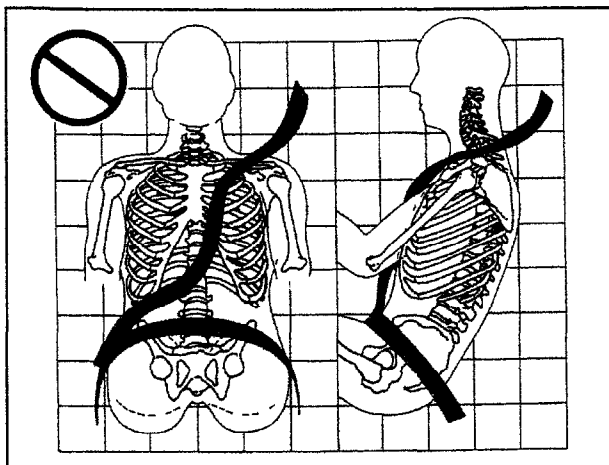
1-22



The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or a crash.

Q: What's wrong with this?



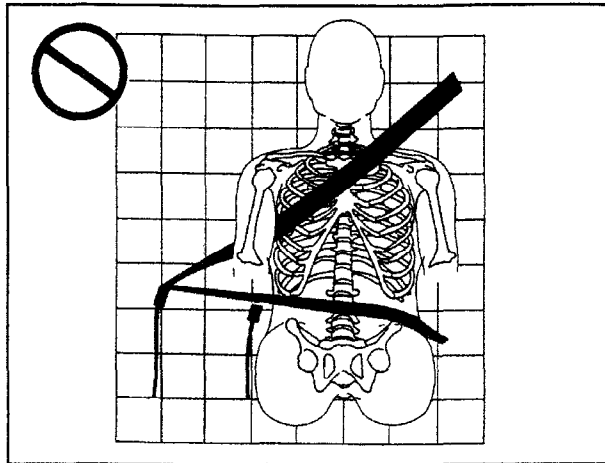
A: The shoulder belt is too loose. It won't give nearly as much protection this way.

⚠ CAUTION:

You can be seriously hurt if your shoulder belt is too loose. In a crash, you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

1-23

Q: What's wrong with this?



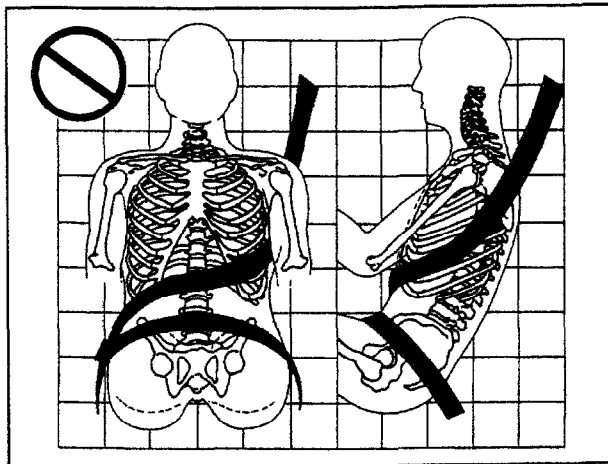
A: The belt is buckled in the wrong place

1-24

⚠ CAUTION:

You can be seriously injured if your belt is buckled in the wrong place like this. In a crash, the belt would go up over your abdomen. The belt forces would be there, not at the pelvic bones. This could cause serious internal injuries. Always buckle your belt into the buckle nearest you.

Q: What's wrong with this?



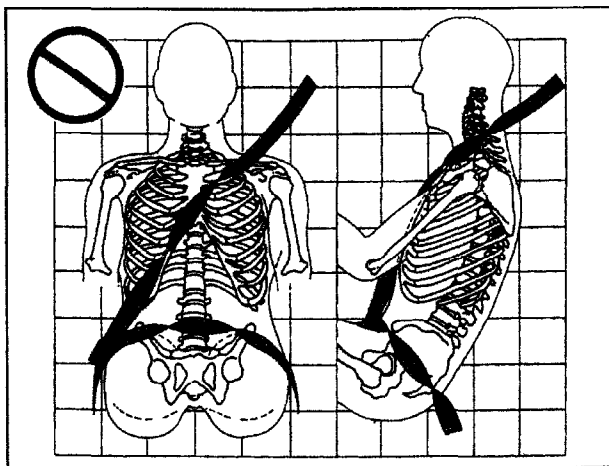
A: The shoulder belt is worn under the arm. It should be worn over the shoulder at all times

⚠ CAUTION:

You can be seriously injured if you wear the shoulder belt under your arm. In a crash, your body would move too far forward, which would increase the chance of head and neck injury. Also, the belt would apply too much force to the ribs, which aren't as strong as shoulder bones. You could also severely injure internal organs like your liver or spleen.

1-25

Q: What's wrong with this?

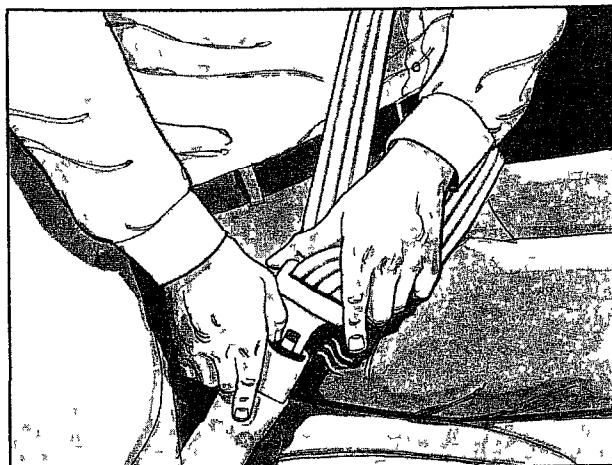


A: The belt is twisted across the body

⚠ CAUTION:

You can be seriously injured by a twisted belt. In a crash, you wouldn't have the full width of the belt to spread impact forces. If a belt is twisted, make it straight so it can work properly, or ask your dealer to fix it.

1-26

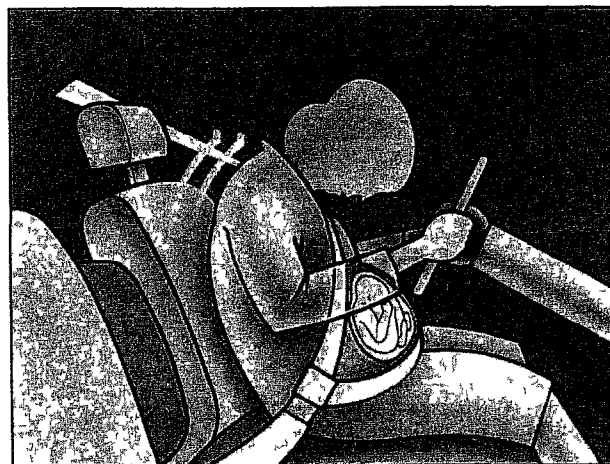


To unlatch the belt, just push the button on the buckle
The belt should go back out of the way

Before you close the door, be sure the belt is out of the way
If you slam the door on it, you can damage both the belt and your vehicle

Safety Belt Use During Pregnancy

Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they don't wear safety belts.



A pregnant woman should wear a lap-shoulder belt, and the lap portion should be worn as low as possible, below the rounding, throughout the pregnancy.

1-27

The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it's more likely that the fetus won't be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.

Right Front Passenger Position

To learn how to wear the right front passenger's safety belt properly, see "Driver Position" earlier in this section.

The right front passenger's safety belt works the same way as the driver's safety belt -- except for one thing. If you ever pull the shoulder portion of the belt out all the way, you will engage the child restraint locking feature. If this happens, just let the belt go back all the way and start again.

Air Bag Systems

This part explains the frontal and side impact air bag systems.

Your vehicle has four air bags -- a frontal air bag for the driver, another frontal air bag for the right front passenger, a side impact air bag for the driver, and another side impact air bag for the right front passenger.

Frontal air bags are designed to help reduce the risk of injury from the force of an inflating frontal air bag. But these air bags must inflate very quickly to do their job and comply with federal regulations.

Here are the most important things to know about the air bag systems.

CAUTION:

You can be severely injured or killed in a crash if you aren't wearing your safety belt -- even if you have air bags. Wearing your safety belt during a crash helps reduce your chance of hitting things inside the vehicle or being ejected from it. Air bags are "supplemental restraints" to the safety belts. All air bags are designed to work with safety belts but don't replace them.

CAUTION: (Continued)

1-28

CAUTION: (Continued)

Frontal air bags for the driver and right front passenger are designed to work only in moderate to severe crashes where the front of your vehicle hits something. They aren't designed to inflate at all in rollover, rear, side or low-speed frontal crashes. And, for unrestrained occupants, frontal air bags may provide less protection in frontal crashes than more forceful air bags have provided in the past. The side impact air bags for the driver and right front passenger are designed to inflate only in moderate to severe crashes where something hits the side of your vehicle. They aren't designed to inflate in frontal, in rollover or in rear crashes. Everyone in your vehicle should wear a safety belt properly -- whether or not there's an air bag for that person.

CAUTION:

Both frontal and side impact air bags inflate with great force, faster than the blink of an eye. If you're too close to an inflating air bag, as you would be if you were leaning forward, it could seriously injure you. Safety belts help keep you in position for air bag inflation before and during a crash. Always wear your safety belt, even with frontal air bags. The driver should sit as far back as possible while still maintaining control of the vehicle. Front occupants should not lean on or sleep against the door.

