VEHICLE SAFETY COMPLIANCE TESTING
FOR
FMVSS 208, OCCUPANT CRASH PROTECTION
FMVSS 212, WINDSHIELD MOUNTING
FMVSS 219, WINDSHIELD INTRUSION (PARTIAL)
FMVSS 301, FUEL SYSTEM INTEGRITY

HYUNDAI MOTOR COMPANY
2007 HYUNDAI ELANTRA PASSENGER CAR
NHTSA NO.: C70508

PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105

FINAL REPORT DATE: JUNE 5, 2007

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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Prepared by: _____________________________  Date:  June 5, 2007
Jeff Lewandowski, Project Engineer

Reviewed by: _____________________________  Date:  June 5, 2007
David Winkelbauer, Facility Director

FINAL REPORT ACCEPTED BY OVSC:

Accepted By: _____________________________  Date:  June 5, 2007

Acceptance Date:  June 5, 2007
Compliance tests were conducted on the subject 2007 Hyundai Elantra in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP208-13 for the determination of FMVSS 208 compliance. Test failures identified were as follows:

None

Key Words

Frontal Impact
40 kmph Vehicle Safety Compliance Testing
FMVSS 208, “Occupant Crash Protection”
FMVSS 212, “Windshield Mounting”
FMVSS 219, (partial), “Windshield Zone Intrusion”
FMVSS 301, “Fuel System Integrity”

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SECTION 1
PURPOSE OF COMPLIANCE TEST

The tests performed are part of a program conducted for the National Highway Traffic Safety Administration (NHTSA) by MGA Research Corporation (MGA) under Contract No. DTNH22-03-D-11002. The purpose of this test was to determine whether the subject vehicle, a 2007 Hyundai Elantra, NHTSA No. C70508, meets certain performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity". The compliance test was conducted in accordance with OVSC Laboratory Test Procedure No. TP208-13 dated July 27, 2005.
### SECTION 2
#### TESTS PERFORMED

**Test Vehicle:** 2007 Hyundai Elantra  
**NHTSA No.:** C70508  
**Test Program:** FMVSS 208 Compliance  
**Test Dates:** 2/27/07 - 4/12/07

The following checked items indicate the tests that were performed:

| X | 1. Rear outboard seating position seat belts (S4.1.1.2(b) & (S4.2.4) |
| X | 2. Air bag labels (S4.5.1) |
| X | 3. Readiness indicator (S4.5.2) |
| X | 4. Passenger air bag manual cut-off device (S4.5.4) |
| X | 5. Lap belt lockability (S7.1.1.5) |
| X | 6. Seat belt warning system (S7.3) |
| X | 7. Seat belt contact force (S7.4.4) |
| X | 8. Seat belt latch plate access (S7.4.5) |
| X | 9. Seat belt retraction (S7.4.6) |
| X | 10. Seat belt guides and hardware (S7.4.6) |
| X | 11. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R) |
| X | 12. Suppression tests with newborn infant (Part 572, Subpart K) |
| X | 13. Suppression tests with 3-year-old dummy (Part 572, Subpart P) |
| X | 14. Suppression tests with 6-year-old dummy (Part 572, Subpart N) |
| X | 15. Test of reactivation of the passenger air bag system with an unbelted 5th percentile female dummy |
| X | 16. Low risk deployment test with 12-month-old dummy (Part 572, Subpart R) |
| X | 17. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P) |
| X | 18. Low risk deployment test with 6-year-old dummy (Part 572, Subpart N) |
| X | 19. Low risk deployment test with 5th female dummy (Part 572, Subpart O) |
| X | 20. Impact Tests |
|  | Frontal Oblique |
|  | Belted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.1(a)) |
|  | Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1)) |
|  | Unbelted 50th male dummy driver and passenger (32 to 40 kmph) (S5.1.2(a) (1) or S5.1.2(b)) |
| X | Frontal 0° |
|  | Belted 50th male dummy driver (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a)) |
|  | Belted 50th male dummy passenger (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a)) |
|  | Belted 5th female dummy driver (0 to 48 kmph) (S16.1(a)) |
|  | Belted 5th female dummy passenger (0 to 48 kmph) (S16.1(a)) |
|  | Belted 50th male dummy driver and passenger (0 to 56 kmph) (S5.1.1.(b)(2)) |
|  | Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a) (1)) |
| X | Unbelted 50th male dummy driver (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b)) |
| X | Unbelted 50th male dummy passenger (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b)) |
Unbelted 5th female dummy driver (32 to 40 kmph) (S16.1(b))
Unbelted 5th female dummy passenger (32 to 40 kmph) (S16.1(b))
40% Offset 0° Belted 5th male dummy driver and passenger (0 to 40 kmph) (S18.1)

21. Sled Test: unbelted 50th male dummy driver and passenger (S13)
22. FMVSS 204 Indicant Test
23. FMVSS 212 Indicant Test
24. FMVSS 219 Indicant Test
25. FMVSS 301 Frontal Indicant Test

For the crash tests, the vehicle was instrumented with 8 accelerometers. The accelerometer data from the vehicle and dummies were sampled at 10,000 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 high-speed digital video.

The vehicle appears to meet all of the performance requirements to which it was tested.
### SECTION 3
INJURY RESULT SUMMARY FOR FMVSS 208 TESTS

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2007 Hyundai Elantra</th>
<th>NHTSA No.:</th>
<th>C70508</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Dates:</td>
<td>3/27 &amp; 3/29/07</td>
</tr>
</tbody>
</table>

#### 5th Percentile Female Low Risk Deployments

**5th Percentile Female SN 511 Position 1 (Chin On Module) 3-27-07 Trial 1**

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>51</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>5.6</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>149.1</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>1955</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>140</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>15</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>10</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>132</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>123</td>
</tr>
</tbody>
</table>

Second stage fire time of 120 ms; Injuries calculated on 0 ms to 245 ms

**5th Percentile Female SN 510 Position 1 (Chin On Module) 3-29-07 Trial 2**

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>40</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>7.0</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>157.7</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>202.4</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>1095</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>179</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>11</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>6</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>72</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>77</td>
</tr>
</tbody>
</table>

Second stage fire time of 120 ms; Injuries calculated on 0 ms to 245 ms
### 5th Percentile Female Low Risk Deployments

#### 5th Percentile Female SN 510 Position 2 (Chin On Rim) 3-27-07

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>52</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>12.7</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>74.9</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>219.3</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>80.0</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>1307</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>100</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>27</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>23</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>16</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>27</td>
</tr>
</tbody>
</table>

Second stage fire time of 120 ms; Injuries calculated on 0 ms to 245 ms

Test Vehicle: 2007 Hyundai Elantra
Test Program: FMVSS 208 Compliance
Test Date: 3/27/07
NHTSA No.: C70508
# SECTION 3
### INJURY RESULT SUMMARY FOR FMVSS 208 TESTS

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
NHTSA No.: C70508  
Test Date: 4/12/07

## 40 kmph Frontal Crash

**Impact Angle:** Zero degrees  
**Belted Dummies:** Yes, No  
**Speed Range:** 0 to 40 kmph, 32 to 40 kmph, 0 to 48 kmph, 0 to 56 kmph  
**Test Speed:** 39.8 kmph  
**Test Weight:** 1508.3 kg  
**Driver Dummy:** 5th female, 50th male  
**Passenger Dummy:** 5th female, 50th male

### 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</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assessment Values</td>
</tr>
<tr>
<td>HIC15</td>
<td>700</td>
</tr>
<tr>
<td>Nte</td>
<td>1.0</td>
</tr>
<tr>
<td>Ntf</td>
<td>1.0</td>
</tr>
<tr>
<td>Nte</td>
<td>1.0</td>
</tr>
<tr>
<td>Ncf</td>
<td>1.0</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>4170 N</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>4000 N</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>63 mm</td>
</tr>
<tr>
<td>Left Femur</td>
<td>10,000 N</td>
</tr>
<tr>
<td>Right Femur</td>
<td>10,000 N</td>
</tr>
</tbody>
</table>
A blanket and visor were not used in the suppression testing because they did not affect the sensing system used on the vehicle.

The driver position 1 (chin on module) and position 2 (chin on rim) low risk deployment test low risk deployment tests were performed on March 27, 2007. The position 2 was performed first. The steering column and steering wheel were not replaced for the subsequent position 1 test. The peak Nij from the position 1 test was 1.4 (max. allowed is 1.0). Due to this high value, a second position 1 test was performed on March 29, 2007, with a new steering column. The peak Nij was 0.4.

The Pre-test and Post-test signs used for the 5th percentile position 1 and the 5th percentile position 2 tests performed on March 27, 2007 incorrectly identified the test subject as a “Hyundai Tucson” rather than a “Hyundai Elantra”. This affected the photos and real time video.

There was no valid data after 25 msec on the Top of Engine (X) accelerometer during the frontal impact crash test.
<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2007 Hyundai Elantra</th>
<th>NHTSA No.:</th>
<th>C70508</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Dates:</td>
<td>2/27/07 - 4/12/07</td>
</tr>
</tbody>
</table>
### DATA SHEET 1

**COTR VEHICLE WORK ORDER**

Test Vehicle: **2007 Hyundai Elantra**  
NHTSA No.: **C70508**  
Test Program: **FMVSS 208 Compliance**  
Test Dates: **2/27/07 - 4/12/07**  
COTR Signature: **Charles R. Case**

Test to be performed for this vehicle are checked below:

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Test Description</th>
<th>Section</th>
<th>Child Restraints</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rear Outboard Seating Position Seat Belts (S4.1.2(b)) &amp; (S4.2.4)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>2.</td>
<td>Air Bag Labels (S4.5.1)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>3.</td>
<td>Readiness Indicator (S4.5.2)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>4.</td>
<td>Passenger Air Bag Manual Cut-off Device (S4.5.4)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>5.</td>
<td>Lap Belt Lockability (S7.1.1.5)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>6.</td>
<td>Seat Belt Warning System (S7.3)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>7.</td>
<td>Seat Belt Contact Force (S7.4.4)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>8.</td>
<td>Seat Belt Latch Plate Access (S7.4.4)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>9.</td>
<td>Seat Belt Retraction (S7.4.5)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>10.</td>
<td>Seat Belt Guides and Hardware (S7.4.6)</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>11.</td>
<td>Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R) using the following indicated child restraints.</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>Section B</td>
<td>Britax Handle with Care 191</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Century Assura 4553</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Century Avanta SE 41530</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Century Smart Fit 4543</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Cosco Arriva 02727</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Cosco Opus 35 02603</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Evenflo Discovery Adjust Right 212</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Evenflo First Choice 204</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Evenflo On My Way Position Right V 282</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Graco Infant 8457</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>Section C</td>
<td>Britax Roundabout 161</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Century Encore 4612</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Century STE 1000 4416</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Cosco Olympian 02803</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Cosco Touriva 02519</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Evenflo Horizon V 425</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td></td>
<td>Evenflo Medallion 254</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>12.</td>
<td>Suppression tests with newborn infant (Part 572, Subpart K) using the following indicated child restraints.</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>Section A</td>
<td>Cosco Dream Ride 02-719</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
<tr>
<td>13.</td>
<td>Suppression tests with 3-year-old dummy (Part 572, Subpart P) using the following indicated child restraints where a child restraint is required.</td>
<td>X</td>
<td>Full Rearward X Mid Position X Full Forward</td>
</tr>
</tbody>
</table>
14. Suppression tests with representative 3-year-old child using the following indicated child restraints where a child restraint is required. (Appendix H, Data Sheet 16H and 17H)

**Section C**
- Britax Roundabout 161
  - Full Rearward
  - Mid Position
  - Full Forward
- Century Encore 4612
  - Full Rearward
  - Mid Position
  - Full Forward
- Century STE 1000 4416
  - Full Rearward
  - Mid Position
  - Full Forward
- Cosco Olympian 02803
  - Full Rearward
  - Mid Position
  - Full Forward
- Cosco Touriva 02519
  - Full Rearward
  - Mid Position
  - Full Forward
- Evenflo Horizon V 425
  - Full Rearward
  - Mid Position
  - Full Forward
- Evenflo Medallion 254
  - Full Rearward
  - Mid Position
  - Full Forward

**Section D**
- Britax Roadster 9004
  - Full Rearward
  - Mid Position
  - Full Forward
- Century Next Step 4920
  - Full Rearward
  - Mid Position
  - Full Forward
- Cosco High Back Booster 02-442
  - Full Rearward
  - Mid Position
  - Full Forward
- Evenflo Right Fit 245
  - Full Rearward
  - Mid Position
  - Full Forward

15. Suppression tests with 3-year-old dummy (Part 572, Subpart P) in the following Forward, Middle, and Rearward seat track positions

- Sitting on seat with back against seat back (S22.2.2.1)
- Sitting on seat with back against reclined seat back (S22.2.2.2)
- Sitting on seat with back not against seat back (S22.2.2.3)
- Sitting on seat edge, spine vertical, hands by the child’s side (S22.2.2.4)
- Standing on seat, facing forward (S22.2.2.5)
- Kneeling on seat facing forward (S22.2.2.6)
- Kneeling on seat facing rearward (S22.2.2.7)
- Lying on seat (S22.2.2.8)

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

- Sitting on seat with back against seat back (S22.2.2.1)
- Sitting on seat with back against reclined seat back (S22.2.2.2)
- Sitting on seat with back not against seat back (S22.2.2.3)
- Sitting on seat edge, spine vertical, hands by the child’s side (S22.2.2.4)
- Standing on seat, facing forward (S22.2.2.5)
- Kneeling on seat facing forward (S22.2.2.6)
- Kneeling on seat facing rearward (S22.2.2.7)
- Lying on seat (S22.2.2.8)

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

- Britax Roadster 9004
  - Full Rearward
  - Mid Position
  - Full Forward

- Century Next Step 4920
  - Full Rearward
  - Mid Position
  - Full Forward

- Cosco High Back Booster 02-442
  - Full Rearward
  - Mid Position
  - Full Forward

- Evenflo Right Fit 245
  - Full Rearward
  - Mid Position
  - Full Forward

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

Section D

- Britax Roadster 9004
  - Full Rearward
  - Mid Position
  - Full Forward

- Century Next Step 4920
  - Full Rearward
  - Mid Position
  - Full Forward

- Cosco High Back Booster 02-442
  - Full Rearward
  - Mid Position
  - Full Forward

- Evenflo Right Fit 245
  - Full Rearward
  - Mid Position
  - Full Forward

19. Suppression tests with 6-year-old dummy (Part 572, Subpart N) in the following Forward, Middle, and Rearward seat track 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 child’s side (S22.2.2.4)
- Sitting back in the seat and leaning on the right front passenger door (S24.2.3)

20. Suppression tests with representative 6-year-old child in the following positions

- Sitting on seat with back against seat back (S22.2.2.1)
- Sitting on seat with back against reclined seat back (S22.2.2.2)
- Sitting on seat edge, spine vertical, hands by the child’s side (S22.2.2.4)
- Sitting back in the seat and leaning on the right front passenger door (S24.2.3)

21. Test of Reactivation of the Passenger Air Bag System with an Unbelted 5th percentile female dummy (S20.3, 22.3, S24.3). Perform this test after the following suppression tests: After each restraint.

22. Test of Reactivation of the passenger air bag system with a representative 5th percentile female (S20.3, 22.3, S24.3). Perform this test after the following suppression tests:

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

Section B

- Britax Handle with Care 191
  - Full Rearward
  - Mid Position
  - Full Forward

- Century Assura 4553
  - Full Rearward
  - Mid Position
  - Full Forward

- Century Avanta SE 41530
  - Full Rearward
  - Mid Position
  - Full Forward

- Century Smart Fit 4543
  - Full Rearward
  - Mid Position
  - Full Forward

- Cosco Arriva 02727
  - Full Rearward
  - Mid Position
  - Full Forward

- Cosco Opus 35 02603
  - Full Rearward
  - Mid Position
  - Full Forward

- Evenflo Discovery Adjust Right 212
  - Full Rearward
  - Mid Position
  - Full Forward

- Evenflo First Choice 204
  - Full Rearward
  - Mid Position
  - Full Forward

- Evenflo On My Way Position Right V 282
  - Full Rearward
  - Mid Position
  - Full Forward

- Graco Infant 8457
  - Full Rearward
  - Mid Position
  - Full Forward

Section C

- Britax Roundabout 161
  - Full Rearward
  - Mid Position
  - Full Forward

- Century Encore 4612
  - Full Rearward
  - Mid Position
  - Full Forward

- Century STE 1000 4416
  - Full Rearward
  - Mid Position
  - Full Forward

- Cosco Olympian 02803
  - Full Rearward
  - Mid Position
  - Full Forward

- Cosco Touriva 02519
  - Full Rearward
  - Mid Position
  - Full Forward

- Evenflo Horizon V 425
  - Full Rearward
  - Mid Position
  - Full Forward

- Evenflo Medallion 254
  - Full Rearward
  - Mid Position
  - Full Forward
24. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P) in the following positions
   - Position 1
   - Position 2

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

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

X 27. Impact Tests
    - Frontal Oblique – Test Speed:
      - Belted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.1(a))
      - Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))
      - Unbelted 50th male dummy driver and passenger (32 to 40 kmph) (S5.1.2(a) (1) or S5.1.2(b))

X Frontal 0° - Test Speed: 39.8 kmph
   - Belted 50th male dummy driver (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
   - Belted 50th male dummy passenger (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
   - Belted 5th female dummy driver (0 to 48 kmph) (S16.1(a))
   - Belted 5th female dummy passenger (0 to 48 kmph) (S16.1(a))
   - Belted 50th male dummy driver and passenger (0 to 56 kmph) (S5.1.1.(b)(2))
   - Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a) (1))
   - Unbelted 50th male dummy driver (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
   - Unbelted 50th male dummy passenger (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
   - Unbelted 5th female dummy driver (32 to 40 kmph) (S16.1(b))
   - Unbelted 5th female dummy passenger (32 to 40 kmph) (S16.1(b))
   - 40% Offset 0° Belted 5th male dummy driver and passenger (0 to 40 kmph) (S18.1)
      - Test Speed:

X 28. Sled Test: Unbelted 50th male dummy driver and passenger (S13)
X 29. FMVSS 204 Indicant Test
X 30. FMVSS 212 Indicant Test
X 31. FMVSS 219 Indicant Test
X 32. FMVSS 301 Frontal Indicant Test
DATA SHEET 2
REPORT OF VEHICLE CONDITION

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
NHTSA No.: C70508  
Test Dates: 2/27/07 - 4/12/07

CONTRACT NO.: DTNH22-03-D-11002  
Date: 4/20/07

FROM (Lab and rep name): MGA Research Corporation  
TO: NHTSA, OVSC (NVS-220)

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

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2007 Hyundai Elantra Sedan  
MANUFACTURE DATE: 9/27/06

NHTSA NO. C70508  
GVWR: 1755 kg (3869 lbs)

BODY COLOR: Black  
GAWR (Fr): 1010 kg (2227 lbs)

VIN: KMHDU46D47U046324  
GAWR (Rr): 950 kg (2094 lbs)

ODOMETER READINGS: 
ARRIVAL (miles): 44  
DATE: 2/20/07

COMPLETION (miles): 56  
DATE: 4/12/07

PURCHASE PRICE: ($) 13,981

DEALER’S NAME: Arrow Hyundai, 10611 W. Arthur Ave., West Allis, WI 53227

A. All options listed on window sticker are present on the test vehicle:  
   _X_ Yes  ____No

B. Tires and wheel rims are new and the same as listed:  
   _X_ Yes  ____No

C. There are no dents or other interior or exterior flaws:  
   _X_ Yes  ____No

D. The vehicle has been properly prepared and is in running condition:  
   _X_ Yes  ____No

E. Keyless remote is available and working:  
   _X_ Yes  ____No

F. The glove box contains an owner’s manual, warranty document, consumer information, and extra set of keys:  
   _X_ Yes  ____No

G. Proper fuel filler cap is supplied on the test vehicle:  
   _X_ Yes  ____No

H. Using permanent marker, identify vehicle with NHTSA number and FMVSS test type(s) on roof line above driver door or for school buses, place a placard with NHTSA number inside the windshield and to the exterior front and rear side of bus:  
   _X_ Yes  ____No

I. Place vehicle in storage area:  
   _X_ Yes  ____No

J. Inspect the vehicle’s interior and exterior, including all windows, seats, doors, etc. to confirm that each system is complete and functional per the manufacturer’s specifications. Any damage, misadjustment, or other unusual condition that could influence the test program or test results shall be recorded. Report any abnormal condition to the NHTSA COTR before beginning any test:  
   _X_ Vehicle OK  ____Conditions reported below
REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

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

VEHICLE: 2007 Hyundai Elantra  
NHTSA NO.: C70508

REMARKS:

Equipment that is no longer on the test vehicle as noted on previous page:
Spare tire, jack and tools, rear seat bottom, and trunk interior

Explanation for equipment removal:
Components removed for instrumentation installation and to meet target weight.

Test Vehicle Condition:
25 mph frontal impact damage- front suspension & structure damaged, hood & front quarter panels damaged, radiator damaged, air bags & pretensioners deployed, Stoddard in fuel system

RECORDED BY: Jeff Lewandowski  
DATE: 4/20/2007

APPROVED BY: David Winkelbauer  
DATE: 4/20/2007

RELEASE OF TEST VEHICLE

The vehicle described above is released from MGA to be delivered to:

Date:  
Time:  
Odometer:

Lab Rep’s Signature:
Title:
Carrier/Customer Rep:
Date:
### DATA SHEET 3
CERTIFICATION LABEL AND TIRE PLACARD INFORMATION

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2007 Hyundai Elantra</th>
<th>NHTSA No.:</th>
<th>C70508</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Date:</td>
<td>4/12/2007</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Jamie Aide</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Certification Label

<table>
<thead>
<tr>
<th>Manufacturer:</th>
<th>Hyundai Motor Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Manufacture:</td>
<td>9/27/06</td>
</tr>
<tr>
<td>VIN:</td>
<td>KMHDU46D47U046324</td>
</tr>
<tr>
<td>Vehicle Certified As (Pass. Car/MPV/Truck/Bus):</td>
<td>Passenger Car</td>
</tr>
<tr>
<td>Front Axle GVWR:</td>
<td>1010 kg (2227 lbs)</td>
</tr>
<tr>
<td>Rear Axle GVWR:</td>
<td>950 kg (2094 lbs)</td>
</tr>
<tr>
<td>Total GVWR:</td>
<td>1755 kg (3869 lbs)</td>
</tr>
</tbody>
</table>

#### Tire Placard

<table>
<thead>
<tr>
<th>Not applicable, vehicle is not a passenger car and does not have a tire placard.</th>
<th>Passenger Car</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is not a passenger car, but all or part of this information is still contained on a vehicle label and is reported here.</td>
<td>Passenger Car</td>
</tr>
<tr>
<td>Vehicle Capacity Weight:</td>
<td>385 kg (850 lbs)</td>
</tr>
<tr>
<td>Designated Seating Capacity Front:</td>
<td>2</td>
</tr>
<tr>
<td>Designated Seating Capacity Rear:</td>
<td>3</td>
</tr>
<tr>
<td>Total Designated Seating Capacity:</td>
<td>5</td>
</tr>
<tr>
<td>Recommended Cold Tire Inflation Pressure Front:</td>
<td>220 kpa (32 psi)</td>
</tr>
<tr>
<td>Recommended Cold Tire Inflation Pressure Rear:</td>
<td>220 kpa (32 psi)</td>
</tr>
<tr>
<td>Recommended Tire Size:</td>
<td>P195/65R15</td>
</tr>
</tbody>
</table>

Signature: [Signature]

Date: 4/12/07
Do all rear outboard seating positions have Type 2 seat belts?  

