



## BenchMike 283 Series

**The industry's most accurate, reliable, and easiest-to-use gauging system**

The BenchMike 283 series from Beta LaserMike provides fast and accurate measurements of manufactured parts or cut samples of extruded parts. Used either in a quality control (QC) laboratory or on the plant floor, the BenchMike gives operators a simple and repeatable system for measuring parts and immediately knowing whether they meet specifications within tolerances of less than 1 micron (0.00004 in).

Laser technology allows the BenchMike to measure multiple product dimensions without touching, deforming, scratching, or damaging the part. Unlike other micrometers and mechanical indicators that can err in zero setting, end play, calibration, or sensitivity of the user, the BenchMike gives repeatable measurements regardless of the operator. With the BenchMike, there is nothing to adjust between part measurements and nothing to wear out.

### Simple, touch-screen interface

The touch-screen graphical user interface (GUI) of the BenchMike gives operators a quick and simple means of viewing dimensional measurements, accessing information, and changing parts. Screen layouts are customized for the needs of the user or application and the "look and feel" is simple for any user familiar with Windows®.

Data display

01/Nylon 12		OD
AVERAGE	10.018	
MAXIMUM	10.258	
MINIMUM	9.934	
OVALITY	0.063	
Setup	9/17/2001 2:11p	OK mm

Magnified display

01/Nylon 12		OD
<b>AVERAGE</b>		
<b>10.018</b>		
Setup	9/17/2001 2:11p	OK mm

Pop-up menus

02/63063-91	
Library	Deviation...
Measure	Nominal/Limits...
Data	Average...
System	Position...
Save...	Count...
Cancel	Size...
	Diff / TIR...
	SQC
	Maximum...
	Slide Position...
	Minimum...
	Std Dev...
Cancel	4/16/1997 09:41

Library (part) selection

02/63063-91	
Select Library	
S	P/N 67483
A	P/N 2349 rev. B
D	P/N 499599
C	P/N 298058
	Select
	Cancel
Setup	4/22/1997 09:41

## Benchtop Laser Micrometer



### The BenchMike Advantage

The BenchMike separates itself from other measurement devices with features that make it the industry's most accurate, reliable, and easiest-to-use gauging system.

#### Accuracy

- Patented optical design and edge-sensing electronics provide high-precision measurements (see measurement specifications – page 2).
- Auto-compensation features maintain accuracy throughout entire measurement range and adjust for thermal expansion outside laboratory environments.

#### Reliability

- Non-contact measurement technique provides the same level of accuracy regardless of operator
- Tolerance checking quickly alerts the operator of out-of-tolerance conditions
- Mounting fixtures from Beta LaserMike ensure the test piece is always properly presented to the gauge.

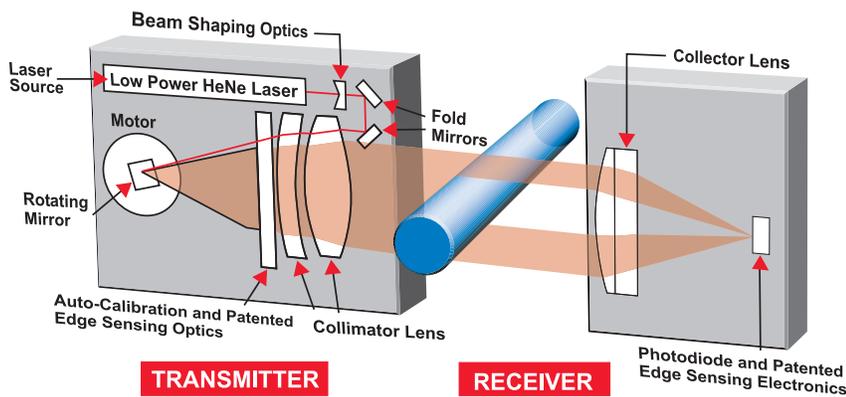
#### Ease-of-use

- A touch-screen interface provides simple operation and set-up
- A library list stores product "recipes" and allows the operator to switch products quickly and easily.
- Several input/output (I/O) ports allow flexible integration with other devices.

