



## UNIVERSAL MATERIAL TESTING MACHINES

- MTE-400 model
- MTE-500 model
- MTE-600 model
- MTE-750 model

Electromechanical machines with a double column floor testing framework, designed to perform tensile, compression, flexion, shear, peeling... tests of very tough materials



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**TECHLABSYSTEMS**

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Universal Materials Testing Machines, with 2 columns designed to perform Tensile - Compression - Flex - Shear - Peel - Tear tests ... on samples of materials such as Metals, Alloys, Plastics, Rubber, Composites, Wood, Textiles, Ropes, Cables...

## MTE-400/500/600/750

- **Maximum force capacity: 400 kN / 500 kN / 600 kN / 750 kN (corresponding to the model)**
- **Range of available load cells not included in the standard supply: 300 kN - 200 kN - 100 kN - 50kN - 25 kN - 10 kN - 5 kN (maximum capacity of each model)**
- **Tests - Traction - Compression - Flexion - Shear ...**
- **Accuracy  $\pm 0.5\%$  (Class 0.5)**
- **Precise electromechanical drive**
- **High stiffness test frame**
- **The testing machine in standard supply is equipped**
- **With METROTEST Testing Software and Mini-PC**
- **Large workspace in test area**
- **Ergonomic and precise**

### General Information

The MTE-400/500/600/750 Universal Electromechanical Testing Machines have the most advanced and reliable structure in electromechanical testing framework with 2 ball circulation spindles. The computerized control system allows for closed-loop control of parameters such as test force, specimen deformation and crossbar travel, etc. The system realizes in real time on the PC screen test diagrams, test curves and creation of test reports. Closed-loop control through the METROTEST test program makes it possible to carry out cyclical tests. Through a simple connection with different accessories, the MTE-400/500/600/750 series can test various materials and components to suit your needs in quality control and research.



In the section on compliance with International Standards, it meets or exceeds the requirements of the following standards: ISO 7500-1, ASTM-E4, EN 10002-2, BS 1610, DIN 51221, and ISO 6892.

To configure the tests and complete the MTE-400/500/600/750 Universal Testing Machines, we optionally have a wide range of test accessories such as Jaws, Extensometers, Bending / Bending Bridges, Special Devices, etc.

The MTE-400/500/600/750 UNIVERSAL COMPUTERIZED TESTING MACHINES are made up of a robust floor frame in which the test frame is located. The test frame is made up of 2 drive and re-circulation spindles with protectors, low coefficient of friction and a guide column made of chrome plated and ground steel.

Force measurement is carried out through a compression-tension load cell housed in the mobile crossbar. The necessary test tools are attached to this load cell (not included in the standard supply of the Universal Testing Machines MTE-400/500/600/750).

The test framework admits overloads of 120% of the nominal force without affecting its measurement or operating precision, which gives the frame a great robustness and safety of correct operation under intensive work.

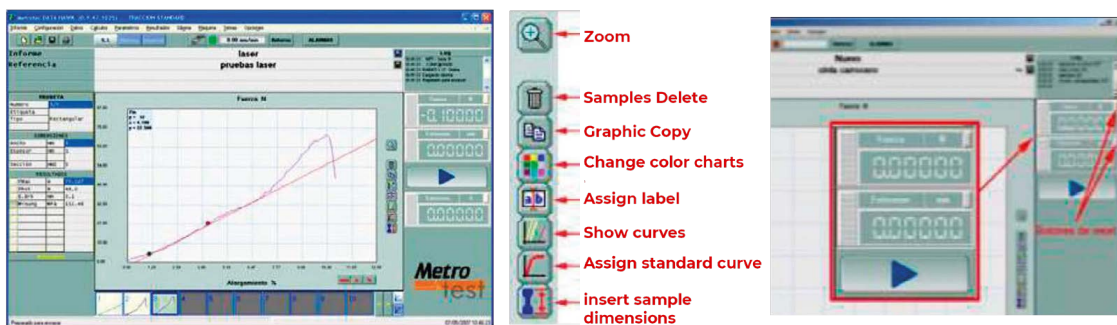
It has a system of upper and lower travel limiters adjustable independently by the user. Inside the base box are included the transmission elements, the transformer, regulation electronics, servo motor, etc.

