

NEW

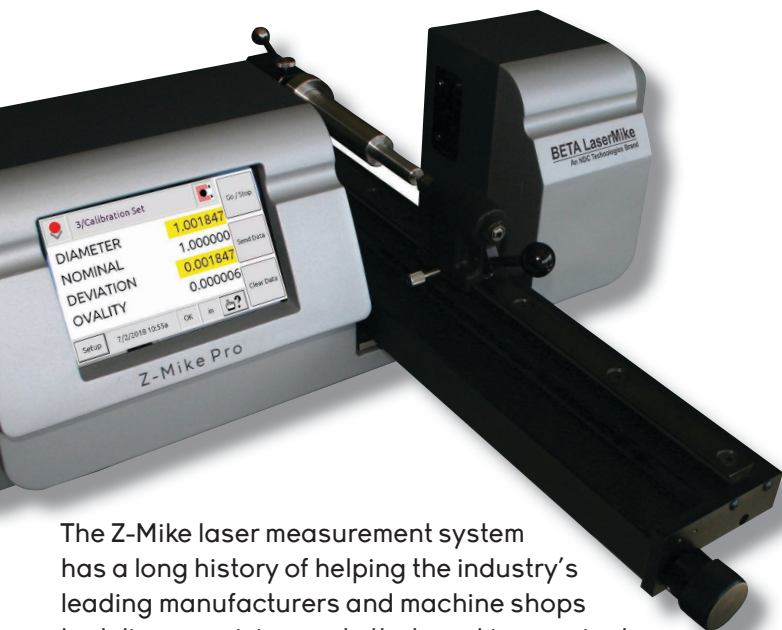


Z-MIKE® PRO LASER MICROMETER

Absolute Precision.
Absolute Repeatability.
Absolute Reliability.

Industry's Leading Precision Off-Line Part Measurement System

Z-Mike Pro...There is Absolutely No Substitute!



The Z-Mike laser measurement system has a long history of helping the industry's leading manufacturers and machine shops to deliver precision parts that meet increasingly tighter tolerances. More than 15,000 manufacturing applications worldwide count on Z-Mike's $\pm 0.5 \mu\text{m}$ accuracy and $\pm 0.13 \mu\text{m}$ repeatability to help them deliver superior quality products their customers demand.

The new Z-Mike Pro gauge system continues this tradition to give you the absolute truth about your parts. In the lab or on the plant floor, the Z-Mike Pro's range of new connectivity, communication and control features for Industry 4.0 increases its performance capabilities to deliver exceptional accuracy, reliability and ease of use in the most challenging measurement applications. **All Z-Mike Pro components are backed by a 2-year product warranty.**

Accuracy

- ▶ Patented optical design and electronics provide unequalled accuracy and exceptional repeatability
- ▶ No need for recalibration – auto-calibration maintains precision throughout the measurement range and adjusts for temperature variation in shop-floor environments
- ▶ Measurement precision not sensitive to surface type (gloss, matte, color) or to external stray light
- ▶ Measurements traceable to national standards

