NPACS Test Bench

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Background

- Geometric and stiffness properties derived from research
- 30 vehicles examined

Vehicles selection based on:
- Sales
- Child safety performance in EuroNCAP
- Known child restraint interaction problems
General description

- Backrest and seat cushions supported by rigid frame
- Cushion characteristics defined by FTSS specification – T75500
- Covered with sun shade cloth (FTSS)

- Design dependent on child restraint method of attachment
  - To accommodate different type and location of anchorages
Child restraints attached with the seat belt

Dimensions and 3-D view
Child restraints attached with the seat belt

Seat belt anchorages

- Referenced from Cr point (x and z axes) and test seat centreline (y axis)
- Coordinate system:
  - Positive x = Fore (towards front of sled)
  - Positive y = Left to right (from occupant’s point of view)
  - Positive z = Downwards

<table>
<thead>
<tr>
<th>Anchorage</th>
<th>Upper (mid position)</th>
<th>Upper (fwd position)</th>
<th>Lower inner (buckle)</th>
<th>Lower outer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction</td>
<td>x        y        z</td>
<td>x        y        z</td>
<td>x        y        z</td>
<td>x        y        z</td>
</tr>
<tr>
<td>Distance (mm)</td>
<td>-240     -250      -630</td>
<td>-130     -250      -630</td>
<td>-29       200       59</td>
<td>10        -200      14.5</td>
</tr>
</tbody>
</table>
Child restraints attached with the seat belt

Seat belt retractor

- Complies with UNECE Regulation 16 for retraction force
- Diameter: 33 ± 0.5 mm
Child restraints attached with ISOFix

Dimensions and 3-D view
Child restraints attached with ISOFix

ISOFix anchorages

- Referenced from Cr point (x and z axes) and test seat centreline (y axis)

- Coordinate system:
  - Positive x = Fore (towards front of sled)
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  - Positive z = Downwards

<table>
<thead>
<tr>
<th>Anchorage</th>
<th>Lower left</th>
<th>Lower right</th>
<th>Top tether G1</th>
<th>Top tether G2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction</td>
<td>x</td>
<td>y</td>
<td>z</td>
<td>x</td>
</tr>
<tr>
<td>Distance (mm)</td>
<td>-65</td>
<td>-140</td>
<td>-2</td>
<td>-65</td>
</tr>
</tbody>
</table>
Child restraints attached with ISOFix

Sled floor pan

- 210 mm below Cr axis (adjustable)
- Surface hardness ≥ 120 HB, according to EN ISO 6506-1:1999
- Surface roughness ≤ Ra 6.3, according to ISO 4287:1997
- Withstands 5 kN vertical concentrated load
  - Vertical movement ≤ 2 mm (relative to Cr axis)
  - No permanent deformation
Do You Have Any Questions?