## Features

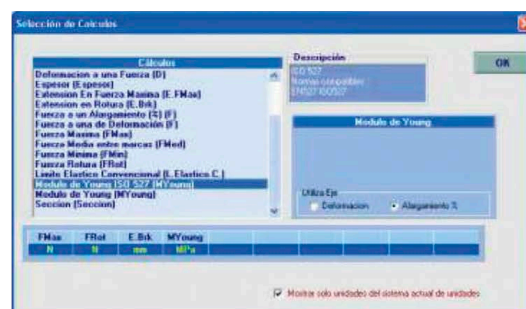
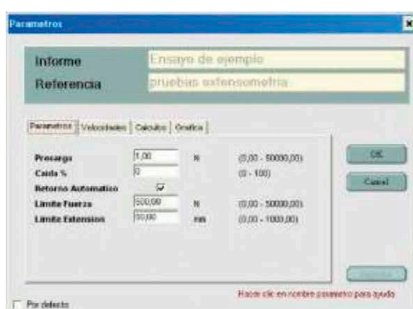
- **Fully computerized:** The control and measurement system with a specific electronic card used for testing machines, performing the tare to zero and adding a setting which is very reliable.
- It has a Database manager for the test results which stores according to a standard format which facilitates analysis and transfer to other programs.
- Compliance with testing requirements for all types of materials with all international testing standards.
- With a wide range of graph functions, curve color changes, magnifications (zoom), reductions, curve auto-scaling can be performed (making it easier and shorter to run a test with a new material), displacement of the curves in the deformation axis, designate standard curve, association of labels to each graph, indication of the values digitally on the screen and printing of all kinds of test curves.
- Modular design makes it easier to upgrade software in the future.

## METROTEST material testing software

METROTEST testing program based on WINDOWS MS is easy and fast to use to achieve different functions, adaptable to most operator habits. With all the integrated functions such as test sample information, sample choice, data display, data processing, data analysis, test operations ... easy to use.



- Very clear, intuitive, attractive interface design with information on the screen.
- Choice of different units for each of the results.
- Route of all the points of the graph, point by point.
- Association of labels to each graph.
- Creation and management of standard curves.
- Context sensitive help
- Customizable report
- Reports in PDF format directly without the need for additional software
- Automatic auto scaling on charts
- Test limits independent of graph limits
- Auto-save of results, specimen by specimen
- Single or multiple curve display
- Customizable interface
- Option to request sample dimensions at the beginning of each trial.
- On-screen information of the tasks being carried out by the program (log)
- Visual parameterization of results



## Control Software

### Specific software with control module (maneuver):

- Closed loop control of force, displacement, deformation or time
- Automatic selection and change of work scales
- Detection of the test piece break with automatic stop, adjustable by user.

As many control tabs can be created as desired. These tokens can be assigned to a "specimen" so that when testing a specimen it is done using its assigned control token. Possibility of independent zeroing in F and L, after one step.

- **Type Setpoint:** It is the action that the machine control will perform.
- **F** Force (N / s).
- **R** Resistance (N / mm<sup>2</sup> / s).
- **V** Speed (mm / min). In open loop (without PC control).
- **L** Displacement (mm / min). In closed loop (The PC will regulate the speed).

### Measurement software included

Specially prepared for static tests on metals, which allows data to be acquired from a machine equipped with MBC3200 measurement electronics, using the PC communications port (RS232C) or through a USB input using commercial RS232C adapters -> USB).

### Main Features

- Selection of control sheet (speeds, etc)
- Selection of specimen sheet with:
  - o **Reference or name** of the specimen
  - o **Sample** type           Rectangular / Circular / Tubular
  - o **lo**                        long. initial of the test piece
  - o **a, b / D / So**           section dimensions
  - o **n%**                      % to calculate the Rpn
  - o **any desired value**   (0.01% -0.2% -1%)
- Selection of test sheet (Test number, material, and other fields to be defined by user)
- Scale on automatic or manual test charts
- Representation in real time in units "force-deformation"
- User selectable units
- Simultaneous digital display with graph
- Possibility of zooming in any area, from the mouse.
- Possibility of manually choosing scales and units.
- Automatic archive of the X-Y values of the graph in a security file.
- Possibility to compare graphics on screen.
- Ease of calculation and presentation of limits
  - o ReH, ReL (apparent in sweet steels)
  - o Rpn (n = 0.2% or any value entered)
  - o E elastic modulus of the material
  - o Rm maximum resistance
  - o Elongation
  - o Other test parameters (Ag, E, N, R, ...)
  - o Z Constraint Coefficient
- Database (results sheets) (MS-Access compatible)

Depending on the type of materials and shapes of the test specimens to be tested, we have a wide range of accessories and test tools, such as Grips, Extensometers, Temperature Chambers...

