

Bionix® Servohydraulic Test Systems – Model 370.02 Tabletop Axial & Axial/Torsional Configurations



Compact new test platform sets global standard for configurability, ergonomics and ease-of-maintenance

Tightly integrated Bionix servohydraulic tabletop test systems are ideal for determining the dynamic properties of a wide variety of biomedical materials and components. Extremely versatile and compact, Bionix tabletop test systems combine the latest in MTS servohydraulic load frame technology, versatile FlexTest® controls, proven MTS test application software, and a full selection of grips, fixtures and test environments to meet a full array of mechanical testing needs.

Axial configurations of the system are designed to perform accurate and repeatable fatigue life studies, fracture growth studies, and tension, bending and compression tests of biomaterials.

Axial/torsional configurations of the system are well-suited for testing the durability and wear properties of components such as knee, hip and spine implants, and conducting simple to complex kinematics studies of skeletal tissue and other orthopaedic constructs.

MTS Performance

The Bionix tabletop system combines all the high performance attributes that MTS test systems are renowned for into a new highly stiff, ergonomic and easy-to-maintain load frame.

Proven Servohydraulic Technology

New Bionix tabletop systems integrate the latest in MTS servohydraulic technology, including:

- Newly designed MTS 370.02 load frames that feature extremely stiff and lightweight crossheads with high natural frequencies, and precision-machined columns for consistently tight alignment.
- Fatigue-rated MTS actuators, which employ best-in-class MTS load cells, low-friction Annular Step Bearings, and co-axially mounted Linear-

variable Displacement Transducers (LVDT).

- Trouble-free SilentFlo™ hydraulic power units that are quiet enough to be located directly in the laboratory.
- A smooth-ramping hydraulic service manifold (57 1pm) that features five-port servovalves; proportional, local hydraulic station control; close-coupled accumulators; and Off-Low-High pressure control.

FlexTest® Control

Versatile FlexTest SE, FT40 & FT60 digital controllers provide the flexibility needed to address a full

spectrum of testing needs and adapt readily to evolving standards or requirements. Scalable and easy-to-use, FlexTest controllers provide the high-speed closed-loop control, data acquisition, function generation and transducer conditioning required for reliable multi-channel, multi-station testing.

Industry Leading MTS Software

The Bionix tabletop system accommodates TestWorks®, MultiPurpose TestWare®, and MTS Fatigue & Fracture software to provide test definition, test execution, and report generation for virtually all types of material tests.

Unparalleled MTS Service & Support

MTS fields the most experienced service, support and consulting staff of any testing solution provider. This global team offers complete lifecycle management services to maximize the return on your Bionix investment and help you meet your exact test requirements as quickly as possible.



Innovative Cylinder-Centric Design

The Bionix tabletop system employs a Cylinder-Centric load frame design that delivers superior stiffness, alignment and ease-of-maintenance, resulting in more efficient operation and minimal down-time over the life of the system.

Integrated Actuator Beam

The Cylinder-Centric Design approach integrates fatigue-rated MTS actuators directly into the cross-beam to comprise an Integrated Actuator Beam. This

minimizes the number of required joints, yielding a frame that exhibits high axial and lateral stiffness and superior reliability. Easy access to both sides of the cylinder facilitates quick and efficient servicing. The Integrated Actuator Beam is easily configured for crosshead-mounted actuation to deliver the same level of performance and serviceability for applications requiring the actuator to be positioned above the test space.

