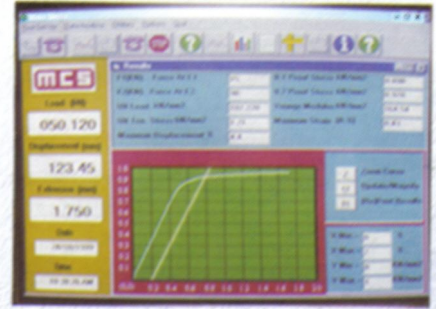
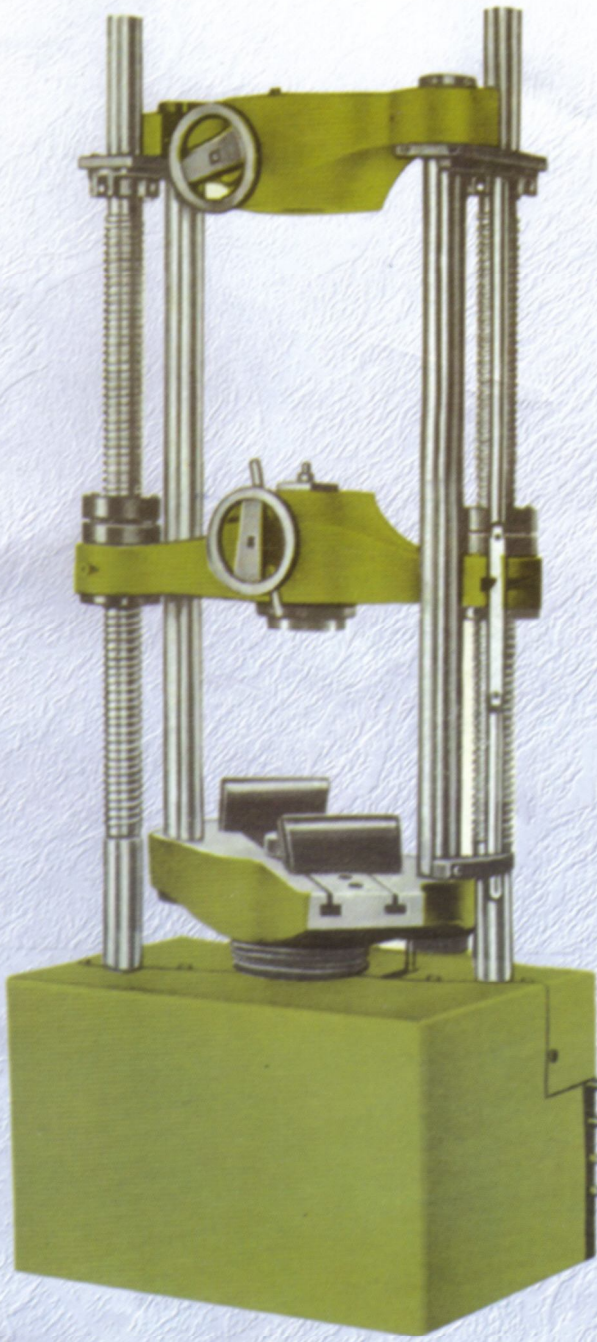




UNIVERSAL TESTING MACHINE

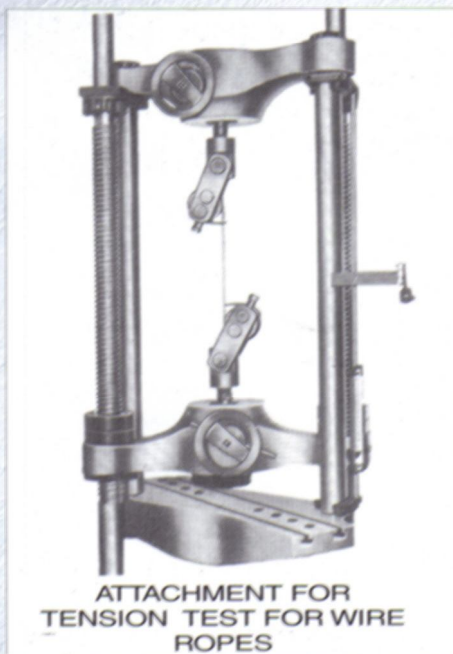


MCS UNIVERSAL TESTING MACHINE

- Loading accuracy as high as $\pm 1\%$
- Straining at variable speeds to suit a wide range of materials.
- Printer supplied as option to study the behavior of the material.
- Motor driven threaded Columns for quick effortless adjustment of middle 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 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 pressure transducer.
- Optional serial port to transfer data to computer for analysis/storage evaluation etc.
- Confirms to IS 1828

Application :

MCS Electronic 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 conducted.



