BIORID for GTR-HR

Limits proposal

F. MINNE, 06 december 2006
Background & aim

BioRID versus HIII used in sled tests with Saab&Volvo seats before and after anti-whiplash redesign

Saab and Volvo seats have been shown to reduce claims and injuries when redesigned with SAHR&Whips (GTR-HR #05-12)

The BioRID is shown to interact with a car seat more biofidelic compared to the HIII (whiplash II project)

The aim of this presentation is to compare the results of sled tests using the BioRID and the HIII
**Method**

**Seats:** Saab 9-3 and Volvo V70 seat models before and after anti-whiplash redesign 1998/99.

**Sled tests:** According to IIWPG and FMVSS202a* (quite similar crash pulses)

*values taken from NHTSA publication and previous HIII sled tests
IIWPG rating results

IIWPG rating based on static and dynamic testing, Dynamic Assessment based on T1/head contact, \( F_x \) and \( F_z \)

**Seat results:**

- Saab 900: Poor
- Saab 9-3 (V1): Moderate
- V70 w/o whips: Poor
- V70 with whips: Good
Tests done with Biorid
BioRID Fx values versus HIII head-torso angle

![Graph showing BioRID Fx values versus HIII head-torso angle.](image)

- Saab 900
- Saab 9-3
- V70 before
- V70 after

Head torso angle [deg]

Upper neck Fx [N]
BioRID Fx values versus HIII head-torso angle

Latest test program done with 32 seats of the European market

Biorid Fx values from 32 tests done in 2006

94% of that latest test program seats covered

300N
BioRID Fx values versus HIII head-torso angle

![Graph showing BioRID Fx values versus HIII head-torso angle. The graph includes data points for Saab 900, Saab 9-3, V70 before, and V70 after. The graph also highlights the angle proposed level and the neck shear proposed level.]
Proposal

As an alternative to the HIII and head-torso angle of [20°], we propose the BioRID and upper neck shear force (Fx) of [300N]

HIC Value still measured for both HIII and BIORID (limit at 500)