

UNECE GRSP Ad-hoc Group Data on Equitable Occupant Protection (DEOP)

Draft minutes of the 3rd meeting held on June 9, 2022. Digital meeting with 34 participants.

Welcome and introduction

Pernilla Bremer of the Swedish Transportation Agency opened the meeting and welcomed all participants.

Adoption of the agenda

Approved.

Minutes from previous meeting

Approved.

Latest GRSP

Recap of the GRSP session in May 2022 on DEOP.

Presentations

1. Håkan Sundmark (Autoliv) presented “Review of DEOP related requirements”. The aim of this review was to add general data regarding current regulations and evaluation tools.
 - a. The status is that we currently see that the male ATD’s (50th percentiles) are used in 18 different regulatory tests (plus 2 “pending”), whereas the female ATD’s (5th percentiles) are used in 9 different regulatory tests.
 - b. Another part of the presentation looked at Sitting Heights and Buttock-to-Knee Length of both Frontal Impact Testing and Side Impact Testing ATD’s.
 - c. Another interesting data set was a comparison of selected US Anthropomorphic Data and corresponding ATD metrics. The metrics Standing Height, Weight, Upper Leg Length for both male and female ATD’s were all compared to corresponding anthropomorphic data. As an example, the standing height for a “sitting ATD” was defined by measuring (by CAE and/or on a physical ATD) and summarizing the “joint-to-joint” distance from under the foot to the top of the head. Standing heights and weights for the female 5th percentile ATD’s corresponded relatively well with anthropometric data, whereas the upper leg length of the ATD’s were much longer than anthropometrics. Similar trend for the male ATD’s.
 - d. Thorax Certification – Samples of Injury Risk Curves (for HIII5F, HIII50M, SID-11s and WorldSID50M) were discussed in relation to discrepancies between regulatory/rating criteria and corresponding dummy thorax certification test corridors.
 - e. Mixed Population – A scatter plot of Male and Female Mass vs. Stature Distribution was discussed.
 - f. Targets & Rewards – A sample of Regulatory Requirements vs. Rating Requirements was discussed.

2. Ken Bonello and Thomas Kinsky (Humanetics) presented “Anthropometric Test Devices”. The presentation provided an overview of available ATD’s and did focus specific attention on the new advanced test dummies THOR, both the THOR 50M and the THOR 5F. Related aspects were discussed, such as the context with crash regulations and rating standards, as well as CAE models of dummies (digital twins of the dummies) and digital Human Body Models.

3. Ines Levallois (Forvia) presented “Whiplash protection for female occupants”. This presentation is based on the EU research project ADSEAT. The background of ADSEAT has been provided in previous DEOP meetings and this time some important observations were shared. Whiplash protection of 3 typical serial seats were compared through virtual testing with the following two virtual dummies:

- BioRID simulation model, representing a 50th male
- EvaRID simulation model, representing a 50th female

Recommendation for regulatory development is to assure that no geometric mismatch occurs. There is no need to wait for a new female dummy, such as the EvaRID; a geometric check is feasible and might suffice, according to Ines.

For correctly adjusted Head Restraints for height for a 50th female (lowest or head restraint aligned with the head, whichever is higher):

- Assure that the head of the 50th female is retained in rear impact by stiff parts within the head restraint.
- Details how to define this requirement and needed coverage area -> TBD.

Next step

Discussion and decision to aim for a spin-off regarding rear impact and protection against neck injuries, known as whiplash injuries, and concurrently continue the general work to get a better understanding of differences regarding sex in occupant protection through further data collections and shared research findings. The specific work to initiate a regulatory review and development on rear impact (and head restraints) will be done in the same group, NB this Ad-hoc DEOP Group.

Next meeting

September 2022; date to be decided through a poll/doodle.