Principle of Operation :

Operation of the 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.

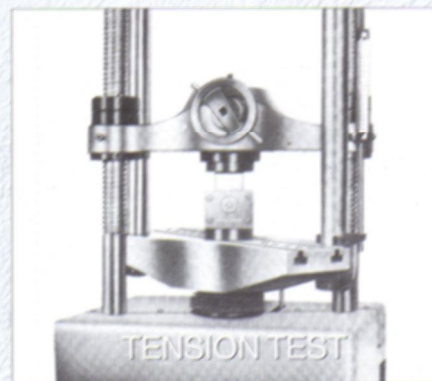
Load is applied by hydrostatically lubricated ram. Main cylinder pressure is transmitted to the pressure transducer housed in the control panel. The transducer gives the signal to the electronic display unit, corresponding to the load exerted by the main ram. Simultaneously the digital electronic encoder 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.

Machine consists of :

Straining Unit :

This consists of a geared 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 cross-head is rigidly fixed to the table by two strengthened columns.

The lower cross-head is connected to two columns which are driven by a motor. Axial loading of the ram is ensured by relieving the cylinder ram of any provision side loading by the provision of ball seating.



An 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 & 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 or the test specimen.

Control Panel :

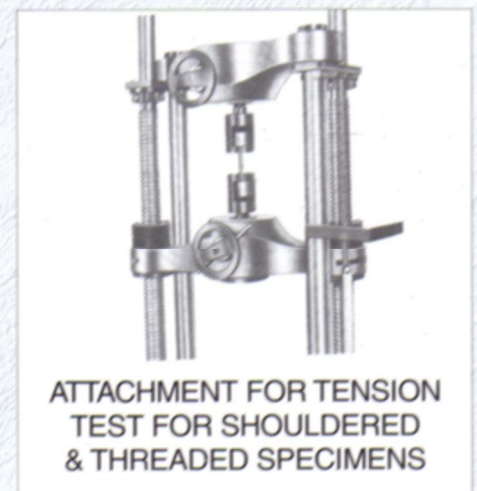
The control panel consists of power pack complete with drive motor and an oil tank, control valves and electronic display unit.

Power Pack :

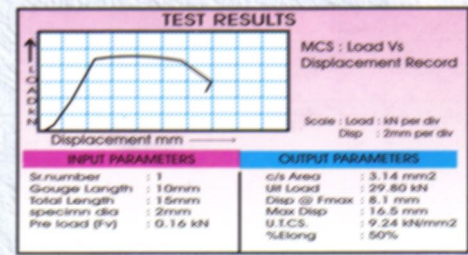
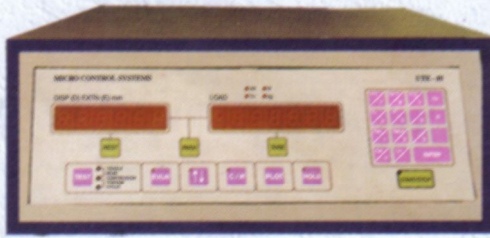
The Power Pack generates the maximum pressure of 200 kgf/cm². The hydraulic pump provides continuously non-pulsating oil flow, Hence the load application is very smooth.

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 readings to be taken.



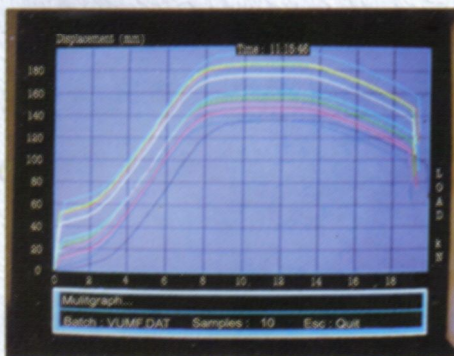
MCS Electronic Measuring System for Universal Testing Machine



Measuring System with Electronic Control Panel MCS-MP

Electronic control panel uses latest microprocessor which incorporates state of the art technology with following features. The panel is having unique feature of two modes of operations i. e. Panel control mode & PC control mode.

With panel control mode, the machine can be operated from panel (without PC) and gives output results / graph on dot matrix printer connected to the panel. With PC control mode, load, displacement and extension data is transferred to PC through RS- 232 serial port thus giving real time display and graph of selected test on PC.



