UNIVERSAL
SUPERMICROMETER™

Datum   AutoZero   Options   Print

English   AutoZero=On   TempComp=On

Pratt & Whitney®
Measurement Systems, Inc.

The Standard of Accuracy

Two Instruments in One

The Universal **Super**micrometer™ represents an evolutionary leap forward in what many users consider to be the definitive bench micrometer. It offers the advantage of two instruments in one by providing the ability to measure both internal and external parts, gages, or standards. Additionally, as a high precision, direct-reading metrology instrument, it is equally capable of checking critical parts on the shop floor or serving as the heart of your in-house calibration laboratory.

As with all Pratt & Whitney® instruments, accuracy and performance begins with user-sensitive design. Overall system accuracy is guaranteed through the use of an advanced linear encoder system, located in-line with the measurement axis to eliminate any Abbe offset errors. A rigid frame and advanced composite materials, coupled with the variable (internal/external) force system maximizes repeatability and reproducibility. An optional variable-attitude measurement table is available to facilitate internal measurements.

A touch screen computer system is included with Pratt & Whitney's GageCal™ software.

Simple, Flexible and Fast

English or Metric measurement of rings, threaded rings, plugs, threaded plugs, pins, length standards or just about any precision part is accomplished in no time at all. This speed advantage comes from the integration of a user-friendly, touch screen interface, with a wide direct reading range, bi-directional probes, and simplified operator controls.

To use, the instrument is first mastered with two National Institute of Standards and Technology (NIST) traceable gage blocks. Varying the size of the gage blocks allows the user to set the measurement range to meet specific needs. Once the system has been mastered, any OD specimen, that falls within the mastered range, can be measured. Just locate the part on the table and close the probes until the "Auto Zero" bar on the touch-screen display turns from red to green. To switch to internal measurement, simply reset the datum with a NIST traceable ID master. It's that simple!

With no hooked feelers, or jaws to compromise accuracy, and no levers to adjust when changing force direction, you spend your time measuring, not setting up!

Part Temperature Compensation

To counter temperature effects when making shop floor measurements, an active temperature compensation circuit is included in all Universal **Super**micrometers. The operator need only specify the material of the part, and the temperature compensation circuit does the rest.

A Standard to Grow With

At Pratt & Whitney we're committed to an ongoing development program that will produce a continuous stream of new or improved applications for the Universal **Super**micrometer. We are equally sensitive to the investment one makes in such an instrument. That is why we have committed to make all new developments reverse compatible. So when you purchase a Universal **Super**micrometer today, be assured your investment is safe. Because as your measurements evolve, and they will, Pratt & Whitney will be there, ready to accommodate you.

Guaranteed Service/A2LA Accredited

The Universal **Super**micrometer was designed with serviceability in mind. Our exclusive modular design facilitates problem isolation and field interchangeability. We provide a one-year warranty and factory trained service personnel to provide you with exceptional product support and calibration services meeting ISO 17025 standards.

We've built these instruments to exacting standards of accuracy and reproducibility to guarantee you years of high productivity, reliability, and product integrity. Our reputation, as well as yours, depends on it.
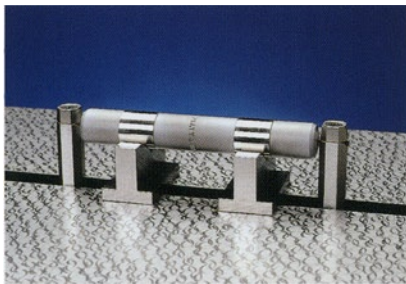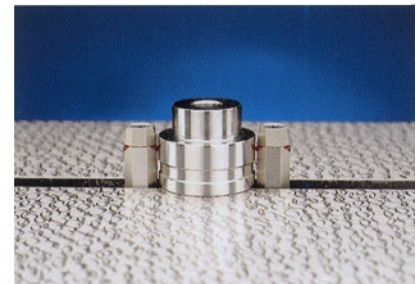

Length Standards

Plugs & Pins

Rings

External Threads

Dial & Test Indicators

Your Precision Part

Features

Mechanical and Thermal Stability
A rugged cast iron base and thermally stable composite materials insure repeatable and reproducible results.

