637265
V4984

Report Number: 208-TRC-04-001
212-TRC-04-001
301-TRC-04-001

Safety Compliance Testing for FMVSS 208

Occupant Crash Protection

Saturn Corporation

2004 Saturn Ion

NHTSA Number: C40113

TRC Inc. Test Number: 040318-1

Transportation Research Center Inc.

10820 State Route 347

East Liberty, OH 43319

Test Date: March 18, 2004

Final Report: March 31, 2004

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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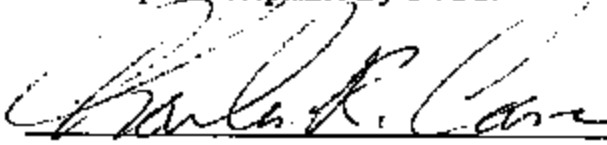
Test Performed By: John Shultz, Supervisor

Report Approved By:

Date 3/31/04

Walter Dudek, Project Manager
Transportation Research Center Inc.

Final Report Acceptance By OVSC:



Date 8/3/04

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

Technical Report Documentation Page

1. Report No. 208-TRC-04-001 212-TRC-04-001 301-TRC-04-001	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Final Report of FMVSS 208 Compliance Testing of a 2004 Saturn Ion NHTSA No. C40113		5. Report Date March 31, 2004 6. Performing Organization Code TRC
7. Author(s) Walter Dudek, Project Manager Transportation Research Center Inc.		8. Performing Organization Report No. 040318-1
9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319		10. Work Unit No. 11. Contract or Grant No. DTNH22-03-D-01002
12. Sponsoring Agency Name and Address 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 6115 Washington, DC 20590		13. Type of Report and Period Covered Final Report March 2004 14. Sponsoring Agency Code NVS-220
15. Supplemental Notes None		

16. Abstract

Compliance tests were conducted on a 2004 Saturn Ion, NHTSA No. C40113, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP208-12 for the determination of FMVSS 208 compliance. Possible test failures identified were as follows:

None

17. Key Words Compliance Testing Safety Engineering FMVSS 208	18. Distribution Statement Copies of this report are available from: NHTSA Technical Information Services (TIS) NPO-230 400 Seventh Street, S.W., Room 5108 Washington, DC 20590 Telephone: 202-366-4946

19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. Number of Pages 306	22. Price

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

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List of Data Sheets

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 DTNH22-03-D-01002. The purpose of the test was to determine whether the subject vehicle, a 2004 Saturn Ion, NHTSA No. C40113, meets certain performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; indicant FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity". The compliance test was conducted in accordance with OVSC Laboratory Test Procedure No. TP-208-12 dated January 14, 2003.

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

____ 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 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.: C40113 Test Date: 03/18/04

VIN: 1G8AF52F54Z[redacted]

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: 40.0 km/h

Driver Dummy: ___ 5th female X 50th male

Passenger Dummy: ___ 5th female X 50th male

Test weight: 1426.0 kg

50th Percentile Male Frontal Crash Test
Vehicles certified to S5.1.1(b)(1), S5.1.1(b)(2), S5.1.2(a)(2), or S5.1.2(b)

Injury Criteria	Max. Allowable Injury Assessment Values	Driver	Passenger
HIC15	700	96	154
N_{te}	1.0	0.09	0.31
N_{tf}	1.0	0.28	0.19
N_{ce}	1.0	0.22	0.07
N_{cf}	1.0	0.09	0.06
Neck tension	4170 N	1202	1469
Neck compression	4000 N	1309	390
Chest g	60 g	39.3	34.6
Chest displacement	63 mm	20	9
Left femur	10,000 N	4157	6390
Right femur	10,000 N	5248	5789

Section 4

Discussion of Test

DISCUSSION OF TEST

The following data channels recorded an anomalous data spike at approximately 41 milliseconds:

Driver's Y-axis neck force channel, NEKYF1

Driver's Z-axis neck moment channel, NEKZM1

Driver's Z-axis right femur force channel, RFMZF1

Right front passenger's X-axis neck force channel, NEKXF2

Right front passenger's Y-axis neck force channel, NEKYF2

Right front passenger's Z-axis neck moment channel, NEKZM2

Right front passenger's Z-axis left femur force channel, LFMZF2

The right front passenger's neck moment occipital condyle about the Y-axis was also affected.

Section 5

Test Data Sheets

DATA SHEET 1
COTR Vehicle Work Order

Vehicle model year, make, and model: 2004 Saturn Ion

NHTSA No.: C40113 Test Date: 03/18/04

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 B

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

Section C

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

___ 12. Suppression tests with Newborn infant (Part 572, Subpart K) using the following indicated child restraints.

Section A

___ Cosco Dream Ride 02-719	___ Full rearward	___ Midposition	___ Full forward

___ 13. 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	___ Midposition	___ Full forward
___ Century Encore 4612	___ Full rearward	___ Midposition	___ Full forward
___ Century STE 1000 4416	___ Full rearward	___ Midposition	___ Full forward
___ Cosco Olympian 02803	___ Full rearward	___ Midposition	___ Full forward
___ Cosco Touriva 02519	___ Full rearward	___ Midposition	___ Full forward
___ Evenflo Horizon V 425	___ Full rearward	___ Midposition	___ Full forward
___ Evenflo Medallion 254	___ Full rearward	___ Midposition	___ Full forward

Section D

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

____ 14. Suppression tests with representative 3-year-old child using the following indicated child restraints where a child restraint is required. (TP-208-12 Appendix H, Data Sheet 16H and 17H)

Section C

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

Section D

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

____ 15. 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)

____ 16. 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)

____ 17. 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 ____ Midposition ___ Full forward
____ Century Next Step 4920 ____ Full rearward ____ Midposition ___ Full forward
____ Cosco High Back Booster 02-442 ____ Full rearward ____ Midposition ___ Full forward
____ Evenflo Right Fit 245 ____ Full rearward ____ Midposition ___ Full forward

____ 18. 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 ____ Midposition ___ Full forward
____ Century Next Step 4920 ____ Full rearward ____ Midposition ___ Full forward
____ Cosco High Back Booster 02-442 ____ Full rearward ____ Midposition ___ Full forward
____ Evenflo Right Fit 245 ____ Full rearward ____ Midposition ___ Full forward

____ 19. 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)

____ 20. 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)

____ 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 12-month-old dummy (Part 572, Subpart R) using the following indicated child restraints.

Section B

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

Section C

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

____ 24. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P) in the following positions
- ____ Position 1
- ____ Position 2

____ 25. Low risk deployment test with 6-year-old dummy (Part 572, Subpart N) in the following positions
- ____ Position 1
- ____ Position 2

____ 26. Low risk deployment test with 5th female dummy (Part 572, Subpart O) in the following positions
- ____ Position 1
- ____ Position 2

__X__ 27. 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__
  - ____ 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))
_X_ Unbelted 50th male dummy driver ((32 to 40 km/h) (S5.1.2(a)(2) or S5.1.2(b))
_X_ Unbelted 50th male dummy passenger (32 to 40 km/h) (S5.1.2(a)(2) or S5.1.2(b))
___ Unbelted 5th female dummy driver (32 to 40 km/h) (S16.1(b))
___ 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 _____

___ 28. Sled test: Unbelted 50th male dummy driver and passenger (S13)
___ 29. FMVSS 204 indicant test
_X_ 30. FMVSS 212 test
_X_ 31. FMVSS 219 indicant test
_X_ 32. FMVSS 301 frontal test

DATA SHEET 2

REPORT OF VEHICLE CONDITION

CONTRACT NO. DTNH22-03-D-01002 Date: 03/18/04
FROM: Transportation Research Center Inc., Walter Dudek
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: 2004/Saturn/Ion/4-door
MANUFACTURE DATE: 11/03 NHTSA NO.: C40113 BODY COLOR: Red
VIN: 1G8AF52F54Z[redacted] GVWR 1661 GAWR (Fr) 850 GAWR (Rr) 811
ODOMETER READINGS: ARRIVAL 81 miles DATE 2/24/2004
COMPLETION 81 miles DATE 03/18/04
PURCHASE PRICE: $ 10,650 DEALER'S NAME: Saturn of Dayton North

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.
X Yes ___ No

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

E. Keyless remote is available and working.
X Yes ___ 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.
X Vehicle OK ___ Conditions reported below in comment section

Identify the letter above to which any of the following comments apply.
Comments: F: Vehicle did not include an extra set of keys.

DATA SHEET 2

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

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

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2004/Saturn/Ion/4-door

NHTSA NO. C40113

REMARKS: None

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

Explanation for equipment removal:

Test Vehicle Condition: Test vehicle crashed in front as part of FMVSS 208 test.

RECORDED BY: Robert Benavides
DATE: 03/19/04

APPROVED BY: Walter Dudek
DATE: 03/25/04

##########

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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

1. Certification Label
   Manufacturer Saturn Corporation
   Date of Manufacture 11/03
   VIN 1G8AF52F54Z[redacted]
   Vehicle certified as: X Passenger car ____ MPV ____ Truck ____ Bus
   Front axle GAWR 850 kg/1874 lbs.
   Rear axle GAWR 811 kg/1787 lbs.
   Total GVWR 1661 kg/3661 lbs.

2. Tire Placard
   ___ N/A – Vehicle is not a passenger car and does not have a tire placard.
   ___ 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 408 kg/899 lbs.
   Designated seating capacity front 2
   Designated seating capacity rear 3
   Total designated seating capacity 5
   Recommended cold tire inflation pressure front 210 kPa/30 psi
   Recommended cold tire inflation pressure rear 210 kPa/30 psi
   Recommended tire size P185/70R14

DATA SHEET 4
REAR OUTBOARD SEATING POSITION SEAT BELTS

NHTSA No.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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))
___ Yes (go to 2.7.1); _X_ No (go to 3)

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

2.7.6 Is the vehicle certified to the requirements of S19.2, S21.2 or S23.2 (automatic suppression)?
___ 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))
___ 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?
___ 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))
___ 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))
___ 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))
___ Yes-Pass; ___ **No-FAIL**

3. Sun Visor Air Bag Warning Label (S4.5.1 (b)) Check only one of the following:
_X_ The vehicle is not certified to meet the requirements of S19, S21 and S23. (Obtain the answer to this question from the COTR.) (S4.5.1(b)(1)) Go to 3.1 and skip 3.2 and 3.3
___ The vehicle is certified to meet the requirements of S19, S21 and S23 before 9/1/03. (Obtain the answer to this question from the COTR.) (S4.5.1(b)(2)) Go to 3.2 and skip 3.1 and 3.3
___ The vehicle is certified to meet the requirements of S19, S21 and S23 on 9/1/03 or later. (Obtain the answer to this question from the COTR.) (S4.5.1(b)(3)) Go to 3.3 and skip 3.1 and 3.2

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

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)(1))
Driver side _X_ Yes-Pass ___ **No-FAIL**
Passenger side _X_ Yes-Pass ___ **No-FAIL**

3.1.2 Does the label conform in content to the label shown in either Figure 6a or 6b (Figure 6b is for vehicles with passenger air bag on-off switches), as appropriate, at each front outboard seating position? (S4.5.1 (b)(1)) **(Vehicles without back seats may omit the statement: "The BACK SEAT is the SAFEST place for children." (S4.5.1(b)(1)(iv)))**

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)(1)(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)(1)(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)(1)(ii))

Driver side: Length _10.0_ cm, Width _3.0_ cm
Passenger side: Length _10.0_ cm, Width _3.0_ cm
Driver actual message area _30_ cm^2
Passenger actual message area _30_ 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 in diameter? (S4.5.1(b)(2)(iii))

Actual diameter _30_ mm
Driver side _X_ Yes-Pass ___ **No-FAIL**
Passenger side _X_ Yes-Pass ___ **No-FAIL**

3.2 Vehicles certified to meet the requirements of S19, S21, and S23 before 9/1/03. (S4.5.1(b)(2)

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 the label or the sun visor? (S4.5.1 (b)(2))

Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.2.2 Does the label conform in content to the label shown in Figure 8 or Figure 11 at each front outboard seating position? (S4.5.1(b)(2)) **(Vehicles without back seats may omit the statement: "The BACK SEAT is the SAFEST place for children." (S4.5.1(b)(2)(1v)) Vehicles without back seats or the back seat is too small to accommodate a rear-facing child restraint may omit the statement "Never put a rear-facing child seat in the front." (S4.5.1(b)(2)(v)))**

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)(2)(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)(2)(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)(2)(ii))
Driver side: Length _____, Width _____
Passenger side: Length _____, Width _____
Driver actual message area _____ cm^2
Passenger 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 (1.2 in.) in length? (S4.5.1 (b)(2)(iii))
Driver side: Length _____
Passenger side: Length _____
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.3 Vehicles certified to meet the requirements of S19, S21, and S23 on 9/1/03 and later (S4.5.1(b)(3).

3.3.1 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)(3))
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.3.2 Does the label conform in content to the label shown in Figure 11 at each front outboard seating position? (S4.5.1 (b)(2)) **(Vehicles without back seats may omit the statement: "The BACK SEAT is the SAFEST place for children." (S4.5.1(b)(3)(iv)) Vehicles without back seats or the back seat is too small to accommodate a rear-facing child restraint may omit the statement "Never put a rear-facing child seat in the front." (S4.5.1(b)(3)(v)))**
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.3.3 Is the label heading area yellow with the word "WARNING" and the alert symbol in black? (S4.5.1 (b)(3)(i))
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.3.4 Is the message area white with black text? (S4.5.1 (b)(3)(ii))
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.3.5 Is the message area at least 30 cm^2? (S4.5.1 (b)(3)(ii))
Driver side: Length _____, Width _____
Passenger side: Length _____, Width _____
Driver actual message area _____ cm^2
Passenger actual message area _____ cm^2
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.3.6 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(b)(3)(iii))
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.3.7 Is the pictogram at least 30 mm in length? (S4.5.1 (b)(3)(iii))
Driver side: Length _____
Passenger side: Length _____
Driver side ___ Yes-Pass ___ **No-FAIL**
Passenger side ___ Yes-Pass ___ **No-FAIL**

3.4 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)(5)(i))
Driver side _X_ Yes-Pass ___ **No-FAIL**
Passenger side _X_ Yes-Pass ___ **No-FAIL**

3.5 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)(5)(i))
Driver side _X_ Yes-Pass ___ **No-FAIL**
Passenger side _X_ Yes-Pass ___ **No-FAIL**

3.6 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 3.6.1; _X_ No (go to 4., skipping 3.6.1 through 3.6.3)

3.6.1 Are both the rollover-warning label and the air bag warning label surrounded by a continuous solid-lined border?
___ Yes (go to 3.6.2 and skip 3.6.3); ____ No (go to 3.6.3 and skip 3.6.2.)

3.6.2 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**

3.6.3 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 (S4.5.1(c)) (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
Passenger side _X_ Yes ___ No
If yes for driver and passenger go to 5.

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 _____
Driver actual message area _____ cm^2
Passenger 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))
___ Yes (go to 5.1.1 and skip 5.2
_X_ 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))
___ Yes-Pass; ___ **No-FAIL**

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

5.1.3 Does the label conform in content to the label shown in Figure 9? (S4.5.1(e)(2)) **(Vehicles without back seats may omit the statement: "The back seat is the safest place for children." (S4.5.1(e)(2)(iii)))**
___ Yes-Pass; ___ **No-FAIL**

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

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

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

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

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

5.2.2 Does the label conform in content to the label shown in Figure 7? (S4.5.1 (e)(1)(iii))? **(Vehicles without back seats may omit the statement: "The back seat is the safest place for children 12 and under." (S4.5.1(e)(2)(iii)))**
_X_ 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)
_X_ Yes-Pass; ___ **No-FAIL**

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

5.2.5 Is the message area at least 30 cm^2? (S4.5.1(e)(1)(ii))
Length 10.5 cm, Width 3.0 cm
Actual message area 32 cm^2
_X_ Yes-Pass; ___ **No-FAIL**

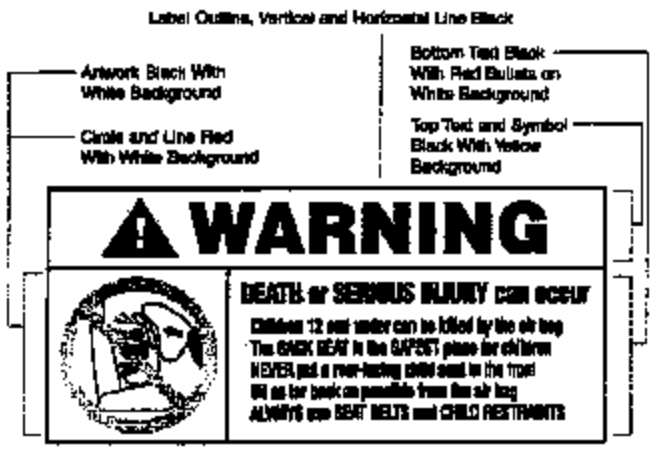


Figure 6a. Sun Visor Label Visible When Visor is in Down Position.

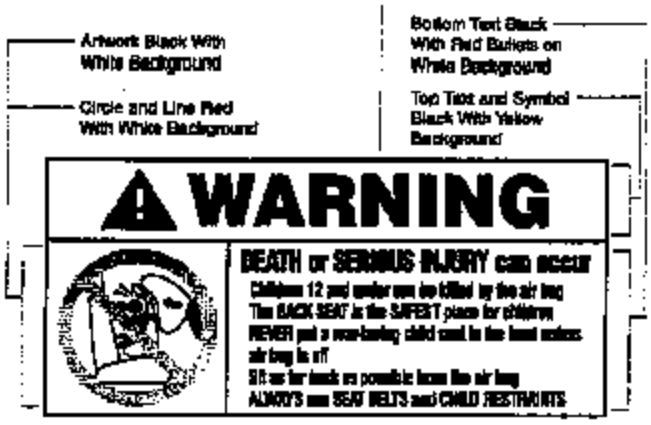


Figure 6b. Sun Visor Label Visible When Visor is in Down Position.

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

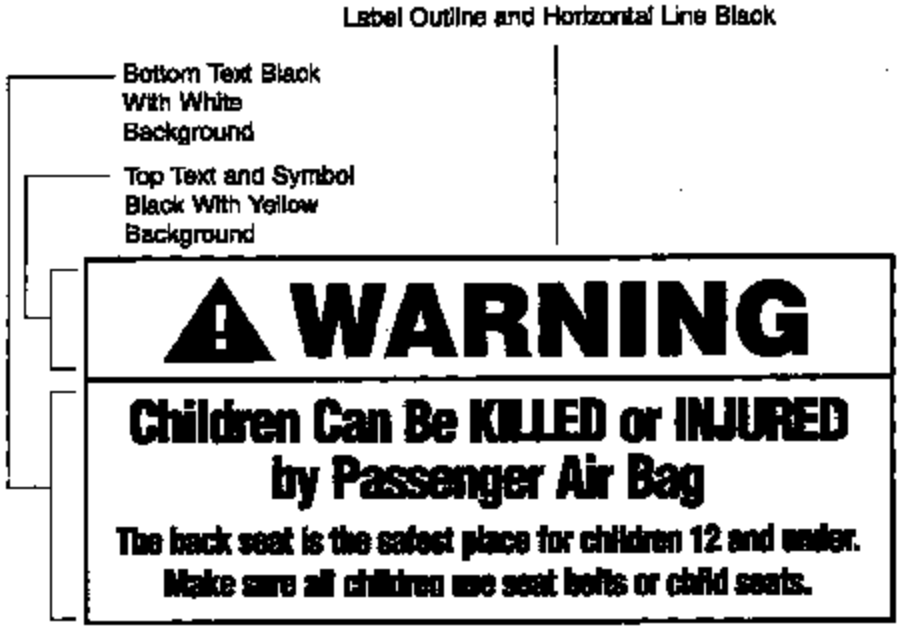


Figure 7. Removable Label on Dash.

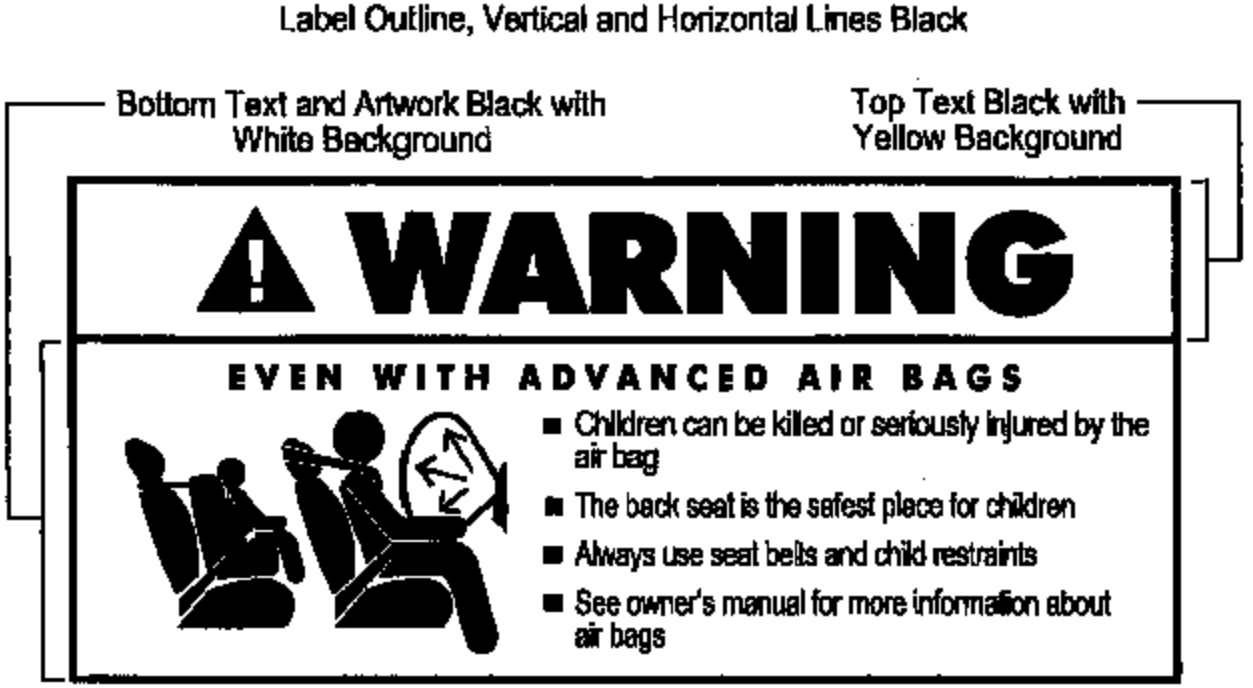


Figure 8. Sun Visor Label Visible when Visor is in Down Position.

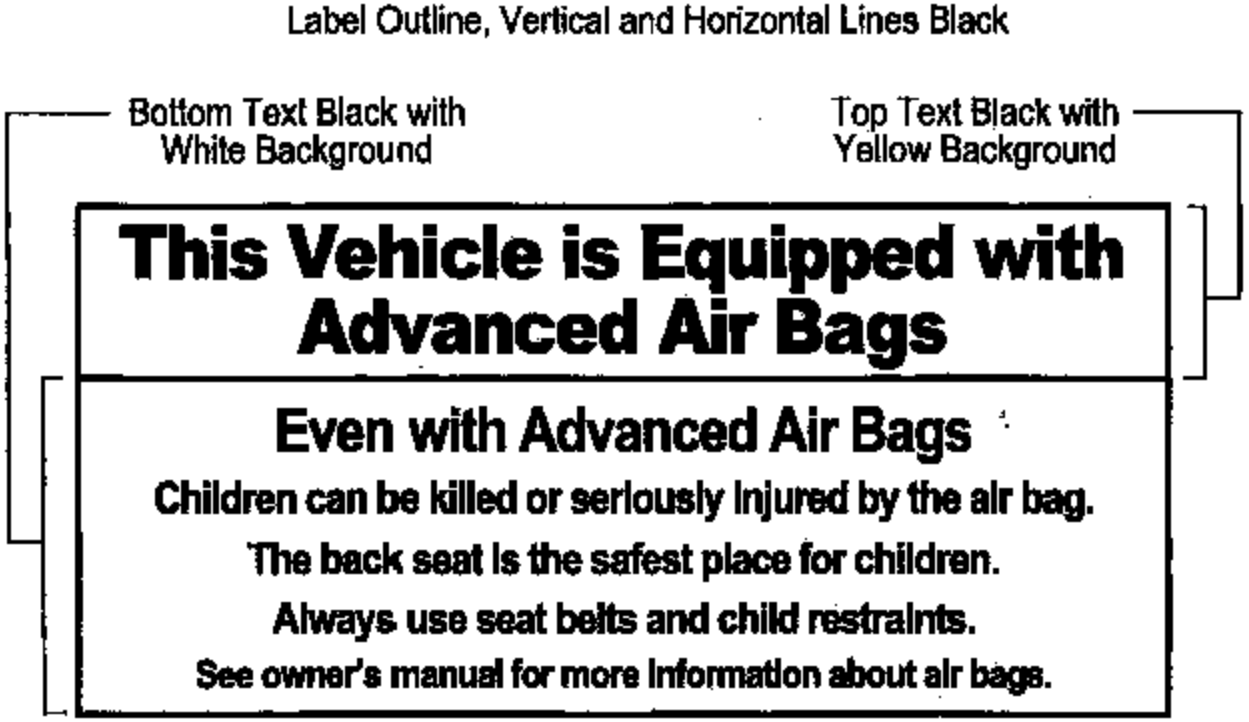


Figure 9. Removable Label on Dash.

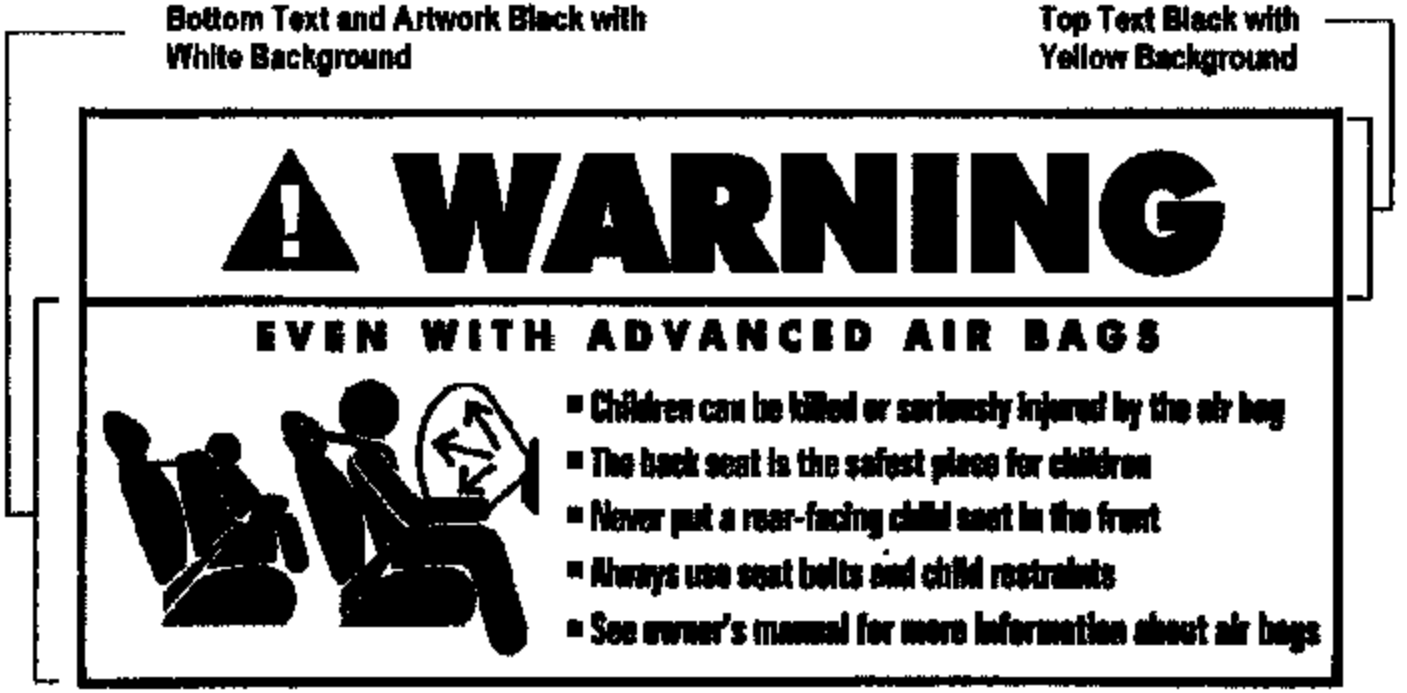


Figure 11. Sun Visor Label Visible when Visor is in Down Position.

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

NHTSA No.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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: Upper right of instrument panel module

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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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. _____ mm

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

___ 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)) located:

___ 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-FAIL**; ___ No-Pass

___ 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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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. Full Rear (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 44.5 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)

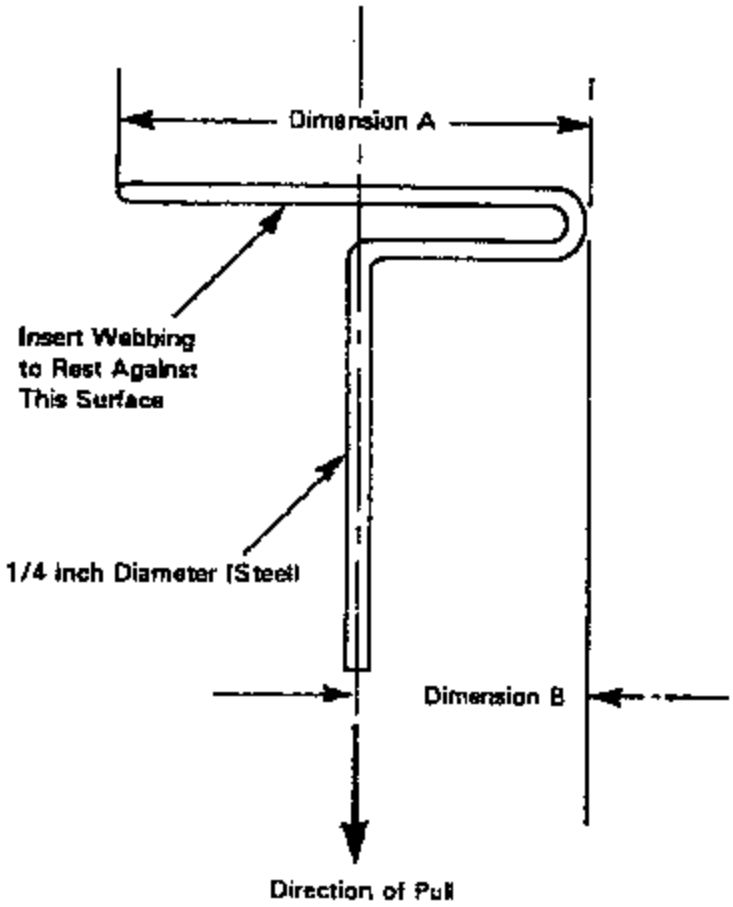
_X_ 12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B 32.0 inches

_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 25 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B 32.2 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= -0.2 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= 12.3 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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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 50.5 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)

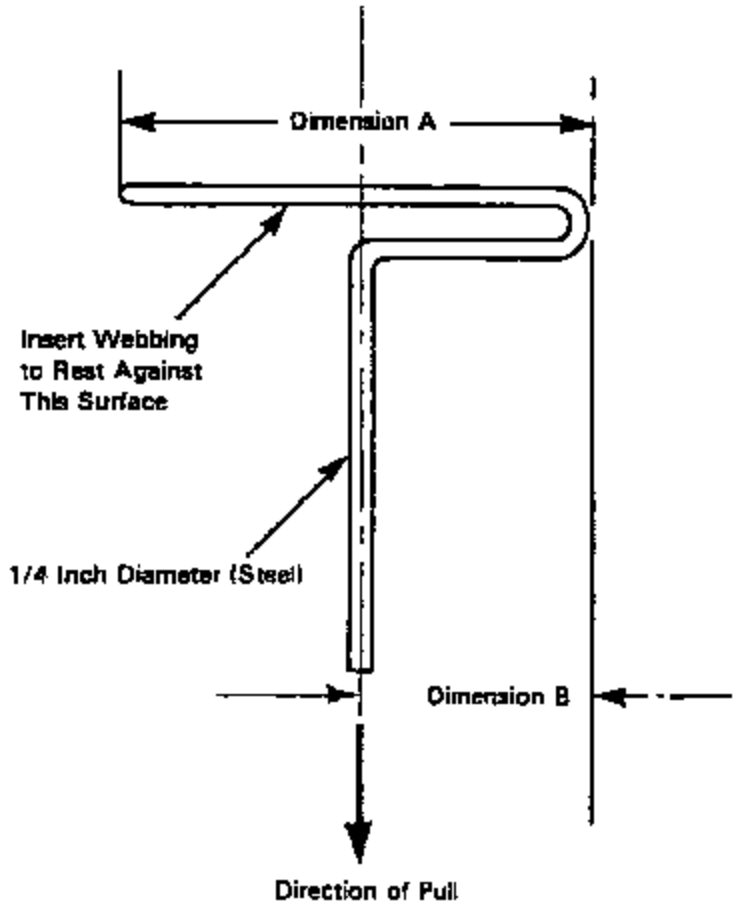
_X_ 12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B _40.5_ inches

_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 _25_ lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B _40.5_ 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_ 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= _10_ 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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

DESIGNATED SEATING POSITION: Second Row Center

___ 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 56.5 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)

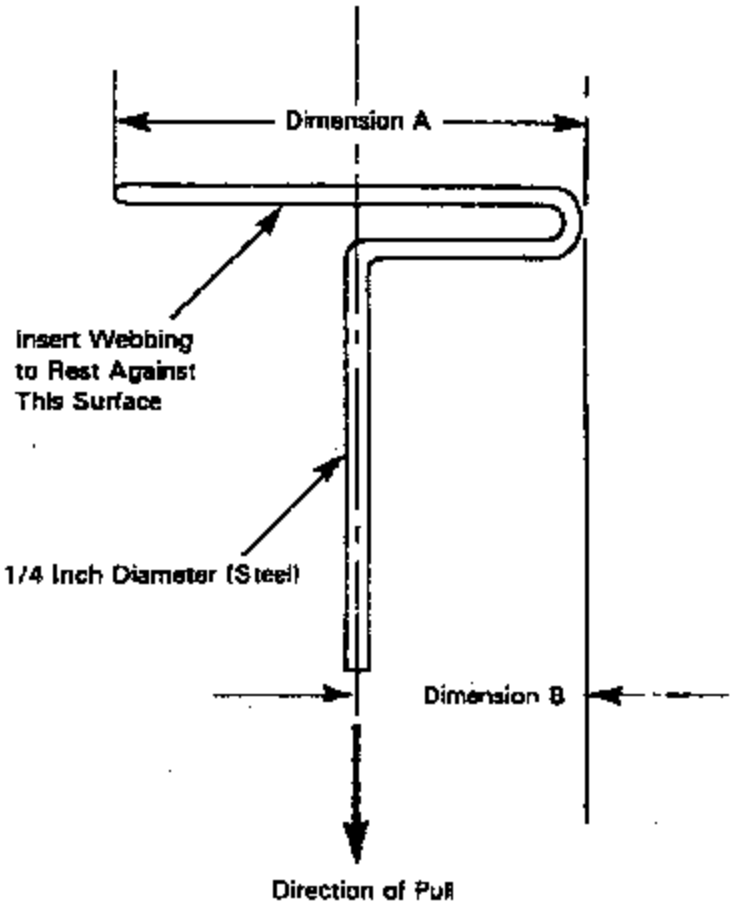
_X_ 12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B 41.5 inches

_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 25 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B 42.0 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= 14.5 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 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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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. 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 50.3 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)

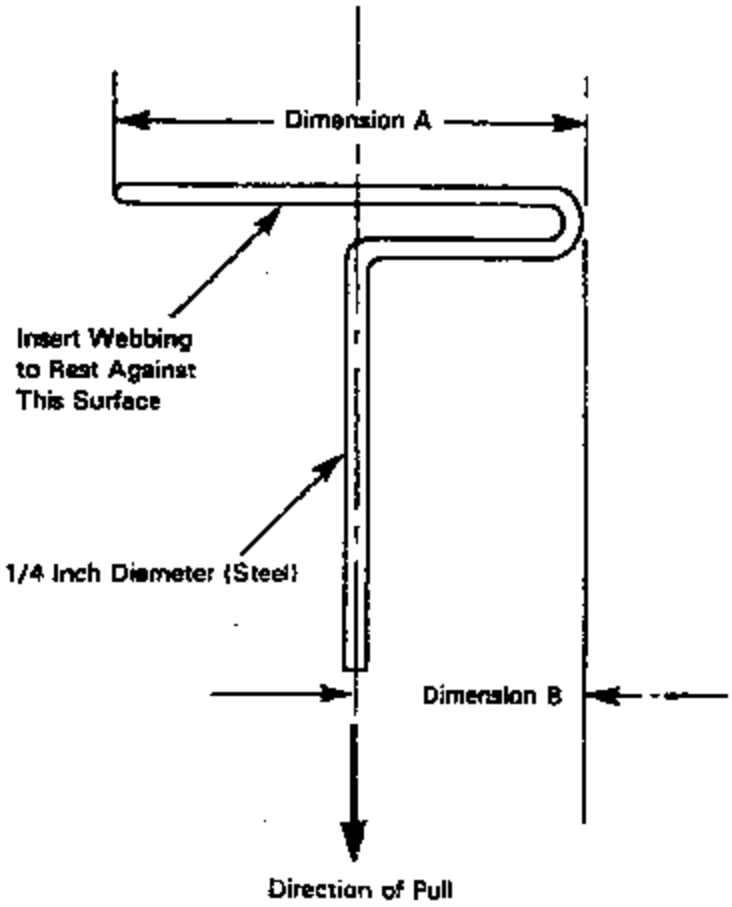
_X_ 12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
Measured distance between A and B 38.2 inches

_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 25 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B 38.6 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= -0.4 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= 11.7 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 9
FMVSS 208 SEAT BELT WARNING SYSTEM CHECK (S7.3)

NHTSA No.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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 7.0 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 72 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 0 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	0 seconds*	Item 12 0	0 seconds**
	Belt stowed & Key on or start	Item 8 72	60 seconds minimum	Item 4 7.0	4 to 8 seconds
S7.3 (a)(2)	Belt latched & Key on or start	Item 16 0	4 to 8 seconds	Item 12 0	0 seconds**
	Belt stowed & Key on or start	Item 8 72	4 to 8 seconds	Item 4 7.0	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)

X S7.3 (a)(1)

_____ 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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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: _____
X N/A - The seat does not have a fore-aft adjustment.

