Vehicle Safety Compliance Testing for FMVSS 208
for Occupant Crash Protection
Sled Test

Ford Motor Company
2004 Ford Freestar MPV
NHTSA Number: C40209
TRC Inc. Test Number: S040428

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

Test Date: April 28, 2004
Report Date: May 12, 2004

Final Report

Prepared For:
U. S. Department of Transportation
National Highway Traffic Safety Administration
Office of Enforcement
Office of Vehicle Safety Compliance (NVS-220)
400 Seventh Street, S.W., Room No. 6115
Washington, DC 20590
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Date 6/11/04
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Transportation Research Center Inc.

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Date 7/26/04
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NHTSA, Office of Vehicle Safety Compliance
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   An FMVSS 208 Section 13 compliance sled test was conducted on a 2004 Ford Freestar MPV, NHTSA
   No.C40209, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No.
   TP 208S-01 for the determination of FMVSS 208 compliance. Possible test failures identified were as follows:

   None.

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Purpose

This Federal Motor Vehicle safety Standard (FMVSS) 208 compliance sled test is part of the FMVSS compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by the Transportation Research Center Inc. (TRC Inc.) under Contract No. DTNH22-03-D-01002. The purpose of this test was to determine if the subject vehicle, a 2004 Ford Freestar MPV, NHTSA No.C40209, meets the performance requirements of FMVSS 208, "Occupant Crash Protection," in the impact simulation sled test mode.
Test Procedure

This test was conducted in accordance with NHTSA’s Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-208S-01, dated January 15, 1998. Data was obtained relative to FMVSS 208, “Occupant Crash Protection,” performance.

The sled test vehicle was instrumented with four (4) accelerometers to measure longitudinal accelerations. The sled was instrumented with one (1) longitudinal accelerometer, which is prefiltered with an analog filter to 200 Hz as an integral part of the sled firing circuit, and two (2) additional accelerometers: the primary accelerometer for pulse and integrated velocity determination and a backup accelerometer. In addition, the sled was instrumented with one (1) light trap to measure velocity and four (4) airbag firing timing circuits.

The sled test vehicle contained two (2) Part 572 E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedure specified in Appendix B of the Laboratory Test Procedure. The dummies were not restrained by seat belts.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations; chest deflection potentiometers; left and right femur load cells to measure axial forces; and upper neck load cells to measure longitudinal, lateral, and vertical forces and moments.

The forty-two (42) data channels were digitally sampled at 12,500 samples per second and processed per Sections 11.7 through 11.9 of the Laboratory Test Procedure.

The sled test event was recorded by one (1) real-time motion picture camera and six (6) high-speed motion picture cameras. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.
Test Results Summary

This FMVSS 208 compliance sled test was conducted by TRC Inc. on April 28, 2004.

The test vehicle, a 2004 Ford Freestar MPV, NHTSA No. C40209, does appear to comply with the performance requirements of FMVSS 208 in the impact simulation sled test mode as measured by Hybrid III 50th percentile male dummies.

<table>
<thead>
<tr>
<th></th>
<th>FMVSS 208 Max. Allowable Injury Assessment Values</th>
<th>Driver</th>
<th>Passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC</td>
<td>1000</td>
<td>188</td>
<td>345</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>32</td>
<td>38</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>3 inches</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Left Femur</td>
<td>2250 lbs</td>
<td>1066</td>
<td>819</td>
</tr>
<tr>
<td>Right Femur</td>
<td>2250 lbs</td>
<td>1391</td>
<td>968</td>
</tr>
<tr>
<td>Neck Extension</td>
<td>57 Nm</td>
<td>11</td>
<td>49</td>
</tr>
<tr>
<td>Neck Flexion</td>
<td>190 Nm</td>
<td>68</td>
<td>22</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>3300 N</td>
<td>1450</td>
<td>1642</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>4000 N</td>
<td>576</td>
<td>2873</td>
</tr>
<tr>
<td>Neck Shear</td>
<td>3100 N</td>
<td>927</td>
<td>1592</td>
</tr>
</tbody>
</table>

The subject vehicle, a 2004 Ford Freestar, NHTSA No. C40209, appears to meet the other FMVSS 208 requirements for which it was tested. These results are shown in the data sheets that are included in this report.

The sled test vehicle was equipped with air bags at the driver and passenger seating positions. The dummies were not restrained by seat belts. The sled carriage was accelerated to 18.3 g with an integrated velocity change of 29.9 mph. The primary stages of the airbags were triggered at 20.2 milliseconds after 0.5 g acceleration was measured by the firing circuit. The secondary stages of the airbags were triggered at 35.2 milliseconds (driver), and 30.2 milliseconds (passenger) after 0.5 g acceleration was measured by the firing circuit. Following
subsequent digital data processing and filtering the acceleration signal to Channel Class 60, the primary stages airbag event trigger signal was 20.7 ms after the 0.5 g acceleration level was indicated and the secondary stages airbag event trigger signal was 35.7 ms (driver) and 30.7 ms (passenger) after the 0.5 g acceleration level was indicated.
Data Acquisition Explanations

The complete 16-hour pre-test dummy ambient air temperature trace was not recorded for this test. A partial trace was recorded and is included in Appendix D. During the final two hours prior to test, the dummies were within the specified temperature range.

Pre-test photographs of the driver and passenger knee bolsters were not taken for this test.
Sled Test Summary

NHTSA number: C40209
Test type: Alternate 208
Test date: 04/28/04
Test time: 14:13
Ambient temperature at impact area: 69.9°F

Vehicle year/make/model/body style: 2004/Ford/Freestar/MPV

Dummy Info:

<table>
<thead>
<tr>
<th>Driver #314</th>
<th>Front passenger #229</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>Hybrid III 50th</td>
</tr>
<tr>
<td>Location:</td>
<td>Left front</td>
</tr>
<tr>
<td>Restraint:</td>
<td>Airbag</td>
</tr>
<tr>
<td>Number of data channels:</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Hybrid III 50th</td>
</tr>
<tr>
<td></td>
<td>Right front</td>
</tr>
<tr>
<td></td>
<td>Airbag</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Number of Cameras:

| Real-time: | 1 |
| High-speed:| 6 |

Door Opening Data:

| Left Front: | Easy |
| Right Front:| Easy |

Front Seat Data:

| Seat track failure: | None |
| Seat back failure:  | None |

Visible Dummy Contact Points:

| Head: Airbag, sun visor, head liner, A-pillar, windshield | Airbag, windshield |
| Chest: Airbag, steering wheel | Airbag |
| Left knee: Knee bolster | Glove box |
| Right knee: Knee bolster | Glove box |
General Test and Vehicle Parameter Data for the Slod Test Vehicle

Test Vehicle information:

Vehicle year-make/model/body style: 2004/Ford/Freestar/MPV
Color: Vibrant white
VIN: 2FMZA50684BA66026
NHTSA number: C40209

Engine data:
Placement: Transverse
Cylinders: 6
Displacement: 3.9

Transmission data: 4 speed, _manual, _X_ automatic, _X_ overdrive
Final drive: _X_ fwd, _rwd, _4wd

Date vehicle received: 4/7/2004
Odometer reading: 649

Dealer's name and address: Graham Ford Inc., Columbus, OH 43216

Major Options:
Power steering: Yes Other: No
Power brakes: Yes
Power windows: Yes
Air conditioning: Yes
Power door locks: Yes

Remarks:
General Test and Vehicle Parameter Data for the Sled Test Vehicle, Cont'd.

Data from Vehicle's Certification Label:
Vehicle manufactured by: Ford Motor Company
Date of manufacture: 01/04
VIN: 2FMZA50684EAA66026
GVWR: 5660 lbs
GAWR: Front: 2915 lbs
Rear: 2760 lbs

Data from Vehicle's Tire Placard:
Tire pressure with maximum capacity vehicle load:
  Front: 35 psi
  Rear: 35 psi
Recommended tire size: P225/60R16
Load range: N/A lbs
Recommended cold tire pressure:
  Front: 35 psi
  Rear: 35 psi
Size of tires on vehicle: P225/60R16
Spare tire: T145/90R16
Vehicle capacity data:
  Type of front seats: Bucket
  Number of occupants:
    Front 2
    Mid 2
    Rear 3
    Total 7

Remarks:
General Test and Vehicle Parameter Data for the Sled Test Vehicle, Cont'd.

Weight of test vehicle as received (with maximum fluids):

Right front 1252.2 lbs Right rear 867.5 lbs
Left front 1277.6 lbs Left rear 847.7 lbs
Total front weight 2529.8 lbs (59.6% of total vehicle weight)
Total rear weight 1715.2 lbs (40.4% of total vehicle weight)
Total delivered weight 4245.0 lbs

Calculation of test vehicle's target test weight:

VCW = Vehicle Capacity Weight (1200 lbs)
DSC = Designated Seating Capacity (7)
RCLW = Rated Cargo and Luggage Weight = VCW - (DSC x 150 lbs) = 150 lbs
UDW = Unloaded Delivered Weight (4245.0 lbs)

Target test weight = UDW + RCLW + (Number of Hybrid III dummies x 167 lbs per dummy)

Target test weight = 4245.0 + 150.0 + 334.0 = 4729.0 lbs

Weight of test vehicle with two dummies and 233.7 lbs of cargo weight:

Right front 1331.6 lbs Right rear 1069.2 lbs
Left front 1360.3 lbs Left rear 1051.6 lbs
Total front weight 2691.9 lbs (56% of total vehicle weight)
Total rear weight 2120.8 lbs (44% of total vehicle weight)
Total test weight 4812.7 lbs

Remarks:

Weight of ballast secured in vehicle cargo area: None
Components removed to meet target test weight: None

1 The RCLW was incorrectly calculated as 233 lbs during vehicle preparations. The correct target test weight was 4729 lbs.
Test Vehicle Attitude:
As delivered door sill angle: 1.3° Nose Down
As tested door sill angle: 1.0° Nose Down
Fully loaded door sill angle: 0.8° Nose Down
Vehicle Wheelbase: 120.8 inches

Fuel System Data:
Fuel system capacity from owner's manual: 26.0 gallons
Useable capacity figure furnished by COTR: 26.0 gallons

Remarks: The roll angle measurements were within 1 inch of each other.
The left and right side measurements were 26.7 inches and 26.7 inches respectively.
Post-Impact Data

Test number: S040428
NHTSA number: C40209
Test date: 04/28/04
Test time: 14:13
Test type: Alternate 208
Impact angle: 0°
Ambient temperature
at impact area: 69.9° F
Temperature in
occupant compartment: 69.9° F

Sled carriage velocity:
Integrated velocity from the integration of the entire sled acceleration: 29.9 mph
Measured velocity from the light trap device attached to the sled (backup): 29.5 mph
Specified integrated velocity range: 28 to 30 mph

Sled carriage acceleration:
Acceleration: 18.1 g
Specified acceleration range: 16.0 g - 18.2 g

Sled carriage acceleration duration:
Time from T-0(-0.5 g) to 0.0 g: 123.5 ms
Specified acceleration duration: 120 - 130 ms

The sled acceleration curve was within the specified corridor.
Seat and Steering Column Positioning Data

Vehicle: 2004/Ford/Freestar/MPV
NHTSA No.: C40209

Nominal Design Riding Position:

Driver Seat: Seat Back Angle = 18.4° measured 13 inches above the back pivot on the rear outboard seat frame.

Passenger Seat: Seat Back Angle = 17.9° measured 13 inches above the back pivot on the rear outboard seat frame.

Seat Fore and Aft Positions:

Driver Seat: Set to the middle of the available fore/aft travel
Passenger: Set to the middle of the available fore/aft travel

Steering Column Adjustments:

Set to the middle of the geometric range of travel.
### Dummy Measurement Data for Front Seat Occupants

<table>
<thead>
<tr>
<th>Designation</th>
<th>Type of Measurement</th>
<th>Driver (Serial #314)</th>
<th>Passenger (Serial #229)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA</td>
<td>Windshield angle</td>
<td>30.4°</td>
<td>N/A</td>
</tr>
<tr>
<td>SWA</td>
<td>Steering wheel angle</td>
<td>63.2°</td>
<td>N/A</td>
</tr>
<tr>
<td>SCA</td>
<td>Steering column angle</td>
<td>26.8°</td>
<td>N/A</td>
</tr>
<tr>
<td>SA</td>
<td>Seat back angle</td>
<td>18.4°</td>
<td>17.9°</td>
</tr>
<tr>
<td>HZ</td>
<td>Head to roof</td>
<td>8.7 in</td>
<td>8.1 in</td>
</tr>
<tr>
<td>HH</td>
<td>Head to header</td>
<td>18.1 in</td>
<td>16.7 in</td>
</tr>
<tr>
<td>HW</td>
<td>Head to windshield</td>
<td>26.9 in</td>
<td>25.2 in</td>
</tr>
<tr>
<td>HR</td>
<td>Head to side header</td>
<td>8.7 in</td>
<td>7.7 in</td>
</tr>
<tr>
<td>NR</td>
<td>Nose to rim</td>
<td>18.2 in</td>
<td>N/A</td>
</tr>
<tr>
<td>NA</td>
<td>Nose to rim angle</td>
<td>12.3°</td>
<td>N/A</td>
</tr>
<tr>
<td>CD</td>
<td>Chest to dash</td>
<td>22.1 in</td>
<td>21.7 in</td>
</tr>
<tr>
<td>CS</td>
<td>Steering wheel to chest</td>
<td>14.4 in</td>
<td>N/A</td>
</tr>
<tr>
<td>RA</td>
<td>Rim to abdomen</td>
<td>9.1 in</td>
<td>N/A</td>
</tr>
<tr>
<td>KDL</td>
<td>Left knee to dash</td>
<td>6.3 in</td>
<td>5.7 in</td>
</tr>
<tr>
<td>KDR</td>
<td>Right knee to dash</td>
<td>6.3 in</td>
<td>5.6 in</td>
</tr>
<tr>
<td>KDA</td>
<td>Outboard knee to dash: angle</td>
<td>70.3°</td>
<td>59.5°</td>
</tr>
<tr>
<td>PA</td>
<td>Pelvis angle</td>
<td>22.6°</td>
<td>24.4°</td>
</tr>
<tr>
<td>TA</td>
<td>Tibia angle</td>
<td>57.7°</td>
<td>55.2°</td>
</tr>
<tr>
<td>KK</td>
<td>Knee to knee</td>
<td>12.4 in</td>
<td>10.6 in</td>
</tr>
<tr>
<td>ST&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Striker to head</td>
<td>23.7 in</td>
<td>24.1 in</td>
</tr>
<tr>
<td></td>
<td>Striker to head angle</td>
<td>-86.8°</td>
<td>-81.5°</td>
</tr>
<tr>
<td>SK&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Striker to knee</td>
<td>23.5 in</td>
<td>24.5 in</td>
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<td></td>
<td>Striker to knee angle</td>
<td>-9.3°</td>
<td>-4.3°</td>
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<tr>
<td>SH&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Striker to H-point</td>
<td>8.7 in</td>
<td>9.4 in</td>
</tr>
<tr>
<td></td>
<td>Striker to H-point angle</td>
<td>19.8°</td>
<td>14.4°</td>
</tr>
<tr>
<td>SHY</td>
<td>Striker to H-point (Y dir.)</td>
<td>9.8 in</td>
<td>8.7 in</td>
</tr>
<tr>
<td>HS</td>
<td>Head to side window</td>
<td>12.2 in</td>
<td>12.2 in</td>
</tr>
<tr>
<td>HD</td>
<td>H-point to door</td>
<td>7.6 in</td>
<td>6.7 in</td>
</tr>
<tr>
<td>AD</td>
<td>Arm to door</td>
<td>5.5 in</td>
<td>4.0 in</td>
</tr>
</tbody>
</table>

The seat back angle (SA°) is measured relative to vertical. All other angles are measured relative to horizontal.  
<sup>1</sup>A negative angle indicates the measurement point was located below the striker.
Dummy Measurement Locations for Front Seat Occupants

VERITCAL LONGITUDINAL PLANE

VERITCAL TRANSVERSE PLANE
Descriptions of Dummy Measurements

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

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

* HH  Head to Header, taken from the point where the dummy’s nose meets his forehead (between his eyes) to the furthest point forward on the header.

* HW  Head to Windshield, taken from the point where the dummy’s nose meets his forehead (between his eyes) to a point on the windshield. Use a level.

HZ  Head to Roof, taken from the point where the dummy’s nose meets his forehead (between his eyes) to the point on the roof directly above it. Use a level.

* CS  Steering Wheel to Chest, taken from the center of the steering wheel hub to the dummy’s chest. Use a level.

* CD  Chest to Dash, place a tape measure on the tip of the dummy’s chin and rotate five inches of it downward toward the dummy to the point of contact on the transverse center of the dummy’s chest. Then measure from this point to the closest point on the dashboard either between the upper part of the steering wheel between the hub and the rim, or measure to the dashboard placing the tape measure above the rim, whichever is a shorter measurement. See diagram.

RA  Steering Wheel Rim to Abdomen, taken from the bottommost point of the steering wheel rim horizontally rearward to the dummy. Use a level.

NR  Nose to Rim, taken from the tip of the dummy’s nose to the closest point on the top of the steering wheel rim. Also indicate the angle this line makes with respect to the horizontal (NA).

* Measurement used in Data Tape Reference Guide
Descriptions of Dummy Measurements, Cont’d.

KI, KDR  Left and Right Knees to Dashboard, taken from the center of the knee pivot bolt’s outer surface to the closest point forward acquired by swinging the tape measure in continually larger arcs until it contacts the dashboard. Also reference the angle of this measurement with respect to the horizontal for the outboard knee (KDA). See diagram.

SH, SK, ST  Striker to Hip, Knee, and Head, these measurements are to be taken in the X-Z plane measured from the forward most center point on the striker to the center of the H-point, outer knee bolt, and head target. When taking this measurement a firm device that can be rigidly connected to the striker should be used. Use a level. The angles of these measurements with respect to the horizontal should also be recorded. The measurement in the Y (transverse) direction from the striker to the H-point should also be taken (SHY). See diagram.

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

HS  Head to Side Window, taken from the point where the dummy’s nose meets his forehead (between his eyes) to the outside of the side window. In order to make this measurement, roll the window down to the exact height which allows a level measurement. Use a level. See diagram.

* AD  Arm to Door, taken from the outer surface of the elbow pivot bolt on a Hybrid II dummy to the first point it hits on the door. In the case of a Hybrid III dummy, measure from the bolt on the outer biceps. When a SID is used make the measurement from the center of the bottom of the arm segment where it meets the dummy’s torso.

* HD  H-point to Door, taken from the H-point on the dummy to the closest point on the door. Use a level.

* HR  Head to Side Header, measure the shortest distance from the point where the dummy’s nose meets his forehead (between his eyes) to the side edge of the header just above the window frame, directly adjacent to the dummy.

* Measurement used in Data Tape Reference Guide
1 Only outboard measurement is referenced in Data Tape Reference Guide
Descriptions of Dummy Measurements, Cont'd.

SHY Striker to H-point, taken from a rod rigidly connected to the forward most center point on the striker to the H-point. Use a level. See diagram.

KK Knee to Knee, for Hybrid II dummies measure the distance between knee pivot bolt head outer surfaces. For Hybrid III dummies measure the distance between the outboard knee clevis flange surfaces. (This measurement may not be exactly transverse.)

Angles

SA Seat Back Angle, find this angle using the instructions provided by the manufacturer. If the manufacturer doesn't provide clear instructions contact the COTR.

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

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

SCA Steering Column Angle, measured with respect to the horizontal by placing an inclinometer on the center of the underside of the steering column.

