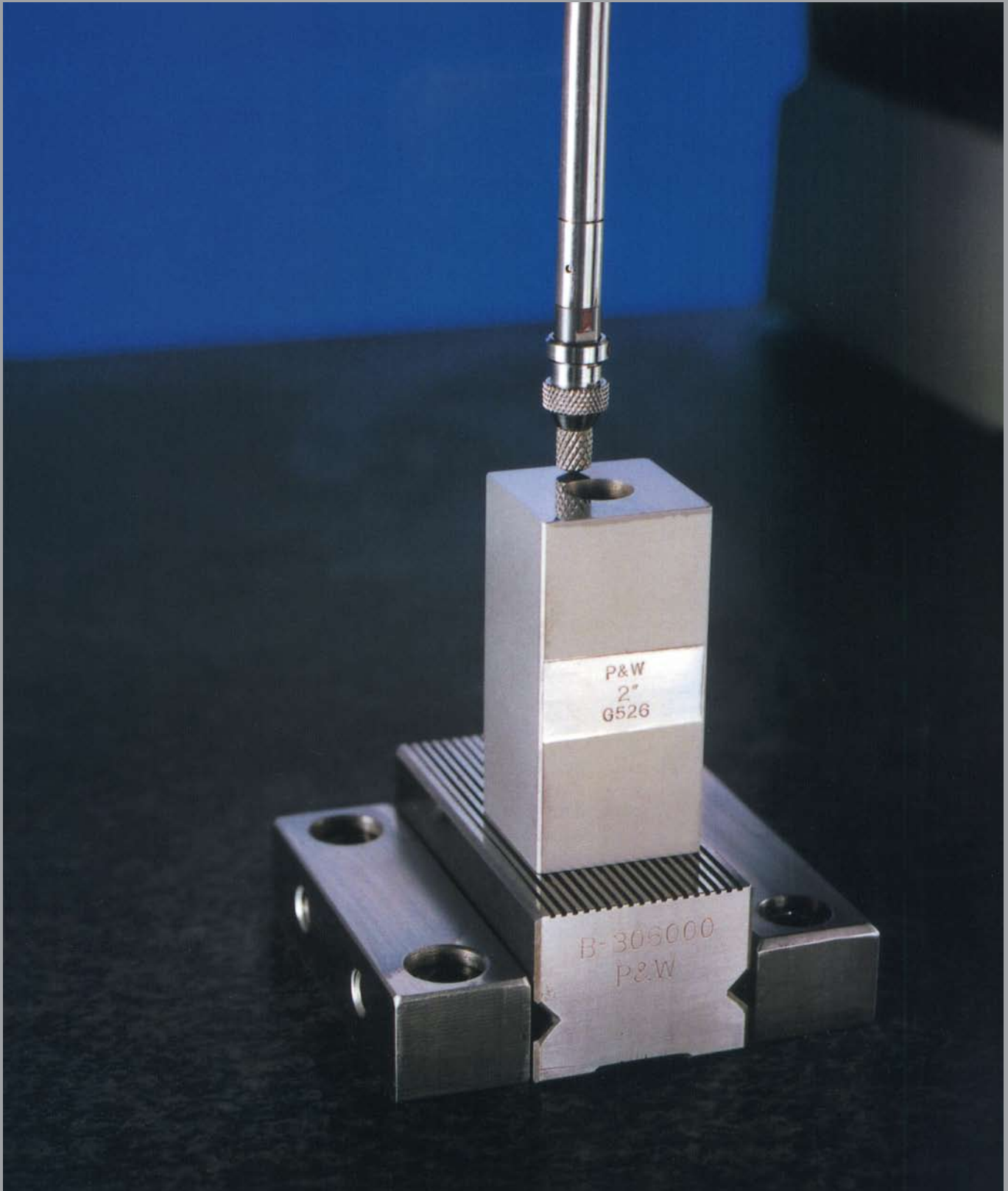


STANDARD  
MEASURING  
SYSTEM

# LABMASTER<sup>®</sup>



**Pratt & Whitney<sup>®</sup>**  
Measurement Systems, Inc.

## The Standard of Accuracy

### Laser-Based

LABMASTER is designed to provide the ultimate in user-friendly operation while delivering calibration-quality accuracy and reproducibility. Our exclusive digital interferometer measures internal and external dimensions by comparing the measurement probe position to the wavelength of a laser light source, effectively coupling the wavelength of light to the part being measured. Our patented laser path is in line with the measurement axis to eliminate Abbe error.

