

Report Number: 208S-TRC02-003

Vehicle Safety Compliance Testing for FMVSS 208

for Occupant Crash Protection

Sled Test

Ford Motor Company

2002 Ford Windstar LX

NHTSA Number: C20204

TRC Inc. Test Number: S011129

Transportation Research Center Inc.

10820 State Route 347

East Liberty, OH 43319



Test Date: November 29, 2001

Report Date: December 19, 2001

Final Report

Prepared For:

U. S. Department of Transportation

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Safety Assurance

Office of Vehicle Safety Compliance (NSA-30)

400 Seventh Street, S.W., Room No. 6115

Washington, DC 20590

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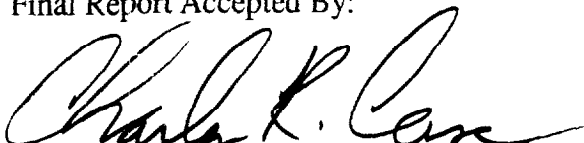
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16 Abstract An FMVSS 208 Section 13 compliance sled test was conducted on a 2002 Ford Windstar LX Wagon, NHTSA No C20204, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No TP208S-01 for the determination of FMVSS 208 compliance Possible test failures identified were as follows: None			
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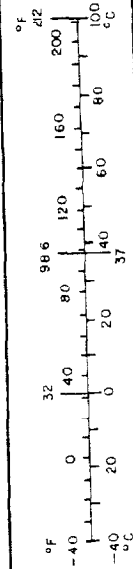
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
m ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kg	kg
	slight tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
tblsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
mi	miles	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.15	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10 000 m ²)	2.5	acres	ac
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	slight tons	ton
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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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 2002 Ford Windstar LX Wagon, NHTSA No.C20204, 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 four (4) 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, 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 four (4) 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-two (42) 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 November 29, 2001.

The test vehicle, a 2002 Ford Windstar LX Wagon, NHTSA No. C20204, 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	246	446
Chest g	60 g	38.9	41.8
Chest Displacement	3 inches	1.2	0.4
Left Femur	2250 lbs	966	905
Right Femur	2250 lbs	1221	1215
Neck Extension	57 Nm	5.5	27.4
Neck Flexion	190 Nm	39.6	29.9
Neck Tension	3300 N	1507	1296
Neck Compression	4000 N	221	1004
Neck Shear	3100 N	430	983

The subject vehicle, a 2002 Ford Windstar LX, NHTSA No. C20204, 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 17.1 g with an integrated velocity change of 28.9 mph. The primary stages of the air bags were triggered at 20.2 milliseconds after 0.5 g acceleration was measured by the firing circuit. The secondary stages of the airbags were triggered at 120.2 milliseconds after acceleration was measured by the firing circuit. Following subsequent digital data processing and filtering the acceleration signal to Channel Class 60, the primary stage air bag event trigger signal was 21.0 ms after the 0.5 g acceleration level was indicated and the secondary stage airbag event trigger signal was 121.0 milliseconds after the 0.5 g acceleration level was indicated.

Sled Test Summary

NHTSA number: C20204
Test type: FMVSS 208 Alternate Sled Test
Test date: 11/29/01
Test time: 1336
Ambient temperature at impact area: 70° F
Vehicle year/make/ model/body style: 2002/Ford/Windstar LX/Wagon

<u>Dummy Info:</u>	Driver #314	Front #339
Type:	Hybrid III	Hybrid III
Location:	Left Front	Right Front
Restraint:	Airbag, dual stage	Airbag, dual stage
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, headliner, sun visor	Airbag, windshield, headliner, 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: 2002/Ford/Windstar LX/Wagon

Color: Light Sapphire Blue

VIN: 2FMZA50462BA07732

NHTSA number: C20204

Engine data:

Placement: Transverse

Cylinders: 6

Displacement: 3.8

Transmission data: 4 speed, ___ manual, X automatic, X overdrive

Final drive: X fwd, ___ rwd, ___ 4wd

Date vehicle received: 10/31/2001

Odometer reading: 95 9

Dealer's name
and address: Graham Ford
707 West Broad Street
Columbus, Ohio 43222

Major Options:

Power steering	Yes	Other: LATCH child safety system, 4-wheel
Power brakes	Yes	antilock brakes
Power windows	Yes	
Air conditioning	Yes	
Power door locks	Yes	

Remarks:

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

Data from Vehicle's Certification Label

Vehicle manufactured by	Ford Motor Company
Date of manufacture	8/01
VIN	2FMZA50462BA07732
GVWR	5450 lbs
GAWR: Front:	2809 lbs
Rear	2663 lbs

Data from Vehicle's Tire Placard

Tire pressure with maximum capacity vehicle load

Front	35 psi
-------	--------

Rear	35 psi
------	--------

Recommended tire size:	P215/70R15
------------------------	------------

Load range	N/A
------------	-----

Recommended cold tire pressure

Front	35 psi
-------	--------

Rear	35 psi
------	--------

Size of tires on vehicle	P215/70R15
--------------------------	------------

Spare tire	T135/90R15
------------	------------

Vehicle capacity data

Type of front seats	Bucket
---------------------	--------

Number of occupants:

Front	2
-------	---

Mid	2
-----	---

Rear	3
------	---

Total	7
-------	---

Remarks: None

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

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

Right front	1206.3 lbs	Right rear	808.6 lbs
Left front	1251.8 lbs	Left rear	795.9 lbs
Total front weight	2458.1 lbs	(60.5% of total vehicle weight)	
Total rear weight	1604.5 lbs	(39.5% of total vehicle weight)	
Total delivered weight	4062.6 lbs		

Calculation of test vehicle's target test weight:

RCLW = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (4062.6 lbs)

DSC = Designated Seating Capacity (7)

RCLW = 150 lbs

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

Target test weight = 4062.6 + 150 + 334 = 4546.6 lbs

Weight of test vehicle with two dummies and 150.6 lbs of cargo weight:

Right front	1294.5 lbs	Right rear	963.0 lbs
Left front	1342.6 lbs	Left rear	947.1 lbs
Total front weight	2637.1 lbs	(58.0% of total vehicle weight)	
Total rear weight	1910.1 lbs	(42.0% of total vehicle weight)	
Total test weight	4547.2 lbs		

Remarks:

Weight of ballast secured in vehicle cargo area: 0 lbs

Components removed to meet target test weight: None

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

Test Vehicle Attitude:

As delivered door sill angle 0 7° Nose down
As tested door sill angle 0 5° Nose down
Fully loaded door sill angle 0 4° Nose down
Vehicle Wheelbase 120 7 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 34 4 inches and 34 4 inches respectively

Post-Impact Data

Test number: S011129
NHTSA number: C20204
Test date: 11/29/01
Test time: 1336
Test type: FMVSS 208 Alternate Sled Test
Impact angle: 0°
Ambient temperature
at impact area: 70° F
Temperature in
occupant compartment: 70° F

Sled carriage velocity:

Integrated velocity from the integration of the entire sled acceleration: 28.9 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: 17.1 g
Specified acceleration range: 16.0 g - 18.2 g

Sled carriage acceleration duration:

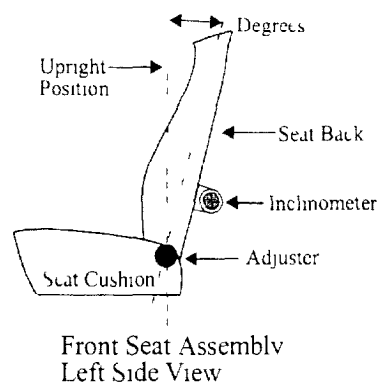
Time from T-0(-0.5 g) to 0.0 g: 124.3 ms
Specified acceleration duration: 120 - 130 ms

The sled acceleration curve was within the specified corridor

Seat and Steering Column Positioning Data

Vehicle 2002/Ford/Windstar LX/Wagon

NHTSA No C20204



Nominal Design Riding Position

Driver Seat	Seat Back Angle = 21.3° Manual adjustable Seat back angle was measured with an inclinometer on the lower inboard seat back frame, with fabric cut away, locating the inclinometer between two tooling holes per manufacturer's instructions
Passenger Seat	Seat Back Angle = 20.8° Manual adjustable Seat back angle was measured with an inclinometer on the lower inboard seat back frame, with fabric cut away, locating the inclinometer between two tooling holes per manufacturer's instructions

Seat Fore and Aft Positions

Driver Seat	Mid - Manual seats were marked at full forward and full rearward to locate the mid position by marking each latch position and setting the seat in the center latching position
Passenger	Mid - Manual seats were marked at full forward and full rearward to locate the mid position by marking each latch position and setting the seat in the center latching position

Steering Column Adjustments

The steering column was not adjustable

Dummy Measurement Data for Front Seat Occupants

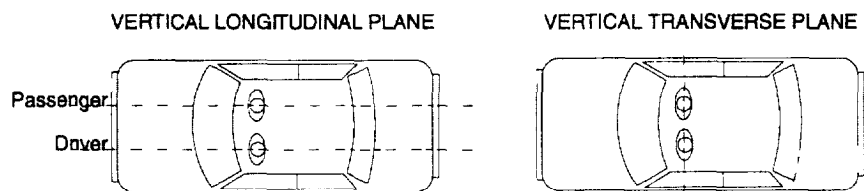
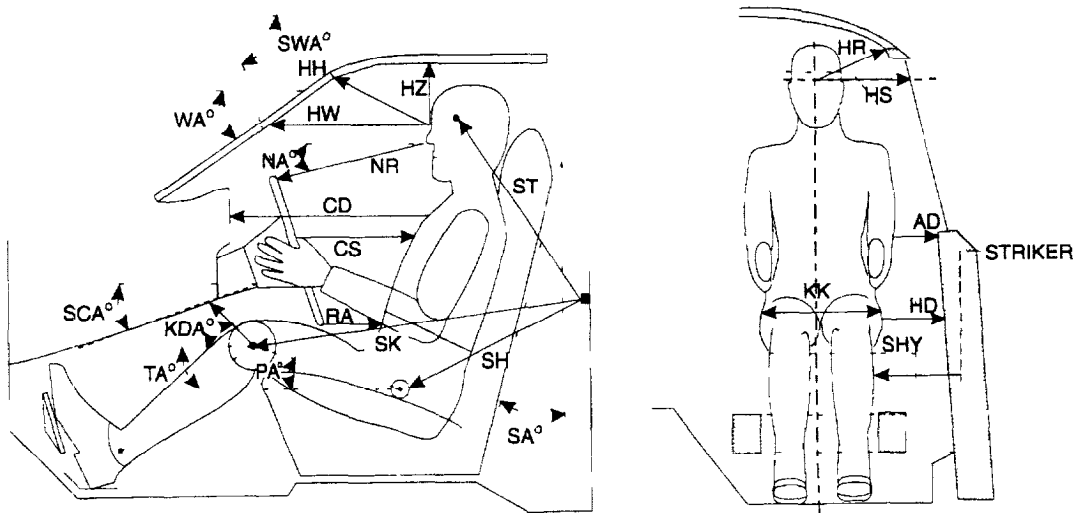
Designation	Type of Measurement	Driver (Serial #314)	Passenger (Serial #339)
WA	Windshield angle	30.8°	N/A
SWA	Steering wheel angle	26.4°	N/A
SCA	Steering column angle	25.0°	N/A
SA	Seat back angle	21.3°	20.8°
HZ	Head to roof	8.4 in	7.5 in
HH	Head to header	15.9 in	15.1 in
HW	Head to windshield	25.8 in	23.9 in
HR	Head to side header	9.4 in	8.8 in
NR	Nose to rim	17.0 in	N/A
NA	Nose to rim angle	12.0°	N/A
CD	Chest to dash	22.6 in	21.4 in
CS	Steering wheel to chest	11.8 in	N/A
RA	Rim to abdomen	8.4 in	N/A
KDL	Left knee to dash	6.7 in	5.7 in
KDR	Right knee to dash	6.1 in	6.2 in
KDA	Outboard knee to dash angle	17.0°	22.0°
PA	Pelvis angle	20.7°	20.9°
TA	Tibia angle	45.0°	48.0°
KK	Knee to knee	12.0 in	10.6 in
ST ¹	Striker to head	24.2 in	24.6 in
	Striker to head angle	-76.0°	-77.0°
SK ¹	Striker to knee	23.6 in	24.1 in
	Striker to knee angle	-2.0°	-4.0°
SH ¹	Striker to H-point	8.7 in	8.9 in
	Striker to H-point angle	22.0°	12.0°
SHY	Striker to H-point (Y dir.)	9.8 in	8.9 in
HS	Head to side window	13.4 in	13.0 in
HD	H-point to door	6.9 in	5.8 in
AD	Arm to door	5.8 in	5.1 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

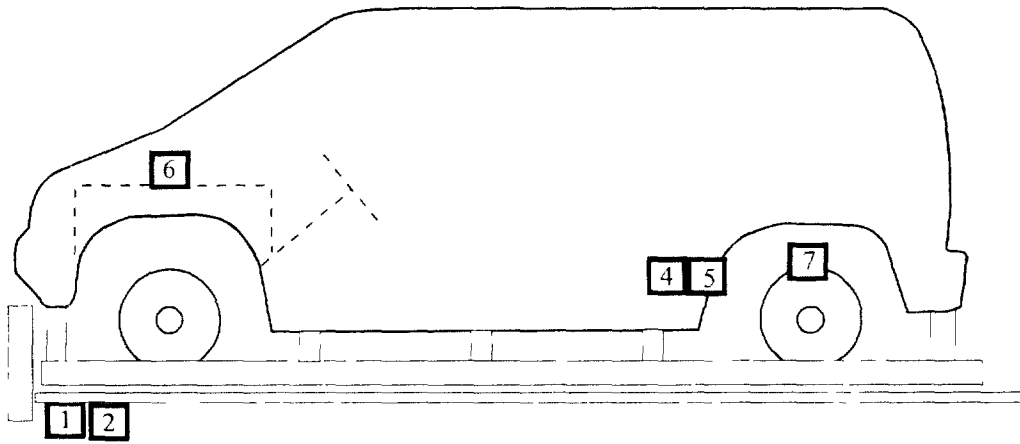
SA Seat Back Angle, find this angle using the instructions provided by the manufacturer. If the manufacturer doesn't provide clear instructions contact the COTR.

* Measurement used in Data Tape Reference Guide

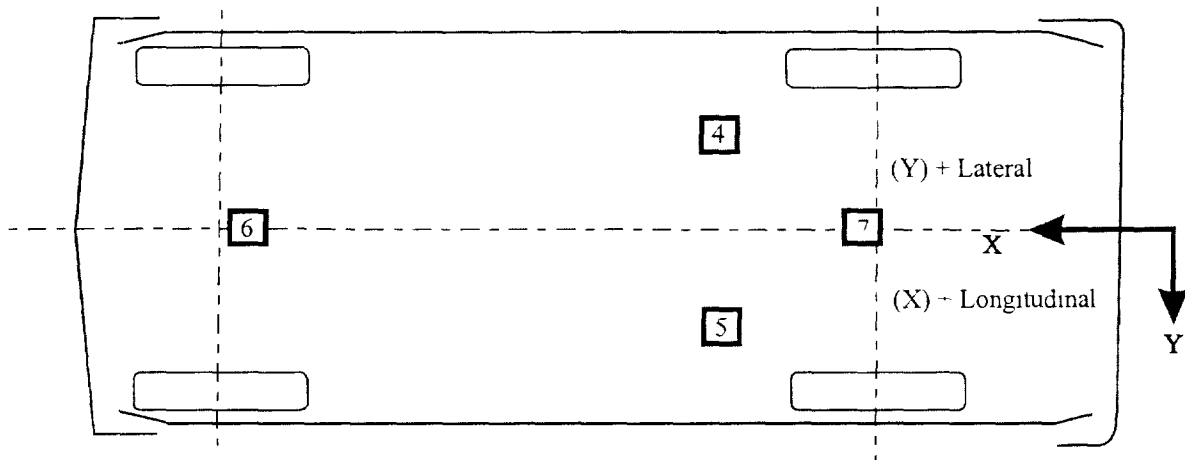
Descriptions of Dummy Measurements, Cont'd

- 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: S011129							
No. LOCATION		X	Y	POSITIVE DIRECTION		NEGATIVE DIRECTION	
1 SLED ACCELERATION PRIMARY		165.6 in	-1.0 in	0.9 g	@ 128.0 ms	17.1 g	@ 57.0 ms
2 SLED ACCELERATION - BACKUP REDUNDANT		165.6 in	-1.0 in	1.0 g	@ 127.9 ms	17.2 g	@ 57.0 ms
3 SLED VELOCITY MEASURED INTEGRATED 1		NA	NA	0.6 mph ---	@ 293.2 ms ---	28.4 mph 28.9 mph	@ 125.6 ms @ 124.4 ms
4 LEFT BODY AT REAR SEAT LONGITUDINAL		89.5 in	-18.5 in	1.6 g	@ 129.7 ms	17.1 g	@ 53.9 ms
5 RIGHT BODY AT REAR SEAT LONGITUDINAL		89.6 in	11.0 in	1.6 g	@ 129.8 ms	17.2 g	@ 54.4 ms
6 TOP ENGINE LONGITUDINAL		179.0 in	5.9 in	3.8 g	@ 135.0 ms	17.8 g	@ 54.1 ms
7 REAR AXLE LONGITUDINAL		39.5 in	0 in	1.5 g	@ 129.0 ms	17.0 g	@ 56.4 ms
8 DRIVER PRIMARY AIRBAG EVENT		NA	NA	1.0 volt	@ 21.0 ms	---	---

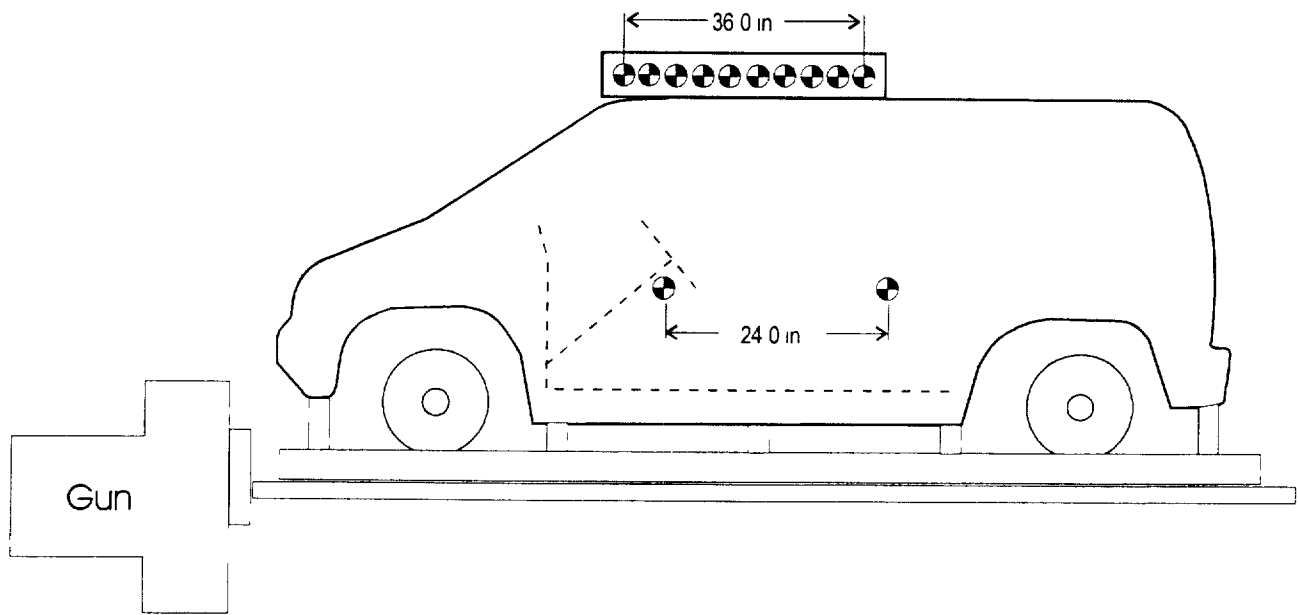
Vehicle Data Summary and Accelerometer Locations, Cont'd

TEST NUMBER: S011129 No. LOCATION	X	Y	POSITIVE DIRECTION	NEGATIVE DIRECTION
9 DRIVER SECONDARY AIRBAG EVENT	NA	NA	1.0 volt @ 121.0 ms	---
10 PASSENGER PRIMARY AIRBAG EVENT	NA	NA	1.0 volt @ 21.0 ms	---
11 PASSENGER SECONDARY AIRBAG EVENT	NA	NA	1.0 volt @ 121.0 ms	---

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

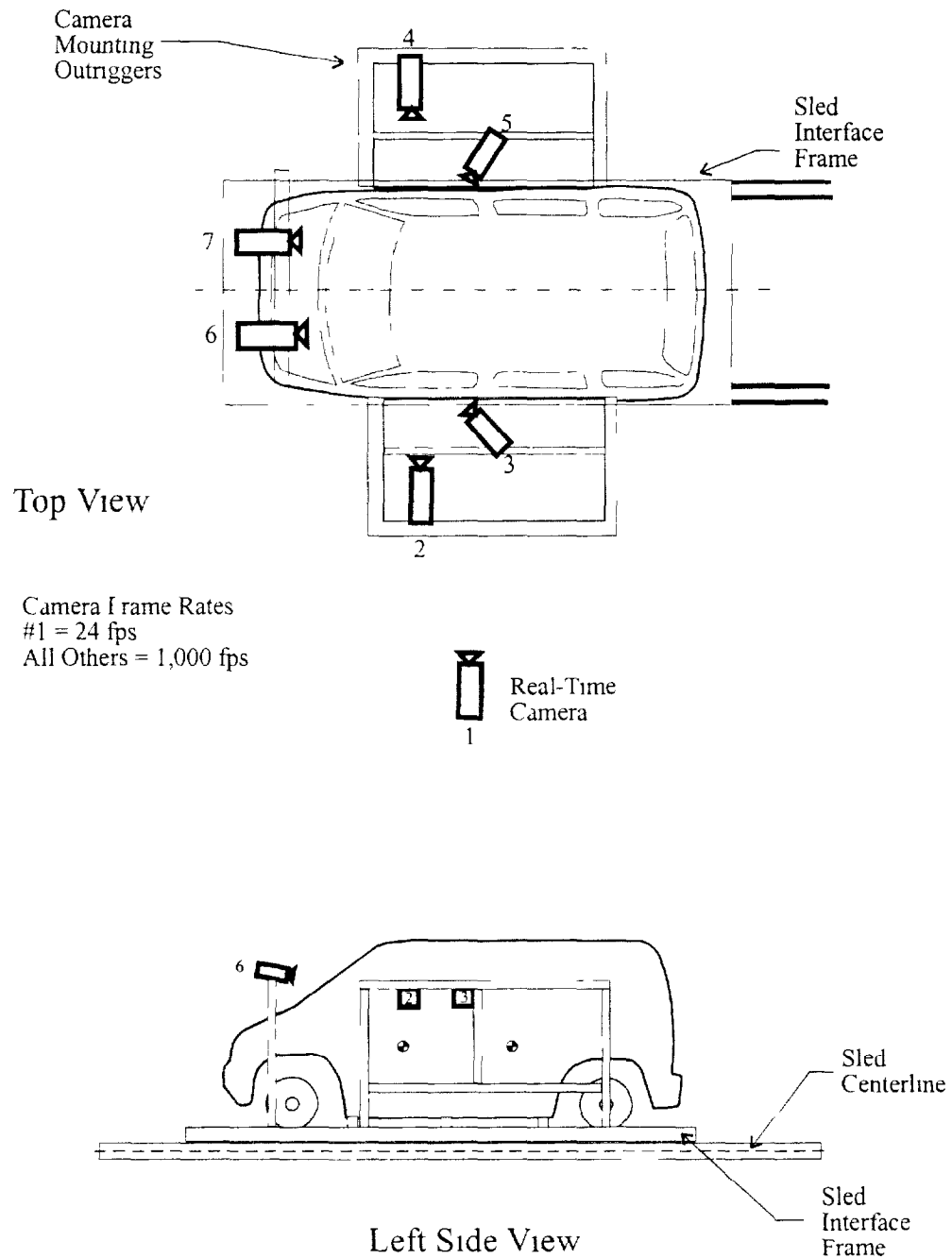
¹No positive data in time frame of interest.

REFERENCE PHOTO TARGETS



LEFT SIDE VIEW

Camera Positions



Motion Picture Camera Locations

Vehicle year/make/model/body style: 2002/Ford/Windstar LX/Wagon NHTSA No.: C20204 Test Number: S011129

Camera Number	View	Camera Positions ¹			Camera Angle ²	Film Plane to Head Target	Camera Lens	Film Speed
		X	Y	Z				
1	Left side view offboard	92.9 in	324.1 in	56.8 in	0°	295.3 in	10 mm	24 frames/s
2	Left side view wide	72.8 in	38.5 in	58.1 in	2.0°	54.5 in	8 mm	1002 frames/s
3	Left side view over shoulder	96.1 in	16.4 in	69.1 in	14.0°	35.0 in	13 mm	1002 frames/s
4	Right side view wide	73.8 in	39.4 in	58.0 in	2.0°	55.2 in	8 mm	1025 frames/s
5	Right side view over shoulder	99.6 in	15.3 in	67.9 in	14.0°	35.0 in	13 mm	995 frames/s
6	Front view - driver	25.8 in	23.6 in	66.5 in	4.0°	55.3 in	8 mm	972 frames/s
7	Front view - passenger	25.4 in	22.0 in	68.9 in	4.0°	54.9 in	8 mm	1005 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: 2002/Ford/Windstar LX/Wagon

NHTSA No : C20204

Date: 11/29/01

Maximum Acceleration Values: (g's)	Driver Dummy #314	Passenger Dummy #339
Head Channel X	-38.5	-66.8
Head Channel Y	19.0	-16.6
Head Channel Z	21.0	35.6
HEAD RESULTANT	45.7	76.0
Chest Channel X	-37.6	-34.7
Chest Channel Y	6.7	4.6
Chest Channel Z	16.2	27.6
CHEST RESULTANT	39.8	43.7

Head Injury Criteria (HIC) Values.

HIC	246	446
t_1 = (ms)	102.08	104.88
t_2 = (ms)	138.08	134.32

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

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

CLIP	38.9	41.8
t^1 = (ms)	106.668	108.681
t^2 = (ms)	109.628	111.641
Chest Deflection (in)	1.2	0.4

FMVSS 208 Occupant Injury Data, Cont'd.

Vehicle: 2002/Ford/Windstar LX/Wagon

NHTSA No.: C20204

Date: 11/29/01

Max. Compressive Femur Forces (lbs.):	Driver Dummy #314	Passenger Dummy #339
Left Side (lbs)	966	905
Right Side (lbs)	1221	1215

Neck Injury Criteria:	Driver Dummy #314	Passenger Dummy #339
Peak Flexion Bending Moment (N-m)	39.6	29.9
Peak Extension Bending Moment (N-m)	5.5	27.4
Peak Axial Tension (N)	1507	1296
Peak Axial Compression (N)	221	1004
Peak Positive X-axis Shear (N)	430	983
Peak Negative X-axis Shear (N)	235	225

FMVSS 208 Seat Belt Warning System Check

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

NHTSA No C20204 Technician: Dick Summers and Steve Bell Date: 11/08/2001

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 = 6 seconds
(4 to 8 seconds)

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

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: 2002/Ford/Windstar LX/Wagon

NHTSA No.: C20204

Technician: Steve Bell

Date: 11/09/2001

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: Top center of instrument panel

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: 2002/Ford/Windstar LX/Wagon

NHTSA No : C20204

Technician: Steve Bell

Date: 11/09/2001

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 placed over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate? ☒ Yes ☐ No-Fail
3. Does the Vehicle:
- 3.1 Provide an automatic means to ensure that the air bag does not deploy when a child seat or child with a total mass of 30 kg or less is present on the front outboard seat? ☐ Yes ☒ No
- 3.2 Incorporate sensors, other than or in addition to weight sensors, which automatically prevent the passenger air bag from deploying in situations in which it might have an adverse effect on infants in rear-facing child seat, and unbelted or improperly belted children? ☐ Yes ☒ No
- 3.3 Have a passenger air bag designed to deploy in a manner that does not create a risk of serious injury to infants in rear-facing child seats, and unbelted or improperly belted children? ☐ Yes ☒ No

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

FMVSS 208 Air Bag Labels, Cont'd.

4 Sun Visor Warning Label

- 4 1 Is the label permanently affixed (may be permanent marking or molding) to either side of the sun visor at each front outboard seating position with an air bag?

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

- 4 2 Does the label conform in content (**vehicles without back seats may omit the statement: "The BACK SEAT is the SAFEST place for children."**) (S4 5 1(b)(2)(v)) to the label shown in either Figure 6a or 6b as appropriate at each front outboard seating position with an air bag? (S4 5.1(b)(2))

4.2 1 Dual air bags

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

- 4 2 2 Vehicles with driver air bag ONLY - either 4.2 1 or 4 2 2 is applicable, not both (S4 5 1(b)(2)(iv))

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

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

- 4 2 2 2 Does the label conform in content to the label shown in Figure 6a where the label can be modified to omit the pictogram and the message may read

DEATH or SERIOUS INJURY can occur

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

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

FMVSS 208 Air Bag Labels, Cont'd.

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN DOWN POSITION

LABEL OUTLINE, VERTICAL AND HORIZONTAL LINE BLACK

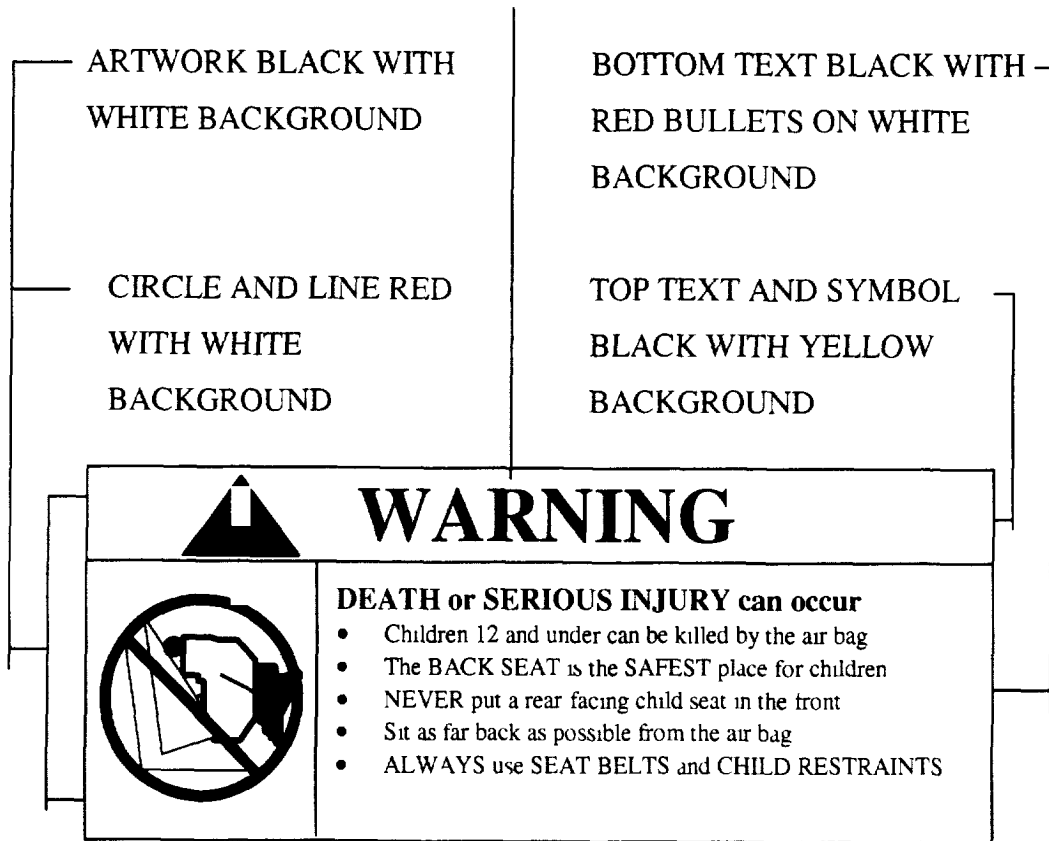


Figure 6a
(S4 5 1(b)(2))

FMVSS 208 Air Bag Labels, Cont'd.

SUN VISOR LABEL VISIBLE WHEN VISOR IS IN DOWN POSITION

LABEL OUTLINE, VERTICAL AND HORIZONTAL LINE BLACK

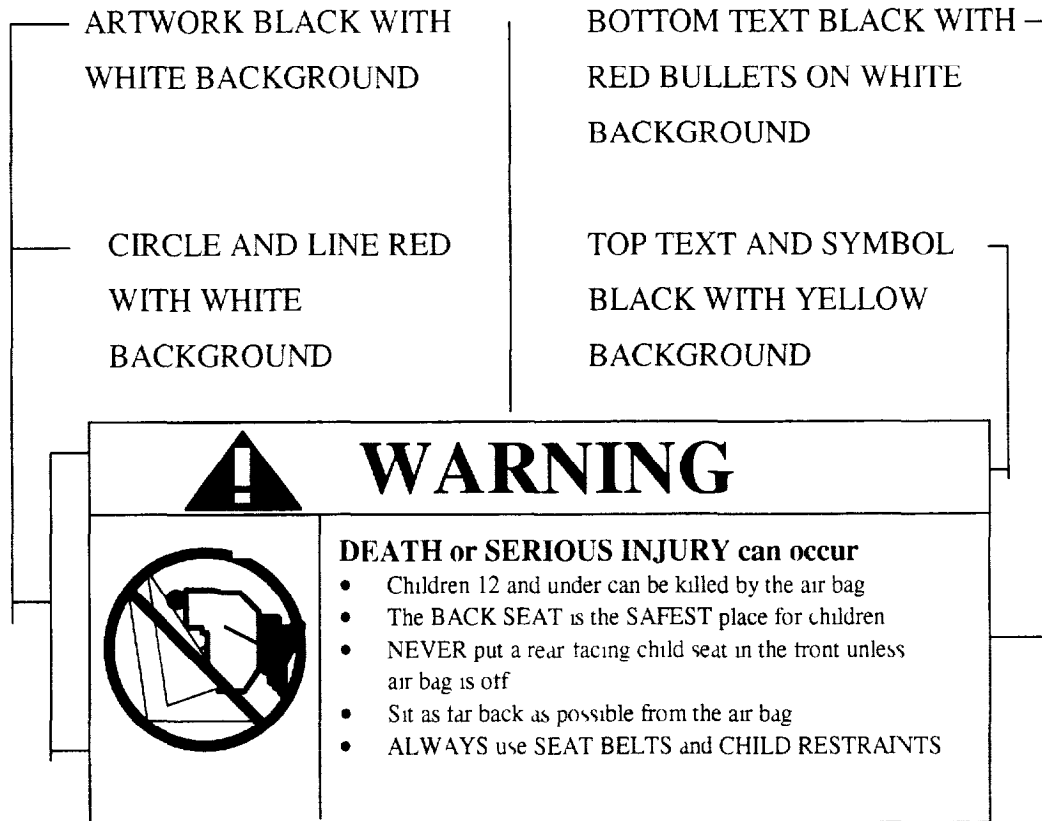


Figure 6b
(S4 5 1(b)(2))

- 4 3 Is the driver side label heading area yellow with the word "warning" and the alert symbol in black? (S4 5 1 (b)(2)(i))

Driver side ☒ Yes-Pass ☐ No-Fail

Passenger side ☒ Yes-Pass ☐ No-Fail

- 4 4 Is the message white with black text? (S4 5 1 (b)(2)(ii))

Driver side ☒ Yes-Pass ☐ No-Fail

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

- 4 5 Is the message area at least 30 cm²? (S4 5 1(b)(2)(ii))

Actual message area, driver side 30.5 cm²

Actual message area, passenger side 30.5 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

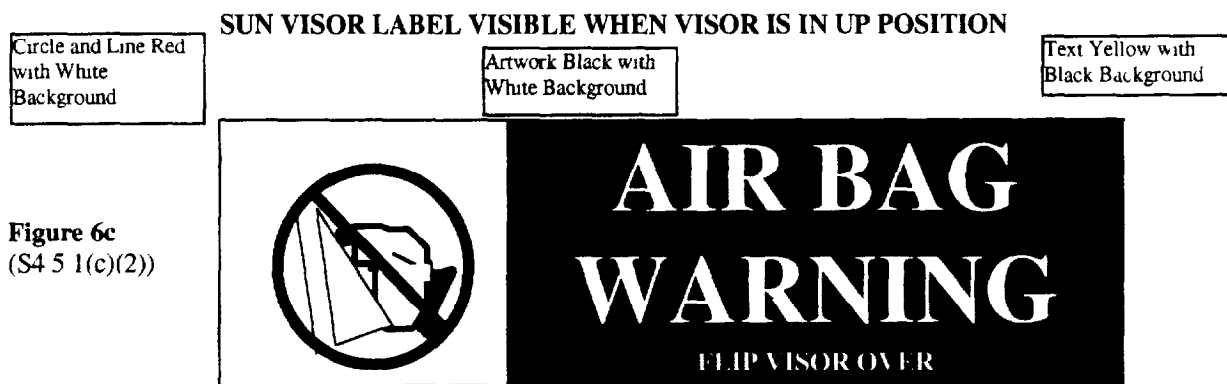


Figure 6c
(S4.5.1(c)(2))

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

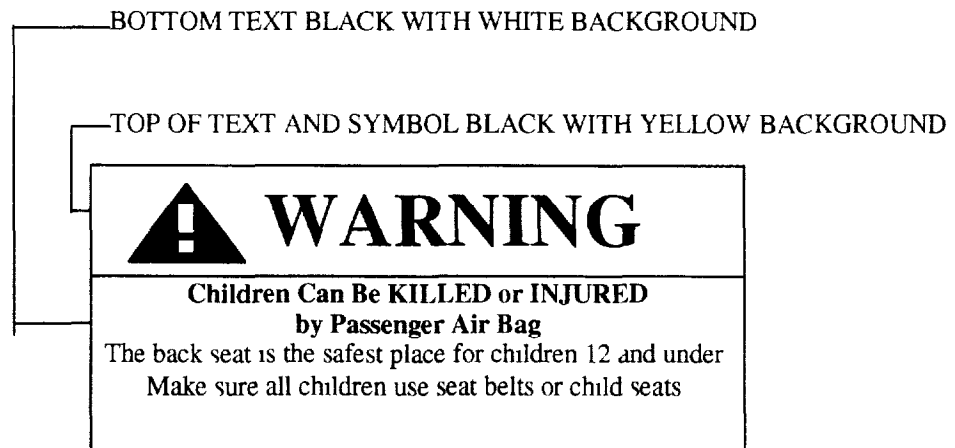
6 1 Does the vehicle have a passenger air bag?
☒ Yes ☐ No

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)(1))

☒ Yes-Pass ☐ No-Fail

6.5 Is the message white with black text? (S4 5.1(e)(1))

☒ Yes-Pass ☐ No-Fail

6.6 Is the message area at least 30 cm²? (S4 5.1(e)(1))
Actual message area 39.6 cm²

☒ Yes-Pass ☐ No-Fail

FMVSS 208 Rear Outboard Seating Position Seat Belts

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

NHTSA No : C20204

Technician: Ronald D Stoner

Date: 11/29/01

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

N/A

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: 2002/Ford/Windstar LX/Wagon

NHTSA No : C20204 Technician: Steve Bell and Nicholas Echeverria Date: 11/12/01

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: 2002/Ford/Windstar LX/Wagon

NHTSA No : C20204

Technician: Steve Bell and Nicholas Echeverria

Date: 11/12/01

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 53.1 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 23.2 inches

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

NHTSA No.: C20204

Technician: Steve Bell and Nicholas Echeverria

Date: 11/12/01

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 5 lbs/sec (spec. 10 ~50 lb/sec)

The measured distance between A and B is 23.6 inches. (S7 1.1.5(c)(6))

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

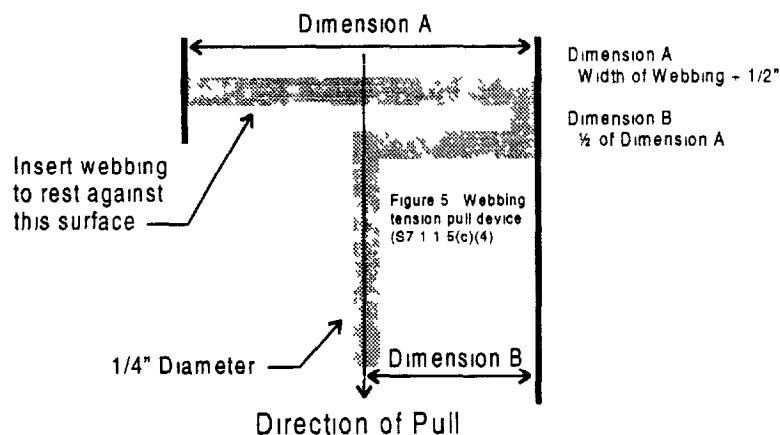
14-13= 0.4 inches

☒ 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= 29.5 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: 2002/Ford/Windstar LX/Wagon

NHTSA No C20204 Technician: Steve Bell and Nicholas Echeverria Date: 11/12/01

Designated Seating Position: Left Mid

- ☒1 Record test seat position: Fixed
(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: 2002/Ford/Windstar LX/Wagon

NHTSA No · C20204

Technician: Steve Bell and Nicholas Echeverria

Date: 11/12/01

Designated Seating Position: Left Mid

- ☒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 **69.3** 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 **48.8** inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

NHTSA No. C20204

Technician: Steve Bell and Nicholas Echeverria

Date 11/12/01

Designated Seating Position: Left Mid

- ☒ 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 5 lbs/sec (spec. 10 ~50 lb/sec)

The measured distance between A and B is 49.2 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))

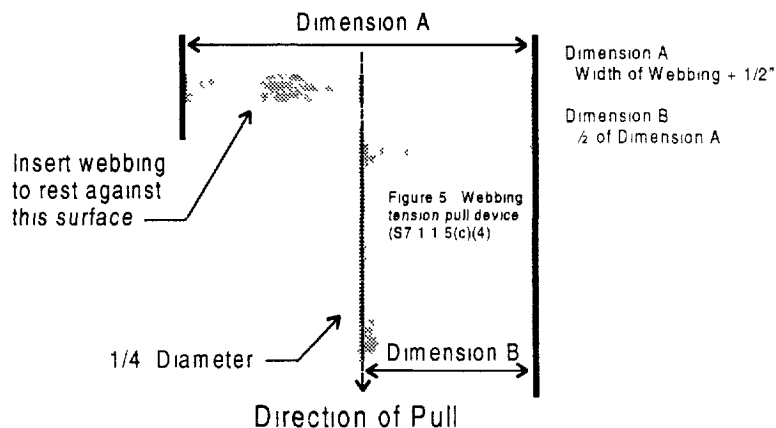
14-13= 0.4 inches

☒ 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= 20.1 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: 2002/Ford/Windstar LX/Wagon

NHTSA No.: C20204 Technician: Steve Bell and Nicholas Echeverria Date: 11/12/01

Designated Seating Position: Right Mid

- ☒ 1. Record test seat position: Fixed
(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: 2002/Ford/Windstar LX/Wagon

NHTSA No C20204

Technician: Steve Bell and Nicholas Echeverria

Date: 11/12/01

Designated Seating Position: Right Mid

- ☒ 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 **57.1** 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 **38.6** inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

NHTSA No.: C20204

Technician: Steve Bell and Nicholas Echeverria

Date: 11/12/01

Designated Seating Position: Right Mid

- ☒ 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 5 lbs/sec (spec. 10 ~50 lb/sec)

The measured distance between A and B is 39.0 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))

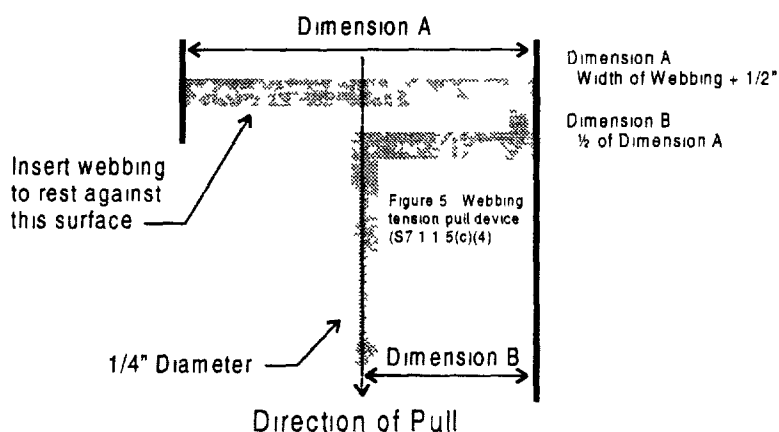
14-13= 0.4 inches

☒ 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= 18.1 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 2002/Ford/Windstar LX/Wagon

NHTSA No.: C20204 Technician Steve Bell and Nicholas Echeverria Date: 11/12/01

Designated Seating Position: Left Rear

- ☒ 1 Record test seat position: Fixed
(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: 2002/Ford/Windstar LX/Wagon

NHTSA No.: C20204 Technician: Steve Bell and Nicholas Echeverria Date: 11/12/01

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 **65.0** 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 **38.2** inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

NHTSA No.: C20204

Technician: Steve Bell and Nicholas Echeverria

Date: 11/12/01

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 5 lbs/sec (spec 10 ~50 lb/sec)

The measured distance between A and B is 38.6 inches. (S7 1.1.5(c)(6))

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

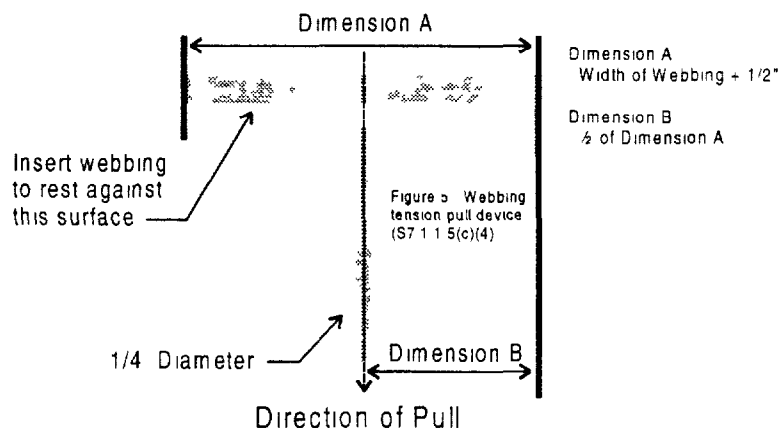
14-13= 0.4 inches

☒ 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= 26.4 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: 2002/Ford/Windstar LX/Wagon

NHTSA No : C20204 Technician: Steve Bell and Nicholas Echeverria Date: 11/12/01

Designated Seating Position: Right Rear

- ☒ 1. Record test seat position: Fixed
(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: 2002/Ford/Windstar LX/Wagon

NHTSA No · C20204

Technician: Steve Bell and Nicholas Echeverria

Date 11/12/01

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 **65.0** 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 **38.2** inches.

FMVSS 208 Lap Belt Lockability, Cont'd.

