ABTech inc.
Pride In Precision

MicroForm Gages

Ultra-Precision Form Measurements

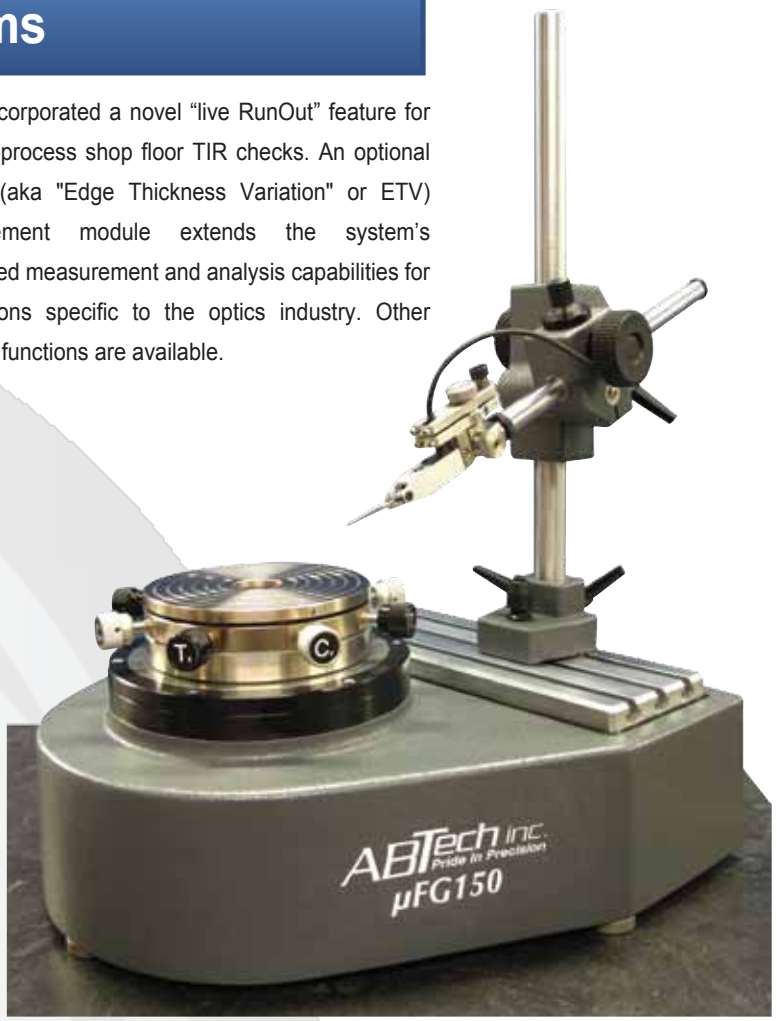
Turn-Key Air Bearing Systems

ABTech's MicroForm™ Gage brings ease and confidence to measuring geometric tolerances with speed, ultra-precision accuracy and repeatability.

State-of-the-art technologies are featured throughout the gage system. Our model µFG150 metrology platform combines an ultra-smooth, maintenance-free rotary air bearing with an integrated direct drive as the reference axis embedded in a cast iron base.

Common contributors to measurement errors in competitors' gages come from internal electrical components that are sources of thermal and/or vibration interference. These have been purposefully engineered out of the MicroForm µFG150 gage. The motor drive amplifier, power supply, encoder interface and other electronic hardware are installed in the separate metrology controller and therefore isolated from the work piece. This gives you the confidence to know that your measurement result is from the part alone, and doesn't include "noise" from the rest of the system.

Along with measuring roundness, flatness, squareness, concentricity (in and out of plane), and parallelism, we've incorporated a novel "live RunOut" feature for quick in-process shop floor TIR checks. An optional Wedge (aka "Edge Thickness Variation" or ETV) measurement module extends the system's automated measurement and analysis capabilities for applications specific to the optics industry. Other analysis functions are available.



Features:

- *Intuitive software and user interface for quick and easy measurements*
- *High speed data acquisition for real-time results*
- *Ultra-precision maintenance-free air bearing rotary axis*
- *Integrated brushless DC servo direct drive*
- *Drives and electronics isolated from test platform*
- *Nearly perfect probe linearity over full measurement range*
- *Unlimited indicator positioning with flexible gage arm*
- *Chrome plated steel T-slots for multiple gage stand options*
- *Adjustable spherical seat table maintains center when leveling*
- *Thermally stable rigid cast iron base*
- *Independent FPGA controller eliminates PC resource conflicts*
- *Optional dual gage head capabilities*
- *Made in USA*

