UTE

Over 60 years of consistent excellence



Electronic
Universal Testing Machine

Micro Controller Based Panel

Loading accuracy as high as ±

Motor driven threaded columns for quick & effortless adjustment of lower cross-head to facilitate rapid fixing of test specimen



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Electronic Universal Testing Machine
Model : UTE

Features :

- Loading accuracy as high as ± 1%
- Straining at variable speeds to suit a wide range of materials.
- Printer & PC graphs enables to study the behavior of the material.
- Motor driven threaded columns for quick effortless adjustment of lower cross-head-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 enables testing of standards 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.
- USB port to transfer data to computer for analysis/storage evaluation etc.
- Manual control & release valve operation.
- Load Capacity : 100 kN, 200 kN, 400 kN, 600 kN, 1000 kN, 1200 kN, 1500 kN, and 2000 kN.

Application :

'FIE' Electronic Universal Testing Machine is designed for testing Ferrous & Non-Ferrous materials under tension, compression bending, transverse and shear loads. Hardness test on metals can also conducted.

Machine Consists of -

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 is ensured by relieving the cylinder and ram of any possible side loading by the provision of ball seating.

A Rotary Encoder of minimum resolution 0.1mm 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, 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 the maximum pressure of 200 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 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.

Principle of Operation for -

Model : UTE

Operation of machine is by hydraulic transmission 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 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 encoder 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.

Electronic Control Panel (Series Universal 2018-UTE) :

Micro Controller based panel incorporating state of art technology with following features -

- Front panel membrane type key board for machine operation.
- Graphical LCD display.
- Data entry with membrane key board of test parameters including rupture %, peak etc.
- Panel communication with PC up to 100 meters (RS 485 Protocol).



Electronic Control Panel
Series - Universal 2018-UTE

Accuracy and Calibration :

FIE Electronic Universal testing machine is closely controlled for sensitivity, accuracy and calibration during every stage of manufacture.

Machine is calibrated over each of its measuring range in accordance with the procedure laid down in IS 1828: Part1: 1991.

FIE Electronic Universal Testing Machine complies with Grade “A” of class 1 of IS-1828-Part1:1991.

Optional Windows based software available for -

- Online graph on PC, Data analysis, Statistics, Point tracing, superimposing graphs to compare with standard, zooming graph etc.
- Report customization as per custom requirements.
- Video Extensometer compatible.
- Proof stress calculation from 0.1% to 1%.
- Integration of custom sample.
- Single point software calibration.
- Facility to export data to PDF, EXCEL & CSV formats.
- Cross platform (Windows 7, Windows 8, Windows 10 & above / Linux) based OS Support.
- Unit selection for Real time Graph.
- Unlimited Test in single batch file.

Technical Specifications for - Electronic Universal Testing Machines
Model – UTE

MODEL	UNIT	UTE 10	UTE 20	UTE 40	UTE 60	UTE 100	UTE 120	UTE 150	UTE 200
Maximum Capacity	kN	100	200	400	600	1000	1200	1500	2000
Measuring range	kN	0-100	0-200	0-400	0-600	0-1000	0 – 1200	0 – 1500	0-2000
Load resolution (50000 counts full scale)	N	2	4	8	12	20	24	30	40
Load range with accuracy of Measurement +/-1%	kN	2 to 100	4 to 200	8 to 400	12 to 600	20 to 1000	24-1200	30-1500	40-2000
Resolution of piston movement (Displacement)	mm	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Clearance for tensile test (At fully descended working piston)	mm	50-700	50-700	50-700	50-800	50-850	50-850	50-850	50-850
Clearance for compression test (At fully descended working piston)	mm	0-700	0-700	0-700	0-800	0-850	0-850	0-850	0-850
Clearance between columns	mm	500	500	500	600	750	750	750	750
Ram Stroke	mm	150	200	200	250	250	250	250	250
Straining/ Piston Speed (at no load)	mm/min	0-300	0-150	0-150	0-100	0-80	0-65	0-50	0-45
CONNECTED LOAD									
Power	HP	1.33	1.33	2.33	2.5	4	4	5	6
V		400-440	400-440	400-440	400-440	400-440	400-440	400-440	400-440
Φ		3	3	3	3	3	3	3	3
STANDARD ACCESSORIES									
FOR TENSION TEST									
Clamping jaws for round specimens of diameter	mm	10-20	10-20	10-25	10-25	10-25	10-25	10-25	10-25
		20-30	20-30	25-40	25-40	25-45	25-45	25-45	25-45
Clamping jaws for flat specimens of thickness	mm	0-10	0-10	0-15	0-15	0-22	0-20	0-20	0-20
		10-20	10-20	15-30	15-30	22-44	20-40	20-40	20-40
Width	mm	50	50	65	70	70	70	70	70
FOR COMPRESSION TEST									
Pair of Compression Plates of Dia.	mm	120	120	120	120	160	160	160	160
FOR TRANSVERSE TEST									
Table with adjustable rollers									
Width of rollers	mm	160	160	160	160	160	160	200	200
Diameter of Rollers	mm	30	30	30	50	50	50	50	50
Maximum clearance between supports	mm	500	500	500	600	800	800	800	800
Radius of punch tops	mm	6,12	6,12	12,16	16,22	16,22	16, 22	16, 22	16, 22

