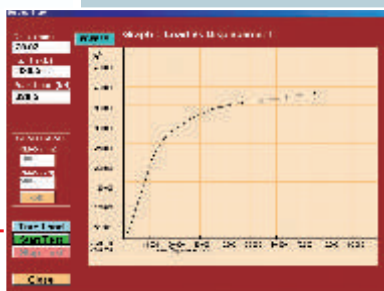




ELECTRONIC

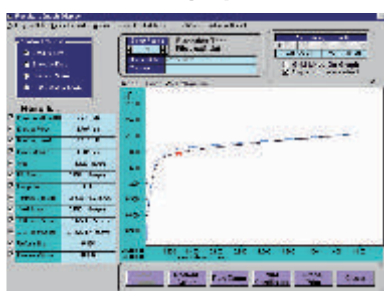
UNIVERSAL TESTING MACHINE

Model : UTE



Real time graph on PC

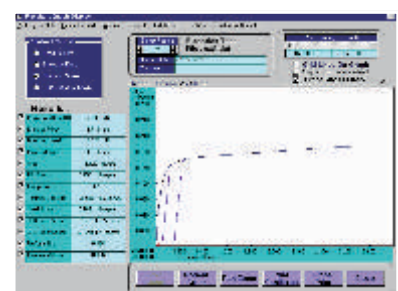
*** With PC Interface & Real Time Graph.
(Panel / PC Controlled)**



Graph comparison & point tracing.



Statistics



Graph with EE2 extensometer.



Electronic UNIVERSAL TESTING MACHINE (Panel / PC Controlled)

- Loading accuracy as high $\pm 1\%$.
- Straining at variable speeds to suit a wide range of materials.
- Printer & PC graphs enable study the behavior of the material.
- Motor driven threaded columns for quick effortless adjustment of middle crosshead to facilitate rapid fixing of test specimen.
- Simplicity in reading because of digital readouts.
- Wide range of standard and special accessories, including load stabilizer.
- Easy change from plain to threaded and screwed specimens.
- Large effective clearance between columns enable testing of standard specimens as well as structures.
- Simple controls for ease of operation.
- Robust straining frame of an extremely rigid construction.
- Safe operation ensured by means of safety devices.
- Fully enclosed and protected pressure transducer.
- RS 232 serial port to transfer data to computer for analysis/storage evaluation etc.
- Manual control & release valve operation.

Application :

FIE Electronic Universal Testing Machine is designed for testing metals and other materials under tension, compression, bending, transverse and shear loads. Hardness test on metals can also 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 hydrostatically lubricated ram. Main cylinder pressure is transmitted to the pressure transducer housed 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 and displacement is displayed on the digital readouts simultaneously.

Machine consists of :

Straining Unit :

This consists of a cylinder motor with chain & 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 is ensured by relieving the cylinder and ram of any possible side loading by the provision of ball seating.

An displacement scale with a minimum graduation of 1mm, is provided to measure the deformation of the specimen.

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

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

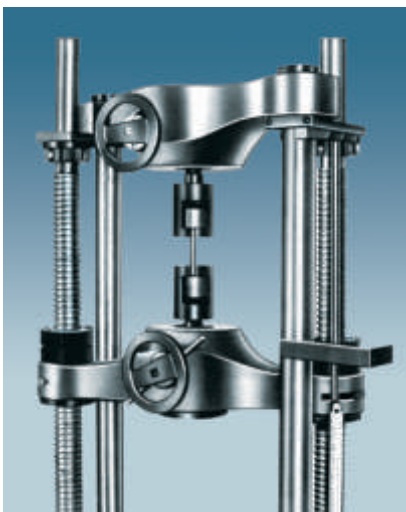
The lower cross-head can be raised or lowered rapidly by operating the screwed columns, thus facilitating ease of fixing of the test specimen.

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 :

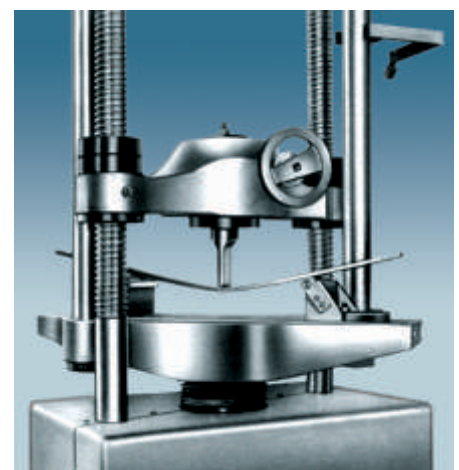
The power pack generates the maximum pressure of 200 kgf/cm². The hydraulic pump provides continuously non-pulsating oil flow. Hence the load application is very smooth.



ATTACHMENT FOR TENSION TEST FOR SHOULDERED AND THREADED SPECIMENS



TENSION TEST



TRANSVERSE TEST



Electronic UNIVERSAL TESTING MACHINE (Panel / PC Controlled)

Hydraulic Controls :

Hand operated wheels are used to control the flow to and from the hydraulic cylinder. The regulation of the 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 reading to be taken.

Electronic Control Panel (Series Universal 2001-UTE) :

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

Front panel membrane type key board for machine operation with numeric keys for data entry.

