

INTRODUCTION MACHINE TOOLS

- DEFINITION
- TYPES OF MACHINE TOOLS
- LATHE MACHINE
- OPERATIONS
- CHIPS & ITS TYPES
- SHAPER
- PLANER
- MILLING MACHINES
- DRILLING MACHINES

DEFINITION

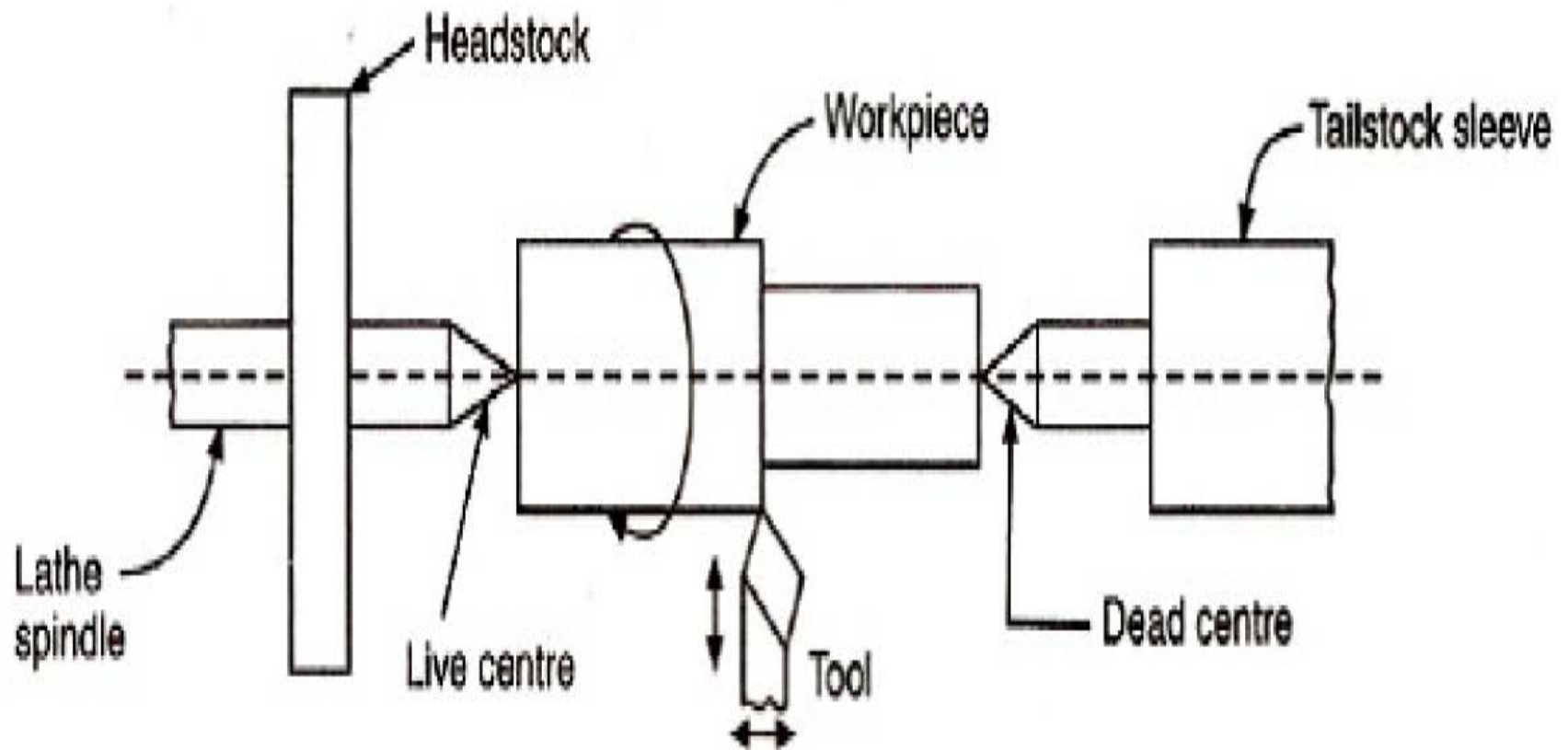
- Machine tools are the machines which are being used to manufacture components of definite shape and size with precision and accuracy by removing materials from the work piece.

