



# COMPUTER CONTROLLED UNIVERSAL TESTING MACHINES

(SERVO DRIVE BALL SCREW DRIVEN)



*Mastering the fine art of testing*

## **APPLICATION**

A wide variety of tests can be conducted on this machine viz. Tensile, Compressive, Transverse, Peel test for adhesive tapes, etc. The materials like rubber, plastics, ferrous metals, non ferrous metals, etc. can be tested as per different standards. The test specimens can have a number of forms like round, flat, threads, wires, dumbbells, fabric, belts, straps, ropes, etc, or sometimes components directly also can be tested. In order to cater to this variety of forms, shapes and materials a range of grips can be offered.

## **SALIENT FEATURES**

- Method of Loading by Re-circulating Ball Screws.
- AC Servo motor for precise crosshead control with infinitely variable speed drive.
- Computerized crosshead control.
- Load measurement by load cell.
- Over travel safety by fixed and settable limit switches at both ends.
- Overload protection for load cell by electronic control.
- Single form windows based user friendly software.
- Test data and reports are stored in access database.
- User programmable strain rates in many steps.
- User defined reports.
- Batch Testing.
- Superimposition of graphs.
- User can select test from templates and can start similar test.
- Variable sample break detection.
- Tare load and reset elongation facilities available.
- Load and Elongation is continuously displayed on screen.
- Statistical output for a batch in report.
- Simultaneous display of two graphs is possible in real time testing when extensometer (optional) is fixed.
- On line display of Load & Displacement (Stress, Extension, Strain) etc. while test is conducted.
- Real time graph of Load & Elongation, Load & Time, Stress & Strain is displayed & is auto scaled.
- User selectable units for Load & Displacement (N, kg, kN, lbf, mm, inch, etc.)
- Report can be printed on any printer with two graphs.
- Large storage space for storing test data and results on PC.
- Provision of calculation of Load & Elongation at yield, Peak load & load at break, Yield stress, Ultimate stress, etc.
- Specific software for Tensile, Compression, Shear test & other tests.
- If Electronic Extensometer is used then proof stress values from 0.1% to 2% can be determined (optional)
- Software will give alert to user to remove Extensometer when load crosses the proof load value (optional)
- In order to cover wide load range, more load cells can be supplied (optional). In that case user has to select the load cell for test
- Standard load resolution is with 1,00,000 counts. Finer resolution with 1,00,000 to 4,00,000 counts can be offered (optional)
- Other slower crosshead speed on specific request (optional).

## **DESCRIPTION**

The Computer Controlled Universal Testing Machines are rugged, versatile, user friendly, accurate and can test a variety of materials. A wide choice of grips is available to suit the application. The Windows based software is comprehensive and covers most of the applications. The automatic calculations of parameters from the observed test values, Real time graphs, storage and retrieval of data are immensely useful. The state of art electronics, high quality material used, and the user friendly software makes the machine reliable and user friendly. The machine comprises a rigid assembly of lower table and Top plate connected by Guide rods. The two ball screws (One on left and the other on right) also are fixed in this assembly. The crosshead, in the center, houses the Nuts of the Ball screws. This entire assembly is fixed on the base, which accommodates driving arrangement including Motor, Gear Box, Timing Belts & Pulleys. The Machine has metallic covers for the ball screws and the base. A set of bellows protects the ball screws from ingress of dust.

The interface and computer are placed on a computer table by the side of the machine.

## STANDARD ACCESSORIES

- Basic machine along with one load cell and a pair of compression plates.
- Windows based users friendly Software.

