MTS Criterion® Series 40 Electromechanical Universal Test Systems

High-performance monotonic testing solutions for research, development and manufacturing

THE **MTS CRITERION FAMILY OF UNIVERSAL TEST SYSTEMS** COMBINES HIGH-PERFORMANCE LOAD FRAME DESIGN, ADVANCED CONTROLLER TECHNOLOGY, EASY-TO-USE MTS TESTSUITE™ TW SOFTWARE, AND A FULL COMPLEMENT OF TEST ACCESSORIES TO ADDRESS THE MONOTONIC TESTING DEMANDS OF A DIVERSE SPECTRUM OF USERS, RANGING FROM THE PIONEERING RESEARCHER TO THE HIGH-VOLUME MANUFACTURER.

Supporting the Evolving Needs of Advanced Research & Development

Engineers and researchers worldwide rely on MTS for the testing technology and expertise required to pursue research and development of the next generation alloys, ceramics, composites and polymers so critical to the futures of industries such as aerospace, power generation, ground transportation and biomedical. High-performance MTS Criterion Systems are engineered to support these critical endeavors by enhancing the over-all flexibility and efficiency of a research and development test lab.

Trusted testing solutions

Whether you are creating a new lab or extending your current testing capabilities, MTS Criterion Systems can enhance testing productivity. Capable of delivering highly accurate and repeatable tension, compression, flexure and other basic tests, these versatile and reliable systems will provide the data accuracy you need to complete your testing objectives quickly and efficiently. As a key cornerstone in your testing operations, MTS Criterion Systems will deliver the results you need.

Versatile, high-performance hardware & software

The MTS Criterion family comprises an array of versatile, high-performance components to meet the exacting test needs of advanced researchers and help them adapt readily to evolving demands. This array includes a broad selection of configurable load frame hardware, high-resolution controls, a customizable software toolset, and a full complement of precision grips, fixtures, extensometers and environmental simulation systems.

MTS application expertise

MTS Criterion Systems are backed by global Application Engineering and System Integration Engineering teams capable of providing the test application and systems integration expertise needed to optimize test system effectiveness and mitigate the risks of pursuing unique or complex custom test applications.

AVX Video Extensometer

Tightly Integrated Monotonic Solutions for Your Specific Testing Environment

Combining the latest in MTS mechanical testing innovation

MTS Criterion Systems integrate the latest MTS hardware and software platform innovations with an expanding selection of test accessories to deliver highly accurate and repeatable monotonic testing for exacting materials research.

A complete portfolio of universal load frames

The MTS Criterion family includes a comprehensive line of compact Series 40 Electromechanical load frames for performing accurate and repeatable monotonic testing on specimens ranging from thin film plastics and carbon fibers to composites and high strength alloys. Available in numerous, high-stiffness configurations, these frames feature high-resolution MTS digital controls and compact AC servomotor drives to provide high-speed, low vibration testing across a very broad range of force capacities. MTS Criterion load frames are TUV certified and comply fully with the latest EU safety directives.

Series 40 Electromechanical Universal Test Systems

A comprehensive line of compact and reliable electromechanical systems for meeting a full spectrum of low- to medium-force monotonic testing requirements

MTS Criterion Series 40 systems feature a complete selection of universal test systems for meeting a wide range of monotonic production testing requirements. Highly reliable and easy-to-operate, these test systems employ high-speed, low vibration MTS electromechanical drives and integrated, digital closed-loop controls to test in load displacement, strain and other control modes at force capacities ranging from 1 N to 600 kN. Series 40 systems are available in a variety of compact, high stiffness 1- and 2-column table-top configurations for low to medium force testing, or robust 2-column floor-standing configurations for medium to high force testing. Easy-to-use MTS TestSuite TW software, a large and growing library of standards-compliant test templates, and a full complement of accessories extend the utility of these systems across a very broad spectrum of materials, including:

- Plastics
- Thin films
- Fibers and threads
- Adhesives
- Foam
- Elastomers
- Biomaterials
- Wood & paper products
- Thin metals
- Wire
- High-strength metals
- Components
- Fasteners
- Composites

SERIES 40 SYSTEM KEY FEATURES

- Complete selection of compact, high stiffness 1- and 2-column load frame configurations
- High-speed, low vibration MTS electromechanical drives
  - World-class, maintenance-free AC servomotor and amp
  - Precision, pre-loaded ballscrews
  - Non-clutched drives, rated for full speed at maximum force
- High-resolution, digital closed loop controls (integrated into load frame)
- Convenient test setup and control handset
- Versatile, easy-to-use MTS TestSuite TW software with standards-compliant template library (ASTM, ISO, DIN, EN, BS, and more)
- MTS load cells with TEDS self-identification capabilities
- Complete selection of grips, fixtures, environmental systems and extensometers
- Optional Dual Zone test space (Models 44, 45.504, and 45.105) for maximizing efficiency
- Anti-rotation grip/fixture mounting
- Optional T-Slot table
- Linear motion guides for superior alignment
- Automatic limit checking of crosshead position, overload, over temperature, over voltage, etc.
- Optional EU-compliant Integrated Test Area Enclosures providing test space protection
- Fully compliant with Machinery Directive 2006/42/EC, Low Voltage Directive 2014/35/EC, and EMC Directive 2014/30/EC, among others

