UNIVERSAL TESTING MACHINE

SSS TriPleS INSTRUMENTS

UNIVERSAL TESTING MACHINE

INCORPORATES DESIGN FEATURES TO ENABLE HIGH ACCURACY

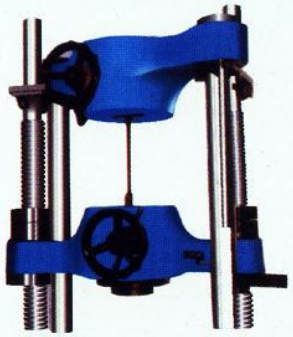
- Loading accuracy as high as ± 1%
- Straining at varible speeds to suit a wide range of materials.
- Continuous roll autographic recorder supplied as standard to enable study of the behaviour of materials.
- Motor driven threaded columns for quick effortless adjustment of lower Crosshead to facilitate rapid fixing of test specimen.
- High reading accuracy due to large size and design of dial.
- 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 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 pendulum.

APPLICATION :-

SSS 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 be conducted.

Principle of Operation :

Operation of the machine is by hydraulic transmission of load from the test specimen 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.



TENSION TEST

Load is applied by a hydrostaticaly lubricated ram. Main cylinder pressure is transmitted to the cylinder of the pendulum dynamometer system housed in the control panel. The cylinder of the dynamometer is also of self - lubricating design. The load transmitted to the cylinder of the dynamometer is transferred through a lever system to the pendulum. Displacement of the pendulum actuates the rack and pinion mechanism which operates the load indicator pointer and the autographic recorder. The deflection of the pendulum represent the absolute load applied on the test speciman.

Return movement of the pendulum is effectively damped to absorb energy in the event of sudden breakage of the specimen.

Machine consists of Straining Unit

This consists of a hydraulic 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 cress-head is rigidly fixed to the table by two straight 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 setting.

An displacement elongation scale,

ATTACHMENT FOR TENSION TEST FOR SHOULDERED AND THREADED SPECIMENTS

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 :

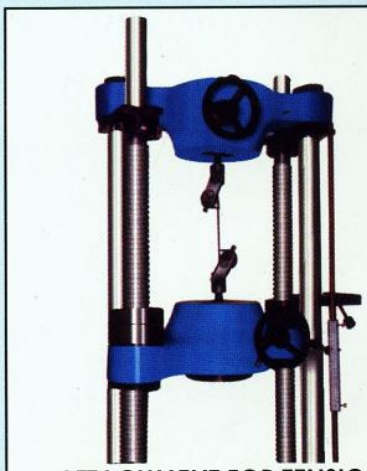
The control panel consists of a power pack complete with drive motor and an oil tank, control valves, a pendulum dynamometer, a load indicator system and an autographic recorder.

Power Pack :

The power pack generates the maximum pressure of 200 kgf/cm^2. 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 oil flow is infinitely variable. Incorporated in hydraulic system is a regulating valve, which maintains a practically constant rate of piston movement. Control by this valve allows extensometer readings to be taken.



ATTACHMENT FOR TENSION TEST FOR WIRE ROPES

TESTING - WITH ECONOMY, SPEED AND VERSATILITY.

Load Indicator System :

This system consists of a large dial and a pointer. A dummy pointer is provided to register the maximum load reached during the test. Different measuring ranges can be selected by operating the range selection knob. An overload trip switch is incorporated which automatically cuts out the pump motor when the load range in use is exceeded.

Pendulum Dynamometer :

This units permits selection of favourable hydraulic ratios producing relatively small frictional forces. Pressurised oil in the loading cylinder pushes up the measuring piston proportionately and actuates the special dynamometer system. The piston is constantly rotated to elimnate friction. The dynamometer system is also provided with an integral damper and ensures high reliability of operation. The load transmitted to the dynamometer is transferred through a pendulum to the load indicator.

