



# **NAGEL ECO 180 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](http://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**

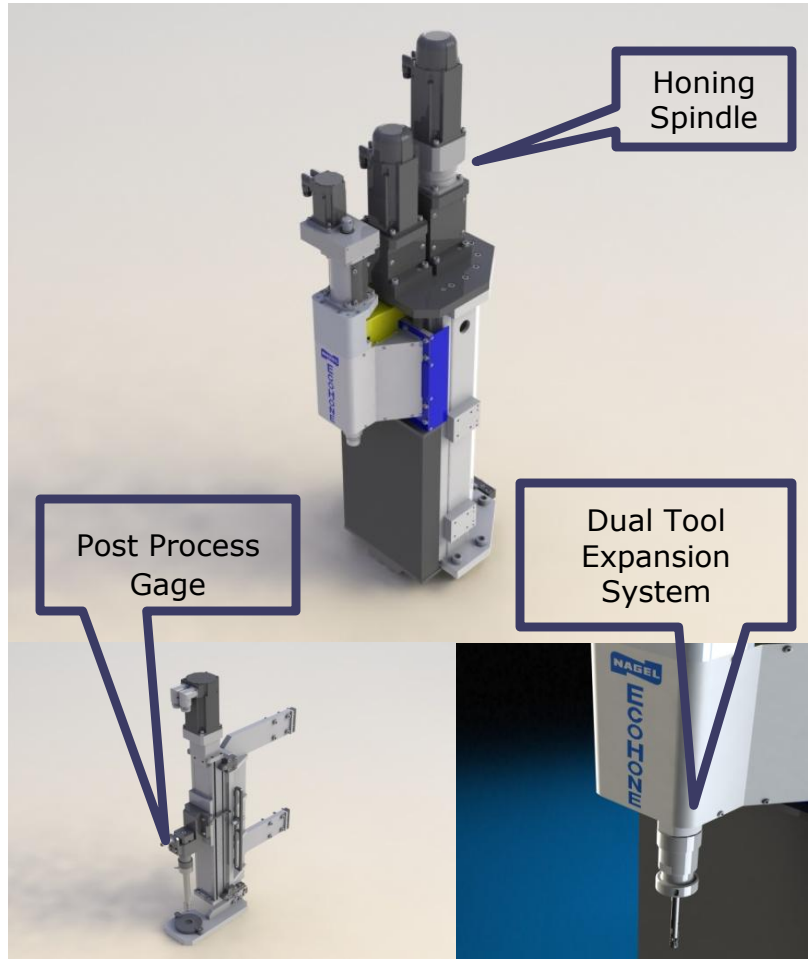
- Bore size and production rates permitting, precision pneumatic gage engineered into the honing spindle provides all the benefits of post process gauging while eliminating a station resulting in cost and floor space savings

