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
2004 Hyundai Elantra 4 Door
NHTSA No.: C40510

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

Test Dates: March 22 – August 27, 2004
Final Report Date: October 1, 2004

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  _____________________________ Date:  October 1, 2004

Jeff Lewandowski, Project Engineer

Reviewed by: _____________________________ Date:  October 1, 2004

David Winkelbauer, Facility Director

FINAL REPORT ACCEPTED BY OVSC:

Accepted By: _____________________________

Acceptance Date: ___________________________
**Abstract**

Compliance tests were conducted on the subject 2004 Hyundai Elantra 4 Door in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP208-12 for the determination of FMVSS 208 compliance. Test failures identified were as follows:

**TEST FAILURES:**

The passenger air bag did not deploy. The Hyundai Elantra was tested as an advanced air bag vehicle. According to Hyundai the test vehicle was not certified as an advanced air bag vehicle. The crash test in this report was an advanced air bag vehicle 40 kmph barrier test with unbelted 5th percentile female dummies. Even though the passenger dummy injury measures were higher than the injury assessment reference values for a 5th percentile female dummy, this is not a test failure because the vehicle was not certified by Hyundai to meet those requirements. The areas of indicative test failure follow:

- **S.15.3.6 (a) Neck Injury** (Critical values: Tension = 4287N, Compression = 3880N; Flexion = 155Nm, Extension = 67Nm) The Neck Injury value shall not exceed 1.0 at any time during the event. The 5th% Passenger Dummy SN506 had a Tension Flexion Neck Injury of 1.7 at a 92 ms time and a Compression Flexion Neck Injury of 2.0 at a 105.3 ms time during the 25mph unbelted frontal impact test.  S.15.3.2 (b) HIC 15 shall not exceed 700 at any time during the event. The passenger HIC 15 value was 1050.

**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 2004 Hyundai Elantra 4 Door, NHTSA No. C40510, 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. TP208-12 dated January 14, 2003.

A 5th percentile female dummy was placed in the center rear designated seating position for the crash test. The data from this position will be used for research and development. This seating position does not have crash test performance requirements.
SECTION 2
TESTS PERFORMED

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Dates: 3/22 - 8/27/04

The following checked items indicate the tests that were performed:

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

Unbelted 5<sup>th</sup> female dummy driver (32 to 40 kmph) (S16.1(b))

Unbelted 5<sup>th</sup> female dummy passenger (32 to 40 kmph) (S16.1(b))

40% Offset 0° Belted 5<sup>th</sup> male dummy driver and passenger (0 to 40 kmph) (S18.1)

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

For the crash tests, the vehicle was instrumented with 8 accelerometers. The accelerometer data from the vehicle and dummies were sampled at 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.
### 5th Percentile Female Low Risk Deployments

#### 5th Percentile Female SN 506 Position 1 (Chin On Module) 7-15-04

<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>4</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>10.9</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>7.1</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.1</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>0.0</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>4.5</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>697</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>7</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>7</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>54</td>
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<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>87</td>
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Second stage fire time of 120 ms; Injuries calculated on 0 ms to 245 ms

#### 5th Percentile Female SN 505 Position 2 (Chin On Rim) 7-29-04

<table>
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<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
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<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>11</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>17.0</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
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<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>30.6</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>190.5</td>
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<td>Peak Nij (Ncf)</td>
<td>1.0</td>
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<td>Time (ms)</td>
<td>NA</td>
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<td>Neck Tension</td>
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<td>Chest g</td>
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<tr>
<td>Chest Displacement</td>
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<td>Left Femur</td>
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<td>316</td>
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<td>Right Femur</td>
<td>6805 N</td>
<td>360</td>
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Second stage fire time of 120 ms; Injuries calculated on 0 ms to 245 ms
SECTION 3...(continued)

INJURY RESULT SUMMARY FOR FMVSS 208 TESTS

Test Vehicle: 2004 Hyundai Elantra 4 Door  
NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  
Test Date: 8/27/04

40 kmph Frontal Crash

Impact Angle: Zero degrees

Belted Dummies: _X_ Yes (Rear Passenger)  _X_ No (Driver and Front Passenger)

Speed Range: ___ 0 to 40 kmph  _X_ 32 to 40 kmph  ___ 0 to 48 kmph  ___ 0 to 56 kmph

Test Speed: 39.8 kmph  
Test Weight: 1484.6 kg

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

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

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Driver</th>
<th>Passenger</th>
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<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>77</td>
<td>1050</td>
</tr>
<tr>
<td>Nle</td>
<td>1.0</td>
<td>0.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Nd</td>
<td>1.0</td>
<td>0.2</td>
<td>1.7</td>
</tr>
<tr>
<td>Nce</td>
<td>1.0</td>
<td>0.1</td>
<td>0.4</td>
</tr>
<tr>
<td>Ncf</td>
<td>1.0</td>
<td>0.2</td>
<td>2.0</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2620 N</td>
<td>459</td>
<td>3225</td>
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<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>510</td>
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<td>Chest g</td>
<td>60 g</td>
<td>36</td>
<td>68</td>
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<td>Chest Displacement</td>
<td>52 mm</td>
<td>20</td>
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<td>Left Femur</td>
<td>6805 N</td>
<td>3574</td>
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<td>Right Femur</td>
<td>6805 N</td>
<td>2268</td>
<td>2661</td>
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* See Discussion of Tests- Page 6

5th Percentile Female Center Rear Passenger Frontal Crash Test

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<th>Center Rear Passenger</th>
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<td>Neck Compression</td>
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<td>Left Femur</td>
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<td>Right Femur</td>
<td>6805 N</td>
<td>137</td>
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The vehicle did not meet all performance requirements.

The passenger air bag did not deploy during the 40 kmph barrier test.

The Hyundai Elantra was tested as an advanced air bag vehicle. According to Hyundai the test vehicle was not certified as an advanced air bag vehicle. The crash test in this report was an advanced air bag vehicle 40 kmph barrier test with unbelted 5th percentile female dummies. Even though the passenger dummy injury measures were higher than the injury assessment reference values for a 5th percentile female dummy, this is not a test failure because the vehicle was not certified by Hyundai to meet those requirements. The areas of indicant test failure follow:  S.15.3.6 (a) Neck Injury (Critical values: Tension = 4287N, Compression = 3880N; Flexion = 155Nm, Extension = 67Nm) The Neck Injury value shall not exceed 1.0 at any time during the event. The 5th% Passenger Dummy SN506 had a Tension Flexion Neck Injury of 1.7 at a 92 ms time and a Compression Flexion Neck Injury of 2.0 at a 105.3 ms time during the 25mph unbelted frontal impact test.  S.15.3.2 (b) HIC 15 shall not exceed 700 at any time during the event. The passenger HIC 15 value was 1050.

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

The Cosco Dream Ride Car Bed was tested for suppression in the Middle and Rearward Seat Slide position. The CRS would not fit in the Forward Seat Slide position due to interference with the transmission shifter. At Middle Seat Slide position its orientation was lateral with the Newborn dummy’s head placed to the left hand side of the vehicle. At Rearward Seat Slide position its orientation was 30° with the Newborn dummy’s head placed to the left hand side of the vehicle. This was done due to interference with the center console.

A 5th percentile dummy (S/N 516) was positioned as a Center Rear Passenger during the 25 mph frontal crash test. This dummy caused the test weight to be over by approximately 52 kg (115 lbs).

The 5th percentile female dummy placed in the center rear designated seating position during the crash test was used for research and development. There was no posttest calibration check on this dummy. The calibration frequency for dummies with this research usage is one calibration for each three exposures.

There were no other unexpected events or items to discuss.
Test Vehicle: 2004 Hyundai Elantra 4 Door
Test Program: FMVSS 208 Compliance
NHTSA No.: C40510
Test Dates: 3/22 – 8/27/04
DATA SHEET 1
COTR VEHICLE WORK ORDER

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Dates: 3/22 – 8/27/04
COTR Signature: Charles R. Case

Test to be performed for this vehicle are checked below:

1. Rear Outboard Seating Position Seat Belts (S4.1.2(b)) & (S4.2.4)
2. Air Bag Labels (S4.5.1)
3. Readiness Indicator (S4.5.2)
4. Passenger Air Bag Manual Cut-off Device (S4.5.4)
5. Lap Belt Lockability (S7.1.1.5)
6. Seat Belt Warning System (S7.3)
7. Seat Belt Contact Force (S7.4.4)
8. Seat Belt Latch Plate Access (S7.4.5)
9. Seat Belt Retraction (S7.4.6)
10. Seat Belt Guides and Hardware (S7.4.6)
11. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R) using the following indicated child restraints.

Section B

<table>
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<th>Child Restraint</th>
<th>Position 1</th>
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<td>Britax Handle with Care 191</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century Assura 4553</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century Avanta SE 41530</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century Smart Fit 4543</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Cosco Arriva 02727</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Cosco Opus 35 02603</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo Discovery Adjust Right 212</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo First Choice 204</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo On My Way Position Right V 282</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Graco Infant 8457</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
</tbody>
</table>

Section C

<table>
<thead>
<tr>
<th>Child Restraint</th>
<th>Position 1</th>
<th>Position 2</th>
<th>Position 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roundabout 161</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century Encore 4612</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century STE 1000 4416</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Cosco Olympian 02803</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Cosco Touriva 02519</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo Horizon V 425</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo Medallion 254</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
</tbody>
</table>

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

Section A

<table>
<thead>
<tr>
<th>Child Restraint</th>
<th>Position 1</th>
<th>Position 2</th>
<th>Position 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cosco Dream Ride 02-719</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Child Restraint</th>
<th>Position 1</th>
<th>Position 2</th>
<th>Position 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roundabout 161</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century Encore 4612</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century STE 1000 4416</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Cosco Olympian 02803</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Cosco Touriva 02519</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo Horizon V 425</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo Medallion 254</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
</tbody>
</table>

### Section D

<table>
<thead>
<tr>
<th>Child Restraint</th>
<th>Position 1</th>
<th>Position 2</th>
<th>Position 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roadster 9004</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century Next Step 4920</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Cosco High Back Booster 02-442</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo Right Fit 245</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>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

<table>
<thead>
<tr>
<th>Child Restraint</th>
<th>Position 1</th>
<th>Position 2</th>
<th>Position 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roundabout 161</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century Encore 4612</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Century STE 1000 4416</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Cosco Olympian 02803</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Cosco Touriva 02519</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo Horizon V 425</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
<tr>
<td>Evenflo Medallion 254</td>
<td>Full Rearward</td>
<td>Mid Position</td>
<td>Full Forward</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Child Restraints</th>
<th>Full Rearward</th>
<th>Mid Position</th>
<th>Full Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roadster 9004</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Century Next Step 4920</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cosco High Back Booster 02-442</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Evenflo Right Fit 245</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Section D</th>
<th>Full Rearward</th>
<th>Mid Position</th>
<th>Full Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roadster 9004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Century Next Step 4920</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cosco High Back Booster 02-442</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Evenflo Right Fit 245</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

#### 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) | X  |
| Sitting on seat with back against reclined seat back (S22.2.2.2) | X  |
| Sitting back in the seat and leaning on the right front passenger door (S24.2.3) | X  |

#### 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) | X  |
| Sitting on seat with back against reclined seat back (S22.2.2.2) | X  |
| Sitting back in the seat and leaning on the right front passenger door (S24.2.3) | X  |

#### 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.

<table>
<thead>
<tr>
<th>Section B</th>
<th>Full Rearward</th>
<th>Mid Position</th>
<th>Full Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Handle with Care 191</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Century Assura 4553</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Century Avanta SE 41530</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Century Smart Fit 4543</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cosco Arriva 02727</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cosco Opus 35 02603</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evenflo Discovery Adjust Right 212</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evenflo First Choice 204</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evenflo On My Way Position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right V 282</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graco Infant 8457</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section C</th>
<th>Full Rearward</th>
<th>Mid Position</th>
<th>Full Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roundabout 161</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Century Encore 4612</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Century STE 1000 4416</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cosco Olympian 02803</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
24. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P) in the following positions
   - Position 1
   - Position 2

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

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

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))
   - 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) (S5.1.2.(a)(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:

28. Sled Test: Unbelted 50th male dummy driver and passenger (S13)

29. FMVSS 204 Indicant Test

30. FMVSS 212 Indicant Test

31. FMVSS 219 Indicant Test

32. FMVSS 301 Indicant Frontal Test
DATA SHEET 2
REPORT OF VEHICLE CONDITION

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Dates: 3/22 – 8/27/04

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

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

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2004 Hyundai Elantra 4 Door
MANUFACTURE DATE: 8/19/03
NHTSA NO. C40510  GVWR: 1760 kg (3880 lbs)
BODY COLOR: RED  GAWR (Fr): 960 kg (2116 lbs)
VIN: KMHDN46D64U733703  GAWR (Rr): 840 kg (1852 lbs)

ODOMETER READINGS: ARRIVAL (miles): 52  DATE: 2/19/04
COMPLETION (miles): 93  DATE: 9/2/04
PURCHASE PRICE: ($) 13,917.00
DEALER’S NAME: Boucher Hyundai 1421 E. Moreland Blvd. Waukesha WI 53186

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: 2004 Hyundai Elantra 4 Door NHTSA NO. C40510

REMARKS:

Equipment that is no longer on the test vehicle as noted on previous page:
Rear tail lights, tool & jack, both outside mirrors, trunk interior, rear speakers, wheel covers,
spare tire, exhaust and muffler

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: 9/2/04
APPROVED BY: David Winkelbauer DATE: 9/2/04

# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

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

Test Vehicle: 2004 Hyundai Elantra 4 Door  
Test Program: FMVSS 208 Compliance  
Test Technician: Clark Subrt

<table>
<thead>
<tr>
<th>Certification Label</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer:</td>
<td>Hyundai Motor Company</td>
</tr>
<tr>
<td>Date of Manufacture:</td>
<td>8/19/03</td>
</tr>
<tr>
<td>VIN:</td>
<td>KMHDN46D64U733703</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>960 kg (2116 lbs)</td>
</tr>
<tr>
<td>Rear Axle GVWR:</td>
<td>840 kg (1852 lbs)</td>
</tr>
<tr>
<td>Total GVWR:</td>
<td>1760 kg (3880 lbs)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tire Placard</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable, vehicle is not a passenger car and does not have a tire placard.</td>
<td>Passenger Car</td>
</tr>
<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>210 kpa (30 psi)</td>
</tr>
<tr>
<td>Recommended Cold Tire Inflation Pressure Rear:</td>
<td>210 kpa (30 psi)</td>
</tr>
<tr>
<td>Recommended Tire Size:</td>
<td>P195/60R16</td>
</tr>
</tbody>
</table>

Signature: ____________________  
Date: 8/25/04
DATA SHEET 4
REAR OUTBOARD SEATING POSITION SEAT BELTS

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2004 Hyundai Elantra 4 Door</th>
<th>NHTSA No.:</th>
<th>C40510</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Date:</td>
<td>3/22/04</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Wayne Dahlke</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do all rear outboard seating positions have Type 2 seat belts?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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: NONE

Signature:  

Date: 3/22/04
**DATA SHEET 5**

**AIR BAG LABELS (S4.5.1)**

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2004 Hyundai Elantra 4 Door</th>
<th>NHTSA No.:</th>
<th>C40510</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Date:</td>
<td>3/22/04</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Wayne Dahlke</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1. Air bag maintenance label and owner’s manual instructions: (S4.5.1(a))</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.1 Does the manufacturer recommend periodic maintenance or replacement of the air bag?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2 Does the vehicle have a label specifying air bag maintenance or replacement?</td>
<td></td>
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<td>1.3 Does the label contain one of the following?</td>
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<td>Check applicable schedule:</td>
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<td></td>
<td>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?</td>
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<td>1.5 Is the label lettered in English?</td>
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<td>1.6 Is the label in block capitals and numerals?</td>
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<td>1.7 Are the letters and numerals at least 3/32 inches high?</td>
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<td>1.8 Does the owner’s manual set forth the recommended schedule for maintenance or replacement?</td>
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<td></td>
<td>2. Does the owner’s manual: (S4.5.1(f))</td>
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</table>

|   | 2.1 Include a description of the vehicle’s air bag system in an easily understandable format? |   |
|   |   |   | Yes – Pass  |   |
|   |   |   | No – Fail  |   |
|   | 2.2 Include a statement that the vehicle is equipped with an air bag and a lap/shoulder belt at the front outboard seating position? |   |
|   |   |   | Yes – Pass  |   |
|   |   |   | No – Fail  |   |
2.3 Include a statement that the air bag is a supplement 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:

- X 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 and 3.3

- X The vehicle is certified to meet the requirements of S19, S21, and S23 before 9/1/03. (Obtain answer from COTR) (S4.5.1(b)(2)) Go to 3.2 and skip 3.1 and 3.3

- X 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 3.3 and skip 3.1 and 3.2

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

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

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

- X 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))

![Figure 6a. Sun Visor Label Visible When Visor is in Down Position.](image)

![Figure 6b. Sun Visor Label Visible When Visor is in Down Position.](image)

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

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

3.1.4 Is the message area white with black text? (S4.5.1(b)(1)(ii))

- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail
3.1.5 Is the message area at least 30 cm²? (S4.5.1(b)(1)(ii))

Driver Side: Length 8.1cm, Width 3.8cm
Passenger Side: Length 8.1cm, Width 3.8cm
Actual message area 30.78 cm²

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

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

X Driver Side, Yes – Pass
     Driver Side, No – Fail
X 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 32 mm

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

3.2 Vehicles certified to meet the requirements of S19, S21, and S23 before 9/1/03.

3.2.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(b)(2))

     Driver Side, Yes – Pass
     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 either Figure 8 or 11 at each front outboard seating position? (S4.5.1(b)(2)) (Vehicles without back seats may omit the statement: “The back seat is the safest place for children.” (S4.5.1(b)(2)(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)(2)(v))

![Figure 8. Sun Visor Label Visible when Visor is in Down Position.](image)

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

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

3.2.3 Is the label heading area yellow with the word “WARNING” and the alert symbol in black? (S4.5.1(b)(2)(i))

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

3.2.4 Is the message area white with black text? (S4.5.1(b)(2)(ii))

<table>
<thead>
<tr>
<th>Side</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Side</td>
<td>Yes – Pass</td>
</tr>
<tr>
<td>Driver Side</td>
<td>No – Fail</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>Yes – Pass</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>No – Fail</td>
</tr>
</tbody>
</table>
3.2.5 Is the message area at least 30 cm²? (S4.5.1(b)(2)(ii))
Driver Side: Length_________, Width_________
Passenger Side: Length_________, Width_________
Actual message area _____________ cm²
- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail

3.2.6 Is the pictogram black 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

3.2.7 Is the pictogram at least 30 mm (1.2 inches) in length? (S4.5.1(b)(2)(iii))
Driver Side: Length_________
Passenger Side: Length_________
- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail

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

3.3.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(b)(3))
- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail

3.3.2 Does the label conform in content to the label shown in either 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))

![Figure 11: Sun Visor Label Visible when Visor is in Down Position.](image)
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Driver Side, Yes – Pass</th>
<th>Driver Side, No – Fail</th>
<th>Passenger Side, Yes – Pass</th>
<th>Passenger Side, No – Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3.3</td>
<td>Is the label heading area yellow with the word “WARNING” and the alert symbol in black? (S4.5.1(b)(3)(i))</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.4</td>
<td>Is the message area white with black text? (S4.5.1(b)(3)(ii))</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.3.5</td>
<td>Is the message area at least 30 cm²? (S4.5.1(b)(3)(ii))</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Driver Side: Length __________, Width __________</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Passenger Side: Length __________, Width __________</td>
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<td></td>
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<tr>
<td></td>
<td>Driver Actual message area __________ cm²</td>
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<td></td>
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<tr>
<td></td>
<td>Passenger Actual message area __________ cm²</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3.3.6</td>
<td>Is the pictogram black on a white background? (S4.5.1(b)(3)(iii))</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.7</td>
<td>Is the pictogram at least 30 mm (1.2 inches) in length? (S4.5.1(b)(3)(iii))</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Driver Side: Length __________</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Passenger Side: Length __________</td>
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<tr>
<td>3.4</td>
<td>Is the same side of the sun visor that contains the air bag warning label free of other information with the exception of the air bag maintenance label and/or the rollover-warning label? (S4.5.1(b)(5)(i))</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
3.5  Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label and/or the rollover-warning label? (S4.5.1(b)(5)(ii))
- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail

3.6  Does the driver side visor contain a rollover-warning label on the same side of the visor as the air bag warning label?
- Yes, go to 3.6.1
- No, go to 4 (skipping 3.6.1 through 3.6.3)

3.6.1  Are both the rollover-warning label and the air bag warning label surrounded by a continuous solid-lined border?
- Yes, go to 3.6.2 and skip 3.6.3
- No, go to 3.6.3 and skip 3.6.2

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

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

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

4.1  Is the sun visor warning label visible when the sun visor is in the stowed position?
- If yes for driver and passenger, go to 5.
- Driver Side, Yes – Pass
- Driver Side, No – Fail
- Passenger Side, Yes – Pass
- Passenger Side, No – Fail

4.2  Is the air bag alert label permanently affixed (including permanent marking on the visor material or molding into the visor material) to the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(c))
- Driver Side, Yes – Pass
- 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))