State-of-the-art MTS Testing Technology

Optimizing test fidelity, operational efficiency, ease-of-use, safety and maintainability

MTS Criterion Systems integrate precision MTS control technologies and numerous design innovations to optimize test fidelity, operational efficiency, ease-of-use, safety and maintainability.

High-resolution digital controllers

MTS digital controllers deliver high-speed, closed loop control and an industry-leading 5000 Hz data acquisition rate. This capacity allows you to generate higher resolution test data for more meaningful analysis, achieve higher fidelity across test runs, and gain statistically significant test samples more quickly and efficiently. MTS digital controllers integrate seamlessly into Series 40 electromechanical load frames.

- 5000 Hz control loop rate
- Up to 5000 Hz data acquisition rate
- Resolution of 23 bits
- Ethernet connection to support faster data rates and provide many advantages over USB
- Four Digital Inputs and four Digital Outputs
- Cascade control for load and strain control, as well as displacemetn control
- Enhanced troubleshooting lights with additional status bits
- A test area enclosure with interlock or reduced speed options

Precision, TEDS-enabled loads cells

Highly accurate MTS load cells are designed to offer high stiffness and stability with low non-linearity. They provide overload and side load protection and are designed with built-in shunt resistors to facilitate regular verification of accuracy using calibration routines featured in MTS software. To increase efficiency and reduce potential operator error, they feature TEDS (Transducer Electronic Data Sheets) self-identification capabilities that follow the IEEE 1451.4 standard. This enables all MTS Criterion Systems to automatically detect installed load cells and download specific calibration information.

Convenient, ergonomic handsets

MTS handsets facilitate streamlined test setup by enabling operators to perform standard system control functions such as start, stop, pause, and crosshead positioning while standing close to the test specimen. The handset can display test status messages, system performance messages, and test results. Two programmable function keys are set up in the software as digital inputs, allowing users to define test functions such as start test, pause and hold position. The handset features a compact, ergonomic design for both right-handed and left-handed operators and a large text display that provides information at a glance, including a message letting the operator know that the system is ready to use.

Durable, easy-to-maintain test space

MTS Criterion Systems feature durable, protective rubber matting to extend the life and enhance the maintainability and utility of the system test space. The Series 40 systems feature heavy work surface mats, which are designed to protect the load frame base and facilitate easy test space cleanup and maintenance. Work surface mats feature molded edges to prevent tools from rolling off and an integrated groove pattern to channel away spills and debris.

Globally-compliant system safety features

To help ensure operator well-being and full compliance with the latest international safety directives, MTS Criterion Systems are designed to accommodate a variety of safety features, including:

» A full complement of integrated test area enclosures
  - Automatic, low-velocity travel when the enclosure door is open
  - Integrated test area enclosure interlocks
  - Integrated Control Pod
    - System Status Light—indicates whether the load frame drive is energized and ready for testing
    - E-Stop
    - Test Control Handset

» Mechanically adjustable limits to stop the crosshead at predetermined points

» Motor overheat device to automatically turn off the motor power supply

» Ability to set limits for load, extension, strain, or any other data channel

Model 41

LOAD FRAME CONFIGURATION: 1-column, Tabletop, Electromechanical

MAXIMUM RATED FORCE CAPACITY: 1 kN

OPTIONAL FORCE CAPABILITIES: 1 N, 5 N, 25 N, 50 N, 100 N, 250 N, 500 N, 1 kN

TEST SPACE: single zone

ENVIRONMENTAL SIMULATION: small fluid baths

TYPICAL SPECIMENS: plastics, fine wire, fibers and threads, biomaterials, thin films, adhesives, foam, packaging, paper products, consumer products

Model 42

LOAD FRAME CONFIGURATION: 1-column, Tabletop, Electromechanical

MAXIMUM RATED FORCE CAPACITY: 5 kN

OPTIONAL FORCE CAPABILITIES: 1 N, 5 N, 25 N, 50 N, 100 N, 250 N, 500 N, 1 kN, 2 kN, 5 kN

TEST SPACE: single zone

ENVIRONMENTAL SIMULATION: small fluid baths

TYPICAL SPECIMENS: plastics, fine wire, fibers and threads, biomaterials, thin films, adhesives, foam, packaging, paper products, consumer products

