

Japan Research Activities for new Bio RID II calibration method in the GTR-7 Phase 2 IWG

JASIC/Japan
Feb. 2-3. 2010



Dummy Calibration Method Comparison Tests

The current method and newly proposed methods for calibrating BioRIDII dummies were compared and studied using 3 dummies.

- (1) Current calibration method (calibration method currently used)
- (2) New calibration method (newly proposed calibration method without headrest)
- (3) New calibration method (newly proposed calibration method with headrest)

Dummies used:

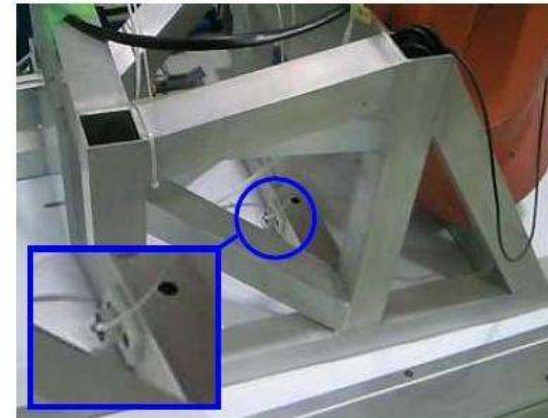
BioRIDII dummies (Ver.G)

- (1) 02G dummy (used for about 7 years)
Old damper, new jacket
- (2) 95G dummy (used for about 1 year)
New damper, new jacket
- (3) 102G dummy (new)
New damper, new jacket

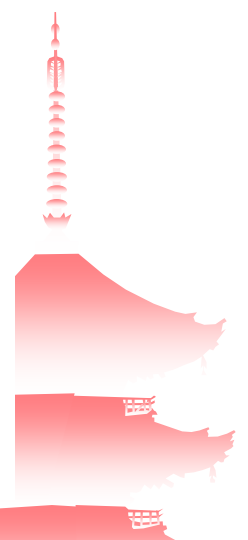
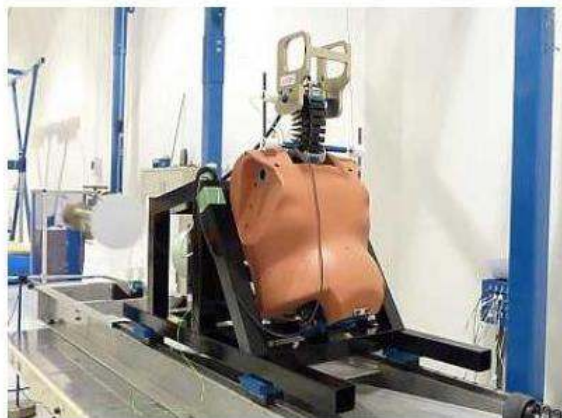