- 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))

Driver Side: Length 5.9cm, Width 3.7cm
Passenger Side: Length 5.9cm, Width 3.7cm
Actual message area 21.83 cm²

- 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
4.8 Is the pictogram at least 20 mm in diameter? (S4.5.1(c)(2))
- Driver Side Diameter 30 mm
- Passenger Side Diameter 30 mm
- 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(3)(2))
- 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)(2))
- Yes – Pass
- No – Fail

5.1.2 Is the label clearly visible from all front seating positions? (S4.5.1(e)(2))
- Yes – Pass
- No - Fail

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

**Figure 9. Removable Label on Dash:**

This Vehicle is Equipped with Advanced Air Bags

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

5.1.4 Is the heading area yellow with black text? (S4.5.1(e)(2)(i))
- Yes – Pass
- No - Fail

5.1.5 Is the message white with black text? (S4.5.1(e)(2)(ii))
- Yes – Pass
- No - Fail
5.1.6 Is the message area at least 30 cm²? (S4.5.1(e)(2)(ii))
Length 12.5 cm, Width 3.5 cm
Actual message area 43.75 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

Vehicles without back seats may omit the statement: "The back seat is the safest place for children." (S4.5.1(e)(2)(iii))
- Yes – Pass
- No - Fail

5.2.2 Does the label conform in content to the label shown in Figure 7? (S4.5.1(e)(1)(iii))
- Yes – Pass
- No - Fail

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

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

5.2.5 Is the message area at least 30 cm²? (S4.5.1(e)(1)(ii))
Length 10 cm, Width 4.8 cm
Actual message area 48 cm²
- Yes – Pass
- No - Fail
I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 3/22/04
DATA SHEET 6
FMVSS 208 READINESS INDICATOR (S4.5.2)

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Date: 3/24/04
Test Technician: Wayne Dahlke

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: Left lower center of instrument cluster

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: 3/24/04
1. Is the vehicle equipped with an on-off switch that deactivates the air bag installed at the right front outboard seating position?
   - Yes, go to 2
   - X No, this sheet is complete

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

3. Verification of the lack of room for a child restraint in the rear seat behind the driver’s seat. (S4.5.4(b))
   - 3.1 Position the seat’s adjustable lumbar supports to that the lumbar support is in its lowest, retracted or deflated adjustment position (S8.1.3)
     - N/A, no lumbar adjustment
   - 3.2 Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.02)
     - N/A, no additional support adjustment
   - 3.3 If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)
     - N/A, no independent fore-aft seat cushion adjustment
   - 3.4 If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position (S16.2.10.3.1)
     - N/A, no independent seat cushion height adjustment
   - 3.5 Put the seat in its full rearward position. (S16.2.10.3.1)
     - N/A, the seat does not have a fore-aft adjustment
   - 3.6 If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
     - N/A, no seat height adjustment
   - 3.7 Draw a horizontal reference line on the side of the seat cushion.
   - 3.8 Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
     - N/A – the seat does not have a fore-aft adjustment.
   - 3.9 Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position. (S8.1.2)
     - N/A – the seat does not have fore-aft adjustment.
Mid position
If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat:

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

N/A – No adjustments

Angle of reference line as tested:

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

N/A – No seat back angle adjustment

Manufacturers design seat back angle:

Tested seat back angle:

3.12 Is the driver seat a bucket seat?

Yes, go to 3.12.1 and skip 3.12.2

No, go to 3.12.2 and skip 3.12.1

3.12.1 Bucket Seats:

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

Record the width of the seat:

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

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

Distance (mm):

Less than 720 mm – Pass

More than 720 mm – Fail

Go to 4

3.12.2 Bench seats (including split bench seats):

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

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

Distance (mm):

Less than 720 mm – Pass

More than 720 mm – Fail

Go to 4

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

Yes – Pass

No – Fail
5. Is the on-off device separate from the ignition switch? (S4.5.4.2)
   - Yes – Pass
   - No – Fail

6. Is there a telltale light that comes on when the passenger air bag is turned off? (S4.5.4.2)
   - Yes – Pass
   - No – Fail

7. Telltale light (S4.5.4.3)
   7.1 Is the light yellow? S4.5.4.3(a))
       - Yes – Pass
       - No – Fail
   7.2 Are the words “PASSENGER AIR BAG OFF” (S4.5.4.3(b))
       7.2.1 on the telltale?
           - Yes – Pass, go to 7.3
           - No – go to 7.2.2
       7.2.2 within 25 mm of the telltale?
           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))
       - Infants: there is no back seat
         the rear seat is too small to accommodate a child restraint
         there is a medical condition that must be monitored constantly
       - Children aged 1 to 12: there is no back seat
         space is not always available in the rear seat
         there is a medical condition that must be monitored constantly
       - Medical condition: medical risk causes special risk for passenger
         greater risk for harm than with the air bag on
       - Yes – Pass
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: 3/24/04
**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: 2004 Hyundai Elantra 4 Door  
NHTSA No.: C40510

Test Program: FMVSS 208 Compliance  
Test Date: 3/25/04

Test Technician: Wayne Dahlke

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

1. N/A – no retractor is at this position
2. N/A – the retractor is an automatic locking retractor ONLY
   1. Record test fore-aft seat position: Full Aft (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))
      X Yes – Pass
      X 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
      X No – Fail
3. 4. Buckle the seat belt. (S7.1.1.5(c)(1))
5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
6. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
7. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
   X Yes, go to 7.1
   X No, go to 8
7.1 Does the vehicle owner’s manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
   X Yes – Pass
   X No – Fail
8. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))
9. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
   Measured distance between A and B (inches): 64.25

10. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))

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

12. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
   Measured distance between A and B (inches): 38.5

13. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
   Record onset rate (lb/sec) (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5)): 15
   Measured distance between A and B (inches) (S7.1.1.5(c)(6)): 39.5

14. Subtract the measurement in 12 from the measurement in 13. Is the difference 2 inches or less? (S7.1.1.5(c)(7))
   13 - 12 = .5
   Yes – Pass
   No – Fail

15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8))
   9 - 13 = 24.75
   Yes – Pass
   No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: __________________________
Date:  3/25/04
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: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Date: 3/25/04
Test Technician: Wayne Dahlke

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: Left Rear Passenger

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>N/A – no retractor is at this position</td>
<td></td>
</tr>
<tr>
<td>N/A – the retractor is an automatic locking retractor ONLY</td>
<td></td>
</tr>
</tbody>
</table>
| X | 1. Record test fore-aft seat position: Not Adjustable  
(S7.1.1.5(c)(1)) (Any position is acceptable) |
| X | 2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle.  
(S7.1.1.5 (a))
| X | Yes – Pass |
| X | No – Fail |
| X | 3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7.1.1.5 (a))
| X | Yes – Pass |
| X | No – Fail |
| X | 4. Buckle the seat belt. (S7.1.1.5(c)(1)) |
| X | 5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2)) |
| X | 6. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2)) |
| X | 7. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?  
Yes, go to 7.1  
No, go to 8 |
| X | 7.1 Does the vehicle owner’s manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
| X | Yes – Pass |
| X | No – Fail |
| X | 8. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1)) |
9. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))

   Measured distance between A and B (inches): 61.75

10. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))

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

   Measured force application angle (Spec. 5-15 degrees): 13.5

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

   Measured distance between A and B (inches): 30.5

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

   Record onset rate (lb/sec) (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5)): 15

   Measured distance between A and B (inches) (S7.1.1.5(c)(6)): 31.75

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

   13 - 12 = 1.25

   Yes – Pass

   No – Fail

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

   9 - 13 = 30

   Yes – Pass

   No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: __________________________

Date: 3/25/04
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: 2004 Hyundai Elantra 4 Door  
NHTSA No.: C40510

Test Program: FMVSS 208 Compliance  
Test Date: 3/25/04

Test Technician: Wayne Dahlke

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

1. Record test fore-aft seat position: Not Adjustable (S7.1.1.5(c)(1)) (Any position is acceptable)

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

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

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

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

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

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

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

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

Measured distance between A and B (inches): 58.5

10. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))

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

Measured force application angle (Spec. 5-15 degrees): 14

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

Measured distance between A and B (inches): 31

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

Record onset rate (lb/sec) (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5)): 15

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

13 - 12 = 1.75

Yes – Pass
No – Fail

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

9 - 13 = 25.75

Yes – Pass
No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: __________________________
Date: 3/25/04
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: 2004 Hyundai Elantra 4 Door
Test Program: FMVSS 208 Compliance
Test Technician: Wayne Dahlke
NHTSA No.: C40510
Test Date: 3/25/04

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

1. Record test fore-aft seat position: Not Adjustable (S7.1.1.5(c)(1)) (Any position is acceptable) X

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

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

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

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

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

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

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

Measured distance between A and B (inches): 60.75

10. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))

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

Measured force application angle (Spec. 5-15 degrees): 14

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

Measured distance between A and B (inches): 28.5

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

Record onset rate (lb/sec) (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5)): 15

Measured distance between A and B (inches) (S7.1.1.5(c)(6)): 29.75

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

13 - 12 = 1.25

Yes – Pass
No – Fail

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

9 - 13 = 31

Yes – Pass
No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: __________________________

Date:  3/25/04
DATA SHEET 9  
FMVSS 208 SEAT BELT WARNING SYSTEM CHECK (S7.3)

Test Vehicle: 2004 Hyundai Elantra 4 Door  
Test Program: FMVSS 208 Compliance  
Test Technician: Wayne Dahlke  
NHTSA No.: C40510  
Test Date: 3/23/04

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. The occupant is in the driver’s seat.</td>
</tr>
<tr>
<td></td>
<td>2. The seat belt is in the stowed position.</td>
</tr>
<tr>
<td></td>
<td>3. The key is in the “on” or “start” position.</td>
</tr>
<tr>
<td></td>
<td>4. The time duration of the audible signal beginning with key “on” or “start” is</td>
</tr>
<tr>
<td></td>
<td>Seconds: 6.0</td>
</tr>
<tr>
<td></td>
<td>5. The occupant is in the driver’s seat.</td>
</tr>
<tr>
<td></td>
<td>6. The seat belt is in the stowed position.</td>
</tr>
<tr>
<td></td>
<td>7. The key is in the “on” or “start” position.</td>
</tr>
<tr>
<td></td>
<td>8. The time duration of the warning light beginning with key “on” or “start” is</td>
</tr>
<tr>
<td></td>
<td>Seconds: Stays On</td>
</tr>
<tr>
<td></td>
<td>9. The occupant is in the driver’s seat.</td>
</tr>
<tr>
<td></td>
<td>10. The seat belt is in the latched position and with at least 4 inches of belt webbing extended.</td>
</tr>
<tr>
<td></td>
<td>11. The key is in the “on” or “start” position.</td>
</tr>
<tr>
<td></td>
<td>12. The time duration of the audible signal beginning with key “on” or “start” is</td>
</tr>
<tr>
<td></td>
<td>Seconds: 0.0</td>
</tr>
<tr>
<td></td>
<td>13. The occupant is in the driver’s seat.</td>
</tr>
<tr>
<td></td>
<td>14. The seat belt is in the latched position and with at least 4 inches of belt webbing extended.</td>
</tr>
<tr>
<td></td>
<td>15. The key is in the “on” or “start” position.</td>
</tr>
<tr>
<td></td>
<td>16. The time duration of the warning light beginning with key “on” or “start” is</td>
</tr>
<tr>
<td></td>
<td>Seconds: 0.0</td>
</tr>
<tr>
<td></td>
<td>17. Complete the following table with the data from 4, 8, 12, and 16 to determine which option is used.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Warning light specification</th>
<th>Audible signal</th>
<th>Audible signal specification*</th>
</tr>
</thead>
<tbody>
<tr>
<td>S7.3 (a)(1)</td>
<td>Belt latched &amp; key on or start</td>
<td>Item 16: 0.0</td>
<td>Item 12: 0.0</td>
</tr>
<tr>
<td></td>
<td>Belt stowed &amp; key on or start</td>
<td>Item 8: Stays On</td>
<td>60 seconds minimum</td>
</tr>
<tr>
<td>S7.3 (a)(2)</td>
<td>Belt latched &amp; key on or start</td>
<td>Item 16: 0.0</td>
<td>4 to 8 seconds</td>
</tr>
<tr>
<td></td>
<td>Belt stowed &amp; key on or start</td>
<td>Item 8: Stays On</td>
<td>4 to 8 seconds</td>
</tr>
</tbody>
</table>

* 49 USCS @ 30124 does NOT allow an audible signal to operate for more than 8 seconds.  
** 0 seconds means the light or audible signal are NOT permitted to operate under these conditions.  
See 7/12/00 interpretation to Patrick Raher of Hogan and Hartson
18. 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

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

REMARKS:

I certify that I have read and performed each instruction.

Signature: __________________________
Date:  3/23/04
DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

Test Vehicle: 2004 Hyundai Elantra 4 Door NHTSA No.: C40510
Test Program: FMVSS 208 Compliance Test Date: 3/23/04
Test Technician: Wayne Dahlke

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
   - No, continue with this check sheet

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

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

4. 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 independent fore-aft seat cushion adjustment

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

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

7. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
   - N/A, no seat height adjustment

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

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

10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
Mid position
If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Not adjustable

11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)

N/A, no adjustments

Reference line angle as tested: N/A

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

N/A, no seat back angle adjustment

Manufacturer's design seat back angle:

Tested seat back angle:

13. Position the test dummies according to dummy position placement instructions in Appendix F.

14. Fasten the seat belt latch.

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

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

Contact Force (lb): 0.29

0.0 to 0.7 pounds – Pass
Greater than 0.7 pounds - Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 3/23/04
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?
   - Yes, this form is complete
   - No, continue with this check sheet

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

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

4. 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 independent fore-aft seat cushion adjustment

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

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

7. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
   - N/A, no seat height adjustment

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

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

10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
Mid position

If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Not adjustable

11. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)

   N/A, no adjustments

Reference line angle as tested: N/A

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

   N/A, no seat back angle adjustment

Manufacturer’s design seat back angle:

   Tested seat back angle:

13. Position the test dummies according to dummy position placement instructions in Appendix F.

14. Fasten the seat belt latch.

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

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

   Contact Force (lb): 0.23

   0.0 to 0.7 pounds – Pass
   Greater than 0.7 pounds - Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: ________________

Date: 3/23/04
DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

Test Vehicle: 2004 Hyundai Elantra 4 Door  
Test Program: FMVSS 208 Compliance  
Test Technician: Wayne Dahlke  
NHTSA No.: C40510  
Test Date: 3/23/04

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.

<table>
<thead>
<tr>
<th>DESIGNATED SEATING POSITION: Right Rear Passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does the vehicle incorporate a webbing tension-relieving device?</td>
</tr>
<tr>
<td>Yes, this form is complete</td>
</tr>
<tr>
<td>No, continue with this check sheet</td>
</tr>
<tr>
<td>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)</td>
</tr>
<tr>
<td>N/A, no lumbar adjustment</td>
</tr>
<tr>
<td>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)</td>
</tr>
<tr>
<td>N/A, no additional support adjustment</td>
</tr>
<tr>
<td>4. 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)</td>
</tr>
<tr>
<td>N/A, no independent fore-aft seat cushion adjustment</td>
</tr>
<tr>
<td>5. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)</td>
</tr>
<tr>
<td>N/A, no independent seat cushion height adjustment</td>
</tr>
<tr>
<td>6. Put the seat in its full rearward position. (S16.2.10.3.1)</td>
</tr>
<tr>
<td>N/A, the seat does not have a fore-aft adjustment</td>
</tr>
<tr>
<td>7. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)</td>
</tr>
<tr>
<td>N/A, no seat height adjustment</td>
</tr>
<tr>
<td>8. Draw a horizontal reference line on the side of the seat cushion.</td>
</tr>
<tr>
<td>9. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the midpoint), and R for full rearward.</td>
</tr>
<tr>
<td>N/A, the seat does not have a fore-aft adjustment</td>
</tr>
<tr>
<td>10. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)</td>
</tr>
</tbody>
</table>

Test Vehicle: 2004 Hyundai Elantra 4 Door  
Test Program: FMVSS 208 Compliance  
Test Technician: Wayne Dahlke  
NHTSA No.: C40510  
Test Date: 3/23/04
Mid position
If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Not adjustable

If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)

Reference line angle as tested: N/A

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)

Manufacturer’s design seat back angle:
Tested seat back angle:

Position the test dummies according to dummy position placement instructions in Appendix F.

Fasten the seat belt latch.

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

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

Contact Force (lb): 0.31

0.0 to 0.7 pounds – Pass
Greater than 0.7 pounds - Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: __________________________
Date: 3/23/04
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. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (8.1.3)

   - N/A, no lumbar adjustment

2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)

   - N/A, no additional support adjustment

3. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)

   - N/A, no independent fore-aft seat cushion adjustment

4. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)

   - N/A, no independent seat cushion height adjustment

5. Put the seat in its full rearward position. (S16.2.10.3.1)

   - N/A, the seat does not have a fore-aft adjustment

6. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)

   - N/A, no seat height adjustment

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

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

   - N/A, the seat does not have a fore-aft adjustment.

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

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

   - N/A, no adjustments
Reference line angle as tested: Zero

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

N/A, no seat back angle adjustment

Manufacturer's design seat back angle:

Tested seat back angle:

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

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

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

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

16. Place the latch plate in the stowed position.

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

Yes – Pass

No

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

Yes – Pass

No

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

Yes – Pass

No – Fail

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

Yes – Pass

No – Fail
Attach the Inboard Reach String (19½" long) at the base of the head on centerline.

Attach the Outboard Reach String (28" long) at this point on the torso sheath.

A—Using flexible tape measure 8" from back centerline 10-¼" from front centerline to find anchor point below arm pit on torso sheath.

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

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 3/23/04
DATA SHEET 12
SEAT BELT RETRACTION (S7.4.5)

Test Vehicle: 2004 Hyundai Elantra 4 Door  
Test Program: FMVSS 208 Compliance  
Test Technician: Wayne Dahlke

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.

<table>
<thead>
<tr>
<th>DESIGNATED SEATING POSITION:</th>
<th>Not Applicable For Any Position - Passenger Car</th>
</tr>
</thead>
<tbody>
<tr>
<td>GVWR:</td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

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

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

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

7. If the seat height is adjustable, put it in the full down position. (S8.1.2)
   - N/A, no seat adjustment

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

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

10. Using only the controls that change the seat in the fore-aft direction, place the seat in the middle fore-aft position. (S8.1.2)
    - If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat:
11. If seat adjustments, other than fore-aft, are present and the reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2)

N/A – no seat adjustment

Reference angle as tested:

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

N/A – no seat back angle adjustment

Manufacturer’s design seat back angle:

Tested seat back angle:

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

N/A – no head restraint adjustment

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

N/A – no adjustable upper seat belt anchorage

Manufacturer’s specified anchorage position:

Tested anchorage position:

15. Is the driver seat a bucket seat?

Yes, go to 15.1 and skip 15.2.

No, go to 15.2 and skip 15.1

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

Record the width of the seat:

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

15.2 Bench seats (including split bench seats):

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

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

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

Distance from the vehicle centerline to Plane B:

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

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

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

- Horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
- Vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
- Pelvic angle (20° to 25°) (S10.4.2.1)
- 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)

20. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches. Measured distance (10.6 inches) (S10.5):

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

22. Fasten the seat belt around the dummy.

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

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

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

Pound load applied:

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

- Yes, continue
- No, go to 27

26.1 Introduce the maximum amount of slack into the upper torso belt that is recommended by the vehicle manufacturer in the vehicle owner’s manual. (S10.9). Go to 25.

27. Check the statement that applies to this test vehicle:

27.1 Check the statement that applies to this test vehicle:

The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.

- Pass

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

- Pass

27.3 Neither A or B apply

- Fail

28. 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
29. If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?

- N/A
- Yes – Pass
- No – Fail

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

Signature: [Signature]

Date: 3/23/04
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
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: __________________________

Date: 3/23/04
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.

DESERIVED 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: 2004 Hyundai Elantra 4 Door
Test Program: FMVSS 208 Compliance
Test Technician: Wayne Dahlke
NHTSA No.: C40510
Test Date: 3/23/04
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: 3/23/04
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle: 2004 Hyundai Elantra 4 Door  
NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  
Test Date: 3/23/04
Test Technician: Wayne Dahlke

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:  

Date:  3/23/04
DATA SHEET 14
MARKING OF REFERENCE POINTS FOR VARIOUS TEST POSITIONS AND POINTS

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Date: 8/27/04
Test Technician: Eric Peschman

1. Driver Designated Seating 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)
       N/A – No lumbar adjustment
   X  1.2 Position any adjustable parts of the seat that provide additional support so that they are
       in the lowest or most open adjustment position (S16.2.10.2)
       N/A – No additional support adjustment
   X  1.3 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.
   X  1.4 Draw a line (seat cushion reference line) through the seat cushion reference point.
   X  1.5 Using only the controls that primarily move the seat in the fore-aft direction, move the
       seat cushion reference point to the rearmost position.
   X  1.6 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)
       N/A – No independent fore-aft seat cushion adjustment
   X  1.7 Using any part of any control, other than the parts just used for fore-aft positioning,
       determine the range of angles of the seat cushion reference line and set the seat
       cushion reference line at the mid-angle.
       Maximum Angle: 4.8 Degrees Nose Down
       Minimum Angle: 7.7 Degrees Nose Up
       Mid-angle: 1.4 Degrees Nose Up
   X  1.8 If the seat and/or seat cushion height is adjustable, use any part of any control other than
       those 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 1.7.
       N/A – No seat height adjustment
   X  1.9 Using only the controls that primarily move the seat in the fore-aft direction, verify the
       seat is in the rearmost position.
   X  1.10 Using only the controls that primarily move the seat in the fore-aft direction, 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  1.11 Use only the controls that primarily move the seat in the fore-aft direction to place the
       seat in the rearmost position.
   X  1.12 Using any controls, other than the controls that primarily move the seat and/or seat
       cushion in the fore-aft direction, 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 1.7.
1.13 Using only the controls that primarily move the seat and/or seat cushion in the fore-aft direction, place the seat in the mid-fore-aft position.