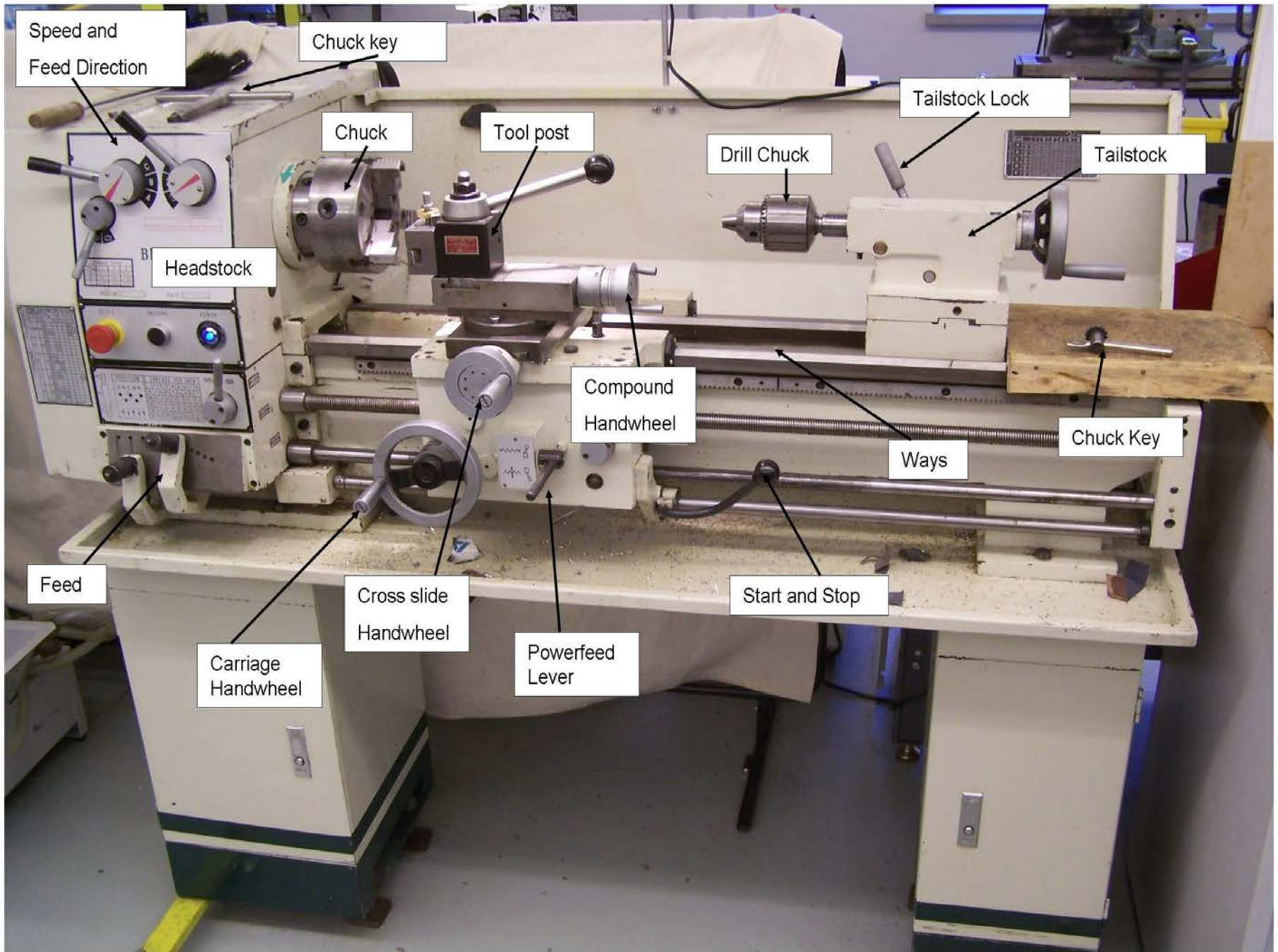
TYPES OF MACHINE TOOLS

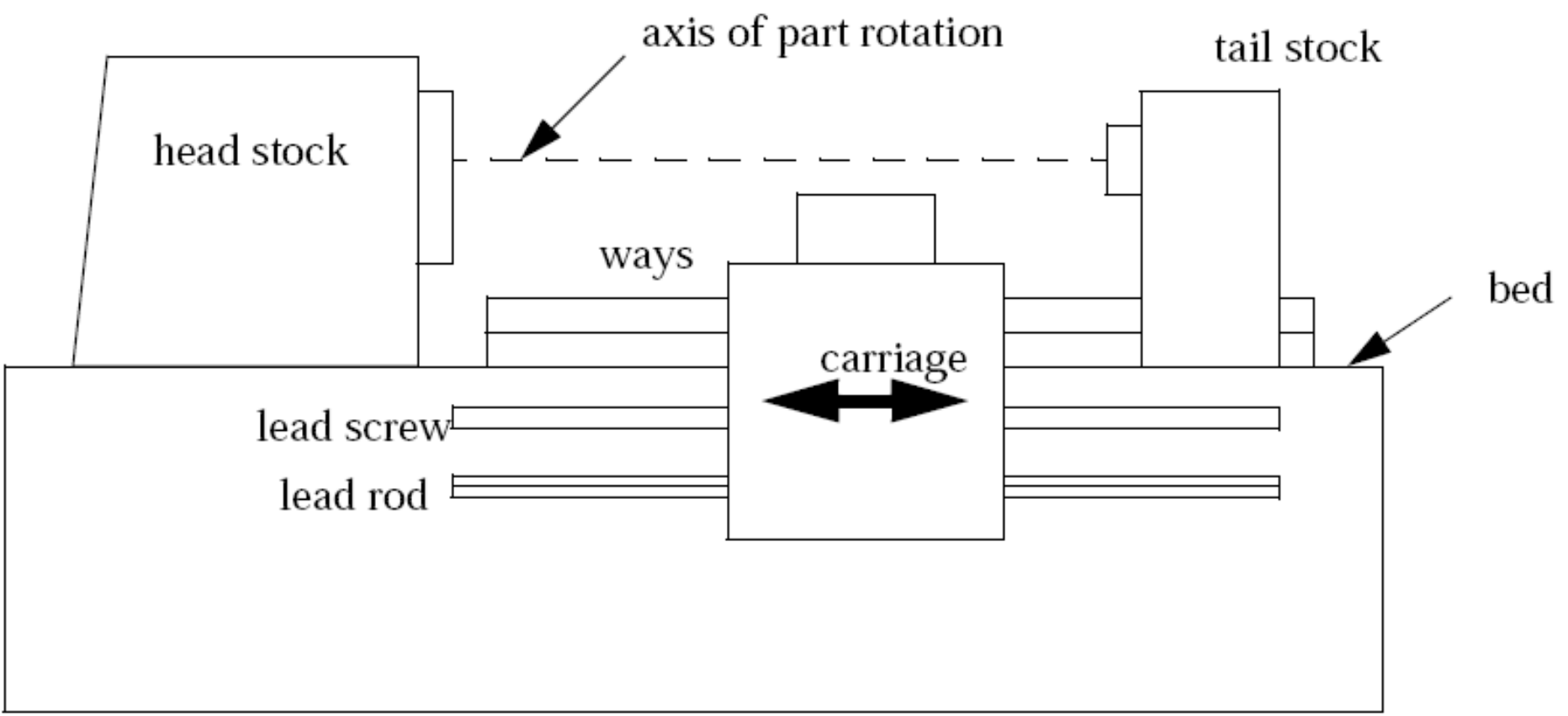
For general purpose machining, the following types of machine tools are used

1. Lathe machine
2. Shaper
3. Planer
4. Milling machine
5. Drilling machine
6. Boring machine
7. Grinding machine
8. Sawing machine

