

**Textechno**  
textile testing technology

# LENGTHCONTROL

Fibre Length Tester





## **Exact Measurement of Fibre Length with the Textechno LENGTHCONTROL Tester (Technology by Trützschler)**

### **LENGTHCONTROL TC-LCT**

This tester was developed for the measurement of fibre length parameters on slivers. The latest version now also allows testing of raw cotton in tuft form. The latter requires preparation of a parallelized fibre sample by means of a laboratory card.

LENGTHCONTROL is a mobile device for use in the spinning mill. As its measurement is independent of the room climate, it can be set up at any place close to the production machines.

The test results of LENGTHCONTROL yield valuable information about the mechanical stresses which the fibres undergo in the manufacturing process. At the same time they deliver data for optimum settings of card, draw-frame, or combing machine.

### **Universally applicable**

LENGTHCONTROL was designed to test all kinds of slivers from carding machines, draw-frames, and combing machines, as well as from laboratory preparatory equipment. Fibres may be cotton, chemical fibres, or fibre blends, up to 63 mm staple length.



**The tester can be transported on rollers within the spinning mill.**

### **Easy to use**

The operator simply has to insert the sliver and start the device. No special operator training is required, and there is no possibility that human error could influence the test result.

### **Tests on-site**

The use of the tester close to the production machine enables quick analysis of the produced sliver and feedback to the machine control for optimum setting of process parameters. In this way delays, as they may occur by time-consuming transportation of samples into a laboratory, sample

preparation, adaptation to normal climate, and evaluation of the results can be avoided.

LENGTHCONTROL is very sturdy. Dusty air and high temperatures in the spinning mill do not have an influence on the measurement.

### **Quick test**

A standard test series on a sliver, which includes 10 successive individual measurements, takes not more than about 10 minutes.



**The operator must only insert the sliver.  
The complete measurement runs fully automatically.**

### **Objective and fully automatic measurement**

Each test is executed fully automatic and without any manual intervention. The measuring systems do not require any form of calibration, for example by the use of calibration cotton, which excludes the potential of false results due to improper or missing calibration.

### **Proven measuring principle**

The measuring principle is based on a modified Fibrograph principle. The sliver is clamped, and the fibre tuft is carefully combed at both sides. An optical sensor measures the fibre mass with reference to the distance to the clamp.

### **Meaningful results**

The measurement results are easy to interpret. Instead of providing a host of information, the data evaluation is concentrated on just three fibre parameters, sufficient for 90 percent of all applications. If required, however, additional parameters can be called up.

Measurement results from LENGTHCONTROL enable optimization of process parameters, e.g. cylinder speed (card), No. of passages, height of doubling, main drafting distance (draw-frame), or combing percentage (combing machine).



**Terms and definitions**

**upper length**

corresponds to the 2,5 percent span length value of a Fibrograph- or an HVI measurement. Drafting systems of draw-frame or combing machine can be set according to this value.

**TC-LCT length**

is comparable to the mean fibre length from an AFIS test. LCT length is indicative of mechanical stresses which the fibres undergo in the carding process. A high value is related to a more gentle process with less fibre damages and vice versa.

**fibre hooks**

this value is determined by the number of head- and tow fibre hooks in a card sliver, and it is also

related to the fibre parallelism in the sliver. With the aid of the fibre hooks value the number of drawing passages and the height of draft ratio and doubling can be optimized.

**TC-LCT length x fibre hooks**

links the information regarding hooks and length. It takes into account that the measured fibre length depends on its true length and on the number of hooks.

**short fibre length**

10 percent of all fibres have a length shorter than this value. With increasing fibre damage in a process, short fibre length is reduced.

**short fibre amount**

describes the ratio between long and short fibres. Higher fibre damages in a process lead to an increase of this value.

**short fibre content**

indicates the amount of fibres at 12,7 mm (1/2") fibre length. It is comparable to the short fibre amount from an AFIS test.

**staple gradient**

describes the steepness of the staple diagram graph. It is equal to the uniformity ratio of the staple of a HVI test. Higher fibre damages in a process result in a lower staple gradient.

