

---

Japan Research Activities in the GTR-7 Phase 2 amendment  
**Bio RID II Smaller Design Torso**  
**Angle seat seating trial**

**JASIC/Japan**

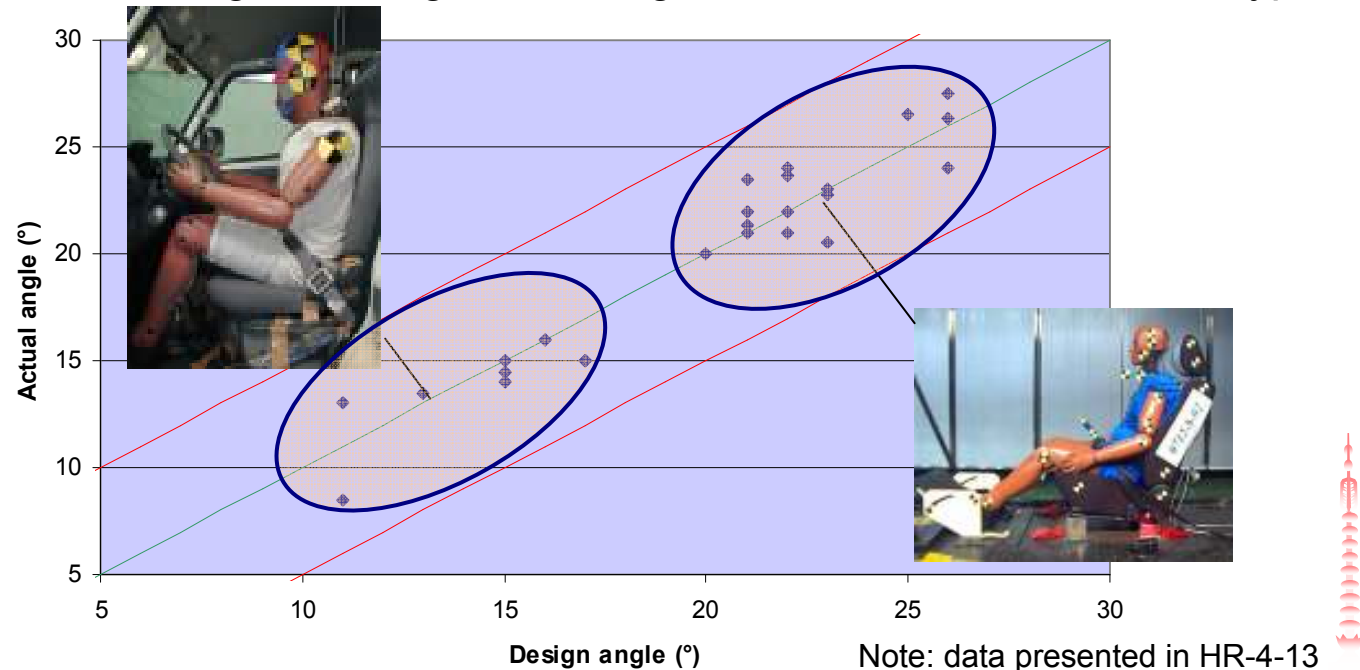
**May. 17. 2010**



# Background of Design Torso Angle Proposal

**Note: presented in HR-6-13**

Range of design torso angles used in different vehicle types



- Design torso angle is specified by typical driving posture for each type of vehicle and seating height. It is varied from 10° to 30° .
  - For certain seat designs, 25° bears no relation to the real world seating position and in some cases may not even be physically achievable
  - Advise the use of the procedure specified in ECE17 Annex 3
- All other safety tests, including vehicle crash tests, are conducted with the design torso angle.

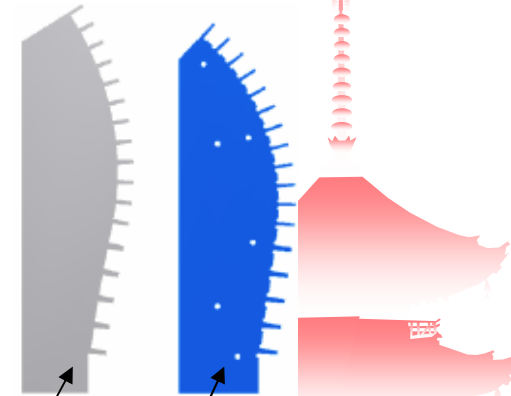
# Smaller Design Torso Angle seat seating trial

Problem in the case of 10 degree torso angle seat

- Head can not remain **laterally level**.
- Distance between head and head restraint is greater than HRMD backset+15mm =112mm.



