

# WorldSID 50<sup>th</sup> Percentile Male Side Impact Dummy W50-00000

WorldSID50 Percentile Male Side Impact Dummy has developed under international sponsored project. ISO/TC22/SC12/WG5 has been working with international technical expert group and county representative.

The final specification has not specified yet. The major issue are Shoulder, Thorax, Abdomen test result.

The keys of Crash Test dummy are to fulfill the requirement of biopedelic corridors with repeatability, reproducibility, durability, sensitivity.

JASTI has developing WorldSID50 based on ISO specification of ISO 15830 requirements as well as European RoSH2 material safety.



WorldSID 50M w/o suit, front and side view:

Specification:

Body segment mass

| Body segment                      | 2015 Updated weight (kg) |
|-----------------------------------|--------------------------|
| Head                              | 4.29 ± 0.05 kg           |
| Neck                              | 2.86 ± 0.02 kg           |
| Thorax/Abdomen/Shoulder           | 20.56 ± 0.35 kg          |
| Two half arms                     | 3.52 ± 0.08 kg           |
| Lumbar spine and Pelvis           | 17.76 ± 0.20 kg          |
| Two upper legs                    | 13.26 ± 0.08 kg          |
| Two lower legs/ankles/feet        | 10.12 ± 0.14 kg          |
| Clothing                          | 1.54 ± 0.10 kg           |
| Total with clothing and half arms | 73.91 ± 1.02 kg          |

Body dimension :

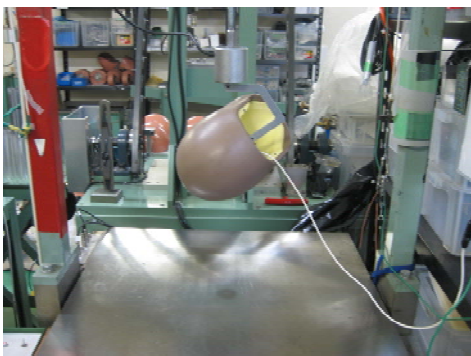
|                       |             |
|-----------------------|-------------|
| Seated height         | 869 ± 30 mm |
| Knee to Back line     | 670 ± 30 mm |
| Width across arms     | 468 ± 30 mm |
| Half arm length (L/R) | 330 ± 30 mm |
| Waist width           | 324 ± 30 mm |
| Knee to shoe height   | 588 ± 30 mm |

Certification Test : Head Test:

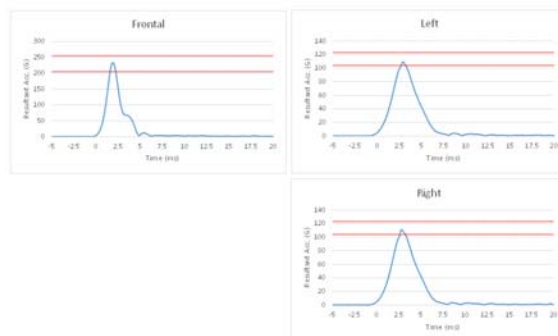
WorldSID 50M Head certification tests are requested as Frontal and Lateral Left and Right.

WorldSID Head validation specifications:

| Frontal Drop                                    |            | Lateral Drop                                    |            |
|---|------------|---|------------|
| Peak resultant acceleration (G)                 | 205 to 255 | Peak resultant acceleration (G)                 | 104 to 123 |
| Peak lateral acceleration (ay)(G)               | < 15       | Peak lateral acceleration (ay)(G)               | < 15       |
| Maximum percentage, subsequent-to-main peak (%) | < 10       | Maximum percentage, subsequent-to-main peak (%) | < 10       |



Lateral Head Drop Test :

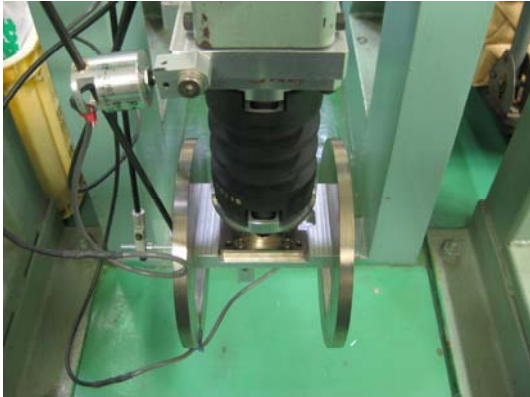


Head drop Test data

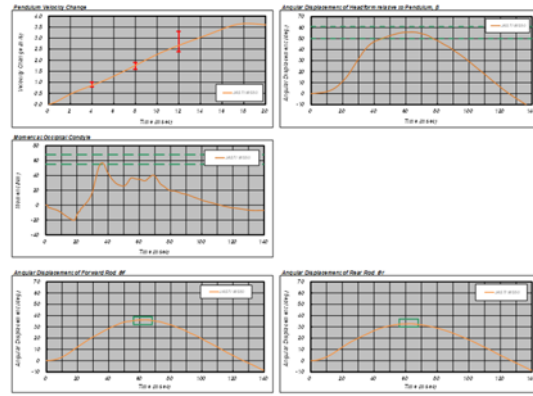
Neck: Test:

WorldSID50M の Neck test are followed by 49 CFR Part 572, Subpart E (Hybrid 50M). The validation specification are followed as below specification.  
WorldSID Neck validation specification:

|   |          |
|---|----------|
| Maximum angular displacement of the head from relative to the pendulum, $\beta$ (degrees) | 50 to 61 |
| Decay time of $\beta$ to 0 degrees (ms)   | 58 to 72 |
| Peak moment at occipital condyle (Nm)   | 55 to 68 |
| Peak moment decay time to 0 Nm (ms)a  | 71 to 87 |
| Peak forward potentiometer angular displacement (degrees)                                 | 32 to 39 |
| Time of peak forward potentiometer angular displacement (ms)a                             | 56 to 68 |
| Peak reward potentiometer angular displacement, $\theta F$ (degrees)                      | 30 to 37 |
| Time of peak reward potentiometer angular displacement, $\theta R$ (ms)a                  | 56 to 68 |



Neck pendulum validation test:



Neck Test data:

Pelvis test:

WorldSID 50M Pelvis Impact Test are the same Pendulum system with Hybrid-III50th Chest Impact Probe(23.4kg) with seat..

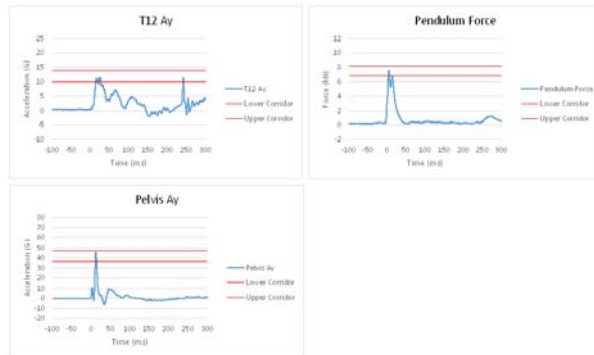
Pelvis H-point at 6.7 m/s impact speed. The results meet the followed specification

WorldSID Pelvis validation specifications:

|   |            |
|---|------------|
| Peak pelvis acceleration along y axis (G) | 37 to 47   |
| Peak Pendulum force (kN)                  | 6.8 to 8.2 |
| Peak T12 acceleration along y axis (G)    | 10 to 14   |



Lumbar spine and pelvis impact test::



Test data:

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