

Material Testing Machines (Physical Measurement)



AGX-V Series Testing Machines

High Performance Electromechanical Testers for the Most Demanding Applications

- Tabletop models with frame capacity up to 50 kN and floor models with frame capacity up to 600 kN
- Ultra high-speed (10 kHz) data sampling and crosshead control (1 kHz) enable astonishingly precise stress and strain control.
- Modular control unit allows expansion of data acquisition inputs (20 max), sensor outputs (20 max) and digital control outputs.
- Intelligent crosshead enhances operability and adds additional safety precautions to protect hardware and users.
- Multi-joint eliminates the need to exchange heavy components when converting from tension to compression.
- Select from additional options including column extensions up to 750 mm and wider frames with up to 1,375 mm effective test widths



Video



AGS-X Series Testing Machines

Economical Electromechanical Testers for Routine Testing

- Load cells with test force accuracy within $\pm 0.5\%$ over the range 1/1 to 1/500 of the maximum capacity
- 1 kHz sampling rate ensures no missed strength changes
- Load cells with maximum capacities ranging from 1 N to 300 kN
- Comprehensive safety functions include stroke limit switches, emergency stop buttons, and safety covers
- Frame capacities of 10 kN, 20 kN, and 50 kN for tabletop models and 100 kN and 300 kN for floor models
- For testing materials with extensive elongations, extended-column models are available



Video



EZ-X Series Testing Machines

Single-Column Testers for Texture Analysis and Material Evaluation

- Analyzers, Accessories and testing Software for Food texture evaluation including hardness, brittleness, Crispiness, Crunchiness, Gumminess, Chewiness, Viscosity, Shear Strength Adhesiveness, cohesiveness, break, flexure and more.
- Ideal for testing a variety of medical devices (Tablets, Syringes, needles, band aids, gel type medicines), Household goods, electronic parts, plastics, fibers, papers, films etc.
- Availability of Short Column Model (Capacity up to 500 N), Long Column Model (Capacity up to 5 kN) and 2 kN Capacity High speed model (2,000 mm/minute)
- Machines include an adjustable controller which enables fingertip control of crosshead positioning and test start operations



Video



UH-X/FX Series Testing Machines

User-friendly Hydraulic UTM for High Capacity Applications

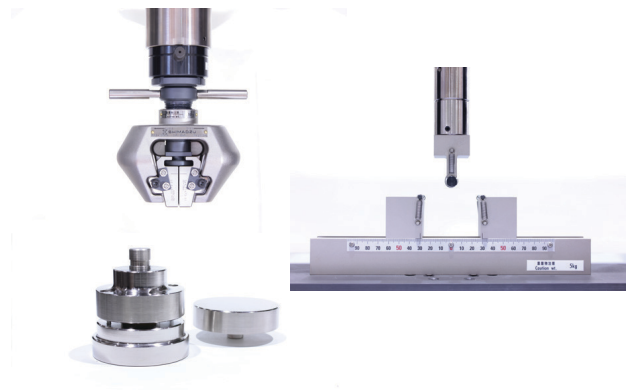
- Choose from front-opening hydraulic grip model or top loading manual grip model to support a wide range of testing applications
- Extra-large color touch-screen LCD improves ease-of-operation and Trapezium X testing software control adds further testing and data processing options
- High-speed, rangeless data measurement means data can be acquired using optimal measurement parameters, even for specimens with unknown strength
- 200 kN to 4,000 kN frame capacities for samples requiring the most demanding of loads
- Includes standard models and hybrid hydraulic models which combine an AC servo motor with a hydraulic pump to increase energy efficiency and reduce environmental impact



Accessories -Testing Machines

Grips / Fixtures

- Tensile Grips (Selection of Manual , Hydraulic or Pneumatic grips)
- Compression Platen, Bending Fixture, Tear, Shear, Peel, Puncture etc
- ASTM / ISO / BE-EN ISO / JIS Compatible grips
- Special Grips for Composite Materials



Extensometers

- Wide Selection of Contact and Non Contact type extensometers
- Video Extensometers and Long Travel Extensometer (DSES Type for high elongation materials include rubber, plastic etc.
- SIE Type fully automatic Extensometers
- Width Measurement device (Poissons ratio, Lankford value -R Value) measurement etc
- Extensometer Calibration Devices (CDE Series)



Chambers

- Wide range of Environmental chambers (Temperature, Humidity etc) and Furnaces
- Gas injection Type and Refrigerated thermostatic type chambers
- Wide range of temperature range from -180 °C to 320 °C (Select Suitable model)
- High temperature furnaces (up to +1,600 °C)



