



**BATES**  
TECHNOLOGIES, INC.  
HONING SPECIALISTS

# CNC TOOLING and ABRASIVE SYSTEM

## Using Microhone® Technology

### The Legacy of Bates Technologies

Bates Technologies and its honing products are built on a long legacy of innovative technology and technical expertise. Today's Bates includes the Micromatic line of tooling and abrasive products, including the Microhone® and Microsize® tooling and processes, size controls, and machine parts. At work in manufacturing processes worldwide, Bates products are the leading choice for forward-thinking companies—from specialized machine shops to the largest manufacturers in precision metalworking, including aircraft, automotive, transportation, packaging, and petroleum industries.

### Products

The Bates family of products represents a complete line of bore finishing solutions for all industries. Products include:

- Conventional Microabrasives (Vitrified- and Resin-Bonded)
- Superabrasives (CBN and Diamond in Vitrified-, Resin-, and Metal-Bonds)
- Microhone®, Microsize®, Micro-Mold® Bonded and Electro-Plated Mandrels and Tooling
- CBN and Diamond Electro-Plated Products
- Micro-Precision Gaging and Size Control Systems
- Microhone®, CNC Tooling and Abrasive Systems

### Products are created for all honing machines:

- Micromatic
- Sunnen
- Barnes
- Gehring
- Nagel
- Toyo
- Kadia
- Delapena
- Engis
- Jones and Shipman
- Accu-Cut
- Fuji
- Others

### Services

- Applications Technology Center (ATC)
- Test Drive Trial Program
- Electronic Ordering of Stock (EDI)
- Process Application Analysis
- Service Department

### Facilities

- Indianapolis, IN
- Berne, IN
- Angola, IN

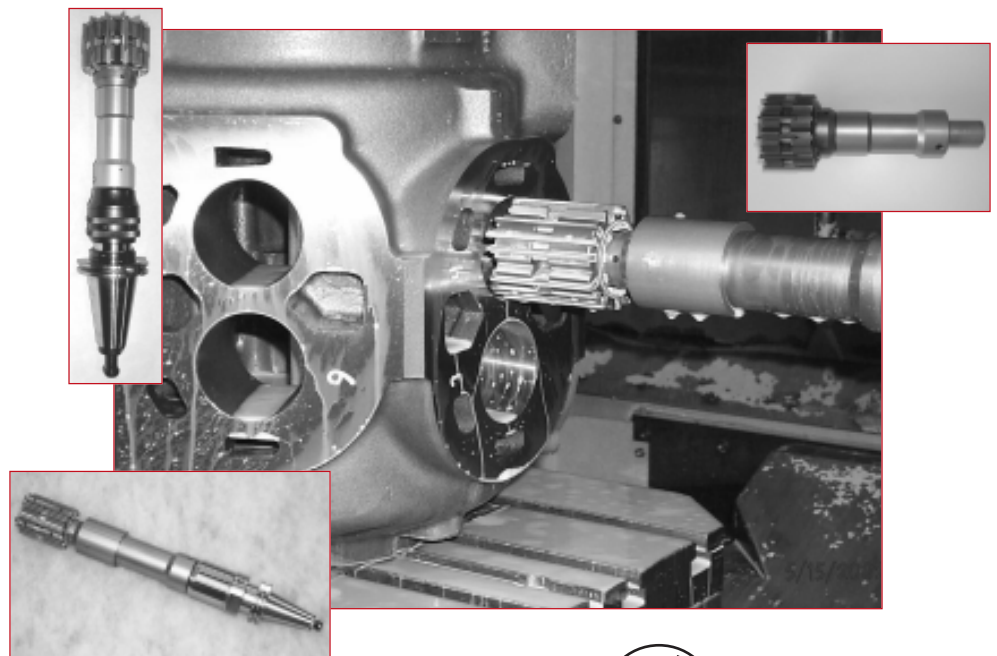
### Another first for Bates Technologies . . . Conventional Honing in a Flexible and Agile Manufacturing Environment

Bates Technologies ushers in a new era of operational effectiveness in honing with the introduction of the Microhone® CNC Tooling and Abrasive System.

With the Microhone® CNC Tooling and Abrasive System, it is no longer necessary to complete honing operations using dedicated, stationery, and otherwise costly honing machines. The Microhone® CNC Tooling and Abrasive System brings conventional honing, for the first time, into an agile and flexible manufacturing environment.