Calibration Method

(1) Old Sled



(2) New Sled without H/R

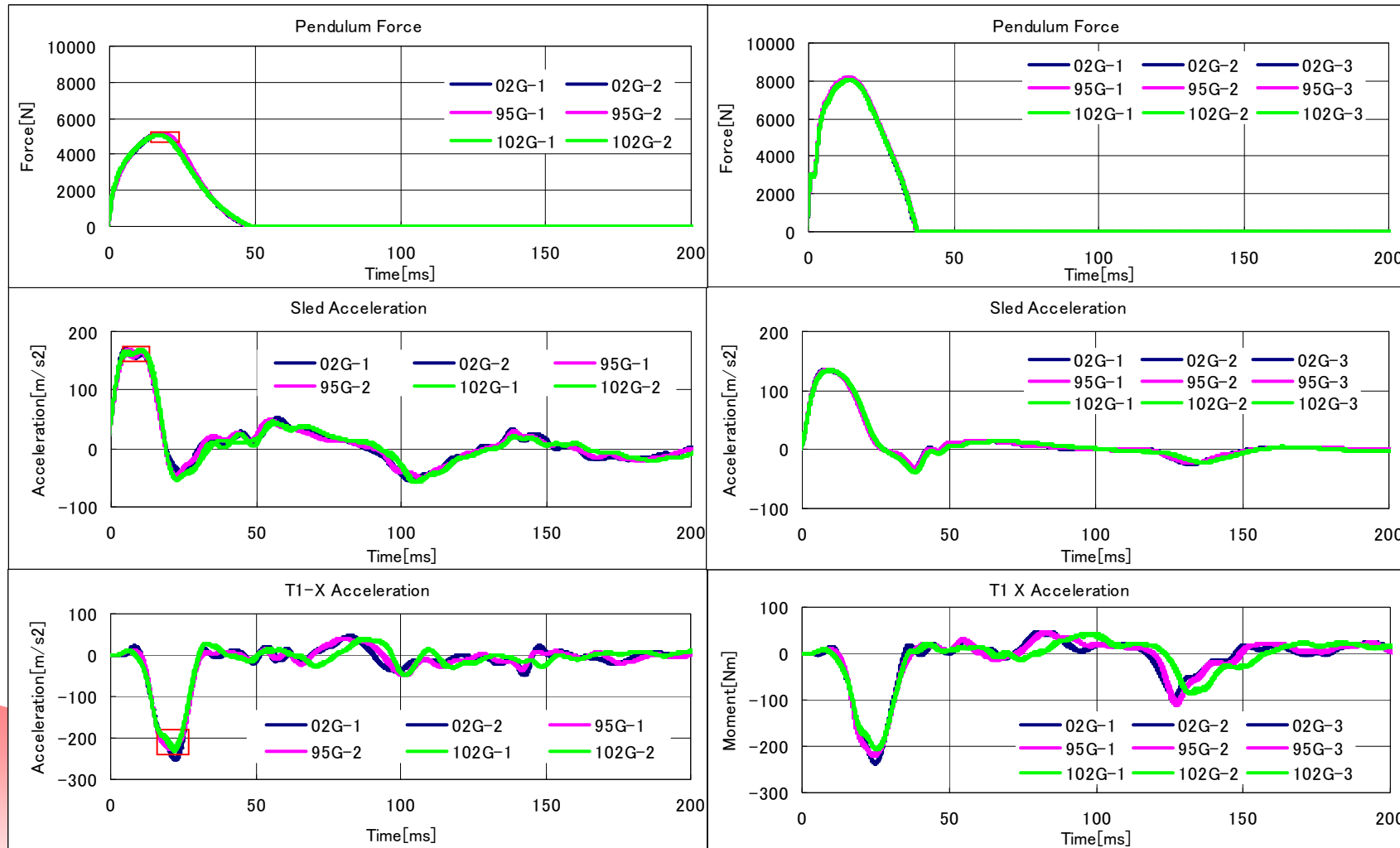


Parameters to measure: Pendulum force, Sled acceleration, T1(first thoracic vertebra) acceleration, Head rotation angle (Pot.A), Neck rotation angle (Pot.B), First thoracic vertebra rotation angle (Pot.C), Upper neck force & moment (UpperNeck-FX, FZ, MY)

