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Informal document No. **GRSP-48-26**
(48th GRSP, 7 - 10 December 2010,
agenda item 21)

GRSP Side Impact Proposal





Target

- Cheap simple method able to be duplicated in different labs (Hyge, PU Tubes, Metal sheet, Hydraulic braking system ...)
- Able to replicate the basics and fundamental parameters of lateral impact





Reference

- ISO CD/PAS 13396
 - Essential Parameters
 - Intrusion Loading
 - Intrusion Velocity
 - Intrusion Surface Height
 - Isofix anchorages :
 - Reasonable to allow dedicated movement





Key Learnings from ISO TF1

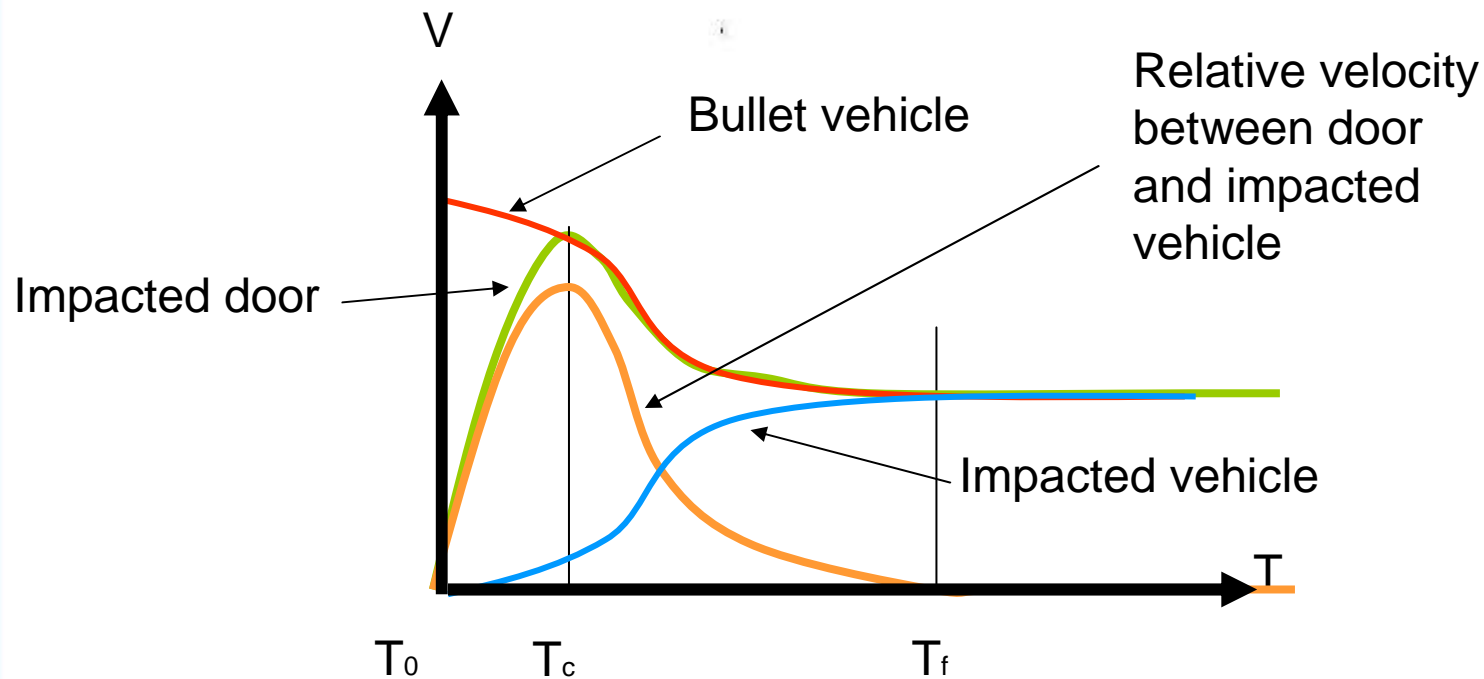
- Intrusion velocity is the main loading parameter
- It is fundamental to manage the intrusion velocity precisely during the impact between the CRS and the door
 - A narrow intrusion velocity corridor is requested.





