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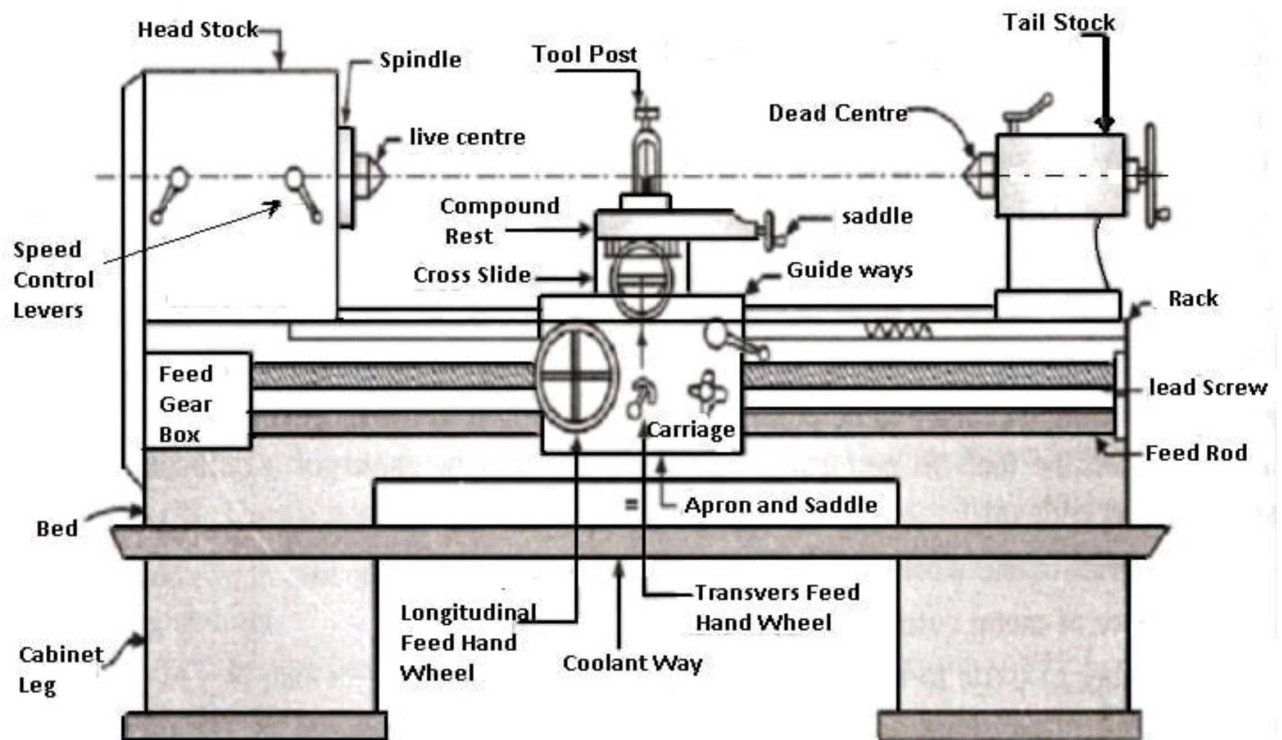
ESTD: 2015 Siromonipur, Bishnupur, Bankura, 722122 (W.B.)



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◆ **WORKING PRINCIPLE:** The lathe is a MACHINE TOOL which holds the workpiece between two rigid and strong supports called centres or in a chuck or face plate which revolves. The cutting tool is rigidly held and supported in a tool post which is fed against the revolving work. The normal cutting operations are performed with the cutting tool fed either parallel or at right angles to the axis of the work.

◆ **CONSTRUCTION:** The main parts of the lathe are the bed, headstock, quick changing gear box, carriage and tailstock.



1. **Bed:** The bed is a heavy, rugged casting in which are mounted the working parts of the lathe. It carries the headstock and tail stock for supporting the workpiece and provides a base for the movement of carriage assembly which carries the tool.

2. **Legs:** The legs carry the entire load of machine and are firmly secured to floor by foundation bolts.

3. **Headstock:** The headstock is clamped on the left hand side of the bed and it serves as housing for the driving pulleys, back gears, headstock spindle, live centre and the feed reverse gear. The headstock spindle is a hollow cylindrical shaft that provides a drive from the motor to work holding devices.

4. **Gear Box:** The quick-change gear-box is placed below the headstock and contains a number of different sized gears.

5. **Carriage:** The carriage is located between the headstock and tailstock and serves the purpose of supporting, guiding and feeding the tool against the job during operation. The main parts of carriage are:

a). **The saddle** is an H-shaped casting mounted on the top of lathe ways. It provides support to cross-slide, compound rest and tool post.

b). **The cross slide** is mounted on the top of saddle, and it provides a mounted or automatic cross movement for the cutting tool.

c). **The compound rest** is fitted on the top of cross slide and is used to support the tool post and the cutting tool.

d). **The tool post** is mounted on the compound rest, and it rigidly clamps the cutting tool or tool holder at the proper height relative to the work centre line.

e). **The apron** is fastened to the saddle and it houses the gears, clutches and levers required to move the carriage or cross slide. The engagement of split nut lever and the automatic feed lever at the same time is prevented she carriage along the lathe bed.

6. **Tailstock:** The tailstock is a movable casting located opposite the headstock on the ways of the bed. The tailstock can slide along the bed to accommodate different lengths of workpiece between the centres. A tailstock clamp is provided to lock the tailstock at any desired position. The tailstock spindle has an internal taper to hold the dead centre and the tapered shank tools such as reamers and drills.

## **LATHE OPERATIONS**

**The engine lathe is an accurate and versatile machine on which many operations can be performed. These operations are:**

1. Plain Turning and Step Turning

2. Facing

3. Parting

4. Drilling

5. Reaming

6. Boring

7. Knurling

8. Grooving

9. Threading



10. [Forming](#)
11. [Chamfering](#)
12. [Filling and Polishing](#)
13. [Taper Turning](#)



◆ Draw A picture of Drilling Machine & Label it:

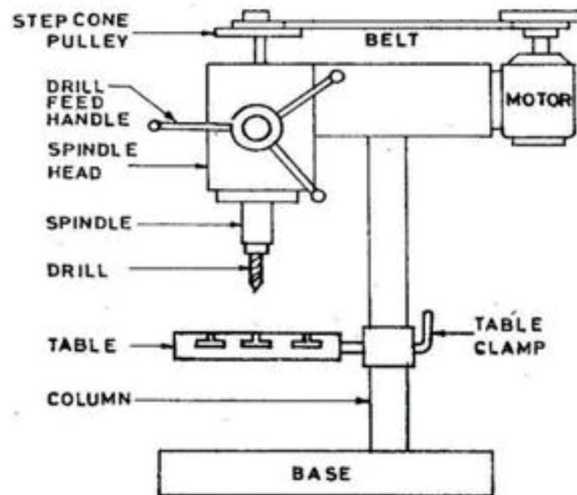


Figure - Drill machine