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

REMARKS:

Signature: Nick Kosinski

Date: 2/27/07
DATA SHEET 5
AIR BAG LABELS (S4.5.1)

Test Vehicle: 2007 Hyundai Elantra  
NHTSA No.: C70508

Test Program: FMVSS 208 Compliance  
Test Date: 2/27/07

Test Technician: Nick Kosinski

1. Air bag maintenance label and owner’s manual instructions: (S4.5.1(a))
   1.1 Does the manufacturer recommend periodic maintenance or replacement of the air bag?
       Yes, go to 1.2
       X No – go to 2
   1.2 Does the vehicle have a label specifying air bag maintenance or replacement?
       Yes – Pass
       No – Fail
   1.3 Does the label contain one of the following?
       Yes – Pass
       No – Fail
       Check applicable schedule:
       ___ Schedule on label specifies month and year (Record date_______)
       ___ Schedule on label specified vehicle mileage (Record mileage_______)
       ___ Schedule on label specifies interval measured from date on certification label
          (Record interval_______)
   1.4 Is the label permanently affixed within the passenger compartment such that it cannot
      be removed without destroying or defacing the label or the sunvisor? (3/19/01 legal interpretation to Todd Mitchell)
       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?
       X Yes – Pass
       No – Fail

2. Does the owner’s manual: (S4.5.1(f))
   2.1 Include a description of the vehicle’s air bag system in an easily understandable format?
       X Yes – Pass
       No – Fail
   2.2 Include a statement that the vehicle is equipped with an air bag and a lap/shoulder
      belt at the front outboard seating position?
       X Yes – Pass
       No – Fail
2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating position?
- 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?
- Yes – Pass
- No – Fail

2.7 Is the vehicle certified to meet the requirements of S14.5, S15, S17, S19, S21, S23, and S25? (Obtain answer from COTR) (S4.5.1(f)(2))
- 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))
- Yes – Pass
- No – Fail

2.7.2 Provide a summary of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2))
- Yes – Pass
- No – Fail

2.7.3 Present and explain the main components of the advanced passenger air bag system? (S4.5.1(f)(2)(i))
- Yes – Pass
- No – Fail

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

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

2.7.6 Is the vehicle certified to the requirements of S19.2, S21.2, or 23.2 (automatic suppression)?
- Yes, continue with 2.7.6
- No, go to 2.7.7

2.7.6.1 Contain a complete description of the passenger air bag suppression system installed in the vehicle, including a discussion of any suppression zone? (S4.5.1(f)(2)(iv))
- Yes – Pass
- No – Fail
2.7.6.2 Discuss the telltale light, specifying its location in the vehicle and explaining when the light is illuminated?

- Yes – Pass
- No – Fail

2.7.7 Explain the interaction of the advanced passenger air bag system with other vehicle components, such as seat belts, seats or other components? (S4.5.1(f)(2)(v))

- Yes – Pass
- No – Fail

2.7.8 Summarize the expected outcomes when child restraint systems, children and small teenagers or adults are both properly and improperly positioned in the passenger seat, including cautionary advice against improper placement of child restraint systems? (S4.5.1(f)(2)(vi))

- Yes – Pass
- No – Fail

2.7.9 Provide information on how to contact the vehicle manufacturer concerning modifications for persons with disabilities that may affect the advanced air bag system? (S4.5.1(f)(2)(vii))

- Yes – Pass
- No – Fail

3. Sun Visor Air Bag Warning Label (S4.5.1(b)) Check only one of the following:

- The vehicle is not certified to meet the requirements of S19, S21, and S23 (Obtain answer from COTR) (S4.5.1(b)(1)) Go to 3.1 and skip 3.2
- The vehicle is certified to meet the requirements of S19, S21, and S23 on 9/1/03 or later. (Obtain answer from COTR) (S4.5.1(b)(3)) Go to 3.2 and skip 3.1

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

3.1.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or sun visor? (S4.5.1(b)(1)) (3/19/01 legal interpretation to Todd Mitchell)

- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail
3.1.2 Does the label conform in content to the label shown in either Figure 6A or 6B (Figure 6b is for vehicles with passenger air bag on-off switches), as appropriate, at each front outboard seating position? (S4.5.1(b)(1)) (Vehicles without back seats may omit the statement: “The back seat is the safest place for children.” (S4.5.1(b)(1)(iv))

3.1.3 Is the label heading area yellow with the word “WARNING” and the alert symbol in black? (S4.5.1(b)(1)(i))

3.1.4 Is the message area white with black text? (S4.5.1(b)(1)(ii))
3.1.5 Is the message area at least 30 cm²? (S4.5.1(b)(1)(ii))

The message area consists of the total label area minus the yellow heading area and the pictogram. The pictogram is enclosed on the left side and bottom by the edge of the label and on the top by line that borders the yellow heading area. The right side of the pictogram is defined by a vertical line midway between the rightmost edge of the pictogram and the left most edge of the text, including any bullets. (See 5/6/03 interpretation to Gerald Plante on behalf of Subaru)

Driver Side: Length______, Width________
Passenger Side: Length______, Width________
Actual message area __________ cm²

3.1.6 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(b)(2)(iii))

Driver Side, Yes – Pass
Driver Side, No – Fail
Passenger Side, Yes – Pass
Passenger Side, No – Fail

3.1.7 Is the pictogram at least 30 mm in diameter? (S4.5.1(b)(2)(iii))

Actual diameter__________mm

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

3.2.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(b)(3)) (3/19/01 legal interpretation to Todd Mitchell)

Driver Side, Yes – Pass
Driver Side, No – Fail
Passenger Side, Yes – Pass
Passenger Side, No – Fail
3.2.2  Does the label conform in content to the label shown in Figure 11 at each front outboard seating position? (S4.5.1(b)(2)) (Vehicles without back seats may omit the statement: “The back seat is the safest place for children.” (S4.5.1(b)(3)(iv)) Vehicles without back seats or the back seat is too small to accommodate a rear-facing child restraint may omit the statement “Never put a rear-facing child seat in the front.” (S4.5.1(b)(3)(v))

<table>
<thead>
<tr>
<th>Side</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Side</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

![Figure 11: Sun Visor Label Visible when Yaw is in Down Position.](image)

3.2.3  Is the label heading area yellow with the word “WARNING” and the alert symbol in black? (S4.5.1(b)(3)(i))

<table>
<thead>
<tr>
<th>Side</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Side</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

3.2.4  Is the message area white with black text? (S4.5.1(b)(3)(ii))

<table>
<thead>
<tr>
<th>Side</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Side</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

3.2.5  Is the message area at least 30 cm²? (S4.5.1(b)(3)(ii)) The message area consists of the total label area minus the yellow heading area and the pictogram. The pictogram is enclosed on the left side and bottom by the edge of the label. The top edge of the pictogram area is defined by a horizontal line midway between the uppermost edge of the pictogram and the lowermost edge of the text. The right side of the pictogram is defined by a vertical line midway between the rightmost edge of the pictogram and the left most edge of the text, including any bullets. (See 5/6/03 interpretation to Gerald Plante on behalf of 9 cm, Width 4 cm)

- Actual message area 36 cm²

<table>
<thead>
<tr>
<th>Side</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Side</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
3.2.6 Is the pictogram black on a white background? (§4.5.1(b)(3)(iii))

- X Driver Side, Yes – Pass
- X Driver Side, No – Fail
- X Passenger Side, Yes – Pass
- X Passenger Side, No – Fail

3.2.7 Is the pictogram at least 30 mm (1.2 inches) in length? (§4.5.1(b)(3)(iii))

- Driver Side: Length 35 mm
- Passenger Side: Length 35 mm

- X Driver Side, Yes – Pass
- X Driver Side, No – Fail
- X Passenger Side, Yes – Pass
- X Passenger Side, 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)(5)(i))

- X Driver Side, Yes – Pass
- X Driver Side, No – Fail
- X Passenger Side, Yes – Pass
- X Passenger Side, 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)(5)(ii))

- X Driver Side, Yes – Pass
- X Driver Side, No – Fail
- X Passenger Side, Yes – Pass
- X Passenger Side, 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 (skipping 3.5.1 through 3.5.3)

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

- Yes, go to 3.5.2 and skip 3.5.3
- No, go to 3.5.3 and skip 3.5.2

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

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

_________ actual distance
__Yes-Pass  ___No-FAIL

4. Air Bag Alert Label (S4.5.1(c)) (A “Rollover Warning Label” or “Rollover Alert Label”
may be on the same side of the driver’s sun visor as the “Air Bag Alert Label.”
575.105(d))

4.1 Is the sun visor warning label visible when the sun visor is in the stowed position?

X If yes for driver and passenger, go to 5.
X Driver Side, Yes
X Driver Side, No
X Passenger Side, Yes
X Passenger Side, No

4.2 Is the air bag alert label permanently affixed (including permanent marking on the
visor material or molding into the visor material) to the sun visor at each front outboard
seating position such that it cannot be removed without destroying or defacing the
label or the sun visor? (S4.5.1(c)) (3/19/01 legal interpretation to Todd Mitchell)

Driver Side, Yes – Pass
Driver Side, No – Fail
Passenger Side, Yes – Pass
Passenger Side, No – Fail

4.3 Is the air bag alert label visible when the visor is in the stowed position? (S4.5.1(c))

Driver Side, Yes – Pass
Driver Side, No – Fail
Passenger Side, Yes – Pass
Passenger Side, No – Fail
4.4 Does the label conform in content to the label shown in Figure 6C? (S4.5.1(c))

![Label Image]

- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail

4.5 Is the message area black with yellow text? (S4.5.1(c)(1))

- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail

4.6 Is the message area at least 20 cm²? (S4.5.1(c)(1)) The message area consists of the black part of the label.

  Driver Side: Length ____, Width _____
  Passenger Side: Length _____, Width ______
  Actual message area _______

- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail

4.7 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(c)(2))

- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail

4.8 Is the pictogram at least 20 mm in diameter? (S4.5.1(c)(2))

  Driver Side Diameter ________
  Passenger Side Diameter ________

- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail
5. Label on the Dashboard

5.1 Is the vehicle certified to meet the requirements of S19, S21, and S23? (Obtain answer from COTR) (S4.5.1(e)(3))
   - Yes, go to 5.1.1 and skip 5.2
   - 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)(3))
   - Yes – Pass
   - No – Fail

5.1.2 Is the label clearly visible from all front seating positions? (S4.5.1(e)(3))
   - Yes – Pass
   - No – Fail

5.1.3 Does the label conform in content to the label shown in Figure 12? (S4.5.1(e)(3))
   Vehicles without back seats may omit the statement: “The back seat is the safest place for children.” Vehicles without back seats or too small to accommodate a rear-facing child restraint consistent with S4.5.4.1 as determined in DATA SHEET 7 may omit the statement “Never put a rear-facing child seat in the front.” (S4.5.1(e)(3)(iii))
   - Yes – Pass
   - No – Fail

5.1.4 Is the heading area yellow with black text? (S4.5.1(e)(3)(i))
   - Yes – Pass
   - No – Fail

5.1.5 Is the message white with black text? (S4.5.1(e)(3)(ii))
   - Yes – Pass
   - No – Fail

---

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.

Never put a rear-facing child seat in the front.

Always use seat belts and child restraints.

See owner’s manual for more information about air bags.

---

Figure 12. Removable Label on Dash.
5.1.6 Is the message area at least 30 cm²? (S4.5.1(e)(3)(ii)) The message area consists of the total label area minus the yellow heading area. (See 5/6/03 interpretation to Gerald Plante on behalf of Subaru)
Length 11.5 cm Width 3.3 cm
Actual message area 37.95 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 to the label shown in Figure 7? (S4.5.1(e)(1)(iii))
Vehicles without back seats may omit the statement: “The back seat is the safest place for children.” (S4.5.1(e)(1)(iii))
Yes – Pass
No – Fail

5.2.3 Is the heading area yellow with the word “WARNING” and the alert symbol in black? (S4.5.1(e)(1)(i))
Yes – Pass
No – Fail

5.2.4 Is the message white with black text? (S4.5.1(e)(1)(ii))
Yes – Pass
No – Fail

5.2.5 Is the message area at least 30 cm²? (S4.5.1(e)(1)(ii)) The message area consists of the total label area minus the yellow heading area. (See 5/6/03 interpretation to Gerald Plante on behalf of Subaru)
Length ________, Width ________
Actual message area ________ cm²
Yes – Pass
No – Fail
REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement. (11/8/94 legal interpretation to Lawrence F. Hennegerger on behalf of Breed)

1. Is the system totally mechanical? If Yes, this data sheet is complete.
   - Yes
   - No

2. Describe the location of the readiness indicator: *Lower left on Instrument Cluster by Tachometer*

3. Is the readiness indicator clearly visible to the driver?
   - Yes – Pass
   - No – Fail

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?
   - Yes – Pass
   - No – Fail

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

6. Is the air bag readiness indicator off when the passenger air bag switch is in the off position?
   - Yes – Pass
   - No – Fail

**REMARKS:**

I certify that I have read and performed each instruction.

**Signature:**

**Date:** 2/27/07
1. Is the vehicle equipped with an on-off switch that deactivates the air bag installed at the right front outboard seating position?
   - Yes, go to 2
   - No, this sheet is complete

2. Does the vehicle have any forward-facing rear designated seating positions?
   (S4.5.4.1(a))
   - Yes, go to 3
   - No, go to 4

3. Verification there is room for a child restraint in the rear seat behind the driver’s seat.
   (S4.5.4.1(b))
   3.1 Using all the controls that affect the fore-aft movement of the seat, move the seat to the rearmost position. Mark this position.
   - N/A, the seat does not have fore-aft adjustment

3.2 Using all the controls that affect the fore-aft movement of the seat, move the seat to the foremost position. Mark this position.
   - N/A, the seat does not have fore-aft adjustment

3.3 Move the seat to the middle of the foremost and rearmost positions. (S8.1.2)
   - N/A, the seat does not have a fore-aft adjustment

3.4 If the driver’s seat height is adjustable, use all the controls that affect height to put it in the lowest position while maintaining the middle fore-aft position. (S8.1.2)
   - N/A, No seat height adjustment

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

3.6 The driver’s 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 driver’s seat back angle ______________
   - Tested driver’s seat back angle ______________

3.7 Is the driver seat a bucket seat?
   - Yes, go to 3.7.1 and skip 3.7.2.
   - No, go to 3.7.2 and skip 3.7.1.

3.7.1 Bucket seats:
   - Locate and mark a vertical Plane B through the longitudinal centerline of the driver’s seat cushion. The longitudinal centerline of a bucket seat cushion is determined at SgRP. (S16.3.1.10) (S4.5.4.1(b)(1))
3.7.1.2 Locate the longitudinal horizontal line in plane B that is tangent to the highest point of the rear seat cushion behind the driver’s seat. Measure along this line from the front of the seat back of the rear seat to the rear of the seat back of the driver’s seat.

____ mm distance

less than 720 mm – Pass
more than 720 mm – FAIL
Go to 4

3.2 Bench seats (including split bench seats):

3.7.2.1 Locate and mark a vertical Plane B through the center of the steering wheel parallel to the vehicle longitudinal centerline. (S4.5.4.1(b)(2))

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

____ mm distance

less than 720 mm – Pass
more than 720 mm – FAIL
Go to 4

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

Yes – Pass
No – Fail

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

Yes – Pass
No – Fail

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

Yes – Pass
No – Fail

7. Telltale light (S4.5.4.3)

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

Yes – Pass
No – Fail

7.2 Are the words “PASSENGER AIR BAG OFF” or “PASS AIR BAG OFF” (S4.5.4.3(b)) on the telltale?

Yes – Pass, go to 7.3
No – go to 7.2.2

7.2.2 within 25 mm of the telltale?

Measurement from the edge of the telltale light (mm):

Yes – Pass
No – Fail

7.3 Does the telltale remain illuminated while the air bag is turned off? (S4.5.4.3c)) (Leave the air bag off for 5 minutes.)

Yes – Pass
No – Fail
7.4 Is the telltale illuminated while the air bag is turned on? (S4.5.4.3(d))
- Yes – Fail
- No – Pass

7.5 Is the telltale combined with the air bag readiness indicator? (S4.5.4.3(e))
- Yes – Fail
- No – Pass

8. Owner’s Manual

8.1 Does the owner’s manual contain complete instructions on the operation of the on-off switch? (S4.5.4.4(a))
- Yes – Pass
- No – Fail

8.2 Does the owner’s manual contain a statement that the on-off switch should only be used when a member of one of the following risk groups is occupying the right front passenger seating position? (S4.5.4.4(b))
- Yes – Pass
- No – Fail

- Infants:
  - there is no back seat
  - the rear seat is too small to accommodate a child restraint
  - there is a medical condition that must be monitored constantly

- Children aged 1 to 12:
  - there is no back seat
  - space is not always available in the rear seat
  - there is a medical condition that must be monitored constantly

- Medical condition:
  - medical risk causes special risk for passenger
  - greater risk for harm than with the air bag on

8.3 Does the owner’s manual contain a warning about the safety consequences of using the on-off switch at other times?
- Yes – Pass
- No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
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)

Test Vehicle: 2007 Hyundai Elantra  NHTSA No.: C70508
Test Program: FMVSS 208 Compliance  Test Date: 2/27/07
Test Technician: Nick Kosinski

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))

DESIGNATED SEATING POSITION: Front Passenger

☐ 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: FULL REAR (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. Place any adjustable seat belt anchorage in the lowest adjustment position.
☐ ☐ N/A The anchorage is not adjustable.
☒ 5. Buckle the seat belt. (S7.1.1.5(c)(1))
☒ 6. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
☒ 7. 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))
☒ 8. 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, go to 8.1  ☐ No, go to 9.
☒ 8.1 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
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))

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

   Measured distance between A and B (inches): 79 inches

11. Readjust the belt system so that the webbing between points A and B is at 1/2 the maximum length of the webbing. (S7.1.1.5(c)(3))

12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

   Measured force application angle (Spec. 5-15 degrees): 10°

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

   Measured distance between A and B (inches): 30 inches

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

   Record onset rate (lb/sec) (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5)): 25lbs/sec

   Measured distance between A and B (inches) (S7.1.1.5(c)(6)): 31 ¼ inches

15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled

16. 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

17. 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 28 ½ inches
18. 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 25lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
   - Measured distance between A and B 29 ¼ inches (S7.1.1.5(c)(6))

19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))
   - 14-13 = 31 ¼ -30 = 1 ¼ inch
   - 18-17 = 29 ¼ -28 ½ = ¾ inch
   - Yes – Pass
   - No – Fail

20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both? (S7.1.1.5(c)(8))
   - 10-14 = 79 - 31 ¼ = 47 ¾ inches
   - 10-18 = 79 - 29 ¼ = 49 ¾ inches
   - Yes – Pass
   - No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
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), and that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

DESIGNATED SEATING POSITION: Left Rear Passenger

<p>| | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

4. Place any adjustable seat belt anchorage in the lowest adjustment position.

   X  N/A The anchorage is not adjustable.

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

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

7. 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))

8. 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, go to 8.1
   -  No, go to 9.

8.1 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
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))

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

   Measured distance between A and B (inches): 75 ½ inches

11. Readjust the belt system so that the webbing between points A and B is at 1/2 the maximum length of the webbing. (S7.1.1.5(c)(3))

12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

   Measured force application angle (Spec. 5-15 degrees): 12°

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

   Measured distance between A and B (inches): 22 ½ inches

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

   Record onset rate (lb/sec) (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5)): 25lbs/sec

   Measured distance between A and B (inches) (S7.1.1.5(c)(6)): 23 ¾ inches

15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled

16. 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 12° (spec. 5 - 15 degrees)

17. 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 13 ½ inches

18. 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 25lbs/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))

   Measured distance between A and B 14 ¾ inches (S7.1.1.5(c)(6))
19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? 
(S7.1.1.5(c)(7))

14-13 = \(23 \frac{3}{4} - 22 \frac{1}{2} = 1 \frac{1}{4} \text{ inch}\)

18-17 = \(14 \frac{3}{4} - 13 \frac{1}{2} = 1 \frac{1}{4} \text{ inch}\)

Yes – Pass

No – Fail

20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both? 
(S7.1.1.5(c)(8))

10-14 = \(75 \frac{1}{2} - 23 \frac{3}{4} = 51 \frac{3}{4} \text{ inches}\)

10-18 = \(75 \frac{1}{2} - 14 \frac{3}{4} = 60 \frac{3}{4} \text{ inches}\)

Yes – Pass

No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
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)

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Nick Kosinski

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))

DESIGNATED SEATING POSITION: Center Rear Passenger

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: FIXED  
   (S7.1.1.5(c)(1)) (Any position is acceptable)
   X  Yes – Pass
   No – Fail

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

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

4. Place any adjustable seat belt anchorage in the lowest adjustment position.
   X  N/A The anchorage is not adjustable.

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

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

7. 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))

8. 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, go to 8.1
   No, go to 9

8.1 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
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))

10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
    Measured distance between A and B (inches): 75 ½ inches

11. Readjust the belt system so that the webbing between points A and B is at 1/2 the maximum length of the webbing. (S7.1.1.5(c)(3))

12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
    Measured force application angle (Spec. 5-15 degrees): 12°

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
    Measured distance between A and B (inches): 24 ¼ inches

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
    Record onset rate (lb/sec) (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5)): 25lbs/sec
    Measured distance between A and B (inches) (S7.1.1.5(c)(6)): 26 inches

15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled

16. 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 12° (spec. 5 - 15 degrees)

17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
    Measured distance between A and B 14 ¼ inches
18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
   - Record onset rate 25 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
   - Measured distance between A and B 16 inches (S7.1.1.5(c)(6))

19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))
   - 14-13 = 26 - 24 ¼ = 1 ¾ inches
   - 18-17 = 16 - 14 ¼ = 1 ¾ inches
   - Yes – Pass
   - No – Fail

20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both? (S7.1.1.5(c)(8))
   - 10-14 = 75 ½ - 26 = 49 ½ inches
   - 10-18 = 75 ½ - 16 = 59 ½ inches
   - Yes – Pass
   - No – Fail

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
# 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)

<table>
<thead>
<tr>
<th>Test Vehicle</th>
<th>2007 Hyundai Elantra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program</td>
<td>FMVSS 208 Compliance</td>
</tr>
<tr>
<td>Test Technician</td>
<td>Nick Kosinski</td>
</tr>
<tr>
<td>NHTSA No.</td>
<td>C70508</td>
</tr>
<tr>
<td>Test Date</td>
<td>2/27/07</td>
</tr>
</tbody>
</table>

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))

### DESIGNATED SEATING POSITION: Right Rear Passenger

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/A – no retractor is at this position</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N/A – the retractor is an automatic locking retractor ONLY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Record test fore-aft seat position: FIXED (S7.1.1.5(c)(1)) (Any position is acceptable)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X Yes – Pass</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X No – Fail</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X Yes – Pass</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X No – Fail</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Place any adjustable seat belt anchorage in the lowest adjustment position.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X N/A The anchorage is not adjustable.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Buckle the seat belt. (S7.1.1.5(c)(1))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. 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))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. 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?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X Yes, go to 8.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X No, go to 9.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.1 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))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X Yes – Pass</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X No – Fail</td>
<td></td>
</tr>
</tbody>
</table>
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))

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

Measured distance between A and B (inches): 75 inches

11. Readjust the belt system so that the webbing between points A and B is at 1/2 the maximum length of the webbing. (S7.1.1.5(c)(3))

12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

Measured force application angle (Spec. 5-15 degrees): 12°

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

Measured distance between A and B (inches): 22 ½ inches

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

Record onset rate (lb/sec) (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5)): 25lbs/sec

Measured distance between A and B (inches) (S7.1.1.5(c)(6)): 24 ¼ inches

15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled

16. 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 12° (spec. 5 - 15 degrees)

17. 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 13 ½ inches
18. 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 25lbs/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
   Measured distance between A and B 14 ¾ inches (S7.1.1.5(c)(6))

19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))
   14-13 = 24 ¼ - 22 ½ = 1 ¼ inches
   18-17 = 14 ¾ - 13 ½ = 1 ¼ inches

   Yes – Pass
   No – Fail

20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both? (S7.1.1.5(c)(8))
   10-14 = 75 - 24 ¼ = 50 ¾ inches
   10-18 = 75 - 14 ¾ = 60 ¼ inches

   Yes – Pass
   No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature:  

Date:  2/27/07
DATA SHEET 9
FMVSS 208 SEAT BELT WARNING SYSTEM CHECK (S7.3)

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Nick Kosinski  
NHTSA No.: C70508  
Test Date: 2/27/07

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 
   Seconds: 6
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 
   Seconds: 6
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 warning light beginning with key “on” or “start” is 
    Seconds: 6
13. Complete the following table with the data from 4, 8, and 12 to determine which option is 
    used.

<table>
<thead>
<tr>
<th>Warning light</th>
<th>Warning light specification</th>
<th>Audible signal</th>
<th>Audible signal specification*</th>
</tr>
</thead>
</table>
| S7.3 (a)(1) Belt stowed & key on or start | Item 8: 6  
60 seconds minimum | Item 4: 6 | 4 to 8 seconds |
| S7.3 (a)(2) Belt latched & key on or start | Item 12: 6  
4 to 8 seconds |             |             |
| Belt stowed & key on or start | Item 8: 6  
4 to 8 seconds | Item 4: 6 | 4 to 8 seconds |

* 49 USCS @ 30124 does NOT allow an audible signal to operate for more than 8 seconds.  
A voluntary audible signal after the 4 to 8 second required signal may be provided. It must be differentiated from the required signal 
14. The seat belt warning system meets the requirements of (manufacturers may comply with either section)
   - S7.3 (a)(1)
   - S7.3 (a)(2)
   - FAIL – does not meet the requirements of either option

15. Note wording of visual warning: (S7.3(a)(1) and S7.3(a)(2))
   - Fasten seat belts
   - Fasten belts
   - Symbol 101 - 
   - FAIL – does not use any of the above wording or symbol

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Nick Kosinski

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.

