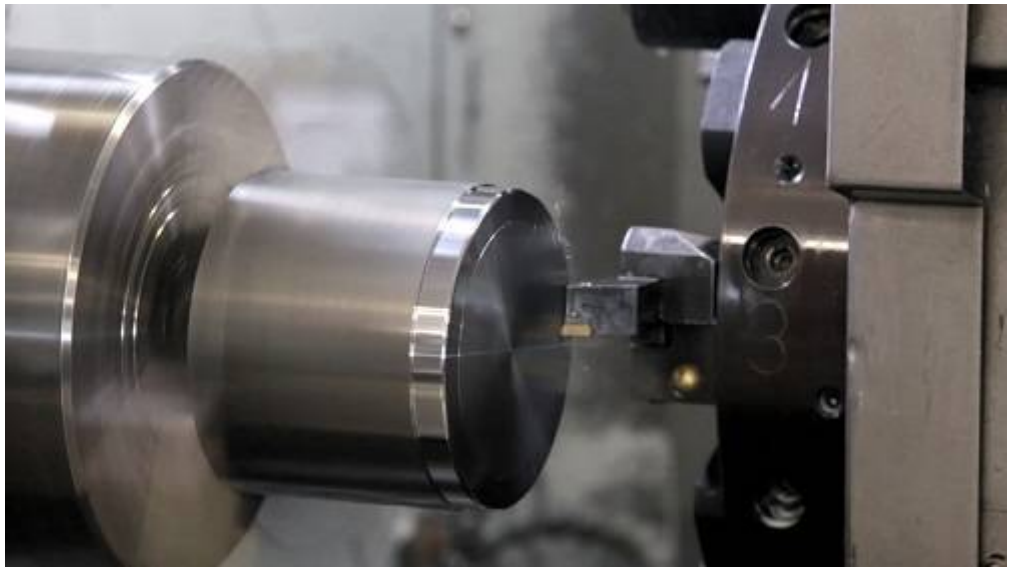
Metal Cutting and Machine Tool (MEL3132)



Dr. Rajiv Kumar,
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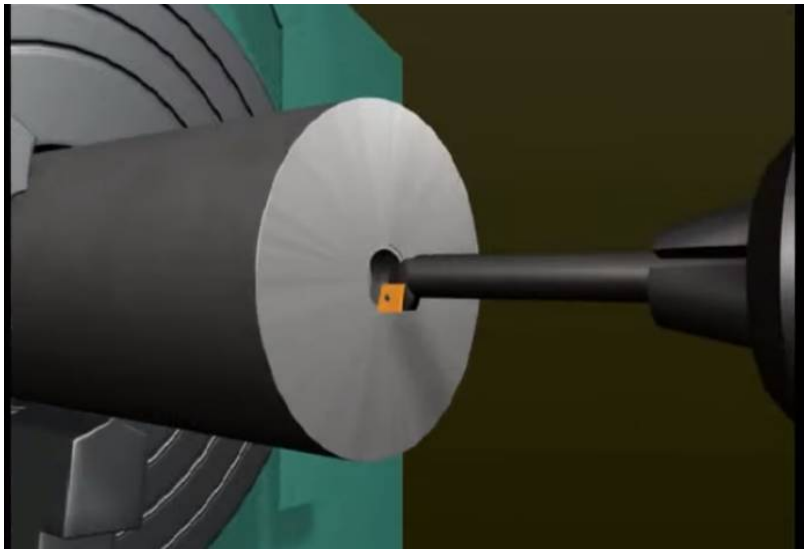
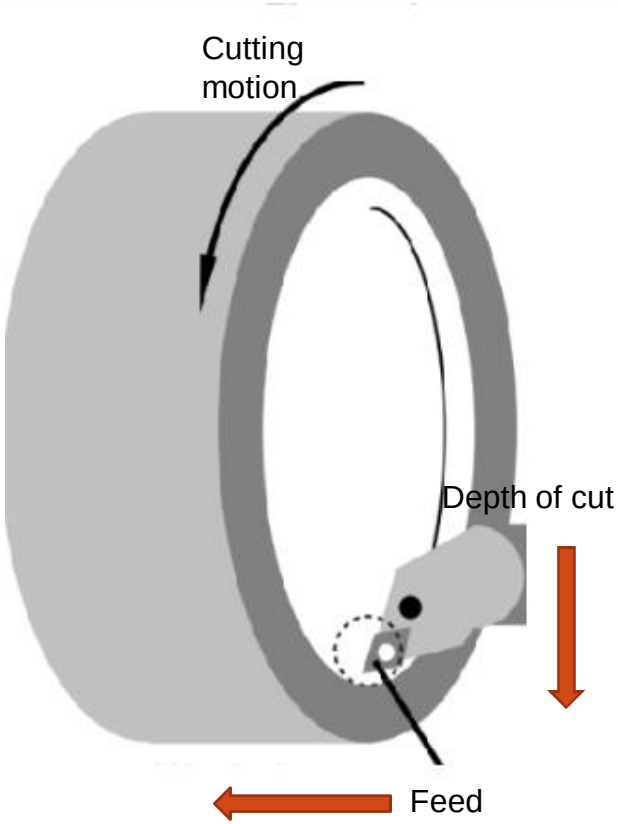
Pic Source-Google images

