


# NAGEL ECO 80 FLEXIBLE HONING SYSTEM

## For Small and Medium Production Runs

**NEW DEVELOPMENT**

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

NAGEL 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**

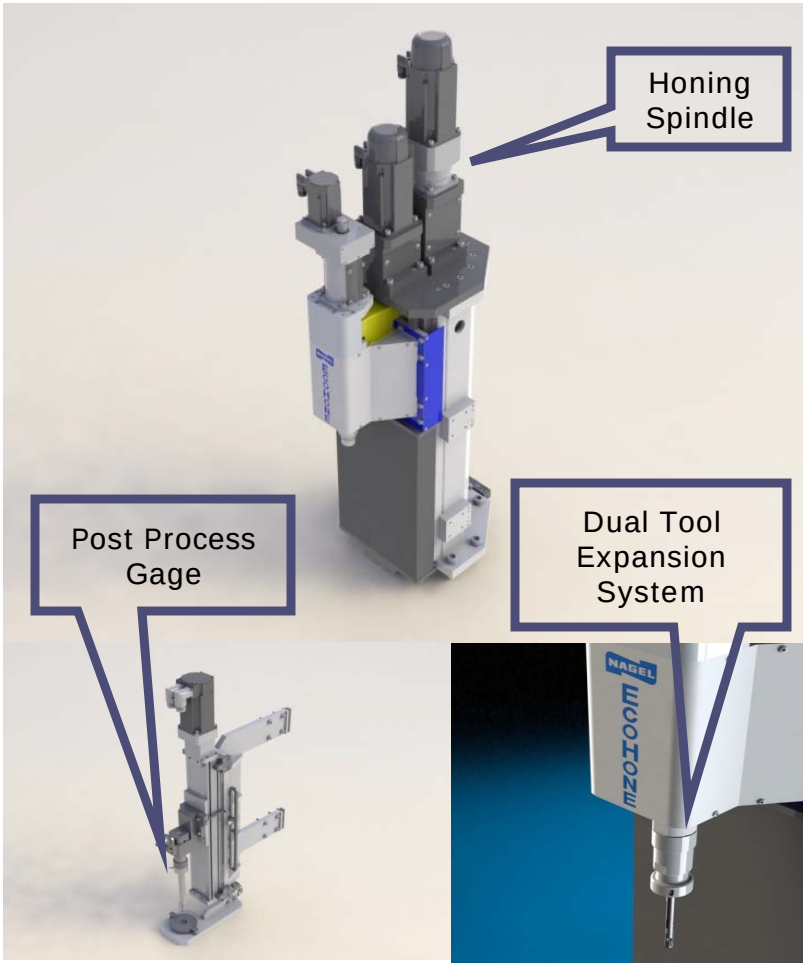
• AB Servo controlled for accurate positioning
•Precision pneumatic gage provides feed back for automatic tool wear compensation
•SPC capability

**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



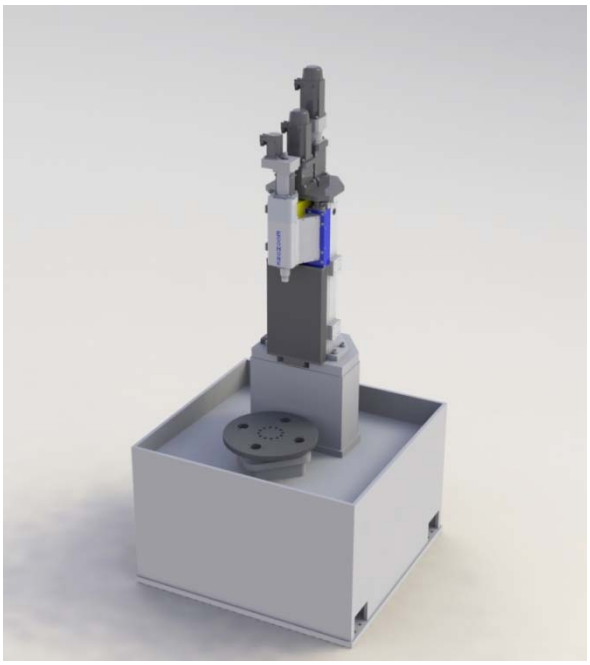

**Dual - Mechanical / Hydraulic Tool Expansion - Bore size and production rates permitting, both roughing and finishing can be incorporated into one spindle.**

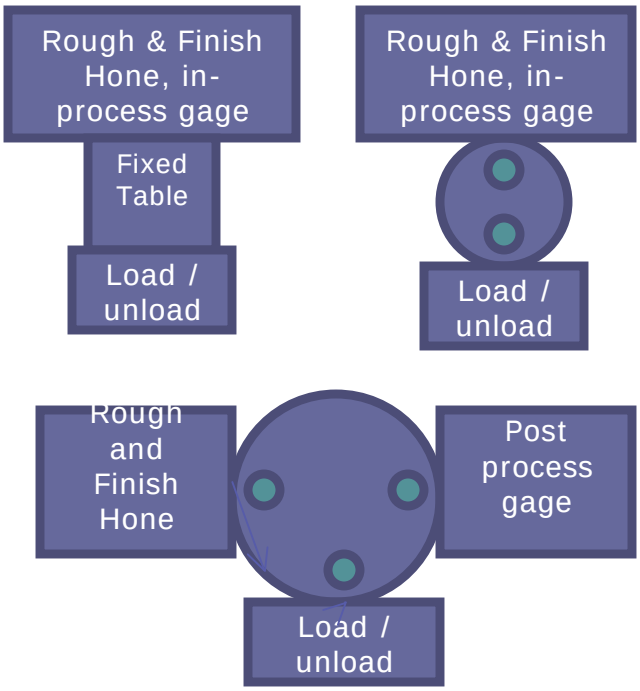
**Mechanical Expansion System**
•Servo controlled mechanical tool expansion system provides controlled feed rate and expansion force
•Integrated with gauging system for automatic tool wear compensation
•Constant tool feed expansion and torque monitoring for tighter bore quality control
•Expands roughing 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

