Section-1 Q2 Ans.

Honing Process :-

- Honing process is an operation used primarily to give holes a fine surface finish.
- The honing tool consists of a set of aluminum-oxide or silicon-carbide bonded abrasive, called stones.
- They are mounted on a mandrel that rotates in the holes, applying a radial force with a reciprocating axial motion, this action produces a cross-hatched pattern.

Page No.
Date

- The stones can be adjusted radially for different hole sizes. Honing is also done on external cylindrical or flat surfaces and to remove sharp edges on cutting tools & inserts.

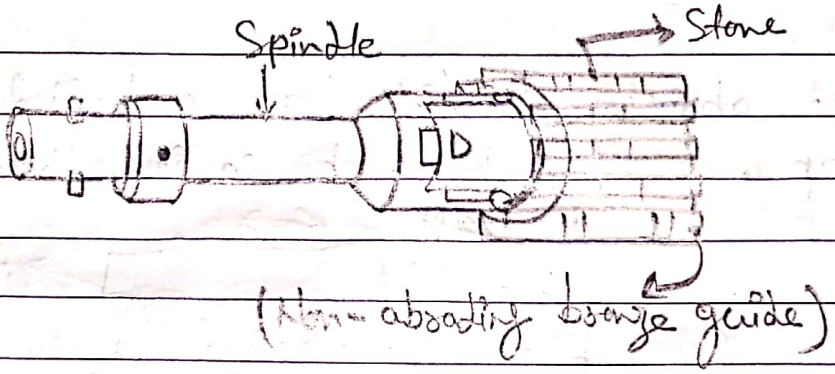


Fig:- Schematic illustration of a honing tool.

- The fineness of surface finish can be controlled by the type & size of abrasive used, the pressure applied, & speed.
- Surface speed range from about 45m/min to 90m/min.

- A fluid is used to remove chips & to keep temp. low.

⇒ Four factors that influence the selection of Grinding wheel:-

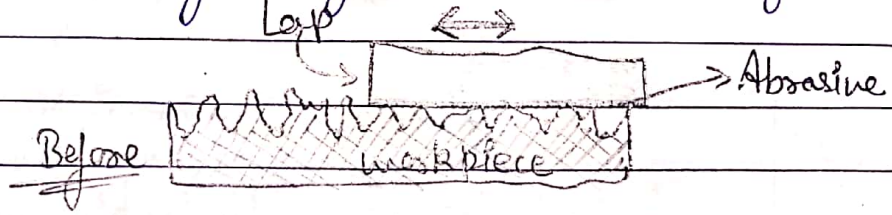
(i) Surface finish.
(ii) Metal removal rate.
(iii) Material.
(iv) Wheel speed.

→ Lapping is basically an abrasive process in which loose abrasives function as cutting pt. floating momentary support from laps.

Page no.
Date

Lapping :- Lapping is a finishing operation used on flat or cylindrical surface.

- The lap is usually made of cast iron, copper, leather or cloth.
- The abrasive particles are embedded in the lap, or they may be carried through slurry.



- Depending on the hardness of the w/p, lapping pressure ranges from 7kPa to 140kPa.
- Material removal in lapping usually ranges from 0.003 to 0.3 mm but may reach 0.08 to 0.1 mm in certain cases.
- Lapping is also done on curved surface, such as special objects & glass tubes, using specially shaped laps.

Advantage of lapping :-

- Extreme accuracy in both tolerance & geometry.
- Fast stock removal.
- No clamping or heat distortion.
- No expensive tooling required.
- Irregular shaped parts can be easily processed.

Page No. _____
Date

Limitation of lapping :-

- Since lapping is a finishing operation, parts should not be far from the expected size & geometry before lapping.
- Residue of compound left on the surface of the part after lapping must be removed.

Uses of Lapping :-

- Aircraft piston pins.
- Automotive wrist pins.
- Diesel engine injector pumps parts.

Polishing :-

- Polishing is a process that produces a smooth, lustrous surface finish.
- Two basic mechanisms are involved in the polishing process :-
  - (a) Fine scale abrasive removal
  - (b) Softening & smearing of surface layers by friction heating during polishing.
- The shiny appearance of polished surface results from the smearing action.
- Parts with irregular shapes, sharp corners, deep recesses, & sharp projections are difficult to polish.

Page No. _____
Date | | |

Chemical Mechanical Polishing :-

- Chemical mechanical polishing is a process in which a chemically reactive surface is polished with ceramic slurry in a sodium hydroxide solution.

- A major application of this process is the polishing of silicon wafers.