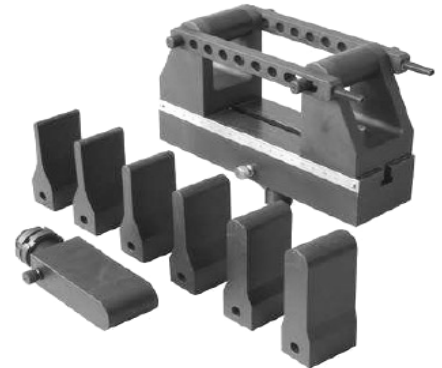
**Ask us about your testing needs!**



**Wedge-type Grips**  
(Metals - Plastics - Wires - Cables - Composites...)



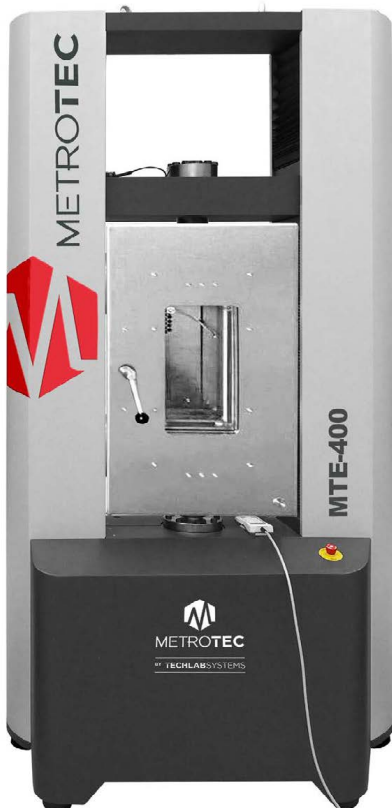
**Pneumatic Grips**



**Bending/Flexure Devices**  
(Metals - Plastics - Composites...)



**Standard and Self-Aligning Compression Plates**



**Thermal Test Chambers**  
at different temperatures

**Safety enclosures**



**Contact Extensometers**

## Functional Technical Specifications

### Control unit

- PC Control and METROTEST Testing Software
- Level of breakage of the sample (% of force drop at the end of the test)
- Maintenance of Peak Force / Extension in Tension or Compression
- Selection of force and deformation units
- External control mode by PC All-in-One of 22"
- RS-232 serial port

### Force measurement

- Range: 2% to 100% - Accuracy 0.5% of applied force
- Precision in Forces: Class 0.5 (accuracy  $\pm 0.5\%$ )
- Load reading resolution: 1 / 200,000 points:
  - 1 / 100,000 in Traction
  - 1 / 100,000 in Compression
- Force Data Sampling Rate (internal): 30,000 S / second
- Digital load tare 20% with the Load Cell at its maximum capacity
- Selectable units: kN, N, cN, kgf, gf, lbf.
- Protection system of the Load Cell
- programmable preload
- 18 bit high speed A / D converter

### Measurement of travel (mobile crosshead)

- Direct measurement from the drive spindles
- Single measurement range (1 scale)
- Reading resolution: 0.001 mm
- Auto-return precision, better than 0.05mm
- Selectable units: Millimeters and Inches
- Programmable extension limits

### Speed control

- Servo motor drive
- Variable speed range (see table)
- Variable return speed within range (see table)
- Default speed resolution:  $< 0.02\text{mm} / \text{minute}$
- Speed accuracy:  $\leq \pm 0.5\%$
- Variable Preload speed within the range (see table)
- Current protection system



MODEL	MTE-400	MTE-500	MTE-600	MTE-750
Capacity	400 kN	500 KN	600 kN	750 kN
Force resolution with 5kN Load Cell	4 N	5 N	6 N	7.5 N
Measured force accuracy	≤ ± 0.5 %			≤ ± 1 %
Displacement resolution	0.001 mm			
Travel accuracy	≤ ± 1 %			
Mobile crosshead travel	1100 mm			1000 mm
Separation between columns	600 mm			
Range Standard Test Speeds	0.05 – 250 mm /min.			0.01 – 125 mm /min.
Accuracy of test speed	≤ ± 1 %			
Maximum return speed	250 mm/min			125 mm/min
Spacing between fixings (adapters)	1100 mm			2000 mm
Electric supply	380V / 50Hz - 400V/60Hz three-phase			
Approximate power	3 Kw	4.5 Kw	4.5 Kw	5.5 Kw
Working Ambient Temperature and Relative Humidity Condition	10 °C ~ 35 °C   20% -80%			
Dimensions Test Frame approx.	1200 x 800 x 2700 mm (Width x Depth x Height)	1200 x 800 x 2700 mm (Width x Depth x Height)	1200 x 800 x 2700 mm (Width x Depth x Height))	1250 x 800 x 2700 mm (Width x Depth x Height)
Net Weight approx.	2270 Kg	2450 Kg	2640 Kg	3600 kg
Dimensions Wooden packaging approx.	3000x1450x1200 mm (Width x Depth x Height)	3000x1450x1200 mm (Width x Depth x Height)	3000x1450x1200 mm (Width x Depth x Height)	3100x1550x1300 mm (Width x Depth x Height)
Gross Weight approx.	2800 kg	2950 kg	3150 kg	4200 kg

### ESTÁNDAR SUPPLY CONTENT:

- \* MTE-100, MTE-200, or MTE-300 (selected model) Universal Testing Machine
- \* 1 Load Cell of the maximum capacity of the Universal Machine (selected)
- \* METROTEST Multilingual Testing Software
- \* Management Module with Basic Statistics Packs:  
Bar Charts - Gaussian Bells and Reference Comparison
- \* 1 "All-in-One" Touch Screen PC with 22" monitor