

Test&Motion

Application Module:

FE 7 – Spring test Force / Elongation

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1 Introduction

Dear customer, thank you for choosing a product of **DOLI Elektronik GmbH**. **Test&Motion** is a modern application for the operating systems Microsoft Windows XP/7/8/10®.

This manual does not deal with the **Test&Motion software** in general but with the application module Plastics Tensile Test FE 7 in particular. Hence, it is recommended to read the **Test&Motion** application manual in order to get familiar with the software. Please follow the demands and safety hints listed in the manual!

1.1 Symbols

The different symbols in this manual will allow you to find your way more easily.

Table 1: Symbols and their meanings.

Symbol	Meaning
	Safety Instructions: In order to avoid interruptions in the work flow as well as damages to man and machine, follow the safety instructions at all cost.
	Job/work instructions: Instructive part of the document with precise work instructions. Here you are asked to do something.
	Information: General information and descriptions of working procedures, etc.
	Note: Important note for the operation, the function or for the working procedures.
	Tip: Gives tips for easy handling of the Test&Motion Software , the EDCs or the testing instrument.

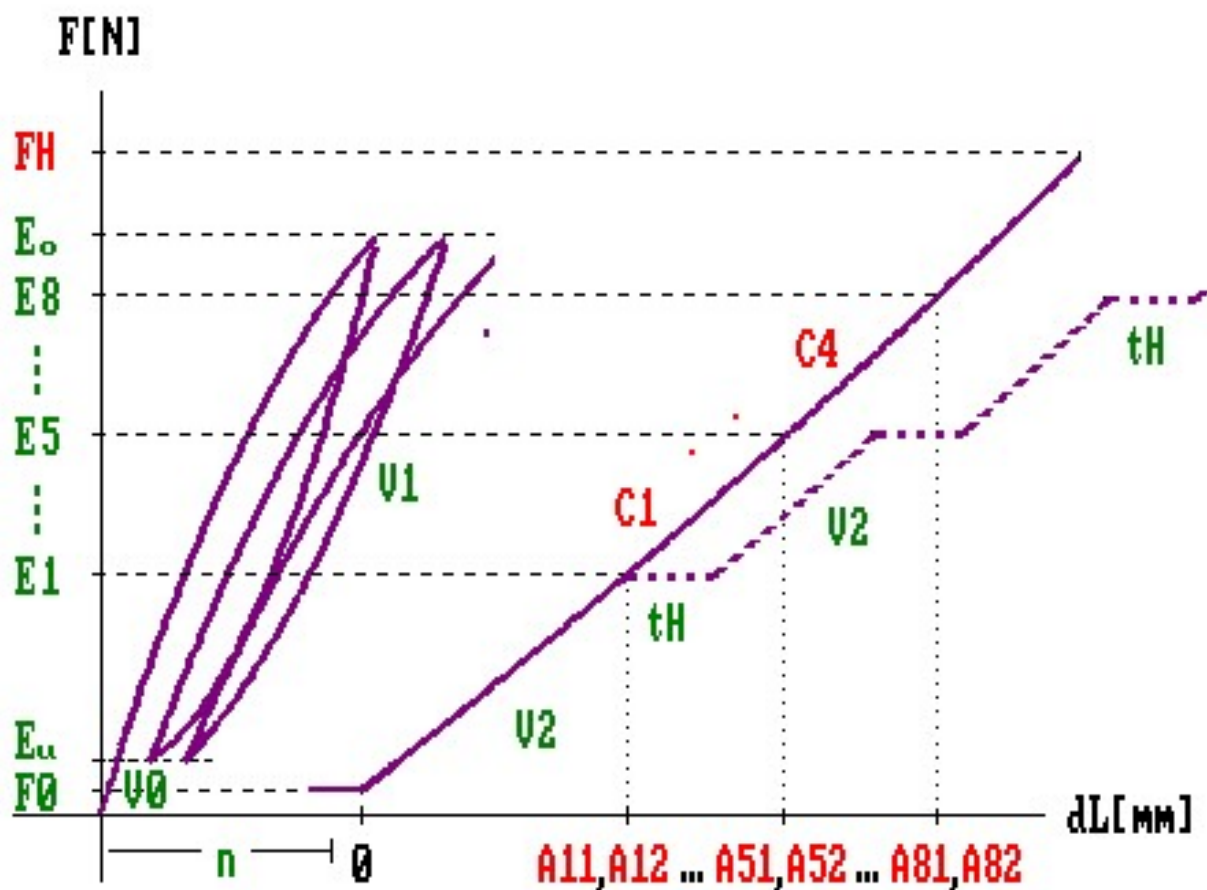


2 Application module FE 7: Spring test Force / Elongation

2.1 Field of application

Load of the spring with input value E_0 (force, crosshead travel, length change, spring length). Calculation of spring rates $C1... C4$ at 4 different points and free selection of up to 8 reference values. For each of the 8 input values $E1... E8$ there are two output values $A11, A12... A81, A82..$

2.2 Test graphic FE 7





2.3 Input values FE 7



1. Click [Menu Test](#) → [Command Settings](#) → [Input values](#). Here you can find expedient input values for this test regulation, already. If necessary adjust the values to your needs.

Table 2: Input values for test FE 7.

Parameter	Meaning	Dimension / Selection possibilities
Eu	Lower load limit for the pre-load cycles (setting cycles)	[N, kN, lbf], [mm_h, in_h], [mm_dL, in_dL], [mm_S, in_S]
