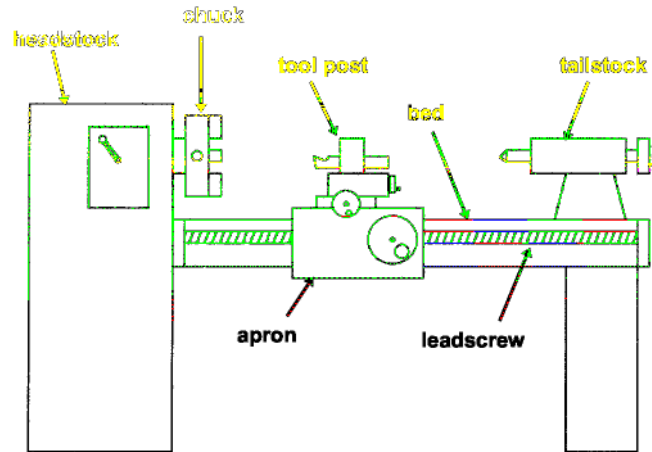


# Design & Manufacture

## Homework 37

### Metalwork Lathe

A metalwork lathe is a machine used for a number of **turning** processes.

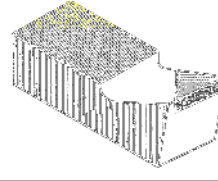


The cutting is done by a **single point cutting tool**. The tool is made from HSS or from tool steel with a hard wearing, tungsten carbide tip.

HSS tool



Tungsten tipped tool

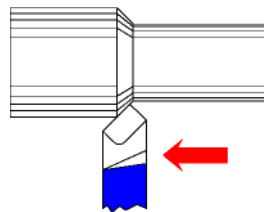


### Processes

A lathe is a very accurate piece of machinery and all turning processes can be carried out to an accuracy of **one 100th of a millimetre**.

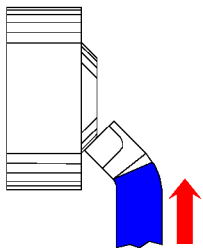
#### Turning down

This reduces the diameter of a rod.



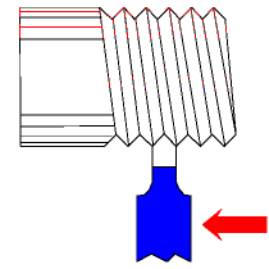
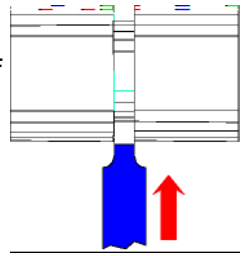
#### Facing off

This shortens the length of a rod and provides a smooth flat end at right angles to the side.



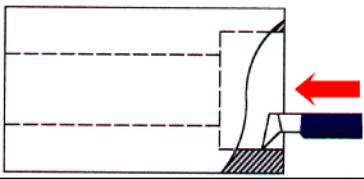
## Parting off

This is a way of cutting off a length of the rod. The diagram shows the parting process half finished.



## Thread cutting

By using a correctly shaped tool, screw threads can be cut.



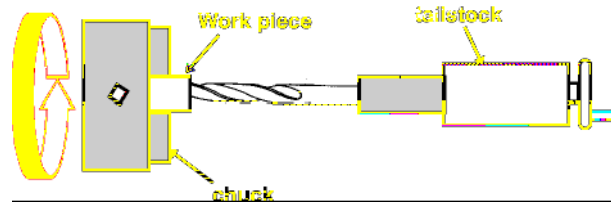
## Boring

Boring is enlarging a hole by cutting away the inside wall.

## Drilling

Holes drilled into the ends of rods are perfectly centred and run along the axis of the rod.

**Note:** The chuck revolves the work, while the drill bit is held still in the tailstock.



## Centre drill

The centre drill is used for starting a hole. It provides a short pilot hole for the main drill bit.



## Questions

1. What materials are cutting tools made from?

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2. How accurately can a lathe work?

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3. Illustrate **four** turning processes.

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4. Describe the process of boring.

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5. What are the differences between drilling using a pillar drill and drilling using a lathe?

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6. How do you start the process of drilling a hole, when working with a lathe?

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