1-29

CAUTION:

Anyone who is up against, or very close to, any air bag when it inflates can be seriously injured or killed. Air bags plus lap-shoulder belts offer the best protection for adults, but not for young children and infants. Neither the vehicle's safety belt system nor its air bag system is designed for them. Young children and infants need the protection that a child restraint system can provide. Always secure children properly in your vehicle. To read how, see the part of this manual called "Children."



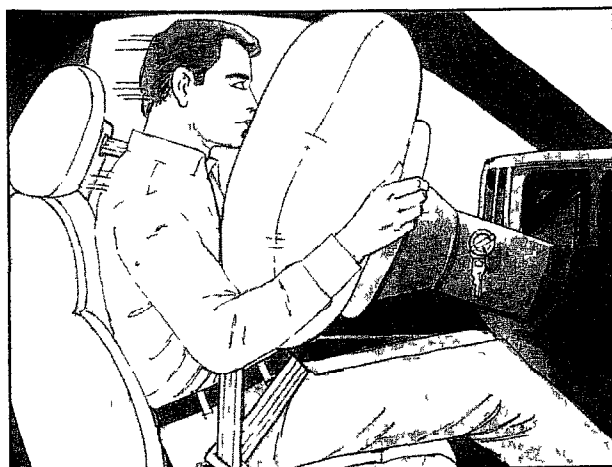
There is an air bag readiness light on the instrument panel, which shows the air bag symbol

The system checks the air bag electrical system for malfunctions. The light tells you if there is an electrical problem. See "Air Bag Readiness Light" in the Index for more information.

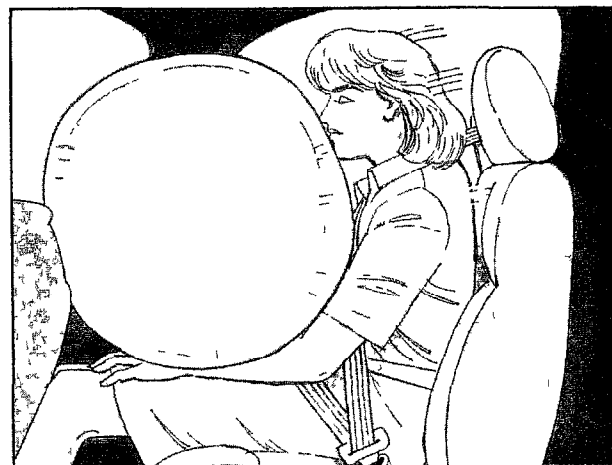
1-30

How the Air Bag Systems Work

Where are the air bags?



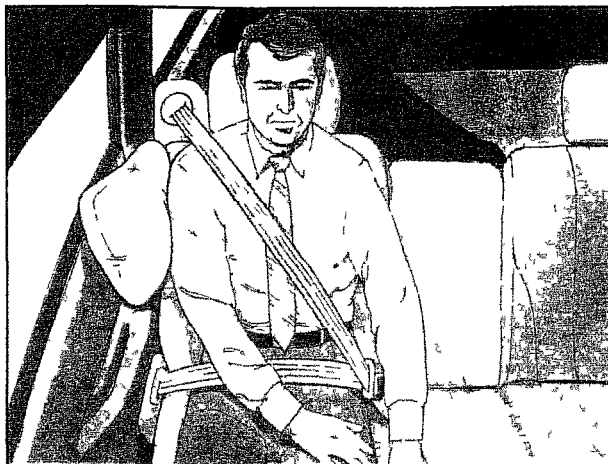
The driver's frontal air bag is in the middle of the steering wheel.



The right front passenger's frontal air bag is in the instrument panel on the passenger's side.

The driver's side impact air bag is in the side of the driver's seatback closest to the door.

1-31



The right front passenger's side impact air bag is in the side of the passenger's seatback closest to the door

⚠ CAUTION:

If something is between an occupant and an air bag, the bag might not inflate properly or it might force the object into that person. The path of an inflating air bag must be kept clear. Don't put anything between an occupant and an air bag, and don't attach or put anything on the steering wheel hub or on or near any other air bag covering and don't let seat covers block the inflation path of a side impact air bag.

1-32

When should an air bag inflate?

The driver's and right front passenger's frontal air bags are designed to inflate in moderate to severe frontal or near-frontal crashes. But they are designed to inflate only if the impact speed is above the system's designed "threshold level."

If your vehicle goes straight into a wall that doesn't move or deform, the threshold level is about 9 to 16 mph (14 to 26 km/h). The threshold level can vary, however, with specific vehicle design, so that it can be somewhat above or below this range.

If your vehicle strikes something that will move or deform, such as a parked car, the threshold level will be higher. The driver's and right front passenger's frontal air bags are not designed to inflate in rollovers, side impacts, or rear impacts, because inflation would not help the occupant.

The side impact air bags are designed to inflate in moderate to severe side crashes. A side impact air bag will inflate if the crash severity is above the system's designed "threshold level." The threshold level can vary with specific vehicle design. Side impact air bags are not designed to inflate in frontal or near-frontal impacts, rollovers or rear impacts, because inflation would not help the occupant. A side impact air bag will only deploy on the side of the vehicle that is struck.

In any particular crash, no one can say whether an air bag should have inflated simply because of the damage to a vehicle or because of what the repair costs were. For frontal air bags, inflation is determined by the angle of the impact and how quickly the vehicle slows down in frontal and near-frontal impacts. For side impact air bags, inflation is determined by the location and severity of the impact.

The air bag system is designed to work properly under a wide range of conditions, including off-road usage. Observe safe driving speeds, especially on rough terrain. As always, wear your safety belt. See "Off-Road Driving" in the Index for more tips on off-road driving.

What makes an air bag inflate?

In an impact of sufficient severity, the air bag sensing system detects that the vehicle is in a crash. For both frontal and side impact air bags, the sensing system triggers a release of gas from the inflator, which inflates the air bag. The inflator, air bag and related hardware are all part of the air bag modules inside the steering wheel, instrument panel and the side of the front seatbacks closest to the door.

1-33

How does an air bag restrain?

In moderate to severe frontal or near frontal collisions, even belted occupants can contact the steering wheel or the instrument panel. In moderate to severe side collisions, even belted occupants can contact the inside of the vehicle. The air bag supplements the protection provided by safety belts. Air bags distribute the force of the impact more evenly over the occupant's upper body, stopping the occupant more gradually. But the frontal air bags would not help you in many types of collisions, including rollovers, rear impacts, and side impacts, primarily because an occupant's motion is not toward the air bag. Side impact air bags would not help you in many types of collisions, including frontal or near frontal collisions, rollovers, and rear impacts, primarily because an occupant's motion is not toward those air bags. Air bags should never be regarded as anything more than a supplement to safety belts, and then only in moderate to severe frontal or near-frontal collisions for the driver's and right front passenger's frontal air bags, and only in moderate to severe side collisions for the driver's and right front passenger's side impact air bags.

What will you see after an air bag inflates?

After an air bag inflates, it quickly deflates, so quickly that some people may not even realize the air bag inflated. Some components of the air bag module -- the steering wheel hub for the driver's air bag, the instrument panel for the right front passenger's bag, the side of the seatback closest to the door for the driver and right front passenger's side impact air bags -- will be hot for a short time. The parts of the bag that come into contact with you may be warm, but not too hot to touch. There will be some smoke and dust coming from the vents in the deflated air bags. Air bag inflation doesn't prevent the driver from seeing or being able to steer the vehicle, nor does it stop people from leaving the vehicle.

1-34



CAUTION:

When an air bag inflates, there is dust in the air. This dust could cause breathing problems for people with a history of asthma or other breathing trouble. To avoid this, everyone in the vehicle should get out as soon as it is safe to do so. If you have breathing problems but can't get out of the vehicle after an air bag inflates, then get fresh air by opening a window or a door.

In many crashes severe enough to inflate an air bag, windshields are broken by vehicle deformation. Additional windshield breakage may also occur from the right front passenger air bag.

- Air bags are designed to inflate only once. After an air bag inflates, you'll need some new parts for your air bag system. If you don't get them, the air bag system won't be there to help protect you in another crash. A new system will include air bag modules and possibly other parts. The service manual for your vehicle covers the need to replace other parts.

- Your vehicle is equipped with a crash sensing and diagnostic module, which records information about the frontal air bag system. The module records information about the readiness of the system, when the system commands air bag inflation and driver's safety belt usage at deployment. The module also records speed, engine rpm, brake and throttle data.
- Let only qualified technicians work on your air bag systems. Improper service can mean that an air bag system won't work properly. See your dealer for service.

NOTICE:

If you damage the covering for the driver's or the right front passenger's air bag, or the air bag covering on the driver's and right front passenger's seatback, the bag may not work properly. You may have to replace the air bag module in the steering wheel, both the air bag module and the instrument panel for the right front passenger's air bag, or both the air bag module and seatback for the driver's and right front passenger's side impact air bag. Do not open or break the air bag coverings.

1-35

Servicing Your Air Bag-Equipped Vehicle

Air bags affect how your vehicle should be serviced. There are parts of the air bag systems in several places around your vehicle. Your dealer and the service manual have information about servicing your vehicle and the air bag systems. To purchase a service manual, see "Service and Owner Publications" in the Index.

