Bionix® EM Torsion Test System

A torsion test system specially designed for orthopaedic and medical devices

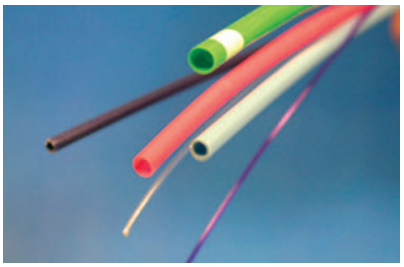
The MTS Bionix Electromechanical (EM) Torsion Test System is a precision mechanical test system designed to meet the specific needs of orthopaedic and medical device developers. It integrates a compact electromechanical load frame, advanced MTS digital controls and powerful TestWorks® application software to provide safe, easy and reliable testing of components and tools subject to torque loading in biomedical service environments.

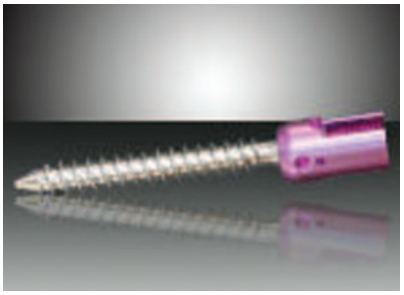
The system accurately applies monotonic and multicycle torsion, in conjunction with an adjustable static axial load, to test orthopaedic bone screws, constructs and tools, and medical device components such as tubing, catheters, torsion springs and lead wires. In addition to biomedical applications, this versatile system can also be used to test electronics, general materials and fasteners.

Running easy-to-use TestWorks Software, the Bionix EM Torsion System provides all the test functionality required to generate the meaningful, high-quality test results necessary for pursuing device approval, production and continued development.

Precision Application of Torsional Loads

The tabletop Bionix EM Torsion System has been right-sized for orthopaedic and medical device testing applications. It is built to deliver the full range of torsional loads necessary for accurately simulating bone screw insertion and head twist-off, or testing the performance and durability of torque limiting screws, needle bonds, tubing and fine lead wires. High-performance components – such as a slotless AC servo motor, a digital sine drive amplifier, and a highly accurate direct drive – provide users with precision control over the amount of torque applied to specimens throughout testing.





The TestWorks Software Advantage

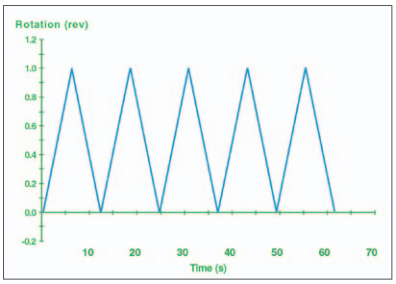
The Bionix EM Torsion System runs industry-leading TestWorks application software, a robust material and component testing package that combines easy operation with flexible test definition, superior data acquisition and powerful analysis and reporting.

TestWorks software enables you to streamline testing procedures and adapt quickly to changing requirements. You can readily configure the software to handle your most demanding requirements, while maintaining an easy-to-use user interface, even for the novice operator. Intuitive menus and controls make test definition, execution and report generation easy for both simple and complex testing.

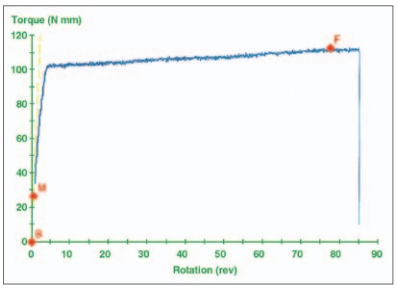
TestWorks software provides users the flexibility to create, customize and share test methods to meet industry-standard testing requirements and perform a wide variety of more unique, advanced tests.

Typical torque/rotation tests, creep testing and bone screw testing are easy to configure using Testworks software's powerful method creation tools. Alternatively, test engineers can save development time and effort by turning to experienced MTS consultants for custom TestWorks methods.