The thermal coefficient of expansion for this laser wavelength is more than ten times smaller than that of steel, making for a highly stable measurement source. Equally important, the linearity errors inherent in other scales (glass, steel, LVDT's) are absent in Pratt & Whitney's laser.

Because this wavelength of light is stable, linear, and has very high resolution, when compared to like instruments, LABMASTER provides the most accurate means of linear dimension measurement available in the world. And that's not all.

GageCal™, our own Windows®-based control software simplifies data collection and speeds up data entry. Add our optional gage management module and the system is complete; with all subsystems complementing each other to deliver the accuracy of a comparator while offering the productivity associated with direct-reading instruments.

### Simple, Flexible and Fast

To master the system, use the following two step technique. First place a small gage block on the anvil and lower the probe. Once engaged, enter the value of the block. Next, raise the probe and replace the gage block with another larger gage block. Lower the probe to the block and enter the value of this block. The system is now calibrated over the range of the smaller and larger gage blocks. By using different size gage blocks, this range can be increased or decreased to meet your specific needs.

Now that the system is calibrated, any specimen that falls within the calibrated range, can be placed on the anvil. Once the probe is lowered to the specimen, the absolute measurement will be displayed in GageCal.

Verify and calibrate rectangular, square and thin gage blocks, plug gages, threaded plug gages, balls, and just about any precision part with complete confidence. Measure thickness, diameter, step height, parallelism, roundness, flatness, straightness, and concentricity more accurately and with higher precision than before.

By selecting the automatic cycle mode, the LABMASTER probe will raise and lower at regular intervals, allowing you to remove and place blocks on the anvil after the measurement has been automatically recorded in GageCal. By employing this automatic cycle mode, users can reduce an 88 piece gage block set calibration time from eight hours to one hour.

Pratt & Whitney also offers the LASERULER®, an economical alternative for your less demanding metrology needs.

### 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 LABMASTER product line. We're equally sensitive to the investment one makes in such an instrument. That's why we make all new developments reverse compatible to the very first LABMASTER we shipped. So when you purchase a LABMASTER today, be assured that your investment is safe. Because as your measurement needs evolve-and they will-your LABMASTER and Pratt & Whitney will be there ready to accommodate your new measurement needs.

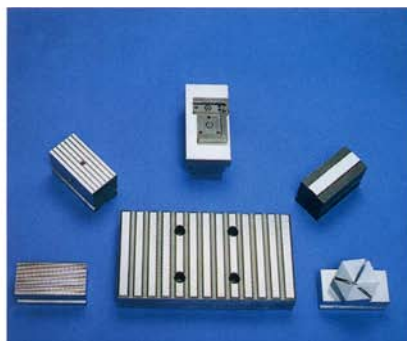
### Guaranteed Service/A2LA Accredited

The LABMASTER was designed with serviceability in mind. Our exclusive modular design facilitates problem isolation and field interchangeability. We offer a one-year warranty and service personnel who receive factory training to provide you with experienced 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.



Leveling



Assorted Anvils



Force Kit (optional)

## Features

### ■ Rigid Ring Design

Low expansion granite base maximizes repeatability and reproducibility while providing an integral reference surface.

### ■ Motorized Probe

Remote controlled probe of low expansion material improves system stability and eliminates operator influence.

### ■ Digital Laser Interferometer

The wavelength of laser light, universally accepted as the reference standard for all length measurements, guarantees maximum resolution, traceability and performance.

### ■ Two Step Calibration

This advanced time-saving feature allows the LABMASTER to be calibrated using two lab grade, traceable gage blocks. This two-step process takes only 30 seconds from start to finish.

### ■ Automatic Cycling

Programmable measurement cycle permits user-defined constant throughput rate. The operator simply positions the specimen for automatic measurement, the probe makes contact and the absolute reading is provided. This procedure is repeated until the lot is complete.

### ■ Direct Reading or Comparator

Depending on your accuracy requirements, the instrument can easily be operated in either mode.

### ■ Statistical Measurement

Summation of all measurements is stored on command. Stats display indicates computed mean value and one standard deviation.