CAUTION:

For up to two minutes after the ignition key is turned off and the battery is disconnected, an air bag can still inflate during improper service. You can be injured if you are close to an air bag when it inflates. Avoid yellow connectors. They are probably part of the air bag systems. Be sure to follow proper service procedures, and make sure the person performing work for you is qualified to do so.

The air bag systems do not need regular maintenance

1-36

Adding Equipment to Your Air Bag-Equipped Vehicle

Q: If I add a push bumper or bicycle rack to the front of my vehicle, will it keep the air bags from working properly?

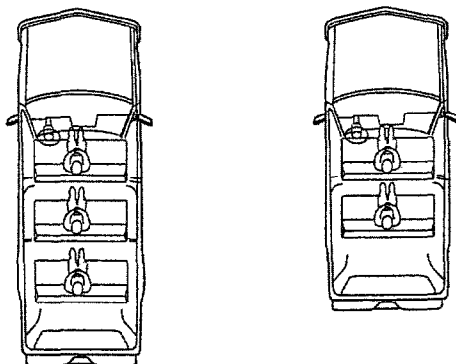
A: As long as the push bumper or bicycle rack is attached to your vehicle so that the vehicle's basic structure isn't changed, it's not likely to keep the air bags from working properly in a crash.

Q: Is there anything I might add to the front or sides of the vehicle that could keep the air bags from working properly?

A: Yes. If you add things that change your vehicle's frame, bumper system, front end or side sheet metal or height, they may keep the air bag system from working properly. Also, the air bag system may not work properly if you relocate any of the air bag sensors. If you have any questions about this, you should contact Customer Assistance before you modify your vehicle. The phone numbers and addresses for Customer Assistance are in Step Two of the Customer Satisfaction Procedure in this manual. See "Customer Satisfaction Procedure" in the Index.

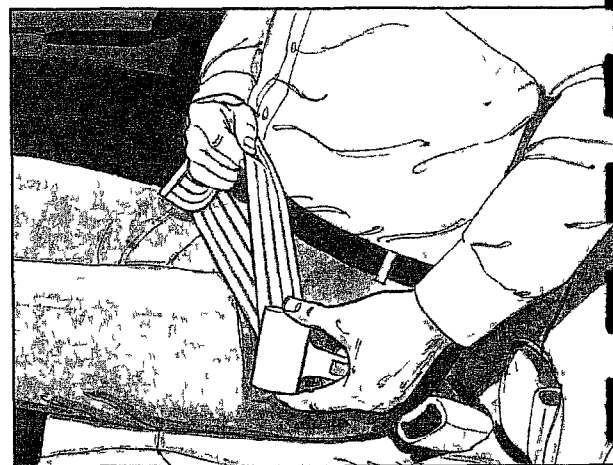
Q: What if I add a snow plow? Will it keep the air bags from working properly?

A: We've designed our air bag systems to work properly under a wide range of conditions, including snow plowing with vehicles equipped with the optional Snow Plow Prep Package (RPO VYU). But don't change or defeat the snow plow's "tripping mechanism." If you do, it can damage your snow plow and your vehicle, and it may cause an air bag inflation.



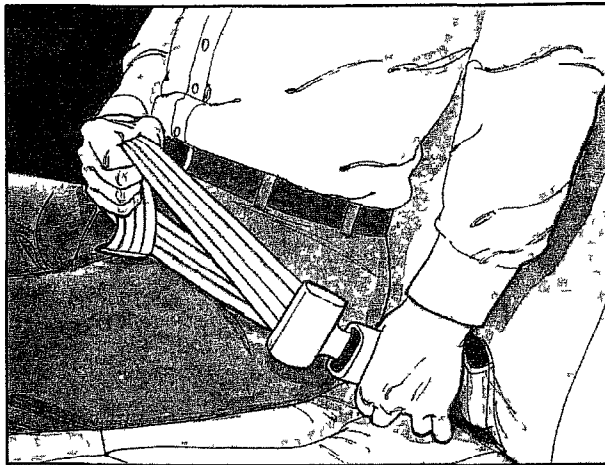
Lap Belt

If your vehicle has front and rear bench seats, someone can sit in the center positions.



When you sit in a center seating position, you have a lap safety belt, which has no retractor. To make the belt longer, tilt the latch plate and pull it along the belt.

1-37



To make the belt shorter, pull its free end as shown until the belt is snug

Buckle, position and release it the same way as the lap part of a lap-shoulder belt. If the belt isn't long enough, see "Safety Belt Extender" at the end of this section

Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to

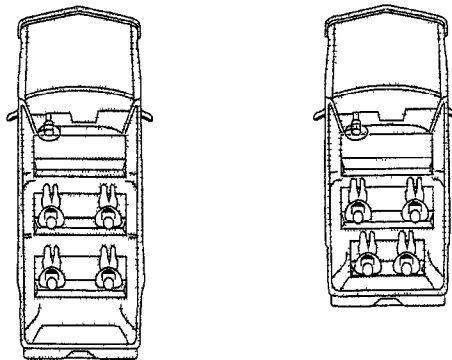
Rear Seat Passengers

It's very important for rear seat passengers to buckle up! Accident statistics show that unbelted people in the rear seat are hurt more often in crashes than those who are wearing safety belts

Rear passengers who aren't safety belted can be thrown out of the vehicle in a crash. And they can strike others in the vehicle who are wearing safety belts

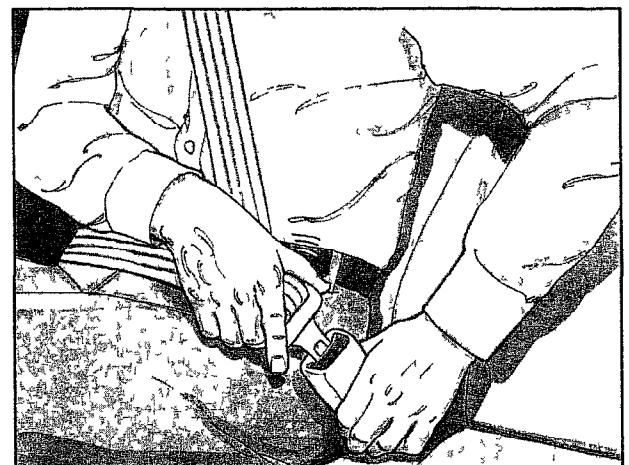
1-38

Rear Seat Outside Passenger Positions



Lap-Shoulder Belt

The positions next to the windows have lap-shoulder belts. Here's how to wear one properly



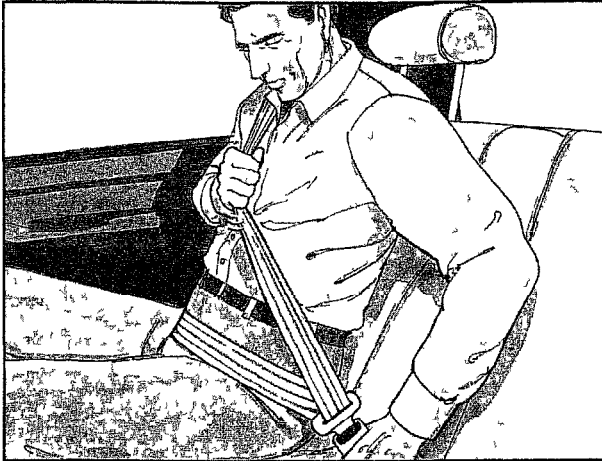
- 1 Pick up the latch plate and pull the belt across you. Don't let it get twisted.
- 2 Push the latch plate into the buckle until it clicks. Pull up on the latch plate to make sure it is secure.

1-39

When the shoulder belt is pulled out all the way, it will lock. If it does, let it go back all the way and start again.

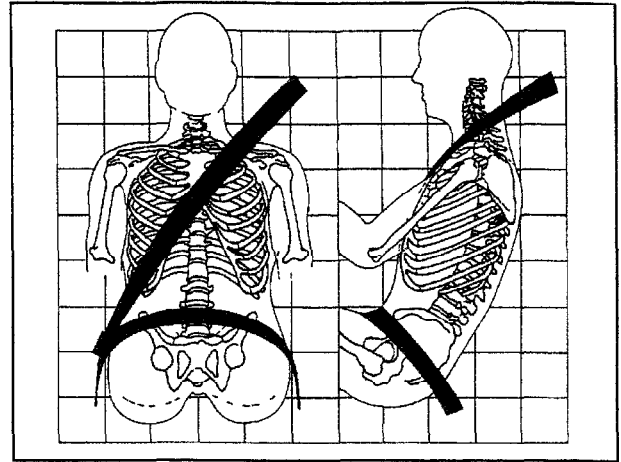
If the belt is not long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



- 3 To make the lap part tight, pull down on the buckle end of the belt as you pull up on the shoulder part.

1-40



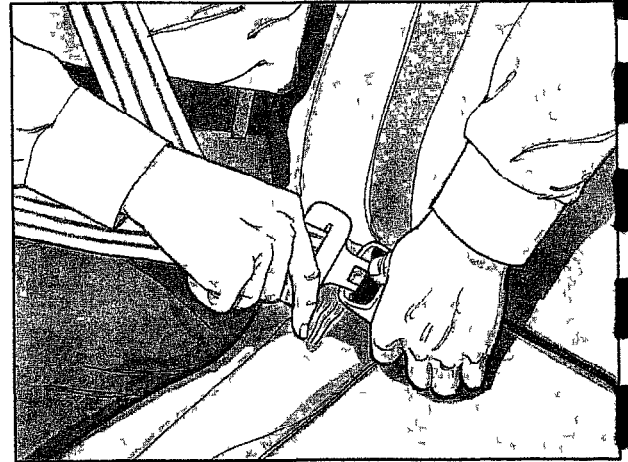
The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or a crash.



