METROTEC

4 POINT BENDING TESTER

MTE-5/GRC model

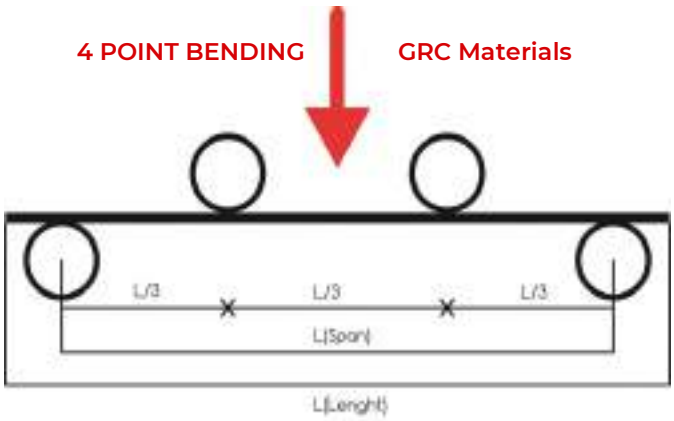
With the testing framework of a column designed to perform 4-point Bending tests on **GRC** (Glass Reinforced Concrete) material specimens

TECHLABSYSTEMS

Testing machine for flexural strength at 4 points of GRC materials according to international standards UNE - BS - EN 1170-5

MTE-5/GRC model

- **Maximum force capacity: 5 kN**
- **Available load cells not included in the standard supply:**
  3kN - 1kN - 500N - 250N - 100N - 50N y 10N
- **Accuracy ± 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-5/GRC Four Point Bending Electromechanical Testing Machine have the most advanced and reliable structure in the framework of electromechanical tests with ball circulation spindle. 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. By simply connecting with different accessories, the MTE-5/5L series machines can test various materials and components to suit your needs in quality control and research.

In the International Standards compliance section, 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.

The **MTE-5/GRC Computerized 4-Point Electromechanical Bending Testing Machine** is made up of a robust frame in which the test frame is located. The high stiffness frame incorporates a crosshead guidance system to prevent side loading of the sample under test. The test frame is made up of a low friction coefficient drive and re-circulation ball screw with protectors and a rectified and chromed steel guide column.

Force measurement is carried out through a compression-tension load cell housed in the mobile crossbar.

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.

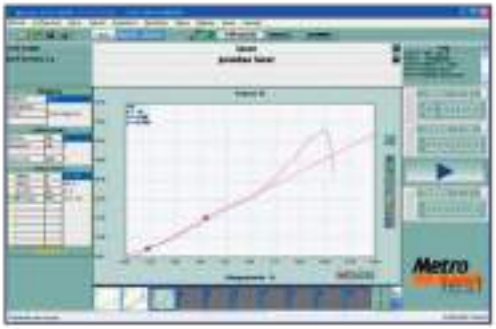
It has a system of upper and lower travel limiters adjustable independently by the user. Inside the base box are included the transmission elements, the transformer, regulation electronics, servo motor, etc.

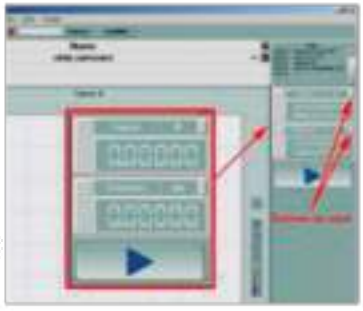
Features

- **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.**

Bending test software in GRC materials "METROTEST"

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**
- **Autosave 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**

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 Mini-PC
- RS-232 serial port

Force measurement

- Range: 2% to 100% - Accuracy 0.5% of applied force
- Precision in Forces: Class 0.5 (accuracy ± 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 pre-load
- 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: <0.02mm / minute
- Speed accuracy: ≤ ± 0.5%
- Variable Preload speed within the range (see table)
- Current protection system

- **Fixture for Bending Tests at 4 Points** with spacing of adjustable lower supports up to 300 mm (according to GRCS specifications)

MODEL	MTE-5/GRC
Capaciity	5 KN
Force resolution with 5kN Load Cell	0.05 N
Measured force accuracy	≤ ± 0.5 %
Displacement resolution	0.001 mm
Travel accuracy	≤ ± 1 %
Mobile crosshead travel	800 mm
Separation between column and grips adapter	150 mm
Range Standard Test Speeds	0.5 – 1000 mm /min.
Accuracy of test speed	≤ ± 1 %
Maximum return speed	1000 mm/min
Spacing between fixings (adapters)	800 mm
Electric supply	220V / 50Hz - 110V/60Hz single-phase
Approximate power	500 W
Working Ambient Temperature and Relative Humidity Condition	10 °C ~ 35 °C | 20% -80%
Dimensions Test Frame approx.	450x700x1240 mm (Width x Depth x Height))
Net Weight approx.	95 Kg
Dimensions Wooden packaging approx.	700 x 900 x 1450 mm (Width x Depth x Height)
Gross Weight approx.	140 Kg

STANDARD SUPPLY CONTENT:

* MTE-5 /GRC model 4 Point Bending Testing Machine
* 4 Point Bending Test Device with adjustable lower support spacing up to 300 mm (according to GRCS specifications)
* METROTEST Multilingual Testing Software
* Management Module with Basic Statistics Packs:
  Bar Charts - Gaussian Bells and Reference Comparison
* Mini PC – Windows O.S.