Reliability

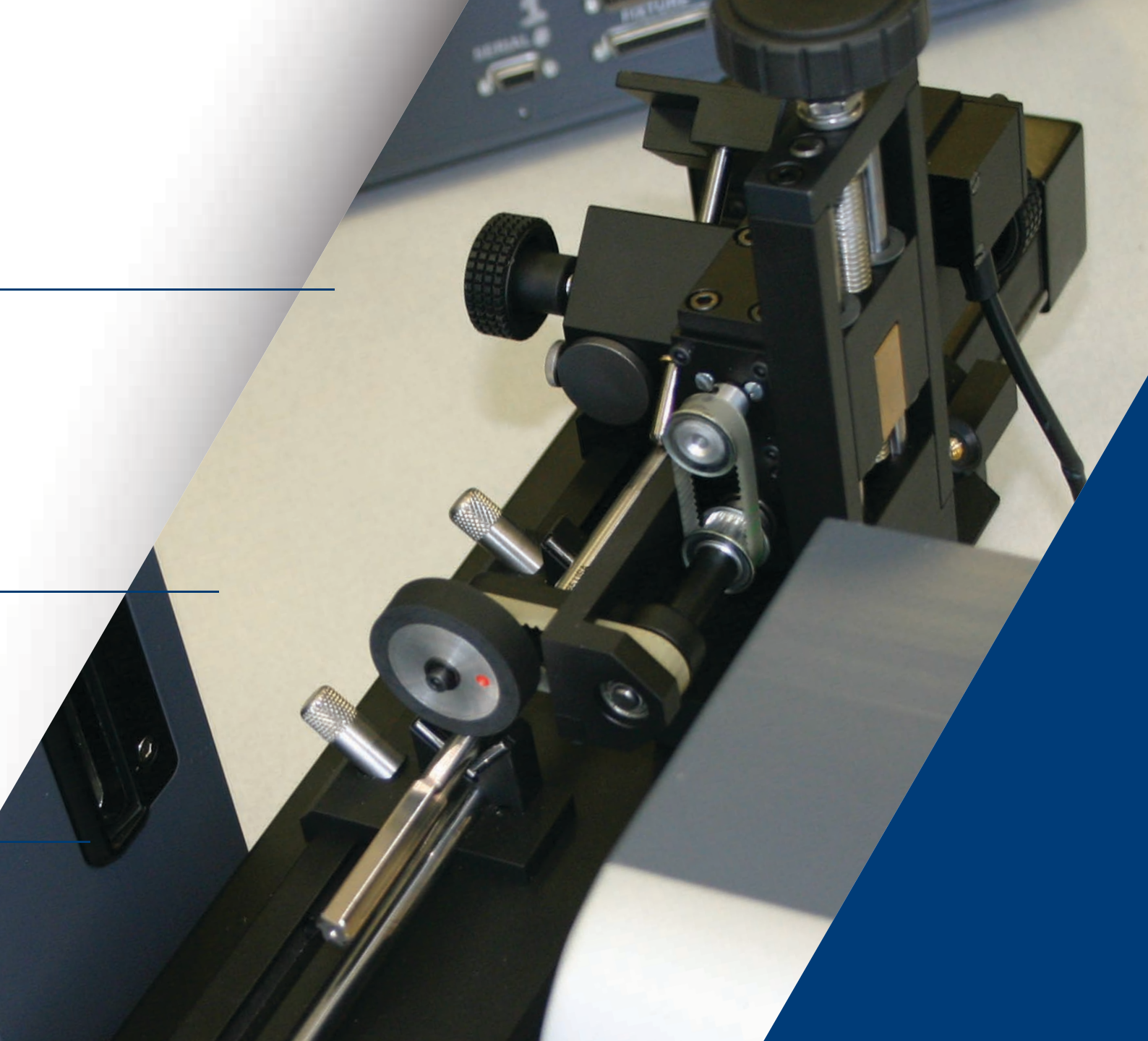
- ▶ Non-contact technique eliminates operator-influenced measurement error
- ▶ No need to center object to be measured – little or no adjustment is required to measure a wide range of part sizes or dimensions
- ▶ Rugged cast housing is sealed against dust and moisture for use in factory-floor environments

Ease-of-use

- ▶ Larger, higher-resolution, touch-screen display provides a simple, yet powerful user interface
- ▶ Multiple product types can be stored and recalled at the touch of button
- ▶ Integrated I/O allows seamless use of automated part handling and motion control

