

Materials Testing

Electromechanical Universal Testing Machines

Electromechanical Testing Machines are designed to test a large range of materials, including rigid and reinforced plastics, composites, ceramics, geo-textiles, mortars, textiles fabrics, ropes, wood, sheet metal, welded specimens, rubbers, adhesives, and medical products and components, in tension, compression, flexure, shear, tear and peel. One of the main advantages of electromechanical testing machines is the maximum accuracy on the test results. Additionally, electromechanical machines have great versatility, single or double testing space configurations, easy installation and minimum maintenance.

These machines are also manufactured for very high and low temperature tests, long-term tests and for the most demanding materials or components. Electromechanical machines are built in capacities ranging from 1kN to 2000kN, both tension and compression.





Servo-Hydraulic Universal Testing Machine

Testing machines ranging from 50 kN to 5000 kN have rigid and two or four column precision aligned high stiffness floor-mounted load frame with a fixed lower table. The adjustment is achieved by using built in hydraulic lifts and the crosshead is secured in position by hydraulic clamps. The system includes a base mounted hydrostatic bearing actuator and a load cell mounted on the upper crosshead. The system is free standing for installation on a standard concrete floor without requiring any special foundations. Air cushion isolators are provided for damping the vibrations. The main advantage of hydraulic acting is its capacity of generating high loads with simple and cost-effective systems. Testing machines are available with fixed or mobile crossheads, single or double testing space, hydraulic actuator in the top of the machine or in the bottom. With the appropriate combination of testing devices, any type of test can be performed: tensile test, compression test, bending test, folding test, shear test, etc.





Fatigue and Dynamic Testing Machine

Fatigue and dynamic testing machines are designed in accordance with test requirements, including load capacity, amplitude, frequency range, loading speed, deformation rate, and other relevant parameters. These machines are used to perform dynamic, fatigue, durability, and crack propagation tests, as well as to simulate the real operating conditions of components or complete systems.

Dynamic testing is conducted to replicate actual service conditions or to evaluate the fatigue life and performance of materials, components, and systems. Dynamic testing machines can perform tests with capacities of up to 2500 kN and frequencies of up to 50 Hz.

These machines can conduct dynamic tests in tension, compression, bending, and fully reversed loading conditions (tension–compression with zero crossing).





Creep Testing Machine

These machines are electromechanical creep testing machines with compact design which consume a minimal amount of laboratory space while performing tension tests on a variety of materials. It is also possible to adapt this type of machine for other types of tests: compression or shear tests. These machines are equipped with a 3-zone, vertical tubular furnace of Split type to carry out tests at temperatures in the range 250 °C to 1100 °C (on test specimen) with an accuracy of ± 1 °C or better. High precision, high accuracy temperature controller and power control unit is employed to achieve the above-mentioned temperature accuracy over a length of 150 mm. Each zone of the furnace can be controlled separately. Infrared furnace can also be provided for testing ceramics.