CAUTION:

You can be seriously hurt if your shoulder belt is too loose. In a crash, you would move forward too much, which could increase injury. The shoulder belt should fit against your body.



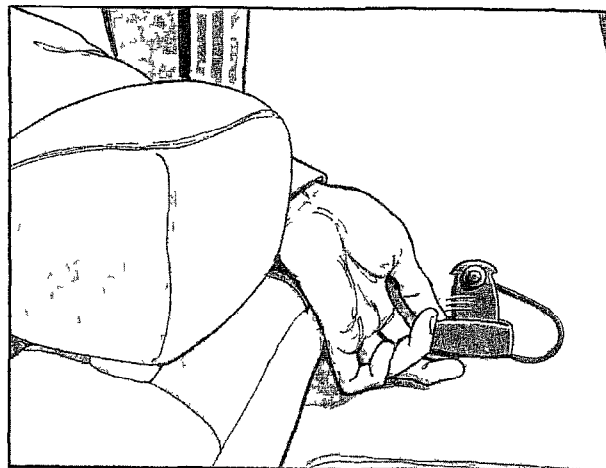
To unlatch the belt, just push the button on the buckle.

1-41

Rear Safety Belt Comfort Guides for Children and Small Adults

Rear shoulder belt comfort guides will provide added safety belt comfort for older children who have outgrown booster seats and for small adults. When installed on a shoulder belt, the comfort guide better positions the belt away from the neck and head.

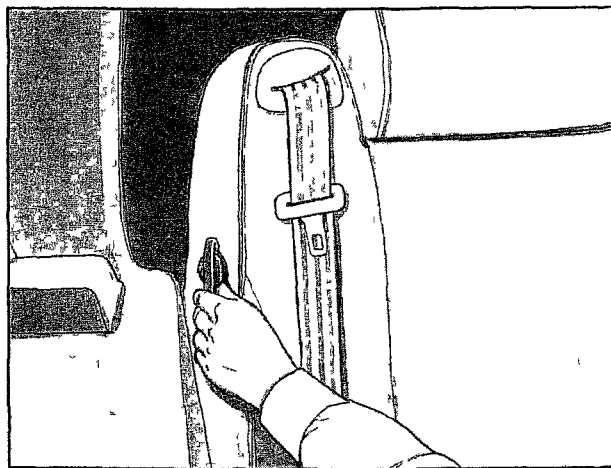
There is one guide for each outside passenger position in the rear seats. To provide added safety belt comfort for children who have outgrown child restraints and for smaller adults, the comfort guides may be installed on the shoulder belts. Here's how to install a comfort guide and use the safety belt.



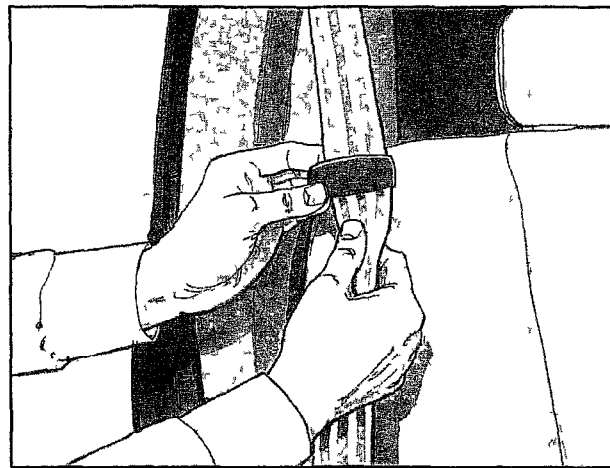
Second Row Seat

- 1 For the second row, remove the guide from its storage clip on the trim panel near the side of the seatback. For the third row, remove the guide from its storage clip on the side of the seatback.

1-42

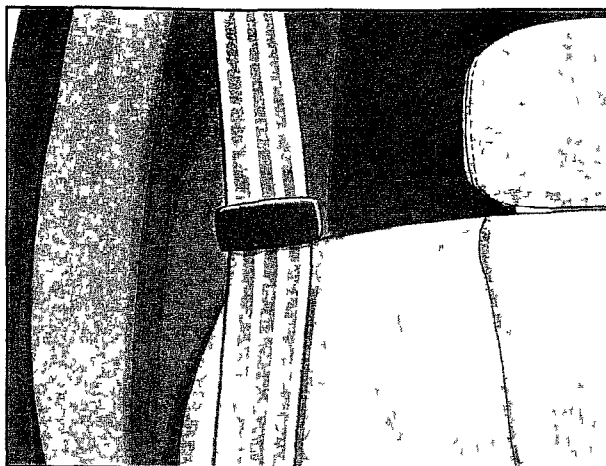


Third Row Seat



- 2 Place the guide over the belt and insert the two edges of the belt into the slots of the guide.

1-43



- 3 Be sure that the belt is not twisted and it lies flat
The guide must be on top of the belt



Second Row Seat

1-44



Third Row Seat

- 4 Buckle, position and release the safety belt as described in "Rear Seat Outside Passenger Positions" earlier in this section. Make sure that the shoulder belt crosses the shoulder.

To remove and store the comfort guides, squeeze the belt edges together so that you can take them out from the guides. Make sure you remove the comfort guide from the belt before you fold a rear seat down or use an easy-entry seat, if your vehicle has one.

Children

Everyone in a vehicle needs protection! This includes infants and all other children. Neither the distance traveled nor the age and size of the traveler changes the need, for everyone, to use safety restraints. In fact, the law in every state in the United States and in every Canadian province says children up to some age must be restrained while in a vehicle.

Infants and Young Children

Every time infants and young children ride in vehicles, they should have the protection provided by the appropriate restraint. Young children should not use the vehicle's safety belts, unless there is no other choice.

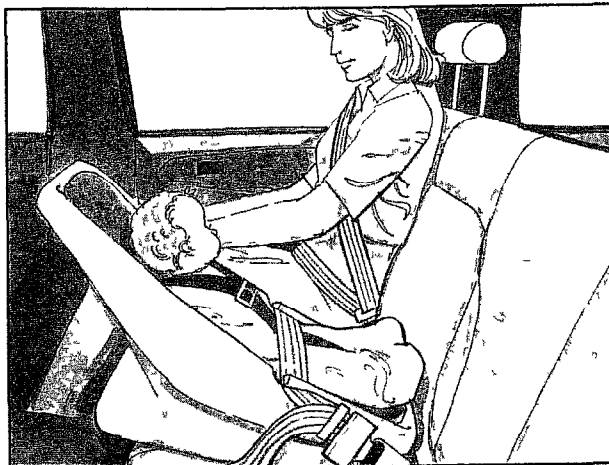
1-45



⚠ CAUTION:

People should never hold a baby in their arms while riding in a vehicle. A baby doesn't weigh much -- until a crash. During a crash a baby will become so heavy it is not possible to hold it. For example, in a crash at only 25 mph (40 km/h), a 12-lb. (5.5 kg) baby will suddenly become a 240-lb. (110 kg) force on a person's arms. A baby should be secured in an appropriate restraint.

1-46



⚠ CAUTION:

Children who are up against, or very close to, any air bag when it inflates can be seriously injured or killed. Air bags plus lap-shoulder belts offer outstanding protection for adults and older children, but not for young children and infants. Neither the vehicle's safety belt system nor its air bag system is designed for them. Young children and infants need the protection that a child restraint system can provide.

1-47

Q: What are the different types of add-on child restraints?

A: Add-on child restraints, which are purchased by the vehicle's owner, are available in four basic types. Selection of a particular restraint should take into consideration not only the child's weight, height and age but also whether or not the restraint will be compatible with the motor vehicle in which it will be used.

For most basic types of child restraints, there are many different models available. When purchasing a child restraint, be sure it is designed to be used in a motor vehicle. If it is, the restraint will have a label saying that it meets federal motor vehicle safety standards.

The restraint manufacturer's instructions that come with the restraint state the weight and height limitations for a particular child restraint. In addition, there are many kinds of restraints available for children with special needs.

⚠ CAUTION:

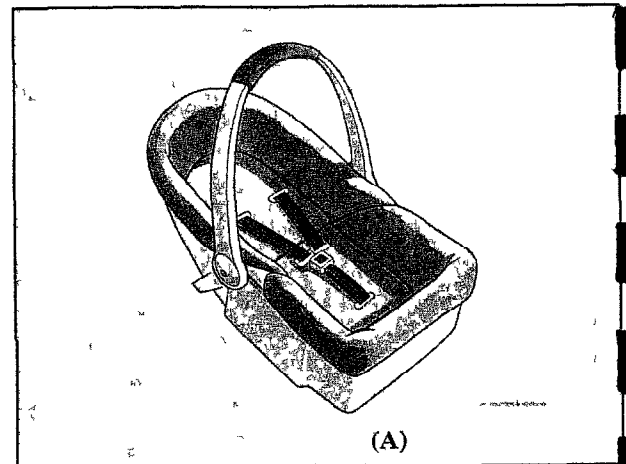
Newborn infants need complete support, including support for the head and neck. This is necessary because a newborn infant's neck is weak and its head weighs so much compared with the rest of its body. In a crash, an infant in a rear-facing seat settles into the restraint, so the crash forces can be distributed across the strongest part of an infant's body, the back and shoulders. Infants always should be secured in appropriate infant restraints.