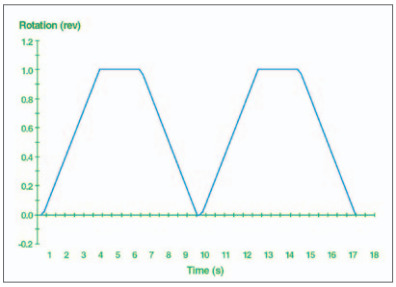
A suite of prepackaged torsion test methods is also available to help users quickly and easily meet the requirements of established orthopaedic and medical device testing standards, such as ASTM A938 (testing of wire), and ASTM F543 and ISO 6475 (mechanical testing of medical bone screws).



Multicycle Test



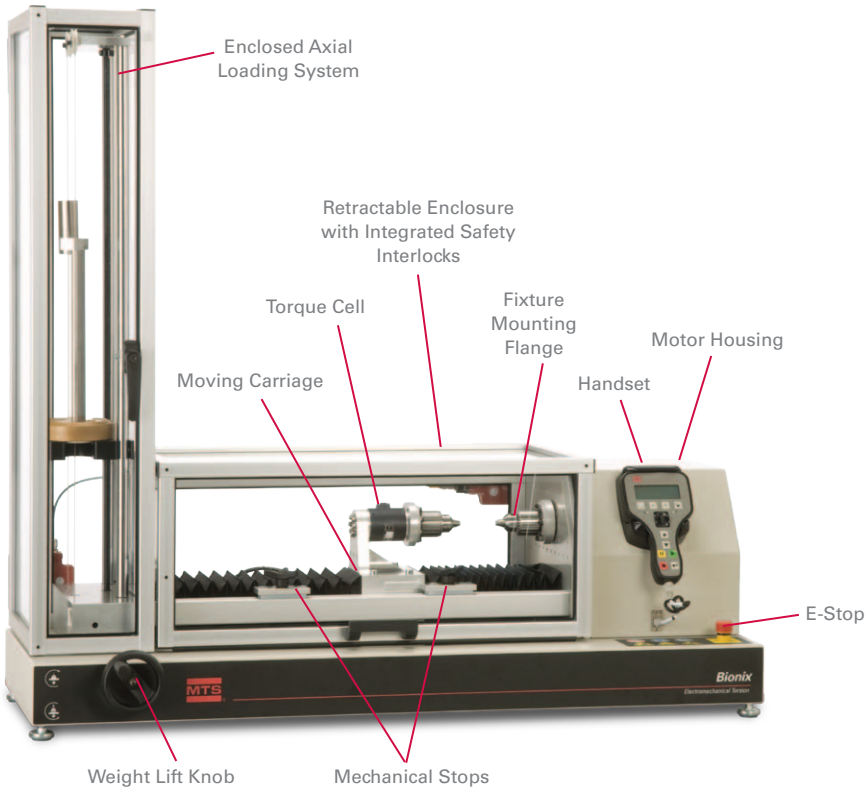
Torque vs. Rotary Displacement



Cycle and Hold

User-friendly, Ergonomic Design

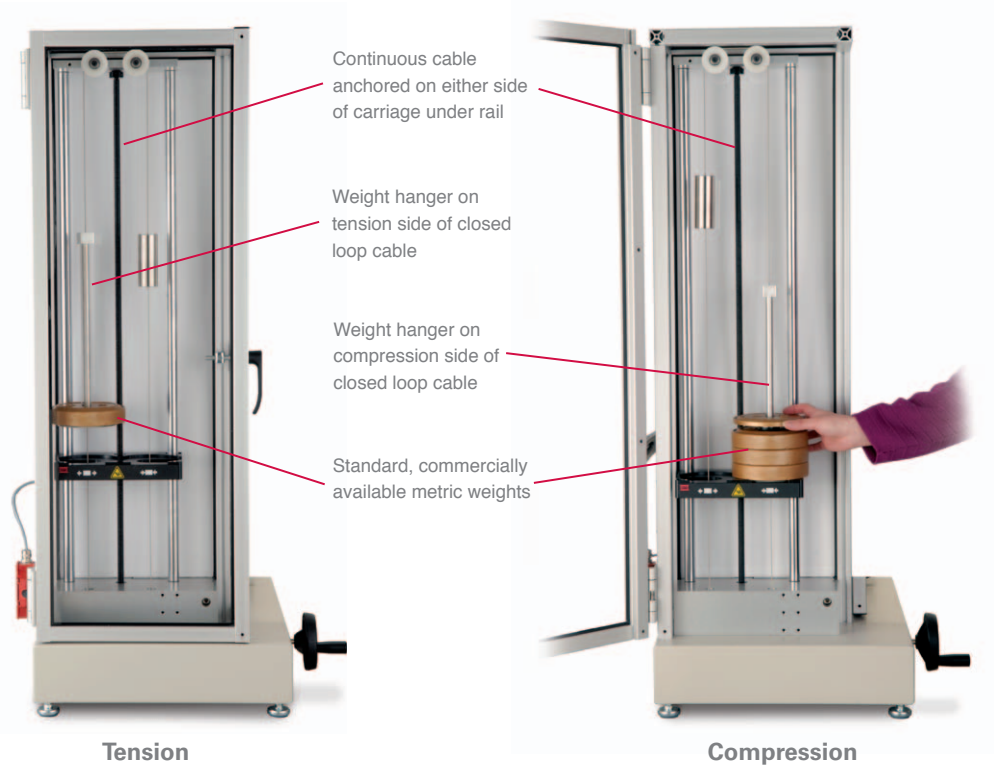
A large, user-friendly test space with an adjustable torque carriage accommodates changing test needs, while operator safety is ensured by a retractable test space enclosure with integrated safety interlocks. The system handset facilitates convenient test setup by allowing operators to perform standard functions such as start, stop and pause while preparing test specimens. The handset features a small, ergonomic design for both right- and left-handed operators and a large display for communicating test status messages, system performance messages and test results.



Bionix EM Torsion System Components

Safe and Convenient Axial Loading

An innovative axial loading system, comprised of an enclosed weight hanger system located away from the test space, ensures safe application of loads. It also makes it easy to switch from tension to compression without disturbing test setups. Optional TEDS-enabled load cells and highly accurate displacement measurement encoders provide accurate monitoring, data acquisition and readout of static axial loads and displacements.



Unmatched MTS Service and Support

The Bionix EM Torsion System is supported by the largest, most experienced worldwide service and consulting staff of any biomedical testing solutions provider.