Model 43

LOAD FRAME CONFIGURATION: 2-column, Tabletop (integrated), Electromechanical

MAXIMUM RATED FORCE CAPACITY: 10 kN, 30 kN, 50 kN

OPTIONAL FORCE CAPABILITIES: 100 N, 250 N, 500 N, 1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 30 kN, 50 kN

TEST SPACE: single zone

ENVIRONMENTAL SIMULATION: full range of fluid baths

TYPICAL SPECIMENS: small components, reinforced plastics, metals, wire, composites, elastomers, wood products, textiles, biomaterials, paper products, adhesives, foam, consumer products

Model 44

LOAD FRAME CONFIGURATION: 2-column, Floor-standing, Electromechanical

MAXIMUM RATED FORCE CAPACITY: 30 kN

OPTIONAL FORCE CAPABILITIES: 100 N, 250 N, 500 N, 1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 30 kN

TEST SPACE: single or dual zone

ENVIRONMENTAL SIMULATION: full range of fluid baths, high-temperature furnace, environmental chamber

TYPICAL SPECIMENS: small components, reinforced plastics, metals, wire, composites, elastomers, wood products, textiles, paper products, adhesives, foam, consumer products

Model 45

LOAD FRAME CONFIGURATION: 2-column, Floor-standing, Electromechanical

MAXIMUM RATED FORCE CAPACITY: 100 kN, 300 kN, 600 kN

OPTIONAL FORCE CAPABILITIES: 1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 30 kN, 50 kN, 100 kN, 150 kN, 200 kN, 300 kN, 500 kN, 600 kN

TEST SPACE: single or dual: C45.504, C45.105, single: C45.305, C45.605

ENVIRONMENTAL SIMULATION: full range of fluid baths, high-temperature furnace, environmental chamber

TYPICAL SPECIMENS: metals, building components, large fasteners, composites, wood products

C45.105

C45.305

C45.605

Model 45.504 Wide

LOAD FRAME CONFIGURATION: 2-column, Floor-standing, Electromechanical

MAXIMUM RATED FORCE CAPACITY: 50 kN

OPTIONAL FORCE CAPABILITIES: 1 kN, 2.5 kN, 5.0 kN, 10 kN, 20 kN, 30 kN, 50 kN

TEST SPACE: single, multistation (optional)

ENVIRONMENTAL SIMULATION: full range of fluid baths, high-temperature furnace, environmental chamber

TYPICAL SPECIMENS: metals, packaging, geo-textiles, building components, composites, wood products

MTS Criterion Series 40 Specifications - Comparative

		Model 41	Model 42	Model 43			Model 44
		C41.103	C42.503	C43.104	C43.304	C43.504	C44.304
Maximum Rated Force Capacity	kN lbf	1 220	5 1100	10 2200	30 6600	50 11000	30 6600
Force Capacity Options	N, kN	1 N, 5 N, 25 N, 50 N, 100 N, 250 N, 500 N, 1 kN	1 N, 5 N, 10 N, 25 N, 50 N, 100 N, 250 N, 500 N, 1 kN, 2 kN, 5 kN	100 N, 250 N, 500 N, 1 kN, 2.5 kN, 5 kN, 10 kN	100 N, 250 N, 500 N, 1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 30 kN	100 N, 250 N, 500 N, 1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 30 kN, 50 kN	100 N, 250 N, 500 N, 1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 30 kN,
	lbf	02, 1, 5, 10, 20, 50, 110, 220	0.2, 1, 2, 5, 10, 20, 50, 110, 220, 450, 1100	20, 50, 110, 220, 500, 1100, 2200	20, 50, 110, 220, 500, 1100, 2200 4400, 6600	20, 50, 110, 220, 500, 1100, 2200 4400, 6600, 11000	20, 50, 110, 220, 500, 1100, 2200 4400, 6600
Frame Type	Guide Columns Floor-standing/ Table-top	1 Table-top	1 Table-top	2 Table-top	2 Table-top	2 Table-top	2 Floor-standing
Test Zones	Single/Dual	Single	Single	Single	Single	Single	Single or Dual
Maximum Test Speed	mm/min in/min	3000 118	2000 78.7	2000 78.7	1020 40.16	750 30	1020 40.1
Minimum Test Speed	mm/min in/min	0.005 0.0002	0.005 0.0002	0.005 0.0002	0.005 0.0002	0.005 0.0002	0.005 0.0002
Position Resolution	mm in	0.00005 0.000002	0.00005 0.000002	0.00005 0.000002	0.00006 0.0000024	0.00006 0.0000024	0.00006 0.0000024
Power Requirements	V AC	200 - 230 V AC, 5 Amps, 50 / 60 Hz, 1000 W	200 - 230 V AC, 5 Amps, 50 / 60 Hz, 1000 W	200 - 230 V AC, 10 Amps, 50 / 60 Hz, 2000 W	200 - 230 V AC, 12 Amps, 50 / 60 Hz, 2400 W	200 - 230 V AC, 12 Amps, 50 / 60 Hz, 2400 W	200 - 230 V AC, 12 Amps, 50 / 60 Hz, 2400 W
	phase		1	1	1	1	1
Space Between Columns	mm in	100* 3.94*	100* 3.94*	425 16.73	420 16.54	420 16.54	400 15.75
Vertical Test Space							
Standard Length	mm in	1100 43.31	820 32.3	1200 47.2	1200 47.2	1200 47.2	1190 46.9
Extended Length	mm in		1120 44.1	1500 59.1	1500 59.1	1500 59.1	1490 58.7
Crosshead Travel							
Standard Length	mm in	900 35.4	650 25.6	1000 39.4	1000 39.4	1000 39.4	1000 39.4
Extended Length	mm in		950 37.4	1300 51.2	1300 51.2	1300 51.2	1300 51.2
Frame Height							
Standard Length	mm in	1520 59.84	1332 52.44	1616 63.6	1752 68.97	1752 68.97	1951 76.8
Extended Length	mm in		1632 64.25	1916 75.43	2052 80.78	2052 80.78	2251 88.6
Frame Width	mm in	560 22.05	704 27.7	794 31.3	826 32.5	826 32.5	861 33.9
Frame Depth	mm in	530 20.87	636 25	757 29.8	768 30.2	768 30.2	689 27.1
Frame Weight							
Standard Length	kg lb	60 132	112 246	175 385	305 671	305 671	395 869
Extended Length	kg lb		125 275	190 418	325 715	325 715	410 902

