Dorel Europe Safety Center

Force transmitted by Support leg

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Summary

• Target
• Description of the tests
  – Pulses
  – Measurement device
  – Type of seats tested
  – Type of floor flexibility
• Analysis
  – Force level
  – Dummy criteria
• Conclusion
Target of the Study


2. Evaluation of dummy safety criteria with floor flexibility
Description of the tests

Pulses

Using a R44 bench 2 types of pulses were applied on each type of seat tested
Description of the tests

Pulses

Using a R44 bench 2 types of pulses were applied on each type of seat tested

Euroncap type pulse
Description of the tests

Measurement Device

Load Sensor:
- Mono Axial
- Max Load 500 DaN/sensor

- R44 Bench
- Support Leg
- Rigid floor
- Load sensor * 4
- Sled
Description of the tests

Type of Seats

Seat A :
Group 1 FWF
Maxi Cosi Priorifix
Weight : 14.6 kg
Description of the tests

Type of Seats

Seat B:
Group 1 RWF
Recaro Polarc
Weight: 13.6 kg
Description of the tests

Type of Seats

Seat C:
Group 0+ RWF
Maxi Cosi Cabriofix
+ Easyfix base
Weight: 12.2 kg

Tests performed only in R44
Description of the tests

Type of Floor

Different type of 50 mm thick materials were placed on the initial bench floor:

- A rigid spacer
- A 84 g/l foam
- A 35 g/l foam
- A 25 g/l foam

The different foam were given by Renault. They seem to be EPP foams.
Analysis of Results

Force to the Floor – R44

<table>
<thead>
<tr>
<th>Seat</th>
<th>A PrioriFix</th>
<th>B Recaro</th>
<th>C CabrioFix (EasyFix)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy Maximum</td>
<td>P3</td>
<td>P3</td>
<td>P1.5</td>
</tr>
<tr>
<td>Force (N)</td>
<td>3956</td>
<td>5681</td>
<td>2750</td>
</tr>
</tbody>
</table>
Analysis of Results

Force to the Floor – EuroNCAP

<table>
<thead>
<tr>
<th>Seat</th>
<th>A PrioriFix</th>
<th>B Recaro Polaric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy</td>
<td>P3</td>
<td>P3</td>
</tr>
<tr>
<td>Maximum Force (N)</td>
<td>4295</td>
<td>6334</td>
</tr>
</tbody>
</table>
Analysis of Results

Force to the Floor / Floor Flexibility / R44
Analysis of Results

Force to the Floor / Floor Flexibility

![Graphs showing EuroNCAP results for Seat A PrioriFix and Seat B Polaric across different material floor densities.](image-url)
Analysis of Results

Force to the lower Isofix Anchorages – R44

![Graph showing maximum force (N) vs. floor density (kg/m³) for different seats: Seat A PrioriFix, Seat C CabrioFix, Seat B Polaric.]

- R44 - Lower Anchorage Maximum Load
  - Seat A PrioriFix
  - Seat C CabrioFix
  - Seat B Polaric
Analysis of Results

Dummy criteria – Head Excursion Seat A

![Graph showing head excursion versus crush for R44 criteria with PrioriFix data point]
Analysis of Results

Dummy criteria – Head Excursion Seat B and C
Analysis of Results

Dummy criteria – Thorax and Head Acceleration

R44

R44 Head Acceleration

R44 Chest Acceleration
Analysis of Results

Dummy criteria – Thorax and Head Acceleration

R44
Conclusion

- Force transmitted by support leg are dependant of CRS weight and configuration.
- The highest load are given by Gr1 Rearward Facing.
- The floor flexibility range given by Renault were either too stiff without big deformation or too soft reaching the maximum available deformation.
- The floor flexibility didn’t show significant increase of Head or Thorax deceleration.
- The support leg intrusion into the floor can produce increase of Head Displacement and must be limited.