

# BASIC TECHNOLOGY

## WOOD WORK HANDTOOLS

### Measuring Tools, Setting and Marking-Out Tools and Driving Tools

**Hand tools** are grouped into six classes based on their uses, they are: measuring tools, setting and marking-out tools, driving tools, boring tools, holding tools, cutting and pairing tools.

**Measuring tools** are used to make an accurate measurement of a project. These are calibrated tools, dedicated to determining the length of wood. They can be made from metal, leather, wood and plastic.

Measuring tools include:

1. Rule
2. Calipers
3. Pair of dividers
4. Micrometer. Etc.

**Setting and marking-out tools:** They are tools used to mark out the profile of the shape to be cut. They are used to set and make marks on the wood. Examples are:

1. Try square
2. Sliding bevel
3. Meter square
4. Compasses
5. Trammel
6. Marking gauge, etc.

**Driving tools** are meant for driving-in objects into and extracting objects (like nails, screws, etc.) from wood. Examples of driving tools are:

1. Hammer
2. Mallet
3. Screwdriver
4. Punches
5. Pincers. Etc.

### Boring Tools, Holding Tools, Cutting and Paring Tools.

#### Boring tools

They are used for making or creating holes in wood. Examples of boring tools are:

1. Brace
2. Gimlet

3. Bradawl
4. Drills
5. Bits.

## **Holding tools**

Holding and supporting devices are both provisions in form of fittings and tools used in holding work piecing the work bench during operations. They are grouped into two.

1. The fittings which include:
  - a. Well (in the work bench)
  - b. Bench stop
  - c. Bench hook
  - d. Shooting board
2. The holding tools which include:
  - a. G-clamp
  - b. F-clamp
  - c. Sash clamp
  - d. Bench holdfast
  - e. Corner clamp
  - f. Saving trestle.

## **Cutting and Paring Tools**

They are tools meant for cutting of wood. They are:

1. Saw
2. Planes
3. Chisels
4. Rasp
5. Scraper
6. Spoke shave, etc.

## **Care and Maintenance of Wood Work Hand tools.**

1. Clean the tools after use.
2. Store the tools properly in the toolbox or rack.
3. Oil or grease the metal part that requires oil.
4. Grind the blunt cutting tools.
5. Oil should always be applied to the sharpening stones during all sharpening.
6. During grinding of the cutter, water should be applied to the cutters to prevent burning.

## **METAL WORK HAND TOOLS.**

### **Marking-Out Tools, Measuring Tools and Gauges and Driving Tools.**

Metals like any other material are worked on using tools, these tools can either be hand tools or machine tools. Metal work hand tools are classified into:

1. Marking-out tools.
2. Measuring tools.
3. Driving tools.
4. Cutting tools.
5. Holding tools.

## **Marking-out Tools**

They are metal work tools used for making inscription or marks on the work piece after measurement. Examples of marking tools are:

1. Surface plate and surface table.
2. Centre dot punch
3. Scriber.
4. Odd- leg caliper.
5. Try square.
6. Divider, etc.

## **Measuring Tools**

They are tools meant for determining dimensions of metal work piece. Examples of metal work measuring tools include:

1. Steel rule.
2. Tape rule.
3. Calipers.
4. Centre square.
5. Protractor.
6. Trysquare.
7. Micrometer.
8. Set squares, etc.

## **Driving Tools**

They are tools used in moving in or out mechanical fasteners (screws, bolts, nuts or rivet) in metal work. These includes:

1. Hammers.
2. Spanners.
3. Adjustable wrench.
4. Screwdriver.
5. Punches, etc.

## **Cutting Tools and Holding Tools.**

### **Cutting tools**

Metal work cutting tools are grade of tools used for cutting metals. The cutting tools includes:

1. Hack saw.
2. Chisels
3. Files, etc.

## **Metalwork Holding Tools**

They are specifically meant for gripping work piece when work is ongoing. They include:

1. Vices.
  - a. Bench vices.
  - b. Machine vices.
  - c. Tool maker's vices.

2. Pliers.
  - a. Combination plier.
  - b. Flat nosed plier.
  - c. Round nose plier.
  - d. Gas pliers.

### **Care and Maintenance of Metalwork Tools.**

1. Maintain the tools in good condition and protect them from damage.
2. Know how to use the correct hand tools to avoid unnecessary damage to the tools and shortening of its useful life.
3. Avoid damage to the work piece through the use of screwdrivers, pliers and hammers, i.e., damaging the slots on the screw heads by using incorrect screwdrivers or pliers.
4. Use correct fitting spanner on a nut.
5. Keep all hand tools clean at all times.
6. When not in use keep them in their cases or in the cupboard.

### **LUBRICANT**

**Lubricants** are substances used to reduce friction between objects or surfaces.

**Lubrication** is the application of a substance (lubricant) between moving surfaces in contact, in order to reduce friction and minimize heating. Effective lubrication is necessary for the parts of machine to avoid friction.

### **Types of Lubricant.**

1. Grease
2. Oil

### **Methods of Lubrication.**

1. Boundary
2. Mixed
3. Full film

### **MAINTENANCE OF TOOLS AND MACHINES**

**Maintenance** is the action performed, to keep some machine systems functioning. In industries, machines are checked regularly by maintenance officers to prevent breakdown of machines. Breakdown causes a lot of inconveniences and delays the work being done.

## **Types of Maintenance**

There are three types of maintenance:

1. Predictive maintenance
2. Preventive maintenance
3. Corrective maintenance

### **Predictive Maintenance**

It involves the use of modern devices to predict an impending breakdown. It is more like forecasting a breakdown and fixing it before it occurs. Certain meters (measuring instruments) are attached, to signal that a part or parts are about getting spoilt. Computers and scanners can be used to predict a damage that is about to happen.

### **Preventive maintenance**

It is a regular servicing of equipment before any breakdown. It involves cleaning, oiling, greasing, checking, servicing and adjusting. It is carried out in order to prevent a machine from breaking down.

### **Corrective Maintenance**

Corrective maintenance involves action taken to restore or correct a broken-down equipment to a functional state. It is the actual repair work that is carried out on an equipment that has broken down. Examples include: replacement of worn-out parts, binding torn out books. Corrective maintenance is usually expensive and time consuming. In most cases, the equipment needs total overhaul and replacement of damaged parts.

### **Needs and Importance of Maintenance.**

1. Inconveniences will be prevented.
2. It saves money.
3. It saves time.
4. It makes the equipment last longer.
5. Avoid sudden breakdown.

### **Students' Activities.**

***State the form of a maintenance involved in the following situations:***

1. The burst car tyre.
2. Changing oil in a motor car.
3. Painting iron door.
4. Stitching your torn school uniform.
5. Binding torn out books.