# global™

brown & sharpe®

*global...engines of productivity*

global

*...because the world isn't flat*

New GLOBAL coordinate measuring machines from Brown & Sharpe give you the flexibility to measure form, dimension, and position, save money, and improve your inspection throughput as well. Choose from three models:

- GLOBAL STATUS™
- GLOBAL IMAGE™
- GLOBAL REFERENCE™

Each model offers specific technological options that allow them to be configured to individual measurement and inspection needs.

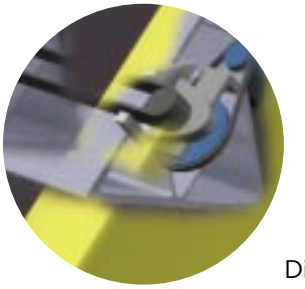
# Functional

## CAPABILITY FOR ANY REQUIREMENT

Multi-sensor design and scanning capability make GLOBAL CMMs versatile measuring systems for first piece inspection, layout inspection, reverse engineering, tool set up, process control, archiving, and more.

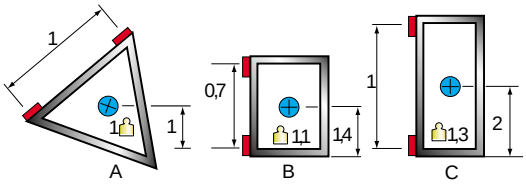
- GLOBAL CMMs combine single-point probing and analog scanning in a single high performance measuring machine. Quickly exchange touch trigger probes and analog probes to measure the dimensions of prismatic features or scan geometric shapes and free form surfaces.

# SIMPLE DESIGN, powerful PERFORMANCE



GLOBAL CMMs feature a simple, proven design with 20% fewer parts than traditional coordinate measuring machines. The result is improved reliability and reduced maintenance.

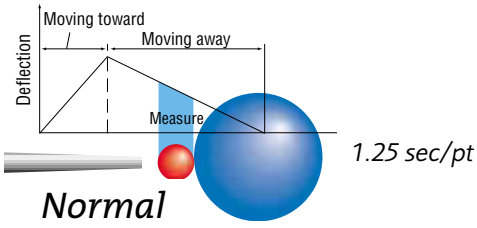
Distinctive TRICISION™ bridge design provides optimum stiffness-to-mass ratio. The light alloy bridge is 25 percent stiffer than traditional designs and the X rail has a 50 percent lower center of gravity for smooth, precise operation. Wider bearing separation than competitive bridge designs assures improved control of bridge axis roll for precise volumetric measuring accuracy, reduced repeatability errors, increased acceleration/deceleration and greater measuring throughput.

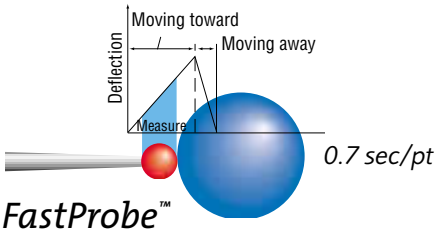


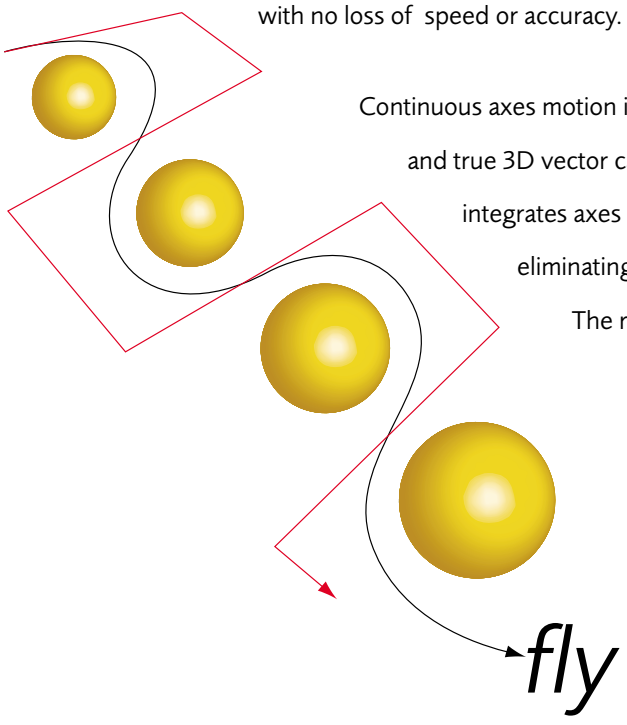

*TRICISION bridge design lowers the center of gravity, yet provides the same wide bearing spread as much larger and heavier bridge configurations.*

GLOBAL Point, Click and Scan Technology™ combines and optimizes temperature and accuracy compensation systems, motion controllers and advanced algorithms to support high-speed, high-accuracy analog open and closed loop scanning. An AUTOTUNE™ function reduces short-term interpolation errors, significantly improving first term measurement uncertainty.