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

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

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

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

* Measurement used in Data Tape Reference Guide
Vehicle Accelerometer Placement

Side View

Bottom View

(Y) + Lateral

(X) + Longitudinal
<table>
<thead>
<tr>
<th>TEST NUMBER: S040428</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>POSITIVE DIRECTION</th>
<th>NEGATIVE DIRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SLED ACCELERATION</td>
<td>165.6 in</td>
<td>-1.0 in</td>
<td>NA</td>
<td>0.8 g @ 126.6 ms</td>
<td>18.1 g @ 57.4 ms</td>
</tr>
<tr>
<td>PRIMARY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 SLED ACCELERATION</td>
<td>165.6 in</td>
<td>-1.0 in</td>
<td>NA</td>
<td>0.9 g @ 126.8 ms</td>
<td>18.3 g @ 57.4 ms</td>
</tr>
<tr>
<td>BACKUP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REDUNDANT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 SLED VELOCITY</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0.1 mph @ 9.3 ms</td>
<td>29.4 mph @ 124.7 ms</td>
</tr>
<tr>
<td>MEASURED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTEGRATED²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 LEFT REAR SEAT</td>
<td>148.2 in</td>
<td>-16.3 in</td>
<td>NA</td>
<td>1.4 g @ 128.7 ms</td>
<td>18.3 g @ 52.7 ms</td>
</tr>
<tr>
<td>CROSSMEMBER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LONGITUDINAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 RIGHT REAR SEAT</td>
<td>145.5 in</td>
<td>14.6 in</td>
<td>NA</td>
<td>1.4 g @ 128.6 ms</td>
<td>18.2 g @ 53.0 ms</td>
</tr>
<tr>
<td>CROSSMEMBER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LONGITUDINAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 TOP ENGINE</td>
<td>178.3 in</td>
<td>2.5 in</td>
<td>NA</td>
<td>6.0 g @ 134.9 ms</td>
<td>23.3 g @ 46.9 ms</td>
</tr>
<tr>
<td>LONITUDINAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 REAR AXLE</td>
<td>39.2 in</td>
<td>0.0 in</td>
<td>NA</td>
<td>3.0 g @ 146.6 ms</td>
<td>19.0 g @ 53.4 ms</td>
</tr>
<tr>
<td>LONGITUDINAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Vehicle Data Summary and Accelerometer Locations, Cont'd.

<table>
<thead>
<tr>
<th>TEST NUMBER: S040428</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>POSITIVE DIRECTION</th>
<th>NEGATIVE DIRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 8: Driver Primary Airbag Event</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.0 volt @ 20.7 ms</td>
<td>---</td>
</tr>
<tr>
<td>Test 9: Driver Secondary Airbag Event</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.0 volt @ 35.7 ms</td>
<td>---</td>
</tr>
<tr>
<td>Test 10: Passenger Primary Airbag Event</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.0 volt @ 20.7 ms</td>
<td>---</td>
</tr>
<tr>
<td>Test 11: Passenger Secondary Airbag Event</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.0 volt @ 30.7 ms</td>
<td>---</td>
</tr>
</tbody>
</table>

**Reference:**
- **X:** Forward from vehicle rear surface
- **Y:** Rightward from sled carriage centerline
- **Z:**

2. See Data Acquisition Explanations on page 4.
3. No positive data in time frame of interest.
Vehicle Targeting Measurements

REFERENCE PHOTO TARGETS

LEFT SIDE VIEW
Camera Positions

Camera Mounting Outriggers

Slid Interface Frame

Top View

Camera Frame Rates:
#1 = 24 fps
All Others = 1,000 fps

Real-Time Camera

Left Side View

Slid Centerline

Slid Interface Frame
# Motion Picture Camera Locations

Vehicle year/make/model/body style: 2004/Ford/Freestar/MPV

NHTSA No.: C40209  Test Number: S040428

<table>
<thead>
<tr>
<th>Camera Number</th>
<th>View</th>
<th>Camera Positions¹</th>
<th>Camera Angle²</th>
<th>Film Plane to Head Target</th>
<th>Camera Lens</th>
<th>Film Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pre- and Post-Test panning and documentary</td>
<td>92.9 in, 304.4 in, 42.2 in</td>
<td>0.0°</td>
<td>286.3 in</td>
<td>6.7 mm</td>
<td>30 frames/s</td>
</tr>
<tr>
<td>2</td>
<td>Left side view wide</td>
<td>73.4 in, 72.2 in, 59.8 in</td>
<td>5.2°</td>
<td>52.8 in</td>
<td>13 mm</td>
<td>1000 frames/s</td>
</tr>
<tr>
<td>3</td>
<td>Left side view over shoulder</td>
<td>95.6 in, 47.7 in, 59.9 in</td>
<td>15.3°</td>
<td>33.9 in</td>
<td>7.5 mm</td>
<td>1200 frames/s</td>
</tr>
<tr>
<td>4</td>
<td>Right side view wide</td>
<td>71.2 in, 74.7 in, 59.0 in</td>
<td>2.5°</td>
<td>55.3 in</td>
<td>13 mm</td>
<td>1000 frames/s</td>
</tr>
<tr>
<td>5</td>
<td>Right side view over shoulder</td>
<td>97.8 in, 48.3 in, 58.6 in</td>
<td>12.6°</td>
<td>34.6 in</td>
<td>8 mm</td>
<td>1045 frames/s</td>
</tr>
<tr>
<td>6</td>
<td>Front view - driver</td>
<td>30.6 in, 15.8 in, 59.3 in</td>
<td>0.8°</td>
<td>51.7 in</td>
<td>8 mm</td>
<td>1062 frames/s</td>
</tr>
<tr>
<td>7</td>
<td>Front view - passenger</td>
<td>28.1 in, 16.7 in, 58.4 in</td>
<td>2.4°</td>
<td>50.6 in</td>
<td>8 mm</td>
<td>1002 frames/s</td>
</tr>
</tbody>
</table>

¹ X: Film plane to front of sled  
Y: Film plane to sled centerline  
Z: Film plane to top of sled  
² Angle: Film plane of camera downward from horizontal plane
### FMVSS 208 Occupant Injury Data

Vehicle: 2004/Ford/Freestar/MPV  
NHTSA No.: C40209  
Date: 04/28/04

<table>
<thead>
<tr>
<th>Maximum Acceleration Values: (g)</th>
<th>Driver Dummy #314</th>
<th>Passenger Dummy #229</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Channel X</td>
<td>-42.7</td>
<td>-69.2</td>
</tr>
<tr>
<td>Head Channel Y</td>
<td>15.3</td>
<td>-15.5</td>
</tr>
<tr>
<td>Head Channel Z</td>
<td>20.5</td>
<td>33.1</td>
</tr>
<tr>
<td>HEAD RESULTANT</td>
<td>45.4</td>
<td>76.9</td>
</tr>
<tr>
<td>Chest Channel X</td>
<td>-29.4</td>
<td>-35.6</td>
</tr>
<tr>
<td>Chest Channel Y</td>
<td>4.2</td>
<td>2.5</td>
</tr>
<tr>
<td>Chest Channel Z</td>
<td>14.5</td>
<td>30.3</td>
</tr>
<tr>
<td>CHEST RESULTANT</td>
<td>32.1</td>
<td>39.8</td>
</tr>
</tbody>
</table>

#### Head Injury Criteria (HIC) Values:

<table>
<thead>
<tr>
<th>HIC</th>
<th>Driver Dummy #314</th>
<th>Passenger Dummy #229</th>
</tr>
</thead>
<tbody>
<tr>
<td>188</td>
<td>95.84</td>
<td>95.04</td>
</tr>
<tr>
<td>345</td>
<td>131.84</td>
<td>120.32</td>
</tr>
</tbody>
</table>

The maximum HIC time interval from $t_1$ to $t_3$ is 36 milliseconds.

#### Chest Injury Criteria (Clip) Values:

<table>
<thead>
<tr>
<th>CLIP (g)</th>
<th>Driver Dummy #314</th>
<th>Passenger Dummy #229</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.8</td>
<td>100.45</td>
<td>107.10</td>
</tr>
<tr>
<td>38.0</td>
<td>103.41</td>
<td>110.07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chest Deflection (in)</th>
<th>Driver Dummy #314</th>
<th>Passenger Dummy #229</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>
**FMVSS 208 Occupant Injury Data, Cont'd.**

Vehicle: 2004/Ford/Freestar/MPV  
NHTSA No.: C40209  
Date: 04/28/04

<table>
<thead>
<tr>
<th>Max. Compressive Femur Forces:</th>
<th>Driver Dummy #314</th>
<th>Passenger Dummy #229</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Side (lbs)</td>
<td>1066</td>
<td>819</td>
</tr>
<tr>
<td>Right Side (lbs)</td>
<td>1391</td>
<td>968</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Neck Injury Criteria:</th>
<th>Driver Dummy #314</th>
<th>Passenger Dummy #229</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Flexion Bending Moment (N-m)</td>
<td>11</td>
<td>49</td>
</tr>
<tr>
<td>Peak Extension Bending Moment (N-m)</td>
<td>68</td>
<td>22</td>
</tr>
<tr>
<td>Peak Axial Tension (N)</td>
<td>1450</td>
<td>1642</td>
</tr>
<tr>
<td>Peak Axial Compression (N)</td>
<td>570</td>
<td>2873</td>
</tr>
<tr>
<td>Peak Positive X-axis Shear (N)</td>
<td>927</td>
<td>1592</td>
</tr>
<tr>
<td>Peak Negative X-axis Shear (N)</td>
<td>241</td>
<td>920</td>
</tr>
</tbody>
</table>
DATA SHEET 3
Certification Label and Tire Placard Information

NHTSA No. C40209 Test Date: 04/16/04
Laboratory: TRC Inc. Test Technician(s): Michael S. Postle

1. Certification Label
Manufacturer: Ford Motor Company
Date of Manufacture: 01/04
VIN: 2FMZAF684E688028
Vehicle certified as: ___ Passenger car ___ MPV ___ Truck ___ Bus
Front axle GVWR: 2915 lbs
Rear axle GVWR: 2780 lbs
Total GVWR: 5690 lbs

2. Tire Placard
___ N/A - Vehicle is not a passenger car and does not have a tire placard.
___ This is not a passenger car (see the item 1 above), but all or part of this information is still contained on a vehicle label and is reported here.
Vehicle Capacity Weight: 1200 lbs
Designated seating capacity front: 2
Designated seating capacity second: 2
Designated seating capacity rear: 3
Total Designated seating capacity: 7
Recommended cold tire inflation pressure front: 35 psi
Recommended cold tire inflation pressure rear: 35 psi
Recommended tire size: P225/60R16
DATA SHEET 4
REAR OUTBOARD SEATING POSITION SEAT BELTS

NHTSA No. C40209 Test Date: 04/15/04

Laboratory: TRC inc. Test Technician(s): Michael S. Pogge

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

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

REMARKS:
DATA SHEET 5
AIR BAG LABELS (54.5.1)

NHTSA No. C40209 Test Date: 04/15/04
Laboratory: TRC inc. Test Technician(s): Michael S. Postle

1. Air Bag Maintenance Label and Owner's Manual Instructions: (54.5.1(a))
   1.1 Does the manufacturer recommend periodic maintenance or replacement of the air bag?
      __ Yes (Go to 1.2); X No (Go to 2)
   1.2 Does the vehicle have a label specifying air bag maintenance or replacement?
      __ Yes-Pass; __ No-FAIL
   1.3 Does the label contain one of the following?
      __ Yes-Pass; __ No-FAIL
      Check applicable schedule
      __ Schedule on label specifies month and year (Record date __________)
      __ Schedule on label specifies vehicle mileage (Record mileage __________)
      __ Schedule on label specifies interval measured from date on certification label
      (Record interval __________)
   1.4 Is the label permanently affixed within the passenger compartment such that it cannot be
      removed without destroying or defacing the label or the sunvisor?
      __ Yes-Pass; __ No-FAIL
   1.5 Is the label lettered in English?
      __ Yes-Pass; __ No-FAIL
   1.6 Is the label in block capitals and numerals?
      __ Yes-Pass; __ No-FAIL
   1.7 Are the letters and numerals at least 3/32 inches high?
      __ Yes-Pass; __ No-FAIL
   1.8 Does the owner's manual set forth the recommended schedule for maintenance or
      replacement? __ Yes-Pass __ No-FAIL

2. Does the owner's manual: (54.5.1(f))
   2.1 Include a description of the vehicle's air bag system in an easily understandable format?
      X Yes-Pass; __ No-FAIL
   2.2 Include a statement that the vehicle is equipped with an air bag and a lap/shoulder belt at
      the front outboard seating positions?
      X Yes-Pass; __ No-FAIL
   2.3 Include a statement that the air bag is a supplemental restraint at the front outboard
      seating positions?
      X Yes-Pass; __ No-FAIL
   2.4 Emphasize that all occupants, including the driver, should always wear their seat belts
      whether or not an air bag is also provided at their seating positions to minimize the risk of
      severe injury or death in the event of a crash?
      X Yes-Pass; __ No-FAIL
   2.5 Provide any necessary precautions regarding the proper positioning of occupants,
      including children, at seating positions equipped with air bags to ensure maximum safety
      protection for those occupants?
      X Yes-Pass; __ No-FAIL
   2.6 Explain that no objects should be placed over or near the air bag on the steering wheel or
      on the instrument panel, because any such objects could cause harm if the vehicle is in a
      crash severe enough to cause the air bag to inflate?
      X Yes-Pass; __ No-FAIL
2.7 Is the vehicle certified to meet the requirements of S14.5, S15, S17, S18, S21, S23, and S25? (Obtain the answer to this question from the COTR) (S4.5.1(f)(2))
   __Yes (go to 2.7.1); X No (go to 3)

2.7.1 Explain the proper functioning of the advanced air bag system? (S4.5.1(f)(2))
   __Yes-Pass; __No-FAIL

2.7.2 Provide a summary of the actions that may affect the proper functioning of the system?
   (S4.5.1(f)(2))
   __Yes-Pass; __No-FAIL

2.7.3 Present and explain the main components of the advanced passenger air bag system?
   (S4.5.1(f)(2)(i))
   __Yes-Pass; __No-FAIL

2.7.4 Explain how the components function together as part of the advanced passenger air bag system?
   (S4.5.1(f)(2)(ii))
   __Yes-Pass; __No-FAIL

2.7.5 Contain the basic requirements for proper operation, including an explanation of the actions
   that may affect the proper functioning of the system? (S4.5.1(f)(2)(iii))
   __Yes-Pass; __No-FAIL

2.7.6 Is the vehicle certified to the requirements of S19.2, S21.2 or S23.2 (automatic
   suppression)?
   __Yes, continue with 2.7.6
   __No, go to 2.7.7

2.7.6.1 Contain a complete description of the passenger air bag suppression system installed in
   the vehicle, including a discussion of any suppression zone? (S4.5.1(f)(2)(iv))
   __Yes-Pass; __No-FAIL

2.7.6.2 Discuss the telltale light, specifying its location in the vehicle and explaining when the
   light is illuminated?
   __Yes-Pass; __No-FAIL

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

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

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

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

3.1 Vehicles not certified to meet the requirements of S19, S21, and S23.
3.1.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing it? (S4.5.1(b)(1)(i))

Driver side  X  Yes-Pass  __  No-FAIL
Passenger side  X  Yes-Pass  __  No-FAIL

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

Driver side  X  Yes-Pass  __  No-FAIL
Passenger side  X  Yes-Pass  __  No-FAIL

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

Driver side  X  Yes-Pass  __  No-FAIL
Passenger side  X  Yes-Pass  __  No-FAIL

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

Driver side  X  Yes-Pass  __  No-FAIL
Passenger side  X  Yes-Pass  __  No-FAIL

3.1.5 Is the message area at least 30 cm²? (S4.5.1 (b)(1)(iii))

Driver side: Length 8.3 Width 3.6
Passenger side: Length 8.3 Width 3.6
Actual message area 30 cm²

Driver side  X  Yes-Pass  __  No-FAIL
Passenger side  X  Yes-Pass  __  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))

Driver side  X  Yes-Pass  __  No-FAIL
Passenger side  X  Yes-Pass  __  No-FAIL

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

Actual diameter 31 mm

Driver side  X  Yes-Pass  __  No-FAIL
Passenger side  X  Yes-Pass  __  No-FAIL

3.2 Vehicles certified to meet the requirements of S19, S21, and S23 before 8/1/03. (S4.5.1(b)(2))

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

Driver side  __  Yes-Pass  __  No-FAIL
Passenger side  __  Yes-Pass  __  No-FAIL

3.2.2 Does the label conform in content to the label shown in Figure 8 or Figure 11 at each front outboard seating position? (S4.5.1(b)(2)) (Vehicles without back seats may omit the statement: "The BACK SEAT is the SAFEST place for children." (S4.5.1(b)(2)(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)))

Driver side  __  Yes-Pass  __  No-FAIL
Passenger side  __  Yes-Pass  __  No-FAIL

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

Driver side  __  Yes-Pass  __  No-FAIL
Passenger side  __  Yes-Pass  __  No-FAIL

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

Driver side  __  Yes-Pass  __  No-FAIL
Passenger side  __  Yes-Pass  __  No-FAIL
3.2.5 Is the message area at least 30 cm²? (S4.5.1(b)(2)(i))
Driver side: Length ________ Width ________
Passenger side: Length ________ Width ________
Driver actual message area ________ cm²
Passenger actual message area ________ cm²
Driver side ___ Yes-Pass ___ No-FAIL
Passenger side ___ Yes-Pass ___ No-FAIL

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

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

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

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

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

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

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

3.3.5 Is the message area at least 30 cm²? (S4.5.1(b)(3)(ii))
Driver side: Length ________ Width ________
Passenger side: Length ________ Width ________
Driver actual message area ________ cm²
Passenger actual message area ________ cm²
Driver side ___ Yes-Pass ___ No-FAIL
Passenger side ___ Yes-Pass ___ No-FAIL

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

3.3.7 Is the pictogram at least 30 mm in length? (S4.5.1(b)(3)(iii))
Driver side: Length ________
Passenger side: Length ________
Driver side ___ Yes-Pass ___ No-FAIL
Passenger side ___ Yes-Pass ___ No-FAIL
3.4 Is the same side of the sun visor that contains the air bag warning label free of other information with the exception of the air bag maintenance label and/or the rollover-warming label? (S4.5.1(b)(5)(i))
   Driver side No-Fail
   Passenger side No-Fail

3.5 Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label and/or the rollover-warming label? (S4.5.1(b)(5)(i))
   Driver side No-Fail
   Passenger side No-Fail

3.6 Does the driver side visor contain a rollover-warming label on the same side of the visor as the air bag warning label? (S4.6.1)
   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-warming label and the air bag warning label surrounded by a continuous solid-lined border? (S4.6.2)
   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)(V)(B))
   Yes-Pass No-Fail

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

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

4.1 Is the Sun Visor Warning Label visible when the sun visor is in the stowed position?
   Driver side Yes-No
   Passenger side Yes-No

If yes, for driver and passenger go to 5.

