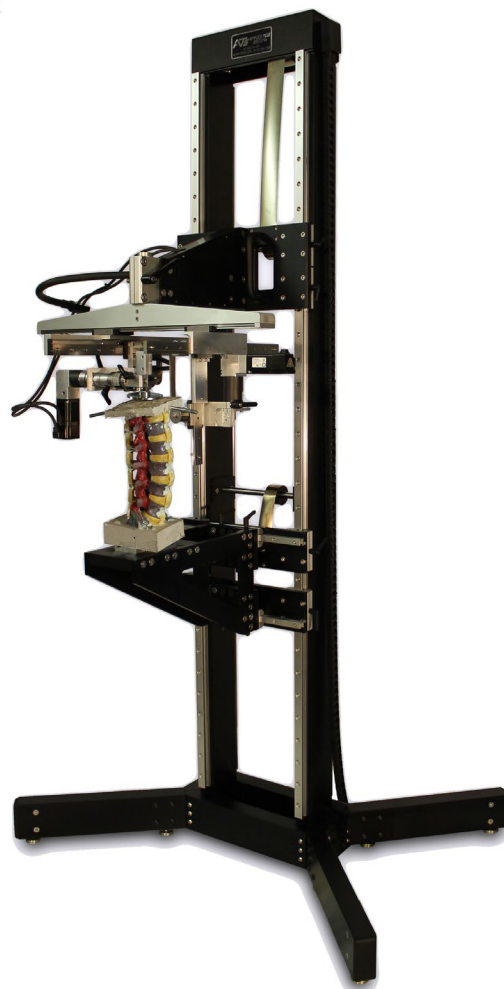


NEXT-GENERATION BIOMECHANICAL TESTING

As part of our expanding line of biomechanical testing equipment, Applied Test Systems (ATS) has developed the new **ST21 Spine Testing System**. Available in both floor-standing and compact benchtop designs, the ST21 utilizes technologies that were originally pioneered by ATS for use in the field of biomechanics, with specific applications currently being utilized in both spine and joint testing.

Precise all-electromechanical operation (free of any hydraulics), unrestrained specimen access, and smooth simulation over a full range of musculoskeletal motion have turned these newly-developed systems into valuable tools for scientists and researchers who are currently working towards significant advancements in modern orthopedics and biomedical design and development.

- **A large workspace** offers unhindered access to the testing area and can accommodate large cadaveric specimens such as ribcages.
- **Perform bend testing** along the vertical axis of a test specimen at any angle from 0 to 180 degrees.
- **Angular displacement measurement** occurs in real time without the need for an external motion capture system.
- **A full range of motion of the human spine** and other joints is simulated during reliable and repeatable testing in all planes (X, Y, Z; flexion/extension, lateral bending, and torsion) under accurate physiological loading conditions.
- **Versatile computer control** is well-suited to biomechanical and other specimen-type testing while providing superior test data and efficient setup and operation.
- **Affordable testing systems** are available with optional single or dual drive modules in convenient floor-standing or compact benchtop designs.



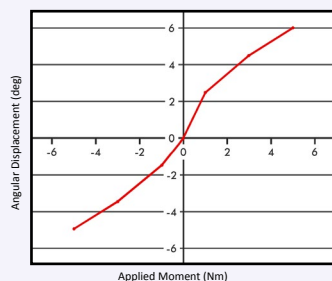
ST21T (floor model) in torsion test mode



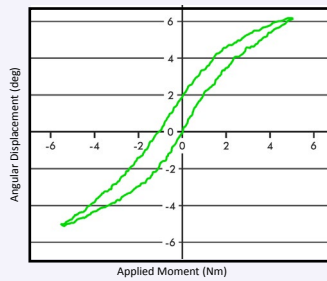
Cervical torsion test

Improved Specimen Access and Data Collection

ST21 spine testers have been designed for the collection of superior dynamic motion data while permitting unrestricted access to even large specimens in a variety of configurations.