**DESIGNATED SEATING POSITION: Left Rear Passenger**

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

2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   - [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. (S16.2.10.2)
   - [X] N/A, no additional support adjustment

4. Is the fore-aft position of the seat adjustable?
   - [X] No – go to 5
   - [ ] Yes – Put the seat in the mid fore-aft and full down height position determined in Data Sheet 14.2

5. Is the seat back angle adjustable?
   - [X] No – go to 6
   - [ ] Yes – Use the seat back angle determined in Data Sheet 14.2

6. Position the test dummies according to dummy position placement instructions in Appendix F. Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.

7. Fasten the seat belt latch.

8. 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.

9. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

   - [X] Contact Force (lb):
     - 0.0 to 0.7 pounds – Pass 0.4 lbs.
     - Greater than 0.7 pounds – Fail
REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

Test Vehicle: 2007 Hyundai Elantra  NHTSA No.: C70508
Test Program: FMVSS 208 Compliance  Test Date: 2/27/07
Test Technician: Nick Kosinski

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.

**DESIGNATED SEATING POSITION:** Center Rear Passenger

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

2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   - 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. (S16.2.10.2)
   - X N/A, no additional support adjustment

4. Is the fore-aft position of the seat adjustable?
   - X No – go to 5
   - X Yes – Put the seat in the mid fore-aft and full down height position determined in Data Sheet 14.2

5. Is the seat back angle adjustable?
   - X No – go to 6
   - X Yes–Use the seat back angle determined in Data Sheet 14.2

6. Position the test dummies according to dummy position placement instructions in Appendix F. Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.

7. Fasten the seat belt latch.

8. 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.

9. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

   Contact Force (lb):
   - X 0.0 to 0.7 pounds – Pass  0.3 lbs.
   - X Greater than 0.7 pounds - Fail
REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Nick Kosinski  
NHTSA No.: C70508  
Test Date: 2/27/07

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.

DESIGNATED SEATING POSITION: Right Rear Passenger

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

2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   - [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. (S16.2.10.2)
   - [X] N/A, no additional support adjustment

4. Is the fore-aft position of the seat adjustable?
   - [X] No – go to 5
   - [ ] Yes – Put the seat in the mid fore-aft and full down height position determined in Data Sheet 14.2

5. Is the seat back angle adjustable?
   - [X] No – go to 6
   - [ ] Yes – Use the seat back angle determined in Data Sheet 14.2

6. Position the test dummies according to dummy position placement instructions in Appendix F. **Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.**

7. Fasten the seat belt latch.

8. 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.

9. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

   Contact Force (lb):
   - [X] 0.0 to 0.7 pounds – Pass 0.4 lbs.
   - [ ] Greater than 0.7 pounds – Fail
REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: [Date] 2/27/07
DATA SHEET 11
LATCH PLATE ACCESS (S7.4.4)

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Nick Kosinski

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.

DESIGNATED SEATING POSITION: Not Applicable For Any Position - Passenger Car

1. Put the seat in the forwardmost fore-aft and full down height position determined in Data Sheet 14.2. (S10.7)
2. Put the seat back angle in the position determined in Data Sheet 14.2.
3. Position the test dummy using the procedures in Appendix F. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position. Note on the Appendix F positioning check sheet any deviations necessary to position the Part 572, Subpart E dummy.) Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.
4. Position the adjustable seat belt anchorage in the manufacturer’s nominal design position for a 50th percentile adult male occupant.
5. Attach the inboard reach string to the base of the head following the instructions on Figure 3.
6. Attach the outboard reach string to the torso sheath following the instructions on Figure 3.
7. Place the latch plate in the stowed position.
8. Extend inboard reach string in front of the dummy and then backward and outboard to the latch plate to generate an arc of the reach envelope of the test dummy’s arms. Is the latch plate within the reach envelope?
   Yes – Pass
   No
9. Extend outboard reach string in front of the dummy and then backward and outboard to the latch plate to generate arcs of the reach envelope of the test dummy’s arms. Is the latch plate within the reach envelope?
   Yes – Pass
   No
10. Is the latch plate within the inboard (item 10) or outboard (item 11) reach envelope?
    Yes – Pass
    No – Fail
11. Using the clearance test block, specified in Figure 4, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?
    Yes – Pass
    No – Fail

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Nick Kosinski

NHTSA No.: C70508  
Test Date: 2/27/07
REMARKS:

I certify that I have read and performed each instruction.

Signature:  

Date: 2/27/07
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.

**DESIGNATED SEATING POSITION:** Not Applicable For Any Position - Passenger Car

**GVWR:**

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

2. Put the seat in the mid fore-aft and full down height position determined in Data Sheet 14.2. (S8.1.2)

3. Put the seat back angle in the position determined in Data Sheet 14.2. (8.1.3)

4. Position the Part 572 Subpart E test dummy according to dummy position placement instructions in Appendix F. Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.

5. Fasten the seat belt around the dummy.

6. Remove all slack from the lap belt portion. (S10.9)
   - N/A, the seat does not have a fore-aft adjustment

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

8. Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
   - **Pound load applied:**

9. Is the belt system equipped with a tension relieving device?
   - _Yes, continue
   - _No, go to 12

10. 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).

11. Check the statement that applies to this test vehicle:
   - 11.1 The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.
     - _Yes – Pass go to 12
     - No – go to 11.2
   - 11.2 The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released.
     - _Yes – Pass go to 12
     - No – go to 11.3
   - 11.3 Neither 11.1 nor 11.2 apply.
     - Fail
12. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
   - Yes – Pass
   - No – Fail

13. If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?
   - N/A – Not an open body vehicle
   - Yes – Pass
   - No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle: 2007 Hyundai Elantra  
NHTSA No.: C70508
Test Program: FMVSS 208 Compliance  
Test Date: 2/27/07
Test Technician: Nick Kosinski

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.

**DESIGNATED SEATING POSITION:** Left Rear Passenger

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 belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
   - Yes – Pass
   - No – Fail

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Nick Kosinski

Identify the part(s) on top or above the seat.
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
    - N/A – Rear seat

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

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.

DEVELOPED SEATING POSITION: Center Rear Passenger

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 belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
   - Yes – Pass
   - No – Fail

Test Vehicle: 2007 Hyundai Elantra
Test Program: FMVSS 208 Compliance
Test Technician: Nick Kosinski
NHTSA No.: C70508
Test Date: 2/27/07
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
    - N/A – Rear seat

REMARKS:
I certify that I have read and performed each instruction.

Signature: [Signature]
Date: 2/27/07
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle: 2007 Hyundai Elantra  NHTSA No.: C70508
Test Program: FMVSS 208 Compliance  Test Date: 2/27/07
Test Technician: Nick Kosinski

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.

**DESIGNATED SEATING POSITION:** Right Rear Passenger

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 belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
   - Yes – Pass
   - No – Fail
8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
   - Yes – Pass
   - No – Fail

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

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

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 2/27/07
DATA SHEET 14
MARKING OF REFERENCE POINTS FOR VARIOUS TEST POSITIONS AND POINTS

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Brian Roach / Wayne Dahlke

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Brian Roach / Wayne Dahlke

DATA SHEET 14.1
MARKING OF REFERENCE POINTS FOR 5th FEMALE

X Driver Seat __Passenger Seat

1. Seat Position

X 1.1 Position the seat’s adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)  
X N/A – No lumbar adjustment

X 1.2 Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)  
X N/A – No additional support adjustment

X 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)  
X N/A – No adjustable leg support system

X 1.4 **Mark** a point (seat cushion reference point) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)  
X N/A – No independent fore-aft seat cushion adjustment

X 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)  

X 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)  

X 1.7 If the seat cushion adjusts fore-aft, independent of the seat back, use only the controls that primarily move the seat cushion in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)  
X N/A – No independent fore-aft seat cushion adjustment

X 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)  

Maximum angle 4.8 Nose down  
Minimum angle 0.0  
Mid-angle 2.4 Nose down

X 1.9 If the seat and/or seat cushion height is adjustable, use any part of any control other than the parts which primarily move the seat or seat cushion fore-aft, to put the seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)  
X N/A – No seat height adjustment

X 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
X 1.11 Use only the controls that primarily move the seat in the fore-aft direction to mark for future reference the fore-aft seat positions. Mark each position so that there is a visual indication when the seat is at a particular position. For manual seats, move the seat forward one detent at a time and mark each detent. For power seats, mark only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, 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 rearmost.

X 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.

X 1.13 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark for future reference the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)

__N/A – No seat height adjustment. Go to 1.18

X 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.

X 1.15 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark for future reference the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1)

X 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)

X 1.17 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark for future reference the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)

X 1.18. Visually mark for future reference the seat back angle at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)

__ N/A – No seat back angle adjustment

Manufacturer’s design seat back angle 6.8° on Head Rest Post

X 1.19 Is the seat a bucket seat?

X Yes, go to 1.20 and skip 1.21

__No, go to 1.21 and skip 1.20

X 1.20 Bucket seats:

Locate and mark for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)

__ 1.21 Bench seats (complete ONLY the one that is applicable to the seat being marked):

__ 1.21.1 Driver Seat

Locate and mark for future reference the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface.
1.21.2 Passenger Seat

Locate and **mark** for future reference the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.3, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))

Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. __________

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) __________

2. Head Restraint Position

**N/A** Vehicle contains automatic head restraints.

**N/A**, there is no head restraint adjustment

X 2.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6, S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)

X 2.2 All adjustments 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. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)

X 2.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)

Vertical height of head restraint 200 mm

Mid-point height 100 mm

________________________________________________________________________

3/27/07

I certify that I have read and performed each instruction. Date

Brian Roach
DATA SHEET 14.1

MARKING OF REFERENCE POINTS FOR 5th FEMALE

__Driver Seat X Passenger Seat

1. Seat Position

X 1.1 Position the seat’s adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)

__N/A – No lumbar adjustment

X 1.2 Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)

X N/A – No additional support adjustment

X 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)

X N/A – No adjustable leg support system

X 1.4 Mark a point (seat cushion reference point) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)

X 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)

X 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)

X 1.7 If the seat cushion adjusts fore-aft, independent of the seat back, use only the controls that primarily move the seat cushion in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)

X N/A – No independent fore-aft seat cushion adjustment

X 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1) NO ADJUSTMENT

Maximum angle Zero
Minimum angle Zero
Mid-angle Zero

X 1.9 If the seat and/or seat cushion height is adjustable, use any part of any control other than the parts which primarily move the seat or seat cushion fore-aft, to put the seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)

X N/A – No seat height adjustment

X 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.

X 1.11 Use only the controls that primarily move the seat in the fore-aft direction to mark for future reference the fore-aft seat positions. Mark each position so that there is a visual indication when the seat is at a particular position. For manual seats, move the seat forward one detent at a time and mark each detent. For power seats, mark only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, 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 rearmost.

X 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
1.13 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark for future reference the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)

X N/A – No seat height adjustment. Go to 1.18

1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.

1.15 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark for future reference the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1)

1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)

1.17 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark for future reference the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)

1.18. Visually mark for future reference the seat back angle at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S22.4.2.1, S22.4.2.1, S22.4.2.1, S22.4.2.1)

 N/A – No seat back angle adjustment

Manufacturer’s design seat back angle 6.8 Degrees on Head Rest Post

1.19. Is the seat a bucket seat?

X Yes, go to 1.20 and skip 1.21

No, go to 1.21 and skip 1.20

1.20 Bucket seats:

Locate and mark for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)

1.21 Bench seats (complete ONLY the one that is applicable to the seat being marked):

1.21.1 Driver Seat

Locate and mark for future reference the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface.

1.21.2 Passenger Seat

Locate and mark for future reference the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.3, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))

Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. ________

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) ________
2. Head Restraint Position
   __N/A Vehicle contains automatic head restraints.
   __N/A, there is no head restraint adjustment

\* 2.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1,
   S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)

\* 2.2 All adjustments 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. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1,
   S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)

\* 2.3 Measure the vertical distance from the top most point of the head restraint to the bottom
   most point. Locate and **mark** a horizontal plane through the midpoint of this distance.
   (S16.3.4.3)
   Vertical height of head restraint 200 mm
   Mid-point height 100 mm

_________________________________________  2/27/07
I certify that I have read and performed each instruction. Date
DATA SHEET 14.2
MARKING OF REFERENCE POINTS FOR 50TH MALE

X Driver Seat  __Passenger Seat  ________________Other seat

X 1. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   __N/A – No lumbar adjustment

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

X 3. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. Mark this position for future reference. (8/31/95 legal interp to Hogan and Hartson)

X 4. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the foremost position. Mark this position for future reference. (8/31/95 legal interp to Hogan and Hartson)

X 5. Mark each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, mark each detent. For power seats, mark only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, 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 rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 3 and 4. (8/31/95 legal interp to Hogan and Hartson)

X 6. Move the seat to the mid position.

X 7. While maintaining the mid position, move the seat to its lowest position. Mark the height position for future reference. For seats with adjustable seat cushions, use the manufacturer’s recommended seat cushion angle for determining the lowest height position.

X 8. Visually mark for future reference the seat back angle, if adjustable, at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer.
   __N/A – No seat back angle adjustment
   X Previously marked during Data Sheet 14.1 go to 9
   Manufacturer’s design seat back angle 6.8° on Head Rest Post

X 9. Is the seat a bucket seat?
   X Previously marked during data sheet 14.1. This form is complete.
   __Yes, go to 10 and skip 11
   __No, go to 11 and skip 10
__10. Bucket seats:
Locate and mark for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)

__11. Bench seats (complete ONLY the one that is applicable to the seat being marked):
__11.1 Driver Seat
Locate and mark for future reference the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)

__11.2 Passenger Seat
Locate and mark for future reference the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)
Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _______
Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. _______

I certify that I have read and performed each instruction.

Signature: ___________________________ Date: 4/12/07
DATA SHEET 14.2
MARKING OF REFERENCE POINTS FOR 50TH MALE

__ Driver Seat  X Passenger Seat  ________________Other seat

X 1. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   __ N/A – No lumbar adjustment

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

X 3. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. Mark this position for future reference. (8/31/95 legal interp to Hogan and Hartson)

X 4. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the foremost position. Mark this position for future reference. (8/31/95 legal interp to Hogan and Hartson)

X 5. Mark each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, mark each detent. For power seats, mark only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, 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 rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 3 and 4. (8/31/95 legal interp to Hogan and Hartson)

X 6. Move the seat to the mid position.

X 7. While maintaining the mid position, move the seat to its lowest position. Mark the height position for future reference. For seats with adjustable seat cushions, use the manufacturer’s recommended seat cushion angle for determining the lowest height position.

X 8. Visually mark for future reference the seat back angle, if adjustable, at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer.
   __ N/A – No seat back angle adjustment
   X Previous marked during Data Sheet 14.1 go to 9
   Manufacturer’s design seat back angle 6.8° on Head Rest Post

X 9. Is the seat a bucket seat?
   X Previous marked during data sheet 14.1. This form is complete.
   __ Yes, go to 10 and skip 11
   __ No, go to 11 and skip 10

__ 10. Bucket seats:
   Locate and mark for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)

__ 11. Bench seats (complete ONLY the one that is applicable to the seat being marked):
   __ 11.1 Driver Seat
   Locate and mark for future reference the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)
__11.2 Passenger Seat

Locate and mark for future reference the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)

Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _______

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. _______

I certify that I have read and performed each instruction.

[Signature: [Handwritten Signature]]

Date: 4/12/07
DATA SHEET 14.3
MARKING OF REFERENCE POINTS FOR STEERING WHEEL

X 1. Is the steering wheel adjustable up and down and/or in and out?
   X Yes – go to 2
   __No – this form is complete

X 2. Find and mark for future reference each up and down position. Label three of the positions with the following: H for highest, M for mid-position (if there is no mid-position, label the next lowest adjustment position), and L for lowest.
   __N/A – steering wheel is not adjustable up and down

X 3. Find and mark for future references each in and out position. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the next rearmost adjustment position), and R for rearmost.
   X N/A – steering wheel is not adjustable in and out

I certify that I have read and performed each instruction.

Signature: Brian Road

Date: 3/27/07
**DATA SHEET 14.4**

**MARKING OF REFERENCE POINTS FOR DRIVER LOW RISK DEPLOYMENT**

**Position 1  Position 2**

1. Position the steering wheel so the front wheels are in the straight-ahead position. (S26.2.1)
2. Position any adjustable parts of the steering controls to the mid-position as determined in Data Sheet 14.3 above. If a mid-position adjustment is not achievable, position the controls to the next lowest detent position. (S26.2.1)
3. Locate and mark the point that is defined by the intersection of the steering wheel cover and a line between the volumetric center of the smallest volume that can encompass the folded undeployed air bag and the volumetric center of the static fully inflated air bag. The vertical plane parallel to the vehicle longitudinal centerline through this point is referred to as “Plane E.” (Check determination method below.) (S26.2.2)

Measurements with respect to measurement reference points:

The longitudinal centerline of the air bag was used.

Point determined using manufacturer’s information supplied by the COTR. (Include manufacturer’s information in the test report.)

OR

Point determined by test lab personnel and approved by the COTR. (Include supporting documentation in the test report.)

4. Locate the highest point of the air bag module cover. The horizontal plane through this point is referred to as “Plane F.” (Check determination method below.) (S26.2.6)

Measurements with respect to measurement reference points:

The top of the air bag module cover was used.

Point determined using manufacturer’s information supplied by the COTR. (Include manufacturer’s information in the test report.)

OR

Point determined by test lab personnel and approved by the COTR. (Include supporting documentation in the test report.)

________________________________________  _____3/27/07_____
I certify that I have read and performed each instruction. Date
DATA SHEET 15
H-POINT DETERMINATION FOR 50TH PERCENTILE MALE DUMMY

Test Vehicle: 2007 Hyundai Elantra  
Test Program: FMVSS 208 Compliance  
Test Technician: Joe Fleck

X Driver Designated Seating Position  __Passenger Designated Seating Position

X 1. Place the seat in the mid-fore-aft position and full down position, with the head restraint full down and the seat back in the manufacturer’s nominal design riding position for the 50th percentile male as determined during the completion of Data Sheet 14.2.

X 2. Place a 910 mm² piece of muslin cotton cloth over the seat area. (The muslin cloth shall be comparable to 48 threads/in² and density of 2.85 lb/yd.) Tuck the muslin cloth in a sufficient amount to prevent hammocking of the material.

X 3. Place the seat and back assembly of the H-Point machine at the centerline of the seat as determined in Data Sheet 14.1 or 14.2.

X 4. Install the lower leg, and foot segments.

X 5. Set the length of the lower leg segment at 16.3 inches and the length of the thigh bar at 15.8 inches.

X 6. Leg and foot placement

X 6.1 Driver Designated Seating Position

X 6.1.1 Insert the pin so that the foot angle is never less than 87 degrees.

X 6.1.2 Place the right foot on the undepressed accelerator pedal with the sole of the foot on the pedal and the heel as far forward as allowable. Do not place the heel on the toe board.

X 6.1.2 Adjust the left leg to be the same distance from H-point machine centerline as the right leg.

X 6.1.3 With the T-bar level, place the left foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toe board, set it on the floor pan.

__Foot on toe board
__Foot on floor pan

X 6.2 Passenger Designated Seating Position

__6.2.1 Insert the pin so that the foot angle is never less than 87 degrees.

__6.2.2 Space the lower legs 10.6 inches apart, equally spaced about the centerline of the H-point machine.

__6.2.3 With the T-bar level, place the left foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toe board, set it on the floor pan.

__Foot on toe board
__Foot on floor pan

__6.2.3 With the T-bar level, place the right foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toe board, set it on the floor pan.

__Foot on toe board
__Foot on floor pan

X 7. Apply the lower leg weights.
X 8. Apply the thigh weights.

X 9. Tilt the back pan forward against the forward stop and draw the H-point machine away from the seatback using the T-bar.

X 10. Repositioning the back pan

10.1 Allow the H-point machine to slide rearward until a forward horizontal restraining load on the T-bar is no longer required due to the seat pan contacting the seat back.

The seat pan does not slide rearward. Go to 10.2

10.2 Slide the H-point machine rearward by a horizontal rearward load applied at the T-bar until the seat pan contacts the seat back.

X 11. Apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.

X 12. Again apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.

X 13. Carefully return the back pan to the seat back.

X 14. Install the right and left buttock weights.

X 15. Install the eight torso weights alternately the installation between right and left.

X 16. Tilt the back pan forward until the stop is contacted.

X 17. Rock the H-point from side to side over a 10degree arc (5 degrees to each side of the vertical centerline) for three complete cycles. Restrain the T-bar during rocking so that the seat pan does not change position. Minimize any inadvertent exterior loads applied in a vertical or fore-aft direction. The feet are free to move during this rocking motion.

X 18. Without applying a forward or lateral load lift the right foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.

X 19. Lower the right foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor, toe board, or undepressed accelerator pedal.

X 20. Without applying a forward or lateral load lift the left foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.

X 21. Lower the left foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor or toe board.

X 22. Is the seat pan level?

Yes, Go to 24

No, Go to 23

23. Apply a sufficient lateral load to the top of the seatback pan to level the H-point machine seat pan on the seat.

X 24. Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, return the seatback pan to the seatback.

X 25. Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, apply sufficient rearward force perpendicular to the back angle bar just above the torso weights to increase the hip angle 3 degrees. Minimize the exterior downward or side forces applied to the H-point machine. Release the force. Repeat this step until the hip angle readout is identical. Complete as many force applications as necessary and record the results in the following table:

<table>
<thead>
<tr>
<th>Force Application</th>
<th>Hip Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>99</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>101</td>
</tr>
<tr>
<td>4</td>
<td>101</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
X 26. Is the H-point machine level?
   X Yes, go to 27.
   _No, relevel. Go back to step 16 and repeat using a new data sheet.

X 27. Record the H-point location.
   Describe and mark the measuring reference point.

<table>
<thead>
<tr>
<th>Driver H-Point (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP to Floor Z</td>
</tr>
<tr>
<td>HP to Hinge X</td>
</tr>
<tr>
<td>HP to Sill Y</td>
</tr>
<tr>
<td>HP to Striker X</td>
</tr>
<tr>
<td>HP to Dash X</td>
</tr>
<tr>
<td>HP to Header Z</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H-Point Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Knee</td>
</tr>
<tr>
<td>Right Knee</td>
</tr>
<tr>
<td>Left Foot Angle</td>
</tr>
<tr>
<td>Right Foot Angle</td>
</tr>
<tr>
<td>Left Leg</td>
</tr>
<tr>
<td>Right Leg</td>
</tr>
<tr>
<td>Hip Angle</td>
</tr>
<tr>
<td>Back Angle</td>
</tr>
</tbody>
</table>

REMARKS:

I certify that I have read and performed each instruction.