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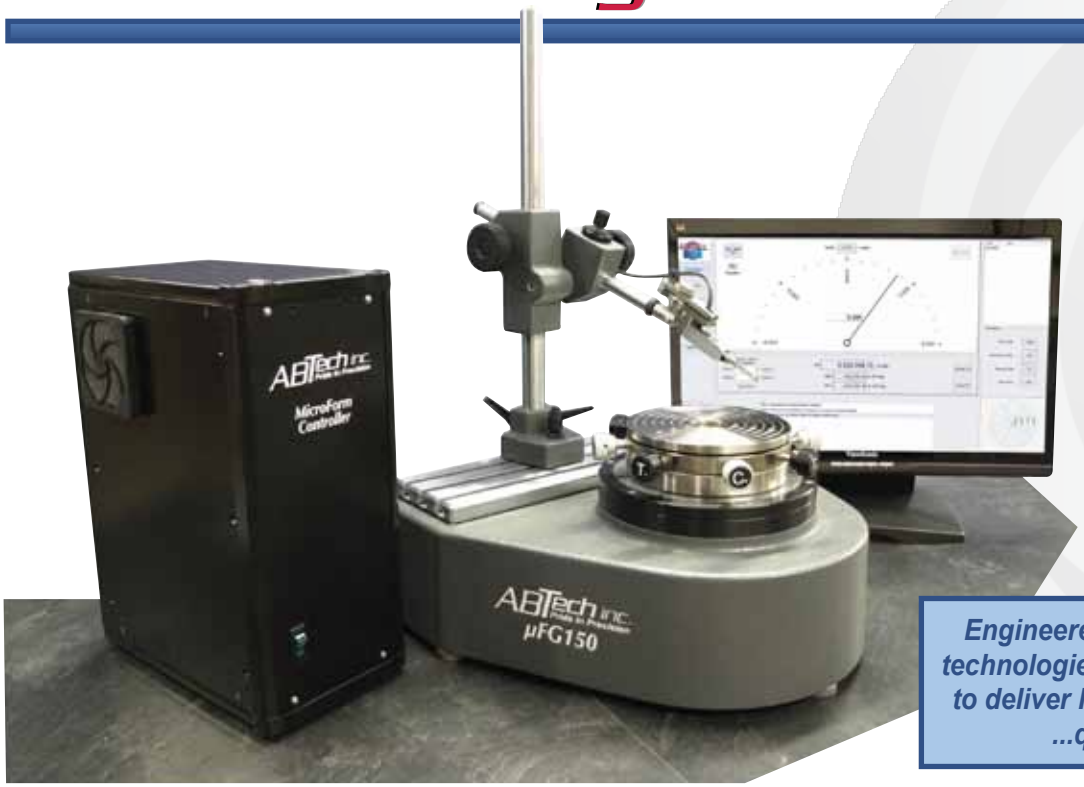


Engineered with proven air bearing technologies and the latest electronics to deliver high-performance results... ...quickly and reliably.

MicroForm™ Gage Model µFG150

Bearing Type	Air bearing (stainless steel construction)
Worktable Type	Spherical seat adjustable tilt & center
Worktable Diameter	6" (150 mm)
Tilt Travel	+/- 1°
Centering Travel	+/- 0.05" (1.3 mm)
Motor Drive	Brushless DC servo direct drive with free-spin feature for manual operation
Encoder	High resolution optical encoder with high speed interpolation
Rotational Speed	10 rpm with motor operation
Working Load Capacity	75 lbs (34 Kg) with motor operation*
Max Load Capacity	250 lbs (113 Kg) in manual mode*
Work Envelope	16" diameter x 18" height (400 x 450 mm)
Indicator	Low profile lever type electronic
Gage Stand	12" vertical and 8" horizontal travel with friction drives and position locks
Base Type	Cast iron with T-slot gage stand base
Base Dimensions	16" x 18" (406 x 457 mm)
Total Weight	<150 lbs (68 kg)
Air Requirements	3.4 CFM at 60 PSI
Filter Type	Dual stage (5.0µm/0.5µm) coalescing filter with regulator and shutoff

** Maximum load capacities for centered and balanced loads*

~ Specifications are at 60 psi (4 kgf/cm2) and are subject to change without notification. Consult ABTech for current specifications at the time of your order.

Quick and accurate part setup. The tilt and center worktable allows very fine adjustments to align parts to the bearing's axis of rotation, reducing eccentricity. A spherical seat design maintains the part's center point when leveling, saving the operator time in set up prior to measuring.