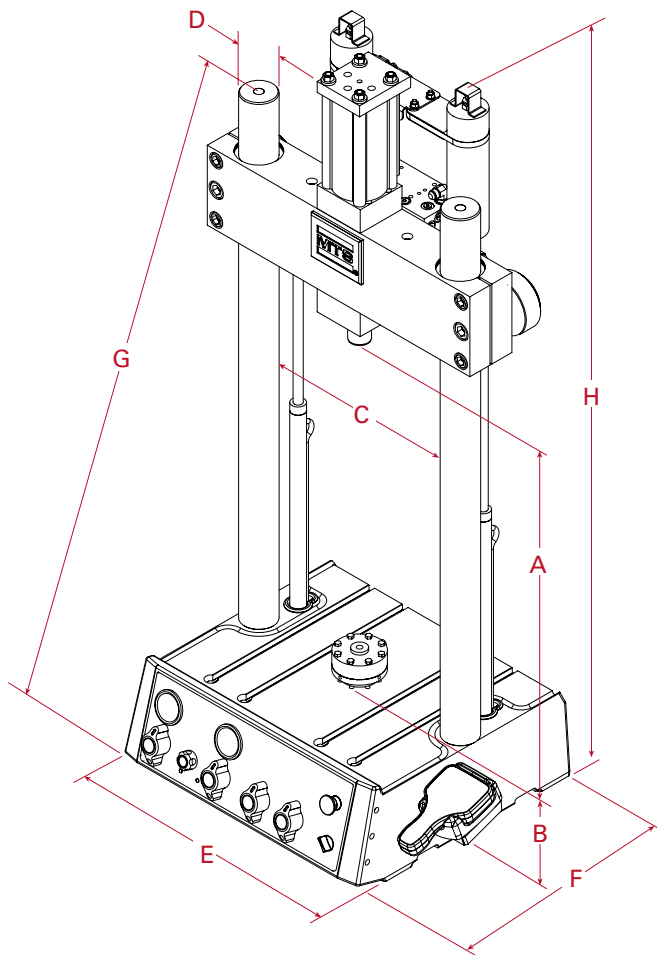
Piloted End-Caps

Precision-machined connections between the actuator cylinder and end-caps guarantee extremely tight

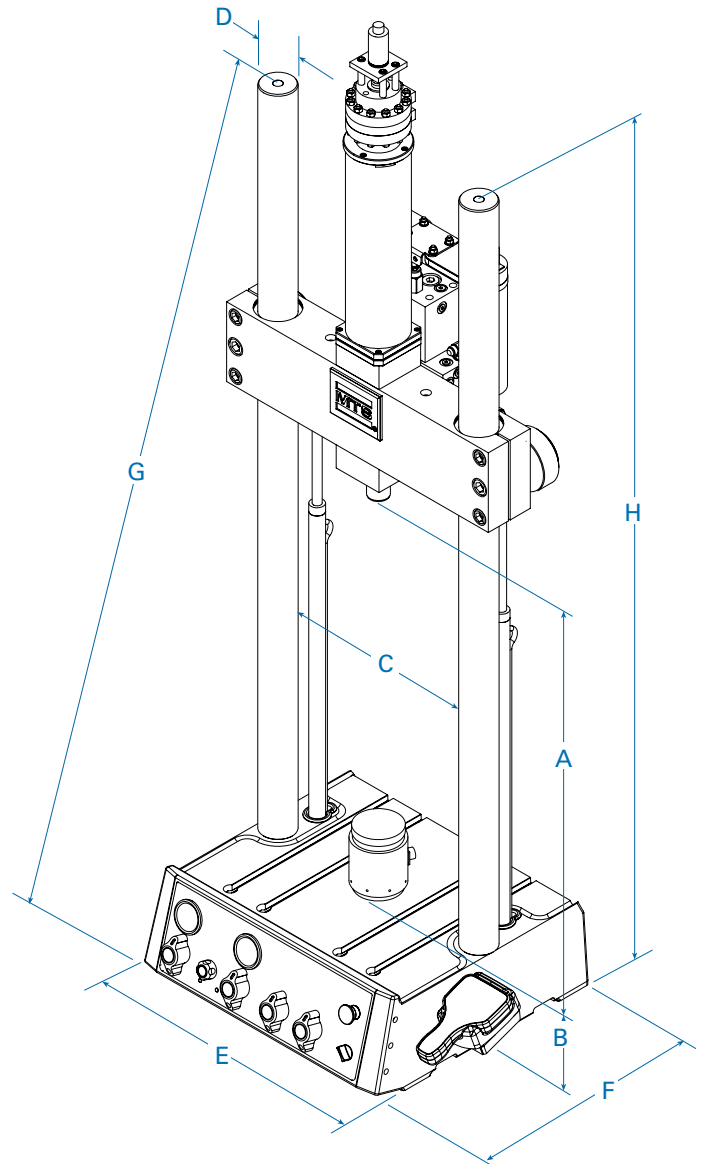
and consistent alignment over the life of the system, adding to the overall reliability of the actuator and eliminating the need for realignment after periodic maintenance.

