INNOVATIVE SPINE TESTING

- Superior motion data
- Optimal specimen access
- Unrestricted spinal motion
- Maximum test versatility
- Unmatched reliability

Introducing the FS20

Breakthroughs in modern spine research and the development of new therapeutic and curative techniques and technologies require an efficient and biomechanically accurate means of obtaining reliable test data.

To meet this challenge, Applied Test Systems (ATS) has developed the **FS20 Biomechanical Spine Test System**, capable of performing flexion/extension, lateral bending, and torsion testing of cadaveric spine specimens in physiological loading conditions that simulate natural movement of the human spine through a **full range of motion**.

The FS20 has been developed in close cooperation with major U.S. research universities to provide an improved testing setup that offers **unhindered specimen access** and unconstrained movements, resulting in **superior test data** and more reliable testing over a wider range of specimens, for **solid results** you and your team can depend on.



Improved Specimen Access

The wide-open, single-column frame design of the FS20 gives you **full 360° specimen access**, allowing optical sensors and other measurement devices to be placed without hindrance.



Versatile Motion Capabilities

To accurately reflect the **smooth**, **continuous motion** of the human spine, the FS20 uses two precision torque drives for freedom of movement in all axes (X, Y, and Z; translational and rotational), making possible a wide range of test procedures.





Cervical torsion test

Cervical bend test

Dynamic Test Data

The FS20 has been specifically designed for the collection of **dynamic motion data**, vastly more useful and more detailed compared to the static data generated by common manual tests.



Why Should You Choose the FS20?

The FS20 Biomechanical Spine Test System is a versatile, well-designed alternative to other spine testers currently on the market. Developed in direct collaboration with scientists and researchers who use such equipment on a regular basis, the FS20 has been built for more efficient test setup procedures, improved data acquisition, and unrestrained simulation of spinal motion as its primary objectives. Combine these features with its smooth electromechanical actuation, precise torque application, and computer control through proprietary ATS software, and the FS20 stands alone as the testing system of choice for modern spine research facilities.

As an example of this, the FS20 is currently in operation and providing valuable data in research studies involving cadaveric spine specimens with the full ribcage attached, thereby eliminating the need for complicated follower load systems and simplifying testing procedures. The FS20's ability to include a full ribcage with 360° access is truly a breakthrough in spine testing.

What innovations can your team make in the field of spine research? Contact ATS today and let the FS20 help you find out.

Ribcage specimen ready for test with optical sensors





Surgical procedure on specimen in test setup

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") specimen mounting height (adjustable).

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

76.2 cm (30") radius working area needed.

Torsion drive movement range:

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

Bending/flexion/extension drive range:

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



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Key Features

> Single-column, open-frame construction provides large specimen capacity and 360° specimen access, allowing ease of loading and attachment of a variety of measurement devices.

> Dual rotatable arms enable testing in different test modes without disturbing the specimen setup, and the vertical height of the arms can be adjusted to suit a wide range of specimens.

> Two independent drive modules with precision torque transducers, including a torsion drive as well as a bending/flexion/extension drive, allow for smooth simulation and testing over a full range of spinal motion.

> The FS20's proprietary computer control system collects data during testing with software that integrates into several popular motion-capture systems.

> Data is collected into a CSV file for easy database integration, enabling immediate analysis, graphing, and report generation.

> Testing routines and procedures are easily programmed and stored for repeat testing.

> Software includes multilingual capabilities.