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 _____

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 0.46 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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

DESIGNATED SEATING POSITION: Second Row Center

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: _____
X N/A - The seat does not have a fore-aft adjustment.

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 _____

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 0.44 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.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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: _____
X N/A - The seat does not have a fore-aft adjustment.

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 _____

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 0.46 lb.

X 0.0 to 0.7 pounds - Pass

___ **greater than 0.7 pounds - FAIL**

DATA SHEET 11
LATCHPLATE ACCESS (S7.4.4)

NHTSA No.: C40113 Test Date: _____

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

DESIGNATED SEATING POSITION: N/A - Passenger car

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

___ 1. Position the seat'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

___ 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. 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

___ 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.

___ 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

___ 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

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

___ 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.

___ 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)

___ 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 _____

___ 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 _____

___ 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.

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

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

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

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

___ 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?
___ Yes-Pass; ___ No

___ 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?
___ Yes-Pass; ___ No

___ 19. Is the latch plate within the inboard (item 17) or outboard (item 18) reach envelope?
___ Yes-Pass; ___ **No-FAIL**

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

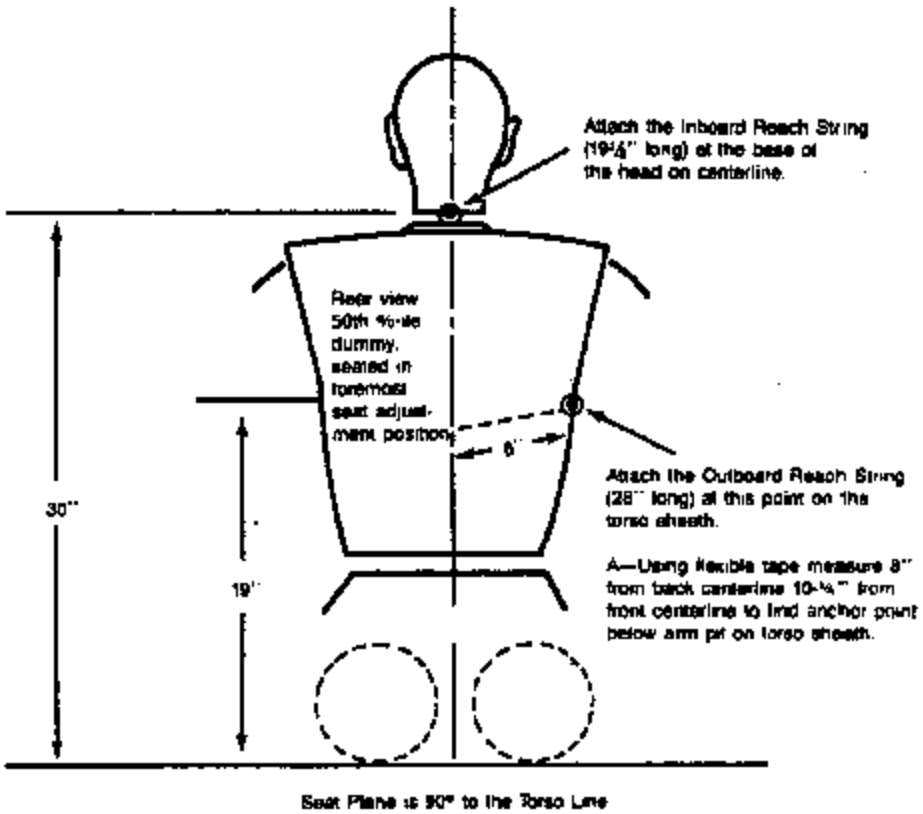


Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart E Test Device

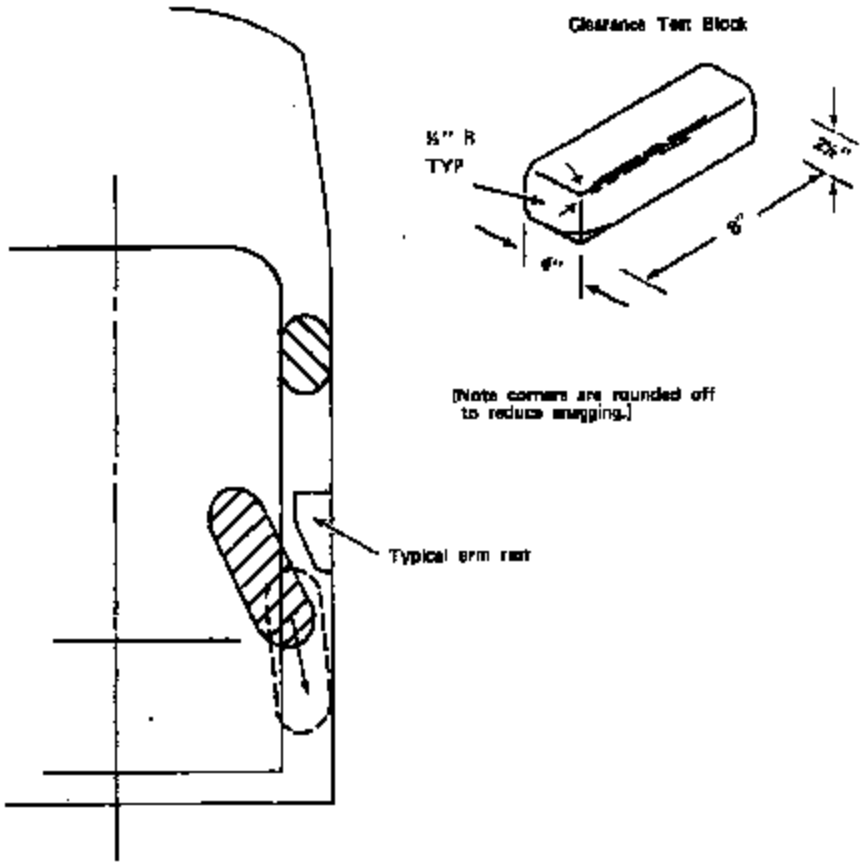


Figure 4—USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS

DATA SHEET 12
SEAT BELT RETRACTION (S7.4.5)

NHTSA No.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

DESIGNATED SEATING POSITION: N/A - Passenger car

GVWR: 1661 kg/3661 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?
   X Yes, this form is complete
   ___ No

___ 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.
   ___ 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. (S8.1.2)
   ___ N/A – No seat height adjustment

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

___ 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.

___ 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: _____

___ 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)
   ___ N/A – No seat adjustments
   Reference angle as tested _____

___ 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 _____
Tested seat back angle _____

___ 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

___ 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. _____
Tested anchorage position _____

___ 14. Is the driver seat a bucket seat?
___ Yes, go to 14.1 and skip 14.2.
___ No, go to 14.2 and skip 14.1.

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

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

___ 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)

___ 17. Rest the thighs on the seat cushion.

___ 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) _____
___ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1) _____
___ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1) _____
___ pelvic angle (20° to 25°) (S10.4.2.2) _____

___ 19. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.
___ measured distance (10.6 inches) (S10.5)

___ 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.

___ 21. Fasten the seat belt around the dummy.

___ 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)

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

___ 25. Is the belt system equipped with a tension relieving device?
___ Yes, continue
___ No, go to 26

___ 25.1 Introduce the maximum amount of slack into the upper torso belt that is recommended by the vehicle manufacturer in the vehicle owner's manual. (S10.9). Go to 26.

___ 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. ____ Pass

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

___ 26.3 Neither A or B apply. ____ **FAIL**

___ 27. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
___ Yes-Pass; ___ **No-FAIL**

___ 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?
___ N/A
___ Yes-Pass; ___ **No-FAIL**

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

NHTSA No.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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))
___ Yes; this form is complete
X No; go to 2

X 2. Is the seat removable? (S7.4.6.1(b))
___ Yes; this form is complete
X No; go 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; go 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))
X Yes: go to 5.
___ No: this form is complete.

X 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))
X Yes-Pass; ___ **No-FAIL**
Identify the part(s) on top or above the seat.
X seat belt latch plate; X buckle; X seat belt webbing

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

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

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

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

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

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

NHTSA No.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

DESIGNATED SEATING POSITION: Second 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; go to 2

X 2. Is the seat removable? (S7.4.6.1(b))
___ Yes; this form is complete
X No; go 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; go 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))
X Yes: go to 5.
___ No: this form is complete.

X 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))
X Yes-Pass; ___ **No-FAIL**
Identify the part(s) on top or above the seat.
X seat belt latch plate; X buckle; X seat belt webbing

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

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

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

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

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

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

NHTSA No.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

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))
___ Yes; this form is complete
X No; go to 2

X 2. Is the seat removable? (S7.4.6.1(b))
___ Yes; this form is complete
X No; go 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; go 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))
X Yes: go to 5.
___ No: this form is complete.

X 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))
X Yes-Pass; ___ **No-FAIL**
Identify the part(s) on top or above the seat.
X seat belt latch plate; X buckle; X seat belt webbing

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

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

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

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

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

DATA SHEET 30

VEHICLE WEIGHT, FUEL TANK, AND ATTITUDE DATA

NHTSA No.: C40113 Test Date: 03/16-17/04

Laboratory: TRC Inc. Test Technician(s): R. Benavides, D. Schmitt, B. Miller

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: ___ 5th female X 50th male Passenger Dummy: ___ 5th female X 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. 13.6 gallons (51.5 l)
X 5 Record the fuel tank capacity supplied in the owner's manual. 13.5 gallons
X 6. 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", or gasoline, fill the fuel tank.
Amount added 12.6 gallons
X 7. Fill the coolant system to capacity.
X 8. Fill the engine with motor oil to the max. mark on the dip stick.
X 9. Fill the brake reservoir with brake fluid to its normal level.
X 10. Fill the windshield washer reservoir to capacity.
X 11. 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 30 ;	LF 30 ;	RR 30 ;	LR 30
Owner's manual pressure	RF 30 ;	LF 30 ;	RR 30 ;	LR 30
Actual inflated pressure	RF 30 ;	LF 30 ;	RR 30 ;	LR 30

X 12. Record the vehicle weight at each wheel to determine the unloaded vehicle weight (UVW), i.e. "as delivered" weight).

Right Front =	374.5 kg	Right Rear =	249.0 kg
Left Front =	361.0 kg	Left Rear =	248.0 kg
TOTAL FRONT =	735.5 kg	TOTAL REAR =	497.0 kg
% Total Weight =	59.7 %	% Total Weight =	40.3 %

UVW = TOTAL FRONT PLUS TOTAL REAR = 1232.5 kg

X 13. UVW Test Vehicle Attitude: (all dimensions in millimeters)
X 13.1 Mark a point on the vehicle above the center of each wheel.
X 13.2 Place the vehicle on a level surface.
X 13.3 Measure perpendicular to the level surface to the 4 points marked on the body and record the measurements
RF 709 ; LF 705 ; RR 700 ; LR 698

X 14. Calculate the Rated Cargo and Luggage Weight (RCLW).

X 14.1 Does the vehicle have the vehicle capacity weight (VCW) on the certification label or tire placard?

X Yes, go to 14.3.

___ No, go to 14.2.

___ 14.2 VCW = Gross Vehicle Weight – UVW

VCW = _____ - _____ = _____ kg

X 14.3 VCW = 408 kg

X 14.4 Does the certification or tire placard contain the Designated Seating Capacity (DSC)?

X Yes, go to 14.6.

___ No, go to 14.5 and skip 14.6.

___ 14.5 DSC = Total number of seat belt assemblies = _____

X 14.6 DSC = 5

X 14.7 RCLW = VCW – (68 kg x DSC) = 408 - (68 kg x 5) = 68 kg

X 14.8 Is the vehicle certified as a truck, MPV or bus (see the certification label on the door jamb)?

___ Yes, If the calculated RCLW is greater than136 kg, use 136 kg as the RCLW (S8.1.1).

X No, use the RCLW calculated in 14.7.

X 15. Fully Loaded Weight (100% fuel fill)

X 15.1 Place the appropriate test dummy in both front outboard seating positions.

Driver: ___ 5th female X 50th male

Passenger: ___ 5th female X 50th male

X 15.2 Load the vehicle with the RCLW from 14.7 or 14.8 whichever is applicable.

X 15.3 Place the RCLW in the cargo area. Center the load over the longitudinal centerline of the vehicle. (S8.1.1 (d))

X 15.4 Record the vehicle weight at each wheel to determine the Fully Loaded Weight.

Right Front	=	416.0 kg	Right Rear	=	328.0 kg
Left Front	=	398.0 kg	Left Rear	=	328.5 kg
TOTAL FRONT	=	814.0 kg	TOTAL REAR	=	656.5 kg
% Total Weight	=	55.4 %	% Total Weight	=	44.6 %
% GVW	=	95.8 %	% GVW	=	80.9 %

FULLY LOADED WEIGHT = TOTAL FRONT + TOTAL REAR = 1470.5 kg

X 16. Fully Loaded Test Vehicle Attitude: (all dimensions in millimeters)

X 16.1 Place the vehicle on a level surface.

X 16.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13.1 above) and record the measurements

RF 689 ; LF 685 ; RR 660 ; LR 663

X 17. Drain the fuel system.

X 18. 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 to 94% of useable capacity.

Fuel tank capacity x .94 = 12.8 gallons

Amount added 12.6 gallons

X 19. Crank the engine to fill the fuel delivery system with Stoddard solvent.

X 20. Calculate the test weight range.

X 20.1 Calculated Test Weight = UVW (see 12 above) + RCLW (see 14 above) + 2 x (dummy weight)

1452.5 = 1232.5 + 68.0 + 152.0

X 20.2 Test Weight Range = Calculated Weight (- 4.5 kg, - 9 kg.)

Max. Test Weight = Calculated Test Weight – 4.5 kg = 1448.0

Min. Test Weight = Calculated Test Weight – 9 kg = 1443.5

X 21. Remove the RCLW from the cargo area.

X 22. 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 23. Vehicle Components Removed For Weight Reduction:

None

X 24. 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 25. If necessary, add ballast to achieve the actual test weight.

____ N/A

Weight of ballast 4 kg

X 26. 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 27. Record the vehicle weight at each wheel to determine the actual test weight.

Right Front	=	397.4 kg	Right Rear	=	321.2 kg
Left Front	=	401.2 kg	Left Rear	=	324.2 kg
TOTAL FRONT	=	798.6 kg	TOTAL REAR	=	645.4 kg
% Total Weight	=	55.3 %	% Total Weight	=	44.7 %
% GVW	=	94.0 %	% GVW	=	80.0 %

(%GVW = Axle GVW ÷ Vehicle GVW)

TOTAL FRONT PLUS TOTAL REAR = 1444.0 kg

X 28. Is the test weight between the Max. Weight and the Min. Weight (See 20.2)?

X Yes

____ No, explain why not. _____

X 29. Test Weight Vehicle Attitude: (all dimensions in millimeters)

X 29.1 Place the vehicle on a level surface.

X 29.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13.1 above) and record the measurements

RF 694 ; LF 692 ; RR 660 ; LR 664

X 30. Summary of test attitude

X 30.1

AS DELIVERED: RF 709 ; LF 705 ; RR 700 ; LR 698

AS TESTED: RF 694 ; LF 692 ; RR 660 ; LR 664

FULLY LOADED: RF 689 ; LF 685 ; RR 660 ; LR 663

X 30.2 Is the "as tested" test attitude equal to or between the "fully loaded" and "as delivered" attitude?

X Yes

___ No, explain why not. _____

DATA SHEET 31
Vehicle Accelerometer Location

NHTSA No.: C40113 Test Date: 03/17/04

Laboratory: TRC Inc. Test Technician(s): D. Thomas

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

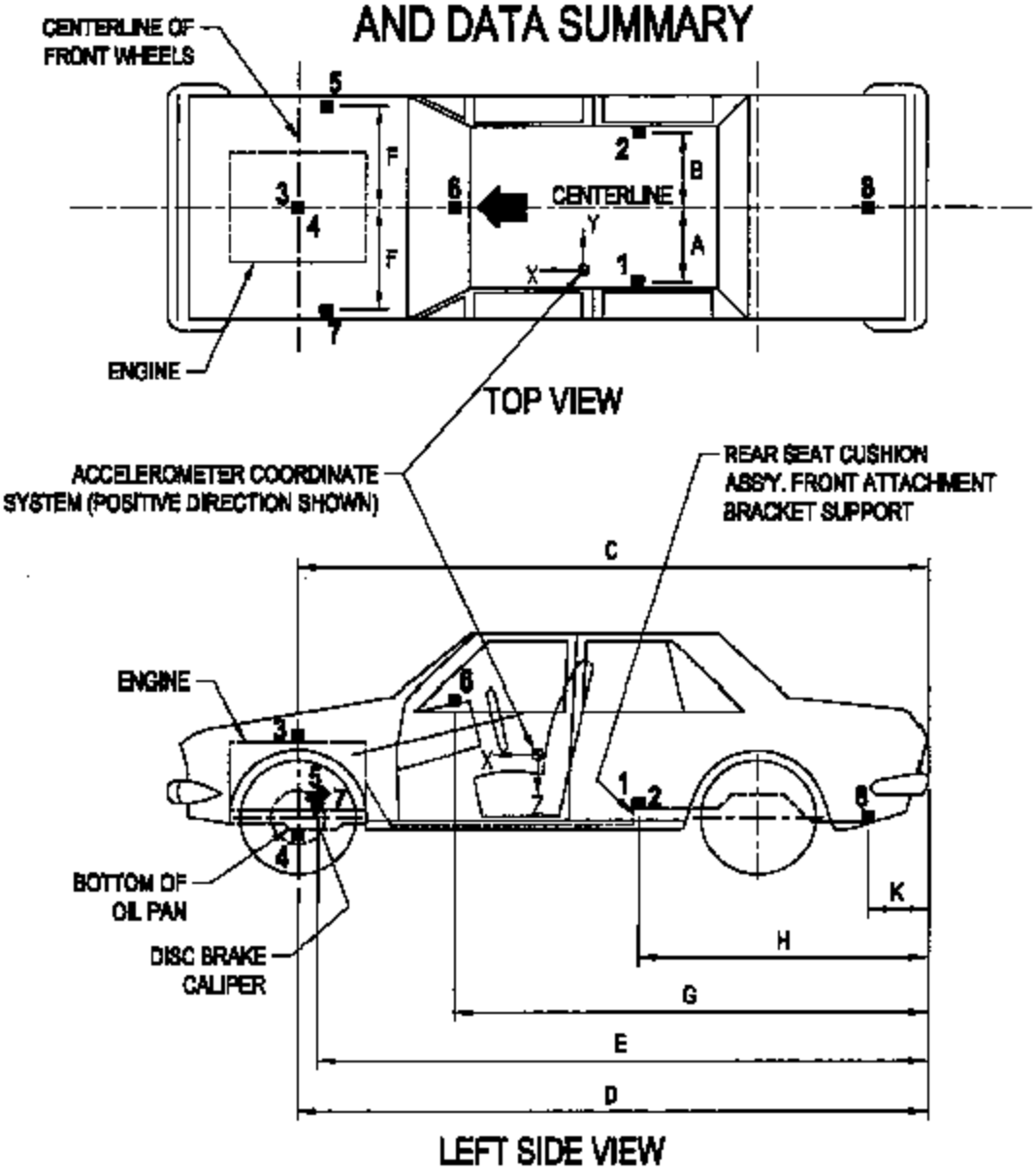
X 5. Install an accelerometer on the right front brake caliper to record x-direction accelerations. Record the location on the following chart.

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



DIMENSION CORRESPONDING TO THE LETTERS "A" THROUGH "K" ARE RECORDED IN THE TABLE ON THE FOLLOWING PAGE.
ACCELEROMETERS CORRESPONDING TO THE NUMBERS 1 THROUGH 8 ARE SPECIFIED ON THE PRECEDING PAGE.

Dimensions corresponding to the letters "A" through "K" are recorded in the table on the following page.

Accelerometers corresponding to the numbers 1 through 8 are specified on the preceding page.

DATA SHEET 31
VEHICLE ACCELEROMETER LOCATION MEASUREMENTS

DIMENSION	LENGTH (mm)	
PRE-TEST VALUES		
A	330	
B	330	
C	3938	
D	3798	
E	3288 Right Side	3288 Left Side
F	640 Right Side	640 Left Side
G	2990	
H	1858 Right Side	1858 Left Side
K	274	
POST-TEST VALUES		
A	337	
B	327	
C	3738	
D	3678	
E	3631 Right Side	3689 Left Side
F	620 Right Side	690 Left Side
G	2973	
H	1851 Right Side	1829 Left Side
K	274	

REMARKS:

DATA SHEET 32
Photographic Targets

NHTSA No.: C40113 Test Date: 03/18/04

Laboratory: TRC Inc. Test Technician(s): D. Thomas, R. Benavides, B. Miller

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

1. FMVSS 208 vehicle targeting requirements (See Figures 32A and 32B)

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 864 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

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

X 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 32D)

2. Barrier targeting

X 2.1 Fix two stationary targets D1 and D2 to the barrier as shown in the Figure 32A. 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.

X 2.2 Targets D1 and D2 are on a rectangular panel.

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[1] 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 32C)

___ 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.

[1] Fixed stationary target D2 was omitted from this test in error.

REFERENCE PHOTO TARGETS

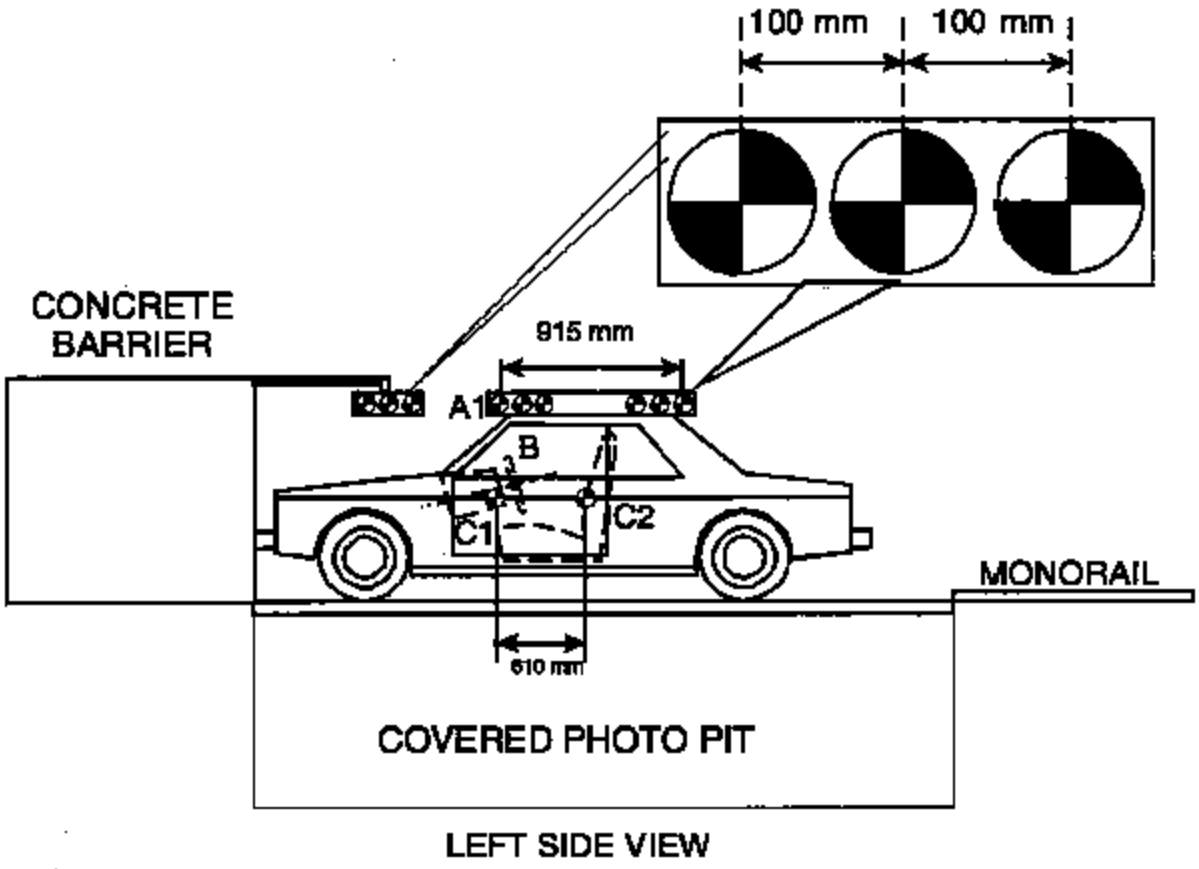


FIGURE 32A

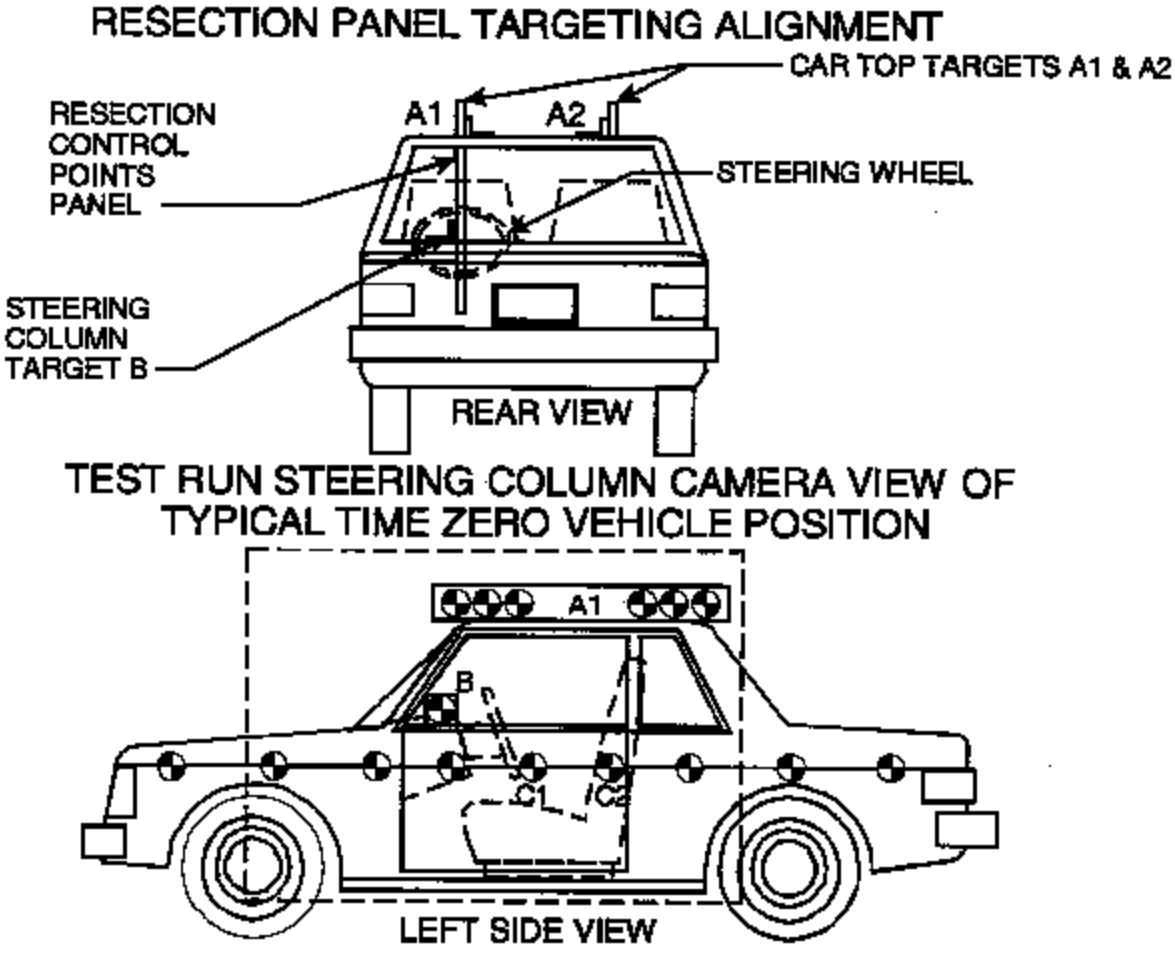
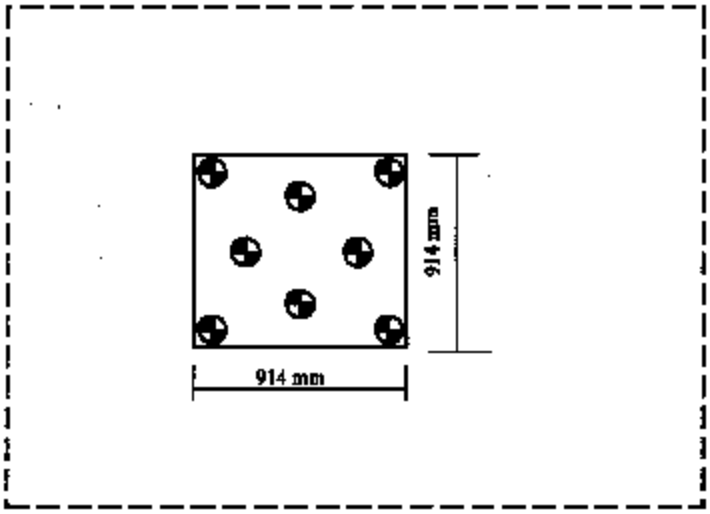

RESECTION PANEL TARGETING ALIGNMENT
CAR TOP TARGETS A1 & A2
RESECTION CONTROL POINTS PANEL
A1
A2
STEERING WHEEL
STEERING COLUMN TARGET B
REAR VIEW
TEST RUN STEERING COLUMN CAMERA VIEW OF TYPICAL TIME ZERO VEHICLE POSITION
A1
B
C1
C2
LEFT SIDE VIEW

