BioRID – Dummy Artefacts
T2 Jacket Bolts / Shoulder Plates

GTR 7 – Meeting
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Hypothesis

- Depending on the shape of the backrest load can be applied through the shoulder to the spine
- Possible interaction between torso jacket bolts and inner shoulder plates

Test set-up
- Testing
  - Hard bucket seat
  - SRA 16 crash pulse
- Simulation
  - Hard bucket seat
  - Standard vehicle seat
  - SRA 16 crash pulse
Design of the dummy

Upper torso jacket bolts

Inner plates
Kinematics

Load path shoulder to spine
Hard bucket seat
Vehicle seat

Interaction between bolts and plates (hard bucket seat)
Test Results
Dummy D078

• Positive neck force is mainly caused by the load applied via the upper torso jacket bolts incl. the interaction with the inner shoulder plates
  – Change of Nkm by 11% and of NIC by 2%
Conclusion

- Shape of the back rest can enable a load path through the upper torso jacket bolts (T2) → significance influence on forces and moments
  - Curved → Load path through shoulder-bolts to the spine influences measurements
  - Flat → Minor influence to the measurements
- Clamping of shoulder plates at jacket bolts can introduce load to the spine
Remaining Questing

• Shoulder bolt load path:
  – Is this a biofidelic behavior of the BioRID?
  – Is the curvature of the back rest in the shoulder region responsible for WAD protection?