Technical Data*

Basic Installation

- Testing Unit for measuring Tensile Properties (Yarn, Lea and Fabric)
- PC and Printer
- Automatic Yarn Changer
- Creel With provision for 20 cops/cones
- Table (*TensoMaxx5* only)

Measuring principle

- Strength and Elongation - Constant Rate of Elongation (CRE) principle

Application Range

Material

- Cotton, Polyester, Viscose, Acrylic and blends

Breaking Force

- Single and Ply Yarn (Upto 30 kgf)
- Lea (Upto 95.9 kgf)
- Woven Fabric Strips (Upto 95.9 kgf)

Breaking Elongation

- Upto 400% for 150 mm test length — *TensoMaxx5*
- Upto 60% for 500 mm test length
- Upto 375% for 150 mm test length — *TurboMaxx7*
- Upto 43% for 500 mm test length

Test Speed (Recommended)

- 5000 mm/min (Yarn)
- 500 mm/min (Lea)
- 50 mm/min (Fabric)

Test Length (Recommended)

- 500 mm (Yarn)
- Fixed length for Lea
- 200 mm (Fabric)

Calibration

- Calibration using standard weights (50, 100, 200, 500 & 1000 gram)

Output Parameters

Numerical Results:

- Breaking Force (kgf, gf, lbf, mN, cN, N & kN)
- Breaking Elongation (%)
- Breaking Tenacity (cN/Tex, gf/Tex, Rkm)
- Time to Break (sec, min)
- Work done
- Part work done
- Modulus characteristics

Graphical Results:

- Force Elongation / Tenacity Elongation Curve
- Stroke Diagram
- Frequency Distribution Curve
- Scatter Plot
- Trend and Comparison | *TurboMaxx7*

Unique Features (*TurboMaxx7*)

- Multi Testing
- Trend and Comparison
- Lab App - Mobile Application for Smartphones

Ambient Condition

- Relative Humidity : 65 ± 2%
- Temperature : 21 ± 1°C (27 ± 1°C (80 ± 2°F) for Tropical Conditions)

Power Consumption

- Single Phase 2 kVA; On-line UPS

Compressed Air Consumption

- $26m^3$/hr at 6 bar (*TensoMaxx5*)
- $22m^3$/hr at 6 bar (*TurboMaxx7*)

∗ Subject to change without Prior notice

PREMIER

TensoMaxx5™

TurboMaxx7™

Fully Automatic
Single Yarn Strength Testers

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iQ

intelligent **QUALITY**

TensoMaxx5™

PREMIER TensoMaxx5 Automatic Tensile Testing equipment provides critical knowledge on important Tensile Properties. Among the typical end use of Yarn, each industry viz., Knitting, Weaving, Sewing thread application demands specific tensile properties such as breaking force, elongation, tenacity and work done. Graphical outputs such as Force Elongation curve, Stroke diagram and frequency distribution diagram enhance the possibilities of analysis and interpretation.
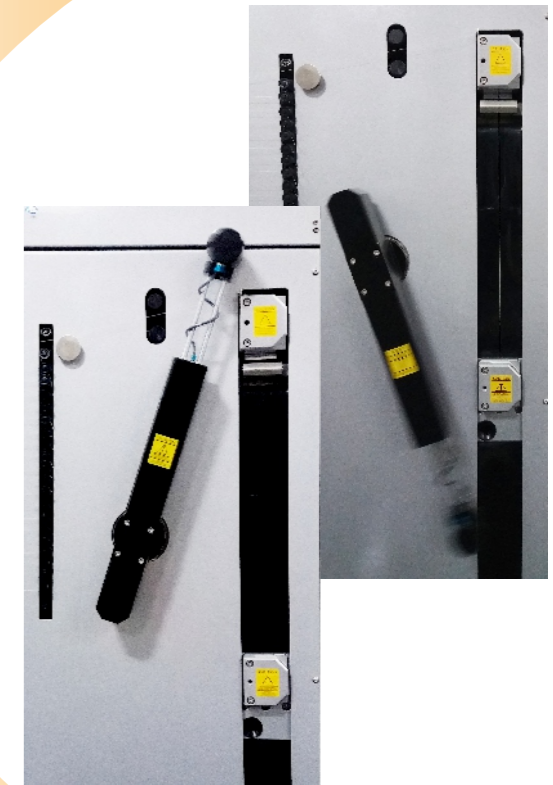
Importance of strength factor cannot be talked exclusive of breaking elongation. The principle involved in quantifying the strength of a product is simple - by gradually loading the test specimen till its maximum load breaking capacity. Greater the specimen elongation, higher will be its load bearing capacity.

