

## **ELECTRONIC UNIVERSAL TESTING MACHINE**

**With Open Front Loading Hydraulic Jaws Supplied Complete With Laptop, Laser Printer & Software 1000 KN Capacity.**

Machines should be capable for conducting tests on various types of ferrous and non-ferrous materials like TMT bars, MS flats, Angles sections, Channels sections, T-sections, I-sections, Conduit pipes; MS pipes (Hollow & Solid), etc.

(i) Compression up to 500mmx500 size (ii) Tension for circular and flat section up to 50mm dia. or 100mm width resp. (iii) Transverse (iv) Bending (v) Shear (vi) Hardness and many others.

The Main Parts of machine are:

### **1. LOADING FRAME**

The machine should have six pillars in total for stability and rigidly. The Loading Frame consists of a central cross head whose position is adjustable through a geared motor depending on the size of the test specimen. The lower table is carried by the piston of the Hydraulic Ram of suitable capacity positioned in the cast iron base of the machine. The upper cross head is carried by four steel columns fixed to the lower table. Compression, transverse, bending, shear and hardness tests to be carried out between the central cross head and lower table, while the tension test is carried between the central and upper cross heads. Sensing of load is through a strain gauge based transducers, while the movement of the lower table (ram Stroke) is measured by rotary encoder. Safety features like over travel limit for central cross head, over travel limit for ram and over loading of the system are provided as standard with the machines. Hydraulically operated front loading grips will be supplied with the machine.

### **2. HYDRAULIC PUMPING SYSTEM**

Hydraulic pumping system consists of multi plunger pump powered by a suitable motor operated on 415V, 3Phase, 50Hz. This pump gives a continuous non pulsating oil flow to the ram of the loading frame. Pressure switch is provided for additional safety against over load. Release valve and load control valve is placed at a convenient position for easy operation by the operator. It also have electrical control panel for the movement of the middle cross head and also for ON/OFF of the main pump. Additional switch is provided for fast lift of the ram for initial filling of the gap.

### **3. LOAD PACING**

The system is to be supplied with manual pacing arrangement with status of pace rate is indicated in the digital display unit. Pace rate is achieved manually by controlling the flow control knob and the system are released manually after the peak load is achieved.

### **4. MICROPROCESSOR BASED TOUCH PANEL DISPLAY & DATA ACQUISITION SYSTEM FOR UTM**

The two-channel micro processor based signal conditioning and touch panel display unit is suitable to measure load, Displacement and Extensometer (Optional) directly indicated in their respective engineering units. Load is indicated in terms kN and Extension/displacement in mm. The load is being measured by the Pressure Transducer and displacement is measured by Rotary encoder/ linear displacement transducer. The system receives the output signal of the both the channels as its input and amplify the same to be displayed on the Touch Panel display at the front panel. The data of both the channels of UTM can be transferred to computer through RS-232/ Ethernet and can be online monitored in the software.

### **SALIENT FEATURES OF SYSTEM**

- Menu driven interface
- Facility to perform various operations such as TARE, PROGRAMMING, START, STOP etc. from Touch Panel display
- Programmable Rate of loading (Pace Rate) and sample parameters (Shape, Dimension etc.) through Touch Panel display

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- Standalone system to Start and stop of test
- Manual Pace Rate control at pre-set value with Pace Deviation Bar
- On-line display of Load, Peak Load and Displacement with recording of Peak load along other sample details
- Real time plotting of Load v/s Displacement, Load v/s Extensometer curve
- Storing of results in user defined file with sample parameter and other details
- Real time clock check to keep automatic track of the date, time and runs
- Test results can be stored in the electronic unit with unique record no. and can be retrieved and transferred to USB drive for printing
- Transmission of Data to computer through Ethernet/USB/RS232 port

- Speed precision +/-5% and accuracy +/-1%

**5. Laptop**

Intel Core, 5th generation processor, 8 GB Ram, 1TB HDD, DVD, 16"screen, HD Cam.

**6. Laser Printer**

With copier and scanner, Speed of 12 pages per minute for A4 and letter-size paper. First page out in as low as 10 seconds, 600 x 600 dpi with HP Resolution Enhancement technology (REt). 1200 dpi effective output quality (600 x 600 x 2 dpi) with Resolution Enhancement technology (REt)

**7. Application Software**

User friendly Software would be provided with the system to acquire and plot data online and then analyze the various result parameters.

**Salient features of the software**

- Windows based & user friendly
- Saving & Retrieving of Test Files
- On line display of Load, Displacement & Extensometer (Optional)
- Start & Stop operation for acquiring data
- Online Plot of Load v/s Displacement and stress v/s strain Graph
- Display of recorded Data on the Screen
- Storing of Data in Numeric form
- Plotting of following graphs-Load v/s Time, Displacement v/s Time, Load v/s Displacement, Stress v/s Strain

Calculation of various parameters such as load and elongation at yields, peak load and displacement at break, yield stress, Modulus of Elasticity, Ultimate tensile strength, compressive strength etc.

Facility to print the data and all the graphs

<b>Max. Capacity (kN)</b>	<b>: 1000</b>
1 <sup>st</sup> Measuring range (kN)	: 0-200
Least Count (N)	: 100
2 <sup>nd</sup> Measuring range (kN)	: 200-1000
Least Count (N)	: 1000
Clearance for Tension test (mm)	: 50-850
Clearance for compression test (mm)	: 0-850
Ram Stroke (mm)	: 250
Piston speed at no load (mm/min)	: 0-80
Clearance between columns (mm)	: 750
Connected Load (K.W.)	: 3.5

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Voltage : 400-440  
Phase : 3

Standard Accessories supplied with the machine

For Tension

Clamping jaws for round specimens (mm) : 08-16mm, 20-40mm, 40-60mm  
Clamping jaws for flat specimens (mm) : 0-20, 20-50  
Width (mm) of specimen : 75

**Hydraulically Operated front loading grips will be supplied with the machine**

For Compression

Diameter of platens (mm) : 250

For Transverse

Diameter of rollers (mm) : 50  
Length of Rollers (mm) : 170  
Max. Span between the rollers  
(Adjustable) (mm) : 800

For Compression

Diameter of platens (mm)

For Transverse

Diameter of rollers (mm) : 50  
Length of Rollers (mm) : 170  
Max. Span between the rollers  
(Adjustable) (mm) : 800

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