PRECISION HONING & BORE FINISHING

BARNES
Bore Honing & Finishing Systems
ABOUT BARNES

BARNES…… HONING THE COMPETITIVE EDGE

Since 1907 Barnes has been considered a world leader in developing innovative honing and bore finishing technology and processes. The earliest Barnes honing machines were the first to make honing a practical and efficient means of finishing automotive cylinder bores in a production environment. As honing and bore finishing requirements evolved, Barnes introduced a multitude of new products and innovations including multiple spindle machines, automatic part load/unload and transfer, automatic tool changing devices, in process part gauging, servomotor controlled honing stone expansion systems and single pass bore finishing. This long history of innovation has culminated in a new generation of machines, tools, fixtures and abrasives that deliver improvements in honing and bore finishing accuracy, surface finish, productivity and efficiency that were unimaginable just a decade ago.

Our Products

- Vertical and horizontal stroke-honing systems
- Single-pass bore finishing systems
- Stroke honing tools and abrasives
- Single pass tools (sintered, electroplated and brazed type super-abrasives)
- Gauging systems (air and plug type)
- Honing and bore finishing fluids

Our Services

- In house equipment design, engineering and manufacturing
- Equipment repair and rebuilding
- Contract honing and bore finishing
- Laboratory process development
- After sales service and support

Typical Honing Applications

- Diesel Engine Blocks
- Marine Engine Blocks
- Automotive Engine Blocks
- Automotive Connecting Rods
- Aviation Landing Gear Struts
- Brake Drums/Cylinders
- Cam/Crank Bores
- C.V. Joints
- Mortar Tubes/Cannon Barrels
- Rocker Arm Bushings
- Fuel Injector Bodies
- Pinion Gears
- Transmission Gears
- Diesel Engine Liners
- Bearing Components
- Small Engine Blocks
- Turbocharger Bodies
- Power Steering Pump Bodies
- Hydraulic Valve Blocks
- Hydraulic Pump Barrels
- Hydraulic Cylinders
- Hydraulic Valve Sleeves
- Refrigeration Compressor Bodies
- Oil Suction Pump Barrel Rods
- Ceramic Dispensing Valves
- Turbine Blade & Shaft Assemblies
SERIES HV VERTICAL SPINDLE HONING SYSTEMS

Barnes Series HV Vertical-Spindle Features
- Full-line of equipment for 0.125" - 30" diameter parts processing
- Stroke lengths from 12" up to 76" in single or multi-spindle configurations
- Robust design and heavy-duty base/column construction for accuracy & repeatability
- Intuitive, menu-driven, programmable system controller, w/color touch-screen PC-based HMI
- Lateral, X-Y and Rotary Index Tables available for parts processing flexibility
- “Open” design allows for easy operator access, maintenance & automation interface
- Compact “Traveling Head” spindle-drive/hone expansion (electromechanical linear actuator)
- Post-Process Parts Gauging options include both Servo-column mounted and Bench-mounted air gauging systems