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

NHTSA No.: C20204

Technician: Steve Bell and Nicholas Echeverria

Date: 11/12/01

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 5 lbs/sec (spec. 10 ~50 lb/sec)

The measured distance between A and B is 38.6 inches (S7.1.1.5(c)(6))

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

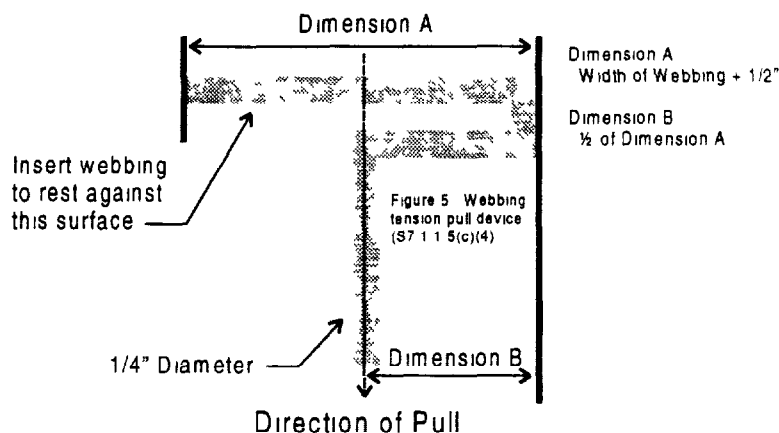
14-13= 0.4 inches

☒ 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= 26.4 inches

☒ Yes-Pass ☐ No-Fail



FMVSS 208 Seat Belt Comfort And Convenience Test

Belt Contact Force (S7.4.3)

Test Vehicle NHTSA No.: C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Left Front

Date of Comfort and Convenience Check: 11/12/01

Technician Performing Check: Steve Bell

GVWR 5450 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 **0.65** 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 . C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Right Front

Date of Comfort and Convenience Check: 11/12/01

Technician Performing Check: Steve Bell

GVWR: 5450 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 : C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Left Mid

Date of Comfort and Convenience Check: 11/12/01

Technician Performing Check: Steve Bell

GVWR 5450 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.: C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Right Mid

Date of Comfort and Convenience Check: 11/12/01

Technician Performing Check: Steve Bell

GVWR: 5450 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 : C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Left Rear

Date of Comfort and Convenience Check: 11/12/01

Technician Performing Check: Steve Bell

GVWR: 5450 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.: C20204

Vehicle Model Year/Make/Model/Body Style 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Right Rear

Date of Comfort and Convenience Check: 11/12/01

Technician Performing Check: Steve Bell

GVWR 5450 pounds

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

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

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

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

is used. (S8.1 2)

☐ Check
☒ N/A

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

☐ Check
☒ N/A

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

☐ Check
☒ N/A

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

☐ Check
☒ N/A

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

Belt Contact Force (S7.4.3)

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

☒ Check
☐ N/A

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

☐ Check
☒ N/A

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

☒ Check

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

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

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

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

Latchplate Access (S7.4.4)

Test Vehicle NHTSA No.: C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Left Front

Date of Comfort and Convenience Check: 11/09/01

Technician Performing Check: Steve Bell

GVWR: 5450 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 : C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Right Front

Date of Comfort and Convenience Check: 11/09/01

Technician Performing Check: Steve Bell

GVWR: 5450 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 · C20204

Vehicle Model Year/Make/Model/Body Style· 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Left Front

Date of Comfort and Convenience Check· 11/09/01

Technician Performing Check· Steve Bell

GVWR 5450 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.: C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Right Front

Date of Comfort and Convenience Check: 11/09/01

Technician Performing Check: Steve Bell

GVWR: 5450 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 : C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Left Front

Date of Comfort and Convenience Check: 11/09/01

Technician Performing Check: Steve Bell

GVWR: 5450 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 : C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested: Right Front

Date of Comfort and Convenience Check: 11/09/01

Technician Performing Check: Steve Bell

GVWR 5450 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 · C20204

Vehicle Model Year/Make/Model/Body Style: 2002/Ford/Windstar LX/Wagon

Designated Seating Position Tested· Left Mid, Right Mid, Left Rear, Middle Rear, Right Rear
seats-does not apply for reasons B and C below

Date of Comfort and Convenience Check: 11/09/01

Technician Performing Check Steve Bell

GVWR· 5450 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**

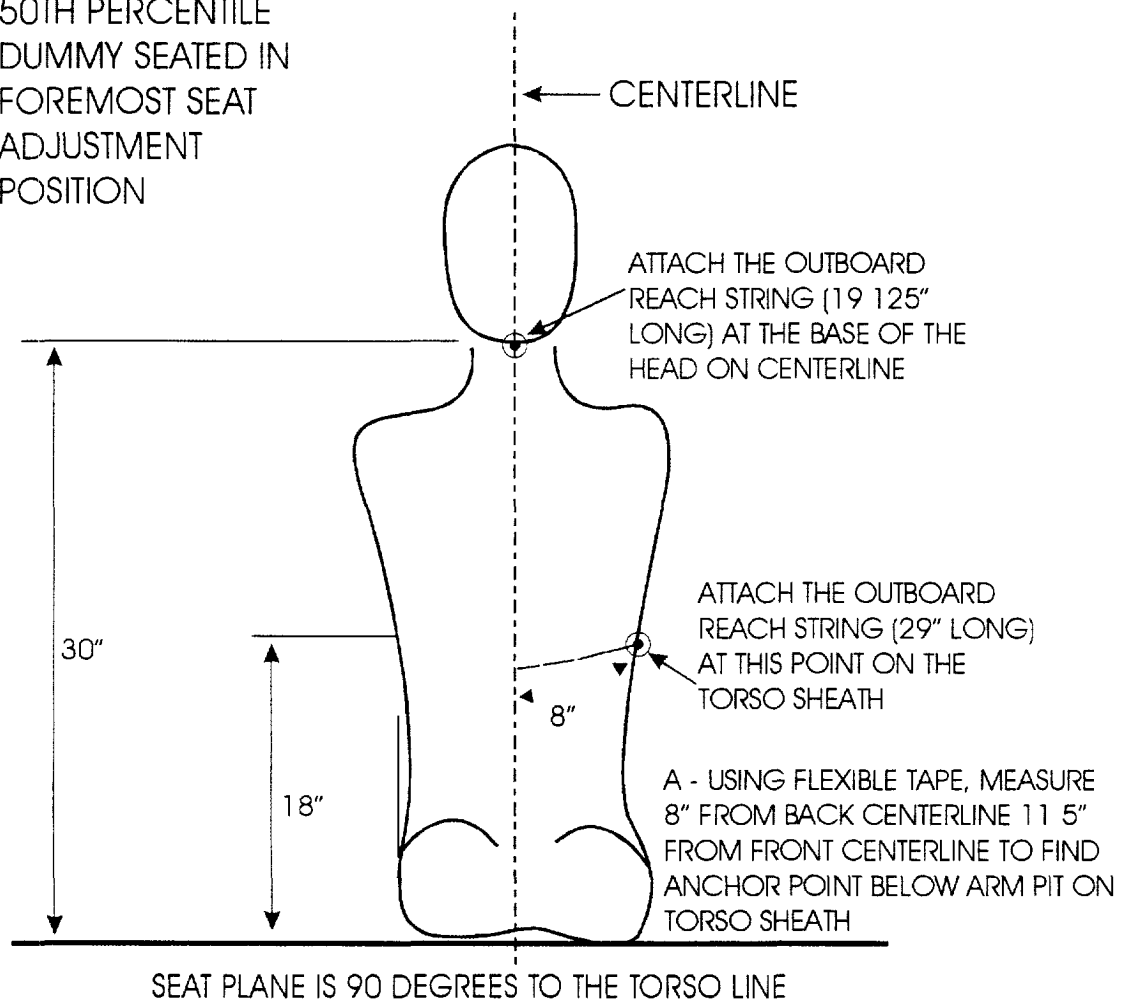
- 5 Is the inboard receptacle end of the seat belt assembly, installed in the outboard designated seating position, accessible with the center arm rest in any position to which it can be adjusted (without moving the armrest)?

Yes- ☐ Pass; No- ☐ **Fail**

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

PART 572E DUMMY

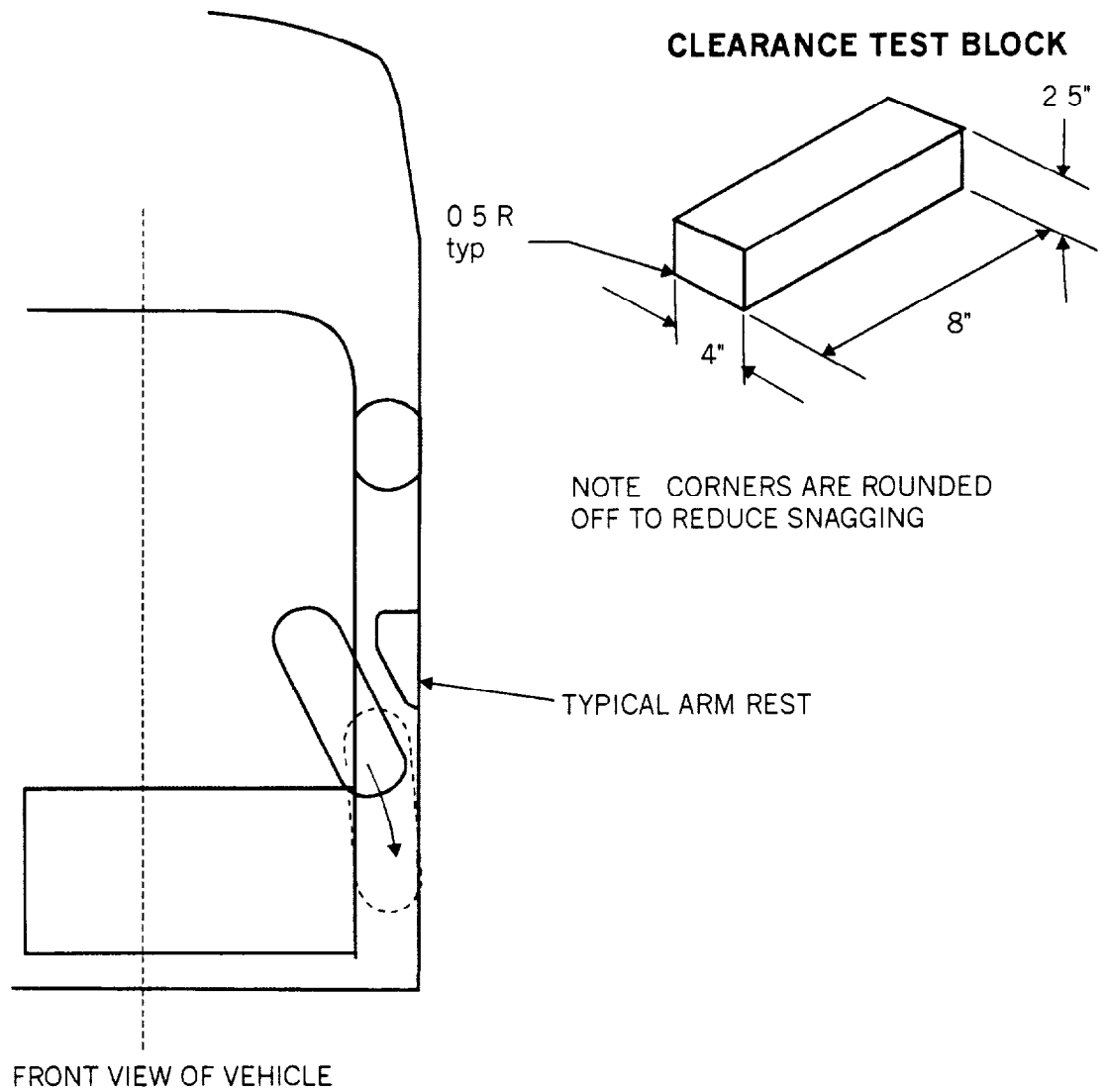
50TH PERCENTILE
DUMMY SEATED IN
FOREMOST SEAT
ADJUSTMENT
POSITION



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

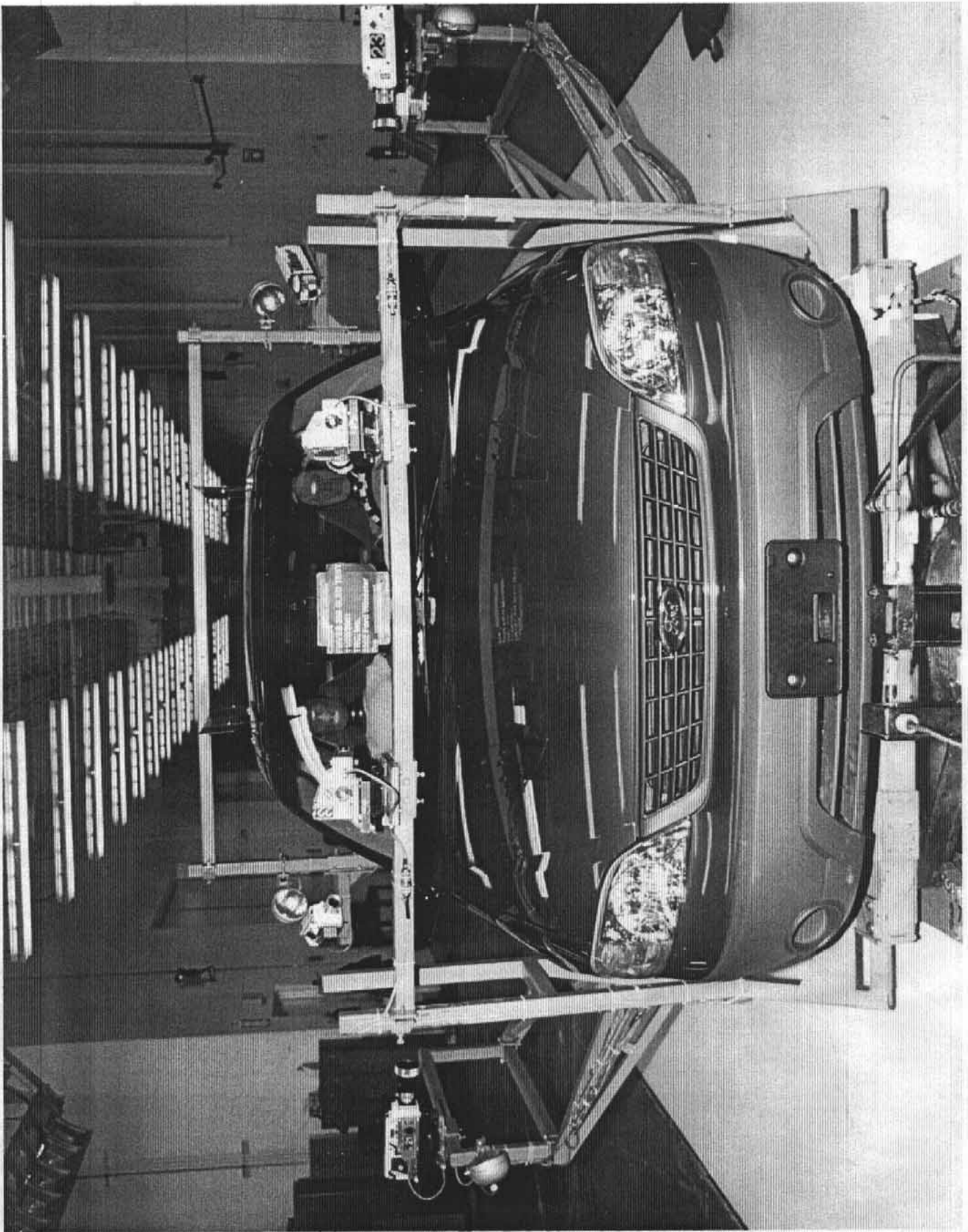


Figure A-1 Pre-Test Front View of Test Vehicle Mounted to Sled

A-2

S011129

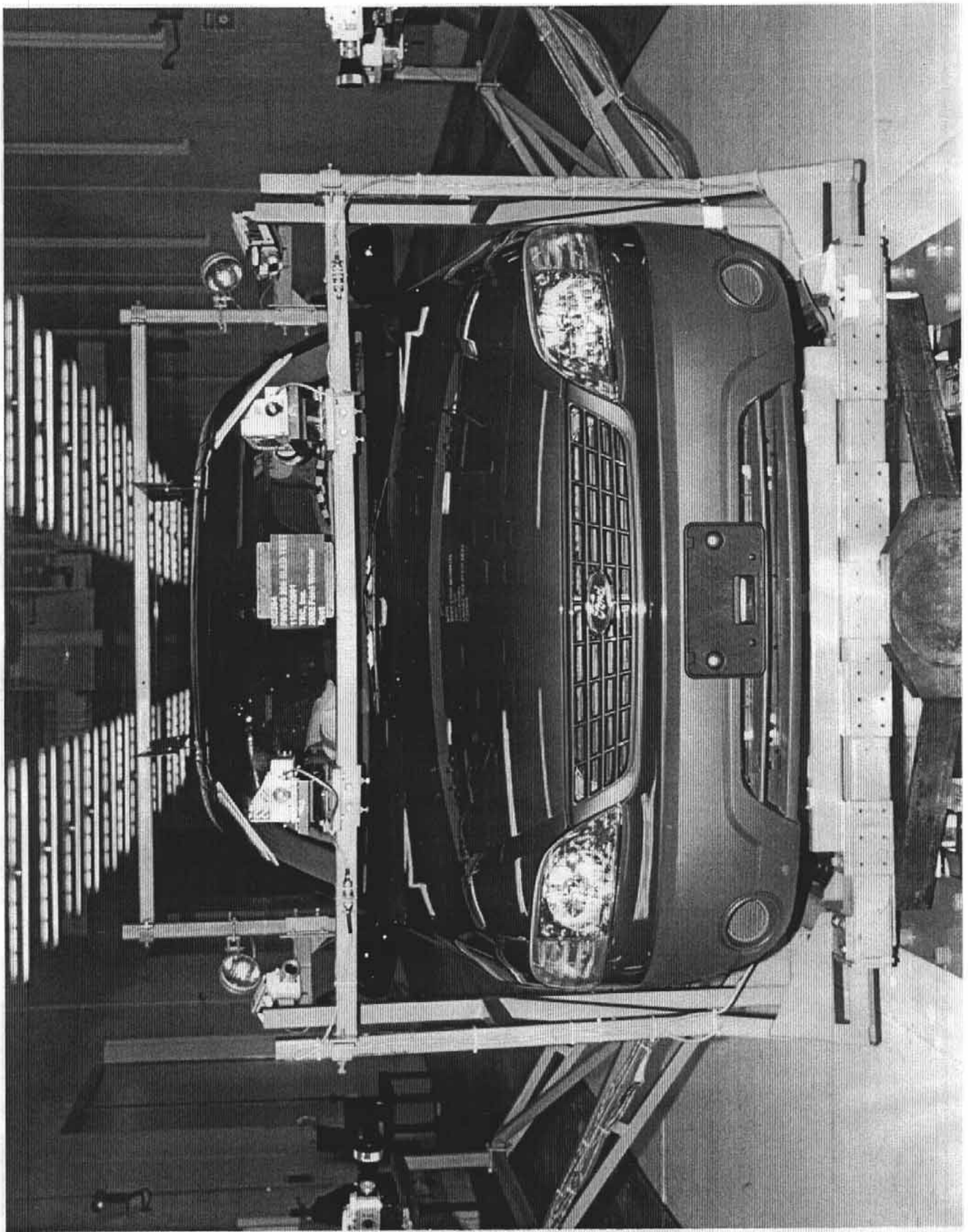
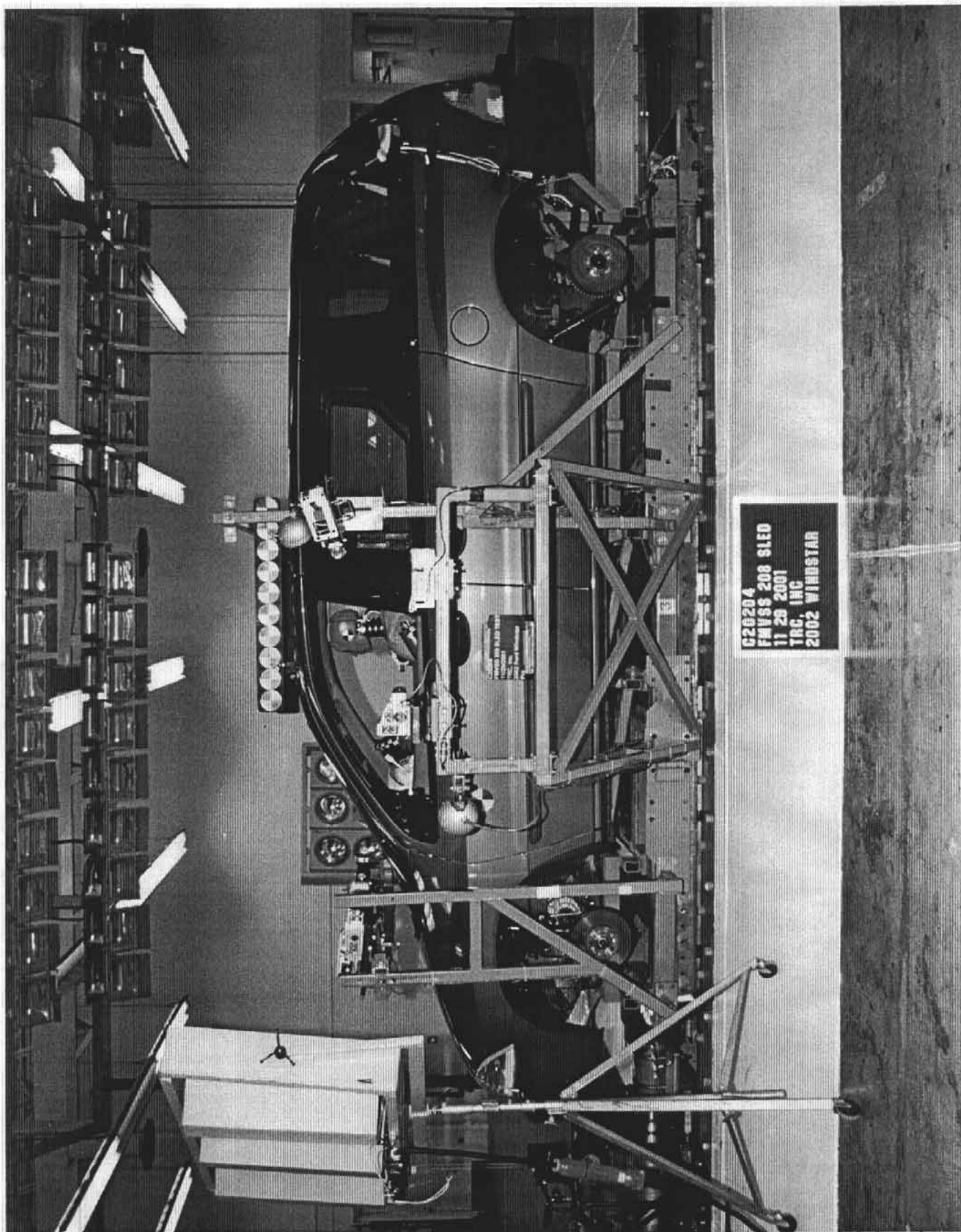


