Report Number: 208-TRC-03-003

Safety Compliance Testing for FMVSS 208
Occupant Crash Protection

General Motors Corporation

2003 Chevrolet Tahoe

NHTSA Number: C30103

TRC Inc. Test Number: 021119-2

Transportation Research Center Inc.

10820 State Route 347

East Liberty, OH 43319

Report Date: Dec. 23, 2002

Final Report

Prepared For:

U. S. Department of Transportation

National Highway Traffic Safety Administration

Safety Assurance

Office of Vehicle Safety Compliance (NVS-220)

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

Washington, DC 20590

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Test Performed By: Jason D. Jenkins, Senior Project Engineer

Report Approved By:

Virginia L. Watters, Project Manager — Date 12/23/02
Transportation Research Center Inc.

Final Report Acceptance By OVSC:

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

Technical Report Documentation Page

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16. Abstract

Compliance tests were conducted on a 2003 Chevrolet Tahoe, NHTSA No. C30103, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP208-11 for the determination of FMVSS 208 compliance. Possible test failures identified were as follows:

None

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Section 1

Purpose of Compliance Test

PURPOSE

This Federal Motor Vehicle Safety Standard 208 compliance test is part of a program conducted for the National Highway Traffic Safety Administration by Transportation research Center (TRC Inc.) under contract DTNH22-02-D-08062, Task Order VRTC-DCF2525. The purpose of the test was to determine whether the subject vehicle, a 2003 Chevrolet Tahoe, NHTSA No. C30103, meets certain performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212 indicant, "Windshield Mounting"; indicant FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301 indicant, "Fuel System Integrity". The compliance test was conducted in accordance with OVSC Laboratory Test Procedure No. TP-208-11 dated August 22, 2002.

Section 2

Tests Performed

TESTS PERFORMED

The following checked items indicate the tests that were performed:

X 1. Rear outboard seating position seat belts (S4.1.4.2(b) & (S4.2.4)
X 2. Air bag labels (S4.5.1)
X 3. Readiness indicator (S4.5.2)
X 4. Passenger Air Bag Manual Cut-Off Device (S4.5.4)
X 5. Lap belt lockability (S7.1.1.5)
X 6. Seat belt warning system (S7.3)
X 7. Seat belt contact force (S7.4.3)
X 8. Seat belt latch plate access (S7.4.4)
X 9. Seat belt retraction (S7.4.5)
X 10. Seat belt guides and hardware (S7.4.6)
___ 11. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart N)
___ 12. Suppression tests with Newborn infant Subpart K dummy (Part 572, Subpart N)
___ 13. Suppression tests with 3-year-old dummy (Part 572, Subpart P)
___ 14. Suppression tests with 6-year-old dummy (Part 572, Subpart R)
___ 15. Test of Reactivation of the passenger Air Bag system with an Unbelted 5th Percentile female dummy
___ 16. Low risk deployment test with 12-month-old dummy (Part 572, Subpart N)
___ 17. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P)
___ 18. Low risk deployment test with 6-year-old dummy (Part 572, Subpart R)
___ 19. Low risk deployment test with 5th female dummy (Part 572, Subpart O)
X 20. Impact tests

___ Frontal Oblique

- ___ Belted 50th male dummy driver and passenger (0 to 48 km/h) (S5.1.1.(a))
- ___ Unbelted 50th male dummy driver and passenger (0 to 48 km/h) (S5.1.2(a)(1))
- ___ Unbelted 50th male dummy driver and passenger (32 to 40 km/h) (S5.1.2(a)(1) or S5.1.2(b))

X Frontal 0°

- ___ Belted 50th male dummy driver (0 to 48 km/h) (S5.1.1(b)(1) or S5.1.1(a))
- ___ Belted 50th male dummy passenger (0 to 48 km/h) (S5.1.1(b)(1) or S5.1.1(a))
- ___ Belted 5th female dummy driver (0 to 48 km/h) (S16.1(a))
- ___ Belted 5th female dummy passenger (0 to 48 km/h) (S16.1(a))
- ___ Belted 50th male dummy driver and passenger (0 to 56 km/h) (S5.1.1(b)(2)
- ___ Unbelted 50th male dummy driver and passenger (0 to 48 km/h) (S5.1.2(a)(1))
- ___ Unbelted 50th male dummy driver (32 to 40 km/h) (S5.1.2(a)(2) or S5.1.2(b))
- ___ Unbelted 50th male dummy passenger (32 to 40 km/h) (S5.1.2(a)(2) or S5.1.2(b))
- X Unbelted 5th female dummy driver (32 to 40 km/h) (S16.1(b))

__X__ Unbelted 5th female dummy passenger (32 to 40 km/h) (S16.1(b))

____ 40% Offset 0° Belted 5th female dummy driver and passenger (0 to 40 km/h) (S18.1)

____ 21. Sled test: Unbelted 50th male dummy driver and passenger (S13)

____ 22. FMVSS 204 indicant test

__X__ 23. FMVSS 212 indicant test

__X__ 24. FMVSS 219 indicant test

__X__ 25. FMVSS 301 indicant frontal test

For the crash tests, the vehicle was instrumented with 8 accelerometers. The accelerometer data from the vehicle and dummies were sampled at 12,500 samples per second and processed as specified in SAE J211/1 MAR95 and FMVSS 208, S4.13.

The dynamic tests were recorded using high speed film and digital motion picture cameras.

The vehicle appears to meet the performance requirements to which it was tested.

Section 3

Injury Result Summary

INJURY RESULT SUMMARY FOR CRASH TESTS AND/OR
LOW RISK DEPLOYMENT TESTS

NHTSA No.: C30103 Test Date: 11/19/02

VIN: 1GNEK13ZX3R106320

Frontal Crash X Offset Crash ____ Low Risk Deployment ____

Impact Angle: 0

Belted Dummies: ____ Yes X No

Speed Range: X 32 to 40 km/h ____ 0 to 48 km/h ____ 0 to 56 km/h

Test Speed: 39.2 km/h

Driver Dummy: X 5th female ____ 50th male

Passenger Dummy: X 5th female ____ 50th male

Test weight: 2713.4 kg

5th Percentile Female Frontal Crash Test
Vehicles certified to S16.1(a), S16.1(b), or S18.1

Injury Criteria	Max. Allowable Injury Assessment Values	Driver	Passenger
HIC15	700	66	84
N_{te}	1.0	0.14	0.22
N_{tf}	1.0	0.24	0.40
N_{ce}	1.0	0.03	0.14
N_{cf}	1.0	0.07	0.13
Neck tension	2620 N	724	899
Neck compression	2520 N	115	146
Chest g	60 g	29.2	35.9
Chest displacement	52 mm	28	10
Left femur	6805 N	5472	4205
Right femur	6805 N	3705	3681

Section 4

Discussion of Test

DISCUSSION OF TEST

The driver dummy's pelvis angle was set at 25.9° to maintain the dummy's head level.

The vehicle's left rear and right rear pre-test attitudes did not fall between the measured attitudes for the delivered and fully loaded conditions. Deviation was 7 mm or less.

The left side view (B-post) and pit camera fuel tank view cameras ran too slowly to determine the film speed.

The left side view (barrier to front seat backs), left side view (A-post), left side view (B-post to steering wheel), left side view (front door under camera 5) and pit camera engine view cameras ran at less than 1000 frames per second.

TRC Inc. used the method of topping off the fuel (gasoline) for determining the fully loaded weight and then drained all the fuel and filled the fuel tank to 94 percent capacity with Stoddard solvent.

Section 5

Test Data Sheets

DATA SHEET 1
COTR Vehicle Work Order

Vehicle model year, make, and model: 2003 Chevrolet Tahoe

NHTSA No.: C30103 Test Date: 11/19/02

COTR signature: Charles R. Case

Tests to be performed for this vehicle are checked below.

X 1. Rear outboard seating position seat belts (S4.1.4.2(b) & (S4.2.4)
X 2. Air bag labels (S4.5.1)
X 3.Readiness indicator (S4.5.2)
X 4. Passenger air bag manual cut-off device (S4.5.4)
X 5. Lap belt lockability (S7.1.1.5)
X 6. Seat belt warning system (S7.3)
X 7. Seat belt contact force (S7.4.3)
X 8. Seat belt latch plate access (S7.4.4)
X 9. Seat belt retraction (S7.4.5)
X 10. Seat belt guides and hardware (S7.4.6)
___ 11. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R) using the following indicated child restraints.

Section A
___ Cosco Dream Ride 02-719 ___ Full rearward ___ Mid position ___ Full forward

Section B
___ Britax Handle with Care 191 ___ Full rearward ___ Mid position ___ Full forward
___ Century Assura 4553 ___ Full rearward ___ Mid position ___ Full forward
___ Century Avanta SE 41530 ___ Full rearward ___ Mid position ___ Full forward
___ Century Smart Fit 4543 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco Arriva 02727 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco Opus 35 02603 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Discovery Adjust Right 212 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo First Choice 204 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo On My Way Position Right V 282 ___ Full rearward ___ Mid position ___ Full forward
___ Graco Infant 8457 ___ Full rearward ___ Mid position ___ Full forward

Section C
___ Britax Roundabout 161 ___ Full rearward ___ Mid position ___ Full forward
___ Century Encore 4612 ___ Full rearward ___ Mid position ___ Full forward
___ Century STE 1000 4416 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco Olympian 02803 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco Touriva 02519 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Horizon V 425 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Medallion 254 ___ Full rearward ___ Mid position ___ Full forward

___ 12. Suppression tests with 3-year-old dummy (Part 572, Subpart P) using the following indicated child restraints where a child restraint is required.

Section C
___ Britax Roundabout 161 ___ Full rearward ___ Mid position ___ Full forward
___ Century Encore 4612 ___ Full rearward ___ Mid position ___ Full forward
___ Century STE 1000 4416 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco Olympian 02803 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco Touriva 02519 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Horizon V 425 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Medallion 254 ___ Full rearward ___ Mid position ___ Full forward

Section D
___ Britax Roadster 9004 ___ Full rearward ___ Mid position ___ Full forward
___ Century Next Step 4920 ___ Full rearward ___ Mid position ___ Full forward

___ Cosco High Back Booster 02-442 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Right Fit 245 ___ Full rearward ___ Mid position ___ Full forward

___ 13. Suppression tests with Representative 3-year-old child using the following indicated child restraints where a child restraint is required. (Laboratory Test Procedure Appendix H, Data Sheet 16H and 17H)

Section C

___ Britax Roundabout 161 ___ Full rearward ___ Mid position ___ Full forward
___ Century Encore 4612 ___ Full rearward ___ Mid position ___ Full forward
___ Century STE 1000 4416 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco Olympian 02803 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco Touriva 02519 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Horizon V 425 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Medallion 254 ___ Full rearward ___ Mid position ___ Full forward

Section D

___ Britax Roadster 9004 ___ Full rearward ___ Mid position ___ Full forward
___ Century Next Step 4920 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco High Back Booster 02-442 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Right Fit 245 ___ Full rearward ___ Mid position ___ Full forward

___ 14. Suppression tests with 3-year-old dummy (Part 572, Subpart P) in the following positions
- ___ Sitting on seat with back against seat back (S22.2.2.1)
- ___ Sitting on seat with back against reclined seat back (S22.2.2.2)
- ___ Sitting on seat with back not against seat back (S22.2.2.3)
- ___ Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)
- ___ Standing on seat, facing forward (S22.2.2.5)
- ___ Kneeling on seat facing forward (S22.2.2.6)
- ___ Kneeling on seat facing rearward (S22.2.2.7)
- ___ Lying on seat (S22.2.2.8)

___ 15. Suppression tests with representative 3-year-old child in the following positions
- ___ Sitting on seat with back against seat back (S22.2.2.1)
- ___ Sitting on seat with back against reclined seat back (S22.2.2.2)
- ___ Sitting on seat with back not against seat back (S22.2.2.3)
- ___ Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)
- ___ Standing on seat, facing forward (S22.2.2.5)
- ___ Kneeling on seat facing forward (S22.2.2.6)
- ___ Kneeling on seat facing rearward (S22.2.2.7)
- ___ Lying on seat (S22.2.2.8)

___ 16. Suppression tests with 6-year-old dummy (Part 572, Subpart N) using the following indicated child restraints where a child restraint is required.

Section D

___ Britax Roadster 9004 ___ Full rearward ___ Mid position ___ Full forward
___ Century Next Step 4920 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco High Back Booster 02-442 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Right Fit 245 ___ Full rearward ___ Mid position ___ Full forward

___ 17. Suppression tests with representative 6-year-old child using the following indicated child restraints where a child restraint is required.

Section D

___ Britax Roadster 9004 ___ Full rearward ___ Mid position ___ Full forward
___ Century Next Step 4920 ___ Full rearward ___ Mid position ___ Full forward
___ Cosco High Back Booster 02-442 ___ Full rearward ___ Mid position ___ Full forward
___ Evenflo Right Fit 245 ___ Full rearward ___ Mid position ___ Full forward

___ 18. Suppression tests with 6-year-old dummy (Part 572, Subpart N) in the following positions
- ___ Sitting on seat with back against seat back (S22.2.2.1)
- ___ Sitting on seat with back against reclined seat back (S22.2.2.2)
- ___ Sitting on seat edge, spine vertical, hands by the dummy's side (S22.2.2.4)
- ___ Sitting back in the seat and leaning on the right front passenger door (S24.2.3)

____ 19. Suppression tests with representative 6-year-old child in the following positions
- ____ Sitting on seat with back against seat back (S22.2.2.1)
- ____ Sitting on seat with back against reclined seat back (S22.2.2.2)
- ____ Sitting on seat edge, spine vertical, hands by the dummy's side (S22.2.2.4)
- ____ Sitting back in the seat and leaning on the right front passenger door (S24.2.3)

____ 20. Low risk deployment test with 12-month-old dummy (Part 572, Subpart R) using the following indicated child restraints.

Section B

____ Britax Handle with Care 191	____ Full rearward	____ Mid position	____ Full forward
____ Century Assura 4553	____ Full rearward	____ Mid position	____ Full forward
____ Century Avanta SE 41530	____ Full rearward	____ Mid position	____ Full forward
____ Century Smart Fit 4543	____ Full rearward	____ Mid position	____ Full forward
____ Cosco Arriva 02727	____ Full rearward	____ Mid position	____ Full forward
____ Cosco Opus 35 02603	____ Full rearward	____ Mid position	____ Full forward
____ Evenflo Discovery Adjust Right 212	____ Full rearward	____ Mid position	____ Full forward
____ Evenflo First Choice 204	____ Full rearward	____ Mid position	____ Full forward
____ Evenflo On My Way Position Right V 282	____ Full rearward	____ Mid position	____ Full forward
____ Graco Infant 8457	____ Full rearward	____ Mid position	____ Full forward

Section C

____ Britax Roundabout 161	____ Full rearward	____ Mid position	____ Full forward
____ Century Encore 4612	____ Full rearward	____ Mid position	____ Full forward
____ Century STE 1000 4416	____ Full rearward	____ Mid position	____ Full forward
____ Cosco Olympian 02803	____ Full rearward	____ Mid position	____ Full forward
____ Cosco Touriva 02519	____ Full rearward	____ Mid position	____ Full forward
____ Evenflo Horizon V 425	____ Full rearward	____ Mid position	____ Full forward
____ Evenflo Medallion 254	____ Full rearward	____ Mid position	____ Full forward

____ 21. Test of Reactivation of the Passenger Air Bag System with an Unbelted 5th Percentile Female Dummy (S20.3, 22.3, S24.3) Perform this test after the following suppression test(s): _____

_____

_____

_____

____ 22. Test of Reactivation of the Passenger Air Bag System with a representative 5th Percentile Female (S20.3, 22.3, S24.3) Perform this test after the following suppression test(s): _____

_____

_____

_____

____ 23. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P) in the following positions
- ____ Position 1
- ____ Position 2

____ 24. Low risk deployment test with 6-year-old dummy (Part 572, Subpart N) in the following positions
- ____ Position 1
- ____ Position 2

____ 25. Low risk deployment test with 5th female dummy (Part 572, Subpart O) in the following positions
- ____ Position 1
- ____ Position 2

__X__ 26. Impact tests
- ____ Frontal Oblique Test Speed _____
  - ____ Belted 50th male dummy driver and passenger ((0 to 48 km/h) (S5.1.1.(a))
  - ____ Unbelted 50th male dummy driver and passenger ((0 to 48 km/h) (S5.1.2(a)(1))
  - ____ Unbelted 50th male dummy driver and passenger ((32 to 40 km/h) (S5.1.2(a)(1) or S5.1.2(b))
- __X__ Frontal 0° Test Speed 40 km/h see test procedure for speed tolerance
  - ____ Belted 50th male dummy driver ((0 to 48 km/h) (S5.1.1(b)(1) or S5.1.1(a))
  - ____ Belted 50th male dummy passenger ((0 to 48 km/h) (S5.1.1(b)(1) or S5.1.1(a))
  - ____ Belted 5th female dummy driver ((0 to 48 km/h) (S16.1(a))
  - ____ Belted 5th female dummy passenger ((0 to 48 km/h) (S16.1(a))
  - ____ Belted 50th male dummy driver and passenger ((0 to 56 km/h) (S5.1.1(b)(2)(
  - ____ Unbelted 50th male dummy driver and passenger ((0 to 48 km/h) (S5.1.2(a)(1))

___ Unbelted 50th male dummy driver ((32 to 40 km/h) (S5.1.2(a)(2) or S5.1.2(b))
___ Unbelted 50th male dummy passenger (32 to 40 km/h) (S5.1.2(a)(2) or S5.1.2(b))
_X_ Unbelted 5th female dummy driver (32 to 40 km/h) (S16.1(b))
_X_ Unbelted 5th female dummy passenger (32 to 40 km/h) (S16.1(b))
___ 40% Offset 0° Belted 5th female dummy driver and passenger (0 to 40 km/h) (S18.1)
Test Speed _____

_____ 27. Sled test: Unbelted 50th male dummy driver and passenger (S13)
_____ 28. FMVSS 204 indicant test
_X_ 29. FMVSS 212 indicant test
_X_ 30. FMVSS 219 indicant test
_X_ 31. FMVSS 301 indicant frontal test

DATA SHEET 2

REPORT OF VEHICLE CONDITION

CONTRACT NO. DTNH22-02-D-08062 Date: 11/19/02
FROM: Transportation Research Center, Virginia L. Watters
Lab & rep name
TO: Charles R. Case OVSC, NSA-31
COTR Name
PURPOSE: ( ) Initial Receipt ( ) Received via Transfer (X) Present vehicle condition
MODEL YEAR/MAKE/MODEL/BODY STYLE: 2003/Chevrolet/Tahoe/SUV
MANUFACTURE DATE: 08/02 NHTSA NO.: C30103 BODY COLOR: Black
VIN: 1GNEK13ZX3R106320 GVWR 3130 GAWR (Fr) 1633 GAWR (Rr) 1814
ODOMETER READINGS: ARRIVAL 63 miles DATE 11/15/02
COMPLETION 63 miles DATE 11/19/02
PURCHASE PRICE: $ 45,104 DEALER'S NAME: Smedley's Chevrolet Sales Inc.

A. All options listed on "window sticker" are present on the test vehicle.
X Yes ___ No

B. Tires and wheel rims are new and the same as listed.
X Yes ___ No

C. There are no dents or other interior or exterior flaws.
___ Yes X No

D. The vehicle has been properly prepared and is in running condition.
___ Yes X No

E. Keyless remote is available and working.
___ Yes X No

F. The glove box contains an owner's manual, warranty document, consumer information, and extra set of keys.
___ Yes X No

G. Proper fuel filler cap is supplied on the test vehicle.
X Yes ___ No

H. Using permanent marker, identify vehicle with NHTSA number and FMVSS test type(s) on roof line above driver door or for school buses, place a placard with NHTSA number inside the windshield and to the exterior front and rear side of bus.
X Yes ___ No

I. Place vehicle in storage area.
X Yes ___ No

J. Inspect the vehicle's interior and exterior, including all windows, seats, doors, etc., To confirm that each system is complete and functional per the manufacturer's specifications. Any damage, misadjustment, or other unusual condition that could influence the test program or test results shall be recorded. Report any abnormal condition to the NHTSA COTR before beginning any test.
___ Vehicle OK ___ Conditions reported below in comment section
X N/A-Post-test condition

Identify the letter above to which any of the following comments apply.
Comments: In a frontal impact, the vehicle sustained significant front end and unknown structural damage.

DATA SHEET 2

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

LIST OF FMVSS TESTS PERFORMED BY THIS LAB:
208, 212 Indicant, 219 Indicant, 301 Indicant

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2003/Chevrolet/Tahoe/SUV

NHTSA NO. C30103

REMARKS: None

Equipment that is no longer on the test vehicle as noted on previous page: None

Explanation for equipment removal: The owner's manual is stored with the project file.

Test Vehicle Condition: In a frontal impact, the vehicle sustained significant front end and unknown structural damage.

RECORDED BY: R. Benavides
DATE: 1/15/02

APPROVED BY: V. Watters
DATE: 12/9/02

##########

RELEASE OF TEST VEHICLE

The vehicle described above is released from TRC Inc. (Laboratory) to be delivered to _____ (Laboratory)

Date: _____ Time: _____ Odometer: _____

Lab Representative: _____
Signature Title

Carrier/Customer Representative: _____
Signature Date

DATA SHEET 3
Certification Label and Tire Placard Information

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

1. Certification Label
   Manufacturer General Motors Corporation
   Date of Manufacture 08/02
   VIN 1GNEK13ZX3R106320
   Vehicle certified as: ____ Passenger car __X__ MPV ____ Truck ____ Bus
   Front axle GVWR 1633 kg/3600 lbs.
   Rear axle GVWR 1814 kg/4000 lbs.
   Total GVWR 3130 kg/6900 lbs.

2. Tire Placard
   X N/A – Vehicle is not a passenger car and does not have a tire placard.
   X This is not a passenger car (see the item 1 above), but all or part of this information is still contained on a vehicle label and is reported here.

Vehicle Capacity Weight	NA[1]
Designated seating capacity front	NA[1]
Designated seating capacity rear	NA[1]
Total Designated seating capacity	NA[1]
Recommended cold tire inflation pressure front	240 kPa/35 psi
Recommended cold tire inflation pressure rear	240 kPa/35 psi
Recommended tire size	P265/70R16

[1] Label did not contain this information.

DATA SHEET 4
REAR OUTBOARD SEATING POSITION SEAT BELTS

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

Do all rear outboard seating positions have type 2 seat belts? Yes X ; No _____

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

REMARKS:

DATA SHEET 5
AIR BAG LABELS (S4.5.1)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

1. Air Bag Maintenance Label and Owner's Manual Instructions: (S4.5.1(a))

1.1 Does the manufacturer recommend periodic maintenance or replacement of the air bag?
___ Yes (Go to 1.2); _X_ No (Go to 2)

1.2 Does the vehicle have a label specifying air bag maintenance or replacement?
___ Yes-Pass; ___ **No-FAIL**

1.3 Does the label contain one of the following?
___ Yes-Pass; ___ **No-FAIL**
Check applicable schedule
___ Schedule on label specifies month and year (Record date _____)
___ Schedule on label specifies vehicle mileage (Record mileage _____)
___ Schedule on label specifies interval measured from date on certification label (Record interval _____)

1.4 Is the label permanently affixed within the passenger compartment such that it cannot be removed without destroying or defacing the label or the sunvisor?
___ 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 inches high?
____ height of letters and numerals
___ 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?
_X_ Yes-Pass; ___ **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?
_X_ Yes-Pass; ___ **No-FAIL**

2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating positions?
_X_ Yes-Pass; ___ **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?
_X_ Yes-Pass; ___ **No-FAIL**

2.5 Provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to ensure maximum safety protection for those occupants?
_X_ Yes-Pass; ___ **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?

_X_ Yes-Pass; ___ **No-FAIL**

2.7 Is the vehicle certified to meet the requirements of S14.5, S15, S17, S19, S21, S23, and S25? (Obtain the answer to this question from the COTR.) (S4.5.1(f)(2))
_X_ Yes (go to 2.7.1); ___ No (go to 3)

2.7.1 Explain the proper functioning of the advanced air bag system? (S4.5.1(f)(2))
_X_ Yes-Pass; ___ **No-FAIL**

2.7.2 Provide a summary of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2))
_X_ Yes-Pass; ___ **No-FAIL**

2.7.3 Present and explain the main components of the advanced passenger air bag system? (S4.5.1(f)(2)(i))
_X_ Yes-Pass; ___ **No-FAIL**

2.7.4 Explain how the components function together as part of the advanced passenger air bag system? (S4.5.1 (f)(2)(ii))
_X_ Yes-Pass; ___ **No-FAIL**

2.7.5 Contain the basic requirements for proper operation, including an explanation of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2)(iii))
_X_ Yes-Pass; ___ **No-FAIL**

2.7.6 Is the vehicle certified to the requirements of S19.2, S21.2 or S23.2?
_X_ Yes, continue with 2.7.6
___ No, go to 2.7.7

2.7.6.1 Contain a complete description of the passenger air bag suppression system installed in the vehicle, including a discussion of any suppression zone? (S4.5.1(f)(2)(iv))
_X_ Yes-Pass; ___ **No-FAIL**

2.7.6.2 Discuss the telltale light, specifying its location in the vehicle and explaining when the light is illuminated?
_X_ Yes-Pass; ___ **No-FAIL**

2.7.7 Explain the interaction of the advanced passenger air bag system with other vehicle components, such as seat belts, seats or other components? (S4.5.1(f)(2)(v))
_X_ Yes-Pass; ___ **No-FAIL**

2.7.8 Summarize the expected outcomes when child restraint systems, children and small teenagers or adults are both properly and improperly positioned in the passenger seat, including cautionary advice against improper placement of child restraint systems? (S4.5.1(f)(2)(vi))
_X_ Yes-Pass; ___ **No-FAIL**

2.7.9 Provide information on how to contact the vehicle manufacturer concerning modifications for persons with disabilities that may affect the advanced air bag system? (S4.5.1(f)(2)(vii))
_X_ Yes-Pass; ___ **No-FAIL**

3. Sun Visor Air Bag Warning Label (S4.5.1 (b))

3.1 Is the vehicle certified to meet the requirements of S19, S21, and S23,? (Obtain the answer to this question from the COTR.) (S4.5.1(b)(2))
_X_ Yes (go to 3.1.1 and skip 3.2; ___ No (go to 3.2, skipping 3.1.1 through 3.1.6)

3.1.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1 (b)(2))
Driver side _X_ Yes-Pass ___ **No-FAIL**
Passenger side _X_ Yes-Pass ___ **No-FAIL**

3.1.2 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 Figure 8 at each front outboard seating position? (S4.5.1(b)(2))
Driver side _X_ Yes-Pass ___ **No-FAIL**
Passenger side _X_ Yes-Pass ___ **No-FAIL**

3.1.3 Is the label heading area yellow with the word "WARNING" and the alert symbol in black? (S4.5.1 (b)(2)(i))
Driver side _X_ Yes-Pass ___ No-FAIL
Passenger side _X_ Yes-Pass ___ No-FAIL

3.1.4 Is the message area white with black text? (S4.5.1(b)(2)(ii))
Driver side _X_ Yes-Pass ___ No-FAIL
Passenger side _X_ Yes-Pass ___ No-FAIL

3.1.5 Is the message area at least 30 cm^2? (S4.5.1(b)(2)(ii))
Driver side: Length 12.6 cm, Width 7.8 cm
Passenger side: Length 12.6 cm, Width 7.8 cm
Driver actual message area 98.3 cm^2
Passenger actual message area 98.3 cm^2
Driver side _X_ Yes-Pass ___ No-FAIL
Passenger side _X_ Yes-Pass ___ No-FAIL

3.1.6 Is the pictogram black on a white background? (S4.5.1(b)(2)(iii))
Driver side _X_ Yes-Pass ___ No-FAIL
Passenger side _X_ Yes-Pass ___ No-FAIL

3.1.7 Is the pictogram at least 30 mm (1.2 in) in length? (S4.5.1(b)(2)(iii))
Driver side: Length 31
Passenger side: Length 31
Driver side _X_ Yes-Pass ___ No-FAIL
Passenger side _X_ Yes-Pass ___ No-FAIL

3.2 Vehicles not certified to meet the requirements of S19, S21, and S23.

3.2.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing it? (S4.5.1 (b)(1))
Driver side ___ Yes-Pass ___ No-FAIL
Passenger side ___ Yes-Pass ___ No-FAIL

3.2.2 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? (S4.5.1 (b)(1))
Driver side ___ Yes-Pass ___ No-FAIL
Passenger side ___ Yes-Pass ___ No-FAIL

3.2.3 Is the label heading area yellow with the word "WARNING" and the alert symbol in black? (S4.5.1 (b)(1)(i))
Driver side ___ Yes-Pass ___ No-FAIL
Passenger side ___ Yes-Pass ___ No-FAIL

3.2.4 Is the message area white with black text? (S4.5.1 (b)(1)(ii))
Driver side ___ Yes-Pass ___ No-FAIL
Passenger side ___ Yes-Pass ___ No-FAIL

3.2.5 Is the message area at least 30 cm^2? (S4.5.1 (b)(1)(ii))
Driver side: Length _____, Width _____
Passenger side: Length _____, Width _____
Actual message area _____ cm^2
Driver side ___ Yes-Pass ___ No-FAIL
Passenger side ___ Yes-Pass ___ No-FAIL

3.2.6 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(b)(2)(iii))
Driver side ___ Yes-Pass ___ No-FAIL
Passenger side ___ Yes-Pass ___ No-FAIL

3.2.7 Is the pictogram at least 30 mm in diameter? (S4.5.1 (b)(2)(iii))
Actual diameter _____ mm
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.3 Is the same side of the sun visor that contains the air bag warning label free of other information with the exception of the air bag maintenance label and/or the rollover-warning label? (S4.5.1 (b)(3))
Driver side _X_ Yes-Pass ___ **No-FAIL**
Passenger side _X_ Yes-Pass ___ **No-FAIL**

3.4 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 and/or the rollover-warning label? (S4.5.1 (b)(3))
Driver side _X_ Yes-Pass ___ **No-FAIL**
Passenger side _X_ Yes-Pass ___ **No-FAIL**

3.5 Does the driver side visor contain a rollover-warning label on the same side of the visor as the air bag warning label?
___ Yes (go to 3.5.1; _X_ No (go to 4.1, skipping 3.5.1 through 3.5.)

3.5.1 Are both the rollover-warning label and the air bag warning label surrounded by a continuous solid-lined border?
___ Yes (go to 3.5.2 and skip 3.5.3); ____ No (go to 3.5.3 and skip 3.5.2.)

3.5.2 Is the shortest distance from the border of the rollover label to the border of the air bag warning label at least 1 cm? (575.105 (d)(1)(iv)(B))
_____ actual distance
___ Yes-Pass; ___ **No-FAIL**

3.5.3 Is the shortest distance from any of the lettering or graphics on the rollover-warning label to any of the lettering or graphics of the air bag warning label at least 3 cm? (575.105 (d)(1)(iv)(A)) _____ actual distance
___ Yes-Pass; ___ **No-FAIL**

4. Air Bag Alert Label (A "Rollover Warning Label" or "Rollover Alert Label" may be on the same side of the driver's sun visor as the "Air Bag Alert Label." 575.105(d))

4.1 Is the Sun Visor Warning Label visible when the sun visor is in the stowed position?
Driver side _X_ Yes ___ No **If yes, for driver and passenger go to 5.**
Passenger side ___ No air bag _X_ Yes ___ No

4.2 Is the air bag alert label permanently affixed (including permanent marking on the visor material or molding into the visor material) to the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1 (c))
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

4.3 Is the air bag alert label visible when the visor is in the stowed position? (S4.5.1(c))
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

4.4 Does the label conform in content to the label shown in Figure 6c? (S4.5.1(c))
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

4.5 Is the message area black with yellow text? (S4.5.1(c)(1))
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

4.6 Is the message area at least 20 cm^2? (S4.5.1(c)(1))
Driver side: Length _____, Width _____
Passenger side: Length _____, Width _____
Actual message area _____ cm^2
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

4.7 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(c)(2))
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

4.8 Is the pictogram at least 20 mm in diameter? (S4.5.1(c)(2))
Driver side: diameter _____ mm
Passenger side: diameter _____ mm
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

5. Label On the Dashboard

5.1 Is the vehicle certified to meet the requirements of S19, S21, and S23? (Obtain the answer to this question from the COTR.) (S4.5.1(e)(2))
_X_ Yes (go to 5.1.1 and skip 5.2 through 5.2.5)
___ No (go to 5.2, skipping 5.1.1 through 5.1.6)

5.1.1 Does the vehicle have a label on the dash or steering wheel hub? (S4.5.1(e)(2))
_X_ Yes-Pass; ___ **No-FAIL**

5.1.2 Is the label clearly visible from all front seating positions? (S4.5.1(e)(2))
_X_ Yes-Pass; ___ **No-FAIL**

5.1.3 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(e)(2)(iii))) to the label shown in Figure 9? (S4.5.1(e)(2))
_X_ Yes-Pass; ___ **No-FAIL**

5.1.4 Is the heading area yellow with black text? (S4.5.1(e)(2)(i)
_X_ Yes-Pass; ___ **No-FAIL**

5.1.5 Is the message white with black text? (S4.5.1(e)(2)(ii))
_X_ Yes-Pass; ___ **No-FAIL**

5.1.6 Is the message area at least 30 cm^2? (S4.5.1(e)(2)(ii))
Length 10.5 cm, Width 4.9 cm
Actual message area 51.5 cm^2
_X_ Yes-Pass; ___ **No-FAIL**

5.2 Does the vehicle have a label on the dash or steering wheel hub? (S4.5.1(e)(1))
___ Yes-Pass; ___ **No-FAIL**

5.2.1 Is the label clearly visible from all front seating positions? (S4.5.1(e)(1))
___ Yes-Pass; ___ **No-FAIL**

5.2.2 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." to the label shown in Figure 7? (S4.5.1 (e)(1)(iii))
___ Yes-Pass; ___ **No-FAIL**

5.2.3 Is the heading area yellow with the word "WARNING" and the alert symbol in black? (S4.5.1 (e)(1)(i)
___ Yes-Pass; ___ **No-FAIL**

5.2.4 Is the message white with black text? (S4.5.1(e)(1)(ii))
___ Yes-Pass; ___ **No-FAIL**

5.2.5 Is the message area at least 30 cm^2? (S4.5.1(e)(1)(ii))
Length _____, Width _____
Actual message area _____ cm^2
___ Yes-Pass; ___ **No-FAIL**

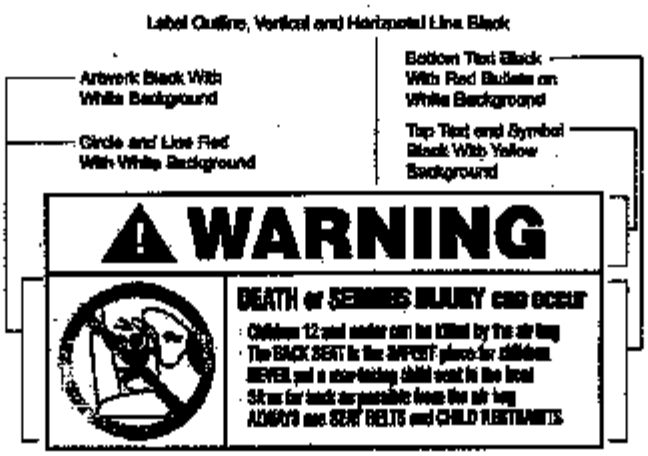


Figure 6a. Sun Visor Label Visible When Visor is in Down Position.

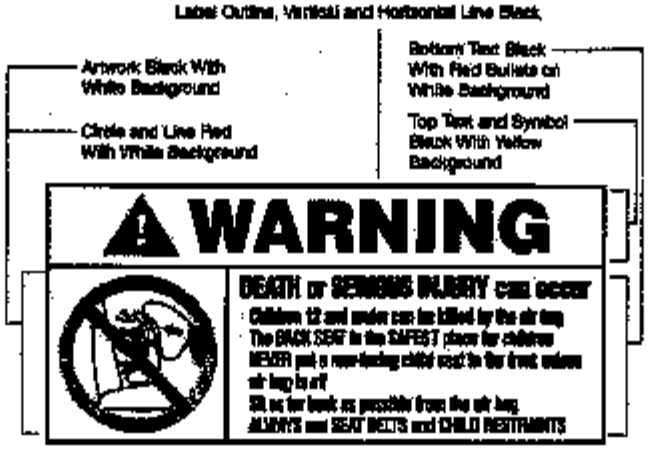


Figure 6b. Sun Visor Label Visible When Visor is in Down Position.

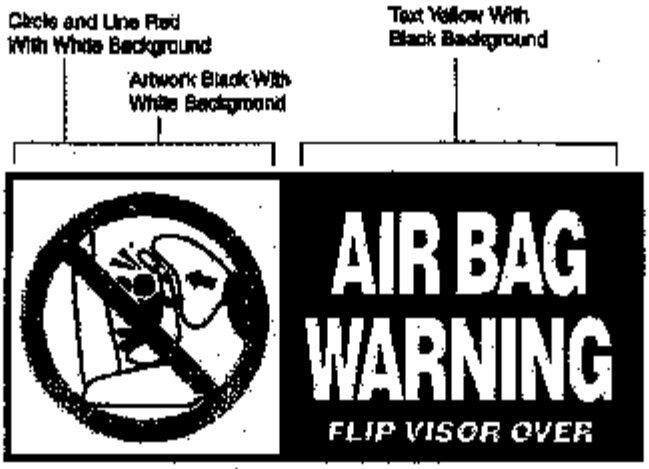


Figure 6c. Sun Visor Label Visible When Visor is in Up Position.

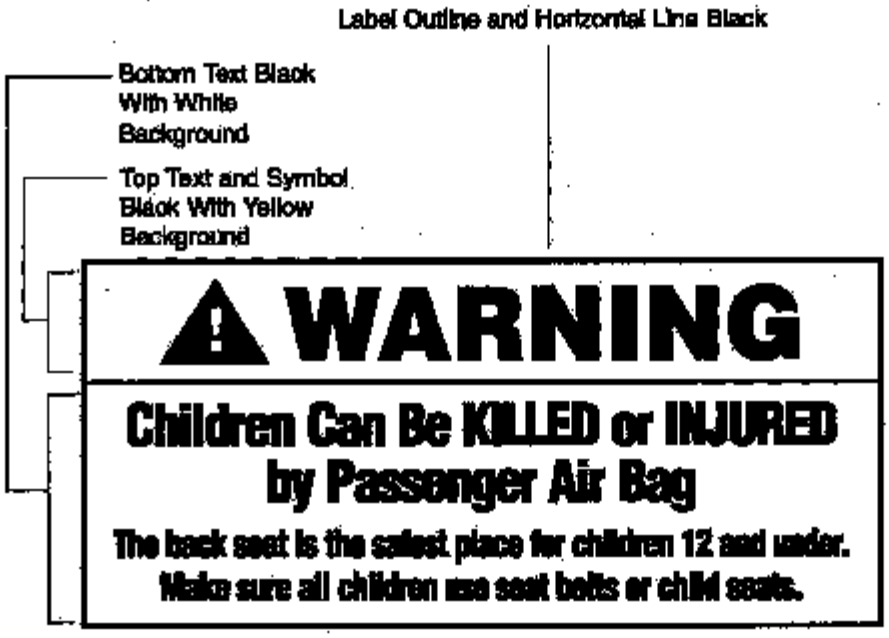


Figure 7. Removable Label on Dash.

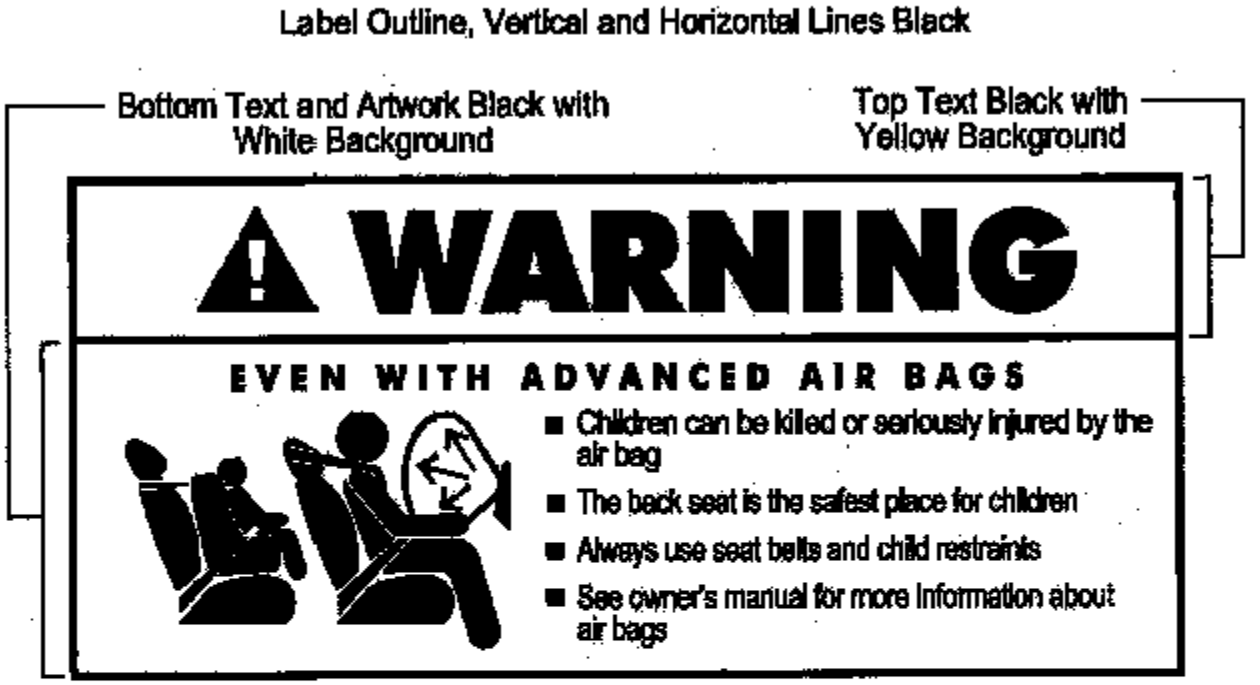


Figure 8. Sun Visor Label Visible when Visor is in Down Position.

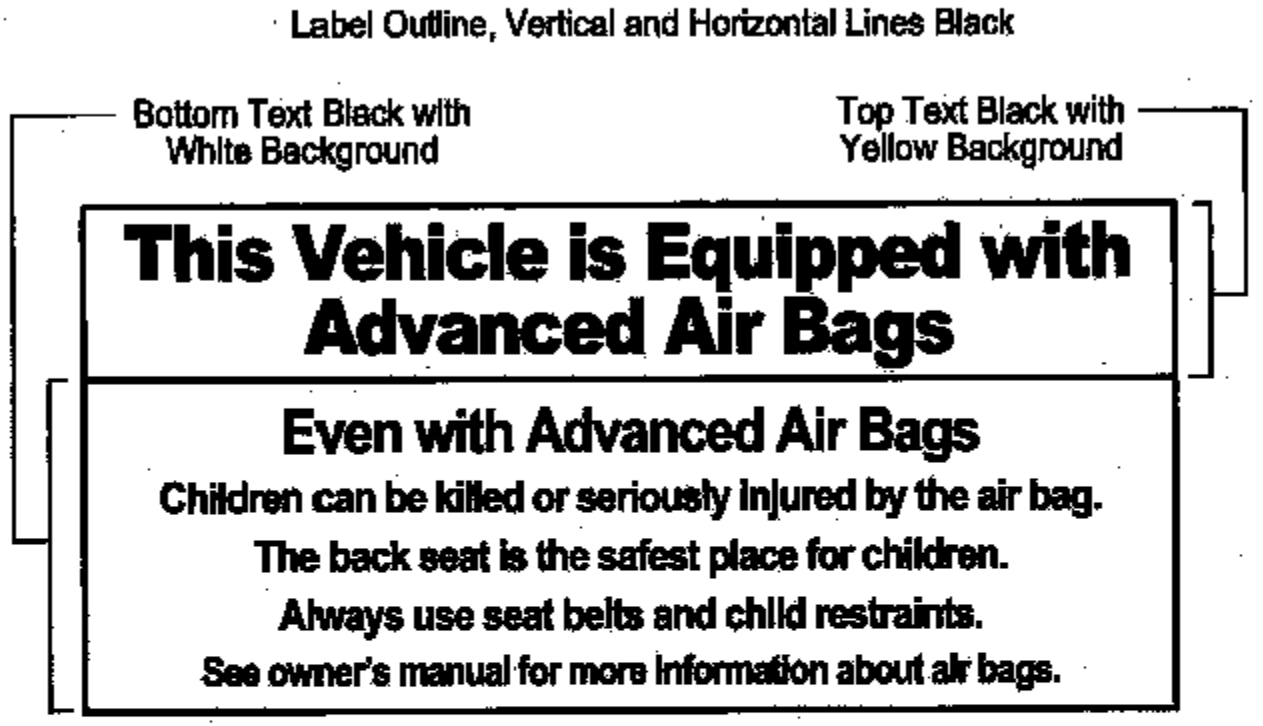


Figure 9. Removable Label on Dash.

DATA SHEET 6
FMVSS 208 READINESS INDICATOR (S4.5.2)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

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 to Lawrence F. Henneberger on behalf of Breed)

X 1. Is the system totally mechanical? Yes ___; No X
(If YES this Data Sheet is complete.)

X 2. Describe the location of the readiness indicator: On instrument cluster

X 3. Is the readiness indicator clearly visible to the driver?
X Yes-Pass; ___ **No-FAIL**

X 4. Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided on a label or in the owner's manual?
X Yes-Pass; ___ **No-FAIL**

X 5. Does the vehicle have an on-off switch for the passenger air bag?
___ Yes (go to 6) X No (this form is complete)

___ 6. Is the air bag readiness indicator off when the passenger air bag switch is in the off position?
___ Yes-Pass; ___ **No-FAIL**

REMARKS:

DATA SHEET 7
Passenger Air Bag Manual Cut-Off Device (S4.5.4)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

_X_ 1. Is the vehicle equipped with an on-off switch that deactivates the air bag installed at the right front outboard seating position?
___ Yes, go to 2
_X_ No, this sheet is complete

___ 2. Does the vehicle have any forward-facing rear designated seating positions? (S4.5.4(a))
___ Yes, go to 3
___ No, go to 4

___ 3. Verification of the lack of room for a child restraint in the rear seat behind the driver's seat. (S4.5.4(b))

___ 3.1 Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
___ N/A – No lumbar adjustment

___ 3.2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
___ N/A – No additional support adjustment

___ 3.3 If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
___ N/A – No independent fore-aft seat cushion adjustment

___ 3.4. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
___ N/A – No independent seat cushion height adjustment.

___ 3.5. Put the seat in its full rearward position. (S16.2.10.3.1)
___ N/A - the seat does not have a fore-aft adjustment

___ 3.6. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
___ N/A – No seat height adjustment

___ 3.7 Draw a horizontal reference line on the side of the seat cushion.

___ 3.8. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
___ N/A - The seat does not have a fore-aft adjustment.

___ 3.9. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position. (S8.1.2)
___ N/A – The seat does not have fore-aft adjustment.
___ Mid position
If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat:_____
_____

___ 3.10. If seat adjustments, other than fore-aft, are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal.
___ N/A – No adjustments

Angle of reference line as tested _____

___ 3.11. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

___ N/A – No seat back angle adjustment

Manufacturer's design seat back angle _____

Tested seat back angle _____

___ 3.12 Is the driver seat a bucket seat?

___ Yes, go to 3.12.1 and skip 3.12.2.

___ No, go to 3.12.2 and skip 3.12.1.

___ 3.12.1 Bucket seats:

___ 3.12.1.1 Locate and mark a vertical Plane B through the longitudinal centerline of the seat driver's seat cushion. (S22.2.1.3) The longitudinal centerline of a bucket seat cushion is determined at the widest part of the seat cushion. Measure perpendicular to the longitudinal centerline of the vehicle.

Record the width of the seat. _____

Record the distance from the edge of the seat to Plane B. _____

___ 3.12.1.2 Locate the longitudinal horizontal line in plane B that is tangent to the highest point of the rear seat cushion behind the driver's seat. Measure along this line from the front of the seat back of the rear seat to the rear of the seat back of the driver's seat.

_____ mm distance

____ less than 720 mm – Pass

____ more than 720 mm – FAIL

Go to 4

___ 3.12.2 Bench seats (including split bench seats):

___ 3.12.2.1 Locate and mark a vertical Plane B through the center of the steering wheel parallel to the vehicle longitudinal centerline.

___ 3.12.2.2 Locate the longitudinal horizontal line in plane B that is tangent to the highest point of the rear seat cushion. Measure along this line from the front of the seat back of the rear seat to the rear of the seat back of the front seat.

_____ mm distance

____ less than 720 mm – Pass

____ more than 720 mm – FAIL

Go to 4

___ 4. Does the device turn the air bag on and off using the vehicle's ignition key? (S4.5.4.2)

___ Yes-Pass; ___ **No-FAIL**

___ 5. Is the on-off device separate from the ignition switch? (S4.5.4.2)

___ Yes-Pass; ___ **No-FAIL**

___ 6. Is there a telltale light that comes on when the passenger air bag is turned off? (S4.5.4.2)

___ Yes-Pass; ___ **No-FAIL**

___ 7. Telltale light (S4.5.4.3)

___ 7.1 Is the light yellow? S4.5.4.3(a))

___ Yes-Pass; ___ **No-FAIL**

___ 7.2 Are the words "PASSENGER AIR BAG OFF" (S4.5.4.3(b))

___ 7.2.1 on the telltale?

___ Yes – Pass, go to 7.3

___ No – go to 7.2.2

___ 7.2.2 within 25 mm of the telltale? _____mm from the edge of the telltale light

___ Yes-Pass; ___ **No-FAIL**

___ 7.3 Does the telltale remain illuminated while the air bag is turned off? (S4.5.4.3c)) (Leave the air bag off for 5 minutes.)
___ Yes-Pass; ___ **No-FAIL**

___ 7.4 Is the telltale illuminated while the air bag is turned on? (S4.5.4.3(d))
___ Yes-Pass; ___ **No-FAIL**

___ 7.5 Is the telltale combined with the air bag readiness indicator? (S4.5.3(e))
___ Yes-Pass; ___ **No-FAIL**

___ 8. Owner's manual

___ 8.1 Does the owner's manual contain complete instructions on the operation of the on-off switch? (S4.5.4.4(a))
___ Yes-Pass; ___ **No-FAIL**

___ 8.2 Does the owner's manual contain a statement that the on-off switch should only be used when a member of one of the following risk groups is occupying the right front passenger seating position? (S4.5.4.4(b))

Infants:	there is no back seat
	the rear seat is too small to accommodate a child restraint
	there is a medical condition that must be monitored constantly
Children aged 1 to 12:	there is no back seat
	space is not always available in the rear seat
	there is a medical condition that must be monitored constantly
Medical condition:	medical risk causes special risk for passenger
	greater risk for harm than with the air bag on

___ Yes-Pass; ___ **No-FAIL**

___ 8.3 Does the owner's manual contain a warning about the safety consequences of using the on-off switch at other times?
___ Yes-Pass; ___ **No-FAIL**

DATA SHEET 8
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 that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Front Row Right

___ N/A – No retractor is at this position
___ N/A – The retractor is an automatic locking retractor ONLY

X 1. Record test fore-aft seat position. Mid (S7.1.1.5 (c)(1))
(Any position is acceptable.)
X 2. 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 of the vehicle. (S7.1.1.5 (a))
X Yes-Pass; ___ **No-FAIL**
X 3. 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))
X Yes-Pass; ___ **No-FAIL**
X 4. Buckle the seat belt. (S7.1.1.5(c)(1))
X 5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
X 6. 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))
X 7. 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?
X Yes; ___ No (If yes, go to 7.1. If no, go to 8.)
X 7.1 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))
X Yes-Pass; ___ **No-FAIL**
X 8. 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) & S7.1.1.5(c)(1))
X 9. 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 49.0 inches
X 10. 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))

_X_ 11. 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°_ (spec. 5 - 15 degrees)

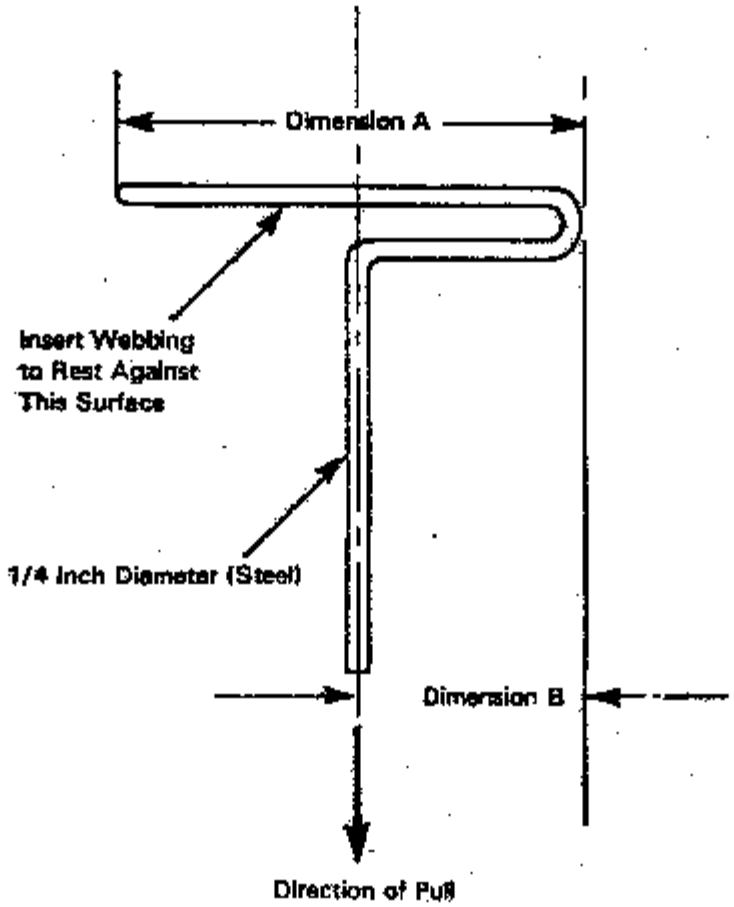
_X_ 12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B _17.5_ inches

_X_ 13. 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 _50_ lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B _18.5_ inches (S7.1.1.5(c)(6))

_X_ 14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12= _1.0_ inches;
_X_ Yes-Pass; ___ **No-FAIL**

_X_ 15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8)) 9-13= _48.0_ inches;
_X_ Yes-Pass; ___ **No-FAIL**

REMARKS:



Dimension A - Width of Webbing Plus 1/2 Inch

Dimension B - 1/2 of Dimension A

Figure 5. - Webbing Tension Pull Device

DATA SHEET 8

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 that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Second Row Left

___ N/A – No retractor is at this position
___ N/A – The retractor is an automatic locking retractor ONLY

X 1. Record test fore-aft seat position. Mid (S7.1.1.5 (c)(1))
(Any position is acceptable.)

X 2. 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 of the vehicle. (S7.1.1.5 (a))
X Yes-Pass; ___ **No-FAIL**

X 3. 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))
X Yes-Pass; ___ **No-FAIL**

X 4. Buckle the seat belt. (S7.1.1.5(c)(1))

X 5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

X 6. 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))

X 7. 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?
X Yes; ___ No (If yes, go to 7.1. If no, go to 8.)

X 7.1 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))
X Yes-Pass; ___ **No-FAIL**

X 8. 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) & S7.1.1.5(c)(1))

X 9. 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 42.5 inches

X 10. 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))

_X_ 11. 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°_ (spec. 5 - 15 degrees)

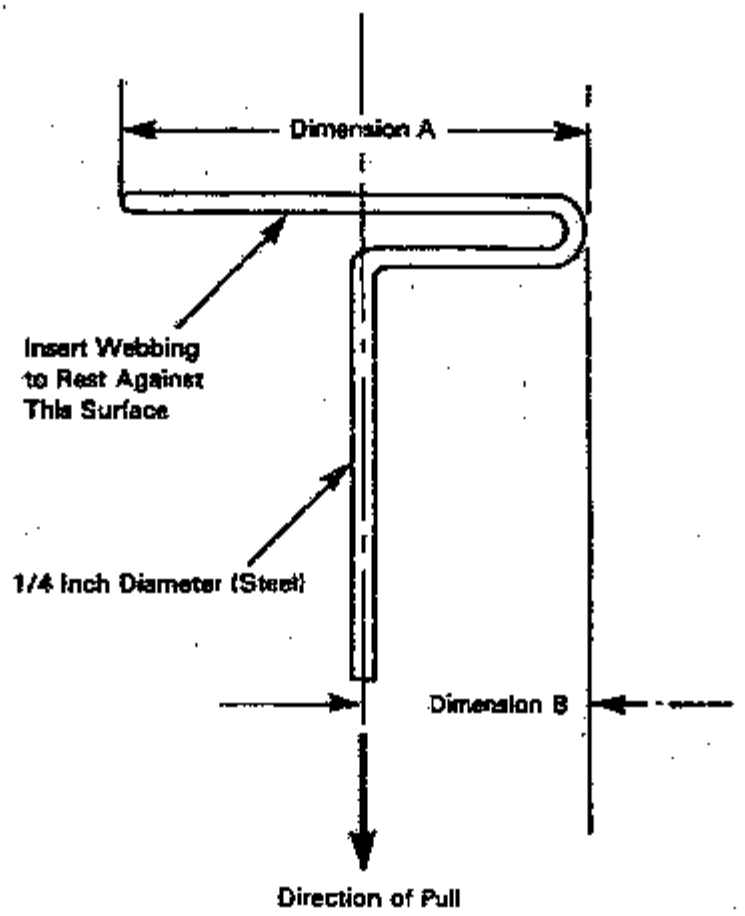
_X_ 12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B _29.8_ inches

_X_ 13. 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 _50_ lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B _30.5_ inches (S7.1.1.5(c)(6))

_X_ 14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12= _0.7_ inches;
_X_ Yes-Pass; ___ **No-FAIL**

_X_ 15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8)) 9-13= _12.0_ inches;
_X_ Yes-Pass; ___ **No-FAIL**

REMARKS:



Dimension A - Width of Webbing Plus 1/2 Inch

Dimension B - 1/2 of Dimension A

Figure 5. - Webbing Tension Pull Device

DATA SHEET 8

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 that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Second Row Right

___ N/A – No retractor is at this position

___ N/A – The retractor is an automatic locking retractor ONLY

X 1. Record test fore-aft seat position. Fixed (S7.1.1.5 (c)(1))
(Any position is acceptable.)

X 2. 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 of the vehicle. (S7.1.1.5 (a))
X Yes-Pass; ___ **No-FAIL**

X 3. 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))
X Yes-Pass; ___ **No-FAIL**

X 4. Buckle the seat belt. (S7.1.1.5(c)(1))

X 5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

X 6. 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))

X 7. 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?
X Yes; ___ No (If yes, go to 7.1. If no, go to 8.)

X 7.1 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))
X Yes-Pass; ___ **No-FAIL**

X 8. 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) & S7.1.1.5(c)(1))

X 9. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
Measured distance between A and B 52.0 inches

X 10. 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))

_X_ 11. 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°_ (spec. 5 - 15 degrees)

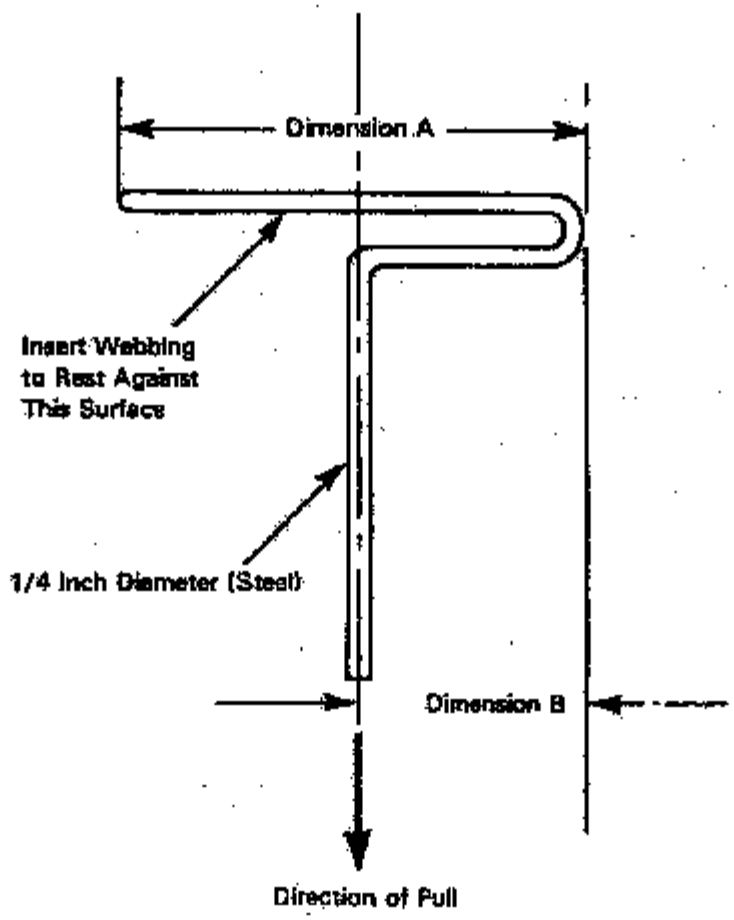
_X_ 12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B _34.5_ inches

_X_ 13. 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 _50_ lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B _35.0_ inches (S7.1.1.5(c)(6))

_X_ 14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12= _0.5_ inches;
_X_ Yes-Pass; ___ **No-FAIL**

_X_ 15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8)) 9-13= _17.0_ inches;
_X_ Yes-Pass; ___ **No-FAIL**

REMARKS:



Dimension A - Width of Webbing Plus 1/2 Inch

Dimension B - 1/2 of Dimension A

Figure 5. - Webbing Tension Pull Device

DATA SHEET 8

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 that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Third Row Left

___ N/A – No retractor is at this position

___ N/A – The retractor is an automatic locking retractor ONLY

X 1. Record test fore-aft seat position. Fixed (S7.1.1.5 (c)(1))
(Any position is acceptable.)

X 2. 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 of the vehicle. (S7.1.1.5 (a))
X Yes-Pass; ___ **No-FAIL**

X 3. 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))
X Yes-Pass; ___ **No-FAIL**

X 4. Buckle the seat belt. (S7.1.1.5(c)(1))

X 5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

X 6. 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))

X 7. 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?
X Yes; ___ No (If yes, go to 7.1. If no, go to 8.)

X 7.1 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))
X Yes-Pass; ___ **No-FAIL**

X 8. 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) & S7.1.1.5(c)(1))

X 9. 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 46.2 inches

X 10. 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))

_X_ 11. 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° (spec. 5 - 15 degrees)

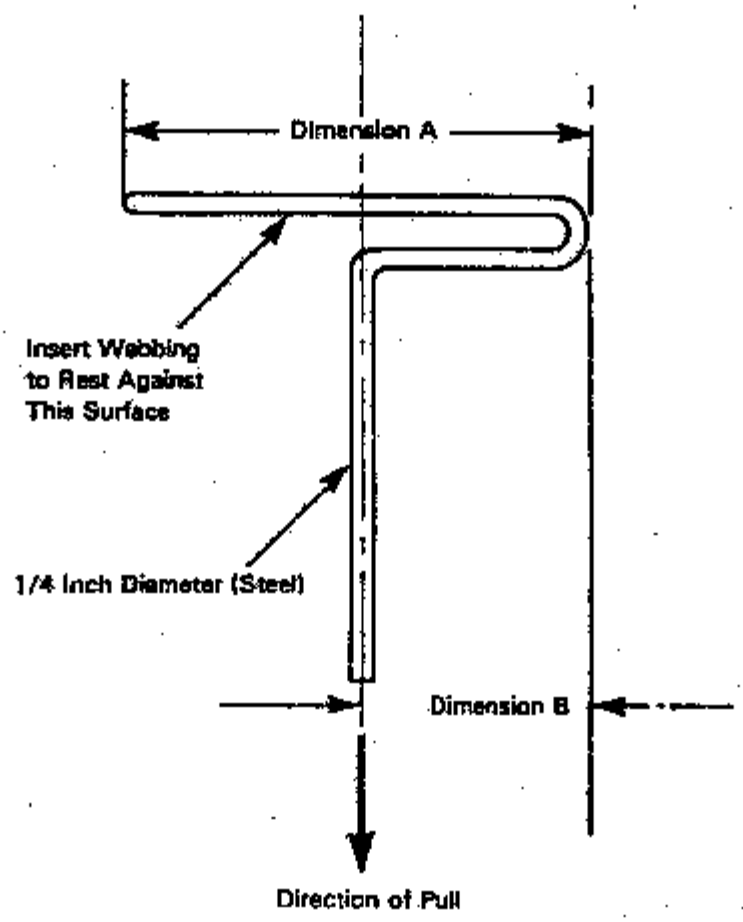
_X_ 12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B 30.0 inches

_X_ 13. 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 50 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B 30.5 inches (S7.1.1.5(c)(6))

_X_ 14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12= 0.5 inches;
_X_ Yes-Pass; ___ **No-FAIL**

_X_ 15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8)) 9-13= 15.7 inches;
_X_ Yes-Pass; ___ **No-FAIL**

REMARKS:



Dimension A - Width of Webbing Plus 1/2 Inch

Dimension B - 1/2 of Dimension A

Figure 5. - Webbing Tension Pull Device

DATA SHEET 8

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 that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Third Row Center – Not Type 2

X N/A – No retractor is at this position

___ N/A – The retractor is an automatic locking retractor ONLY

___ 1. Record test fore-aft seat position. _____ (S7.1.1.5 (c)(1))
(Any position is acceptable.)

___ 2. 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 of the vehicle. (S7.1.1.5 (a))
___ Yes-Pass; ___ **No-FAIL**

___ 3. 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**

___ 4. Buckle the seat belt. (S7.1.1.5(c)(1))

___ 5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

___ 6. 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))

___ 7. 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?
___ Yes; ___ No (If yes, go to 7.1. If no, go to 8.)

___ 7.1 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**

___ 8. 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) & S7.1.1.5(c)(1))

___ 9. 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_____ inches

___ 10. 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))

___11. 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 _____ (spec. 5 - 15 degrees)

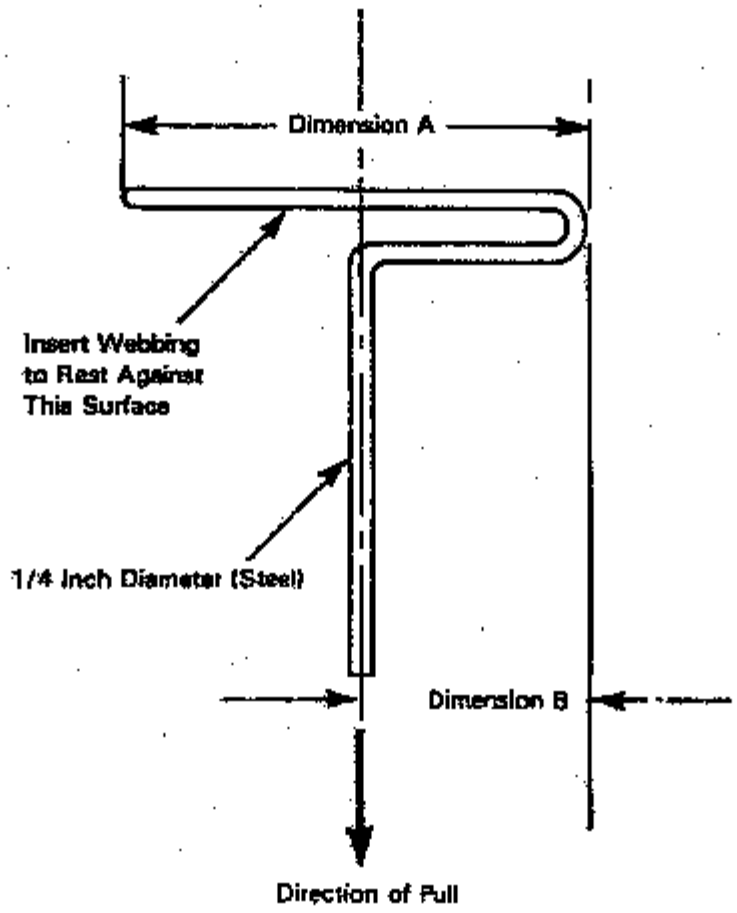
___12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B_____ inches

___13. 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 _____ lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B_____ inches (S7.1.1.5(c)(6))

___14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12= _____ inches;
___ Yes-Pass; ___ No-FAIL

___15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8)) 9-13=_____ inches;
___ Yes-Pass; ___ No-FAIL

REMARKS:



Dimension A - Width of Webbing Plus 1/2 Inch

Dimension B - 1/2 of Dimension A

Figure 5. - Webbing Tension Pull Device

DATA SHEET 8

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 that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Third Row Right

___ N/A – No retractor is at this position
___ N/A – The retractor is an automatic locking retractor ONLY

X 1. Record test fore-aft seat position. Fixed (S7.1.1.5 (c)(1))
(Any position is acceptable.)

X 2. 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 of the vehicle. (S7.1.1.5 (a))
X Yes-Pass; ___ **No-FAIL**

X 3. 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))
X Yes-Pass; ___ **No-FAIL**

X 4. Buckle the seat belt. (S7.1.1.5(c)(1))

X 5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

X 6. 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))

X 7. 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?
X Yes; ___ No (If yes, go to 7.1. If no, go to 8.)