Direct Actuator Porting

Direct mounting and porting of servovalves on the Integrated Actuator Beam minimizes pressure loss for more efficient delivery of hydraulic power. A single-plane interface provides for high-integrity connections to a new family of high-performance hydraulic service manifolds.



Axial Configuration



Axial/Torsional Configuration

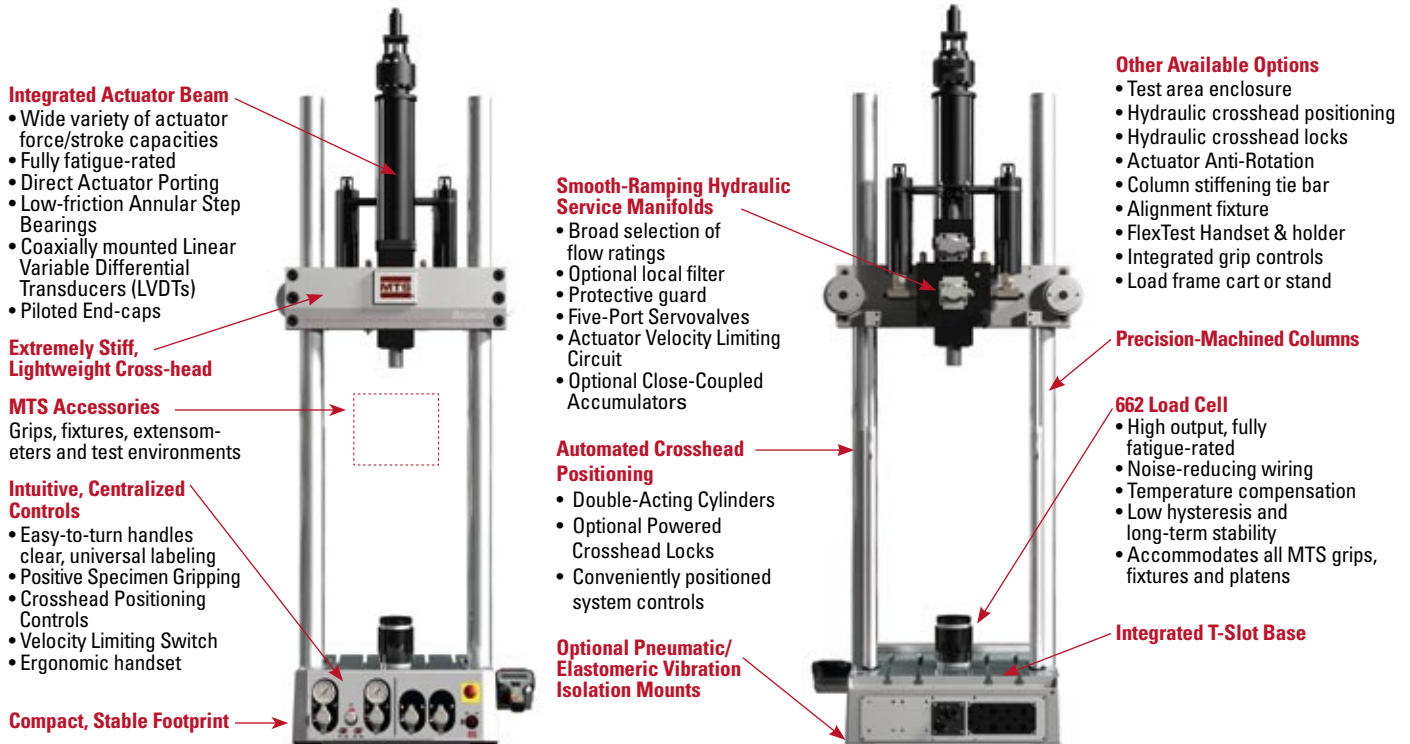
Model 370.02 Load Frame Specifications

Load Frame Specifications	Diagram Detail	Units	CONFIGURATIONS			
			Axial		Axial/Torsional	
			Standard Height	Extended Height	Standard Height	Extended Height
Force Capacity (rated dynamic force)		kN (kip)	25 (5.5)	25 (5.5)	200 N-m (1770 in-lbf)	200N-m (1770 in-lbf)
Available actuator ratings		kN (kip)	15, 25 (3.3, 5.5)	15, 25 (3.3, 5.5)	100, 200 N-m (885 , 1770 in-lbf)	100, 200 N-m (885 , 1770 in-lbf)
Dynamic Stroke		mm (in)	100, 150 (4, 6)	100, 150 (4, 6)	270° Rotation	270° Rotation
Min vertical test space*	A	mm (in)	221 (8.7)	475 (18.7)	221 (8.7)	475 (18.7)
Max vertical test space*	A	mm (in)	904 (35.6)	1412 (55.6)	904 (35.6)	1412 (55.6)
Working height	B	mm (in)	198 (7.8)	198 (7.8)	198 (7.8)	198 (7.8)
Column spacing	C	mm (in)	460 (18.1)	460 (18.1)	460 (18.1)	460 (18.1)
Column diameter	D	mm (in)	76.2 (3.00)	76.2 (3.00)	76.2 (3.00)	76.2 (3.00)
Base width	E	mm (in)	622 (24.5)	622 (24.5)	622 (24.5)	622 (24.5)
Base depth	F	mm (in)	577 (22.7)	577 (22.7)	577 (22.7)	577 (22.7)
Diagonal clearance	G	mm (in)	1461 (57.5)	1461 (57.5)	1461 (57.5)	1461 (57.5)
Overall height	H	mm (in)	1410 (55.5)	1919 (75.5)	1740 (68.5)	2248 (88.5)
Stiffness**		N/m (lbf/in)	345 x 10 ⁶ (1.95 x 10 ⁶)	345 x 10 ⁶ (1.95 x 10 ⁶)	345 x 10 ⁶ (1.95 x 10 ⁶)	345 x 10 ⁶ (1.95 x 10 ⁶)
Weight		kg (lb)	248 (547)	286 (630)	296 (652)	not available

*Measured with actuator piston fully retracted.

**Measured at crosshead height of 26.6 inches.

Model 370.02 Load Frame Features



Leading-Edge Ergonomics