Ready for Service Under Industry 4.0

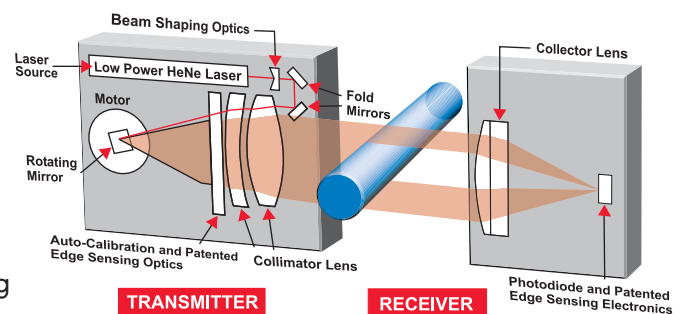
- ▶ **Expanded connectivity options** – Ethernet and USB – that simplify integrating Z-Mike Pro into centralized production networks. This new platform lays the foundation for future connection via WiFi.
- ▶ **Faster communications processing** for more efficient data logging and sharing...improved production reporting and analysis...and increased quality control.
- ▶ **More I/O connections** featuring additional USB resources to provide greater flexibility in connecting Z-Mike Pro to computers, data gathering devices and USB printers that support the CUPS protocol.



How It Works

A special collimator lens incorporates patented optics, enabling high accuracy in a short focal length. A thin band of high-speed scanning laser light projects from the transmitter to the receiver. A part placed in the beam casts a shadow.

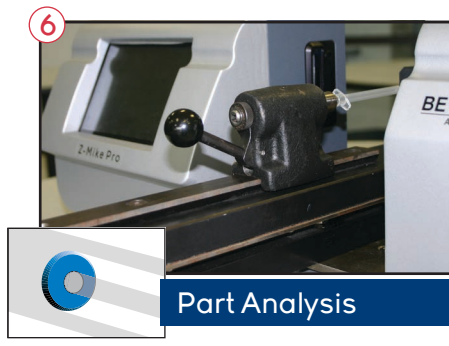
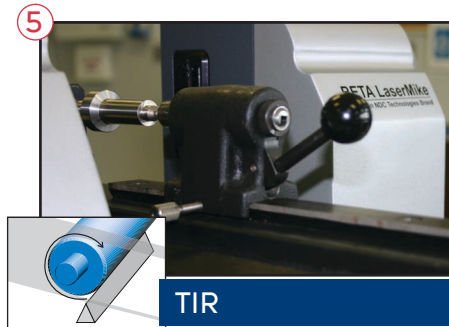
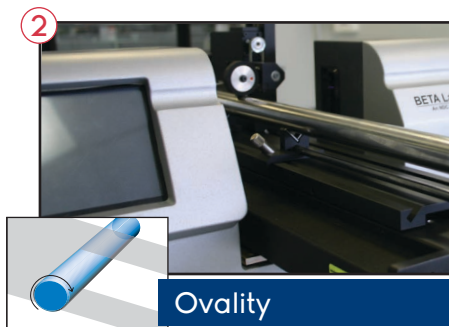
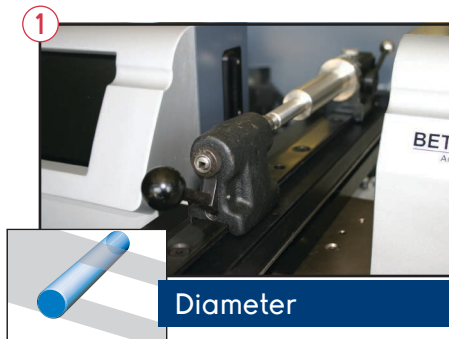
The receiver houses a collector optic, photodiode and preamplifier. Through our patented edge-sensing process, signals from the laser light entering the receiver are used by the microprocessor to calculate the dimensions represented by distances between the shadow edges. Dimensional data is instantly displayed or can be transmitted to a computer or networked system for further processing.



Measurement Capabilities Second to None

to Efficiently Produce the Most Precise Parts

The Z-Mike Pro measurement system is so precise that it can measure parts within tolerances of less than 1 micron and will take your operators only minutes to learn. It measures parts without contact so there is no part distortion or operator influence to affect your measurements. You can measure soft, delicate, brittle, hot and even radioactive parts with complete confidence. And, Z-Mike Pro gauges are engineered with the best edge-detection technology on the market, traceable to national standards (NIST).



1. Diameter

Outside Diameter of the lobe on a camshaft is determined by the shadow created when the shaft obscures the laser beam as it scans across the measurement area. The camshaft is mounted on a linear slide so that outside diameters can be determined for each cam.