X 7.1 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))
X Yes-Pass; ___ **No-FAIL**

X 8. 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) & S7.1.1.5(o)(1))

X 9. 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(o)(2))
Measured distance between A and B 45.5 inches

X 10. 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(o)(3))

_X_ 11. 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° (spec. 5 - 15 degrees)

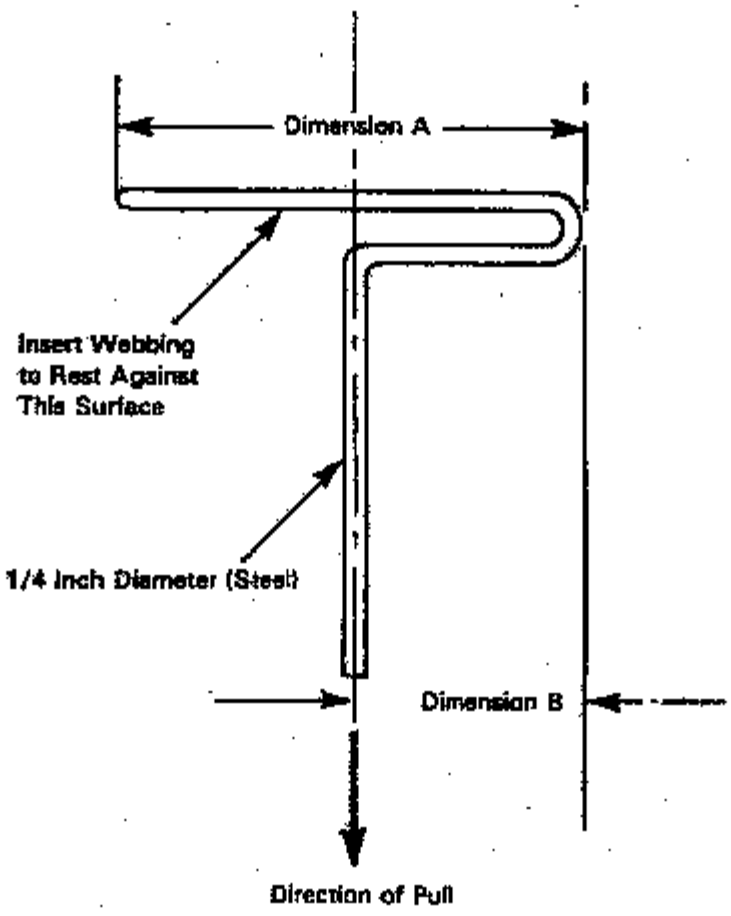
_X_ 12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B 14.5 inches

_X_ 13. 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 50 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B 15.0 inches (S7.1.1.5(c)(6))

_X_ 14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12= 0.5 inches;
_X_ Yes-Pass; ___ No-FAIL

_X_ 15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8)) 9-13= 30.5 inches;
_X_ Yes-Pass; ___ No-FAIL

REMARKS:



Dimension A - Width of Webbing Plus 1/2 Inch

Dimension B - 1/2 of Dimension A

Figure 5. - Webbing Tension Pull Device

DATA SHEET 9
FMVSS 208 SEAT BELT WARNING SYSTEM CHECK (S7.3)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

X 1. The occupant is in the driver's seat.
X 2. The seat belt is in the stowed position.
X 3. The key is in the "on" or "start" position.
X 4. The time duration of the audible signal beginning with key "on" or "start" is 6 seconds.
X 5. The occupant is in the driver's seat.
X 6. The seat belt is in the stowed position.
X 7. The key is in the "on" or "start"" position.
X 8. The time duration of the warning light beginning with key "on" or "start" is 6 seconds.
X 9. The occupant is in the driver's seat.
X 10. The seat belt is in the latched position and with at least 4 inches of belt webbing extended.
X 11. The key is in the "on" or "start" position.
X 12. The time duration of the audible signal beginning with key "on" or "start" is 0 seconds.
X 13. The occupant is in the driver's seat.
X 14. The seat belt is in the latched position and with at least 4 inches of belt webbing extended.
X 15. The key is in the "on" or "start" position.
X 16. The time duration of the warning light beginning with key "on" or "start" is 7 seconds.
X 17. Complete the following table with the data from 4, 8, 12 and 16 to determine which option is used

		Warning light	Warning light specification	Audible signal	Audible signal specification*
S7.3 (a)(1)	Belt latched & Key on or start	Item 16 ____	0 seconds*	Item 12 ____	0 seconds**
	Belt stowed & Key on or start	Item 8 ____	60 seconds minimum	Item 4 ____	4 to 8 seconds
S7.3 (a)(2)	Belt latched & Key on or start	Item 16 7	4 to 8 seconds	Item 12 0	0 seconds**
	Belt stowed & Key on or start	Item 8 6	4 to 8 seconds	Item 4 6	4 to 8 seconds

* 49 USCS @ 30124 does NOT allow an audible signal to operate for more than 8 seconds.
** 0 seconds means the light or audible signal are NOT permitted to operate under these conditions. See 7/12/00 interpretation to Patrick Raher of Hogan and Hartson

_X_ 18. The seat belt warning system meets the requirements of (manufacturers may comply with either section)

_____ S7.3 (a)(1)

_X_ S7.3 (a)(2)

_____ **FAIL** - Does NOT meet the requirements of either option

_X_ 19. Note wording of visual warning: (S7.3(a)(1) and S7.3(a)(2))

_____ Fasten Seat Belts

_____ Fasten Belts

_X_ Symbol 101

_____ **FAIL** – Does not use any of the above wording or symbol

DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Front Row Left

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.

X 1. Does the vehicle incorporate a webbing tension-relieving device?
___ Yes (this form is complete)
X No (continue with this check sheet)

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
___ N/A – No lumbar adjustment

X 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
___ N/A – No additional support adjustment

X 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 5. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
___ N/A – No independent seat cushion height adjustment.

X 6. Put the seat in its full rearward position. (S16.2.10.3.1)
___ N/A - the seat does not have a fore-aft adjustment

X 7. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
___ N/A – No seat height adjustment

X 8 Draw a horizontal reference line on the side of the seat cushion.

X 9. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
___ N/A - The seat does not have a fore-aft adjustment.

X 10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
X Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Mid

X 11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
___ N/A – No adjustments
Reference line angle as tested 0°

X 12. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

___ N/A – No adjustments

Manufacturer's design seat back angle 15.5°

Tested seat back angle 15.5°

X 13. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X 14. Fasten the seat belt latch.

X 15. 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.

X 16. 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) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

Contact force 0.59 lb.

X 0.0 to 0.7 pounds - Pass

___ **greater than 0.7 pounds - FAIL**

DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Front Row Right

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.

X 1. Does the vehicle incorporate a webbing tension-relieving device?
___ Yes (this form is complete)
X No (continue with this check sheet)

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
___ N/A – No lumbar adjustment

X 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
___ N/A – No additional support adjustment

X 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 5. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
___ N/A – No independent seat cushion height adjustment.

X 6. Put the seat in its full rearward position. (S16.2.10.3.1)
___ N/A - the seat does not have a fore-aft adjustment

X 7. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
___ N/A – No seat height adjustment

X 8 Draw a horizontal reference line on the side of the seat cushion.

X 9. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
___ N/A - The seat does not have a fore-aft adjustment.

X 10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
X Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Mid

X 11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
___ N/A – No adjustments
Reference line angle as tested 0°

X 12. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

___ N/A – No adjustments

Manufacturer's design seat back angle 15.5°

Tested seat back angle 15.5°

X 13. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X 14. Fasten the seat belt latch.

X 15. 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.

X 16. 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) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

Contact force 0.60 lb.

X 0.0 to 0.7 pounds - Pass

___ **greater than 0.7 pounds - FAIL**

DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Second Row Left

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.

X 1. Does the vehicle incorporate a webbing tension-relieving device?
___ Yes (this form is complete)
X No (continue with this check sheet)

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
X N/A – No lumbar adjustment

X 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
X N/A – No additional support adjustment

X 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 5. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
X N/A – No independent seat cushion height adjustment.

X 6. Put the seat in its full rearward position. (S16.2.10.3.1)
X N/A - the seat does not have a fore-aft adjustment

X 7. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
X N/A – No seat height adjustment

X 8 Draw a horizontal reference line on the side of the seat cushion.

X 9. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
X N/A - The seat does not have a fore-aft adjustment.

X 10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
___ Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Fixed

X 11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
X N/A – No adjustments
Reference line angle as tested 0°

X 12. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

X N/A – No adjustments

Manufacturer's design seat back angle _____

Tested seat back angle _____

X 13. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X 14. Fasten the seat belt latch.

X 15. 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.

X 16. 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) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

Contact force 0.60 lb.

X 0.0 to 0.7 pounds - Pass

___ **greater than 0.7 pounds - FAIL**

DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Bequavides

DESIGNATED SEATING POSITION: Second Row Right

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.

X 1. Does the vehicle incorporate a webbing tension-relieving device?
___ Yes (this form is complete)
X No (continue with this check sheet)

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
X N/A – No lumbar adjustment

X 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
X N/A – No additional support adjustment

X 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 5. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
X N/A – No independent seat cushion height adjustment.

X 6. Put the seat in its full rearward position. (S16.2.10.3.1)
X N/A - the seat does not have a fore-aft adjustment

X 7. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
X N/A – No seat height adjustment

X 8 Draw a horizontal reference line on the side of the seat cushion.

X 9. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
X N/A - The seat does not have a fore-aft adjustment.

X 10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
___ Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Fixed

X 11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
X N/A – No adjustments
Reference line angle as tested 0°

X 12. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

X N/A – No adjustments

Manufacturer's design seat back angle _____

Tested seat back angle _____

X 13. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X 14. Fasten the seat belt latch.

X 15. 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.

X 16. 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) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

Contact force 0.60 lb.

X 0.0 to 0.7 pounds - Pass

___ **greater than 0.7 pounds - FAIL**

DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Third Row Left

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.

X 1. Does the vehicle incorporate a webbing tension-relieving device?
___ Yes (this form is complete)
X No (continue with this check sheet)

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
X N/A – No lumbar adjustment

X 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
X N/A – No additional support adjustment

X 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 5. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
X N/A – No independent seat cushion height adjustment.

X 6. Put the seat in its full rearward position. (S16.2.10.3.1)
X N/A - the seat does not have a fore-aft adjustment

X 7. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
X N/A – No seat height adjustment

X 8 Draw a horizontal reference line on the side of the seat cushion.

X 9. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
X N/A - The seat does not have a fore-aft adjustment.

X 10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
___ Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Fixed

X 11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
X N/A – No adjustments
Reference line angle as tested 0°

X 12. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

X N/A – No adjustments

Manufacturer's design seat back angle _____

Tested seat back angle _____

X 13. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X 14. Fasten the seat belt latch.

X 15. 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.

X 16. 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) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

Contact force 0.58 lb.

X 0.0 to 0.7 pounds - Pass

___ **greater than 0.7 pounds - FAIL**

DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Third Row Right

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.

X 1. Does the vehicle incorporate a webbing tension-relieving device?
___ Yes (this form is complete)
X No (continue with this check sheet)

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
X N/A – No lumbar adjustment

X 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
X N/A – No additional support adjustment

X 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 5. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
X N/A – No independent seat cushion height adjustment.

X 6. Put the seat in its full rearward position. (S16.2.10.3.1)
___ N/A - the seat does not have a fore-aft adjustment

X 7. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
X N/A – No seat height adjustment

X 8 Draw a horizontal reference line on the side of the seat cushion.

X 9. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
X N/A - The seat does not have a fore-aft adjustment.

X 10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
___ Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Fixed

X 11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
X N/A – No adjustments
Reference line angle as tested 0°

X 12. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

X N/A – No adjustments

Manufacturer's design seat back angle _____

Tested seat back angle _____

X 13. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X 14. Fasten the seat belt latch.

X 15. 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.

X 16. 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) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

Contact force 0.58 lb.

X 0.0 to 0.7 pounds - Pass

___ **greater than 0.7 pounds - FAIL**

DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Third Row Center – Not Type 2

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 (this form is complete)
___ No (continue with this check sheet)

___ 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
___ N/A – No lumbar adjustment

___ 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
___ N/A – No additional support adjustment

___ 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
___ N/A – No independent fore-aft seat cushion adjustment

___ 5. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
___ N/A – No independent seat cushion height adjustment.

___ 6. Put the seat in its full rearward position. (S16.2.10.3.1)
___ N/A - the seat does not have a fore-aft adjustment

___ 7. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
___ N/A – No seat height adjustment

___ 8 Draw a horizontal reference line on the side of the seat cushion.

___ 9. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
___ N/A - The seat does not have a fore-aft adjustment.

___ 10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
___ Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: _____
_____

___ 11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
___ N/A – No adjustments
Reference line angle as tested _____

___ 12. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

___ N/A – No adjustments

Manufacturer's design seat back angle _____

Tested seat back angle _____

___ 13. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

___ 14. Fasten the seat belt latch.

___ 15. 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.

___ 16. 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) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

Contact force _____ lb.

___ 0.0 to 0.7 pounds – Pass

___ **greater than 0.7 pounds – FAIL**

DATA SHEET 11
LATCHPLATE ACCESS (S7.4.4)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Left Front

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.

X 1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (8.1.3)
___ N/A – No lumbar adjustment

X 2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
___ N/A – No additional support adjustment

X 3. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 4. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
___ N/A – No independent seat cushion height adjustment.

X 5. Put the seat in its full rearward position. (S16.2.10.3.1)
___ N/A - the seat does not have a fore-aft adjustment

X 6. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
___ N/A – No seat height adjustment

X 7 Draw a horizontal reference line on the side of the seat cushion

X 8. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
___ N/A - The seat does not have a fore-aft adjustment.

X 9. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the forwardmost fore-aft position for this test. (S10.7)

X 10. If seat adjustments, other than fore-aft, are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal.
___ N/A – No adjustments
Reference line angle as tested 0°

X 11. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

___ N/A – No seat back angle adjustment

Manufacturer's design seat back angle 15.5°

Tested seat back angle 15.5°

X 12. Position the test dummy using the procedures in Appendix A. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position. Note on the Appendix A positioning check sheet any deviations necessary to position the Part 572, Subpart E dummy.) Include the positioning check sheet with this form.

X 13. Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant.

X 14. Attach the inboard reach string to the base of the head following the instructions on Figure 3.

X 15. Attach the outboard reach string to the torso sheath following the instructions on Figure 3.

X 16. Place the latch plate in the stowed position.

X 17. Extend inboard reach string in front of the dummy and then backward and outboard to the latch plate to generate an arc of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

X Yes-Pass; ___ **No**

X 18. Extend outboard reach string in front of the dummy and then backward and outboard to the latch plate to generate an arc of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

X Yes-Pass; ___ **No**

X 19. Is the latch plate within the inboard (item 17) or outboard (item 18) reach envelope?

X **Yes-Pass;** ___ **No-FAIL**

X 20. Using the clearance test block, specified in Figure 4, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?

X Yes-Pass; ___ **No-FAIL**

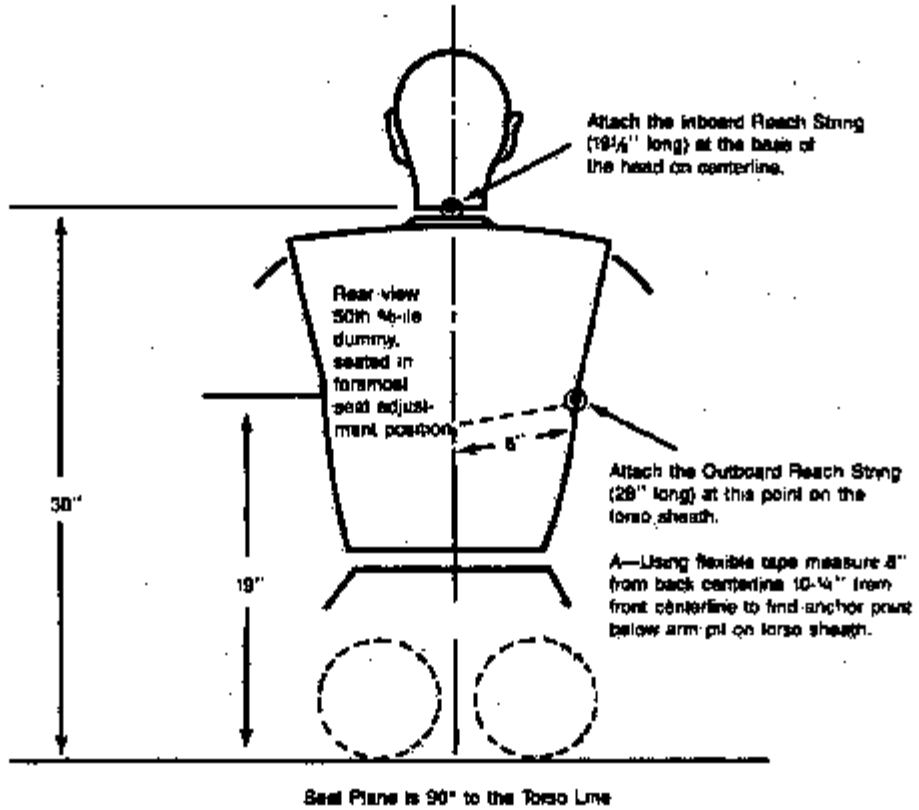


Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart E Test Device

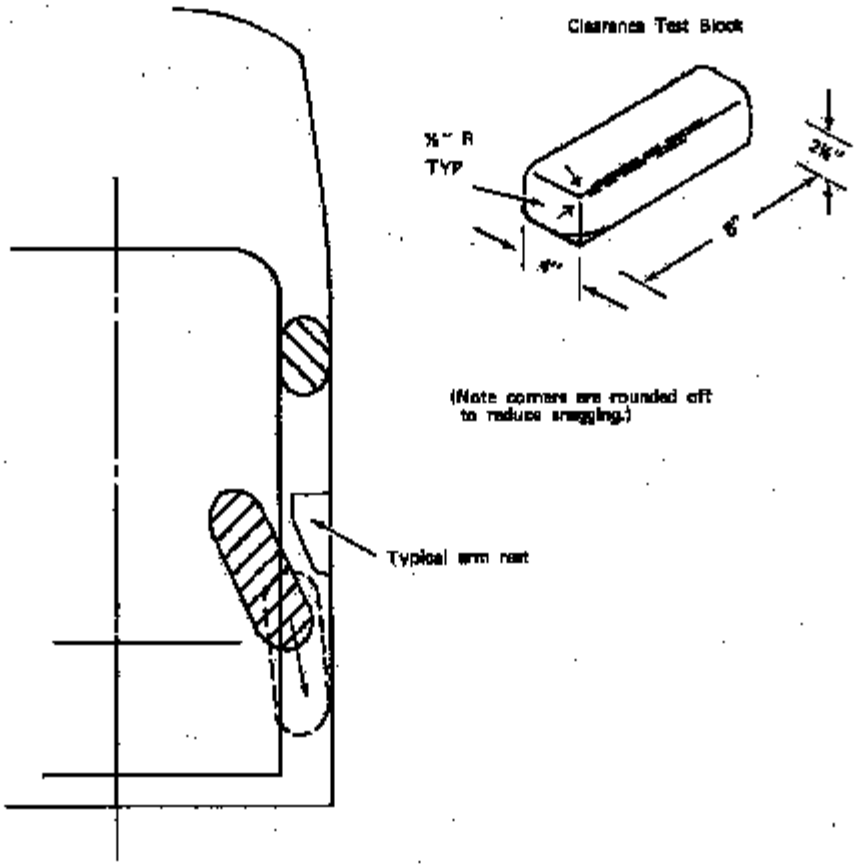


Figure 4—USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS

DATA SHEET 11
LATCHPLATE ACCESS (S7.4.4)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavidesw

DESIGNATED SEATING POSITION: Right Front

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.

X 1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (8.1.3)
___ N/A – No lumbar adjustment

X 2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
___ N/A – No additional support adjustment

X 3. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 4. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
___ N/A – No independent seat cushion height adjustment.

X 5. Put the seat in its full rearward position. (S16.2.10.3.1)
___ N/A - the seat does not have a fore-aft adjustment

X 6. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
___ N/A – No seat height adjustment

X 7 Draw a horizontal reference line on the side of the seat cushion

X 8. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
___ N/A - The seat does not have a fore-aft adjustment.

X 9. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the forwardmost fore-aft position for this test. (S10.7)

X 10. If seat adjustments, other than fore-aft, are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal.
___ N/A – No adjustments
Reference line angle as tested 0°

X 11. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

___ N/A – No seat back angle adjustment

Manufacturer's design seat back angle 15.5°

Tested seat back angle 15.5°

X 12. Position the test dummy using the procedures in Appendix A. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position. Note on the Appendix A positioning check sheet any deviations necessary to position the Part 572, Subpart E dummy.) Include the positioning check sheet with this form.

X 13. Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant.

X 14. Attach the inboard reach string to the base of the head following the instructions on Figure 3.

X 15. Attach the outboard reach string to the torso sheath following the instructions on Figure 3.

X 16. Place the latch plate in the stowed position.

X 17. Extend inboard reach string in front of the dummy and then backward and outboard to the latch plate to generate an arc of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

X Yes-Pass; ___ **No**

X 18. Extend outboard reach string in front of the dummy and then backward and outboard to the latch plate to generate an arc of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

X Yes-Pass; ___ **No**

X 19. Is the latch plate within the inboard (item 17) or outboard (item 18) reach envelope?

X Yes-Pass; ___ **No-FAIL**

X 20. Using the clearance test block, specified in Figure 4, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?

X Yes-Pass; ___ **No-FAIL**

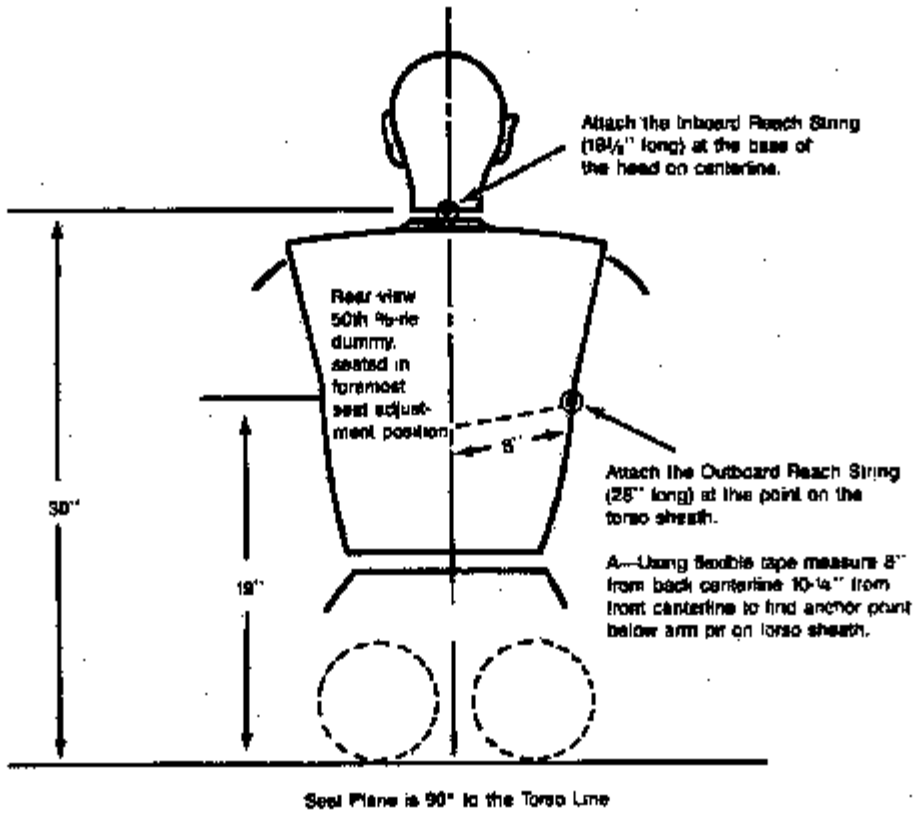


Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart E Test Device

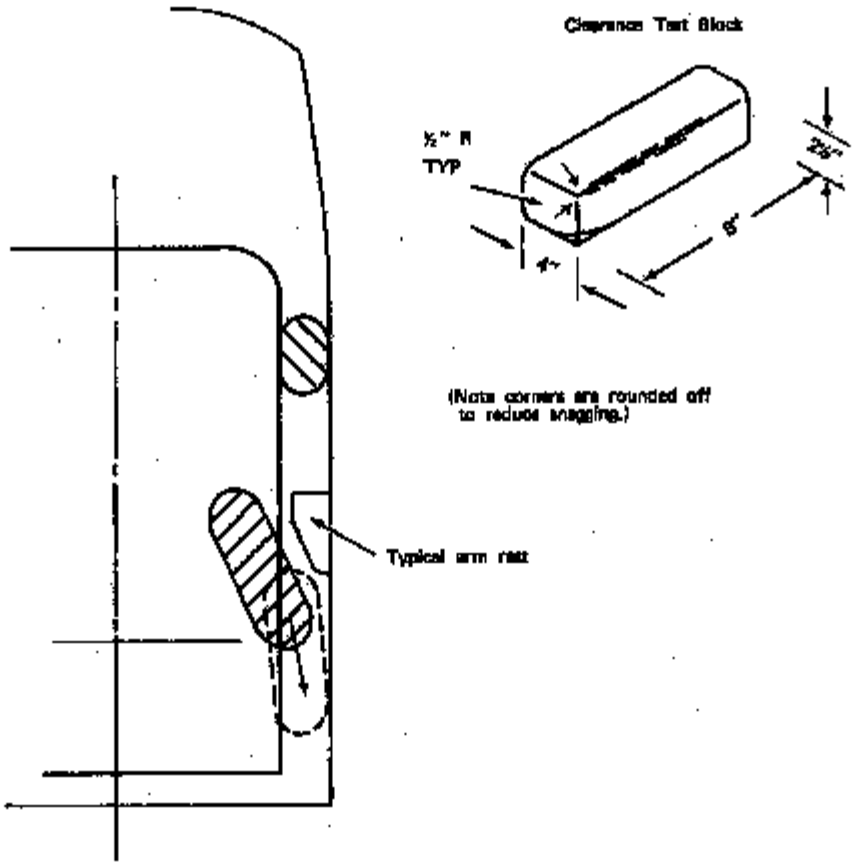


Figure 4—USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS

DATA SHEET 12
SEAT BELT RETRACTION (S7.4.5)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Left Front

GVWR: 3130 kg/6900 lbs.

Test all front outboard 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.

X 1. Is the vehicle a passenger car or walk-in van-type vehicle?
___ Yes, this form is complete
X No

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
___ N/A – No lumbar adjustment

X 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
___ N/A – No additional support adjustment

X 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position.) (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 5. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
___ N/A – No independent seat cushion height adjustment.

X 6. Put the seat in its full rearward position.
___ N/A - the seat does not have a fore-aft adjustment

X 7. If the seat height is adjustable, put it in the full down position. (S8.1.2)
___ N/A – No seat height adjustment

X 7 Draw a horizontal line on the side of the seat cushion.

X 8. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
___ N/A - The seat does not have a fore-aft adjustment.

X 9. Using only the controls that change the seat in the fore-aft direction, place the seat in the middle fore-aft position. (S8.1.2)
If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Mid

X 10. If seat adjustments, other than fore-aft, are present and the reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2)
X N/A – No seat adjustments
Reference angle as tested 0°

X 11. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S8.1.3)

___ N/A – No seat back angle adjustment

Manufacturer's design seat back angle 15.5°

Tested seat back angle 15.5°

X 12. If adjustable, set the head restraint at the full up and full forward position. (S8.1.3) Any adjustment of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible.

___ N/A – No head restraint adjustment

X 13. Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant (S8.1.3)

___ N/A – No adjustable upper seat belt anchorage

Manufacturer's specified anchorage position. Fixed

Tested anchorage position Fixed

X 14. Is the driver seat a bucket seat?

X Yes, go to 14.1 and skip 14.2.

___ No, go to 14.2 and skip 14.1.

X 14.1 Bucket seats:

Locate and mark a vertical Plane B through the longitudinal centerline of the seat. The longitudinal centerline of a bucket seat cushion is determined at the widest part of the seat cushion. Measure perpendicular to the longitudinal centerline of the vehicle.

Record the width of the seat. 584 mm

Record the distance from the edge of the seat to Plane B. 292 mm

___ 14.2 Bench seats (including split bench seats):

___ Driver seat: Locate and mark a vertical Plane B through the center of the steering wheel parallel to the vehicle longitudinal centerline.

___ Passenger seat: Locate and mark a vertical longitudinal Plane B on the seat that is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel.

Distance from the vehicle centerline to the center of the steering wheel 411 mm

Distance from the vehicle centerline to Plane B 411 mm

X 15. Stow outboard armrests that are capable of being stowed. (S7.4.5)

X 16. Remove the arms of a Subpart E dummy and place it in the seat such that the midsagittal plane is coincident with Plane B and the upper torso rests against the seat back. (S10.4.1.1 & S10.4.1.2)

X 17. Rest the thighs on the seat cushion.

X 18. Position the H-point of the dummy within 0.5 inch of the vertical dimension and 0.5 inch of the horizontal dimension of a point 0.25 inch below the H-point determined by using the equipment and procedures specified in SAE J826 (APR 1980). (S10.4.2.1) Then measure the pelvic angle with respect to the horizontal using the pelvic angle gage. Adjust the dummy position until these three measurements are within the specifications. (S10.4.2.1 and S10.4.2.2)

X horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1) Measurement not recorded

X vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1) Measurement not recorded

X pelvic angle (20° to 25°) (S10.4.2.2) Measurement not recorded

X 19. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.

X measured distance (10.6 inches) (S10.5)

_X_ 20. To the extent practicable keep the thighs and the legs in a vertical plane (S10.5) and rest the thighs on the seat cushion while resting the feet on the floorpan or toe board.

_X_ 21. Fasten the seat belt around the dummy.

_X_ 22. Remove all slack from the lap belt portion. (S10.9)

___ 23. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)

_X_ 24. Apply a 2 to 4 pound tension load to the lap belt. (S10.9)

_2_ pound load applied

_X_ 25. Is the belt system equipped with a tension relieving device?

___ Yes, continue

_X_ No, go to 26

___ 25.1 Introduce the maximum amount of slack into the upper torso bet that is recommended by the vehicle manufacturer in the vehicle owner's manual. (S10.9).

_X_ 26. Check the statement that applies to this test vehicle:

___ 26.1 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 latch plate is released. _X_ Pass

_X_ 26.2 The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released. _X_ Pass

___ 26.3 Neither 26.1 nor 26.3 apply. ____ FAIL

_X_ 27. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?

_X_ Yes-Pass; ___ No-FAIL

_X_ 28. 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?

_X_ N/A

___ Yes-Pass; ___ No-FAIL

DATA SHEET 12
SEAT BELT RETRACTION (S7.4.5)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Right Front

GVWR: 3130 kg/6900 lbs.

Test all front outboard 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.

X 1. Is the vehicle a passenger car or walk-in van-type vehicle?
___ Yes, this form is complete
X No

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
___ N/A – No lumbar adjustment

X 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
___ N/A – No additional support adjustment

X 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position.) (S16.2.10.3.1)
X N/A – No independent fore-aft seat cushion adjustment

X 5. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
___ N/A – No independent seat cushion height adjustment.

X 6. Put the seat in its full rearward position.
___ N/A - the seat does not have a fore-aft adjustment

X 7. If the seat height is adjustable, put it in the full down position. (S8.1.2)
___ N/A – No seat height adjustment

X 7 Draw a horizontal line on the side of the seat cushion.

X 8. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
___ N/A - The seat does not have a fore-aft adjustment.

X 9. Using only the controls that change the seat in the fore-aft direction, place the seat in the middle fore-aft position. (S8.1.2)
If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Mid

X 10. If seat adjustments, other than fore-aft, are present and the reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2)
X N/A – No seat adjustments
Reference angle as tested 0°

X 11. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S8.1.3)

___ N/A – No seat back angle adjustment

Manufacturer's design seat back angle 15.5°

Tested seat back angle 15.5°

X 12. If adjustable, set the head restraint at the full up and full forward position. (S8.1.3) Any adjustment of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible.

X N/A – No head restraint adjustment

X 13. Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant (S8.1.3)

X N/A – No adjustable upper seat belt anchorage

Manufacturer's specified anchorage position. Fixed

Tested anchorage position Fixed

X 14. Is the driver seat a bucket seat?

X Yes, go to 14.1 and skip 14.2.

___ No, go to 14.2 and skip 14.1.

X 14.1 Bucket seats:

Locate and mark a vertical Plane B through the longitudinal centerline of the seat. The longitudinal centerline of a bucket seat cushion is determined at the widest part of the seat cushion. Measure perpendicular to the longitudinal centerline of the vehicle.

Record the width of the seat. 584 mm

Record the distance from the edge of the seat to Plane B. 292 mm

___ 14.2 Bench seats (including split bench seats):

___ Driver seat: Locate and mark a vertical Plane B through the center of the steering wheel parallel to the vehicle longitudinal centerline.

___ Passenger seat: Locate and mark a vertical longitudinal Plane B on the seat that is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel.

Distance from the vehicle centerline to the center of the steering wheel ___

Distance from the vehicle centerline to Plane B ___

X 15. Stow outboard armrests that are capable of being stowed. (S7.4.5)

X 16. Remove the arms of a Subpart E dummy and place it in the seat such that the midsagittal plane is coincident with Plane B and the upper torso rests against the seat back. (S10.4.1.1 & S10.4.1.2)

X 17. Rest the thighs on the seat cushion.

X 18. Position the H-point of the dummy within 0.5 inch of the vertical dimension and 0.5 inch of the horizontal dimension of a point 0.25 inch below the H-point determined by using the equipment and procedures specified in SAE J826 (APR 1980). (S10.4.2.1) Then measure the pelvic angle with respect to the horizontal using the pelvic angle gage. Adjust the dummy position until these three measurements are within the specifications. (S10.4.2.1 and S10.4.2.2)

X horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1) Measurement not recorded

X vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1) Measurement not recorded

X pelvic angle (20° to 25°) (S10.4.2.2) Measurement not recorded

X 19. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.

X measured distance (10.6 inches) (S10.5)

_X_ 20. To the extent practicable keep the thighs and the legs in a vertical plane (S10.5) and rest the thighs on the seat cushion while resting the feet on the floorpan or toe board.

_X_ 21. Fasten the seat belt around the dummy.

_X_ 22. Remove all slack from the lap belt portion. (S10.9)

_X_ 23. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)

_X_ 24. Apply a 2 to 4 pound tension load to the lap belt. (S10.9)

_3_ pound load applied

_X_ 25. Is the belt system equipped with a tension relieving device?

___ Yes, continue

_X_ No, go to 26

___ 25.1 Introduce the maximum amount of slack into the upper torso bet that is recommended by the vehicle manufacturer in the vehicle owner's manual. (S10.9).

_X_ 26. Check the statement that applies to this test vehicle:

___ 26.1 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 latch plate is released. _X_ Pass

_X_ 26.2 The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released. _X_ Pass

___ 26.3 Neither 26.1 nor 26.2 apply. ____ **FAIL**

_X_ 27. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?

_X_ Yes-Pass; ___ **No-FAIL**

_X_ 28. 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?

_X_ N/A

___ Yes-Pass; ___ **No-FAIL**

DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Left Front

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.

X 1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
___ Yes; this form is complete
X No; got to 2

X 2. Is the seat removable? (S7.4.6.1(b))
___ Yes; this form is complete
X No; got to 3

X 3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
___ Yes; this form is complete
X No; got to 4

X 4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
___ Yes: go to 5.
X No: this form is complete.

___ 5. Does one of the following three parts, the seat belt latch plate, 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)? (S7.4.6.1(a))
___ Yes-Pass; ___ **No-FAIL**
Identify the part(s) on top or above the seat.
___ seat belt latch plate; ___ buckle; ___ seat belt webbing

___ 6. Are the remaining two seat belt parts accessible under normal conditions?
___ Yes-Pass; ___ **No-FAIL**

___ 7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Right Front

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.

X 1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
___ Yes; this form is complete
X No; got to 2

X 2. Is the seat removable? (S7.4.6.1(b))
___ Yes; this form is complete
X No; got to 3

X 3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
___ Yes; this form is complete
X No; got to 4

X 4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
___ Yes: go to 5.
X No: this form is complete.

___ 5. Does one of the following three parts, the seat belt latch plate, 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)? (S7.4.6.1(a))
___ Yes-Pass; ___ **No-FAIL**
Identify the part(s) on top or above the seat.
___ seat belt latch plate; ___ buckle; ___ seat belt webbing

___ 6. Are the remaining two seat belt parts accessible under normal conditions?
___ Yes-Pass; ___ **No-FAIL**

___ 7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Second Row Left

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.

X 1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
X Yes; this form is complete
___ No; got to 2

___ 2. Is the seat removable? (S7.4.6.1(b))
___ Yes; this form is complete
___ No; got to 3

___ 3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
___ Yes; this form is complete
___ No; got to 4

___ 4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
___ Yes: go to 5.
___ No: this form is complete.

___ 5. Does one of the following three parts, the seat belt latch plate, 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)? (S7.4.6.1(a))
___ Yes-Pass; ___ **No-FAIL**
Identify the part(s) on top or above the seat.
___ seat belt latch plate; ___ buckle; ___ seat belt webbing

___ 6. Are the remaining two seat belt parts accessible under normal conditions?
___ Yes-Pass; ___ **No-FAIL**

___ 7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Second Row Right

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.

X 1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
   X Yes; this form is complete
   ___ No; got to 2

___ 2. Is the seat removable? (S7.4.6.1(b))
   ___ Yes; this form is complete
   ___ No; got to 3

___ 3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
   ___ Yes; this form is complete
   ___ No; got to 4

___ 4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
   ___ Yes: go to 5.
   ___ No: this form is complete.

___ 5. Does one of the following three parts, the seat belt latch plate, 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)? (S7.4.6.1(a))
   ___ Yes-Pass; ___ **No-FAIL**
   Identify the part(s) on top or above the seat.
   ___ seat belt latch plate; ___ buckle; ___ seat belt webbing

___ 6. Are the remaining two seat belt parts accessible under normal conditions?
   ___ Yes-Pass; ___ **No-FAIL**

___ 7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
   ___ Yes-Pass; ___ **No-FAIL**

___ 8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
   ___ Yes-Pass; ___ **No-FAIL**

___ 9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
   ___ Yes-Pass; ___ **No-FAIL**

___ 10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
   ___ Yes-Pass; ___ **No-FAIL**

DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Third Row Left

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.

X 1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
___ Yes; this form is complete
X No; got to 2

X 2. Is the seat removable? (S7.4.6.1(b))
X Yes; this form is complete
___ No; got to 3

___ 3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
___ Yes; this form is complete
___ No; got to 4

___ 4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
___ Yes: go to 5.
___ No: this form is complete.

___ 5. Does one of the following three parts, the seat belt latch plate, 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)? (S7.4.6.1(a))
___ Yes-Pass; ___ **No-FAIL**
Identify the part(s) on top or above the seat.
___ seat belt latch plate; ___ buckle; ___ seat belt webbing

___ 6. Are the remaining two seat belt parts accessible under normal conditions?
___ Yes-Pass; ___ **No-FAIL**

___ 7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Third Row Center

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.

X 1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
___ Yes; this form is complete
X No; got to 2

X 2. Is the seat removable? (S7.4.6.1(b))
X Yes; this form is complete
___ No; got to 3

___ 3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
___ Yes; this form is complete
___ No; got to 4

___ 4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
___ Yes: go to 5.
___ No: this form is complete.

___ 5. Does one of the following three parts, the seat belt latch plate, 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)? (S7.4.6.1(a))
___ Yes-Pass; ___ **No-FAIL**
Identify the part(s) on top or above the seat.
___ seat belt latch plate; ___ buckle; ___ seat belt webbing

___ 6. Are the remaining two seat belt parts accessible under normal conditions?
___ Yes-Pass; ___ **No-FAIL**

___ 7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No.: C30103 Test Date: 11/15/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

DESIGNATED SEATING POSITION: Third Row Right

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.

X 1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
___ Yes; this form is complete
X No; got to 2

X 2. Is the seat removable? (S7.4.6.1(b))
X Yes; this form is complete
___ No; got to 3

___ 3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
___ Yes; this form is complete
___ No; got to 4

___ 4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
___ Yes: go to 5.
___ No: this form is complete.

___ 5. Does one of the following three parts, the seat belt latch plate, 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)? (S7.4.6.1(a))
___ Yes-Pass; ___ **No-FAIL**
Identify the part(s) on top or above the seat.
___ seat belt latch plate; ___ buckle; ___ seat belt webbing

___ 6. Are the remaining two seat belt parts accessible under normal conditions?
___ Yes-Pass; ___ **No-FAIL**

___ 7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

___ 10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
___ Yes-Pass; ___ **No-FAIL**

DATA SHEET 26

VEHICLE WEIGHT, FUEL TANK, AND ATTITUDE DATA

NHTSA No.: C30103 Test Date: 11/19/02

Laboratory: TRC Inc. Test Technician(s): R. Benavioes, J. Jenkins

Impact Angle: 0° Belted Dummies: ___ Yes X No

Test Speed: X 32 to 40 km/h ___ 0 to 48 km/h ___ 0 to 56 km/h

Driver Dummy: X 5th female ___ 50th male Passenger Dummy: X 5th female ___ 50th male

X 1. Fill the transmission with transmission fluid to the satisfactory range.
X 2. Drain fuel from vehicle
X 3. Run the engine until fuel remaining in the fuel delivery system is used and the engine stops.
X 4. Record the useable fuel tank capacity supplied by the COTR. 26.0 gallons (98.4 L)
X 5 Record the fuel tank capacity supplied in the owner's manual. 31.0 gallons (117.3 L)
___ 6.[1] Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71, "Standard Specifications for Hydrocarbon Dry-cleaning Solvents," fill the fuel tank with an amount equal to the useable capacity provided by the COTR.
Amount added ___
X 7. Crank the engine to fill the fuel delivery system with Stoddard solvent.
X 8. Fill the coolant system to capacity.
X 9. Fill the engine with motor oil to the max. mark on the dip stick.
X 10. Fill the brake reservoir with brake fluid to its normal level.
X 11. Fill the windshield washer reservoir to capacity.
X 12. Inflate the tires to the tire pressure on the tire placard. If no tire placard is available, inflate the tires to the recommended pressure in the owner's manual.

Tire placard pressure	RF	35	LF	35	RR	35	LR 35
Owner's manual pressure[2]	RF	N/A	LF	N/A	RR	N/A	LR N/A
Actual inflated pressure	RF	35	LF	35	RR	35	LR 35

X 13. Record the vehicle weight at each wheel to determine the unloaded vehicle weight (UVW), i.e. "as delivered" weight).

Right Front	=	607.0 kg	Right Rear	=	607.5 kg
Left Front	=	689.0 kg	Left Rear	=	602.0 kg
TOTAL FRONT	=	1296.0 kg	TOTAL REAR	=	1209.5 kg
% Total Weight	=	51.7 %	% Total Weight	=	48.3 %

UVW = TOTAL FRONT PLUS TOTAL REAR = 2505.5 kg

X 14. UVW Test Vehicle Attitude: (all dimensions in millimeters)
X 14.1 Mark a point on the vehicle above the center of each wheel.
X 14.2 Place the vehicle on a level surface.
X 14.3 Measure perpendicular to the level surface to the 4 points marked on the body and record the measurements
RF 921 ; LF 912 ; RR 940 ; LR 931

X 15. Calculate the Rated Cargo and Luggage Weight (RCLW).

X 15.1 Does the vehicle have the vehicle capacity weight (VCW) on the certification label or tire placard?

___ Yes, go to 15.3.

X No, go to 15.2.

X 15.2 VCW = Gross Vehicle Weight – UVW

VCW = 3130.0 - 2505.5 = 624.5

X 15.3 VCW = 624.5

X 15.4 Does the certification or tire placard contain the Designated Seating Capacity (DSC)?

___ Yes, go to 15.6.

X No, go to 15.5

X 15.5 DSC = Total number of seat belt assemblies = 7

X 15.6 DSC = 7

X 15.7 RCLW = VCW – (68 kg x DSC) = 624.5 - (68 kg x 7) = 148.5

X 15.8 Is the vehicle certified as a truck, MPV or bus (see the certification label on the door jamb)?

X Yes, the maximum RCLW is 136 kg.

___ No, use the RCLW calculated in 15.7.

X 16. Fully Loaded Weight (100% fuel fill)

X 16.1 Place the appropriate test dummy in both front outboard seating positions.

Driver: X 5th female ____ 50th male

Passenger: X 5th female ____ 50th male

X 16.2 Load the vehicle with the RCLW from 15.7 or 15.8 whichever is applicable.

X 16.3 Place the RCLW in the cargo area. Center the load over the longitudinal centerline of the vehicle. (S8.1.1 (d))

X 16.4 Record the vehicle weight at each wheel to determine the Fully Loaded Weight.

Right Front	= 618.0 kg		Right Rear	= 706.0 kg	
Left Front	= 699.5 kg		Left Rear	= 703.0 kg	
TOTAL FRONT	= 1317.5 kg		TOTAL REAR	= 1409.0 kg	
% Total Weight	= 48.3 %		% Total Weight	= 51.7 %	
% GVW	= 42.1 %		% GVW	= 45.0 %	

FULLY LOADED WEIGHT = TOTAL FRONT + TOTAL REAR = 2726.5 kg

X 17. Fully Loaded Test Vehicle Attitude: (all dimensions in millimeters

X 17.1 Place the vehicle on a level surface.

X 17.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 14.1 above) and record the measurements

RF 918 ; LF 907 ; RR 910 ; LR 902

X 18. Calculate the test weight range (94% fuel fill).

X 18.1 Calculated Test Weight = Fully Loaded Condition (See 16.4 above) – ((.06 x useable fuel tank capacity) x 0.79kg/liter)

Calculated Test Weight = 2726.5 - (.06 x 98.4 1 x 0.79 kg/l) = 2721.8 kg

X 18.2 Test Weight Range = Calculated Test Weight (- 4.5 kg, - 9 kg.)

Max. Weight = Calculated Test Weight – 4.5 kg = 2717.3

Min. Weight = Calculated Test Weight – 9 kg = 2712.8

X 19. Remove the RCLW from the cargo area.

___ 20.[3] Remove Stoddard solvent from the gas tank in the amount of 6% of the useable capacity as supplied by the COTR. .06 x _____ (useable capacity) = _____
Amount removed _____

X 21. Drain transmission fluid, engine coolant, motor oil, and windshield washer fluid from the test vehicle so that Stoddard solvent leakage from the fuel system will be evident.

X 22. Vehicle Components Removed For Weight Reduction:
None

X 23. Secure the equipment and ballast in the load carrying area and distribute it, as nearly as possible, to obtain the proportion of axle weight indicated by the gross axle weight ratings and center it over the longitudinal centerline of the vehicle.

X 24. If necessary, add ballast to achieve the actual test weight.
____ N/A
Weight of ballast 87.0 kg

X 25. Ballast, including test equipment, must be contained so that it will not shift during the impact event or interfere with data collection or interfere with high-speed film recordings or affect the structural integrity of the vehicle or do anything else to affect test results. Care must be taken to assure that any attachment hardware added to the vehicle is not in the vicinity of the fuel tank or lines.

X 26. Record the vehicle weight at each wheel to determine the actual test weight.

Right Front	= 678.4 kg		Right Rear	= 684.6 kg	
Left Front	= 688.4 kg		Left Rear	= 662.0 kg	
TOTAL FRONT	= 1366.8 kg		TOTAL REAR	= 1346.6 kg	
% Total Weight	= 50.4 %		% Total Weigh	= 49.6 %	
% GVW	= 43.7 %		% GVW	= 43.0 %	

(%GVW = Axle GVW ÷ Vehicle GVW)

TOTAL FRONT PLUS TOTAL REAR = 2713.4 kg

X 27. Is the test weight between the Max. Weight and the Min. Weight (See 18.2)?
X Yes
____ No, explain why not. _____

X 28. Test Weight Vehicle Attitude: (all dimensions in millimeters)
X 28.1 Place the vehicle on a level surface.
X 28.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 3 above) and record the measurements
RF 900 ; LF 890 ; RR 914 ; LR 909

X 29. Summary of test attitude

X 29.1

AS DELIVERED: RF 921 ; LF 912 ; RR 940 ; LR 931

AS TESTED: RF 900 ; LF 890 ; RR 914 ; LR 909

FULLY LOADED: RF 918 ; LF 907 ; RR 910 ; LR 902

X 29.2 Is the "as tested" test attitude equal to or between the "fully loaded" and "as delivered" attitude?

___ Yes

X No, explain why not. Approved by COTR on test day.

[1] At this step gasoline in the fuel tank was topped off (Stoddard was not introduced until after fully loaded weight and attitudes were obtained). The exact amount of fuel in the tank was unknown.

[2] The owner's manual said to see certification/tire label for tire pressure.

[3] At this step Stoddard solvent was introduced into the drained fuel tank; 0.094 x 117.3 liter. A total of 110.3 liters was added.

DATA SHEET 27
Vehicle Accelerometer Location

NHTSA No.: C30103 Test Date: 11/19/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

Impact Angle: 0° Belted Dummies: ___ Yes _X_ No

Test Speed: _X_ 32 to 40 km/h ___ 0 to 48 km/h ___ 0 to 56 km/h

Driver Dummy: _X_ 5th female ___ 50th male Passenger Dummy: _X_ 5th female ___ 50th male

_X_ 1. Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the left front outboard seating position intersects the left rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.

_X_ 2. Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the right front outboard seating position intersects the right rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.

_X_ 3. Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect at the top of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.

_X_ 4. Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect the bottom of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.

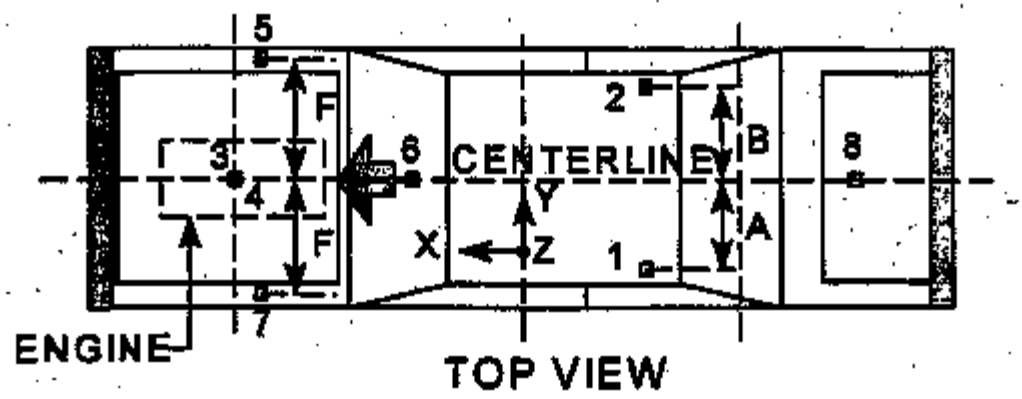
_X_ 5. Install an accelerometer on the right front brake caliper to record x-direction accelerations. Record the location on the following chart.

_X_ 6. Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the top of the instrument panel. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.

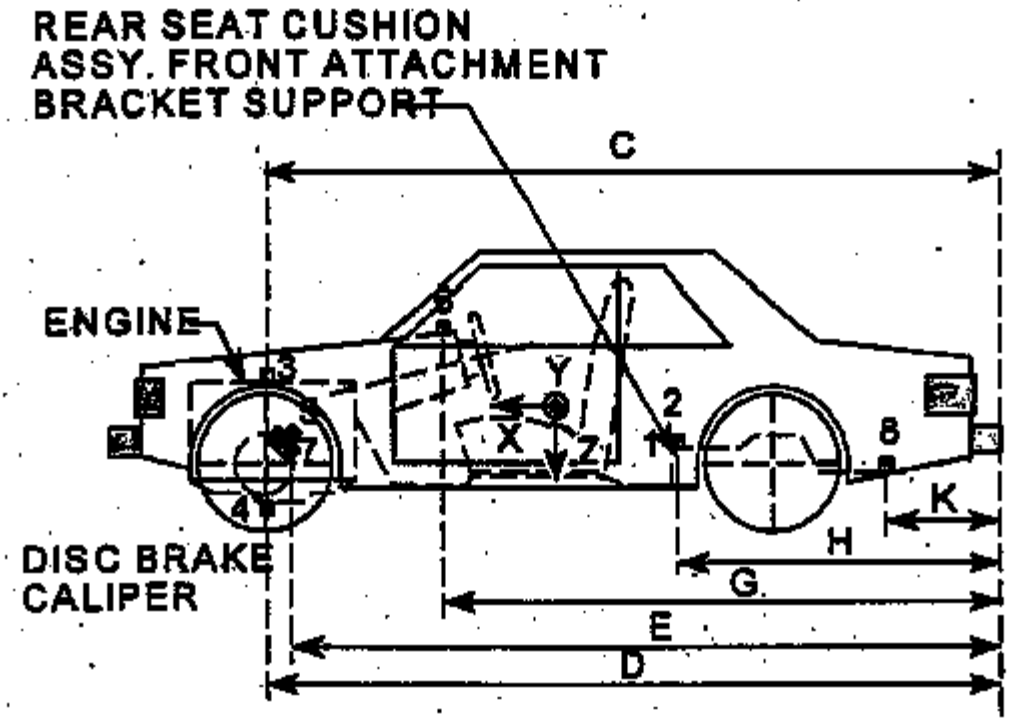
_X_ 7. Install an accelerometer on the left front brake caliper to record x-direction accelerations. Record the location on the following chart.

_X_ 8. Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the floor of the trunk. Install an accelerometer on the trunk floor at this intersection to record z-direction accelerations. Record the location on the following chart.

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



TOP VIEW



LEFT SIDE VIEW

DATA SHEET 27
VEHICLE ACCELEROMETER LOCATION MEASUREMENTS

DIMENSION	LENGTH (mm)
PRE-TEST VALUES	
A	813
B	813
C	4226
D	3851
E	3983 left; 3983 right
F	693 left; 688 right
G	3299
H	2039 left; 2685 right
K	330
POST-TEST VALUES	
A	813
B	813
C	4121
D	3850
E	3910 left; 3900 right
F	719 left; 720 right
G	3302
H	2019
K	307

REMARKS:

DATA SHEET 28
Photographic Targets

NHTSA No.: C30103 Test Date: 11/18/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

Impact Angle: 0° Offset percentage: 0 Belted Dummies: ___ Yes X No

Test Speed: X 32 to 40 km/h ___ 0 to 48 km/h ___ 0 to 56 km/h

Driver Dummy: X 5th female ___ 50th male Passenger Dummy: X 5th female ___ 50th male

1. FMVSS 208 vehicle targeting requirements (See Figures 28A and 28B)

X 1.1 Targets A1 and A2 are on flat rectangular panels.

X 1.2 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the front on the outboard sides of A1 and A2. The center of each circular target is 100 mm from the one next to it. Distance between targets 127 mm

X 1.3 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the back on the outboard sides of on A1 and A2. The center of each circular target is 100 mm from the one next to it. Distance between targets 127 mm

X 1.4 The distance between the first circular target at the front of A1 and A2 and the last circular target at the back of A1 and A2 is at least 915 mm.
Distance between the first and last circular targets 915 mm

X 1.5 Firmly fix target A1 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy.

X 1.6 Firmly fix target A2 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy.

X 1.7 Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the driver door. The centers of each circular target are at least 610 mm apart. Distance between targets 610 mm

X 1.8 Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the passenger door. The centers of each circular target are at least 610 mm apart. Distance between targets 610 mm

X 1.9 Place tape with squares having alternating colors on the top portion of the steering wheel.

___ 1.10 Chalk the bottom portion of the steering wheel.

X 1.11 Is this an offset test?
___ Yes, continue with this section
X No, go to 2.

___ 1.12 Measure the width of the vehicle. Vehicle width _____ mm

___ 1.13 Find the centerline of the vehicle. (½ of the vehicle width)

___ 1.14 Find the line parallel to the centerline of the vehicle and 0.1 x vehicle width from the centerline of the vehicle.

___ 1.15 Apply 25 mm wide tape with alternating black and yellow squares parallel to and on each side of the line found in 1.14. The edge of each tape shall be 50 mm from the line found in 1.14. The tape shall extend from the bottom of the bumper to the front edge of the windshield. (Figure 28D)

2. Barrier targeting

X 2.1 Fix two stationary targets D1 and D2 to the barrier as shown in the Figure 28A. One target is in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy. The other is in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy. One target over driver dummy

X 2.2 Targets D1 and D2 are on a rectangular panel. No D2 target

X 2.3 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted on the sides of the rectangular panel away from the longitudinal centerline of the vehicle. The center of each circular target is 100 mm from the one next to it.
Distance between circular targets on D1 127 mm
Distance between circular targets on D2 N/A mm

3. FMVSS 208 dummy targeting requirements

X 3.1 Place a circular target with black and yellow quadrants on both sides of the driver dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).

X 3.2 Place a circular target with black and yellow quadrants on both sides of the passenger dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).

X 3.3 Place a circular target with black and yellow quadrants on the outboard shoulder of the driver dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.

X 3.4 Place a circular target with black and yellow quadrants on the outboard shoulder of the passenger dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.

4. FMVSS 204 targeting requirements

X 4.1 Is an FMVSS 204 indicant test ordered on the "COTR Vehicle Work Order?"
___ Yes, continue with this form.
X No, this form is complete

___ 4.2 Resection panel (Figure 28C)

___ 4.2.1 The panel deviates no more than 6 mm from perfect flatness when suspended vertically.

___ 4.2.2 The 8 targets on the panel are circular targets at least 90 mm in diameter and with black and yellow quadrants.

___ 4.2.3 The center of each of the 4 outer targets are placed within 1 mm of the corners of a square measuring 914 mm on each side.

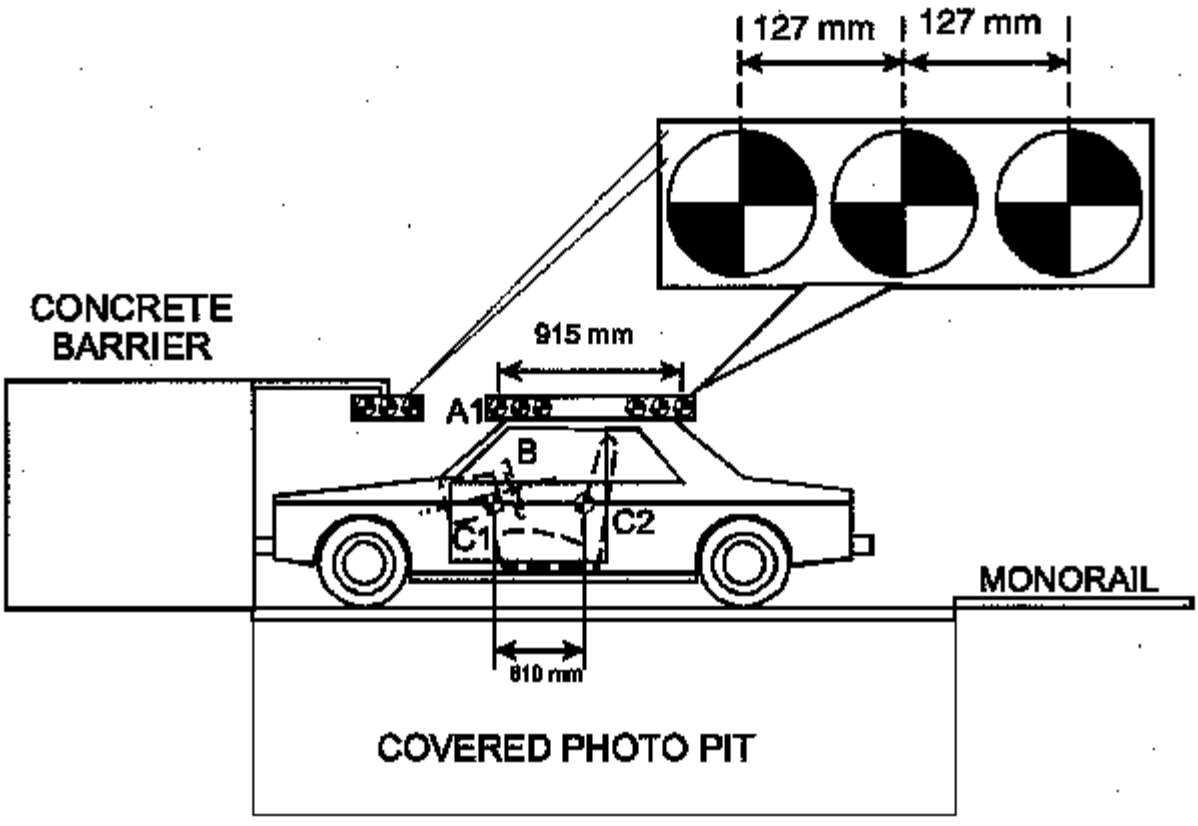
___ 4.2.4 Locate another square with 228 mm sides and with the center of this square coincident with the center of the 914 mm square.

___ 4.2.5 The center of the 4 inner targets are placed at the midpoints of each of the 228 mm sides.

___ 4.3 Place a circular target at least 90 mm in diameter and with black and yellow quadrants on a material (cardboard, metal, etc.) that can be taped to the top of the steering column.

___ 4.4 Tape the target from 4.3 to the top of the steering column in a manner that does not interfere with the movement of the steering column in a crash.

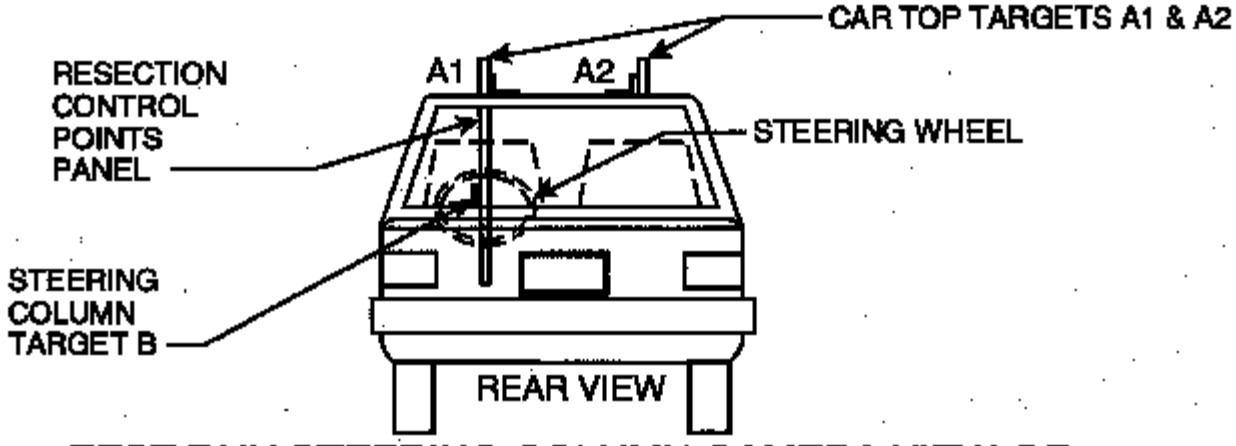
REFERENCE PHOTO TARGETS



LEFT SIDE VIEW

FIGURE 28A

RESECTION PANEL TARGETING ALIGNMENT



TEST RUN STEERING COLUMN CAMERA VIEW OF TYPICAL TIME ZERO VEHICLE POSITION

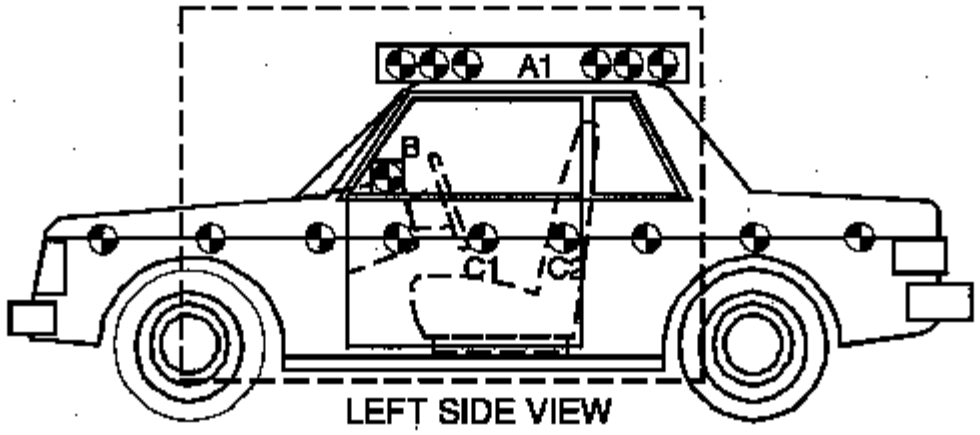
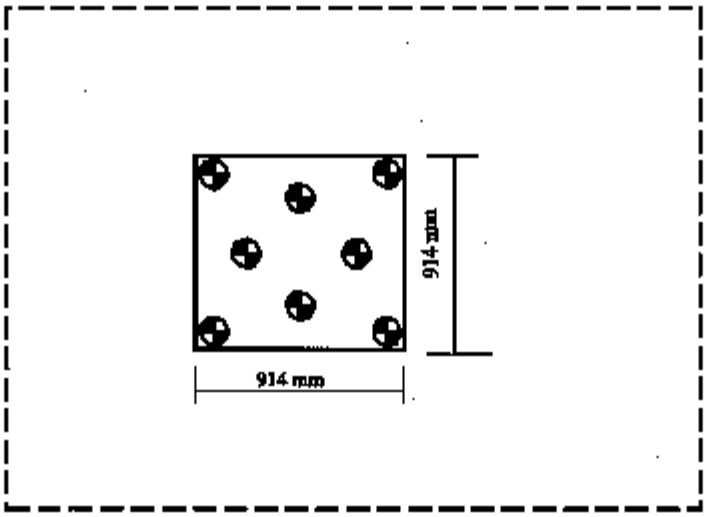


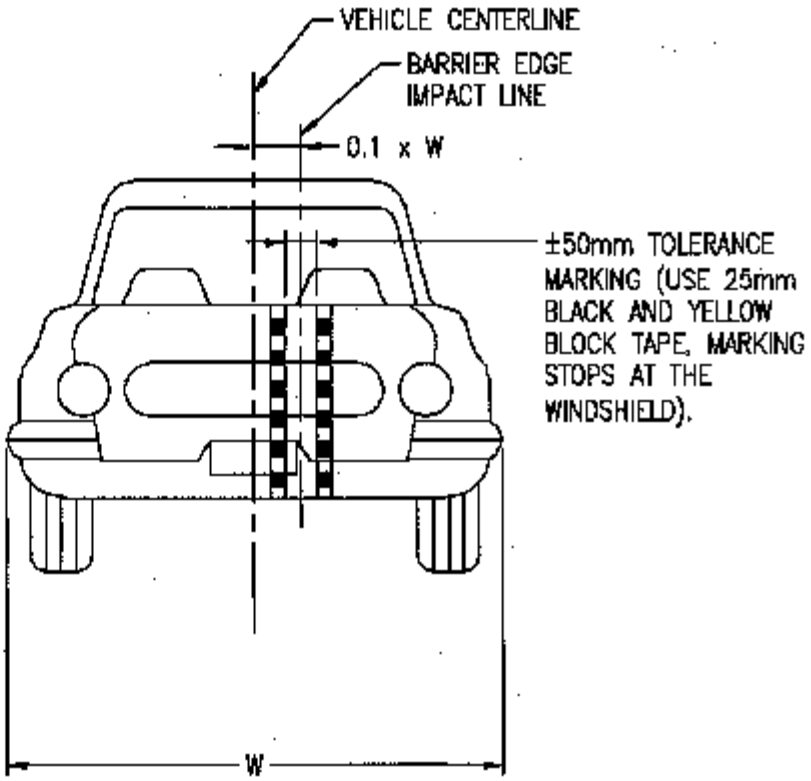
FIGURE 28B

PRE-RUN STEERING COLUMN HIGH SPEED CAMERA VIEW



LEFT SIDE VIEW

FIGURE 28C



OFFSET DEFORMABLE BARRIER
ADDITIONAL VEHICLE TARGETING

FIGURE 28D

DATA SHEET 29
CAMERA LOCATIONS

VEH. NHTSA No.: C30103 ; TEST DATE: 11/19/02 ; TIME: 1605

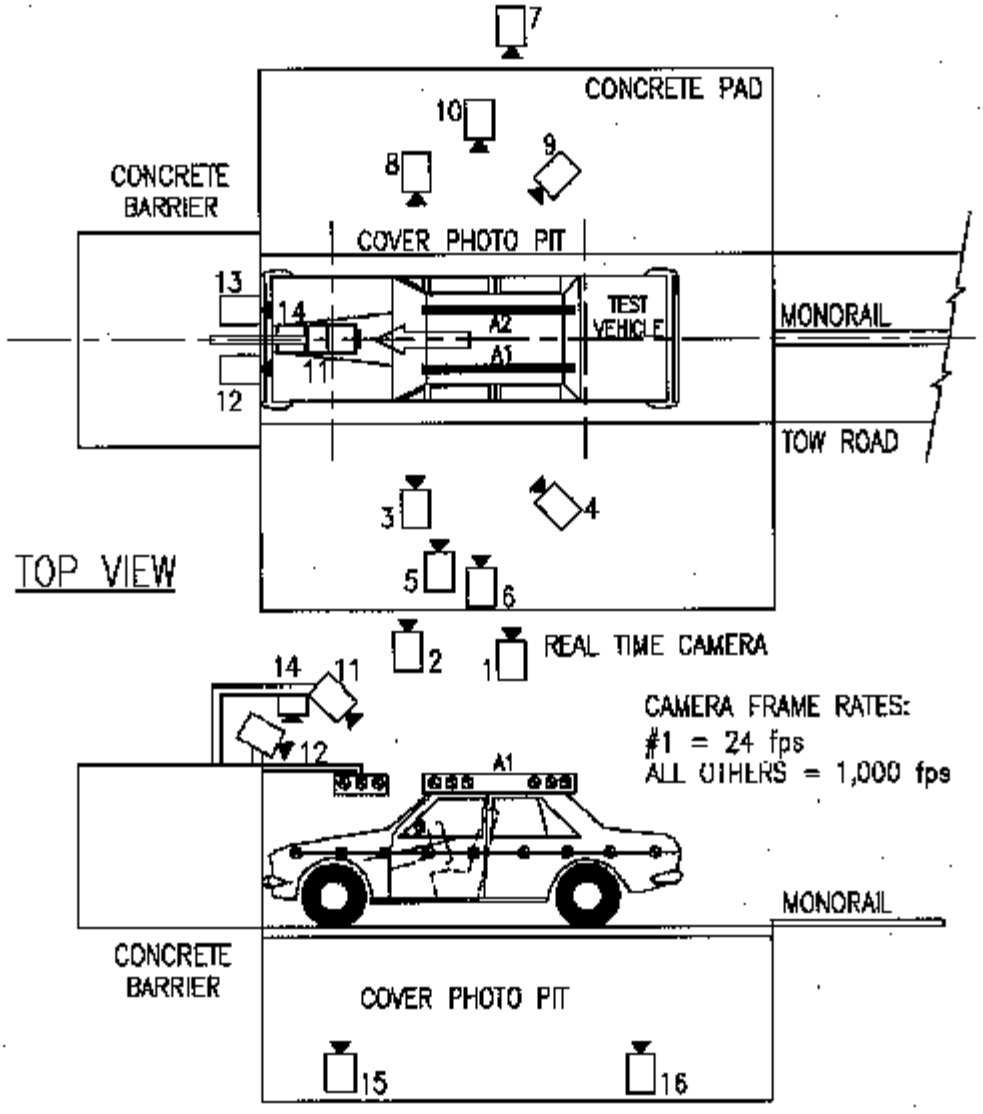
VEH. YEAR/MAKE/MODEL/BODY STYLE: 2003/Chevrolet/Tahoe/SUV

CAMERA NO.	VIEW	CAMERA POSITIONS (mm) *			ANGLE (deg.)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Left Side View							24
2	Left Side View (barrier face to front seat backs)	-946	-5760	-960	-1.0	5350	25	445
3	Left Side View (A-post)	-1230	-7660	-1380	0	7200	35	735
4	Left Side View (B-post aimed toward center of steering wheel)	-5330	-4970	-2134	-9.2	4320	25	500
5	Left Side View (B-post)	-1640	-7220	-1300	-3.5	7200	25	NA[2]
6	Left Side View (front door under camera 5)	-1600	-7310	-950	0	6820	25	595
7[3]	Right Side View (overall)	-2770	9060	-1300	-1	8480	13	1000
8	Right Side View (A-post)	-900	5850	-1300	0	5350	25	997
9	Right Side View (B-post)	-5210	5510	-1940	-7	4670	25	1000
10	Right Side View (front door)	-1300	7880	-1300	0	7370	25	1007
11[3]	Front View Windshield	470	0	-2500	-66	2150	8.5	1000
12[3]	Front View Driver	470	-270	-2500	-62	2200	17	1000
13[3]	Front View Passenger	560	230	-2500	-62	2180	17	1000
14[3]	Overhead Barrier Impact View	0	0	-5600	-90	NA[1]	13	1000
15	Pit Camera Engine View	-900	0	830	90	NA[1]	17	687
16	Pit Camera Fuel Tank View	-2650	130	1000	90	NA[1]	13	NA[2]

* +X - film plane forward (downstream) from barrier impact surface
+Y - film plane to right of monorail centerline from driver's perspective
+Z - film plane below ground level

[1] Not applicable
[2] Unable to determine speed, camera ran too slow to tome.
[3] Digital camera.

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET 30

DUMMY POSITIONING PROCEDURES FOR TEST DUMMY CONFORMING TO SUBPART O OF PART 572

Seating Procedure 5th Percentile Female Driver Dummy (Part 572, Subpart O) (S16.2- S16.3)

NHTSA No.: C30104 Test Date: 11/19/02

Laboratory: TRC Inc. Test Technician(s): J. Jenkins

Test Number: 021119-2

Seat Type: ____ Bench __X__ Bucket ____ Split Bench
(Check One)

1.0 Seat Positioning (S16.2.10)

__X__ 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment position. (S16.2.10.1)
____ N/A – No lumbar adjustment

__X__ 1.2 Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
__X__ N/A – No additional support adjustment

__X__ 1.3 If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
__X__ N/A – No independent fore-aft seat cushion adjustment

__X__ 1.4 If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
____ N/A – No independent seat cushion height adjustment.

__X__ 1.5 Put the seat in its full rearward position. (S16.2.10.3.1)
____ N/A - the seat does not have a fore-aft adjustment

__X__ 1.6 If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
____ N/A – No seat height adjustment

__X__ 1.7 Draw a horizontal line on the side of the seat cushion.

__X__ 1.8 Using only the controls which change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position rearward of the mid-point), and R for full rearward.
____ N/A - The seat does not have a fore-aft adjustment.