### ■ PC Control with our GageCal Software

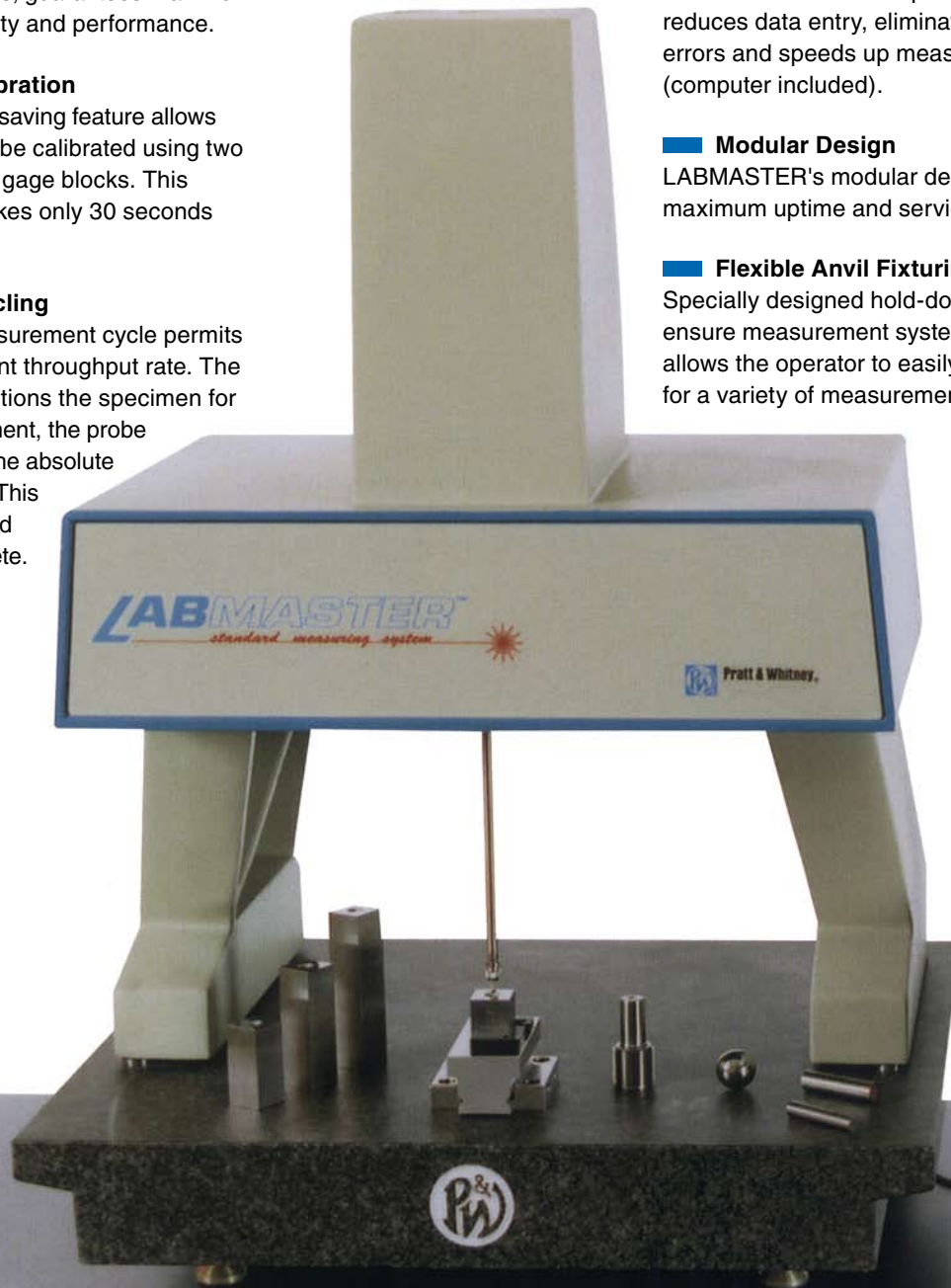
Windows™ based, mouse-driven control software with "Smart" spreadsheets reduces data entry, eliminates transcription errors and speeds up measurements (computer included).

### ■ Modular Design

LABMASTER's modular design promotes maximum uptime and serviceability.