Signature: ___________________________ Date: 4/12/07
DATA SHEET 15
H-POINT DETERMINATION FOR 50TH PERCENTILE MALE DUMMY

Test Vehicle: 2007 Hyundai Elantra  NHTSA No.: C70508
Test Program: FMVSS 208 Compliance  Test Date: 4/12/07
Test Technician: Joe Fleck

_X_ Driver Designated Seating Position  ___Passenger Designated Seating Position

X 1. Place the seat in the mid-fore-aft position and full down position, with the head restraint full
down and the seat back in the manufacturer's nominal design riding position for the 50th
percentile male as determined during the completion of Data Sheet 14.2.
X 2. Place a 910 mm² piece of muslin cotton cloth over the seat area. (The muslin cloth shall
be comparable to 48 threads/in² and density of 2.85 lb/yd.) Tuck the muslin cloth in a
sufficient amount to prevent hammocking of the material.
X 3. Place the seat and back assembly of the H-Point machine at the centerline of the seat as
determined in Data Sheet 14.1 or 14.2.
X 4. Install the lower leg, and foot segments.
X 5. Set the length of the lower leg segment at 16.3 inches and the length of the thigh bar at
15.8 inches.
X 6. Leg and foot placement
   ___6.1 Driver Designated Seating Position
   ___6.1.1 Insert the pin so that the foot angle is never less than 87 degrees.
   ___6.1.2 Place the right foot on the undepressed accelerator pedal with the sole of the foot on
the pedal and the heel as far forward as allowable. Do not place the heel on the toe
board.
   ___6.1.2 Adjust the left leg to be the same distance from H-point machine centerline as the right
leg.
   ___6.1.3 With the T-bar level, place the left foot on the toe board with the rearmost point of the
heel resting on the floor pan as close as possible to the point of intersection of the
planes described by the toe board and the floor pan and not on the wheelwell projection.
If the foot cannot be positioned on the toe board, set it on the floor pan.
   ___Foot on toe board
   ___Foot on floor pan
X 6.2 Passenger Designated Seating Position
X 6.2.1 Insert the pin so that the foot angle is never less than 87 degrees.
X 6.2.2 Space the lower legs 10.6 inches apart, equally spaced about the centerline of the H-
point machine.
X 6.2.3 With the T-bar level, place the left foot on the toe board with the rearmost point of the
heel resting on the floor pan as close as possible to the point of intersection of the
planes described by the toe board and the floor pan and not on the wheelwell projection.
If the foot cannot be positioned on the toe board, set it on the floor pan.
   X Foot on toe board
   ___Foot on floor pan
X 6.2.3 With the T-bar level, place the right foot on the toe board with the rearmost point of the
heel resting on the floor pan as close as possible to the point of intersection of the
planes described by the toe board and the floor pan and not on the wheelwell projection.
If the foot cannot be positioned on the toe board, set it on the floor pan.
   X Foot on toe board
   ___Foot on floor pan
7. Apply the lower leg weights.
8. Apply the thigh weights.
9. Tilt the back pan forward against the forward stop and draw the H-point machine away from the seatback using the T-bar.
10. Repositioning the back pan
   10.1 Allow the H-point machine to slide rearward until a forward horizontal restraining load on the T-bar is no longer required due to the seat pan contacting the seat back. The seat pan does not slide rearward. Go to 10.2
   10.2 Slide the H-point machine rearward by a horizontal rearward load applied at the T-bar until the seat pan contacts the seat back.
11. Apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
12. Again apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
13. Carefully return the back pan to the seat back.
14. Install the right and left buttock weights.
15. Install the eight torso weights alternately the installation between right and left.
16. Tilt the back pan forward until the stop is contacted.
17. Rock the H-point from side to side over a 10-degree arc (5 degrees to each side of the vertical centerline) for three complete cycles. Restrain the T-bar during rocking so that the seat pan does not change position. Minimize any inadvertent exterior loads applied in a vertical or fore-aft direction. The feet are free to move during this rocking motion.
18. Without applying a forward or lateral load lift the right foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
19. Lower the right foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor, toe board, or undepressed accelerator pedal.
20. Without applying a forward or lateral load lift the left foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
21. Lower the left foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor or toe board.
22. Is the seat pan level?
   - Yes, Go to 24
   - No, Go to 23
23. Apply a sufficient lateral load to the top of the seatback pan to level the H-point machine seat pan on the seat.
24. Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, return the seatback pan to the seatback.
25. Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, apply sufficient rearward force perpendicular to the back angle bar just above the torso weights to increase the hip angle 3 degrees. Minimize the exterior downward or side forces applied to the H-point machine. Release the force. Repeat this step until the hip angle readout is identical. Complete as many force applications as necessary and record the results in the following table:

<table>
<thead>
<tr>
<th>Force Application</th>
<th>Hip Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>102</td>
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<tr>
<td>2</td>
<td>103</td>
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<tr>
<td>3</td>
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<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
26. Is the H-point machine level?
   X Yes, go to 27.
   ___No, relevel. Go back to step 16 and repeat using a new data sheet.
   X 27. Record the H-point location.
   Describe and mark the measuring reference point.

<table>
<thead>
<tr>
<th>Passenger H-Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP to Floor Z</td>
</tr>
<tr>
<td>HP to Hinge X</td>
</tr>
<tr>
<td>HP to Sill Y</td>
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<td>HP to Striker X</td>
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<tr>
<td>HP to Dash X</td>
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<td>HP to Header Z</td>
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<table>
<thead>
<tr>
<th>H-Point Machine</th>
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<tbody>
<tr>
<td>Left Knee</td>
</tr>
<tr>
<td>Right Knee</td>
</tr>
<tr>
<td>Left Foot Angle</td>
</tr>
<tr>
<td>Right Foot Angle</td>
</tr>
<tr>
<td>Left Leg</td>
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<tr>
<td>Right Leg</td>
</tr>
<tr>
<td>Hip Angle</td>
</tr>
<tr>
<td>Back Angle</td>
</tr>
</tbody>
</table>

REMARKS:

I certify that I have read and performed each instruction.

Signature: ___________________________  Date: 4/12/07
DATA SHEET 16

AIR BAG SUPPRESSION TELLTALE (S19.2.2)

Test Vehicle: 2007 Hyundai Elantra   NHTSA No.: C70508
Test Program: FMVSS 208 Compliance   Test Date: 2/27/07
Test Technician: Wayne Dahlke

X 1. Is the vehicle certified to any suppression performance standards of FMVSS 208?
   X Yes – go to 2
   _No – this form is complete

X 2. Does telltale emit yellow light when the air bag is suppressed? (S19.2.2(a))
   X Yes - Pass ___ NO – FAIL

X 3. Are the words “PASSENGER AIR BAG OFF” or “PASS AIR BAG OFF” on the telltale? (S19.2.2(b))
   X 3.1 Yes – Pass, go to 4
   _No – go to 3.2
   _3.2 Within 25 mm of the telltale? (S19.2.2(b)) ___mm from the edge of the telltale light
   _Yes - Pass ___ NO – FAIL

X 4. Is the telltale separate from the air bag readiness indicator? (S19.2.2(c))
   X Yes - Pass ___ NO – FAIL

X 5. Is the telltale within the interior of the vehicle? (S19.2.2(d))
   X Yes - Pass ___ NO – FAIL

X 6 Is the telltale forward of and above the design H-point of both the driver’s and the front
   outboard passenger’s seat when the seats are in their forwardmost seating positions? (S19.2.2(d))
   X Yes - Pass ___ NO – FAIL

X 7. Is the telltale away from surfaces that can be used for temporary or permanent storage
   of objects that could obscure the telltale from either the driver’s or front outboard
   passenger’s view? (S19.2.2(d))
   X Yes - Pass ___ NO – FAIL

X 8. Is the telltale located so that it is not obscured from the driver or front outboard
   passenger by a rear-facing child restraint in Appendix A installed in the front outboard
   passenger seat? (S19.2.2(d))
   X Yes - Pass ___ NO – FAIL

X 9. Is the telltale visible or recognizable during the night? (S19.2.2(e))
   X Yes - Pass ___ NO – FAIL

X 10. Is the telltale visible or recognizable during the day? (S19.2.2(e))
   X Yes - Pass ___ NO – FAIL

X 11. If there is a visibility adjustment, do all the adjustment levels make the telltale visible and
   recognizable? (S19.2.2(g))
   X N/A-No visibility adjustment
   _Yes - Pass ___ NO – FAIL

X 12. Does the telltale remain illuminated while the air bag is suppressed? (S19.2.2(h)) (Leave
   the air bag suppressed for 5 minutes.)
   X Yes - Pass ___ NO – FAIL

X 13. Is the telltale off while the air bag is activated? (S19.2.2(h)) (Leave the air bag activated
   for 5 minutes.)
   X Yes - Pass ___ NO – FAIL

________________________________________________  _____2/27/07____

I certify that I have read and performed each instruction.   Date

Test Vehicle: 2007 Hyundai Elantra   NHTSA No.: C70508
Test Program: FMVSS 208 Compliance   Test Date: 2/27/07
Test Technician: Wayne Dahlke

X 1. Is the vehicle certified to any suppression performance standards of FMVSS 208?
   X Yes – go to 2
   _No – this form is complete

X 2. Does telltale emit yellow light when the air bag is suppressed? (S19.2.2(a))
   X Yes - Pass ___ NO – FAIL

X 3. Are the words “PASSENGER AIR BAG OFF” or “PASS AIR BAG OFF” on the telltale? (S19.2.2(b))
   X 3.1 Yes – Pass, go to 4
   _No – go to 3.2
   _3.2 Within 25 mm of the telltale? (S19.2.2(b)) ___mm from the edge of the telltale light
   _Yes - Pass ___ NO – FAIL

X 4. Is the telltale separate from the air bag readiness indicator? (S19.2.2(c))
   X Yes - Pass ___ NO – FAIL

X 5. Is the telltale within the interior of the vehicle? (S19.2.2(d))
   X Yes - Pass ___ NO – FAIL

X 6 Is the telltale forward of and above the design H-point of both the driver’s and the front outboard passenger’s seat when the seats are in their forwardmost seating positions? (S19.2.2(d))
   X Yes - Pass ___ NO – FAIL

X 7. Is the telltale away from surfaces that can be used for temporary or permanent storage of objects that could obscure the telltale from either the driver’s or front outboard passenger’s view? (S19.2.2(d))
   X Yes - Pass ___ NO – FAIL

X 8. Is the telltale located so that it is not obscured from the driver or front outboard passenger by a rear-facing child restraint in Appendix A installed in the front outboard passenger seat? (S19.2.2(d))
   X Yes - Pass ___ NO – FAIL

X 9. Is the telltale visible or recognizable during the night? (S19.2.2(e))
   X Yes - Pass ___ NO – FAIL

X 10. Is the telltale visible or recognizable during the day? (S19.2.2(e))
   X Yes - Pass ___ NO – FAIL

X 11. If there is a visibility adjustment, do all the adjustment levels make the telltale visible and recognizable? (S19.2.2(g))
   X N/A-No visibility adjustment
   _Yes - Pass ___ NO – FAIL

X 12. Does the telltale remain illuminated while the air bag is suppressed? (S19.2.2(h)) (Leave the air bag suppressed for 5 minutes.)
   X Yes - Pass ___ NO – FAIL

X 13. Is the telltale off while the air bag is activated? (S19.2.2(h)) (Leave the air bag activated for 5 minutes.)
   X Yes - Pass ___ NO – FAIL

________________________________________________  _____2/27/07____

I certify that I have read and performed each instruction.   Date
DATA SHEET 17 SUMMARY
Suppression Test Using 12-month-old CRABI Dummy  (Part 572, Subpart R)
Section B  Rear Facing CRS

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>TEST DATE:</th>
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<tbody>
<tr>
<td>C70508</td>
<td>2/28/07</td>
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<tr>
<td>MGA</td>
<td>WD</td>
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<table>
<thead>
<tr>
<th>DUMMY TYPE:</th>
<th>DUMMY SERIAL NO.:</th>
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<tbody>
<tr>
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<td>084</td>
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<table>
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<th>CHILD RESTRAINT NAME:</th>
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<tr>
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<th></th>
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<tr>
<td>5-26-2000</td>
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Base: __On __Off __X N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer’s specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

### Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>131</td>
<td>Suppressed</td>
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<tr>
<td>Rear</td>
<td>Middle</td>
<td>132</td>
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<tr>
<td>Facing</td>
<td>Rearward</td>
<td>132</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Middle</td>
<td>N/A</td>
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<tr>
<td>Facing</td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
<td>N/A</td>
<td>Suppressed</td>
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<tr>
<td>Forward</td>
<td>Middle</td>
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<td>Suppressed</td>
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<tr>
<td>Facing</td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
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Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Middle position. (SN507)
DATA SHEET 17 SUMMARY
Suppression Test Using 12-month-old CRABI Dummy (Part 572, Subpart R)
Section B Rear Facing CRS

<table>
<thead>
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<th>TEST DATE:</th>
<th>2/28/07</th>
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<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
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<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>084</td>
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</tbody>
</table>

| CHILD RESTRAINT NAME: | Evenflo  |
| CHILD RESTRAINT MODEL: | First Choice 204  |
| DATE OF MANUFACTURE: | 6-20-2000  |

Base: ___On ___Off ___X N/A-Restraint does not have a removable base

Manufacturer’s design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer’s specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

<table>
<thead>
<tr>
<th>Test Summary</th>
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</thead>
<tbody>
<tr>
<td>Seat Belt</td>
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<tr>
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<tr>
<td>Hub</td>
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<tr>
<td>Unbelted Rear Facing</td>
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<tr>
<td>Unbelted Forward Facing</td>
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Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Forward position. (SN507)
DATA SHEET 17 SUMMARY
Suppression Test Using 12-month-old CRABI Dummy  (Part 572, Subpart R)
Section B  Rear Facing CRS

<table>
<thead>
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<th>NHTSA No.:</th>
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<th>TEST DATE:</th>
<th>2/29/07</th>
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<tr>
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<td>DUMMY TYPE:</td>
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<td>DUMMY SERIAL NO.:</td>
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<table>
<thead>
<tr>
<th>CHILD RESTRAINT NAME:</th>
<th>Graco</th>
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<tbody>
<tr>
<td>CHILD RESTRAINT MODEL:</td>
<td>Infant 8457</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>8-31-2000</td>
</tr>
</tbody>
</table>

Base:  _X_ On  _Off  _N/A-Restraint does not have a removable base

Manufacturer's design seat back angle:  6.8° On Head Rest Post
Tested seat back angle:  6.8° On Head Rest Post
Manufacturer's specified anchorage position:  2nd Down
Tested anchorage position:  2nd Down

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>129</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Middle</td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Facing</td>
<td>Rearward</td>
<td>130</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Middle</td>
<td>N/A</td>
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<tr>
<td>Facing</td>
<td>Rearward</td>
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<tr>
<td>Unbelted</td>
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<td>Suppressed</td>
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<td>Facing</td>
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DATA SHEET 17 SUMMARY
Suppression Test Using 12-month-old CRABI Dummy  (Part 572, Subpart R)
Section B Rear Facing CRS

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<tr>
<td>LABORATORY:</td>
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<td>TECHNICIANS:</td>
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<td>DUMMY SERIAL NO.:</td>
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<table>
<thead>
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<th>CHILD RESTRAINT NAME:</th>
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<tbody>
<tr>
<td>CHILD RESTRAINT MODEL:</td>
<td>Infant 8457</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>8-31-2000</td>
</tr>
</tbody>
</table>

Base: __On  _X_Off  __N/A-Restraint does not have a removable base

Manufacturer’s design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer’s specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear Facing</td>
<td>Middle</td>
<td>130</td>
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<td></td>
<td>Rearward</td>
<td>130</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
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<td>Suppressed</td>
</tr>
<tr>
<td>Rear Facing</td>
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<td>Rearward</td>
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<tr>
<td>Unbelted</td>
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<td>N/A</td>
<td>Suppressed</td>
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<tr>
<td>Forward</td>
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<tr>
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<td>Rearward</td>
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Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Rearward position. (SN507)
DATA SHEET 17 SUMMARY
Suppression Test Using 12-month-old CRABI Dummy  (Part 572, Subpart R)
Section C  Forward Facing Convertible CRS

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<th>NHTSA No.:</th>
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<tr>
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<td>DUMMY TYPE:</td>
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<th>CHILD RESTRAINT NAME:</th>
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<tr>
<td>CHILD RESTRAINT MODEL:</td>
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<td>7-21-2000</td>
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Base: ___On ___Off ___X N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer's specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

### Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
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<tbody>
<tr>
<td>Belted</td>
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Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Middle position. (SN507)
### DATA SHEET 17 SUMMARY

Suppression Test Using 12-month-old CRABI Dummy  (Part 572, Subpart R)
Section C  Forward Facing Convertible CRS

<table>
<thead>
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<th>NHTSA No.:</th>
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<td>DUMMY TYPE:</td>
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<td>DUMMY SERIAL NO.:</td>
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<table>
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<th>CHILD RESTRAINT NAME:</th>
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<tr>
<td>CHILD RESTRAINT MODEL:</td>
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<td>DATE OF MANUFACTURE:</td>
<td>8-16-2000</td>
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Base: ___On ___Off ___X N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer's specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

#### Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
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<tbody>
<tr>
<td>Belted</td>
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<td>Suppressed</td>
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<td>Rearward</td>
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<tr>
<td>Belted</td>
<td>Forward</td>
<td>132</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Rearward position. (SN507)
DATA SHEET 17 SUMMARY
Suppression Test Using 12-month-old CRABI Dummy (Part 572, Subpart R)
Section C Forward Facing Convertible CRS

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>2/28/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>084</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHILD RESTRAINT NAME:</th>
<th>Evenflo</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHILD RESTRAINT MODEL:</td>
<td>Medallion 254</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>6-1-2000</td>
</tr>
</tbody>
</table>

Base: __On __Off ___X N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer's specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>129</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>132</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>132</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>130</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Forward position. (SN507)
## DATA SHEET 18 SUMMARY

Suppression Test Using Newborn Infant Dummy (Part 572, Subpart K)

**Section A Car Bed**

<table>
<thead>
<tr>
<th>NHTSA No.</th>
<th>TEST DATE</th>
<th>LABORATORY</th>
<th>TECHNICIANS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C70508</td>
<td>2/28/07</td>
<td>MGA</td>
<td>WD</td>
</tr>
</tbody>
</table>

**Dummy Type:** Newborn Infant

**Dummy Serial No.:** 003

<table>
<thead>
<tr>
<th>Car Bed Name</th>
<th>Car Bed Model</th>
<th>Date of Manufacture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cosco</td>
<td>Dream Ride 02-719</td>
<td>6-16-2000</td>
</tr>
</tbody>
</table>

Base: __On  __Off  _X_ N/A-Restraint does not have a removable base

(A car bed with a removable base shall be treated as two separate models, i.e. this form and test procedure will be completed with the base on and then repeated on a new form with the base off.

Manufacturer’s design seat back angle: 6.8° On Head Rest Post

Tested seat back angle: 6.8° On Head Rest Post

Manufacturer’s specified anchorage position: 2nd Down

Tested anchorage position: 2nd Down

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

### Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>Won't Fit</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>Won't Fit</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Rearward position. (SN507)
### DATA SHEET 19 SUMMARY

Suppression Test Using 3 Year Old Dummy And Booster Seats (Part 572, Subpart P)
Section D  Forward Facing Belt Positioning Booster

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>2/28/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>3 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>031</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOOSTER SEAT NAME:</th>
<th>Century</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOOSTER SEAT MODEL:</td>
<td>Next Step 4920</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>8-16-2000</td>
</tr>
</tbody>
</table>

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer's specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

#### Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>9</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Forward Facing Without Harness</td>
<td>Middle</td>
<td>9</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>10</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>128</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Forward Facing Cinched With Harness</td>
<td>Middle</td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>131</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Rearward position. (SN507)
DATA SHEET 19 SUMMARY
Suppression Test Using 3 Year Old Dummy And Booster Seats (Part 572, Subpart P)
Section D Forward Facing Toddler Belt Positioning Booster Seat

| NHTSA No.: | C70508 | TEST DATE: | 2/28/07 |
| LABORATORY: | MGA | TECHNICIANS: | WD |
| DUMMY TYPE: | 3 Year Old | DUMMY SERIAL NO.: | 031 |

**BOOSTER SEAT NAME:** Cosco  
**BOOSTER SEAT MODEL:** High Back Booster 02-442  
**DATE OF MANUFACTURE:** 4-28-2000

Manufacturer's design seat back angle: 6.8° On Head Rest Post  
Tested seat back angle: 6.8° On Head Rest Post  
Manufacturer's specified anchorage position: 2nd Down  
Tested anchorage position: 2nd Down

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>9</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Forward Facing Without Harness</td>
<td>Middle</td>
<td>9</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>10</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Forward Facing Cinched With Harness</td>
<td>Middle</td>
<td>130</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>130</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Middle position. (SN507)
DATA SHEET 20 SUMMARY
Suppression Test Using 3 Year Old Dummy And Convertible Restraints (Part 572, Subpart P)
Section C Forward Facing Convertible CRS

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>2/28/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>3 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>031</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHILD RESTRAINT NAME:</th>
<th>Britax</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHILD RESTRAINT MODEL:</td>
<td>Roundabout 161</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>7-21-2000</td>
</tr>
</tbody>
</table>

Manufacturer’s design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer’s specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward</td>
<td></td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Middle</td>
<td></td>
<td>132</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rearward</td>
<td></td>
<td>130</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Rearward position. (SN507)
DATA SHEET 20 SUMMARY

Suppression Test Using 3 Year Old Dummy And Convertible Restraints (Part 572, Subpart P)
Section C Forward Facing Convertible CRS

<table>
<thead>
<tr>
<th>NHTSA No.</th>
<th>TEST DATE:</th>
<th>LABORATORY:</th>
<th>TECHNICIANS:</th>
<th>DUMMY TYPE:</th>
<th>DUMMY SERIAL NO.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C70508</td>
<td>2/28/07</td>
<td>MGA</td>
<td>WD</td>
<td>3 Year Old</td>
<td>031</td>
</tr>
</tbody>
</table>

CHILD RESTRAINT NAME: Century
CHILD RESTRAINT MODEL: Encore 4612
DATE OF MANUFACTURE: 8-16-2000

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer's specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forward</td>
<td>129</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>130</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>131</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Middle position. (SN507)
DATA SHEET 20 SUMMARY
Suppression Test Using 3 Year Old Dummy And Convertible Restraints (Part 572, Subpart P)
Section C Forward Facing Convertible CRS

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>2/28/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>3 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>031</td>
</tr>
</tbody>
</table>

| CHILD RESTRAINT NAME: | Evenflo |
| CHILD RESTRAINT MODEL: | Medallion 254 |
| DATE OF MANUFACTURE: | 6-1-2000 |

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer's specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

**Test Summary**

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward</td>
<td>130</td>
<td>Suppressed</td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>130</td>
<td>Suppressed</td>
<td></td>
</tr>
<tr>
<td>Rearward</td>
<td>131</td>
<td>Suppressed</td>
<td></td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Forward position. (SN507)
DATA SHEET 21 SUMMARY
Suppression Test Using An Unbelted 3 Year Old Dummy (Part 572, Subpart P)
No CRS

<table>
<thead>
<tr>
<th>NHTSA No.</th>
<th>TEST DATE</th>
<th>LABORATORY</th>
<th>TECHNICIAN</th>
<th>DUMMY TYPE</th>
<th>DUMMY SERIAL NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C70508</td>
<td>3/1/07</td>
<td>MGA</td>
<td>WD</td>
<td>3 Year Old</td>
<td>031</td>
</tr>
</tbody>
</table>

Test Summary

<table>
<thead>
<tr>
<th>Position</th>
<th>Seat Slide</th>
<th>Seat Back Angle</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position 1 Sitting on seat with back against seat back</td>
<td>Forward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 2 Sitting on seat with back against reclined seat back</td>
<td>Forward</td>
<td>31.6° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>31.6° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>31.6° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 3 Sitting on seat with back not against seat back</td>
<td>Forward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 4 Sitting on seat edge, spine vertical, hands at dummy's sides</td>
<td>Forward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 5 Standing on seat, facing forward</td>
<td>Forward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 6 Kneeling on seat, facing forward</td>
<td>Forward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 7 Kneeling on seat, facing rearward</td>
<td>Forward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 8 Lying on seat. (Three designated seating positions only)</td>
<td>Forward</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Forward position. (SN507)
DATA SHEET 22 SUMMARY
Suppression Test Using 6 Year Old Dummy And Booster Seats (Part 572, Subpart N)
Section D  Forward Facing Toddler Belt Positioning Booster Seat

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>3/1/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>6 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>153</td>
</tr>
<tr>
<td>BOOSTER SEAT NAME:</td>
<td>Century</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOOSTER SEAT MODEL:</td>
<td>Next Step 4920</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>8-16-2000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer’s specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Belt Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forward</td>
<td>9</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>12</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>11</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Rearward position. (SN507)
**DATA SHEET 22 SUMMARY**

Suppression Test Using 6 Year Old Dummy And Booster Seats (Part 572, Subpart N)
Section D  Forward Facing Toddler Belt Positioning Booster Seat

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>3/1/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>6 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>153</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOOSTER SEAT NAME:</th>
<th>Cosco</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOOSTER SEAT MODEL:</td>
<td>High Back Booster 02-442</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>4-28-2000</td>
</tr>
</tbody>
</table>

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer's specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

**Test Summary**

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Belt Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward</td>
<td></td>
<td>10</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Middle</td>
<td></td>
<td>12</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rearward</td>
<td></td>
<td>11</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Middle position. (SN507)
DATA SHEET 22 SUMMARY
Suppression Test Using 6-Year-Old Dummy And Booster Seats (Part 572, Subpart N)
Section D Forward Facing Toddler Belt Positioning Booster Seat

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>3/1/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>6 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>153</td>
</tr>
<tr>
<td>BOOSTER SEAT NAME:</td>
<td>Evenflo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOOSTER SEAT MODEL:</td>
<td>Right Fit 245</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>6-26-2000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.8° On Head Rest Post
Manufacturer's specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Belt Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forward</td>
<td>9</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>12</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>11</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Forward position. (SN507)
DATA SHEET 23 SUMMARY
Suppression Test Using An Unbelted 6-Year-Old Dummy (Part 572, Subpart N)
No CRS

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>3/1/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>6 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>153</td>
</tr>
</tbody>
</table>

## Test Summary

<table>
<thead>
<tr>
<th>Position</th>
<th>Seat Slide</th>
<th>Seat Back Angle</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position 1 Sitting on seat with back against seat back</td>
<td>Forward 6 *</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 2 Sitting on seat with back against reclined seat back</td>
<td>Forward 6 *</td>
<td>31.6° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>31.6° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>31.6° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 3 Sitting on seat edge, spine vertical, hands at dummy's sides</td>
<td>Forward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Position 4 Sitting on seat with back against seat back then leaning on the door</td>
<td>Forward 6 *</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>6.8° on HRP</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Forward position. (SN507)