Assumptions

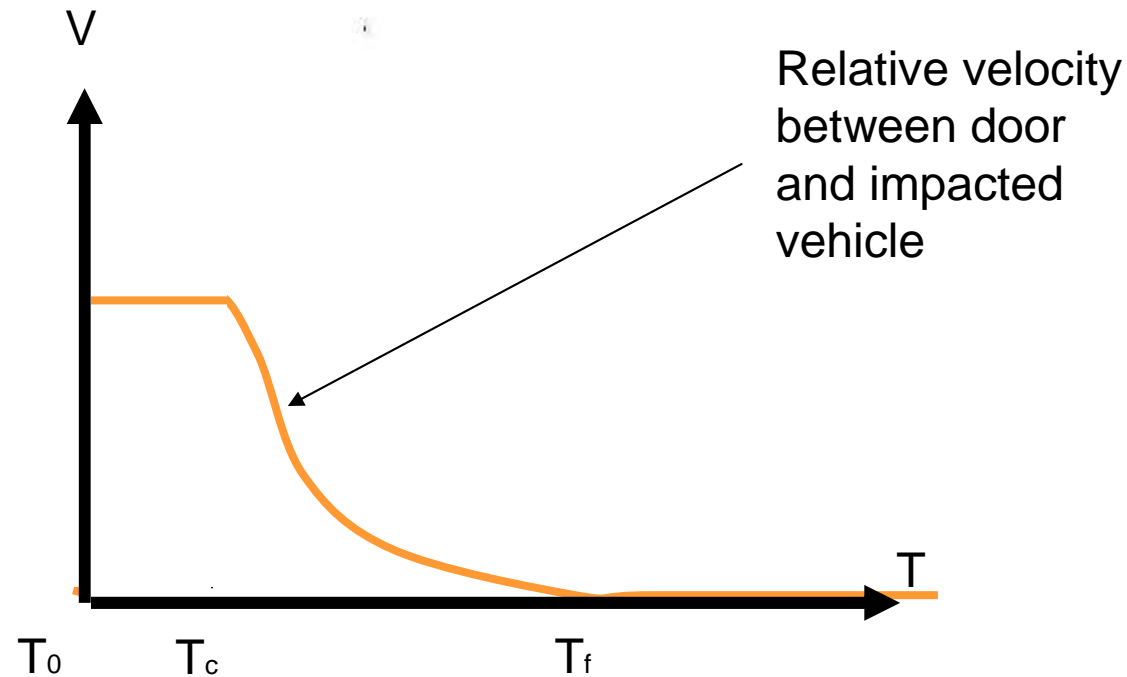
- Velocity change during lateral impact





Assumptions

- Door contact with CRS after T_c
 - Keep only decreasing part of the door to impacted car velocity curve





Assumptions

- In the method proposed to GRSP IG in 10th meeting (April 2009), it has been chosen to duplicate only the decreasing part of the intrusion velocity.
- The proposal includes a narrow corridor to keep the same loading severity for different tests.





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Possible solution presented to GRSP IG

One possible solution to reproduce this part of the intrusion velocity was proposed during the 10th GRSP IG meeting.

- Since R44 rear impact parameters were close to ISO CD/PAS 13396 recommendation
 - Intrusion velocity (7 – 10 m/s)
 - Intrusion (200 – 300 mm)
 - Sled acceleration 10 – 14 g

It has been chosen to start from this basis with some light modification

- Decrease of initial velocity.
- Decrease of stopping distance.





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Possible solution presented to GRSP IG