** For single-column load frames this measurement denotes the distance between grip center and column cover.*

		Model 45				
		C45.504	C45.504 Wide	C45.105	C45.305	C45.605
Maximum Rated Force Capacity	kN lbf	50 11000	50 11000	100 22500	300 66000	600 132000
Force Capacity Options	N, kN	1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 30 kN, 50 kN	1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 30 kN, 50 kN	1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 30 kN, 50 kN, 100 kN,	150 kN, 200 kN, 300 kN	500 kN, 600 kN,
	lbf	220, 500, 1100, 2200, 4400, 6600, 11000	220, 500, 1100, 2200, 4400, 6600, 11000	220, 500, 1100, 2200, 4400, 6600, 11000, 22500	33000, 44000, 66000	112400, 132000
Frame Type	Guide Columns Floor-standing/ Table-top	2 Floor-standing	2 Floor-standing	2 Floor-standing	2 Floor-standing	2 Floor-standing
Test Zones	Single/Dual	Single or Dual	Single	Single or Dual	Single	Single
Maximum Test Speed	mm/min in/min	750 30	750 29.53	750 30	750 30	254 10
Minimum Test Speed	mm/min in/min	0.005 0.0002	0.005 0.0002	0.005 0.0002	0.005 0.0002	0.005 0.0002
Position Resolution	mm in	0.000047 0.0000019	0.000047 0.0000019	0.000047 0.0000019	0.000049 0.0000019	0.000016 0.0000000
Power Requirements	V AC	200 - 230 V AC, 12 Amps, 50 / 60 Hz, 2400 W	200 - 230 V AC, 12 Amps, 50 / 60 Hz, 2400 W	200 - 230 V AC, 22 Amps, 50 / 60 Hz, 4400 W	380 - 480 V AC, 20 Amps, 50 / 60 Hz, 5200 W	380 - 480 V AC, 20 Amps, 50 / 60 Hz, 5200 W
	phase	1		1	3	3
Space Between Columns	mm in	600 23.62	1000 39.37	600 23.62	650 25.59	750 29.52
Vertical Test Space						
Standard Length	mm in	1220 48.0	1520 59.81	1220 48.0	1540 60.63	2000 78.74
Extended Length	mm in	1520 59.8		1520 59.8	1840 72.44	1500
Crosshead Travel						
Standard Length	mm in	1000 39.4	1300 51.18	1000 39.4	1100 43.31	1750 68.90
Extended Length	mm in	1300		1300 51.2	1400 55.12	
Frame Height						
Standard Length	mm in	2269 89.3	2554 100.6	2269 89.3	2535 99.8	3490 137.4
Extended Length	mm in	2569 101.1		2569 101.1	2835 111.61	
Frame Width	mm in	1315 51.77	1710 67.32	1315 51.77	1362 53.6	1660 65.35
Frame Depth	mm in	957 37.7	957 37.68	957 37.7	1100 43.31	1272 50.08
Frame Weight						
Standard Length	kg lb	1195 2629	1700 3748	1195 2629	1605 3538	3500 7700
Extended Length	kg lb	1265 2783		1265 2783	1695 3737	

