

# CONSTANT TENSION TRANSPORT ELECTRONIC DRIVE

A MINI TEXTILE LABORATORY  
on a SINGLE INSTRUMENT

## A MINI TEXTILE LABORATORY, CTT-E



CTT-E Constant Tension Transport with Electronic Drive is a dynamic test instrument that performs as a mini physical textile laboratory.

This all-in-one instrument can run more than 10 yarn tests for many types of yarns.

Various CTT-E test modules are available and they are easy to install, quickly converting the CTT-E into the test instrument that is needed.

## CTT-E TENSION AND SPEED SPECIFICATIONS

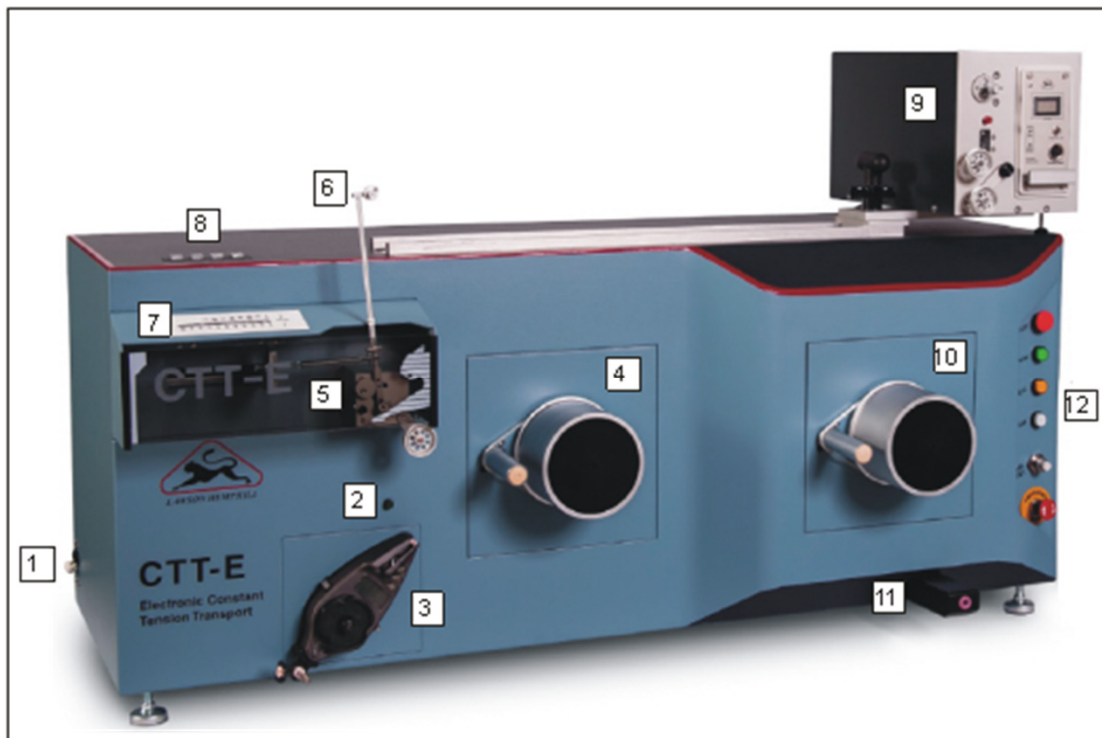


- TEST SPEED:** Variable Test Speed (20-500m/min) with Electronic Servo Drive (1000m/min for Draw Ratio Test)
- INPUT TENSION:** Constant Input Tension Range 2-700g
- OUTPUT TENSION:** 1000g (standard) and 100g (spandex)

# CTT-E MAIN MACHINE PARTS and CONTROLS



## CTT-E MAIN MACHINE PARTS and CONTROLS



1. Main Power
2. Power Light
3. Pre-tension
4. Input Roll
5. Encoder
6. Tension Arm
7. Tension Scale
8. Input Tension Adjust
9. Tensiometer
10. Output Roll
11. Yarn Exit
12. Control Panel

## CTT-E MAIN TENSION ARM SPECIFICATIONS



### MAIN CTT-E CONFIGURATIONS (\*)

<b>TENSION SPECIFICATIONS</b>	<b>CTT-E SPANDEX</b>	<b>CTT-E STANDARD</b>
<b>Input Tension</b>	2-100g	2-700g
<b>Maximum Output Tension</b>	100g	1000g
<b>Tension Arms included</b>	Arm 0 and Arm 1	Arm 0, 1, 2, 3

\* above table shows main CTT-E configurations.  
The machine can be configured for your special requirements.