__X__ 1.9 Using only the controls which change the seat in the fore-aft direction, place the seat in the full forward position. (S16.2.10.3.2)
____ N/A - The seat does not have a fore-aft adjustment.

__X__ 1.10 If seat adjustments other than fore-aft are present and the line on the side of the seat cushion changes from the horizontal, use those adjustment to maintain the line as close as possible to the horizontal. (S16.2.10.3.2)
____ N/A – No adjustments
Angle of the line on side of the seat cushion in the full forward position. 0.9 degrees

X 1.11 If the seat height is adjustable, determine the maximum and minimum heights. Identify a reference point on the vehicle that does not move with respect to the seat. Identify this point as "S1". Mark a reference point on the seat. Identify this point as "S2". Locate the maximum height, the minimum height and the mid height with respect to the S1 reference point. If seat adjustments other than fore-aft are present and the line on the side of the seat cushion changes from the horizontal, use those adjustment to maintain the line as close as possible to the horizontal at all height positions. (S16.2.10.3.3)

X 1.12 Record the mid height position. (S16.2.10.3.3)

____ N/A – No seat height adjustment

Max. height from S1 109 mm

Min. height from S1 82 mm

Test height from S1 95 mm

Angle of line on seat cushion at test height. 0.9 degrees

X 1.13 Record the horizontal longitudinal distance between Point S1 and Point S2.

S1, S2 separation. 27 mm

2.0 Dummy Positioning

X 2.1. Is the seat a bucket seat? X Yes ____ No

If yes, go to 2.1.1 and skip 2.1.2. If no, go to 2.1.2 and skip 2.1.1.

2.1.1 Bucket seats:

Locate and mark a vertical plane through the longitudinal centerline of the seat. (S16.3.1.10) The longitudinal centerline of a bucket seat cushion is determined at the widest part of the seat cushion. Measure perpendicular to the longitudinal centerline of the vehicle.

Record the width of the seat cushion. 510 mm

Record the distance from the edge of the seat cushion to the vertical plane. 255 mm

2.1.2 Bench seats and split bench seats:

Mark a longitudinal vertical plane that coincides with the center of the steering wheel (S16.3.2.1.4)

X 2.2 If the vehicle has an adjustable accelerator pedal, place it in the full forward position. (S16.3.2.2.1)

____ N/A accelerator pedal not adjustable

X 2.3 With the seat in the position from step 1.11, move the seat to the full rearward position using controls that affect the fore and aft position. Do not use height or angle controls. (S16.3.2.1.1)

X 2.4 Fully recline the seat back. (S16.3.2.1.2)

____ N/A seat back not adjustable.

X 2.5 Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The calves should not be touching the seat cushion. (S16.3.2.1.2)

X 2.6 Position the dummy midsagittal plane vertical and coincident with the seating position centerline. (S16.3.2.1.3)

X 2.7 Hold down the dummy's thighs and push rearward on the upper torso to maximize the pelvic angle. (S16.3.2.1.6)

X 2.8 Set the angle between the legs and the thighs to 120 degrees.

X 2.9 Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches) Center the knee separation with respect to the seat centerline. (S16.3.2.1.6)

Record Knee Separation 160 mm

X 2.10 Push rearward on the dummy's knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first. (S16.3.2.1.6)

____ Pelvis contacted seat back.

X Calves contacted seat cushion.

X 2.11 Gently rock the upper torso +/- 5 degrees (approximately 51 mm (2 inches)) side to side three times to reduce the friction between the dummy and the seat. (S16.3.2.1.7)

X 2.12 If needed, extended the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S16.3.2.1.8)

X 2.13 Position the right foot until the foot is in line with a longitudinal vertical plane passing through the center of the accelerator pedal. Maintain the leg and thigh in a vertical plane. (S16.3.2.1.8)

X 2.14 Rotate the left leg and thigh laterally to equalize the distance between each knee and the seating position centerline. (S16.3.2.1.8)

X 2.15 Using only the controls that move the seat fore and aft, attempt to return the seat to the full forward position. The right foot may contact and depress the accelerator and/or change the angle of the foot with respect to the leg. (S16.3.2.1.8)

X Full forward position achieved. Proceed to step 2.20.

____ Full forward not achieved because of foot interference. Proceed to step 2.17

____ Full forward not achieved because of steering wheel contact.

X 2.16 If the dummy's legs contact the steering wheel, move the steering wheel up the minimum amount required to avoid contact. If the steering wheel is not adjustable separate the knees the minimum required to avoid contact. (S16.3.2.1.8)

X N/A- there was no leg contact

____ Steering wheel repositioned

____ Knees separated

X 2.17 If the left foot interferes with the clutch or brake pedals, rotate the left foot about the leg to provide clearance. If this is not sufficient, rotate the left thigh outboard at the hip the minimum amount required for clearance. (S16.3.2.1.8)

X N/A No foot interference with pedals.

____ Foot adjusted to provided clearance.

____ Foot and Thigh adjusted to provide clearance.

X 2.18 Continue to move the seat forward until the full forward position is reached, or until the dummy contacts the interior. If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position which does not cause dummy contact. (S16.3.2.1.8)

X Full Forward reached

____ Dummy contact. Clearance set at maximum of 5mm

Measured Clearance _____

____ Dummy Contact. Seat set at nearest detent position.

Seat position ____ detent positions rearward of full forward

(full forward is position zero)

X 2.19 If the steering wheel was repositioned in step 2.16, return the steering wheel to the original position. If the steering wheel contacts the dummy before reaching the original position, position the wheel until a maximum clearance of 5mm (.2 inches) is achieved, or the steering wheel is in the closest detent position that does not cause dummy contact.

X N/A Steering wheel was not repositioned.

____ Original position achieved.

____ Dummy contact. Clearance set at maximum of 5mm

Measured Clearance _____

____ Dummy Contact. Steering wheel set at nearest detent position.

Steering wheel position ____ detent positions upward of original position.

(Original position is position zero)

X 2.20 If the seat back is adjustable, rotate the seat back forward while holding the thighs in place. Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level +/- 0.5 degrees. If head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle.

X Head Level Achieved. (Check all that apply)

X Head leveled using the adjustable seat back

____ Head leveled using the neck bracket.

Head Angle 0 degrees

____ Head Level NOT Achieved. (Check all that apply)

____ Head leveled using the adjustable seat back

____ Head leveled using the neck bracket.

Head Angle _____ degrees

X 2.21 Verify the pelvis is not interfering with the seat bight.

X 2.22 Verify the dummy abdomen is properly installed.

X 2.23 If the dummy torso contacts the steering wheel while performing step 2.20, reposition the steering wheel in the following order to eliminate contact.

X N/A No dummy torso contact with the steering wheel.

____ 2.23.1 Adjust telescoping mechanism.

____ N/A No telescoping adjustment.

____ Adjustment performed (fill in appropriate change)

Steering wheel moved ____ detent positions in the forward direction.

Steering wheel moved ____ mm in the forward direction.

____ 2.23.2 Adjust tilt mechanism.

____ N/A No tilt adjustment.

____ No adjustment performed.

____ Adjustment performed.

Steering wheel moved ____ detent positions Upward/Downward.
(circle one)

Steering wheel moved ____ degrees Upward/Downward

____ 2.23.3 Adjust Seat in the aft direction.

____ No Adjustment performed.

____ Seat moved aft ____ mm from original position.

____ Seat moved aft ____ detent positions from the original position.

X 2.24 Measure and set the pelvic angle using the pelvic angle gage TE-2504. The pelvic angle should be 20.0 degrees +/- 2.5 degrees. If the pelvic angle cannot be set to 20 degrees, minimize the angular difference.

____ Pelvic angle set to 20.0 degrees +/- 2.5 degrees.

X Pelvic angle of 20.0 degrees not achieved, the angular difference was minimized.

X Record the pelvic angle. 25.9 degrees

X 2.25 Check the dummy for contact with interior after completing adjustments.

X No contact.

____ Dummy in contact with interior.

____ Seat moved Aft ____ mm from the previous position.

____ Seat moved Aft ____ detent positions from the previous position.

X 2.26 Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward.

X N/A Seat already at full forward position.

____ Clearance unchanged. No adjustments required.

____ Additional clearance available

____ Seat moved Forward ____ mm from the previous position.

____ Seat moved Forward ____ detent positions from the previous position.

X 2.27 Driver's foot positioning, right foot

X 2.27.1 Place the foot perpendicular to the leg and determine if the right heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 2.28 otherwise, proceed to step 2.29.

X 2.28 Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 2.28.6 shall be completed in all cases.

X 2.28.1 With the rear of the heel contacting the floor pan, move the foot forward until pedal contact occurs or the foot is at the full forward position.

____ 2.28.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position.

____ 2.28.3 Extend the leg, allowing the heel to lose contact with the floor until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

____ 2.28.4 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

____ 2.28.5 Align the center line of the foot in the same horizontal plane as the centerline of the accelerator pedal. Place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

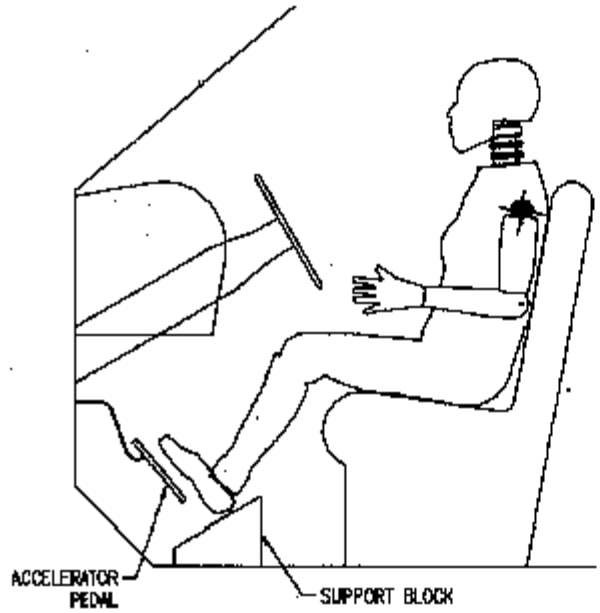
__X__ 2.28.6 Record foot position

__X__ Pedal Contact achieved. Contact occurred at step __2.28.1__.

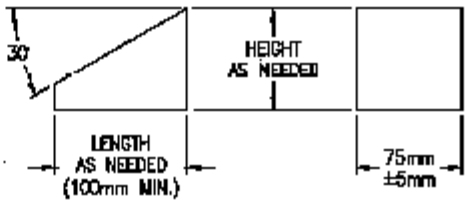
__X__ Heel contacts floor pan

____ Heel set ____ mm from floor pan.

____ Pedal Contact not achieved. Heel set ____ mm from the floor pan.



5th PERCENTILE FEMALE RIGHT FOOT SUPPORT BLOCK



SUPPORT BLOCK DETAIL

FIGURE G1

___ 2.29 Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 2.29.5 shall be completed in all cases.

____ 2.29.1 Extend the leg until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

____ 2.29.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

____ 2.29.3 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

____ 2.29.4 Align the centerline of the foot in the same horizontal plane as the centerline of the accelerator pedal. Place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

____ 2.29.5 Record foot position

____ Pedal Contact achieved. Contact occurred at step _____.
____ Heel set _____ mm from floor pan.

____ Pedal Contact not achieved. Heel set _____ mm from the floor pan.

X 2.30 Driver's foot positioning, left foot.

X 2.30.1 Place the foot perpendicular to the leg and determine if the left heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 2.30.2 otherwise, position the leg as perpendicular to the thigh as possible with the foot parallel to the floor pan.

X 2.30.2 Place the left foot on the toe board with the heel resting on the floor pan as close to the intersection of the floor pan and the toe board as possible. Adjust the angle of the foot if necessary to contact the toe board. If the foot will not contact the toe board, set the foot perpendicular to the leg, and set the heel on the floor pan as far forward as possible. Do not place the foot on the wheel well projection or footrest. If the pedals interfere with the placement of the foot, reposition the foot by rotating the foot about the leg, or rotate the leg outboard about the hip if necessary.

____ Foot rotated about the leg
____ Foot rotated about the leg, and the leg rotated about the hip.
X No pedal interference

X 2.30.3 Record foot position.

____ Heel does not contact floor pan.
____ Foot placed on toe board.
X Foot placed on floor pan.

X 2.31 Driver arm/hand positioning.

X 2.31.1 Place the dummy's upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.2.3.1)

X 2.31.2 Place the palms of the dummy in contact with the outer part of the steering wheel rim at its horizontal centerline with the thumbs over the steering wheel rim. (S16.3.2.3.2)

X 2.31.3 If it is not possible to position the thumbs inside the steering wheel rim at its horizontal centerline, then position them above and as close to the horizontal centerline of the steering wheel rim as possible. (S16.3.2.3.3)

X 2.31.4 Lightly tape the hands to the steering wheel rim so that if the hand of the test dummy is pushed upward by a force of not less than 9 N (2 lb) and not more than 22 N (5 lb), the tape releases the hand from the steering wheel rim. S16.3.2.3.4

X 2.32 Adjustable head restraints

____ 2.32.1 If the head restraint has an automatic adjustment, leave it where the system positions the restraint after the dummy is placed in the seat. (S16.3.4.1)

X N/A Vehicle does not contain automatic head restraints.

X 2.32.2 Adjust each head restraint to its lowest position. (S16.3.4.2)

X 2.32.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate a horizontal plane through the midpoint of this distance. Adjust each head restraint vertically so that this horizontal plane is aligned with the center of gravity (CG) of the dummy head. (S16.3.4.3)

Vertical height of head restraint 200 mm
Mid-point height 100 mm

X 2.32.4 If the above position is not attainable, move the vertical center of the head restraint to the closest detent below the center of the head CG. (S16.3.4.3)

X N/A midpoint position attained in previous step
____ Headrest set at nearest detent below the head CG

____ 2.32.5 If the head restraint has a fore and aft adjustment, place the restraint in the forwardmost position or until contact with the head is made, whichever occurs first. (S16.3.4.4)

___ 2.33 Driver and passenger manual belt adjustment (for tests conducted with a belted dummy). S16.3.5

____ 2.33.1 If an adjustable seat belt D-ring anchorage exists, place it in the manufacturer's design position for a 5th percentile adult female. This information will be supplied by the COTR.

Manufacturer's specified position _____

_____

Actual Position _____

_____

____ 2.33.2 Place the Type 2 manual belt around the test dummy and fasten the latch. (S16.3.5.2)

____ 2.33.3 Ensure that the dummy's head remains as level as possible. (S16.3.5.3)

____ 2.33.4 Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 9 N (2 lbf) to 18 N (4 lbf) tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S16.3.5.4)

Seating Procedure 5th Percentile Female Passenger Dummy
(Part 572, Subpart O) (S16.2- S16.3)

NHTSA No.: C30104 Test Date: 11/19/02

Laboratory: TRC Inc. Test Technician(s): J. Jenkins

Test Number: 021119-2

Seat Type: ____ Bench _X_ Bucket ____ Split Bench
(Check One)

1.0 Seat Positioning (S16.2.10)

_X_ 1.1. Position the seat's adjustable lumber supports so that the lumbar supports are in the lowest, retracted or deflated adjustment position. (S16.2.10.1)
_____ N/A – No lumbar adjustment

_X_ 1.2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
_____ N/A – No additional support adjustment

_X_ 1.3. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
_____ N/A – No independent fore-aft seat cushion adjustment

_X_ 1.4 If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
_____ N/A – No independent seat cushion height adjustment.

_X_ 1.5 If the seat is a bench seat, use the position determined for the driver's side and proceed to Section 2.0.
_____ N/A- Seat is not a bench seat.

_X_ 1.6 Put the seat in its full rearward position. (S16.2.10.3.1)
_____ N/A - the seat does not have a fore-aft adjustment

_X_ 1.7 If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
_____ N/A – No seat height adjustment

_X_ 1.8 Draw a horizontal line on the side of the seat cushion.

_X_ 1.9 Using only the controls which change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position rearward of the mid-point), and R for full rearward.
_____ N/A - The seat does not have a fore-aft adjustment.

_X_ 1.10 Using only the controls which change the seat in the fore-aft direction, place the seat in the full forward position. (S16.2.10.3.2)
_____ N/A - The seat does not have a fore-aft adjustment.

_X_ 1.11 If seat adjustments other than fore-aft are present and the line on the side of the seat cushion changes from the horizontal, use those adjustment to maintain the line as close as possible to the horizontal. (S16.2.10.3.2)
_____ N/A – No adjustments
Angle of the line on side of the seat cushion in the full forward position. _____ degrees

_X_ 1.12 If the seat height is adjustable, determine the maximum and minimum heights. Identify a reference point on the vehicle that does not move with respect to the seat. Identify this point as "S1". Mark a reference point on the seat. Identify this point as "S2". Locate the maximum height, the minimum height and the mid height with respect to the S1 reference point. If seat adjustments other than fore-aft are present and the line on the side of the seat cushion changes from the horizontal, use those adjustment to maintain the line as close as possible to the horizontal at all height positions. (S16.2.10.3.3)

X 1.13 Record the mid height position of S2. (S16.2.10.3.3)

X N/A – No seat height adjustment

Max. height from S1 52 mm

Min. height from S1 24 mm

Test height from S1 38 mm

Angle of line on seat cushion at test height. 0 degrees

____ 1.14 Record the horizontal longitudinal distance between Point S1 and Point S2.

S1, S2 separation. 28 mm

2.0 Dummy Positioning

NOTE: Certain steps may need to be performed simultaneously with the positioning of the driver side dummy.

X 2.1. Is the seat a bucket seat? X Yes ____ No

If yes, go to 2.1.1 and skip 2.1.2. If no, go to 2.1.2 and skip 2.1.1.

2.1.1 Bucket seats:

Locate and mark a vertical plane through the longitudinal centerline of the seat. (S16.3.1.10) The longitudinal centerline of a bucket seat cushion is determined at the widest part of the seat cushion. Measure perpendicular to the longitudinal centerline of the vehicle.

Record the width of the seat cushion. 510 mm

Record the distance from the edge of the seat cushion to the vertical plane. 255 mm

2.1.2 Bench seats and split bench seats:

Mark a longitudinal vertical plane that is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel (S16.3.3.1.4)

X 2.3 With the seat in the position from step 1.5 or 1.13, move the seat to the full rearward position using controls that affect the fore and aft position. Do not use height or angle controls. (S16.3.3.1.1)

X 2.4 Fully recline the seat back. (S16.3.3.1.2)

____ N/A seat back not adjustable.

X 2.5 Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The calves should not be touching the seat cushion. (S16.3.3.1.2)

X 2.6 Position the dummy midsagittal plane vertical and coincident with the seating position centerline. (S16.3.3.1.3 or S16.3.3.1.4)

X 2.7 Hold down the dummy's thighs and push rearward on the upper torso to maximize the pelvic angle. (S16.3.3.1.5)

X 2.8 Set the angle between the legs and the thighs to 120 degrees. (S16.3.3.1.6)

X 2.9 Set the transverse distance between the centers of the front of the knees at 160 to 170 mm (6.3 to 6.7 inches). Center the knee separation with respect to the seat centerline. (S16.3.3.1.6)

Record Knee Separation 160 mm

X 2.10 Push rearward on the dummy's knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first. (S16.3.3.1.6)

____ Pelvis contacted seat back.

X Calves contacted seat cushion.

X 2.11 Gently rock the upper torso +/- 5 degrees (approximately 51 mm (2 inches)) side to side three times to reduce the friction between the dummy and the seat. (S16.3.3.1.7)

X 2.12 If needed, extended the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S16.3.3.1.8)

X 2.13 If the seat is a bench seat perform the driver dummy setup first and perform only the steps that do not affect the seat position or seat back angle of the driver as indicated. (S16.2.10.3)

X 2.14 Using only the controls that move the seat fore and aft, move the seat forward until the full forward position is reached, or until the dummy contacts the interior. If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position which does not cause dummy contact. (S16.3.3.1.8)

____ N/A Bench Seat

X Full Forward reached

____ Dummy contact. Clearance set at maximum of 5mm

Measured Clearance _____ mm

____ Dummy Contact. Seat set at nearest detent position.

Seat position ____ detent positions rearward of full forward

(full forward is position zero)

X 2.15 If the seat back is adjustable, rotate the seat back forward while holding the thighs in place. Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level +/- 0.5 degrees. If head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.3.1.9 and S16.3.3.1.10) (Check All That Apply)

____ Seat back not adjustable

____ Seat back not independent of driver side seat back

X Head Level Achieved. (Check all that apply)

X Head leveled using the adjustable seat back

____ Head leveled using the neck bracket.

Head Angle _____ degrees

____ Head Level NOT Achieved. (Check all that apply)

____ Head leveled using the adjustable seat back

____ Head leveled using the neck bracket.

Head Angle _____ degrees

X 2.16 Verify the pelvis is not interfering with the seat bight. (S16.3.3.1.9)

X 2.17 Verify the dummy abdomen is properly installed. (S16.3.3.1.9)

X 2.18 Measure and set the pelvic angle using the pelvic angle gage TE-2504. The pelvic angle should be 20.0 degrees +/- 2.5 degrees. If the pelvic angle cannot be set to 20 degrees, minimize the angular difference. (S16.3.3.1.11)

X Pelvic angle set to 20.0 degrees +/- 2.5 degrees.

____ Pelvic angle of 20.0 degrees not achieved, the angular difference was minimized.

X Record the pelvic angle. 21.7 degrees

X 2.19 Verify the transverse instrument platform of the dummy head is level +/- 0.5 degrees. Use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.3.1.9, S16.3.3.1.10, and S16.3.3.1.11)

X Head Level Achieved

Head Angle Measurement not recorded degrees

____ Head Level NOT Achieved.

Head Angle _____ degrees

X 2.20 Check the dummy for contact with interior after completing adjustments. (S16.3.3.1.12)

____ N/A Bench Seat

X No contact.

____ Dummy in contact with interior.

____ Seat moved aft ____ mm from previous position.

____ Seat moved aft ____ detent positions from the previous position.

X 2.21 Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward. (S16.3.3.1.12)

____ N/A Bench Seat

X N/A Seat already at full forward position.

____ Clearance unchanged. No adjustments required.

____ Additional clearance available

____ Seat moved Forward ____ mm from the previous position.

____ Seat moved Forward ____ detent positions from the previous position.

____ Seat moved Forward, Full Forward position reached.

X 2.22 Passenger foot positioning. (Indicate final position achieved) (S16.3.3.2)

____ 2.22.1 Place feet flat on the toe board. OR

X 2.22.2 If the feet cannot be placed flat on the toe board, set the feet perpendicular to the lower leg, and rest the heel as far forward on the floor pan as possible. OR

____ 2.22.3 If the heels do not touch the floor pan, set the legs to vertical and set the feet parallel to the floor pan

X 2.23 Passenger arm/hand positioning. (S16.3.3.3)

X 2.23.1 Place the dummy's upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.2.3.1)

X 2.23.2 Place the palms of the dummy in contact with the outer part of the thighs (S16.3.3.3.2)

X 2.23.3 Place the little fingers in contact with the seat cushion. (S16.3.3.3.3)

X 2.24 Adjustable head restraints

____ 2.24.1 If the head restraint has an automatic adjustment, leave it where the system positions the restraint after the dummy is placed in the seat. (S16.3.4.1)

X N/A Vehicle does not contain automatic head restraints.

X 2.24.2 Adjust the head restraint to its lowest position. (S16.3.4.2)

X 2.24.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate a horizontal plane through the midpoint of this distance. Adjust the head restraint vertically so that this horizontal plane is aligned with the center of gravity (CG) of the dummy head. (S16.3.4.3)

Vertical height of head restraint 190 mm

Mid-point height 95 mm

X 2.24.4 If the above position is not attainable, move the vertical center of the head restraint to the closest detent below the center of the head CG. (S16.3.4.3)

X N/A midpoint position attained in previous step

____ Head rest set at nearest detent below the head CG

X 2.24.5 If the head restraint has a fore and aft adjustment, place the restraint in the forwardmost position or until contact with the head is made, whichever occurs first. (S16.3.4.4) No adjustment

___ 2.25 Driver and passenger manual belt adjustment (for tests conducted with a belted dummy) S16.3.5

____ 2.25.1 If an adjustable seat belt D-ring anchorage exists, place it in the manufacturer's design position for a 5th percentile adult female. This information will be supplied by the COTR.

Manufacturer's specified position _____

_____

Actual Position _____

_____

____ 2.25.2 Place the Type 2 manual belt around the test dummy and fasten the latch. (S16.3.5.2)

____ 2.25.3 Ensure that the dummy's head remains as level as possible. (S16.3.5.3)

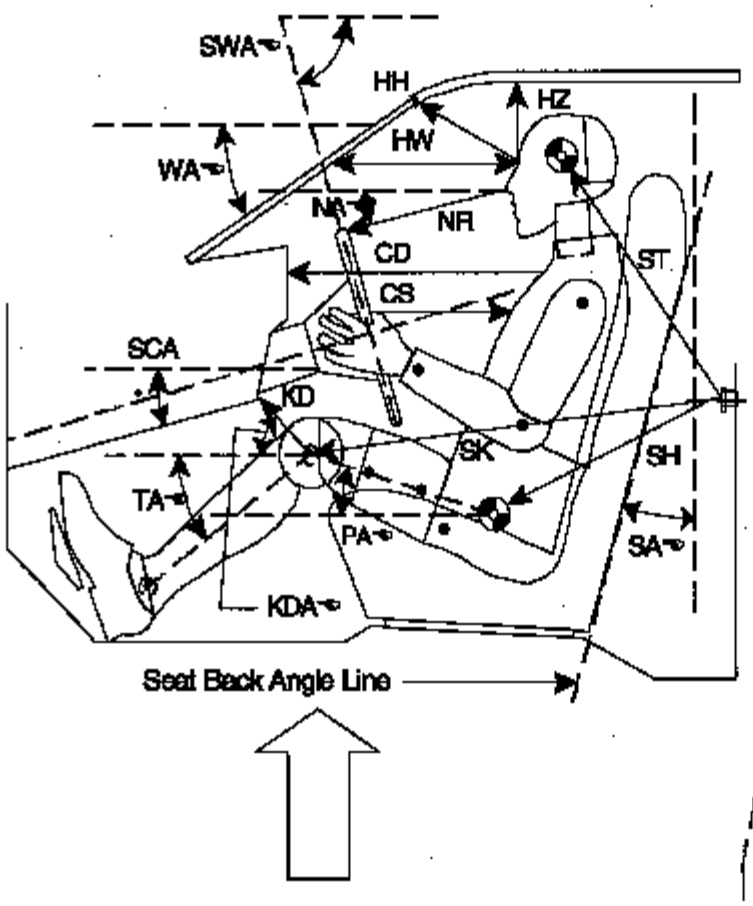
____ 2.25.4 Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 9 N (2 lbf) to 18 N (4 lbf) tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S16.3.5.4)

DATA SHEET 31

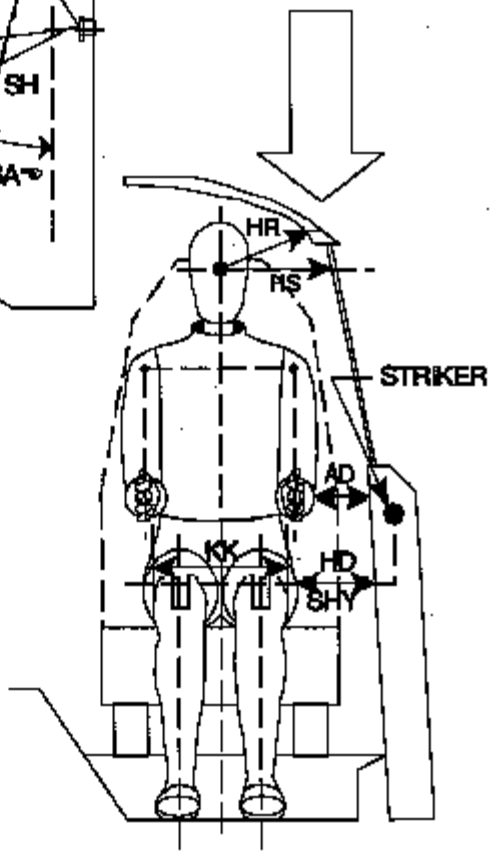
DUMMY POSITIONING MEASUREMENTS

	DRIVER (Serial No. 426)	PASSENGER (Serial No. 421)
WA°	40°	
SWA°	69.0°	NA
SCA°	21.0°	NA
SA°	16.7°	16.5°
HZ	307	290
HH	450	428
HW	702	646
HR	320	399
NR	320 ANGLE -7.9°	NA
CD	482	390
CS	229	NA
RA	98	NA
KDL	119 ANGLE 57.1°	98
KDR	112	95 ANGLE 60.3°
PA°	25.6°	22.1°
TA°	54.1°	57.0°
KK	235	160
ST	611 ANGLE -55.5°	630 ANGLE -54.4°
SK	794 ANGLE -1.0°	803 ANGLE -0.4°
SH	480 ANGLE 8.6°	473 ANGLE 5.3°
SHY	293	295
HS	300	300
HD	209	191
AD	184	213

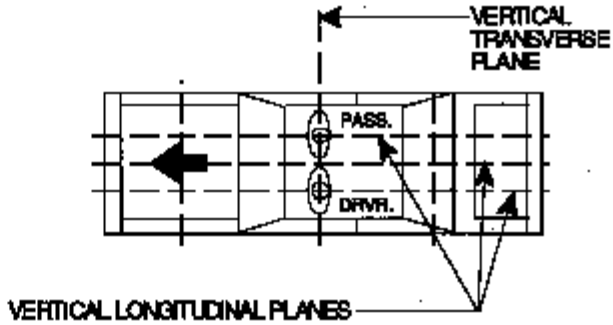
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



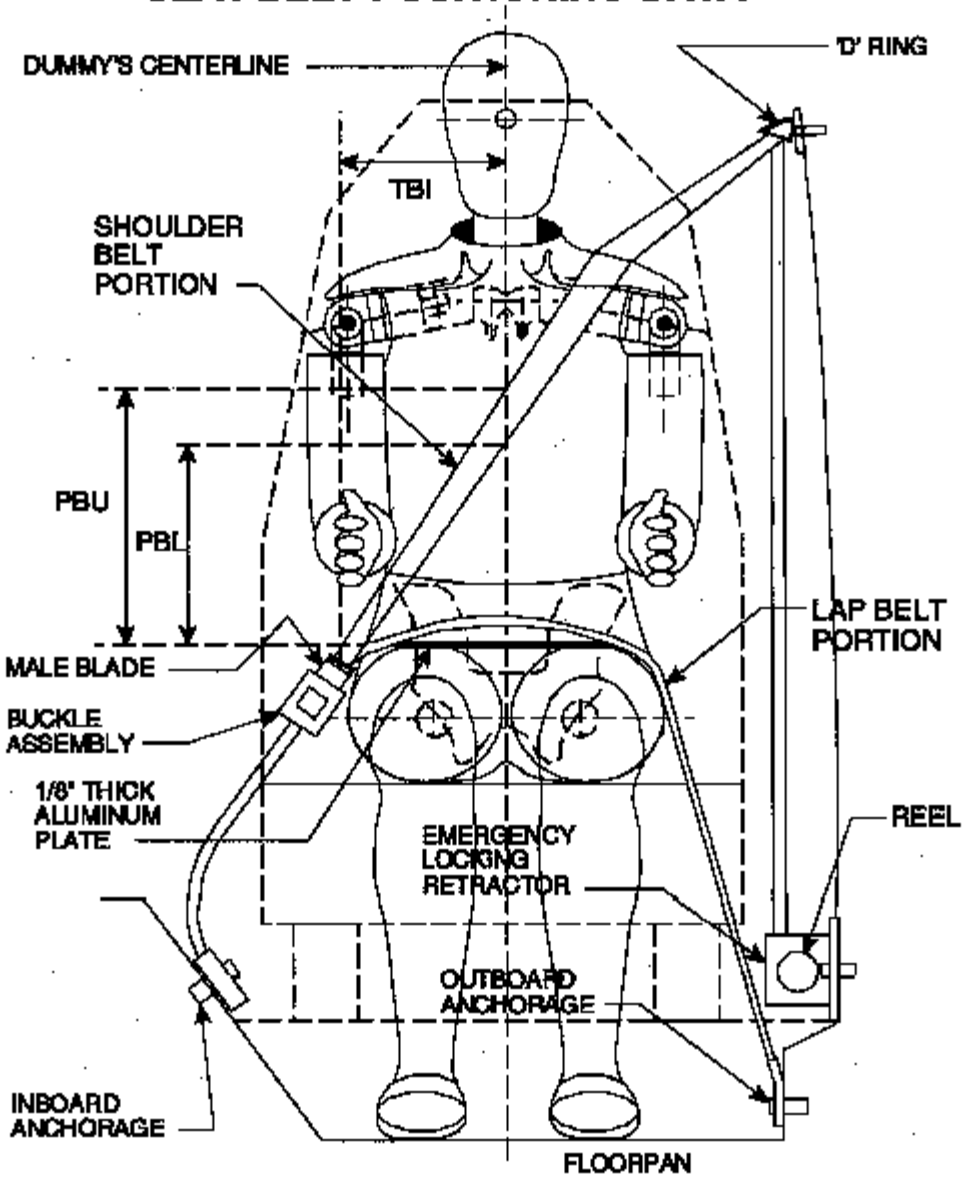
AD - Arm to Door
HD - H-Point to Door
HR - Head to Side Header
HS - Head to Side Window
KK - Knee to Knee
SHY- Striker to H-Point (Y Direction)



CD - Chest to Dash
CS - Steering Wheel to Chest
HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
KDA- Knee to Dash Angle
KDL- Left Knee to Dash
KDR- Right Knee to Dash
NA - Nose to Rim Angle
NR - Nose to Rim
PA - Pelvic Angle
RA - Rim to Abdomen
SA - Seat Back Angle
SCA- Steering Column Angle
SH - Striker to H-Point
SK - Striker to Knee
ST - Striker to Head
SWA- Steering Wheel Angle
TA - Tibial Angle
WA - Windshield Angle



SEAT BELT POSITIONING DATA



FRONT VIEW OF DUMMY

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. 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 photograph.

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 photograph.

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

* Measurement used in Data Tape Reference Guide

[1] Only outboard measurement is referenced in Data Tape Reference Guide

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 photograph.

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 that allows a level measurement. Use a level. See photograph.

* 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 photograph.

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.

PA — Pelvic 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.

* Measurement used in Data Tape Reference Guide
[1] Only outboard measurement is referenced in Data Tape Reference Guide

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 photograph.

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.

DATA SHEET 32
CRASH TEST

NHTSA No.: C30103 Test Date: 11/19/02

Laboratory: TRC Inc. Test Technician(s): J. Jenkins

Impact Angle: 0° Belted Dummies: ____ Yes X No

Test Speed: X 32 to 40 km/h ____ 0 to 48 km/h ____ 0 to 56 km/h

Driver Dummy: X 5th female ____ 50th male Passenger Dummy: X 5th female ____ 50th male

X 1. Vehicle underbody painted
X 2. The speed measuring devices are in place and functioning.
X 3. The speed measuring devices are 1.5 m from the barrier (spec. 1.5m) and 30 cm from the barrier (spec. is 30 cm)
X 4. Convertible top is in the closed position.
X N/A – Not a convertible
X 5. Instrumentation and wires are placed so the motion of the dummies during impact is not affected.
X 6. Tires inflated to pressure on tire placard or if it does not have a tire placard because it is not a passenger car, then inflated to the tire pressure specified in the owner information.
240 kPa front left tire 240 kPa specified on tire placard or in owner information
240 kPa front right tire 240 kPa specified on tire placard or in owner information
240 kPa rear left tire 240 kPa specified on tire placard or in owner information
240 kPa rear right tire 240 kPa specified on tire placard or in owner information
X 7. Time zero markers and switches in-place.
X 8. Pre test zero and shunt calibration adjustments performed and recorded
X 9. Dummy temperature meets requirements of section 12.2 of the test procedure.
X 10. Vehicle hood closed and latched
X 11. Transmission placed in neutral
X 12. Parking brake off
X 13. Ignition in the ON position
X 14. Doors closed and latched but not locked.
X 15. Posttest zero and shunt calibration checks performed and recorded
X 16. Actual test speed 39.2 km/h
X 17. Vehicle rebound from the barrier 49.5 cm
X 18. Describe whether the doors open after the test and what method is used to open the doors.
Left front door Easy
Right front door Easy
Left rear door Easy
Right rear door Easy
X 19. Describe the contact points of the dummy with the interior of the vehicle.
Driver dummy Head contacted airbag and seat back at the point where the shoulder belt comes out of the seat. Chest contacted airbag. Abdomen contacted airbag and steering wheel. Both knees contacted knee bolster.
Passenger dummy Head contacted airbag and head restraint. Chest and abdomen contacted airbag. Both knees contacted the glove box.

DATA SHEET 34
ACCIDENT INVESTIGATION MEASUREMENTS

NHTSA No.: C30103 Test Date: 11/19/02

Laboratory: TRC Inc. Test Technician(s): J. Jenkins

Impact Angle: 0° Belted Dummies: ____ Yes X No

Test Speed: X 32 to 40 km/h ____ 0 to 48 km/h ____ 0 to 56 km/h

Driver Dummy: X 5th female ___ 50th male Passenger Dummy: X 5th female ___ 50th male

Vehicle Year/Make/Model/Body Style: 2003/Chevrolet/Tahoe/MPV

VIN: 1GNEK13ZX3R106320

Wheelbase: 2945 ; Build Date: 08/02

Veh. Size Category: SUV ; Test Weight: 2713.4

Front Overhang: 925 ; Overall Width: 1990

Veh. Impact Speed: 39.2 ; Vel. Change[1]: 44.7 km/h

Collision Deformation Classification (CDC) Code: 12FDEW2

[1] From integration of right rear seat crossmember X-axis accelerometer.

Impact Mode: 0° Front

Crush Depth Dimensions:

C1 = 256 mm

C2 = 379 mm

C3 = 452 mm

C4 = 451 mm

C5 = 400 mm

C6 = 349 mm

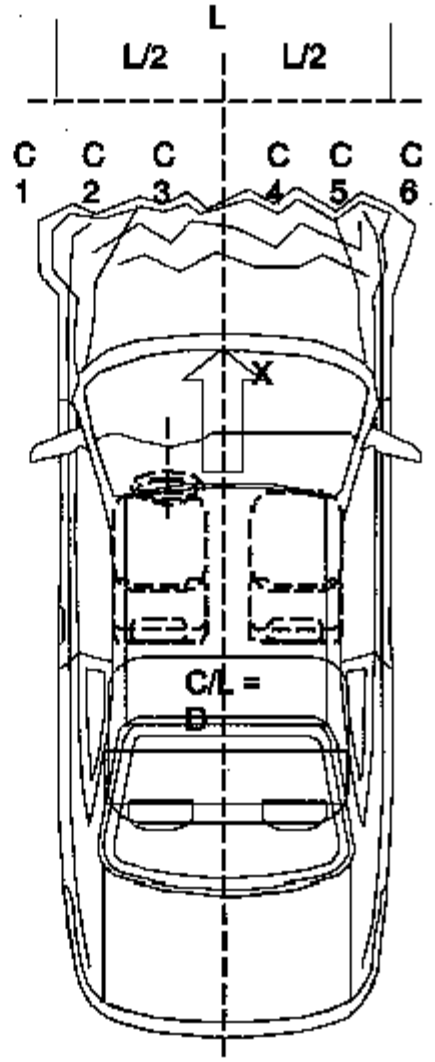
Midpoint of Damage: D= 0 mm
(Left of Vehicle Longitudinal Centerline)

Length of Damage Region:

L = 1762 mm

REMARKS:

Numbered from left to right of vehicle.



DATA SHEET 35
WINDSHIELD MOUNTING (FMVSS 212)

NHTSA No.: C30103 Test Date: 11/19/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides

Impact Angle: 0° Belted Dummies: ___ Yes X No

Test Speed: X 32 to 40 km/h ___ 0 to 48 km/h ___ 0 to 56 km/h

Driver Dummy: X 5th female ___ 50th male Passenger Dummy: X 5th female ___ 50th male

Most vehicle windshields are either bonded in place and covered with chrome or plastic strips or they are held to the body by a rubber retainer. It is difficult to determine the exact periphery of the windshield because the glazing edge is hidden from view. The test engineer will measure the perimeter inside the retainer or molding at several locations. After the impact test the covering over the glazing edge may be removed for exact measurement of the windshield periphery. Do not disturb the molding or retainer in the event of a noncompliance.

X 1. Describe from visual inspection how the windshield is mounted and describe any trim material.
Plastic trim around perimeter, held by adhesive around inner perimeter..

X 2. Mark the longitudinal centerline of the windshield.

X 3. Measure pre-crash A, B, and C for the left side and record in the chart below.

X 4. Measure pre-crash D, E, and F for the right side and record in the chart below.

X 5. Measure from the edge of the retainer or molding to the edge of the windshield.
Dimension G: 20 mm

X 6. Can a single thickness of copier type paper (as small a piece as necessary) slide between the windshield and the vehicle body?
X No, pass.
___ Yes, go to 7.

___ 7. Visibly mark the beginning and end of the portions of the periphery where the paper slides between the windshield and the vehicle body.

___ 8. Measure and record post-crash A, B, C, D, E, and F such that the measurements do not include any of the parts of the windshield where the paper slides between the windshield and the vehicle body.

___ 9. Calculate and record the percent retention for the right and left side of the windshield.

___ 10. Is total right side percent retention less than 75%?
___ Yes, FAIL
___ No, Pass

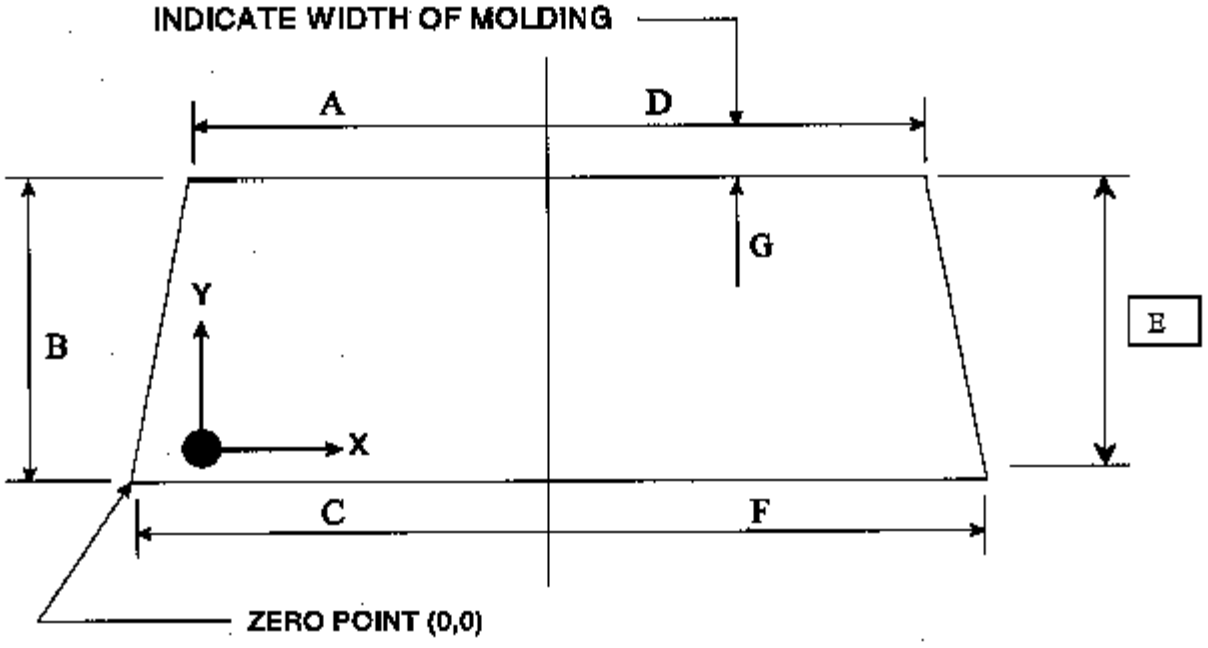
___ 11. Is total left side percent retention less than 75%?
___ Yes, FAIL
___ No, Pass

WINDSHIELD PERIPHERY MEASUREMENT

	Dimension	Pre-crash mm	Post-crash mm	Percent Retention (Post-crash ÷ Pre-crash)
Left side	A	700	700	
	B	675	675	
	C	880	880	
	Total	2255	2255	100
Right side	D	700	700	
	E	675	675	
	F	880	880	
	Total	2255	2255	100
Width of Molding	G	18		

Indicate area of mounting failure.

FRONT VIEW OF WINDSHIELD



DATA SHEET 36
WINDSHIELD ZONE INTRUSION (FMVSS 219)

NHTSA No.: C30103 Test Date: 11/19/02

Laboratory: TRC Inc. Test Technician(s): R. Benavides, J. Jenkins

Impact Angle: 0° Belted Dummies: ___ Yes X No

Test Speed: X 32 to 40 km/h ___ 0 to 48 km/h ___ 0 to 56 km/h

Driver Dummy: X 5th female ___ 50th male Passenger Dummy: X 5th female ___ 50th male

X 1. Place a 165 mm diameter rigid sphere, with a mass of 6.8 kg on the instrument panel so that it is simultaneously touching the instrument panel and the windshield. (571.219 S6.1(a))

X 2. Roll the sphere from one side of the windshield to the other while marking on the windshield where the sphere contacts the windshield. (571.219 S6.1(b))

X 3. From the outermost contactable points on the windshield draw a horizontal line to the edges of the windshield. (571.219 S6.1(b))

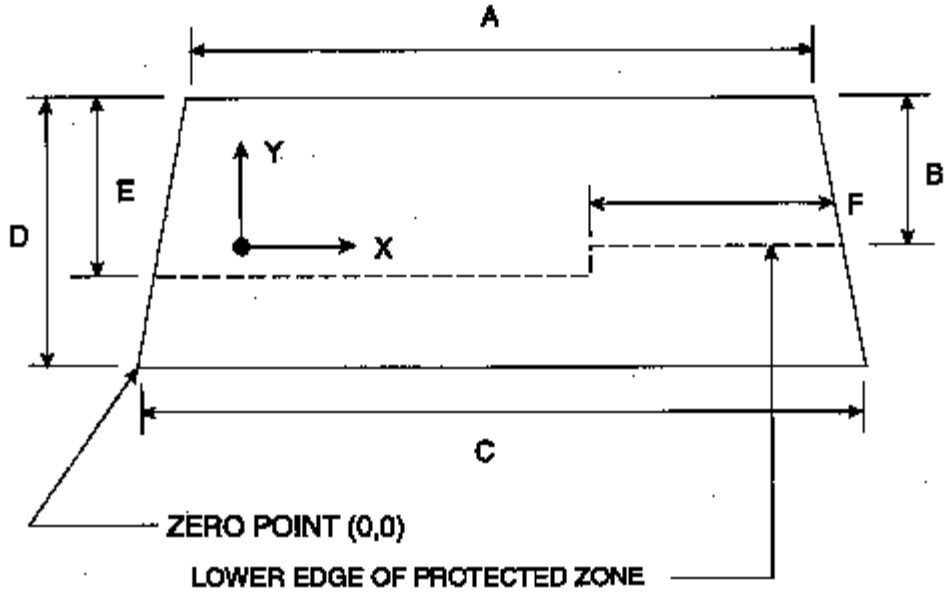
X 4. Draw a line on the inner surface of the windshield that is 13 mm below the line determined in items 2 and 3.

X 5. After the crash test, record any points where a part of the exterior of the vehicle has marked, penetrated, or broken the windshield.

SKETCH OF FRONT VIEW OF WINDSHIELD:

Provide all dimensions necessary to reproduce the protected area.

FRONT VIEW OF WINDSHIELD



A. Windshield Dimensions

A	B	C	D	E	F
1400	350	1760	675	465	910

AREA OF PROTECTED ZONE FAILURES:

B. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one which is normally in contact with the windshield.

X	Y

C. Provide coordinates of the area beneath the protected zone template that the inner surface of the windshield was penetrated by a vehicle component

X	Y

REMARKS:

No penetration into or beneath the protected zone.

DATA SHEET 37
FUEL SYSTEM INTEGRITY (FMVSS 301)

TEST VEHICLE NHTSA NO.: C30103 ; TEST DATE: 11/19/02

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: J. Jenkins

TYPE OF IMPACT: 0° Front

STODDARD SOLVENT SPILLAGE MEASUREMENT:

A. From impact until vehicle motion ceases —

Actual = 0 grams. (Maximum Allowable = 28 grams)

B. For 5 minute period after vehicle motion ceases —

Actual = 0 grams. (Maximum Allowable = 142 grams)

C. For next 25 minutes —

Actual = 0 grams . (Maximum Allowable = 28 grams/minute)

D. Provide Spillage Details: None

REMARKS:

No spillage occurred during the interval between test time and the start of the rollover.

FMVSS 301 STATIC ROLLOVER DATA SHEET

A. TEST PHASE = 0° TO 90°

Determination of Stoddard Solvent Collection Time Period:

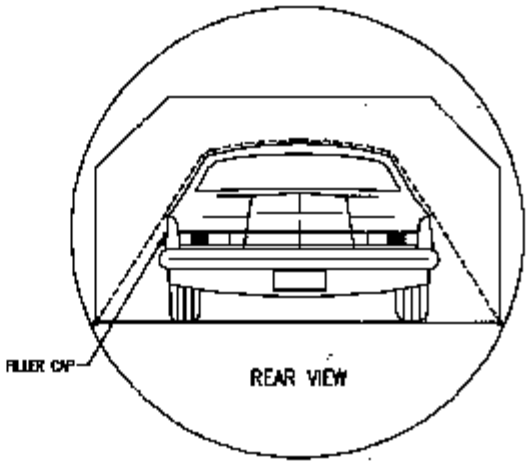
1. Rollover Fixture 90° Rotation Time = 1 minutes, 30 seconds

   (Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 30 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes



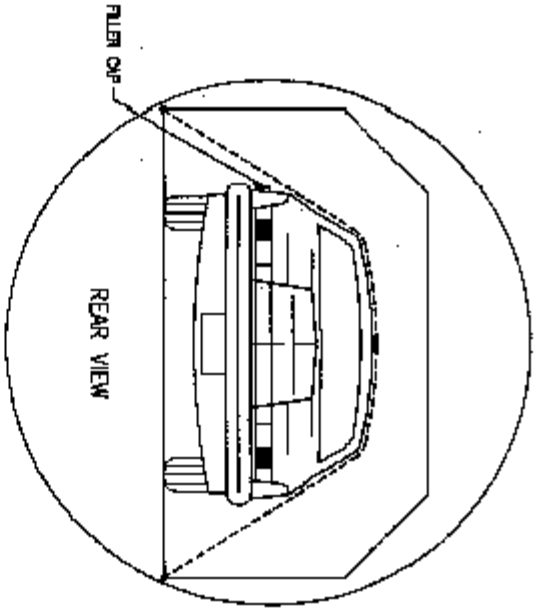
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0 grams (142 grams allowed)

2. 6th minute = 0 grams (28 grams allowed)

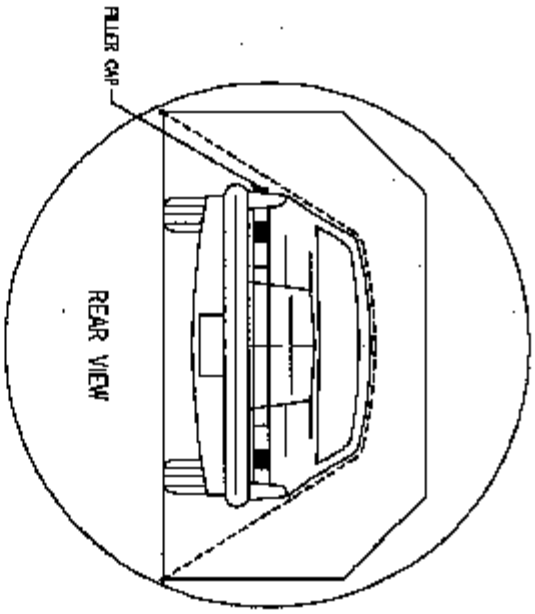
3. 7th minute = 0 grams (28 grams allowed)

4. 8th minute (if required) = NA grams (28 grams allowed)



Provide Details of Stoddard Solvent Spillage Locations – None

B. TEST PHASE = 90° TO 180°



Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90° Rotation Time = 1 minutes, 30 seconds

   (Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 30 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes

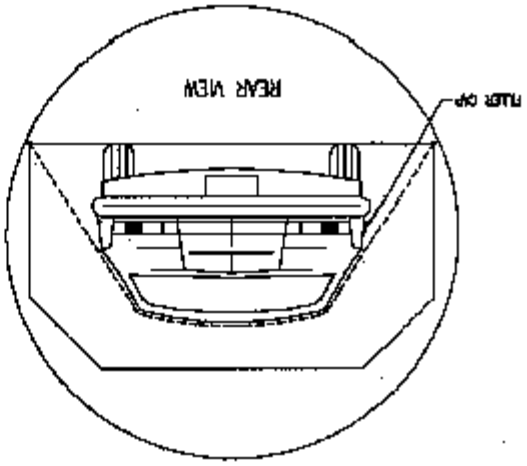
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0 grams (142 grams allowed)

2. 6th minute = 0 grams (28 grams allowed)

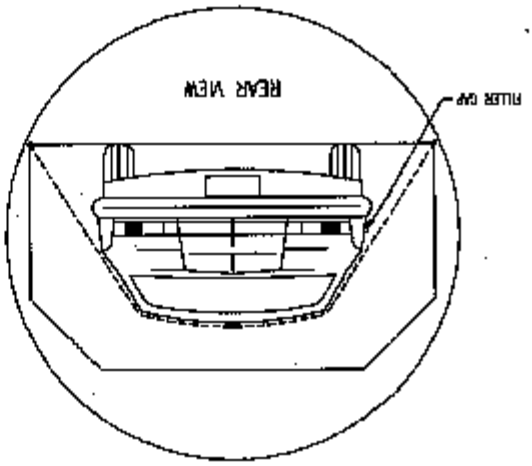
3. 7th minute = 0 grams (28 grams allowed)

4. 8th minute (if required) = NA grams (28 grams allowed)



Provide Details of Stoddard Solvent Spillage Locations – None

C. TEST PHASE = 180° TO 270°



Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90° Rotation Time = 1 minutes, 30 seconds

   (Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 30 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes

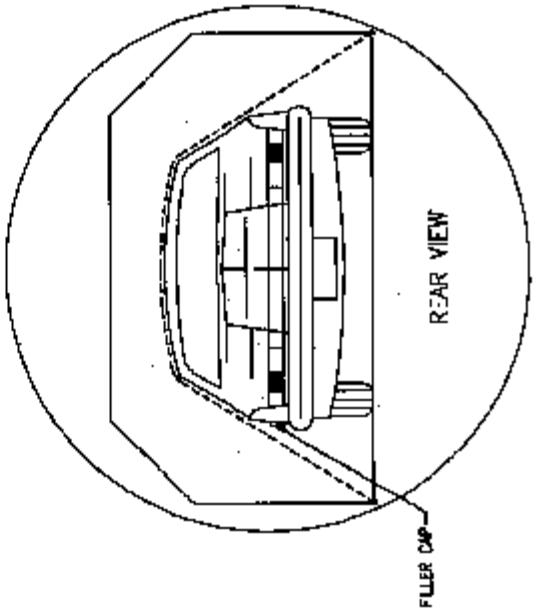
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0 grams (142 grams allowed)

2. 6th minute = 0 grams (28 grams allowed)

3. 7th minute = 0 grams (28 grams allowed)

4. 8th minute (if required) = NA grams (28 grams allowed)



Provide Details of Stoddard Solvent Spillage Locations – None

D. TEST PHASE = 270° TO 360°

Determination of Stoddard Solvent Collection Time Period:

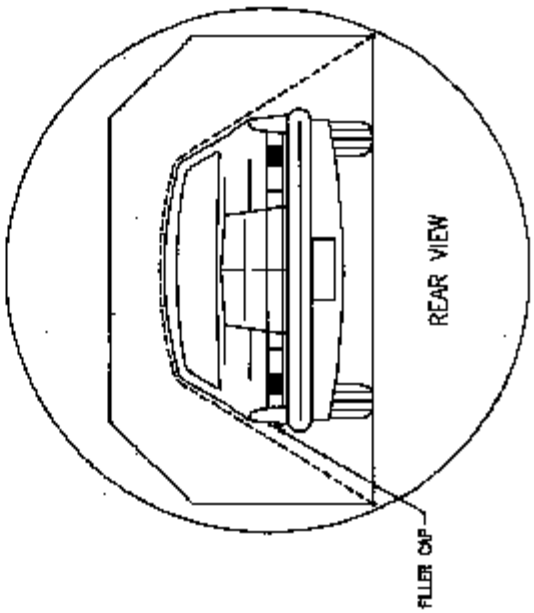
1. Rollover Fixture 90° Rotation Time = 1 minutes, 30 seconds

   (Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 30 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes



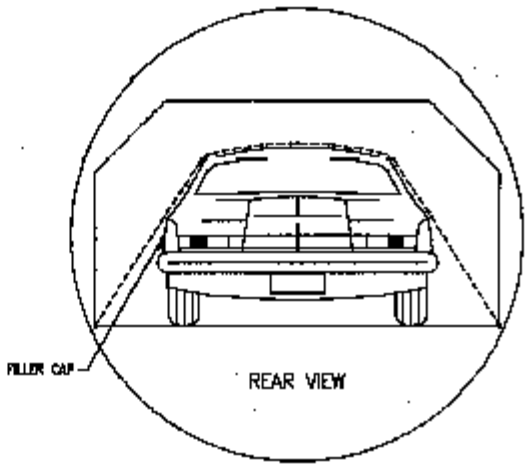
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0 grams (142 grams allowed)

2. 6th minute = 0 grams (28 grams allowed)

3. 7th minute = 0 grams (28 grams allowed)

4. 8th minute (if required) = NA grams (28 grams allowed)

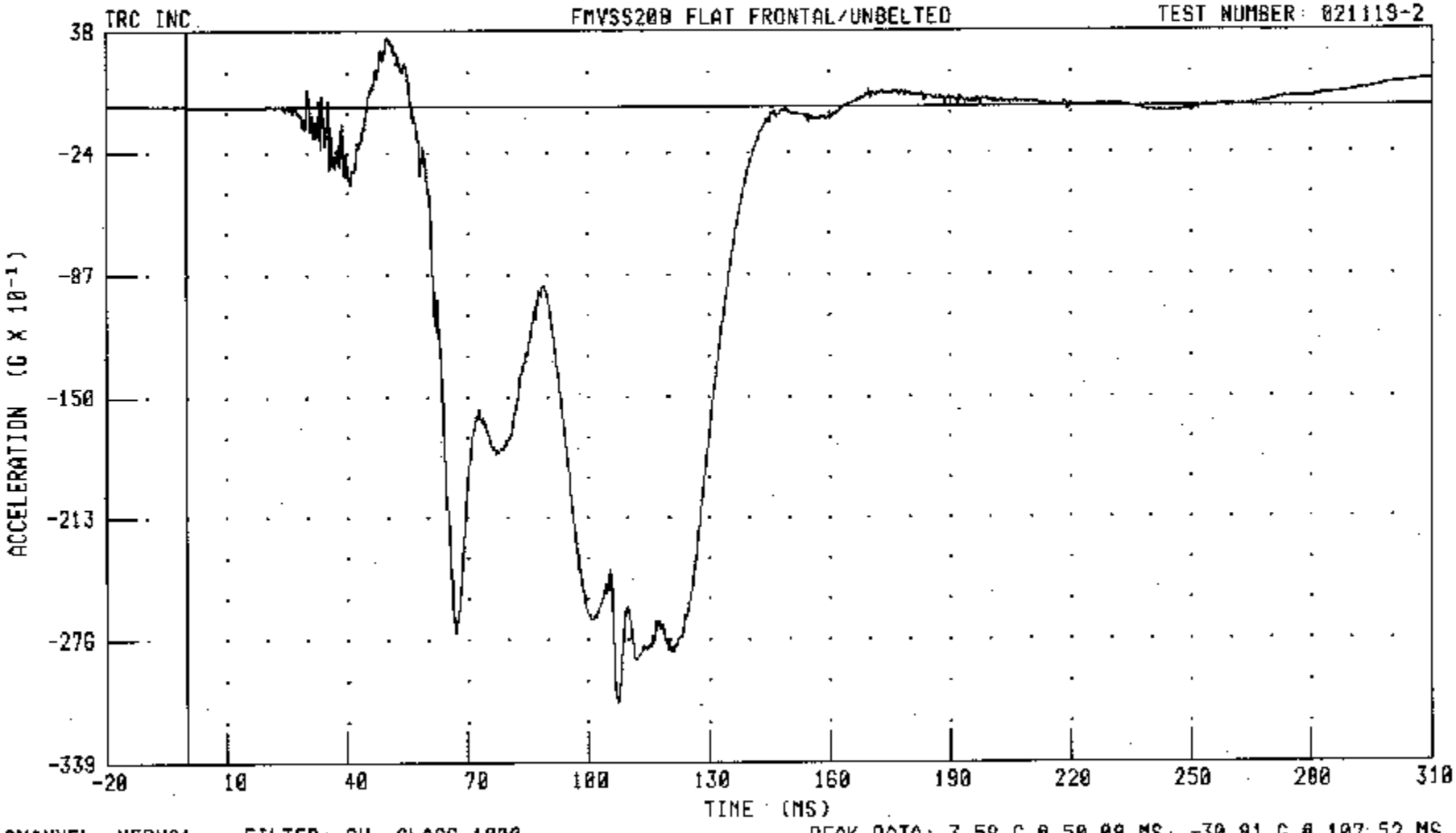


Provide Details of Stoddard Solvent Spillage Locations – None

Section 6

Test Data

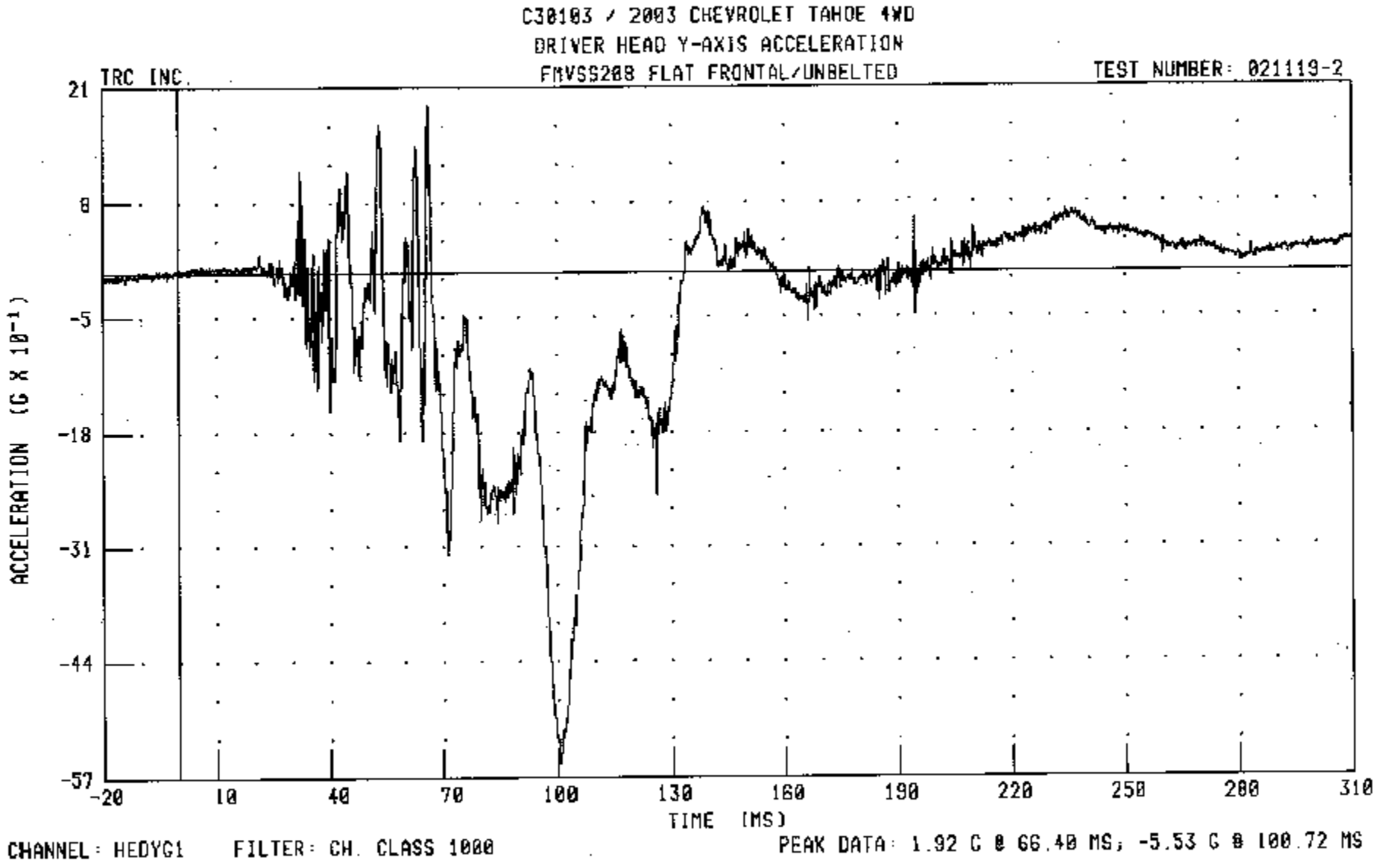
C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER HEAD X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED



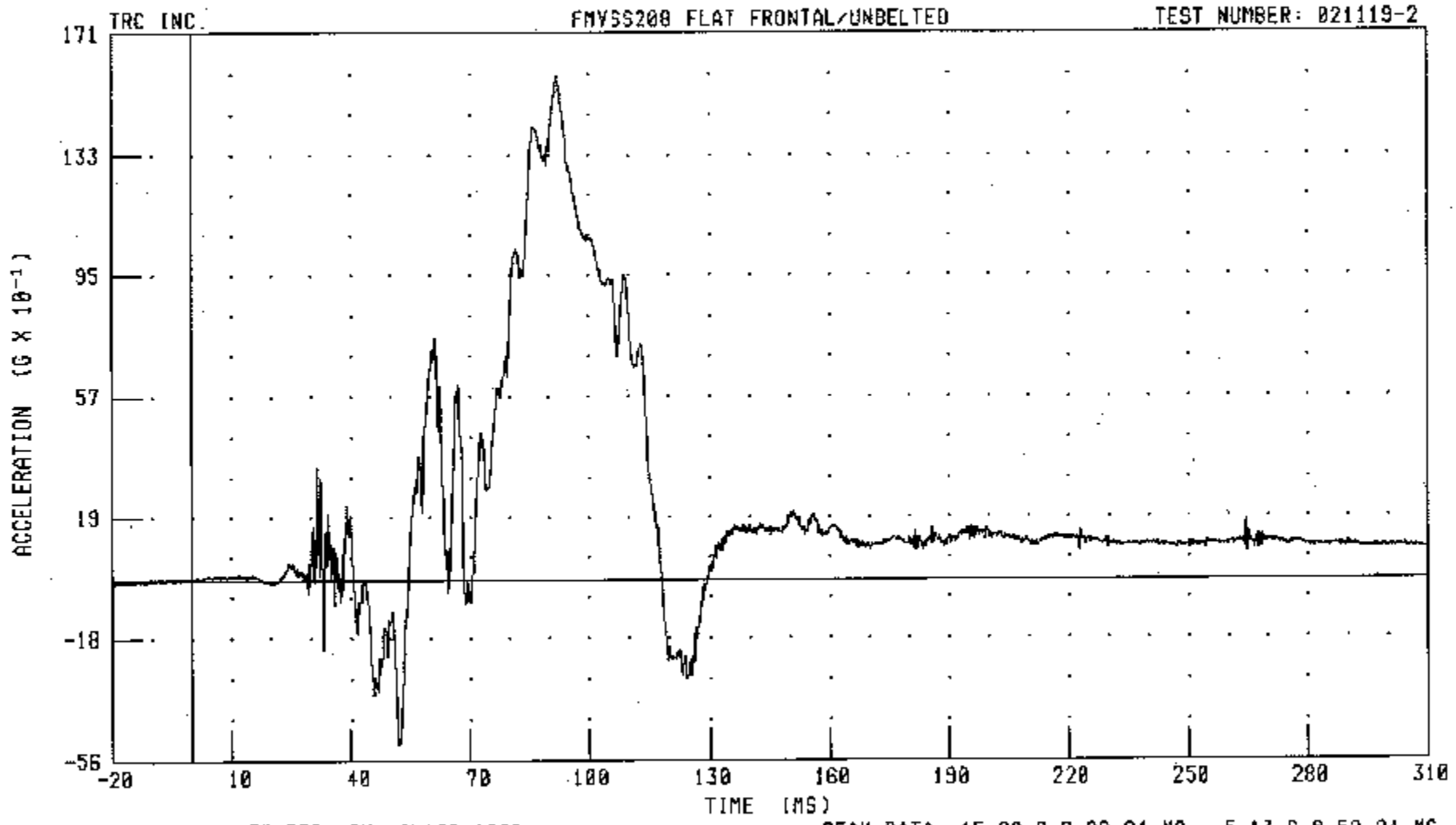
CHANNEL: HEDXG1 FILTER: CH. CLASS 1000 PEAK DATA: 3.58 G @ 50.00 MS; -30.81 G @ 107.52 MS

62

021119-2


C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER HEAD Y-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
21
8
-5
-18
-31
-44
-57
ACCELERATION (G X 10⁻¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDYG1
FILTER: CH. CLASS 1000
PEAK DATA: 1.92 G @ 66.40 MS, -5.53 G @ 100.72 MS

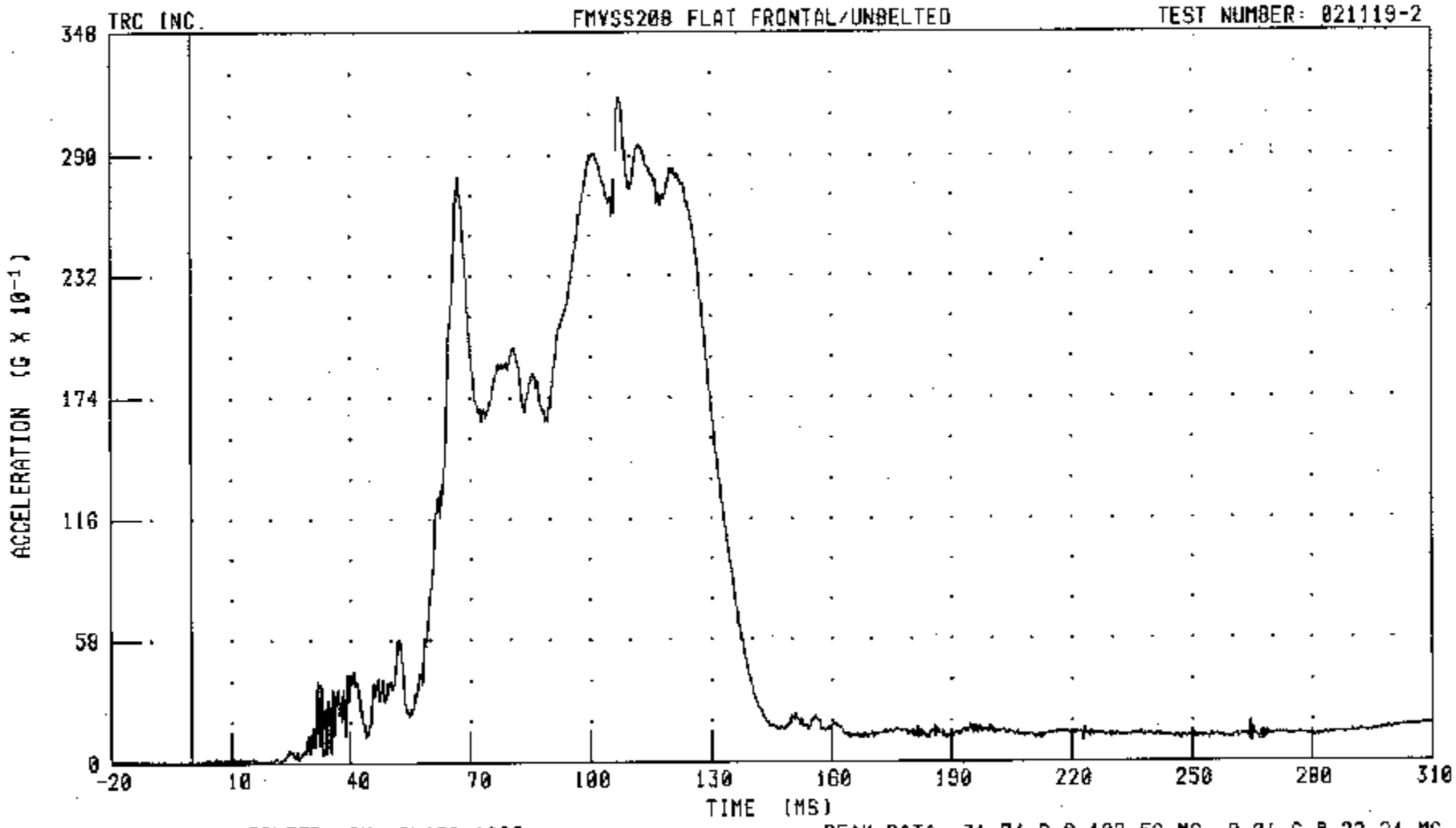
C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER HEAD Z-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED



CHANNEL: HEDZG1 FILTER: CH. CLASS 1000 PEAK DATA: 15.89 G @ 92.24 MS; -5.13 G @ 52.24 MS

021119-2

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER HEAD RESULTANT ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED



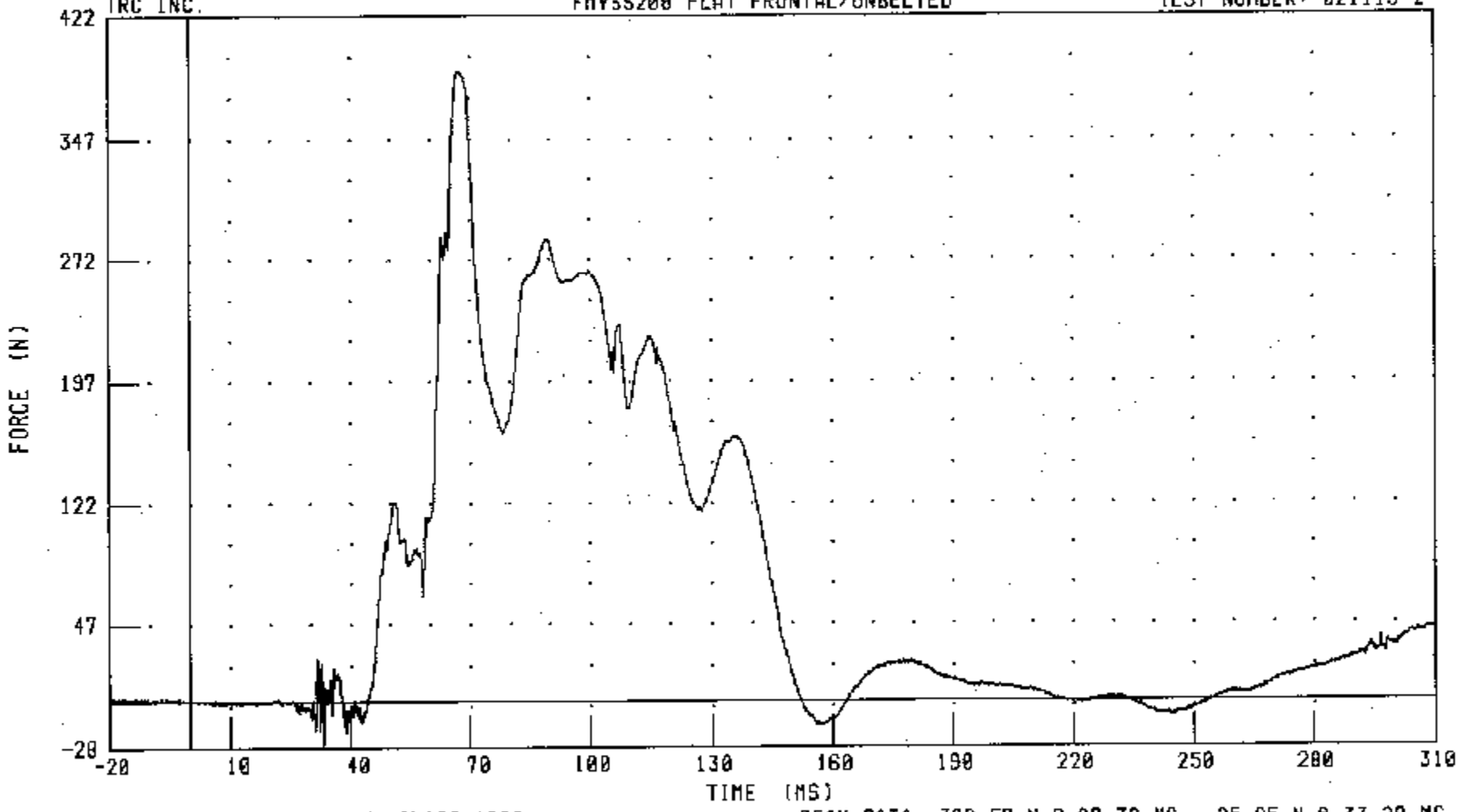
CHANNEL: HEDRG1 FILTER: CH. CLASS 1000 PEAK DATA: 31.74 G @ 107.52 MS; 0.0[G @ 22.24 MS

021119-2

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NECK X-AXIS SHEAR FORCE
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

TEST NUMBER: 021119-2



CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

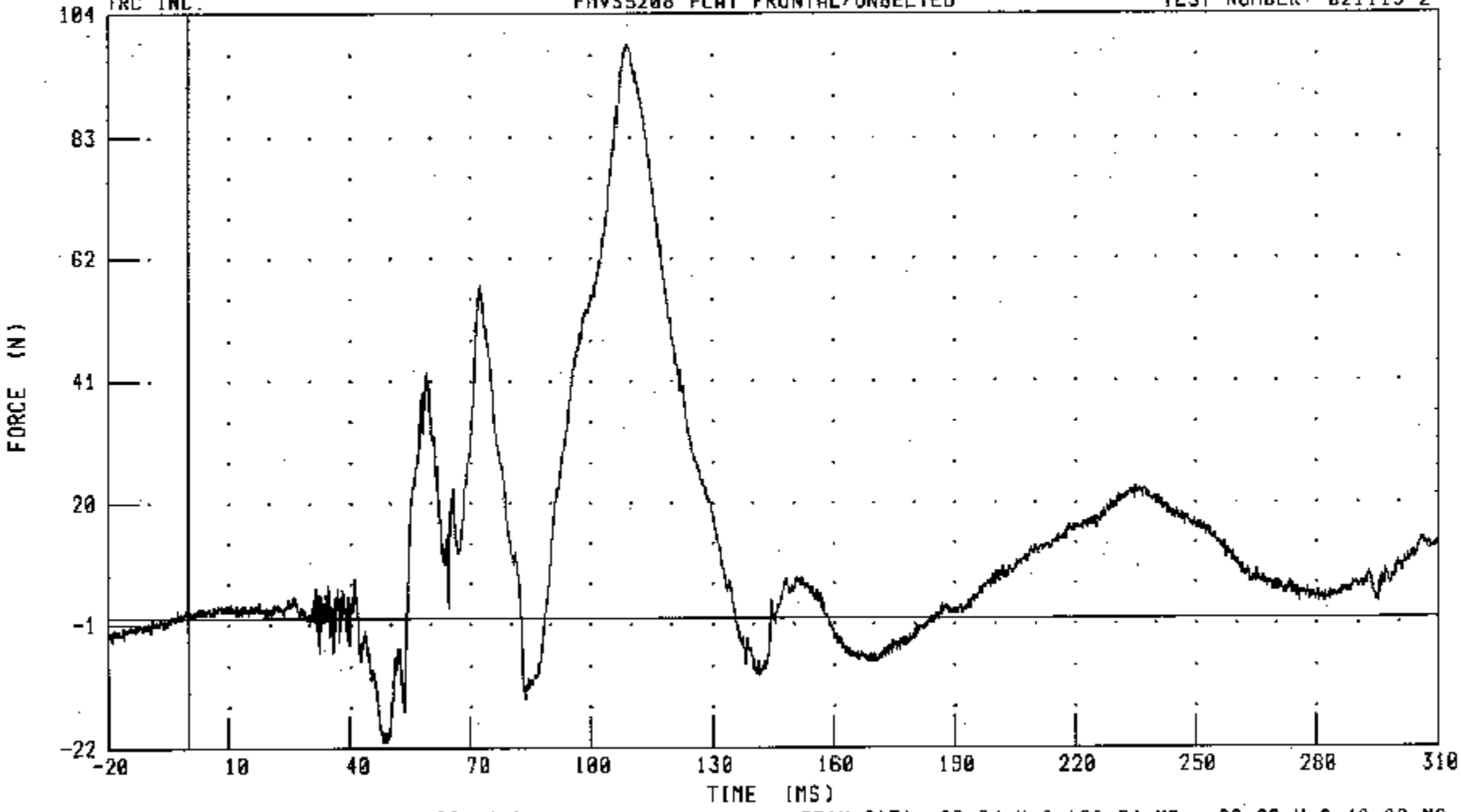
PEAK DATA: 388.57 N @ 67.36 MS; -25.85 N @ 33.28 MS

021119-2

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NECK Y-AXIS SHEAR FORCE
FMVSS208 FLAT FRONTAL/UNBELTED

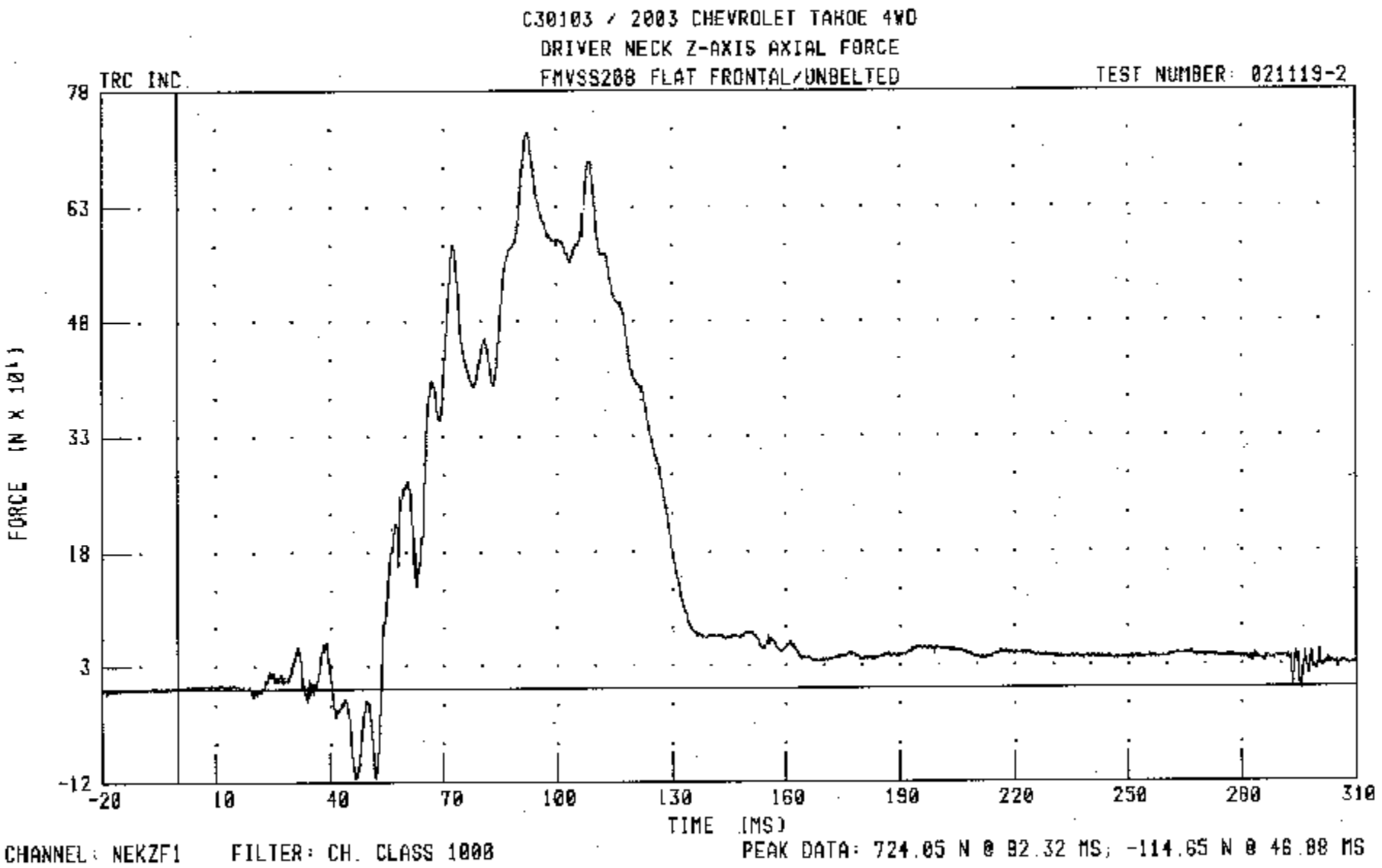
TRC INC.

TEST NUMBER: 021119-2

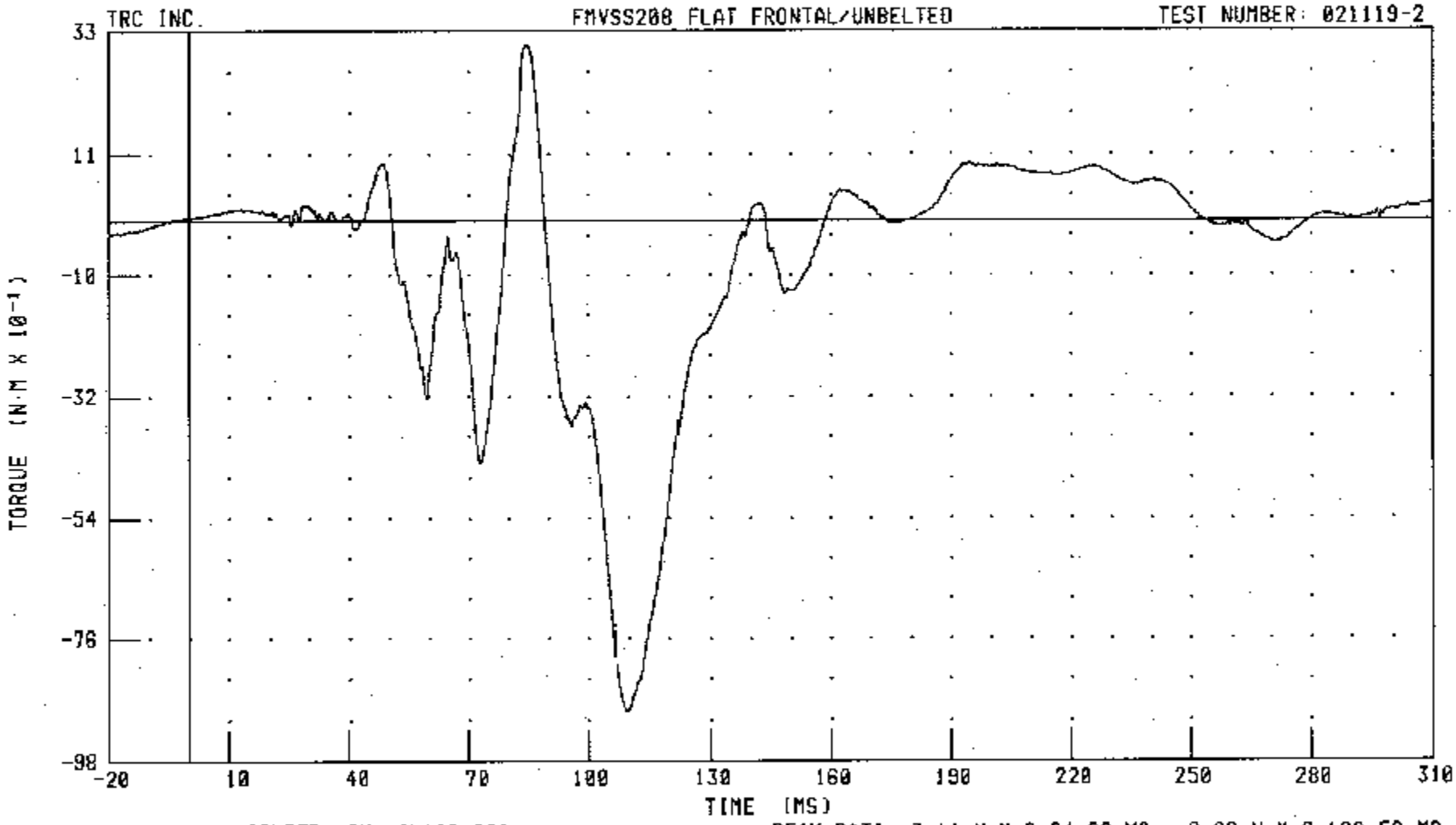


CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

PEAK DATA: 98.94 N @ 109.04 MS; -20.90 N @ 48.08 MS


C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NECK Z-AXIS AXIAL FORCE
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
78
63
48
33
18
3
-12
FORCE (N X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKZF1
FILTER: CH. CLASS 1000
PEAK DATA: 724.05 N @ 82.32 MS; -114.65 N @ 46.88 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NECK MOMENT ABOUT X AXIS
FMVSS208 FLAT FRONTAL/UNBELTED

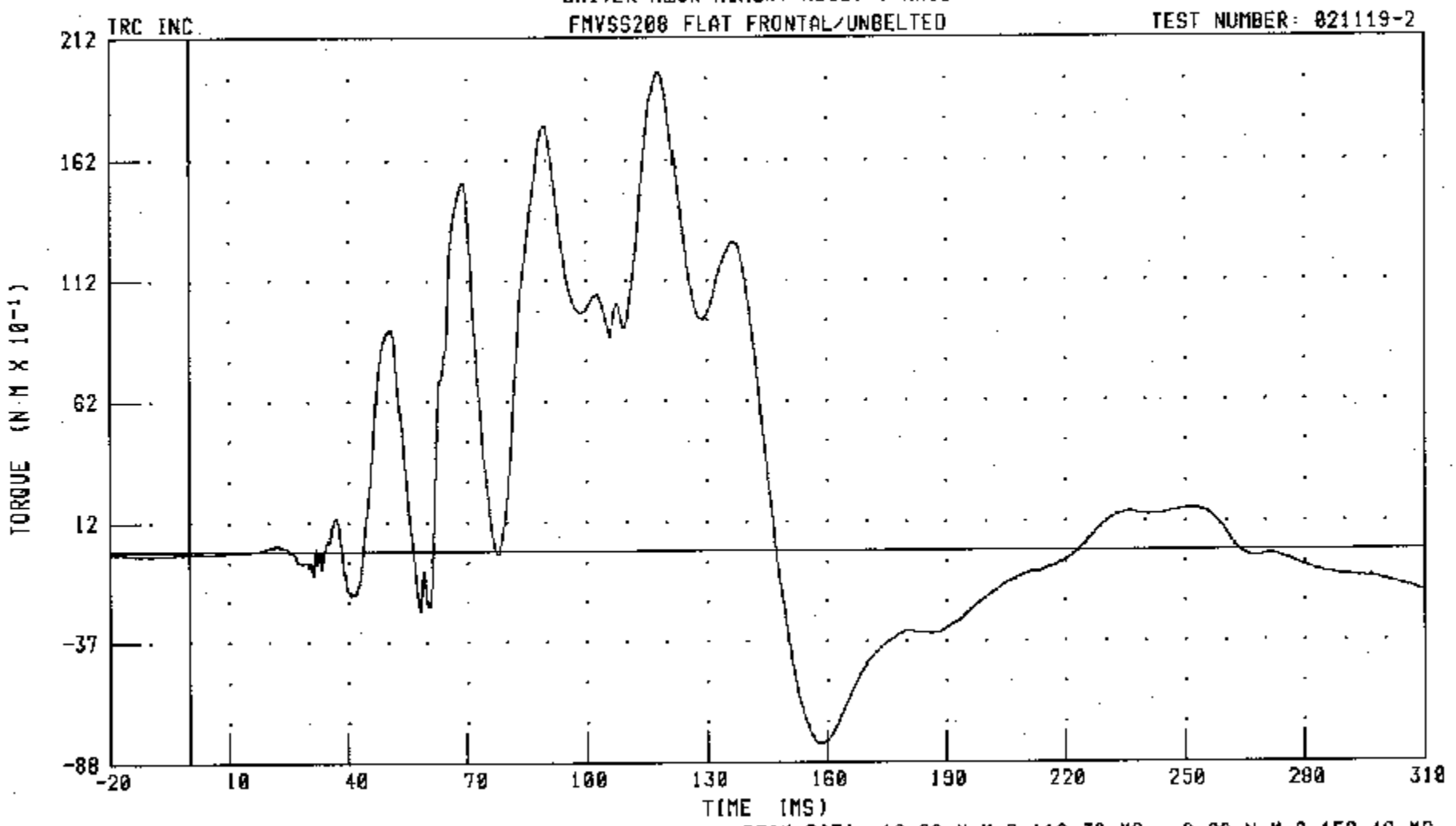


CHANNEL: NEKXM1 FILTER: CH. CLASS 600

PEAK DATA: 3.14 N·M @ 84.80 MS; -8.90 N·M @ 109.52 MS

021119-2

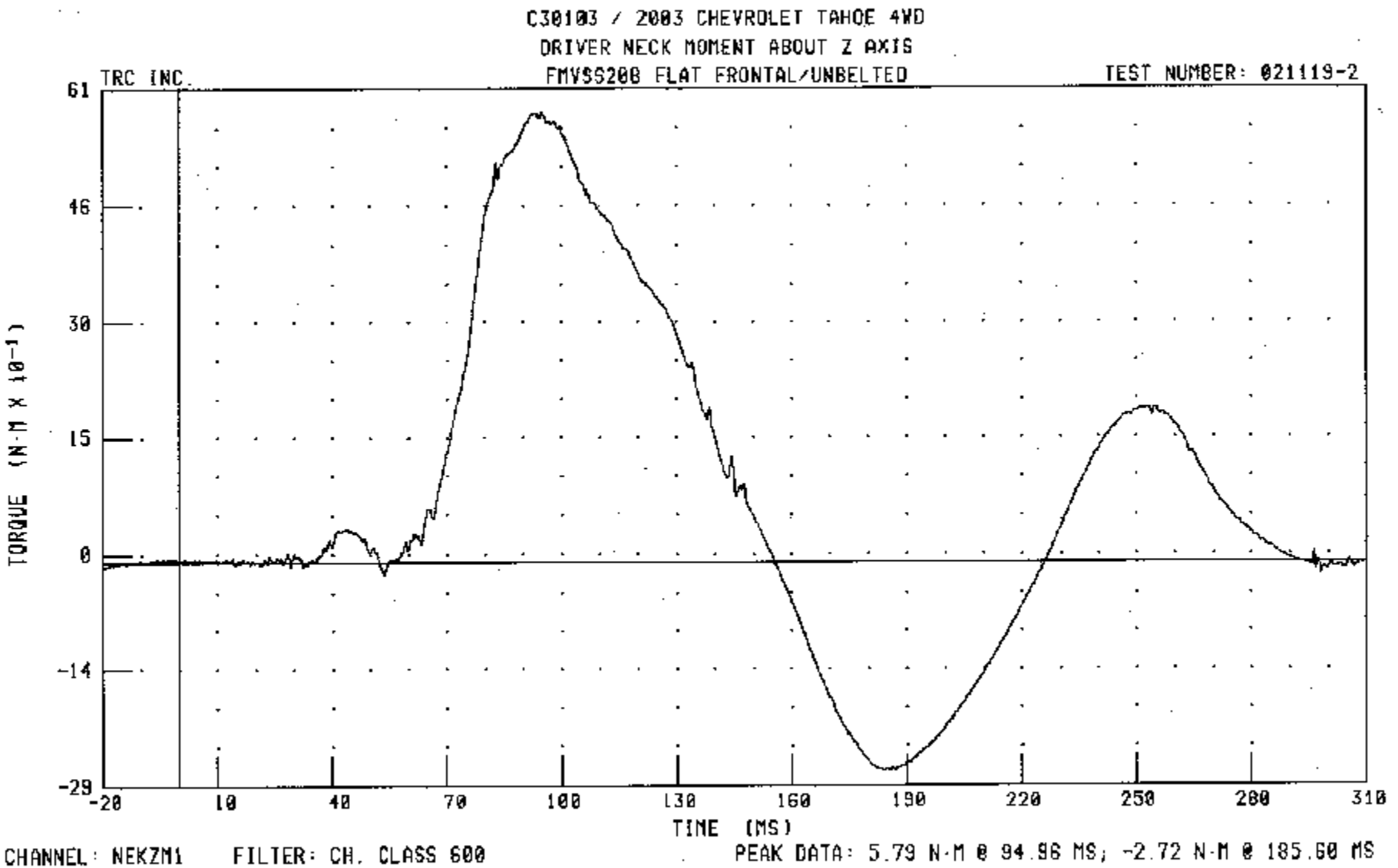
C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NECK MOMENT ABOUT Y AXIS
FMVSS208 FLAT FRONTAL/UNBELTED



CHANNEL: NEKYM1 FILTER: CH. CLASS 600

PEAK DATA: 19.80 N·M @ 118.32 MS; -8.02 N·M @ 158.48 MS

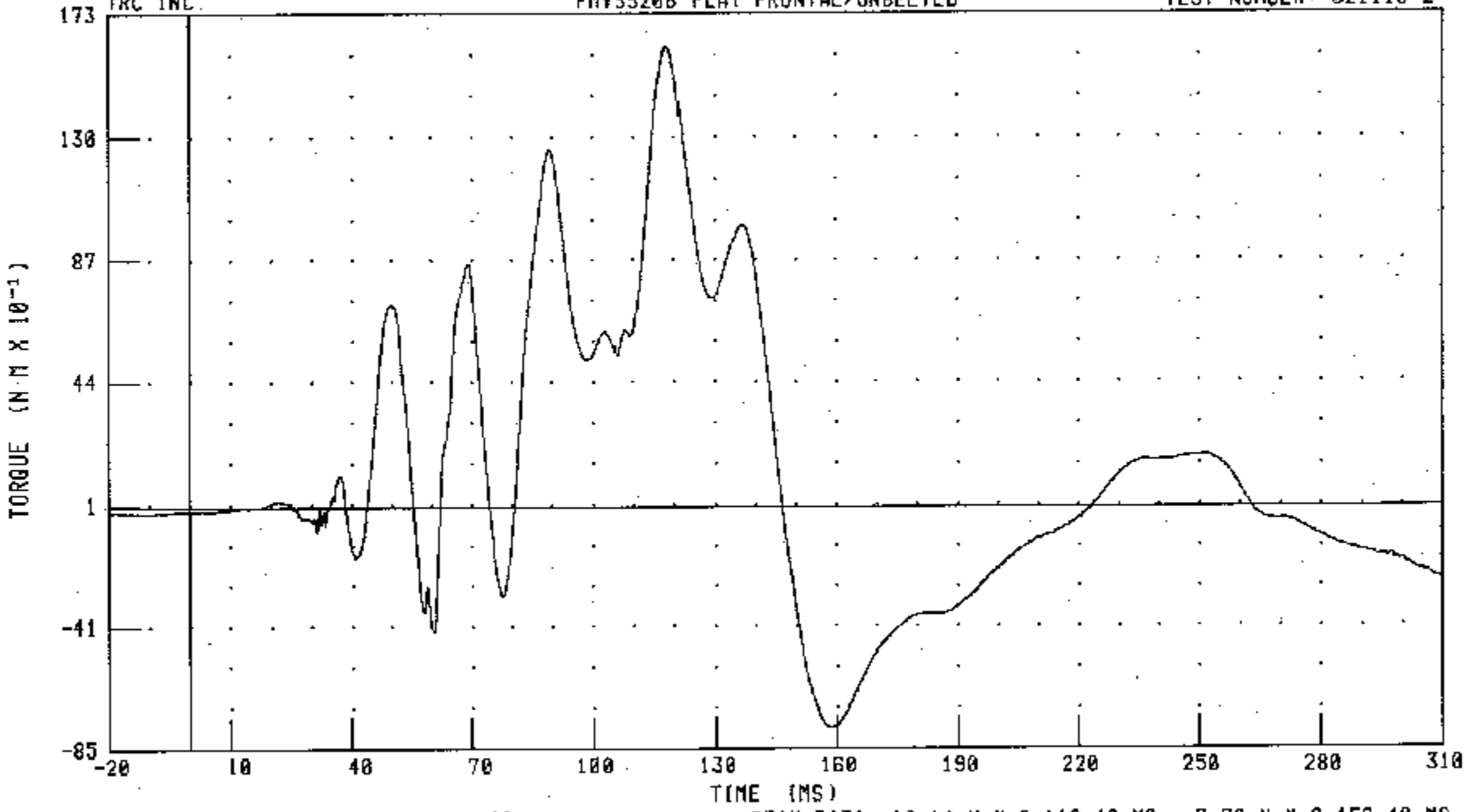
021119-2


C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NECK MOMENT ABOUT Z AXIS
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
61
46
30
15
0
-14
-29
TORQUE (N-M X 10⁻¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKZM1
FILTER: CH. CLASS 600
PEAK DATA: 5.79 N-M @ 94.96 MS; -2.72 N-M @ 185.60 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NECK MOMENT OCCIPITAL CONDYLE ABOUT Y AXIS
FMVSS208 FLAT FRONTAL/UNBELTED

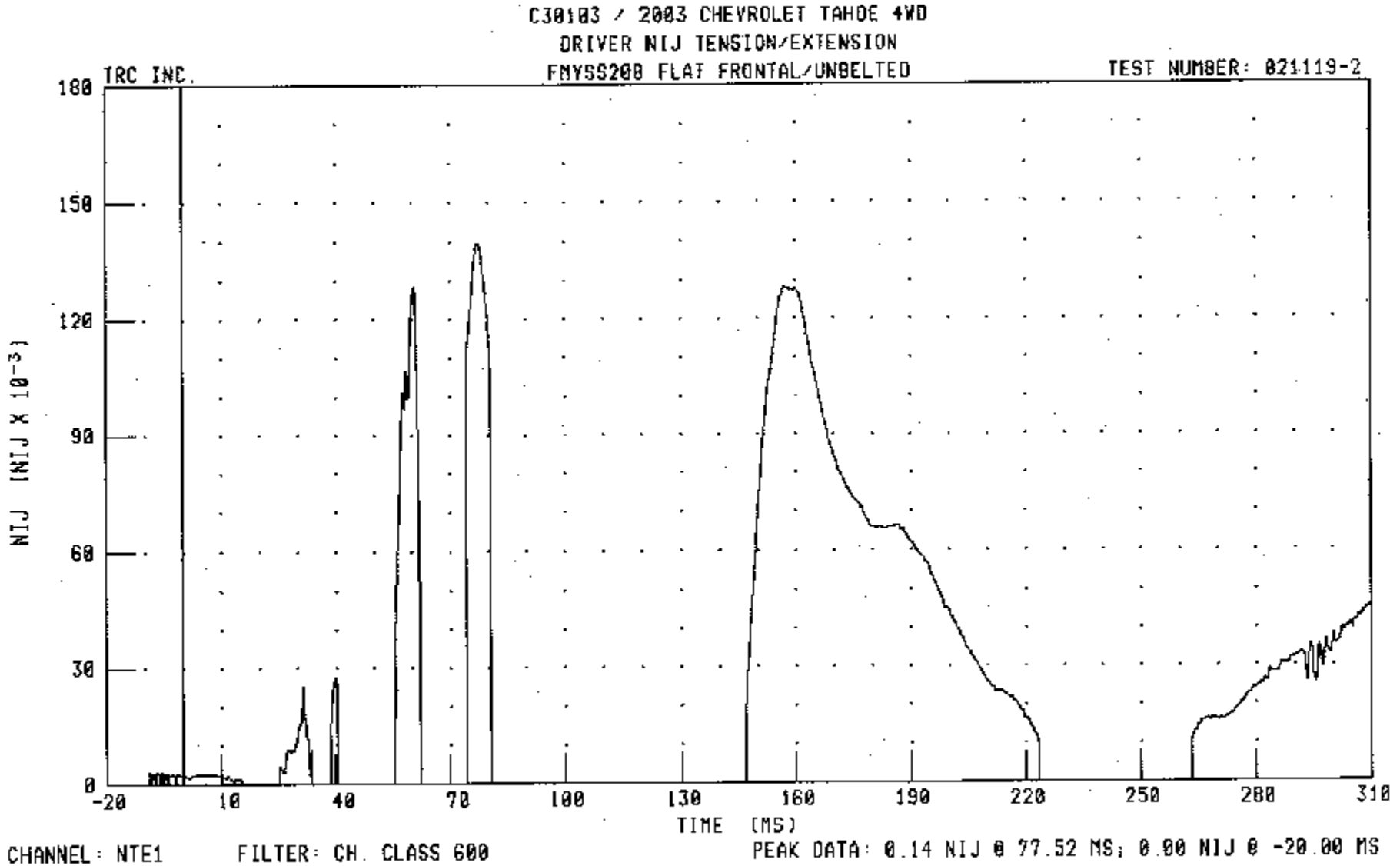
TRC INC.

TEST NUMBER: 021119-2



CHANNEL: NKOYM1 FILTER: CH. CLASS 600

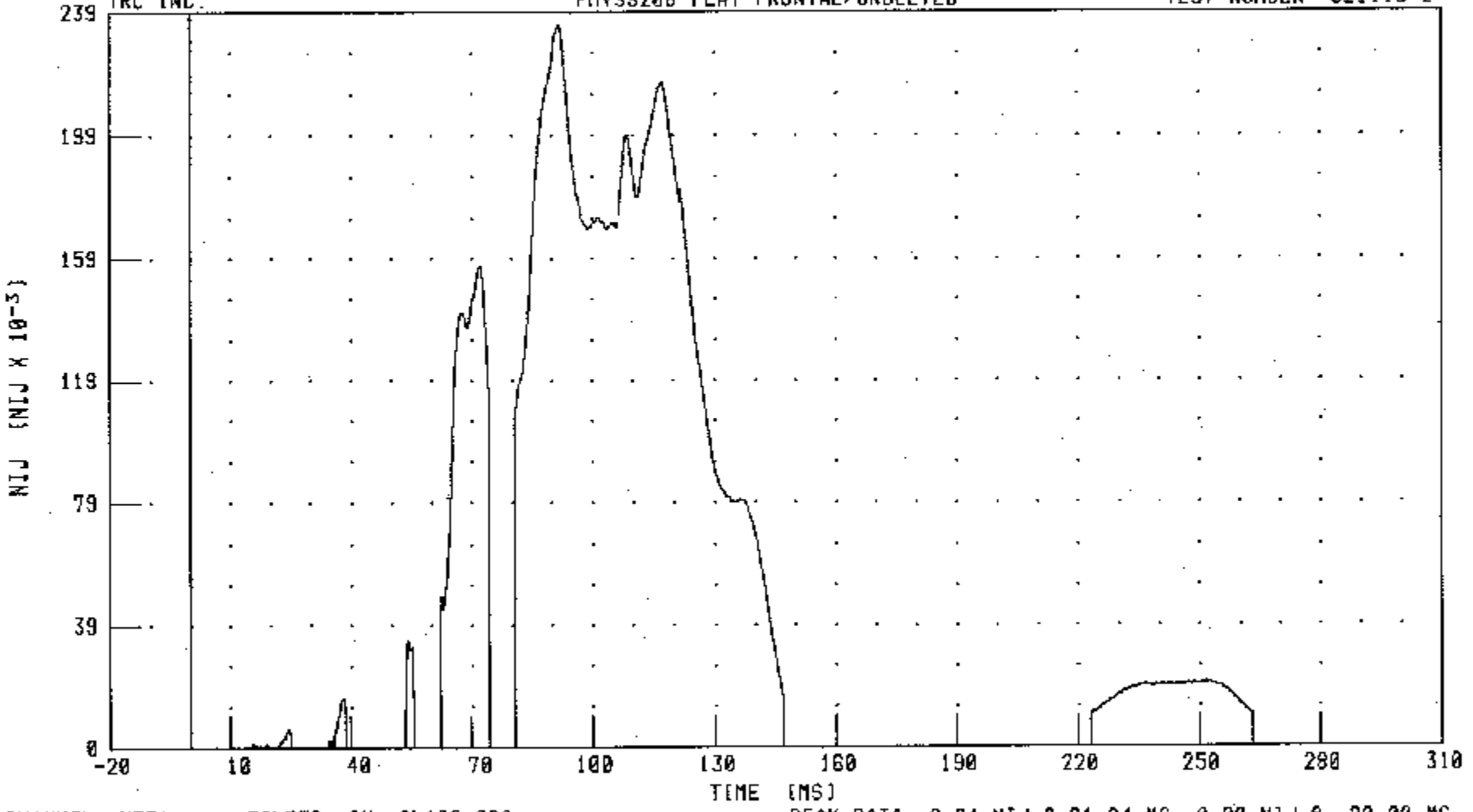
PEAK DATA: 16.14 N·M @ 118.48 MS; -7.78 N·M @ 158.40 MS


C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NIJ TENSION/EXTENSION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
NIJ (NIJ X 10-3)
180
150
120
90
60
30
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NTE1
FILTER: CH. CLASS 600
PEAK DATA: 0.14 NIJ @ 77.52 MS; 0.00 NIJ @ -20.00 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NIJ TENSION/FLEXION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

TEST NUMBER: 021119-2



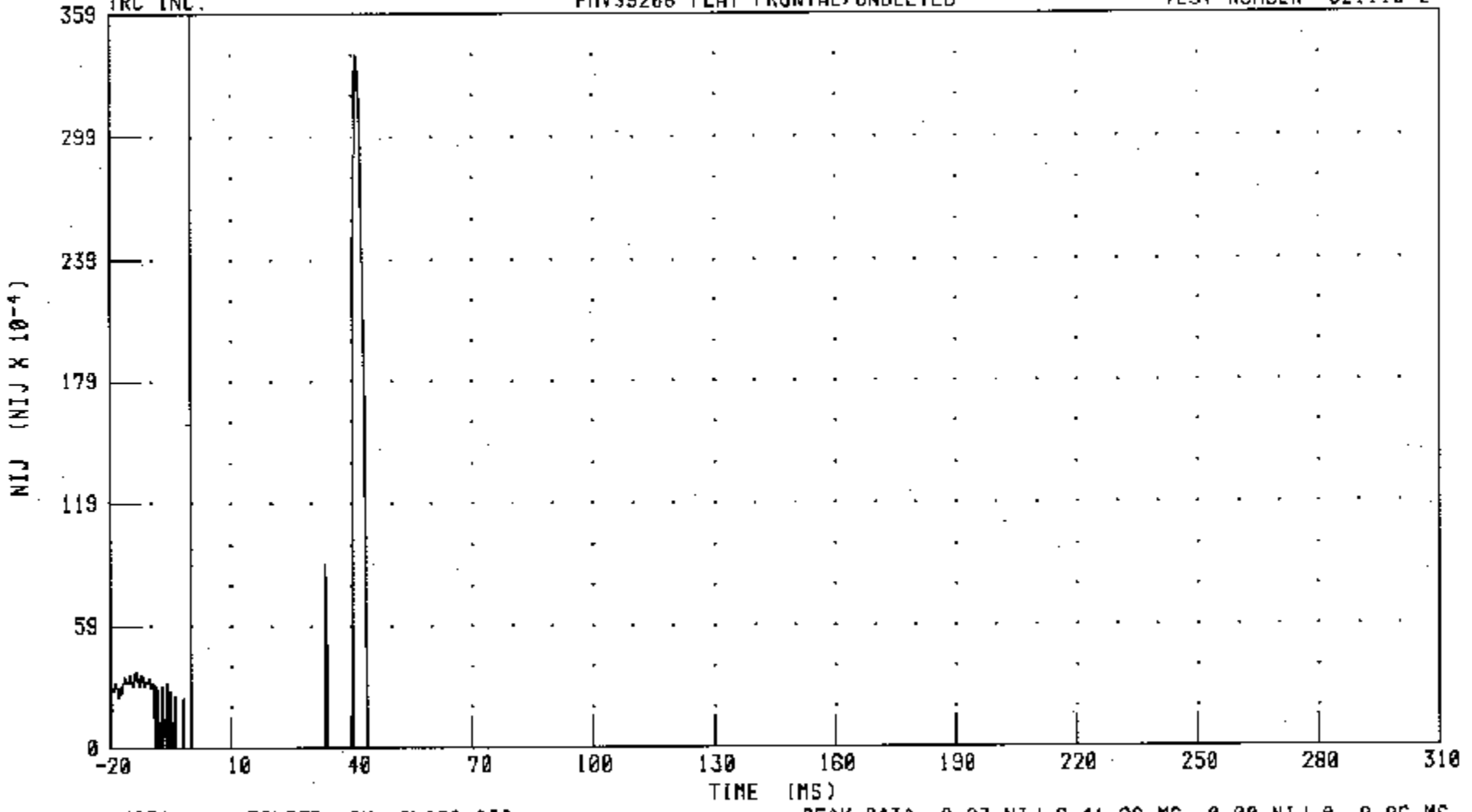
CHANNEL: NTF1 FILTER: CH. CLASS 600

PEAK DATA: 0.24 NIJ @ 91.84 MS; 0.00 NIJ @ -20.00 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NIJ COMPRESSION/EXTENSION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

TEST NUMBER: 021119-2



CHANNEL: NCE1 FILTER: CH. CLASS 600

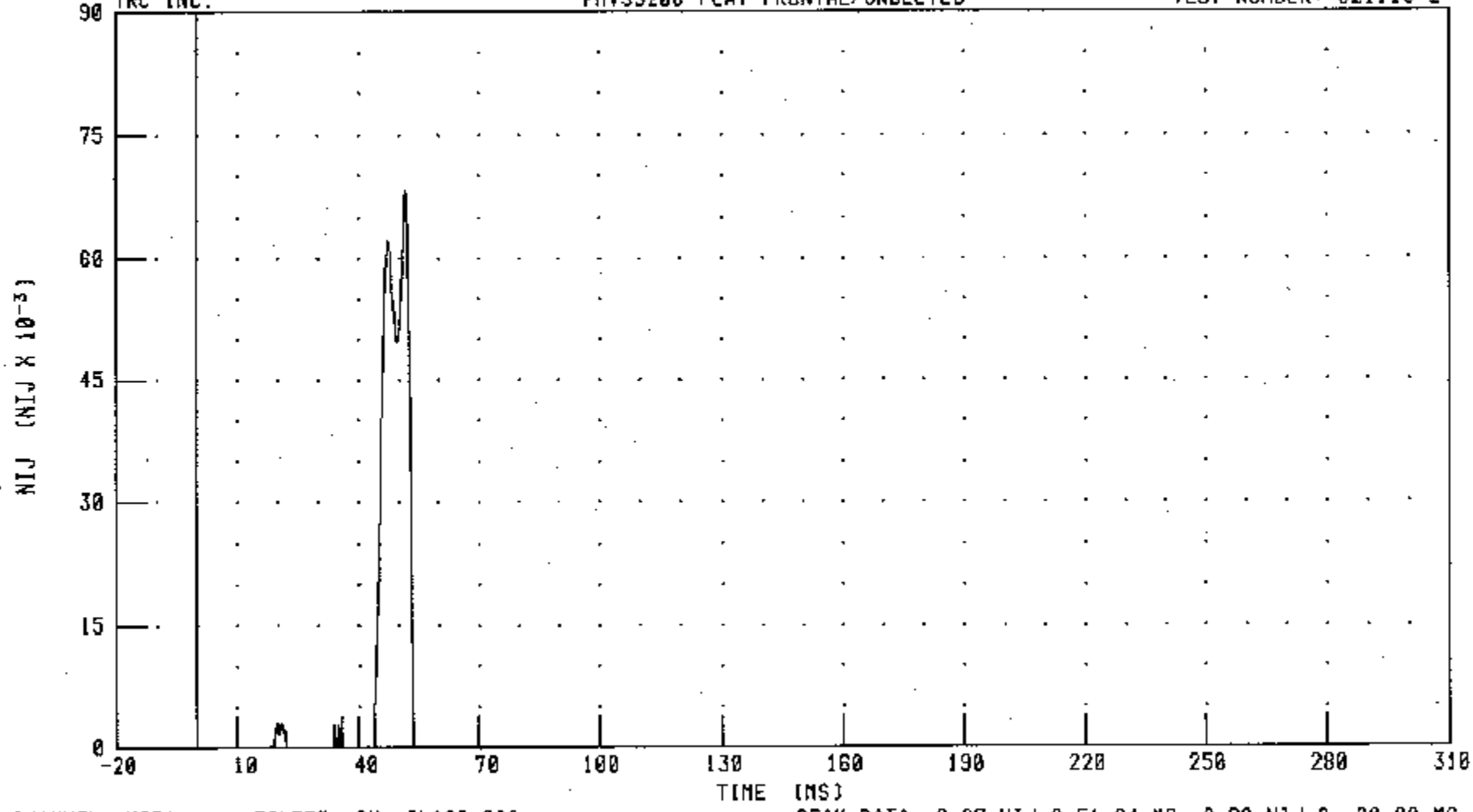
PEAK DATA: 0.03 NIJ @ 41.28 MS; 0.00 NIJ @ -8.96 MS

021119-2

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER NIJ COMPRESSION/FLEXION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

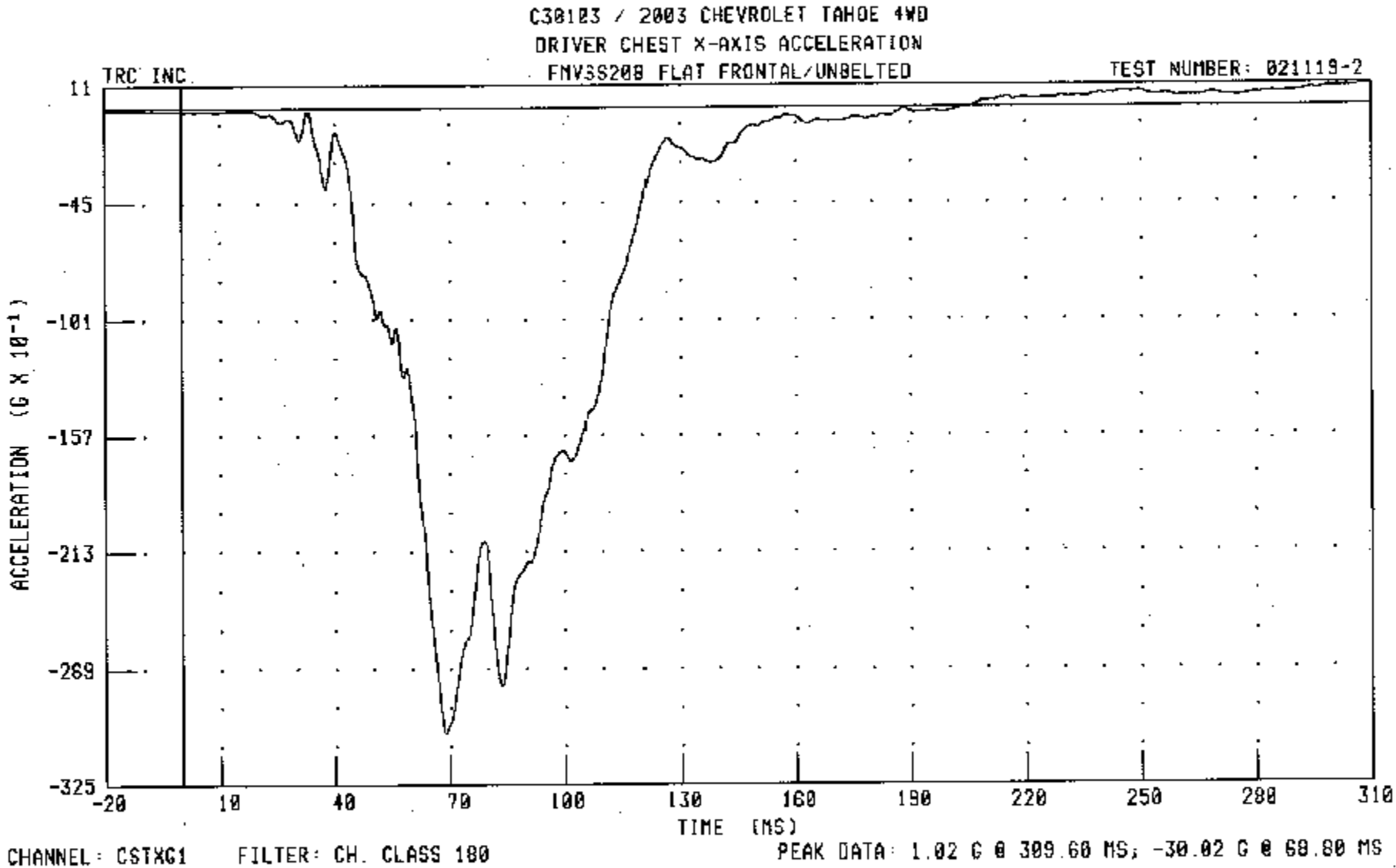
TEST NUMBER: 021119-2



CHANNEL: NCF1 FILTER: CH. CLASS 600

PEAK DATA: 0.07 NIJ @ 51.84 MS; 0.00 NIJ @ -20.00 MS

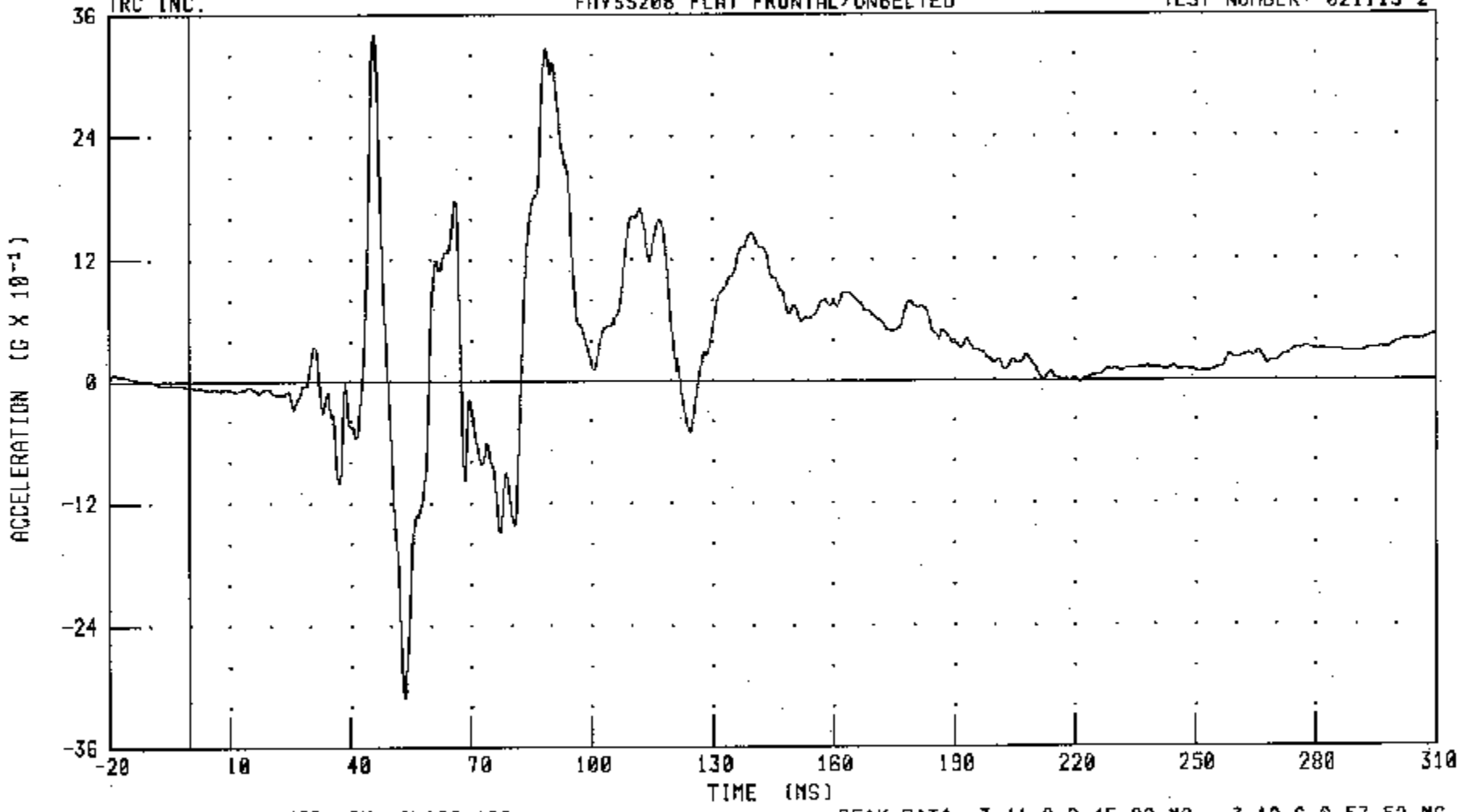
021119-2


C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER CHEST X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC
TEST NUMBER: 021119-2
11
-45
-101
-157
-213
-269
-325
ACCELERATION (G X 10⁻¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXG1
FILTER: CH. CLASS 180
PEAK DATA: 1.02 G @ 309.60 MS; -30.02 G @ 68.80 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER CHEST Y-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

TEST NUMBER: 021119-2



CHANNEL: CSTYG1 FILTER: CH. CLASS 180

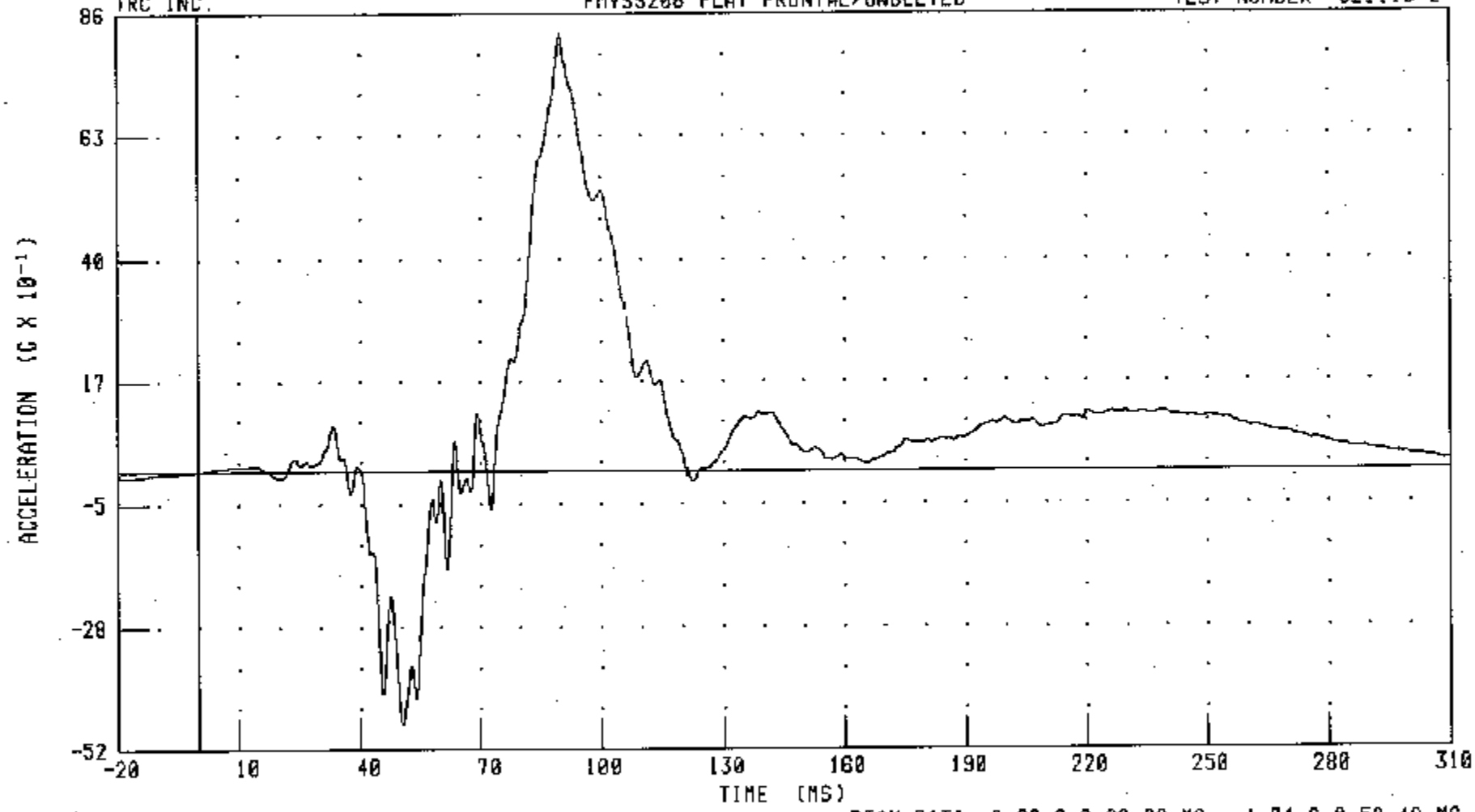
PEAK DATA: 3.41 G @ 45.92 MS, -3.12 G @ 53.52 MS

021119-2

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER CHEST Z-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

TEST NUMBER: 021119-2

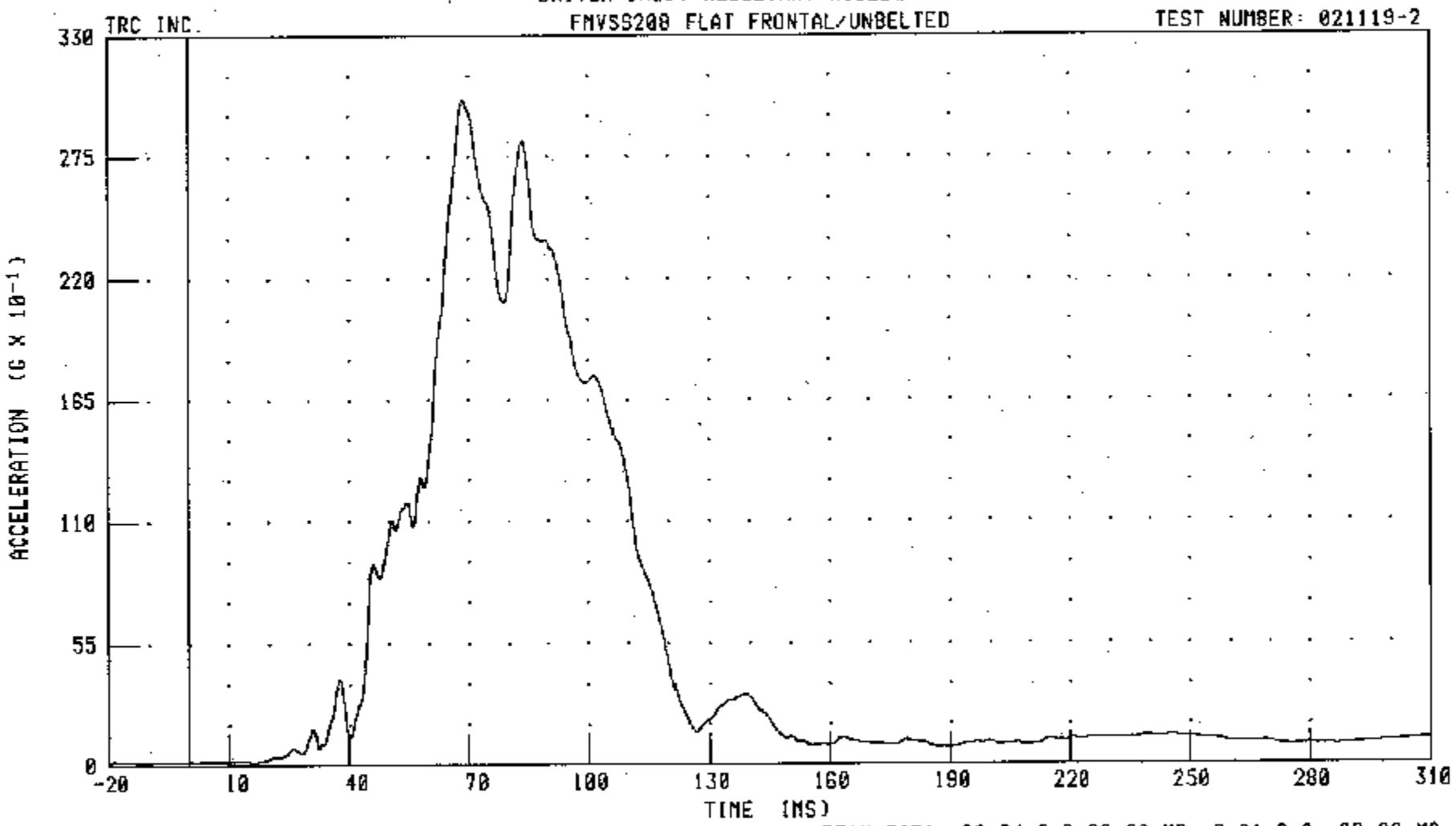


CHANNEL: CSTZG1 FILTER: CH. CLASS 180

PEAK DATA: 8.22 G @ 90.08 MS; -4.74 G @ 50.48 MS

021119-2

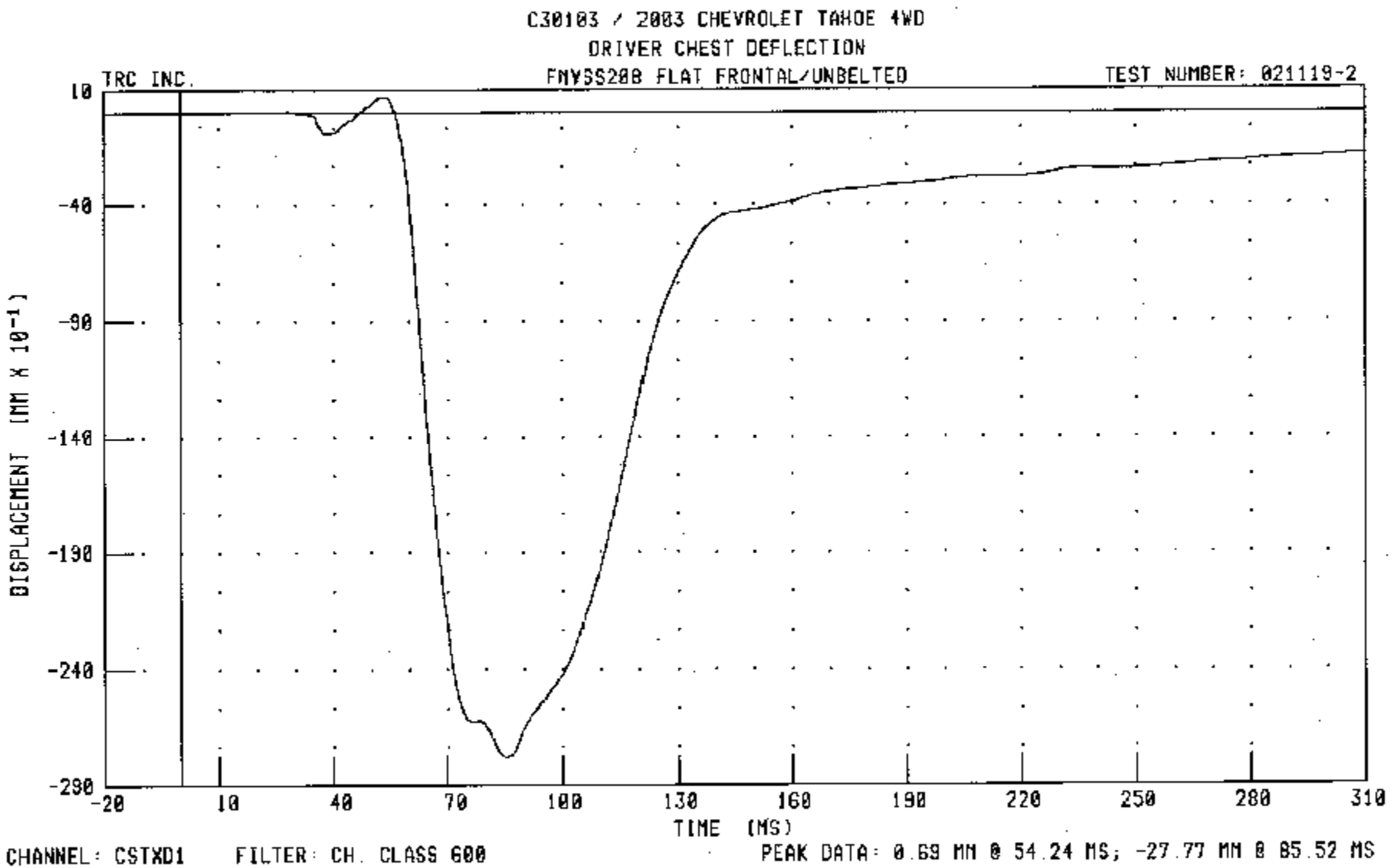
C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER CHEST RESULTANT ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

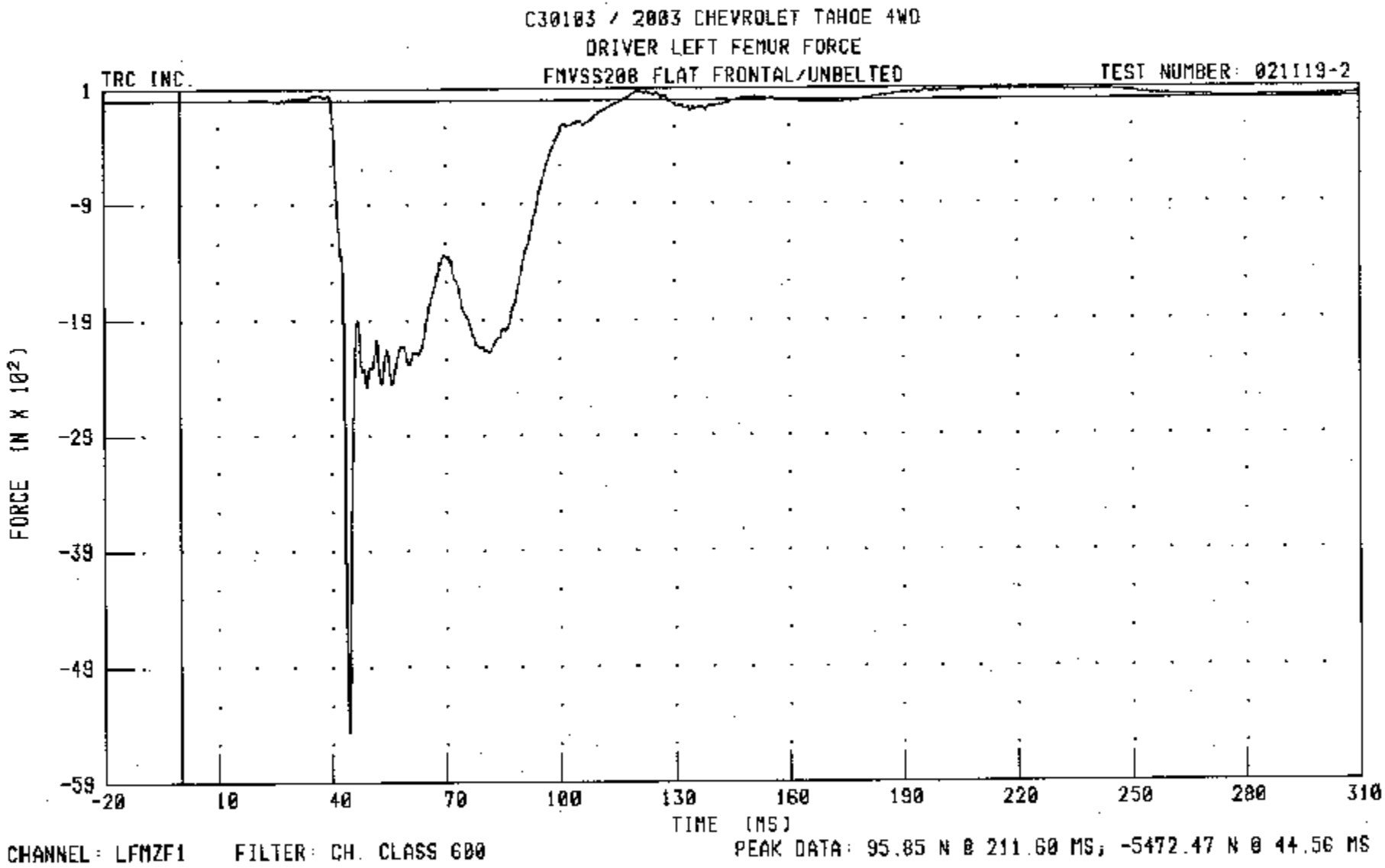


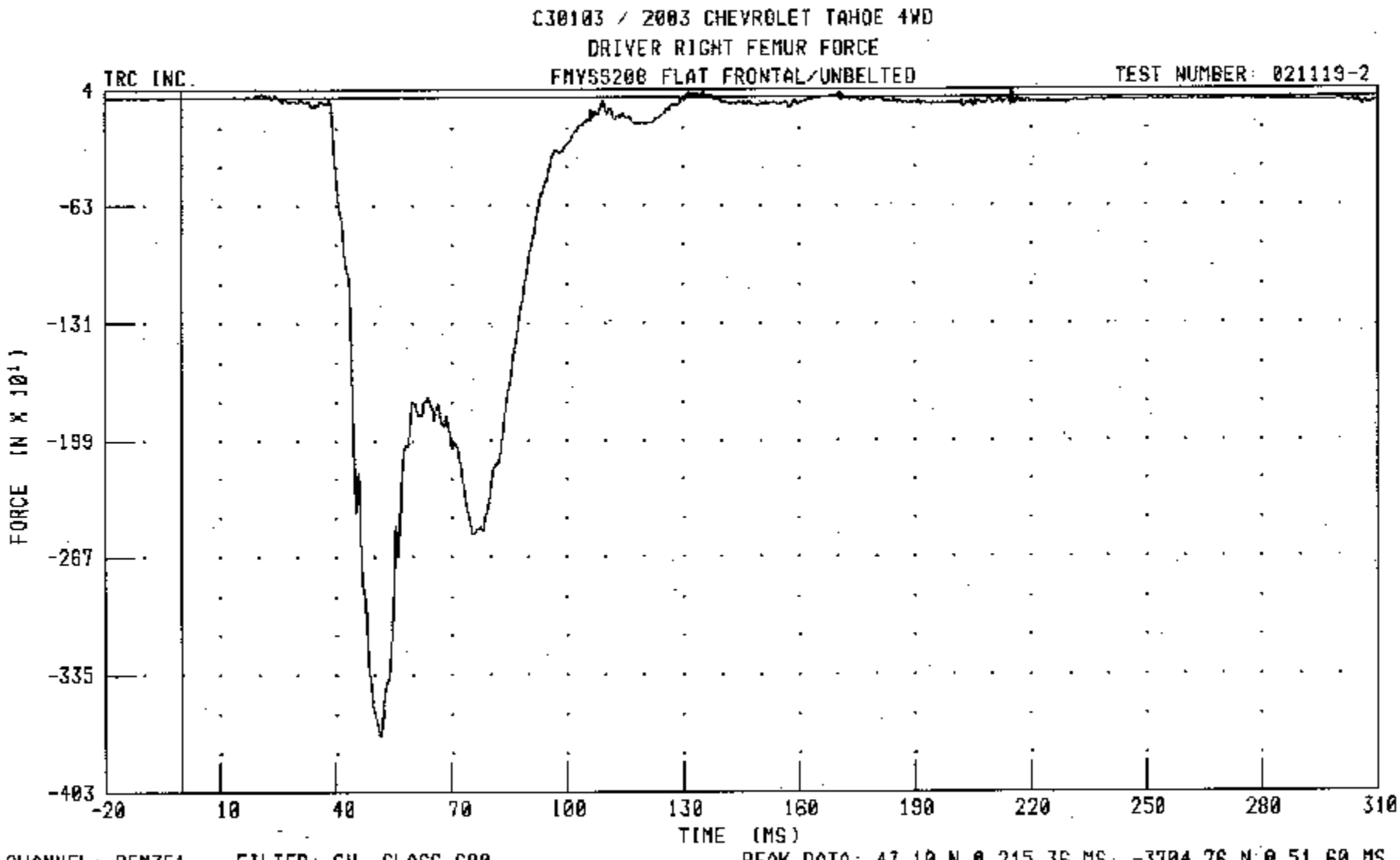
CHANNEL: CSTRG1 FILTER: CH. CLASS 180

PEAK DATA: 30.04 G @ 68.80 MS, 0.01 G @ -20.00 MS

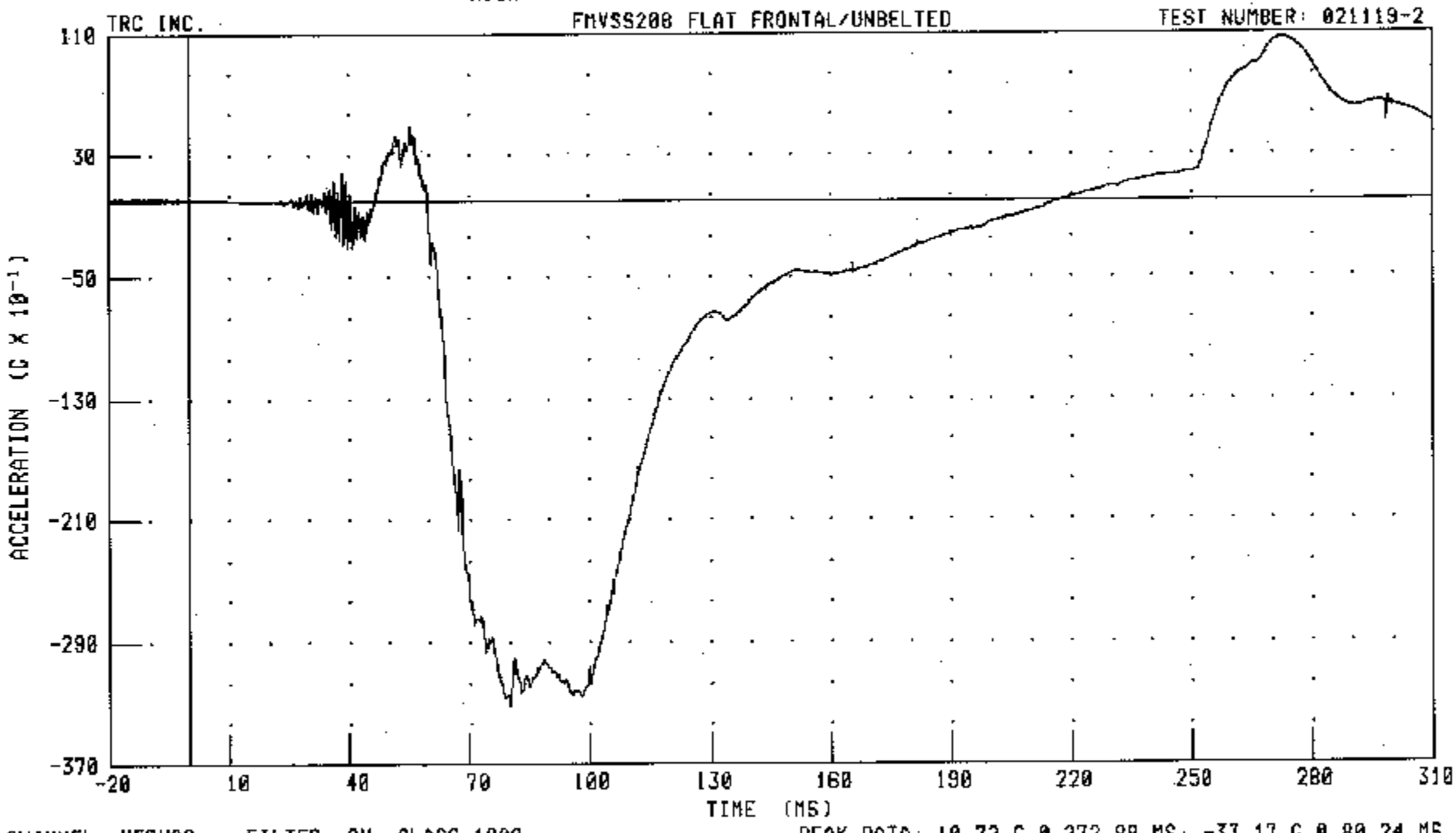
021119-2


C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER CHEST DEFLECTION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
10
-40
-90
-140
-190
-240
-290
DISPLACEMENT (MM X 10⁻¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXD1
FILTER: CH. CLASS 600
PEAK DATA: 0.69 MM @ 54.24 MS; -27.77 MM @ 85.52 MS