1.14 Using any controls, other than the controls that primarily move the seat in the fore-aft direction, 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 1.7.

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

1.16 Using any controls, other than the controls that primarily move the seat in the fore-aft direction, 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 1.7.

1.17 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

Manufacturer’s design seat back angle: 22.5° (9th notch)

1.18 Is the seat a bucket seat?

Yes, go to 1.18.1 and skip 1.18.2

No, go to 1.18.2 and skip 1.18.1

1.18.1 Bucket seats:

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

Record the width of the seat cushion: 525 mm

One half the width of the seat cushion is: 262 mm

Record the distance from the edge of the seat cushion to the seat mark: 262 mm

1.18.2 Bench seats:

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

2. Passenger Designated Seating Position

2.1 Is the seat adjustable independent of the driver seating position?

Yes, go to 2.2

No, go to 2.18

2.2 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, S22.1.7.1)

N/A – No lumbar adjustment

2.3 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, S20.1.9.2, S22.1.7.2)

N/A – No additional support adjustment

2.4 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.

2.5 Draw a line (seat cushion reference line) through the seat cushion reference point.

2.6 Using only the controls that primarily move the seat in the fore-aft direction, move the seat cushion reference point to the rearmost position.
2.7 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, S20.1.9.3, S22.1.7.3)

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

2.8 Using any part of the control, other than the parts just used for fore-aft positioning, determine the range of angles of the seat cushion reference line and set the seat cushion reference line at the mid-angle.

Maximum Angle: Zero
Minimum Angle: Zero
Mid-angle: Zero

2.9 If the seat and/or seat cushion height is adjustable, use any part of any control other than those 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-range angle.

N/A – No seat height adjustment

2.10 Using only the controls that primarily move the seat and/or seat cushion in the fore-aft direction, verify the seat is in the rearmost position.

2.11 Using only the controls that primarily move the seat in the fore-aft direction, 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.

2.12 Using only the controls that primarily move the seat in the fore-aft direction, place the seat in the rearmost position.

2.13 Using any controls, other than the controls that primarily move the seat in the fore-aft direction, 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 2.8.

N/A – No seat height adjustment Go to 2.18

2.14 Using only the controls that primarily move the seat in the fore-aft direction, place the seat in the mid-fore-aft position.

2.15 Using any controls, other than the controls that primarily move the seat in the fore-aft direction, 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 2.8.

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

2.17 Using any controls, other than the controls that primarily move the seat in the fore-aft direction, 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 2.8.

2.18 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

N/A – The seat back angle adjustment is controlled by the setting of the driver seat back angle.
Manufacturer’s design seat back angle: 22.5° (9th notch)
Actual seat back angle: 22.5° (9th notch)

2.19 Is the seat a bucket seat?
- Yes, go to 2.19.1 and skip 2.19.2
- No, go to 2.19.2 and skip 2.19.1

2.19.1 Bucket seats:
- Locate and mark for future reference the longitudinal centerline of the seat cushion. (S20.2.1.3, S22.2.1.3) The longitudinal centerline of a bucket seat cushion is determined at the widest part of the seat cushion. Measure perpendicular to the longitudinal centerline of the vehicle. (S20.1.10)
- Record the width of the seat cushion: 530 mm
- One half the width of the seat cushion is: 265 mm
- Record the distance from the edge of the seat cushion to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) 265 mm

2.19.2 Bench seats:
- 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)
- 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.)

3. Head Restraints
- N/A, vehicle contains automatic head restraints
- N/A, there is no head restraint adjustment

3.1 Left outboard
- Adjust the head restraint to its lowest position. (S16.3.4.2)
- 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. Mark the foremost position.
- 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.
- Vertical height of head restraint (mm): 160 mm
- Mid-point height (mm): 80 mm

3.2 Right outboard
- Adjust the head restraint to its lowest position. (S16.3.4.2)
- 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. Mark the foremost position.
- 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.
- Vertical height of head restraint (mm): 160 mm
- Mid-point height (mm): 80 mm

4. Steering Wheel
4.1 Is the steering wheel adjustable up and down and/or in and out?

- Yes, go to 4.2
- No, this form is complete

4.2 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

4.3 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.

- N/A, steering wheel is not adjustable in and out

5. Driver Low Risk Deployment

- N/A, no low risk deployment tests scheduled

5.1 Position the steering wheel so the front wheels are in the straight-ahead position. (S26.2.1)

5.2 Position any adjustable parts of the steering controls to the mid-position as determined in item 3 above. If a mid-position adjustment is not achievable, position the controls to the next lowest detent position. (S26.2.1)

5.3 Locate the vertical plane parallel to the vehicle longitudinal centerline through the geometric center of the opening through which the driver air bag deploys into the occupant compartment. This is referred to as “Plane E”. (Check determination method below.) (S26.2.6)

- Plane E determined using manufacturer’s information supplied by the COTR. (Found in Appendix D on page D-39)
- Plane E determined by test lab personnel and approved by the COTR. (Include supporting documentation in the test report.)

<table>
<thead>
<tr>
<th>&quot;Plane E&quot; Measurement::</th>
<th>Ey (mm)</th>
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<tbody>
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<tr>
<td>Specified:</td>
<td></td>
</tr>
<tr>
<td>Verify Measured Equals Specified +/- 6mm:</td>
<td></td>
</tr>
</tbody>
</table>

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

- Plane F determined using manufacturer’s information supplied by the COTR. (Found in Appendix D on page D-39)
- Plane F determined by test lab personnel and approved by the COTR. (Include supporting documentation in the test report.)

<table>
<thead>
<tr>
<th>&quot;Plane F&quot; Measurement::</th>
<th>Fz (mm)</th>
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</thead>
<tbody>
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<tr>
<td>Specified:</td>
<td></td>
</tr>
<tr>
<td>Verify Measured Equals Specified +/- 6mm:</td>
<td></td>
</tr>
</tbody>
</table>

6. Passenger Low Risk Deployment – Planes C and D

- N/A, no low risk deployment tests scheduled

6.1 Locate the horizontal plane through the geometric center of the opening through which the right front air bag deploys into the occupant compartment. This is referred to as "Plane C." (Check location method below.) (S22.4.1.3)
Plane C located using manufacturer’s information supplied by the COTR. (Include manufacturer’s information in the test report.) OR
Plane C located by test lab personnel and approved by the COTR. (Include supporting documentation in the test report.)

<table>
<thead>
<tr>
<th>Cz (mm)</th>
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<tbody>
<tr>
<td>“Plane C” Measurement:</td>
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</table>

Plane D determined using manufacturer’s information supplied by the COTR. (Include manufacturer’s information in the test report.) OR
Plane D determined by test lab personnel and approved by the COTR. (Include supporting documentation in the test report.)

<table>
<thead>
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<tr>
<td>Verify Measured Equals Specified +/- 6mm:</td>
<td></td>
</tr>
</tbody>
</table>

6.2 Locate the vertical plane parallel to the vehicle longitudinal centerline through the geometric center of the opening through which the right front air bag deploys into the occupant compartment. This is referred to as “Plane D.” (Check determination method below.) (S22.4.1.2)

6.3 **Mark** the intersection of Planes C and D on the instrument panel.

7. **5th Female Dummy**
Mark a point on the chin of the dummy 40 mm below the center of the mouth. (Chin Point) (S26.2.6)

8. 6-Year-Old Dummy
Locate and **mark** a point on the front of the dummy’s chest jacket on the midsaggital plane which is 139 mm (5.5 in) ± 3 mm (± 0.1 in) along the surface of the skin down from the top of the skin at the neck line. Designate this point as “Point 1.” (S24.4.1.1)

9. 3-Year-Old Dummy
Locate and **mark** a point on the front of the dummy’s chest jacket on the midsaggital plane which is 114 mm (4.5 in) ± 3 mm (± 0.1 in) along the surface of the skin down from the top of the skin at the neck line. Designate this point as “Point 1.” (S22.4.1.1)

**REMARKS:**

I certify that I have read and performed each instruction.

Signature: ____________________  Date: 8/27/04
DATA SHEET 15 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>C40510</th>
<th>TEST DATE:</th>
<th>7/12/04</th>
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<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
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<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>082</td>
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<table>
<thead>
<tr>
<th>CHILD RESTRAINT NAME:</th>
<th>Britax</th>
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</thead>
<tbody>
<tr>
<td>CHILD RESTRAINT MODEL:</td>
<td>Handle With Care 191</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>5-26-2000</td>
</tr>
</tbody>
</table>

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

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
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>Handle Down</th>
<th>Handle Up</th>
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<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
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<td>Suppressed</td>
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<td>Forward</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>
<td>N/A</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
<td>N/A</td>
<td>Suppressed</td>
<td>N/A</td>
</tr>
<tr>
<td>Forward</td>
<td>Middle</td>
<td>N/A</td>
<td>Suppressed</td>
<td>N/A</td>
</tr>
<tr>
<td>Facing</td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Rearward position.  (SN507)
DATA SHEET 15 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>C40510</th>
<th>TEST DATE:</th>
<th>7/12/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>082</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>First Choice 204</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>6-20-2000</td>
</tr>
</tbody>
</table>

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

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
Manufacturer’s specified anchorage position: 2\textsuperscript{nd} Down
Tested anchorage position: 2\textsuperscript{nd} 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>
</tr>
</thead>
<tbody>
<tr>
<td>Seat Belt</td>
</tr>
<tr>
<td>Belted</td>
</tr>
<tr>
<td>Rear Facing</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Unbelted</td>
</tr>
<tr>
<td>Rear Facing</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Unbelted</td>
</tr>
<tr>
<td>Forward</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Successful Unbelted 5\textsuperscript{th} percentile Female Dummy Reactivation was performed with the seat in the Middle position. (SN507)

* The CRS 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 15 SUMMARY
Suppression Test Using 12-month-old CRABI Dummy  (Part 572, Subpart R)
Section B  Rear Facing CRS

NHTSA No.:          C40510          TEST DATE:          7/12/04
LABORATORY:         MGA            TECHNICIANS:        JL/TB
DUMMY TYPE:         12 Month Old   DUMMY SERIAL NO.:   082

CHILD RESTRAINT NAME:     Graco
CHILD RESTRAINT MODEL:    Infant 8457
DATE OF MANUFACTURE:     8-31-2000

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

Manufacturer’s design seat back angle:   22.5°
Tested seat back angle:     22.5°
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>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Handle Down</th>
<th>Handle Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted Rear Facing</td>
<td>Forward 7 *</td>
<td>130</td>
<td>N/A</td>
<td>Suppressed</td>
<td></td>
</tr>
<tr>
<td>Unbelted Rear Facing</td>
<td>Forward 9 *</td>
<td>N/A</td>
<td>N/A</td>
<td>Suppressed</td>
<td></td>
</tr>
<tr>
<td>Unbelted Forward Facing</td>
<td>Forward</td>
<td>N/A</td>
<td>N/A</td>
<td>Suppressed</td>
<td></td>
</tr>
</tbody>
</table>

* The CRS 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 15 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>
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<th>7/12/04</th>
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</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>082</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHILD RESTRAINT NAME:</th>
<th>Graco</th>
</tr>
</thead>
<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: 22.5°
Tested seat back angle: 22.5°
Manufacturer’s specified anchorage position: 2\textsuperscript{nd} Down
Tested anchorage position: 2\textsuperscript{nd} 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>Handle Down</th>
<th>Handle Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted Rear Facing</td>
<td>Forward 8 *</td>
<td>130</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>131</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>127</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted Rear Facing</td>
<td>Forward 7 *</td>
<td>N/A</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>N/A</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>N/A</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted Forward Facing</td>
<td>Forward 6 *</td>
<td>N/A</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>N/A</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>N/A</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5\textsuperscript{th} percentile Female Dummy Reactivation was performed with the seat in the 6\textsuperscript{th} Forward position. (SN507)

* The CRS 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 15 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>TEST DATE:</th>
<th>7/9/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>DUMMY SERIAL NO.:</td>
<td>082</td>
</tr>
<tr>
<td>12 Month Old</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CHILD RESTRAINT NAME: Britax
CHILD RESTRAINT MODEL: Roundabout 161
DATE OF MANUFACTURE: 7-21-2000

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

Manufacturer’s design seat back angle:  22.5°
Tested seat back angle:     22.5°
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>No Blanket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>128</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>129</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>Rearward</td>
<td>131</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>127</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Rearward</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 15 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>C40510</th>
<th>TEST DATE:</th>
<th>7/12/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>082</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHILD RESTRAINT NAME:</th>
<th>Century</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHILD RESTRAINT MODEL:</td>
<td>Encore 4612</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>8-16-2000</td>
</tr>
</tbody>
</table>

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

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
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 |
|--------------|--------------|-------------|----------|
| Seat Belt    | Seat Slide   | Cinch Load (N) | No Blanket |
| Belted       | Forward      | 133         | Suppressed |
|              | Middle       | 131         | Suppressed |
|              | Rearward     | 132         | Suppressed |
| Unbelted     | Forward      | N/A         | Suppressed |
|              | Middle       | N/A         | Suppressed |
|              | Rearward     | N/A         | Suppressed |
| Belted       | Rear         | Forward     | 130       | Suppressed |
|              |              | Middle      | 127       | Suppressed |
|              |              | Rearward    | 133       | Suppressed |
| Unbelted     | Rear         | Forward     | N/A       | Suppressed |
|              |              | Middle      | N/A       | Suppressed |
|              |              | Rearward    | N/A       | Suppressed |

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Middle position. (SN507)
DATA SHEET 15 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>C40510</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST DATE:</td>
<td>7/12/04</td>
</tr>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
</tr>
<tr>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
</tr>
<tr>
<td>DUMMY SERIAL NO.:</td>
<td>082</td>
</tr>
</tbody>
</table>

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

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

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
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>No Blanket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>127</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Forward</td>
<td>Middle</td>
<td>127</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</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>Forward</td>
<td>Middle</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Belted</td>
<td>Rear</td>
<td>127</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Middle</td>
<td>132</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Rearward</td>
<td>128</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Rear</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Middle</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</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 16 SUMMARY
Suppression Test Using Newborn Infant Dummy (Part 572, Subpart K)
Section A Car Bed

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C40510</th>
<th>TEST DATE:</th>
<th>7/12/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>Newborn Infant</td>
<td>DUMMY SERIAL NO.:</td>
<td>003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAR BED NAME:</th>
<th>Cosco</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR BED MODEL:</td>
<td>Dream Ride 02-719</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</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:  22.5°
Tested seat back angle:  22.5°
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>Handle Down</th>
<th>Handle Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward</td>
<td>Won’t Fit</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>Suppressed</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Rearward</td>
<td>Suppressed</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

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

The CRS would not fit in the Forward Seat Slide position due to interference with the transmission shifter.
The CRS was orientated at 30° to fit in the Rearward Seat Slide position due to interference with the center console.
DATA SHEET 17 SUMMARY
Suppression Test Using 3 Year Old Dummy And Booster Seats (Part 572, Subpart P)
Section D  Forward Facing Belt Positioning Booster

NHTSA No.: C40510  TEST DATE: 7/13/04
LABORATORY: MGA  TECHNICIANS: JL/TB
DUMMY TYPE: 3 Year Old  DUMMY SERIAL NO.: 031

BOOSTER SEAT NAME: Century
BOOSTER SEAT MODEL: Next Step 4920
DATE OF MANUFACTURE: 8-16-2000

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
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>No Blanket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward 2 *</td>
<td>13</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Forward Facing Without Harness</td>
<td>Middle</td>
<td>17</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>15</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>133</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>127</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

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

* The CRS 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 17 SUMMARY
Suppression Test Using 3 Year Old Dummy And Booster Seats (Part 572, Subpart P)
Section D  Forward Facing Toddler Belt Positioning Booster Seat

<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>
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</tbody>
</table>

<table>
<thead>
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<th>C40510</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Date:</td>
<td>7/13/04</td>
</tr>
<tr>
<td>Laboratory:</td>
<td>MGA</td>
</tr>
<tr>
<td>Technicians:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>Dummy Type:</td>
<td>3 Year Old</td>
</tr>
<tr>
<td>Dummy Serial No.:</td>
<td>031</td>
</tr>
</tbody>
</table>

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
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>No Blanket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted Forward Facing Without Harness</td>
<td>Forward 5 *</td>
<td>11</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Belted Forward Facing Cinched With Harness</td>
<td>Forward 5 *</td>
<td>130</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Belted Forward Facing Without Harness</td>
<td>Middle</td>
<td>15</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Belted Forward Facing Cinched With Harness</td>
<td>Middle</td>
<td>131</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>127</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

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

* The CRS 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 18 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>C40510</th>
<th>TEST DATE:</th>
<th>7/12/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</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: 22.5°
Tested seat back angle: 22.5°
Manufacturer’s specified anchorage position: 2nd Down
Tested anchorage position: 2nd Down

<table>
<thead>
<tr>
<th>Test Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seat Belt</strong></td>
</tr>
<tr>
<td>Belted</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

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

* The CRS 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 18 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>C40510</th>
<th>TEST DATE:</th>
<th>7/12/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</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>Century</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHILD RESTRAINT MODEL:</td>
<td>Encore 4612</td>
</tr>
<tr>
<td>DATE OF MANUFACTURE:</td>
<td>8-16-2000</td>
</tr>
</tbody>
</table>

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
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 4 *</td>
<td>130</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>133</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

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

* The CRS 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 18 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>C40510</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST DATE:</td>
<td>7/12/04</td>
</tr>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
</tr>
<tr>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>3 Year Old</td>
</tr>
<tr>
<td>DUMMY SERIAL NO.:</td>
<td>031</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>

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
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>130</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>127</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>128</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 19 SUMMARY

Suppression Test Using An Unbelted 3 Year Old Dummy (Part 572, Subpart P)
No CRS

<table>
<thead>
<tr>
<th>NHTSA No.</th>
<th>C40510</th>
<th>TEST DATE</th>
<th>7/12/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY</td>
<td>MGA</td>
<td>TECHNICIANS</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE</td>
<td>3 Year Old</td>
<td>DUMMY SERIAL NO.</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</td>
<td>Sitting on seat with back against seat back</td>
<td>Forward</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rearward</td>
<td>22.5</td>
</tr>
<tr>
<td>Position 2</td>
<td>Sitting on seat with back against reclined seat back</td>
<td>Forward</td>
<td>46.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>46.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rearward</td>
<td>46.5</td>
</tr>
<tr>
<td>Position 3</td>
<td>Sitting on seat with back not against seat back</td>
<td>Forward</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rearward</td>
<td>22.5</td>
</tr>
<tr>
<td>Position 4</td>
<td>Sitting on seat edge, spine vertical, hands at dummy’s sides</td>
<td>Forward</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rearward</td>
<td>22.5</td>
</tr>
<tr>
<td>Position 5</td>
<td>Standing on seat, facing forward</td>
<td>Forward</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rearward</td>
<td>22.5</td>
</tr>
<tr>
<td>Position 6</td>
<td>Kneeling on seat, facing forward</td>
<td>Forward</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rearward</td>
<td>22.5</td>
</tr>
<tr>
<td>Position 7</td>
<td>Kneeling on seat, facing rearward</td>
<td>Forward</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rearward</td>
<td>22.5</td>
</tr>
<tr>
<td>Position 8</td>
<td>Lying on seat. (Three designated seating positions only)</td>
<td>Forward</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rearward</td>
<td>N/A</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 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>C40510</th>
<th>TEST DATE:</th>
<th>7/13/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>6 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>052</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: 22.5°
Tested seat back angle: 22.5°
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>12</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>10</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>17</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 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>C40510</th>
<th>TEST DATE:</th>
<th>7/13/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>6 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>052</td>
</tr>
</tbody>
</table>

**Booster Seat Information**

<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>
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</table>

Manufacturer’s design seat back angle: \( 22.5^\circ \)

Tested seat back angle: \( 22.5^\circ \)

Manufacturer’s specified anchorage position: \( 2^{nd} \) Down

Tested anchorage position: \( 2^{nd} \) 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>18</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>11</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>15</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5\(^{th}\) percentile Female Dummy Reactivation was performed with the seat in the Middle position. (SN507)
**DATA SHEET 20 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>TEST DATE:</th>
<th>TEST DATE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C40510</td>
<td>7/13/04</td>
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</tbody>
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<table>
<thead>
<tr>
<th>LABORATORY:</th>
<th>TECHNICIANS:</th>
<th>DUMMY SERIAL NO.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGA</td>
<td>JL/TB</td>
<td>052</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DUMMY TYPE:</th>
<th>DUMMY SERIAL NO.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Year Old</td>
<td>052</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOOSTER SEAT NAME:</th>
<th>BOOSTER SEAT MODEL:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evenflo</td>
<td>Right Fit 245</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DATE OF MANUFACTURE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-26-2000</td>
</tr>
</tbody>
</table>

