



NAGEL ECO 120 FLEXIBLE HONING SYSTEM

For Small and Medium
Production Runs

**NEW
DEVELOPMENT**

In-process
gauging,
Roughing and
finishing
in a single
spindle



Tel: 734-426-1812 www.nagelusa.com

MACHINE HIGHLIGHTS

Machine Highlights

Honing Spindle

- Precision Spindle coupled to Allen Bradley (AB) Servo motor via ball spline
- AB Servo controlled stroking system mounted on linear slide and precision ball screw
- up to 2 spindles

Gauging – Post Process

- AB Servo controlled for accurate positioning
- Precision pneumatic gage provides feed back for automatic tool wear compensation
- SPC capability

Gauging – In-Process

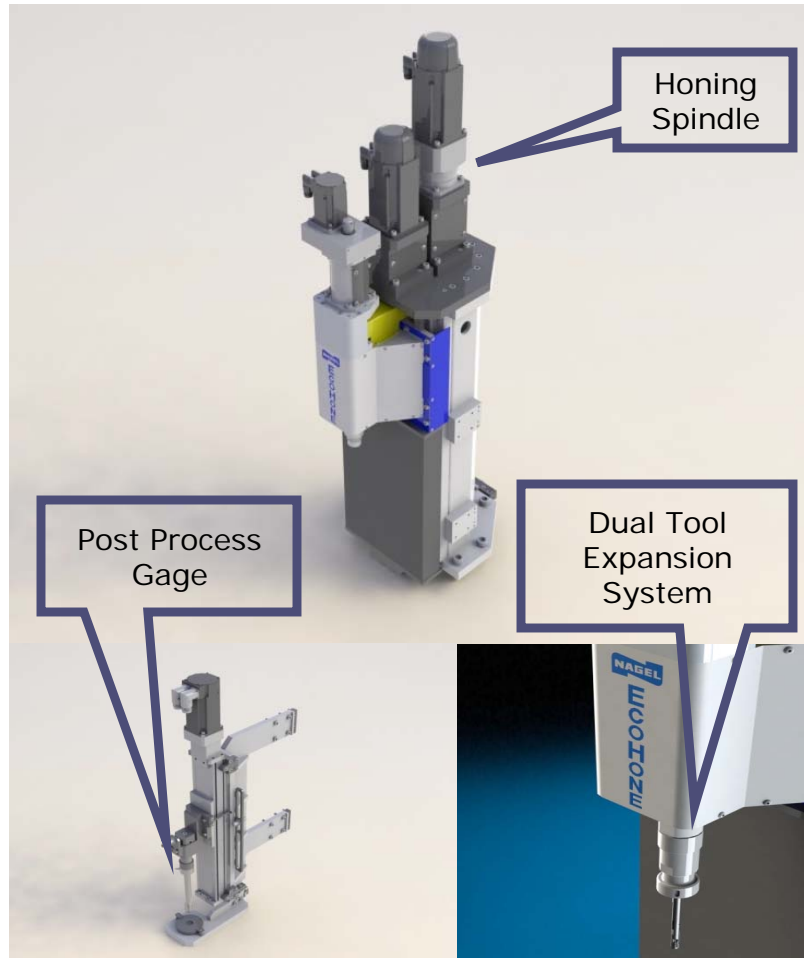
- Bore size and production rates permitting, precision pneumatic gage engineered into the honing spindle provides all the benefits of post process gauging while eliminating a station resulting in cost and floor space savings

Controls

- AB control logix PLC and
- Windows PC based HMI

Hydraulic System

- Compact power unit integral to the machine base . Necessary for dual expansion option only



Dual - Mechanical / Hydraulic Tool Expansion - Bore size and production rates permitting, both roughing and finishing can be incorporated into one spindle.

Mechanical Expansion System

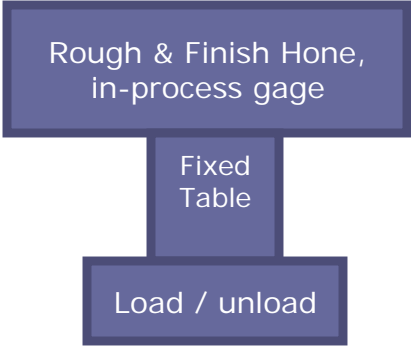
- Servo controlled mechanical tool expansion system provides controlled feed rate and expansion force
- Integrated with gauging system for automatic tool wear compensation
- Constant tool feed expansion and torque monitoring for tighter bore quality control
- Expands roughing tool in the dual mode operation and provides stock removal and geometry control

Hydraulic Expansion System

Fully integrated with the mechanical expansion system and the gauging , actuates the finishing tool in the honing spindle and provides fine finishes



