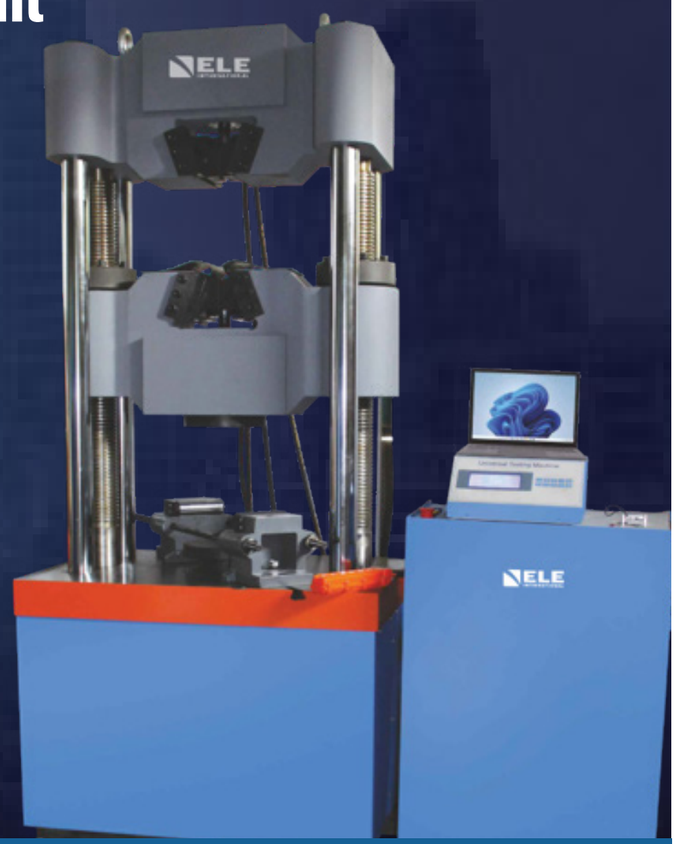
ELE INTERNATIONAL

Automatic Universal Testing Machine

(Load and Displacement Controlled)

ELE 36-2419/05, ELE 36-2421/05,
ELE 36-2420/05,ELE 36-2422/05,
ELE 36-2426/05,ELE 36-2427/05,



New

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Automatic Universal Testing Machine (Load and Displacement Controlled)

Overview

The Automatic Universal Testing Machine (UTM) is an advanced material testing system designed for high accuracy, repeatability, and compliance with international standards. This machine utilises a servo motor-driven control mechanism, ensuring smooth and precise load and displacement application during testing.

The system is automatic and controlled via an intelligent Pace Rate Controller, which operates in a closed loop feedback system for real-time monitoring of load and displacement. This model is fully automatic and features an auto load release system, which automatically releases the load upon test completion, eliminating the need for manual intervention and ensuring seamless operation.

Modes of Operation:

- **Load Control Mode:** Maintains a specified load rate until material failure.
- **Displacement Control Mode:** Applies a constant displacement rate for detailed deformation analysis.
- **Automatic Transition Mode:** Starts in Load Control Mode and automatically switches to Displacement Control Mode upon reaching the yield point.
- **Manual Mode Switching:** Allows the operator to switch between load and displacement control modes at any stage of testing.

Applications:

The UTM is designed for a wide range of material testing applications across different industries, including:

- **Tensile Testing:** Determines material tensile strength and elongation.
- **Compression Testing:** Analyses material resistance to compressive forces.
- **Bending Testing:** Evaluates material flexibility and strength under bending stress.
- **Shear Testing:** Measures a material's shear strength and failure resistance throughout the test process.

This machine is ideal for quality control, research applications, and compliance testing in various industries such as construction, automotive, aerospace, metallurgy, and material science.

Components and General Details
Load Frame:

The load frame is built for high rigidity, stability, and minimal deformation under load. It features:

- **6-Pillar Structure:** Provides excellent stability and minimises deflection.
- **Axial Load Application:** Uniform force distribution through ball seating.
- **Integrated High-Resolution Displacement Sensor:** Captures deformation data in real-time.
- **Adjustable Middle Crosshead:** Allows flexible test space for different specimen sizes.
- **Motorised Threaded Columns:** Enables quick UP/DOWN movement of the lower crosshead for specimen and grip adjustments.
- **Large Clearance between Columns:** Facilitates testing of standard specimens.
- **Automatic Hydraulic Gripping System:** Remote-controlled opening/closing of grips for convenience.