However a specimen with maximum load bearing capacity need not necessarily be the one with maximum elongation. Though this is basically due to the inherent characteristics of the fibres, their structural arrangement greatly influences the yarn strength and its elongation in case of yarn and the fabric weave / knit structure for fabrics.

It is the end use and process requirement which decides the importance of one over the other. Say for example, stronger yarns are required to withstand the high tension level in today's high speed processing and weaving machines. Where as yarn with greater elongation are required for knitting process.

Configuration

TensoMaxx5 is a versatile automatic high speed tensile testing equipment. The most widely used principle of operation - Constant Rate of Elongation (CRE) has been used for its operation. Testing in *TensoMaxx5* is highly simplified, made easier and quicker with its automatic testing option.

Operator friendly Fully Automatic

After laying in the yarn, the complete test series is done automatic without any human interference.

Adjustable testing speeds from 500 to 5000 mm/min

User selectable testing speeds based on the material property which requires a lower breaking force.

Automatic clamping pressure adjustment based on count and material

Appropriate clamping pressure is a must for reliable and precise results based on testing material. Clamping pressure is set automatically based on count.

Compatible for testing Single & Ply Yarn, Lea and Fabric

Yarn, Lea and Fabric can be tested just by using appropriate clamps.

Global testing standards

For spinning industry ASTM standards is being followed universally. The methods and results follows ASTM D1578, D2256, D3107, D5034, D5035

TurboMaxx7™

PREMIER TurboMaxx7 New generation High Speed Fully Automatic Single Yarn Strength Tester for testing more number of samples at a higher speed compared to any traditional system available today. With significantly higher testing speeds, Larger samples can be subjected to Quality scrutiny for estimating the weak places in Yarn precisely. A good correlation with the performance of downstream processes like Weaving and Knitting can be established there by.

TurboMaxx7 developed as a versatile strength testing instrument enables testing of yarn, lea and fabric in an easy and quick manner. Since strength of a product is determined by the strength of the weakest point, and its occurrence being random, strength variation forms another important parameter and therefore it necessitates more samples to be tested to arrive at reliable conclusions requires automatic high speed tensile testing equipment to obtain quick and reliable results.

TurboMaxx7 is an automatic high speed tensile testing equipment. This PC based system is incorporated with all the added features of today's high speed strength testing equipment. The user friendly front end software with touch screen facility enables the instrument operations highly simple. The most widely used principle of operation - Constant Rate of Elongation (CRE) has been used for its operation. The instrument can be used to test wide range of textile products for its tensile characteristics with test parameters like test length and test speed etc. that can be chosen to the user's requirement.

Clamps designed exclusively for testing yarn and lea are provided along with the instrument. The top clamp - a fixed one, is fixed rigidly to a beam type load cell. The load cell and the top clamp assembly is designed so as to avoid independent deflections.

An automatic yarn laying arm with its picker makes a vertical motion and aids in picking & laying the yarn in the clamps using pneumatics.

Yarn & End Product
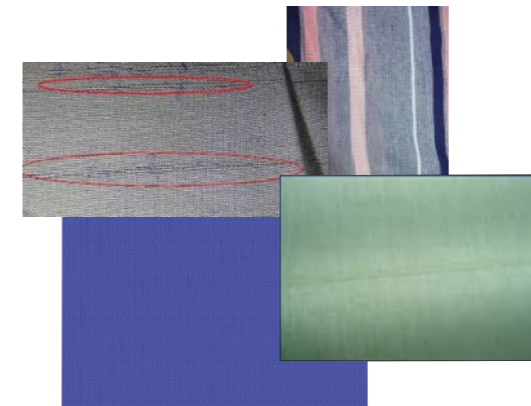
Strength is one important parameter in deciding the quality of a product, may it be for any type of end use - either in yarn or fabric form. Apart from the Primary measured parameters, strength and its variation gives an overall indication of the quality characteristics of the product.