The FastProbe™ feature of Point, Click and Scan Technology allows a scanning probe to be used as a touch trigger probe with no loss of speed or accuracy.




Continuous axes motion interpolation and true 3D vector capability (FLY) integrates axes movements by eliminating stops and corners.

The result is a 50 percent increase in probe velocity, a smooth, continuous probe path between points, more precise data collection, and a significant increase in machine throughput.

# *Finally... A GLOBAL Perspective on the World of*

## UPGRADE THE status OF YOUR INSPECTION PROGRAM

- GLOBAL STATUS...

  a cost-effective solution to common shop measurement and inspection applications. It is equipped with a MH20i or PH10MQ/TP20 probe and PC-DMIS,™ PC-DMIS™ LITE or QUINDOS® NT software and has integrated SPC statistical software package available as an option. A scanning option is also available. GLOBAL STATUS includes manual thermal compensation.

# FULL FUNCTIONALITY THAT FITS YOUR METROLOGY image


- GLOBAL IMAGE…

  flexible gaging system that can handle any measurement and inspection task quickly and efficiently. GLOBAL IMAGE comes equipped with PC-DMIS™ or QUINDOS® NT software, an integrated statistical software package and a PH10MQ or PH10M/TP200 probe. The SP600 scanning probe system is optional. An automatic linear thermal compensation system is standard on the GLOBAL IMAGE. ACTIV® structural temperature compensation is available as an option (shown).

# PRECISION IN THE details

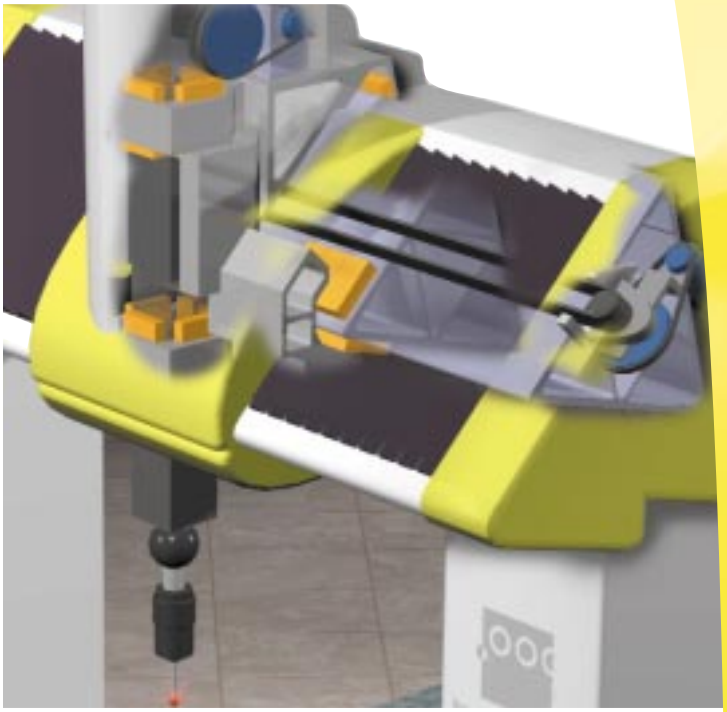
- Computer design techniques, including Finite Element Analysis (FEA) and Modal Analysis, reduce structural deflection and the effects of vibrations and thermal variations on machine performance.
- Lightweight covers reduce overall machine weight to increase throughput.
- All-aluminum ultra-rigid frame.
- TRICISION™ bridge design increases bridge stiffness.
- Heavy, stable granite table resists vibrations.
- Patented precision-machined dovetail guideways improve accuracy and repeatability.
- Small footprint and reduced height machine make it easy to fit into tight spaces.
- Non-contact encoders eliminate axis drag reducing uncertainty errors.
- Powerful new controller provides high acceleration and scanning velocity.
- On-board diagnostics simplify maintenance.
- Tuned elastomeric passive damping system.