Old Sled & New Sled without H/R

(1) Old sled without H/R

(2) New sled without H/R

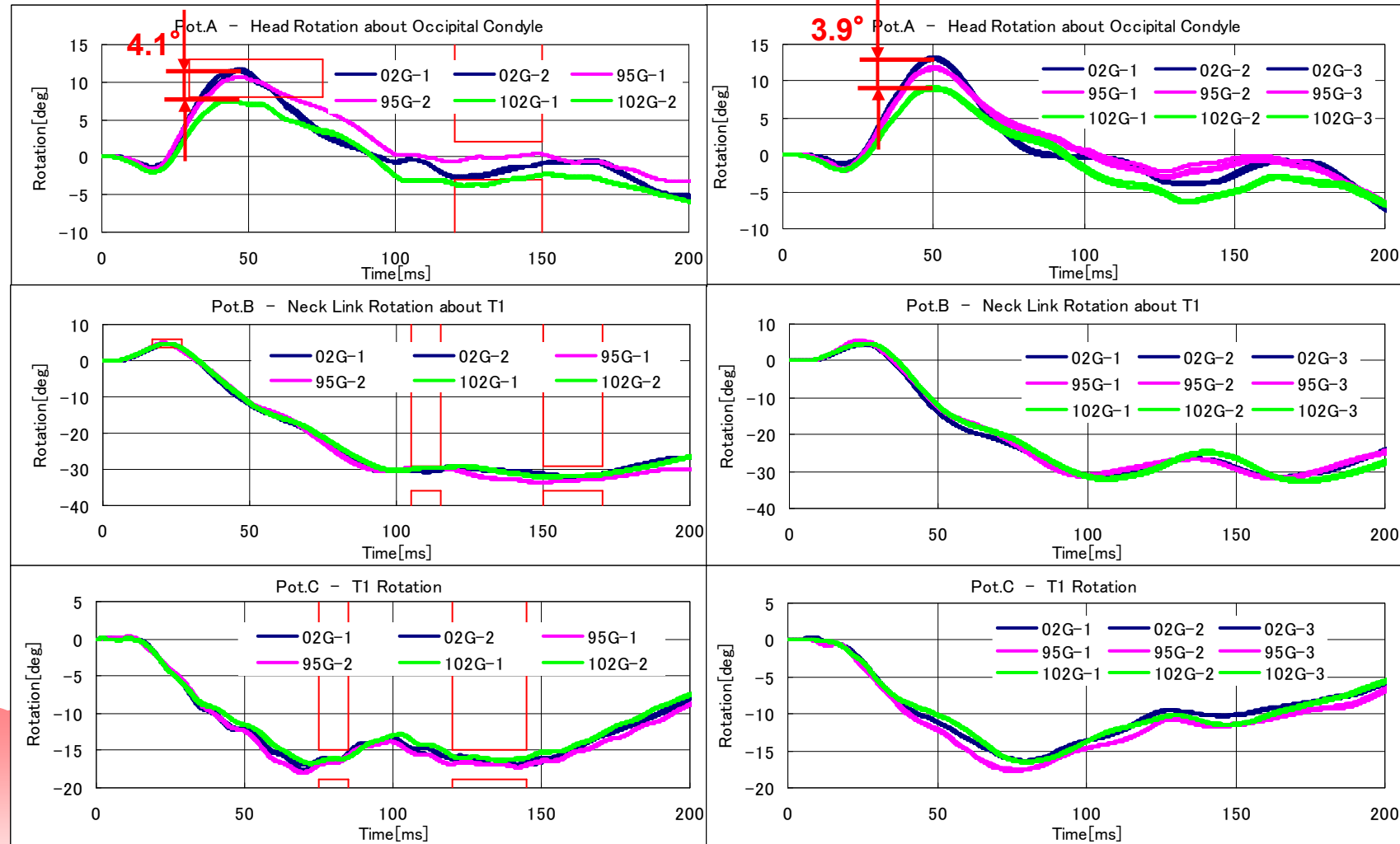


* The level of impact was almost the same between current and new methods in all tests. 4

