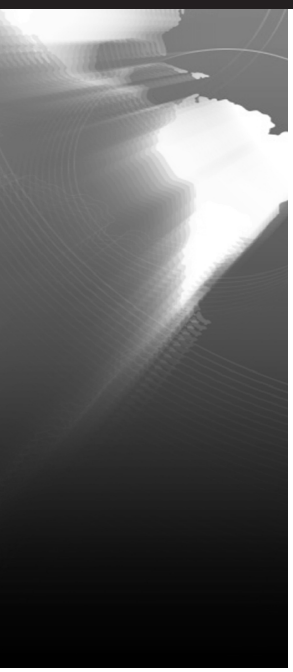
Hybrid III 95th Male



Technical Product Sheet

The Hybrid III 95th Large Male Dummy is currently at build level D, was originally developed by First Technology Safety Systems (then Humanetics) and the Society of Automotive Engineers (SAE) Biomechanics Subcommittees, CDC and Ohio State University. The dummy represents the largest segment of the adult population and is based on USA anthropometry studies. The biomechanical impact responses are derived from scaling functions applied to the Hybrid III 50th Dummy. Originally developed in 1988, the dummy is used worldwide for the evaluation of automotive and military safety restraints and particularly for seat belt integrity testing.

Simulation Models

Humanetics offers highly detailed and fully validated Finite Element (FE) models of its dummies in the codes LS-DYNA, PAM-CRASH, ABAQUS and RADIOSS, along with FE modeling consultancy services.

Dummy Features

Head & Neck

The skull and skull cap are one piece cast aluminum parts with removable vinyl skins. The neck is a segmented rubber and aluminum construction with center cable. It accurately simulates the human dynamic moment/rotation flexion and extension response.

Upper Torso

The rib cage is represented by six high strength steel ribs with polymer based damping material to simulate human chest force-deflection characteristics. Each rib unit comprises left and right anatomical ribs in one continuous part open at the sternum and anchored to the back of the thoracic spine.

A sternum assembly connects to the front of the ribs and includes a slider for the chest deflection rotary potentiometer. The angle between the neck and upper torso is adjustable, unless the optional lower neck load cell is used. A two-piece aluminum clavicle and clavicle link assemblies have cast integral scapulae to interface with shoulder belts.

Lower Torso

A straight lumbar spine replaces curved spine in automotive dummy allowing erect posture. It mounts to the pelvis through a six axis femur load cell (without end caps) or the transducer replacement which is mounted in the cup of the pelvis.One cable through the axis of the lumbar spine limits stretching, controls response and increases durability. The pelvis is a vinyl skin/ urethane foam molded over an aluminum casting in the seated position. The femur and tibia can be instrumented to predict bone fracture and the knee can evaluate tibia to femur ligament injury Lower legs are interchangeable with instrumented versions.

Technical Specifications

Weight Specification

Body Segment	Mass (lb)	Mass (kg)
Head	10.90	4.94
Neck	3.60	1.63
Upper Torso with Jacket	49.80	22.58
Lower Torso	66.80	30.30
Upper Arms	12.40	5.62
Lower Arms & Hands	11.60	5.25
Upper Legs	36.20	16.42
Lower Legs & Feet	31.96	14.49
Total Weight	223.00	101.15

Dimensions

Measurement	Dim. (in)	Dim. (cm)
Head Circumference	23.0	58.4
Head Width	6.1	15.5
Head Depth	7.9	20.0
Erect Sitting Height	36.8	93.5
Shoulder to Elbow Length	14.0	35.6
Back of Elbow to Fingertip	18.8	47.8
Buttock to Knee Length	24.9	63.2
Knee Pivot Height	23.4	59.4

Instrumentation

Location	Description	Channels
Head	Triaxial Accelerometers Pack	Ax, Ay, Az (used for HIC)
Neck	Six-Axis Upper Neck Load Cell Six-Axis Lower Neck Load Cell	Fx, Fy, Fz, Mx, My, Mz Fx, Fy, Fz, Mx, My, Mz
Thorax	Triaxial Accelerometers Pack Chest Displacement Transducer	Ax, Ay, Az Dx (Std. Equipment)
Thoracic Spine	Five-Axis Thoracic Spine Load Cell	Fx, Fy, Fz, Mx, My
Lumbar Spine	Five-Axis Lumbar Spine Load Cell	Fx, Fz, My
Pelvis	3 Uniaxial or Triaxial Accelerometers Uniaxial ASIS Iliac Wing LC Pair, L&R	Ax, Ay, Az Fx Upper & Lower
Femur	Uniaxial Load Cell Six-Axis Load Cell	Fx (per leg) Fx, Fy, Fz, Mx, My, Mz (per leg)
Knee	Tibia/Knee Displacement (knee slide)	Dx (per knee)
Lower Legs*	Biaxial Knee Clevis Load Cells Four Axis Upper Tibia Load Cells Four Axis Lower Tibia Load Cells	Fx, Fz (per knee) Fx, Fz, Mx, My (per leg) Fx, Fy, Mx, My (per leg)

*Special channel configurations are available in the upper & lower tibia to include 5 or 6 channels.