* The ATD would not fit in this Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft detent position with respect to the foremost position. (1 = Full Forward; 25 = Full Rearward; 25 total Seat Slide detents)
**DATA SHEET 29 SUMMARY**

Low Risk Deployment Tests Using an Unbelted 5th Percentile Female Dummy (Part 572, Subpart O) (S26)
Position 1 - Chin On Module (S26.2)

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>3/27/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>5th Percentile Female</td>
<td>DUMMY SERIAL NO.:</td>
<td>511</td>
</tr>
</tbody>
</table>

Manufacturer’s design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.9° On Head Rest Post
Tested seat position: Full Aft

Tested steering wheel angle: 23.8°
Thorax cavity angle: 29.9°
Bottom of chin height: 1 mm Above Module

### Air Bag Deployment Timing

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Firing time (ms)</th>
<th>Recorded firing time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>120.0</td>
<td>120.1</td>
</tr>
</tbody>
</table>

### 5th Percentile Female SN 511 Position 1 (Chin On Module) 3-27-07 Trial 1

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>51</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>29.4</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>5.6</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>149.1</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>198.3</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>1955</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>140</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>15</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>10</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>132</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>123</td>
</tr>
</tbody>
</table>

Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 26 km/h. (S4.11(d))
Second stage fire time of 120 ms; Injuries calculated on 0 ms to 245 ms
DATA SHEET 29 SUMMARY
Low Risk Deployment Tests Using an Unbelted 5th Percentile Female Dummy (Part 572, Subpart O) (S26)
Position 1 - Chin On Module (S26.2)

<table>
<thead>
<tr>
<th>NHTSA No.</th>
<th>C70508</th>
<th>TEST DATE:</th>
<th>3/29/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>5th Percentile Female</td>
<td>DUMMY SERIAL NO.:</td>
<td>510</td>
</tr>
</tbody>
</table>

Manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 6.9° On Head Rest Post
Tested seat position: Full Aft
Tested steering wheel angle: 23.8°
Thorax cavity angle: 29.5°
Bottom of chin height: 1 mm Above Module

### Air Bag Deployment Timing

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Firing time (ms)</th>
<th>Recorded firing time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>120.0</td>
<td>120.1</td>
</tr>
</tbody>
</table>

### 5th Percentile Female SN 510 Position 1 (Chin On Module) 3-29-07 Trial 2

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>40</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>49.8</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>7.0</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>157.7</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>202.4</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>1095</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>179</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>11</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>6</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>72</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>77</td>
</tr>
</tbody>
</table>

Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 26 km/h. (S4.11(d))
Second stage fire time of 120 ms; Injuries calculated on 0 ms to 245 ms
Low Risk Deployment Tests Using an Unbelted 5th Percentile Female Dummy (Part 572, Subpart O) (S26) Position 2 - Chin On Rim (S26.3)

manufacturer's design seat back angle: 6.8° On Head Rest Post
Tested seat back angle: 13.1° seat back angle
Tested seat position: Full Aft
Tested steering wheel angle: 23.8°
Thorax cavity angle: 29.7°
Chin Point height: 7 mm Below Steering Wheel Target
Note: The chin on rim steering wheel target is 10 mm below the highest point on the steering wheel

Air Bag Deployment Timing

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Firing time (ms)</th>
<th>Recorded firing time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>120.0</td>
<td>120.0</td>
</tr>
</tbody>
</table>

5th Percentile Female SN 510 Position 2 (Chin On Rim) 3-27-07

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>52</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>12.7</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>74.9</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>219.3</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>80.0</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>1307</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>100</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>27</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>23</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>16</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>27</td>
</tr>
</tbody>
</table>

Calculated on data recorded for 120ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 26 km/h. (S4.11(d))
Second stage fire time of 120 ms; Injuries calculated on 0 ms to 245 ms
DATA SHEET 32

VEHICLE WEIGHT, FUEL TANK, AND ATTITUDE DATA

Test Vehicle: 2007 Hyundai Elantra
Test Program: FMVSS 208 Compliance
Test Technician: Jamie Aide
NHTSA No.: C70508
Test Date: 4/12/07

IMPACT ANGLE: Zero Degrees
BELTED DUMMIES (YES/NO): No
TEST SPEED: X 32 to 40 kmph __ 0 to 48 kmph __ 0 to 56 kmph
DRIVER DUMMY: __ 5th female __ X 50th male
PASSENGER DUMMY: __ 5th female __ X 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
   Useable Fuel Tank Capacity supplied by COTR: 45.0 liters (11.9 gallons)
5. Record the fuel tank capacity supplied in the owner’s manual.
   Useable Fuel Tank Capacity in owner’s manual: 45.0 liters (11.9 gallons)
6. Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71, “Standard Specifications for Hydrocarbon Dry-cleaning Solvents,” or gasoline, fill the fuel tank.
   Amount Added: 45.0 liters (11.9 gallons)
7. Fill the coolant system to capacity.
8. Fill the engine with motor oil to the Max. mark on the dip stick.
9. Fill the brake reservoir with brake fluid to its normal level.
10. Fill the windshield washer reservoir to capacity.
11. Inflate the tires to the tire pressure on the tire placard. If no tire placard is available, inflate the tires to the recommended pressure in the owner’s manual.
   Tire placard pressure: RF: 32 psi LF: 32 psi RR: 32 psi LR: 32 psi
   Owner’s manual pressure: RF: 32 psi LF: 32 psi RR: 32 psi LR: 32 psi
   Actual inflated pressure: RF: 32 psi LF: 32 psi RR: 32 psi LR: 32 psi
12. Record the vehicle weight at each wheel to determine the unloaded vehicle weight (UVW), i.e. "as delivered" weight.
   Right Front (kg): 396.4 Right Rear (kg): 249.5
   Left Front (kg): 419.1 Left Rear (kg): 248.6
   Total Front (kg): 815.5 Total Rear (kg): 498.1
   % Total Weight: 62.1 % Total Weight: 37.9
   UVW = TOTAL FRONT PLUS TOTAL REAR (KG): 1313.6
13. UVW Test Vehicle Attitude: (All dimensions in millimeters)
13.1 Mark a point on the vehicle above the center of each wheel.
13.2 Place the vehicle on a level surface.
13.3 Measure perpendicular to the level surface to the 4 points marked on the body and record the measurements

\[
\begin{align*}
\text{RF:} & \quad 681 \\
\text{LF:} & \quad 677 \\
\text{RR:} & \quad 682 \\
\text{LR:} & \quad 675
\end{align*}
\]

14. Calculate the Rated Cargo and Luggage Weight (RCLW): 45 kg

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

\[
\begin{align*}
\text{Yes, go to } & \quad 14.3 \\
\text{No, go to } & \quad 14.2
\end{align*}
\]

14.2 VCW = Gross Vehicle Weight – UVW

\[
\text{VCW} = \underline{\phantom{10000}} \ - \ \underline{\phantom{10000}} = \underline{\phantom{10000}}
\]

14.3 VCW = 385 kg (850 lbs)

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

\[
\begin{align*}
\text{Yes, go to } & \quad 14.6 \\
\text{No, go to } & \quad 14.5 \text{ and skip 14.6}
\end{align*}
\]

14.5 DSC = Total number of seat belt assemblies = \underline{\phantom{10000}}

14.6 DSC = 5

14.7 RCLW = VCW – (68 kg x DSC) = 385 kg - (68 kg x 5 ) = 45 kg

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

\[
\begin{align*}
\text{Yes, if the calculated RCLW is greater than 136 kg, use 136 kg as the RCLW. (S8.1.1)} \\
\text{No, use the RCLW calculated in 14.7}
\end{align*}
\]

15. Fully Loaded Weight (100% fuel fill): 1515.0 kg

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

Driver: \(\underline{\phantom{10000}}\) 5th female \(\times\) 50th male

Passenger: \(\underline{\phantom{10000}}\) 5th female \(\times\) 50th male

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

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

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

\[
\begin{align*}
\text{Right Front (kg):} & \quad 436.8 & \text{Right Rear (kg):} & \quad 313.0 \\
\text{Left Front (kg):} & \quad 456.3 & \text{Left Rear (kg):} & \quad 308.9 \\
\text{Total Front (kg):} & \quad 893.1 & \text{Total Rear (kg):} & \quad 621.9 \\
\% \text{ Total Weight:} & \quad 58.9 & \% \text{ Total Weight:} & \quad 41.1 \\
\% \text{ GVW} & \quad 57.6 & \% \text{ GVW} & \quad 54.1 \\
\text{(\% GVW = Axle GVW divided by Vehicle GVW)} & \\
\text{Fully Loaded Weight = Total Front Plus Total Rear (kg):} & \quad 1515.0
\end{align*}
\]

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

16.1 Place the vehicle on a level surface.
16.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13.1 above) and record the measurements

|   RF: | 665 | LF: | 662 | RR: | 652 | LR: | 646 |

17. Drain the fuel system

18. Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71, “Standard Specifications for Hydrocarbon Dry-cleaning Solvents,” fill the fuel tank to 92 - 94 percent of useable capacity.

Fuel tank capacity \times 0.94 = 45.0 \text{ liters} (11.9 \text{ gallons}) \times 0.94 = 42.3 \text{ liters} (11.2 \text{ gallons})

Amount added 42.0 \text{ liters} (11.1 \text{ gallons}) 93.3%

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

20. Calculate the test weight range.

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

\[ 1514.6 \text{ kg} = 1313.6 \text{ kg} + 45.0 \text{ kg} + 156.0 \text{ kg} \]

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

Max. Test Weight = Calculated Test Weight – 4.5 kg = 1510.1 kg
Min. Test Weight = Calculated Test Weight – 9 kg = 1505.6 kg

21. Remove the RCLW from the cargo area.

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

23. Vehicle Components Removed For Weight Reduction:
- Spare tire, tool and jack, rear seat bottom, and trunk interior

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

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

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

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

| Right Front (kg): | 430.5 | Right Rear (kg): | 305.3 |
| Left Front (kg): | 465.4 | Left Rear (kg): | 307.1 |
| Total Front (kg): | 895.9 | Total Rear (kg): | 612.4 |
| % Total Weight: | 59.4 | % Total Weight: | 40.6 |
| % GVW | 57.6 | % GVW | 54.1 |

(% GVW = Axle GVW divided by Vehicle GVW)

TOTAL FRONT PLUS TOTAL REAR (kg): 1508.3
28. Is the test weight between the Max. Weight and the Min. Weight (See 20.2)?
   - Yes
   - No, explain why not.

29. Test Weight Vehicle Attitude: (all dimensions in millimeters)
   - 29.1 Place the vehicle on a level surface
   - 29.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13 above) and record the measurements
     
     | RF: | LF: | RR: | LR: |
     |-----|-----|-----|-----|
     | 667 | 663 | 658 | 648 |

30. Summary of test attitude
   - 30.1 AS DELIVERED:
     
     | RF: | LF: | RR: | LR: |
     |-----|-----|-----|-----|
     | 681 | 677 | 682 | 675 |

   - AS TESTED:
     
     | RF: | LF: | RR: | LR: |
     |-----|-----|-----|-----|
     | 667 | 663 | 658 | 648 |

   - FULLY LOADED:
     
     | RF: | LF: | RR: | LR: |
     |-----|-----|-----|-----|
     | 665 | 662 | 652 | 646 |

30.2 Is the “as tested” test attitude equal to or between the “fully loaded” and “as delivered” attitude?
   - Yes
   - No, explain why not.

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 4/12/07
DATA SHEET 33

VEHICLE ACCELEROMETER LOCATION AND MEASUREMENT

Test Vehicle: 2007 Hyundai Elantra  
NHTSA No.: C70508
Test Program: FMVSS 208 Compliance  
Test Date: 4/12/07
Test Technician: Jamie Aide

<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td></td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td></td>
</tr>
</tbody>
</table>

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.

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.

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.

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.

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

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.

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

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

REMARKS:

I certify that I have read and performed each instruction.

Signature: Jamie Aide  
Date: 4/12/07
Dimensions Corresponding To The Letters “A” Through “K” (Excluding “I”) Are Recorded In The Table On The Following Page. Accelerometers Corresponding To The Numbers 1 Through 8 Are Specified On The Preceding Page.
## DATA SHEET 33

### VEHICLE ACCELEROMETER LOCATION AND MEASUREMENTS

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRETEST VALUES</strong></td>
<td></td>
</tr>
<tr>
<td>A (LH Rear Seat Xmbr)</td>
<td>310</td>
</tr>
<tr>
<td>B (RH Rear Seat Xmbr)</td>
<td>310</td>
</tr>
<tr>
<td>C (Engine Top)</td>
<td>3542</td>
</tr>
<tr>
<td>D (Engine Bottom)</td>
<td>3694</td>
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<tr>
<td>E (Caliper)</td>
<td></td>
</tr>
<tr>
<td>F (Left Caliper)</td>
<td></td>
</tr>
<tr>
<td>G (IP)</td>
<td>3150</td>
</tr>
<tr>
<td>H (Seat)</td>
<td>1700</td>
</tr>
<tr>
<td>J (Right Caliper)</td>
<td>685</td>
</tr>
<tr>
<td>K (Trunk)</td>
<td>980</td>
</tr>
</tbody>
</table>

| **POST TEST VALUES** |             |
| A (LH Rear Seat Xmbr) | 310         |
| B (RH Rear Seat Xmbr) | 310         |
| C (Engine Top)       | 3517        |
| D (Engine Bottom)    | 3611        |
| E (Caliper)          |             |
| F (Left Caliper)     | 704         |
| G (IP)               | 3146        |
| H (Seat)             | 1700        |
| J (Right Caliper)    | 704         |
| K (Trunk)            | 980         |
### DATA SHEET 34

#### PHOTOGRAPHIC TARGETS

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2007 Hyundai Elantra</th>
<th>NHTSA No.:</th>
<th>C70508</th>
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<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Date:</td>
<td>4/12/07</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Jamie Aide</td>
<td></td>
<td></td>
</tr>
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</table>

<table>
<thead>
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<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
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<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>_ 5th female</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>_ 5th female</td>
</tr>
</tbody>
</table>

1. FMVSS 208 vehicle targeting requirements (See Figures 28A and 28B)
   1.1 Targets A1 and A2 are on flat rectangular panels.
   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 (mm): **100 mm**

   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 (mm): **100 mm**

   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 (mm): **915 mm**

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

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

   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 (mm): **612 mm**

   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 (mm): **612 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

   1.11 Is this an offset test?

   _  Yes, continue with this section
   X  No, go to 2.

   1.12 Measure the width of the vehicle.

   Vehicle width (mm):
1.13 Find the centerline of the vehicle. (½ of the vehicle width)

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

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

2. Barrier Targeting

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.

2.2 Targets D1 and D2 are on a rectangular panel.

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 (mm): 100 mm
Distance between circular targets on D2 (mm): 100 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 indicant test ordered on the “COTR Vehicle Work Order?”

Yes, continue with this form.

No, this form is complete.

4.2 Resection panel (Figure 28C)

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

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

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

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

4.2.5 The center of the 4 inner targets are placed at the midpoints of each of the 228 mm sides.
4.3 Place a circular target at least 90 mm in diameter and with black and yellow quadrants on a material (cardboard, metal, etc.) that can be taped to the top of the steering column.

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

I certify that I have read and performed each instruction.

Signature: [Signature]  Date:  4/12/07
REFERENCE PHOTO TARGETS

CONCRETE BARRIER

COVERED PHOTO PIT

LEFT SIDE VIEW
RESECTION PANEL TARGETING ALIGNMENT

CAR TOP TARGETS A1 & A2

RESECTION CONTROL POINTS PANEL

A1 A2

STEERING WHEEL

STEERING COLUMN TARGET B

REAR VIEW

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

LEFT SIDE VIEW

A1

B

C1

C2
PRE-RUN STEERING COLUMN HIGH SPEED CAMERA VIEW

LEFT SIDE VIEW

914 mm
DATA SHEET 35
CAMERA LOCATIONS

Test Vehicle: 2007 Hyundai Elantra
Test Program: FMVSS 208 Compliance
NHTSA No.: C70508
Test Date: 4/12/07
Time: 10:45 am

<table>
<thead>
<tr>
<th>CAMERA NO.</th>
<th>VIEW</th>
<th>CAMERA POSITIONS (mm) *</th>
<th>LENS (mm)</th>
<th>SPEED (fps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Real Time Left Side View</td>
<td></td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>Left Side View (Barrier face to front seat backs)</td>
<td>340  -5300  1020</td>
<td>24</td>
<td>1000</td>
</tr>
<tr>
<td>3</td>
<td>Left Side View (Driver)</td>
<td>1370  -6380  1215</td>
<td>35</td>
<td>1000</td>
</tr>
<tr>
<td>4</td>
<td>Left Side View (B-post aimed toward center of steering wheel)</td>
<td>5450  -5100  2120</td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td>5</td>
<td>Left Side View (Steering Column)</td>
<td>1170  -5600  1300</td>
<td>25</td>
<td>1000</td>
</tr>
<tr>
<td>6</td>
<td>Left Side View (Steering Column)</td>
<td>1160  -5600  885</td>
<td>25</td>
<td>1000</td>
</tr>
<tr>
<td>7</td>
<td>Right Side View (Overall)</td>
<td>1900  6125  1030</td>
<td>19</td>
<td>1000</td>
</tr>
<tr>
<td>8</td>
<td>Right Side View (Passenger)</td>
<td>1500  5700  1200</td>
<td>35</td>
<td>1000</td>
</tr>
<tr>
<td>9</td>
<td>Right Side View (Angle)</td>
<td>6330  5000  2160</td>
<td>50</td>
<td>1000</td>
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<tr>
<td>10</td>
<td>Right Side View (Front door)</td>
<td>1000  4900  1040</td>
<td>25</td>
<td>1000</td>
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<tr>
<td>11</td>
<td>Front View Windshield</td>
<td>-285  0  2370</td>
<td>12.5</td>
<td>1000</td>
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<tr>
<td>12</td>
<td>Front View Driver</td>
<td>-150  -365  2240</td>
<td>24</td>
<td>1000</td>
</tr>
<tr>
<td>13</td>
<td>Front View Passenger</td>
<td>-155  500  2240</td>
<td>24</td>
<td>1000</td>
</tr>
<tr>
<td>14</td>
<td>Overhead Barrier Impact View</td>
<td>1600  0  5050</td>
<td>19</td>
<td>1000</td>
</tr>
<tr>
<td>15</td>
<td>Pit Camera Engine View</td>
<td>1095  0  -3160</td>
<td>24</td>
<td>1000</td>
</tr>
<tr>
<td>16</td>
<td>Pit Camera Fuel Tank View</td>
<td>3250  0  -3160</td>
<td>24</td>
<td>1000</td>
</tr>
</tbody>
</table>

*COORDINATES:
+X - forward of impact plane
+Y - right of monorail centerline
+Z - above ground level
CAMERA POSITIONS FOR FMVSS 208

TOP VIEW

1. REAL TIME CAMERA

11. COVERED PHOTO PIT

5. CONCRETE PAD

CONCRETE BARRIER

TOW ROAD

12. REAL TIME CAMERA

13. COVERED PHOTO PIT

14. MONORAIL

LEFT SIDE VIEW

15. CONCRETE BARRIER

16. COVERED PHOTO PIT

MONORAIL

12. REAL TIME CAMERA

13. COVERED PHOTO PIT

14. MONORAIL

TOP VIEW

1. REAL TIME CAMERA

11. COVERED PHOTO PIT

5. CONCRETE PAD

CONCRETE BARRIER

TOW ROAD

12. REAL TIME CAMERA

13. COVERED PHOTO PIT

14. MONORAIL

LEFT SIDE VIEW

15. CONCRETE BARRIER

16. COVERED PHOTO PIT

MONORAIL
DATA SHEET 36
APPENDIX F
DUMMY POSITIONING PROCEDURES
FOR DRIVER TEST DUMMY CONFORMING TO SUBPART E OF PART 572

Test Vehicle: 2007 Hyundai Elantra  
NHTSA No.: C70508  
Test Program: FMVSS 208 Compliance  
Test Date: 4/12/07  
Test Technician: Joe Fleck

<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>5th female</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>5th female</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. (S8.1.3)  
   __N/A – No lumbar adjustment

2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (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. (S20.1.9.3)  
   X N/A – No independent fore-aft seat cushion adjustment

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

5. The seat back angle, if adjustable, is set at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)  
   __N/A – No seat back angle adjustment
   Manufacturer’s design seat back angle 6.8° on Head Rest Post  
   Tested seat back angle 6.7° on Head Rest Post

6. If adjustable, set the head restraint at the full up and full forward position. Any adjustment of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. (S8.1.3)  
   X N/A – No head restraint adjustment

7. Place any adjustable seat belt anchorages at the vehicle manufacturer’s nominal design position for a 50th percentile adult male occupant (S8.1.3)  
   __N/A – No adjustable upper seat belt anchorage
   Manufacturer’s specified anchorage position. 2nd Down  
   Tested anchorage position 2nd Down (Unbelted Test)
8. Place the adjustable accelerator pedal in the full forward position. 
N/A – the accelerator pedal is not adjustable.

9. Set the steering wheel hub at the geometric center of the full range of driving positions including any telescopng positions as determined in data sheet 14.

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

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

12. Position the H-point of the dummy within 0.5 inch of the vertical dimension and 0.5 inch of the horizontal dimension of a point 0.25 inch below the H-point determined by using the equipment and procedures specified in SAE J826 (APR 1980). (S10.4.2.1) Then measure the pelvic angle with respect to the horizontal using the pelvic angle gage.

Adjust the dummy position until these three measurements are within the specifications. (S10.4.2.1 and S10.4.2.2)
- .000 horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.)
- .092 vertical inches from the point 0.25 below the determined H-point (0.5 inch max.)
- 23.8° pelvic angle (20° to 25°)

13. Is the head level within ± 0.5°? (S10.1)
   Yes, go to 14
   No, go to 13.1

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

   13.2 Is the head level within ± 0.5°? (S10.1)
      Yes, record the following, then go to 15.
      No, go to 13.3
      - horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.)
        (S10.4.2.1)
      - vertical inches from the point 0.25 below the determined H-point (0.5 inch max.)
        (S10.4.2.1)
      - pelvic angle (20° to 25°) (S10.4.2.2)

   13.3 Adjust the pelvic angle. (S10.1)

   13.4 Is the head level within ± 0.5°? (S10.1)
      Yes, record the following, then go to 14.
      No, go to 13.5
      - horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.)
        (S10.4.2.1)
      - vertical inches from the point 0.25 below the determined H-point (0.5 inch max.)
        (S10.4.2.1)
      - pelvic angle (20° to 25°) (S10.4.2.2)
__13.5 Adjust the neck bracket of the dummy the minimum amount necessary from the non-adjusted “0” setting until the head is level within ± 0°. (S10.1) Record the following, then go to 14 (The neck bracket was moved one notch) 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°)

X 14. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches. 10.6” measured distance (10.6 inches) (S10.5)

X 15. Can the right foot be placed on the accelerator?
   X Yes, go to 15.1 and skip 15.2
   __No, go to 15.2

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

   __15.2 Initially set the foot perpendicular to the leg and then place it as far forward as possible in the direction of the pedal centerline with the rearmost point of the heel resting on the floor pan. (S10.6.1.1)

   __15.2.1 Move the adjustable pedal to its most rearward position or until the right foot is flat on the pedal, whichever occurs first. (S10.6.1.1)

   __N/A – the accelerator pedal is not adjustable

X 16. Does the vehicle have a foot rest?
   X Yes, go to 16.1
   __No, go to 16.2

   X 16.1 With the left thigh and leg in a vertical plane, place the foot on the foot rest with the heel resting on the floor pan. (S10.6.1.2)

   X 16.1.1 Is the left foot elevated above the right foot?
      __Yes, go to 16.1.2 and position the foot off the foot rest
      __No, go to 17
16.1.2 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 (S10.5) and place the foot on the toeboard, skip 16.1.3 (S10.6.1.2)

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

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

__N/A – the foot does not reach the toeboard, go to 16.1.3

16.1.3 Check the ONLY one of the following that applies

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

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

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

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

X 18. Is the driver seat belt used for this test?
   __Yes, continue
   X No, go to 19

__18.1 Fasten the seat belt around the dummy.

__18.2 Remove all slack from the lap belt portion. (S10.9)
18.3 Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)

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

18.5 Is the belt system equipped with a tension-relieving device?
   Yes, continue
   No, go to 19

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

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

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

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

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

REMARKS:

I certify that I have read and performed each instruction.

