



Over **60** years of consistent excellence

Electronic Compression Testing Machine

Model : CTE



The FIE Compression Testing Machine incorporates design features to enable high accuracy testing with economy, speed and versatility.

Features :

- Loading accuracy as high as $\pm 1\%$.
- Straining at variable speeds to suit a wide range of materials.
- Panel & PC graph enables to study the behavior of the material.
- Motor driving geared shaft for quick & effortless adjustment of Cross-head to facilitate rapid fixing of the test specimen.
- Simple controls for ease of operation.
- Simplicity in reading because of Digital Read-outs.
- Wide range of standard and special accessories, including load stabilizer.
- Large effective clearance between columns enables testing of standard specimen as well as structures.
- Robust straining frame of an extremely rigid construction.
- Safe operation ensured by means of safety device.
- Fully enclosed and protected pressure transducer.
- RS 232 serial port to transfer data to computer for analysis, storage, evaluation etc.
- Manual control and release valve operation.

Application :

FIE Compression Testing Machine is designed to test metals and other materials under compression, bending, transverse and shear loads. Hardness test on metals can also be conducted.

Principle of Operation :

Operation of the machine is by hydraulic transmission of load from the test specimen through pressure transducer to a separately house 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 pressure transducer house in the control panel. The transducer gives the signal to the electronic display unit, corresponding to 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 displacement on digital readouts simultaneously.

Machine consist of :

I) Straining Unit : It consists of a hydraulic cylinder and a table coupled with the ram of hydraulic cylinder, mounted on a robust base. The cylinder and the ram are individually lapped to eliminate friction. The cross-head is connected to two screwed columns and is driven by a motor, for rapid adjustment of test height.

An elongation scale with minimum graduation of 1.0 mm, is provided to measure the deformation of the specimen.

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

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

A) Power Pack :

The power pack generates the maximum pressure of 200 kgf/cm². The hydraulic pump provides continuously no pulsating oil flow. Hence the load application is very smooth.

B) Hydraulic Control Panel :

Hand operated wheels are used to control the flow to and from the hydraulic cylinder. The regulation of the oil is infinitely variable. Incorporate in the hydraulic system is a regulation valve, which maintains a practically constant rate of table movements.

C) Electronic Control Panel (Series Universal 2001-UTE) :

Microprocessor based panel incorporating state of art technology with following feature.

- Front panel membrane key board with numeric keys for data entry.
- 7 segment display to show load and compression.
- Data entry of test parameters including rupture % peak, pre-load, module data, test data & specimen data etc. through numeric key board.
- 20 input data set storage , 50 results storage.
- Maintains data & results during power off.
- Each test facility for generating batch and statistics result.
- Printer port for dot metrics printer interface to print graph and results, batch certificate and simple statistics printout.

Optional Software Packages on PC :

The Universal 2001-UTE series control panel can be hooked to any PC using RS-232 communication port. FIE offers different exhaustive application, Window based software package with real time graph on PC to enable that user to effectively evaluated different parameters.

The features include :

- Real time graph, user friendly software
- Extensive graphics on screen for curve plotting, magnification and zooming.
- Statistical evaluation with water fall dig, mean deviation, frequency distribution, skew dig, histogram also calculates max. value, min value, Mean value, Variance, Standard Deviation (Other statistical parameters on request). Selectable batch statistical printouts.

Accuracy and Calibration :

All FIE Electronic 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 IS 1828: Part 1:1991, Electronic Universal Testing machine comply with the grade "A" of BS:1610 Part 1:1992 and class 1 of IS-1828-Part 1: 1991 an accuracy of + 1% is guranted from 2% to 100% of the capacity of machine below 20% of the selected range, the maximum permissible error is 0.2% of the full load range.

Specifications :	Model				
	CTE 50	CTE 100	CTE 200	CTE 300	CTE 500
MODEL					
Maximum Capacity (kN)	500	1000	2000	3000	5000
Measuring Range (kN)	0-500	0-1000	0-2000	0-3000	0-5000
Load resolution in N (20,000 counts full scale)	0-25	0-50	0-100	0-150	0-250
Load range with accuracy of measurement $\pm 1.0\%$ (kn) from 2% to 100% capacity of M/c	10 to 500	20 to 100	40 to 2000	60 to 3000	100 to 5000
Maximum clearance for compression test at fully descended working piston (mm)	500	500	700	700	1000
Clearance between column (mm)	390	390	530	650	650
Ram Stroke (mm)	100	100	150	150	250
Straining piston speed mm/min (at safe load)	60	30	30	30	18
For Compression test : Upper & Lower Compression plates of diameter (mm)	220	220	320	450	500
Motor for oil pump (3ph, HP)	1 HP	1 HP	3 HP	3 HP	3 HP
Motor for Cross head (3ph, HP)	0.5 HP	1 HP	2 HP	3 HP	3 HP

Special Accessories : These include load stabilizer, Brinell test, Bend test attachment and a wide range of accessories offered on request at additional cost.

Installation : It is recommended that machines be erected on a foundation. Details on foundation can be given on request. FIE reserves the rights of change in the above specifications due constant improvement in design. The dimensions given above are all approximate.