## Innovative Technology

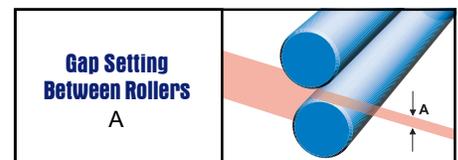
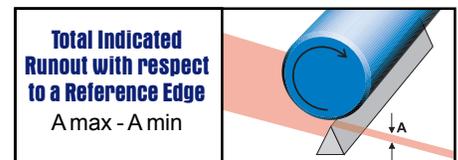
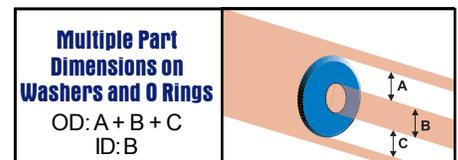
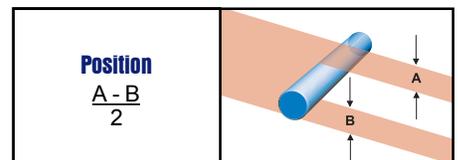
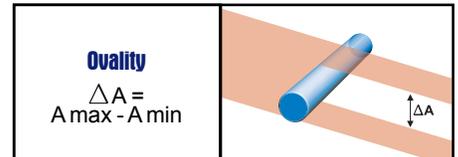
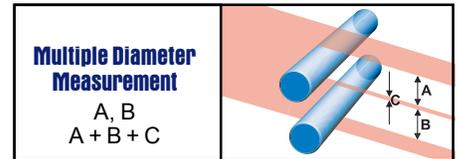
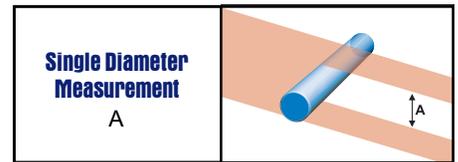
Beta LaserMike operates on the cutting edge of measurement technology. In 1973, we patented our innovative laser measurement technique (the first of its kind in the world), and today we continue to improve our designs by making them easier to use while maintaining precision accuracy.

Each BenchMike contains a transmitter, receiver, processor electronics, and a touch screen display in an integrated package. A thin band of high-speed scanning laser light is projected from the transmitter by a low-power laser source, a scanning mirror, and a series of optics. The receiver houses a collector optic, photodiode and preamplifier. Through our patented edge-sensing process, the laser light signal entering the receiver is used to calculate the distances between the edges of the product. Dimensional data is instantly displayed and can be transmitted to a computer for further processing.



## No Field Calibration Required?

Let's face it; all laser scanners need field calibration or remastering if operators expect to meet performance specifications. Not so fast, the Beta LaserMike 283 uses a combination of built-in autocalibration and dual differentiation technology providing unmatched accuracy without field calibration. Never has it been easier to incorporate precision measurement on the production line, and since every system includes a programmable RS-232C interface, collecting and sending data to your storage and control system is almost effortless. Contact your local Beta LaserMike Sale Engineer and start seeing the benefits of improved quality, increased production yield, and decreased material cost on bottom line today.



Measurement Specifications		Model 283-10	Model 283-20
<b>Measurement Range</b>		0.100 to 25.4 mm (0.004 to 1.0 in.)	0.254 to 50 mm (0.010 to 2.0 in.)
<b>Repeatability</b>		±0.25 µm (0.000010 in.)	±0.5 µm (0.000020 in.)
<b>Linearity</b>		±0.9 µm (±0.000036 in.)	±1.5 µm (±0.000060 in.)
<b>Measurement Area Depth Of Field</b>		±.75 x 25 mm (±0.030 x 1.0 in.)	±1.5 x 50 mm (±0.060 x 2.0 in.)
<b>Laser Beam Spot Size</b>		100 µm (0.004 in.)	250 µm (0.010 in.)
<b>Laser Beam Velocity</b>		50 m/sec. (2,000 in./sec.)	100 m/sec. (4,000 in./sec.)
<b>Temperature Coefficient</b>		<0.2 µm/°C (<0.000004 in./°F)	
<b>Calibration</b>		Factory calibrated	
<b>Scan Rate</b>		100/sec	

# BenchMike Solutions for Tube & Pipe Applications

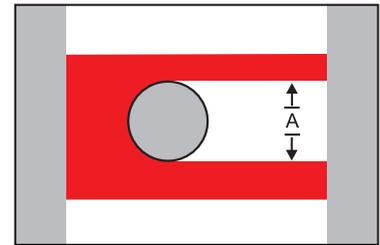
The BenchMike 283 series from Beta LaserMike is the ideal solution for fast, simple, and accurate measurements of cut samples of extruded tube or pipe. BenchMikes are used worldwide on extrusion plant floors and quality control (QC) laboratories to give operators and technicians immediate feedback of product dimensions.

Tube and pipe manufacturers must ensure that the dimensions of their products are maintained within tight specifications to ensure the quality of the product and the profitability of the company. To satisfy this need, the BenchMike utilizes the latest in laser gauging technology to provide high precision measurements of the OD, ID, wall thickness, concentricity and ovality of a tube or pipe within specifications of less than 1µm (0.00004 in.).