### ■ Flexible Anvil Fixturing

Specially designed hold-down fixtures ensure measurement system integrity and allows the operator to easily change anvils for a variety of measurement applications.



## Applications



*Square Gage Blocks*



*Rectangular Gage Blocks*



*Thin Gage Blocks*



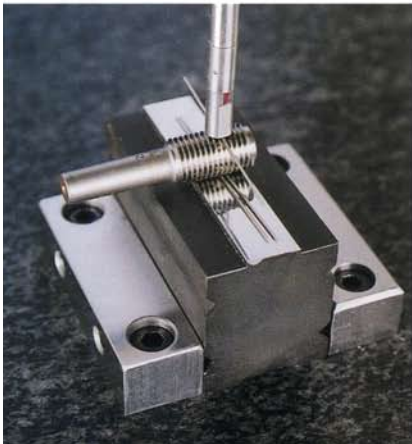
*Rectangular Gage Blocks  
(Comparator Mode)*



*Plugs/Pins*



*Thread Wires\**



*Threaded Plugs\**



*Spheres*



*Your Precision Component*

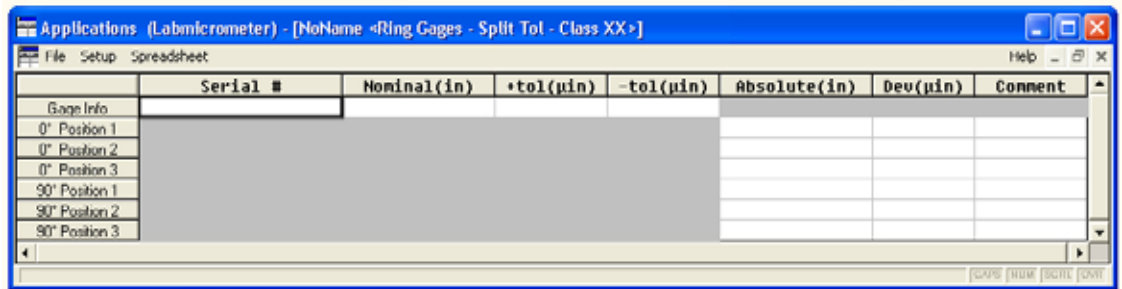
\*force kit required

## GageCal™

### PC Based Control

Powerful and resourceful, our GageCal control software sets a new standard for user-friendly calibration. By controlling the operation of the LABMASTER and facilitating data collection, GageCal increases total measurement productivity. And with a graphics-rich user interface, you'll be amazed with how simple it is to use.

We designed GageCal to be intuitive and self-teaching. So much so, that the extensive context sensitive HELP screens are seldom called upon. Mouse or hot key driven, with pull down menus and icons that let you "click" your way through a calibration, GageCal helps put you at ease, so you can concentrate on the business of measuring. And the Microsoft® WINDOWS™ environment allows multitasking and data export to other programs.



The operator simply chooses the class of gage (ie., XX or XXX), in the dialogue box, selects the appropriate cell in the "smart" spreadsheet, and clicks on the *close probe* icon (or presses the footswitch). GageCal displays the measurement in the "Current Reading" window and auto-matically updates the record. The data can be saved, printed in a customized report, or exported to any Windows™ based program.

### Smart Spreadsheets Speed Up Data Entry

Faster measurement begins with selecting an icon (or pressing the hot key) to first master the instrument, and then calibrate your particular gages. The user can choose between pre-defined applications (*Gage Blocks, Balls, Plugs, etc.*) and *Free Measure* (for custom applications). With an application selected, dialogue boxes will continuously prompt the user for information that will build and open a "smart" spreadsheet. This "smart" spreadsheet, in the case of pre-defined applications, will automatically enter nominal sizes, tolerance bands, define best wire size for thread measurements, calculate pitch diameters, and flag out of tolerance conditions as appropriate.