Signature: ___________________________ Date: 4/12/07
### APPENDIX F

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

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2007 Hyundai Elantra</th>
<th>Test Program:</th>
<th>FMVSS 208 Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Technician:</td>
<td>Joe Fleck</td>
<td>NHTSA No.:</td>
<td>C70508</td>
</tr>
<tr>
<td>Test Date:</td>
<td>4/12/07</td>
<td>Test Date:</td>
<td>4/12/07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>5th female</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>5th female</td>
</tr>
</tbody>
</table>

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

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

3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S20.1.8.2)
   X N/A – No additional support adjustment

4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S20.1.9.3)
   X N/A – No independent fore-aft seat cushion adjustment

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

6. The seat back angle, if adjustable, is set at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)
   __N/A – No seat back angle adjustment
   Manufacturer’s design seat back angle | 6.8° On Head Rest Post
   Tested seat back angle | 6.9° On Head Rest Post

7. If adjustable, set the head restraint at the full up and full forward position. Any adjustment of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. (S8.1.3)
   __N/A – No head restraint adjustment
8. Place any adjustable seat belt anchorages at the vehicle manufacturer’s nominal design position for a 50th percentile adult male occupant (S8.1.3)
   N/A – No adjustable upper seat belt anchorage
   Manufacturer’s specified anchorage position. 2nd Down
   Tested anchorage position 2nd Down (Unbelted Test)
   N/A - the seat does not have a fore-aft adjustment

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

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

11. Position the H-point of the dummy within 0.5 inch of the vertical dimension and 0.5 inch of the horizontal dimension of a point 0.25 inch below the H-point determined by using the equipment and procedures specified in SAE J826 (APR 1980). (S10.4.2.1) Then measure the pelvic angle with respect to the horizontal using the pelvic angle gage.

   Adjust the dummy position until these three measurements are within the specifications. (S10.4.2.1 and S10.4.2.2)
   .078 horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
   .053 vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
   23.5° pelvic angle (20° to 25°)

12. Is the head level within ± 0.5°? (S10.1)
   X Yes, go to 13
   ___No, go to 12.1

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

   12.2 Is the head level within ± 0.5°? (S10.1)
   ___Yes, record the following, then go to 13. ___No, go to 12.3
   ___horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
   ___vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
   ___pelvic angle (20° to 25°) (S10.4.2.2)

   12.3 Adjust the pelvic angle. (S10.1)

   12.4 Is the head level within ± 0.5°? (S10.1)
   ___Yes, record the following, then go to 13. ___No, go to 12.5
   ___horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
   ___vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
   ___pelvic angle (20° to 25°) (S10.4.2.2)
12.5 Adjust the neck bracket of the dummy the minimum amount necessary from the non-adjusted "0" setting until the head is level within ±0.5°. (S10.1)
Record the following, then go to 13 (The neck bracket was moved four notches)
- horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.)
  (S10.4.2.1)
- vertical inches from the point 0.25 below the determined H-point (0.5 inch max.)
  (S10.4.2.1)
- pelvic angle (20° to 25°) (S10.4.2.2)

X 13. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.
  10.6" measured distance (10.6 inches) (S10.5)

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

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

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

X 16. Is the passenger seat belt used for this test?
  - Yes, continue
    X No, go to 17

  - Fasten the seat belt around the dummy.
  - Remove all slack from the lap belt portion. (S10.9)
  - Pull 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
16.5 Is the belt system equipped with a tension relieving device?
   __Yes, continue
   __No, go to 17

16.6 Introduce the maximum amount of slack into the upper torso belt that is recommended by
   the vehicle manufacturer in the vehicle owner's manual. (S10.9). Go to 17.

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

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

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

REMARKS:

I certify that I have read and performed each instruction.

Signature: ___________________________ Date: 4/12/07
DATA SHEET 37
DUMMY MEASUREMENTS

Test Vehicle: 2007 Hyundai Elantra
Test Program: FMVSS 208 Compliance
Test Technician: Joe Fleck

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

AD Arm to Door
HD H-Point to Door
HR Head to Side Header
HS Head to Side Window
KK Knee to Knee
SHY Striker to H-Point (Y Axis)
CD Chest to Dash
CS Chest to Steering Wheel Hub
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

Test Vehicle: 2007 Hyundai Elantra
Test Program: FMVSS 208 Compliance
Test Technician: Joe Fleck

NHTSA No.: C70508
Test Date: 4/12/07
## DATA SHEET 37

### DUMMY MEASUREMENTS

**Test Vehicle:** 2007 Hyundai Elantra  
**Test Program:** FMVSS 208 Compliance  
**Test Technician:** Joe Fleck  
**NHTSA No.:** C70508  
**Test Date:** 4/12/07

### TEST DUMMY POSITION MEASUREMENTS

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<th>Code</th>
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<th>Passenger SN 403</th>
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<td>Angle (°)</td>
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<td>Steering Wheel Angle</td>
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<td>SCA</td>
<td>Steering Column Angle</td>
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<td>Seat Back Angle (On Head Rest Post)</td>
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<td>6.9</td>
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<td>175</td>
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<td>HH</td>
<td>Head to Header</td>
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<td>Head to Windshield</td>
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<td>Head to Side Header (Y)</td>
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<td>Nose to Rim</td>
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<td>CD</td>
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<td>576</td>
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<td>CS</td>
<td>Chest to Steering Hub</td>
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<td>Rim to Abdomen</td>
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<td>Left Knee to Dash</td>
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<td>KDR</td>
<td>Right Knee to Dash</td>
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<td>183</td>
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<td>Pelvic Angle</td>
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<td>23.5</td>
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<td>Tibia Angle</td>
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<td>Knee to Knee (Y)</td>
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<td>Striker to Head</td>
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<td>SH</td>
<td>Striker to H-Point</td>
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<td>SHY</td>
<td>Striker to H-Point (Y)</td>
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<td>HS</td>
<td>Head to Side Window</td>
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<tr>
<td>HD</td>
<td>H-Point to Door (Y)</td>
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<td>160</td>
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<tr>
<td>AD</td>
<td>Arm to Door (Y)</td>
<td>151</td>
<td>154</td>
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<tr>
<td>AA</td>
<td>Ankle to Ankle</td>
<td>376</td>
<td>244</td>
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</table>
SEAT BELT POSITIONING DATA

DUMMY’S CENTERLINE

SHOULDER BELT PORTION

TBI

‘D’ RING

1/8" THICK ALUMINUM PLATE

EMERGENCY LOCKING RETRACTOR

BUCKLE ASSEMBLY

1/8" THICK ALUMINUM PLATE

PBU

PBL

MALE BLADE

REEL

OUTBOARD ANCHORAGE

INBOARD ANCHORAGE

FLOORPAN

LAP BELT PORTION

FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

<table>
<thead>
<tr>
<th>Measurement Description</th>
<th>Units</th>
<th>Driver</th>
<th>Passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBU - Top surface of reference to belt upper edge</td>
<td>mm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>PBL - Top surface of reference to belt lower edge</td>
<td>mm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
DATA SHEET 38
CRASH TEST

Test Vehicle: 2007 Hyundai Elantra
Test Program: FMVSS 208 Compliance
Test Technician: Joe Fleck

IMPACT ANGLE: Zero Degrees
BELTED DUMMIES (YES/NO): No
TEST SPEED: X 32 to 40 kmph | 0 to 48 kmph | 0 to 56 kmph
DRIVER DUMMY: 5th female | X 50th male
PASSENGER DUMMY: 5th female | X 50th male

1. Vehicle underbody painted
2. The speed measuring devices are in place and functioning.
3. The speed measuring devices are 1.0 m from the barrier (spec. 1.5m) and 30 cm from the barrier (spec. is 30 cm)
4. Convertible top is in the closed position.
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.

- 220 kpa front left tire
- 220 kpa front right tire
- 220 kpa rear left tire
- 220 kpa rear right tire

7. Time zero contacts on barrier in place.
8. Pre test 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 39.8 kmph
17. Vehicle rebound from the barrier 296 cm
18. Describe whether the doors open after the test and what method is used to open the doors.

- Left Front Door: Door remained closed and latched; Door opened without tools
- Right Front Door: Door remained closed and latched; Door opened without tools
- Left Rear Door: Door remained closed and latched; Door opened without tools
- Right Rear Door: Door remained closed and latched; Door opened without tools

19. Describe the contact points of the dummy with the interior of the vehicle.

- Driver Dummy: Head to Air Bag and Windshield; Chest to Air Bag; Knees to Knee Bolster
- Passenger Dummy: Head to Air Bag, Headliner and Windshield; Chest to Air Bag; Knees to Glove Box

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature] Date: 4/12/07
**DATA SHEET NO. 40**

**ACCIDENT INVESTIGATION MEASUREMENTS**

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2007 Hyundai Elantra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Jamie Aide</td>
</tr>
<tr>
<td>NHTSA No.:</td>
<td>C70508</td>
</tr>
<tr>
<td>Test Date:</td>
<td>4/12/07</td>
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<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td><em>X</em> 32 to 40 km/h</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>___ 5th female</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>___ 5th female</td>
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</tbody>
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<table>
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<tr>
<th>Vehicle Year/Make/Model/Body Style:</th>
<th>2007 Hyundai Elantra Passenger Car</th>
</tr>
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<tbody>
<tr>
<td>VIN:</td>
<td>KMHDU46D47U046324</td>
</tr>
<tr>
<td>Wheelbase:</td>
<td>2650 mm</td>
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<tr>
<td>Build Date:</td>
<td>9/27/06</td>
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<td>Vehicle Size Category:</td>
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<tr>
<td>Test Weight:</td>
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<td>Overall Width:</td>
<td>1754 mm</td>
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<tr>
<td>Overall Length Center:</td>
<td>4453 mm</td>
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</table>

**Accelerometer Data**

| Location: | As per measurements on Data Sheet 33 |
| Linearity: | >99.9% |
| Integration Algorithm: | Trapezoidal |
| Vehicle Impact Speed: | 39.8 km/h |
| Time of Separation: | 82.6 ms |
| Velocity Change: | 45.2 km/h |
CRUSH PROFILE

Collision Deformation Classification: 12FDEW6
Midpoint of Damage: Vehicle Longitudinal Centerline
Damage Region Length (mm): 1244
Impact Mode: Frontal Barrier

<table>
<thead>
<tr>
<th>No.</th>
<th>Measurement Description</th>
<th>Units</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Difference</th>
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<td>Crush zone 1 at left side</td>
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<td>4149</td>
<td>215</td>
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<td>Crush zone 2 at left side</td>
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<tr>
<td>C4</td>
<td>Crush zone 4 at right side</td>
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<td>4446</td>
<td>4215</td>
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<td>C5</td>
<td>Crush zone 5 at right side</td>
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<td>4232</td>
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<td>4456</td>
<td>4218</td>
<td>138</td>
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</table>

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature] Date: 4/12/07
DATA SHEET 41
WINDSHIELD MOUNTING (FMVSS 212)

Test Vehicle: 2007 Hyundai Elantra
Test Program: FMVSS 208 Compliance
Test Technician: Jamie Aide
NHTSA No.: C70508
Test Date: 4/12/07

<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>5th female</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>5th female</td>
</tr>
</tbody>
</table>

1. Pre-Crash
   1.1 Describe from visual inspection how the windshield is mounted and describe any trim material.
      Retained with glue
      Rubber trim
   1.2 Mark the longitudinal centerline of the windshield
   1.3 Measure pre-crash A, B, and C for the left side and record in the chart below.
   1.4 Measure pre-crash C, D, and E for the right side and record in the chart below.
   1.5 Measure from the edge of the retainer or molding to the edge of the windshield.
      Dimension G (mm): 15 mm

2. Post Crash
   2.1 Can a single thickness of copier type paper (as small a piece as necessary) slide between the windshield and the vehicle body?
      X No – Pass. Skip to the table of measurements, complete it by repeating the pre-crash measurements in the post crash column, and calculate the retention percentage, which will be 100%.
      Yes, go to 2.2
   2.2 Visibly mark the beginning and end of the portions of the periphery where the paper slides between the windshield and the vehicle body.
   2.3 Measure and record post-crash A, B, C, D, E, and F such that the measurements do not include any of the parts of the windshield where the paper slides between the windshield and the vehicle body.
   2.4 Calculate and record the percent retention for the right and left side of the windshield.
   2.5 Is total right side percent retention less than 75%?
      Yes, Fail
      No, Pass
   2.6 Is total left side percent retention less than 75%?
      Yes, Fail
      No, Pass
## WINDSHIELD RETENTION MEASUREMENTS

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Pre-Crash (mm)</th>
<th>Post-Crash (mm)</th>
<th>Percent Retention (Post-Test + Pre-Crash)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>574</td>
<td>574</td>
<td>100%</td>
</tr>
<tr>
<td>B</td>
<td>858</td>
<td>858</td>
<td>100%</td>
</tr>
<tr>
<td>C</td>
<td>759</td>
<td>759</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>2191</td>
<td>2191</td>
<td>100%</td>
</tr>
<tr>
<td>D</td>
<td>574</td>
<td>574</td>
<td>100%</td>
</tr>
<tr>
<td>E</td>
<td>858</td>
<td>858</td>
<td>100%</td>
</tr>
<tr>
<td>F</td>
<td>735</td>
<td>735</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>2167</td>
<td>2167</td>
<td>100%</td>
</tr>
</tbody>
</table>

Indicate area of mounting failure. NONE

**FRONT VIEW OF WINDSHIELD**

INDICATE WIDTH OF MOLDING

**REMARKS:**

I certify that I have read and performed each instruction.

Signature: [Signature]  Date: 4/12/07
**DATA SHEET 42**

**WINDSHIELD ZONE INTRUSION (FMVSS 219)**

<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>_ 5th female</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>_ 5th female</td>
</tr>
</tbody>
</table>

1. Place a 165 mm diameter rigid sphere, with a mass of 6.8 kg on the instrument panel so that it is simultaneously touching the instrument panel and the windshield. (571.219 S6.1(a))

2. Roll the sphere from one side of the windshield to the other while marking on the windshield where the sphere contacts the windshield. (571.219 S6.1(b))

3. From the outermost contactable points on the windshield draw a horizontal line to the edges of the windshield. (571.219 S6.1(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.

Provide all dimensions necessary to reproduce the protected area.

**Test Vehicle:** 2007 Hyundai Elantra  
**NHTSA No.:** C70508  
**Test Program:** FMVSS 208 Compliance  
**Test Date:** 4/12/07  
**Test Technician:** Jamie Aide  

**FRONT VIEW OF WINDSHIELD**
WINDSHIELD DIMENSIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>mm</td>
<td>1148</td>
</tr>
<tr>
<td>B</td>
<td>mm</td>
<td>554</td>
</tr>
<tr>
<td>C</td>
<td>mm</td>
<td>1494</td>
</tr>
<tr>
<td>D</td>
<td>mm</td>
<td>858</td>
</tr>
<tr>
<td>E</td>
<td>mm</td>
<td>558</td>
</tr>
<tr>
<td>F</td>
<td>mm</td>
<td>497</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>NONE</td>
<td></td>
</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>NONE</td>
<td></td>
</tr>
</tbody>
</table>

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]  Date: 4/12/07
DATA SHEET 43
FUEL SYSTEM INTEGRITY (FMVSS 301)

Test Vehicle: 2007 Hyundai Elantra  
NHTSA No.: C70508
Test Program: FMVSS 208 Compliance  
Test Date: 4/12/07
Test Technician: Daniel Sienko

TYPE OF IMPACT: 25 mph Unbelted Flat Frontal

Stoddard Solvent Spillage Measurements

A. From impact until vehicle motion ceases: 0.0 grams  
(Maximum Allowable = 28 grams)
B. For the 5 minute period after motion ceases: 0.0 grams  
(Maximum Allowable = 142 grams)
C. For the following 25 minutes: 0.0 grams  
(Maximum Allowable = 28 grams/minute)
D. Spillage: NONE

REMARKS: NO SPILLAGE
DATA SHEET NO. 43
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2007 Hyundai Elantra
Test Program: FMVSS 208 Compliance

NHTSA No.: C70508
Test Date: 4/12/07

1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations: None

<table>
<thead>
<tr>
<th>Test Phase</th>
<th>Rotation Time (sec.)</th>
<th>Hold Time (sec.)</th>
<th>Spillage (grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0° to 90°</td>
<td>120</td>
<td>300</td>
<td>0.0</td>
</tr>
<tr>
<td>90° to 180°</td>
<td>118</td>
<td>300</td>
<td>0.0</td>
</tr>
<tr>
<td>180° to 270°</td>
<td>119</td>
<td>300</td>
<td>0.0</td>
</tr>
<tr>
<td>270° to 360°</td>
<td>120</td>
<td>300</td>
<td>0.0</td>
</tr>
</tbody>
</table>
APPENDIX A

CRASH TEST DATA
<table>
<thead>
<tr>
<th>Figure No.</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Driver Head X Acceleration vs. Time</td>
<td>A-1</td>
</tr>
<tr>
<td>2.</td>
<td>Driver Head Y Acceleration vs. Time</td>
<td>A-1</td>
</tr>
<tr>
<td>3.</td>
<td>Driver Head Z Acceleration vs. Time</td>
<td>A-1</td>
</tr>
<tr>
<td>4.</td>
<td>Driver Head Resultant Acceleration vs. Time</td>
<td>A-1</td>
</tr>
<tr>
<td>5.</td>
<td>Driver Head X Velocity vs. Time</td>
<td>A-2</td>
</tr>
<tr>
<td>6.</td>
<td>Driver Head Y Velocity vs. Time</td>
<td>A-2</td>
</tr>
<tr>
<td>7.</td>
<td>Driver Head Z Velocity vs. Time</td>
<td>A-2</td>
</tr>
<tr>
<td>8.</td>
<td>Driver Neck Force X vs. Time</td>
<td>A-3</td>
</tr>
<tr>
<td>11.</td>
<td>Driver Neck Force Resultant vs. Time</td>
<td>A-3</td>
</tr>
<tr>
<td>12.</td>
<td>Driver Neck Moment X vs. Time</td>
<td>A-4</td>
</tr>
<tr>
<td>13.</td>
<td>Driver Neck Moment Y vs. Time</td>
<td>A-4</td>
</tr>
<tr>
<td>14.</td>
<td>Driver Neck Moment Z vs. Time</td>
<td>A-4</td>
</tr>
<tr>
<td>15.</td>
<td>Driver Neck Moment Resultant vs. Time</td>
<td>A-4</td>
</tr>
<tr>
<td>20.</td>
<td>Driver Chest X Velocity vs. Time</td>
<td>A-6</td>
</tr>
<tr>
<td>21.</td>
<td>Driver Chest Y Velocity vs. Time</td>
<td>A-6</td>
</tr>
<tr>
<td>22.</td>
<td>Driver Chest Z Velocity vs. Time</td>
<td>A-6</td>
</tr>
<tr>
<td>23.</td>
<td>Driver Chest Displacement vs. Time</td>
<td>A-6</td>
</tr>
<tr>
<td>24.</td>
<td>Driver Left Femur Force vs. Time</td>
<td>A-7</td>
</tr>
<tr>
<td>25.</td>
<td>Driver Right Femur Force vs. Time</td>
<td>A-7</td>
</tr>
<tr>
<td>26.</td>
<td>Passenger Head X Acceleration vs. Time</td>
<td>A-8</td>
</tr>
<tr>
<td>27.</td>
<td>Passenger Head Y Acceleration vs. Time</td>
<td>A-8</td>
</tr>
<tr>
<td>28.</td>
<td>Passenger Head Z Acceleration vs. Time</td>
<td>A-8</td>
</tr>
<tr>
<td>29.</td>
<td>Passenger Head Resultant Acceleration vs. Time</td>
<td>A-8</td>
</tr>
</tbody>
</table>
Figure No. 30. Passenger Head X Velocity vs. Time
Figure No. 31. Passenger Head Y Velocity vs. Time
Figure No. 32. Passenger Head Z Velocity vs. Time
Figure No. 33. Passenger Neck Force X vs. Time
Figure No. 34. Passenger Neck Force Y vs. Time
Figure No. 35. Passenger Neck Force Z vs. Time
Figure No. 36. Passenger Neck Force Resultant vs. Time
Figure No. 37. Passenger Neck Moment X vs. Time
Figure No. 38. Passenger Neck Moment Y vs. Time
Figure No. 39. Passenger Neck Moment Z vs. Time
Figure No. 40. Passenger Neck Moment Resultant vs. Time
Figure No. 41. Passenger Chest X Acceleration vs. Time
Figure No. 42. Passenger Chest Y Acceleration vs. Time
Figure No. 43. Passenger Chest Z Acceleration vs. Time
Figure No. 44. Passenger Chest Resultant Acceleration vs. Time
Figure No. 45. Passenger Chest X Velocity vs. Time
Figure No. 46. Passenger Chest Y Velocity vs. Time
Figure No. 47. Passenger Chest Z Velocity vs. Time
Figure No. 48. Passenger Chest Displacement vs. Time
Figure No. 49. Passenger Left Femur Force vs. Time
Figure No. 50. Passenger Right Femur Force vs. Time
Figure No. 51. Driver Nij (N_{TF}) vs. Time
Figure No. 52. Driver Nij (N_{TE}) vs. Time
Figure No. 53. Driver Nij (N_{CF}) vs. Time
Figure No. 54. Driver Nij (N_{CE}) vs. Time
Figure No. 55. Passenger Nij (N_{TF}) vs. Time
Figure No. 56. Passenger Nij (N_{TE}) vs. Time
Figure No. 57. Passenger Nij (N_{CF}) vs. Time
Figure No. 58. Passenger Nij (N_{CE}) vs. Time
Figure No. 59. Driver Occipital Condyle Moment vs. Time
<table>
<thead>
<tr>
<th>Figure No.</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>60.</td>
<td>Passenger Occipital Condyle Moment vs. Time</td>
<td>A-17</td>
</tr>
<tr>
<td>61.</td>
<td>Left Rear Seat Crossmember X Acceleration vs. Time</td>
<td>A-18</td>
</tr>
<tr>
<td>62.</td>
<td>Left Rear Seat Crossmember X Velocity vs. Time</td>
<td>A-18</td>
</tr>
<tr>
<td>63.</td>
<td>Right Rear Seat Crossmember X Acceleration vs. Time</td>
<td>A-18</td>
</tr>
<tr>
<td>64.</td>
<td>Right Rear Seat Crossmember X Velocity vs. Time</td>
<td>A-18</td>
</tr>
<tr>
<td>65.</td>
<td>Top of Engine X Acceleration vs. Time</td>
<td>A-19</td>
</tr>
<tr>
<td>66.</td>
<td>Top of Engine X Velocity vs. Time</td>
<td>A-19</td>
</tr>
<tr>
<td>67.</td>
<td>Bottom of Engine X Acceleration vs. Time</td>
<td>A-19</td>
</tr>
<tr>
<td>68.</td>
<td>Bottom of Engine X Velocity vs. Time</td>
<td>A-19</td>
</tr>
<tr>
<td>69.</td>
<td>Left Brake Caliper X Acceleration vs. Time</td>
<td>A-20</td>
</tr>
<tr>
<td>70.</td>
<td>Left Brake Caliper X Velocity vs. Time</td>
<td>A-20</td>
</tr>
<tr>
<td>71.</td>
<td>Right Brake Caliper X Acceleration vs. Time</td>
<td>A-20</td>
</tr>
<tr>
<td>72.</td>
<td>Right Brake Caliper X Velocity vs. Time</td>
<td>A-20</td>
</tr>
<tr>
<td>73.</td>
<td>Instrument Panel X Acceleration vs. Time</td>
<td>A-21</td>
</tr>
<tr>
<td>74.</td>
<td>Instrument Panel X Velocity vs. Time</td>
<td>A-21</td>
</tr>
<tr>
<td>75.</td>
<td>Trunk Z Acceleration vs. Time</td>
<td>A-21</td>
</tr>
<tr>
<td>76.</td>
<td>Trunk Z Velocity vs. Time</td>
<td>A-21</td>
</tr>
<tr>
<td>77.</td>
<td>Barrier Force – Upper Left vs. Time</td>
<td>A-22</td>
</tr>
<tr>
<td>78.</td>
<td>Barrier Force – Upper Center vs. Time</td>
<td>A-22</td>
</tr>
<tr>
<td>79.</td>
<td>Barrier Force – Upper Right vs. Time</td>
<td>A-22</td>
</tr>
<tr>
<td>80.</td>
<td>Barrier Force – Lower Left vs. Time</td>
<td>A-23</td>
</tr>
<tr>
<td>81.</td>
<td>Barrier Force – Lower Center vs. Time</td>
<td>A-23</td>
</tr>
<tr>
<td>82.</td>
<td>Barrier Force – Lower Right vs. Time</td>
<td>A-23</td>
</tr>
<tr>
<td>83.</td>
<td>Barrier Force – Sum Left vs. Time</td>
<td>A-24</td>
</tr>
<tr>
<td>84.</td>
<td>Barrier Force – Sum Center vs. Time</td>
<td>A-24</td>
</tr>
<tr>
<td>85.</td>
<td>Barrier Force – Sum Right vs. Time</td>
<td>A-24</td>
</tr>
<tr>
<td>86.</td>
<td>Barrier Force – Sum All vs. Time</td>
<td>A-24</td>
</tr>
</tbody>
</table>
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