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

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

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

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

4.6 Is the message area at least 20 cm²? (S4.5.1(c)(1))
   Driver side Length Width
   Passenger side Length Width
   Actual message area cm²
   Driver side Yes-Pass No-Fail
   Passenger side Yes-Pass No-Fail

4.7 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(c)(2))
   Driver side Yes-Pass No-Fail
   Passenger side Yes-Pass No-Fail
4.8 Is the pictogram at least 20 mm in diameter? (S4.5.1(e)(2))
Driver side: diameter ______________
Passenger side: diameter ______________
Driver side: Yes-Pass  No-FAIL
Passenger side: Yes-Pass  No-FAIL

5. Label On the Dashboard

5.1 Is the vehicle certified to meet the requirements of S18, S21, and S23? (Obtain the answer to this question from the COTR.) (S4.5.1(e)(2))
Yes (go to 5.1.1 and skip 5.2)
X No (go to 5.2, skipping 5.1.1 through 5.1.6)

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

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

5.1.3 Does the label conform in content to the label shown in Figure 8? (S4.5.1(e)(2))
(Also, the label should conform to the content of Figure 8.)
Yes-Pass  No-FAIL

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

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

5.1.6 Is the message area at least 30 cm²? (S4.5.1(e)(2)(iii))
Length ___________ cm, Width ___________ cm
Actual message area  ___________ cm²
Yes-Pass  No-FAIL

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

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

5.2.2 Does the label conform in content to the label shown in Figure 7? (S4.5.1(e)(1)(ii))
(Also, the label should conform to the content of Figure 7.)
X Yes-Pass  No-FAIL

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

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

5.2.5 Is the message area at least 30 cm²? (S4.5.1(e)(1)(ii))
Length 12.5 cm, Width 3 cm
Actual message area 38 cm²
X Yes-Pass  No-FAIL
Figure 8a. Sun Visor Label Visible When Visor is in Down Position.

Figure 8b. Sun Visor Label Visible When Visor is in Down Position.
Figure 6c. Sun Visor Label Visible When Visor is In Up Position.

Figure 7. Removable Label on Dash.
WARNING

EVEN WITH ADVANCED AIR BAGS

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

Figure 8. Sun Visor Label Visible when Visor is in Down Position.
This Vehicle is Equipped with Advanced Air Bags

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

Figure 9. Removable Label on Dash.
Figure 11. Sun Visor Label Visible when Visor is in Down Position.
DATA SHEET 6

FMVSS 208 READINESS INDICATOR (S4.5.2)

NHTSA No. C40209 ___________________ Test Date: 04/15/04

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

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement. (11/9/94 legal interpretation to Lawrence F. Hennesberger on behalf of Breed)

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

X.2. Describe the location of the readiness indicator: Lower right corner of instrument cluster

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

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

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

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

REMARKS:
X1. Is the vehicle equipped with an on-off switch that deactivates the air bag installed at the right front outboard seating position?
   - Yes, go to 2
   - No, this sheet is complete

X2. Does the vehicle have any forward-facing rear designated seating positions? (S4.5.4(a))
   - Yes, go to 3
   - No, go to 4

X3. Verification of the lack of room for a child restraint in the rear seat behind the driver's seat. (S4.5.4(b))

X3.1 Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   - N/A - No lumbar adjustment

X3.2 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

X3.3 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

X3.4. 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.

X3.5. Put the seat in its full rearward position. (S16.2.10.3.1)
   - N/A - the seat does not have a fore-aft adjustment

X3.6. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
   - N/A - No seat height adjustment

X3.7 Draw a horizontal reference line on the side of the seat cushion.

X3.8. 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.

X3.9. 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.

X3.10. If seat adjustments, other than fore-aft, are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal.
   - N/A - No adjustments

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

- N/A - No seat back angle adjustment
- Manufacturer's design seat back angle: ______
- Tested seat back-angle: ______

3.12 Is the driver seat a bucket seat?
- Yes, go to 3.12.1 and skip 3.12.2.
- No, go to 3.12.2 and skip 3.12.1.

3.12.1 Bucket seats:

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

Record the width of the seat: ____________________________

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

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

- mm distance
  - less than 720 mm - Pass
  - more than 720 mm - FAIL

Go to 4

3.12.2 Bench seats (including split bench seats):

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

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

- mm distance
  - less than 720 mm - Pass
  - more than 720 mm - FAIL

Go to 4

4. Does the device turn the air bag on and off using the vehicle's Ignition key? (S4.5.4.2)
- Yes - Pass
- No - FAIL

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

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

7. Teillate 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 teillate?
- Yes - Pass, go to 7.3
- No - go to 7.2.2

7.2.2 within 25 mm of the teillate? mm from the edge of the teillate light
- Yes - Pass
- No - FAIL
7.3 Does the telltale remain illuminated while the air bag is turned off? (S4.5.4.3(c)) (Leave the air bag off for 5 minutes.)
   __Yes – Pass
   __No – FAIL

7.4 Is the telltale illuminated while the air bag is turned on? (S4.5.4.3(d))
   __Yes – FAIL
   __No – Pass

7.5 Is the telltale combined with the air bag readiness indicator? (S4.5.9(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
either seat is too small to accommodate a child restraint
   there is a medical condition that must be monitored constantly
   space is not always available in the rear seat
   there is a medical condition that must be monitored constantly
   Medical condition: medical risk causes special risk for passenger
greater risk for harm than with the air bag on

   __Yes – Pass
   __No – FAIL

8.3 Does the owner’s manual contain a warning about the safety consequences of using the on-off switch at other times?
   __Yes – Pass
   __No – FAIL
DATA SHEET 8
LAP BELT LOCKABILITY
Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a)), and that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No. C40209
Test Date: 04/18/04

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

DESIGNATED SEATING POSITION: Right front passenger

__N/A - No retractor is at this position
__N/A - The retractor is an automatic locking retractor ONLY

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

X.2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5(a))
   X Yes; Pass; __No-FAIL

X.3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7.1.1.5(a))
   X Yes; Pass; __No-FAIL

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

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

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

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

X.7.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
   X Yes; Pass; __No-FAIL

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

X.9. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly, (S7.1.1.5(c)(2))
   Measured distance between A and B: 74.8 inches

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

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

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

Measured distance between A and B: 54.0 inches

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

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

Measured distance between A and B: 54.3 inches (S7.1.1.5(c)(6))

X.14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12 = 0.3 inches;

X Yes-Pass; No-FAIL

X.15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8)) 9-13 = 20.5 inches;

X Yes-Pass; No-FAIL

REMARKS:
Figure 5. - Webbing Tension Pull Device

Dimension A - Width of Webbing Plus 1/2 Inch
Dimension B - 1/2 of Dimension A
DATA SHEET 8
LAP BELT LOCKABILITY
Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), and that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No. C40209 ____________________ Test Date: 04/16/04

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

DESIGNATED SEATING POSITION: 2nd Row, Right outboard passenger

__N/A - No retractor is at this position
__N/A - The retractor is an automatic locking retractor ONLY

X1. Record test fore-aft seat position. Fixed (S7.1.1.5 (c)(1)) (Any position is acceptable.)

X2. 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

X3. 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

X4. Buckle the seat belt. (S7.1.1.5(c)(1))

X5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

X6. 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))

X7. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
   X Yes; __ No (If yes, go to 7.1. If no, go to 8.)

X7.1 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

X8. 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))

X9. 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 71.2 _________ inches

X10. Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
11. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

Measured force application angle 10 degrees (spec. 5 - 15 degrees)

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

Measured distance between A and B 58.0 inches

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

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

Measured distance between A and B 58.8 inches (S7.1.1.5(c)(6))

14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12 = 0.6 inches;

X Yes-Pass; __No-FAIL

15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8)) 9-13 = 12.4 inches;

X Yes-Pass; __No-FAIL

REMARKS:
Figure 5. - Webbing Tension Pull Device
DATA SHEET 8
LAP BELT LOCKABILITY
Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a)), and that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No. C40206 Test Date: 04/16/04
Laboratory: TRC Inc. Test Technician(a): Michael S. Postle

DESIGNATED SEATING POSITION: 2nd Row, Left outboard passenger

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

X 1. Record test fore-at seat position. Fixed (S7.1.1.5 (c)(1))
     (Any position is acceptable.)
     X 2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be
     adjusted to forward-facing consist of a locking device that does NOT have to be attached
     by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle.
     (S7.1.1.5 (a))
     X Yes- Pass; ____ No-FAIL
     X 3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be
     adjusted to forward-facing consist of a locking device that does NOT require inverting,
     twisting or deforming of the belt webbing. (S7.1.1.5 (a))
     X Yes- Pass; ____ No-FAIL
     X 4. Buckle the seat belt. (S7.1.1.5(c)(1))
     X 5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
     X 6. Locate a reference point B on the attachment hardware or retractor assembly at the other
     end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
     X 7. Does the vehicle user need to take some action to activate the locking feature on the lap
     belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to
     forward-facing?
     X Yes; ____ No (if yes, go to 7.1. If no, go to 8.)
     X 7.1 Does the vehicle owner's manual include a description in words and/or diagrams
     describing how to activate the locking feature so that the seat belt assembly can tightly
     secure a child restraint system and how to deactivate the locking feature to remove the
     child restraint system. (S7.1.1.5(b))
     X Yes- Pass; ____ No-FAIL
     X 8. Adjust the lap belt or lap belt portion of the seat belt assembly according to any
     procedures recommended in the vehicle owner's manual to activate any locking feature
     so that the webbing between points A and B is at the maximum length allowed by the belt
     system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))
     X 9. Measure and record the distance between points A and B along the longitudinal
     centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly.
     (S7.1.1.5(c)(2))
     Measured distance between A and B __________ inches
     X 10. Readjust the belt system so that the webbing between points A and B is at any length
     that is 5 inches or more shorter than the maximum length of the webbing. (S7.1.1.5(c)(3))
XI.11. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
Measured force application angle 10 degrees (spec. 5 - 15 degrees)

XI.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 63.0 inches

XI.13. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
Record onset rate 25 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
Measured distance between A and B 63.7 inches (S7.1.1.5(c)(5))

XI.14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12= 0.7 inches;
Yes-Pass; No-FAIL

XI.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= 8.8 inches;
Yes-Pass; No-FAIL

REMARKS:
Figure 5. - Webbing Tension Pull Device

Dimension A - Width of Webbing Plus 1/2 Inch
Dimension B - 1/2 of Dimension A
DATA SHEET 8
LAP BELT LOCKABILITY
Passenger cars, trucks, buses, and multipurpose passenger
vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position that can be adjusted to
forward-facing or that is a forward-facing seat, other than the driver’s seat (S7.1.1.5(a), and that
has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No. C40209 Test Data: 04/16/04
Laboratory: TRC inc. Test Technician(s): Michael S. Postle

DESIGNATED SEATING POSITION: 3rd Row, Left outboard passenger

_N/A - No retractor is at this position
_N/A - The retractor is an automatic locking retractor ONLY

X 1. Record test fore-aft seat position. Fixed
   (S7.1.1.5 (c)(1))
   (Any position is acceptable.)
   X 2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be
       adjusted to forward-facing consist of a locking device that does NOT have to be attached
       by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle.
       (S7.1.1.5 (a))
       X Yes-Pass; __ No-FAIL
   X 3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be
       adjusted to forward-facing consist of a locking device that does NOT require inventing,
       twisting or deforming of the belt webbing. (S7.1.1.5 (a))
       X Yes-Pass; __ No-FAIL
   X 4. Buckle the seat belt. (S7.1.1.5(c)(1))
   X 5. Locate a reference point A on the seat belt buckle. (S7.1.1.6(c)(2))
   X 6. Locate a reference point B on the attachment hardware or retractor assembly at the other
       end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
   X 7. Does the vehicle user need to take some action to activate the locking feature on the lap
       belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to
       forward-facing?
       X Yes; __ No (If yes, go to 7.1. If no, go to 8.)
   X 7.1 Does the vehicle owner’s manual include a description in words and/or diagrams
       describing how to activate the locking feature so that the seat belt assembly can tightly
       secure a child restraint system and how to deactivate the locking feature to remove the
       child restraint system. (S7.1.1.5(b))
       X Yes-Pass; __ No-FAIL.
   X 8. Adjust the lap belt or lap belt portion of the seat belt assembly according to any
       procedures recommended in the vehicle owner’s manual to activate any locking feature
       so that the webbing between points A and B is at the maximum length allowed by the
       belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))
   X 8.1 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 76.5 inches
   X 10. Readjust the belt system so that the webbing between points A and B is at any length
       that is 5 inches or more shorter than the maximum length of the webbing.
       (S7.1.1.6(c)(3))
X.11. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane 10 degrees parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

Measured force application angle 10 degrees (spec. 5 - 15 degrees)

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

Measured distance between A and B 83.2 inches

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

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

Measured distance between A and B 84.0 inches (S7.1.1.5(c)(5))

X.14. Subtract the measurement in 13 from the measurement in 12. Is the difference 2 inches or less? (S7.1.1.5(c)(7)) 13-12= 0.8 inches;

X Yes-Pass; No-FAIL

X.15. Subtract the measurement in 9 from the measurement in 13. Is the difference 3 inches or more? (S7.1.1.5(c)(8)) 6-13= 12.5 inches;

X Yes-Pass; No-FAIL

REMARKS:
Figure 5. - Webbing Tension Pull Device

Dimension A - Width of Webbing Plus 1/2 Inch
Dimension B - 1/2 of Dimension A

*Insert Webbing to Rest Against This Surface*

1/4 inch Diameter (Steel)

*Direction of Pull*
DATA SHEET 8
LAP BELT LOCKABILITY
Passenger cars, trucks, buses, and multipurpose passenger
vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position that can be adjusted to
forward-facing or that is a forward-facing seat, other than the driver’s seat (S7.1.1.5(a)), and that
has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No. C40209 ___________________________ Test Date: 04/16/04

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

DESIGNATED SEATING POSITION: 3rd Row, Center passenger

_N/A - No retractor is at this position
_N/A - The retractor is an automatic locking retractor ONLY

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

X.2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be
adjusted to forward-facing consist of a locking device that does NOT have to be attached
by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle.
(S7.1.1.5 (a))
_X Yes-Pass; __No-FAIL

X.3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be
adjusted to forward-facing consist of a locking device that does NOT require inverting,
twisting or deforming of the belt webbing. (S7.1.1.5 (a))
_X Yes-Pass; __No-FAIL

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

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

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

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

X.7.1 Does the vehicle owner’s manual include a description in words and/or diagrams
describing how to activate the locking feature so that the seat belt assembly can tightly
secure a child restraint system and how to deactivate the locking feature to remove the
child restraint system. (S7.1.1.5(b))
_X Yes-Pass; __No-FAIL

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

X.9. Measure and record the distance between points A and B along the longitudinal
centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly.
(S7.1.1.5(c)(2))
Measured distance between A and B _63.2_________ inches

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

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

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

Measured distance between A and B: 53.2 inches

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

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

Measured distance between A and B: 54.7 inches (S7.1.1.5(c)(6))

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

13-12 = 1.5 inches; Yes-Pass; No-FAIL

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

9-13 = 8.5 inches; Yes-Pass; No-FAIL

REMARKS:
Insert Webbing to Rest Against This Surface

1/4 Inch Diameter (Steel)

Dimension A

Dimension B

Direction of Pull

Dimension A - Width of Webbing Plus 1/2 Inch
Dimension B - 1/2 of Dimension A

**Figure 5. - Webbing Tension Pull Device**
DATA SHEET 8
LAP BELT LOCKABILITY
Passenger cars, trucks, buses, and multipurpose passenger
vehicles with a GWVR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for each designated seating position that can be adjusted to
forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a)), and that
has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No. C40269

Test Date: 04/15/04

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

DESIGNATED SEATING POSITION: 3rd Row, Right outboard passenger

_N/A - No retractor at this position
_N/A - The retractor is an automatic locking retractor ONLY

X1. Record test fore-aft seat position. Fixed (S7.1.1.5 (c)(1))
(Any position is acceptable.)

X2. 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

X3. 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

X4. Buckle the seat belt. (S7.1.1.5(c)(1))

X5. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

X6. 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))

X7. Does the vehicle user need to take some action to activate the locking feature on the lap
belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to
forward-facing?
_X Yes; ___ No (If yes, go to 7.1. If no, go to 8.)

X7.1 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

X8. 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))

X9. 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 72.2 inches

X10. Readjust the belt system so that the webbing between points A and B is at any length
that is 5 inches or more shorter than the maximum length of the webbing.
(S7.1.1.5(c)(3))
X.11. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c))

Measured force application angle 10 degrees (spec. 5 - 15 degrees)

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

Measured distance between A and B 60 inches

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

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

Measured distance between A and B 60 inches

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

13-12 = 0 inches; Yes-Pass; No-FAIL

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

9-13 = 11 inches; Yes-Pass; No-FAIL

REMARKS:
Figure 5. - Webbing Tension Pull Device

Dimension A - Width of Webbing Plus 1/2 Inch
Dimension B - 1/2 of Dimension A
DATA SHEET 9

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

NHTSA No. C40208 ____________________  Test Date: 04/16/04

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

X1. The occupant is in the driver's seat.
X2. The seat belt is in the stowed position.
X3. The key is in the "on" or "start" position.
X4. The time duration of the audible signal beginning with key "on" or "start" is __________ seconds.
X5. The occupant is in the driver's seat.
X6. The seat belt is in the stowed position.
X7. The key is in the "on" or "start" position.
X8. The time duration of the warning light beginning with key "on" or "start" is __________ seconds.
X9. The occupant is in the driver's seat.
X10. The seat belt is in the latched position and with at least 4 inches of belt webbing extended.
X11. The key is in the "on" or "start" position.
X12. The time duration of the audible signal beginning with key "on" or "start" is __________ seconds.
X13. The occupant is in the driver's seat.
X14. The seat belt is in the latched position and with at least 4 inches of belt webbing extended.
X15. The key is in the "on" or "start" position.
X16. The time duration of the warning light beginning with key "on" or "start" is __________ seconds.
X17. Complete the following table with the data from 4, 8, 12 and 16 to determine which option is used

<table>
<thead>
<tr>
<th>S7.3 (a)(1)</th>
<th>Belt latched &amp; Key on or start</th>
<th>Item 16 <strong>0</strong></th>
<th>0 seconds*</th>
<th>Item 12 <strong>0</strong></th>
<th>0 seconds**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Belt stowed &amp; Key on or start</td>
<td>Item 8 <strong>62</strong></td>
<td>60 seconds</td>
<td>Item 4 <strong>6</strong></td>
<td>4 to 8 seconds</td>
</tr>
<tr>
<td>S7.3 (a)(2)</td>
<td>Belt latched &amp; Key on or start</td>
<td>Item 16 <strong>0</strong></td>
<td>4 to 8 seconds</td>
<td>Item 12 <strong>0</strong></td>
<td>0 seconds**</td>
</tr>
<tr>
<td></td>
<td>Belt stowed &amp; Key on or start</td>
<td>Item 8 <strong>62</strong></td>
<td>4 to 8 seconds</td>
<td>Item 4 <strong>6</strong></td>
<td>4 to 8 seconds</td>
</tr>
</tbody>
</table>

* 49 USC § 30124 does NOT allow an audible signal to operate for more than 0 seconds.
** 0 seconds means the light or audible signal are NOT permitted to operate under these conditions. See 7/12/00 interpretation to Patrick Fisher of Hogan and Hartson
X.18. The seat belt warning system meets the requirements of (manufacturers may comply with either section)
  X. S7.3 (a)(1)
  ___ S7.3 (a)(2)
  ___ FAIL — Does NOT meet the requirements of either option

X.19. Note wording of visual warning: (S7.3(a)(1) and S7.3(a)(2))
  ___ Fasten Seat Belts
  ___ Fasten Belts
  X. Symbol 101
  ___ FAIL — Does not use any of the above wording or symbol
DATA SHEET 10

BELT CONTACT FORCE (S7.4.3)

NHTSA No. C40208

Test Date: 04/19/04

Laboratory: TRC Inc.

Test Technician(s): Michael S. Postle

DESIGNATED SEATING POSITION: Driver

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

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

X.3. Position the seat's adjustable lumber supports so that the lumber support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   X ___ N/A - No lumber adjustment

X.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)
   X ___ N/A - No additional support adjustment

X.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)
   X ___ N/A - No independent fore-aft seat cushion adjustment

X.6. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
   X ___ N/A - No independent seat cushion height adjustment.