Figure A-2 Post-Test Front View of Test Vehicle Mounted to Sled

A-3

S011129



C20294
FMVSS 208 SLED
11 29 2001
TRC, INC
2002 WINDSTAR

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

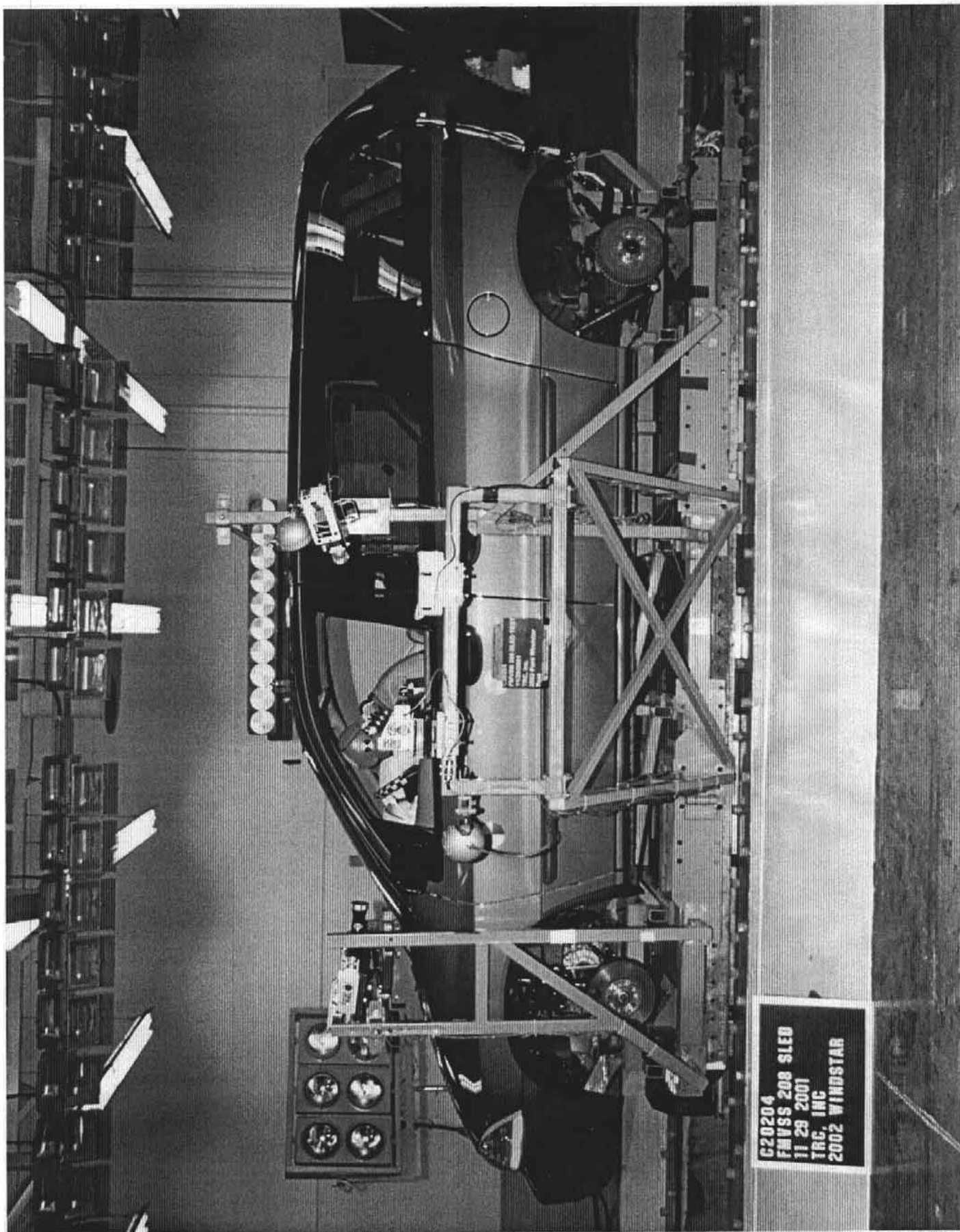


Figure A-4 Post-Test Left Side View of Test Vehicle Mounted to Sled

A-5

S011129

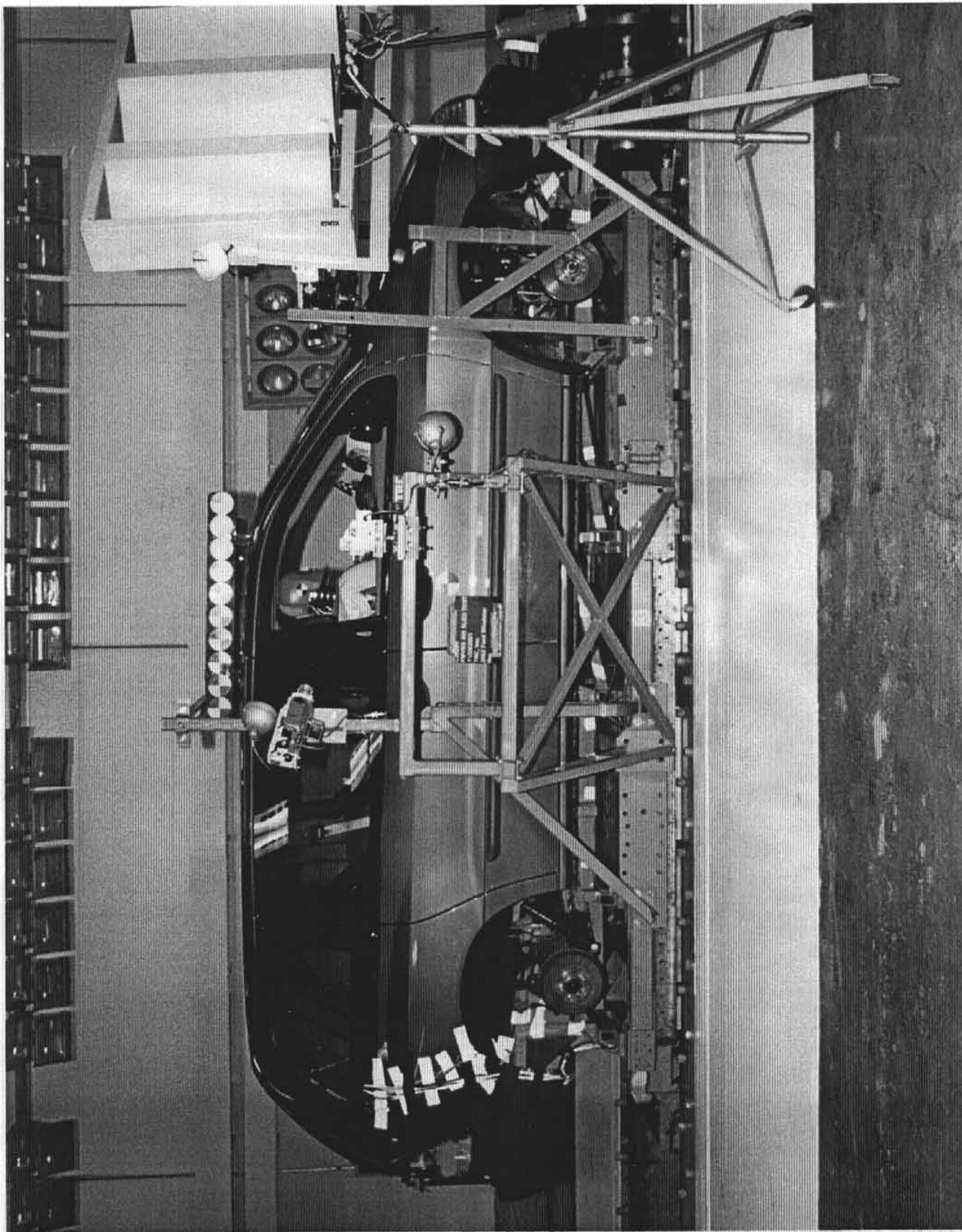


Figure A-5 Pre-Test Right Side View of Test Vehicle Mounted to Sled

A-6

S011129

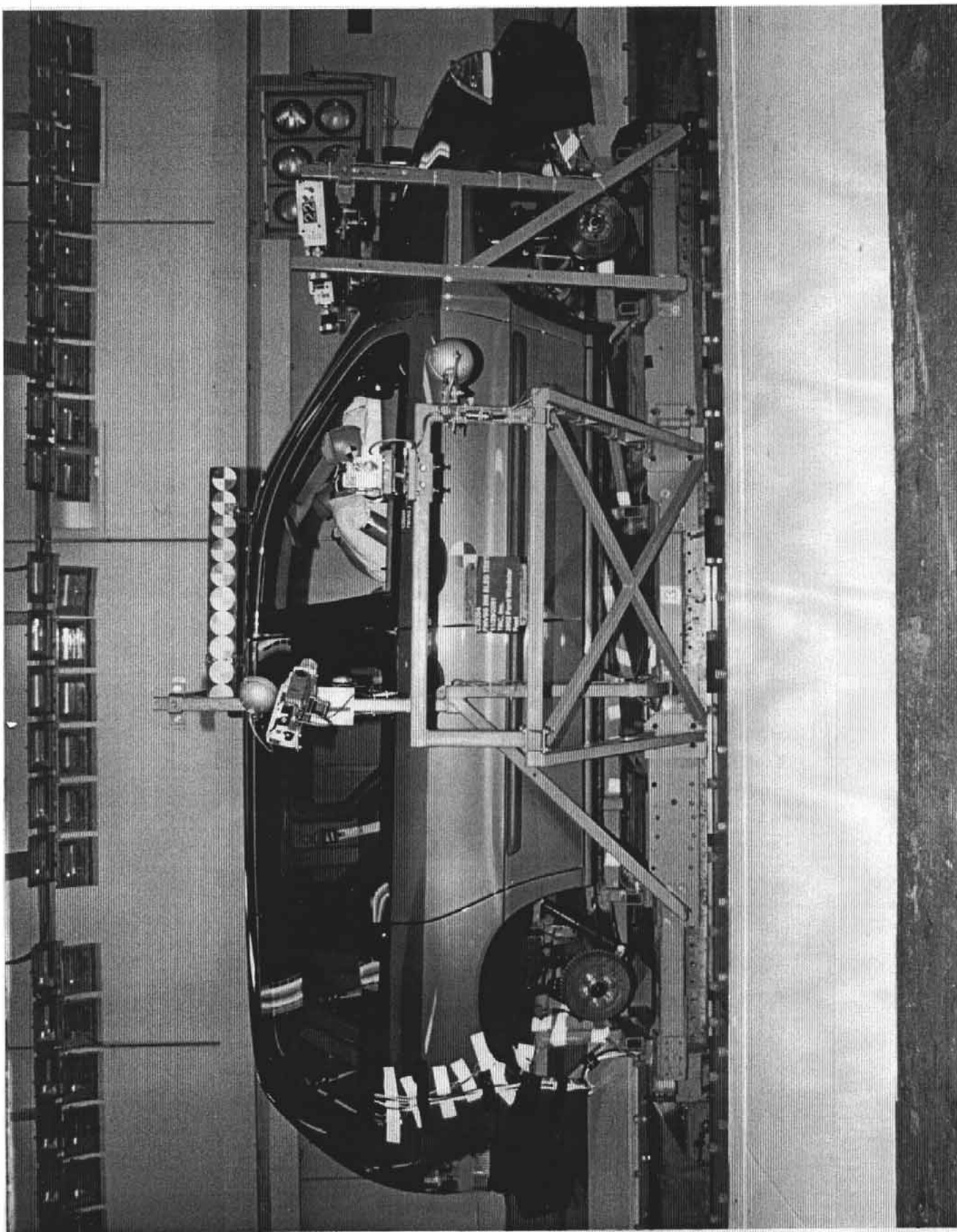


Figure A-6 Post-Test Right Side View of Test Vehicle Mounted to Sled

A-7

S011129

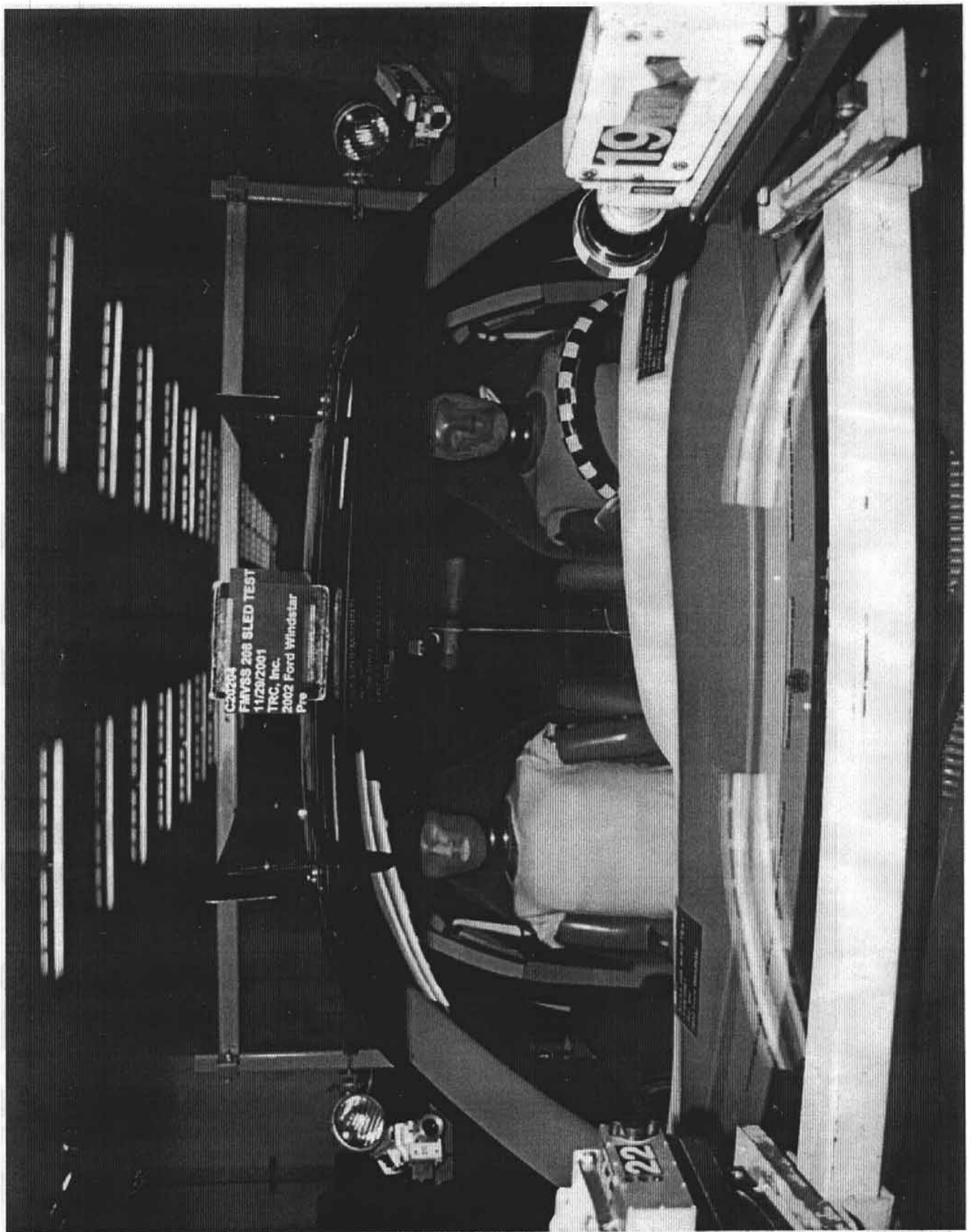


Figure A-7 Pre-Test Windshield View
A-8

S011129

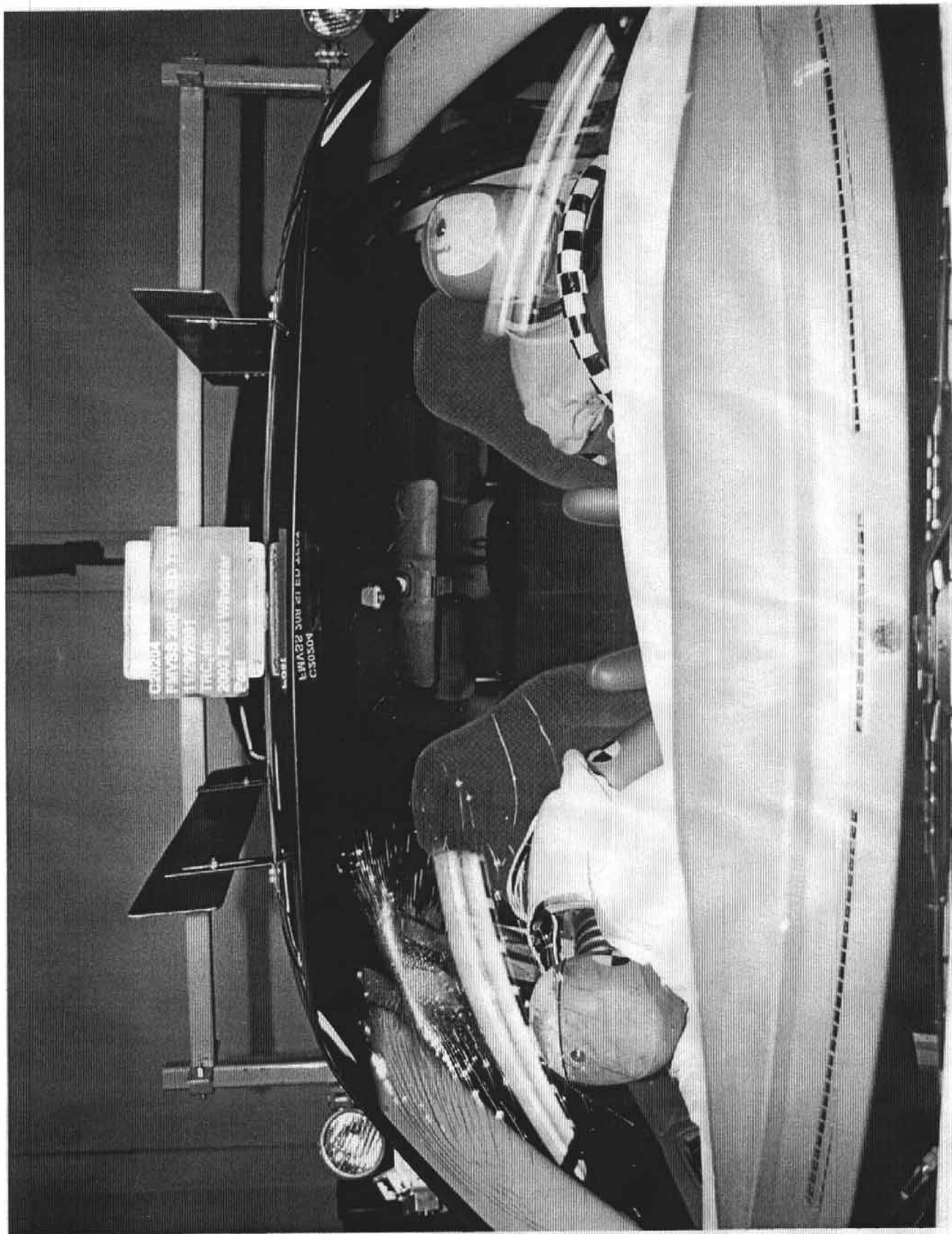


Figure A-8 Post-Test Windshield View
A-9

S011129

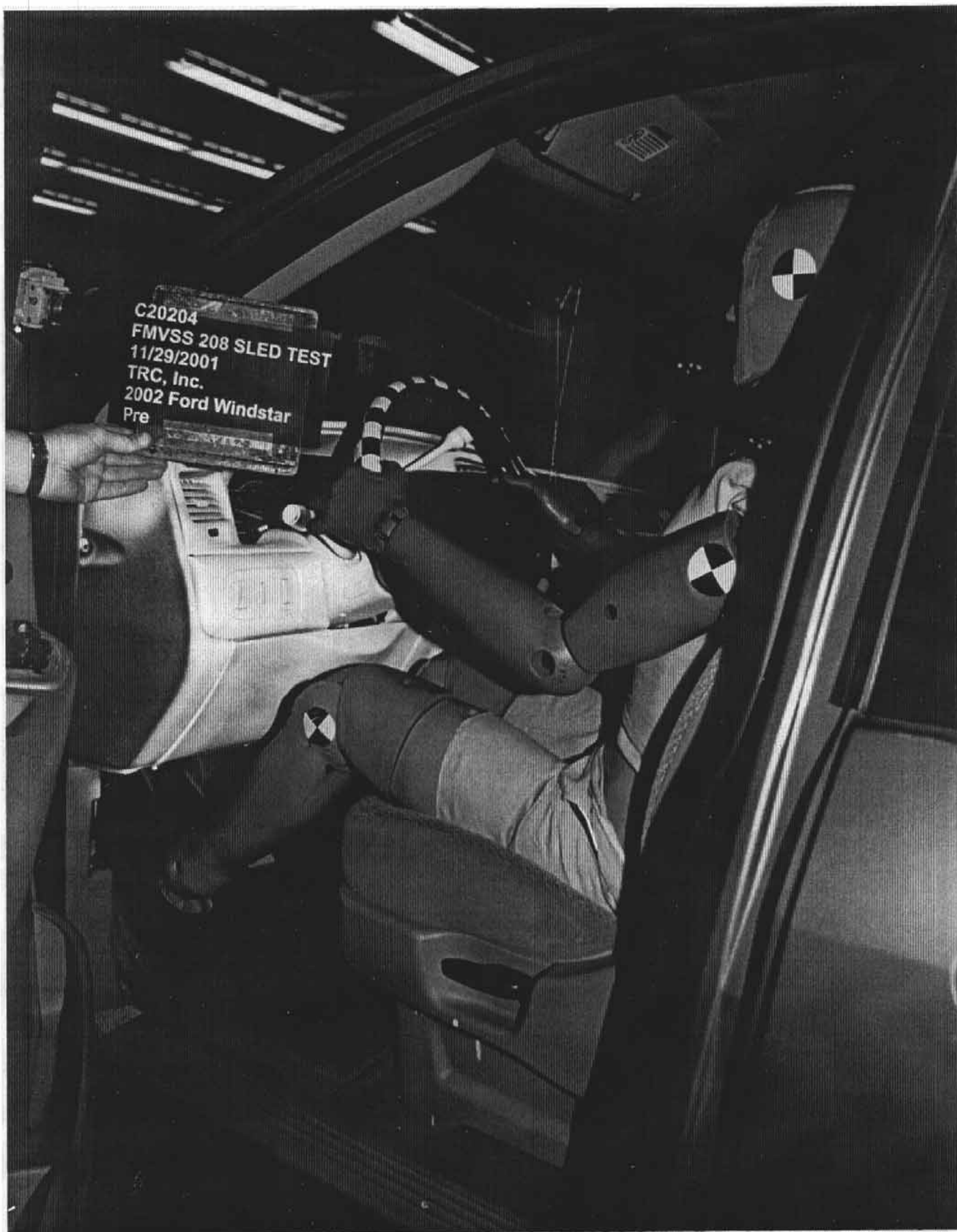


Figure A-9 Pre-Test Driver Dummy Position View with Door Open

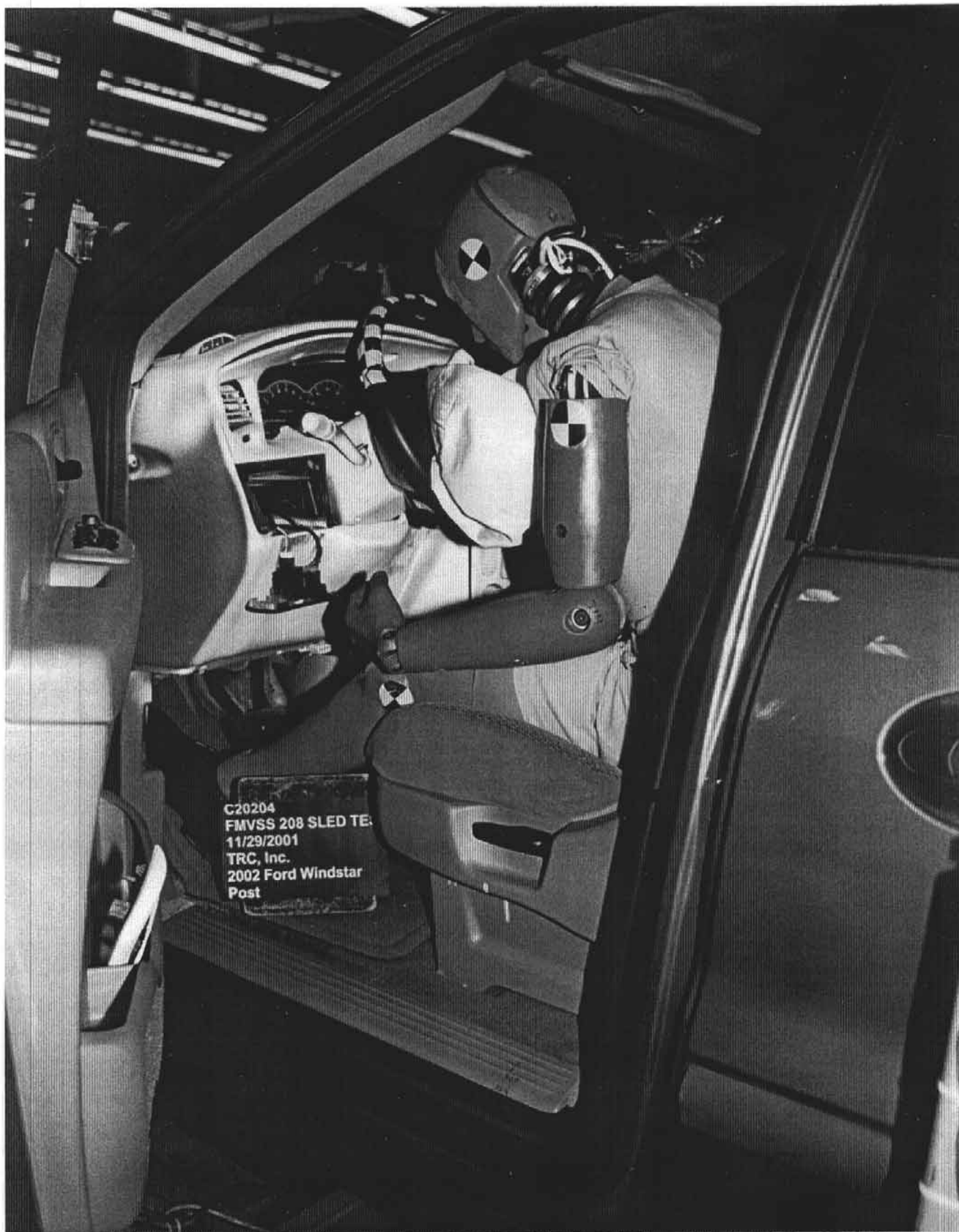


Figure A-10 Post-Test Driver Dummy Position View with Door Open

A-11

S011129



Figure A-11 Pre-Test Driver Seat Track Position View
A-12

S011129

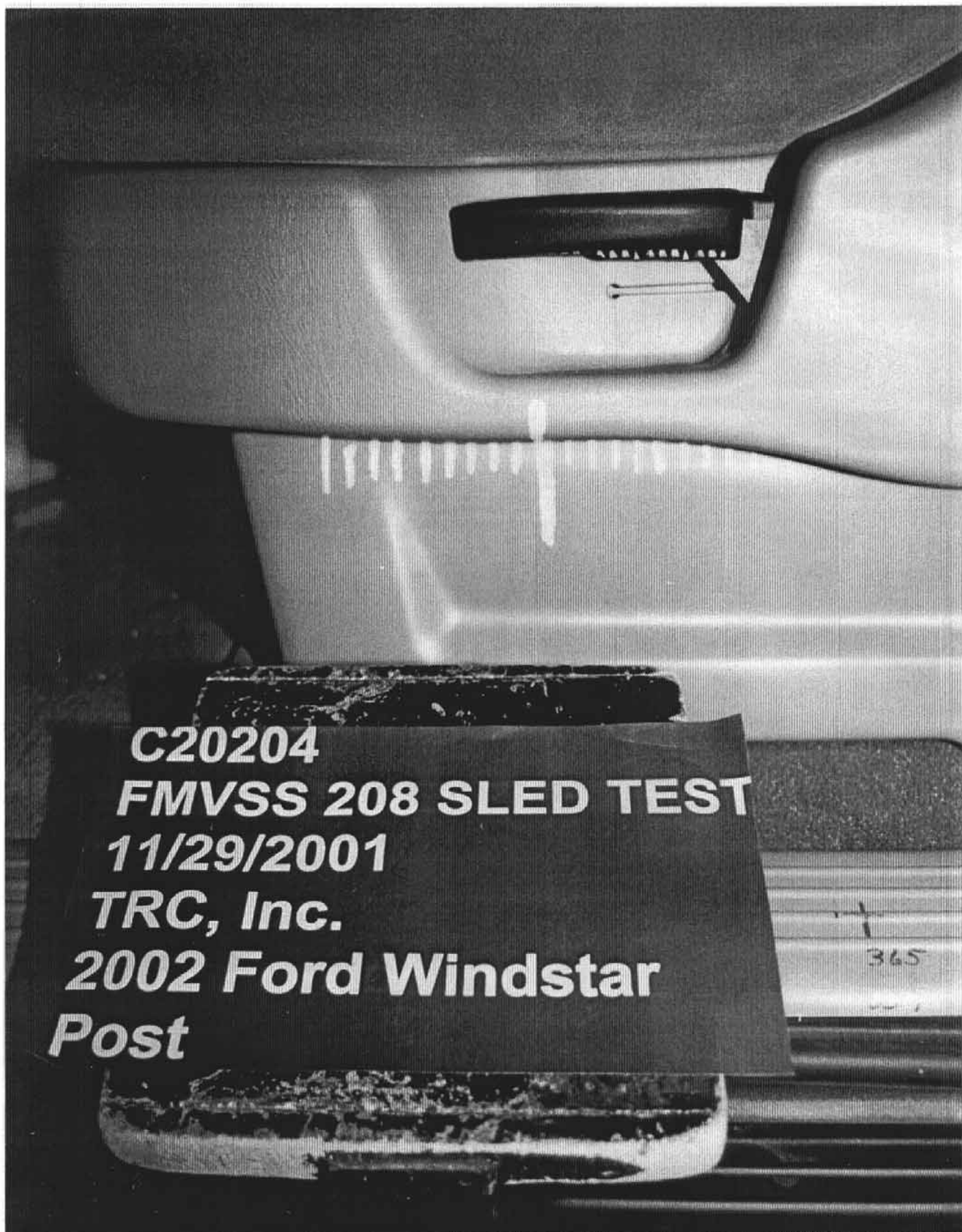


Figure A-12 Post-Test Driver Seat Track Position View
A-13

S011129



Figure A-13 Pre-Test Driver Dummy Position Front View



Figure A-14 Post-Test Driver Dummy Position Front View
A-15

S011129



Figure A-15 Pre-Test Passenger Dummy Position View with Door Open

A-16

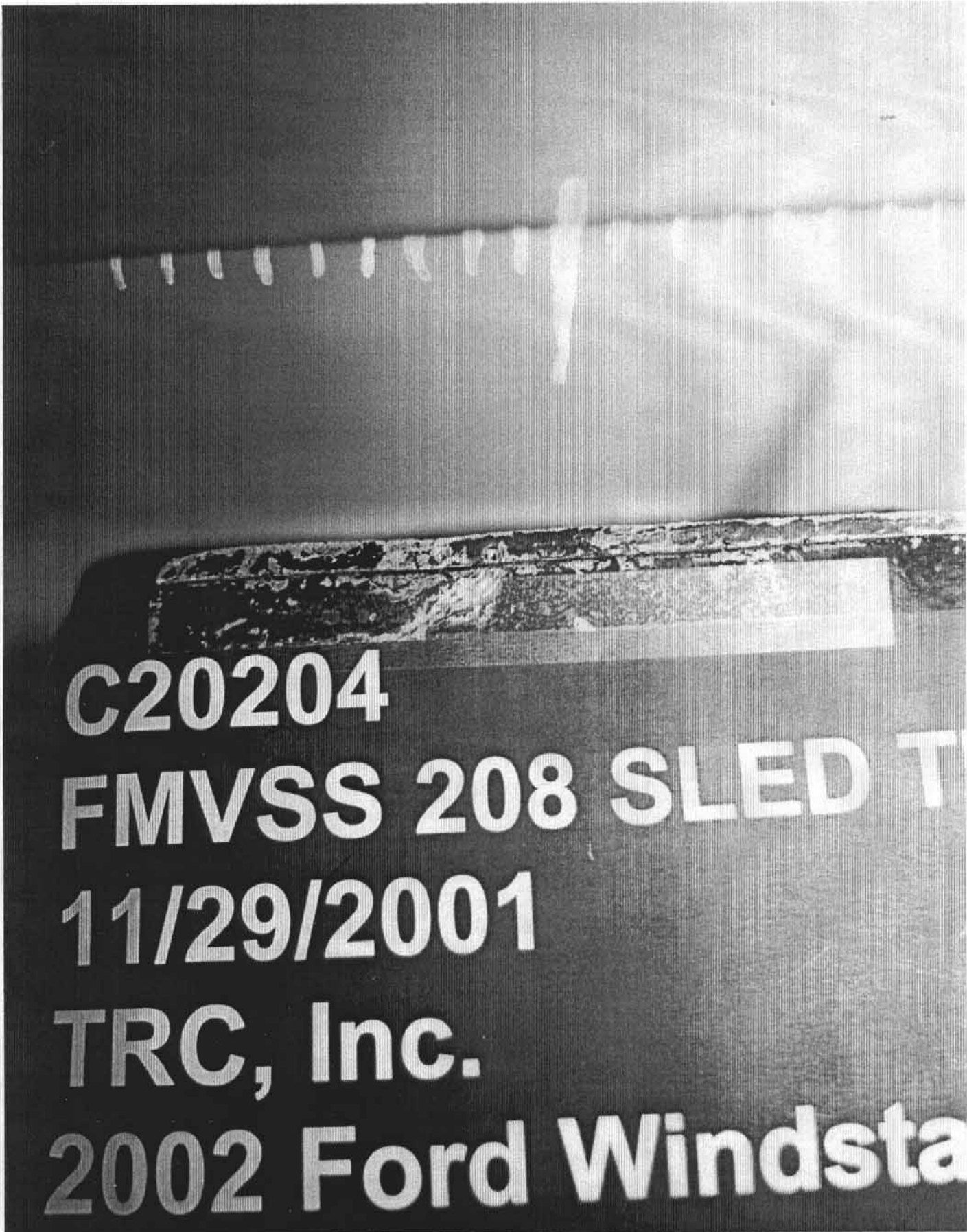
S011129



Figure A-16 Post-Test Passenger Dummy Position View with Door Open

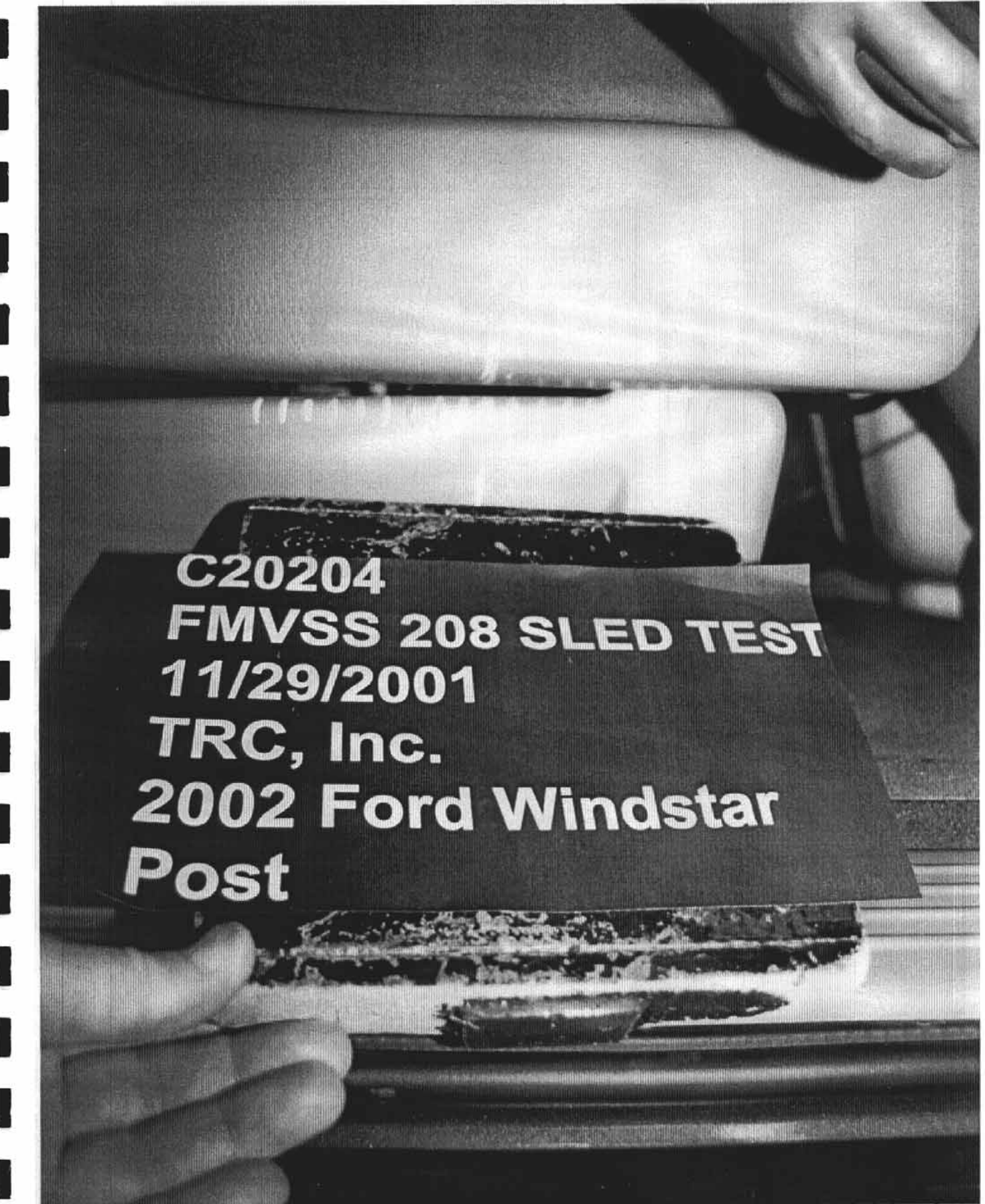
A-17

S011129



C20204
FMVSS 208 SLED T
11/29/2001
TRC, Inc.
2002 Ford Windsta

Figure A-17 Pre-Test Passenger Seat Track Position View



C20204
FMVSS 208 SLED TEST
11/29/2001
TRC, Inc.
2002 Ford Windstar
Post

Figure A-18 Post-Test Passenger Seat Track Position View

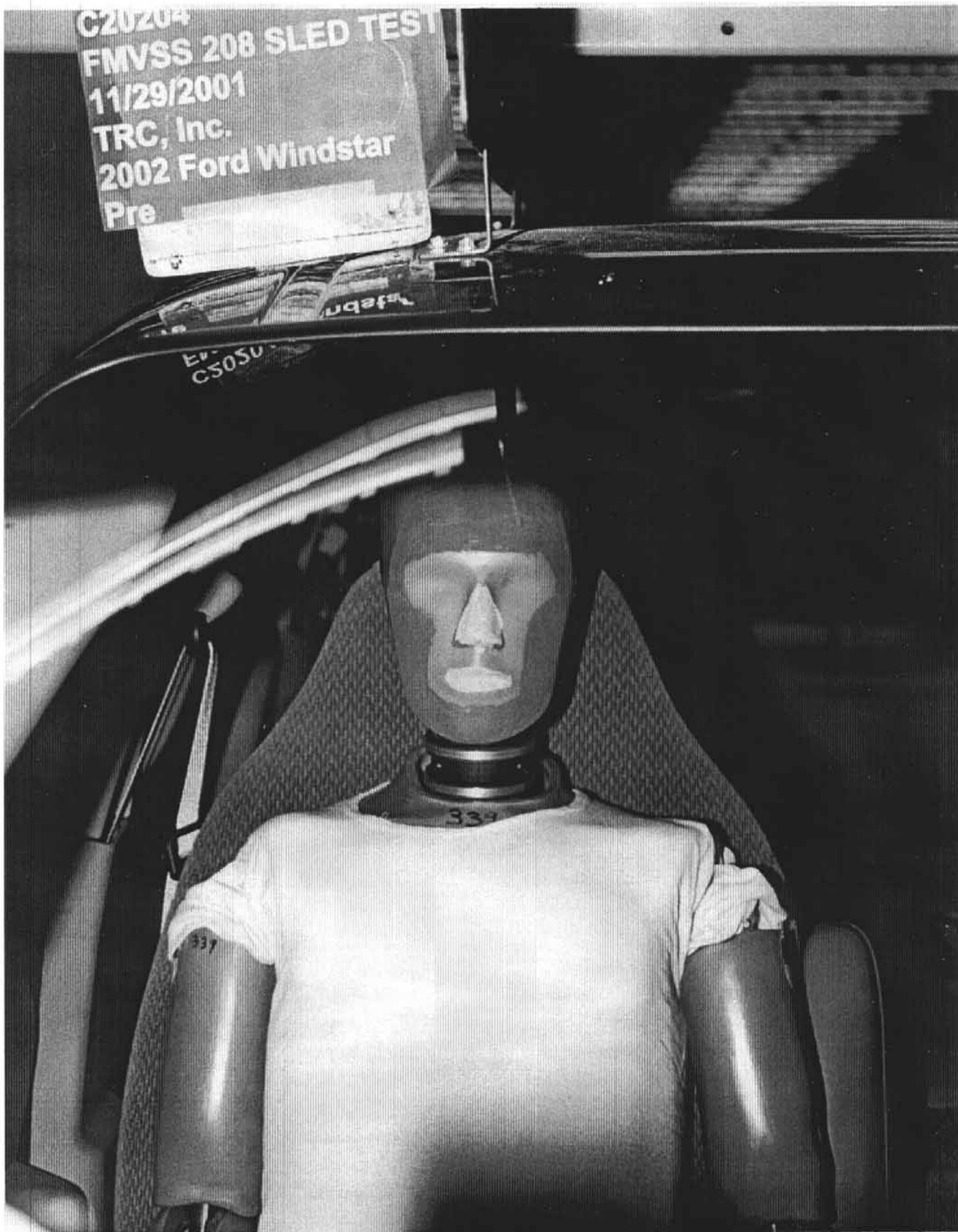


Figure A-19 Pre-Test Passenger Dummy Position Front View

A-20

S011129

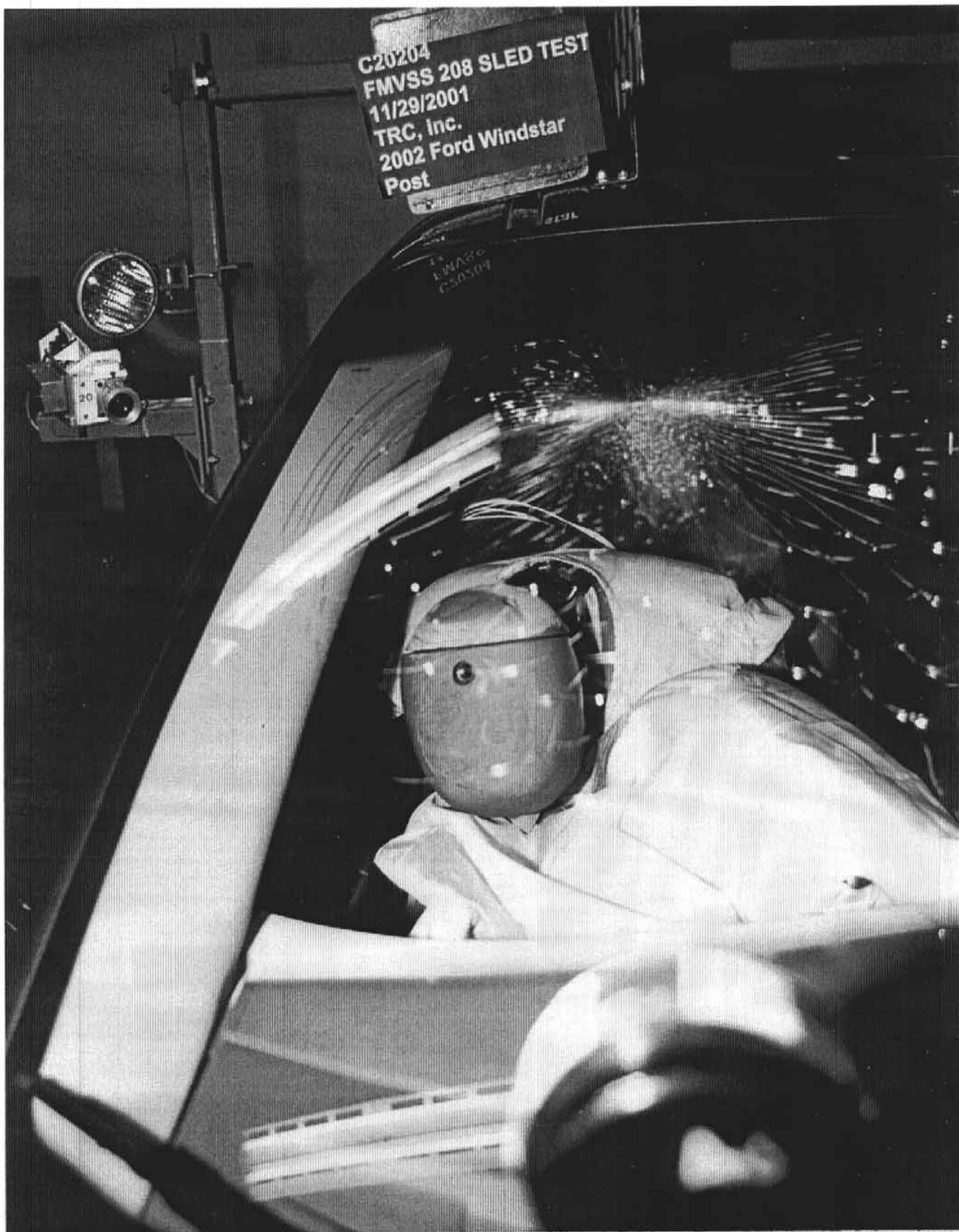


Figure A-20 Post-Test Passenger Dummy Position Front View



Figure A-21 Post-Test Driver Airbag View

A-22

S011129

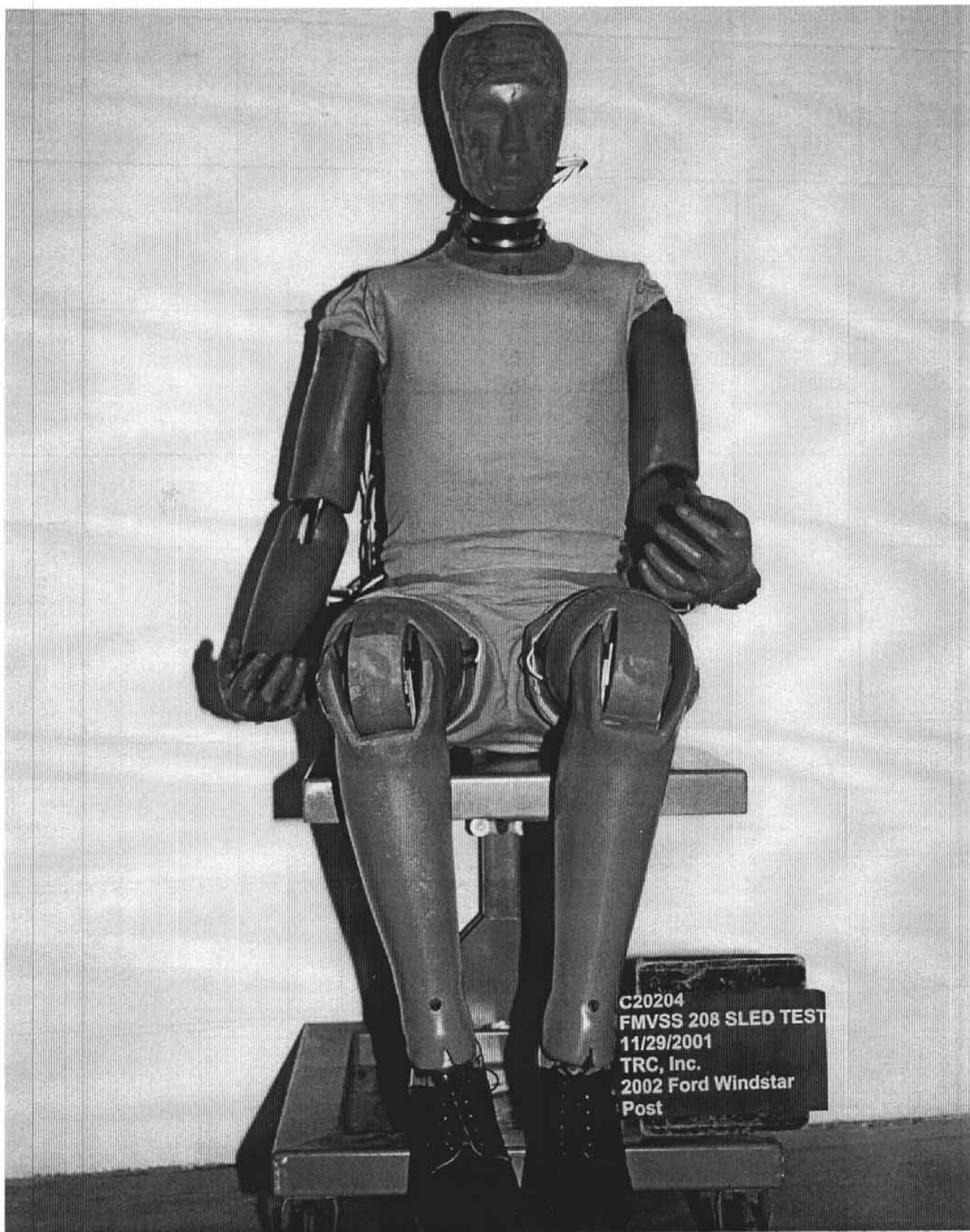


Figure A-22 Post-Test Driver Dummy Removed from Vehicle Overall View

A-23

S011129



C20204
FMVSS 208 SLED TEST
11/29/2001
TRC, Inc.
2002 Ford Windstar
Post

Figure A-23 Post-Test Driver Head Contact View

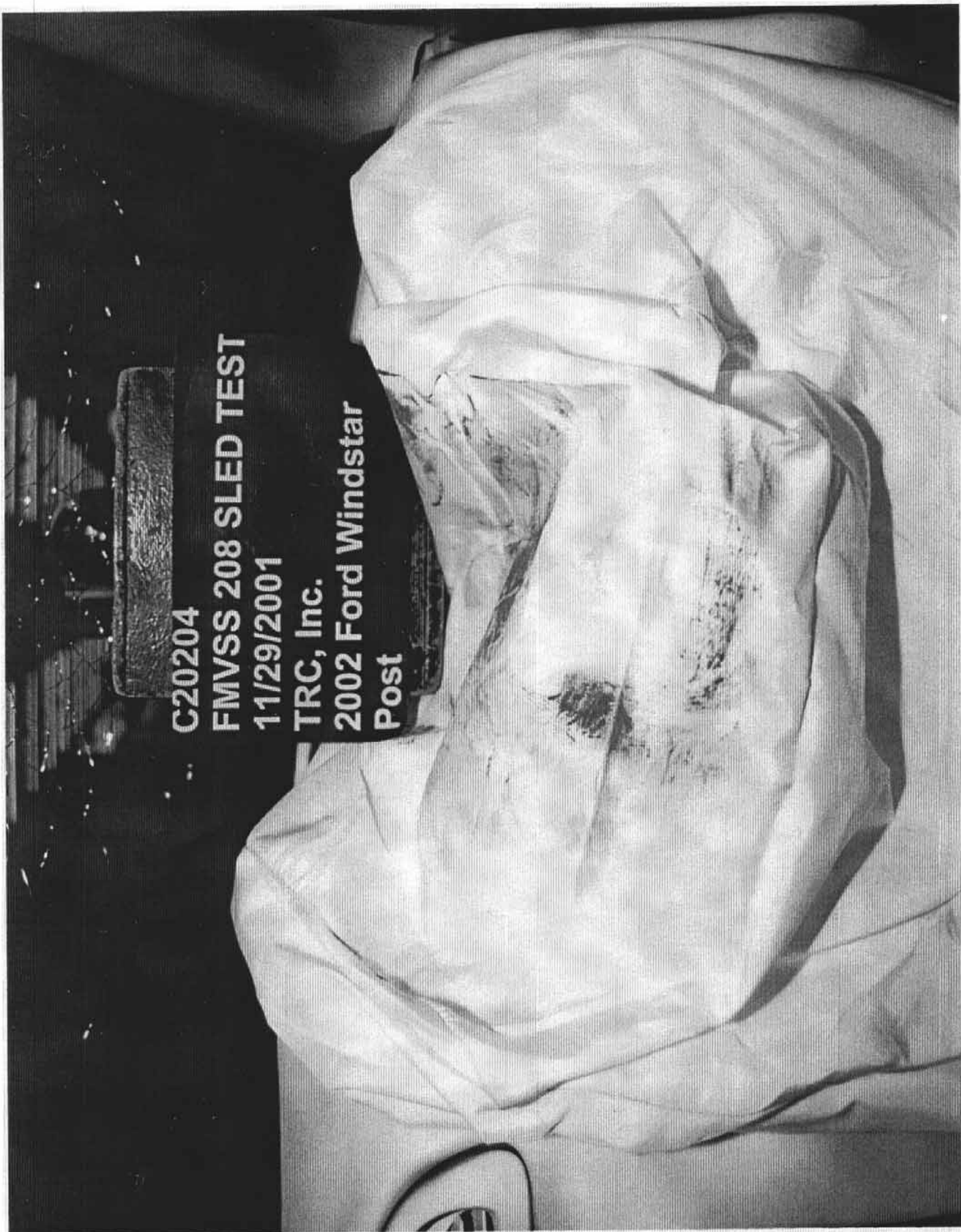


Figure A-24 Post-Test Passenger Airbag View

A-25

S011129

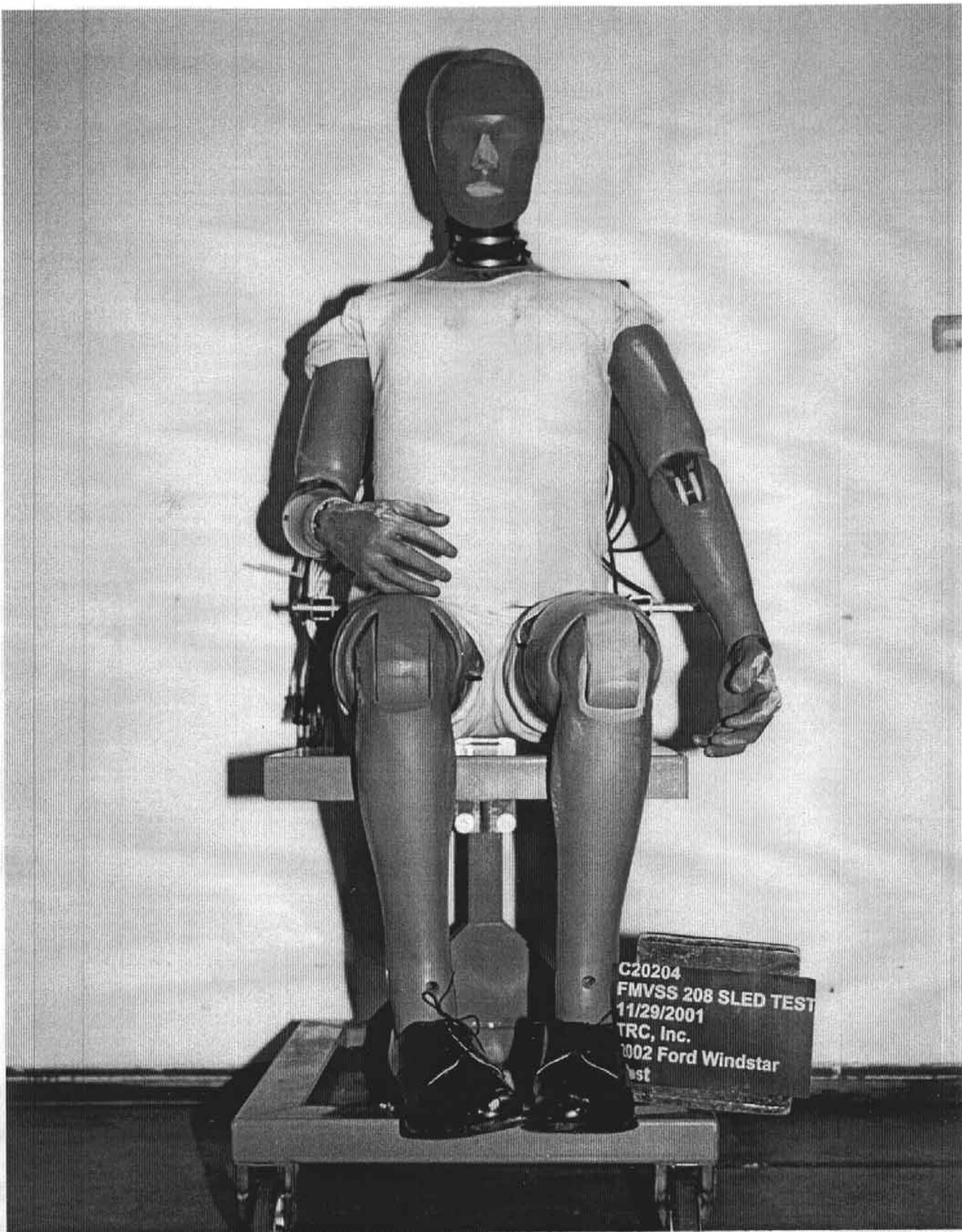


Figure A-25 Post-Test Passenger Dummy Removed from Vehicle Overall View
A-26 S011129

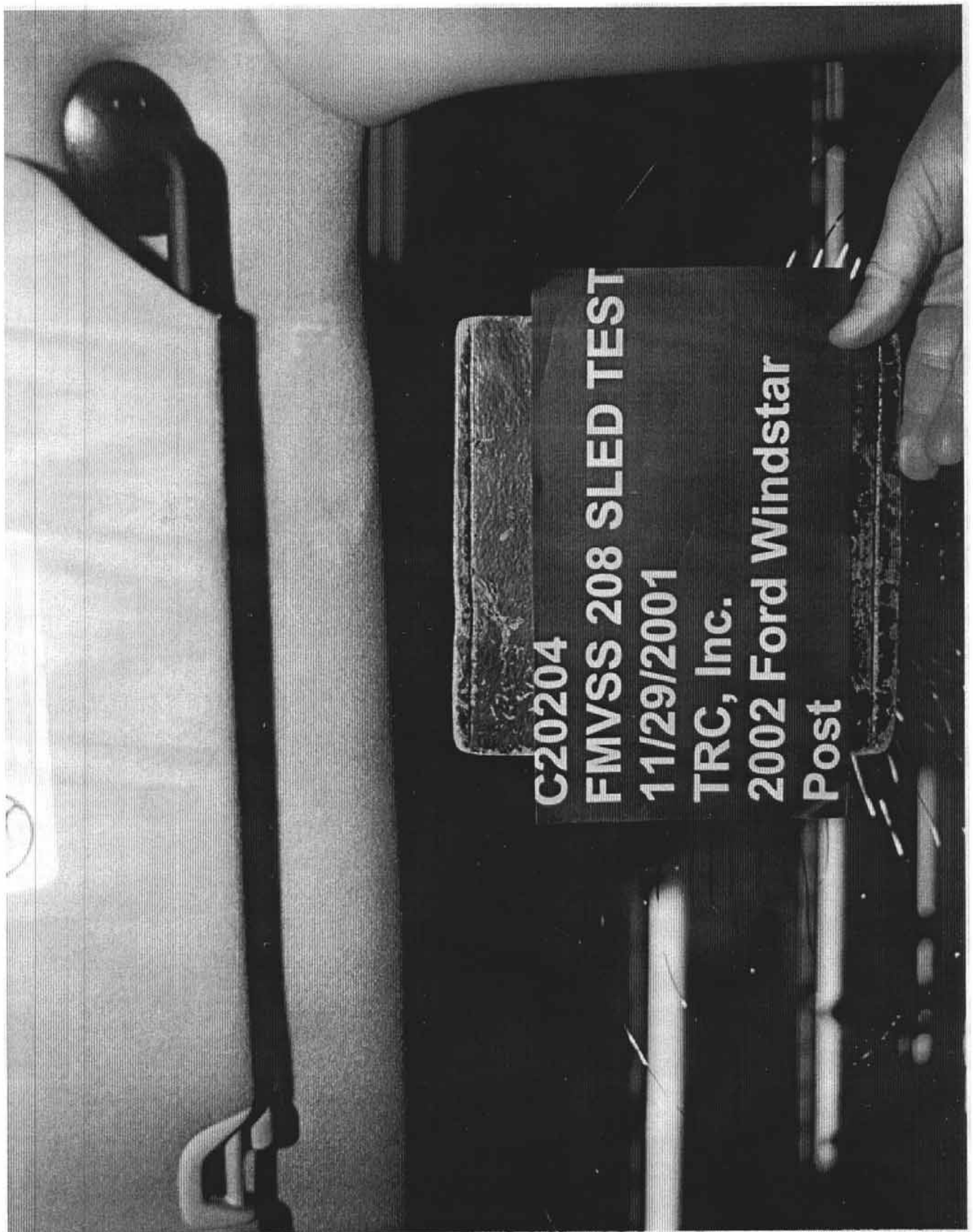


Figure A-26 Post-Test Passenger Head Contact - View 1



Figure A-27 Post-Test Passenger Head Contact - View 2

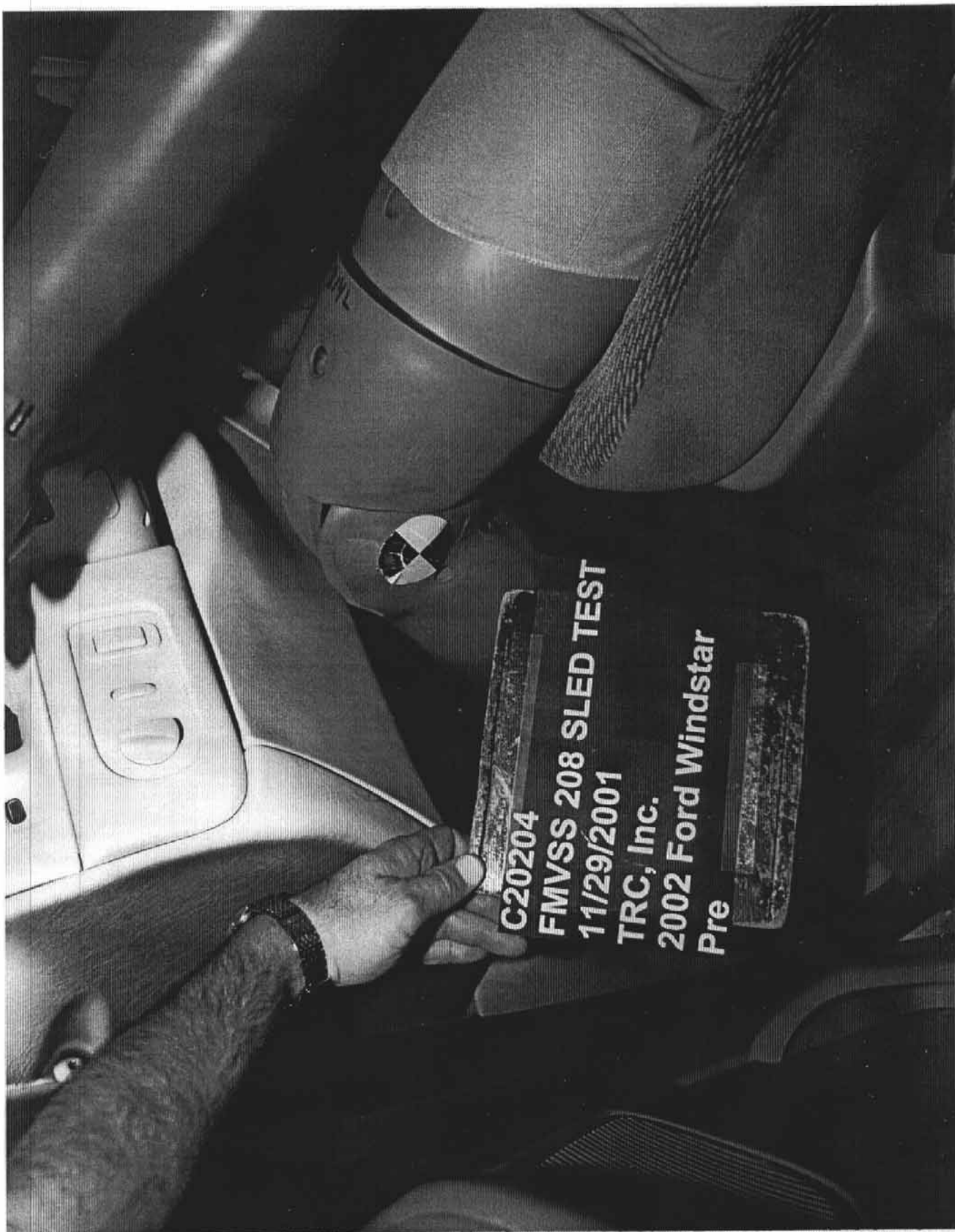


Figure A-28 Pre-Test Driver Knee Bolster View
A-29

S011129

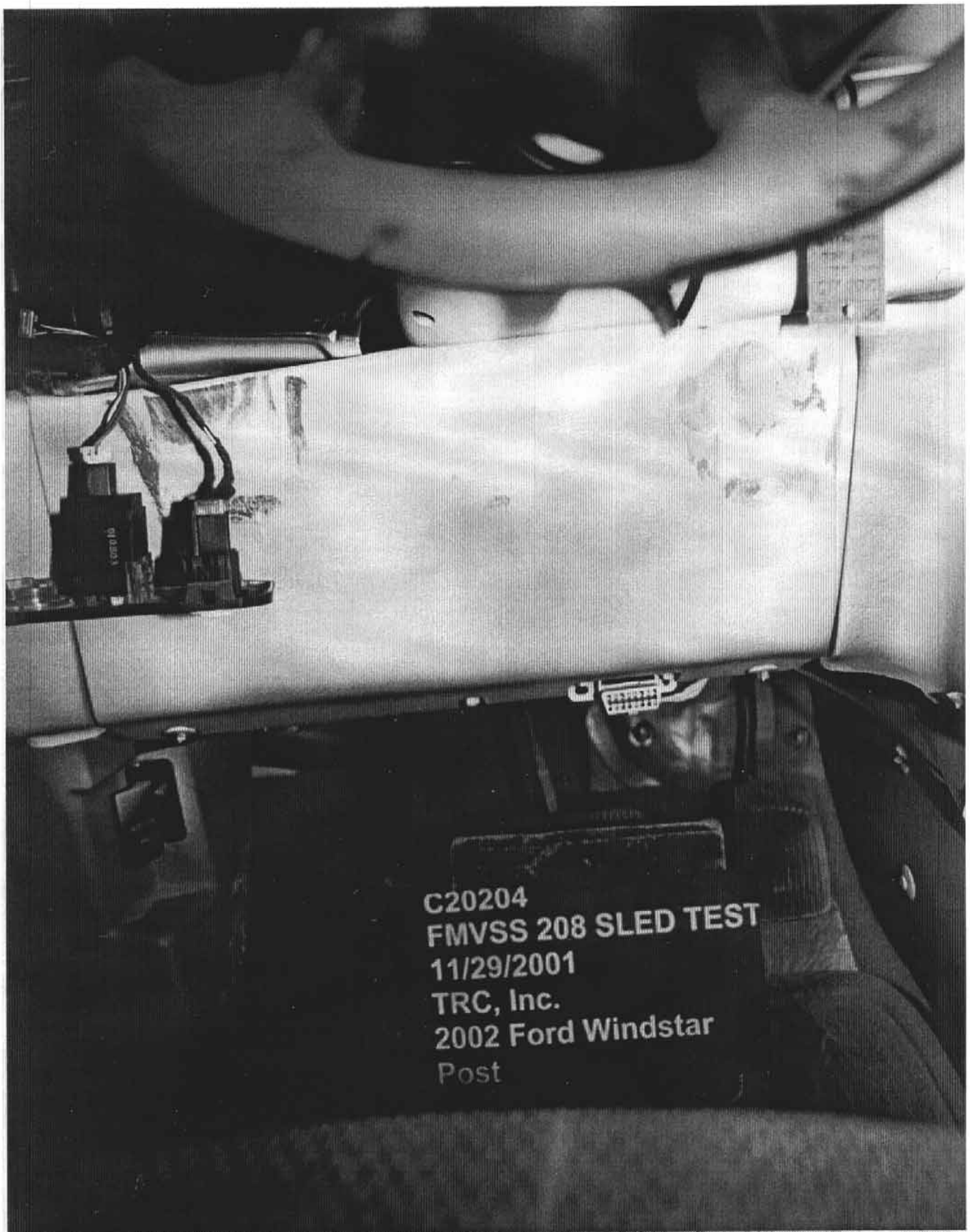


Figure A-29 Post-Test Driver Knee Bolster View
A-30

S011129



Figure A-30 Pre-Test Passenger Glove Box View
A-31

S011129



Figure A-31 Post-Test Passenger Glove Box View
A-32

S011129

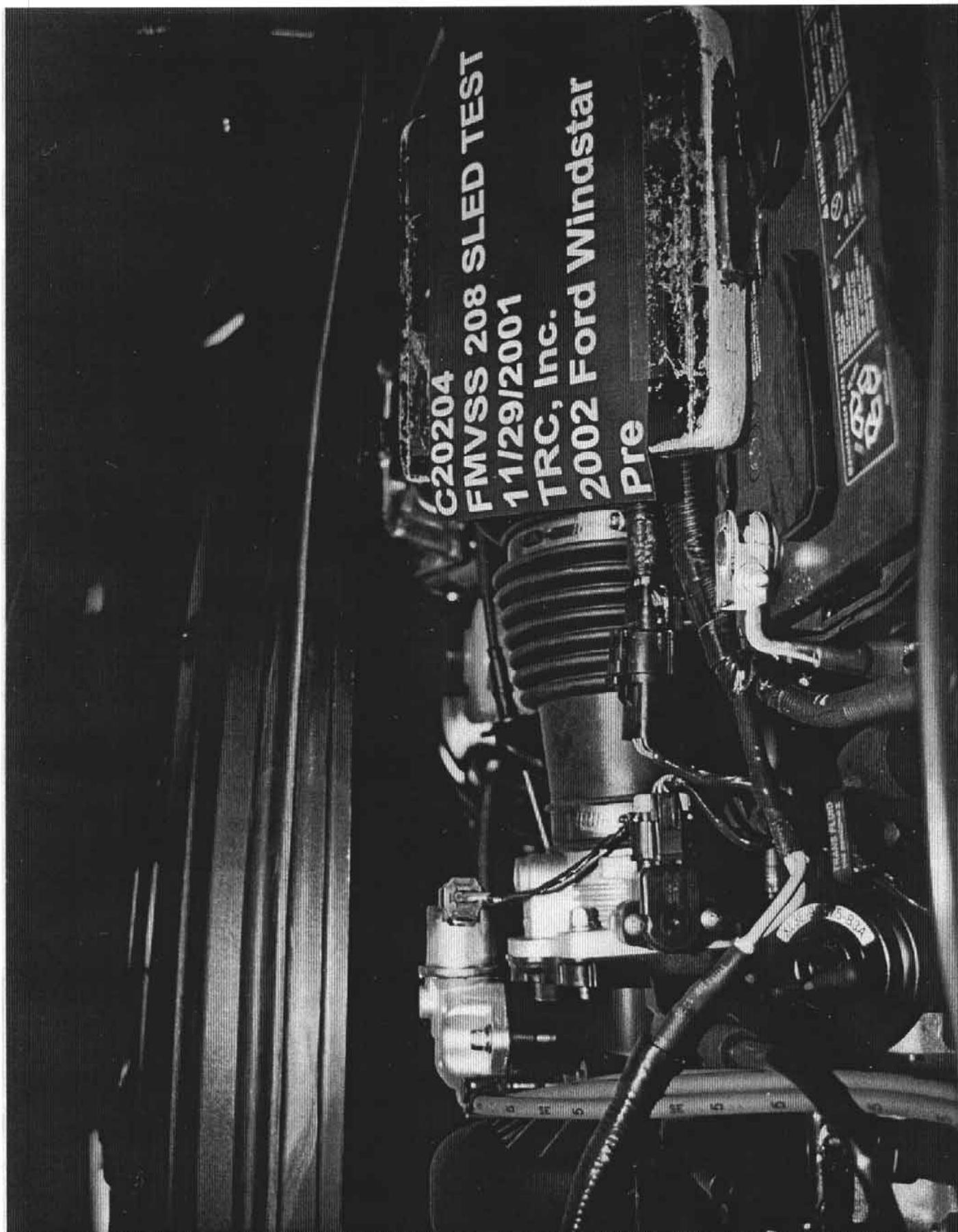


Figure A-32 Pre-Test Steering Column Linkage in Engine Compartment View

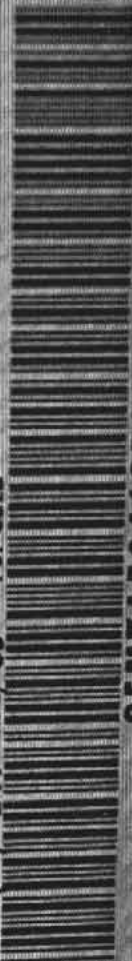


Figure A-33 Post-Test Steering Column Linkage in Engine Compartment View

MFD. BY FORD MOTOR CO.