Manufacturer’s design seat back angle: 22.5°

Tested seat back angle: 22.5°

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>10</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>13</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>12</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 21 SUMMARY**

Suppression Test Using An Unbelted 6 Year Old Dummy (Part 572, Subpart N)
No CRS

<table>
<thead>
<tr>
<th>NHTSA No.:</th>
<th>C40510</th>
<th>TEST DATE:</th>
<th>7/13/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL/TB</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>6 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>052</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><strong>Position 1</strong>&lt;br&gt;Sitting on seat with back against seat back</td>
<td>Forward 7 *&lt;br&gt;Middle&lt;br&gt;Rearward</td>
<td>22.6&lt;br&gt;22.6&lt;br&gt;22.6</td>
<td>Suppressed&lt;br&gt;Suppressed&lt;br&gt;Suppressed</td>
</tr>
<tr>
<td><strong>Position 2</strong>&lt;br&gt;Sitting on seat with back against reclined seat back</td>
<td>Forward 9 *&lt;br&gt;Middle 9 *&lt;br&gt;Rearward 9 *</td>
<td>46.8&lt;br&gt;46.8&lt;br&gt;46.8</td>
<td>Suppressed&lt;br&gt;Suppressed&lt;br&gt;Suppressed</td>
</tr>
<tr>
<td><strong>Position 3</strong>&lt;br&gt;Sitting on seat edge, spine vertical, hands at dummy's sides</td>
<td>Forward&lt;br&gt;Middle&lt;br&gt;Rearward</td>
<td>22.6&lt;br&gt;22.6&lt;br&gt;22.6</td>
<td>Suppressed&lt;br&gt;Suppressed&lt;br&gt;Suppressed</td>
</tr>
<tr>
<td><strong>Position 4</strong>&lt;br&gt;Sitting on seat with back against seat back then leaning on the door</td>
<td>Forward 9 *&lt;br&gt;Middle&lt;br&gt;Rearward</td>
<td>22.6&lt;br&gt;22.6&lt;br&gt;22.6</td>
<td>Suppressed&lt;br&gt;Suppressed&lt;br&gt;Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted 5th percentile Female Dummy Reactivation was performed with the seat in the Rearward 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 27 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>C40510</th>
<th>TEST DATE:</th>
<th>7/15/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD/DW/BR</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>5th Percentile Female</td>
<td>DUMMY SERIAL NO.:</td>
<td>506</td>
</tr>
</tbody>
</table>

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
Tested seat position: Full Aft

Tested steering wheel angle: 23.4°
Thorax cavity angle: 29.2°
Chin Point height: 3 mm Below 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>120.3</td>
</tr>
</tbody>
</table>

### 5th Percentile Female SN 506 Position 1 (Chin On Module) 7-15-04

<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>4</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>10.9</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>7.1</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.1</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>0.0</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>4.5</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>697</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>7</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>7</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>54</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>87</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 28 SUMMARY
Low Risk Deployment Tests Using an Unbelted 5th Percentile Female
Dummy (Part 572, Subpart O) (S26)
Position 2 - Chin On Rim (S26.3)

NHTSA No.: C40510 TEST DATE: 7/29/04
LABORATORY: MGA TECHNICIANS: WD/DW/BR
DUMMY TYPE: 5th Percentile Female DUMMY SERIAL NO.: 505

Manufacturer’s design seat back angle: 22.5°
Tested seat back angle: 22.5°
Tested seat position: Full Aft

Tested steering wheel angle: 20.8°
Thorax cavity angle: 27.0°
Chin Point height: 16 mm Below Rim

*The dummy contacted the windshield with the steering wheel at mid position. The steering controls were adjusted to lower the upper steering wheel rim the necessary amount to bring the Chin Point coincident with the upper steering wheel rim. The rear thorax cavity was adjusted along with the steering wheel angle.

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>120.3</td>
</tr>
</tbody>
</table>

5th Percentile Female SN 505 Position 2 (Chin On Rim) 7-29-04

<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>11</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>17.0</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>30.6</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>190.5</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>93.4</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>910</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>52</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>25</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>21</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>316</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>360</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 30
VEHICLE WEIGHT, FUEL TANK, AND ATTITUDE DATA

Test Vehicle: 2004 Hyundai Elantra 4 Door
Test Program: FMVSS 208 Compliance
Test Technician: Clark Subrt

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

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: 55 liters (14.5 gallons)
5. Record the fuel tank capacity supplied in the owner's manual.
   Useable Fuel Tank Capacity in owner's manual: 55 liters (14.5 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: 55 liters (14.5 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: 30 psi LF: 30 psi RR: 30 psi LR: 30 psi |
   | Owner's manual pressure: RF: 30 psi LF: 30 psi RR: 30 psi LR: 30 psi |
   | Actual inflated pressure: RF: 30 psi LF: 30 psi RR: 30 psi LR: 30 psi |
12. Record the vehicle weight at each wheel to determine the unloaded vehicle weight (UVW), i.e. "as delivered" weight.
   | Right Front (kg): 397.8 Right Rear (kg): 248.1 |
   | Left Front (kg): 402.4 Left Rear (kg): 245.4 |
   | Total Front (kg): 800.2 Total Rear (kg): 493.5 |
   | % Total Weight: 61.9 % Total Weight: 38.1 |
   | UVW = TOTAL FRONT PLUS TOTAL REAR (KG): 1293.7 |
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

| RF: 664 | LF: 663 | RR: 657 | LR: 659 |

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

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

- Yes, go to 14.3
- No, go to 14.2

14.2 VCW = Gross Vehicle Weight – UVW

VCW = _________ - _________ = _________

14.3 VCW = 385 kg (850 lbs)

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

- Yes, go to 14.6
- No, go to 14.5 and skip 14.6

14.5 DSC = Total number of seat belt assemblies = _________

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)?

- Yes, if the calculated RCLW is greater than 136 kg, use 136 kg as the RCLW. (S8.1.1)
- No, use the RCLW calculated in 14.7

15. Fully Loaded Weight (100% fuel fill)

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

- Driver: 5th female __50th male
- Passenger: 5th female __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.

| Right Front (kg): 442.7 | Right Rear (kg): 285.8 |
| Left Front (kg): 434.1 | Left Rear (kg): 272.6 |
| Total Front (kg): 876.8 | Total Rear (kg): 558.4 |
| % Total Weight: 61.1 | % Total Weight: 38.9 |
| % GVW: 54.5 | % GVW: 47.7 |

Fully Loaded Weight = Total Front Plus Total Rear (kg): 1435.2

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


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 usable capacity.

Fuel tank capacity x .92 = 55.0 liters (14.5 gallons) x .92 = 50.6 liters (13.4 gallons)

Amount added 50.6 liters (13.4 gallons) 92%

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)

1436.7 kg = 1293.7 kg + 45.0 kg + 98.0 kg

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

Max. Test Weight = Calculated Test Weight – 4.5 kg = 1432.2 kg

Min. Test Weight = Calculated Test Weight – 9 kg = 1427.7 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:
Rear tail lights, tool & jack, both outside mirrors, trunk interior, rear speakers, wheel cover, spare tire, exhaust and muffler

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.

<table>
<thead>
<tr>
<th>Right Front (kg):</th>
<th>439.5</th>
<th>Right Rear (kg):</th>
<th>296.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Front (kg):</td>
<td>447.2</td>
<td>Left Rear (kg):</td>
<td>301.2</td>
</tr>
<tr>
<td>Total Front (kg):</td>
<td>886.7</td>
<td>Total Rear (kg):</td>
<td>597.9</td>
</tr>
<tr>
<td>% Total Weight:</td>
<td>59.7</td>
<td>% Total Weight:</td>
<td>40.3</td>
</tr>
<tr>
<td>% GVW</td>
<td>54.5</td>
<td>% GVW</td>
<td>47.7</td>
</tr>
</tbody>
</table>

(% GVW = Axle GVW divided by Vehicle GVW)

TOTAL FRONT PLUS TOTAL REAR (kg): 1484.6
28. Is the test weight between the Max. Weight and the Min. Weight (See 20.2)?
   - Yes
   - No, explain why not. 5%th female rear center seat dummy causes test weight to be over by approximately 52 kg (115 lbs)

29. Test Weight Vehicle Attitude: (all dimensions in millimeters)
   - Place the vehicle on a level surface
   - Measure perpendicular to the level surface to the 4 points marked on the body (see 13 above) and record the measurements
     
29.1 RF: 647  LF: 646  RR: 636  LR: 638

29.2 RF: 647  LF: 646  RR: 636  LR: 638

30. Summary of test attitude
   - AS DELIVERED:
     
30.1 RF: 664  LF: 663  RR: 657  LR: 659

                          AS TESTED:
30.2 RF: 647  LF: 646  RR: 636  LR: 638

                          FULLY LOADED:

   - Is the "as tested" test attitude equal to or between the "fully loaded" and "as delivered" attitude?
   - Yes
   - No, explain why not. 5%th female rear center seat dummy causes test weight to be over by approximately 52 kg (115 lbs)- this affects vehicle attitude

REMARKS:

I certify that I have read and performed each instruction.

Signature:  

Date:  8/25/04
DATA SHEET 31

VEHICLE ACCELEROMETER LOCATION AND MEASUREMENT

Test Vehicle: 2004 Hyundai Elantra 4 Door  
Test Program: FMVSS 208 Compliance  
Test Technician: Clark Subrt

REMARKS:

I certify that I have read and performed each instruction.

Signature:  
Date:  8/25/04
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.
<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>348</td>
</tr>
<tr>
<td>B (RH Rear Seat Xmbr)</td>
<td>348</td>
</tr>
<tr>
<td>C (Engine Top)</td>
<td>3848</td>
</tr>
<tr>
<td>D (Engine Bottom)</td>
<td>3750</td>
</tr>
<tr>
<td>E (Caliper)</td>
<td>Right Side 3767</td>
</tr>
<tr>
<td>F (Left Caliper)</td>
<td>670</td>
</tr>
<tr>
<td>G (IP)</td>
<td>3073</td>
</tr>
<tr>
<td>H (Seat)</td>
<td>1766</td>
</tr>
<tr>
<td>J (Right Caliper)</td>
<td>670</td>
</tr>
<tr>
<td>K (Trunk)</td>
<td>930</td>
</tr>
<tr>
<td><strong>POST TEST VALUES</strong></td>
<td></td>
</tr>
<tr>
<td>A (LH Rear Seat Xmbr)</td>
<td>348</td>
</tr>
<tr>
<td>B (RH Rear Seat Xmbr)</td>
<td>348</td>
</tr>
<tr>
<td>C (Engine Top)</td>
<td>3813</td>
</tr>
<tr>
<td>D (Engine Bottom)</td>
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</tr>
<tr>
<td>F (Left Caliper)</td>
<td>675</td>
</tr>
<tr>
<td>G (IP)</td>
<td>3073</td>
</tr>
<tr>
<td>H (Seat)</td>
<td>1766</td>
</tr>
<tr>
<td>J (Right Caliper)</td>
<td>680</td>
</tr>
<tr>
<td>K (Trunk)</td>
<td>930</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.
   1.3 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the back on the outboard sides of on A1 and A2. The center of each circular target is 100 mm from the one next to it.
   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.
   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.
   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.
   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
      No, go to 2.
   1.12 Measure the width of the vehicle.
      Vehicle width (mm):
   1.13 Find the centerline of the vehicle. (¼ 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): 100mm
Distance between circular targets on D2 (mm): 100mm

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. (Removed at manufacturer’s request with COTR approval)
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.

REMARKS: Center Rear Passenger Dummy Target Information:

Horizontal distance from camera to dummy reference targets: 656 mm
Horizontal distance from camera to vehicle reference targets: 1416 mm
Distance between 1" reference targets: 75 mm
Reference targets were placed on inch tape for continuous reference.

I certify that I have read and performed each instruction.

Signature: __________________________

Date: 8/27/04
RESECTION PANEL TARGETING ALIGNMENT

RESECTION CONTROL POINTS PANEL

STEERING COLUMN TARGET B

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

CAR TOP TARGETS A1 & A2

STEERING WHEEL

LEFT SIDE VIEW

REAR VIEW
PRE-RUN STEERING COLUMN HIGH SPEED CAMERA VIEW

LEFT SIDE VIEW
**DATA SHEET 33**

**CAMERA LOCATIONS**

Test Vehicle: 2004 Hyundai Elantra 4 Door  
NHTSA No.: C40510  
Test Program: FMVSS 208 Compliance  
Test Date: 8/27/04  
Time: 12:23 pm

<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></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Left Side View (Barrier face to front seat backs)</td>
<td>852 -7440 1460</td>
<td>24</td>
<td>1000</td>
</tr>
<tr>
<td>3</td>
<td>Left Side View (Driver)</td>
<td>1852 -8080 1539</td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td>4</td>
<td>Left Side View (B-post aimed toward center of steering wheel)</td>
<td>5930 -4640 1970</td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td>5</td>
<td>Left Side View (Steering Column)</td>
<td>2185 -5430 1560</td>
<td>19</td>
<td>1000</td>
</tr>
<tr>
<td>6</td>
<td>Left Side View (Steering Column)</td>
<td>2140 -5430 1033</td>
<td>19</td>
<td>1000</td>
</tr>
<tr>
<td>7</td>
<td>Right Side View (Overall)</td>
<td>2330 6530 1785</td>
<td>19</td>
<td>1000</td>
</tr>
<tr>
<td>8</td>
<td>Right Side View (Passenger)</td>
<td>1660 8600 1640</td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td>9</td>
<td>Right Side View (Angle)</td>
<td>5880 4120 1965</td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td>10</td>
<td>Right Side View (Front door)</td>
<td>815 7400 1575</td>
<td>25</td>
<td>1000</td>
</tr>
<tr>
<td>11</td>
<td>Front View Windshield</td>
<td>-470 0 2865</td>
<td>19</td>
<td>1000</td>
</tr>
<tr>
<td>12</td>
<td>Front View Driver</td>
<td>105 -455 1750</td>
<td>13</td>
<td>1000</td>
</tr>
<tr>
<td>13</td>
<td>Front View Passenger</td>
<td>70 475 1700</td>
<td>13</td>
<td>1000</td>
</tr>
<tr>
<td>14</td>
<td>Overhead Barrier Impact View</td>
<td>940 0 5050</td>
<td>14</td>
<td>1000</td>
</tr>
<tr>
<td>15</td>
<td>Pit Camera Engine View</td>
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<td>16</td>
<td>Pit Camera Fuel Tank View</td>
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<td>17</td>
<td>Onboard Rear Passenger View</td>
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</table>

*COORDINATES*  
+X – forward of impact plane  
+Y – right of monorail centerline  
+Z – above ground level
DATA SHEET 34
APPENDIX G
DUMMY POSITIONING PROCEDURES
FOR 5th% DRIVER TEST DUMMY CONFORMING TO SUBPART O OF PART 572

Test Vehicle: 2004 Hyundai Elantra 4 Door  
Test Program: FMVSS 208 Compliance  
Test Technician: Eric Peschman  
NHTSA No.: C40510  
Test Date: 8/27/04

<table>
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<td>BELTED DUMMIES (YES/NO):</td>
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<td>TEST SPEED:</td>
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<tr>
<td>DRIVER DUMMY:</td>
<td>X 5th female</td>
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<tr>
<td>PASSENGER DUMMY:</td>
<td>X 5th female</td>
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</tbody>
</table>

X 1. Position the seat’s adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment position. (S16.2.10.1)  
X N/A – No lumbar adjustment

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

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

X 4. Use the seat markings determined during the completion of Data Sheet 14 to set the rearmost fore-aft position, mid-height position and the seat cushion mid-angle. (S16.3.2.1.1)

X 5. If the vehicle has an adjustable accelerator pedal, place it in the full forward position. (S16.3.2.2.1)  
X N/A accelerator pedal not adjustable

X 6. Set the steering wheel hub at the geometric center of the full range of driving positions including any telescoping positions as determined in data sheet 14. (S16.2.9)

X 7. Fully recline the seat back. (S16.3.2.1.2)  
__ N/A seat back not adjustable.

X 8. Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The calves should not be touching the seat cushion. (S16.3.2.1.2)

X 9. Position 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 (S16.3.2.1.3 and S16.3.2.1.4)

X 10. Hold down the dummy’s thighs and push rearward on the upper torso to maximize the pelvic angle. (S16.3.2.1.5)

X 11. Set the angle between the legs and the thighs to 120 degrees. (S16.3.2.1.6)
12. Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches) Center the knee separation with respect to the longitudinal seat cushion marking as determined in item 1.18 of Data Sheet 14. (S16.3.2.1.6) Record Knee Separation 162 mm

13. Push rearward on the dummy’s knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first. (S16.3.2.1.6) Pelvis contacted seat back. Calves contacted seat cushion.

14. Gently rock the upper torso ± 5 degrees (approximately 51 mm (2 inches)) side to side three time. (S16.3.2.1.7)

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

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

17. Rotate the left leg and thigh laterally to equalize the distance between each knee and the longitudinal seat cushion marking as determined in item 1.18 of Data Sheet 14. (S16.3.2.1.8)

18. Attempt to return the seat to the foremost fore-aft position, mid-height, and seat cushion mid-angle. The foot may contact and depress the accelerator and/or change the angle of the foot with respect to the leg. (S16.3.2.1.8) Foremost position achieved. Proceed to step 23. Foremost not achieved because of foot interference. Proceed to step 20. Foremost not achieved because of steering wheel contact.

19. If the dummy’s legs contact the steering wheel, move the steering wheel up the minimum amount required to avoid contact. If the steering wheel is not adjustable separate the knees the minimum required to avoid contact. (S16.3.2.1.8) N/A- there was no leg contact Steering wheel repositioned Knees separated

20. If the left foot interferes with the clutch or brake pedals, rotate the left foot about the leg to provide clearance. If this is not sufficient, rotate the thigh outboard at the hip the minimum amount required for clearance. (S16.3.2.1.8) N/A, No foot interference with pedals. Foot adjusted to provide clearance. Foot and Thigh adjusted to provide clearance.

21. Continue to move the seat. Use seat controls to line up the seat markings determined during the completion of Data Sheet 14 to set the foremost fore-aft position, mid-height position and the seat cushion mid-angle. If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position that does not cause dummy contact. (S16.3.2.1.8)
__Foremost, mid-height position and the seat cushion mid-angle reached

__Dummy contact.  Clearance set at maximum of 5mm
Measured Clearance______________

__Dummy Contact.  Seat set at nearest detent position.
Seat position ___ detent positions rearward of foremost
(Foremost is position zero)

__22. If the steering wheel was repositioned in step 19, return the steering wheel to the original position.  If the steering wheel contacts the dummy before reaching the original position, position the wheel until a maximum clearance of 5mm (.2 inches) is achieved, or the steering wheel is in the closest detent position that does not cause dummy contact.  
(S16.3.2.1.8)
__N/A Steering wheel was not repositioned.

__Original position achieved.

__Dummy contact.  Clearance set at maximum of 5mm
Measured Clearance______________

__Dummy Contact.  Steering wheel set at nearest detent position.
Steering wheel position ___ detent positions upward of original position.
(Original position is position zero)

X 23. If the seat back is adjustable, rotate the seat back forward while holding the thighs in place.  Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level ± 0.5 degrees.  If the head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head.  If a level position cannot be achieved, minimize the angle.  
(S16.3.2.1.9)

X Head Level Achieved. (Check all that apply)
   X Head leveled using the adjustable seat back
   __ Head leveled using the neck bracket.
      Head Angle ______0.0______degrees

__Head Level NOT Achieved. (Check all that apply)
   __ Head adjusted using the adjustable seat back
   __ Head adjusted using the neck bracket.
      Head Angle ________________ degrees

X 24. Verify the pelvis is not interfering with the seat bight.  (S16.3.2.1.9)
   X No interference
   __ Pelvis moved forward the minimum amount so that it is not caught in the seat bight.

X 25. Verify the dummy abdomen is properly installed.  (S16.3.2.1.9)
   X Abdomen still seated properly into dummy
   __ Abdomen was adjusted because it was not seated properly into dummy
X 26. Head Angle  
   _N/A, neither the pelvis nor the abdomen were adjusted.

  X 26.1 Head still level (Go to 27)

   __26.2 Head level adjusted
   
   __Head Level Achieved. (Check all that apply)
   _Head leveled using the adjustable seat back
   _Head leveled using the neck bracket.
   
   Head Angle ____________ degrees
   
   __Head Level NOT Achieved. (Check all that apply)
   _Head level adjusted using the adjustable seat back
   _Head level adjusted using the neck bracket.
   
   Head Angle ____________ degrees

X 27. If the dummy torso contacts the steering wheel while performing step 23, reposition the steering wheel in the following order to eliminate contact.
  _N/A, No dummy torso contact with the steering wheel.