X.7. Put the seat in its full rearward position. (S16.2.10.3.1)
   ___ N/A - the seat does not have a fore-aft adjustment

X.8. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
   X ___ N/A - No seat height adjustment


X.10. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
   ___ N/A - The seat does not have a fore-aft adjustment

X.11. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
   X Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat:

X.12. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
   X ___ N/A - No adjustments
   Reference line angle as tested
X.13. 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 ___18.0___
   Tested seat back angle ___18.0___
X.14. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.
X.15. Fasten the seat belt latch.
X.16. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.
X.17. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.
   Contact force ___0.11___ lb.
   ___0.0 to 0.7 pounds – Pass
   ___greater than 0.7 pounds – FAIL
DATA SHEET 10

BELT CONTACT FORCE (S7.4.3)

NHTSA No. C40209  Test Date: 04/20/04

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

DESIGNATED SEATING POSITION: Right front passenger

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

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

X.3. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or default adjustment position. (S8.1.3)
   X. N/A - No lumbar adjustment

X.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)
   X. N/A - No additional support adjustment

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

X.6. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
   X. N/A - No independent seat cushion height adjustment.

X.7. Put the seat in its full rearward position. (S16.2.10.3.1)
   X. N/A - the seat does not have a fore-aft adjustment

X.8. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
   X. N/A - No seat height adjustment


X.10. 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 these of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
   X. N/A - The seat does not have a fore-aft adjustment

X.11. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
   X. Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the mid-point. Describe the location of the seat: __________

X.12. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
   X. N/A - No adjustments
   Reference line angle as tested ________
X.13. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (§4.5.4.1(b) and §8.1.3)
   _N/A_ – No seat back angle adjustment
   Manufacturer's design seat back angle: 19.0
   Tested seat back angle: 19.0

X.14. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X.15. Fasten the seat belt latch.

X.16. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.

X.17. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (§10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.
   Contact force: 0.83 lb.
   _X_ 0.0 to 0.7 pounds = Pass
   _X_ greater than 0.7 pounds = FAIL.
DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

NHTSA No. C40209  Test Date: 04/20/04

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

DEVELOPMENT SEATING POSITION: 2nd Row, Right outboard passenger

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

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

X.3. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
  X N/A - No lumbar adjustment

X.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)
  X N/A - No additional support adjustment

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

X.6. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
  X N/A - No independent seat cushion height adjustment.

X.7. Put the seat in its full rearward position. (S16.2.10.3.1)
  X N/A - the seat does not have a fore-aft adjustment

X.8. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
  X N/A - No seat height adjustment


X.10. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
  X N/A - The seat does not have a fore-aft adjustment

X.11. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
  X Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the midpoint. Describe the location of the seat: Fixed

X.12. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
  X N/A - No adjustments
  Reference line angle as tested
X.13. 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 SB.1.3)

  _N/A_ – No seat back angle adjustment
  Manufacturer's design seat back angle  \[22.5\]
  Tested seat back angle  \[22.5\]

X.14. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X.15. Fasten the seat belt latch.

X.16. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.

X.17. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

  Contact force  \[0.40\] lb.
  \[X\] 0.0 to 0.7 pounds - Pass
  greater than 0.7 pounds - FAIL
DATA SHEET 10

BELT CONTACT FORCE (S7.4.3)

NHTSA No. C40209 Test Date: 04/20/04

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

DESIGNATED SEATING POSITION: 2nd Row, Left outboard passenger

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

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

X.3. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   X N/A - No lumbar adjustment

X.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)
   X N/A - No additional support adjustment

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

X.6. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
   X N/A - No independent seat cushion height adjustment

X.7. Put the seat in its full rearward position. (S16.2.10.3.1)
   X N/A - the seat does not have a fore-aft adjustment

X.8. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
   X N/A - No seat height adjustment


X.10. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft seat positions. Mark the side of the seat and a reference position directly below on a part of the vehicle that does not adjust. For manual seats, move the seat forward one detent at a time and mark each detent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
   X N/A - The seat does not have a fore-aft adjustment

X.11. 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. (S6.1.2)
   Mld position. If there is no mid position, put the seat in the closest adjustment position to the rear of the mid-point. Describe the location of the seat: Fixed

X.12. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
   X N/A - No adjustments

Reference line angle as tested
X.13. 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    22.5
   Tested seat back angle                  22.5

X.14. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X.15. Fasten the seat belt latch.

X.16. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.

X.17. Locate the point where the centerline of the upper torso belt webbing crosses the mid-sagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.
   Contact force    0.24    lb.
   __ 0.0 to 0.7 pounds - Pass
   __ greater than 0.7 pounds - FAIL
DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

NHTSA No. C40203
Test Date: 04/20/04

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

DESIGNATED SEATING POSITION: 3rd Row, Left outboard passenger

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.

X1. Does the vehicle incorporate a webbing tension-relieving device?
   ___ Yes (this form is complete)  
   X No (continue with this check sheet)

X3. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest,
   retracted or deflated adjustment position. (S8.1.3)
   X N/A – No lumbar adjustment

X4. 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

X5. 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

X6. If the seat cushion height adjusts independent of the seat back, set this adjustment to the
   full down position. (S16.2.10.3.1)
   X N/A – No Independent seat cushion height adjustment

X7. Put the seat in its full rearward position. (S16.2.10.3.1)
   X N/A – The seat does not have a fore-aft adjustment

X8. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
   X N/A – No seat height adjustment

X9. Draw a horizontal reference line on the side of the seat cushion.

X10. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft
    seat positions. Mark the side of the seat and a reference position directly below on a part
    of the vehicle that does not adjust. For manual seats, move the seat forward one detent
    at a time and mark each detent as was done for the full rearward position. For power
    seats, mark only the full rearward, middle, and full forward positions. Label three of the
    positions with the following: F for full forward, M for mid-position (if there is no mid
    position, label the closest adjustment position to the rear of the mid-point), and R for full
    rearward.
    X N/A – The seat does not have a fore-aft adjustment.

X11. Using only the controls that change the seat in the fore-aft direction, place the seat in the
    full rearward position and then place the seat in the middle fore-aft position for this test.
    (S8.1.2)
    Mid position. If there is no mid position, put the seat in the closest adjustment position
    to the rear of the midpoint. Describe the location of the seat: Fixed

X12. If seat adjustments other than fore-aft are present and the horizontal reference line is no
    longer horizontal, use those adjustments to maintain the reference line as closely as
    possible to the horizontal. (S16.2.10.3.2.1)
    X N/A – No adjustments

Reference line angle as tested

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S040428
X.13. 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 18.4
   Tested seat back angle 18.4

X.14. Position the test dummies according to dummy position placement instructions in
Appendix B and include the positioning check sheets.

X.15. Fasten the seat belt latch.

X.16. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing,
whichever is less, from the retractor and then release it, allowing the belt webbing to
return to the dummy's chest.

X.17. Locate the point where the centerline of the upper torso belt webbing crosses the
midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches
from the dummy's chest and release until it is within one inch from the dummy's chest.
(S10.8) Using a force measuring gage with a full scale range of no more than 1.5
pounds, measure the contact force perpendicular to the dummy's chest exerted by the
belt webbing.
   Contact force 0.38 lb.
   X 0.0 to 0.7 pounds - Pass
   ___ greater than 0.7 pounds - FAIL
DATA SHEET 10
BELT CONTACT FORCE (57.4.3)

NHTSA No. C40209 Test Date: 04/20/04

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

DESIGNATED SEATING POSITION: 3rd Row, Center passenger

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.

X1. Does the vehicle incorporate a webbing tension-relieving device?
   Yes (this form is complete)
   X No (continue with this check sheet)

X3. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   X N/A – No lumbar adjustment

X4. 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

X5. 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

X6. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
   X N/A – No independent seat cushion height adjustment

X7. Put the seat in its full rearward position. (S16.2.10.3.1)
   X N/A – the seat does not have a fore-aft adjustment

X8. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)
   X N/A – No seat height adjustment

X9. Draw a horizontal reference line on the side of the seat cushion.

X10. 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 dent in at a time and mark each dent as was done for the full rearward position. For power seats, mark only the full rearward, middle, and full forward positions. Label three of the positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
   X N/A – The seat does not have a fore-aft adjustment.

X11. Using only the controls that change the seat in the fore-aft direction, place the seat in the full rearward position and then place the seat in the middle fore-aft position for this test. (S8.1.2)
   X Mid position. If there is no mid position, put the seat in the closest adjustment position to the rear of the mid-point. Describe the location of the seat: Fixed

X12. If seat adjustments other than fore-aft are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal. (S16.2.10.3.2.1)
   X N/A – No adjustments

Reference line angle as tested

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13. 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  __18.4___
   Tested seat back angle  __18.4___
14. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.
15. Fasten the seat belt latch.
16. 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.
17. Locate the point where the centerline of the upper torse belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.
   Contact force  __0.12___ lb.
   __X__ 0.0 to 0.7 pounds - Pass
   __greater than 0.7 pounds - FAIL
DATA SHEET 10

BELT CONTACT FORCE (S7.4.3)

NHTSA No. C40208

Test Date: 04/20/04

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

DESIGNATED SEATING POSITION: 2nd Row, Right outboard passenger

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

X.1. Does the vehicle incorporate a webbing tension-relieving device?

Yes (this form is complete)

X. No (continue with this check sheet)

X.3. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest,
retracted or deflated adjustment position. (S8.1.3)

X. N/A - No lumbar adjustment

X.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)

X. N/A - No additional support adjustment

X.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)

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

X.6. If the seat cushion height adjusts independent of the seat back, set this adjustment to the
full down position. (S16.2.10.3.1)

X. N/A - No independent seat cushion height adjustment

X.7. Put the seat in its full rearward position. (S16.2.10.3.1)

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

X.8. If the seat height is adjustable, put it in the full down position. (S16.2.10.3.1)

X. N/A - No seat height adjustment


X.10. Using only the controls that change the seat in the fore-aft direction, mark the fore-aft
seat positions. Mark the side of the seat and a reference position directly below on a part
of the vehicle that does not adjust. For manual seats, move the seat forward one detent
at a time and mark each detent as was done for the full rearward position. For power
seats, mark only the full rearward, middle, and full forward positions. Label three of the
positions with the following: F for full forward, M for mid-position (if there is no mid
position, label the closest adjustment position to the rear of the mid-point), and R for full
rearward.

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

X.11. Using only the controls that change the seat in the fore-aft direction, place the seat in the
full rearward position and then place the seat in the middle fore-aft position for this test.
(S8.1.2)

X. Mid position. If there is no mid position, put the seat in the closest adjustment position
in the rear of the mid-point. Describe the location of the seat. Fixed

X.12. If seat adjustments other than fore-aft are present and the horizontal reference line is no
longer horizontal, use those adjustments to maintain the reference line as closely as
possible to the horizontal. (S16.2.10.3.2.1)

X. N/A - No adjustments

Reference line angle as tested
X.13. 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 SB.1.3)

___ N/A – No seat back angle adjustment
Manufacturer's design seat back angle 18.4
Tested seat back angle 18.4

X.14. Position the test dummies according to dummy position placement instructions in Appendix B and include the positioning check sheets.

X.15. Fasten the seat belt latch.

X.16. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.

X.17. 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. (S10.3) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.

Contact force 0.94 lb.
X 0.0 to 0.7 pounds - Pass
___ greater than 0.7 pounds - FAIL
DATA SHEET 11

LATCHPLATE ACCESS (S7.4.4)

NHTSA No. C40209 Test Date: 04/16/04

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

DESIGNATED SEATING POSITION: Driver

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

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

X.2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (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. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
   X N/A - No independent seat cushion height adjustment

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

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

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

X.8. Using only the controls that change the seat in the fore-aft direction, mark the fore-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 these three positions with the following: F for full forward, M for mid-position (if there is no mid position, label the closest adjustment position to the rear of the mid-point), and R for full rearward.
   ___ N/A - The seat does not have a fore-aft adjustment.

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

X.10. If seat adjustments, other than fore-aft, are present and the horizontal reference line is no longer horizontal, use those adjustments to maintain the reference line as closely as possible to the horizontal.
   X N/A - No adjustments
   Reference line angle as tested
X.11. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (§4.5.4.1 (b) and §8.1.3)
  N/A – No seat back angle adjustment
  Manufacturer's design seat back angle: 18.0
  Tested seat back angle: 18.0

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

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

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

X.15. Place the latch plate in the stowed position.

X.16. Extend inboard reach string in front of the dummy and then backward and outboard to the latch plate to generate an arc of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?
  X Yes - Pass NO

X.17. Extend outboard reach string in front of the dummy and then backward and outboard to the latch plate to generate an arc of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?
  X Yes - Pass NO

X.18. Is the latch plate within the inboard (Item 17) or outboard (Item 16) reach envelope?
  X Yes - Pass NO - FAIL

X.19. Using the clearance test block, specified in Figure 4, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?
  X Yes - Pass NO - FAIL
Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart E Test Device

Attach the Inboard Reach String (18 1/4'' long) at the base of the head on centerline.

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

A. Using flexible tape measure 8'' from back centerline 10-1/4'' from front centerline to find anchor point below arm pit on torso sheath.
Figure 4—USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS
DATA SHEET 11

LATCHPLATE ACCESS (S7.4.4)

NHTSA No. C40209 Test Date: 04/16/04

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

DESIGNATED SEATING POSITION: Right front passenger

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

X.1. Position the seat's adjustable lumbar support so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S1.1.3)
   X N/A - No lumbar adjustment

X.2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (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. If the seat cushion height adjusts independent of the seat back, set this adjustment to the full down position. (S16.2.10.3.1)
   X N/A - No independent seat cushion height adjustment

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

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

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

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

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

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

81 8040428
X.11. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (§4.5.4.1 (b) and §8.1.3)

___ N/A – No seat back angle adjustment
Manufacturer's design seat back angle  __18.0____
Tested seat back angle  __18.0____

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

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

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

X.14. Attach the outboard reach string to the torso sheath following the instructions on Figure 3.

X.15. Place the latch plate in the stowed position.

X.16. 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

X.17. 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

X.18. Is the latch plate within the inboard (Item 17) or outboard (Item 18) reach envelope?
   ___ Yes - Pass ___ NO - FAIL

X.19. Using the clearance test block, specified in Figure 4, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?
   ___ Yes - Pass ___ NO - FAIL
Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibibility Using Subpart F Test Device
Figure 4—USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS

(Note corners are rounded off to reduce snagging.)
DATA SHEET 12
SEAT BELT RETRACTION (S7.4.5)

NHTSA No. C40208  Test Date: 04/19/04
Laboratory: TRC inc.  Test Technician(s): Michael S. Postle

DESIGNATED SEATING POSITION: Driver

GVWR: 6660 lbs

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

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

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S6.1.3)
   X N/A - No lumbar adjustment

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

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

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

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

X 7. If the seat height is adjustable, put it in the full down position. (S6.1.2)
   X N/A - No seat height adjustment

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

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

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

85  S040428
X11. 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: 18.0

Tested seat back angle: 18.0

X12. 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

X13. 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 anchorages

Manufacturer's specified anchorage position: 1 up from full down

Tested anchorage position: 1 up from full down

X14. Is the driver seat a bucket seat?

Yes, go to 14.1 and skip 14.2.

No, go to 14.2 and skip 14.1.

X14.1 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: 20.8 inches

Record the distance from the edge of the seat to Plane B: 10.4 inches

X14.2 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

X15. Stow outboard armrests that are capable of being stowed. (S7.4.5)

X16. 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)

X17. Rest the thigh on the seat cushion.

X18. 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)

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

(S10.4.2.1)

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

(S10.4.2.1)

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

X19. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.

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

X20. 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 ice board.

X21. Fasten the seat belt around the dummy.
X 22. Remove all slack from the lap belt portion. (S10.9)
X 23. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)
X 24. Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
    ___4 pound load applied
X 25. Is the belt system equipped with a tension relieving device?
    ___Yes, continue
    ___X No, go to 26
    25.1 Introduce the maximum amount of slack into the upper torso belt that is recommended by the vehicle manufacturer in the vehicle owner's manual. (S10.9). Go to 25.
X 26. Check the statement that applies to this test vehicle:
    26.1 The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released. ___Pass
    26.2 The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released. ___X Pass
    26.3 Neither A or B apply. ___FAIL
X 27. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
    ___X Yes - Pass
    ___X No - FAIL
X 28. If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?
    ___X N/A
    ___Yes - Pass ___NO - FAIL.
DATA SHEET 12
SEAT BELT RETRACTION (S7.4.5)

NHTSA No. C40208                                Test Date: 04/19/04
Laboratory: TRC Inc.                               Test Technician(s): Michael S. Postle
DESIGNATED SEATING POSITION: Right front passenger
GVWR: 5680 lbs

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

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

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

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

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

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

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

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

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

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

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

88
X11. The seat back angle, if adjustable, is set at the manufacturer's nominal design sitting 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 = 18.0°
Tested seat back angle = 18.0°

X12. 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

X13. Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design sitting position for a 50th percentile adult male occupant (S8.1.3)

N/A — No adjustable upper seat belt anchorage
Manufacturer's specified anchorage position = 1 up from full down
Tested anchorage position = 1 up from full down

X14. Is the driver seat a bucket seat?

X Yes, go to 14.1 and skip 14.2.

No, go to 14.2 and skip 14.1.

X14.1 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 = 20.9 inches

X14.2 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 =

X15. Stow outboard emblems that are capable of being stowed. (S7.4.6)

X16. 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)

X17. Rest the thighs on the seat cushion.

X18. 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 1990). (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)

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

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

X19. Set the distance between the outboard knees cleats flange surfaces at 10.8 inches.

X measured distance (10.8 inches) (S10.5)

X20. 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.

X21. Fasten the seat belt around the dummy.
X 22. Remove all slack from the lap belt portion. (S10.8)
X 23. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)
X 24. Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
__4__ pound load applied
X 25. Is the belt system equipped with a tension relieving device?
__Yes, continue
X No, go to 26
X 26. Check the statement that applies to this test vehicle:
__26.1__ The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released. __Pass
X 26.2__ The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released. __X Pass
X 26.3__ Neither A or B apply. __FAIL
X 27. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
__X Yes - Pass
X N/A
X 28. If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?
__X N/A
__Yes -- Pass __NO -- FAIL
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No. C40209

Test Date: 04/19/04

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

DESIGNATED SEATING POSITION: Driver

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

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

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

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

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

5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))
   _Yes – Pass
   _NO - FAIL
   Identify the part(s) on top or above the seat.
   _seat belt latch plate; _buckles; _seat belt webbing

6. Are the remaining two seat belt parts accessible under normal conditions?
   _Yes – Pass
   _NO - FAIL

7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
   _Yes - Pass _NO - FAIL

8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
   _Yes - Pass _NO - FAIL

9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
   _Yes - Pass _NO - FAIL

10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
    _Yes - Pass _NO - FAIL
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No. C40203

Test Date: 04/19/04

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

DESIGNATED SEATING POSITION: Right front passenger

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

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

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

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

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

X.5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (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

X.6. Are the remaining two seat belt parts accessible under normal conditions?
   ___Yes - Pass
   ___NO - FAIL

X.7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unatched. (S7.4.6.2)
   ___Yes - Pass ___NO - FAIL

X.8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
   ___Yes - Pass ___NO - FAIL

X.9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
   ___Yes - Pass ___NO - FAIL

X.10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
   ___Yes - Pass ___NO - FAIL

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

NHTSA No. C40238
Test Date: 04/19/04

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

DESIGNATED SEATING POSITION: 2nd Row, Right outboard passenger

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

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

2. Is the seat removable? (S7.4.6.1(b))
   X Yes; this form is complete
   __No; got to 3

3. Is the seat moveable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
   __Yes; this form is complete
   __No; got to 4

4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
   __Yes; go to 5.
   __No; this form is complete.