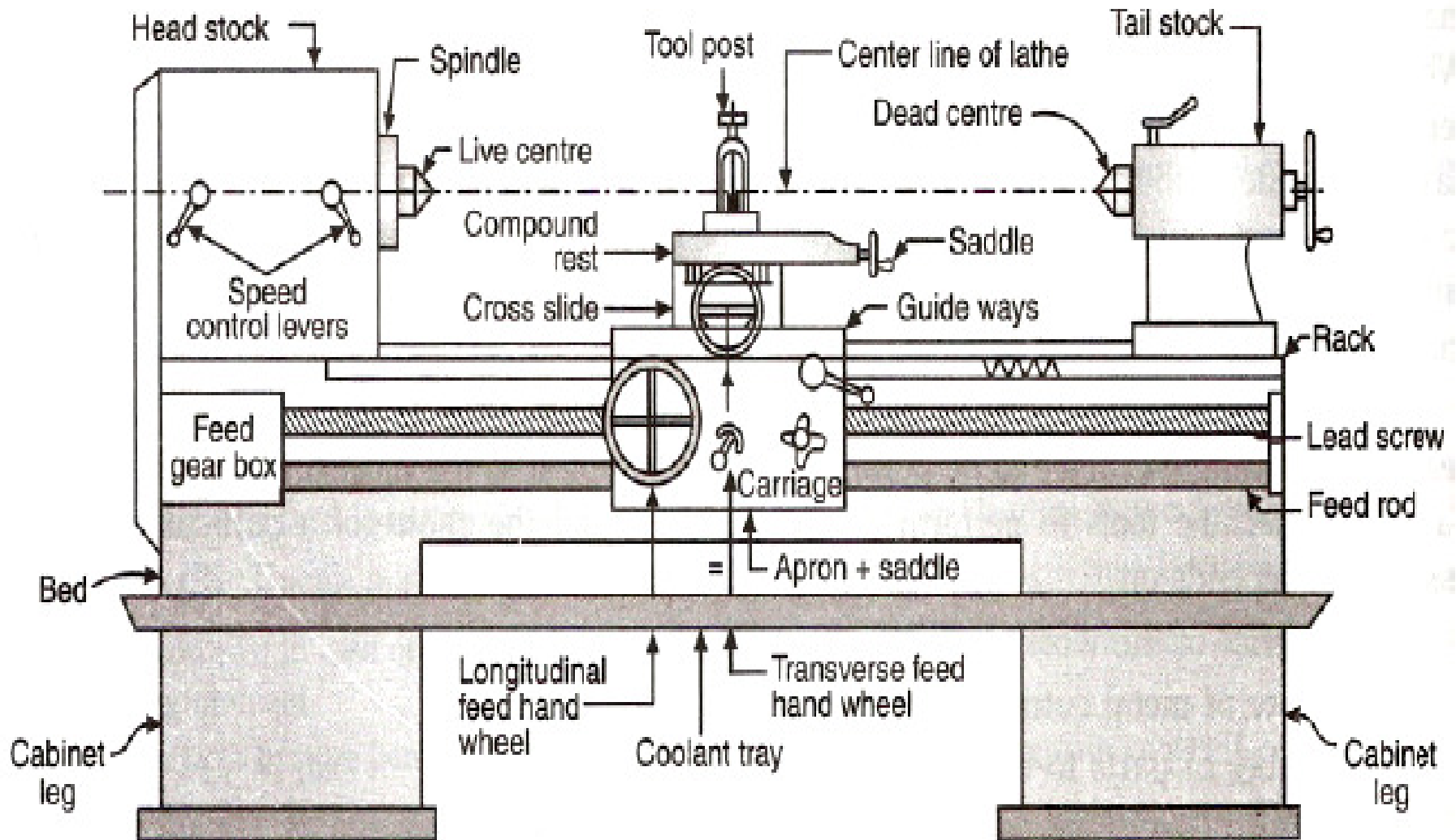
LATHE MACHINE







LATHE MACHINE

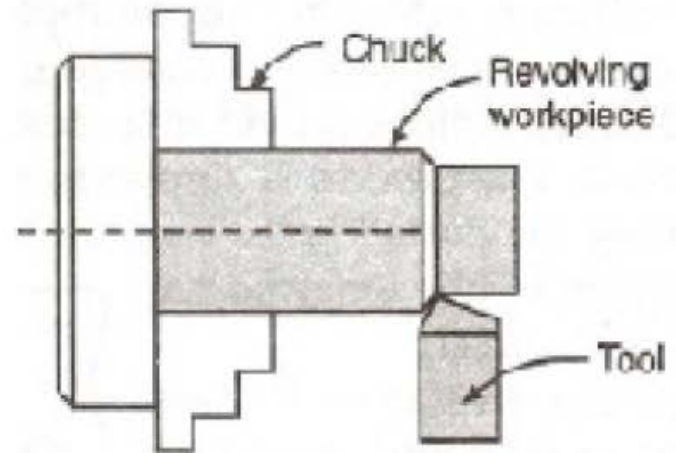


LATHE OPERATIONS

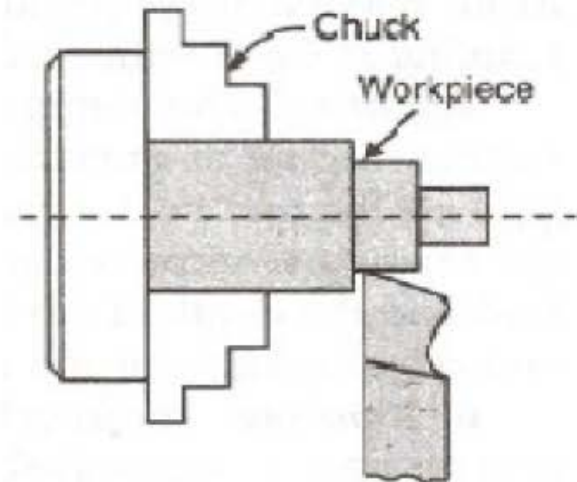
- 1. Plain Turning, Taper Turning and Step Turning
- 2. Facing
- 3. Parting
- 4. Drilling
- 5. Reaming
- 6. Boring
- 7. Knurling
- 8. Grooving
- 9. Threading
- 10. Forming

LATHE OPERATIONS

Plain Turning: Plain turning is the operation of removing excess amount of material from the surface of a cylindrical job.

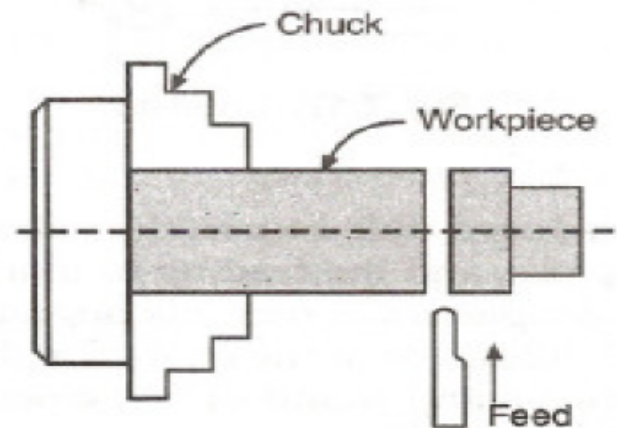


Step Turning: Step turning produces various steps of different diameters.

