Safety Compliance Testing for FMVSS 208

Occupant Crash Protection

General Motors Corporation
2003 Chevrolet Silverado
NHTSA Number: C30102
TRC Inc. Test Number: 021119-1

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

Report Date: Dec. 23, 2002

Final Report

Prepared For:
U. S. Department of Transportation
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance (NVS-221)
400 Seventh Street, S.W., Room No. 6115
Washington, DC 20590
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Test Performed By: Jason D. Jenkins, Senior Project Engineer

Report Approved By:

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

Date 11/23/02

Final Report Acceptance By OVSC:

[Signature] Date

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Section 1

Purpose of Compliance Test
PURPOSE

This Federal Motor Vehicle Safety Standard 208 compliance test is part of a program conducted for the National Highway Traffic Safety Administration by Transportation Research Center (TRC Inc.) under contract DTNH22-02-D-08062, Task Order VRTC-DCF2525. The purpose of the test was to determine whether the subject vehicle, a 2003 Chevrolet Silverado, NHTSA No. C50102, 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-208-11 dated August 22, 2002.
Section 2

Tests Performed
TESTS PERFORMED

The following checked items indicate the tests that were performed.

- 1. Rear outboard seating position seat belts (S4.1.4.2(h) & (S4.2.4))
- 2. Air bag labels (S4.5.1)
- 3. Readiness indicator (S4.5.2)
- 4. Passenger Air Bag Manual Cut-Off Device (S4.5.4)
- 5. Lap belt lockability (S7.1.1.5)
- 6. Seat belt warning system (S7.3)
- 7. Seat belt contact force (S7.4.3)
- 8. Seat belt latch plate access (S7.4.4)
- 9. Seat belt retraction (S7.4.5)
- 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)
- 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))
  - 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 50 km/h) (S5.1.1(b)(2))
    - Unbelted 50th male dummy driver and passenger (0 to 48 km/h) (S5.1.2(a)(1))
    - Unbelted 50th male dummy driver (32 to 40 km/h) (S5.1.2(a)(2) or S5.1.2(b))
    - Unbelted 50th male dummy passenger (32 to 40 km/h) (S5.1.2(a)(2) or S5.1.2(b))
    - Unbelted 5th female dummy driver (32 to 40 km/h) (S16.1(b))
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.: C36102  Test Date: 11/19/02

VIN: 1GCEC14XLS131545

Frontal Crash ☒ Offset Crash  Low Risk Deployment  

Impact Angle: 0

Belted Dummies: Yes  No

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

Test Speed: 39.2 km/h

Driver Dummy: 5th female  50th male

Passenger Dummy: 5th female  50th male

Test weight: 7295.7 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)

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Driver</th>
<th>Passenger</th>
</tr>
</thead>
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<tr>
<td>HIC1.5</td>
<td>700</td>
<td>132</td>
<td>94</td>
</tr>
<tr>
<td>Nw</td>
<td>1.0</td>
<td>0.40</td>
<td>0.34</td>
</tr>
<tr>
<td>Nt</td>
<td>1.0</td>
<td>0.35</td>
<td>0.32</td>
</tr>
<tr>
<td>Nwc</td>
<td>1.0</td>
<td>0.12</td>
<td>0.06</td>
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<tr>
<td>Nv</td>
<td>1.0</td>
<td>0.06</td>
<td>0.11</td>
</tr>
<tr>
<td>Neck tension</td>
<td>4170 N</td>
<td>2068</td>
<td>1495</td>
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<tr>
<td>Neck compression</td>
<td>4000 N</td>
<td>282</td>
<td>318</td>
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<tr>
<td>Chest g</td>
<td>60 g</td>
<td>47.3</td>
<td>41.1</td>
</tr>
<tr>
<td>Chest displacement</td>
<td>65 mm</td>
<td>33</td>
<td>14</td>
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<tr>
<td>Left femur</td>
<td>10,000 N</td>
<td>6433</td>
<td>6773</td>
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<tr>
<td>Right femur</td>
<td>10,000 N</td>
<td>7643</td>
<td>6915</td>
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</tbody>
</table>
Section 4

Discussion of Test
DISCUSSION OF TEST

The engine top X-axis acceleration data channel exceeded the data channel's full scale at 61 milliseconds and did not record valid data after 61 milliseconds.

The vehicle's pre-test attitudes did not fall between the measured attitudes for the delivered and fully-loaded conditions. Deviations were 6 mm or less.

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

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

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

The test dummies were not maintained in the required temperature soak of 20.6 to 22.2°C for the full sixteen hours. See temperature data on page 6-56.
Section 5

Test Data Sheets
DATA SHEET
COTR Vehicle Work Order

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

NHTSA No.: C30102 Test Date: 11/14/02

COTR signature: Charles R. Case

Tests to be performed for this vehicle are checked below:

- [x] 1. Rear outboard seating position seat belts ($7.1.4.2(b) & ($7.1.2.4))
- [x] 2. Airbag labels ($4.5.1)
- [x] 3. Readiness indicator ($4.5.2)
- [x] 4. Passenger airbag manual cut-off device ($4.5.1)
- [x] 5. Lap belt lockability ($7.1.1.5)
- [x] 6. Seatbelt warning system ($7.2.2)
- [x] 7. Seatbelt contact force ($7.4.3)
- [x] 8. Seatbelt latch plate access ($7.4.4)
- [x] 9. Seatbelt retraction ($7.4.5)
- [x] 10. Seatbelt guide and hardware ($7.4.6)

11. Suppression tests with 12-month-old CRAI3 dummy (Part 572, Subpart R) using the following indicated child restraints.

Section A

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

Section B

- Britax Handle with Care 191
  - Full rearward
  - Midposition
  - Full forward

- Century Aurora 1552
  - Full rearward
  - Midposition
  - Full forward

- Century Arcata 4513
  - Full rearward
  - Midposition
  - Full forward

- Century Smart Fit 1453
  - Full rearward
  - Midposition
  - Full forward

- Cosco Arvella 02727
  - Full rearward
  - Midposition
  - Full forward

- Cosco Opus 35 02603
  - Full rearward
  - Midposition
  - Full forward

- Evenflo Discovery 2112
  - Full rearward
  - Midposition
  - Full forward

- Evenflo First Choice 294
  - Full rearward
  - Midposition
  - Full forward

- Eventflo On My Way Position Right V 282
  - Full rearward
  - Midposition
  - Full forward

- Guzzo Infant 415
  - Full rearward
  - Midposition
  - Full forward

Section C

- Britax Roundabout 161
  - Full rearward
  - Midposition
  - Full forward

- Century Encore 46.2
  - Full rearward
  - Midposition
  - Full forward

- Century STE 1900 44.4
  - Full rearward
  - Midposition
  - Full forward

- Cosco Olympian 02803
  - Full rearward
  - Midposition
  - Full forward

- Cosco Tourriva 02519
  - Full rearward
  - Midposition
  - Full forward

- Evenflo Horizon V 425
  - Full rearward
  - Midposition
  - Full forward

- Eventflo Medallion 254
  - Full rearward
  - Midposition
  - Full forward

Section D

- Britax Roundabout 9004
  - Full rearward
  - Midposition
  - Full forward

- Century Next Step 1926
  - Full rearward
  - Midposition
  - Full forward
Section C

<table>
<thead>
<tr>
<th>Britax Roundabout 1061</th>
<th>Full rearward</th>
<th>Midposition</th>
<th>Full forward</th>
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<td>Century Procor 4512</td>
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<td>Midposition</td>
<td>Full forward</td>
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<td>Century SEI 1060 444.6</td>
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<td>Full forward</td>
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<td>Cosco Oynphar 92803</td>
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<td>Cosco Touring 02519</td>
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<td>Midposition</td>
<td>Full forward</td>
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<tr>
<td>Evenflo Horizon V 425</td>
<td>Full rearward</td>
<td>Midposition</td>
<td>Full forward</td>
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<tr>
<td>Evenflo Medallion 234</td>
<td>Full rearward</td>
<td>Midposition</td>
<td>Full forward</td>
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13. Suppression tests with representative 3-year-old child using the following indicated child restraint where a child restraint is required. (Laboratory Test Procedure Appendix H, Data Sheet 167A and 17A)

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<th>Britax Roundabout 1061</th>
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<th>Midposition</th>
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<tbody>
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<td>Century Next Step 4926</td>
<td>Full rearward</td>
<td>Midposition</td>
<td>Full forward</td>
</tr>
<tr>
<td>Cosco High Back Booster 02-442</td>
<td>Full rearward</td>
<td>Midposition</td>
<td>Full forward</td>
</tr>
<tr>
<td>Evenflo Right Pi 245</td>
<td>Full rearward</td>
<td>Midposition</td>
<td>Full forward</td>
</tr>
</tbody>
</table>

14. Suppression tests with a 3-year-old dummy (Part 372 Subpart D) in the following positions:

- Sitting on seat with back against seat back (§22.2.2.1)
- Sitting on seat with back against reclined seat back (§22.2.2.2)
- Sitting on seat with back not against seat back (§22.2.2.3)
- Sitting on seat edge, spine vertical, hands by the child’s side (§22.2.2.4)
- Standing on seat, facing forward (§22.2.2.5)
- Kneeling on seat facing forward (§22.2.2.6)
- Kneeling on seat facing rearward (§22.2.2.7)
- Lying on seat (§22.2.2.8)

15. Suppression tests with representative 3-year-old child in the following positions:

- Sitting on seat with back against seat back (§22.2.2.1)
- Sitting on seat with back against reclined seat back (§22.2.2.2)
- Sitting on seat with back not against seat back (§22.2.2.3)
- Sitting on seat edge, spine vertical, hands by the child’s side (§22.2.2.4)
- Standing on seat, facing forward (§22.2.2.5)
- Kneeling on seat facing forward (§22.2.2.6)
- Kneeling on seat facing rearward (§22.2.2.7)
- Lying on seat (§22.2.2.8)

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

Section D

<table>
<thead>
<tr>
<th>Britax Roundabout 1061</th>
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<td>Evenflo Right Pi 245</td>
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17. Suppression tests with representative 6-year-old child using the following indicated child restraint where a child restraint is required.

