

## CTT-E SPECIFICATIONS

|                            |   |
|----------------------------|---|
| Measurement Principle      | Dynamic yarn testing  |
| Test Speed                 | Adjustable, 10-500m/min   |
| Yarn Input Tension         | 1~300g kept constant via Tension Arms<br>(Max available Input Tension depends on the Tension Head installed.)   |
| Output Tension Measurement | 250g tension head (standard)<br>5g, 10g and 100g tension head options are available   |
| Draw Ratio / Elongation %  | 50x draw / 4900% Elongation   |
| Application Range          | Elastomeric (spandex), Spun and Filament yarns  |
| Available Test Types       | Yarn tension measurement at 20 selectable draw ratios up to 50x<br>Elongation % measurement under constant tension<br>Pin Friction measurement (complies with ASTM 3108)<br>Unwinding tension measurement |
| System Computer            | Windows based, printer, monitor, keyboard and mouse   |
| Statistical Results        | Average Tension / Coefficient of Friction / Elongation %<br>Min and max values<br>Standard Deviation and CV%<br>High and Low limits<br>Ability to export the results to Excel                             |
| Options                    | Elastomeric Yarn Feeder (EYF / LH 455) option for Unwinding test<br>Non-contact heater for hot air shrinkage option<br>Hot Pin Friction test option   |

## CTT-E TECHNICAL DATA

|                                  |  |
|----------------------------------|--|
| Voltage Supply:                  | 115 or 220 VAC – 50/60 Hz                  |
| Power Consumption:               | 1200 watts                                 |
| Air Supply:                      | 70 psi (instrument quality air required)   |
| Air Consumption:                 | 100 CFH (3 SCMH)                           |
| CTT-E Weight:                    | 90 kg (200 lbs)                            |
| CTT- E Dimensions: (H x W x L)   | 70cm x 105cm x 70cm (28" x 41" x 28" in)   |
| Shipping Weight:                 | 320 kg (700 lbs)                           |
| Shipping Dimensions: (H x W x L) | 160cm x 120cm x 153cm (63" x 47" x 60" in) |

**Technical Specifications are subject to change without notice.**

Contact us today for more information on the CTT-E or any Lawson Hemphill product,

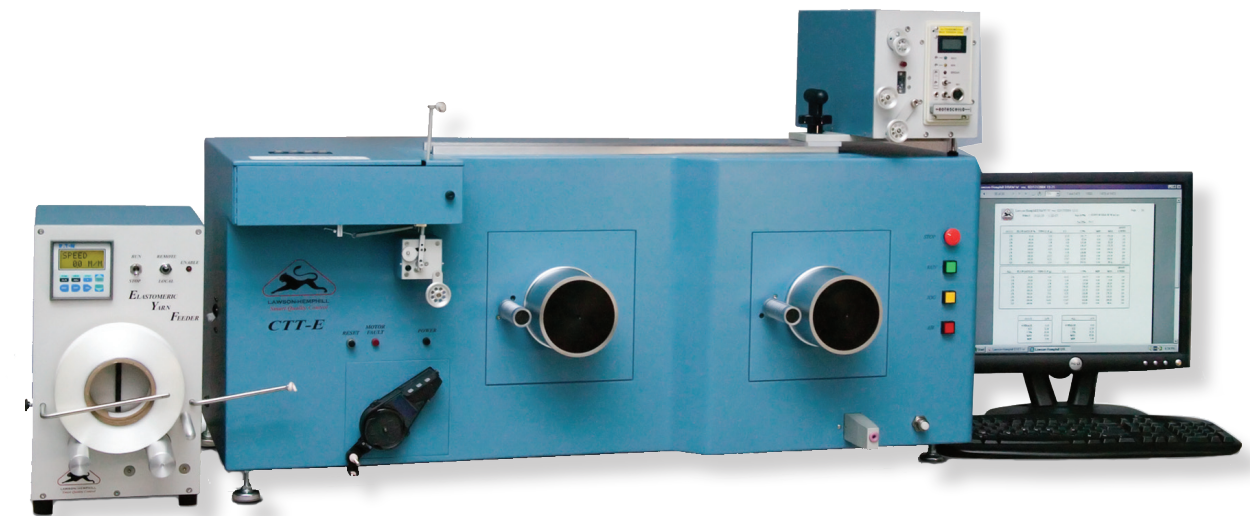
Please call us at 1-508-679-5364, or e-mail: [information@lawsonhemphill.com](mailto:information@lawsonhemphill.com)

©2012 Testing Machines, Inc. All rights reserved. Specifications subject to change.

### North American Agent:

**ATI Advanced Testing Instruments**  
203 Parksouth Drive Greer, SC 29651  
T: 864-989-0566 F: 864-989-0567  
[info@aticorporation.com](mailto:info@aticorporation.com)  
[www.ATICorporation.com](http://www.ATICorporation.com)

# CONSTANT TENSION TESTER ELECTRONIC DRIVE



## *ELASTOMERIC YARN TESTER model CTT-E LH 450*

Elastomeric yarn has high stretch and recovery properties, which are affected by tension on the yarn during fabric production and yarn covering.

Lawson Hemphill Constant Tension Transport for Elastomeric Yarns, CTT-E is a dynamic quality control test instrument, specifically designed for the elastomeric yarn market in mind.

Conventional static tensile testers can only measure small test lengths at slower test speeds. This does not reflect the process conditions that the elastomeric yarns will be facing. The CTT-E provides a dynamic test platform to measure the yarn properties and performance factors such as Draw Ratio, Elongation %, Unwinding Tension, Hot Air Shrinkage as the yarn is moving at test speeds from 10m/min up to 500m/min.