DATE: 08/01
 FRONT GAWR: 1274KG/2809LB
 GVWR: 2472KG/5450LB
 REAR GAWR: 1207KG/2663LB
 THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR
 VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS
 IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: 2FMZA50462BA07732 TYPE: MPV
 MAXIMUM LOAD = OCCUPANTS + LUGGAGE = 544KG/1200LB
 OCCUPANTS LUGGAGE
 2 408KG/0900LB
 4 272KG/0600LB
 7 068KG/0150LB
 2 FRONT, 2 2ND, 3 REAR
 TIRE: P215/70R15
 PRESSURE(FR): 241 kPa/35 PSI COLD
 PRESSURE(RR): 241 kPa/35 PSI COLD



2FMZA50462BA07732

TRAILER TOWING - SEE OWNER GUIDE

EXT PNT: 1V
 BRK INT TR TP/PS R AXLE TR SPR
 D 7 15 N DC A05
 G2
 MADE IN CANADA
 F0071
 10124
 CBC V F8DB-5420472-A8

Figure A-34 Pre-Test Vehicle Certification Label View

Appendix B

Data Plots

C20204 / 2002 FORD WINDSTAR

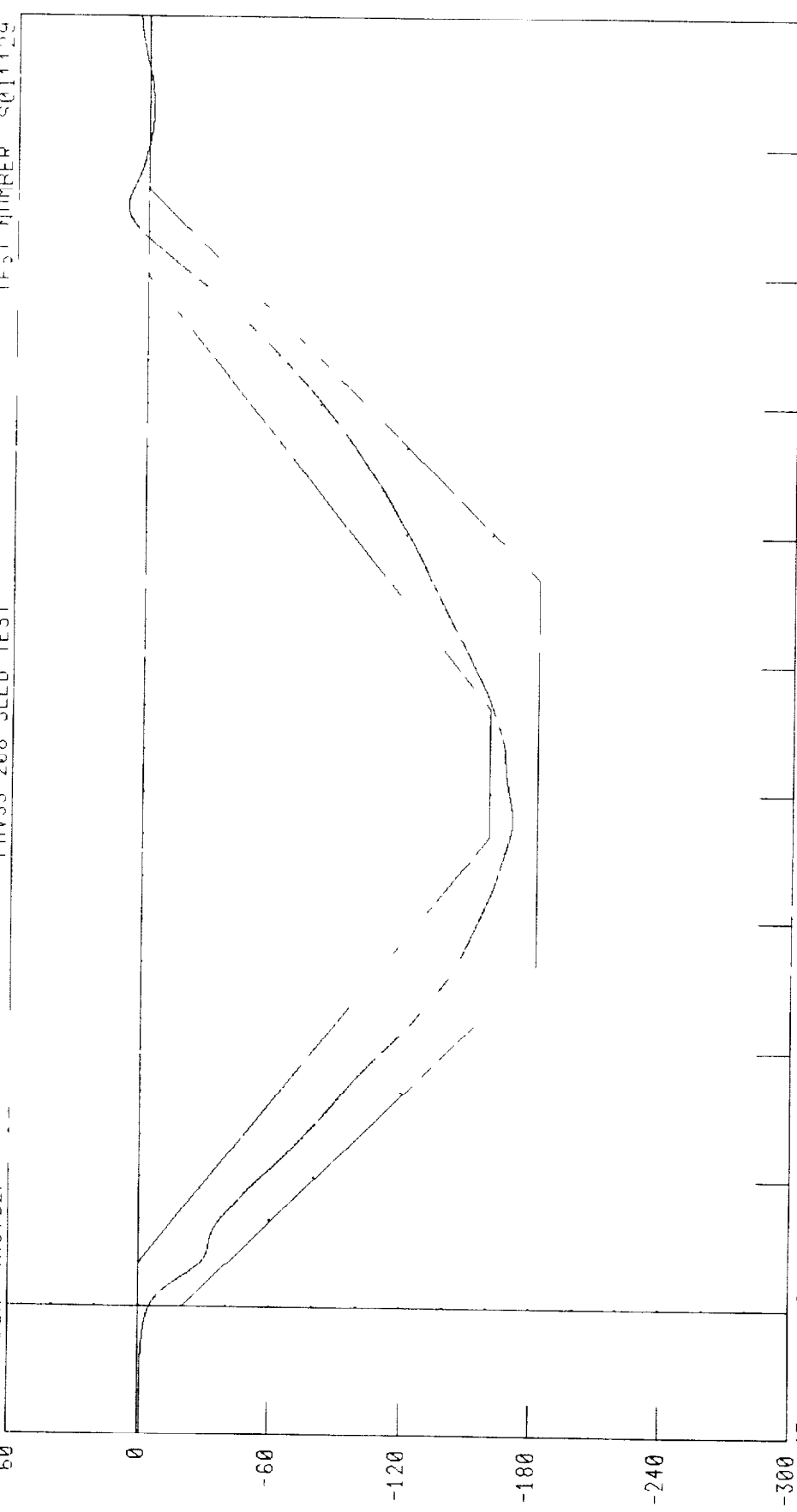
SLED ACCELERATION

FMVSS 208 SLED TEST

TEST NUMBER 001129

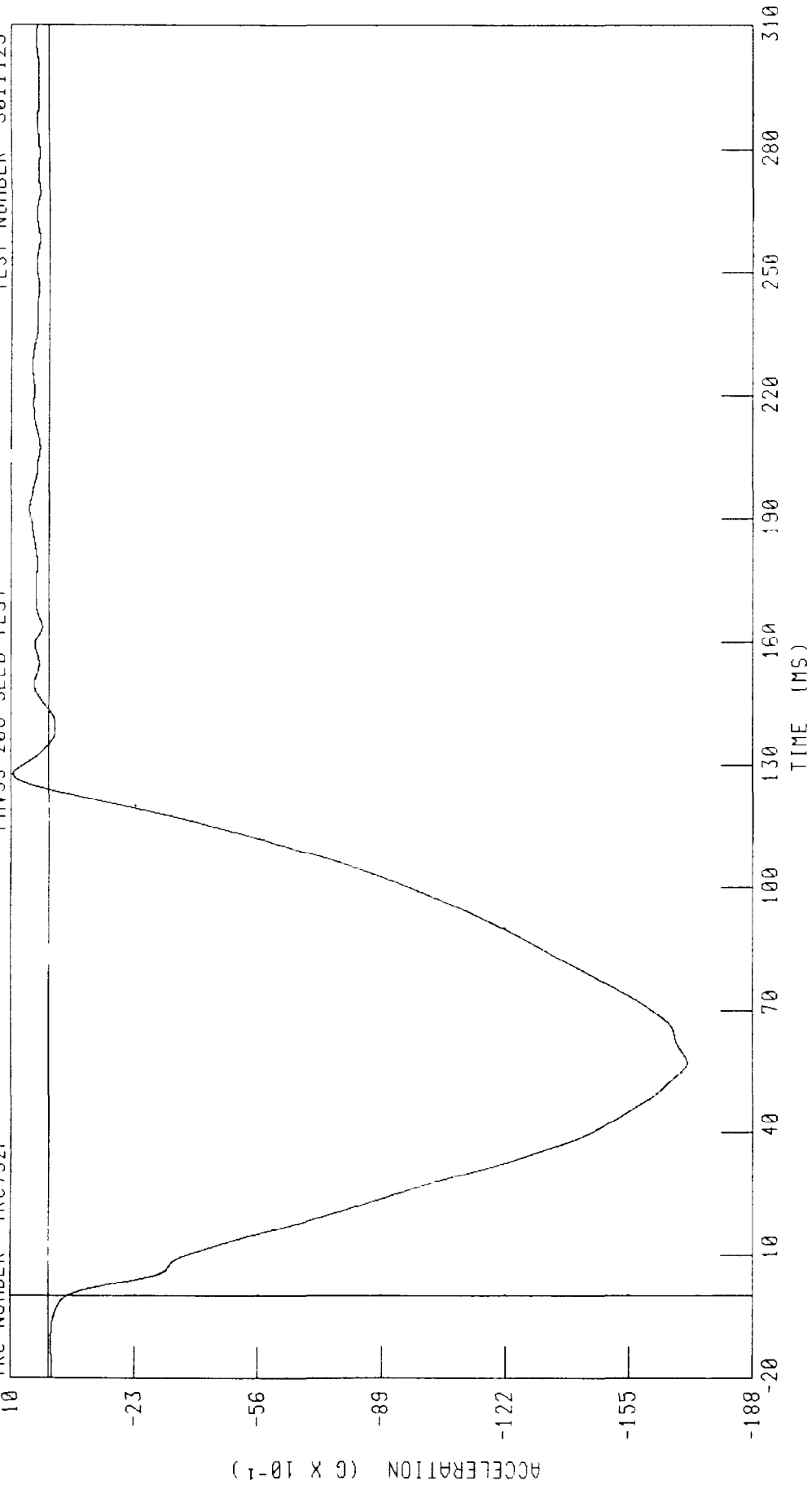
TRC NUMBER TRC732F

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



CHANNEL SLDXG FILTER CH CLASS 60 TIME (MS) PEAK DATA 0 94 G @ 128 00 MS, -17 06 G @ 57 04 MS

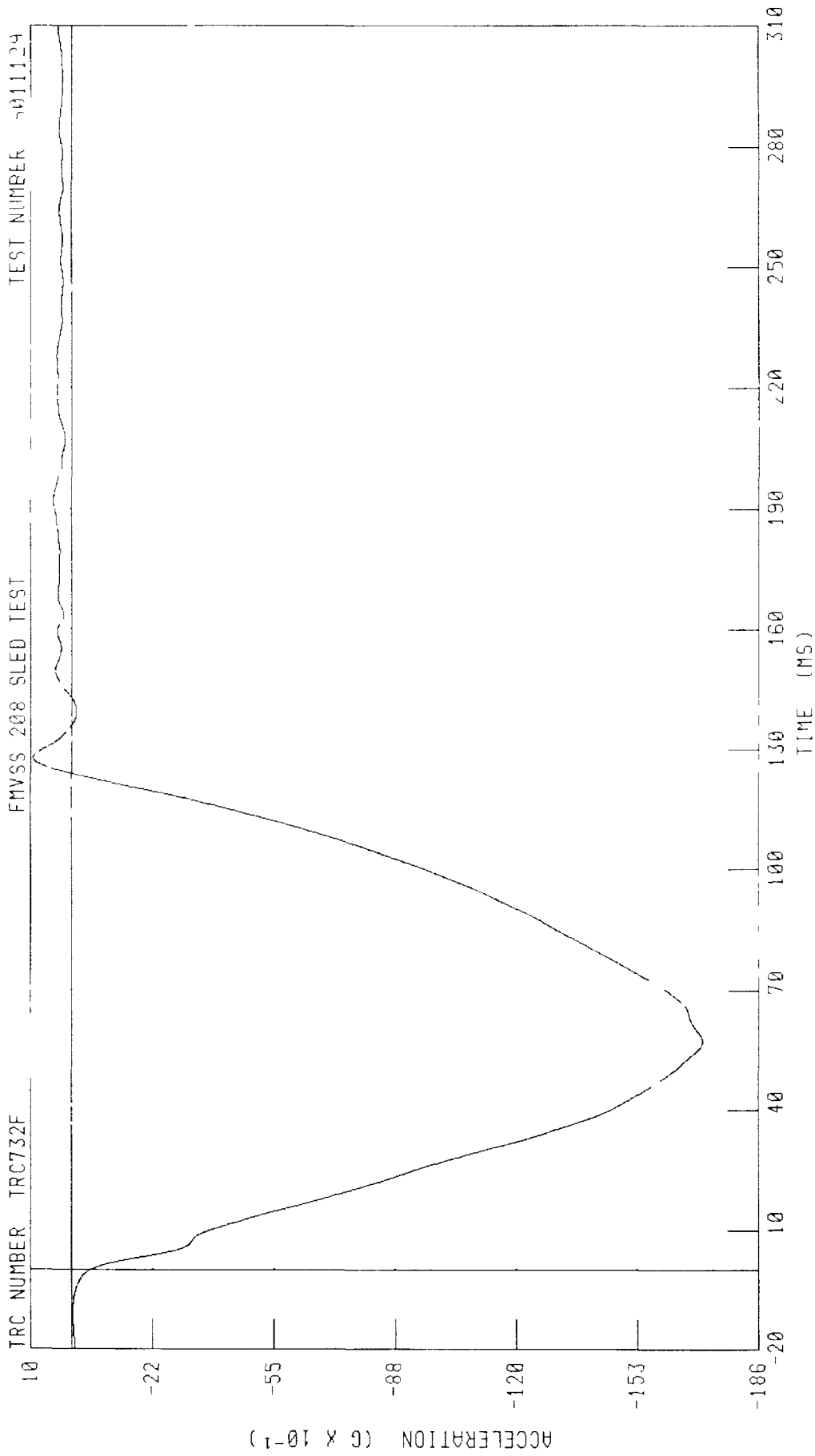
TEST NUMBER S011129



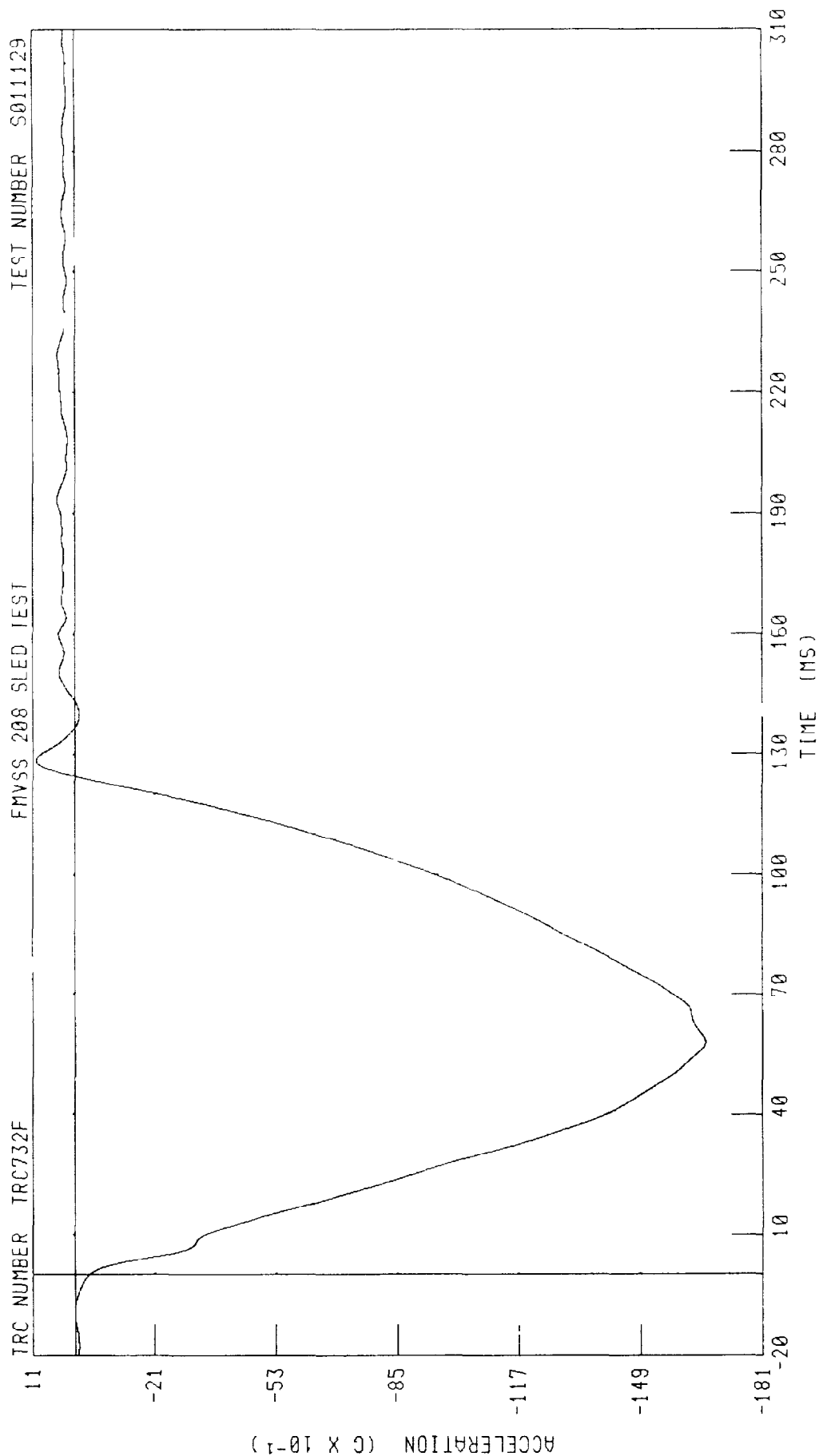
CHANNEL	SLOXC	FILTER	CH	CLASS	60
1	1	1	1	1	1
2	1	1	1	1	1
3	1	1	1	1	1
4	1	1	1	1	1
5	1	1	1	1	1
6	1	1	1	1	1
7	1	1	1	1	1
8	1	1	1	1	1
9	1	1	1	1	1
10	1	1	1	1	1
11	1	1	1	1	1
12	1	1	1	1	1
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15	1	1	1	1	1
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17	1	1	1	1	1
18	1	1	1	1	1
19	1	1	1	1	1
20	1	1	1	1	1
21	1	1	1	1	1
22	1	1	1	1	1
23	1	1	1	1	1
24	1	1	1	1	1
25	1	1	1	1	1
26	1	1	1	1	1
27	1	1	1	1	1
28	1	1	1	1	1
29	1	1	1	1	1
30	1	1	1	1	1
31	1	1	1	1	1
32	1	1	1	1	1
33	1	1	1	1	1
34	1	1	1	1	1
35	1	1	1	1	1
36	1	1	1	1	1
37	1	1	1	1	1
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40	1	1	1	1	1
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44	1	1	1	1	1
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46	1	1	1	1	1
47	1	1	1	1	1
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74	1	1	1	1	1
75	1	1	1	1	1
76	1	1	1	1	1
77	1	1	1	1	1
78	1	1	1	1	1
79	1	1	1	1	1
80	1	1	1	1	1
81	1	1	1	1	

PEAK DATA 0 94 G @ 128 00 MS, -17 06 G @ 57 04 MS

C20204 / 2002 FORD WINDSTAR
SLED ACCELERATION BACKUP



C20204 / 2002 FORD WINDSTAR
 SLED ACCELERATION FOR TIMING CIRCUIT
 FMVSS 208 SLED TEST



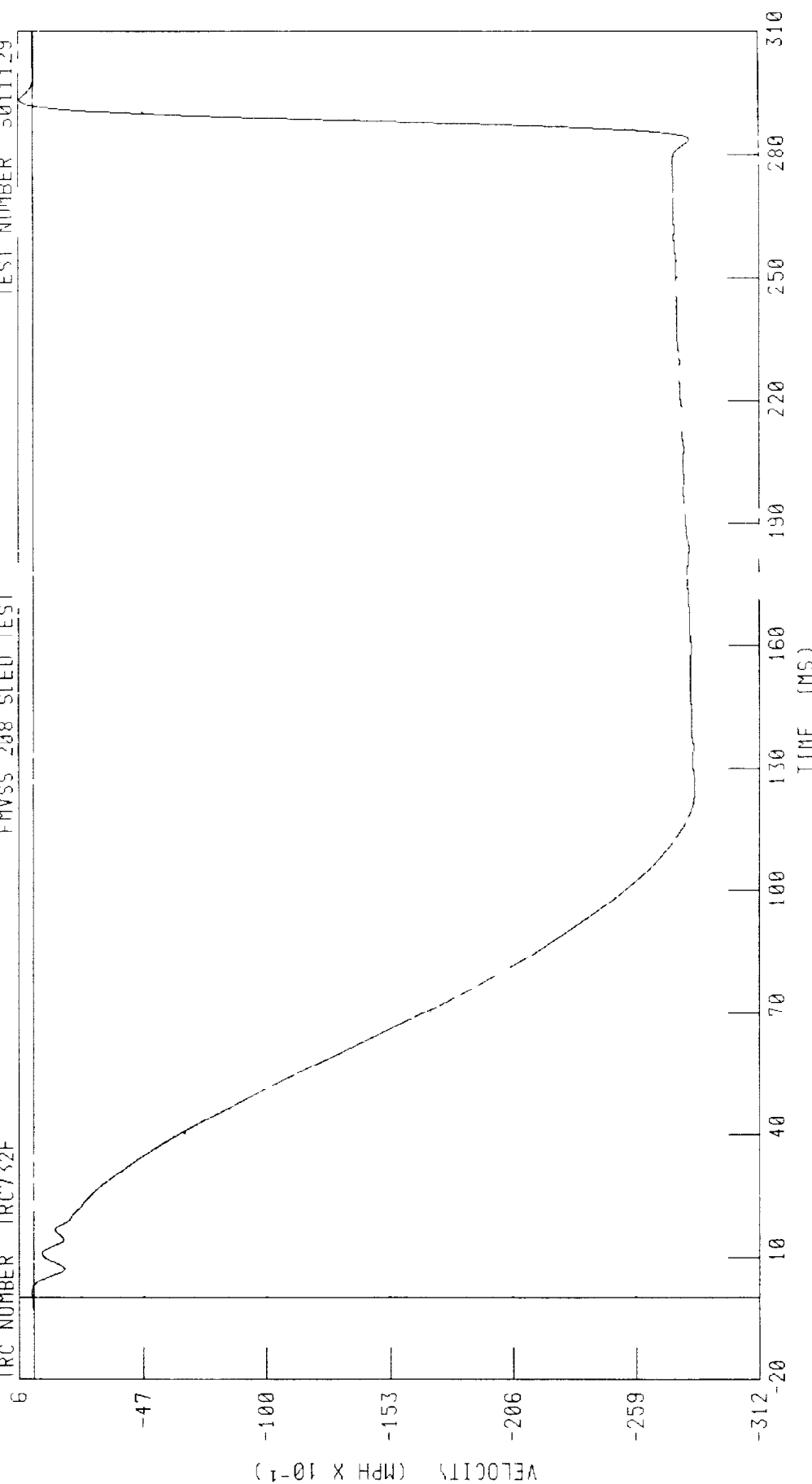
L20204 / 2002 FORD WINDSTAR

MEASURED VELOCITY TRAF

TRC NUMBER TRC732F

FMVSS 208 SLED TEST

TEST NUMBER 5011129

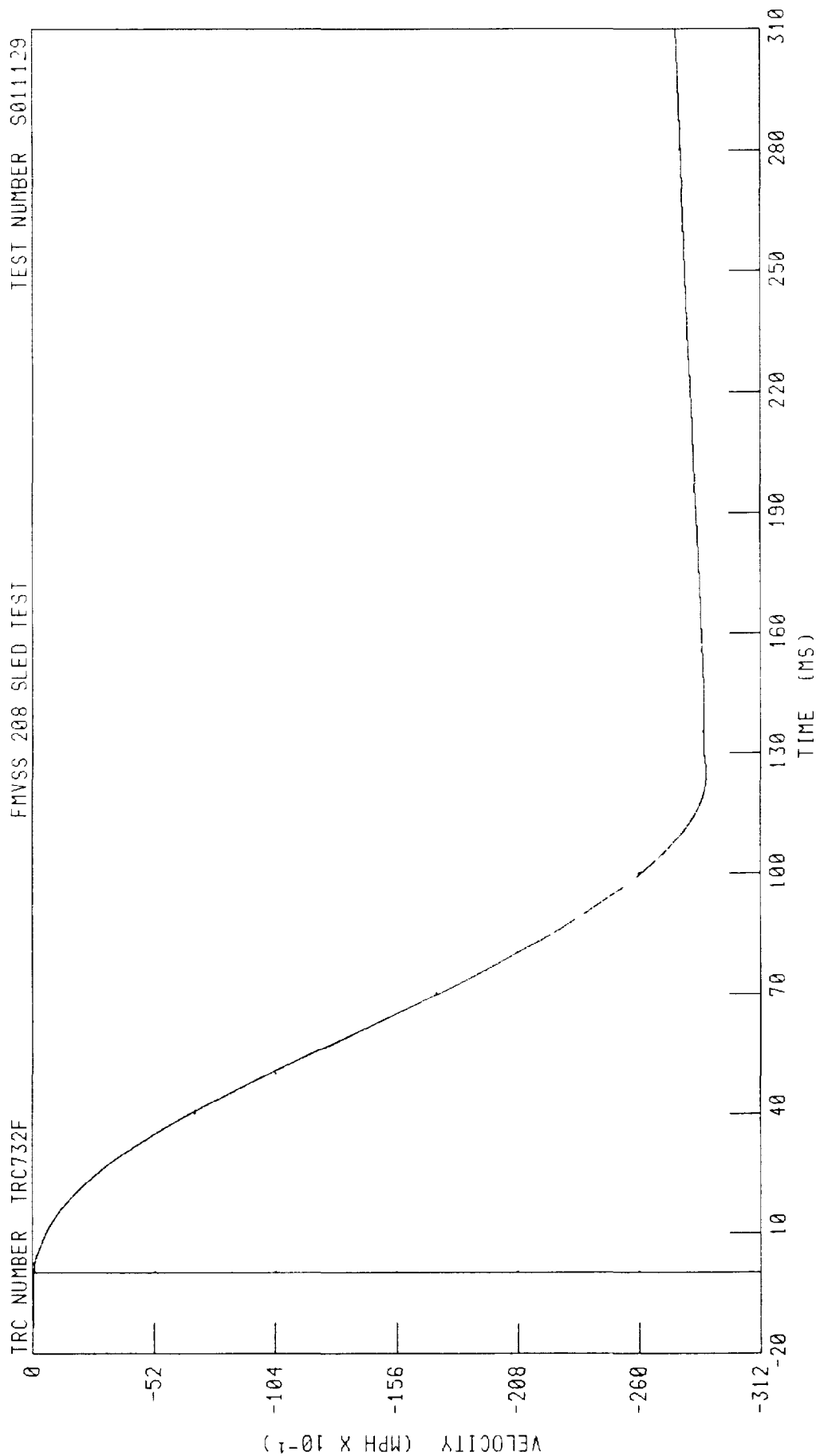


TIME (MS)

CHANNEL SLDXV FILTER CH CLASS 60

PEAK DATA 0 55 MPH @ 293 20 MS, -28 44 MPH @ 125 60 MS

C20204 / 2002 FORD WINDSTAR
SLED VELOCITY (INTEGRATED)
FMVSS 208 SLED TEST

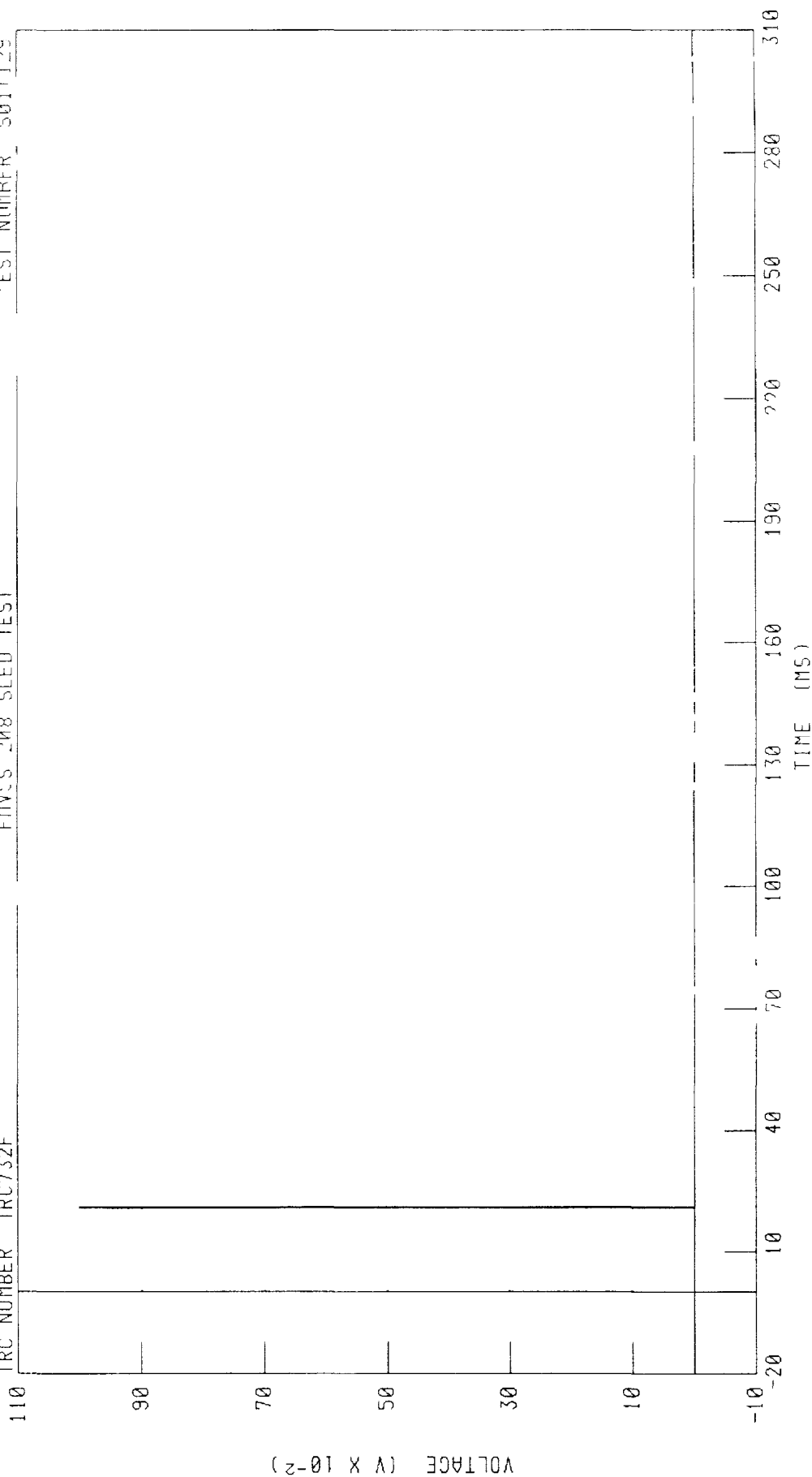


CHANNEL SLOXVI FILTER CH CLASS 180

C20204 2002 FORD WINDSTAR
 DRIVER PRIMARY AIRBAG EVENT
 FIVCS 208 SLED TEST

TRC NUMBER TRC732F

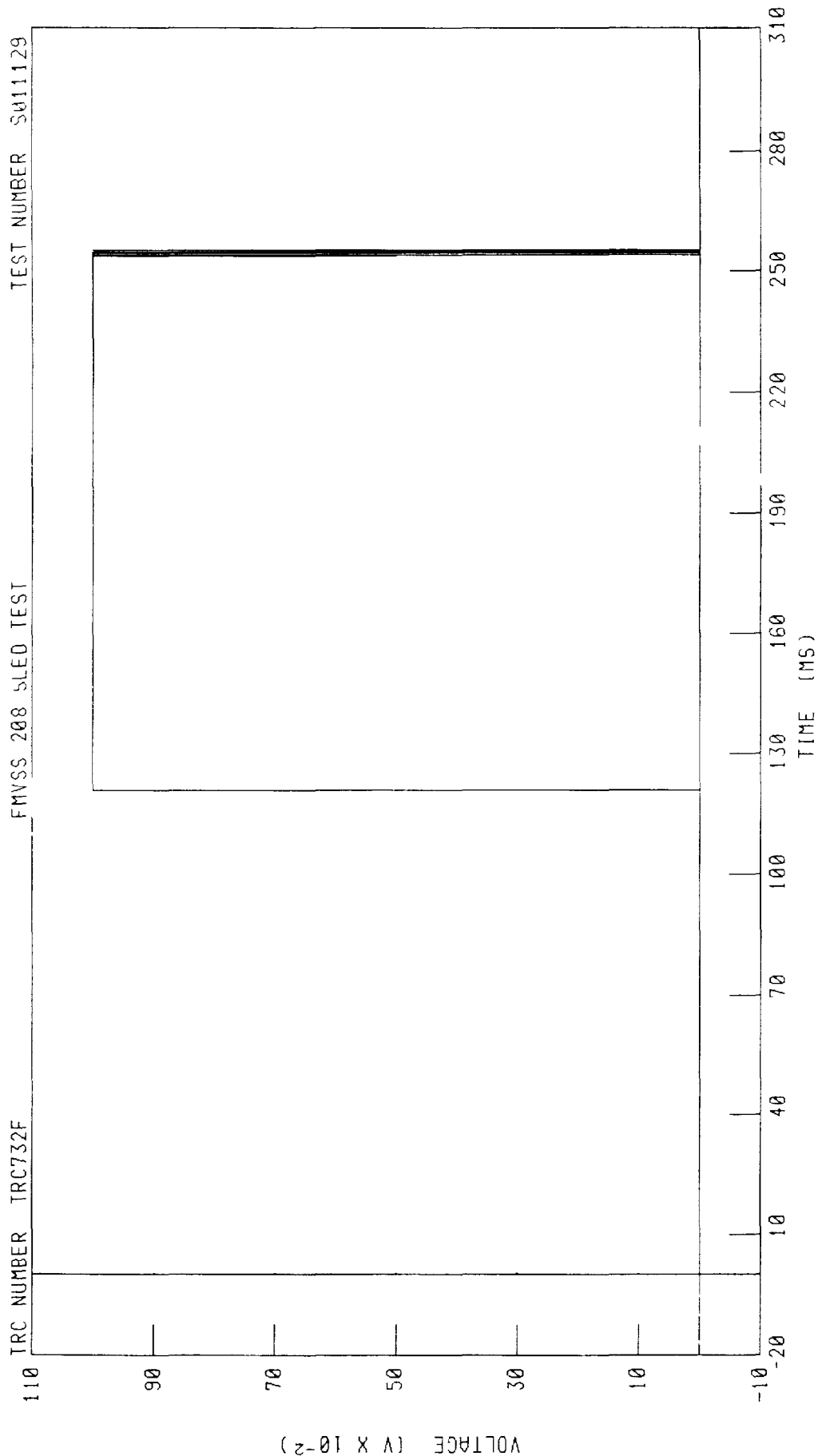
TEST NUMBER 5011129



CHANNEL ABEVT1 FILTER CH CLASS 1000

PEAK DATA 1 00 V @ 20 96 MS 0 00 V @ -20 00 MS

C20204 2002 FORD WINDSTAR
 DRIVER SECONDARY AIRBAG EVENT



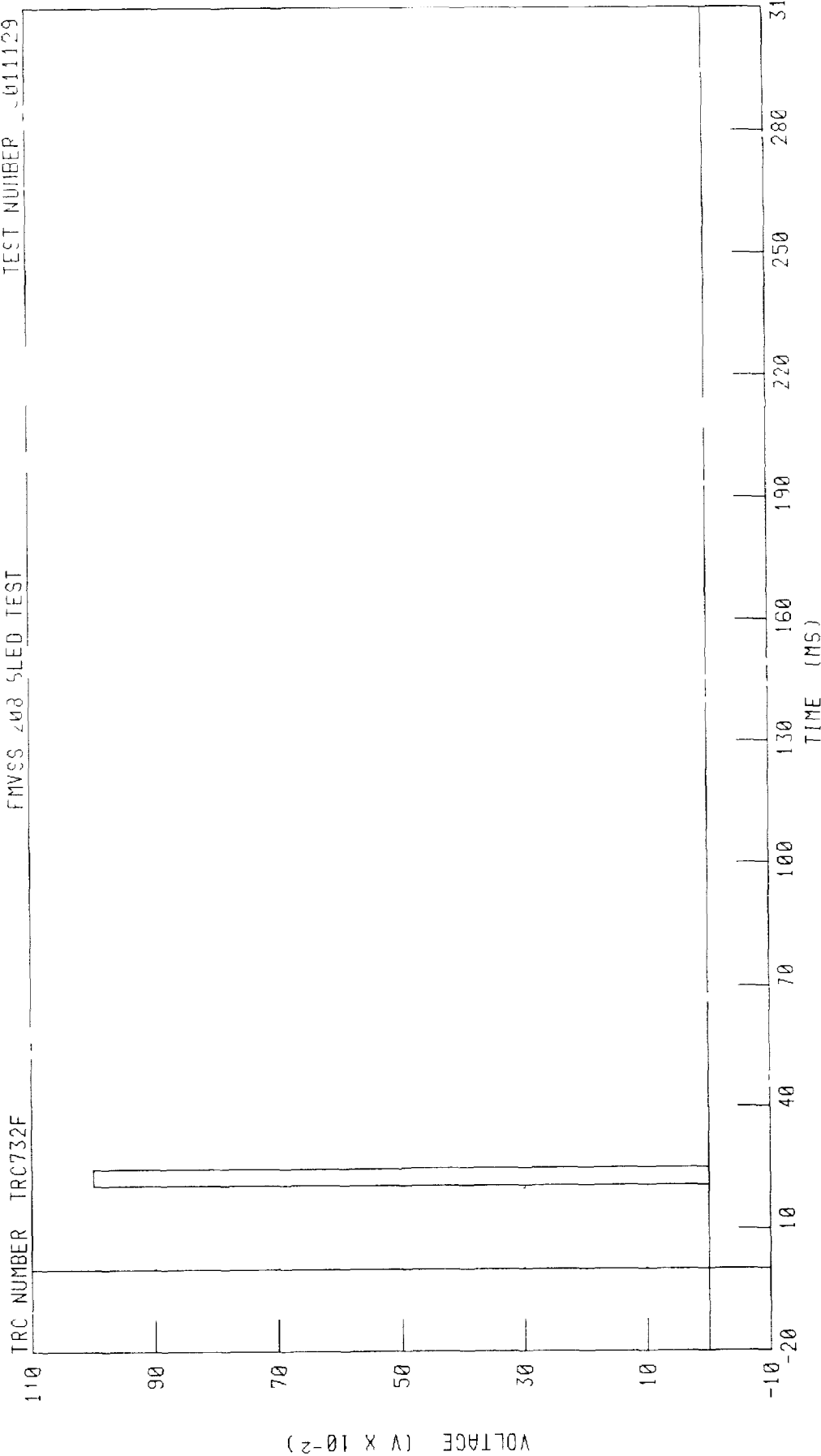
CHANNEL ABEV12 FILTER CH CLASS 1000

PEAK DATA 1 00 V @ 120 96 MS, 0 00 V @ -20 00 MS

C20204 / 2002 FORD WINDSTAR
 PASSENGER PRIMARY AIRBAG EVENT
 FMVSS 208 SLED TEST

TEST NUMBER 011129

TRC NUMBER TRC732F



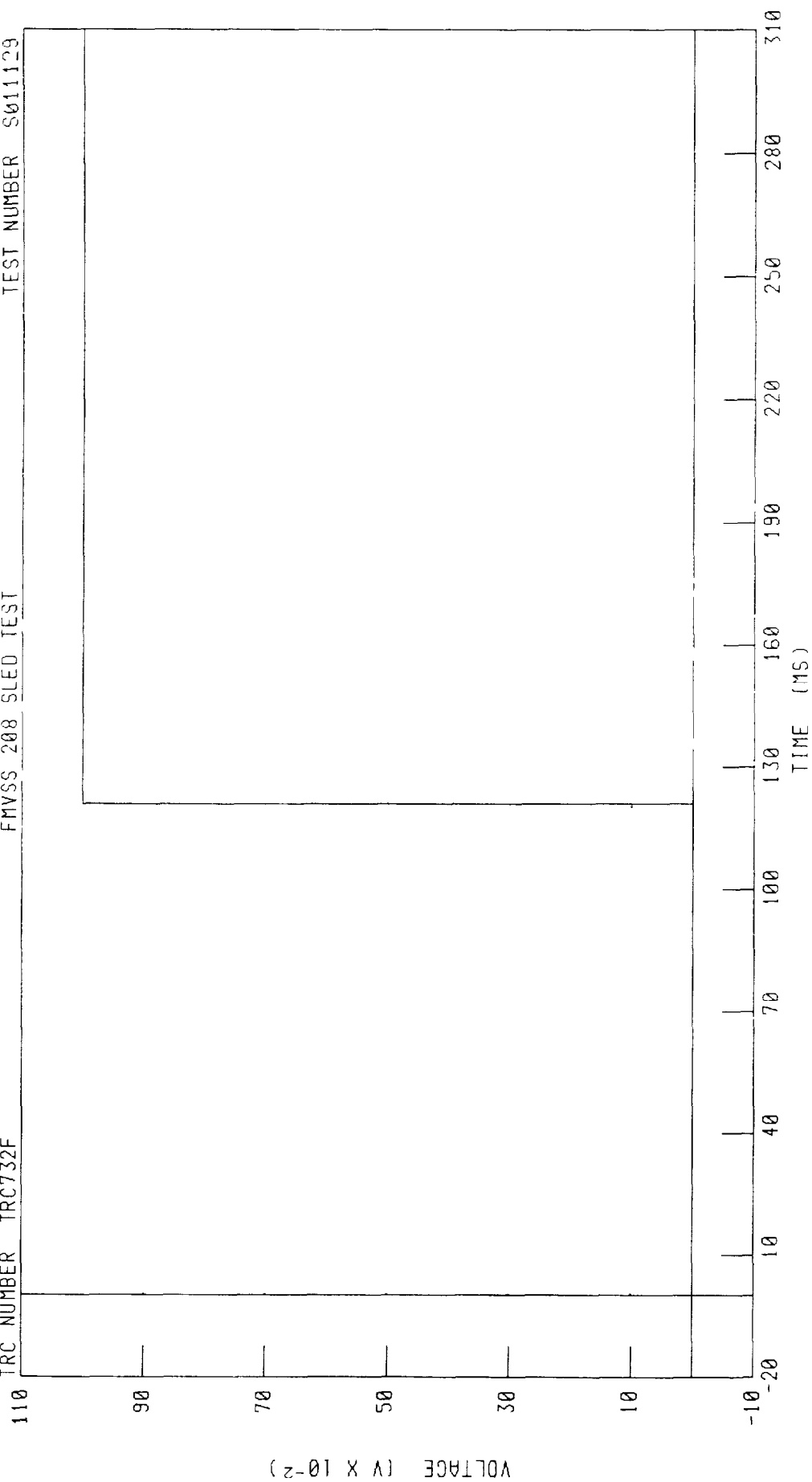
PEAK DATA 1 00 V @ 20 96 MS, 0 00 V @ -20 00 MS

CHANNEL ABEV3 FILTER (H CLASS 1000

C20204 / 2002 FORD WINDSTAR
PASSENGER SECONDARY AIRBAG EVENT
FMVSS 208 SLED TEST

TEST NUMBER S011129

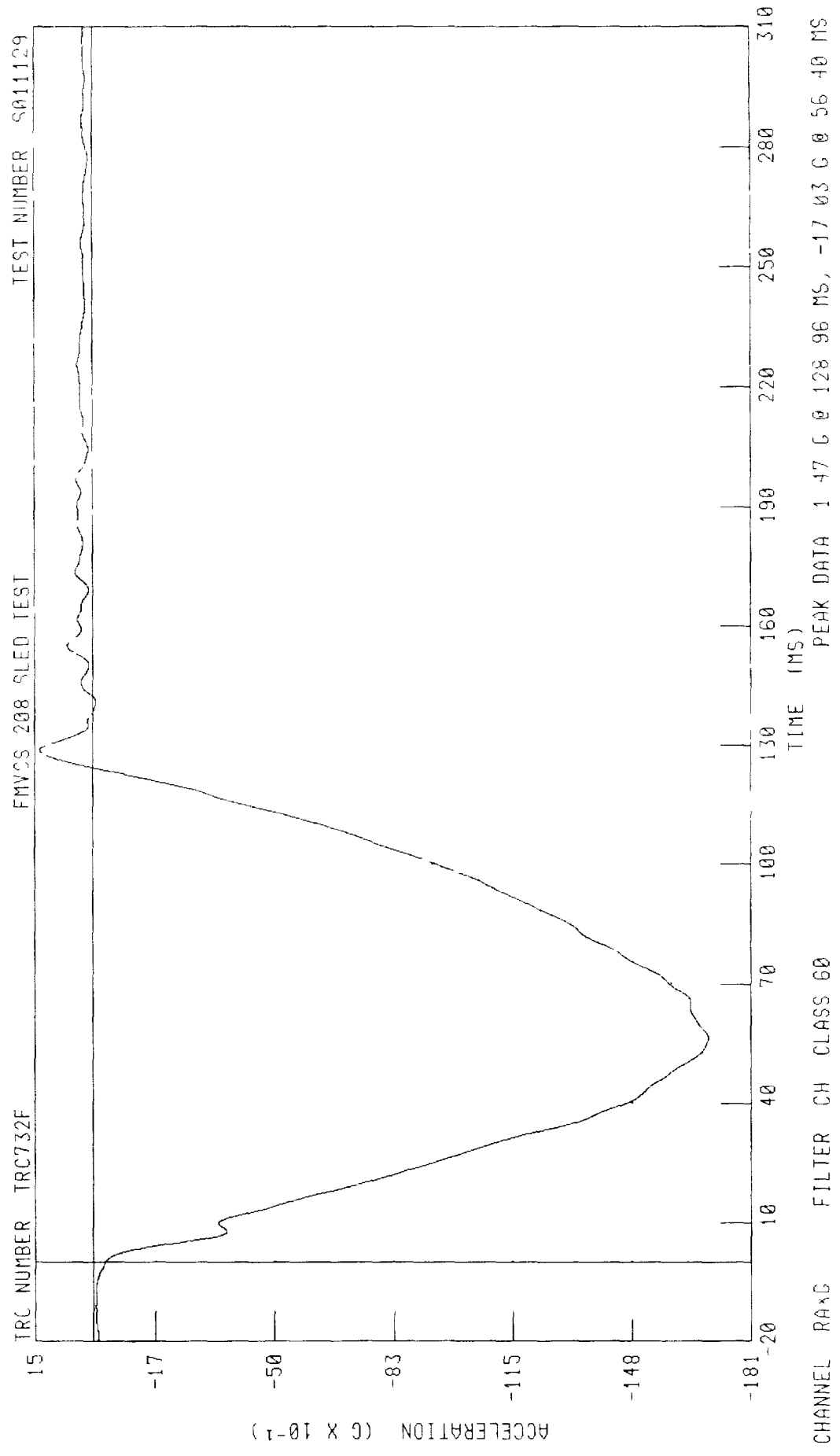
TRC NUMBER TRC732F



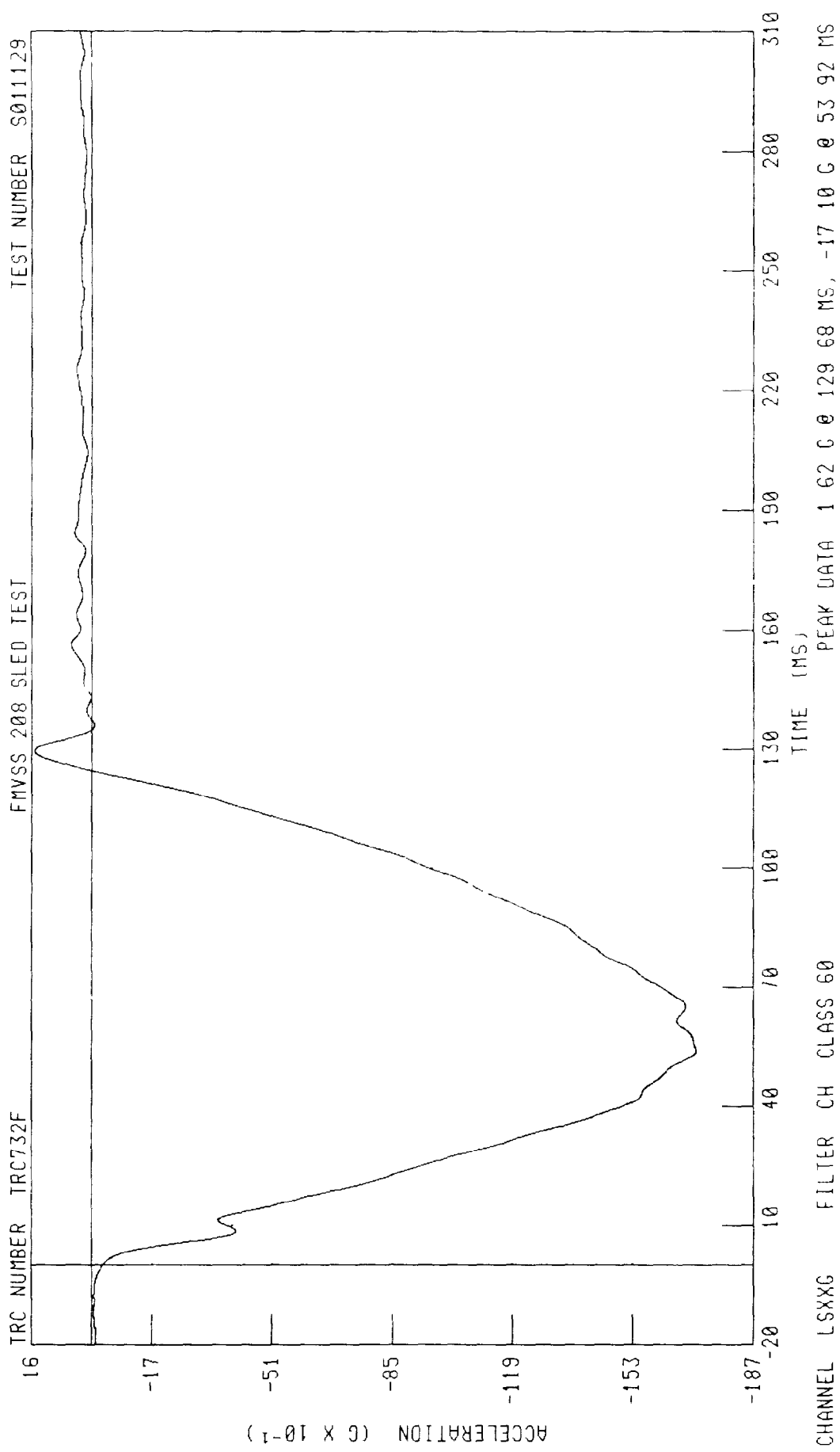
PEAK DATA 1 00 V 0 310 00 MS, 0 00 V 0 -20 00 MS

CHANNEL ABEV14 FILTER CH CLASS 1000

C20204 / 2002 FORD WINDSTAR
 REAR AXLE X-AXIS ACCELERATION
 FMVCS 208 SLED TEST



L20204 / 2002 FORD WINDSTAR
LEFT BODY AT REAR SEAT X-AXIS ACCELERATION

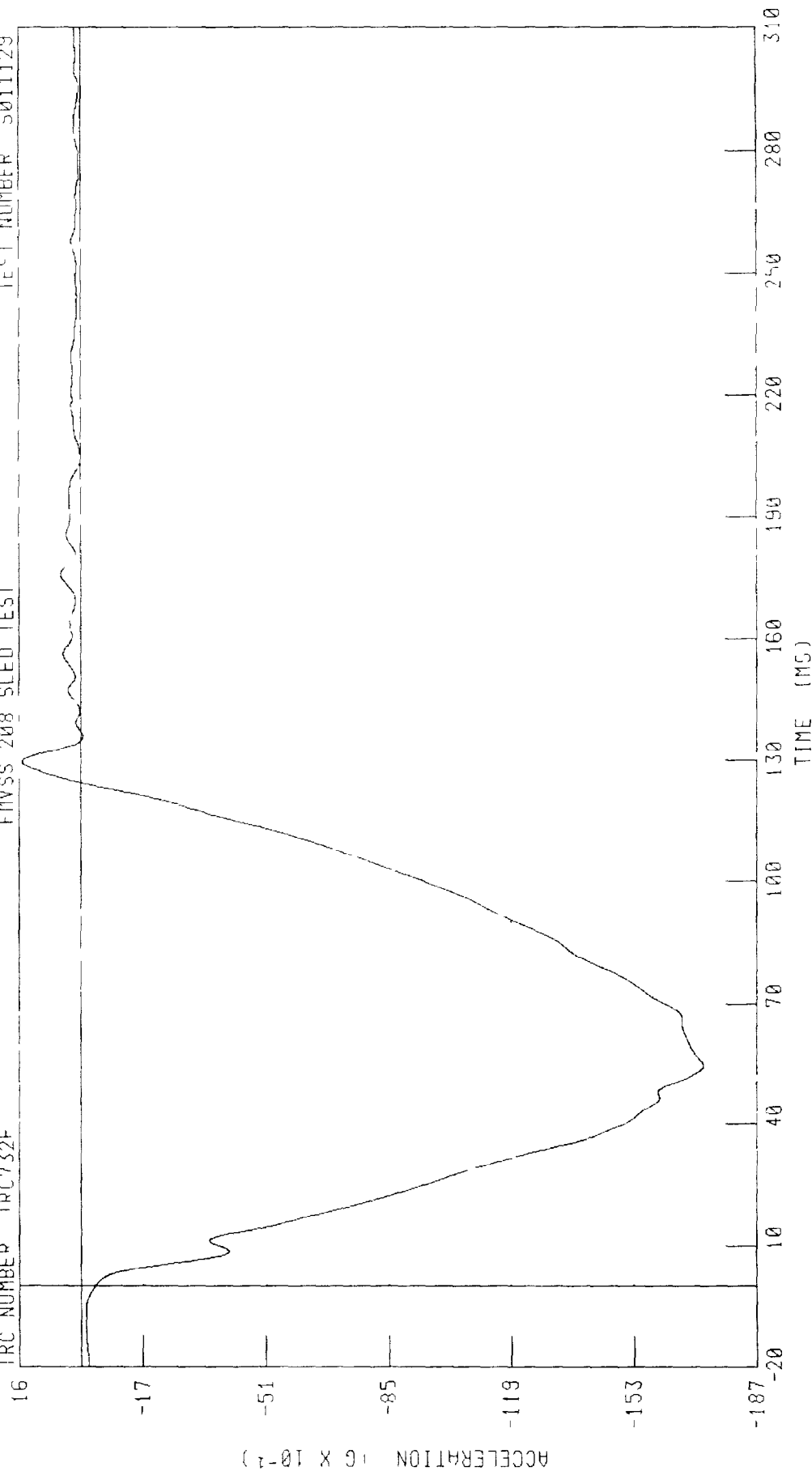


C20204 / 2002 FORD WINDSTAR
RIGHT BODY AT REAR SEAT X-AXIS ACCELERATION

TRC NUMBER TRC732F

FIVSS 208 SLED TEST

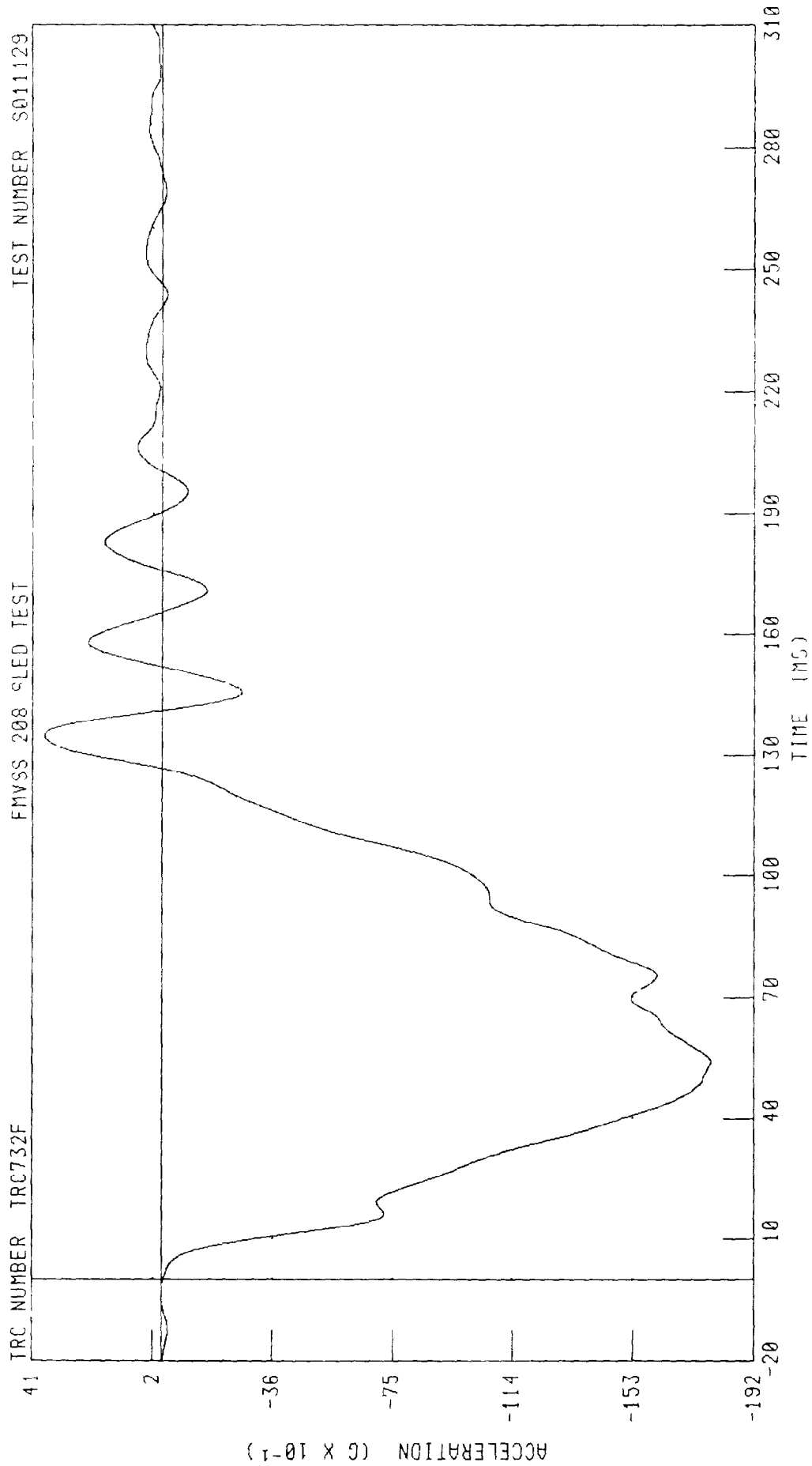
TEST NUMBER 5011129



CHANNEL RSXXG FILTER CH CLASS 60

PEAK DATA 1 63 6 0 129 76 M⁴ -17 24 0 54 40 MS

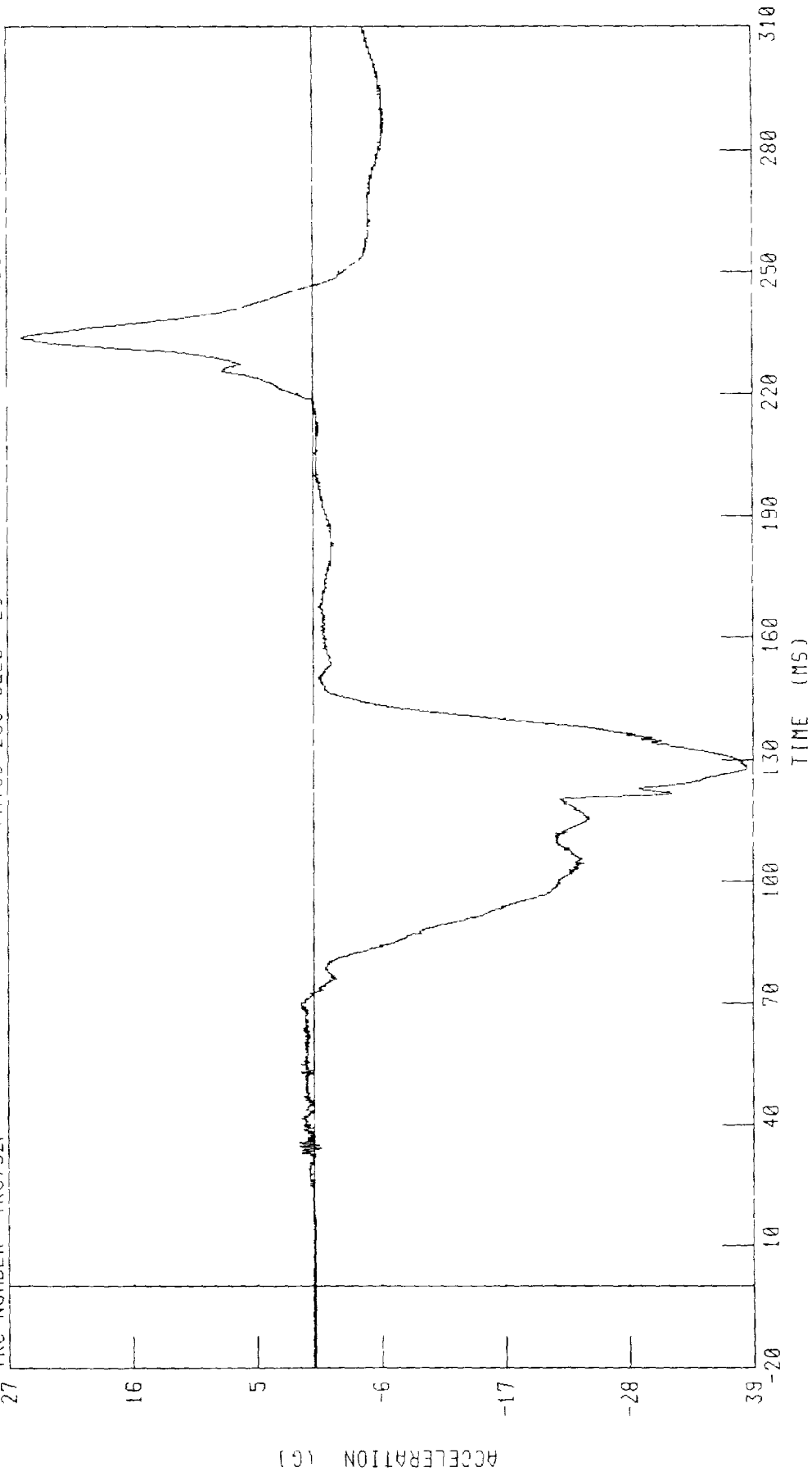
C20204 / 2002 FORD WINDSTAR
 TOP ENGINE X-AXIS ACCELERATION
 FMVSS 208 PLED TEST