Quality characteristics can be broadly categorized into two groups - Fabric appeal and Durability. Unevenness and objectionable faults which are the prime qualities affecting the fabric appeal are in turn the basic reasons for strength and its variation which affects the end use product's durability.

Automatic Yarn Changer

A Creel with 20 pegs for package holding aligned vertically along with 20 tensioners in line is provided along with the instrument. This is to provide uniform unwinding condition and reduced yarn structural deformation during automatic yarn testing in particular. The pegs are removable to accommodate large size packages.

Tensile Testers for Yarn, Lea and Fabric

The tensile properties measured also provide a basis for optimization of process parameters by identifying deviations apart from helping in selection of Raw material suitable for expected end use. Breaking force and elongation are the most widely used tensile properties for assessing the quality of a Fibre, Yarn and Fabric, though other Parameters such as co-efficient of variation of force and elongation, work done, modulus, etc., are useful for specific application and end use requirements

Configuration

- Testing Unit for measuring Tensile Properties (Yarn, Lea and Fabric)
- PC and Printer
- Automatic Yarn Changer
- Creel
- Lea & Fabric Testing Accessories
- Table (**TensoMaxx 5** only)

Intelligent Reports

- Single / Overall report to judge the performance of the test specimen and Within / Between report for comparative performance analysis

- Combined Report to view the numerical results along with important graphical results for comprehensive analysis

- Limits can be selected for results, to know the impact of deviated values from the mean

- Comprehensive information viz; Breaking Force, Elongation, Tenacity, Time and Work done

Total: 10/10 Single test(s)

| Test No	B.Force (gf)	Elong. (%)	Tenacity (Rkm)	B.Work (kgfm)
1/10	252.10	3.74	17.08	252.8
2/10	245.60	3.57	16.64	242.0
3/10	261.90	3.89	17.74	274.8
4/10	232.00	3.39	15.72	216.2
5/10	243.30	3.49	16.48	230.7
6/10	240.80	3.63	16.31	238.5
7/10	237.10	3.59	16.06	233.7
8/10	241.40	3.68	16.35	240.5
9/10	257.00	3.63	17.41	252.8
10/10	231.30	3.59	15.67	227.5
Mean	244.25	3.62	16.55	240.9
CV%	7.82	11.14	7.82	16.9
Q95+/-	3.78	0.08	0.26	8.1
P5(5)	214.00	2.95	14.50	177.1
Min	195.00	2.72	13.21	146.3
Max	283.00	4.32	19.17	320.4