Eo	Upper load limit for the pre-load cycles (setting cycles)	[N, kN, lbf], [mm_h, in_h], [mm_dL, in_dL], [mm_S, in_S]
n	Number of preload cycles (setting cycles)	
V1	Test speed during setting cycles	[mm/min]
V2	Test speed in the measuring cycle	[mm/min]
Distance	Distance of plates (used for calculation of spring length)	[mm], [in]
Selection Distance = Pos.	The display value Position Machine (Raw Measured Value dialog) is taken as the distance of plates at test start.	No / Yes
E1... E8	Force values 1... 8 or spring length (height) 1... 8 or change in length 1... 8 or traverse travel 1... 8 to define the reference values	[N, kN, lbf], [mm_h, in_h], [mm_dL, in_dL], [mm_S, in_S]
tH	Hold time in the reference values E1... E8 (zero can be entered here)	[s, min]



2.4 Results FE 7



1. Click [Menu Test](#) → [Command Settings](#) → [Results](#). Here you can already find expedient results. If necessary, adjust the values to your needs.

Table 3: Results for test FE 7.

Parameter	Meaning	Dimension
Fh	Max test force	[N]
C1	Spring rate between E1 and E2	[N/mm]
C2	Spring rate between E3 and E4	[N/mm]
C3	Spring rate between E5 and E6	[N/mm]
C4	Spring rate between E7 and E8	[N/mm]
A11, A12... A81, A82	Output values for reference value E1... E8	



2.5 Hints for the test FE 7

2.5.1 Input value ‚Distance‘

To calculate the spring length, the distance between the load plates must be entered at the start of the test.

2.5.2 Input values Eo, Eu

The spring is loaded between these points during the preload (setting cycles). Depending on the dimension of the input values, Eo / Eu can be a spring height, length change, crosshead position or force.

2.5.3 Test speeds

The crosshead starts with speed V0 until the input value pre-force F0 is reached. After that, V2 continues to be loaded. Setting cycles can optionally be run (input value n > 0). During the setting cycles, speed V1 is used.

2.5.4 Input values E1 .. E8

At 8 different points of the curve, defined by the input values E1... E8, 2 output values (A11, A12... A81, A82) can be calculated. The meaning of the output values is determined by their dimension:

Dimension	Meaning
N, kN	Force
mm S	Xhead path
mm dL	Elongation
mm h	Spring length (-height)
%	Compression