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# CTT-E TEST OPTIONS

# CTT-E DYNAMIC TENSILE STRENGTH and WEAK SPOT TEST



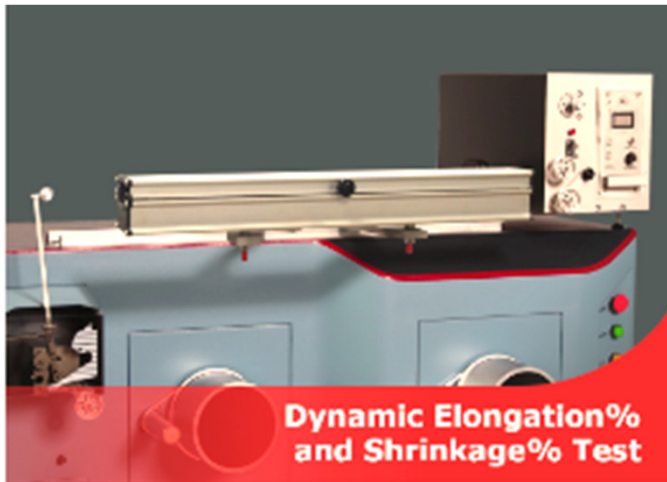
## DYNAMIC TENSILE STRENGTH and WEAK SPOT TEST

This test subjects every section of the yarn to determine its Weak Spots as it is moving under constant tension and constant speed applied by the CTT-E machine.

Tension Software program features include:

- Tension data and statistical results including the (CV)% and Standard Deviation (SD), Min and Max values for each package
- Real time yarn tension display
- Summary statistics
- Ability to set the limits
- Automatic data export

# CTT-E DYNAMIC ELONGATION and SHRINKAGE TEST



## DYNAMIC ELONGATION and SHRINKAGE % TEST (DSET)

Multiple yarn ends go together to form a fabric. It is important that all yarns have similar Elongation % and Shrinkage % properties to minimize yarn breaks and changes in fabric properties. CTT-E Servo System automatically detects the smallest changes in both elongation and shrinkage of the yarn.

DSET Software program features include:

- Elongation % / Shrinkage% data and statistical results including the (CV)% and Standard Deviation (SD), Min and Max values for each package
- Available Heater types include Non-contact Heater, Contact Heater and Pin Heater (max 250°C)



# CTT-E DYNAMIC YARN-TO-PIN FRICTION TEST



## DYNAMIC YARN-TO-PIN FRICTION TEST

This test measures Coefficient of Yarn-to-Pin Friction. It complies with ASTM D 3108. Friction Module is supplied with Ceramic Pins and Metal Pins as friction elements.

Friction Software program features include:

- Coefficient of Friction data and statistical results including the (CV)% and Standard Deviation (SD), Min and Max values for each package
- Real time yarn tension display
- Summary statistics
- Ability to set the limits
- Automatic data export



# CTT-E DYNAMIC YARN-TO-YARN FRICTION TEST



## DYNAMIC YARN-TO-YARN FRICTION TEST

This test measures Coefficient of Yarn-to-Yarn Friction. It complies with ASTM D 3412. Yarn Friction Module is designed to accommodate various number of turns for yarn contact and apex angle requirements.

Friction Software program features include:

- Coefficient of Friction data and statistical results including the (CV)% and Standard Deviation (SD), Min and Max values for each package
- Real time yarn tension display
- Summary statistics
- Ability to set the limits
- Automatic data export

# CTT-E DYNAMIC YARN ABRASION TEST



## DYNAMIC YARN ABRASION TEST

Yarn Abrasiveness is affected most notably by fiber shape and amount of  $\text{TiO}_2$  on the yarn. If the yarn is really abrasive, this will cause frequent replacement of machine parts.

Tension Software is used to monitor the abrasiveness of the yarn as it is moving over Abrasion Wire supplied with the Abrasion Module.

The software is pre-programmed to run a very long test.

When the yarn breaks the Abrasion Wire, the software stops the CTT-E machine and test length is recorded.