Section D

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<tr>
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<td>Cosco High Back Booster 02-442</td>
<td>Full rearward</td>
<td>Midposition</td>
<td>Full forward</td>
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<tr>
<td>Evenflo Right Pi 245</td>
<td>Full rearward</td>
<td>Midposition</td>
<td>Full forward</td>
</tr>
</tbody>
</table>

18. Suppression tests with 6 year old dummy (Part 572 Subpart N) in the following positions:

- Sitting on seat with back against seat back (§22.2.2.1)
- Sitting on seat with back against reclined seat back (§22.2.2.2)
- Sitting on seat edge, spine vertical, hands by the dummy's side (§22.2.2.4)
- Sitting back in the seat and leaning on the right front passenger door (§22.2.3)
19. Suspension 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 seat (S24.2.3)

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

Section B

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<thead>
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<th>Brand</th>
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<tr>
<td>Britax</td>
<td>HandiFix 191</td>
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<td>Century</td>
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<td>Century</td>
<td>Smart Fit 4503</td>
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<td>Cosco</td>
<td>Arvita 0727</td>
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<td>Cosco</td>
<td>Opus 25-02603</td>
</tr>
<tr>
<td>Eventflo</td>
<td>Discovery Adjus Right 212</td>
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<td>Eventflo</td>
<td>First Choice 204</td>
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<td>Eventflo</td>
<td>On My Way Position Right V 282</td>
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<tr>
<td>Graco</td>
<td>Infant 8457</td>
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Section C

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
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<td>Britax</td>
<td>Roundabout 161</td>
</tr>
<tr>
<td>Century</td>
<td>Precise G6.2</td>
</tr>
<tr>
<td>Century</td>
<td>STE 1000-44-0</td>
</tr>
<tr>
<td>Cosco</td>
<td>Olympian 02403</td>
</tr>
<tr>
<td>Cosco</td>
<td>Tourtta (2519)</td>
</tr>
<tr>
<td>Eventflo</td>
<td>Horizon V 429</td>
</tr>
<tr>
<td>Eventflo</td>
<td>Medallion 254</td>
</tr>
</tbody>
</table>

21. Test of Reactivation of the Passenger Air Bag System with a Unbelted 5th Percentile Female Dummy (S20.3, 22.3, 24.3). Perform this test after the following suppression tests:

22. Test of Reactivation of the Passenger Air Bag System with a representative 5th Percentile Female (S20.3, 22.3, 24.3). Perform this test after the following suppression tests:

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

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

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

X 26. Impact tests:
   - Frontal Oblique Test Speed
     - Unbelted 5th male dummy driver and passenger (0 to 48 km/h) (S5.1.1.a)
     - Unbelted 5th male dummy driver and passenger (0 to 48 km/h) (S5.1.2.a)(1)
     - Unbelted 5th male dummy driver and passenger (32 to 40 km/h) (S5.1.2.b)(1) or (S5.1.2.b)(2)
   - Frontal Test Speed
     - Unbelted 5th male dummy driver (0 to 48 km/h) (S5.1.1.b)(1) or (S5.1.1.b)(2)
     - Unbelted 5th male dummy passenger (0 to 48 km/h) (S5.1.1.b)(1) or (S5.1.1.b)(2)
X Unbelted 50th male dummy driver (32 to 40 km/h) (§5.1.2(a)(2)) or §5.1.2(b)(i)
X Unbelted 50th male dummy passenger (32 to 40 km/h) (§5.1.2(a)(2)) or §5.1.2(b)(i)
_____ Unbelted 5th female dummy driver (32 to 40 km/h) (§16.1(b))
_____ Unbelted 5th female dummy passenger (32 to 40 km/h) (§16.1(b))
_____ 30% Offset 0+ Belted 5th female dummy driver and passenger (0 to 26 km/h) (§18.1)
Test Speed __________

27. Sled test: Unbelted 50th male dummy driver and passenger (§13)

_____ 28. FMVSS 204 no band test
X 29. FMVSS 212 test
X 30. FMVSS 219 no band test
X 31. FMVSS 301 frontal test
REPORT OF VEHICLE CONDITION

CONTRACT NO. DTNH22-02-D-08062                      Date: 11/19/02

FROM: Transportation Research Center, Virginia L. Watters
       Lab & rep name

TO: Charles R. Case                                   OVCSC, NSA-31
       COIR Name

PURPOSE: ( ) Initial Receipt ( ) Received via Transfer (X ) Present vehicle condition

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2003/Chevrolet/Silverado/pickup truck

MANUFACTURE DATE: 08/02    NHTSA NO.: C30102    BODY COLOR: Gray

VIN: 1GCEC14X13Z131545    GVWR: 2904    GAWR (Fr) 1429    GAWR (Br) 1572

ODOMETER READINGS: ARRIVAL 71         miles  DATE 11/14/02
                        COMPLETION 71         miles  DATE 11/19/02

PURCHASE PRICE: $20,271    DEALER'S NAME: Bvers Downtown Chevrolet

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

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

C. There are no dents or other interior or exterior flaws.
   __ Yes  X  No  See remarks

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

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

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

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

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

I. Place vehicle in storage area.
   X Yes    No

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

Identify the letter above to which any of the following comments apply.

Comments:  In a frontal impact the vehicle sustained significant front end and unknown
structural damage
LIST OF FMVSS TESTS PERFORMED BY THIS LAB:
208, 212, 219 Indent, 301

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2003/Chevrolet/Silverado/pickup truck

NHTSA NO: C36102

REMARKS: None

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

Explanation for equipment removal: The owner's manual and extra keys are stored with the project file.

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

RECORDED BY: R. Benavides
DATE: 11/14/02

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

RELEASE OF TEST VEHICLE

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

Date: Time: Odometer: 

Lab Representative: Signature Title

Carrier/Customer Representative: Signature Date
DATA SHEET 3
Certification Label and Tire Placard Information

NHTSA No.: C36102 ____________________________ Test Date: 11/14/02

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

1. Certification Label
   Manufacturer: General Motors Corporation ________________________________
   Date of Manufacture: 08/02 __________________
   VIN: 1GCEC14X13Z131545 ____________________________
   Vehicle certified as: ____ Passenger car ____ MPV ____ Truck ____ Bus
   Front axle GVWR: 1429 kg/3150 lbs. __________________
   Rear axle GVWR: 1672 kg/3686 lbs. __________________
   Total GVWR: 2903 kg/6400 lbs. __________________

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

   Vehicle Capacity Weight: NA
   Designated seating capacity front: NA
   Designated seating capacity rear: NA
   Total Designated seating capacity: NA
   Recommended cold tire inflation pressure front: 240 kPa/35 psi
   Recommended cold tire inflation pressure rear: 240 kPa/35 psi
   Recommended tire size: P235/75R16

1 Label did not contain this information
DATA SHEET 4
REAR OUTBOARD SEATING POSITION SEAT BELTS

NHTSA No.: C36102
Test Date: 11/14/02

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

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

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.
No rear seats.

REMARKS:
DATA SHEET 5
AIR BAG LABELS (§4.5.1)

NHTSA No.:  C36102  Test Date: 11/14/02

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

1. Air Bag Maintenance Label and Owner's Manual Instructions: (§4.5.1(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 surface?
      ___ 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?
      ___ 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: (§4.5.1(f))
   2.1 Include a description of the vehicle's air bag system in an easily understandable format?
      ___ 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?
      ___ Yes-Pass;  ___ No-FAIL
   2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating
      positions?
      ___ 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?
      ___ 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?
      ___ 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?
2.7 Is the vehicle certified to meet the requirements of §14.5, §15, §17, §19, §21, §23, and §25? (Obtain the answer to this question from the COTR) (S4.5.1(f)(2))
   X Yes (go to 2.7.1); ___ No (go to 3)
2.7.1 Explain the proper functioning of the advanced air bag system? (S4.5.1(f)(2))
   X Yes-Pass; ___ No-FAIL
2.7.2 Provide a summary of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2))
   X Yes-Pass; ___ No-FAIL
2.7.3 Present and explain the main components of the advanced passenger air bag system? (S4.5.1(f)(2)(i))
   X Yes-Pass; ___ No-FAIL
2.7.4 Explain how the components function together as part of the advanced passenger air bag system? (S4.5.1(f)(2)(ii))
   X Yes-Pass; ___ No-FAIL
2.7.5 Contain the basic requirements for proper operation, including an explanation of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2)(iii))
   X Yes-Pass; ___ No-FAIL
2.7.6 Is the vehicle certified to the requirements of §19.2, §21.2 or §23.2?
   X Yes, continue with 2.7.6
   ___ No, go to 2.7.7
2.7.6.1 Contain a complete description of the passenger air bag suppression system installed in the vehicle, including a discussion of any suppression zone? (S4.5.1(f)(2)(v))
   X Yes-Pass; ___ No-FAIL
2.7.6.2 Discuss the telltale light, specifying its location in the vehicle and explaining when the light is illuminated?
   X Yes-Pass; ___ No-FAIL
2.7.7 Explain the interaction of the advanced passenger air bag system with other vehicle components, such as seat belts, seats or other components? (S4.5.1(f)(2)(v))
   X Yes-Pass; ___ No-FAIL
2.7.8 Summarize the expected outcomes when child restraint systems, children and small teenagers or adults are both properly and improperly positioned in the passenger seat, including cautionary advice against improper placement of child restraint systems? (S4.5.1(f)(2)(v))
   X Yes-Pass; ___ No-FAIL
2.7.9 Provide information on how to contact the vehicle manufacturer concerning modifications for persons with disabilities that may affect the advanced air bag system? (S4.5.1(f)(2)(vii))
   X Yes-Pass; ___ No-FAIL

3. Sun Visor Air Bag Warning Label (S4.5.1(b))
3.1 Is the vehicle certified to meet the requirements of §19, §21, and §23? (Obtain the answer to this question from the COTR) (S4.5.1(b)(2))
   X Yes (go to 3.1.1 and skip 3.2); ___ No (go to 3.2, skipping 3.1.1 through 3.1.6)
3.1.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(b)(2))
   Driver side, X Yes-Pass ___ No-FAIL
   Passenger side, X Yes-Pass ___ No-FAIL
3.1.2 Does the label conform in content (vehicles without back seats may omit the statement: "The BACK SEAT is the SAFEST place for children") (S4.5.1(b)(2)(v)) to the label shown in Figure 8 at each front outboard seating position? (S4.5.1(b)(2))
   Driver side, X Yes-Pass ___ No-FAIL
   Passenger side, X Yes-Pass ___ No-FAIL
3.1.3 Is the label heading area yellow with the word “WARNING” and the alert symbol in black? (4.5.1 (b)(2)(i))

<table>
<thead>
<tr>
<th>Field</th>
<th>Driver side</th>
<th>Passenger side</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

3.1.4 Is the message area white with black text? (4.5.1 (b)(2)(ii))

<table>
<thead>
<tr>
<th>Field</th>
<th>Driver side</th>
<th>Passenger side</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

3.1.5 Is the message area at least 30 cm²? (4.5.1 (b)(2)(i))

<table>
<thead>
<tr>
<th>Field</th>
<th>Driver side</th>
<th>Passenger side</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

3.1.6 Is the pictogram black on a white background? (4.5.1 (b)(2)(iii))

<table>
<thead>
<tr>
<th>Field</th>
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<th>Passenger side</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

3.1.7 Is the pictogram at least 30 mm (1.2 in) in length? (4.5.1 (b)(2)(iii))

<table>
<thead>
<tr>
<th>Field</th>
<th>Driver side</th>
<th>Passenger side</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

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

3.2.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or deforming it? (4.5.1 (b)(1))

<table>
<thead>
<tr>
<th>Field</th>
<th>Driver side</th>
<th>Passenger side</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

3.2.2 Does the label conform in content (vehicles without back seats may omit the statement: “The BACK SEAT is the SAFEST place for children.” (4.5.1 (b)(2)(v))) to the label shown in either Figure 6a or 6b as appropriate at each front outboard seating position? (4.5.1 (b)(1))

<table>
<thead>
<tr>
<th>Field</th>
<th>Driver side</th>
<th>Passenger side</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

3.2.3 Is the label heading area yellow with the word “WARNING” and the alert symbol in black? (4.5.1 (b)(1)(i))

<table>
<thead>
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<th>Passenger side</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

3.2.4 Is the message area white with black text? (4.5.1 (b)(1)(ii))

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

3.2.5 Is the message area at least 30 cm²? (4.5.1 (b)(1)(ii))

<table>
<thead>
<tr>
<th>Field</th>
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<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>

3.2.6 Is the pictogram black with a red circle and slash on a white background? (4.5.1 (b)(2)(iii))

<table>
<thead>
<tr>
<th>Field</th>
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<th>Passenger side</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X Yes-Pass</td>
<td>X Yes-Pass</td>
<td>No-FAIL</td>
</tr>
</tbody>
</table>
3.2.7 Is the pictogram at least 30 mm in diameter? (§4.5.1(b)(2)(iii))

Actual diameter _______ mm

Driver side ______ Yes-Pass ______ No-FAIL
Passenger side ______ Yes-Pass ______ No-FAIL.

