

DIGITAL UNIVERSAL TESTING MACHINE

(Electro-Hydraulic)

A product from an ISO 9001-2000 Certified Company

ETS



DIGITAL UNIVERSAL TESTING MACHINE

- Loading Accuracy as high as $\pm 1\%$
- Straining at variable speeds to suit a wide range of materials.
- Printer may be supplied to enable study the behavior of the material (Optional)
- Motor driven threaded columns for quick effortless adjustment of lower cross-head-to facilitate rapid fixing of test specimen (Optional)
- Simplicity in reading because of digital readouts.
- Wide range of standard and special accessories, including load stabilizer which are optional.
- Easy change/fixing of specimens.
- Large effective clearance between columns enables testing of standards specimens as well as structures.
- Simple controls for easy of operation.
- Robust staining frame of an extremely rigid construction.
- Safe operation ensured be means of safety devices.
- Fully enclosed hydraulic power pack.
- Optional serial port to transfer data.

Application :

Universal Testing Machine is designed for testing metals and other materials under tension, compression bending, transverse, brinelland shear loads. Brinell Hardness test on metals can also be conducted using optional test attachments.

Principal of Operation :

Operation of the machines is by transfer of electronic signals of load from the test specimen through pressure transducer to a separately housed load indicator. The system is ideal since it replaces transmission of load through levers and knife edges, which are prone to wear and damage due to shock on rupture of test pieces.

Load is applied by a hydrostatically lubricated ram. Main cylinder pressure is transmitted to the cylinder of the pressure transducer housed in the control panel. The transducer gives the signal to the electronic display unit corresponding the load exerted by the main ram. Simultaneously the digital electronic fitted on the straining unit gives the mechanical displacement to the electronic display unit. Both the signals are processed by the microprocessor and load and displacement is displayed on the digital readouts simultaneously. The displacement may be read from a linear scale fitted in the loading unit at a reduced price.

Straining Unit

This consists of a cylinder motor with chain and sprocket drive and a table coupled with the ram of the hydraulic cylinder, mounted on to a robust base. The cylinder and the ram are individually lapped to eliminate friction. The upper cross-head is rigidly fixed to the table by two strengthened columns. The lower cross-head is connected to two screwed columns which are driven by a motor. Axial loading of the ram of any possible side loading by the provision of seatings. Manual adjustment of cross-head may be provided at a reduced price.

Tension test is conducted by gripping the test specimen between the upper and lower cross-heads,

Compression, transverse, bending, shear and hardness tests are conducted between the lower cross head and the table.

The lower cross-head can be raised or lowered rapidly by operating the screwed columns thus facilitating ease of fixing of the test specimen.

Control Panel :

The control Panel consists of a power pack complete with drive motor and an oil tank, control valves and electronic display unit.

Power Pack :

The power pack generates a pressure of upto 600 kgf/cm² the hydraulic pump provides continuously non-pulsating oil flow. Hence the load application is very smooth.

Hydraulic Controls :

Hand-operated wheels are used to control the flow to and from the hydraulic cylinder. The regulation of oil flow is infinitely variable incorporated in the hydraulic system is a regulating valve which maintains a practically constant rate of piston movement. Control by this valve allows extensometer readings to be taken.

Electronic Control Panel :

The electronic control panel incorporates state of the art technology with following features.

- Front panel key board for test setup.
- 7 seg. digital display of load displacement / extension.
- Printer port interface(Optional)
- Serial port for communication with PC.(Optional)
- Optional add-on facility for electronic extensometers & electronic load pacer.
- Storage of important parameters such as peak load, displacement at peak load & maximum displacement after test (Optional)
- Preload selections to take care of initial slippage.

Accuracy & Calibration :

Digital Universal Testing Machines are closely controlled for sensitivity, accuracy and calibration during every stage of manufacture. Every machine is then calibrated over each of its measuring ranges in accordance with the procedure laid down in BS : 1610 : Part 1 :1992 and/or IS 1828 : (Part 1) : 1991.

An accuracy of $\pm 1.0\%$ is guaranteed from 2% to 80% of the capacity of the machine.

Capacity :10T (100KN) to 200T (2000KN)

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