Autographic Continuous Roll Load - elongation Recorder :

This unit is of the pen and drum type and is supplied as standard. The horizontal motion of the pen produces the load ordinate of the diagram and the drum rotation produces the extension ordinates, in the ratio of eighter 1:5 or 1:10.

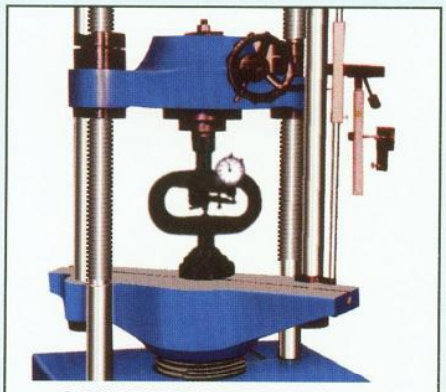
A continuous roll of graph paper is stored inside the drum and is easily replaced.

Accuracy and Calibration :

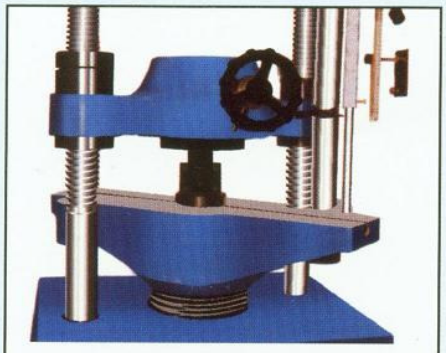
All Universal Testing Machines are closely controlled for sensitivity, accuracy and calibration during every stage of manufacture. Every Machine is then calibrated over each of its measuring ranges in accordance with the procedure laid down in British Standard 1610:1992 and IS:1828-2005 Part-1.

Universal Testing Machines comply with grade'A'of BS :1610:1992 and class 1 of IS-1828 : 2005 Part-1. An accurecy of ± 1% is guaranteed from 20% of the load range to full load. Below 20% of the selected range, the maximum permissible error is 0.2% of the full reading.

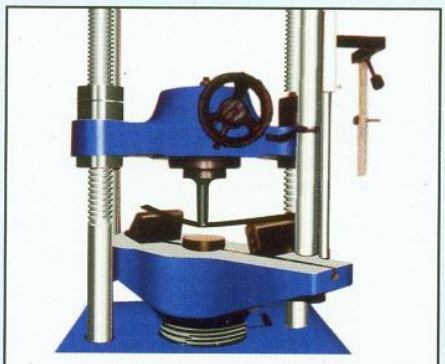
COMPRESSION TEST



CALIBRATION OF MACHINE WITH PROVING RING

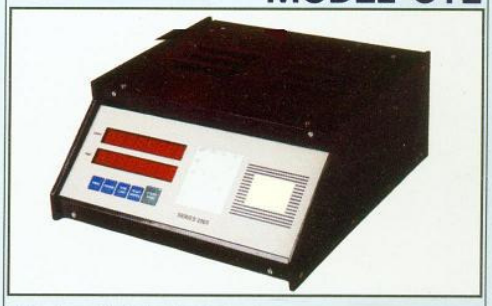


SHEAR TEST



TRANSVERSE TEST

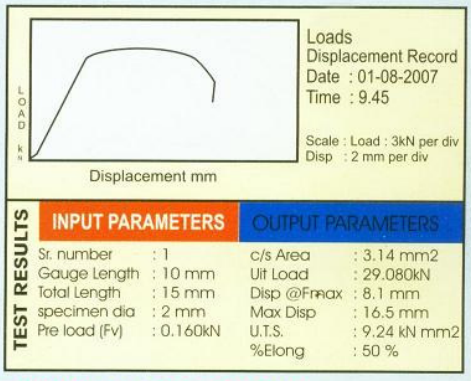
ELECTRONIC UNIVERSAL TESTING MACHINE MODEL-UTE



Electronic Models of Universal Testing Machine of all capacities as mentioned in the mechanical type. All specifications of the machine remain same. For detailed specifications of electronic system, please refer separate catalogue.