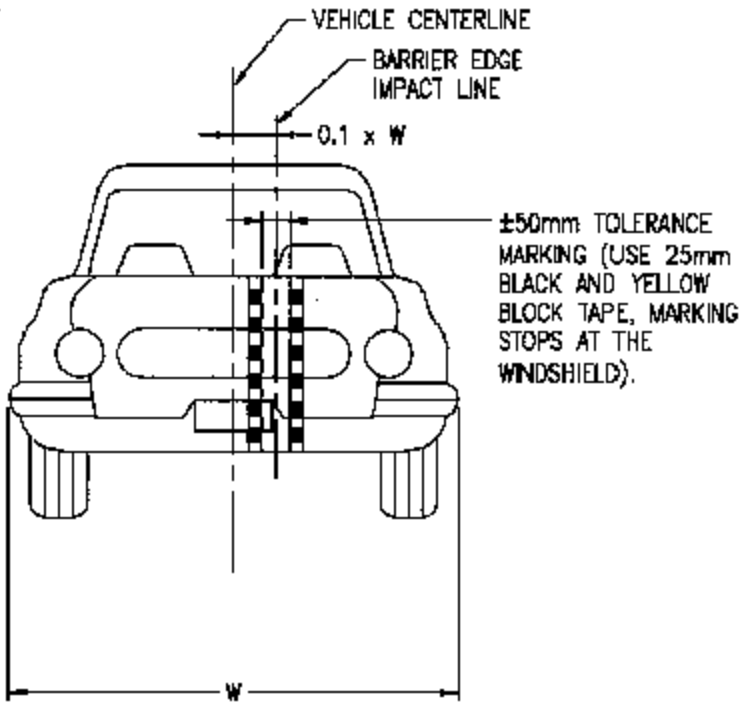
FIGURE 32B

PRE-RUN STEERING COLUMN HIGH SPEED CAMERA VIEW



LEFT SIDE VIEW

FIGURE 32C



OFFSET DEFORMABLE BARRIER
ADDITIONAL VEHICLE TARGETING

FIGURE 32D

DATA SHEET 33
CAMERA LOCATIONS

VEH. NHTSA No.: C40113 ; TEST DATE: 03/18/04 ; TIME: 10:29

VEH. YEAR/MAKE/MODEL/BODY STYLE: 2004/Saturn/Ion/4-door

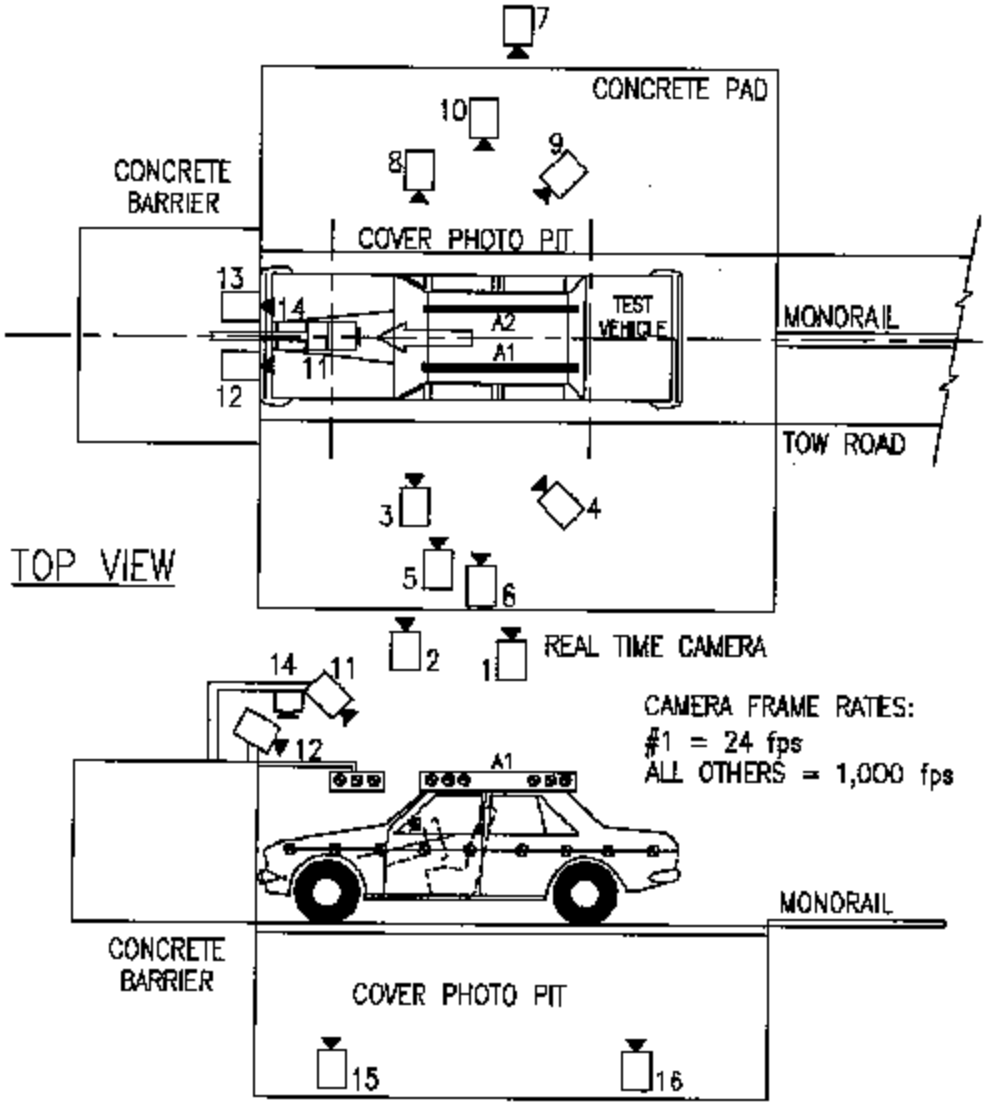
CAMERA NO.	VIEW	CAMERA POSITIONS (mm) *			ANGLE (deg.)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Left Side View[2]							24
2	Left Side View (barrier face to front seat backs)[2]	1810	-7350	-950	-2.3	NA[1]	50	1000
3	Left Side View (A-post)[2]	1380	-8850	-950	2.1	NA[1]	75	1000
4	Left Side View (B-post aimed toward center of steering wheel)[2]	N/A[1]	N/A[1]	N/A[1]	-10	NA[1]	50	1000
5	Left Side View (B-post)[2]	1950	-7950	-2260	-14.3	NA[1]	25	1000
6	Left Side View (front door under camera 5)[2]	1950	7340	-960	-5.6	NA[1]	Zoom	1000
7	Right Side View (overall)[2]	2050	7340	-960	-2.1	NA[1]	20	1000
8	Right Side View (A-post)[2]	1030	7060	-940	1.9	NA[1]	75	1000
9	Right Side View (B-post)[2]	N/A[1]	N/A[1]	N/A[1]	-9.6	NA[1]	50	1000
10	Right Side View (front door)[2]	1530	7800	-1000	-2.0	NA[1]	Zoom	1000
11	Front View Windshield[2]	740	0	-5650	-85.4	NA[1]	25	1000
12	Front View Driver[2]	0	-350	-2260	-46.9	NA[1]	13	1000
13	Front View Passenger[2]	0	350	-2260	-46.3	NA[1]	13	1000
14	Overhead Barrier Impact View[2]	340	0	-5650	-88.5	NA[1]	35	1000
15	Pit Camera Engine View	500	0	560	88.8	NA[1]	17	1022
16	Pit Camera Fuel Tank View	2440	100	520	89	NA[1]	17	1010

* +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 recorded

[2] Digital camera

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET 34
DUMMY POSITIONING PROCEDURES
FOR DRIVER TEST DUMMY CONFORMING TO SUBPART E OF PART 572

NHTSA No.: C40113 Test Date: 03/18/04

Laboratory: TRC Inc. Test Technician(s): John Shultz

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

X 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)
X 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. (S20.1.8.2)
X 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. (S20.1.9.3)
X N/A – No independent fore-aft seat cushion adjustment

X 4. Use the seat markings determined during completion of Data Sheet 14 to set the mid fore-aft position, full down height position and the seat cushion angle. (S8.1.2)

X 5. 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 9° to 9.5° measured at the head restraint
Tested seat back angle 9.4° measured at the head restraint

X 6. If adjustable, set the head restraint at the full up and full forward position. 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. (S8.1.3)
____ N/A – No head restraint adjustment

X 7. 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. _____
Tested anchorage position _____

X 8. Place the adjustable accelerator pedal in the full forward position.
X N/A – the accelerator pedal is not adjustable.

X 9. Set the steering wheel hub at the geometric center of the full range of driving positions including any telescoping positions as determined in Data Sheet 14.

X 10. Place the dummy in the seat such that the midsagittal plane is coincident with the longitudinal seat cushion markings as determined in item 1.18 of Data Sheet 14 and the upper torso rests against the seat back. (S10.4.1.1 & S10.4.1.2)

X 11. Rest the thighs on the seat cushion. (S10.5)

X 12. 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°) 22.5°

X 13. Is the head level within ± 0.5°? (S10.1)

X Yes, go to 14

____ No, go to 13.1

___ 13.1 Adjust the position of the H-point. (S10.1)

___ 13.2 Is the head level within ± 0.5°? (S10.1)

___ Yes, record the following, then go to 15. ____ No, go to 13.3

_____ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

° _____ pelvic angle (20° to 25°) (S10.4.2.2)

___ 13.3 Adjust the pelvic angle. (S10.1)

___ 13.4 Is the head level within ± 0.5°? (S10.1)

___ Yes, record the following, then go to 14. ____ No, go to 13.5

___ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

___ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

___ pelvic angle (20° to 25°) (S10.4.2.2)

___ 13.5 Adjust the neck bracket of the dummy the minimum amount necessary from the non-adjusted "0" setting until the head is level within ± 0.5°. (S10.1)

Record the following, then go to 14

_____ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ pelvic angle (20° to 25°) (S10.4.2.2)

X 14. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.

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

X 15. Can the right foot be placed on the accelerator?

X Yes, go to 15.1 and skip 15.2

____ No, go to 15.2

X 15.1 To the extent practicable keep the right thigh and the leg in a vertical plane (S10.5) while resting the foot on the undepressed accelerator pedal with the rearmost point of the heel on the floor pan in the plane of the pedal. (S10.6.1.1)

____ 15.2 Initially set the foot perpendicular to the leg and then place it as far forward as possible in the direction of the pedal centerline with the rearmost point of the heel resting on the floor pan. (S10.6.1.1)

____ 15.2.1 Move the adjustable pedal to its most rearward position or until the right foot is flat on the pedal, whichever occurs first. (S10.6.1.1)

____ N/A – the accelerator pedal is not adjustable

X 16. Does the vehicle have a foot rest?

____ Yes, go to 16.1

X No, go to 16.1.2

____ 16.1 With the left thigh and leg in a vertical plane, place the foot on the foot rest. (S10.6.1.2)

____ 16.1.1 Is the left foot elevated above the right foot?

____ Yes, go to 16.1.2 and position the foot off the foot rest
____ No, go to 17

X 16.1.2 Check the ONLY one of the following that applies

X The foot reaches the toeboard without adjusting the foot or leg. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5) and place the foot on the toeboard, skip 16.1.3 (S10.6.1.2)

____ The foot reaches the toeboard but contacts the brake or clutch pedal and must be rotated to avoid pedal contact. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5) and place the foot on the toeboard. The foot was rotated about the leg to avoid pedal contact, skip 16.1.3 (S10.6.1.2)

____ The foot reaches the toeboard but contacts the brake or clutch pedal and the foot and leg must be rotated to avoid pedal contact. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5) and place the foot on the toeboard. The foot was rotated about the leg and the leg was rotated outboard about the hip the minimum distance necessary to avoid pedal contact, skip 16.1.3 (S10.6.1.2)

____ N/A - the foot does not reach the toeboard, go to 16.1.3

____ 16.1.3 Check the ONLY one of the following that applies

____ The foot did not contact the brake or clutch pedal. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5). Set the foot perpendicular to the leg and place it as far forward as possible with the heel resting on the floor pan. (S10.6.1.2)

____ The foot did contact the brake or clutch pedal and the foot was rotated to avoid contact. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5). Set the foot perpendicular to the leg and place it as far forward as possible with the heel resting on the floor pan and rotate the foot the minimum amount to avoid pedal contact. (S10.6.1.2)

____ The foot did contact the brake or clutch pedal and the foot was rotated about the leg and the leg was rotated outboard about the hip the minimum distance necessary to avoid pedal contact. Set the foot perpendicular to the leg and place it as far forward as possible with the heel resting on the floor pan and rotate the foot about the leg and the thigh and leg outboard about the hip the minimum distance necessary to avoid pedal contact. (S10.6.1.2)

X 17. Place the right upper arm adjacent to the torso with the centerline as close to a vertical plane as possible. (S10.2.1)

X 18. Is the driver seat belt used for this test?

____ Yes, continue
X No, go to 19

____ 18.1 Fasten the seat belt around the dummy.
____ 18.2 Remove all slack from the lap belt portion. (S10.9)
____ 18.3 Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)
____ 18.4 Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
____ pound load applied
____ 18.5 Is the belt system equipped with a tension relieving device?
____ Yes, continue
____ No, go to 19
____ 18.6 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 19. Place the left upper arm adjacent to the torso with the centerline as close to a vertical plane as possible. (S10.2.1)

X 20. Place the right hand with the palm in contact with the steering wheel at the rim's horizontal centerline and with the thumb over the steering wheel. (S10.3.1)

X 21. Place the left hand with the palm in contact with the steering wheel at the rim's horizontal centerline and with the thumb over the steering wheel. (S10.3.1)

X 22. Tape the thumb of each hand to the steering wheel by using masking tape with a width of 0.25 inch. The length of the tape shall only be enough to go around the thumb and steering wheel one time.

DATA SHEET 34
DUMMY POSITIONING PROCEDURES FOR PASSENGER TEST DUMMY CONFORMING TO SUBPART E OF PART 572

NHTSA No.: C40113 Test Date: 03/18/04

Laboratory: TRC Inc. Test Technician(s): John Shultz

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

X 1. The seat is a bench seat for which the adjustments have already been made for the driver and there are no independent adjustments that can be made for the passenger. Go to 7
X N/A- the passenger seat adjusts independently of the driver seat.

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. (S20.1.8.2)
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. (S20.1.9.3)
X N/A – No independent fore-aft seat cushion adjustment

X 5. Use the seat markings determined during completion of Data Sheet 14 to set the mid fore-aft position, full down height position and the seat cushion angle. (S8.1.2).

X 6. 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 9° to 9.5° measured at the head restraint
Tested seat back angle 9.5° measured at the head restraint

X 7. If adjustable, set the head restraint at the full up and full forward position. 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. (S8.1.3)
____ N/A – No head restraint adjustment

X 8. 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. ____
Tested anchorage position ____

X 9. Place the dummy in the seat such that the midsagittal plane is coincident with the longitudinal seat cushion markings as determined in Item 2.19 of Data Sheet 14 and the upper torso rests against the seat back. (S10.4.1.1 & S10.4.1.2)

X 10. Rest the thighs on the seat cushion. (S10.5)

X 11. 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)

_____ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

24.0° pelvic angle (20° to 25°) (S10.4.2.2)

X 12. Is the head level within ± 0.5°? (S10.1)

X Yes, go to 13

___ No, go to 12.1

___ 12.1 Adjust the position of the H-point. (S10.1 and S10.4.2.1)

___ 12.2 Is the head level within ± 0.5°? (S10.1)

___ Yes, record the following, then go to 13. ___ No, go to 12.3

_____ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ pelvic angle (20° to 25°) (S10.4.2.2)

___ 12.3 Adjust the pelvic angle. (S10.1)

___ 12.4 Is the head level within ± 0.5°? (S10.1)

___ Yes, record the following, then go to 13. ___ No, go to 12.5

_____ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ pelvic angle (20° to 25°) (S10.4.2.2)

___ 12.5 Adjust the neck bracket of the dummy the minimum amount necessary from the non-adjusted "0" setting until the head is level within ± 0.5°. (S10.1)

Record the following, then go to 13

_____ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)

_____ pelvic angle (20° to 25°) (S10.4.2.2)

X 13. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.

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

X 14. Check the only one of the following that applies:

X To the extent practicable keep the left thigh and leg in a vertical plane and the right thigh and leg in a vertical plane, place the feet on the toeboard with the heels resting on the floor pan as close as possible to the intersection of the floor pan and toeboard.

___ The feet cannot be placed flat on the toeboard. To the extent practicable keep the left thigh and leg in a vertical plane and the right thigh and leg in a vertical plane, set the feet perpendicular to the legs and place them as far forward as possible with the heels resting on the floor pan.

___ The vehicle has a wheelhouse projection. To the extent practicable keep the left thigh and leg in a vertical plane and the right thigh and leg in a vertical plane, set the feet perpendicular to the legs and place them as far forward as possible with the heels resting on the floor pan. Do not set the feet on the wheelhouse projection.

___ The vehicle has a wheelhouse projection and the feet cannot be placed on the toeboard. To the extent practicable keep the left thigh and leg in a vertical plane and the right thigh and leg in a vertical plane, set the feet perpendicular to the legs and place them as far forward as possible with the heel resting on the floor pan. . Do not set the feet on the wheelhouse projection.

X 15. Place the left upper arm in contact with the seat back and side of the torso. (S10.2.2)

X 16. Is the passenger seat belt used for this test?

____ Yes, continue

X No, go to 17

___ 16.1 Fasten the seat belt around the dummy.

___ 16.2 Remove all slack from the lap belt portion. (S10.9)

___ 16.3 Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)

___ 16.4 Apply a 2 to 4 pound tension load to the lap belt. (S10.9)

_____ pound load applied

___ 16.5 Is the belt system equipped with a tension relieving device?

____ Yes, continue

____ No, go to 17

___ 16.6 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). Go to 17.

X 17. Place the right upper arm in contact with the seat back and side of the torso. (S10.2.2)

X 18. Place the left hand palm in contact with the outside of the left thigh and the little finger in contact with the seat cushion. (S10.3.2)

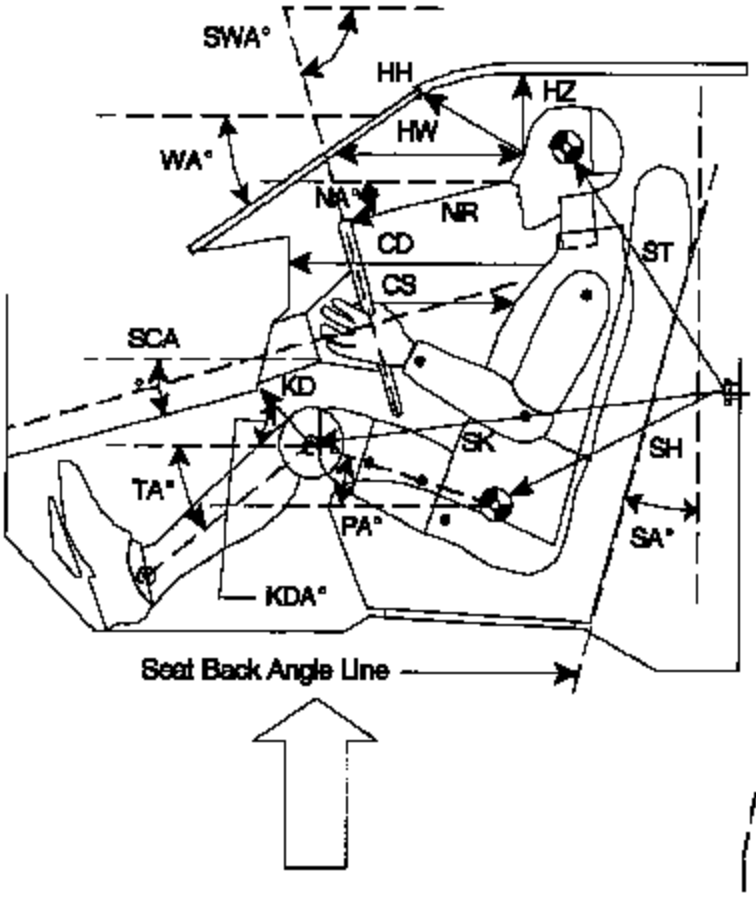
X 19. Place the right hand palm in contact with the outside of the right thigh and the little finger in contact with the seat cushion. (S10.3.2)

DATA SHEET 35

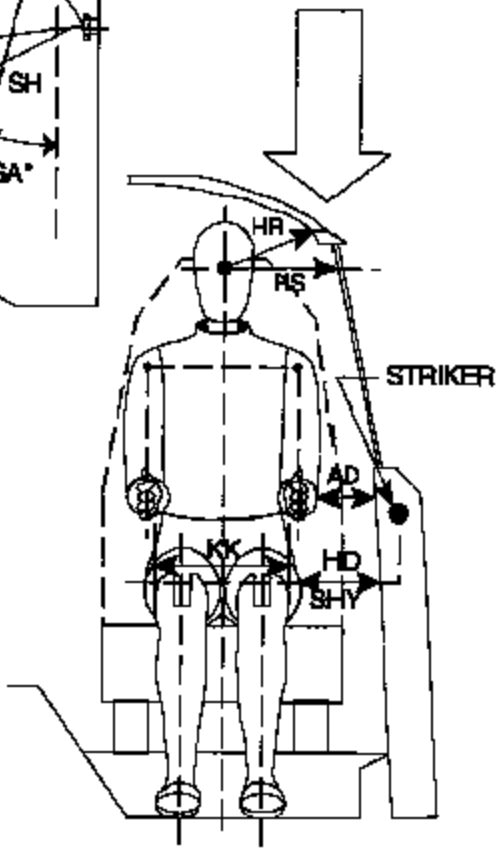
DUMMY POSITIONING MEASUREMENTS

	DRIVER (Serial No. 229)	PASSENGER (Serial No. 230)
WA°	23.0	
SWA°	17.9	NA
SCA°	71.6	NA
SA°	9.4	9.5
HZ	235	220
HH	390	391
HW	739	720
HR	195	200
NR	396 ANGLE 12.1°	NA
CD	710	531
CS	312	NA
RA	222	NA
KDL	143 ANGLE 39.6°	150
KDR	142	142 ANGLE 30.3°
PA°	22.5	24
TA°	45.4	44.1
KK	317	270
ST	525 ANGLE -86.2°	540 ANGLE -81.0°
SK	582 ANGLE 0.7°	576 ANGLE 1.0°
SH	243 ANGLE 37.2°	227 ANGLE 34.1°
SHY	230	199
HS	337	333
HD	105	104
AD	111	94

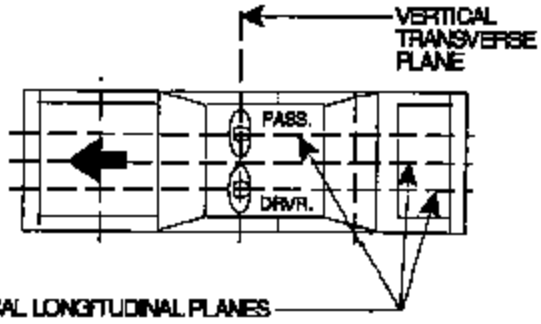
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



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



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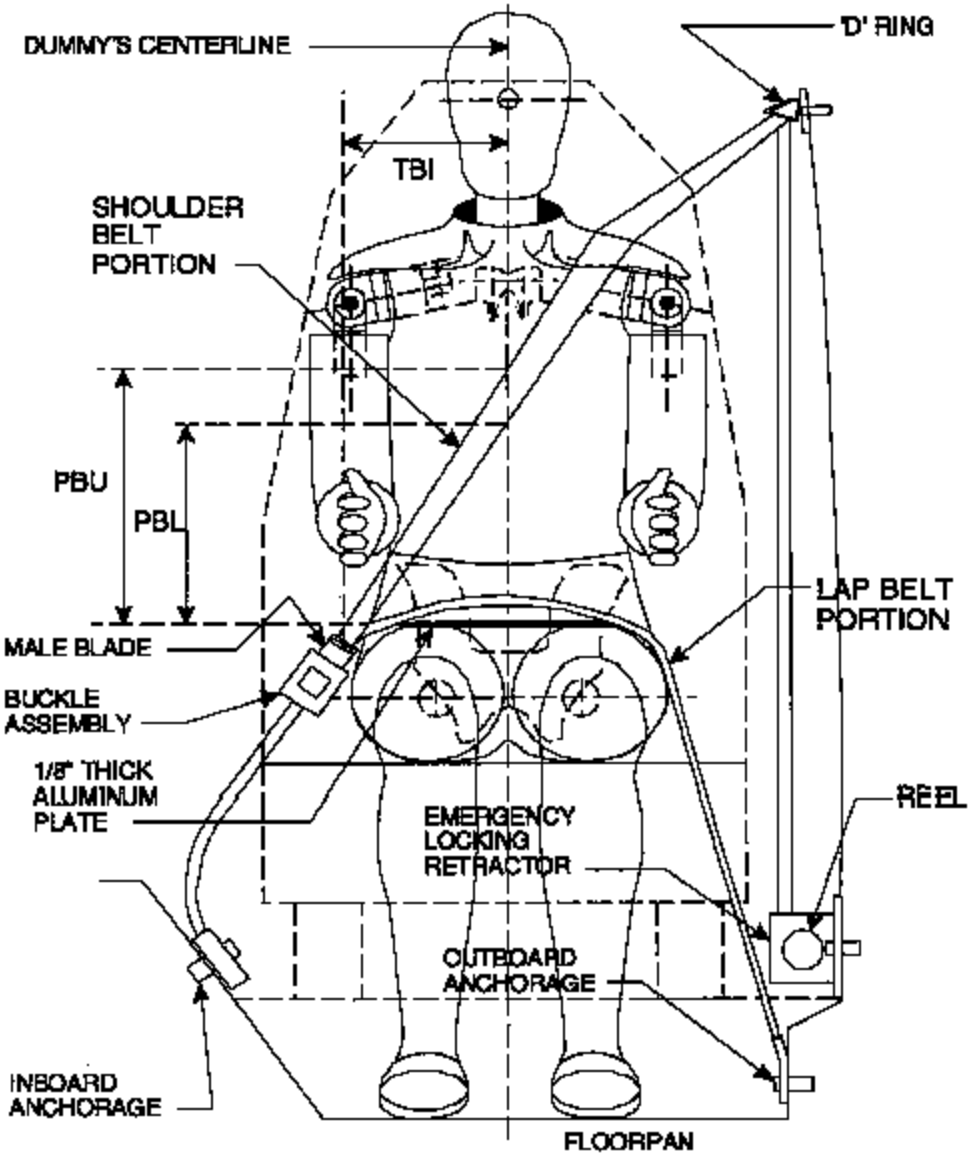
SEAT BELT POSITIONING DATA



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 36
CRASH TEST

NHTSA No.: C40113 Test Date: 03/18/04

Laboratory: TRC Inc. Test Technician(s): John Shultz

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: ___ 5th female X 50th male Passenger Dummy: ___ 5th female X 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.
____ 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.
210 kPa front left tire 210 kPa specified on tire placard or in owner information
210 kPa front right tire 210 kPa specified on tire placard or in owner information
210 kPa rear left tire 210 kPa specified on tire placard or in owner information
210 kPa rear right tire 210 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. Post-test zero and shunt calibration checks performed and recorded
X 16. Actual test speed 40.0 km/h
X 17. Vehicle rebound from the barrier N/A[1] mm
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 header and airbag. Chest contacted airbag. both knees contacted the knee bolster.
Passenger dummy Head contacted sun visor, header, A-pillar and airbag. Chest contacted airbag. Both knees contacted the glove box.

[1] Measurement not recorded.

DATA SHEET 38
ACCIDENT INVESTIGATION MEASUREMENTS

NHTSA No.: C40113 Test Date: 03/18/04

Laboratory: TRC Inc. Test Technician(s): John Shultz

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

Vehicle Year/Make/Model/Body Style: 2004/Saturn/Ion/4-door

VIN: 1G8AF52F54Z[redacted]

Wheelbase: 2615 mm; Build Date: 11/03

Veh. Size Category: 3; Test Weight: 1426 kg

Front Overhang: 975 mm; Overall Width: 1695 mm

Veh. Impact Speed: 40.0 km/h; Vel. Change: 46.0 km/h

Collision Deformation Classification (CDC) Code: 12FDEW2

Impact Mode: 0° Front

Crush Depth Dimensions[1]:

C1 = 253 mm

C2 = 323 mm

C3 = 371 mm

C4 = 358 mm

C5 = 314 mm

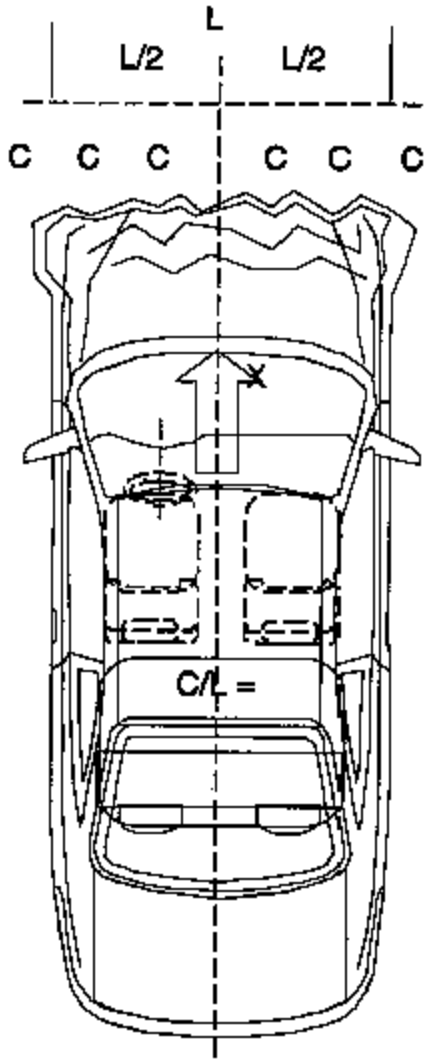
C6 = 235 mm

Midpoint of Damage: D= 0 mm
(Left of Vehicle Longitudinal Centerline)

Length of Damage Region:

L = 1505 mm

REMARKS:



[1] Numbered from left to right of vehicle.

DATA SHEET 39
WINDSHIELD MOUNTING (FMVSS 212)

NHTSA No.: C40113 Test Date: 03/18/04

Laboratory: TRC Inc. Test Technician(s): D. Thomas, 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: ___ 5th female X 50th male Passenger Dummy: ___ 5th female X 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.

1. Pre crash

X 1.1 Describe from visual inspection how the windshield is mounted and describe any trim material.
Adhesive, plastic trim

X 1.2 Mark the longitudinal centerline of the windshield.

X 1.3 Measure pre-crash A, B, and C for the left side and record in the chart below.

X 1.4 Measure pre-crash C, D, and E for the right side and record in the chart below.

X 1.5 Measure from the edge of the retainer or molding to the edge of the windshield.
Dimension G: 24 mm

2. Post Crash

X 2.1. 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. Skip to the table of measurements, complete it by repeating the pre-crash measurements in the post crash column, and calculate the retention percentage, which will be 100%.

____ Yes, go to 2.2.

___ 2.2. Visibly mark the beginning and end of the portions of the periphery where the paper slides between the windshield and the vehicle body.

___ 2.3. 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.

___ 2.4. Calculate and record the percent retention for the right and left side of the windshield.

___ 2.5. Is total right side percent retention less than 75%?

____ Yes, FAIL

____ No, Pass

___ 2.6. Is total left side percent retention less than 75%?

____ Yes, FAIL

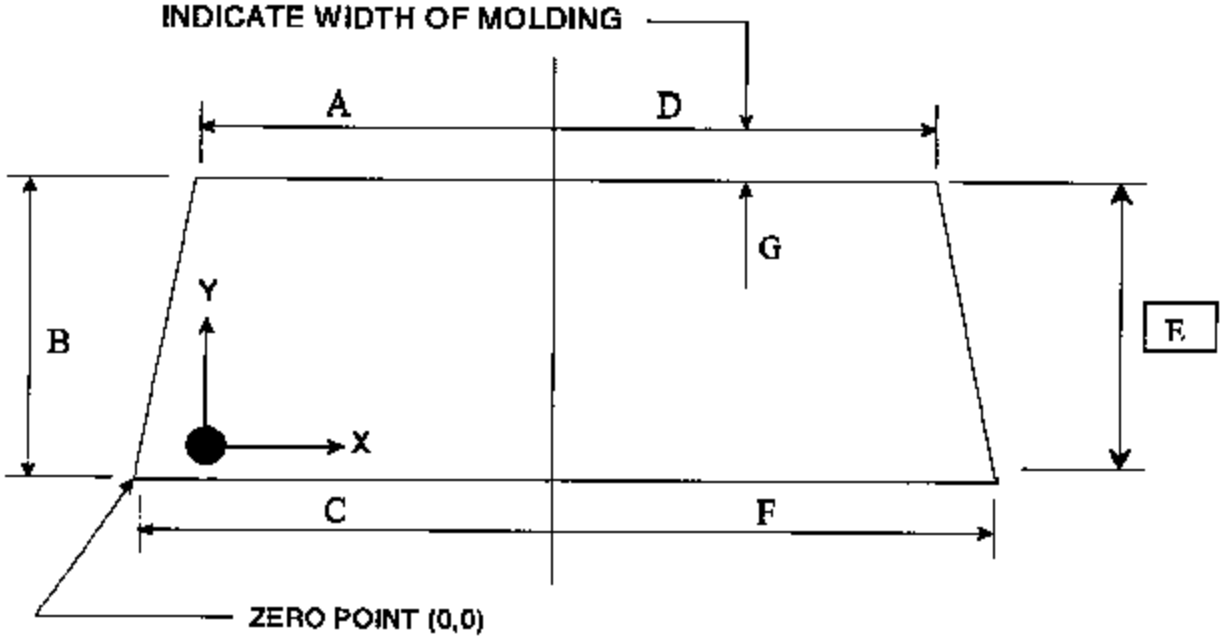
____ No, Pass

WINDSHIELD PERIPHERY MEASUREMENT

	Dimension	Pre-crash mm	Post-crash mm	Percent Retention (Post-crash ÷ Pre-crash)
Left side	A	594	594	
	B	851	851	
	C	742	742	
	Total	2187	2187	100%
Right side	D	594	594	
	E	851	851	
	F	742	742	
	Total	2187	2187	100%
Width of Molding	G	24		

Indicate area of mounting failure.