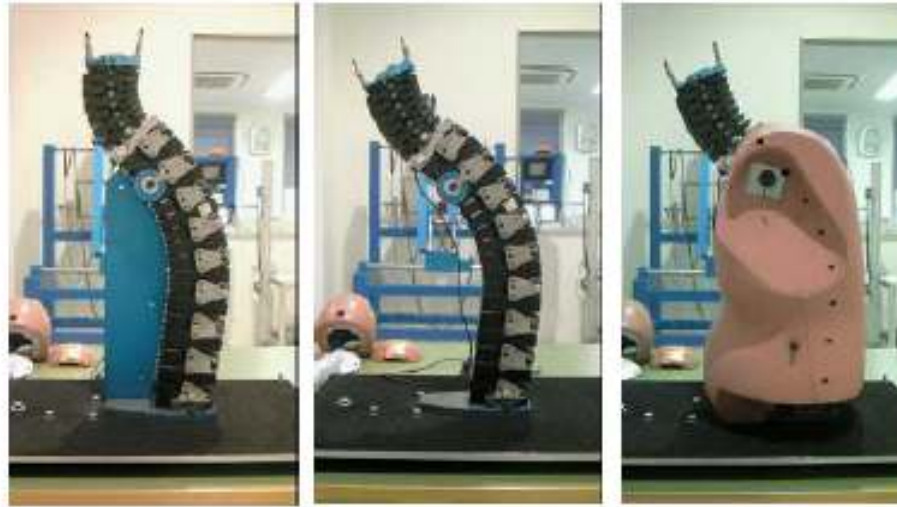
Develop a new comb to adjust spine for upright torso angle.



Upright tool    Standard tool<sup>3</sup>

# Smaller Design Torso Angle seat seating trial

## Standard tool



the spine adjusted by original tool

## Upright tool

The spine and jacket are able to install without any conflict.



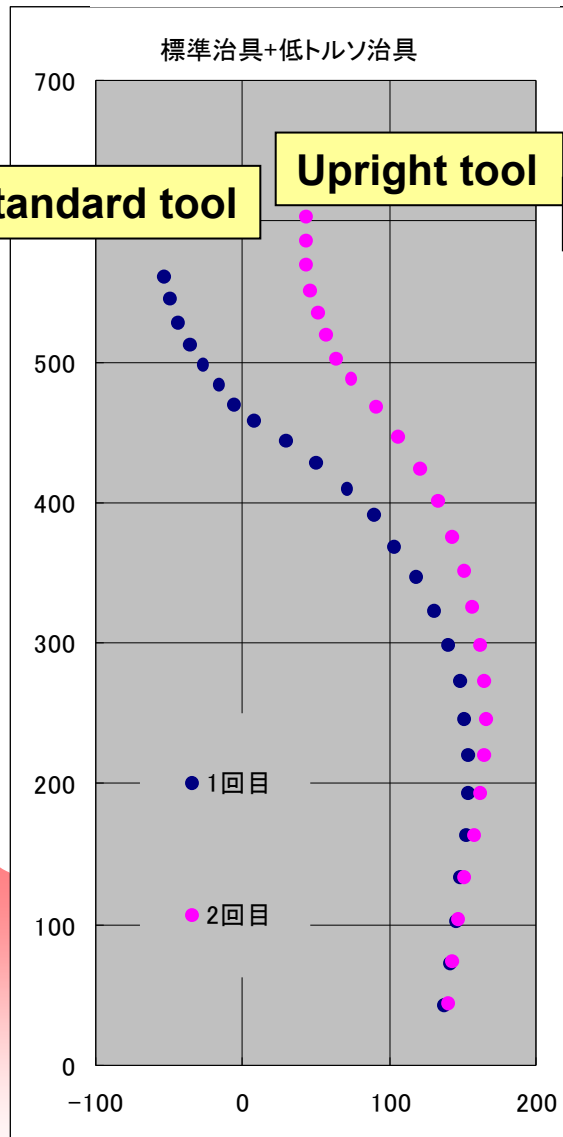
the spine adjusted by new tool for low torso angle



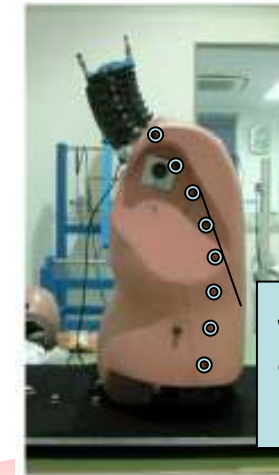
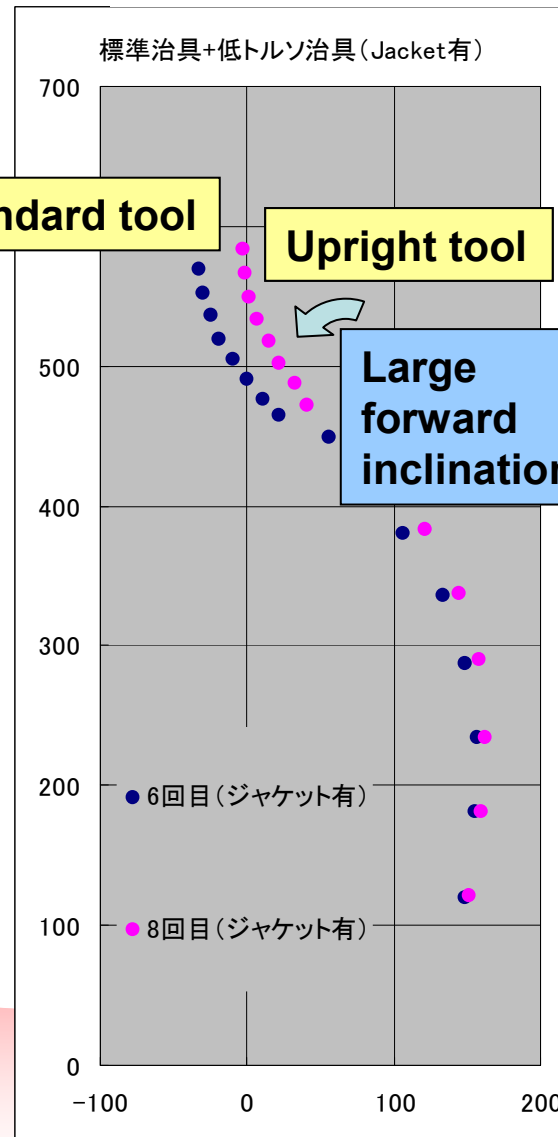