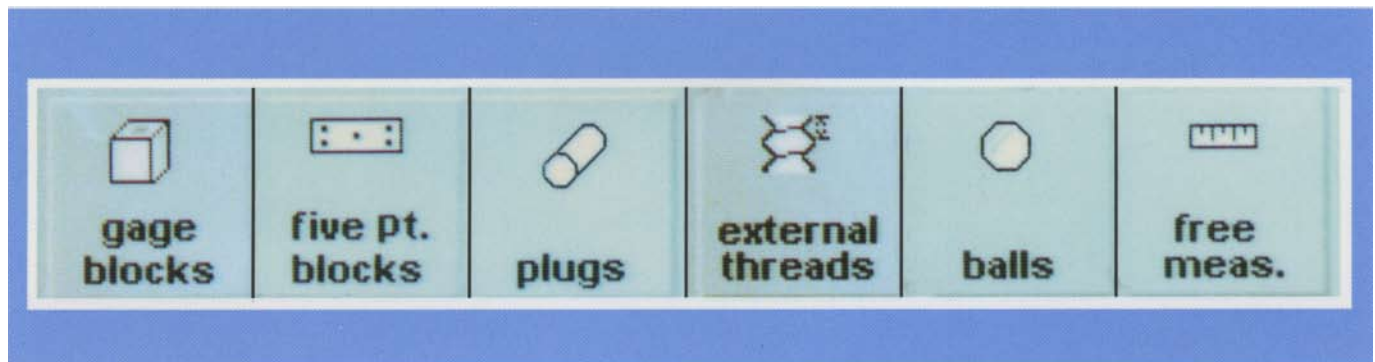
### Gage Management

Our optional gage management module, designed in accordance with ISO 17025 and ISO 9000, puts gage information at your finger tips. It represents a logical addition to the LABMASTER because it makes storing, retrieving and reporting gage information quite simple. You will be able to track and display gage history, wear data, current users, the product evaluated with the gage, calibration date, and days since last calibration.

Additional subsystems of the gage management module include gage studies, gage crib, gage preventative maintenance, and gage archives. With them, you'll be able to control your gage data as well as your gages,

### Detailed Printouts to Your Specifications

The reporting system is extensive, offering both standard and custom reports. Common reports include standard calibration reports, gages due, recall letters, gage lists, supplier summaries, gage study listings, and many more.



## SPECIFICATIONS

Instrument Uncertainty: 1,2,3	2 + 0.5L Microinches	0.05 + 0.5L/1000 Microns
Repeatability: 1,3	1.6 Microinches	0.04 Microns
Display Resolution:	0.1 Microinch	0.0025 Microns
Measurement Range:	0-8.0 inches	203 mm
Maximum Specimen Size (Cylindrical Shape):	11 inches x 8 inches high	279 x 203 mm
Measurement Probe Contact Force, Standard:	0.5 oz*	14 grams*
Measuring Probe Geometry:	Tungsten Carbide Flat (1/10 wave) Diamond Tip (standard 0.125" radius) Mounts with ADG #4-48 adapter	
Electrical Requirements:	110 / 120 VAC 60 Hz (2 AMP) or 220 / 240 VAC 50 Hz (1 AMP)	
Dimensions (W x D x H)	22 x 16 x 31 inches	56 x 41 x 79 cm
Shipping Weight:	430 lbs.	196kgs.
Laser Type:	Helium-Neon 632. 8nm (red)	
<p>1. Environmental conditions should be within +/- 0.5°F (0.25°C), +/- 0.05 in Hg (1.5mm Hg), and +/- 25% relative humidity between mastering and measuring. Simply re-master if variation exceeds these conditions. Re-mastering takes less than 1-minute.</p> <p>2. Total measurement uncertainty will vary with grade of master and application.</p> <p>3. ±2 standard deviations.</p> <p>L = Length from datum (in/mm)</p>		
<div style="border: 1px solid black; padding: 10px;"> <p><b>NIST TRACEABLE</b></p> <p>LABMASTER'S exclusive Digital Interferometer-based sensor, accurately measures length by comparing the measurement probe position to the absolute wavelength of a laser light source.</p> </div>		
*Contact factory for specific requirements		

## 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:

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CALIBRATION CERT. #2629.01

## U.S. Export Control Laws Compliance:

Export and re-export of laser measuring instruments manufactured by Pratt & Whitney are subject to U.S. Export Administration Regulations, which are administered by the Commerce Department. The applicable restrictions vary depending on the specific product involved and its destination. In some cases, U.S. law requires the U.S. Government approval be obtained prior to resale, export or re-export. Clarification can be obtained by contacting Pratt & Whitney or an appropriate U.S. Government agency.