UTEST
MATERIAL TESTING EQUIPMENT

UNIVERSAL TESTING SYSTEMS

SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

Product Code

UTM-9000 1000 kN Capacity High Stiffness Servo Hydraulic Universal Testing Machine

Application

Model UTM 9000 computer control electro-hydraulic servo universal testing machine is a superior model of UTM 7000. It is suitable to test various metallic & non-metallic materials for tension, compression, bending and shearing strength. It can be capable of testing the characters of materials on physical & technology properties. Equipped with the computer & software & printer, it can display, record, process and print the test results, and control test procedures as the set program and can draw test curves automatically in real time. The machine complies with ASTM, DIN, ISO standards. It is simple, easy to operate and widely used in works, laboratories and universities for material properties research and quality control.

Applied Standards

- Load meets or exceeds the following standards: ASTM E4, ISO7500-1, EN 10002-2, BS1610, DIN 51221.
- Strain measurement meets or exceeds the following standards: ASTM E83, ISO 9513, BS 3846 and EN 10002-4
- Safety: This machine shall conform to all relevant European CE Health and Safety Directives EN 50081-1, 580081-1, 73/23/EEC, EN 61010-1
- ISO6892: DIN EN 10002-1, JIS Z2241, BS-18, ASTM E8: Metallic Material-Tensile Testing at Ambient Temperature.

Load Frame

Testing system has rigid (700 kN/mm) four-column & two-lead screw construction & compact design. Dual workspace design: upper for tension, lower for compression, bending and shearing tests, which is quite convenient for different kinds of tests. No need adjustment to tensile space for same length sample due to special grip design. Space-adjustment by multiple-level notched column is suitable for specimen with different lengths.

The frames all incorporate human factor consideration in the design to ensure safety, improve testing efficiency & reduce operator weariness. Cylinder mounted at the bottom of the machine to guarantee the working gravity. Test space can be extended according to the length & elongation of specimen and related test requirements. With multi-level crosshead positioning structure, the upper crosshead position can be easily changed along with four chrome-plated notched columns depending on the specimen length. Therefore, tests can be performed at a height appropriate for the operator, and movable lower crosshead. With front-opening hydraulic wedge grips, it is easier for change of inserts and specimen loading.

When the testing load is over 2%-5% of max. load, the system will unload. When the ram arrives at the upper limited position, the motor of oil pump will stop. Oil actuator overflow protection, oil pump over-current protection, hydraulic oil, overheat protection, overload protection and filter protection is also supplied with the system.

SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

Load cell mounted on the piston has readability from % 0.2 - %2 to %100 of the rated capacity. Calibration within 0.5% accuracy can be carried out as per ASTM E4, ISO7500-1, EN 10002-2, BS1610, DIN 51221 standards. Top quality load cell provides excellent immunity to impact and side forces, rugged & low-profile measuring body with strictly symmetrical design is optimally suited to ensure high endurance strength. Excellent linearity guarantees highly precise measurement, additional mechanical protection of the strain gage area. It can be set for protections of 105% over range protection, over load capacity of 150% without permanent zero shift and over load projection of 300% of the rated capacity without mechanical damage.

Extensometers

Long Gauge Length Axial Extensometers

According to the customer needs, EPSILON 3542L extensometer can be delivered to the user. Technical specifications of the extensometer are listed below;
Mechanical overtravel stops in both directions. Standard units meet ASTM class B-1 requirements for accuracy. A test certificate is included. ISO 9513 class 0,5 test certificates are available upon request. hardened tool steel knife edges are easily replaced. A spare set comes with every extensometer. High and low temperature options extend operation from as low as -270 °C (-454 F) to +200 °C (400 °F). Includes high quality foam lined case. Replaceable arms and spacers for ease of repair. This also allows changing the gauge length for different test requirements. Rugged, dual flexure design for strength and improved performance. Much stronger than single flexure designs, this also allows cyclic testing at higher frequencies. Standard quick attach kit allows quick mounting to specimens.

Fully Automated Extensometer

According to the customer needs, MF MFL series automated extensometer can be delivered to the user. Technical specifications of the extensometer are listed below;
The extensometer MFL 800-B (in the following named MFL) is suitable for almost all samples of an initial gauge length from 10 mm. Its low clamping forces combined with high measurement accuracy makes it highly suitable even for small, notch sensitive test samples. The MFL can be connected to partly or fully automatic testing machines with hydraulic grips. The strain can be measured from the elastic range to fracture for almost all types of samples. When used in combination with the MFQ-A, the MFL is highly suitable for testing the deep-drawing properties (vertical anisotropy r) of thin sheets.