Specifications

<table>
<thead>
<tr>
<th></th>
<th>HV-1000</th>
<th>HV-5000</th>
<th>HV-8000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore Diameter</td>
<td>0.125&quot; - 3.0&quot;</td>
<td>3.0&quot; - 10.0&quot;</td>
<td>10.0&quot; - 30.0&quot;</td>
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<tr>
<td>Spindle Power (HP)</td>
<td>5.0 - 7.5 HP</td>
<td>15 HP</td>
<td>15.0 - 3 0.0 HP</td>
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<tr>
<td>Spindle Speeds (RPM)</td>
<td>0 - 3,000</td>
<td>0 - 250</td>
<td>0 - 125</td>
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<tr>
<td>Stroke Length</td>
<td>8.0&quot; - 24.0&quot;</td>
<td>24.0&quot; - 76.0&quot;</td>
<td>24.0&quot; - 76.0&quot;</td>
</tr>
<tr>
<td>Spindle Config.</td>
<td>Single/Multiple</td>
<td>Single/Multiple</td>
<td>Single/Multiple</td>
</tr>
<tr>
<td>Voltage Requirement</td>
<td>380 or 460V/50 - 60 Hz</td>
<td>380 or 460V/50 - 60 Hz</td>
<td>380 or 460V/50 - 60 Hz</td>
</tr>
<tr>
<td>Stroke Control</td>
<td>Servo-Motor/Ball-Screw</td>
<td>Servo-Motor/Ball-Screw or Hydraulic</td>
<td>Servo-Motor/Ball-Screw or Hydraulic</td>
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<tr>
<td>Reciprocation Speed</td>
<td>Up to 50m/minute</td>
<td>Up to 36m/minute</td>
<td>Up to 36m/minute</td>
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<tr>
<td>Reciprocation Power (HP)</td>
<td>10.0 HP</td>
<td>10.0 HP</td>
<td>15.0 HP</td>
</tr>
<tr>
<td>Hone Expansion Method</td>
<td>Linear Actuator</td>
<td>Linear Actuator or Hydraulic</td>
<td>Linear Actuator or Hydraulic</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>4,400 lbs</td>
<td>8,000 lbs</td>
<td>12,000 lbs</td>
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<tr>
<td>Approx. Height</td>
<td>96&quot;</td>
<td>128&quot; - 185&quot;</td>
<td>128&quot; - 205&quot;</td>
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<tr>
<td>Approx. Width</td>
<td>57&quot;</td>
<td>64&quot;</td>
<td>80&quot;</td>
</tr>
<tr>
<td>Approx. Length</td>
<td>50&quot;</td>
<td>68&quot;</td>
<td>88&quot;</td>
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</tbody>
</table>
### Barnes Series HH Horizontal-Spindle Features
- Rigid construction for long service life, low cost of ownership and accuracy
- Stroke lengths up to 40’ (HH-10 and HH-12) and 80’ (HH-25)
- Single or multiple spindle design available (Model HH-12)
- Intuitive, menu-driven, programmable system controller, with color touch-screen HMI
- Choice of hydraulic or linear actuator honing tool expansion
- Process capability of bores from 1” to 42” diameter (also OD honing capability)
- Variety of parts fixturing available for thin wall & thick wall tubes
- Expansion system torque monitoring for automatic “tight spot” detection and correction

### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>HH-10</th>
<th>HH-12</th>
<th>HH-25</th>
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</thead>
<tbody>
<tr>
<td>Maximum Bore Size and Outer Diameter</td>
<td>25.5” Bore, 28” Diameter</td>
<td>4.8” Bore, 5.5” Diameter (Twin Spindle) 25.5” Bore, 28” Diameter (Single Spindle)</td>
<td>39.4” Bore, 42” Diameter</td>
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<tr>
<td>Spindle Power (HP)</td>
<td>15.0 HP</td>
<td>25.0 HP</td>
<td>40.0 HP</td>
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<tr>
<td>Spindle Speeds (RPM)</td>
<td>0 - 500</td>
<td>50 - 500</td>
<td>20 - 200</td>
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<tr>
<td>Stroke Length</td>
<td>Up to 40’</td>
<td>Up to 40’</td>
<td>Up to 80’</td>
</tr>
<tr>
<td>Reciprocation Speed</td>
<td>10 - 90'/minute</td>
<td>10 - 70'/minute</td>
<td>10 - 70'/minute</td>
</tr>
<tr>
<td>Reciprocation Power (HP)</td>
<td>10.0 HP</td>
<td>15.0 HP</td>
<td>30.0 HP</td>
</tr>
<tr>
<td>Spindle Configuration</td>
<td>Single</td>
<td>Single or Twin</td>
<td>Single</td>
</tr>
<tr>
<td>Voltage Requirements</td>
<td>380 or 460V/50 - 60Hz</td>
<td>380 or 460V/50 - 60Hz</td>
<td>380 or 460V/50 - 60Hz</td>
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<tr>
<td>Stroke Control</td>
<td>Servo-Motor</td>
<td>Hydraulic or Servo-Motor</td>
<td>Hydraulic or Servo-Motor</td>
</tr>
<tr>
<td>Hone Expansion Method</td>
<td>Linear Actuator</td>
<td>Hydraulic or Linear Actuator</td>
<td>Hydraulic or Linear Actuator</td>
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<tr>
<td>Approximate Shipping Weight</td>
<td>15,000 lbs</td>
<td>30,000 lbs (Twin)</td>
<td>45,000 lbs (Single)</td>
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<tr>
<td>Approximate Length</td>
<td>84’ Maximum</td>
<td>84’ Maximum</td>
<td>170’ Maximum</td>
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</table>