FRONT VIEW OF WINDSHIELD



DATA SHEET 40
WINDSHIELD ZONE INTRUSION (FMVSS 219)

NHTSA No.: C40113 Test Date: 03/18/04

Laboratory: TRC Inc. Test Technician(s): D. Thomas, 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: ___ 5th female X 50th male Passenger Dummy: ___ 5th female X 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))

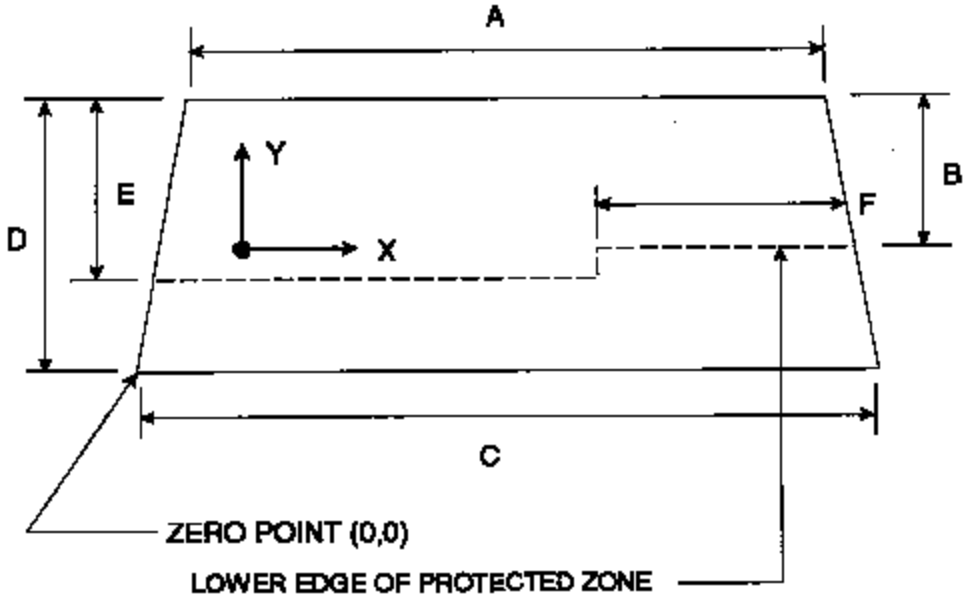
X 4. Draw a line on the inner surface of the windshield that is 13 mm below the line determined in items 2 and 3.

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
1188	585	1485	851	578	418

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
No penetration	No penetration

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
No penetration	No penetration

REMARKS:

No penetration into or beneath the protected zone.

DATA SHEET 41
FUEL SYSTEM INTEGRITY (FMVSS 301)

TEST VEHICLE NHTSA NO.: C40113 ; TEST DATE: 03/18/04

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 2004/Saturn/Ion/4-door

TYPE OF IMPACT: 0° Flat Frontal

STODDARD SOLVENT SPILLAGE MEASUREMENT:

A. From impact until vehicle motion ceases —

Actual = 0.0 grams. (Maximum Allowable = 28 grams)

B. For 5 minute period after vehicle motion ceases —

Actual = 0.0 grams. (Maximum Allowable = 142 grams)

C. For next 25 minutes —

Actual = 0.0 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:

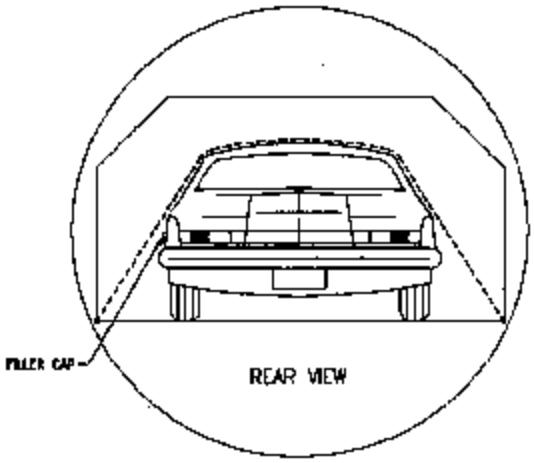
1. Rollover Fixture 90° Rotation Time = 1 minutes, 30 seconds

   (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



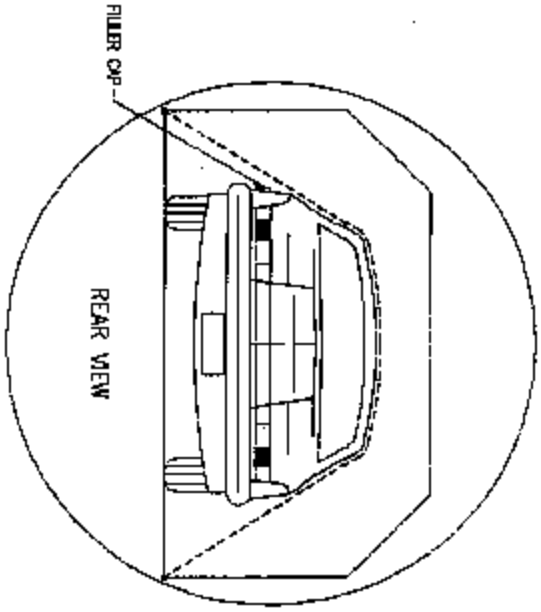
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0.0 grams (142 grams allowed)

2. 6th minute = 0.0 grams (28 grams allowed)

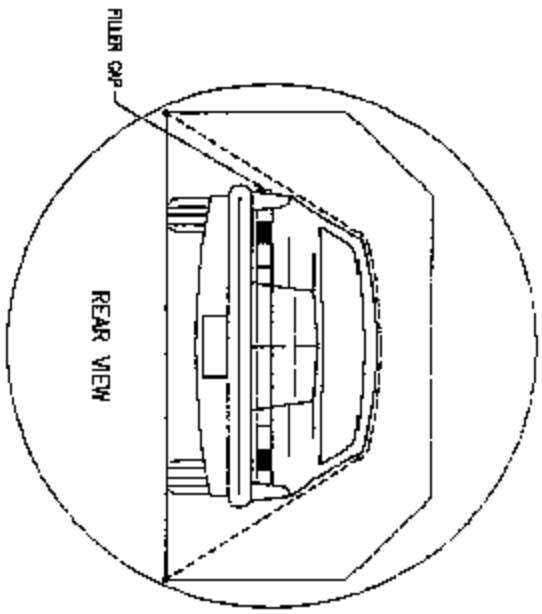
3. 7th minute = 0.0 grams (28 grams allowed)

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

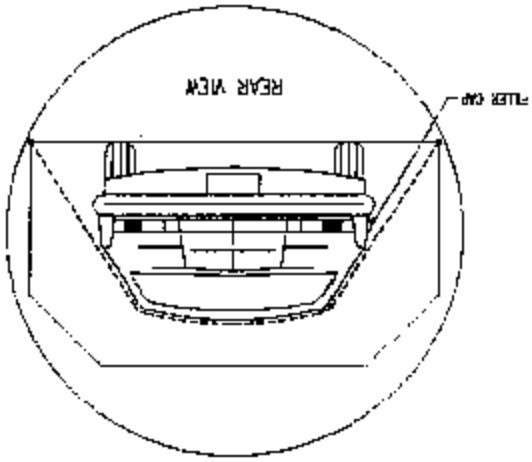
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0.0 grams (142 grams allowed)

2. 6th minute = 0.0 grams (28 grams allowed)

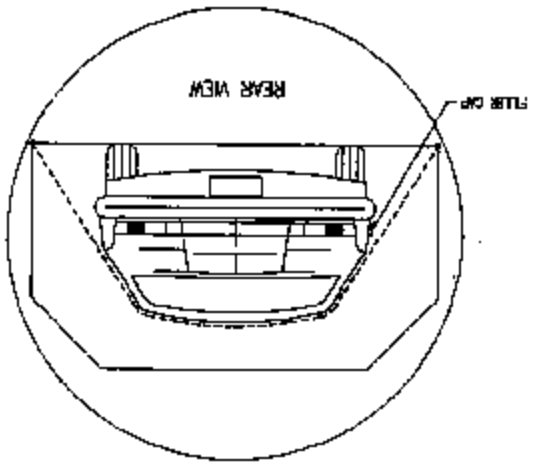
3. 7th minute = 0.0 grams (28 grams allowed)

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

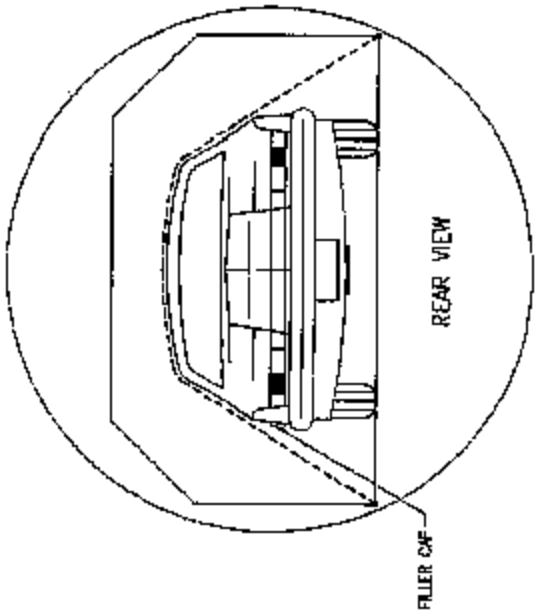
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0.0 grams (142 grams allowed)

2. 6th minute = 0.0 grams (28 grams allowed)

3. 7th minute = 0.0 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:

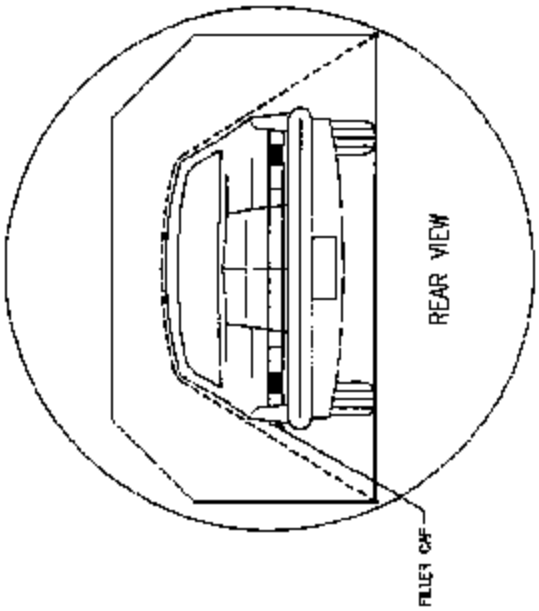
1. Rollover Fixture 90° Rotation Time = 1 minutes, 30 seconds

   (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



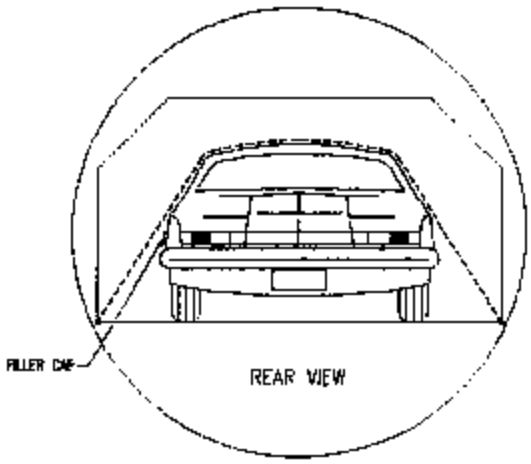
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0.0 grams (142 grams allowed)

2. 6th minute = 0.0 grams (28 grams allowed)

3. 7th minute = 0.0 grams (28 grams allowed)

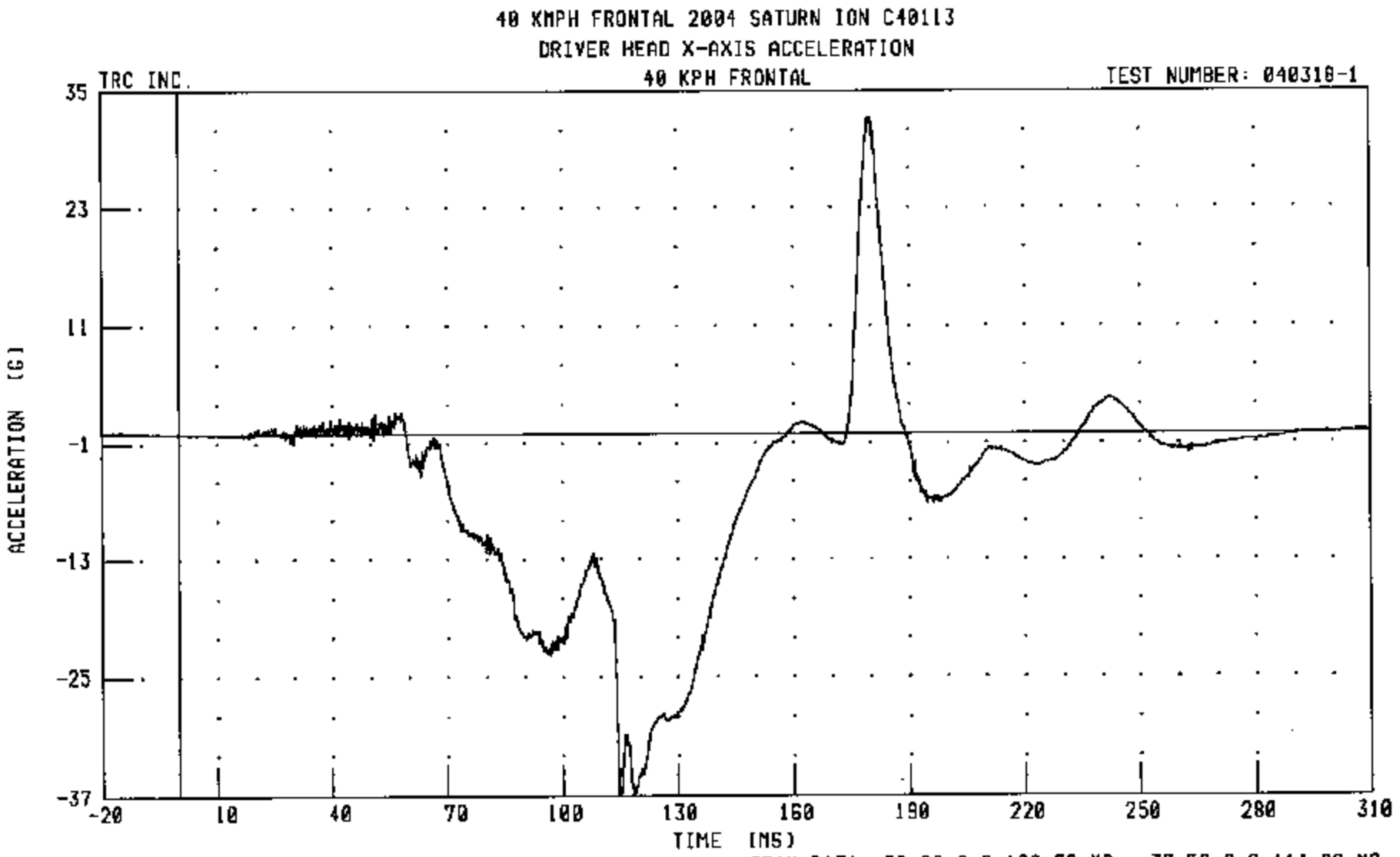
4. 8th minute (if required) = NA grams (28 grams allowed)



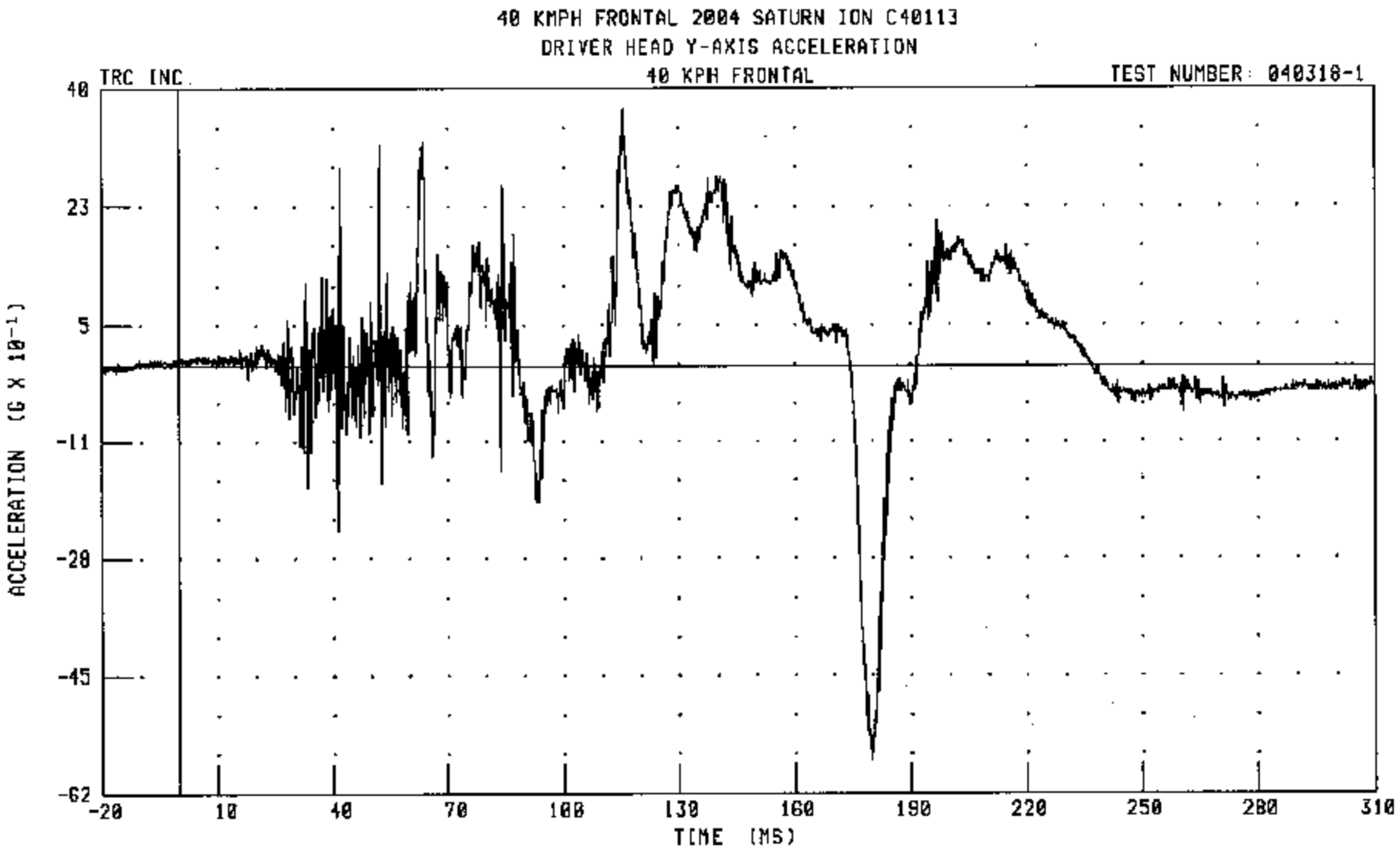
Provide Details of Stoddard Solvent Spillage Locations - None

Section 6

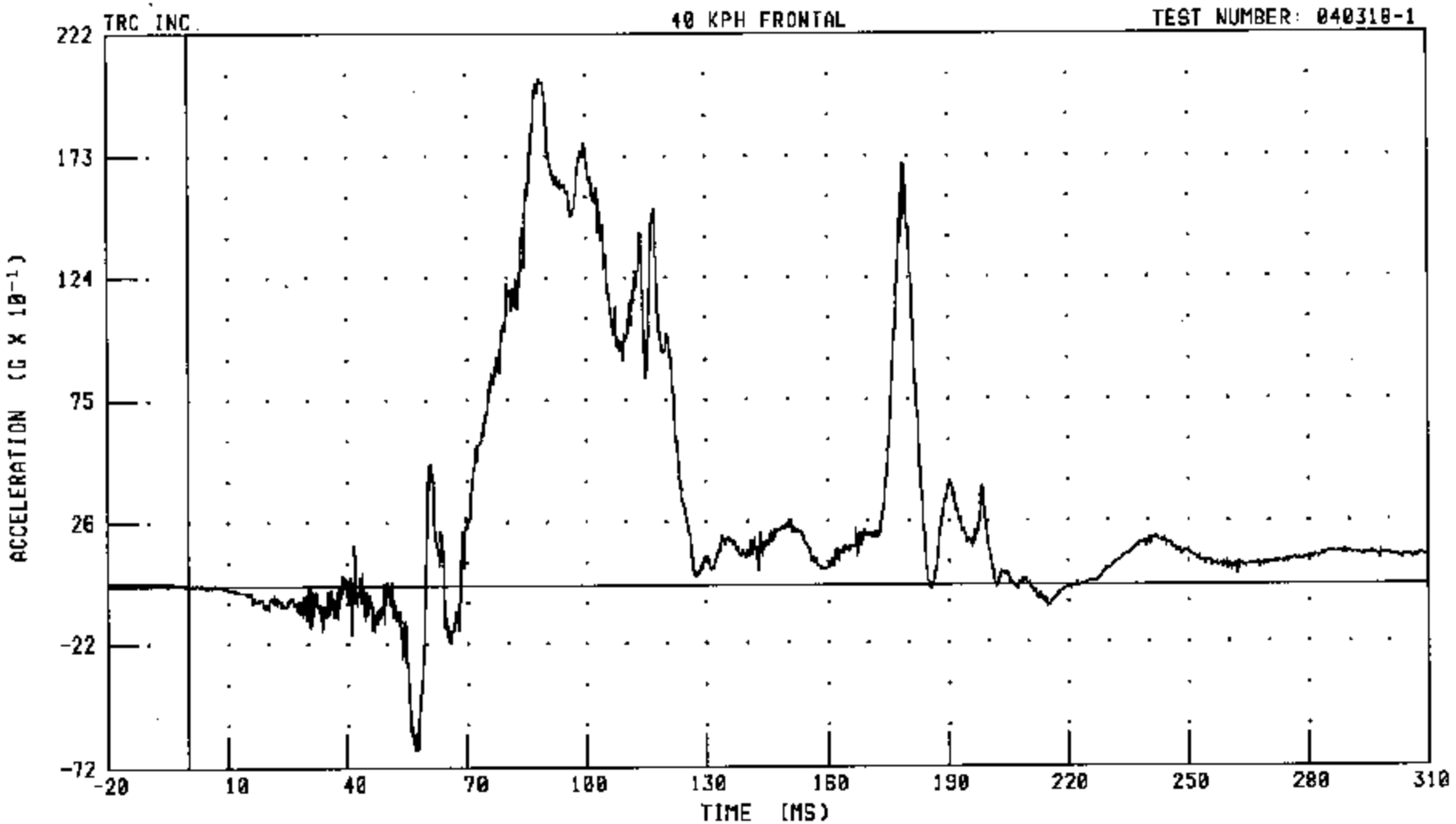
Test Data


40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER HEAD X-AXIS ACCELERATION
40 KPH FRONTAL
TRC INC.
TEST NUMBER: 040318-1
35
23
11
-1
-13
-25
-37
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDXG1
FILTER: CH. CLASS 1000
PEAK DATA: 32.22 G @ 179.76 MS; -37.56 G @ 114.88 MS

040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER HEAD Y-AXIS ACCELERATION
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
ACCELERATION (G X 10⁻¹)
40
23
5
-11
-28
-45
-62
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDYG1
FILTER: CH. CLASS 1000
PEAK DATA: 3.70 G @ 115.76 MS; -5.69 G @ 179.84 MS

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER HEAD Z-AXIS ACCELERATION

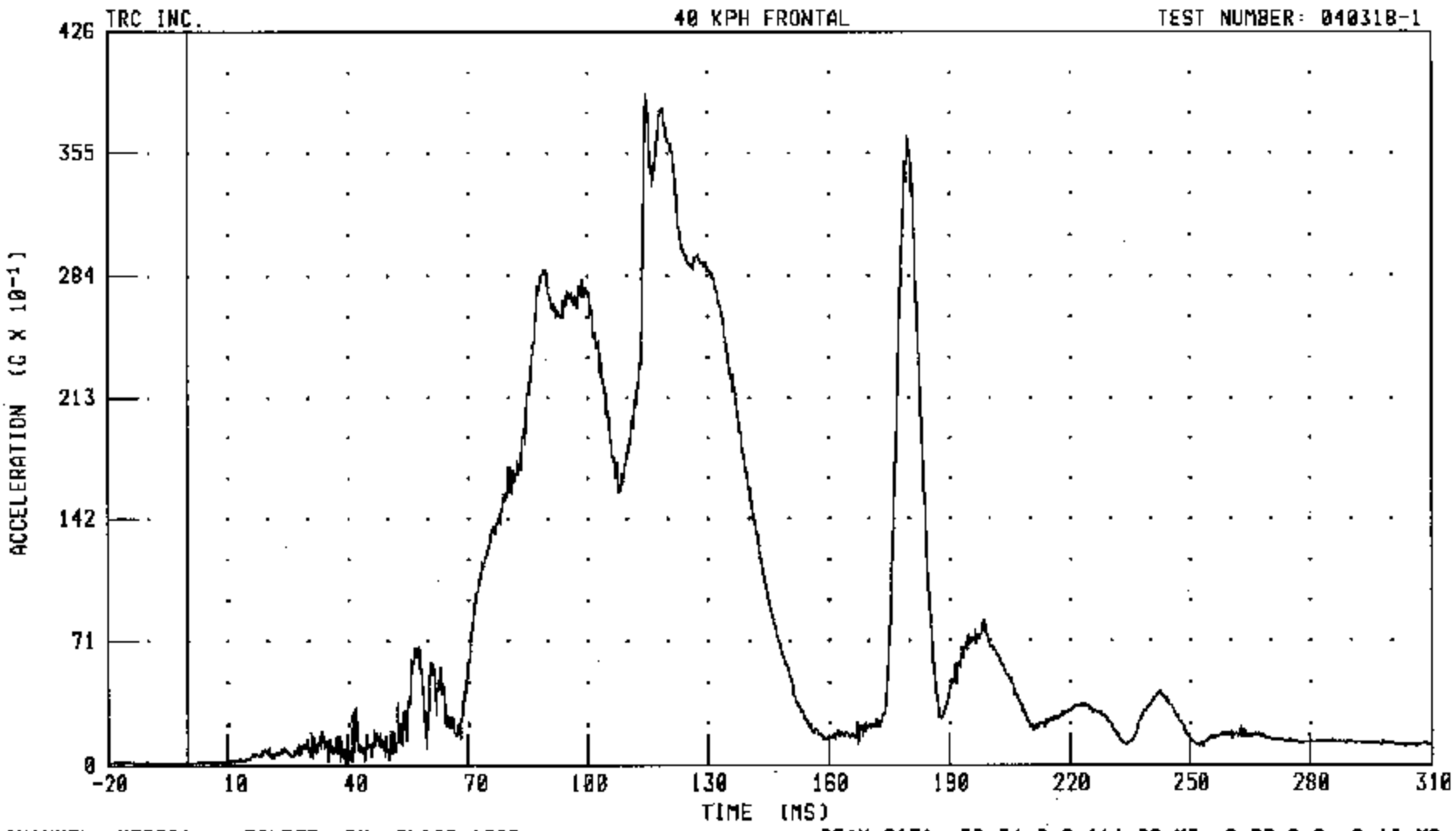


CHANNEL: HEDZG1 FILTER: CH. CLASS 1000 PEAK DATA: 20.43 G @ 00.48 MS; -6.56 G @ 57.76 MS

6-4

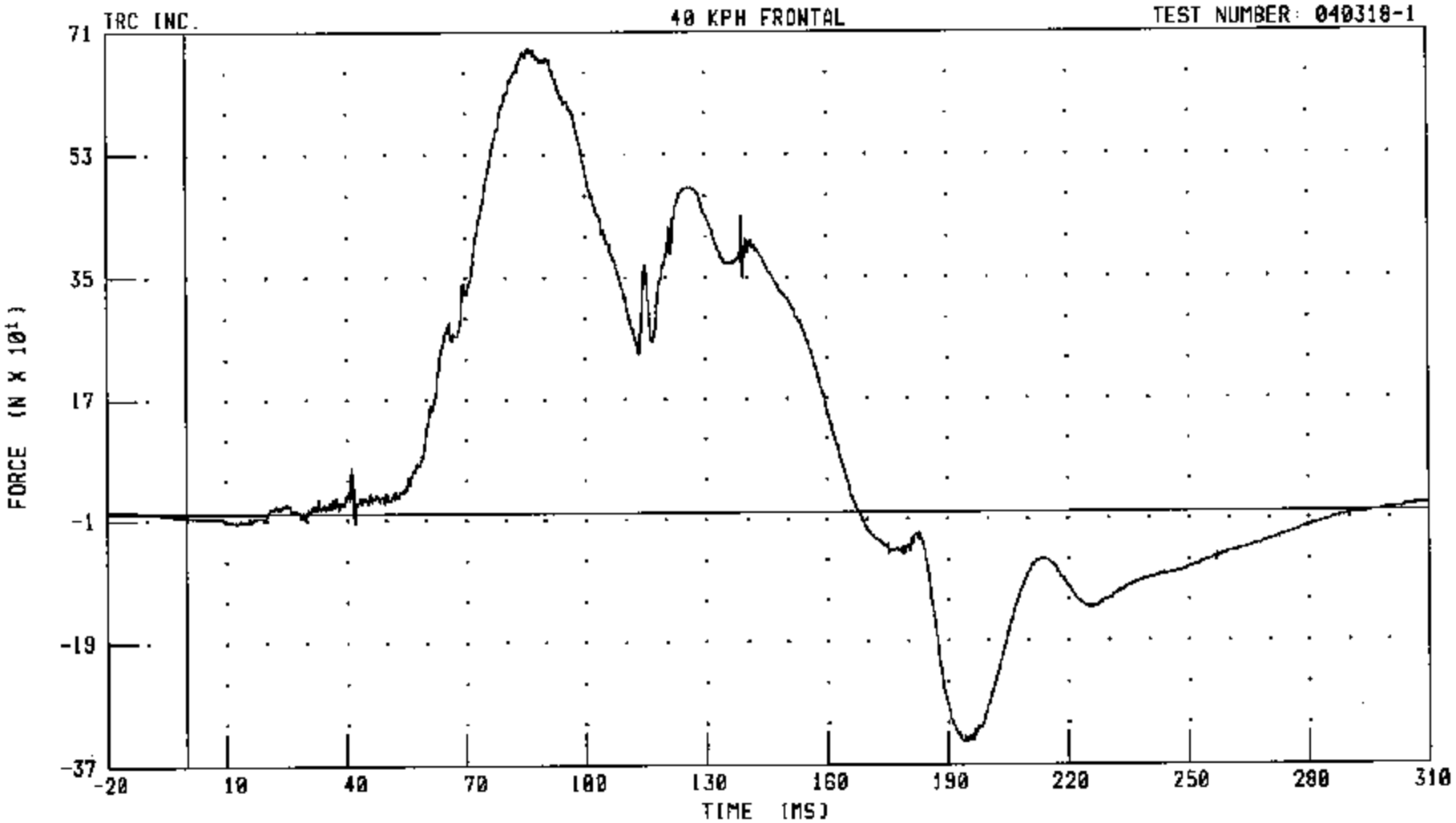
040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER HEAD RESULTANT ACCELERATION



CHANNEL: HEDRG1 FILTER: CH. CLASS 1000 PEAK DATA: 38.94 G @ 114.88 MS; 0.07 G @ -2.16 MS

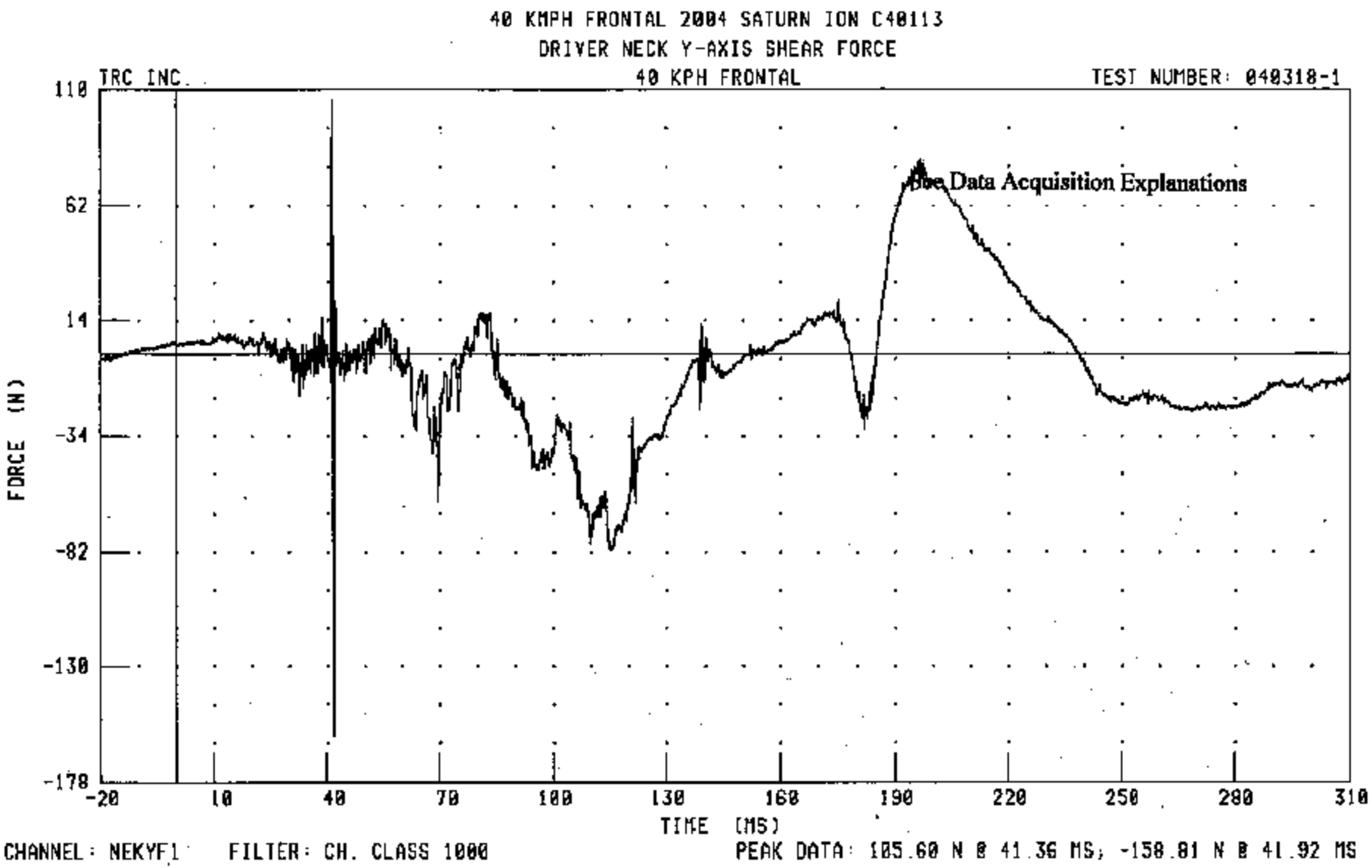
40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NECK X-AXIS SHEAR FORCE
40 KPH FRONTAL



CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

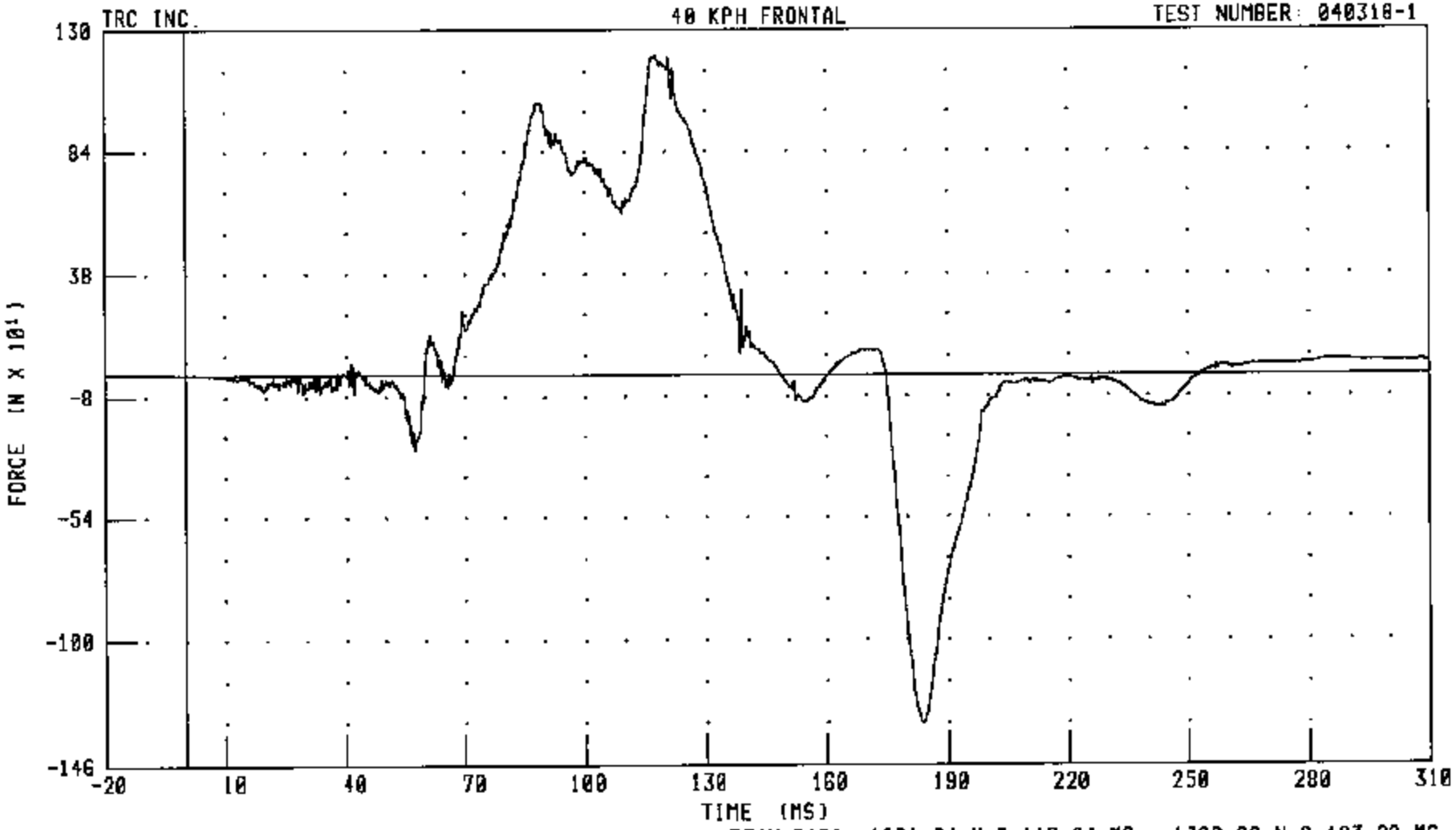
PEAK DATA: 686.61 N @ 86.24 MS; -337.94 N @ 194.72 MS

040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NECK Y-AXIS SHEAR FORCE
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
See Data Acquisition Explanations
110
62
14
-34
-82
-130
-178
FORCE (N)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKYF1
FILTER: CH. CLASS 1000
PEAK DATA: 105.60 N @ 41.36 MS, -158.81 N @ 41.92 MS

040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NECK Z-AXIS AXIAL FORCE

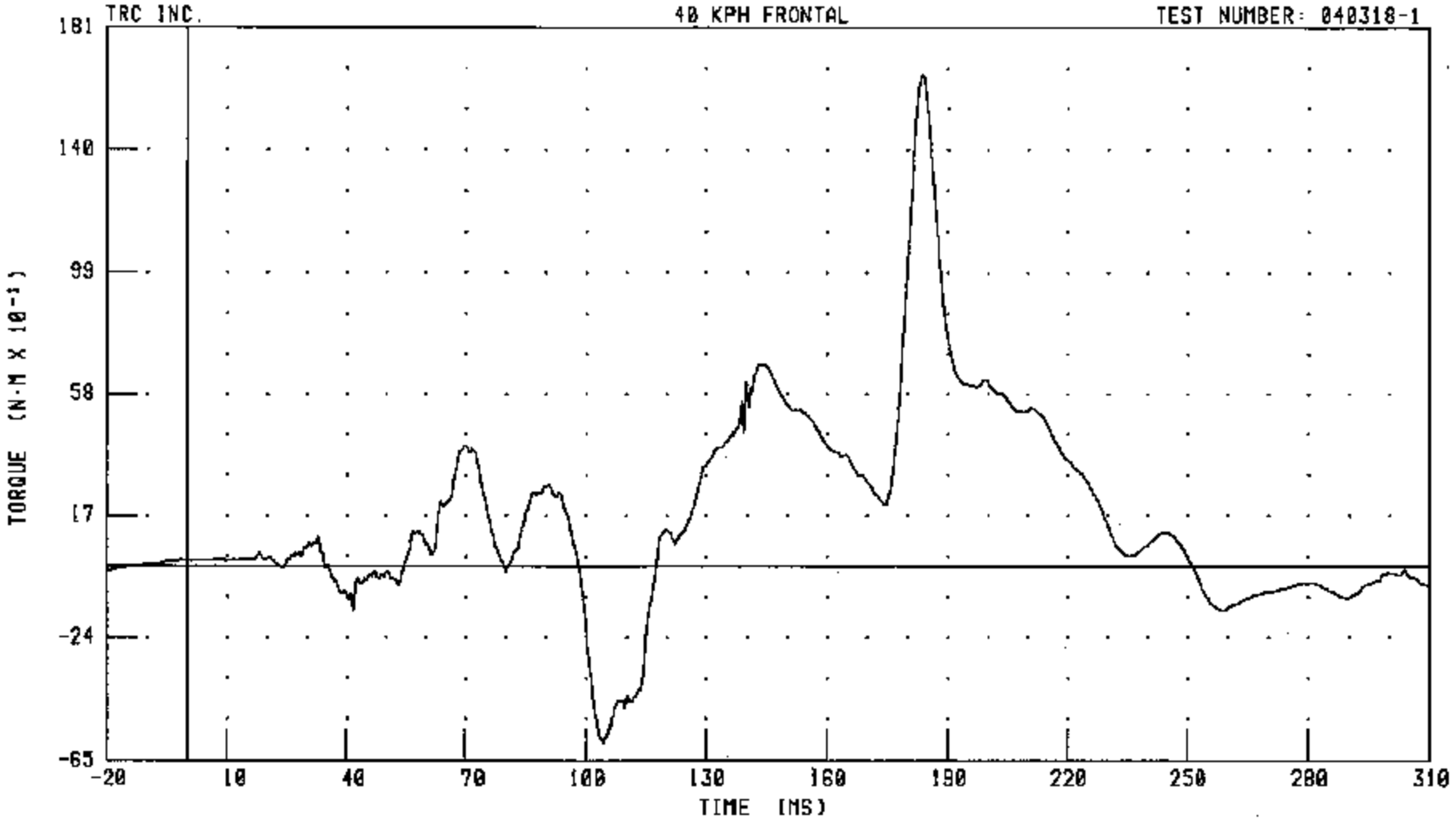


CHANNEL: NEKZF1 FILTER: CH. CLASS 1000 PEAK DATA: 1201.84 N @ 117.84 MS; -1309.29 N @ 183.92 MS

8-9

040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NECK MOMENT ABOUT X AXIS

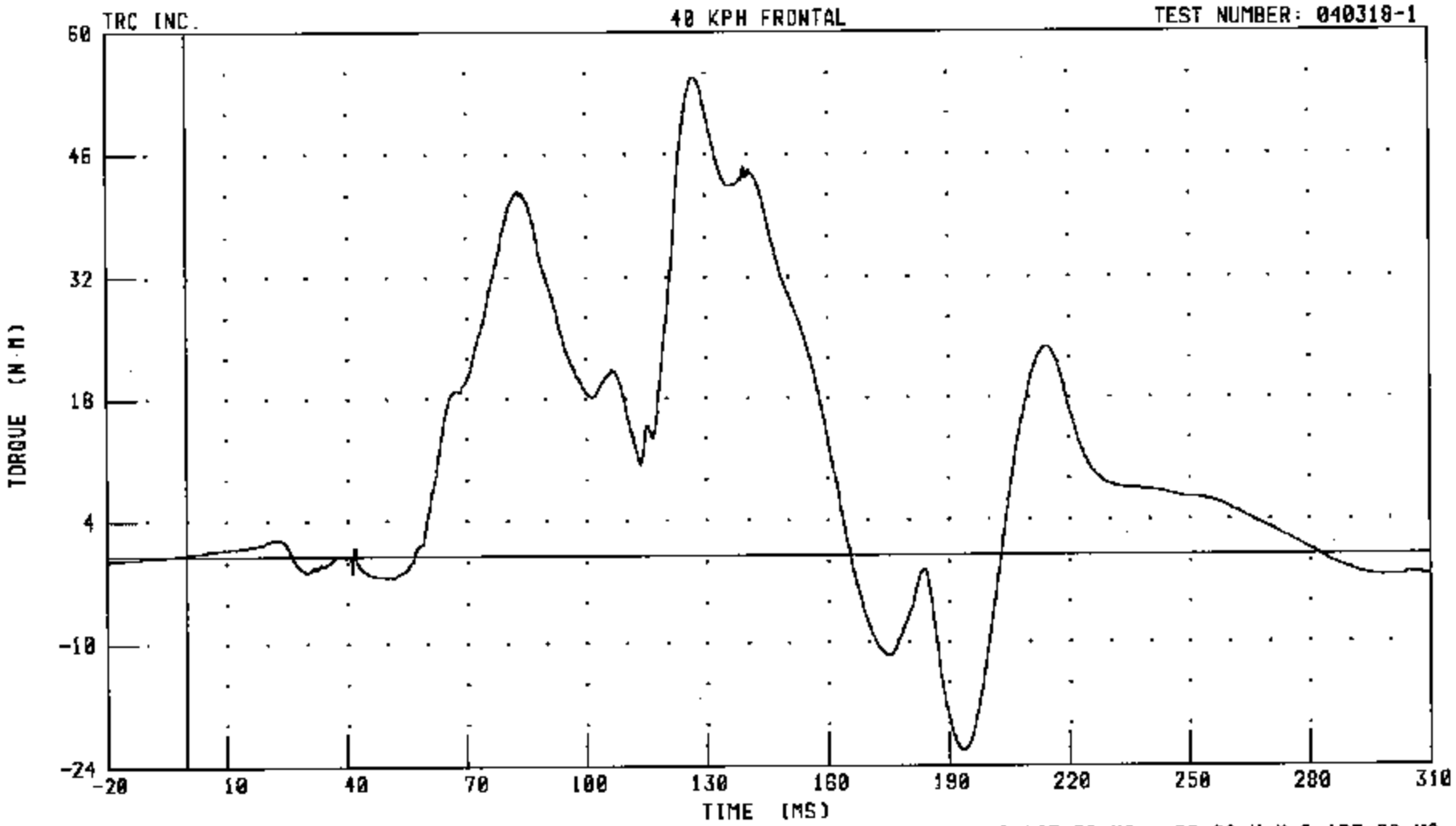


CHANNEL: NEKXM1 FILTER: CH. CLASS 600 PEAK DATA: 16.50 N-M @ 184.00 MS; -5.91 N-M @ 104.40 MS

6-9

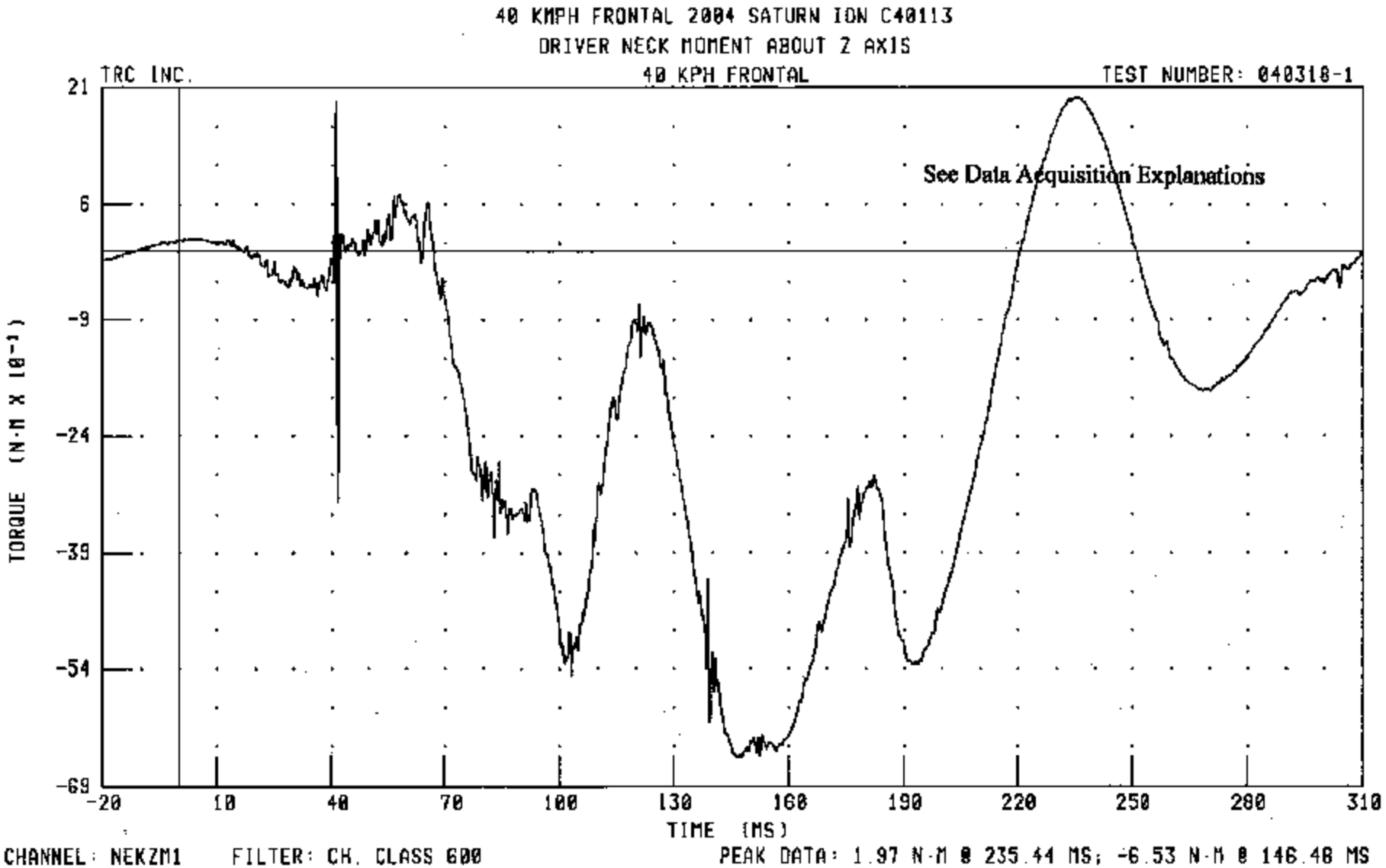
040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NECK MOMENT ABOUT Y AXIS



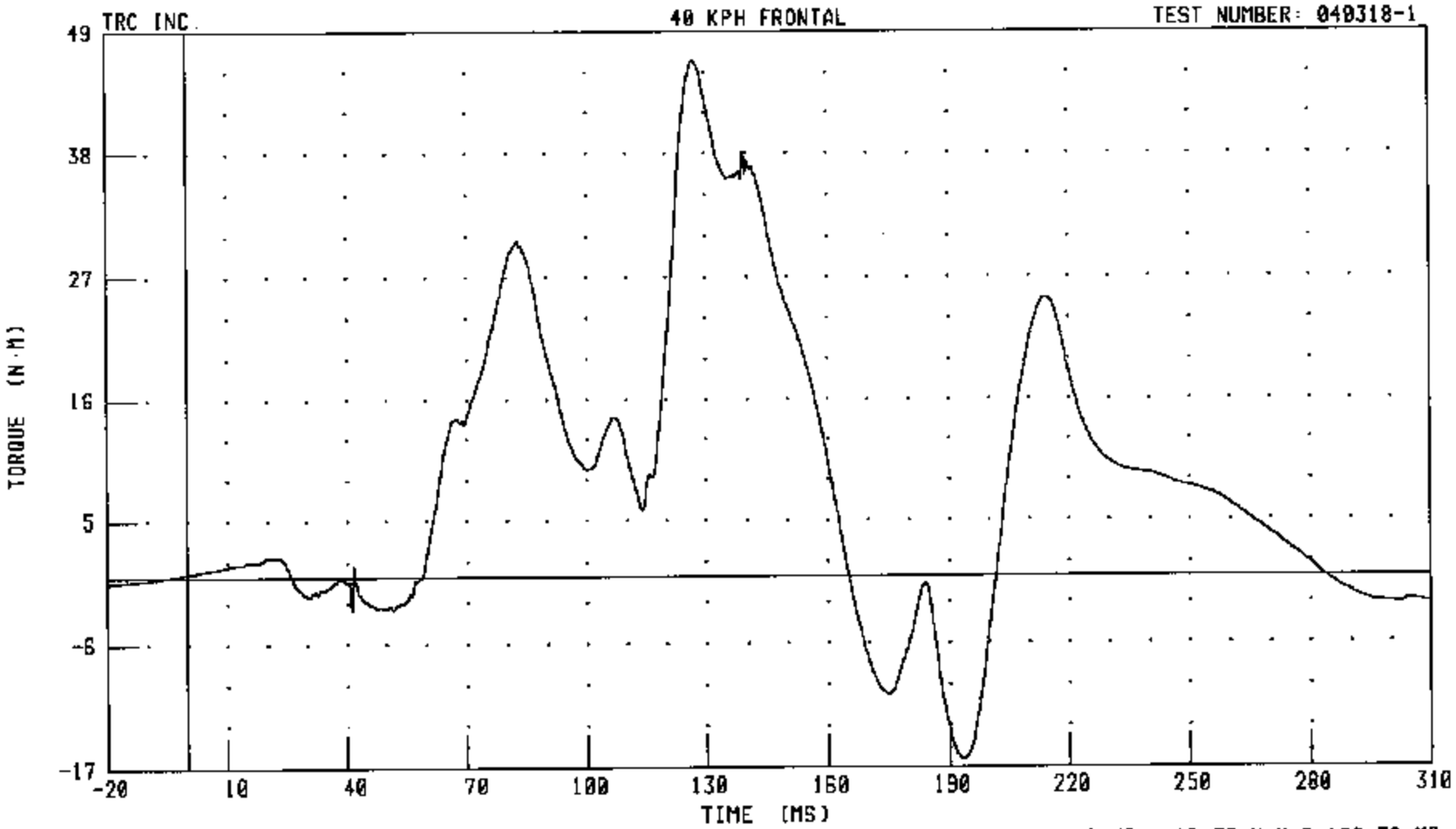
CHANNEL: NEKYM1 FILTER: CH. CLASS 600 PEAK DATA: 54.81 N-M @ 127.36 MS; -22.28 N-M @ 193.68 MS

040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NECK MOMENT ABOUT Z AXIS
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
See Data Acquisition Explanations
TORQUE (N-M X 10-1)
21
6
-9
-24
-39
-54
-69
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKZM1
FILTER: CH. CLASS 600
PEAK DATA: 1.97 N-M @ 235.44 MS; -6.53 N-M @ 146.48 MS

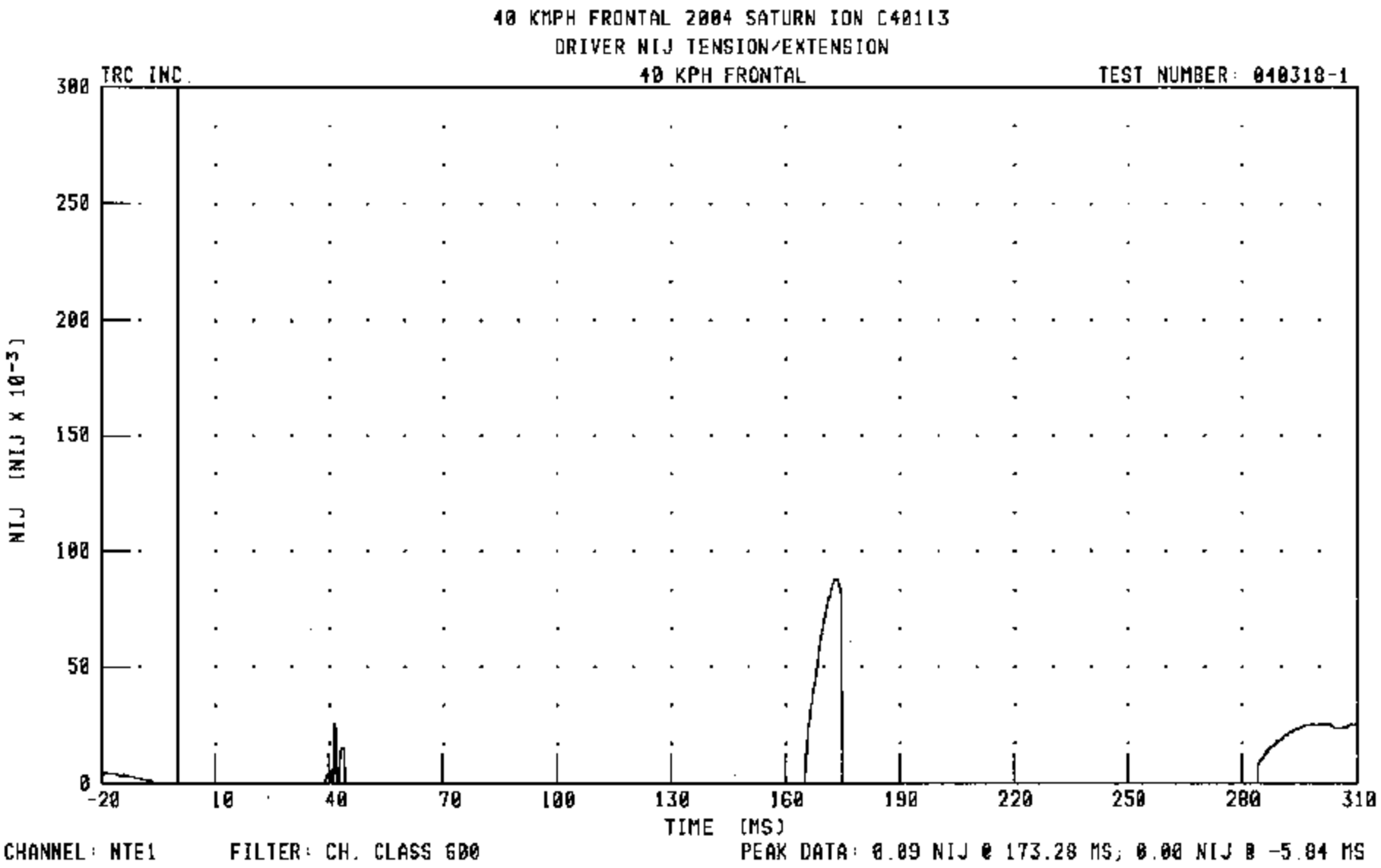
040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NECK MOMENT OCCIPITAL CONDYLE ABOUT Y AXIS

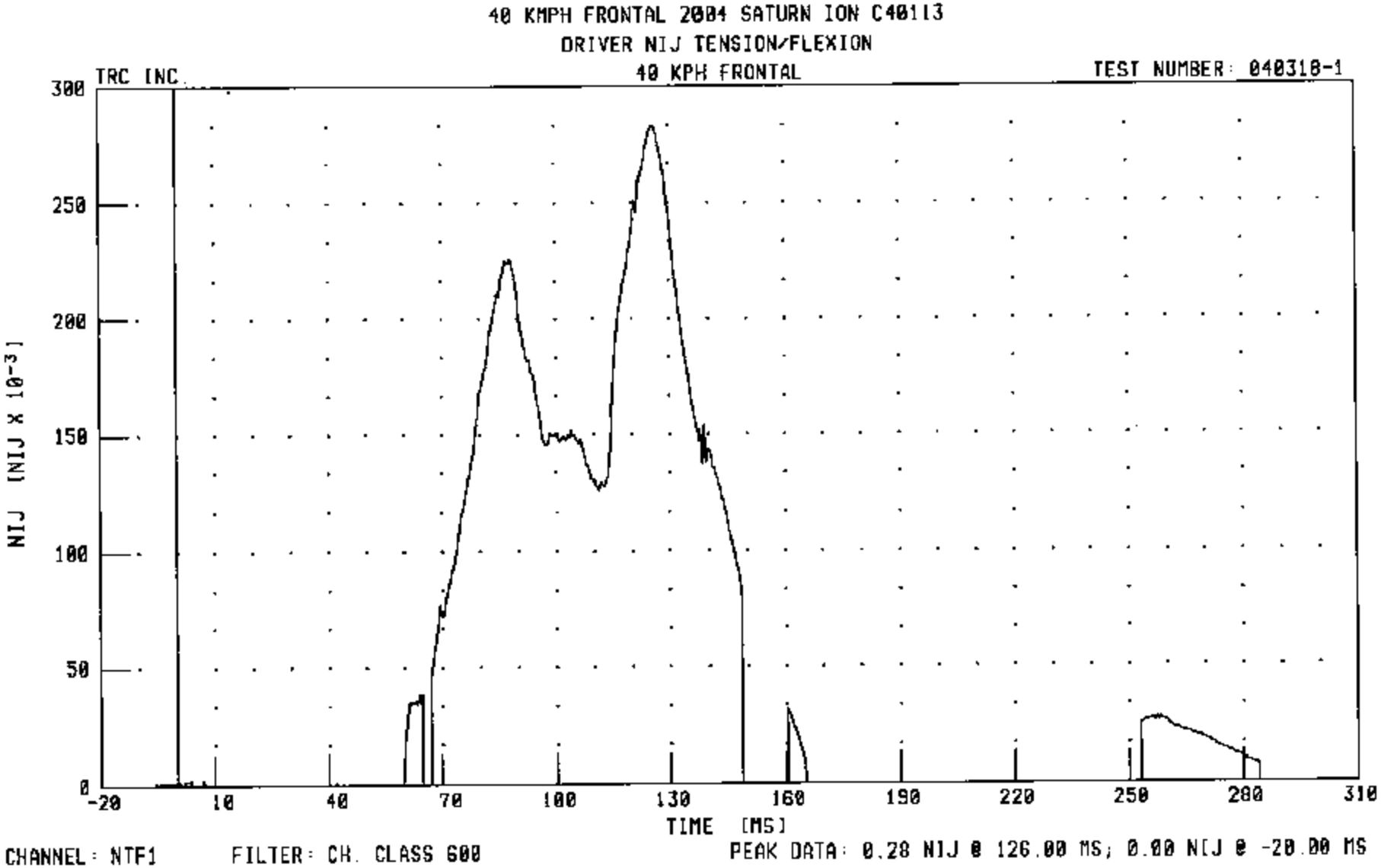


CHANNEL: NEKOM1 FILTER: CH. CLASS 600
PEAK DATA: 46.30 N-M @ 127.36 MS; -16.33 N-M @ 193.52 MS

040318-1

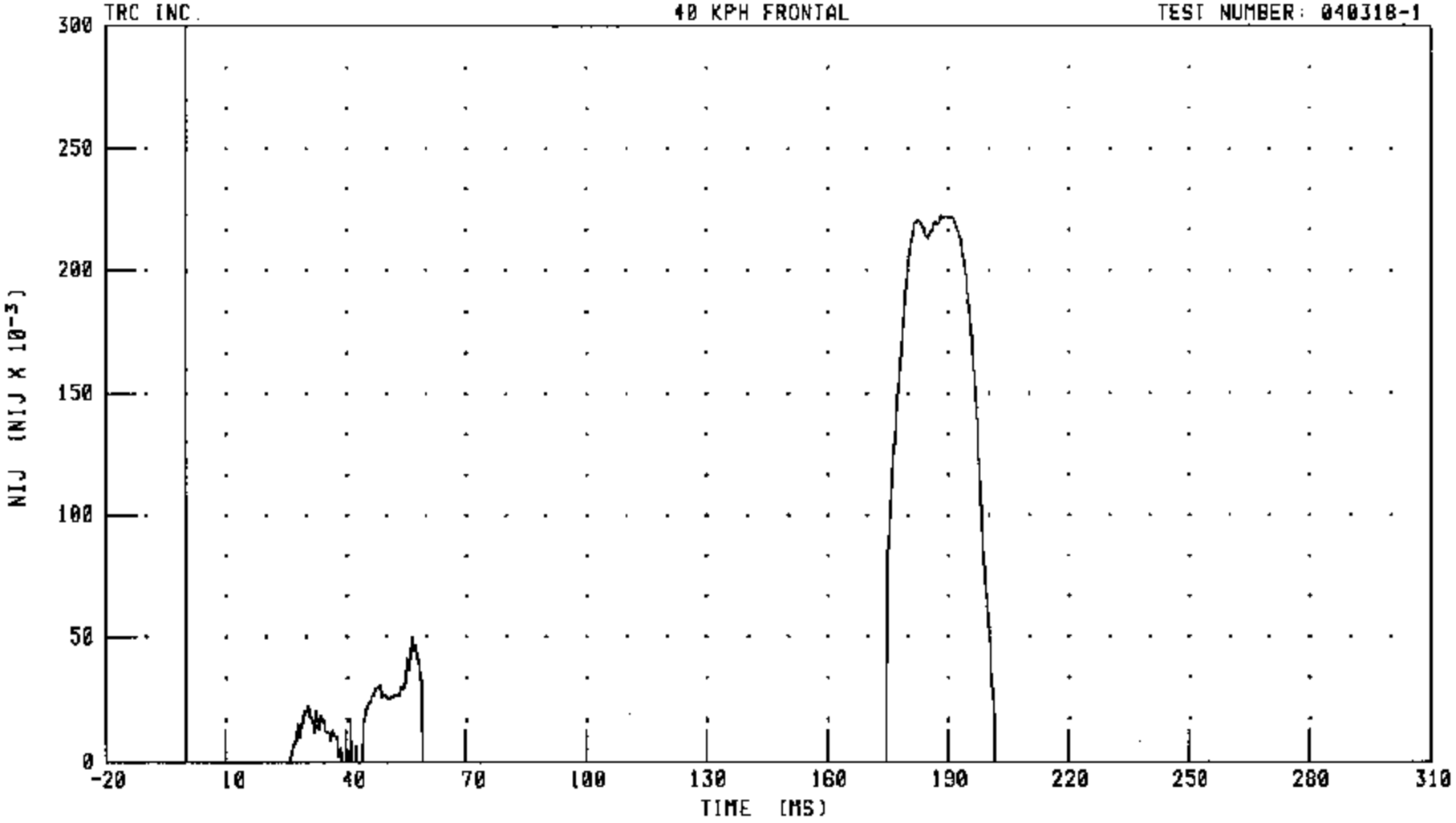

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NIJ TENSION/EXTENSION
40 KPH FRONTAL
TRC INC.
TEST NUMBER: 040318-1
300
250
200
150
100
50
0
NIJ (NIJ X 10-3)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NTE1
FILTER: CH. CLASS 600
PEAK DATA: 0.09 NIJ @ 173.28 MS; 0.00 NIJ @ -5.84 MS

040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NIJ TENSION/FLEXION
40 KPH FRONTAL
TRC INC.
TEST NUMBER: 040318-1
NIJ [NIJ X 10-3]
300
250
200
150
100
50
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME [MS]
CHANNEL: NTF1
FILTER: CH. CLASS 600
PEAK DATA: 0.28 NIJ @ 126.00 MS; 0.00 NIJ @ -20.00 MS