Types of Motions in Machining

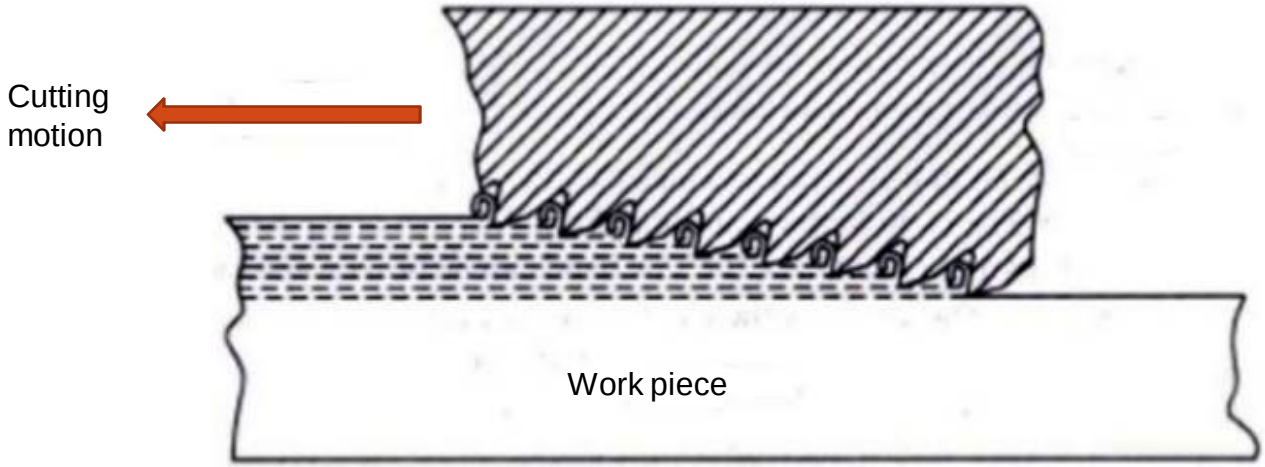




Boring

Pic Source-Google images

Types of Motions in Machining



Pic Source-Google images

Broaching

Broaching Tools

Pic Source-Shaktiman Tech. Tools Punjab

Definition of Machining

Machining - Conversion of raw material into the product by removing the excess material gradually in the form of chips.