Max: 22.2 G's
Tmax: 168.4 ms
Min: -23.4 G's
Tmin: 125.2 ms
CFC 1000

Max: 9.4 G's
Tmax: 127.2 ms
Min: -6.1 G's
Tmin: 168.3 ms
CFC 1000

Max: 18.7 G's
Tmax: 80.2 ms
Min: -3.4 G's
Tmin: 52.1 ms
CFC 1000

Max: 26.4 G's
Tmax: 116.1 ms
Min: 0.0 G's
Tmin: 20.3 ms
CFC 1000
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

DRIVER HEAD X Velocity (kph) vs TIME (ms)
Max: 39.8 kph
Tmax: 0.0 ms
Min: -8.4 kph
Tmin: 161.1 ms
CFC 180

DRIVER HEAD Y Velocity (kph) vs TIME (ms)
Max: 11.2 kph
Tmax: 251.4 ms
Min: -0.1 kph
Tmin: 45.6 ms
CFC 180

DRIVER HEAD Z Velocity (kph) vs TIME (ms)
Max: 25.4 kph
Tmax: 300.0 ms
Min: -0.3 kph
Tmin: 20.0 ms
CFC 180
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

Max: 693.6 N
Tmax: 78.3 ms
Min: -295.1 N
Tmin: 179.2 ms
CFC 1000

Max: 64.0 N
Tmax: 186.3 ms
Min: -179.3 N
Tmin: 99.6 ms
CFC 1000

Max: 841.1 N
Tmax: 80.5 ms
Min: -758.1 N
Tmin: 170.2 ms
CFC 1000

Max: 1081.7 N
Tmax: 80.5 ms
Min: 1.0 N
Tmin: 0.0 ms
CFC 1000
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)
Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

DRIVER NECK MX (Nm) vs TIME (ms)
- Max: 13.7 Nm
- Tmax: 139.4 ms
- Min: -1.8 Nm
- Tmin: 49.7 ms

DRIVER NECK MY (Nm) vs TIME (ms)
- Max: 55.3 Nm
- Tmax: 76.7 ms
- Min: -10.4 Nm
- Tmin: 50.7 ms

DRIVER NECK MZ (Nm) vs TIME (ms)
- Max: 1.5 Nm
- Tmax: 60.8 ms
- Min: -8.7 Nm
- Tmin: 133.8 ms

DRIVER NECK MResultant (Nm) vs TIME (ms)
- Max: 55.8 Nm
- Tmax: 76.7 ms
- Min: 0.1 Nm
- Tmin: 0.0 ms

CFC 600
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

Max: 1.6 G's
Tmax: 188.6 ms
Min: -38.8 G's
Tmin: 80.0 ms
CFC 180

Max: 2.6 G's
Tmax: 81.0 ms
Min: -5.1 G's
Tmin: 52.3 ms
CFC 180

Max: 5.1 G's
Tmax: 78.6 ms
Min: -5.8 G's
Tmin: 62.0 ms
CFC 180

Max: 39.1 G's
Tmax: 79.9 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 180
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

DRIVER CHEST X Velocity (kph) vs TIME (ms)
Max: 39.8 kph
Tmax: 0.0 ms
Min: -11.1 kph
Tmin: 173.7 ms
CFC 180

DRIVER CHEST Y Velocity (kph) vs TIME (ms)
Max: 0.8 kph
Tmax: 300.0 ms
Min: -1.4 kph
Tmin: 75.9 ms
CFC 180

DRIVER CHEST Z Velocity (kph) vs TIME (ms)
Max: 4.0 kph
Tmax: 300.0 ms
Min: -5.0 kph
Tmin: 113.8 ms
CFC 180

DRIVER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: 0.1 mm
Tmax: 20.5 ms
Min: -23.2 mm
Tmin: 81.3 ms
CFC 600
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

Max: 212.0 N
Tmax: 193.9 ms
Min: -5962.2 N
Tmin: 65.0 ms
CFC 600

Max: 244.9 N
Tmax: 296.1 ms
Min: -6868.9 N
Tmin: 50.9 ms
CFC 600
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

PASSENGER HEAD X (G's) vs TIME (ms)
Max: 3.4 G's
Tmax: 35.5 ms
Min: -34.6 G's
Tmin: 93.4 ms
CFC 1000

PASSENGER HEAD Y (G's) vs TIME (ms)
Max: 3.7 G's
Tmax: 35.1 ms
Min: -7.1 G's
Tmin: 101.7 ms
CFC 1000

PASSENGER HEAD Z (G's) vs TIME (ms)
Max: 24.0 G's
Tmax: 78.0 ms
Min: -23.4 G's
Tmin: 104.7 ms
CFC 1000

PASSENGER HEAD Resultant (G's) vs TIME (ms)
Max: 35.5 G's
Tmax: 93.5 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 1000
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

PASSENGER NECK FX (N) vs TIME (ms)
Max: 1103.7 N
Tmax: 86.0 ms
Min: -209.7 N
Tmin: 169.1 ms
CFC 1000

PASSENGER NECK FY (N) vs TIME (ms)
Max: 320.9 N
Tmax: 101.9 ms
Min: -55.7 N
Tmin: 56.2 ms
CFC 1000

PASSENGER NECK FZ (N) vs TIME (ms)
Max: 1070.8 N
Tmax: 77.9 ms
Min: -858.7 N
Tmin: 105.2 ms
CFC 1000

PASSENGER NECK FResultant (N) vs TIME (ms)
Max: 1326.2 N
Tmax: 79.6 ms
Min: 0.5 N
Tmin: 0.0 ms
CFC 1000
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)
Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

PASSENGER NECK MX (Nm) vs TIME (ms)
Max: 4.5 Nm
Tmax: 121.8 ms
Min: -9.8 Nm
Tmin: 75.4 ms
CFC 600

PASSENGER NECK MY (Nm) vs TIME (ms)
Max: 45.8 Nm
Tmax: 83.5 ms
Min: -11.7 Nm
Tmin: 129.7 ms
CFC 600

PASSENGER NECK MZ (Nm) vs TIME (ms)
Max: 15.5 Nm
Tmax: 108.3 ms
Min: -3.0 Nm
Tmin: 60.5 ms
CFC 600

PASSENGER NECK MResultant (Nm) vs TIME (ms)
Max: 46.3 Nm
Tmax: 83.5 ms
Min: 0.0 Nm
Tmin: 0.0 ms
CFC 600
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

PASSENGER CHEST X (G's) vs TIME (ms)
Max: 0.0 G's
Tmax: 0.0 ms
Min: -42.9 G's
Tmin: 85.0 ms
CFC 180

PASSENGER CHEST Y (G's) vs TIME (ms)
Max: 4.7 G's
Tmax: 51.8 ms
Min: -6.4 G's
Tmin: 84.1 ms
CFC 180

PASSENGER CHEST Z (G's) vs TIME (ms)
Max: 16.4 G's
Tmax: 91.5 ms
Min: -8.7 G's
Tmin: 55.0 ms
CFC 180

PASSENGER CHEST Resultant (G's) vs TIME (ms)
Max: 44.8 G's
Tmax: 85.1 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 180
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

PASSENGER CHEST X Velocity (kph) vs TIME (ms)
Max: 39.8 kph
Tmax: 0.0 ms
Min: -72.7 kph
Tmin: 300.0 ms
CFC 180

PASSENGER CHEST Y Velocity (kph) vs TIME (ms)
Max: 1.4 kph
Tmax: 55.7 ms
Min: -2.8 kph
Tmin: 201.5 ms
CFC 180

PASSENGER CHEST Z Velocity (kph) vs TIME (ms)
Max: 20.0 kph
Tmax: 283.7 ms
Min: -3.0 kph
Tmin: 66.1 ms
CFC 180

PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: 1.5 mm
Tmax: 60.1 ms
Min: -16.0 mm
Tmin: 111.3 ms
CFC 600
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

Speed: 24.7 mph (39.8 km/h)

Max: 363.6 N
Tmax: 192.3 ms
Min: -7265.6 N
Tmin: 54.1 ms
CFC 600

Max: 185.3 N
Tmax: 189.6 ms
Min: -6010.8 N
Tmin: 54.7 ms
CFC 600
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

- Drv. nij (NTF) () vs TIME (ms)
  - Max: 0.2
  - Tmax: 79.1 ms
  - Min: 0.0
  - Tmin: 0.0 ms
  - CFC 600

- Drv. nij (NTE) () vs TIME (ms)
  - Max: 0.1
  - Tmax: 49.0 ms
  - Min: 0.0
  - Tmin: 0.0 ms
  - CFC 600

- Drv. nij (NCF) () vs TIME (ms)
  - Max: 0.2
  - Tmax: 171.0 ms
  - Min: 0.0
  - Tmin: 0.0 ms
  - CFC 600

- Drv. nij (NCE) () vs TIME (ms)
  - Max: 0.1
  - Tmax: 52.2 ms
  - Min: 0.0
  - Tmin: 0.0 ms
  - CFC 600
Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

Pass. nij (NTF) () vs TIME (ms)
Max: 0.2
Tmax: 78.1 ms
Min: 0.0
Tmin: 0.0 ms
CFC 600

Pass. nij (NTE) () vs TIME (ms)
Max: 0.1
Tmax: 140.1 ms
Min: 0.0
Tmin: 0.0 ms
CFC 600

Pass. nij (NCF) () vs TIME (ms)
Max: 0.1
Tmax: 184.9 ms
Min: 0.0
Tmin: 0.0 ms
CFC 600

Pass. nij (NCE) () vs TIME (ms)
Max: 0.2
Tmax: 105.6 ms
Min: 0.0
Tmin: 0.0 ms
CFC 600
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

LEFT REAR SEAT CROSSMEMBER X (G's) vs TIME (ms)
Max: 3.7 G's
Tmax: 99.0 ms
Min: -26.9 G's
Tmin: 55.1 ms
CFC 60

LEFT REAR SEAT CROSSMEMBER X Velocity (kph) vs TIME (ms)
Max: 39.8 kph
Tmax: 0.0 ms
Min: -5.1 kph
Tmin: 80.1 ms
CFC 180

RIGHT REAR SEAT CROSSMEMBER X (G's) vs TIME (ms)
Max: 3.8 G's
Tmax: 99.3 ms
Min: -26.1 G's
Tmin: 54.4 ms
CFC 60

RIGHT REAR SEAT CROSSMEMBER X Velocity (kph) vs TIME (ms)
Max: 39.8 kph
Tmax: 3.1 ms
Min: -5.7 kph
Tmin: 85.0 ms
CFC 180
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)
Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

LEFT BRAKE CALIPER X (G's) vs TIME (ms)
Max: 12.8 G's
Tmax: 67.8 ms
Min: -38.1 G's
Tmin: 51.2 ms
CFC 60

LEFT BRAKE CALIPER X Velocity (kph) vs TIME (ms)
Max: 39.9 kph
Tmax: 4.3 ms
Min: -7.9 kph
Tmin: 104.8 ms
CFC 180

RIGHT BRAKE CALIPER X (G's) vs TIME (ms)
Max: 9.5 G's
Tmax: 62.8 ms
Min: -48.6 G's
Tmin: 32.7 ms
CFC 60

RIGHT BRAKE CALIPER X Velocity (kph) vs TIME (ms)
Max: 39.9 kph
Tmax: 4.8 ms
Min: -5.8 kph
Tmin: 102.1 ms
CFC 180
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

Max: 50.9 G's
Tmax: 27.9 ms
Min: -67.5 G's
Tmin: 59.3 ms

Max: 39.8 kph
Tmax: 0.0 ms
Min: -9.2 kph
Tmin: 112.2 ms

Max: 9.8 G's
Tmax: 25.0 ms
Min: -13.3 G's
Tmin: 44.0 ms

Max: 0.5 kph
Tmax: 300.0 ms
Min: -7.5 kph
Tmin: 81.3 ms
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)

Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

BARRIER FORCE - UPPER LEFT (KN) vs TIME (ms)
Max: 2.5 KN
Tmax: 6.6 ms
Min: -19.4 KN
Tmin: 56.4 ms
CFC 60

BARRIER FORCE - UPPER CENTER (KN) vs TIME (ms)
Max: 2.3 KN
Tmax: 5.0 ms
Min: -29.7 KN
Tmin: 12.8 ms
CFC 60

BARRIER FORCE - UPPER RIGHT (KN) vs TIME (ms)
Max: 2.7 KN
Tmax: 4.8 ms
Min: -22.6 KN
Tmin: 12.9 ms
CFC 60
25 MPH FRONTAL UNBELTED
2007 HYUNDAI ELANTRA (C70508)
Test Date: 04/12/2007
Speed: 24.7 mph (39.8 km/h)

BARRIER FORCE - LOWER LEFT (KN) vs TIME (ms)
Max: 1.3 KN
Tmax: 3.8 ms
Min: -96.6 KN
Tmin: 27.6 ms
CFC 60

BARRIER FORCE - LOWER CENTER (KN) vs TIME (ms)
Max: 1.1 KN
Tmax: 0.0 ms
Min: -161.1 KN
Tmin: 38.9 ms
CFC 60

BARRIER FORCE - LOWER RIGHT (KN) vs TIME (ms)
Max: 0.2 KN
Tmax: 116.9 ms
Min: -124.7 KN
Tmin: 32.2 ms
CFC 60
APPENDIX B

LOW RISK TEST DATA
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Low Risk Deployment

Test Date: 03/27/07

2007 Hyundai Elantra (C70508) (5th P1)

Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER HEAD X (G's) vs TIME (ms)

Max: 22.6 G's
Tmax: 131.6 ms
Min: -31.0 G's
Tmin: 5.2 ms
CFC 1000

5TH FEM. DRIVER HEAD Y (G's) vs TIME (ms)

Max: 14.7 G's
Tmax: 17.0 ms
Min: -10.8 G's
Tmin: 16.5 ms
CFC 1000

5TH FEM. DRIVER HEAD Z (G's) vs TIME (ms)

Max: 19.7 G's
Tmax: 7.2 ms
Min: -46.8 G's
Tmin: 5.2 ms
CFC 1000

5TH FEM. DRIVER HEAD Resultant (G's) vs TIME (ms)

Max: 56.2 G's
Tmax: 5.2 ms
Min: 0.0 G's
Tmin: 2.5 ms
CFC 1000
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER HEAD X Velocity (kph) vs TIME (ms)
Max: 2.4 kph
Tmax: 244.9 ms
Min: -23.7 kph
Tmin: 49.0 ms
CFC 180

5TH FEM. DRIVER HEAD Y Velocity (kph) vs TIME (ms)
Max: 1.1 kph
Tmax: 42.0 ms
Min: -2.0 kph
Tmin: 244.9 ms
CFC 180

5TH FEM. DRIVER HEAD Z Velocity (kph) vs TIME (ms)
Max: 31.5 kph
Tmax: 186.4 ms
Min: -1.2 kph
Tmin: 6.5 ms
CFC 180

5TH FEM. DRIVER HEAD Z Velocity (kph) vs TIME (ms)
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER NECK FX (N) vs TIME (ms)
- Max: 269.4 N
- Tmax: 5.0 ms
- Min: -1538.2 N
- Tmin: 29.9 ms
- CFC 1000

5TH FEM. DRIVER NECK FY (N) vs TIME (ms)
- Max: 138.1 N
- Tmax: 30.0 ms
- Min: -15.2 N
- Tmin: 214.7 ms
- CFC 1000

5TH FEM. DRIVER NECK FZ (N) vs TIME (ms)
- Max: 1954.7 N
- Tmax: 25.2 ms
- Min: -140.0 N
- Tmin: 144.3 ms
- CFC 1000

5TH FEM. DRIVER NECK FResultant (N) vs TIME (ms)
- Max: 2384.3 N
- Tmax: 25.3 ms
- Min: 1.2 N
- Tmin: 1.1 ms
- CFC 1000
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

**5TH FEM. DRIVER NECK MX (Nm) vs TIME (ms)**
- Max: 1.3 Nm
- Tmax: 70.2 ms
- Min: -11.7 Nm
- Tmin: 18.0 ms

**5TH FEM. DRIVER NECK MY (Nm) vs TIME (ms)**
- Max: 14.2 Nm
- Tmax: 201.4 ms
- Min: -88.1 Nm
- Tmin: 30.8 ms

**5TH FEM. DRIVER NECK MZ (Nm) vs TIME (ms)**
- Max: 2.7 Nm
- Tmax: 19.2 ms
- Min: -3.0 Nm
- Tmin: 61.4 ms

**Drv. Occipital Condyle Moment (Nm) vs TIME (ms)**
- Max: 16.1 Nm
- Tmax: 201.3 ms
- Min: -61.1 Nm
- Tmin: 31.8 ms

CFC 600
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1)
Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER CHEST X (G's) vs TIME (ms)
Max: 6.4 G's
Tmax: 6.5 ms
Min: -21.8 G's
Tmin: 8.6 ms
CFC 180

5TH FEM. DRIVER CHEST Y (G's) vs TIME (ms)
Max: 1.6 G's
Tmax: 8.9 ms
Min: -2.3 G's
Tmin: 25.8 ms
CFC 180

5TH FEM. DRIVER CHEST Z (G's) vs TIME (ms)
Max: 11.3 G's
Tmax: 8.8 ms
Min: -10.4 G's
Tmin: 6.6 ms
CFC 180

5TH FEM. DRIVER CHEST Resultant (G's) vs TIME (ms)
Max: 24.6 G's
Tmax: 8.7 ms
Min: 0.0 G's
Tmin: 1.8 ms
CFC 180
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER CHEST X Velocity (kph) vs TIME (ms)
Max: 5.4 kph
Tmax: 244.9 ms
Min: -8.7 kph
Tmin: 37.4 ms
CFC 180

5TH FEM. DRIVER CHEST Y Velocity (kph) vs TIME (ms)
Max: 0.1 kph
Tmax: 13.1 ms
Min: -0.4 kph
Tmin: 240.3 ms
CFC 180

5TH FEM. DRIVER CHEST Z Velocity (kph) vs TIME (ms)
Max: 10.7 kph
Tmax: 206.4 ms
Min: -0.6 kph
Tmin: 7.7 ms
CFC 180

5TH FEM. DRIVER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: 0.3 mm
Tmax: 0.8 ms
Min: -9.8 mm
Tmin: 29.0 ms
CFC 600
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER LEFT FEMUR (N) vs TIME (ms)

Max: 174.9 N
Tmax: 31.8 ms
Min: -131.8 N
Tmin: 243.6 ms
CFC 600

5TH FEM. DRIVER RIGHT FEMUR (N) vs TIME (ms)

Max: 189.5 N
Tmax: 31.4 ms
Min: -122.8 N
Tmin: 235.3 ms
CFC 600
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

FIRE VOLTAGE #1 (Volts) vs TIME (ms)
Max: 16.3 Volts
Tmax: 0.3 ms
Min: -1.1 Volts
Tmin: 10.3 ms
CFC 1000

FIRE CURRENT #1 (Amps) vs TIME (ms)
Max: 3.8 Amps
Tmax: 0.2 ms
Min: -0.0 Amps
Tmin: 10.3 ms
CFC 1000

FIRE VOLTAGE #2 (Volts) vs TIME (ms)
Max: 16.9 Volts
Tmax: 120.3 ms
Min: -1.2 Volts
Tmin: 130.3 ms
CFC 1000

FIRE CURRENT #2 (Amps) vs TIME (ms)
Max: 2.7 Amps
Tmax: 120.1 ms
Min: -0.2 Amps
Tmin: 120.5 ms
CFC 1000
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Drv. nij (NTF) () vs TIME SPECIAL CHS (ms)
Max: 0.2
Tmax: 5.6 ms
Min: 0.0
Tmin: 0.5 ms
CFC 600

Drv. nij (NTE) () vs TIME SPECIAL CHS (ms)
Max: 1.4
Tmax: 29.4 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drv. nij (NCF) () vs TIME SPECIAL CHS (ms)
Max: 0.1
Tmax: 198.3 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drv. nij (NCE) () vs TIME SPECIAL CHS (ms)
Max: 0.2
Tmax: 149.1 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1 Trial 2)

Test Date: 03/29/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER HEAD X (G's) vs TIME (ms)
Max: 16.6 G's
Tmax: 139.8 ms
Min: -34.1 G's
Tmin: 6.3 ms
CFC 1000

5TH FEM. DRIVER HEAD Y (G's) vs TIME (ms)
Max: 4.4 G's
Tmax: 9.4 ms
Min: -12.8 G's
Tmin: 17.5 ms
CFC 1000

5TH FEM. DRIVER HEAD Z (G's) vs TIME (ms)
Max: 12.7 G's
Tmax: 23.0 ms
Min: -34.2 G's
Tmin: 5.8 ms
CFC 1000

5TH FEM. DRIVER HEAD Resultant (G's) vs TIME (ms)
Max: 44.6 G's
Tmax: 5.8 ms
Min: 0.0 G's
Tmin: 1.0 ms
CFC 1000
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1 Trial 2)
Test Date: 03/29/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER HEAD X Velocity (kph) vs TIME (ms)
Max: 2.5 kph
Tmax: 245.0 ms
Min: -21.6 kph
Tmin: 64.5 ms
CFC 180

5TH FEM. DRIVER HEAD Y Velocity (kph) vs TIME (ms)
Max: 0.4 kph
Tmax: 245.0 ms
Min: -6.6 kph
Tmin: 148.9 ms
CFC 180

5TH FEM. DRIVER HEAD Z Velocity (kph) vs TIME (ms)
Max: 36.0 kph
Tmax: 189.8 ms
Min: -0.5 kph
Tmin: 6.5 ms
CFC 180
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1 Trial 2)  
Test Date: 03/29/07  
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER NECK FX (N) vs TIME (ms)

Max: 269.2 N  
Tmax: 6.5 ms  
Min: -213.2 N  
Tmin: 40.9 ms  
CFC 1000

5TH FEM. DRIVER NECK FY (N) vs TIME (ms)

Max: 140.6 N  
Tmax: 6.7 ms  
Min: -84.5 N  
Tmin: 187.7 ms  
CFC 1000

5TH FEM. DRIVER NECK FZ (N) vs TIME (ms)

Max: 1094.7 N  
Tmax: 26.6 ms  
Min: -178.9 N  
Tmin: 202.4 ms  
CFC 1000

5TH FEM. DRIVER NECK FResultant (N) vs TIME (ms)

Max: 1104.1 N  
Tmax: 26.6 ms  
Min: 1.6 N  
Tmin: 3.6 ms  
CFC 1000
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1 Trial 2)
Test Date: 03/29/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

**5TH FEM. DRIVER NECK MX (Nm) vs TIME (ms)**
- Max: 5.6 Nm
- Tmax: 45.5 ms
- Min: -9.5 Nm
- Tmin: 201.1 ms

**5TH FEM. DRIVER NECK MY (Nm) vs TIME (ms)**
- Max: 12.7 Nm
- Tmax: 8.9 ms
- Min: -20.0 Nm
- Tmin: 59.2 ms

**5TH FEM. DRIVER NECK MZ (Nm) vs TIME (ms)**
- Max: 13.8 Nm
- Tmax: 205.8 ms
- Min: -3.4 Nm
- Tmin: 115.7 ms

**Drv. Occipital Condyle Moment (Nm) vs TIME (ms)**
- Max: 10.4 Nm
- Tmax: 202.1 ms
- Min: -17.6 Nm
- Tmin: 59.7 ms
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1 Trial 2)

Test Date: 03/29/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER CHEST X (G's) vs TIME (ms)
- Max: 6.8 G's
- Tmax: 199.7 ms
- Min: -17.0 G's
- Tmin: 9.3 ms
- CFC 180

5TH FEM. DRIVER CHEST Y (G's) vs TIME (ms)
- Max: 1.3 G's
- Tmax: 193.0 ms
- Min: -2.9 G's
- Tmin: 12.1 ms
- CFC 180

5TH FEM. DRIVER CHEST Z (G's) vs TIME (ms)
- Max: 5.3 G's
- Tmax: 24.2 ms
- Min: -7.0 G's
- Tmin: 6.8 ms
- CFC 180

5TH FEM. DRIVER CHEST Resultant (G's) vs TIME (ms)
- Max: 17.4 G's
- Tmax: 9.3 ms
- Min: 0.0 G's
- Tmin: 1.6 ms
- CFC 180
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1 Trial 2)
Test Date: 03/29/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER CHEST X Velocity (kph) vs TIME (ms)
Max: 5.9 kph
Tmax: 245.0 ms
Min: -8.2 kph
Tmin: 40.7 ms
CFC 180

5TH FEM. DRIVER CHEST Y Velocity (kph) vs TIME (ms)
Max: 0.5 kph
Tmax: 245.0 ms
Min: -1.8 kph
Tmin: 160.4 ms
CFC 180