5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))
   __Yes - Pass
   __NO - FAIL

Identify the part(s) on top or above the seat.
   __seat belt latch plate; __buckle; __seat belt webbing

6. Are the remaining two seat belt parts accessible under normal conditions?
   __Yes - Pass
   __NO - FAIL.

7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unattached. (S7.4.6.2)
   __Yes - Pass __NO - FAIL

8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
   __Yes - Pass __NO - FAIL

9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
   __Yes - Pass __NO - FAIL

10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
    __Yes - Pass __NO - FAIL.
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No. C40209
Test Date: 04/19/04

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

DESIGNATED SEATING POSITION: 2nd Row, Left outboard passenger

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

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

X.2. Is the seat removable? (S7.4.6.1 (b))
   X Yes; this form is complete
   _No; got to 3

_3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1 (b))
   _Yes; this form is complete
   _No; got to 4

_4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1 (a))
   _Yes; go to 5.
   _No; this form is complete.

_5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1 (a))
   _Yes – Pass
   _NO – FAIL

   Identify the part(s) on top or above the seat,
   _seat belt latch plate; _buckle; _seat belt webbing

_6. Are the remaining two seat belt parts accessible under normal conditions?
   _Yes – Pass
   _NO – FAIL

_7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
   _Yes – Pass _NO – FAIL

_8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt 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 and of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
   _Yes – Pass _NO – FAIL
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No. C40206 Test Date: 04/19/04

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

DESIGNATED SEATING POSITION: 3rd Row, Left outboard passenger

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

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

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

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

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

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

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

7. The buckle and latch plate do not pass through the guides or constricts 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

8. The buckle and latch plate do not pass through the guides or constricts 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

9. The buckle and latch plate do not pass through the guides or constricts 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

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

95  S040428
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.8)

NHTSA No. C40209 Test Date: 04/19/04

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

DEPRIZEE AT SEATING POSITION: 3rd Row, Center passenger

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.

X1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
   ___ Yes; this form is complete
   __X No; goto 2

X2. Is the seat removable? (S7.4.6.1(b))
   ___ Yes; this form is complete
   __X No; goto 3

X3. 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; goto 4

X4. 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.

X5. 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

X6. Are the remaining two seat belt parts accessible under normal conditions?
   ___ Yes - Pass
   ___ NO - FAIL

X7. 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

X8. 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

X9. 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

X10. 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

96 S040428
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No. C0209.2004 Test Date: 04/19/04

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

DESIGNATED SEATING POSITION: 3rd Row, Right outboard passenger

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.

X1. is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1(b))
   __Yes; this form is complete
   X No; got to 2

X2. Is the seat removable? (S7.4.6.1(b))
   __Yes; this form is complete
   X No; got to 3

X3. 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))
   X Yes; this form is complete
   __No; got to 4

4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
   __Yes; go to 5.
   __No; this form is complete.

5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))
   __Yes - Pass
   __NO - FAIL

   Identify the part(s) on top or above the seat.
   __seat belt latch plate; __ buckle; __ seat belt webbing

6. Are the remaining two seat belt parts accessible under normal conditions?
   __Yes - Pass
   __NO - FAIL

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

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

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

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

Photographs
Figure A-1 Pre-Test Front View of Test Vehicle Mounted to Sled
Figure A-2 Pre-Test Left Side View of Test Vehicle Mounted to Sled
Figure A-3 Pre-Test Right Side View of Test Vehicle Mounted to Sled
Figure A-6 Pre-Test Driver Dummy Position View with Door Open
Figure A-7  Post-Test Driver Dummy Position View with Door Open
Figure A-8  Pre-Test Driver Seat Track Position View
Figure A-15 Post-Test Passenger Seat Track Position View
Figure A-17 Post-Test Passenger Dummy Position Front View
Figure A-23  Post-Test Passenger Dummy Removed from Vehicle Overall View
Appendix B

Data Plots
C40209 / 2004 FORD FREESTAR
DRIVER PRIMARY AIRBAG EVENT
FMVSS 208 SLED TEST

TRC NUMBER: S040428
TEST NUMBER: S040428

VOLTAGE (V x 10^-2)

TIME (NS)

CHANNEL: DABET1
FILTER: CH. CLASS 1000

PEAK DATA: 1.00 V @ 20.16 NS; 0.00 V @ -20.00 NS
C10289 / 2001 FORD FREESTAR
DRIVER HEAD Y-AXIS ACCELERATION
FMVSS 208 SLED TEST

TRC NUMBER: S040428
TEST NUMBER: S040428

ACCELERATION (g x 10^-1)

TIME (NS)

CHANNEL: HEDY9
FILTER: CH. CLASS 1B00
PEAK DATA: 15.34 G @ 128.48 MS; -4.22 G @ 159.92 MS
C10289 / 2004 FORD FREESTAR
DRIVER CHEST Z-AXIS ACCELERATION
FMVSS 208 SLED TEST

TRC NUMBER: S040428
TEST NUMBER: S040428

ACCELERATION (G x 10^-1)

B-33

CHANNEL: CSTZC1  FILTER: CH. CLASS 180

TIME (MS)

-20  10  40  70  100  130  160  190  220  250  280  310

PEAK DATA: 14.46 G @ 106.88 MS; -6.66 G @ 71.12 MS
C40209 / 2001 FORD FREESTAR
DRIVER CHEST RESULTANT ACCELERATION
FMVSS 208 SLED TEST
TEST NUMBER: S040428

ACCELERATION (g X 10^-1)

TIME (MS)

CHANNEL: CSTRG1  FILTER: CH. CLASS 180  PEAK DATA: 32.13 G @ 101.92 MS; 0.00 G @ -9.44 MS
C40283 / 2001 FORD FREESTAR
DRIVER CHEST DEFLECTION
FMYS 200 SLED TEST

TRC NUMBER: S040428F
TEST NUMBER: S040428

CHANNEL: C51XD1 FILTER: CH. CLASS 600
PEAK DATA: 0.01 IN @ 48.88 MS; -0.93 IN @ 115.04 MS

DISPLACEMENT [IN X 10^-2]

TIME [MS]

-140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140
C10289 / 2001 FORD FREESTAR

RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

CHANNEL: HEDY02 FILTER: CH. CLASS 1000

PEAK DATA: 3.83 G @ 143.52 MS; -15.46 G @ 108.16 MS

TEST NUMBER: S040428F

FMVSS 208 SLED TEST
C40209 / 2004 FORD FREESTAR
RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE
FMVSS 208 SLED TEST

FORCE (N x 10^6)

-312 -280 -250 -220 -190 -160 -130 -100 -70 -40 -10 10 40 70 100

TIME [MS]

-20 10 40 70 100 130 160 190 220 250 280 310

CHANNEL: NEKZF2    FILTER: CH. CLASS 1000
PEAK DATA: 1642.19 N @ 171.28 MS, -2972.61 N @ 110.48 MS

TEST NUMBER: S040420

TRC NUMBER: S040428F
C10299 / 2001 FORD FREESTAR
RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS
FMYS 208 SLED TEST

TEST NUMBER: 5040428

TRC NUMBER: 5040428

CHANNEL: NEXXIM
FILTER: CH. CLASS 600

PEAK DATA: 8.61 N.M @ 139.52 MS; -9.70 N.M @ 177.60 MS
C10289 / 2001 FORD FREESTAR
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE
FMVSS 208 SLED TEST

TRC NUMBER: S04012BF
TEST NUMBER: S040428

FORCED (LBF X 10³)

TIME (MS)

CHANNEL: RFNZF2
FILTER: CH. CLASS 600

PEAK DATA: 83.51 LBF @ 200.96 MS, -966.24 LBF @ 100.00 MS
Appendix C

Manufacturer's Vehicle Information
January 9, 2004

Mr. Harry Thompson, Chief
Vehicle Division
Office of Vehicle Safety Compliance
National Highway Traffic Safety Administration
400 Seventh Street, S. W.
Washington, DC 20590

Dear Mr. Thompson:

Subject: FMVSS 208 "Occupant Crash Protection" 2004 Model Year Freestar

Reference: NVT-221CCA/CA-208-031018-H

This is the Ford Motor Company (Ford) response to your October 22, 2003 letter requesting information for possible agency compliance surveillance testing of a 2004 Ford Freestar vehicle (subject vehicle) to the requirements of Federal Motor Vehicle Safety Standard (FMVSS) No. 208, "Occupant Crash Protection." For the agency's convenience, all pertinent photographs for the test reports contained in this response are being provided on a computer CD.

We listed each request for information followed by our response to it below:

Request 1: Restraint System Information

1.1 Describe the difference between the MY 2004 air bag restraint system and the 2003 system.
1.2 Describe what other restraint system changes have been made.
1.3 Describe other vehicle changes that may affect FMVSS 208 performance.
1.4 Describe any features that may affect occupant protection performance with respect to children and out of position occupants.
1.5 State whether the vehicle is equipped with a FMVSS 208 air bag on-off switch for the passenger frontal air bag.

Answer:

1.1: The new 2004 Ford Freestar is a major model change from the 2003 Ford Windstar that features an all-new vehicle interior as well as an all-new flexible seating system. For 2004, there is a new driver air bag assembly with a new thermoplastic cover and floating horn.
assembly, with revised dual stage inflators with a variable time delay. Autoliv continues as
the supplier for the driver air bag system. The passenger side frontal air bag is also new
for 2004 and incorporates a new dual stage inflator with variable time delay along with a
hybrid stored-gas inflator system. The air bag cover has been changed from a
thermoplastic cover to a seamless integrated velcro foam cover. The passenger air bag in
the subject vehicle utilizes a mounting that produces an initial upward, then rearward
inflation pattern, as opposed to the 2003 passenger air bag that had an initial rearward
inflation pattern. The supplier also changes from TRW in 2003 to Autoliv in 2004.

1.2: For 2004, the supplier for all Ford Freestar seat belts is Autoliv; TRW supplied all the seat
belts for the 2003 Ford Windstar. Freestar belt assemblies have free-falling, single-slotted
tongues and automatic locking retractors (ALR) as opposed to the double-slotted locking
cinch tongues used on the 2003 Windstar. In the first row, the Freestar is equipped with
pyrotechnic buckle pretensioners while the Windstar was equipped with retractor
pretensioners. The front passenger seat belt assembly in the Freestar includes a belt
tension sensor (BTS). In second row on the bench seat equipped Freestar vehicles, both
left side and right side belts anchor to the side of the seat. 2003 Windstar vehicles with
bench seats had floor-anchored belts on the driver's side and seat-anchored belts on the
passenger side. The Freestar does not utilize the load limiting retractors in the second row
bench seat that were in the 2003 Windstar. The 2004 Freestar first and second row height
adjusters now have four positions rather than the five positions on the Windstar. In the
third row of seats, the center seating position on the 2004 Freestar is now equipped with a
three-point, retracted seat belt whereas the 2003 Windstar has only a lap belt for the
center position.

1.3: Vehicle changes to the new 2004 Ford Freestar vehicle that may affect FMVSS 208
performance are:
- Modified front frame rails
- New upper radiator support to mount the new roll restrictor
- New engine
- New dash panel
- New #1 front cross member and extensions
- New hood and front fenders
- New front sub-frame and lower control arms
- New instrument panel with new knee bolsters system
- New steering wheel

1.4: For the 2004 model year, the new Ford Freestar vehicle has a Right Front Passenger Seat
Occupant Classification System (OCIS) sensor that, in conjunction with the logic system in
the Restraints Control Module, can suppress the activation of the right front passenger air
bag depending upon the weight/position of the occupant. This feature is intended to
decate the air bag for 12 month old, three year old and six year old children but
reactivate the air bag for a 5th percentile female individual. This OCIS system is designed
to meet all the new S14 requirements of FMVSS 208 but the subject 2004 model year Ford
Freestar vehicle itself is certified to the S 13 requirements of FMVSS 208 as was the 2003
model year Ford Windstar.

1.5: The 2004 Ford Freestar vehicle is not equipped with an FMVSS 208 air bag on-off switch
for the right front passenger frontal air bag.
Request 2: Advanced Air Bag Vehicles

Request 2.1: Crash tests

2.1.1 A copy of the certification test reports for belted and unbelted crash tests (frontal, angular, and offset) using the 5th percentile female dummy and the 50th percentile male dummy.

2.1.2 The width of the vehicle as defined in S18.2.4, the location at which the maximum dimension was measured, and any other information and measurements used to position the vehicle for the offset crash test at 40 percent overlap.

Answer:

2.1: The subject vehicles are not certified to meet the new advanced air bag requirements of section S14 of FMVSS 208. This vehicle meets the existing S13 requirements of FMVSS 208.

Request 2.2: 5th Female Low Risk Deployment

2.2.1 A copy of the 5th female low risk deployment certification tests.

2.2.2 For air bags with dual-stage or multi-stage inflators, describe the inflator stage of combination of inflator stages or time delay between successive inflator stages used for low risk deployment.

2.2.3 A copy of the tests and analyses that were used to determine the inflator stage or combination of inflator stages or time delay between successive inflator stages used for the low risk deployment test. (S29.4)

2.2.4 The location of the "geometric center of the opening through which the air bag deploys into the occupant compartment."

2.2.5 Describe how to disconnect the air bags and trigger the appropriate inflator stages.

Answer:

2.2: The subject vehicles are not certified to meet the 5th Female Low Risk Deployment requirements of section S14 of FMVSS 208.

Request 2.3: Children Low Risk Deployment (if applicable):

2.3.1 When certified to low risk deployment for children, a copy of the certification test report for each child restraint (12-month-old) and/or child position (3-year-old, 8-year-old).

2.3.2 For air bags with dual-stage or multi-stage inflators, describe the inflator stage or combination of inflator stages or time delay between successive inflator stages used for low risk deployment.

2.3.2 A copy of the tests and analyses that were used to determine the inflator stage or combination of inflator stages or time delay between successive inflator stages used for the low risk deployment tests. (S20.4.9 & S22.4.4 & S24.4.4)

2.3.3 The location of the "geometric center of the opening through which the air bag deploys into the occupant compartment."
2.3.4 Describe how to disconnect the air bags and trigger the appropriate inflator stages.

Answer:

2.3: The subject vehicles are not certified to the "Children Low Risk Deployment" option of the advanced air bag requirements of section 514 of FMVSS 208.

Request 2.4: Suppression (if applicable):

2.4.1 A representative test report for each type of suppression test (12-month-old, 3-year-old, 6-year-old) and a reactivation test report using a 5th percentile female dummy.

2.4.2 State whether dummies or humans were used. If humans were used provide the method to deactivate the air bag during suppression tests, identify any parts or equipment necessary for deactivation, and provide the method to assure that the same test results would be obtained if the air bag were not deactivated.

2.4.3 Describe how the suppression system works and its components.

2.4.4 State whether the air bag is suppressed when the seat is empty and whether the telltale on the dash is lit when the seat is empty. If the telltale is not lit when the seat is empty, describe the mechanism used to determine whether the air bag is suppressed or activated and describe the equipment and procedure necessary to verify the air bag is suppressed.

2.4.5 Describe the telltale and its location.

Answer:

2.4: The subject vehicles are not certified to the "Suppression" option of the advanced air bag requirements of section 514 of FMVSS 208.

Request 3: Non-Advanced Air Bag Vehicles: Barrier Crash Tests:

Non-advanced air bag vehicles certified unbelted in a 40 km/h barrier crash test. A copy of the certification test reports for belted and unbelted crash tests (frontal and angular).

Answer:

The subject vehicles are not certified to the "Non-Advanced Air Bag Unbeltsed 40 km/h Barrier Crash Test" requirements of FMVSS 208.

Request 4: Non-Advanced Air Bag Vehicles: Certified Unbelted in a Sled Test:

4.1 A copy of the certification sled test.

4.2 A copy of the certification test reports for belted crash tests (frontal and angular).

4.3 Describe how to disconnect the air bags from the vehicle sensors and connect them to the triggering mechanism used in the sled test.
4.4 For air bags with dual stage or multi-stage inflators, describe the inflator stage or combination of inflator stages or time delay between successive inflator stages used in the sled test.

4.5 For air bags with dual stage or multi-stage inflators, provide a copy of the tests and analyses that were used to determine the inflator stage or combination of inflator stages or time delay between successive inflator stages that would occur in a crash of similar severity.

Answer:

4: The subject vehicles were certified to the S13 non-advanced air bag requirements (certified unbelted in a sled test) of FMVSS 208.

4.1: Appendix A contains copies of the following representative test reports used for demonstrating compliance to the S13 unbelted sled test requirements:
- Sled test for driver position: Test H23794
- Sled test for front passenger: Test H23805

4.2: Appendix B contains copies of the following representative test reports used for demonstrating compliance to belted crash test requirements of FMVSS 208:
- Full frontal barrier test: Test C13447 (35 mph 90 degree frontal) — Driver only
- Full frontal barrier test sled simulation: Test H24038 (35 mph 90 degree frontal simulation) — Front passenger only
- 30 degree angular barrier test: Test C13448 (30 mph 30 degree front angular left)

4.3: For Driver Air Bag:

To disconnect the 2004 Ford Freestar driver air bag, first disconnect the vehicle battery and wait several minutes to allow the crash sensor power supply to decay, then open the access door at the lower part of driver steering wheel air bag to view and access the connector. The white connector is for the radio and cruise function. The gray connector contains the air bag circuits. Disconnect the gray connector. For detailed wiring and connector information, see Appendix C that contains the Interface Connector Diagram (ICD) for the driver air bag circuits for stage 1 and stage 2.

In the Ford sled tests, the wiring from the extension cable that supplies the firing current from the KT-Ford Programmable Time-Fire Unit was connected to the driver air bag connector. The Programmable unit has an arming circuit and variable time delay (adjustable to 0.1 msec) which starts counting once time zero (T=0) has been triggered. At 20 msec after T=0, the Programmable-Time-Fire Unit sends current through the extension cable and into the air bag wiring.

For Front Passenger Air Bag:

To disconnect the 2004 Ford Freestar passenger side air bag, disconnect the vehicle battery and again wait several minutes to allow the crash sensor power supply to decay, then open the glove box and release the door bumper stop to allow access to the passenger air bag connector. The gray connector contains the air bag circuits. Disconnect the gray connector. For detailed wiring and connector information, see Appendix D that contains the Interface Connector Diagram (ICD) for the front passenger air bag circuits for stage 1 and stage 2.
In the Ford sled tests, the wiring from the extension cable that supplies the firing current from the KT-Ford Programmable Time Fire Unit was connected to the passenger air bag connection. The Programmable unit has an arming circuit and variable time delay (adjustable to 0.1 msec) which starts counting once time zero (T=0) has been triggered. At 20 msec after T=0, the Programmable Time Fire Unit sends current through the extension cable and into the air bag wiring.

**KT-Ford Programmable Time Fire Unit**

The Programmable Time Fire Unit has the capability of supplying between 30 and 35 volts with a current draw limited to 3 amps. In testing conducted by Ford, the typical current draw is 3 amps. The system has an arming circuit and variable time delay (adjustable to 0.1 msec) which starts counting once time zero (T=0) has been triggered. An accelerometer is used on the sled to trigger T=0 when an acceleration of 0.75g is attained on the sled. (Ford Motor Company adjusted the T=0 trigger for their US HYGE sled system to a level of 0.75g's prior to 1998 in order to have more consistent triggers for any given pulse.) Evaluation of recorded test instrumentation data shows that for these compliance tests, our T=0 timing occurs less than 0.4 msec later than a 0.5g trigger. This data paired with the air bag delay-triggering system tolerance of 2.0 msec results in a difference from the regulated trigger (0.5g T=0 and T=20 msec deployment time) of less than 0.6 msec. This is safely within the tolerance allowed in the regulation (+/-2.0 msec).