MTS Criterion Series 40 Specifications - Common

Low Profile Force Accuracy* *(Bending Beam and Shear Beam)*	± 0.5% of applied force		± 1.0% of applied force
Low Profile Force Range** *(Bending Beam and Shear Beam)*	1 to 100% of rated force capacity		0.5 to 1% of force rated capacity
S-Beam Force Accuracy*	± 1.0% of applied force		
S-Beam Force Range**	1 to 100% of rated force capacity		
Rated Force Capacity at Max Test Speed	100%		
Maximum Test Speed at Rated Force Capacity	100%		
Speed Accuracy****	**C41, C42**	**C43, C44**	**C45**
	±0.1% of set speed (≥2 mm/min)	±0.1% of set speed (≥1 mm/min)	±0.1% of set speed (≥0.01 mm/min) ±0.2% of set speed (<0.01 mm/min)
Displacement Accuracy****	± 0.008 mm or ± 0.05% of set displacement (whichever is greater)		
Strain Accuracy***	± 0.5% of applied strain		
Security Protection	Over-force, travel limits, over-voltage and others		
Over-Force Protection	110%		
Data Acquisition Rate	Up to 5000 Hz		
Control Loop Rate	5000 Hz		
Environmental Requirements			
Operating Temperature	5 to 40°C 41 to 104°F		
Operating Humidity	5 to 85% Non-condensing		
Storage Temperature	-18 to 49°C 0 to 120°F		
Maximum Storage Humidity	90% Non-condensing		
Maximum Altitude	2000 Meters		
Motor & Drive System	AC Servo Motor		
Ballscrews	Pre-Loaded		
Position Measurement	Encoder		
User Digital Inputs/Outputs (DIO)	4 user Digital Inputs and 4 user Digital Outputs		
Encoder Capacity	4 Encoders		

** Applicable onsite calibration services are available to meet ISO 7500-1, ASTM E4.*

*** Range dependent upon controller settings and operating environment.*

**** Extensometer calibration services are available to meet ISO 9513, ASTM E83.*

*****This specification was derived from measurements using MTS specified methods under specified conditions and equipment. Subject to change without notice.*

Shipping Information

		Model 41	Model 42	Model 43			Model 44
		C41.103	C42.503	C43.104	C43.304	C43.504	C44.304
Standard Height							
Crate Dimensions	mm	820 x 1100 x 1760	1200 x 960 x 1570	1036 x 956 x 1865	1970 x 1100 x 1120	1970 x 1100 x 1120	2165 x 1100 x 1130
	in	32.3 x 43.3 x 69.3	47.2 x 37.8 x 61.8	40.8 x 37.6 x 73.4	77.6 x 43.3 x 44.1	77.6 x 43.3 x 44.1	85.2 x 43.3 x 44.5
Weight - Crated	kg	110	290	380	600	600	650
	lb	242.5	638	836	1320	1320	1430
Extended Height							
Crate Dimensions	mm		1200 x 960 x 1870	1036 x 956 x 2165	2270 x 1100 x 1120	2270 x 1100 x 1120	2465 x 1100 x 1130
	in		47.2 x 37.8 x 73.6	40.8 x 37.6 x 85.2	89.4 x 43.3 x 44.1	89.4 x 43.3 x 44.1	97.1 x 43.3 x 44.5
Weight - Crated	kg		330	420	650	650	695
	lb		726	924	1430	1430	1529

		Model 45				
		C45.504Y	C45.504WY	C45.105Y	C45.305Y	C45.605Y
Standard Height						
Crate Dimensions	mm	2620 x 1620 x 1600	2960 x 2000 x 1410	2620 x 1620 x 1600	2920 x 1660 x 1660	3680 x 1960 x 1760
	in	103.2 x 63.8 x 63.0	116.5 x 78.7 x 55.5	103.2 x 63.8 x 63.0	115.0 x 65.4 x 65.4	144.9 x 77.2 x 69.3
Weight - Crated	kg	1880	2150	1880	2010	4050
	lb	4136	4739	4136	4422	8928
Extended Height						
Crate Dimensions	mm	2620 x 1620 x 1600		2620 x 1620 x 1600	3220 x 1660 x 1660	
	in	115.0 x 63.8 x 63.0		115.0 x 63.8 x 63.0	126.8 x 65.4 x 65.4	
Weight - Crated	kg	1980		1980	2210	
	lb	4356		4356	4862	

The MTS TestSuite TW Test Editor provides an intuitive graphical depiction of workflow that clearly distinguishes finished activities from those that are in progress or have not started yet.