Software

- Powerful and easy to operate Trapezium X Software Compatible with Autograph, EZX and UH Machines
- Improved data integrity with LabSolutions™ AG software for Autograph series that complies with regulations and guideline requirements of pharmaceutical and medical devices industry
- ASTM / ISO / BS-EN / JIS Methods can be easily created with step by step wizard assistance
- For data security and management, establish up to eight user account with different level of access



Video



Video

Micro Hardness Testers

HMV-G Series Micro Hardness Testers

- Manual and automated reading options available
- Test force range from 9.8 mN (1 gf) to 19.6 N (2,000 gf)
- Option of up to 2 indenters and up to 4 objective lenses
- Novel G-shaped frame improves work space and ease-of-use
- Range of accessories for mounting various sample types



Video



HMV-G Series Fully Automated Micro Hardness Testers

- Models with X-Y (2Dimension) Automation and X-Y-Z (3Dimension) Automations (Full automation)
- Enables automated sample shape recognition for indentation patterning 9.8 mN (1 gf) to 19.6 N (2,000 gf) force range
- Supports depth of hardening, area, and edge measurements
- Full automation model includes automatic focus function



DUH Dynamic Ultra Micro Hardness Tester

- Suitable for measuring hardness of Fibers, thin Films, Coatings, Rubbers and Elastomers (Elastic Recovery Materials)
- Ultra-low test force range of 0.1 mN (0.01 gf) to 1.96 N (200 gf)
- Indentation depth readings from 0.001 μ m to 10 μ m
- Elastic modulus and elastic and plastic indentation work calculations
- Evaluation of Hardness in accordance with ISO 14577-1 Annex A



MCT Micro Compression Tester

- Developed for compression strength testing of micro materials with size up to several hundred microns
- Force loading range of 9.8 mN (1 gf) to 4.9 N (500 gf)
- Displacement measurement range up to 100 μ m
- Compression plate diameter options of 50 μ m, 100 μ m, 200 μ m, and 500 μ m
- Determine compression strength, compression rate, and recovery rate



Viscosity and Flow Testers

CFT-EX Series Capillary Rheometer

- Wide range of extruding pressures (up to 49 MPa) and test temperatures (up to 500 $^{\circ}$ C)
- Constant temperature and constant heating rate methods
- Data acquisition and analysis software with a natural flow
- Determine apparent shear rate, apparent viscosity, flow rate, softening temperature, Flow Beginning temperature etc



Video



SMV-301 Series Mooney Viscometer

- For Measuring Mooney Viscosity and Scroch Time of Raw and Unvulcanized Rubber
- Mooney Viscosity test, Mooney Scorch Test, Stress Relaxation Test, Cyclic Test (SMV-301RT) Variable Rotor Speed test (SMV-301RT)
- Maximum 200 M Capacity (Optional up to 400 M)
- Automatic Calibration Unit (Optional) allows weight to be automatically Calibrated to ensure high tensile reliability
- Compliance with Global Standards Include ISO 289-1,2,3,4, ASTM D1646, JIS K6300-1 etc
- A color LCD Panel display allows instrument to be operated by anyone and enhance Safety

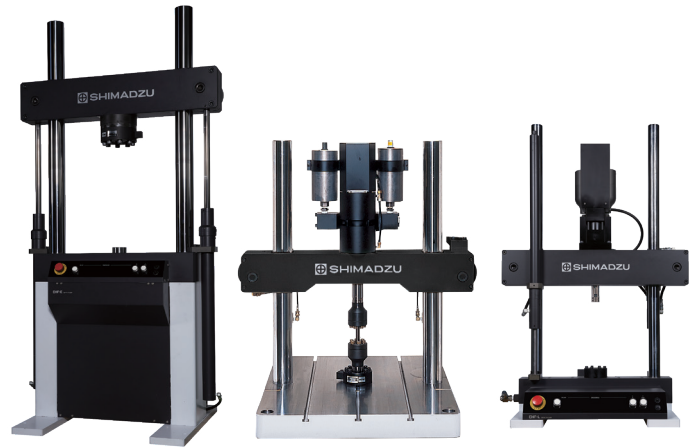


Video



Dynamic and Fatigue Testing Machine (Servopulser Series)

- Electric, hydraulic, pneumatic and ultrasonic type systems for fatigue and fracture analysis.
- Combination of high-rigidity load frame, low friction actuators, powerful controller and easy to use software makes smooth and accurate test analysis.
- Powerful 4830 controller features World best performance: 24 bit high resolution, 40 KHz fast sampling and 10 KHz fast feedback, auto tuning and auto gaining.
- Gluon 4830 software for fracture toughness
- ASTM E647-13, ASTM E399-12, ASTM E1820-11, ISO 12108-2012, ASTM E813-89.
- Special Instruments include Ultrasonic Fatigue Testing Machine, High Speed Tensile / Impact Testing Machine, Hydraulic Jack Systems, Electromechanical Actuators etc.