4.4: The time delays used in the Ford S73 Unbelted Sled Tests were the following times after T=0 time was triggered:
- Driver: 1st stage = 20 msec, 2nd stage = 30 msec, (15 msec after stage 1)
- Front Passenger: 1st stage = 20 msec, 2nd stage = 30 msec, (10 msec after stage 1)

4.5: Appendix E contains the Ford analysis and rationale utilized to determine the time delay between successive inflator stages that would occur in a crash of similar severity.

**Request 5: Other Information**

5.1 Describe the seat adjustment controls (manual and power) available for this model, including any adjustment controls on seats rearward of the front outboard designated seating positions, and the seat movements associated with each individual control.

5.2 Describe the headrest adjustments available for this model.

5.3 State for each safety belt system in the subject vehicles whether or not it is equipped with a tension-relieving device. Provide a copy of the information furnished in accordance with S7.4.2 if the tension-relieving device is used.

5.4 State for each crash test (frontal, angular, and offset) whether the movable windows and vents were opened or closed.

5.5 Submit dummy placement measurements, including diagrams or photographs that show exactly where each measurement was taken. For the subject vehicles certified to the advanced air bag requirements, provide measurements for both the 50th percentile male and the 5th percentile female. Enclosed is a diagram of some of OVSC's dummy measurements. Where possible, use each dimension shown in the diagram to provide the individual dummy placement measurements.

5.6 State whether the subject vehicles have a footrest for the driver.
5.7 Provide the seat positioning, steering column positioning, and fuel tank data on the enclosed form. If more than one front seating configuration, steering column or fuel tank configuration are available on this vehicle, provide separate information for each. For certification tests using the 5th percentile female, provide the seat fore-aft position, seat height, and seat back angle used in the certification test.

5.8 Provide the seating reference point (SrRP) for the driver designated seating position and every other designated seating position required to comply with the lockable seat belt requirement in S7.1.1.5.

5.9 If there are adjustable seat belt anchorages at front and/or rear designated seating positions, provide the manufacturer's nominal design position for a 50th percentile adult male occupant and, if certified to the advanced air bag requirements, the position for the 5th percentile female.

5.10 For all tests that are performed to certify the subject vehicles to injury assessment performance requirements of FMVSS 208, provide a summary of the injury results. In addition, for crash tests provide the measured test speed.

5.11 When vehicle components must be removed to obtain the proper test weight for crash tests, list the components you recommend for removal, and in the priority order you recommend for removal.

5.12 If the subject vehicles use a pressure vessel to inflate the air bag, provide a copy of the test report or engineering analysis to demonstrate that it meets all the requirements of S9.1.

5.13 If the subject vehicles use an explosive device to inflate the air bag, provide a copy of the test report or engineering analysis to demonstrate that it meets all the requirements of S9.2.

Answer:

5.1: As noted previously, the new 2004 Ford Freestar is a major model change that features an all-new vehicle interior as well as an all-new flexible seating system. Appendix F contains a detailed description of this new seating system in the 2004 Freestar (Vehicle code: V229).

5.2: Appendix F also contains a description of the seat headrest adjustments available on the 2004 Ford Freestar.

5.3: The 2004 Ford Freestar vehicles do not use tension-relieving devices for the driver or front passenger safety belt systems.

5.4: The 2004 Ford Freestar vehicles were tested with all moveable windows full down for 80 degree frontal impact testing. For the front angular left test mode, the driver side window was up and the passenger side window was down. There are no vents on this vehicle. Ford requests that the agency conduct their testing with all windows in the full up position.

5.5: The requested dummy placement measurements for the 2004 Ford Freestar vehicle are provided in Appendix G.

5.6: The 2004 Ford Freestar vehicle is equipped with a driver side outboard (left) footrest.

5.7: Appendix H contains the completed NHTSA Form 1 with the requested information.
Appendix J contains the completed NHTSA Form 4, which shows the SgRP for all seating positions relative to measurements from the driver's seat front outboard anchorage bolt hole.

5.8: The driver and front passenger adjustable four position D-ring anchorages in the 2004 Ford Freestar should be set one position up from the bottom position for a 50th percentile male occupant. For the second seating row, the D-ring height adjusters should be set full up for a 50th percentile male occupant. No height adjustment is available for the third row seating occupants.

5.10: Ford is providing the requested summary information for all tests used as a basis to certify the subject vehicles to the injury assessment performance requirements of FMVSS 206 in Appendix J.

5.11: The following components are removed in the order listed to compensate for the added weight of test equipment:
- 3rd Row Seat
- 2nd Row Seats
- Rear Quarter Windows
- Sliding Door Trim Panels, C and D Pillar Trim, Rear Quarter Trim

5.12: The subject vehicle utilizes a hybrid (pressure vessel/explosive device) inflator device to inflate the passenger side frontal air bag. Appendix K contains the pertinent documentation from the supplier, Autoliv ASP, Inc., that attests to the compliance of the hybrid inflator to the requirements of S9.1.

5.13: The subject vehicle uses an explosive device to inflate the driver side frontal air bag and also uses an explosive device in conjunction with a pressurized vessel to form a hybrid inflator to inflate the passenger side frontal air bag. Copies of the pertinent documentation from the supplier, Autoliv ASP, Inc., that attests to the compliance of these inflators to the requirements of S9.2 are contained in Appendix K for the passenger air bag inflator and Appendix L for the driver air bag.

If you have any further questions, please contact me.

Sincerely,

[Signature]

James P. Vondale

Attachments
### Physical Hardware Requirements Matrix

| Connector Pin Interface #1 | | | | |
|--------------------------|-------------------------------|-------------------------------|-------------------------------|
| **Signal Name** | **Terminals** | **Terminal Pin Number** | **Effect** | **Wire** |
| Port terminal 1         | 1                            | 301 1-2-3                |                  |        |
| Port terminal 2         | 2                            | 302 1-2-3                |                  |        |

| Connector Pin Interface #2 | | | | |
|--------------------------|-------------------------------|-------------------------------|-------------------------------|
| **Signal Name** | **Terminals** | **Terminal Pin Number** | **Effect** | **Wire** |
| Port terminal 1         | 1                            | 911 1-2-3                |                  |        |
| Port terminal 2         | 2                            | 912 1-2-3                |                  |        |

| Connector Pin Interface #3 | | | | |
|--------------------------|-------------------------------|-------------------------------|-------------------------------|
| **Signal Name** | **Terminals** | **Terminal Pin Number** | **Effect** | **Wire** |
| Port terminal 1         | 1                            | 1813 1-2-3                |                  |        |

**Connector Pin-Out - View Looking Into Pins of the Connector**

**Connector Part Number:** Y511-14AM64J

**Connector Part Number:** Y511-14AM64J

**Note:** Connector Part Number is the part number for the Connector or Wire Component. Unless Otherwise Noted.
V229 Seat Function Information

1st Row
Cushion Adjustment:

Standard for Driver and Passenger – 2-Way Manual (fore/aft) tracks with 180mm travel (150mm forward of design position and 30mm rearward of design position)

Optional for Driver and passenger – 8-Way Power (fore/aft, front tilt up/down, and rear tilt up/down) with 180mm of fore/aft travel (150mm forward of design position and 30mm rearward of design position) and 47mm of up/down (17mm down from design position and 30mm up from design position)

Seat Back Recline:

Standard for all – Manual recline with 80.5° of adjustment (46.75° forward of design position and 33.75° rearward of design position)

Seat Back Lumbar:

Packaged with Power Tracks for Driver Seat on Freestar and Monterey and Optional on Power Passenger Monterey (Design position is full off)

Head Restraint:

Fixed Head Restraints are standard on the low-level Freestar and Adjustable head restraints are standard on the high level Freestar and all Monterey levels – Adjustment is 2-Way, up and down, with 50mm of adjustment.

2nd Row Bench

Cushion Adjustment:

Optional – 2-Way Manual (fore/aft) tracks with 220mm travel (180mm forward of design position and 40mm rearward of design position)

Seat Back Recline:

Standard for all – Manual recline with 118.5° of adjustment (95.5° forward of design position and 22.5° rearward of design position)

Head Restraint:

Adjustable head restraints are standard – Adjustment is 2-Way, up and down, with 67mm of adjustment
2nd Row Buckets

Cushion Adjustment:
Optional for Freestar and standard for Monterey—2-Way Manual (fore/aft) tracks with 180mm travel (150mm forward of design position and 30mm rearward of design position)

Seat Back Recline:
Standard for all—Manual recline with 123° of adjustment (95° forward of design position and 28° rearward of design position)

Head Restraint:
Adjustable head restraints are standard—Adjustment is 2-Way, up and down, with 67mm of adjustment

3rd Row Bench

Seat Back Recline:
Standard for all—Manual recline with 9.375° of adjustment (3.750° forward of design position and 5.625° rearward of design position)

Head Restraint:
Adjustable head restraints are standard—Adjustment is 2-Way, up and down, with 96.7mm of adjustment
**POSITIONING NUMBERS**

Make sure dummy is sitting centered in seat.

<table>
<thead>
<tr>
<th></th>
<th>DRIVER</th>
<th>PASSenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEATBACK ANGLE (deg)</td>
<td>18.0 +/- 0.5</td>
<td>18.0 +/- 0.5</td>
</tr>
<tr>
<td>PELVIC ANGLE (deg)</td>
<td>22.5 +/- 2.5</td>
<td>22.5 +/- 2.5</td>
</tr>
<tr>
<td>NECK BRACKET ANGLE (deg)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>in</strong></td>
<td><strong>mm</strong></td>
</tr>
<tr>
<td>NOSE TO WHEEL</td>
<td>18.0 +/- 0.3</td>
<td>457.2 +/- 7.62</td>
</tr>
<tr>
<td>NOSE TO IP</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>TORSO TO WHEEL</td>
<td>9.4 +/- 0.4</td>
<td>238.76 +/- 10.16</td>
</tr>
<tr>
<td>TORSO TO IP</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>TOP OF LEGS TO WHEEL</td>
<td>1.7 +/- 0.4</td>
<td>43.18 +/- 10.16</td>
</tr>
<tr>
<td>KNEE SPREAD</td>
<td>10.5 +/- 0</td>
<td>265.7 +/- 0</td>
</tr>
<tr>
<td>LEFT LEG TO IP</td>
<td>4.7 +/- 0.6</td>
<td>119.38 +/- 15.24</td>
</tr>
<tr>
<td>RIGHT LEG TO IP</td>
<td>4.8 +/- 0.6</td>
<td>121.92 +/- 15.24</td>
</tr>
</tbody>
</table>

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S040428
TEST VEHICLE INFORMATION

Vehicle Model Year and Make: 2004 Ford/Mercury
Vehicle Model and Body Style: Freestar Wagon/Monterey Wagon
VIN (If Known): 

1. NOMINAL DESIGN RIDING POSITION –
   For adjustable driver and passenger seat backs, describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent if applicable. 
   Seat back angle for driver's seat = ___18__°. 
   Measurement Instructions: 
   The seat back angle is measured relative to the rocker sill. Remove the seat back panel and position inclinometer as shown in the drawing 13 inches above the back pivot point on the rear outboard seat frame. Avoid taking measurement on reinforcement plates. 
   Seat back angle for passenger's seat = ___18__°. 
   Measurement Instructions: 
   Same instructions as the driver's seat. 

2. SEAT FORE AND AFT POSITIONS –
   Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, provide information to locate the detent in which the seat track is to be locked.
   Position of the driver's seat: 
   For all seats (driver & passenger, power & manual seat tracks): Position the seat in the mechanical mid-position. Reference points are scribed on the seat and the seat track. The total seat travel is measured and the seat is then positioned in the center of seat travel. On manual seats, position at the mid-point track location (if available) or the next closest position to the rear of the mid-point travel location. 
   Position of the passenger's seat (if applicable): Same instructions as the driver's seat.

3. FUEL TANK CAPACITY DATA –

3.1 A. "Usable Capacity" of standard equipment fuel tank = ___26___ gallons. 

B. "Usable Capacity" of optional equipment fuel tank = ___N/A___ gallons. 

C. Capacity used when certification testing to requirements of FMVSS 301 = ___26___ gallons. 

   (= 90 to 95% of A. plus B.)

D. Operational Instructions: None.

3.2 Amount of Stoddard solvent added to vehicle for certification test = ___24.7___ gallons. 

   (= C. minus Unusable Capacity)
3.3 Is vehicle equipped with electric fuel pump? **X** YES  ____ NO

If YES, does pump normally operate when vehicle's electrical system is activated?

**X** YES  ____ NO

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

The electric fuel pump operates for 2 seconds to pressurize the fuel system following the actuation of the ignition. If no attempt has been made to start the engine within 2 seconds following ignition actuation the fuel pump will shut off. The fuel pump operates continuously while the engine is running. If the engine stalls the fuel pump is deactivated. Also, a fuel pump shut-off switch is provided, designed to stop fuel flow to the engine if the vehicle sustains an impact above a certain magnitude.

4. STEERING COLUMN ADJUSTMENTS –
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions.

If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions:
Adjustable steering controls are adjusted so that the steering wheel hub is located at the geometric center of the locus it describes when it is moved through its full range of driving positions. Vehicle is equipped with a 5 position tilt column, Test position is mid-position.

5. SEATING REFERENCE POINT (SRP) – (Polar Coordinate Measures from Actual Tests (Inches))
Provide drawing (or description) which shows the occupant SRP locations.

<table>
<thead>
<tr>
<th>Door Striker to H-point</th>
<th>Door Striker to OB Knee</th>
<th>Nose to Rim</th>
<th>Knee Spread</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver (Manual Seat)</td>
<td>N/A</td>
<td>N/A</td>
<td>18.0</td>
</tr>
<tr>
<td>Driver (Power Seat)</td>
<td>SAME AS MANUAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger (Manual Seat)</td>
<td>N/A</td>
<td>N/A</td>
<td>7.8</td>
</tr>
<tr>
<td>Passenger (Power Seat)</td>
<td>SAME AS MANUAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. FUEL TANK LOCATION –
Provide drawing (or description) which shows the undercarriage view and/or location.

7. ADJUSTABLE D-RING POSITIONS –
Adjust the front outboard seat D-ring locations to the 2nd from the bottom position (the track has 4 vertical adjustments) when testing 50% dummies.

8. VEHICLE EQUIPMENT –

<table>
<thead>
<tr>
<th>Availability (Y or N)</th>
<th>If yes (Std. or Opt.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustable pedals</td>
<td><em>Y</em></td>
</tr>
<tr>
<td>Drivers side outboard foot rest</td>
<td><em>Y</em></td>
</tr>
<tr>
<td>Telescoping steering column</td>
<td><em>N</em></td>
</tr>
<tr>
<td>Side air bags</td>
<td><em>Y</em></td>
</tr>
</tbody>
</table>

The date this form was completed — 12/4/03 _C.18_  S040428
SEATING REFERENCE POINT (SRP) AND TORSO ANGLE DATA FOR FMVSS 201, 202, 203, 207 & 210

(All dimensions in inches)

Model Year: 2004; Make: Ford; Model: Windstar
Body Style: Minivan; Seat Style: 1st Row High Back and Low Back, 2nd Row Quad and Bench, 3rd Row Bench

![Diagram of seating reference point and torso angles](image)

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>FRONT, A1</th>
<th>MIDDLE, A2</th>
<th>REAR, A3</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>14.66</td>
<td>13.67</td>
<td>15.3</td>
</tr>
<tr>
<td>B</td>
<td>10.4A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>43.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>75.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Low Back: Up=10.66, Down=9.08, High Back: N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>21&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>22&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>22&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SEATING REFERENCE POINT (SRP) AND TORSO ANGLE
FOR FMVSS 201, 202, 203, 207 & 210

(All dimensions in Inches)

Model Year: 2004; Make: Ford; Model: Windstar
Body Style: Minivan; Seat Style: 1st Row High Back and Low Back, 2nd Row Quad and Bench, 3rd Row Bench

---

**PLAN VIEW OF TEST VEHICLE**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>10.18</td>
</tr>
<tr>
<td>C</td>
<td>43.98</td>
</tr>
<tr>
<td>D</td>
<td>76.92</td>
</tr>
<tr>
<td>H*</td>
<td>1st row=7.07, 2nd row quad=10.96, 2nd row bench=12.26, 3rd row=7.07</td>
</tr>
<tr>
<td>I*</td>
<td>23.28</td>
</tr>
<tr>
<td>J*</td>
<td>1st row=40.0, 2nd row quad=40.10, 2nd row bench=34.30, 3rd row=39.51</td>
</tr>
</tbody>
</table>

* Provide all dimensions needed to locate SRP.
**TEST VEHICLE SEAT INFORMATION**

(All dimensions in inches)

Model Year: 2004; Make: Ford; Model: Windstar
Body Style: Van; Seat Style: Free standing

![Diagram of vehicle with dimensions marked]

**LEFT SIDE VIEW OF VEHICLE**

Note:  
A: CG of Seat Back  
B: CG of total seating system

<table>
<thead>
<tr>
<th></th>
<th>FRONT</th>
<th>BACK</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>21.467</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td>33.15</td>
<td></td>
<td>High back - 24.06 lbs</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>Bench 344</td>
<td>Weight of Total Seat System</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quad 443</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2</td>
<td>Bench 475</td>
<td>Angle of Seat Back</td>
<td></td>
<td>See FMVSS drawing</td>
</tr>
<tr>
<td></td>
<td>Quad 619</td>
<td></td>
<td>See FMVSS drawing</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>11.142</td>
<td>REMARKS: Weights depend on configuration. Seat Matrix with weights will be provided.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B3</td>
<td>16.289</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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S040428
### Compliance Demonstration Report

2004 V229

50% Hybrid III Unbelted Generic FMVSS 208 HYGE Sled Testing

<table>
<thead>
<tr>
<th></th>
<th>DRIVER</th>
<th>FRONT PASSENGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Mode</td>
<td>Unbelted Generic 208</td>
<td>Unbelted Generic 208</td>
</tr>
<tr>
<td>Test Number</td>
<td>H23794</td>
<td>H23805</td>
</tr>
<tr>
<td>Airbag Deployment</td>
<td>High Output</td>
<td>High Output</td>
</tr>
<tr>
<td></td>
<td>15ms delay between 1st and 2nd stage</td>
<td>10ms delay between 1st and 2nd stage</td>
</tr>
<tr>
<td>HIC (15ms)</td>
<td>31</td>
<td>132</td>
</tr>
<tr>
<td>HIC (36ms)</td>
<td>90</td>
<td>227</td>
</tr>
<tr>
<td>Upper Neck:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fore/Aft Shear (N)</td>
<td>625.4</td>
<td>1152</td>
</tr>
<tr>
<td>Axial Tension (N)</td>
<td>1354.9</td>
<td>799</td>
</tr>
<tr>
<td>Axial Compression (N)</td>
<td>100.5</td>
<td>2267</td>
</tr>
<tr>
<td>Flexion (N•m)</td>
<td>29.54</td>
<td>28.09</td>
</tr>
<tr>
<td>Extension (N•m)</td>
<td>10.37</td>
<td>28.17</td>
</tr>
<tr>
<td>Chest 6's (5ms clip)</td>
<td>28.2</td>
<td>33.6</td>
</tr>
<tr>
<td>Chest Deflection (mm)</td>
<td>22.1</td>
<td>6.35</td>
</tr>
<tr>
<td>Y+V (m/s)</td>
<td>0.07</td>
<td>0.006</td>
</tr>
<tr>
<td>Left Femur Load (N)</td>
<td>4600</td>
<td>3425</td>
</tr>
<tr>
<td>Right Femur Load (N)</td>
<td>6750</td>
<td>4100</td>
</tr>
<tr>
<td>Comments</td>
<td>See E7#1 for Low Output</td>
<td>See E7#1 for Low Output</td>
</tr>
</tbody>
</table>

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S040428
3. To return the seat, ensure seat latching area is free of objects. Then, raise the seat off the lunge plate and push at the top of the seat back to rotate the seat back onto the latches. Pull up on the head restraints to raise them.