5TH FEM. DRIVER CHEST Z Velocity (kph) vs TIME (ms)
Max: 10.2 kph
Tmax: 213.3 ms
Min: -0.5 kph
Tmin: 8.4 ms
CFC 180

5TH FEM. DRIVER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: 0.3 mm
Tmax: 3.4 ms
Min: -6.4 mm
Tmin: 29.5 ms
CFC 600
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1 Trial 2)

Test Date: 03/29/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER LEFT FEMUR (N) vs TIME (ms)

- Max: 129.5 N
- Tmax: 27.8 ms
- Min: -71.7 N
- Tmin: 9.7 ms
- CFC 600

5TH FEM. DRIVER RIGHT FEMUR (N) vs TIME (ms)

- Max: 123.1 N
- Tmax: 31.7 ms
- Min: -76.9 N
- Tmin: 11.0 ms
- CFC 600
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P1 Trial 2)

Test Date: 03/29/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

FIRE VOLTAGE #1 (Volts) vs TIME (ms)
Max: 15.7 Volts
Tmax: 1.1 ms
Min: 1.2 Volts
Tmin: 10.7 ms
CFC 1000

FIRE CURRENT #1 (Amps) vs TIME (ms)
Max: 1.6 Amps
Tmax: 0.6 ms
Min: -0.0 Amps
Tmin: 120.2 ms
CFC 1000

FIRE VOLTAGE #2 (Volts) vs TIME (ms)
Max: 16.3 Volts
Tmax: 120.6 ms
Min: -0.1 Volts
Tmin: 119.7 ms
CFC 1000

FIRE CURRENT #2 (Amps) vs TIME (ms)
Max: 1.6 Amps
Tmax: 120.2 ms
Min: -0.1 Amps
Tmin: 119.7 ms
CFC 1000
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P2)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

**5TH FEM. DRIVER HEAD X (G's) vs TIME (ms)**
- Max: 39.1 G's
- Tmax: 71.0 ms
- Min: -16.6 G's
- Tmin: 15.4 ms
- CFC 1000

**5TH FEM. DRIVER HEAD Y (G's) vs TIME (ms)**
- Max: 15.4 G's
- Tmax: 7.6 ms
- Min: -4.1 G's
- Tmin: 8.2 ms
- CFC 1000

**5TH FEM. DRIVER HEAD Z (G's) vs TIME (ms)**
- Max: 36.9 G's
- Tmax: 8.8 ms
- Min: -16.4 G's
- Tmin: 7.6 ms
- CFC 1000

**5TH FEM. DRIVER HEAD Resultant (G's) vs TIME (ms)**
- Max: 39.8 G's
- Tmax: 70.9 ms
- Min: 0.0 G's
- Tmin: 5.3 ms
- CFC 1000
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P2)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER HEAD X Velocity (kph) vs TIME (ms)
- Max: 1.6 kph
- Tmax: 82.8 ms
- Min: -12.7 kph
- Tmin: 61.8 ms
- CFC 180

5TH FEM. DRIVER HEAD Y Velocity (kph) vs TIME (ms)
- Max: 1.0 kph
- Tmax: 68.5 ms
- Min: -0.0 kph
- Tmin: 6.0 ms
- CFC 180

5TH FEM. DRIVER HEAD Z Velocity (kph) vs TIME (ms)
- Max: 8.2 kph
- Tmax: 222.1 ms
- Min: -0.2 kph
- Tmin: 7.7 ms
- CFC 180
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P2)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER NECK FX (N) vs TIME (ms)
Max: 152.0 N
Tmax: 75.6 ms
Min: -674.1 N
Tmin: 30.5 ms
CFC 1000

5TH FEM. DRIVER NECK FY (N) vs TIME (ms)
Max: 24.4 N
Tmax: 101.4 ms
Min: -129.1 N
Tmin: 7.7 ms
CFC 1000

5TH FEM. DRIVER NECK FZ (N) vs TIME (ms)
Max: 1306.9 N
Tmax: 8.9 ms
Min: -100.0 N
Tmin: 104.1 ms
CFC 1000

5TH FEM. DRIVER NECK FResultant (N) vs TIME (ms)
Max: 1328.6 N
Tmax: 8.9 ms
Min: 0.8 N
Tmin: 219.1 ms
CFC 1000
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P2)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER NECK MX (Nm) vs TIME (ms)
Max: 5.5 Nm
Tmax: 14.3 ms
Min: -1.3 Nm
Tmin: 55.2 ms
CFC 600

5TH FEM. DRIVER NECK MY (Nm) vs TIME (ms)
Max: 34.3 Nm
Tmax: 77.4 ms
Min: -49.5 Nm
Tmin: 15.3 ms
CFC 600

5TH FEM. DRIVER NECK MZ (Nm) vs TIME (ms)
Max: 1.5 Nm
Tmax: 8.8 ms
Min: -1.3 Nm
Tmin: 22.0 ms
CFC 600

Drv. Occipital Condyle Moment (Nm) vs TIME (ms)
Max: 32.0 Nm
Tmax: 77.6 ms
Min: -37.6 Nm
Tmin: 15.3 ms
CFC 600
Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER CHEST X (G's) vs TIME (ms)
- Max: 9.7 G's
- Tmax: 15.8 ms
- Min: -36.3 G's
- Tmin: 9.8 ms
- CFC 180

5TH FEM. DRIVER CHEST Y (G's) vs TIME (ms)
- Max: 2.4 G's
- Tmax: 8.6 ms
- Min: -1.8 G's
- Tmin: 11.9 ms
- CFC 180

5TH FEM. DRIVER CHEST Z (G's) vs TIME (ms)
- Max: 8.5 G's
- Tmax: 10.2 ms
- Min: -2.8 G's
- Tmin: 20.0 ms
- CFC 180

5TH FEM. DRIVER CHEST Resultant (G's) vs TIME (ms)
- Max: 37.0 G's
- Tmax: 9.8 ms
- Min: 0.0 G's
- Tmin: 2.1 ms
- CFC 180

LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P2)
Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P2)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER CHEST X Velocity (kph) vs TIME (ms)
Max: 0.1 kph
Tmax: 6.0 ms
Min: -7.7 kph
Tmin: 31.9 ms
CFC 180

5TH FEM. DRIVER CHEST Y Velocity (kph) vs TIME (ms)
Max: 0.4 kph
Tmax: 54.4 ms
Min: -0.0 kph
Tmin: 3.8 ms
CFC 180

5TH FEM. DRIVER CHEST Z Velocity (kph) vs TIME (ms)
Max: 4.2 kph
Tmax: 226.7 ms
Min: -0.0 kph
Tmin: 0.1 ms
CFC 180

5TH FEM. DRIVER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: 0.3 mm
Tmax: 2.9 ms
Min: -22.9 mm
Tmin: 11.1 ms
CFC 600
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P2)
Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

5TH FEM. DRIVER LEFT FEMUR (N) vs TIME (ms)
Max: 248.8 N
Tmax: 14.3 ms
Min: -16.2 N
Tmin: 7.5 ms
CFC 600

5TH FEM. DRIVER RIGHT FEMUR (N) vs TIME (ms)
Max: 263.4 N
Tmax: 13.6 ms
Min: -27.4 N
Tmin: 157.5 ms
CFC 600
LOW RISK DEPLOYMENT
2007 Hyundai Elantra (C70508) (5th P2)

Test Date: 03/27/07
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 245ms

FIRE VOLTAGE #1 (Volts) vs TIME (ms)
Max: 16.4 Volts
Tmax: 0.3 ms
Min: -1.1 Volts
Tmin: 10.3 ms
CFC 1000

FIRE CURRENT #1 (Amps) vs TIME (ms)
Max: 3.6 Amps
Tmax: 0.2 ms
Min: -0.0 Amps
Tmin: 120.2 ms
CFC 1000

FIRE VOLTAGE #2 (Volts) vs TIME (ms)
Max: 16.8 Volts
Tmax: 120.3 ms
Min: -1.1 Volts
Tmin: 130.3 ms
CFC 1000

FIRE CURRENT #2 (Amps) vs TIME (ms)
Max: 2.8 Amps
Tmax: 120.2 ms
Min: -0.2 Amps
Tmin: 120.5 ms
CFC 1000
APPENDIX C

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<td>Pre-Test Passenger Side Knee Bolster View</td>
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<td>66</td>
<td>Vehicle in Relation to The Load Cell Grid</td>
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</table>
Vehicle Certification Label

MANUFACTURED IN KOREA BY
HYUNDAI MOTOR COMPANY

SEP/27/06 GVWR 3869 lbs PAINT 9F
GAWR FRONT 2227 lbs GAWR REAR 2094 lbs TRIM 9K

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S.A. FEDERAL
MOTOR VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS
IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE

V.I.N. KMHDU46D47U046324

PASSENGER CAR
TIRE AND LOADING INFORMATION

SEATING CAPACITY | TOTAL 5 | FRONT 2 | REAR 3

The combined weight of occupants and cargo should never exceed 385 kg or 850 lbs.

<table>
<thead>
<tr>
<th>TIRE</th>
<th>SIZE</th>
<th>COLD TIRE PRESSURE</th>
<th>SEE OWNER’S MANUAL FOR ADDITIONAL INFORMATION</th>
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<tr>
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<td>220 KPA, 32 PSI</td>
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<td>REAR</td>
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<td>SPARE</td>
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Tire Placard
Pre-Test Right Side View of Test Vehicle
Post-Test Right Side View of Test Vehicle
Pre-Test Right Front Three-Quarter View of Test Vehicle
Post-Test Right Front Three-Quarter View of Test Vehicle
Post-Test Left Front Three-Quarter View of Test Vehicle
Pre-Test Right Rear Three-Quarter View of Test Vehicle
Pre-Test Rear View of Test Vehicle
Post-Test Rear View of Test Vehicle
Post-Test Fuel Filler Cap View
Pre-Test Mid Underbody View
Post-Test Mid Underbody View
Pre-Test Rear Underbody View
Pre-Test Driver Dummy Position Left Side View (Door Open)
Post-Test Driver Dummy Position Left Side View (Door Open)
Pre-Test Driver Dummy Seat Position
Post-Test Driver Dummy Seat Position
Pre-Test Driver Dummy Feet Position
Post-Test Driver Dummy Feet Position
Pre-Test Driver Side Knee Bolster View
Post-Test Driver Dummy Head Contact (windshield)
Post-Test Driver Dummy Knee Contact
Post-Test Driver Dummy Airbag Contact
Pre-Test Passenger Dummy Front View (head position)
Post-Test Passenger Dummy Front View (head position)
Pre-Test Passenger Dummy Position Right Side View
Post-Test Passenger Dummy Position Right Side View
Pre-Test Passenger Dummy Position Right Side View (Door Open)
Post-Test Passenger Dummy Position Right Side View (Door Open)
Pre-Test Passenger Dummy Seat Position
Post-Test Passenger Dummy Seat Position
Post-Test Passenger Dummy Feet Position
Post-Test Passenger Dummy Head Contact
Post-Test Passenger Dummy Knee Contact
Rollover 360 Degrees
Vehicle in Relation to The Load Cell Grid
APPENDIX D

LOW RISK PHOTOGRAPHS
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<td>Photo No. 2</td>
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<td>Photo No. 5</td>
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<td>Photo No. 7</td>
<td>Pre-Test 5&lt;sup&gt;th&lt;/sup&gt; Fem. P1 Trial 2 Driver Dummy Left Side View (Door Open)</td>
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<td>Photo No. 8</td>
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<td>Photo No. 9</td>
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<td>Photo No. 12</td>
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<tr>
<td>Photo No. 13</td>
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<td>Photo No. 14</td>
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<td>Photo No. 15</td>
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<td>Photo No. 17</td>
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<td>Photo No. 18</td>
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<td>Photo No. 19</td>
<td>Post-Test 5&lt;sup&gt;th&lt;/sup&gt; Fem. P2 Driver Dummy Head Contact</td>
<td>D-19</td>
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</table>
PLEASE NOTE: The Pre-test and Post-test signs used for the 5th percentile position 1 and the 5th percentile position 2 tests performed on March 27, 2007 incorrectly identified the test subject as a “Hyundai Tucson” rather than a “Hyundai Elantra”. This affected the photos and real time video.
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Pre-Test 5th Fem. P1 Trial 2 Driver Dummy Right Side View (Door Open)
PLEASE NOTE: The Pre-test and Post-test signs used for the 5th percentile position 1 and the 5th percentile position 2 tests performed on March 27, 2007 incorrectly identified the test subject as a “Hyundai Tucson” rather than a “Hyundai Elantra”. This affected the photos and real time video.
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APPENDIX E
SUPPRESSION PHOTOGRAPHS
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<td>Cosco Dream Ride Car Bed Belted, Rearward Seat Track</td>
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<td>2</td>
<td>Unbelted 5th Percentile Female Dummy Reactivation, Rearward Seat Track</td>
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<td>Britax Handle With Care 191 Belted, Forward Seat Track</td>
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<td>Evenflo Medallion 254 Rear Facing Unbelted, Forward Seat Track</td>
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<td>3-Year-Old Forward Facing Britax Roundabout Belted, Forward Seat Track</td>
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<td>Unbelted 5th Percentile Female Dummy Reactivation, Rearward Seat Track</td>
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<td>Unbelted 5th Percentile Female Dummy Reactivation, Forward Seat Track</td>
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12 Month Section B Rear Facing CRS

Britax Handle With Care 191 Belted, Forward Seat Track

Britax Handle With Care 191 Belted, Middle Seat Track

Britax Handle With Care 191 Belted, Rearward Seat Track

Britax Handle With Care 191 Unbelted, Forward Seat Track
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12 Month Section B Rear Facing CRS

Britax Handle With Care 191 Forward Facing Unbelted, Rearward Seat Track

Unbelted 5th Percentile Female Dummy Reactivation, Middle Seat Track
Evenflo First Choice 204 Belted, Forward Seat Track

Evenflo First Choice 204 Belted, Middle Seat Track

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Graco Infant W/ Base Belted, Middle Seat Track
Graco Infant W/ Base Belted, Rearward Seat Track
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12 Month Section B Rear Facing CRS

Graco Infant W/ Base Unbelted, Middle Seat Track

Graco Infant W/ Base Unbelted, Rearward Seat Track

Graco Infant W/ Base Forward Facing Unbelted, Forward Seat Track

Graco Infant W/ Base Forward Facing Unbelted, Middle Seat Track
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12 Month Section B Rear Facing CRS

Graco Infant W/ Base Forward Facing Unbelted, Rearward Seat Track

Graco Infant W/O Base Belted, Forward Seat Track

Graco Infant W/O Base Belted, Middle Seat Track

Graco Infant W/O Base Belted, Rearward Seat Track
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12 Month Section B Rear Facing CRS

Graco Infant W/O Base Forward Facing Unbelted, Middle Seat Track

Graco Infant W/O Base Forward Facing Unbelted, Rearward Seat Track

Unbelted 5th Percentile Female Dummy Reactivation, Rearward Seat Track
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12 Month Section C Forward Facing Convertible CRS

Britax Roundabout 161 Forward Facing Belted, Forward Seat Track

Britax Roundabout 161 Forward Facing Belted, Middle Seat Track

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Britax Roundabout 161 Forward Facing Unbelted, Forward Seat Track
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12 Month Section C
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Britax Roundabout 161 Forward Facing Unbelted, Middle Seat Track
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Century Encore Forward Facing Belted, Middle Seat Track

Century Encore Forward Facing Belted, Rearward Seat Track

Century Encore Forward Facing Unbelted, Forward Seat Track
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12 Month Section C Forward Facing Convertible CRS

Century Encore Forward Facing Unbelted, Middle Seat Track
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Century Encore Rear Facing Belted, Forward Seat Track
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Unbelted 5th Percentile Female Dummy Reactivation, Rearward Seat Track
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12 Month Section C  Forward Facing Convertible CRS

Evenflo Medallion 254 Forward Facing Unbelted, Middle Seat Track

Evenflo Medallion 254 Rear Facing Belted, Forward Seat Track

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Evenflo Medallion 254 Rear Facing Belted, Middle Seat Track
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Evenflo Medallion 254 Rear Facing Belted, Rearward Seat Track

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Evenflo Medallion 254 Rear Facing Unbelted, Middle Seat Track

Evenflo Medallion 254 Rear Facing Unbelted, Rearward Seat Track
Unbelted 5th Percentile Female Dummy Reactivation, Forward Seat Track
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3 Year Old  Section C  Forward Facing Convertible CRS

3-Year-Old Forward Facing Britax Roundabout Belted, Forward Seat Track

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3-Year-Old Forward Facing Britax Roundabout Belted, Rearward Seat Track

Unbelted 5th Percentile Female Dummy Reactivation, Rearward Seat Track
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3 Year Old Section C Forward Facing Convertible CRS

3-Year-Old Forward Facing Century Encore Belted, Forward Seat Track

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Unbelted 5th Percentile Female Dummy Reactivation, Middle Seat Track
3-Year-Old Forward Facing Evenflo Medallion Belted,
Forward Seat Track

3-Year-Old Forward Facing Evenflo Medallion Belted,
Middle Seat Track

3-Year-Old Forward Facing Evenflo Medallion Belted,
Rearward Seat Track

Unbelted 5th Percentile Female Dummy Reactivation,
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3 Year Old  Section D  Forward Facing Toddler  Belt Positioning Booster Seat

3-Year-Old Century Next Step Cinched With Harness, Middle Seat Track

3-Year-Old Century Next Step Cinched With Harness, Rearward Seat Track

Unbelted 5th Percentile Female Dummy Reactivation, Rearward Seat Track
3-Year-Old Cosco High Back Booster Belted, Forward Seat Track
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3 Year Old Section D Forward Facing Toddler Belt Positioning Booster Seat

3-Year-Old Cosco High Back Booster Cinched With Harness, Middle Seat Track

3-Year-Old Cosco High Back Booster Cinched With Harness, Rearward Seat Track

Unbelted 5th Percentile Female Dummy Reactivation, Middle Seat Track
DOT/NHTSA 208 Suppression Test – 2007 Hyundai Elantra (C70508)

6 Year Old Section D Forward Facing Toddler Belt Positioning Booster Seat

6-Year-Old Century Next Step Belted, Forward Seat Track

6-Year-Old Century Next Strap Belted, Middle Seat Track

6-Year-Old Century Next Step Belted, Rearward Seat Track

Unbelted 5th Percentile Female Dummy Reactivation, Rearward Seat Track
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6 Year Old  Section D  Forward Facing Toddler  Belt Positioning Booster Seat

6-Year-Old Cosco High Back Booster Belted, Forward Seat Track

6-Year-Old Cosco High Back Booster Belted, Rearward Seat Track

6-Year-Old Cosco High Back Booster Belted, Middle Seat Track

Unbelted 5th Percentile Female Dummy Reactivation, Middle Seat Track
DOT/NHTSA 208 Suppression Test – 2007 Hyundai Elantra (C70508)
6 Year Old  Section D  Forward Facing Toddler  Belt Positioning Booster Seat

6-Year-Old Evenflo Right Fit Belted, Forward Seat Track

6-Year-Old Evenflo Right Fit Belted, Middle Seat Track

6-Year-Old Evenflo Right Fit Belted, Rearward Seat Track

Unbelted 5th Percentile Female Dummy Reactivation, Forward Seat Track
3 Year Old No CRS

3-Year-Old Unbelted, Forward Seat Track, Position 5

3-Year-Old Unbelted, Forward Seat Track, Position 6

3-Year-Old Unbelted, Forward Seat Track, Position 7

3-Year-Old Unbelted, Middle Seat Track, Position 1
DOT/NHTSA 208 Suppression Test – 2007 Hyundai Elantra (C70508)
3 Year Old No CRS

3-Year-Old Unbelted, Middle Seat Track, Position 2
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DOT/NHTSA 208 Suppression Test – 2007 Hyundai Elantra (C70508)
3 Year Old No CRS

3-Year-Old Unbelted, Middle Seat Track, Position 6
3-Year-Old Unbelted, Middle Seat Track, Position 7
3-Year-Old Unbelted, Rearward Seat Track, Position 1
3-Year-Old Unbelted, Rearward Seat Track, Position 2
3 Year Old No CRS

3-Year-Old Unbelted, Rearward Seat Track, Position 3
3-Year-Old Unbelted, Rearward Seat Track, Position 4
3-Year-Old Unbelted, Rearward Seat Track, Position 5
3-Year-Old Unbelted, Rearward Seat Track, Position 6
DOT/NHTSA 208 Suppression Test – 2007 Hyundai Elantra (C70508)
3 Year Old No CRS

3-Year-Old Unbelted, Rearward Seat Track, Position 7

Unbelted 5th Percentile Female Dummy Reactivation, Forward Seat Track
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6 Year Old  No CRS

6-Year-Old Unbelted, Forward Seat Track, Position 1

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6-Year-Old Unbelted, Forward Seat Track, Position 3

6-Year-Old Unbelted, Forward Seat Track, Position 4
6 Year Old  
No CRS

6-Year-Old Unbelted, Forward Seat Track, Position 4, View 2

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6-Year-Old Unbelted, Middle Seat Track, Position 2

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6 Year Old  No CRS

6-Year-Old Unbelted, Middle Seat Track, Position 4

6-Year-Old Unbelted, Middle Seat Track, Position 4, View 2

6-Year-Old Unbelted, Rearward Seat Track, Position 1

6-Year-Old Unbelted, Rearward Seat Track, Position 2
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6 Year Old No CRS
APPENDIX F

INSTRUMENTATION CALIBRATION
### INSTRUMENTS FOR DRIVER DUMMY NO. 401

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<td>04/03/07</td>
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<td>Chest Displacement</td>
<td>401</td>
<td>Servo</td>
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<tr>
<td>Left Femur Load Cell</td>
<td>995</td>
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<td>Right Femur Load Cell</td>
<td>991</td>
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### INSTRUMENTS FOR PASSENGER DUMMY NO. 403

<table>
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<th>Calibration Date</th>
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<tr>
<td>Head X</td>
<td>C13046</td>
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<tr>
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<td>Neck Load Cell</td>
<td>376</td>
<td>Denton</td>
<td>12/13/06</td>
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<tr>
<td>Chest X</td>
<td>AGH11</td>
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<td>10/25/06</td>
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<td>Chest Y</td>
<td>C12881</td>
<td>Endevco</td>
<td>04/02/07</td>
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<td>Chest Z</td>
<td>C12853</td>
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<tr>
<td>Chest Displacement</td>
<td>403</td>
<td>Servo</td>
<td>04/03/07</td>
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<td>Left Femur Load Cell</td>
<td>959</td>
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<td>Right Femur Load Cell</td>
<td>950</td>
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### INSTRUMENTS FOR LOW RISK 5TH FEMALE DUMMY NO. 511 (P1) TRIAL 1

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<th>Calibration Date</th>
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<tr>
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<td>03/12/07</td>
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<tr>
<td>Head Y</td>
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<td>Entran</td>
<td>03/12/07</td>
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<tr>
<td>Head Z</td>
<td>P49521</td>
<td>Endevco</td>
<td>03/12/07</td>
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<tr>
<td>Neck Load Cell</td>
<td>650</td>
<td>Denton</td>
<td>11/13/06</td>
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<tr>
<td>Chest X</td>
<td>G06-X02</td>
<td>Entran</td>
<td>11/13/06</td>
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<td>Chest Y</td>
<td>A12-A14</td>
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<td>12/28/06</td>
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<td>Chest Z</td>
<td>C09-Y08</td>
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<td>511</td>
<td>Servo</td>
<td>03/19/07</td>
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<tr>
<td>Left Femur Load Cell</td>
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<td>Right Femur Load Cell</td>
<td>9425</td>
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### INSTRUMENTS FOR LOW RISK 5TH FEMALE DUMMY NO. 510 (P1) TRIAL 2 AND 5TH (P2)

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<td>Head X</td>
<td>A29-F08</td>
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<tr>
<td>Head Y</td>
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<td>02/21/07</td>
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<td>Head Z</td>
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<td>02/21/07</td>
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<tr>
<td>Neck Load Cell</td>
<td>1021</td>
<td>Denton</td>
<td>11/13/06</td>
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<tr>
<td>Chest X</td>
<td>P47879</td>
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<td>P47881</td>
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<td>Servo</td>
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<td>Left Femur Load Cell</td>
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## VEHICLE INSTRUMENTS

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<th>SERIAL NO.</th>
<th>MANUFACTURER</th>
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<tbody>
<tr>
<td>Left Rear Seat Crossmember X</td>
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<td>Entran</td>
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<tr>
<td>Right Rear Seat Crossmember X</td>
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<tr>
<td>Top of Engine X</td>
<td>P24154</td>
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<tr>
<td>Bottom of Engine X</td>
<td>AP2D7</td>
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<tr>
<td>Left Brake Caliper X</td>
<td>AN8D5</td>
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<td>AJ4J0</td>
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<td>Instrument Panel X</td>
<td>E05-Z27</td>
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<td>Trunk Z</td>
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