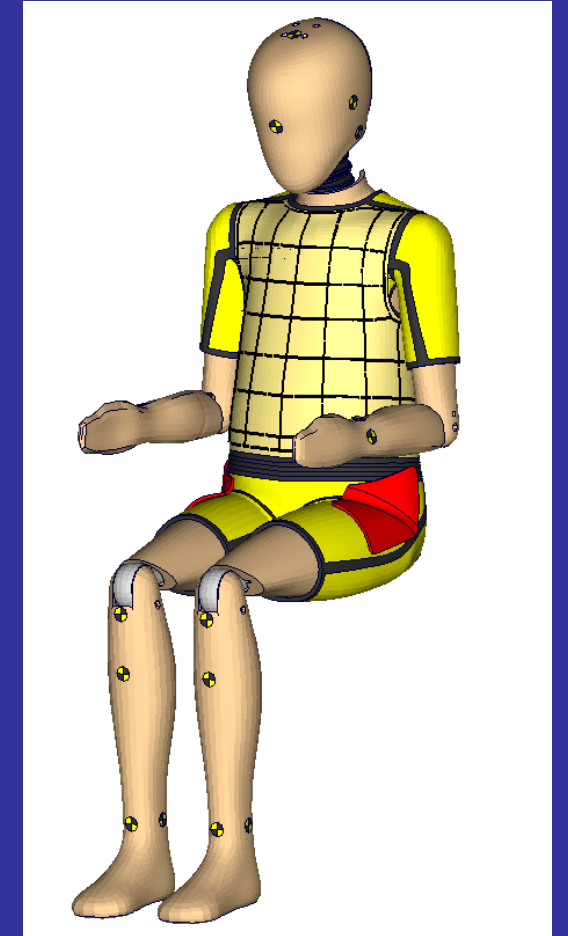


# Q10 CHILD DUMMY EURO NCAP 2020

LS-DYNA Release Version: 1.9

September 2021

Humanetics Innovative Solutions, Inc.



For Further Information Contact

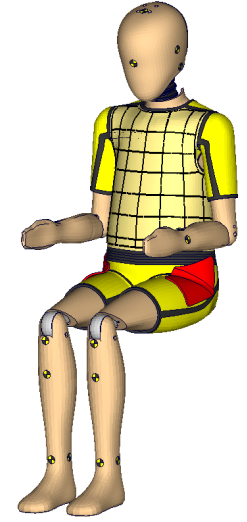
Humanetics CAE Department

Tel +1 248 778 2000

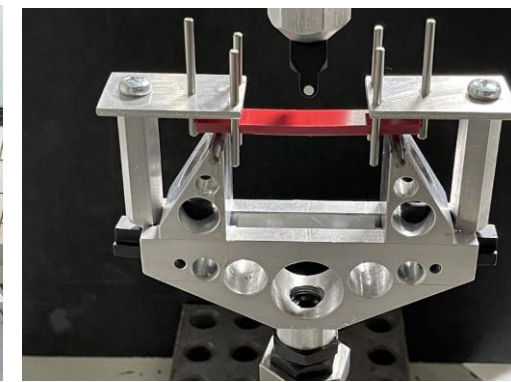
E-mail: [fe.support@humaneticsatd.com](mailto:fe.support@humaneticsatd.com)

# Q10 2020 V1.9-What's New

- Abdomen update
  - E-liner sled tests to further validate upper torso kinematics and signals
- Hipshields update
  - Injection molded hipshields dynamic bending tests and mesh refinements
- Oblique ribcage component tests
- Sled test updates
  - MPDB sled pulse severity 43g evaluated in environment, which includes
    - Belt with pre-tensioner, retractor and load limiter, ECE R44 bench and Euro NCAP TB 12 approved CRS