C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER LEFT FEMUR FORCE
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
1
-9
-19
-29
-39
-49
-59
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LFMZF1
FILTER: CH. CLASS 600
PEAK DATA: 95.85 N @ 211.60 MS; -5472.47 N @ 44.56 MS

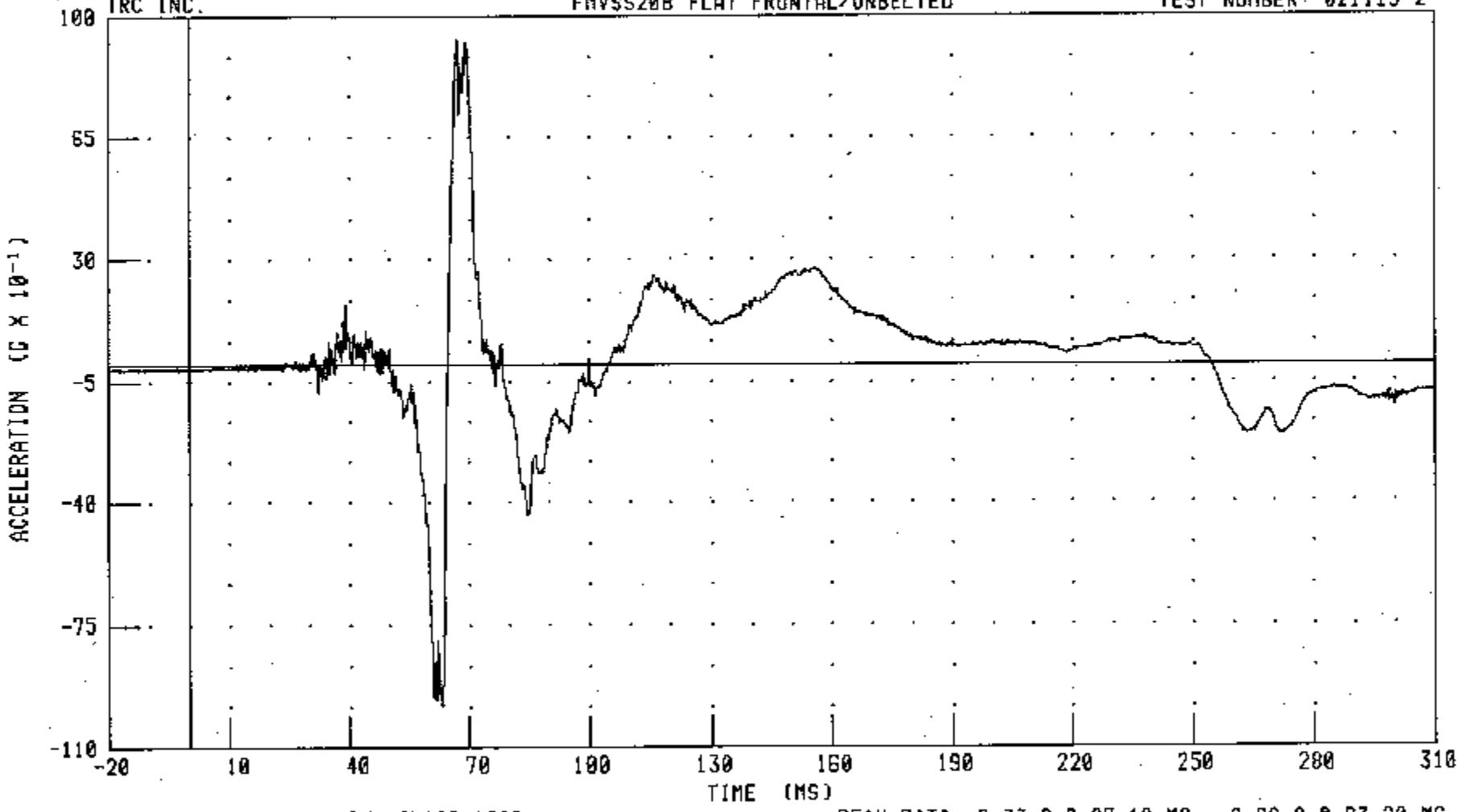

C30103 / 2003 CHEVROLET TAHOE 4WD
DRIVER RIGHT FEMUR FORCE
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
4
-63
-131
-199
-267
-335
-403
FORCE (N X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: RFMZF1
FILTER: CH. CLASS 600
PEAK DATA: 43.10 N @ 215.36 MS; -3704.76 N @ 51.60 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED



CHANNEL: HEDXG2 FILTER: CH. CLASS 1000 PEAK DATA: 10.72 G @ 272.88 MS; -33.17 G @ 80.24 MS

C30103 / 2003 CHEVROLET TAHOE 4ND
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION
TRC INC. FMVSS208 FLAT FRONTAL/UNBELTED TEST NUMBER: 021119-2

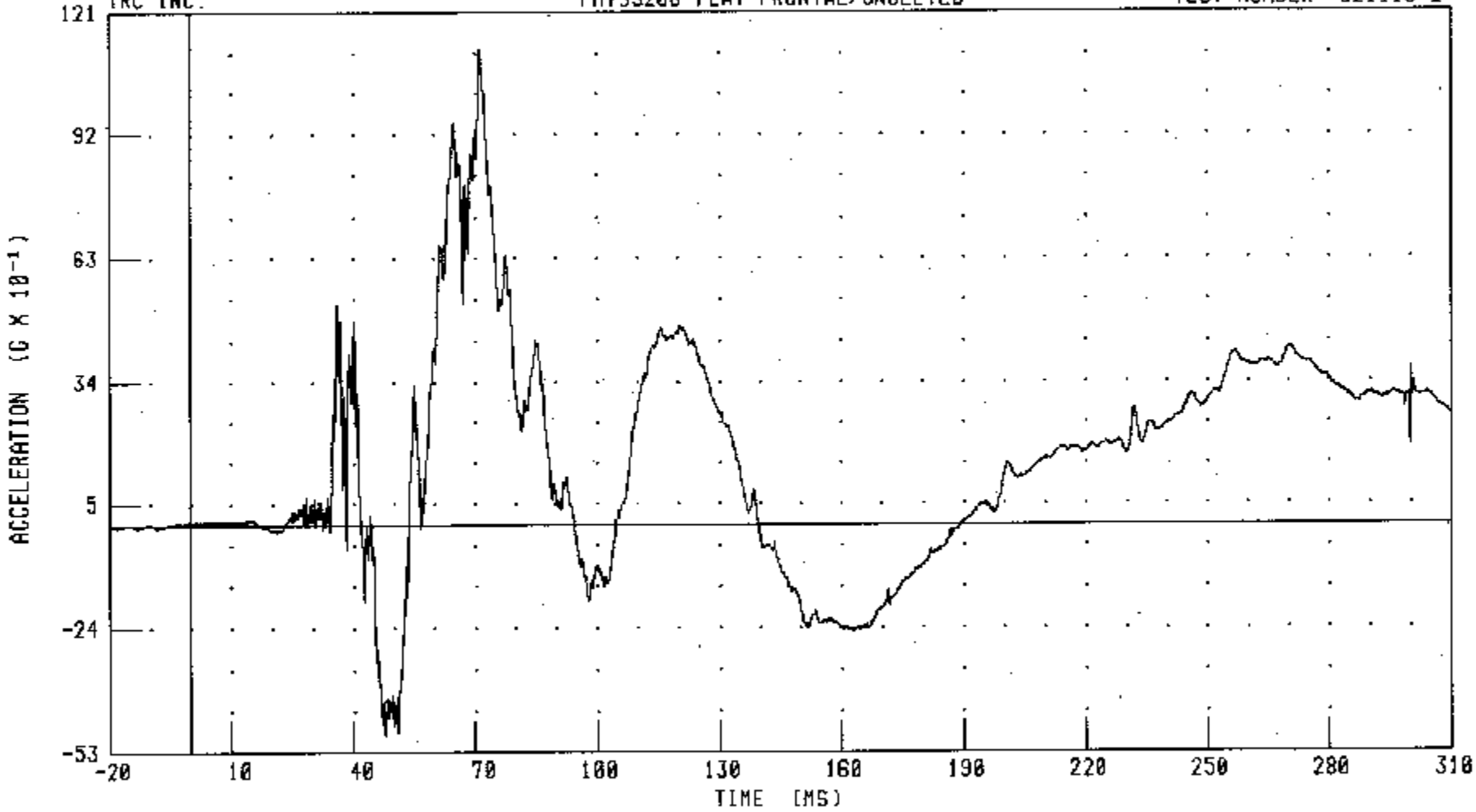


CHANNEL: HEDYG2 FILTER: CH. CLASS 1000 PEAK DATA: 9.33 G @ 67.12 MS; -9.82 G @ 83.20 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

TEST NUMBER: 021119-2

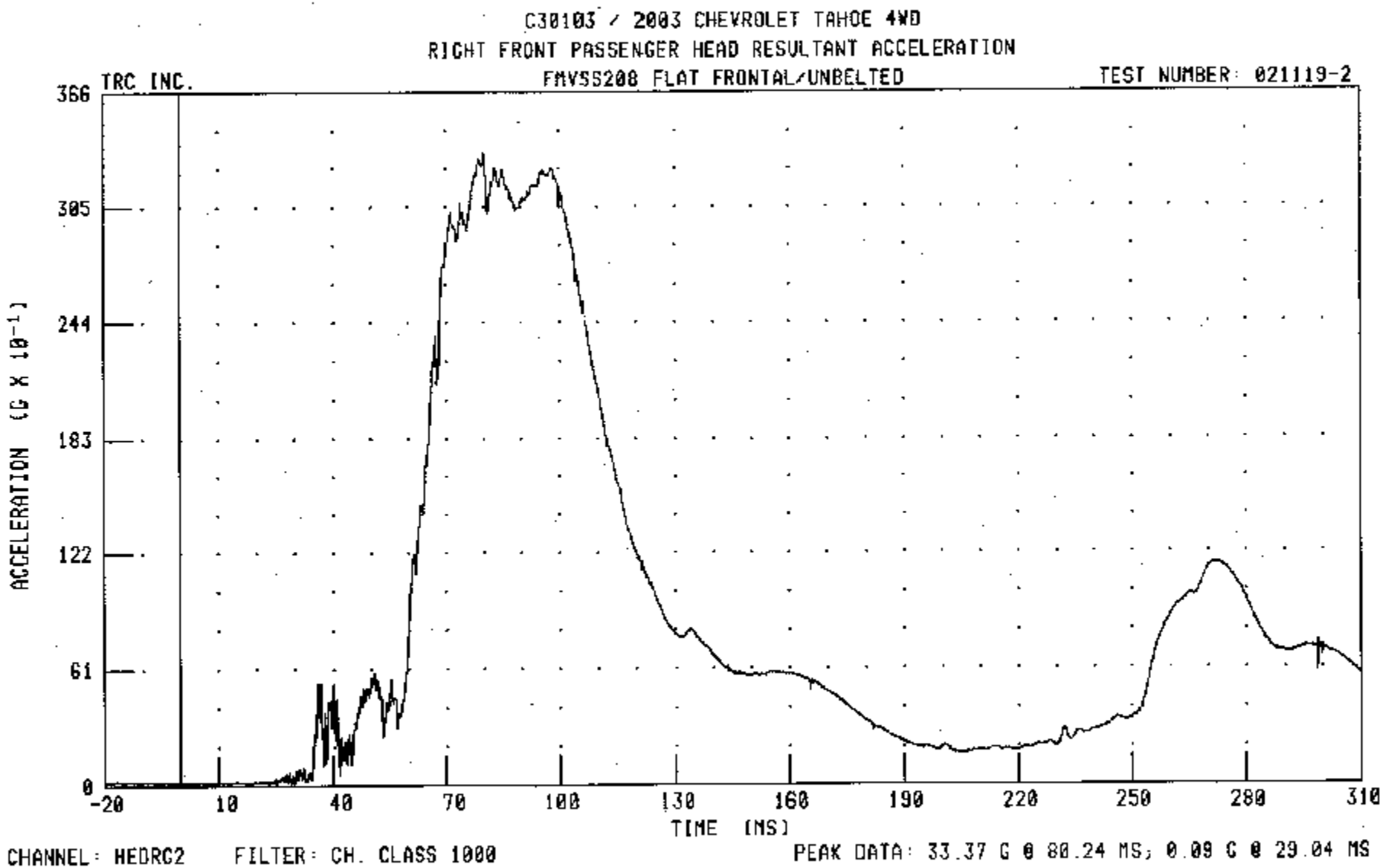


CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

PEAK DATA: 11.26 G @ 71.44 MS; -4.89 G @ 47.76 MS

6-26

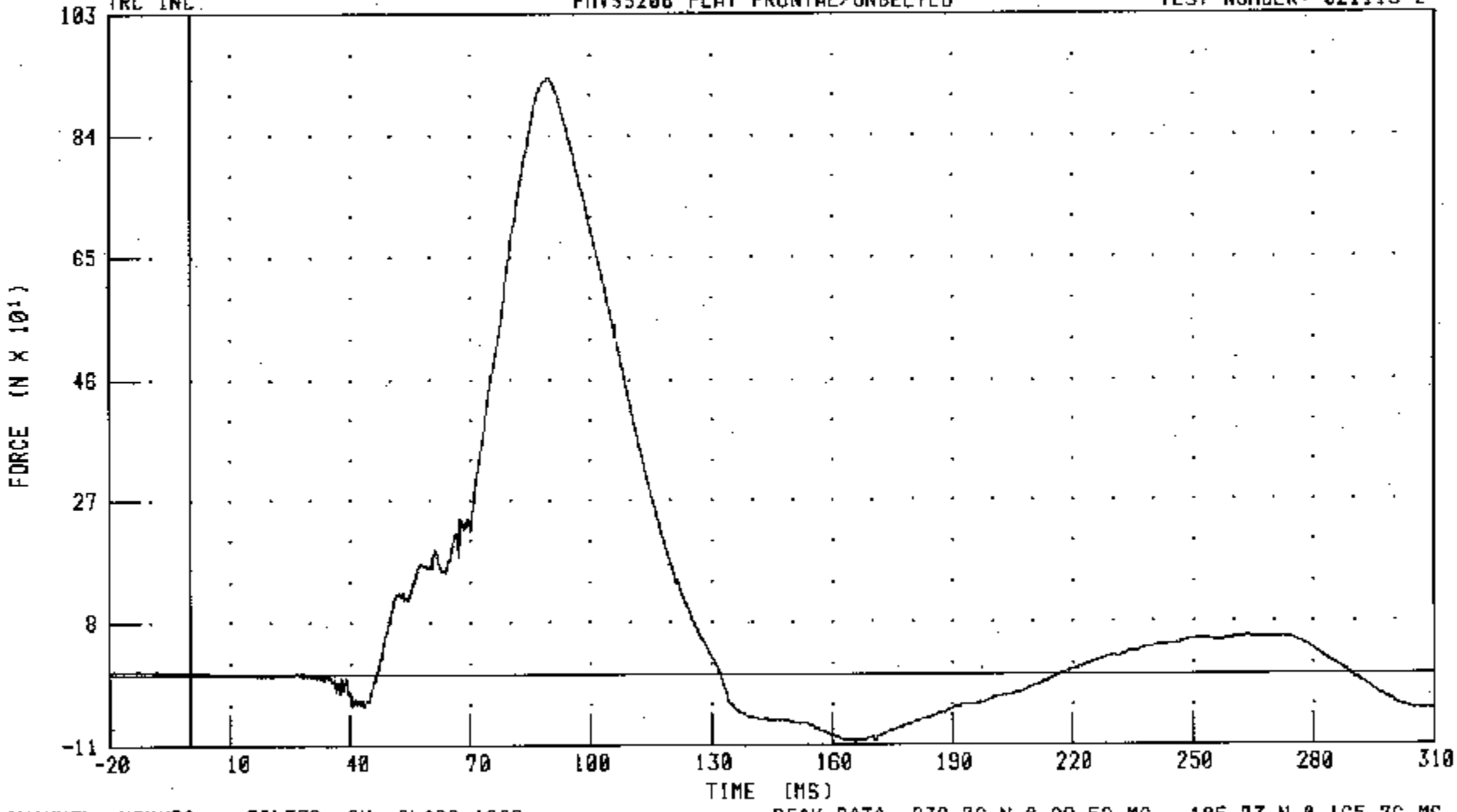
021119-2


C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
ACCELERATION (G X 10⁻¹)
366
305
244
183
122
61
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDRC2
FILTER: CH. CLASS 1000
PEAK DATA: 33.37 G @ 80.24 MS; 0.09 G @ 29.04 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC

TEST NUMBER: 021119-2

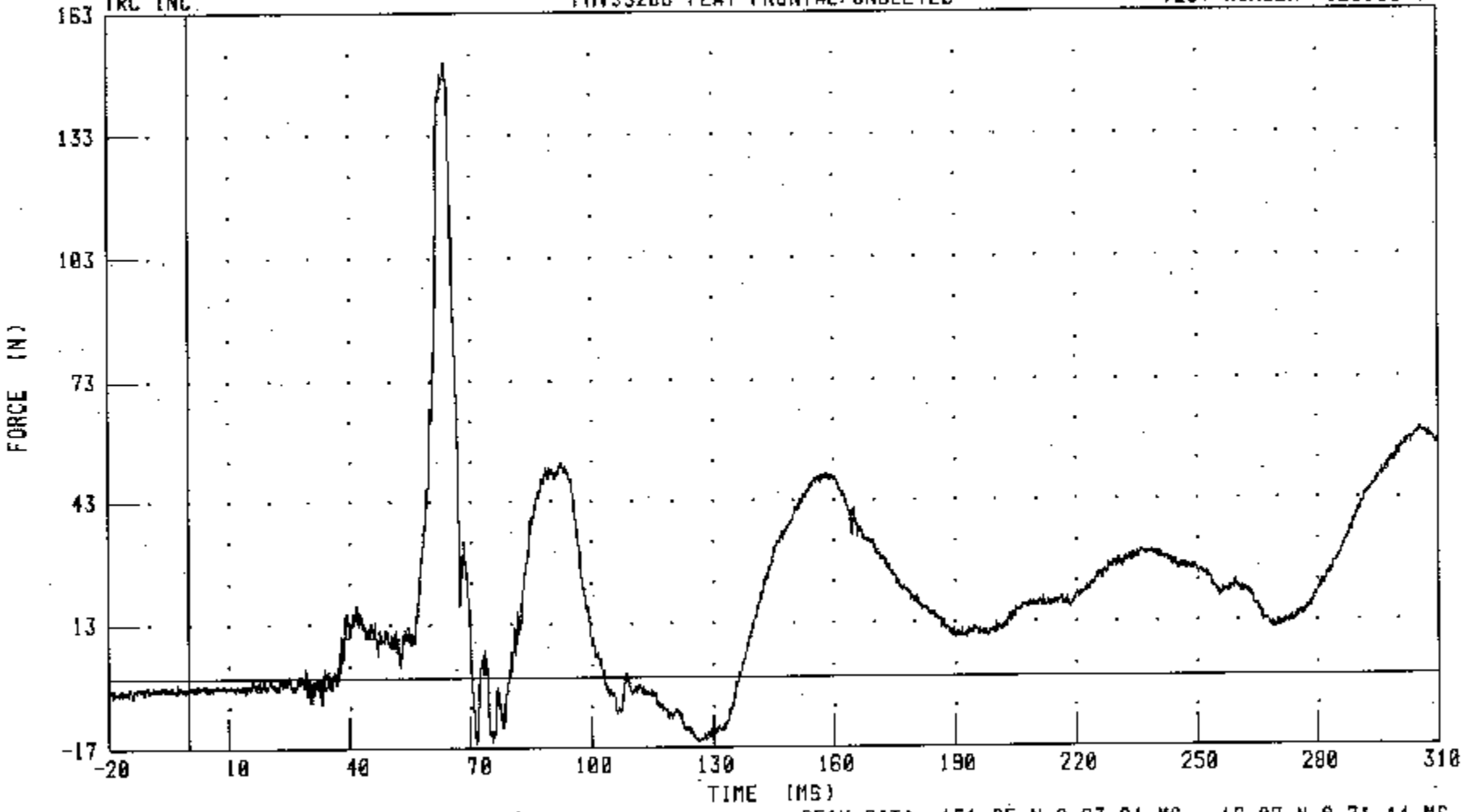


CHANNEL: NEKXF2 FILTER: CH. CLASS 1000

PEAK DATA: 930.76 N @ 89.52 MS, -105.73 N @ 165.76 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC. TEST NUMBER: 021119-2



CHANNEL: NEKYF2 FILTER: CH. CLASS 1000

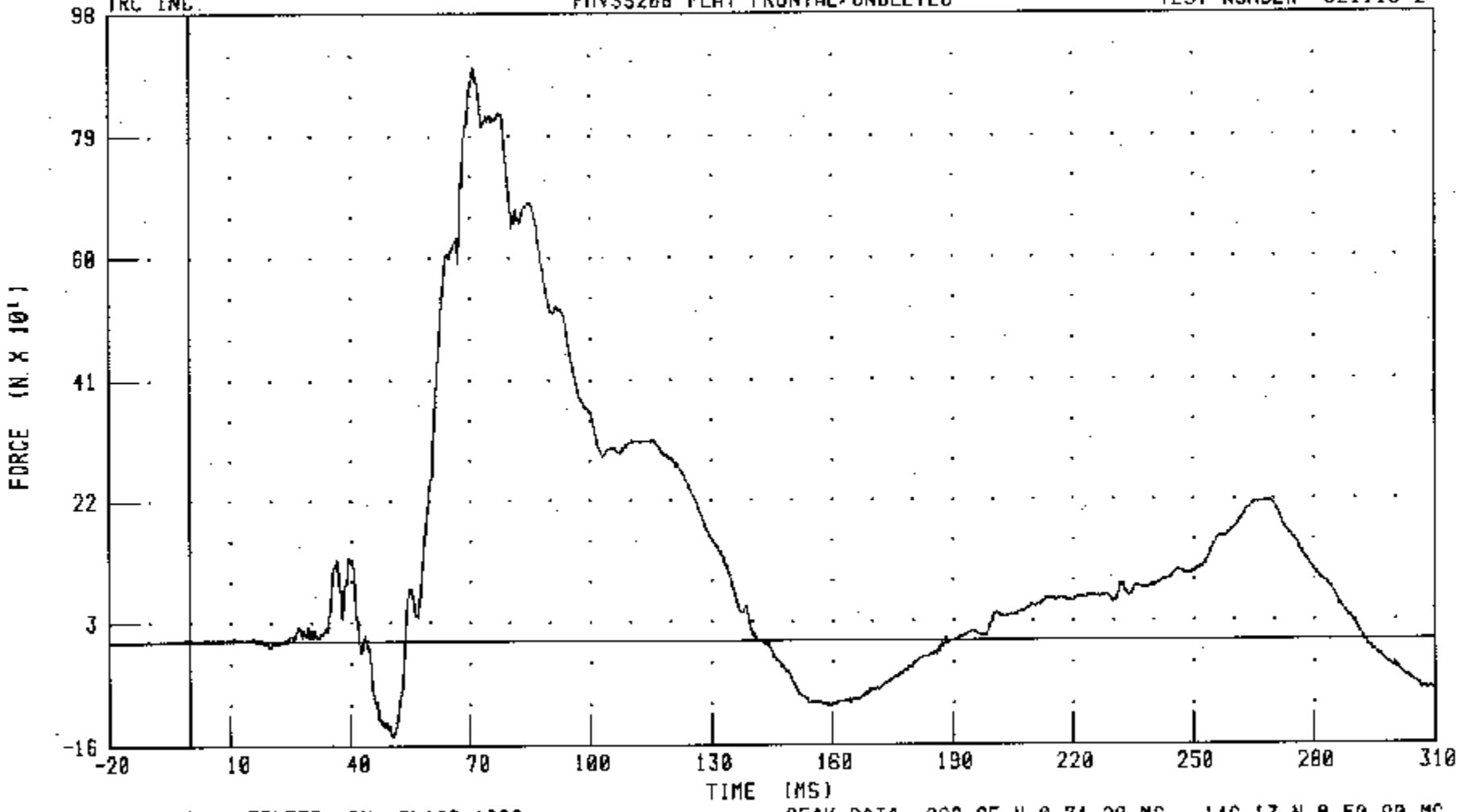
PEAK DATA: 151.05 N @ 63.84 MS; -16.07 N @ 71.44 MS

021119-2

C30103 / 2003 CHEVROLET TAHOE 4ND
RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC

TEST NUMBER: 021119-2



CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

PEAK DATA: 898.85 N @ 71.20 MS; -146.13 N @ 50.80 MS

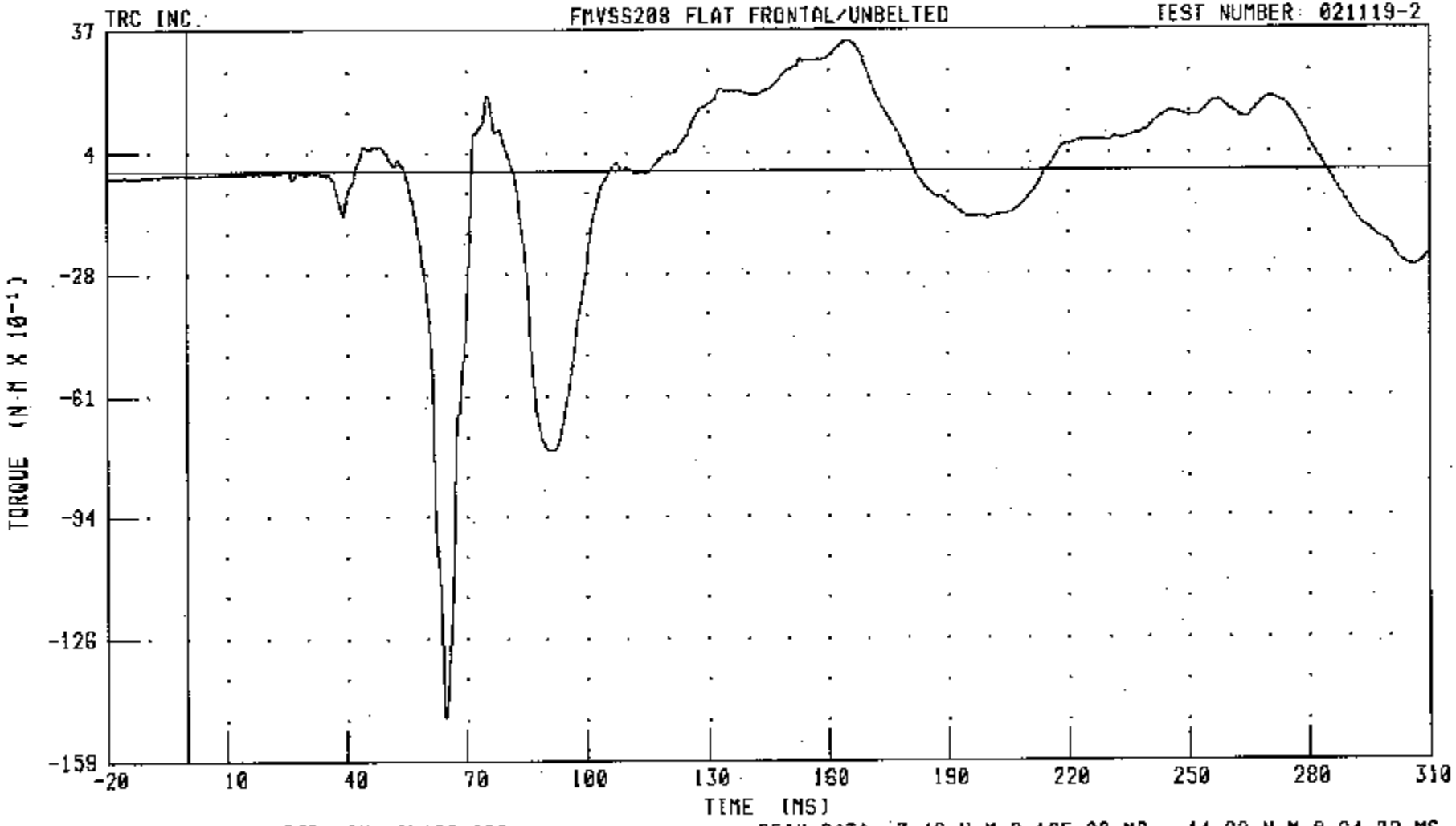
6-30

021119-2

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

TEST NUMBER: 021119-2

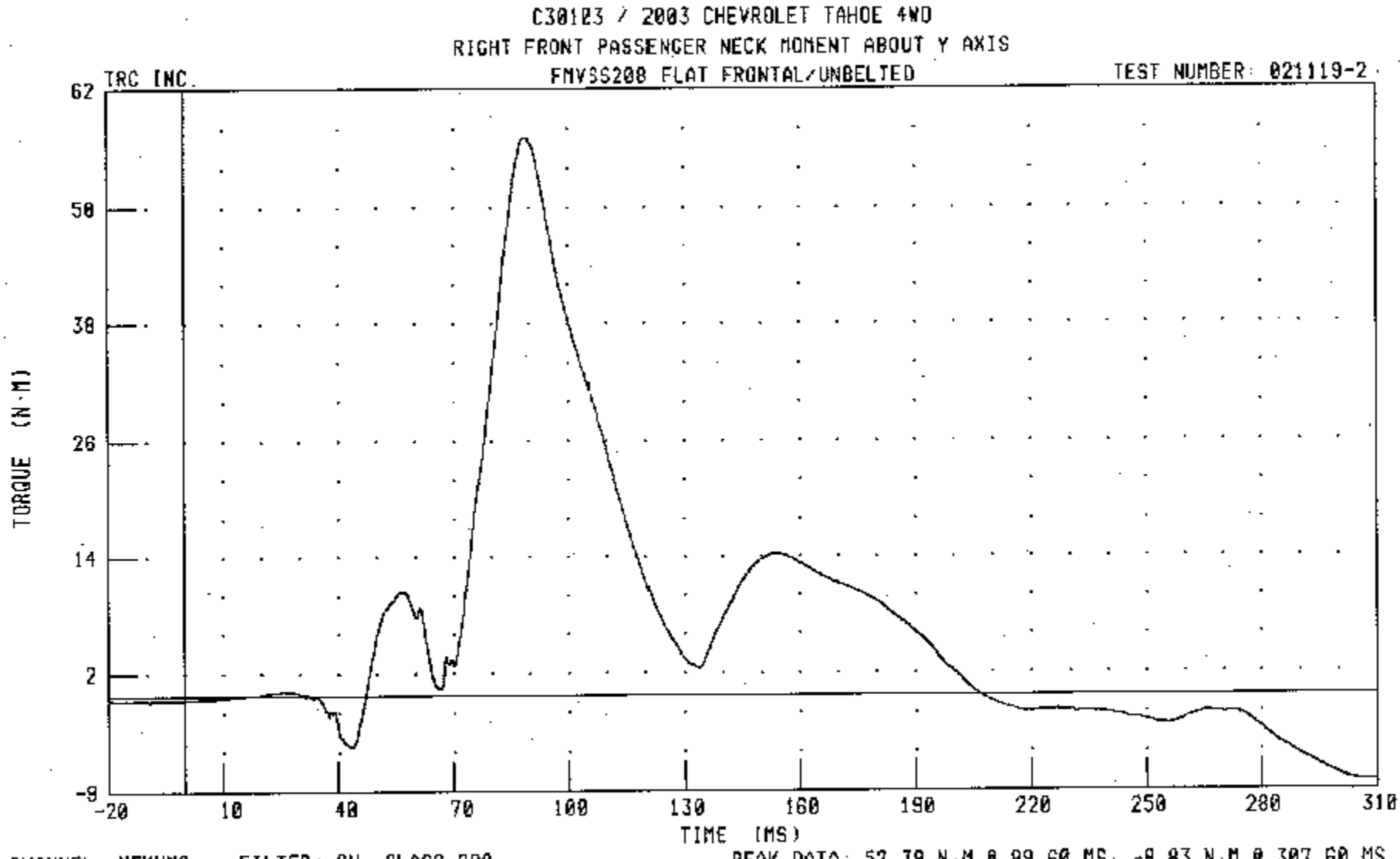


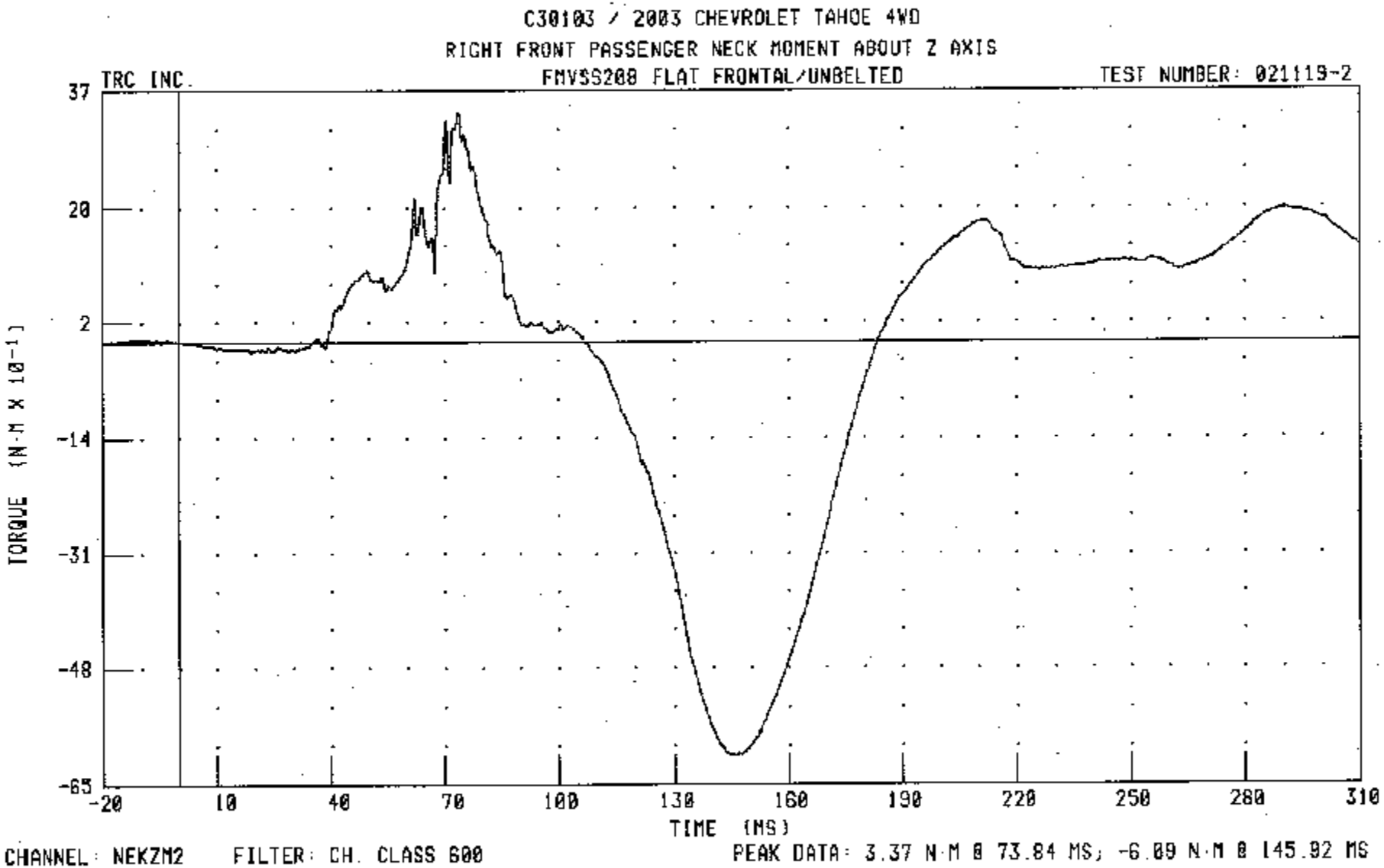
CHANNEL: NEKXM2 FILTER: CH. CLASS 600

PEAK DATA: 3.48 N-M @ 165.20 MS; -14.82 N-M @ 64.72 MS

6-31

021119-2

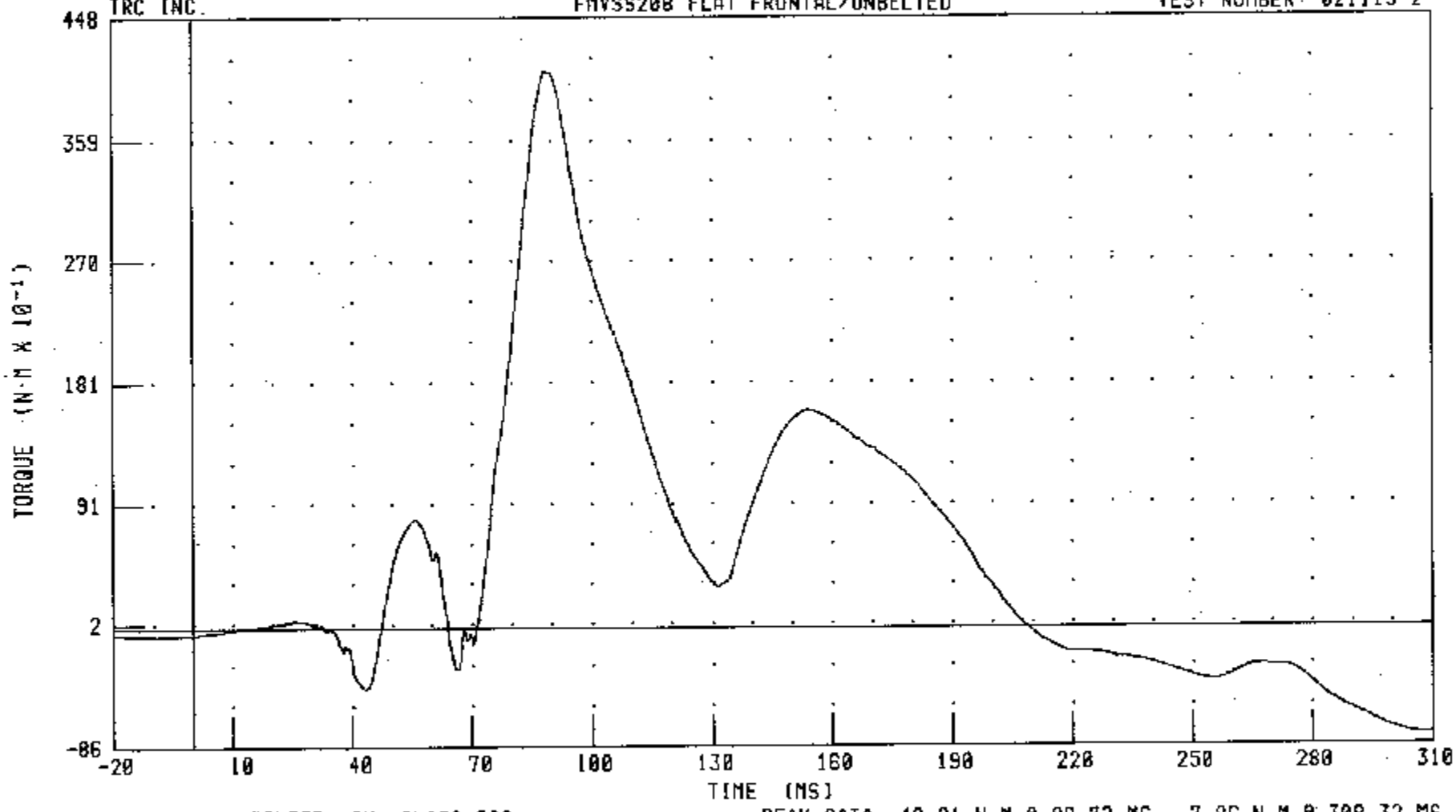

C30123 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
TORQUE (N-M)
62
50
38
26
14
2
-9
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKYM2
FILTER: CH. CLASS 600
PEAK DATA: 57.38 N-M @ 89.60 MS; -8.83 N-M @ 307.60 MS


C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Z AXIS
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
37
20
2
-14
-31
-48
-65
TORQUE (N-M X 10-1)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKZM2
FILTER: CH. CLASS 600
PEAK DATA: 3.37 N-M @ 73.84 MS; -6.09 N-M @ 145.92 MS

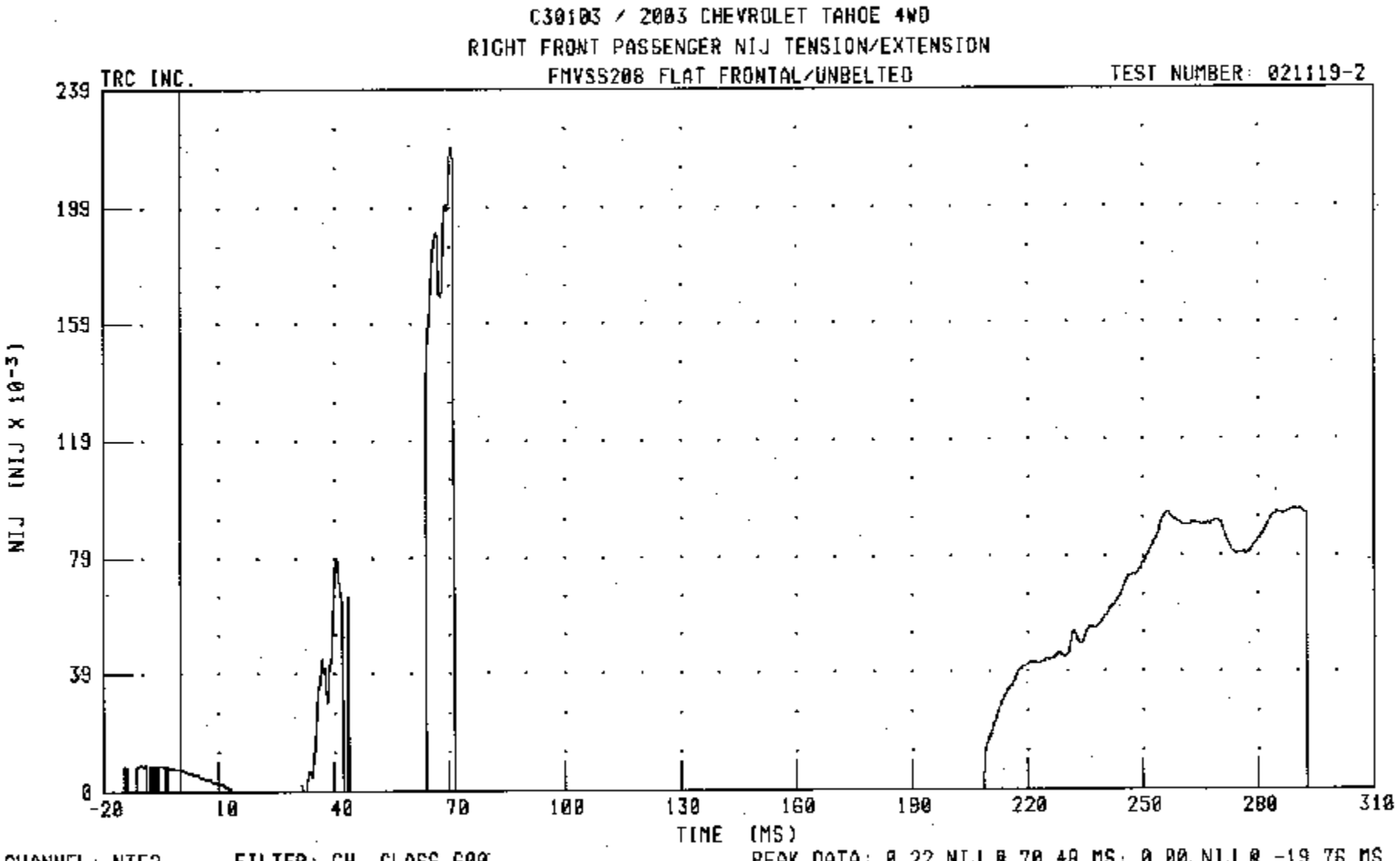
C30103 / 2003 CHEVROLET TAHOE 4WD

RIGHT FRONT PASSENGER NECK MOMENT OCCIPITAL CONDYLE ABOUT Y AXIS

TRC INC. FMVSS208 FLAT FRONTAL/UNBELTED TEST NUMBER: 021119-2



CHANNEL: NKOYM2 FILTER: CH. CLASS 600 PEAK DATA: 40.91 N-M @ 88.72 MS; -7.86 N-M @ 308.32 MS

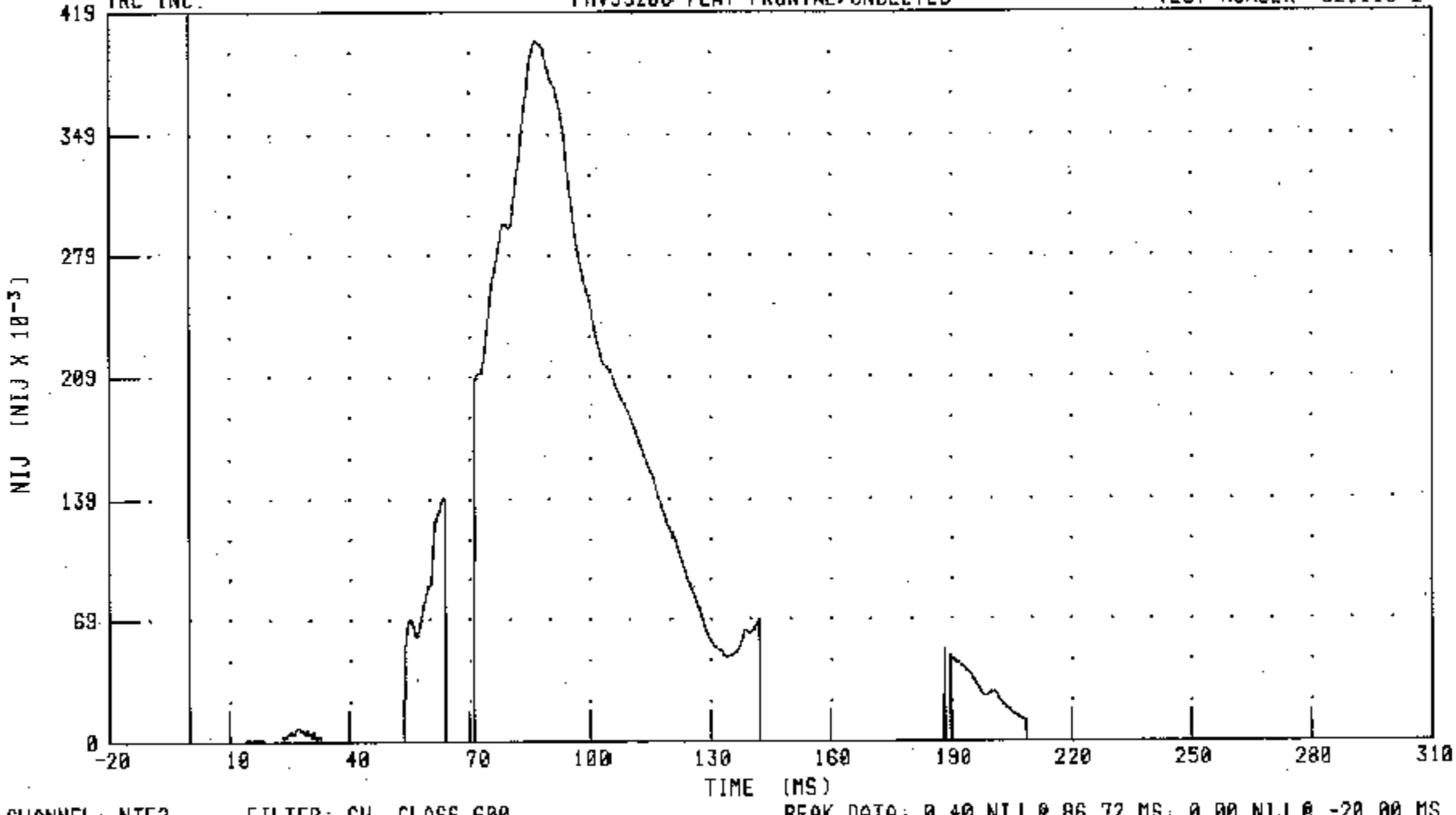

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER NIJ TENSION/EXTENSION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
239
199
159
119
79
39
0
NIJ (NIJ X 10-3)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NTE2
FILTER: CH. CLASS 600
PEAK DATA: 0.22 NIJ @ 70.48 MS; 0.00 NIJ @ -19.76 MS

021119-2

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER NIJ TENSION/FLEXION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

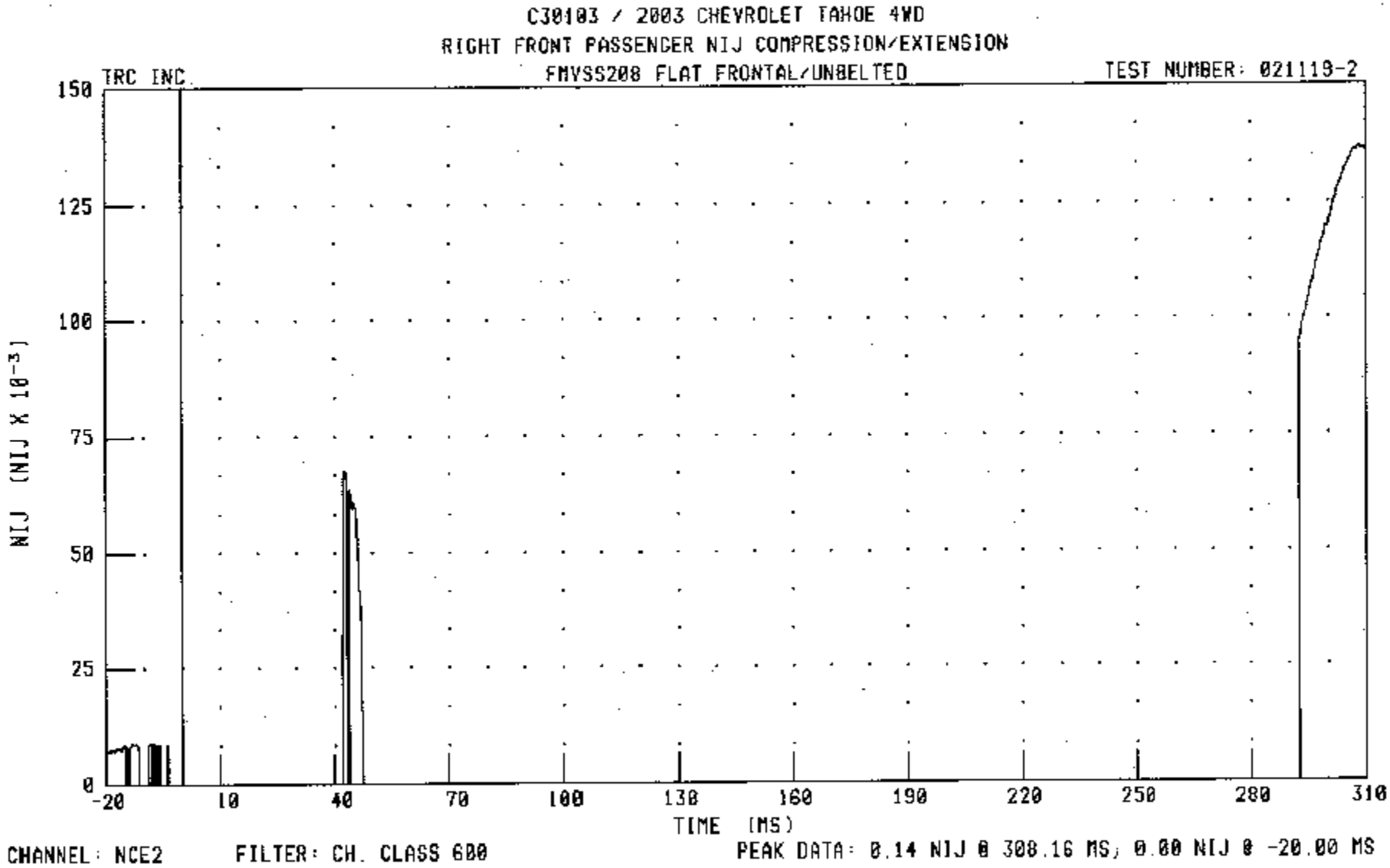
TEST NUMBER: 021119-2



CHANNEL: NTF2 FILTER: CH. CLASS 600

PEAK DATA: 0.40 NIJ @ 86.72 MS; 0.00 NIJ @ -20.00 MS

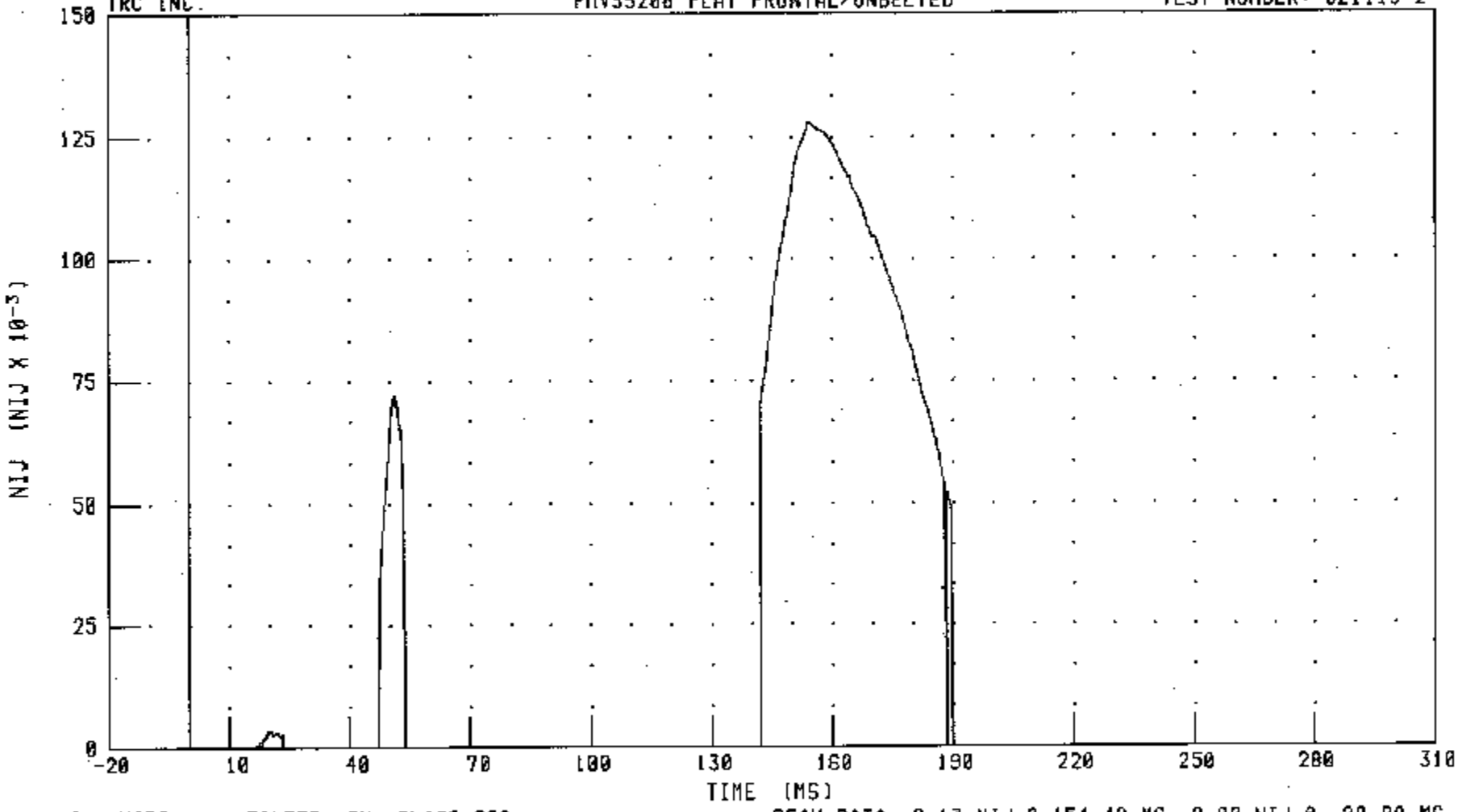
021119-2


C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER NIJ COMPRESSION/EXTENSION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
NIJ (NIJ X 10⁻³)
150
125
100
75
50
25
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NCE2
FILTER: CH. CLASS 600
PEAK DATA: 0.14 NIJ @ 308.16 MS, 0.00 NIJ @ -20.00 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER NIJ COMPRESSION/FLEXION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

TEST NUMBER: 021119-2



CHANNEL: NCF2 FILTER: CH. CLASS 600

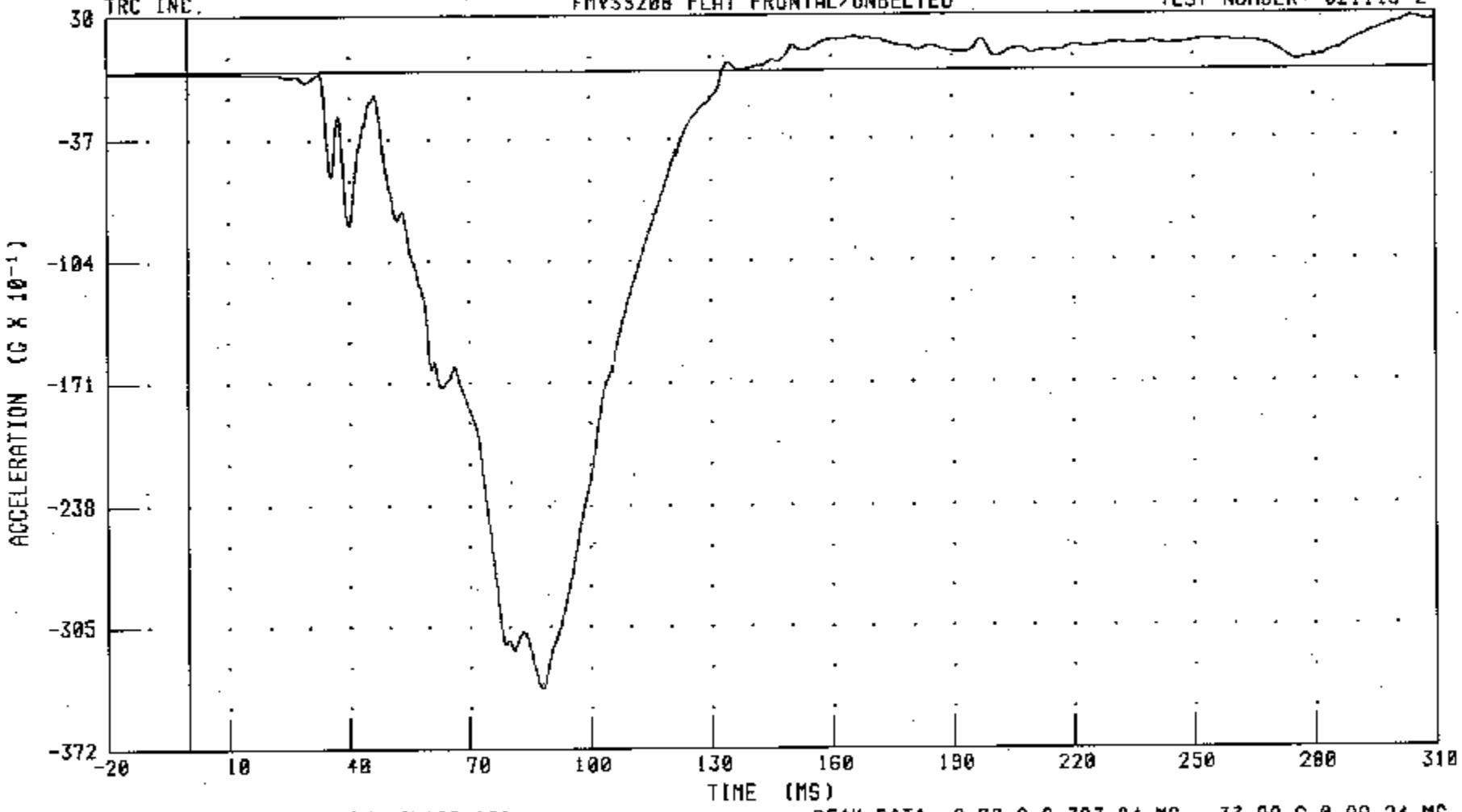
PEAK DATA: 0.13 NIJ @ 154.48 MS; 0.00 NIJ @ -20.00 MS

021119-2

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

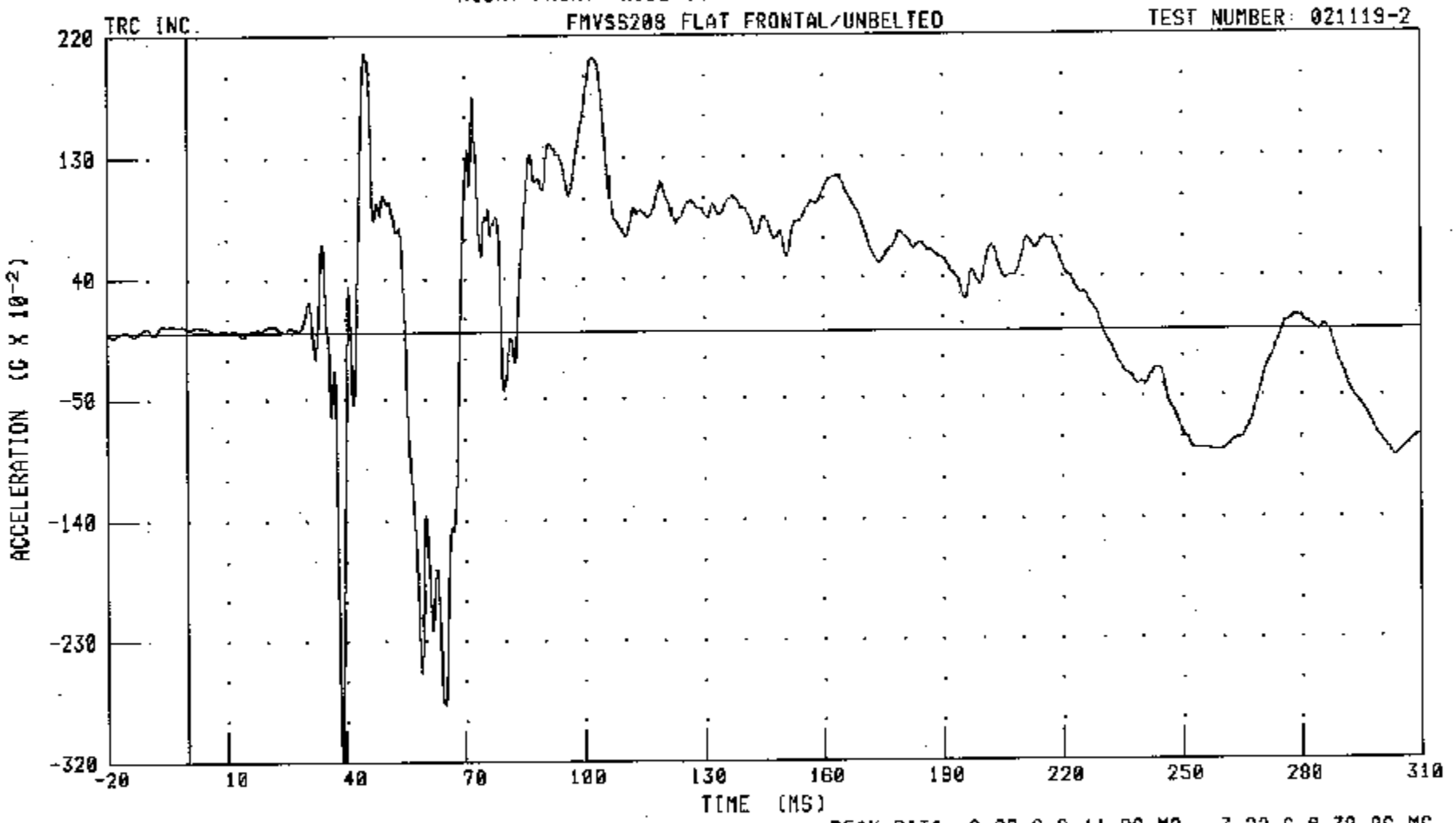
TEST NUMBER: 021119-2



CHANNEL: CSTXC2 FILTER: CH. CLASS 180

PEAK DATA: 2.77 G @ 303.84 MS; -33.89 G @ 88.24 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