1-48

⚠ CAUTION:

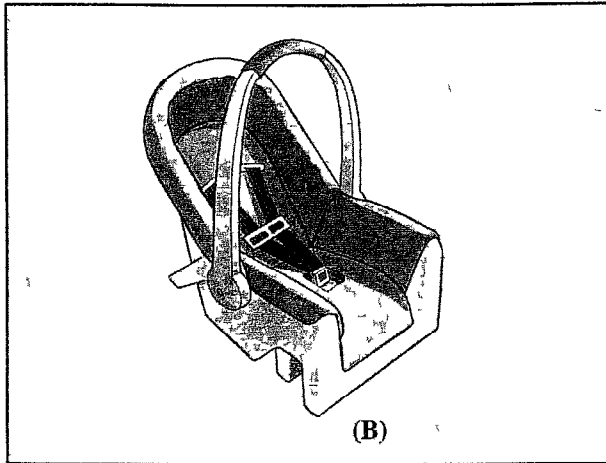
The body structure of a young child is quite unlike that of an adult or older child, for whom the safety belts are designed. A young child's hip bones are still so small that vehicle's regular safety belt may not remain low on the hip bones, as it should. Instead, it may settle up around the child's abdomen. In a crash, the belt would apply force on a body area that's unprotected by any bony structure. This alone could cause serious or fatal injuries. Young children always should be secured in appropriate child restraints.

Restraint Systems for Children

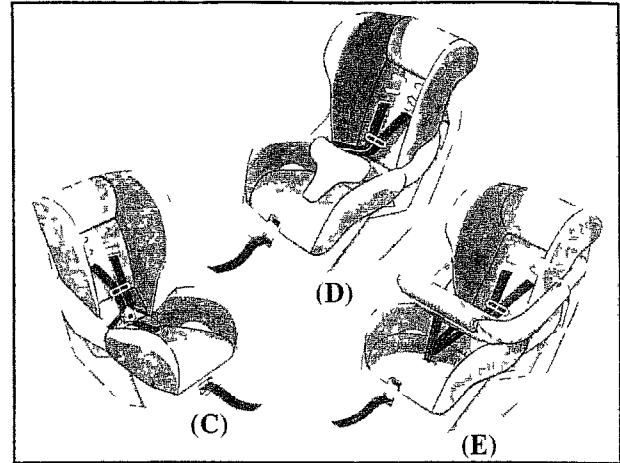


An infant car bed (A), a special bed made for use in a motor vehicle, is an infant restraint system designed to restrain or position a child on a continuous flat surface. Make sure that the infant's head rests toward the center of the vehicle.

1-49

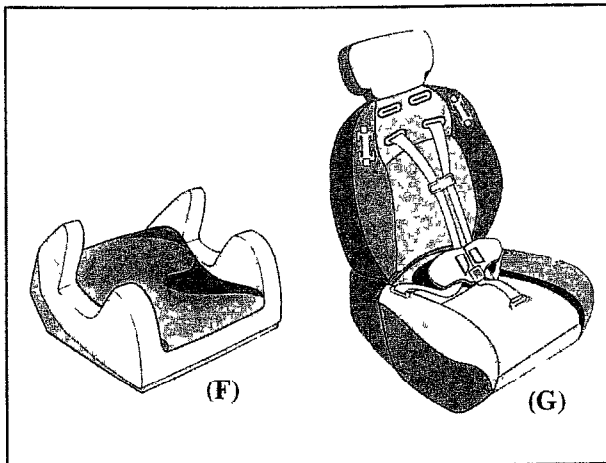


A rear-facing infant seat (B) provides restraint with the seating surface against the back of the infant. The harness system holds the infant in place and, in a crash, acts to keep the infant positioned in the restraint.



A forward-facing child seat (C-E) provides restraint for the child's body with the harness and also sometimes with surfaces such as T-shaped or shelf-like shields.

1-50



A booster seat (F-G) is a child restraint designed to improve the fit of the vehicle's safety belt system. Some booster seats have a shoulder belt positioner, and some high-back booster seats have a five-point harness. A booster seat can also help a child to see out the window.

Q: How do child restraints work?

A: A child restraint system is any device designed for use in a motor vehicle to restrain, seat, or position children. A built-in child restraint system is a permanent part of the motor vehicle. An add-on child restraint system is a portable one, which is purchased by the vehicle's owner.

For many years, add-on child restraints have used the adult belt system in the vehicle. To help reduce the chance of injury, the child also has to be secured within the restraint. The vehicle's belt system secures the add-on child restraint in the vehicle, and the add-on child restraint's harness system holds the child in place within the restraint.

One system, the three-point harness, has straps that come down over each of the infant's shoulders and buckle together at the crotch. The five-point harness system has two shoulder straps, two hip straps and a crotch strap. A shield may take the place of hip straps. A T-shaped shield has shoulder straps that are attached to a flat pad which rests low against the child's body. A shelf- or armrest-type shield has straps that are attached to a wide, shelf-like shield that swings up or to the side.

1-51

When choosing a child restraint, be sure the child restraint is designed to be used in a vehicle. If it is, it will have a label saying that it meets federal motor vehicle safety standards.

Then follow the instructions for the restraint. You may find these instructions on the restraint itself or in a booklet, or both. These restraints use the belt system in your vehicle, but the child also has to be secured within the restraint to help reduce the chance of personal injury. When securing an add-on child restraint, refer to the instructions that come with the restraint which may be on the restraint itself or in a booklet, or both, and to this manual. The child restraint instructions are important, so if they are not available, obtain a replacement copy from the manufacturer.

Where to Put the Restraint

Accident statistics show that children are safer if they are restrained in the rear rather than the front seat. General Motors, therefore, recommends that child restraints be secured in a rear seat including an infant riding in a rear-facing infant seat, a child riding in a forward-facing child seat and an older child riding in a booster seat. *Never* put a rear-facing child restraint in the right front passenger seat. Here's why.

CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. Always secure a rear-facing child restraint in a rear seat.

You may secure a forward-facing child restraint in the right front seat, but before you do, always move the front passenger seat as far back as it will go. It's better to secure the child restraint in a rear seat.

Wherever you install it, be sure to secure the child restraint properly.

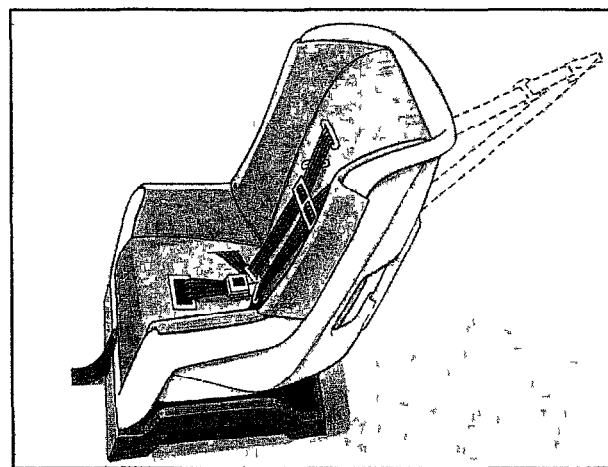
Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle -- even when no child is in it.

1-52

Top Strap

Some child restraints have a top strap, or "top tether." It can help restrain the child restraint during a collision. For it to work, a top strap must be properly anchored to the vehicle.

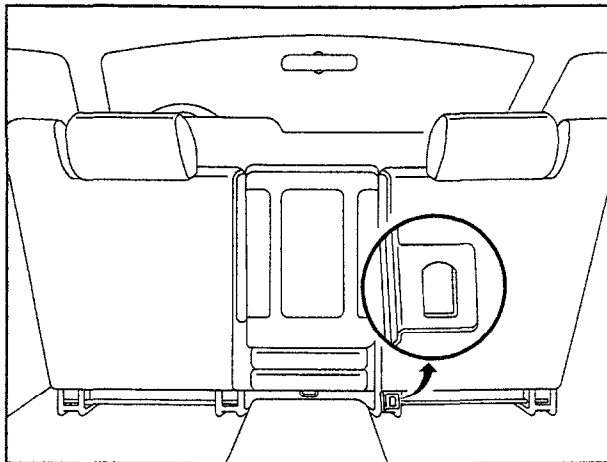
If the child restraint does not have a top strap, one can be obtained, in kit form, for many child restraints. Ask the child restraint manufacturer whether or not a kit is available.



In Canada, the law requires that forward-facing child restraints have a top strap, and that the strap be anchored. In the United States, some child restraints also have a top strap. If your child restraint has a top strap, it should be anchored.

