Test&Motion

Application Module:

BA 27 – Concrete paving blocks – Measurement of strength EN 1338:2003

Version 1.0 (State 20160819)

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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 BA 27 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.

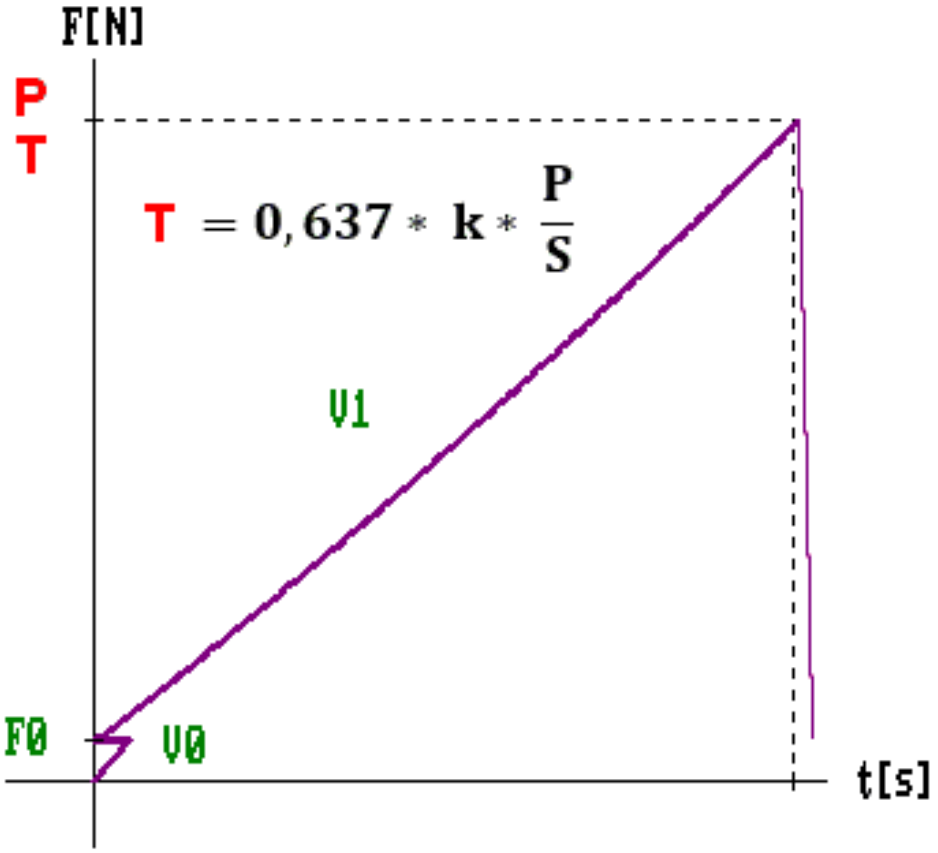
Symbol	Meaning
	**Safety Instructions:** **In order to avoid interruptions in the work flow as well as damages to man and machine, follow the safety instructions at all cost.**
	**Job/work instructions:** **Instructive part of the document with precise work instructions.** **Here you are asked to do 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 BA 27: Concrete paving blocks – Measurement of strength acc. EN 1338:2003

2.1 Field of application

Determination of strength of paving blocks.

2.2 Test graphic BA 27



2.3 Input values BA 27

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 BA 27.

Parameter	Meaning	Dimension / Selection possibilities
l	**Failure length of paving block**	**[mm]**
t	**Thickness of paving block**	**[mm]**
V1	**Test speed after reaching preload F0 (0,05 ± 0,01)**	**[MPa/s]**
Specification:		
b	**Width of packing pieces (15 ± 1)**	**[mm]**
a	**Thickness of packing pieces (4 ± 1)**	**[mm]**

a and b should be 10 mm longer than the anticipated fracture plane.

2.4 Results BA 27

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 BA 27.

Parameter	Meaning	Dimension
S	**Fracture plane**	**[mm²]**
P	**Failure load**	**[N]**
T	**Strentgh**	**[MPa]**
F	**Failure load per unit length**	**[N/mm]**

2.5 Hints for the test BA 27

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).

2.5.2 Input failure length and thickness of paving block

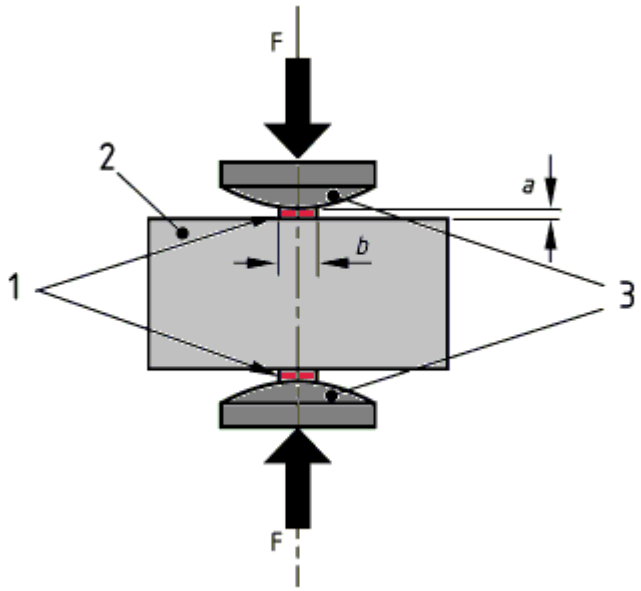
Calculate the area of the failure planes(S) of the block tested from the equation:

$$Failure\ plaine\ S = l * t$$

l is the mean of two measurements of the failure length, one at the top one at the bottom of the block in millimetres

t is the thickness of the block at the failure plane in millimetres and is the mean of three measurement; one in the middle and one at either end.

2.5.3 Principle of testing



1 Packing pieces
2 Paving block
3 Rigid bearers

2.5.4 Calculation of results

2.5.4.1 Calculation of strength T

$$\mathbf{T = 0,637 * k * \frac{P}{S}}$$

T Strength in MPa

P Failure load in Newton

k Correction factor for the block

2.5.4.2 Determination of the correction factor k

$$k = 1,3 - 30 * \left(0,18 - \frac{t}{1000}\right)^2, \qquad if \;\; 140\,mm \leq t \leq 180\,mm$$

or

$$k = 1,3\,, \qquad if \;\; t > 180\,mm$$

or

$$for \quad t < 140\,mm \;\; table\;4$$

Table 4: Correction factor k.

t (mm)	40	50	60	70	80	90	100	110	120	130	140
k	0,71	0,79	0,87	0,94	1,00	1,06	1,11	1,15	1,19	1,23	1,25

2.5.4.3 Determination of failure load per unit length F

$$F = \frac{P}{l} \quad [\frac{N}{mm}]$$