SAFETY RERAINTS

Personal Safety System

The Personal Safety System provides an improved overall level of frontal crash protection to front seat occupants and is designed to help further reduce the risk of air bag-related injuries. The system is able to analyze different occupant conditions and crash severity before activating the appropriate safety devices to help better protect a range of occupants in a variety of frontal crash situations.

Your vehicle's Personal Safety System consists of:

- Driver and passenger dual-stage air bag supplemental restraints.
- Front safety belts with pretensioners, energy management retractors (first row only), and safety belt usage sensors.
- Driver's seat position sensor.
- Passenger occupant classification sensor
- Front crash severity sensor.
- Restraints Control Module (RCM) with impact and sensing sensors.
- Restraint system warning light and back-up tone.
- The electrical wiring for the air bags, crash sensor(s), safety belt pretensioners, front safety belt usage sensors, driver seat position sensor, passenger occupant classification sensor, and indicator lights.
How does the Personal Safety System work?

The Personal Safety System can adapt the deployment strategy of your vehicle's safety devices according to crash severity and occupant conditions. A collection of crash and occupant sensors provides information to the Restraints control module (RCM). During a crash, the RCM activates the safety belt pretensioners and/or either one or both stages of the dual-stage air bag supplemental restraints based on crash severity and occupant conditions.

The fact that the pretensioners or air bags did not activate for both front seat occupants in a collision does not mean that something is wrong with the system. Rather, it means the Personal Safety System determined the accident conditions (crash severity, belt usage, etc.) were not appropriate to activate these safety devices. Front air bags and pretensioners are designed to activate only in frontal and near-frontal collisions, not rollovers, side-impacts, or rear-impacts unless the collision causes sufficient longitudinal deceleration.

Driver and passenger dual-stage air bag supplemental restraints

The dual-stage air bags offer the capability to tailor the level of air bag inflation energy. A lower, less forceful energy level is provided for more common, moderate-severity impacts. A higher energy level is used for the most severe impacts. Refer to Air bag supplemental restraints section in this chapter.

Front crash severity sensor

The front crash severity sensor enhances the ability to detect the severity of an impact. Positioned up front, it provides valuable information early in the crash event on the severity of the impact. This allows your Personal Safety System to distinguish between different levels of crash severity and modify the deployment strategy of the dual-stage air bags and safety belt pretensioners.

Driver's seat position sensor

The driver's seat position sensor allows your Personal Safety System to tailor the deployment level of the driver dual-stage air bag based on seat position. The system is designed to help protect smaller drivers sitting closer to the driver air bag by providing a lower air bag output level.

Passenger occupant classification sensor (OCS)

A label is located under the front passenger seat which is marked "OCS". Take your vehicle to any Ford or Lincoln Mercury dealer for assistance.

For air bags to do their job they must inflate with great force, and this force can pose a potentially deadly risk to occupants that are very close to the air bag when it begins to inflate. For some occupants, like infants in rear-facing child seats, this occurs because they are initially sitting very close to the air bag. For other occupants, this occurs when the occupant is not properly restrained by seat belts or child safety seats and they move forward during pre-crash braking. The most effective way to reduce the risk of unnecessary injuries is to make sure all occupants are properly restrained. Accident statistics suggest that children are much safer when properly restrained in the rear seating positions than in the front.

The passenger occupant classification sensor can automatically turn off the passenger front air bag and side air bags (if equipped). The system is designed to help protect small (child size) occupants from air bag deployments when they are improperly seated or restrained in the front passenger seat contrary to proper child-seating or restraint usage recommendations. Even with this technology, parents are STRONGLY encouraged to always properly restrain children in the rear seat. The sensor also turns off the air bag(s) when the passenger seat is empty to prevent unnecessary replacement of the air bag(s) after a collision.

Front safety belt usage sensors

The front safety belt usage sensors detect whether or not the driver and front outboard passenger safety belts are fastened. This information allows your Personal Safety System to tailor the air bag deployment and safety belt pretensioner activation depending upon safety belt usage. Refer to Safety belt section in this chapter.
Seating and Safety Restraints

Front safety belt pretensioners

The safety belt pretensioners at the front outboard seating positions are designed to tighten the safety belts firmly against the occupant's body during a frontal or near-frontal collision. This maximizes the effectiveness of the safety belts and helps properly position the occupant relative to the air bag to improve protection. The safety belt pretensioners can be either activated alone or, if the collision is of sufficient severity, together with the air bags.

Front safety belt energy management retractor

The front outboard safety belt energy management retractor system allows webbing to be pulled out of the retractor in a gradual and controlled manner in response to the occupant's forward momentum. This helps reduce the risk of force-related injuries to the occupant's chest by limiting the load on the occupant. Refer to "Safety management features" section in this chapter.

Determining if the Personal Safety System is operational

The Personal Safety System uses a warning light in the instrument cluster or a back-up tone to indicate the condition of the system. Refer to the "Warning light" section in the Instrument cluster chapter. Routine maintenance of the Personal Safety System is not required.

The Restraint control module (RCM) monitors its own internal circuits and the circuits for the air bag supplemental restraint systems, crash sensor(s), safety belt pretensioners, front safety belt buckle sensors, driver seat position sensor, and passenger occupant classification sensor. In addition, the RCM also monitors the restraint warning light in the instrument cluster. A difficulty with the system is indicated by one or more of the following:

- The warning light will either flash or stay lit.
- The warning light will not illuminate immediately after ignition is turned on.
- A series of five beeps will be heard. The tone pattern will repeat periodically until the problem and warning light are repaired.

If any of these things happen, even intermittently, have the Personal Safety System serviced at your dealership or by a qualified technician immediately. Unless serviced, the system may not function properly in the event of a collision.

Safety belt precautions

⚠ Always sit in the vehicle with your back against the backrest and the seat belt flat and low across the chest.

⚠ Children under the age of 12 years or who have a height of less than 53" should use a child restraint system.

⚠ In a rollover crash, an unbelted person is significantly more likely to die than a person wearing a seat belt.

⚠ Each seat position in your vehicle has a specific safety belt configuration which is made up of the buckle and one portion that may be designed to be used as a part: 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing the safety belt around your neck over the inside shoulder. 3) Never use a single belt for more than one person.

⚠ Always transport children 12 years old and under in the back seat and always properly use appropriate child restraint system.
Combination lap and shoulder belts
1. Insert the belt tongue into the proper buckle (the buckle closest to the direction the tongue is coming from) until you hear a snap and feel it latch. Make sure the tongue is securely fastened in the buckle.

2. To unfasten, push the release button and remove the tongue from the buckle.

All restraints in the vehicle are combination lap and shoulder belts. While you are fastened in the seat belt, the combination lap/shoulder belt adjusts to your movement. However, if you brake hard, turn hard, or if your vehicle receives an impact of 6 km/h (6 mph) or more, the safety belt will become locked and help reduce your forward movement.

Energy Management Feature — Outboard
- This vehicle has a safety belt system with an energy management feature at the front seats to help further reduce the risk of injury in the event of a head-on collision.
- This safety belt system has a retractor assembly that is designed to extend the seat belt webbing in a controlled manner. This helps reduce the belt force acting on the user’s chest.

Vehicle sensitive mode
This is the normal retractor mode, which allows free shoulder belt length adjustment to your movements and locking in response to vehicle movement. For example, if the driver brakes suddenly or turns a corner sharply, or the vehicle receives an impact of approximately 6 km/h (6 mph) or more, the combination safety belts will lock to help reduce forward movement of the driver and passengers.

Automatic locking mode
The automatic locking mode is not available on the driver safety belt.

When to use the automatic locking mode
In this mode, the shoulder belt is automatically pre-locked. The belt will still retract to remove any slack in the shoulder belt. The automatic locking mode is not available on the driver safety belt.

This mode should be used any time a child safety seat is installed in a passenger front or outboard rear seating position (if equipped). Children 12 years old and under should be properly restrained in the rear seat whenever possible. Refer to Safety restraints for children or Safety seats for children later in this chapter.

How to use the automatic locking mode
- Buckle the combination lap and shoulder belt.
Seating and Safety Restraints

- Grasp the shoulder portion and pull downward until the entire belt is pulled out.

- Allow the belt to retract. As the belt retracts, you will hear a clicking sound. This indicates the safety belt is now in the automatic locking mode.

**How to disengage the automatic locking mode**

Your vehicle is equipped with a passive safety belt system that is designed to maintain the belt's retracted position. If you need to disengage the automatic locking mode, you can do so by:

1. Unbuckling the combination lap/shoulder belt and allow it to retract completely to disengage the automatic locking mode and activate the vehicle sensitive (emergency) locking mode.

**Safety belt height adjustment**

Your vehicle has safety belt height adjustments at the front and second row seating positions. Adjust the height of the shoulder belt so the belt rests across the middle of your shoulder.

To adjust the shoulder belt height, squeeze and hold the buttons on the side and slide the height adjuster up or down. Release the buttons and pull down on the height adjuster to make sure it is locked in place.

**Third row comfort guide**

The safety belt for the 3rd row center occupant may be stowed in the ceiling if it has been detached from the seat to carry large cargo. Remove the safety belt from the stowage area on the ceiling and buckle the small tongue on the end of the safety belt to the mini-buckle on the left side of the center seat position.

The third row center lap/shoulder belt is equipped with a Belt Comfort Guide located in a pocket on the back of the seat. The guide is attached to the driver's side head restraint, and is used to adjust the comfort of the shoulder belt for smaller occupants in the center position of the 3rd row seat. To adjust the comfort guide:

- Slip the shoulder belt into the belt guide.
- Slide the guide up or down along the head restraint post so that the belt is centered on the occupant's shoulder.

**Safety belt warning light and Indicator chime**

The safety belt warning light illuminates in the instrument cluster and a chime sounds to remind the occupants to fasten their safety belts.
Seating and Safety Restraints

Conditions of operation

<table>
<thead>
<tr>
<th>Situation</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>The driver's safety belt is not buckled before the ignition switch is turned to the ON position...</td>
<td>The safety belt warning light illuminates 1-2 minutes and the warning chime sounds 4-8 seconds.</td>
</tr>
<tr>
<td>The driver's safety belt is buckled while the indicator light is illuminated and the warning chime is sounding...</td>
<td>The safety belt warning light and warning chime turn off.</td>
</tr>
<tr>
<td>The driver's safety belt is buckled before the ignition switch is turned to the ON position...</td>
<td>The safety belt warning light and indicator chime remain off.</td>
</tr>
</tbody>
</table>

BeltMinder

The BeltMinder feature is a supplemental warning to the safety belt warning function. This feature provides additional reminders by intermittently sounding a chime and illuminating the safety belt warning lamp in the instrument cluster when the driver's and front passenger's safety belt is unbuckled.

The BeltMinder feature uses information from the passenger occupant classification sensor to determine if a front seat passenger is present and therefore potentially in need of a warning. To avoid activating the BeltMinder feature for objects placed in the front passenger seat, warnings will only be given to large front seat occupants as determined by the passenger occupant classification sensor.

Both the driver's and passenger's safety belt usages are monitored and either may activate the BeltMinder feature. The warnings are the same for the driver and the front passenger. If the BeltMinder warnings have expired (warnings for approximately 5 minutes) for one occupant (driver or front passenger), the other occupant can still activate the BeltMinder feature.

Seating and Safety Restraints

<table>
<thead>
<tr>
<th>If...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>The driver's and front passenger's safety belts are buckled before the ignition switch is turned to the ON position; or less than 1-2 minutes have elapsed since the ignition switch has been turned ON...</td>
<td>The BeltMinder feature will not activate.</td>
</tr>
<tr>
<td>The driver's or front passenger's safety belt is not buckled when the vehicle has reached at least 6 km/h (3 mph) and 1-2 minutes have elapsed since the ignition switch has been turned ON...</td>
<td>The BeltMinder feature is activated - the safety belt warning light illuminates and the warning chime sounds for 6 seconds every 30 seconds, repeating for approximately 5 minutes or until the safety belts are buckled.</td>
</tr>
<tr>
<td>The driver's or front passenger's safety belt becomes unbuckled for approximately 1 minute while the vehicle is traveling at least 6 km/h (3 mph) and more than 1-2 minutes have elapsed since the ignition switch has been turned ON...</td>
<td>The BeltMinder feature is activated - the safety belt warning light illuminates and the warning chime sounds for 6 seconds every 30 seconds, repeating for approximately 5 minutes or until the safety belts are buckled.</td>
</tr>
</tbody>
</table>

The following are reasons most often given for not wearing safety belts:
(All statistics based on U.S. data)

- "Crashes are rare events" 86,700 crashes occur every day. The more we drive, the more we are exposed to "rare" events, even for good drivers. 1 in 4 of us will be seriously injured in a crash during our lifetime.
- "I'm not going far" 3 of 4 fatal crashes occur within 25 miles of home.
<table>
<thead>
<tr>
<th>Reason for Belts Being Disliked</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Belts are uncomfortable&quot;</td>
<td>We design our safety belts to enhance comfort. If you are uncomfortable - try different positions for the safety belt upper anchorage and seatback which should be as upright as possible; this can improve comfort.</td>
</tr>
<tr>
<td>&quot;I was in a hurry&quot;</td>
<td>Prime time for an accident. Beh-Minder reminds us to take a few seconds to buckle up.</td>
</tr>
<tr>
<td>&quot;Safety belts don't work&quot;</td>
<td>Safety belts, when used properly, reduce risk of death to front seat occupants by 45% in cars, and by 60% in light trucks.</td>
</tr>
<tr>
<td>&quot;Traffic is light&quot;</td>
<td>Nearly 1 of 2 deaths occur in single-vehicle crashes, many when no other vehicles are around.</td>
</tr>
<tr>
<td>&quot;Belts wrinkle my clothes&quot;</td>
<td>Possibly, but a serious crash can do much more than wrinkle your clothes, particularly if you are unbelted.</td>
</tr>
<tr>
<td>&quot;The people I'm with don't wear belts&quot;</td>
<td>Set the example, teen deaths occur 4 times more often in vehicles with TWO or MORE people. Children and younger brothers/sisters imitate behavior they see.</td>
</tr>
<tr>
<td>&quot;I have an air bag&quot;</td>
<td>Air bags offer greater protection when used with safety belts. Frontal airbags are not designed to inflate in rear and side crashes or rollovers.</td>
</tr>
<tr>
<td>&quot;I'd rather be thrown clear&quot;</td>
<td>Not a good idea. People who are ejected are 40 times more likely to DIE. Safety belts help prevent ejection, WE CAN'T &quot;PICK OUR CRASH&quot;.</td>
</tr>
</tbody>
</table>

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**Seating and Safety Restraints**

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⚠️ Do not sit on top of a buckled safety belt to avoid the Beh-Minder chime. Sitting on the safety belt will increase the risk of injury in an accident. To disable (one-time) or deactivate the Beh-Minder feature please follow the directions stated below.

---

**One time disable**

If at any time the driver/front passenger quickly buckles then unbucks the Beh-Minder feature for that seating position, the Beh-Minder is disabled for the current ignition cycle. The Beh-Minder feature will re-enable during the same ignition cycle if the occupant buckles and remains buckled for approximately 30 seconds. Confirmation is not given for the one-time disable.

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**Deactivating/activating the Beh-Minder feature**

The driver and front passenger Beh-Minder are deactivated/activated independently. When deactivating/activating one seating position, do not buckle the other position as this will terminate the process.

Read steps 1 - 4 thoroughly before proceeding with the deactivation/activation programming procedure.

The driver and front passenger Beh-Minder features can be deactivated/activated by performing the following procedure:

Before following the procedure, make sure that:
- The parking brake is set.
- The gearshift is in P (Park) (automatic transmission)
- The ignition switch is in the OFF position
- The driver and front passenger safety belts are unbuckled

⚠️ To reduce the risk of injury, do not deactivate/activate the Beh-Minder feature while driving the vehicle.

1. Turn the ignition switch to the RUN (or ON) position. (DO NOT START THE ENGINE)
2. Wait until the safety belt warning light turns off. (Approximately 1 minute)
3. Step 3 must be completed within 50 seconds after the safety belt warning light turns off.
3. For the seating position being disabled, buckle then unbuckle the safety belt 9 times, ending in the unbuckled state. (Step 3 must be completed within 60 seconds after the safety belt warning light turns off.)
- After step 3, the restraint system warning light (airbag light) will be turned on for three seconds.
4. Within 10 seconds of the light turning on, buckle then unbuckle the safety belt.
- This will disable the BeltMinder feature for that seating position if it is currently enabled. As confirmation, the restraint system warning light will flash 4 times per second for 3 seconds.
- This will enable the BeltMinder feature for that seating position if it is currently disabled. As confirmation, the restraint system warning light will flash 4 times per second for 3 seconds, followed by 3 seconds with the light off, then followed by the restraint system warning light flashing 4 times per second for 3 seconds again.

Safety belt extension assembly
If the safety belt is too short when fully extended, a 29 cm (9 inch) or 31 cm (12 inch) safety belt extension assembly can be added (part numbers 611C22-A and 611C22-B respectively). These assemblies can be obtained from your dealer at no cost.

Use only extensions manufactured by the same supplier as the safety belt. Manufacturer identification is located at the end of the webbing on the label. Also, use the safety belt extension only if the safety belt is too short for you when fully extended.

Safety belt maintenance
Inspect the safety belt systems periodically to make sure they work properly and are not damaged. Inspect the safety belts to make sure there are no nicks, tears or cuts, replacing if necessary. All safety belt assemblies, including retractors, buckles, front seat belt buckle assemblies, buckle support assemblies (slide bar-if equipped), shoulder belt height adjusters (if equipped), child safety seat tether bracket assemblies (if equipped), LATCH child seat tether anchors and lower anchors (if equipped), and attaching hardware, should be inspected after a collision. Ford recommends that all safety belt assemblies in use in vehicles involved in a collision be replaced. However, if the collision was minor and a qualified technician finds that the belts do not show damage and continue to operate properly, they do not need to be replaced, except as described in the Replacing the front seat belt assemblies after a collision section of this chapter. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.

Refer to Interior in the Cleaning chapter.

Replacing the front seat belt assemblies after a collision
The front outboard safety belt assemblies have a special energy management retractors designed to further reduce the risk of injury in the event of a head-on collision. These retractors should be replaced if they were used in any accident in which the front airbags deploy. If the safety belt assemblies are not replaced, there may be increased risk of injury in the event of a subsequent collision.

AIR BAG SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The air bag supplemental restraint system (SRS) is designed to work in conjunction with the safety belts to help protect the driver and front outboard passenger from certain upper body injuries. The term
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"supplemental restraint" means the air bags are intended as a supplement to the safety belts. Air bags alone cannot protect as well as air bags plus safety belts in impacts for which the air bags are designed to deploy, and air bags do not offer any protection in crashes for which they do not deploy.

**Important SRS precautions**

The SRS is designed to work with the safety belt to help protect the driver and right front passenger from certain upper body injuries. Air bags DO NOT inflate slowly; there is a risk of injury from a deploying air bag.

- **Do not put anything on or over the air bag module.** Placing objects on or over the air bag inflation area may cause these objects to be propelled by the air bag into your face and into causing serious injury.
- **Do not attempt to service, repair, or modify the air bag.** Supplemental restraint systems or its related components are hazardous to handle.
- **Mercury users.**

**Children and air bags**

Children must always be properly restrained. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating position. Failure to follow these instructions may increase the risk of injury in a collision.