Old Sled & New Sled without H/R

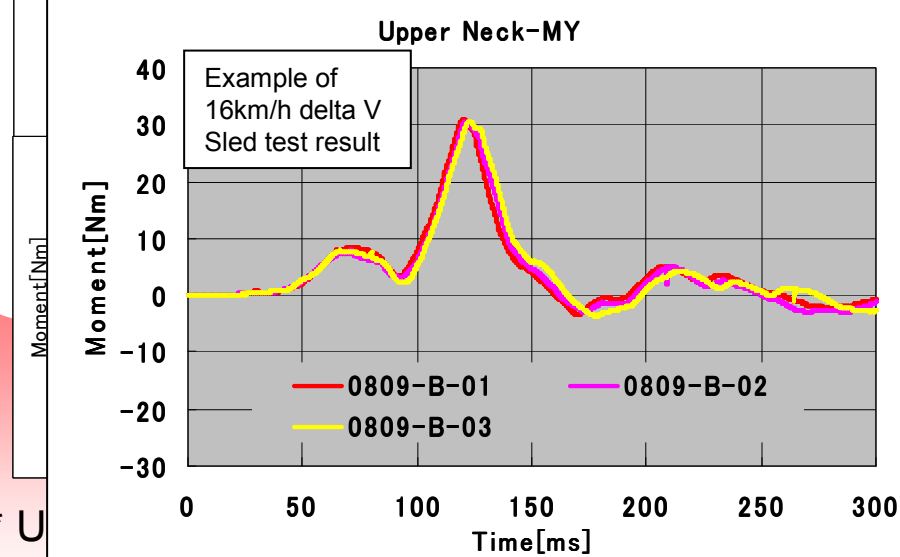
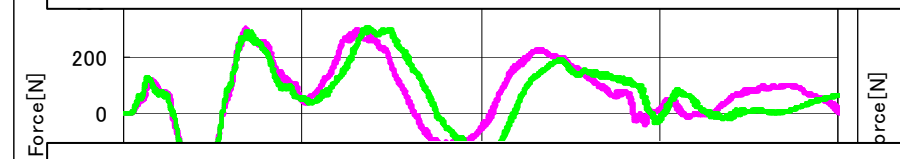
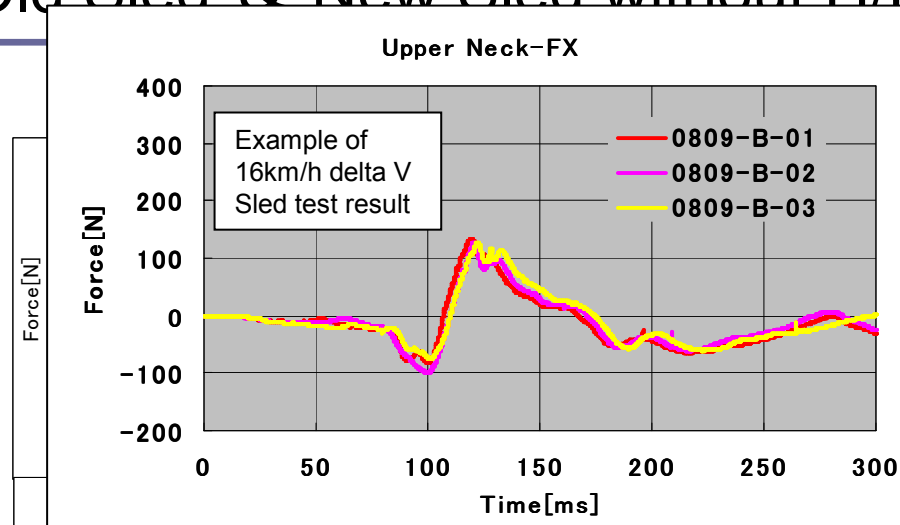
(1) Old sled without H/R