2. Ovality

A precision shaft is manually rotated to measure maximum and minimum diameter. Ovality is displayed as Max OD - Min OD.

3. Effective Cutting Diameter

The effective diameter of a part is determined by rotating it in a fixture with near-zero runout. The position of the part and its diameter are monitored simultaneously as the part rotates to determine the maximum circle inscribed by the part.

4. Taper

The taper angle of a crankshaft bearing is determined by traversing the part on a linear slide with an encoder. The OD is measured at two locations and taper is determined by calculating the change in diameter divided by the change in position of the slide.

5. TIR

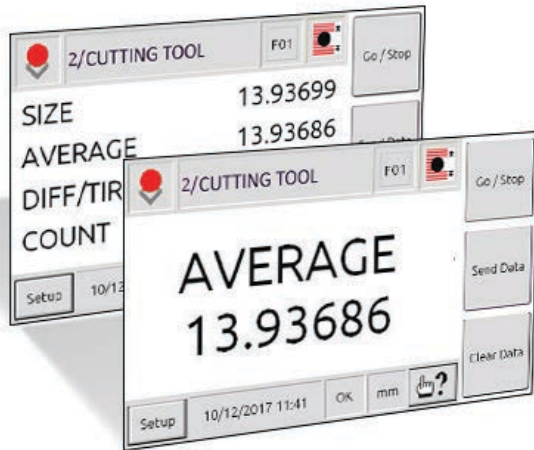
A cutting-tool blank is rotated on a V-block while measuring the gap between the blank and a reference edge. TIR is measured as the total change in the size of the gap.

6. Part Analysis

The outside diameter, ovality and taper of a medical component are measured simultaneously by traversing the product across the scanning field. As the product is traversed, the Z-Mike Pro software looks at the critical dimension and determines if they are within specified limits.

Simple Touch-Screen Interface

Lets You Easily Access Z-Mike Pro Features & Functions



Data Display

Z-Mike Pro has advanced display capabilities allowing you to display measurement data, access menus to configure Z-Mike Pro and display general information such as presence or absence of error conditions.

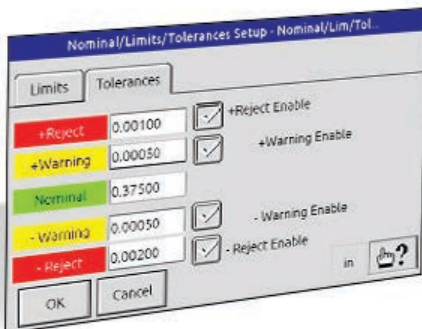
Magnified Display

Magnify measurement items on the screen for visibility from a distance.



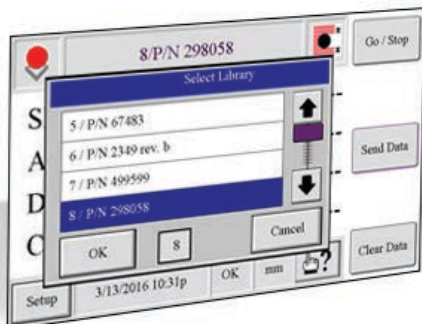
Pop-Up Menus

Quickly, easily access Z-Mike features and functions via clear pop-up menus.



Tolerance Limits

Categorize parts with five (5) thresholds (low, reject, low warning, in-tolerance, high warning and high reject). Setup either part limits (actual dimensions) or tolerances (plus/minus deviation from nominal).



Library (Part) Selection

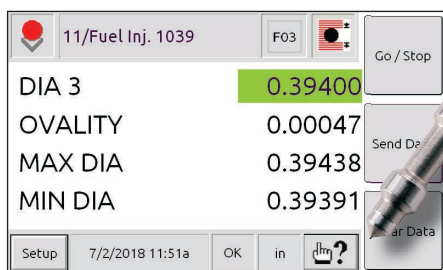
Use Z-Mike Pro libraries to store and recall how the measurements are to be taken, and manage other system set-up information via separate libraries. By defining libraries for each product or for different fixtures, you can shorten set-up times for various parts or applications.

