

## **BLOG ON HONING & SUPER FINISHING OPERATION AND SELECTION OF HONING OIL**

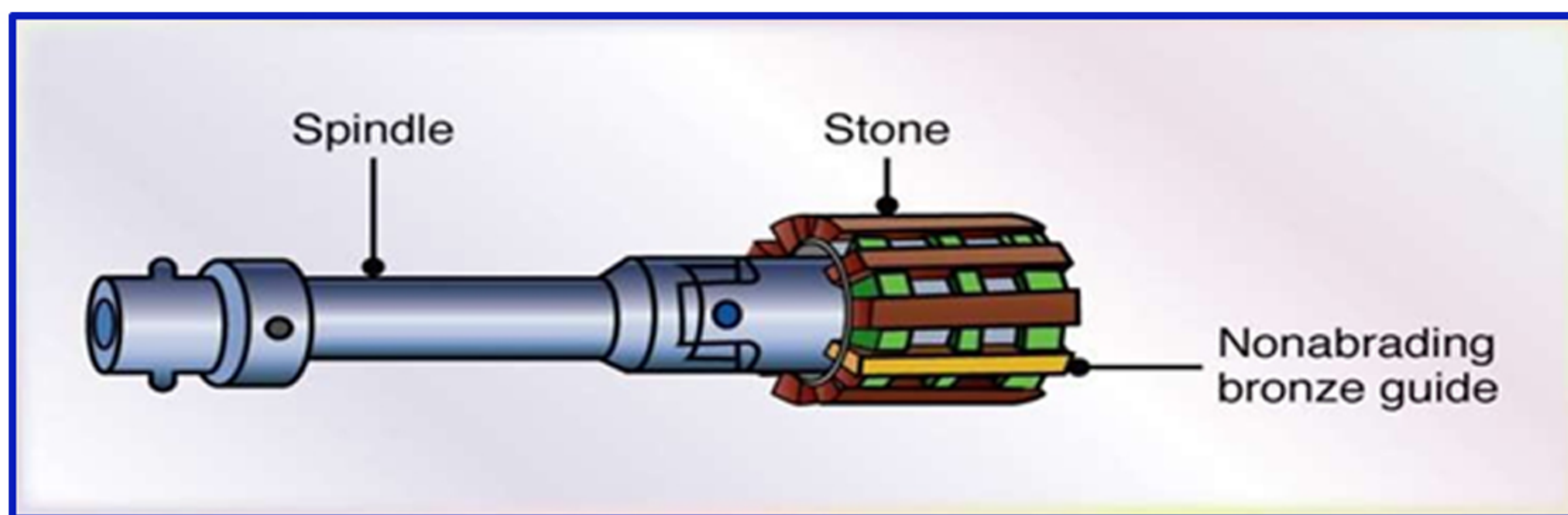