MTS TestSuite Software

Efficient and versatile software for productive materials and component testing

MTS TestSuite TW software facilitates the accurate and repeatable mechanical testing of materials, components and finished goods. It provides the versatility required to address unique and complex test requirements, along with ease-of-operation. With this software, test engineers will have utmost flexibility to create and run tests, analyze data and report results in a way that matches their specific mechanical testing needs, now and well into the future.

The MTS TestSuite TW Software family

Comprises a set of applications and templates that can be bundled together to meet specific test program or organization needs.

TW Elite is the engine that drives all the MTS TestSuite TW offerings. It includes all the test definition capacity and flexibility test designers need to create and edit custom test sequences while accommodating the specific runtime needs of lab personnel.

TW Express is designed for the test operator and is used to run tests created with TW Elite. This application allows the operator to easily execute even the most complex tests and monitor data or calculated values in runtime views that can be tailored by both test designers and operators.

TW Essential provides the ability to design, run, analyze and report on monotonic and cyclic tests. The easy-to-use interface guides the user through the test definition process to reduce test creation time and streamline test execution.

Reporter Add-In for report design and generation, there is a Reporter Add-In for use with Microsoft Excel® that allows the easy organization of raw data and creation of impressive reports with little time investment or manual intervention.

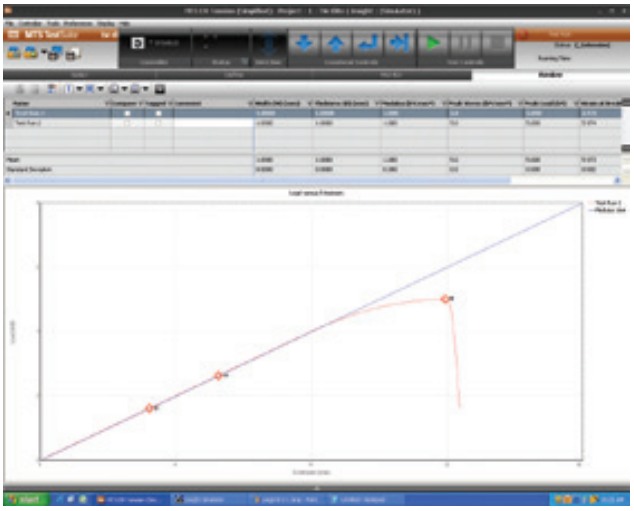
Templates from the straightforward test to the extremely complex calculation. MTS test templates offer a wide array of solutions to reduce test creation time, streamline test execution and support adherence to testing standards. Four types of template solutions are available to meet a range of testing needs:

BASE TEMPLATES are included with the software application and include five tensile, two flex, five peel/tear, and three compression templates that may be modified to meet specific needs.

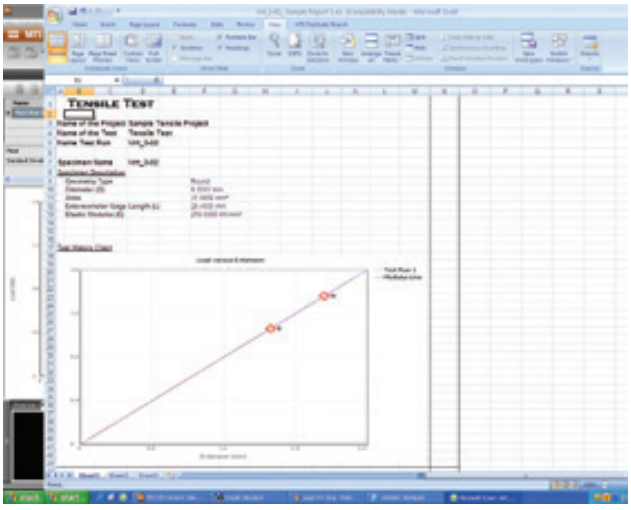
ADVANCED PRE-PACKAGED TEMPLATES make it fast and simple to run tests according to ASTM, ISO and EN standards. Purchased individually or in application-specific bundles, they also can be modified to meet unique requirements.

MTS CUSTOM TEMPLATES are available for the most complex or challenging test applications. Users can turn to MTS experts for custom test template development, saving valuable test engineering time and resources.

An integrated **METHOD CONVERTER** automatically converts TestWorks® 4 software test methods to TW templates for use with MTS TestSuite TW software.



Interactive markers, text and construction lines enable operators to flexibly plot data and zoom in on an area of interest at any time.



Easily create a report against a defined template as part of a test.