The Bionix tabletop system features a user-friendly testing environment that emphasizes operator well-being and simplifies test setup and operation, enabling operators to safely and reliably perform more tests with fewer damaged or misaligned specimens

Intuitive, Centralized Controls

Bionix system controls are designed to keep operators focused on the test space while setting-up tests. Conveniently located to eliminate any need for awkward bending and long reaching, they feature easy-to-turn handles and clear, universally-understood labeling.

Enhanced Safety Features

The Bionix tabletop system provides a standard level of safety that exceeds the guidelines of CE and other organizations:

Automated Crosshead Positioning

Provides tight control of crosshead lifting and lowering to ensure safe operation and reduce test setup time.

• **An Actuator Velocity Limiting Circuit** restricts the actuator's speed as it moves into test position, preventing unexpected motion that could injure operators

• **Positive Specimen Gripping** for both the upper and lower grips ensures that specimens are attached securely and won't slip during testing

Highly Efficient Workspace

The Bionix tabletop system sets a new standard for workspace accessibility and convenience:

• The 370.02 load frame stand features an integrated t-slot table with channels to contain spilled fluids

• The compact system handset features a clear test status display, precision controls for fine actuator positioning and an ergonomic design for both right- and left-handed operators.

Streamlined System Procurement

The Bionix tabletop system configuration methodology that allows you to quickly specify the mix of performance factors, standard available options, and MTS testing accessories appropriate for your particular test program and budget.

To Learn More

Contact your local MTS sales engineer today to learn how the configurable, high-performing Bionix tabletop system can meet and exceed your static and dynamic material test requirements – now and well into the future.

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