This global team offers a wide range of on-site services to help maximize your test laboratory's productivity, such as preventive maintenance, system lifecycle management, problem solving, technology transfer, consulting engineering and process optimization.

For More Information

To learn more about how the MTS Bionix EM Torsion Test System can help you meet your specific orthopaedic or medical device development needs, contact your MTS sales representative or e-mail info@mts.com.

Bionix EM Torsion Specifications

Specifications	Units	
System Torque Rating, Peak @ Zero Speed	+/- N-m	50
Test Speed, Maximum @ 240 V (1)	rpm	175
Specimen Diameter Maximum (2)	mm	200
Test Space Maximum	mm	530
Maximum Rotations	#	26,214
Rotation Resolution	arc-sec	7, 9
Backlash, Maximum (3)	arc-sec	180
Torsional Stiffness, Frame Only	N-m/deg	1691
Axial Preload/Axial Preload Maximum	+/- N	220
Preload Method		Deadweight, Closed System
Frame Length	mm	1200
Frame Depth	mm	435
Frame Height	mm	420
Weight Hanger Height	mm	1135
Frame Weight	kg	70
Torque Cells Available	+/- N-m	50, 20, 10, 2 & 0.2
Fixture Mounting		M5 Bolt Circle
Grips Included with System		Keyed Chuck, 2-12.7 mm diameter
Grip Options		Precision Collet Grips (0.2-5.0 mm) Precision Miniature Collet Grips Block Fixture for Simulated Bone, etc.

Notes:
1. Peak test speed, maximum @ 110 V 100 rpm
2. 150 mm with protective bellows in place
3. Gearbox only, rail/carriage not included

MTS Systems Corporation
14000 Technology Drive
Eden Prairie, MN 55344-2290 USA

Telephone: 1-952-937-4000
Toll Free: 1-800-328-2255
Fax: 1-952-937-4515

E-mail: info@mts.com
www.mts.com

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