(2) New sled without H/R

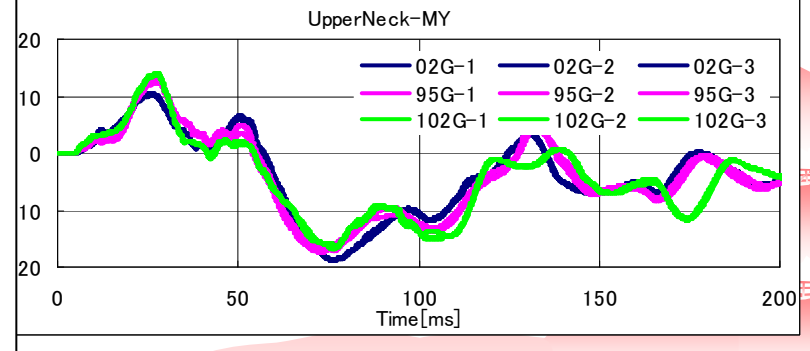
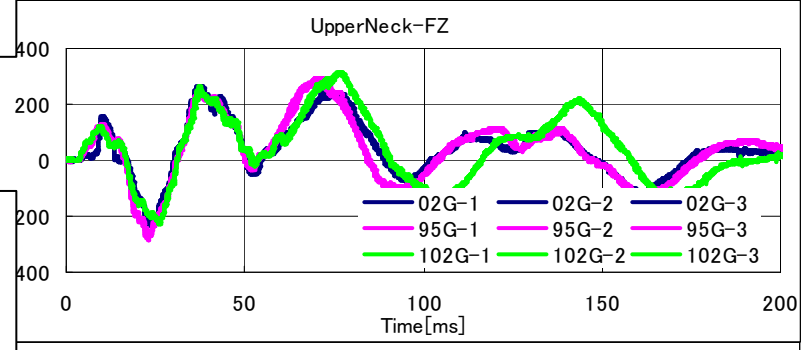
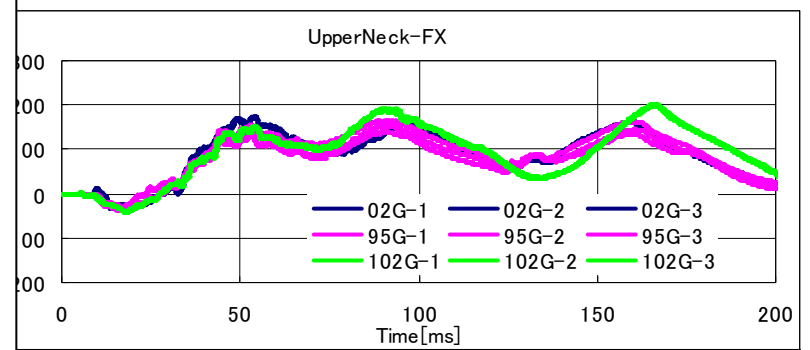


* Rotation Angle: While the waveform tendencies differed between current and new methods, the same differences that were seen among dummies in the current method were also observed in the new method.

Old Sled & New Sled without H/R



(2) New sled without H/R



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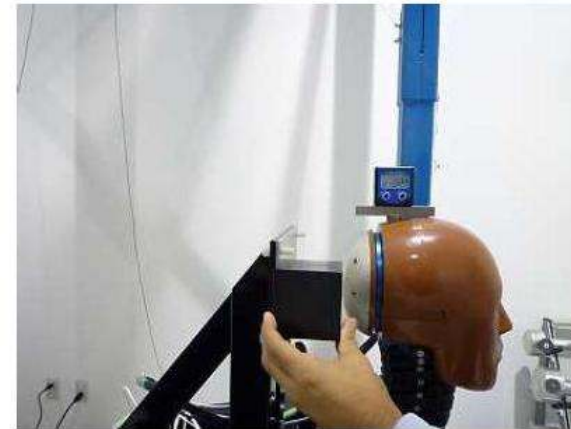
arm tendencies differed between current and new methods, the same differences that were seen among dummies in the current method were also observed in the new method.

Summary of the Results of Comparison Between (1) Current Calibration Method (without Headrest) and (2) New Calibration Method (without Headrest)

- * The level of impact was almost the same between current and new methods in all tests.
- * Rotation Angle: While the waveform tendencies differed between current and new methods, the same differences that were seen among dummies in the current method were also observed in the new method.
- * Upper Neck Force & Moment: While the waveform tendencies differed between current and new methods, the same differences that were seen among dummies in the current method were also observed in the new method.
- * The new method presented some differences among dummies that were not seen in the current method .