Applications Flexibility

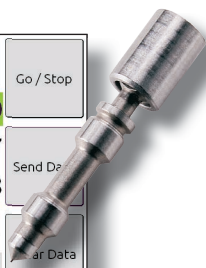
Engineered to Precisely Measure a Wide Range of Part Dimensions

Fuel Injectors

Critical diameters and taper angles (cones) affect engine performance and emissions. Z-Mike Pro enables you to closely analyze these dimensions.



Measurement	Value
DIA 3	0.39400
OVALITY	0.00047
MAX DIA	0.39438
MIN DIA	0.39391

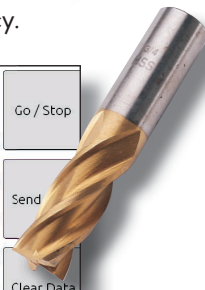


Cutting Tools

Measure effective cutting tool diameters for twist drills, end mills, reamers, routers and hole saws with absolute accuracy.

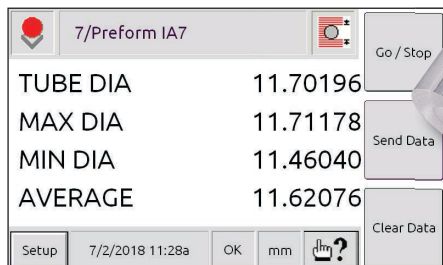


Measurement	Value
CUT DIA	0.171176
AVERAGE	0.160040
COUNT	9
LIN POS	1.700000

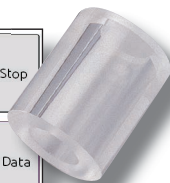


Glass Tubes

Measure transparent parts to the same degree of precision as opaque parts.

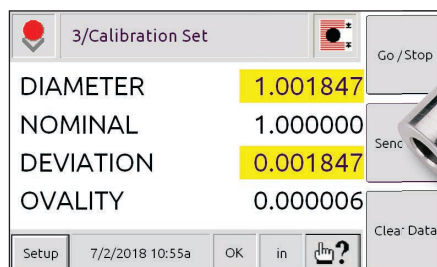


Measurement	Value
TUBE DIA	11.70196
MAX DIA	11.71178
MIN DIA	11.46040
AVERAGE	11.62076



Plug and Pin Gauge Calibration

Measure cylindrical plug and pin gauge calibration standards with absolute accuracy. Verify and calibrate gauge standards with complete confidence.



Measurement	Value
DIAMETER	1.001847
NOMINAL	1.000000
DEVIATION	0.001847
OVALITY	0.000006



Valves

Precisely measure the rod diameter and narrow groove cylindricity.



Measurement	Value
GRV DIA	11.72953
LIN POS	150.0000



Pistons

Many pistons are elliptical. Z-Mike Pro easily measures this shape and the diameter of piston ring grooves.



Measurement	Value
DIAMETER	25.44693



Rubber Rollers

Control rubber roller profiles and precisely measure diameter, cylindricity, roundness and total indicated runout (TIR) simultaneously.

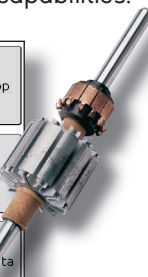
1/Roller X800	Go / Stop
STRAIGHT	0.000691
MAXIMUM	0.000407
MINIMUM	-0.000284
LIN POS	12.50000
Send Data	
Clear Data	
Setup	7/2/2018 10:18a OK in ?



Motor Shafts

Z-Mike Pro easily manages the various dimensional measurements through its "features" capabilities.

8/Motor Shaft J06	Go / Stop
RUNOUT	
0.00014	
Send Data	
Clear Data	
Setup	7/2/2018 11:34a OK mm ?



Crankshafts

The crankshaft's critical diameters have a crucial impact on engine performance.