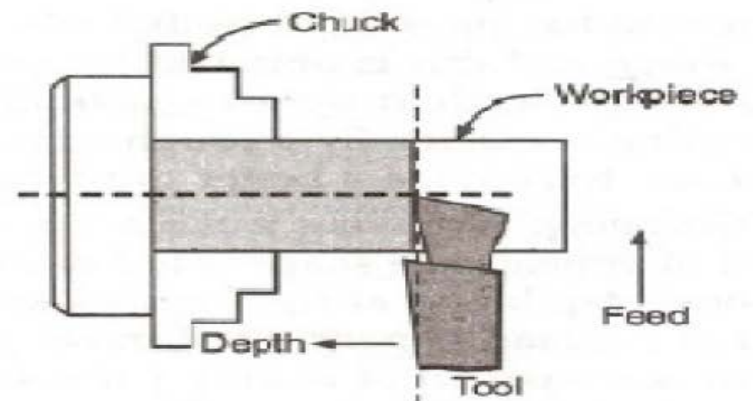


LATHE OPERATIONS

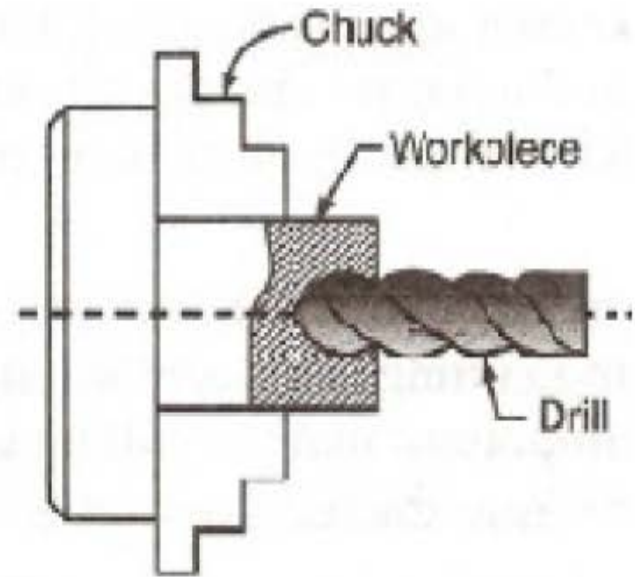
Facing: The facing is a machining operation by which the end surface of the workpiece is made flat by removing metal from it.



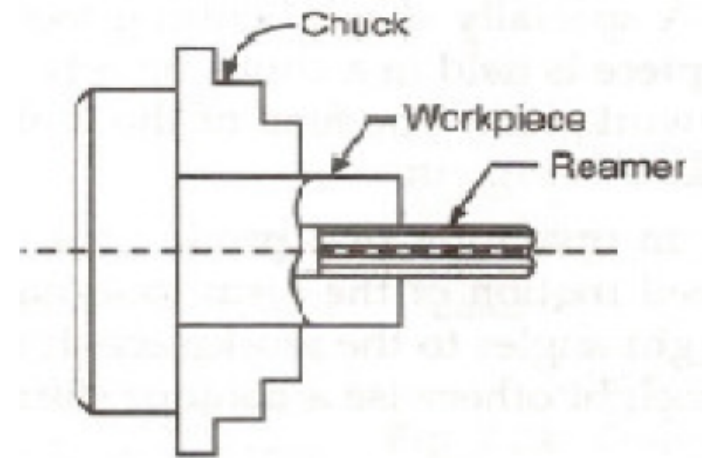
Parting: The parting or cutting off is the operation of cutting away a desired length of the workpiece, *i.e.*, dividing the workpiece in two or more parts.



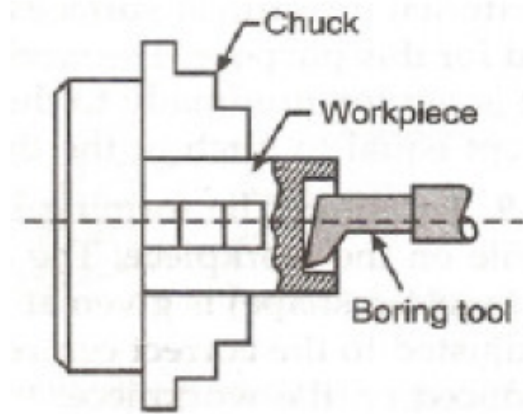
Drilling: Drilling is the operation of producing a cylindrical hole in the workpiece.



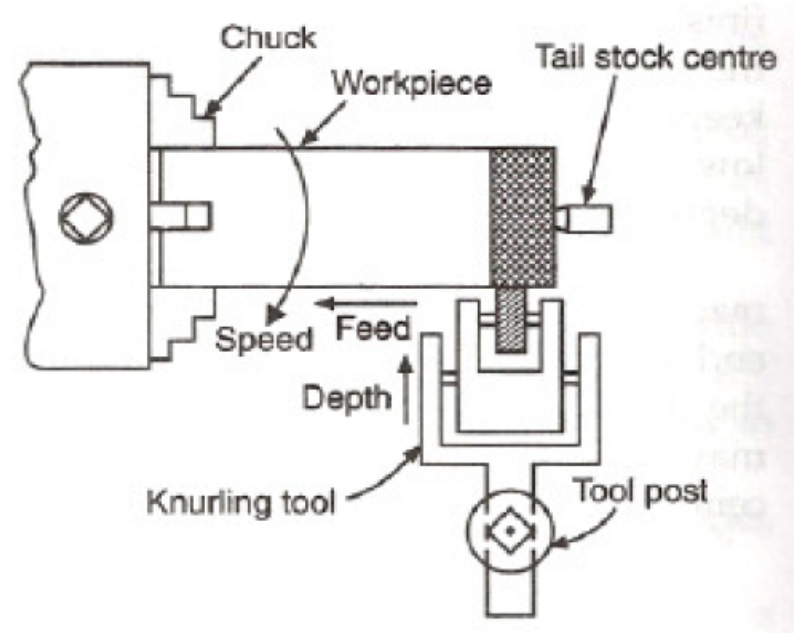
Reaming: The holes that are produced by drilling are rarely straight and cylindrical in form. The reaming operation finishes and sizes the hole already drilled into the workpiece.



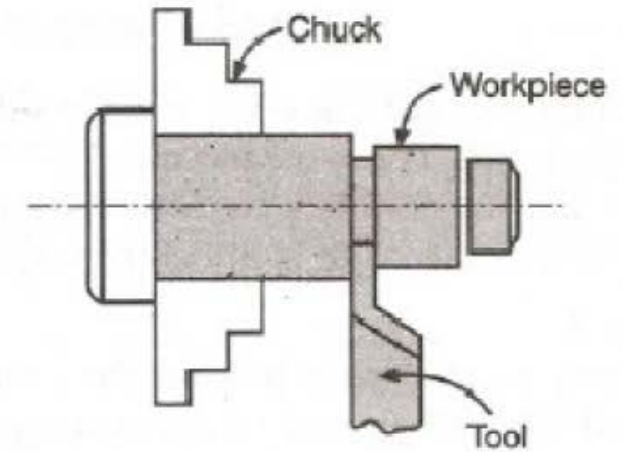
Boring: The boring operation is the process of enlarging a hole already produced by drilling.