Preforming (casting, forging etc.) → Finishing (machining) → Super Finishing (grinding, honing, lapping)

- Desired dimensional accuracy and finish

Definition-

"It is an essential process of finishing by which jobs of *desired dimensions* and *surface finish* are produced by gradually removing the excess material from the preformed blank in the form of chips with the help of cutting tool(s) moved past the work surface(s)".

Purpose of Machining

Purpose- To enable the finished product fulfill the

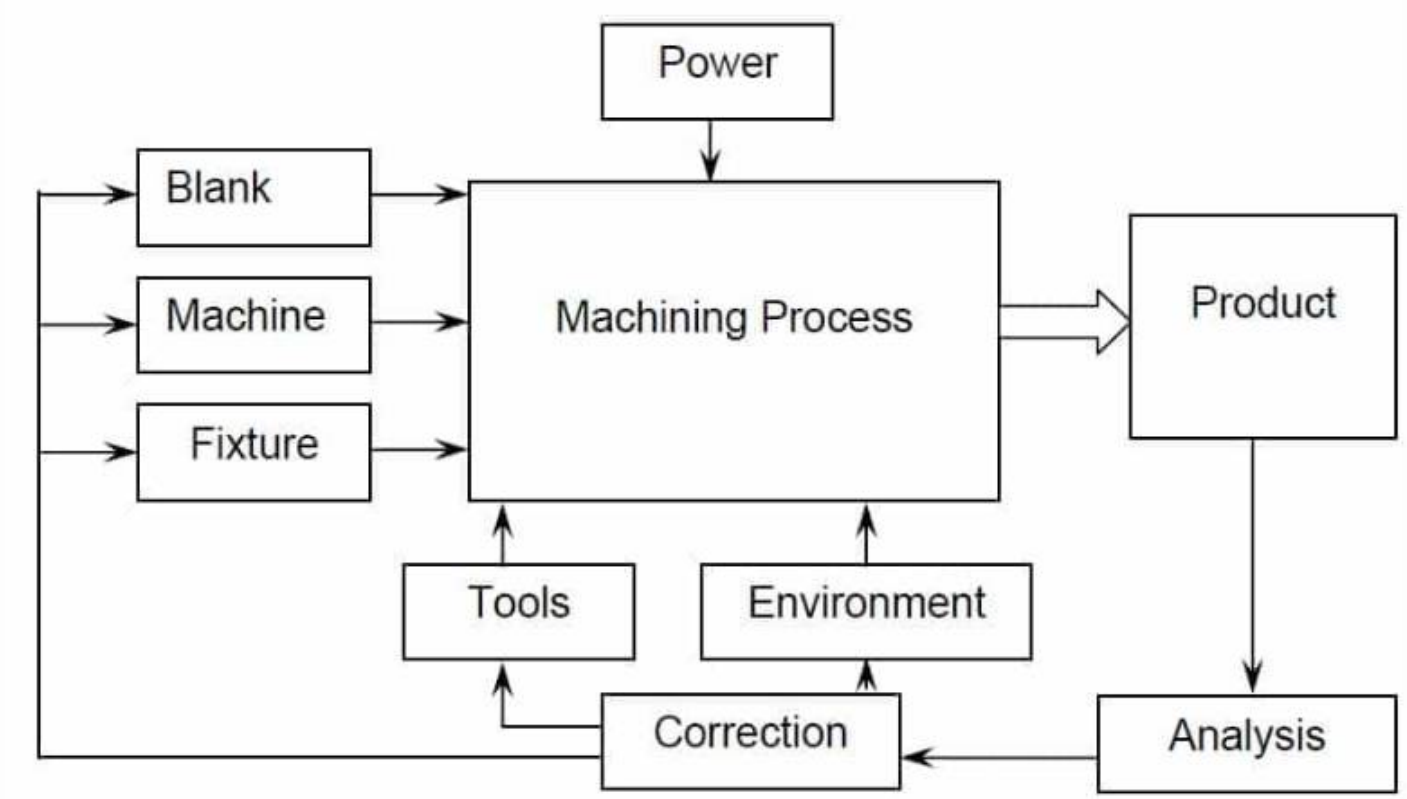
1. Functional requirement

   (e.g. Bearing fitting)