Advantages:

Accuracy class 0.5 (EN ISO 9513)
High resolution over the whole measuring range (0.1 or 1 µm)
Double-sided measurement via 4 sensors
Initial gauge length from 10 mm
Automatic movement to the position and gauge length
Automatic attachment at specimen
Very low clamping forces (ca. 0.5 N)
Measuring displacement of 800 mm minus gauge length
Lowest activating forces (←1 cN)

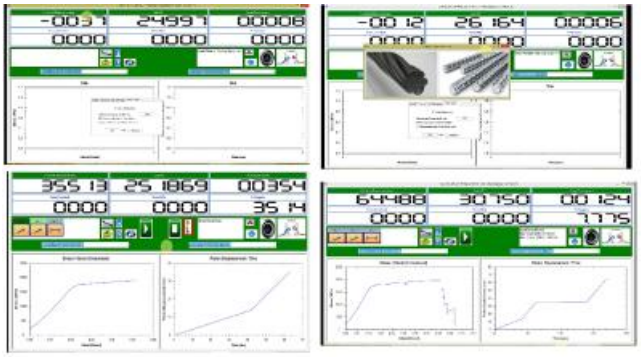
Hydraulic Power Pack

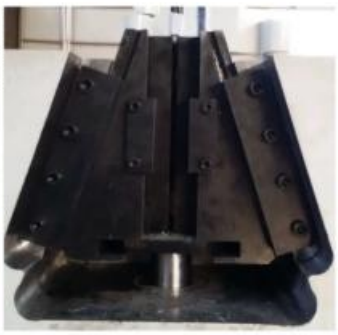
The hydraulic power units are specially designed for UTM 9000 system, which are governed by oil flow and pressure. The series have standard 1000kN static force capability at 280 bar (3000 psi on servo valve) system pressure with standard ratings 5 l/min oil flow. For larger oil flows, the unit can be modified to suit customers' requirements. Electrical parts as indicators, system management buttons and controller is involved in the power pack. Bladder type accumulators are supplied with the pack in order to compensate pressure drops while actuator is operating and any pressure losses between the HPU and test station, in order to smooth pump ripples. Oil level, oil temperature, filter's condition and motor temperature are continuously checked by controller and system has necessary interlocks for fault conditions. Factory –set pressure relief valve prevents excessive increases in pressure.. Compact designed hydraulic power units allow systems configured to control up four systems independently, this means saving valuable floor space in your lab. Installed isolation manifold lets hydraulic power system running multiple test stations, preventing over pressurization, discharging system pressure separately and power isolation of the stations. According to the environment where system is going to be built, air/oil cooler and water/oil cooler is supplied as standard. However alternative closed loop cooler systems can be adapted to unit if customer requests.

SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

Software

UTM 9000 is controlled by a computer with the free of charge software uDyna. uDyna is flexible and user-friendly windows based application software for both static and low frequency dynamic testing. In the software user can create either test methods (dynamic, fatigue or static) in accordance with EN ISO 6892-1 or custom test sequences where you can manage to run simple ramp to cyclic waveforms, even arbitrary custom motion profiles. Synchronized 100 Hz data transfer from feedback signals supplies detailed recording of running tests. This rate is flexible up to 4 kHz if the application is applicable. Graphical and numeric monitoring is displayed real time in the user interface. Data reduction and peak values recording are running in cyclic tests. Safety limits (pressure and displacement limits) and internal algorithm protect the machine against any fault condition occurred in the system. uDyna always optimizes the control parameters (PID and feed forward terms) during test in order to adapt actuator control to the changing stiffness characteristic of the specimen. The software also includes an easy calibration check facility. The machine gives some constant load values and waits there for easy check mechanism. Furthermore uData is also delivered to customer freely, where data analysing and reporting operations will be handled.





Technical Specifications

Maximum Capacity	1000 kN
Load Measurement	Class 1 or Class 0.5 starting from % 0.2 -%2 to %100 of rated capacity
Extensometer Accuracy Class (Epsilon)	ASTM Class B 1
Extensometer Accuracy Class (Fully Automated Extensometer)	EN ISO 9513 Class 0.5
Stroke	250 mm
Test Loading Speed	100 mm/min
Maximum Crosshead Moving Speed	200 mm/min
Tensile Space	1000 mm
Compression Space	850 mm
Column Space	750 mm
Working Table Size (mm)	1100 x 1000
Flat Jaw (mm)	0 - 70
Round Jaw (mm)	Ø4 - Ø80 ,
Platen Size (mm)	Ø200 x 60
Bending Span (mm)	50-720
Bending Depth (mm)	200
Gross Weight (kg)	8000
Dimensions of Load Frame	1250X900X3500
Power Supply	3PH, 380VAC, 50Hz,15A, 6kW