3.3 Is the same side of the sun visor that contains the air bag warning label free of other information with the exception of the air bag maintenance label and/or the rollover-warning label? (§4.5.1(b)(3))

Driver side ______ X____ Yes-Pass ______ No-FAIL
Passenger side ______ X____ Yes-Pass ______ No-FAIL.

3.4 Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label and/or the rollover-warning label? (§4.5.1(b)(3))

Driver side ______ X____ Yes-Pass ______ No-FAIL
Passenger side ______ X____ Yes-Pass ______ No-FAIL.

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

3.5.1 Are both the rollover-warning label and the air bag warning label surrounded by a continuous solid-lined border?

____ Yes (go to 3.5.2 and skip 3.5.3); ______ X__ No (go to 3.5.3 and skip 3.5.2.)

3.5.2 Is the shortest distance from the border of the rollover label to the border of the air bag warning label at least 1 cm? (§575.105(d)(1)(iv)(A))

_________ actual distance

____ Yes-Pass; ______ X____ No-FAIL

3.5.3 Is the shortest distance from any of the lettering or graphics on the rollover-warning label to any of the lettering or graphics of the air bag warning label at least 3 cm? (§575.105(d)(1)(iv)(A))

_________ actual distance

____ Yes-Pass; ______ X____ No-FAIL.

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

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

Driver side ______ X____ Yes ______ No
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? (§4.5.1(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? (§4.5.1(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? (§4.5.1(c))

Driver side ______ Yes-Pass ______ No-FAIL
Passenger side ______ Yes-Pass ______ No-FAIL.

4.5 Is the message area black with yellow text? (§4.5.1(c)(1))

Driver side ______ Yes-Pass ______ No-FAIL
Passenger side ______ Yes-Pass ______ No-FAIL.
4.6 Is the message area at least 20 cm²? (S4.5.1(e)(1))
   Driver side: Length __________, Width __________
   Passenger side: Length __________, Width __________
   Actual message area __________ cm²
   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(e)(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(e)(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 through 5.2.5)
   ___ No (go to 5.2, skipping 5.1.1 through 5.1.6)

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

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

5.1.3 Does the label conform in content (vehicles without back seats may omit the statement: “The back seat is the safest place for children” (S4.5.1(e)(2)(iii))) to the label shown in Figure 9? (S4.5.1(e)(2))
   ___ 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 cm²? (S4.5.1(e)(2)(ii))
   Length 105 mm, Width 49 mm
   Actual message area __________ cm²
   ___ Yes-Pass: ___ No-FAIL

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

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

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

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

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

5.2.5 Is the message area at least 30 cm²? (S4.5.1(e)(1)(ii))
   Length __________, Width __________
   Actual message area __________ cm²
   ___ 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.
This Vehicle is Equipped with Advanced Air Bags

Even with Advanced Air Bags

Children can be killed or seriously injured by the air bag.
The back seat is the safest place for children.
Always use seat belts and child restraints.
See owner's manual for more information about air bags.

Figure 9. Removable Label on Dash.
DATA SHEET 6
FMVSS 208 READINESS INDICATOR (S4.5.2)

NHTSA No.: C36102  Test Date: 11/14/02

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

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement. (11/8/94 legal interpretation to Lawrence J. 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: Left side of instrument cluster

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

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

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

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

REMARKS:
DATA SHEET 7
Passenger Air Bag Manual Cut-Off Device (§4.5.4)

NHTSA No.: C36102
Lab Test Technician(s): R. Benavides

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

2. Does the vehicle have any forward-facing rear designated seating positions? (§4.5.4(a))
   ___ Yes, go to 3
   X No, go to 4

3. Verification of the lack of room for a child restraint in the rear seat behind the driver’s seat.
   (§4.5.4(b))
   3.1 Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (§8.1.3)
      ___ 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. (§16.2.10.2)
      ___ N/A - No additional support adjustment
   3.3 If the seat cushion adjusts fore and aft, independently of the seat back, set this adjustment to the full rearward position. (§16.2.10.3.1)
      ___ N/A - No independent fore-aft seat cushion adjustment
   3.4 If the seat cushion height adjusts independently of the seat back, set this adjustment to the full down position. (§16.2.10.3.1)
      ___ N/A - No independent seat cushion height adjustment
   3.5 Put the seat in its full rearward position. (§16.2.10.3.1)
      ___ 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. (§16.2.10.3.1)
      ___ 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. (§8.1.2)
      ___ 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 seat:

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

Record the width of the seat. __________

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

3.12.12 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 seat (including split bench seats):

3.12.21 Locate and mark a vertical plane B through the center of the steering wheel parallel to the vehicle longitudinal centerline.

3.12.22 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 721 mm – Pass
___ more than 720 mm – FAIL

Go to 4

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

X Yes-Pass; ____ No-FAIL

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

X 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) This check was not performed

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

___ Yes-Pass; ____ No-FAIL

7.2 Are the words “PASSENGER AIR BAG OFF” (S4.5.4.3(b))

7.2.1 on the telltale?

___ Yes Pass, go to 7.3

___ No go to 7.2.2

7.2.2 within 25 mm of the telltale? __________ mm from the edge of the telltale light

___ Yes-Pass; ____ No-FAIL.
7.3 Does the telltale remain illuminated while the air bag is turned off? (§4.5.4.3(c)) (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? (§4.5.4.3(d))
   __ Yes-Pass; __ No-FAIL

7.5 Is the telltale combined with the air bag readiness indicator? (§4.5.3(e))
   __ Yes-Pass; __ No-FAIL

8. Owner's manual
   X 8.1 Does the owner's manual contain complete instructions on the operation of the on-off switch? (§4.5.4.4(a))
      __ X Yes-Pass; __ No-FAIL

   X 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? (§4.5.4.4(b))

      Infants:  the 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 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
      __ X Yes-Pass; __ No-FAIL

   X 8.3 Does the owner's manual contain a warning about the safety consequences of using the on-off switch at other times?
      __ X 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.: C36102 ___________________________ Test Date: 11/14/02 __________________

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

DESIGNATED SEATING POSITION: Front Row Center Not Type 2 ______________________

X N/A No retractor is at this position

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

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

2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle, (S7.1.1.5(a))
   Yes-Pass; __ No-FAIL

3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing, (S7.1.1.5(a))
   Yes-Pass; __ No-FAIL

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

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

6. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly, (S7.1.1.5(c)(2))

7. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
   Yes: __ No: (If yes, go to 7.1. If no, go to 8.)

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

8. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))

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

10. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
11. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
   Measured force application angle ________________ (spec. 5 - 15 degrees)

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

13. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractor are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
   Record onset rate ________________ lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
   Measured distance between A and B ________________ inches (S7.1.1.5(c)(6))

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

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

REMARKS:
Figure 5. - Webbing Tension Pull Device

Dimension A - Width of Webbing Plus 1/2 Inch
Dimension B - 1/2 of Dimension A
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.: C36102 Test Date: 11/14/02

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

DESIGNATED SEALING 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. 23 marks (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 53.8 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))
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)

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

   Measured distance between A and B 30.4 inches

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

   Record onset rate 36 lb/sec (spec. 10 to 30 lb/sec) (S7.1.1.5(c)(5))

   Measured distance between A and B 34.0 inches (S7.1.1.5(c)(6))

14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7))

   13-12 = 0.6 inches; X Yes-Pass; No-FAIL

15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8))

   9-13 = 22.8 inches; X Yes-Pass; No-FAIL

REMARKS
Figure 5. - Webbing Tension Pull Device

Dimension A: Width of Webbing Plus 1/2 Inch
Dimension B: 1/2 of Dimension A
DATA SHEET 9
FMVSS 208 SEAT BELT WARNING SYSTEM CHECK (S7.3)

NHTSA No.: C36102 Test Date: 11/14/02
Laboratory: TRC Inc. Test Technician(s): R. Benavides

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

<table>
<thead>
<tr>
<th>S7.3 (a)(1)</th>
<th>Warning light specification</th>
<th>Audible signal specification*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belt latched &amp; Key on or start</td>
<td>Item 16 7</td>
<td>Item 12 0</td>
</tr>
<tr>
<td>Belt stowed &amp; Key on or start</td>
<td>Item 8 7</td>
<td>Item 8 7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S7.3 (a)(2)</th>
<th>Warning light specification</th>
<th>Audible signal specification*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belt latched &amp; Key on or start</td>
<td>Item 16 7</td>
<td>Item 12 0</td>
</tr>
<tr>
<td>Belt stowed &amp; Key on or start</td>
<td>Item 8 7</td>
<td>Item 4 6</td>
</tr>
</tbody>
</table>

* 49 USC 523(a)(1)(i)(2) does NOT allow an audible signal to operate 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 Tidman
18. The seat belt warning system meets the requirements of (manufacturers may comply with either section)
   - [ ] S7.3 (a)(1)
   - [X] S7.3 (a)(7)
   - [ ] FAIL - Does NOT meet the requirements of either option

19. Note wording of visual warning. (S7.3(a)(1) and S7.3(a)(2))
   - [ ] Fasten Seat Belts
   - [ ] Fasten Belt
   - [X] Symbol 101
   - [ ] FAIL - Does not use any of the above wording or symbol
DATA SHEET 10
BELT CONTACT FORCE (§7.4.3)

NHTSA No.: C36102 ____________________________ Test Date: 11/14/02

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

DESIGNATED SEATING POSITION: Front Row Left

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outbound 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. (§8.1.3)
   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. (§16.2.10.2)
   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. (§16.2.10.3.1)
   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. (§16.2.10.3.1)
   X  N/A - No independent seat cushion height adjustment

X 6. Put the seat in its full rearward position. (§16.2.10.3.1)
   ___ N/A - the seat does not have a fore-aft adjustment

X 7. If the seat height is adjustable, put it in the full down position. (§16.2.10.3.1)
   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.
   ___ 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. (§8.1.2)
   X  Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Mid

X 11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (§16.2.10.3.2.1)
   X  N/A - No adjustments

Reference line angle as tested: 0°
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. (§4.5.4.1 (b) and §8.1.3)

   N/A   No adjustments

Manufacturer's design seat back angle  15.5°
Tested seat back angle  15.5°

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

14. Fasten the seat belt latch.

15. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.

16. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (§10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

   Contact force  0.60 lb.
   0.0 to 0.7 pounds - Pass
   greater than 0.7 pounds - FAIL
DATA SHEET 10
BELT CONTACT FORCE (§7.4.3)

NHTSA No.: C36102                         Test Date: 11/14/02

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

DE情怀ATED SEATING POSITION: Front Row Right

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

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

X 2. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (§8.1.3)
   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. (§16.2.10.2)
   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. (§16.2.10.3.1)
   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. (§16.2.10.3.1)
   X  N/A - No independent seat cushion height adjustment

X 6. Put the seat in its full rearward position. (§16.2.10.3.1)
   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. (§16.2.10.3.1)
   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. (§8.1.2)
   X  Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Mid

X 11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (§16.2.10.3.2.1)
   X  N/A - No adjustments

Reference line angle as tested: 0°
X 12. The seat back angle, if adjustable, is set at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (§4.5.4.1 (b) and §8.1.3)

   ___ N/A   No adjustments
   Manufacturer’s design seat back angle    15.5°
   Tested seat back angle                  15.5°

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

X 14. Fasten the seat belt latch.

X 15. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy’s chest.

X 16. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy’s chest. At that point pull the belt webbing out 3 inches from the dummy’s chest and release until it is within one inch from the dummy’s chest. (§10.8) 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: 0.56 lb.

   ___ 0.0 to 0.7 pounds - Pass
   ___ greater than 0.7 pounds - FAIL
DATA SHEET 10
BELT CONTACT FORCE (§7.4.3)

NHTSA No.: C36102 Test Date: 11/14/02

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

DESIGNATED SEATING POSITION: Front Row Center – Not Type 2

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

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

2. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (§81.5)
   ___ 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. (§16.2.10.2)
   ___ 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. (§16.2.10.3.1)
   ___ 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. (§16.2.10.3.1)
   ___ N/A – No independent seat cushion height adjustment

6. Put the seat in its full rearward position. (§16.2.10.3.1)
   ___ N/A – The seat does not have a fore-aft adjustment

7. If the seat height is adjustable, put it in the full down position. (§16.2.10.3.1)
   ___ N/A – No seat height adjustment

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

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

10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (§8.1.2)
    ___ Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the mid-point. Describe the location of the seat:

11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (§16.2.10.3.2.1)
    ___ N/A – No adjustments
    Reference line angle as tested
12. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (§4.5.4.1 (b) and §8.1.3)
   N/A   No adjustments
   Manufacturer's design seat back angle  
   Tested seat back angle  
13. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.
14. Fasten the seat belt latch.
15. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.
16. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (§19.9) 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  
   0.0 to 0.7 pounds - Pass
   greater than 0.7 pounds - FAIL
DATA SHEET 11
LATCHPLATE ACCESS (S7.4.4)

NHTSA No.: C36102  Test Date: 11/14/02

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

DESIGNATED SEATING POSITION: Left Front

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

X 1. Position the seat’s adjustable lumbar supports so that the lumbar support is in its
     lowest, retracted or deflated adjustment position (8.1.3)
     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. (8.16.2.10.2)
     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. (8.16.2.10.3.1)
     X N/A - No independent fore-aft seat cushion adjustment

X 4. If the seat cushion height adjusts independent of the seat back, set this adjustment to
     the full down position. (8.16.2.10.3.1)
     X N/A - No independent seat cushion height adjustment

X 5. Put the seat in its full rearward position. (8.16.2.10.3.1)
     ___ N/A - the seat does not have a fore-aft adjustment

X 6. If the seat height is adjustable, put it in the full down position. (8.16.2.10.3.1)
     X N/A - No seat height adjustment

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

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

X 9. Using only the controls that change the seat in the fore-aft direction, place the seat in
     the full rearward position and then place the seat in the forwardmost fore-all position
     for this test (8.10.7)

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

Reference line angle as tested 0°

5-37  021119-1
X. 11. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

N/A  No seat back angle adjustment

Manufacturer's design seat back angle  15.5°

Tested seat back angle  15.5°

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

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

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

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

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

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

X Yes-Pass;  No

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

X Yes-Pass;  No

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

X Yes-Pass;  No-FAIL

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

X Yes-Pass;  No-FAIL
Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart B Test Device
Figure 4: Use of clearance test block to determine hand/arm access.
DATA SHEET 11
LATCHPLATE ACCESS (S7.4.1)

NHTSA No.: C36102                      Test Date: 11/14/02

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

DESIGNATED SEATING POSITION: Right Front

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

1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position (S16.2.10.3)
   X 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)
   X 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)
   X 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)
   X N/A - No independent seat cushion height adjustment.

5. 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

6. 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

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-all 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 midpoint); and R for full rearward
   X 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-all 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
   X N/A - No adjustments

Reference line angle as tested 0°
X. 11. The seat back angle, if adjustable, is set at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

  _N/A_  No seat back angle adjustment

Manufacturer’s design seat back angle _15.5°_

Tested seat back angle _15.5°_

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

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

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

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

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

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

  _X_ Yes-Pass,  _X_ No

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

  _X_ Yes-Pass;  _X_ No

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

  _X_ Yes-Pass;  _X_ No-FAIL

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

  _X_ Yes-Pass,  _X_ No-FAIL
Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart B Test Device.
DATA SHEET 12
SEAT BELT RETRACTION (S7.4.5)

NHTSA No.: C30102 Test Date: 11/14/02

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

DESIGNATED SEATING POSITION: Left Front

GVWR: 2903 kg/6400 lbs.

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

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

X 2. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   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.
   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. (S8.1.2)
   X N/A - No seat height adjustment

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

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

X 10. If seat adjustments, other than fore-aft, are present and the reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2)
   X N/A - No seat adjustments
   Reference angle as tested: 0°
X 11. The seat back angle, if adjustable, is set at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S8.1.3)
   -- N/A  No seat back angle adjustment
   Manufacturer’s design seat back angle  15.5°
   Tested seat back angle  15.5°
X 12. If adjustable, set the head restraint at the full up and full forward position. (S8.1.3) Any adjustment of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible.
   -- N/A  No head restraint adjustment
X 13. Place any adjustable seat belt anchorages at the vehicle manufacturer’s nominal design position for a 50th percentile adult male occupant (S8.1.5)
   -- N/A  No adjustable upper seat belt anchorage
   Manufacturer’s specified anchorage position
   Tested anchorage position
X 14. Is the driver seat a bucket seat?
   X  Yes, go to 14.1 and skip 14.2.
   X  No, go to 14.2 and skip 14.1.
X 14.1 Bucket seats:
   Locate and mark a vertical Plane B through the longitudinal centerline of the seat. The longitudinal centerline of a bucket seat cushion is determined at the widest part of the seat cushion. Measure perpendicular to the longitudinal centerline of the vehicle.
   Record the width of the seat. 365 mm
   Record the distance from the edge of the seat to Plane B. 267 mm
X 14.2 Bench seats (including split bench seats):
   ___ Driver seat: Locate and mark a vertical Plane B through the center of the steering wheel parallel to the vehicle longitudinal centerline.
   ___ Passenger seat: Locate and mark a vertical longitudinal Plane B on the seat that is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel.
   Distance from the vehicle centerline to the center of the steering wheel
   Distance from the vehicle centerline to Plane B
X 15. Stow outboard armrests that are capable of being stowed. (S7.4.5)
X 16. Remove the arms of a Subpart E dummy and place it in the seat such that the midsagittal plane is coincident with Plane B and the upper torso rests against the seat back. (S10.4.1.1 & S10.4.1.2)
X 17. Rest the thighs on the seat cushion.
X 18. Position the H-point of the dummy within 0.5 inch of the vertical dimension and 0.5 inch of the horizontal dimension of a point 0.25 inch below the H-point determined by using the equipment and procedures specified in SAE J826 (APR 1980). (S10.4.2.1) Then measure the pelvic angle with respect to the horizontal using the pelvic angle gage. Adjust the dummy position until these three measurements are within the specifications. (S10.4.2.2 & S10.4.2.2)  
   ___ Measurement not recorded
   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)
   ___ pelvic angle (20° to 25°) (S10.4.2.2)  ___ Measurement not recorded
X 19. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.
   ___ 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)

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)

26. Check the statement that applies to this test vehicle:
   - 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
   - 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 12
SEAT BELT RETRACTION (S7.4.5)

NHTSA No.: C36102                Test Date: 11/14/02

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

DESIGNATED SEATING POSITION: Right Front

GVWR: 2903 kg/6400 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 vans. Complete a form for each applicable seat belt.

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

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or default adjustment position. (§8.1.5)
   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. (§16.2.10.2)
   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. (§16.2.10.3.1)
   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. (§16.2.10.3.1)
   X N/A No independent seat cushion height adjustment

X 6. Put the seat in its full rearward position.
   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. (§8.1.2)
   X N/A No seat height adjustment

X 8. Draw a horizontal 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 midpoint), and R for full rearward.
   N/A The seat does not have a fore-aft adjustment

X 10. If seat adjustments, other than fore-aft are present and the reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (§16.2.10.3.2)
   X N/A No seat adjustments

Reference angle as tested: 0°
11. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S8.1.3)
   N/A    No seat back angle adjustment
   Manufacturer's design seat back angle  15.5°
   Tested seat back angle  15.5°

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 (S8.1.5)
   N/A    No adjustable upper seat belt anchorage
   Manufacturer's specified anchorage position
   Tested anchorage position

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

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  359 mm
   Record the distance from the edge of the seat to Plane B  274 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. (S10.4.2.2 & S10.4.2.2)
   Measurement not recorded
   Horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.)
   Measurement not recorded
   Vertical inches from the point 0.25 below the determined H-point (0.5 inch max.)
   Measurement not recorded
   Pelvic angle (20° to 25°)

19. Set the distance between the outboard knee zone 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)

3 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)

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 not 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

   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.: C36102 ___________________________ Test Date: 11/14/02

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

DESIGNATED SEATING POSITION: Left Front

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

X   1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1(b))
    __ Yes; this form is complete
    X   No; 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))
    __ Yes; go to 5.
    X   No: this form is complete.