040318-1

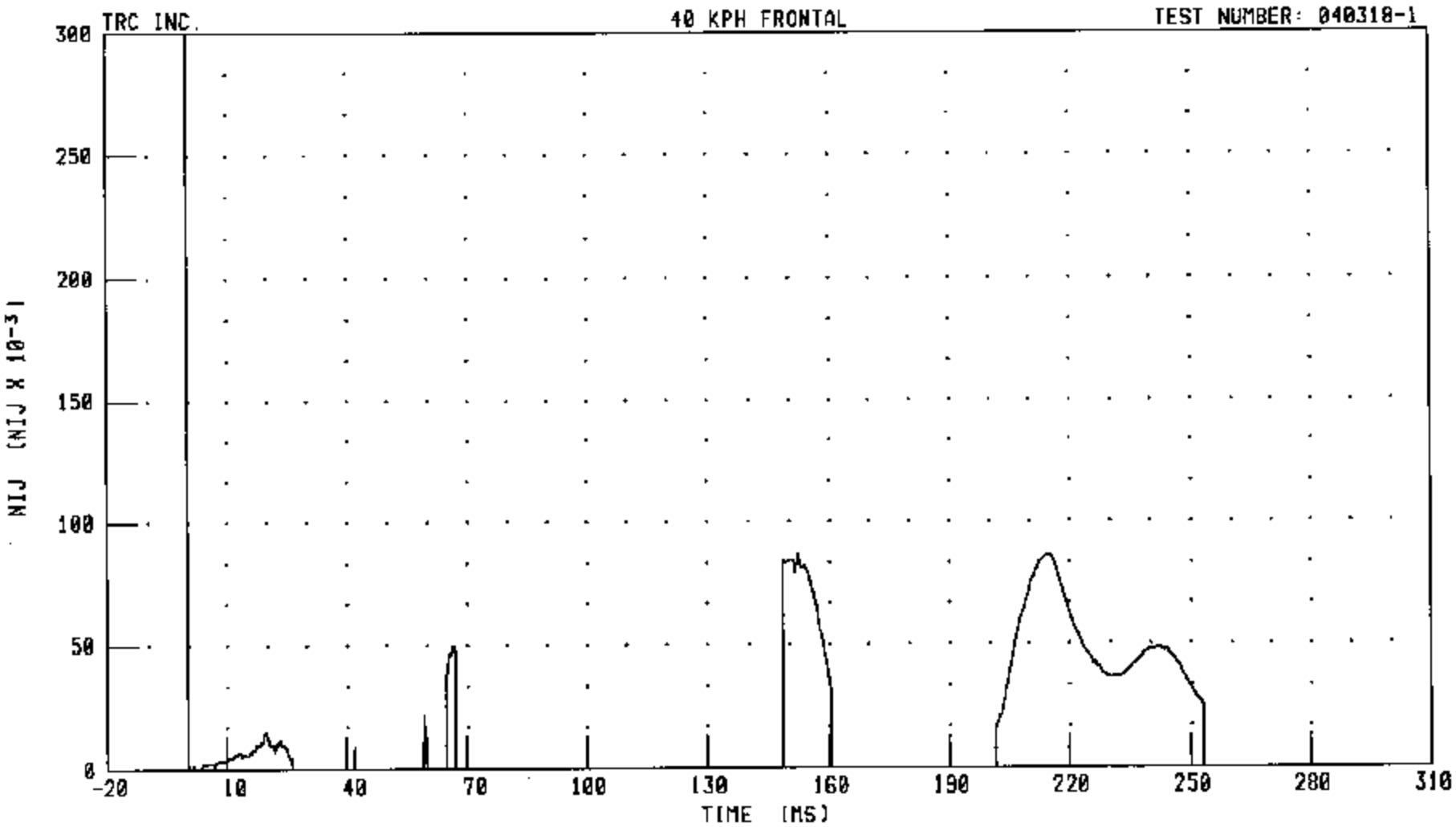
40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NIJ COMPRESSION/EXTENSION



CHANNEL: NCE1 FILTER: CH. CLASS 600 PEAK DATA: 0.22 NIJ @ 189.52 MS; 0.00 NIJ @ -20.00 MS

040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER NIJ COMPRESSION/FLEXION

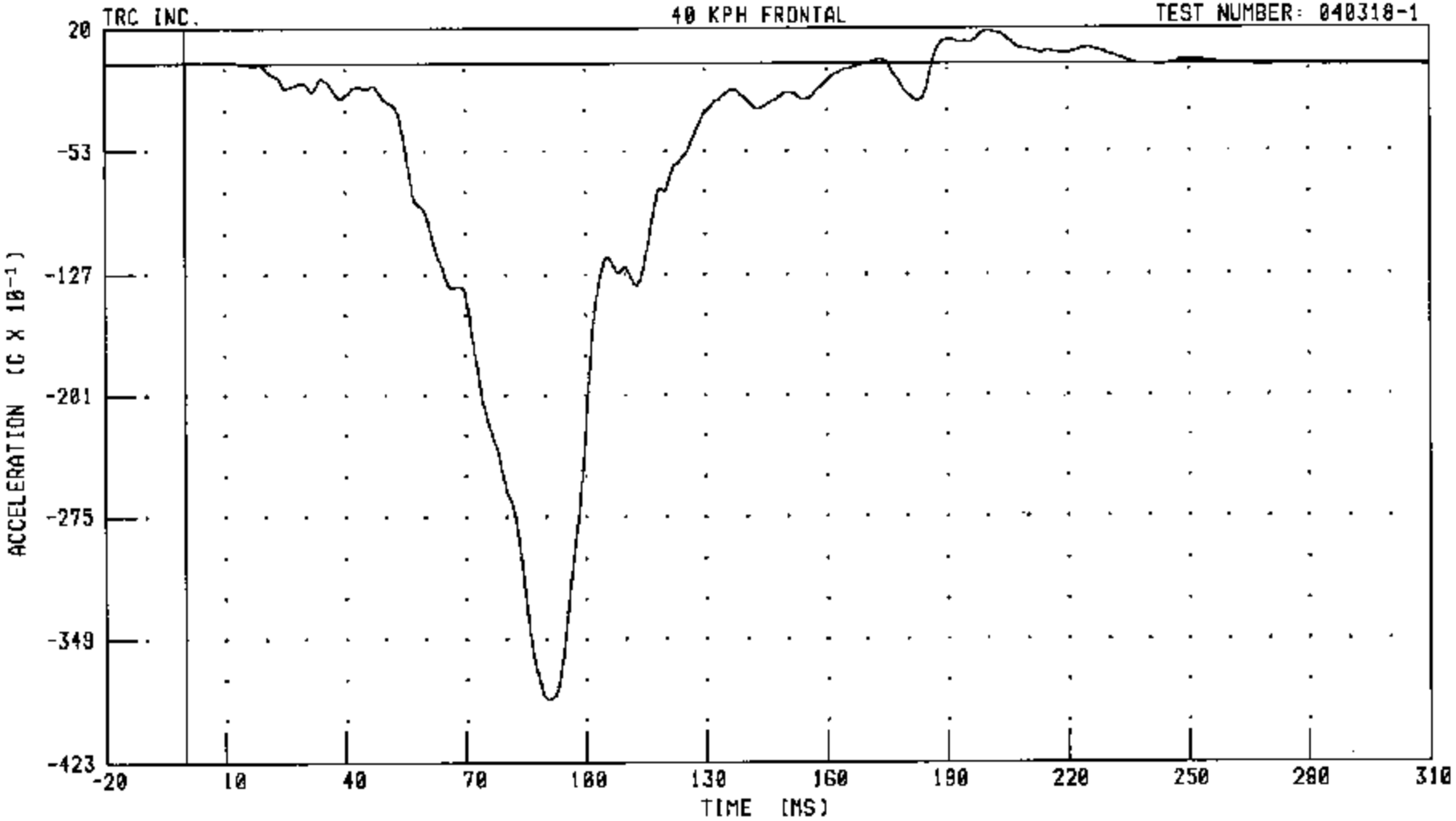


CHANNEL: NCF1 FILTER: CH. CLASS 600 PEAK DATA: 0.09 NIJ @ 152.32 MS; 0.00 NIJ @ -20.00 MS

6-16

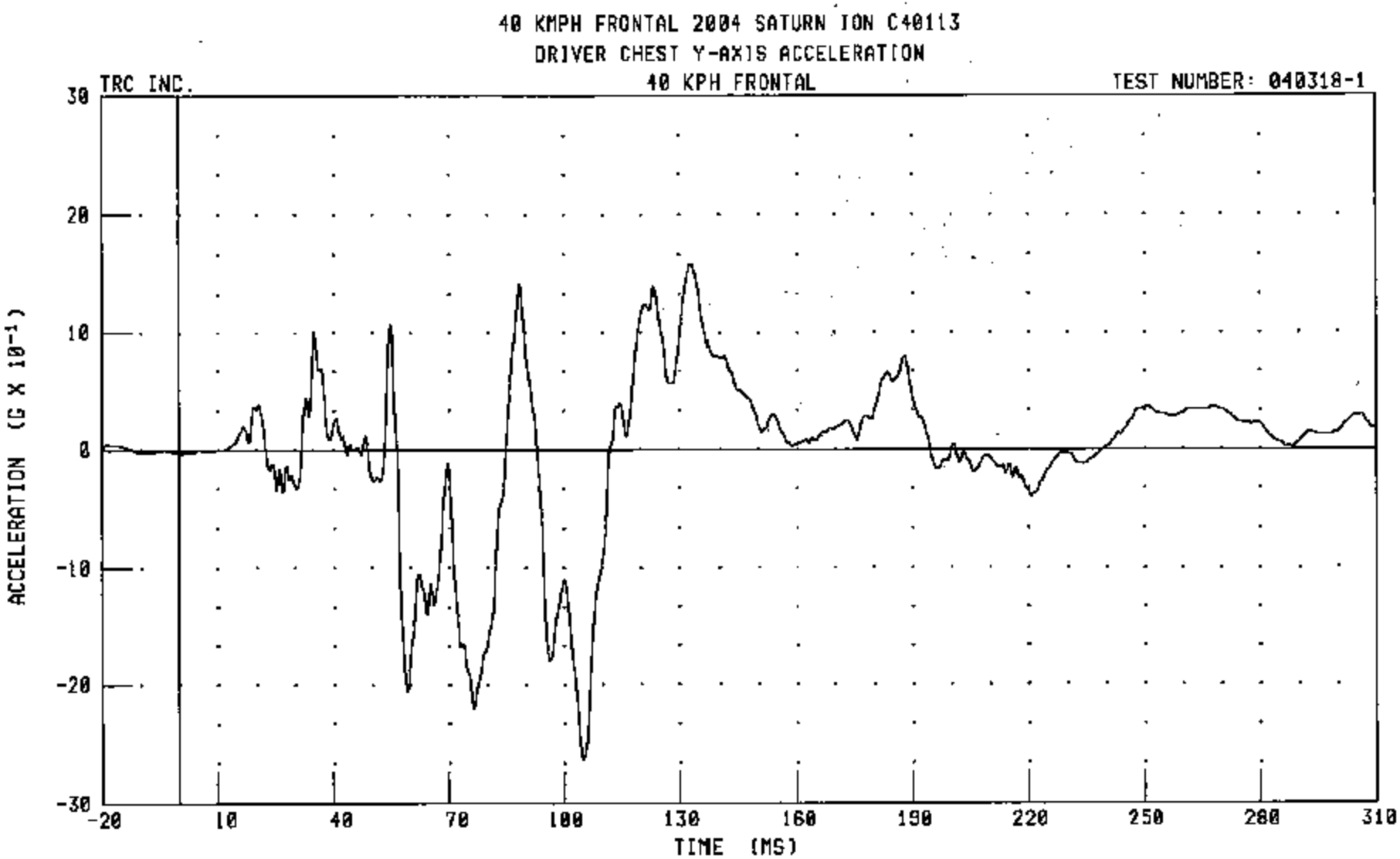
040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER CHEST X-AXIS ACCELERATION



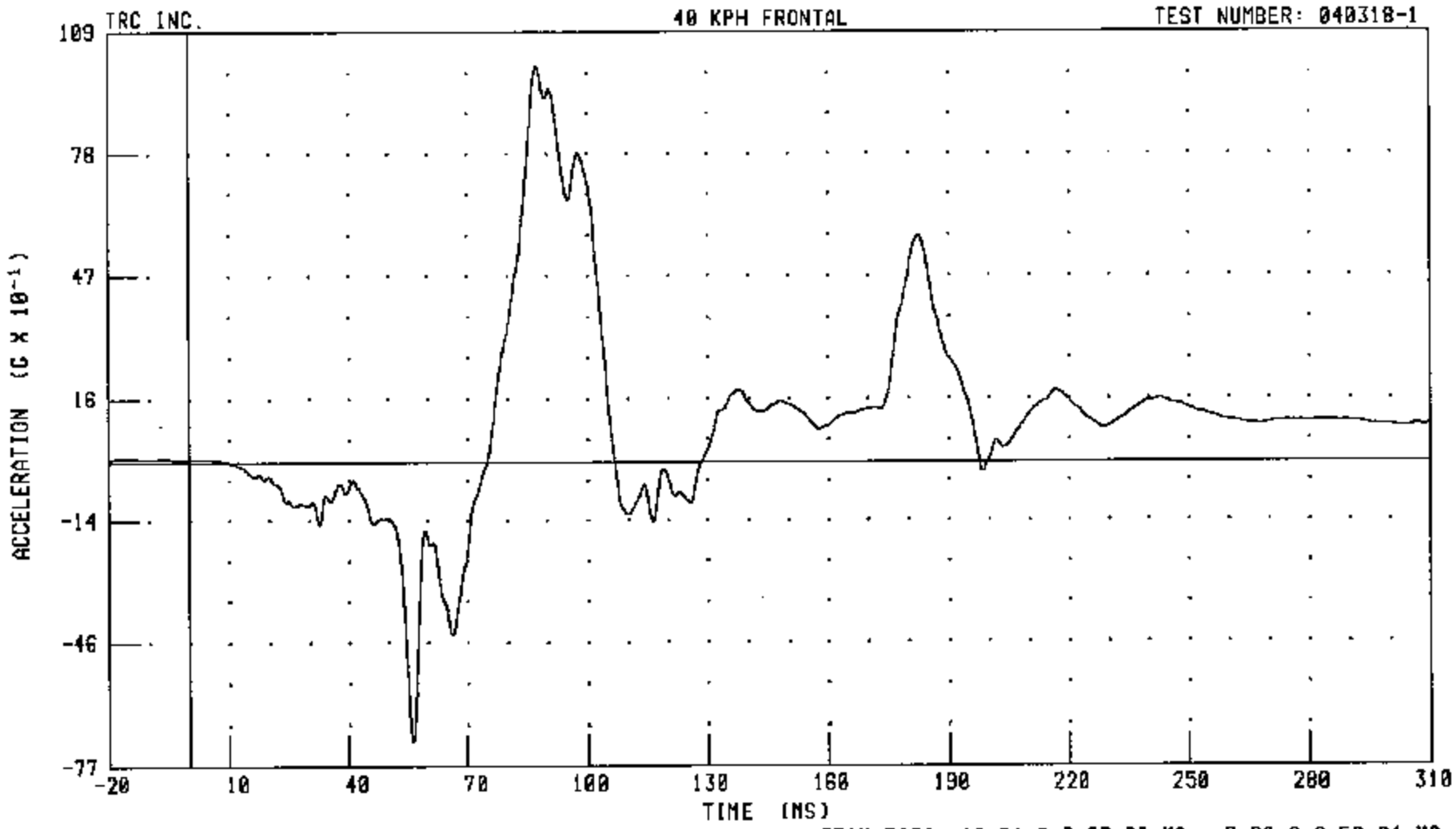
CHANNEL: CSTXG1 FILTER: CH. CLASS 180 PEAK DATA: 1.96 G @ 200.80 MS; -38.54 G @ 90.48 MS

040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER CHEST Y-AXIS ACCELERATION
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
ACCELERATION (G X 10⁻¹)
30
20
10
0
-10
-20
-30
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTYG1
FILTER: CH. CLASS 180
PEAK DATA: 1.58 G @ 133.04 MS; -2.64 G @ 105.12 MS

040318-1

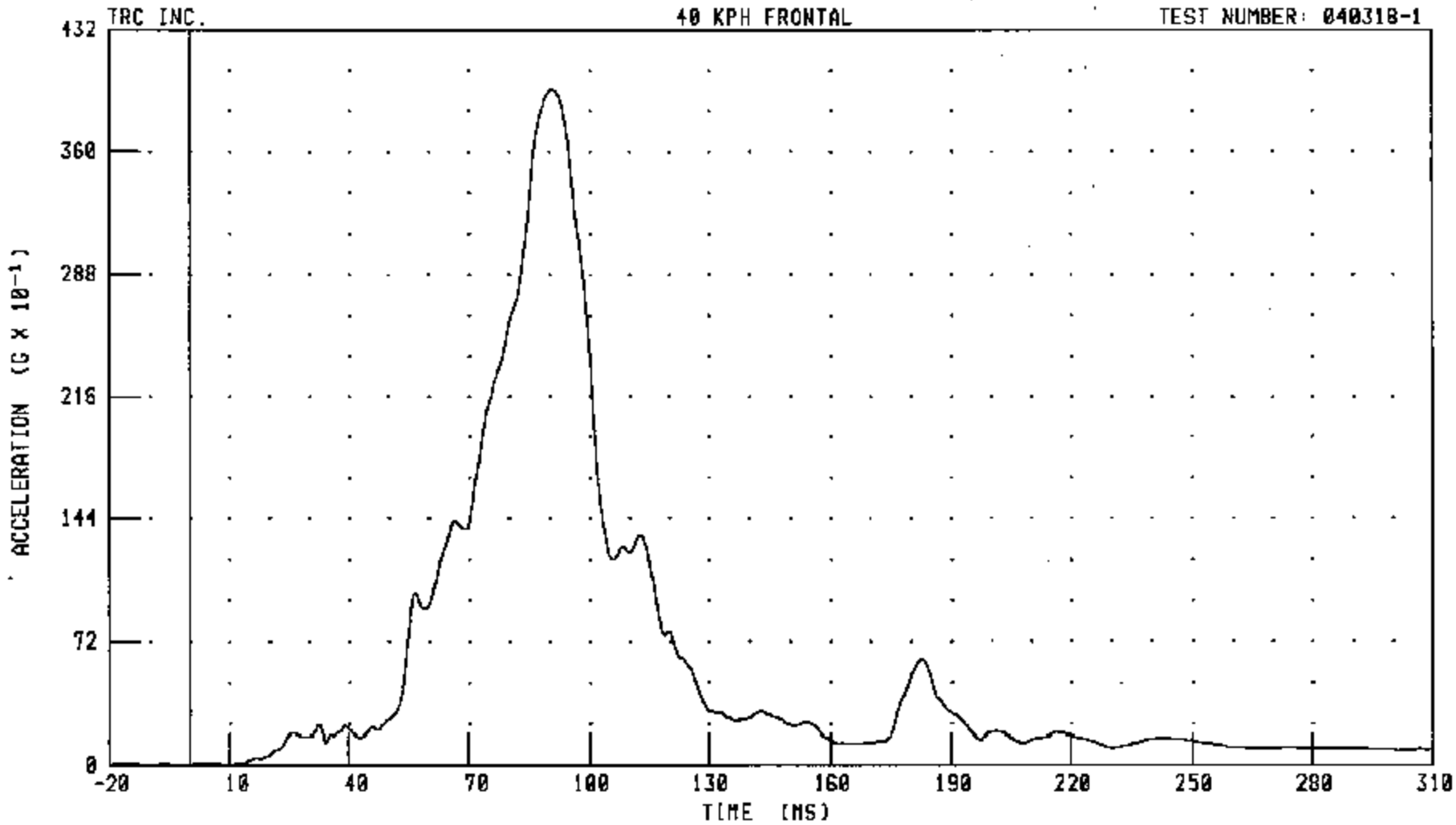
40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER CHEST Z-AXIS ACCELERATION



CHANNEL: CSTZG1 FILTER: CH. CLASS 180 PEAK DATA: 10.04 G @ 87.68 MS; -7.08 G @ 56.24 MS

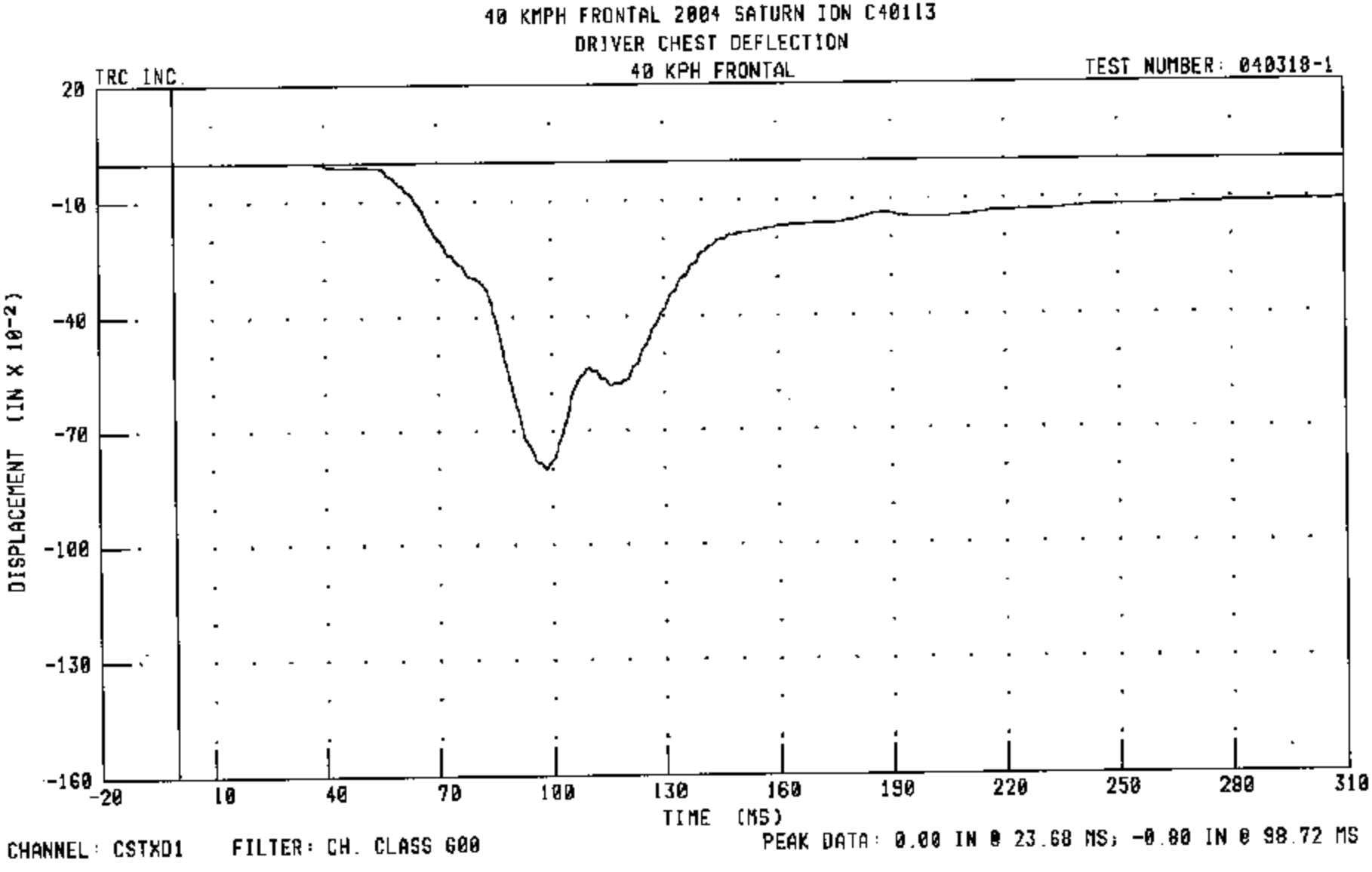
040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER CHEST RESULTANT ACCELERATION

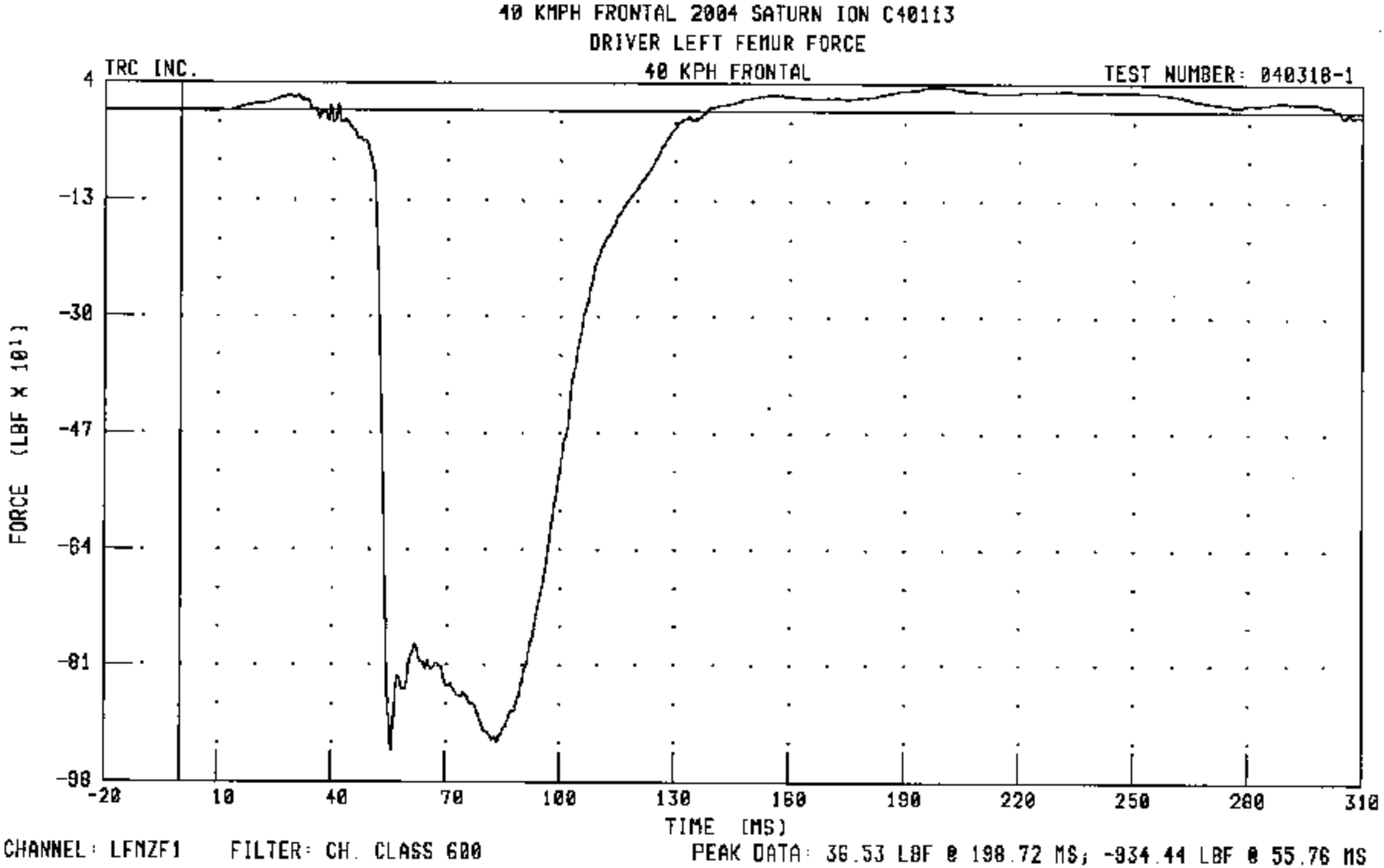


CHANNEL: CSTRC1 FILTER: CH. CLASS 180 PEAK DATA: 39.69 G @ 90.56 MS, 0.01 G @ -20.00 MS

040318-1

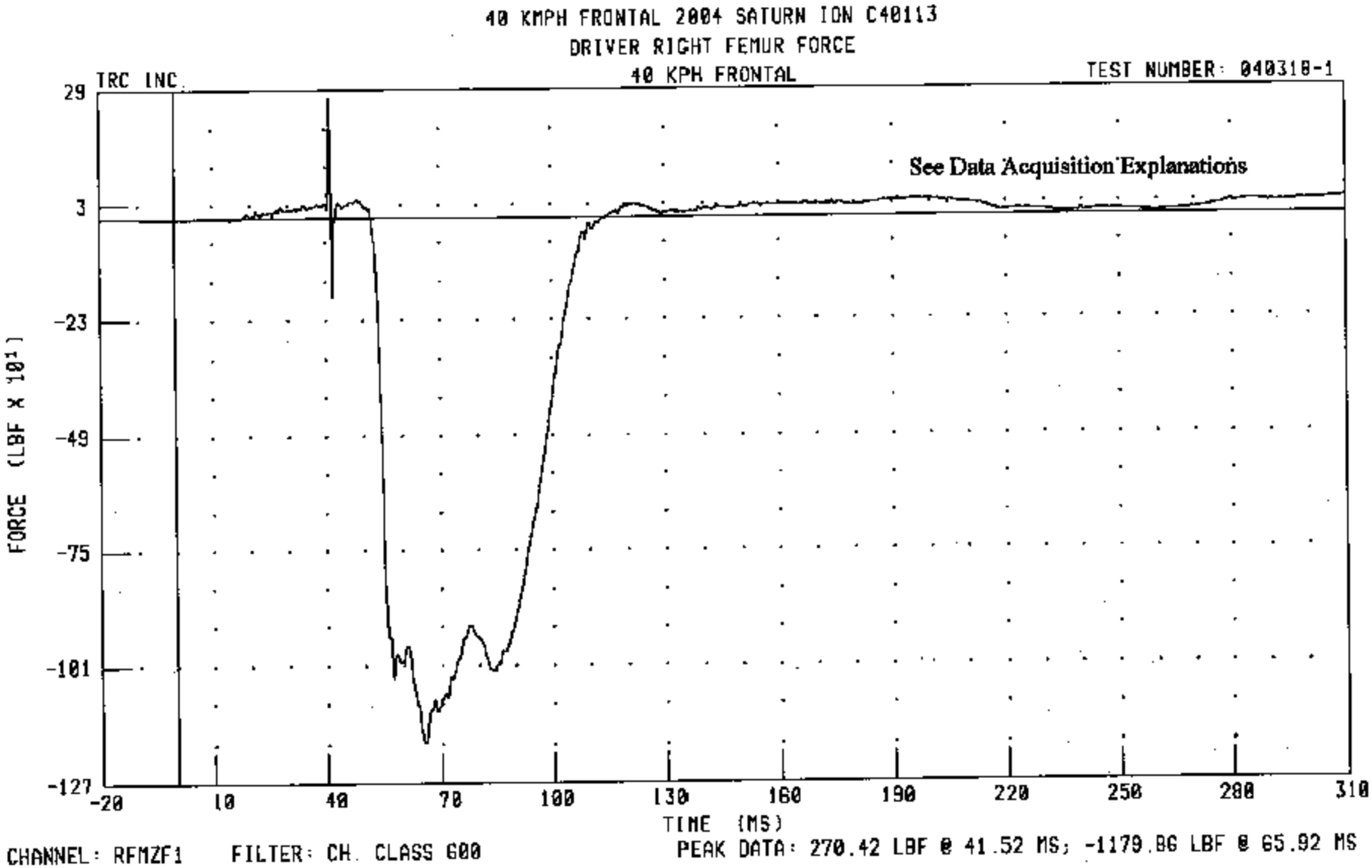

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER CHEST DEFLECTION
40 KPH FRONTAL
TRC INC.
TEST NUMBER: 040318-1
20
-10
-40
-70
-100
-130
-160
DISPLACEMENT (IN X 10-2)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXD1
FILTER: CH. CLASS 600
PEAK DATA: 0.00 IN @ 23.68 MS; -0.80 IN @ 98.72 MS

040318-1

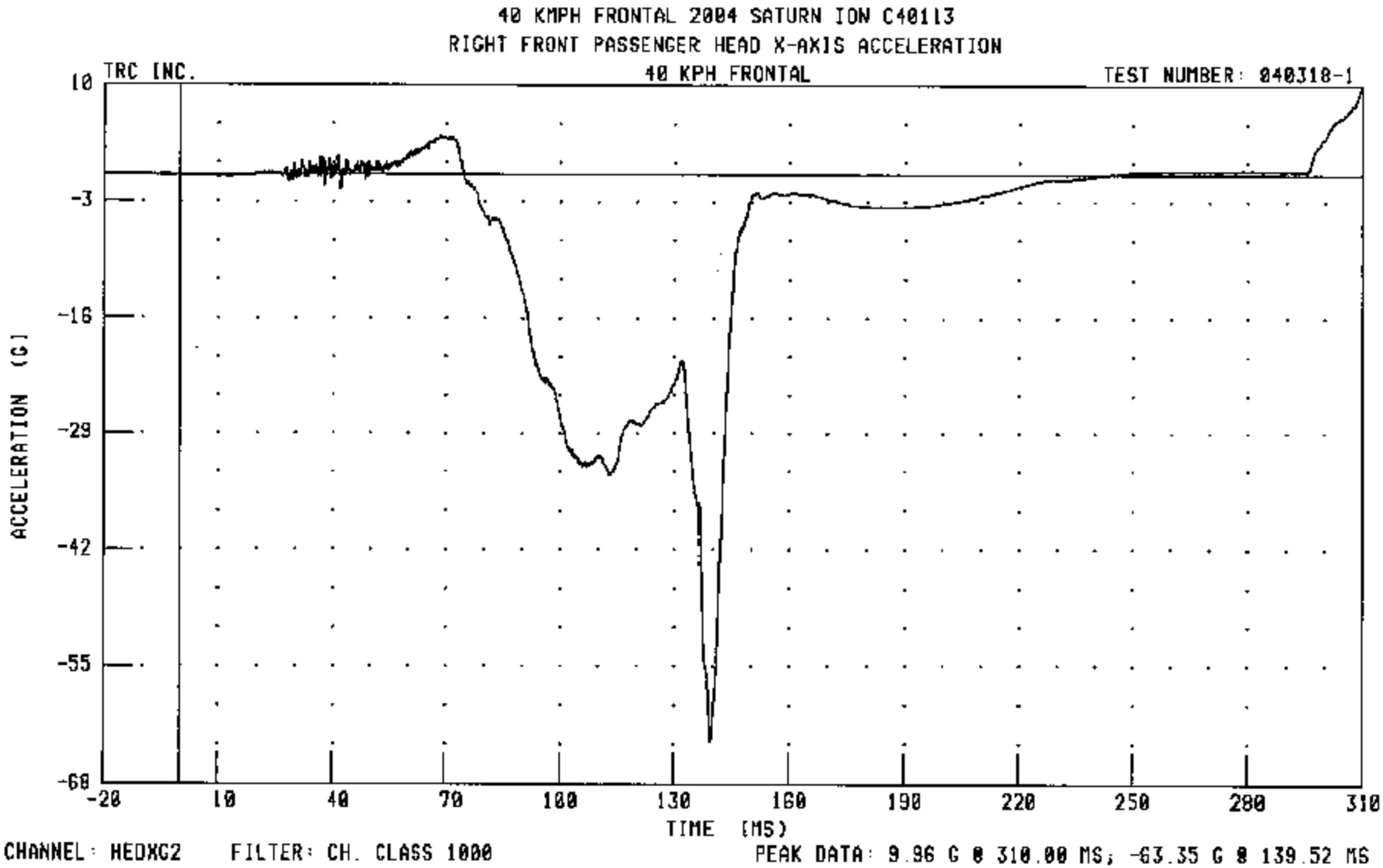

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER LEFT FEMUR FORCE
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
4
-13
-30
-47
-64
-81
-98
FORCE (LBF X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LFMZF1
FILTER: CH. CLASS 600
PEAK DATA: 36.53 LBF @ 198.72 MS; -934.44 LBF @ 55.76 MS