C20204 2002 FORD WINDSTAR
 DRIVER HEAD X-AXIS ACCELERATION
 FILTER 200 SLED TEST

TRC NUMBER TRC732F

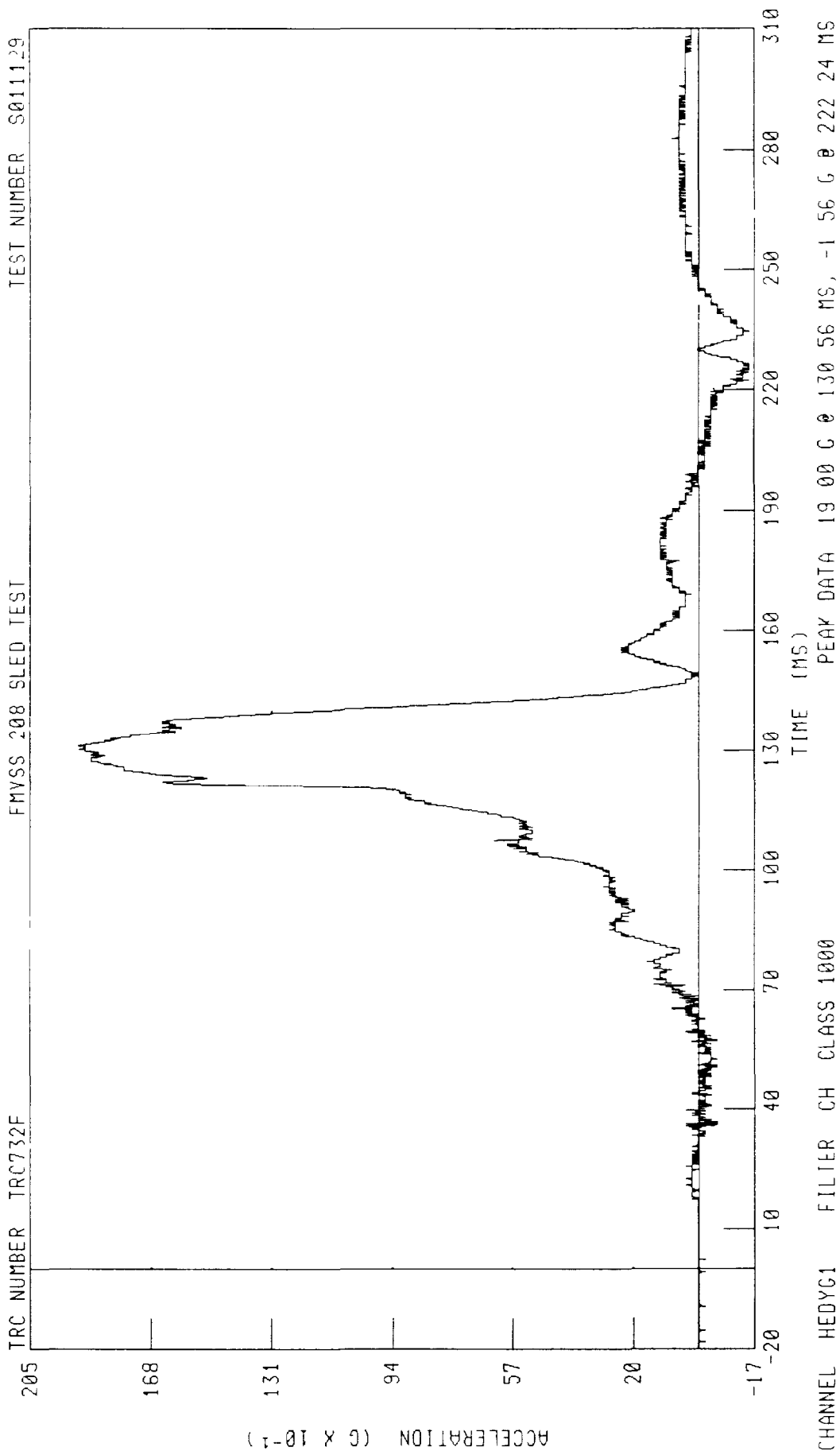
TEST NUMBER S011129



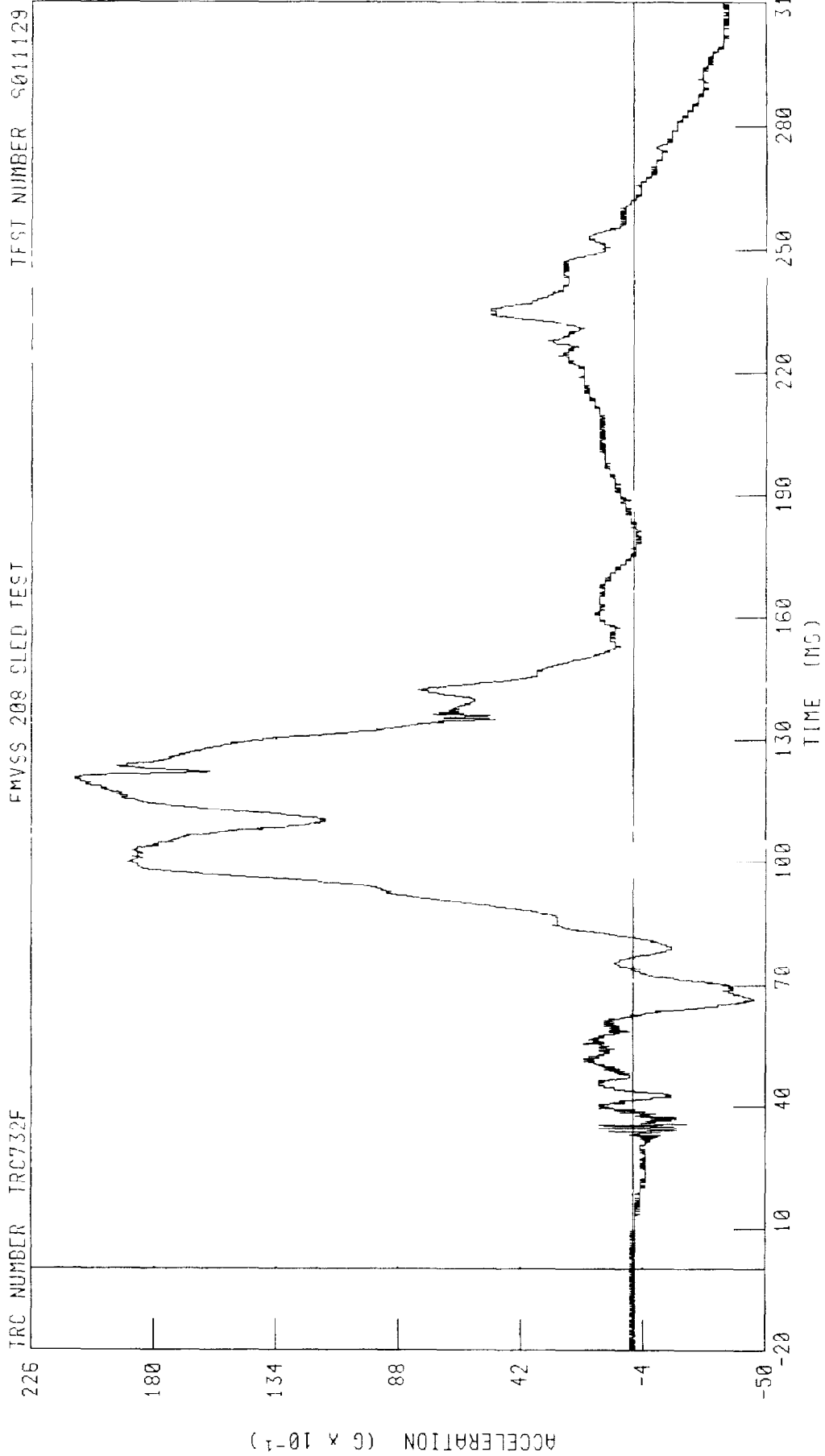
CHANNEL HEDXG1 FILTER CH CLASS 1000

PEAK DATA 25 70 0 234 08 MC 3P 48 1 0 128 00 MS

C20204 / 2002 FORD WINDSTAR
DRIVER HEAD Y-AXIS ACCELERATION



C20204 / 2002 FORD WINDSTAR
 DRIVER HEAD Z-AXIS ACCELERATION
 FMVSS 208 SLED TEST



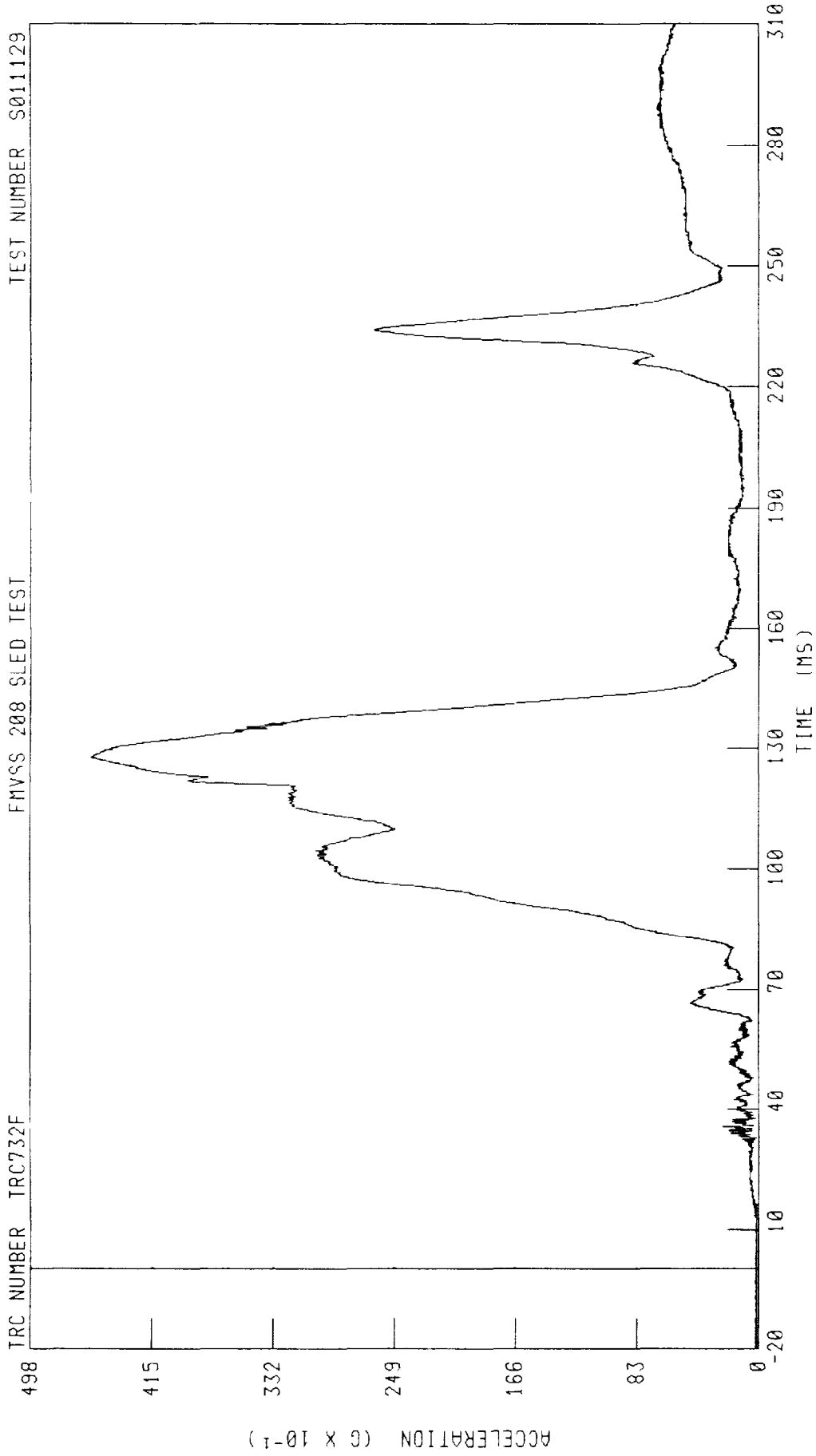
CHANNEL HEDZG1 FILTER CH CLASS 1000

PEAK DATA 20 96 G @ 120 24 MS -4 58 G @ 66 40 MS

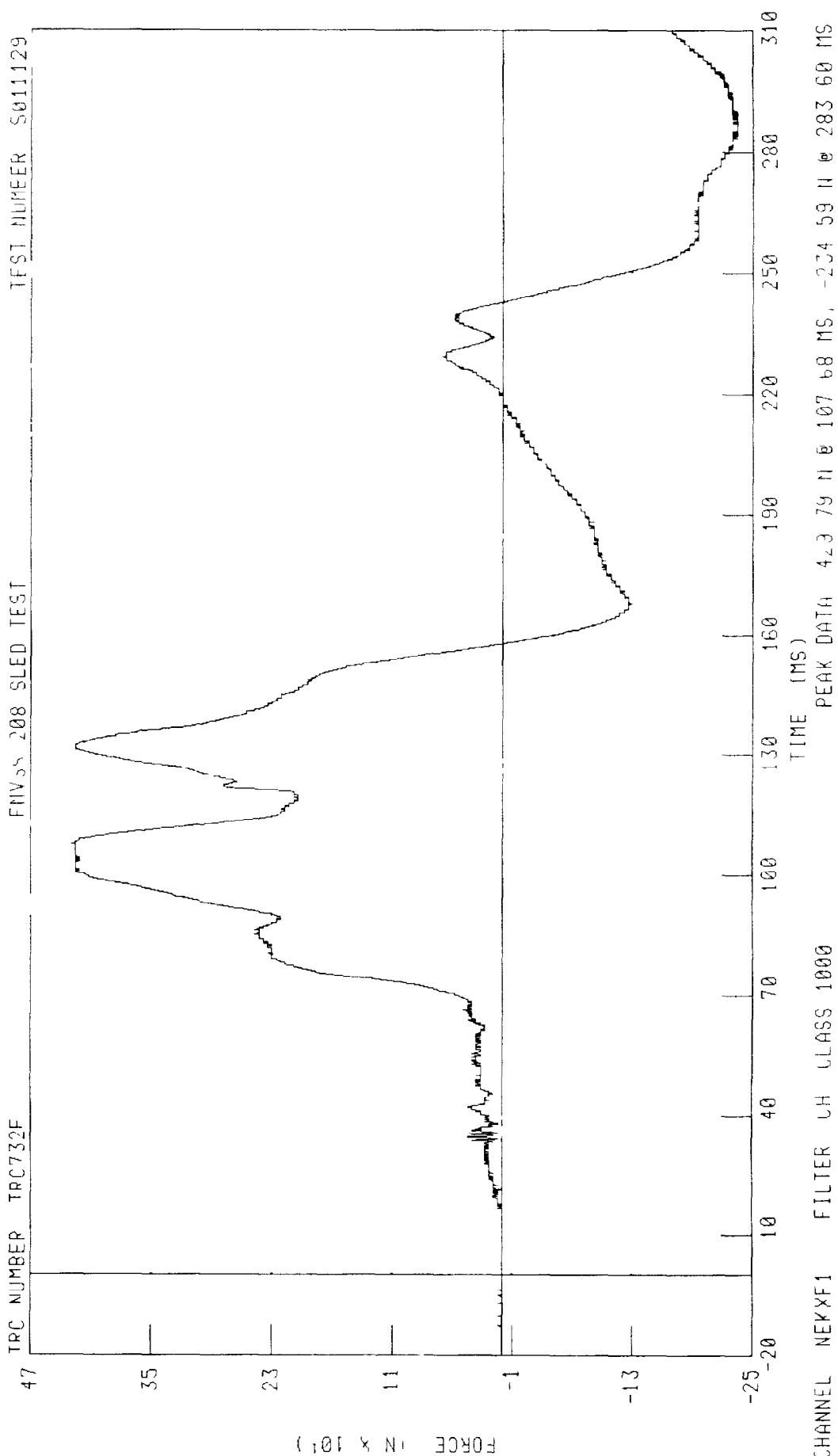
TRC NUMBER TRC732F

TEST NUMBER S011129

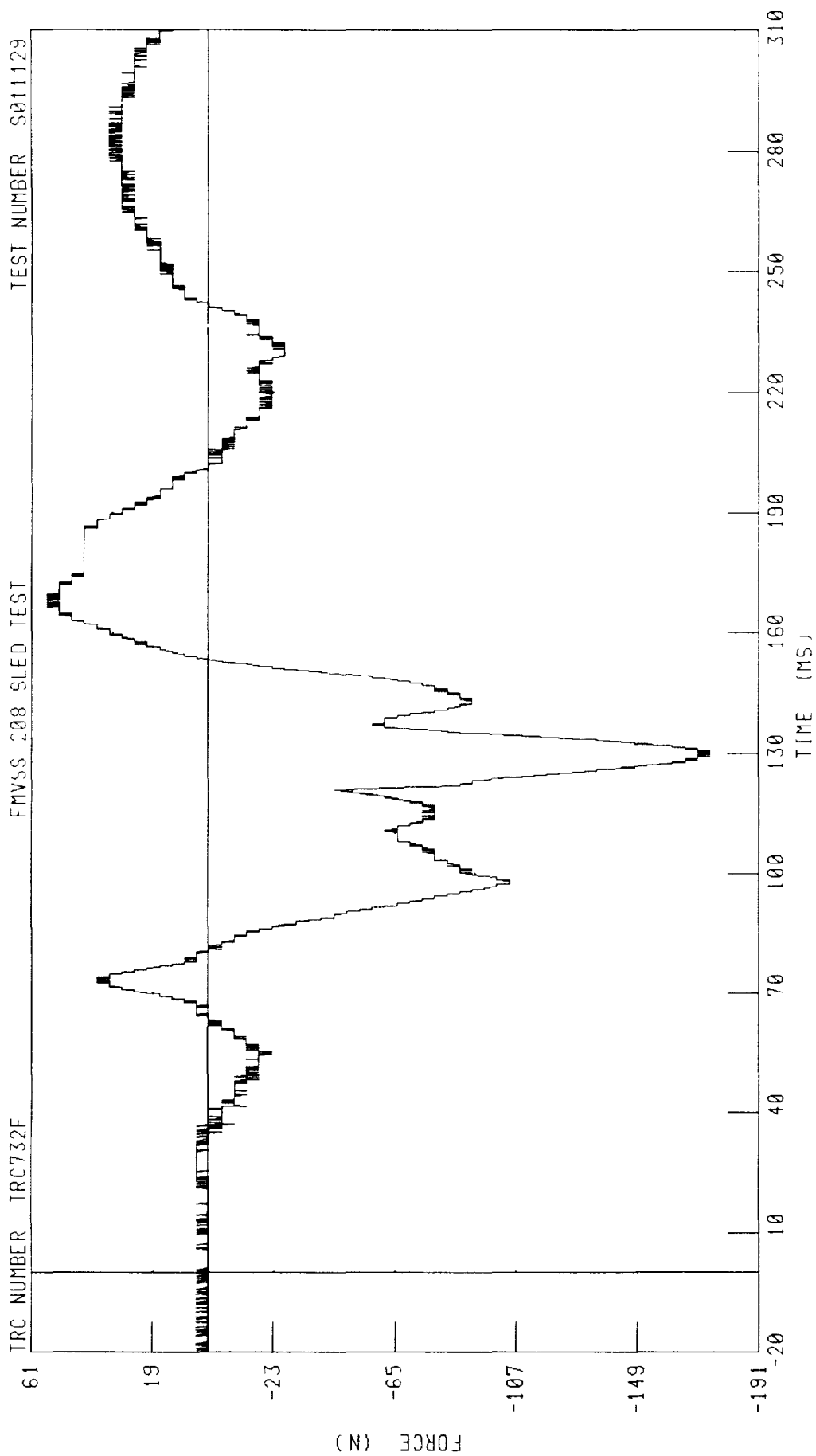
C20204 / 2002 FORD WINDSTAR
DRIVER HEAD RESULTANT ACCELERATION



C2W204 / 2002 FORD WINDSTAR
 DRIVER NECK X-AXIS SHEAR FORCE
 FNVSX 208 SLED TEST



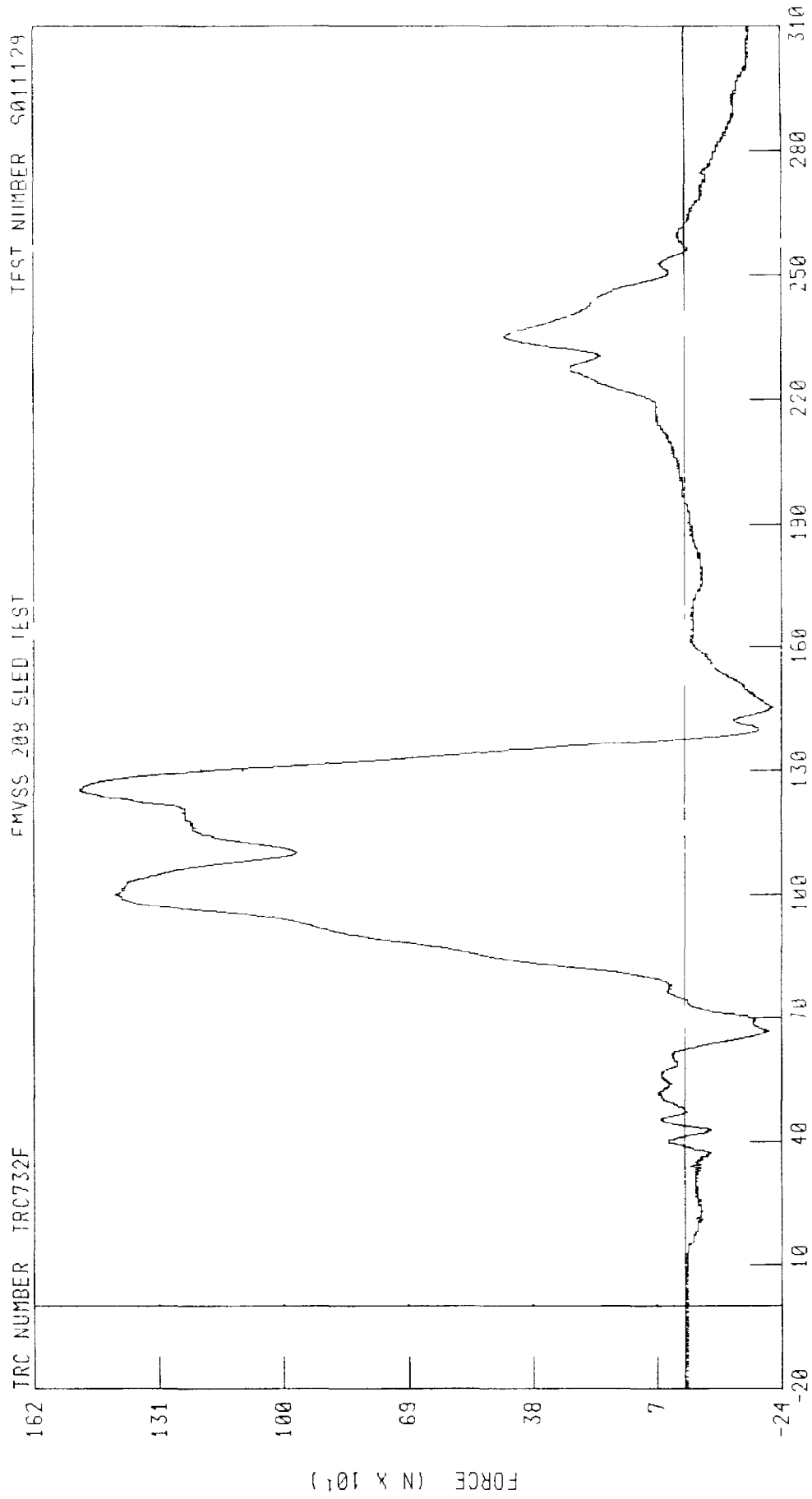
C20204 / 2002 FORD WINDSTAR
DRIVER NECK Y-AXIS SHEAR FORCE



CHANNEL NEKYF1 FILTER CH CLASS 1000

PEAK DATA 55 85 N @ 166 64 MS -174 33 N @ 129 36 MS

C20204 / 2002 FORD WINDSTAR
DRIVER NECK Z-AXIS AXIAL FORCE



TRC NUMBER TRC732F

FMVSS 208 SLED TEST

TEST NUMBER S011129

TIME (MS)

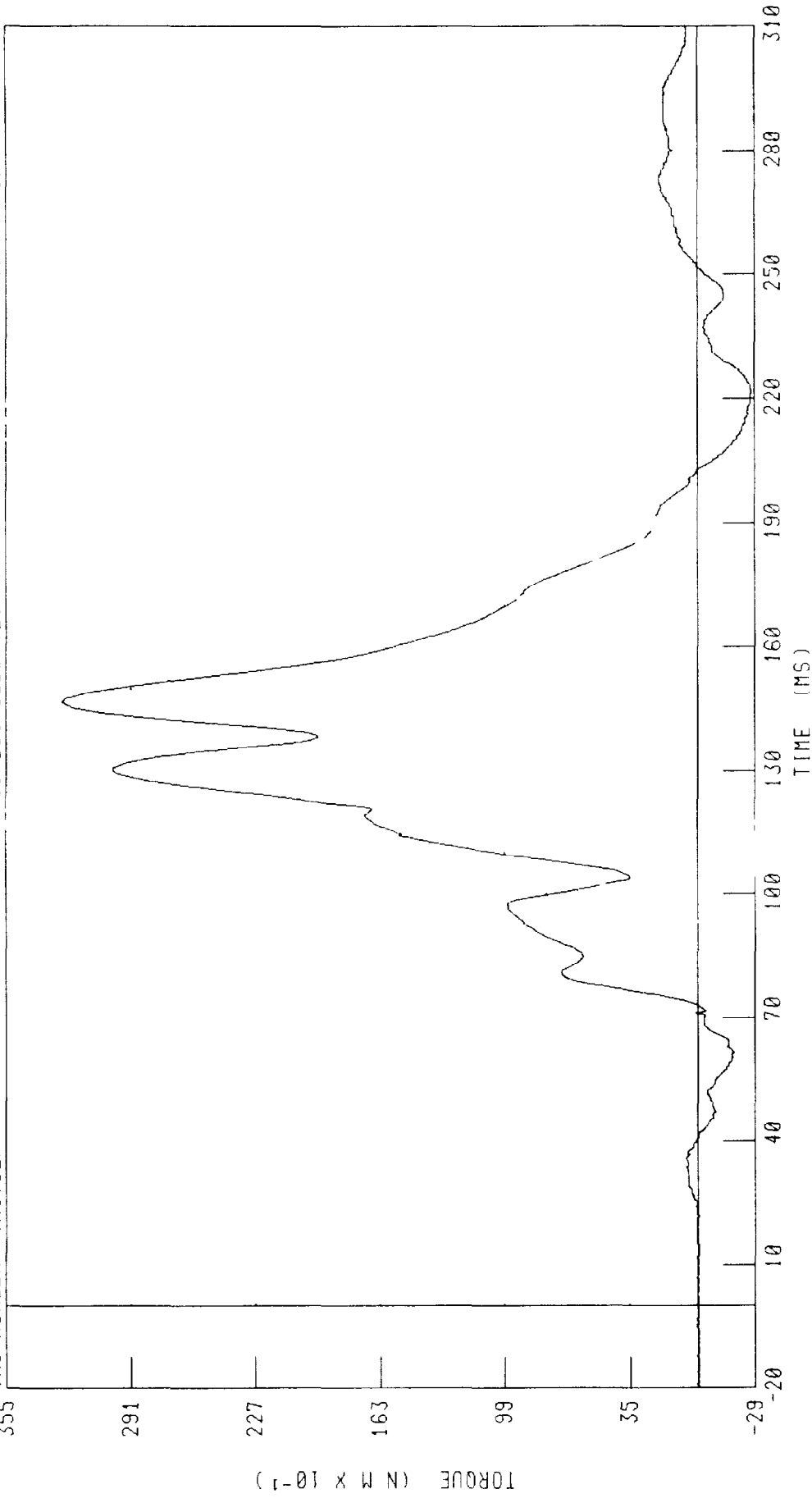
CHANNEL NEKZF1 FILTER CH CLASS 1000

PEAK DATA 1506 91 N @ 125 20 MS, -220 64 N @ 145 44 MS

C20204 / 2002 FORD WINDSTAR
DRIVER NECK MOMENT ABOUT X AXIS
FMVSS 208 SLED TEST

TEST NUMBER S011129

TRC NUMBER TRC732F



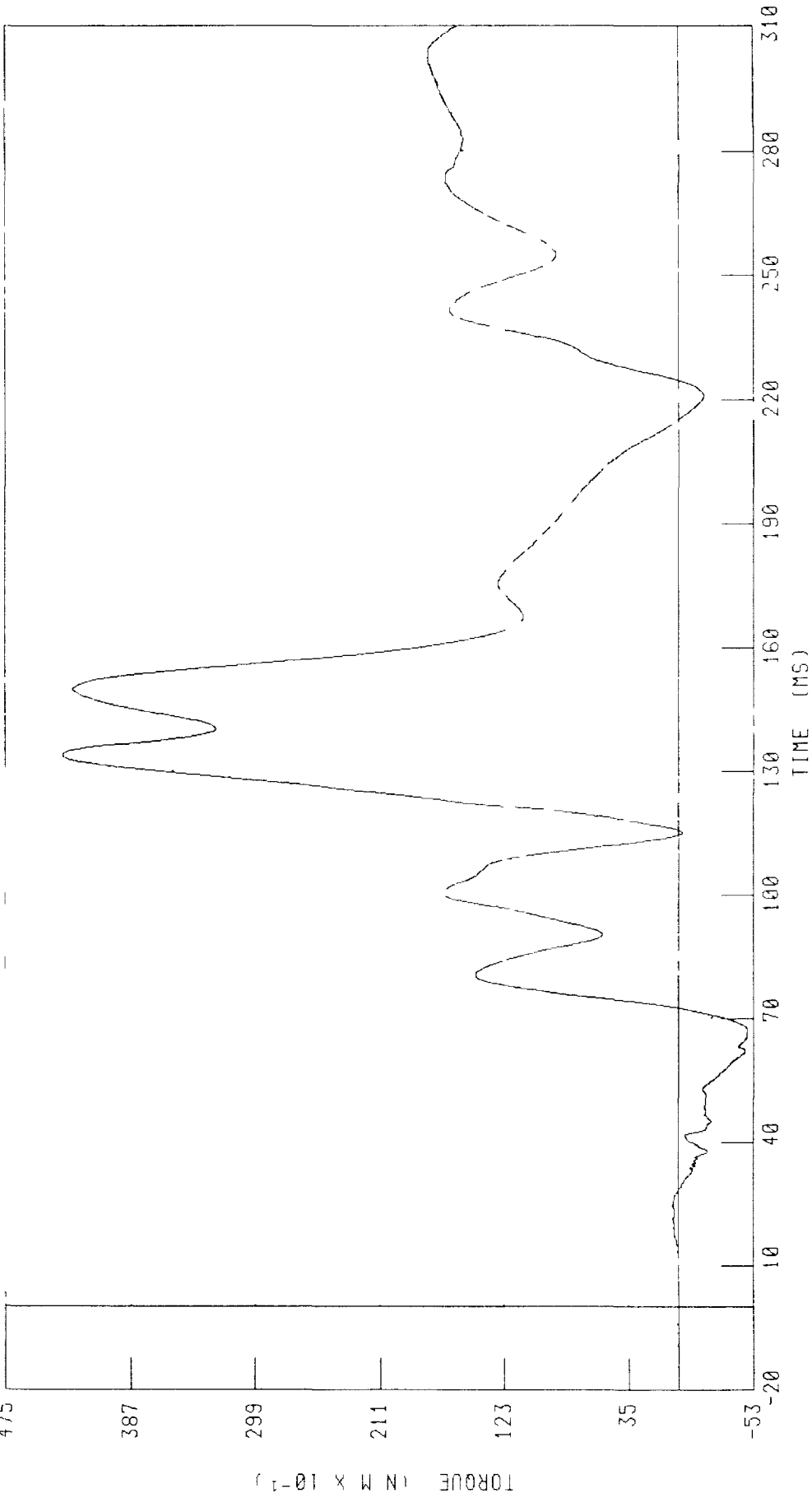
CHANNEL NEKX1 FILTER CH CLASS 600

PEAK DATA 32 64 N M @ 147 04 MS, -2 73 N M @ 221 68 MS

C20204 / 2002 FORD WINDSTAR
 DRIVER HFCK MOMENT ABOUT Y AXIS
 FMVSS 208 SLED TEST

TRC NUMBER TRC732F

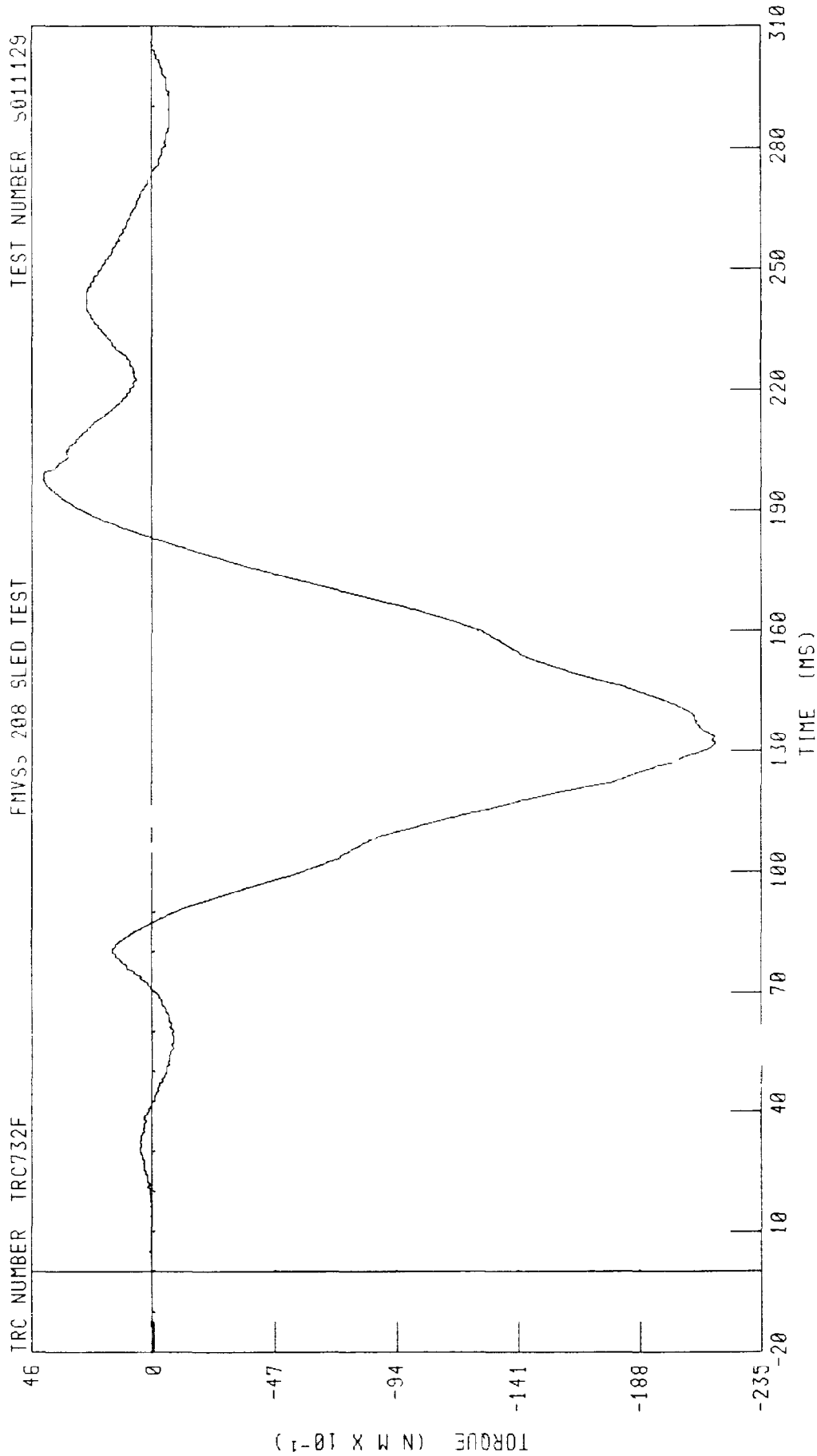
TEST NUMBER SH111-19



PEAK DATA 43 43 N M 0 134 00 N -4 88 N M 0 65 76 MS

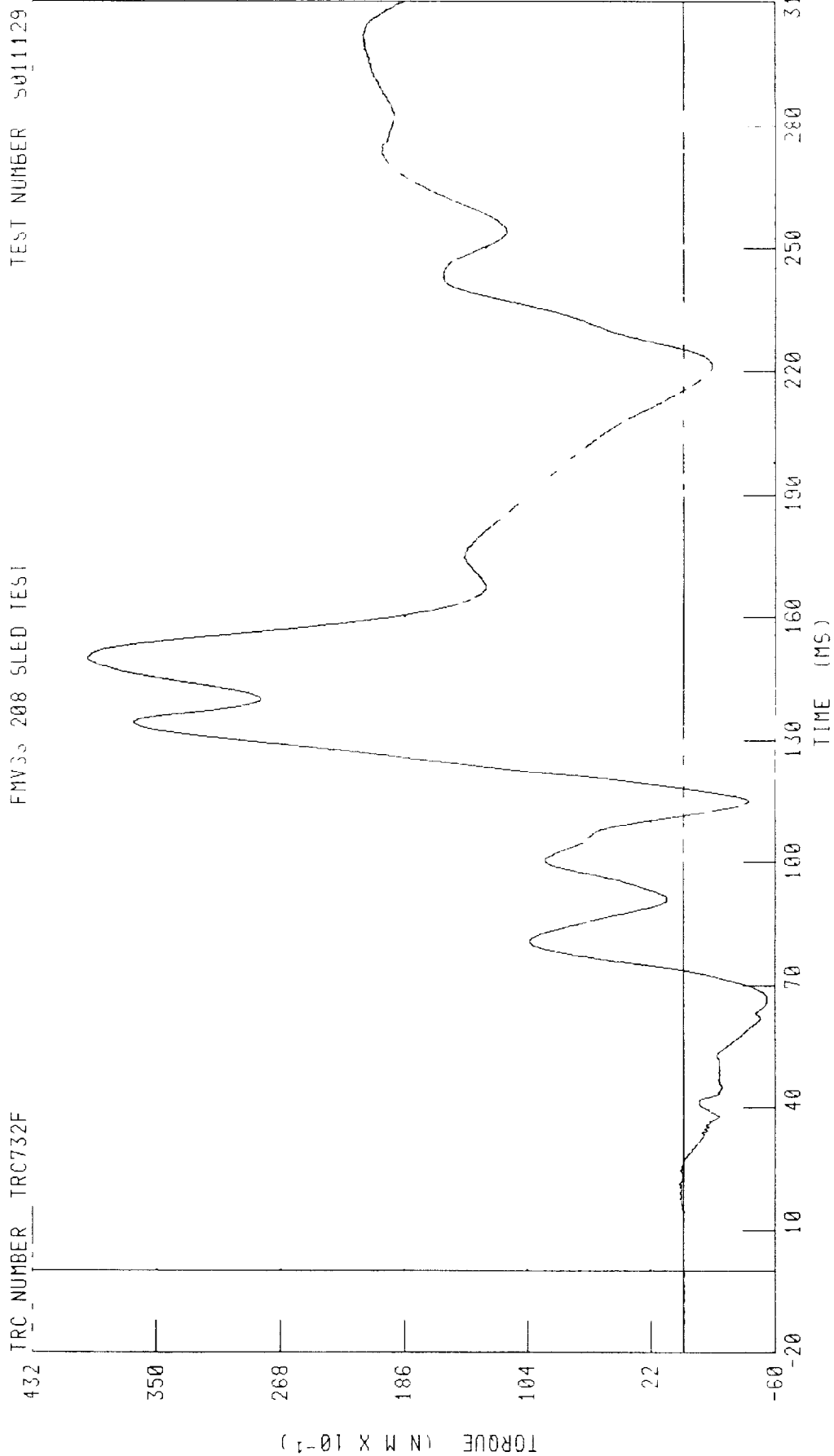
CHANNEL NEKYM1 FILTER CH CLASS 600

C20204 / 2002 FORD WINDSTAR
DRIVER NECK MOMENT ABOUT Z AXIS

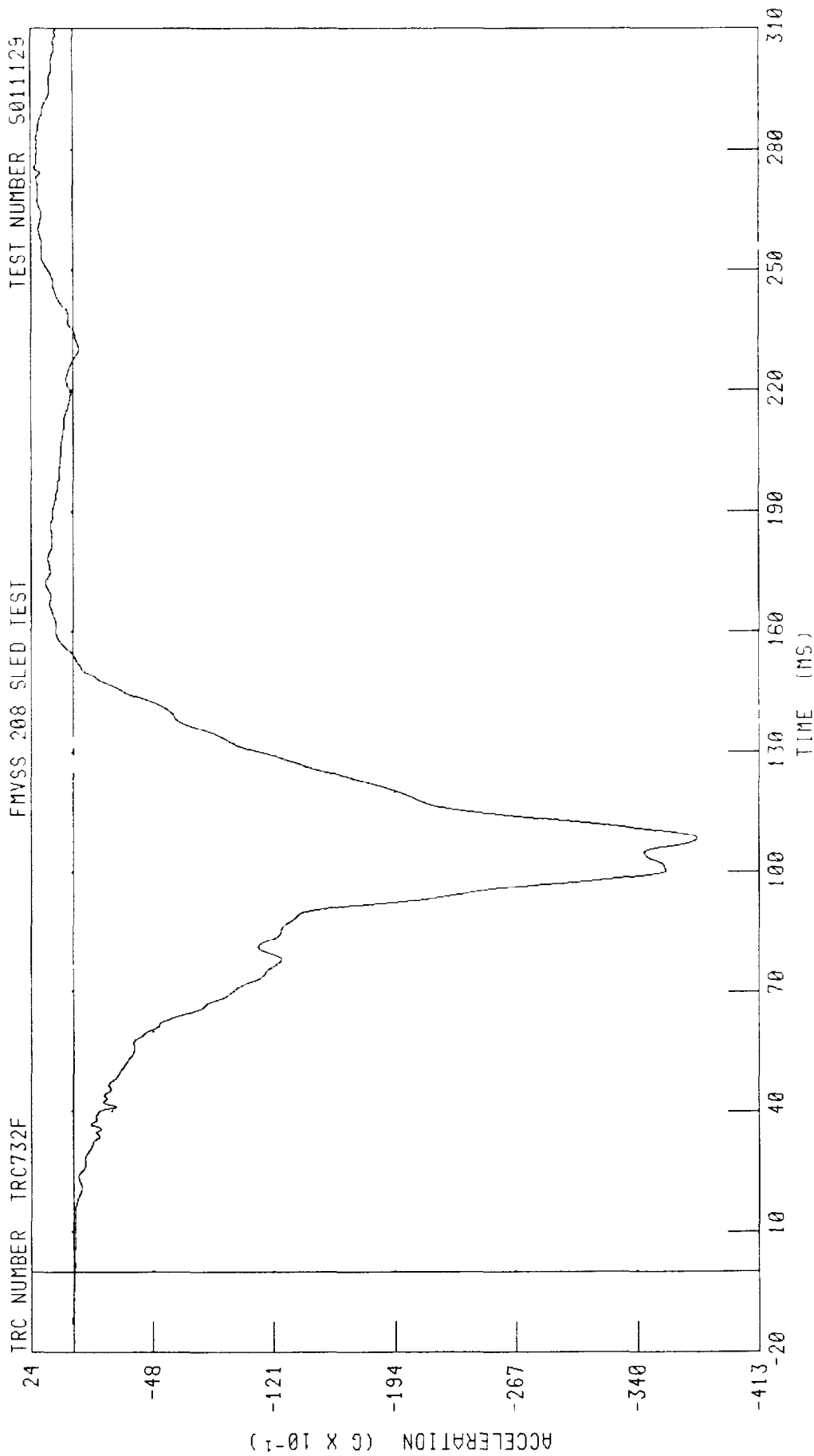


CHANNEL NEKZM1 FILTER CH CLASS 600 PEAK DATA 4 20 N M @ 197 68 MS, -21 82 N M @ 132 08 MS

120204 2002 FORD WINDSTAR
 DRIVER NECK MOMENT ABOUT Y AXIS OCCIPITAL CONDYLE
 FMV30 208 SLED TEST



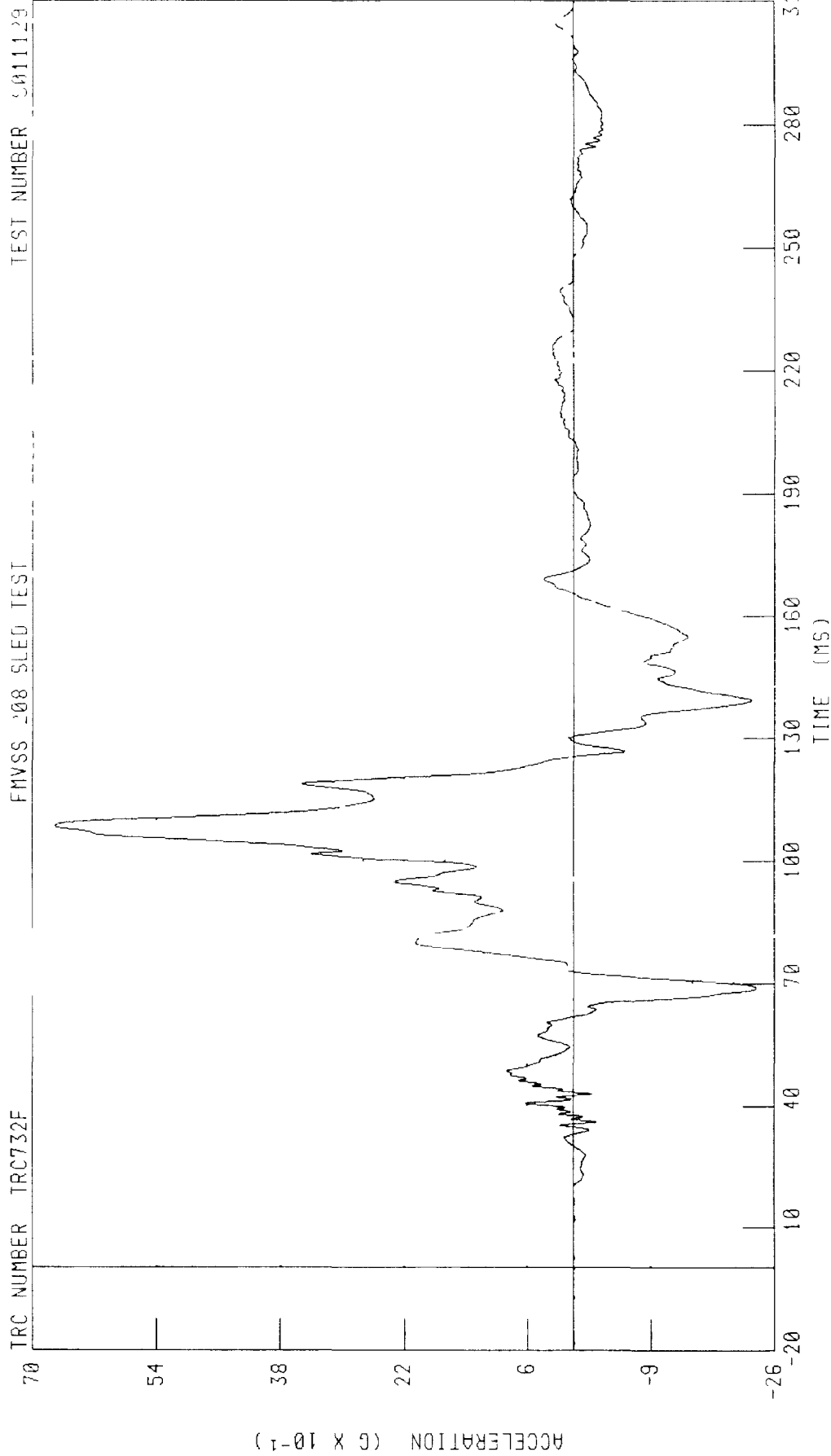
C20204 / 2002 FORD WINDSTAR
 DRIVER CHEST X-AXIS ACCELERATION
 FMVSS 208 SLED TEST