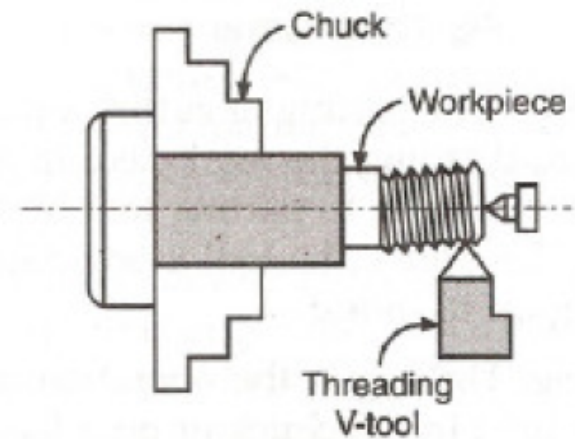
Knurling: The knurling is a process of embossing (impressing) a diamond-shaped or straight-line pattern into the surface of workpiece. Knurling is essentially a roughening of the surface and is done to provide a better gripping surface.



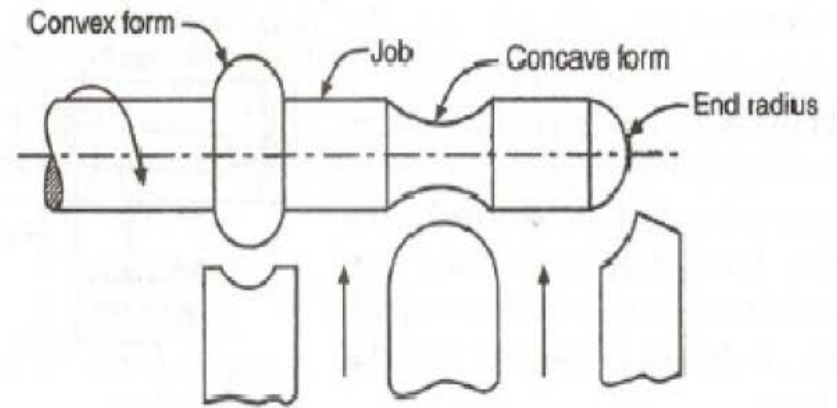
Grooving: Grooving is the act of making grooves of reduced diameter in the workpiece.



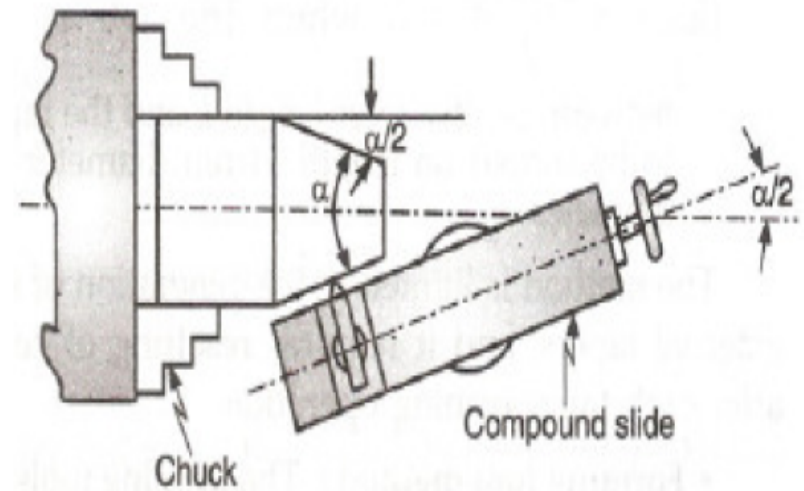
Threading: Threading is the act of cutting of the required form of threads on the internal or external cylindrical surfaces.



11. **Forming:** The forming is an operation that produces a convex, concave or any irregular profile on the workpiece.

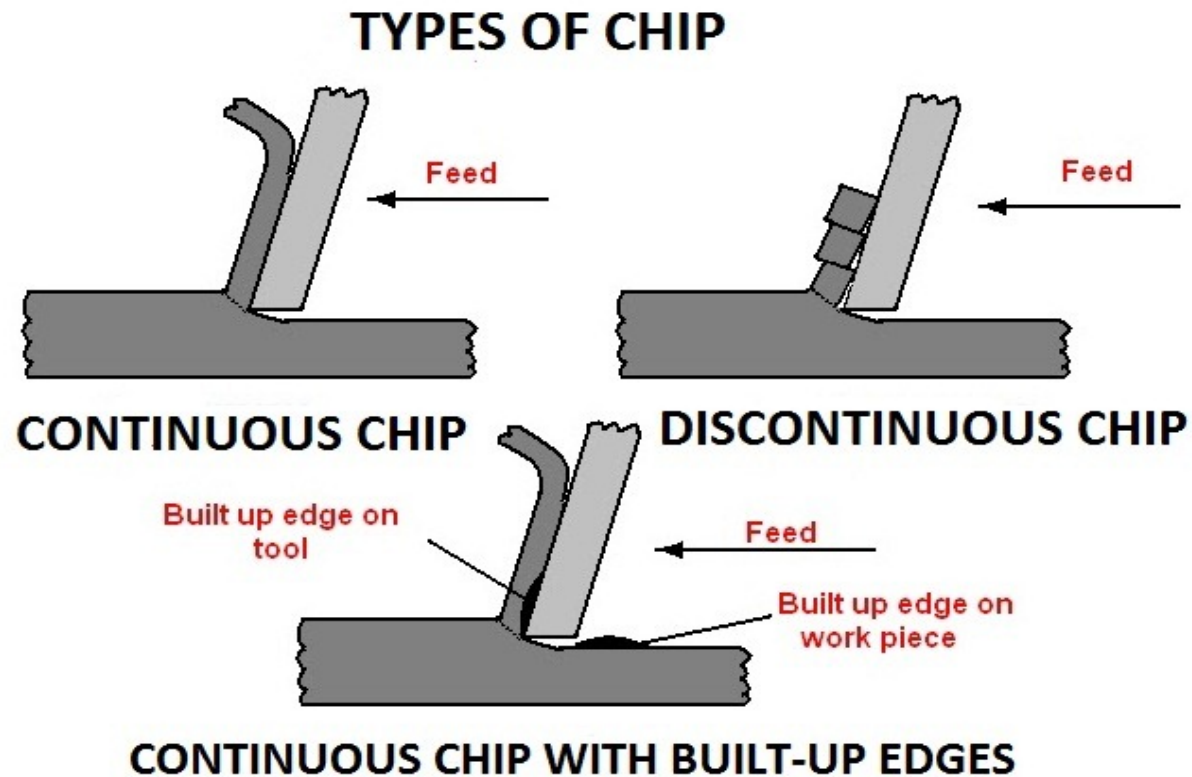


Taper Turning: The taper turning is an operation of producing a conical surface by gradual reduction in the diameter of a cylindrical workpiece.

