5th centile female Belt Routing with NPACS bench

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11 April 2012
Summary

1. Starting from UTAC study to define a reference belt routing using 5th female dummy
2. Test of TRL bench with its 2 upper positions
3. Modify upper anchorages
4. Check with Astra H and Golf 6
5. Conclusion
1. Initial study from UTAC

- Superposition of 10 belt routings
TRL Bench

- TRL’s Child Seat Rating, (TCSR) from July 2009 defined anchorages location for belt installation with reference to Cr point:

  Positive x = Fore (towards the front of the sled)
  Positive y = Left to right (from the 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>
Forward upper point
Forward upper point
Forward upper point

Reference from UTAC study
Rearward upper point
Rearward upper point
Rearward upper point

Reference from UTAC study
Adjusted upper Point
Adjusted upper Point
Adjusted upper Point

Adjusted upper point = Rear TRL + 30 mm in Y
X = -240 mm
Y = -220 mm
Z = -630 mm
Summary – NPACS bench

Most Forward

Rearward

Adjusted
Comparison with Golf 6 and Astra H

Astra H  Golf 6  Adjusted
Conclusion

• Slight modification (30 mm) on TRL upper anchorage position enables to get equivalent belt routing as the one from UTAC study.
• Comparison with Astra H and Golf 6 in line with proposal