7 segment display.

Data entry with numeric keyboard of test parameters including speeds, rupture % peak, preload, modulus data, test data & specimen data etc.

20 input data set storage, 50 results storage, maintains data & results during power off.

Batch test facility for generating batch & statistics result. using same data set.

RS 232C serial port. Optional windows based software available for ...

On line graph on PC. Data analysis, statistics, point tracing superimposing graphs to compare with standard, zooming graph etc.

Printer port for printer interface with ...

- Graph & result printout. Test certificate printout.
- Batch Certificate printout.
- Simple statistics printout.



ATTACHMENT FOR TENSION TEST FOR WIRE ROPES



Opional Software packages on PC :

The UINIVERSAL 2001 - UTE series control panel can be hooked to any PC using RS-232 communication port. FIE offers different exhaustive application, Window based software packages with real time graph on PC to enable the 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.
- Software features includes Graph comparison, point tracing facility. Different units selection for load & displacement.
- 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.
- Evaluation of wide range of user selectable parameters such as % elongation, % reduction in area, young's modulus, yield stress, proof stress etc.
- Software packages for Shear, Bend, Torsion, Rubber, Textile testing etc.
- Custom built application software to suit customer requirements.



COMPRESSION TEST

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 British standards. 1610 : Part 1 : 1992 and IS : 1828 : Part 1 : 1991.

FIE Electronic Universal Testing Machine comply with Grade "A" of BS:1610:Part 1:1992 and class 1 of IS-1828-Part 1:1991. An accuracy of $\pm 1\%$ is guaranted from 2% to 100% of the capacity of the machine.

Below 20% of the selected range, the maximum permissible error is 0.2% of the full load reading.

UTE Panel/PC Controlled Machine, Servo Controlled Model available.

It is with motorised control valve & automatic operation with given loading/elongation rate.



NATIONAL AWARD FOR IMPORT SUBSTITUTION

MODEL	UNITS	UTE-10	UTE-20	UTE-40	UTE-60	UTE-100	UTE-200	UTE-300
Maximum Capacity	kN	100	200	400	600	1000	2000	3000
Measuring Range	kN	0-100	0-200	0-400	0-600	0-1000	0-2000	0-3000
Load Resolution (20,000 counts full scale)	N	5	10	20	30	50	100	150
Load Range with Accuracy of measurement $\pm 1.0\%$	kN	2 to 100	4 to 200	8 to 400	12 to 600	20 to 1000	40 to 2000	60 to 3000
Resolution of piston movement (Displacement)	mm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Clearance for tensile at fully descended working piston.	mm	50-700	50-700	50-700	50-800	50-850	50-900	50-900
Clearance for compression test at fully descended working piston.	mm	0-700	0-700	0-700	0-800	0-850	0-900	0-900
Clearance between columns.	mm	500	500	500	600	750	850	850
Ram Stroke	mm	150	200	200	250	250	300	300
Straining/piston speed (at no load)	mm/min	0-300	0-150	0-150	0-100	0-80	0-45	0-50
CONNECTED LOAD								
Power	kW	1.0	1.0	1.7	1.9	2.6	4.9	6.4
V		400-440	400-440	400-440	400-440	400-440	400-440	400-440
Ø		3	3	3	3	3	3	3
DIMENSIONS								
LxWxH (approx.)	mm	2032 x 750 x 1960 x	2032 x 750 x 1960 x	2060 x 750 x 2180 x	2265 x 750 x 2534 x	2415 x 815 x 2900 x	3000 x 1200 x 3600 x	3500 x 1900 x 4550 x
WEIGHT (approx.)	kg.	1500	1500	2500	3500	5500	9500	15,000
STANDARD ACCESSORIES								
FOR TENSION TEST								
● Clamping jaws for round specimens of Diameters.	mm	10-20 20-30	10-20 20-30	10-25 25-40	10-25 25-40 40-55	10-25 25-45 45-70	20-40 40-60 60-80	25-50 50-70 70-90
● Clamping jaws for flat specimens of thickness.	mm	0-10 10-20	0-10 10-20	0-15 15-30	0-15 15-30	0-22 22-44 44-65	0-20 20-45 45-70	0-25 25-50 50-75
Width	mm	50	50	65	70	70	90	100
FOR COMPRESSION TEST								
Pair of compression plates of dia.	mm	120	120	120	120	160	220	220
FOR TRANSVERSE TEST								
Table with adjustable rollers width of rollers.	mm	160	160	160	160	160	200	200
Diameter of Rollers	mm	30	30	30	50	50	70	70
Maximum clearance between supports	mm	500	500	500	600	800	900	1000
Radius of punch tops.	mm	6,12	6,12	12,16	16,22	16,22	30,40	50,75

SPECIAL ACCESSORIES & OPTIONS :

- Load Stabilizer
- Printer
- Plotter
- Brinell test attachment
- Electronic extensometer
- Piston movement resolution of 0.01mm
- Electronic load pacer
- Shear test attachment
- Software packages
- Mechanical extensometer

- Wide range accessories offered on request at additional cost.
- Due to constant R & D specifications & features are subject to change without notice.
- The dimensions given above are approximate.

*** PC & Printer is not in our standard scope of supply.**

Manufactured by :



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