   5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))
    __ Yes-Pass; __ No-FAIL
    Identify the part(s) on top or above the seat
    seat belt latch plate: ______ buckle: ______ seat belt webbing

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

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

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

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

  10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
    __ Yes-Pass; __ No-FAIL
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (§7.4.6)

NHTSA No.: C36102 ________________________ Test Date: 11/14/02

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

DESIGNATED SEATING POSITION: Center Front

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

X 1. Is the seat cushion movable so that the seat back serves a function other than seating? (§7.4.6.1 (b))
   ____ Yes; this form is complete
   X  No; go to 2

X 2. Is the seat removable? (§7.4.6.1(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? (§7.4.6.1(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? (§7.4.6.1(a))
   ____ Yes; go to 5.
   X  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)? (§7.4.6.1(a))
   ____ Yes-Pass; ________ No-FAIL
   Identify the part(s) on top or above the seat
   seat belt latch plate: ________ buckle: ________ seat belt webbing

X 6. Are the remaining two seat belt parts accessible under normal conditions?
   ____ 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. (§7.4.6.2)
   ____ 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. (§7.4.6.2)
   ____ 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. (§7.4.6.2)
   ____ Yes-Pass; ________ No-FAIL

10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (§7.4.6.2)
    ____ Yes-Pass; ________ No-FAIL
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No.: C36102 Test Date: 11/14/02

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

DELEGATED SEATING POSITION: Right Front

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

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
   - No; go to 2

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

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

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

5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))
   - Yes-Pass; No-FAIL
   - Identify the part(s) on top or above the seat:
     - seat belt latch plate: 
     - buckle: 
     - seat belt webbing:

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

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

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

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

10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
   - Yes-Pass; No-FAIL
DATA SHEET 26

VEHICLE WEIGHT, FUEL TANK, AND ATTITUDE DATA

NHTSA No.: C30102 __________________________ Test Date: 11/19/02

Laboratory: TRC Inc. __________ Test Technician(s): B. Miller, N. Pacheco, A. D. Summers, L. Hinkins

Impact Angle: 0° __________ Belted Dummy: ___ Yes ___ No

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

Driver Dummy: ___ 5th Female ___ 50th Male Passenger Dummy: ___ 5th Female ___ 50th Male

___ 1. Fill the transmission with transmission fluid to the satisfactory range.
___ 2. Drain fuel from vehicle.
___ 3. Run the engine until fuel remaining in the fuel delivery system is used and the engine stops.
___ 4. Record the useable fuel tank capacity supplied by the COTR. 34 gallons (128.7 L)
___ 5. Record the fuel tank capacity supplied in the owner’s manual. 34 gallons (128.7 L)
___ 6. Using purple dyed Stoddard solvent, having the physical and chemical properties of Type I solvent or cleaning fluid, Table 1. ASTM Standard D484-71, “Standard Specifications for Hydrocarbon Dry-cleaning Solvents,” fill the fuel tank with an amount equal to the useable capacity provided by the COTR. Amount added ___
___ 7. Crank the engine to fill the fuel delivery system with Stoddard solvent.
___ 8. Fill the coolant system to capacity.
___ 9. Fill the engine with motor oil to the max mark on the dip stick.
___ 10. Fill the brake reservoir with brake fluid to its normal level.
___ 11. Fill the windshield washer reservoir to capacity.
___ 12. Inflate the tires to the tire pressure on the tire placard. If no tire placard is available, inflate the tires to the recommended pressure in the owner’s manual.
   Tire placard pressure RF 35; LF 35; RR 35; LR 35
   Owner’s manual pressure RF N/A; LF N/A; RR N/A; LR N/A
   Actual inflated pressure RF 35; LF 35; RR 35; LR 35
   Tire pressure measurement RF 35; LF 35; RR 35; LR 35
___ 13. Record the vehicle weight at each wheel to determine the unloaded vehicle weight (UVW), i.e. “as delivered” weight.
   Right Front – 556.0 kg Right Rear – 406.5 kg
   Left Front – 615.0 kg Left Rear – 414.5 kg
   TOTAL FRONT – 1167.0 kg TOTAL REAR – 824.0 kg
   % Total Weight = 58.6 % % Total Weight = 41.4 %

UVW = TOTAL FRONT PLUS TOTAL REAR = 1991.0 kg

___ 14. UVW Test Vehicle Attitude: (all dimensions in millimeters)
   ___ 14.1 Mark a point on the vehicle above the center of each wheel.
   ___ 14.2 Place the vehicle on a level surface.
   ___ 14.3 Measure perpendicular to the level surface to the 4 points marked on the body and record the measurements
   RF 845; LF 835; RR 918; LR 909

5-51 021119-1
15. Calculate the Rated Cargo and Luggage Weight (RCLW).

15.1 Does the vehicle have the vehicle capacity weight (VCW) on the certification label or tire placard?
   ___ Yes, go to 15.3.
   X No, go to 15.2.

15.2 VCW - Gross Vehicle Weight - UVW
   VCW = \( 2903.0 \) - 1991.0 = 912.0

15.3 VCW = 912.0

15.4 Does the certification or tire placard contain the Designated Seating Capacity (DSC)?
   ___ Yes, go to 15.6.
   X No, go to 15.5

15.5 DSC = Total number of seat belt assemblies = ___

15.6 DSC = ___

15.7 RCLW = VCW - (68 kg x DSC) = 912.0 - (68 kg x ___) = 788.0

15.8 Is the vehicle certified as a truck, MPV or bus (see the certification label on the door jamb)?
   ___ Yes, the maximum RCLW is 136 kg
   X No, use the RCLW calculated in 15.7.

16. Fully Loaded Weight (100% fuel full)

16.1 Place the appropriate test dummy in both front outboard seating positions.
   Driver: ___ 5' female X 5' male
   Passenger: ___ 5' female X 5' male

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

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

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

   Right Front = 609.0 kg
   Right Rear = 519.5 kg
   Left Front = 659.5 kg
   Left Rear = 519.0 kg

   TOTAL FRONT = 1268.5 kg
   TOTAL REAR = 1038.5 kg

   % Total Weight = 55.0 %
   % Total Weight = 45.0 %

   % GVW = 43.7 %
   % GVW = 35.8 %

   FULLY LOADED WEIGHT = TOTAL FRONT + TOTAL REAR = 2307.0 kg

17. Fully Loaded Test Vehicle Altitude: (all dimensions in millimeters)

17.1 Place the vehicle on a level surface.

17.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 14.1.1 above) and record the measurements
   RF = 827 mm, LF = 827 mm, RR = 882 mm, LR = 873 mm

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

18.1 Calculated Test Weight = Fully Loaded Condition (See 16.4 above) x (0.06 x useable fuel tank capacity) x 0.79 kg/liter
   Calculated Test Weight = 2307.0 x (0.06 x 128.7 x 0.79 kg/liter) = 2300.9 kg

18.2 Test Weight Range = Calculated Test Weight (-4 kg, -9 kg)
   Max. Weight = Calculated Test Weight - 4 kg = 2296.4 kg
   Min. Weight = Calculated Test Weight - 9 kg = 2291.9 kg

19. Remove the RCLW from the cargo area.
20. Remove Stoddard solvent from the gas tank in the amount of 6% of the usable capacity as supplied by the COTR: 
\[ \text{Amount removed} = \frac{0.06 \times \text{usable capacity}}{\text{usable capacity}} \] 

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

22. Vehicle Components Removed For Weight Reduction:

None

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

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

N/A

Weight of ballast: \(68.0\) kg

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

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Front</td>
<td>624.8</td>
</tr>
<tr>
<td>Left Front</td>
<td>636.8</td>
</tr>
<tr>
<td>Right Rear</td>
<td>519.6</td>
</tr>
<tr>
<td>Left Rear</td>
<td>514.5</td>
</tr>
<tr>
<td>TOTAL FRONT</td>
<td>1261.6</td>
</tr>
<tr>
<td>TOTAL REAR</td>
<td>1034.1</td>
</tr>
<tr>
<td>% Total Weight</td>
<td>48.7%</td>
</tr>
<tr>
<td>% Total Weight</td>
<td>51.3%</td>
</tr>
<tr>
<td>% GVW</td>
<td>43.5%</td>
</tr>
<tr>
<td>% GVW + Axle GVW*Vehicle GVW</td>
<td>35.6%</td>
</tr>
</tbody>
</table>

\[ \text{TOTAL FRONT PLUS TOTAL REAR} = 2295.7 \text{ kg} \]

27. Is the test weight between the Max Weight and the Min Weight (Sec 18.7)?

Yes

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

28.1 Place the vehicle on a level surface.

28.2 Measure perpendicular to the level surface to the 4 points marked on the body (see Sec. 3 above) and record the measurements:

<table>
<thead>
<tr>
<th>Front Left</th>
<th>Front Right</th>
<th>Rear Left</th>
<th>Rear Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF 830</td>
<td>LF 822</td>
<td>RR 878</td>
<td>LR 871</td>
</tr>
</tbody>
</table>
29. Summary of test attitude

29.1

**AS DELIVERED:** RF 845; LF 835; RR 918; LR 909

**AS TESTED:** RF 830; LF 827; RR 878; LR 871

**FULLY LOADED:** RF 832; LF 827; RR 882; LR 873

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

Yes

X No, explain why not Approved by CDTR.

---

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

2 The Owner's Manual said to see Certification/Tire Label for tire pressure.

3 At this step Stoddard solvent was introduced into the drained fuel tank. 0.94 x 128.7 liters, a total of 121.0 liters was added.
DATA SHEET 27
Vehicle Accelerometer Location

NHTSA No.: C36102 Test Date: 11/19/02

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

Impact Angle: 0° Belted Dummy: Yes No

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

Driver Dummy: 5' female X 5' male Passenger Dummy: 5' female X 5' 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 x-direction accelerations. Record the location on the following chart.
VEHICLE ACCELEROMETER LOCATION
AND DATA SUMMARY

ENGINE

TOP VIEW

REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT

LEFT SIDE VIEW
# DATA SHEET 27

## VEHICLE ACCELEROMETER LOCATION MEASUREMENTS

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRE-TEST VALUES</strong></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>711</td>
</tr>
<tr>
<td>B</td>
<td>673</td>
</tr>
<tr>
<td>C</td>
<td>4757</td>
</tr>
<tr>
<td>D</td>
<td>4452</td>
</tr>
<tr>
<td>E</td>
<td>5067</td>
</tr>
<tr>
<td>F</td>
<td>693 left; 706 right</td>
</tr>
<tr>
<td>G</td>
<td>4343</td>
</tr>
<tr>
<td>H</td>
<td>3068</td>
</tr>
<tr>
<td>K</td>
<td>314</td>
</tr>
<tr>
<td><strong>POST-TEST VALUES</strong></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>712</td>
</tr>
<tr>
<td>B</td>
<td>673</td>
</tr>
<tr>
<td>C</td>
<td>4697</td>
</tr>
<tr>
<td>D</td>
<td>4457</td>
</tr>
<tr>
<td>E</td>
<td>4497 left; 4517 right</td>
</tr>
<tr>
<td>F</td>
<td>691 left; 691 right</td>
</tr>
<tr>
<td>G</td>
<td>3813</td>
</tr>
<tr>
<td>H</td>
<td>2988</td>
</tr>
<tr>
<td>K</td>
<td>307</td>
</tr>
</tbody>
</table>

**REMARKS**
DATA SHEET 28
Photographic Targets

NHTSA No.: C36102 ___________________________ Test Date: 11/14/02

Laboratory: TRC Inc. ___________________________ Test Technician(s): D. Summers, N. Echeverria

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: ___________ 50th female ___________ X 50th male Passenger Dummy: ___________ 50th female ___________ X 50th male

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

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

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

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

X 1.5 Firmly fix target A1 on the vehicle roof in the vertical longitudinal plane that is coincident with the mid sagittal 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 mid sagittal 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

1.10 Chalk the bottom portion of the steering wheel.

X 1.11 Is this an offset test?

X Yes, continue with this section

X No, go to 2.