Scatter Plot
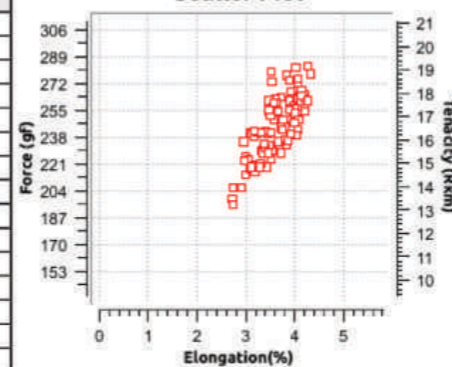
Force Stroke Diagram
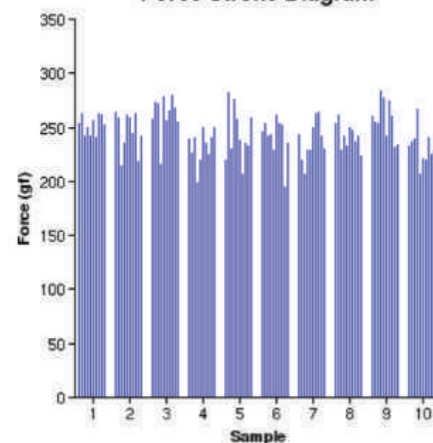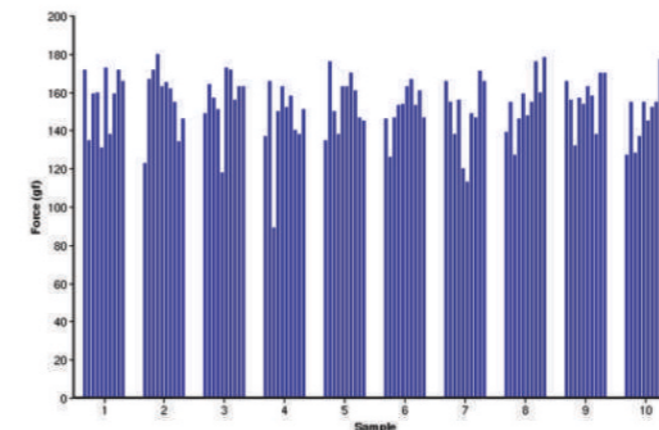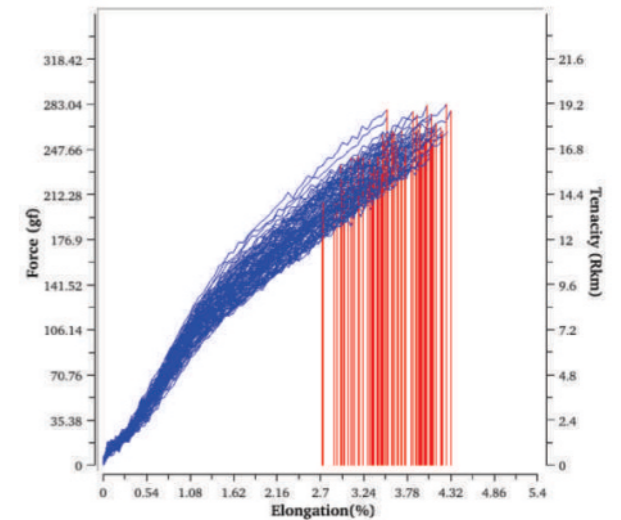
Elong Stroke Diagram
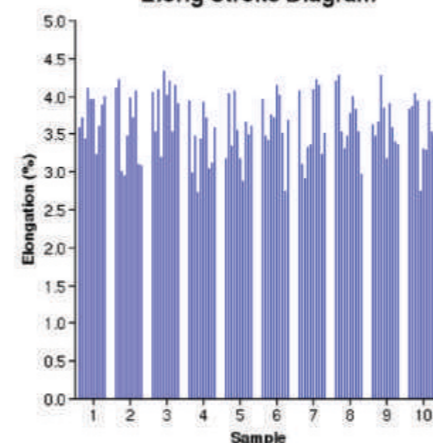
The Proven Single Yarn Strength Testers

Consistent quality in production is the result of controlling the weak places in the Yarn. The weak places result in poor tensile strength of the Yarn. The resulting deviations are promptly highlighted and their impact on mean values are also displayed for the user to judge the performance of the tested Yarn quickly

Force Elongation Curve

- The Force Elongation curve represents the characteristic relation between Breaking Force and Elongation encountered during the tensile testing of a specimen.
- Force Elongation curve can be effectively used to compare two different yarns
- It can be used to read off any chosen value along the curve

Stoke Diagram

- Stroke diagram, the stacked individual value by means of a representative line side by side facilitates quick understanding of values within a test
- The stroke diagram is available for both Force and Elongation characteristics
- It also enables to identify periodicity or variations present in the Yarn under test
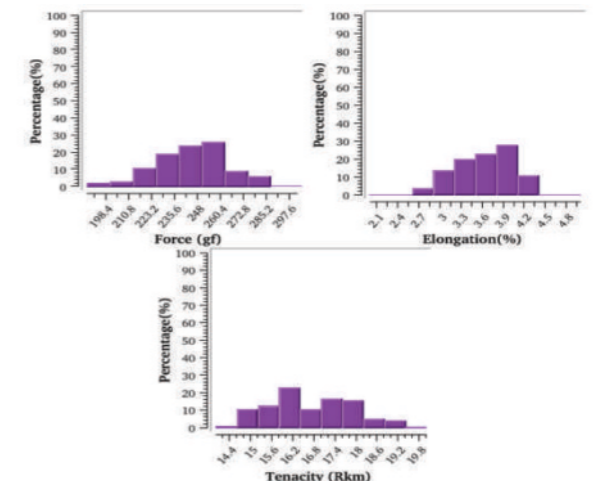
Histogram

- Histogram depicts the distribution and frequency of force and Elongation values in a test
- Extreme variations, more importantly the low tensile values can be quickly recognized to attend the back process

Scatter Plot

- Scatter plot represents the distribution of readings with respect to Force/Tenacity and Elongation values
- It helps to identify outlier readings easily