High Speed Impact Testing Machine (Tensile or Puncture)

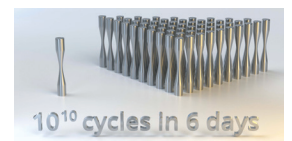
- State of the art machine for research on Plastics and Composites for their behavior against High Speed impact (Tensile or Puncture)
- HITS-TX (High Speed Tensile testing) for Tensile analysis and And HITS-PX (High Speed Puncture testing) for puncture analysis
- Capable of speed control from a very wide range of 0.0001 m/s to 20 m/s (72 km/hour) For HITS-PX: 1 m/s to 20 m/s
- Excellent vibration resistant design and powerful software enable the best accurate test results (Load cell: 10 KN)
- Optional thermostatic chamber for temperature dependency test(-40 to 150 °C)
- Related Standards include ISO 6603-2:2000 and ASTM D3763-06



Video

Ultrasonic Fatigue Testing machine

- High Cycle fatigue testing system (20 kHz) provides most time and coefficient test procedures for reliable service life data
- 10^{10} Cycle can be completed with in 6 days (400 times faster compared to 50 Hz cyclic testing)
- Supports R&D Activities in Automotive, Railway, Aerospace application
- Generates stress amplitude in a specimen by resonating it with 20 kHz longitudinal wave oscillation
- Range of test amplitudes 100 MPa - 1,200 MPa (1,000 MPa grade steel tests are possible)
- Resonance technique reduces power consumption to 1/100 W compared to conventional fatigue test.
- No Oil or Cooling water required.
- Availability of mean stress model



Laser Diffraction Particle Size Analyzers

SALD 2300

- Measurement range: 17 nm to 2,500 µm
- Wide range of particle concentrations, from 0.1 ppm to 200,000 ppm (20 %)
- Continues measurement function with an interval as short as 1 second
- wide range of fields including pharmaceuticals, cosmetics, foods, drinks, pigments, paints, ceramics, and electronic materials.
- Liquid measurements, High Concentrated and Dry powder measurement



Video



SALD 7500

- Wider range from 7 nm up to 800 µm
- Improvement, more powerful laser with 405 nm wavelength
- Reduced minimum sample quantity of just 5 ml for the batch cell
- designed for the nano and sub-nano range, as well as for measurement of fine-bubbles, carbon black
- Liquid measurements and High Concentrated measurements



High-Speed Video Camera

- World-class ultra-high-speed video recording up to 10 million frames per second
- Dedicated software
- Record images can be saved in AVI or BMP
- Variety of fields: Material failure, fluid dynamics and combustion
- real frame to frame synchronisation of multiple cameras



Video



Applications

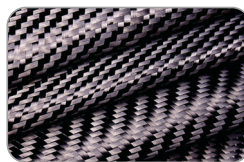
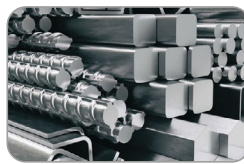
Metal Industries

Semi-auto-tuning function enables high-precision stress control and strain control (compliant with ISO 6892-2009 and JIS Z2241 metallic materials tensile testing standards)

Applicable Methods

- ASTM E8, ASTM O7205, ASTM A370, ASTM E399
- ISO 6892
- JIS Z 2241

And more ...



UH-X/FX Series

AGX-V Series

Carbon Fiber (CFRP)

- ASTM D6484 / D6484M: Testing Open-Hole Compressive Strength of Polymer-Matrix Composite Laminates
- ASTM D7137 / D7137M: Testing Compressive Residual Strength Properties of Damaged Polymer-Matrix Composite Plates
- ASTM D7078 / D7078M: Evaluation Testing of Shear Properties of Composite Materials by the V-Notched Rail Shear Method
- ASTM D6671 / D6671M: Evaluating the Compression Characteristics of Polymer-Matrix Composite Laminated Plates Using a Combined Loading Compression (CLC) Test Jig



Video



Video



Video



Video

Plastic, Rubber, Packaging Industries

- Strength properties of various plastics (HDPE, LDPE, PP, PVC etc.) and rubber are evaluated with high precision.
- Availability of a wide range of extensometers makes the system compatible with global testing standards (ASTM, ISO, JIS).
- High speed sampling of 1,000 Hz ensure no sudden variations in strength are missed.

