

Cutting Tool Measurement System

Effective Cutting Diameter Measurement

Simple, fast, and accurate measurement of critical cutting tool dimensions

Beta LaserMike's Cutting Tool Measurement System (CTMS) is an easy-to-use non-contact system for measuring effective cutting diameter of fluted cutting tools such as end mills, drill bits, step tools, reamers, and router bits.

By measuring the dimensional characteristics of a cutting tool before it cuts your part, you eliminate scrap that results from an oversized tool and rework that results from an undersized tool. In addition, by identifying and eliminating tool run-out, tool lifetimes can be significantly improved. This is especially important for PCD tools, where even a small amount of run-out can dramatically shorten tool life.

Zero Error Fixturing

The CTMS utilizes a unique rotary drive and "zero-error" carbide V-blocks, along with the proven measurement accuracy of a Z-Mike laser micrometer to eliminate errors caused by typical gage mechanics. The CTMS is capable of diameter and TIR measurements with an accuracy of ± 0.00003 in. (± 0.0008 mm).

A motorized rotary drive system allows the system to automatically measure effective cutting diameter, regardless of the number of flutes. An adjustable slide allows the tool to be positioned anywhere along the length and displayed on-screen with a 0.0005 in. (0.0127 mm) resolution.



The CTMS Advantage

- Accuracies up to 10 times greater than mechanical dial indicators
- Non-contact laser ensures that tool is not damaged during measurement
- Repeatable measurement of tool geometry free from operator influence
- Accommodates a wide range of tool sizes and types
- No mastering or field calibration required
- Graphical touch-screen interface provides ultra-simple operation
- No tool centering required

Measurement Capabilities

- Shank Diameter
- Shank TIR
- Effective Cutting Diameter
- Shank Bow and Straightness¹
- Taper or Back Taper Angle¹

¹Requires optional reference edge



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978-887-3389

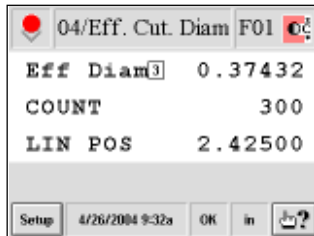
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Z-MikeTM
by BETA LaserMike

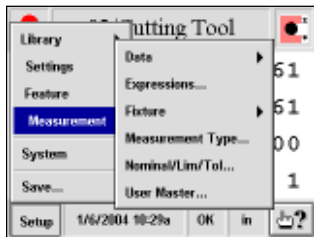
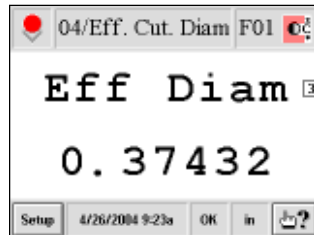
Easy to use

Measurements are performed quickly and easily. Just place the tool in the fixture, adjust the linear position and rotational speed, and hit the GO button. In seconds, the system computes the measurements and displays the results on screen. You can even send the data to a data logger or PC automatically. The fixture can be quickly adjusted to accommodate a wide range of shank lengths and diameters, and an adjustable end-stop ensures consistent tool placement and position during measurement.

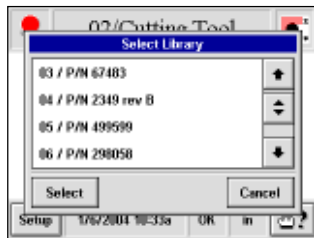
Data display



Magnified display



Pop-up menus



Library (part) selection

Measurement Specifications

| Measurement Range* | |
|----------------------------|----------------------------------|
| Shank Diameter | 0.04 – 1.0 in. (1.0 – 25.4 mm) |
| Cutter Diameter | 0.01 – 1.26 in. (0.25 – 32.0 mm) |
| Shank Length | 1.1 – 4.0 in. (28.0 – 100 mm) |
| Overall Length | 1.1 – 10.0 in. (28.0 – 254 mm) |
| Measurement Accuracy | |
| Display Resolution | 0.000001 in. (0.01 µm) |
| Diameter Measurement | ±0.000030 in. (±0.76 µm) |
| Effective Cutting Diameter | ±0.000060 in. (±1.5 µm) |
| Linear Position | ±0.0005 in. (±12.7 µm) |

*All tools should be evaluated by a Z-Mike representative before ordering

Output Specifications

| | |
|-------------|---|
| Serial Port | RS-232C, 9-Pin Female D-connector, User selectable baud rate |
|-------------|---|

General Specifications

| | |
|---|---|
| Operating Temperature | 7° to 36° C (45° to 97° F) at < 90% relative humidity |
| Storage Temperature | -20° to 60° C (-4° to 140° F) |
| Dimensions (H x W x D) (including fixture) | 254 x 635 x 559 mm (10 x 25 x 22 in.) |
| Weight (including fixture) | 18 kg (40 lb.) |
| Laser Source | HeNe gas laser; <1 mW output |
| Display | 320 x 240 liquid crystal display; 256 colors |
| Power Requirements | 100-240 volts AC (+5% to -10%), 50/60 Hz (+/- 2 Hz) 100 watts total |



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