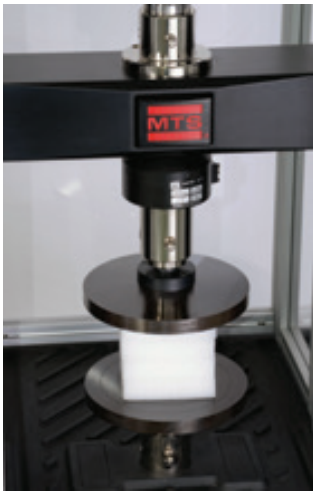
A Full Complement of Test Accessories

Choose the right mix for your specific testing needs

Grips, platens & fixtures

MTS Criterion System users can draw upon an extensive offering of grips and fixtures, environmental simulation systems and extensometers to address standard and custom test requirements across a full spectrum of monotonic materials testing applications, including tension, compression, flex/bend and shear, peel, tear creep, stress and more.

- Advantage™ Accessories comprise a highly versatile, full-featured set of grips for demanding R&D testing of advanced composites and alloys. Ideal for the specific needs of the high-end researcher, this accessory family accommodates a very broad range of clamping force and temperature requirements and features numerous control and grip face options.
- The MTS Fundamental™ family includes basic, affordable accessories for standard monotonic testing of metals, polymers, construction materials, composites, wood and paper products, fibers and textiles, adhesives and coatings, foam and more.
- The Bionix® Accessories family includes affordable and extremely durable grips, fixtures, platens and environmental simulation systems for monotonic testing of biomedical materials and components in fluids heated to body temperatures.


Compression Platens


Bollard Grips


Pneumatic Grips


Bend Fixture


Wedge Grips


Vise Grips


Capstan Grips

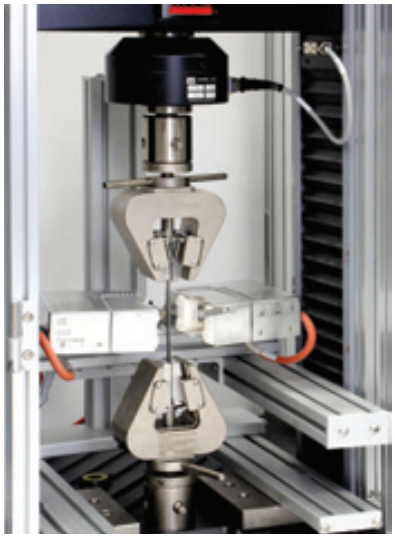

Scissor Grips

Environmental simulation systems

MTS environmental simulation systems enable the testing of materials and components under a wide variety of real world conditions. Available systems include high temperature furnaces, environmental chambers and liquid baths.

FLUID BATHS

Versatile and easy-to-use, the Bionix EnviroBath facilitates efficient and accurate mechanical testing of biomedical and general material specimens in fluids heated to body temperatures. The EnviroBath is available in a variety of volume configurations to accommodate a wide range of test requirements. A universal adapter design ensures full compatibility with MTS electromechanical and servohydraulic load frames, and a wide variety of Bionix grips and fixtures.



FURNACES

MTS furnaces are ideal for conducting tension, compression, bend and cyclic fatigue testing of metals, composites and ceramics at high temperatures. A center-split design facilitates easy specimen and fixture access, and mounting brackets are available for a variety of MTS and non-MTS load frames.

CHAMBERS

MTS environmental chambers enable the testing of materials and components across a range of controlled temperature, humidity or caustic conditions. Typical uses include elastomer, plastics and composite tests, body and engine mount tests, shock absorber tests, tire cord tests, laminate tests, and vibration isolator tests.

Precision extensometers

MTS offers the world's most comprehensive and highest-performing array of strain and displacement measuring tools for monotonic materials and component testing. This array includes displacement gages, a variety of axial, diametral, cross-sectional and biaxial extensometers, and a selection of both laser and video non-contacting solutions.

Video Extensometer

High Elongation Extensometer

Unmatched MTS Service & Support

Committed to maximizing test system uptime and operational efficiency

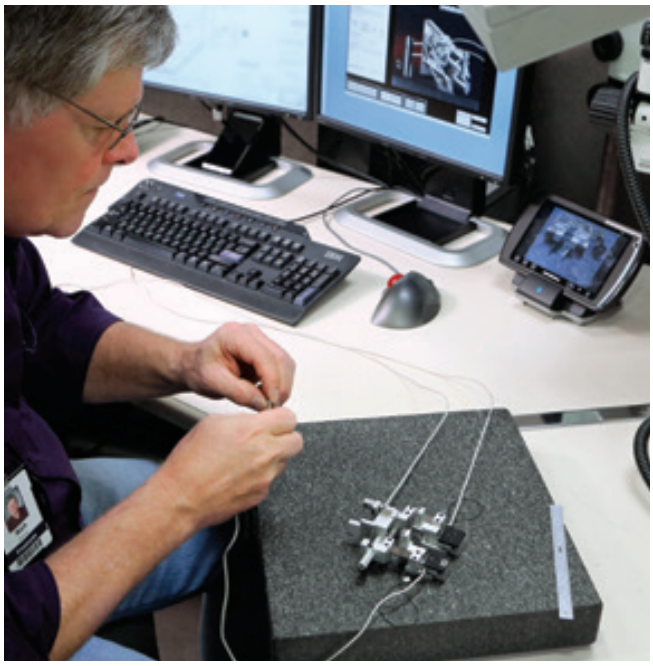
MTS Criterion Systems are backed by the global MTS Service & Support organization. This highly experienced team offers lifecycle management services for all your test systems and is committed to maximizing the uptime and operational efficiency of your test system. With the expertise to support your test equipment from pre-installation to decommission, and at every point in between, MTS has the service solutions to meet your needs for test schedule predictability, data integrity, system performance optimization and budget management.