Longer test length indicates less abrasive yarn.

# CTT-E DYNAMIC LINT GENERATION TEST



## DYNAMIC LINT GENERATION TEST

Excessive lint (fiber loss) creates problems during fabric production and not desired for clean work environment.

Tension Software is used to monitor the amount of fiber that is lost when the yarn is under yarn-to-yarn friction condition inside a closed and low vacuum lint box.

The software is pre-programmed to run 1km long test.

When the test is finished, the software stops the CTT-E machine. Lint collected during the test is weighed to report amount of fiber loss as mg/km.

# CTT-E YARN ANALYSIS TEST (YAS)



## YARN ANALYSIS TEST (YAS)

Yarn Diameter Uniformity is an important quality control parameter. CTT-E Yarn Analysis Test (YAS) Provides yarn uniformity information, using the diameter data as measured by Camera Module.

YAS software features include:

- Measures every 0.5mm of yarn with 3.5micron precision
- Classification of yarn defects by diameter and length
- Ability to view the yarn defects on simulated blackboard and taperboard
- Ability to view the yarn profile
- Ability to export the yarn diameter for further analysis



## CTT-E ENTANGLEMENT TEST (ACE)



### ENTANGLEMENT TEST (ACE)

Entanglements are responsible for holding the filaments together during fabric formation. CTT-E Entanglement Test (ACE) is based on diameter data measured by Camera Module. (See Slide 17 for Entanglement Retention Test.)

ACE software features include:

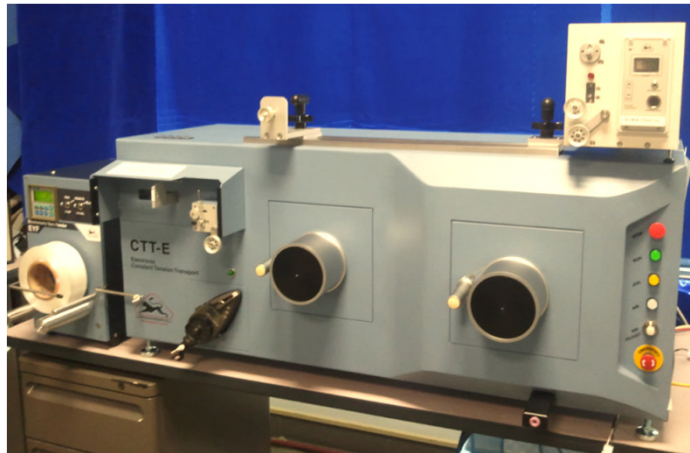
- Measures every 0.5mm of yarn with 3.5micron precision
- Average, Min and Max Entanglement/meter count
- Maximum “no show” (missing entanglement) length
- Ability to set the limits for entanglement count and skips
- Automatic data export
- Ability to store and view yarn images
- Ability to view and compare different sections of the yarn

# CTT-E DRAW RATIO TEST



## DRAW RATIO TEST

Draw Ratio Test is a special application that is used to determine the amount of tension that develops on the yarn when it is stretched at specific elongation levels.



Draw Ratio software allows entering 20 separate elongation steps, which run consecutively until the yarn breaks. This is a required test for spandex yarns.

Draw Ratio software features include:

- Up to 1000m/min test speed
- Ability to enter elongation levels in terms of Speed, Elongation % or Draw Ratio
- Real-time tension and speed recording
- Ability to review and export tension data

# CTT-E UNWINDING TENSION TEST



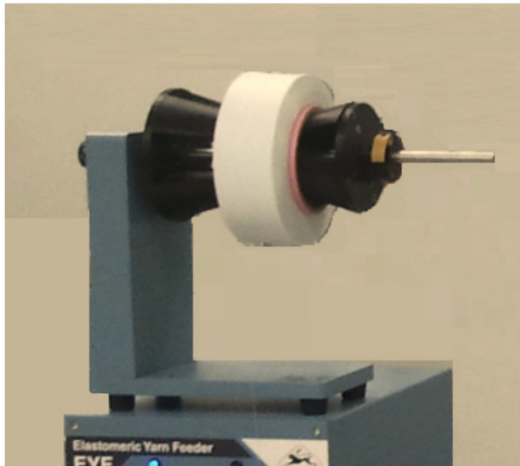
## UNWINDING TENSION TEST

Unwinding Test is a special application that is used to determine the amount of tension that develops on the yarn as it is coming off the package. Unwinding Tension can also be referred as “stickiness of the yarn” that develops due to winding or ageing issues.

