

# MicroForm Gage

## Ultra-Precision Form Measurements

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

State-of-the-art technologies are featured throughout the gage system. The 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. Reliable and repeatable.

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 measurement platform. 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. There's even an optional Wedge (aka "Edge Thickness Variation" or ETV) measurement module that extends the system's automated measurement and analysis capabilities for applications specific to the optics industry. Other form measurements available.



**ABTech, Inc.**  
P.O. Box 10296  
126 Monadnock Highway  
Swanzey, NH 03446

Phone: 1-603-358-6431  
Fax: 1-603-358-0196  
info@abtechmfg.com  
www.abtechmfg.com



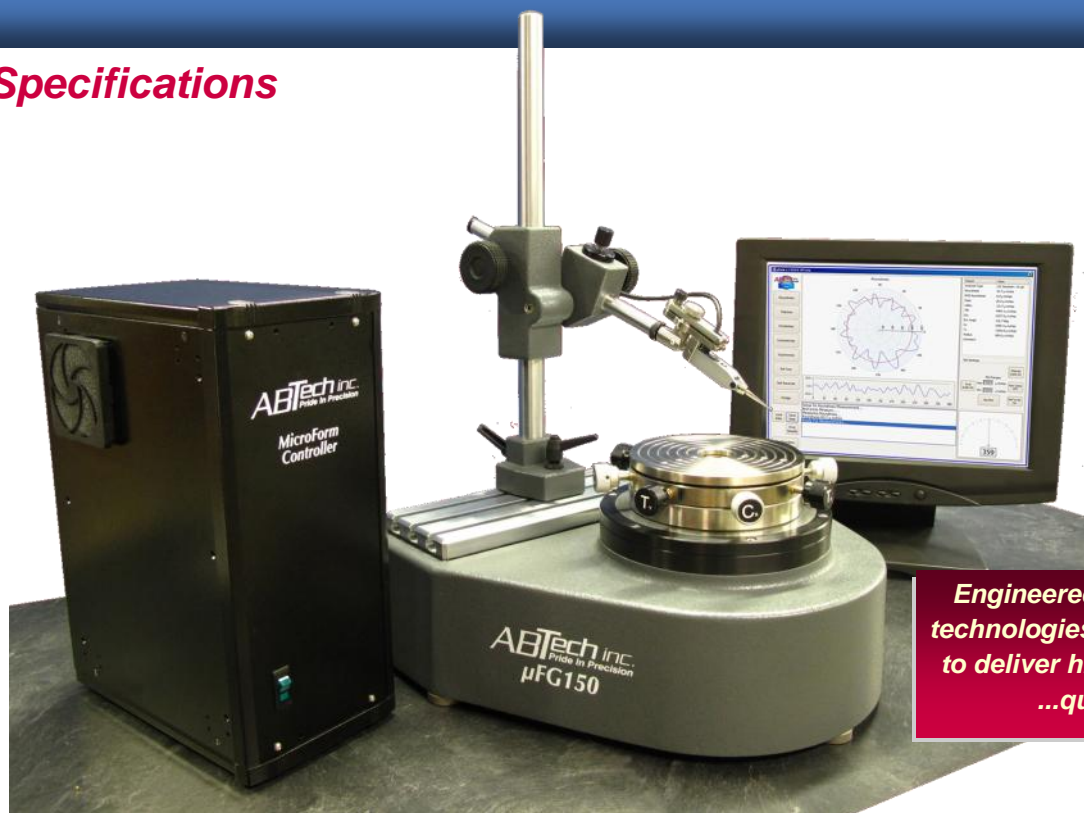
**μFG150**



### Features:

- High speed data acquisition for real-time measurements
- Nearly perfect linearity over full measurement range
- Ultra-smooth maintenance-free air bearing table
- Integrated brushless DC servo direct drive
- Drives and electronics isolated from test platform
- Thermally stable rigid cast iron base
- Independent controller eliminates PC resource conflicts
- Indicator positioning flexibility with articulating gage arm
- Chrome plated steel T-slots for multiple gage stand options
- Spherical seat tip/tilt maintains center when adjusting tilt

## Specifications



*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	4 rpm
Working Load Capacity	75 lbs (34 Kg) with motor operation*
Max Load Capacity	250 lbs (113 Kg) in manual mode*
Work Envelope	8" diameter x 10" height (200 x 250 mm)
Indicator	Low profile bi-directional lever type
Gage Stand	12" vertical and 8" horizontal travel with friction drives and position locks
Base Type	Cast iron
Base Dimensions	16" x 18" ( 406 x 457 mm)
Total Weight	<150 lbs (68 kg)
Air Requirements	1.0 scfm (1.7 m <sup>3</sup> /h) at 60 PSI
Filter Type	Dual stage (5.0μm/0.5μm) coalescing filter with regulator and shutoff

**Quick and accurate part setup.** The tilt and center (tip/tilt) 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 setting up the part for measurement.