Pumping Unit:

A servo motor controlled hydraulic system that provides consistent force during testing. It includes:

- **High-Efficiency Hydraulic System:** Ensures precise force application.
- **Low Noise & Minimal Heat Generation:** Designed for energy-efficient performance.
- **Constant Pressure & Flow Control:** Maintains uniform conditions during prolonged tests.
- **Automatic Load Release Mechanism:** Automatically releases the applied load upon test completion, eliminating the need for manual intervention and enhancing testing efficiency and safety.

Digital Indicator and Controller:

The digital controller provides real-time load and displacement feedback with multiple control features:

- **Multi-Mode Operation:** Load Control, Displacement Control, Automatic Transition Mode, and Manual Switching.
- **Closed-Loop PID Feedback System:** Ensures precise and stable adjustments.
- **PC Integration:** Facilitates seamless data visualisation and operation.
- **Overload Protection:** Stops the test automatically if predefined limits are exceeded.

Automatic Universal Testing Machine (Load and Displacement Controlled)

UTM Software (Windows-Based):

ELE recognises that the most efficient way of testing is with the help of software and the ease of its operation. The ELE UTM 1.1 has been ergonomically designed to suit the various needs of the customers as per their requirements. Operation of the software is extremely user friendly and the features are self-explanatory. The advanced software suite is designed for real-time control, data acquisition, and analysis.

Features:

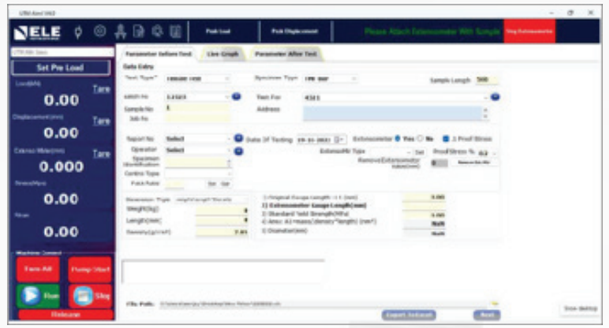
- Tensile Testing
- Compression Testing
- Transverse Test for flat sample
- Bend & Rebend Test
- Shear Test
- Extensometer Test
- Flexure Test
- Rope Test

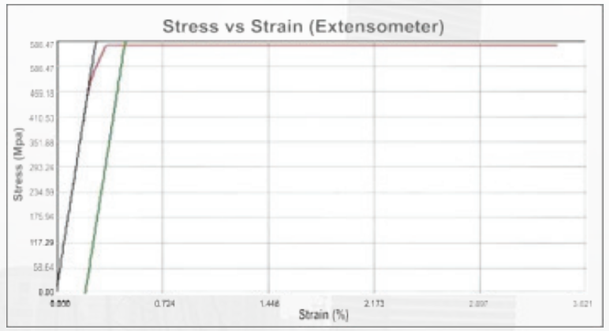
The bright, large and prominent display for the load and displacement adds to the readability of the software and hence effortless observation of the online tests.

The enhanced display of the test screen displays the value of the load and displacement and the online graphs as it is generated during the tests. The selection of the scale on graph enables you to view the graph more prominently on the screen. The extensometer test screen incorporates the results of the normal Load Vs Displacement. Test as well as the Load Vs Extension and Stress Vs Strain online graphical view simultaneously, a unique facility on its own.

Software Capability:

- Operation Mode Control - Software-based control of load control, displacement control, auto transition mode, and manual switching - all selectable directly from the interface.
- Automatic Test Execution - Complete testing process automation, including auto load release.
- Control parameter-load/displacement.
- Database backup & restore facilities are available.
- Customisable report-header/footer.
- The default report generated automatically in crystal reports & can be printed directly. The reports can also be exported to Excel.
- User can set starting point of graph line.
- User can set failure detection percentage.
- Automatic change over graph scale.
- Display of Load Vs Displacement & Stress Vs Strain graph in real time.
- Printout of Load Vs Displacement, Stress Vs Strain graph & test results.
- User can analyse the report from test data & also define 0.1% & 0.2% proof stress line.
- Overload feature which stops the machine when the maximum defined load is reached.