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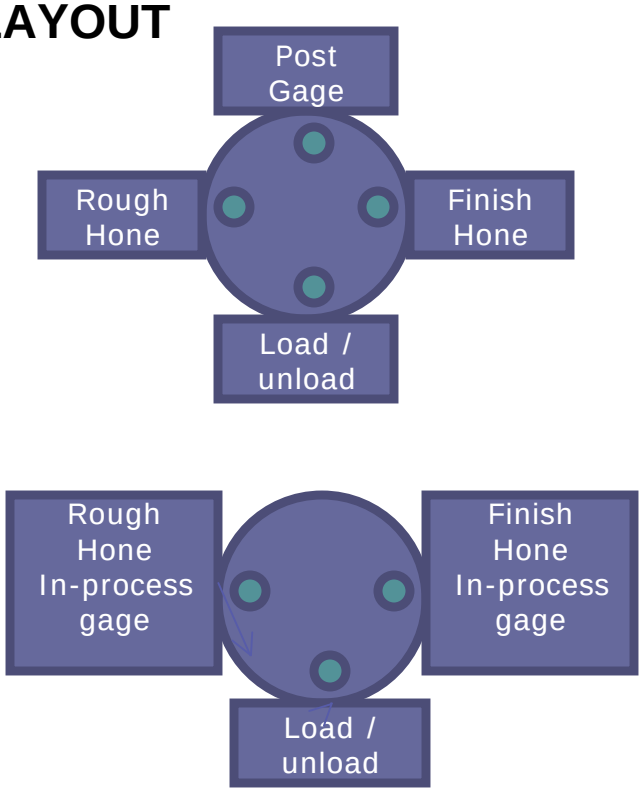
# SINGLE SPINDLE MACHINE LAYOUT






# TWO SPINDLE MACHINE LAYOUT



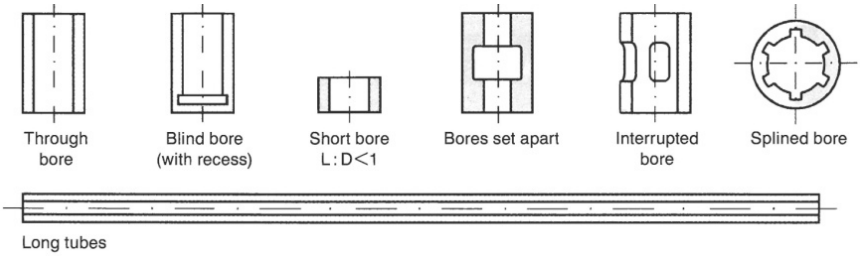


# HIGH PERFORMANCE TOOLING AND ABRASIVE SOLUTIONS

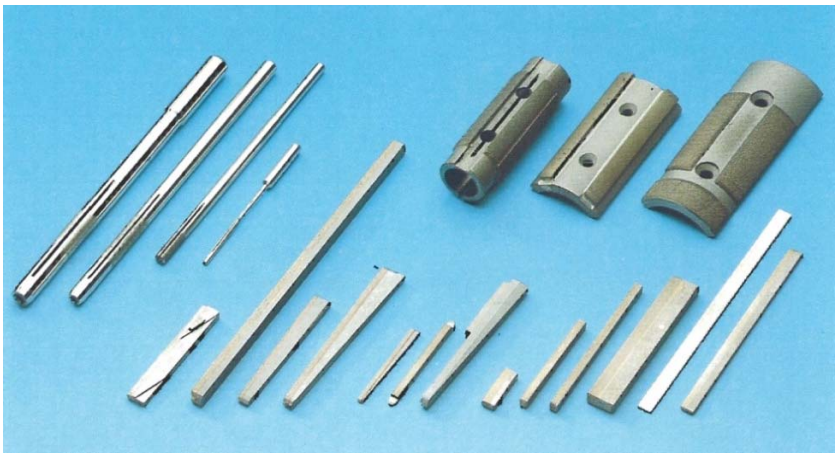
Nagel offers a complete line of Diamond and CBN tooling for both conventional stroke honing and single pass "*precido*r" honing applications from our State of the art 125,000 Sq. Ft. manufacturing facility in Ann Arbor, MI.



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 | 10 to 80 mm |
| | Max Bore Depth | 400 mm |
| | Max part height | 400 mm |
| | | |
| Spindle | Spindle RPM | 90 to 600 |
| | Spindle Drive (AB Servo) | 4.5 HP |
| | Number of Spindles (X) | Up to 2 |
| | | |
| Oscillation | Spindle Stroke | 600 mm |
| | Speed | 30m/min |
| | Spindle Drive (AB Servo) | 5 HP |
| | | |
| Machine | Dimension H x W x L mm | 2750 x 1890 x 1380 |
| | 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 | 55 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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