

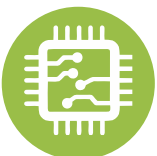
# UTES-HGFL-TS



Over **60** years of  
consistent excellence



## Servo Controlled Hydraulic Grip Front Loading Touch Screen **Universal Testing Machine**



Micro Controller Based Panel,  
Front Panel Touch Screen Display



Loading accuracy as high as  $\pm 1\%$



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



Best in Class Analysis Software



### Features :

- Open type cross head
- Hydraulic wedge action grips
- Long test stroke and test space
- Loading accuracy as high as  $\pm 1\%$
- Straining at variable speeds to suit a wide range of materials.
- Servo controlled Motorized Valve incorporating of control modes -
- Standard manual control, Load rate control, Elongation rate control, Load hold mode, Auto start & initial valve open start.
- Windows based touch screen control panel with printing connectivity.
- Motor driven threaded columns for quick effortless adjustment of lower cross-head-to facilitate rapid fixing of test specimen.
- 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.
- Load Capacity : 100 kN, 200 kN, 400 kN, 600 kN & 1000 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 be 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 of 0.01mm 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.

**Typical HGFL design includes a basic universal testing machine frame with open type crossheads and hydraulic wedge action grips.**

#### 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/cm<sup>2</sup>. The hydraulic pump provides continuously non-pulsating oil flow. Hence the load application is very smooth.

#### Hydraulic Controls :

Hand operated release valve & motorized control valve 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.

**Another Power pack is used to operate wedge action grips by means of hydraulic cylinder by using solenoid valve operation.**

**For Hydraulic Wedge action grips separate control remote is provided with selector switches indicating clamp – declamp and null positions.**

Principle of Operation for -

#### Model : UTES-HGFL-TS

UTM right control valve is Servo Controlled in close loop mode as per mode selection. Following control modes available :

- 1) Standard Manual control
- 2) Load rate control
- 3) Elongation rate control
- 4) Load hold mode

Also Auto start & initial valve open start options are available for test start to take care of slippage & different specimen types.

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.

#### Computerized Touch Screen Control Panel Series : UTS 2018-TS



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

- Front panel touch screen display
- Data entry of test parameters including pre-load, rupture %, Safe Load & Specimen data etc.
- Online graph of load Vs Displacement directly on screen.
- USB Printer port for printer interface with graph & result print out.
- Facility to export the result/ Data to PDF, EXCEL & CSV formats.
- Windows based software available for Online graph on PC, Data analysis, Statistics, Point tracing, superimposing graphs to compare with standard, zooming graph etc.

#### 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 British standards 1610: Part1: 1992 and IS 1828: Part1: 1991.

FIE Electronic Universal Testing Machine complies with Grade "A" of - BS: 1610:Part1:1992 and class 1 of IS-1828-Part1:1991.

Technical Specifications for -  
Servo Controlled Hydraulic Grip Front Loading Universal Testing Machine

**Model : UTES-HGFL-TS**

MODEL	UNIT	UTES-HGFL-TS 10	UTES-HGFL-TS 20	UTES-HGFL-TS 40	UTES-HGFL-TS 60	UTES-HGFL-TS 100	UTES-HGFL-TS 120
Maximum Capacity	kN	100	200	400	600	1000	1200
Measuring range	kN	0-100	0-200	0-400	0-600	0-1000	0 – 1200
Load resolution (40000 counts full scale)	N	2.5	5	10	15	25	30
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
Resolution of piston movement (Displacement)	mm	0.01	0.01	0.01	0.01	0.01	0.01
Clearance for tensile test (At fully descended working piston)	mm	50-700	50-700	50-700	50-800	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
Clearance between columns	mm	500	500	500	600	750	750
Ram Stroke	mm	150	200	200	250	250	250
Straining/ Piston Speed (at no load)	mm/min	0-300	0-150	0-150	0-100	0-80	0-65
<b>CONNECTED LOAD</b>							
Power	HP	2.33	2.33	3.33	3.5	5	5
V		400-440	400-440	400-440	400-440	400-440	400-440
Φ		3	3	3	3	3	3
<b>STANDARD ACCESSORIES</b>							
<b>FOR TENSION TEST</b>							
Clamping jaws for round specimens of diameter	mm	10-20	10-20	10-20	10-20	10-20	10-20
		20-30	20-30	20-30	20-30	20-30	20-30
		.....	.....	30-40	30-40	30-40	30-40
		.....	.....	.....	.....	40-50	40-50
Clamping jaws for flat specimens of thickness	mm	0-10	0-10	0-10	0-10	0-10	0-10
		10-20	10-20	10-20	10-20	10-20	10-20
		.....	.....	20-30	20-30	20-30	20-30
		.....	.....	.....	.....	30-40	30-40
Width	mm	50	50	65	70	70	70
<b>FOR COMPRESSION TEST</b>							
Pair of Compression Plates of diameter.	mm	120	120	120	120	160	160
<b>FOR TRANSVERSE TEST</b>							
<b>Table with adjustable rollers</b>							
width of rollers	mm	160	160	160	160	160	160
Diameter of Rollers	mm	30	30	30	50	50	50
Maximum clearance between supports	mm	500	500	500	600	800	800
Radius of punch tops	mm	6,12	6,12	12,16	16,22	16,22	16, 22