**Unlimited probe positioning.** Using a T-slot mounting plate provides unlimited positioning options for the inspection quality gage stand location and allows for the use of multiple stands. Easily position the probe in any orientation to the part thanks to the flexible design of the gage stand.

**Ultra-precision results.** By combining an ultra-precise air bearing rotary axis in an extremely stable metrology platform the MicroForm™ model μFG150 gage carries an overall system accuracy certification better than 5.0 millionths of an inch (5μ" or 0.125 μm). The probe has excellent linear reliability with a correlation coefficient of .9999 (out of a possible 1.0000) over the full travel allowing you confidence in the accuracy of your test results.

\* Load capacities are based on centered and balanced vertical loads  
All specifications are at 60 psi and subject to change without notification



**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 available to assist even novice operators through each measurement, without reducing the efficiency of more experienced users.

A touch screen color monitor displays the MicroForm™ program in two simplified views. The main section of the primary view is dedicated to a graphical display which can be toggled between a polar chart and the active runout meter. A sidebar menu of all the form options is always visible along with the measurement results.

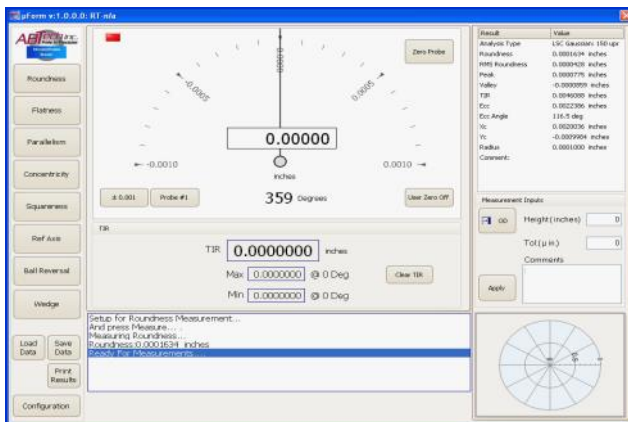
The other view is for user definable configuration settings to customize displays and output options. Select from four reference circle types: Least Squares Circle (LSC), Minimum Zone Circle (MRS), Minimum Inscribed Circle (MIC), and Maximum Circumscribed Circle (MCC), and the Gaussian filter setting to match your part drawing's requirement.

Quickly save, print, convert to PDF, or export and share measurement results and graphical charts using Ethernet network connections for statistical process control (SPC) and document traceability.

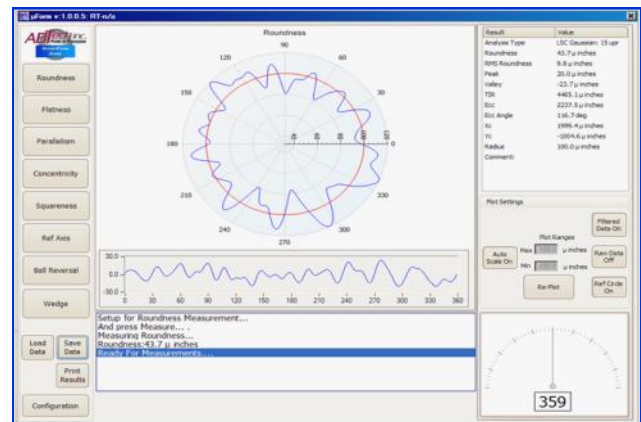
**Fast and definitive results.** A "real-time" operating system with dedicated FPGA processing platform and signal conditioners are included in the metrology controller. These are the workhorses for running the measurement algorithms, eliminating resource conflicts typical with systems running on PC's. 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. The processing platform not only provides tremendous system performance but also permits future system enhancements without the cost and time associated with obsolescence of electronic hardware.



*Fine action for leveling and centering the part with ABTech's spherical seat tip/tilt 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; optional linear strip chart format and settings for filter, reference circle type and output options.*

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

## Options & Accessories

- Certified 2μ" round master test ball and cover
- Vacuum feed thru center with adjustable pressure control box for part holding
- Precision 3-jaw scroll chuck
- Custom collets
- Custom tooling, fixture design and manufacture
- Additional gage stands
- Electronic indicators with ruby tipped probes
- Color printer
- Cart to house PC, metrology controller, monitor, and optional printer
- Welded steel base for metrology platform
- Optical "wedge" (ETV) package (software upgrade and ruby tipped probe)



*Shown with optional electronics cart and welded steel base for metrology platform*

**Ask ABTech about MicroForm™ metrology software and controller upgrades for your existing systems...**