Draw Ratio software is used to measure the unwinding tension of the yarn.

Draw Ratio software features include:

- Up to 1000m/min test speed
- Ability to enter elongation levels in terms of Speed, Elongation % or Draw Ratio
- Real-time tension and speed recording
- Ability to review and export tension data







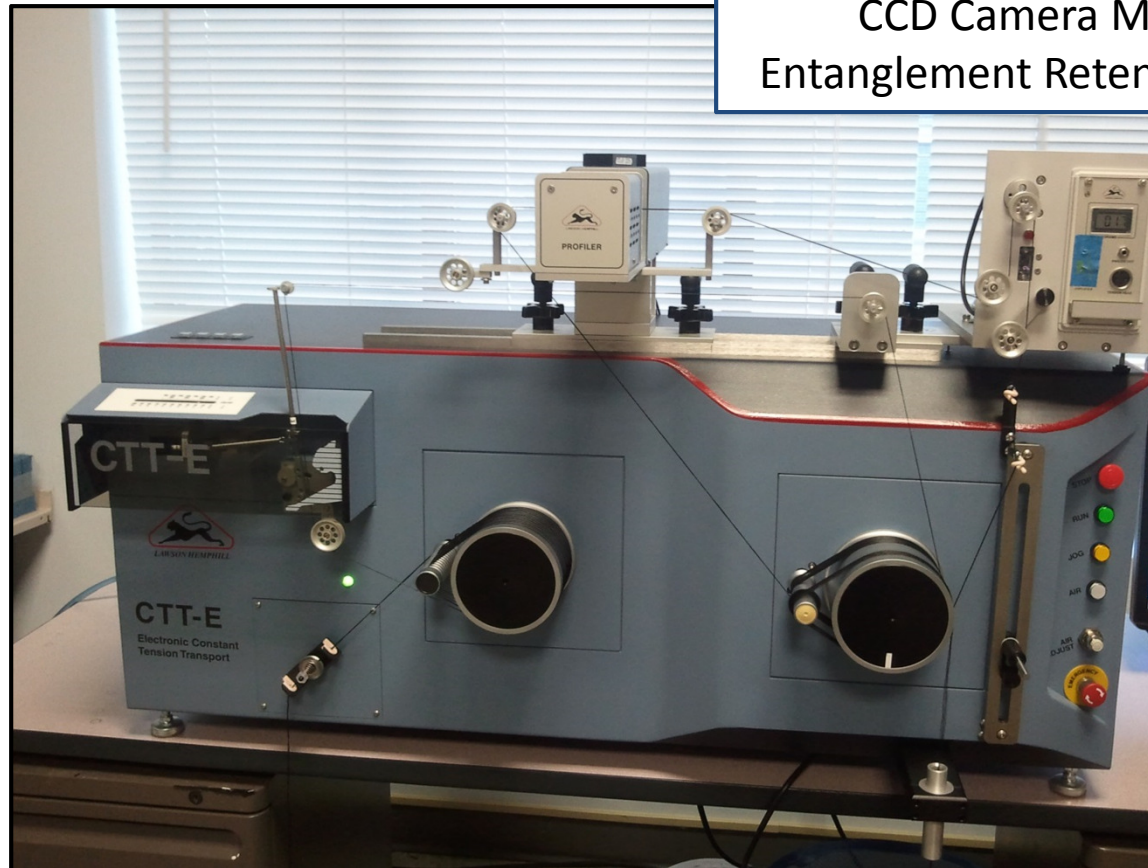
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# ADDITIONAL OPTIONS

