ISO SC12/WG1
TF4 Status

F. RENAUDIN
18th September 2013
A new work item has been proposed to ISO in 2009 to improve compatibility between CRS and vehicles. To achieve it, a Task Force TF4 chaired initially by Véronique Denier (Renault) was established. This Task force proposed to improve compatibility in 3 directions:

1. Belt compatibility (revision of belt length and load bearing point)
2. Isofix Compatibility
   - Support Leg
   - Top Tether
3. Isofix booster compatibility
Presentation of TF4

• Part 2 of the compatibility work (Support Leg) was used by GRSP Informal Group to build new i-Size requirements for the Support Leg.

• In May 2011 SC12/WG1 decided to focus TF4 on Isofix Booster Compatibility. A new Chairman was chosen for the TF4: F. Renaudin (DOREL)

• Action Plan decided in May 2011
  – Gather dimensions of existing boosters
  – Build a fixture
  – Get Feedback from OEM
  – Amend fixture
After gathering information from volunteer CRS manufacturers (Japan, Europe, US) an initial fixture was proposed to include a majority of existing CRSs. This initial fixture was abandoned after investigations from OEM.
Current Booster CRS in cars

- A study lead by TÜB (ISO/N978) confirm this situation.
  - The current booster CRS do not fit in all cars
New Fixture Proposals

- New fixtures were proposed by Audi, Volvo and TÜB
New Fixtures Proposals

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In May 2012 ISO/SC12/WG1 decided

- To select TÜB 135 cm fixture (representativeness of TÜB study)
- To modify TÜB 135:
  - Buckle accessibility
  - Verification of 135 cm 95th percentile dimension

- To define a booster only cushion

- To evaluate a transition criteria for side impact responsibility between CRS and cars.
  - The position of 5th percentile female dummy head was considered
Not enough cushion thickness for 135 P95

135 P95 into CRF
TÜB CRF modifications : N1007

- CRF modification proposed : green areas

Top areas : +2 cm + a cut for 800 mm

Rear shape of ISO CRF
95°-110° angle for the back side

Increase of Cushion height and length

Introduction of lateral recess
Feedbacks from N1007

• Need to enlarge backrest angle from 90 to 110°
Feedbacks from N1007

- Buckle accessibility N1015
  - **CRF 135:**
  - **Vorschlag Dorel:**

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Kontakt zum Gurtschloss

Kein Kontakt zum Gurtschloss

Schnitt in X-Richtung
Feedbacks from N1007

- Buckle accessibility N1023

Close up view buckles, outboard seats

Sufficient cut-out for buckles
Feedbacks from N1007

- Buckle accessibility Renault analysis no ISO N number
  - Interference with a non rigid buckle
Feedbacks from N1007

- Remarks N1023

Note: Clearance and smooth surface on CRF needed for IC deployment.
Feedbacks from N1007

- Other interferences N1023
Feedbacks from N1007

- Renault Lardy Workshop August 2013
Feedbacks from N1007

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Feedbacks from N1007

• Renault Lardy Workshop August 2013
  – Possibility to install the fixture in all vehicles
  – Need to give clearance in certain areas.
  – A new version of the CRF will be proposed soon to TF4
Transition height

- Document N 1301 Swedish Workshop

Renault Megane, P10

- Britax KidFix: +1 cm
- BeSafe iZi Up X3 Fix: +3 cm
- Volvo booster cushion with backrest: +2 cm
- Volvo booster cushion: -3 cm
Transition height

- Document N 1301 Swedish Workshop

**Renault Megane, P6**

<table>
<thead>
<tr>
<th>Car Seat Brand</th>
<th>Relative Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax KidFix</td>
<td>+2 cm</td>
</tr>
<tr>
<td>BeSafe iZi Up X3 Fix</td>
<td>+7 cm</td>
</tr>
<tr>
<td>Volvo booster cushion with 4 cm</td>
<td>-4 cm</td>
</tr>
<tr>
<td>Volvo booster cushion</td>
<td>-2 cm</td>
</tr>
</tbody>
</table>
Transition height

• Document N 1301 Swedish Workshop

Summary
  – Height:
    • The P10’s head is in level or above the adult’s head.
    • The P6’s head is in line with the adult’s head, except when using the Volvo booster.

The P6 head depends on CRS geometry
Transition height

- Renault Lardy Workshop August 2013
Transition height

- Renault Lardy Workshop August 2013

Initial rough measurements

<table>
<thead>
<tr>
<th></th>
<th>Head height (from 5th percentile female head position as reference)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Clio</td>
</tr>
<tr>
<td>Q6 + Booster 1</td>
<td>-4 cm</td>
</tr>
<tr>
<td>Q6 + Booster 2</td>
<td>-4 cm</td>
</tr>
</tbody>
</table>

- The Q6 dummy’s head is close to 5th percentile female
• Comparison using i-Size bench
  – Head upper position/Cr point

Transition height

HIII 5th
- H : 770 mm

P10
- H : 796 mm

Q6
- H : 687 mm
Transition height

- Proposal

Assumptions: Cars protect the 5th percentile female

A CRS must protect a child head up to a position of [750 mm] in height compared to Cr point.

Consequences: Possibility to Reduce the CRF in height
Transition height

- Renault Lardy Workshop August 2013
Transition height

- Potential reduction of CRF
Conclusion

• After several iteration a CRF based on TÜB study has been proposed.

• A version taking into account Workshop and CAD reconstructions will be proposed soon

• It is needed to protect a 135 cm child

• Workshop in cars and on bench show that
  – P10 head is often above 5th percentile female head
  – Q6 head is slightly below 5th percentile female head depending on the CRS geometry

• A transition height using the i-Size bench can be proposed.
  – This transition height when selected will have consequences on CRF height