CHANNEL CSTXG1 FILTER CH CLASS 180

PEAK DATA 2 31 G @ 275 60 MS, -37 61 G @ 108 40 MS

U20204 / 2002 FORD WINDSTAR
 DRIVER CHEST THORIS ACCELERATION
 FMVSS 208 SLED TEST



CHANNEL CSTYC1 FILTER CH CLASS 180 PEAK DATA 6 71 0 0 108 56 MS, -2 36 0 0 68 80 N,

C20204 / 2002 FORD WINDSTAR
DRIVER CHEST Z-AXIS ACCELERATION
FMVSS 208 SLED TEST

TEST NUMBER S011129

TRC NUMBER TRC732F

174

133

92

51

10

-30

-72

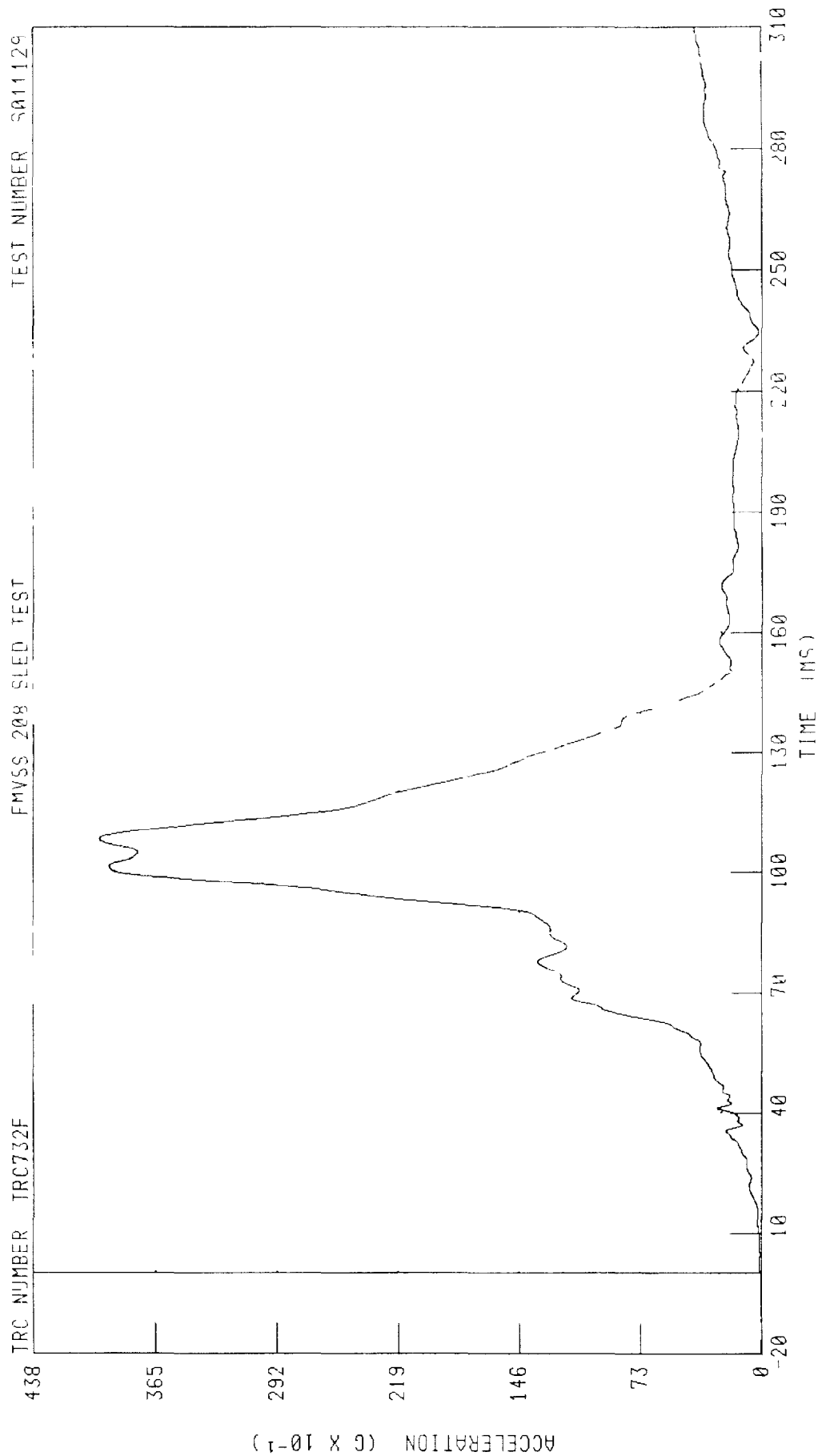
ACCELERATION (G X 10⁻¹)

TIME (MS)

CHANNEL CSTZG1 FILTER CH CLASS 180

PEAK DATA 16 23 0 101 60 MS -6 56 0 68 16 MS

C20204 / 2002 FORD WINDSTAR
 DRIVER CHEST RESULTANT ACCELERATION

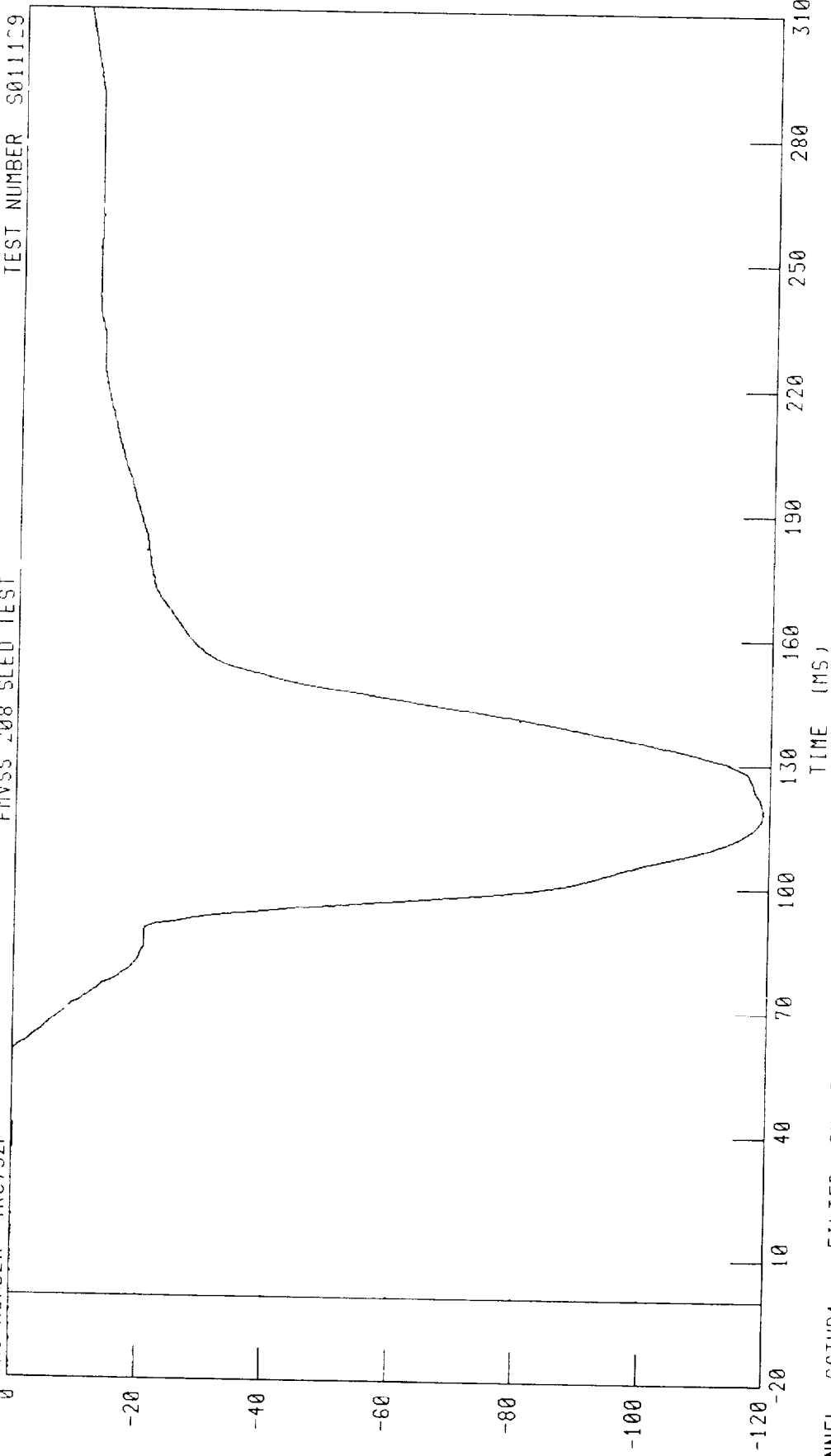


L20204 / 2002 FORD WINDSTAR
DRIVER CHEST DEFLECTION
FMVSS 208 SLED TEST

TRC NUMBER TRC732F

TEST NUMBER S011129

DISPLACEMENT (IN X 10⁻²)

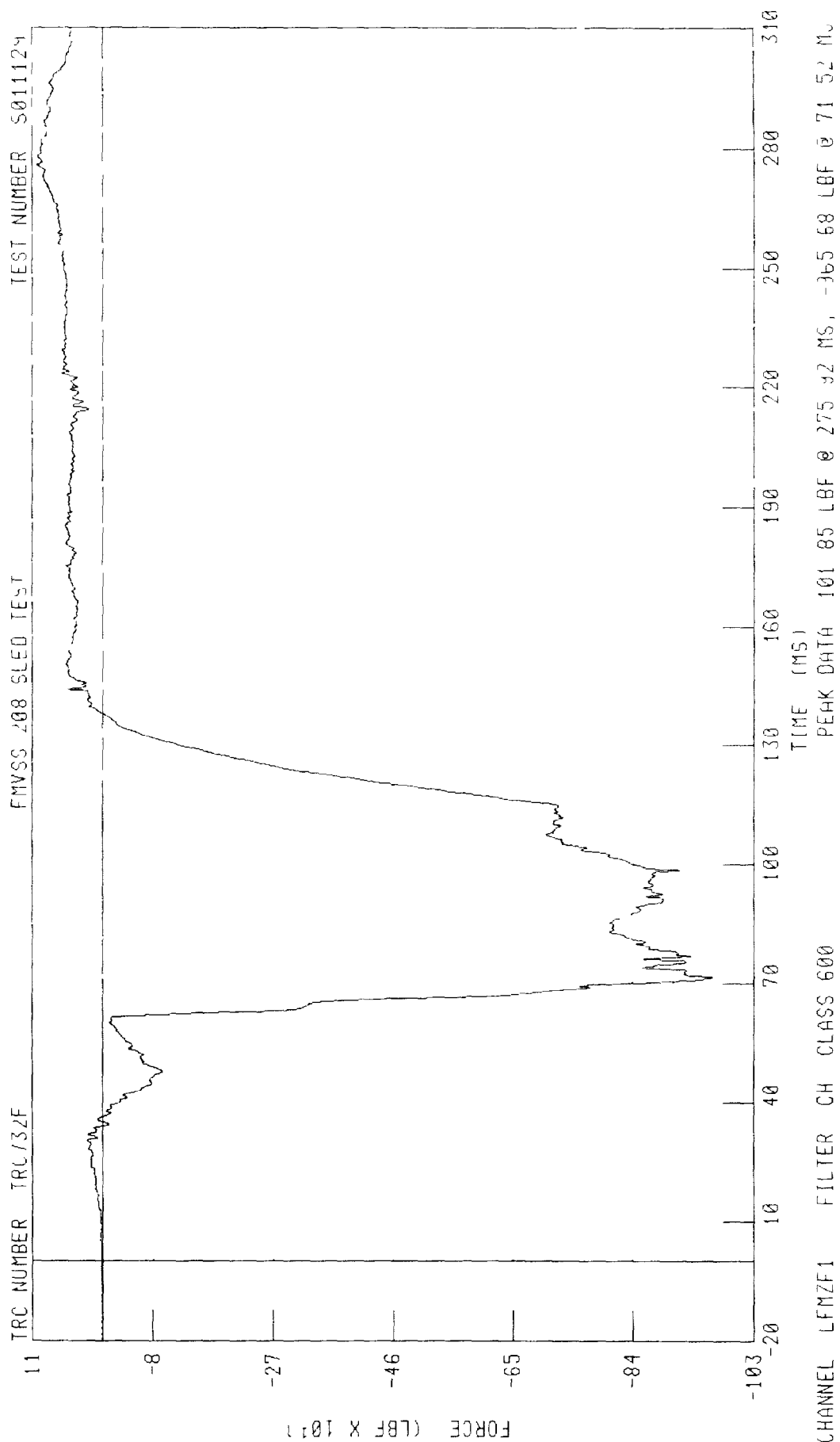


TIME (MS)

CHANNEL CSTXD1 FILTER CH CLASS 600

PEAK DATA 0 01 IN @ 44 88 MS, -1 19 IN @ 118 24 MS

C20204 / 2002 FORD WINDSTAR
 DRIVER LEFT FEMUR FORCE
 FMVSS 208 SLED TEST



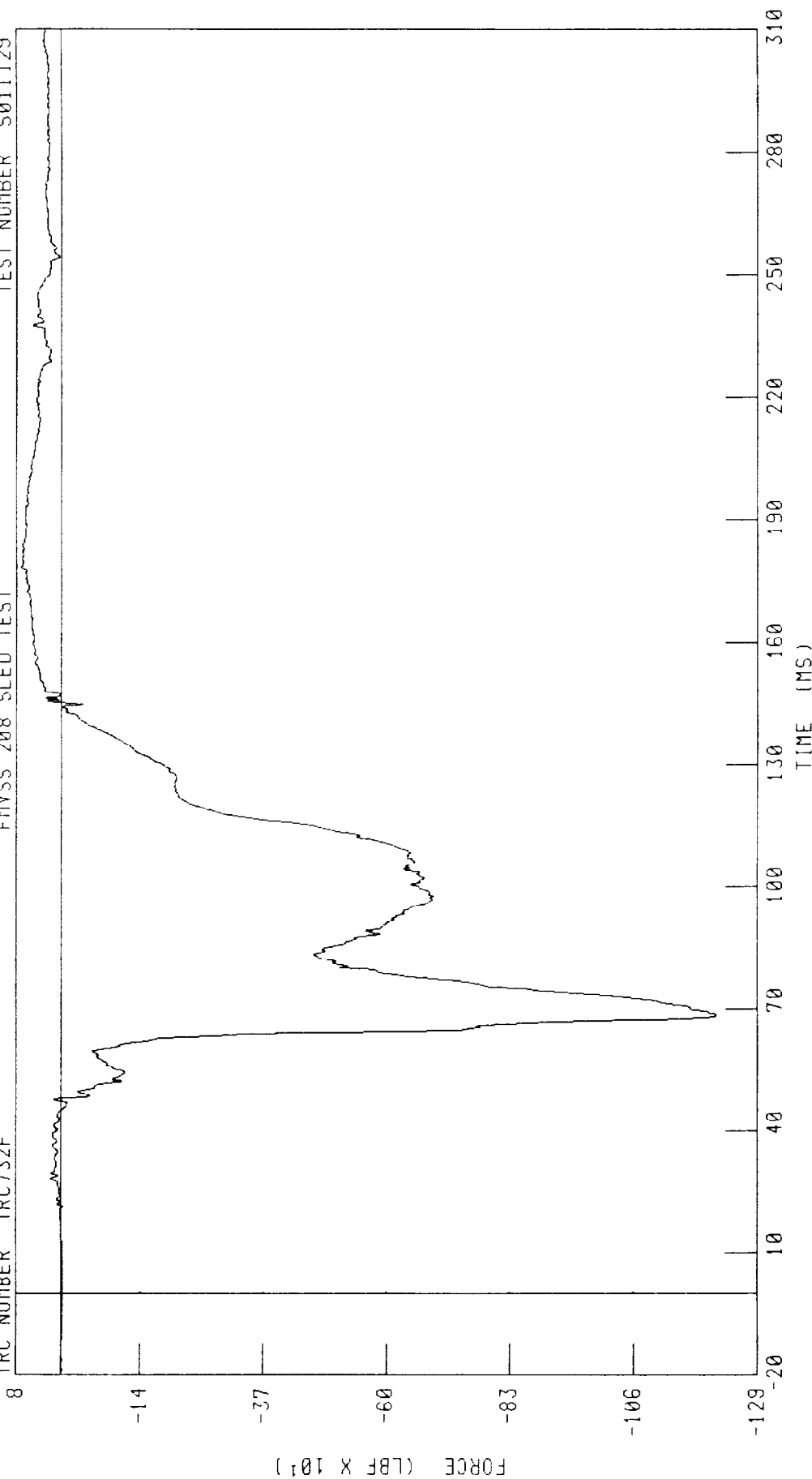
C20204 / 2002 FORD WINDSTAR

DRIVER RIGHT FEMUR FORCE

FMVSS 208 SLED TEST

TRC NUMBER TRC732F

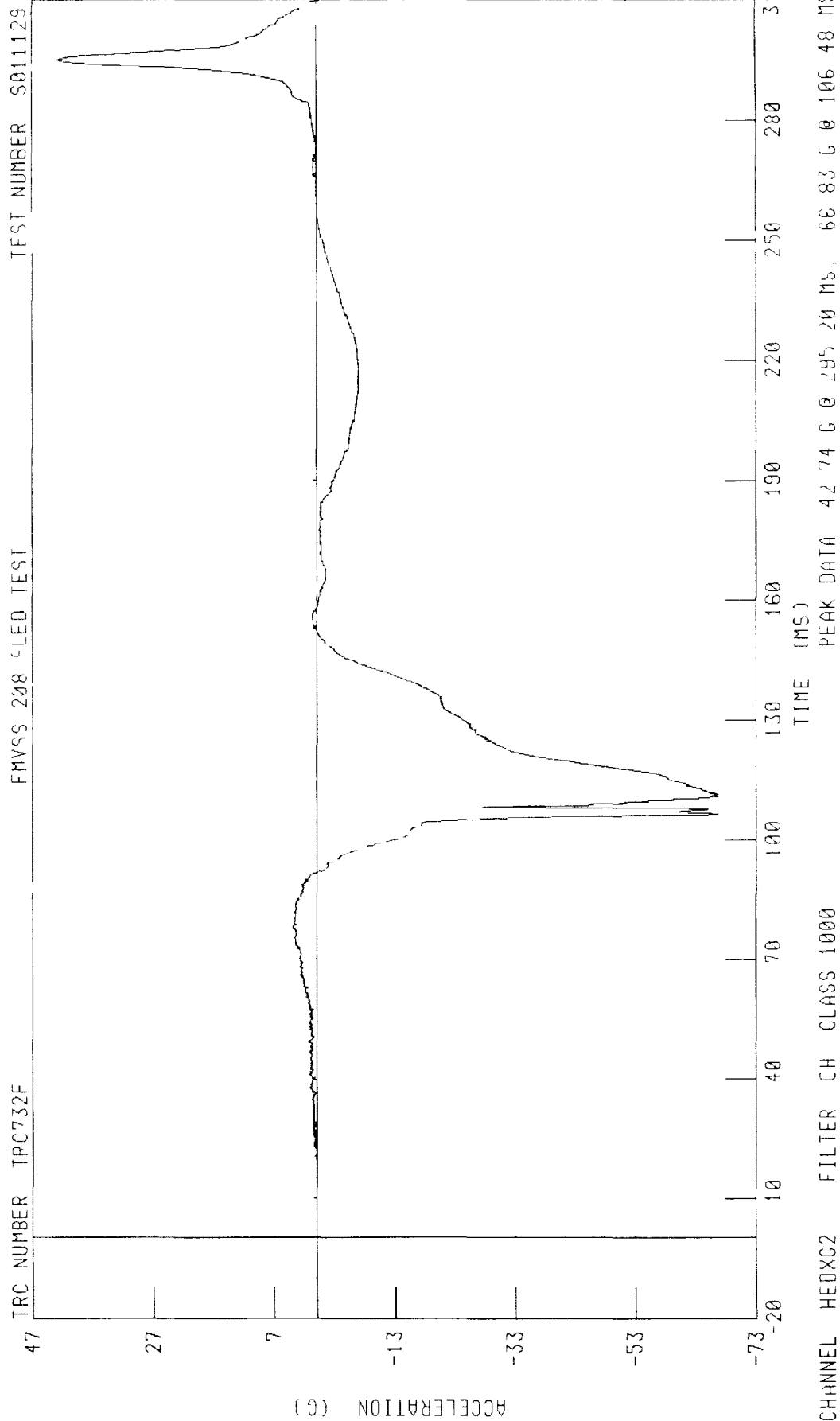
TEST NUMBER S011129



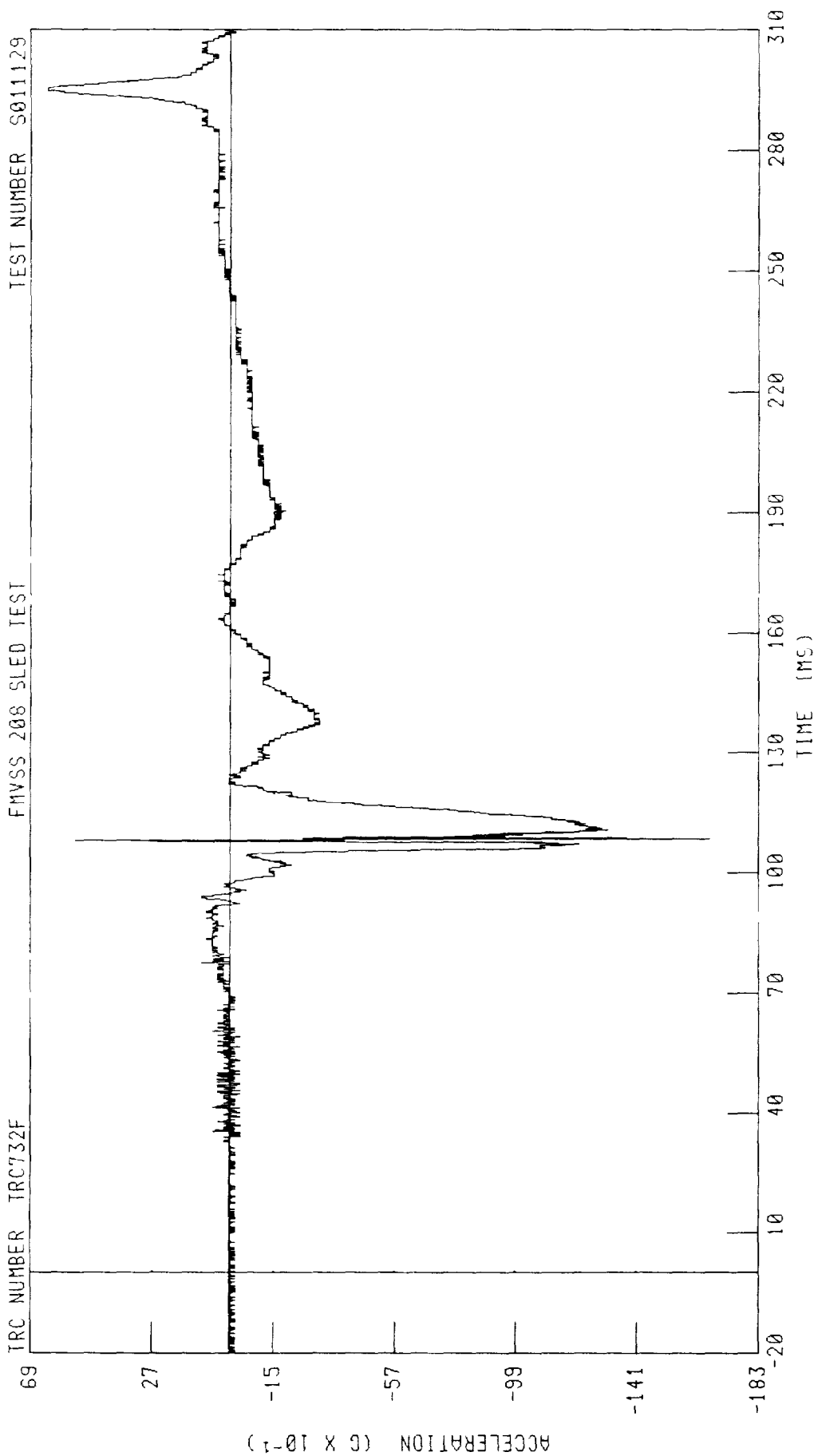
CHANNEL RFMF1 FILTER CH CLASS 600

PEAK DATA 76 90 LBF @ 178 56 MS, -1221 20 LBF @ 68 32 MS

C20204 - 2002 FORD WINDSTAR
 RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION
 FMVSS 208 C-LED TEST



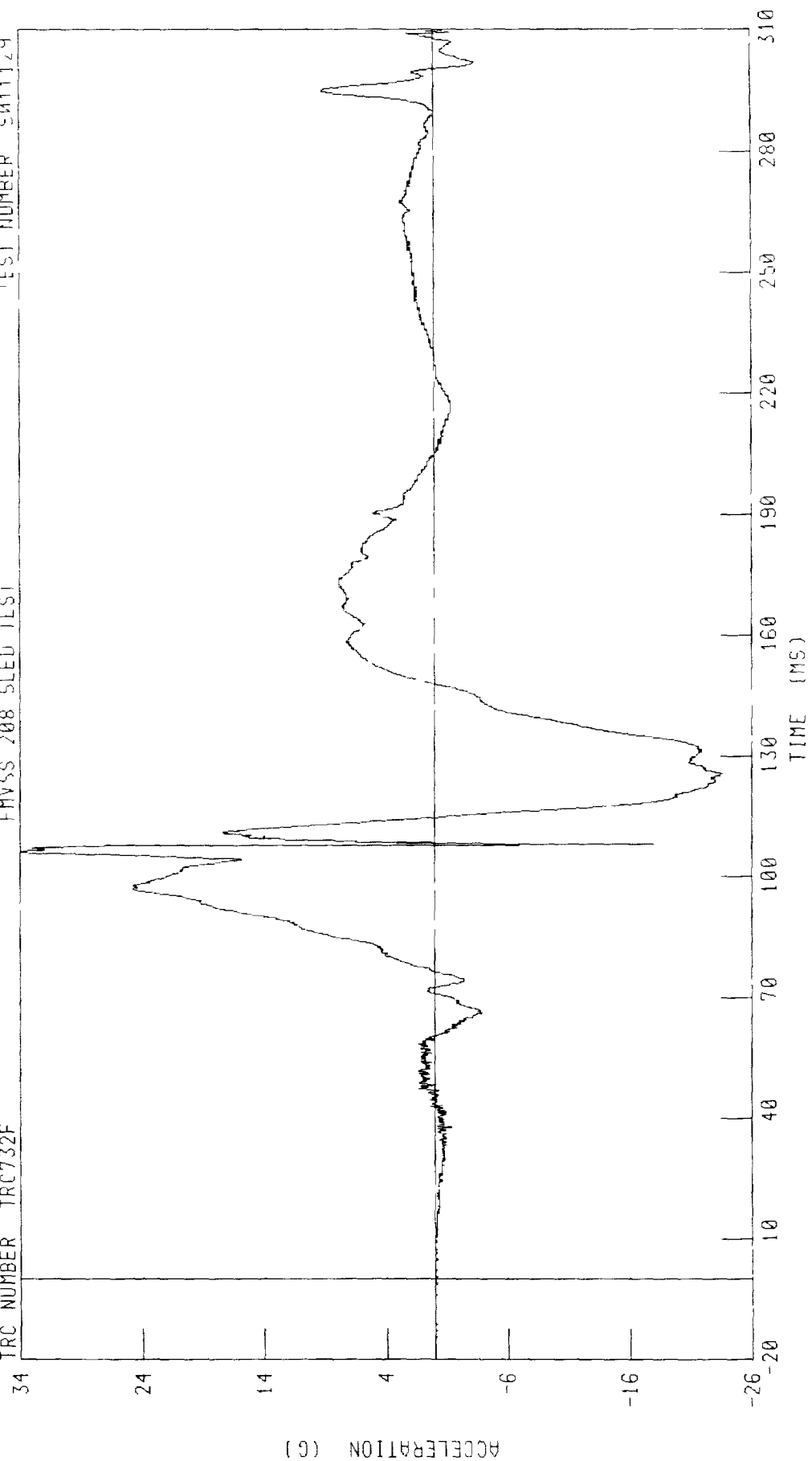
C20204 / 2002 FORD WINDSTAR
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION



C20204 / 2002 FORD WINDSTAR
 P1CH1 FRUNT PASSENGER HEAD Z-HX1'S ACCELERATION
 FMVSS 208 SLED TEST

TRC NUMBER TRC732F

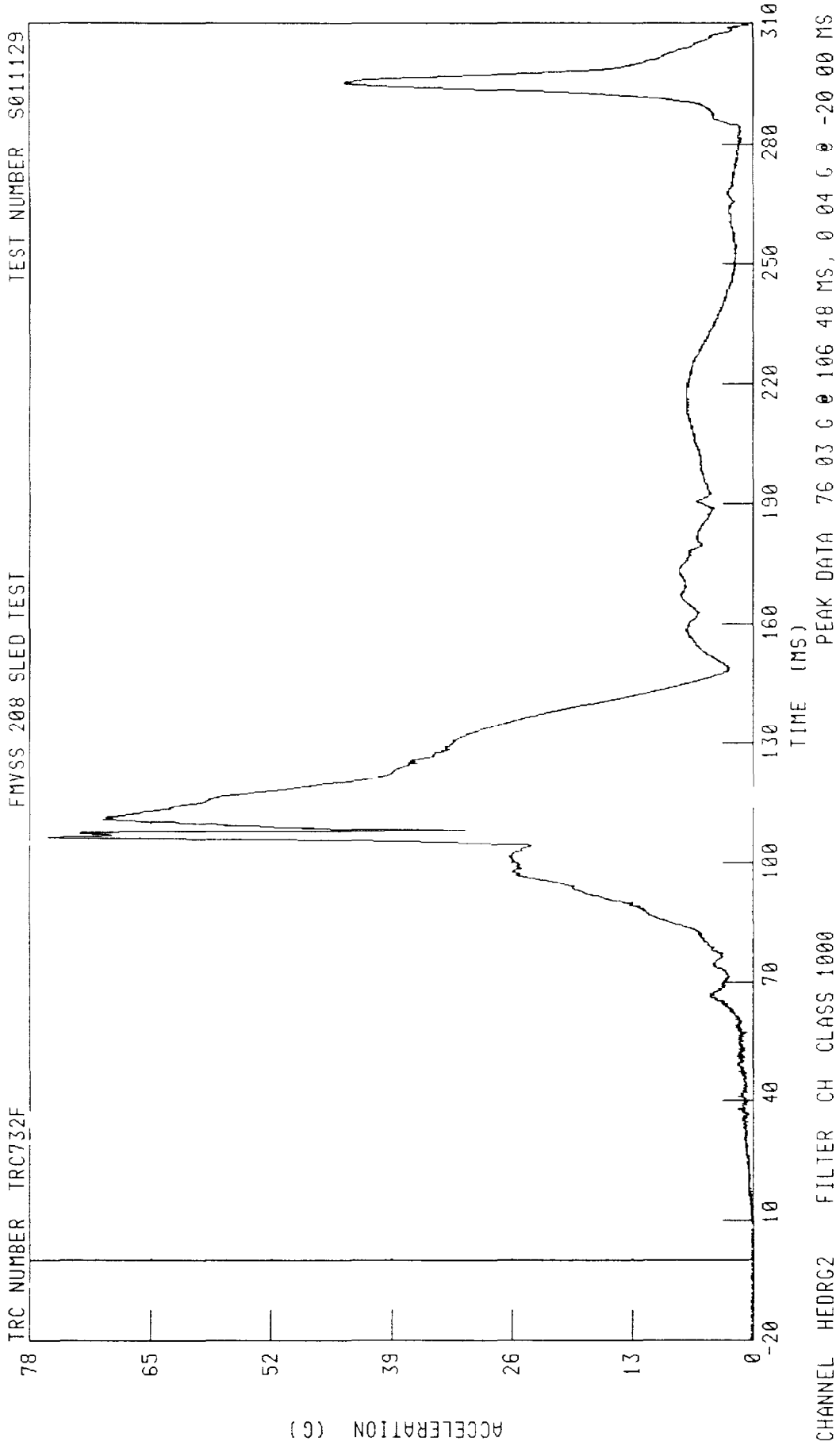
TEST NUMBER SA11129



CHANNEL HEDZC2 FILTER CH CLASS 1000

PEAK DATA 35 60 6 0 106 32 MS, -23 64 6 0 125 84 MS

C20204 / 2002 FORD WINDSTAR
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

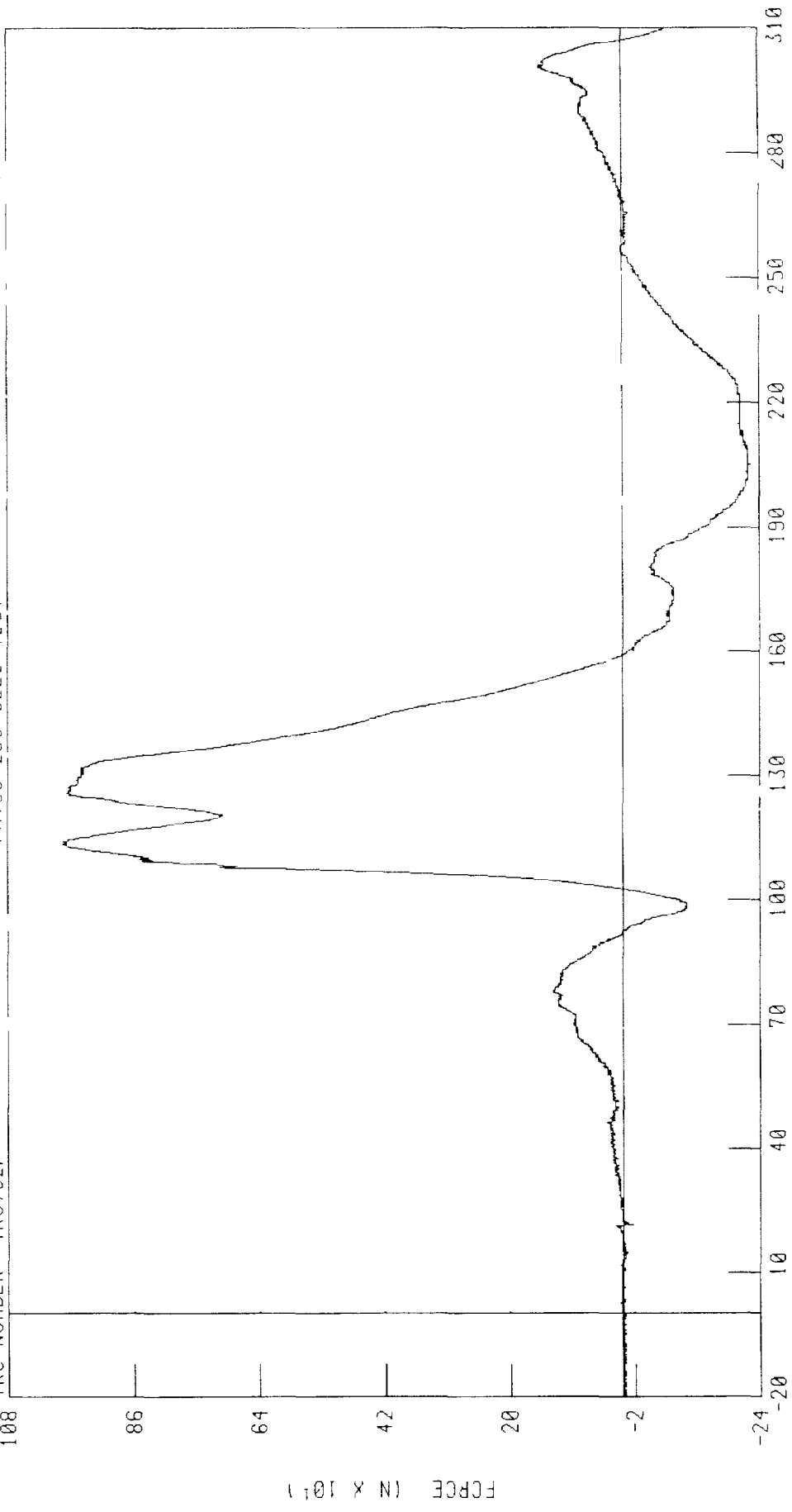


C20204 2002 FORD WINDSTAR
 RIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE

IF3T NUMBER 5011129

TRC NUMBER IRC732F

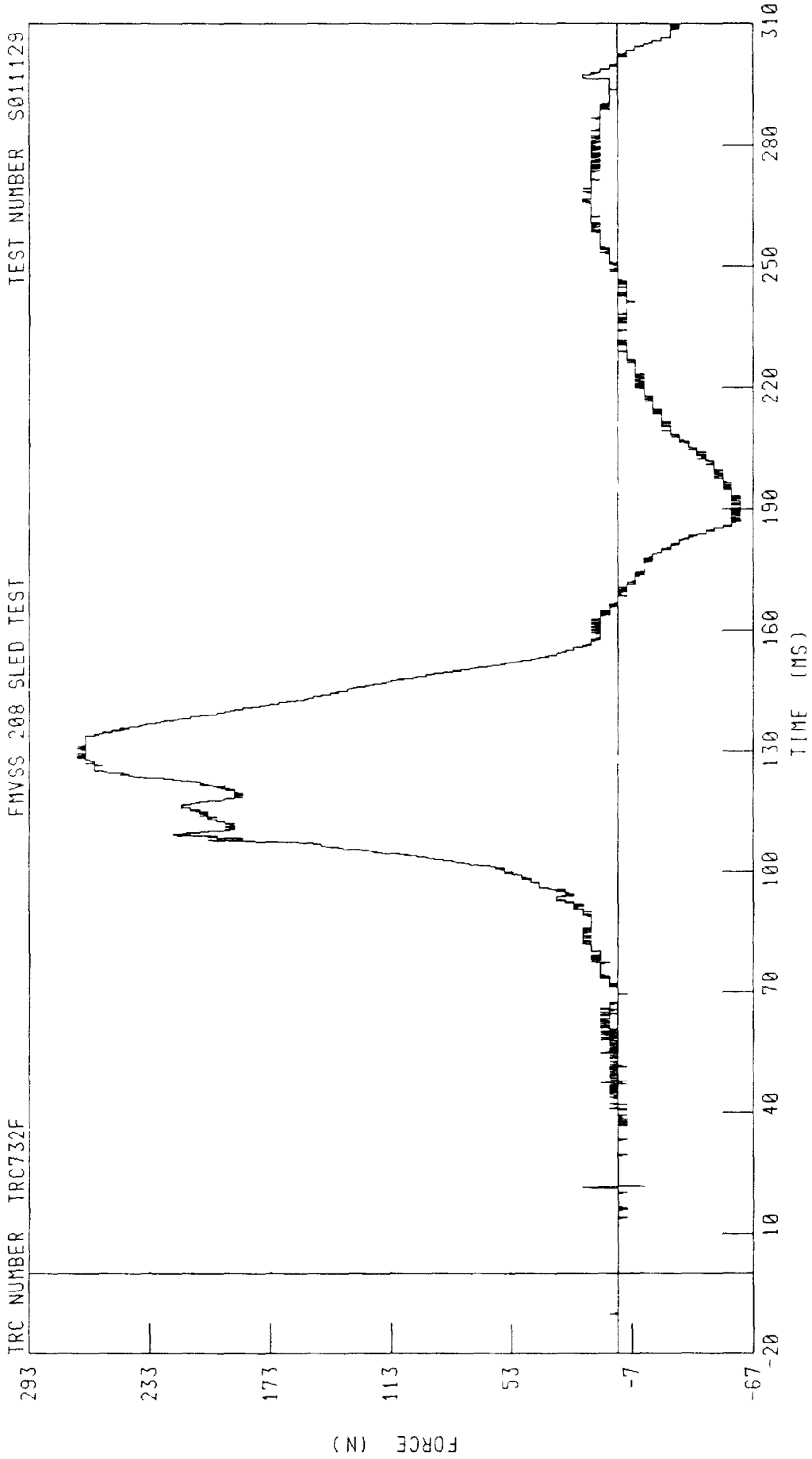
FNVSS 208 SLED TEST



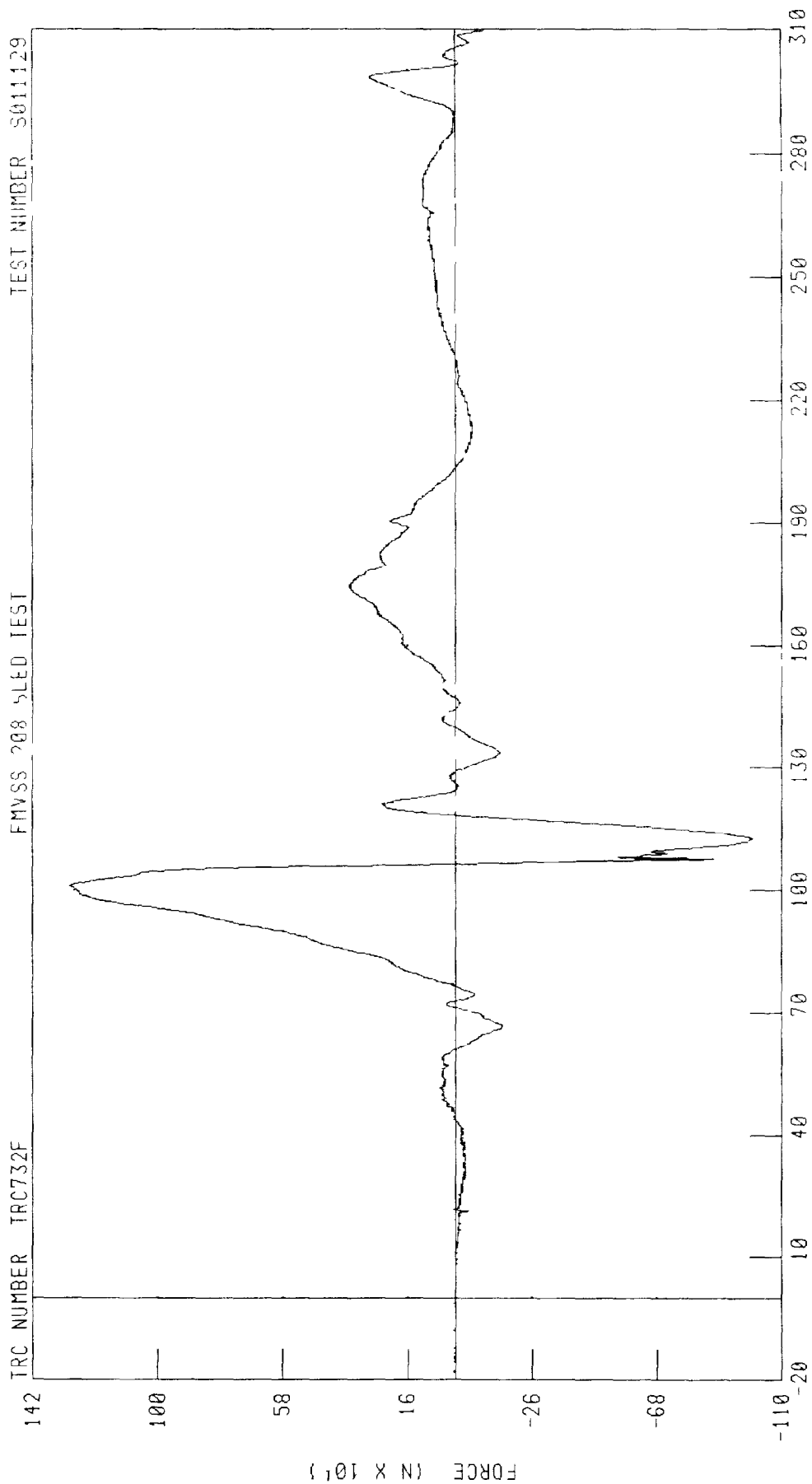
TIME (MS)
 PEAK DATA 963 01 N @ 113 68 MS, -2.4 70 N @ 205 28 MS

CHANNEL NEKXF2 FILTER CH CLASS 1000

C20204 - 2002 FORD WINDSTAR
RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE



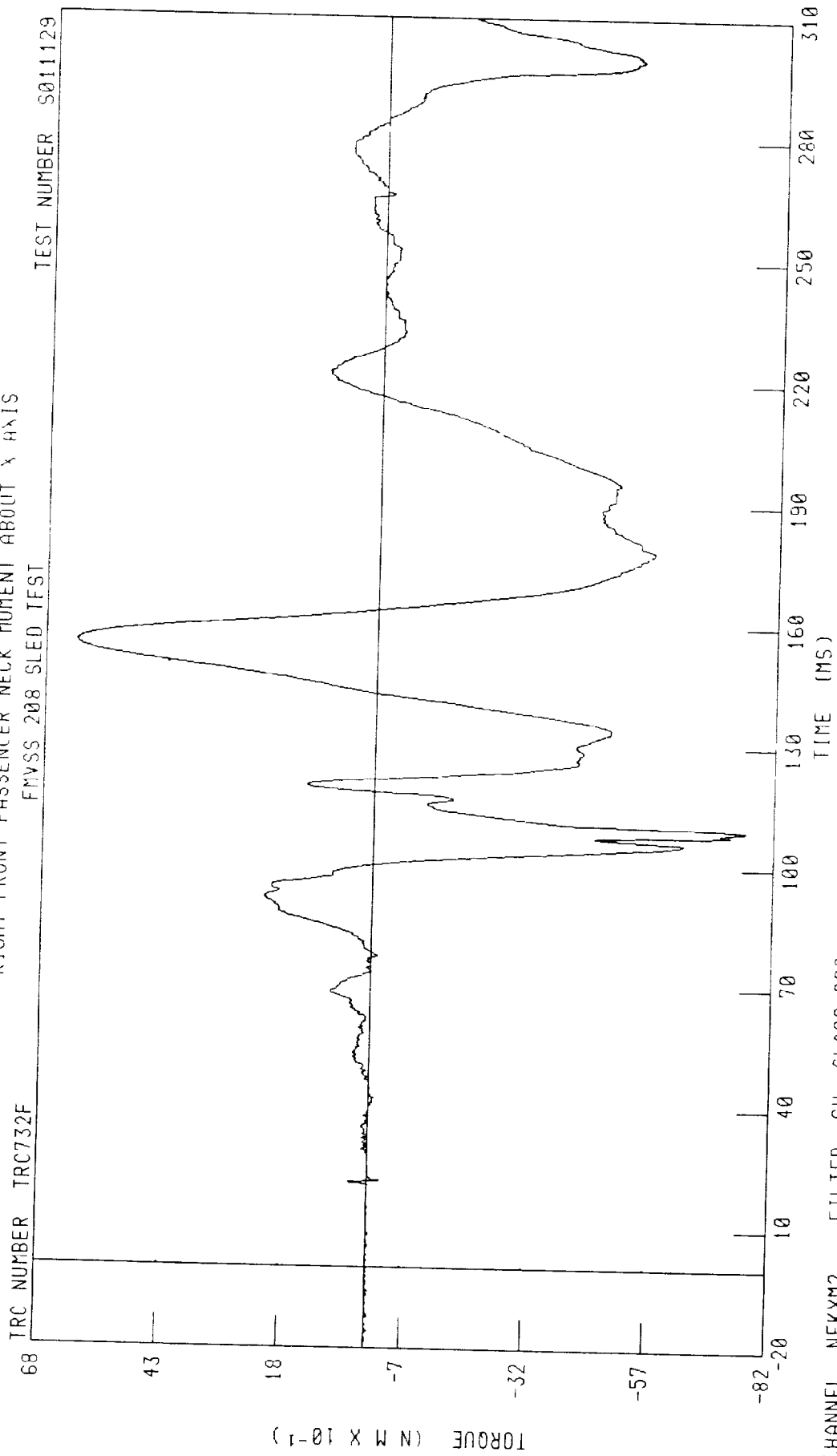
L20204 - 2002 FORD WINDSTAR
 RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE



C20204 / 2002 FORD WINDSTAR
 RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS
 FMVSS 208 SLED TEST

TRC NUMBER TRC732F

TEST NUMBER S011129



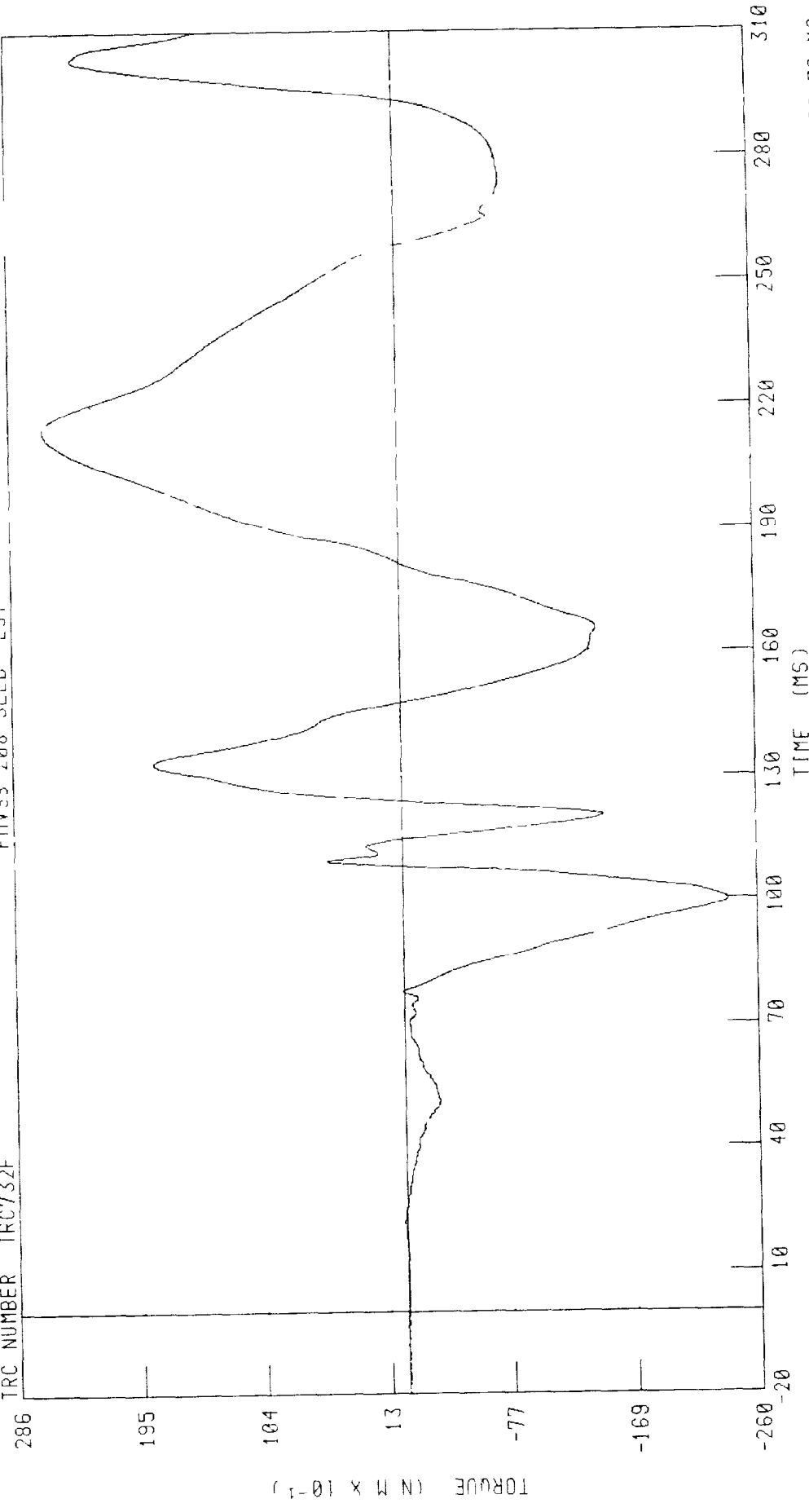
CHANNEL NEKXM2 FILTER CH CLASS 500

PEAK DATA 6 19 N M @ 155 28 MS, -7 63 N M @ 109 20 MS

020204 2002 FORD WINDSTAR
 RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS
 FMVSS 208 SLED TEST

TEST NUMBER SW11129

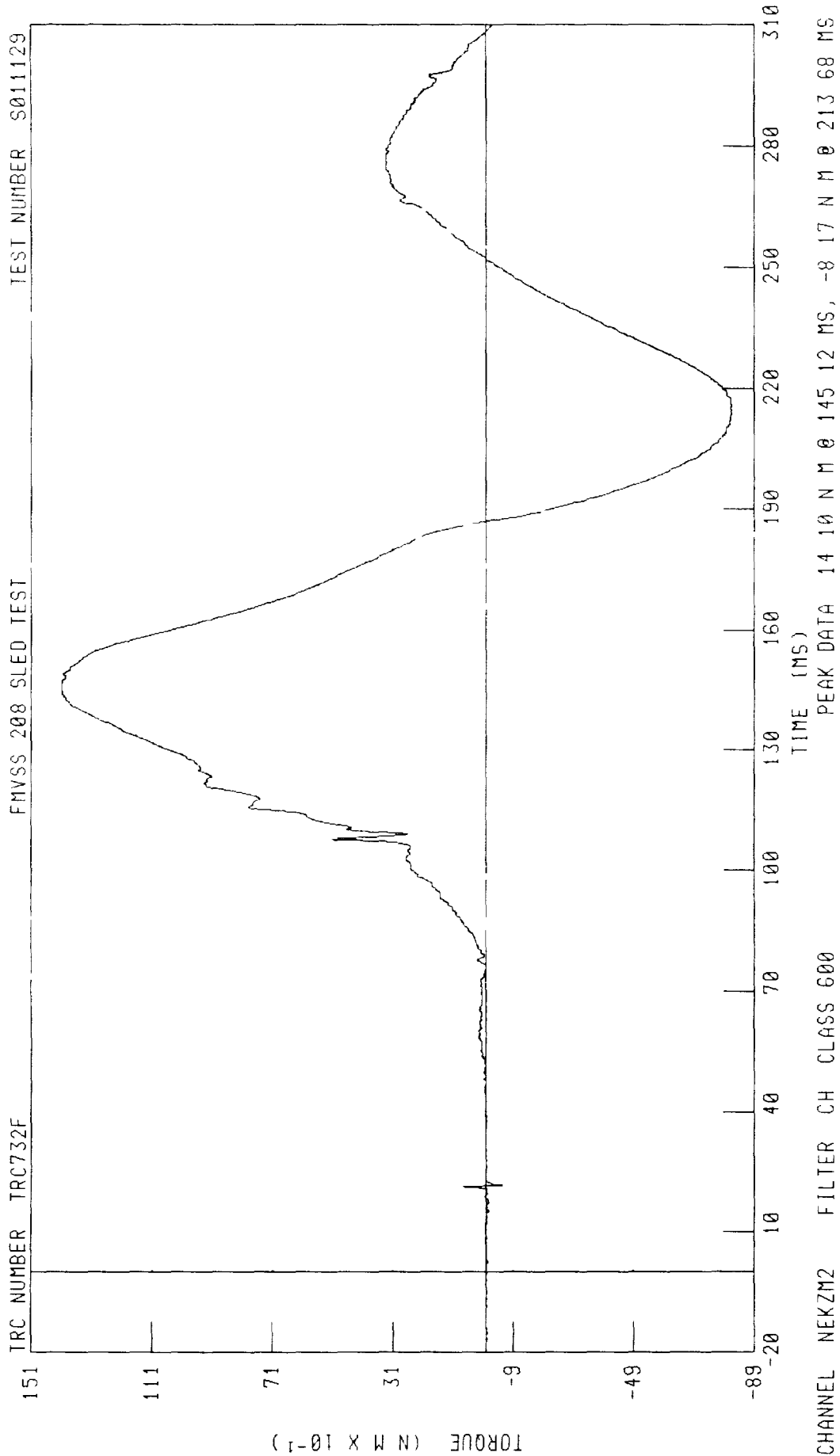
TRC NUMBER TRC732F



TIME (MS)
 PEAK DATA 26 13 N M @ 14 24 MS -23 88 N M @ 99 76 MS

CHANNEL NEYM2 FILTER CH CLASS 600

C20204 2002 FORD WINDSTAR
RIGHT FRONT PHSENCEER NECK MOMENT ABOUT Z AXIS



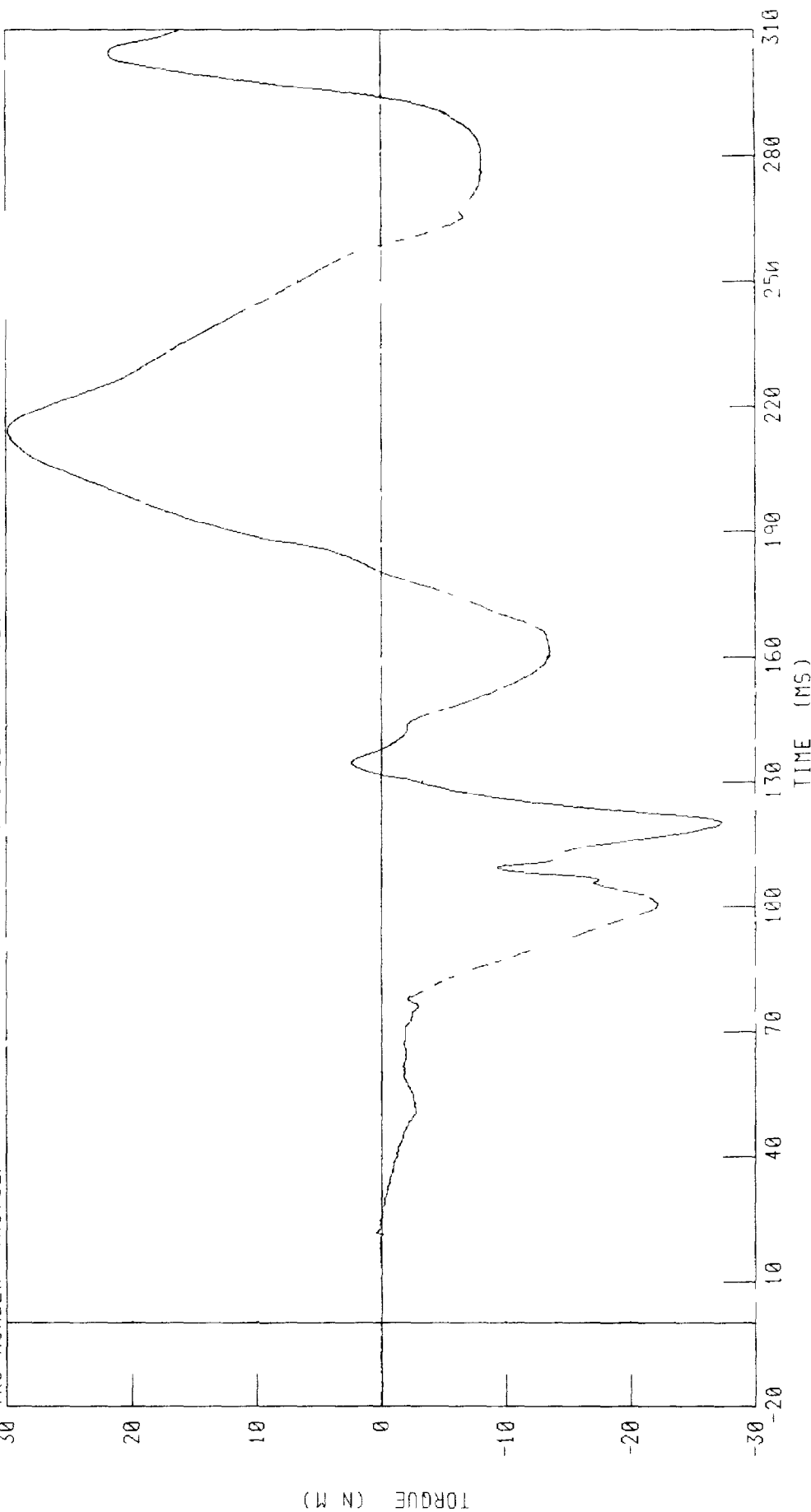
C20204 / 2002 FORD WINDSTAR

RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS OCCIPITAL CONDYLE

TRC NUMBER TRC732F

FMVSS 208 51F0 TEST

TEST NUMBER 5011129



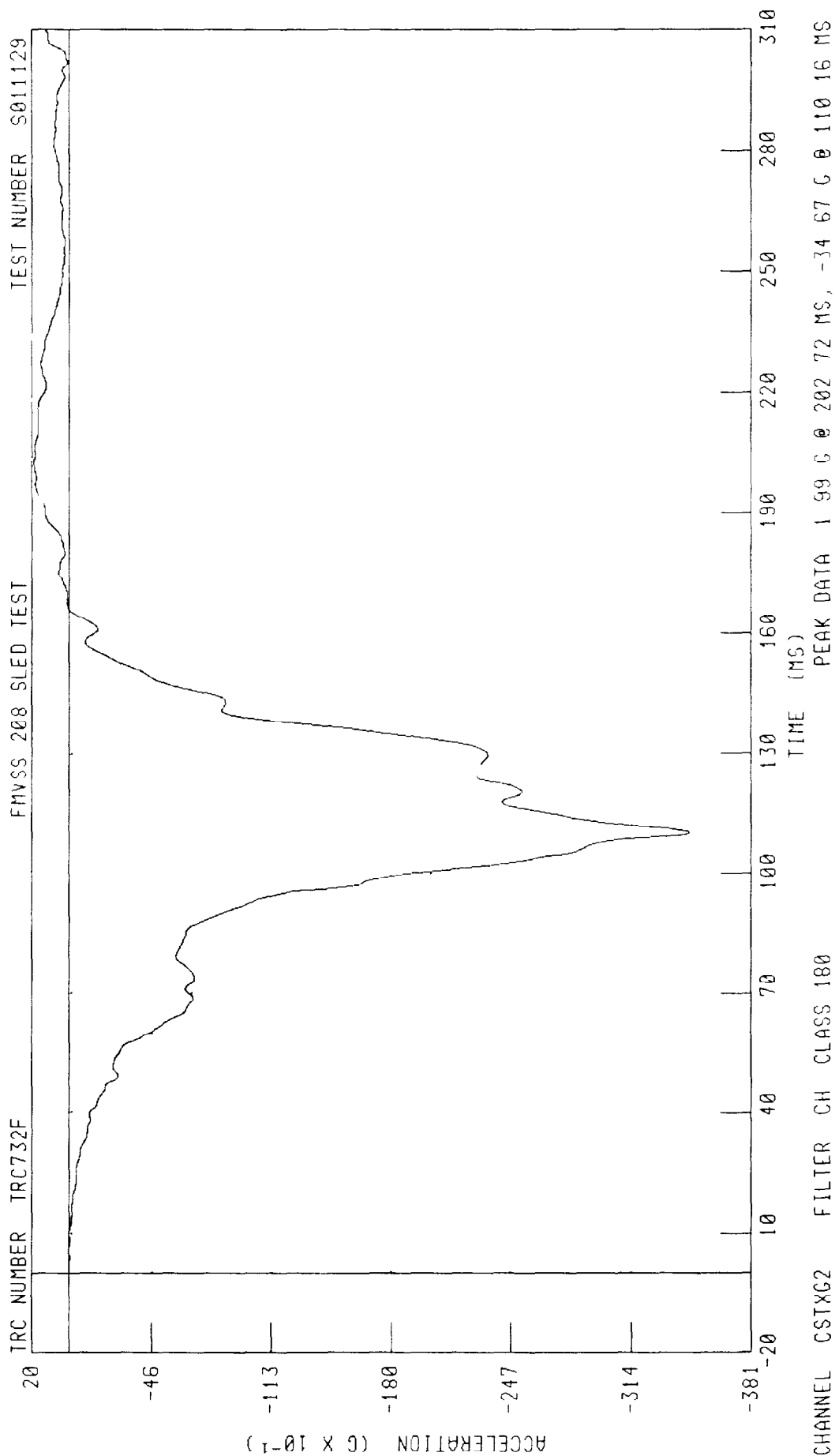
TIME (MS)

PEAK DATA 29 88 N M @ 214 32 MS -27 37 N M @ 120 40 MS

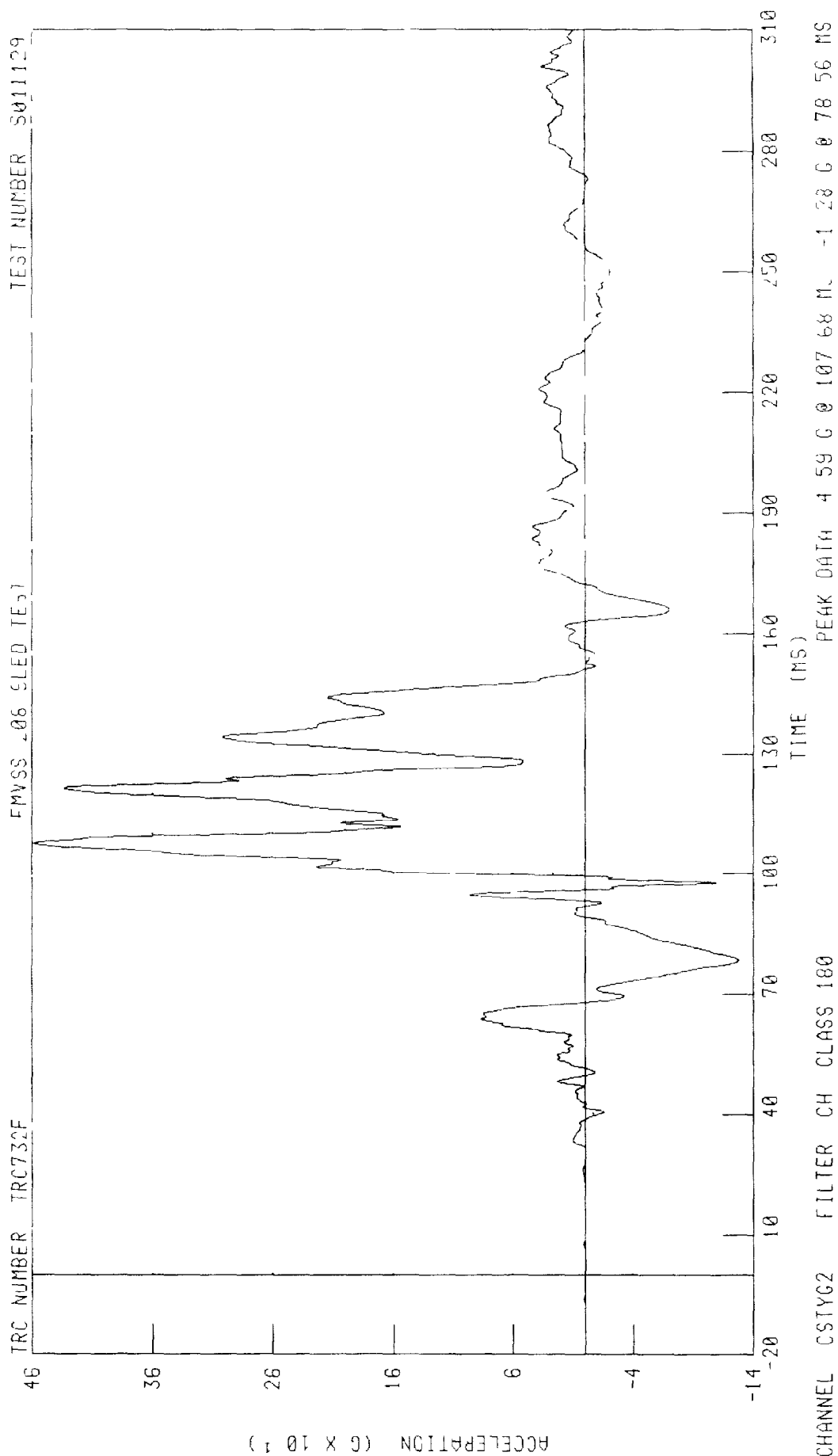
CHANNEL NEKOM2 FILTER (H CLASS 600

TORQUE (N.M)

C20204 / 2002 FORD WINDSTAR
 RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION
 FMVSS 208 SLED TEST



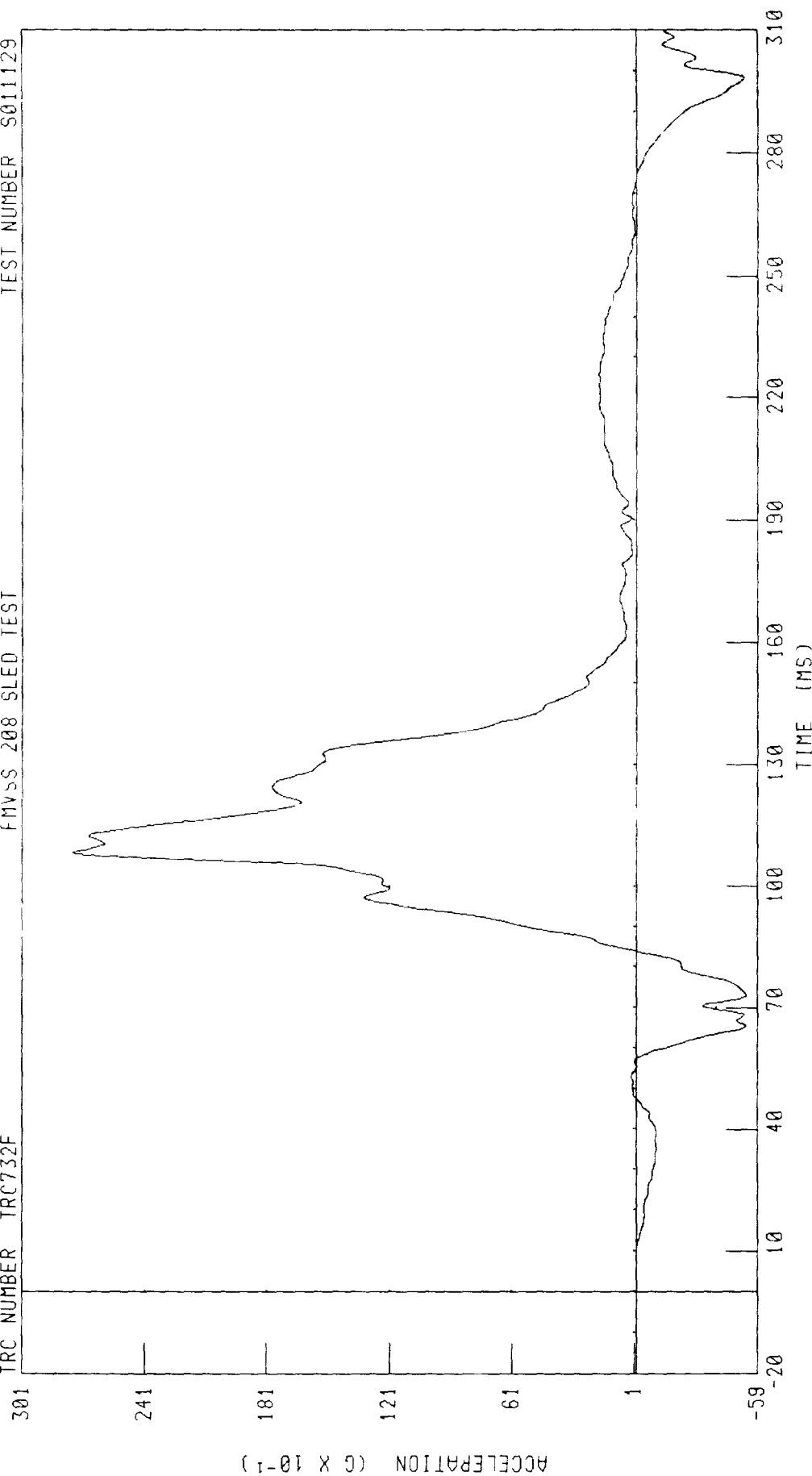
120204 / 2002 FORU WIND31AR
 PICT FRONT PASSENGER CHEST \-axis ACCELERATION



C20204 2002 FORD WINDSTAR
 RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION
 FMVSS 208 SLED TEST

TRC NUMBER TRC732F

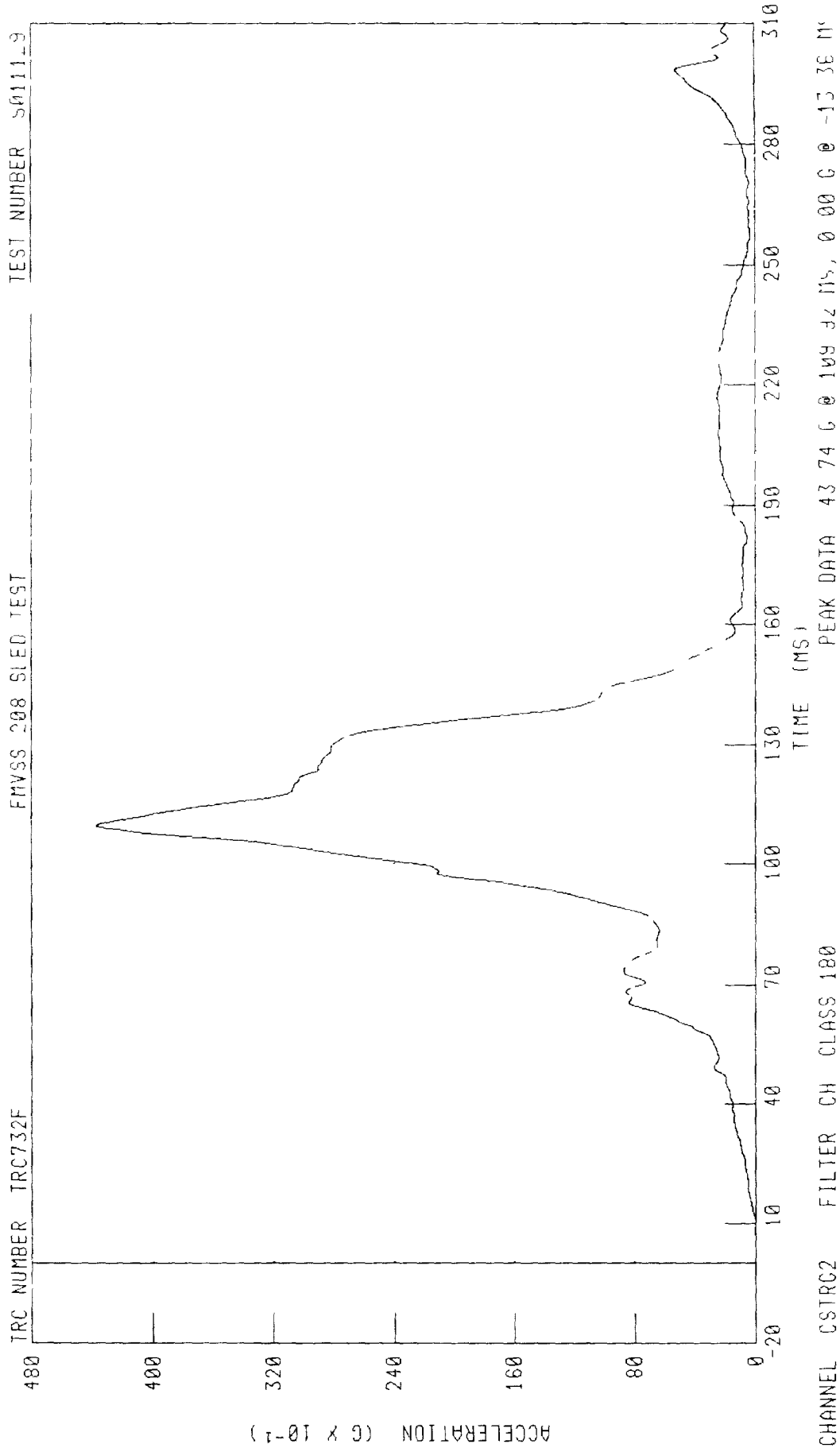
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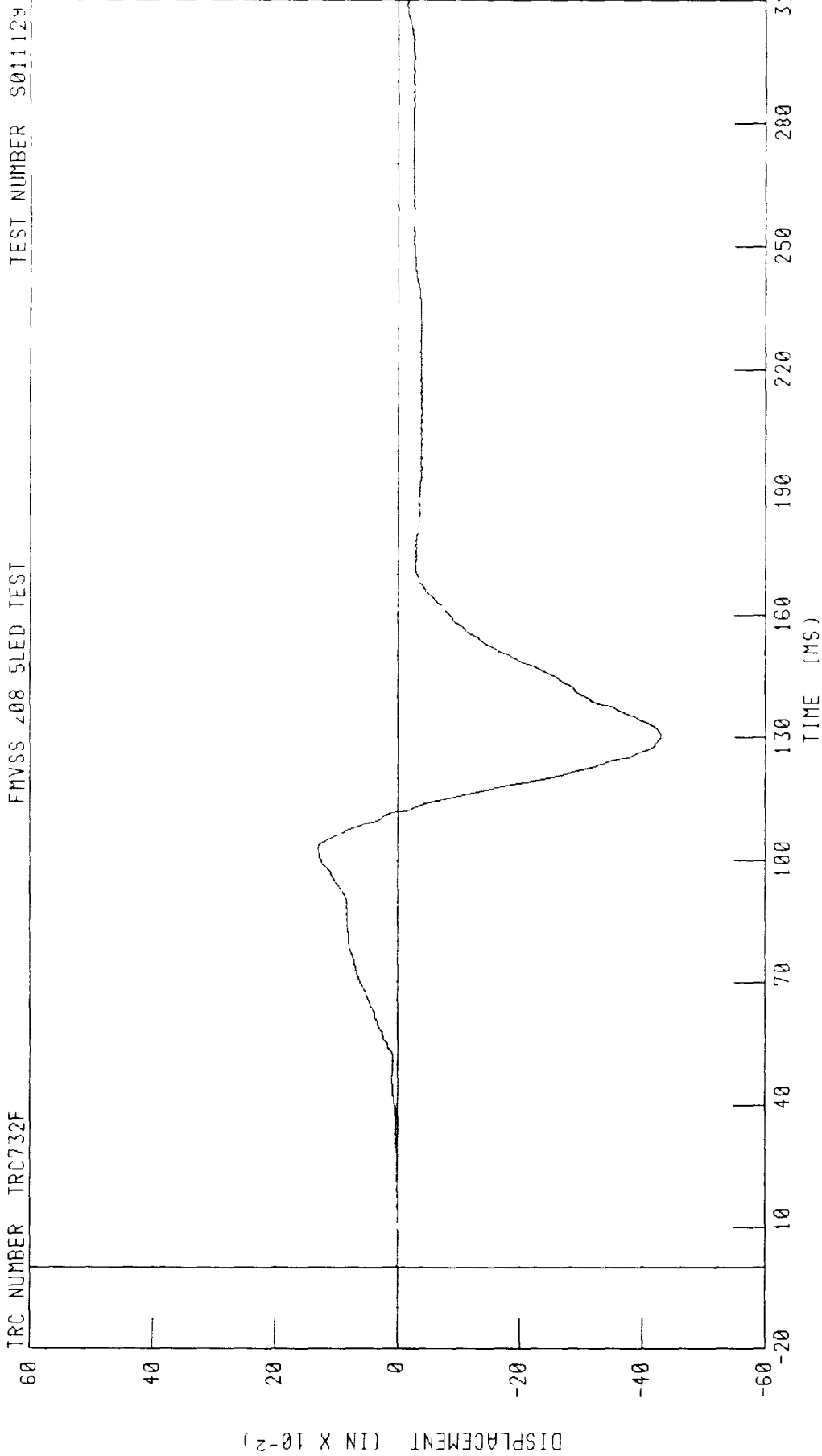
CHANNEL CSTZG2 FILTER CH CLASS 180

PEAK DATA 27 62 G @ 108 56 MS -5 37 G @ 65 36 MS

C20204 / 2002 FORD WINDSTAR
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

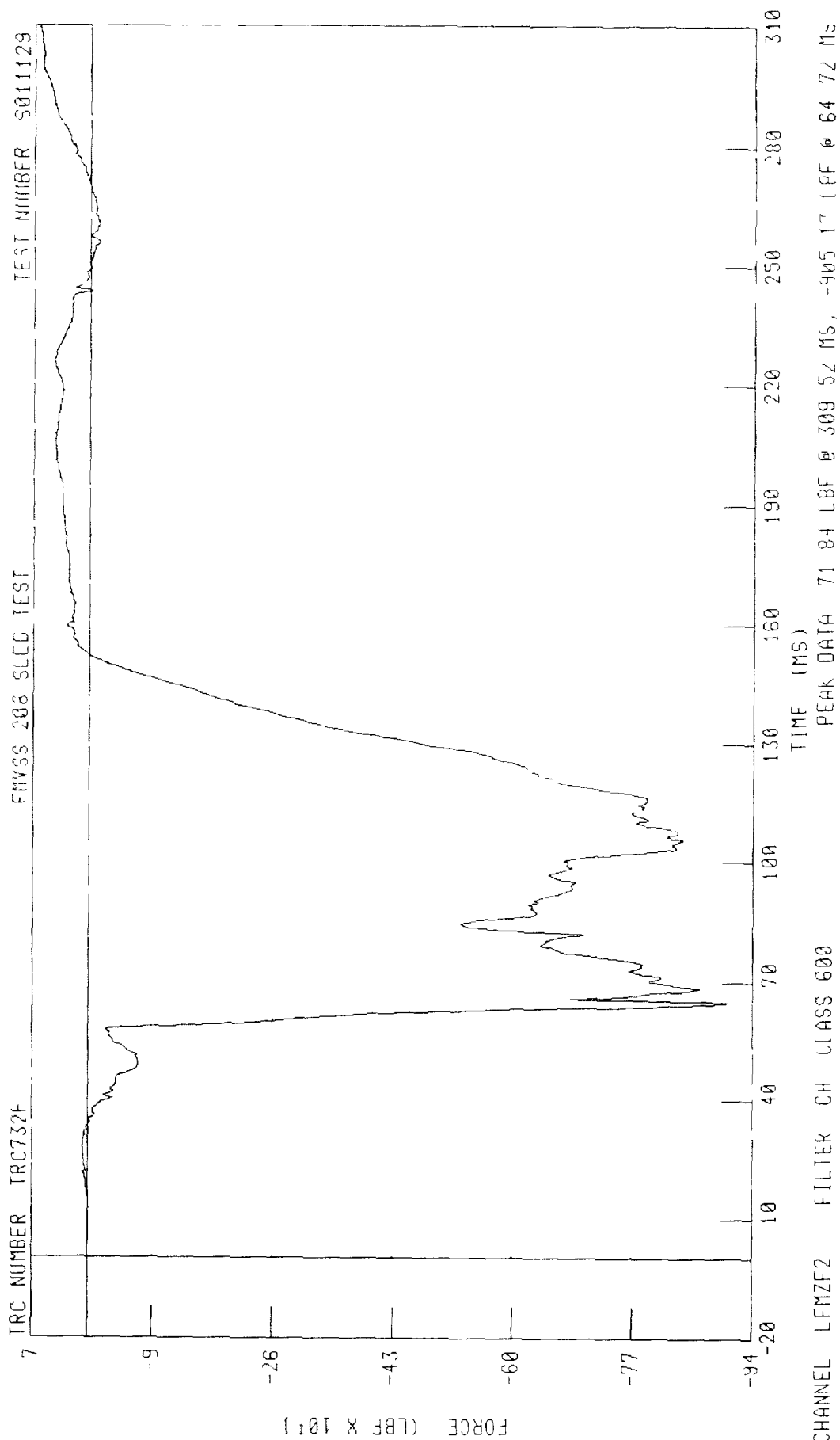


20204 / 2002 FORD WINDSTAR
 RIGHT FRONT PASSENGER CHEST DEFLECTION
 FMVSS 208 SLED TEST



CHANNEL CSTXD2 FILTER CH CLASS 600
 PEAK DATA 0 13 IN @ 102 08 MS, -0 43 IN @ 130 40 MS

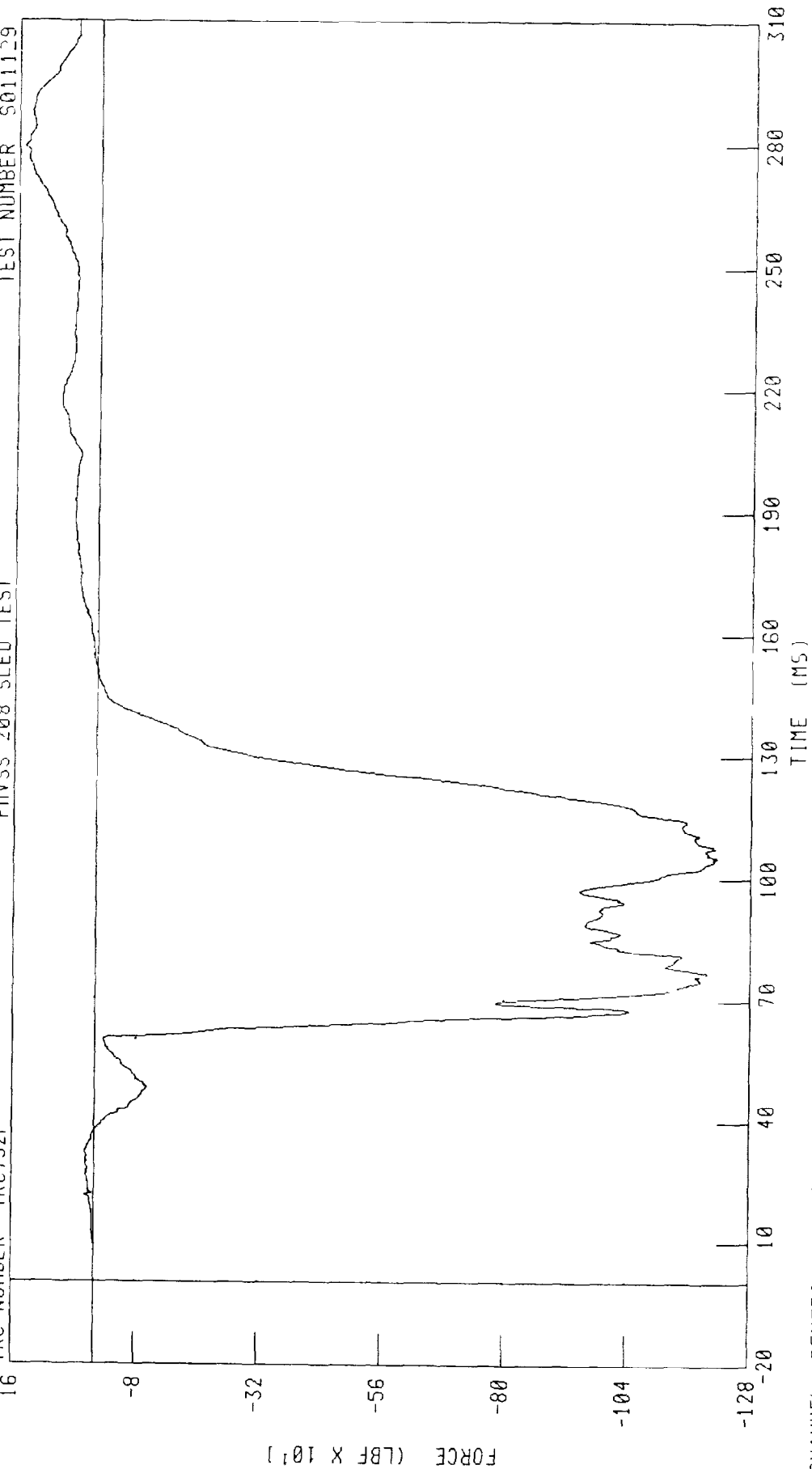
C20104 - 2002 FORD WINDSTAR
 RIGHT FRONT PASSENGER LEFT FEMUR FURIE
 FMVSS 203 SLED TEST



C20204 / 2002 FORD WINDSTAR
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE
FMVSS 208 SLED TEST

TRC NUMBER TRC732F

TEST NUMBER S011129



CHANNEL RFMZF2 FILTER CH CLASS 600

PEAK DATA 148 15 LBF @ 279 12 MS, -1215 30 LBF @ 105 28 MS

Appendix C

Manufacturer's Vehicle Information

Seating and Safety Restraints

2 Align seat front hooks to front tub pins lower back of seat into the rear tubs until both release controls latch into place. Be sure that the seat is locked in place both front and back.



Always latch the vehicle seat to the floor, whether the seat is occupied or empty. If not latched, the seat may cause injury during a sudden stop.

SAFETY RESTRAINTS

Personal Safety System

The Personal Safety System provides an improved overall level of frontal crash protection to front seat occupants and is designed to help further reduce the risk of air bag-related injuries. The system is able to analyze different occupant conditions and crash severity before activating the appropriate safety devices to help better protect a range of occupants in a variety of frontal crash situations.

Your vehicle's Personal Safety System consists of:

- Driver and passenger dual-stage air bag supplemental restraints
- Front safety belts with pretensioners, energy management retractors, and safety belt usage sensors
- Driver's seat position sensor
- Passenger occupant classification sensor (if equipped)
- Front crash severity sensor
- Restraints Control Module (RCM) with impact and safing sensors
- Restraint system warning light and back-up tone
- The electrical wiring for the air bags, crash sensor(s), safety belt pretensioners, front safety belt usage sensors, driver seat position sensor, passenger occupant classification sensor (if equipped) and indicator lights

How does the personal safety system work?

The Personal safety system can adapt the deployment strategy of your vehicle's safety devices according to crash severity and occupant conditions. A collection of crash and occupant sensors provides information to the Restraints control module (RCM). During a crash, the RCM activates the safety belt pretensioners and/or either one or both

Seating and Safety Restraints

stages of the dual-stage air bag supplemental restraints based on crash severity and occupant conditions

The fact that the pretensioners or air bags did not activate for both front seat occupants in a collision does not mean that something is wrong with the system. Rather, it means the Personal safety system determined the accident conditions (crash severity, belt usage, etc.) were not appropriate to activate these safety devices. Front air bags and pretensioners are designed to activate only in frontal and near-frontal collisions, not rollovers, side impacts, or rear impacts unless the collision causes sufficient longitudinal deceleration.

Driver and passenger dual-stage air bag supplemental restraints

The dual stage air bags offer the capability to tailor the level of air bag inflation energy. A lower, less forceful energy level is provided for more common, moderate-severity impacts. A higher energy level is used for the most severe impacts. Refer to *Air bag supplemental restraints* section in this chapter.

Front crash severity sensor

The front crash severity sensor enhances the ability to detect the severity of an impact. Positioned up front, it provides valuable information early in the crash event on the severity of the impact. This allows your Personal safety system to distinguish between different levels of crash severity and modify the deployment strategy of the dual stage air bags and safety belt pretensioners.

Driver's seat position sensor

The driver's seat position sensor allows your Personal safety system to tailor the deployment level of the driver dual-stage air bag based on seat position. The system is designed to help protect smaller drivers sitting close to the driver air bag by providing a lower air bag output level.

Passenger occupant classification sensor (OCS) (if equipped)

If your vehicle is equipped with this feature, there will be a label located under the front passenger seat which is marked 'OCS'. Alternatively, you may take your vehicle to any Ford or Lincoln Mercury dealer for assistance.

For air bags to do their job they must inflate with great force, and this force can pose a potentially deadly risk to occupants that are very close to the air bag when it begins to inflate. For some occupants, like infants in rear-facing child seats, this occurs because they are initially sitting

Seating and Safety Restraints

very close to the air bag. For other occupants this occurs when the occupant is not properly restrained by seat belts or child safety seats and they move forward during pre crash braking. The most effective way to reduce the risk of unnecessary injuries is to make sure all occupants are properly restrained. Accident statistics suggest that children are much safer when properly restrained in the rear seating positions than in the front.

 Air bags can kill or injure a child in a child seat. **NEVER** place a rear-facing child seat in front of an active air bag. If you must use a forward-facing child seat in the front seat, move the seat all the way back.

 Always transport children 12 years old and under in the back seat and always properly use appropriate child restraints.

The passenger occupant classification sensor can automatically turn off the passenger front air bag and side air bag (if equipped). The system is designed to help protect small (child size) occupants from air bag deployments when they are improperly seated or restrained in the front passenger seat contrary to proper child seating or restraint usage recommendations. Even with this technology, parents are **STRONGLY** encouraged to always properly restrain children in the rear seat. The sensor also turns off the air bag(s) when the passenger seat is empty to prevent unnecessary replacement of the air bag(s) after a collision.

Front safety belt usage sensors

The front safety belt usage sensors detect whether or not the driver and front outboard passenger safety belts are fastened. This information allows your Personal safety system to tailor the air bag deployment and safety belt pretensioner activation depending upon safety belt usage. Refer to *Safety belt* section in this chapter.

Front safety belt pretensioners

The safety belt pretensioners are designed to tighten the safety belts firmly against the occupant's body during a collision. This maximizes the effectiveness of the safety belts and helps properly position the occupant relative to the air bag to improve protection. The safety belt pretensioners can be either activated alone or, if the collision is of sufficient severity, together with the air bags.

Seating and Safety R restraints

Seating and Safety Restraints

Front safety belt energy management retractors

The front safety belt energy management retractors allow webbing to be pulled out of the retractor in a gradual and controlled manner in response to the occupant's forward momentum. This helps reduce the risk of force-related injuries to the occupant's chest by limiting the load on the occupant. Refer to *Safety belt* section in this chapter.

Determining if the Personal safety system is operational

The Personal safety system uses a warning light in the instrument cluster or a back-up tone to indicate the condition of the system. Refer to the *Warning light* section in the *Instrument cluster* chapter. Routine maintenance of the Personal safety system is not required.

The Restraints control module (RCM) monitors its own internal circuits and the circuits for the air bag supplemental restraints, crash sensor(s), safety belt pretensioners, front safety belt buckle sensors, driver seat position sensor, and passenger occupant classification sensor (if equipped). In addition, the RCM also monitors the restraints warning light in the instrument cluster. A difficulty with the system is indicated by one or more of the following:

- The warning light will either flash or stay lit
- The warning light will not illuminate immediately after ignition is turned on
- A series of five beeps will be heard. The tone pattern will repeat periodically until the problem and warning light are repaired.

If any of these things happen, even intermittently, have the Personal safety system serviced at your dealership or by a qualified technician immediately. Unless serviced, the system may not function properly in the event of a collision.

Safety belt precautions

- ⚠ Always drive and ride with your seatback upright and the lap belt snug and low across the hips.

- ⚠ To reduce the risk of injury, make sure children sit where they can be properly restrained.

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

- ⚠ All occupants of the vehicle, including the driver, should always properly wear their safety belts, even when an air bag (SRS) is provided.

- ⚠ 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.

- ⚠ In a rollover crash, an unbelted person is significantly more likely to die than a person wearing a seat belt.

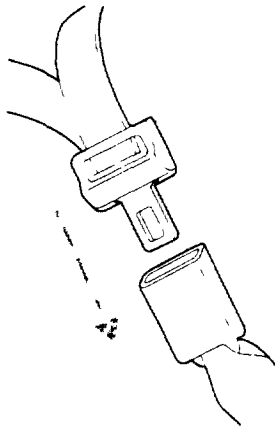
- ⚠ Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair. 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing the safety belt around your neck over the inside shoulder. 3) Never use a single belt for more than one person.

- ⚠ Always transport children 12 years old and under in the back seat and always properly use appropriate child restraints.

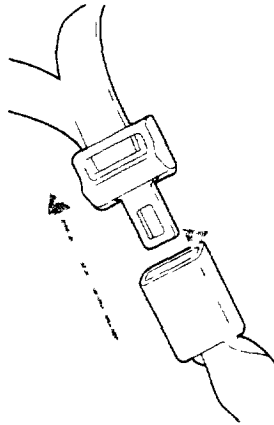
Seating and Safety Restraints

Combination lap and shoulder belts

- 1 Insert the belt tongue into the proper buckle (the buckle closest to the direction the tongue is coming from) until you hear a snap and feel it latch. Make sure the tongue is securely fastened in the buckle.



- 2 To unfasten, push the release button and remove the tongue from the buckle.



The front and rear outboard safety restraints in the vehicle are combination lap and shoulder belts. The front and rear seat passenger outboard safety belts have locking cinch tongues described below.

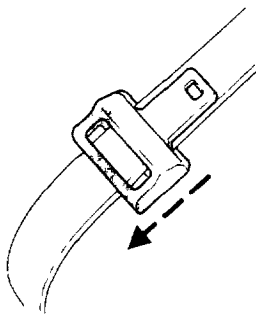
Safety belts with locking cinch tongue

The locking cinch tongue will slide up and down the belt webbing when the belt is in the stowed position or while putting seat belts on. When the locking cinch tongue of the lap/shoulder combination seat belt is latched into the buckle, the cinch tongue will allow the lap portion to become shorter, but locks the webbing in place to restrict it from becoming longer.

Before you can reach and latch a combination lap and shoulder belt having a cinch tongue into the buckle, you may have to lengthen the lap belt portion of it.

Seating and Safety Restraints

- 1 To lengthen the lap belt, pull some webbing out of the shoulder belt retractor.
- 2 While holding the webbing below the tongue, grasp the tip (metal portion) of the tongue so that it is parallel to the webbing and slide the tongue upward.



- 3 Provide enough lap belt length so that the tongue can reach the buckle.

How to fasten the cinch tongue

- 1 Pull the combination lap and shoulder belt from the retractor so that the shoulder belt portion of the safety belt crosses your shoulder and chest.
- 2 Be sure the belt is not twisted. If the belt is twisted, remove the twist.
- 3 Insert the belt tongue into the proper buckle for your seating position until you hear a snap and feel it latch.
- 4 Make sure the tongue is securely fastened to the buckle by pulling on the tongue.

⚠ The lap belt should fit snugly and as low as possible around the hips, not across the waist.