- Full fledged sealed membrane keyboard with numeric keypad.
- Data entry for specimen dimensions.
- Push button tare facility for load & reset for displacement/extension.
- Serial port for communication with PC.
- Built in centronics interface for dot matrix printer.
- Modulus data output (optional).
- Scrolling of test result data up to breakage.
- Results include load Vs Displacement Curve, Max Load/ Displacement. UTS, % Elong, % reduction in Area, Yield load, Proof Stress.
- Over load safety through opto isolated output.

Serial Communications Software.

MCS-MP series control panel can be connected to any PC using RS-232 communication port . MCS offers Window based software on PC to enable the user to effectively evaluate different parameters. The Features include

- Real time graph of selected test on PC.
- User friendly software with colour graphics.
- Wide Range of Data entry for easy test setup.
- Unit interchangeability of load in kg., T, N, kN.
- Extensive graphics , Curve fitting / Zooming / Tracing.
- Effective file handling for data storage ,RDBMS based.
- Operational instructions on HELP Screen for all programme modules.
- Automatic calculation of Proof stress and Young's Modulus with graphical representation.
- Automatic rescalling of graph.
- Batch testing ,multigraph facility and statistical analysis with MIS reports(optional).
- Load, displacement , extension, strain rate values are displayed at all times on PC screen.
- Load V Displacement, Load V Extension, Stress V Strain graphs available for single test run..
- Results include graph, Max load Max displacement, U.T.S.,% Elongation,% Reduction In Area, proof load, proof stress, Yield stress,Youngs Modulus,breaking load, etc



Measuring System with PC Add on cards MCS-PC.

In MCS PC model, the measuring system is based on two PCB's inserted in PC motherboard slots. All the system features are same as MCS-MP with serial software.

Electronic Extensometer

MCS offers Strain Gauge type electronic extensometer for the evaluation of 0.2 % Proof Stress & Young's modulus values.

Extensometer specifications

Model MCE-2
 Type : Strain Gauge
 Extension : 2 mm
 Gauge Length : 25 / 50 mm
 Maximum Dia. : 25 mm
 Confirms to IS 12872 Class-I

SPECIFICATIONS

MODEL	UNITS	UTE-10	UTE-20	UTE-40	UTE-60	UTE-100	UTE-200	UTE-300
Maximum Capacity	kN	100	200	400	600	1000	2000	3000
Measuring Range	kN	0-100	0-200	0-400	0-600	0-1000	0-2000	0-3000
Load Resolution	N	10	20	40	60	100	200	300
Load Range with accuracy of measurement $\pm 1.0\%$	kN	2 to 100	4 to 200	8 to 400	12 to 600	20 to 1000	40 to 2000	60 to 3000
Resolution of piston movement (Displacement)	mm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
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 test 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	0-45

CONNECTED LOAD

Power	kW	1.0	1.0	1.7	1.9	2.6	4-9	6-4
V		400-440	400-440	400-440	400-440	400-440	400-440	400-440
\emptyset		3	3	3	3	3	3	3

DIMENSIONS

L X W X H (approx.)	mm	2032 750 1960	2032 750 1960	2060 750 2180	2265 750 2534	2415 815 2900	3000 1200 3000	3500 1900 4550
WEIGHT (approx.)	kg	1500	1500	2500	3500	5500	9500	15,000

STANDARD ACCESSORIES

FOR TENSION TEST

● Clamping jaws for round Specimens of Diameters.	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 of Thickness	mm	0-10 10-20	0-10 10-20	0-15 15-30	0-15 15-30	0-22 22-44 44-65	0-20 20-45 45-70	0-25 25-50 50-75
Width	mm	50	50	65	70	70	90	100

FOR COMPRESSION TEST

Pair of compression plates of diameter.	mm	120	120	120	120	160	220	220
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FOR TRANSVERSE TEST

Table with adjustable rollers width of rollers	mm	160	160	160	160	160	200	200
Diameters of rollers	mm	30	30	30	50	50	70	70
Maximum 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 & OPTIONS

- Load stabilizer
- Printer
- X-Y Plotter
- Brinell test Attachment
- Shear test attachment
- Serial communication port with software package.
- Mechanical extensometer
- Electronic extensometer
- Load full scale of 20,000 or 50,000 counts
- Piston movement resolution of 0.01 mm
- Load Rate and Strain Rate indication.

- Wide range of accessories offered on request at additional cost.
- Due to constant R&D specifications and features are subject to change without notice.
- The dimensions given above are approximate.

Manufactured By :

MICRO CONTROL SYSTEMS

24 / 1264 / 5, Vitthal Nagar, Shahapur Road, Ichalkaranji - 416 115.
Tal :- 0230 - 2425674, Fax :- 0230 - 2421966 Email : klp_mcs@sanchavnet.in

Sold & Serviced By :