# CTT-E ENTANGLEMENT RETENTION TEST SETUP



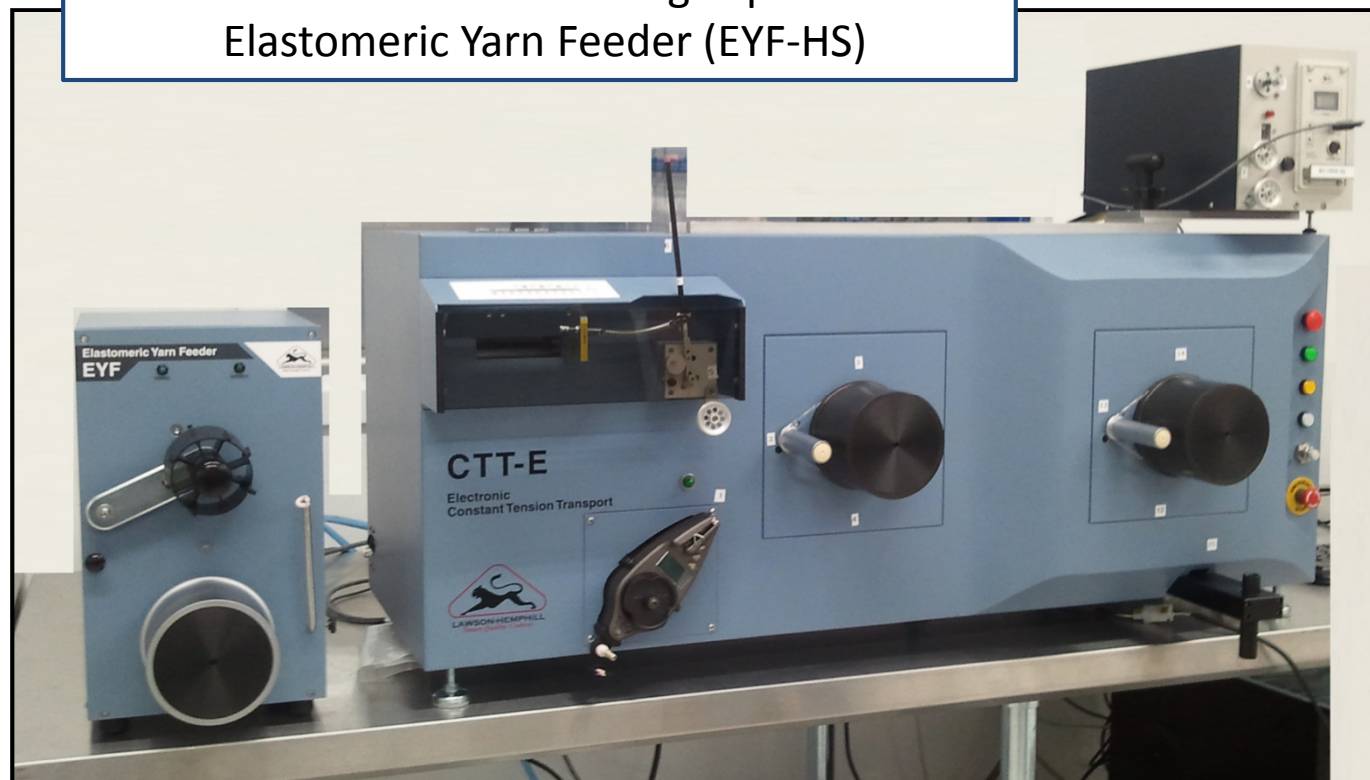
CTT-E machine with  
CCD Camera Module and  
Entanglement Retention Test Setup



# CTT-E with POSITIVE YARN FEEDER for SPANDEX



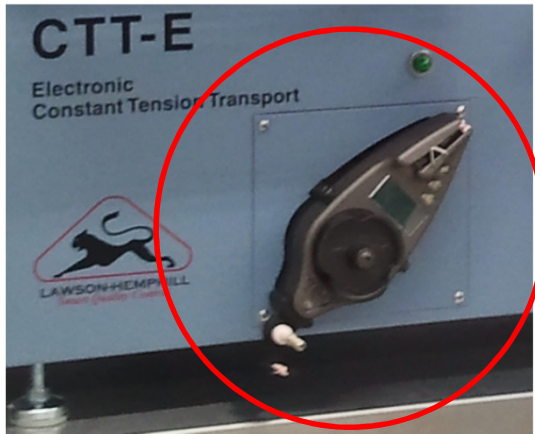
CTT-E machine with high speed  
Elastomeric Yarn Feeder (EYF-HS)



# CTT-E PRE-TENSION OPTIONS



## CTT-E Pre-Tension Options



**POSITIVE YARN FEEDER**



**SPRING TENSIONER**

## CTT-E with STAND ALONE FEEDER



CTT-E machine can be equipped with Stand Alone Feeder, SAF for semi-automatic non-stop operation.