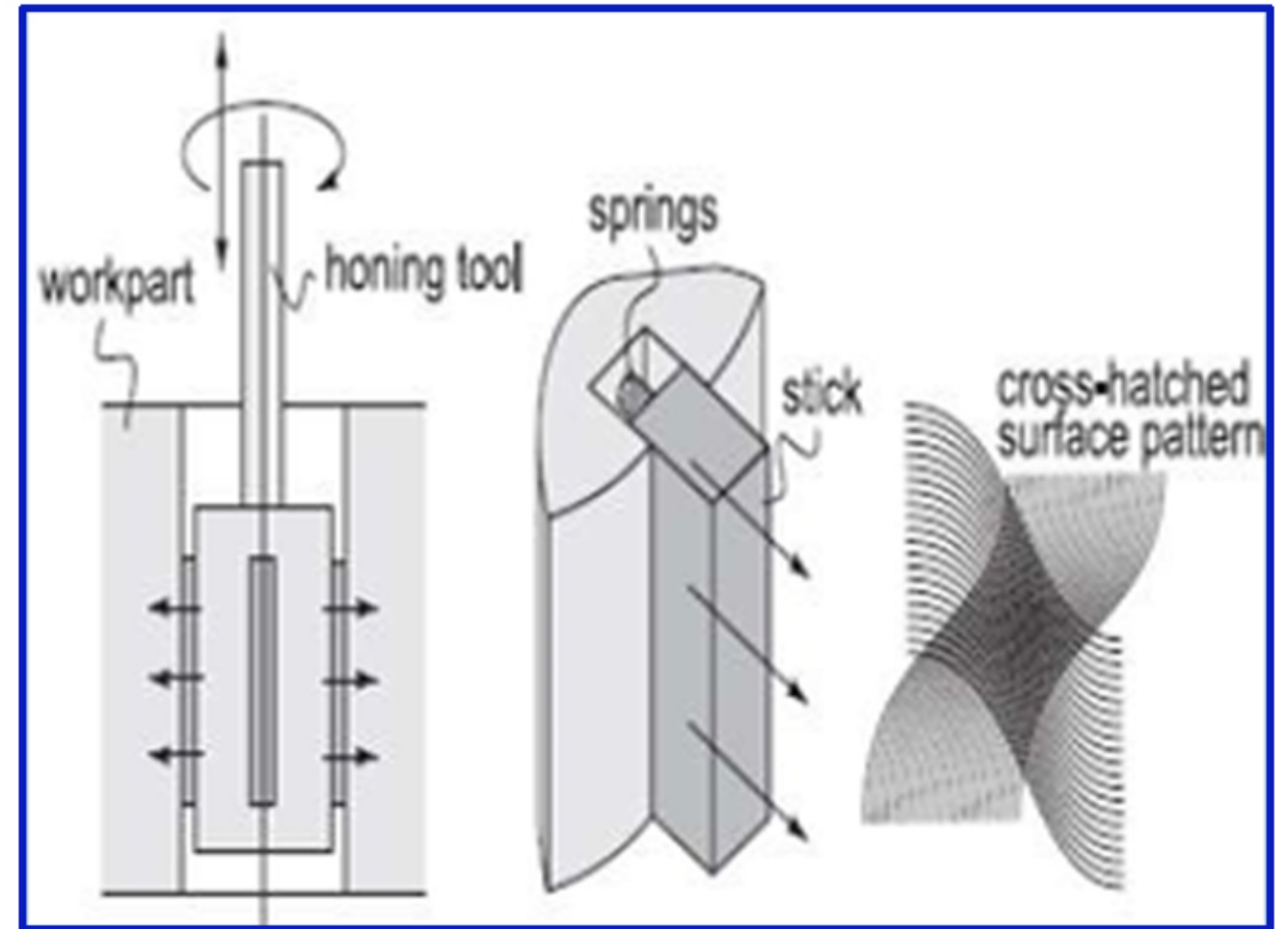
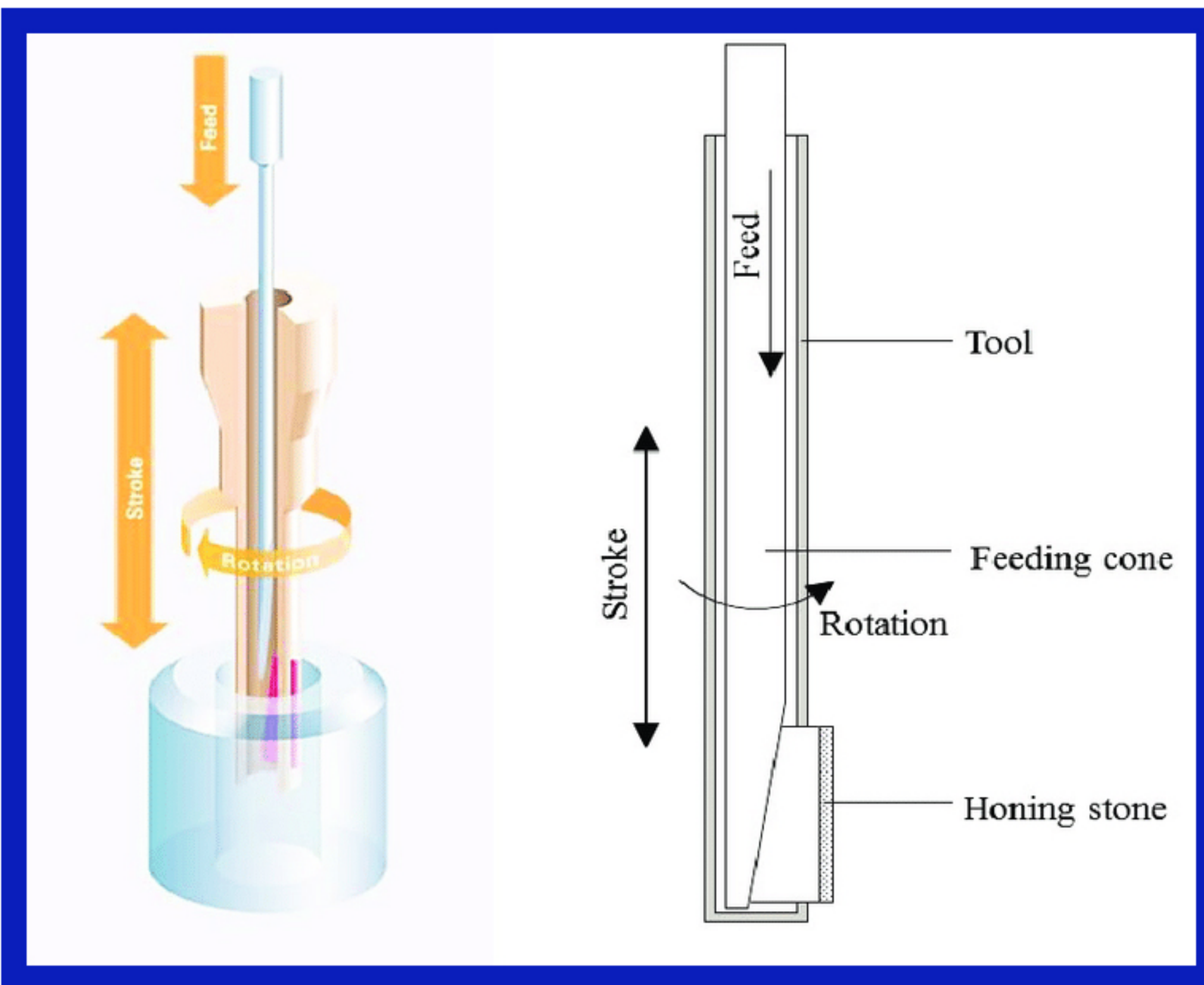


