BENCHMIKE PRO

## The Industry's leading off-line ID/OD/Wall measurement system

- Industry's leading sample inspection system

- Measure manufactured cut samples fast and with the highest accuracy in the industry

- Perform reliable, non-contact measurements from run to run

- Benefit from easy-to-use features for simple setup and operation

- Get powerful Ethernet connectivity, communication and control capabilities

BETA LaserMike Products

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The Industry's Most Accurate, Reliable and
Easiest-To-Use Gauging System Is Even Better

Non-contact laser technology, unsurpassed accuracy, and a compact design that allows it to fit almost anywhere have made the BenchMike gauge the industry's leading off-line ID/OD/Wall measurement system. Today, more than 15,000 manufacturing applications worldwide count on BenchMike's ±0.9 µm accuracy and ±0.25 µm repeatability to help them deliver the superior-quality products their customers demand.
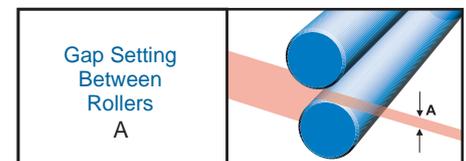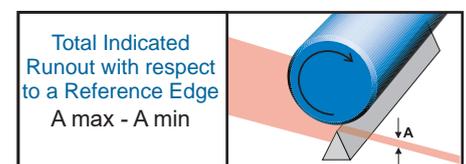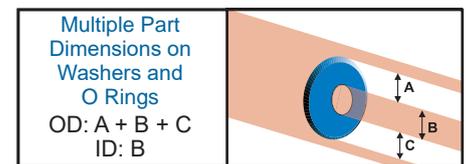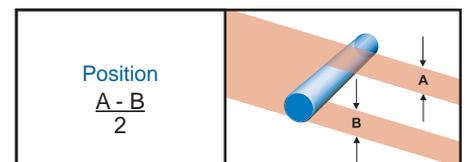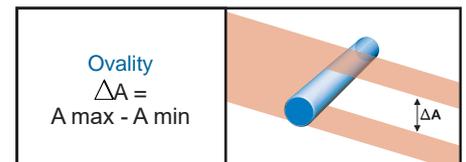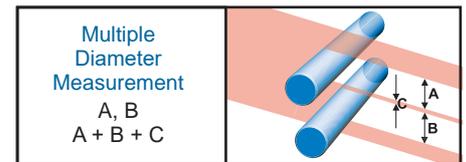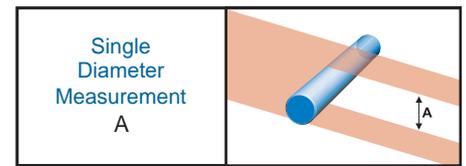
The new **BenchMike Pro** gauge system continues this tradition. In the lab or on the plant floor, the BenchMike Pro's range of new connectivity, communication, and control features increases its performance capabilities to deliver exceptional accuracy, reliability, and ease of use in the most challenging measurement applications. Ready for service under Industry 4.0, BenchMike Pro offers:
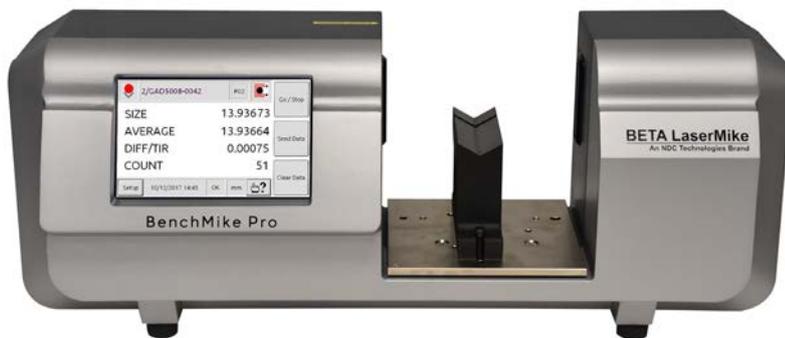
- **Expanded connectivity options** – Ethernet and USB – that simplify integrating BenchMike Pro into centralized production networks. This new platform lays the foundation for future connection via WiFi.