Unlimited probe positioning. A T-slot gage stand base provides unlimited positioning options for the inspection quality gage stand and allows for the use of multiple stands including magnetic base designs. Easily position the probe in any orientation to the part thanks to the flexible design of the vertical and horizontal drive assemblies.

Ultra-precision accuracy. The air bearing rotary axis with a non-influencing direct drive motor housed in an extremely stable casting delivers an overall system accuracy certification better than 5.0 millionths of an inch (5µ" or 0.125 µm). The lever probe has excellent linear reliability over its full range allowing you to start your measurement as soon as the part is on scale, and giving you confidence in the accuracy of your test results.

Fast and definitive results. A "real-time" operating system with dedicated FPGA processing platform and signal conditioners are included in the metrology controller. The on-board processor results in high speed data acquisition and instantaneously synchronizes the indicator displacement with the high resolution encoder for pin-point accuracy. These are the workhorses for taking the measurement data, eliminating resource conflicts typical with systems running on PC's.

A reliable long-term investment. The ultra-precise, robust and maintenance-free stainless steel air bearing with properly supplied air will provide reproducible results for decades to come. The field programmable electronic architecture will keep pace with functional software upgrades without the cost and time associated with obsolescence of electronic hardware. With features like these you may never need to replace this gage!

ABTech's MicroForm™ measurement software offers intuitive navigation for shop floor use, and full function analysis for quality control labs. On screen "step-by-step" instructions are displayed to guide even novice operators through each measurement, without hindering the efficiency of more experienced users.

A touch screen color monitor displays the MicroForm™ program in two simplified views. The main section of the screen is dedicated to a graphical display which can be toggled between the active RunOut meter screen and the results screen with polar chart (a strip chart plot can be selected also).

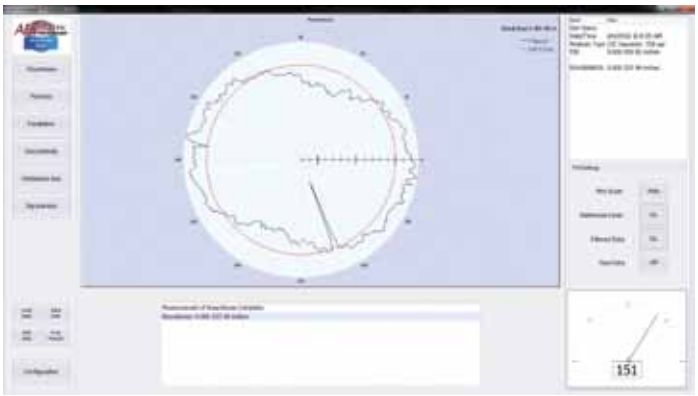
A sidebar menu of all the form options and data options is visible on all screens along with the measurement results.

Customizable options are accessed in the configuration screen and include changes to the display and output options as well as units of measure, analysis type and filter settings. Select from four established reference circle types: Least Squares Circle (LSC), Minimum Zone Circle (MZC), Maximum Inscribed Circle (MIC), and Minimum Circumscribed Circle (MCC). Choose low and high pass Gaussian filter settings to match your company standards or each part's requirements.

Don't leave even simple RunOut measurements to operator subjectivity. Quickly print or save a PDF of any of the form measurement results and graphical charts for document traceability. Save the raw data file, or export and share the data with the available network option via an Ethernet connection for use in your existing statistical process control (SPC) program.

Fine action for leveling and centering the part with ABTech's spherical seat design. Lock in the adjustments using eight opposing knobs to eliminate hysteresis and provide superior position stability.

Screenshot of live indicator reading as analog meter with synchronized rotary encoder position; step-by-step instructions for part and probe set up; and T.I.R. results table.



Roundness test results screen with polar chart; results table; settings for output options; and a minimized live RunOut meter with active angular position displayed.

Designed, manufactured, assembled and tested with "Pride in Precision" in the United States.

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Options & Accessories:

- Vacuum feed thru center with tunable pressure control box for part holding
- Cart to house PC, metrology controller, monitor, and optional printer
- Welded steel base for metrology platform
- Color printer
- Second electronic indicator
- Additional gage stands
- Electronic indicators with ruby tipped probes
- Precision 3-jaw scroll chucks, iris centering fixtures or custom collets
- Custom tooling, fixture design and manufacture
- Certified 2µ" round master test ball and cover
- Network capable Ethernet interface for PC
- Optical "wedge" (ETV) package (software up-grade and ruby tipped probe)

Shown with optional electronics cart and welded steel base and printer for model µFG150 metrology platform.

Ask about MicroForm systems for larger air bearing platforms or as an upgrade to your existing system. Custom industry specific analysis functions are also available.

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