6-22

040318-1

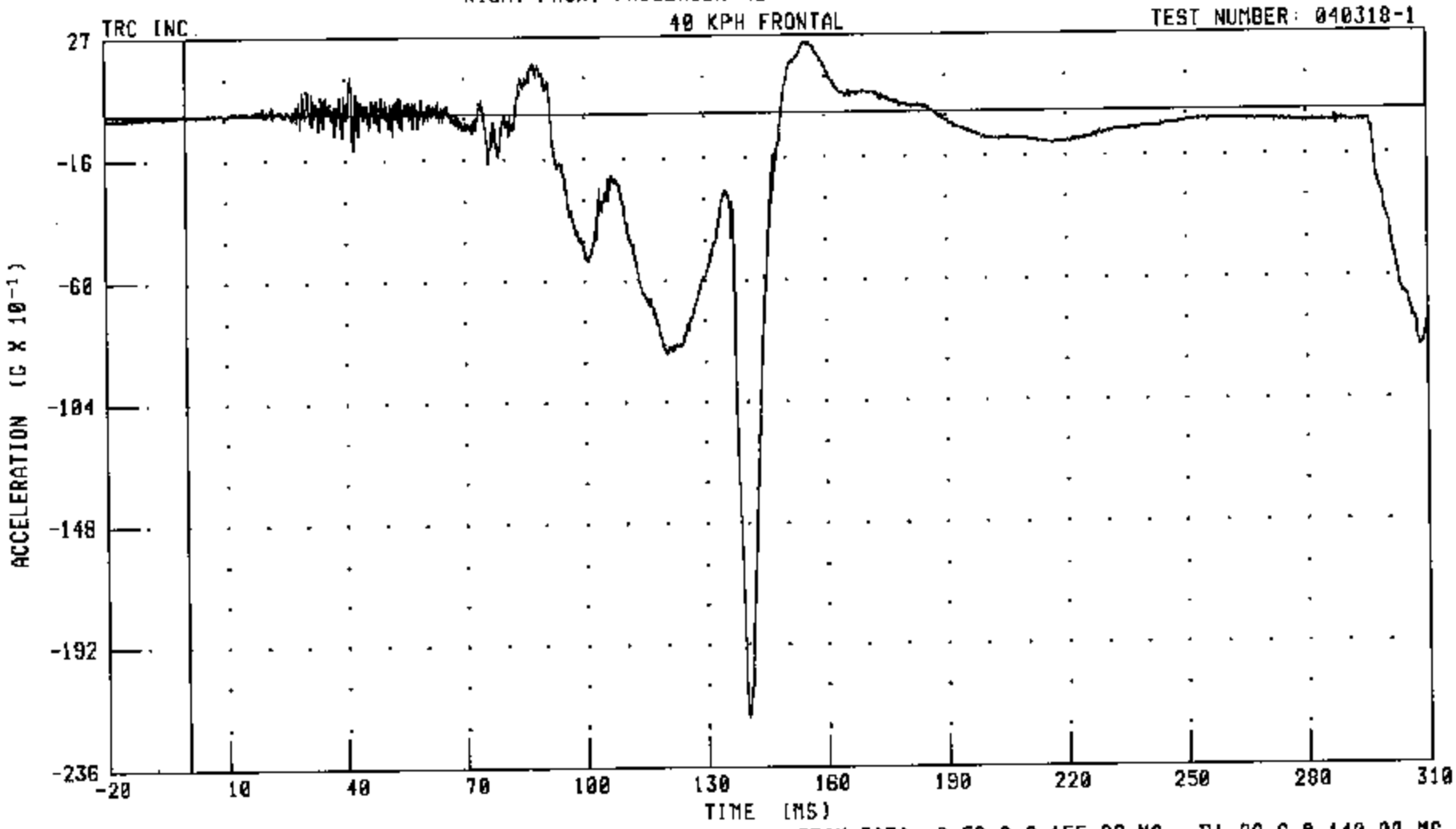

40 KMPH FRONTAL 2004 SATURN ION C40113
DRIVER RIGHT FEMUR FORCE
40 KPH FRONTAL
TRC INC
TEST NUMBER: 040318-1
See Data Acquisition Explanations
29
3
-23
-49
-75
-101
-127
FORCE (LBF X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: RFMZF1
FILTER: CH. CLASS 600
PEAK DATA: 270.42 LBF @ 41.52 MS; -1179.86 LBF @ 65.92 MS

040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
10
-3
-16
-29
-42
-55
-68
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDXC2
FILTER: CH. CLASS 1000
PEAK DATA: 9.96 G @ 310.00 MS; -63.35 G @ 139.52 MS

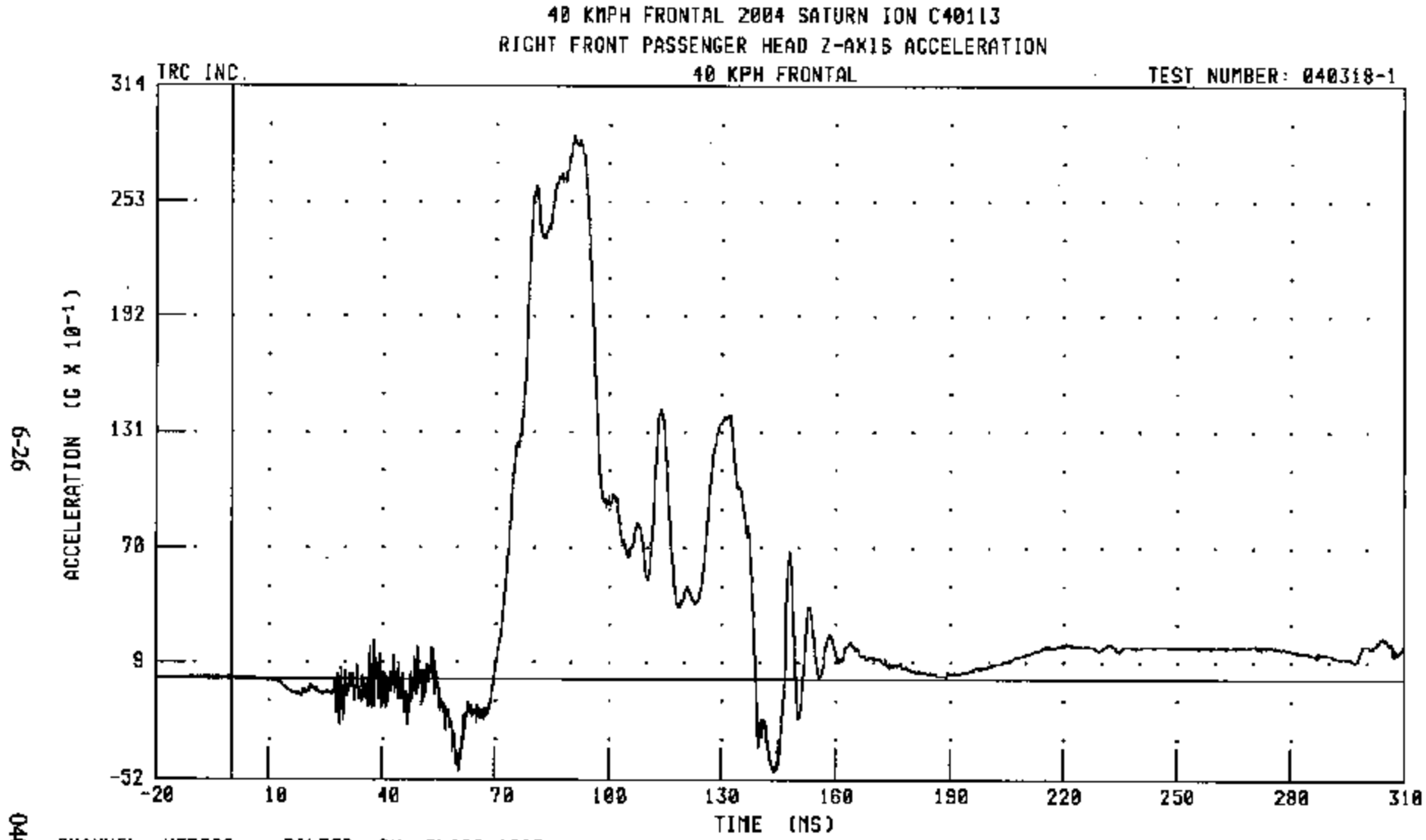
040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION



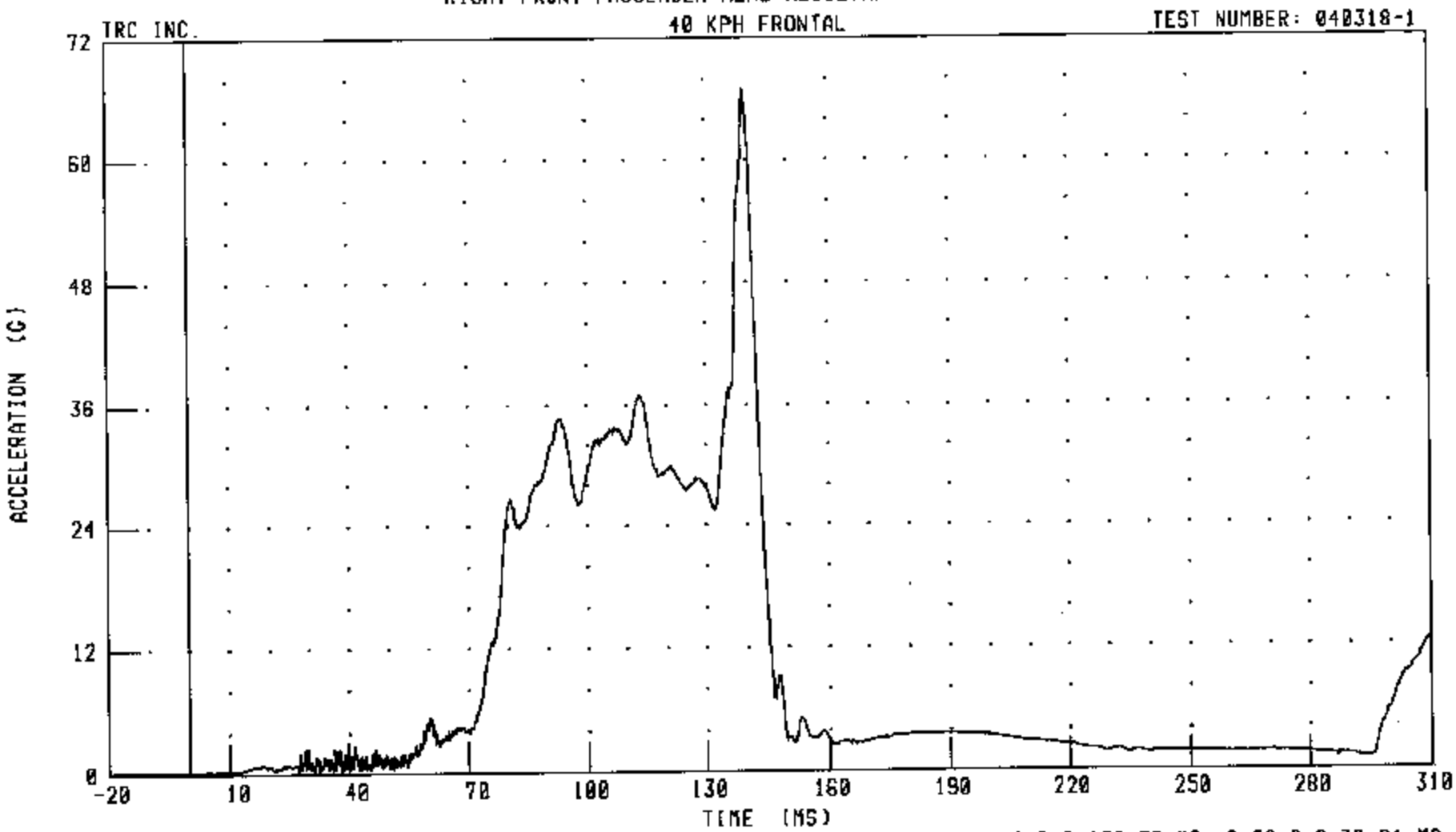
CHANNEL: HEDYG2 FILTER: CH. CLASS 1000 PEAK DATA: 2.56 G @ 155.20 MS; -21.89 G @ 140.00 MS

040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
ACCELERATION (G X 10-1)
314
253
192
131
70
9
-52
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDZG2
FILTER: CH. CLASS 1000
PEAK DATA: 28.75 G @ 90.96 MS; -4.78 G @ 143.76 MS

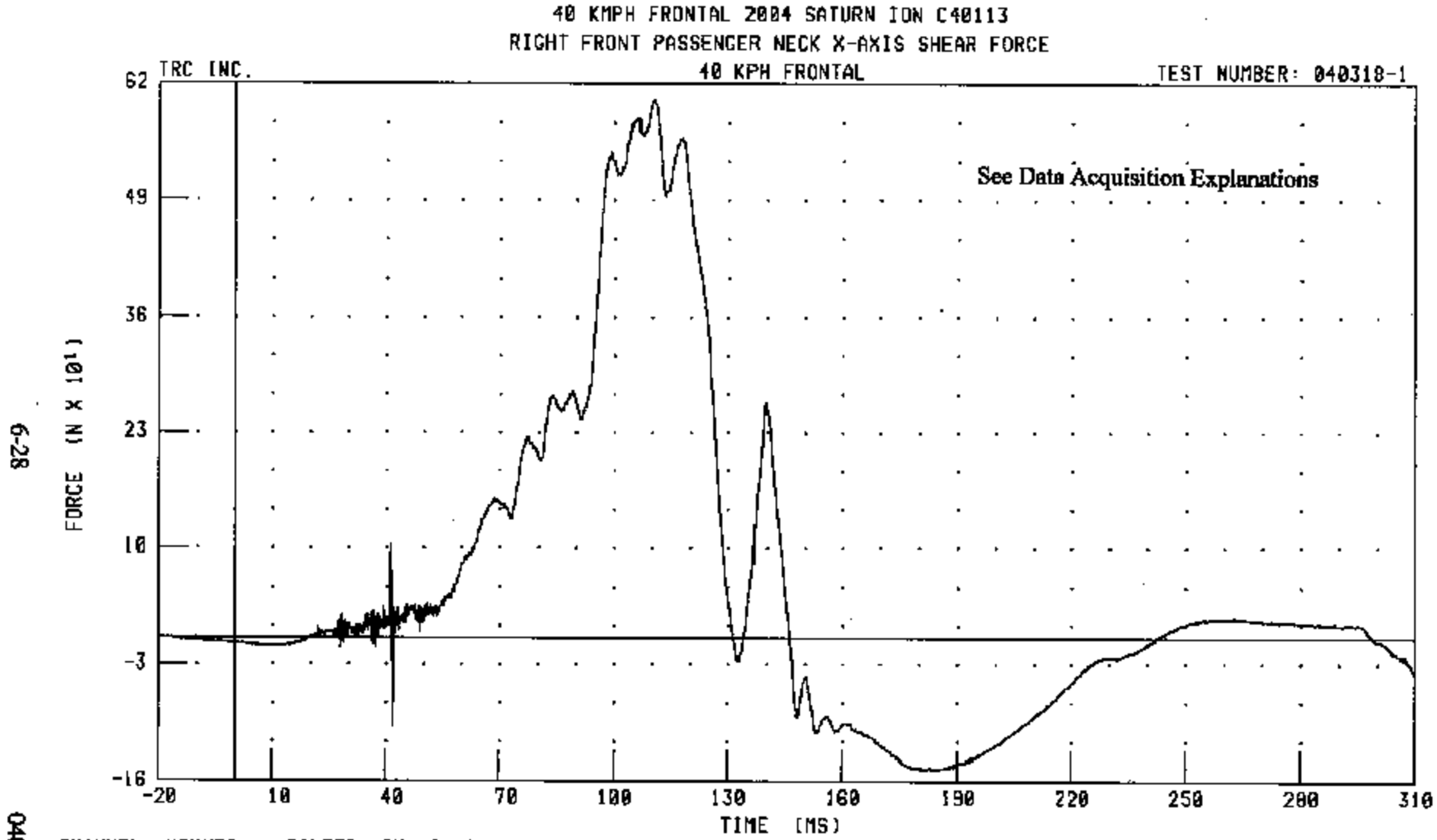
040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION



CHANNEL: HEDRG2 FILTER: CH. CLASS 1000 PEAK DATA: 66.99 G @ 139.52 MS; 0.06 G @ 38.24 MS

040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
See Data Acquisition Explanations
FORCE (N X 10¹)
62
49
36
23
10
-3
-16
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKXF2
FILTER: CH. CLASS 1000
PEAK DATA: 601.61 N @ 110.16 MS; -147.88 N @ 101.44 MS

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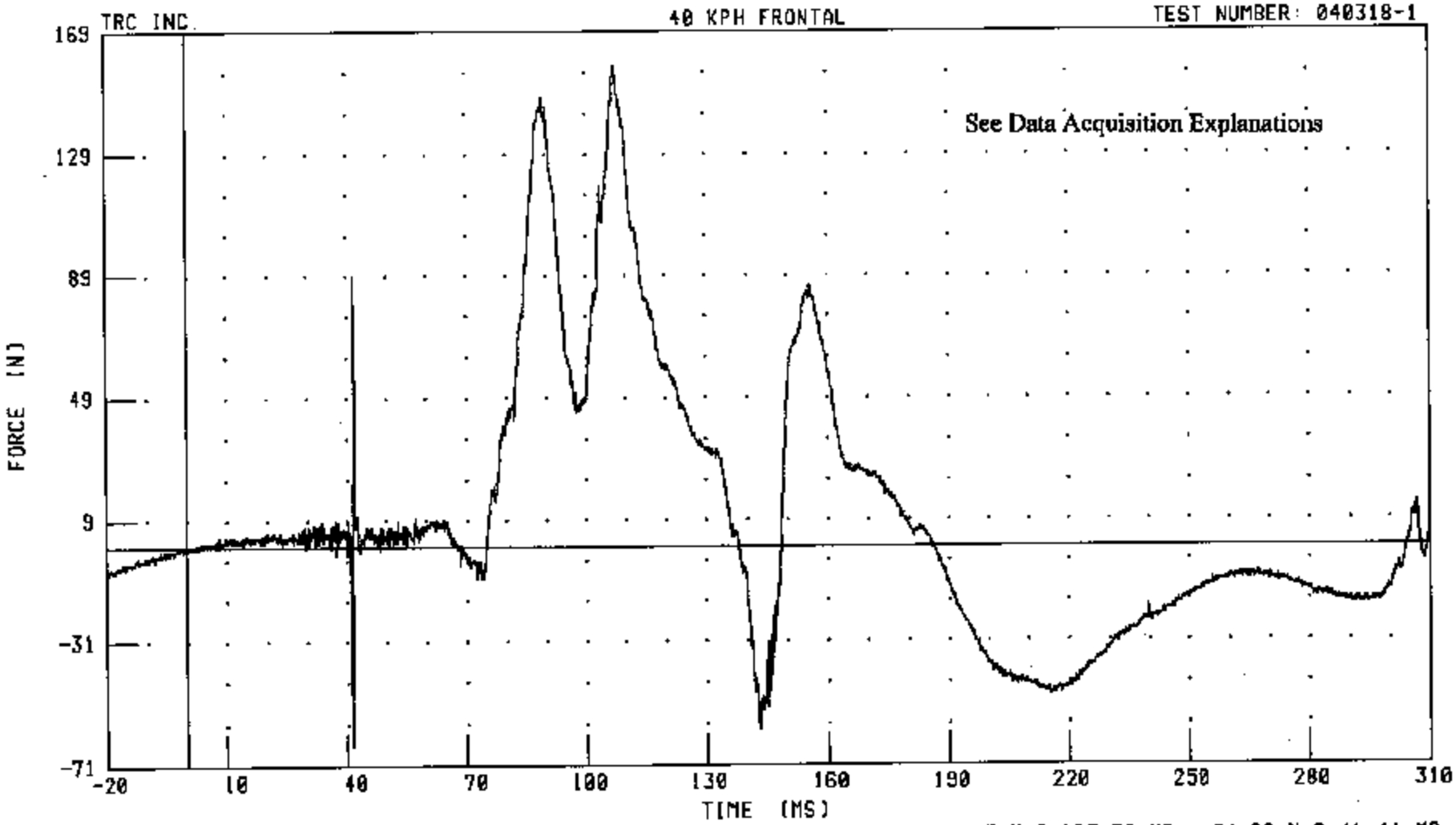
040318-1

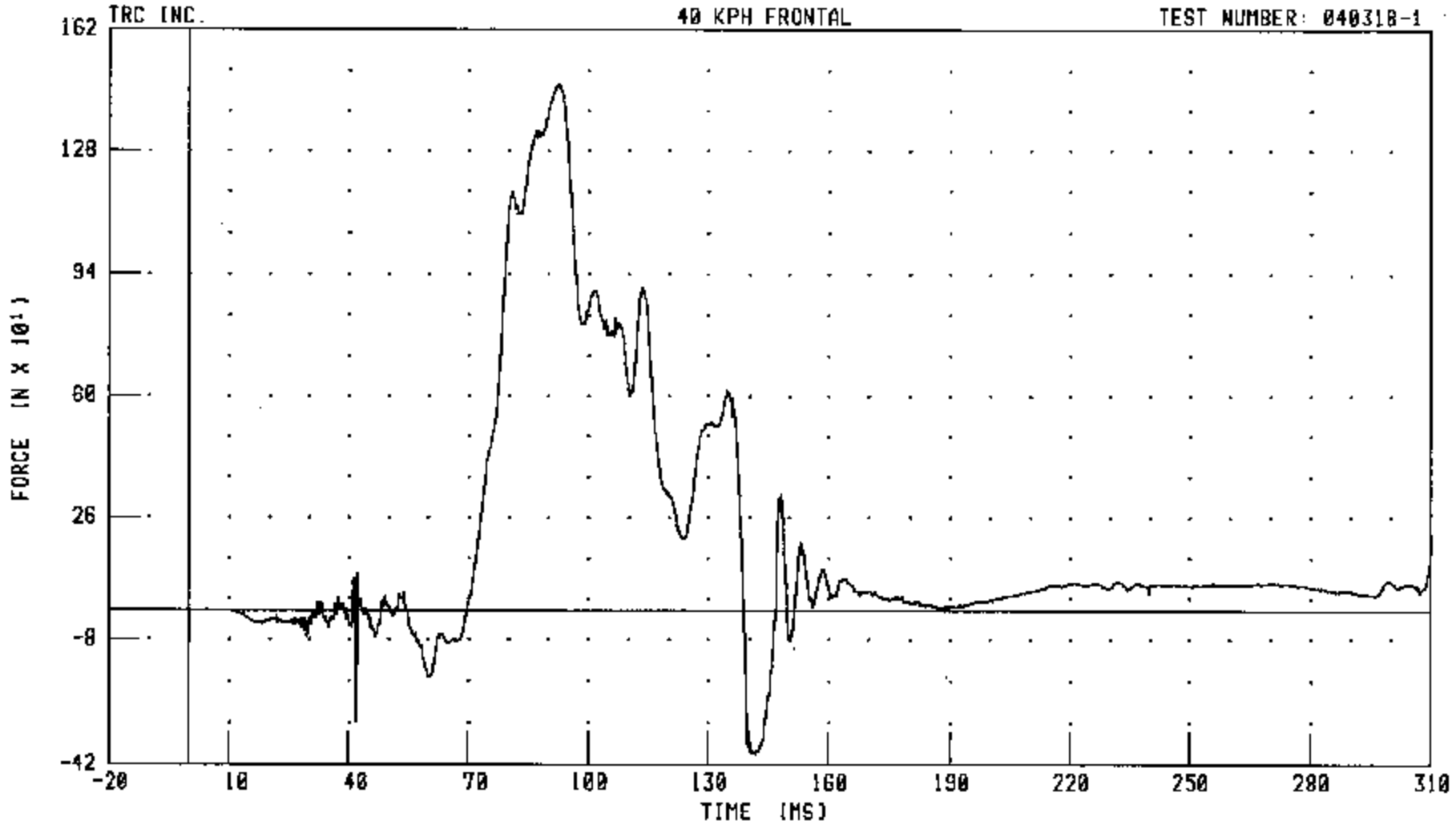
40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE



CHANNEL: NEKYF2 FILTER: CH. CLASS 1000
PEAK DATA: 158.05 N @ 107.36 MS; -64.92 N @ 41.44 MS

040318-1

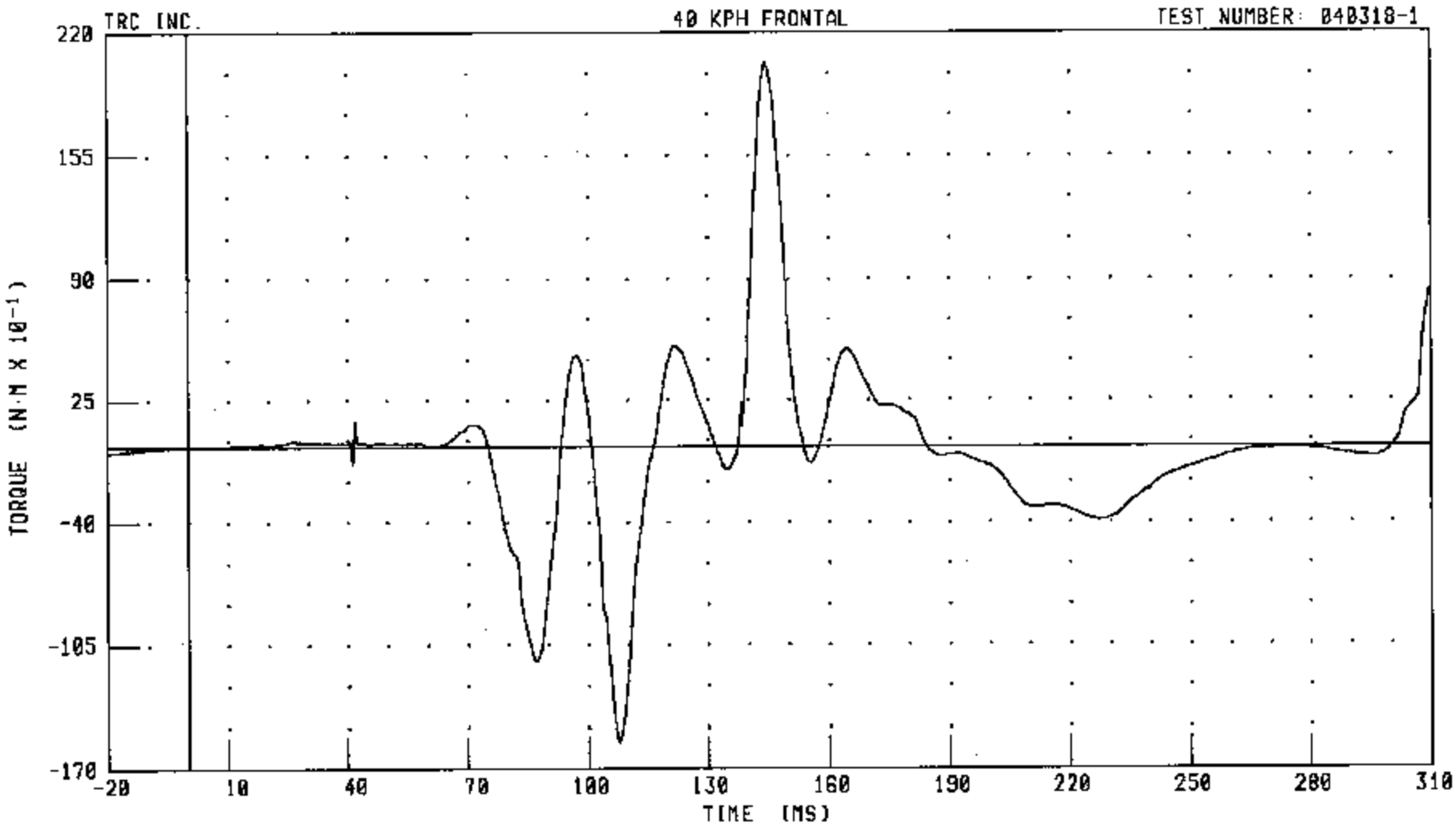
40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE



CHANNEL: NEKZF2 FILTER: CH. CLASS 1000 PEAK DATA: 1468.56 N @ 92.48 MS, -390.34 N @ 141.68 MS

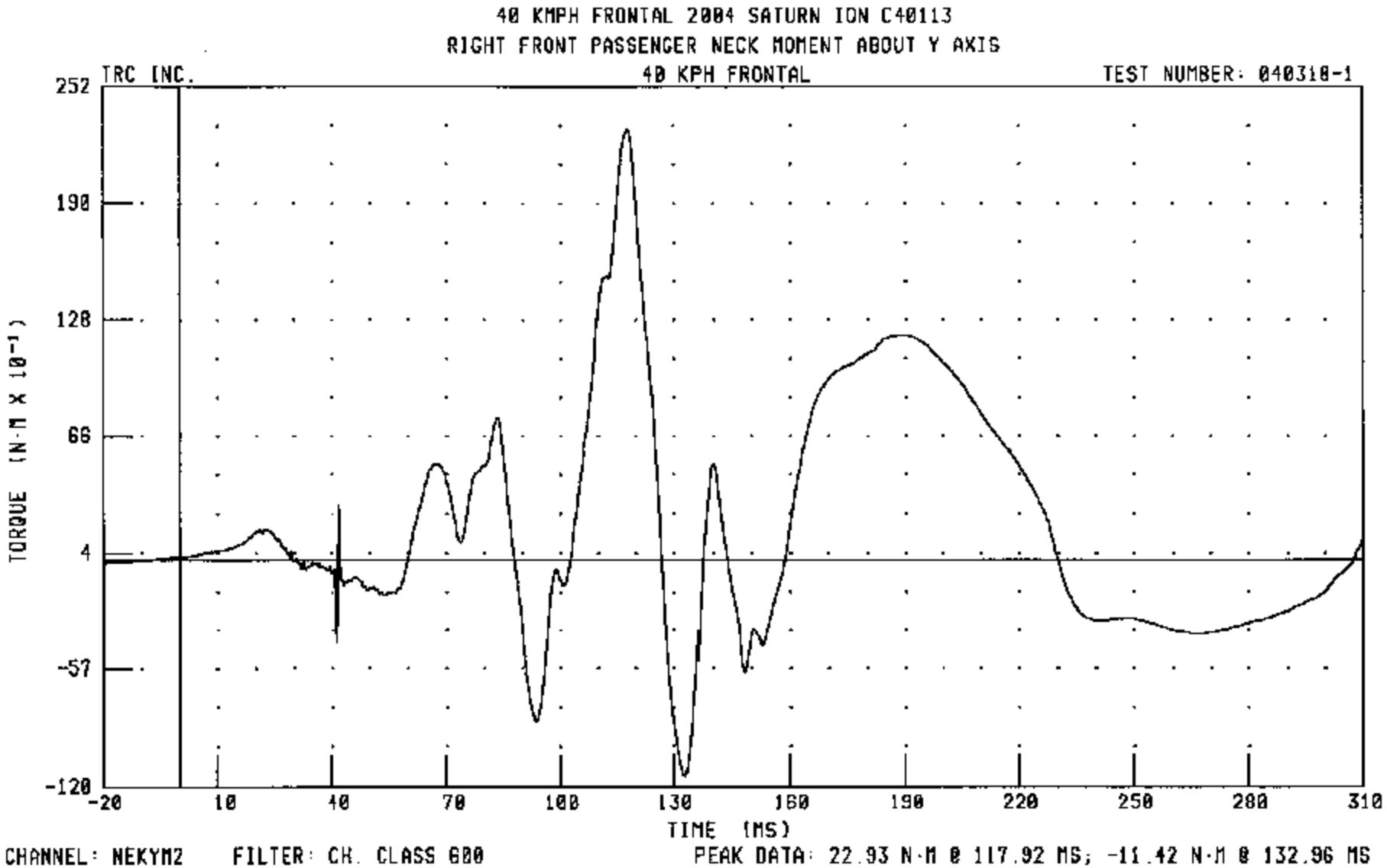
040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS

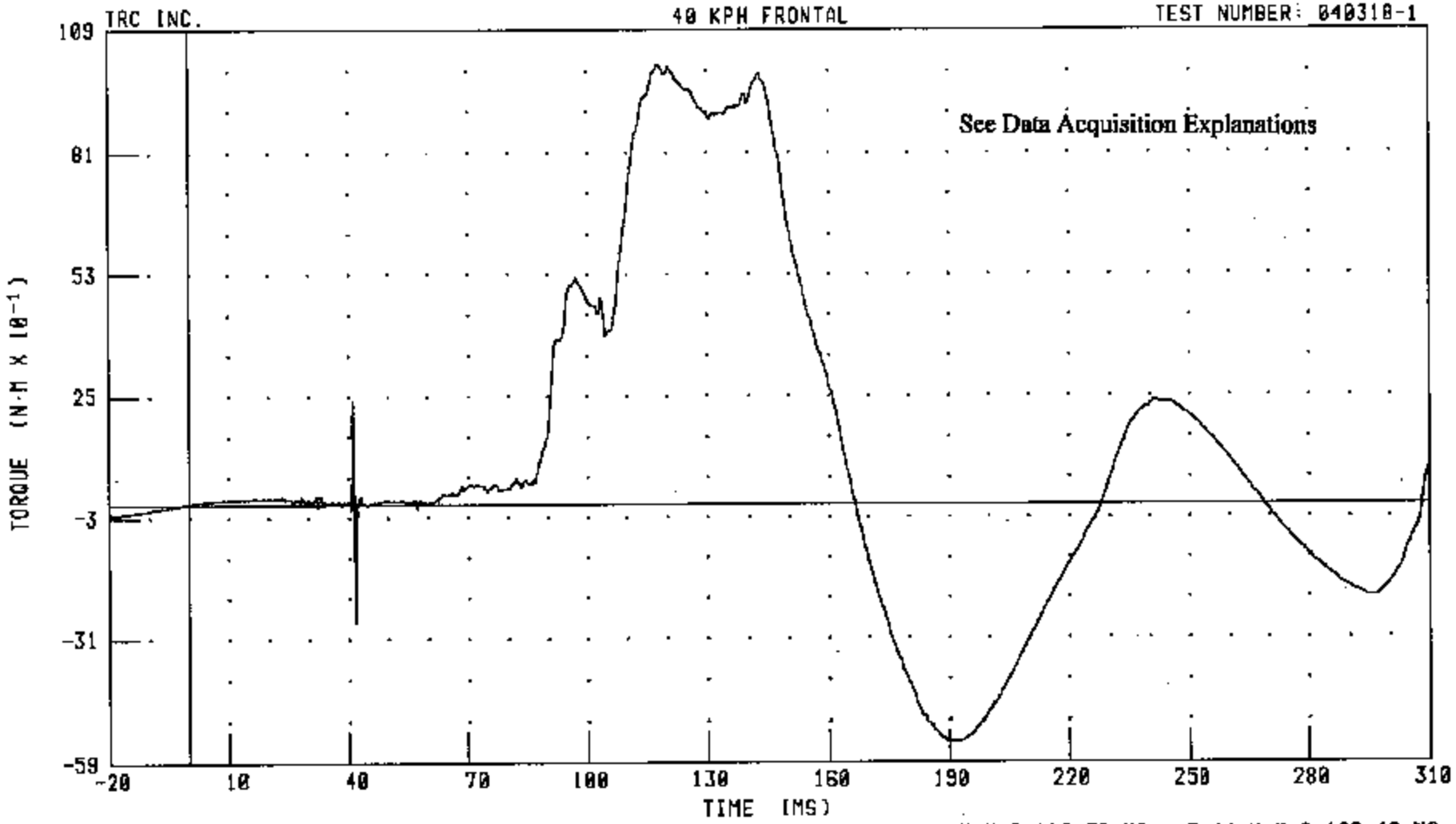


CHANNEL: NEKXM2 FILTER: CH. CLASS 600
PEAK DATA: 20.35 N·M @ 144.40 MS; -15.64 N·M @ 107.68 MS

040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
252
190
128
66
4
-57
-120
TORQUE (N-M X 10⁻¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKYM2
FILTER: CH. CLASS 600
PEAK DATA: 22.93 N-M @ 117.92 MS; -11.42 N-M @ 132.96 MS