X 1.12 Measure the width of the vehicle. Vehicle width 1967 ___________ mm

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

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

X 1.15 Apply 25 mm wide tape with alternating black and yellow squares parallel to and on each side of the line found in 1.14. The edge of each tape shall be 50 mm from the line found in 1.14. The tape shall extend from the bottom of the bumper to the front edge of the windshield (Figure 28D)
2. Barrier targeting
   2.1 Fix two stationary targets D1 and D2 to the barrier as shown in the Figure 28A. One target is in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy. The other is in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy. **Only one target over driver dummy**
   2.2 Targets D1 and D2 are on a rectangular panel. **No D2 target**
   2.3 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted on the sides of the rectangular panel away from the longitudinal centerline of the vehicle. The center of each circular target is 100 mm from the one next to it.
   Distance between circular targets on D1: 127 mm
   Distance between circular targets on D2: N/A mm

3. FMVSS 208 dummy targeting requirements
   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).
   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).
   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.
   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
   4.1 Is an FMVSS 204 impact test ordered on the “COTR Vehicle Work Order?”
     Yes, continue with this form.
     **X** No, this form is complete
   4.2 Rejection panel (Figure 28C)
     4.2.1 The panel deviates no more than 6 mm from perfect flatness when suspended vertically.
     4.2.2 The 8 targets on the panel are circular targets at least 90 mm in diameter and with black and yellow quadrants.
     4.2.3 The center of each of the 4 outer targets are placed within 1 mm of the corners of a square measuring 914 mm on each side.
     4.2.4 Locate another square with 228 mm sides and with the center of this square coincident with the center of the 914 mm square.
     4.2.5 The center of the 4 inner targets are placed at the midpoints of each of the 228 mm sides.
   4.3 Place a circular target at least 90 mm in diameter and with black and yellow quadrants on a material (cardboard, metal, etc.) that can be taped to the top of the steering column.
   4.4 Tape the target from 4.3 to the top of the steering column in a manner that does not interfere with the movement of the steering column in a crash.
REFERENCE PHOTO TARGETS

COVERED PHOTO PIT

LEFT SIDE VIEW

FIGURE 28A
RESECTION PANEL TARGETING ALIGNMENT

RESECTION CONTROL POINTS PANEL

STERING COLUMN TARGET B

STEERING WHEEL

CAR TOP TARGETS A1 & A2

REAR VIEW

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

LEFT SIDE VIEW

FIGURE 28B
PRE-RUN STEERING COLUMN HIGH SPEED CAMERA VIEW

LEFT SIDE VIEW

FIGURE 28C
## DATA SHEET 29
### CAMERA LOCATIONS

**VEH. NHTSA No.:** C30102  
**TEST DATE:** 11/19/02  
**TIME:** 1617

**VEH. YEAR/MAKE/MODEL/BODY STYLE:** 2003/Chevrolet/Silverado/Pickup Truck

<table>
<thead>
<tr>
<th>CAMERA NO.</th>
<th>VIEW</th>
<th>CAMERA POSITIONS (mm)</th>
<th>ANGLE (deg)</th>
<th>FILM PLANE TO LEAD TARGET</th>
<th>LENS (mm)</th>
<th>SPEED (fps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left Side View</td>
<td>X: NA  Y: NA  Z: NA 1</td>
<td></td>
<td></td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>Left Side View (barrier face to front seat backs)</td>
<td>X: NA  Y: NA  Z: NA 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Left Side View (A-post)</td>
<td>X: -1230  Y: -7660  Z: -1380</td>
<td>0</td>
<td>7200</td>
<td>35</td>
<td>705</td>
</tr>
<tr>
<td>4</td>
<td>Left Side View (B-post aimed toward center of steering wheel)</td>
<td>X: -5000  Y: -5000  Z: -2150</td>
<td>-9</td>
<td>4230</td>
<td>25</td>
<td>250</td>
</tr>
<tr>
<td>5</td>
<td>Left Side View (B-post)</td>
<td>X: -1640  Y: -7220  Z: -1300</td>
<td>-3.5</td>
<td>7200</td>
<td>25</td>
<td>NA 2</td>
</tr>
<tr>
<td>6</td>
<td>Left Side View (front door under camera 5)</td>
<td>X: -1600  Y: -7310  Z: -950</td>
<td>0</td>
<td>6820</td>
<td>25</td>
<td>585</td>
</tr>
<tr>
<td>7</td>
<td>Right Side View (overall)</td>
<td>X: -2770  Y: 9060  Z: -1300</td>
<td>-1</td>
<td>8480</td>
<td>13</td>
<td>1000</td>
</tr>
<tr>
<td>8</td>
<td>Right Side View (A-post)</td>
<td>X: -900  Y: 5850  Z: -1300</td>
<td>0</td>
<td>5350</td>
<td>25</td>
<td>1000</td>
</tr>
<tr>
<td>9</td>
<td>Right Side View (B-post)</td>
<td>X: -5210  Y: 5510  Z: -1040</td>
<td>-7</td>
<td>4670</td>
<td>25</td>
<td>1000</td>
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<tr>
<td>10</td>
<td>Right Side View (front door)</td>
<td>X: -1300  Y: 7880  Z: -1300</td>
<td>0</td>
<td>7370</td>
<td>25</td>
<td>1002</td>
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<tr>
<td>11</td>
<td>Front View Windshield</td>
<td>X: 470  Y: 0  Z: -2500</td>
<td>-66</td>
<td>2150</td>
<td>8.5</td>
<td>1000</td>
</tr>
<tr>
<td>12</td>
<td>Front View Driver</td>
<td>X: 470  Y: -270  Z: -2500</td>
<td>-62</td>
<td>2200</td>
<td>17</td>
<td>1000</td>
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<tr>
<td>14</td>
<td>Overhead Barrier Impact View</td>
<td>X: 0  Y: 0  Z: -5600</td>
<td>-90</td>
<td>NA 1</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>15</td>
<td>Pit Camera Engine View</td>
<td>X: -900  Y: 0  Z: 830</td>
<td>90</td>
<td>NA 1</td>
<td></td>
<td>17</td>
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<tr>
<td>16</td>
<td>Pit Camera Fuel Tank View</td>
<td>X: -2650  Y: 130  Z: 1000</td>
<td>90</td>
<td>NA 1</td>
<td></td>
<td>13</td>
</tr>
</tbody>
</table>

* X - film plane forward (downstream) from barrier impact surface
  Y - film plane to right of monorail centerline from driver's perspective
  Z - film plane below ground level
1 Not applicable
2 Unable to determine speed, camera ran too slow to time.
3 Digital camera
CAMERA POSITIONS FOR FRONTAL IMPACTS

TOP VIEW

CONCRETE BARRIER

CONECPT R/F DPT

REAL FACE CAMERA

CAMERA FRAME RATES:

a = 24 fps
All Others = 1,075 fps

LEFT SIDE VIEW
# DATA SHEET 30

**DUMMY POSITIONING PROCEDURES**

FOR DRIVER TEST DUMMY CONFORMING TO SUBPART E OF PART 572

<table>
<thead>
<tr>
<th>Laboratory: TRC Inc</th>
<th>Test Technician(s): J Jenkins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact Angle: 0°</td>
<td>Belted Dummies: Yes No</td>
</tr>
<tr>
<td>Test Speed: X 32 to 40 km/h</td>
<td>0 to 48 km/h</td>
</tr>
<tr>
<td>Driver Dummy: 5th female X 50th male</td>
<td>Passenger Dummy: 5th female X 50th male</td>
</tr>
</tbody>
</table>

1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position (S20.1.8.1)
   - X 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 (S20.1.8.2)
   - X 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 (S20.1.8.3)
   - X 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.
   - X N/A - No independent seat cushion height adjustment.

5. Put the seat in its full rearward position.
   - X 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.
   - X N/A - No seat height adjustment.

7. Draw a horizontal line on the side of the seat cushion. Record the angle of this line, with respect to the horizontal, as the seat cushion reference angle 0°.

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.

10. If seat adjustments, other than fore-aft, are present and the seat cushion reference angle changes from that measured in 7, use those adjustments to maintain as closely as possible the angle recorded in 7.
    - X N/A - No adjustments
    - Reference angle __________

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)
    - X N/A - No seat back angle adjustment
Manufacturer's design seat back angle: 15.5°

Tested seat back angle: 15.4°

12. 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.

   ___ 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 (§222.2.1.6.1)

   ___ N/A — No adjustable upper seat belt anchorage

Manufacturer's specified anchorage position: Fixed

Tested anchorage position: Fixed

14. Place the adjustable accelerator pedal in the full forward position

   ___ N/A — the accelerator pedal is not adjustable.

15. Is the driver seat a bucket seat?

   ___ Yes, go to 15.1 and skip 15.2.

   ___ No, go to 15.2 and skip 15.1.

15.1 Bucket seat.

   Locate and mark a vertical Plane B through the longitudinal centerline of the seat. (§222.2.1.3) 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: 525 mm

   Record the distance from the edge of the seat to Plane B: 263 mm

   Go to 16

15.2 Bench seat (including split bench seats):

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

   Go to 16

16. Place the dummy in the seat such that the midsagittal plane is coincident with Plane B and the upper torso rests against the seat back. (§10.4.1.1 & §10.4.1.2)

17. Rest the thighs on the seat cushion. (§10.5)

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 1986). (§10.4.2.1) Then measure the pelvic angle with respect to the horizontal using the pelvic angle gauge. Adjust the dummy position until these three measurements are within the specifications (§10.4.2.1 and §10.4.2.2)

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

   (§10.4.2.1) Measurement not recorded

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

   (§10.4.2.1) Measurement not recorded

   ___ Pelvic angle (20° to 25°) Measurement not recorded

19. Is the head level within ± 0.5"? (§10.1)

   ___ Yes, go to 20

   ___ No, go to 19.1

   19.1 Adjust the position of the H-point. (§10.1)

   ___ Yes, record the following, then go to 20.

   ___ No, go to 19.3

   ___ 8 mm forward horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (§10.4.2.1)

   ___ 10 mm vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (§10.4.2.1)

   ___ 24.8° pelvic angle (20° to 25°) (§10.4.2.2)
19.3 Adjust the pelvic angle. (§10.1)

19.4 Is the head level within ± 0.5°? (§10.1)

___ Yes, record the following, then go to 20. ___ No, go to 19.5

_____ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (§10.4.1)

_____ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (§10.4.2.1)

pelvic angle (20° to 25°) (§10.4.2.2)

19.5 Adjust the neck bracket of the dummy to the minimum amount necessary from the non-adjusted "0°" setting until the head is level within ± 0.5°. (§10.1)

Record the following, then go to 20

____________________ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (§10.4.2.1)

____________________ vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (§10.4.2.1)

____________________ pelvic angle (20° to 25°) (§10.4.2.2)

20. Set the distance between the outboard knee elevis flange surfaces at 10.6 inches.

270 mm measured distance (10.6 inches) (§10.5)

21. Can the right foot be placed on the accelerator?

X Yes, go to 21.1 and skip 21.2

___ No, go to 21.2

21.1 To the extent practicable keep the right thigh and the leg in a vertical plane (§10.5) while resting the foot on the unpressed accelerator pedal with the rearmost point of the heel on the floor pan in the plane of the pedal. (§10.6.1.1)

21.2 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. (§10.6.1.4)

21.2.1 Move the adjustable pedal to its most rearward position or until the right foot is flat on the pedal, whichever occurs first. (§10.6.1.1)

N/A the accelerator pedal is not adjustable.