Onsite services

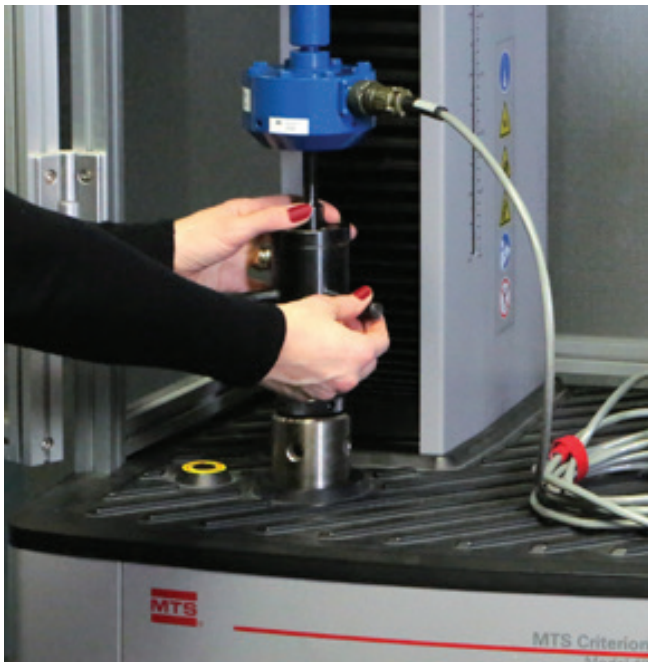
MTS builds the most rugged test solutions available, but constant motions and forces applied to test specimens ultimately take their toll. Our field service engineers have a worldwide reputation for applications expertise, and will respond to your request for support or repair quickly and efficiently. MTS can also assist with installation or movement of lab equipment. Our service team can help you properly disassemble the equipment, pack it for transportation and install it at a new location. In addition, we offer consumables and spare parts for new-generation MTS equipment and most of our legacy systems.

Engineering services

MTS offers a complete set of professional engineering services, including systems engineering, test consulting and facilities design services. MTS experts will listen to your test objectives, analyze your situation, and translate your desires to specific system requirements. Leveraging years of application expertise, MTS will engineer the right solution that meets your testing needs and business conditions. We can provide test designs, fixture engineering, control system evaluation, data collection and results analysis. By referencing the best practices of test labs worldwide, MTS can help you design test facilities, including hydraulic distribution systems, and recommend long-range lab investment plans that support your business growth strategies or research plans.



Extensometer Calibration



Load Cell Calibration

Training

MTS training programs are designed to improve operator efficiency and optimize system performance. Expertly led and completely customizable, the courses provide hands-on learning to make sure your staff is thoroughly familiar with your test systems and know how to operate them effectively. In addition to a broad selection of standard courses, MTS can customize courses to meet your specific lab needs and deliver the training at our Training Center or your workplace.

Calibration

All test labs must calibrate their testing equipment to help ensure data accuracy, and MTS provides top-quality, accredited calibration services. We can complete calibration at your location, or in our Factory Calibration Laboratory.

Maintenance & monitoring

Making sure that equipment is operating at full capacity and test projects are completed on time without interruption are important aspects of test lab management. Based on service experiences accumulated over decades, MTS has a set of well-defined routine maintenance offerings tailored for specific systems and components, to help extend equipment life and provide you with confidence in your equipment operation. We also offer sophisticated assessment tools to better understand equipment condition and anticipate potential issues before they become larger problems.

Upgrade solutions

As technology improves, an upgrade is often the most economical way of expanding your lab capabilities and extending the life of existing test equipment. MTS offers upgrades and replacements for all areas of your test system: mechanical components, controllers and software. Our Software Support Plan (SSP) agreements make it easy to stay current with rapidly changing software technology. Within your contract period, you will automatically receive updates to all software covered in your contract.

MTS TestSuite TW Software Training

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