X 27.1 Adjust telescoping mechanism.
  _N/A No telescoping adjustment.
  _Adjustment performed (fill in appropriate change)
  Steering wheel moved ____ detent positions in the forward direction.
  Steering wheel moved ____ mm in the forward direction.

X 27.2 Adjust tilt mechanism.
  _N/A No tilt adjustment.
  _No adjustment performed.
  _Adjustment performed.
  Steering wheel moved ____ detent positions Upward/Downward.
  (circle one)
  Steering wheel moved ____ degrees Upward/Downward

X 27.3 Adjust Seat in the aft direction.
  _No Adjustment performed.
  _Seat moved aft ____ mm from original position.
  _Seat moved aft ____ detent positions from the original position.

X 28. Measure and set the pelvic angle using the pelvic angle gage TE-2504. The pelvic angle should be 20.0 degrees ± 2.5 degrees. If the pelvic angle cannot be set to the specified range because the head will not be level, adjust the pelvis as closely as possible to the angle range, but keep the head level.
  _Pelvic angle set to 20.0 degrees ± 2.5 degrees.
  _Pelvic angle of 20.0 degrees not achieved, the angular difference was minimized.
  _Record the pelvic angle: 26.2 ________ degrees
29. Check the dummy for contact with the interior after completing adjustments.
   - No contact.
   - Dummy in contact with interior
     - Seat moved aft ___ mm from the previous position.
     - Seat moved aft ___ detent positions from the previous position.

30. Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward.
   - N/A, Seat already at foremost position.
   - Clearance unchanged. No adjustments required.
   - Additional clearance available
     - Seat moved Forward ___ mm from the previous position.
     - Seat moved Forward ___ detent positions from the previous position.

31. Driver’s foot positioning, right foot. Place the foot perpendicular to the leg and determine if the heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 32 otherwise, proceed to step 33.

32. Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 32.6 shall be completed in all cases.

32.1 With the rear of the heel contacting the floor pan, move the foot forward until pedal contact occurs or the foot is at the full forward position.

32.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position.

32.3 Extend the leg, allowing the heel to lose contact with the floor until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact occurs, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

32.4 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact occurs, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

32.5 Align the centerline of the foot with the vertical-longitudinal plane passing through the center of the accelerator pedal. Place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

32.6 Record foot position
   - Pedal Contact achieved. Contact occurred at step 32.1.
     - Heel contacts floor pan
       - Heel set _____ mm from floor pan.

   - Pedal Contact not achieved. Heel set _____ mm from the floor pan.
FIGURE G1

_33. Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 33.5 shall be completed in all cases.

_33.1 Extend the leg until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

_33.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

_33.3 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.

_33.4 Align the centerline of the foot in the same horizontal plane as the centerline of the accelerator pedal. Place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward.
33.5 Record foot position

- Pedal Contact achieved. Contact occurred at step 32.1.
  - Heel set ______ mm from floor pan.

- Pedal Contact not achieved. Heel set ______ mm from the floor pan.

34. Driver’s foot positioning, left foot.

34.1 Place the foot perpendicular to the leg and determine if the heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 34.2, otherwise position the leg as perpendicular to the thigh as possible with the foot parallel to the floor pan.

34.2 Place the foot on the toe board with the heel resting on the floor pan as close to the intersection of the floor pan and the toe board as possible. Adjust the angle of the foot if necessary to contact the toe board. If the foot will not contact the toe board, set the foot perpendicular to the leg, and set the heel on the floor pan as far forward as possible. Do not place the foot on the wheel well projection or footrest. If the pedals interfere with the placement of the foot, reposition the foot by rotating the foot about the leg, or rotate the leg outboard about the hip if necessary.

  - Foot rotated about the leg
  - Foot rotated about the leg, and the leg rotated about the hip.
  - No pedal interference

34.3 Record foot position.

  - Heel does not contact floor pan.
  - Foot placed on toe board.
  - Foot placed on floor pan.

35. Driver arm/hand positioning.

35.1 Place the dummy’s upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.2.3.1)

35.2 Place the palms of the dummy in contact with the outer part of the steering wheel rim at its horizontal centerline with the thumbs over the steering wheel rim. (S16.3.2.3.2)

35.3 If it is not possible to position the thumbs inside the steering wheel rim at its horizontal centerline, then position them above and as close to the horizontal centerline of the steering wheel rim as possible. (S16.3.2.3.3)

35.4 Lightly tape the hands to the steering wheel rim so that if the hand of the test dummy is pushed upward by a force of not less than 9 N (2 lb) and not more than 22 N (5 lb), the tape releases the hand from the steering wheel rim. S16.3.2.3.4

36. Adjustable head restraints

  - N/A, there is no head restraint adjustment

36.1 If the head restraint has an automatic adjustment, leave it where the system positions the restraint after the dummy is placed in the seat. (S16.3.4.1) Go to 37.
X 36.2 Adjust each head restraint vertically so that the horizontal plane determined in item 3 of Data Sheet 14 is aligned with the center of gravity (CG) of the dummy head. (S16.3.4.3)

X 36.3 If the above position is not attainable, move the vertical center of the head restraint to the closest detent below the center of the head CG. (S16.3.4.3)
- N/A midpoint position attained in previous step
- X Headrest set at nearest detent above the head CG

36.4 If the head restraint has a fore and aft adjustment, place the restraint in the foremost position or until contact with the head is made, whichever occurs first. (S16.3.4.4)

X 37. Driver and passenger manual belt adjustment (for tests conducted with a belted dummy). (S16.3.5) Unbelted Test

37.1 If an adjustable seat belt D-ring anchorage exists, place it in the manufacturer’s design position for a 5th percentile adult female. This information will be supplied by the COTR.
Manufacturer’s specified position ____________________________
Actual Position __________________________________________

37.2 Place the Type 2 manual belt around the test dummy and fasten the latch. (S16.3.5.2)

37.3 Ensure that the dummy’s head remains as level as possible. (S16.3.5.3)

37.4 Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 9 N (2 lbf) to 18 N (4 lbf) tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S16.3.5.4)

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature] Date: 8/27/04
APPENDIX G
DUMMY POSITIONING PROCEDURES
FOR 5th% PASSENGER TEST DUMMY CONFORMING TO SUBPART O OF PART 572

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Date: 8/27/04
Test Technician: Wayne Dahlke

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

(Check this item ONLY if it applies to this vehicle.)

___ The passenger seat adjustments are controlled by the adjustments made to the driver’s seat. Therefore, positioning of the passenger dummy is made simultaneously with the driver dummy. Adjustments made to the seat to position the driver will over ride any adjustments that would normally be made to position the passenger. (S16.2.10.3)

X 1. Position the seat’s adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment position. (S16.2.10.1)

X N/A – No lumbar adjustment

X 2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)

X N/A – No additional support adjustment

X 3. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S16.2.10.3.1)

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

X 4. Use the seat markings determined during the completion of Data Sheet 14 to set the rearmost fore-aft position, mid-height position and the seat cushion mid-angle. (S16.3.3.1.1)

X 5. Fully recline the seat back. (S16.3.3.1.2)

___ N/A seat back not adjustable.

X 6. Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The calves should not be touching the seat cushion. (S16.3.3.1.2)

X 7. Position the dummy in the seat such that the midsagittal plane is coincident with the longitudinal seat cushion marking that was determined in item 2.19 of Data Sheet 14 (S16.3.3.1.3 and S16.3.3.1.4)

X 8. Hold down the dummy’s thighs and push rearward on the upper torso to maximize the pelvic angle. (S16.3.3.1.5)

X 9. Set the angle between the legs and the thighs to 120 degrees. (S16.3.3.1.6)
10. Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches) Center the knee separation with respect to the longitudinal seat cushion marking that was determined in item 2.19 of Data Sheet 14. (S16.3.3.1.6) Record Knee Separation 166 mm

11. Push rearward on the dummy’s knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first. (S16.3.3.1.6)
   X Pelvis contacted seat back.
   X Calves contacted seat cushion.

12. Gently rock the upper torso ± 5 degrees (approximately 51 mm (2 inches)) side-to-side three times. (S16.3.3.1.7)

13. If needed, extend the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S16.3.3.1.8)

14. Use seat controls to line up the seat markings determined during the completion of Data Sheet 14 to set the foremost fore-aft position, mid-height position and the seat cushion mid-angle. If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position that does not cause dummy contact. (S16.3.3.1.8)
   X Foremost, mid-height position and the seat cushion mid-angle reached
   ___ Dummy contact. Clearance set at maximum of 5mm
   Measured Clearance ____________
   ___ Dummy Contact. Seat set at nearest detent position.
   Seat position ___ detent positions rearward of foremost
   (Foremost is position zero)

15. If the seat back is adjustable, rotate the seat back forward while holding the thighs in place. Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level ± 0.5 degrees. If head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, adjust the head as closely as possible to the ± 0.5 degree range. (S16.3.3.1.9 and S16.3.3.1.10)
   (Check All That Apply)
   ___ Seat back not adjustable
   ___ Seat back not independent of driver side seat back
   X Head Level Achieved. (Check all that apply)
      ___ Head leveled using the adjustable seat back
      ___ Head leveled using the neck bracket.
      Head Angle ____________ degrees
   ___ Head Level NOT Achieved. (Check all that apply)
      ___ Head adjusted using the adjustable seat back
      ___ Head adjusted using the neck bracket.
      Head Angle ____________ degrees
16. Verify the pelvis is not interfering with the seat bight. (S16.3.3.1.9)
   - No interference
   - Pelvis moved forward the minimum amount so that it is not caught in the seat bight.

17. Verify the dummy abdomen is properly installed. (S16.3.3.1.9)
   - Abdomen still seated properly into dummy
   - Abdomen was adjusted because it was not seated properly into dummy

18. Head Angle
   - N/A, neither the pelvis nor the abdomen were adjusted.

18.1 Head still level (Go to 19)
   - Head level adjusted

   - Head Level Achieved. (Check all that apply)
     - Head leveled using the adjustable seat back
     - Head leveled using the neck bracket.
     - Head Angle ____________ degrees

   - Head Level NOT Achieved. (Check all that apply)
     - Head adjusted using the adjustable seat back
     - Head adjusted using the neck bracket.
     - Head Angle ____________ degrees

19. Measure and set the pelvic angle using the pelvic angle gage TE-2504. The pelvic angle should be 20.0 degrees ± 2.5 degrees. If the pelvic angle cannot be set to the specified range because the head will not be level, adjust the pelvis as closely as possible to the angle range, but keep the head level.
   - Pelvic angle set to 20.0 degrees ± 2.5 degrees.
   - Pelvic angle of 20.0 degrees not achieved, the angular difference was minimized.
   - Record the pelvic angle. ____________ degrees

20. Check the dummy for contact with the interior after completing adjustments.
   - No contact.

   - Dummy in contact with interior.
     - Seat moved aft __ mm from the previous position.
     - Seat moved aft __ detent positions from the previous position.

21. Verify the transverse instrument platform of the dummy head is level +/- 0.5 degrees. Use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.3.1.9, S16.3.3.1.10, and S16.3.3.1.11)
   - Head Level Achieved
     - Head Angle ____________ degrees

   - Head Level NOT Achieved.
     - Head Angle ____________ degrees
X 22. Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward. (S16.3.3.1.12)
   _N/A Bench Seat
   X  N/A Seat already at full forward position.
   _Clearance unchanged. No adjustments required.
   _Additional clearance available
   _Seat moved Forward ____ mm from the previous position.
   _Seat moved Forward ____ detent positions from the previous position.
   _Seat moved Forward, Full Forward position reached.

X 23. Passenger foot positioning. (Indicate final position achieved) (S16.3.3.2)
   _23.1 Place feet flat on the toe board; OR

X 23.2 If the feet cannot be placed flat on the toe board, set the feet perpendicular to the lower leg, and rest the heel as far forward on the floor pan as possible; OR
   _23.3 If the heels do not touch the floor pan, set the legs to vertical and set the feet parallel to the floor pan.

X 24. Passenger arm/hand positioning. (S16.3.3.3)
   _24.1 Place the dummy’s upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.2.3.1)

X 24.2 Place the palms of the dummy in contact with the outer part of the thighs (S16.3.3.3.2)
   _24.3 Place the little fingers in contact with the seat cushion. (S16.3.3.3.3)

X 25. Adjustable head restraints
   _N/A, there is no head restraint adjustment
   _25.1 If the head restraint has an automatic adjustment, leave it where the system positions the restraint after the dummy is placed in the seat. (S16.3.4.1) Go to 26.
   _25.2 Adjust each head restraint vertically so that the horizontal plane determined in item 3 of Data Sheet 14 is aligned with the center of gravity (CG) of the dummy head. (S16.3.4.3)

X 25.3 If the above position is not attainable, move the vertical center of the head restraint to the closest detent below the center of the head CG. (S16.3.4.3)
   _N/A midpoint position attained in previous step
   _X  Headrest set at nearest detent below the head CG
   _25.4 If the head restraint has a fore and aft adjustment, place the restraint in the foremost position or until contact with the head is made, whichever occurs first. (S16.3.4.4)

X 26. Manual belt adjustment (for tests conducted with a belted dummy) S16.3.5
   _X N/A, Unbelted test
26.1 If an adjustable seat belt D-ring anchorage exists, place it in the manufacturer’s design position for a 5th percentile adult female.

This information will be supplied by the COTR.

Manufacturer’s specified position _______________________________________

Actual Position _____________________________________________________

26.2 Place the Type 2 manual belt around the test dummy and fasten the latch. (S16.3.5.2)

26.3 Ensure that the dummy’s head remains as level as possible. (S16.3.5.3)

26.4 Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 9 N (2 lbf) to 18 N (4 lbf) tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S16.3.5.4)

REMARKS:

I certify that I have read and performed each instruction.

Signature: ____________________  Date: 8/27/04
### Dummy Positioning Procedures for Rear Passenger Test Dummy Conforming to Subpart O of Part 572

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2004 Hyundai Elantra 4 Door</th>
<th>NHTSA No.:</th>
<th>C40510</th>
</tr>
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<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Date:</td>
<td>8/27/04</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Eric Peschman</td>
<td>N/A seat back not adjustable.</td>
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</table>

#### IMPACT ANGLE: Zero Degrees

#### BELTED DUMMIES (YES/NO): No – Front Occupants Yes – Center Rear Passenger

#### TEST SPEED: X 32 to 40 kmph __ 0 to 48 kmph __ 0 to 56 kmph

#### DRIVER DUMMY: X 5<sup>th</sup> female ___ 50<sup>th</sup> Male

#### PASSENGER DUMMY: X 5<sup>th</sup> female X 5<sup>th</sup> Center Rear

1. If the seat is a bench seat for which there are no independent adjustments that can be made, Go to step 7.

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

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

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

5. If the seat and/or seat cushion height is adjustable, put the seat in the full down height position. (S16.3.3.1.1)
   
   __N/A – No seat height adjustment

6. Using only the controls that move the seat in the fore-aft direction, place the seat in the rearmost position. (S16.3.3.1.8)

7. Fully recline the seat back. (S16.3.3.1.2)
   
   X N/A seat back not adjustable.

8. Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The calves should not be touching the seat cushion. (S16.3.3.1.2)

9. Position the dummy in the seat such that the midsagittal plane is vertical and coincides with the vertical longitudinal plane that passes through the SgRP and is parallel to the longitudinal centerline of the vehicle and the upper torso rests against the seat back.

10. Hold down the dummy’s thighs and push rearward on the upper torso to maximize the pelvic angle. (S16.3.3.1.5)

11. Set the angle between the legs and the thighs to 120 degrees. (S16.3.3.1.6)
12. Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches) Not Applicable Due To Center Tunnel Geometry
Record Knee Separation _266mm (FINAL)___

13. Push rearward on the dummy's knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first. (S16.3.3.1.6)
   _X_ Pelvis contacted seat back.
   ___Calves contacted seat cushion._

14. Gently rock the upper torso ± 5 degrees (approximately 51 mm (2 inches)) side-to-side three times. (S16.3.3.1.7)

15. If needed, extend the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S16.3.3.1.8)

16. If the seat back is adjustable, rotate the seat back forward while holding the thighs in place. Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level ± 0.5 degrees. If head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, adjust the head as closely as possible to the ± 0.5 degree range. (S16.3.3.1.9 and S16.3.3.1.10)
   (Check All That Apply)
   _X_ Seat back not adjustable
   ___Seat back not independent of driver side seat back
   _X_ Head Level Achieved. (Check all that apply)
      ___Head leveled using the adjustable seat back
      ___Head leveled using the neck bracket.
      Head Angle ______0.1____ degrees
   ___Head Level NOT Achieved. (Check all that apply)
      ___Head adjusted using the adjustable seat back
      ___Head adjusted using the neck bracket.
      Head Angle ______________ degrees

17. Verify the pelvis is not interfering with the seat bight. (S16.3.3.1.9)
   _X_ No interference
   ___Pelvis moved forward the minimum amount so that it is not caught in the seat bight.

18. Verify the dummy abdomen is properly installed. (S16.3.3.1.9)
   _X_ Abdomen still seated properly into dummy
   ___Abdomen was adjusted because it was not seated properly into dummy

19. Head Angle
   _X_ N/A, neither the pelvis nor the abdomen were adjusted.
   ___19.1 Head still level (Go to 20)
   _19.2 Head level adjusted
   ___Head Level Achieved. (Check all that apply)
      ___Head leveled using the adjustable seat back
      ___Head leveled using the neck bracket.
      Head Angle _________ degrees
   ___Head Level NOT Achieved. (Check all that apply)
      ___Head adjusted using the adjustable seat back
      ___Head adjusted using the neck bracket.
      Head Angle ____________ degrees
X 20. Measure the pelvic angle using the pelvic angle gage TE-2504.

X Record the pelvic angle. ____20.2____ degrees

X 21. Verify the transverse instrument platform of the dummy head is level +/- 0.5 degrees. Use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.3.1.9, S16.3.3.1.10, and S16.3.3.1.11)

X Head Level Achieved

Head Angle ____0.1____ degrees

X Head Level NOT Achieved.

Head Angle ____________ degrees

X 22. Passenger foot positioning. Check only one of the following that applies: (Indicate final position achieved) (S16.3.3.2)

__ Outboard seating position

__22.1 Keeping the right thigh and leg in a vertical plane and the left thigh and leg in a vertical plane, place the feet flat on the floorpan and beneath the front seat as far as possible without front seat interference. If necessary, the distance between the knees can be changed in order to place the feet beneath the seat. Record new distance between the outboard knee clevis flange surfaces if knees have been repositioned. _____ measured distance (mm)

X Center seating position

X 22. Keeping the left thigh and leg in a vertical plane, place the left foot flat on the floorpan on the left side of the transmission tunnel (if present). Keeping the right thigh and leg in a vertical plane, place the right foot flat on the floorpan on the right side of the transmission tunnel. If necessary, the distance between the knees can be changed in order to place the feet flat on the floor. If possible, the knees should remain as close to the distance as measured in #11 above. Record new distance between the outboard knee clevis flange surfaces if knees have been repositioned. 266 measured distance (mm)

X 23. Passenger arm/hand positioning. (S16.3.3.3)

X 23.1 Place the dummy’s upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.2.3.1)

X 23.2 Place the palms of the dummy in contact with the outer part of the thighs (S16.3.3.3.2)

X 23.3 Place the little fingers in contact with the seat cushion. (S16.3.3.3.3)

X 24. Adjustable head restraints

X N/A, there is no head restraint adjustment

__24.1 If the head restraint has an automatic adjustment, leave it where the system positions the restraint after the dummy is placed in the seat. (S16.3.4.1) Go to 25.

__24.2 Adjust each head restraint vertically so that the horizontal plane through the vertical center of the head restraint is aligned with the center of gravity (CG) of the dummy head. (S16.3.4.3)
24.3 If the above position is not attainable, move the vertical center of the head restraint to the closest detent below the center of the head CG. (S16.3.4.3)

N/A midpoint position attained in previous step

Headrest set at nearest detent below the head CG

24.4 If the head restraint has a fore and aft adjustment, place the restraint in the foremost position or until contact with the head is made, whichever occurs first. (S16.3.4.4)

X 25. Manual belt adjustment (for tests conducted with a belted dummy) S16.3.5

N/A, Unbelted test

X 25.1 If an adjustable seat belt D-ring anchorage exists, place it in the manufacturer’s design position for a 5th percentile adult female. This information will be supplied by the COTR.

Manufacturer’s specified position No D-ring

Actual Position

X 25.2 Place the Type 2 manual belt around the test dummy and fasten the latch. (S16.3.5.2)

X 25.3 Ensure that the dummy’s head remains as level as possible. (S16.3.5.3)

X 25.4 Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 9 N (2 lbf) to 18 N (4 lbf) tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S16.3.5.4)

I certify that I have read and performed each instruction.