Statistical Analysis:

This powerful tool enables users to compare and analyse results in a statistical format, making it particularly useful for reviewing batch reports in production environments. The feature has been developed to meet the evolving needs of the industry and support the achievement of higher standards. Such flexibility is provided through ELE Software, backed by assured lifetime quality service and updates in line with the latest industry standards.

Minimum Recommended Computer Hardware:

- 2 GHz Pentium Dual Core or equivalent.
- 4 GB RAM, although using multiple testing machines may require additional memory and/or a faster processor.
- 256 MB DirectX 9.0 capable video card.
- 250 GB HD Drive.
- CD-ROM Drive.
- Mouse or pointing device and keyboard supported by Windows.
- Monitor that supports at least 1024 x 768 resolution and 32-bit colour.
- 2 USB Serial Port adapter per machine.
- Windows compatible printer recommended for reporting capabilities.
- Windows compatible sound card and speakers (for audio playback).
- Additional USB ports for measuring devices, barcode scanners, printer etc.
- At least 1 integrated serial port (not USB) where possible.

Software Requirements:

- The ELE software is suitable for either Windows 10 or Windows 11 systems (64-bit recommended).
- Internet Explorer 8 or higher.

Note: 1 UTM is supplied with ELE Software. Computer will be supplied at an extra cost.

Note: 2 Modifications in optional accessories can be made on request.

Note: 3 UKAS Accredited Calibration Certificate for force parameter is optional.

Automatic Universal Testing Machine Model Available:

Capacity 300 kN/500 kN, 600 kN, 1000 kN, 1200 kN, 1500 kN & 2000 kN

Specifications						
MODEL NO	ELE36-2419/05	ELE36-2422/05	ELE36-2420/05	ELE36-2426/05	ELE36-2427/05	ELE36-2421/05
Machine capacity	300 kN/500 kN	600 kN	1000 kN	1200 kN	1500 kN	2000 kN
Accuracy	±1 %	±1 %	±1 %	±1 %	±1 %	±1 %
Load Resolution	0.01 kN	0.01 kN	0.01 kN	0.01 kN	0.01 kN	0.01 kN
Elongation Scale Resolution	0.01mm	0.01mm	0.01mm	0.01mm	0.01mm	0.01mm
Extensometer Resolution	0.001mm	0.001mm	0.001mm	0.001mm	0.001mm	0.001mm
Control Type	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
Control Parameter	Load/Displacement	Load/Displacement	Load/Displacement	Load/Displacement	Load/Displacement	Load/Displacement
Load Control Range	0.2 to 5 kN / sec	0.5 to 10 kN / sec	0.5 to 12 kN / sec	0.5 to 15 kN / sec	0.8 to 18 kN / sec	1 to 20 kN / se
Displacement Control Range	0.001 to 10 mm/sec	0.001 to 10 mm/sec	0.001 to 10 mm/sec	0.001 to 10 mm/sec	0.001 to 10 mm/sec	0.001 to 10 mm
Load Release Type	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
Max Clearance for tensile	600mm	700mm	800mm	850mm	850mm	900mm
Max Clearance for Compression test	540mm	650mm	750mm	800mm	800mm	850mm
Clearance between columns	375mm	455mm	540mm	700mm	850mm	850mm
Ram Stroke	200mm	200mm	200mm	250mm	250mm	300mm
For Tension Test Clamping jaws for round specimens	6-12mm 12-22mm 22-32mm	8-15mm 26-40mm 13-26mm	8-15mm 16-25mm 26-40mm	8-16mm 16-25mm 40-60mm	10-25mm 20-40mm 45-70mm	20-40mm 25 - 45mm40- 60-80mm
Clamping jaws for flat specimens thickness	0-20mm	0-30mm	0- 40mm	0 -22mm 22-44mm	0-22mm 22-44mm, 44-70mm	0-20mm 20-45mm, 45-70mm
Flat specimen width	70mm	90mm	110mm	70mm	100mm	90mm
For Compression Test: Dia of circular platen	200mm	200mm	200mm	200mm	200mm	220mm
Crosshead geared motor (kW)	0.74kW	0.55kW	0.74kW	0.74kW	1.1kW	1.5kW
Power pack motor (kW)	0.75kW	1.5kW	1.5kW	1.5kW	1.5kW	1.5kW
Weight (approx)	1700kg	2500kg	3500kg	5000kg	6000kg	9500kg

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