2. Good performance

   (longer service)

Machining Requirements



Pic Source-Google images

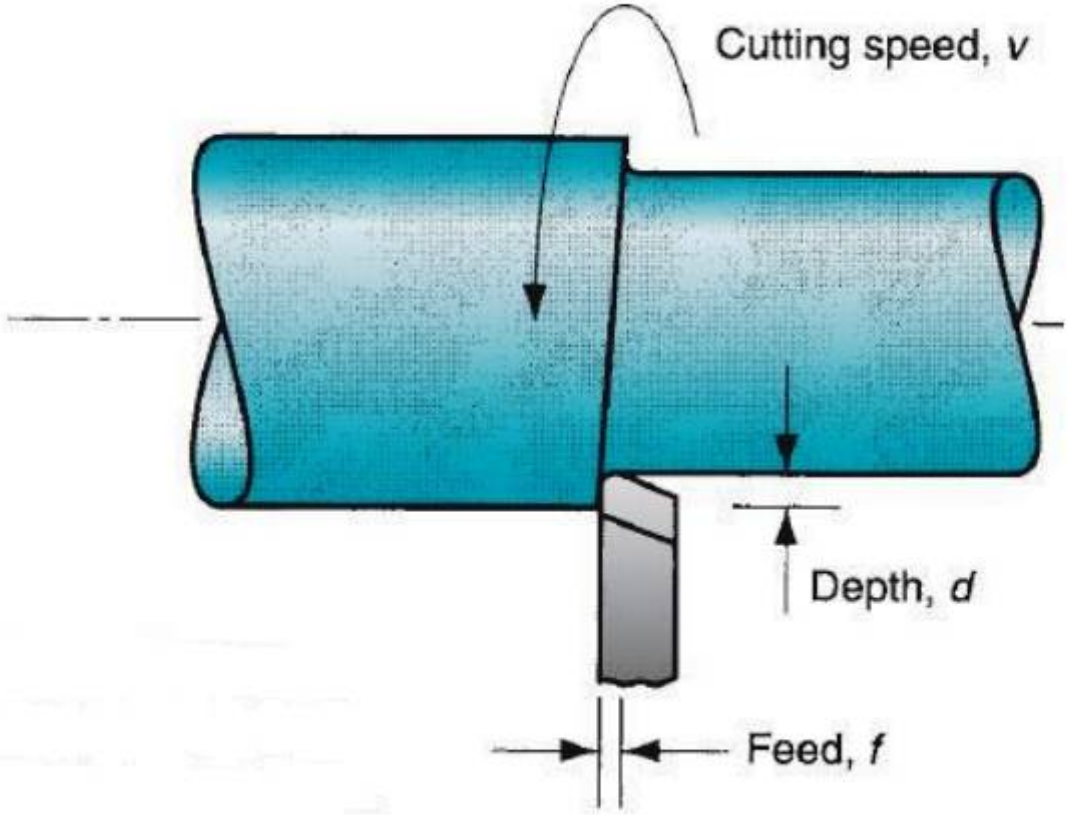
Machining Parameters

Cutting Speed (v)- the speed with which the cutting tool moves through the work material (unit- m/s)

Depth of Cut (d)- the normal distance between the unmachined surface and the machined surface (unit- mm)

Feed rate (f)- the small relative movement per cycle (per revolution or per stroke) of the cutting tool in a direction usually normal to the cutting speed direction (unit- mm/revolution or mm/stroke).

Machining Parameters



CUTTING TOOL MATERIALS & CUTTING FLUIDS

Characteristics of Cutting Tool Material

1. Higher hardness than w/p
2. Hot hardness
3. Wear resistance
4. Toughness
5. Low friction
6. Better Thermal Characteristics


THANK YOU