Date/Time	:	09.04.2007	12:42
Lot	:	ATT NORMAL	
Comments	:	TEST	
Operator	:	AB	
Machine No.	:	TC03 C	

Page 2	[ ]	Value	Q 95 %
upper length*	[mm]	<b>28,03</b>	0,13
TC LCT length*	[mm]	<b>23,31</b>	0,26
fibre hooks*	[%]	<b>6,5</b>	1,1
LCT length x hooks	[mm]	<b>24,82</b>	0,22
short fibre length	[mm]	<b>15,51</b>	0,19
short fibre amount	[%]	<b>27,2</b>	0,6
short fibre content	[%]	<b>4,9</b>	3,0
staple gradient	[%]	<b>45,8</b>	0,5

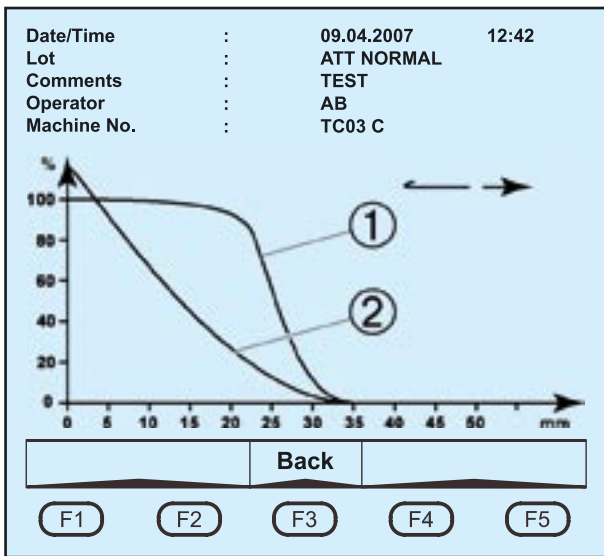
  

Single values	Back	
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F1	F2	F3	F4	F5
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Basic\*- and additional test results



Calculated staple diagram graph (1)  
 and span length graph (2)

**Suggestion for setting  
 the drafting system**

Based on the measurements, the TC-LCT provides not just fibre values, but also a suggestion for the setting of the next drafting system. After testing a sliver from the preceding process (card or 1st draft) the optimum settings for the following draft passage can be called up.

Date/Time: : 14.07.2007 15:01  
 Lot: : OT KAEM  
 Comments: : 1  
 Operator : BM  
 Machine No. : AMI

No.		SL 2.5%	SL 50%	
		[mm]	[mm]	
1	✓	27.10	13.20	----
2	✓	27.08	12.20	----
3	✓	27.35	12.15	----
4	✓	27.33	12.35	----
5	✓	27.90	12.68	----
6	✓	27.53	12.60	----
7	✓	26.88	12.35	----
8	/	41.77	16.45	----
9	✓	27.15	12.88	----
10	✓	27.33	13.03	----

Back

F1 F2 F3 F4 F5

Results of individual tests

Date/Time : 19.04.2007 12:45  
 Lot : ATT NORMAL  
 Comments : TEST  
 Operator : AB  
 Machine No. : TC 03 C

Recommended setting for next draft passage		
Distance nip line/drafting system		
Main draft distance	[mm]	<b>40,72</b>
Break draft distance	[mm]	<b>46,40</b>
Break draft level		<b>1,31</b>
Pressure bar: Cam number		<b>2</b>