- *Patented counterbalance design improves measuring performance.*

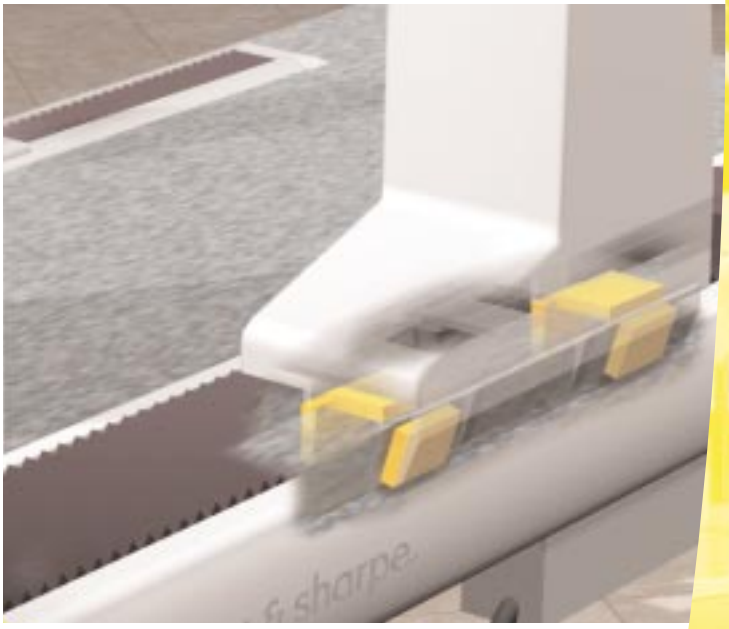



*GLOBAL IMAGE with ACTIV® Structural Compensation System shown*

*Remotely mounted drive motors reduce moving mass for faster settling, dissipate heat away from the machine frame.*



*Steel reinforced closed-loop belt drive is precision engineered with an elliptical tooth profile to reduce machine vibration at high scanning speeds.*

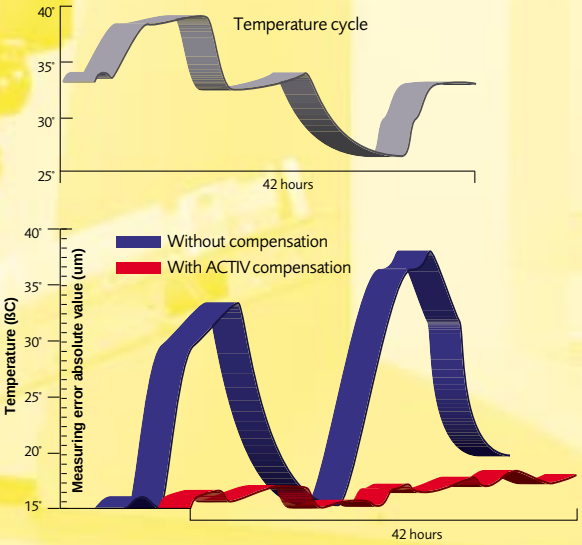


*Wrap-around air bearings provide optimum measuring repeatability and long term system stability. Easy-maintenance, pre-loaded Belleville springs assure constant force over the machine's entire travel distance.*

# ADVANCED TEMPERATURE COMPENSATION improves PERFORMANCE

GLOBAL's linear thermal compensation system includes two sensors installed in each axis scale, plus a part temperature sensor.

Optional ACTIV® structural temperature compensation system uses a web of sensors throughout the machine structure and special software to compensate, in real time, the 3D volumetric performance of the measuring machine.




*Temperature compensation systems have a dramatic effect on measuring machine accuracy. This chart illustrates how optional GLOBAL ACTIV structural compensation can significantly improve machine performance in fluctuating ambient temperature conditions.*

# High speed scanning HAS NEVER BEEN

GLOBAL's Point, Click and Scan Technology makes high speed scanning applications fast, easy and precise.