Test setup

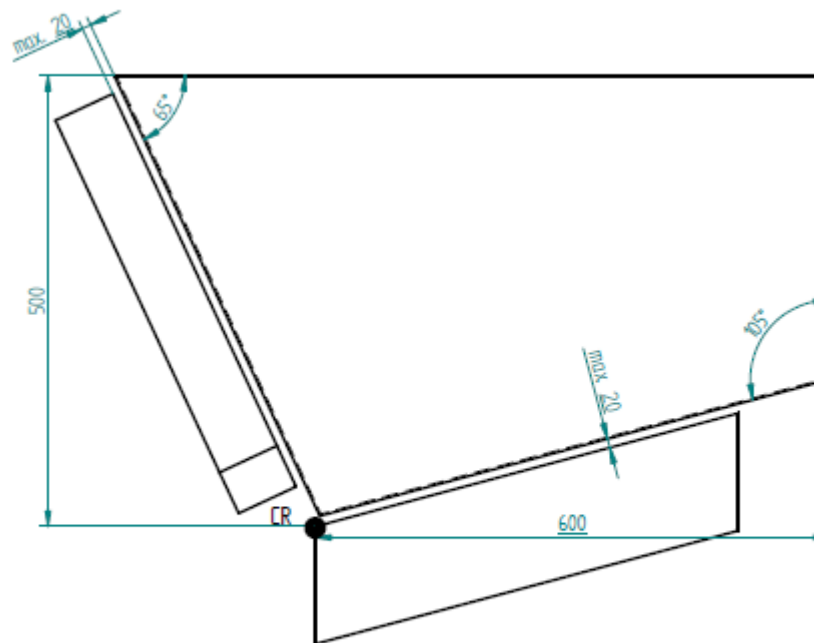
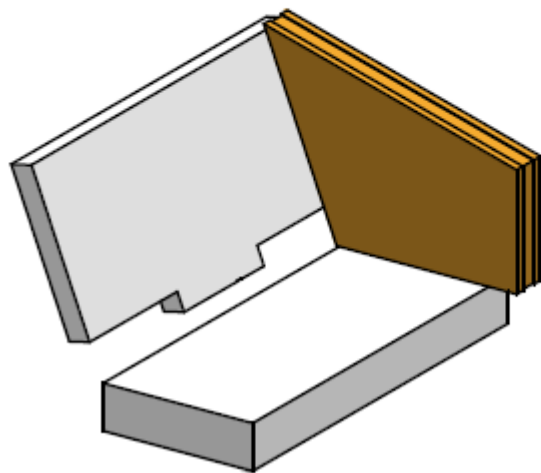
- Impactor on the reaction mass
- Bench on the sled

