Test&Motion

Application Module:

ME 1B – 3-point Bend Test Metals - DIN 50 110

Version 1.0 (State 20160819)

DOLI Elektronik GmbH

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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 ME 1B 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.

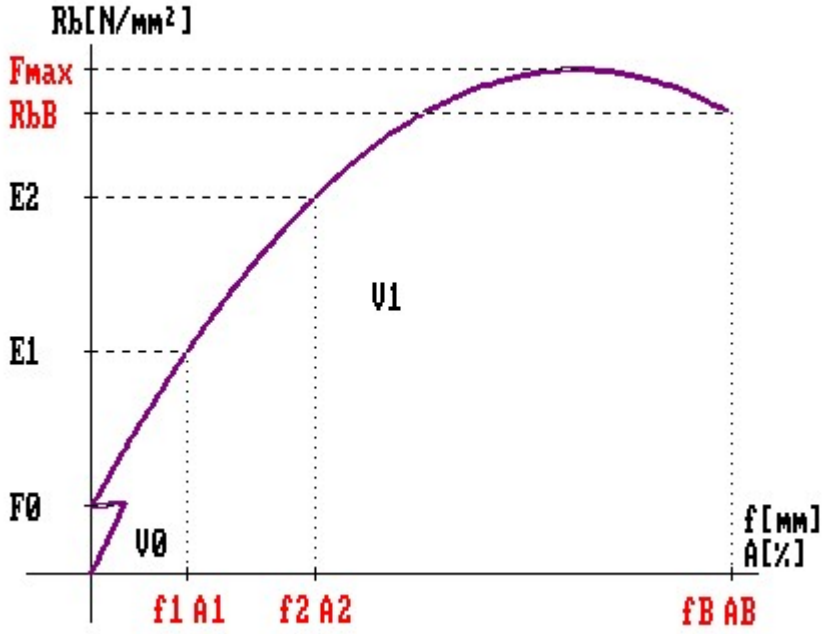
Symbol	Meaning
	**Safety Instructions:** **In order to avoid interruptions in the work flow as well as damages to man and machine, follow the safety instructions at all cost.**
	**Job/work instructions:** **Instructive part of the document with precise work instructions.** **Here you are asked to do 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 ME 1B: 3-point Bend Test Metals - DIN 50 110

2.1 Field of application

Determination of maximum force, bending strength and deflection at fracture as per nach DIN 50 110 for cast iron.

2.2 Test graphic ME 1B



2.3 Input values ME 1B

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 ME 1B.

Parameter	Meaning	Dimension / Selection possibilities
E1	Force/bending stress at which the deflection f1 shall be determined	[N, kN], [N/mm²]
E2	Force/bending stress at which the deflection f2 shall be determined	[N, kN], [N/mm²]
Lv	Distance between supports	[mm]

2.4 Results ME 1B

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 ME 1B.

Parameter	Meaning	Dimension
Fmax	Maximum tensile force	[N]
RbB	Bending strength at fracture	[GPa]
f1	Deflection at E1	[mm]
f2	Deflection at E2	[mm]
fB	Deflection at fracture	[mm]
S0	Sample diameter	[mm²]
PA1	Sample dimension 1 (not available for all sample shapes)	[mm]
PA2	Sample dimension 2 (not available for all sample shapes)	[mm]

2.5 Hints for the test ME 1B

2.5.1 Pre-load F0

For the test control, the elongation and the strain will be set to zero when pre-load F0 is reached (see explanations about elongation and strain further down, also).

The measuring length then will be corrected to **L0' = L0 + dL(F0)**

whereas
L0' *corrected measuring length*
L0 *measuring length*
dL(F0) *sample deformation at F0*

2.5.2 Calculation of RbB

- Calculating the resistance moment W

  in dependence upon the sample shape)

  FLAT: W = width * thickness ^2 / 6

  ROUND: W = PI * diameter ^3 / 32

  TUBE: W = PI * (outside diameter^4

  - inside diameter^4)

  / (32 * outside diameter)

- Calculating the bending moment Mb

  Mb = Fmax * distance between supports / 4

- RbB = Mb / W