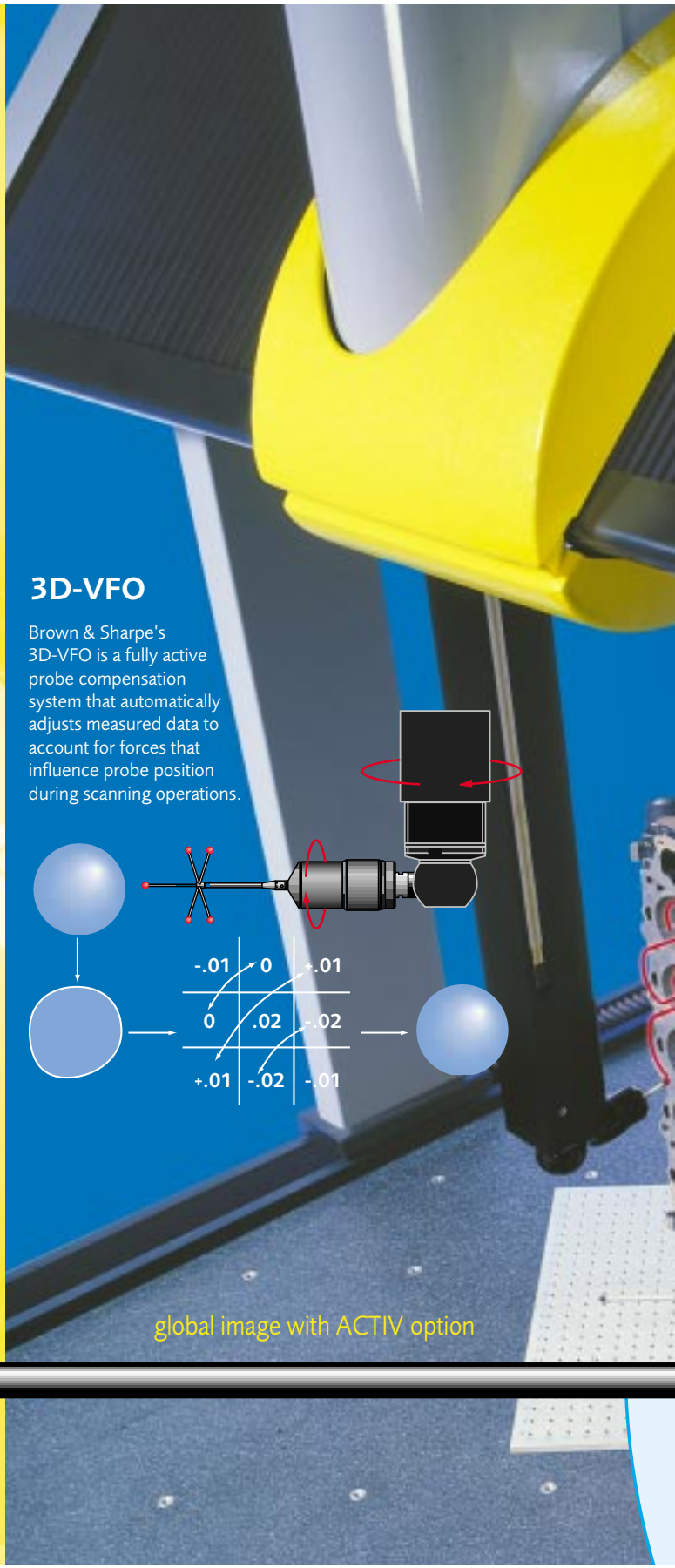
Just download the CAD model of the part. Click on the features you want to scan. Click on GLOBAL's Scan Icon. Software automatically inserts moves to avoid obstacles. Elect additional scan paths on the setup screen if needed. Preview the scan paths, then click OK. It's that easy.

## Automatically Reduce Uncertainty and Cycle Time

Point, Click and Scan Technology uses a special Object Oriented Scanning feature that allows the controller to define the scan path from only a single user command. A patented Observer function inside the controller provides a feedback loop from the probe head that reduces measuring uncertainty and cycle time by keeping the head closer to the part's nominal dimensions.

## Generate Precise Data with Every Move

Exclusive 3D Vector Force Optimization (3D-VFO) assures accurate probe compensation and improved data analysis in all scanning applications. Unlike competitive probe systems, Brown & Sharpe probe systems are designed to perform a 3D force vector analysis at every probe qualification for every probe tip, and automatically apply that data during probing. Probing data is automatically compensated, in real time, for all force, drag, styli, and weight changes. You get precise data, all the time, in all conditions, with all probe configurations.