Electrodynamic Actuator

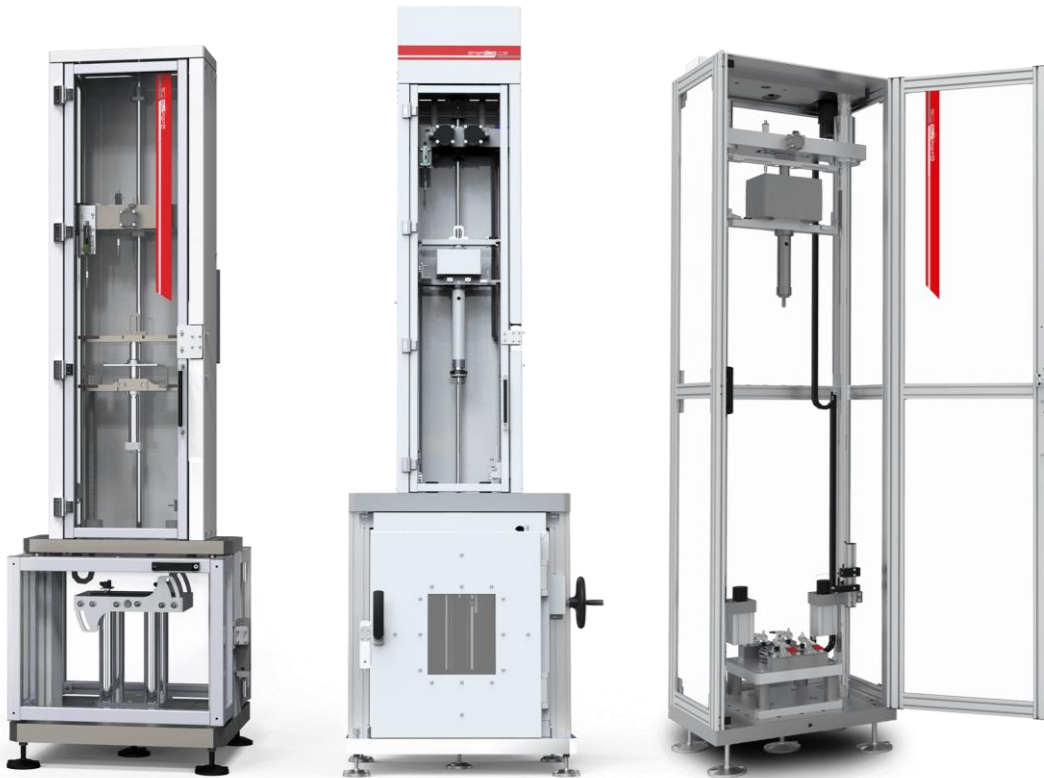
The UD Series electrodynamic testing machines are based on advanced linear motor technology and are specifically designed for the testing of materials and products that require highly precise force and position control. These machines offer exceptional dynamic performance due to their low moving masses, enabling accurate and responsive testing. The absence of mechanical transmission systems significantly reduces maintenance requirements while also improving energy efficiency and minimizing power consumption. With a wide operating range, the UD Series can perform tests at speeds from 0.01 mm/s to 2,000 mm/s and provides a 100 mm stroke, making it suitable for a broad range of testing applications. Additionally, installation is simple and convenient, requiring only a standard electrical power connection. These features make the UD Series an efficient, reliable, and versatile solution for dynamic material and product testing.





Drop Weight Impact Testing Machine

Drop-weight impact testing systems offer an extensive impact energy range from 0.2 J to 2000 J, making them suitable for testing a wide variety of materials, components, and finished products. The large specimen testing area provides flexibility for accommodating different sample sizes and configurations, enhancing the overall testing capability of the system. To support diverse testing requirements, we offer a comprehensive range of accessories, including load cells, anti-rebound systems, spring accelerators, instrumented impactors, and specialized specimen holders. Designed to deliver accurate, reliable, and repeatable results, our drop-weight towers and impact testing systems provide an ideal solution for research, quality control, and product development applications across multiple industries.





Axial-Torsion Test Systems

The BV Series testing systems are designed to perform both static and dynamic tests, including torsional fatigue, combined loading fatigue, and multiaxial stress analysis. They are compatible with climatic chambers, strain gauges, and a wide range of grips and accessories, making them suitable for various testing applications. Their flexible design allows them to meet the demanding requirements of both research laboratories and industrial testing environments.





Test Systems for Shock Absorbers

Electrical damper testing systems are designed to provide superior performance compared to conventional hydraulic systems while offering easy installation and low power consumption. These advanced systems are ideal for testing suspension components and shock absorbers, delivering accurate and reliable results. We offer one of the widest ranges of damper and suspension test benches available, with peak dynamic load capacities of up to 160 kN and continuous dynamic loads of up to 82 kN, making them suitable for demanding research, development, and quality control applications.





Robot-Based Testing Systems

STEP Lab robot-based testing systems are designed and supplied to perform automated testing involving highly complex three-dimensional movements. The systems are managed through a specialized version of the Test Center software, enabling easy programming and control of advanced test sequences. These solutions are widely used in the automotive industry for testing doors, seat movements, and user interfaces, as well as in the home appliance sector for evaluating doors, drawers, and control interfaces. They are also suitable for any product or system requiring complex motion simulation and repetitive durability testing. With the capability to perform an almost unlimited variety of tests, these systems offer exceptional flexibility and precision. STEP Lab customizes each solution according to specific testing requirements, providing maximum test speeds of up to 2000 mm/s and load capacities of up to 3000 N. In addition to their high performance, the systems feature low energy consumption, simple installation, and the ability to maximize the value of long-term investment through reusability and adaptability to future testing needs.