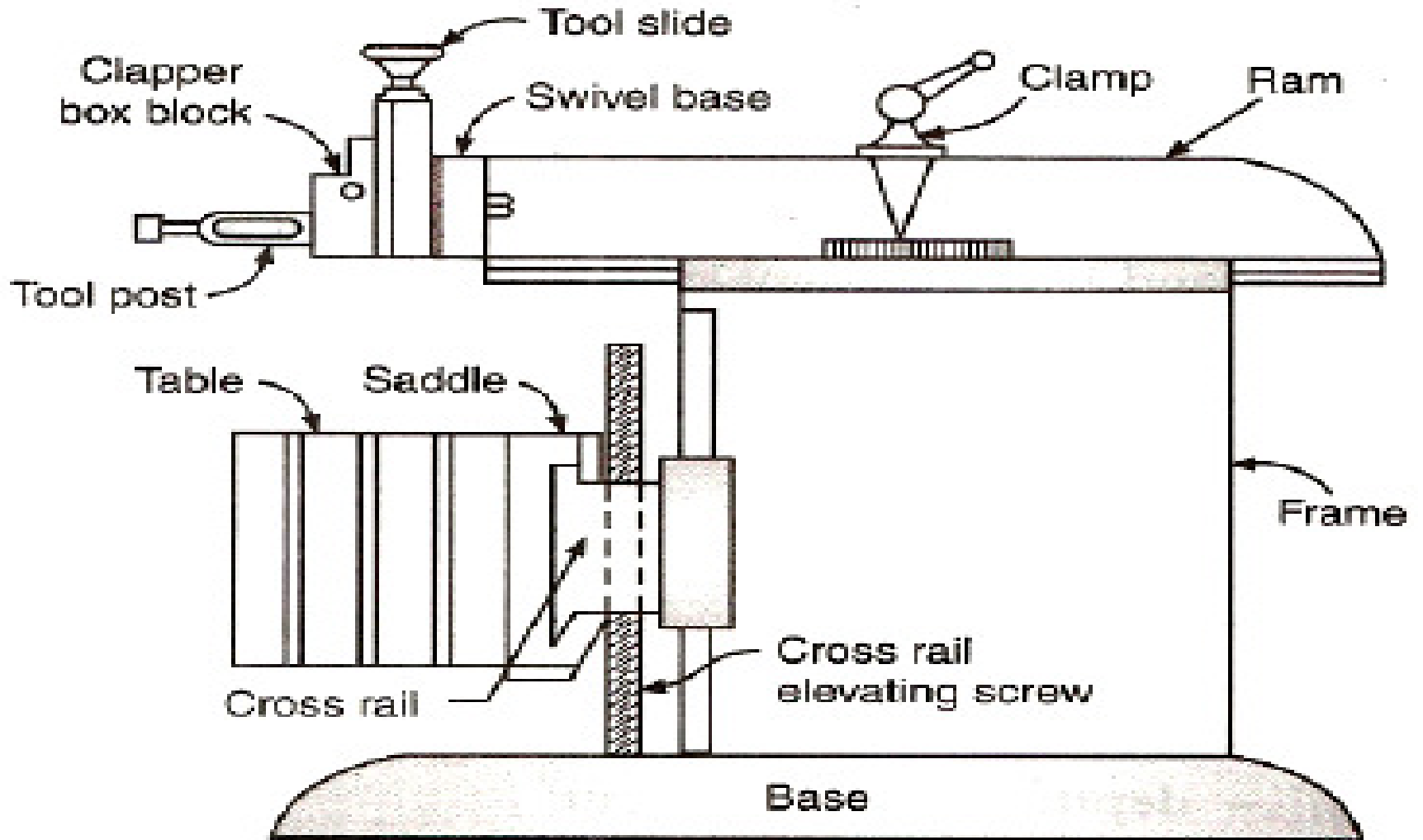


CHIP & ITS TYPES

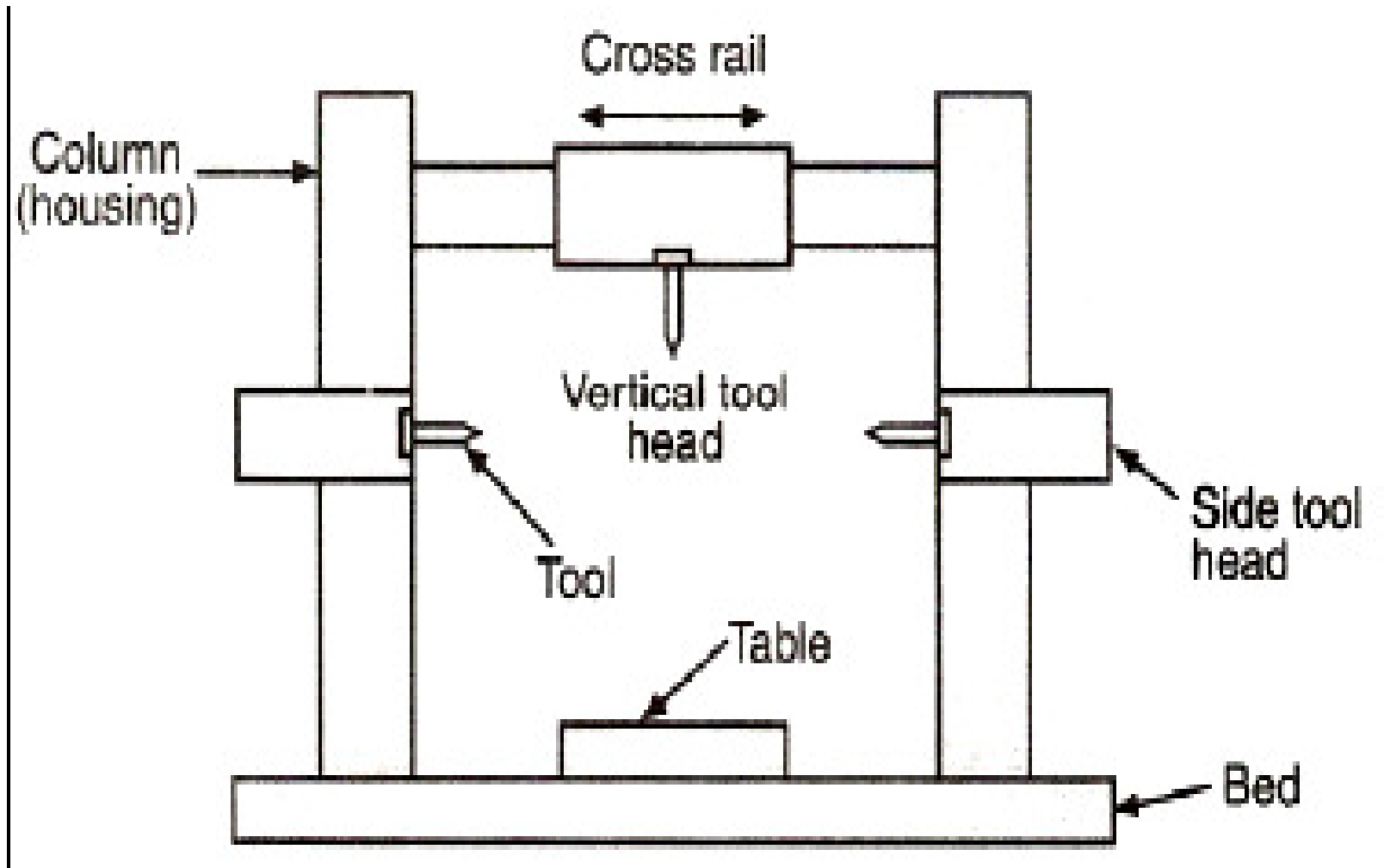
Extra material removed after every machining process is termed as chip