Precise management
of the intrusion
speed by the
braking system of
the sled





Door definition

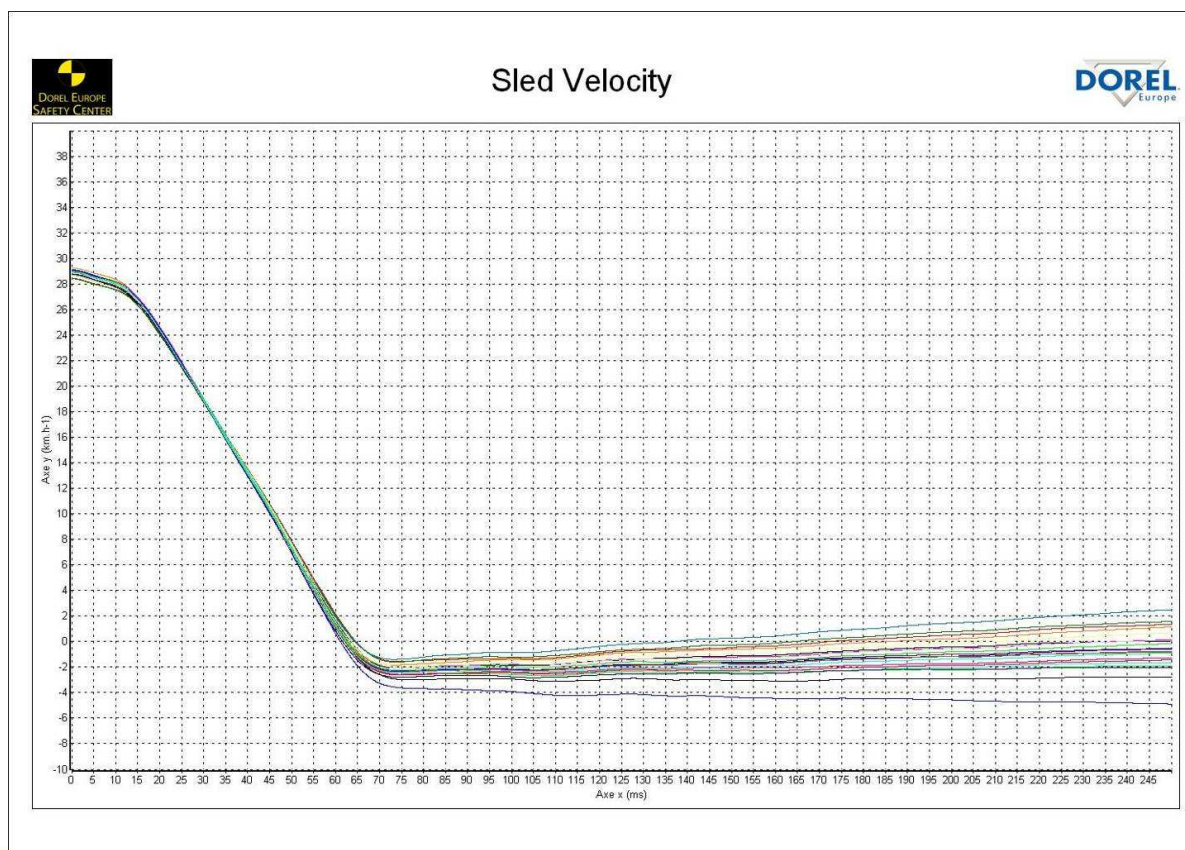




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Possible solution presented to GRSP IG

- Repeatability of intrusion velocity (21 tests, 3 types of CRS-es)

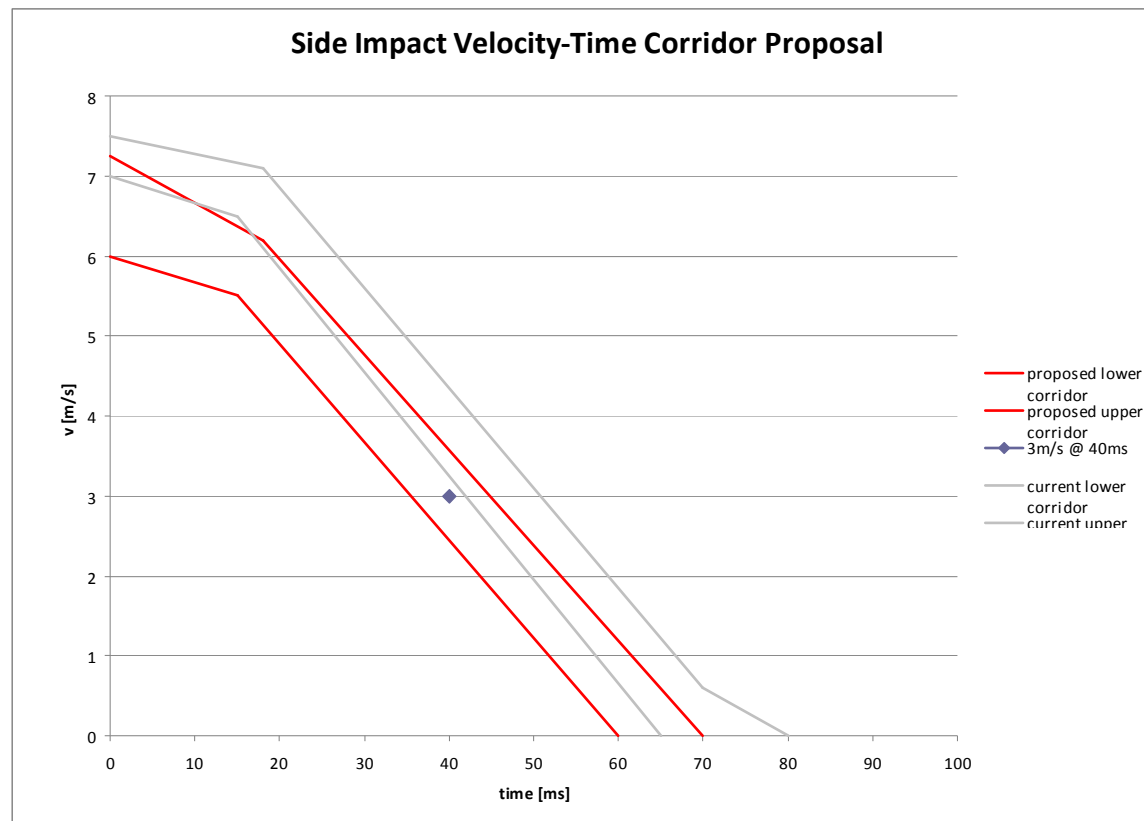




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Possible solution presented to GRSP IG

