Miniature Tensile Tester MTT680

The Dia-Stron MTT680 is a cassette based automated miniature tensile tester for single fibres.

General Information

Principal benefits

- Automated system
- High throughput, 100 fibre cassette
- Wet & dry tensile measurements
- Small footprint & low weight
- Easy to set-up and to use
- Low maintenance & robust

Application examples

- Hair strength claims
- Hair damage repair/alleviation claims

System Description

The MTT680 was developed to overcome the low productivity associated with the manual testing of mechanical properties of single fibres. The system is based on a circular sample cassette, which allows the automatic measurement up to 100 pre-mounted fibre samples. The MTT680 is supplied as a complete system comprising mechanical unit, control unit, pneumatics unit, Windows software and sample mounting accessories.

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Specifications

Programmable Features	
Extension range	0-120mm (330mm option available)
Speed range	1-2000mm/min
Methods	• Strain/stress with break detection • Stress relaxation • Hysteresis

Control unit	
Net weight	5kg
Total weight with packaging	7kg
Control unit length	450mm
Control unit height	80mm
Control unit depth	280mm

MTT680 test module	
Force range	0 to 20N (2000gmf)
Force resolution	0.05gmf
Displacement resolution	10μm
Sample size	30mm 10mm optional
Net weight	9kg
Total weight with packaging	15kg
Length	550mm
Height	180mm
Depth	300mm

Control Unit

A single universal control unit (UV1000) supports all MTT variants and other measurement modules including the Fibre Dimensional Analysis System (FDAS76x), and the automated sample loading modules (ALS1500). The MTT680 uses compressed air for operation of the sample holding mechanism and requires a pneumatics control unit (PU1100).

Commonality of the control units permits upward compatibility, allowing the user to upgrade testing capability in line with changing needs. The control unit is connected to the computer by USB and is interfaced with the Windows UvWin software.

MTT680 automated test module

The MTT680 is an automated tensile tester based on a circular sample cassette. Before testing, the fibre samples are mounted using the crimp system (for hair) or the tab/adhesive mounts and placed in the 100 fibre sample cassette. One end of the sample is held in the cassette whilst the outer mount overhangs the cassette edge. The module is configured so that the load cell is driven in and out on the moving bridge of the tensile tester. Assembled on the load cell is the pneumatically operated sample gripper and, when in position, the gripper closes on the outer sample mount ready for testing.

Following the end of the measurement the mount is released and the cassette rotated to bring the next sample into alignment. The moving bridge is driven by an enclosed lead screw linear rail with recycling ball bearing assembly. This gives a high degree of stiffness with low mechanical noise to the system. Construction of the mechanical unit is of anodised aluminium with stainless steel fittings, providing a low maintenance and easy to clean instrument. Samples may be immersed in liquids placed in the cassette and tested in contact with the liquid.

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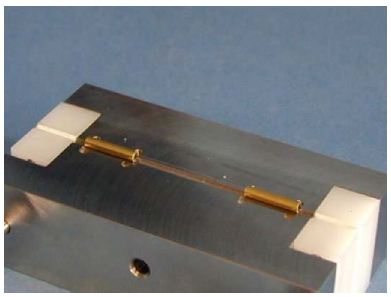
General specifications

Power	25W
Voltage input	220-240V 50-60Hz 100-120V 50-60Hz
Socket(s)	1

Content

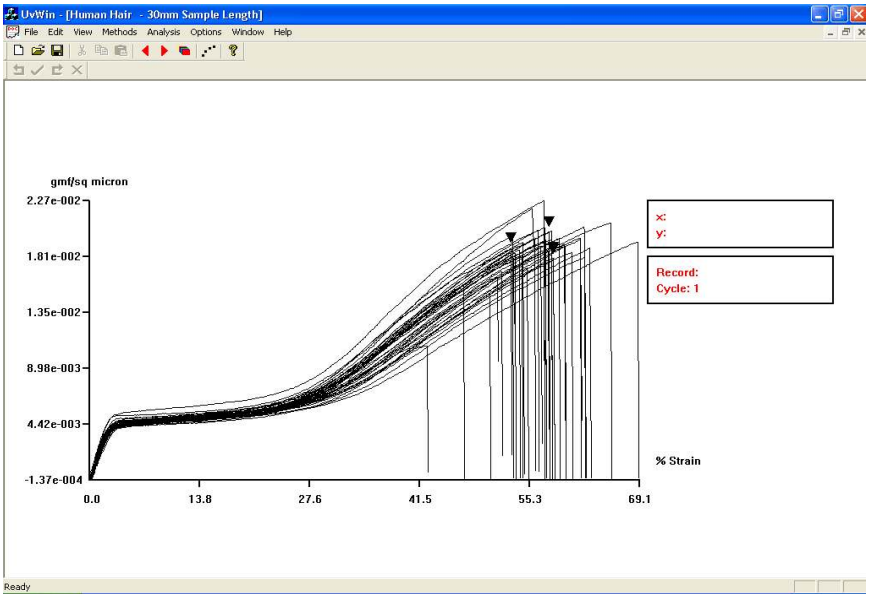
UV1000 Control unit
PU1100 Pneumatic Unit
MTT680 Module
USB and Power cords
UvWin Windows software
Sample cassette
Mechanical crimping press & block
5,000 crimps

Crimping Press



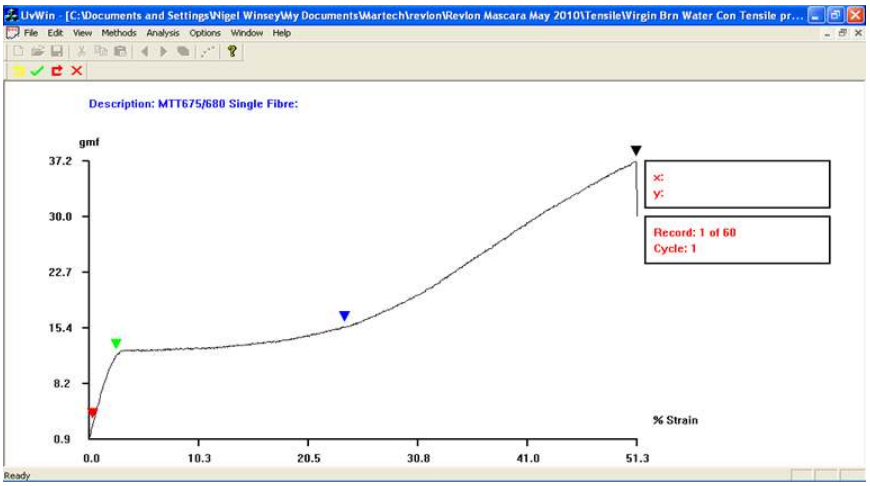
Crimping Block

The MTT680 can be integrated on the automated sample loading system (ALS1500) with the FDAS765 to provide both dimensional and tensile data from a single fully automated measurement operation. The data collected is integrated in the UvWin Windows software.



Above is an example of normalised tensile data for several hair fibre samples

UvWin offers a number of analysis options: 1, 2 or 3 phase tensile analysis, hysteresis analysis, stress relaxation, etc. The raw data can also be exported as txt file.



Above is an example of 3 phase analysis of tensile data for a hair fibre sample

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