Applicable Methods

- ISO 527, ISO 37
- ASTM D1894, ASTM D1781, ASTM D429 (Method A), ASTM D412, ASTM D790, ASTM D5943 etc.



AGS-X Series

Food & Pharmaceuticals

For Food Industries:

Bite Strength, Cook Quality, Resistance to Skin Break, Toughness, Crispiness, Crunchiness, Fracture, Work at break, Chewability, Rubberiness, Brittleness and more ...

For Pharma Industries:

Tablet Hardness, Syringe Extrusion, Package Strength, tablet splitting strength, press-dispense test, needle injectability test, medical goods (syringes, needles, sutures, condoms, bandages etc) Strength test and more ...

General Application:

Electrical Components, papers, plastics, wet and dry tissues, household goods and more ...



EZ-X Series

103+ years of History in Testing Machines



Innovation and collaboration

Since 1917, 103+ years of materials testing technology for R&D and QA/QC

Shimadzu's highly precise materials testing solutions serve the most challenging R&D, production and quality control applications. Developers and users benefit from technical excellence and customer-focused commitment.

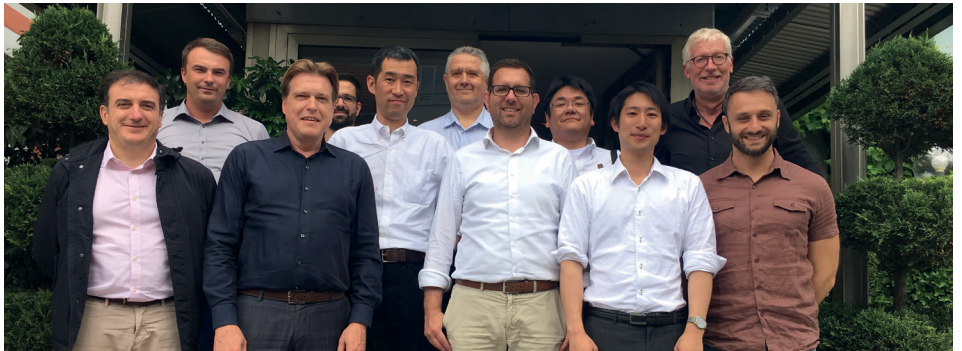
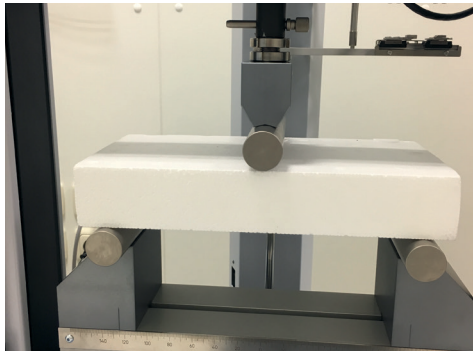
- Leading-edge sensor technology, control systems and information processing
- Static and dynamic universal testing machines
- Hardness testing instruments
- Capillary rheometers



Video

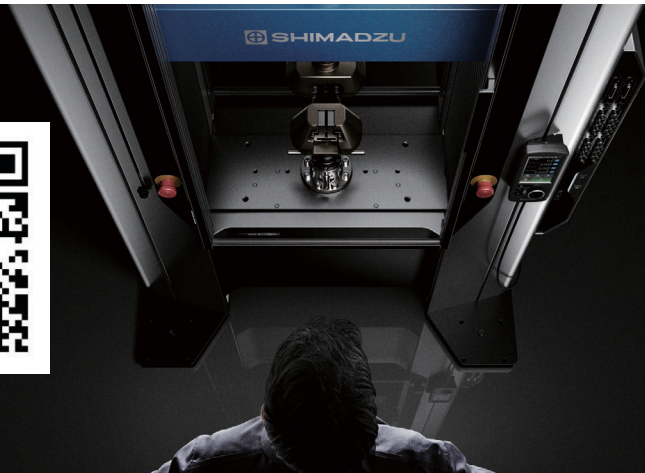
Our motto is to provide world-class customer experience by combining over 100 years of Japanese Quality with superior 'After Sales Support'. Our business capabilities ensure that we sustain our customer satisfaction.

- On-site installation
- Factory Acceptance Testing (FAT)
- Site Acceptance Testing (SAT)
- Operational training
- Prompt service support
- Spare parts and instruments warehouse



Testing Machine Configurator

Create your own testing system configuration and request quotations



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