40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Z AXIS

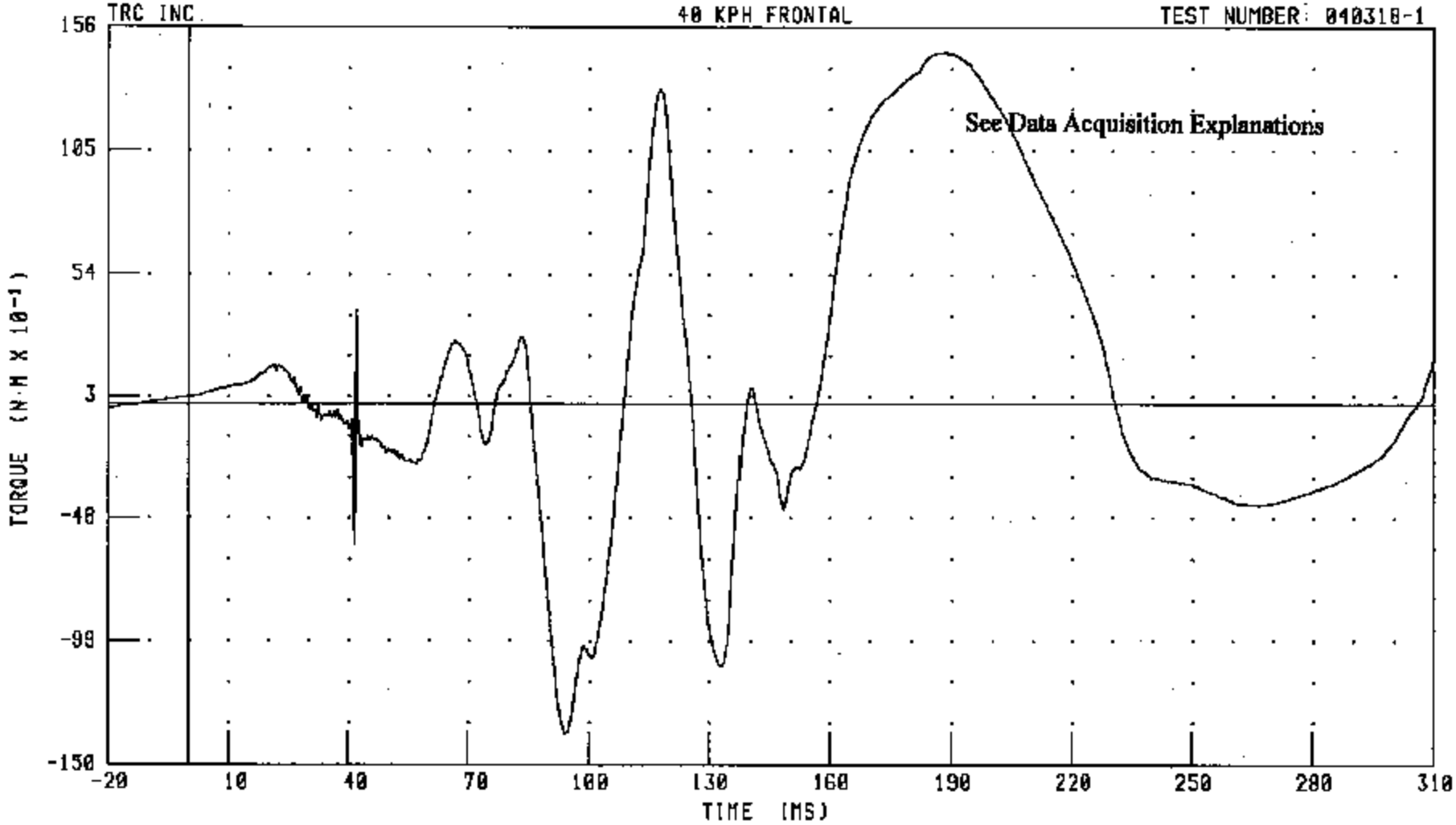


CHANNEL: NEKZM2 FILTER: CH. CLASS 600 PEAK DATA: 10.11 N-M @ 118.32 MS, -5.44 N-M @ 192.48 MS

040318-1

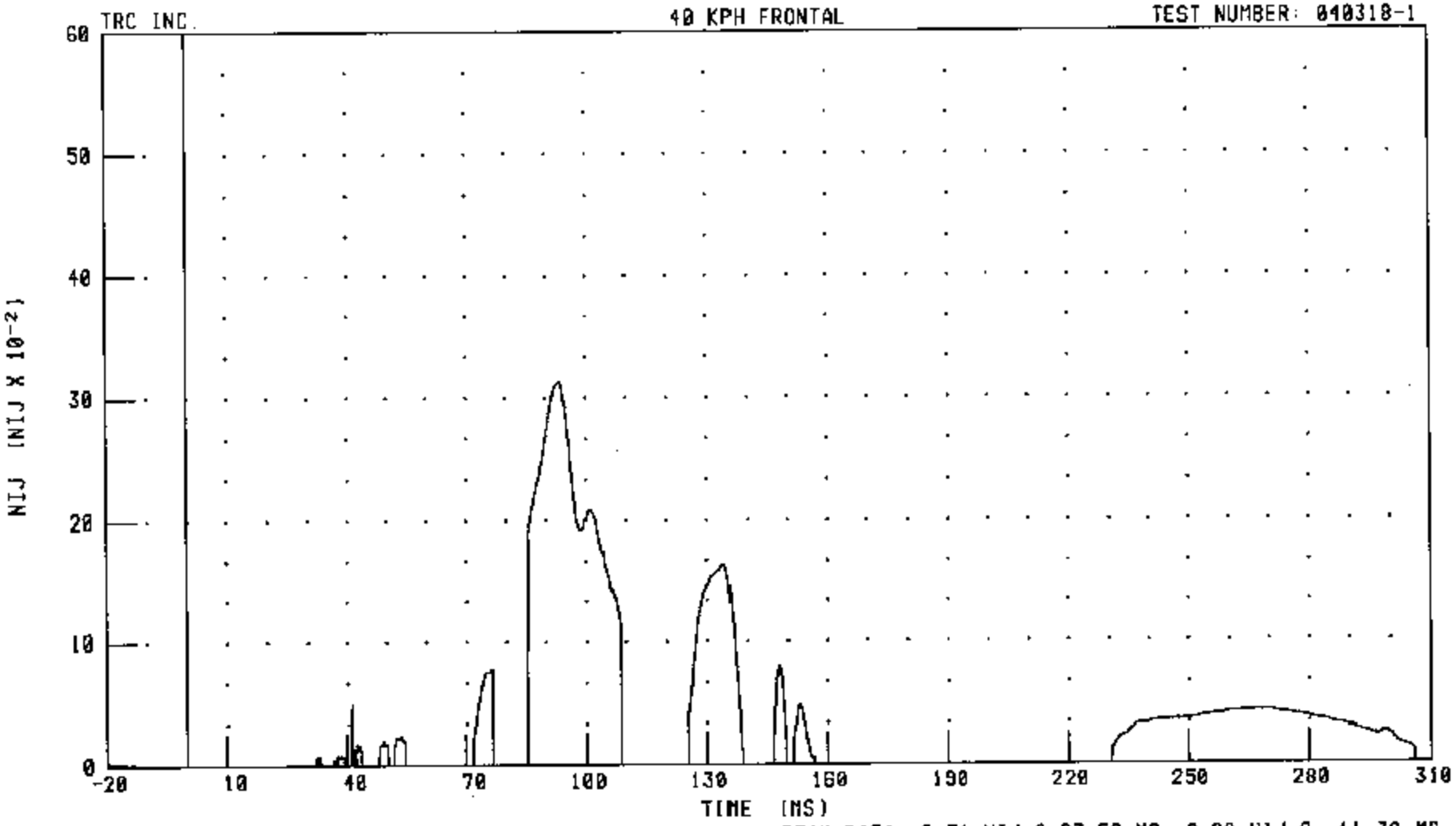
40 KMPH FRONTAL 2004 SATURN ION C40113

RIGHT FRONT PASSENGER NECK MOMENT OCCIPITAL CONDYLE ABOUT Y AXIS



040318-1

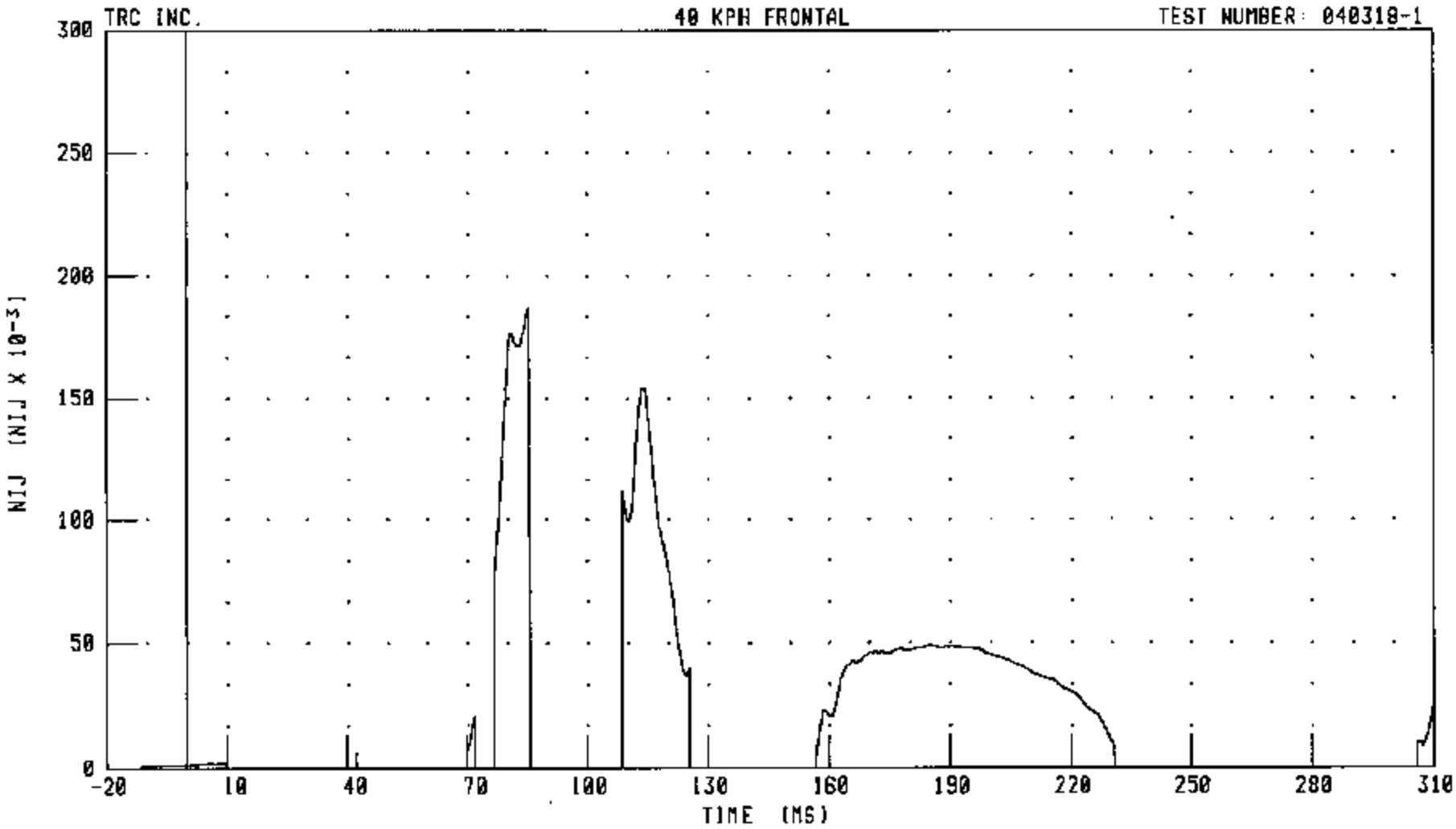
40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NIJ TENSION/EXTENSION
40 KPH FRONTAL



CHANNEL: NTE2 FILTER: CH. CLASS 600 PEAK DATA: 0.31 NIJ @ 93.52 MS; 0.00 NIJ @ -11.36 MS

040318-1

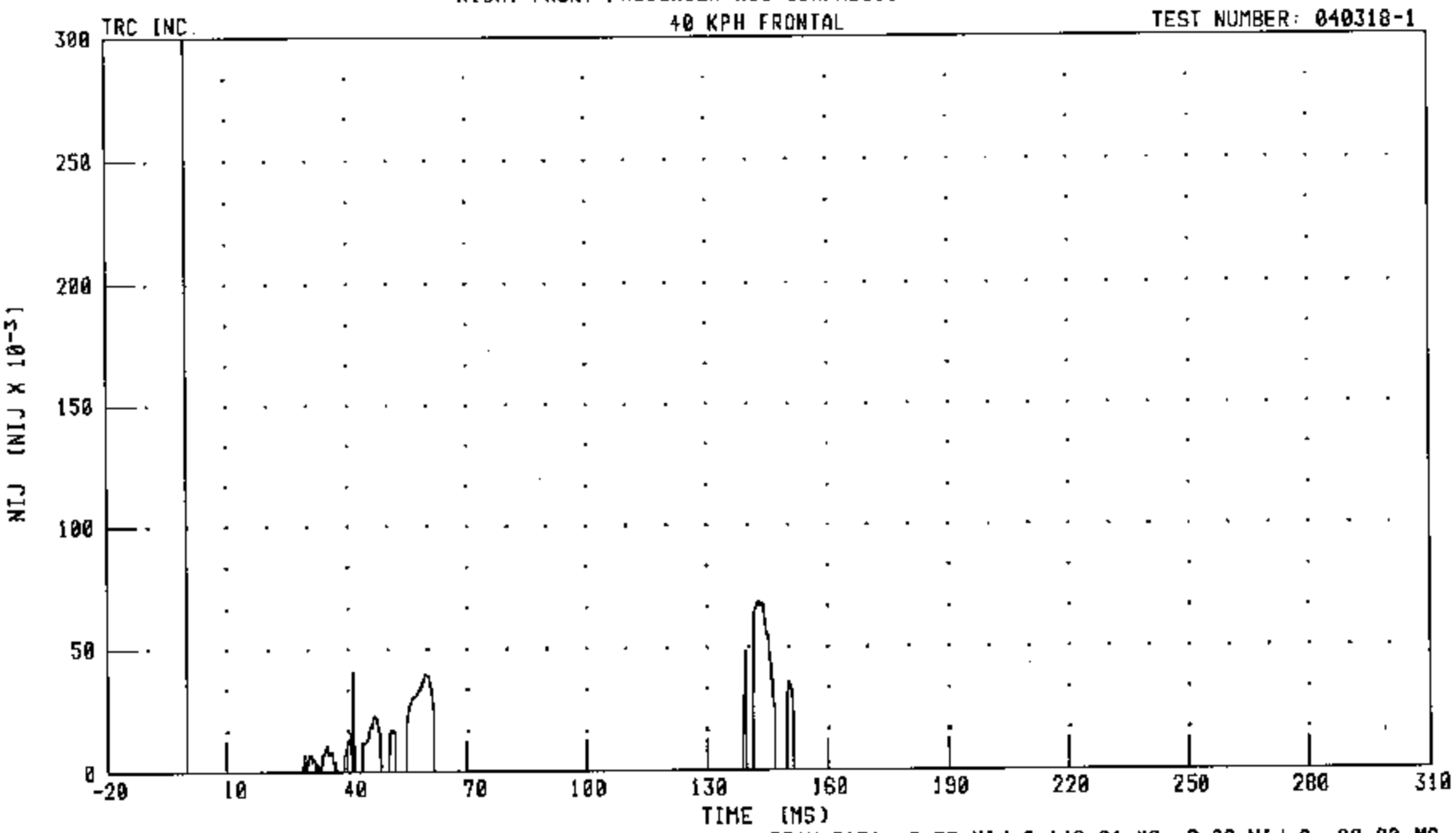
40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NIJ TENSION/FLEXION



CHANNEL: NTF2 FILTER: CH. CLASS 600 PEAK DATA: 0.19 NIJ @ 85.44 MS; 0.00 NIJ @ -20.00 MS

040318-1

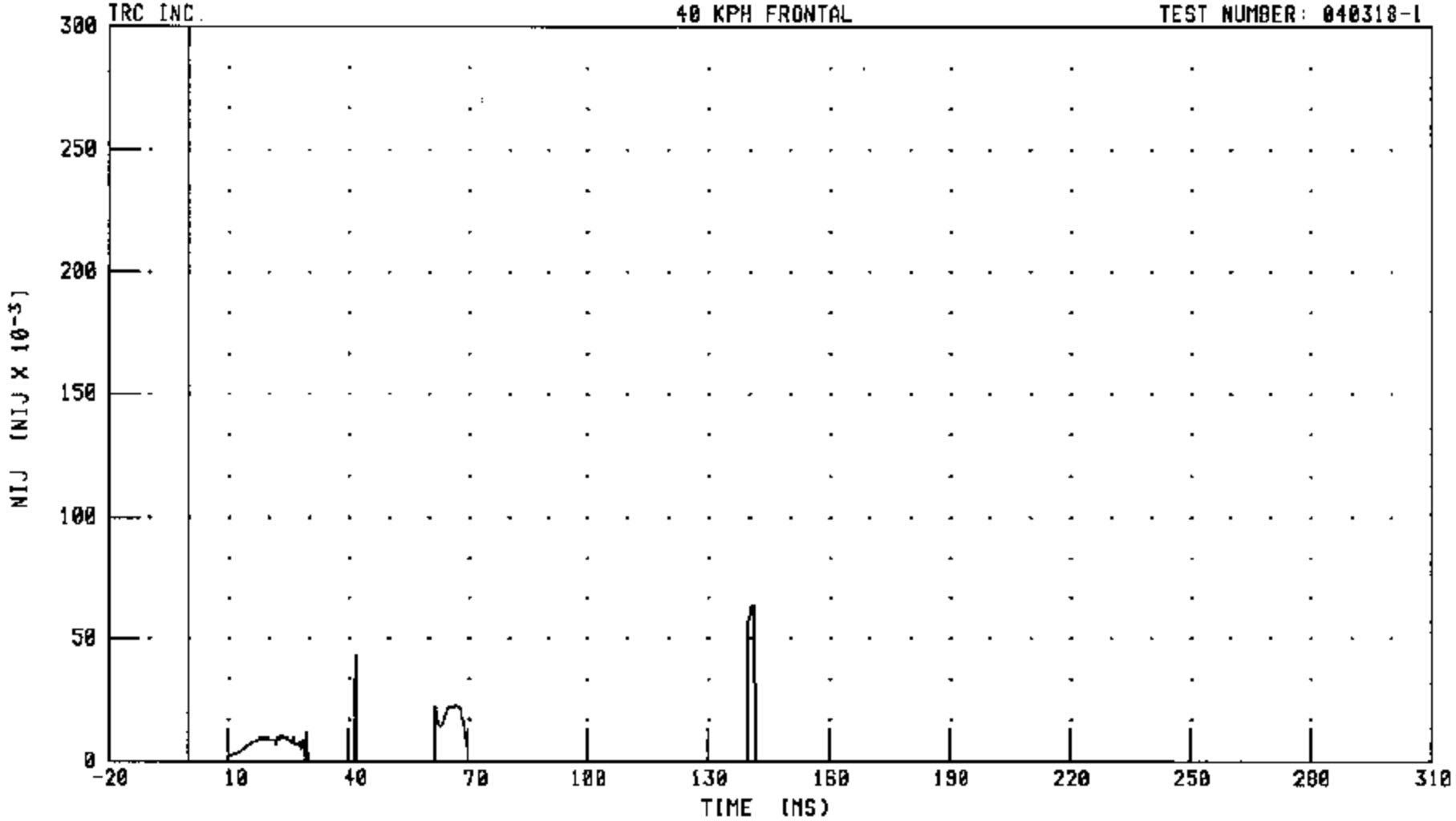
40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NIJ COMPRESSION/EXTENSION



CHANNEL: NCE2 FILTER: CH. CLASS 600 PEAK DATA: 0.07 NIJ @ 142.64 MS; 0.00 NIJ @ -20.00 MS

040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER NIJ COMPRESSION/FLEXION



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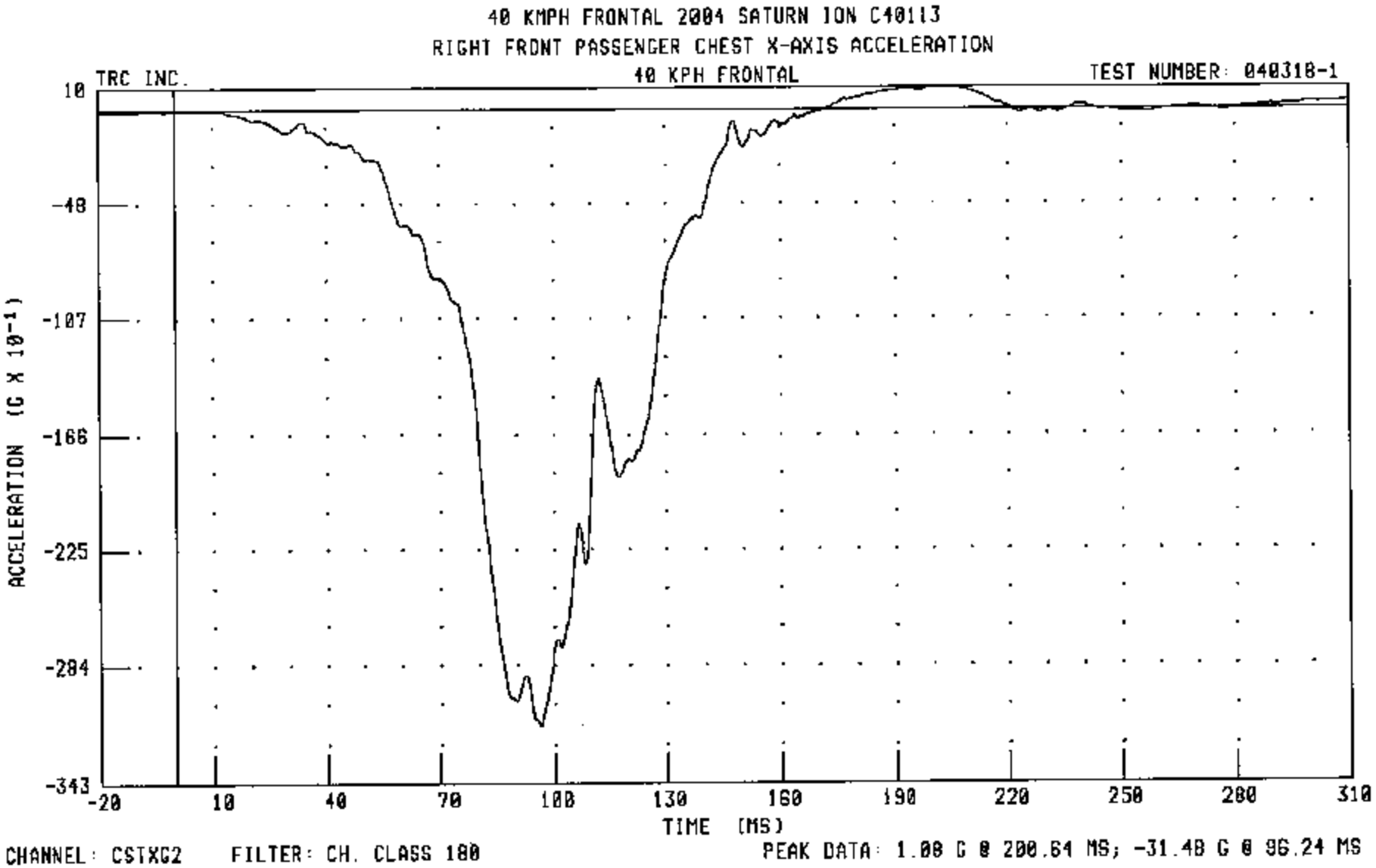
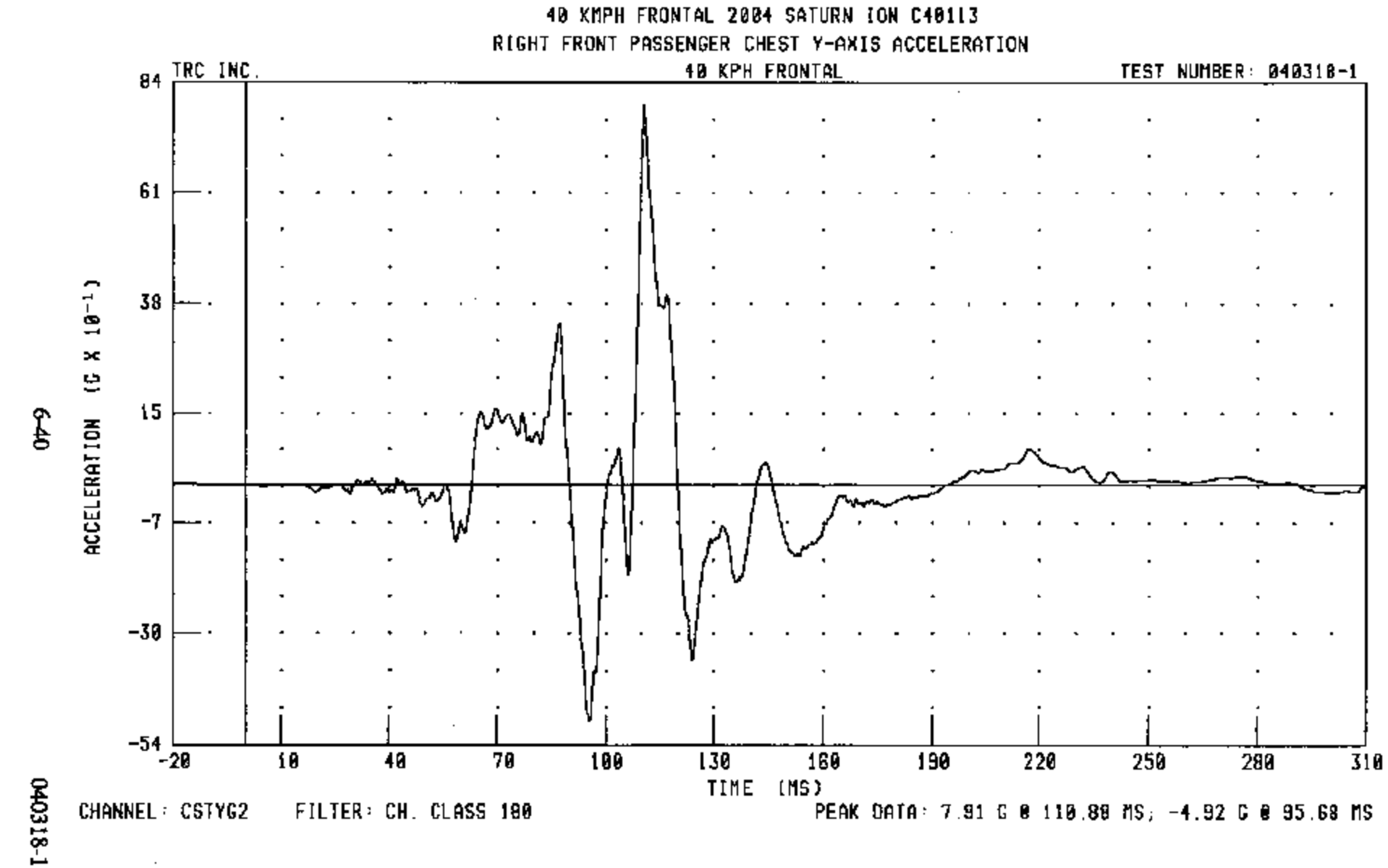
040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION
40 KPH FRONTAL
TRC INC.
TEST NUMBER: 040318-1
ACCELERATION (G X 10-1)
10
-48
-107
-166
-225
-284
-343
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXG2
FILTER: CH. CLASS 180
PEAK DATA: 1.08 G @ 200.64 MS; -31.48 G @ 96.24 MS

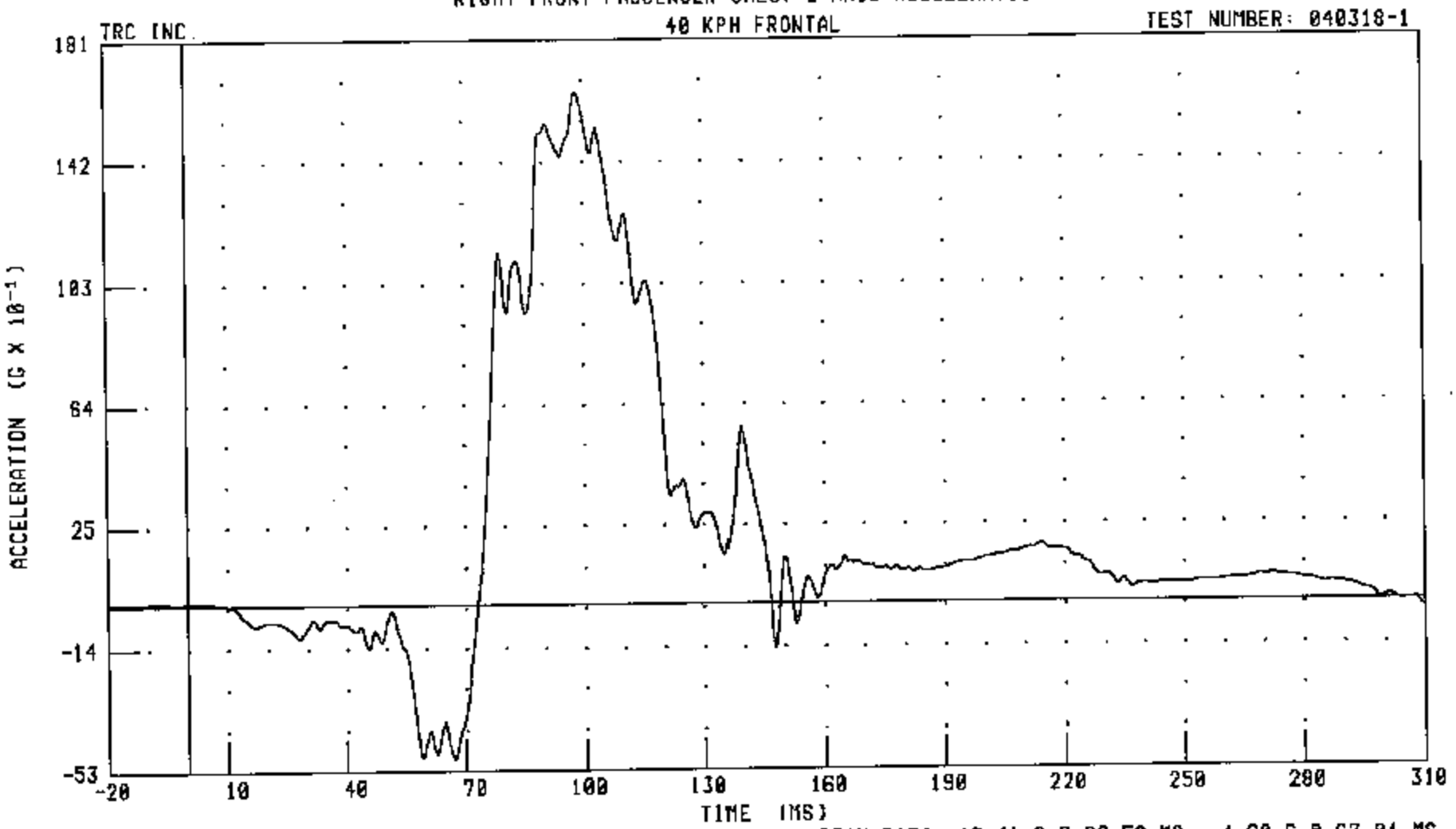
040318-1


40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION
TRC INC.
40 KPH FRONTAL
TEST NUMBER: 040318-1
ACCELERATION (G X 10⁻¹)
84
61
38
15
-7
-30
-54
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTYG2
FILTER: CH. CLASS 180
PEAK DATA: 7.91 G @ 110.88 MS; -4.92 G @ 95.68 MS

6-40

040318-1

40 KMPH FRONTAL 2004 SATURN ION C40113
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION
40 KPH FRONTAL



CHANNEL: CSTZC2 FILTER: CH. CLASS 180

PEAK DATA: 16.41 G @ 98.56 MS; -4.90 G @ 67.04 MS

040318-1