- **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 BenchMike Pro to computers, data gathering devices, and USB printers that support the CUPS protocol.

- **Larger, higher-resolution touch-screen display** for easier viewing of critical measurement information and more intelligent production decisions.

- **Transparent object measurement** allowing BenchMike Pro to measure the diameter of transparent material, such as clear plastic products.

- ► **2-Year product warranty**

Maintain Consistent Accuracy and Repeatability

BenchMike Pro uses auto-compensation features to maintain accuracy throughout the entire measurement range and adjusts for thermal expansion outside laboratory environments. 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.

Single Diameter Measurement
A

Multiple Diameter Measurement
A, B
A + B + C

Ovality
$\triangle A$ = A max - A min

Position
$\dfrac{A - B}{2}$

Multiple Part Dimensions on Washers and O Rings
OD: A + B + C
ID: B

Total Indicated Runout with respect to a Reference Edge
A max - A min

Gap Setting Between Rollers
A

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Simple Touch-Screen Interface Lets You Easily Access BenchMike Features and Functions

The BenchMike Pro's touch-screen graphical user interface (GUI) gives operators a quick and simple means of viewing dimensional measurements, accessing gauge and system 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.
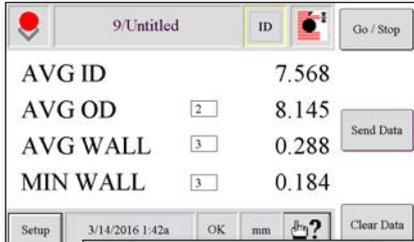
Data Display
BenchMike Pro has advanced display capabilities allowing you to display measurement data, access menus to configure BenchMike Pro, and display general information such as presence or absence of error conditions.

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

Library (Part) Selection
Use BenchMike libraries to store and recall how the measurements are to be taken, and manage other system setup 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.
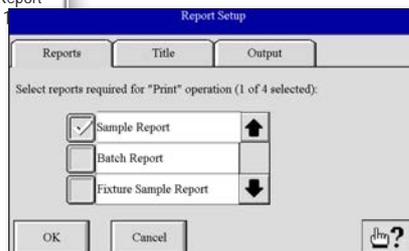
Pop-Up Menus
Quickly, easily access BenchMike features and functions via clear pop-up menus.

Rotational Cross-Section Display
When using a rotary ID/OD/Wall fixture, create a rotary graph that displays the size, position, and minimum and maximum data for measurements taken at multiple points around the product.
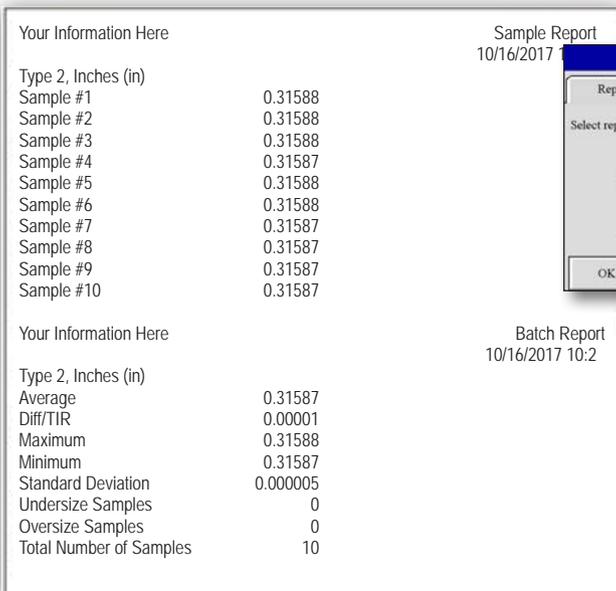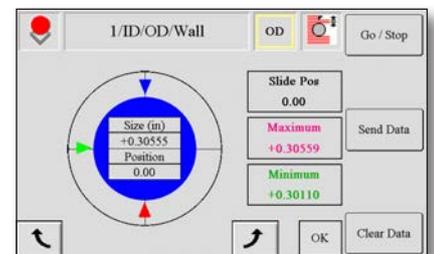
Robust Reporting
Easily generate Sample, Batch, and Fixture reports. Use the Sample Report when taking a single measurement of multiple parts. Use the Batch report to summarize statistical results for all measured parts. Use the Fixture reports to generate similar sample and batch details when using automated part-positioning fixtures.