Calibration Method

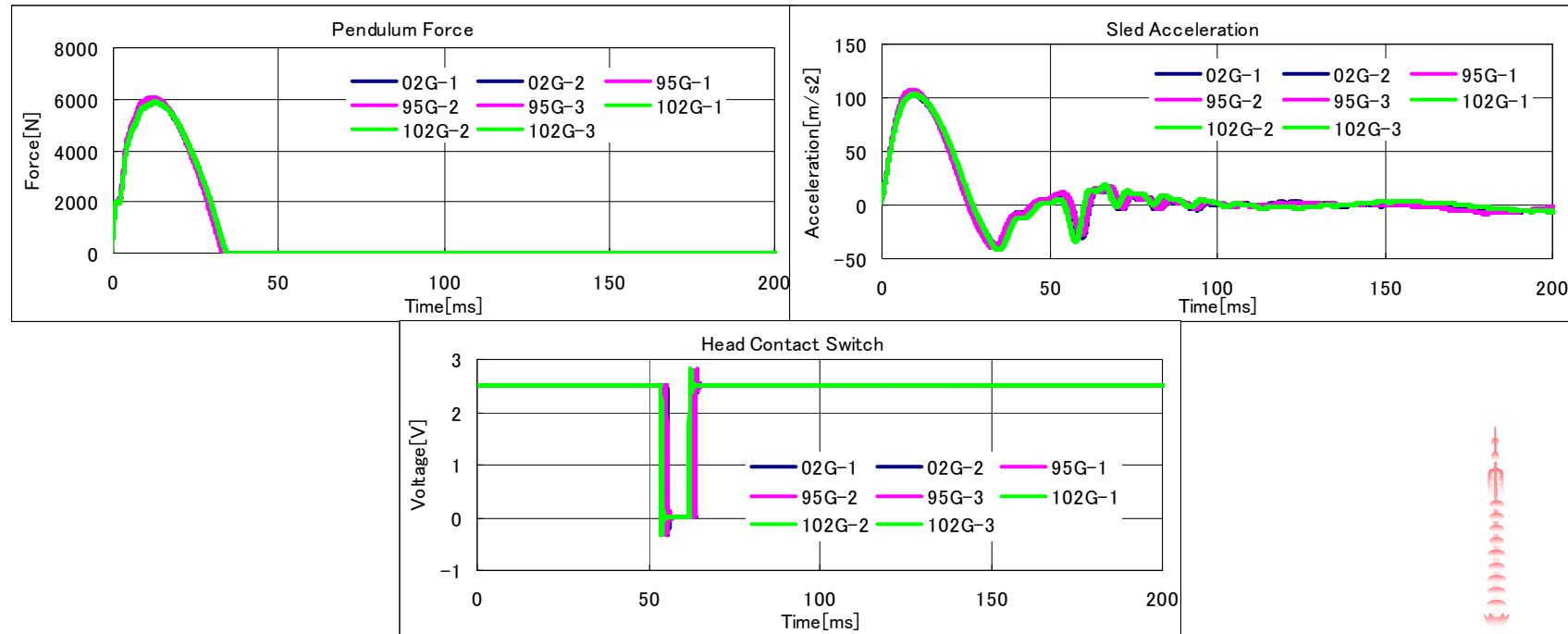
(3) New Sled with H/R



Parameters to measure: Pendulum force, Sled acceleration, Upper neck force & moment (UpperNeck-FX, FZ, MY), Lower neck force & moment (LowerNeck-FX, FZ, MY)