The new system provides a timely answer for metalworking businesses facing greater quality and cost-efficiency demands than ever before.

Designed for use with computer numerically controlled (CNC) machining centers, the Microhone® CNC Tooling and Abrasive System can be adapted so suit most machining centers in use today. The new system allows the manufactured part to remain in place throughout the manufacturing process, fixtured throughout the various tool changes necessary to complete the job. The system uses the existing coolant system through the spindle to activate the honing abrasives.



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## Testing Quality

The Microhone® CNC Tooling and Abrasive System in an agile environment provides a greater opportunity for testing to measure quality and meet customer expectations for the finished component. Bates provides manufacturers with testing, documentation, and statistical data needed to support new process technology.

The end product of testing is a series of formal reports utilizing "Six Sigma" methodologies that document the kind of measured results customers can achieve and a blueprint of how to get there. Typical capabilities studies are completed for coolant trials, cylinder bores, main bearings, housings, and connecting rods, among other parts.

## Reporting Includes:

■ A PAT Incometer shows the roundness and straightness (cylindricity) of a bore down to 2.5 microns or 100 millionths of an inch (For comparison purposes, a hair measures 30 times more than 3000 of an inch).

■ A scanning electron microscope (SEM) is used to give an accurate topographical picture of the finish, revealing scratches in the bore. The statistical readings that accompany these pictures determine whether the current process is meeting or exceeding the customer's requirements.

■ Surface profile equipment measures usually at the micron level and provides documentation of the surface of a component that detects irregularities in the surface of the part. Inspections can detect form or waviness patterns that can be analyzed to assess the manufacturing process.

## Key Advantages of the Microhone® CNC Tooling and Abrasive System . . .

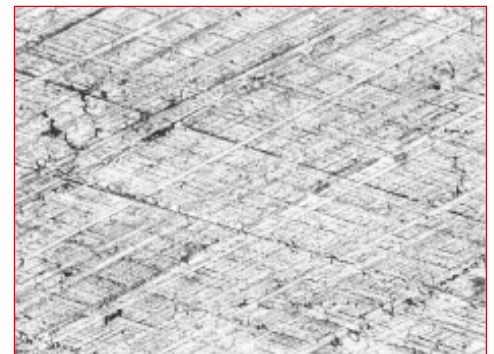
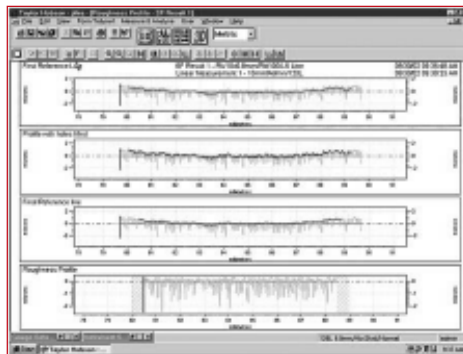
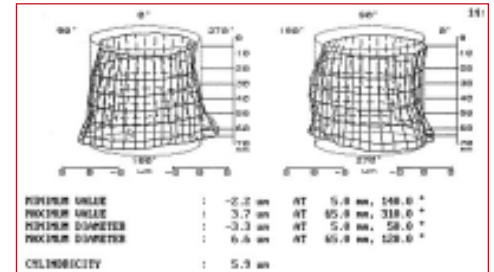
- Quality production potential at six sigma levels
- Ability to handle critical size control and surface finish requirements
- May be adapted for most CNC machining centers
- Part remains fixed, eliminating part alignment issues related to multiple setups
- Allows for use of environmentally-friendly coolants
- Flexibility to quickly change tool for limited quantities and minimal process interruption

Bates Technologies' Microhone® CNC Tooling and Abrasive System provides a timely answer for metalworking businesses facing greater quality and cost-efficiency demands than ever before. The new CNC system from Bates provides for maximum process capability to six sigma levels, allowing for finer and more defined surface finishes, size and shape tolerances in microns, cpk improvements and six sigma quality levels.

Aside from quality and cost-efficiency, the Microhone® CNC Tooling and Abrasive System utilizes environmentally friendly coolants, and allows users the ability to address the eight types of waste elimination (LEAN) to gain a stronger overall competitive position in the market.

Tests provided by Bates using "Six Sigma" methodologies include:

- 1) an Incometer (top right)
- 2) the Scanning Electron Microscope (bottom right)
- 3) a Surface Profile (bottom left)



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Contact our representative:



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