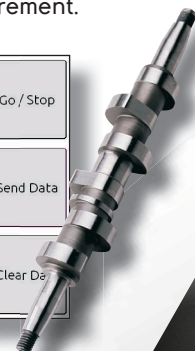
6/P/N 88002	Go / Stop
JOURNAL2	0.600363
+REJ TOL	0.000500
+WRN TOL	0.000250
NOMINAL	0.600000
Send Data	
Clear Data	
Setup	7/2/2018 11:14a OK in ?



Camshafts

Camshafts are complex components and perfect candidates for Z-Mike Pro measurement.

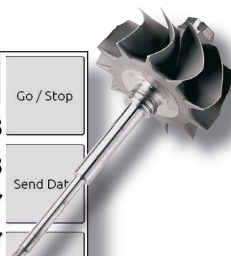
10/Shaft 40700	Go / Stop
CAM RISE	0.39396
LIN POS	14.00000
COUNT	79
Send Data	
Clear Data	
Setup	7/2/2018 11:46a OK in ?



Pins and Shafts

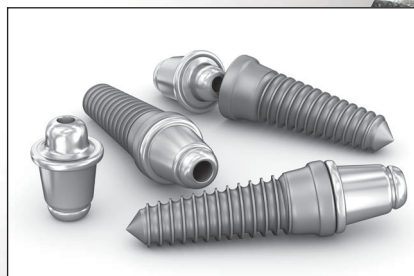
Z-Mike Pro effectively measures complex pins and shafts with different diameters and characteristics. And, it can switch from the smallest to the largest measurement diameters without adjustment or recalibration, as long as it remains within the measurement range.

4/Shaft 217T	F08	Go / Stop
DIA 8	9.68753	
AVERAGE	9.68943	
RANGE	0.00357	
STD DEV	0.001267	
Send Data		
Clear Data		
Setup	7/2/2018 11:03a OK mm ?	



Medical Devices

Measure life-critical parts such as dental implants, cardiac components, artificial joints and surgical devices, to name a few, with the highest degree of accuracy.



Modular Fixtures

An extensive line of ready-to-mount modular fixtures are available from simple manual fixtures to fully automatic and intelligent fixtures. These fixtures hold workpieces properly and effectively for any gauging need. Simply attach these easy-to-install fixtures to your gauge for precise, reliable measurements without calibration.

We provide a full line of heavy-duty fixtures to measure large parts, along with automatic motorized fixtures for part translation and rotation. For your custom needs, our Special Engineering group excels at developing fixtures for special applications.

Fixture	Description	Part #
Universal V-Block	Used for measuring parts positioned on their outside diameter.	7060-0117-06 (ZM Pro 25) 7060-0117-07 (ZM Pro 50)
Modular V-Block	Used for measuring parts positioned on their outside diameter. Must be mounted on a slide or insulated base support.	83881 (ZM Pro 25) 83627 (ZM Pro 50)
Flat Test	Designed for use when measuring the thickness of a flat part or the width of a rectangular cross-section, as well as for holding flat surface parts. Must be mounted on a slide or insulated base support.	83640 (ZM Pro 25) 83641 (ZM Pro 50)
Universal Manual Slide	Used to linearly position parts by hand. Available in 18, 25 or 32 in. (457, 635 or 829 mm) lengths.	83610 (18 in.) 83611 (25 in.) 83618 (32 in.)
Heavy-Duty Manual Universal Slide	Supports large parts with diameters up to 4.5 in. (115 mm) and loads up to 305 lb. (138 kg).	7070-0304-01
Digital Readout Slide	Used to linearly position parts to predetermined positions for measurement, and/or measure the distance between two points on a part. Available in 18, 25 or 32 in. (457, 635 or 829 mm) lengths.	83616 (18 in.) 83617 (25 in.) 83863 (32 in.)
Adjustable V-Block	Supports parts that must be held on their outside diameters. Must be mounted on a slide.	83609
Adjustable Dead Centers	Holds variable length shaft-type parts with centers. Must be mounted on a slide.	83607
Manual Concentricity	Supports cylindrical parts on their outside diameter for measuring concentricity.	83924
Motorized Concentricity	Supports cylindrical parts on their outside diameter for measuring concentricity.	1334-000-002
Auto-Rotating Chuck	Motorized rotation of shafts or wires to detect variation in diameter around the circumference. Keyless precision chuck holds diameters 0.030 to 0.50 in (0.76 to 12.7 mm).	84015
Micrometer Adjustable V-Block	Designed for ultra-fine wire or other material that must be centered for best measurement accuracy. Holds wires in the range of 0.001 to 0.400 in (0.025 to 10.16 mm).	84260
Reference Edge	Used in applications requiring gap measurement, such as straightness, concentricity and run out.	85138 (1 in.) 85139 (2 in.)
Insulated Base Support	Support base for Flat Test and Modular V-block.	83639