TRAX probing area up to 800 mm

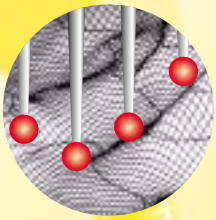
EASIER

## High Point Density Means Better Data

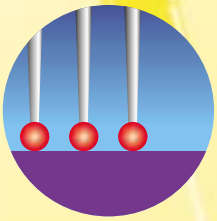
GLOBAL REFERENCE, the ultra-high accuracy model in the GLOBAL series, comes equipped with Brown & Sharpe's TRAX™ Technology, including the TRAX scanning probe. The TRAX probe system automatically scans unknown, free form surfaces at speeds of 25 mm/sec. and known surfaces up to 150 mm/sec. with high point density for increased accuracy and better form definition. The TRAX system is specially designed to maintain high accuracy when equipped with probe configurations weighing up to 1,000 g and extensions up to 800 mm.

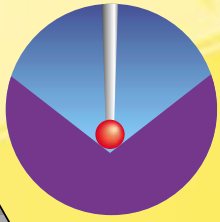
For added flexibility, the TRAX probe system lets you select two other ultra precise probe modes.

The discrete, single point mode is the highest precision mode for simple geometric dimensions. User selectable probe force allows the system to be customized for soft materials, such as plastics.



The self-centering mode automatically determines the precise center and the high/low points of symmetrical features such as grooves, slots, and gears.



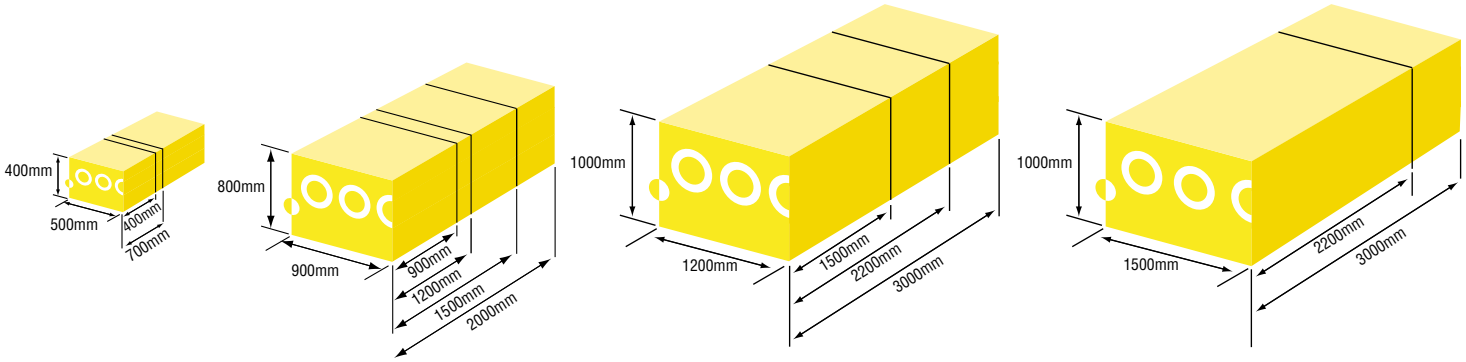




SP600 probing area up to 205 mm

# GLOBAL: ONE MACHINE FOR ALL applications

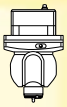
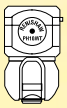
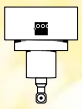
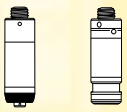
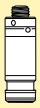
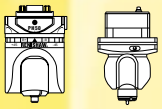
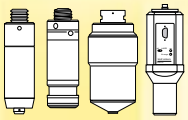
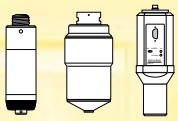
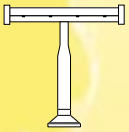
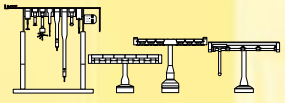
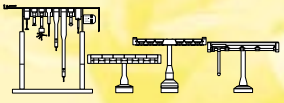
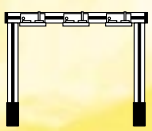
## Measuring Volume




