

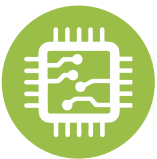
UTE - HGFL



Over **60** years of
consistent excellence



Hydraulic Grip Front Loading Electronic Universal Testing Machine



Micro Controller Based Panel



Loading accuracy as high as \pm



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



Features :

- Open type cross head
- Hydraulic wedge action grips
- Long test stroke and dual test space
- Loading accuracy as high as $\pm 1\%$
- 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 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.
- RS 232 serial 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 and 1200 kN.

Application :

'FIE' Electronic Universal Testing Machine is designed for testing materials and other 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.

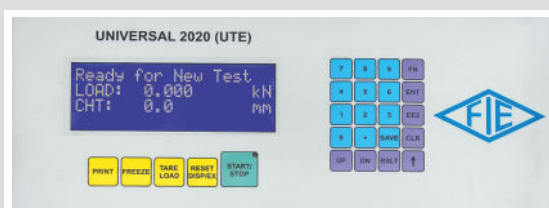
The cylinder and the ram are individually lapped to eliminate friction. The upper cross-head is rigidly fixed to the table by two strengthened columns.

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

Electronic Control Panel Series Universal 2020 (UTE) :

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

- Front panel membrane type key board for machine operation.
- LCD display.
- Data entry with membrane key board of test parameters including rupture %, peak etc.
- Panel communication with PC (RS 232 Protocol).



Electronic Control Panel
Series - Universal 2020 (UTE)

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/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.

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 : UTE-HGFL

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.

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.



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Hydraulic Grip Front Loading Electronic Universal Testing Machine Model : UTE-HGFL

Technical Specifications for - Hydraulic Grip Front Loading Electronic Universal Testing Machine Model : UTE-HGFL

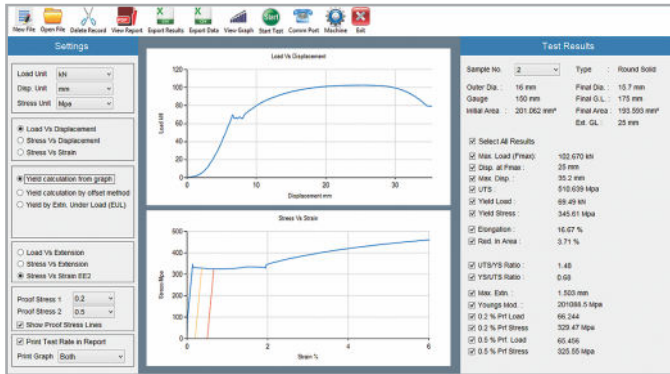
- **Maximum allowable capacity for Tensile & Compression test –
80% of the machine capacity for tensile test and full capacity for compression test.**

MODEL	UNIT	UTE-HGFL 10	UTE-HGFL 20	UTE-HGFL 40	UTE-HGFL 60	UTE-HGFL 100	UTE-HGFL 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 (50000 counts full scale)	N	2	4	8	12	20	24
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) for UTE	mm	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
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
CONNECTED LOAD							
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
STANDARD ACCESSORIES							
FOR TENSION TEST							
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
FOR COMPRESSION TEST							
Pair of Compression Plates of diameter.	mm	120	120	120	120	160	160
FOR TRANSVERSE TEST							
Table with adjustable rollers							
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

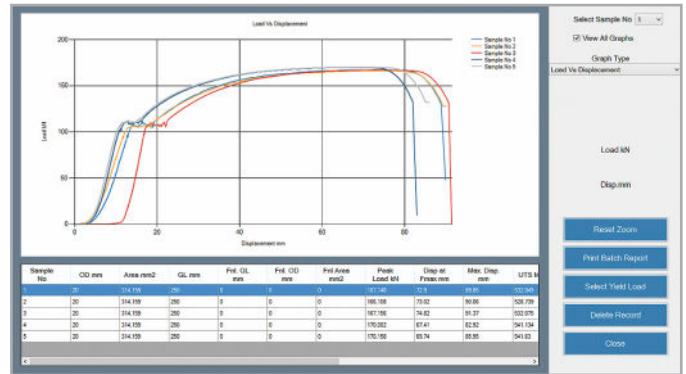
- Due to constant R& D specifications & features are subject to change without notice.
- Colour scheme subject to confirm at the time of order.

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

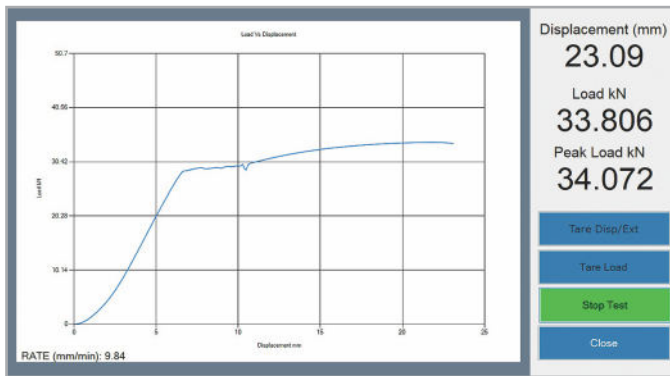
Home Screen



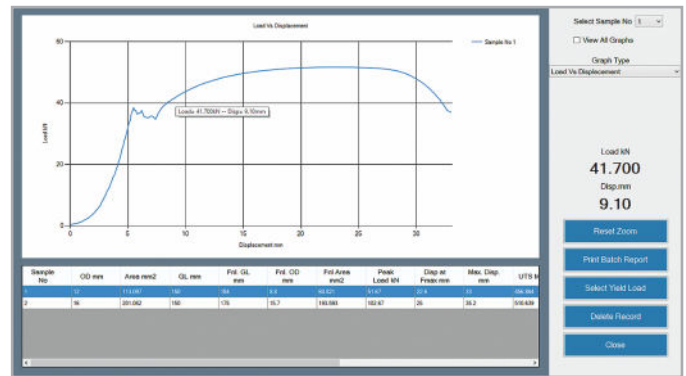
Graph of superimpose & Comparison



Real Time Graph



Point Tracing Zoom



Batch Results

The Batch Results screen displays a table with the following data:

Sample No.	OD mm	Area mm ²	GL mm	Pre. GL mm	Pre. OD mm	Pre. Area mm ²	Peak Load kN	Drip at Preload mm	Max. Drip mm	UTS kN	Yield Load kN	YS Ratio %	UTS Ratio %
1	20	314.159	290	0	0	0	187.146	72.5	99.85	332.049	186.364	56.14	137.84
2	20	314.159	290	0	0	0	186.146	72.5	99.85	328.739	185.146	56.33	137.84
3	20	314.159	290	0	0	0	187.146	72.5	99.85	332.049	186.364	56.14	137.84
4	20	314.159	290	0	0	0	170.382	67.41	82.92	341.134	170.382	49.95	137.84
5	20	314.159	290	0	0	0	170.158	65.74	80.95	325.550	170.158	49.51	137.84

Results



Manufactured By :

Fuel Instruments & Engineers Pvt. Ltd.

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