SINGLE SPINDLE MACHINE LAYOUT

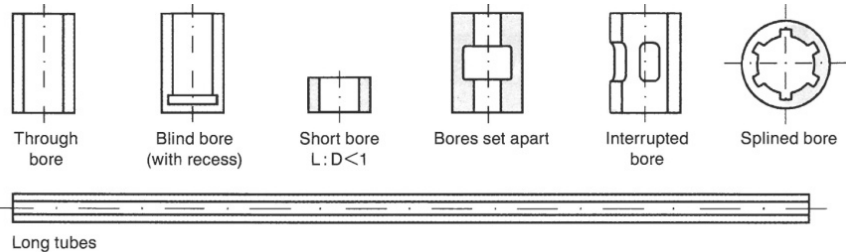


HIGH PERFORMANCE TOOLING AND ABRASIVE SOLUTIONS

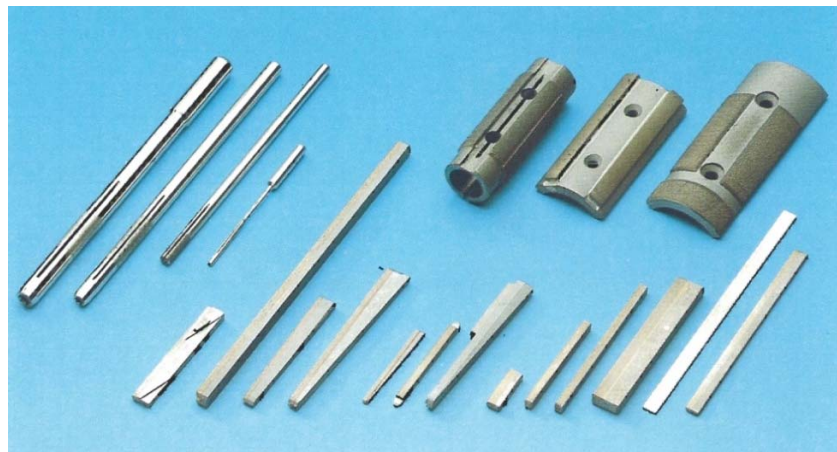
Nagel offers a complete line of Diamond and CBN tooling for both conventional stroke honing and single pass "precidor" honing applications from our State of the art 125,000 Sq. Ft. manufacturing facility in Ann Arbor, MI.



Based on the bore configuration, size, material and incoming condition, we customize tool and matrix to maximize bore accuracy, enhance cutting characteristics and minimize per piece honing costs.



Abrasives are "pre dressed" as part of our manufacturing process to yield "first part good part".



APPLICATION EXAMPLES

Partial List

Small Engine bores
ABS Control Valve
Bearing Races
Crankshaft Pulley
Rocker Arm
Stators
Hydraulic valves
Steering Components
Turbocharger Components
Gears



Materials Honed – Partial List

Steel – soft
Steel – Hardened
Ceramics
Aluminum
Bronze
Powder Metal

Nagel established in 1948 in Germany, is now the automotive industry's gold standard for honing Engine Blocks, Connecting Rods, Pinion Gears and host of other components, with a market share of over 70% in North America. Our technology sets the bar for bore quality and productivity.

Nagel ECO 40 was engineered to incorporate the key features of high volume honing machine into low and medium volume environments. All machines are designed, built and serviced out of our State of the art 125,000 Sq. Ft. manufacturing facility in Ann Arbor, MI.

With production centers in USA, Germany, UK, Brazil & India and Sales and Service support in Mexico and China, Nagel supports global programs locally.



MACHINE SPECIFICATIONS

	Particulars	ECO 80
Work Piece	Bore Size	40 to 180 mm
	Max Bore Depth	600 mm
	Max part height	600 mm
Spindle	Spindle RPM	50 to 500
	Spindle Drive (AB Servo)	10 HP
	Number of Spindles (X)	1
Oscillation	Spindle Stroke	800 mm
	Speed	25m/min
	Spindle Drive (AB Servo)	10 HP
Machine	Dimension H x W x L mm	2750 x 2000 x 1500
	Electricity Requirement	400/480 V & 50/60 HZ 3 Ph a/c
	Air requirement	60 psi line pressure
	Controls	AB Control logix
	HMI	AB windows based HMI
	Coolant System	75 gal tank capacity, 5 gpm flow rate
	Hydraulic System	1.7 gpm, with dual expansion option
Options	In-Process Gauging	Yes (bore size dependent)
	Post Process Gauging	Yes
	Automatic tool wear compensation	Yes
	Dual Mechanical / Hydraulic expansion	Yes
	Rotary Index Table	Yes
	Automatic load / unload	Yes
	SPC	Yes



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