- Proposed Velocity corridor





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Possible solution presented to GRSP IG

Door Intrusion





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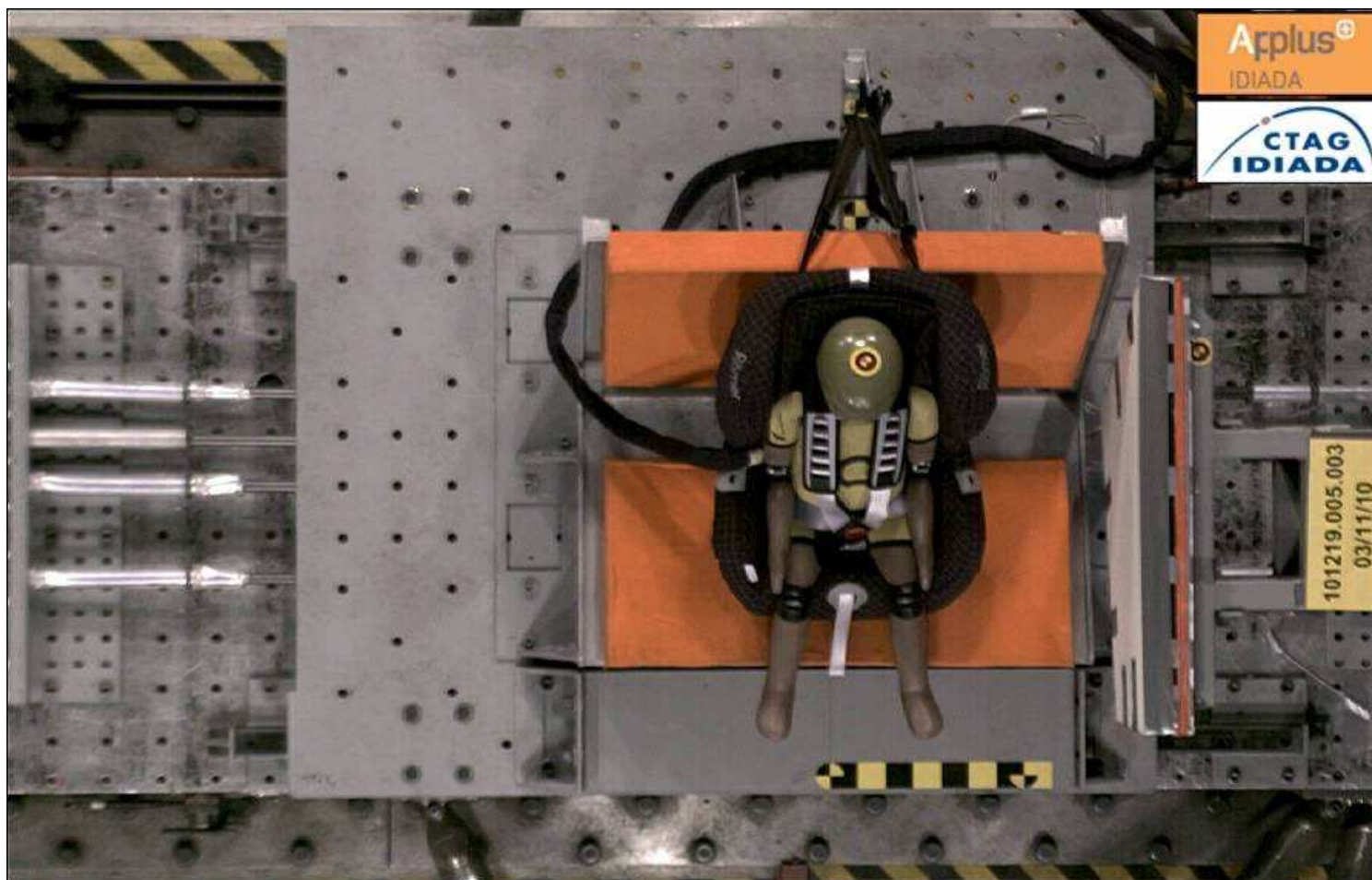
Test with metal bar





