



GENESS ENGINEERS

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## Servo Controlled Computerized Touch Screen Universal Testing Machine Model: UTES TS

### Features:

- Loading accuracy as high as + 1%
- 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.
- Straining at variable speeds to suit a wide range of materials. 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.
- Simplicity in reading because of digital readouts.
- Wide range of standard and special accessories.
- 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.
- Fully enclosed and protected pressure transducer.
- Load Capacity: 100 kN, 200 kN, 400 kN & 1000 kN



### Application:

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 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 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 displacement scale, with a minimum graduation of 1 mm, 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 an 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 the extensometer reading to be taken.



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### Principle of Operation for – **Model: UTES-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, Potentometric start & initial value 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 %, SafeLoad & 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 graphsto compare with standard, zooming graph etc.

#### **Accuracy and Calibration:**

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. 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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## Technical Specifications for - Servo Controlled Computerized Touch Screen Universal Testing Machines- Model: UTES-TS

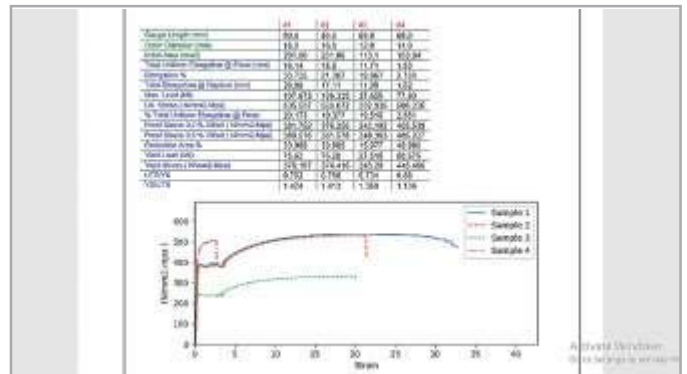
MODEL	UNIT	UTES-TS10	UTES-TS20	UTES-TS40	UTES-TS60	UTES-TS100	UTES-TS120	UTES-TS150	UTES-TS200
MaximumCapacity	kN	100	200	400	600	1000	1200	1500	2000
Measuringrange	kN	0-100	0-200	0-400	0-600	0-1000	0-1200	0-1500	0-2000
Loadresolution (20000countsfullscale)	N	5	10	20	30	50	60	75	100
Loadrangewithaccuracyof Measurement+/-1%	kN	2to100	4to200	8to400	12to600	20to1000	24-1200	30-1500	40-2000
Resolutionofpistonmovement(Displace ment)	mm	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Clearancefortensiletest (Atfullydescendedworkingpiston)	mm	50-700	50-700	50-700	50-800	50-850	50-850	50-850	50-850
Clearanceforcompressiontest (Atfullydescendedworkingpiston)	mm	0-700	0-700	0-700	0-800	0-850	0-850	0-850	0-850
Clearancebetweencolumns	mm	500	500	500	600	750	750	750	750
RamStroke	mm	150	200	200	250	250	250	250	250
Straining/PistonSpeed(atnoload)	mm/min	0-300	0-150	0-150	0-100	0-80	0-65	0-50	0-45
<b>CONNECTEDLOAD</b>									
Power	HP	1.33	1.33	2.33	2.5	3.5	3.5	5	6
V		400-440	400-440	400-440	400-440	400-440	400-440	400-440	400-440
		3	3	3	3	3	3	3	3
<b>STANDARDACCESSORIES</b>									
<b>FOR TENSIONTEST</b>									
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
<b>FOR COMPRESSIONTEST</b>									
Pair of Compression Plates of Dia.	mm	120	120	120	120	160	160	160	160
<b>FOR TRANSVERSE TEST</b>									
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

Optional Software Package -  
 Tension & Compression test Software package for Model:UTES-TS

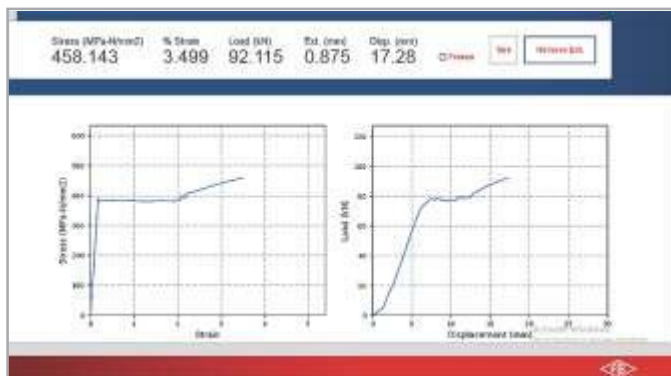
Home Screen



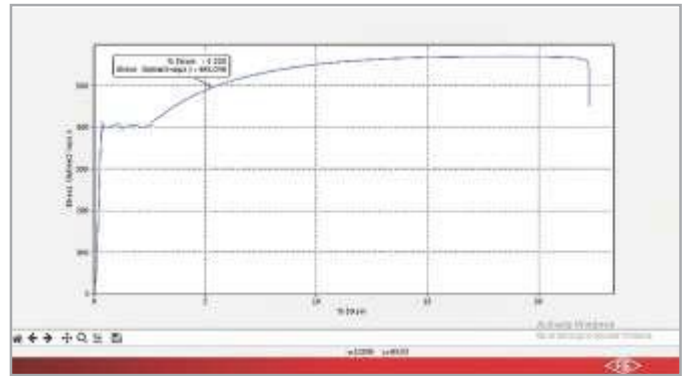
Graph of superimpose & Comparison



RealTime Graph



PointTracing Zoom



Batch Results

#	Lot No.	Sample Length (mm)	Final Diameter (mm)	Final Length (mm)	Extension (mm)	Max Load (kN)	UTS (MPa)	% Total Extension @ Break	Total Elongation @ Break (mm)	Total Elongation @ Break (%)
1	10.1	50.4	10.05	18.14	32.26	120.515	119.512	64.01	32.26	36.01
2	10.1	49.8	10.05	18.8	31.8	118.222	118.412	63.86	31.8	37.56
3	10.1	49.9	10.05	17.75	32.15	121.628	120.518	64.43	32.15	35.3
4	10.1	49.9	10.05	17.5	32.4	119.89	118.706	64.93	32.4	35.08

Results