- Due to constant R& D specifications & features are subject to change without notice.
- Colour scheme subject to confirm at the time of order.

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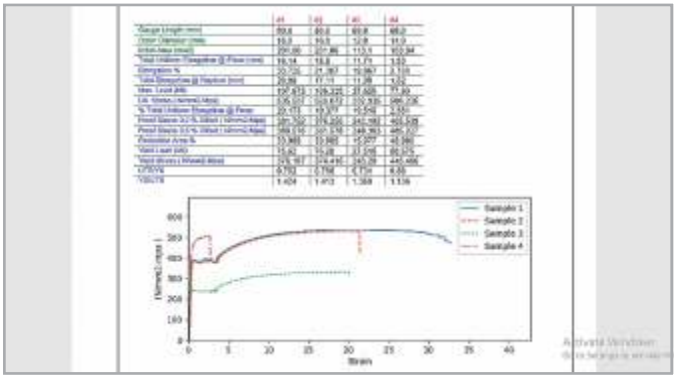
Electronic Universal Testing Machine
Model : UTE

Optional Software Package -
'FIE' Tension & Compression test Software package for Model : UTE

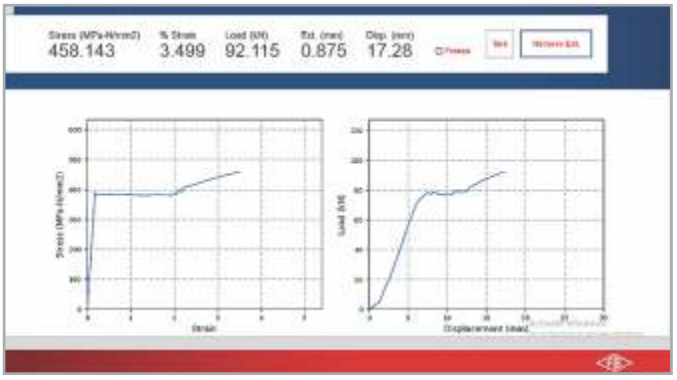
Home Screen



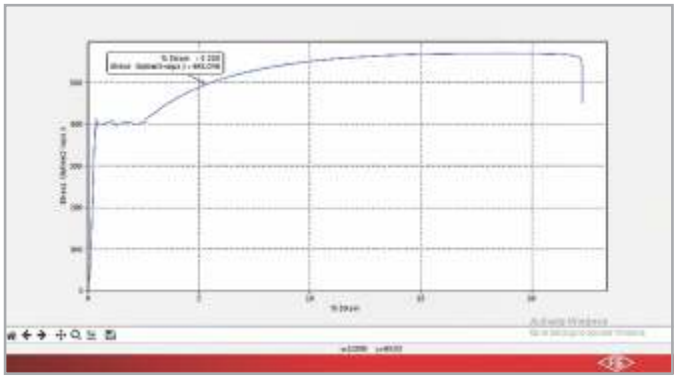
Graph of superimpose & Comparison



Real Time Graph



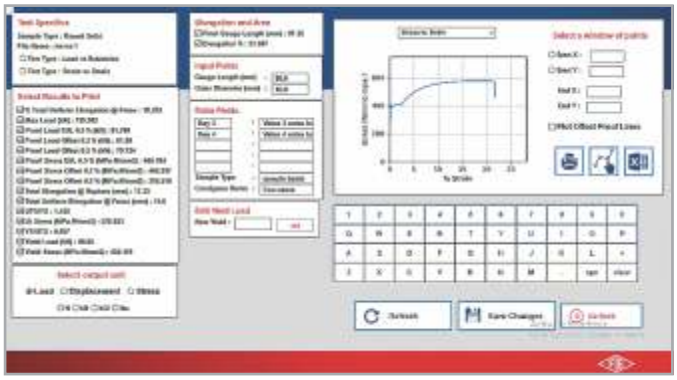
Point Tracing Zoom



Batch Results



Results



Manufactured By :

Fuel Instruments & Engineers Pvt. Ltd.

FIE/TEST/DD-CAT-UTE-REV00