Ready-to-Mount Flexibility



Universal Manual Slide



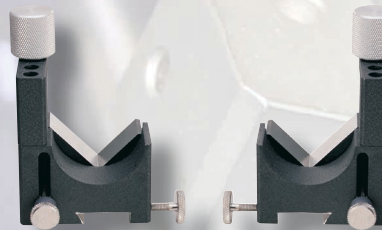
Digital Readout Slide



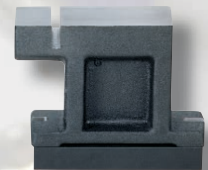
Heavy-Duty Manual Universal Slide



Modular V-Block



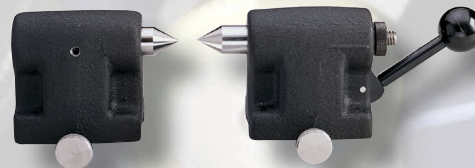
Adjustable V-Block



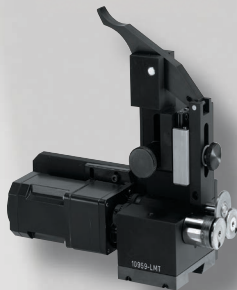
Universal V-Block



Flat Test



Adjustable Dead Centers



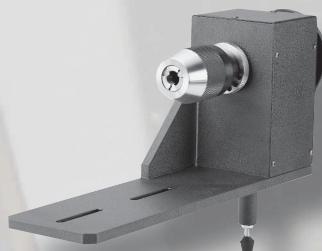
Motorized Concentricity



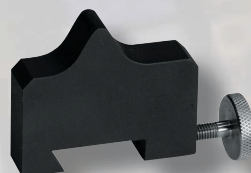
Manual Concentricity



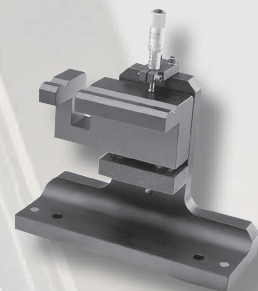
Insulated Base Support



Auto-Rotating Chuck



Reference Edge



Micrometer Adjustable V-Block

Specifications

Measurement	Z-Mike Pro 25	Z-Mike Pro 50
Measurement Range	0.100 to 25.4 mm (0.004 to 1.0 in.)	0.254 to 50 mm (0.010 to 2.0 in.)
Repeatability	$\pm 0.13 \mu\text{m}$ ($\pm 0.000005 \text{ in.}$)	$\pm 0.25 \mu\text{m}$ ($\pm 0.000010 \text{ in.}$)
Accuracy ¹	$\pm 0.5 \mu\text{m}$ ($\pm 0.000020 \text{ in.}$)	$\pm 0.76 \mu\text{m}$ ($\pm 0.000030 \text{ in.}$)
Measurement Area Depth Of Field	$\pm 7.5 \times 25 \text{ mm}$ ($\pm 0.030 \times 1.0 \text{ in.}$)	$\pm 1.5 \times 50 \text{ mm}$ ($\pm 0.060 \times 2.0 \text{ in.}$)
Laser Beam Velocity	50 m/sec. (2,000 in./sec.)	100 m/sec. (4,000 in./sec.)
Temperature Coefficient	$< 0.2 \mu\text{m}/^\circ\text{C}$ ($< 0.000004 \text{ in.}/^\circ\text{F}$)	$< 0.2 \mu\text{m}/^\circ\text{C}$ ($< 0.000004 \text{ in.}/^\circ\text{F}$)
Calibration	Factory calibrated	Factory calibrated