# Spine Pin and Point Measurement Result

## Without Jacket



## With Jacket



Jacket attachment bolts restriction



# Seating Trial Result

- Dummy head angle and backset are improved with upright tool.
- In the case of about 14 degree torso angle, head can maintain laterally level, however, backset is little bit smaller than target, 112mm.

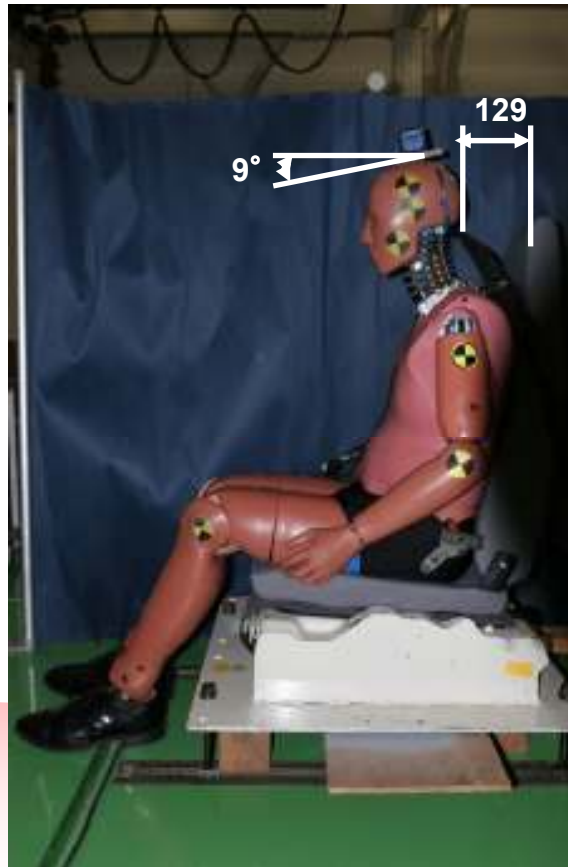
## Standard tool

with 10 degree torso angle



## Upright tool

with 10 degree torso angle



## Upright tool

with about 14 degree torso angle condition



# SUMMARY

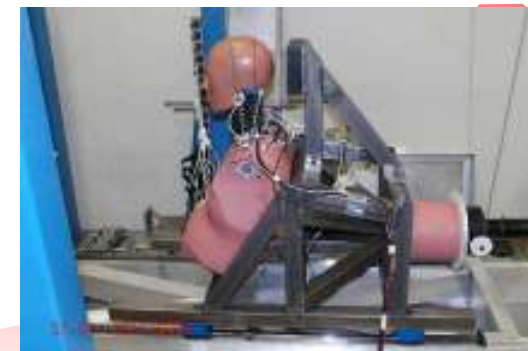
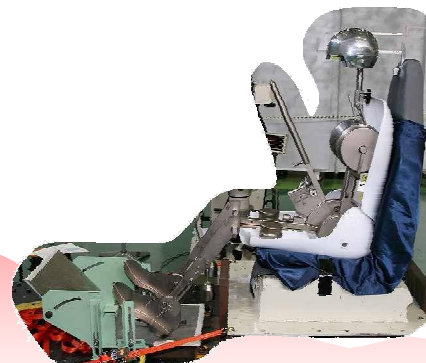
---

- ◆ The spine and jacket are able to install without any conflict.
- ◆ T2 angle of Upright tool is about 15 degree greater than standard tool
- ◆ Large forward inclination is occurred due to the jacket attachment bolts restriction
- ◆ Dummy head angle and backset is improved for 10 degree torso angle seat with upright tool, However, head angle is still tilted due to jacket restriction.
- ◆ In the case of about 14 degree torso angle, head can maintain laterally level, however, backset is 16mm smaller than target value.



# DISCUSSION

- The upright tool human scientific background and target dimension, including seating backset, are need to verify.
- Jacket and calibration tool modification are need to study.
- Development & research schedule is also need to study. If necessary tentative alternative solution need to study, for example static backset option etc.



Thank you for your attention !