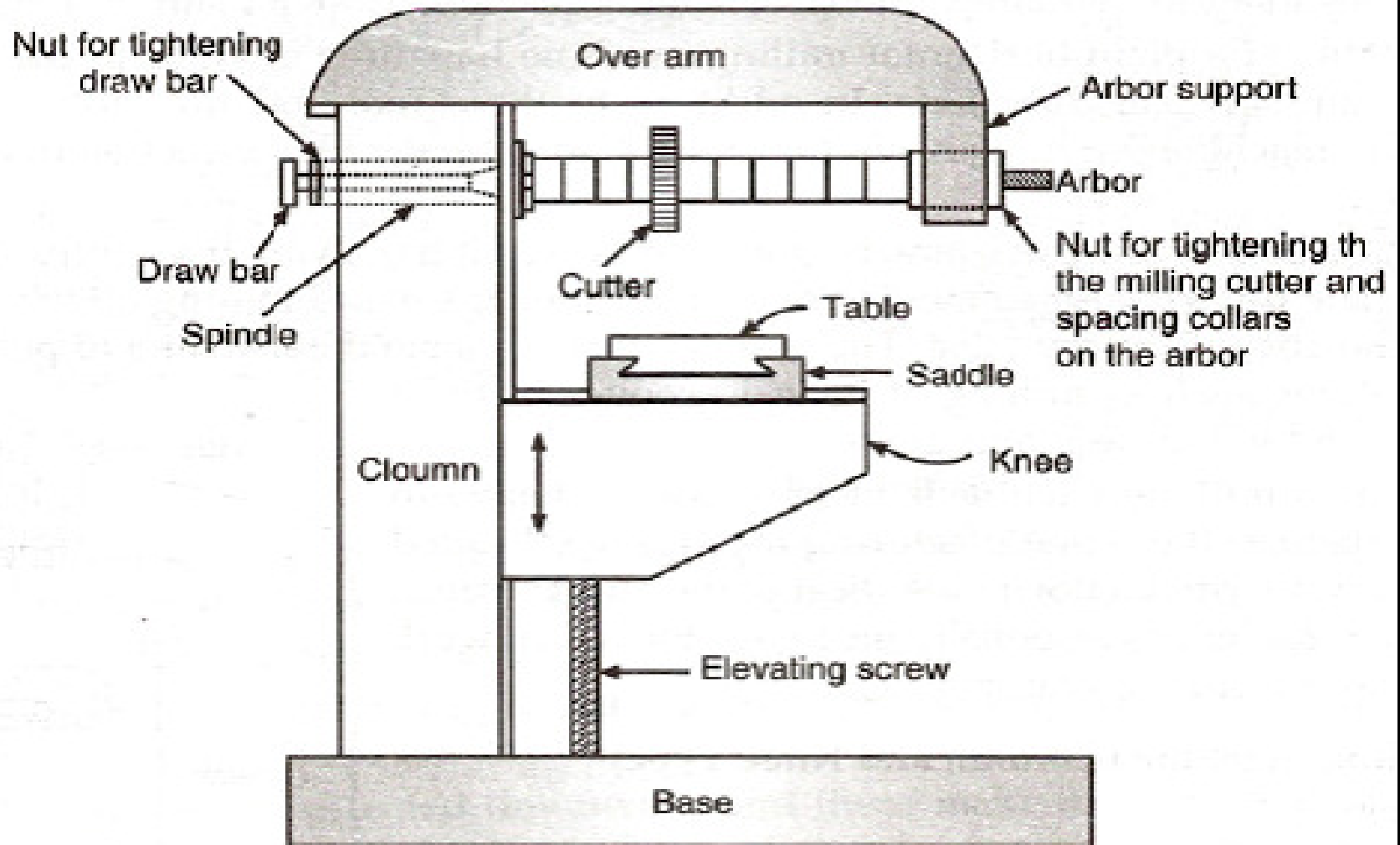
SHAPER MACHINE



P LANER MACHINE

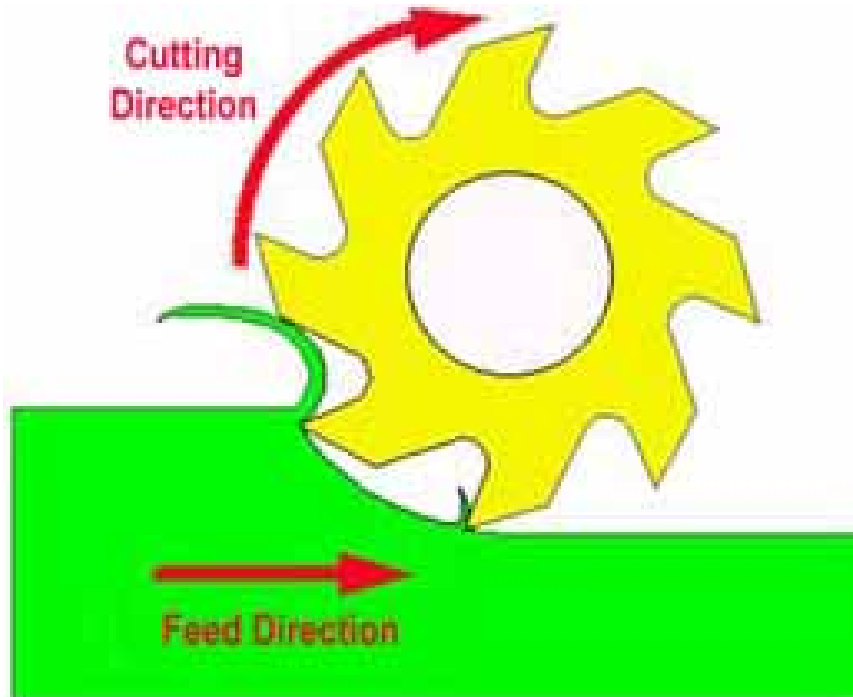


MILLING MACHINE



TYPES OF MILLING

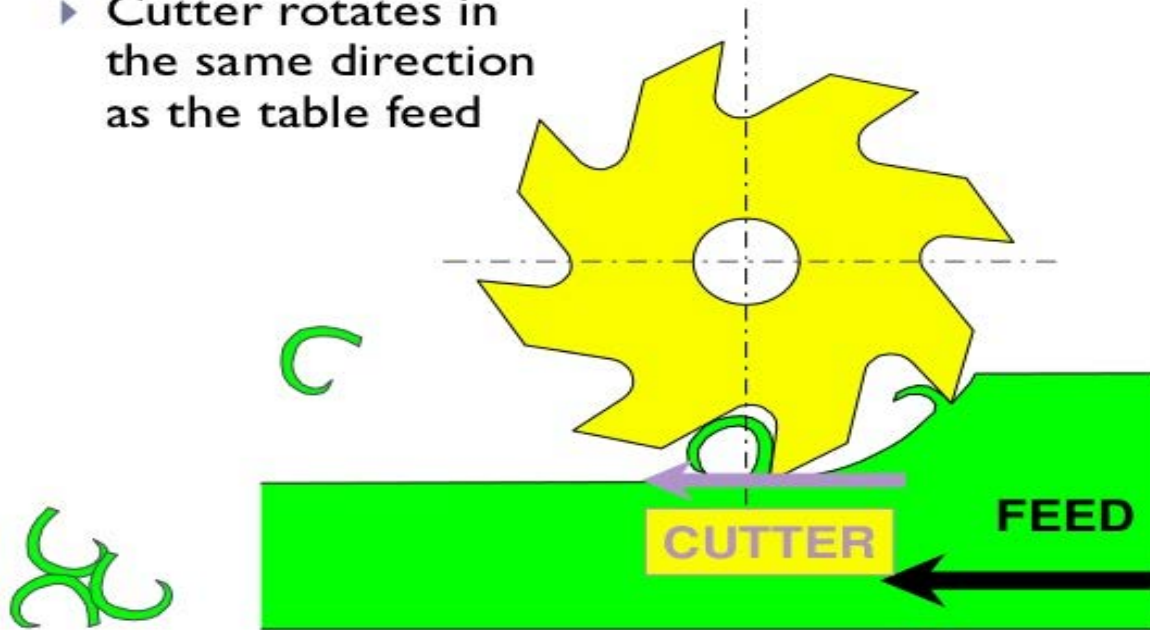
- UPMILLING OR CONVENTIONAL MILLING