22. Does the vehicle have a foot rest?

X Yes, go to 22.1

___ No, go to 22.1.2

22.1 With the left thigh and leg in a vertical plane, place the foot on the foot rest. (§10.6.1.2)

22.1.1 Is the left foot elevated above the right foot?

___ Yes, go to 22.1.2 and position the foot off the foot rest.

___ No, go to 23

22.1.2 Check the ONLY one of the following that applies

___ 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 (§10.5) and place the foot on the toeboard, skip 22.1.3 (§10.6.1.2)

___ 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 (§10.5) and place the foot on the toeboard. The foot was rotated about the leg to avoid pedal contact, skip 22.1.3 (§10.6.1.2)

___ 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 (§10.5) 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 22.1.3 (§10.6.1.2)
22.1.3 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 ($10.5$). Set the foot perpendicular
when the leg and place it as far forward as possible with the heel resting on the
floor pan. ($10.6.1.2$)

__ 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 ($10.5$). 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. ($10.6.1.2$)

__ The foot did contact the brake or clutch pedal and the foot was rotated about the leg
and the leg was rotated outward 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 outward about the hip the minimum distance necessary to
avoid pedal contact. ($10.6.1.2$)

X 23. Place the right upper arm adjacent to the torso with the centerline as close to a vertical
plane as possible. ($10.2.1$)

X 24. Is the driver seat belt used for this test?

__ Yes, continue

X No, go to 25

__ 24.1 Fasten the seat belt around the dummy.

__ 24.2 Remove all slack from the lap belt portion. ($10.9$)

__ 24.3 Pull the upper torso webbing out of the retractor and allow it to retract; repeat this
four times. ($10.9$)

__ 24.4 Apply a $2$ to $4$ pound tension load to the lap belt. ($10.9$)

__ pound load applied

__ 24.5 Is the belt system equipped with a tension relieving device?

__ Yes, continue

__ No, go to 25

__ 24.6 Introduce the maximum amount of slack into the upper torso belt that is
recommended by the vehicle manufacturer in the vehicle owner’s manual. ($10.9$).

Go to 25

X 25. Place the left upper arm adjacent to the torso with the centerline as close to a vertical plane
as possible. ($10.2.1$)

X 26. 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. ($10.3.1$)

X 27. 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. ($10.3.1$)

X 28. 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 30

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

NIHSA No.: C30102 Test Date: 11/19/02

Laboratory: TRC Inc Test Technician(s): T Jenkins

Impact Angle: 0° Borted Dummies: Yes No

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

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

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 14
   X N/A - the passenger seat adjusts independently of the driver seat.

2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (§20.1.8.1)
   X 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. (§20.1.8.2)
   X 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. (§20.1.8.3)
   X 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
   X N/A - No independent seat cushion height adjustment

6. Put the seat in its full rearward position.
   X 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
   X N/A - No seat height adjustment

8. Draw a horizontal line on the side of the seat cushion. Record the angle of this line, with respect to the horizontal, as the seat cushion reference angle. 0°

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

10. Using only the controls that change the seat in the fore-aft direction, place the seat in the middle fore-aft position

11. If seat adjustments, other than fore-aft, are present and the seat cushion reference angle changes from that measured in 8, use those adjustments to maintain as closely as possible the angle recorded in 8.
   X N/A - No adjustments

Reference angle

Reference angle as tested
12. The seat back angle, if adjustable, is set at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (§4.5.4.1(b) and §8.1.3)
   ___ N/A - No seat back angle adjustment
   Manufacturer’s design seat back angle ___ 15.5 •
   Tested seat back angle ___

13. 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.
   ___ N/A - No head restraint adjustment

14. Place any adjustable seat belt anchorages at the vehicle manufacturer’s nominal design position for a 50th percentile adult male occupant (§22.2 1.6.1)
   ___ N/A - No adjustable upper seat belt anchorage
   Manufacturer’s specified anchorage position ___ Fixed
   Tested anchorage position ___ Fixed

15. Is the passenger seat a bucket seat?
   ___ Yes, go to 15.1 and skip 15.2.
   ___ No, go to 15.2 and skip 15.1.

15.1 Bucket seats.
   Locate and mark a vertical Plane B through the longitudinal centerline of the seat (§22.2 1.5) 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 ___ 520 mm
   Record the distance from the edge of the seat to Plane B ___ 262 mm
   Go to 16

15.2 Bench seats (including split bench seats):
   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 ___
   Go to 16

16. Place the dummy in the seat such that the midsagittal plane is coincident with Plane B and the upper torso rests against the seat back. (§10.4.1.1 & §10.4.1.2)

17. Rest the thighs on the seat cushion. (§10.5)

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). (§10.4.2.1) 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 (§10.4.2.1 and §10.4.2.2)
   7 mm forward horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (§10.4.2.1)
   3 mm high vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (§10.4.2.1)
   22.6 • pelvic angle (20° to 25°) (§10.4.2.2)

19. Is the head level within 0.5°? (§10.1)
   ___ Yes, go to 20
   ___ No, go to 19.1
   ___ 19.1 Adjust the position of the H-point. (§10.1)
19.2 Is the head level within • 0.5•7 (S10.1)
   ______ Yes, record the following, then go to 20. ______ No, go to 19.3
   ______ 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)

19.3 Adjust the pelvic angle. (S10.1)

19.4 Is the head level within • 0.5•7 (S10.1)
   ______ Yes, record the following, then go to 20. ______ No, go to 19.5
   ______ 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)

19.5 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•7. (S10.1)
   Record the following, then go to 20
   ______ 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 20. Set the distance between the outboard knee hinge flange surfaces at 10.6 inches.
     ______ measured distance (10.6 inches) (S10.5)

X 21. Check the only one of the following that applies.
     ______ 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 22. Place the left upper arm in contact with the seat back and side of the torso. (S10.2.2)

X 23. Is the passenger seat belt used for this test?
     ______ Yes, continue
     ______ No, go to 24

   ______ Fasten the seat belt around the dummy.
   ______ Remove all slack from the lap belt portion. (S10.9)
   ______ Full the upper torso webbing out of the retractor and allow it to retract. Repeat this
         four times. (S10.9)
   ______ Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
         ______ pound load applied
23.5 Is the belt system equipped with a tension relieving device?

--- Yes, continue

--- No, go to 24

23.6 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 24.

X 24. Place the right upper arm in contact with the seat back and side of the torso. (S10.2.2)

X 25. 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 26. 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)
<table>
<thead>
<tr>
<th>DRIVER (Serial No. 230)</th>
<th>PASSENGER (Serial No. 229)</th>
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</thead>
<tbody>
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<td>WA°</td>
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<td>PA°</td>
<td>24.8</td>
</tr>
<tr>
<td>TA°</td>
<td>54.9</td>
</tr>
<tr>
<td>KK</td>
<td>320</td>
</tr>
<tr>
<td>ST</td>
<td>634, ANGLE -74.6°</td>
</tr>
<tr>
<td>SK</td>
<td>720, ANGLE -3.2°</td>
</tr>
<tr>
<td>SH</td>
<td>355, ANGLE 12.4°</td>
</tr>
<tr>
<td>SIHY</td>
<td>260</td>
</tr>
<tr>
<td>HS</td>
<td>278</td>
</tr>
<tr>
<td>HD</td>
<td>162</td>
</tr>
<tr>
<td>AD</td>
<td>134</td>
</tr>
</tbody>
</table>
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

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

AD - Arm to Door
HD - H-Point to Door
HR - Head to Seat Header
HS - Head to Seat Window
4K - Knee to Knee
SHY - Striker to H-Point (Y Direction)

Seat Back Angle Line

VERTICAL TRANSVERSE PLANE

VERTICAL LONGITUDINAL PLANES

5-78
021119-1
DESIGNATIONS OF DUMMY MEASUREMENTS

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

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

* **THI**  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.

* **THW**  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).

* **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.

**IID**  
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.

**SHV**  
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 COIR.

**PA**  
Pelvic or Femur Angle, taken by inserting the pelvic angle gauge into the H-point gauging hole on the SID or the Hybrid III dummies and taking this angle with respect to the horizontal. Measure the angle of the line connecting the H-point hole and the outer knee pivot bolt hole on a Hybrid II dummy with respect to the horizontal, to find the femur angle.

**SWA**  
Steering Wheel Angle, find this by placing a straight edge against the steering wheel rim along the longitudinal plane. Then measure the acute angle of the straight edge with respect to the horizontal.

* Measurement used in Data Tape Reference Guide

1 Only outboard measurement is referenced in Data Tape Reference Guide
SCA  Steering Column Angle, measured with respect to the horizontal by placing an inclinometer on the center of the underside of the steering column.

NA  Measure the angle made when taking the measurement NR with respect to the horizontal.

KDA  Knee to Dash Angle, the angle that the measurement KD is taken at with respect to the horizontal. Only get this angle for the outboard knee. See photograph.

WA  Windshield Angle, place an inclinometer along the transverse center of the windshield exterior (measurement is made with respect to horizontal)

TA  Tibia Angle, use a straight edge to connect the dummy's knee and ankle bolts. Then place an inclinometer on the straight edge and measure the angle with respect to the horizontal.
DATA SHEET 32
CRASH TEST

NHTSA No.: C36102 ____________________ Test Date: 11/19/02 ______

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

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

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

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

1. Vehicle underbody painted

2. The speed measuring devices are in place and functioning

3. The speed measuring devices are 1.5 m from the barrier (spec. 1.5 m) and 30 cm from the barrier (spec. is 30 cm)

4. Convertible top is in the closed position.
   X N/A — Not a convertible

5. Instrumentation and wires are placed so the motion of the dummies during impact is not affected

6. Tires inflated to pressure on tire placard or if it does not have a tire placard because it is not a passenger car; then inflated to the tire pressure specified in the owner information.
   240 kPa from left tire 240 kPa specified on tire placard or in owner information
   240 kPa from right tire 240 kPa specified on tire placard or in owner information
   240 kPa rear left tire 240 kPa specified on tire placard or in owner information
   240 kPa rear right tire 240 kPa specified on tire placard or in owner information

7. Time zero markers and switches in place

8. Pretest zero and shunt calibration adjustments performed and recorded

9. Dummy temperature meets requirements of section 12.2 of the test procedure.

10. Vehicle hood closed and latched

11. Transmission placed in neutral

12. Parking brake off

13. Ignition in the ON position

14. Doors closed and latched but not locked

15. Posttest zero and shunt calibration checks performed and recorded

16. Actual test speed 39.2 km/h

17. Vehicle rebound from the barrier 56.4 cm

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 NA
   Right rear door NA

19. Describe the contact points of the dummy with the interior of the vehicle.
   Both knees contacted knee bolster.
   Passenger dummy: Head contacted airbag and sun visor. Chest contacted airbag. Both knees contacted the glove box.
DATA SHEET 34