**Note :** 1) PC, UPS & Printers are supplied with extra Price. 2) Additional load cells are supplied with extra Price.

## DETAILS OF GRIPS (Extra Accessories)

Models	Capacity	Description	Specifications	Application
FG-1/1	2 kN	Eccentric Roller Grip	25mm wide x 5mm thk	For Dumbbell shaped specimens of rubber & Plastics
FG-1/2	5 kN	Eccentric Roller Grip	50 mm wide x 6mm thk	For Dumbbell shaped specimens of rubber & Plastics
FG-2/1	1 kN	Vice Type Grip	25mm wide x 4mm thk	For thin flat samples of paper or materials with smaller strength
FG-2/2	5 kN	Vice Type Grip	50mm wide x 10mm thk	For fabric asbestos leather & similar flat & thin materials
FG-2/3	10 kN	Vice Type Grip	100mm wide x 10mm thk	For fabric asbestos leather & similar flat & thin materials
FG-6/1	1 kN	Motorised Ring Grip	----	For 'O' Rings
FG-7/1	2 kN	Bollard Type Grip	20 SWG & Finer	For fine flexible wires
FG-7/2	5 kN	Bollard Type Grip	Upto 5mm dia	For fine cords
FG-7/3	20 kN	Bollard Type Grip	20mm wide	For flexible non-metalic straps
FG-7/4	10 kN	Double Bollard Type Grip	Upto 2mm dia	For flexible wires
FG-8/1	5 kN	Vice cum Wedge Type Grip	25mm wide x 5mm thk	For rigid wires & strips
FG-8/4	100 kN	Vice cum Wedge Type Grip	<b>Flat</b> - 35mm wide, thickness 0-10, 10-20 mm <b>Round</b> - dia. 5-15,15-25 mm	For rigid wires, round bars and flat strips
FG-8/6	30 kN	Vice cum Wedge Type Grip	<b>Flat</b> - 35mm wide, thickness 0-10 mm <b>Round</b> - dia. 5-12 mm	For rigid wires & strips
FG-8/7	50 kN	Vice cum Wedge Type Grip	<b>Flat</b> - 35mm wide, thickness 0-10 mm <b>Round</b> - dia. 5-12, 10-17 mm	For rigid wires & strips of relatively softer materials
FG-8/8	50 kN	Vice cum Wedge Type Grip	<b>Flat</b> - 35mm wide, thickness 0-8 mm <b>Round</b> - dia. 5-10, 10-15 mm	For rigid wires, round bars and flat strips of relatively harder materials (harder steels, etc.)
FG-10/1	2 kN	Grip for Special Moulded Plastics	Moulded dumbbell specimen	As per IS : 867-1963
FG-11/1	2 kN	Compression Cage	100 x 65 x 200mm height	For conducting compression test
FG-11/2	10 kN	Compression Cage	150 x 80 x 200mm height	For conducting compression test
FG-11/3	50 kN	Compression Cage	150 x 150 x 200mm height	For conducting compression test
FG-12/1	15 kN	Bend Test Attachment	Span Variable from 40mm to 250mm	For conducting transverse or bend test (Safety Guard with extra cost)
FG-13/1	Elongation measures upto 800mm	High Elongation Electronic Extensometer	L.C. 0.01mm, Maximum distance between knife edges 800mm	For measuring the elongation of plastics & similar materials

Grips to suit special applications are available.

## TECHNICAL SPECIFICATIONS

Specifications	Models						
	M1	M2	M5	M30	M50	M75	M100
Max. Capacity (kN)	1	2	5	30	50	75	100
Max. Crosshead traverse excluding grips (mm)	1000	1000	1000	1000	1000	1000	1000
Max. working width (mm)	400	400	400	400	400	600	600
Fixed and working upper & lower limit switches	✓	✓	✓	✓	✓	✓	✓
Overall dimension H x W x D (mm) (Approx.)	1780 x 630 x 505	1780 x 630 x 505	1780 x 630 x 505	1780 x 630 x 505	1920 x 675 x 750	2640 x 1180 x 1050	2640 x 1180 x 1050
Weight (kg) (Approx.)	150	150	150	200	250	450	500
Power supply	1 Phase, 220 V, 50Hz AC				3 Phase, 415 V, 50Hz AC		
Overload protection for load	✓	✓	✓	✓	✓	✓	✓
	(Software operated & electronically operated in the event of loadcell overload)						
<b>Drive System</b>							
Method of loading	By recirculating ball screws						
Crosshead drive motor	AC servo with feed back						
Crosshead Speed	0.05 to 500 mm per min.						
Crosshead Control	Computer controlled						
Accuracy of Speed in percent	±1%	±1%	±1%	±1%	±1%	±1%	±1%
<b>Measurement</b>							
Load	By Precision Loads cell's						
Load resolution	1,00,000 counts standard (1,00,000 to 4,00,000 counts optional)						
Load Accuracy	±1% as per IS : 1828- 1991 & BS : 1610-1964						
Resolution of cross head displacement in mm	0.001mm						

We can also supply Universal Testings Machine Hardness Testers (Rockwell, Brinell, Vickers), Spring Testing Machines, Compression Testing Machines, Tensile Testing machines, Dynamic Balancing Machines & Custom Built Testing Machines.

FSA reserve the rights to change the above specifications without any notice due to constant improvements in design



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