## Operating Environment

| Environment Model | Lab Reference | General Use Status | → | Image | Open Shop |
|---|---|---|---|---|---|
| Thermal Compensation | Automatic Linear | Manual Linear | | Standard Automatic Linear | ACTIV® Technology Automatic Structural |
| Allowable Temperature Range | 18 - 22° C | 18 - 22° C | | 18 - 22° C | 15 - 30° C |
| Allowable Gradients:<br>Per Day<br>Per Hour<br>Per Meter | <br>2° C<br>1° C<br>1° C | <br>2° C<br>1° C<br>1° C | | <br>2° C<br>1° C<br>1° C | <br>10° C<br>2° C<br>1° C |
| Additional Protection | | | | | Extra Covers |

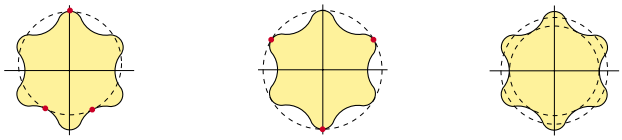
## Sensing Technology

| | 544-574 Status | All Others (Status & Image) | 544/574 Image | Reference |
|---|---|---|---|---|
| Standard Probe Head | MH20i  | PH10MQ  | PH10M  | TRAX  |
| Standard Probe | | TP20<br>TP200  STATUS IMAGE | TP200  | |
| Optional Probes/Heads | PH50<br>PH10M  | TP2<br>TP200<br>SP600M<br>OTM3*  | TP20<br>SP600M<br>OTM3*  | |
| Optional Changers | MSR1  | ACR1 SCR200<br>MCR20 SCR600  | ACR1 SCR200<br>MCR20 SCR600  | TRAX Magazine  |

* Laser Probe

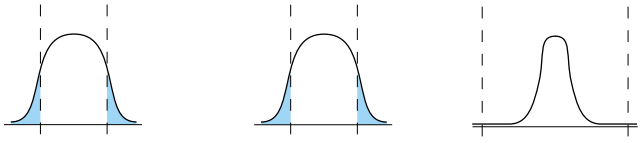
# HIGH SPEED Scanning...SIMPLE, EFFICIENT, COST EFFECTIVE

GLOBAL CMMs offer fast, low cost data gathering and analysis capabilities for prismatic parts and contoured, free form shapes. Use the information below as a baseline to compare your current metrology operations. You'll see that GLOBAL CMMs are an efficient way to add value to your manufacturing processes.



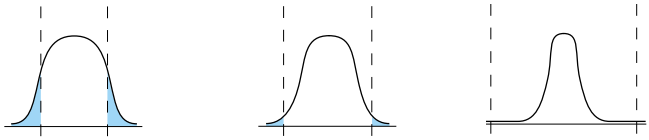
## Prismatic Parts

| Results | | | | |
|---|---|---|---|---|
| Measurement Points | | 3 | 3 | 650 |
| Measurement Cycle: Time (sec) | | 5 | 5 | 13 |
| Diameter (mm): | | 45.5478 | 50.888 | 46.6100 |
| Error: (computational) | | -1.0622 | +4.2783 | 0 |
| | | 2.3% | 10% | 0 |
| Minimum Inscribed Circle (mm) | | * | * | 40.6270 |
| Max. Circumscribed Circle (mm) | | * | * | 51.0619 |
| Location: | X | 0.0855 | 0.1178 | 0.0000 |
| | Y | 2.7776 | -0.0619 | 0.0000 |
| Form Error: (mm) | | * | * | 5.4431 |