ACCIDENT INVESTIGATION MEASUREMENTS

NHTSA No.: C36102  Test Date: 11/19/02

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

Impact Angle: 0°  Belted Dummies: Yes  No

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

Driver Dummy: 50th female  50th male  Passenger Dummy: 50th female  50th male

Vehicle Year/Make/Model/Body Style: 2003/Chevrolet/Silverado/Pickup Truck

VIN: 1GCEC13Z131545

Wheelbase: 3387  Build Date: 08/02

Veh Size Category: Pickup  Test Weight: 2295.7

Front Overhang: 1004  Overall Width: 1967

Veh. Impact Speed: 39.2  Vel. Change\(^1\): 44.0 km/h

Collision Deformation Classification (CDC) Code: 12FDW2

\(^1\) From integration of right rear seat crossmember X-axis acceleration.
Impact Mode: 0° Front

Crush Depth Dimensions¹:

C1 = 340 mm
C2 = 407 mm
C3 = 442 mm
C4 = 444 mm
C5 = 399 mm
C6 = 354 mm

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

Length of Damage Region:
L = 1829 mm

REMARKS:

¹ Numbered from left to right of vehicle.
DATA SHEET 35
WINDSHIELD MOUNTING (FMVSS 212)

NIHSA No.: C30102  
Test Date: 11/19/02

Laboratory: IRC Inc  
Test Technician(s): D. Summers

Impact Angle: 0°  
Belted Dummies: Yes  
No

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

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

Most vehicle windshields are either bonded in place and covered with chrome or plastic strips or they are held to the body by a rubber retainer. It is difficult to determine the exact periphery of the windshield because the glazing edge is hidden from view. The test engineer will measure the perimeter inside the retainer or molding at several locations. After the impact test the covering over the glazing edge may be removed for exact measurement of the windshield periphery. Do not disturb the molding or retainer in the event of a noncompliance.

1. Describe from visual inspection how the windshield is mounted and describe any trim material.
   Plastic trim around perimeter, held by adhesive around inner perimeter.

2. Mark the longitudinal centerline of the windshield.

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

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

5. Measure from the edge of the retainer or molding to the edge of the windshield.
   Dimension D: 20 mm

6. Can a single thickness of copier type paper (as small a piece as necessary) slide between the windshield and the vehicle body?
   No pass.

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

8. Measure and record post-crash A, B, C, D, E, and F such that the measurements do not include any of the parts of the windshield where the paper slides between the windshield and the vehicle body.

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

10. Is total right side percent retention less than 75%?
    Yes, FAIL.
    No, PASS.

11. Is total left side percent retention less than 75%?
    Yes, FAIL.
    No, PASS.
### WINDSHIELD PERIPHERY MEASUREMENT

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Pre-crash mm</th>
<th>Post-crash mm</th>
<th>Percent Retention (Post-crash + Pre-crash)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left side</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>700</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>665</td>
<td>665</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>880</td>
<td>880</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2245</td>
<td>2245</td>
<td>100</td>
</tr>
<tr>
<td>Right side</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>700</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>665</td>
<td>665</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>880</td>
<td>880</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2245</td>
<td>2245</td>
<td>100</td>
</tr>
<tr>
<td>Width of Molding</td>
<td>G</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

Indicate area of mounting failure.

### FRONT VIEW OF WINDSHIELD

**INDICATE WIDTH OF MOLDING**

zer0 point (0,0)
DATA SHEET 36
WINDSHIELD ZONE INTRUSION (FMVSS 219)

NHTSA No.: C30102                 Test Date: 11/1992

Laboratory: TRC Inc.               Test Technician(s): N. Veleveria, D. Summers, K. Watkins

Impact Angle: 0°                   Belted Dummies: ☑ Yes  ☑ No

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

Driver Dummy: ☑ 50th Female  ☑ 50th Male  Passenger Dummy: ☑ 50th Female  ☑ 50th Male

1. Place a 165 mm diameter rigid sphere, with a mass of 0.8 kg on the instrument panel so that it is simultaneously touching the instrument panel and the windshield, (571.219 S5.1(e))
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 S5.1(b))
3. From the outermost contactable points on the windshield draw a horizontal line to the edges of the windshield. (571.219 S5.1(b))
4. Draw a line on the inner surface of the windshield that is 13 mm below the line determined in items 2 and 3.
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

ZERO POINT (0,0)
LOWER EDGE OF PROTECTED ZONE

A Windshield Dimensions

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1400</td>
<td>350</td>
<td>1760</td>
<td>665</td>
<td>447</td>
<td>915</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

C. Provide coordinates of the area beneath the protected zone template that the inner surface of the windshield was penetrated by a vehicle component.

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>

REMARKS:

No penetration into or beneath the protected zone.
DATA SHEET 37
FUEL SYSTEM INTEGRITY (FMVSS 301)

TEST VEHICLE NHTSA NO.: C30102; TEST DATE: 11/19/02

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 2003/Chevrolet/Silverado/Pickup Truck

TYPE OF IMPACT: 0• Front

STODDARD SOLVENT SPILLAGE MEASUREMENT.

A. From impact until vehicle motion ceases —
   
   Actual = 0 grams. (Maximum Allowable = 28 grams)

B. For 5 minute period after vehicle motion ceases
   
   Actual = 0 grams. (Maximum Allowable = 142 grams)

C. For next 25 minutes —
   
   Actual = 0 grams. (Maximum Allowable = 28 grams/minute)

D. Provide Spillage Details: None

REMARKS:

No spillage occurred during the interval between test time and the start of the rollover
A. TEST PHASE – 0" TO 90"

Determination of Stoddard
Solvent Collection Time Period.

1. Rollover Fixture 90° Rotation Time –
   _1_ minutes, _30_ seconds
   (Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold
   Time – 5 minutes, 0 seconds

3. TOTAL – _6_ minutes, _30_ seconds

4. NEXT WHOLE MINUTE INTERVAL –
   _7_ minutes

Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of
   rotation = _0_ grams
   (142 grams allowed)

2. 6th minute = _0_ grams
   (28 grams allowed)

3. 7th minute = _0_ grams
   (28 grams allowed)

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

Provide Details of Stoddard Solvent Spillage Locations – None
B  TEST PHASE = 90\degree TO 180\degree

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90\degree Rotation Time = 1 minute, 30 seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 30 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes

Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0 grams
   (142 grams allowed)

2. 6th minute = 0 grams
   (28 grams allowed)

3. 7th minute = 0 grams
   (28 grams allowed)

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

Provide Details of Stoddard Solvent Spillage Locations  None
C. **TEST PHASE – 180° TO 270°**

- **Determination of Stoddard Solvent Collection Time Period**

  1. Rollover Fixture 90° Rotation Time – ___ minutes, ___ seconds
     
     (Specified Range is 1 to 3 minutes)

  2. FMVSS 301 Position Hold Time – 5 minutes, 0 seconds

  3. **TOTAL** – ___ minutes, ___ seconds

  4. **NEXT WHOLE MINUTE INTERVAL** – ___ minutes

- **Actual Test Vehicle Stoddard Solvent Spillage**

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

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

  3. 7th minute = ___ 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 - ___ minutes, ___ seconds
   (Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold
   Time = 5 minutes, 0 seconds

3. TOTAL = ___ minutes, ___ seconds

4. NEXT WHOLE MINUTE INTERVAL = ___ minutes

   Actual Test Vehicle Stoddard Solvent Spillage

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

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

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

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

Provide Details of Stoddard Solvent Spillage Locations - None
Section 6

Test Data
CHANNEL FILTER CH. CLASS 164/3

STAB L/H 10/19 10 0308 200 RESULT 3RD

DRIVER 4-FO 7-AXIS ACCELERATION

TRACK FRONT 09/05 11 3128

PEAK GAT T 37 G 0 122.24 HR -5 7 10 0 52 32 HR
CHANNEL MARKER:  ALTER SH. CLASS 1970

FORCE (N) vs TIME (ms)

PEAK FORCE: 763.35 N 0.97 s FWHM -238 78 N 0.147 46 Hz

TEST NUMBER: 121198
Pre-Test Dummy Scan Time (Test Time: 41:23)

Lower and Upper Temperature Bounds indicated with bold lines at 20.6°C and 25.2°C.
Section 7

Photographs
<table>
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<th>Image Title</th>
<th>Page</th>
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<td>7-5</td>
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<tr>
<td>2</td>
<td>Post-Test Front View</td>
<td>7-6</td>
</tr>
<tr>
<td>3</td>
<td>Pre-Test Left Side View</td>
<td>7-7</td>
</tr>
<tr>
<td>4</td>
<td>Post-Test Left Side View</td>
<td>7-8</td>
</tr>
<tr>
<td>5</td>
<td>Pre-Test Right Side View</td>
<td>7-9</td>
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<tr>
<td>6</td>
<td>Post-Test Right Side View</td>
<td>7-10</td>
</tr>
<tr>
<td>7</td>
<td>Pre-Test Left Front Three-Quarter View</td>
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<td>8</td>
<td>Post-Test Left Front Three-Quarter View</td>
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<td>9</td>
<td>Pre-Test Right Rear Three-Quarter View</td>
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<td>10</td>
<td>Post-Test Right Rear Three-Quarter View</td>
<td>7-14</td>
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<tr>
<td>11</td>
<td>Pre-Test Windshield View</td>
<td>7-15</td>
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<tr>
<td>12</td>
<td>Post-Test Windshield View</td>
<td>7-16</td>
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<tr>
<td>13</td>
<td>Pre-Test Engine Compartment View</td>
<td>7-17</td>
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<tr>
<td>14</td>
<td>Post-Test Engine Compartment View</td>
<td>7-18</td>
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<tr>
<td>15</td>
<td>Pre-Test Steering Column and Firewall - Under Hood View</td>
<td>7-19</td>
</tr>
<tr>
<td>16</td>
<td>Post-Test Steering Column and Firewall - Under Hood View</td>
<td>7-20</td>
</tr>
<tr>
<td>17</td>
<td>Pre-Test Steering Column and Steering Box View</td>
<td>7-21</td>
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<td>18</td>
<td>Post-Test Steering Column and Steering Box View</td>
<td>7-22</td>
</tr>
<tr>
<td>19</td>
<td>Pre-Test Steering Column and Firewall - Interior View</td>
<td>7-23</td>
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<td>20</td>
<td>Post-Test Steering Column and Firewall - Interior View</td>
<td>7-24</td>
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<td>21</td>
<td>Pre-Test Front Underbody View</td>
<td>7-25</td>
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<td>22</td>
<td>Post-Test Front Underbody View</td>
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<td>Pre-Test Mid Underbody View</td>
<td>7-27</td>
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<td>24</td>
<td>Post-Test Mid Underbody View</td>
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<td>Pre-Test Rear Underbody View</td>
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<td>Post-Test Rear Underbody View</td>
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</tr>
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<td>Pre-Test Fuel Tank View</td>
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<td>Post-Test Fuel Tank View</td>
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<td>Pre-Test Fuel Lines and Filter View</td>
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<tr>
<td>30</td>
<td>Post-Test Fuel Lines and Filter View</td>
<td>7-34</td>
</tr>
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Appendix A

Test Equipment List and Calibration Information
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