1-53

Suburban/Yukon XL models without rear seats: Top strap anchor loops are located at the bottom rear of the front seat cushion for the right front passenger's position



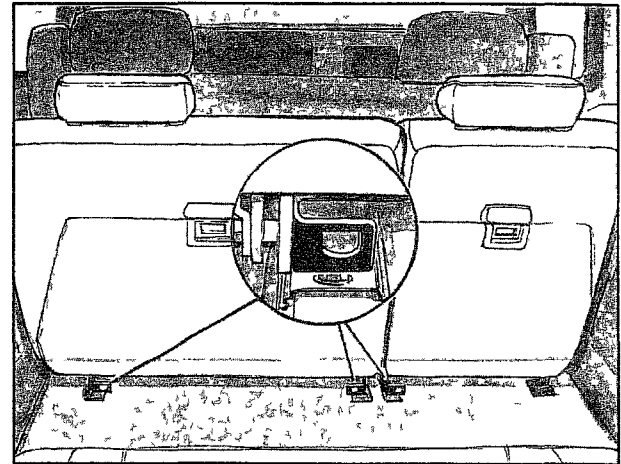
Suburban/Yukon XL Models Without Rear Seats

Anchor the top strap to this bracket. Once you have the top strap anchored, you'll be ready to secure the child restraint itself.

Suburban/Yukon XL models with rear seats:

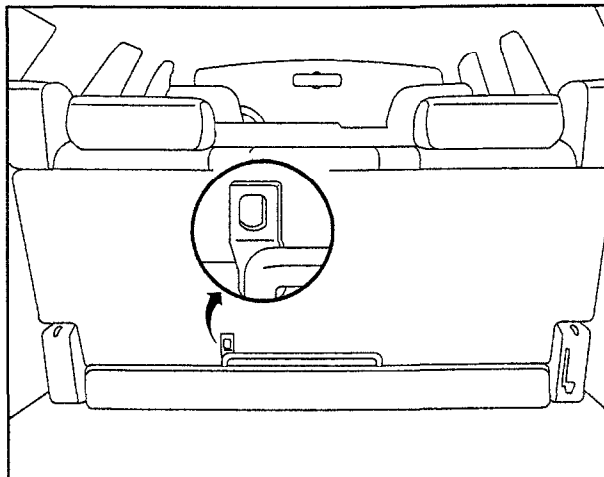
A child restraint with a top strap should only be used in the second or third row. Don't use a child restraint with a top strap in the front seat because there's no place to anchor the top strap.

An anchor loop bracket for a top strap is located at the bottom rear of the seat cushion for each seating position in the second row, and for the center seating position in the third row.



Suburban/Yukon XL Second Row Seat.
Bucket seats similar.

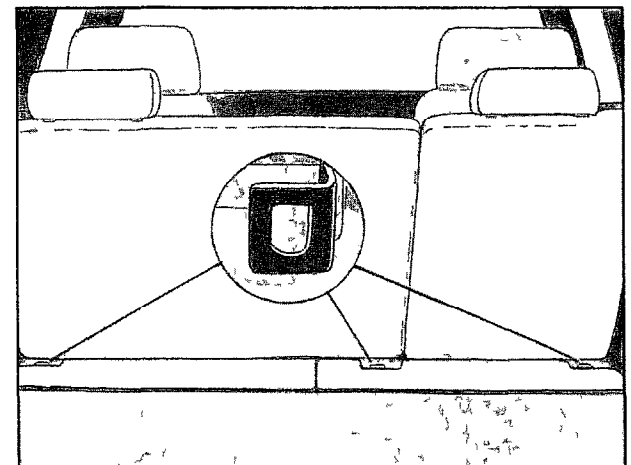
1-54



Suburban/Yukon XL Third Row Seat

Utility models: A child restraint with a top strap should only be used in the second row. Don't use a child restraint with a top strap in the right front passenger's position or in the third row, because there's no place to anchor the top strap.

An anchor loop bracket for a top strap is located at the bottom rear of the seat cushion for each seating position in the second row.



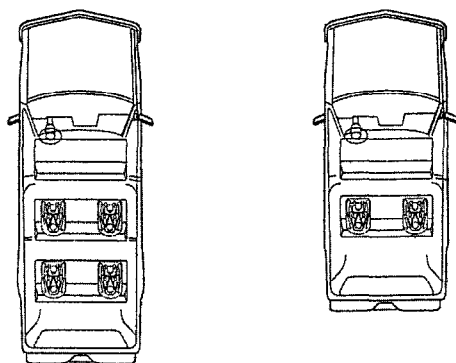
Utility Second Row Seat

Anchor the top strap to one of these anchor points. Be sure to use an anchor point located on the same side of the vehicle as the seating position where the child restraint will be placed. Raise the head restraint and route the top strap under it.

Once you have the top strap anchored, you'll be ready to secure the child restraint itself. Tighten the top strap when and as the child restraint manufacturer's instructions say.

1-55

Securing a Child Restraint in a Rear Outside Seat Position



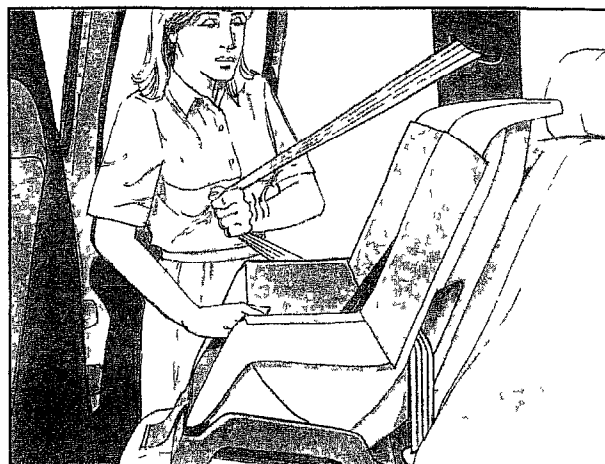
You'll be using the lap-shoulder belt. See the earlier part about the top strap if the child restraint has one. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.

- 1 Put the restraint on the seat.

- 2 Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.

If the shoulder belt goes in front of the child's face or neck, put it behind the child restraint.

- 3 Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



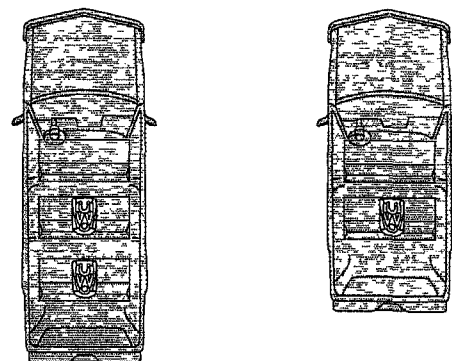
1-56

- 4 Pull the rest of the shoulder belt all the way out of the retractor to set the lock.



To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

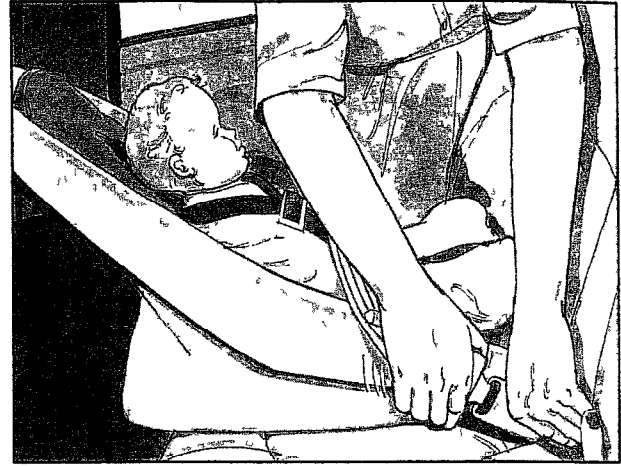
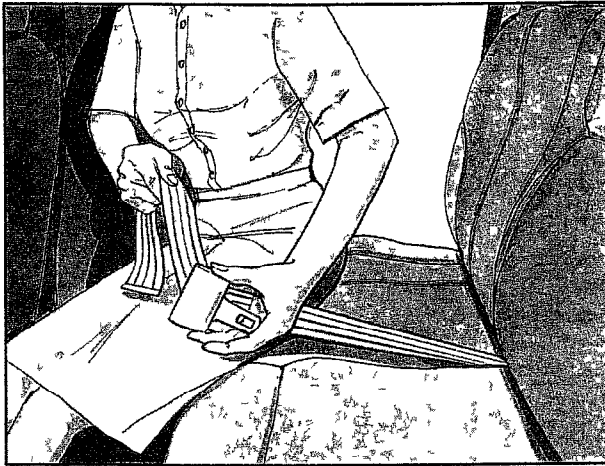
Securing a Child Restraint in a Center Rear Seat Position



- 5 To tighten the belt, feed the shoulder belt back into the retractor while you push down on the child restraint. If you're using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt.
- 6 Push and pull the child restraint in different directions to be sure it is secure.

You'll be using the lap belt. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say. See the earlier part about the top strap if the child restraint has one.

1-57



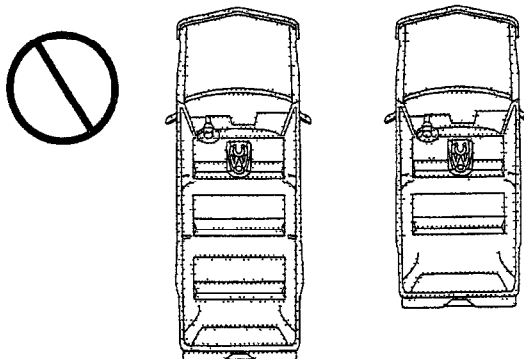
- 1 Make the belt as long as possible by tilting the latch plate and pulling it along the belt
- 2 Put the restraint on the seat
- 3 Run the vehicle's safety belt through or around the restraint The child restraint instructions will show you how
- 4 Buckle the belt Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to
- 5 To tighten the belt, pull its free end while you push down on the child restraint If you're using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt

1-58

- 6 Push and pull the child restraint in different directions to be sure it is secure

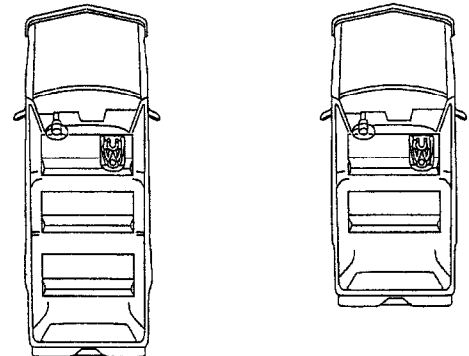
To remove the child restraint, just unbuckle the vehicle's safety belt It will be ready to work for an adult or larger child passenger

Securing a Child Restraint in the Center Front Seat Position



Don't use child restraints in this position The restraints won't work properly.