Typical static data



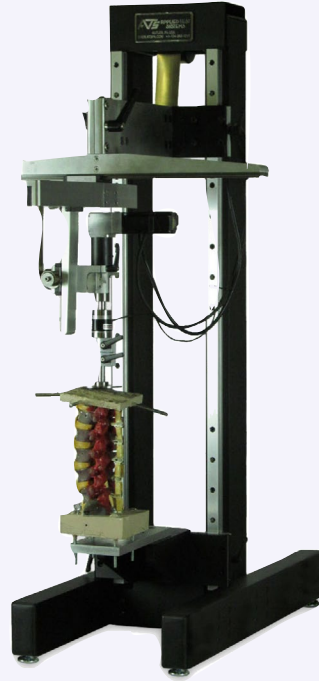
Improved dynamic data



Cervical bend test

Key Features

- › A sturdy two-column frame with an offset testing area provides large specimen capacity and 360° access for efficient test setup and the use of various measurement devices.
- › Precision torque application provides un-restricted motion even on specimens with considerable movement (e.g., cervical) and supports high-demand cyclic testing in torsion, bending, and axial directions.
- › Crossheads are counterbalanced using constant-force springs and are mounted on roller-bearing slides with position locks to allow the vertical position of the cross-heads to be adjusted quickly and safely, while optional lateral adjustment of the crossheads permits numerous test setups.
- › A proprietary computer control system collects data that easily integrates into several popular motion-capture systems for rapid analysis, graphing, and report generation. Testing routines and procedures can be programmed and stored for repeat testing, and software includes multilingual capabilities.



ST21B (benchtop) model in torsion test mode

Specifications

20 Nm (14.75 ft.-lb.) torque capacity in both torsion and flexion/extension drives.

76.2 to 132.1 cm (30 to 52 in.) specimen mounting height (adjustable).

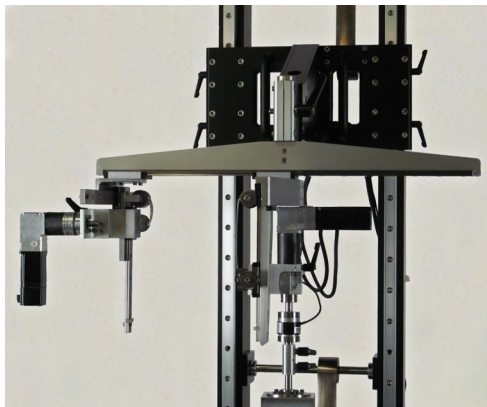
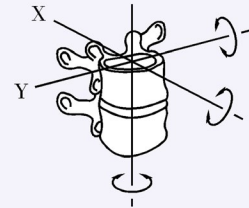
180° range of bending/flexion/extension load application.

Torsion drive movement range:

- X-axis (side-to-side): **31.8 cm (12.5 in.)**
- Y-axis (forward/back): **29.2 cm (11.5 in.)**
- Z-axis (up/down): **14.0 cm (5.5 in.)**

Bending/flexion/extension drive range:

- X-axis (side-to-side): **31.8 cm (12.5 in.)**
- Y-axis (forward/back): **17.8 cm (7.0 in.)**
- Z-axis (up/down): **14.0 cm (5.5 in.)**



ST21 with optional dual drive system
(Torsion drive system is connected to the specimen;
bend test drive system is on standby and moved off
to the side)

Your Best Option for Spine and Joint Testing

The advanced technologies utilized in the ST21 Spine Test System have been refined and enhanced by ATS for maximum versatility and functionality in the diverse fields of biomechanical and materials testing, engineering, research, and development, resulting in a solid and well-designed alternative to other spine testers currently on the market. Combining smooth electromechanical actuation, precise torque application, and computer control through proprietary ATS software, the ST21 is proving itself to be a superior alternative in the very dynamic field of biomechanics.

Developed in close cooperation with major U.S. research universities, the ST21 combines decades of ATS engineering expertise with the experience and know-how of the scientists and researchers who use such equipment every day, resulting in machines that offer efficient test procedures, superior data acquisition, and a more accurate simulation of spinal motion. Spine testers from ATS are currently in operation and providing valuable data in various research studies, including complex setups requiring the use of cadaveric spine specimens with the full ribcage attached.

An ISO 9001 2008 Certified Company



For more information regarding the ST21 Spine Testing System
or other Biomechanical Testing Equipment, Contact Applied Test Systems.



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