Honing is an abrasive process (similar to grinding) at comparatively slow speed from which the stock is removed from metallic or non-metallic surfaces by a bonded abrasive sticks called honing sticks/tools.

Honing improves the accuracy and finish of automobile cylinder bores, hydraulic cylinders, and similar parts. The honing machine consists of four fine-grain abrasive stones attached to an expandable tool that is then slowly revolved and oscillated inside the cylinder until the desired finish and diameter are obtained. In Honing process simultaneous rotating and reciprocation motion is given to the stick and the surface thus produced will have a characteristic cross-hatch lay (Honey comb type) pattern.







## Common Industries

- Automotive
- Aerospace
- Oil & gas
- Industrial equipment's (cylinder barrels, etc.)

## General Parts for Honing Application

- Bearing rings
- Cylinder blocks
- Connecting rods
- Crank Shaft,
- Cam shafts
- Wheel cylinders
- Hydraulic parts (Pistons, rods, rings, etc.)
- Valves
- Fuel injectors
- Gears







## DIFFERENT TYPES OF **FINISHING APPLICATIONS**



### **Honing**

Honing is a finishing process used to improve the geometry of a part, readjust the alignment of features such as holes or bores, and produce a finer surface finish. In the honing process, a small, bonded, abrasive stone or super-abrasive stick is rotated over the surface of a part over a controlled path.