Securing a Child Restraint in the Right Front Seat Position



1-59

Your vehicle has a right front passenger air bag. *Never* put a rear-facing child restraint in this seat. Here's why:

⚠ CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. Always secure a rear-facing child restraint in the rear seat.

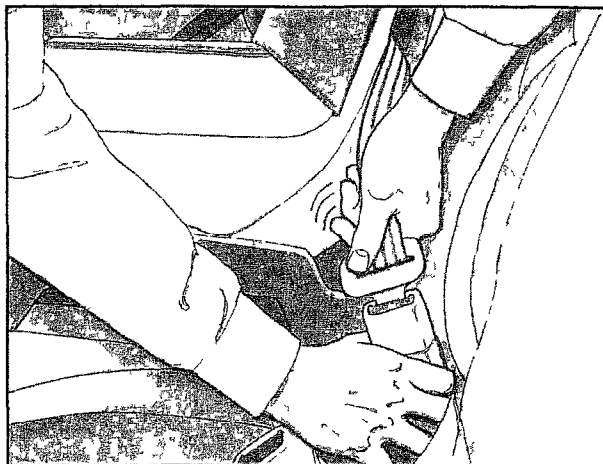
Although a rear seat is a safer place, you can secure a forward-facing child restraint in the right front seat.

You'll be using the lap-shoulder belt. See the earlier part about the top strap if the child restraint has one. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.

- 1 Because your vehicle has a right front passenger air bag, always move the seat as far back as it will go before securing a forward-facing child restraint. See "Seats" in the Index.
- 2 Put the restraint on the seat.

- 3 Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.

If the shoulder belt goes in front of the child's face or neck, put it behind the child restraint.

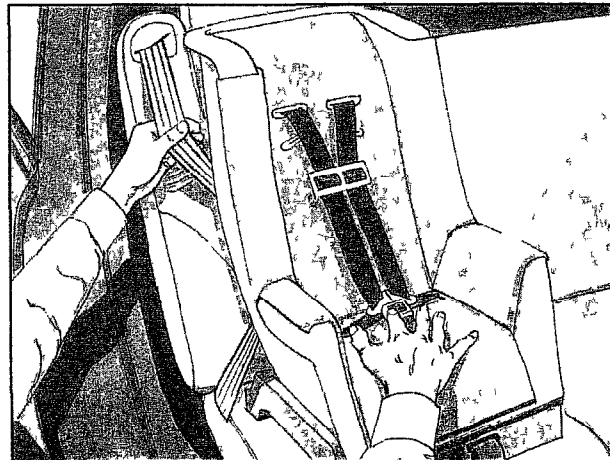


- 4 Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

1-60



- 5 Pull the rest of the shoulder belt all the way out of the retractor to set the lock.

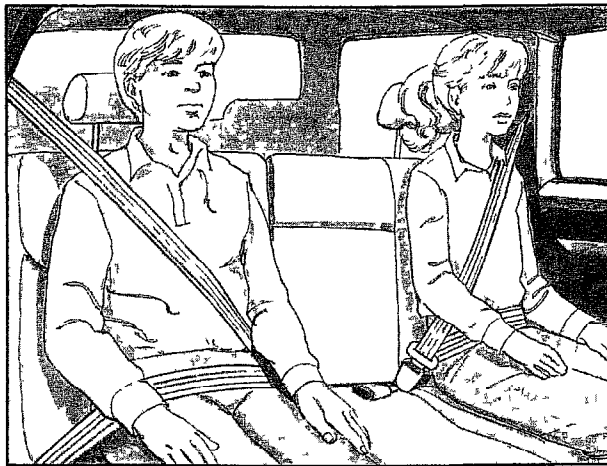


- 6 To tighten the belt, feed the shoulder belt back into the retractor while you push down on the child restraint. You may find it helpful to use your knee to push down on the child restraint as you tighten the belt.
- 7 Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

1-61

Older Children



Older children who have outgrown booster seats should wear the vehicle's safety belts

If you have the choice, a child should sit next to a window so the child can wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide

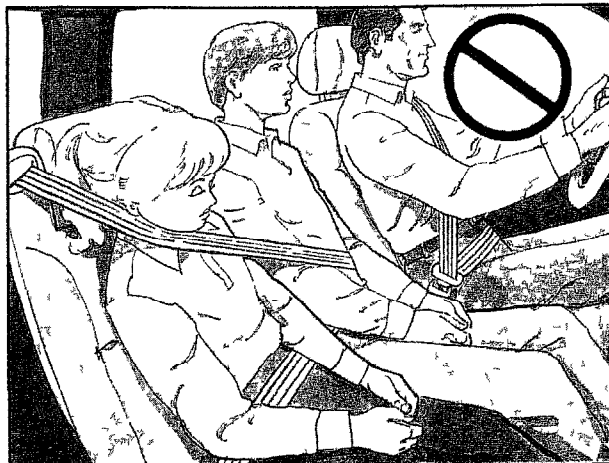
Q: What is the proper way to wear safety belts?

A: If possible, an older child should wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide. The shoulder belt should not cross the face or neck. The lap belt should fit snugly below the hips, just touching the top of the thighs. It should never be worn over the abdomen, which could cause severe or even fatal internal injuries in a crash.

Accident statistics show that children are safer if they are restrained in the rear seat.

In a crash, children who are not buckled up can strike other people who are buckled up, or can be thrown out of the vehicle. Older children need to use safety belts properly.

1-62



CAUTION:

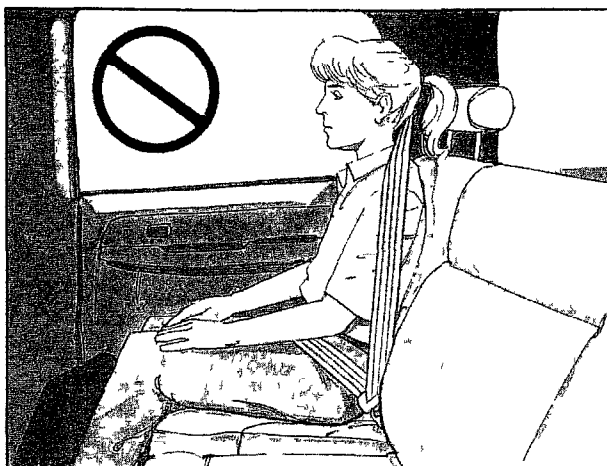
Never do this.

Here two children are wearing the same belt. The belt can't properly spread the impact forces. In a crash, the two children can be crushed together and seriously injured. A belt must be used by only one person at a time.

Q: What if a child is wearing a lap-shoulder belt, but the child is so small that the shoulder belt is very close to the child's face or neck?

A: Move the child toward the center of the vehicle, but be sure that the shoulder belt still is on the child's shoulder, so that in a crash the child's upper body would have the restraint that belts provide. If the child is sitting in a rear seat outside position, see "Rear Safety Belt Comfort Guides" in the Index. If the child is so small that the shoulder belt is still very close to the child's face or neck, you might want to place the child in a seat that has a lap belt, if your vehicle has one.

1-63



⚠ CAUTION:

Never do this.

Here a child is sitting in a seat that has a lap-shoulder belt, but the shoulder part is behind the child. If the child wears the belt in this way, in a crash the child might slide under the belt. The belt's force would then be applied right on the child's abdomen. That could cause serious or fatal injuries.

Wherever the child sits, the lap portion of the belt should be worn low and snug on the hips, just touching the child's thighs. This applies belt force to the child's pelvic bones in a crash.

1-64

Safety Belt Extender

If the vehicle's safety belt will fasten around you, you should use it.

But if a safety belt isn't long enough to fasten, your dealer will order you an extender. It's free. When you go in to order it, take the heaviest coat you will wear, so the extender will be long enough for you. The extender will be just for you, and just for the seat in your vehicle that you choose. Don't let someone else use it, and use it only for the seat it is made to fit. To wear it, just attach it to the regular safety belt.

Checking Your Restraint Systems

Now and then, make sure the safety belt reminder light and all your belts, buckles, latch plates, retractors and anchorages are working properly. Look for any other loose or damaged safety belt system parts. If you see anything that might keep a safety belt system from doing its job, have it repaired.

Torn or frayed safety belts may not protect you in a crash. They can rip apart under impact forces. If a belt is torn or frayed, get a new one right away.

Also look for any opened or broken air bag covers, and have them repaired or replaced. (The air bag system does not need regular maintenance.)

Replacing Restraint System Parts After a Crash

If you've had a crash, do you need new belts?

After a very minor collision, nothing may be necessary. But if the belts were stretched, as they would be if worn during a more severe crash, then you need new belts.