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Solutions for Pipe & Tube Applications

Pipe and tube 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. BenchMike Pro is the ideal solution for fast, simple, and accurate measurements of cut samples of extruded pipe and tube. BenchMike Pro is used worldwide on extrusion plant floors and quality control (QC) laboratories to give operators and technicians immediate feedback of product dimensions.

BenchMike Pro utilizes the latest in laser gauging technology to provide high-precision OD measurements of pipe and tube within specifications of less than 1µm (0.00004 in.). It is also engineered with the best edge detection technology on the market that is traceable to national standards (NIST).

Diameter & Ovality Measurements

OD Measurement

For precision OD measurements, simply place your pipe or tube sample on the V-block fixture and 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.
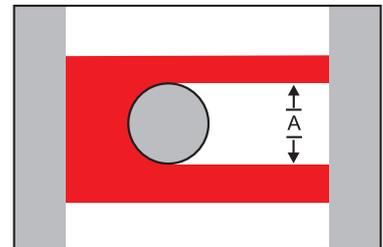
Single Diameter Measurement
OD = A

ID/OD/Wall Measurement

For precision ID, OD, and wall thickness measurements, simply place a pipe or tube sample on the ID/OD/Wall fixture and 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.
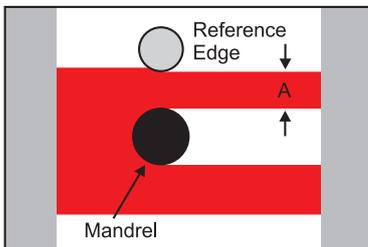
Step 1: Master on reference edge and mandrel
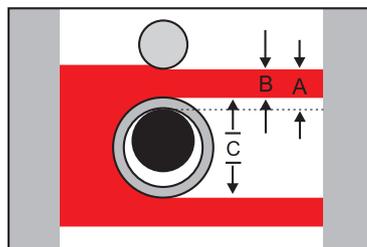
Step 2: Place product on mandrel and take measurements
Wall = A - B   OD = C
ID = OD - (2 x Wall)
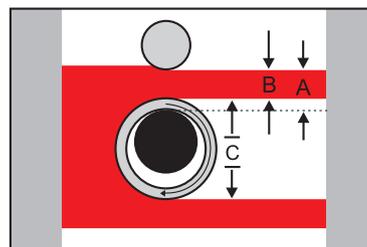
Step 3: Rotate the product to attain multiple points of measurement as well as concentricity and ovality
Concentricity = $\triangle$ (A - B)
Ovality = $\triangle$ C

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Specifications

Measurement Specifications

	Model 2025	Model 2050
Measurement Range[1]	0.100 to 25.4 mm (0.004 to 1.0 in.)	0.254 to 50 mm (0.010 to 2.0 in.)
Repeatability[2]	±0.25 µm (0.000010 in.)	±0.5 µm (0.000020 in.)
Accuracy	±0.9 µm (±0.000036 in.)	±1.5 µm (±0.000060 in.)
Measurement Area Depth Of Field	±.75 x 25 mm (±0.030 x 1.0 in.)	±1.5 x 50 mm (±0.060 x 2.0 in.)
Laser Beam Velocity	50 m/sec. (2,000 in./sec.)	100 m/sec. (4,000 in./sec.)
Temperature Coefficient	<0.2 µm/°C (<0.000004 in./°F)	
Calibration	Factory calibrated	
Scan Rate	100/sec	

[1]For ID/OD/Wall applications, maximum OD is dependent on product.
[2]Accuracy of ID/OD/Wall measurement is dependent on product.

