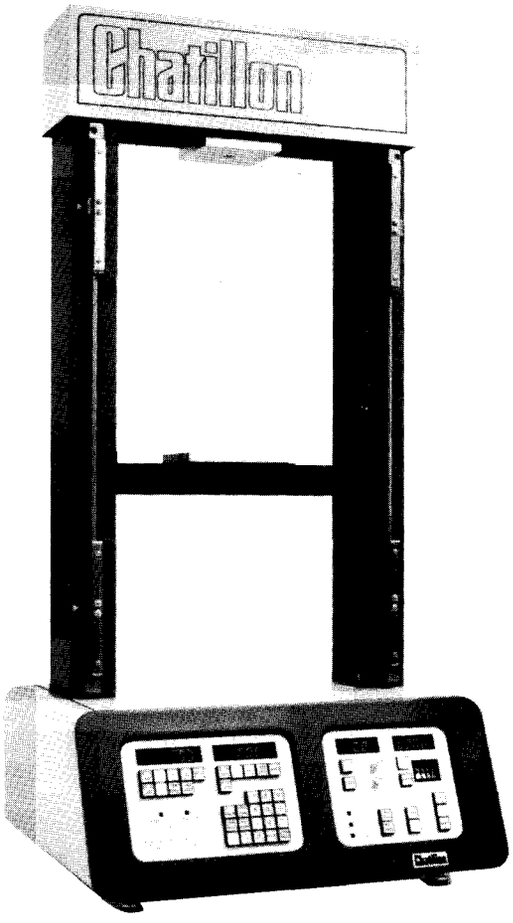
ET1100 – Universal Electronic Tester



Motorized, microprocessor based universal electronic tester designed for testing compressive/tensile strengths, yield, and breaking strengths of various specimens to it's capacity of 1100 lb. (500 kg, 5000 N). Features include programmable set points; for maximum efficiency of repetitive testing in manual, or automatic cycling mode.

Major Components

1. D.C. Gearmotor with tachometer feedback and dynamic braking assures constant speed regardless of loading.
2. Strain gage load cell: Mounted to the top bar of the loading frame, it produces an electrical signal proportional to the applied force in compression or tension. An adjacent mounted pre-amp amplifies the signal to the microprocessor in the control section of the tester. Force calibration is accessible through the pre-amp.
3. Precision ball screws and rotary optical encoder: The screws are motor driven by means of a gear pulley/timing belt system. One revolution of the screws produces ¼" travel of the ram (0.250" pitch). One screw is equipped with an anti-backlash assembly. The rotary optical encoder, mounted to the same screw, generates 250 pulses for each revolution and also indicates the direction of travel.
4. Microprocessor, and associated digital displays: The signals from the load cell (force) and the optical encoder (deflection), are transmitted to the microprocessor for the necessary digital manipulations. It also compensates for the deflection of the load cell and the test frame.
5. Control panel: The front panel incorporates convenient push buttons for the following functions:

Set Points:	High and low set points for either force or deflection may be entered to establish predetermined limits and for repetitive testing in manual or automatic cycling mode.
Tension/Compression:	(T/C) for selecting test mode.
Units of Measurement:	
Force:	Pounds (lb), Kilograms (kg), or Newtons (N)
Deflection:	Inches (in), or millimeters (mm)
High Range:	100% of load cell capacity
Low Range:	20% of load cell capacity (with increased resolution)
Zero:	For force and deflection separately; to establish reference points, or tare out specimen and fixture weights.
Max Hold:	For force and deflection; holds force display alone, or both force and deflection together, when force starts to diminish from current value.
Max Recall:	For recalling a maximum force reading and the deflection at which it occurred, over a series of individual tests.
Max Clear:	Clears previously stored maximum values.
First Peak:	Used for testing materials which exhibit an early yield, and then recover (notably plastics). Pressing "FIRST PEAK" will display both force and deflection of the first yield point. The amount of first peak capture is user selectable through internal switches.

6. Motor controller: Handles the up, stop, and down functions of the traveling ram in manual or automatic mode, at the operator's discretion. Up and down speeds are independently adjustable from 0.2" to 24" per minute (or 5 to 609 mm/minute), and are digitally displayed during operation. The entered speeds may be overridden during operation by non-locking maximum, and minimum speed push buttons.

When **set points** are used during testing, automatic cycling may be initiated by dialing the desired number of cycles using the thumb wheel switch (up to 9999 cycles). Each completed cycle is counted, and digitally displayed. The tester automatically stops upon completion of the cycling count and returns to the manual mode. Pressing the "CLEAR" button will clear the cycles display, and permit resetting of the auto-cycling function.

A locking "DAMP" button, working in conjunction with the microprocessor and the motor controller, may be used to minimize "overshoot" during testing, when set points are in use. When "DAMP" is on, the motor slows to minimum speed as it nears the digital set point, and gradually approaches it.

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