

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





Model HV-1000



Model HV-5000



Bladder Fixture & Cylinder Liner



X-Y Axis Table



Turbine Blade Honing



V-6 Engine & Tool



Diesel Injector & Tool



Hydraulic Pump Barrel & Tool

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	HV-1000	HV-5000	HV-8000
Bore Diameter	0.125" - 3.0"	3.0" - 10.0"	10.0" - 30.0"
Spindle Power (HP)	5.0 - 7.5 HP	15 HP	15.0 - 30.0 HP
Spindle Speeds (RPM)	0 - 3,000	0 - 250	0 - 125
Stroke Length	8.0" - 24.0"	24.0" - 76.0"	24.0" - 76.0"
Spindle Configuration	Single/Multiple	Single/Multiple	Single/Multiple
Voltage Requirement	380 or 460V/50 - 60 Hz	380 or 460V/50 - 60 Hz	380 or 460V/50 - 60 Hz
Stroke Control	Servo-Motor/Ball-Screw	Servo-Motor/Ball-Screw or Hydraulic	Servo-Motor/Ball-Screw or Hydraulic
Reciprocation Speed	Up to 50m/minute	Up to 36m/minute	Up to 36m/minute
Reciprocation Power (HP)	10.0 HP	10.0 HP	15.0 HP
Hone Expansion Method	Linear Actuator	Linear Actuator or Hydraulic	Linear Actuator or Hydraulic
Shipping Weight	4,400 lbs	8,000 lbs	12,000 lbs
Approximate Height	96"	128" - 185"	128" - 205"
Approximate Width	57"	64"	80"
Approximate Length	50"	68"	88"



Model HH-12 Dual-Spindle

Model HH-12 Single-Spindle



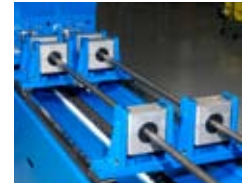
Cannon Barrel Honing



Twin Spindle Drive



Twin Oil Pump Barrel Honing



Twin Spindles



Coolant Injection System



Thin-Walled Tube Chuck Fixture

SERIES HH HORIZONTAL SPINDLE HONING SYSTEMS

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



Model MSSP-1000L-6



Model MSSP-1000L-3



Valve Block Bore-Finishing



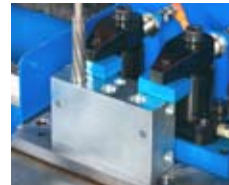
Con-Rod & Tools



6 Spindles w/ Rotary Table



Single-Pass Sintered Diamond Sleeves



Manual Parts Fixture



3 Spindles w/ Lateral Table

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

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

TOOLING AND ABRASIVES

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

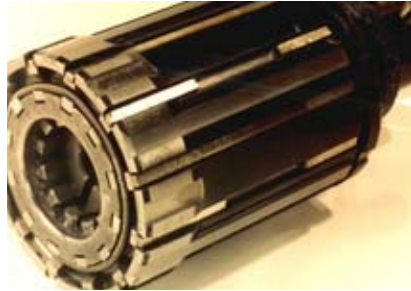
Honing Stones

Vitrified Bond Conventional Abrasive Stones



Honing Tools

Large Bore-Honing Tool



Metal Bond Super Abrasive Stones



Smaller Bore-Honing Tool



Single-Pass Tooling

Electro-Plated



Single-Pass Tooling

Sintered Metal Bond



Super-Abrasive Tooling Uses Either Diamond or CBN.

Single-Pass Tooling Abrasive Bonds:

- Sintered (Metal-Bond)
- Electro-Plated
- Brazed

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

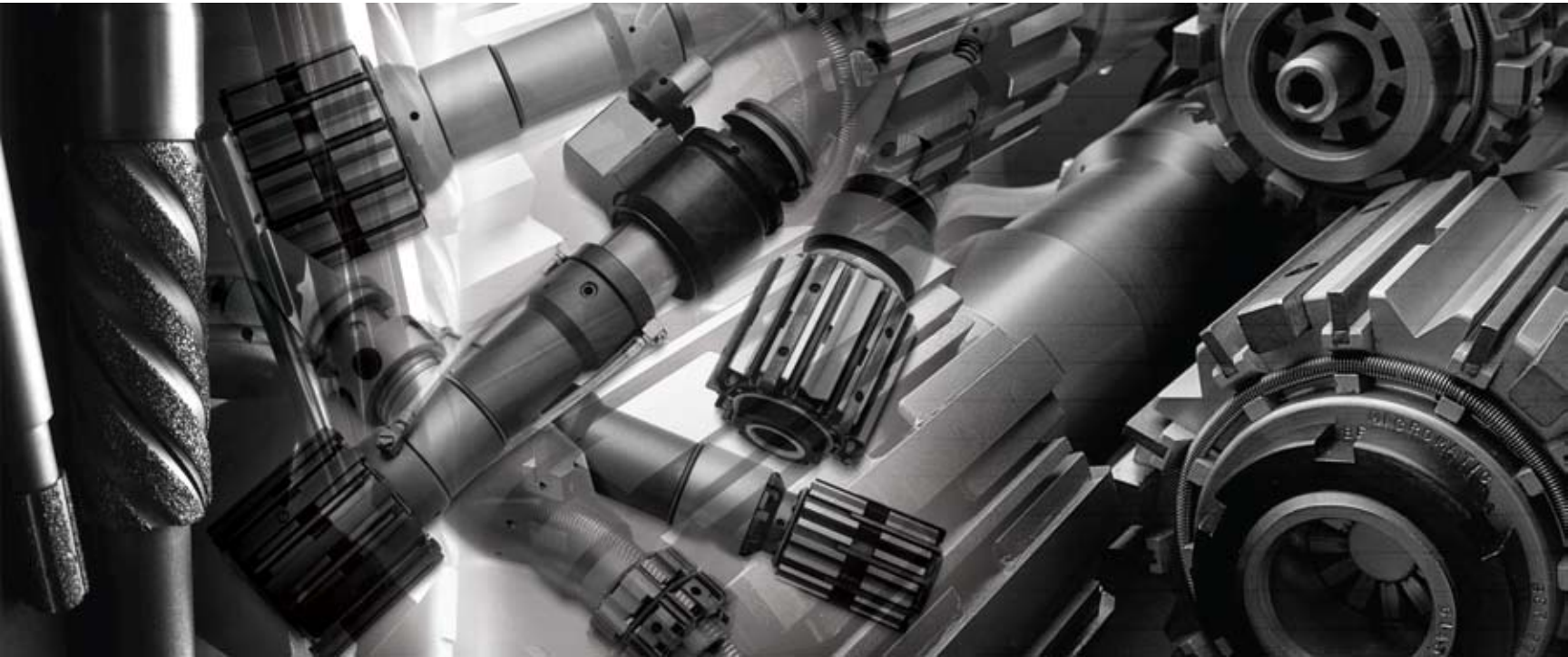
We can further raise productivity and reliability to higher levels by upgrading or implementing:

- 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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