See other sizes in the Options section.

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)	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, Spanish and Chinese
Power Requirements	100 to 240 volts AC (+5% to -10%), 50/60 Hz (±2 Hz)100 watts total power
Product Warranty	2 years

Input/Output

BenchMike 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

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Modular Fixtures

Ready-To-Mount Flexibility

We offer 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 Pro for precise, reliable measurements without calibration.

We provide a full line of heavy-duty fixtures to measure small and 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
	V-Block: General Purpose, Fixed	Used for measuring parts positioned on their outside diameter. Holds diameters from 0.38 to 45.72 mm (0.015 to 1.800 in.).
	V-Block: General Purpose, Full-Range, Adjustable	Enables part centering and measurement over the full measuring range of the BenchMike Series. Holds diameters from 0.38 to 50.4 mm (0.015 to 2.0 in.).
	V-Block: Adjustable	Supports parts that must be held on their outside diameters. Must be mounted on a slide. Holds wire diameters up to 45 mm (1.8 in.).
	V-Block: General Purpose Adjustable	Designed for fine wire or other material that must be centered for best measurement accuracy. Holds wire diameters from 0.025 to 10.16 mm (0.001 to 0.400 in.).
	Slide: Universal Manual	Used to linearly position parts by hand. Available in 457, 635 or 829 mm (18, 25 or 32 in.) lengths. Slide travel is 305, 483, or 660 mm (12, 19, or 26 in.).
	Slide: Digital Readout	Used to linearly position parts to predetermined positions for measurement and/or measure the distance between two points on a part. Available in 457, 635 or 829 mm (18, 25 or 32 in.) lengths. Slide travel is 305, 483, or 660 mm (12, 19, or 26 in.).
	ID/OD/Wall: Small Tube & Hose, Auto-Rotating	Automatically rotates enabling inside diamter, outside diameter, and wall thickness measurements of small tubular products such as medical tubing, hose, and glass. Can be supplied with a Force Gauge for measuring very small tubes.
	Chuck: Auto-Rotating	Motorized rotation of shafts or wires to detect variation in diameter around the circumference. Keyless precision chuck holds diameters 0.003 to 1.5 in. (75µm to 38 mm).

Modular Fixtures, cont.

Force Gauge (GA5005-0013)

For precision ID, OD, and Wall Thickness measurements on thin-wall small diameter tubing, such as medical tubing, simply place a tube sample on the ID/OD/Wall fixture, apply the desired force on the sample, and BenchMike will calculate all the dimensions.

Other Measurement and Control Solutions

In addition to our BenchMike Pro off-line gauging system, we offer a complete portfolio of measurement and control solutions for on-line production applications. Our solutions enable manufacturers to realize a number of performance and production benefits, such as improved product quality, enhanced process reliability, increased productivity, and reduced manufacturing costs.

AccuScan
High-Speed Diameter and Ovality Measurement Systems

UltraScan Pro
Wall and Concentricity Measurement Systems

LN Detectors
Lump and Neckdown Measurement Systems

LaserSpeed Pro
Non-Contact Length and Speed Measurement Systems

InControl
Process Control and Data Management Systems

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Nordson
MEASUREMENT & CONTROL

Optimizing Your Investment with World-Class Service and Support

Nordson'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 BETA LaserMike product.

Visit myNDC service cloud at ndc.custhelp.com.

LASER LIGHT
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT
MAX POWER <1mW
WAVELENGTH 670 nm

Complies with IEC/EN 60825-1:2001. Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No 50, dated July 26, 2001

CAUTION
CLASS 3B LASER LIGHT
WHEN OPEN AVOID EXPOSURE TO BEAM

Nordson Measurement & Control is represented in over 60 countries worldwide. **www.ndc.com/betalasermike**

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