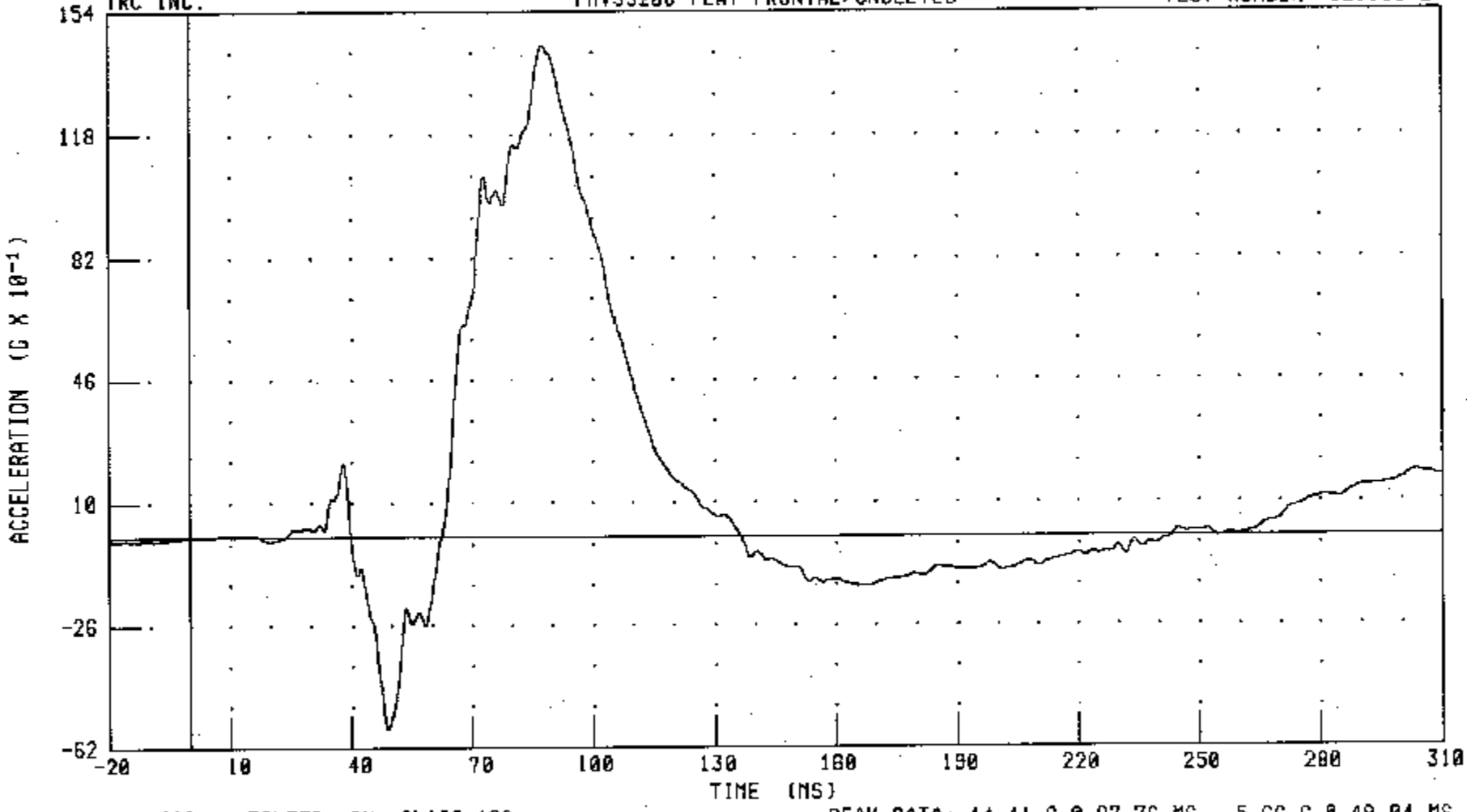


CHANNEL: CSTYG2 FILTER: CH. CLASS 180

PEAK DATA: 2.07 G @ 44.96 MS; -3.22 G @ 30.96 MS

021119-2

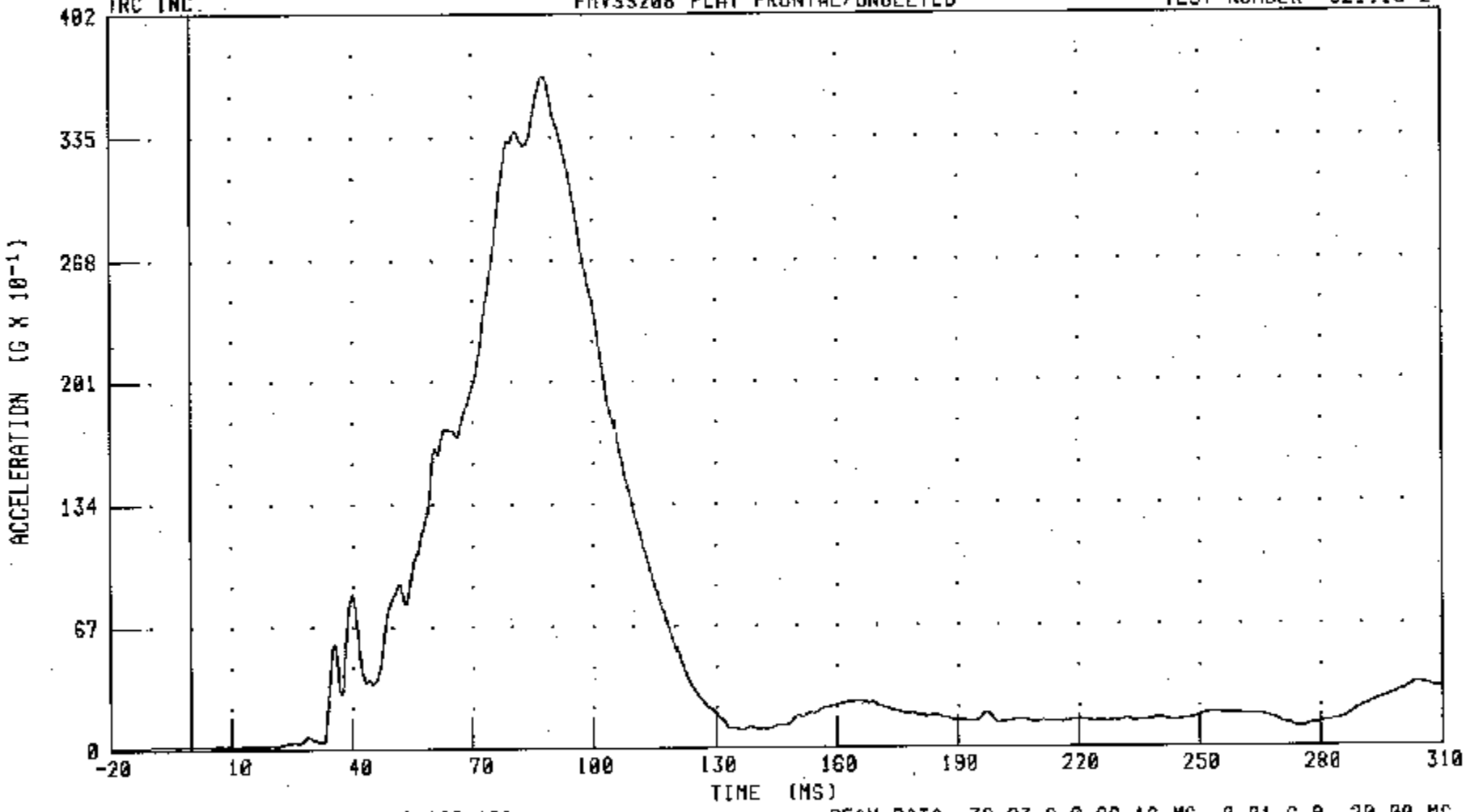
C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION
TRC INC. FMVSS208 FLAT FRONTAL/UNBELTED TEST NUMBER: 021119-2



CHANNEL: CSTZG2 FILTER: CH. CLASS 180 PEAK DATA: 14.41 G @ 87.76 MS; -5.66 G @ 49.04 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC. TEST NUMBER: 021119-2

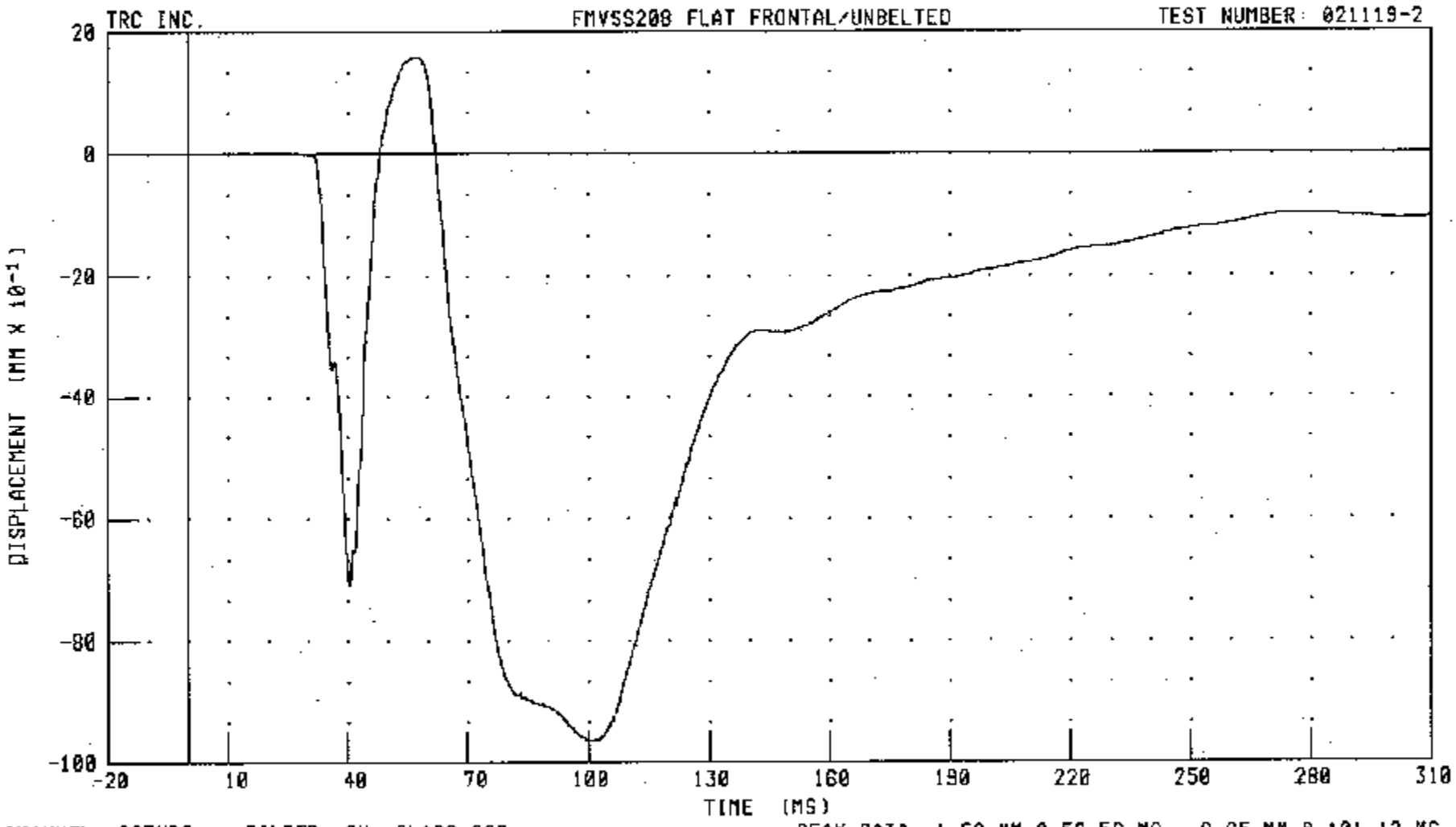


CHANNEL: CSTRG2 FILTER: CH. CLASS 180

PEAK DATA: 36.83 G @ 88.16 MS; 0.01 G @ -20.00 MS

021119-2

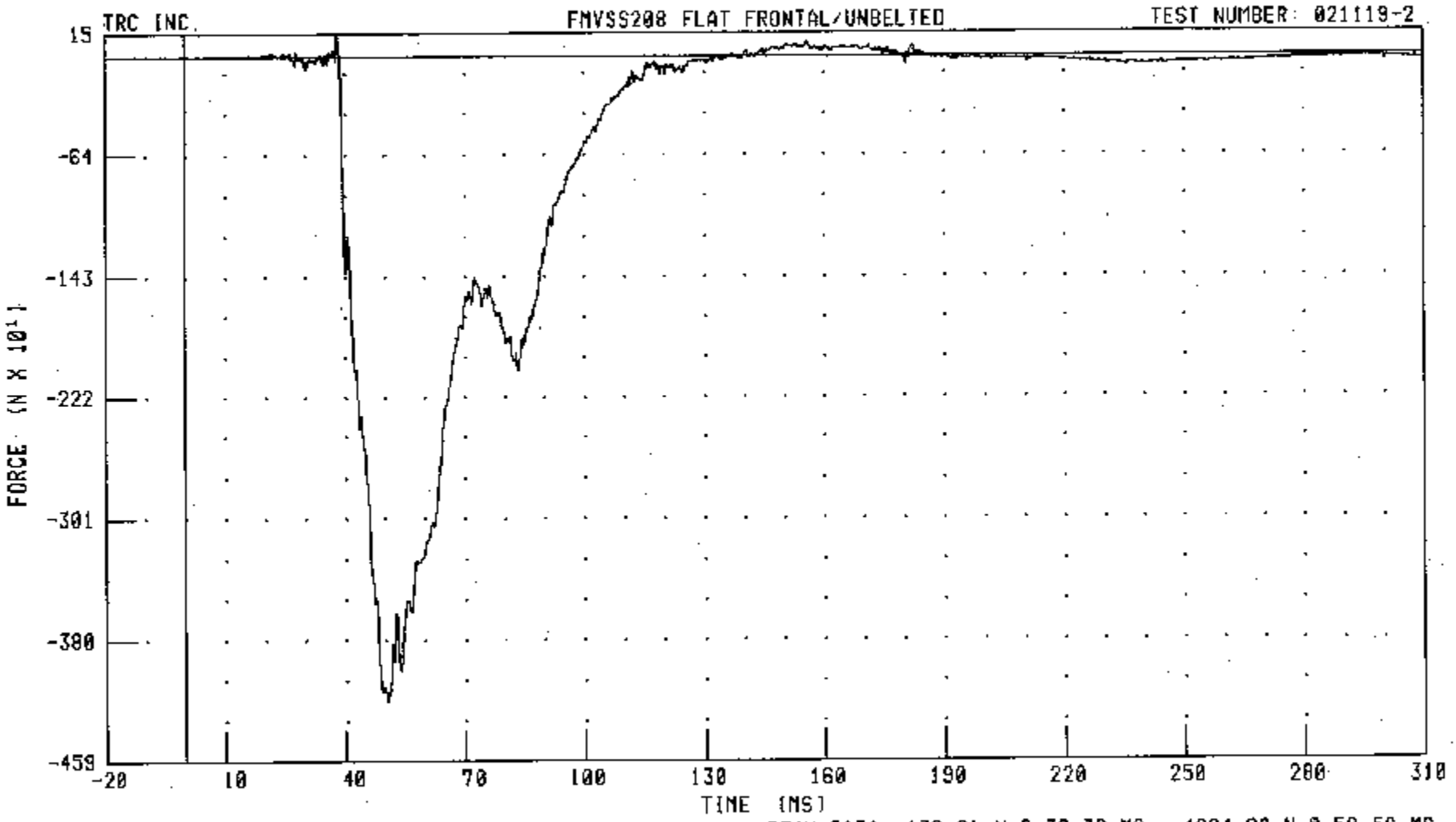
C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER CHEST DEFLECTION
FMVSS208 FLAT FRONTAL/UNBELTED



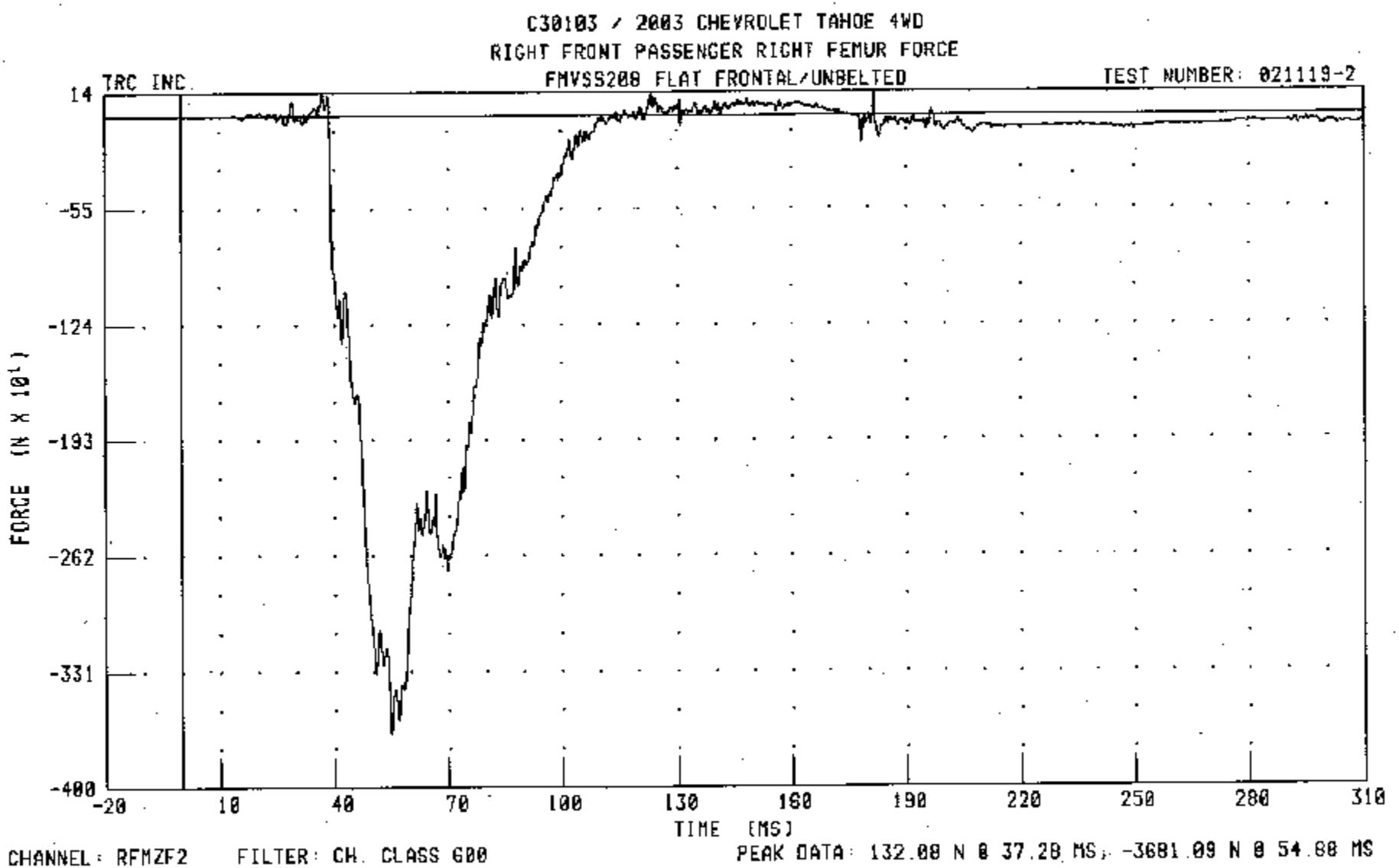
CHANNEL: CSTXD2 FILTER: CH. CLASS 600 PEAK DATA: 1.58 MM @ 56.56 MS; -9.65 MM @ 101.12 MS

021119-2

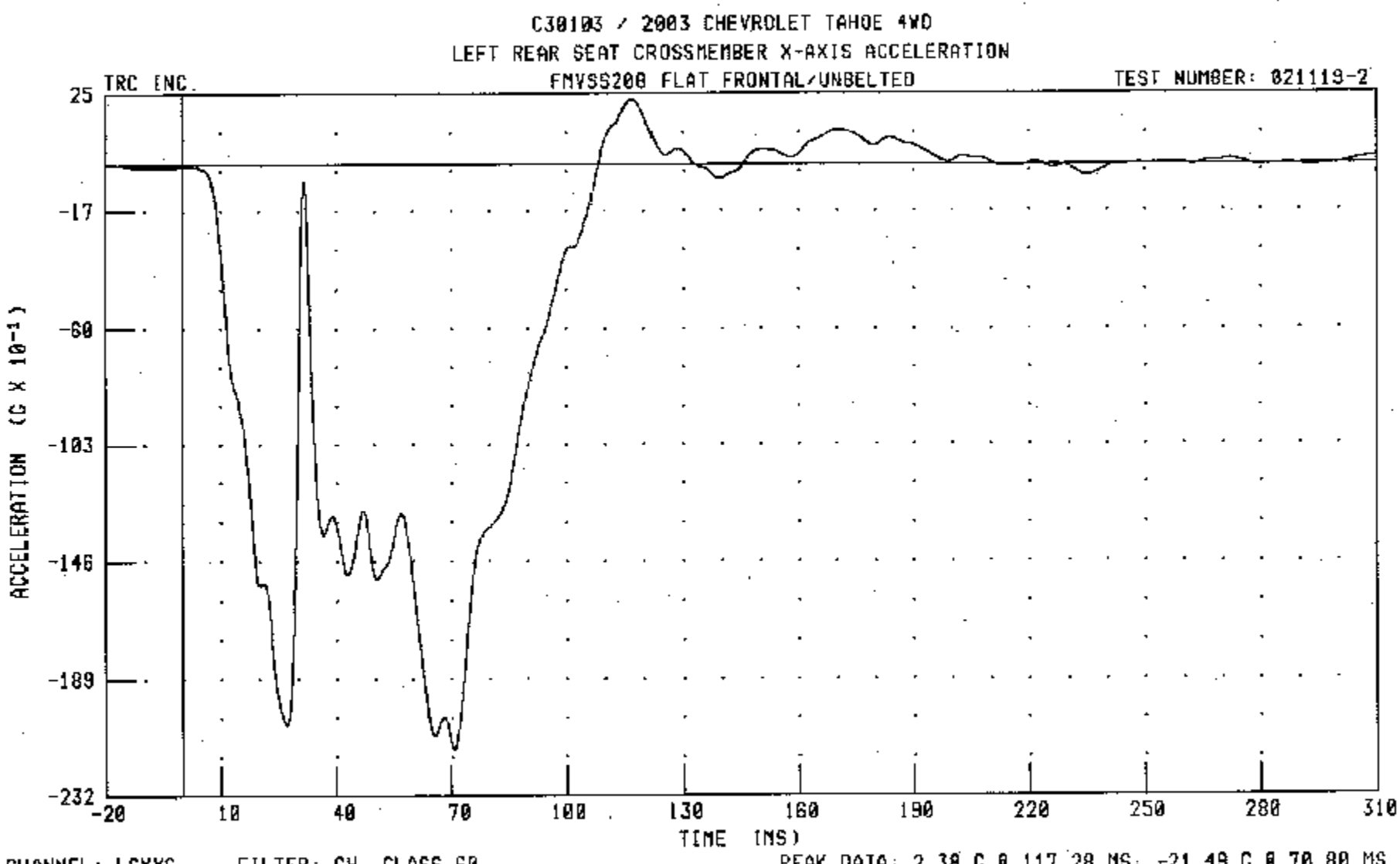
C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER LEFT FEMUR FORCE
FMVSS208 FLAT FRONTAL/UNBELTED



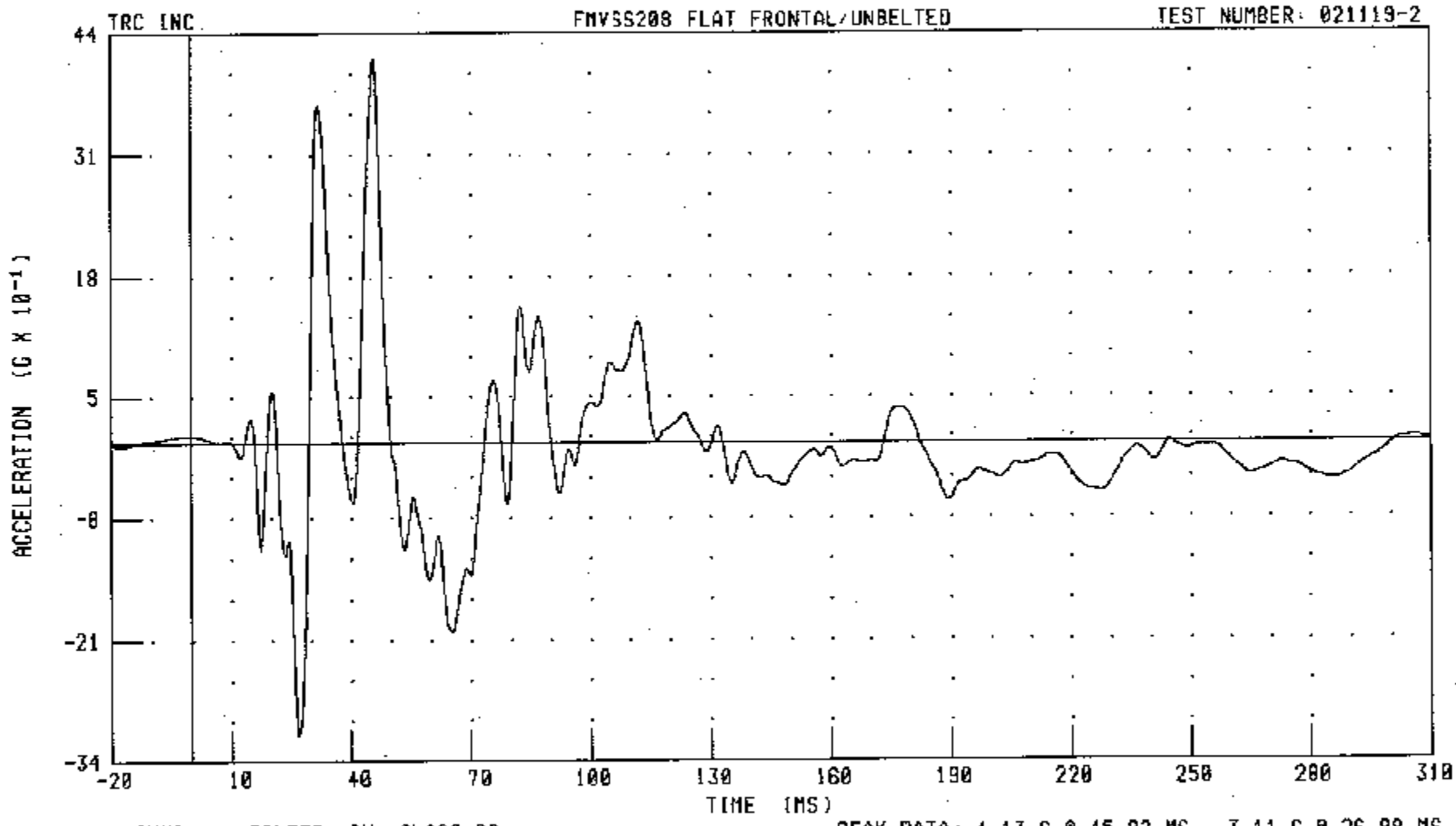
CHANNEL: LFMZF2 FILTER: CH. CLASS 600
PEAK DATA: 139.91 N @ 38.32 MS; -4204.89 N @ 50.56 MS


C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
14
-55
-124
-193
-262
-331
-400
FORCE (N X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: RFMZF2
FILTER: CH. CLASS 600
PEAK DATA: 132.08 N @ 37.28 MS; -3681.09 N @ 54.68 MS

021119-2

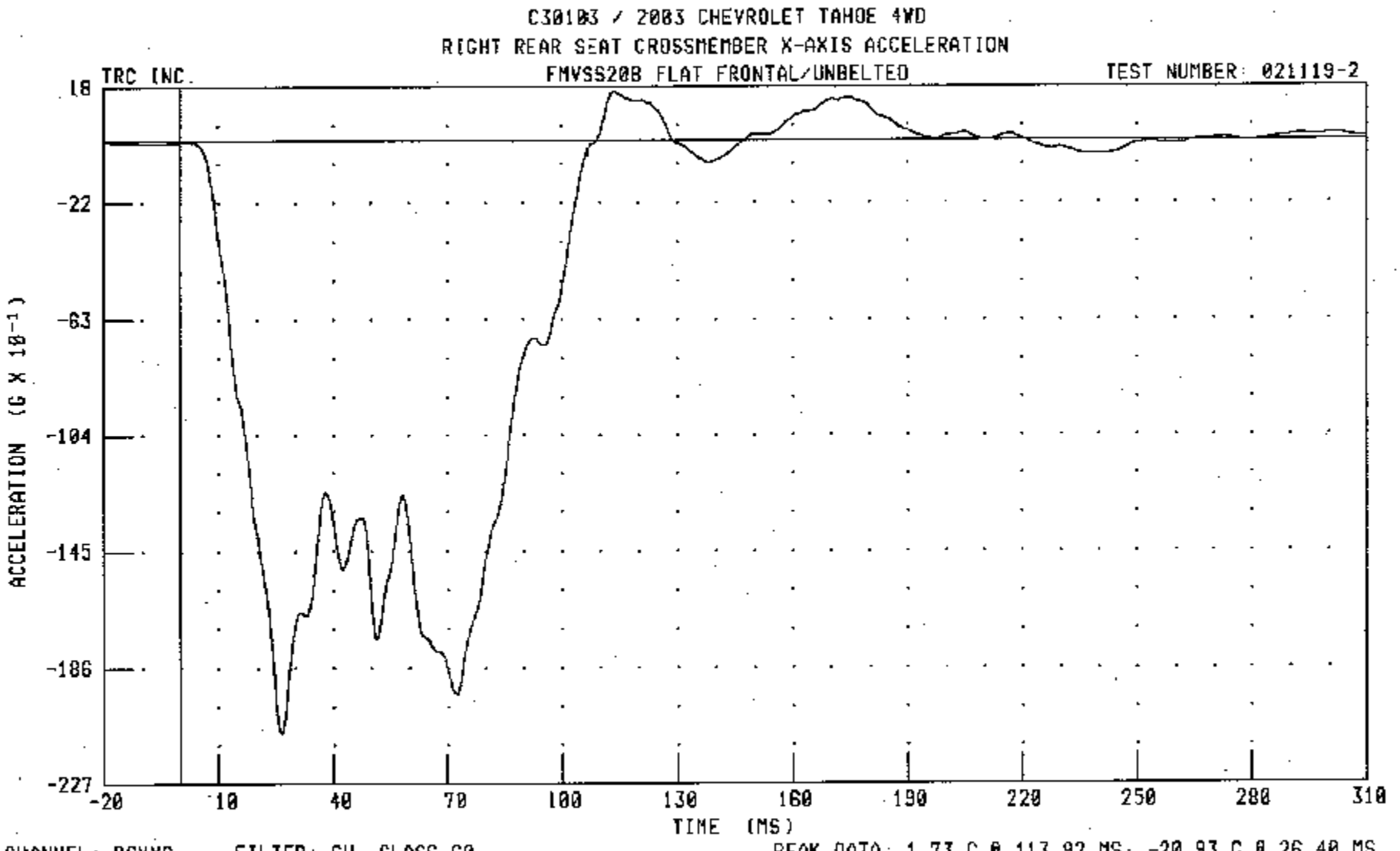

C30103 / 2003 CHEVROLET TAHOE 4WD
LEFT REAR SEAT CROSSMEMBER X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC ENC.
TEST NUMBER: 021119-2
25
-17
-60
-103
-146
-189
-232
ACCELERATION (G X 10-1)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LSXXG
FILTER: CH. CLASS 60
PEAK DATA: 2.38 G @ 117.28 MS; -21.49 G @ 70.80 MS

C30103 / 2003 CHEVROLET TAHOE 4WD
LEFT REAR SEAT CROSSMEMBER Y-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED



CHANNEL: LSXYG FILTER: CH. CLASS 60 PEAK DATA: 4.13 G @ 45.92 MS; -3.11 G @ 26.88 MS

021119-2

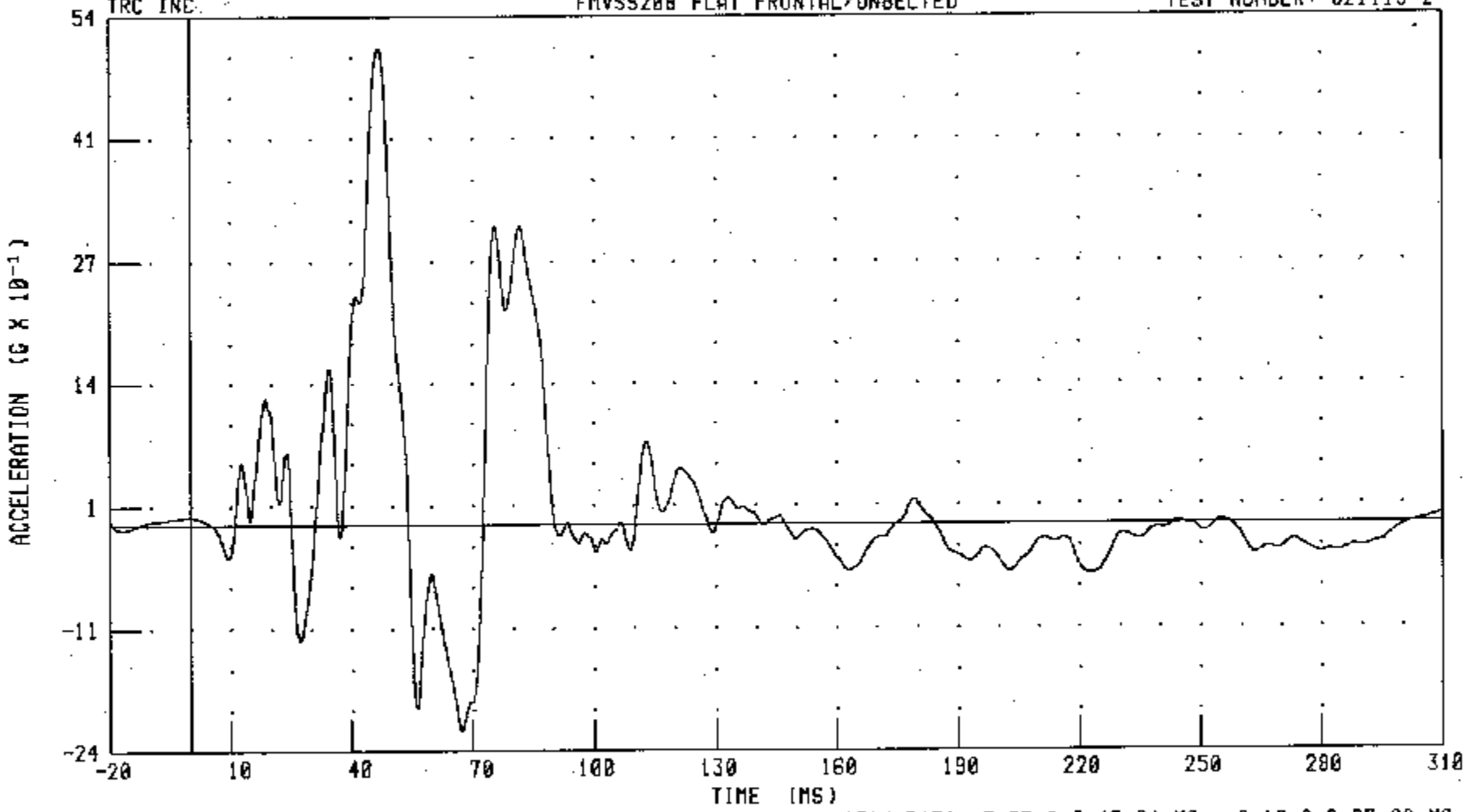

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT REAR SEAT CROSSMEMBER X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
18
-22
-63
-104
-145
-186
-227
ACCELERATION (G X 10⁻¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: RSXXG
FILTER: CH. CLASS 60
PEAK DATA: 1.73 G @ 113.92 MS; -20.93 G @ 26.40 MS

021119-2

C30103 / 2003 CHEVROLET TAHOE 4WD
RIGHT REAR SEAT CROSSMEMBER Y-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

TRC INC.

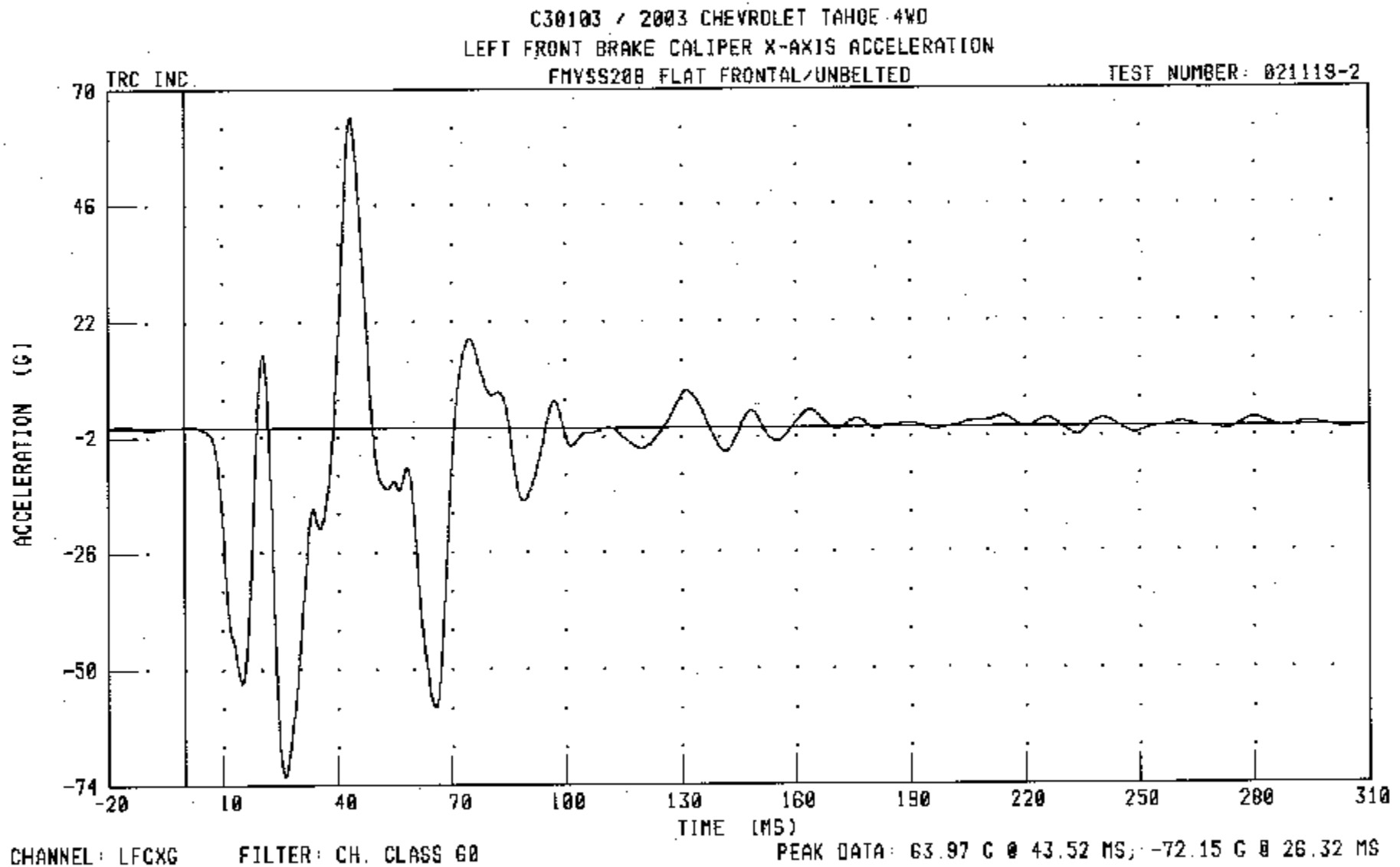
TEST NUMBER: 021119-2



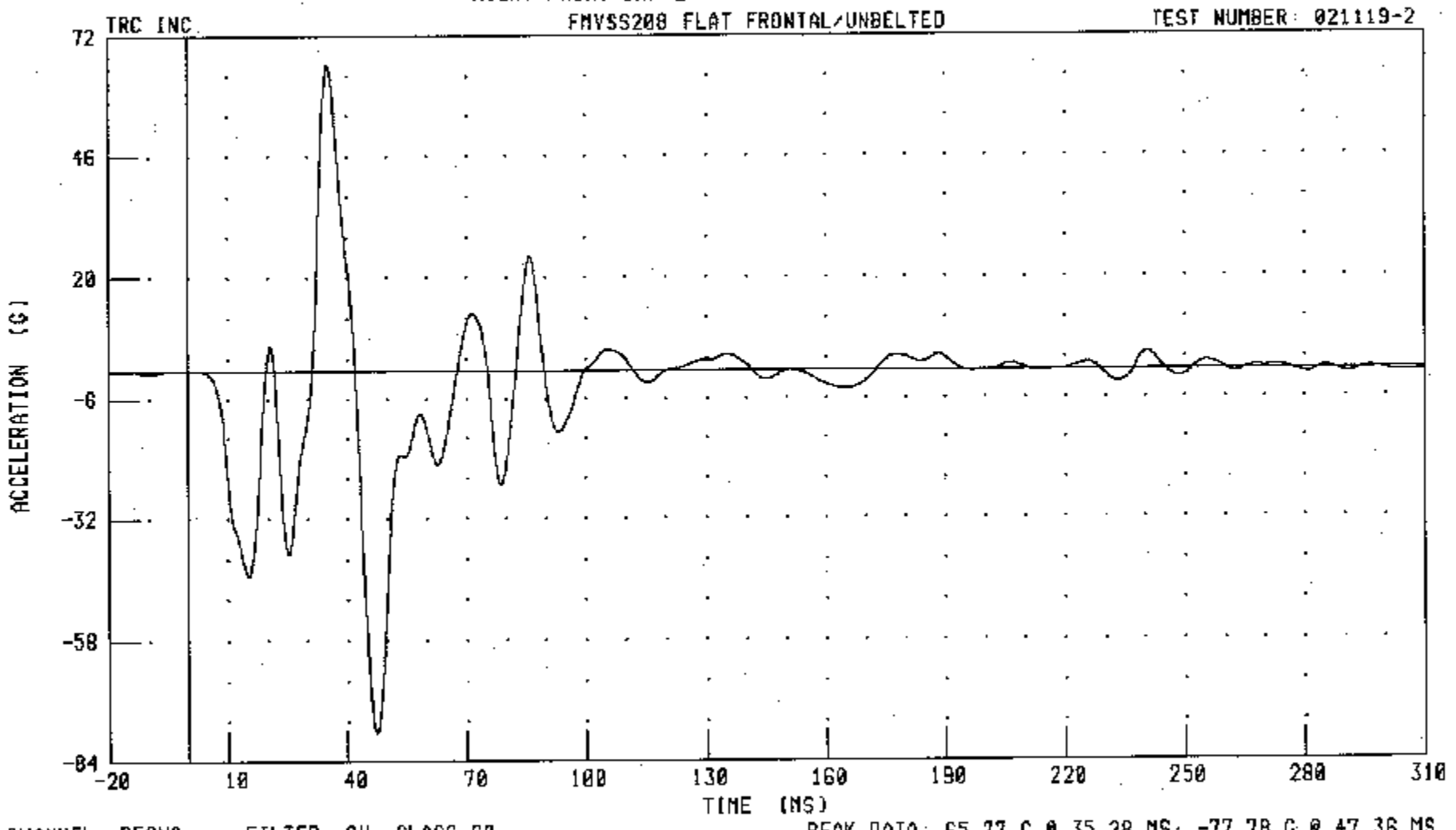
CHANNEL: RSXYG FILTER: CH. CLASS 60

PEAK DATA: 5.05 G @ 47.04 MS; -2.19 G @ 87.20 MS

021119-2


C30103 / 2003 CHEVROLET TAHOE 4WD
LEFT FRONT BRAKE CALIPER X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC
TEST NUMBER: 021119-2
70
46
22
-2
-26
-50
-74
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LFCXG
FILTER: CH. CLASS 60
PEAK DATA: 63.97 G @ 43.52 MS; -72.15 G @ 26.32 MS

C30103 / Z003 CHEVROLET TAHOE 4WD
RIGHT FRONT BRAKE CALIPER X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

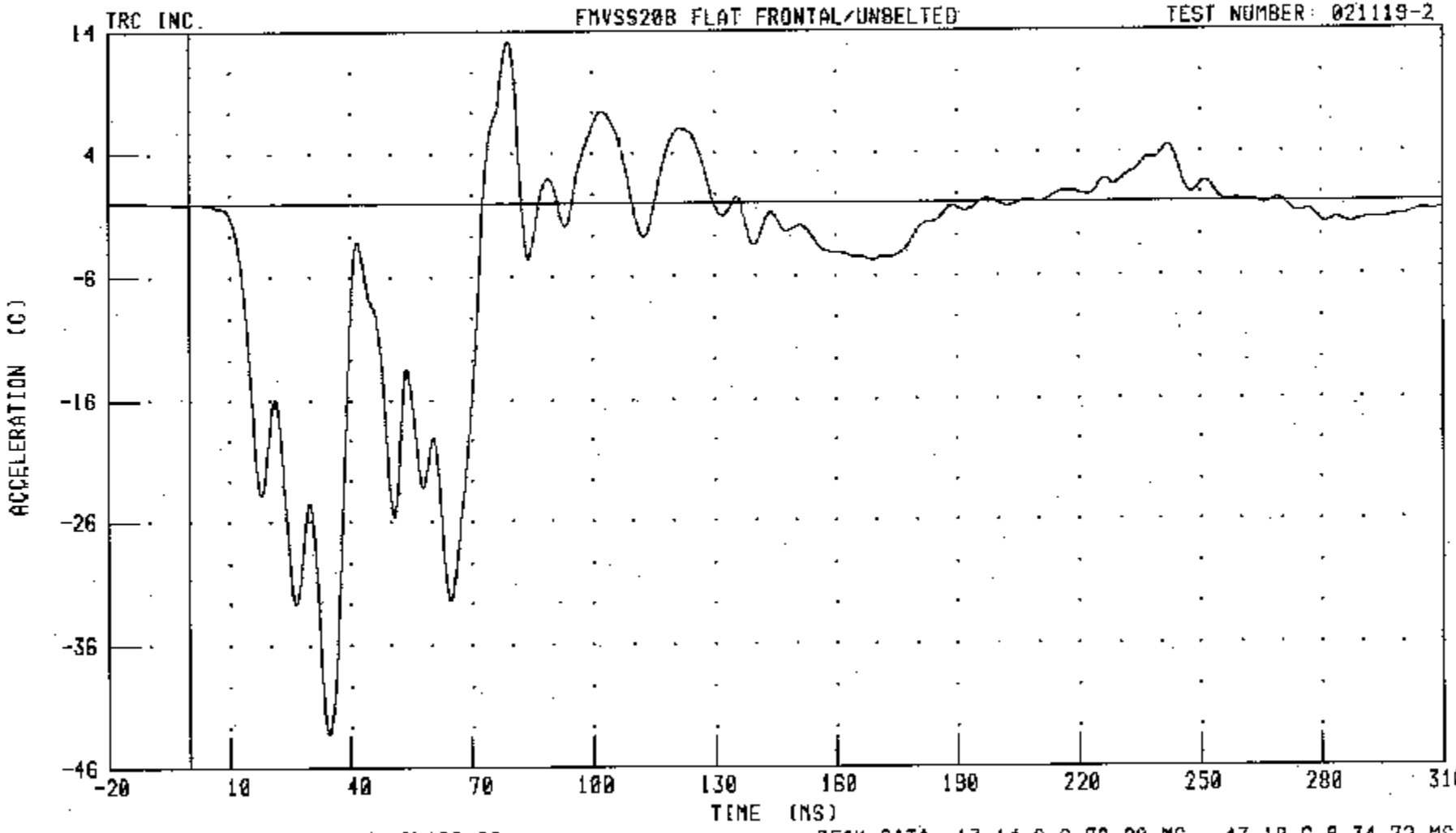


CHANNEL: RFCXG FILTER: CH. CLASS 60 PEAK DATA: 65.77 G @ 35.28 MS; -77.78 G @ 47.36 MS

6-51

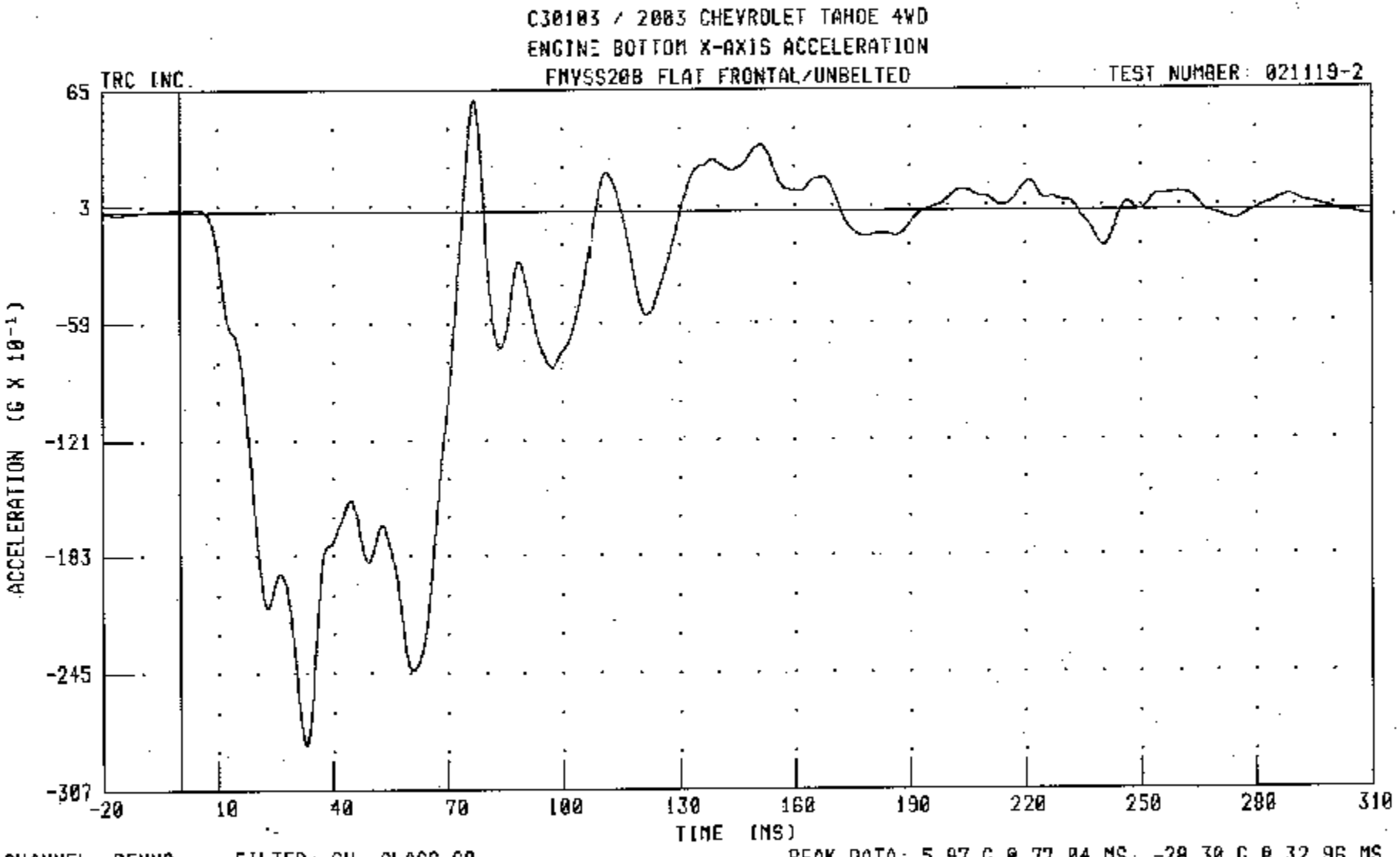
021119-2

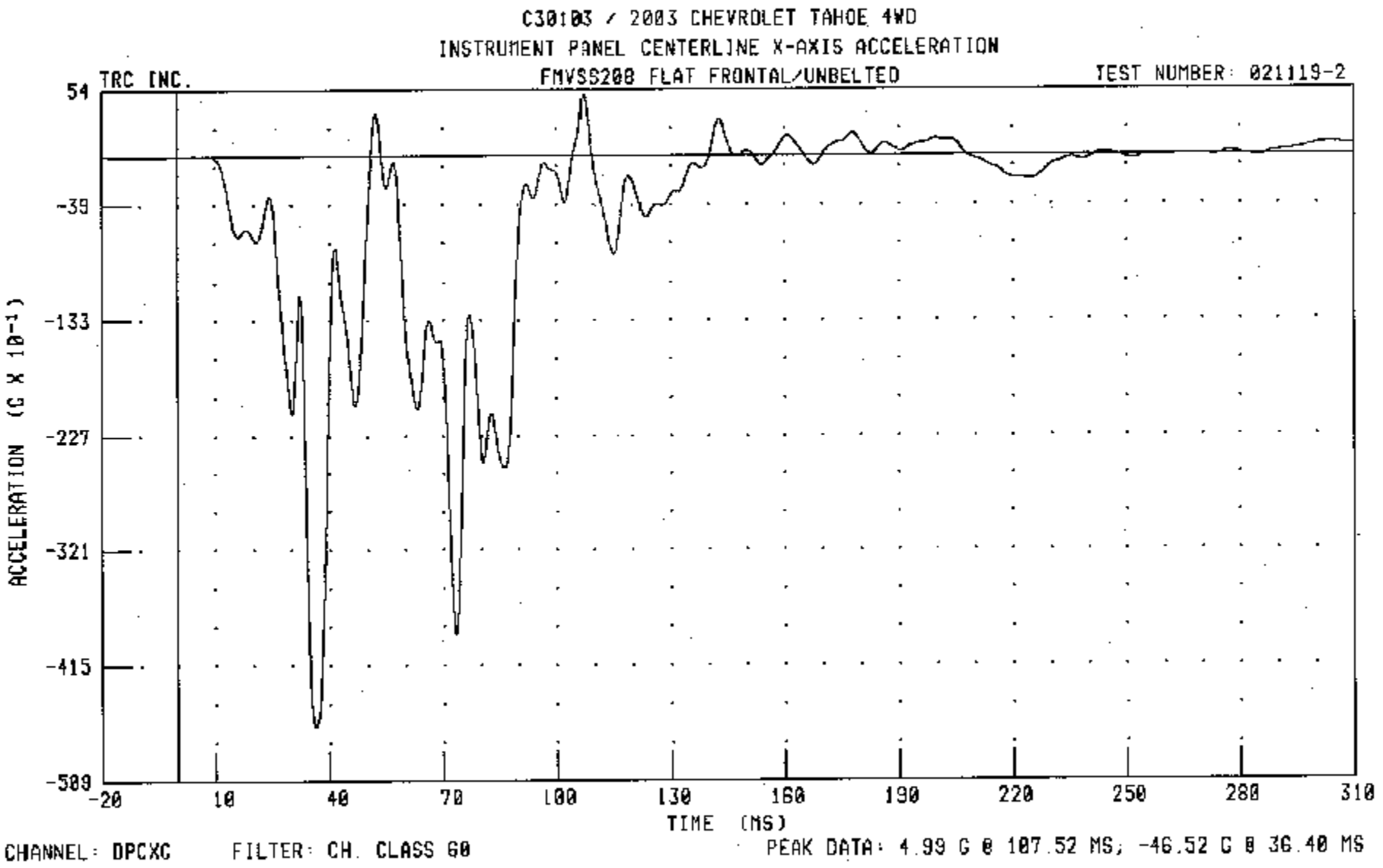
C30103 / 2003 CHEVROLET TAHOE 4WD
ENGINE TOP X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED

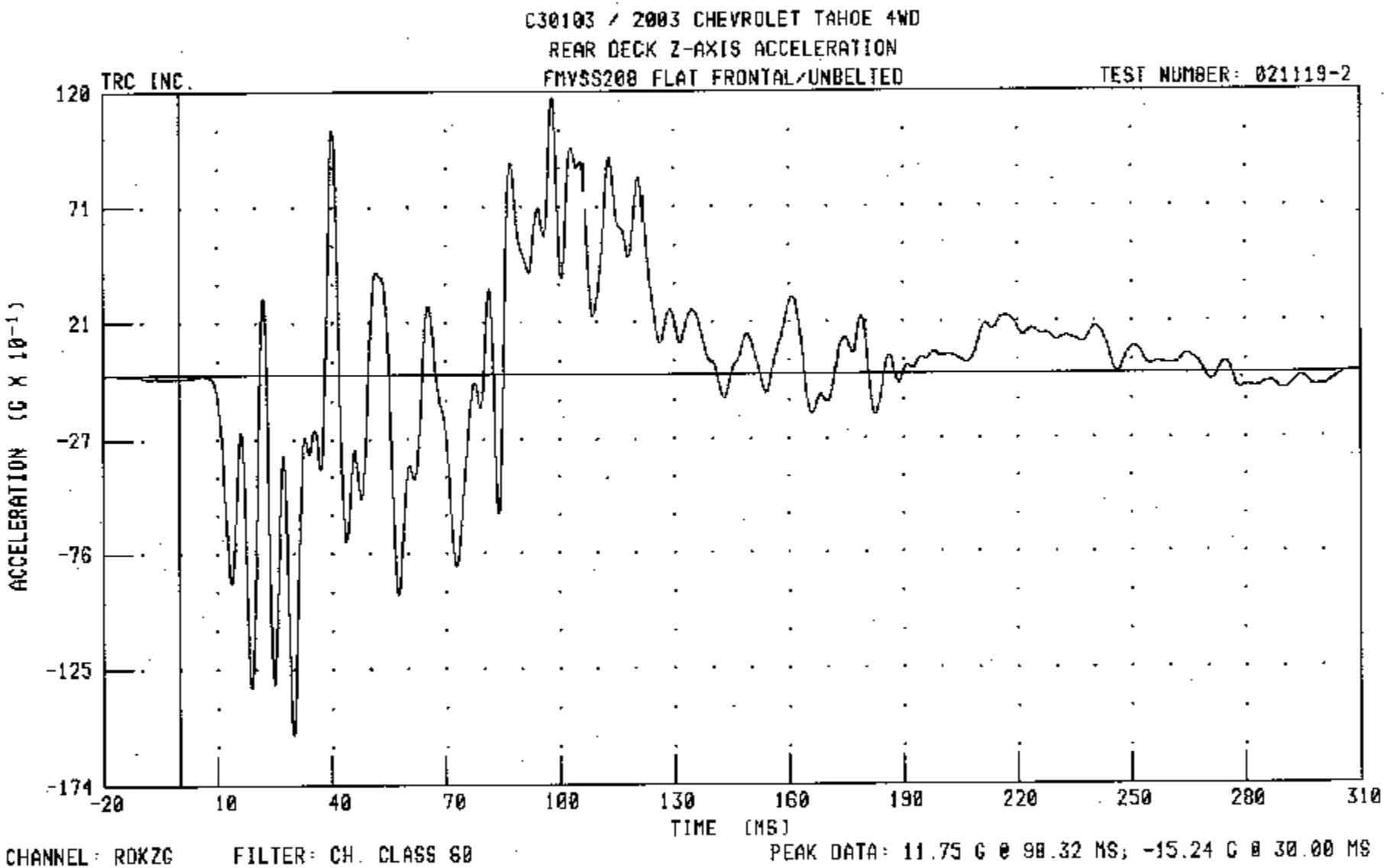


CHANNEL: TENXG FILTER: CH. CLASS 60 PEAK DATA: 13.14 G @ 79.20 MS; -43.18 G @ 34.72 MS

021119-2


C30103 / 2003 CHEVROLET TAHOE 4WD
ENGINE BOTTOM X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
65
3
-59
-121
-183
-245
-307
ACCELERATION (G X 10⁻¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BENXG
FILTER: CH. CLASS 60
PEAK DATA: 5.97 G @ 77.04 MS, -28.30 G @ 32.96 MS

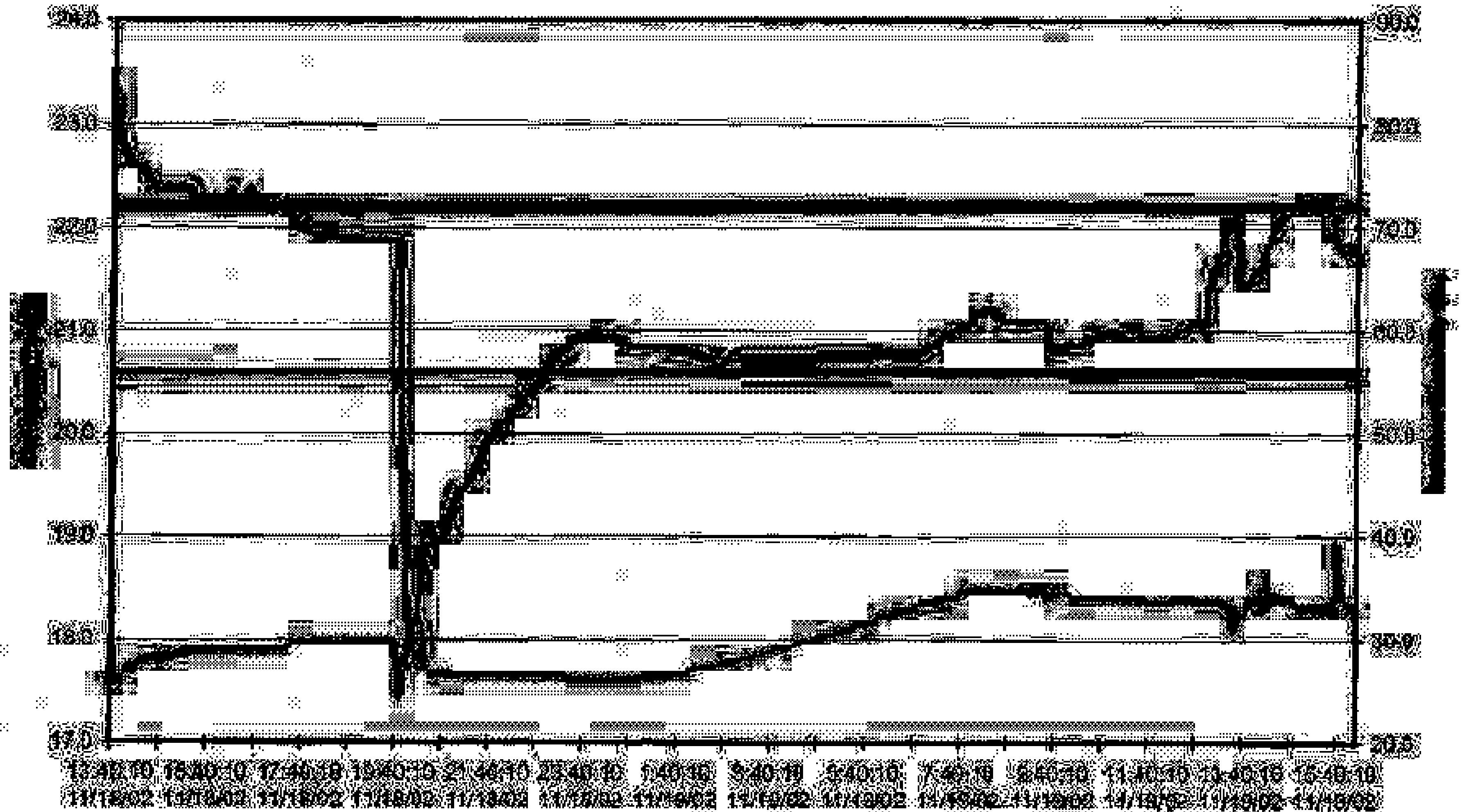

C30103 / 2003 CHEVROLET TAHOE 4WD
INSTRUMENT PANEL CENTERLINE X-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
54
-39
-133
-227
-321
-415
-509
ACCELERATION (G X 10-1)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: DPCXC
FILTER: CH. CLASS 60
PEAK DATA: 4.99 G @ 107.52 MS, -46.52 G @ 36.40 MS


C30103 / 2003 CHEVROLET TAHOE 4WD
REAR DECK Z-AXIS ACCELERATION
FMVSS208 FLAT FRONTAL/UNBELTED
TRC INC.
TEST NUMBER: 021119-2
120
71
21
-27
-76
-125
-174
ACCELERATION (G X 10⁻¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: R0KZG
FILTER: CH. CLASS 60
PEAK DATA: 11.75 G @ 98.32 MS; -15.24 G @ 30.00 MS

6-55

021119-2

C30103 / 2003 Chevrolet Tahoe 021119-2



Pre-Test Dummy Soak Time (Test Time: 18.0h)
Lower and Upper Temperature Bounds Indicated with Bold Lines at 20.6 C and 22.2 C