Signature: ___________________________ Date: 8/27/04
DATA SHEET 35
DUMMY MEASUREMENTS

Test Vehicle: 2004 Hyundai Elantra 4 Door
Test Program: FMVSS 208 Compliance
Test Technician: Eric Peschman

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

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
DATA SHEET 35

DUMMY MEASUREMENTS

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Date: 8/27/04
Test Technician: Eric Peschman

TEST DUMMY POSITION MEASUREMENTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Measurement Description</th>
<th>Driver SN 505</th>
<th>Passenger SN 506</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Length (mm)</td>
<td>Angle (°)</td>
</tr>
<tr>
<td>WA</td>
<td>Windshield Angle</td>
<td>31.1</td>
<td></td>
</tr>
<tr>
<td>SWA</td>
<td>Steering Wheel Angle</td>
<td>66.4</td>
<td></td>
</tr>
<tr>
<td>SCA</td>
<td>Steering Column Angle</td>
<td>23.8</td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>Seat Back Angle (On headrest post)</td>
<td>0.3</td>
<td>2.7</td>
</tr>
<tr>
<td>HZ</td>
<td>Head to Roof (Z)</td>
<td>208</td>
<td>256</td>
</tr>
<tr>
<td>HH</td>
<td>Head to Header</td>
<td>266</td>
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<td>HW</td>
<td>Head to Windshield</td>
<td>533</td>
<td>591</td>
</tr>
<tr>
<td>HR</td>
<td>Head to Side Header (Y)</td>
<td>260</td>
<td>282</td>
</tr>
<tr>
<td>NR</td>
<td>Nose to Rim</td>
<td>257</td>
<td>0.1</td>
</tr>
<tr>
<td>CD</td>
<td>Chest to Dash</td>
<td>444</td>
<td>435</td>
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<tr>
<td>CS</td>
<td>Chest to Steering Hub</td>
<td>186</td>
<td></td>
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<tr>
<td>RA</td>
<td>Rim to Abdomen</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>KDL</td>
<td>Left Knee to Dash</td>
<td>66</td>
<td>41.3</td>
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<tr>
<td>KDR</td>
<td>Right Knee to Dash</td>
<td>108</td>
<td>110</td>
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<tr>
<td>PA</td>
<td>Pelvic Angle</td>
<td>26.2</td>
<td></td>
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<tr>
<td>TA</td>
<td>Tibia Angle</td>
<td>45.8</td>
<td></td>
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<tr>
<td>KK</td>
<td>Knee to Knee (Y)</td>
<td>279</td>
<td>206</td>
</tr>
<tr>
<td>SK</td>
<td>Striker to Knee</td>
<td>681</td>
<td>94.7</td>
</tr>
<tr>
<td>ST</td>
<td>Striker to Head</td>
<td>482</td>
<td>26.6</td>
</tr>
<tr>
<td>SH</td>
<td>Striker to H-Point</td>
<td>382</td>
<td>111.2</td>
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<tr>
<td>SHY</td>
<td>Striker to H-Point (Y)</td>
<td>278</td>
<td></td>
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<tr>
<td>HS</td>
<td>Head to Side Window</td>
<td>348</td>
<td></td>
</tr>
<tr>
<td>HD</td>
<td>H-Point to Door (Y)</td>
<td>221</td>
<td></td>
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<tr>
<td>AD</td>
<td>Arm to Door (Y)</td>
<td>167</td>
<td></td>
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<tr>
<td>AA</td>
<td>Ankle to Ankle</td>
<td>282</td>
<td></td>
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</tbody>
</table>
# Data Sheet 35 Supplemental

## Right Rear Passenger Dummy Measurements

<table>
<thead>
<tr>
<th>Code</th>
<th>Measurement Description</th>
<th>Units</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>Seat Back Angle</td>
<td>degrees</td>
<td>24.7</td>
</tr>
<tr>
<td>HR</td>
<td>Head to Side Header (Y)</td>
<td>mm</td>
<td>517</td>
</tr>
<tr>
<td>HS</td>
<td>Head to Side Window</td>
<td>mm</td>
<td>673</td>
</tr>
<tr>
<td>AD</td>
<td>Arm to Door</td>
<td>mm</td>
<td>490</td>
</tr>
<tr>
<td>HD</td>
<td>H-Point to Door (Y)</td>
<td>mm</td>
<td>563</td>
</tr>
<tr>
<td>HB</td>
<td>Head to Seatback</td>
<td>mm</td>
<td>756</td>
</tr>
<tr>
<td>NB</td>
<td>Neck to Seatback</td>
<td>mm</td>
<td>819</td>
</tr>
<tr>
<td>CB</td>
<td>Chest to Seatback</td>
<td>mm</td>
<td>713</td>
</tr>
<tr>
<td>KB</td>
<td>Knee to Seatback</td>
<td>mm</td>
<td>403</td>
</tr>
<tr>
<td>PA</td>
<td>Pelvic Angle</td>
<td>degrees</td>
<td>20.2</td>
</tr>
<tr>
<td>TA</td>
<td>Tibia Angle</td>
<td>degrees</td>
<td>56.8</td>
</tr>
<tr>
<td>KK</td>
<td>Knee to Knee (Y)</td>
<td>mm</td>
<td>266</td>
</tr>
<tr>
<td>AA</td>
<td>Ankle to Ankle</td>
<td>mm</td>
<td>291</td>
</tr>
</tbody>
</table>

Center Rear Post Test Seat Back Angle = 31.8 degrees

Center Rear Passenger Dummy Target Information:

- Horizontal distance from camera to dummy reference targets: **656 mm**
- Horizontal distance from camera to vehicle reference targets: **1416 mm**
- Distance between 1” reference targets: **75 mm**

Reference targets were placed on inch tape for continuous reference.
**SEAT BELT POSITIONING DATA**

- DUMMY'S CENTERLINE
- 'D' RING
- SHOULDER BELT PORTION
- TBI
- LAP BELT PORTION
- PBU
- PBL
- EMERGENCY LOCKING RETRACTOR
- REEL
- MALE BLADE
- INBOARD ANCHORAGE
- OUTBOARD ANCHORAGE
- FLOORPAN

---

**FRONT VIEW OF DUMMY**

**SEAT BELT POSITIONING MEASUREMENTS**

<table>
<thead>
<tr>
<th>Measurement Description</th>
<th>Units</th>
<th>Driver</th>
<th>Passenger</th>
<th>Rear 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>
<td>294</td>
</tr>
<tr>
<td>PBL - To surface of reference to belt lower edge</td>
<td>mm</td>
<td>N/A</td>
<td>N/A</td>
<td>202</td>
</tr>
</tbody>
</table>
DATA SHEET 36

CRASH TEST

Test Vehicle: 2004 Hyundai Elantra 4 Door  
NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  
Test Date: 8/27/04
Test Technician: Eric Peschman

<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No – Front Occupants  Yes – Center Rear Passenger</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph  _ 0 to 48 kmph  __ 0 to 56 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>X 5th female  _ 50th Male</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>X 5th female  X 5th Center Rear</td>
</tr>
</tbody>
</table>

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. N/A, not a convertible
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.

<table>
<thead>
<tr>
<th></th>
<th>210 kpa front left tire</th>
<th>210 kpa specified on tire placard or in owner information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>210 kpa front right tire</td>
<td>210 kpa specified on tire placard or in owner information</td>
</tr>
<tr>
<td></td>
<td>210 kpa rear left tire</td>
<td>210 kpa specified on tire placard or in owner information</td>
</tr>
<tr>
<td></td>
<td>210 kpa rear right tire</td>
<td>210 kpa specified on tire placard or in owner information</td>
</tr>
</tbody>
</table>

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 75 cm
18. Describe whether the doors open after the test and what method is used to open the doors.

<table>
<thead>
<tr>
<th></th>
<th>Left Front Door: Door remained closed and latched; Door opened without tools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Right Front Door: Door remained closed and latched; Door opened without tools</td>
</tr>
<tr>
<td></td>
<td>Left Rear Door: Door remained closed and latched; Door opened without tools</td>
</tr>
<tr>
<td></td>
<td>Right Rear Door: Door remained closed and latched; Door opened without tools</td>
</tr>
</tbody>
</table>
19. Describe the contact points of the dummy with the interior of the vehicle.

Driver Dummy: Head to Air Bag and Visor; Chest and Abdomen to Air Bag; Knees to Knee Bolster
Passenger Dummy: Head to Windshield, Dash and A-pillar; Knees to Glove Box
Center Rear Passenger Dummy: Head to Rear Seat Back; Left Knee to Center Console

REMARKS:

I certify that I have read and performed each instruction.

Signature: _______________ Date: 8/27/04
## DATA SHEET NO. 38
### ACCIDENT INVESTIGATION DIVISION DATA

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2004 Hyundai Elantra 4 Door</th>
<th>NHTSA No.:</th>
<th>C40510</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Date:</td>
<td>8/27/04</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Eric Peschman</td>
<td></td>
<td></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 – Front Occupants  Yes – Center Rear Passenger</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph  _ 0 to 48 kmph  _ 0 to 56 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>X 5th female  _ 50th Male</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>X 5th female  X 5th Center Rear</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vehicle Year/Make/Model/Body Style:</th>
<th>2004 Hyundai Elantra 4 Door</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIN:</td>
<td>KMHDN46D64U733703</td>
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<tr>
<td>Wheelbase:</td>
<td>2610 mm</td>
</tr>
<tr>
<td>Build Date:</td>
<td>8/19/03</td>
</tr>
<tr>
<td>Vehicle Size Category:</td>
<td>3</td>
</tr>
<tr>
<td>Test Weight:</td>
<td>1484.6 kg</td>
</tr>
<tr>
<td>Front Overhang:</td>
<td>930 mm</td>
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<td>Overall Width:</td>
<td>1731 mm</td>
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<tr>
<td>Overall Length Center:</td>
<td>4495 mm</td>
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### Accelerometer Data

<table>
<thead>
<tr>
<th>Location:</th>
<th>As per measurements on Data Sheet 31</th>
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</thead>
<tbody>
<tr>
<td>Linearity:</td>
<td>&gt;99.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Integration Algorithm:</th>
<th>Trapezoidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Impact Speed:</td>
<td>39.8 kmph</td>
</tr>
<tr>
<td>Time of Separation:</td>
<td>92.9 ms</td>
</tr>
<tr>
<td>Velocity Change:</td>
<td>45.0 kmph</td>
</tr>
</tbody>
</table>
CRUSH PROFILE

Collision Deformation Classification: 12FDEW6
Midpoint of Damage: Vehicle Longitudinal Centerline
Damage Region Length (mm): 1537
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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<tbody>
<tr>
<td>C1</td>
<td>Crush zone 1 at left side</td>
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<td>4297</td>
<td>4131</td>
<td>166</td>
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<tr>
<td>C2</td>
<td>Crush zone 2 at left side</td>
<td>mm</td>
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<td>4135</td>
<td>278</td>
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<tr>
<td>C3</td>
<td>Crush zone 3 at left side</td>
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<td>4470</td>
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<td>353</td>
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<tr>
<td>C4</td>
<td>Crush zone 4 at right side</td>
<td>mm</td>
<td>4470</td>
<td>4184</td>
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<tr>
<td>C5</td>
<td>Crush zone 5 at right side</td>
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<td>4157</td>
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<tr>
<td>C6</td>
<td>Crush zone 6 at right side</td>
<td>mm</td>
<td>4297</td>
<td>4125</td>
<td>172</td>
</tr>
</tbody>
</table>

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]

Date: 8/27/04
DATA SHEET 39
WINDSHIELD MOUNTING (FMVSS 212)

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Date: 8/27/04
Test Technician: Clark Subrt

<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No – Front Occupants  Yes – Center Rear Passenger</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph  ___ 0 to 48 kmph  ___ 0 to 56 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>X 5th female  ___ 50th Male</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>X 5th female  X 5th Center Rear</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
Plastic and 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): 19

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%?

X Yes, Fail
X No, Pass

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

X Yes, Fail
X No, Pass

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Date: 8/27/04
Test Technician: Clark Subrt
## 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>545</td>
<td>545</td>
<td>100%</td>
</tr>
<tr>
<td>B</td>
<td>776</td>
<td>776</td>
<td>100%</td>
</tr>
<tr>
<td>C</td>
<td>720</td>
<td>720</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2041</strong></td>
<td><strong>2041</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Left Side**

<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>D</td>
<td>545</td>
<td>545</td>
<td>100%</td>
</tr>
<tr>
<td>E</td>
<td>776</td>
<td>776</td>
<td>100%</td>
</tr>
<tr>
<td>F</td>
<td>720</td>
<td>720</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2041</strong></td>
<td><strong>2041</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Right Side**

Indicate area of mounting failure. **NONE**

### FRONT VIEW OF WINDSHIELD

**INDICATE WIDTH OF MOLDING**

![Front View Diagram]

**REMARKS:**

I certify that I have read and performed each instruction.

**Signature:**

**Date:** 8/27/04
DATA SHEET 40
WINDSHIELD ZONE INTRUSION (FMVSS 219)

Test Vehicle: 2004 Hyundai Elantra 4 Door
Test Program: FMVSS 208 Compliance
Test Technician: Clark Subrt

IMPACT ANGLE: Zero Degrees
BELTED DUMMIES (YES/NO): No – Front Occupants Yes – Center Rear Passenger
TEST SPEED: X 32 to 40 kmph _ 0 to 48 kmph _ 0 to 56 kmph
DRIVER DUMMY: X 5th female ___ 50th Male
PASSENGER DUMMY: X 5th female ___ 5th Center Rear

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.
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>1090</td>
</tr>
<tr>
<td>B</td>
<td>mm</td>
<td>480</td>
</tr>
<tr>
<td>C</td>
<td>mm</td>
<td>1440</td>
</tr>
<tr>
<td>D</td>
<td>mm</td>
<td>776</td>
</tr>
<tr>
<td>E</td>
<td>mm</td>
<td>513</td>
</tr>
<tr>
<td>F</td>
<td>mm</td>
<td>649</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>NONE</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>NONE</td>
</tr>
</tbody>
</table>

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]
Date: 8/27/04
DATA SHEET 41
FUEL SYSTEM INTEGRITY (FMVSS 301)

Test Vehicle: 2004 Hyundai Elantra 4 Door  NHTSA No.: C40510
Test Program: FMVSS 208 Compliance  Test Date: 8/27/04
Test Technician: Eric Peschman

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: The post test FMVSS 301 rollover was not conducted due to the apparent noncompliance.
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: The post test FMVSS 301 rollover was not conducted due to the apparent noncompliance.

<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></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90° to 180°</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>180° to 270°</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>270° to 360°</td>
<td></td>
<td></td>
<td></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>9</td>
<td>Driver Neck Force Y vs. Time</td>
<td>A-3</td>
</tr>
<tr>
<td>10</td>
<td>Driver Neck Force Z 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>16</td>
<td>Driver Chest X Acceleration vs. Time</td>
<td>A-5</td>
</tr>
<tr>
<td>17</td>
<td>Driver Chest Y Acceleration vs. Time</td>
<td>A-5</td>
</tr>
<tr>
<td>18</td>
<td>Driver Chest Z Acceleration vs. Time</td>
<td>A-5</td>
</tr>
<tr>
<td>19</td>
<td>Driver Chest Resultant Acceleration vs. Time</td>
<td>A-5</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>
<tr>
<td>30</td>
<td>Passenger Head X Velocity vs. Time</td>
<td>A-9</td>
</tr>
</tbody>
</table>
Figure No. 31. Passenger Head Y Velocity vs. Time A-9
Figure No. 32. Passenger Head Z Velocity vs. Time A-9
Figure No. 33. Passenger Neck Force X vs. Time A-10
Figure No. 34. Passenger Neck Force Y vs. Time A-10
Figure No. 35. Passenger Neck Force Z vs. Time A-10
Figure No. 36. Passenger Neck Force Resultant vs. Time A-10
Figure No. 37. Passenger Neck Moment X vs. Time A-11
Figure No. 38. Passenger Neck Moment Y vs. Time A-11
Figure No. 39. Passenger Neck Moment Z vs. Time A-11
Figure No. 40. Passenger Neck Moment Resultant vs. Time A-11
Figure No. 41. Passenger Chest X Acceleration vs. Time A-12
Figure No. 42. Passenger Chest Y Acceleration vs. Time A-12
Figure No. 43. Passenger Chest Z Acceleration vs. Time A-12
Figure No. 44. Passenger Chest Resultant Acceleration vs. Time A-12
Figure No. 45. Passenger Chest X Velocity vs. Time A-13
Figure No. 46. Passenger Chest Y Velocity vs. Time A-13
Figure No. 47. Passenger Chest Z Velocity vs. Time A-13
Figure No. 48. Passenger Chest Displacement vs. Time A-13
Figure No. 49. Passenger Left Femur Force vs. Time A-14
Figure No. 50. Passenger Right Femur Force vs. Time A-14
Figure No. 51. CRP Head X Acceleration vs. Time A-15
Figure No. 52. CRP Head Y Acceleration vs. Time A-15
Figure No. 53. CRP Head Z Acceleration vs. Time A-15
Figure No. 54. CRP Head Resultant Acceleration vs. Time A-15
Figure No. 55. CRP Head X Velocity vs. Time A-16
Figure No. 56. CRP Head Y Velocity vs. Time A-16
Figure No. 57. CRP Head Z Velocity vs. Time A-16
Figure No. 58. CRP Neck Force X vs. Time A-17
Figure No. 59. CRP Neck Force Y vs. Time A-17
Figure No. 60. CRP Neck Force Z vs. Time A-17
Figure No. 61. CRP Neck Force Resultant vs. Time A-17
Figure No. 62. CRP Neck Moment X vs. Time A-18
Figure No. 63. CRP Neck Moment Y vs. Time A-18
Figure No. 64. CRP Neck Moment Z vs. Time A-18
Figure No. 65. CRP Neck Moment Resultant vs. Time A-18
Figure No. 66. CPR Chest X Acceleration vs. Time A-19
Figure No. 67. CPR Chest Y Acceleration vs. Time A-19
Figure No. 68. CPR Chest Z Acceleration vs. Time A-19
Figure No. 69. CPR Chest Resultant Acceleration vs. Time A-19
Figure No. 70. CPR Chest X Velocity vs. Time A-20
Figure No. 71. CPR Chest Y Velocity vs. Time A-20
Figure No. 72. CPR Chest Z Velocity vs. Time A-20
Figure No. 73. CRP Chest Displacement vs. Time A-20
Figure No. 74. CRP Right Femur Force vs. Time A-21
Figure No. 75. CRP Left Femur Force vs. Time A-21
Figure No. 76. CRP Shoulder Belt Force vs. Time A-21
Figure No. 77. CRP Lap Belt Force vs. Time A-21
Figure No. 78. CRP Belt Spoolout vs. Time A-22
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Figure No. 80. Driver Nij (N_{TE}) vs. Time A-23
Figure No. 81. Driver Nij (N_{CF}) vs. Time A-23
Figure No. 82. Driver Nij (N_{CE}) vs. Time A-23
Figure No. 83. Passenger Nij (N_{TF}) vs. Time A-24
Figure No. 84. Passenger Nij (N_{TE}) vs. Time A-24
Figure No. 85. Passenger Nij (N_{CF}) vs. Time A-24
Figure No. 86. Passenger Nij (N_{CE}) vs. Time A-24
Figure No. 87. Center Nij (N_{TF}) vs. Time A-25
Figure No. 88. Center Nij (N_{TE}) vs. Time A-25
Figure No. 89. Center Nij (N_{CF}) vs. Time A-25
Figure No. 90. Center Nij (N_{CE}) vs. Time A-25
Figure No. 91. Driver Occipital Condyle Moment vs. Time A-26
Figure No. 92. Passenger Occipital Condyle Moment vs. Time A-26
Figure No. 93.  Center Occipital Condyle Moment vs. Time A-26
Figure No. 94.  Left Rear Seat Crossmember X Acceleration vs. Time A-27
Figure No. 95.  Left Rear Seat Crossmember X Velocity vs. Time A-27
Figure No. 96.  Right Rear Seat Crossmember X Acceleration vs. Time A-27
Figure No. 97.  Right Rear Seat Crossmember X Velocity vs. Time A-27
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Figure No. 99.  Top of Engine X Velocity vs. Time A-28
Figure No. 100. Bottom of Engine X Acceleration vs. Time A-28
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Figure No. 103. Left Brake Caliper X Velocity vs. Time A-29
Figure No. 104. Right Brake Caliper X Acceleration vs. Time A-29
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Figure No. 106. Instrument Panel X Acceleration vs. Time A-30
Figure No. 107. Instrument Panel X Velocity vs. Time A-30
Figure No. 108. Trunk Z Acceleration vs. Time A-30
Figure No. 109. Trunk Z Velocity vs. Time A-30
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Figure No. 111. Barrier Force – Upper Center vs. Time A-31
Figure No. 112. Barrier Force – Upper Right vs. Time A-31
Figure No. 113. Barrier Force – Lower Left vs. Time A-32
Figure No. 114. Barrier Force – Lower Center vs. Time A-32
Figure No. 115. Barrier Force – Lower Right vs. Time A-32
Figure No. 116. Barrier Force – Sum Left vs. Time A-33
Figure No. 117. Barrier Force – Sum Center vs. Time A-33
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Figure No. 119. Barrier Force – Sum All vs. Time A-33
Figure No. 120. Barrier Force – Sum All vs. Average Seat X-member Displacement A-34
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)
Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

Max: 9.5 G's
Tmax: 271.3 ms
Min: -33.8 G's
Tmin: 89.7 ms
CFC 1000

Max: 3.0 G's
Tmax: 134.6 ms
Min: -5.5 G's
Tmin: 82.5 ms
CFC 1000

Max: 5.9 G's
Tmax: 29.6 ms
Min: -7.1 G's
Tmin: 61.2 ms
CFC 1000

Max: 34.2 G's
Tmax: 89.8 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 1000
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)
Test Date: 08/27/04
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: -12.3 kph
Tmin: 258.3 ms
CFC 180