### **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**

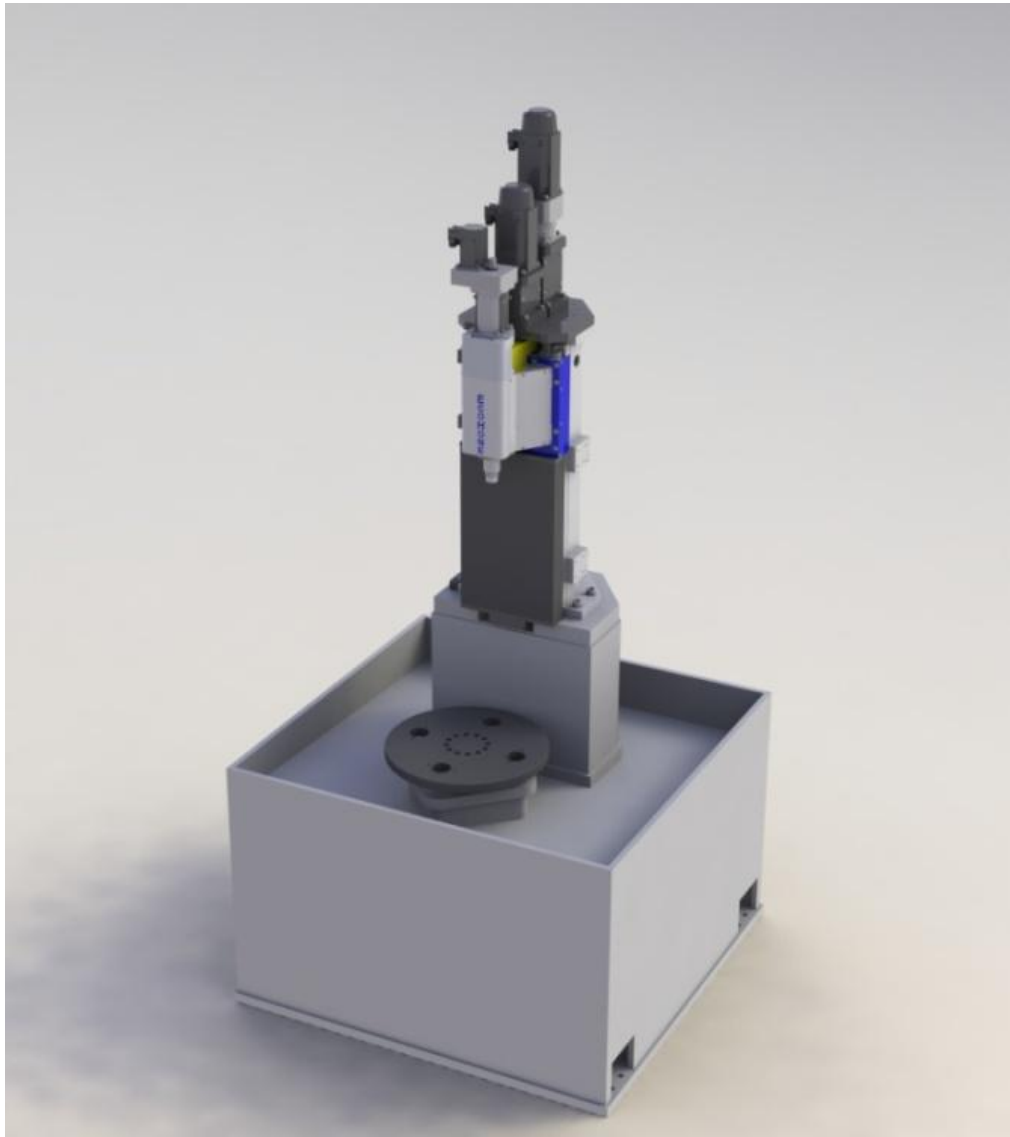
- Servo controlled mechanical tool expansion system provides controlled feed rate and expansion force
- Integrated with gauging system for automatic tool wear compensation
- Constant tool feed expansion and torque monitoring for tighter bore quality control
- Expands roughing tool in the dual mode operation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



Rough & Finish Hone,  
in-process gage

Fixed  
Table

Load / unload

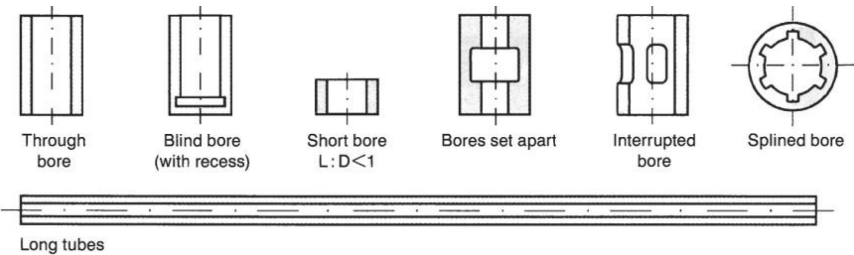


# HIGH PERFORMANCE TOOLING AND ABRASIVE SOLUTIONS

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

Engine bores  
Cylinder Liners  
Process Equipment

## 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 180
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



**Nagel Precision, Inc.**  
 288 Dino Drive  
 Ann Arbor, MI 48103  
 Tel: 734.426.1812  
[www.nagelusa.com](http://www.nagelusa.com)