**Model HH-12 Dual-Spindle**

**Model HH-12 Single-Spindle**

**Cannon Barrel Honing**

**Twin Spindle Drive**

**Twin Oil Pump Barrel Honing**

**Twin Spindles**

**Coolant Injection System**

**Thin-Walled Tube Chuck Fixture**

**SERIES HH HORIZONTAL SPINDLE HONING SYSTEMS**
SERIES MSSP SINGLE-PASS BORE FINISHING SYSTEMS

Barnes Series MSSP Vertical-Spindle Bore-Finishing System Features

- Heavy-Duty, Compact Base w/one or more column assemblies arranged for single/multiple spindles
- Ball screw tool feed system
- Lateral, X-Y or Rotary tables available for parts processing flexibility
- Intuitive, menu-driven, programmable system controller, with color touch-screen HMI
- Individual spindle motor torque measurement system available for monitoring tool performance
- “Open” design allows for easy operator access, maintenance and automation implementation
- Post-Process Gauging options include servo column mounted or bench mounted air gauging systems
- Spring-Loaded Pre-Gauging System available for protection against tool-crashing
- Equipment design compatible with a variety of tool options including sintered, electro-plated & brazed super-abrasive sleeves

<table>
<thead>
<tr>
<th>Specifications</th>
<th>MSSP-1000</th>
<th>MSSP-2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore Diameter</td>
<td>0.050&quot; - 2.00&quot;</td>
<td>1.00&quot; - 4.00&quot;</td>
</tr>
<tr>
<td>Spindle Power (HP)</td>
<td>1-3 HP per spindle</td>
<td>3-5 HP per spindle</td>
</tr>
<tr>
<td>Spindle Speeds (RPM)</td>
<td>300 - 4,000</td>
<td>100 - 2,000</td>
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<tr>
<td>Spindle Drive</td>
<td>Direct Drive or Serpentine Belt</td>
<td>Direct Drive or Serpentine Belt</td>
</tr>
<tr>
<td>Stroke Length</td>
<td>Up to 20&quot;</td>
<td>Up to 20&quot;</td>
</tr>
<tr>
<td>Spindle Configuration</td>
<td>Single/Multiple</td>
<td>Single/Multiple</td>
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<tr>
<td>Control System</td>
<td>PLC</td>
<td>PLC</td>
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<tr>
<td>Parts Handling Table</td>
<td>Fixed, Lateral, Rotary, X-Y</td>
<td>Fixed, Lateral, Rotary, X-Y</td>
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<tr>
<td>Column Configuration</td>
<td>Single/Multiple</td>
<td>Single/Multiple</td>
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<tr>
<td>Voltage Requirement</td>
<td>380 or 460V/50 - 60Hz</td>
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<tr>
<td>Stroke Control</td>
<td>Servo-Motor &amp; Ball-Screw</td>
<td>Servo-Motor &amp; Ball-Screw</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>3,000 lbs (approx.)</td>
<td>5,500 lbs (approx.)</td>
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<tr>
<td>Approximate Length/Width</td>
<td>48” x 44”</td>
<td>57” x 52”</td>
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</tbody>
</table>
**TOOLING AND ABRASIVES**

Bores are finished faster, smoother, rounder & straighter through advanced honing tools and abrasive technology

- **Honing Stones**
  - Vitrified Bond Conventional Abrasive Stones
  - Metal Bond Super Abrasive Stones

- **Honing Tools**
  - Large Bore-Honing Tool
  - Smaller Bore-Honing Tool

- **Single-Pass Tooling**
  - Electro-Plated
  - Sintered Metal Bond

Super-Abrasive Tooling Uses Either Diamond or CBN.

Single-Pass Tooling Abrasive Bonds:
- Sintered (Metal-Bond)
- Electro-Plated
- Brazed

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**REMANUFACTURING**

Bring your existing machines to like-new performance & condition!

**BEFORE**

Barnes offers machine rebuild, retrofit and remanufacturing services either in-house or on-site. This includes electrical and mechanical items such as:

- Spindle Head
- Guide Ways
- Reciprocation Drive Systems
- Tool Expansion Systems

We can further raise productivity and reliability to higher levels by upgrading or implementing:

- Electrical Controls to PC or PLC
- Safety Systems
- Automation/Parts Handling

This service is an expeditious and cost-effective alternative to a new unit purchase!

**AFTER**

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