## Quality of Measurement

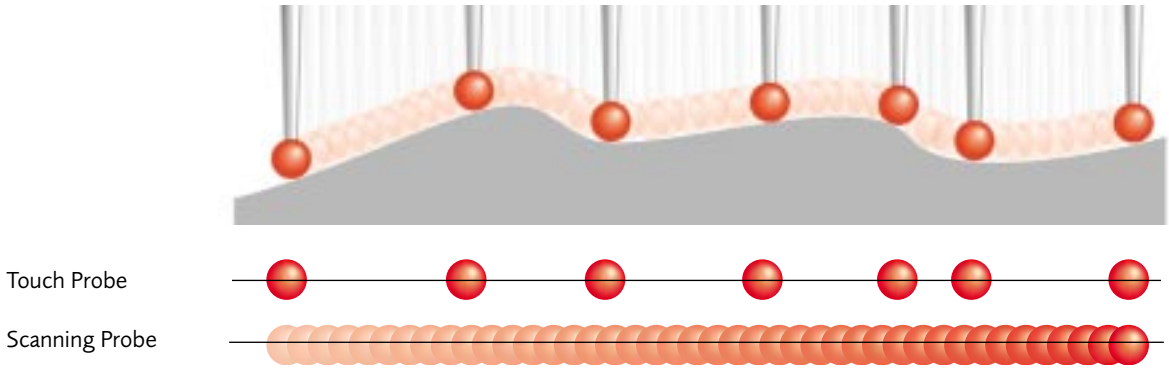
| | | | |
|---|---|---|---|
| Size | Good | Poor | Best |
| Location | Poor | Better | Best |
| Form | N/A | N/A | Best |



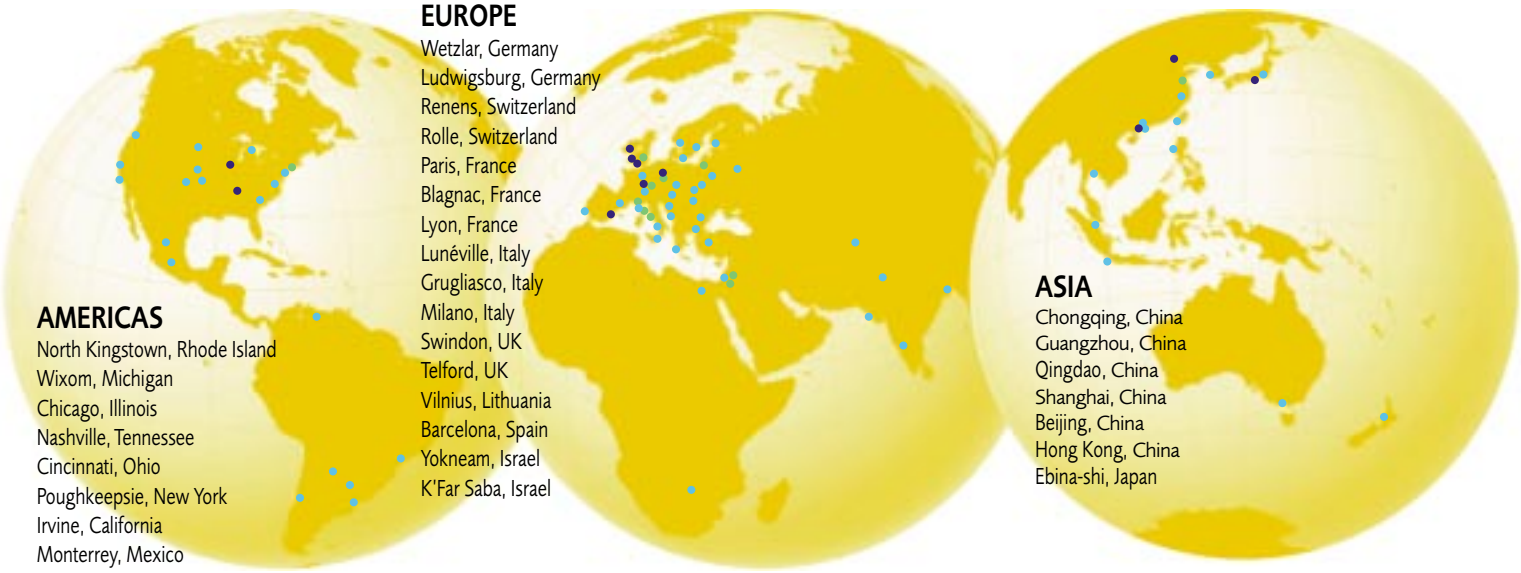
## Surfaces and Contours

| | Typical CMM | Global with Touch Probe | Global with Scanning |
|---|---|---|---|
| Measurement Points | 50 | 72 | 2,700 |
| Approx. Cycle Time (sec) | 65 | 65 | 15 |
| Quality of Measurement | Good | Better | Best |

*mathematically unattainable




*Size, location and form on one inspection device. GLOBAL...because the world isn't flat*

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*global...engines of productivity*

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Due to continuing product development, Brown & Sharpe reserves the right to change product specifications and price without notice.
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