



Data Sheet – MTT175

MTT175 Miniature Tensile Tester.

Fully featured bench top tensile tester supporting a range of applications on small fibres & sheet material. Integrated approach to materials testing, from sample mounting to data analysis.
Entry level instrument to the range of Dia-Stron advanced tensile testers.
May be upgraded for operation as an automated unit for single fibres.
Uses common Windows™ platform for Dia-Stron tensile testers and automated sample handling systems.

System Description.

General Information.

The MTT175 miniature tensile tester is supplied as a complete system, comprising the UV1000 control unit, MTT175 mechanical test module and UvWin PC applications software. Accessories for specific applications are available as optional extras (see below).

Control Unit.

A single universal control unit (UV1000) supporting all MTT variants and other measurement modules including the Fibre Dimensional Analysis System, and the automated sample loading modules. The commonality of the control unit permits upward compatibility, allowing the user to upgrade testing capability in line with changing needs. The control unit has no user interface and all methods are entered through the PC software.

MTT175 Manual Test Module.

The MTT175 is the entry-level system and uses the manual mechanical jig. The moving bridge is driven by an enclosed lead screw and along a linear rail with recycling ball bearing assembly. This gives a high degree of stiffness with low mechanical noise to the system. The innovative design permits use in vertical or horizontal modes depending on protocol requirements and test accessories. Construction of the mechanical unit is of anodised aluminium with stainless steel fittings, providing a low maintenance and easy to clean instrument.

UvWin PC Applications Software.

The MTT175 is operated through UvWin PC application, a 32Bit software programme written for Windows™ NT, 2000 & XP. The instrument protocols are selected from user interactive dialogues and the software includes method options for specific applications, data display and storage, and a range of analysis tools designed for particular applications. Data export to other PC applications is through formatted text files suitable for import into Excel and other similar software.

UvWin supports the complete range of Dia-Stron fibre testing instruments, including the automated sample loading modules, and giving a familiar Windows platform over the range of applications.

MTT175 Applications.

The MTT175 supports a range of applications with specific accessories. These include:

Single Fibre Mechanical Properties.

Methods developed by Dia-Stron for single fibre testing require the fibre to be mounted on a tab or crimp system. The crimping method was developed to permit the automation of hair testing. The fibre is threaded through two PVC lined brass tube mounts and then placed in a press to crimp the tubing. The hair is permanently mounted and suitable for testing. For other fibres there is an adhesive based tab system, which has proved suitable for cottons, vegetable fibres, carbon etc. Please consult with Dia-Stron on the best methods for mounting fibres.

Recommended Accessories (for hair):

Complete mechanical sample crimping set – Product Code: 160.0340

Crimps per pack (1000 pieces) – Product Code: 600.0320

Ease of Combing.

This method was developed for hair care applications and for the evaluation of efficacy of shampoos and conditioners. The principle of the method is a comb is driven through a tress of hair and the load required to achieve this is measured. Peak forces and work done can be calculated from the instrument output.

Recommended Accessories:

Vertical Stand – Product Code: 170.0400

Combing Attachment Set – Product Code: 160.0320

3-Point Bending.

Standard 3-point bending test for evaluating stiffness/flexibility in lengths of materials. The material under test is rested on two arms and a central beam is driven down and the force required to bend the material by a known displacement is measured.

Recommended accessories:

Vertical Stand – Product Code: 170.0400

3-Point Bend Test Set – Product Code: 170.0460

Curl Compression.

Test method developed for the hair care industry but with application in other areas. The method can be used to measure the resistance to compression of tubular materials by clamping one side of the structure and applying a force to the opposite side and measuring force and displacement. For the hair application, a tress is rolled on to a smooth curler and pinned in a cylindrical shape. The curler is removed from the hair and mounted in the accessory and compression measured.

Recommended accessories:

Vertical Stand – Product Code: 170.0400

Curl Compression Set – Product Code: 170.0450

Tack Testing for Adhesive Properties.

Method developed to evaluate the drying profiles of products with adhesive properties. As products dry they go through a phase of increased tack followed by a reduction as the solvents dry. The principle of

the method is that 2 parallel plates are driven together to a predetermined force and time. Then the degree of tack is determined by measuring the force required to separate the plates. By repeating the measurement cycles over time, a drying profile of the product can be ascertained. Applications include hair care products, roll-on deodorants and adhesives.

Recommended accessories:

Vertical Stand – Product Code: 170.0400

Tack/Adhesive Test Plate Set – Product Code: 170.0430

Tress Volume.

Used to determine hair volume by drawing tresses through a series of ring diameters and measuring the force and work done.

Recommended Accessories:

Vertical Stand - Product Code: 170.0400

Tress Volume Accessory – Product Code: 175.0330

Sheet Materials.

Small flat clamps, either rigid or self aligning, may be used for determining the mechanical properties of materials such as non-wovens, tissues, thin films etc.

Recommended Accessories:

Flat Clamp Set – Product Code: 160.0330

Self Aligning Flat Clamp Set (for thin films) – Product Code: 160.0440

Specifications.

Standard sample size:	3-300mm
Extension range:	0-300mm
Standard speed range:	1-2000mm/min
*High speed range:	10-5000mm/min
Sample resolution:	up to 10 micron
Accuracy:	0.1mm
Standard force range:	up to 2000gmf (20N)
Standard force resolution:	0.05gmf
*Extended force range option:	up to 5000gmf (50N)
*Extended force range resolution:	0.125gmf
Methods:	extension, compression, relaxation, creep, cycling.
Software:	Windows 2000, NT, XP
Communication:	Serial RS232, USB serial adapter
Data Output:	Printer & ASCII file
Power:	100W
Voltage:	Universal supply 85-265vac,
Frequency:	47-63Hz
* - Special Order Options	

System Components:

MTT175 Mechanical Testing Module.

UV1000 Control Unit.

UvWin PC Applications Software including manuals (supplied on CD).
Mains cord and serial cable.

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