CONSTANT TENSION TESTER ELECTRONIC DRIVE

LH-450 CTT-E

MINI TEXTILE LABORATORY with DYNAMIC TEST PRINCIPLE

Constant Tension Transport with Electronic Servo Drive (CTT-E) is a dynamic test instrument that is available as a mini laboratory for yarns. With its interchangeable test modules, the CTT-E can run more than 10 tests on the same instrument for all natural and synthetic yarns as well as technical yarns such as aramids, carbon, glassfiber and spandex. With this versatility along with its dynamic test principle that will test every section of the yarn, the CTT-E offers the ability to eliminate high cost of running trials on actual production machines before the yarn is sent to the next textile process.

PRINCIPLE & VERSATILITY

- Offers dynamic test conditions that tests every section of yarn to predict yarn behavior and avoid high cost of running trials on production machines
- Ability to run more than 10 different tests on the same instrument
- Applicable for all types of natural and synthetic yarns, including cotton, polyester, nylon, wool, silk, acrylic, flax, viscose, carpet yarns
- Functional tests for technical yarns such as aramids, carbon, spandex, glassfiber and monofilament

OPERATION & FEATURES

- Electronic Servo Drive and Tension Arm System that maintain 2g-700g constant input tension at test speeds between 20-500m/min
- Four Tension Arms with different max tension and sensitivity ranges
- Easy to install test modules that allow measurement from coefficient of friction, entanglement count to yarn appearance on the same instrument
- Available with Standard (1000g) and Spandex Range (100g) tension measurement heads

LAWSON-HEMPHILL
Smart Quality Control

Tensile Strength and Weak Spot Test

In any textile process, reducing the number of yarn breaks is most critical for high production efficiency. Static Tensile Test provides only break elongation and strength data. Rather than running short yarn lengths for maximum tensile data, the CTT-E Weak Spot Test runs yarn continuously and finds its weakest point. Since this test subjects every section of the yarn to dynamic tension and speed combination, it provides a better prediction of yarn strength during knitting, weaving, beaming or covering applications.

Elongation% and Shrinkage% Test

Multiple yarn ends are used side by side during textile processes. It is important that all yarns have similar elongation/shrinkage levels to minimize yarn breaks and changes in fabric properties. During the CTT-E Dynamic Elongation/Shrinkage test, each section of the yarn will be subjected to the combination of constant tension, speed and heat. The CTT-E Servo System automatically detects changes in the elongation/shrinkage properties of the yarn. For shrinkage tests, non-contact, contact and pin heaters up to 250°C are available.

Yarn to Pin Friction Test

Yarns are in constant contact with various machine parts such as guides, tension bars, needles, reed during textile processes. To reduce friction, wear, static electricity and tension build-up, special finishes are added on the yarns. During the CTT-E Friction Test, the machine applies constant input tension and measures the change in the tension as a result of yarn to machine part interaction. By using CTT-E Yarn to Pin Friction Module with Ceramic and Metal Pins, these tension values can also be used to calculate the Coefficient of Yarn-to-Pin Friction following ASTM D 3108 Standard.

Yarn to Yarn Friction Test

Yarn friction influences many properties such as yarn strength, yarn and fabric stiffness and fabric crease recovery. The CTT-E Yarn to Yarn Friction test measures the frictional properties of the moving yarn when it is in contact with itself at a specified wrap angle. During the CTT-E Friction Test, the machine applies constant input tension and measures the change in the tension as the yarn follows the CTT-E Yarn to Yarn Friction test setup. These tension values are then used to calculate the Coefficient of Yarn-to-Yarn Friction following ASTM D 3412 Standard.

Yarn Abrasion Test

Yarn Abrasiveness can be affected most notably by the fiber shape and amount of the TiO_2 on the yarn. If the yarn is really abrasive, this will cause frequent replacement of machine parts such as needles and yarn guides, which then increases spare part consumption and manufacturing cost. In CTT-E Abrasion Test, the yarn will be running over a standard abrasion wire. When the wire breaks, the test stops. The longer test length indicates a less abrasive yarn.