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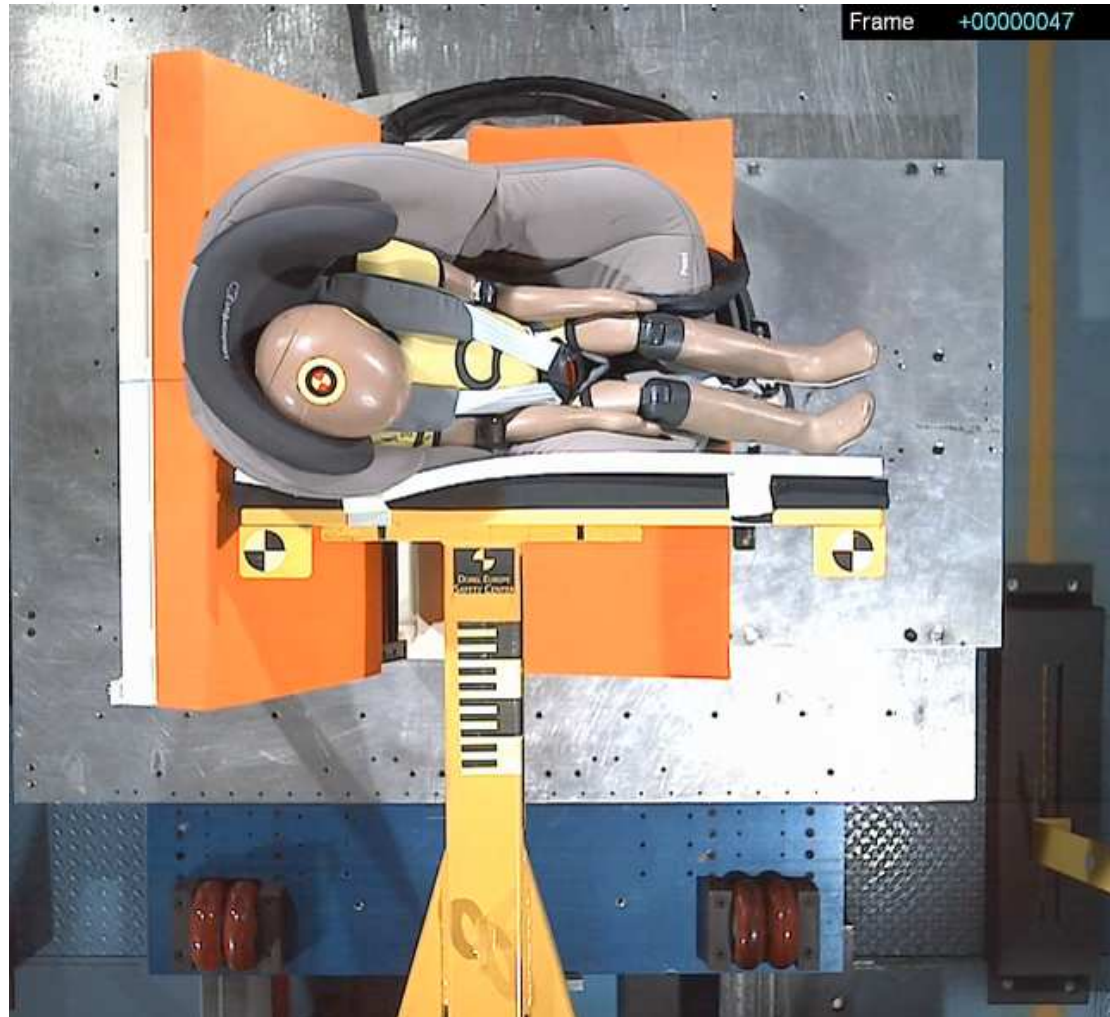
Test with Hyge





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Test with hydraulic break



Video





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Test with PU tubes