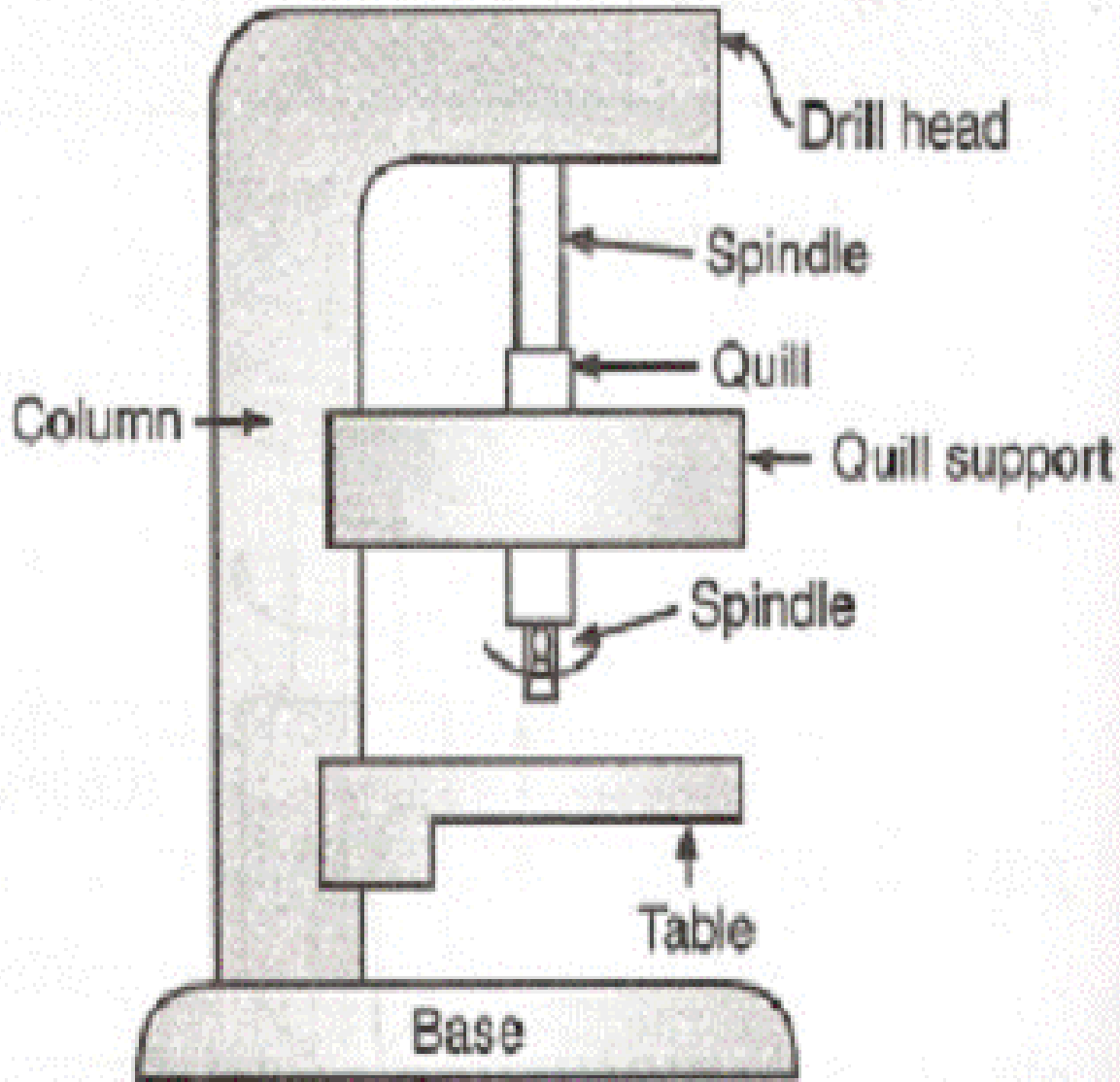
- **DOWN-MILLING OR CLIMB MILLING**

Down Cut

- ▶ Cutter rotates in the same direction as the table feed



DRILLING MACHINE



Working Principle of Drill machine