Linear Encoder with Zero Abbe Offset
A high precision glass scale located along the measurement axis eliminates Abbe offset errors that reduce overall measurement uncertainty.

"Variable Attitude" Measurement Table
Vertical table adjustment is provided on all instruments (model 501 and model 504). An optional, four-axis, measurement table allows additional adjustments in centering, swiveling and tilting (model 504).

Variable Force
Allows the Universal **Super**micrometer to make measurements at forces ranging from -8 to +40 ozf. This wide range of forces is essential, especially when making precision calibrations such as external threads and wires, which require that the measurements be made at a specified constant force.

Touch Screen Operator Interface
All inputs are made via a color, liquid crystal display (LCD) touch screen. A keyboard and mouse is also included in the system.

Two Point Calibration
Mastering with two, NIST traceable blocks, allows continuous, accurate measurement over the full direct reading range. This provides significantly higher levels of productivity when compared to single point comparators.

Flexible Fixturing
Pratt & Whitney's bi-directional probes (US Patent) and flat anvils are standard accessories. The bi-directional probes allow for both internal and external measurement without time consuming set-up changes. In addition, our unique V-grove fixturing provides repeatable probe positioning. Optional, special probes and fixtures are also available to meet a wide variety of applications.

Auto Zero Mode
In this mode, measurements can be taken at great speed, increasing throughput, without compromising accuracy. Unlike traditional measuring techniques where the operator "nulls" a reading to an exact point on the scale, the Universal **Super**micrometer allows the operator to quickly adjust the setting wheel to display a green "go" condition. The Universal **Super**micrometer automatically "nulls" the system.

Part Temperature Compensation
A sensor is provided to monitor the temperature of the specimen. The operator inputs the material data, and the Universal **Super**micrometer automatically compensates for the difference between temperatures.

Dual Measurement
Switching between English and Metric units can be accomplished without recalibration. Measurement units are easily changed with a touch of the screen.

*Model 504

UNIVERSAL SUPERMICROMETER™

SPECIFICATIONS

Instument Uncertainty:	10 + 0.7L Microinches (±2 std dev)	0.25 + 0.7L/1000 Microns (±2 std dev)
Repeatability:	4 Microinches (±2 std dev)	0.1 Microns (±2 std dev)
Resolution:	1 Microinch	0.025 Microns

Measuring Range (Standard):
  External (Bi-Directional Probes):
  External (Flat Probes):[1]
  Internal (Bi-Directional Probes):[2]
	0 to 11 inches
	0 to 5 inches
	1.0 to 11.5 inches
		0 to 279 mm
		0 to 127 mm
		25 to 292 mm

Direct Reading Range	2 inches	50 mm

Measuring Forces:
  External:
  Internal:
	2 to 40 ozf
	2 to 8 ozf
		57 to 1134 gf
		57 to 226 gf

Measuring Table Area:	116 sq. inches	748 sq. cm
Measuring Table Lift Range:	1.5 inches	38 mm
Control:	GageCal™ for Windows® with PC	
Electrical Requirements:	110/120 VAC 60 Hz (220/240 VAC 50 Hz with optional accessory)	
Dimensions (W x D x H):	28 x 11 x 11 inches	71 x 28 x 28 cm
Shipping Weight:	100 lbs	45 kgs
Transducer:	Linear Encoder	

L = Length from datum (in/mm)
1. Larger ranges with optional probes
2. Smaller ranges, to 0.040 inches (1mm), with optional probes

WARRANTY POLICY

Any part which, under normal operating conditions in the plant of the original purchaser, proves defective in material or workmanship within one (1) year from the date of shipment as determined by **Pratt & Whitney**'s inspection, will be repaired free of charge, f.o.b. factory Bloomfield, Connecticut, provided that the product has been properly installed, maintained and operated within the limits of rated and normal usage.

For further information call or write:

Main Office and Plant
Pratt & Whitney®
Measurement Systems, Inc.

66 Douglas Street
Bloomfield, CT 06002-3619
U.S.A.

ACCREDITED
CALIBRATION CERT. #2629.01

Toll Free: (800) 371-7174
Phone: (860) 286-8181
Fax: (860) 286-7878
E-mail: info@prattandwhitney.com
www.prattandwhitney.com