DRIVER HEAD Y Velocity (kph) vs TIME (ms)
Max: 0.0 kph
Tmax: 32.0 ms
Min: -6.5 kph
Tmin: 127.7 ms
CFC 180

DRIVER HEAD Z Velocity (kph) vs TIME (ms)
Max: 1.1 kph
Tmax: 223.1 ms
Min: -6.1 kph
Tmin: 96.7 ms
CFC 180
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

---

**DRIVER NECK MX (Nm) vs TIME (ms)**

Max: 3.6 Nm
Tmax: 88.8 ms
Min: -7.4 Nm
Tmin: 60.8 ms
CFC 600

**DRIVER NECK MY (Nm) vs TIME (ms)**

Max: 23.6 Nm
Tmax: 60.9 ms
Min: -4.1 Nm
Tmin: 83.9 ms
CFC 600

**DRIVER NECK MZ (Nm) vs TIME (ms)**

Max: 6.7 Nm
Tmax: 93.0 ms
Min: -6.4 Nm
Tmin: 151.2 ms
CFC 600

**DRIVER NECK MResultant (Nm) vs TIME (ms)**

Max: 24.7 Nm
Tmax: 60.8 ms
Min: 0.0 Nm
Tmin: 0.0 ms
CFC 600

---
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

DRIVER CHEST X (G's) vs TIME (ms)
Max: 2.7 G's
Tmax: 171.9 ms
Min: -34.6 G's
Tmin: 83.5 ms
CFC 180

DRIVER CHEST Y (G's) vs TIME (ms)
Max: 1.7 G's
Tmax: 126.5 ms
Min: -2.9 G's
Tmin: 74.9 ms
CFC 180

DRIVER CHEST Z (G's) vs TIME (ms)
Max: 15.0 G's
Tmax: 87.3 ms
Min: -9.9 G's
Tmin: 54.2 ms
CFC 180

DRIVER CHEST Resultant (G's) vs TIME (ms)
Max: 36.3 G's
Tmax: 84.4 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 180
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

Max: 437.9 N
Tmax: 143.1 ms
Min: -2267.6 N
Tmin: 55.0 ms
CFC 600

Max: 994.7 N
Tmax: 142.2 ms
Min: -3573.6 N
Tmin: 64.2 ms
CFC 600
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

PASSENGER HEAD X Velocity (kph) vs TIME (ms)

Max: 43.5 kph
Tmax: 72.6 ms
Min: -25.7 kph
Tmin: 265.0 ms
CFC 180

PASSENGER HEAD Y Velocity (kph) vs TIME (ms)

Max: 0.4 kph
Tmax: 102.6 ms
Min: -7.6 kph
Tmin: 274.1 ms
CFC 180

PASSENGER HEAD Z Velocity (kph) vs TIME (ms)

Max: 0.0 kph
Tmax: 0.0 ms
Min: -72.5 kph
Tmin: 264.8 ms
CFC 180
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

PASSENGER NECK FX (N) vs TIME (ms)
Max: 4726.2 N
Tmax: 99.9 ms
Min: -355.0 N
Tmin: 300.0 ms
CFC 1000

PASSENGER NECK FY (N) vs TIME (ms)
Max: 515.4 N
Tmax: 105.1 ms
Min: -87.2 N
Tmin: 300.0 ms
CFC 1000

PASSENGER NECK FZ (N) vs TIME (ms)
Max: 3225.4 N
Tmax: 90.9 ms
Min: -2780.5 N
Tmin: 107.3 ms
CFC 1000

PASSENGER NECK FResultant (N) vs TIME (ms)
Max: 4752.1 N
Tmax: 99.8 ms
Min: 1.6 N
Tmin: 0.0 ms
CFC 1000
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

PASSENGER NECK MX (Nm) vs TIME (ms)
Max: 10.1 Nm
Tmax: 270.9 ms
Min: -24.2 Nm
Tmin: 99.6 ms
CFC 600

PASSENGER NECK MY (Nm) vs TIME (ms)
Max: 328.2 Nm
Tmax: 101.9 ms
Min: -33.0 Nm
Tmin: 83.6 ms
CFC 600

PASSENGER NECK MZ (Nm) vs TIME (ms)
Max: 13.7 Nm
Tmax: 294.3 ms
Min: -2.5 Nm
Tmin: 190.9 ms
CFC 600

PASSENGER NECK MResultant (Nm) vs TIME (ms)
Max: 328.7 Nm
Tmax: 101.9 ms
Min: 0.0 Nm
Tmin: 22.6 ms
CFC 600
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

Max: 15.9 G's
Tmax: 90.7 ms
Min: -159.5 G's
Tmin: 92.8 ms
CFC 180

Max: 10.5 G's
Tmax: 90.6 ms
Min: -16.6 G's
Tmin: 92.3 ms
CFC 180

Max: 55.7 G's
Tmax: 100.5 ms
Min: -9.4 G's
Tmin: 57.6 ms
CFC 180

Max: 161.1 G's
Tmax: 92.8 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 180
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
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: -6.3 kph
Tmin: 129.2 ms
CFC 180

PASSENGER CHEST Y Velocity (kph) vs TIME (ms)
Max: 0.7 kph
Tmax: 69.5 ms
Min: -3.3 kph
Tmin: 300.0 ms
CFC 180

PASSENGER CHEST Z Velocity (kph) vs TIME (ms)
Max: 26.0 kph
Tmax: 119.5 ms
Min: -8.6 kph
Tmin: 73.2 ms
CFC 180

PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: 2.6 mm
Tmax: 84.9 ms
Min: -5.3 mm
Tmin: 98.7 ms
CFC 600
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

PASSENGER LEFT FEMUR (N) vs TIME (ms)
Max: 269.2 N
Tmax: 175.1 ms
Min: -3963.0 N
Tmin: 63.1 ms
CFC 600

PASSENGER RIGHT FEMUR (N) vs TIME (ms)
Max: 494.1 N
Tmax: 179.7 ms
Min: -2661.4 N
Tmin: 70.8 ms
CFC 600
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)
Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

CRP HEAD X Velocity (kph) vs TIME (ms)
Max: 39.8 kph
Tmax: 0.0 ms
Min: -25.7 kph
Tmin: 163.9 ms
CFC 180

CRP HEAD Y Velocity (kph) vs TIME (ms)
Max: 0.3 kph
Tmax: 54.2 ms
Min: -10.7 kph
Tmin: 117.8 ms
CFC 180

CRP HEAD Z Velocity (kph) vs TIME (ms)
Max: 105.7 kph
Tmax: 300.0 ms
Min: -0.2 kph
Tmin: 40.4 ms
CFC 180
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

CRP NECK FX (N) vs TIME (ms)
Max: 129.1 N
Tmax: 253.9 ms
Min: -1139.2 N
Tmin: 96.1 ms
CFC 1000

CRP NECK FY (N) vs TIME (ms)
Max: 525.0 N
Tmax: 99.7 ms
Min: -38.7 N
Tmin: 139.3 ms
CFC 1000

CRP NECK FZ (N) vs TIME (ms)
Max: 1739.8 N
Tmax: 89.5 ms
Min: -149.8 N
Tmin: 237.9 ms
CFC 1000

CRP NECK FResultant (N) vs TIME (ms)
Max: 2042.9 N
Tmax: 90.3 ms
Min: 0.4 N
Tmin: 0.0 ms
CFC 1000
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

CRP NECK MX (Nm) vs TIME (ms)
Max: 10.8 Nm
Tmax: 87.5 ms
Min: -13.3 Nm
Tmin: 103.6 ms
CFC 600

CRP NECK MY (Nm) vs TIME (ms)
Max: 32.2 Nm
Tmax: 100.7 ms
Min: -53.0 Nm
Tmin: 234.9 ms
CFC 600

CRP NECK MZ (Nm) vs TIME (ms)
Max: 15.1 Nm
Tmax: 107.5 ms
Min: -1.8 Nm
Tmin: 290.1 ms
CFC 600

CRP NECK MResultant (Nm) vs TIME (ms)
Max: 54.4 Nm
Tmax: 234.8 ms
Min: 0.0 Nm
Tmin: 17.9 ms
CFC 600
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

CRP CHEST X (G's) vs TIME (ms)
Max: 8.0 G's
Tmax: 236.3 ms
Min: -41.4 G's
Tmin: 67.0 ms
CFC 180

CRP CHEST Y (G's) vs TIME (ms)
Max: 9.2 G's
Tmax: 91.1 ms
Min: -2.4 G's
Tmin: 236.6 ms
CFC 180

CRP CHEST Z (G's) vs TIME (ms)
Max: 5.8 G's
Tmax: 238.1 ms
Min: -16.7 G's
Tmin: 70.3 ms
CFC 180

CRP CHEST Resultant (G's) vs TIME (ms)
Max: 43.5 G's
Tmax: 70.3 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 180
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

Max: 39.8 kph
Tmax: 0.0 ms
Min: -12.6 kph
Tmin: 118.7 ms
CFC 180

Max: 9.2 kph
Tmax: 212.5 ms
Min: -0.0 kph
Tmin: 0.0 ms
CFC 180

Max: 0.8 kph
Tmax: 300.0 ms
Min: -13.2 kph
Tmin: 162.2 ms
CFC 180

Max: 0.3 mm
Tmax: 12.7 ms
Min: -23.7 mm
Tmin: 93.2 ms
CFC 600
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

Max: 1031.2 N
Tmax: 66.1 ms
Min: -136.5 N
Tmin: 40.7 ms
CFC 600

Max: 1106.3 N
Tmax: 86.0 ms
Min: -146.8 N
Tmin: 113.0 ms
CFC 600

Max: 5428.6 N
Tmax: 83.5 ms
Min: -9.7 N
Tmin: 184.1 ms
CFC 60

Max: 3263.6 N
Tmax: 66.2 ms
Min: -6.6 N
Tmin: 123.0 ms
CFC 60
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

Max: 114.2 mm
Tmax: 92.2 ms
Min: -41.5 mm
Tmin: 239.6 ms
CFC 1000
25MPH FRONTAL IMPACT Test Date: 08/27/04
2004 HYUNDAI ELANTRA (C40510) Speed: 24.7 mph (39.8 km/h)

Driv. nj (NTF) () vs TIME (ms)
Max: 0.2
Tmax: 156.7 ms
Min: 0.0
Tmin: 0.0 ms
CFC 600

Driv. nj (NTE) () vs TIME (ms)
Max: 0.2
Tmax: 84.5 ms
Min: 0.0
Tmin: 0.0 ms
CFC 600

Driv. nj (NCF) () vs TIME (ms)
Max: 0.2
Tmax: 143.7 ms
Min: 0.0
Tmin: 0.0 ms
CFC 600

Driv. nj (NCE) () vs TIME (ms)
Max: 0.1
Tmax: 37.9 ms
Min: 0.0
Tmin: 0.0 ms
CFC 600
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

Drv. Occipital Condyle Moment (Nm) vs TIME (ms)
Max: 25.4 Nm
Tmax: 164.1 ms
Min: -9.8 Nm
Tmin: 84.4 ms
CFC 600

Pass. Occipital Condyle Moment (Nm) vs TIME (ms)
Max: 245.8 Nm
Tmax: 102.4 ms
Min: -29.6 Nm
Tmin: 83.9 ms
CFC 600

Center Occipital Condyle Moment (Nm) vs TIME (ms)
Max: 51.8 Nm
Tmax: 100.8 ms
Min: -44.7 Nm
Tmin: 235.1 ms
CFC 600
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

LEFT REAR SEAT CROSSMEMBER X (G's) vs TIME (ms)
Max: 2.9 G's
Tmax: 105.6 ms
Min: -28.6 G's
Tmin: 53.3 ms
CFC 60

LEFT REAR SEAT CROSSMEMBER X Velocity (kph) vs TIME (ms)
Max: 39.8 kph
Tmax: 0.0 ms
Min: -4.2 kph
Tmin: 92.5 ms
CFC 180

RIGHT REAR SEAT CROSSMEMBER X (G's) vs TIME (ms)
Max: 3.0 G's
Tmax: 114.2 ms
Min: -29.0 G's
Tmin: 53.0 ms
CFC 60

RIGHT REAR SEAT CROSSMEMBER X Velocity (kph) vs TIME (ms)
Max: 39.8 kph
Tmax: 0.0 ms
Min: -6.1 kph
Tmin: 93.3 ms
CFC 180
25MPH FRONTAL IMPACT

2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

Max: 44.7 G's
Tmax: 55.4 ms
Min: -81.1 G's
Tmin: 42.5 ms
CFC 60

Max: 39.8 kph
Tmax: 0.0 ms
Min: -5.9 kph
Tmin: 164.4 ms
CFC 180

Max: 4.3 G's
Tmax: 161.5 ms
Min: -61.7 G's
Tmin: 34.1 ms
CFC 60

Max: 39.8 kph
Tmax: 0.0 ms
Min: -6.1 kph
Tmin: 143.4 ms
CFC 180
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

INSTRUMENT PANEL X (G's) vs TIME (ms)
Max: 24.5 G's
Tmax: 85.7 ms
Min: -33.1 G's
Tmin: 64.6 ms
CFC 60

INSTRUMENT PANEL X Velocity (kph) vs TIME (ms)
Max: 39.8 kph
Tmax: 0.0 ms
Min: -7.4 kph
Tmin: 119.6 ms
CFC 180

TRUNK Z (G's) vs TIME (ms)
Max: 6.2 G's
Tmax: 124.8 ms
Min: -8.3 G's
Tmin: 59.9 ms
CFC 60

TRUNK Z Velocity (kph) vs TIME (ms)
Max: 1.7 kph
Tmax: 297.8 ms
Min: -7.2 kph
Tmin: 88.3 ms
CFC 180
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

BARRIER FORCE - UPPER LEFT (kn) vs TIME (ms)
Max: 31.5 kn
Tmax: 55.4 ms
Min: -3.5 kn
Tmin: 6.6 ms
CFC 60

BARRIER FORCE - UPPER CENTER (kn) vs TIME (ms)
Max: 28.7 kn
Tmax: 12.6 ms
Min: -3.8 kn
Tmin: 3.1 ms
CFC 60

BARRIER FORCE - UPPER RIGHT (kn) vs TIME (ms)
Max: 19.2 kn
Tmax: 33.8 ms
Min: -6.2 kn
Tmin: 5.8 ms
CFC 60
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

BARRIER FORCE - LOWER LEFT (kn) vs TIME (ms)
Max: 98.5 kn
Tmax: 28.9 ms
Min: -1.1 kn
Tmin: 3.9 ms
CFC 60

BARRIER FORCE - LOWER CENTER (kn) vs TIME (ms)
Max: 98.8 kn
Tmax: 62.7 ms
Min: -0.8 kn
Tmin: 0.0 ms
CFC 60

BARRIER FORCE - LOWER RIGHT (kn) vs TIME (ms)
Max: 144.5 kn
Tmax: 33.1 ms
Min: -1.1 kn
Tmin: 0.0 ms
CFC 60
25MPH FRONTAL IMPACT
2004 HYUNDAI ELANTRA (C40510)

Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

BARRIER FORCE - SUM LEFT (kn) vs TIME (ms)

Max: 104.6 kn
Tmax: 29.1 ms
Min: -4.1 kn
Tmin: 5.6 ms
CFC 60

BARRIER FORCE - SUM CENTER (kn) vs TIME (ms)

Max: 117.1 kn
Tmax: 63.2 ms
Min: -0.7 kn
Tmin: 0.0 ms
CFC 60

BARRIER FORCE - SUM RIGHT (kn) vs TIME (ms)

Max: 163.4 kn
Tmax: 33.2 ms
Min: -0.9 kn
Tmin: 1.0 ms
CFC 60

BARRIER FORCE - SUM ALL (kn) vs TIME (ms)

Max: 337.1 kn
Tmax: 32.7 ms
Min: -0.8 kn
Tmin: 0.0 ms
CFC 60
Test Date: 08/27/04
Speed: 24.7 mph (39.8 km/h)

Max: 337.1 kn
Tmax: 322.5 mm
Min: -0.8 kn
Tmin: -54.1 mm
CFC 60
APPENDIX B

LOW RISK TEST DATA
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LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P1)

Test Date: 07/15/04
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER HEAD X (G's) vs TIME (ms)
Max: 2.9 G's
Tmax: 118.1 ms
Min: -20.5 G's
Tmin: 5.9 ms
CFC 1000

Max: 6.7 G's
Tmax: 6.4 ms
Min: -4.6 G's
Tmin: 9.8 ms
CFC 1000

Max: 14.8 G's
Tmax: 7.7 ms
Min: -17.7 G's
Tmin: 6.6 ms
CFC 1000

Max: 22.9 G's
Tmax: 6.2 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 1000
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P1)

Test Date: 07/15/04
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER HEAD X Velocity (kph) vs TIME (ms)
Max: 4.3 kph
Tmax: 300.0 ms
Min: -10.4 kph
Tmin: 59.1 ms
CFC 180

5TH FEM. DRIVER HEAD Y Velocity (kph) vs TIME (ms)
Max: 1.3 kph
Tmax: 43.9 ms
Min: -0.5 kph
Tmin: 300.0 ms
CFC 180

5TH FEM. DRIVER HEAD Z Velocity (kph) vs TIME (ms)
Max: 7.3 kph
Tmax: 211.6 ms
Min: -0.5 kph
Tmin: 7.3 ms
CFC 180
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P1)

Test Date: 07/15/04
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER NECK FX (N) vs TIME (ms)
Max: 175.0 N
Tmax: 6.0 ms
Min: -92.1 N
Tmin: 7.4 ms
CFC 1000

5TH FEM. DRIVER NECK FY (N) vs TIME (ms)
Max: 23.8 N
Tmax: 9.7 ms
Min: -67.7 N
Tmin: 7.2 ms
CFC 1000

5TH FEM. DRIVER NECK FZ (N) vs TIME (ms)
Max: 696.6 N
Tmax: 7.5 ms
Min: -15.4 N
Tmin: 268.5 ms
CFC 1000

5TH FEM. DRIVER NECK FResultant (N) vs TIME (ms)
Max: 704.0 N
Tmax: 7.5 ms
Min: 0.4 N
Tmin: 0.0 ms
CFC 1000
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P1)
Test Date: 07/15/04
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER CHEST X (G's) vs TIME (ms)
Max: 8.6 G's
Tmax: 7.7 ms
Min: -34.2 G's
Tmin: 10.0 ms
CFC 180

5TH FEM. DRIVER CHEST Y (G's) vs TIME (ms)
Max: 4.7 G's
Tmax: 12.2 ms
Min: -5.6 G's
Tmin: 10.4 ms
CFC 180

5TH FEM. DRIVER CHEST Z (G's) vs TIME (ms)
Max: 8.7 G's
Tmax: 10.3 ms
Min: -5.4 G's
Tmin: 7.5 ms
CFC 180

5TH FEM. DRIVER CHEST Resultant (G's) vs TIME (ms)
Max: 35.6 G's
Tmax: 10.1 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 180
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P1)

Test Date: 07/15/04
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER LEFT FEMUR (N) vs TIME (ms)
Max: 88.2 N
Tmax: 18.3 ms
Min: -54.3 N
Tmin: 6.0 ms
CFC 600

5TH FEM. DRIVER RIGHT FEMUR (N) vs TIME (ms)
Max: 187.6 N
Tmax: 39.4 ms
Min: -87.2 N
Tmin: 40.4 ms
CFC 600
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P1)

Test Date: 07/15/04
Speed: 0.0 mph (0.0 km/h)

FIRE VOLTAGE #1 (Volts) vs TIME (ms)
Max: 16.3 Volts
Tmax: 5.3 ms
Min: -0.2 Volts
Tmin: 0.0 ms
CFC 1000

FIRE CURRENT #1 (Amps) vs TIME (ms)
Max: 2.5 Amps
Tmax: 5.0 ms
Min: -0.2 Amps
Tmin: 5.3 ms
CFC 1000

FIRE VOLTAGE #2 (Volts) vs TIME (ms)
Max: 12.0 Volts
Tmax: 120.3 ms
Min: -0.3 Volts
Tmin: 130.3 ms
CFC 1000

FIRE CURRENT #2 (Amps) vs TIME (ms)
Max: 2.6 Amps
Tmax: 129.8 ms
Min: -0.1 Amps
Tmin: 130.3 ms
CFC 1000
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P1)

Test Date: 07/15/04
Speed: 0.0 mph (0.0 km/h)

1. Drv. nij (NTF) () vs TIME SPECIAL CHS (ms)
   - Max: 0.2
   - Tmax: 7.1 ms
   - Min: 0.0
   - Tmin: 0.6 ms
   - CFC 600

2. Drv. nij (NTE) () vs TIME SPECIAL CHS (ms)
   - Max: 0.2
   - Tmax: 10.9 ms
   - Min: 0.0
   - Tmin: 0.1 ms
   - CFC 600

3. Drv. nij (NCF) () vs TIME SPECIAL CHS (ms)
   - Max: 0.0
   - Tmax: 4.5 ms
   - Min: 0.0
   - Tmin: 0.1 ms
   - CFC 600

