

Material Testing Machines Services

Ph. No.: +91(020) 65330794, 65334794, 32948178, Tele Fax : +91 20 27286718
www.mtmstpune.com NABL Accredited Site Calibration Laboratory (C0262)

Computerised Universal Testing Machines



Features

Universal Testing Machine have a wide range of applications. A number of materials, metals in different form and shapes can be tested for variety of tests like Tension, Compression, Transverse, Bend, Shear, Brine Hardness etc. Special attachments are also available for testing of Flat Belts, Chain Links, Wire Ropes etc.

Loading Frame

The base has a hydraulic cylinder at its center and two main screws at both ends. The middle cross head is mounted on screws through main nuts. The middle cross head can be moved up or down through chain transmission and geared motor to adjust the initial tensile/compression clearance. On the piston, rests an assembly of upper, lower cross head and two columns. The individually lapped cylinder/piston assembly ensures smooth axial force with minimum friction.

Control panel

Hydraulic circuit - it consists of hydraulic power pack which has a directly driven radial plunger pump which gives a continuous non-pulsating flow of oil pressure up to 250 bar. A pressure-compensated needle-type flow control valve is provided to control the oil flow to cylinder there by achieving a desired piston speed. Infinitely variable speeds can be obtained with help of valves. Optionally this can be controlled from electronic control system.

Material Testing Machines Services

Computerised Universal Testing Machines



● Loading Rate / Straining Rate Control

This is superfine controlling system which controls loading rate I straining rate as per commands from electronic machine control system. With UP / DOWN Keys on electronic control system loading ratel straining rate is adjusted. Fine UTM Software can send loading rate / straining rate to electronic control system.

● Load Measurement System

The oil pressure in the main cylinder is also transferred to an electronic pressure transducer which goes proportionate signal to computer electronic unit. both the motors for hydraulic operation and cross head motion are controlled by buttons on electronic control system and they have interlocks to prevent simultaneous working of motors. The electrical panel is housed in control panel. Displacement measurement is carried out by means of a rack and pinion on rotary encoder. Encoder signal is fed to electronic control system to get displacement.

● Operation

Tension test is conducted by gripping the test specimen in the upper and middle cross head. Compression, Bending, Transverse, Shear and Hardness tests are conducted between the middle and lower cross head by using appropriate fixtures. The rapid adjustment of middle cross head facilities easy fixing of tensile I Compression specimens of different lengths.

Hydraulic controls are through hand operated valves, ergonomically placed for ease of control. Optionally valves can be controlled from electronic control system. Adequate safeties for over load and over travel are incorporated and emergency switch is provided.

● Accuracy & Calibration

Every machine is calibrated in accordance with procedure laid down in BS - 1610 - 1964 IS 1828 - 1991. 'FMI' Computerised Universal Testing Machines comply with grade A of BS 161() "1964 and Grade 1.0 of IS 1828 - 1991. An accuracy of + -1% guaranteed from 2% to 100% of capacity of the machine. in the computerised UTM, the computer is an integral part of the entire system and not just on ADD - ON feature. This puts a lot of power and versatility into the hands of the operator and makes the system much more self contained then usual, as it includes many functions usually only available as additional (often expensive) optional features.

Contd

Material Testing Machines Services

Computerised Universal Testing Machines

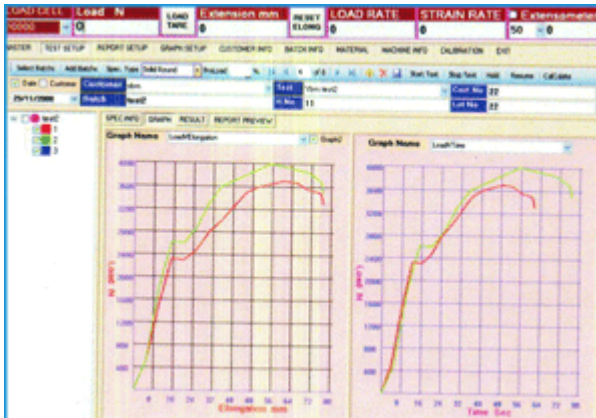


● Features of -Fine UTM software

- Load and Elongation is continuously displayed on screen.
- Overload protection for machine by electronic control.
- Tare Load and Reset Elongation facility available.
- User selectable sample break detect condition
- load rate and strain rate are also displayed while testing
- Unlimited load rate and strain rate control steps
- With Load rate controller, user can hold the load on specimen for unlimited time.
- With Load rate control, user can specify positive or negative Rate of Loading
- User selectable units for load and displacement(kg, kN, N, lbf, mm, ern, inch etc.) Results and graphs are automatically displayed accordingly.
- On line display of load and Displacement (Stress, Extension, Strain) etc. while test is conducted
- User Programmable graphs and graph templates are stored as master Real time graphs with various combinations of Load. Stress, Elongation, strain and Time can be user selectable and is auto scaled Such two graphs are simultaneously displayed.
- Multiple graphs of tested selected specimens in selected batches are displayed simultaneously with different colors.
- Provision of auto zeroing of Elongation at preload set by user
- User Programmable Reports. User can select Header, Footer, Specimen Information, Dimensions, Test information, graphs (2nos), Test Results, Stastical analysis as per his need and the report templates master are stored and can be used for printing
- Date wise and or customer wise batch selection facility.
- User can select specimens from different batches
- Generated reports can be exported to PDF file and can be a -mailed.
- No limit for test result storage as data is stored in access database(User need not remember file names for the tests conducted for report generation)
- If electronic extensometer is used then proof test values from 0.1 % to 1 % can be determined
- Software will give alert to user to remove extensometer when load crosses .2 % of Gauge length selected then proof load value is calculated.
- Combined graph of extenso meter and encoder is displayed
- Provision of calculation of Load and Elongation at yield, Peak load and Load at break, Yield stress, Ultimate stress etc.
- Special software for tensile, compression, bend, TOR steel and other test software as per customer requirements.

Material Testing Machines Services

Computerised Universal Testing Machines



A microcomputer based Machine Control system

- Full fledged sealed membrane alpha numeric keyboard for data entry 21X 8 Lines LCD Graphics display with backlit for displaying load and Elongation of crosshead with bigger font size.
- Load indicated with resolution of 0.01 % of machine capacity for entire range
- Elongation is measured with resolution of 0.01 mm
- Controller for Load rate and strain rate control (Optional)
- Lower and upper limit switch for mechanical safety in Load rate and strain rate control (Optional)
- User can use UP DOWN button to control the flowload on test specimen manually (Optional)
- Auto detection of overload and over travel and specimen break. On detection of any condition hydraulic system is automatically turned off
- Tare Load and Reset Elongation facility
- Data entry for specimen type and dimensions
- Data entry for Customer Information, Batch Information, Peak load and Elongation at peak, Load at break, Elongation at break, UTS, %Elongation, % reduction in area. Yield load etc. results for offline test
- RS232C interface for computer connectivity
- Built in centronics parallel port ISerial Port for printer interface