Lint Generation Test

Excessive lint creates problems for fabric production machines and work environment. In addition, it can also cause tensile strength loss for the yarn. CTT-E Lint test measures the amount of lint (fiber loss) that is generated as a result of yarn to yarn and yarn to machine part interaction. As the yarn is moving under constant tension and speed, the generated lint is collected inside a vacuum sealed lint module. The test automatically ends when 1km of yarn is passed. The amount of lint that is generated is expressed as mg/1km. Test length, yarn tension and test speed are all selectable.

Yarn Analysis Test

The spun yarn uniformity is an important quality control parameter as it affects the commercial value of the yarn. Thin places, thick places, neps, hairiness and yarn appearance all contribute to yarn evenness and fabric quality. CTT-E Yarn Analysis Test is based on the diameter data measured by Yarn Analysis software (YAS) and Camera Module. As the yarn passes in front of the camera, the YAS program classifies yarn defects by diameter and length. The program also provides simulation of yarn appearance on blackboard and taperboard as well as diameter statistics.

Entanglement Test

The entanglements in the yarn are responsible for holding the filaments together during fabric formation. CTT-E Entanglement Test is based on diameter data measured by Accu Count Entanglement software (ACE) and Camera Module. As the yarn passes in front of the camera, the ACE program counts the entanglements and records the skip length (missed entanglement sections). Accept/Reject limits can be defined by the operator. The profile of an individual package or the entire test can be viewed at any time. This unique feature provides the ability to share entanglement data and yarn profiles.

CTT-E APPLICATIONS

FILAMENT YARNS	SPUN YARNS	SPANDEX
• Tensile Strength / Weak Spot Test • Elongation / Shrinkage Test • Abrasion Test • Coefficient of Friction Test Yarn to Pin Friction Yarn to Yarn Friction • Camera Tests Entanglement / Meter Skip Length Broken Filament Air Textured Yarn Loop Test	• Tensile Strength / Weak Spot Test • Elongation / Shrinkage Test • Lint Generation Test • Coefficient of Friction Test Yarn to Pin Friction Yarn to Yarn Friction • Camera Tests Diameter Statistics Thick Place, Thin place, Neps Hairiness Appearance on Blackboard	• Tensile Strength / Weak Spot Test • Elongation / Shrinkage Test • Draw Ratio Test • Coefficient of Friction Test Yarn to Pin Friction Yarn to Yarn Friction • Unwinding Tests

SPECIFICATIONS

Test Speed	20m/min-500m/min with Electronic Servo Drive System
Yarn Input Tension	2g-700g with four different sensitivity ranges Arm 1 (max 10g) Arm 2 (max 100g) Arm 3 (max 300g) Arm 4 (max 700g)
Output Tension Measurement	100g tension head (standard for spandex) 1000g tension head (standard for all other yarns) 5g, 10g, or 250g are available
Draw Ratio / Elongation %	25X Draw (2400% elongation)
Application Range	Filament, Spun, Air Textured, Spandex, Monofilament and Technical yarns such as Aramid, Carbon, Glassfiber
System Computer	Windows based, Monitor, Keyboard, Mouse and Printer
Options	Elastomeric Yarn Feeder (EYF LH 455)

MODEL

LH-450 Constant Tension Tester Electronic Drive	
Electrical	115-220 Vac 50-60 Hz, 1.2Kw
Air	70psi (clean and dry instrument quality air is required)
Dimensions	700 x 1050 x 700mm (28 x 41x 28 inches)
Weight	147kg (325 lbs)
Shipping Dimensions	1600 x 1200 x 1530mm) (63” x 47” x 60” inches)
Shipping Weight	238 kg (525 lbs)

**All specifications are subject to change.*

Contact us today for more information on any Lawson-Hemphill product!

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