021119-2

Section 7

Photographs

List of Photographs

List of Photographs, Continued

List of Photographs, Continued

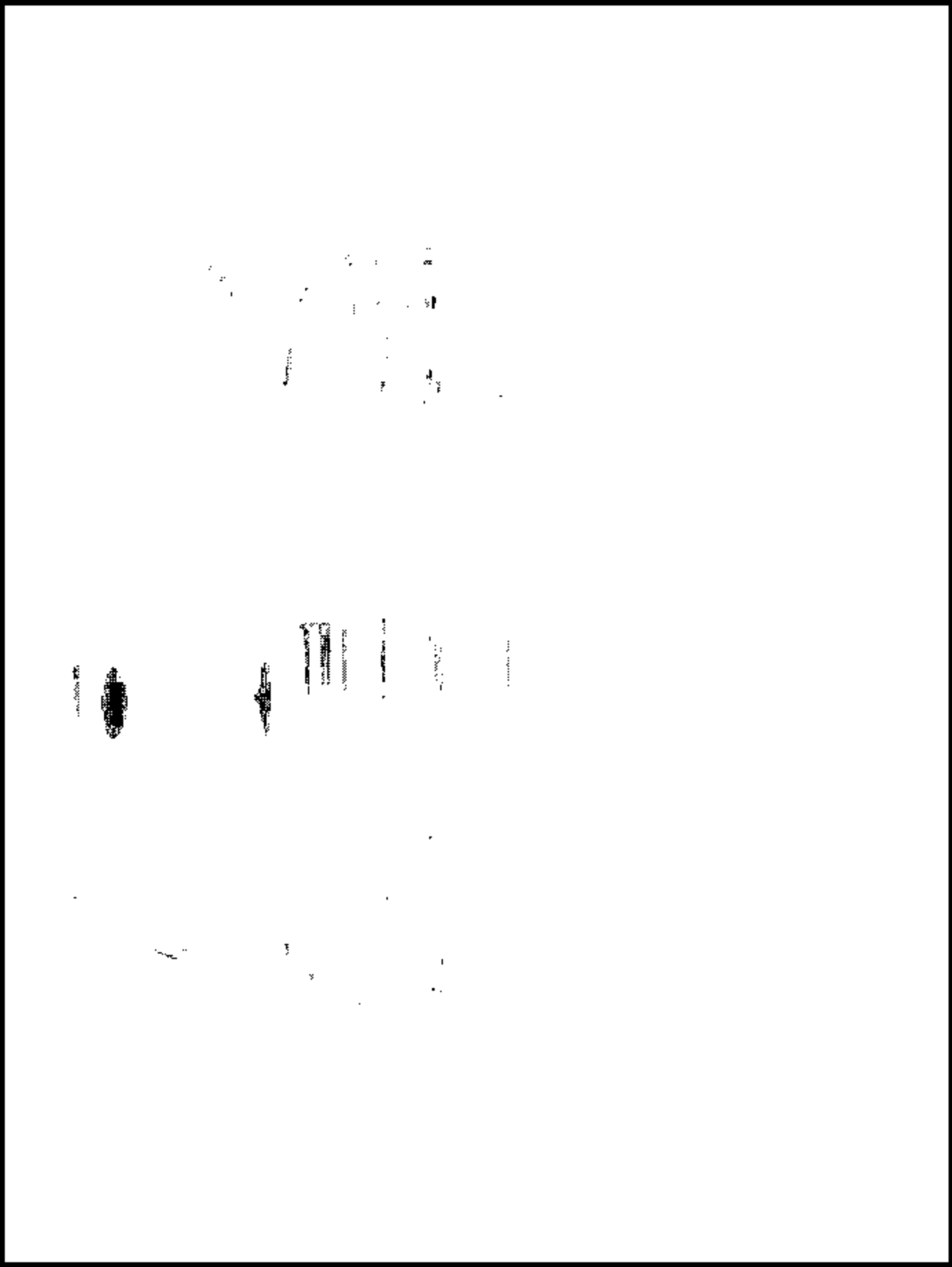


Image 1 Pre-Test Front View

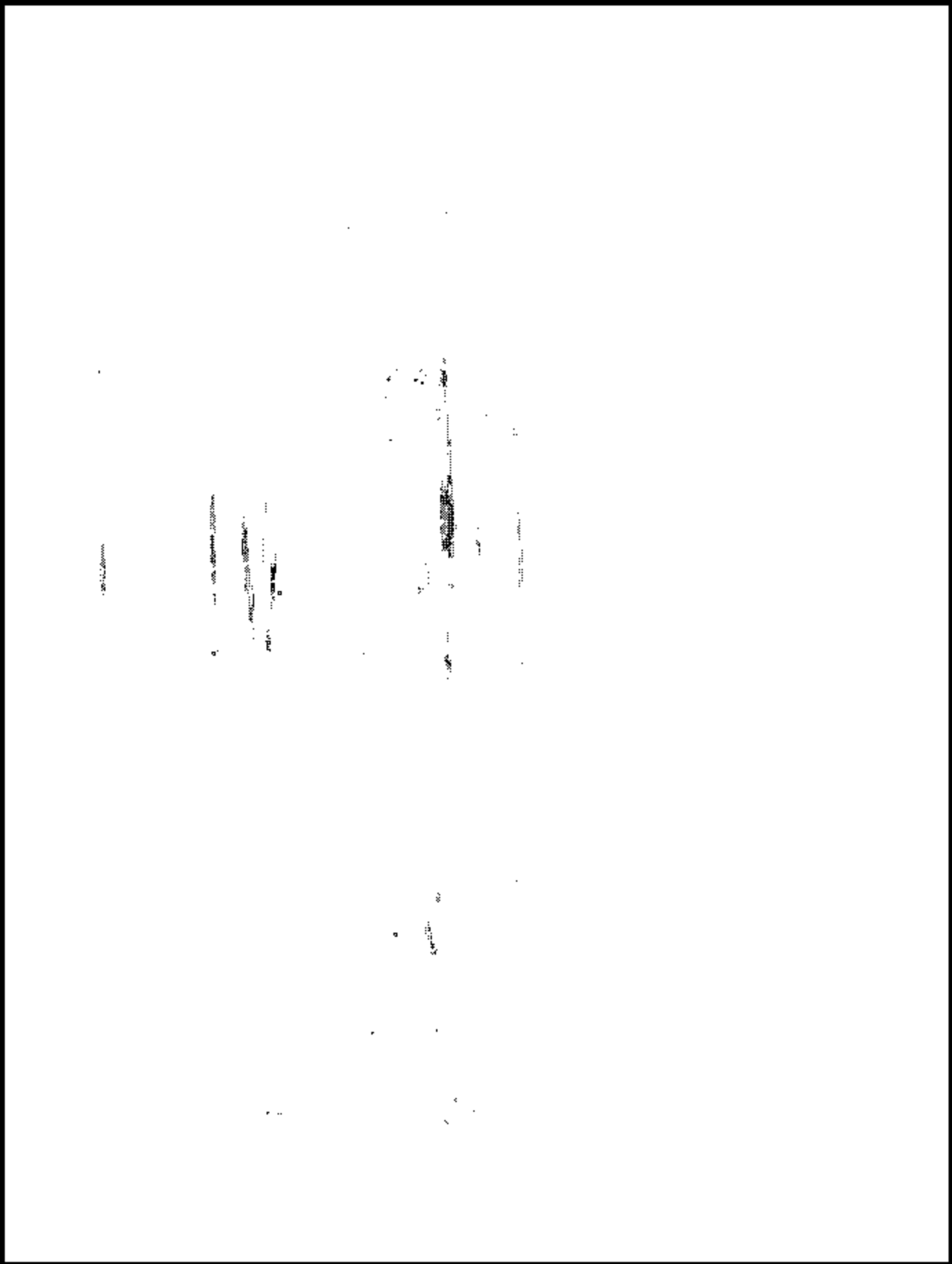


Image 2 Post-Test Front View

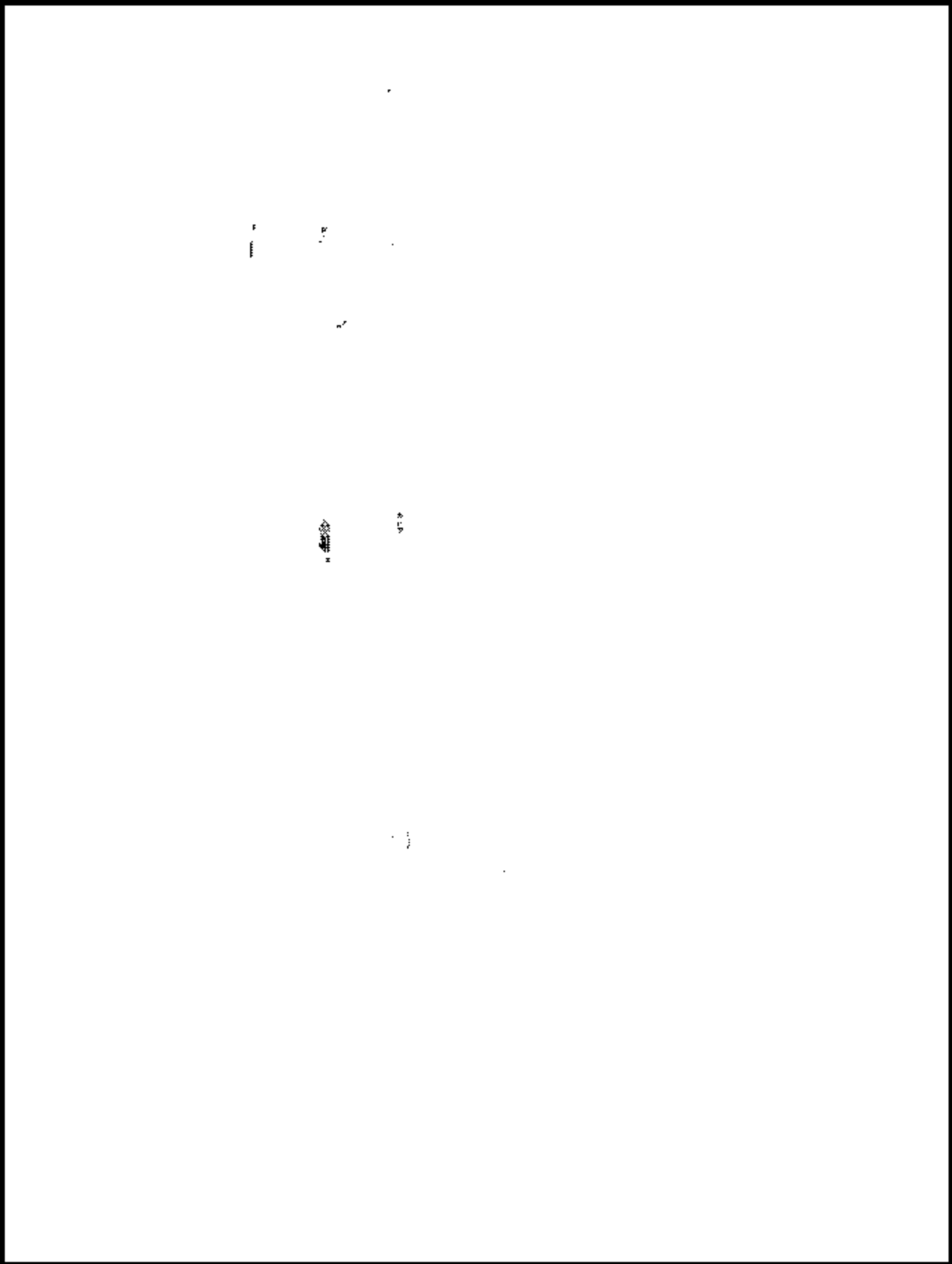


Image 3 Pre-Test Left Side View

Image 4 Post-Test Left Side View

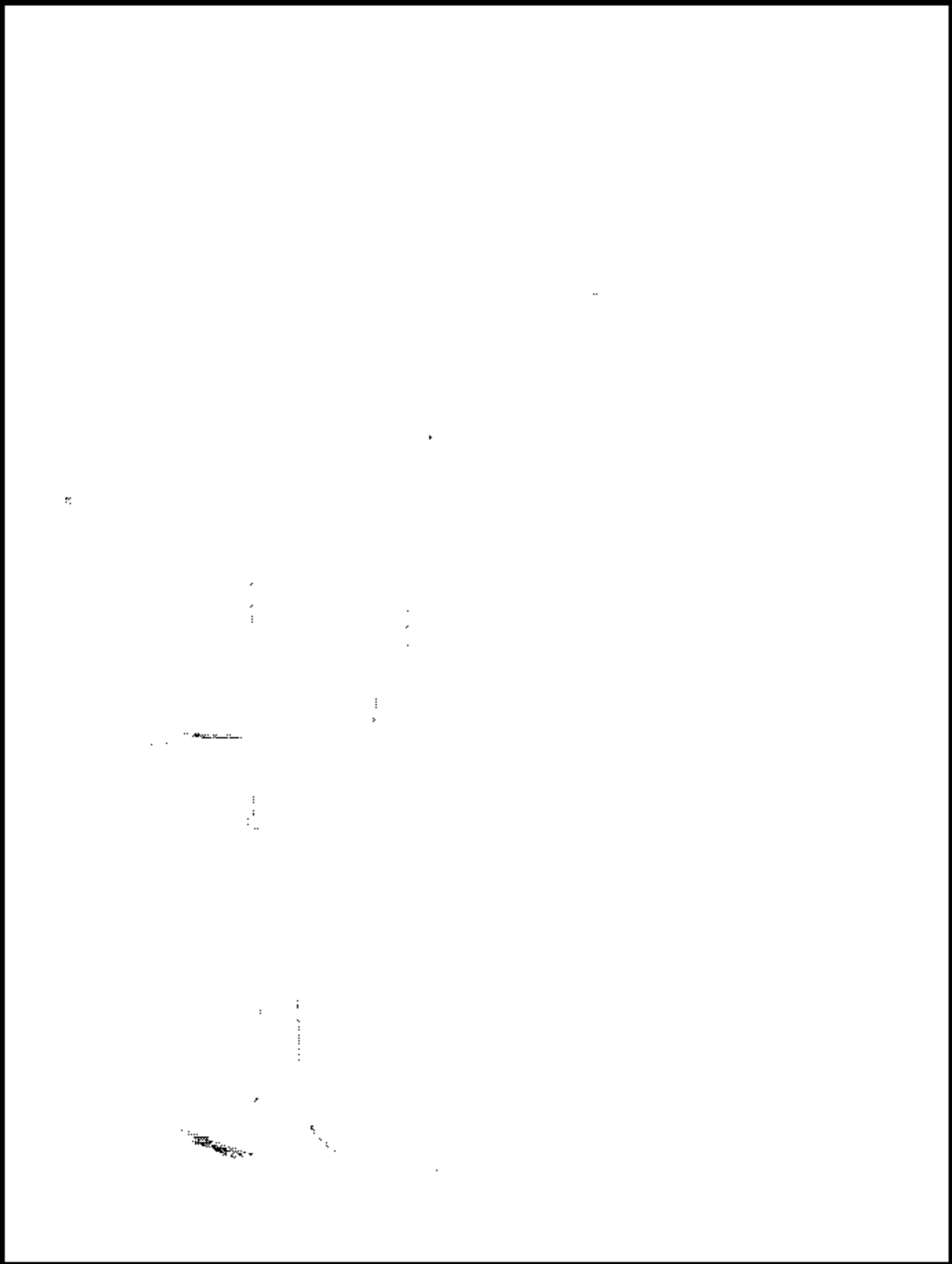


Image 5 Pre-Test Right Side View

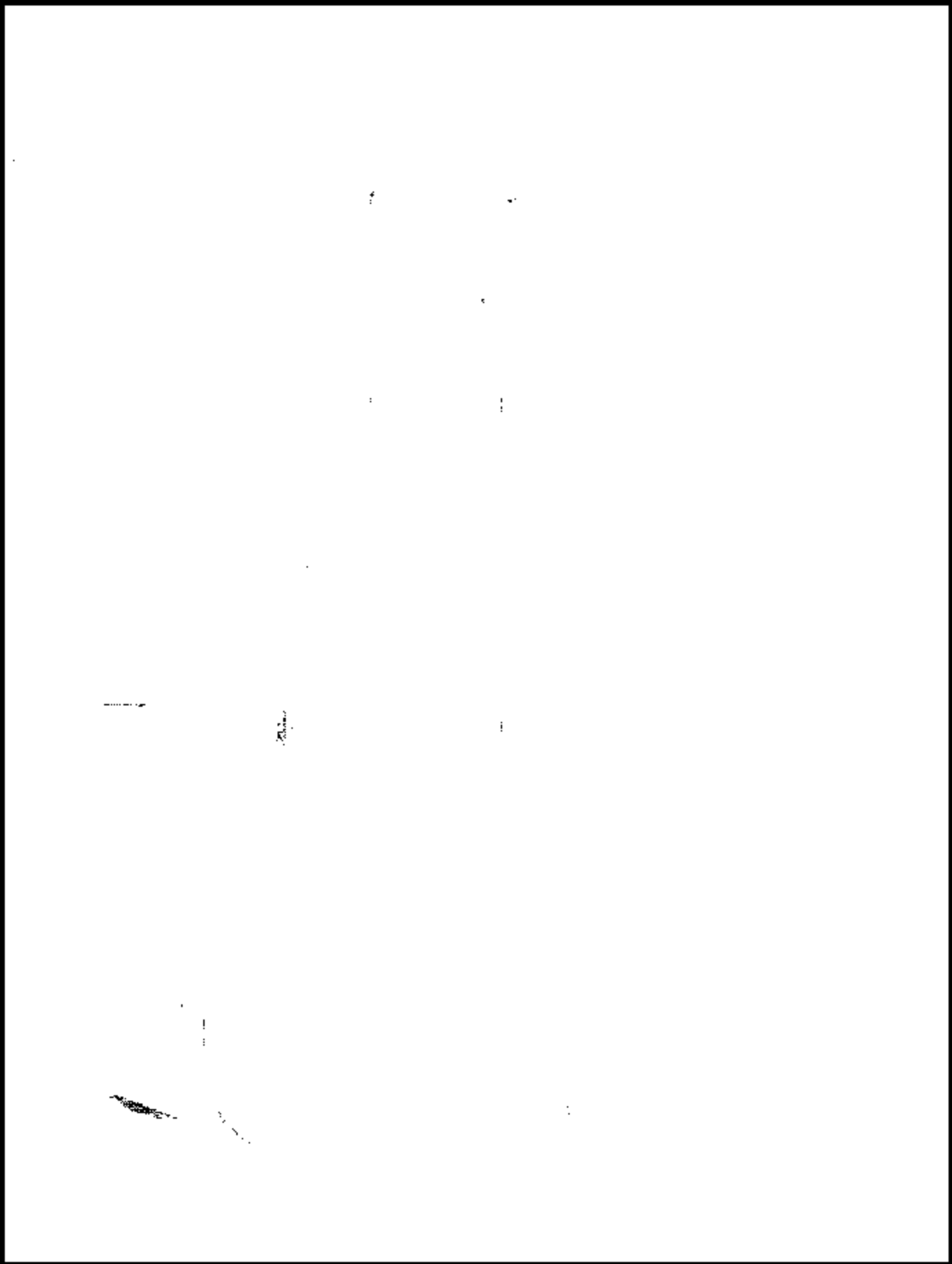


Image 6 Post-Test Right Side View

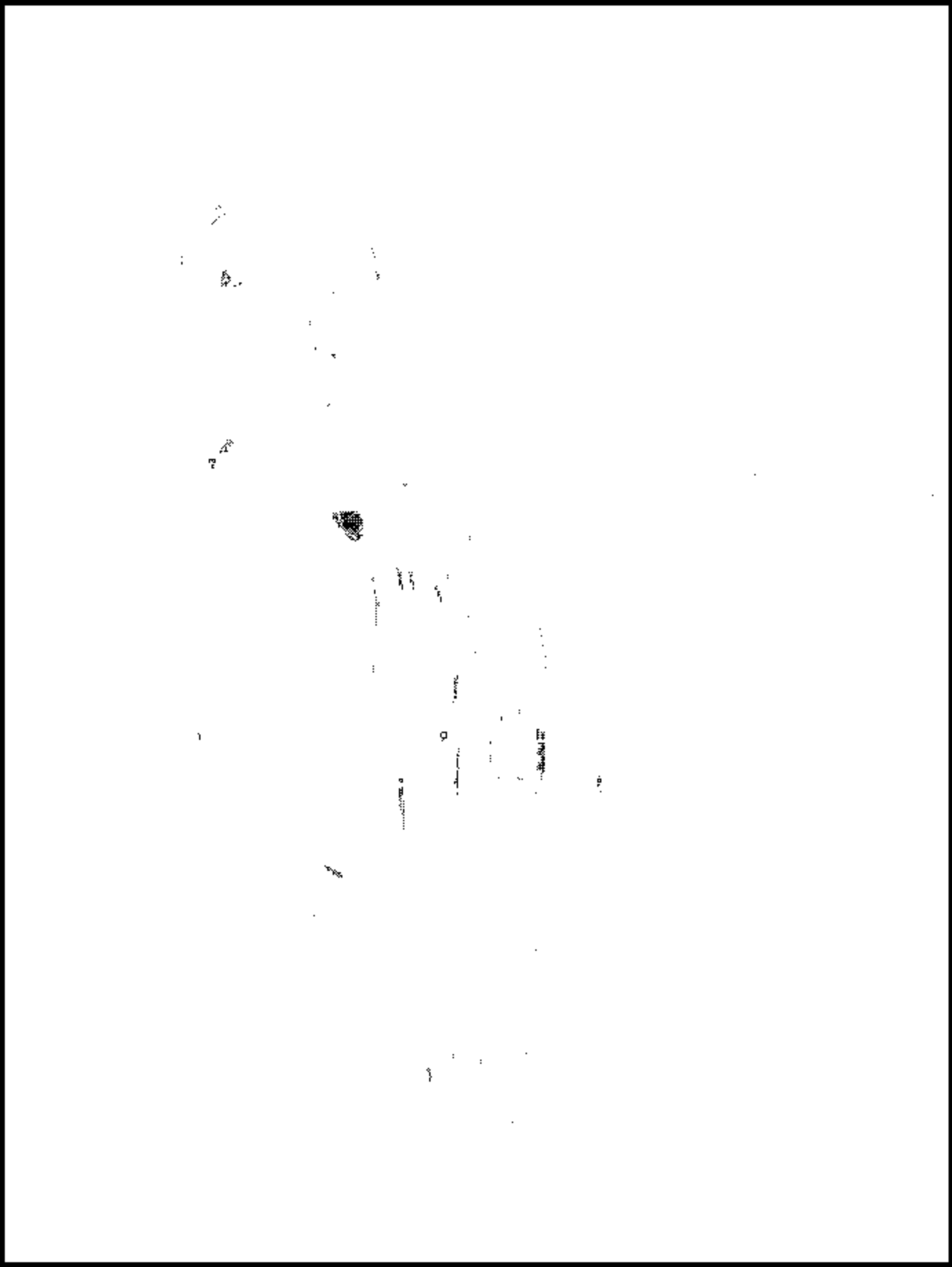


Image 7 Pre-Test Left Front Three-Quarter View

Image 8 Post-Test Left Front Three-Quarter View

Image 9 Pre-Test Right Rear Three-Quarter View

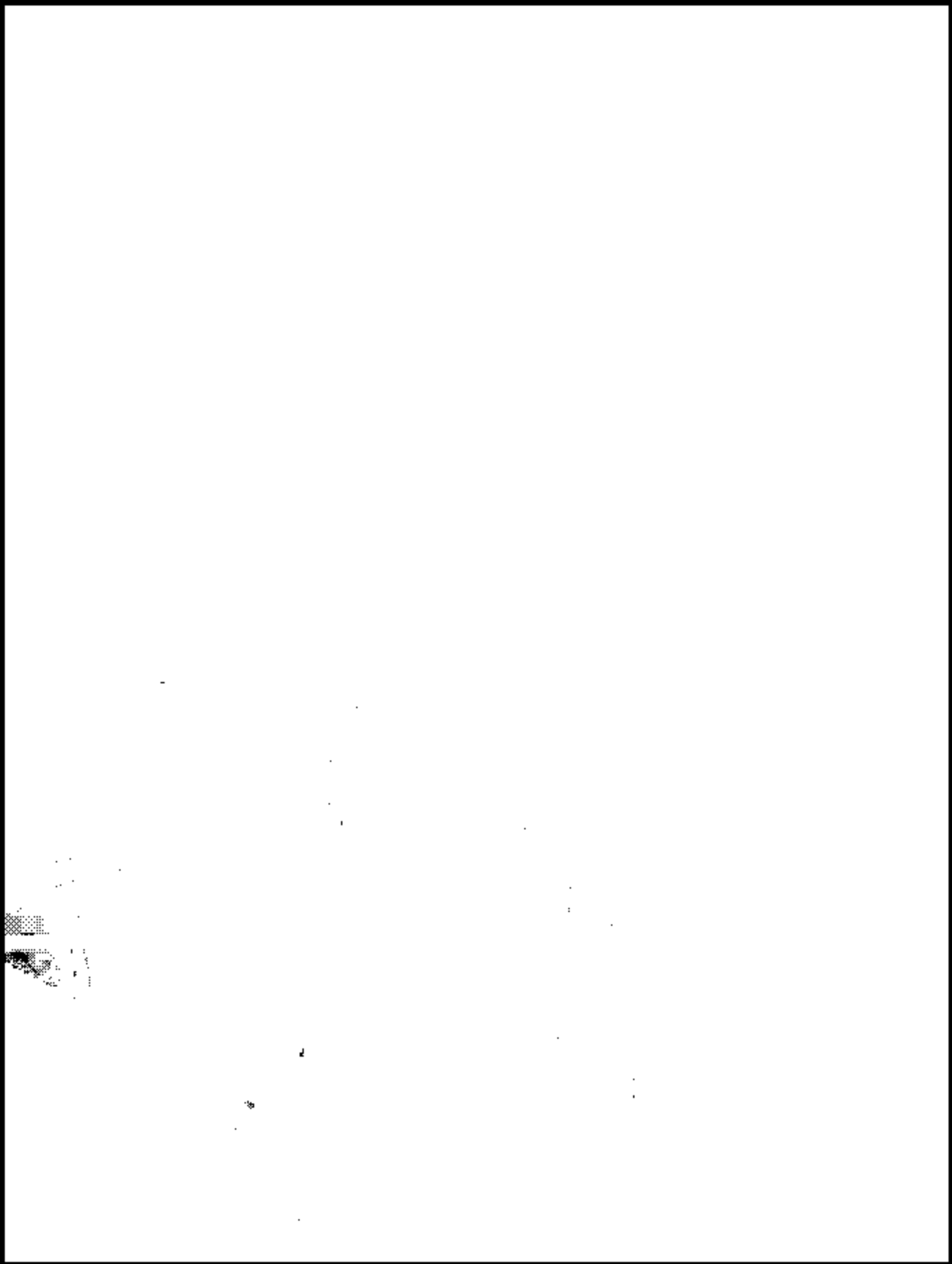


Image 10 Post-Test Right Rear Three-Quarter View

Image 11 Pre-Test Windshield View

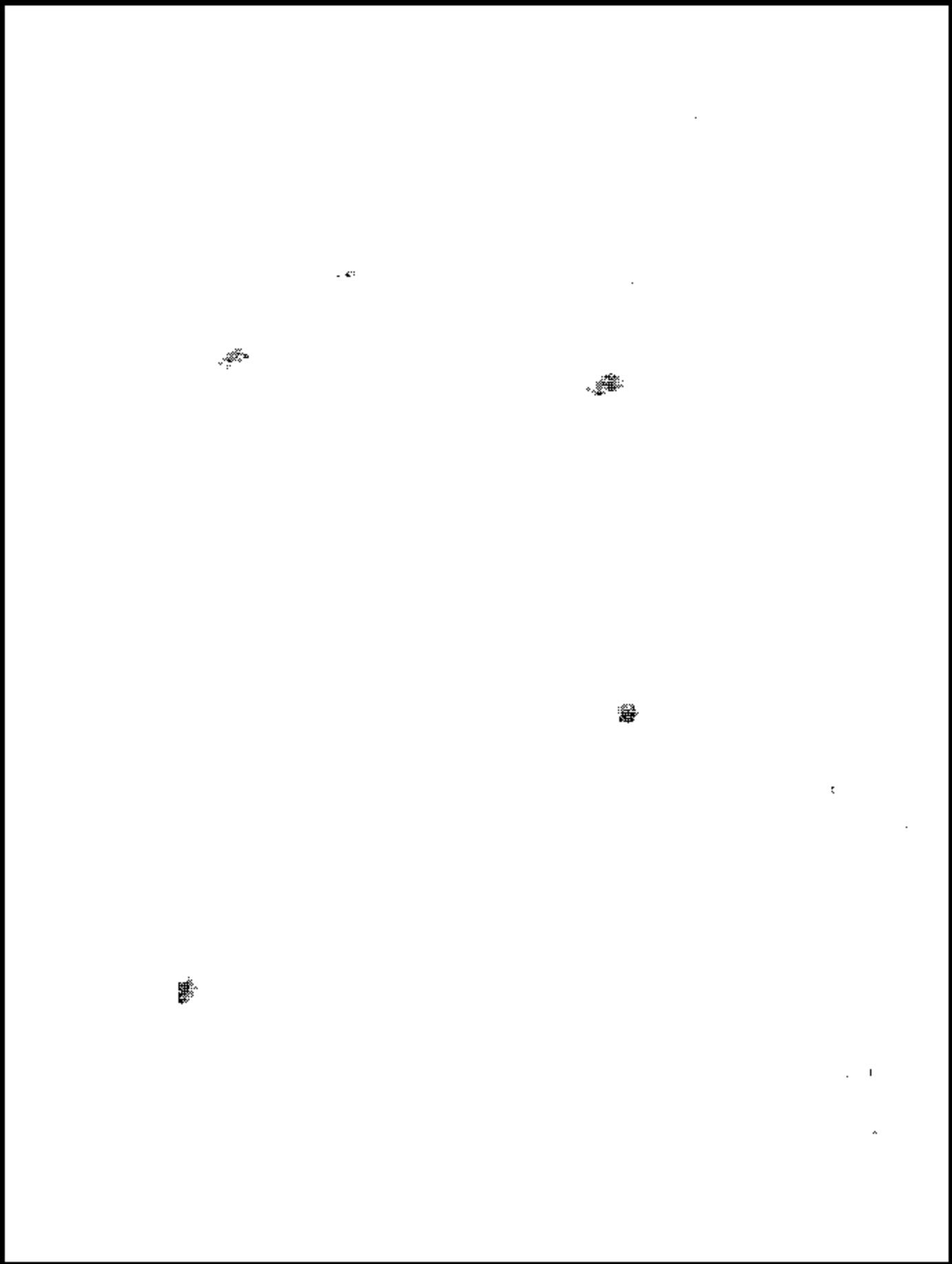


Image 12 Post-Test Windshield View

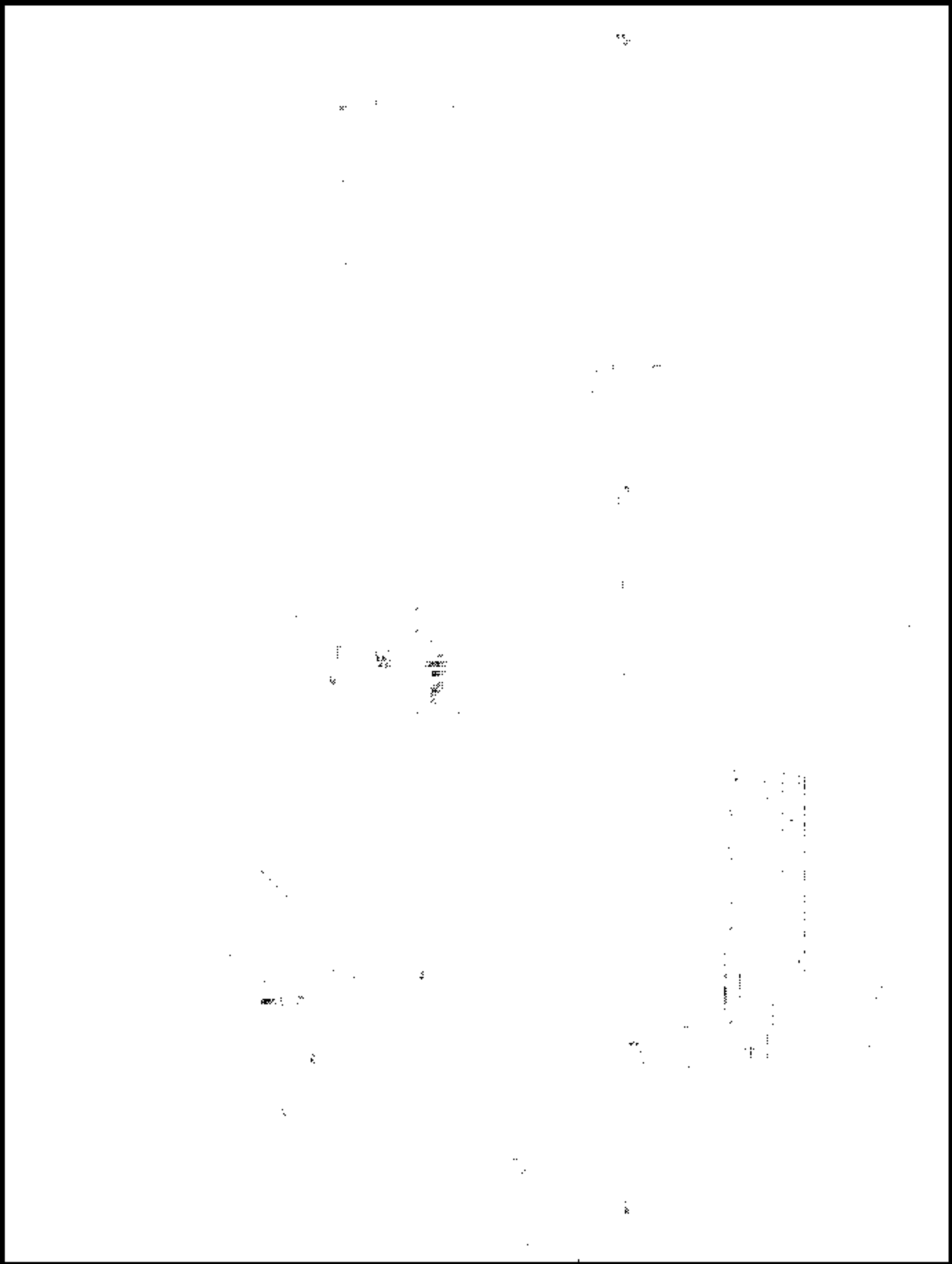


Image 13 Pre-Test Engine Compartment View

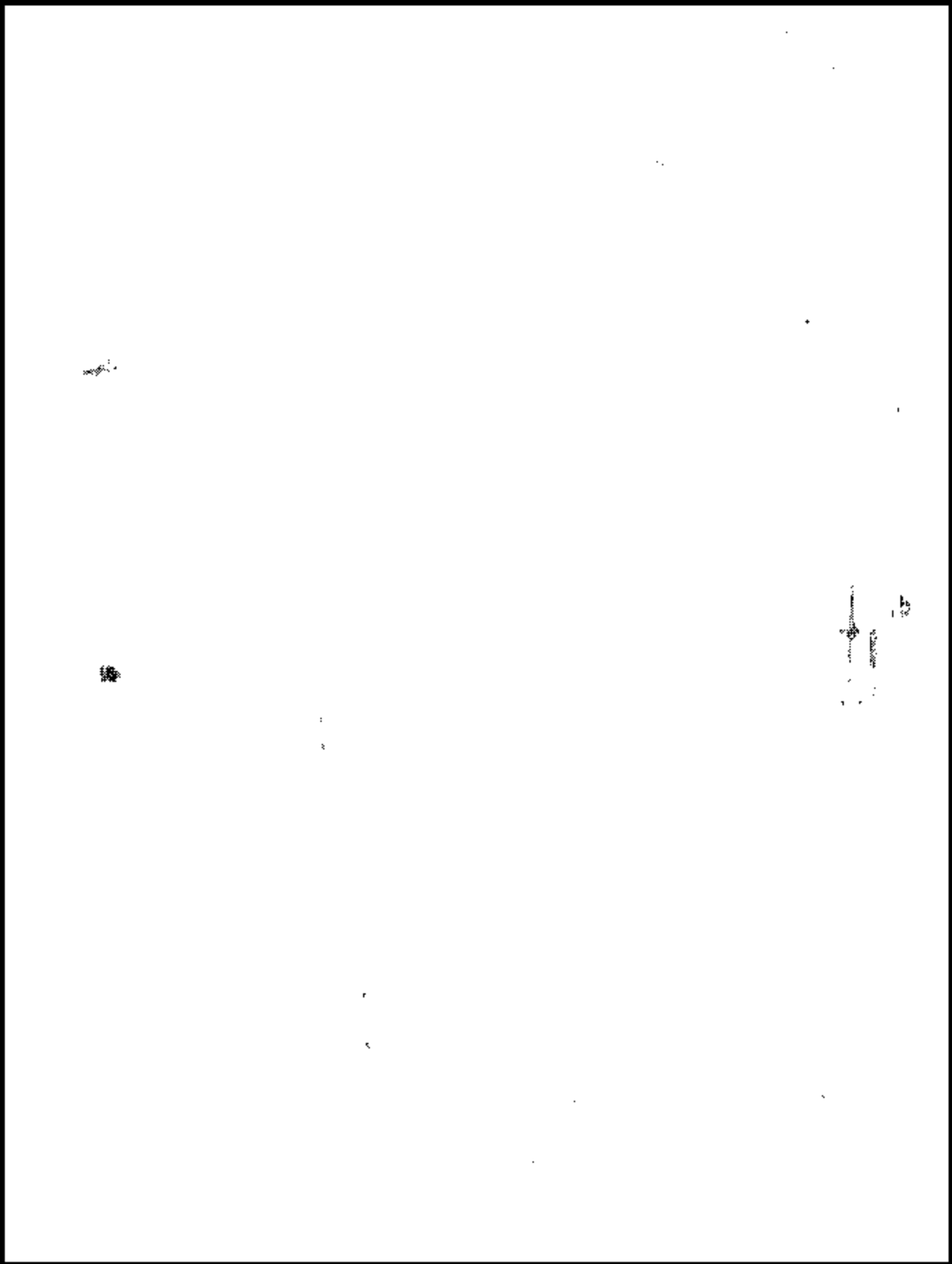


Image 14 Post-Test Engine Compartment View

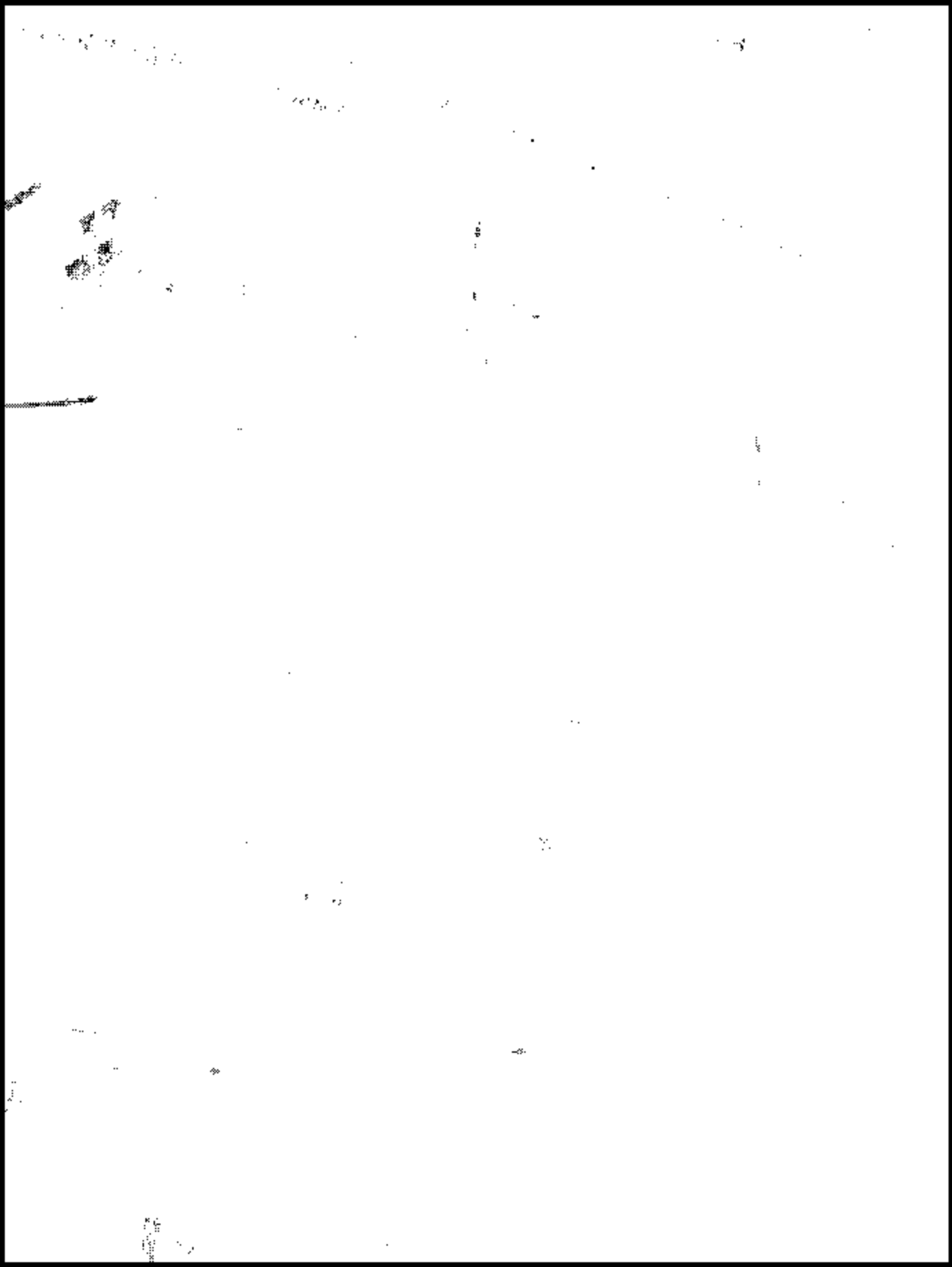


Image 15 Pre-Test Steering Column and Firewall - Under Hood View

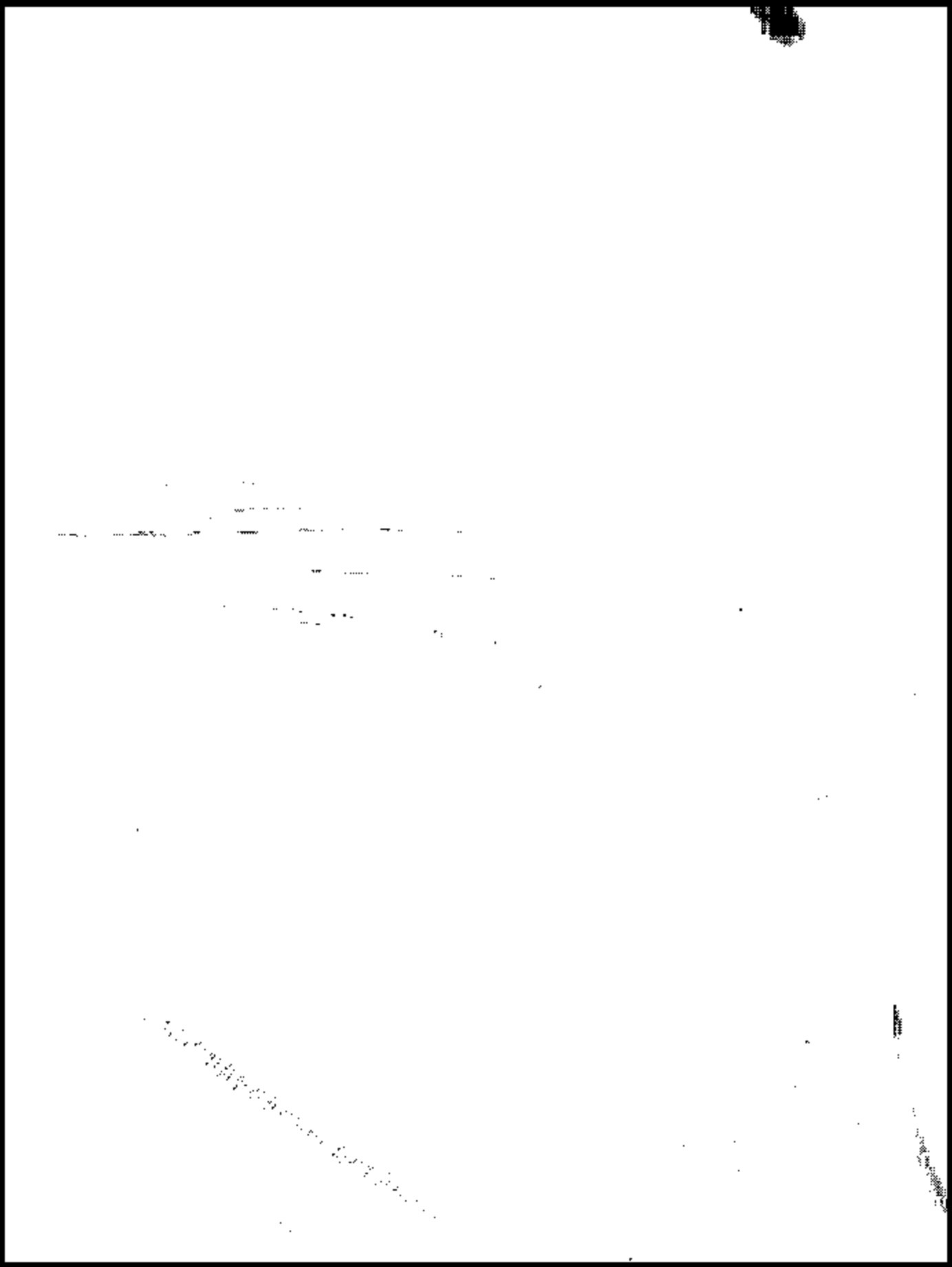


Image 16 Post-Test Steering Column and Firewall - Under Hood View

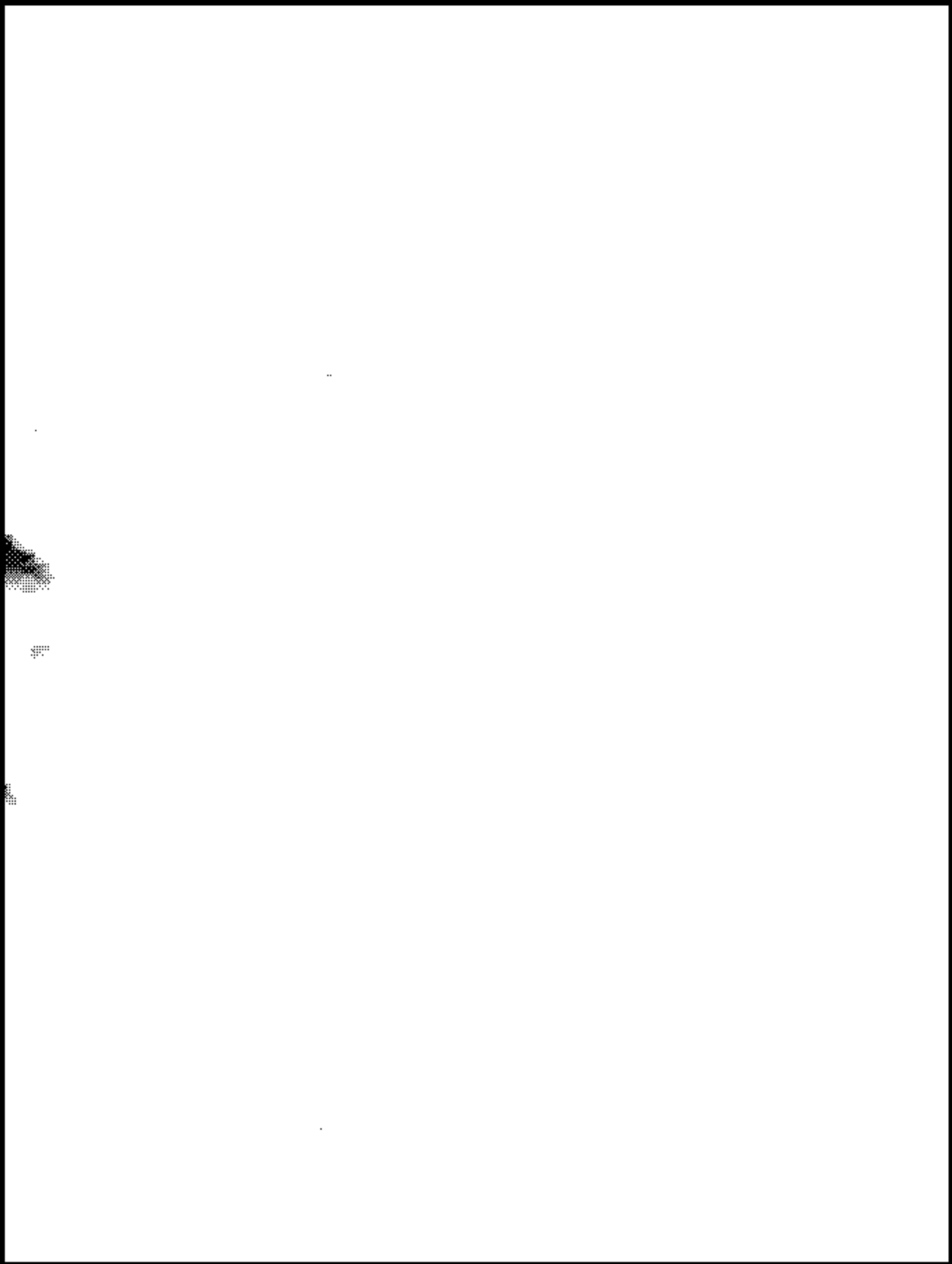


Image 17 Pre-Test Steering Column View

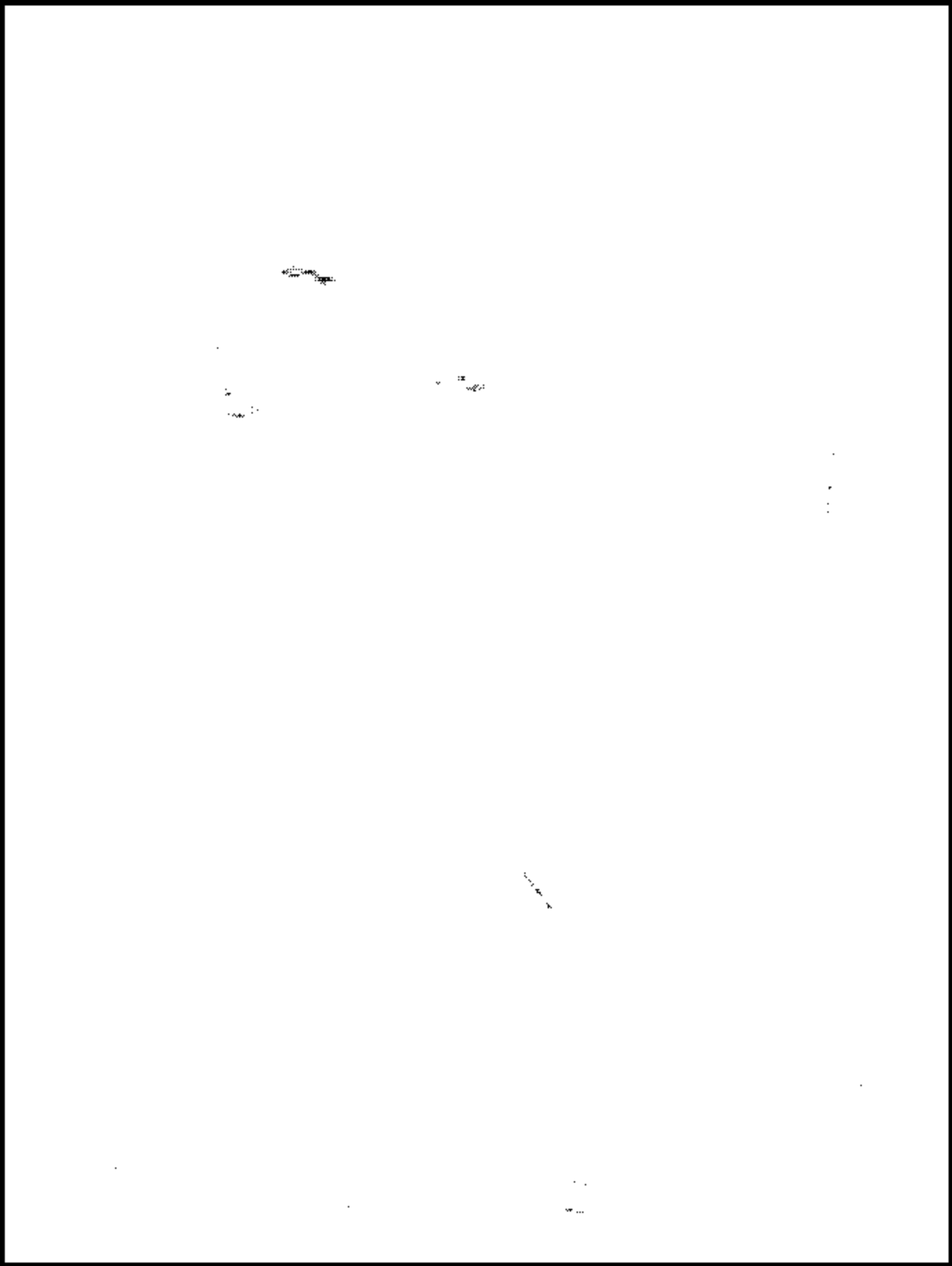


Image 18 Post-Test Steering Column View

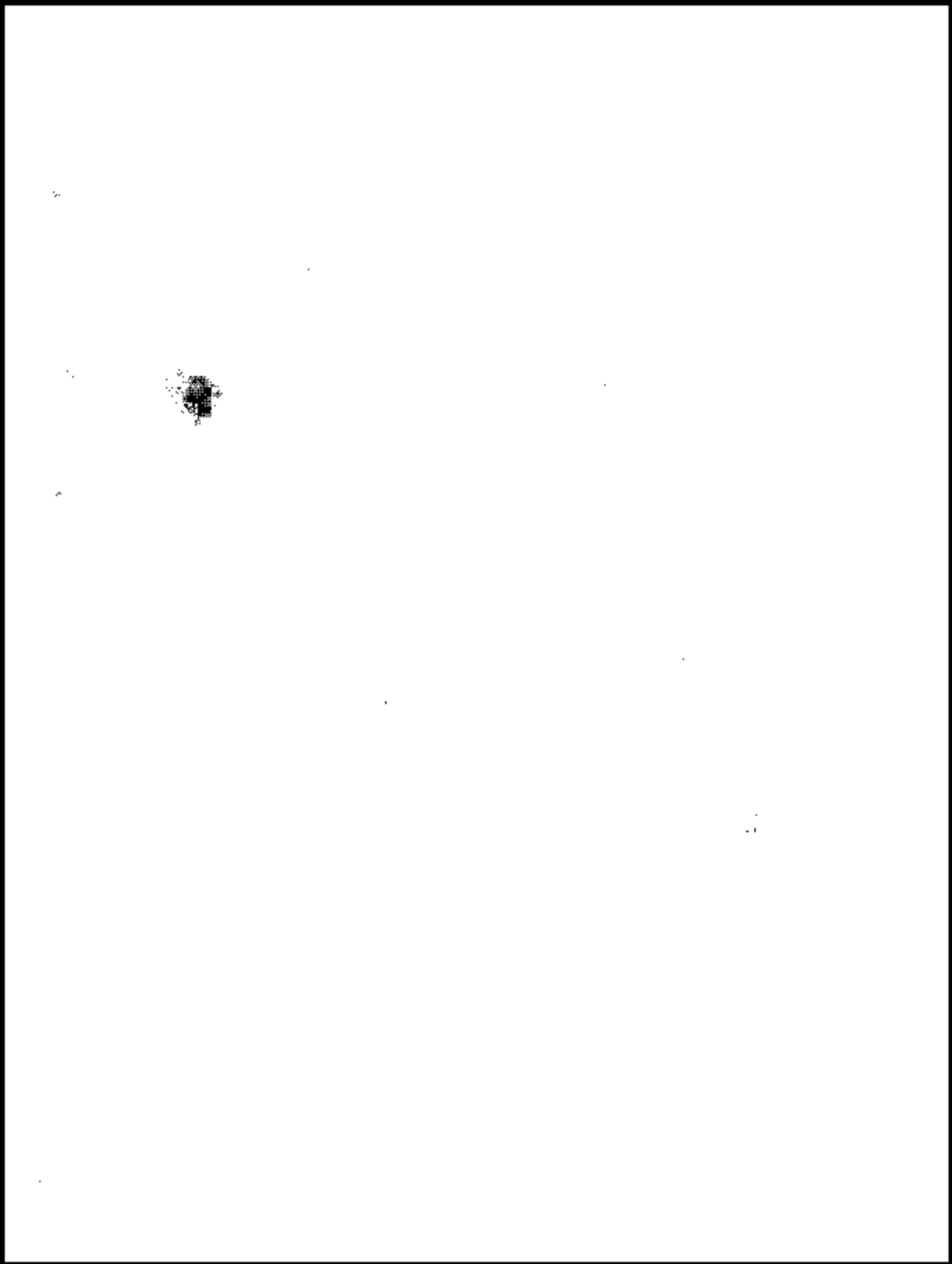


Image 19 Pre-Test Steering Column and Firewall - Interior View

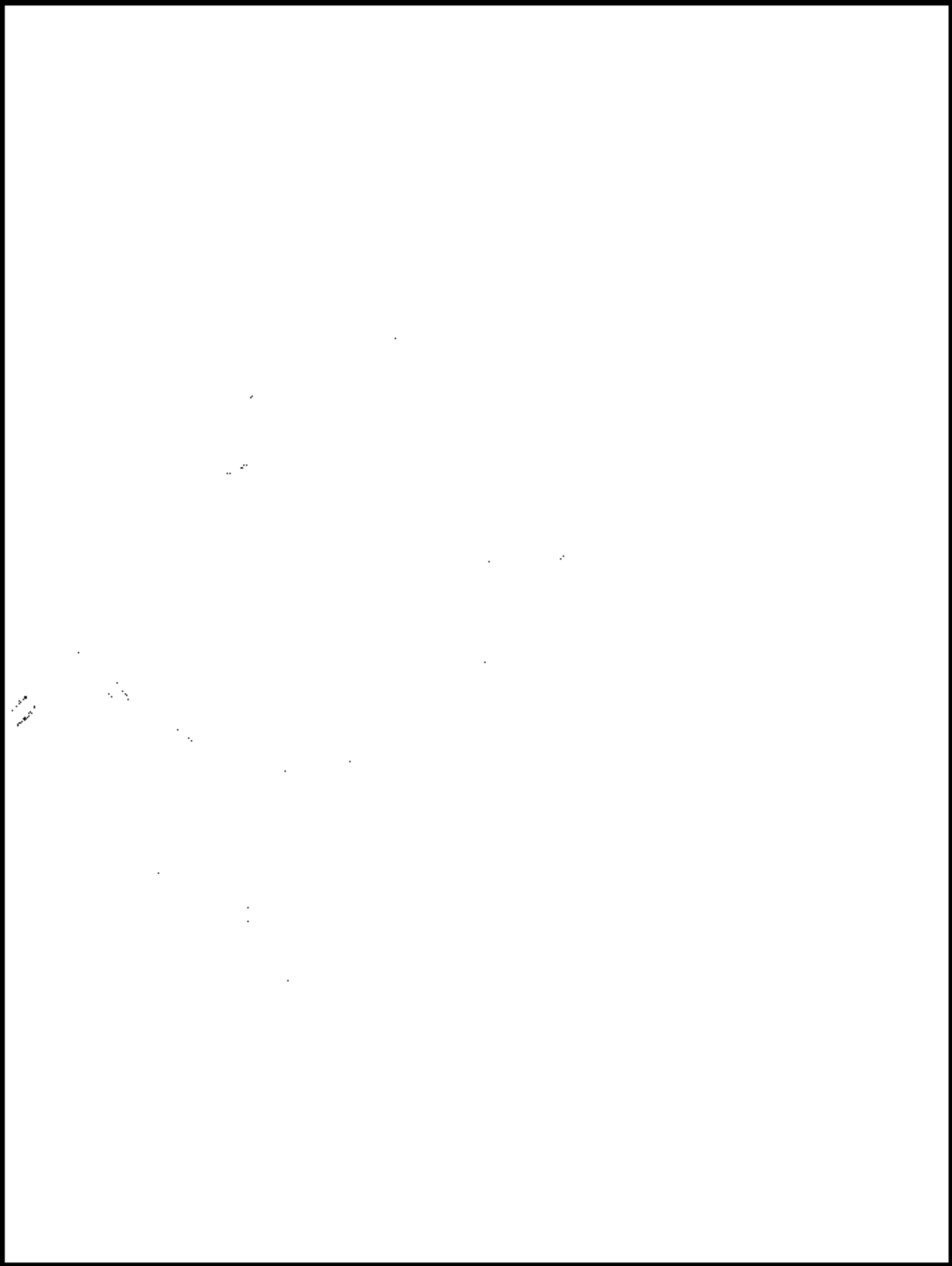


Image 20 Post-Test Steering Column and Firewall - Interior View

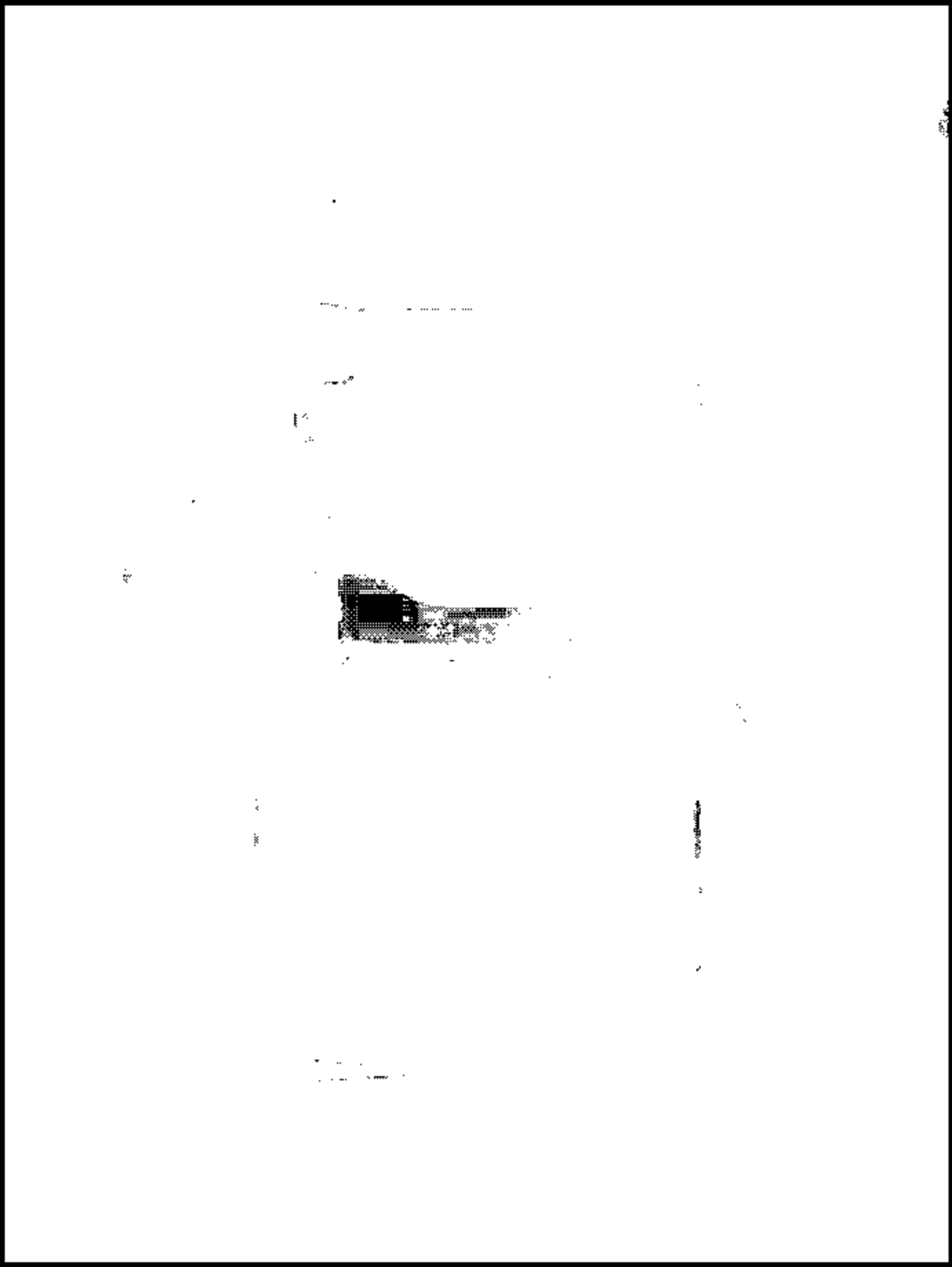


Image 21 Pre-Test Front Underbody View

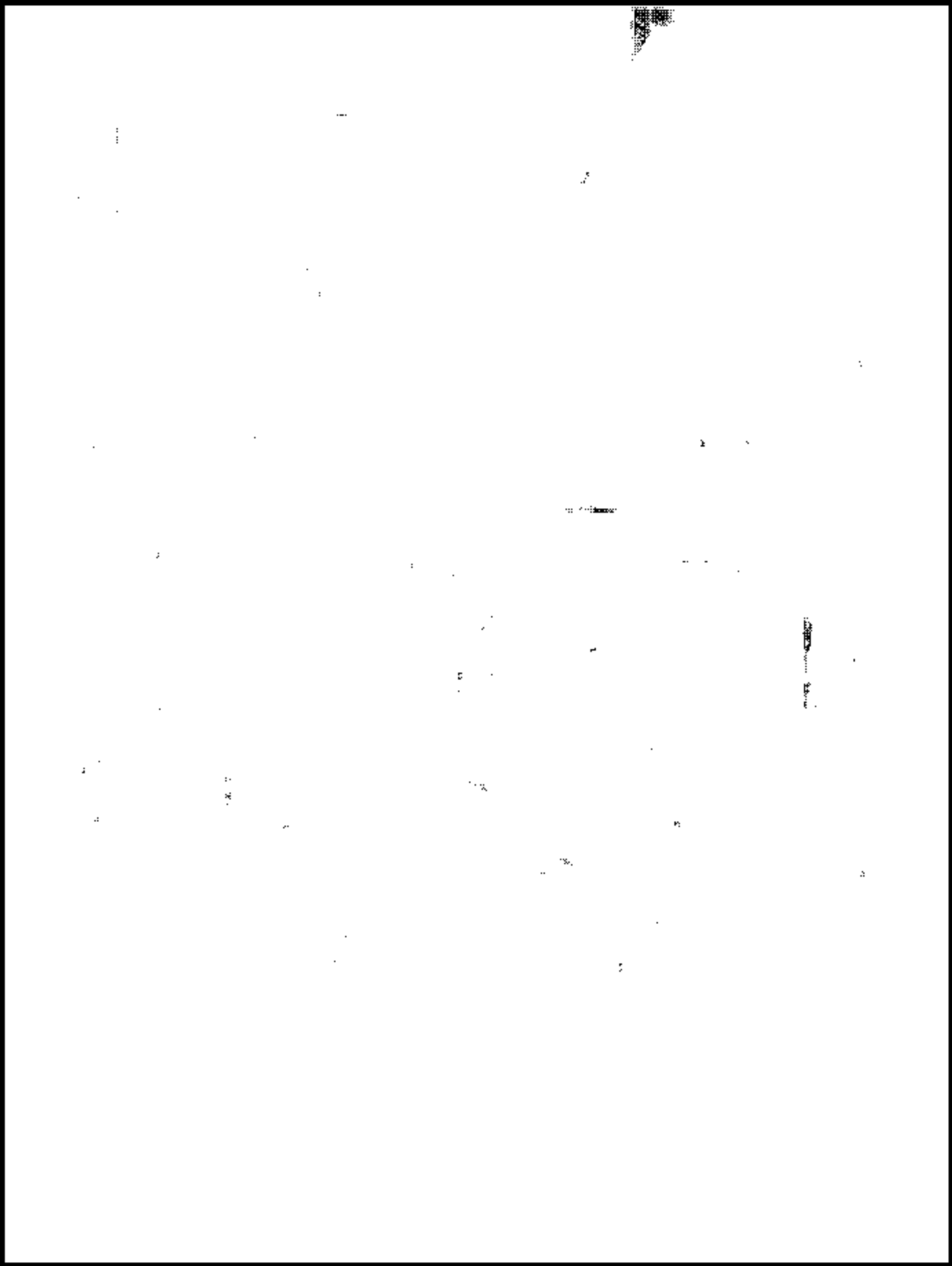


Image 22 Post-Test Front Underbody View

Image 23 Pre-Test Mid Underbody View

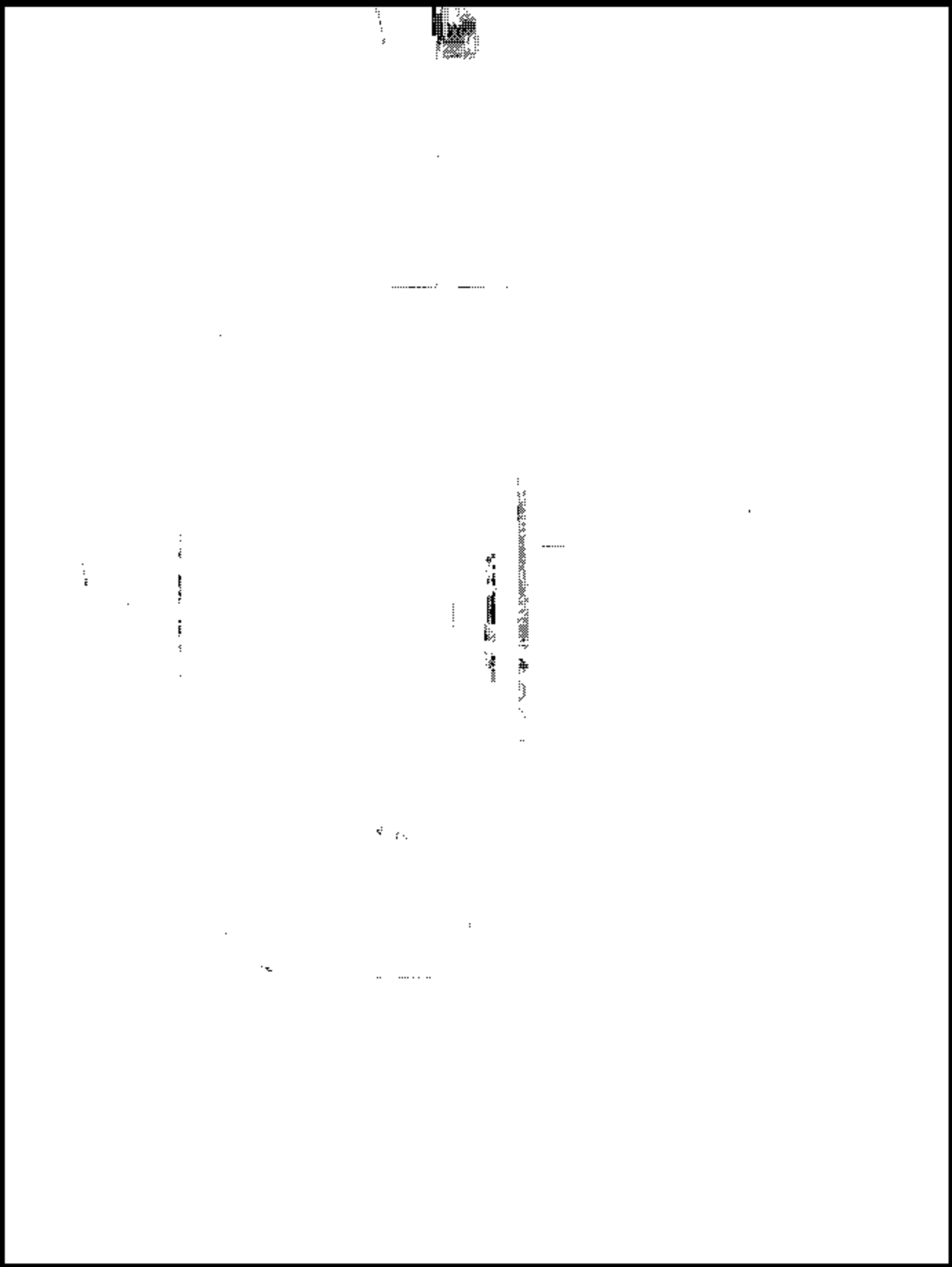


Image 24 Post-Test Mid Underbody View

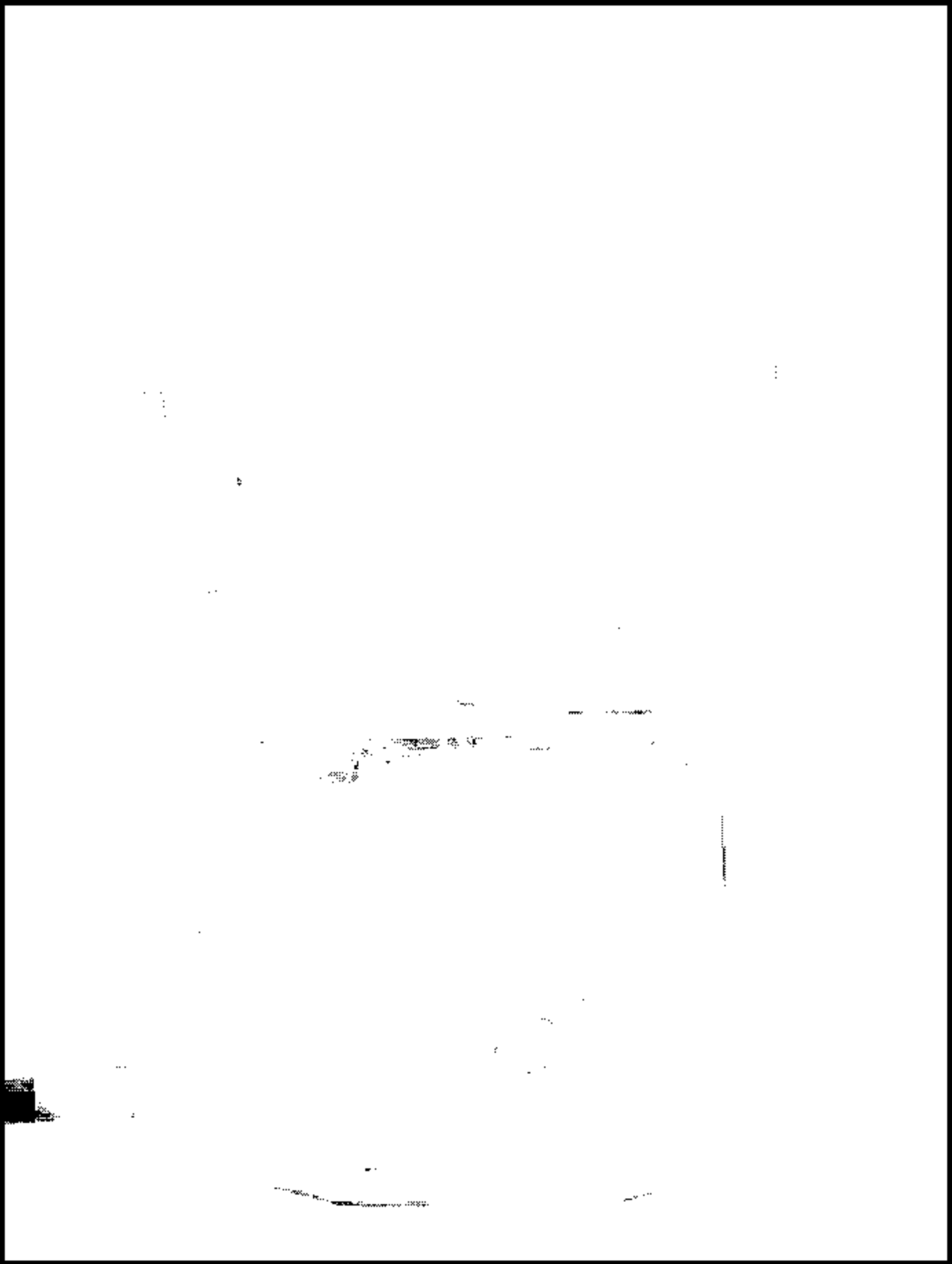


Image 25 Pre-Test Rear Underbody View

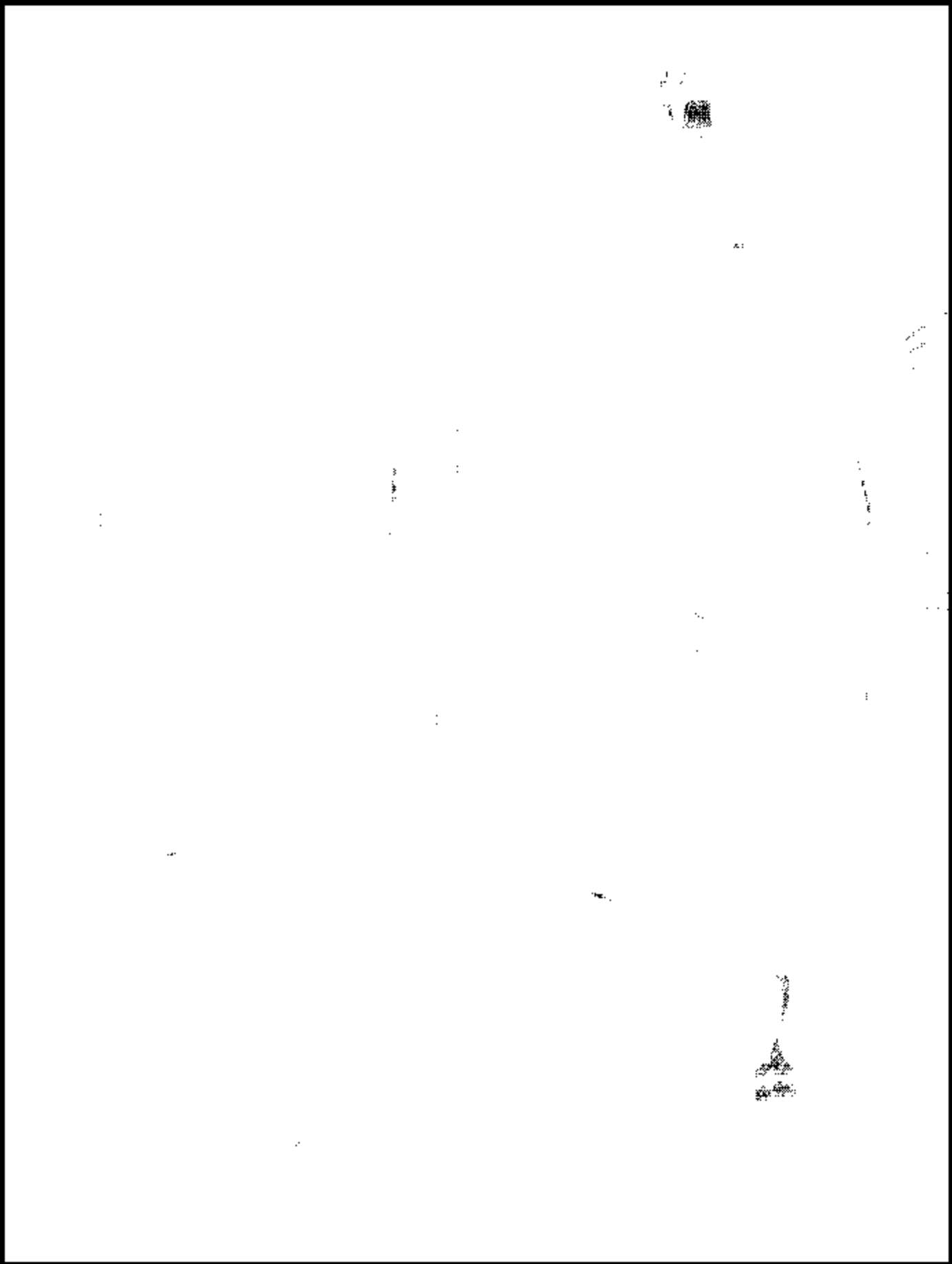


Image 26 Post-Test Rear Underbody View

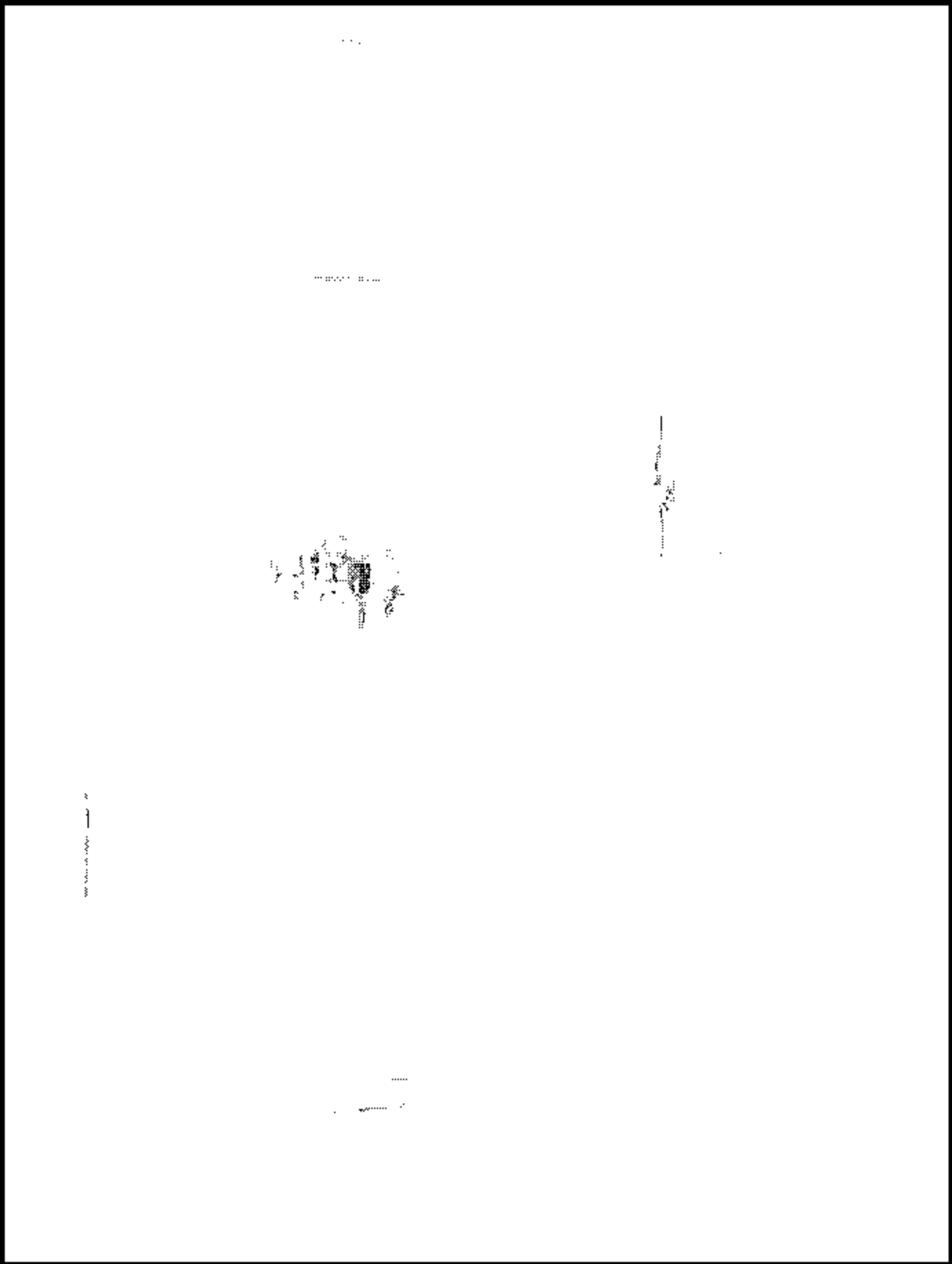


Image 27 Pre-Test Fuel Tank View

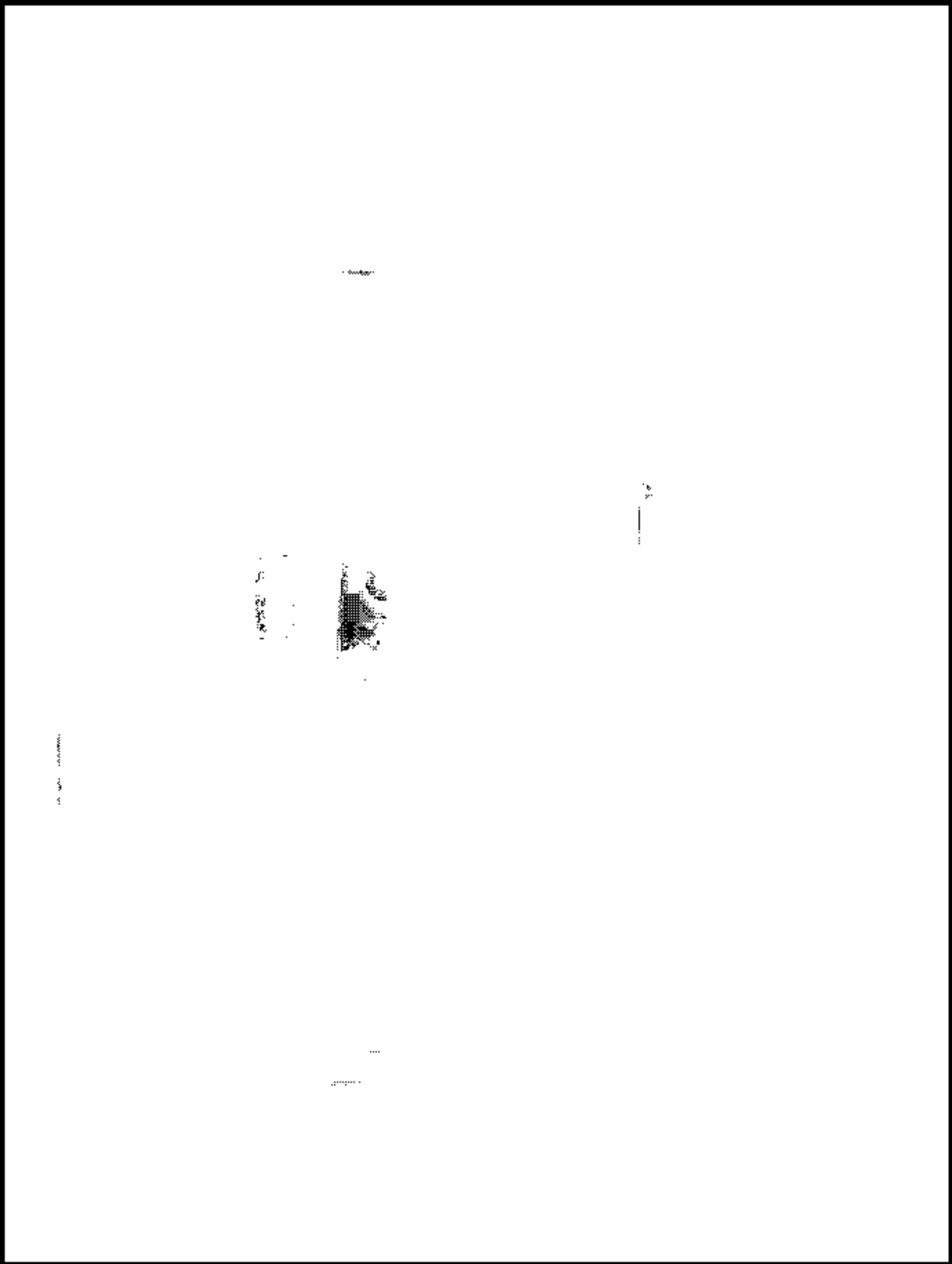


Image 28 Post-Test Fuel Tank View

Image 29 Pre-Test Fuel Lines View

Image 30 Post-Test Fuel Lines View

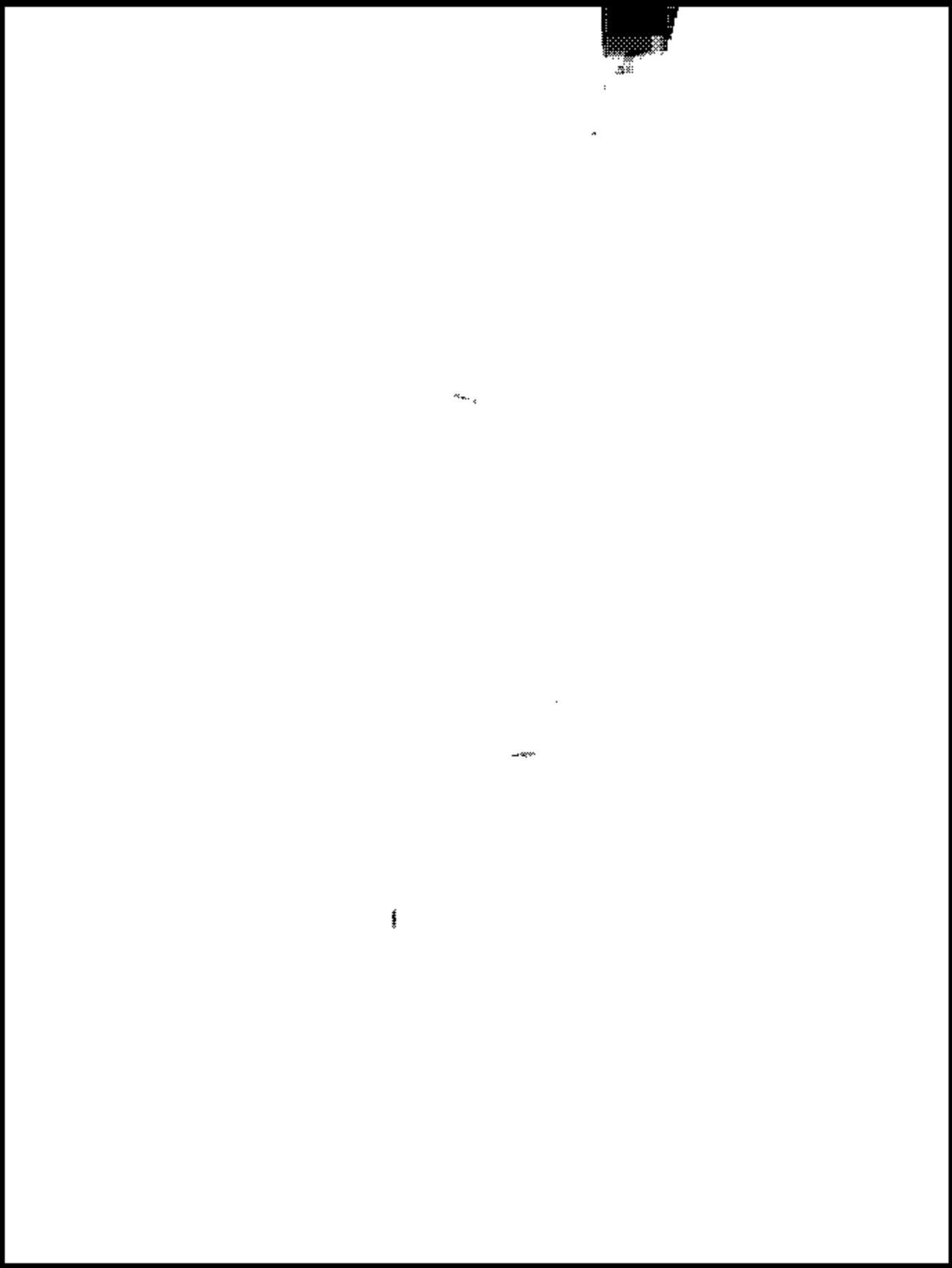


Image 31 Pre-Test Fuel Filler Neck View

Image 32 Post-Test Fuel Filler Neck View

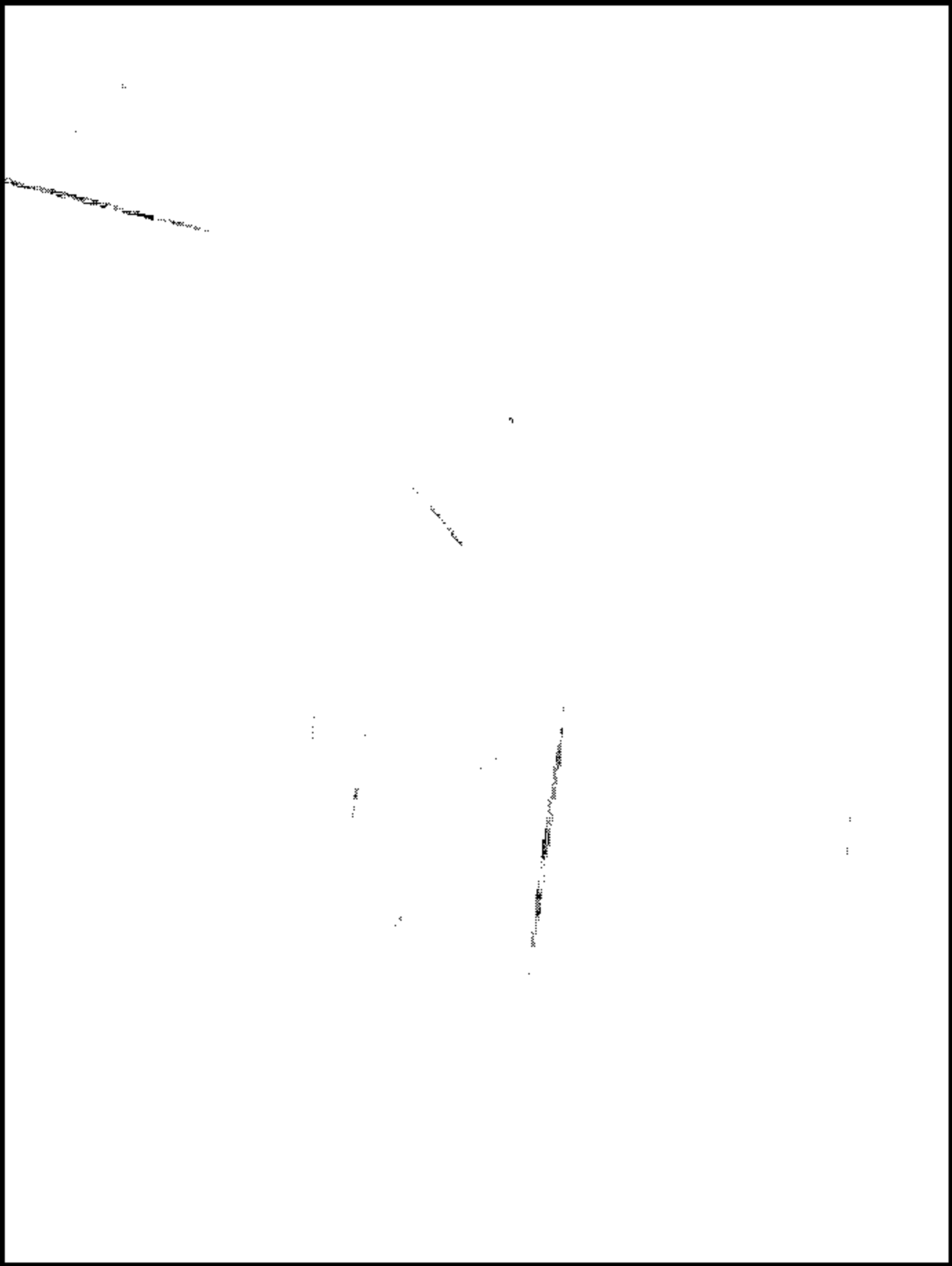


Image 33 Pre-Test Fuel Filter View

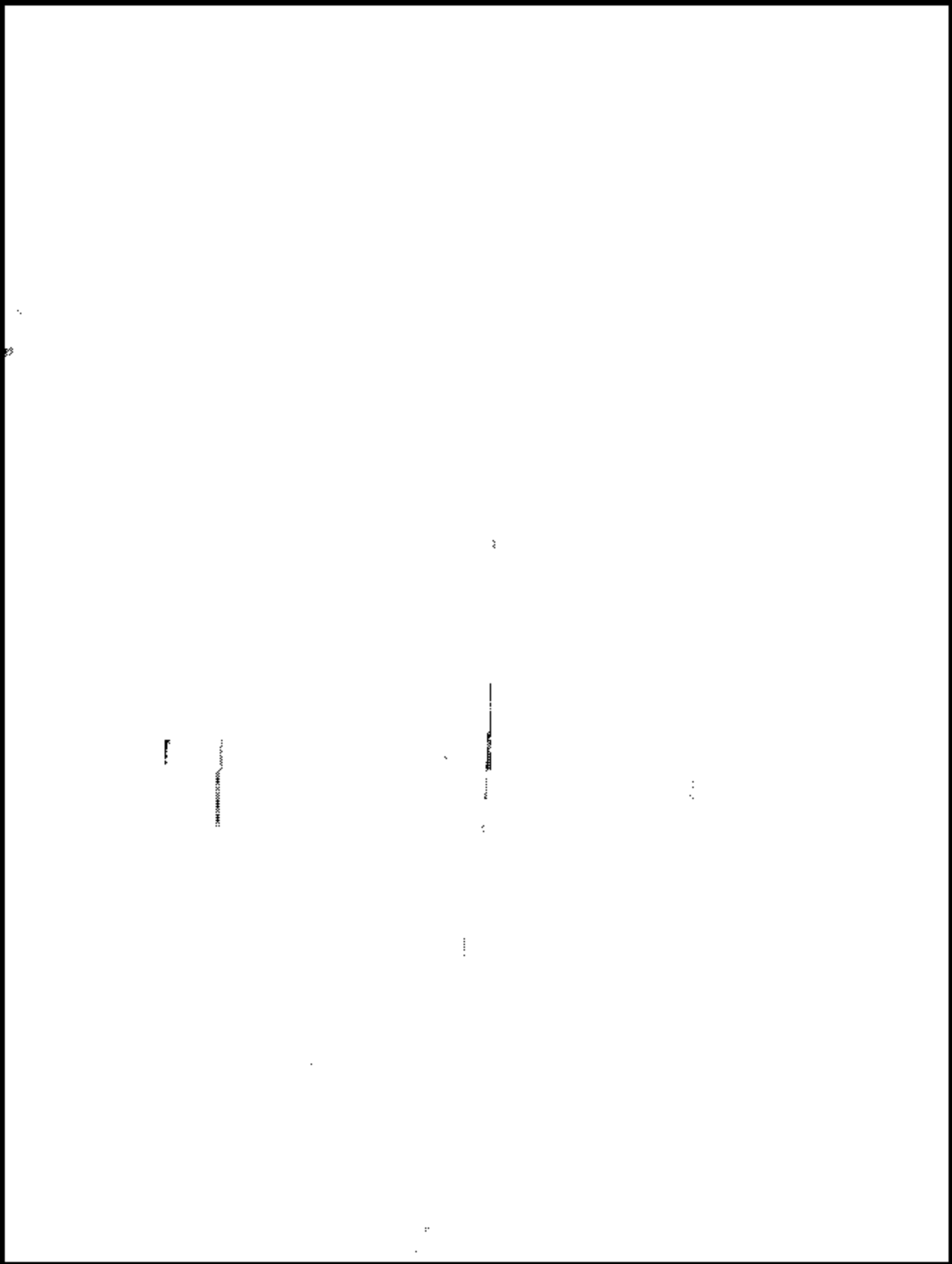


Image 34 Post-Test Fuel Filter View

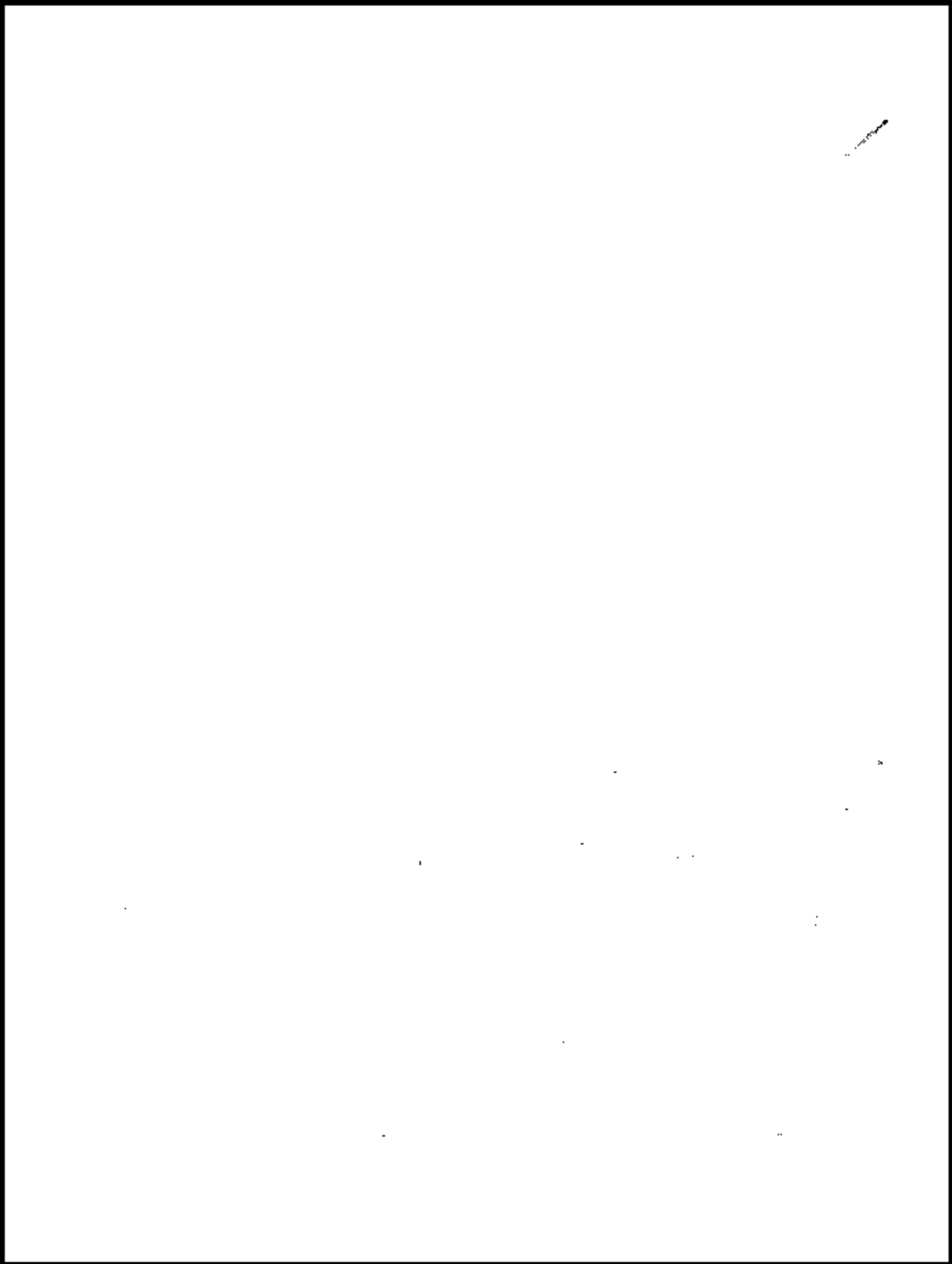


Image 35 Pre-Test Fuel Filler Cap View

Image 36 Post-Test Fuel Filler Cap View

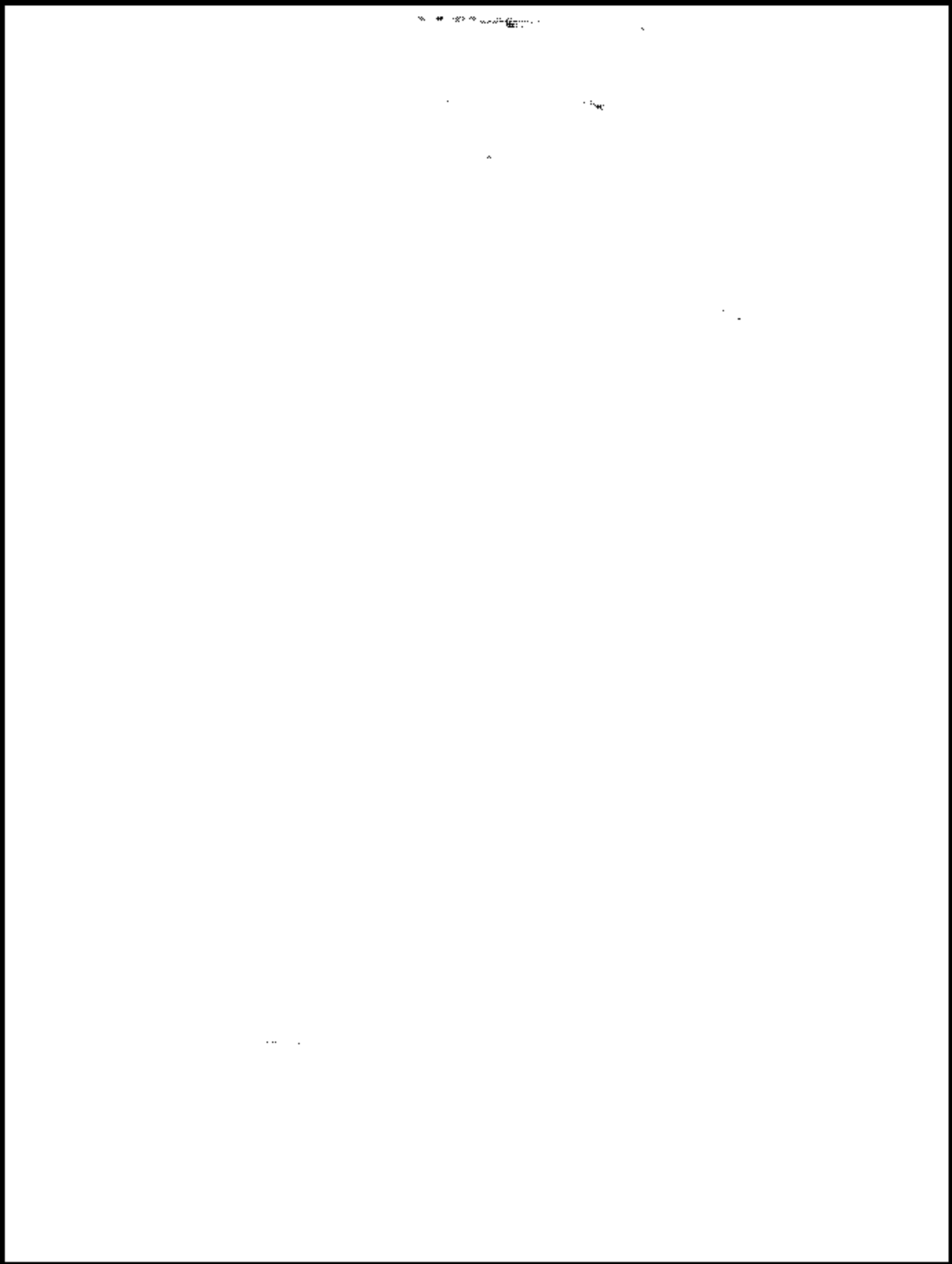


Image 37 Pre-Test Driver Dummy Front View

Image 38 Post-Test Driver Dummy Front View

Image 39 Pre-Test Driver Dummy Position View

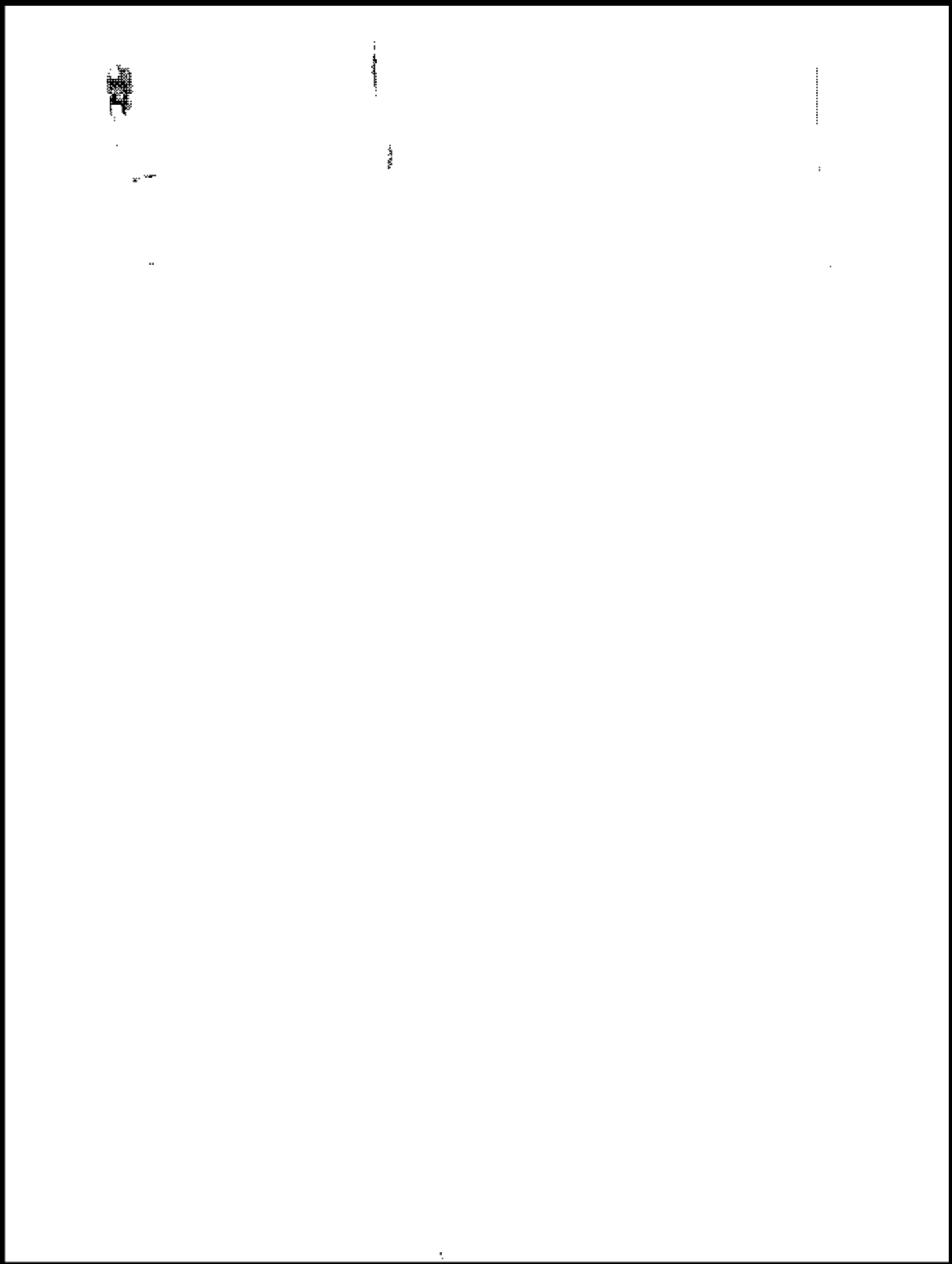


Image 40 Post-Test Driver Dummy Position View

Image 41 Pre-Test Driver Seat Position View

Image 42 Post-Test Driver Seat Position View

Image 43 Pre-Test Driver Dummy & Vehicle Intrusion View

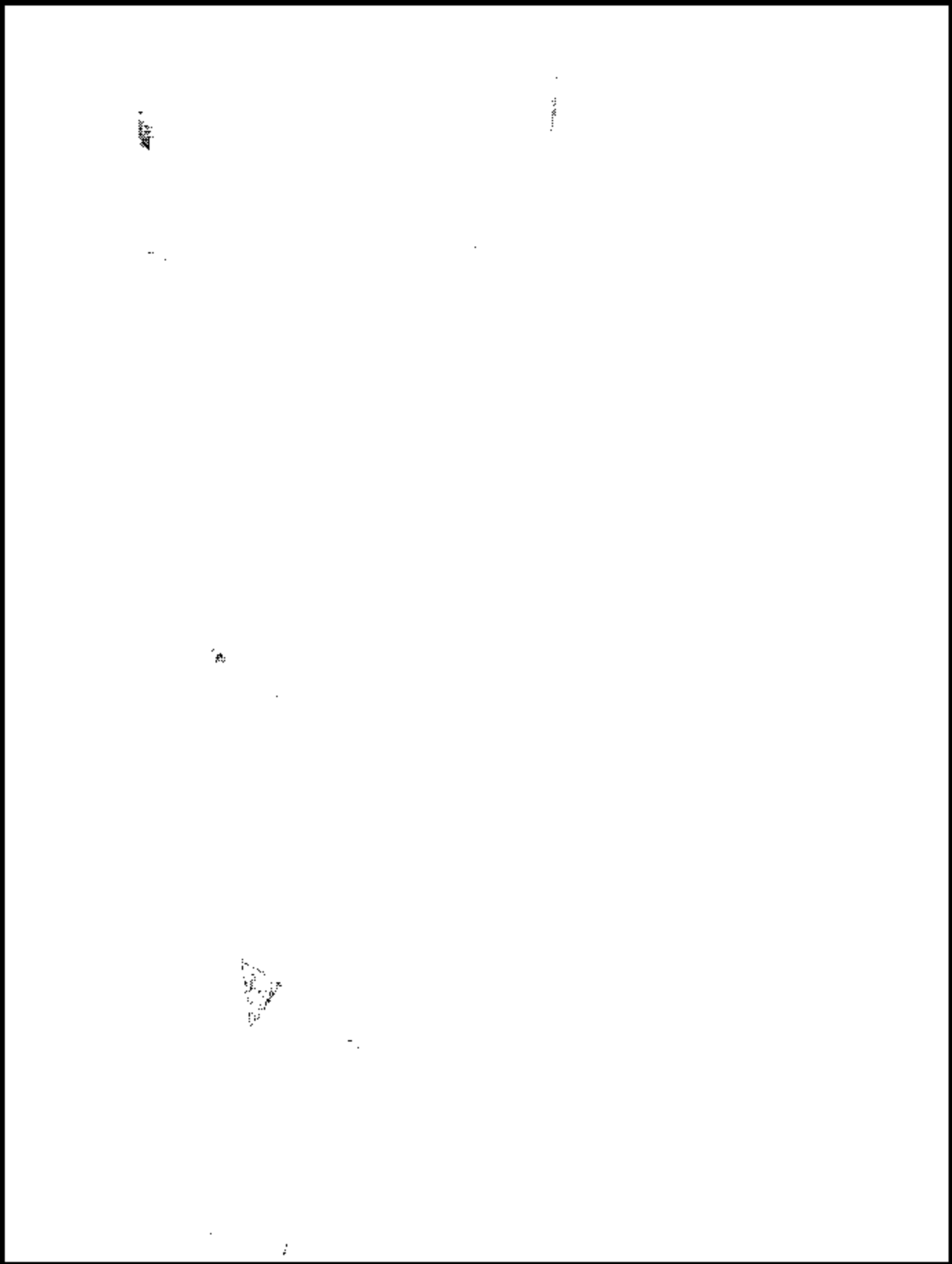


Image 44 Post-Test Driver Dummy & Vehicle Intrusion View

Image 45 Pre-Test Passenger Dummy Front View

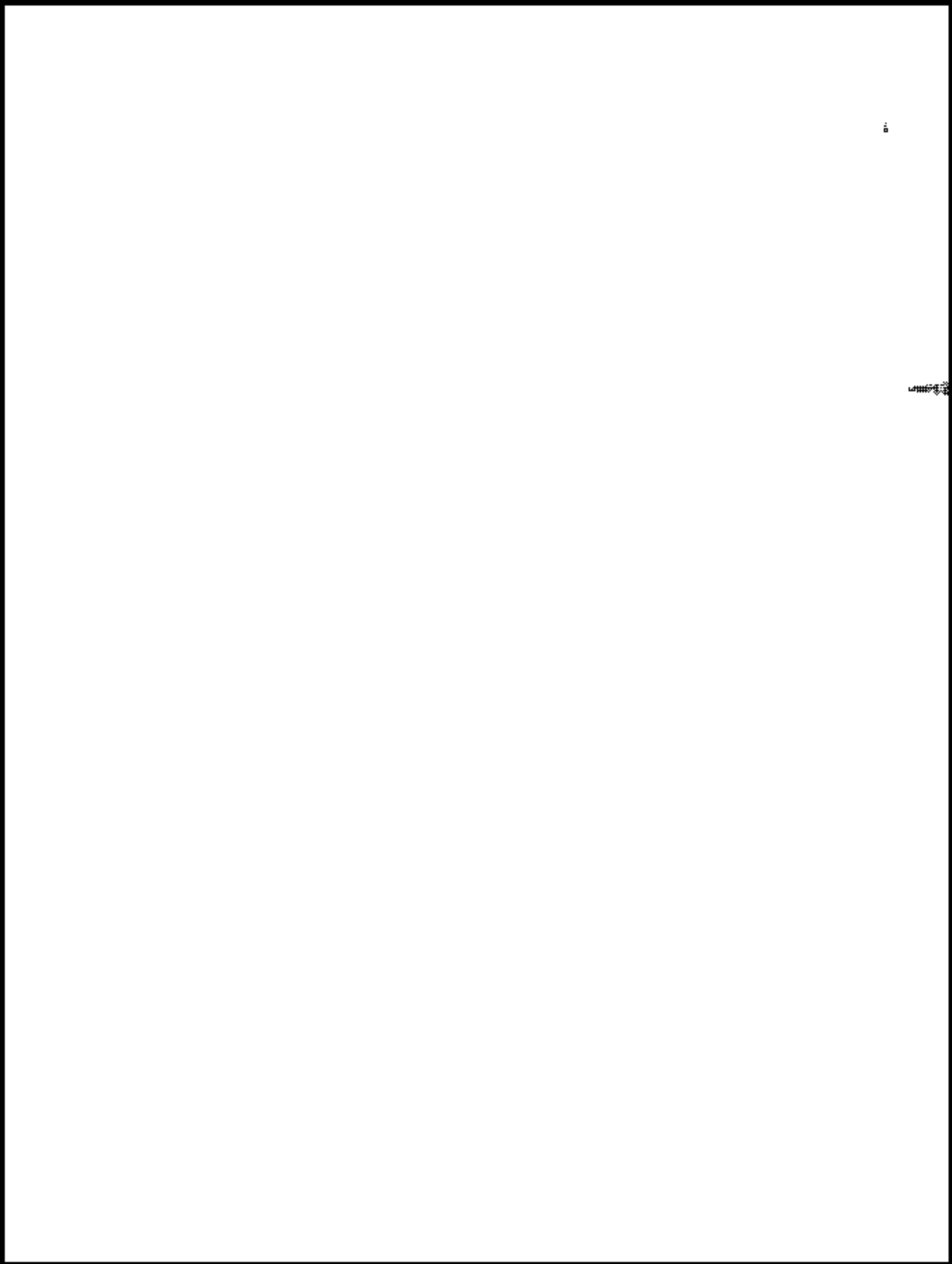


Image 46 Post-Test Passenger Dummy Front View

Image 47 Pre-Test Passenger Dummy Position View

Image 48 Post-Test Passenger Dummy Position View

Image 49 Pre-Test Passenger Seat Position View

Image 50 Post-Test Passenger Seat Position View

Image 51 Pre-Test Passenger Dummy & Vehicle Intrusion View

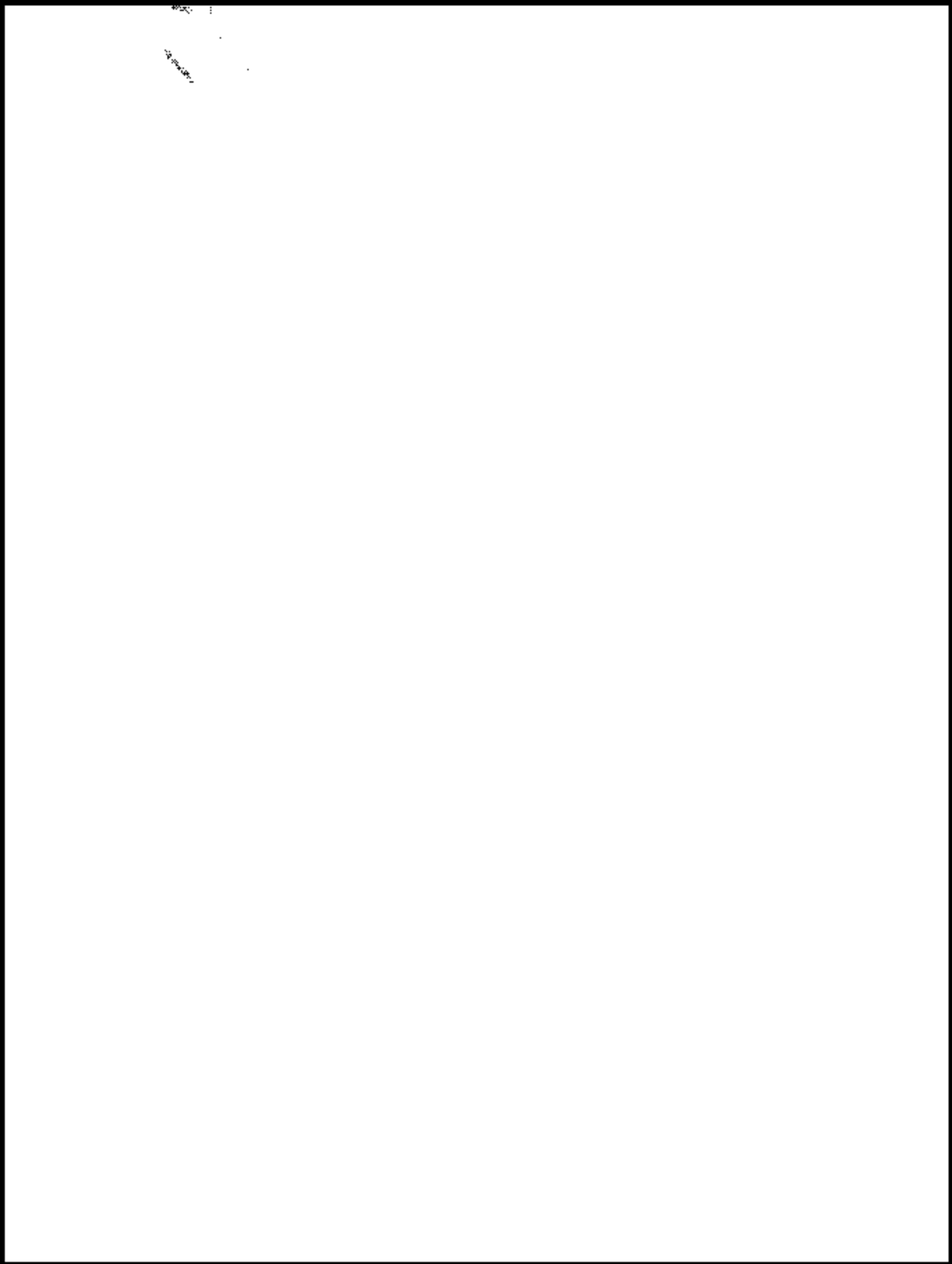


Image 52 Post-Test Passenger Dummy & Vehicle Intrusion View

Image 53 Post-Test Driver Dummy Head Contact - View 1

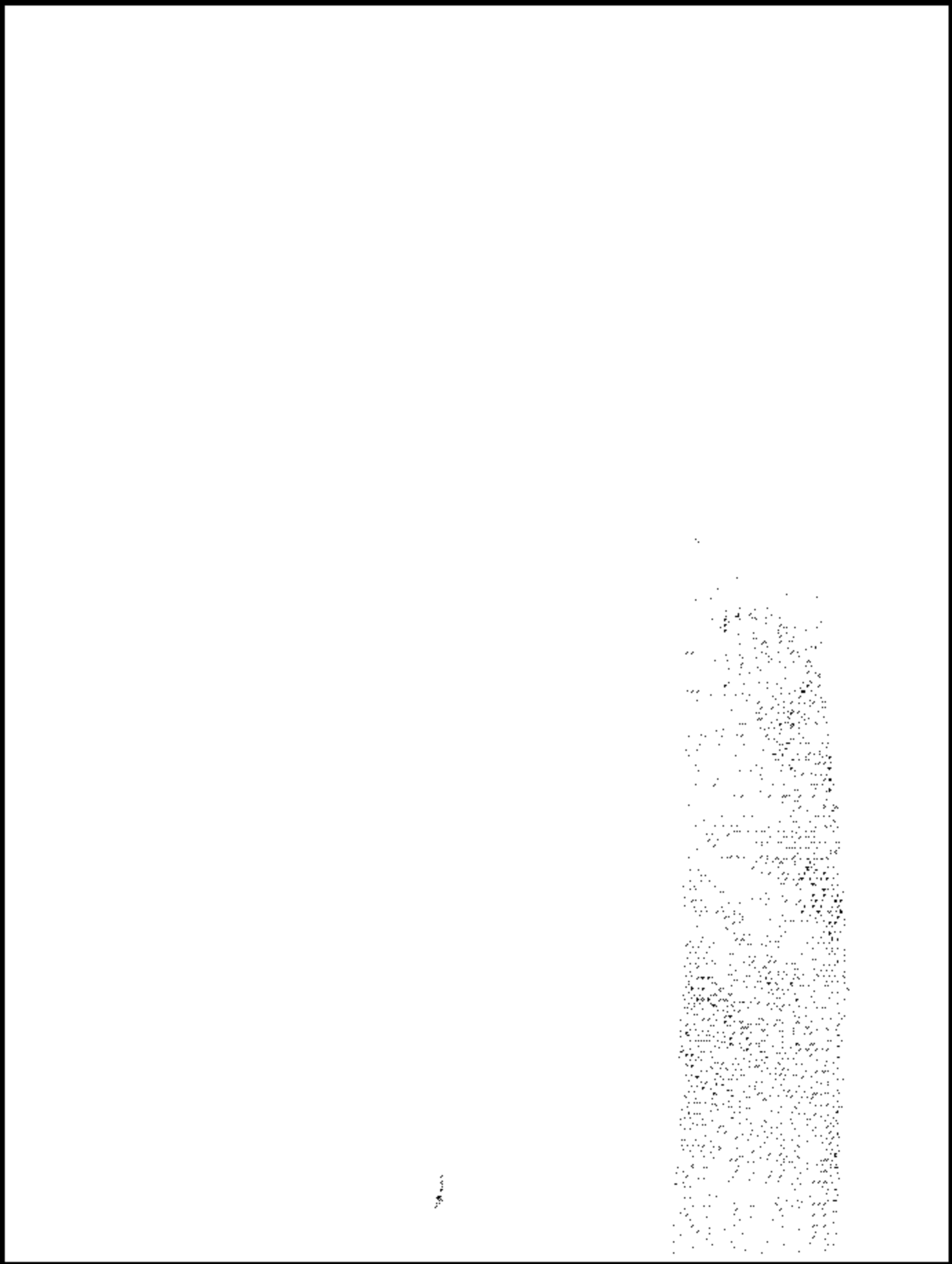


Image 54 Post-Test Driver Dummy Head Contact - View 2

Image 55 Pre-Test Driver Dummy Knee Bolster View

Image 56 Post-Test Driver Dummy Knee Contact View

Image 57 Post-Test Driver Toepan View

Image 58 Post-Test Passenger Dummy Head Contact - View 1

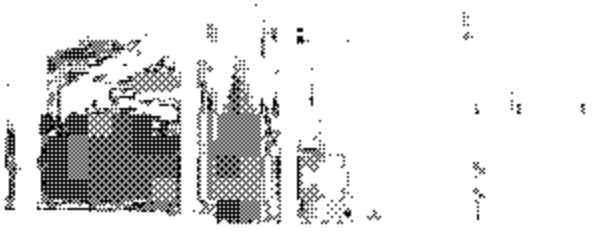


Image 59 Post-Test Passenger Dummy Head Contact - View 2

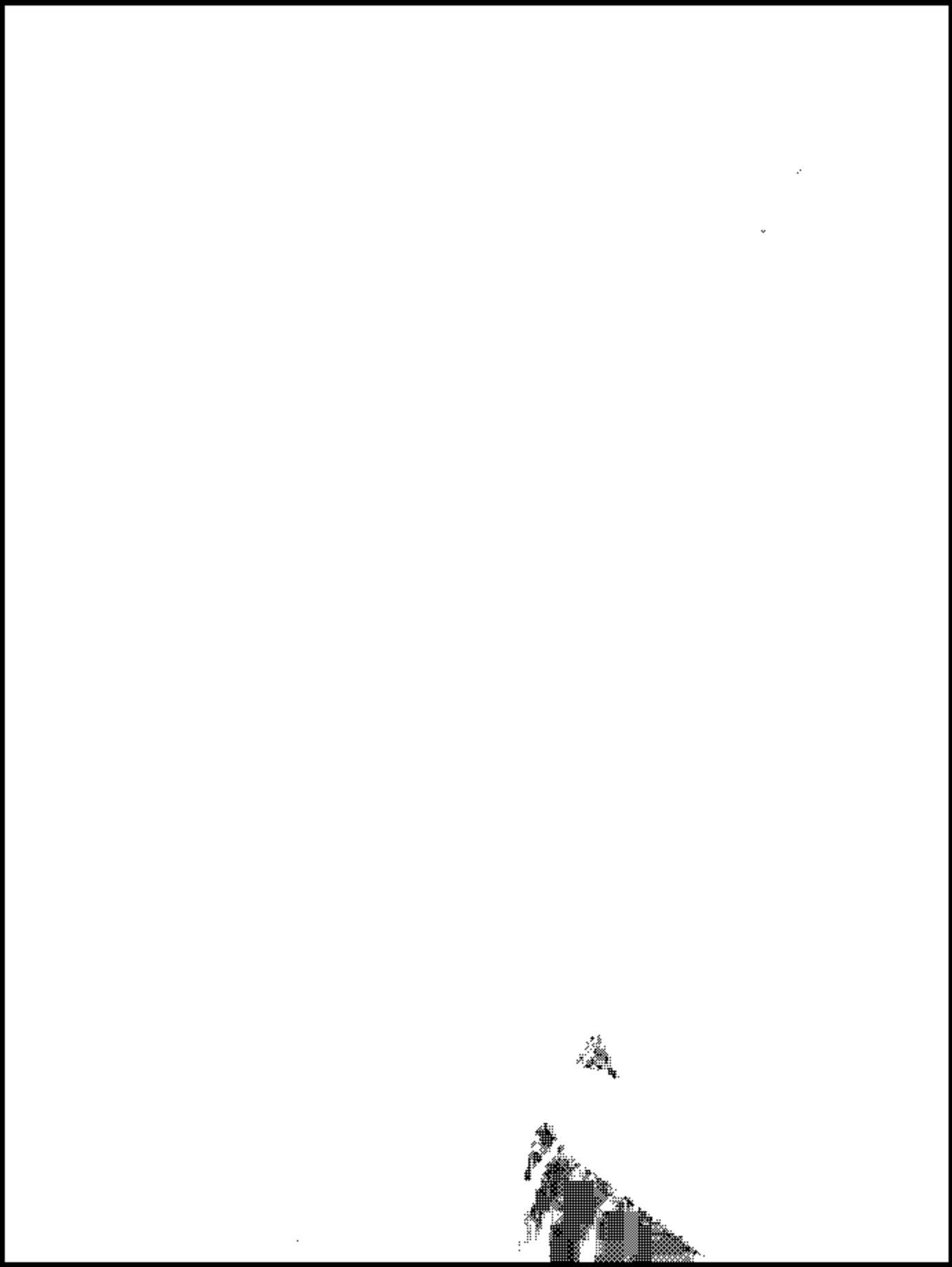


Image 60 Pre-Test Passenger Dummy Knee Bolster View

Image 61 Post-Test Passenger Dummy Knee Contact View

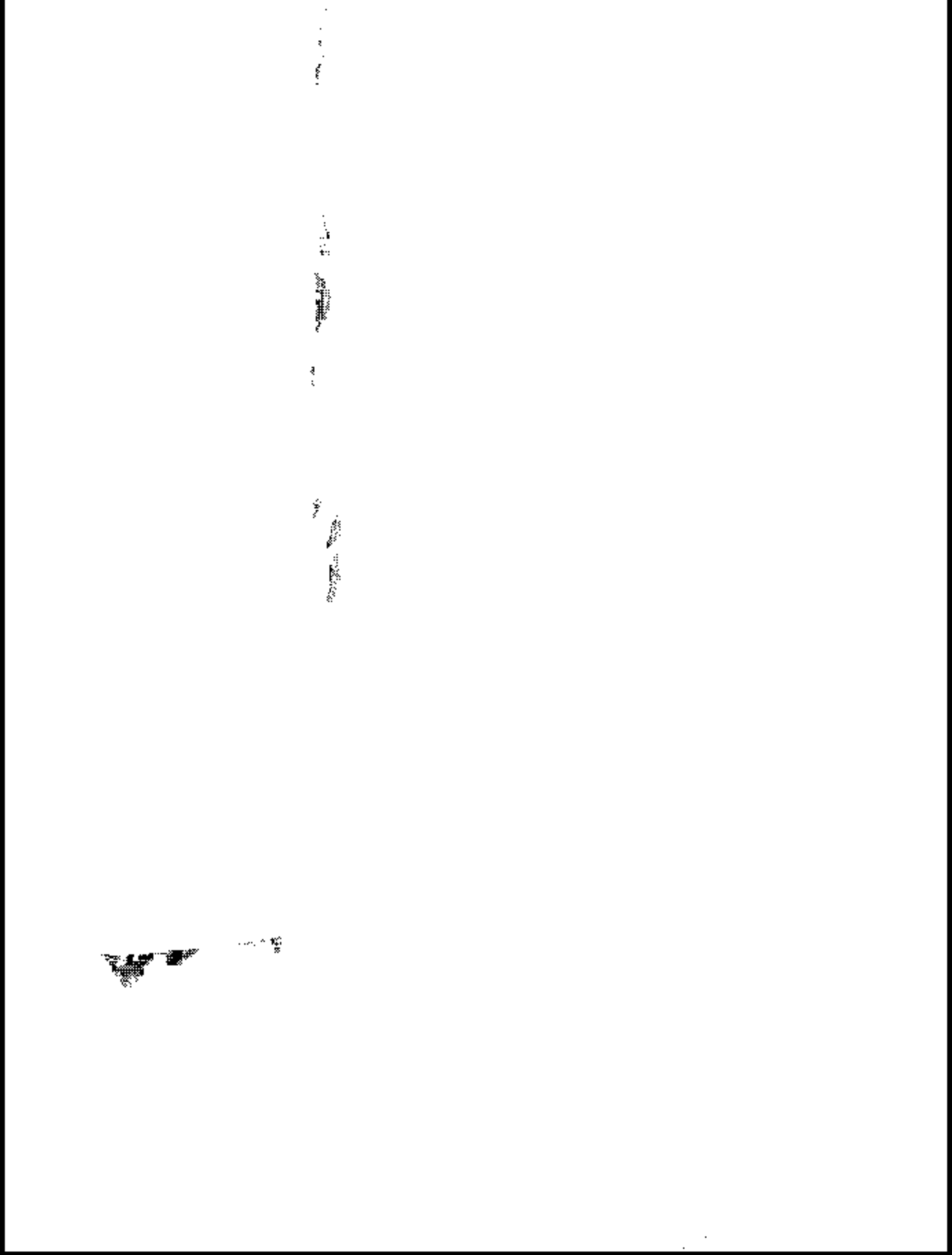


Image 62 Post-Test Passenger Toepan View

Image 63 Post-Test Vehicle on Static Rollover Device - 90° View

Image 64 Pre-Test Vehicle Ballast View

Image 65 Pre-Test Vehicle Certification and Recommended Tire Pressure Label View

Image 66 Pre-Test Vehicle Window Sticker

Appendix A

Test Equipment List and Calibration Information

Dummy 421v(208) **Type** HYBRID III 5th **Description** VRTC - 421v HYBRID III 5th Female (208 Config) ICAL'd 6-2-01(DKS 10-24-02)J211

Chsname	Location	Model	Name	Manufacturer	Sens./mV/V/U		Fullscale	Caldate	Pos Output	Flip
HEDXG	Head Accel X	EGE-73B6Q-20	02I02I16-A13	Entran	0.023	g	2000	9/24/02	Rr	1
HEDYG	Head Accel Y	EGE-73B6Q-20	02I02I16-A08	Entran	0.0213	g	2000	9/24/02	Lft	1
HEDZG	Head Accel Z	EGE-73B6Q-20	02I02I16-A18	Entran	0.0225	g	2000	9/24/02	Up	1
NEKXF	Neck Force X	IF-205	IF-205-180-FX	FTSS	0.00018243	N	8896	3/18/02	Hd Fd,Cst Rr	1
NEKYF	Neck Force Y	IF-205	IF-205-180-FY	FTSS	0.000175596	N	8896	3/18/02	Hd Lt,Cst Rt	0
NEKZF	Neck Force Z	IF-205	IF-205-180-FZ	FTSS	0.000092266	N	13344	3/18/02	Hd Up,Cst Dn	0
NEKXM	Neck Moment X	IF-205	IF-205-180-MX	FTSS	0.005577699	N-m	282.5	3/18/02	Rt Ear to Rt Shld	1
NEKYM	Neck Moment Y	IF-205	IF-205-180-MY	FTSS	0.005602124	N-m	282.5	3/18/02	Chin to Stnm	0
NEKZM	Neck Moment Z	IF-205	IF-205-180-MZ	FTSS	0.008122478	N-m	282.5	3/18/02	Chn to Lt Shld	0
CSTXG	Chest Accel X	EGE-73B6Q-20	B02A25-N09	Entran	0.02163	g	2000	8/5/02	Fwd	0
CSTYG	Chest Accel Y	EGE-73B6Q-20	02A18-N12	Entran	0.01926	g	2000	8/6/02	Lft	1
CSTZG	Chest Accel Z	EGE-73B6Q-20	B02A25-N10	Entran	0.01967	g	2000	8/5/02	Up	1
CSTXD	Chest Deflection X	14CB1-2897	14CB1-2897-1355	Servo	1.70969	mm	100	3/25/02	Stnm Away Frm Spn	0
PEVXG	Pelvis Accel X	7264-2000LC	AF9K3	Endevco	0.0212	g	2000	8/5/02	Rwd	1
PEVYG	Pelvis Accel Y	EGE-73B6Q-20	02A16-A26	Entran	0.02009	g	2000	8/5/02	Lft	1
PEVZG	Pelvis Accel Z	EGE-73B6Q-20	02A18-N15	Entran	0.01877	g	2000	8/5/02	Up	1
LFMZF	Left Femur Force Z S37	2430	2430-739	GSE	0.000067676	N	13344	3/18/02	Knee Fd,Pel Rr	0
RFMZF	Right Femur Force Z VRTC 4	2430	2430-760	GSB	0.000067069	N	13344	3/18/02	Knee Fd,Pel Rr	0

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021119-2

Dummy 426v **Type** HYBRID III 5th **Description** VRTC - 426v HYBRID III 5th Female ICAL'd 11-06-01(DKS11-13-02)J211

Chname	Location	Model	Name	Manufacturer	Sens./mV/V/U		Fullscale	Caldate	Pos Output	Flip
HEDXG	Head Accel X	7264C-2KLC-2-	P17837	Endevco	0.01415	g	2000	11/6/02	Rt	1
HEDYG	Head Accel Y	7264C-2KLC-2-	P17559	Endevco	0.0141006	g	2000	11/6/02	Lft	1
HEDZG	Head Accel Z	7264C-2KLC-2-	P15856	Endevco	0.01471	g	2000	11/6/02	Up	1
NEKXF	Neck Force X	IF-205	IF-205-287-FX	FTSS	0.000178125	N	8896.4	11/6/02	Hd Fd,Cst Rr	1
NEKYF	Neck Force Y	IF-205	IF-205-287-FY	FTSS	0.000171009	N	8896.4	11/6/02	Hd Lt,Cst Rt	0
NEKZF	Neck Force Z	IF-205	IF-205-287-FZ	FTSS	0.000090426	N	13344.6	11/6/02	Hd Up,Cst Dn	0
NEKXM	Neck Moment X	IF-205	IF-205-287-MX	FTSS	0.005443186	N-m	282.5	11/6/02	Rt Ear to Rt Shld	1
NEKYM	Neck Moment Y	IF-205	IF-205-287-MY	FTSS	0.005449912	N-m	282.5	11/6/02	Chin to Sturn	0
NEKZM	Neck Moment Z	IF-205	IF-205-287-MZ	FTSS	0.008	N-m	282.5	11/6/02	Chn to Lt Shld	0
CSTXG	Chest Accel X	7264C-2KLC-2-	P16194	Endevco	0.0140458	g	2000	11/6/02	Fwd	0
CSTYG	Chest Accel Y	7264C-2KLC-2-	P16517	Endevco	0.01507	g	2000	11/6/02	Lft	1
CSTZG	Chest Accel Z	7264C-2KLC-2-	P16428	Endevco	0.0148929	g	2000	11/6/02	Up	1
CSTXD	Chest Deflection X	14CB1-2897	14CB1-2897-1392	Servo	1.6878	mm	100	11/13/02	Strnm Away Frm Spn	0
LFMZF	Left Femur Force Z #2	2121	2121-0257	Denton	0.000100243	N	13344.6	11/6/02	Knee Fd,Pel Rr	0
RFMZF	Right Femur Force Z #12	2121	2121-0256	Denton	0.000099478	N	13344.6	11/6/02	Knee Fd,Pel Rr	0

Channel Report

11/19/2002 10:12:45 AM

Name of Test 021119-2 **System** MINIDAU **Name of DAU** DAUA

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range		Pol.	Cal.		Group	Mfg.	Model
0001	EVENT	SYNCA	SYNCA		5.12	V	+	10/15/2002	OK	-1	TRC	Event
0002	P17837	HEDXG1	Head Accel X	Rr	402.04161	g	-	11/6/2002	OK	426v	Endevco	7264C-2KLC-2-
0003	P17559	HEDYG1	Head Accel Y	Lft	399.01661	g	-	11/6/2002	OK	426v	Endevco	7264C-2KLC-2-