Abdomen Squeeze tests



Hipshield bending tests



Oblique ribcage tests



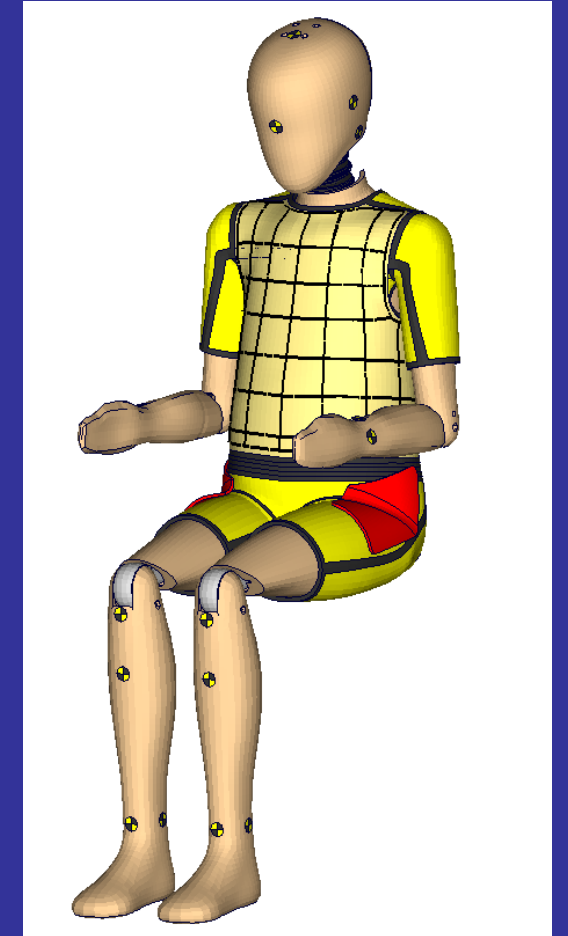
Sled tests-Straight and angled

# Q10 CHILD DUMMY EURO NCAP 2020 APTS SENSORS

LS-DYNA Release Version: 1.9

October 2021

Humanetics Innovative Solutions, Inc.



For Further Information Contact

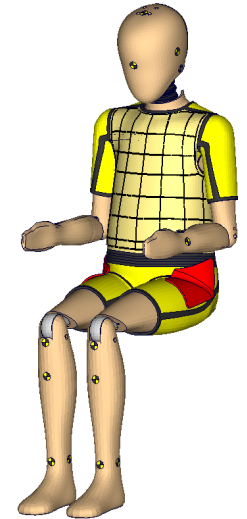
Humanetics CAE Department

Tel +1 248 778 2000

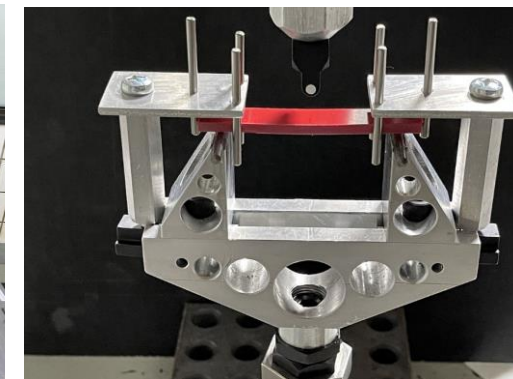
E-mail: [fe.support@humaneticsatd.com](mailto:fe.support@humaneticsatd.com)

# Q10 2020 APTS V1.9-What's New

- APTS Abdomen update
  - E-liner sled tests to further validate upper torso kinematics and signals
- Hipshields update
  - Injection molded hipshields dynamic bending tests and mesh refinements
- Oblique ribcage component tests
- Sled test updates with APTS Abdomen
  - MPDB sled pulse severity 43g evaluated in environment, which includes
    - Belt with pre-tensioner, retractor and load limiter, ECE R44 bench and Euro NCAP TB 12 approved CRS



Abdomen Squeeze tests



Hipshield bending tests



Oblique ribcage tests



Sled tests-Straight

# Q10 CHILD DUMMY EURO NCAP 2020 SK

LS-DYNA Release Version: 1.9

December 2021

Humanetics Innovative Solutions, Inc.



For Further Information Contact

Humanetics CAE Department

Tel +1 248 778 2000

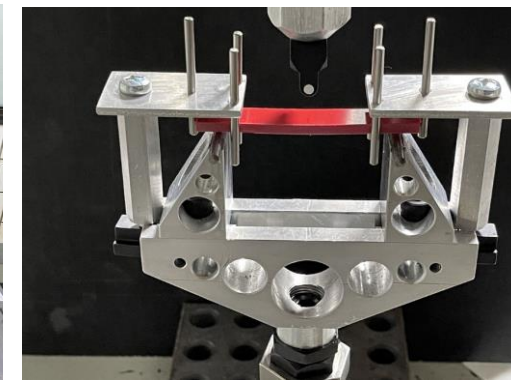
E-mail: [fe.support@humaneticsatd.com](mailto:fe.support@humaneticsatd.com)

# Q10 2020 V1.9 SK-What's New

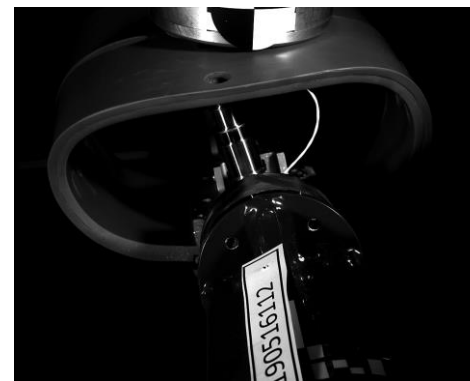
- Abdomen update
  - E-liner sled tests to further validate upper torso kinematics and signals
- Hipshields update
  - Injection molded hipshields dynamic bending tests and mesh refinements
- Oblique ribcage component tests



Abdomen Squeeze tests



Hipshield bending tests



Oblique ribcage tests