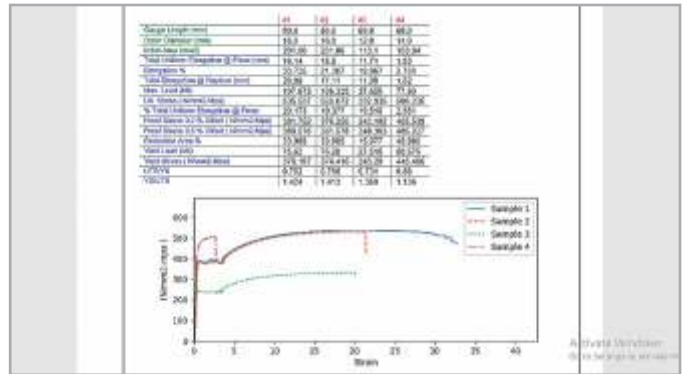
- Due to constant R & D specifications & features are subject to change without notice.
- Colour scheme subject to confirm at the time of order.

'FIE' Tension & Compression Test Software Package for -  
UTES-HGFL-TS (Standard Supply with TS Models).

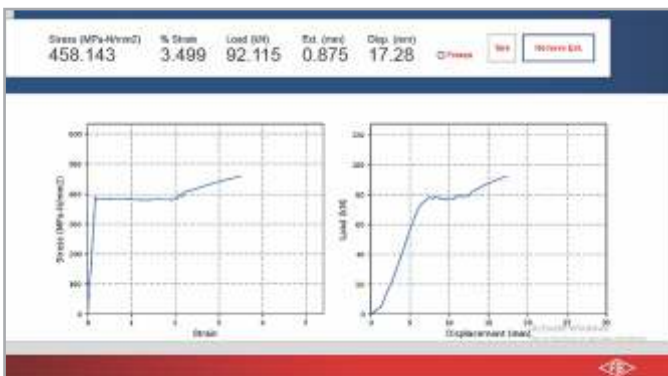
Home Screen



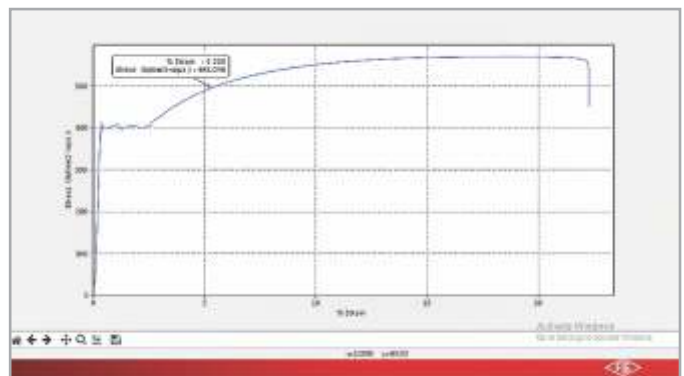
Graph of superimpose & Comparison



Real Time Graph



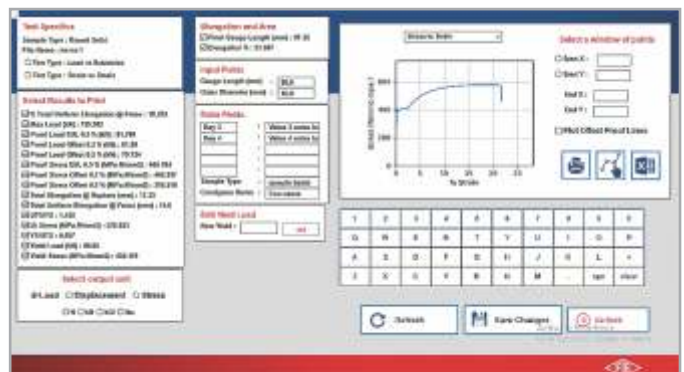
Point Tracing Zoom



Batch Results

The Batch Results screen shows a table of test data with columns for 'Set No.', 'Change Length (mm)', 'Cross Sectional Area (mm²)', 'Yield Strength (MPa)', 'Tensile Strength (MPa)', 'Elongation %', 'Modulus of Elasticity (GPa)', 'Modulus of Resilience (GPa)', and 'Modulus of Toughness (GPa)'. The table contains data for four samples. On the left, there is a sidebar with 'Test Specifications' including 'Sample Type', 'Batch Size', 'Test Speed', 'Test Type', 'Test Method', 'Test Standard', 'Test Unit', 'Test Load', 'Test Area', 'Test Length', 'Test Displ.', 'Test Speed', 'Test Force', and 'Test Time'.

Results



Manufactured By :

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