**Vertical Honing**



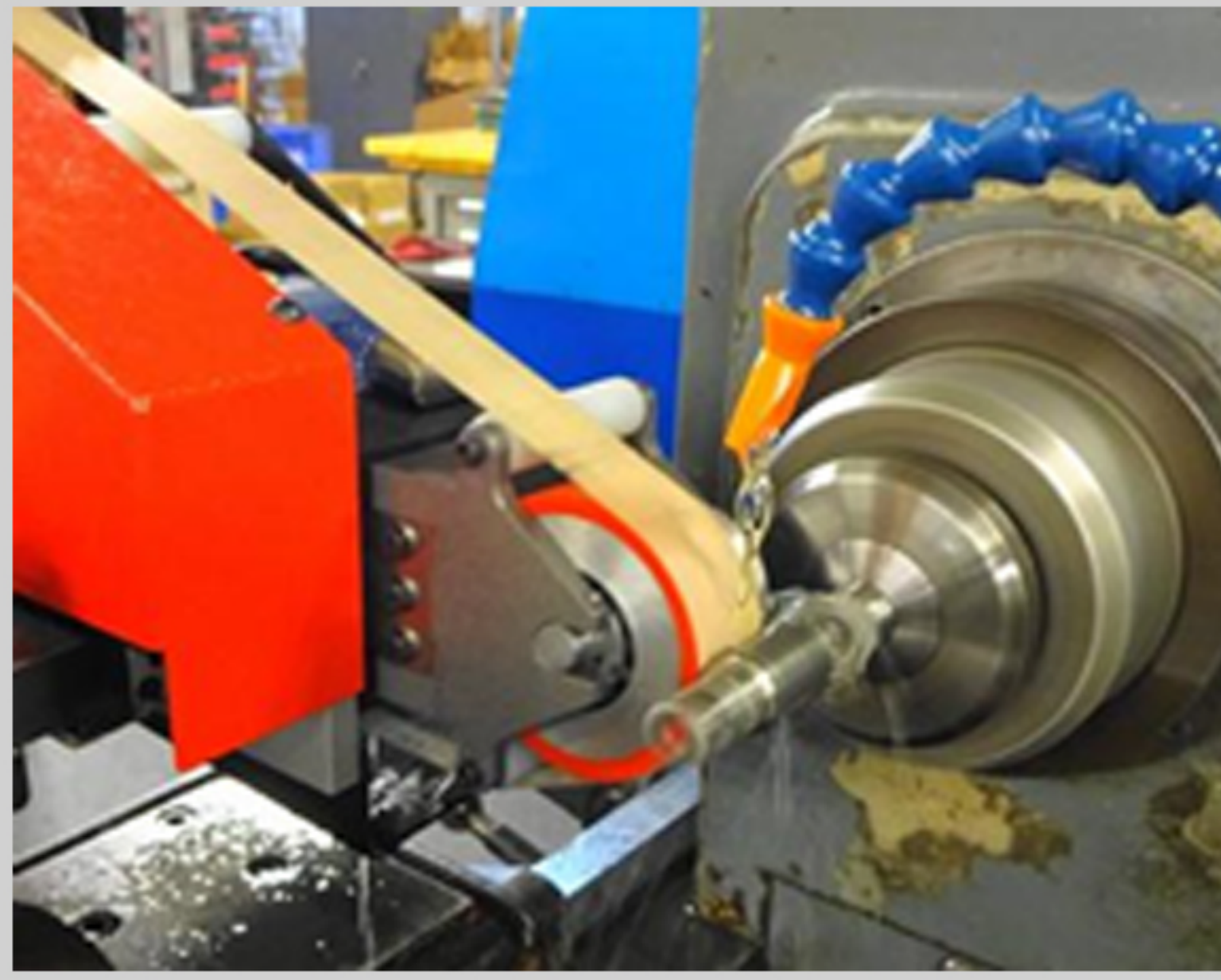
**Horizontal Honing**

### **Superfinishing**

Superfinishing is used to refine the surface finish of a component to produce a very fine surface with an exceptionally low roughness average (RA). A fine-grit abrasive stone or tape is rotated over the component while the component is simultaneously spun in the opposite direction. This process removes the amorphous surface layer left by the last grinding process and leaves a recognizable crosshatch pattern. Superfinishing will increase the life of a part by decreasing wear and tear.







## **Honing / Super finishing Oil**

The high-performance honing and finishing oils are formulated with a select blend of base fluids and additives that are safe for use with all types of materials.

The low-viscosity oil is blended with or without chlorine and sulphur additives, antioxidants, extreme-pressure additives and synthetic ester lubricity additive for honing different metals. High lubricity of honing and super finishing oil ensures longer tool life, higher work speeds and better finish quality. It also helps to achieve good finishes in short-stroke, micro-finishing operations on tough materials like bearing steel and other steels.






## **Majors Factors influencing Honing application**

- Honing/ super finishing fluid
- Honing Tool (Material-Carbides, Blades, Sulphurized key stone, Diamond stones, etc.)
- Honing time
- Honing Length
- Honing pressure
- RPM
- Material
- Filtration

## **Key requirements of Honing Oil**

- Low Viscosity
  - EP Additives
  - Compatibility with tools and part material
  - Good Filterability
  - Good sludge/ fines settling properties
  - Good oxidation Stability
- 

## **Types of tools**





# Advantages of using high performance Honing Oil

S.No	Features	Advantages
1	Polar and Extreme Pressure additives	<ul style="list-style-type: none"><li>• The Polar based additives induces good sludge separation &amp; settling properties.</li><li>• Good rinsing properties, which will reduce the sludge deposition and excellent honing performance.</li><li>• EP additives to achieve an excellent surface finish with minimum tool wear.</li></ul>
2	Highly refined Base stocks	<ul style="list-style-type: none"><li>• Good Oxidation Stability, which will result in longer sump life.</li></ul>
3	Low viscosity	<ul style="list-style-type: none"><li>• Ensures maximum cooling and swarf removal without oil misting</li><li>• Less carry over loss results in lower consumption. Good Oil spread ability which reduces the heat generation during machining.</li><li>• Easy filterability</li></ul>
4	Low Copper Strip Corrosion	<ul style="list-style-type: none"><li>• No stain marks in parts during machining.</li><li>• Products can be used for machining of Aluminum and other nonferrous material.</li></ul>

## Different Types of Honing & Super finishing Oils from Hardcastle

We at Hardcastle Petrofer have developed various types of Honing oils considering the critical operating conditions, operators handling, safety and health issues.



### Neat oils

#### Hicut Hone Series

- With & Without Chlorine
- With & Without Sulphur

#### Isocut Series

- With modern additive and base oil



### Water Based

- Emulcut series -
- Translucent
- Micro emulsions

In order to determine the most suitable honing oil for an application, consult our technical experts for their advice in selecting the right product.