This speed range along with the sensitive tension heads provides true information regarding yarn behavior during fabric formation, air or mechanical covering and comfort level of the end product.

The CTT-E can be equipped with optional Elastomeric Yarn Feeder to measure the Unwinding tension under conditions that are very close to zero draft.

# CTT-E APPLICATIONS

The CTT-E is easy to operate and it comes with all three software programs installed and ready to use.

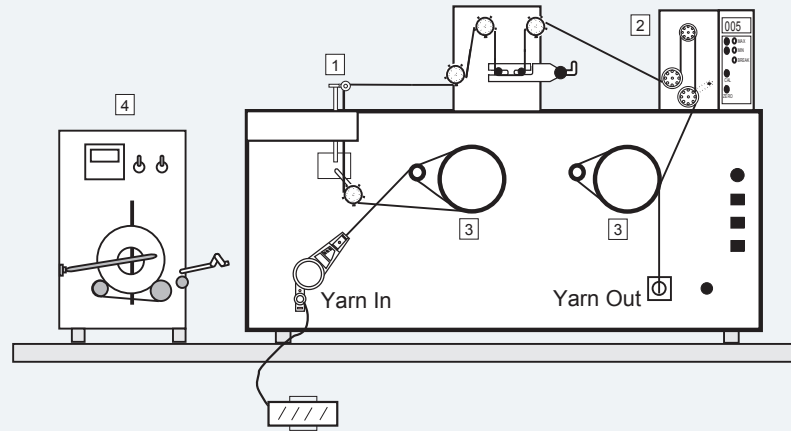
These software programs are used for:

1. Draw ratio measurement
2. Elongation % measurement
3. Pin Friction measurement

With the optional Elastomeric Yarn Feeder, EYF machine (LH 455), Unwinding tests are also possible.

For the Shrinkage tests, a contact or non-contact heater can be installed on top of the CTT-E

# CTT-E FEATURES



1. Input Tension Control
2. Output Tension Measurement & Optical Yarn Break Detector
3. Electronic Drives (10-500 m/min)
4. Positive Yarn Feeder (EYF LH 455) Optional

## CTT-E TESTS

### DRAW RATIO TEST

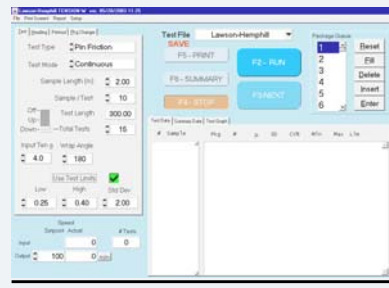
Yarn Tension measurement under 20 different Draw Ratios

### ELONGATION TEST

Yarn Elongation measurement under Constant Input Tension

### PIN FRICTION TEST

Pin Friction Coefficient measurement for Spin Finish

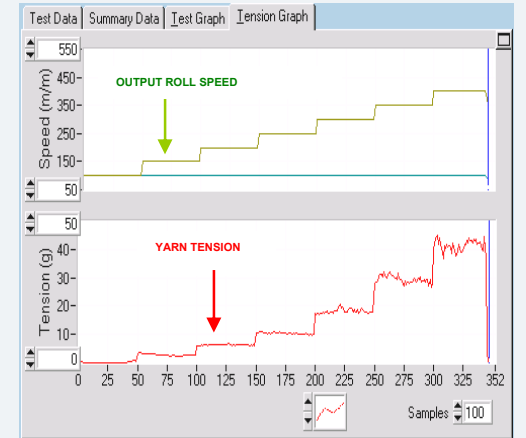


# 1. DRAW RATIO TEST

This test measures the tension on the yarn when it is drawn up to 50x (4900% elongation). The drawing is achieved by the speed difference between the CTT-E input and output rolls.

Up to 20 consecutive draw ratio levels can be entered to measure the tension on the yarn as it is being stretched. The CTT-E draw rolls will follow the programmed draw levels.

Different tension heads such as 5g, 10g, 100g or 250g are available to measure the yarn tension within the desired sensitivity range.



### The Draw Ratio test applications include:

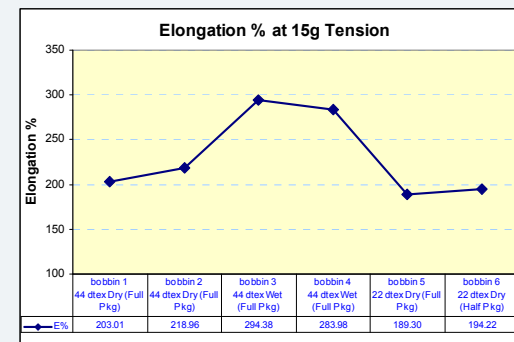
1. Measuring the yarn draftability
2. Performance check before air or mechanical covering process
3. Wear comfort prediction

# 2. ELONGATION TEST

This test measures the Elongation % of the yarn under constant tension at test speeds up to 500m/min.

The CTT-E Tension Arms maintains the tension levels constant throughout the test while the yarn is moving.

Below graph shows the difference in Elongation % between the Dry Spinning and Wet Spinning methods. It also shows how the Elongation % can change when the package is full or half full.



# 3. PIN FRICTION TEST

This test measures the Coefficient of Friction of yarn to ceramic pins or yarn to metal pins. This test complies with ASTM D 3108.

The results of this test are used to study the effect of different spin finish types on the yarn as well as how much finish is needed.

Higher coefficient of friction usually indicates that the tension on the yarn might increase during the processes such as covering, knitting, weaving, causing yarn to break. Below graph shows how COF can change.