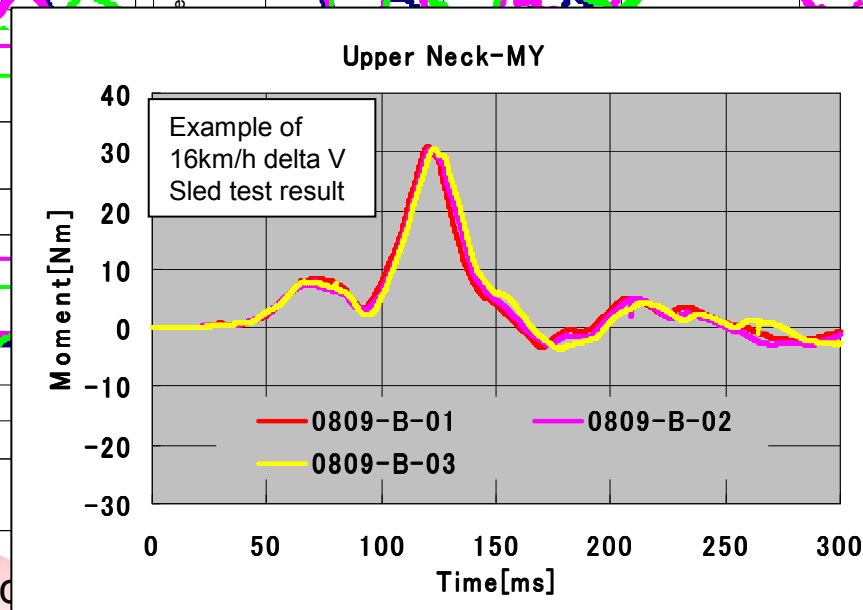
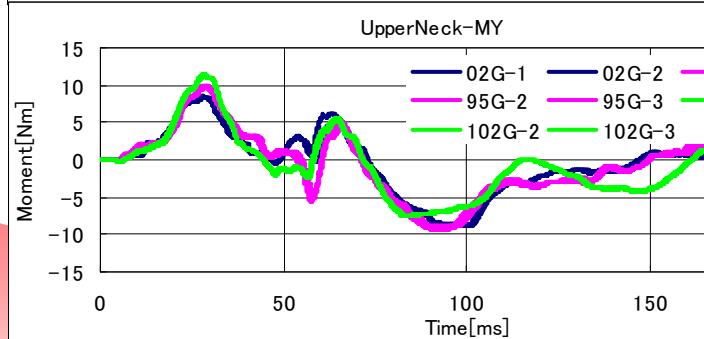
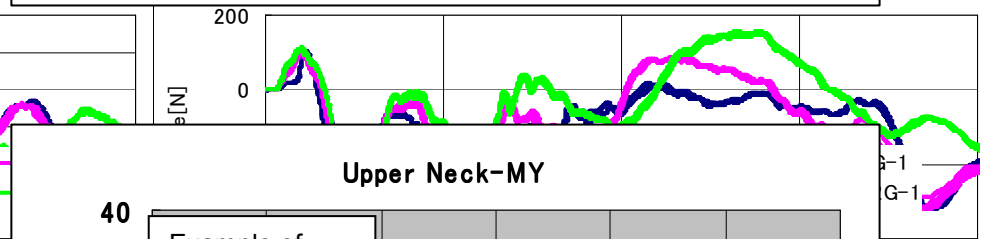
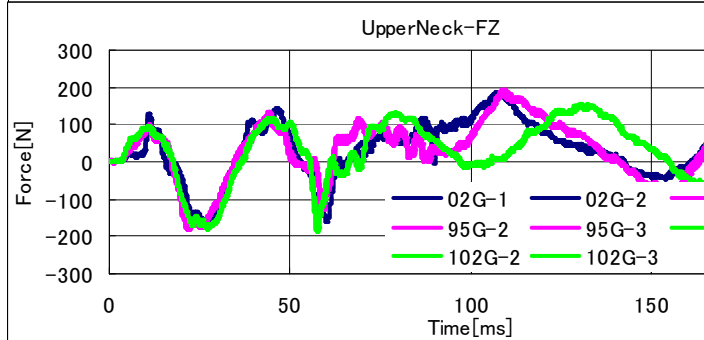
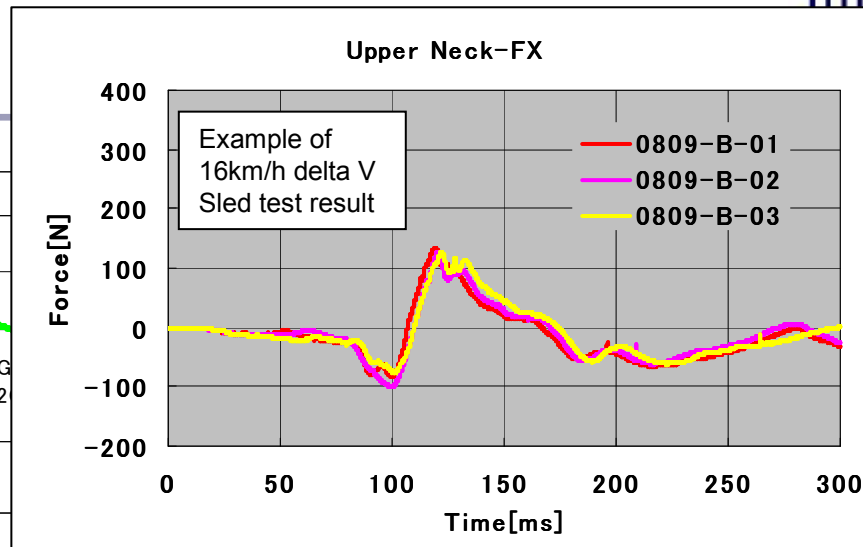
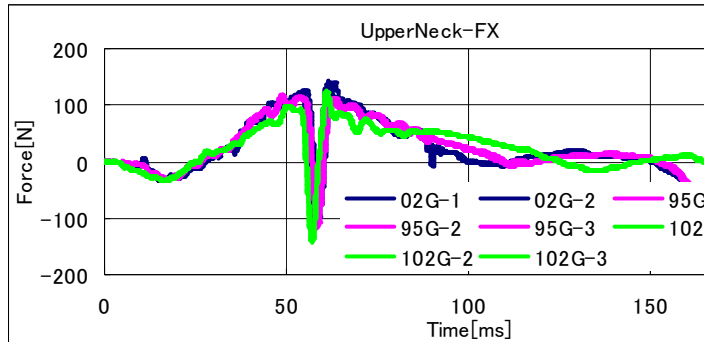
New Sled with H/R