General

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)	254 x 635 x 228 mm (10 x 25 x 9 in.)
Weight	19.7 kg (43 lb.)
LaserSource	HeNe gas laser; <1 mW output
Display	177.8 mm (7 in.) capacitive touch
Language Support	German, French and Spanish
Power Requirements	100 to 240 volts AC (+5% to -10%), 50/60 Hz ($\pm 2 \text{ Hz}$) 100 watts total power
Product Warranty	2 years

¹Accuracy is maintained over the entire measurement range.

Input/Output

Z-Mike Pro provides a variety of input/output connectors to allow flexible integration with other devices.

- ▶ Two serial ports – DB9 and USB – to link with computers or data gathering devices
- ▶ USB port compatible with most inkjet printers that support the CUPS protocol
- ▶ Ethernet port for network connection to facilitate easy data access and sharing
- ▶ Digital I/O port for connection of alarm outputs to indicate out-of-tolerance conditions and other errors, as well as digital inputs to activate functions remotely
- ▶ Fixture port for connection to intelligent fixtures capable of moving and rotating the test pieces
- ▶ Scan output BNC port for diagnostic access to the laser scan signal



Custom Engineered Solutions

Customers Benefit From Our Proven Expertise

Providing our customers with the total measurement solution is our priority. If you've reached the end of this document and still haven't found a standard Z-Mike Pro product that's just right for your needs, we have great news for you. We offer Custom Solutions to ensure a perfect fit for your particular application.

We can modify an existing product, design and build special fixturing, customize a software application, or engineer a unique system just for you. Let us show you examples of the numerous custom solutions we have provided for a wide range of applications. Getting started is easy - just contact your local Beta LaserMike product representative to be on your way to a solution tailored to your needs.

Customer Success Story

- ▶ **Problem:** A leading cutting tool provider required a highly accurate, automated measurement system for its production of extra-long, high-precision carbide drills for motor blocks. The non-contact system had to be vertically oriented and effectively measure the cutting diameter of all the flutes along the entire length of the cutting tool.
- ▶ **Solution:** The company implemented a custom, automated cutting tool measurement system (CTMS) utilizing a Z-Mike laser micrometer with unique motorized rotary drive and slide system.
- ▶ **Results:** Fast, precision measurements of critical cutting tool dimensions. Highly reliable gauging free from operator influence. The company was so pleased with the system that it now has a second Z-Mike CTMS at its plant.



Optimizing Your Investment with World-Class Service and Support

NDC's technical expertise comes from deep experience supporting thousands of products at the world's leading manufacturers. Our portfolio of support offerings leverages this expertise to assist you through the service lifecycle. We offer a complete range of cost-effective support solutions including commissioning, training, technical support and service agreements. Customers rely on our 24-7 availability via myNDC – the industry's most progressive service cloud portal. Whether it's configuring new equipment, training your technical staff or solving a technical problem, you can count on our experienced team to help maintain the health and performance of your NDC product.

Visit myNDC service cloud at ndc.custhelp.com.



NDC Technologies is represented in over 60 countries worldwide. www.ndc.com/betalasermike

a **spectris** company

NDC Americas

Tel: +1 937 233 9935

Email: sales@betalasermike.com

NDC Europe

Tel: +44 1621 852244

Germany only: 08001123194

Email: sales@betalasermike.com

NDC China

Tel: +86 21 6113 3617

Email: sales@betalasermike.com

NDC SE Asia

Tel: +65 91994120

Email: sales@betalasermike.com

NDC India

Tel: +91 124 2789507

Email: sales@betalasermike.com

In line with its policy of continuous improvement, NDC reserves the right to revise or replace its products or services without prior notice. The information contained in this document may not represent the latest specification and is for indicative purposes only.

Document #: P-BROC-SCAN-Z-Mike_Pro-EN-2018OCT22
Date of Issue: October 2018
© NDC Technologies 2018

Making Light Work