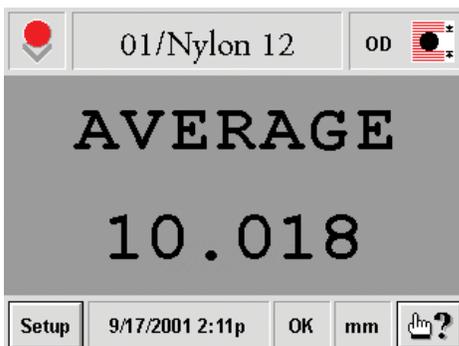
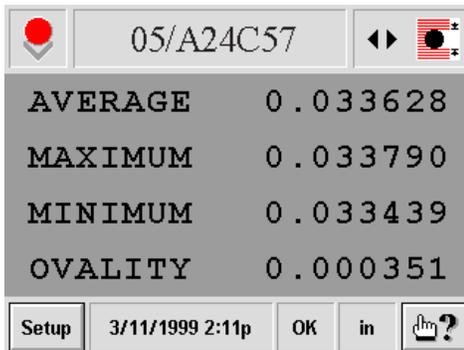
## OD Measurement

For precision OD measurements, simply place your tube or pipe sample on the V-block fixture and the BenchMike will instantly measure it. Using the V-block and BenchMike, an operator can measure dozens of parts per minute and with a much higher level of accuracy than any other method available for sample inspection. And with the use of laser technology, the measurements will be repeatable from one operator to another.



Single Diameter Measurement  
OD = A

Data display



Magnified display



### ◀ V-Block

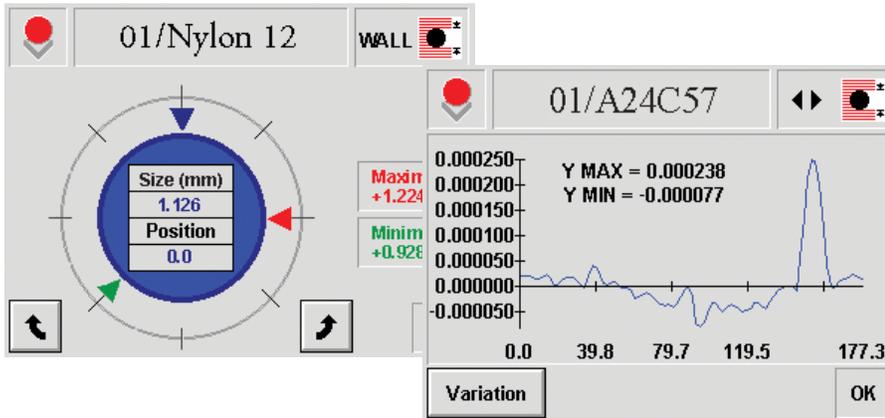
Provides quick and easy placement of cut samples when mounted to the BenchMike, while ensuring proper fixturing of the samples.

## ID/OD/Wall Measurement

For precision ID, OD, and wall thickness measurements, simply place a tube or pipe sample on the ID/OD/Wall fixture and the BenchMike will calculate all of the dimensions. The ID/OD/Wall fixture can also automatically rotate a sample to a pre-defined number of positions for measurements at multiple points around the product. This rotation also allows for the calculation of concentricity and ovality of the product. The graphical user interface has options to view the rotational cross section of the product and a graph that shows deviation or variation at the various rotational degrees of measurement.



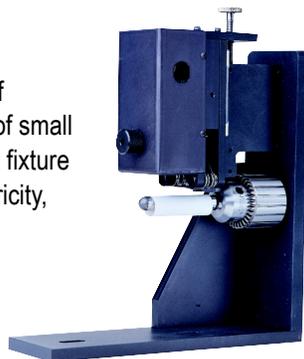
Rotational cross-section display



Rotational deviation/variation graphs

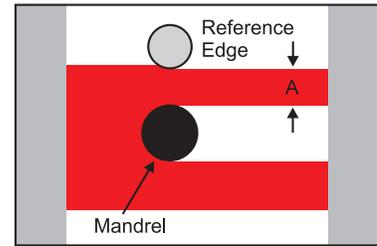
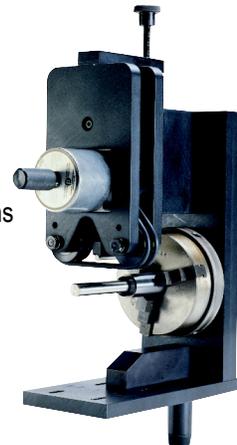
### Small ID/OD/Wall Auto-Rotating Fixture

Provides an easy method of placement for cut samples of small tube or pipe. This intelligent fixture also rotates to add concentricity, ovality and multiple points of measurement.

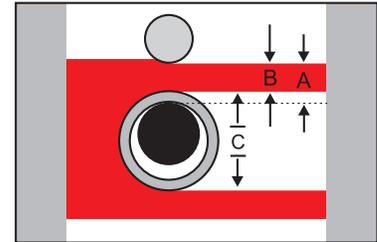


### Large ID/OD/Wall Auto-Rotating Fixture

Performs the same functions as the small ID/OD/Wall Auto-Rotating fixture, but is designed for larger products.