* Pendulum Force: The impact was given in the same manner in all tests.

* The same differences in the peak force/moment, etc. among dummies that were seen in the current and new methods without headrest were also observed in the new method with headrest.

New Sled with H/R



* The same differences in the peak force and moment between the current and new methods without headrest were also observed in the new method with headrest.

Summary of the Results of All Tests

- * The level of impact was almost the same in all tests.
- * The same differences in the peak acceleration, rotation angle, force/moment, etc. among dummies that were seen in the current method were also observed in the new method without headrest.
- In the new method with headrest, the same differences in the peak force/moment, etc. among dummies that were seen in the current and new methods without headrest were also observed.
- In the new method with headrest, the out put value and shape are closer to the results of 16km/h delta V sled test than other method.
- * The damper damage that had occurred in Korea was not observed in the present tests.

Sled Test Method

- Dummy & Number of tests
 - Denton 3 different BioRIDII-g (02G, 95G, 102G)
[Dummy was calibrated before the test by FITP]
 - 9 times test (3 dummies x 3 seats)

- Test Site: JARI (Japan Automobile Research Institute)

- Pulse: GTR-Phase1 Dynamic option test
(Same as the EuroNCAP Medium pulse 16 km/h)

- Seat: Normal seat, Passive seat, Re-active seat