0004	P15856	HEDZG1	Head Accel Z	Up	400.07188	g	-	11/6/2002	OK	426v	Endevco	7264C-2KLC-2-
0005	IF-205-287-FX	NEKXF1	Neck Force X	Hd	8899.0277	N	-	11/6/2002	OK	426v	FTSS	IF-205
0006	IF-205-287-FY	NEKYF1	Neck Force Y	Hd	8884.2565	N	+	11/6/2002	OK	426v	FTSS	IF-205
0007	IF-205-287-FZ	NEKZF1	Neck Force Z	Hd	13353.981	N	+	11/6/2002	OK	426v	FTSS	IF-205
0008	IF-205-287-MX	NEKXM1	Neck Moment X	Rt Ear	282.47014	N·m	-	11/6/2002	OK	426v	FTSS	IF-205
0009	IF-205-287-MY	NEKYM1	Neck Moment Y	Chin	282.12153	N·m	+	11/6/2002	OK	426v	FTSS	IF-205
0010	IF-205-287-MZ	NEKZM1	Neck Moment Z	Chn	281.93832	N·m	+	11/6/2002	OK	426v	FTSS	IF-205
0011	P16194	CSTXG1	Chest Accel X	Fwd	400.57338	g	+	11/6/2002	OK	426v	Endevco	7264C-2KLC-2-
0012	P16517	CSTYG1	Chest Accel Y	Lft	399.70334	g	-	11/6/2002	OK	426v	Endevco	7264C-2KLC-2-
0013	P16428	CSTZG1	Chest Accel Z	Up	399.75346	g	-	11/6/2002	OK	426v	Endevco	7264C-2KLC-2-
0014	14CB1-2897-139	CSTXD1	Chest Deflection X	Strnm	99.460156	mm	+	11/13/2002	OK	426v	Servo	14CB1-2897
0015	2121-0257	LFMZF1	Left Femur Force Z #2	Knee	13335.740	N	+	11/6/2002	OK	426v	Denton	2121
0016	2121-0258	RFMZF1	Right Femur Force Z #12	Knee	13333.851	N	+	11/6/2002	OK	426v	Denton	2121
0017	02I02I16-A13	HEDXG2	Head Accel X	Rr	397.51552	g	-	9/24/2002	OK	421v(20	Entran	EGE-73B6Q-200
0018	02I02I16-A08	HEDYG2	Head Accel Y	Lft	400.62597	g	-	9/24/2002	OK	421v(20	Entran	EGE-73B6Q-200
0019	02I02I16-A18	HEDZG2	Head Accel Z	Up	399.22027	g	-	9/24/2002	OK	421v(20	Entran	EGE-73B6Q-200
0020	IF-205-180-FX	NEKXF2	Neck Force X	Hd	8909.7013	N	-	3/18/2002	OK	421v(20	FTSS	IF-205
0021	IF-205-180-FY	NEKYF2	Neck Force Y	Hd	8889.5852	N	+	3/18/2002	OK	421v(20	FTSS	IF-205
0022	IF-205-180-FZ	NEKZF2	Neck Force Z	Hd	13339.358	N	+	3/18/2002	OK	421v(20	FTSS	IF-205
0023	IF-205-180-MX	NEKXM2	Neck Moment X	Rt Ear	282.44346	N·m	-	3/18/2002	OK	421v(20	FTSS	IF-205
0024	IF-205-180-MY	NEKYM2	Neck Moment Y	Chin	282.07995	N·m	+	3/18/2002	OK	421v(20	FTSS	IF-205
0025	IF-205-180-MZ	NEKZM2	Neck Moment Z	Chn	282.66794	N·m	+	3/18/2002	OK	421v(20	FTSS	IF-205
0026	B02A25-N03	CSTXG2	Chest Accel X	Fwd	401.20046	g	+	8/5/2002	OK	421v(20	Entran	EGE-73B6Q-200
0027	02A18-N12	CSTYG2	Chest Accel Y	Lft	402.78171	g	-	8/5/2002	OK	421v(20	Entran	EGE-73B6Q-200
0028	B02A25-N10	CSTZG2	Chest Accel Z	Up	400.45363	g	-	8/5/2002	OK	421v(20	Entran	EGE-73B6Q-200
0029	14CB1-2897-135	CSTXD2	Chest Deflection X	Strnm	99.823164	mm	+	3/25/2002	OK	421v(20	Servo	14CB1-2897
0030	2430-739	LFMZF2	Left Femur Force Z S37	Knee	13342.961	N	+	3/18/2002	OK	421v(20	GSE	2430

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Channel Report

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0031	2430-760	RFMZF2	Right Femur Force Z	VRTC	4	Knee	13346.030	N	+	3/18/2002	OK	421v(20	GSE	2430
0032	P23843	LSXXG1	LEFT REAR SEAT			FWD	1017.1646	g	+	8/19/2002	OK	-1	Endevco	7264C-2K-2-180

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Channel Report

11/19/2002 10:12:45 AM

Name of Test 021119-2 **System** MINIDAU **Name of DAU** DAUB

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range		Pol.	Cal.		Group	Mfg.	Model
0001	P24201	LSXYG1	LEFT REAR SEAT	LT	1005.5185	g	-	8/26/2002	OK	-1	Endevco	7264C-2K-2-180
0002	P23877	RSXXG1	RIGHT REAR SEAT	FWD	991.09562	g	+	8/16/2002	OK	-1	Endevco	7264C-2K-2-180
0003	P23619	RSXYG1	RIGHT REAR SEAT	RT	1016.7808	g	+	8/9/2002	OK	-1	Endevco	7264C-2K-2-180
0004	J17586	TENXG1	TOP OF ENGINE X-AXIS	FWD	1553.0211	g	+	11/5/2002	OK	-1	Endevco	7264-2000TZ
0005	J35571	BENXG1	BOTTOM OF ENGINE X-AXIS	FWD	1515.0170	g	+	8/27/2002	OK	-1	Endevco	7264-2000TZ
0006	P23842	RFCXG1	RIGHT FRONT BRAKE	RR	983.63175	g	-	8/15/2002	OK	-1	Endevco	7264C-2K-2-180
0007	P23618	LFCXG1	LEFT FRONT BRAKE	RR	1002.4473	g	-	8/13/2002	OK	-1	Endevco	7264C-2K-2-180
0008	P23623	DPCXG1	INSTRUMENT PANEL TOP	FWD	985.22167	g	+	8/13/2002	OK	-1	Endevco	7264C-2K-2-180
0009	10226	RDKZG1	REAR DECK Z-AXIS	UP	1011.8577	g	-	11/5/2002	OK	-1	Endevco	7264-2000TZ

Shunt Measurement before Test

Name of Test 021119-2

2002-12-20 17:32:45

			Shunt 1 (+)			Shunt 2 (-)			Shunt 3 (+) [K3600 only!]			Shunt 4 (-) [K3600 only!]		
DAU	Sensor	Channel	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range
DAUA	EVENT	0001												
DAUA	P17837	0002	3.000	3.144	Yes									
DAUA	P17559	0003	3.000	3.166	Yes									
DAUA	P15856	0004	3.000	3.150	Yes									
DAUA	IF-205-287-FX	0005	3.700	3.707	No									
DAUA	IF-205-287-FY	0006	3.700	3.718	No									
DAUA	IF-205-287-FZ	0007	3.700	3.675	No									
DAUA	IF-205-287-MX	0008	3.700	3.717	No									
DAUA	IF-205-287-MY	0009	3.700	3.717	No									
DAUA	IF-205-287-MZ	0010	3.700	3.664	No									
DAUA	P16194	0011	3.000	3.156	Yes									
DAUA	P16517	0012	3.000	3.146	Yes									
DAUA	P16428	0013	3.000	3.152	Yes									
DAUA	14CB1-2897-13	0014	5.000	3.175	Yes									
DAUA	2121-0257	0015	3.700	3.685	No									
DAUA	2121-0258	0016	3.700	3.698	No									
DAUA	02I02I16-A13	0017	3.000	3.170	Yes									
DAUA	02I02I16-A08	0018	3.000	3.164	Yes									
DAUA	02I02I16-A18	0019	3.000	3.165	Yes									
DAUA	IF-205-180-FX	0020	3.700	3.714	No									
DAUA	IF-205-180-FY	0021	3.700	3.712	No									
DAUA	IF-205-180-FZ	0022	3.700	3.676	No									
DAUA	IF-205-180-MX	0023	3.700	3.716	No									
DAUA	IF-205-180-MY	0024	3.700	3.708	No									

			Shunt 1 (+)			Shunt 2 (-)			Shunt 3 (+) [K3600 only!]			Shunt 4 (-) [K3600 only!]		
DAU	Sensor	Channel	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range
DAUA	IF-205-180-MZ	0025	3.700	3.665	No									
DAUA	B02A25-N03	0026	3.000	3.158	Yes									
DAUA	02A18-N12	0027	3.000	3.158	Yes									
DAUA	B02A25-N10	0028	3.000	3.160	Yes									
DAUA	14CB1-2897-13	0029	5.000	3.330	Yes									
DAUA	2430-739	0030	3.700	3.732	No									
DAUA	2430-760	0031	3.700	3.716	No									
DAUA	P23843	0032	3.000	3.164	Yes									
DAUB	P24201	0001	3.000	3.193	Yes									
DAUB	P23877	0002	3.000	3.158	Yes									
DAUB	P23619	0003	3.000	3.160	Yes									
DAUB	J17586	0004	3.000	2.560	Yes									
DAUB	J35571	0005	3.000	2.534	Yes									
DAUB	P23842	0006	3.000	3.153	Yes									
DAUB	P23618	0007	3.000	3.161	Yes									
DAUB	P23623	0008	3.000	3.146	Yes									
DAUB	10226	0009	3.000	2.642	Yes									

Shunt Measurement after Test

Name of Test 021119-2

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			Shunt 1 (+)			Shunt 2 (-)			Shunt 3 (+) [K3600 only!]			Shunt 4 (-) [K3600 only!]		
Name of DA	Name of Sensor	Channel	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range
DAUA	EVENT	0001												
DAUA	P17837	0002	3.000	3.144	Yes									
DAUA	P17559	0003	3.000	3.166	Yes									
DAUA	P15856	0004	3.000	3.150	Yes									
DAUA	IF-205-287-FX	0005	3.700	3.706	No									
DAUA	IF-205-287-FY	0006	3.700	3.718	No									
DAUA	IF-205-287-FZ	0007	3.700	3.674	No									
DAUA	IF-205-287-MX	0008	3.700	3.717	No									
DAUA	IF-205-287-MY	0009	3.700	3.717	No									
DAUA	IF-205-287-MZ	0010	3.700	3.664	No									
DAUA	P16194	0011	3.000	3.157	Yes									
DAUA	P16517	0012	3.000	3.145	Yes									
DAUA	P16428	0013	3.000	3.152	Yes									
DAUA	14CB1-2897-13	0014	5.000	3.184	Yes									
DAUA	2121-0257	0015	3.700	3.686	No									
DAUA	2121-0258	0016	3.700	3.698	No									
DAUA	02I02I16-A13	0017	3.000	3.169	Yes									
DAUA	02I02I16-A08	0018	3.000	3.164	Yes									
DAUA	02I02I16-A18	0019	3.000	3.165	Yes									
DAUA	IF-205-180-FX	0020	3.700	3.716	No									
DAUA	IF-205-180-FY	0021	3.700	3.711	No									
DAUA	IF-205-180-FZ	0022	3.700	3.678	No									
DAUA	IF-205-180-MX	0023	3.700	3.717	No									
DAUA	IF-205-180-MY	0024	3.700	3.708	No									

			Shunt 1 (+)			Shunt 2 (-)			Shunt 3 (+) [K3600 only!]			Shunt 4 (-) [K3600 only!]		
Name of DA	Name of Sensor	Channel	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range	Reference Voltage / V	Shunt Value / V	Out of Range
DAUA	IF-205-180-MZ	0025	3.700	3.666	No									
DAUA	B02A25-N03	0026	3.000	3.158	Yes									
DAUA	02A18-N12	0027	3.000	3.160	Yes									
DAUA	B02A25-N10	0028	3.000	3.161	Yes									
DAUA	14CB1-2897-13	0029	5.000	3.361	Yes									
DAUA	2430-739	0030	3.700	3.732	No									
DAUA	2430-760	0031	3.700	3.715	No									
DAUA	P23843	0032	3.000	3.163	Yes									
DAUB	P24201	0001	3.000	3.193	Yes									
DAUB	P23877	0002	3.000	3.159	Yes									
DAUB	P23619	0003	3.000	3.160	Yes									
DAUB	J17586	0004	3.000	2.554	Yes									
DAUB	J35571	0005	3.000	2.543	Yes									
DAUB	P23842	0006	3.000	3.153	Yes									
DAUB	P23618	0007	3.000	3.162	Yes									
DAUB	P23623	0008	3.000	3.146	Yes									
DAUB	10226	0009	3.000	2.640	Yes									