

BORE FINISHING
Engis Precision Honing

**PRECISION HONING SOLUTIONS
FOR FIREARM COMPONENT BORES**



Rifle Barrels • Pistol Barrels • Gas Blocks • Triggers



**World Leader in Superabrasive
Finishing Systems**
www.engis.com

Are you looking to Increase Quality, Reliability and Accuracy in the Manufacture of Precision Firearms?

For years Engis has worked closely with manufacturers of handguns, as well as sporting and military rifles, to improve product consistency and lower costs in the production and finishing of pistol barrels, revolver barrels, rifle barrels, gas blocks and triggers.

Engis Bore Finishing Systems have been successfully used in the precision honing of the barrel prior to rifling. Not only does our Single-Pass technology improve the roundness and straightness of the barrel, it clearly enhances the cosmetics which are so important to the quality conscious firearms enthusiast. In some cases, we have also improved the accuracy of bores in precision trigger assemblies.

Engis Single-Pass bore finishing technology delivers superior-fitting bores when compared to bores finished through conventional honing.

WHY? Conventional honing utilizes a reciprocating tool with relatively fast-wearing bonded stones that must expand and contract during each cycle. Single-Pass technology is just that; the work is spread over a series of progressively finer, pre-set diamond tools that only require a 'single pass' from each tool. It is this pre-set capability of the tooling, combined with the extremely slow wear of the diamond coating, that allows the Single-Pass process to achieve superior bore size capability.

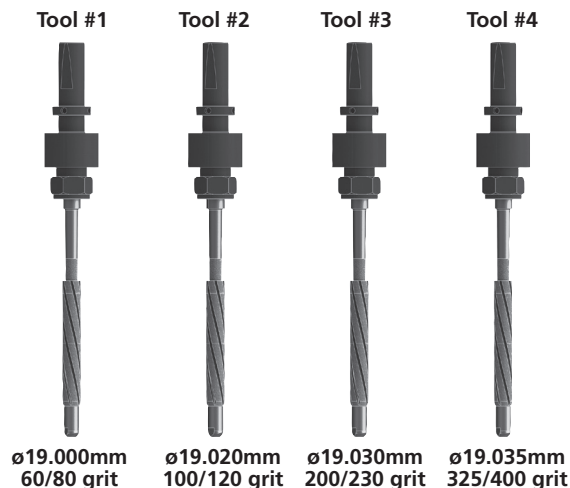
Single-Pass Process is the Best Choice for Firearms Bore Finishing:

- Improved bore quality
- Tool cuts on full periphery
- Improved Statistical Process Control
- <2 microns of distortion on 20 inch barrels
- Long tool life results in lower overall cost per piece
- High production rates

Comparison of Single-Pass and Conventional Honing



The Engis Single-Pass Process Spreads the Workload over a Series of High-Precision Electroplated Diamond Tools



CASE STUDY



PROBLEM:

Old conventional honing process was slow, labor intensive and costly. The process also produced inconsistent bore quality.

APPLICATION:

Pistols and Revolvers

MATERIAL:

Stainless Steel

SOLUTION:

Engis produced a turn-key solution utilizing a series of single-pass honing tools with full floating quick-change fixtures. The system achieved:

- Improved surface finish - better than 0.25Ra with uniform pattern
- Improved bore size – within 0.005mm
- Improved bore geometry – within 0.005mm
- Improved production rates – 50 parts per hour
- Reduced operator Involvement
- High SPC capability
- Dramatic reduction in overall costs
- Improved bore condition greatly extended the life of rifling broaches

Engis has the ability to provide end-to-end system solutions with full automation packages for manufacturers of precision firearms components



Precision Bore Finishing (Honing) Systems



- Best in Class Barrel Quality
- Superior Surface Finish
- Improved Roundness & Straightness
- Removes Burnishing
- Eliminates High Scrap

Engis offers a standard machine platform for firearm component finishing applications which can be customized to meet your unique production and part quality requirements. This approach helps keep the initial capital investment low and within budget. Additionally, Engis has the capability to design automation and/or robotic parts handling systems, brushing stations and in-line post- and pre-gauging systems which can further reduce labor and inspection costs.

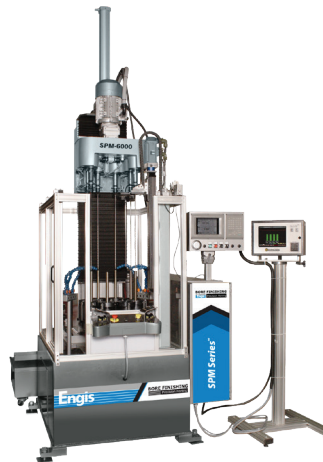
Engis also manufactures custom machines through its Specialty Series offering. Features such as multi-columns, extended stroke lengths, specialty gauging packages, auxiliary operations and independent spindles are possible.

Small Production Machine 'SPM'



The SPM series of machines is designed to meet the needs of job shops for small to medium size parts. Available in 4, 6, 8 and 10 spindle models, these systems are primarily for bores up to 51mm (2") diameter.

SPM with Extended Column



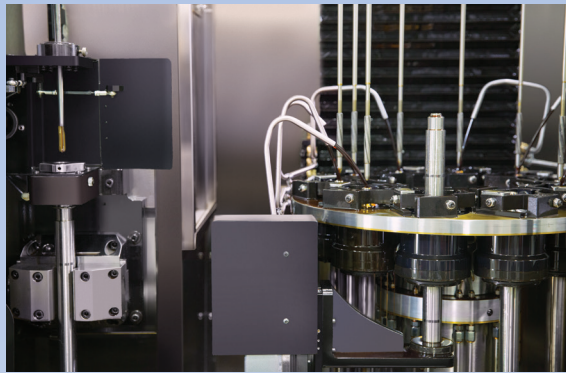
The SPM with Extended Column provides 889mm of stroke for finishing barrels up to 750mm in length.

Specialty Custom Machines



Specialty Custom Machines are designed to meet each customer's specific requirements. For example, in finishing Hammer Forged Rifle Barrels we included a precision reaming station for roughing followed by a series of 8 single-pass honing tools.

CASE STUDY



APPLICATION:

Finishing long barrels 356mm-711mm in length prior to the hammer forge process.

MATERIAL:

32CrMoV12-10, 280-330 BHN

PROBLEM:

- Incoming barrels had the bore rough drilled, causing size variation as much as 0.05mm.
- After finishing, the final surface finish must be controlled and without any random deep scratches.
- High production requirement of 27 finished barrels per hour.

RESULTS:

- 0.1mm of stock removal
- Bore size within 0.002mm
- Uniform surface finish under 0.3Ra
- Improved straightness
- Quick change-over
- 27 finished barrels per hour

The tools firearm manufacturers use are critical to their process



The diamond driven experts at Engis have designed Single-Pass tools that create improved barrel roundness and a more uniform finish. Engis Single-Pass tools have a longer life than reamers.

Engis has decades of proven experience in the design and manufacture of electroplated grinding and honing tools. We have our own in-house design staff, precision machine shop and plating department. And, because we design complete systems, we understand how the tools must function in harmony with the machine tool and fixturing.

We are not just a company selling honing tools, we are a company that designs tooling packages to help you achieve your objectives in terms of part quality, throughput and overall cost.

Unified Global Presence

- Engis has sales and service offices located in North America, East Asia and Europe, supplemented by our global distribution network.
- Our bore finishing systems are operating throughout the world.
- We have successful applications in most every market including automotive, hydraulic, compressor, medical, aerospace, gear and firearm manufacturers.



World Leader in Superabrasive Finishing Systems

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