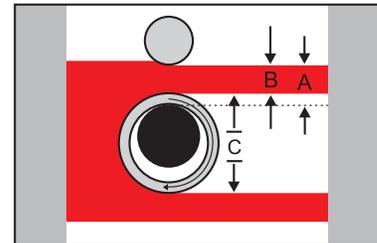
**Step 1:** Master on reference edge and mandrel



**Step 2:** Place product on mandrel and take measurements

$$\text{Wall} = A - B \quad \text{OD} = C$$

$$\text{ID} = \text{OD} - (2 \times \text{Wall})$$



**Step 3:** Rotate the product to attain multiple points of measurement as well as concentricity and ovality

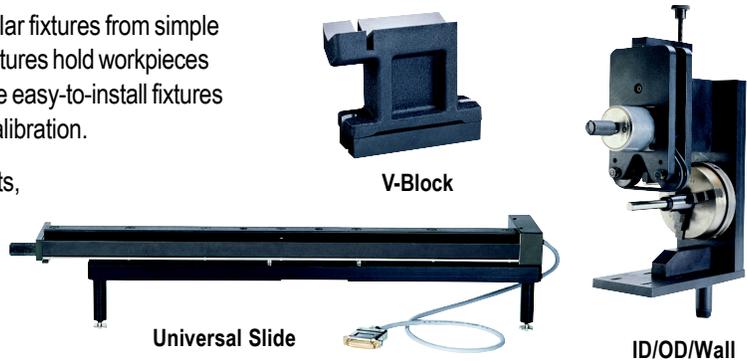
$$\text{Concentricity} = \Delta (A - B)$$

$$\text{Ovality} = \Delta C$$

## Ready-To-Mount Flexibility

Beta LaserMike offers an extensive line of ready-to-mount modular fixtures 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 BenchMike for precise, reliable measurements without calibration.

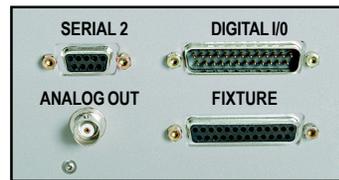
We provide a full line of heavy-duty fixtures to measure large parts, along with automatic motorized fixtures for part translation and rotation. For your custom needs, the Beta LaserMike Special Engineering group excels at developing fixtures for special applications.



## Input/Output

The BenchMike provides a variety of input/output connectors to allow flexible integration with other devices. The available BenchMike I/O includes:

- Serial ports to link with computers or data gathering devices
- Parallel port to connect to printers for printed reports
- 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
- Analog output BNC port for sending information to chart recorders or PLCs
- 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



## General Specifications

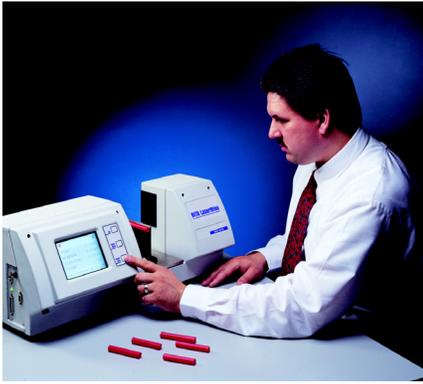
<b>Operating Temperature</b>	7° to 36° C (45° to 97° F) at < 90% relative humidity
<b>Storage Temperature</b>	-20° to 60° C (-4° to 140° F)
<b>Dimensions (H x W x D)</b>	254 x 635 x 228 mm (10 x 25 x 9 in.)
<b>Weight</b>	17 kg (38 lb.)
<b>Laser Source</b>	HeNe gas laser; <1 mW output
<b>Display</b>	320 x 240 liquid crystal display; 256 colors
<b>Power Requirements</b>	100-240 volts AC (+5% to -10%), 50/60 Hz (+/-2 Hz) 100 watts total power

## Options

Special accessories are available to address certain non-standard applications or data needs:

- **Small Spot Size Option:**  
Special measurement range from 25  $\mu$ m (0.001 in.) to 10 mm (0.4 in.) (factory installed option)
- **Digital I/O Interface:**  
High current open collector outputs for Hi/Low/Go, and Warning Limits. A footswitch accessory lets the user activate the gauge's measure function or initiate single measurements.
- **Language Legends:**  
Can be used worldwide with the display language option.
- **Transparent Object Measurement:**  
Enables the BenchMike to measure the diameter of transparent material, such as clear plastic tubing and glass rods.

**BETA LaserMike**  
Measured by Commitment



## Take Control

Your nearest Beta LaserMike representative will be happy to discuss how the Model 283 Benchtop Micrometer can help you improve your productivity.



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Visit our web site at: [www.betalasermike.com](http://www.betalasermike.com)

ISO 9001  
Certified



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