

Superabrasives Engineering Certification Course

Honing

Operating Characteristics

Honing is an abrasive process for finishing round holes by means of bonded abrasive stones or sticks, called hones. The abrasives can be made from conventional materials such as Aluminum Oxide (Al_2O_3) and Silicon Carbide (SiC), or Diamond and Cubic Boron Nitride (CBN) for higher performance. These abrasives are mounted to a honing head, which is mounted to the honing machine. Honing is usually a follow-up operation to drilling or boring. It is a cutting process used to remove small amounts of material such as plastics, silver, aluminum, brass, cast-iron, wrought steel and cemented carbides. Material removal from ground or machined surfaces depends on the work piece material, type of abrasive and the desired effect on the hole, which is mainly to produce a specific surface finish. During this process, geometric corrections to the existing hole also result, with respect to roundness, taper, tool marks, axial distortions and scratches. The honing head rotates slowly with an oscillating motion, holding the abrasive stones against the work surface under controlled light pressure.

Experimental Set-up

Machine Tool:	Alzmetall AB40/ST Honing Machine
Tooling & Fixtures:	Honing head and work piece mounting fixtures
Material:	Wrought steel with existing hole
Experiment:	CBN vs. Aluminum Oxide or Silicone Carbide
Description:	Compare honing performance of the indicated abrasive materials
Measurements:	Quality; surface roughness, stock removal & hole geometry Tool performance; Cutting ratio (stock removal / tool wear) Abrasive efficiency; Stone hungriness (Material removal rate / power consumed)
Conclusion:	Student will draw conclusions based on test results