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

⚠ Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair. 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing the safety belt around your neck over the inside shoulder. 3) Never use a single belt for more than one person.

While you are fastened in the seat belt, the combination lap/shoulder belt with a cinch tongue adjusts to your movement. However, if you brake hard, turn hard or if your vehicle receives an impact of 8 km/h (5 mph) or more, the safety belt will become locked and help reduce your forward movement.

Seating and Safety Restraints

Energy Management Feature

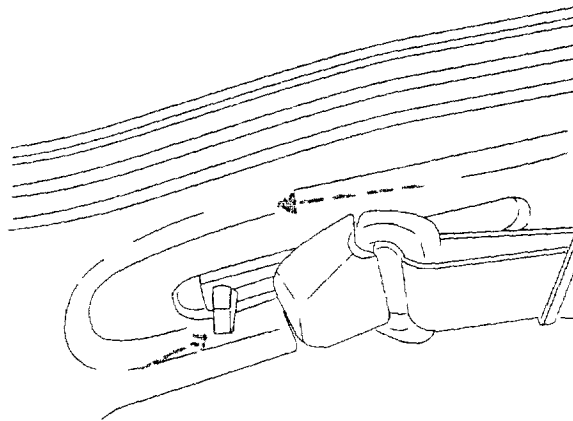
- This vehicle has a seat belt system with an energy management feature at the driver and front passenger seating positions and second row bench seat belt assemblies adjacent to a sliding door to help further reduce the risk of injury in the event of a head-on collision
- This seat belt system has a retractor assembly that is designed to pay out webbing in a controlled manner. This feature is designed to help reduce the belt force acting on the occupant's chest

⚠ Failure to replace the Belt and Retractor assembly after an accident could increase the risk of injury in a collision

Safety belt height adjustment

Your vehicle has safety belt height adjustments for the driver, front passenger and second row shoulder belt so the belt rests across the middle of your shoulder. To lower the shoulder belt height, push the button and slide the height adjuster down. To raise the height of the shoulder belt, push the button and slide the height adjuster up. Pull down on the height adjuster to make sure it is locked in place.

⚠ Position the shoulder belt height adjusters so that the belt rests across the middle of your shoulder. Failure to adjust the safety belt properly could reduce the effectiveness of the seat belt and increase the risk of injury in a collision.



Seating and Safety Restraints

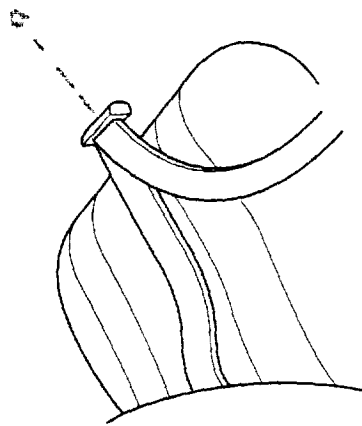
Lap belts

Adjusting the center lap belt

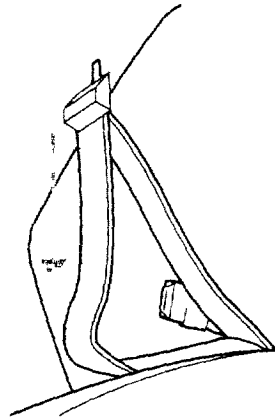
The lap belt does not adjust automatically.

⚠ The lap belt should fit snugly and as low as possible around the hips, not across the waist.

Insert the tongue into the correct buckle (the buckle closest to the direction the tongue is coming from). To lengthen the belt, turn the tongue at a right angle to the belt and pull across your lap until it reaches the buckle. To tighten the belt, pull the loose end of the belt through the tongue until it fits snugly across the hips.



Shorten and fasten the belt when not in use.



Safety belt warning light and indicator chime ⚠

The seat belt warning light illuminates in the instrument cluster and a chime sounds to remind the occupants to fasten their safety belts.

Seating and Safety Restraints

Conditions of operation

If...	Then...
The driver's safety belt is not buckled before the ignition switch is turned to the ON position	The safety belt warning light illuminates 1-2 minutes and the warning chime sounds 4-8 seconds
The driver's safety belt is buckled while the indicator light is illuminated and the warning chime is sounding	The safety belt warning light and warning chime turn off
The driver's safety belt is buckled before the ignition switch is turned to the ON position	The safety belt warning light and indicator chime remain off

BeltMinder

The BeltMinder feature is a supplemental warning to the safety belt warning function. This feature provides additional reminders to the driver that the driver's safety belt is unbuckled by intermittently sounding a chime and illuminating the safety belt warning lamp in the instrument cluster.

If...	Then...
The driver's safety belt is not buckled before the vehicle has reached at least 5 km/h (3 mph) and 1-2 minutes have elapsed since the ignition switch has been turned to ON	The BeltMinder feature is activated - the safety belt warning light illuminates and the warning chime sounds for 6 seconds every 30 seconds, repeating for approximately 5 minutes or until safety belt is buckled
The driver's safety belt is buckled while the safety belt indicator light is illuminated and the safety belt warning chime is sounding	The BeltMinder feature will not activate

Seating and Safety Restraints

If...	Then...
The driver's safety belt is buckled before the ignition switch is turned to the ON position	The BeltMinder feature will not activate

The purpose of the BeltMinder is to remind occasional wearers to wear safety belts all of the time.

The following are reasons most often given for not wearing safety belts (All statistics based on U.S. data)

Reasons given...	Consider...
'Crashes are rare events'	36 700 crashes occur every day. The more we drive, the more we are exposed to "rare" events, even for good drivers. <i>1 in 4 of us will be seriously injured in a crash during our lifetime</i>
"I'm not going far"	3 of 4 fatal crashes occur within 25 miles of home
'Belts are uncomfortable'	We design our safety belts to enhance comfort. If you are uncomfortable - try different positions for the safety belt upper anchorage and seatback which should be as upright as possible, this can improve comfort
"I was in a hurry"	Prime time for an accident. BeltMinder reminds us to take a few seconds to buckle up
'Seat belts don't work'	Safety belts, when used properly, reduce risk of death to front seat occupants by 45% in cars, and by 60% in light trucks.
"Traffic is light"	Nearly 1 of 2 deaths occur in single-vehicle crashes, many when no other vehicles are around

Seating and Safety Restraints

Reasons given...	Consider...
'Belts wrinkle my clothes'	Possibly, but a serious crash can do much more than wrinkle your clothes, particularly if you are unbelted
'The people I'm with don't wear belts'	Set the example, teen deaths occur 4 times more often in vehicles with TWO or MORE people (Children and young brothers/sisters imitate behavior they see)
'I have an air bag'	Air bags offer greater protection when used with safety belts. Frontal airbags are not designed to inflate in rear and side crashes or rollovers
'I'd rather be thrown clear'	Not a good idea. People who are ejected are 40 times more likely to DIE . Safety belts help prevent ejection, WE CAN'T 'PICK OUR CRASH'

 Do not sit on top of a buckled safety belt to avoid the BeltMinder chime. Sitting on the safety belt will increase the risk of injury in an accident. To disable (one-time) or deactivate the BeltMinder feature please follow the directions stated below

One time disable

Any time the safety belt is buckled and then unbuckled during an ignition ON cycle, BeltMinder will be disabled for that ignition cycle only

Deactivating/activating the BeltMinder feature

Read steps 1 - 9 thoroughly before proceeding with the deactivation/activation programming procedure

The BeltMinder feature can be deactivated/activated by performing the following procedure

Before following the procedure, make sure that

- the parking brake is set
- the gearshift is in P (Park) (automatic transmission)

Seating and Safety Restraints

the ignition switch is in the OFF position

- all vehicle doors are closed
- the driver's safety belt is unbuckled
- the parklamps/headlamps are in OFF position (If vehicle is equipped with Autolamps, this will not affect the procedure)

 To reduce the risk of injury, do not deactivate/activate the BeltMinder feature while driving the vehicle

- 1 Turn the ignition switch to the RUN (or ON) position (DO NOT START THE ENGINE)
- 2 Wait until the safety belt warning light turns off (Approximately 1 minute)
 - Steps 3-5 must be completed within 60 seconds of the procedure will have to be repeated
- 3 Buckle then unbuckle the safety belt three times, ending with the safety belt unbuckled. This can be done before or during BeltMinder warning activation
 - 1 Turn on the parklamps/headlamps, turn off the parklamps/headlamps
 - 5 Buckle then unbuckle the safety belt three times, ending with the safety belt unbuckled
- After step 5 the safety belt warning light will be turned on for three seconds
 - 6 Within seven seconds of the safety belt warning light turning off, buckle then unbuckle the safety belt
 - This will disable BeltMinder if it is currently enabled, or enable BeltMinder if it is currently disabled
- 7 Confirmation of disabling BeltMinder is provided by flashing the safety belt warning light four times per second for three seconds
- 8 Confirmation of enabling BeltMinder is provided by flashing the safety belt warning light four times per second for three seconds, followed by three seconds with the safety belt warning light off, then followed by flashing the safety belt warning light four times per second for three seconds again
- 9 After receiving confirmation, the deactivation/activation procedure is complete

Seating and Safety Restraints

Safety belt extension assembly

If the safety belt is too short when fully extended, there is a 20 cm (8 inch) safety belt extension assembly that can be added (part number 611C22). This assembly can be obtained from your dealer at no cost.

Use only extensions manufactured by the same supplier as the safety belt. Manufacturer identification is located at the end of the webbing on the label. Also, use the safety belt extension only if the safety belt is too short for you when fully extended. Do not use extensions to change the fit of the shoulder belt across the torso.

Safety belt maintenance

Inspect the safety belt systems periodically to make sure they work properly and are not damaged. Inspect the safety belts to make sure there are no nicks, tears or cuts, replacing if necessary. All safety belt assemblies, including retractors, buckles, front seat belt buckle assemblies, buckle support assemblies (slide bar-if equipped), shoulder belt height adjusters (if equipped), child safety seat tether bracket assemblies (if equipped), LATCH (child seat tether anchors and lower anchors (if equipped), and attaching hardware should be inspected after a collision. Ford recommends that all safety belt assemblies used in vehicles involved in a collision be replaced. However, if the collision was minor and a qualified technician finds that the belts do not show damage and continue to operate properly, they do not need to be replaced, except as described in the *Replacing the front passenger and second row bench seat belt assemblies after a collision* section of this chapter. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.

⚠ Failure to inspect and if necessary replace the safety belt assembly under the above conditions could result in severe personal injuries in the event of a collision.

Refer to *Cleaning and maintaining the safety belts* in the *Cleaning* chapter.

Replacing the front passenger and second row bench seat belt assemblies after a collision

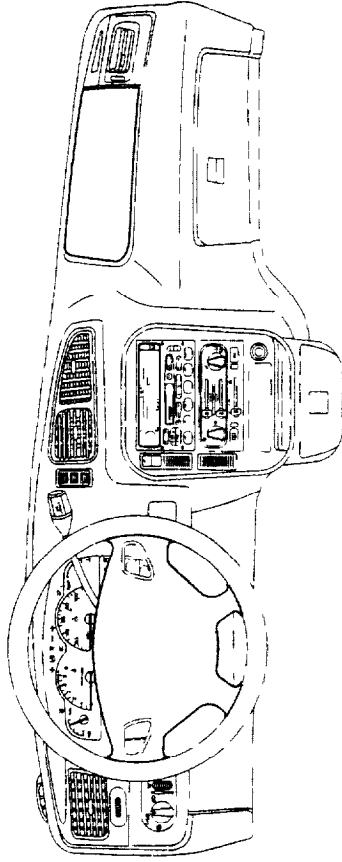
All front passenger and second row bench seat belt assemblies adjacent to a sliding door have special energy management retractors designed to further reduce the risk of injury in the event of a head-on collision.

Seating and Safety Restraints

These retractors should be replaced if they were used in any accident in which the front airbags deploy. If the safety belt assemblies are not replaced, there may be increased risk of injury in the event of a subsequent collision.

⚠ Failure to inspect and if necessary replace the safety belt assembly under the above conditions could result in severe personal injuries in the event of a collision.

AIR BAG SUPPLEMENTAL RESTRAINT SYSTEM



Your vehicle is equipped with a crash sensing and diagnostic module which records information about the air bag and sensor systems. In the event of a collision, this module may save information related to the collision, including information about the air bag system and impact severity. This information will assist Ford in the servicing of your vehicle and may help Ford better understand real-world collisions and further improve the safety of future vehicles.

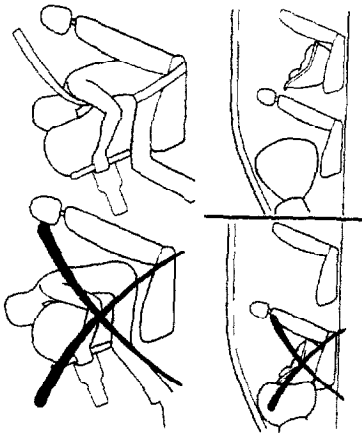
The air bag supplemental restraint system is designed to work in conjunction with the safety belts to help protect the driver and front outboard passenger from certain upper body injuries. The term supplemental restraint means the air bags are intended as a supplement to the safety belts. Air bags alone cannot protect as well as air bags plus safety belts in impacts for which the air bags are designed to deploy, and air bags do not offer any protection in crashes for which they do not deploy.

Seating and Safety Restraints

Important supplemental restraint system (SRS) precautions

The supplemental restraint system is designed to work with the safety belt to help protect the driver and right front passenger from certain upper body injuries.

Air bags DO NOT inflate slowly or gently and the risk of injury from a deploying air bag is greatest close to the trim covering the air bag module.



 All occupants of the vehicle, including the driver, should always properly wear their safety belts, even when an air bag (SRS) is provided.

 Always transport children 12 years old and under in the back seat and always properly use appropriate child restraints.

 National Highway Traffic Safety Administration (NHTSA) recommends a minimum distance of at least 25 cm (10 inches) between an occupant's chest and the driver air bag module.

 Never place your arm over the air bag module as a deploying air bag can result in serious arm fractures or other injuries.

Steps you can take to properly position yourself away from the air bag:

- Move your seat to the rear as far as you can while still reaching the pedals comfortably.
- Recline the seat slightly (one or two degrees) from the upright position.

Seating and Safety Restraints

 Do not put anything on or over the air bag module. Placing objects on or over the air bag inflation area may cause those objects to be propelled by the air bag into your face and torso causing serious injury.

 Do not attempt to service, repair, or modify the air bag supplemental restraint systems or its fuses. See your Ford or Lincoln Mercury dealer.

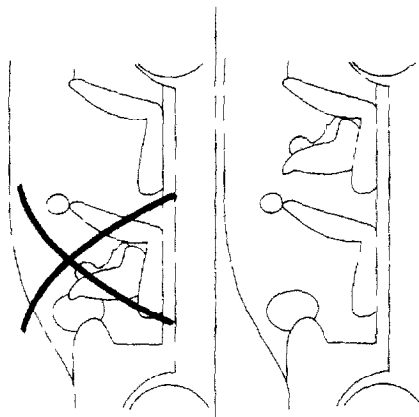
 Modifications to the front end of the vehicle, including frame, bumper, front end body structure and tow hooks may affect the performance of the air bag sensors increasing the risk of injury. Do not modify the front end of the vehicle.

Children and air bags

For additional important safety information, read all information on safety restraints in this guide.

Children must always be properly restrained. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating position. Failure to follow these instructions may increase the risk of injury in a collision.

 Air bags can kill or injure a child in a child seat. **NEVER** place a rear-facing child seat in front of an active air bag. If you must use a forward-facing child seat in the front seat, move the seat all the way back.



S ating and Saf ty Restraints

Determining if the system is operational

The supplemental restraint system uses a warning indicator in the instrument cluster or a back up tone to indicate the condition of the system. Refer to the *Warning light* section in the *Instrument cluster* chapter. Routine maintenance of the air bag is not required.

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

- The readiness light (same light for front and side air bag system) will either flash or stay lit.
- The readiness light will not illuminate immediately after ignition is turned on.
- A series of five beeps will be heard. The tone pattern will repeat periodically until the problem and/or light are repaired.

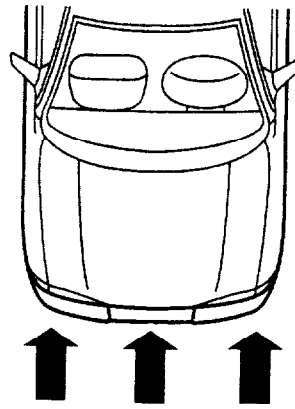


If any of these things happen, even intermittently, have the supplemental restraint system serviced at your dealership or by a qualified technician immediately. Unless serviced, the system may not function properly in the event of a collision.

How does the air bag supplemental restraint system work?

The air bag SRS is designed to activate when the vehicle sustains longitudinal deceleration sufficient to cause the sensors to close an electrical circuit that initiates air bag inflation.

The fact that the air bags did not inflate in a collision does not mean that something is wrong with the system. Rather, it means the forces were not of the type sufficient to cause activation. Front air bags are designed to inflate in frontal and near-frontal collisions, not rollover, side impact, or rear impacts unless the collision causes sufficient longitudinal deceleration.



S ating and Safety R straints

The air bags inflate and deflate rapidly upon activation. After air bag deployment, it is normal to notice a smoke-like powdery residue or smell the burnt propellant. This may consist of cornstarch, talcum powder (to lubricate the bag) or sodium compounds (e.g., baking soda) that result from the combustion process that inflates the air bag. Small amounts of sodium hydroxide may be present which may irritate the skin and eyes, but none of the residue is toxic.

While the system is designed to help reduce serious injuries, contact with a deploying air bag may also cause abrasions, swelling or temporary hearing loss. Because air bags must inflate rapidly and with considerable force, there is the risk of death or serious injuries, such as fractures, facial and eye injuries or internal injuries, particularly to occupants who are not properly restrained or are otherwise out of position at the time of air bag deployment. Thus, it is extremely important that occupants be properly restrained as far away from the air bag module as possible while maintaining vehicle control.

⚠ Several air bag system components get hot after inflation. Do not touch them after inflation.

⚠ If the air bag has deployed, **the air bag will not function again and must be replaced immediately.** If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.

The SRS consists of

- driver and passenger air bag modules (which include the inflators and air bags)
- side air bags (if equipped). Refer to *Side air bag system* later in this chapter.
- one or more impact and safing sensors.

Seating and Safety Restraints

- a readiness light and tone
 - diagnostic module
 - and the electrical wiring which connects the components
- The diagnostic module monitors its own internal circuits and the supplemental air bag electrical system warning (including the impact sensors), the system wiring the air bag system readiness light, the air bag back up power and the air bag ignitors

Side air bag system (if equipped)

 Do not place objects or mount equipment on or near the air bag cover on the side of the seatbacks of the front seats or in front seat areas that may come into contact with a deploying air bag. Failure to follow these instructions may increase the risk of personal injury in the event of a collision.

 Do not use accessory seat covers. The use of accessory seat covers may prevent the deployment of the side air bags and increase the risk of injury in an accident.

 Do not lean your head on the door. The side air bag could injure you as it deploys from the side of the seatback.

 Do not attempt to service, repair, or modify the air bag supplemental restraint system, its fuses or the seat cover on a seat containing an air bag. See your Ford or Lincoln Mercury dealer.

 All occupants of the vehicle including the driver should always wear their safety belts even when an air bag SRS is provided.

Seating and Safety Restraints

How does the side air bag system work?

The side air bag system consists of the following:

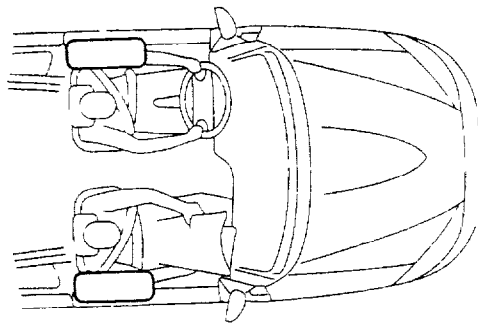
- An inflatable nylon bag (air bag) with a gas generator concealed behind the outboard bolster of the driver and front passenger seatbacks.
- A special seat cover designed to allow airbag deployment.
- The same warning light, electronic control and diagnostic unit as used for the front air bags.
- Two crash sensors located under the outboard side of the front seats, attached to the floor.

Side air bags, in combination with seat belts, can help reduce the risk of severe injuries in the event of a significant side impact collision.

The side air bags are fitted on the outboard side of the seatbacks of the front seats. In certain lateral collisions, the air bag on the side affected by the collision will be inflated, even if the respective seat is not occupied. The air bag was designed to inflate between the door panel and occupant to further enhance the protection provided occupants in side impact collisions.

The air bag SRS is designed to activate when the vehicle sustains lateral deceleration sufficient to cause the sensors to close an electrical circuit that initiates air bag inflation.

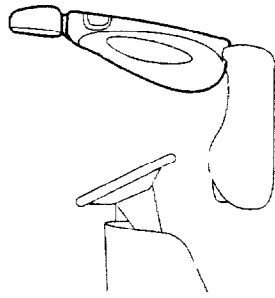
The fact that the air bags did not inflate in a collision does not mean that something is wrong with the system. Rather, it means the forces were not of the type sufficient to cause activation. Side air bags are designed to inflate in side impact collisions, not roll over, rear impact, frontal or near-frontal collisions, unless the collision causes sufficient lateral deceleration.



Seating and Safety Restraints

 Several air bag system components get hot after inflation. Do not touch them after inflation.

 If the side air bag has deployed, **the air bag will not function again. The side air bag system (including the seat) must be inspected and serviced by a qualified technician in accordance with the vehicle service manual.** If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.



Disposal of air bags and air bag equipped vehicles (including pretensioners)

For disposal of air bags or air bag equipped vehicles, see your local dealership or qualified technician. Air bags MUST BE disposed of by qualified personnel.

SAFETY RESTRAINTS FOR CHILDREN

See the following sections for directions on how to properly use safety restraints for children. Also see *Air bag supplemental restraint system (SRS)* in this chapter for special instructions about using air bags.

Important child restraint precautions

You are required by law to use safety restraints for children in the U.S. and Canada. If small children ride in your vehicle (generally children who are four years old or younger and who weigh 18 kg [40 lbs] or less), you must put them in safety seats made especially for children. Check your local and state or provincial laws for specific requirements regarding the safety of children in your vehicle.

Seating and Safety Restraints

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

Always follow the instructions and warnings that come with any infant or child restraint you might use.

When possible, always place children under age 12 in the rear seat of your vehicle. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating position.

Children and safety belts

If the child is the proper size, restrain the child in a safety seat.

Children who are too large for child safety seats (as specified by your child safety seat manufacturer) should always wear safety belts.

Follow all the important safety restraint and air bag precautions that apply to adult passengers in your vehicle.

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

 Do not leave children, unreliable adults, or pets unattended in your vehicle.

To improve the fit of lap and shoulder belts on children who have outgrown child safety seats, Ford recommends use of a belt-positioning booster seat that is labelled as conforming to all applicable Federal motor vehicle safety standards. Belt-positioning booster seats raise the child and provide a shorter, firmer seating cushion that encourages safer seating posture and better fit of lap and shoulder belts on the child.

A belt-positioning booster seat should be used if the shoulder belt rests in front of the child's face or neck, or if the lap belt does not fit snugly on both thighs, or if the thighs are too short to let the child sit all the way back on the seat cushion when the lower legs hang over the edge of the seat cushion. You may wish to discuss the special needs of your child with your pediatrician.

Seating and Safety Restraints

SAFETY SEATS FOR CHILDREN

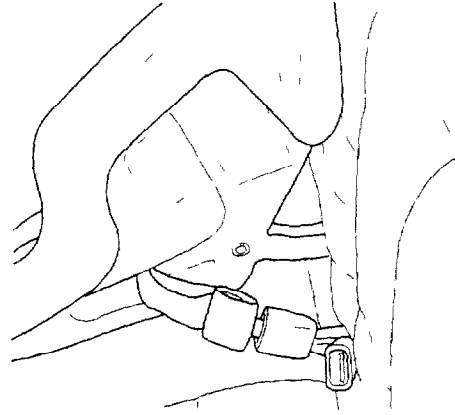


Child and infant or child safety seats

Use a safety seat that is recommended for the size and weight of the child. Carefully follow all of the manufacturer's instructions with the safety seat you put in your vehicle. If you do not install and use the safety seat properly the child may be injured in a sudden stop or collision.

When installing a child safety seat

- Review and follow the information presented in the *Air Bag Supplemental Restraint System* section in this chapter.
- Use the correct safety belt buckle for that seating position.
- Insert the belt tongue into the proper buckle until you hear a snap and feel it latch. Make sure the tongue is securely fastened in the buckle.
- Keep the buckle release button pointing up and away from the safety seat, with the tongue between the child seat and the release button, to prevent accidental unbuckling.
- Place seat back in upright position.



Seating and Safety Restraints

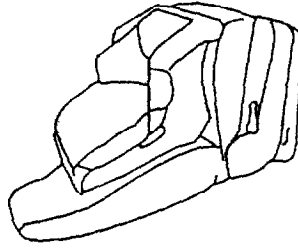
Ford recommends the use of a child safety seat having a top tether strap. Install the child safety seat in a seating position which is capable of providing a tether anchorage. For more information on top tether traps, refer to *Attaching safety seats with tether straps*.

 Carefully follow all of the manufacturer's instructions included with the safety seat you put in your vehicle. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

Installing child safety seats in cinch tongue combination lap and shoulder belt seating positions

The belt webbing below the tongue is the lap portion of the combination lap/shoulder belt, and the belt webbing above the tongue is the shoulder belt portion of the combination lap/shoulder belt.

1. Position the child safety seat in a seat with a combination lap and shoulder belt.

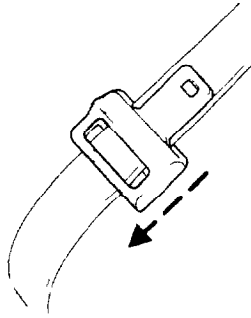


 Air bags can kill or injure a child in a child seat. If you must use a forward-facing child seat in the front seat, move seat all the way back.

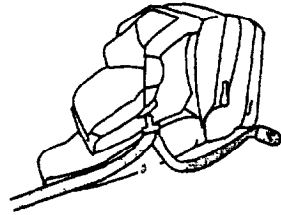
 Rear facing child seats should NEVER be placed in front of an active air bag.

Seating and Safety Restraints

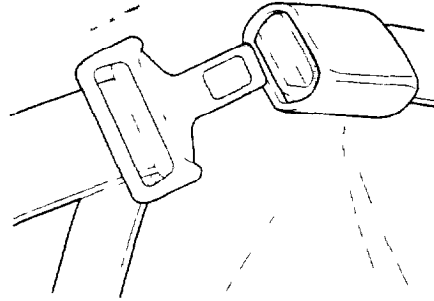
2 Slide the tongue up the webbing



3 While holding both shoulder and lap portions next to the tongue, route the tongue and webbing through the child seat according to the child seat manufacturer's instructions. Be sure that the belt webbing is not twisted

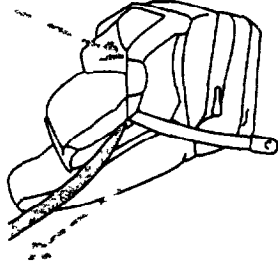


4 Insert the belt tongue into the proper buckle for that seating positions until you hear a snap and feel it latch. Make sure the tongue is securely latched to the buckle by pulling on the tongue

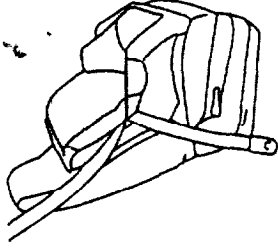


Seating and Safety Restraints

5 While pushing down with your knee on the child seat pull up on the shoulder belt portion to tighten the lap belt portion of the combination lap and shoulder belt



6 Allow the safety belt to retract and remove any slack in the belt to securely tighten the child safety seat in the vehicle



7 Before placing the child into the child seat, forcibly tilt the child seat forward and back to make sure that the seat is held securely in place
8 Check from time to time to be sure that there is no slack in the lap/shoulder belt. The shoulder belt must be snug to keep the lap belt tight during a collision

Installing child safety seats in the lap belt seating positions

- 1 Lengthen the lap belt. To lengthen the belt, hold the tongue so that it's bottom is perpendicular to the direction of webbing while sliding the tongue up the webbing
- 2 Place the child safety seat in the center seating position
- 3 Route the tongue and webbing through the child seat according to the child seat manufacturer's instructions
- 4 Insert the belt tongue into the proper buckle for the center seating position until you hear a snap and feel it latch. Make sure the tongue is securely fastened to the buckle by pulling on tongue

Seating and Safety Restraints

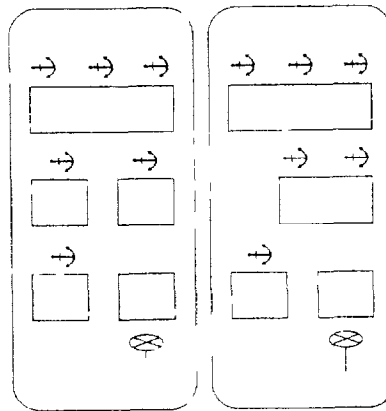
- 5 Push down on the child seat while pulling on the loose end of the lap belt webbing to tighten the belt
- 6 Before placing the child into the child seat, forcibly tilt the child seat from side to side and in forward direction to make sure that the seat is held securely in place. If the child seat moves excessively, repeat steps 5 through 6, or properly install the child seat in a different position

Attaching child safety seats with tether straps

Most new forward-facing child safety seats include a tether strap which goes over the back of the seat and hooks to an anchoring point. Tether straps are available as an accessory for many older safety seats. Contact the manufacturer of your child seat for information about ordering a tether strap.

 Children should be placed in the rear in an appropriate child safety seat that is properly secured to the vehicle.

The tether anchors in your vehicle are in the positions shown

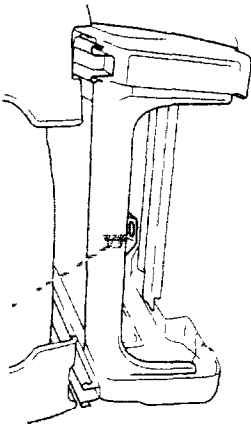


The tether can be attached directly to the rear of all passenger seating except the front passenger seat. The front passenger seat equipped with power adjustment. The front passenger seat with manual adjustment does have a tether anchor.

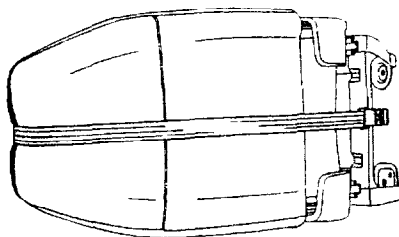
Seating and Safety Restraints

Front passenger seating position (manual adjusting seats only)

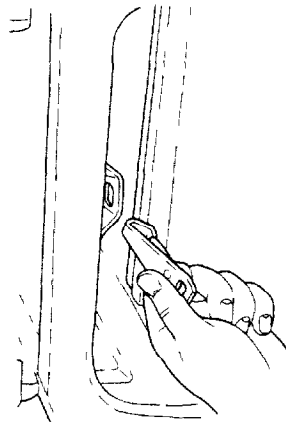
- 1 Position the child safety seat on the passenger seat cushion



- 2 Route the child safety seat tether strap over the back of the seat. If the head restraint is adjustable, route the tether strap under the head restraint and between the head restraint posts. If the top of the safety seat hits the head restraint, raise the head restraint to let the child seat fit further rearward.

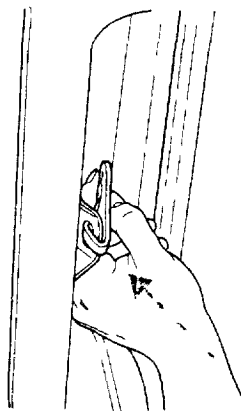


- 3 Grasp the tether strap and position it to the seat frame

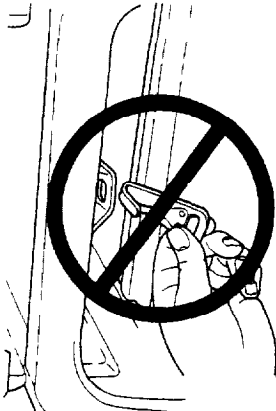


Seating and Safety Restraints

4 Rotate the tether hook, and clip the tether strap to the seat frame

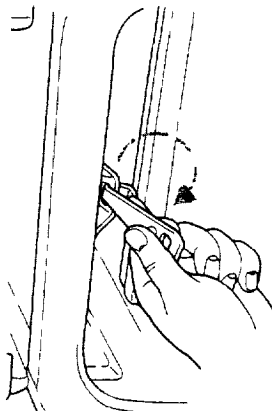


⚠ If the tether strap is clipped incorrectly (as shown) the child safety seat may not be retained properly in the event of a collision



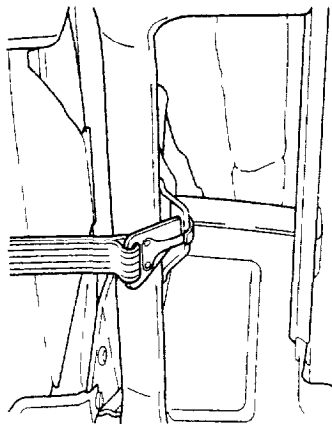
5 Rotate the tether strap clip

6 Refer to the instructions in this section under *Installing child safety seats in car's tongue combination lap and shoulder belt seating positions* to secure the child safety seat



Seating and Safety Restraints

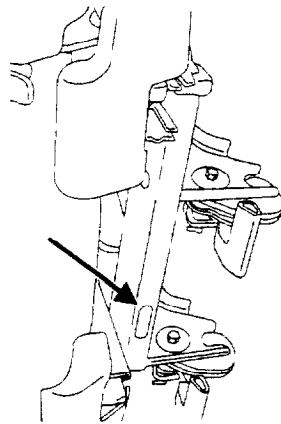
7 Tighten the child safety seat tether strap according to the manufacturer's instructions



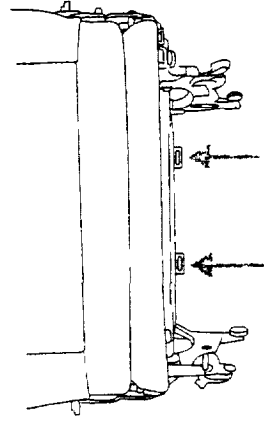
Rear seating positions

Follow steps 1-8 as described above for the following available seats

- 2nd row bucket

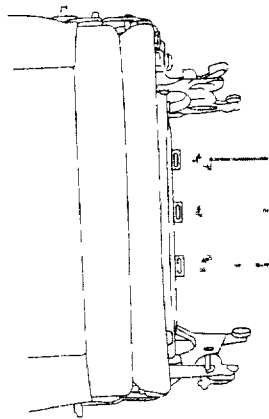


- 2nd row bench



Seating and Safety Restraints

- Child row bench

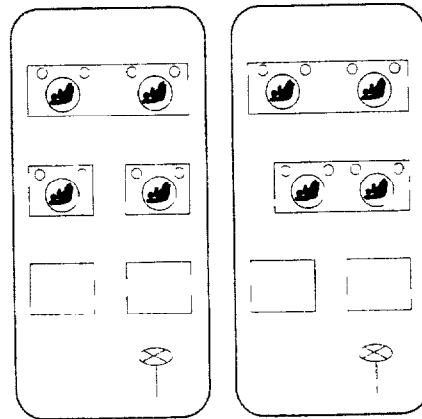


For additional important safety information on the proper use of seatbelts, child seats and infant seats, please read the entire *Seating and safety restraints* chapter in this owner's guide.

Attaching safety seats with LATCH (Lower Anchors and Tethers for Children) attachments for child seat anchors

Some child safety seats have two rigid or webbing mounted attachments that connect to two anchors at certain seating positions in your vehicle. This type of child seat eliminates the need to use seat belts to attach the child seat. For forward-facing child seats, the tether strap must also be attached to the proper tether anchor. See *Attaching safety seats with tether straps* in this chapter.

Your vehicle has LATCH anchors for child seat installation at the seating positions marked with the child seat symbol.

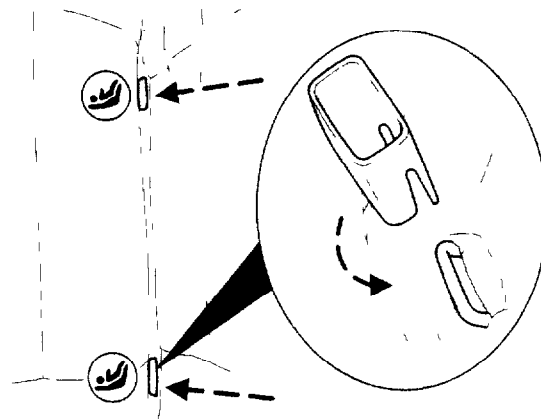


The anchors on both sides of the center of the rear seat are provided primarily for child seats at the outboard seats, and are further apart than the pairs of lower anchors for child seat installation at other seating positions. A child seat with rigid LATCH attachments cannot be installed at the center rear seat. A child seat with LATCH attachments on belt webbing can be used at the center rear seat unless a child seat at an outboard rear seat is attached to one of these lower anchors.

Seating and Safety Restraints

- Never attach two LATCH child safety seats to the same anchor. In a crash, one anchor may not be strong enough to hold two child safety seat attachments and may break, causing serious injury or death.

The lower anchors for child seat installation are located at the rear section of the rear seat between the cushion and seat back.



Follow the child seat manufacturer's instructions to properly install a child seat with LATCH attachments. Two plastic LATCH guides can be obtained at no charge from any Ford or Lincoln Mercury dealer. They snap onto the LATCH lower anchors in the seat to help attach a child seat with rigid attachments. The guides hold the seat trim away to expose the anchor and make it easier to attach some child seats.

- Attach LATCH lower attachments of the child seat only to the anchors shown.

Seating and Safety Restraints

If you install a child seat with rigid LATCH attachments, do not tighten the tether strap enough to lift the child seat off the vehicle seat cushion when the child is seated in it. Keep the tether strap just snug without lifting the front of the child seat. Keeping the child seat just touching the vehicle seat gives the best protection in a severe crash. Adjusting the seat back angle may allow the tether strap to be tight without lifting the child seat.

Each time you use the safety seat, check that the seat is properly attached to the lower anchors and tether anchor. Try to tilt the child seat from side to side. Also try to tug the seat forward. Check to see if the anchors hold the seat in place.



If the safety seat is not anchored properly, the risk of a child being injured in a crash greatly increases.

Appendix D

Miscellaneous Test Information

Dummy 314n Type HYBRID III 50TH Description NHISA - 314n HYBRID III 50TH CAI DUE 4-3-02 (DKS 10-10-01) J211

Chsname	Location	Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldate	Pos Output	Flip
HEDXG	Head X-Axis Accel	7231C	APDJ3	Endevco	0.02018 G	750	10/04/2001	Rwd	1
HEDYG	Head Y-Axis Accel	7231C	AGHP8	Endevco	0.01905 G	750	10/04/2001	Left	1
HEDZG	Head Z-Axis Accel	7231C	APD60	Endevco	0.02068 G	750	10/04/2001	Up	1
NEKXF	Neck X-Axis Force	1716	1716-0534-FX	Denton	0.00019255 N	8896.4	10/04/2001	Hd Fd, Cst Rr	1
NEKYF	Neck Y-Axis Force	1716	1716-0534-FY	Denton	0.000187199 N	8896.4	10/04/2001	Hd Lt, Cst Rt	0
NEKZF	Neck Z-Axis Force	1716	1716-0534-FZ	Denton	0.000087256 N	13344.6	10/04/2001	Hd Up Cst Dn	0
NEKXM	Neck X-Axis Moment	1716	1716-0534-MX	Denton	0.00596885 NM	282.5	10/04/2001	Rt Ear to Rt Shld	1
NEKYM	Neck Y-Axis Moment	1716	1716-0534-MY	Denton	0.005899823 NM	282.5	10/04/2001	Chn to Strnm	0
NEKZM	Neck Z-Axis Moment	1716	1716-0534-MZ	Denton	0.000832354 NM	282.5	10/04/2001	Chn to Lt Shld	0
CSTXG	Chest X-Axis Accel	7231C	C13010	Endevco	0.02948 G	750	10/04/2001	Fwd	0
CSTYG	Chest Y-Axis Accel	7231C	C14563	Endevco	0.02982 G	750	10/04/2001	Left	1
CSTZG	Chest Z-Axis Accel	7231C	AD343	Endevco	0.01933 G	750	10/04/2001	Down	0
CSTXD	Chest Displacement	14CB1-2847	14CB1-2847-041	Servo	1.1262655 MM	100	10/10/2001	Strnm Away Frm Spn	0
LFMZL	Left Femur Z-Axis 91	2430T	2430T-962	GSE	0.00007002 N	13344.7	10/04/2001	Knee Fd Pel Rr	0
RPMZF	Right Femur Z-Axis 98	2430T	2430T-982	GSE	0.000068477 N	13344.7	10/04/2001	Knee Fd Pel Rr	0

Dummy 339n **Type** HYBRID III 50TH **Description** NHTSA - 339n HYBRID III 50TH CAL DUE 4-3-02 (DKS 10-10-01) J211

Chsname	Location	Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldat	Pos Output	Flip
HEDXG	Head X Axis Accel	7231C	C12975	Endevco	0 02892 G	750	10/04/2001	Rwd	1
HEDYG	Head Y-Axis Accel	7231C	C13128	Endevco	0 02549 G	750	10/04/2001	Lft	1
HEDZG	Head Z-Axis Accel	7231C	C14560	Endevco	0 02389 G	750	10/04/2001	Up	1
NEKXF	Neck X-Axis Force	1716A	1716A-1222-FX	Denton	0 000197417 N	8896 4	10/05/2001	Hd Fd,Cst Rt	1
NEKYF	Neck Y-Axis Force	1716A	1716A-1222-FY	Denton	0 000191426 N	8896 4	10/05/2001	Hd Lt,Cst Rt	0
NEKZF	Neck Z-Axis Force	1716A	1716A-1222-FZ	Denton	0 00010004 N	13344 6	10/05/2001	Hd Up,Cst Dn	0
NEKXM	Neck X-Axis Moment	1716A	1716A-1222-MX	Denton	0 006116106 NM	282 5	10/05/2001	Rt Ear to Rt Shld	1
NEKYM	Neck Y-Axis Moment	1716A	1716A-1222-MY	Denton	0 006059823 NM	282 5	10/05/2001	Chn to Strmm	0
NFK7M	Neck Z-Axis Moment	1716A	1716A-1222-MZ	Denton	0 008541593 NM	282 5	10/05/2001	Chn to Lt Shld	0
CSTXG	Chest X-Axis Accel	7231C	C14135	Endevco	0 02737 G	750	10/04/2001	Fwd	0
CSTYG	Chest Y Axis Accel	7231C	C14317	Endevco	0 02736 G	750	10/04/2001	1 ft	1
CSTZG	Chest Z-Axis Accel	7231C	C14341	Endevco	0 02335 G	750	10/04/2001	Down	0
CSTXD	Chest Displacement X	14CB1-2847	14CB1-2847-339	Servo	1 137514 MM	100	10/10/2001	Strmm Away Frm Spn	0
IFMZP	Left Femur Z-Axis 603	2430T	2430T-901	GSE	0 000071144 N	13344 7	10/04/2001	Knee Fd,Pel Rr	0
RFMZP	Right Femur Z-Axis 744	2430T	2430T-902	GSE	0 00007035 N	13344 7	10/04/2001	Knee Fd,Pel Rr	0

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Name of Test 011129-1 System K3600 Name of DAU DAU3

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal. Date/Status	Group	Mfg.	Model
3000	LVFNT	EVFNT	Lvent low		10 24	+	11/21/2002 OK	-1	IRC	Lvent
3001	C15253	SLDXG	Primay Sled Accel	Rear	199 72499	G	10/02/2001 OK	SLED G	Endevco	7231C
3002	AN4B3	SLDXGR	Redundant Sled Accel	Rear	199 99688	G	07/24/2001 OK	-1	Endevco	7231C
3003	SLDXV	SLDXV	Sled Velocity		164 76797	KPH	04/03/2001 OK	SLHD G	TRC	SLDXV
3004	SLDXGT	SLDXGT	Sled Trigger Accel	Rear	202 38354	G	10/19/2001 OK	-1	Endevco	7231C
3005	APDJ3	HFDXG1	Head X-Axis Accel	Rwd	399 55362	G	10/04/2001 OK	314n	Endevco	7231C
3006	AGHP8	HEDYG1	Head Y-Axis Accel	Left	401 14389	G	10/04/2001 OK	314n	Endevco	7231C
3007	APD60	HLDZG1	Head Z-Axis Accel	Up	399 32614	G	10/04/2001 OK	314n	Endevco	7231C
3008	1716-0534-FX	NEKXF1	Neck X-Axis Force	Hd Fd	8893 1425	N	10/04/2001 OK	314n	Denton	1716
3009	1716-0534-FY	NEKYF1	Neck Y-Axis Force	Hd Lt	8894 4954	N	10/04/2001 OK	314n	Denton	1716
3010	1716-0534-FZ	NEKZF1	Neck Z-Axis Force	Hd U	13351 061	N	10/04/2001 OK	314n	Denton	1716
3011	1716-0534-MX	NTKXM1	Neck X-Axis Moment	Rt Far	282 63152	NM	10/04/2001 OK	314n	Denton	1716
3012	1716-0534-MY	NEKYM1	Neck Y-Axis Moment	Chn t	282 67839	NM	10/04/2001 OK	314n	Denton	1716
3013	1716-0534-MZ	NEKZM1	Neck Z-Axis Moment	Chn t	282 81512	NM	10/04/2001 OK	314n	Denton	1716
3014	C13010	CS1XG1	Chest X-Axis Accel	Fwd	399 25763	G	10/04/2001 OK	314n	Endevco	7231C
3015	C14563	CSTYG1	Chest Y-Axis Accel	Left	399 29499	G	10/04/2001 OK	314n	Endevco	7231C
3016	AD343	CS1ZG1	Chest Z-Axis Accel	Down	401 32311	G	10/04/2001 OK	314n	Endevco	7231C
3017	14CB1-2847-041	CS1XD1	Chest Displacement	Strmm	101 02216	MM	10/10/2001 OK	314n	Servo	14CB1-2847
3018	24301-962	LFMZP1	Left Femur Z-Axis 91	Knee	13343 424	N	10/04/2001 OK	314n	GSF	24301
3019	2430T-982	RFMZF1	Right Femur Z-Axis 98	Knee	13351 72	N	10/04/2001 OK	314n	GSF	2430T
3020	C13128	HEDYG2	Head Y-Axis Accel	I ft	401 72617	G	10/04/2001 OK	339n	Endevco	7231C
3021	C12975	HEDXG2	Head X-Axis Accel	Rwd	397 84295	G	10/04/2001 OK	339n	Endevco	7231C
3022	C14560	HEDZG2	Head Z-Axis Accel	Up	400 58993	G	10/04/2001 OK	339n	Endevco	7231C
3023	1716A-1222-FX	NEKXF2	Neck X-Axis Force	Hd Fd	8897 0669	N	10/05/2001 OK	339n	Denton	1716A
3024	1716A-1222-FY	NEKYF2	Neck Y-Axis Force	Hd Lt	8900 7081	N	10/05/2001 OK	339n	Denton	1716A
3025	1716A-1222-FZ	NEKZF2	Neck Z-Axis Force	Hd U	13345 379	N	10/05/2001 OK	339n	Denton	1716A
3026	1716A-1222-MX	NEKXM2	Neck X-Axis Moment	Rt Far	282 33860	NM	10/05/2001 OK	339n	Denton	1716A
3027	1716A-1222-MY	NEKYM2	Neck Y-Axis Moment	Chn t	282 57832	NM	10/05/2001 OK	339n	Denton	1716A
3028	1716A-1222-MZ	NEKZM2	Neck Z-Axis Moment	Chn t	282 74519	NM	10/05/2001 OK	339n	Denton	1716A
3029	C14135	CSTXG2	Chest X-Axis Accel	I wd	398 01304	G	10/04/2001 OK	339n	Endevco	7231C

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3030	C14317	CSTYG2	Chest Y-Axis Accel	Lft	398 15852	G	-	10/04/2001	OK	339n	Fndevco	7231C
3031	C14341	CSTZG2	Chest Z-Axis Accel	Down	398 67627	G	+	10/04/2001	OK	339n	Endevco	7231C
3032	14CB1-2847-339	CSTXD2	Chest Displacement X	Strm	100 02319	MM	+	10/10/2001	OK	339n	Servo	14CB1-2847
3033	2430T-901	LFMZP2	Left Femur Z-Axis 603	Knee	13351 895	N	+	10/04/2001	OK	339n	GSE	2430T
3034	2430T-902	RFMZP2	Right Femur Z-Axis 744	Knee	13353 938	N	+	10/04/2001	OK	339n	GSE	2430T
3035	J35767	LSSXG	Rear Seat X- Member @	Left Sl	200 37570	G	+	11/28/2001	OK	-1	Endevco	7264-2000TZ
3036	J38432	RSSXG	Rear Seat X- Member @	Right	200 20137	G	+	10/23/2001	OK	-1	Fndevco	7264-2000TZ
3037	J38245	TEXG	Top of Engine Block	Fwd	200 21977	G	+	10/23/2001	OK	-1	Fndevco	7264-2000TZ
3038	J39646	RAXG	Rear Axle	Rr	200 03125	G	-	10/23/2001	OK	-1	Endevco	7264-2000TZ

Digital and System Channel Report

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Name of Test		011129-1	System		K3600	Name of DAU		DAU3	Module Type	
enabled Channel			Type			Data File			KM3650 Sequencer	
Yes		3500	Dig3			DAT33500				

bit position	bit selector	short name	long name	description
MSB = bit 15	1	Switch	Pull-Apart Switch	Backup Trigger switch
bit 14	1	ABEVT1	AIRBAG EVENT DP	20 mS 1
bit 13	1	ABEVT2	AIRBAG FVENT DS	120 mS 2
bit 12	1	ABEVI3	AIRBAG EVENT PP	20 mS 3
bit 11	1	ABEVT4	AIRBAG EVENT PS	120 mS 4
bit 10	0			
bit 09	0			
bit 08	0			
bit 07	0			
bit 06	0			
bit 05	0			
bit 04	0			
bit 03	0			
bit 02	0			
bit 01	0			
LSB = bit 00	0			

Temperature Chart