4. Drv. nij (NCE) () vs TIME SPECIAL CHS (ms)
   - Max: 0.1
   - Tmax: 219.3 ms
   - Min: 0.0
   - Tmin: 0.1 ms
   - CFC 600
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P2)

Test Date: 7/29/2004
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER HEAD X (G's) vs TIME (ms)
Max: 18.7 G's
Tmax: 86.6 ms
Min: -13.5 G's
Tmin: 17.6 ms
CFC 1000

5TH FEM. DRIVER HEAD Y (G's) vs TIME (ms)
Max: 5.9 G's
Tmax: 10.0 ms
Min: -5.3 G's
Tmin: 10.9 ms
CFC 1000

5TH FEM. DRIVER HEAD Z (G's) vs TIME (ms)
Max: 23.4 G's
Tmax: 12.1 ms
Min: -1.8 G's
Tmin: 21.1 ms
CFC 1000

5TH FEM. DRIVER HEAD Resultant (G's) vs TIME (ms)
Max: 24.0 G's
Tmax: 12.1 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 1000
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P2)

Test Date: 7/29/2004
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER HEAD X Velocity (kph) vs TIME (ms)
Max: 1.9 kph
Tmax: 300.0 ms
Min: -10.6 kph
Tmin: 74.3 ms
CFC 180

5TH FEM. DRIVER HEAD Y Velocity (kph) vs TIME (ms)
Max: 0.4 kph
Tmax: 132.3 ms
Min: -0.1 kph
Tmin: 17.9 ms
CFC 180

5TH FEM. DRIVER HEAD Z Velocity (kph) vs TIME (ms)
Max: 6.2 kph
Tmax: 91.9 ms
Min: -0.0 kph
Tmin: 0.0 ms
CFC 180
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P2)

Test Date: 7/29/2004
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER NECK FX (N) vs TIME (ms)
Max: 86.9 N
Tmax: 88.9 ms
Min: -246.1 N
Tmin: 18.2 ms
CFC 1000

5TH FEM. DRIVER NECK FY (N) vs TIME (ms)
Max: 28.6 N
Tmax: 11.0 ms
Min: -56.6 N
Tmin: 10.1 ms
CFC 1000

5TH FEM. DRIVER NECK FZ (N) vs TIME (ms)
Max: 909.6 N
Tmax: 12.4 ms
Min: -52.0 N
Tmin: 108.6 ms
CFC 1000

5TH FEM. DRIVER NECK FResultant (N) vs TIME (ms)
Max: 917.7 N
Tmax: 12.4 ms
Min: 0.6 N
Tmin: 0.0 ms
CFC 1000
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P2)

Test Date: 7/29/2004
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER NECK MX (Nm) vs TIME (ms)
Max: 3.5 Nm
Tmax: 14.2 ms
Min: -2.8 Nm
Tmin: 19.9 ms
CFC 600

5TH FEM. DRIVER NECK MY (Nm) vs TIME (ms)
Max: 24.8 Nm
Tmax: 29.3 ms
Min: -21.9 Nm
Tmin: 17.4 ms
CFC 600

5TH FEM. DRIVER NECK MZ (Nm) vs TIME (ms)
Max: 0.9 Nm
Tmax: 210.3 ms
Min: -2.5 Nm
Tmin: 155.4 ms
CFC 600

Drv. Occipital Condyle Moment (Nm) vs TIME (ms)
Max: 23.9 Nm
Tmax: 29.3 ms
Min: -17.6 Nm
Tmin: 17.5 ms
CFC 600
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P2)

Test Date: 7/29/2004
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER CHEST X (G's) vs TIME (ms)
Max: 7.6 G's
Tmax: 19.9 ms
Min: -27.5 G's
Tmin: 12.0 ms
CFC 180

5TH FEM. DRIVER CHEST Y (G's) vs TIME (ms)
Max: 1.9 G's
Tmax: 11.1 ms
Min: -2.2 G's
Tmin: 15.6 ms
CFC 180

5TH FEM. DRIVER CHEST Z (G's) vs TIME (ms)
Max: 9.8 G's
Tmax: 13.0 ms
Min: -2.1 G's
Tmin: 24.4 ms
CFC 180

5TH FEM. DRIVER CHEST Resultant (G's) vs TIME (ms)
Max: 28.4 G's
Tmax: 12.1 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 180
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P2)

Test Date: 7/29/2004
Speed: 0.0 mph (0.0 km/h)

5TH FEM. DRIVER CHEST X Velocity (kph) vs TIME (ms)
Max: 3.4 kph
Tmax: 300.0 ms
Min: -6.3 kph
Tmin: 37.6 ms
CFC 180

5TH FEM. DRIVER CHEST Y Velocity (kph) vs TIME (ms)
Max: 0.3 kph
Tmax: 190.1 ms
Min: -0.0 kph
Tmin: 7.1 ms
CFC 180

5TH FEM. DRIVER CHEST Z Velocity (kph) vs TIME (ms)
Max: 2.7 kph
Tmax: 69.8 ms
Min: -0.0 kph
Tmin: 5.4 ms
CFC 180

5TH FEM. DRIVER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: 0.3 mm
Tmax: 1.8 ms
Min: -20.9 mm
Tmin: 13.4 ms
CFC 600
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P2)
Test Date: 7/29/2004
Speed: 0.0 mph (0.0 km/h)

Max: 454.1 N
Tmax: 9.5 ms
Min: -316.4 N
Tmin: 9.8 ms
CFC 600

Max: 281.9 N
Tmax: 10.8 ms
Min: -359.8 N
Tmin: 11.5 ms
CFC 600
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P2)

Test Date: 7/29/2004
Speed: 0.0 mph (0.0 km/h)

FIRE VOLTAGE #1 (Volts) vs TIME (ms)
Max: 9.4 Volts
Tmax: 0.2 ms
Min: -0.5 Volts
Tmin: 11.3 ms
CFC 1000

FIRE CURRENT #1 (Amps) vs TIME (ms)
Max: 1.4 Amps
Tmax: 0.0 ms
Min: -10.0 Amps
Tmin: 10.9 ms
CFC 1000

FIRE VOLTAGE #2 (Volts) vs TIME (ms)
Max: 15.7 Volts
Tmax: 120.9 ms
Min: -0.5 Volts
Tmin: 130.4 ms
CFC 1000

FIRE CURRENT #2 (Amps) vs TIME (ms)
Max: 1.5 Amps
Tmax: 120.1 ms
Min: -0.6 Amps
Tmin: 121.4 ms
CFC 1000
LOW RISK DEPLOYMENT
2004 HYUNDAI ELANTRA (5TH P2)

Test Date: 7/29/2004
Speed: 0.0 mph (0.0 km/h)

Drive nij (NTF) vs TIME SPECIAL CHS (ms)
Max: 0.2
Tmax: 30.6 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drive nij (NTE) vs TIME SPECIAL CHS (ms)
Max: 0.4
Tmax: 17.0 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drive nij (NCF) vs TIME SPECIAL CHS (ms)
Max: 0.1
Tmax: 93.4 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drive nij (NCE) vs TIME SPECIAL CHS (ms)
Max: 0.0
Tmax: 190.5 ms
Min: 0.0
Tmin: 6.0 ms
CFC 600
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MANUFACTURED IN KOREA BY

HYUNDAI MOTOR COMPANY

AUG/19/03

GVWR 3880 lbs

PAINT AH

GAWR FRONT 2116 lbs

GAWR REAR 1852 lbs

TRIM LT

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. KMHDN46D64U733703

PASSenger CAR
### TIRE AND LOADING INFORMATION

The combined weight of occupants and cargo should never exceed 385 kg or 850 lbs.

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<td>420kPa, 60PSI</td>
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SEE OWNER’S MANUAL FOR ADDITIONAL INFORMATION
Post-Test Front View of Test Vehicle
Post-Test Left Side View of Test Vehicle
Post-Test Right Side View of Test Vehicle
Post-Test Right Front Three-Quarter View of Test Vehicle
Pre-Test Left Rear Three-Quarter View of Test Vehicle
Post-Test Left Rear Three-Quarter View of Test Vehicle
Pre-Test Rear View of Test Vehicle
Post-Test Rear View of Test Vehicle
Pre-Test Windshield View
Post-Test Windshield View
Pre-Test Engine Compartment View
Pre-Test Fuel Filler Cap View
Post-Test Fuel Filler Cap View
Post-Test Front Mid Underbody
Pre-Test Rear Underbody View
Post-Test Driver Dummy Front View (head position)
Pre-Test Driver Dummy Position Left Side View
Pre-Test Driver Dummy Position Left Side View (Door Open)
Pre-Test Driver Dummy Seat Position

C40510
25 MPH FRONTAL UNBELTED
04082701
MGA RESEARCH CORP.
2004 HYUNDAI ELANTRA
Post-Test Driver Dummy Seat Position
Pre-Test Driver Dummy Feet Position
Post-Test Driver Dummy Head Contact (visor)
Post-Test Driver Dummy Airbag Contact
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Temperature Plot
APPENDIX D

LOW RISK PHOTOGRAPHS
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APPENDIX E
SUPPRESSION PHOTOGRAPHS
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<td>Unbelted 5th Percentile Female Reactivation, Middle Seat Track</td>
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<td>94</td>
<td>3-Year-Old Century Next Step Belted, Forward Seat Track</td>
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<td>3-Year-Old Century Next Step Belted, Middle Seat Track</td>
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<td>3-Year-Old Century Next Step Belted, Rearward Seat Track</td>
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<td>3-Year-Old Century Next Step Cinched With Harness, Forward Seat Track</td>
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<td>3-Year-Old Cosco High Back Booster Cinched With Harness, Forward Seat Track</td>
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<td>6-Year-Old Century Next Step Booster Cinched With Harness, Middle Seat Track</td>
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<td>6-Year-Old Unbelted, Forward Seat Track, Position 4, Side View</td>
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<td>6-Year-Old Unbelted, Middle Seat Track, Position 4, Side View</td>
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<td>Unbelted 5th Percentile Female Reactivation, Middle Seat Track</td>
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DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
Newborn Section A Car Bed

Cosco Dream Ride Car Bed With Belt, Middle Seat Track
Cosco Dream Ride Car Bed With Belt, Rearward Seat Track
Unbelted 5th Percentile Female Reactivation, Rearward Seat Track
Britax Handle With Care 191 With Belt, Forward Seat Track, Handle Down
Britax Handle With Care 191 With Belt, Middle Seat Track, Handle Down
Britax Handle With Care 191 With Belt, Rearward Seat Track, Handle Down
Britax Handle With Care 191 Unbelted, Forward Seat Track, Handle Down
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

12 Month Section B Rear Facing CRS

Evenflo First Choice 204 With Belt, Forward Seat Track, Handle Up

Evenflo First Choice 204 With Belt, Middle Seat Track, Handle Up

Evenflo First Choice 204 With Belt, Rearward Seat Track, Handle Up

Evenflo First Choice 204 Unbelted, Forward Seat Track, Handle Up
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
12 Month Section B Rear Facing CRS

Evenflo First Choice 204 Unbelted, Middle Seat Track, Handle Up
Evenflo First Choice 204 Unbelted, Rearward Seat Track, Handle Up
Evenflo First Choice 204 Fwd Facing Unbelted, Forward Seat Track, Handle Up
Evenflo First Choice 204 Fwd Facing Unbelted, Middle Seat Track, Handle Up
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
12 Month Section B Rear Facing CRS

Evenflo First Choice 204 Fwd Facing Unbelted, Rearward Seat Track, Handle Up

Unbelted 5th Percentile Female Reactivation, Middle Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

12 Month Section B Rear Facing CRS

Graco Infant W/ Base With Belt, Forward Seat Track, Handle Up
Graco Infant W/ Base With Belt, Middle Seat Track, Handle Up
Graco Infant W/ Base With Belt, Rearward Seat Track, Handle Up
Graco Infant W/ Base Unbelted, Forward Seat Track, Handle Up
Graco Infant W/ Base Unbelted, Rearward Seat Track, Handle Up
Graco Infant W/ Base Unbelted, Middle Seat Track, Handle Up

Graco Infant W/ Base Unbelted, Rearward Seat Track, Handle Up

Graco Infant W/ Base Fwd Facing Unbelted, Forward Seat Track, Handle Up

Graco Infant W/ Base Fwd Facing Unbelted, Middle Seat Track, Handle Up
Graco Infant W/ Base Fwd Facing Unbelted, Rearward Seat Track, Handle Up
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
12 Month Section B Rear Facing CRS

Graco Infant W/O Base With Belt, Forward Seat Track, Handle Up
Graco Infant W/O Base With Belt, Middle Seat Track, Handle Up
Graco Infant W/O Base With Belt, Rearward Seat Track, Handle Up
Graco Infant W/O Base Unbelted, Forward Seat Track, Handle Up
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

12 Month Section B Rear Facing CRS

Graco Infant W/O Base Unbelted, Middle Seat Track, Handle Up

Graco Infant W/O Base Unbelted, Rearward Seat Track, Handle Up

Graco Infant W/O Base Fwd Facing Unbelted, Forward Seat Track, Handle Up

Graco Infant W/O Base Fwd Facing Unbelted, Middle Seat Track, Handle Up
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
12 Month Section B Rear Facing CRS

Graco Infant W/O Base Fwd Facing Unbelted, Rearward Seat Track, Handle Up

Unbelted 5th Percentile Female Reactivation, Forward Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

12 Month Section C Forward Facing Convertible CRS

Britax Roundabout 161 Fwd Facing With Belt, Forward Seat Track

Britax Roundabout 161 Fwd Facing With Belt, Middle Seat Track

Britax Roundabout 161 Fwd Facing With Belt, Rearward Seat Track

Britax Roundabout 161 Fwd Facing Unbelted, Forward Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
12 Month Section C Forward Facing Convertible CRS

Britax Roundabout 161 Fwd Facing Unbelted, Middle Seat Track
Britax Roundabout 161 Fwd Facing Unbelted, Rearward Seat Track
Britax Roundabout 161 Rear Facing With Belt, Forward Seat Track
Britax Roundabout 161 Rear Facing With Belt, Middle Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

12 Month Section C Forward Facing Convertible CRS

Britax Roundabout 161 Rear Facing With Belt, Rearward Seat Track

Britax Roundabout 161 Rear Facing Unbelted, Forward Seat Track

Britax Roundabout 161 Rear Facing Unbelted, Middle Seat Track

Britax Roundabout 161 Rear Facing Unbelted, Rearward Seat Track
Unbelted 5th Percentile Female Reactivation,
Rearward Seat Track
Century Encore Fwd Facing With Belt, Forward Seat Track
Century Encore Fwd Facing With Belt, Middle Seat Track
Century Encore Fwd Facing With Belt, Rearward Seat Track
Century Encore Fwd Facing Unbelted, Forward Seat Track
Century Encore Fwd Facing Unbelted, Middle Seat Track

Century Encore Fwd Facing Unbelted, Rearward Seat Track

Century Encore Rear Facing With Belt, Forward Seat Track

Century Encore Rear Facing With Belt, Middle Seat Track
Unbelted 5th Percentile Female Reactivation, Middle Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
12 Month Section C Forward Facing Convertible CRS

Evenflo Medallion 254 Fwd Facing With Belt, Forward Seat Track

Evenflo Medallion 254 Fwd Facing Unbelted, Forward Seat Track

Evenflo Medallion 254 Fwd Facing With Belt, Middle Seat Track

Evenflo Medallion 254 Fwd Facing With Belt, Rearward Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

12 Month Section C Forward Facing Convertible CRS

- Evenflo Medallion 254 Rear Facing With Belt, Rearward Seat Track
- Evenflo Medallion 254 Rear Facing Unbelted, Forward Seat Track
- Evenflo Medallion 254 Rear Facing Unbelted, Middle Seat Track
- Evenflo Medallion 254 Rear Facing Unbelted, Rearward Seat Track
Unbelted 5th Percentile Female Reactivation, Forward Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
3 Year Old Section C Forward Facing Convertible CRS

3-Year-Old Fwd Facing Britax Roundabout Belted, Forward Seat Track
3-Year-Old Fwd Facing Britax Roundabout Belted, Middle Seat Track
3-Year-Old Fwd Facing Britax Roundabout Belted, Rearward Seat Track
Unbelted 5th Percentile Female Reactivation, Rearward Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

3 Year Old Section C Forward Facing Convertible CRS

3-Year-Old Fwd Facing Century Encore Belted, Forward Seat Track

3-Year-Old Fwd Facing Century Encore Belted, Middle Seat Track

3-Year-Old Fwd Facing Century Encore Belted, Rearward Seat Track

Unbelted 5th Percentile Female Reactivation, Rearward Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

3 Year Old  Section C  Forward Facing Convertible CRS

3-Year-Old Fwd Facing Evenflo Medallion Belted, Forward Seat Track

3-Year-Old Fwd Facing Evenflo Medallion Belted, Middle Seat Track

3-Year-Old Fwd Facing Evenflo Medallion Belted, Rearward Seat Track

Unbelted 5th Percentile Female Reactivation, Middle Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

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 Reactivation, Middle Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

3 Year Old Section D Forward Facing Toddler Belt Positioning Booster Seat

3-Year-Old Cosco High Back Booster Belted, Forward Seat Track

3-Year-Old Cosco High Back Booster Belted, Middle Seat Track

3-Year-Old Cosco High Back Booster Belted, Rearward Seat Track

3-Year-Old Cosco High Back Booster Cinched With Harness, Forward Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

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 Reactivation, Rearward Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

6 Year Old  Section D  Forward Facing Toddler  Belt Positioning Booster Seat

6-Year-Old Century Next Step Booster  Cinched With Harness,
Forward Seat Track

6-Year-Old Century Next Step Booster  Cinched With Harness,
Middle Seat Track

6-Year-Old Century Next Step Booster  Cinched With Harness,
Rearward Seat Track

Unbelted 5th Percentile Female Reactivation,
Rearward Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

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, Middle Track

6-Year-Old Cosco High Back Booster Belted, Rearward Seat Track

Unbelted 5th Percentile Female Reactivation, Middle Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

3 Year Old  No CRS

3-Year-Old Unbelted, Forward Seat Track, Position 1

3-Year-Old Unbelted, Forward Seat Track, Position 2

3-Year-Old Unbelted, Forward Seat Track, Position 3

3-Year-Old Unbelted, Forward Seat Track, Position 4
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 – 2004 Hyundai Elantra (C40510)

3 Year Old No CRS

3-Year-Old Unbelted, Middle Seat Track, Position 2

3-Year-Old Unbelted, Middle Seat Track, Position 3

3-Year-Old Unbelted, Middle Seat Track, Position 4

3-Year-Old Unbelted, Middle Seat Track, Position 5
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

3 Year Old No CRS

3-Year-Old Unbelted, Rearward Seat Track, Position 7

Unbelted 5th Percentile Female Reactivation, Middle Seat Track
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
6 Year Old       No CRS

6-Year-Old Unbelted, Forward Seat Track, Position 1

6-Year-Old Unbelted, Forward Seat Track, Position 2

6-Year-Old Unbelted, Forward Seat Track, Position 3

6-Year-Old Unbelted, Forward Seat Track, Position 4
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

6 Year Old No CRS

6-Year-Old Unbelted, Forward Seat Track, Position 4, Side View

6-Year-Old Unbelted, Middle Seat Track, Position 1

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6-Year-Old Unbelted, Middle Seat Track, Position 3
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)
6 Year Old No CRS

6-Year-Old Unbelted, Middle Seat Track, Position 4

6-Year-Old Unbelted, Middle Seat Track, Position 4, Side View

6-Year-Old Unbelted, Rearward Seat Track, Position 1

6-Year-Old Unbelted, Rearward Seat Track, Position 2
DOT/NHTSA 208 Suppression Test – 2004 Hyundai Elantra (C40510)

6 Year Old No CRS

6-Year-Old Unbelted, Rearward Seat Track, Position 3

6-Year-Old Unbelted, Rearward Seat Track, Position 4

6-Year-Old Unbelted, Rearward Seat Track, Position 4, Side View

Unbelted 5th Percentile Female Reactivation, Middle Seat Track
APPENDIX F

INSTRUMENTATION CALIBRATION
### INSTRUMENTS FOR DRIVER DUMMY NO. 506 (LOW RISK DEPLOYMENT P1)

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### INSTRUMENTS FOR DRIVER DUMMY NO. 505 (LOW RISK DEPLOYMENT P2)

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<tbody>
<tr>
<td>Head X</td>
<td>APYN0</td>
<td>Endevco</td>
<td>2/20/04</td>
</tr>
<tr>
<td>Head Y</td>
<td>ALFJ7</td>
<td>Endevco</td>
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</tr>
<tr>
<td>Head Z</td>
<td>APYN3</td>
<td>Endevco</td>
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<tr>
<td>Neck Load Cell</td>
<td>1703</td>
<td>Denton</td>
<td>2/25/04</td>
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<tr>
<td>Chest X</td>
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<td>Endevco</td>
<td>4/16/04</td>
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<tr>
<td>Chest Y</td>
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<td>Servo</td>
<td>3/30/04</td>
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<tr>
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<td>GSE</td>
<td>3/03/04</td>
</tr>
<tr>
<td>Right Femur Load Cell</td>
<td>1361</td>
<td>GSE</td>
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