FEATURES :

- Micro Processor based electronic panel.
- Precision strain gauge type pressure transducer for load measurement.
- Rotary Encoder with rack for crosshead displacement indication with 0.1 mm resolution.
- Digital Load, Displacement / Extension indication.
- RS-232 Com. port for PC interface.
- Data entry for specimen dimensions, serial number, gauge length, Unit selection for load etc.
- Results include Load v/s Displacement Curve, Maximum Load, Maxmium Displacement, U.T.S.-% Elongation, Young's Modulus & Proof stress is Extensometer is used.



TEST RESULTS

INPUT PARAMETERS		OUTPUT PARAMETERS	
Sr. number	: 1	c/s Area	: 3.14 mm2
Gauge Length	: 10 mm	Ult Load	: 29.080kN
Total Length	: 15 mm	Disp @Fmax	: 8.1 mm
specimen dia	: 2 mm	Max Disp	: 16.5 mm
Pre load (Fv)	: 0.160kN	U.T.S.	: 9.24 kN mm2
		%Elong	: 50 %

OPTIONAL ACCESSORIES :

- X-Y plotter interface.
- Electronic load pacer.
- Crosshead displacement resolution of 0.01 mm.
- Basic Evaluation software.
- Exhaustive Evaluation software for proof stress calculation.
- Any special software on request.

SPECIFICATIONS :

MODEL		SSS-UTM-10	SSS-UTM-20	SSS-UTM-40	SSS-UTM-60	SSS-UTM-100	SSS-UTM-200	SSS-UTM-300
Maximum capacity	kN	100	200	400	600	1000	2000	3000
First Measuring Range	kN	0-100	0-200	0-400	0-600	0-1000	0-2000	0-3000
Minimum Graduation	kN	0.2	0.4	1	1	2	4	5
Second Measuring Range	kN	0-50	0-100	0.200	0-300	0-500	0-1000	0-1500
Minimum Graduations	kN	0.1	0.2	0.5	0.5	1	2	2.5
Third Measuring Range	kN	0-25	0-50	0-100	0-120	0-250	0-500	0-600
Minimum Graduation	kN	0.05	0.1	0.25	0.2	0.5	1	1
Fourth Measuring Range	kN	0-10	0-20	0-40	0-60	0-100	0-200	0-300
Minimum Graduation	kN	0.02	0.04	0.1	0.1	0.2	0.4	0.5
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 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 speeds (at no load)	mm/min	0-300	0-150	0-150	0-100	0-80	0-45	0-50
CONNECTED LOAD								
HP		1.3	1.3	2.3	2.5	3.5	6.5	8.5
V		400-440	400-440	400-440	400-440	400-440	400-440	400-440
∅		3	3	3	3	3	3	3
DIMENSION								
L x W x H (approx)	mm	2032 x 750 x 1960	2032 x 750 x 1960	2060 x 750 x 2180	2265 x 750 x 2534	2415 x 815 x 2900	3000 x 1200 x 3600	3500 x 1900 x 4550
WEIGHT (approx)	kg	1500	1500	2500	3500	5500	12 500	22 000
STANDARD ACCESSORIES								
FOR TENSION TEST								
Clamping jaws for round specimens diameter	mm 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 thickness Width	 mm mm	0-10 10-20 50	0-10 10-20 50	0-15 15-30 65	0-15 15-30 70	0-22 22-44, 44-65 70	0-20 20-45 45-70 90	0-25 25-50 50-75 100
FOR COMPRESSION TEST								
Pair of compression plates of dia		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
Max.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 :

These include load stabilizer, Brinell Test Attachment, 180° bend test attachment, shear test attachment and a wide range accessories offered on request at an additional cost.

Due to constant R & D, specifications and features are subject to change without notice.

The dimensions given above are approximate.

INSTALLATION :

It is recommended that machines be erected on a foundation. Details of foundation can be given on request.

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