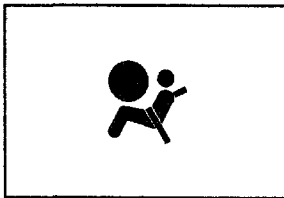
If belts are cut or damaged, replace them. Collision damage also may mean you will need to have safety belt or seat parts repaired or replaced. New parts and repairs may be necessary even if the belt wasn't being used at the time of the collision.

If an air bag inflates, you'll need to replace air bag system parts. See the part on the air bag system earlier in this section.

1-65

Air Bag Readiness Light

There is an air bag readiness light on the instrument panel, which shows the air bag symbol. The system checks the air bag's electrical system for malfunctions. The light tells you if there is an electrical problem. The system check includes the air bag sensors, the air bag modules, the wiring and the crash sensing and diagnostic module. For more information on the air bag system, see "Air Bag" in the Index.



This light will come on when you start your vehicle, and it will flash for a few seconds. Then the light should go out. This means the system is ready.

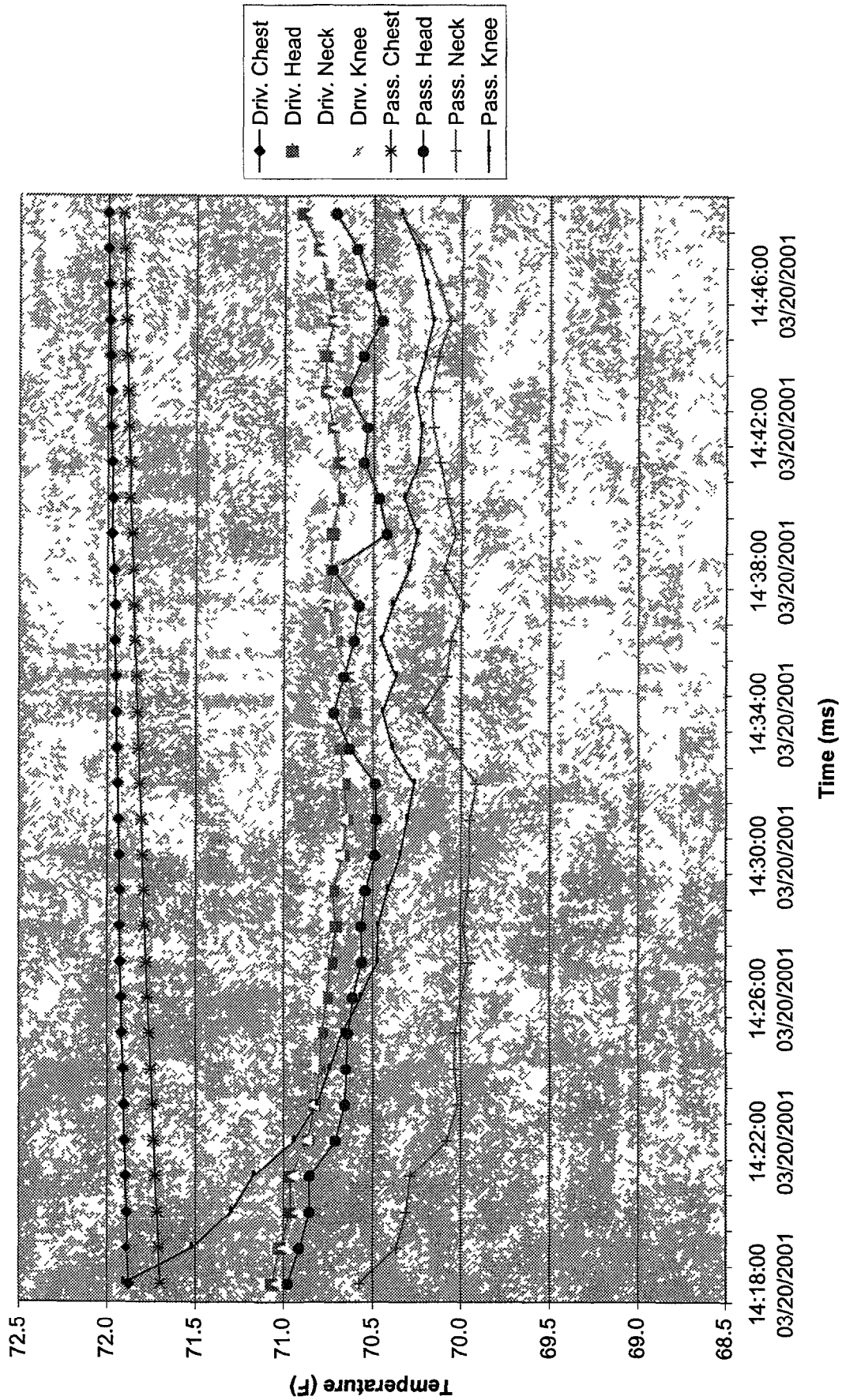
If the air bag readiness light stays on after you start the vehicle or comes on when you are driving, your air bag system may not work properly. Have your vehicle serviced right away.

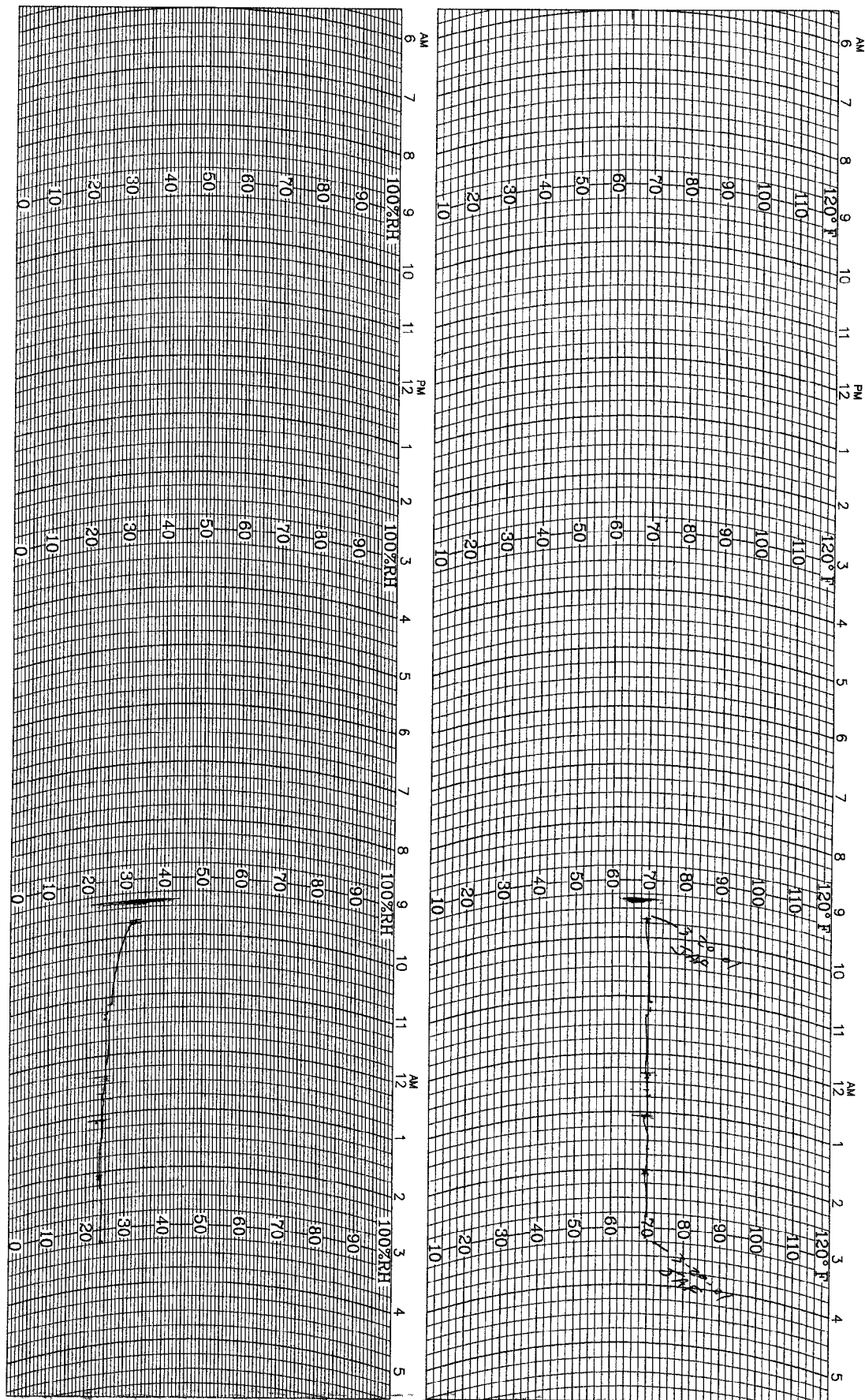
CAUTION:

If the air bag readiness light stays on after you start your vehicle, it means the air bag system may not be working properly. The air bags in your vehicle may not inflate in a crash, or they could even inflate without a crash. To help avoid injury to yourself or others, have your vehicle serviced right away if the air bag readiness light stays on after you start your vehicle.

The air bag readiness light should flash for a few seconds when you turn the ignition key to RUN. If the light doesn't come on then, have it fixed so it will be ready to warn you if there is a problem.

C10106/ 2001 Chevrolet Tahoe Sled Test 3/20/01





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