Back

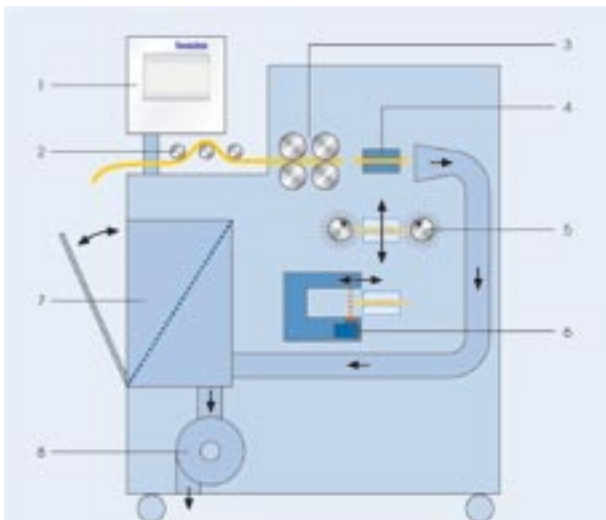
F1 F2 F3 F4 F5

Recommended settings for the draw-frame





**The device is clearly structured and of compact design**



- 1 Screen for operation and display of the results. An Ethernet interface allows data transfer to networks.
- 2 Sliver feed.
- 3 The drafting system attenuates the sliver.
- 4 The clamp seizes the sliver.
- 5 The fibre tuft is combed in both directions.
- 6 The camera measures the fibre tuft on both sides up to a distance of 0.2 mm to the clamp.
- 7 A high-volume waste container receives the remains of the sample.
- 8 A built-in compressor makes the unit independent of an external compressed-air supply.
- 9 The fan ensures the necessary vacuum air flow.



The drafting system components originate from a draw frame. The top rolls are pneumatically loaded.

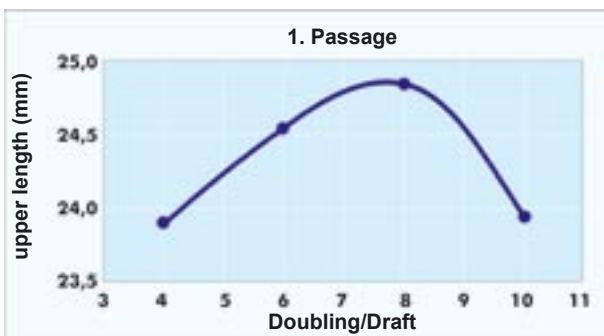


A solid clamp ensures precise fixing of the fibres.

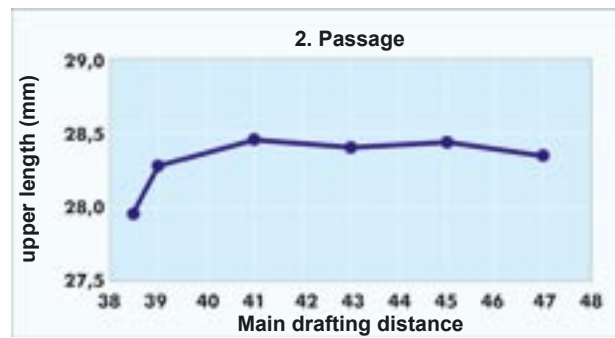


Two needle rolls with inside suction remove the loose fibres on both sides of the fibre tuft.

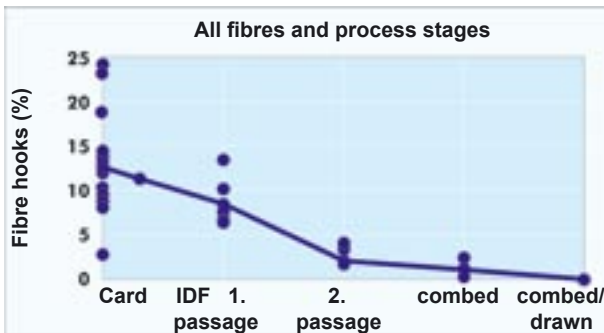
## LENGHTCONTROL results versus machine parameters



Influence of draft



Influence of cylinder distance



Fibre hooks versus process stages



Comparison of different cards

### Technical data

Mains supply	: 3-phase 400 V / 50...60 Hz, 16 A
Continuous power consumption	: 1 kW max.
Compressed-air supply	: approx. 8 bar
Dimensions, weight	: Height 1.880 mm, width 1.200 mm, depth 800 mm, approx. 400 kg

The above technical contents can be subject to changes by Textechno

# Textechno

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