- **Air bags can kill or injure a child in a child seat.** NEVER place a rear-facing child seat in front of an active air bag. If you must use a forward-facing child seat, use the seat all the way back.

**Determining if the system is operational**

The supplemental restraint system uses a warning indicator in the instrument cluster or a back-up tone to indicate the condition of the system. Refer to the Warning light section in the Instrument cluster chapter. Routine maintenance of the air bag is not required.

To properly position yourself away from the air bag:
- Move your seat to the rear as far as you can while still reaching the pedals comfortably.
- Recline the seat slightly one or two degrees from the upright position.
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A difficulty with the system is indicated by one or more of the following:

- The readiness light (same light for front and side air bag system) will either flash or stay lit.
- The readiness light will not illuminate immediately after ignition is turned on.
- A series of five beeps will be heard. The tone pattern will repeat periodically until the problem and/or light are repaired.

If any of these things happen, even intermittently, have the supplemental restraint system serviced at your dealership or by a qualified technician immediately. Unless serviced, the system may not function properly in the event of a collision.

How does the air bag supplemental restraint system work?

The air bag SRS is designed to activate when the vehicle sustains longitudinal deceleration sufficient to cause the sensors to close an electrical circuit that initiates air bag inflation. The fact that the air bags did not inflate in a collision does not mean that something is wrong with the system. Rather, it means the forces were not of the type sufficient to cause activation. Front air bags are designed to inflate in frontal and near-frontal collisions, not rollover, side-impact, or rear-impacts unless the collision causes sufficient longitudinal deceleration.

The air bags inflate and deflate rapidly upon activation. After air bag deployment, it is normal to notice a smoke-like, powdery residue or smell the burn propellant. This may consist of cornstarch, talcum powder to lubricate the bag) or sodium compounds (e.g., baking soda) that result from the combustion process that inflates the air bag. Small amounts of sodium hydroxide may be present which may irritate the skin and eyes, but none of the residue is toxic.

While the system is designed to help reduce serious injuries, contact with a deploying air bag may also cause abrasions, swelling or temporary hearing loss. Because air bags must inflate rapidly and with considerable force, there is the risk of death or serious injuries such as fractures, facial and eye injuries or internal injuries, particularly to occupants who are not properly restrained or are otherwise out of position at the time of air bag deployment. Thus, it is extremely important that occupants be properly restrained as far away from the air bag module as possible while maintaining vehicle control.

The SRS consists of:

- driver and passenger air bag modules (which include the inflators and air bags).
- side air bags (if equipped). Refer to Side air bag system later in this chapter.
- one or more impact and sensing sensors.
- a readiness light and tone.
Seating and Safety Restraints

- diagnostic module.
- and the electrical wiring which connects the components.

The diagnostic module monitors its own internal circuits and the supplemental air bag electrical system wiring (including the impact sensors), the system wiring, the air bag system readiness light, the air bag back up power and the air bag ignitors.

Front passenger sensing system

The front passenger sensing system will turn off the front passenger's frontal air bag under certain conditions. The driver's air bag and side air bag are not part of the front passenger sensing system. The front passenger sensing system works with sensors that are part of the front passenger's seat and safety belt. The sensors are designed to detect the presence of a properly seated occupant and determine if the front passenger's frontal air bag should be enabled (may inflate) or not.

The front passenger sensing system is designed to meet the regulatory requirements of Federal Motor Vehicle Safety Standard (FMVSS) 208 and is designed to turn off the front passenger's frontal air bag if:

- the front passenger seat is unoccupied,
- an infant or small child weighing less than 50 pounds (25 kg) is in the front seat, either in a child restraint, in a booster seat, or sitting directly on the vehicle seat,
- a front passenger takes their weight off the seat for a period of time.

For larger children and very small adults, the passenger sensing system may leave the air bag system enabled, or turn it OFF. The occupant's seating position may determine whether or not the air bag is enabled.

When the front passenger seat is occupied and the sensing system has turned off the passenger's frontal air bag, the "passenger airbag off" or "pass airbag off" indicator will light and stay lit to remind you that the front passenger frontal air bag is off. When the front passenger seat is not occupied (empty seat) or in the event that the front passenger frontal air bag is enabled (may inflate), the indicator light will be unlit.

The indicator light is located in the center stack of the instrument panel to the right of the radio.

The front passenger sensing system is designed to turn off the front passenger's frontal air bag when a rear facing infant seat, a forward facing child restraint, or a booster seat is detected. If the child restraint has been installed and the indicator is not lit, then turn the vehicle off, remove the child restraint from the vehicle and reinstall the restraint following the child restraint manufacturer's directions.

The front passenger sensing system is designed to enable (may inflate) the right front passenger's frontal air bag anytime the system senses that a person of adult size is sitting properly in the front passenger seat. When the passenger sensing system has allowed the air bag to be enabled, the indicator will be unlit and stay lit to remind you that the air bag is enabled (may inflate).

If a person of adult-size is sitting in the front passenger's seat, but the "passenger airbag off" or "pass airbag off" indicator is lit, it could be that the person isn't sitting properly in the seat. If this happens, turn the vehicle off until the person to place the seatback in the full upright position, then sit upright in the seat, centered on the seat cushion, with the person's legs comfortably extended. Restart the vehicle and have the person remain in this position for about two minutes. This will allow the system to detect that person and then enable the passenger's air bag. If the indicator lamp remains lit even after this, then the occupant should be advised to ride in the back seat.

After all occupants have adjusted their seats and put on safety belts, it's very important that they continue to sit upright, with their back against the seatback, with their feet comfortably extended on the floor while the vehicle is still in motion. Sitting improperly can increase the chance of injury in a crash event. For example, if an occupant slouches, lies down,
turns sideways, sits forward, leans forward or sideways, or puts one or both feet up, the chance of injury during a crash is greatly increased.

In case there is a problem with the passenger sensing system, the airbag readiness light in the instrument cluster will stay lit. Do NOT attempt to repair or service the system; take your vehicle immediately to the dealer.

If it is necessary to modify an advanced front air bag system to accommodate a person with disabilities, contact the Ford Customer Relationship Center at the phone number shown in the Customer Assistance section of this Owner's Guide.

**Side air bag system (if equipped)**

*How does the side air bag system work?*

The side air bag system consists of the following:

- An inflatable nylon bag (air bag) with a gas generator concealed behind the outboard bolster of the driver and front passenger seatbacks.

- A special seat cover designed to allow airbag deployment.

- The same readiness airbag light, electronic control and diagnostic unit as used for the front air bags.

- Two crash sensors located under the outboard side of the front seats, attached to the floor.

Side air bags, in combination with seat belts, can help reduce the risk of severe injuries in the event of a significant side impact collision.

The side air bags are fitted on the outboard side of the seatbacks of the front seats. In certain lateral collisions, the air bag on the side affected by the collision will be inflated, even if the respective seat is not occupied. The air bag was designed to inflate between the door panel and occupant to further enhance the protection provided occupants in side impact collisions.

The air bag SRS is designed to activate when the vehicle sustains lateral deceleration sufficient to cause the sensors to close an electrical circuit that initiates air bag inflation.

The fact that the air bags did not inflate in a collision does not mean that something is wrong with the system. Rather, it means the forces were not of the type sufficient to cause activation. Side air bags are designed to inflate in side-impact collisions, not roll-over, rear-impact, frontal or near-frontal collisions, unless the collision causes sufficient lateral deceleration.
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Safety Canopy® system (if equipped)

How does the Safety Canopy® system work?

The design and development of the Safety Canopy® system included recommended testing procedures that were developed by a group of automotive safety experts known as the Side Air Bag Technical Working Group. These recommended testing procedures help reduce the risk of injuries related to the deployment of side airbags (including the Safety Canopy®).

The Safety Canopy® system consists of the following:

- An inflatable nylon curtain with a gas generator concealed behind the headliner and above the doors (one on each side of vehicle).
- A headliner designed to flex open above the side doors to allow Safety Canopy® deployment.
- The same readiness airbag light, electronic control and diagnostic unit as used for the front airbags.
- Two crash sensors mounted under the front seats (one on each side).
- Two crash sensors located at the c-pillar behind the rear doors (one on each side).
- Rollover sensor in the restraints control module (RCM).

The Safety Canopy® system, in combination with seat belts, can help reduce the risk of severe injuries in the event of a significant side impact collision or rollover event.

Children 12 years old and under should always be properly restrained in the second or third row seats. The Safety Canopy® will not interfere with children restrained using a properly installed child or booster seat because it is designed to inflate downward from the headliner above the doors along the side window opening.
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The Safety Canopy® system is designed to activate when the vehicle sustains lateral deceleration sufficient to cause the side crash sensor to close an electrical circuit that initiates Safety Canopy® inflation or when a certain likelihood of a rollover event is detected by the rollover sensor.

The Safety Canopy® is mounted to roof side-rail sheet metal, behind the headliner, along the entire side of the vehicle. In certain lateral collisions or rollover events, the Safety Canopy® system will be activated, regardless of which seats are occupied. In certain rollover events, the Safety Canopy® on both sides of the vehicle will be inflated, regardless of which seats are occupied. The Safety Canopy® is designed to inflate between the side window area and occupants to further enhance protection provided in side impact collisions and rollover events.

The fact that the Safety Canopy® did not activate in a collision does not mean that something is wrong with the system. Rather, it means the forces were not of the type sufficient to cause activation. The Safety Canopy® is designed to inflate in certain side impact collisions or rollover events, not in rear impact, frontal or near-frontal collisions, unless the collision causes sufficient lateral deceleration or rollover.

Determining if the system is operational

The SRS uses a readiness light in the instrument cluster or a tone to indicate the condition of the system. Refer to the Air bag readiness section in the Instrument Cluster chapter. Routine maintenance of the air bag is not required.

Any difficulty with the system is indicated by one or more of the following:

- The readiness airbag light (same light as for front air bag system) will either flash or stay lit.
- The readiness light will not illuminate immediately after ignition is turned on.
- A series of five beeps will be heard. The tone pattern will repeat periodically until the problem and light are repaired.

If any of these things happen, even intermittently, have the SRS serviced at your dealership or by a qualified technician immediately. Unless serviced, the system may not function properly in the event of a collision or rollover event.

Disposal of air bags and air bag equipped vehicles (including pretensioners)

See your local dealership or qualified technician. Air bags MUST BE disposed of by qualified personnel.

SAFETY RESTRAINTS FOR CHILDREN

See the following sections for directions on how to properly use safety restraints for children. Also see Air bag supplemental restraint system (SRS) in this chapter for special instructions about using air bags.

Important child restraint precautions

You are required by law to use safety restraints for children in the U.S. and Canada. If small children (generally children who are four years old or younger and who weigh 18 kg [40 lbs] or less) ride in your vehicle, you must put them in safety seats made especially for children. Many states require that children use approved booster seats until they are eight years old. Check your local and state or provincial laws for specific requirements regarding the safety of children in your vehicle. When possible, always place children under age 12 in the rear seat of your vehicle. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating position.
Seating and Safety Restraints

Always follow the instructions and warnings that come with any infant or child restraint you might use.

Children and safety belts
If the child is the proper size, restrain the child in a safety seat. Children who are too large for child safety seats (as specified by your child safety seat manufacturer) should always wear safety belts. Follow all the important safety restraint and airbag precautions that apply to adult passengers in your vehicle.

If the shoulder belt portion of a combination lap and shoulder belt can be positioned so it does not cross or rest in front of the child's face or neck, the child should wear the lap and shoulder belt. Moving the child closer to the center of the vehicle may help provide a good shoulder belt fit.

Child booster seats
Children outgrow a typical convertible or toddler seat when they weigh 40 pounds and are around 4 years of age. Although the lap/shoulder belt will provide some protection, these children are still too small for lap/shoulder belts to fit properly, which could increase the risk of serious injury.

To improve the fit of both the lap and shoulder belt on children who have outgrown child safety seats, Ford Motor Company recommends use of a belt-positioning booster.

Booster seats position a child so that safety belts fit better. They lift the child up so that the lap belt rests low across the hips and the knees bend comfortably. Booster seats also make the shoulder belt fit better and more comfortably for growing children.

When children should use booster seats
Children need to use booster seats from the time they outgrow the toddler seat until they are big enough for the vehicle seat and lap/shoulder belt to fit properly. Generally this is when they weigh about 80 lbs (about 8 to 12 years old).

Booster seats should be used until you can answer YES to ALL of these questions:
- Can the child sit all the way back against the vehicle seat back with knees bent comfortably at the edge of the seat without slouching?
- Does the lap belt rest low across the hips?
- Is the shoulder belt centered on the shoulder and chest?
- Can the child stay seated like this for the whole trip?

Types of booster seats
There are two types of belt-positioning booster seats:
- Those that are backless.
  If your backless booster seat has a removable shield, remove the shield and use the lap/shoulder belt. If a seating position has a low seat back and no head restraint, a backless booster seat may place your child's head (top of ear level) above the top of the seat. In this case, move the backless booster to another seating position with a higher seat back and lap/shoulder belts.
- Those with a high back.
  If, with a backless booster seat, you cannot find a seating position that adequately supports your child's head, a high back booster seat would be a better choice.
Both can be used in any vehicle in a seating position equipped with lap/shoulder belts if your child is over 40 lbs.

The shoulder belt should cross the chest, resting snugly on the center of the shoulder. The lap belt should rest low and snug across the hips, never up high across the stomach.

If the booster seat slides on the vehicle seat, placing a rubberized mesh sold as shelf or carpet liner under the booster seat may improve this condition.

The importance of shoulder belts
Using a booster without a shoulder belt increases the risk of a child's head hitting a hard surface in a collision. For this reason, you should never use a booster seat with a lap belt only. It is best to use a booster seat with lap/shoulder belts in the back seat—the safest place for children to ride.

SAFETY SEATS FOR CHILDREN

Child and infant or child safety seats
Use a safety seat that is recommended for the size and weight of the child. Carefully follow all of the manufacturer's instructions with the safety seat you put in your vehicle. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

When installing a child safety seat:
- Review and follow the information presented in the Air Bag Supplemental Restraint System section in this chapter.
- Use the correct safety belt buckle for that seating position.
- Insert the belt tongue into the proper buckle until you hear a snap and feel it latch. Make sure the tongue is securely fastened in the buckle.
- Keep the buckle release button pointing up and away from the safety seat, with the tongue between the child seat and the release button, to prevent accidental unbuckling.
- Place seat back in upright position.
- LATCH lower anchors are recommended for use by children up to 22 kg (46 pounds) in a child restraint. Top tether anchors can be used for children up to 27 kg (60 pounds) in a child restraint, and to provide upper torso restraint for children up to 35 kg (76 pounds) using an upper torso harness and a belt-positioning booster.

Ford recommends the use of a child safety seat having a top tether strap. Install the child safety seat in a seating position with LATCH and tether anchors. For more information on top tether straps and anchors, refer to Attaching safety seats with tether straps in this chapter. For more information of LATCH anchors refer to Attaching safety seats with LATCH (Lower Anchors and Tethers for Children) attachments in this chapter.
Seating and Safety Restraints

Installing child safety seats with combination lap and shoulder belts

1. Position the child safety seat in a seat with a combination lap and shoulder belt.

2. Pull down on the shoulder belt and then grasp the shoulder belt and lap belt together.

3. While holding the shoulder and lap belt portions together, route the tongue through the child seat according to the child seat manufacturer's instructions. Be sure the belt webbing is not twisted.

4. Insert the belt tongue into the proper buckle (the buckle closest to the direction the tongue is coming from) for that seating position until you hear a snap and feel the latch engage. Make sure the tongue is latched securely by pulling on it.

5. To put the retractor in the automatic locking mode, grasp the shoulder portion of the belt and pull downward until all of the belt is pulled out and a click is heard.

6. Allow the belt to retract. The belt will click as it retracts to indicate it is in the automatic locking mode.
7. Pull the lap belt portion across the child seat toward the buckle and pull up on the shoulder belt while pushing down with your knee on the child seat.

8. Allow the safety belt to retract to remove any slack in the belt.

9. Before placing the child in the seat, forcibly move the seat forward and back to make sure the seat is securely held in place. To check this, grab the seat at the belt path and attempt to move it side to side and forward. There should be no more than one inch of movement for proper installation.

10. Try to pull the belt out of the retractor to make sure the retractor is in the automatic locking mode (you should not be able to pull more belt out). If the retractor is not locked, unfasten the belt and repeat steps two through nine.

Check to make sure the child seat is properly secured before each use.

**Attaching child safety seats with tether straps**

Most new forward-facing child safety seats include a tether strap which goes over the back of the seat and hooks to an anchoring point. Tether straps are available as an accessory for many older safety seats. Contact the manufacturer of your child seat for information about ordering a tether strap.

The tether anchors in your vehicle are in the positions shown:

The front passenger seat with power adjustment does not have a tether anchor. The two tether anchors on the back of the second row bench seat can be used either for child safety seats at the two seating positions, or either anchor can be used for a single LATCH child seat installed at the center of the bench seat.

**Front passenger seating position (manual adjusting seats only)**

1. Position the child safety seat on the passenger seat cushion.

*Note: Child seats should be placed in the rear in an appropriate child seat.*
Seating and Safety Restraints

2. Route the child safety seat tether strap over the back of the seat. If the head restraint is adjustable, route the tether strap under the head restraint and between the head restraint posts. If the top of the safety seat hits the head restraint, raise the head restraint to let the child seat fit further rearward.

3. Grasp the tether strap and position it to the seat frame.

4. Rotate the tether hook, and clip the tether strap to the seat frame.

5. Rotate the tether strap clip.

6. Install the child safety seat tightly using the LATCH anchors or safety belts. Follow the instructions in this chapter.

7. Tighten the child safety seat tether strap according to the manufacturer's instructions.
Rear seating positions
Follow steps 1-7 as described above for the following available seats:
- 2nd row bucket

- 2nd row bench

- 3rd row bench

For additional important safety information on the proper use of safety belts, child seats and infant seats, please read the entire Seating and safety restraints chapter in this owner's guide.

Attaching safety seats with LATCH (Lower Anchors and Tethers for Children) attachments for child seat anchors

New child safety seats have two rigid or webbel mounted attachments that connect to two anchors at certain seating positions in your vehicle. This type of child seat eliminates the need to use safety belts to attach the child seat. For forward-facing child seats, the tether strap must also be attached to the proper tether anchor. See Attaching safety seats with tether straps in this chapter.

Your vehicle has LATCH anchors for child seat installation at the seating positions marked with the child seat symbol.

If your vehicle has a second row bench seat, one child seat can be placed in each outboard seating position, or one LATCH child seat can be placed in the center of the seat only. Please note that the center-only position does not have a separate tether anchor. Either of the outboard tether anchors may be used for the center position.

Do not use the two designated seating positions of the 2nd row bench when a LATCH child seat is installed at the center. A child seat will block access to the safety belt buckles.
Seating and Safety Restraints

The lower anchors for child seat installation are located at the rear section of the rear seat between the cushion and seat back.

Follow the child seat manufacturer's instructions to properly install a child seat with LATCH attachments.

Attach LATCH lower attachments of the child seat only to the anchor shown.

If you install a child seat with rigid LATCH attachments, do not tighten the tether strap enough to lift the child seat off the vehicle seat cushion when the child is seated in it. Keep the tether strap just snug without lifting the front of the child seat. Keeping the child seat just touching the vehicle seat gives the best protection in a severe crash. Adjusting the seatback angle may allow the tether strap to be tight without lifting the child seat.

Each time you use the safety seat, check that the seat is properly attached to the lower anchors and tether anchor. Try to tilt the child seat from side to side. Also try to tug the seat forward. Check to see if the anchors hold the seat in place.

If the safety seat is not anchored properly, the risk of a child being injured in a crash greatly increases.
Appendix D

Miscellaneous Test Information
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